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DISSERTATION

NUMERICAL AND PHYSICAL MODELING OF BLUFF BODY FLOW AND DISPERSION IN URBAN STREET CANYONS

Submitted by

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In partial fulfillment of the requirements
for the Degree of Doctor of Philosophy
Colorado State University
Fort Collins, Colorado
Spring, 2001

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY **CHENG-HSIN CHANG** ENTITLED **NUMERICAL AND PHYSICAL MODELING OF BLUFF BODY FLOW AND DISPERSION IN URBAN STREET CANYONS** BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work

Advisor

Department Head

ABSTRACT OF DISSERTATION

NUMERICAL AND PHYSICAL MODELING OF BLUFF BODY FLOW AND DISPERSION IN URBAN STREET CANYONS

This investigation is focused on bluff body flow, wind loads and transport of pollutants or chemical and biological (CB) agents in urban environments, which require accurate measurements of the basic flow fields for carefully controlled, well known conditions. The research consists of two components: physical urban street canyon modeling in a boundary layer wind tunnel and numerical urban street canyon modeling using finite-volume numerical methods.

Fluid modeling in an industrial wind tunnel provides an opportunity to produce accurate simulations of the bluff body flow and transport of urban pollution or simulations of CB agents associated with urban terrorism incidents. A basic building shape, the Wind Engineering Research Field Laboratory building (WERFL) at Texas Tech University, is used for this study. Many studies have been performed on pressure fields, flow and dispersion patterns based on the isolated WERFL building during the past ten-year Colorado State University/Texas Tech University Cooperative Program in Wind Engineering. An urban street canyon matrix was built by using the 1:50 scale WERFL model and surrounding it by models of similar dimensions. These buildings were arranged in various symmetric configurations with different separation distances

and different numbers of buildings upwind, laterally and downwind. A series of measurements were made over the generic urban street canyon arrangements using flow visualization, anemometry, pressure transducers and gas chromatography. Experimental data include visualization, video sequences, velocity and turbulence intensity profiles, surface pressure on the building and dispersion of tracer gas. Results were examined for the influence of surroundings on the pressure and concentration distributions. Results were also compared to three-dimensional numerical models of the same configuration using the commercial code, Fluent 5.4 and the Large Eddy Simulation (LES) code Fire Dynamics Simulator (FDS). The effects of grid resolution, boundary conditions, source placement and selection of turbulence model (kappa-epsilon, RNG kappa-epsilon, Reynolds stress, LES, etc.) were examined in a series of sensitivity calculations.

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LIST OF SYMBOLS

A, B, c	calibration constants
C	steady-state concentration at point (x, y, z)
C_{bg}	background concentration
C_m	source normalized model concentration
C_{mea}	sampled concentration
C_p	Pressure coefficient
C_p'	RMS pressure coefficient
C_{source}	source gas concentration
d_0	zero-plane displacement
E	anemometer output voltage
Ec	Eckert Number
g_c	gravitational conversion constant
H	effective stack height
K_s	equivalent sand roughness
K	normalized concentration
k	turbulent kinetic energy
κ	von Karman constant
L	length
P	pressure
Pr	Prandtl number
P_{static}	static pressure
Q	emission rate
Ro	Rossby Number
Re	Reynolds Number
Ri	Richardson Number
T	temperature
U	flow velocity

$U(z)$	mean wind velocity at elevation z
u	average wind speed at stack height
$u*$	friction velocity
u_{ref}	mean velocity at reference height
$u(z)$	mean wind speed
V	mean velocity at reference point
ν	kinematic viscosity
y	horizontal distant from plume centerline
z	vertical distance from ground level
z_0	roughness length
z_{ref}	the reference height
α	power law exponent (function of roughness)
ε	kinetic dissipation
ρ	air density
σ_y, σ_z	horizontal and vertical spread parameters
λ_{ar}	$\sum$ of areas covered by buildings / total urban area
λ_{fa}	$\sum$ of average building areas normal to the wind /total urban area
Ω	angular velocity of earth

Abbreviations

ABL	Atmospheric boundary layer
ASL	Atmospheric surface layer
CAD	Computer aided design
CB	Chemical and Biological
CFD	Computational fluid dynamics
CSU-B2	Medium turbulence (TTU nominal turbulence) surface layer
CWE	Computational Wind Engineering

DNS	Direct Numerical Simulation
FDS	Fire Dynamics Simulator
GC	Gas Chromatograph
IWT	Industrial Wind Tunnel
LES	Large Eddy Simulation
NIST	National Institute of Standards and Technology
PSI	Pressure System Inc.
TSI	Thermo System Inc.
TTU	Texas Tech University
WERFL	Wind Engineering Research Field Laboratory
WEFL	Wind Engineering Fluid Laboratory

CHAPTER 1

INTRODUCTION

The flow patterns that develop around individual buildings govern the wind forces on the building, the distribution of pressure about the building, and scalar dispersion about the building and in its wake. The superposition and interaction of flow patterns associated with adjacent buildings govern the final distribution of facade pressures and the movement of pollutants in urban and industrial complexes. Street canyon depth and width, intersection locations, canyon orientation to dominate wind directions, and building geometries determine peak pollution incidents (Oke, 1988; Theurer, 1995).

Many studies have shown that the worst mean and peak suctions on flat building roofs occur for cornering or oblique wind angles. At such angles, conical or delta wing vortices form along the roof edges, which induce higher suction pressures, associated with the strongly curved separation streamlines (Banks et al., 1999a and 1999b). Yet the presence of nearby buildings is expected to deflect streamlines, modify local circulation patterns and induce modified patterns of suction and stagnation pressure, as well as different convection patterns for pollutants. Many studies have previously examined physical models of urban street canyons. Plate et al. (1992) studied models of the development of the atmospheric boundary above urban areas by measuring flows over different arrangements of buildings. Plate (1995) considered the effects of urban climates and urban climate modeling. Surry (1994) examined the effect of both surroundings and roof corner geometric modifications on the roof pressures on a low-rise building. Hertig

et al. (1995) also performed wind tunnel tests to determine the influence of nearby buildings on mean and peak pressure coefficients. Kiefer and Plate (1998) provided modeling of mean and fluctuation wind loads in different types of built-up areas. Cermak (1995) introduced the physical modeling of flow and dispersion over larger urban areas and proposed similarity criteria required to uniquely determine flow and dispersion. Gerdes et al. (1999) measured and analyzed pollutant dispersion in an urban street canyon. Most recently, Macdonald (2000) modeled the mean velocity profiles in an urban canopy layer and examined the effect of a reduction of turbulence length scale with increasing obstacle-packing density.

Advanced technology makes computers faster and more powerful, which allows computational fluid dynamics (CFD) procedures to be applied to many experimental flow problems. Today, increasing applications of CFD to wind engineering problems include wind load of building and pollutant dispersion phenomena. Several previous studies have compared measurements made during physical modeling with numerical predictions. He and Song (1997) simulated the wind flow around the Texas Tech University (TTU) building and roof corner vortex by using a Large Eddy Simulation (LES) code. They claim that the three-dimensional roof corner vortex pattern was successfully simulated and that mean values of pressure predicted were in good agreement with wind tunnel and field test measurements. Murakami et al (1997) generated velocity fluctuations for an inflow boundary condition for LES with prescribed spatial correlation distributions and turbulence intensity levels. To generate velocity fluctuations for an inflow boundary condition for LES is one of the most important unresolved problems in CFD research.

Lee et al. (1997) solved the LES of wind effects on bluff bodies using the finite element method, and they compared simulated results with numerical and experimental studies reported by other researchers. Selvam (1997) used LES to compute the pressures around the TTU building using different inflow turbulence conditions, and he compared them with available field mean and peak pressure coefficients. Rehm et al. (1997) compared mean surface pressure on a single building by using an LES algorithm with uniform and shear inflows. Cheatham et al (2000) also simulated the flow and dispersion around a surface-mounted cube, and they examined the effect of resolution, boundary conditions, and the form of the inflow velocity profiles. Carpenter and Locke (1999) investigated wind speeds over multiple two-dimensional hills and compared results with numerical solutions. Meroney et al. (1995 and 1996) examined the behavior of line-source diffusion within two-dimensional arrays of simple rectangular model buildings. Leitl and Meroney (1997) compared traffic exhaust dispersion in street canyons as measured by Rafailidis et al. (1995) with numerical simulations including the effects of pitched roofs and finite length cross wise streets. Leitl et al. (1997) considered the numerical simulation of concentration and flow distributions in the vicinity of U-shaped building structures. They compared their calculations against detailed wind tunnel measurements produced by Klein et al. (1994).

The goal of this dissertation is to investigate the bluff body flow, wind load and transport of pollutants, or chemical and biological (CB) agents in an idealized urban environment. The experiments associated with this dissertation provide accurate measurements of the basic flow fields for carefully controlled, well known conditions.

The research consists of two components: physical urban street canyon fluid modeling in a boundary layer wind tunnel and numerical urban street canyon modeling using finite-volume numerical method.

1.1 Fluid Modeling

This study used a basic building shape, the Wind Engineering Research Field Laboratory building (WERFL), Texas Tech University, Lubbock, which is a metal building of simple rectangular prism shape (9.2 m x 13.8 m x 4.0 m tall) to build an urban street canyon model. Pressure fields, flow and dispersion patterns about this isolated building were extensively measured both at full scale and over various model scales immersed in an equivalent turbulent shear layer (Cochran, 1992; Birdsall, 1993; Bienkiewicz, 1995; Ham, 1998; Banks, 2000).

A plastic model of the WERFL structure was constructed to a 1:50 scale and instrumented with multiple pressure ports. A large number of "dummy" models of similar dimensions were constructed of plastic foam and wood to represent surrounding buildings. These buildings were arranged in various symmetric configurations with different separation distances; then they were placed in the Industrial Wind Tunnel of the Wind Engineering and Fluid Laboratory, Colorado State University. Typical building patterns are noted in Figure 3.6, and the associated arrangement patterns are listed in Table 3.1.

Wind velocity measurements were made with a single hot-film probe and anemometry equipment manufactured by Thermo-Systems, Inc. (TSI). Flow

visualization was accomplished with a laser light sheet produced by 5-watt Coherent Innova 7005 Argon ion water-cooled laser. Images were recorded by using a Panasonic Omni vision II camera/recorder system. Pressure taps on the 1:50 scale building model were connected to a 48-channel Pressure System Inc. (PSI) "ESP48" transducer unit mounted inside the model. Concentrations of tracer gases (C_2H_6) released from point and line source regions are measured using a Hewlett Packard 5710A Flame-ionization Gas Chromatography. An automated sampling system designed and built at CSU using 50 syringes captured samples simultaneously for sequential processing through the gas chromatography. Transducer voltages are integrated and recorded automatically by a National Instrument Inc. LabVIEW based data acquisition system.

1.2 Numerical Modeling

Flow and dispersion over various building pattern arrangements were also simulated with the Fluent 5.4 and Fire Dynamics Simulator (FDS) computational fluid dynamics software.

The Fluent CFD software was based on a finite volume discretization of the equations of motion, an unstructured grid volume made of either rectangular prisms or tetrahedral cells, various matrix inverting routines, and, in this case, either kappa-epsilon (κ-ε) or renormalized group theory kappa-epsilon (RNG-κ-ε) turbulence models. Steady state solutions were sought for several flow configurations, and the data generated were displayed on various isopleth contour plots of velocity, turbulence and concentration. The effects of grid resolution, boundary conditions, source placement and selection of

turbulence model (kappa-epsilon, RNG kappa-epsilon, Reynolds stress, etc.) were examined in a series of sensitivity calculations. Particle trajectories were also generated to elucidate the effect of building spacing and street configuration (Fluent 5, User's Guide, 1998).

Fire Dynamics Simulator (FDS) is a public domain computational fluid dynamics (CFD) model of fire-driven fluid flow created by the Building and Fire Research Laboratory at the National Institute of Standards and Technology (NIST) (http://fire.nist.gov). FDS consists of two programs, fds and smokeview. Fds solves a form of the Navier-Stokes equations appropriate for low-speed, thermally-driven flows of smoke and hot gases generated in a fire. Smokeview visualizes fds computed data by animating time dependent particle flow, 2D slice contours, and surface boundary contours. Data at a particular time may also be visualized using 2D or 3D contour plots or vector plots. FDS uses the Large Eddy Simulation (LES) methodology, and it was developed and used for the description of gas phase combustion and convection processes in fires where buoyancy is fundamental. However, since wind speeds are so high in most wind engineering applications, mechanical turbulence dominates thermal effects and buoyancy effects are relatively small. Thus, in the calculations induced here, the incoming flow is assumed to be turbulence-free. The signature turbulence effects are accounted only to the size of the grid.

Chapter 2 presents the background of analytical and numerical models considered. The arrangement of the experiments, data acquisition and analysis techniques is summarized in Chapter 3. In Chapter 4, a number of simulation procedures

using Fluent 5.4 and FDS are described. Chapter 5 presents experimental data of flow visualization, velocity and turbulence intensity profiles, pressure coefficients, and concentrations. Chapter 6 discusses the wind tunnel results and compares the experimental data with the numerical data, and Chapter 7 summarizes conclusions of this study.

CHAPTER 2

ANALYTICAL AND NUMERICAL MODELS

Characteristics of bluff body flow and transport of pollutants in urban street canyons and the theoretical background for various analytical and numerical models are discussed in this chapter. There are four topics involved: urban climates and urban climate modeling, wind effects on low-rise buildings in the turbulent boundary layers, physical modeling of flow and dispersion in urban street canyons, and numerical simulation of flow over such geometries.

2.1 Urban Climates and Urban Climate Modeling

There are two different types of boundary layer flows typical for different applications and meteorological situations during urban street canyon wind studies (Plate, 1995). One is a high velocity boundary layer flow characteristic of wind loading situations. This high speed flow is neutrally stratified and can be modeled in a conventional boundary layer wind tunnel. The other is a low velocity flow, typical for situations of significant air pollution which may require thermal stratification facilities. The low velocity flow may also be neutrally stratified, but the most extreme pollution cases occur for stratified flows with a surface level mixed layer and an elevated inversion.

2.1.1 Urban Boundary Layer Flow at High Velocities

Urban boundary layer flow at high velocities is a very typical flow condition of broad applicability for the rough surface of urban areas. From the standpoint of aerodynamics, the wind field of an urban street canyon area is a boundary layer flow along a rough surface, as shown in Figure 2.1.

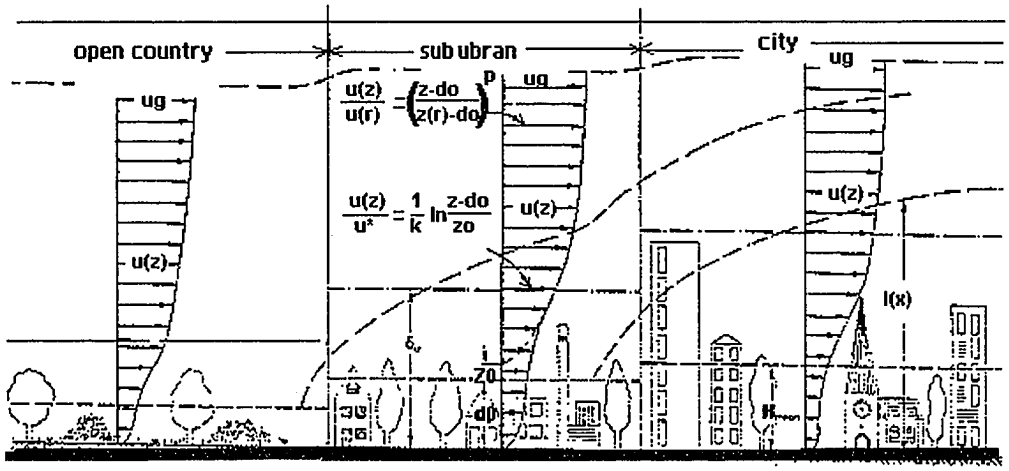


Figure 2.1 The urban boundary layer for neutrally stratified flow (Plate, 1995)

To define mean wind speed height, the logarithmic distribution for the urban boundary layer for neutrally stratified flow is usually applied.

$$\frac{u(z)}{u_*} = \frac{1}{\kappa} * \ln \frac{z - d_0}{z_0} \tag{2.1}$$

Where, z = height above the surface, [L],

z_0 = roughness length, [L],

d_0 = zero-plane displacement, [L],

$u(z)$ = mean wind speed, [L/T],

u_* = friction velocity, [L/T], and

κ = von Karman constant.

The application of this equation to a particular situation requires that the coefficients u_*, z_0 and d_0 are properly defined. This can be accomplished through measurements of the urban boundary layer. Table 2.1 (Wieringa, 1993) shows eight classes of different surface roughness in terms of a z_0 – value, ranging from a super smooth "sea"-surface to a super rough "chaotic"-surface characteristic of a big city center. This work represents the latest effort to classify the steadily expanding body of experimental knowledge.

Classification	z_0 (m)	Landscape description
1: "Sea"	0.0002	Open sea or lake.
2: "Smooth"	0.005	Featureless land surface.
3: "Open"	0.03	Level country with low vegetation.
4: "Roughly open"	0.10	Cultivated area with regular cover of low crop.
5: "Rough:	0.25	Recently-developed "young" landscape.
6: "Very rough"	0.5	"Old" cultivated landscape
7: " Closed"	1.0	Landscape totally and quite regularly covered.
8: "Chaotic"	>= 2	Center of large cities.

Table 2.1: Davenport roughness classification (from Wieringa, 1993)

An alternate functional description of the flow in this part of the urban boundary is by means of the power law, as

$$\frac{u(z)}{u_{ref}} = \left(\frac{z - d_0}{z_{ref}} \right)^{\alpha} \tag{2.2}$$

Where, z_{ref} = the reference height, [L],

u_{ref} is mean velocity at reference height, [L/T], and

α = power law exponent (function of roughness).

A very comprehensive study of urban boundary layer flow was made by Theurer (1993) to summarize what is known about these parameters and to correlate them with building dimensions. These parameters can be predicted by using building parameters without performing any measurement. Theurer uses two parameters to describe the distribution of roughness elements. He suggests,

λ_{ar} = $\sum$ of areas covered by buildings / total urban area, and (2.3)

λ_{fa} = $\sum$ of average building areas normal to the wind /total urban area. (2.4)

These two parameter, λ_{ar} and λ_{fa}, are not precise enough to uniquely classify the roughness of an urban area. However, the precise roughness can be classified by using

these two parameters combined with a pictorial description of the roughness pattern. The results are shown in Table 2.2.

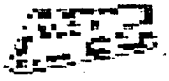
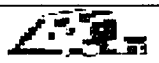
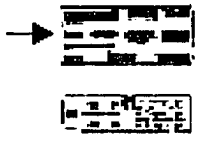
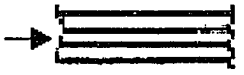
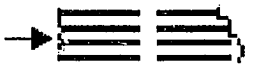
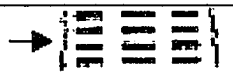
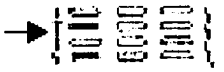
Structure	Description	H (m)	λ_{ar}	λ_{fa}	d_0	z_0
	One family building 1-2 stories	8-10 (9)	0.1-0.2	0.12	2	1.3
	Dense urban development one and more family building, 1-3 stories	8-12	0.2-0.3	0.15	4	1.4
	Building row 3-5 stories	12-20	0.2-0.3	0.1	7	1.5
	Block edge buildings 3-5 stores	15-20	0.25- 0.35	0.15	9	2.1
	City centers	>20	<0.5	0.15	10	2.4
	Industrial areas (chemical industry) with a. rows of buildings b. refinery type	15-25	0.3-0.4	0.12	12	1.6
	Suburban business center	5-15	0.25- 0.35	0.07	5	0.6
	Row like buildings (windtunnel: Theurer 1993)	20	0.44	-	15 (10)	0.1
	Interrupted rows (windtunnel: Theurer 1993)	20	0.36	0.044	12 (10)	0.6 (0.4)
	Interrupted rows (windtunnel: Theurer 1993)	20	0.3	0.093	10 (9)	1.5 (0.8)
	(windtunnel: Theurer 1993) Rows with varing heights	22.2	0.3	0.103	11 (10)	1.8 (1.8)
	Rows with varying heights (windtunnel: Theurer 1993)	19	0.3	0.088	10 (10)	1.3 (1.3)

Table 2.2 Relationship of aerodynamic parameter with building pattern (Theuer, 1993)

2.1.2 Urban Boundary Layer at Low Velocity Flows

Pollutant gases usually are diluted by the wind. The stronger the wind, the greater the dilution. But with low velocity flow inside the urban area, vertical motions induced by the thermal turbulence become more significant. In this situation, local heating of a building, either from outside by the sun or inside through room heating, may determine the flows in the urban areas. Thus, the structure of a diurnal thermal cycle of heating and cooling will be more important for the flows of contaminant gases in the urban canopy layer.

Analytical pollution studies at low wind speeds inside the urban areas are possible only in very simplified conditions. The case of a point source that exists within the outer part of the urban boundary layer is well known; it has been studied extensively both in the field and in laboratories. Semi-empirical models have been established that permit one to calculate the spreading of pollutants from an elevated point source. The empirical models are based on the "Gaussian Plume" model. A Gaussian or normal distribution often results from random processes. Such behavior has been shown by Pasquill (1961) to be well modeled by a double Gaussian equation. This equation is given below in a form that predicts the steady-state concentration at point *(x, y, z)* located downwind from the source:

$$C(x,y,z)=\frac{Q}{2\pi u\sigma_y\sigma_z}\exp\left(-\frac{1}{2}\frac{y^2}{\sigma_y^2}\right)\left\{\exp\left(-\frac{1}{2}\frac{(z-H)^2}{\sigma_z^2}\right)+\exp\left(-\frac{1}{2}\frac{(z+H)^2}{\sigma_z^2}\right)\right\} \qquad (2.5)$$

Where, C = steady-state concentration at point (x, y, z), [M/L^3],

Q = emission rate, [M/T],

σ_y, σ_z = horizontal and vertical spread parameters, [L],

u = average wind speed at stack height, [L],

y = horizontal distant from plume centerline, [L],

z = vertical distance from ground level, [L], and

H = effective stack height, [L].

A view of the double Gaussian distribution in the plume, portrayed by Equation 2.5 is presented in Figure 2.2.

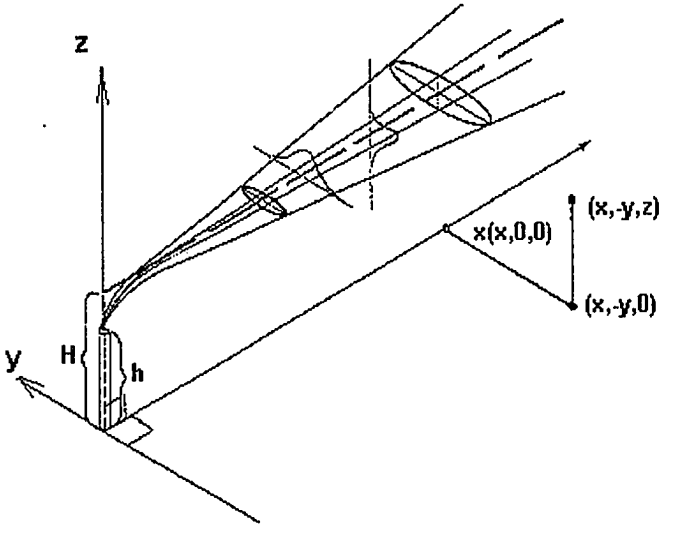


Figure 2.2 Coordinate system showing Gaussian distributions in horizontal and vertical (Turner, 1970)

Gaussian distribution plume models, which have the initial parameters reflecting urban area conditions, have been evaluated for many different studies both in the field and laboratory, and semi-empirical models have been established that permit to calculate, with some accuracy, the spreading of pollutants from a elevated point source. These semi-empirical models are not accurate enough to describe local street canyon behavior. Mathematical models are needed to connect them to meteorological mesoscale models.

2.2 Wind Effects on Low-Rise Building in the Turbulent Boundary Layers

From the viewpoint of aerodynamics, most buildings are called bluff or blunt bodies, in contrast to streamlined bodies such as aircraft wings. Most buildings are located within the Atmospheric Surface Layer (ASL), where the wind flow is more turbulent than in the upper part of Atmospheric Boundary Layer (ABL). The interaction between the building and the approaching wind leads to building-induced turbulence generated near the building surfaces. The wind-induced pressure fluctuation on the surfaces of a building varies in time and space. It is influenced by many factors: wind speed and direction, level of turbulence in the approaching wind, surrounding terrain, and geometry of the building. Airflow around bluff bodies results in distortion, deceleration, acceleration, separation and reattachment of flow. Turbulent boundary layer flows, such as the presence of a wind velocity profile and shear stress, as they are typical for natural wind, complicate the flow around bluff bodies drastically. A single rectangular-shaped bluff building in ABL flow represents an idealized case, which is illustrated in Figure 2.3.

The remainder of this section is devoted to the discussion of these characteristics on the walls and the roof of a simple building.

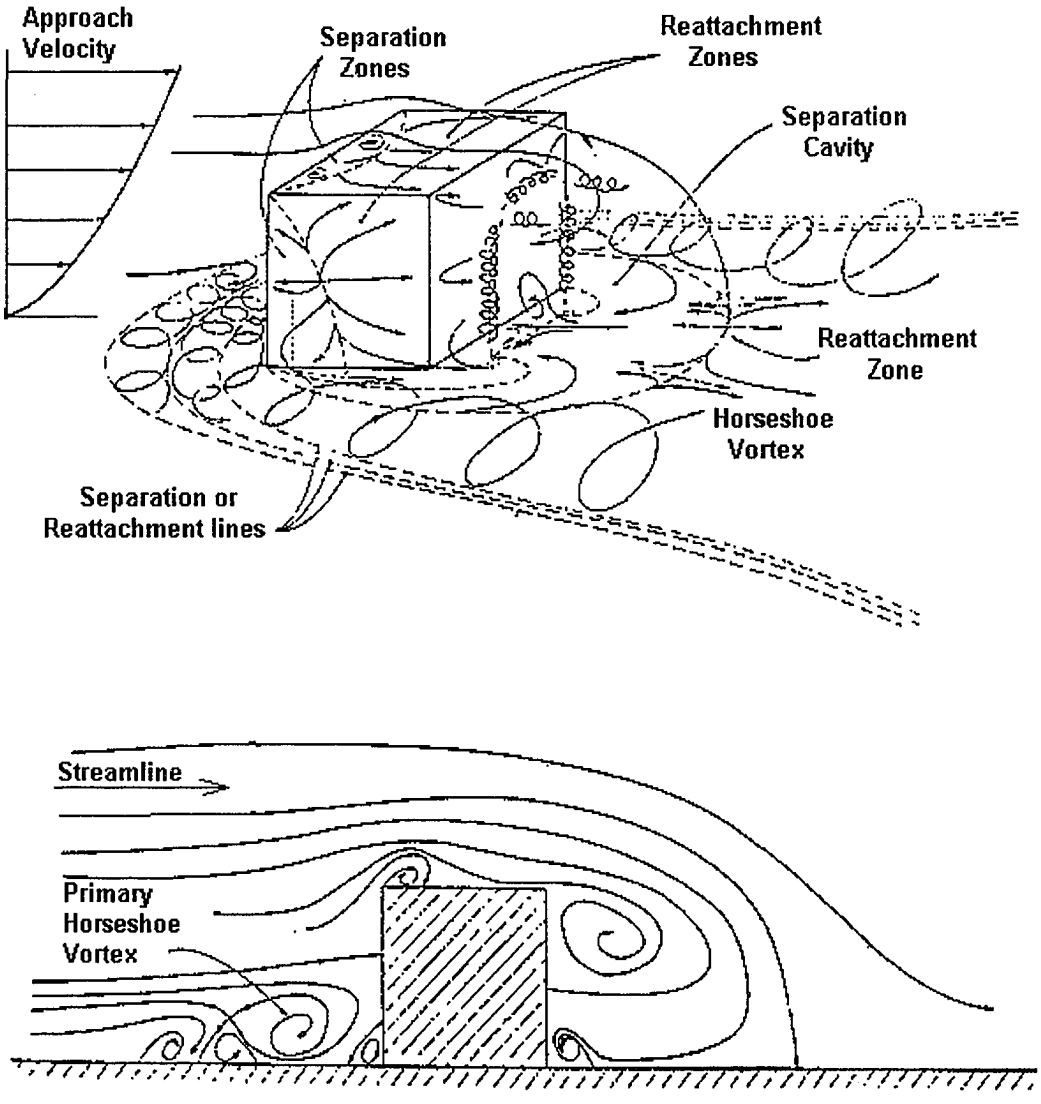


Figure 2.3 Model of flow near a sharp-edged building normal to deep boundary layer wind (from Hosker, 1984, based on Peterka, 1977)

2.2.1 Windward Wall

The flow pattern near the windward wall is shown on Figure 2.4. The wind flow comes to rest to form the front stagnation point, S1, at about two-thirds of the height of the building. The flow goes down until it reaches the ground, where it has more kinetic energy than the incident wind at this level. It moves forward against the wind and loses energy until it comes to rest at a separation point on the ground, marked S2. As Figure 2.4 shows, beyond the point, S2, the flow rolls up and forms a horseshoe vortex on the ground in front of the windward face. Near the ground, the vortex extends along the sidewalls of the building. This vortex has a significant effect on the distribution of wind pressure on the windward surface.

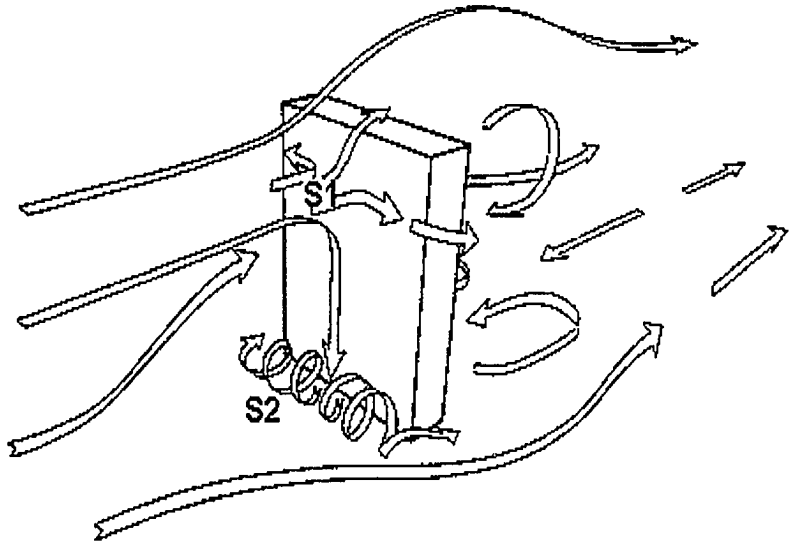


Figure 2.4 Flow pattern on windward wall (Beranek, 1980)

2.2.2 Side and Leeward Walls

In Figure 2.5, due to the flow separation along the edge of the windward surface, the two sidewalls are under the action of negative pressures (suctions). Flow around the top one-thirds of the building height is marked A. The flow at low elevations, marked B, is associated with the horseshoe vortex. It is significantly faster than the incident wind at that level. The pressure distribution is found to be nearly uniform along the upstream edge of the sidewall.

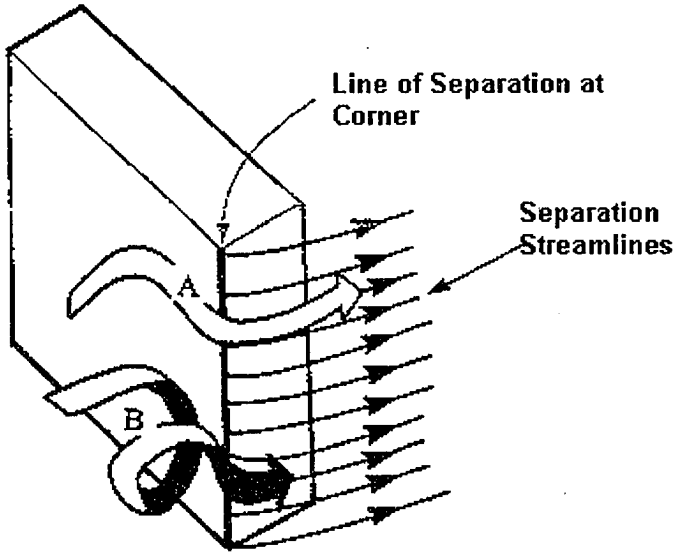


Figure 2.5 Separation at sidewall (Cook, 1985)

The flow trailing the building is called the wake. Figure 2.6 shows the flow pattern in the wake immediately behind a slab block. Two flows, marked A, indicate a pair of vertical vortices driven by a flow from the horseshoe vortex through the shear

layers on each side of the slab. The flow marked B indicates a circulation driven through the shear layer over the roof, which interacts with the flow in the vortices. A relatively uniform pressure distribution is found in the region close to the vertical sides of the leeward face (Cook, 1985).

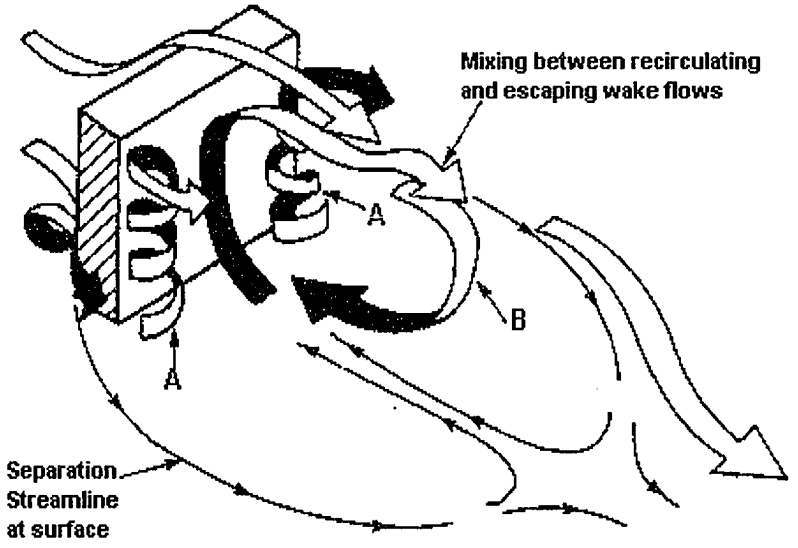


Figure 2.6 Wake circulations behind slab block (Cook, 1985)

2.2.3 Roof

The pressure on the roof surface of the building shows high suction near the roof corner and edges. Despite extensive wind-tunnel experiments, the agreement between laboratory simulation and full scale model measurements of the negative peak and rms point pressure continues to be less than satisfactory, especially at some locations near the roof corner (Ham and Bienkiewicz, 1997).

Consider a wind with a flow approaching normal to the windward face of a building. A uniform separation bubble is formed along the upstream edge of the roof. Figure 2.7 shows a streamline pattern associated with the condition described above. The flow above the stagnation point on the windward wall goes up and separates along the roof edge; then it reattaches to the roof. The joint effect of the wind profile, vorticity in the shear layer along the separation boundary, and Reynolds stress within the ABL is to lower the separated streamline and to promote earlier reattachment of the separated flow to the building roof (Banks, 1999). Higher suctions are encountered near the roof edge.

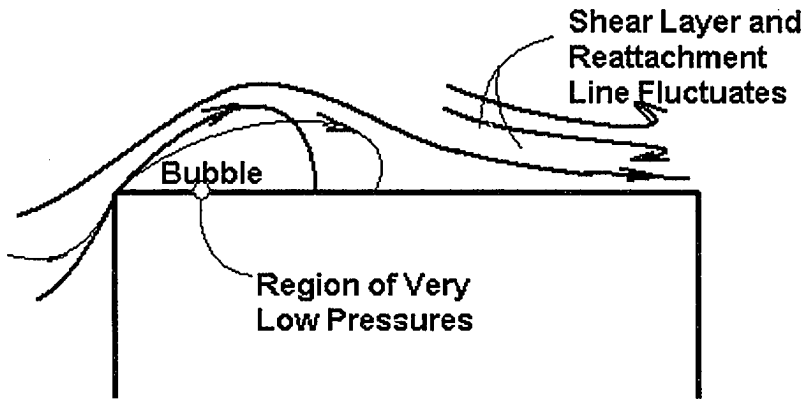


Figure 2.7 Separation and reattachment on the roof of low-rise building (Banks, 1999)

At an angle other than normal to a face, the flow separating from the upwind edge of the roof will have a component of velocity along the line of separation. Figure 2.8 illustrates the general pattern of the resulting deltawing vortices. Both of these primary

and secondary vortices roll up to form a pair of trailing vortices. The highest magnitude of the mean (negative) roof pressure occurs in the secondary vortex region. The highest pressure gradient occurs in the reattachment region, located between the reattachment line and the secondary separation line. The highest negative peak pressure and the highest pressure fluctuations occur in the separated region of the primary flow (Sun, 1993).

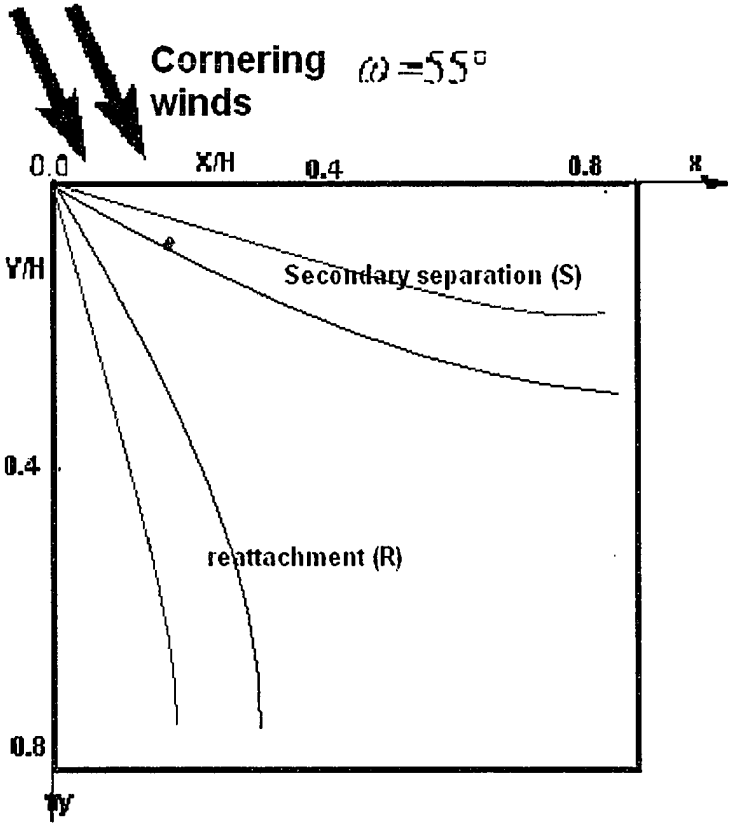


Figure 2.8 Sketch of primary and secondary vortices (Sun, 1993)

2.3 Physical Modeling of Flow and Dispersion in Urban Street Canyons

The characteristics of flow and dispersion over an urban area are determined by interaction of the approaching flow with a change in surface boundary conditions created by the urban development. Roughness and temperature of an urban area usually are higher than for the surroundings. When modeling the flow of air in the atmospheric boundary layer, certain similarity conditions must be satisfied. Similarity criteria are presented for modeling of thermally stratified, boundary layer approach flows and similarity of the urban area roughness and thermal characteristics. These requirements of similarity of the ABL and the wind tunnel boundary can be obtained from nondimensional groups found in the normalized equations of conservation of mass, momentum and energy. Cermak (1981) has summarized these requirements for wind tunnel boundary layers.

It is very difficult to obtain exact simulation of all requirements for similarity. However, there are relaxations that can be made in some situations for these requirements because of the limited effect on the flow characteristics.

2.3.1 The Equations of Conservation of Mass, Momentum and Energy

Inspectional analysis (Ruark, 1935) of the fundamental conservation equations for mass, momentum and energy and the equation of state yields non-dimensional parameters that serve as similarity criteria (Cermak, 1975). The equation of motion for a fluid in a turbulent boundary layer can be expressed in a nondimensional form by using the scaling factors:

$$U_i^* = \frac{U_i}{U_0},\quad u_i^* = \frac{u_i}{U_0},\quad \left(u_i'\right)^* = \frac{u_i'}{U_0},\quad \left(\theta'\right)^* = \frac{\theta'}{T_0},\quad x_i^* = \frac{x_i}{L_0},\quad t^* = \frac{tU_0}{L_0},$$

$$\rho^* = \frac{\rho}{\rho_0},\quad \Omega_j^* = \frac{\Omega_j}{\Omega_0},\quad P^* = \frac{P}{\left(\rho_0 U_0^2\right)},\quad T^* = \frac{T}{T_0},\quad \Delta T^* = \frac{\Delta T}{\Delta T_0},\quad \textit{and}\quad g^* = \frac{g}{g_0}.$$

The equations which result are

$$\frac{\partial \rho^*}{\partial t^*} + \frac{\partial\left(\rho^* u_i^*\right)}{\partial x_i^*} = 0 \tag{2.6}$$

$$\frac{\partial U_i^*}{\partial t^*} + U_j^* \frac{\partial U_i^*}{\partial x_j^*} + \left[\frac{L_0\Omega_0}{U_0}\right] 2\varepsilon_{ijk}\Omega_j^* U_k^* =$$
$$-\frac{\partial P^*}{\partial x_i^*} - \left[\frac{\Delta T_0}{T_0}\frac{L_0 g_0}{U_0^2}\right]\Delta T^* g^* \delta_{i3} + \left[\frac{\nu_0}{L_0 U_0}\right]\frac{\partial^2 U_i^*}{\partial x_k^* \partial x_k^*} + \frac{\partial\overline{\left(-u_i' u_j'\right)^*}}{\partial x_j^*}, \tag{2.7}$$

$$\frac{\partial T^*}{\partial t^*} + U_i^* \frac{\partial T^*}{\partial x_i^*} = \left[\frac{k_0}{\rho_0 C_{po} \nu_0}\right]\left[\frac{\nu_0}{L_0 U_0}\right]\frac{\partial^2 T^*}{\partial x_k^* \partial x_k^*} + \frac{\partial\overline{\left(-\theta' u_i'\right)^*}}{\partial x_i^*} + \left[\frac{\nu_0}{U_0 L_0}\right]\left[\frac{U_0^2}{C_{po} T_0}\right]\phi^* \tag{2.8}$$

the dimensionless continuity, momentum and energy equations respectively (Equations (2.6), (2.7) and (2.8)).

The above equations are time averaged instantaneous equations of motion in a fixed frame of reference. These equations contain the non-dimensional groups that form the basis for the simulation of atmospheric flow in a wind tunnel.

Synoptically, the parameters that must reproduced in the wind tunnel for exact similarity between the model and prototype are:

1. Geometric scaling.
2. Rossby Number Ro, $U_0/L_0\Omega_0$.
3. Richardson Number Ri, $(\Delta T_0/T_0)(L_0 g_0/U_0^2)$.
4. Prandtl number Pr, $\nu_0 \rho_0 C_{p0}/k_0$.
5. Eckert Number Ec, $U_0^2/(C_{p0} T_0)$.
6. Reynolds Number Re, $U_0 L_0/\nu_0$.
7. The approach flow characteristics.
8. Longitudinal pressure gradient.

2.3.2 Satisfying the Similarity Criteria

Geometric Similarity

Geometric similarity of the model and the prototype automatically require one to scale all lengths equally in 3 dimensions. The continuity equation, shown at Equation 2.6, contributes no additional dimensionless groups. Hence a correctly scaled model will automatically simulate the mass flow and satisfy the conservation of mass.

Rossby Number Similarity

The Rossby number found within the momentum equation, Equation 2.7, is a representation of the ratio of inertial forces to Coriolis forces. To exactly simulate the Rossby number, the effects of the Earth's rotation should be simulated by rotating the model sufficiently to equal that of the Earth after compensating for the length and/or velocity scaling. Relaxation of this criterion is allowed because the effects of the Earth's rotation are negligible in the prototype for the short traced distances and velocities considered in this experiment.

Richardson Number Similarity

The Richardson number represents the relative significance of buoyant forces and inertial forces. The density stratification for both the model and the prototype for proper simulation of buoyant forces must be the same. Since neutral stratification is used in this experiment, the Richardson number is zero for the model and prototype atmospheres.

Prandtl Number Similarity and Eckert Number Similarity

Both the Prandtl number and the Eckert number are dimensionless groups found in Equation 2.8, the energy equation. The Prandtl number is expressed as the ratio of molecular viscosity to thermal diffusivity, which involves only the properties of the fluid. Prandtl number equality is automatically achieved in this experiment, because the working fluid in both the model and the prototype is air.

The Eckert number is a difficult parameter to model in a wind tunnel. It represents the ratio of heat generated by friction to heat compression. The Eckert numbers of the two flows cannot be made similar, if the Richardson number equality exists. However, the range of velocities considered in these experiments produce a Mach number that is much smaller than the speed of sound. Because of these low velocities, there is little compression and little heat is generated by friction. Therefore, the Eckert number criteria may be relaxed.

Reynolds Number Similarity

The Reynolds Number is defined as the ratio of convective inertial forces to viscous forces. The equality of the Reynolds number, Re, cannot be realized; therefore, the significance of this difficulty must be assessed. Fortunately, as shown by Figure 2.9 (Cermak, 1975), local flow characteristics over a plane surface become independent of Re at values that depend upon the relative roughness $\mathbf{K_s/L}$, where $\mathbf{K_s}$ = equivalent sand roughness. This means the approach flow can be adequately simulated, when values of Re_m are in the Reynolds number independence range, even though Re_m does not equal Re_p.

The Approach Flow Characteristics and Longitudinal Pressure Gradient

To achieve similarity in the approach flow, the boundary layer structured by the upwind fetch is characterized by a power-law velocity profile similar to those found in an

urban atmosphere. The turbulence intensity levels must also be similar to the atmosphere found in a city.

The longitudinal pressure gradient over the model is set to be zero by adjusting the wind tunnel roof height to make the flow as non-accelerating as it is in the atmosphere.

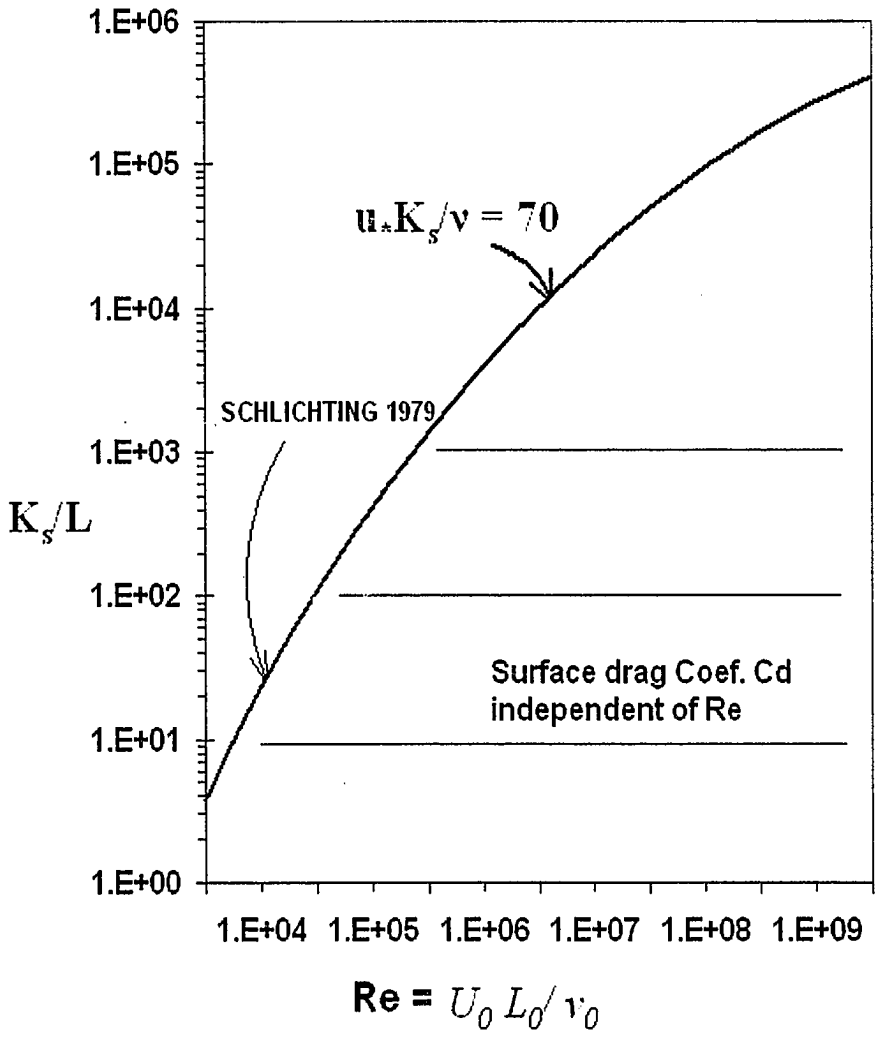


Figure 2.9 Reynolds-number independence for surface drag coefficient C_d (Cermak, 1975)

2.4 Numerical Simulation Model

Advanced technology has produced faster and more powerful desktop computers, which allows computational fluid dynamics (CFD) procedures to be applied to urban flow problems. Numerical simulation is especially useful for providing detailed flow visualization that is difficult for physical simulation to perform.

The field of CFD is a youtl field of research in a constant state of evolution, and the developments occur rapidly. Analysis of flow fields around bluff bodies by CFD is a very difficult task. There are two main reasons: first, fiow obstacles are always inside the surface boundary layer. Second, these flow obstacles and bluff bodies have sharp edges at their corners, which require very fine grid discretization to analyze such flow fields with high precision. Some in the physical modeling community may question the precision of the numerical approaches. However, comparative exercises like those provided here provide validation efforts to assess the accuracy of the numerical approaches.

2.4.1 Numerical Simulation Solution Techniques

Three general solution approaches exist for numerical simulation of turbulent flow fields. The methodologies become increasingly powerful with each level of complexity. The approaches described here are direct numerical simulation, large eddy simulation and statistical turbulence model simulation (Murakami and Rodi, 1993).

Direct Numerical Simulation

The most fundamental, most powerful and most demanding technique used presently is direct numerical simulation (DNS). This requires direct solution of the unsteady conservation of mass and momentum equations. With proper boundary conditions and a sufficiently fine grid mesh, this approach can solve problems for all scales of turbulent motion. Needless to say, this requires immense storage and computation times and is far beyond the scope of this investigation.

Large Eddy Simulation

Large eddy simulation (LES) uses a more coarse-grid distribution to resolve only large-scale turbulent motion. Sub-grid scale turbulence and its dissipation are atmospheric dynamic simulations, which are recently being applied to building aerodynamic studies (Kato et al. 1991, Nicholls et al. 1992).

Statistical Turbulence Models

Most commercial computational fluid dynamics codes use statistical turbulence models. These solve the Reynolds averaged forms of the conservation equations while applying a numerical model to account for all scales of turbulent dissipation. The model simulates all stochastic turbulent fluctuations and turbulent stresses in the averaged equations. The κ-ϵ model is an example of a statistical code and algebraic stress models are typically more refined versions of this approach. The κ-ϵ approach assumes that turbulent stresses are strictly proportional to velocity gradients and that the eddy viscosity

is isotropic. An algebraic stress and approach solves each of the stress tensor terms and is not restricted by an isotropic eddy viscosity assumption (Rodi, 1993).

2.4.2 CFD Applications in Wind Engineering

The application of CFD in wind engineering is developing steadily (Computation Wind Engineering (CWE) 1992, 1996, and 2000). CFD has become very familiar as an analytical tool for engineers and researchers in wing engineering fields. Recent applications of CFD to wind engineering problems cover topics such as wind force, oscillation, dispersion, ventilation, atmospheric boundary layer, and regional climate (Overview of CWE 2000, Murakami). Among the most popular topics are analysis of fluid structure interaction problems in the field of structural engineering, and analysis of contaminant dispersion phenomena in the field of engineering. These two topics are often solved by CFD and are regarded as the most important and difficult research problems for each field.

There have been many CFD studies done on the analysis of velocity and pressure fields around a bluff body (See papers of Fourth International Colloquium on Bluff Body Aerodynamics & Application, Sep. 11-14, 2000). The κ-ϵ model was among the first turbulence models to be used, but the predicted values of velocity or pressure around a bluff body are significantly different from the experiment results, due to the fundamental shortcomings of EVM (Eddy Viscosity Modeling) in the κ-ϵ model. Many attempts have been made to revise the κ-ϵ model, and several new models have also been proposed. The prediction accuracy of these new models has significantly improved. The

predictions of air pollution dispersion around buildings or in city areas are very important subjects in environmental engineering. It is often arduous and time consuming to measure air pollution concentrations in a wind tunnel or in the field. CFD prediction of such dispersion phenomenon promises to eventually provide a convenient and flexible solution approach. Alternatively, CFD can help design and set up wind tunnel or field experiments, and, hence, reduce the time required to optimize a physical model and reduce expensive runs in a wind tunnel or in the field.

CHAPTER 3

ARRANGEMENT OF THE EXPERIMENTS, DATA ACQUISITION AND ANALYSIS TECHNIQUES

3.1 Wind Tunnel Facility and Physical Arrangement of the Experiment

The wind tunnel facility and the geometric arrangement of the experiments are discussed in this section. Topics include descriptions of the boundary layer wind tunnel, characteristics of the approach flow, the basic building model (TTU Building), and array arrangements of the urban street canyon model.

3.1.1 Boundary Layer Wind Tunnel

All data reported in this study are obtained in the Industrial Aerodynamics Wind Tunnel (IWT) in the Wind Engineering and Fluids Laboratory (WEFL) at Colorado State University. The layout of the WEFL and a schematic of IWT are shown on Figures 3.1 and 3.2. The IWT is a closed-circuit wind tunnel, which has a test section of 6 ft. (1.83 m) wide by 60 ft. (18.29 m) long with a ceiling height adjustable from 5 ft. (1.52 m) to 7 ft. (2.13 m). The wind speed can be continuously varied from 0 fps up to approximately 80 fps depending on blockage inside the tunnel. The ceiling of the wind tunnel is adjustable to control pressure gradient in the mean flow direction. The inlet boundary as

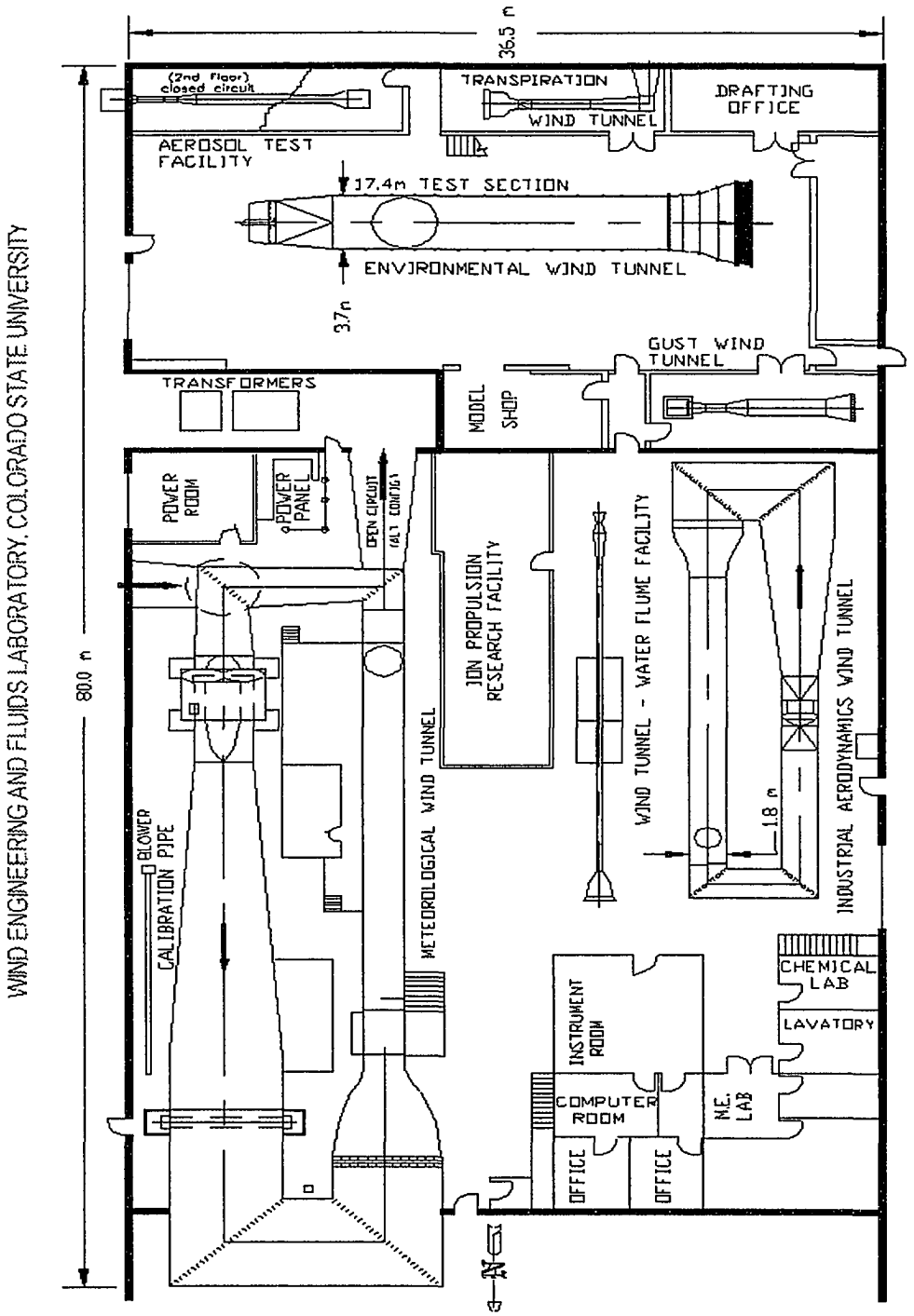


Figure 3.1 Wind engineering and fluid laboratory layouts

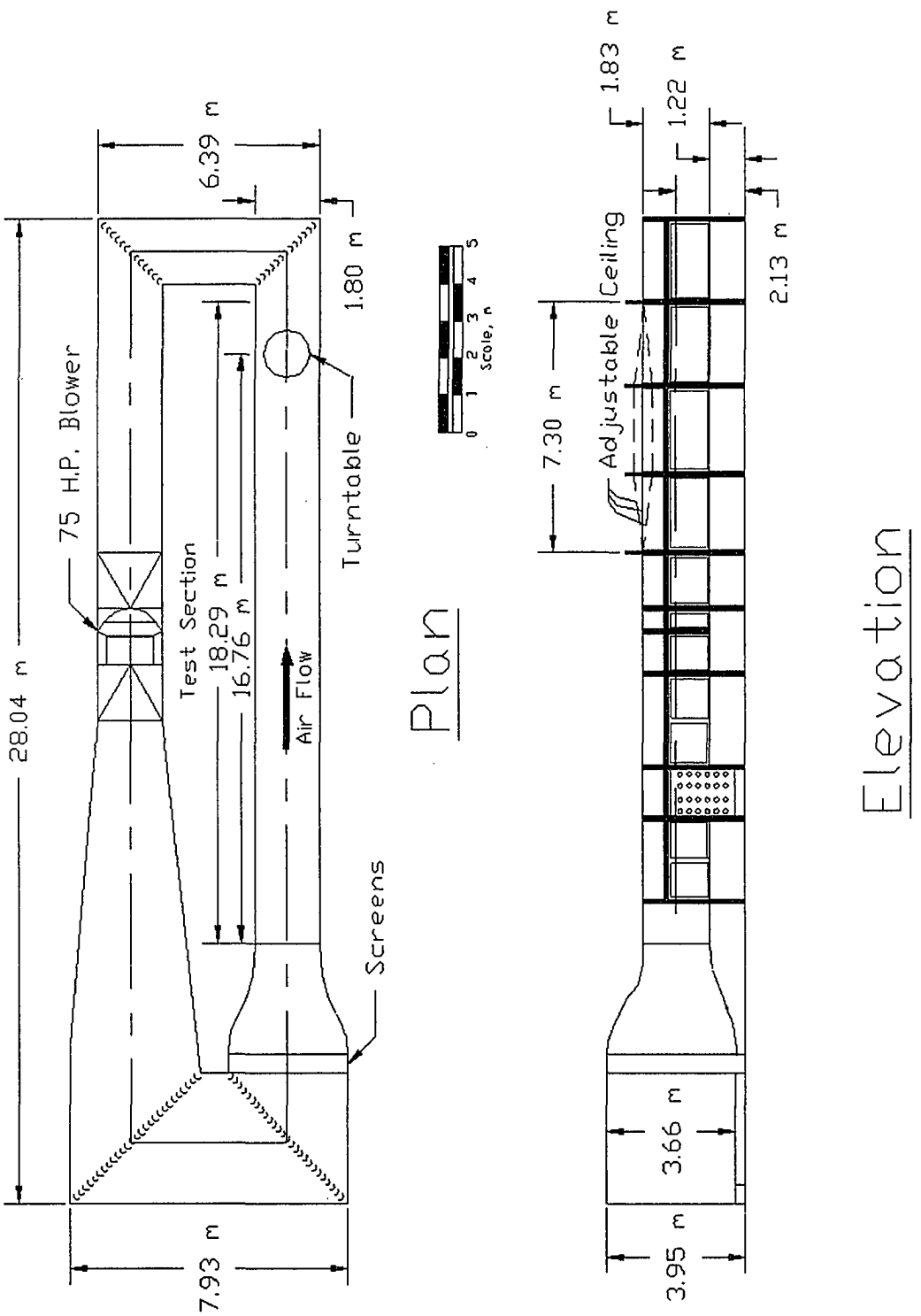


Figure 3.2 Schematic of Industrial Wind Tunnel

defined by wind velocity and turbulence intensity profiles in front of the second row of the upstream building is similar to the CSU-B2 case prepared by Ham (1998).

3.1.2 Approach Flow Characteristics

Approach flow velocity measurements were surveyed at the front of the second row of the upstream buildings. Figure 3.3 shows the approach flow velocity profile. The approach flow velocity and turbulent statistics profiles are obtained from film measurement described in section 3.2.2. The approach flow velocity profile data were regressed to find the best logarithmic law (Simiu and Scanlan, 1996) and power law fit. The logarithmic regression found a best fit roughness length z_0 = 1.1 cm and u^* = 0.6 m/sec, such that

$$u(z) = \frac{1}{k} u_* \ln \frac{z}{z_0}, k \approx 0.4 \tag{3.1}$$

The power law regression found an exponent, p =0.14 (see Equation (3.2)).

$$u(z_1) = u(z_2)(\frac{z_1}{z_2})^p \tag{3.2}$$

The local turbulence intensity profile is plotted in Figure 3.4. The longitudinal turbulence intensity is defined as

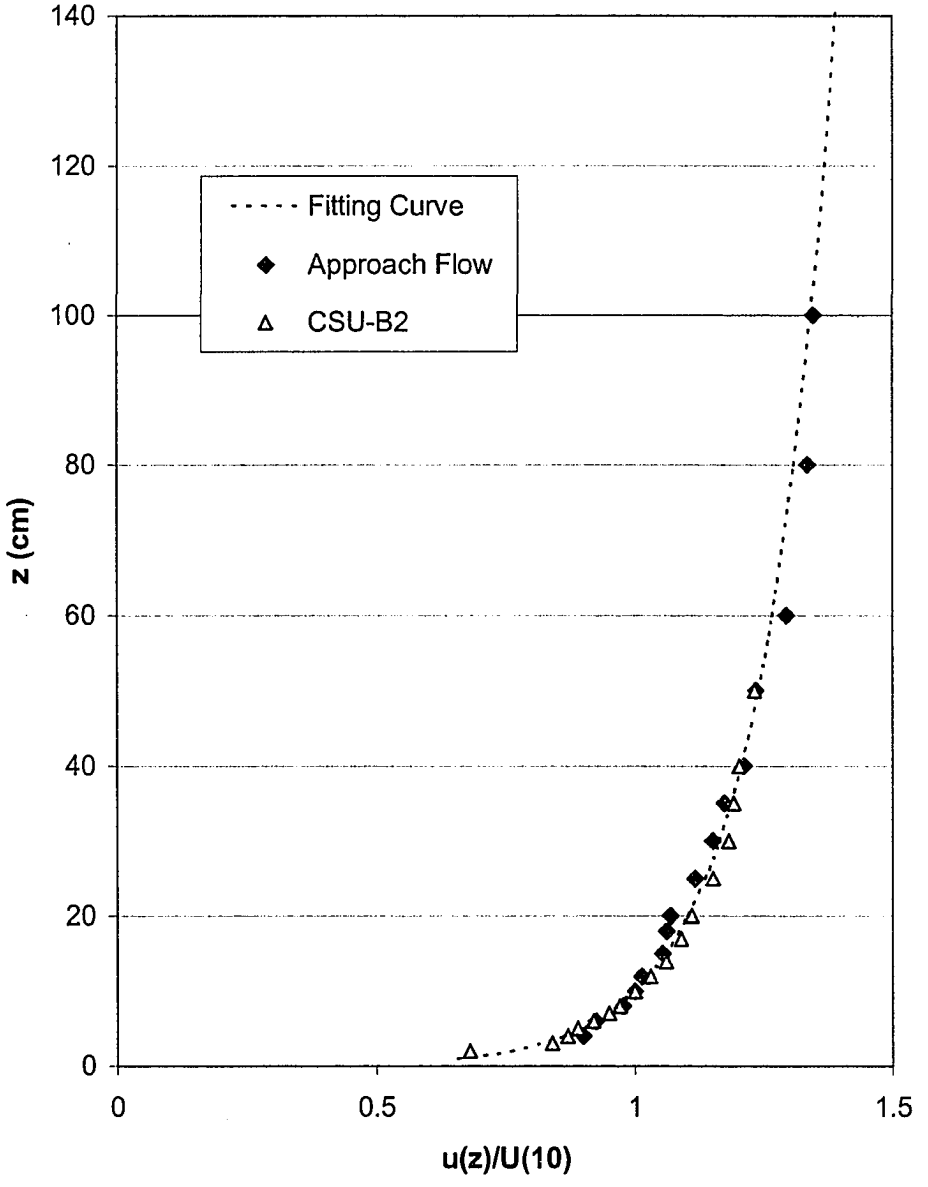


Figure 3.3 Approach flow velocity profile

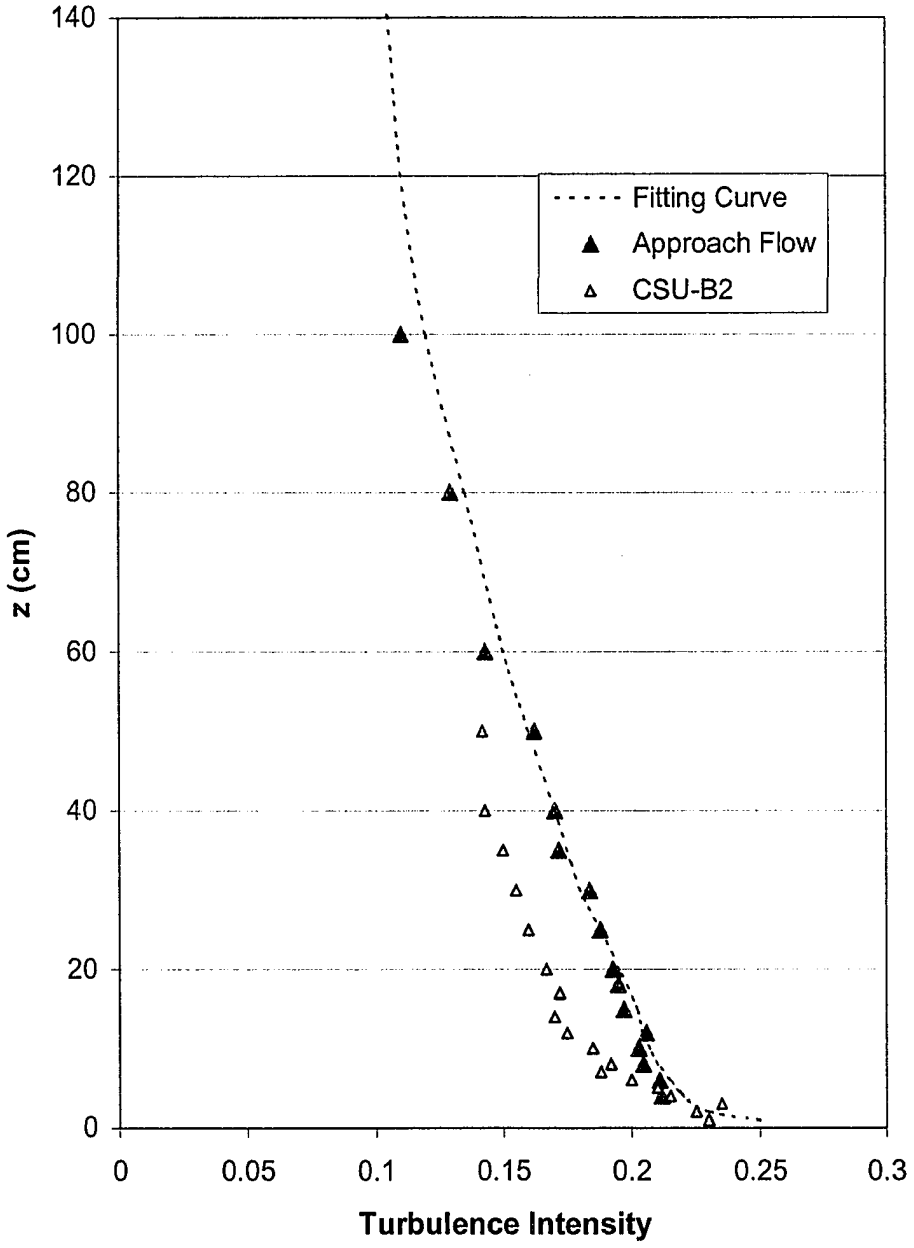


Figure 3.4 Approach flow turbulence intensity profile

$$I(z) = \frac{\sqrt{u^2(z)}}{U(z)} \tag{3.3}$$

Where $U(z)$ = mean wind velocity at elevation z and $\sqrt{u^2}$ root mean square value of u, the local perturbation velocity.

3.1.3 Basic Building Model and Arrangement of Urban Street Canyon Model

The basic shape of the Wind Engineering Research Field Laboratory building (WERFL) at Texas Tech University, Lubbock, which is a metal building of simple rectangular prism shape (9.2 m * 13.8 m * 4.0 m tall). It is used to perform the wind tunnel simulation. Figure 3.5a shows the picture of WERFL at TTU. Two plastic models of the WERFL structure are constructed to a 1:50 scale for pressure and concentration measurements. One is instrumented with 95 pressure-sampling ports, and the other is instrumented with 44 concentration-sampling ports (Figure 3.5b and 3.5c). A large number of "dummy" models of similar dimensions, constructed of plastic foam and wood, represent the surrounding buildings. These buildings are arranged in various symmetric configurations with different separation distances and placed in the Industrial Wind Tunnel of the Wind Engineering and Fluid Laboratory, Colorado State University. Typical building patterns are noted in Figure 3.6, and the associated arrangement patterns are listed in Table 3.1. Figure 3.5d shows the models inside the industrial wind tunnel.

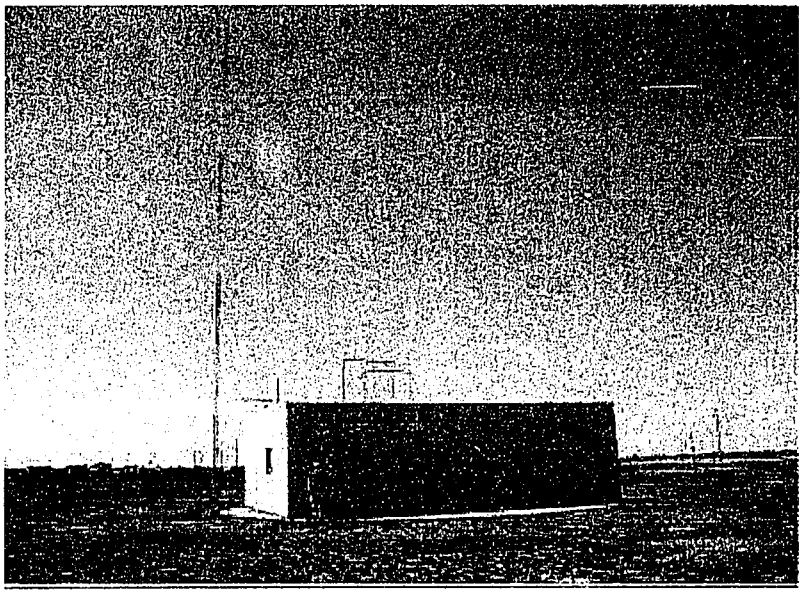


Figure 3.5a Picture of WERFL at TTU

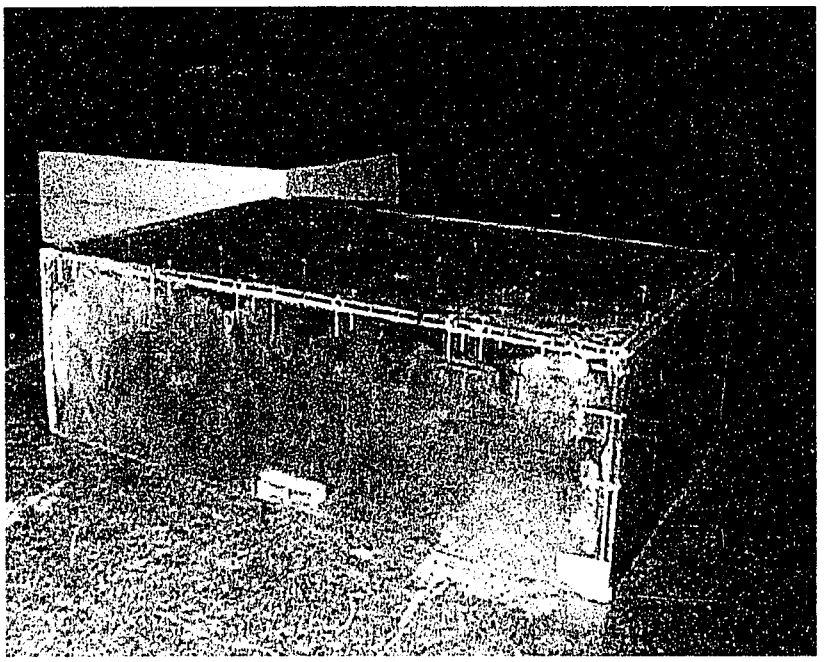


Figure 3.5b 1:50 scale WERFL with 95 pressure ports

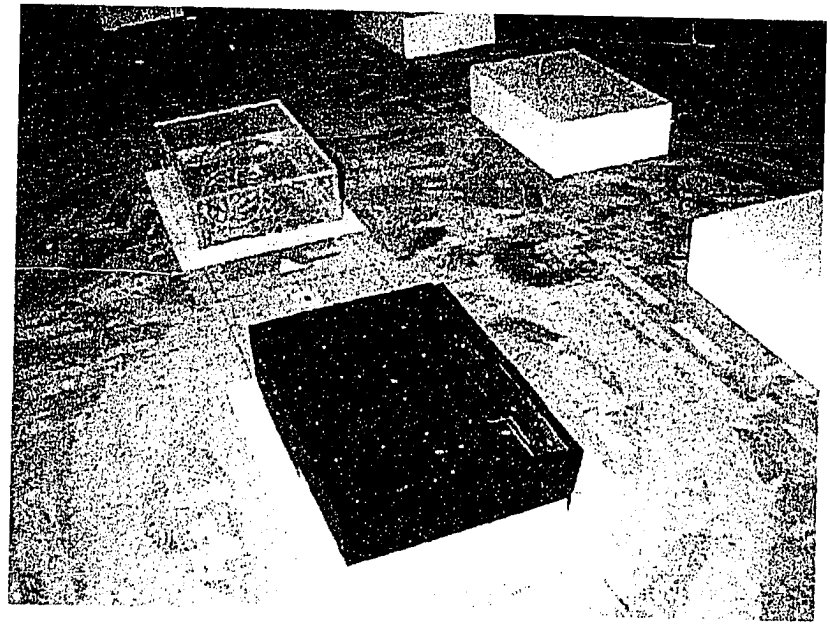


Figure 3.5c 1:50 scale WERFL with 44 concentration ports

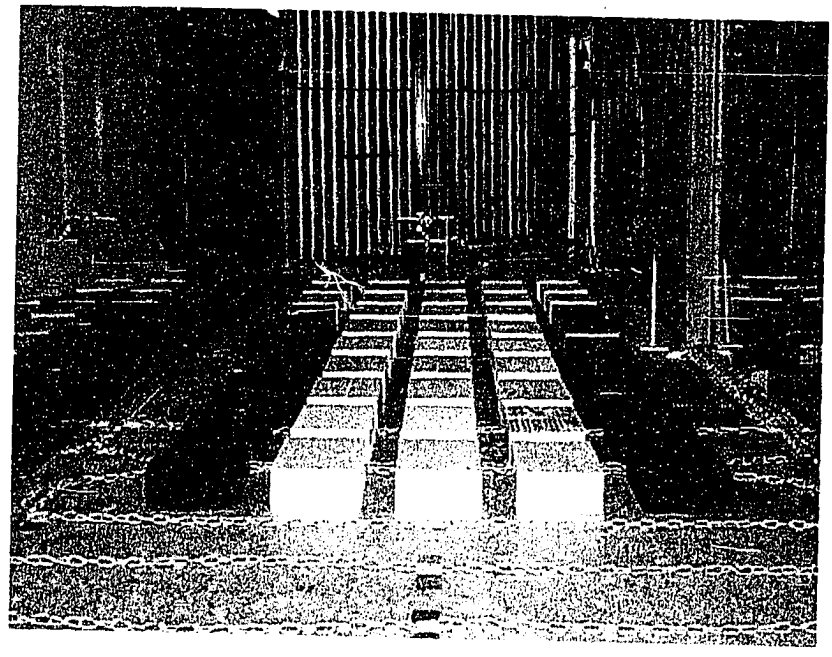


Figure 3.5d Industrial wind tunnel (IWT) and models

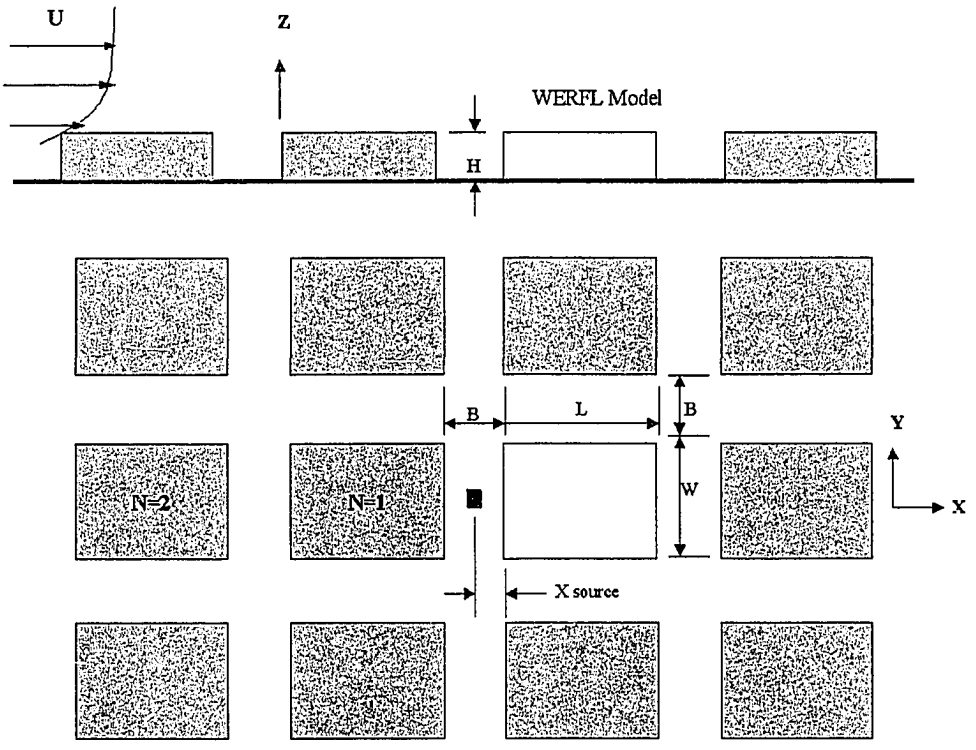


Figure 3.6 Schematic of Urban Street-canyon Model Arrangement

B/H	λ_{ar}	λ_{fa}	N rows	Structure	Flow
0.5	.72	.21	1,2,3,&8	City center	Skimming flow
1.0	.54	.16	1,2,3,&8	City center	Skimming flow
2.0	.34	.10	1,2,3,&8	Suburban	Wake interference
4.0	.17	.05	1,2,3,&8	Urban 1-2 stories	Wake interference
6.0	.10	.03	1,2,3,&8	One story houses	Isolated

$\lambda_{ar} = \sum$ of areas covered by buildings / total urban area
$\lambda_{fa} = \sum$ of average building areas normal to the wind /total urban area

Table 3.1 Array of model structures studied, $X_{source} = B/2$

3.2 Wind Tunnel Measurements

A series of measurements were made over a generic urban street canyon arrangement using flow visualization, anemometry and gas chromatography in the Industrial Wind Tunnel. The detailed descriptions of each measurement technique will be discussed in the following subsections.

3.2.1 Flow Visualization on Street Canyon Area

A visible plume is produced by passing the metered stimulant gas through a Rosco Model 1600 Fog/Smoke Machine located outside the wind tunnel, and then the smoke is released upstream of the model inside the wind tunnel. A laser light sheet is used to illuminate a plane within the canyon and flow separation region. Figure 3.7 shows a schematic of the flow visualization setup. The laser is a Coherent Innova 70-5 Argon ion water-cooled laser, which is operated in a multi-line mode. It has a nominal maximum output of 5 Watts, but is generally run at or below 1 Watt for these tests. Seventy percent of the laser beam light is carried into the tunnel using a fiber optic cable with a 50 micro diameter core. The fibers replace a mirror assembly that transferred 100% of the light, and require regular re-alignment. An assortment of lenses mounted at the fiber optic cable's exit is used to focus the light to a point 1 mm to 2 mm in diameter on the center of the canyon between two buildings. Various cylindrical lenses can spread this spot of light into a sheet from a few centimeters to over one meter in length. The visualizations for each test were recorded on VHS videocassettes with a Panasonic Omni

vision II camera/recorder system. The visible behavior of the smoke line is also recorded by a high-resolution television camera system on a VCR tape. The analog images may be transformed into digital arrays and saved into personal computer by Digital Photo & Video Maker (P/N DM-5000 V.3, Dazzle Multimedia), and the images can then be enhanced and manipulated by a personal computer system.

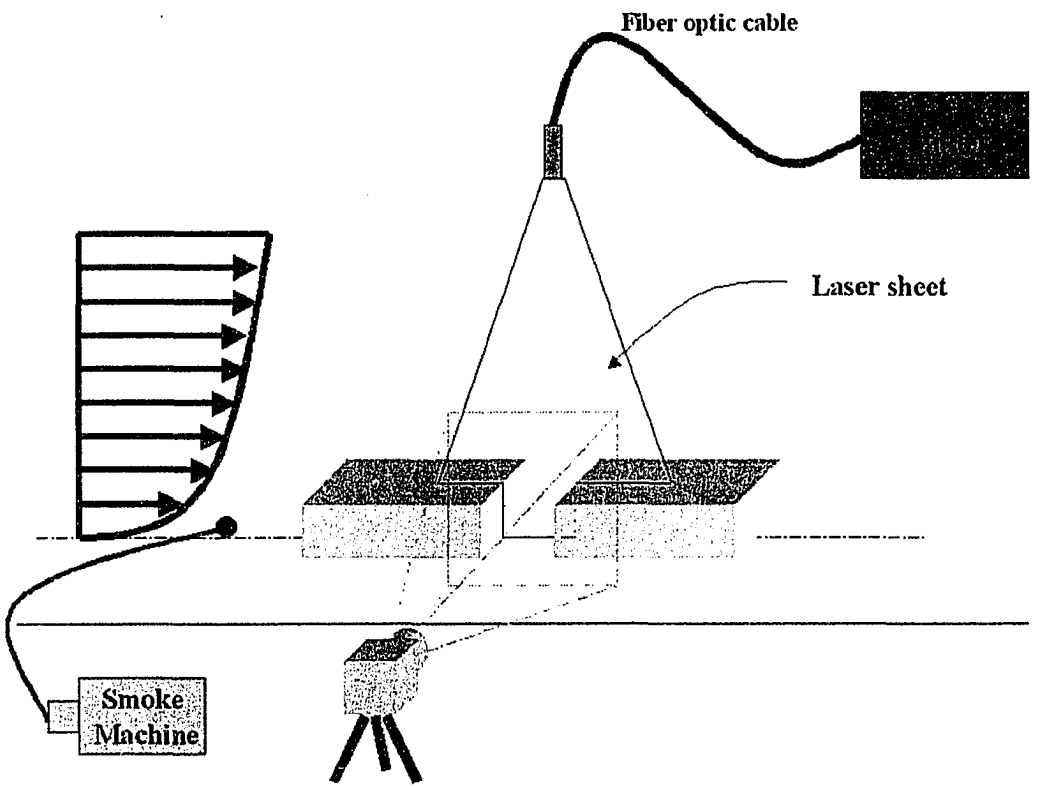


Figure 3.7 Schematic of visualization setup

3.2.2 Wind Profile and Turbulence Characteristics Measurements

Velocity measurements were made with single hot-film probes (TSI1220 Sensor) and constant-temperature anemometer model TSI 1051-2D manufactured by Thermo-System, Inc. Figure 3.8 shows a schematic chart of the velocity calibration system, velocity measurement system, and the positioning system within the wind tunnel.

Velocity Standards

TSI 1125 Velocity Calibrator System and Pitot-static Probes are used for velocity calibration. The TSI Model 1125 Velocity Calibrator System is designed to calibrate hot wire sensors. The calibration range is from about 0.1 m/s to 305 m/s in air. The accuracy of this system depends on the accuracy of the pressure measurement. The accuracy is ± 2 percent when flow velocity is above 3 m/s. Pitot-static probes are used as velocity standards during the calibration of the different hot film systems to provide the reference upwind velocity measurement. The principles of operation of pitot-static probes can be explained in terms of Bernoullis' equation. The operational relationship for these probes is $U = (2g_c\Delta P/\rho)^{1/2}$, where U = velocity, g_c = gravitational conversion constant, ΔP = difference between static and stagnation pressures, and ρ is the air density. ρ is calculated from the ideal gas law, and ΔP is measured by using a Datametrics Electronic Manometer. The pitot-static probe measurements are accurate to be within ± 2 percent of the actual velocity.

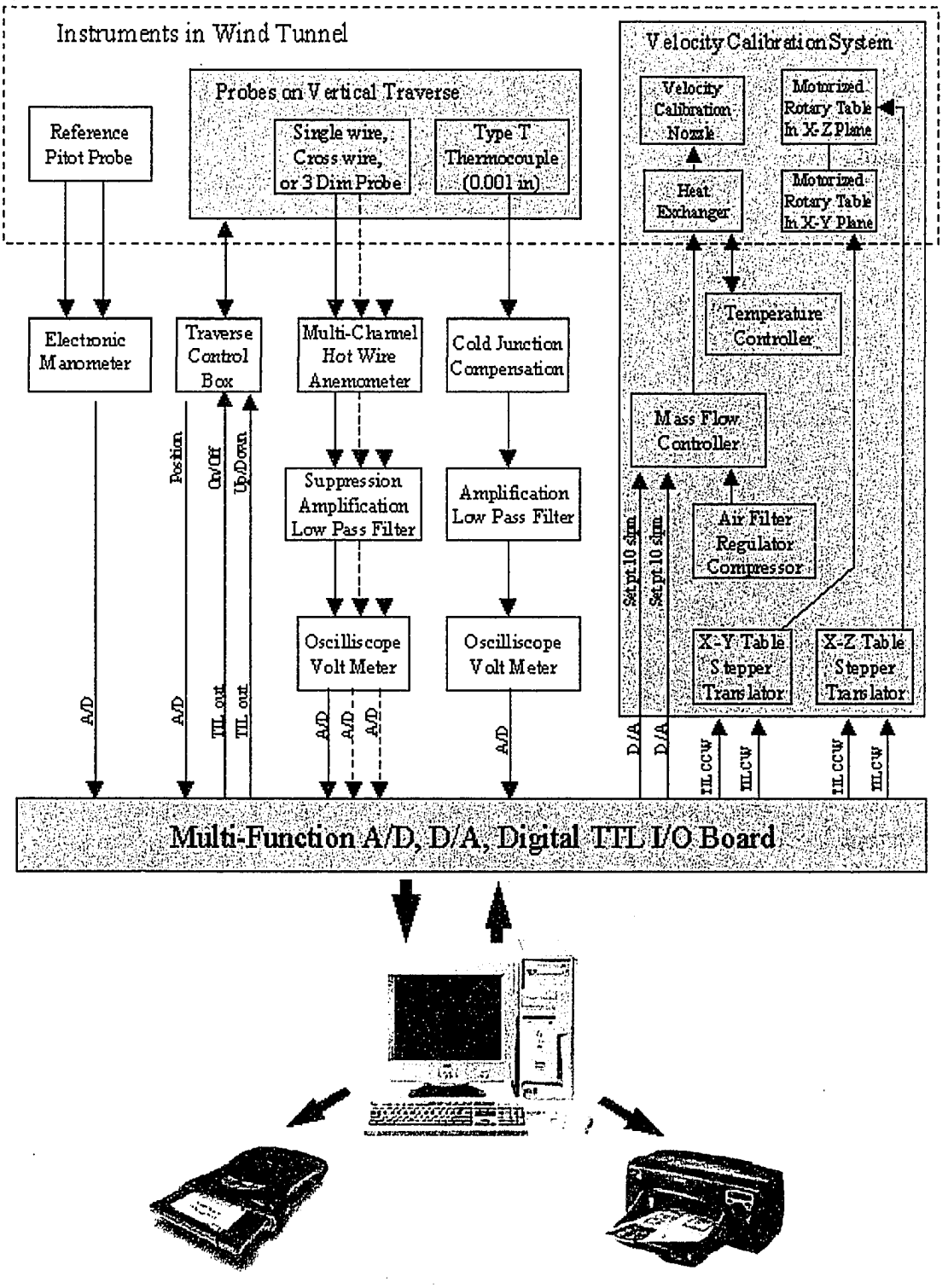


Fig.3.8 Velocity calibration and Measurement system

Single-Hot-film Probe Measurements

Single-hot-film (TSI 1220 Sensor) measurements are used to document the longitudinal turbulence level for the approach flow conditions. The probe voltages are recorded at several velocities covering the interest range during wind tunnel simulation calibration. The single-hot-film voltages are converted to velocities using King's Law (King, 1914):

$$E^2 = A + BU^c \tag{3.4}$$

Where E is the anemometer output voltage, U is the flow velocity, and A, B, and c are calibration constants. The values of A, B, and c can be obtained by the least-squares method. Figure 3.9 shows typical calibration data and the fitting curve.

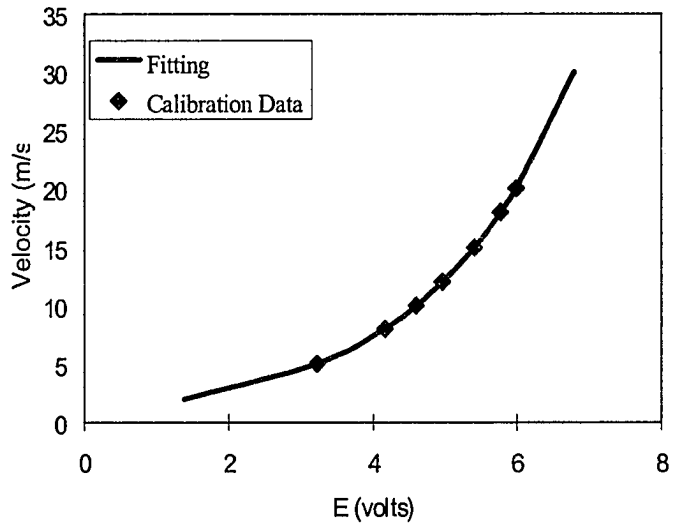


Figure 3.9 Single-hot-film calibrations

The hot-film-probe is mounted on a vertical traverse and positioned over the measurement location inside the wind tunnel. The anemometer's output voltage is digitized and stored within a PC by a LabVIEW based data acquisition system. This voltage time series is converted to a velocity time series using the inverse of the calibration equation. The computer system moves the hot-film-probe to a vertical position, acquires the data, and then moves on to the next vertical position. The entire vertical velocity profile can be obtained automatically by repeating the above steps.

Velocity measurements obtained in this study were summarized and presented through plots of vertical profiles of mean velocity and longitudinal turbulence. For velocity profile measurements inside the urban street canyon, there were seven points measured. Point 1 is located in the middle of the street in front of the central building model. Points 2, 3 and 4 are on the roof of the central building model along the building center. Points 5, 6 and 7 are located in the street beside the central building model. Figure 3.10 shows the location of each measuring point.

3.2.3 Pressure Measurements

The 0.5 mm diameter taps on the plastic 1:50 WERFL building model are connected to two 48-channel PSI transducer units (Model ESP48) and mounted inside the model. Two units may be used simultaneously. The number 1 channel of the first unit is connected to measure reference pressure, and there are a total of 95 pressure taps available for surface measurement. The building geometry pressure tap locations are shown on Figure 3.11 through Figure 3.14.

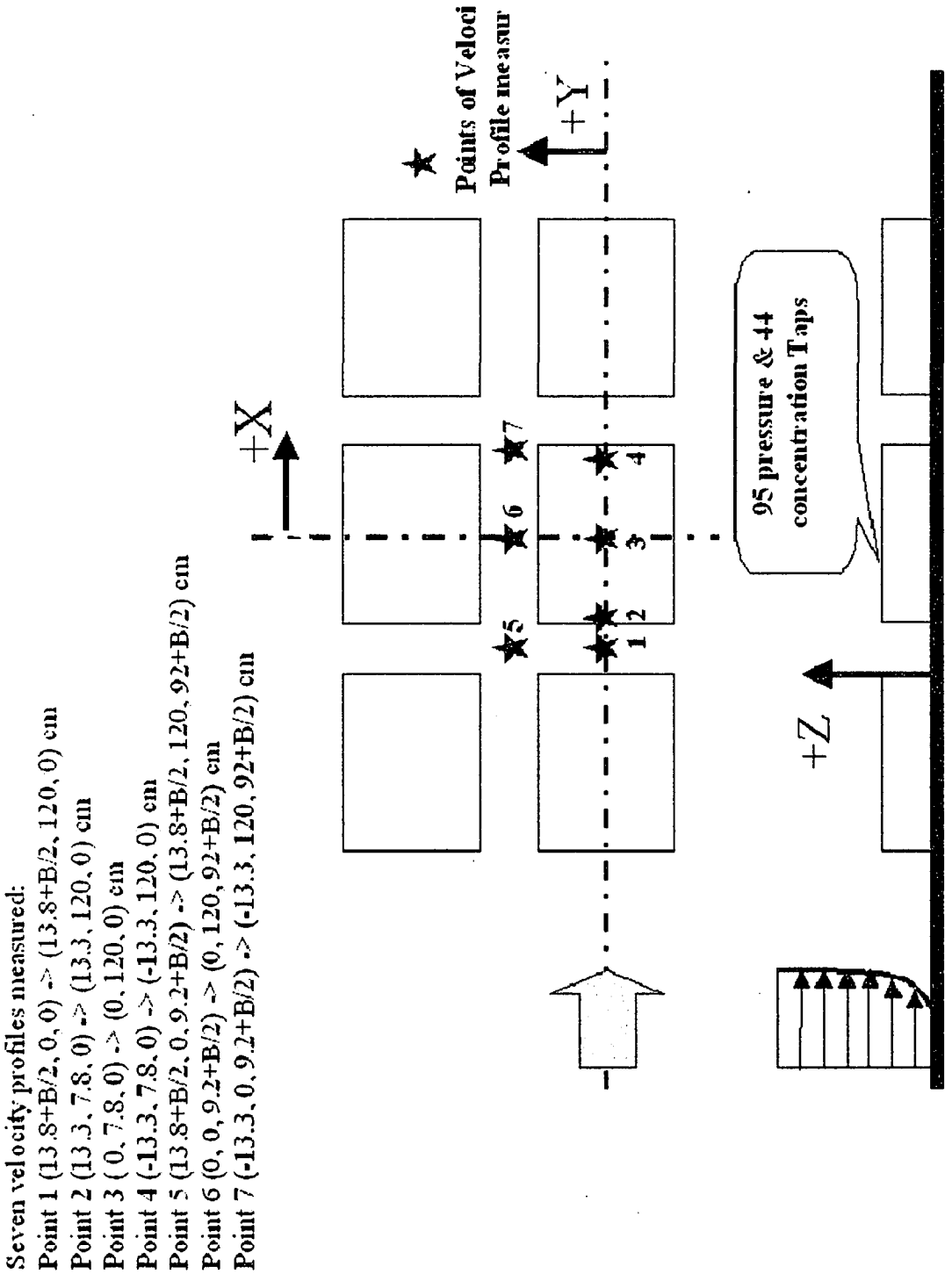


Figure 3.10 Detail position of velocity profiles measurements

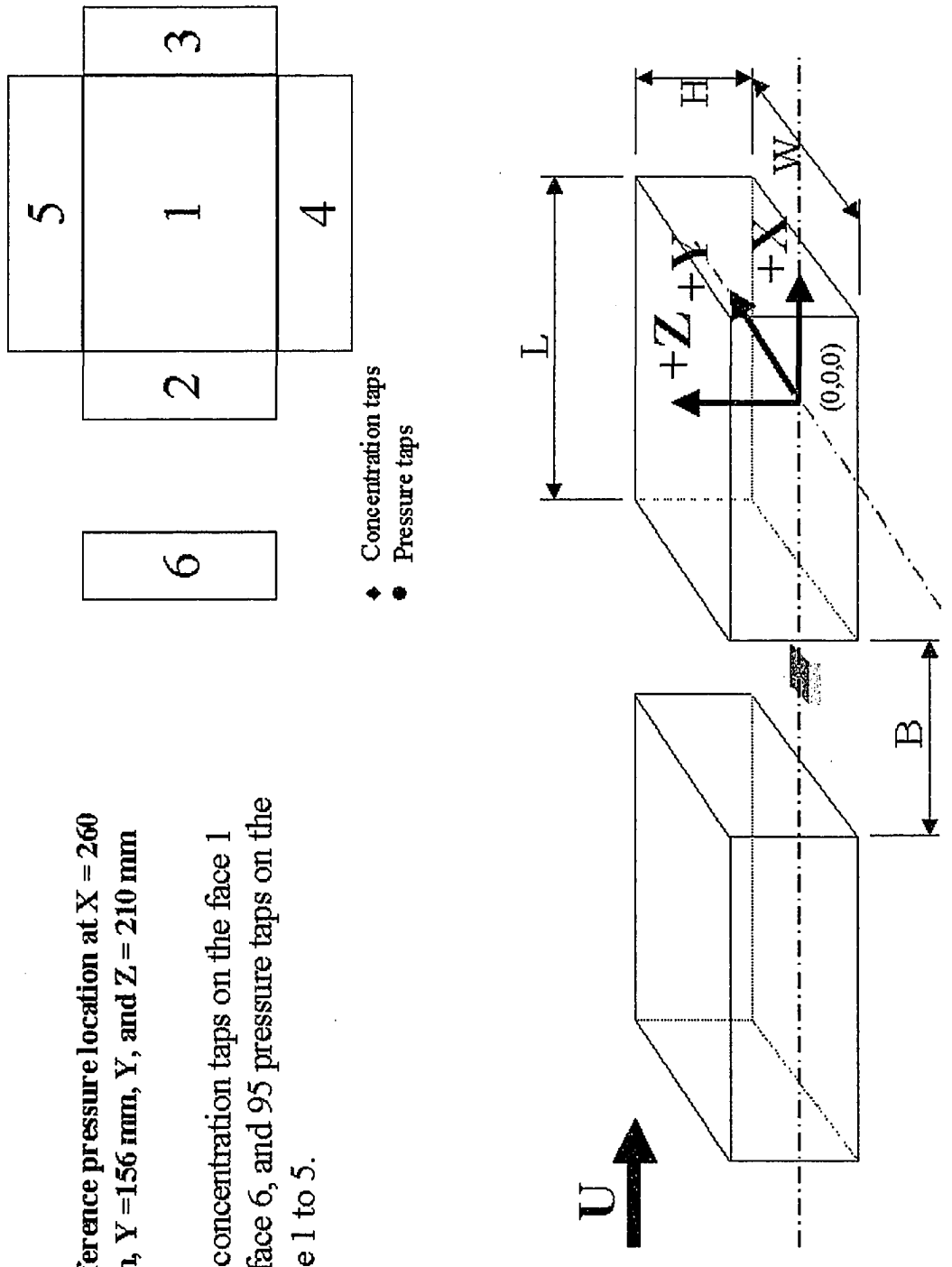


Figure 3.11 Pressure and concentration tap locations on 1:50 TTU WERFL building

tab #	X (mm)	Z (mm)	Y (mm)
1	-130	78	-84
2	-130	78	-73.5
3	-130	78	-63
4	-130	78	-38.5
5	-130	78	0
6	-130	78	38.5
7	-130	78	84
8	-118	78	-84
9	-118	78	-73.5
10	-118	78	-38.5
11	-118	78	0
12	-118	78	38.5
13	-118	78	84
14	-106	78	-81.5
15	-106	78	-73.5
16	-106	78	-38.5
17	-82	78	-81.3
18	-82	78	-63
19	-82	78	-38.5
20	-71.5	78	-84
21	-71.5	78	-76.5
22	-71.5	78	-38.5
23	-71.5	78	0
24	-71.5	78	38.5
25	-71.5	78	84
26	-24	78	-84
27	-24	78	-76.5
28	-24	78	-38.5
29	-24	78	0
30	-24	78	38.5
31	-24	78	84
32	23	78	-84
33	23	78	-76.5
34	23	78	-38.5
35	23	78	0
36	23	78	38.5
37	23	78	84
38	70	78	-84
39	70	78	-76.5
40	70	78	-38.5
41	70	78	0
42	70	78	38.5
43	70	78	84
44	130	78	-84
45	130	78	-76.5
46	130	78	-38.5
47	130	78	0
48	130	78	38.5
49	130	78	84

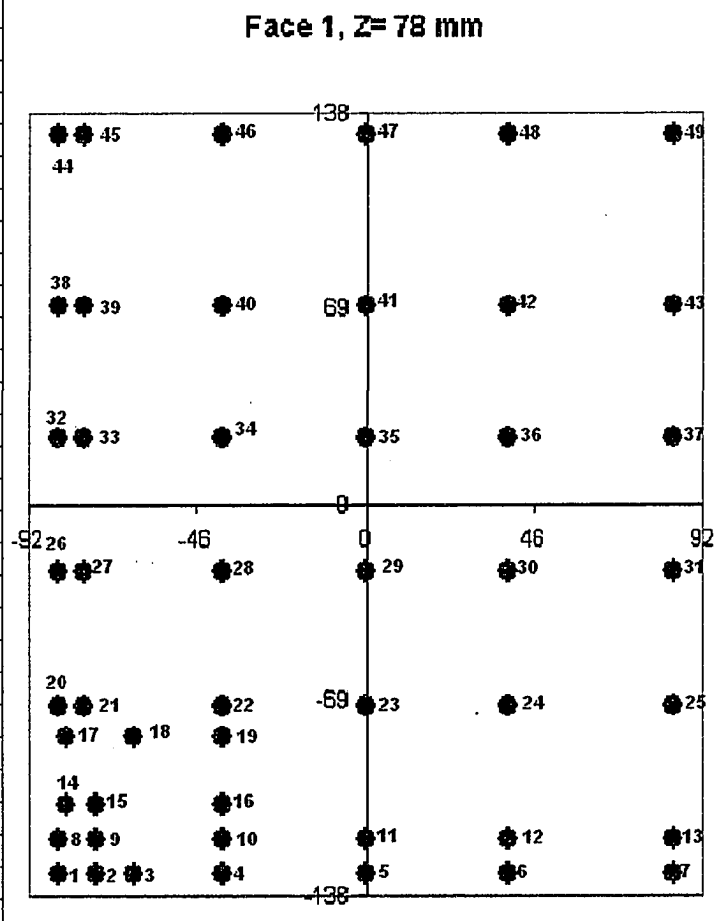
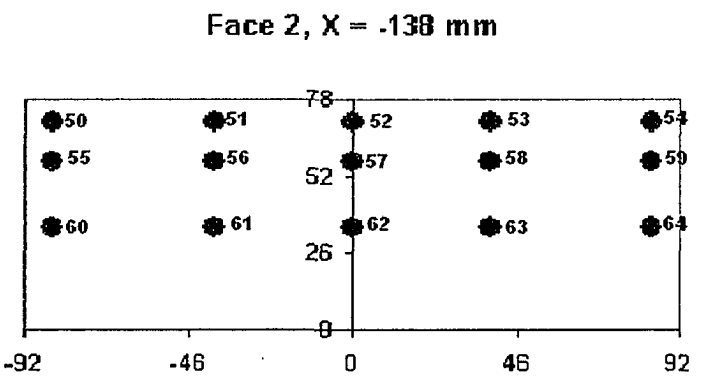


Figure 3.12 Pressure tap location on 1:50 TTU WERFL building at roof (face 1)

Tab#	X (mm)	Y (mm)	Z (mm)
50	-138	-84	70.5
51	-138	-38.5	70.5
52	-138	0	70.5
53	-138	38.5	70.5
54	-138	84	70.5
55	-138	-84	57
56	-138	-38.5	57
57	-138	0	57
58	-138	38.5	57
59	-138	84	57
60	-138	-84	35
61	-138	-38.5	35
62	-138	0	35
63	-138	38.5	35
64	-138	84	35



Tab#	X (mm)	Y (mm)	Z (mm)
65	138	-74	70.5
66	138	-26	70.5
67	138	26	70.5
68	138	74	70.5
69	138	-74	52
70	138	-26	52
71	138	26	52
72	138	74	52
73	138	-74	31
74	138	-26	31
75	138	26	31
76	138	74	31

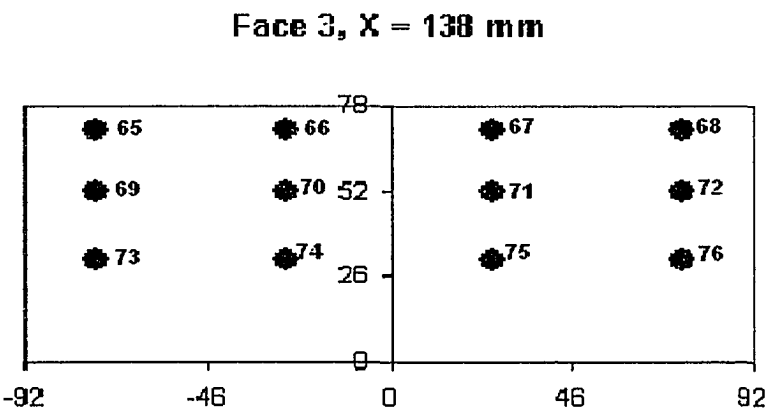


Figure 3.13 Pressure tap location on 1:50 TTU WERFL building at face 2 and face3

Tab#	X (mm)	Z (mm)	Y (mm)
77	70.5	-130	92
78	70.5	-118	92
79	70.5	-71.5	92
80	70.5	4	92
81	70.5	70	92
82	70.5	130	92
83	57	-130	92
84	57	-118	92
85	57	-71.5	92
86	57	-25	92
87	57	23	92
88	57	70	92
89	57	130	92
90	43	-130	92
91	43	-118	92
92	43	-71.5	92
93	43	4	92
94	43	70	92
95	43	130	92

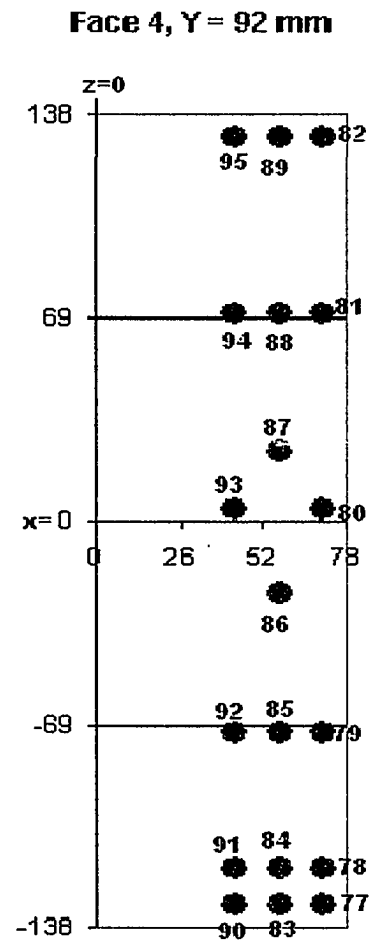


Figure 3.14 Pressure tap location on 1:50 TTU WERFL building at face 4

The restrictor tubes used with the PSI transducers provide a linear phase shift and a gain of 1.0 +/- 0.1 out to 200 Hz. A restrictor cutoff at 200 Hz is chosen in this case, since the pressure cannot be recorded much faster than 480 Hz per tap for the PSI system due to the transducer settling time. There is no possibility of low-pass filtering the signals electronically, since all 48 signals exit the transducer on the same line. The tunnels are run at its highest speed (16m/s at roof height). This provides an adequate pressure to collect data with the PSI system. The building pressure is non-dimensionalized to obtain the pressure coefficient, C_p,

$$C_p = \frac{P - P_{static}}{\frac{1}{2}\rho \bar{U}^2} \tag{3.5}$$

where ρ is air density and $\bar{U}$ is the mean velocity at reference point. The data records are taken at a sampling rate of 1,000 sample/sec. Typically, 10 segments with 18,000 sampling point/segment are acquired. The mean, RMS, positive peak, and negative peak of the segment are computed and converted into pressure coefficients as follows:

$$C_p(mean) = \frac{\overline{p - p_{static}}}{\frac{1}{2}\rho \bar{U}^2} \tag{3.6}$$

and

$$C_p(RMS) = \frac{\sqrt{\overline{\{(p - p_{static}) - \overline{(p - p_{static})}\}^2}}}{\frac{1}{2}\rho\overline{U}^2} \tag{3.7}$$

for 10 segments,

$$C_p(+peak) = \frac{[P - P_{static}]}{\frac{1}{2}\rho\overline{U}^2} \tag{3.8}$$

maximum in a segment

$$C_p(+peak) = \frac{[P - P_{static}]}{\frac{1}{2}\rho\overline{U}^2} \tag{3.9}$$

minimum in a segment

Hence, for ten segments of the pressure data, average mean and RMS are obtained and positive and negative are determined for each of the 10 segments of the pressure data.

3.2.4 Concentration Measurements

The experimental measurements of concentration are performed by using a Hewlett Packard gas-chromatograph and a sampling system designed by Wind Engineering and Fluids Laboratory staff. Figure 3.15 shows the schematic of the source-gas release, gas sample, and concentration measurement.

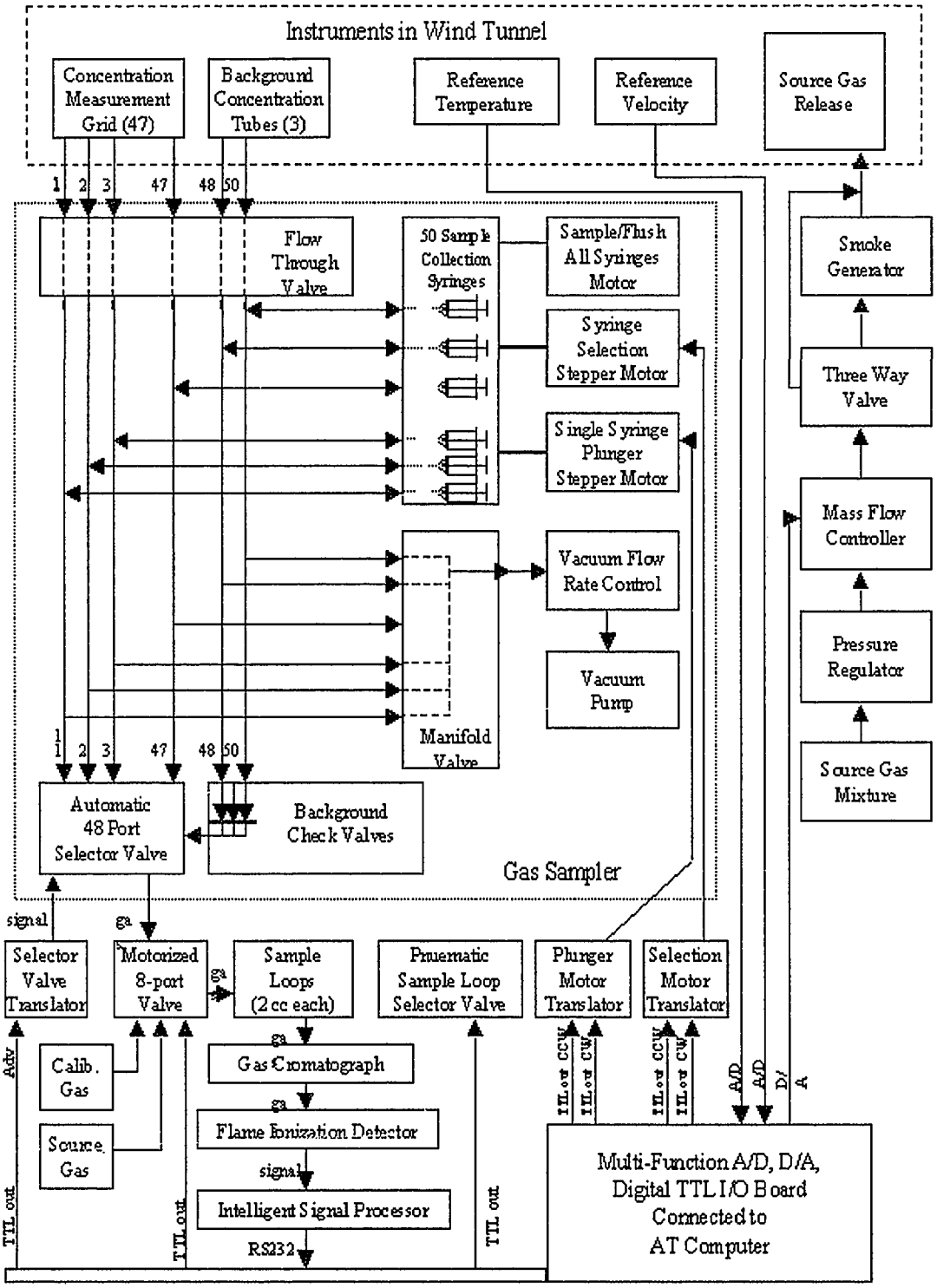


Fig. 3.15 Concentration sampling and measurement system schematic

Gas Chromatograph

A gas chromatograph (Hewlett-Packard Model 5710A) (GC) with flame ionization detector (FID) operates on the principle that the electrical conductivity of a gas is directly proportional to the concentration of charged particles within the gas. The burning mixture of hydrogen and the sample gas in the FID in this case forms the ions. The ions and electrons formed pass an electrode gap and decrease the gap resistance. The resulting voltage drop is amplified by an electrometer and passed to a Hewlett-Packard Model 3390A integrator. When no effluent gas is flowing, a carrier gas (nitrogen) flows through the FID. Due to certain impurities in the carrier, some ions and electrons are formed creating a background voltage or zero shift. When the effluent gas enters the FID, the voltage increase above this zero shift is proportional to the degree of ionization or correspondingly the amount of tracer gas present. Since the chromatograph used in this study features a temperature control on the flame and electrometer, there is very low drift of the zero shift. Given any zero drift, the HP 3390A, which integrates the effluent peak, subtracts out the zero drift.

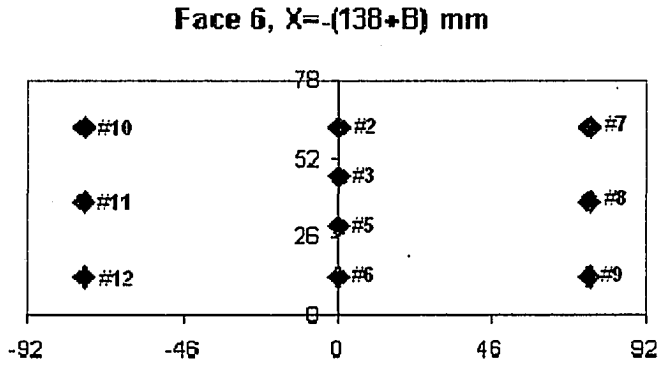
The lower limit of measurement is imposed by the instrument sensitivity and the background concentration of tracer within the air in the wind tunnel. Background concentrations are measured and subtracted from all data.

Sampling System

The tracer gas sampling system consists of a series of fifty 30 cc syringes mounted between two circular aluminum plates. A variable speed motor raises a third plate, which lifts the plunger on all 50 syringes, simultaneously. The concentration tap locations are shown on Figure 3.11, 3.16, 3.17 and 3.18. Computer controlled valves and tubing are connected so that airflow from each tunnel sampling point passes over the top of each designated syringe. When the syringe plunger is raised, a sample from the tunnel is drawn into the syringe container. The sampling procedure consists of flushing (taking and expending a ampule) the syringe three times after, which the test sample is retained. The draw rate is variable and generally set to be approximately 6 cc/min.

The sampling system is periodically calibrated to insure proper function of each of the valves and tubing assemblies. To calibrate the sampler, each intake is connected to a manifold. The manifold, in turn, is connected to a gas cylinder having a known concentration of tracer gas. The gas is turned on, and a valve on the manifold is opened to release the pressure produced in the manifold. The manifold is allowed to flush for about one minute. Normal sampling procedures are carried out during calibration to insure exactly the same procedure is reproduced as when taking a sample from the tunnel. Each sample is then analyzed for tracer gas concentration. Percent error is calculated, and "bad" syringe/tube systems (error>2 percent) are not used or repaired.

Tab#	X (mm)	Z (mm)	Y (mm)
2	-(138+B)	62.5	0
3	-(138+B)	46	0
4	-(138+B)		
5	-(138+B)	30	0
6	-(138+B)	12.5	0
7	-(138+B)	62.5	75
8	-(138+B)	37.5	75
9	-(138+B)	12.5	75
10	-(138+B)	62.5	-75
11	-(138+B)	37.5	-75
12	-(138+B)	12.5	-75



B = street width

Tab#	X (mm)	Z (mm)	Y (mm)
13	-138	62.5	0
14	-138	46	0
15	-138	30	0
16	-138	12.5	0
17	-138	62.5	37.5
18	-138	37.5	37.5
19	-138	12.5	37.5
20	-138	62.5	75
21	-138	37.5	75
22	-138	12.5	75

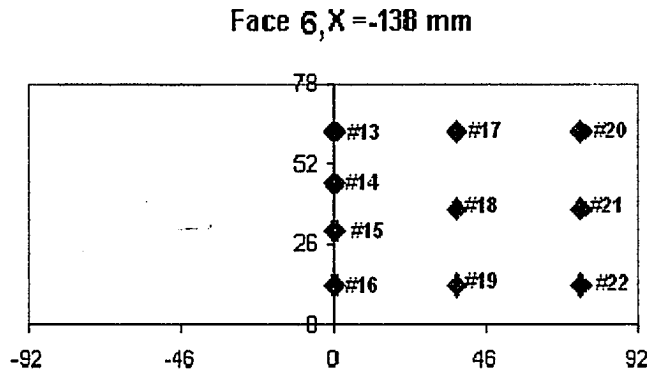


Figure 3.16 Concentration tap locations on 1:50 TTU building at face 2 and face 6

Tab#	X (mm)	Z (mm)	Y (mm)
23	-125.5	78	0
24	-75.5	78	0
25	-22.5	78	0
26	22.5	78	0
27	75.5	78	0
28	125.5	78	0
29	-125.5	78	37.5
30	-75.5	78	37.5
31	-22.5	78	37.5
32	-125.5	78	75
33	-75.5	78	75
34	-22.5	78	75
35	22.5	78	75
36	75.5	78	75
37	125.5	78	75
38	-125.5	78	-75
39	-75.5	78	-75

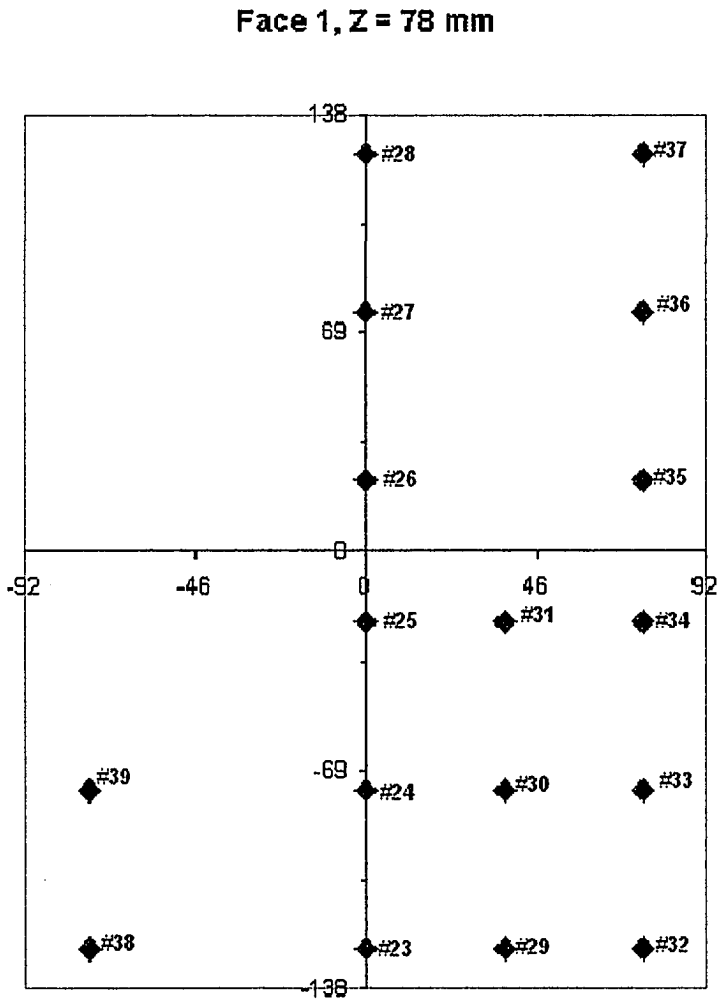


Figure 3.17 Concentration tap locations on 1:50 TTU building at face 1

Tab#	X (mm)	Z (mm)	Y (mm)
40	-125.5	62.5	92
41	-75.5	62.5	92
42	-22.5	62.5	92
43	-125.5	37.5	92
44	-75.5	37.5	92
45	-22.5	37.5	92
46	-125.5	12.5	92
47	-75.5	12.5	92

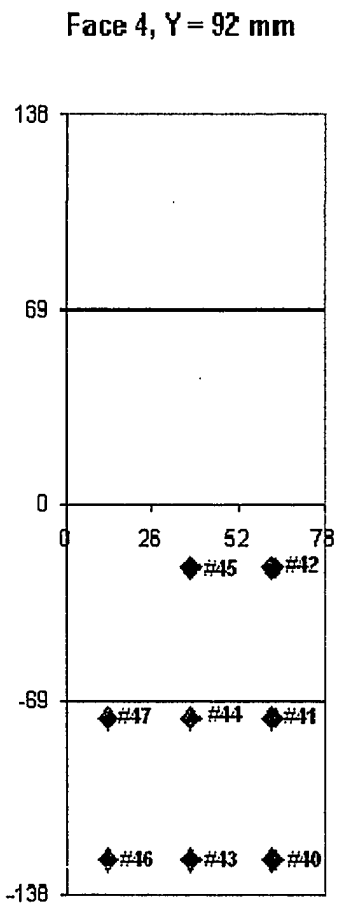


Figure 3.18 Concentration tap locations on 1:50 TTU building at face 4

Test Procedure

The test procedure consists of 4 steps:

1. Setting the proper tunnel wind speed,
2. Releasing the metered mixtures of source gas from the plant stack,
3. Withdrawing samples of air from the tunnel designated locations, and
4. Analyzing the samples with an FID.

The samples are drawn into each syringe over an –200 second (adjustable) time period, and then consecutively injected into the GC.

The procedure for analyzing the samples from the tunnel follows:

1. User introduces the sample into the GC which separates the ethane tracer gas from other hydrocarbons,
2. The voltage output from the chromatograph FID electrometer goes to the HP 3390A Integrator,
3. The HP 3390A communicates the measured concentration in ppm to an Personal Computer for storage, and
4. These values, C_{mea}, along with the response levels for the background C_{bg} and source C_{source} are converted into source normalized model mean concentration by the equation:

$$C_m = (C_{mea}-C_{bg})/(C_{source}-C_{bg}) \qquad (3.6)$$

5. Field equivalent mean concentration values are related to model values by the equation:

$$C_p = \frac{C_m}{C_m + (1 - C_m)[V(T_a / T_s)]_m / [V(T_a / T_s)]_p} \tag{3.7}$$

Where $V = Q/\bar{U}_h L^2$,

and L is the characteristic length scale. When there is no distortion in the model-field volume flux ratio, V, and the plumes are isothermal this equation reduces to $C_p = C_m$.

Error Statement

Background concentrations, C_{bg}, (the result of previous tests within the laboratory), are measured to an accuracy of 20 percent. The larger measured concentrations, C_{mea}, are accurate to two percent. The source gas concentration, C_{source}, is known to within ten percent. Thus the source normalized concentration for $C_{mea} >> C_{bg}$ is accurate to approximately three percent. For low concentration values, $C_{mea} > C_{bg}$, the errors are larger.

CHAPTER 4

NUMERICAL SIMULATION PROCEDURE

Two types of numerical simulation software, Fluent 5.4 and Fire Dynamics Simulator (FDS), are used to perform the numerical experiments with the same configurations as the physical experiments. Both of CFD codes, Fluent and FDS, provide numerical simulation of the mean flow within the street canyon setup and the concentration distribution for a three-dimensional street canyon of the same configuration. Four separate turbulence models, the standard κ–ε, the RNG κ–ε, the Reynolds-stress and LES, are used in Fluent to examine each flow field case. For FDS, large eddy simulations (LES) methodology is used to examine flow field cases. In LES the fluctuating motions of turbulence can be computed exactly except for eddies that are smaller than the grid size. The smaller eddies are modeled using eddy viscosity models. Because of this, LES can compute fluctuating pressures on buildings due to turbulence. This suggests that LES will be used more and more as computing hardware and software technology improve.

4.1 Introduction of Fluent

Fluent is a computer program for modeling fluid flow and heat transfer in complex geometries. It is written in the C computer language. All functions required to

compute a solution and display the results are accessed through Fluent's menu-driven interface. The user interface is written in a language called Scheme, a dialect of LISP. Fluent provides complete mesh flexibility, solving flow problems with unstructured meshes that can be generated about complex geometries with relative ease. The mesh types include 2D triangular/quadrilateral, 3D tetrahedral/hexahedral/pyramid/wedge, and mixed (hybrid) meshes. It allows the user to refine or coarsen the grid based on the flow solution.

Fluent has a solution-adaptive grid capability that provides accurate prediction on flow fields in regions with large gradients, such as free shear layers and boundary layers. This feature reduces the time required to generate a good grid. Solution-adaptive refinement makes it easier to perform grid refinement studies and reduces the computational effort required to achieve a desired level of accuracy, since mesh refinement is limited to those regions where greater mesh resolution is needed.

The Fluent CFD package consists of several tools for defining a discrete flow problem, setting boundary and initial conditions, and solving the set of complex equations for conservations of momentum, mass, energy, and chemical species. The governing equations are discretized on a curvilinear grid to permit computations over irregular geometries and are solved using a control volume based finite difference method. Discrete velocities and pressures are stored in a non-staggered grid, and interpolation is realized by using a first-order, second-order, power-law scheme or optionally by higher-order upwind scheme. The basic solver in Fluent is the

SIMPLEC/SIMPLE algorithm with iterative line-by-line matrix solver and multigrid acceleration.

4.1.1 Turbulence Models

Turbulent flows are characterized by fluctuating velocity fields. These fluctuations transport quantities, such as momentum, energy, and species concentration, cause the transported quantities to fluctuate as well. Because these fluctuations are in small scales and high frequencies, they are too computationally expensive to simulate directly in practical engineering calculations. Instead the instantaneous governing equations can be time-averaged, ensemble-averaged, or otherwise manipulated to remove the small scales, resulting in a modified set of equations that are computationally less expensive to solve. However, the modified equations contain additional unknown variables that need the turbulence models to determine these variables in terms of known quantities. The commercial CFD software, Fluent, provides six different turbulence models (details can be obtained in Fluent User's guide, Volume 2). In this research, only four turbulence models, the standard κ–ε, the RNG κ–ε, the Reynolds-stress and LES are tested in numerical simulations.

4.1.2 The CFD Process

The CFD process contains three steps: preprocessing, calculating, and postprocessing. Preprocessing is the first step in building and analyzing a flow model. It

includes building the model (or importing it from a CAD package), discretizing the geometry, applying a mesh, and entering the initial boundary data. A separate software unit Gambit 1.20 is used in this case.

After preprocessing, the CFD solver calculates a solution (solution of the conservation equations for mass, momentum, energy, and chemical species). Before solving the problem, the flow condition, fluid properties, and turbulence models have to be defined and selected. Fluent 5.4 Solver is selected for calculation for this research.

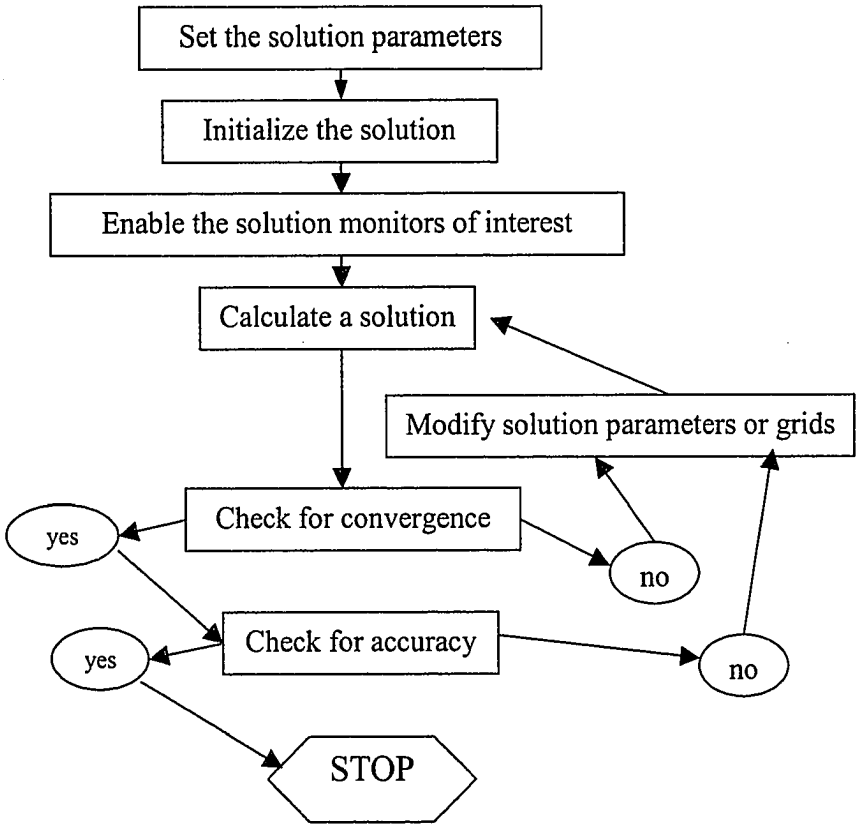


Figure 4.1 Flow chart for numerical solution method

Postprocessing is the final step in CFD analysis. It involves organization and interpretation of the data and images. The flow chart of the numerical solution method is illustrated in Figure 4.1.

4.1.3 Inlet Conditions to the Numerical Domain

The wind tunnel profiles of velocity and turbulence intensity (CSU-B2) can be used for calculating inlet boundary conditions. The wind tunnel data and input profiles of velocity, turbulent kinetic energy, and dissipation used for the numerical simulation are shown on Figure 4.2 to Figure 4.4. The inlet values of kinetic energy, k, and dissipation ratio, ϵ, are calculated from measured velocity profiles and turbulence intensities with a given friction velocity ratio, u_*/u_{ref} for the wind tunnel setup, according to Equation (4.1) and Equation (4.2).

$$\varepsilon = \frac{u_*^{\,3}}{\kappa y} \tag{4.1}$$

$$k = \frac{3}{2}\sqrt{\overline{u'^2}} \tag{4.2}$$

Where, y is distance from the wall, κ is the von Karman constant.

All velocity profiles are collinear, and the numerical and wind tunnel kinetic energy and dissipation ratio are very similar as well.

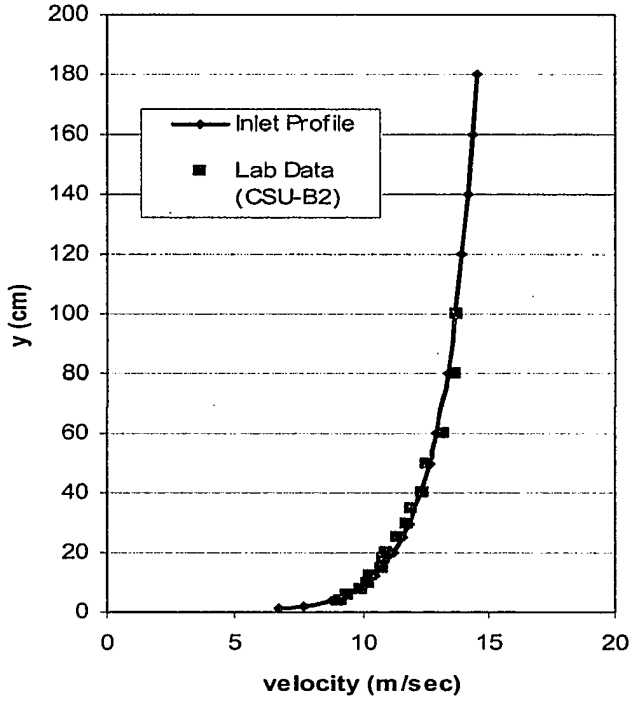


Figure 4.2 Numerical inlet velocity profile compared to Approach velocity profile.

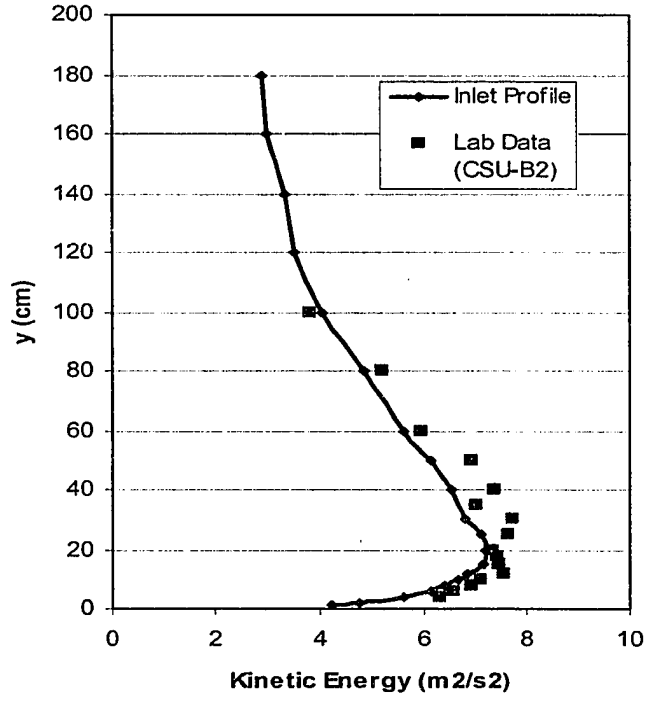


Figure 4.3 Numerical inlet kinetic energy profile compared to approach velocity profile

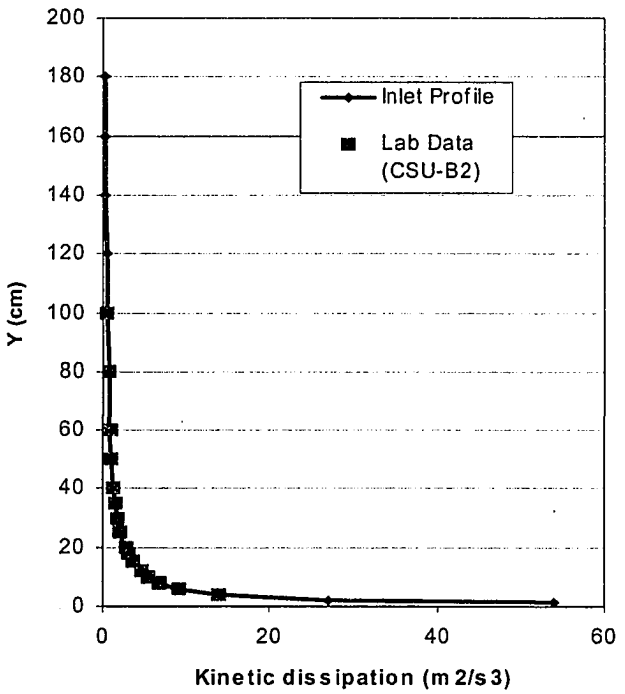


Figure 4.4 Numerical inlet kinetic dissipation profile compared to CSU-B2

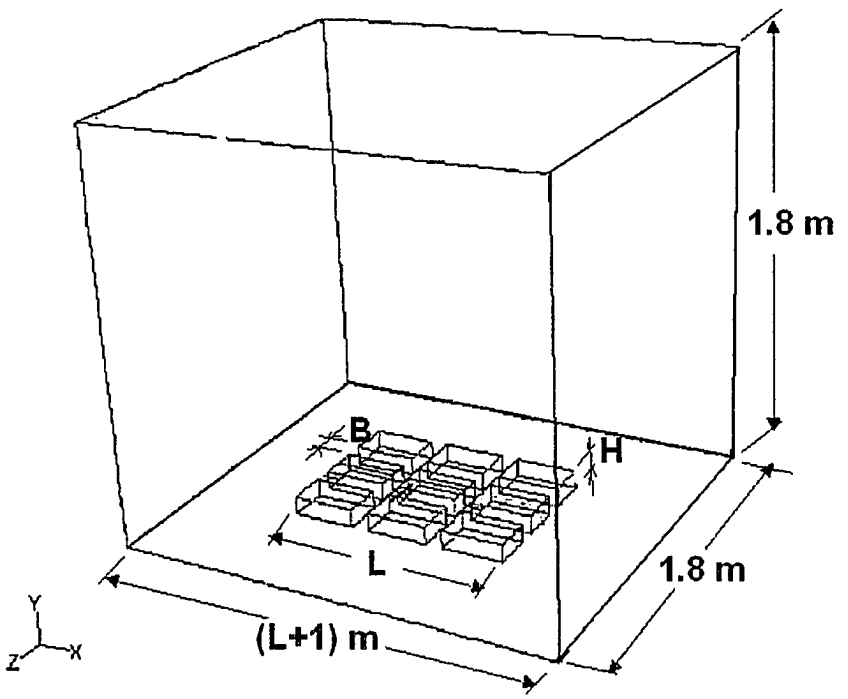


Figure 4.5 The numerical domain of 9 buildings and B/H=1 case

4.1.4 Numerical Domain and Meshes

Various calculation domains are chosen depending on the number of the buildings and different separation distances. The typical numerical domain represents a 1.8 m wide wind tunnel with 1.8 m flow depth and (L+ 1) m test section length, where L is the length of the urban street canyon areas. The example of 9 buildings and B/H=1 case configuration is shown on Figure 4.5. Figure 4.6 shows the typical unstructured boundary mesh used for tetrahedral mesh generation for the case of 9 buildings and B/H=1. Figure 4.6 contains 24,731 cells; 52,471 faces; and 5,762 nodes distributed over 51 face zones. Figure 4.7 shows the grids after using solution-adaptive refinement in the same case as Figure 4.6. These grids contain 159,015 cells; 353,007 faces; and 44,390 nodes distributed over 51 face zones. By using solution-adaptive refinement, it is easy to add cells where they are needed in the mesh, thus enabling the features of the flow field to be better resolved. When adaption is used properly, the resulting mesh is optimal for the flow solution because the solution is used to determine where more cells are added. In other words, computational resources are not wasted by the inclusion of unnecessary cells, as typically occurs in the structured grid approach. Furthermore, the effect of mesh refinement on the solution can be studied without completely regenerating the mesh.

Outlet and velocity inlet or symmetry boundaries are specified at the sides and top of the grid volume, when appropriate surface roughness is specified at the ground. As noted in Section 4.4, the inflow boundary conditions are chosen to match the velocity and turbulence profiles measured during the wind tunnel experiments. Outflow boundary

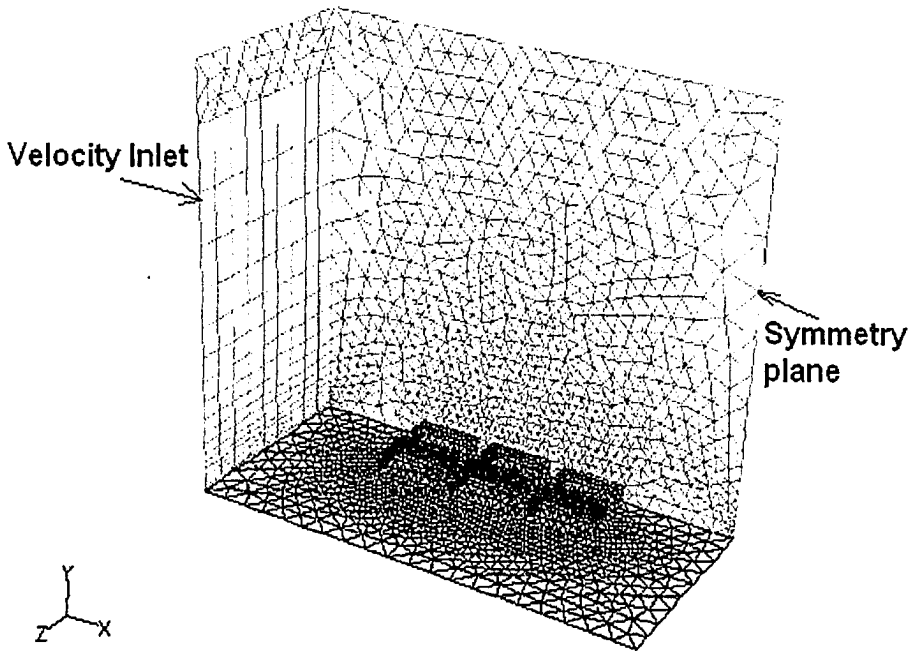


Figure 4.6 Typical unstructured boundary mesh used for tetrahedral mesh generation on 9 buildings and B/H=1 case

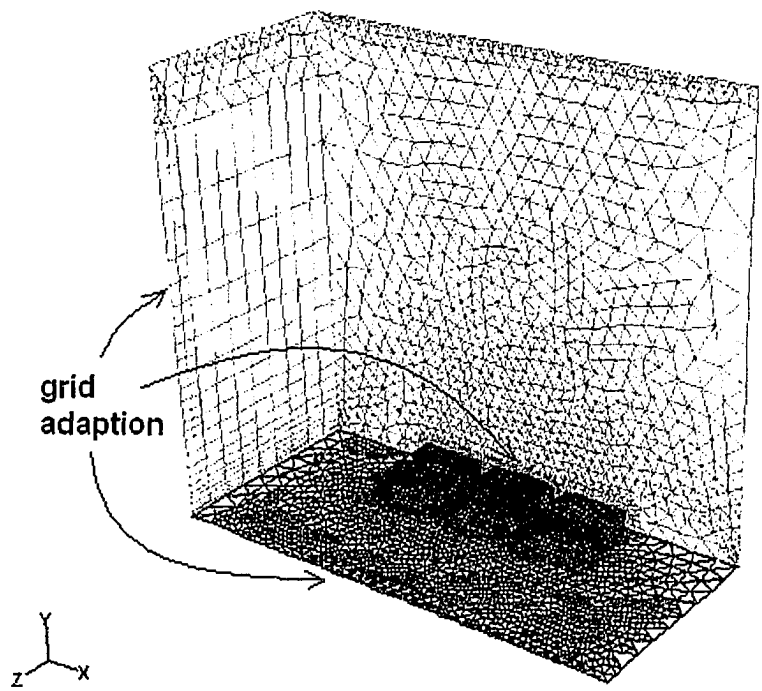


Figure 4.7 The adaption grid on 9 buildings and B/H=1 case

conditions are chosen to maintain constant longitudinal rate of change of all dependent variables such as constant slope.

4.2 Introduction of FDS

Fire Dynamics Simulator (FDS) is a computational fluid dynamics (CFD) model for fire-driven fluid flow (FDS-User's Manual). FDS consists of two programs, fds and smokeview. The Fire Dynamics Simulator predicts smoke and/or air flow movement caused by fire, wind, and ventilation systems. Fds solves a form of the Navier-Stokes equations appropriate for low-speed, thermally-driven flows of smoke and hot gases generated in a fire. Smokeview visualizes fds computed data by animating time dependent particle flow, 2D slice contours and surface boundary contours. Data at a particular time may also be visualized using 2D or 3D contour plots or vector plots. Currently, the only obstacle to the methodology is the memory capacity and computational speed of the hardware.

4.2.1 Inlet Conditions and Numerical Domain

FDS has been used only for the B/H=1, N=1 case for numerical simulations. For this computation, a numerical domain of 100 m long by 90 m wide by 40 m high is employed. Figure 4.8 shows the 9-building urban street canyon case inside numerical domain. The mesh is uniform in each direction with 192 cells in the windward, 144 cells in the cross-wind directions and 64 cells in vertical directions for a total of 1,769,472 grid cells. Each computational cell is 0.52 m long by 0.625 m wide by 0.33 m high, so that

the master building is described by about 27 nodes in the windward direction by 15 cells in the cross-wind direction by 12 nodes vertically. Some lower grid resolution cases also are run for examining the sensitivity of the calculations to grid resolution. Figure 4.9 exhibits the structured grid at x-y and x-z planes at highest grid resolution case.

The inflow boundary conditions are chosen to match the velocity profiles measured during the wind tunnel experiments. There is no turbulence intensity inflow boundary condition, since FDS does not offer the function of setting up the value of inlet turbulence intensity. Outflow boundary conditions are chosen open to the atmosphere. The top of the numerical domain is set as a mirror (symmetric) plane, and two sidewalls of numerical domain are set as a wall boundary condition with free-slip. The ground is chosen as a wall boundary condition with three different levels of slip, free-slip, half-slip and no-slip. Since the ground has three different boundary conditions, the approaching flows appear to be different near the ground for each boundary condition. Figure 4.10 shows the approaching profile for different ground boundary conditions.

The calculation speed of FDS is very slow because it uses time-dependent LES turbulence model. It requires about ten times calculation time of Fluent. It takes about 5 or 6 days continuously to finish running a case. Therefore, only one case is examined in this study due to time constraints.

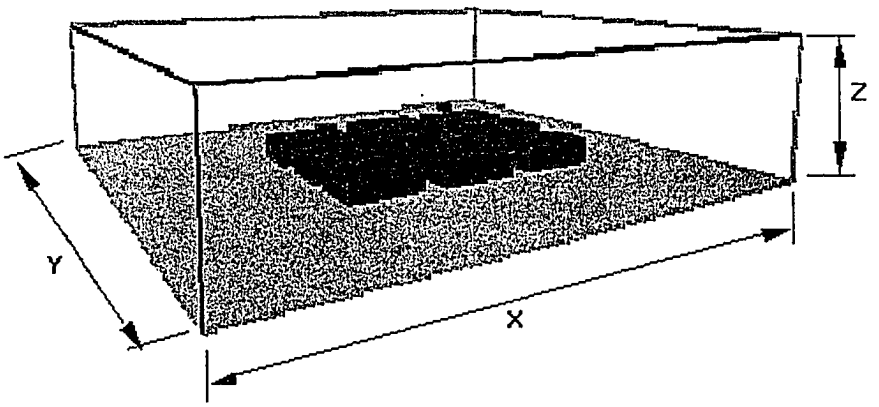


Figure 4.8 Numerical domain at X=100m, Y=90m, and Z=40m

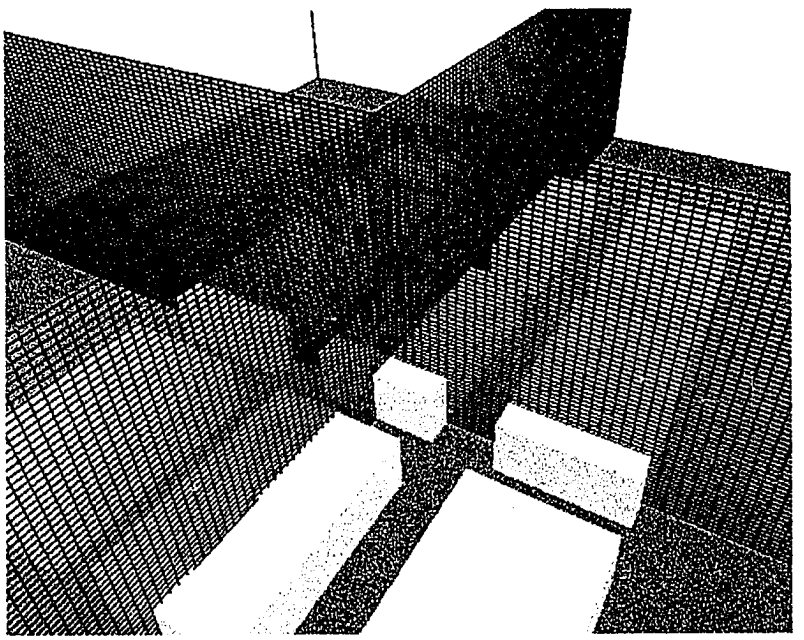


Figure 4.9 The structured computational grid at x-z and y-z planes at high resolution at 192*144*64 grid cells

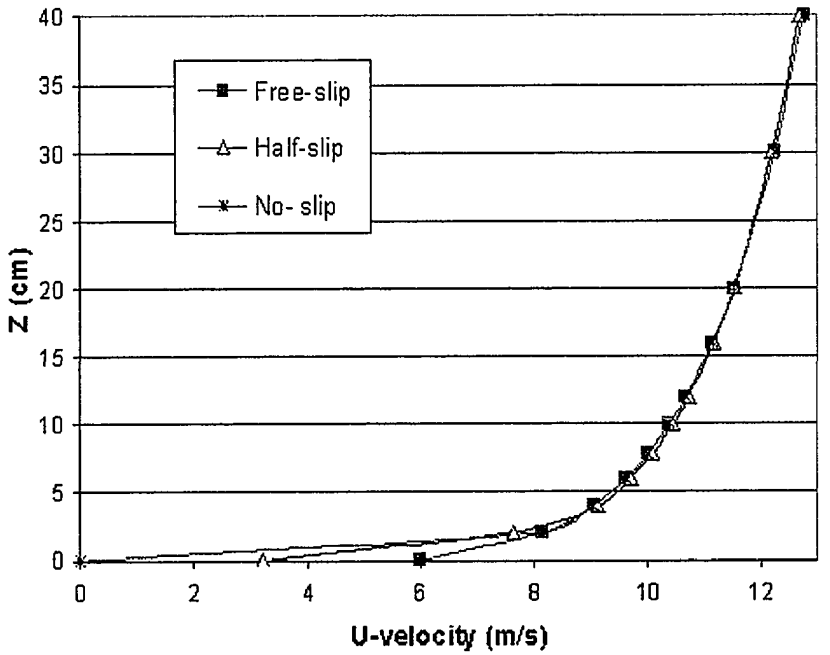


Figure 4.10 Approaching wind velocity profile for different ground boundary conditions

CHAPTER 5

EXPERIMENTAL DATA

This chapter presents all the data obtained from various physical experiments performed at the industrial wind tunnel. These physical experiments, which are discussed in the Chapter 3, consist of flow visualization, velocity and turbulence intensity profile measurements, pressure coefficient measurements, and concentration measurements. The object of this chapter is to provide original data sets as references for future research.

5.1 Flow Visualization

Flow visualization was accomplished with a laser light sheet produced by 5-watt Coherent Innova 7005 Argon ion water-cooled laser. Images were recorded by using the Panasonic Omni vision II camera/recorder system. Appendix A shows some visualization images in sequences, which are digitized from videotapes.

5.2 Velocity and Turbulence Intensity Profile

The velocity and turbulence intensity was measured by using a single hot-film. (The details of the measurement procedures are discussed in Section 3.2.2.) Twenty cases of measurements were performed, which consist of 5 different street widths to building height ratio (B/H) and 4 different rows of surrounding buildings in the upstream direction. Each case measures 7 locations around the target building. (The detailed

measuring points are shown at Figure 3.10.) The 20 sets of data results are summarized in Appendix B.

5.3 Pressure Coefficient

Two 48-channels PSI transducer units mounted inside the target building were used to measure pressure coefficient. (The details of the measuring procedures can be viewed at Section 3.2.3, and the different locations of the pressure taps are shown at Figures 3.11, 3.12, 3.13, and 3.14.) Similar to the velocity and turbulence intensity measurement, twenty cases of different B/H ratios and different rows of surrounding buildings were measured with 0 degree approaching wind. Three of these 20 cases, the different combinations of N=1, B/H=0.5, 1,2, are measured with different approaching winds from 0 degree to 90 degrees. The results of each case are interpreted for minimum value, mean, maximum value, RMS, - peak, and + peak pressure coefficients, and these values are presented in Appendix C.

5.4 Concentration

The concentration was measured by using a gas chromatograph and a sampling system. (Section 3.2.4 describes the detail procedures used during the experiment. The locations of concentration taps are shown on Figure 3.16, 3.17, and 3.18.) The 20 cases described previously were measured with 0 degree approaching wind for their concentration dispersion. One case of N=1 and B/H=1 was measured with different

approaching winds from 0 degree to 90 degrees. Appendix D presents the concentration mean values for each case.

CHAPTER 6

WIND TUNNEL RESULT ANALYSIS AND COMPARISION

This chapter presents the analysis and comparison of all the data collected from the various wind tunnel experiments. The influences surrounding buildings on the bluff body flow in an urban street canyon, the effect of the surrounding buildings on surface pressure of a low-rise building, and the dispersion of gases released in an urban street canyon are discussed in the following sections. All the physical data will also be compared to numerical data to examine the limitations of numerical modeling.

6.1 The Effects of Surroundings on Flow Around the Low-Rise Buildings

The turbulent flow of air over a surface covered with large numbers of discrete bluff obstacles occurs in many engineering applications. The flow over urban surfaces is a particular example of this type of very rough surface, boundary-layer flow. Because of the effects of the surrounding buildings there is considerable spatial non-uniformity of the flow field in the lower part of the boundary layer, which is called the roughness sub-layer. For most locations, this layer is characterized by inhomogeneous regions of reduced mean velocity and enhanced levels of turbulence intensity. Above the immediate influence of the surrounding buildings, the flow in the boundary layer becomes more homogeneous. Modeling details for the urban roughness sub-layer are not well

established. With traditional anemometry it is difficult and time-consuming to measure velocity data in the highly turbulent, recirculating flow field in the roughness sub-layer. Three flow regimes occur in practice: the skimming flow regime, wake interference flow regime and isolated roughness flow regime (Oke, 1992). The flow within the urban street canyon is extremely difficult to parameterize since it is shaped by the detailed arrangement of streets and building density. The following sections will present the results of flow visualization and flow field measurements for different configuration arrangement of an idealized urban street complex.

6.1.1 Flow Visualization of Wind Tunnel Result

As noted previously, multiple building configurations are considered (See Figure 3.6 and Table 3.1). Depending on the street width to building height ratio (B/H), the flow in the street canyons can be classified as skimming flow (B/H=0-1.2), wake interference flow (B/H=1.2-5.0), or an isolated roughness flow (B/H>5.0) as originally proposed by Oke (1998). Through the observation of flow visualization of wind tunnel tests performed for this dissertation, the results match the observations made by Oke.

Skimming Flow

After observing the videotapes of flow visualization tests, cases B/H=0.5 and B/H=1 are referred as skimming flow cases. Figure 6.1 exhibits the skimming flow image of case B/H=1. As the image indicates, the two gray blocks represent the

buildings, and the arrows represent the wind flow direction. As the wind blow normally from left to right to the buildings, a vortex-flow develops between them. The circulation as shown on the graph is a form of a cavity zone lee eddy where the downward pull of the suction is re-enforced by deflection down the windward face of the next building downstream. The winds in the street canyon zone are more turbulent than in the open at the same height because of such separation and recirculation effects. In skimming flow, the winds tend to skim over the rooftops.

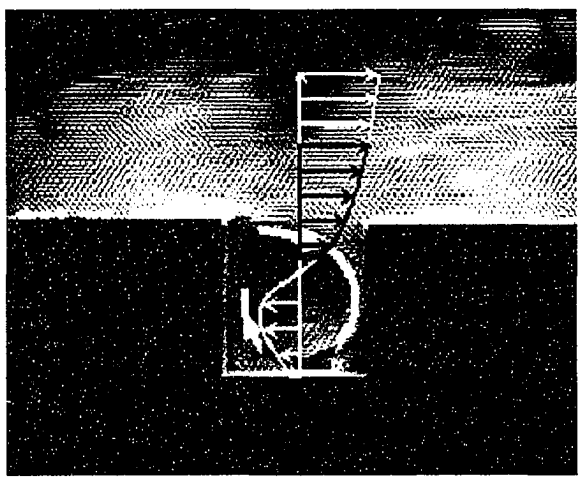


Figure 6.1 Skimming Flow, B/H=1

Interference Flow

Cases B/H=2 and B/H=4 are identified as interference flows. Figure 6.2 is an example of interference flow case (B/H=4 case). After the winds cross the left building (the gray block), the room available for expansion suddenly increases. However, the fluid cannot immediately react to fill it. The flow therefore separates from the building's

surface, and its organization breaks down into a much more turbulent condition in the low pressure or wake zone (Region A) which extends downwind from the left building. Immediately behind the left building, the pressure is low and thus tends to "suck" air into a semi-stationary lee eddy or vortex. This part of the wake is known as the cavity zone. The large lee eddy structure is dissipated into the smaller turbulent eddies of the wake zone, before finally settling down and reassuming conditions similar to those of the upwind flow. Before the flow reaches the right building, it begins to react because of the pressure build-up ahead. The bulk of the flow is forcibly displaced up and over the building. Immediately above the building, the streamlines are forced to converge as the same mass of air attempts to "squeeze" over, causing an acceleration or jet. The separation and reattachment occur on the roof of the right building. The flow in Region C can be called as displacement zone. Since the distance between the two buildings is not long enough, interference between these flows occurs at Region B. This is because a displacement flow has developed at Region C before the eddy has settled down in the wake zone (Region A).

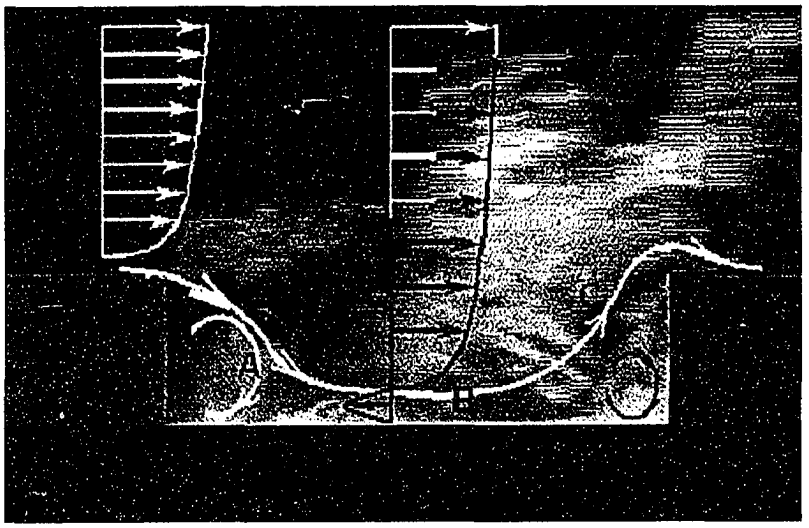


Figure 6.2 Interference Flow, B/H=4

Isolated Roughness Flow

In the case B/H=6, isolated roughness flow is observed. Figure 6.3 is an example of isolated roughness flow (Case B/H=6). In this case, the development of wake zone (Region A) and displacement zone (Region C) is the same as the previous case, the interference flow case. However, Region B in this case does not have any interference between the wake zone and the displacement zone, because the distance between the two buildings is large enough to provide horizontal motions parallel to the ground. Since the distance between the two buildings is large, the right building is referred to as an isolated building and the left building is referred to as a roughness.

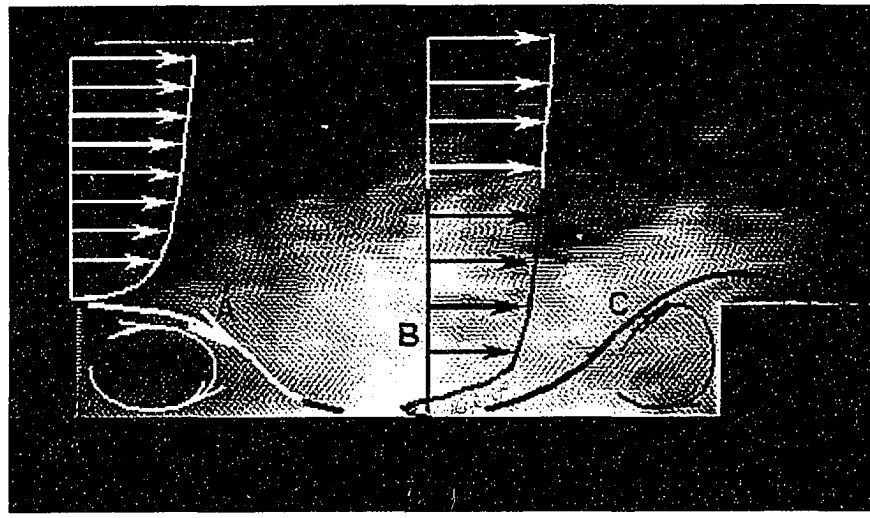


Figure 6.3 Isolated Roughness Flow, B/H=6

6.1.2 Wind Velocity and Turbulence Intensity Profiles of Wind Tunnel Result

Profiles of the velocity and turbulence intensity around the master building from Point 1 to Point 7 (see Figure 3.10 for detailed locations) for case N=1 open country are presented in Figures 6.4a to 6.10b. In Figure 6.4a, the X-axis represents mean velocity (u/Uref), where u = measured velocity magnitude and Uref = reference velocity at building roof height, and Y-axis represents heights. As the graphs indicate, the isolated roughness case (B/H=6) has the highest magnitude of velocity at any height among all cases, whereas the interference flow cases (B/H=2 and B/H=4) and the skimming flow cases (B/H=0.5 and B/H=1) have lower values for velocity profiles. However, at the areas above the roof height, the results of the velocity values for each case approach one another. Figure 6.4b shows the turbulence intensity profiles relative to heights for each

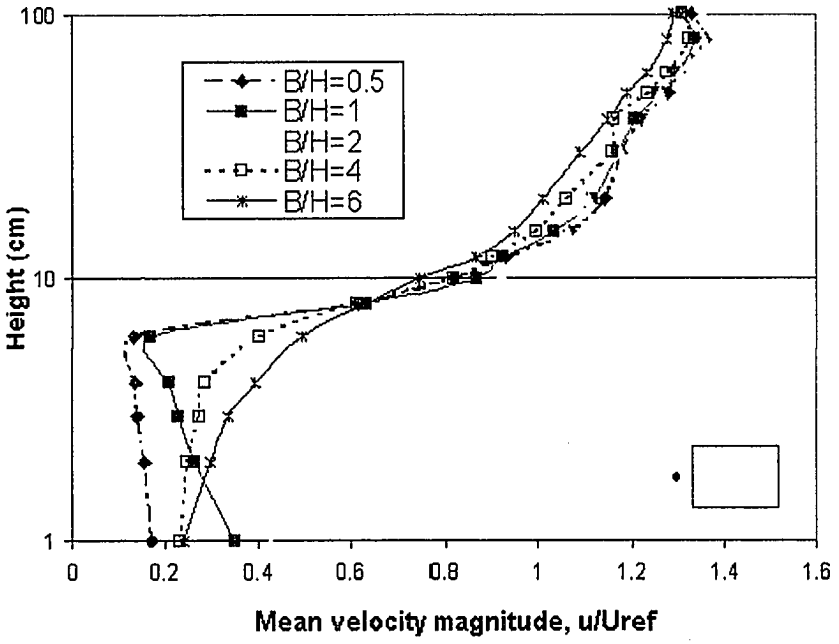


Figure 6.4a Mean velocity magnitude profile measured at point 1, N=1

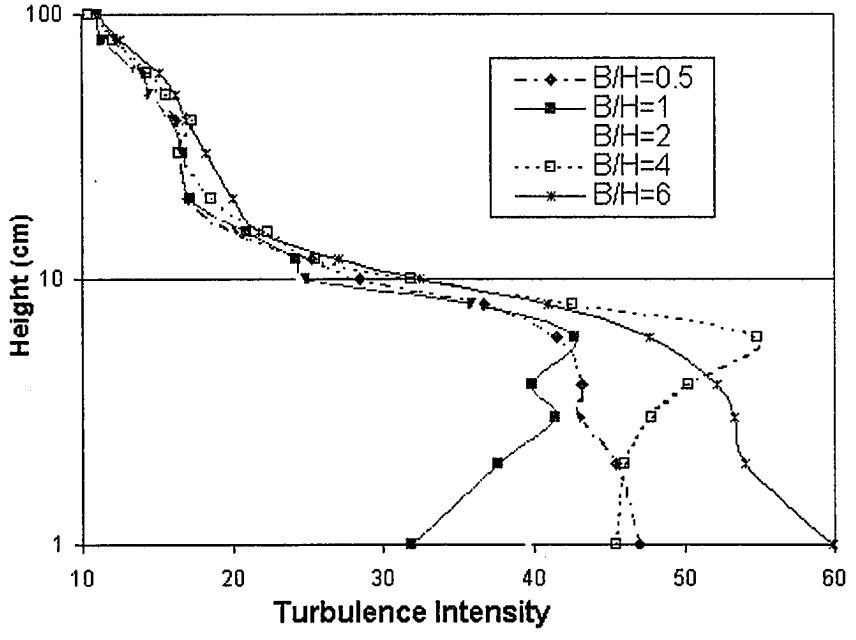


Figure 6.4b Turbulence intensity profile measured at point 1, N=1

case. At the point 1 of the street canyon area, the isolated roughness case (B/H=6) has the highest turbulence intensity, whereas the interference flow cases (B/H=2 and B/H=4) and the skimming flow cases (B/H=0.5 and B/H=1) have lower turbulence intensity.

Figures 6.5a and 6.5b show the velocity and turbulence intensity profiles at point 2. In the region close to the roof, when the value of B/H increases, the value of velocity increases because separation behavior occurs in this region for both interference and isolated roughness cases. Figures 6.6b shows the turbulence intensity profile over the center point of the master building (point 3). The turbulence intensity of isolated roughness cases is highest compared to the other cases in the region close to roof height, whereas the interference flow cases have the second highest turbulence intensity and the skimming flow cases have the lowest.

The velocity and turbulence intensity profiles of points 5, 6, and 7 are presented in Figures 6.8a to 6.10b. These three points are along the same line from upwind to downwind, so they have the same velocity and turbulence intensity behavior. The isolated roughness flow case has the highest velocity and lowest turbulence intensity in the region near the ground. The skimming flow cases have the lowest velocity and the highest turbulence intensity, and the interference flow cases have velocity and turbulence intensity values in between the isolated roughness cases and the skimming flow cases. Figure 6.11 and 6.12 show velocity profiles of point 2 and point 3 for urban roughness case (N=8). Comparing the velocity at the region of just above roof for two figures, there are higher speeds for point 2 since separation occurs at the edge of roof.

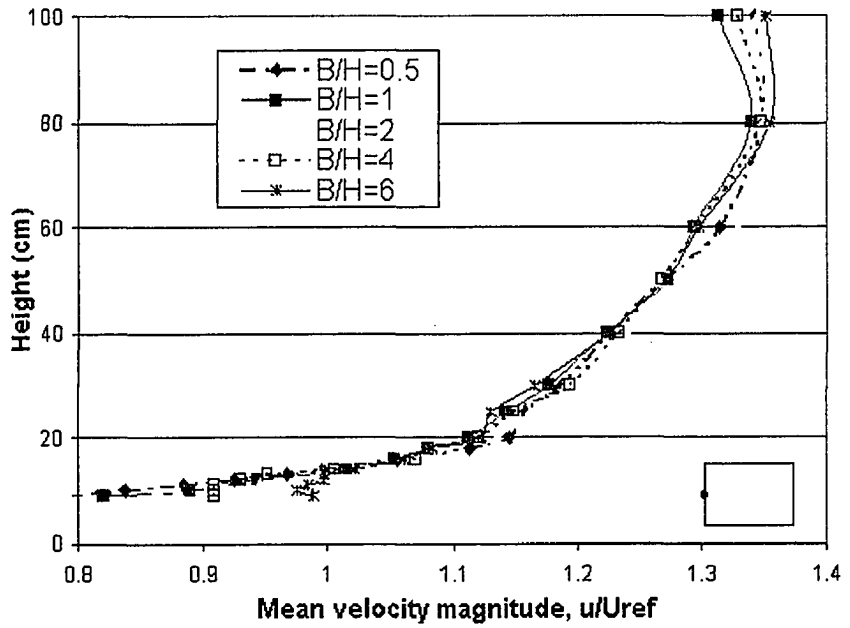


Figure 6.5a Mean velocity magnitude profile measured at point 2, N=1

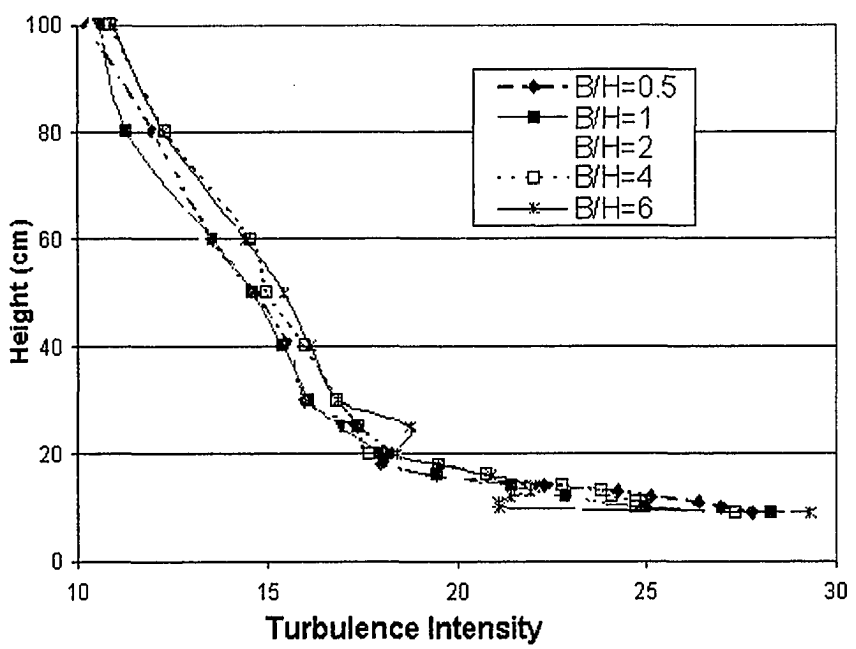


Figure 6.5b Turbulence intensity profile measured at point 2, N=1

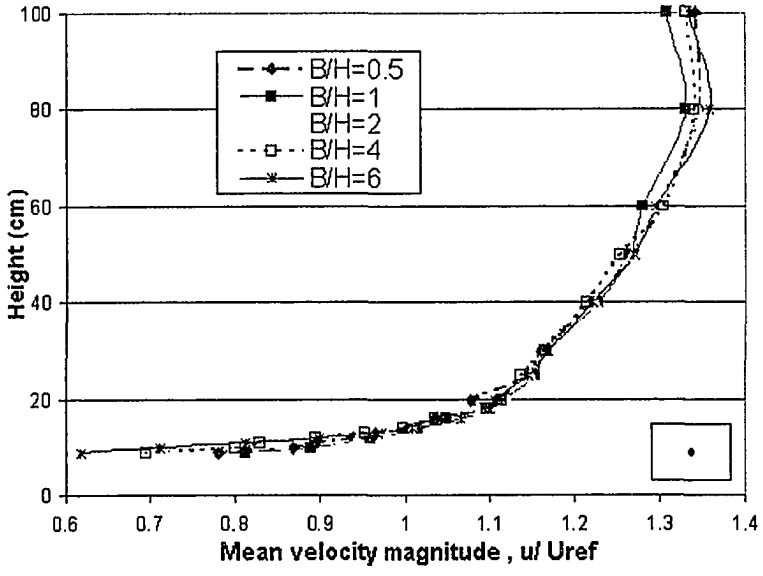


Figure 6.6a Mean velocity magnitude profile measured at point 3, N=1

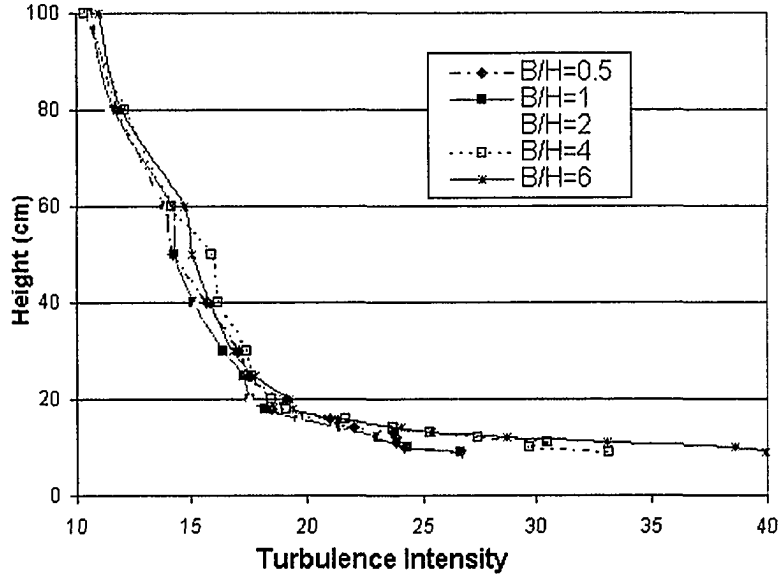


Figure 6.6b Turbulence intensity profile measured at point 3, N=1

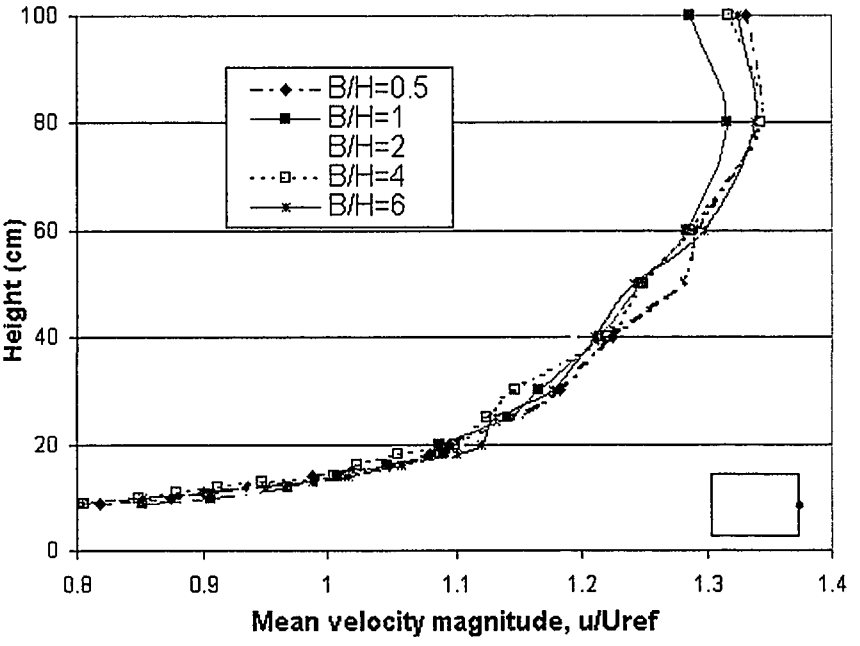


Figure 6.7a Mean velocity magnitude profile measured at point 4, N=1

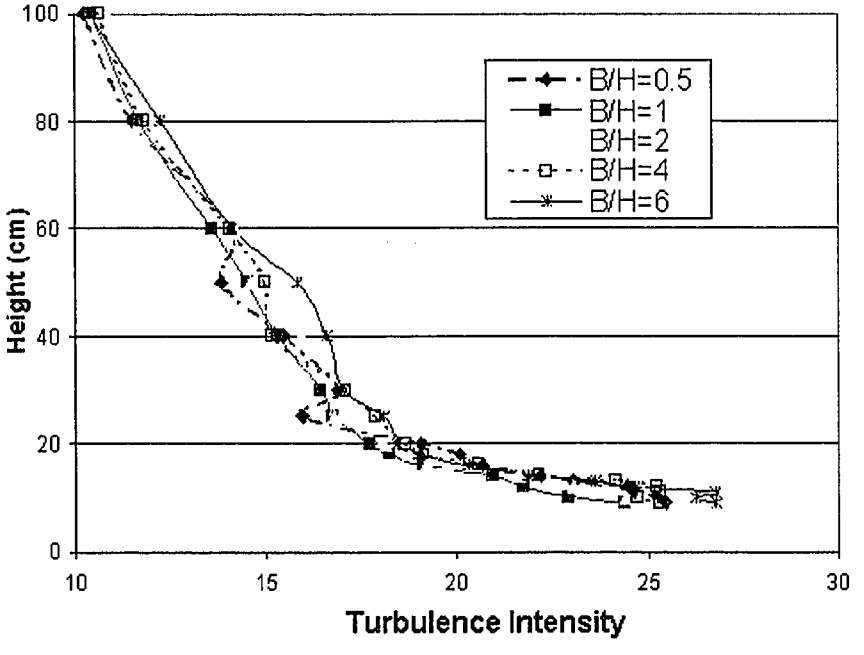


Figure 6.7b Turbulence intensity profile measured at point 4, N=1

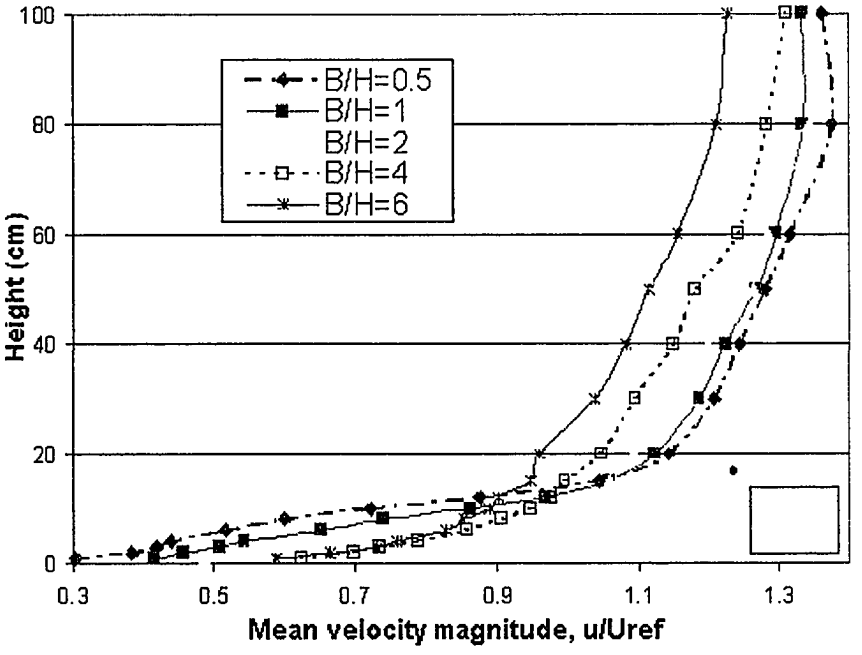


Figure 6.8a Mean velocity magnitude profile measured at point 5, N=1

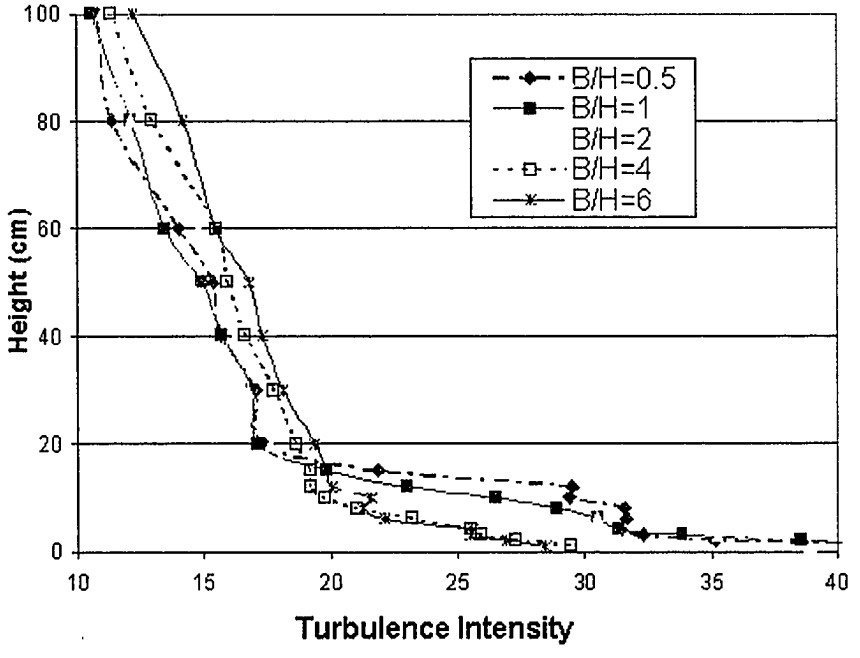


Figure 6.8b Turbulence intensity profile measured at point 5, N=1

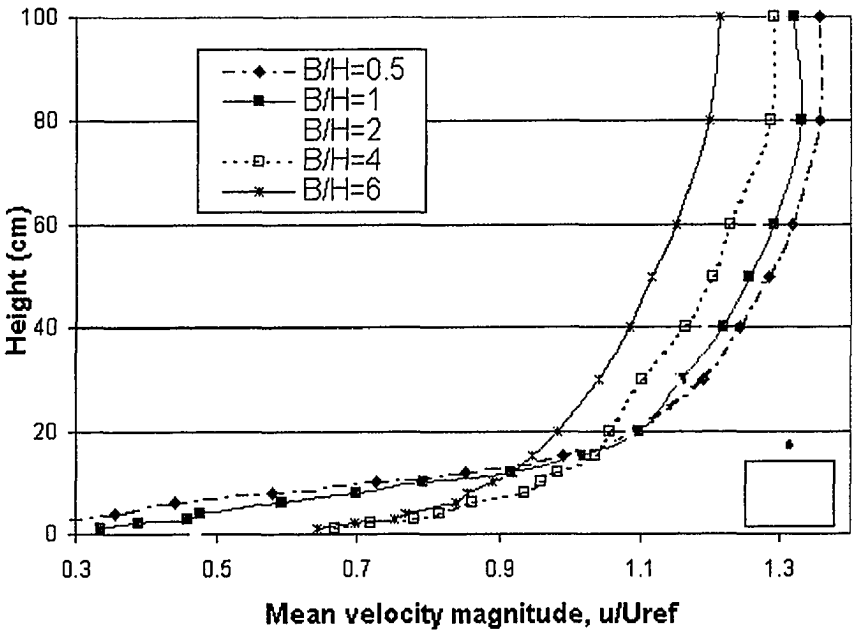


Figure 6.9a Mean velocity magnitude profile measured at point 6, N=1

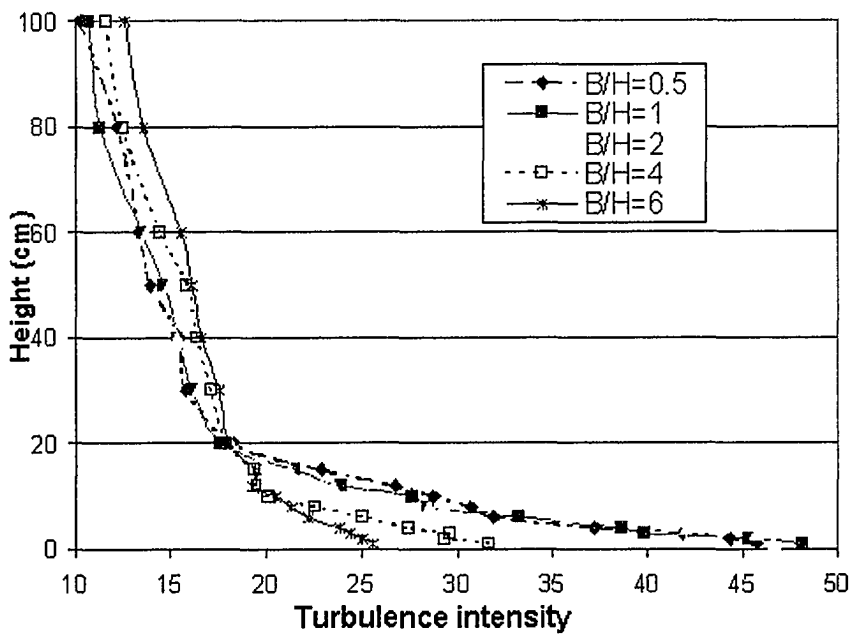


Figure 6.9b Turbulence intensity profile measured at point 6, N=1

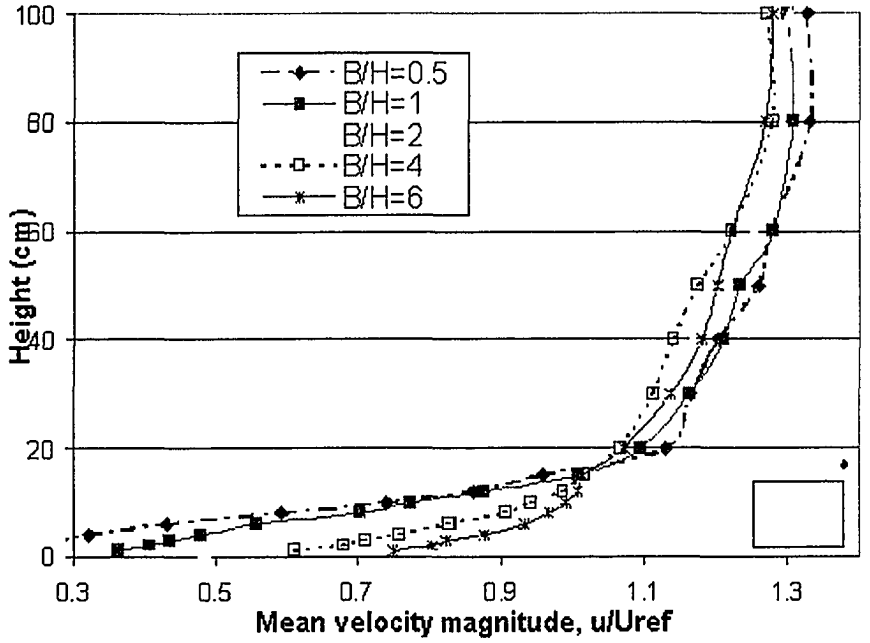


Figure 6.10a Mean velocity magnitude profile measured at point 7, N=1

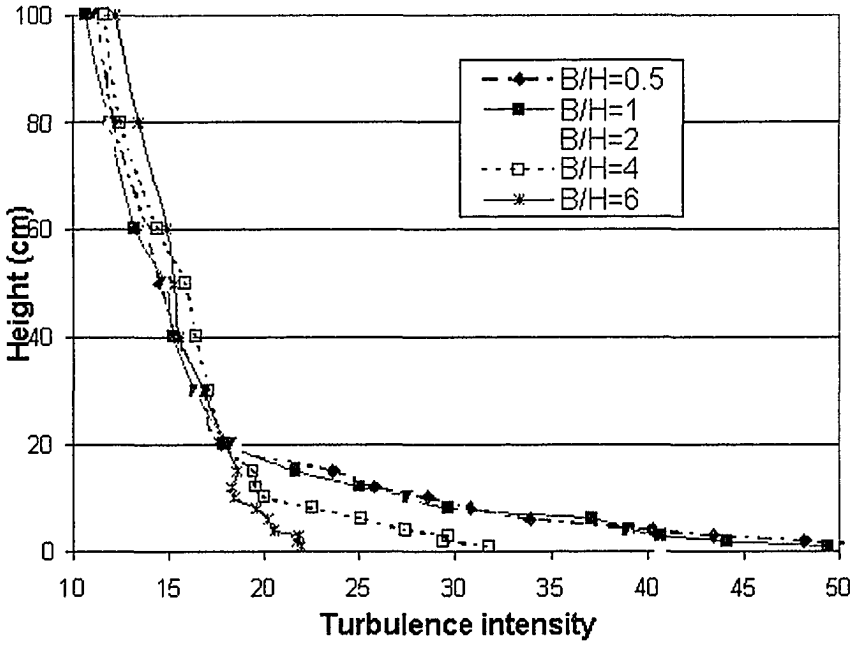


Figure 6.10b Turbulence intensity profile measured at point 7, N=1

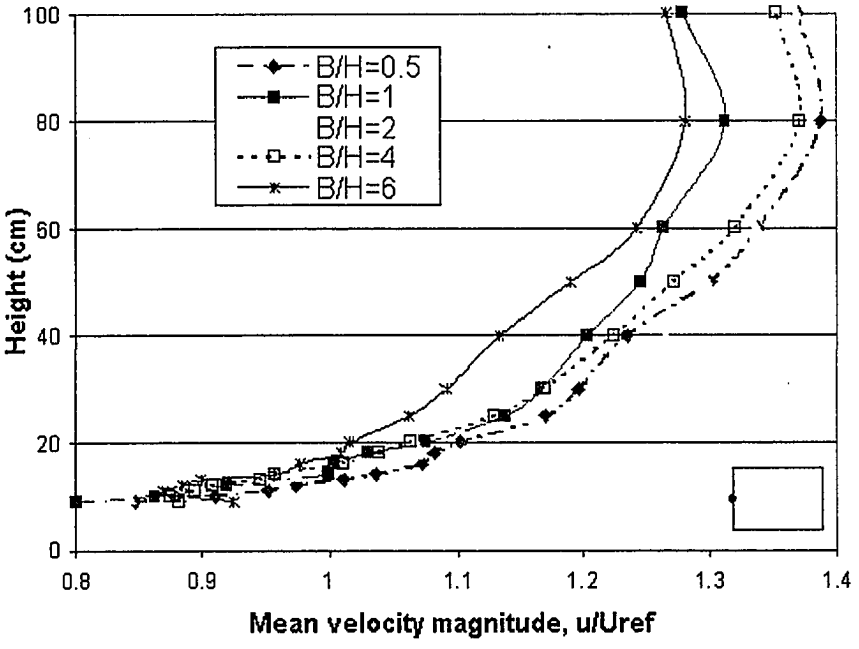


Figure 6.11 Mean velocity magnitude profile measured at point 2, N=8

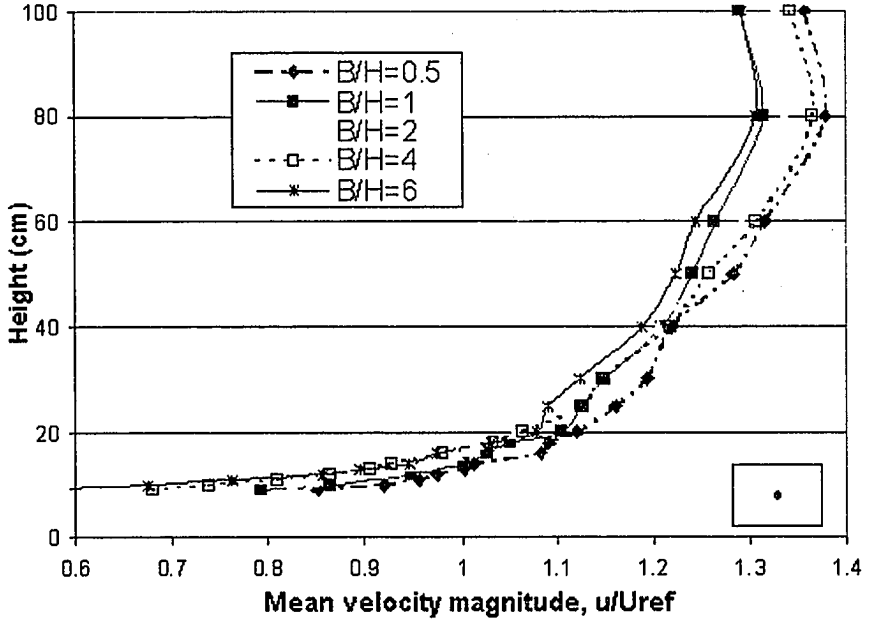


Figure 6.12 Mean velocity magnitude profile measured at point 3, N=8

6.1.3 Comparison of Wind Tunnel Results and Numerical Simulation

Two computational fluid dynamics (CFD) programs, Fluent 5.4 and Fire Dynamics Simulator (FDS), as described in Chapter 4 are used to model the wind flow over the different configurations of an urban street canyon. In this section, the comparison between wind tunnel data and numerical data for both flow visualization and velocity and turbulence profiles is presented.

Flow Visualization

Figure 6.13a shows the actual image of skimming flow visualization for case B/H=1 taken from the wind tunnel experiment. In the image, the clockwise circulation of flow can be seen in the street canyon as the winds blow normally from left to right. The results of the calculated velocity vector in the street canyon from both Fluent and FDS simulations within the same region display the same patterns of flow movement. Figures 6.13b and 6.13c show the numerical velocity vector results of case B/H=1 from Fluent and FDS simulations. The conclusion can be made that numerical simulations predict the flow pattern of skimming flow quite well.

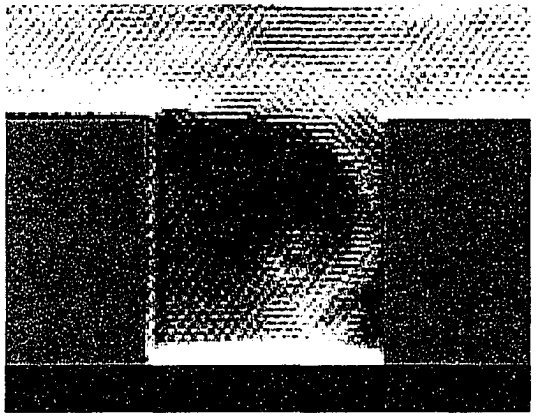


Figure 6.13a Flow visualization result of case, B/H=1

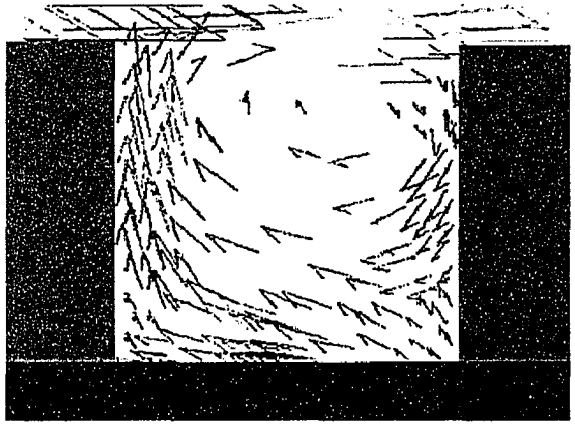


Figure 6.13b Numerical velocity vector result of case, B/H=1 from Fluent 5.4

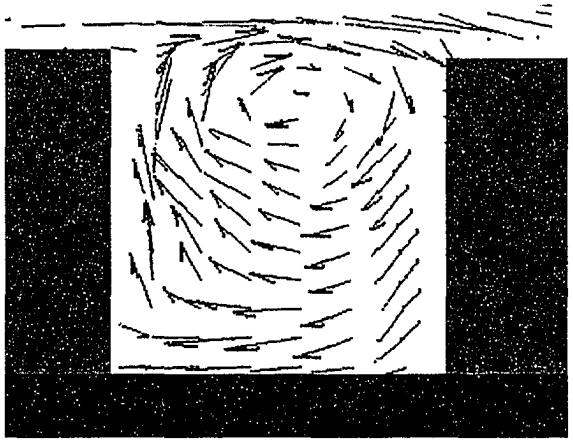


Figure 6.13c Numerical velocity vector result of case, B/H=1 from FDS

Figure 6.14a is an image of interference flow visualization for case B/H=4. In this case, the numerical experiment is performed using Fluent. Figure 6.14b shows the result of the numerical experiment. As the wind blows from left to right, a wake zone is generated right behind the left building and a displacement zone is formed before the right building in the street canyon area. In the center region of the canyon, the interference flow, a mix of part wake zone and part displacement zone, occurs. The numerical data reflect exactly the pattern of the physical experiment observed in the wind tunnel.

Figure 6.15a shows the actual image of isolated roughness flow for case B/H=6. Figure 6.15b presents the result of the numerical experiment for this case using Fluent. As indicated on the graph, the isolated roughness flow case has both a wake zone and a displacement zone in the street canyon region; however, the wider distance of the street canyon separates these two zones far enough so the buildings only have the isolated effect to the wind flow. The numerical data again predicts the results of the physical experiment.

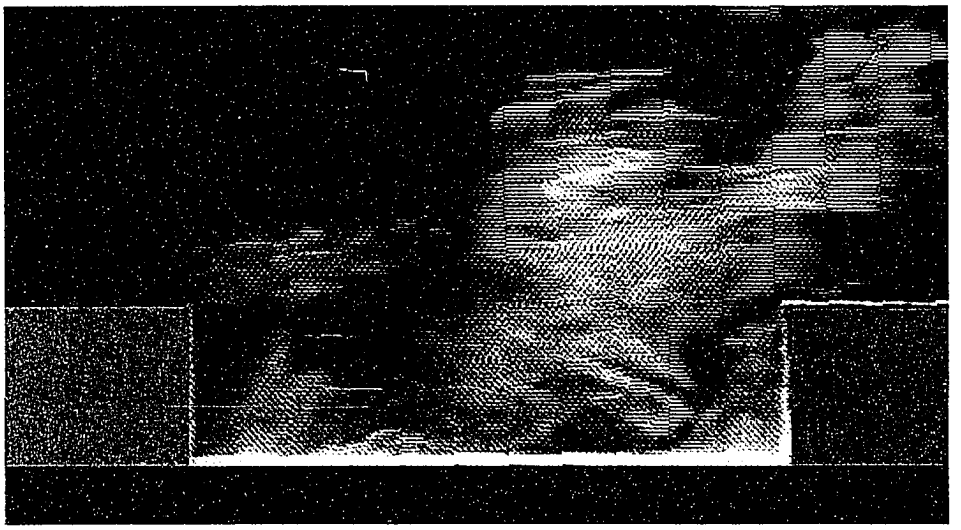


Figure 6.14a Flow visualization result of case, B/H=2

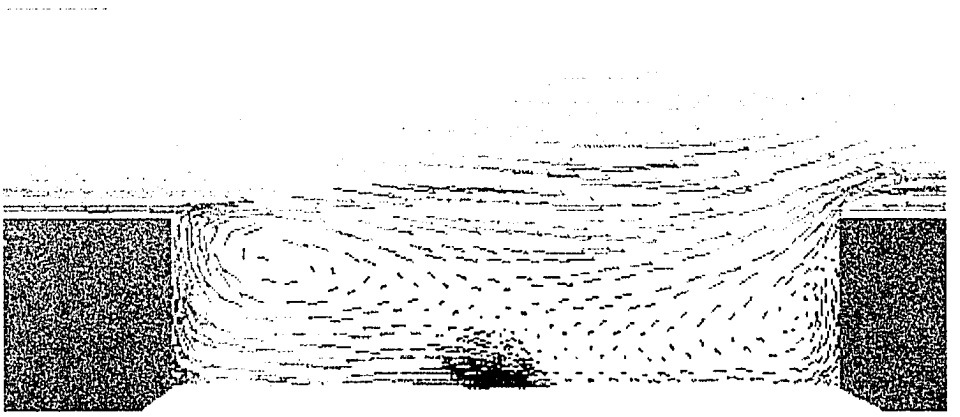


Figure 6.14b Numerical velocity vector result of case, B/H=4 from Fluent

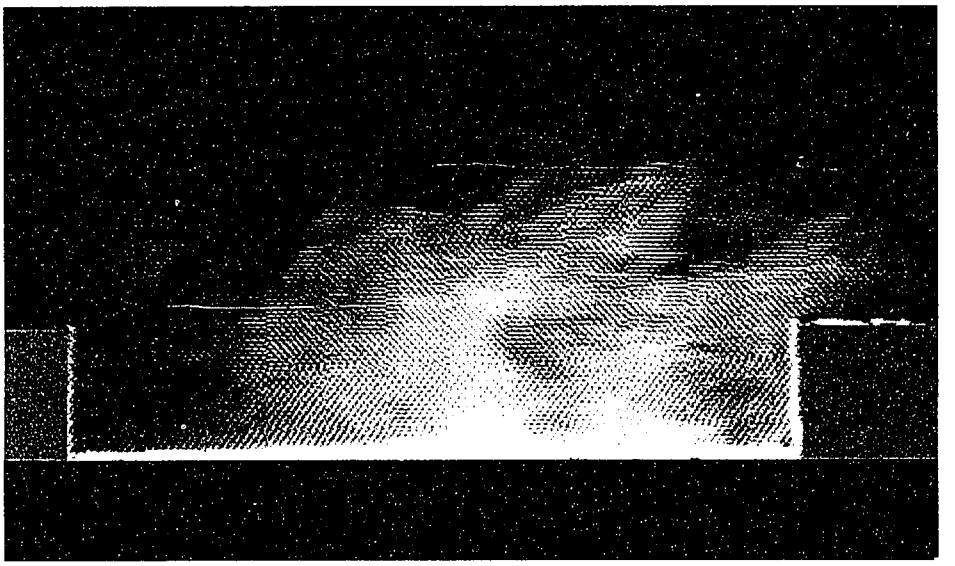


Figure 6.15a Flow visualization result of case, B/H=6

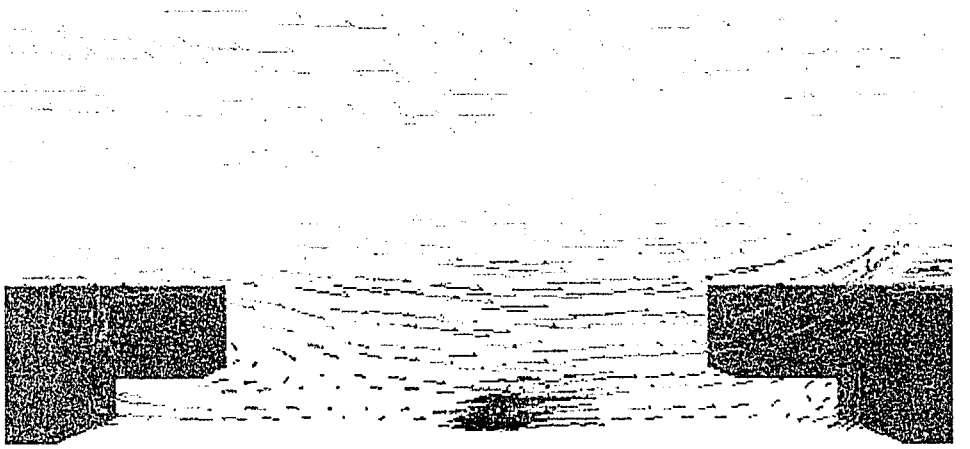


Figure 6.15b Numerical velocity vector result of case, B/H=6 from Fluent

Velocity and Turbulence Intensity Profiles

Fluent:

Four separate turbulence models, the standard κ–ε, the RNG κ–ε, the Reynolds-stress and the LES, are used to model wind flow over the different configurations of an urban street canyon using Fluent. By examining the results for each turbulence model, it appears that the standard κ–ε and the RNG κ–ε models give almost the same predictions for velocity magnitude profiles; however, the standard κ–ε provides the best simulations of the flow field in the urban street canyon.

Figures 6.16a, 6.17a, and 6.18a show the velocity magnitude profiles at points 1, 3 and 5, respectively, for case B/H=1, N=1 using four turbulence models. The graphs indicate clearly that both the standard κ–ε and RNG κ–ε models predict the measured velocity profiles. On the other hand, the Reynolds-stress and LES models underpredict the velocity profile in the region around the building roof height. Figures 6.16b, 6.17b, and 6.18b show the turbulence intensity profiles at point 1, 3, and 5, respectively, for case B/H=1, N=1 using different turbulence models. All four turbulence models produce similar turbulence intensity profiles. By comparing the predictions of turbulence intensity profiles to the physical experimental results, the prediction values are reasonable. The very large value of turbulence intensity at z = 8 – 9 cm are an artifact due to $U \approx 0$ at this height.

Since the κ–ε turbulence model outperformed the other turbulence models for the cases considered above, additional comparisons of velocity and turbulence intensity

profiles will be limited to those using the κ–ε model. Figures 6.19a shows the velocity magnitude and profile at point 1 for case N=1 with different values of B/H by using Fluent with the κ–ε turbulence model. Figure 6.19b is a graph of the comparison results of turbulence intensity profiles at point 1 for case N=1 with different values of B/H using κ–ε model. Both the graphs indicate that the Fluent κ–ε turbulence model successfully predicts dominated flow patterns for the velocity magnitude and turbulence intensity profiles for each case.

A comparison of velocity magnitude profiles over point 1 for the case B/H=1, but different values of N is shown at Figure 6.20a. The graph shows that the Fluent κ–ε model predicts the flow patterns for open-country roughness cases (N=1, N=2) quite well. However, the Fluent κ–ε model over predicts the area above the building roof height for the urban-roughness cases (N=3, N=8). Figure 6.20b presents turbulence intensity profiles at point 1 for case B/H=1 but different values of N by using κ–ε model. The Fluent κ–ε model predicts the flow patterns of open-country roughness cases (N=1, N=2), but underpredicts the flow patterns for the area around the building roof height for the urban-roughness cases (N=3, N=8).

In Figure 6.16b, the turbulence intensity values predicted by Fluent were bigger than the values collected from wind tunnel experiments. Considering the equation that was discussed in Chapter 3:

$$I(z) = \frac{\sqrt{u^2(z)}}{U(z)}$$

The turbulence intensity is equal to root mean square value of velocity at elevation z divided by mean velocity at elevation z. In some area of the canyon, mean velocity is close to zero. Since U is close to zero, the turbulence intensity, I(z), becomes very large. Figures 6.19b and 6.20b show similar results of predicted turbulence intensity at point 1 of the canyon area.

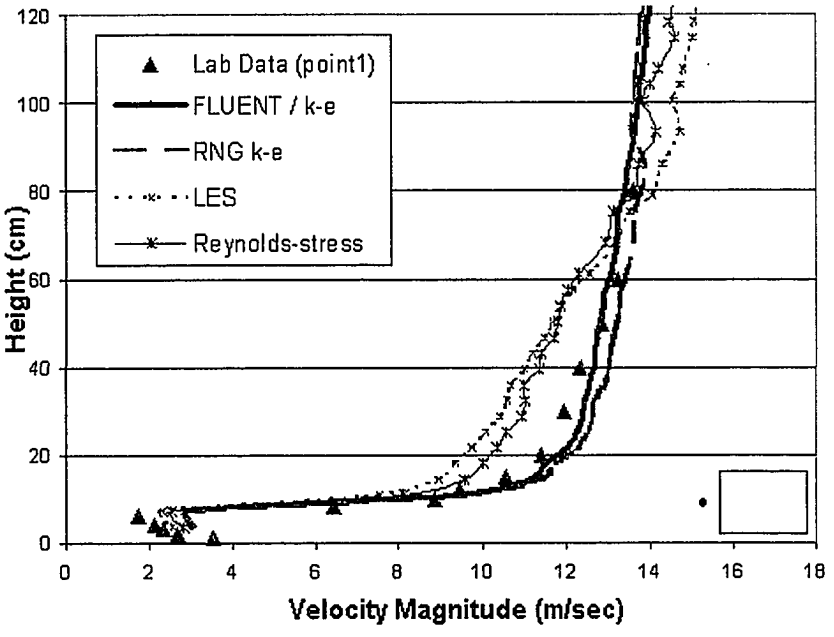


Figure 6.16a Velocity magnitude profile at point1 for case B/H=1, N=1

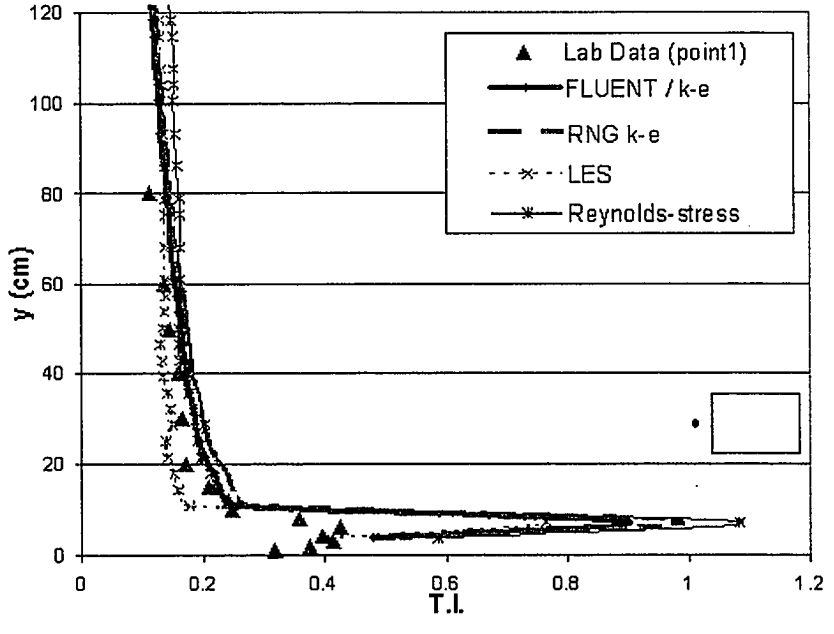


Figure 6.16b Turbulence intensity profile at point1 for case B/H=1, N=1

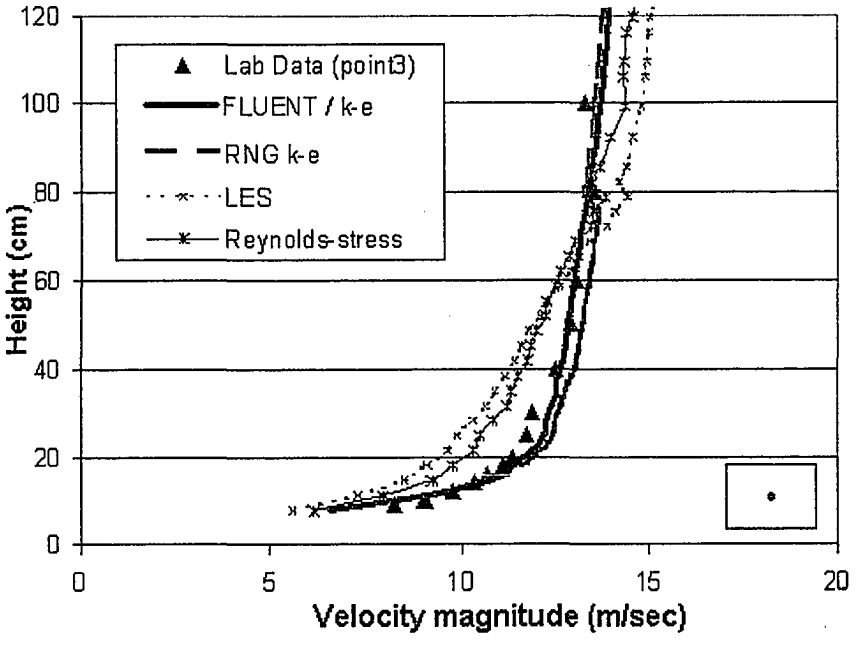


Figure 6.17a Velocity magnitude profile at point 3 for case B/H=1, N=1

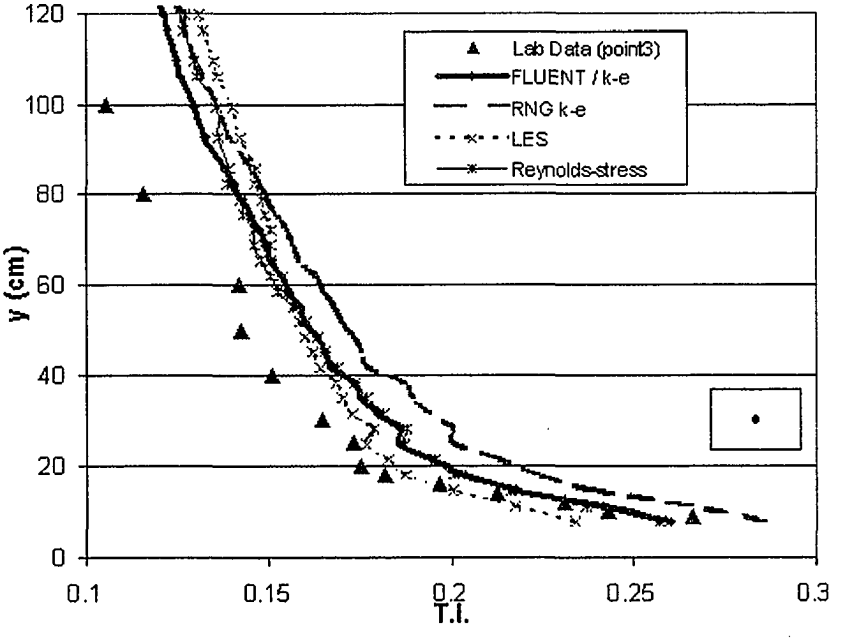


Figure 6.17b Turbulence intensity profile at point 3 for case B/H=1, N=1

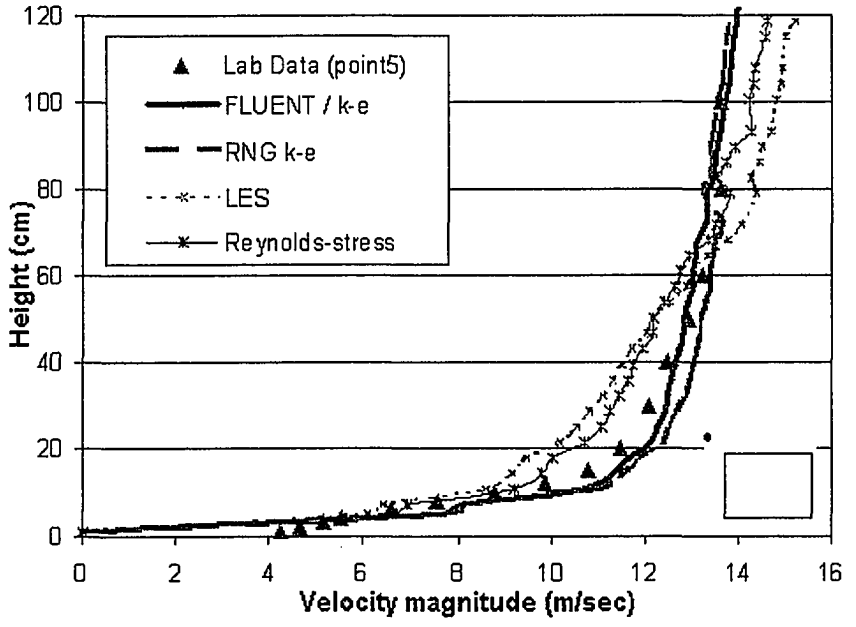


Figure 6.18a Velocity magnitude profile at point 5 for case B/H=1, N=1

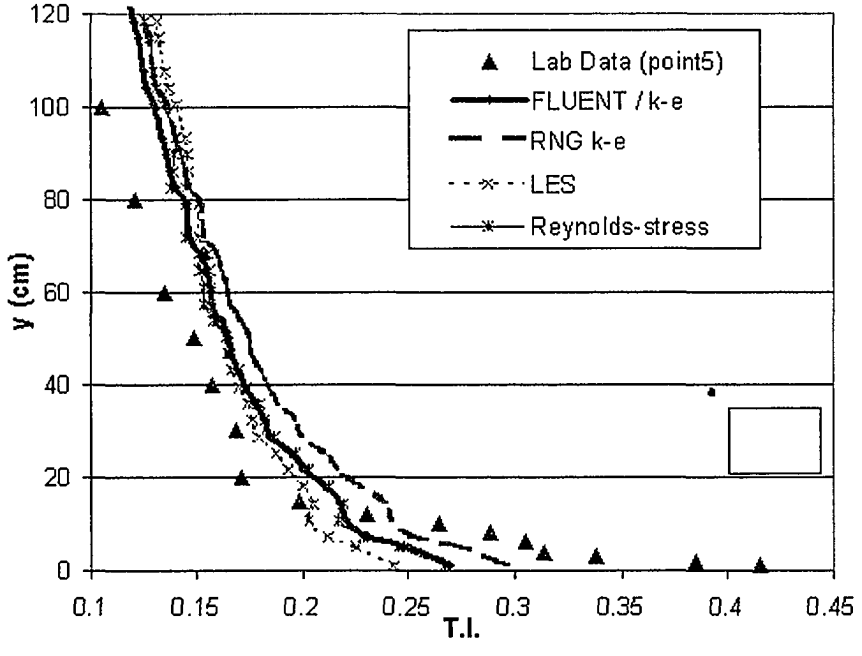


Figure 6.18b Turbulence intensity profile at point 5 for case B/H=1, N=1

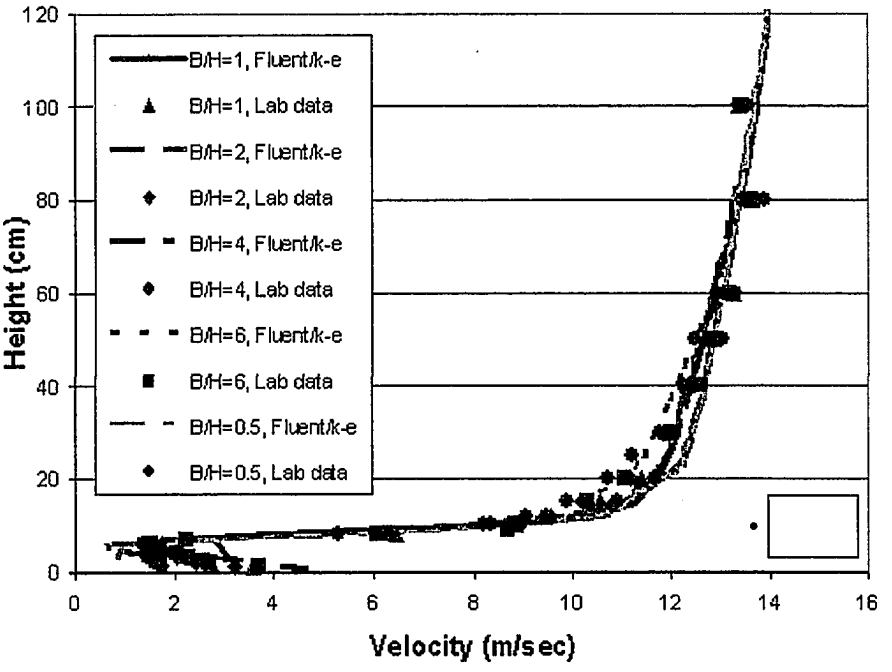


Figure 6.19a Velocity magnitude profile at point 1, N=1 using k-ε model

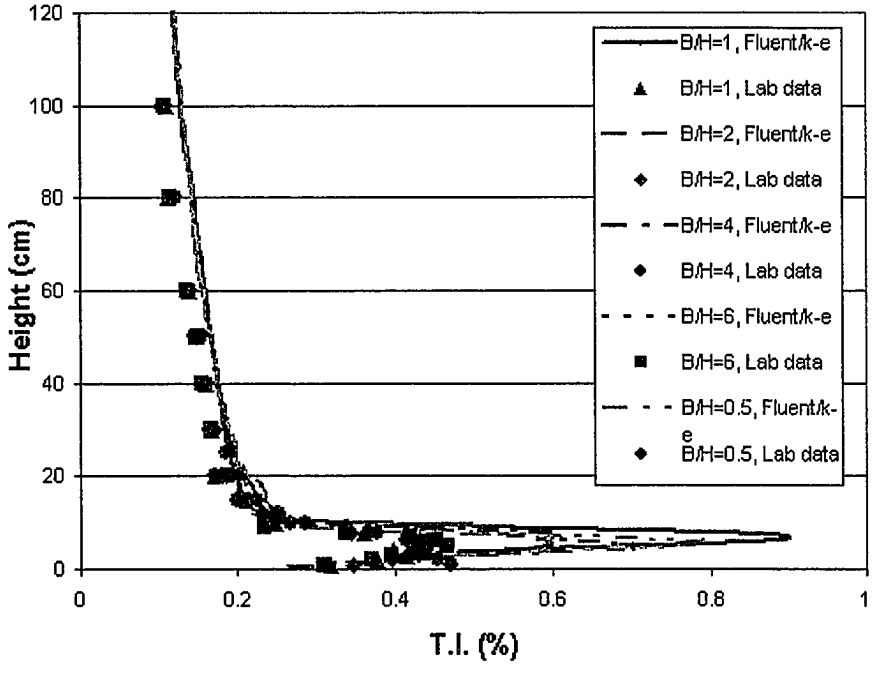


Figure 6.19b Turbulence intensity profile at point 1, N=1 using k-ε model

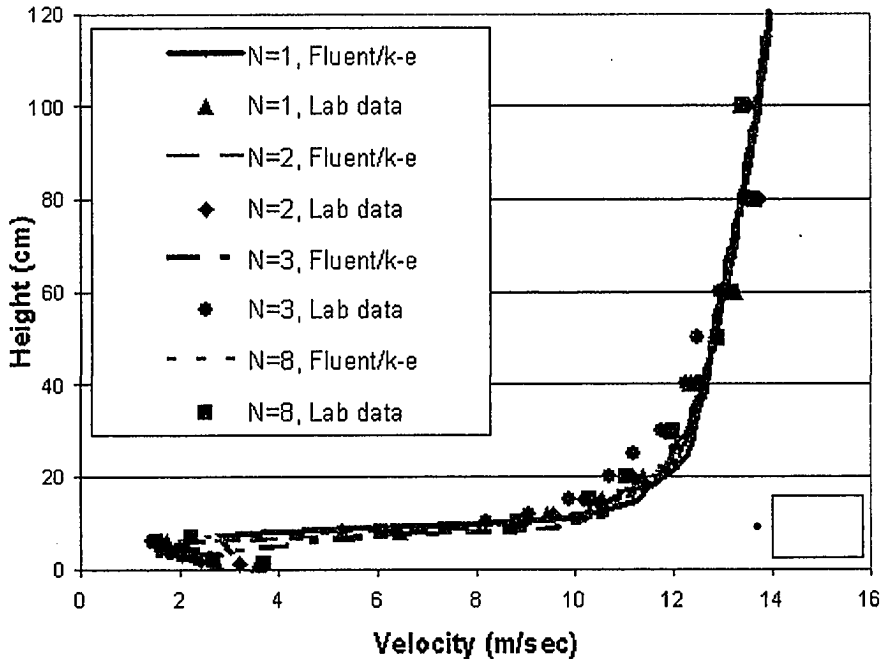


Figure 6.20a Velocity magnitude profile at point 1, B/H=1 using k-ε model

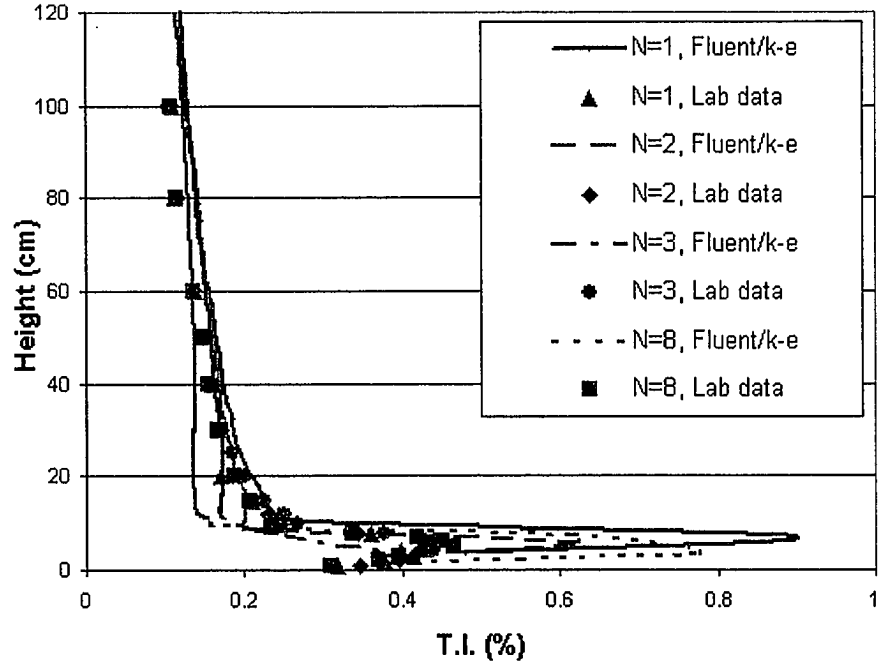


Figure 6.20b Turbulence intensity profiles at point 1, B/H=1 using k-ε model

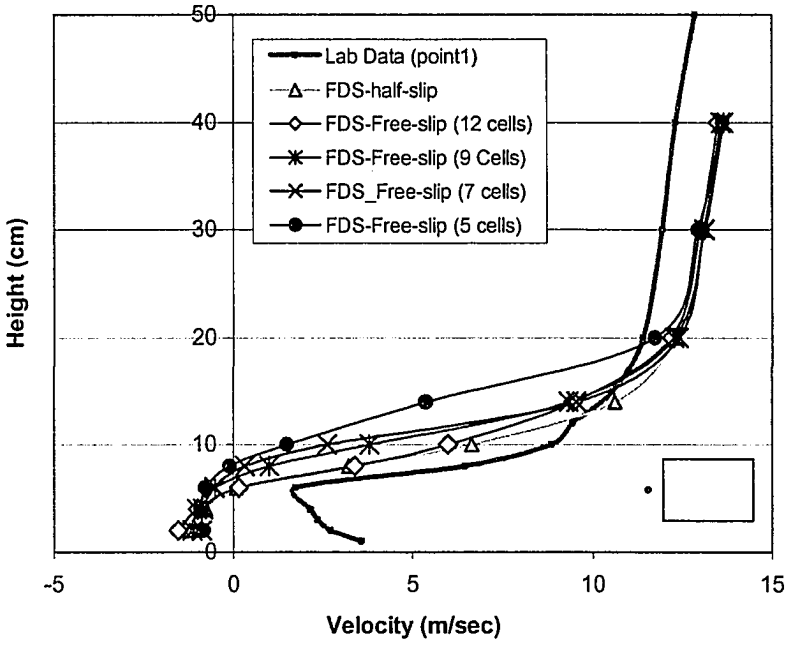
FDS:

The effect of grid resolution on the features of the flow field is considered to determine the grid size needed to accurately resolve the flow. Four different grid resolutions, and canyon heights of 12 cells, 9 cells, 7 cells and 5 cells are examined here. Typical resolution study results are shown in Figures 6.21a and 6.21b. The graph of the velocity profile at point 1 shows that higher grid resolution cases are closer to the wind tunnel data. The graph of velocity profiles of point 3 shows that the cases of canyon heights of 5, 7 and 9 give the velocity near the roof of master building. These are much lower than the case for a height of 12 cells. From these comparisons of different calculation grid resolutions, it is obvious that a higher grid resolution better predicts the flow field in this urban street canyon simulation.

FDS is used to run the case of B/H=1, N=1 with three different ground boundary conditions, no-slip, half-slip and free-slip. The tangential velocity boundary condition can be no-slip, free-slip or something in between (a simple law of the wall). For no-slip, set VBC to –1. For free-slip, set VBC to 1. Numbers in between –1 and 1 can represent partial slip conditions, which may be appropriate for simulations involving large grid cells. The grid resolution is based on a canyon height of 12 cells here. Figure 6.22a shows the comparison of FDS and lab data for a velocity profile above point 1. The graph indicates that the no-slip profile provides poor agreement with wind tunnel results. The other two profiles appear to be acceptable. In contrary, the turbulence intensity profiles at point 1 have opposite results. In Figure 6.22b, the no-slip profile appears to

match best with the lab profile, but apparently the other profiles do not. Similar results can be seen for the cases of point 3 and 5 (see Figures 6.23a, 6.23b, 6.24a and 6.24b).

The previous cases discussed above reflect the questionable reliability of FDS as a CFD tool for predicting the flow fields of an urban street canyon. The problem might be a restriction of the software itself, or it may be due to lack of enough understanding and research on operating the software. For example, turbulence cannot be introduced at the inlet flow during the computational process because the software lacks that option. Another restriction is that the calculation domain had to be small because the personal computer used lacks the hardware capacity to perform a calculation with larger domain.



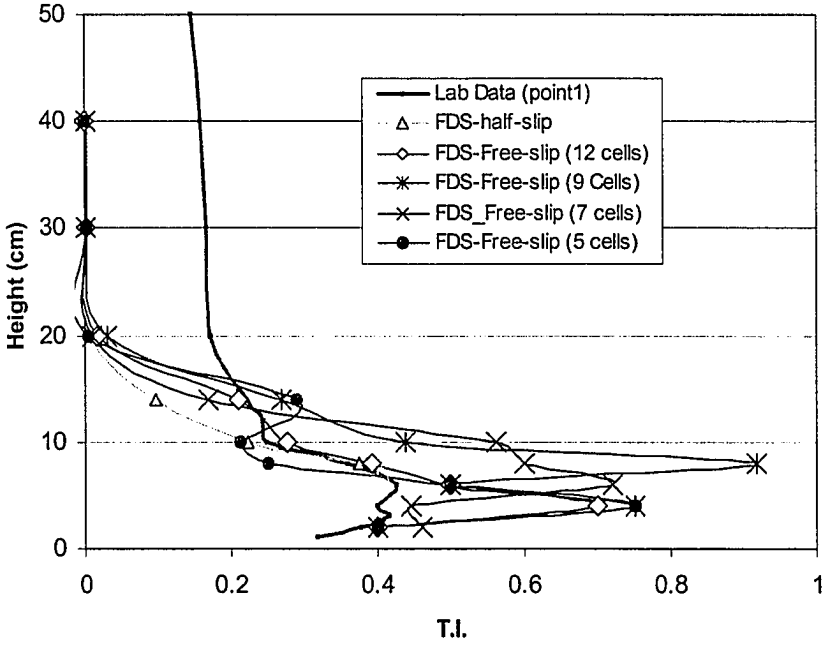
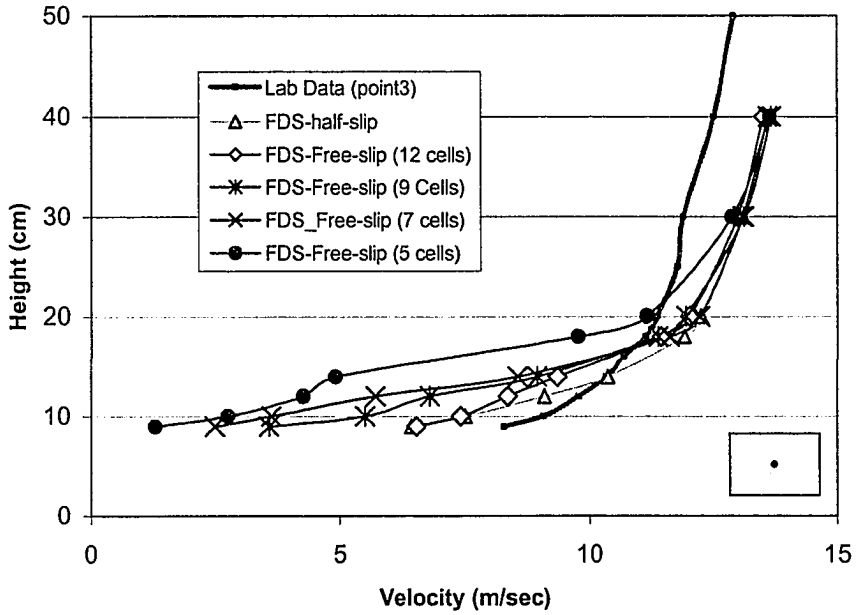


Figure 6.21a Mean velocity and turbulence profile at point 1 using FDS with different grid resolution



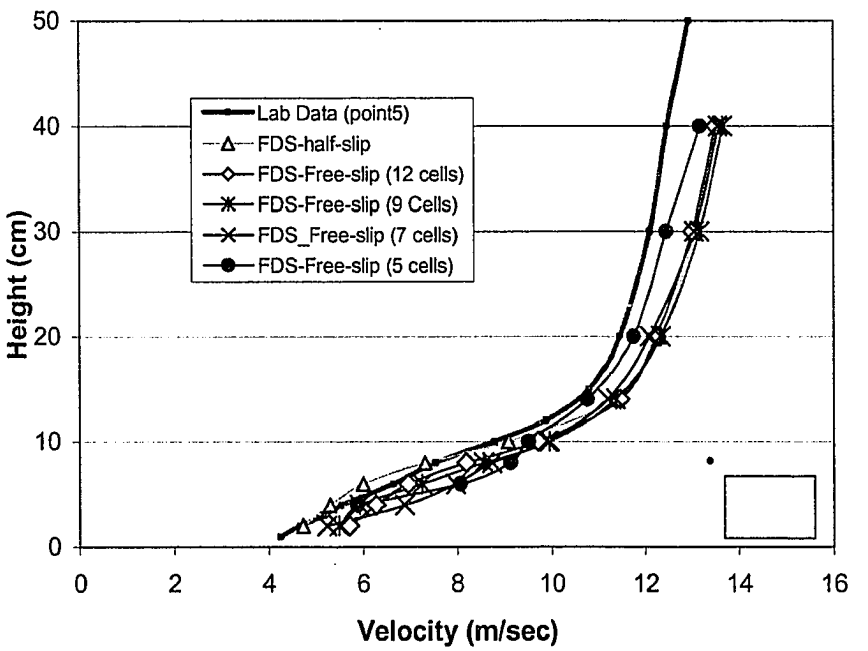


Figure 6.21b Mean velocity profile at point 3 and point 5 using FDS with different grid resolution

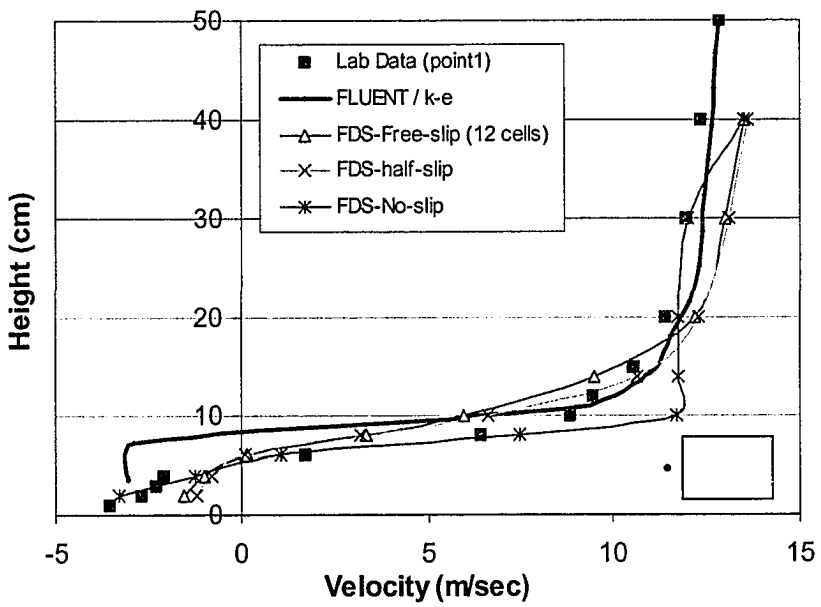


Figure 6.22a Velocity profile at point 1, B/H=1, N=1 using FDS

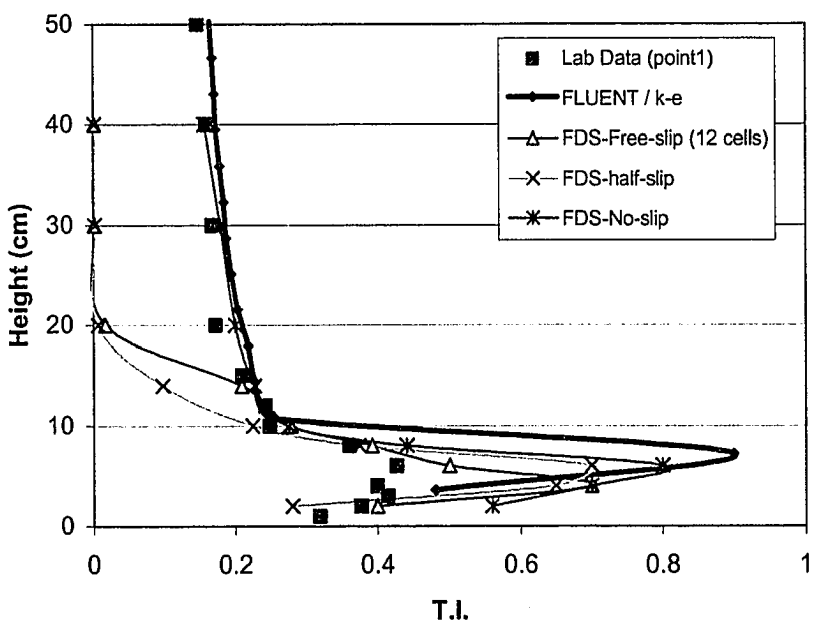


Figure 6.22b Turbulence intensity profiles at point 1, B/H=1, N=1 using FDS

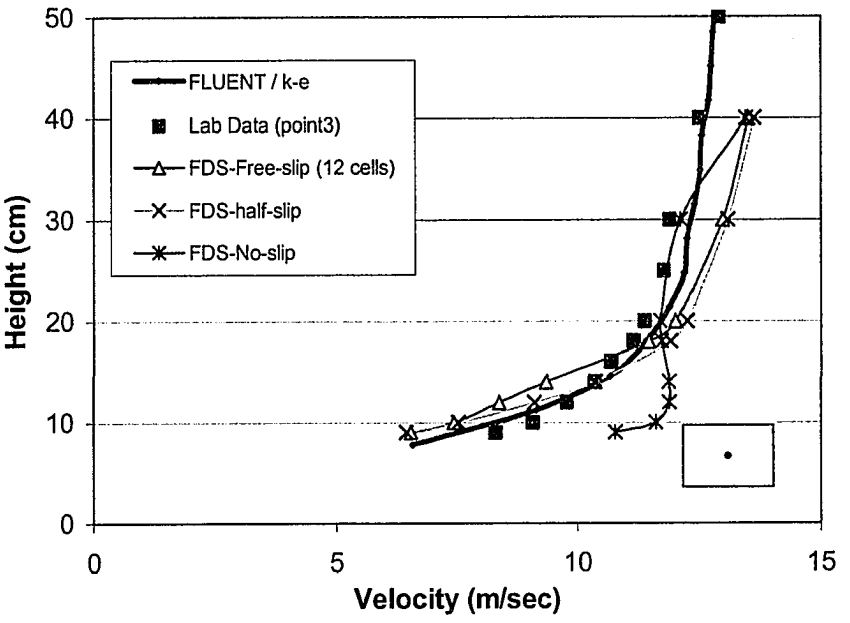


Figure 6.23a Velocity profile at point 3, B/H=1, N=1 using FDS

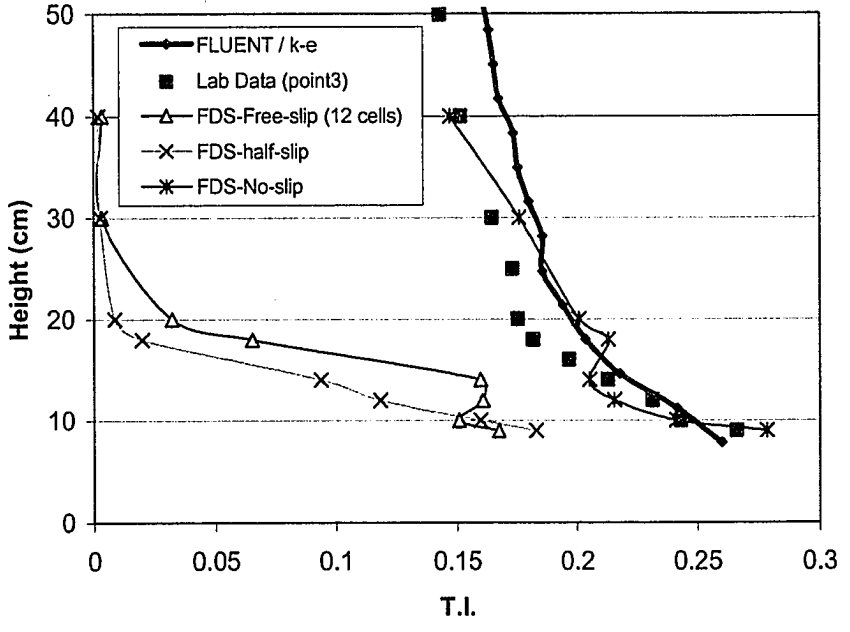


Figure 6.23b Turbulence intensity profiles at point 3, B/H=1, N=1 using FDS

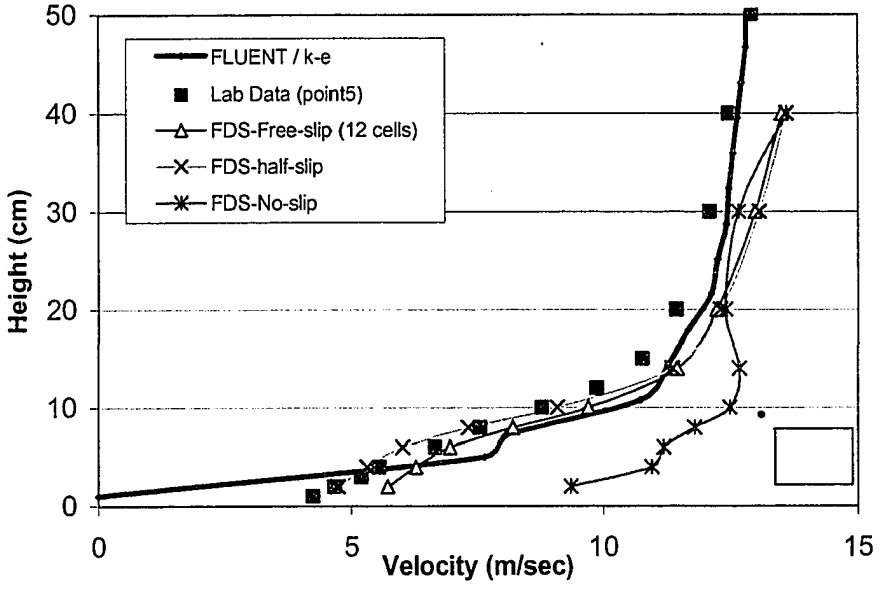


Figure 6.24a Velocity profile at point 5, B/H=1, N=1 using FDS

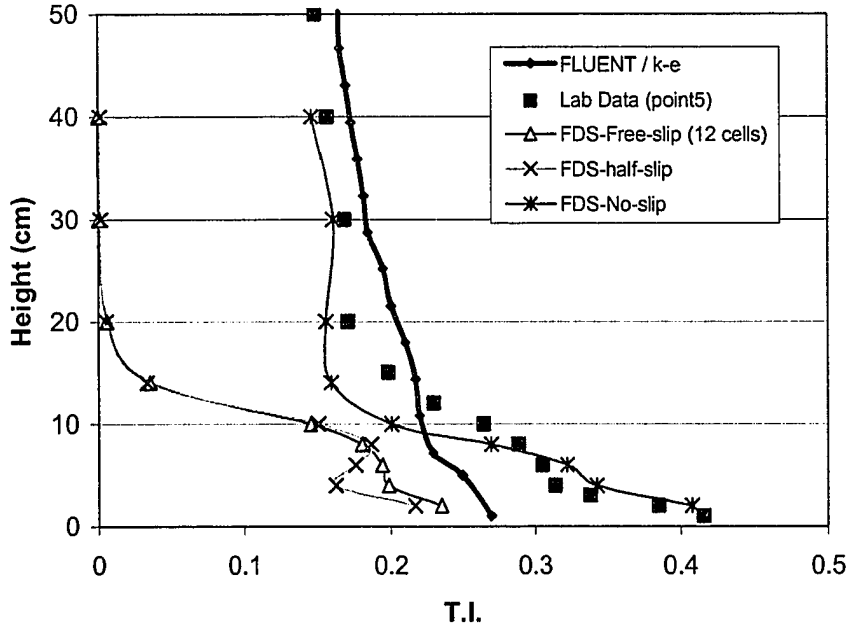


Figure 6.24b Turbulence intensity profiles at point 5, B/H=1, N=1 using FDS

6.2 The Effects of Surroundings on Surface Pressure on Low-Rise Buildings

Very large vortex-induced roof suctions on low-rise buildings have been revealed for isolated buildings in both full scale experiments and wind tunnel tests by many investigators. This section investigates the sensitivity of these high suctions to the presence of multiple surrounding building configurations. The wind tunnel experimental results are presented and are briefly compared with numerical data calculated using CFD.

6.2.1 The Effects of Surroundings

High suction pressures over the building surface are significantly reduced for a building surrounded by other buildings compared to the isolated building in the same approach flow, in terms of the peak, mean or RMS Cp. All three statistical interpretations of pressure variation are significantly reduced by the presence of surrounding buildings. See Figures 6.25 to 6.39 for detailed Cp comparisons on a single building and all surrounding cases.

It was expected that shielding effects depend on the width of the street canyon (ratio of B/H) and the number of the buildings located upstream of the master building. When examining the open-country cases (N=1) for different values of B/H and wind perpendicular to the building wall, the results show that as the value of B/H increases, the shielding effect on the roof Cp's decrease. For example, the –mean, -peak and RMS Cp's for the case of B/H=0.5 are all smaller than the case of B/H=6. Compare the open-country cases (N=1) for different values of B/H with the single building case, the -mean,

-peak and RMS Cp's reduce in all cases. However, in the upwind region of the roof or of the centerline of the master building, RMS and –peak Cp's are larger than those of the single building case due to the flow separation occurring at the forward corner. The upwind wall cases have similar results to the roof cases. The shielding effects become larger in the cases of lower B/H. (See Figures 6.40 to 6.42).

For urban roughness cases (N=8), the shielding effects have similar trends to the open-country cases mentioned above. However, the shielding effects on the urban roughness cases are better than the open–country cases, because the number of buildings located upstream of the master building is greater. (See Figures 6.43 to 6.45).

Mean, RMS and –peak pressure coefficients measured in the wind tunnel for a corner roof point (Tap #1) for the wind azimuths range from 0 degree to 90 degrees are shown at Figures 6.47, 6.48 and 6.49. Pressure tap #1 corresponds to the tap 50101 as absented in the TTU/WERFL building (see Fig 4.3, Ham's diddertation) Figure 6.46 shows a schematic for pressure coefficient measurement at different approaching angles. For mean pressure coefficient, the results show that the maximum value of –1.8 occurs at the wind angle of 10 degrees for the single building case. For other cases, the maximum mean Cp's reduce to –0.3, -0.7 and –0.5 for cases of B/H=0.5, B/H=1 and B/H=2, respectively. For RMS pressure coefficient, the result of the single building case shows that the maximum RMS Cp is 0.8 at the wind angle of 20 degrees. The values of RMS reduce to 0.1, 0.3 and 0.35 for cases of B/H=0.5, B/H=1 and B/H=2, respectively. For –peak pressure coefficient, the maximum value of the single building case is –4.1 at the wind angle of 10 degrees. The maximum values of –peak reduce to –0.8, -1.6 and –1.5

for cases of B/H=0.5, B/H=1 and B/H=2, respectively. The case of B/H=0.5 has the maximum reduction rate for each pressure coefficient. The surroundings lead to a reduction in magnitude of 83% for the mean Cp, 87% for the RMS Cp and 80% for the – peak Cp. High suction at the roof corner is significantly reduced when surrounding buildings are presented for all cases of wind flow angle varying from 0 to 90 degrees.

The effects of surroundings significantly reduce the pressure coefficients, especially when the width of the street canyon is smaller (value of B/H is lower). In the case with the same street canyon width, urban roughness cases tend to have greater shielding effects than the open-country cases.

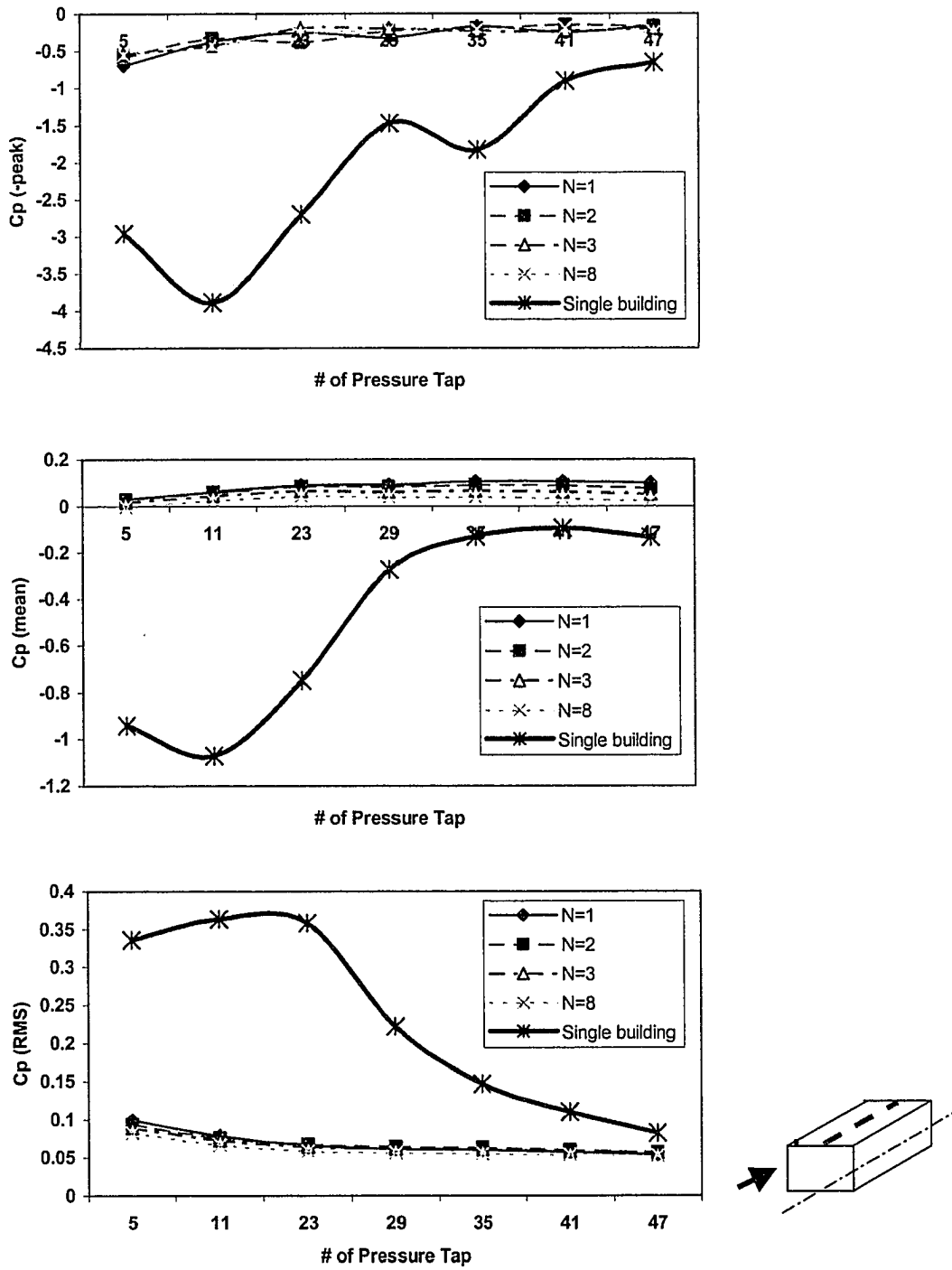


Figure 6.25 Pressure coefficients (-peak, mean, and RMS) on the centerline of roof for cases, B/H=0.5, with different N

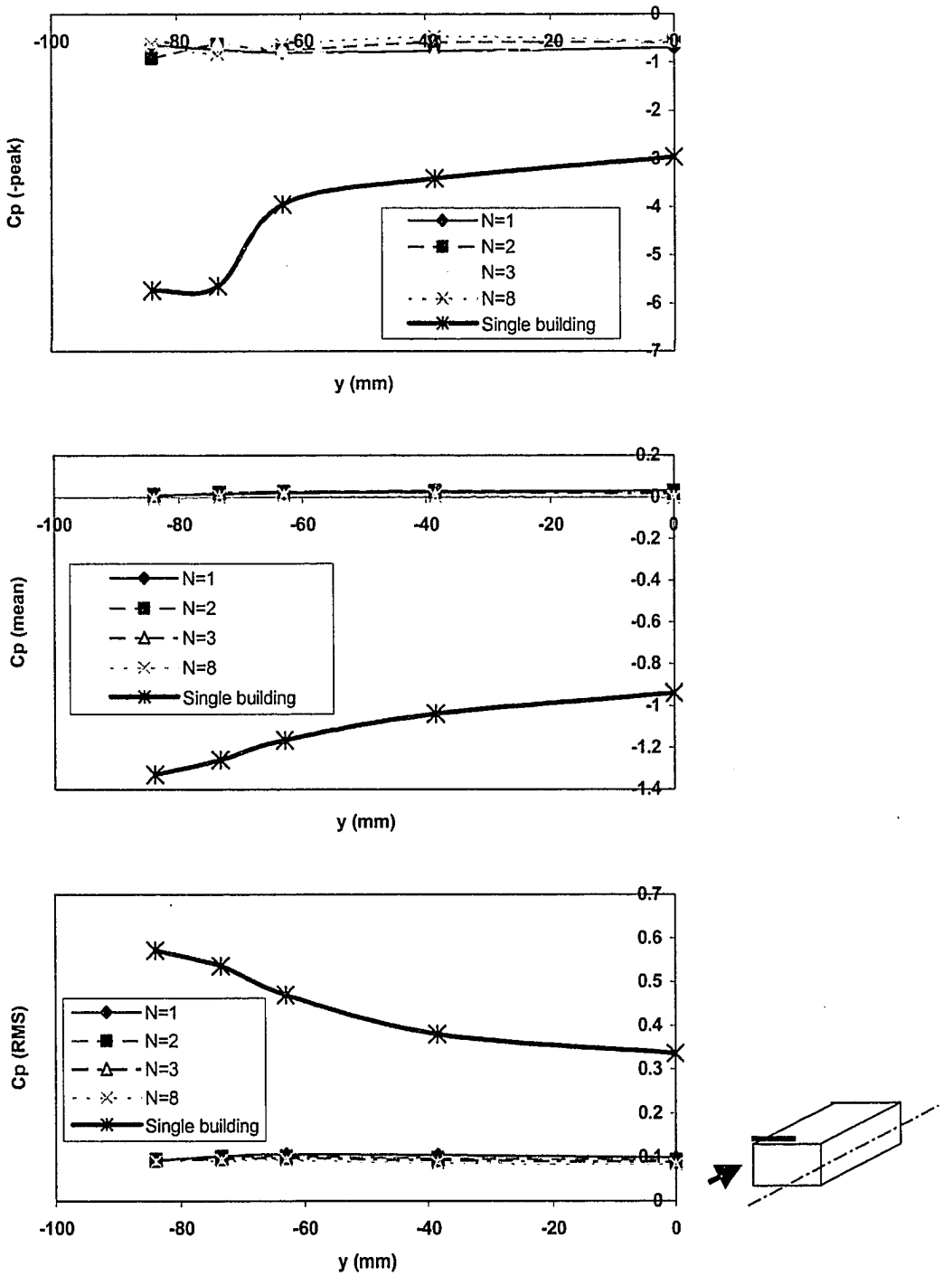


Figure 6.26 Pressure coefficients (-peak, mean, and RMS) on the front edge of roof for cases, B/H=0.5, with different N

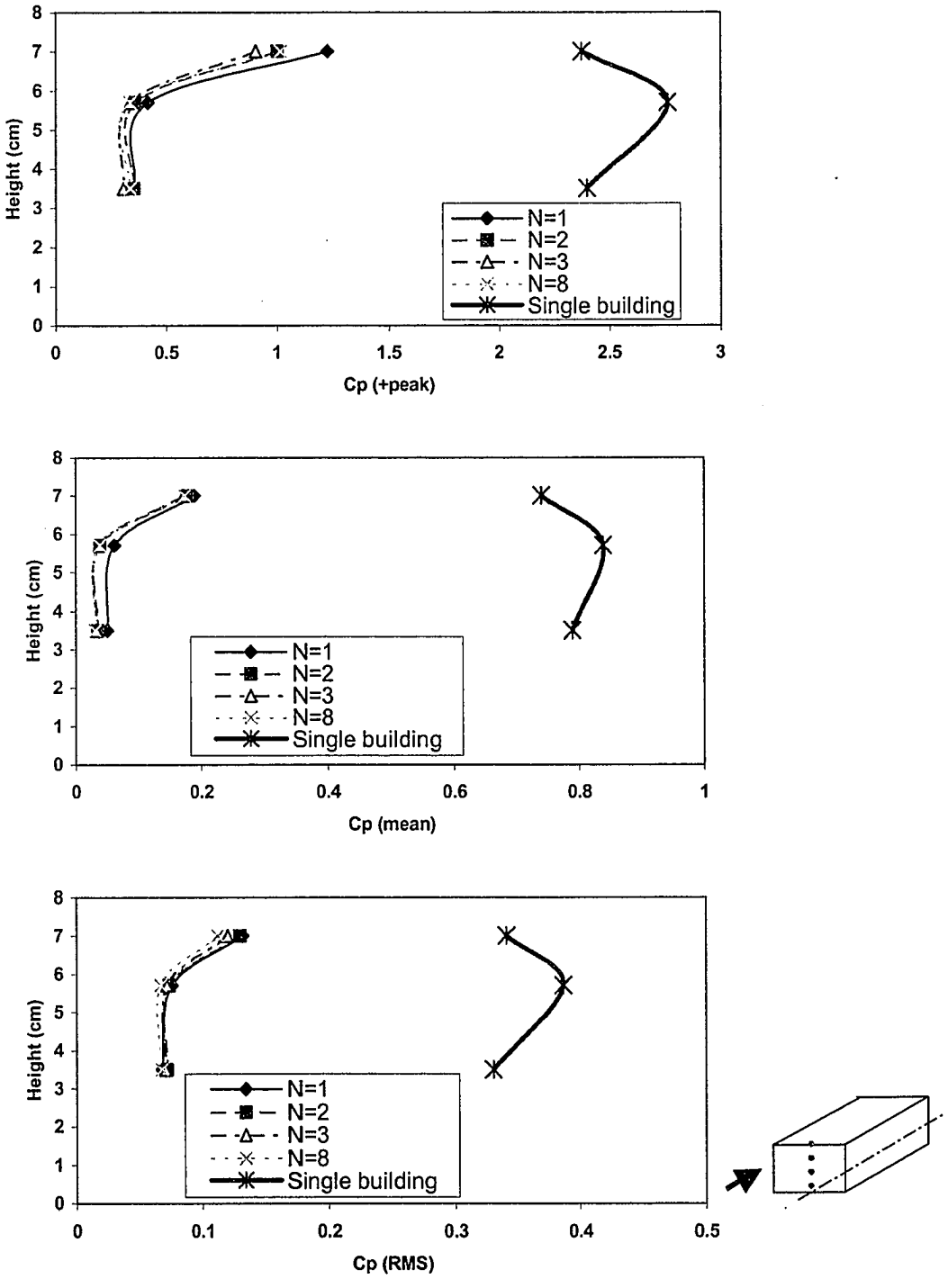


Figure 6.27 Pressure coefficients (-peak, mean, and RMS) on the centerline of downwind wall of street canyon for cases, B/H=0.5, with different N

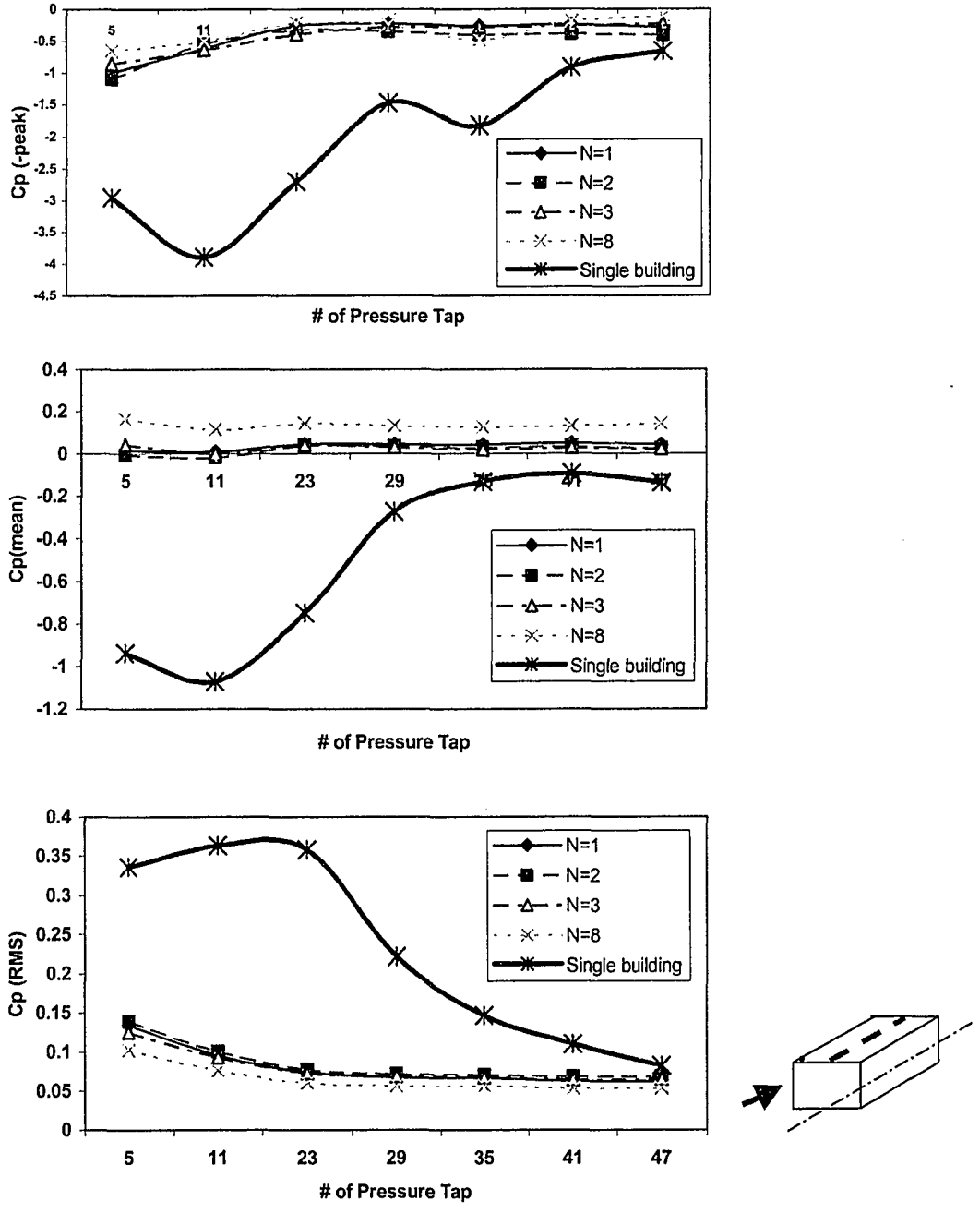


Figure 6.28 Pressure coefficients (-peak, mean, and RMS) on the centerline of roof for cases, B/H=1, with different N

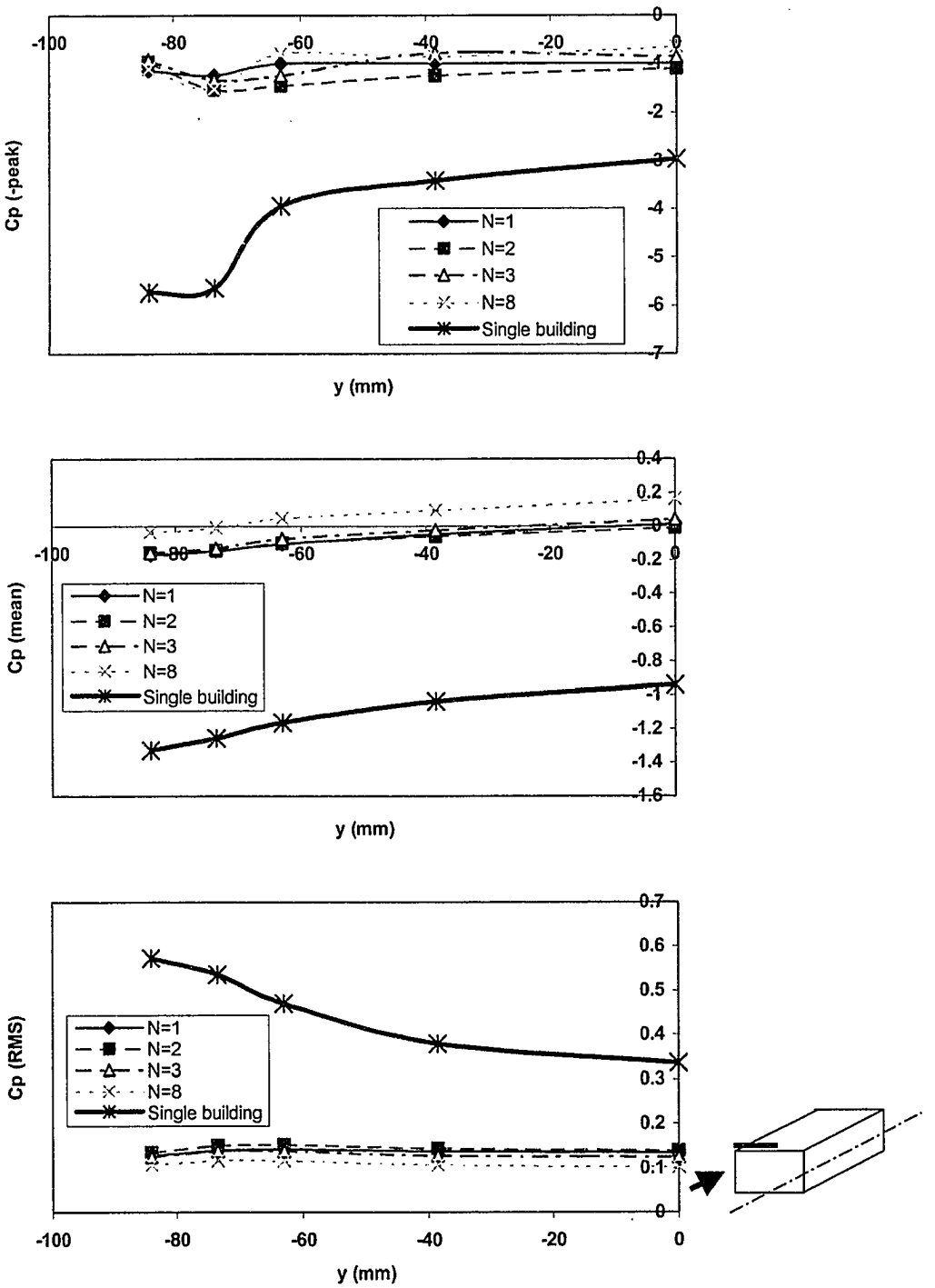


Figure 6.29 Pressure coefficients (-peak, mean, and RMS) on the front edge of roof for cases, B/H=1, with different N

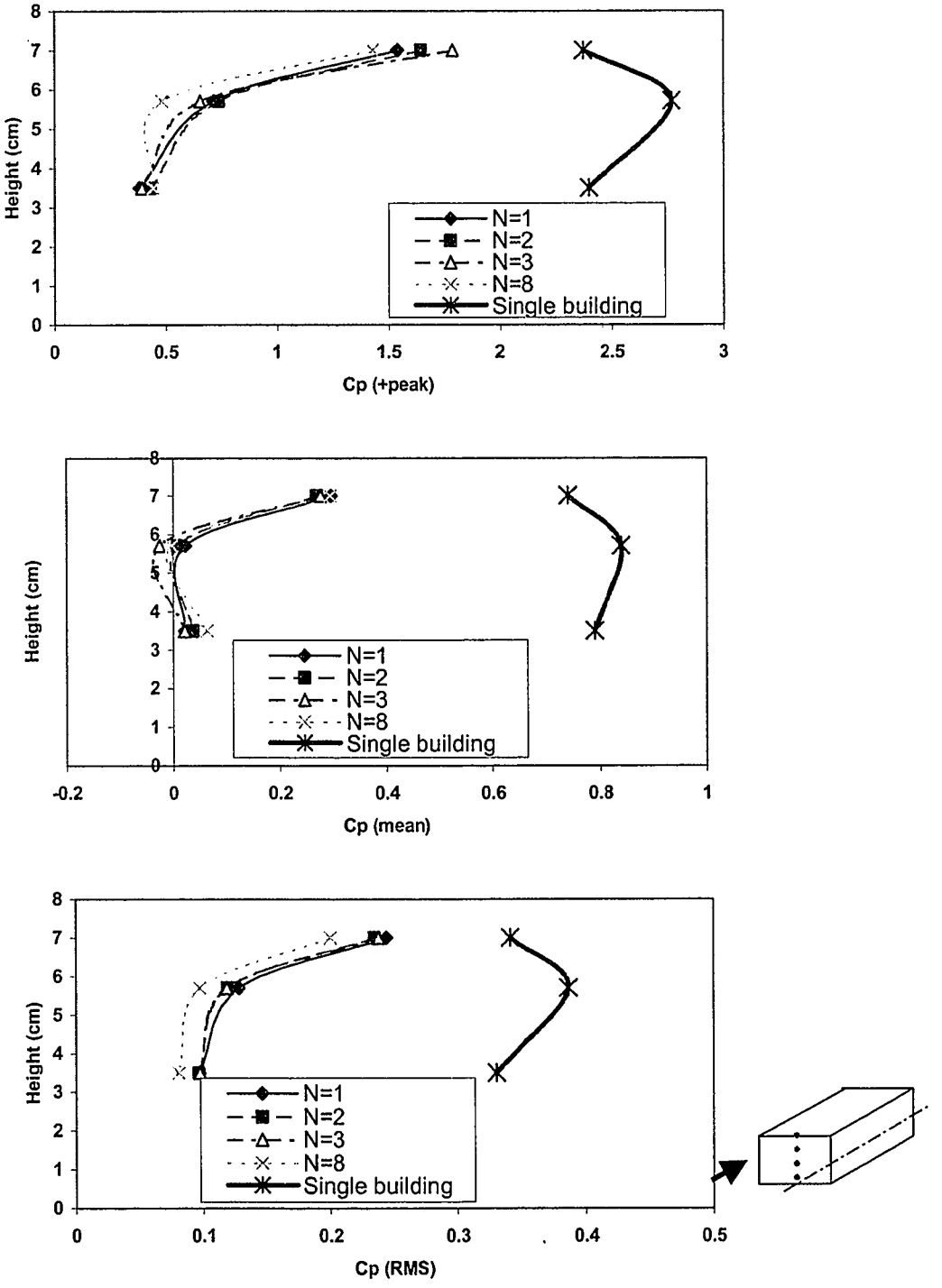


Figure 6.30 Pressure coefficients (-peak, mean, and RMS) on the centerline of downwind wall of street canyon for cases, B/H=1, with different N

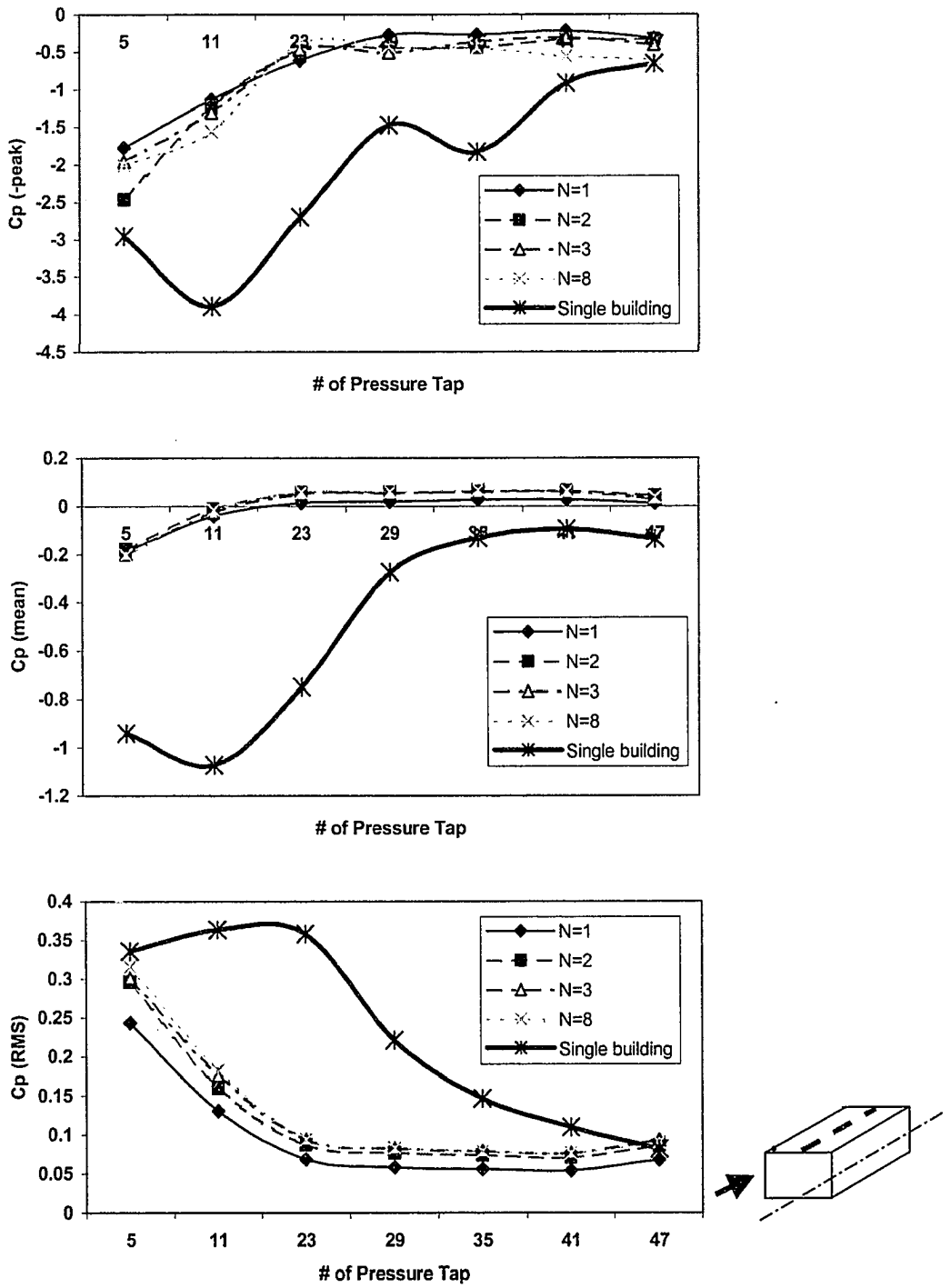


Figure 6.31 Pressure coefficients (-peak, mean, and RMS) on the centerline of roof for cases, B/H=2, with different N

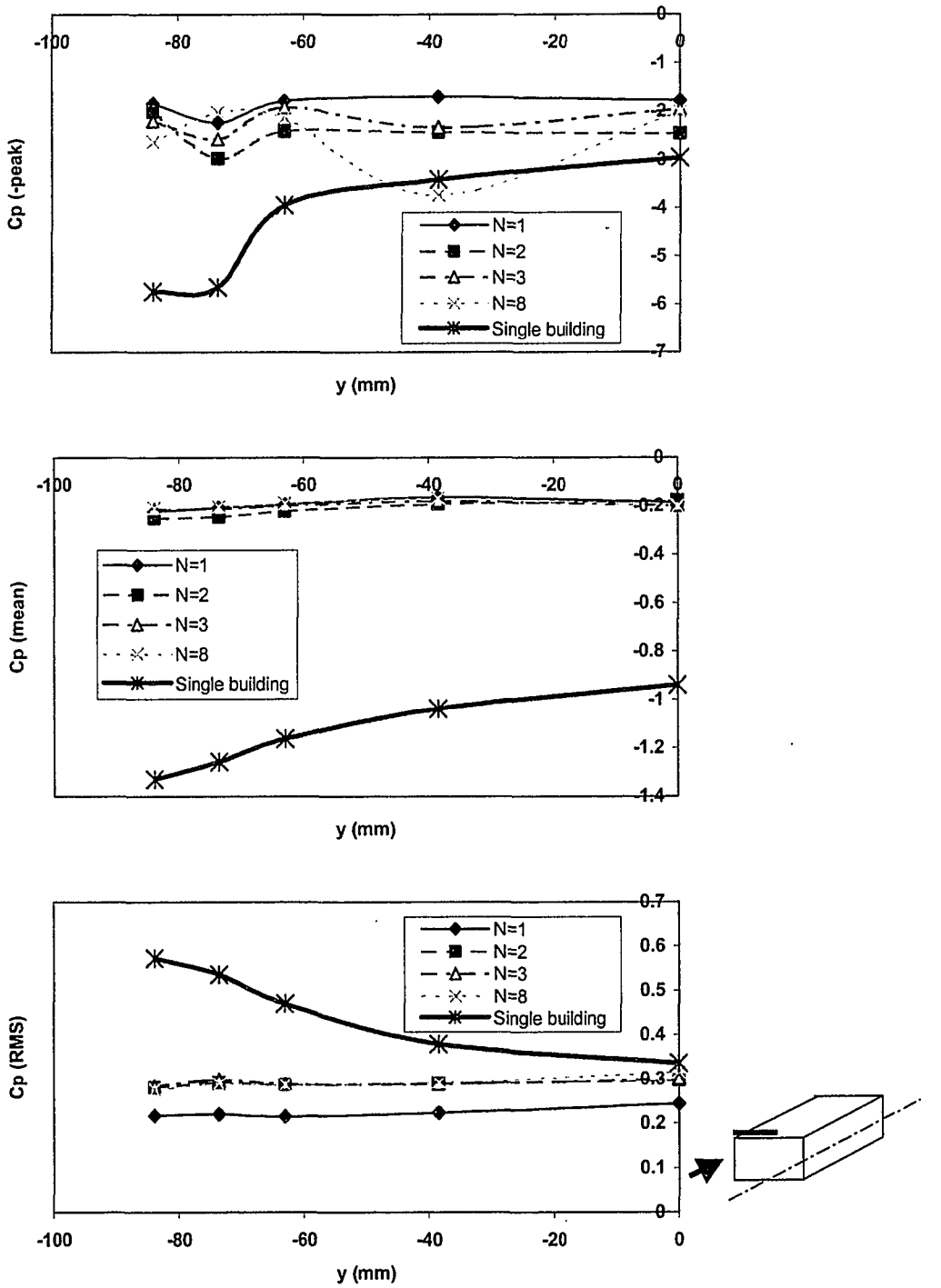


Figure 6.32 Pressure coefficients (-peak, mean, and RMS) on the front edge of roof for cases, B/H=2, with different N

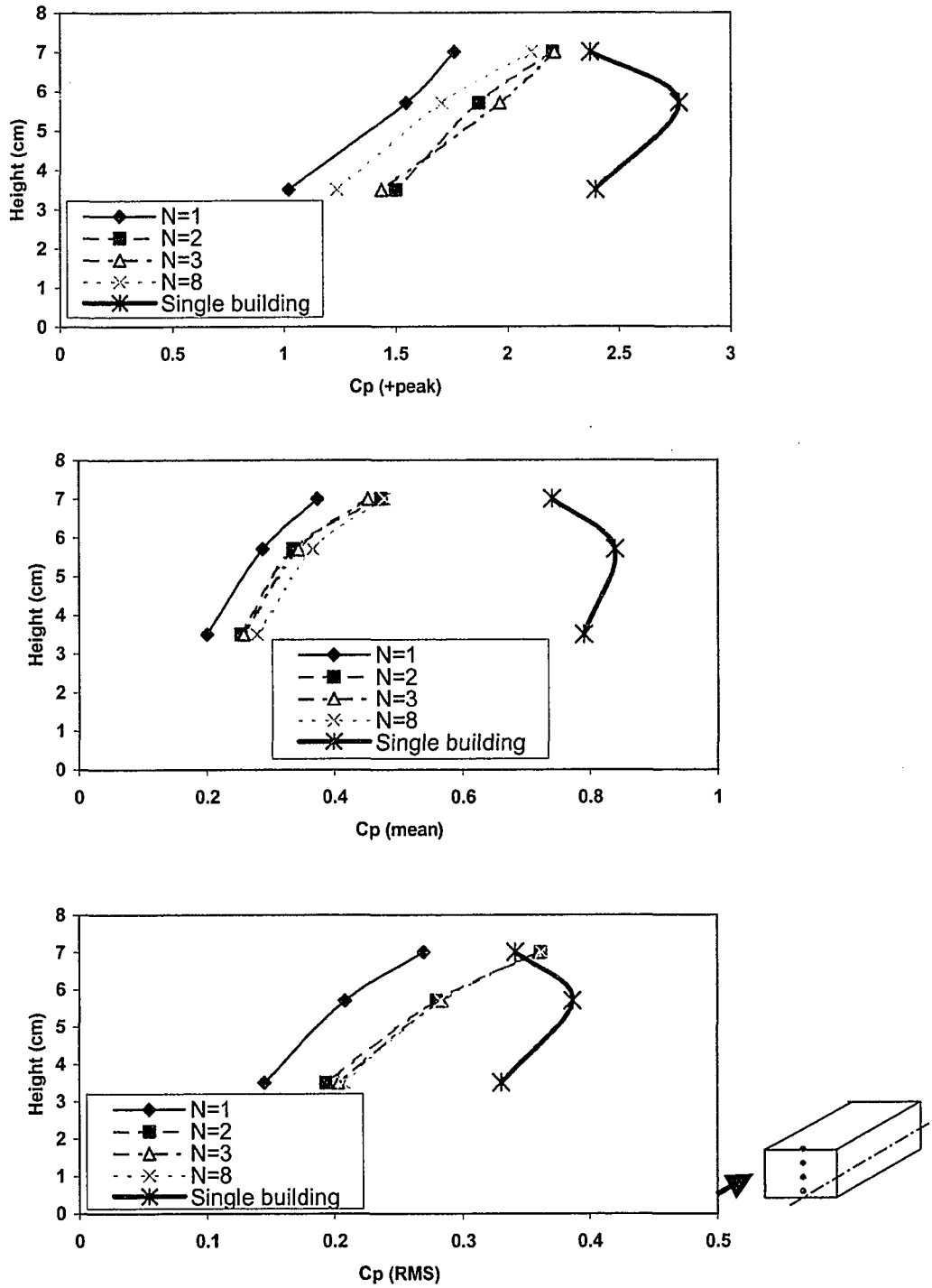


Figure 6.33 Pressure coefficients (-peak, mean, and RMS) on the centerline of downwind wall of street canyon for cases, B/H=2, with different N

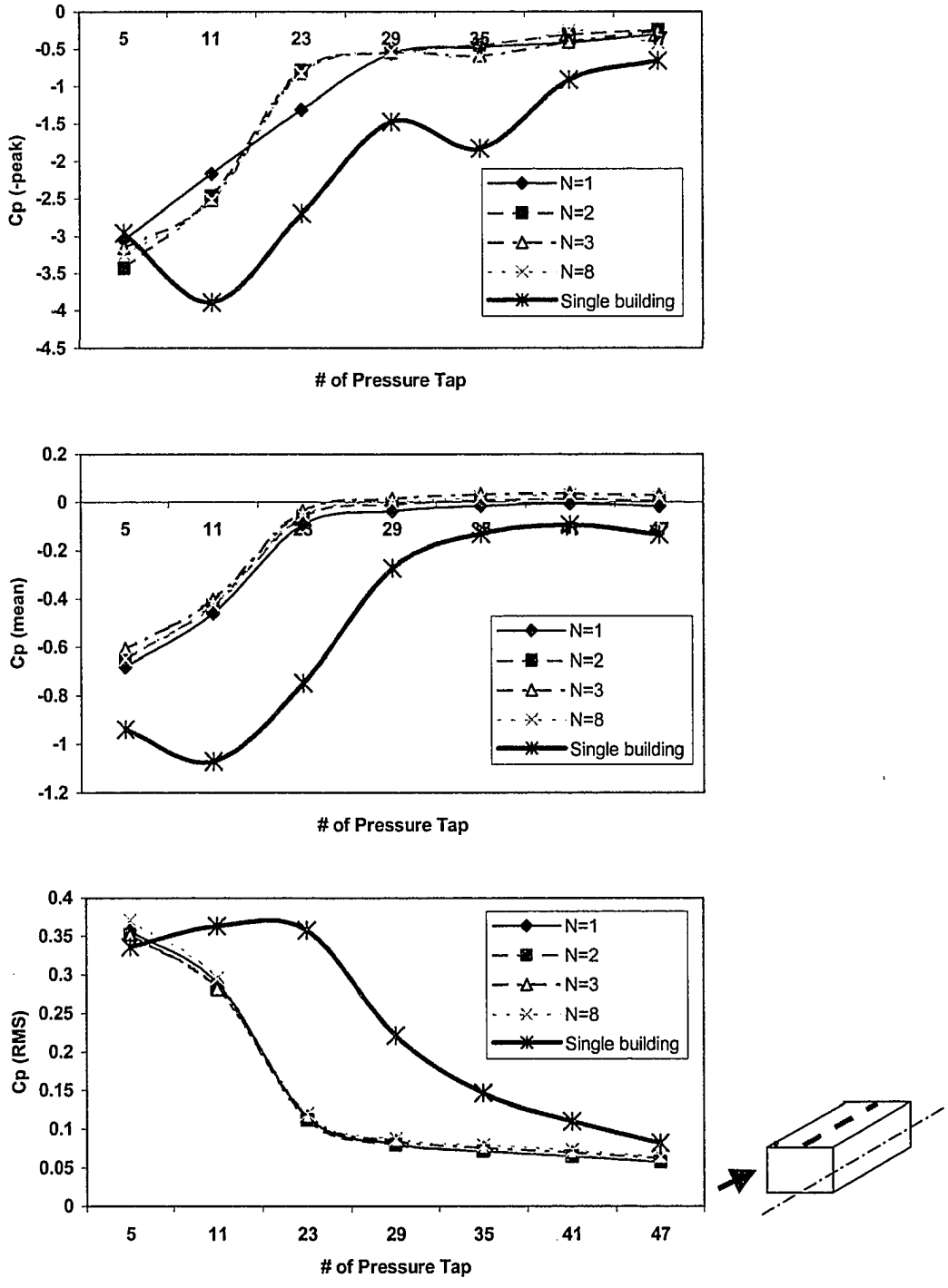


Figure 6.34 Pressure coefficients (-peak, mean, and RMS) on the centerline of roof for cases, B/H=4, with different N

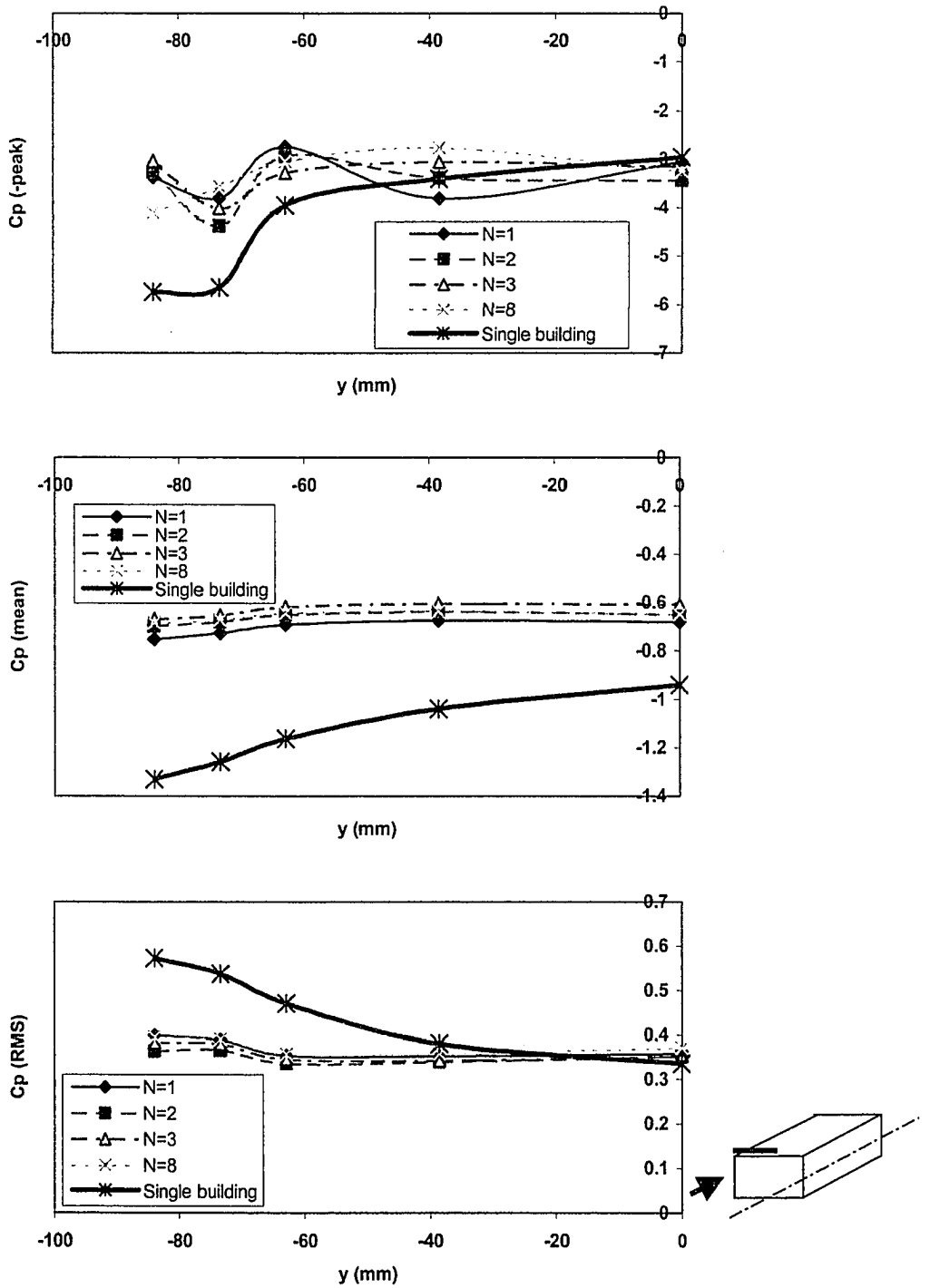


Figure 6.35 Pressure coefficients (-peak, mean, and RMS) on the front edge of roof for cases, B/H=4, with different N

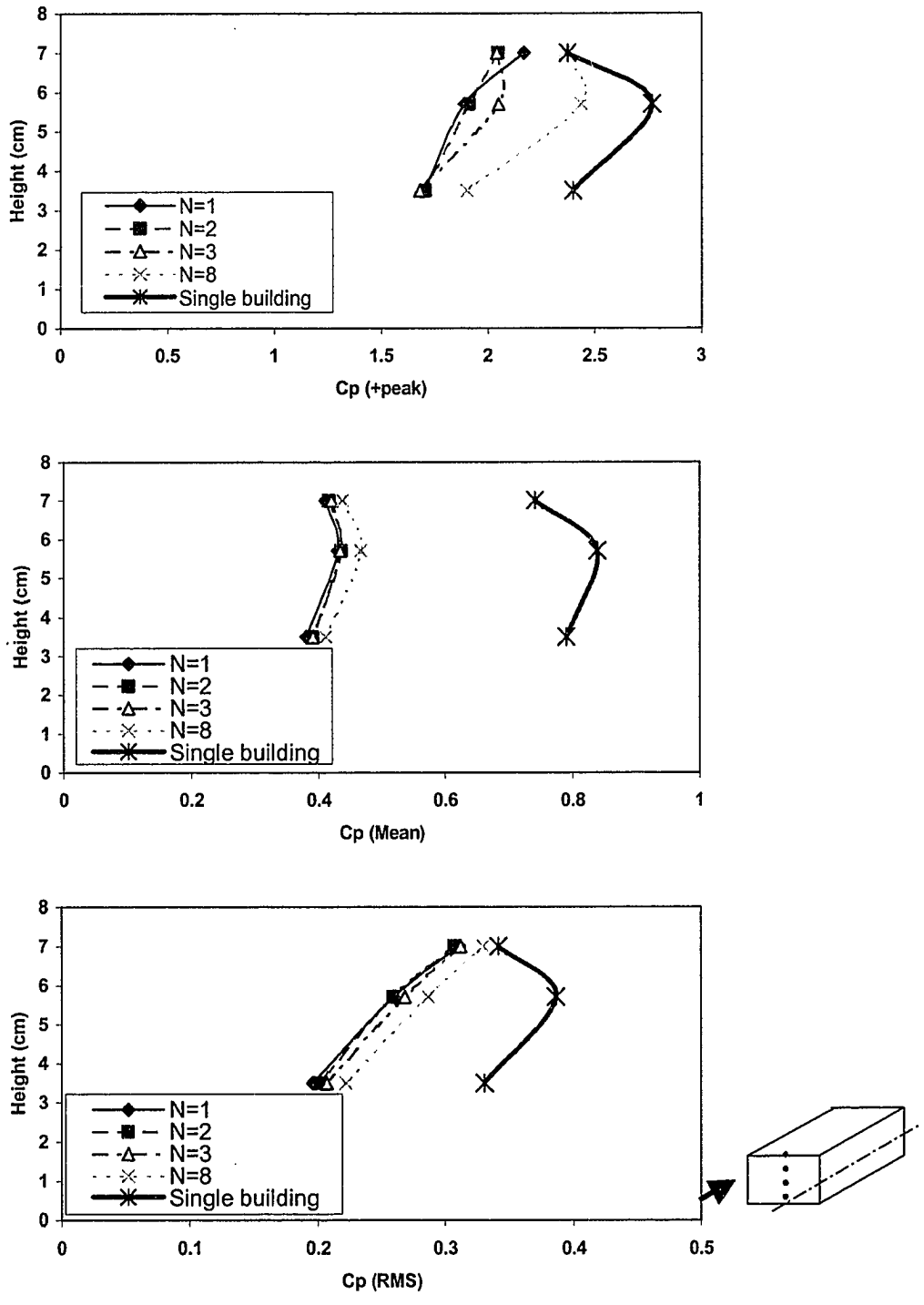


Figure 6.36 Pressure coefficients (-peak, mean, and RMS) on the centerline of downwind wall of street canyon for cases, B/H=4, with different N

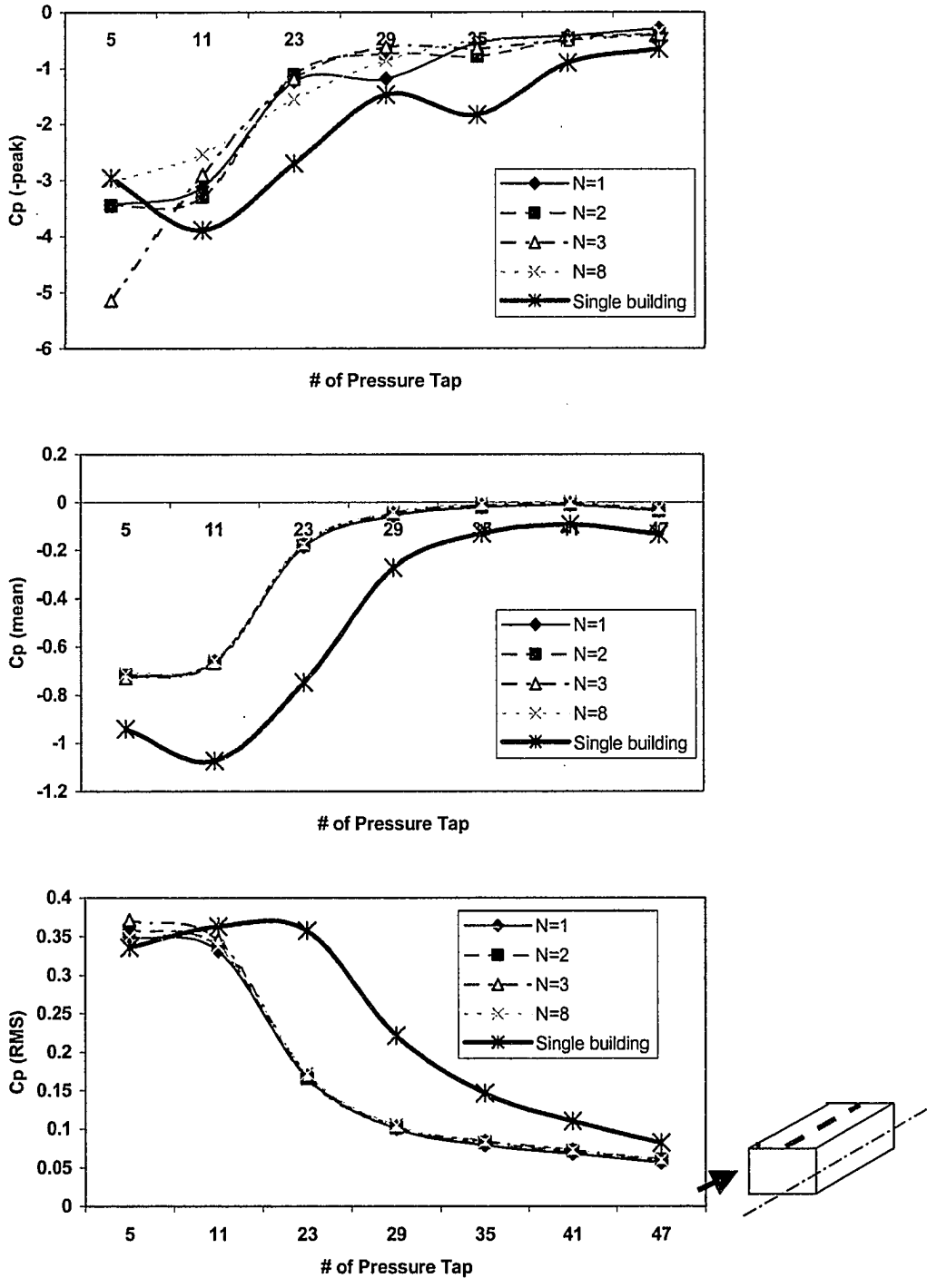


Figure 6.37 Pressure coefficients (-peak, mean, and RMS) on the centerline of roof for cases, B/H=6, with different N

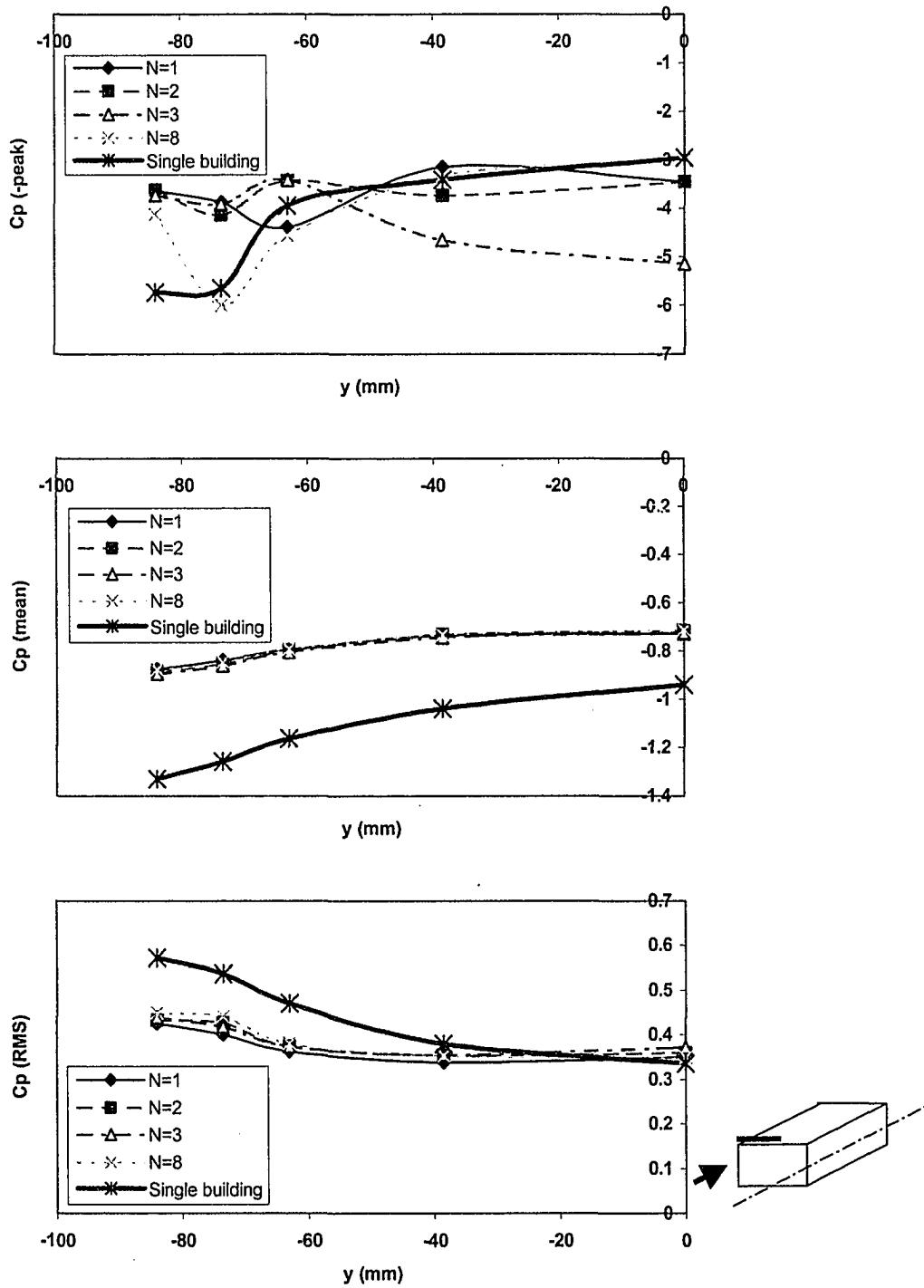


Figure 6.38 Pressure coefficients (-peak, mean, and RMS) on the front edge of roof for cases, B/H=6, with different N

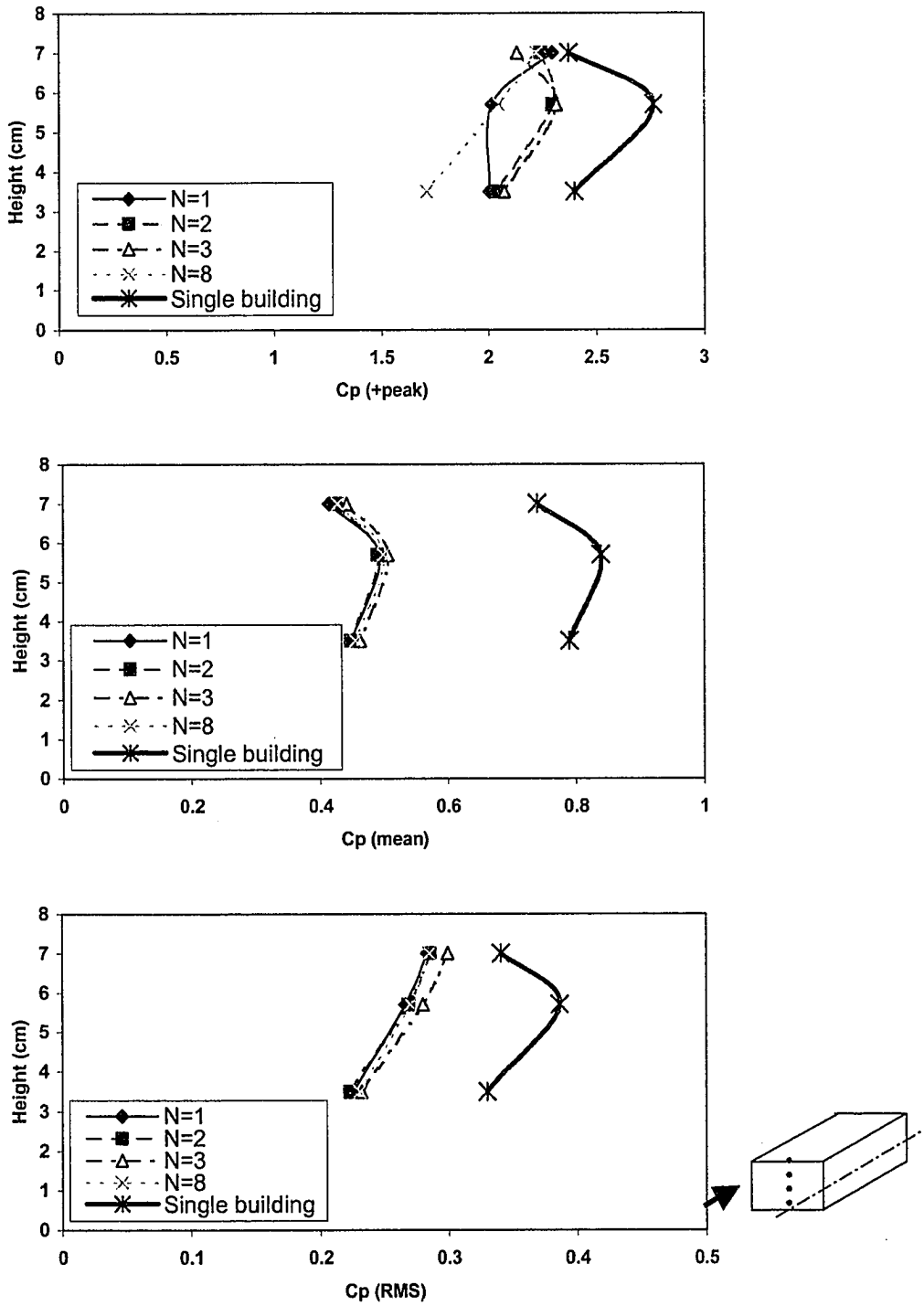


Figure 6.39 Pressure coefficients (-peak, mean, and RMS) on the centerline of downwind wall of street canyon for cases, B/H=6, with different N

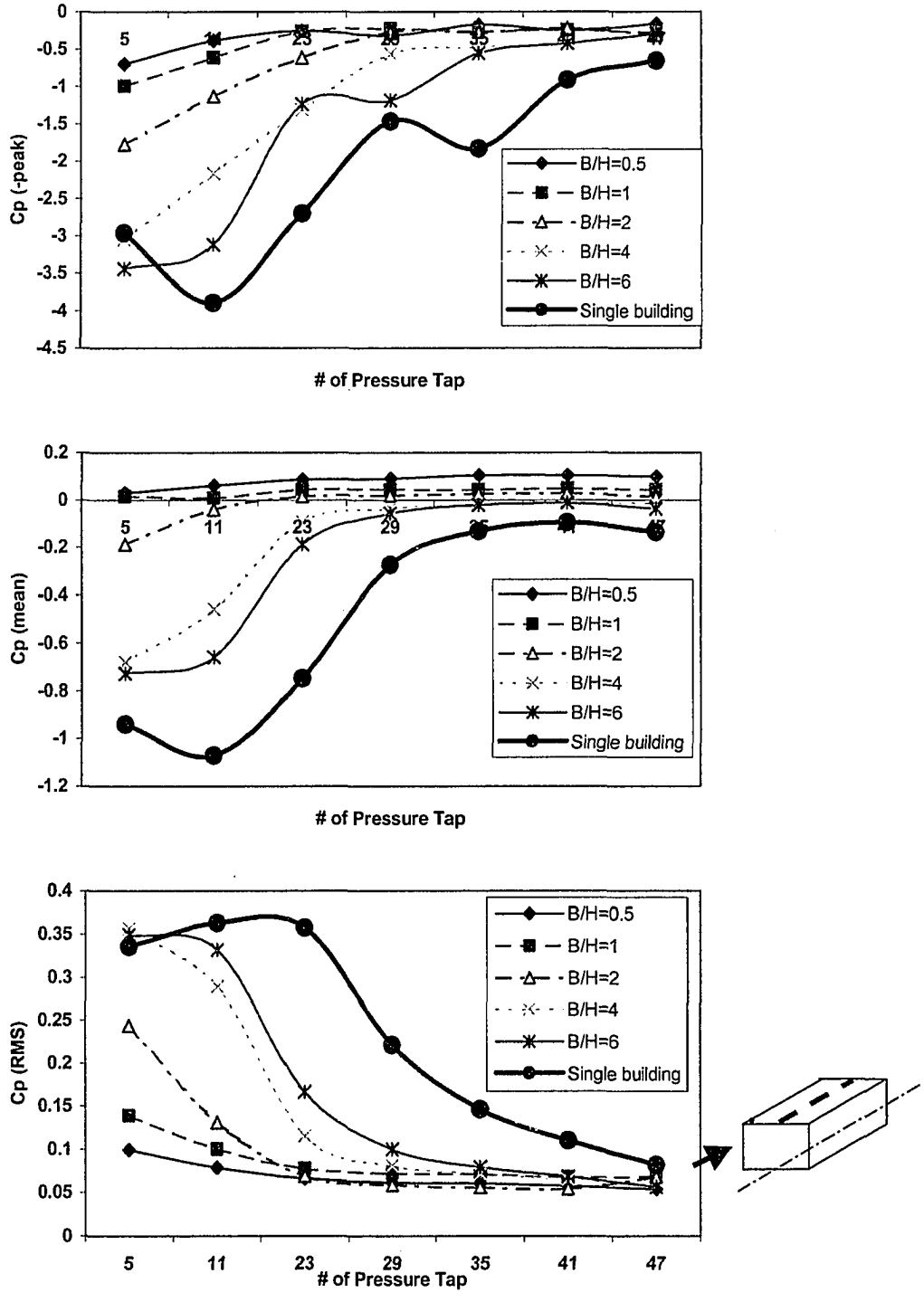


Figure 6.40 Pressure coefficients (-peak, mean, and RMS) on the centerline of roof for cases, N=1 with different values of B/H

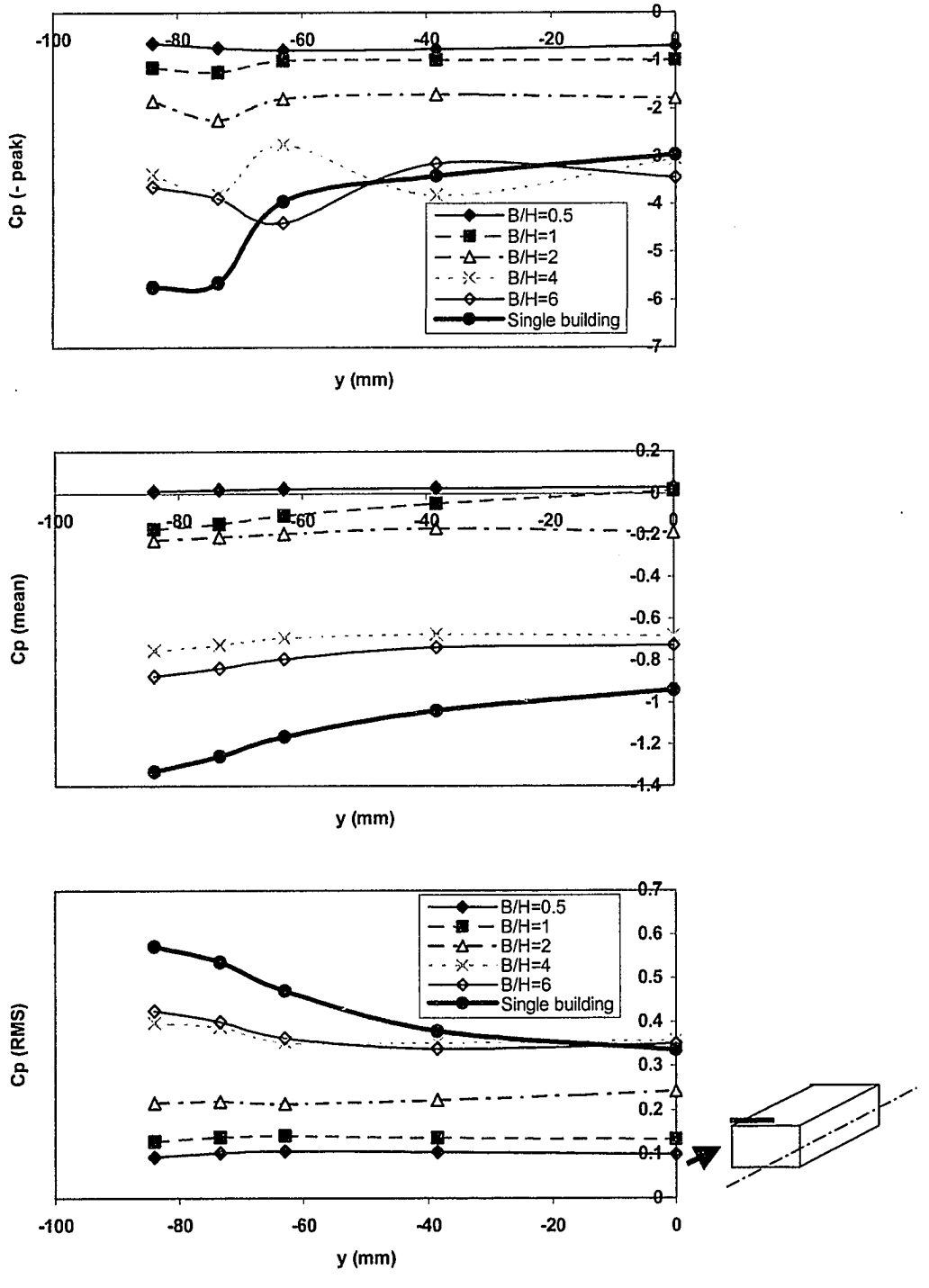


Figure 6.41 Pressure coefficients (-peak, mean, and RMS) on the front edge of roof for cases, N=1 with different values of B/H

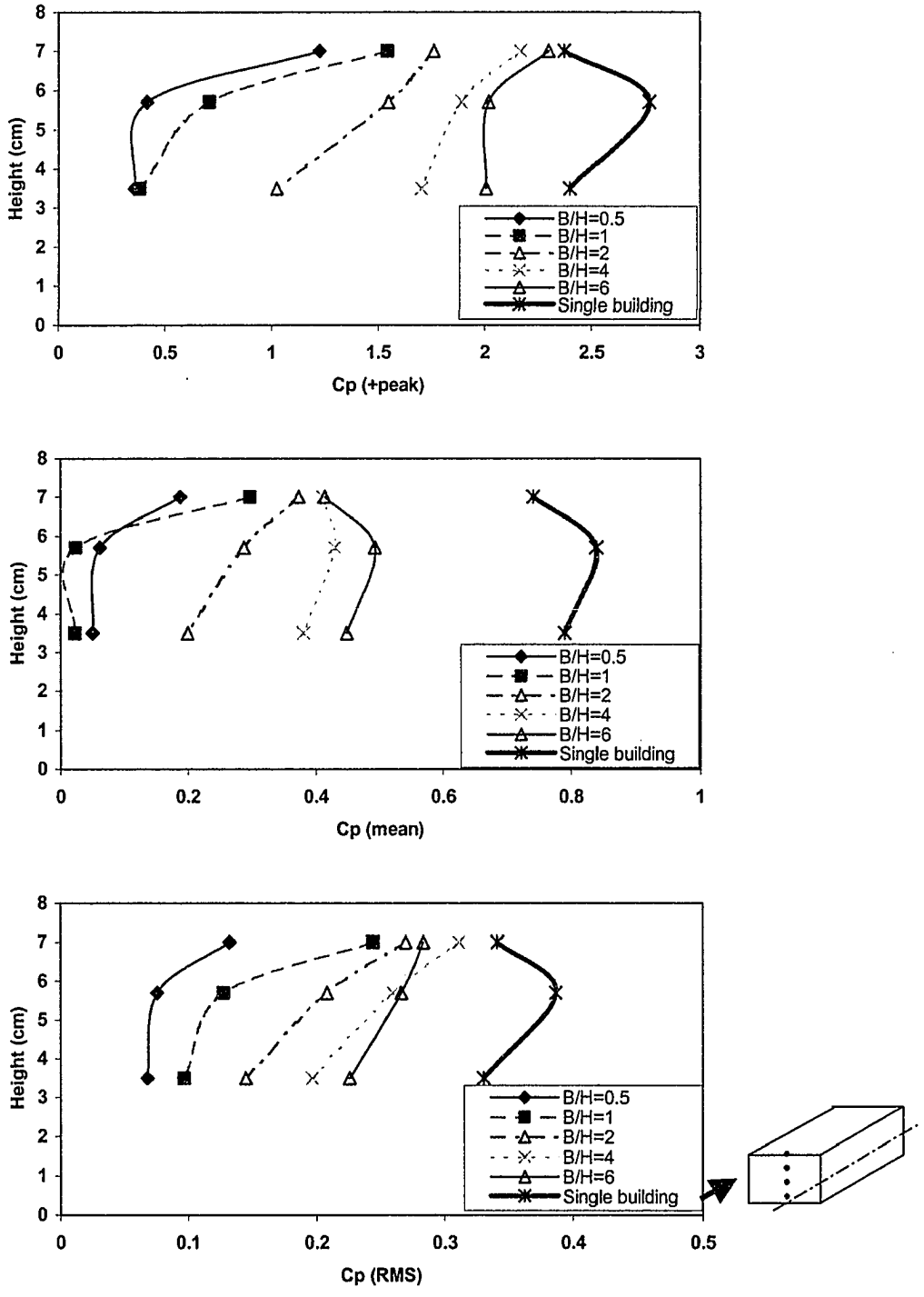


Figure 6.42 Pressure coefficients (-peak, mean, and RMS) on the centerline of downwind wall of street canyon for cases, N=1 with different B/H

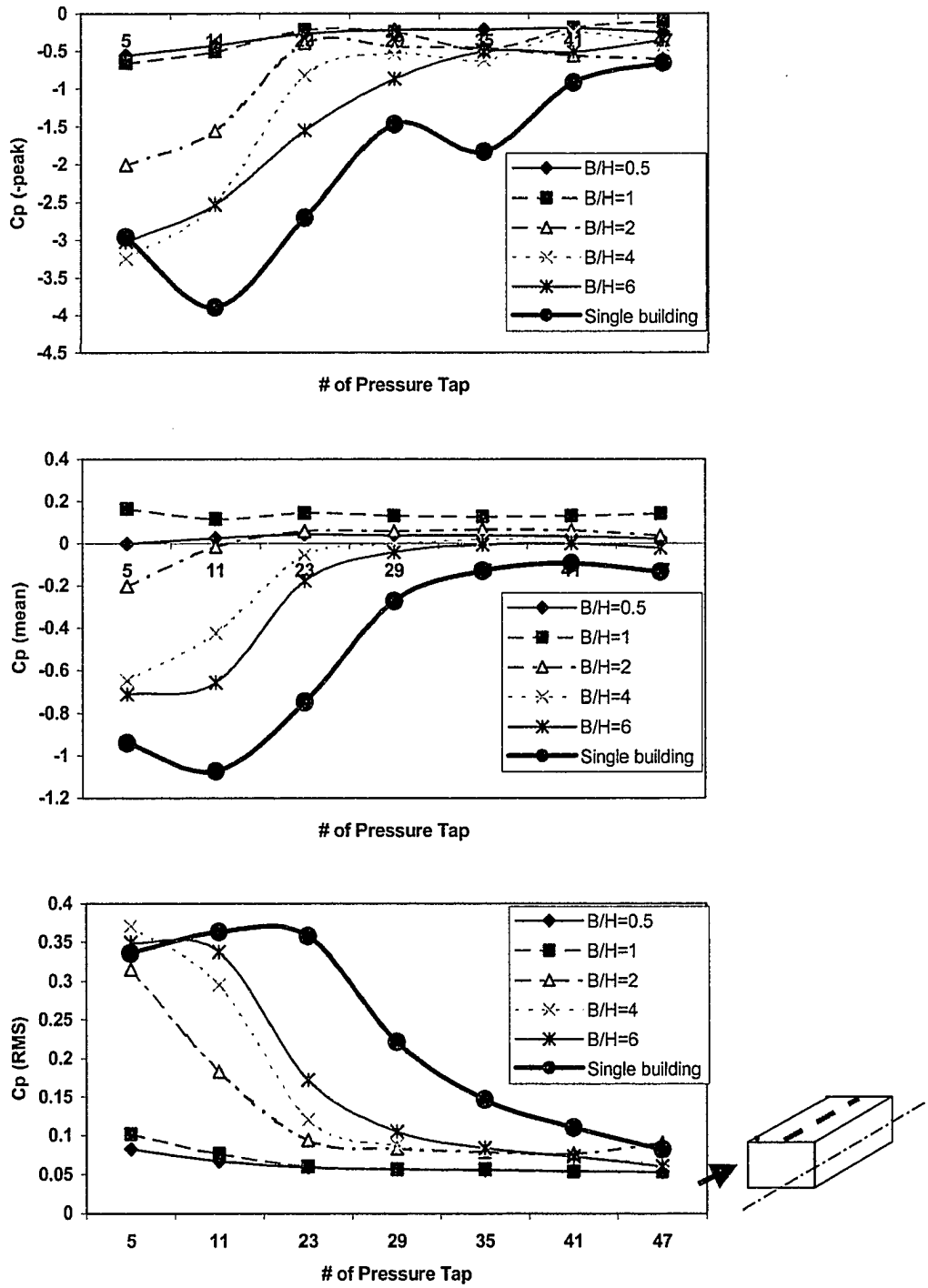


Figure 6.43 Pressure coefficients (-peak, mean, and RMS) on the centerline of roof for cases, N=8 with different B/H

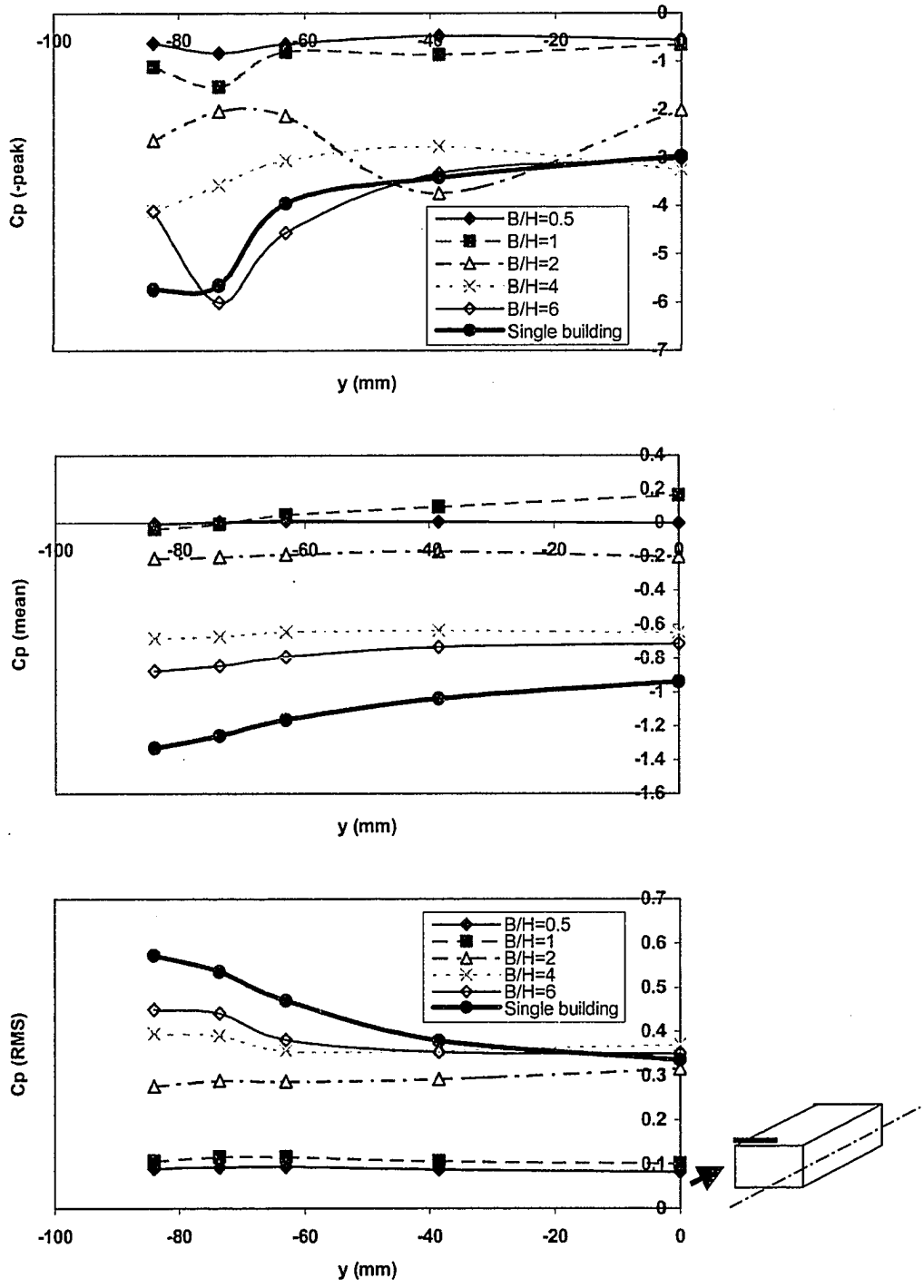


Figure 6.44 Pressure coefficients (-peak, mean, and RMS) on the front edge of roof for cases, N=8 with different B/H

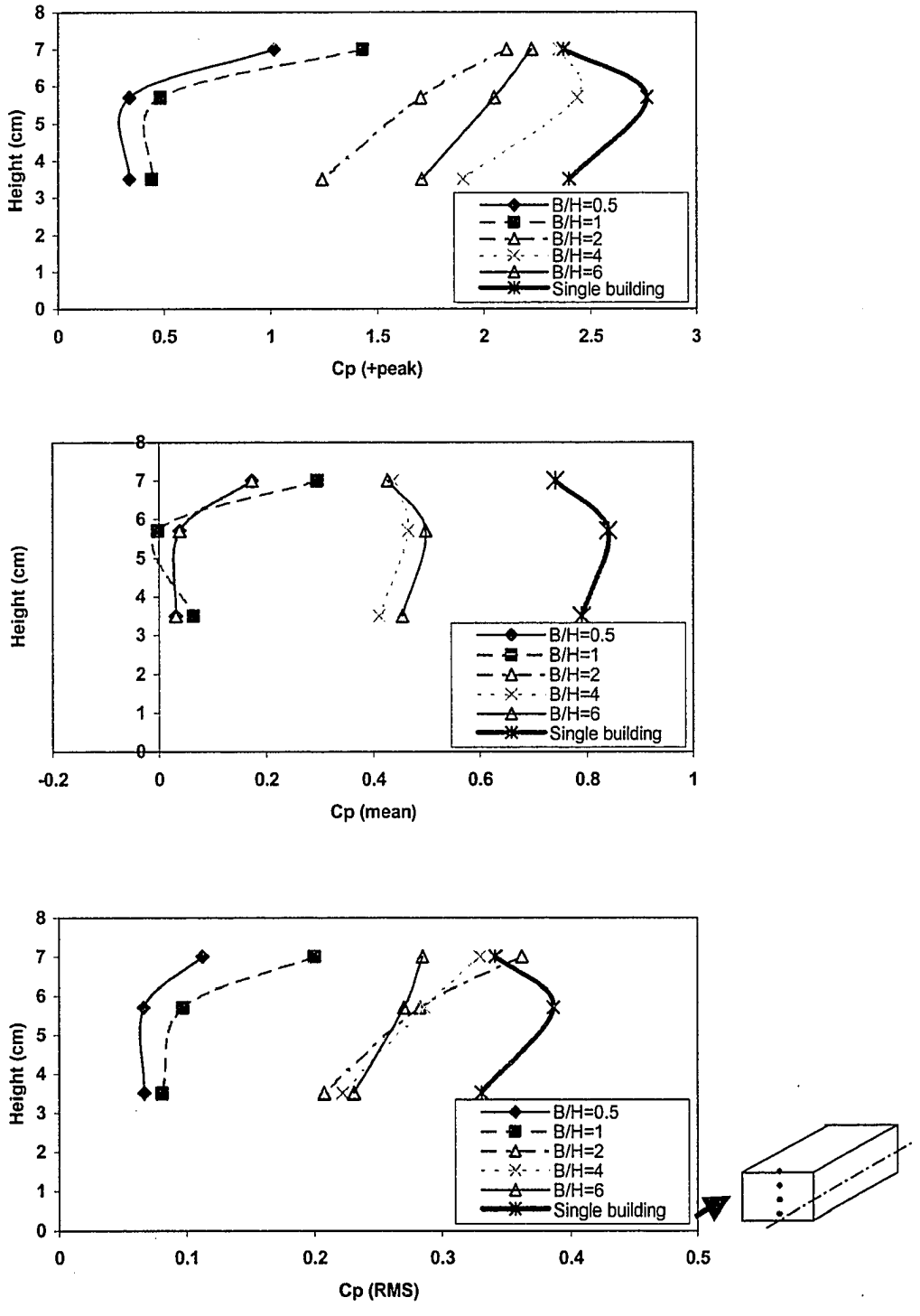


Figure 6.45 Pressure coefficients (-peak, mean, and RMS) on the centerline of downwind wall of street canyon for cases, N=8 with different B/H

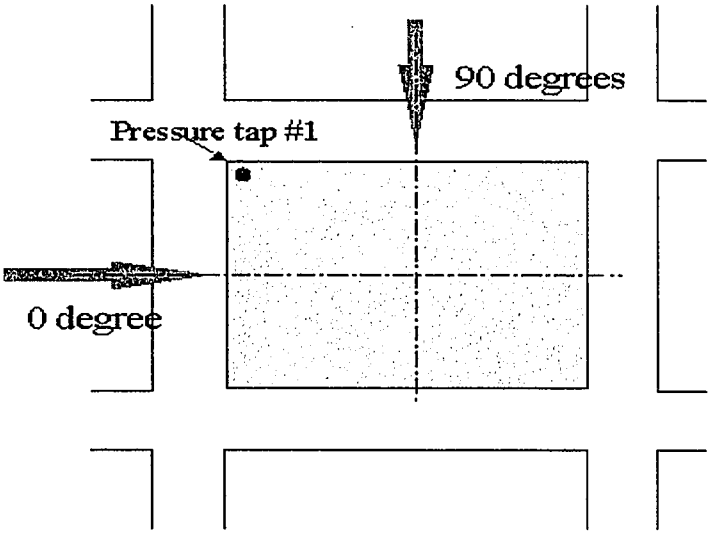


Figure 6.46 The schematic of pressure coefficient measurement in different approaching angles

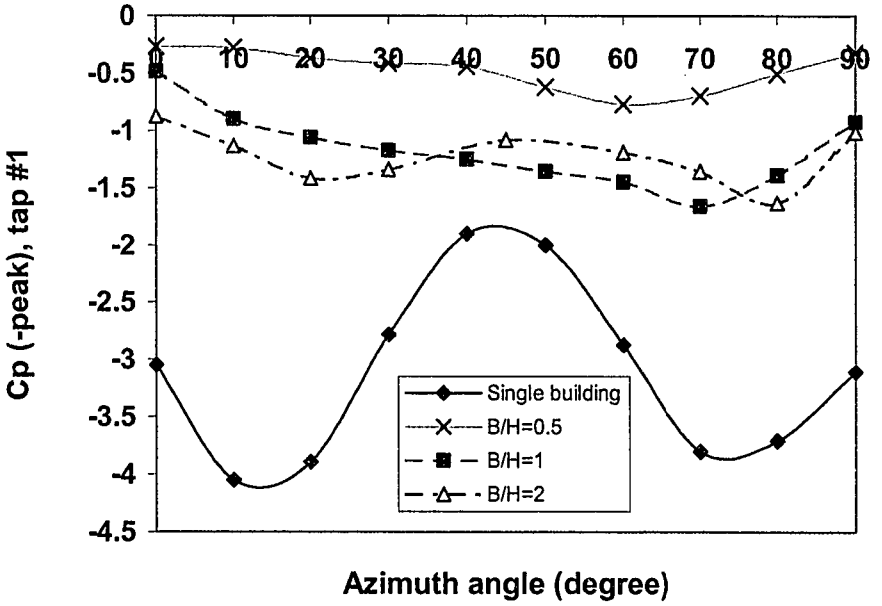


Figure 6.47 -Peak pressure coefficient measurement for a roof corner point for the wind azimuths ranging from 0 to 90 degrees

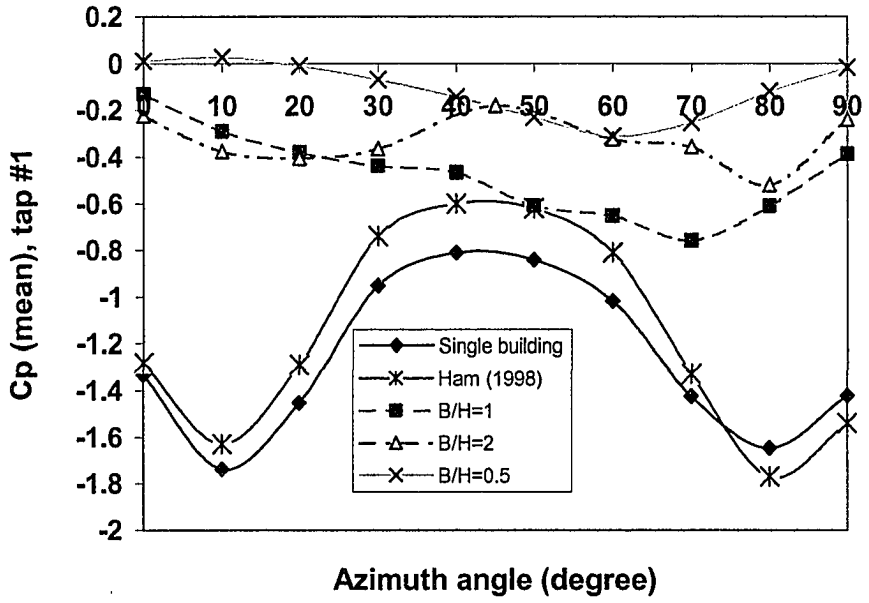


Figure 6.48 Mean pressure coefficient measurement for a roof corner point for the wind azimuths ranging from 0 to 90 degrees

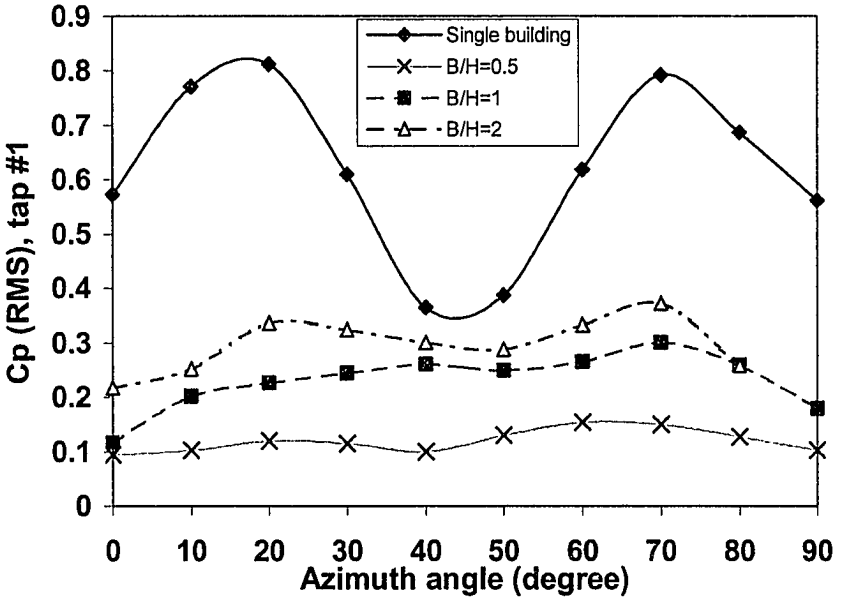


Figure 6.49 RMS pressure coefficient measurement for a roof corner point for the wind azimuths ranging from 0 to 90 degrees

6.2.2 Comparison of Pressure Coefficients of Wind Tunnel Results and Numerical Simulations

Fluent Simulation

The pressure coefficients calculated by Fluent using κ-ε are shown in this section. Since Fluent is a steady-state computer program, only the mean Cp can be determined. Figure 6.50a compares mean wind pressure coefficients on the centerline of the roof of the master building with relevant results from numerical simulations carried out by using the Fluent κ-ε model. The graph shows both numerical data and experimental data of cases for different values of B/H for comparison. The colored dots indicate the experimental data and the different style lines indicate the numerical data. The overall results appear similar to that of the experimental data with the exception of the front edge of the centerline region at flow separation in which the numerical results indicate higher suction. Figure 6.50b shows the comparisons of the mean Cp's along the centerline of the downwind wall of the street canyon. The numerical results are similar to that of the experimental results, except that CFD predicts higher suction on the upper part of the centerline of downwind wall of the street canyon.

There is no root mean square (RMS) pressure coefficient provided from the output of Fluent, since Fluent is a steady-state Reynolds averaged model computer program. However, RMS pressure coefficients can be estimated from calculated mean pressure coefficients, mean velocities and RMS velocities using the equation 6.1 and 6.2 proposed by Paterson (1989).

$$C_p' = 2[k_1/3 + 0.816|\overline{C_p}|\overline{U_0}\sqrt{k_0}]/\overline{V}^2 \qquad 6.1$$

$$C_p'^2 = 8k_0^2/\overline{U}_0^4 + 8\overline{C}_p^2\overline{U}_0^2 k_0/(\overline{U}_0^2 + 2k_0 - 2k_1)^2 \qquad 6.2$$

Where, C_p' is the RMS pressure coefficient,

$\overline{C}_p$ is the mean pressure coefficient,

$\overline{V}$ is a mean reference velocity,

$\overline{U}$ is the mean velocity, and

k is the turbulent kinetic energy.

Subscripts 0 and 1 represent upwind and local values at similar measurement heights to the pressure part respectively. Figure 6.51a shows RMS pressure coefficients plotted against mean pressure coefficients for roof pressure tap from wind tunnel results as predicted results by Equations 6.1 and 6.2. Since the predictions of RMS pressure by both equations at the near zero mean pressure coefficients are poor, the isolated roughness flow case (B/H=6) with highest magnitude of the mean pressure coefficient are chosen here. There is a near relationship between Cp(RMS) and Cp(mean) in figure 6.51 for each set of data. The slope of the line of best fit is about –0.4 for wind tunnel results, -0.21 for equation 6.1, and –0.43 for equation 6.2, respectively.

Two numerical models are presented to compare with wind tunnel results from flow over the urban street area (isolated roughness flow case). Both equations correctly

predict an increase in RMS pressure coefficients with an increase in the magnitude of the mean pressure coefficient. The RMS pressure coefficients calculated from equation 6.2 are in much better agreement with the wind tunnel than those from equation 6.1. The comparison of the RMS Cp on the centerline of the roof between experiments and predictions by using Paterson-Selvam are shown in Figure 6.51b. Figure 6.52a and 6.52b show the comparisons of distributions of mean Cp on the roof for case N=1, B/H=1 between measured and calculated (Fluent) at wind direction 30 and 60 degrees. Both of the graphs show good results with different angles of the approaching winds. The measured values of mean Cp matched the calculated values.

FDS Simulation

FDS uses a time-dependent flow phenomena large eddy simulation (LES) algorithm to simulate field flows. LES can compute fluctuating pressures on buildings due to turbulence. Both mean and RMS Cp's generated from FDS will be compared with the experimental data.

After running the cases of B/H=1, N=1 with three different ground boundary conditions, no-slip, half-slip and free-slip, with the grid resolution of canyon height of 12 cells, the mean Cp's collected from the free-slip and half-slip conditions are found to be close to the experimental data. However, the mean Cp of no-slip condition is found to be significantly different from experimental data. Figures 6.53a, 6.53b, 6.54a and 6.54b show the comparisons of mean and RMS Cp's with different grid resolutions for free-slip boundary condition cases. For mean Cp, the cases show that as the grid resolutions

become larger, the mean Cp collected from FDS becomes closer to the lab data. However, for RMS Cp, predictions of finer grid resolution are not necessarily closer to the lab results. For example, in Figures 6.52b and 6.53b, the results for grid sizes of 9 cells appear to be closer to the lab data. In general, the numerical results of RMS Cp under predict the experimental results. This is most likely due to under prediction of free stream turbulence due to inappropriate inlet turbulence conditions.

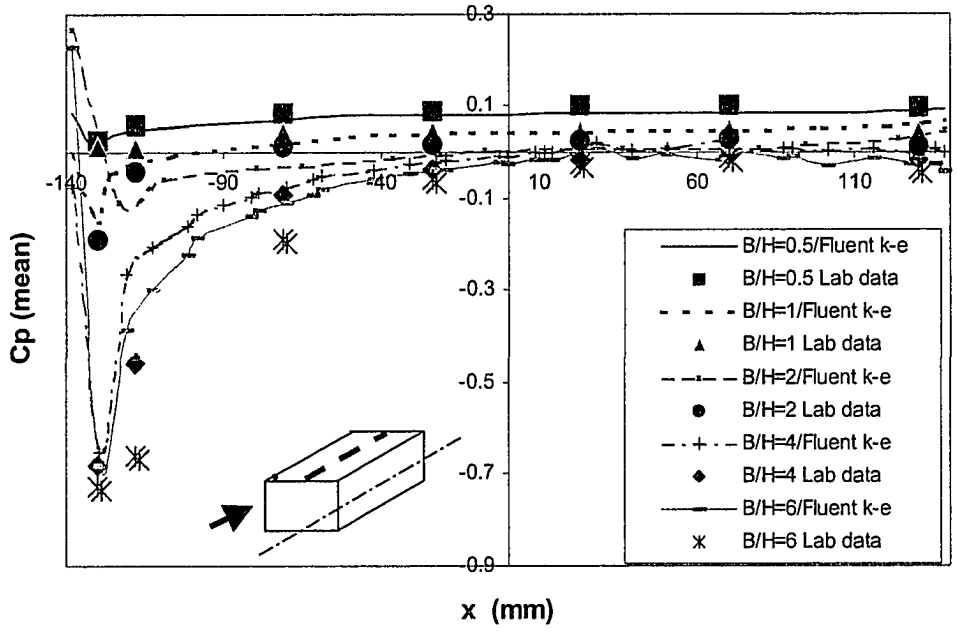


Figure 6.50a Comparisons of mean pressure coefficients on the centerline of the roof for case N=1: experiments and numerical simulation using Fluent κ-ε model

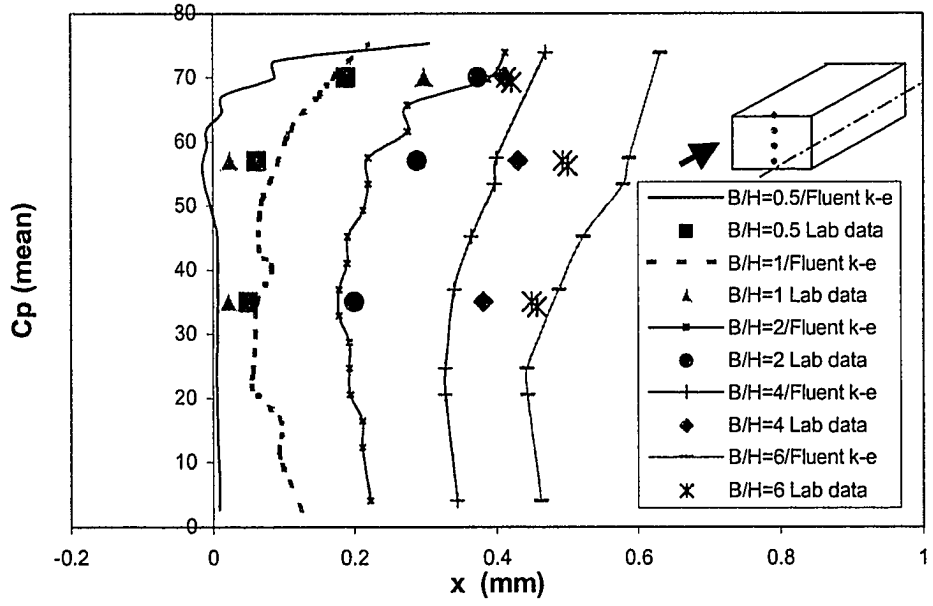


Figure 6.50b Comparisons of mean Cp on the centerline of the downwind wall of street canyon for case N=1: experiments and numerical simulation using Fluent κ-ε model

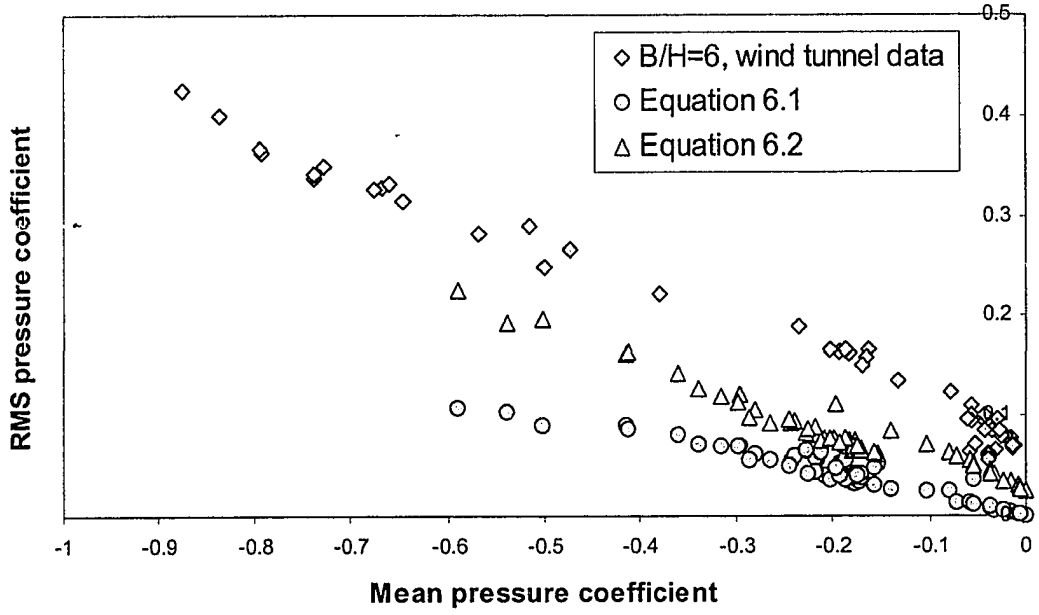


Figure 6.51a RMS vs. mean pressure coefficients form roof tappings, (B/H=6, N=1)

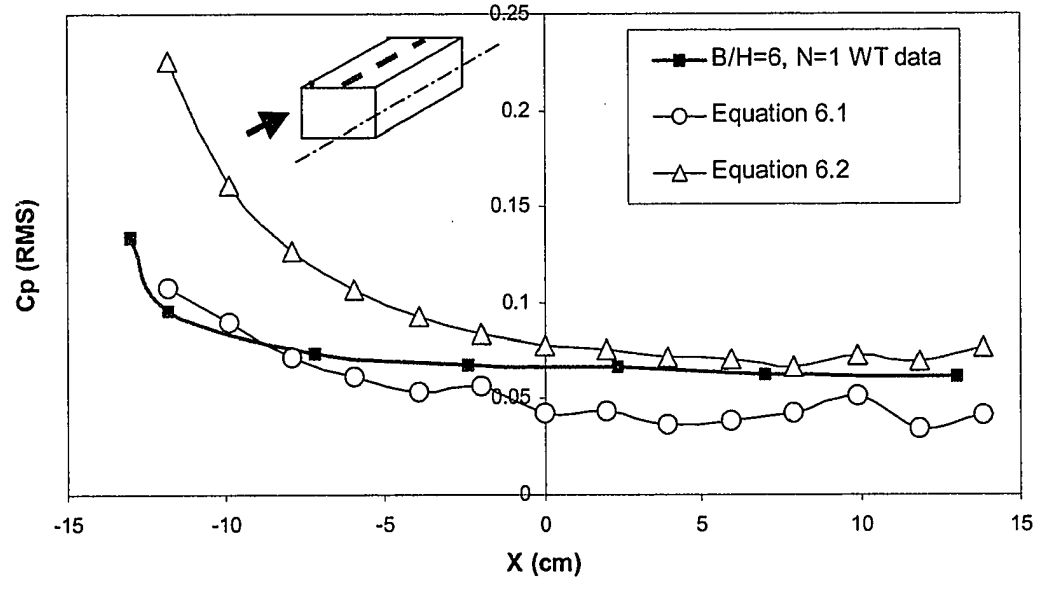
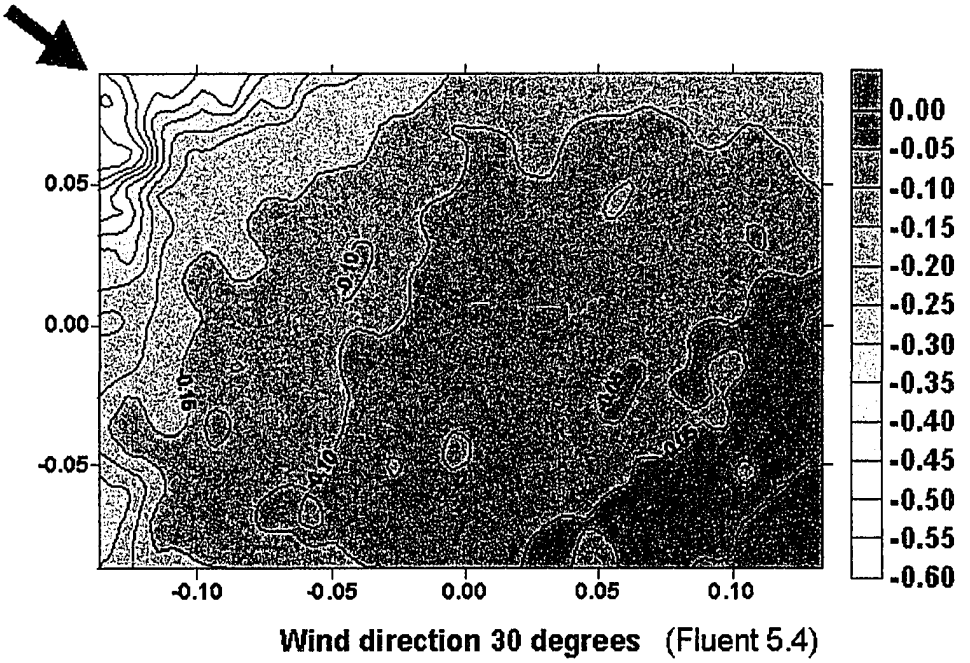


Figure 6.51b Comparison of RMS Cp for case B/H=6, N=1: experiments and predictions by Paterson –Selvam formulas



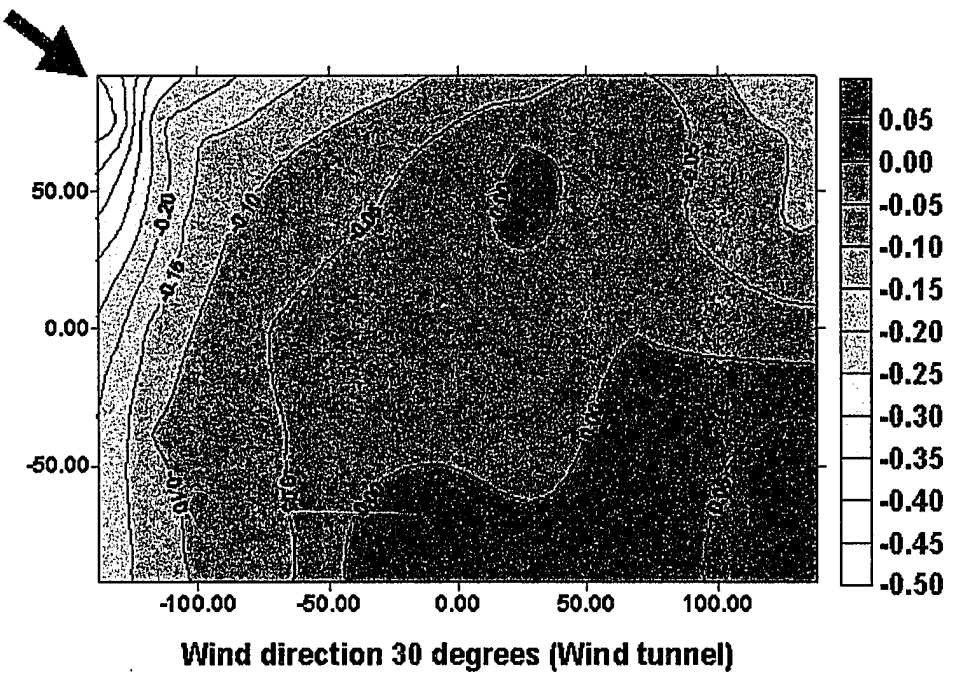


Figure 6.52a Comparison of distributions of mean Cp for case N=1, B/H=1 between measured and calculated (Fluent) at wind direction 30 degrees

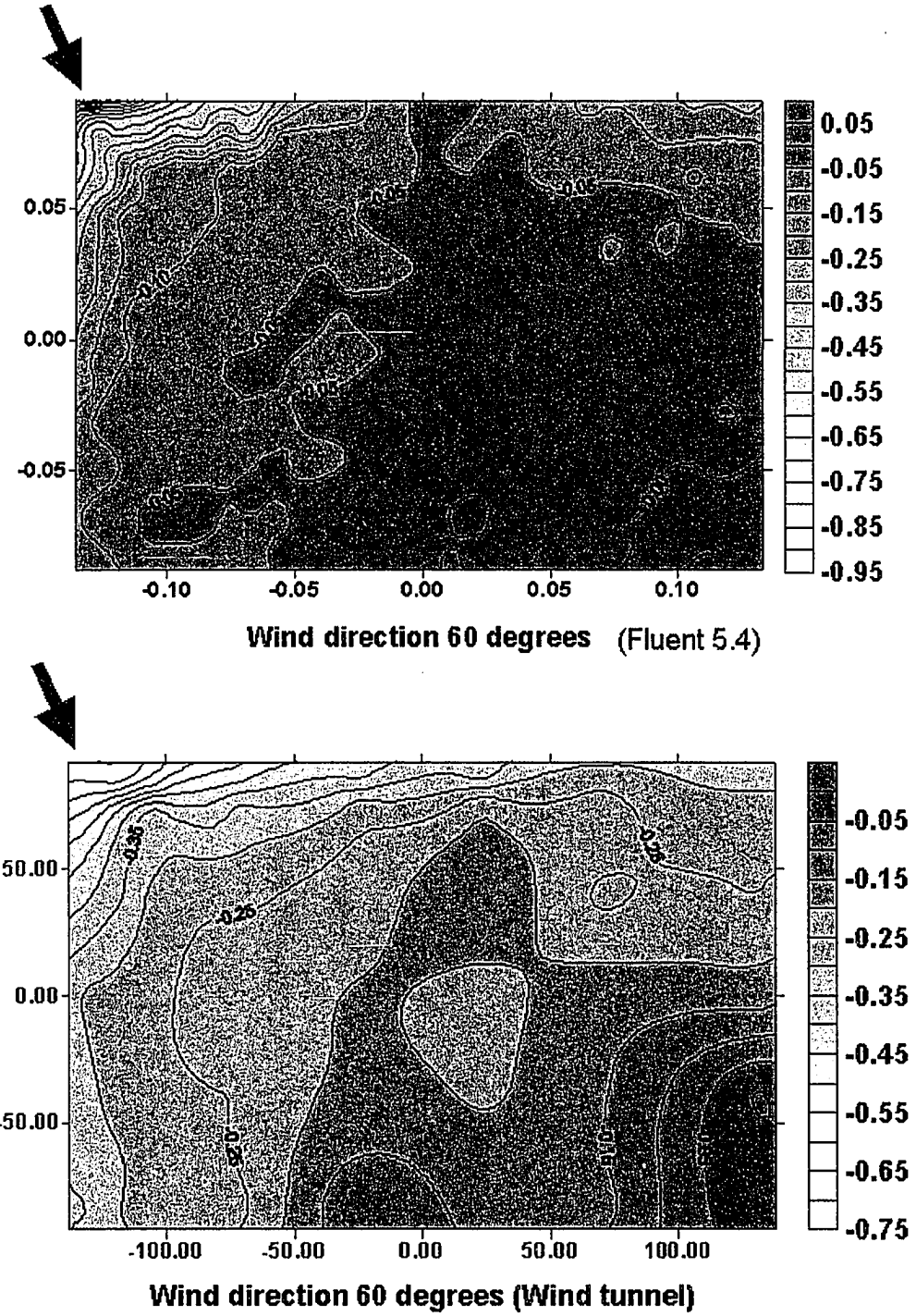


Figure 6.52b Comparison of distributions of mean Cp for case N=1, B/H=1 between measured and calculated (Fluent) at wind direction 60 degrees

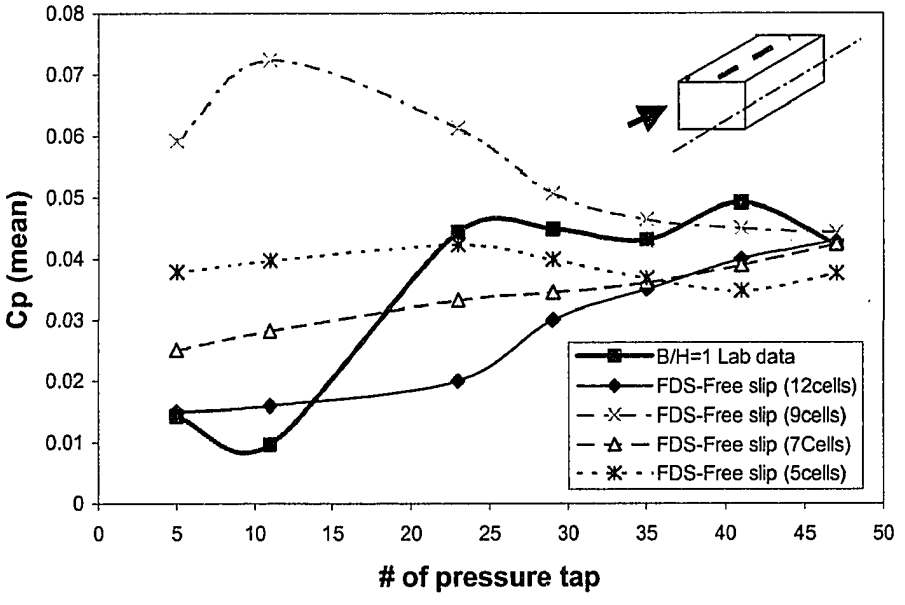


Figure 6.53a Comparisons of mean pressure coefficients on the centerline of the roof for case N=1: experiments and numerical simulation using FDS LES model

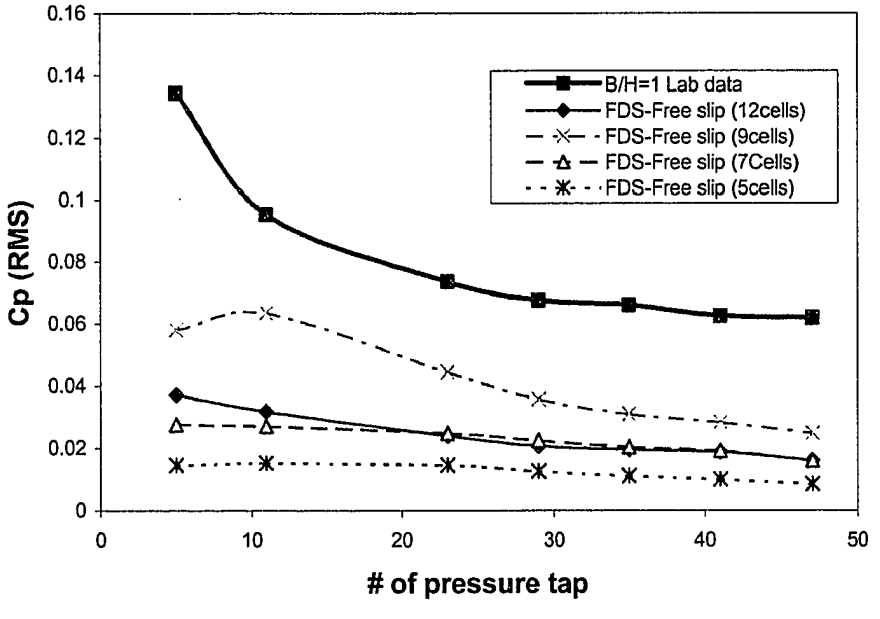


Figure 6.53b Comparisons of RMS pressure coefficients on the centerline of the roof for case N=1: experiments and numerical simulation using FDS LES model

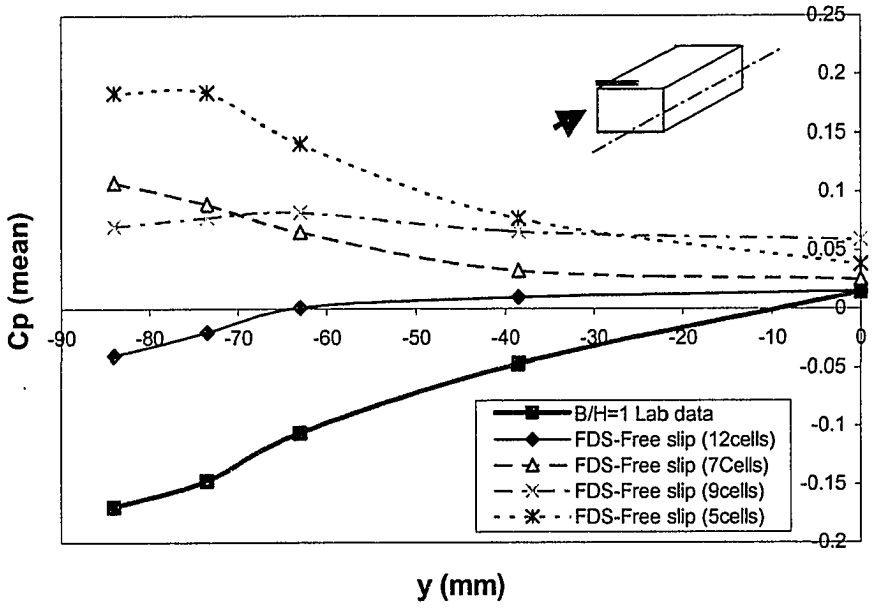


Figure 6.54a Comparisons of mean pressure coefficients on the front edge of the roof for case N=1: experiments and numerical simulation using FDS LES model

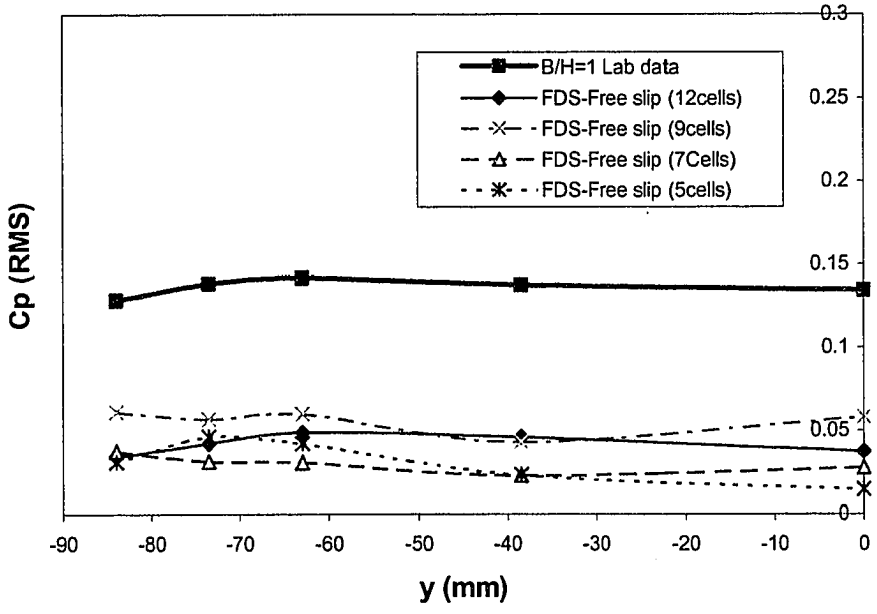


Figure 6.54b Comparisons of RMS pressure coefficients on the front edge of the roof for case N=1: experiments and numerical simulation using FDS LES model

6.3 Modeling of Pollutant Dispersion in Urban Street Canyons

Air pollution in urban street canyons resulting from exhaust emissions is a major urban problem. Often traffic pollution excess controls air pollution management decisions. There are a number of elaborate predictive models of pollutant dispersion and diffusion that address the effects of variable shapes of city buildings on pollutant concentrations, but few are fully validated. This section presents ventilation behavior in different street canyon configurations. To evaluate dispersion in a model urban street canyon, a series of tests with various street canyon aspect ratios (B/H) are presented. Both open-country roughness and urban roughness cases are considered.

6.3.1 Wind Tunnel Results and Interpretation

A point source was located at the center point of a cross street canyon in front of our base building model (see Figure 3.6 for details). The dimensionless concentration coefficient used in the presentation of the data is $K = C \cdot U \cdot H^2 / Q$, where C is the dimensional tracer species density, U is the upwind free stream velocity at roof height, H is the building height and Q is the source flow rate. It is known that the horizontal wind velocity at street level is typically of the order of 10 % the free stream velocity. For reference velocities achievable in our wind tunnel, this results in horizontal velocities at street level of a few cm/s. Simple calculations show that the tracer gas discharge velocities from the point source are the same order of magnitude, so they may influence the recirculating flow patterns in the canyon.

Figure 6.55a shows the normalized concentrations on the centerline of the upwind and downwind walls of street canyons for B/H=0.5 and different values of N. The normalized concentrations are the highest for the B/H=0.5 case, especially in the street level corners of the canyons. The upwind wall areas have higher concentrations than the downwind wall areas, because there are two circulation flows inside the street canyon: the upper circulation flow is clockwise and the lower circulation flow is counter clockwise. The circulation flows carry the emission gas to the upwind wall of the street canyon, resulting in higher concentrations on the upwind wall. The lower circulation flow (CCW) carries some emission to the downwind wall of the street canyon, so the ground corner of the downwind wall also has high concentrations. The results also show that the open-country roughness cases (N=1, N=2) have higher concentrations at street level than the urban roughness cases (N=3, N=8).

Similarly, Figure 6.55b shows normalized concentrations for B/H=1 with different N. Since there is only one circulation eddy (CW) in the street canyon, the clockwise flow impinges on the upwind wall areas. Therefore, the upwind wall areas have higher concentrations than the downwind wall areas. Contrary to the cases of B/H=0.5, the higher concentrations are in the street canyons of the urban roughness cases (N=3, N=8) instead of the open-country roughness cases (N=1, N=2). It is likely that with fewer upwind buildings (i.e. $N \leq 2$), the flow field is more unstable and intermittent ventilation of the entire canyon occurs more often resulting in lower street level concentrations.

Figures 6.56 and 6.57 both show interference flow effects on the concentrations for the cases B/H=2 and B/H=4, respectively. Similar to the cases of B/H=0.5 and B/H=1, both B/H=2 and B/H=4 show that the upwind wall areas have higher concentrations. Wake zone eddies occurring against the upwind wall areas and the resulting re-circulation keep the gas against upwind wall areas. However, with the greater width of the street canyons, the downwind wall areas have very low concentrations, because the circulation downwind of the upwind eddy carries the emissions out of the canyons. The concentrations are higher for B/H=2 than for B/H=4 because the dilution effects the cavity zone are higher for B/H=4.

For the isolated roughness cases (B/H=6), the concentrations are almost zero at the upwind wall areas of the street canyon, because the emissions are transported out of the canyon. The downwind wall areas, on the other hand, have higher concentrations because the concentrations convect to downwind wall areas more easily. Figure 6.58 presents comparisons of concentration levels for N=1 but different B/H. The results show that the lower the ratio of B/H, the higher the concentrations in the street canyons.

Figure 6.59 presents the concentration levels on the centerline of the roof area for N=1 and different B/H values. The results of each case show that the concentrations become lower on the line of the roof as the roof distances become larger.

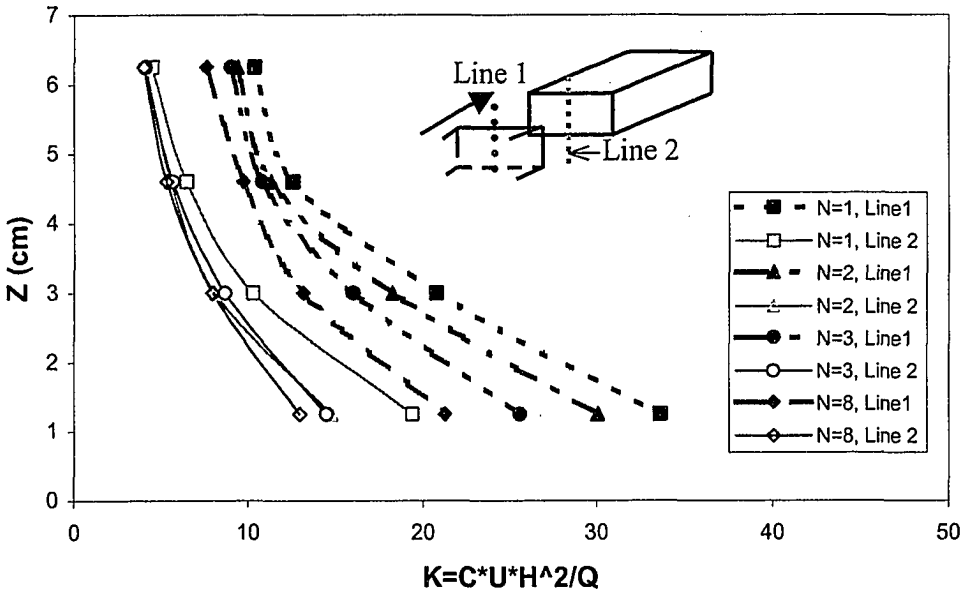


Figure 6.55a Concentrations on the upwind and downwind walls of the street canyon for case B/H=0.5

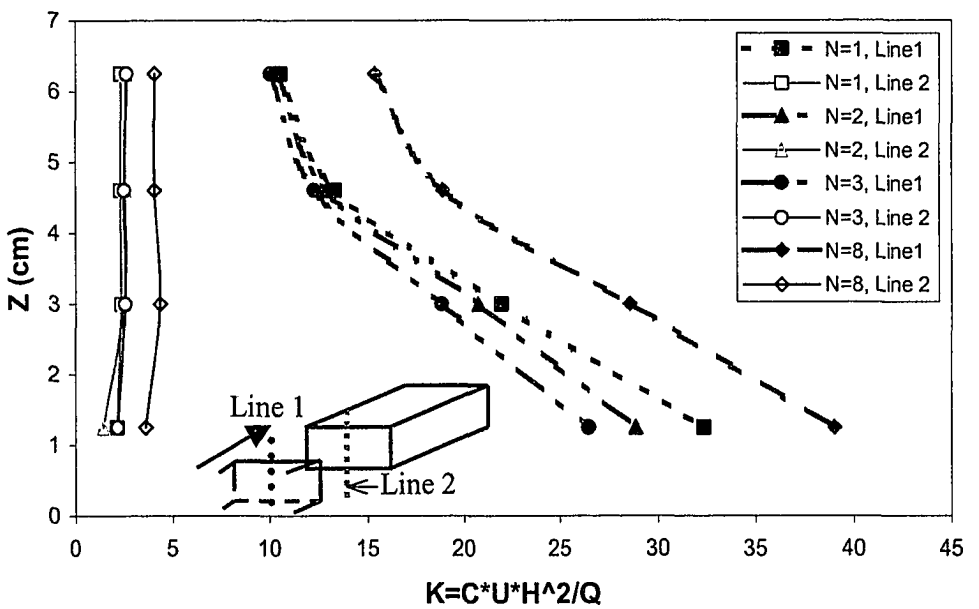


Figure 6.55b Concentrations on the upwind and downwind walls of the street canyon for case B/H=1

6.3.2 Comparison of Concentrations of Wind Tunnel Results and Numerical Simulations

FLUENT and FDS were used for numerical simulations. The point source inlet was modeled as a 1.3*1.3 cm vent emitting at a constant velocity and no turbulence. The inlet velocity of w_{source} = 0.05 m/sec was set to be equivalent to the source emission rate used in the wind tunnel simulation. A tracer mass fraction of 1 was applied to the point source inlet during the calculation. In presenting the results from the calculation, tracer species density was normalized to facilitate comparison with experiments and other numerical results.

A comparison of each set of data from wind tunnel experiments with the numerical simulation, reveales that the CFD software, Fluent 5.4, can predict the actual wind tunnel results by choosing optimum boundary condition, grid resolution and turbulence model. Figures 6.60 and 6.61 show a direct comparison between measured and calculated concentrations on the centerline of the upwind and downwind walls for a street canyon where point source inlet located mid canyon for all cases and N = 1. The results show that Fluent predicts the right order of mean concentration for each case. However, Fluent gives higher concentration predictions in some zones, for example, the ground level corners of the upwind walls of B/H=1 cases and the ground corners of both upwind and downwind walls of the B/H=0.5 cases.

Figure 6.62 shows a comparison of measured and numerically predicted concentrations on the centerline of the roof for open-country cases, N=1. The calculated concentrations (Standard κ-ε) for the roof surface agree reasonably well with the data

collected from the wind tunnel; however, the exceptions are the areas around the front edges of the roof for case B/H=0.5. The numerical simulation predicts significantly higher values than measured in the wind tunnel. This is due to that the wind flow was considered more stable in the numerical modeling than that of the physical modeling. The unstable wind flow caused the concentration value in the canyon of the physical modeling to be lower, because there was more ventilation inside the canyon, and more of the concentration was washed out of the canyon.

A comparison of measured and calculated concentrations for B/H=1 with different number rows of shelter models is given in Figure 6.63. Two concentration taps are chosen. One is on the downwind wall and the other is on the roof surface. Both measured and calculated results show increased concentrations with a greater sheltering effect of more upwind model structures. Figure 6.64 shows the calculated normalized concentrations using Fluent code are plotted against the experimental normalized concentrations on the centerline of rooftop and upwind and downwind walls of canyon tappings.

For FDS simulations, two ground boundary conditions are chosen to compare results with the wind tunnel measurements. Figure 6.65 presents comparisons between wind tunnel and numerical concentrations for the centerline of the upwind and downwind walls of the open-country roughness case, N=1 and B/H=1. The result shows that with the half-slip ground boundary condition, the FDS predicts the measurements of the wind tunnel experiments. For the concentrations at centerline of roof of N=1, B/H=1 cases, both Fluent and FDS numerical results predict the measurements of the wind tunnel

experiments (see Figure 6.66). The calculated normalized concentrations from both Fluent and FDS are plotted against the experimental normalized concentrations in Figure 6.67. There is a near linear relationship between the experimental data and the numerical data. The slop of the line of best fit is 2.85 for Fluent and 1.15 for FDS. The results from FDS simulation agree much better with the experimental results than those from Fluent.

The numerical simulation results conclude that wind approaching angle is a significant effect to the concentration dispersion on the roof of the master building. Figures 6.58a, 6.58b, 6.58c and 6.58d show the concentration dispersion on the master building with different angles of approaching winds. In the case of approaching wind of zero degree, the concentration distributed to the whole roof surface. The maximum normalized concentration (K = 4) was measured near the center of the roof front edge, and the minimum normalized concentration (K= 0.2) was measured around two sides of the roof rear edge. The concentration in the case of approaching wind of 15 degrees was found only at the lower corner of the front roof edge with the maximum normalized concentration of K= 2.5. The other areas of the roof were found no concentration at all. In the cases of approaching wind angles of both 75 degrees and 90 degrees, there was almost zero concentration found on the roof with the maximum values of K= 0.04 and K= 0.003, respectively.

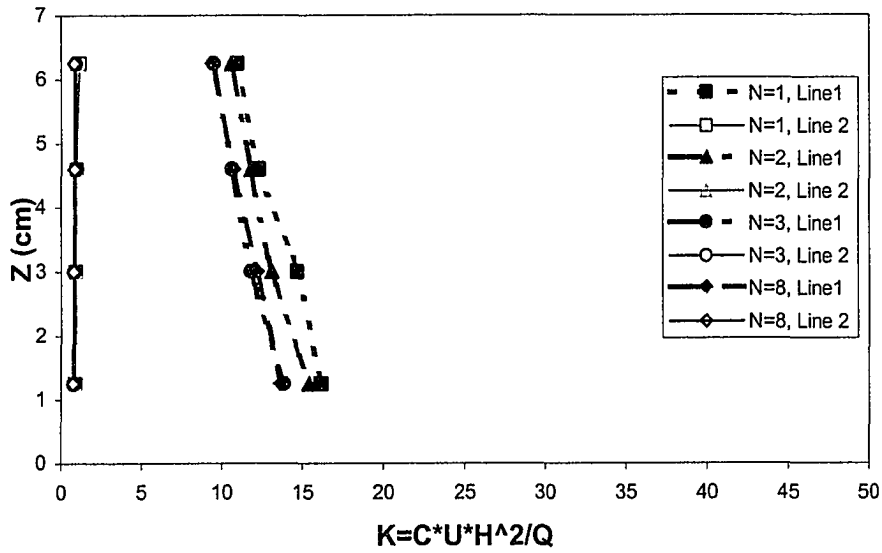


Figure 6.56 Concentrations on the upwind and downwind walls of the street canyon for case B/H=2

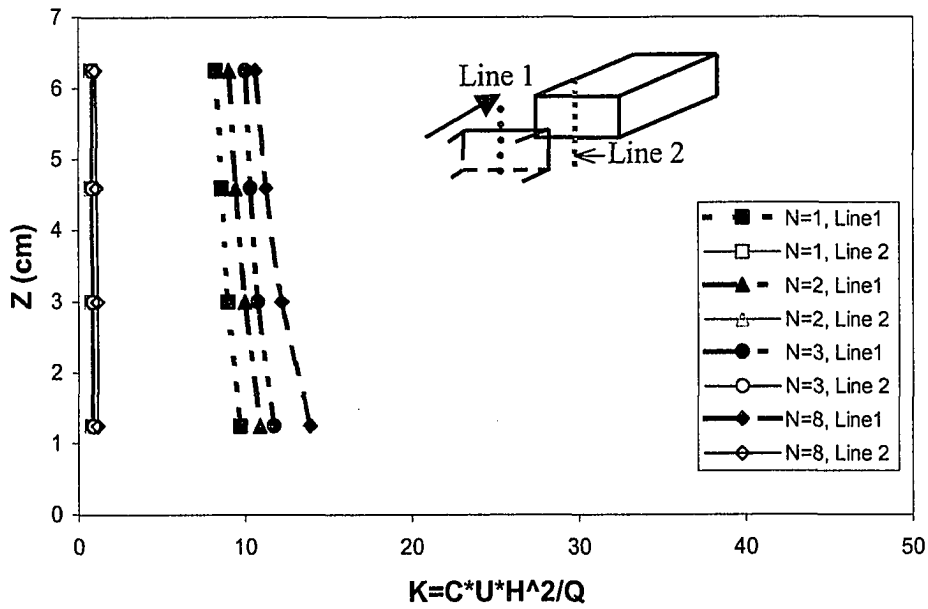


Figure 6.57 Concentrations on the upwind and downwind walls of the street canyon for case B/H=4

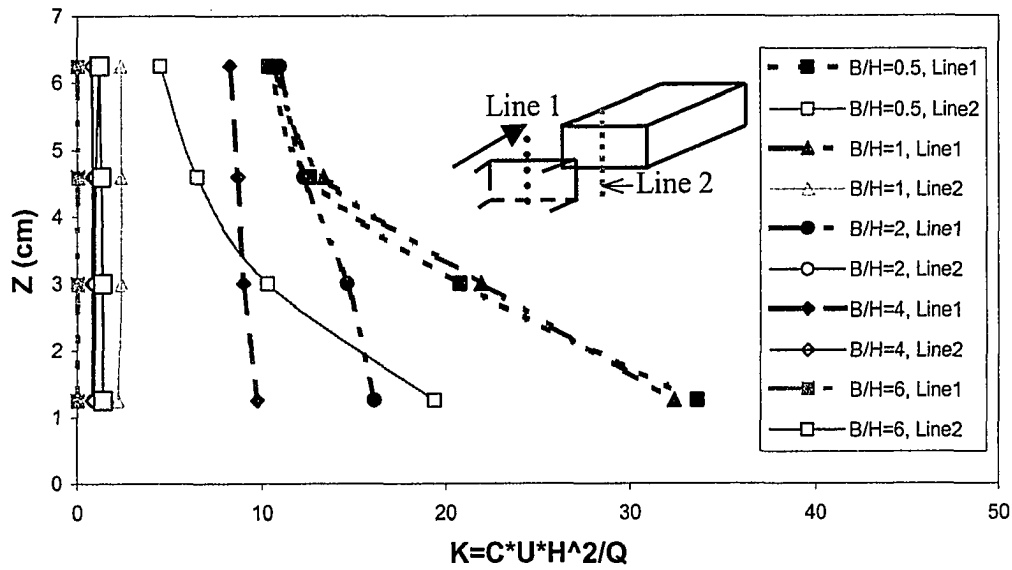


Figure 6.58 Concentrations on the upwind and downwind walls of the street canyon for open country roughness case N=1

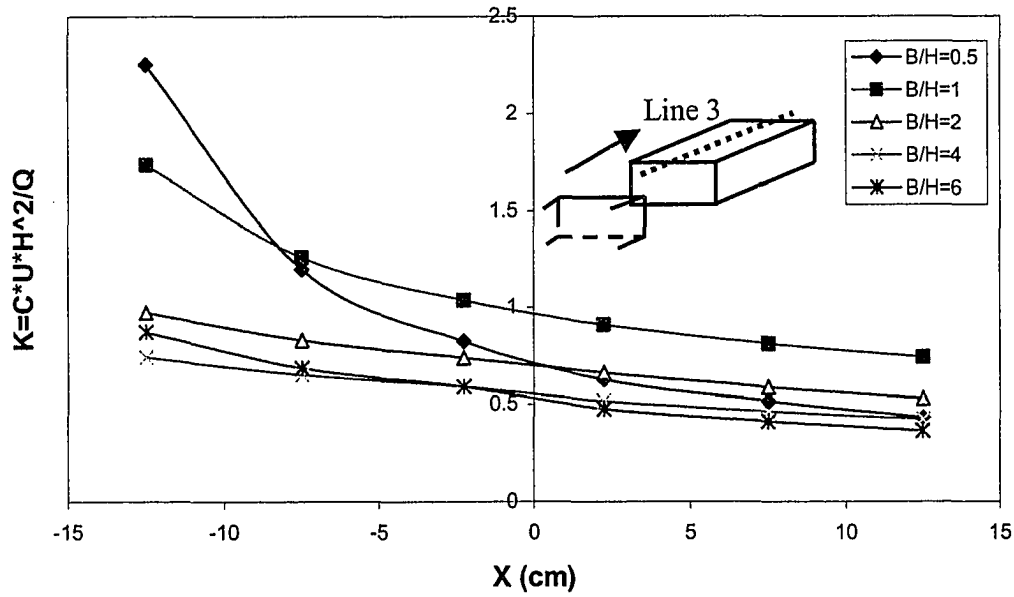


Figure 6.59 Concentrations on the centerline of the roof for open country roughness case N=1

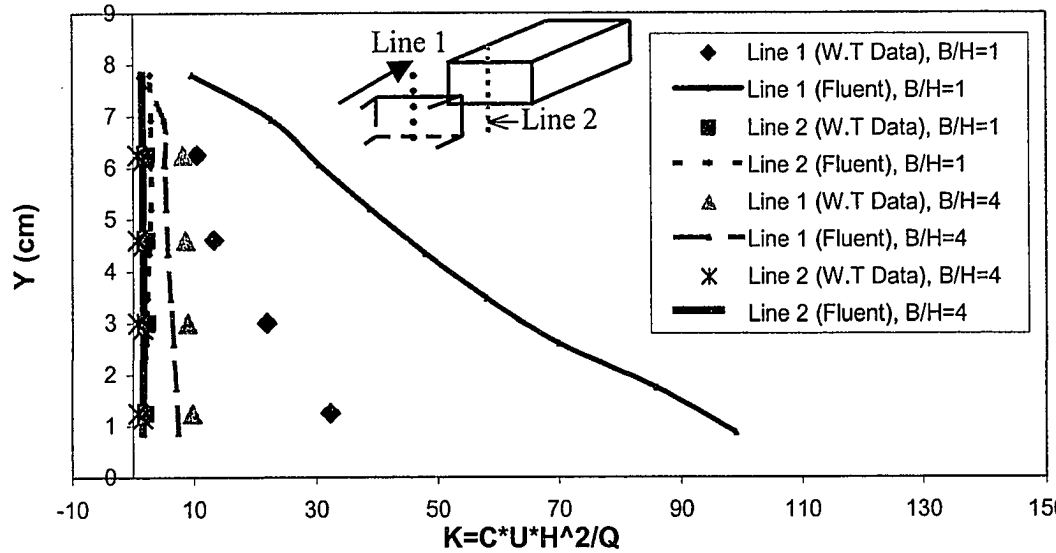


Figure 6.60 Comparisons between wind tunnel and numerical model (Fluent κ-ε model) concentrations for the open country roughness case N=1

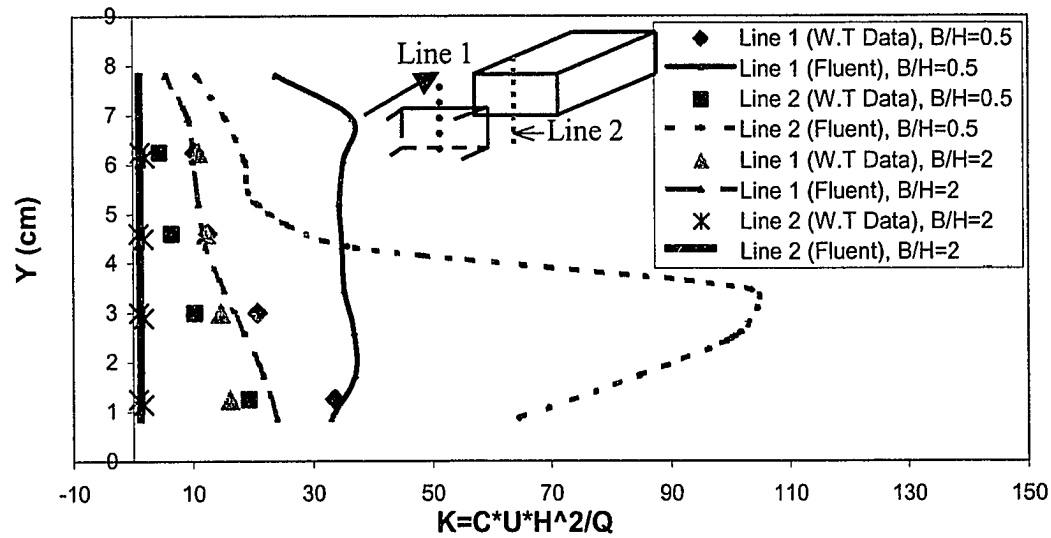


Figure 6.61 Comparisons between wind tunnel and numerical model (Fluent κ-ε model) concentrations for the open country roughness case N=1

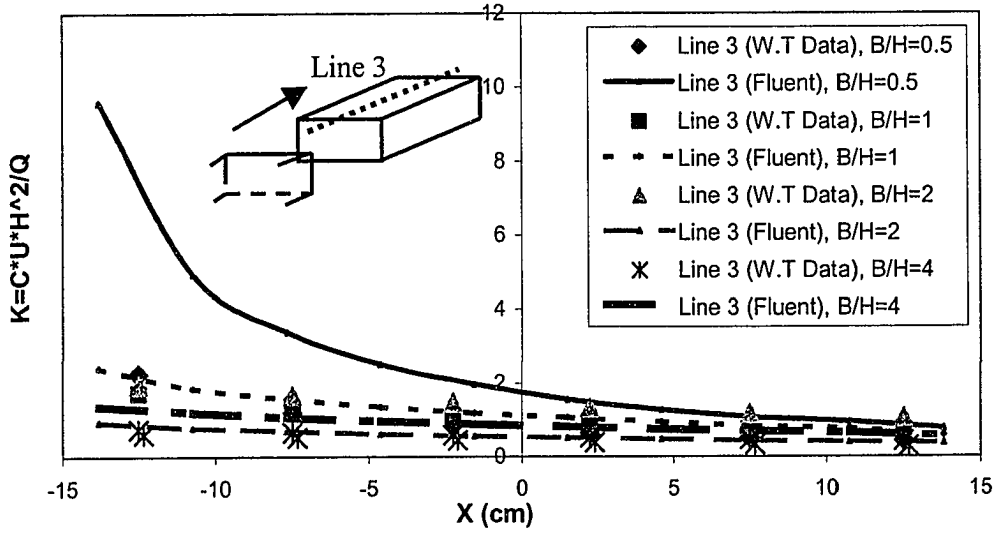


Figure 6.62 Comparisons between wind tunnel and numerical model (Fluent κ-ε model) concentrations on the centerline of the roof for open country cases N=1

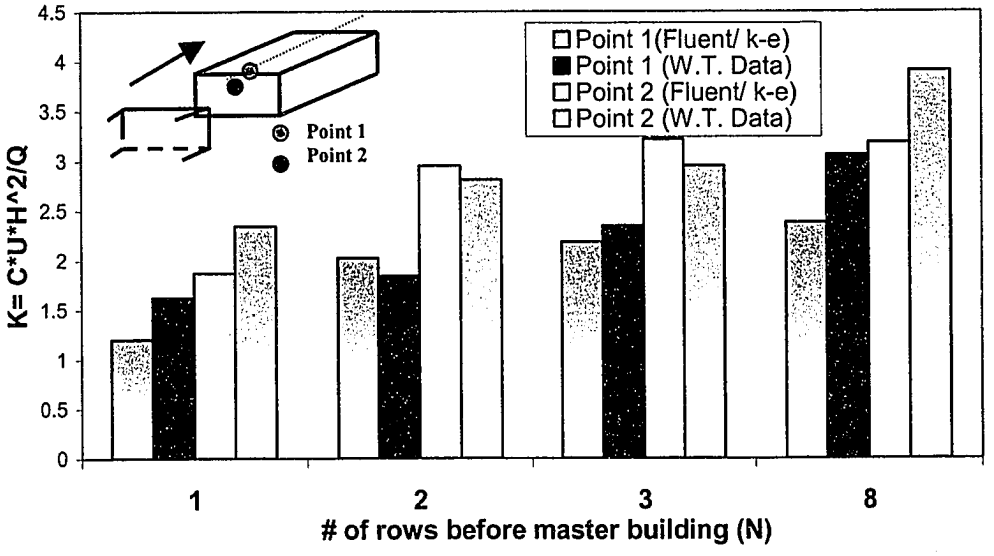


Figure 6.63 Comparisons between wind tunnel and numerical model (Fluent κ-ε model) concentrations for different numbers of upwind buildings before master building for case B/H=1

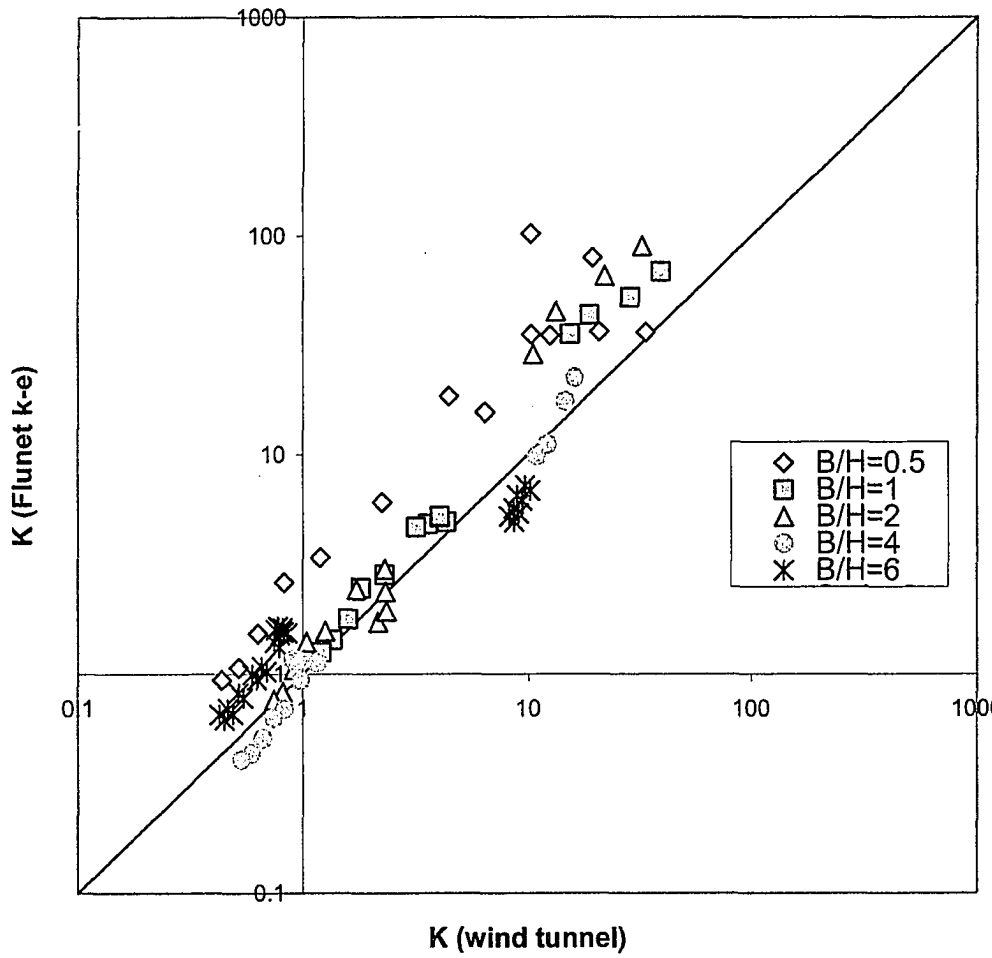


Figure 6.64 Experimental vs. Fluent calculated normalized concentration on the centerline of the roof and upwind and downwind walls of canyon tappings

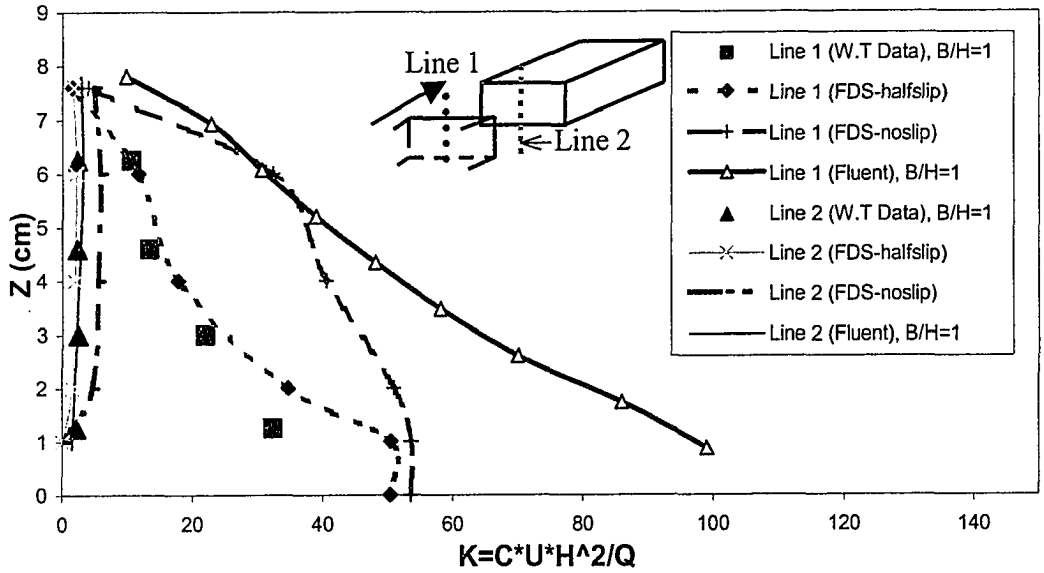


Figure 6.65 Comparisons between wind tunnel and numerical model (Fluent κ-ε model, FDS) concentrations for the open country roughness case N=1 and B/H=1

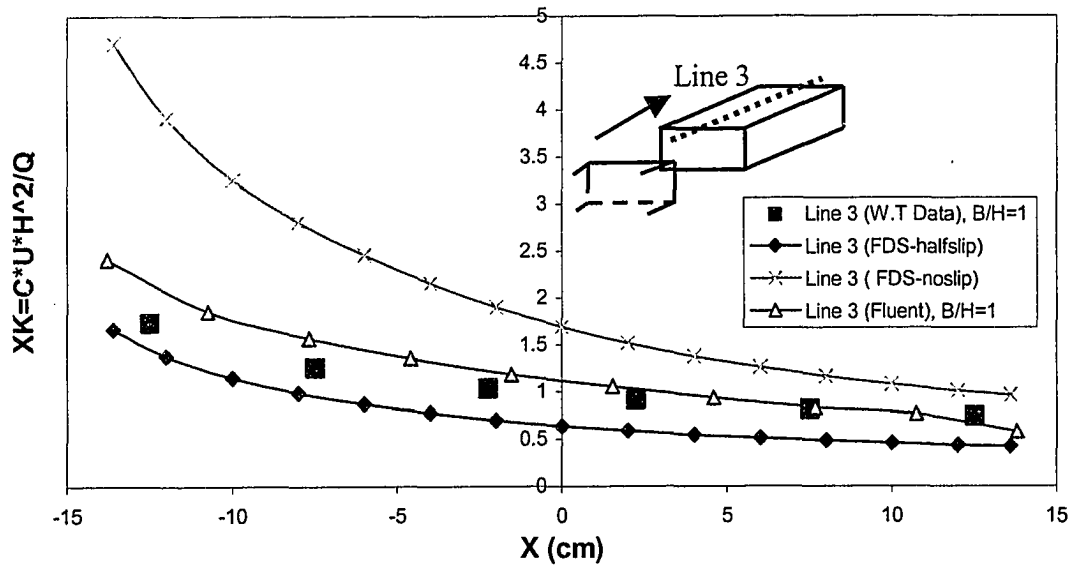


Figure 6.66 Comparisons between wind tunnel and numerical model (Fluent κ-ε model, FDS) concentrations on the centerline of the roof N=1 and B/H=1

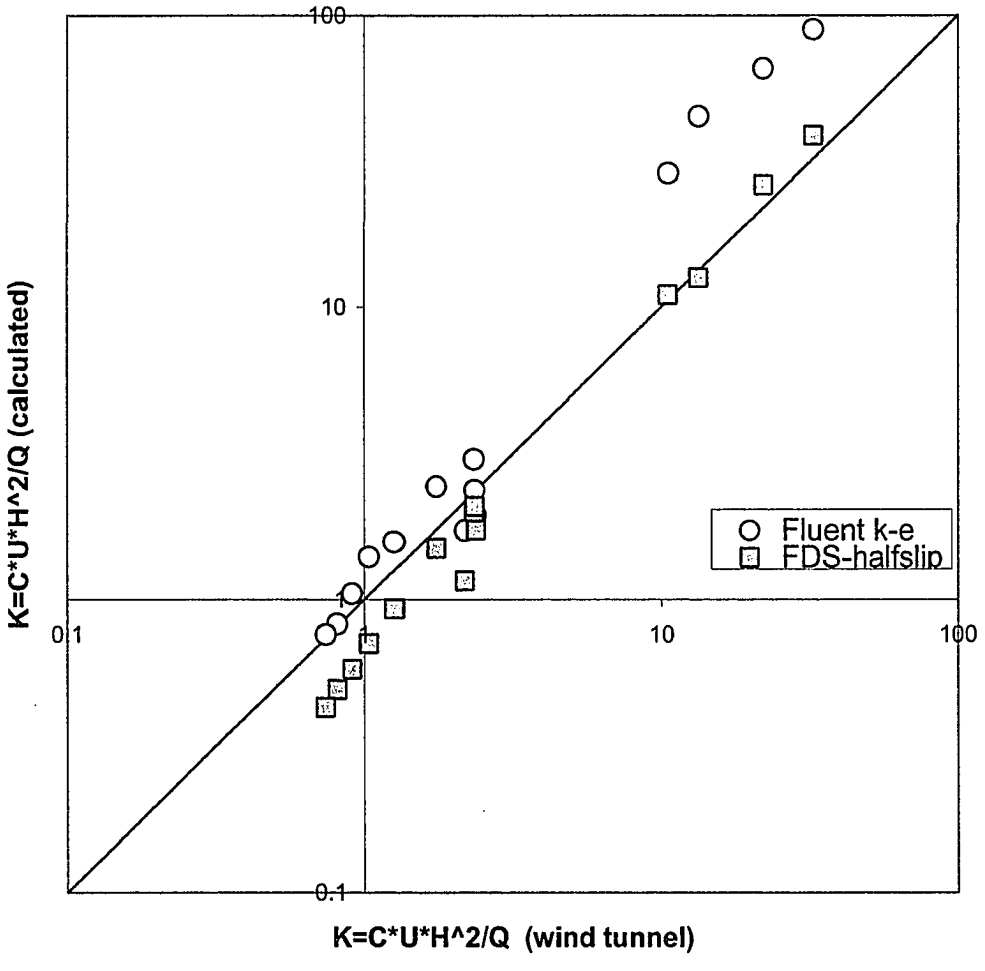
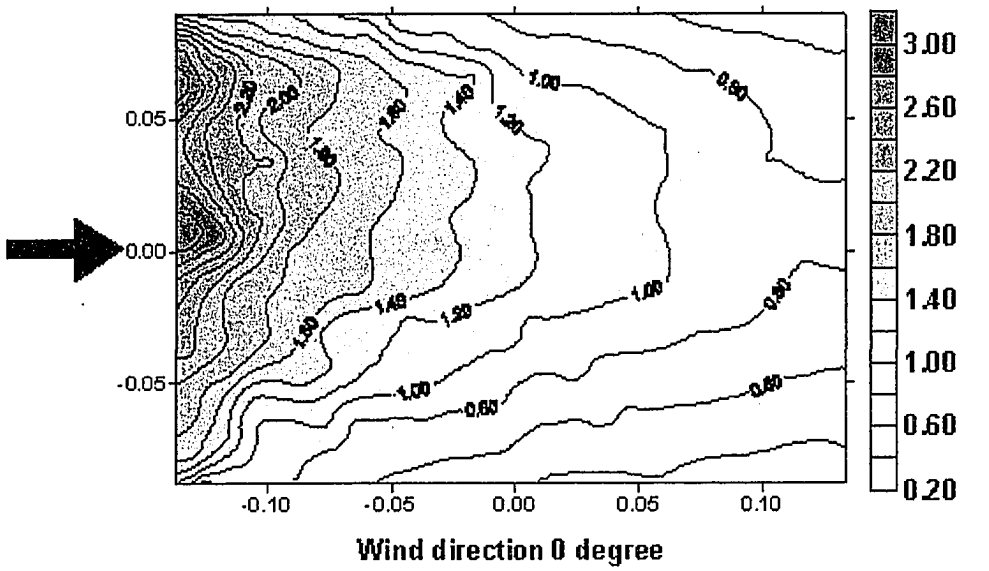


Figure 6.67 Experimental vs. calculated (Fluent and FDS) normalized concentration, K, on the centerline of the roof and upwind and downwind walls of canyon tappings (B/H=1, N=1)



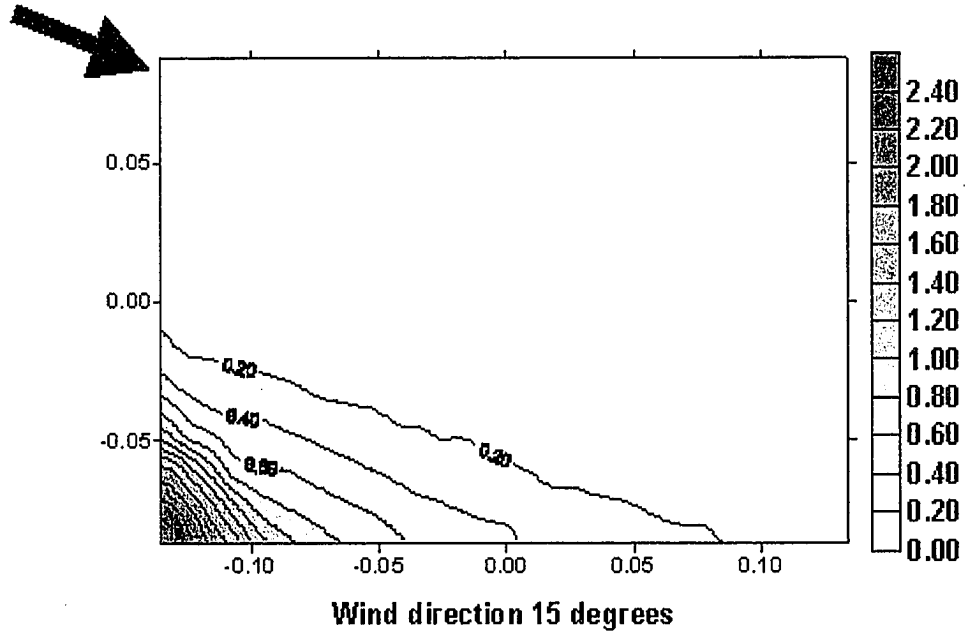
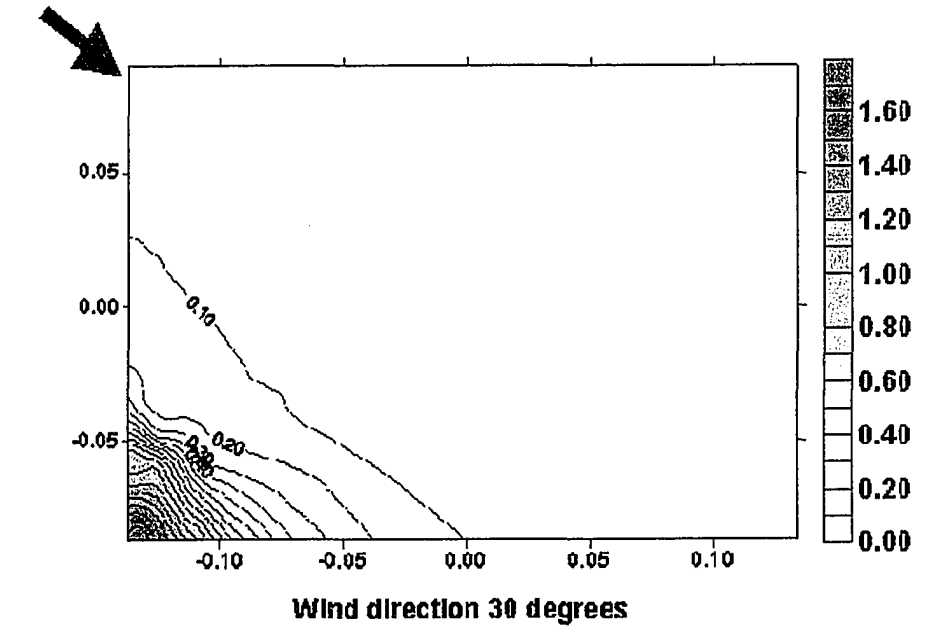


Figure 6.68a Predictions of tracer gas concentration on the master building roof for the wind azimuths with zero and 15 degrees, N=1, B/H=1



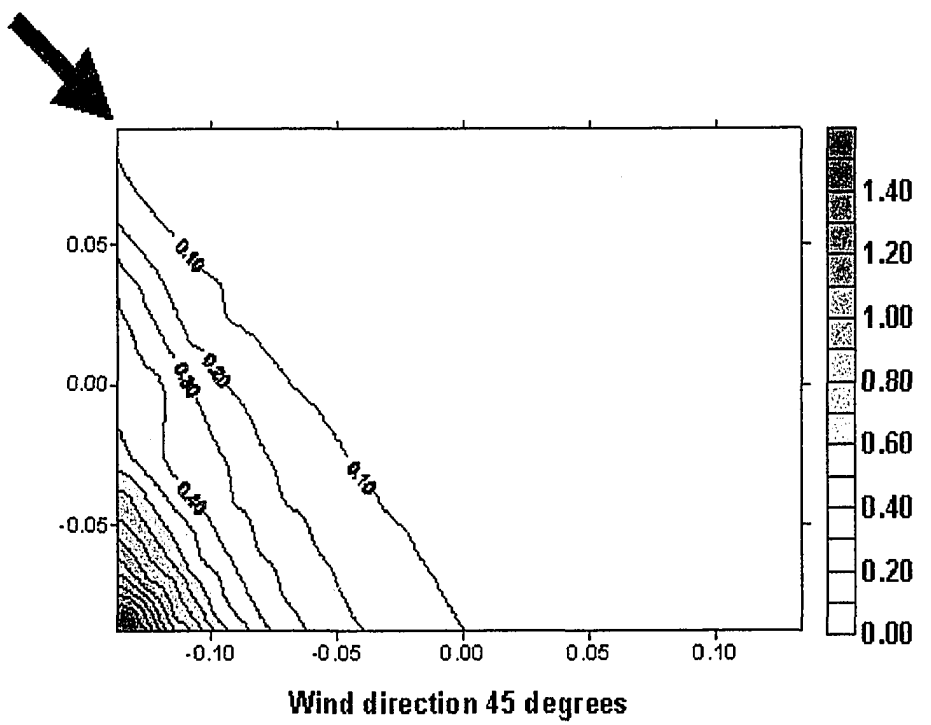
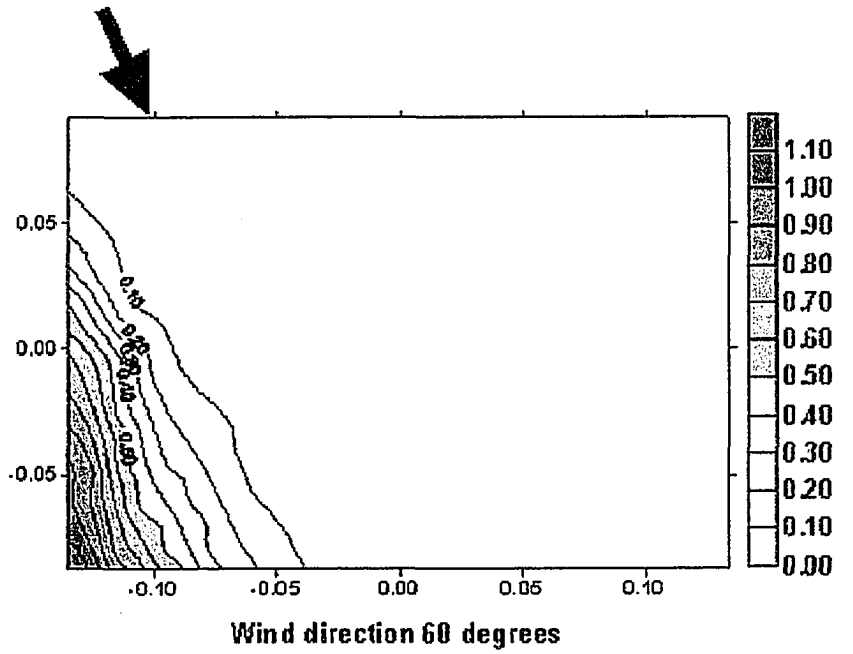


Figure 6.68b Predictions of tracer gas concentration on the master building roof for the wind azimuths with 30 and 45 degrees, N=1, B/H=1



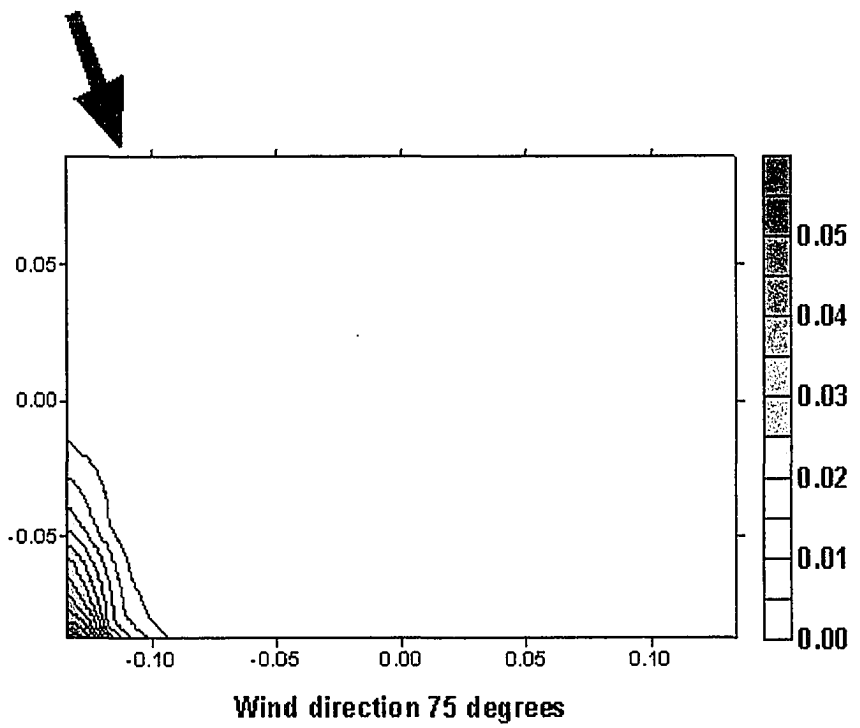


Figure 6.68c Predictions of tracer gas concentration on the master building roof for the wind azimuths with 60 and 75 degrees, N=1, B/H=1

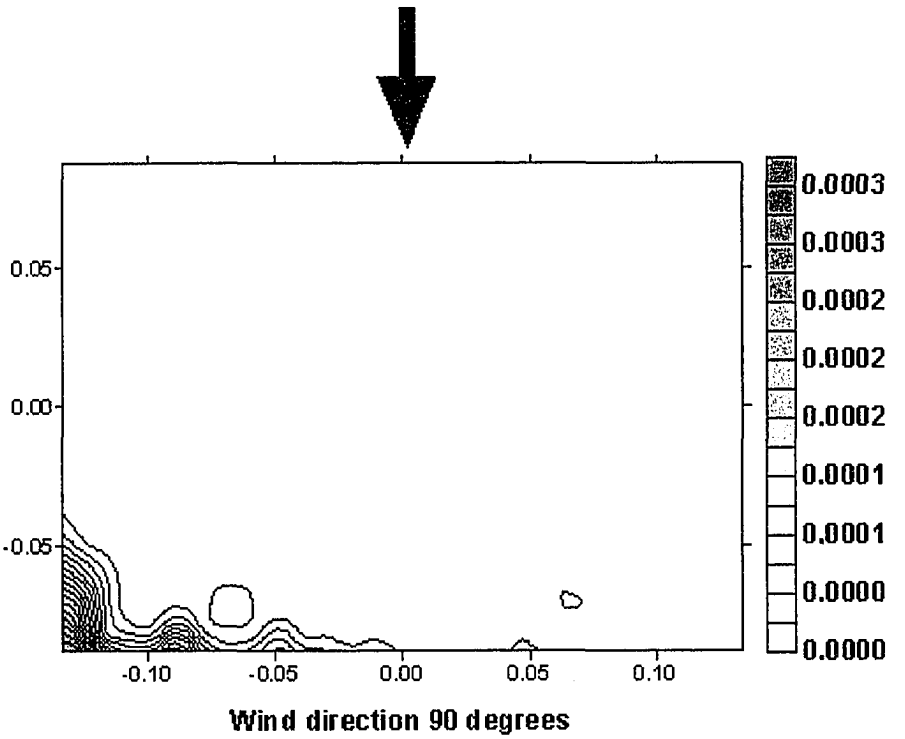


Figure 6.68d Predictions of tracer gas concentration on the master building roof for the wind azimuths with 90 degrees, N=1, B/H=1

CHAPTER 7

SUMMARY AND CONCLUSIONS

In order to better understand the bluff body flow and dispersion in urban street canyons, this study has performed wind tunnel experiments and numerical simulations. Wind tunnel experiments record flow images, velocity flow fields, multiple surface pressures, and multiple surface concentrations around urban street canyons. Numerical modeling used two computational fluid dynamics software suites, Fluent 5.4 and Fire Dynamics Simulator (FDS), to examine the simulations of urban street canyons with the same configurations as the wind tunnel experiments. The results can be summarized into four main conclusions: First, the shielding effects from the surrounding buildings are significantly larger than expected; Second, high concentrations were measured on the upwind walls of urban street canyon except the isolated roughness case; Third, the overall performance of Fluent including predictions of flow fields, surface pressure coefficients and mean concentrations is acceptable. Finally, the performance of FDS is acceptable only in predictions of mean concentrations.

7.1 Wind Tunnel Experimental Results

The results of the wind tunnel experiments suggest that depending on the street width to building height ratio (B/H), the flow in the street canyons can be classified as skimming flow (B/H=0-1.2), wake interference flow (B/H=1.2-5.0), or an isolated

roughness flow (B/H>5.0) as originally proposed by Oke (1988). Results differ substantially depending upon whether the master building is surrounded by only a few or many buildings. If the surrounding depth of buildings about the central structure is only one or two circuits deep, the approach flow is characterized by an open-country roughness surrounding the complex. But if multiple building circuits exist, then an equilibrium urban roughness situation develops.

In open country cases, the characteristics of flow, pressure and concentration distributions were examined. The experimental results are:

- Visualization using smoke and vertical light sheets reveals that clean air is drawn into the canyon by intermittent eddies circulating down into the canyons or along the upwind street canyon intersections.
- Stagnation pressure occurred on the upwind face of the test building, but their magnitudes are reduced by the sheltering effect of upwind model structures. The maximum value of mean Cp on the centerline of the upwind face of the test building for single building case is 0.85. With the sheltering effect, the maximum value of mean CP is reduced to 0.2, 0.3, 0.45, 0.47 and 0.5 for cases of B/H=0.5, B/H=1, B/H=2, B/H=4 and B/H=6, respectively.
- The suction on the roof can be significantly reduced by the presence of surrounding buildings. Compared to a single building case, building arrangements with B/H=0.5 can reduce the magnitude values of mean, RMS and –peak Cp's over 80%.
- Significant pollution concentrations are measured on upwind walls of urban street canyons and along the rooftops.

- Building orientations oblique to the street canyons result in higher street level wind speed, the development of corner vortices over the roof of the test building, and lower concentrations on the building faces upwind of the ground level sources.

In urban roughness cases, experiments were also performed on the dispersion within extended urban roughness associated with additional upstream dummy buildings. The overall characteristics discussed for the open country case are also identified in canyons amidst large urban roughness, but some significant differences are observed:

- For closely spaced multiple street canyons, skimming flow dominates, advection in and out of the canyons appears intermittent, and transport over the street-canyon top streamline appears to primarily by turbulent mixing.
- As the street widths widen with respect to building height, wake-interference flows dominate the advection and dispersion of pollutant plumes.
- Once the street width to building height exceeds about 5, the flow field even for a multiple building arrangement, appears to be perturbed by individual isolated buildings.

7.2 Numerical Simulation Results

As noted by Meroney et al. (1998), it is not difficult to achieve a correct looking presentation of pressures and concentrations over a bluff body. However, it is not a given that quantitative equivalence between experimental and numerical data will occur unless careful attention is paid to inlet profiles, grid adaptation and the turbulent model chosen.

In the calculation produced to replicate some of the test cases studied above, it was found necessary to take upmost care in adapting the turbulent grids to assure that intense concentration gradients, separation locations and re-attachment locations were reproduced.

Wind-tunnel flow, pressure and diffusion tests performed about an idealized building arrangement replicate many of the features of the urban environment previously noted at full scale and in earlier laboratory simulations. Numerical simulations using Fluent and FDS reproduce these patterns, but only with care taken to provide adequate grid resolution, accurate inlet flow profiles, and improved turbulence models.

Conclusions for comparisons of the experiment with the Fluent model suite can be summarized as follows:

- Fluent 5.4 can simulate the velocity profiles in urban street canyons very well using the standard κ-ε model.
- The standard κ-ε model and the RNG κ-ε model give almost the same results for the calculated flow fields in urban street canyon cases.
- Fluent predicts concentration levels in urban street canyons reasonably well; however, it systematically predicts higher predictions in high concentration zones.
- Concentration magnitudes are generally under-predicted by numerical predictions for cases with $N > 2$ rows of shelter buildings.
- Improved grid resolution also results in faster numerical convergence.
- Adapted grids provide a convenient way to reproduce flow details of separation, reattachment, and high concentration regions without excessive calculation cells.

Conclusions for comparisons of the FDS simulations are summarized as follows:

- FDS can well simulate the mean velocity flow profiles in urban street canyons using free-slip and half-slip ground boundary conditions.
- Free-slip and half-slip ground boundary conditions give almost the same results for the calculated flow fields in urban street canyon cases.
- The time-dependent flow phenomena large eddy simulation (LES) has the capability to compute fluctuating pressures and concentrations on building surfaces due to the turbulence. However, results may improve with finer grid resolution and more accurate inlet turbulence specification.

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Appendix A

Flow Visualization Images

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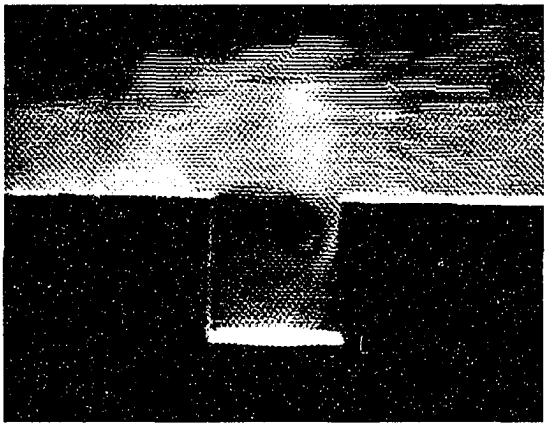

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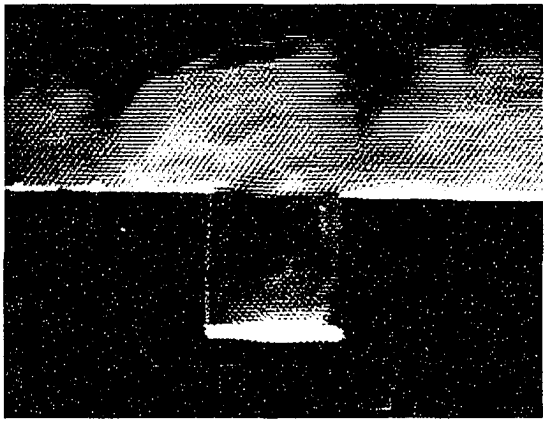

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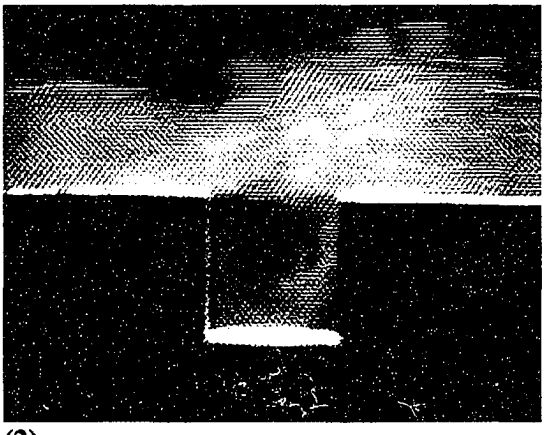

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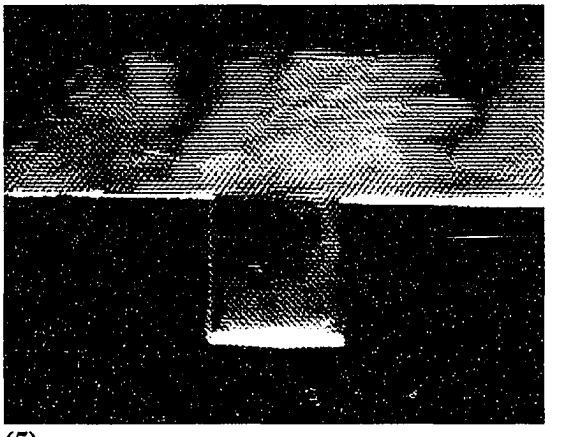

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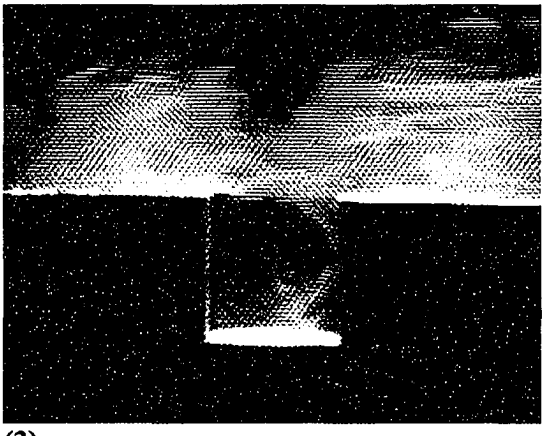

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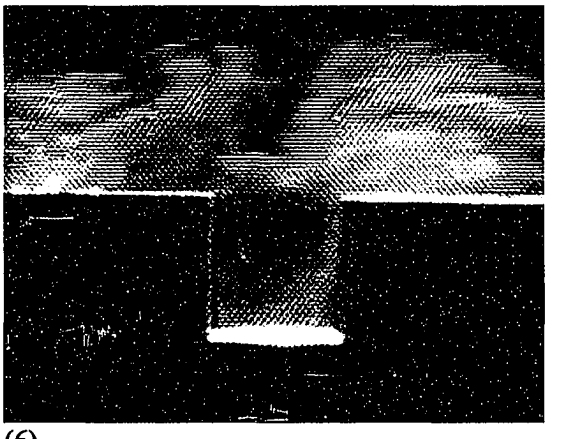

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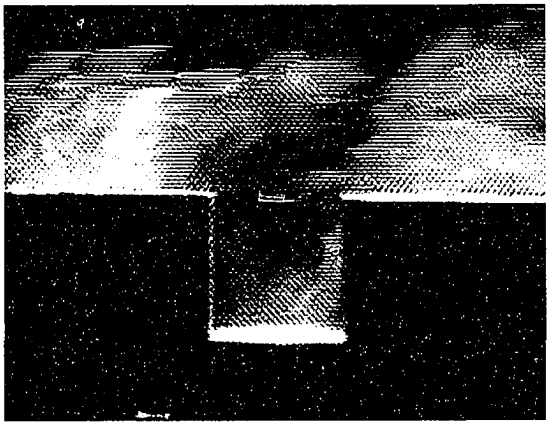

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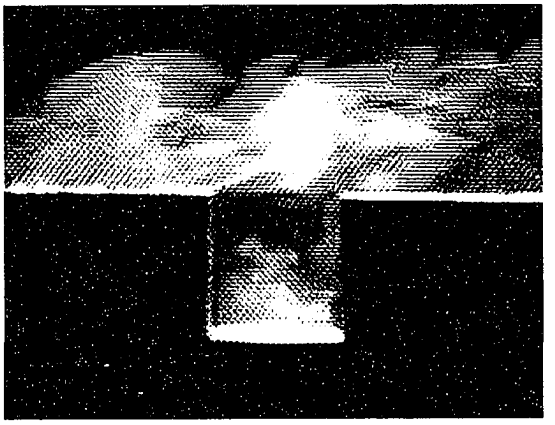

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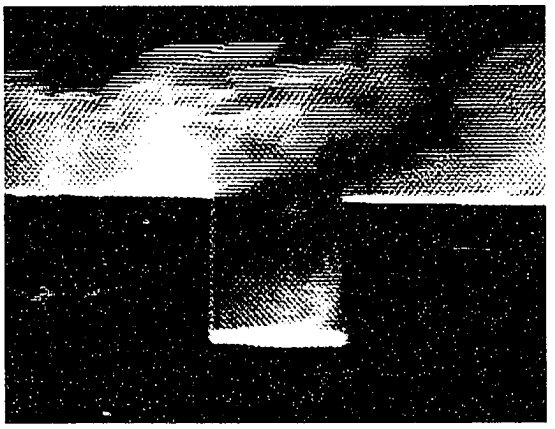

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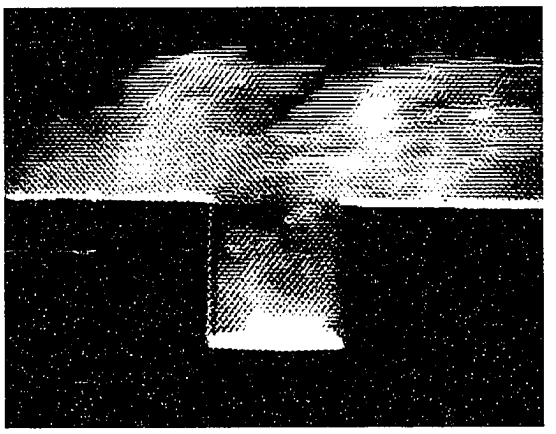

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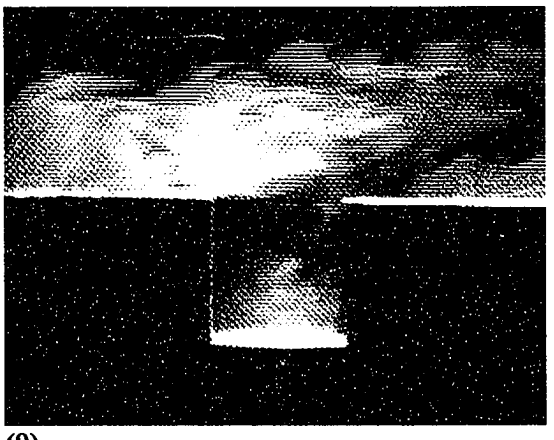

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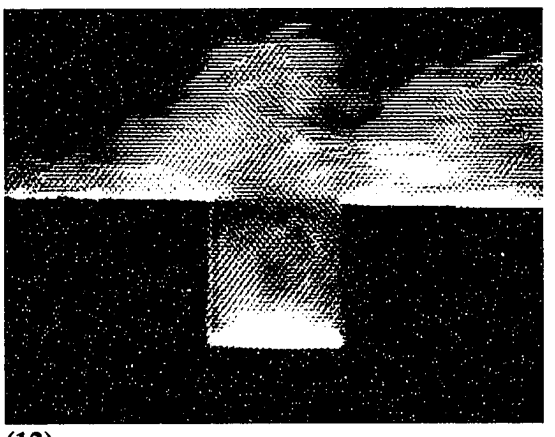

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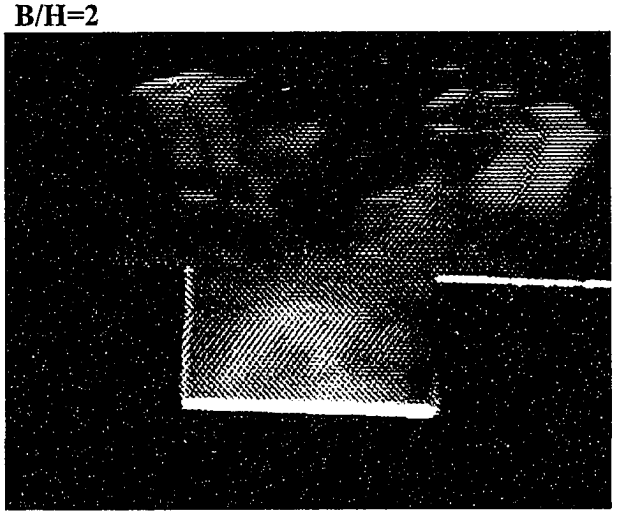

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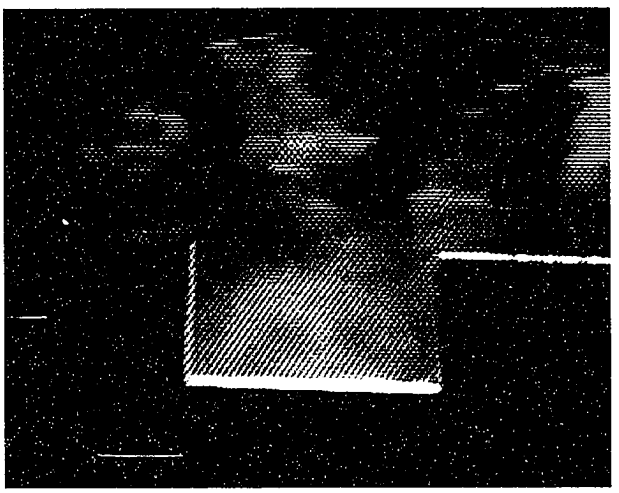

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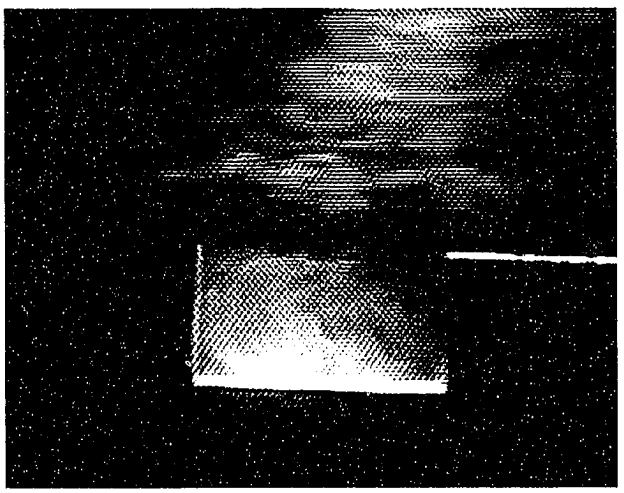

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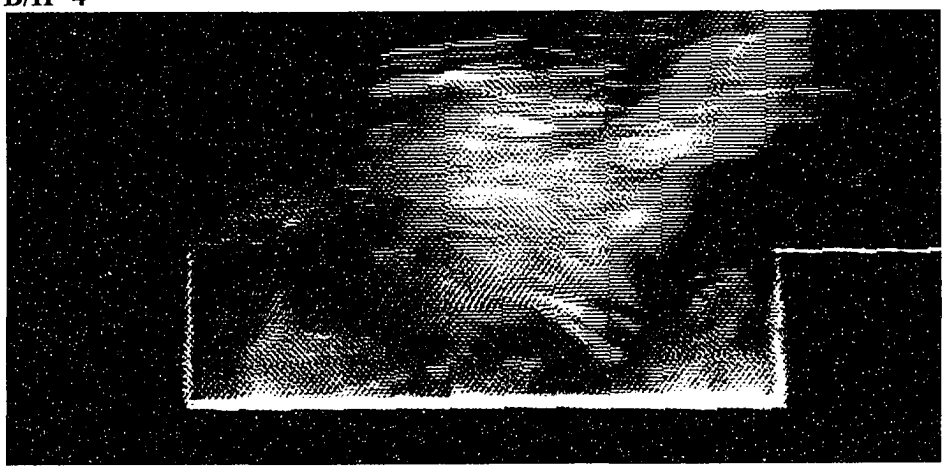

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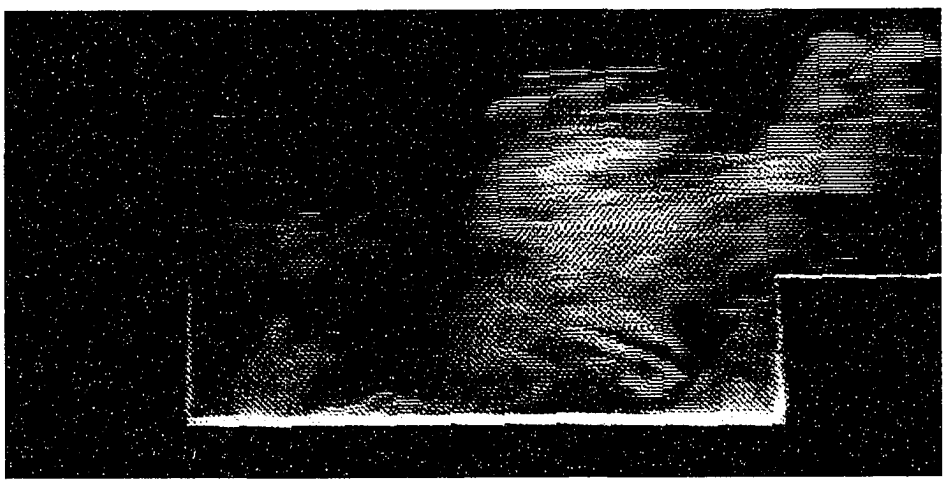

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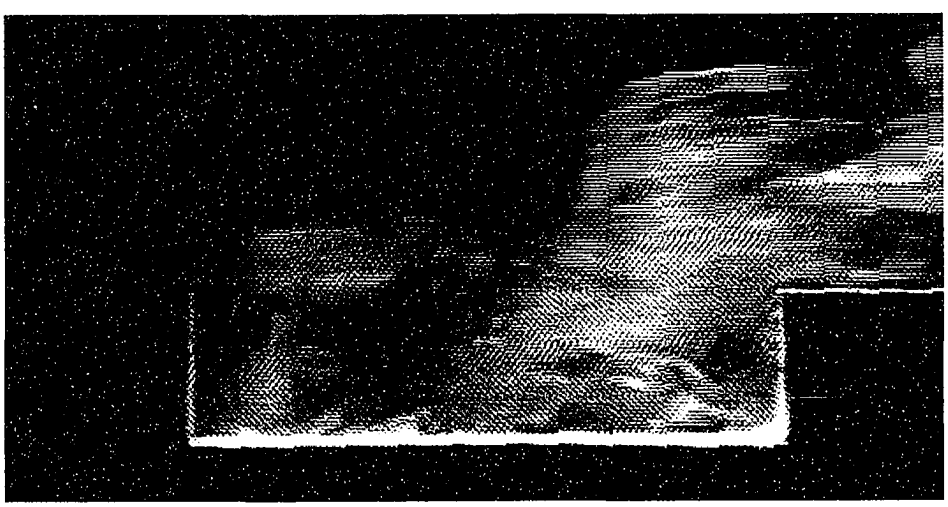

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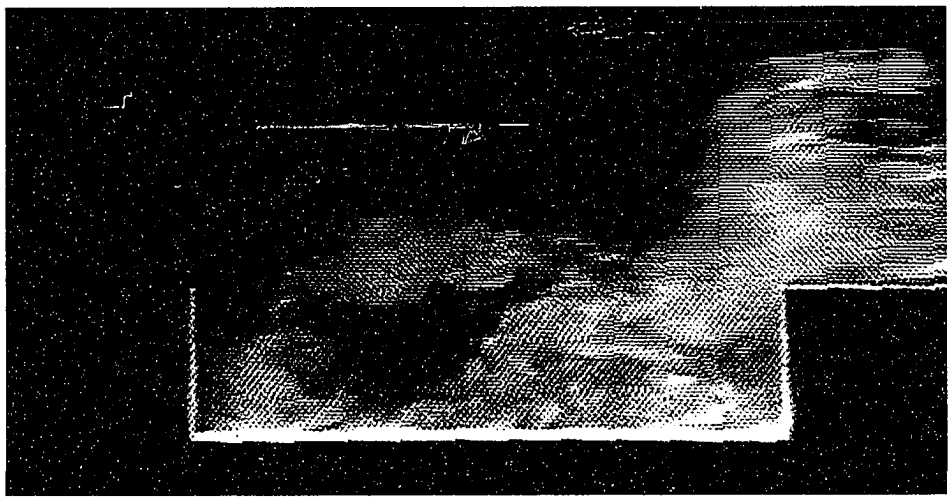

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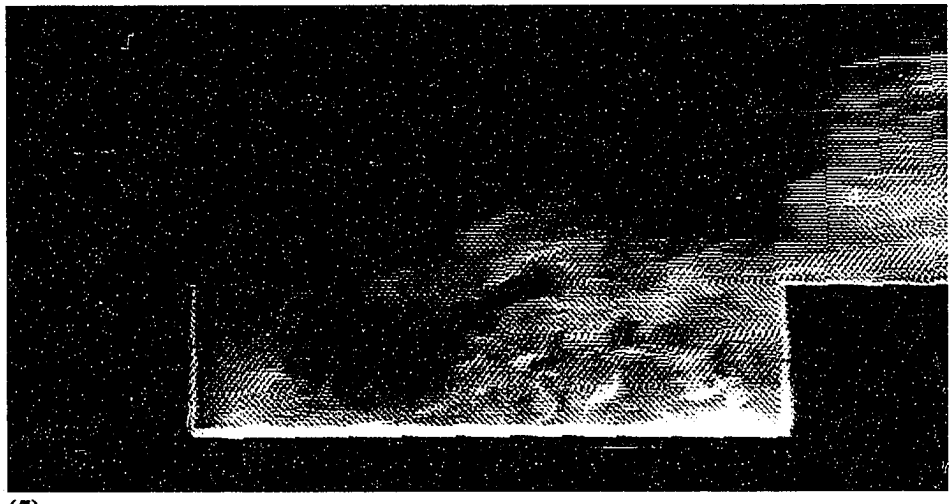

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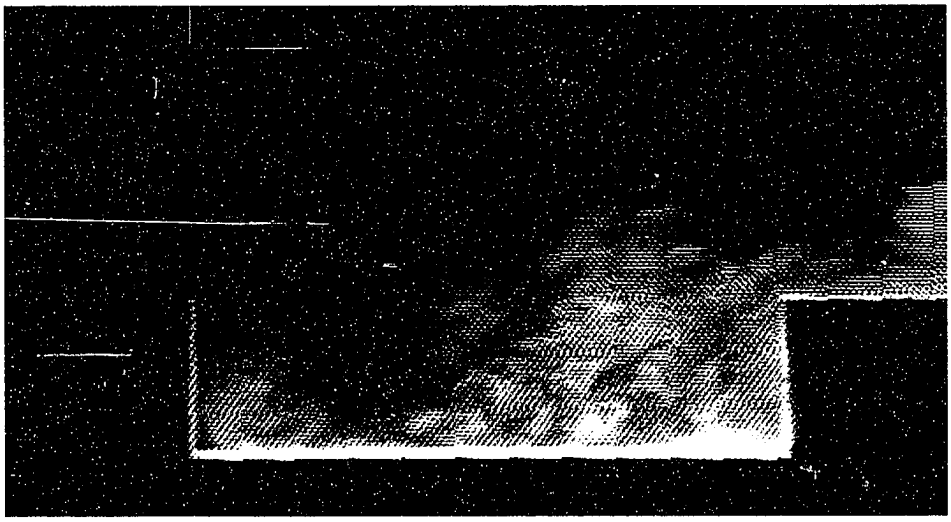

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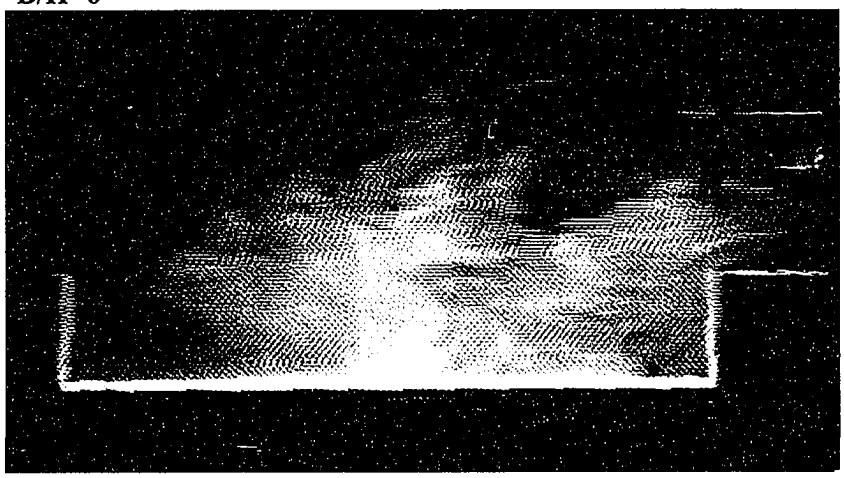

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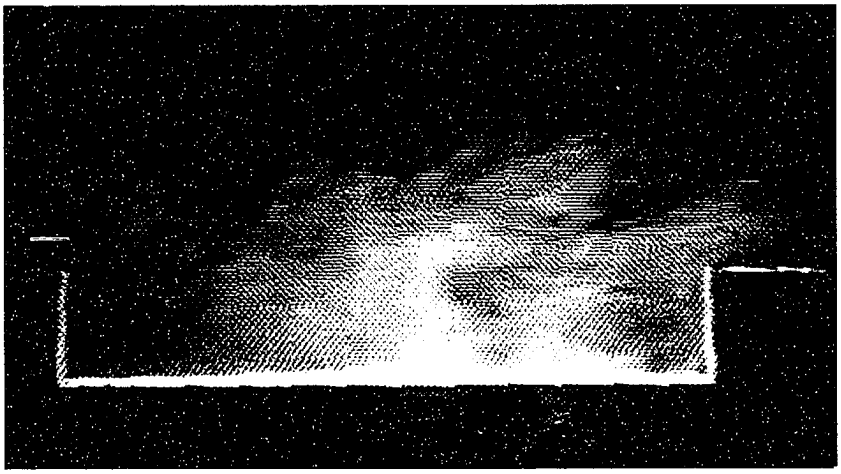

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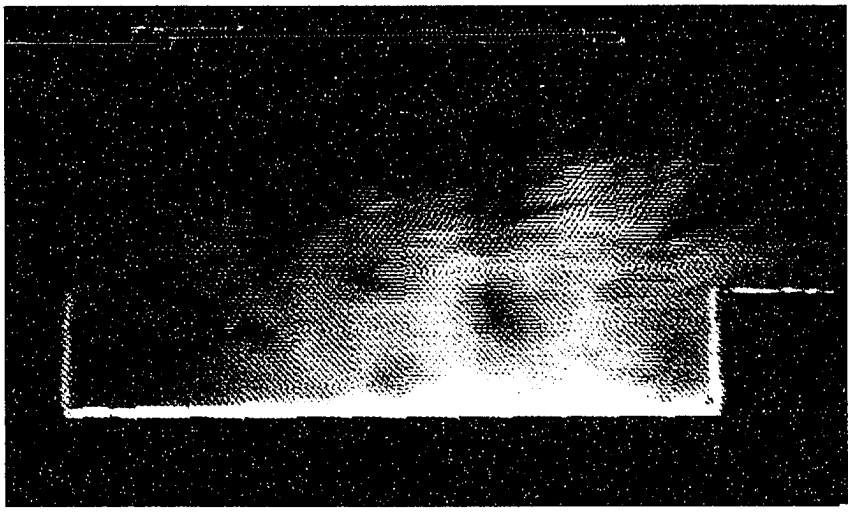

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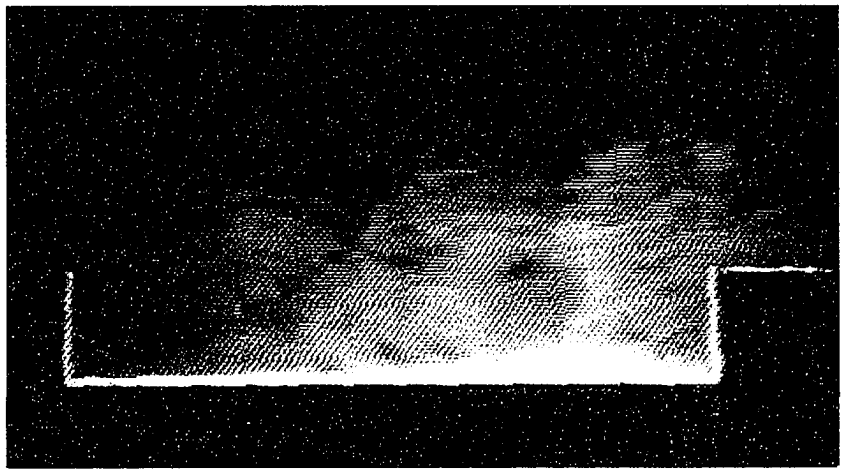

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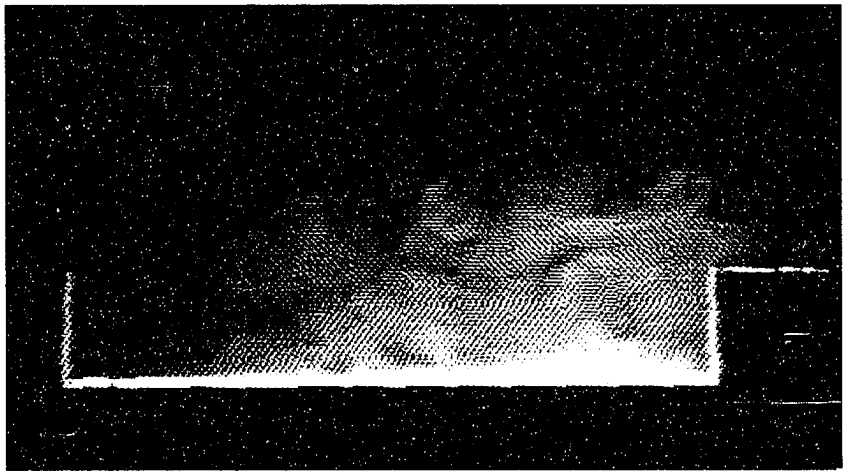

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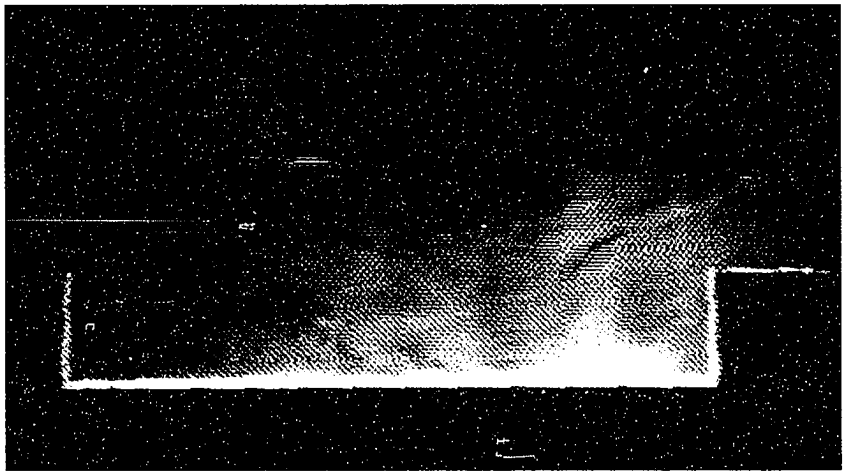

(6)

Appendix B

Velocity and Turbulence Intensity Profiles

This appendix includes five pages of data. Each data shows seven different velocity and turbulence intensity profile data with different rows of upwind buildings.

B/H=0.5 N=1 U(m/sec) Height (cm)

Point 1			Point 2			Point 3			Point 4			Point 5			Point 6			Point 7		
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%		Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%	
1	1.7489	46.9921	9	8.07	27.8051	7.9808	26.7013		8.3448	25.4701		1	3.1028	44.6376	2.0698	45.7639		2.0629	51.3195	
2	1.599	45.4378	10	8.5424	26.9915	8.8641	24.2176		8.9203	25.2115		2	3.9153	35.1703	2.406	44.3696		2.5641	48.1801	
3	1.4513	42.9929	11	9.0212	26.394	9.1357	23.8408		9.1879	24.6319		3	4.2745	32.2646	2.9861	41.8929		2.8397	43.4353	
4	1.413	43.1804	12	9.436	25.1393	9.5836	23.8273		9.5532	24.4283		4	4.4817	31.4381	3.6285	37.2379		3.2836	40.282	
6	1.3687	41.5541	13	9.8708	24.238	9.8566	23.6799		10.1077	23.0646		6	5.2666	31.628	4.4942	31.9178		4.3873	33.9106	
8	6.2837	36.7262	14	10.1619	22.3172	10.228	22.0949		10.0805	22.1909		8	6.1253	31.5748	5.9211	30.7366		6.0438	30.7835	
10	8.3605	28.4887	16	10.7683	19.4375	10.5526	21.0081		10.704	20.6809		10	7.3742	29.3859	7.4118	28.7896		7.5662	28.5928	
12	9.4855	25.327	18	11.3479	17.9976	11.1407	18.5018		11.0233	20.0981		12	8.9245	29.5017	8.6842	26.843		8.7786	25.852	
15	10.8834	20.0191	20	11.6747	18.254	11.0014	19.0859		11.1668	19.0883		15	10.6524	21.8638	10.109	22.8927		9.7595	23.6158	
20	11.6437	17.0168	25	11.8105	17.3589	11.6846	17.513		11.7214	15.9669		20	11.6596	17.3304	11.1477	18.3285		11.531	17.832	
30	12.0197	16.4654	30	12.1065	15.9854	11.8426	17.087		12.0703	16.8821		30	12.3104	17.0142	12.1479	15.8464		11.8888	16.8336	
40	12.4695	16.2285	40	12.4986	15.5446	12.4548	15.7096		12.4893	15.4742		40	12.6748	15.667	12.6738	15.4912		12.2743	15.4312	
50	13.0365	14.5458	50	12.9562	14.6594	12.9225	14.2668		13.0532	13.8048		50	13.0634	15.3511	13.1059	13.9602		12.8444	14.5441	
60	13.2773	13.9695	60	13.4058	13.5321	13.2609	13.7775		13.176	14.074		60	13.4295	14.0409	13.4312	13.3728		13.02	13.8304	
80	13.8753	12.1815	80	13.7566	11.9721	13.7265	11.7552		13.6929	11.4852		80	14.035	11.3843	13.8285	12.229		13.5873	12.1516	
100	13.5553	10.818	100	13.6952	10.2525	13.6834	10.5618		13.5903	10.1958		100	13.8899	10.7974	13.8411	10.2949		13.5328	11.2822	

B/H=0.5 N=2

Point 1			Point 2			Point 3			Point 4			Point 5			Point 6			Point 7		
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%		Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%	
1	1.756	49.352	9	8.2764	26.4051	7.9602	26.2633		8.1951	25.3986		1	1.7403	49.1623	2.0521	47.805		2.8541	42.7618	
2	1.6299	45.9832	10	8.6617	26.1659	8.4926	25.2911		8.4951	24.0317		2	2.3655	46.6519	2.4264	45.641		3.4223	40.8844	
3	1.4519	42.8714	11	8.8956	25.7939	8.7376	25.0949		9.0237	23.9144		3	2.7557	41.6759	2.864	43.117		3.8865	37.0587	
4	1.388	40.819	12	9.2968	24.9747	9.2466	24.5622		9.0076	24.0848		4	3.0236	41.8908	3.471	38.2912		4.4584	34.1559	
6	1.3599	41.5877	13	9.8218	22.9407	9.5096	24.0472		9.3944	23.4719		6	3.7395	40.864	4.7427	32.4942		5.3184	33.4965	
8	6.1071	35.2153	14	9.9689	22.117	9.8026	24.7889		9.8742	23.2249		8	5.4812	35.7518	6.5842	29.8137		7.078	28.3496	
10	8.4223	26.3764	16	10.5059	21.7435	10.2432	21.9395		10.3291	21.4666		10	7.3247	29.0053	8.0145	25.8435		8.2367	24.8975	
12	9.3437	25.1018	18	11.2401	19.5123	10.747	21.3679		10.7287	21.1971		12	8.3031	27.7299	8.8968	24.3771		9.1343	24.399	
15	10.2861	21.8669	20	11.3825	18.7119	11.3323	18.8323		11.0806	19.4818		15	9.9401	24.7884	9.8203	22.8341		9.9748	22.5011	
20	11.2838	19.2851	25	11.6835	18.2767	11.7085	17.6168		11.5667	18.3626		20	11.0666	19.903	11.1521	19.1657		11.1376	20.4496	
30	12.1028	16.8181	30	12.1173	16.8461	11.8912	17.2747		11.7605	17.1828		30	12.0232	16.9282	11.9615	17.3925		11.8552	17.6352	
40	12.6507	15.6017	40	12.7441	16.5851	12.3023	16.4094		12.3554	15.9917		40	12.5807	15.9207	12.639	16.0471		12.4708	15.5523	
50	13.1549	14.6928	50	13.1228	14.4031	12.9976	14.8548		12.8288	14.829		50	12.9804	15.3906	13.124	14.4694		12.7333	15.1441	
60	13.4231	13.9771	60	13.4568	13.8078	13.289	13.7811		13.3026	13.3016		60	13.5541	13.6833	13.4865	13.4763		13.2125	14.1249	
80	14.046	11.3859	80	13.9934	11.6195	13.8541	11.9424		13.5897	12.1208		80	13.9672	11.6826	13.976	11.7495		13.6874	12.1699	
100	13.8273	10.5899	100	13.7991	10.7564	13.649	10.3439		13.4941	10.4723		100	13.9827	11.1579	13.9814	10.7622		13.6284	10.9178	

B/H=0.5 N=3

Point 1			Point 2			Point 3			Point 4			Point 5			Point 6			Point 7		
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%		Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%	
1	1.732	46.3818	9	8.3	24.9465	7.9912	25.6985		8.3698	24.1642		1	2.0612	51.418	2.5259	43.8294		3.3452	39.0647	
2	1.6133	44.1095	10	8.6445	24.713	8.6699	23.979		9.0071	21.6575		2	2.7125	42.7005	2.9745	40.7209		3.9266	35.9087	
3	1.4984	41.7119	11	8.9609	24.6621	8.9114	23.7062		9.1864	22.3292		3	3.244	40.7851	3.2763	38.1204		4.3138	33.7364	
4	1.4334	41.5166	12	9.2587	24.1944	9.4907	22.7659		9.5486	21.5948		4	3.4866	40.8719	3.8175	34.8012		5.0052	31.4243	
6	1.3979	40.7771	13	9.4809	23.89	9.7233	22.4379		10.0122	21.0874		6	4.24	38.974	5.3787	29.5713		5.7074	31.2829	
8	6.397	32.0886	14	10.0473	22.587	10.1692	22.017		10.1389	21.8985		8	6.1686	33.4	6.9798	27.3252		7.3117	25.5077	
10	8.4872	25.7935	16	10.5303	21.1462	10.4988	21.5089		10.6837	21.0099		10	8.0048	26.8549	8.3189	25.1327		8.7449	23.496	
12	9.2745	24.673	18	10.5986	22.1436	10.7102	21.1674		11.0714	19.8261		12	8.8759	25.2613	9.1495	23.9915		9.5506	21.5905	
15	10.2995	22.9572	20	11.1641	19.3868	11.4391	18.8036		11.2106	18.746		15	10.1042	22.6909	9.9604	21.8146		10.3383	21.0018	
20	11.08	21.0367	25	11.7941	17.2395	11.7068	17.5543		11.9575	17.7581		20	11.4223	19.8784	11.1696	19.103		10.9168	20.8679	
30	12.1343	16.7147	30	12.0491	17.677	11.8701	18.0932		11.9771	17.4159		30	12.1812	16.698	12.1337	16.4249		11.8228	16.7949	
40	12.6517	16.9041	40	12.5259	16.2386	12.3654	16.0499		12.7891	15.031		40	12.7256	15.303	12.6159	16.0073		12.5656	15.5735	
50	13.0334	15.3125	50	13.0933	14.76	12.9708	15.5389		13.0057	14.6697		50	13.1214	14.7124	13.1161	14.7623		13.0064	14.0771	
60	13.6173	13.4464	60	13.5941	13.4928	13.481	13.7741		13.4459	13.7239		60	13.5062	13.5326	13.3195	14.3949		13.3487	13.4314	
80	14.0753	11.7562	80	14.0024	12.2223	13.9272	12.1884		13.8367	12.1281		80	14.0549	11.6063	13.9406	11.5231		13.7972	11.9318	
100	13.859	10.8008	100	13.88	10.9904	13.7921	10.7531		13.6853	10.3596		100	13.9966	10.8915	13.8878	10.8312		13.7011	10.9751	

B/H=0.5 N=8

Point 1			Point 2			Point 3			Point 4			Point 5			Point 6			Point 7		
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%		Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%	
1	1.74	46.6559	9	8.6385	22.2586	8.687	21.7103		8.9584	21.9336		1	2.3488	49.2466	2.7745	39.4103		3.1328	38.188	
2	1.6282	42.6086	10	9.2831	20.8396	9.3895	20.9737		9.4564	20.4154		2	3.4194	38.1641	3.2717	35.1162		3.6913	36.8651	
3	1.4653	41.162	11	9.7172	20.264	9.7557	20.9482		9.6992	19.8947		3	3.8357	35.6553	3.9708	33.3441		4.2706	34.3679	
4	1.4207	42.2611	12	9.9376	21.0032	9.9489	20.2352		9.9317	19.8096		4	4.5029	33.3339	4.5219	32.2483		4.9243	31.4396	
6	1.3725	40.5847	13	10.3141	19.2165	10.2176	20.2553		10.4766	18.6235		6	5.1219	32.5865	5.9231	27.267		6.0269	28.862	
8	6.9786	27.6569	14	10.576	19.2636	10.3231	20.4147		10.411	18.4813		8	6.7559	27.8624	7.4618	25.7122		7.6537	25.0821	
10	9.1695	21.7295	16	10.9464	19.0887	11.0438	19.0062		10.8692	19.0334		10	8.6407	22.9658	8.7375	22.6674		8.9358	21.2903	
12	9.8914	20.6342	18	11.0448	19.2354	11.1295	17.812		11.1621	18.0582		12	9.7578	21.344	9.8427	21.7421		9.7414	19.8789	
15	10.7267	19.1274	20	11.2406	18.4188	11.4325	18.1885		11.3799	18.5065		15	10.7647	19.5854	10.5922	18.0873		10.466	19.8966	
20	11.0842	19.3125	25	11.9423	17.7881	11.8422	17.2032		11.9744	16.7555		20	11.2031	18.822	11.2982	18.0327		11.2376	18.5037	
30	12.0771	16.494	30	12.2101	16.3039	12.1743	16.4338		12.1641	17.0614		30	11.8763	17.2842	12.1748	17.2598		11.871	17.356	
40	12.8447	15.2822	40	12.5952	16.2556	12.4489	16.1798		12.5037	16.5941		40	12.4439	16.8793	12.6137	15.6939		12.4161	15.9515	
50	13.1101	14.8997	50	13.2654	14.713	13.0892	14.7009		12.8169	15.5253		50	13.1425	14.1599	13.12	14.7722		12.8638	14.7745	
60	13.5358	13.743	60	13.6527	13.6297	13.4238	14.1965		13.4577	13.5386		60	13.5083	14.2157	13.2174	14.3405		13.17	13.5625	
80	14.0773	11.8927	80	14.1528	11.6136	14.0604	11.6903		13.783	11.7493		80	14.0469	12.0023	13.9143	12.1093		13.842	11.1311	
100	13.9342	10.5439	100	13.9741	10.2567	13.8403	10.7835		13.5943	10.8964		100	14.1532	10.6754	13.8573	10.7813		13.7372	10.9741	

B/H=1 N=1

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1	3.5607	31.8593	9	8.3611	28.2943	8.2891	26.6271	8.6989	24.3735	1	4.2488	41.5671	3.4305	48.188	3.6984	49.3537
2	2.7056	37.6862	10	9.0685	24.9885	9.0713	24.323	9.2381	22.9216	2	4.6666	38.5661	3.9838	45.3751	4.1429	44.1348
3	2.338	41.4485	12	9.6239	22.8689	9.7885	23.1179	9.8865	21.7698	3	5.1896	33.8346	4.6807	39.9013	4.4468	40.6909
4	2.1378	39.9047	14	10.3682	21.4354	10.3556	21.2782	10.2898	20.9794	4	5.542	31.377	4.8694	38.6321	4.8892	39.0436
6	1.7351	42.6822	16	10.7483	19.4712	10.6878	19.6736	10.693	19.1376	6	6.6508	30.4908	6.0563	33.2423	5.687	37.107
8	6.4502	35.9922	18	11.02	18.1552	11.1483	18.1762	11.1421	18.2301	8	7.5526	28.8712	7.1242	28.559	7.171	29.6383
10	8.8517	24.8487	20	11.3393	17.9681	11.3774	17.5322	11.0956	17.7147	10	8.7826	26.4826	8.1076	27.6615	7.9211	27.632
12	9.4374	24.2499	25	11.639	16.904	11.7756	17.3054	11.6444	16.7578	12	9.8708	23.0239	9.3442	23.9846	8.9316	25.0564
15	10.5552	20.964	30	12.0017	16.1011	11.8999	16.44	11.8901	16.433	15	10.7842	19.8502	10.3534	21.4737	10.2787	21.669
20	11.3968	17.2099	40	12.4784	15.3733	12.524	15.1397	12.3815	15.3084	20	11.4491	17.1143	11.2156	17.6411	11.1723	18.3313
30	11.9455	16.6797	50	12.9857	14.6052	12.9173	14.2828	12.7144	14.4882	30	12.0967	16.889	11.8363	16.1507	11.8709	16.4259
40	12.3246	15.9363	60	13.1906	13.549	13.0548	14.1983	13.0927	13.555	40	12.466	15.7142	12.4474	15.4062	12.3511	15.239
50	12.8615	14.6661	80	13.6623	11.2682	13.5691	11.6106	13.4307	11.6715	50	12.9234	14.9217	12.7959	14.6358	12.5824	14.8515
60	13.2531	13.7683	100	13.3964	10.5753	13.3353	10.5639	13.1175	10.4292	60	13.2129	13.468	13.1806	13.4953	13.0464	13.2383
80	13.637	11.357								80	13.6144	12.1412	13.5821	11.3073	13.3291	11.8839
100	13.3617	11.0257								100	13.5981	10.5497	13.4642	10.7766	13.257	10.7006

B/H=1 N=2

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1	3.1943	34.5641	9	8.0073	27.782	8.2481	26.0759	8.1365	25.2778	1	3.3115	47.218	3.3807	49.543	3.4663	51.6283
2	2.4115	39.6445	10	8.7284	24.2781	8.6358	25.2655	8.4947	26.0264	2	3.5947	46.4237	3.6256	47.22	4.0241	43.5826
3	2.0266	41.4758	12	9.6146	22.8626	9.4223	23.1023	9.2925	23.3691	3	4.1335	41.992	3.9908	42.9714	4.6945	40.1568
4	1.7519	42.143	14	9.6742	23.2113	9.8907	22.7661	9.889	22.361	4	4.8752	37.3325	4.7246	38.5974	4.6682	40.9378
6	1.53	43.0181	16	10.4553	21.6874	10.7253	20.6201	10.4251	22.1386	6	5.3199	34.0951	5.2609	35.75	5.5949	36.4469
8	6.3714	34.3885	18	10.8535	19.8846	10.8711	19.9243	10.6843	19.983	8	6.4282	30.5611	6.5528	32.0983	6.5443	33.2443
10	8.9374	24.6417	20	11.0428	19.2264	11.1545	19.3847	11.077	19.0782	10	7.3438	29.6527	7.5779	28.0602	8.0282	27.1078
12	9.5544	23.0633	25	11.7632	16.7645	11.6048	17.4559	11.7263	17.0066	12	8.5535	26.3781	8.5297	25.2674	8.6077	24.7881
15	10.2089	21.4855	30	11.8642	16.2226	11.9888	16.4976	11.8981	16.6919	15	9.6636	23.3134	9.7819	21.8819	9.6357	22.4797
20	11.1714	18.5186	40	12.587	15.7327	12.4807	15.7153	12.4784	15.2736	20	11.0227	19.5654	10.9145	18.9346	10.974	19.3263
30	11.8578	17.0436	50	13.0247	13.841	12.766	14.4947	12.731	14.5291	30	11.7282	17.0157	11.9004	16.3816	11.7361	16.5767
40	12.3707	15.6524	60	13.2378	13.347	13.0161	14.0814	13.1907	13.1301	40	12.1349	16.4006	12.0956	15.8009	12.1113	15.5979
50	12.8579	14.8416	80	13.5908	12.3214	13.67	11.3299	13.487	11.3573	50	12.6756	14.9085	12.7315	14.1345	12.5793	14.4617
60	13.2271	13.5882	100	13.3966	10.8435	13.3378	10.3821	13.2419	10.6552	60	13.0924	13.4842	13.0443	13.3191	12.8104	13.3082
80	13.7485	11.8102								80	13.5033	11.1761	13.3292	11.5811	13.2438	11.798
100	13.5208	10.4193								100	13.4173	10.8006	13.3418	10.6168	13.23	10.7498

B/H=1 N=3

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
4	1.8373	44.1087	9	7.8502	27.9297	7.688	26.8118	8.1296	25.0859	1	3.4725	46.0271	3.4489	49.8204	4.2134	41.6744
6	1.4574	44.2273	10	8.2218	26.3717	8.4753	25.8929	8.9234	22.7438	2	3.9269	42.9448	3.919	44.355	4.522	41.5262
8	5.2956	37.7044	12	9.3342	23.3126	9.1453	24.0382	9.3261	22.3951	3	4.2264	42.5452	4.1786	42.1157	4.8745	39.8191
10	8.2155	26.7177	14	9.6939	22.6292	9.6219	23.5265	9.7181	21.9303	4	4.4329	39.5975	4.6897	38.058	5.2142	36.9519
12	9.0853	24.9677	16	10.0511	22.1749	10.2734	20.9958	10.5617	19.581	6	5.2218	36.1271	5.5071	33.5208	5.7635	35.8509
15	9.8909	22.3846	18	10.8012	20.0875	10.5175	21.4442	10.482	20.8173	8	6.1605	33.8174	6.41	31.2267	7.0286	29.9536
20	10.7185	20.2135	20	10.7849	20.3843	10.7355	20.1114	10.8963	19.3153	10	7.1748	29.7921	7.6299	26.8935	8.2499	24.6881
25	11.191	18.4364	25	11.2096	18.392	11.538	18.4815	11.4167	17.9074	12	8.2976	26.5234	8.5834	25.373	8.657	24.2512
30	11.7483	16.9549	30	11.778	17.8779	11.6951	16.9587	11.7278	16.8915	15	9.2685	23.1187	9.5864	22.1413	9.5987	22.2258
40	12.2562	16.168	40	12.4385	15.3773	12.138	16.2165	12.1112	15.7882	20	10.6054	20.5608	10.6599	19.3577	10.6047	19.9534
50	12.4802	15.4428	50	12.6233	15.0432	12.5257	14.6807	12.3922	15.2312	30	11.8141	17.4257	11.6339	17.4185	11.5225	17.9087
60	12.9298	13.8549	60	12.9265	14.4094	12.9569	13.7069	12.8738	13.871	40	12.2841	15.3439	12.1836	15.2277	11.9993	15.7107
80	13.4488	11.3913	80	13.5705	11.4097	13.3961	11.3321	13.3244	12.0709	50	12.5967	15.1331	12.6578	13.8731	12.2337	14.834
100	13.3771	11.0637	100	13.338	10.9227	13.108	10.8268	12.9953	10.9256	60	12.9572	13.6707	12.8529	13.6812	12.6485	13.5191
										80	13.374	11.7093	13.1623	11.7627	13.083	11.7809
										100	13.2555	10.8067	13.1379	10.7245	13.0235	10.3717

B/H=1 N=8

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1	3.6707	31.0033	9	8.1685	25.6816	8.0941	24.0764	8.8891	23.0861	1	4.0537	44.2291	4.1111	45.7349	5.0279	38.9074
2	2.6921	37.0512	10	8.8014	22.2119	8.8146	23.0246	9.2321	21.7213	2	4.5069	43.8988	4.5968	41.9317	5.3936	35.838
3	2.2771	39.538	12	9.381	21.3763	9.6784	20.8321	9.7973	20.6486	3	5.0627	39.1357	4.938	38.2469	5.8747	33.2826
4	2.0207	43.1905	14	10.2037	19.0815	10.2065	20.4695	10.4848	19.6359	4	5.2222	36.4614	5.2339	35.2322	6.0686	30.995
5	1.6264	46.647	16	10.2388	20.3315	10.4688	19.0566	10.7328	19.272	6	6.0255	30.2487	6.2292	31.0276	6.4775	31.5633
6	1.5234	45.295	18	10.519	19.2689	10.7121	19.0054	10.944	18.5609	8	6.673	29.8473	7.1722	29.014	7.5326	27.3122
7	2.2106	41.8383	20	10.9711	17.5479	11.2588	17.6401	11.2683	18.0539	10	7.9576	26.1435	8.2632	24.2064	8.1353	24.8538
8	6.0643	33.642	25	11.5989	16.8248	11.4729	17.4473	11.5191	16.9703	12	8.9267	22.3876	9.1198	22.4595	9.1446	22.216
9	8.7137	23.498	30	11.9045	16.129	11.7273	16.7789	12.1093	16.0085	15	9.6497	21.0821	9.796	21.3509	9.9967	20.5611
10	8.8361	23.8498	40	12.2809	15.4399	12.3422	15.5473	12.5168	14.6384	20	10.4683	18.8339	10.758	18.8653	10.651	19.5799
15	10.3008	20.6243	50	12.7053	14.0241	12.6584	14.4964	12.7716	14.8018	30	11.5459	16.8583	11.7652	15.8818	11.406	17.1797
20	11.0655	18.7856	60	12.8946	13.537	12.8963	13.7517	13.0827	13.3059	40	11.9437	16.0148	12.0804	15.5339	11.8761	16.4337
30	11.9967	16.679	80	13.3904	11.9796	13.3996	11.3335	13.4389	11.8936	50	12.5087	15.0154	12.5428	14.388	12.3633	15.0536
40	12.5734	15.5603	100	13.0484	10.8826	13.1603	10.4101	13.2479	10.4845	60	12.7871	13.5058	12.8849	13.2317	12.7418	13.1364
50	12.8865	14.8914								80	13.197	12.2894	13.2923	11.7108	12.9581	11.6671
60	13.1973	13.557								100	13.2294	10.8602	13.2064	11.0258	12.9752	11.0456
80	13.5982	11.5549														
100	13.3868	10.6595														

B/H=2 N=1

Point 1			Point 2			Point 3			Point 4			Point 5			Point 6			Point 7		
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%		Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%	
1	4.3633	39.593	9	8.7708	28.7384	8.1018	27.0318		8.4906	25.1528		1	4.9726	38.9265	4.7941	46.6563		4.9279	40.6706	
2	3.3737	40.01	10	8.9668	26.6934	8.764	27.3084		9.0567	24.4115		2	5.548	37.9881	5.3479	43.8228		5.4138	39.8084	
3	3.055	42.6678	11	9.6478	23.313	9.4094	25.3919		9.4957	24.8163		3	6.1153	35.2521	5.4038	45.7003		5.9136	39.1221	
4	2.9787	50.7155	12	9.9438	23.1125	9.633	24.943		9.5858	23.0669		4	6.7423	35.2477	6.1923	42.0541		6.306	36.6586	
6	3.9504	55.1937	13	10.1316	21.8636	9.9978	23.3174		10.1505	22.3592		6	7.8526	30.4965	7.2255	35.7342		7.2202	32.1485	
8	7.3648	36.2242	14	10.533	20.6926	10.2815	21.1439		10.4891	21.608		8	9.1809	25.0075	8.4792	28.6075		8.0167	30.3514	
10	9.3845	24.5054	16	10.949	19.8139	11.0885	19.6942		10.9421	19.2163		10	9.5541	22.3342	9.2576	25.3131		8.705	27.8312	
12	9.9398	23.0872	18	11.0774	18.2658	11.0893	19.3455		11.1951	18.766		12	10.2009	20.625	9.8267	23.52		9.7866	24.0759	
15	10.8388	19.9187	20	11.5621	18.4413	11.4479	17.5855		11.2762	18.1191		15	10.7945	18.6396	10.2616	21.203		10.3901	20.4928	
20	11.3032	18.2098	25	11.8449	16.7337	11.7123	16.7634		11.7351	16.7712		20	11.1591	17.5941	11.0719	18.1402		10.8556	18.5977	
30	12.0045	16.2372	30	12.1407	16.8152	12.2484	15.8336		12.3053	16.0072		30	11.9212	16.7196	11.7871	16.4201		11.4486	16.5485	
40	12.616	15.6282	40	12.6409	15.6682	12.4829	15.2948		12.1792	15.9218		40	12.209	16.2086	12.1902	15.3825		11.8915	16.0521	
50	12.8655	14.7882	50	12.9	15.2107	12.9382	14.6786		13.0426	14.58		50	12.8806	14.4612	12.531	14.9107		12.3332	14.9193	
60	13.3295	13.6765	60	13.5571	13.2375	13.2599	13.984		13.2211	14.1792		60	13.0914	14.808	12.9779	13.7448		12.7678	13.8091	
80	13.8438	11.8615	80	13.7596	12.1165	13.7216	11.4068		13.6962	11.9817		80	13.703	12.1277	13.3552	12.5507		13.1771	11.8759	
100	13.8059	10.5472	100	13.7127	10.3503	13.5466	10.5174		13.467	10.8095		100	13.7466	10.9775	13.3163	11.5454		13.2937	11.4516	

B/H=2 N=2

Point 1			Point 2			Point 3			Point 4			Point 5			Point 6			Point 7		
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%		Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%	
1	4.216	41.3835	9	8.3689	30.271	7.7821	30.7837		8.2391	27.7368		1	4.4283	45.7824	4.4577	53.1957		4.8474	43.9406	
2	3.2125	42.3965	10	8.6652	27.4723	8.4755	28.6342		8.9953	25.5117		2	4.8976	42.8386	5.1388	49.6527		5.3825	41.5822	
3	2.8975	43.6337	11	8.9964	25.4308	8.8989	27.0737		8.8293	27.0549		3	5.2115	41.9088	5.4318	48.8767		5.5873	39.9608	
4	2.7959	47.7886	12	9.3604	24.0445	9.3296	25.4743		9.5681	23.7302		4	5.7122	40.687	5.7219	44.1299		5.9287	39.922	
6	3.5759	57.1057	13	9.726	23.5771	9.8028	24.2553		9.6456	23.6633		6	6.8288	34.5232	6.6976	39.2942		6.8865	35.7572	
8	6.959	38.877	14	10.1529	22.6429	10.1539	22.4635		10.0519	23.1589		8	7.8061	28.856	7.6713	32.0307		7.7921	30.5782	
10	8.6787	27.8991	16	10.5501	20.7333	10.3856	21.9379		10.7597	20.4855		10	8.3115	28.6479	8.2348	29.2526		8.8031	26.9443	
12	9.5325	24.2656	18	10.8525	19.7679	10.9105	19.833		10.7924	20.7787		12	9.0639	26.8179	9.1647	26.0591		9.5081	23.895	
15	10.4257	21.884	20	11.1441	19.3779	11.201	19.5221		11.155	19.8376		15	10.2156	21.1302	10.178	22.437		10.2066	23.3149	
20	11.2993	18.6037	25	11.6346	17.4905	11.67	17.6535		11.6899	17.7579		20	10.9453	19.3313	10.9324	19.3749		10.8392	20.3513	
30	12.3544	16.1612	30	11.6481	17.9954	11.9764	17.5886		11.91	16.5057		30	11.6581	16.6517	11.8195	17.0393		11.8961	17.3815	
40	12.5771	15.661	40	12.3106	16.2966	12.4762	15.9101		12.4564	16.0474		40	12.1228	15.6751	12.0583	16.1761		12.2475	15.4814	
50	12.834	15.2836	50	13.0457	14.6773	12.9912	14.9141		12.7969	15.2284		50	12.699	15.014	12.5972	15.596		12.6149	15.0738	
60	13.3557	14.2141	60	13.3561	14.1062	13.4461	13.2529		13.3545	13.4576		60	13.1675	13.8644	13.0426	13.6715		13.085	13.8231	
80	13.9039	11.8014	80	13.955	12.0766	13.8452	11.7947		13.6253	11.9283		80	13.6052	12.3593	13.4973	12.6354		13.3905	12.5093	
100	13.7531	10.3857	100	13.6255	10.6891	13.632	10.4267		13.3929	10.7445		100	13.7299	11.1613	13.6028	10.6302		13.4587	11.2215	

B/H=2 N=3

Point 1			Point 2			Point 3			Point 4			Point 5			Point 6			Point 7		
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%		Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%	
1	4.0998	43.32	9	8.4685	31.01	7.0282	33.062		8.3005	27.1065		1	4.318	45.8444	4.4	51.15		5.2035	43.2607	
2	3.1647	44.1667	10	8.5081	29.5199	8.2099	29.4378		9.0192	25.055		2	4.8293	44.3415	4.7347	53.0547		5.3769	41.116	
3	2.793	43.4282	11	8.8975	27.2618	8.7878	29.0454		8.8407	25.9483		3	5.2072	42.647	5.3492	48.4269		5.545	44.1128	
4	2.5884	49.124	12	9.1189	25.805	8.9942	26.6274		9.5152	24.86		4	5.4137	42.1738	6.2974	43.9154		5.9782	39.3394	
6	3.3573	57.1824	13	9.4465	24.6776	9.5777	24.3617		9.7445	24.1116		6	6.5197	33.6688	6.9752	38.607		6.9233	36.3172	
8	6.7831	39.3202	14	9.5742	23.8337	9.8641	24.845		9.9953	23.2913		8	7.4141	29.6015	7.4174	32.4379		7.8195	31.4173	
10	8.9588	26.4541	16	10.1881	22.0727	10.1626	23.3283		10.5074	21.5438		10	8.2183	29.1968	8.2878	29.2662		8.4212	29.6702	
12	9.4046	25.0047	18	10.4598	21.5999	10.7983	20.1341		10.7095	20.7099		12	8.9457	27.7284	9.3204	25.8455		9.1285	26.921	
15	10.1938	22.7693	20	10.8713	19.6068	10.9949	20.8206		11.1854	19.3348		15	9.9095	23.3803	10.0171	22.19		10.129	23.7465	
20	11.1502	19.5882	25	11.4939	18.1219	11.5746	18.5776		11.763	17.6525		20	11.0197	19.3684	10.8812	20.7458		10.7381	21.4411	
30	11.9397	17.9532	30	12.014	16.6876	12.1593	16.0301		11.9848	16.5455		30	11.6986	16.8028	12.1667	17.2987		11.8295	17.1166	
40	12.2191	16.281	40	12.4853	16.4463	12.6615	15.1798		12.5414	16.3392		40	12.1538	16.4124	12.4985	15.138		12.2707	15.8314	
50	12.8235	15.3431	50	12.982	14.9781	12.9601	14.4955		12.8401	14.7049		50	12.9114	14.9006	12.6969	14.7272		12.8024	14.6182	
60	13.2206	13.8812	60	13.4253	13.501	13.228	13.8278		13.1043	14.4989		60	13.3175	13.6836	13.2956	13.5791		12.9058	13.9797	
80	13.862	12.0316	80	13.8742	11.5131	13.7692	11.5226		13.5546	12.0222		80	13.8178	12.2705	13.518	12.4653		13.4206	12.2783	
100	13.689	10.6309	100	13.537	10.801	13.5861	10.5119		13.4985	10.5322		100	13.8892	10.6842	13.7357	10.7002		13.5601	10.8906	

B/H=2 N=8

Point 1			Point 2			Point 3			Point 4			Point 5			Point 6			Point 7		
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%		Height	U mean	u T.I.%	U mean	u T.I.%		U mean	u T.I.%	
1	4.14	41.8319	9	8.3308	31.277	7.5143	28.7001		7.924	28.0955		1	5.395	38.1724	5.4366	42.549		5.7359	40.7602	
2	3.1791	40.6853	10	8.5905	28.708	8.418	26.8788		8.5106	27.4482		2	5.5159	40.5552	5.5522	44.9731		5.6501	41.9701	
3	2.8481	45.2728	11	9.0014	25.0943	8.6342	27.1525		8.9644	24.6722		3	5.8325	41.1336	6.1679	39.9598		6.4581	36.5811	
4	2.5709	46.7591	12	9.1649	26.2561	9.0129	26.6164		9.0762	25.5792		4	6.3238	38.3315	6.1589	42.7199		7.0707	31.8339	
6	3.6203	57.2176	13	9.809	23.5897	9.4856	24.0686		9.5937	23.1215		6	6.7187	35.1577	7.2527	35.6306		7.2592	32.1414	
8	6.9753	39.7016	14	9.9429	23.9497	9.6689	23.9504		9.6764	22.6505		8	7.8594	30.0204	8.3109	28.7565		8.5114	28.9264	
10	8.85	28.3907	16	10.4228	21.7367	10.1341	21.4841		10.155	22.218		10	8.9876	25.8106	8.9	27.0749		8.6709	26.3236	
12	9.6487	24.046	18	10.9054	21.0496	10.3394	21.1862		10.6727	20.0512		12	9.0309	25.7302	9.4113	24.8529		9.4574	24.0922	
15	9.9104	23.0247	20	10.8941	20.8152	10.7545	20.4242		10.7832	19.905		15	9.7383	22.5236	10.3469	21.9795		10.3253	21.0816	
20	10.9332	20.8354	25	11.7968	18.2973	11.3132	18.7196		11.3198	18.2905		20	10.9795	20.3229	10.9216	20.1165		10.9855	19.0156	
30	12.3673	16.6949	30	11.9566	17.9016	11.8573	16.6836		11.7711	17.2133		30	12.0173	17.309	11.9307	17.3688		11.9089	16.9999	
40	12.6956	16.4707	40	12.9056	15.8453	12.299	16.1178		12.3427	15.8579		40	12.5227	16.3486	12.4981	15.4197		12.4036	16.3365	
50	13.1318	14.3764	50	13.2413	14.6073	12.8102	14.7171		12.7145	15.1394		50	13.1109	14.7311	13.0281	14.7938		12.8635	14.6924	
60	13.5687	13.6206	60	13.633	13.962	13.1704	13.731		13.0355	13.5367		60	13.3851	13.6236	13.3621	13.6464		13.274	13.3687	
80	14.0874	11.5385	80	14.0752	11.8699	13.6319	11.951		13.545	11.5677		80	14.0277	11.8829	13.8222	12.0017		13.7387	11.8256	
100	13.8923	10.7102	100	13.9575	10.4224	13.5362	10.3097		13.3479	10.0042		100	14.1977	10.6715	13.9333	10.6563		13.8325	11.0245	

B/H=4 N=1

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1	2.3991	45.421	9	9.2753	27.3752	7.0926	33.1483	8.2135	25.3064	1	6.3693	29.4378	6.8184	27.0375	6.2478	31.7252
2	2.5408	46.0268	10	9.2684	24.758	8.1803	29.6856	8.6615	24.7135	2	7.1428	27.2521	7.3305	25.8524	6.9433	29.3845
3	2.7901	47.8091	11	9.2698	24.7488	8.4548	30.4473	8.9642	25.3004	3	7.4957	25.9644	7.9654	24.8495	7.2585	29.63
4	2.9218	50.2753	12	9.4848	24.0763	9.1392	27.4115	9.2992	25.2393	4	8.0634	25.5173	8.3293	24.2582	7.7583	27.4598
6	4.1147	54.8328	13	9.7087	23.8014	9.7305	25.3442	9.6609	24.1615	6	8.7258	23.2369	8.7947	22.4514	8.4478	25.1073
8	6.2628	42.6166	14	10.2595	22.7993	10.1725	23.6675	10.2553	22.1516	8	9.2396	21.0528	9.5615	20.5269	9.2347	22.5438
10	8.3637	31.9054	16	10.9218	20.7934	10.5461	21.7352	10.4451	20.605	10	9.6697	19.781	9.7803	20.3042	9.6048	20.0958
12	9.2073	25.5711	18	11.0319	19.5225	11.1976	19.1278	10.7857	19.1616	12	9.9549	19.2156	10.0258	19.724	10.0637	19.5342
15	10.1421	22.3738	20	11.4291	17.6688	11.3727	18.472	11.2156	18.6417	15	10.1435	19.1927	10.57	18.6493	10.3707	19.4469
20	10.7999	18.53	25	11.7075	17.4139	11.588	17.6118	11.4717	17.8669	20	10.6764	18.6401	10.7869	18.4232	10.8748	17.9395
30	11.8069	16.525	30	12.1675	16.8529	11.8752	17.4101	11.6995	17.0967	30	11.1706	17.7723	11.2605	17.3345	11.3403	17.1275
40	11.8761	17.3094	40	12.571	15.974	12.3813	16.218	12.4485	15.1811	40	11.7197	16.6447	11.8781	16.9901	11.6278	16.4397
50	12.6024	15.666	50	12.9272	14.9821	12.7813	15.9007	12.7349	14.9666	50	12.0364	15.937	12.2801	15.25	11.993	15.8906
60	13.0295	14.3541	60	13.2152	14.5702	13.3105	14.1933	13.1162	14.0132	60	12.6567	15.5297	12.5416	14.4722	12.4627	14.4586
80	13.522	12.0685	80	13.7348	12.3059	13.6764	12.1467	13.6944	11.7944	80	13.0793	13.003	13.1199	12.2814	13.0392	12.5182
100	13.3764	10.4501	100	13.5525	10.8644	13.5732	10.3188	13.448	10.5947	100	13.3701	11.3612	13.1774	11.1866	12.9816	11.6373

B/H=4 N=2

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1	2.4604	42.9578	9	9.4271	24.2084	7.1175	32.4712	8.0614	25.2003	1	5.5698	31.6494	6.4459	26.8798	5.9044	31.7975
2	2.4884	44.2387	10	8.9377	24.4984	7.7325	32.6892	8.4799	25.5622	2	6.3366	31.6625	6.8703	26.6847	6.6358	31.3216
3	2.7175	46.7238	11	9.1823	24.7588	8.5161	30.0546	9.081	26.1441	3	6.7041	29.5248	7.2169	27.688	7.1388	30.4984
4	2.9741	50.5362	12	9.495	25.0504	9.0703	26.716	9.349	24.7094	4	7.2389	28.8495	7.6327	24.9633	7.4958	28.981
6	4.0665	52.0619	13	9.6638	24.5092	9.5231	25.9962	9.6951	24.0256	6	8.0396	27.1033	8.3544	23.3625	8.1637	26.338
8	6.2419	42.5112	14	10.2028	22.2774	10.136	23.8368	9.748	24.2529	8	8.5889	24.7353	8.9876	22.0137	8.6967	24.6753
10	8.1121	30.9021	16	10.5367	21.1829	10.446	21.407	10.4342	22.7235	10	9.1239	21.7921	9.381	20.7487	9.4166	22.6038
12	8.9678	25.8193	18	10.7226	20.6412	10.8186	21.2195	10.6612	20.7271	12	9.4978	22.2846	9.6734	21.3535	9.7374	21.7307
15	10.0068	21.6484	20	11.1545	18.8363	11.2707	19.4824	11.1228	19.6587	15	10.0618	20.8915	10.1262	20.2555	10.1923	20.6298
20	10.7585	19.8259	25	11.4058	18.3902	11.5988	18.2408	11.4324	18.3566	20	10.6472	19.6992	10.8155	18.7954	10.7196	19.6208
30	11.8451	17.1417	30	11.8695	16.7471	12.0267	17.7035	11.7866	17.249	30	11.3673	17.1866	11.2533	17.8639	11.5663	16.8784
40	12.2921	16.8914	40	12.3166	16.4706	12.4018	16.8537	12.3433	16.2109	40	11.9168	17.0941	11.9507	16.9578	12.0671	16.1438
50	12.8235	15.7587	50	13.0784	14.7998	13.0464	14.6945	12.8633	14.8792	50	12.4709	15.6941	12.306	15.7323	12.5426	15.5041
60	13.1013	15.5914	60	13.1946	14.2795	13.2645	14.2176	13.0971	14.0754	60	12.856	14.9286	12.6728	14.8364	12.8838	14.6056
80	13.7318	11.8878	80	13.8389	12.2673	13.7953	12.1488	13.7781	11.6992	80	13.5806	12.9098	13.2126	12.9486	13.3234	13.1946
100	13.6502	10.598	100	13.6391	10.8905	13.6743	10.344	13.5107	10.6674	100	13.5174	11.5871	13.3505	11.9125	13.3629	11.92

B/H=4 N=3

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1	2.2871	44.0909	9	9.2647	26.0852	6.7782	33.3382	7.931	26.5328	1	5.7237	33.3198	6.6843	27.3785	5.9893	32.4501
2	2.5354	45.4207	10	8.7323	24.8945	7.7171	32.8891	8.5581	25.9446	2	6.3792	31.0019	7.0063	27.172	6.6299	31.117
3	2.7848	48.5445	11	8.9784	25.0934	8.3899	31.0558	8.9768	25.4474	3	6.8304	28.8428	7.5541	26.713	7.0417	30.192
4	3.1367	51.2752	12	9.3029	25.1135	8.7728	27.8452	9.2094	25.7322	4	7.1823	29.0693	7.7809	26.5464	7.407	28.9598
6	4.4426	50.9173	13	9.7407	23.1245	9.1235	26.3155	9.5492	23.4968	6	7.8864	27.2353	8.3851	24.2953	8.0655	26.75
8	6.2679	42.4382	14	9.6924	23.6987	9.6833	26.0734	9.7203	23.8438	8	8.8498	24.5441	8.8682	23.9756	8.5435	24.9745
10	8.4106	30.1861	16	10.3006	21.6326	10.1527	22.0589	10.323	22.8653	10	9.2256	23.6003	9.3347	23.4885	9.227	23.3847
12	9.0848	26.6388	18	10.8656	20.0352	10.7594	21.0871	10.8665	20.556	12	9.5413	22.4583	9.905	22.0373	9.6048	22.4821
15	10.1534	22.9034	20	10.8749	19.5279	10.9322	19.7402	11.1463	18.9387	15	10.2697	21.3854	10.5732	19.9632	10.2088	21.0712
20	11.0174	19.7797	25	11.5208	17.7	11.3946	18.3729	11.5542	18.3816	20	10.9897	19.484	11.0678	20.1533	10.971	18.8149
30	12.1778	18.0157	30	11.8972	17.0588	11.7066	18.1147	11.9739	17.1673	30	11.8339	17.5918	11.8905	17.3111	11.9671	16.0319
40	12.4934	16.7914	40	12.3487	16.0701	12.2547	15.9207	12.3291	15.4215	40	12.3458	17.2324	12.2172	16.5802	12.4262	15.74
50	13.0744	16.1463	50	12.769	15.6855	12.7725	14.8265	12.8765	14.3949	50	12.7858	16.0313	12.8905	14.6167	12.7188	15.1645
60	13.6333	14.5781	60	13.2708	14.1875	12.8619	14.463	13.1248	14.0796	60	13.3338	15.0268	13.1692	14.216	13.1496	13.9983
80	14.1813	12.5868	80	13.8152	11.8276	13.5851	11.606	13.6202	11.9242	80	14.0266	12.7806	13.6883	12.814	13.4642	13.4976
100	13.9543	11.3468	100	13.6517	10.2213	13.5038	10.4678	13.4893	10.5833	100	14.0138	11.4003	13.8845	11.4995	13.5122	11.8821

B/H=4 N=8

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1	2.2273	44.6849	9	9.0001	27.6527	6.9388	32.6197	7.7478	26.8568	1	5.4163	33.9314	6.2263	29.1292	5.8994	32.8045
2	2.437	45.5457	10	8.9272	24.4624	7.5418	32.9038	8.2121	26.8629	2	6.09	32.2523	6.8843	28.208	6.5914	31.2563
3	2.6887	50.4373	11	9.1282	24.9498	8.2591	29.8878	8.7347	26.6609	3	6.464	32.3809	7.2107	27.5454	6.7771	30.8954
4	3.0332	51.5271	12	9.266	24.7586	8.8159	29.209	9.04	25.5656	4	7.0051	29.4823	7.6723	26.7482	7.3072	29.7834
6	3.9676	52.5837	13	9.6555	23.6905	9.2301	25.3796	9.2383	25.204	6	7.8346	27.2354	8.0908	25.055	8.1361	25.1274
8	5.9048	44.3231	14	9.7695	23.7889	9.4699	26.2187	9.8301	22.8037	8	8.6044	25.2524	8.8301	23.7883	8.7341	24.3609
10	7.8689	32.5414	16	10.3145	21.6306	10.0156	22.3092	10.054	23.1788	10	9.0094	25.0775	9.3552	23.4674	9.0693	24.0122
12	8.919	26.6199	18	10.6072	20.1171	10.5276	21.9901	10.4461	20.9573	12	9.252	23.7316	9.7093	22.1658	9.4913	22.5921
15	9.7737	23.5967	20	10.8582	20.2842	10.8484	20.0282	10.7318	20.6861	15	9.7594	23.2485	10.1239	21.1971	9.8993	21.7086
20	10.6934	21.8843	25	11.5121	19.3912	11.4906	19.1693	11.3619	19.2075	20	10.5602	20.8353	10.5599	20.0434	10.7257	19.9892
30	11.5917	17.9306	30	11.9281	18.1526	11.7066	17.5791	12.0139	17.6031	30	11.4935	18.8726	11.9259	16.8246	11.6945	17.9853
40	12.3808	16.5644	40	12.489	16.8071	12.4308	16.2981	12.3593	15.9338	40	12.4271	16.5029	12.2762	16.7042	12.2517	16.4854
50	12.9454	16.0079	50	12.9802	15.2052	12.8306	15.4199	12.8771	15.5701	50	12.8452	15.7578	12.9125	15.3168	12.7206	15.4029
60	13.3509	14.6328	60	13.463	13.8591	13.3324	13.8462	13.1903	13.993	60	13.3692	14.0158	13.3011	14.1933	13.1791	14.2545
80	14.0582	11.6736	80	13.9836	11.8185	13.9272	11.5148	13.8654	10.8701	80	13.9391	12.252	13.8971	12.2067	13.756	12.2855
100	13.7628	10.7907	100	13.794	10.275	13.6913	10.4273	13.6444	10.2741	100	14.0792	11.3136	13.9314	11.1047	13.8356	10.9134

B/H=6 N=1

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1	2.4473	59.8697	9	10.083	29.3225	6.3099	39.8955	8.2001	26.7927	1	5.9955	28.4698	6.5555	25.5836	7.6529	21.9201
2	3.0367	53.9626	10	9.9498	21.0972	7.2608	38.5753	8.6948	26.2542	2	6.7861	26.9058	7.1055	25.0399	8.2208	21.709
3	3.4301	53.3342	11	10.0401	21.0698	8.2981	33.0634	9.2469	26.7791	3	7.4736	25.4711	7.6904	24.4555	8.4153	21.8014
4	4.0343	52.0688	12	10.1733	21.3998	9.1755	28.6767	9.6925	24.6266	4	7.7445	25.5955	7.8436	23.8957	8.9275	20.5454
6	5.0456	47.6546	13	10.1723	21.9105	9.8747	25.3646	10.0898	23.6105	6	8.4625	22.098	8.5625	22.192	9.5092	20.2055
8	6.4827	40.9476	14	10.4253	22.0457	10.2873	24.0524	10.3693	21.8593	8	8.6767	21.2659	8.7188	21.3191	9.8558	19.5824
10	7.6555	32.4995	16	10.8241	20.8765	10.8709	21.3463	10.8141	20.3061	10	9.0608	21.575	9.0866	20.4861	10.1035	18.4519
12	8.8457	27.0954	18	11.0586	19.4849	11.2289	19.3831	11.2219	18.9948	12	9.1935	20.0452	9.3539	19.3086	10.2694	18.3098
15	9.6603	21.7758	20	11.4395	18.4023	11.2855	19.2422	11.4274	18.4431	15	9.6445	19.8679	9.6514	19.4729	10.3611	18.577
20	10.3092	19.9898	25	11.5237	18.7711	11.6941	17.749	11.5396	18.0795	20	9.7816	19.3736	10.0208	18.0407	10.9241	17.9423
30	11.1108	18.1888	30	11.8792	16.8647	11.9231	16.8579	12.0043	17.0423	30	10.584	18.1239	10.6208	17.5468	11.6001	16.853
40	11.7191	16.9286	40	12.492	16.1265	12.4542	15.8712	12.3465	16.5982	40	11.033	17.2995	11.0676	16.605	12.0414	15.56
50	12.1471	16.2155	50	12.9568	15.4148	12.9551	15.0974	12.6542	15.8246	50	11.3615	16.7697	11.3991	16.1095	12.26	15.3079
60	12.5778	15.1663	60	13.2384	14.4182	13.2207	14.6945	13.2391	14.1083	60	11.7793	15.4629	11.7451	15.5579	12.4616	14.9104
80	13.0227	12.554	80	13.8124	12.2471	13.8567	11.9449	13.6524	12.2166	80	12.333	14.1914	12.2401	13.5695	12.9418	13.4379
100	13.1581	11.078	100	13.7773	10.9	13.6159	10.9783	13.5203	10.3756	100	12.5016	12.2201	12.3858	12.6374	13.0409	12.2501

B/H=6 N=2

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1	2.5387	57.4762	9	10.033	23.7117	6.1317	41.4359	8.1432	26.8167	1	6.5389	28.1966	7.3118	23.0118	7.2784	24.013
2	3.0895	53.6576	10	9.7428	21.3155	7.5304	36.1345	8.5252	27.0181	2	7.1682	26.7464	7.869	22.6527	7.9111	23.5812
3	3.6151	52.6924	11	9.6204	21.7532	8.2582	34.5394	9.0178	26.7557	3	7.6056	26.3687	8.3677	21.732	8.2544	21.2038
4	3.9828	51.2007	12	9.7944	21.6941	8.9449	29.1242	9.6573	24.775	4	7.8555	25.5031	8.6923	21.8395	8.5531	22.3206
6	5.1354	47.2715	13	9.7201	23.0623	9.5759	25.8529	9.9445	23.8544	6	8.2509	23.5994	9.1487	21.7047	8.9728	21.7215
8	6.6367	38.6151	14	9.9595	23.0645	9.9464	23.5595	10.1837	22.9448	8	8.9517	22.8849	9.3996	21.5803	9.2456	21.2269
10	7.8165	32.3147	16	10.5014	20.2857	10.7383	21.8733	10.5168	21.5245	10	9.4103	20.4474	9.5974	21.7167	9.803	20.8947
12	8.8339	27.3124	18	10.6365	19.8851	11.0648	19.8404	10.8167	21.1854	12	9.5384	20.7674	10.0759	20.214	10.2674	20.1776
15	9.5951	24.4466	20	11.0019	18.4293	10.9456	19.6215	11.1904	18.2384	15	9.7303	20.5525	10.3934	18.1164	10.3621	20.1643
20	10.4633	20.7471	25	11.4432	17.8262	11.22	18.7864	11.4659	18.0182	20	10.3581	19.0844	10.4933	19.4543	11.0389	17.8563
30	11.4614	18.5385	30	11.3843	18.0056	11.715	16.9931	11.9641	16.9194	30	10.8895	17.8835	11.3488	17.0117	11.603	16.9136
40	12.1301	16.5468	40	12.1027	16.3228	12.1652	16.6894	12.2497	15.8425	40	11.448	16.8937	11.732	17.1018	11.9706	16.4017
50	12.625	15.5754	50	12.6143	15.2887	12.5013	15.4598	12.3261	16.4558	50	11.9435	15.9863	12.1909	16.0913	12.4014	15.3513
60	13.0701	14.8899	60	13.0789	14.0236	13.0055	14.2992	13.0002	14.293	60	12.2345	15.1322	12.6472	14.4449	12.833	14.4289
80	13.5511	12.6736	80	13.6848	12.0169	13.409	12.4618	13.4823	11.4646	80	12.9142	13.3068	12.9955	13.4136	13.2704	13.6454
100	13.5053	11.3332	100	13.4889	10.517	13.3694	10.9063	13.2736	10.8378	100	13.0232	12.4698	13.077	12.2284	13.3425	12.0691

B/H=6 N=3

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1	2.594	55.3707	9	10.0248	24.621	6.0347	40.4939	8.2575	26.5262	1	5.9955	29.2911	7.1552	22.8101	7.602	23.4768
2	3.1408	52.1201	10	9.5795	21.6567	6.7797	39.562	8.5164	26.4894	2	6.8754	27.3984	7.5913	22.7426	7.9283	23.0659
3	3.5138	51.6141	11	9.2865	23.1776	8.062	33.6368	9.0075	26.3052	3	7.4557	26.0204	8.0078	22.4693	8.2197	23.2677
4	3.9294	50.5166	12	9.6384	21.9127	8.9609	29.0959	9.4064	25.3149	4	7.6743	26.1682	8.5122	21.9394	8.4867	23.1747
6	5.3085	45.4066	13	9.9019	21.4804	9.4619	24.9023	9.647	23.9885	6	8.3757	24.3656	8.7769	22.6625	8.9582	22.6529
8	6.5924	39.8248	14	10.0128	22.705	9.7397	24.2374	10.0372	22.7843	8	8.645	23.5709	9.087	22.148	9.3611	20.8297
10	7.9227	32.8176	16	10.1802	21.9262	10.184	22.3582	10.5308	21.3832	10	9.0589	22.4532	9.582	20.0071	9.7897	19.842
12	8.755	27.0107	18	10.6565	20.786	10.8427	20.8044	10.6906	20.4455	12	9.3262	21.5446	9.9233	20.432	9.9873	19.1949
15	9.6724	22.8048	20	10.9735	19.7662	11.1339	19.1115	10.9636	20.4441	15	9.7123	21.6974	10.3559	19.3318	10.3267	19.7589
20	10.5299	20.4523	25	11.5216	17.8094	11.466	18.7043	11.2716	18.7157	20	10.2536	19.9964	10.7961	18.6209	10.6454	19.2624
30	11.362	18.913	30	11.6689	17.8977	11.6664	17.5781	11.7502	17.2368	30	11.0125	17.122	11.3221	17.736	11.4095	17.4353
40	12.0782	16.9926	40	12.1509	16.6029	12.2643	16.5027	12.0599	16.8353	40	11.4509	17.4271	11.9404	16.6822	11.7751	16.5296
50	12.6476	16.0517	50	12.5363	15.7791	12.6026	15.6332	12.61	14.8428	50	12.0473	15.871	12.3057	15.1636	12.2647	15.3059
60	13.2452	13.6478	60	13.1107	14.3058	13.0643	14.0147	13.0498	14.197	60	12.3753	15.7729	12.7135	14.622	12.383	15.2599
80	13.5906	12.3221	80	13.6302	12.1878	13.5505	12.4313	13.4962	11.8616	80	12.8922	13.6968	13.1042	13.4736	12.898	13.9139
100	13.5481	10.7465	100	13.4021	10.8998	13.4723	10.7631	13.3896	10.4122	100	13.0814	12.3486	13.239	12.1065	13.1734	11.8957

B/H=6 N=8

Point 1			Point 2			Point 3		Point 4		Point 5			Point 6		Point 7	
Height	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%	Height	U mean	u T.I.%	U mean	u T.I.%	U mean	u T.I.%
1.01	2.7692	49.1741	9	9.4355	21.511	5.7237	42.6249	8.2664	27.1114	1	6.017	29.8594	7.0281	23.3132	7.1804	24.2856
2	3.1844	45.8874	10	9.0092	21.8507	6.8924	38.9147	8.7472	26.9227	2	6.6167	28.2767	7.6118	22.7923	7.7565	24.2121
3	3.5675	47.1777	11	8.8633	22.1272	7.7787	34.8246	9.0039	25.8178	3	7.1281	27.5584	7.9611	22.8983	8.044	23.7708
4	4.0592	46.943	12	9.0242	22.965	8.7375	28.8646	9.2705	25.5086	4	7.6184	26.0048	8.3854	21.7244	8.3469	22.1412
6	5.1846	43.0143	13	9.1725	23.3055	9.125	26.0375	9.8298	22.6335	6	8.1215	25.0252	8.9591	21.7388	8.7628	23.1634
8	6.4125	37.2412	14	9.7599	21.8493	9.6556	23.5648	9.7876	22.9968	8	8.4631	23.6818	9.0899	21.6717	9.2244	21.357
10	7.6418	30.7085	16	9.9641	20.8839	9.9349	22.1577	10.4669	20.8183	10	8.8767	22.6449	9.5802	20.7257	9.4395	22.6441
12	8.3541	27.0843	18	10.2986	21.2412	10.4987	20.32	10.6974	20.4901	12	9.1885	21.4842	9.8526	19.9979	9.8418	20.1173
15	9.0511	23.996	20	10.36	19.4988	10.9904	19.4326	10.8923	19.6978	15	9.4225	21.734	10.2327	20.3594	10.0666	20.2246
20	9.8878	21.0664	25	10.8417	18.3196	11.1185	19.1941	11.0665	18.353	20	9.8354	21.5073	10.7118	19.0043	10.5328	18.9553
30	10.8629	18.2273	30	11.1324	17.6783	11.4598	18.0613	11.5234	17.4055	30	10.8059	18.7915	11.4147	17.324	11.2543	17.4766
40	11.6373	17.0426	40	11.5546	16.446	12.1226	15.6915	11.9617	16.7567	40	11.4993	16.7359	11.8748	16.9867	11.9003	15.9987
50	12.0203	15.7224	50	12.1416	15.5275	12.4792	15.1744	12.3769	14.804	50	11.8533	16.3956	12.3715	15.5088	12.2136	15.873
60	12.4836	14.4128	60	12.6727	13.1587	12.6907	14.9999	12.8573	13.6567	60	12.4878	14.6303	12.6789	15.4818	12.6201	14.4283
80	13.0427	12.3188	80	13.072	11.94	13.3274	12.2093	13.2945	11.711	80	12.9275	13.2862	13.1455	13.6733	13.0271	13.0082
100	13.0665	11.1685	100	12.9226	11.2934	13.1772	10.4676	13.0097	10.8364	100	13.0246	12.6163	13.2209	12.5976	13.0954	11.874

Appendix C

Pressure Coefficients

This appendix presents the values of minimum, mean, maximum, RMS, -peak and +peak pressure coefficients for 95 pressure taps on the surface of testing building.

B/H=0.5 N=1 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5799	1.266	2.1343	0.2613	0.4822	2.0498
1	-0.6391	0.0094	0.392	0.0935	-0.2709	0.2898
2	-0.7342	0.0159	0.4245	0.1021	-0.2904	0.3221
3	-0.7922	0.0207	0.4692	0.1067	-0.2993	0.3407
4	-0.7683	0.0252	0.4475	0.1049	-0.2896	0.3399
5	-0.6999	0.0284	0.4242	0.0992	-0.269	0.3259
6	-1.0242	0.0398	0.4722	0.0989	-0.2569	0.3365
7	-0.6759	-0.011	0.4666	0.0936	-0.2018	0.2698
8	-0.5079	0.0443	0.3936	0.0776	-0.1886	0.2772
9	-0.4651	0.0472	0.4063	0.0793	-0.1908	0.2853
10	-0.4412	0.0599	0.4545	0.0826	-0.188	0.3078
11	-0.385	0.0597	0.4316	0.0786	-0.1762	0.2956
12	-0.3774	0.0643	0.456	0.0787	-0.172	0.3005
13	-0.6674	0.0431	0.3448	0.0769	-0.1875	0.2737
14	-0.4219	0.0573	0.3723	0.0739	-0.1641	0.2787
15	-0.3054	0.0632	0.4135	0.074	-0.1589	0.2852
16	-0.3107	0.0669	0.3942	0.0743	-0.1561	0.2898
17	-0.4143	0.0666	0.4165	0.0709	-0.1481	0.2792
18	-0.3014	0.0754	0.4324	0.0702	-0.1352	0.286
19	-0.4137	0.0805	0.3808	0.0696	-0.1282	0.2891
20	-0.5206	0.0659	0.4033	0.0712	-0.1477	0.2795
21	-0.2433	0.0725	0.3871	0.0691	-0.1348	0.2797
22	-0.2912	0.0838	0.3846	0.0681	-0.1204	0.288
23	-0.2573	0.0867	0.3808	0.0661	-0.1118	0.2851
24	-0.3479	0.0811	0.3918	0.0655	-0.1153	0.2776
25	-0.7038	0.0568	0.3324	0.07	-0.1533	0.267
26	-0.5541	0.0772	0.3769	0.0692	-0.1305	0.2849
27	-0.3159	0.0832	0.4132	0.0675	-0.1193	0.2857
28	-0.245	0.0914	0.4179	0.0639	-0.1004	0.2832
29	-0.3187	0.0903	0.3798	0.0615	-0.0944	0.2749
30	-0.2649	0.0896	0.3848	0.0619	-0.0962	0.2754
31	-0.5541	0.0772	0.3769	0.0692	-0.1305	0.2849
32	-0.3291	0.088	0.4094	0.0683	-0.1169	0.2929
33	-0.2364	0.0943	0.3939	0.0655	-0.1022	0.2909
34	-0.2327	0.103	0.3841	0.0617	-0.0822	0.2882
35	-0.1744	0.1028	0.4098	0.0602	-0.0778	0.2835
36	-0.2239	0.0997	0.378	0.0602	-0.081	0.2804
37	-0.528	0.0883	0.415	0.0642	-0.1043	0.2809
38	-0.2979	0.093	0.4139	0.0666	-0.1069	0.2929
39	-0.355	0.0992	0.4139	0.063	-0.0897	0.288
40	-0.1863	0.1048	0.4124	0.0588	-0.0718	0.2813
41	-0.2497	0.1035	0.3841	0.0574	-0.0686	0.2756
42	-0.1761	0.1018	0.3455	0.0579	-0.072	0.2756
43	-0.4902	0.0883	0.358	0.0619	-0.0973	0.2739
44	-0.3005	0.1041	0.3846	0.0607	-0.078	0.2862
45	-0.2027	0.1032	0.348	0.0568	-0.0673	0.2736
46	-0.1386	0.1013	0.3275	0.0534	-0.0588	0.2614
47	-0.161	0.0976	0.312	0.0538	-0.0638	0.259
48	-0.259	0.0906	0.2687	0.0552	-0.1149	0.2161
49	-0.392	0.0956	0.3413	0.0609	-0.1469	0.2182
50	-0.2563	0.1414	0.8667	0.1167	-0.2087	0.4915
51	-0.2754	0.1597	0.8234	0.1189	-0.191	0.5104
52	-0.2556	0.1889	1.2257	0.1322	-0.2078	0.5855
53	-0.7032	0.2195	1.07	0.1529	-0.2392	0.6783
54	-0.2393	0.2307	1.1741	0.1559	-0.237	0.6983
55	-0.176	0.0935	0.5814	0.0808	-0.1489	0.3359
56	-0.3077	0.0818	0.3766	0.0731	-0.1575	0.2811
57	-0.3727	0.0816	0.4184	0.0756	-0.1654	0.2885
58	-0.2731	0.0571	0.3855	0.0755	-0.1603	0.2836
59	-0.2453	0.1635	0.8131	0.1095	-0.1651	0.4921
60	-0.5735	0.0719	0.4307	0.0696	-0.1369	0.2807
61	-0.2605	0.0533	0.3468	0.0654	-0.1428	0.2494
62	-0.2148	0.0499	0.3546	0.0676	-0.153	0.2528
63	-0.2907	0.055	0.3577	0.0701	-0.1552	0.2651
64	-0.5519	0.1082	0.7358	0.0894	-0.1599	0.3763
65	-0.1724	0.0648	0.2911	0.0542	-0.0979	0.2275
66	-0.221	0.0572	0.2443	0.0536	-0.1035	0.218
67	-0.3421	0.0384	0.2868	0.0591	-0.139	0.2158
68	-0.3701	-0.0039	0.249	0.0656	-0.2002	0.1936
69	-0.1682	0.0664	0.2808	0.0536	-0.0946	0.2273
70	-0.2816	0.0576	0.2409	0.0555	-0.1009	0.2243
71	-0.2394	0.0475	0.2782	0.0571	-0.1237	0.2187
72	-0.4783	-0.0142	0.2311	0.0671	-0.2156	0.1872
73	-0.1842	0.0611	0.2725	0.0533	-0.0989	0.221
74	-0.2309	0.053	0.2775	0.056	-0.1151	0.2211
75	-0.181	0.0551	0.3259	0.0538	-0.1063	0.2164
76	-0.3779	-0.0093	0.2306	0.0656	-0.2059	0.1874
77	-0.7071	-0.0099	0.3961	0.0978	-0.3034	0.2836
78	-0.3976	0.0356	0.3899	0.0656	-0.1812	0.2323
79	-0.3437	0.051	0.3929	0.0629	-0.1378	0.2398
80	-0.3513	0.0582	0.4188	0.0648	-0.1361	0.2525
81	-0.5022	0.063	0.3828	0.0659	-0.1347	0.2607
82	-0.3887	0.0415	0.3163	0.0607	-0.1407	0.2236
83	-0.5625	0.0177	0.332	0.0746	-0.2082	0.2418
84	-0.2889	0.0374	0.3378	0.0613	-0.1466	0.2215
85	-0.29	0.0493	0.3517	0.0602	-0.1314	0.2299
86	-0.3491	0.06	0.3544	0.0612	-0.1235	0.2436
87	-0.3658	0.0585	0.3561	0.062	-0.1195	0.2526
88	-0.2883	0.064	0.3308	0.0616	-0.1209	0.2489
89	-0.2655	0.0432	0.276	0.0557	-0.1238	0.2102
90	-0.4569	0.0424	0.3883	0.0658	-0.1549	0.2397
91	-0.2466	0.0415	0.3626	0.0587	-0.1347	0.2177
92	-0.2347	0.0471	0.3571	0.0577	-0.1259	0.2201
93	-0.2884	0.0641	0.333	0.0586	-0.1118	0.2399
94	-0.2342	0.0726	0.3184	0.0571	-0.0986	0.2438
95	-0.1855	0.0545	0.2939	0.0514	-0.0996	0.2085

B/H=0.5 N=1 10 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5384	1.2697	2.1033	0.2516	0.515	2.0244
1	-0.8345	0.026	0.5107	0.1021	-0.2802	0.3322
2	-0.8984	0.0379	0.5092	0.1091	-0.2893	0.3652
3	-0.6136	0.0585	0.5684	0.1047	-0.2559	0.3727
4	-0.6206	0.078	0.5995	0.0992	-0.2196	0.3756
5	-0.7398	0.066	0.5482	0.0952	-0.2197	0.3517
6	-0.6597	0.0527	0.4792	0.095	-0.2324	0.3378
7	-0.7483	0.0243	0.457	0.0858	-0.2331	0.2816
8	-0.7417	0.059	0.4733	0.0916	-0.217	0.3329
9	-0.4806	0.0736	0.4473	0.0783	-0.1612	0.3084
10	-0.3578	0.0952	0.5023	0.0804	-0.1458	0.3363
11	-0.335	0.092	0.5604	0.0764	-0.1371	0.321
12	-0.393	0.0881	0.4381	0.0763	-0.1407	0.3169
13	-0.3614	0.0721	0.4093	0.0703	-0.1388	0.283
14	-0.6191	0.0688	0.4864	0.0846	-0.185	0.3226
15	-0.3683	0.0882	0.46	0.0721	-0.128	0.3044
16	-0.3507	0.0957	0.4501	0.0722	-0.1198	0.3132
17	-0.5571	0.0785	0.4659	0.0777	-0.1545	0.3116
18	-0.3176	0.0953	0.4566	0.0684	-0.1088	0.3014
19	-0.3307	0.1047	0.4449	0.0673	-0.0973	0.3066
20	-0.6891	0.0748	0.4506	0.0803	-0.1662	0.3158
21	-0.4859	0.0886	0.4362	0.0713	-0.1253	0.3024
22	-0.3325	0.106	0.4424	0.0658	-0.0914	0.3035
23	-0.2235	0.1135	0.4045	0.0647	-0.0807	0.3077
24	-0.1857	0.1109	0.4076	0.064	-0.0811	0.3026
25	-0.3677	0.0967	0.4287	0.064	-0.0954	0.2888
26	-0.5525	0.0938	0.4685	0.0728	-0.1245	0.3121
27	-0.3735	0.1017	0.5206	0.0673	-0.1002	0.3036
28	-0.3096	0.1138	0.4249	0.0625	-0.0737	0.3012
29	-0.2113	0.1164	0.4607	0.0605	-0.0652	0.2979
30	-0.2473	0.1202	0.4089	0.0606	-0.0616	0.3021
31	0.0357	0.1791	0.3303	0.0337	0.0782	0.2801
32	-0.6789	0.1102	0.4585	0.07	-0.0997	0.3201
33	-0.4307	0.1161	0.4268	0.0642	-0.0765	0.3086
34	-0.2408	0.1254	0.427	0.0604	-0.0557	0.3065
35	-0.2557	0.1278	0.4177	0.0599	-0.0518	0.3074
36	-0.1975	0.1292	0.4027	0.0597	-0.0499	0.3083
37	-0.1962	0.1249	0.4053	0.0615	-0.0597	0.3096
38	-0.5956	0.1161	0.4692	0.0675	-0.0864	0.3187
39	-0.3202	0.1214	0.4211	0.0613	-0.0626	0.3054
40	-0.1858	0.1253	0.386	0.0577	-0.0478	0.2984
41	-0.1929	0.1297	0.4229	0.0568	-0.0408	0.3003
42	-0.2003	0.1338	0.4022	0.0571	-0.0374	0.305
43	-0.2952	0.1262	0.373	0.0599	-0.0535	0.3058
44	-0.2426	0.1029	0.3753	0.0583	-0.0719	0.2777
45	-0.2888	0.0991	0.3639	0.0549	-0.0656	0.2639
46	-0.1636	0.1084	0.3603	0.0528	-0.05	0.2668
47	-0.3292	0.123	0.3195	0.0517	-0.032	0.278
48	-0.1969	0.098	0.3731	0.0516	-0.0569	0.2529
49	-0.3997	0.1007	0.3849	0.0592	-0.0769	0.2783
50	-0.381	0.2044	1.0728	0.1248	-0.17	0.5788
51	-0.1765	0.2025	0.9456	0.128	-0.1916	0.5867
52	-0.2002	0.2226	1.0761	0.1369	-0.1881	0.6334
53	-0.2084	0.2081	1.0669	0.1229	-0.1604	0.5767
54	-0.1753	0.2037	1.1977	0.1294	-0.1843	0.5918
55	-0.362	0.1632	0.7308	0.0924	-0.1141	0.4404
56	-0.3248	0.0775	0.4114	0.0738	-0.1437	0.2998
57	-0.306	0.0901	0.4713	0.0727	-0.1282	0.3083
58	-0.2723	0.0997	0.43	0.0716	-0.1152	0.3147
59	-0.2446	0.1307	0.7493	0.0815	-0.1139	0.3754
60	-0.3037	0.133	0.7872	0.0901	-0.1074	0.3734
61	-0.3332	0.087	0.4009	0.0676	-0.1159	0.2899
62	-0.306	0.0826	0.4204	0.0665	-0.117	0.2821
63	-0.2808	0.0828	0.4105	0.0658	-0.1147	0.2802
64	-0.2702	0.0985	0.4809	0.0737	-0.1228	0.3197
65	-0.2147	0.0997	0.333	0.0596	-0.1392	0.2186
66	-0.2203	0.0667	0.2779	0.055	-0.0983	0.2316
67	-0.2514	0.0856	0.3022	0.0512	-0.0679	0.2396
68	-0.2973	0.0871	0.3107	0.055	-0.078	0.2523
69	-0.2205	0.0397	0.2888	0.0593	-0.1383	0.2178
70	-0.2482	0.075	0.3053	0.0553	-0.0909	0.2409
71	-0.2565	0.0831	0.2863	0.0524	-0.0742	0.2403
72	-0.3177	0.0782	0.3011	0.0545	-0.0853	0.2418
73	-0.2729	0.0354	0.2538	0.0575	-0.1371	0.2079
74	-0.2302	0.0894	0.3553	0.0533	-0.0706	0.2493
75	-0.1804	0.082	0.29	0.052	-0.0739	0.2379
76	-0.2863	0.0847	0.2934	0.0551	-0.0805	0.2498
77	-0.93	-0.0443	0.3408	0.1023	-0.3513	0.2628
78	-0.4922	0.0334	0.4412	0.0732	-0.186	0.2529
79	-0.2612	0.0745	0.3827	0.0617	-0.1106	0.2597
80	-0.4573	0.0838	0.3818	0.0627	-0.1043	0.2719
81	-0.4098	0.0884	0.3817	0.0625	-0.099	0.2758
82	-0.3876	0.0912	0.3424	0.0598	-0.0882	0.2707
83	-0.5609	-0.0144	0.3223	0.0887	-0.2808	0.2518
84	-0.3056	0.0416	0.4181	0.0668	-0.1587	0.2419
85	-0.2103	0.0768	0.3682	0.0591	-0.1007	0.2542
86	-0.2935	0.0875	0.3808	0.0598	-0.0918	0.2689
87	-0.3559	0.094	0.384	0.0603	-0.0868	0.2748
88	-0.3297	0.0926	0.3299	0.0605	-0.0687	0.2742
89	-0.2736	0.0946	0.3195	0.0554	-0.0715	0.2611
90	-0.3578	0.0264	0.3695	0.0718	-0.189	0.2417
91	-0.2549	0.0514	0.3616	0.0611	-0.1319	0.2346
92	-0.1977	0.0784	0.3379	0.0572	-0.0932	0.2501
93	-0.2613	0.0952	0.3669	0.0578	-0.0782	0.2685
94	-0.2245	0.1038	0.3898	0.0571	-0.0675	0.2751
95	-0.1489	0.1069	0.3471	0.0538	-0.0544	0.2682

B/H=0.5 N=1 20 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	-0.5176	1.2425	2.0723	0.2779	0.409	2.0761
1	-0.8177	-0.012	0.4781	0.1192	-0.3697	0.3457
2	-1.1548	-0.0105	0.5115	0.1346	-0.4144	0.3934
3	-0.7729	0.0303	0.5979	0.1232	-0.3393	0.3999
4	-0.5905	0.0751	0.5517	0.1067	-0.2451	0.3953
5	-0.7217	0.081	0.5175	0.0965	-0.2084	0.3705
6	-0.5454	0.0511	0.5324	0.0912	-0.2224	0.3246
7	-0.7815	0.0014	0.4248	0.082	-0.2446	0.2473
8	-0.9322	0.018	0.4671	0.1168	-0.3324	0.3683
9	-0.6811	0.0513	0.4656	0.0874	-0.2109	0.3135
10	-0.4411	0.0855	0.5133	0.0861	-0.1727	0.3437
11	-0.3508	0.0914	0.4397	0.0769	-0.1391	0.322
12	-0.4526	0.0816	0.4476	0.0734	-0.1387	0.3019
13	-0.4532	0.0487	0.4098	0.0681	-0.1556	0.2531
14	-0.7594	0.0356	0.4214	0.1025	-0.2719	0.3432
15	-0.3845	0.0793	0.4619	0.0774	-0.1528	0.3115
16	-0.3249	0.088	0.485	0.0754	-0.1384	0.3143
17	-0.526	0.0545	0.4502	0.088	-0.2096	0.3186
18	-0.3507	0.0874	0.4753	0.0724	-0.1298	0.3045
19	-0.2711	0.0964	0.4712	0.0689	-0.1104	0.3031
20	-1.0686	0.0514	0.4852	0.0944	-0.2317	0.3345
21	-0.445	0.0757	0.4457	0.0764	-0.1536	0.3049
22	-0.2278	0.0991	0.4435	0.0677	-0.104	0.3021
23	-0.2199	0.1078	0.4133	0.0645	-0.0856	0.3012
24	-0.3025	0.1016	0.3819	0.0629	-0.0869	0.2902
25	-0.3432	0.0849	0.3792	0.062	-0.1011	0.2708
26	-0.6164	0.0894	0.4185	0.0795	-0.1492	0.329
27	-0.3134	0.0996	0.4295	0.0704	-0.1116	0.3108
28	-0.2663	0.1112	0.4342	0.0639	-0.0805	0.3029
29	-0.1489	0.1108	0.4708	0.0606	-0.0709	0.2924
30	-0.1668	0.1131	0.4092	0.0598	-0.0664	0.2925
31	0.0365	0.1798	0.3548	0.0349	0.0751	0.2845
32	-0.4976	0.1144	0.5542	0.0749	-0.1103	0.3392
33	-0.3622	0.1218	0.5318	0.0667	-0.0783	0.3219
34	-0.1832	0.1248	0.4722	0.0618	-0.0606	0.3101
35	-0.1312	0.1202	0.4361	0.0601	-0.0602	0.3005
36	-0.1318	0.1208	0.4553	0.0592	-0.0567	0.2983
37	-0.4601	0.1212	0.4055	0.0597	-0.0581	0.3004
38	-0.5179	0.1212	0.5371	0.0722	-0.0952	0.3377
39	-0.2411	0.1235	0.4991	0.063	-0.0656	0.3127
40	-0.121	0.1165	0.4374	0.0578	-0.0569	0.2898
41	-0.1399	0.1229	0.3832	0.0568	-0.0475	0.2932
42	-0.1118	0.1264	0.3773	0.0563	-0.0427	0.2954
43	-0.2523	0.1233	0.3976	0.0579	-0.0505	0.2971
44	-0.3977	0.0719	0.4582	0.06	-0.108	0.2519
45	-0.2325	0.0641	0.4322	0.0545	-0.0995	0.2277
46	-0.1585	0.074	0.4285	0.0545	-0.0895	0.2375
47	-0.1555	0.1024	0.3953	0.0528	-0.0561	0.2609
48	-0.1205	0.1058	0.3454	0.0525	-0.0515	0.2632
49	-0.3902	0.1193	0.4024	0.057	-0.0517	0.2903
50	-0.3552	0.258	1.3264	0.1494	-0.19	0.7061
51	-0.2715	0.2227	1.0571	0.1407	-0.1993	0.6448
52	-0.1673	0.2333	1.0437	0.1364	-0.176	0.6426
53	-0.1943	0.2135	0.9042	0.118	-0.1405	0.5674
54	-0.2346	0.1904	1.104	0.117	-0.1605	0.5414
55	-0.2519	0.2148	0.9103	0.106	-0.1032	0.5328
56	-0.2493	0.092	0.4387	0.0798	-0.1475	0.3314
57	-0.3127	0.0836	0.4529	0.0742	-0.139	0.3063
58	-0.213	0.11	0.4581	0.0719	-0.1057	0.3255
59	-0.223	0.1217	0.5503	0.0746	-0.102	0.3454
60	-0.2099	0.1944	0.7587	0.0958	-0.093	0.4818
61	-0.3217	0.1045	0.569	0.0726	-0.1132	0.3222
62	-0.253	0.103	0.4381	0.0705	-0.1087	0.3146
63	-0.3329	0.0922	0.3644	0.0696	-0.1166	0.301
64	-0.2582	0.0872	0.5181	0.0705	-0.1242	0.2986
65	-0.4844	-0.0144	0.3228	0.0662	-0.2131	0.1843
66	-0.3042	0.035	0.3629	0.063	-0.1541	0.2241
67	-0.1487	0.0815	0.3255	0.0537	-0.0795	0.2425
68	-0.1299	0.1018	0.3267	0.0534	-0.0584	0.262
69	-0.495	-0.0187	0.304	0.0672	-0.2182	0.1848
70	-0.4368	0.0545	0.3701	0.0677	-0.1486	0.2577
71	-0.2075	0.0724	0.3289	0.059	-0.1044	0.2493
72	-0.1439	0.088	0.3167	0.0545	-0.0753	0.2514
73	-0.4339	-0.0141	0.2959	0.0656	-0.211	0.1827
74	-0.1549	0.0985	0.4256	0.0632	-0.091	0.288
75	-0.3089	0.0819	0.332	0.059	-0.0951	0.2589
76	-0.2186	0.0995	0.3277	0.0568	-0.0709	0.2698
77	-0.9779	-0.0849	0.2929	0.0922	-0.3415	0.2118
78	-0.7696	-0.0042	0.3347	0.0802	-0.2447	0.2364
79	-0.2484	0.0628	0.3446	0.0672	-0.1397	0.2643
80	-0.3215	0.0898	0.3719	0.0608	-0.0926	0.2721
81	-0.2608	0.1004	0.3714	0.0609	-0.0823	0.2831
82	-0.3961	0.1116	0.3499	0.0588	-0.0641	0.2872
83	-0.7161	-0.0459	0.3025	0.0843	-0.2089	0.207
84	-0.501	0.0044	0.3352	0.0733	-0.2155	0.2244
85	-0.2686	0.0718	0.3673	0.0631	-0.1176	0.2612
86	-0.3278	0.0931	0.3798	0.0605	-0.0883	0.2745
87	-0.2441	0.0995	0.3904	0.0598	-0.0798	0.2789
88	-0.2073	0.1026	0.3889	0.0593	-0.0753	0.2806
89	-0.1349	0.1126	0.3445	0.055	-0.0523	0.2775
90	-0.3929	-0.0005	0.3142	0.0703	-0.2114	0.2104
91	-0.3244	0.0209	0.3512	0.0668	-0.179	0.2209
92	-0.1556	0.0739	0.3731	0.0584	-0.1012	0.249
93	-0.2314	0.1056	0.3928	0.059	-0.0715	0.2827
94	-0.2294	0.1141	0.3614	0.059	-0.0629	0.291
95	-0.0875	0.1321	0.3639	0.0556	-0.0347	0.2989

B/H=0.5 N=1 30 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.528	1.2421	2.124	0.2579	0.4685	2.0156
1	-0.8005	-0.0696	0.3821	0.1144	-0.4127	0.2735
2	-0.8698	-0.0908	0.5205	0.1473	-0.5326	0.351
3	-0.8504	-0.0349	0.4697	0.1347	-0.4389	0.3691
4	-0.6169	0.0392	0.4388	0.1144	-0.304	0.3824
5	-0.7049	0.0767	0.4836	0.095	-0.2082	0.3616
6	-0.9665	0.0421	0.4045	0.0894	-0.2261	0.3104
7	-0.7227	-0.0313	0.2901	0.0765	-0.2607	0.198
8	-0.7333	-0.0549	0.3764	0.1256	-0.4316	0.3218
9	-0.4482	0.0078	0.4141	0.0852	-0.2477	0.2633
10	-0.4161	0.0549	0.388	0.0862	-0.2037	0.3136
11	-0.3508	0.0745	0.4399	0.0757	-0.1525	0.3015
12	-0.6231	0.0631	0.3715	0.0704	-0.1482	0.2744
13	-0.5206	0.0074	0.2593	0.0623	-0.1795	0.1942
14	-0.6498	-0.0297	0.3542	0.1093	-0.3576	0.2982
15	-0.3846	0.0456	0.3971	0.0742	-0.177	0.2682
16	-0.6516	0.0604	0.3851	0.0728	-0.1579	0.2787
17	-0.4742	0.0056	0.3555	0.0698	-0.2637	0.275
18	-0.3595	0.0564	0.3712	0.0644	-0.1518	0.2647
19	-0.2462	0.0723	0.3714	0.0656	-0.1244	0.2689
20	-0.6217	0.0052	0.4194	0.0967	-0.285	0.2953
21	-0.4109	0.0375	0.3432	0.0758	-0.1899	0.265
22	-0.2279	0.0755	0.3834	0.0642	-0.117	0.268
23	-0.2116	0.085	0.3882	0.0617	-0.1002	0.2702
24	-0.2159	0.0747	0.3907	0.059	-0.1023	0.2517
25	-0.3596	0.0428	0.3063	0.0574	-0.1292	0.2149
26	-0.4699	0.0664	0.3841	0.0617	-0.1787	0.3115
27	-0.305	0.0754	0.3784	0.0709	-0.1372	0.288
28	-0.2331	0.0885	0.3842	0.0613	-0.0953	0.2724
29	-0.216	0.0875	0.3871	0.0576	-0.0854	0.2605
30	-0.2442	0.0867	0.3922	0.0562	-0.0819	0.2554
31	0.0279	0.1541	0.3549	0.0322	0.0576	0.2507
32	-0.694	0.0908	0.4516	0.076	-0.1372	0.3188
33	-0.3537	0.0996	0.4537	0.0666	-0.1002	0.2994
34	-0.2102	0.1029	0.3825	0.0592	-0.0751	0.2798
35	-0.2056	0.0844	0.3525	0.0569	-0.0763	0.2651
36	-0.1932	0.0941	0.3502	0.0557	-0.0729	0.2612
37	-0.3391	0.0933	0.3537	0.0545	-0.0702	0.2568
38	-0.3944	0.089	0.4384	0.0751	-0.1363	0.3144
39	-0.2584	0.0927	0.4132	0.0638	-0.0988	0.2842
40	-0.2157	0.0857	0.3603	0.056	-0.0823	0.2536
41	-0.189	0.0969	0.3425	0.0542	-0.0656	0.2594
42	-0.2893	0.1003	0.369	0.0535	-0.0602	0.2607
43	-0.3925	0.0963	0.3813	0.0532	-0.0633	0.2559
44	-0.4561	0.017	0.309	0.0653	-0.1769	0.2128
45	-0.3191	0.0153	0.2944	0.0559	-0.1524	0.1831
46	-0.1759	0.0323	0.2992	0.0546	-0.1316	0.1961
47	-0.2762	0.0727	0.3438	0.053	-0.0863	0.2317
48	-0.1654	0.0884	0.3545	0.0518	-0.067	0.2438
49	-0.2901	0.1029	0.3843	0.0538	-0.0586	0.2643
50	-0.1501	0.2531	1.4293	0.1453	-0.183	0.6891
51	-0.3992	0.2326	1.2485	0.154	-0.2294	0.6946
52	-0.2233	0.237	1.1	0.1414	-0.1872	0.6611
53	-0.1851	0.1998	0.8674	0.1147	-0.1444	0.5439
54	-0.1792	0.1571	0.7353	0.0949	-0.1274	0.4417
55	-0.1249	0.2191	0.9015	0.1032	-0.0905	0.5287
56	-0.2953	0.0921	0.4481	0.0828	-0.1564	0.3405
57	-0.3128	0.0625	0.3861	0.0765	-0.1669	0.2919
58	-0.269	0.0831	0.4489	0.0715	-0.1315	0.2977
59	-0.2321	0.0937	0.3888	0.071	-0.1104	0.3069
60	-0.21	0.2102	0.7956	0.0999	-0.0895	0.5099
61	-0.2749	0.0843	0.4473	0.074	-0.1376	0.3063
62	-0.3043	0.0971	0.4297	0.0753	-0.1288	0.3231
63	-0.333	0.0756	0.3648	0.0751	-0.1498	0.3011
64	-0.2673	0.0507	0.75	0.0719	-0.1651	0.2668
65	-0.4471	-0.07	0.2005	0.07	-0.28	0.1399
66	-0.3219	-0.0013	0.2841	0.0666	-0.201	0.1984
67	-0.1904	0.0613	0.3671	0.0553	-0.1045	0.2271
68	-0.1574	0.0864	0.3724	0.0533	-0.0734	0.2462
69	-0.4232	-0.0736	0.2145	0.0705	-0.2854	0.1378
70	-0.2954	0.0264	0.3121	0.0711	-0.1869	0.2397
71	-0.244	0.0505	0.3563	0.0619	-0.1351	0.236
72	-0.1891	0.0717	0.3529	0.0548	-0.0927	0.2361
73	-0.4158	-0.0872	0.1773	0.068	-0.2712	0.1367
74	-0.1817	0.0678	0.39	0.0648	-0.1267	0.2623
75	-0.2379	0.0671	0.35	0.0585	-0.1085	0.2427
76	-0.2002	0.0837	0.3834	0.0565	-0.0857	0.2532
77	-0.8771	-0.0881	0.2007	0.083	-0.3372	0.161
78	-0.5832	-0.0613	0.2545	0.0796	-0.3002	0.1775
79	-0.3226	0.0045	0.2891	0.0726	-0.2132	0.2222
80	-0.194	0.0664	0.3172	0.0573	-0.1054	0.2382
81	-0.2516	0.0824	0.3157	0.0552	-0.0831	0.2479
82	-0.2307	0.0989	0.3501	0.0543	-0.064	0.2618
83	-0.6827	-0.0798	0.2132	0.0772	-0.3113	0.1517
84	-0.4562	-0.0586	0.4254	0.0761	-0.2868	0.1696
85	-0.3404	0.0232	0.2888	0.0707	-0.1888	0.2353
86	-0.207	0.0618	0.324	0.0605	-0.1199	0.2434
87	-0.1798	0.0719	0.3353	0.0578	-0.1013	0.2452
88	-0.1554	0.0806	0.3113	0.0554	-0.0857	0.2469
89	-0.1711	0.0887	0.3628	0.0525	-0.0587	0.2561
90	-0.5384	-0.044	0.2238	0.0682	-0.2485	0.1606
91	-0.4343	-0.0407	0.2145	0.0709	-0.2532	0.1717
92	-0.1835	0.0389	0.3083	0.0568	-0.1316	0.2094
93	-0.2047	0.0825	0.3305	0.0584	-0.0928	0.2578
94	-0.1372	0.0909	0.3248	0.0554	-0.0751	0.257
95	-0.106	0.117	0.3825	0.053	-0.0421	0.2761

B/H=0.5 N=1 40 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.6006	1.2406	2.1136	0.2533	0.4808	2.0003
1	-0.9156	-0.1441	0.2686	0.0999	-0.4439	0.1557
2	-1.1301	-0.1884	0.3276	0.1394	-0.6066	0.2298
3	-0.903	-0.1312	0.4017	0.1276	-0.5139	0.2514
4	-0.6264	-0.034	0.3957	0.1096	-0.3627	0.2947
5	-0.6543	0.0385	0.3902	0.0916	-0.2363	0.3134
6	-0.6065	0.0231	0.328	0.0819	-0.2225	0.2687
7	-0.8504	-0.0832	0.1976	0.0717	-0.2782	0.1518
8	-1.1685	-0.1459	0.3024	0.1246	-0.5198	0.2279
9	-0.466	-0.0543	0.2767	0.0747	-0.2785	0.1699
10	-0.4418	-0.0041	0.3466	0.0785	-0.2396	0.2313
11	-0.4179	0.0348	0.3155	0.0707	-0.1773	0.2469
12	-0.3511	0.0353	0.2785	0.0658	-0.162	0.2327
13	-0.5044	-0.0368	0.2261	0.0569	-0.2075	0.1339
14	-0.789	-0.1065	0.304	0.1089	-0.4333	0.2202
15	-0.3524	-0.0049	0.2917	0.0675	-0.2073	0.1976
16	-0.3171	0.0137	0.302	0.0657	-0.1835	0.2108
17	-0.6049	-0.0436	0.3473	0.0955	-0.3301	0.2428
18	-0.4908	0.0107	0.3021	0.0682	-0.194	0.2154
19	-0.2966	0.0319	0.3051	0.0622	-0.1547	0.2185
20	-0.6307	-0.0354	0.3621	0.1074	-0.3578	0.2869
21	-0.3856	-0.0063	0.3007	0.0806	-0.2481	0.2356
22	-0.3059	0.0361	0.3063	0.0624	-0.1512	0.2234
23	-0.2795	0.0491	0.3126	0.0586	-0.1265	0.2248
24	-0.2856	0.038	0.2524	0.056	-0.13	0.206
25	-0.2461	-0.0013	0.2498	0.0531	-0.1605	0.158
26	-0.7211	0.0305	0.3846	0.0941	-0.2518	0.3128
27	-0.6045	0.038	0.3361	0.0801	-0.2021	0.2782
28	-0.4003	0.0503	0.276	0.0635	-0.1402	0.2409
29	-0.2665	0.0517	0.2786	0.0573	-0.1203	0.2236
30	-0.2617	0.0512	0.3151	0.0545	-0.1122	0.2146
31	0.0021	0.1223	0.2692	0.0301	0.032	0.2126
32	-0.7547	0.0374	0.375	0.0895	-0.2311	0.3058
33	-0.6403	0.0509	0.3324	0.0762	-0.1778	0.2798
34	-0.8754	0.0816	0.329	0.064	-0.1304	0.2537
35	-0.4665	0.0544	0.2784	0.0584	-0.1208	0.2295
36	-0.2723	0.0564	0.3156	0.055	-0.1087	0.2216
37	-0.2788	0.0588	0.2587	0.0518	-0.0988	0.2123
38	-0.7334	0.0181	0.4059	0.0929	-0.2605	0.2967
39	-0.6039	0.0322	0.319	0.0732	-0.1873	0.2517
40	-0.6729	0.0345	0.3091	0.06	-0.1455	0.2145
41	-0.2384	0.057	0.2938	0.0563	-0.1119	0.2259
42	-0.3405	0.0631	0.2935	0.0539	-0.0986	0.2249
43	-0.2857	0.0595	0.283	0.0508	-0.093	0.2121
44	-0.6735	-0.0571	0.2594	0.0761	-0.2855	0.1713
45	-0.3888	-0.0407	0.2429	0.0606	-0.2226	0.1412
46	-0.306	-0.0128	0.2478	0.0562	-0.1814	0.1558
47	-0.2075	0.0371	0.2753	0.0539	-0.1246	0.1989
48	-0.1836	0.0662	0.3011	0.053	-0.0929	0.2252
49	-0.2539	0.0785	0.3118	0.0522	-0.078	0.2349
50	-0.2445	0.2044	1.0467	0.1142	-0.1381	0.547
51	-0.4088	0.1894	0.9131	0.1381	-0.2249	0.6038
52	-0.2515	0.2292	0.924	0.1364	-0.18	0.6384
53	-0.2506	0.1866	0.8125	0.1175	-0.1658	0.539
54	-0.2535	0.1213	0.9949	0.0928	-0.1571	0.3997
55	-0.225	0.1879	0.8935	0.0932	-0.0917	0.4674
56	-0.2864	0.0786	0.4211	0.0778	-0.1549	0.3122
57	-0.2653	0.0546	0.4345	0.0775	-0.178	0.2872
58	-0.288	0.06	0.3654	0.07	-0.1501	0.2701
59	-0.2323	0.0517	0.3713	0.0715	-0.1629	0.2663
60	-0.3383	0.1838	0.7233	0.1012	-0.1198	0.4874
61	-0.2846	0.0485	0.354	0.0658	-0.149	0.246
62	-0.3389	0.0837	0.379	0.0723	-0.1333	0.3007
63	-0.3242	0.0654	0.365	0.0768	-0.1643	0.2951
64	-0.3482	0.0207	0.3404	0.069	-0.1863	0.2277
65	-0.6581	-0.1152	0.1832	0.0755	-0.3417	0.1112
66	-0.2959	-0.03	0.2493	0.067	-0.2311	0.1712
67	-0.1989	0.0406	0.276	0.0555	-0.126	0.2071
68	-0.1851	0.0665	0.3089	0.0522	-0.0902	0.2232
69	-0.5316	-0.1186	0.1699	0.0723	-0.3336	0.1003
70	-0.3875	0.0009	0.3124	0.0676	-0.202	0.2038
71	-0.2261	0.0363	0.3112	0.0608	-0.1461	0.2188
72	-0.1984	0.0535	0.281	0.0531	-0.1058	0.2126
73	-0.4346	-0.1047	0.1593	0.0678	-0.308	0.0986
74	-0.2178	0.0211	0.4084	0.0649	-0.1738	0.2159
75	-0.2292	0.053	0.3325	0.057	-0.118	0.224
76	-0.1819	0.0676	0.2725	0.0536	-0.0933	0.2286
77	-1.0255	-0.122	0.1548	0.0778	-0.3554	0.1114
78	-0.8597	-0.1169	0.1832	0.0799	-0.3566	0.1227
79	-0.4435	-0.0453	0.2152	0.0729	-0.264	0.1734
80	-0.3494	0.0404	0.2536	0.0547	-0.1238	0.2045
81	-0.3078	0.0575	0.2695	0.0527	-0.1006	0.2156
82	-0.2954	0.079	0.3043	0.0523	-0.0781	0.236
83	-0.753	-0.1209	0.1508	0.0753	-0.3467	0.105
84	-0.6097	-0.1206	0.2386	0.0778	-0.3541	0.1129
85	-0.4215	-0.0184	0.2422	0.0719	-0.2343	0.1974
86	-0.319	0.0276	0.2497	0.06	-0.1524	0.2076
87	-0.2721	0.0399	0.262	0.0556	-0.1275	0.2073
88	-0.2769	0.0532	0.2598	0.0531	-0.1083	0.2126
89	-0.1804	0.0785	0.327	0.0515	-0.076	0.2331
90	-0.8578	-0.0897	0.1605	0.0672	-0.2912	0.1119
91	-0.5447	-0.1011	0.1873	0.0709	-0.3139	0.1116
92	-0.2303	0.0184	0.253	0.0601	-0.164	0.1969
93	-0.2496	0.0518	0.2882	0.0601	-0.1284	0.2319
94	-0.239	0.0598	0.2787	0.0547	-0.1042	0.2239
95	-0.1618	0.0947	0.3461	0.0509	-0.0581	0.2474

B/H=0.5 N=1 50 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5072	1.1586	2.0929	0.2414	0.4345	1.8827
1	-1.3943	-0.2298	0.2783	0.1301	-0.6202	0.1607
2	-1.3904	-0.2671	0.247	0.1541	-0.7293	0.1951
3	-1.4458	-0.2105	0.3476	0.1359	-0.6181	0.1972
4	-0.9052	-0.1093	0.377	0.1184	-0.4646	0.2461
5	-0.8659	-0.0169	0.4361	0.0993	-0.3147	0.281
6	-0.7046	-0.0174	0.3696	0.0874	-0.2794	0.2447
7	-0.6118	-0.0988	0.2025	0.0767	-0.3288	0.1311
8	-1.2758	-0.236	0.2794	0.1531	-0.6952	0.2232
9	-0.7953	-0.122	0.2501	0.0925	-0.3995	0.1554
10	-0.563	-0.073	0.3532	0.0881	-0.3373	0.1913
11	-0.5011	-0.0228	0.3825	0.0793	-0.2606	0.215
12	-0.5037	-0.0098	0.2527	0.0714	-0.2241	0.2046
13	-0.4951	-0.0799	0.1882	0.0621	-0.256	0.1064
14	-0.9414	-0.1748	0.2804	0.1293	-0.5626	0.2131
15	-0.4998	-0.0638	0.2687	0.0836	-0.3147	0.1871
16	-0.4741	-0.0453	0.2518	0.0781	-0.2796	0.189
17	-0.8521	-0.1015	0.3164	0.113	-0.4404	0.2374
18	-0.8808	-0.0552	0.3607	0.0856	-0.3119	0.2015
19	-0.5955	-0.0277	0.2999	0.0761	-0.2561	0.2008
20	-0.6931	-0.0903	0.3965	0.122	-0.4562	0.2757
21	-0.6153	-0.0669	0.3037	0.0974	-0.3591	0.2253
22	-0.4476	-0.0262	0.3096	0.0764	-0.2553	0.203
23	-0.4352	-0.003	0.2894	0.0697	-0.2121	0.2061
24	-0.4545	-0.0138	0.3167	0.0642	-0.2065	0.179
25	-0.3942	-0.0454	0.2066	0.0588	-0.2217	0.1308
26	-1.0591	-0.0621	0.3471	0.1116	-0.3959	0.2726
27	-0.6747	-0.0463	0.3232	0.0924	-0.3235	0.231
28	-0.4198	-0.0192	0.3135	0.0752	-0.2447	0.2062
29	-0.4469	-0.0062	0.2803	0.068	-0.2104	0.1979
30	-0.6761	0.0003	0.2821	0.0643	-0.1925	0.1931
31	-0.09	0.0799	0.2513	0.0334	-0.0204	0.1803
32	-1	-0.0772	0.328	0.1104	-0.4083	0.2539
33	-0.6206	-0.0404	0.3	0.0882	-0.2989	0.2182
34	-0.4756	-0.0076	0.3042	0.0716	-0.2224	0.2072
35	-0.4895	-0.0116	0.3081	0.0668	-0.2119	0.1887
36	-0.3479	-0.0016	0.3191	0.0637	-0.1929	0.1896
37	-0.5213	0.0096	0.277	0.0577	-0.1636	0.1827
38	-0.8384	-0.0816	0.3109	0.1086	-0.4075	0.2443
39	-0.5727	-0.0491	0.2677	0.0816	-0.294	0.1957
40	-0.5265	-0.039	0.2296	0.0673	-0.2408	0.1628
41	-0.3606	-0.0023	0.2708	0.063	-0.1914	0.1868
42	-0.3102	0.0106	0.3053	0.0616	-0.1743	0.1954
43	-0.3059	0.0106	0.2589	0.0563	-0.1583	0.1794
44	-0.8462	-0.1268	0.2867	0.0918	-0.4022	0.1485
45	-0.5092	-0.0947	0.2878	0.0739	-0.3163	0.127
46	-0.5874	-0.0558	0.219	0.0662	-0.2543	0.1427
47	-0.5827	-0.0059	0.2856	0.0622	-0.1924	0.1806
48	-0.408	0.0381	0.2744	0.0601	-0.1423	0.2186
49	-0.3109	0.0442	0.2656	0.0583	-0.1307	0.2191
50	-0.4084	0.1414	0.9561	0.113	-0.1976	0.4804
51	-0.5452	0.1186	0.8899	0.1186	-0.2373	0.4745
52	-0.3891	0.1778	0.9194	0.1253	-0.198	0.5537
53	-0.3384	0.146	0.8401	0.1126	-0.1918	0.4837
54	-0.2615	0.0796	0.7588	0.0937	-0.2015	0.3607
55	-0.3675	0.1277	0.5769	0.0974	-0.1646	0.4199
56	-0.4445	0.0455	0.3722	0.0765	-0.184	0.275
57	-0.4688	0.0307	0.3318	0.0788	-0.2057	0.2672
58	-0.4483	0.0414	0.3713	0.0725	-0.1759	0.2588
59	-0.2874	0.015	0.3398	0.0727	-0.2031	0.2331
60	-0.3133	0.117	0.7058	0.0995	-0.1814	0.4154
61	-0.3249	0.011	0.3388	0.0663	-0.1878	0.2098
62	-0.3171	0.0573	0.3509	0.071	-0.1558	0.2704
63	-0.3275	0.0399	0.3024	0.0736	-0.1809	0.2606
64	-0.3536	-0.0034	0.2975	0.0673	-0.2054	0.1986
65	-0.7986	-0.1547	0.1118	0.0883	-0.4136	0.1041
66	-0.4016	-0.0481	0.201	0.0701	-0.2583	0.1621
67	-0.3738	0.0149	0.2777	0.0627	-0.1731	0.203
68	-0.3356	0.0373	0.2721	0.058	-0.1358	0.2114
69	-0.5887	-0.1492	0.1242	0.0773	-0.381	0.0826
70	-0.3791	-0.0225	0.2633	0.0676	-0.2253	0.1804
71	-0.2811	0.0258	0.2748	0.0637	-0.1653	0.217
72	-0.29	0.0269	0.2428	0.0577	-0.1461	0.1999
73	-0.4458	-0.1326	0.1901	0.0748	-0.3571	0.0919
74	-0.3098	-0.0281	0.2745	0.0656	-0.2228	0.1705
75	-0.2454	0.0305	0.2605	0.0606	-0.1514	0.2124
76	-0.2444	0.0444	0.2421	0.0581	-0.1297	0.2186
77	-0.8417	-0.1619	0.1163	0.0821	-0.4082	0.0845
78	-0.892	-0.1587	0.1579	0.0839	-0.4105	0.0931
79	-0.5443	-0.0771	0.2105	0.0744	-0.3004	0.1462
80	-0.3548	0.0093	0.2911	0.0578	-0.1643	0.1828
81	-0.2598	0.0248	0.2786	0.0563	-0.1442	0.1939
82	-0.2966	0.0517	0.3159	0.0579	-0.122	0.2254
83	-0.6826	-0.1602	0.1231	0.0811	-0.4036	0.0832
84	-0.7203	-0.1646	0.1858	0.0851	-0.4198	0.0907
85	-0.5377	-0.0518	0.2594	0.0766	-0.2816	0.1781
86	-0.4114	-0.0052	0.2574	0.0653	-0.201	0.1906
87	-0.3899	0.0043	0.2806	0.0595	-0.1743	0.183
88	-0.3057	0.0199	0.2596	0.0573	-0.152	0.1918
89	-0.2707	0.0513	0.2725	0.0587	-0.1187	0.2212
90	-0.548	-0.1206	0.1913	0.0709	-0.3332	0.092
91	-0.495	-0.1398	0.1908	0.0753	-0.3655	0.0863
92	-0.396	-0.0017	0.3206	0.0665	-0.2013	0.1979
93	-0.4011	0.0174	0.2682	0.065	-0.1777	0.2125
94	-0.2955	0.0257	0.2788	0.0595	-0.1528	0.2041
95	-0.2324	0.0706	0.3014	0.0556	-0.0963	0.2375

B/H=0. N=1 60 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4761	1.1629	1.9895	0.264	0.371	1.9548
1	-1.7269	-0.312	0.324	0.1534	-0.7723	0.1482
2	-1.6315	-0.3198	0.2649	0.1687	-0.8258	0.1882
3	-1.4772	-0.2658	0.2731	0.1434	-0.6958	0.1647
4	-1.0515	-0.1726	0.2547	0.1205	-0.5342	0.189
5	-0.7986	-0.0835	0.2685	0.1048	-0.398	0.231
6	-0.9772	-0.0741	0.2952	0.0975	-0.3665	0.2184
7	-0.6546	-0.1255	0.2108	0.0822	-0.372	0.121
8	-1.5197	-0.3062	0.3137	0.1671	-0.8076	0.1951
9	-1.1248	-0.1812	0.2491	0.1014	-0.4854	0.123
10	-0.5968	-0.1343	0.2447	0.091	-0.4075	0.1388
11	-0.6418	-0.0862	0.2567	0.0844	-0.3395	0.1671
12	-0.8839	-0.0649	0.2427	0.0789	-0.3015	0.1717
13	-0.4933	-0.1097	0.2054	0.0667	-0.3066	0.0903
14	-1.4174	-0.2267	0.3333	0.1402	-0.6472	0.1938
15	-0.742	-0.1209	0.259	0.0887	-0.387	0.1452
16	-0.6691	-0.1034	0.2419	0.0817	-0.3485	0.1416
17	-0.8953	-0.1519	0.3337	0.1171	-0.5031	0.1994
18	-0.7471	-0.1161	0.2944	0.0895	-0.3847	0.1524
19	-0.504	-0.0891	0.3077	0.0792	-0.3266	0.1484
20	-0.9825	-0.1401	0.4039	0.1254	-0.5163	0.236
21	-0.7964	-0.1231	0.3391	0.1007	-0.4253	0.1791
22	-0.6577	-0.0883	0.3084	0.079	-0.3253	0.1487
23	-0.4156	-0.0598	0.3515	0.0731	-0.279	0.1594
24	-0.5455	-0.0677	0.26	0.0687	-0.274	0.1385
25	-0.3841	-0.0817	0.2058	0.0613	-0.2657	0.1022
26	-0.9168	-0.1354	0.3182	0.1134	-0.4755	0.2049
27	-0.7087	-0.1093	0.3129	0.0922	-0.3859	0.1672
28	-0.5338	-0.0763	0.2856	0.0756	-0.3031	0.1505
29	-0.3917	-0.0602	0.2793	0.0692	-0.2677	0.1473
30	-0.6828	-0.0509	0.3362	0.0665	-0.2504	0.1486
31	-0.0897	0.0435	0.2136	0.0339	-0.0583	0.1452
32	-0.9235	-0.1469	0.2628	0.1153	-0.4928	0.199
33	-0.6553	-0.096	0.2525	0.0879	-0.3596	0.1676
34	-0.5122	-0.0551	0.2455	0.0726	-0.2729	0.1627
35	-0.6763	-0.0621	0.2274	0.0686	-0.2679	0.1437
36	-0.5057	-0.0504	0.2523	0.065	-0.2454	0.1445
37	-0.4547	-0.0353	0.2298	0.0579	-0.2088	0.1383
38	-1.0203	-0.1279	0.4242	0.1192	-0.4855	0.2297
39	-0.543	-0.0925	0.2943	0.0888	-0.3588	0.1739
40	-0.6166	-0.0833	0.2196	0.0706	-0.2952	0.1286
41	-0.4206	-0.0428	0.2262	0.0658	-0.2401	0.1545
42	-0.4987	-0.0305	0.2231	0.0631	-0.2197	0.1587
43	-0.3224	-0.0327	0.2053	0.0563	-0.2016	0.1362
44	-0.6788	-0.1721	0.2413	0.0995	-0.4705	0.1283
45	-0.7202	-0.1353	0.2315	0.0812	-0.3788	0.1081
46	-0.465	-0.0906	0.2459	0.0701	-0.3009	0.1198
47	-0.3687	-0.0432	0.3029	0.0642	-0.2359	0.1496
48	-0.2916	0.0191	0.3892	0.0621	-0.1671	0.2054
49	-0.2708	0.0181	0.3521	0.0589	-0.1585	0.1947
50	-0.4891	0.0714	0.7085	0.1111	-0.2619	0.4048
51	-0.4945	0.0525	0.7701	0.1059	-0.2653	0.3702
52	-0.3677	0.1069	0.6999	0.116	-0.241	0.4548
53	-0.3471	0.0922	0.5487	0.1067	-0.228	0.4124
54	-0.3099	0.0456	0.5585	0.0885	-0.2201	0.3112
55	-0.4631	0.0652	0.6039	0.0977	-0.2278	0.3583
56	-0.3644	0.0069	0.4002	0.0753	-0.2191	0.2329
57	-0.5285	-0.0003	0.3306	0.0776	-0.233	0.2323
58	-0.4665	0.0233	0.3201	0.0732	-0.1962	0.2427
59	-0.3345	-0.0035	0.3097	0.0676	-0.2063	0.1992
60	-0.3511	0.0536	0.5079	0.0916	-0.2213	0.3284
61	-0.3437	-0.019	0.3175	0.0657	-0.216	0.1781
62	-0.2977	0.0266	0.3314	0.0672	-0.175	0.2282
63	-0.3459	0.011	0.311	0.0677	-0.1821	0.2141
64	-0.2855	-0.0193	0.2393	0.0628	-0.2078	0.1692
65	-0.8051	-0.1738	0.1955	0.0929	-0.4524	0.1046
66	-0.4002	-0.0582	0.2659	0.0703	-0.2691	0.1526
67	-0.3279	-0.0065	0.2501	0.0637	-0.1976	0.1846
68	-0.54	0.012	0.2614	0.0592	-0.1654	0.1895
69	-0.5096	-0.164	0.1908	0.0798	-0.4034	0.0753
70	-0.3689	-0.0392	0.2712	0.066	-0.2372	0.1588
71	-0.2606	0.0098	0.264	0.0614	-0.1743	0.194
72	-0.2503	0.0038	0.2419	0.0564	-0.1654	0.1731
73	-0.5806	-0.1439	0.1992	0.0787	-0.374	0.0862
74	-0.3564	-0.049	0.2162	0.0644	-0.2421	0.1441
75	-0.216	0.0074	0.3167	0.0592	-0.1701	0.185
76	-0.2336	0.0204	0.2412	0.0564	-0.1489	0.1897
77	-0.6518	-0.1612	0.1159	0.083	-0.4102	0.0879
78	-0.6514	-0.1579	0.1288	0.0866	-0.4176	0.1018
79	-0.4632	-0.0812	0.1998	0.0749	-0.306	0.1436
80	-0.2559	-0.0116	0.2315	0.0569	-0.1823	0.1591
81	-0.2191	0.0021	0.218	0.0557	-0.1651	0.1692
82	-0.2464	0.0281	0.2556	0.057	-0.143	0.1991
83	-0.6315	-0.1596	0.094	0.0831	-0.409	0.0898
84	-0.6984	-0.1659	0.089	0.0889	-0.4325	0.1008
85	-0.4784	-0.0689	0.2297	0.0796	-0.3075	0.1698
86	-0.3006	-0.0244	0.2465	0.0659	-0.2216	0.1729
87	-0.2804	-0.0184	0.2304	0.0589	-0.1931	0.1602
88	-0.2399	-0.0013	0.2218	0.0568	-0.1717	0.1691
89	-0.2311	0.0286	0.2812	0.0558	-0.1388	0.1959
90	-0.5168	-0.1272	0.0938	0.072	-0.343	0.0887
91	-0.5322	-0.1454	0.1023	0.0792	-0.3829	0.0921
92	-0.2754	-0.0126	0.2798	0.0657	-0.2097	0.1846
93	-0.333	-0.0051	0.2482	0.0645	-0.1984	0.1883
94	-0.2353	0.0042	0.2382	0.0588	-0.1716	0.18
95	-0.1822	0.0485	0.2708	0.0552	-0.1172	0.2143

B/H=0. N=1 70 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5176	1.163	1.9998	0.2419	0.4374	1.8885
1	-1.2297	-0.2525	0.3053	0.1495	-0.7011	0.1962
2	-1.0259	-0.199	0.3024	0.1478	-0.6423	0.2444
3	-0.8807	-0.164	0.3828	0.1291	-0.5514	0.2235
4	-0.8644	-0.1036	0.4407	0.1036	-0.4143	0.2071
5	-0.7711	-0.0376	0.3706	0.0925	-0.3152	0.24
6	-1.4183	-0.0354	0.359	0.0921	-0.3117	0.2409
7	-0.6997	-0.0488	0.3819	0.0822	-0.2955	0.1979
8	-1.0669	-0.2147	0.4373	0.1518	-0.6701	0.2406
9	-0.6908	-0.1164	0.3595	0.0984	-0.4057	0.173
10	-0.5699	-0.0754	0.4323	0.0863	-0.3343	0.1835
11	-0.4369	-0.0433	0.381	0.0801	-0.2835	0.1969
12	-0.9294	-0.0265	0.3877	0.0781	-0.2609	0.2079
13	-0.4753	-0.0356	0.3395	0.0696	-0.2445	0.1733
14	-0.8294	-0.1298	0.4412	0.1278	-0.5133	0.2536
15	-0.5066	-0.0618	0.4241	0.0857	-0.319	0.1954
16	-0.7496	-0.0496	0.3845	0.0795	-0.2882	0.1889
17	-0.9045	-0.0649	0.4442	0.1084	-0.3902	0.2604
18	-0.775	-0.0512	0.3501	0.0875	-0.3138	0.2114
19	-0.4146	-0.034	0.3611	0.0779	-0.2677	0.1996
20	-1.0001	-0.0495	0.4215	0.1152	-0.3952	0.2962
21	-0.7963	-0.0476	0.3848	0.0939	-0.3293	0.2342
22	-0.4459	-0.0301	0.336	0.0785	-0.2655	0.2053
23	-0.3614	-0.0055	0.3334	0.0739	-0.227	0.2161
24	-0.3232	-0.0155	0.334	0.071	-0.2286	0.1976
25	-0.3407	-0.0189	0.2925	0.0639	-0.2107	0.1729
26	-0.7323	-0.0649	0.4379	0.1104	-0.396	0.2661
27	-0.6448	-0.0396	0.4041	0.0929	-0.3183	0.2391
28	-0.4448	-0.0112	0.339	0.0775	-0.2438	0.2214
29	-0.3459	0.0013	0.315	0.071	-0.2117	0.2143
30	-0.7928	0.0096	0.3178	0.0692	-0.198	0.2172
31	-0.0897	0.0973	0.2963	0.0393	-0.0206	0.2152
32	-1.0236	-0.0837	0.5555	0.1238	-0.4551	0.2877
33	-0.7292	-0.0312	0.4474	0.0972	-0.3227	0.2603
34	-0.5409	0.0115	0.3606	0.0796	-0.2273	0.2503
35	-0.3586	0.0013	0.3864	0.0728	-0.217	0.2196
36	-0.4963	0.0103	0.3834	0.0688	-0.1962	0.2168
37	-0.2512	0.0211	0.313	0.0607	-0.1611	0.2033
38	-0.9145	-0.0773	0.5386	0.1304	-0.4683	0.3138
39	-0.7179	-0.0415	0.4413	0.1027	-0.3496	0.2665
40	-0.5706	-0.0319	0.293	0.0808	-0.2743	0.2105
41	-0.3418	0.0149	0.3658	0.0732	-0.2048	0.2345
42	-0.3361	0.0284	0.3671	0.0692	-0.1793	0.2362
43	-0.2871	0.0194	0.3195	0.0601	-0.1608	0.1997
44	-0.8698	-0.1201	0.4364	0.1044	-0.4332	0.193
45	-0.5906	-0.0763	0.3328	0.0898	-0.3459	0.1932
46	-0.6221	-0.0354	0.2919	0.079	-0.2725	0.2016
47	-0.4884	0.0058	0.3488	0.0741	-0.2163	0.228
48	-0.4256	0.0597	0.3691	0.0698	-0.1498	0.2692
49	-0.4559	0.053	0.3327	0.0642	-0.1395	0.2455
50	-0.5348	0.0578	0.6244	0.0947	-0.2264	0.3419
51	-0.3485	0.0469	0.6728	0.0857	-0.2102	0.304
52	-0.5268	0.0868	0.7367	0.0942	-0.1957	0.3693
53	-0.357	0.0793	0.5785	0.0924	-0.198	0.3567
54	-0.2704	0.0577	0.4993	0.0812	-0.1859	0.3011
55	-0.3661	0.0587	0.5747	0.086	-0.1993	0.3166
56	-0.2271	0.0278	0.3904	0.0699	-0.1619	0.2376
57	-0.3443	0.0237	0.3817	0.0711	-0.1808	0.2371
58	-0.3471	0.0631	0.3898	0.0696	-0.1456	0.2717
59	-0.2767	0.0444	0.3001	0.0628	-0.1439	0.2326
60	-0.234	0.0549	0.4884	0.0809	-0.1877	0.2975
61	-0.2134	0.0157	0.3776	0.0634	-0.1746	0.2059
62	-0.1883	0.0518	0.3678	0.0631	-0.1374	0.241
63	-0.2478	0.0353	0.3306	0.0629	-0.1534	0.224
64	-0.2759	0.0307	0.2869	0.0592	-0.1469	0.2084
65	-0.7863	-0.0987	0.2795	0.0921	-0.3751	0.1776
66	-0.372	-0.0017	0.3877	0.0714	-0.2158	0.2124
67	-0.3635	0.0335	0.3211	0.0676	-0.1699	0.2369
68	-0.3343	0.0471	0.349	0.0639	-0.1447	0.2389
69	-0.4519	-0.0891	0.2578	0.0804	-0.3304	0.1522
70	-0.2799	0.0089	0.3511	0.064	-0.1832	0.201
71	-0.3092	0.0556	0.3417	0.0613	-0.1282	0.2395
72	-0.1827	0.042	0.2901	0.0576	-0.1307	0.2147
73	-0.5416	-0.0711	0.3941	0.0765	-0.3007	0.1585
74	-0.2895	-0.0027	0.3307	0.0625	-0.1902	0.1848
75	-0.235	0.048	0.3167	0.0578	-0.1255	0.2215
76	-0.1644	0.0575	0.3105	0.0554	-0.1088	0.2237
77	-0.5338	-0.0598	0.1848	0.0742	-0.2825	0.1629
78	-0.7938	-0.0524	0.2145	0.0755	-0.279	0.1742
79	-0.305	0.0031	0.3088	0.0688	-0.2064	0.2066
80	-0.1877	0.039	0.3095	0.0582	-0.1256	0.2136
81	-0.1992	0.0464	0.3372	0.0565	-0.123	0.2159
82	-0.2169	0.0645	0.3739	0.0585	-0.1111	0.2401
83	-0.5265	-0.0568	0.1895	0.0727	-0.2749	0.1613
84	-0.4681	-0.0571	0.2043	0.077	-0.288	0.1738
85	-0.3731	0.0014	0.3254	0.0713	-0.2124	0.2152
86	-0.2211	0.0394	0.3062	0.0634	-0.1508	0.2269
87	-0.2018	0.0374	0.309	0.0586	-0.1383	0.2132
88	-0.1937	0.0473	0.3509	0.0585	-0.1222	0.2167
89	-0.1828	0.0654	0.3778	0.0567	-0.1046	0.2354
90	-0.4198	-0.0407	0.2293	0.0671	-0.242	0.1606
91	-0.4052	-0.0486	0.2096	0.0699	-0.2582	0.1611
92	-0.2258	0.0348	0.3293	0.0628	-0.1535	0.2231
93	-0.1996	0.0535	0.2958	0.0612	-0.1302	0.2371
94	-0.2155	0.0566	0.3171	0.0568	-0.114	0.2271
95	-0.1231	0.0873	0.3593	0.055	-0.0776	0.2521

B/H=0.5 N=1 80 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5591	1.2345	2.1964	0.2672	0.4327	2.0362
1	-1.0084	-0.121	0.3404	0.1275	-0.5034	0.2614
2	-0.7974	-0.0486	0.3469	0.1059	-0.3663	0.2691
3	-0.6397	-0.024	0.3176	0.102	-0.3302	0.2821
4	-0.5328	0.005	0.3451	0.0848	-0.2495	0.2595
5	-0.3991	0.0537	0.435	0.0782	-0.1809	0.2883
6	-0.4886	0.05	0.3554	0.0766	-0.1797	0.2798
7	-0.4128	0.0554	0.3852	0.0709	-0.1573	0.2682
8	-0.7211	-0.07	0.3953	0.1245	-0.4444	0.3043
9	-0.4596	-0.0145	0.3474	0.0853	-0.2705	0.2415
10	-0.3427	0.0163	0.3399	0.0775	-0.2161	0.2486
11	-0.3613	0.0404	0.3422	0.0743	-0.1826	0.2634
12	-0.3015	0.0534	0.3311	0.073	-0.1657	0.2725
13	-0.2198	0.0621	0.3872	0.0687	-0.1381	0.2623
14	-0.5262	-0.005	0.4326	0.1067	-0.3251	0.315
15	-0.346	0.0288	0.424	0.0809	-0.2137	0.2714
16	-0.3607	0.0357	0.3707	0.0744	-0.1875	0.2588
17	-0.5643	0.0379	0.4792	0.0983	-0.257	0.3328
18	-0.6774	0.0402	0.4259	0.084	-0.212	0.2923
19	-0.3402	0.0515	0.4911	0.0758	-0.176	0.279
20	-0.6088	0.0493	0.5713	0.1085	-0.2761	0.3747
21	-0.5515	0.0459	0.4917	0.0907	-0.2261	0.3176
22	-0.2726	0.0553	0.3771	0.0776	-0.1774	0.288
23	-0.2979	0.0797	0.3821	0.0728	-0.1386	0.298
24	-0.287	0.0683	0.3756	0.0696	-0.1405	0.2771
25	-0.46	0.069	0.3735	0.064	-0.1229	0.2609
26	-0.7941	0.0077	0.4906	0.1158	-0.3396	0.3551
27	-0.5817	0.0336	0.4581	0.0998	-0.2659	0.3331
28	-0.3771	0.0663	0.4538	0.0824	-0.1809	0.3135
29	-0.4669	0.0812	0.4064	0.0757	-0.146	0.3083
30	-0.3235	0.0914	0.3946	0.0711	-0.1219	0.3046
31	-0.0066	0.1643	0.3398	0.0432	0.0346	0.2939
32	-0.8957	-0.0216	0.5578	0.1262	-0.4002	0.357
33	-0.6957	0.0319	0.5265	0.105	-0.2832	0.347
34	-0.4915	0.0798	0.7014	0.0879	-0.1838	0.3435
35	-0.3285	0.0726	0.5889	0.0789	-0.1639	0.3095
36	-0.397	0.0831	0.4759	0.0742	-0.1395	0.3056
37	-0.4196	0.0985	0.3733	0.065	-0.0965	0.2934
38	-0.9196	-0.006	0.6484	0.1284	-0.3912	0.3792
39	-0.7457	0.0254	0.5456	0.1051	-0.2898	0.3406
40	-0.6155	0.0317	0.4661	0.0875	-0.2309	0.2944
41	-0.5033	0.0801	0.4432	0.0798	-0.1592	0.3195
42	-0.2996	0.0963	0.4646	0.0747	-0.1277	0.3203
43	-0.3285	0.0895	0.3754	0.0642	-0.1032	0.2822
44	-0.702	-0.0421	0.5364	0.1007	-0.3441	0.26
45	-0.4517	0.0044	0.435	0.0809	-0.2622	0.2709
46	-0.5948	0.0381	0.3879	0.0814	-0.206	0.2823
47	-0.3126	0.0716	0.4411	0.0767	-0.1587	0.3018
48	-0.3288	0.1163	0.528	0.0738	-0.105	0.3376
49	-0.4295	0.1041	0.4508	0.0675	-0.0983	0.3066
50	-0.4522	0.0887	0.6569	0.0831	-0.1604	0.3379
51	-0.1999	0.0906	0.4507	0.0699	-0.1192	0.3004
52	-0.2246	0.1204	0.5065	0.0706	-0.0915	0.3322
53	-0.2613	0.1087	0.6011	0.0716	-0.106	0.3234
54	-0.2919	0.1002	0.5447	0.0674	-0.102	0.3023
55	-0.2261	0.0896	0.5963	0.0774	-0.1424	0.3217
56	-0.2047	0.0878	0.4047	0.0656	-0.1088	0.2845
57	-0.257	0.0808	0.427	0.0642	-0.1117	0.2733
58	-0.1582	0.1252	0.4329	0.0634	-0.0649	0.3154
59	-0.161	0.1167	0.3822	0.0604	-0.0644	0.2978
60	-0.2112	0.0897	0.4969	0.0747	-0.1344	0.3138
61	-0.1728	0.0816	0.3934	0.0623	-0.1054	0.2686
62	-0.143	0.1097	0.4068	0.06	-0.0703	0.2897
63	-0.1502	0.0907	0.4037	0.0594	-0.0977	0.269
64	-0.134	0.1028	0.3511	0.0564	-0.0664	0.272
65	-0.5468	0.0025	0.3689	0.0864	-0.2566	0.2617
66	-0.315	0.0783	0.3917	0.0702	-0.1324	0.289
67	-0.3257	0.0998	0.4196	0.0687	-0.1065	0.306
68	-0.3611	0.1037	0.3838	0.0671	-0.0976	0.305
69	-0.4801	0.0085	0.3691	0.0804	-0.2327	0.2497
70	-0.1882	0.0818	0.4227	0.0651	-0.1136	0.2772
71	-0.2089	0.1219	0.4317	0.0634	-0.0683	0.312
72	-0.2358	0.1013	0.3641	0.0601	-0.0791	0.2817
73	-0.2899	0.026	0.4355	0.0767	-0.204	0.256
74	-0.1739	0.0704	0.3475	0.0648	-0.1242	0.2649
75	-0.1229	0.1137	0.4418	0.0609	-0.069	0.2964
76	-0.1362	0.1182	0.3764	0.0583	-0.0588	0.2912
77	-0.2526	0.0596	0.3319	0.0667	-0.1407	0.2598
78	-0.2734	0.0686	0.3369	0.0678	-0.1348	0.272
79	-0.2221	0.0968	0.3656	0.0645	-0.0969	0.29
80	-0.1034	0.1166	0.3468	0.0596	-0.0623	0.2955
81	-0.1034	0.1122	0.4019	0.0596	-0.0667	0.291
82	-0.1488	0.1147	0.3801	0.0621	-0.0716	0.3009
83	-0.2622	0.0632	0.3585	0.0659	-0.1344	0.2609
84	-0.2872	0.0677	0.3649	0.0688	-0.1388	0.2742
85	-0.2523	0.0952	0.3606	0.0646	-0.0988	0.289
86	-0.124	0.1258	0.3635	0.0619	-0.06	0.3115
87	-0.1161	0.1142	0.3559	0.0593	-0.0635	0.292
88	-0.0955	0.1154	0.374	0.06	-0.0646	0.2955
89	-0.1449	0.1152	0.3832	0.0597	-0.0639	0.2941
90	-0.2675	0.0719	0.3527	0.0626	-0.1157	0.2596
91	-0.2621	0.069	0.326	0.0646	-0.1247	0.2627
92	-0.1473	0.1071	0.3648	0.0601	-0.0732	0.2874
93	-0.1162	0.1345	0.3774	0.0597	-0.0446	0.3136
94	-0.073	0.1276	0.373	0.0582	-0.0471	0.3023
95	-0.1159	0.1365	0.4033	0.0572	-0.035	0.308

B/H=0.5 N=1 90 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.6006	1.3049	2.2068	0.2625	0.5175	2.0924
1	-0.6784	-0.0184	0.3803	0.102	-0.3255	0.2868
2	-0.5273	0.0301	0.4202	0.0837	-0.2211	0.2813
3	-0.4174	0.0583	0.4552	0.0839	-0.1934	0.3099
4	-0.4374	0.0767	0.459	0.078	-0.1574	0.3107
5	-0.3124	0.1128	0.4928	0.073	-0.1061	0.3319
6	-0.4295	0.1051	0.5231	0.0722	-0.1114	0.3216
7	-0.3262	0.1232	0.5249	0.0678	-0.0803	0.3267
8	-0.9666	0.0201	0.5077	0.1038	-0.2913	0.3314
9	-0.4594	0.042	0.5007	0.0844	-0.2113	0.2952
10	-0.3003	0.0685	0.4728	0.0761	-0.1598	0.2958
11	-0.3022	0.0922	0.4583	0.072	-0.1237	0.3082
12	-0.35	0.1034	0.515	0.0708	-0.1091	0.3159
13	-0.2398	0.1276	0.5176	0.0657	-0.0695	0.3246
14	-0.6345	0.0529	0.5454	0.0985	-0.2427	0.3486
15	-0.4127	0.0753	0.5094	0.0826	-0.1726	0.3232
16	-0.4368	0.0825	0.4935	0.0757	-0.1445	0.3095
17	-0.7896	0.0641	0.6091	0.101	-0.2388	0.3671
18	-0.533	0.0748	0.5104	0.088	-0.1891	0.3387
19	-0.465	0.0911	0.5042	0.0796	-0.1476	0.3299
20	-1.0964	0.0634	0.6345	0.1115	-0.2711	0.3978
21	-0.5054	0.0733	0.514	0.0947	-0.2106	0.3573
22	-0.4384	0.0914	0.5123	0.0815	-0.153	0.3357
23	-0.2657	0.12	0.498	0.0747	-0.1041	0.344
24	-0.2715	0.1107	0.4378	0.0712	-0.1028	0.3242
25	-0.1587	0.1193	0.446	0.0629	-0.0694	0.3079
26	-1.0472	0.0268	0.8086	0.1191	-0.3307	0.384
27	-0.6153	0.0575	0.6123	0.1036	-0.2532	0.3682
28	-0.436	0.0955	0.5326	0.0855	-0.1611	0.3522
29	-0.357	0.1146	0.4802	0.0765	-0.1149	0.344
30	-0.4123	0.1268	0.5208	0.0716	-0.0879	0.3415
31	0.0593	0.1928	0.387	0.0404	0.0715	0.3142
32	-1.4309	0.0161	0.6256	0.1237	-0.355	0.3873
33	-0.6005	0.0686	0.5808	0.1022	-0.2382	0.3753
34	-0.4223	0.1149	0.5437	0.0857	-0.142	0.3719
35	-0.6734	0.1063	0.4153	0.0775	-0.1261	0.3388
36	-0.7339	0.1145	0.4669	0.073	-0.1043	0.3334
37	-0.2074	0.1299	0.4273	0.0619	-0.056	0.3157
38	-0.8072	0.0495	0.582	0.1209	-0.3131	0.4121
39	-0.5987	0.0735	0.5326	0.0971	-0.2178	0.3648
40	-0.5659	0.0699	0.4491	0.0792	-0.1678	0.3075
41	-0.3592	0.1161	0.4115	0.0747	-0.108	0.3402
42	-0.5733	0.1287	0.4315	0.0713	-0.0851	0.3425
43	-0.1696	0.1144	0.363	0.0607	-0.0678	0.2966
44	-0.6641	0.0052	0.4521	0.0946	-0.2786	0.289
45	-0.6748	0.049	0.4525	0.0841	-0.2032	0.3011
46	-0.4309	0.0874	0.3916	0.076	-0.1667	0.3016
47	-0.4188	0.098	0.4009	0.0742	-0.1247	0.3207
48	-0.55	0.1365	0.4589	0.0721	-0.0799	0.3528
49	-0.5453	0.1077	0.4091	0.0638	-0.0837	0.2991
50	-0.5092	0.0942	0.4589	0.0824	-0.1529	0.3413
51	-0.1111	0.128	0.4697	0.0651	-0.0673	0.3233
52	-0.3809	0.1538	0.5678	0.066	-0.0441	0.3518
53	-0.2649	0.1382	0.4889	0.0671	-0.0632	0.3396
54	-0.285	0.1407	0.5505	0.0646	-0.0532	0.3346
55	-0.4559	0.0949	0.469	0.0745	-0.1286	0.3185
56	-0.1063	0.1315	0.505	0.0639	-0.0603	0.3233
57	-0.1702	0.119	0.4859	0.0637	-0.0722	0.3102
58	-0.1141	0.1634	0.5161	0.0632	-0.0263	0.353
59	-0.118	0.1708	0.5497	0.062	-0.0153	0.3569
60	-0.4173	0.0921	0.4526	0.0735	-0.1283	0.3125
61	-0.1009	0.1306	0.5061	0.0637	-0.0604	0.3216
62	-0.0946	0.1519	0.4902	0.0618	-0.0336	0.3373
63	-0.1246	0.1283	0.5041	0.0606	-0.0536	0.3102
64	-0.1013	0.1558	0.4849	0.0585	-0.0197	0.3313
65	-0.5173	0.0796	0.4321	0.0745	-0.1438	0.303
66	-0.1809	0.1263	0.4624	0.0655	-0.0703	0.3229
67	-0.1971	0.1404	0.5078	0.0649	-0.0543	0.3351
68	-0.9362	0.1339	0.4498	0.0637	-0.0571	0.3249
69	-0.2829	0.081	0.3919	0.0705	-0.1305	0.2925
70	-0.1068	0.1269	0.4552	0.0624	-0.0602	0.314
71	-0.0677	0.1631	0.4863	0.0615	-0.0214	0.3476
72	-0.094	0.1305	0.4218	0.0574	-0.0418	0.3027
73	-0.2482	0.0938	0.4294	0.0706	-0.1181	0.3057
74	-0.122	0.1163	0.4222	0.0629	-0.0724	0.305
75	-0.0654	0.1539	0.4519	0.0597	-0.0252	0.333
76	-0.0584	0.1455	0.4091	0.0558	-0.0219	0.3128
77	-0.1863	0.1414	0.5249	0.0632	-0.0482	0.331
78	-0.1738	0.1509	0.5484	0.0628	-0.0375	0.3394
79	-0.1307	0.1522	0.5048	0.0591	-0.0252	0.3296
80	-0.1065	0.1486	0.415	0.0573	-0.0232	0.3205
81	-0.1421	0.1277	0.4068	0.0603	-0.0531	0.3086
82	-0.1933	0.1042	0.3596	0.0601	-0.0762	0.2845
83	-0.1374	0.1488	0.4638	0.0621	-0.0378	0.335
84	-0.1347	0.1534	0.5763	0.0624	-0.0339	0.3407
85	-0.1108	0.1498	0.4691	0.0586	-0.0261	0.3257
86	-0.073	0.1668	0.4326	0.057	-0.004	0.3377
87	-0.1011	0.1378	0.3717	0.0579	-0.0357	0.3114
88	-0.1397	0.1288	0.3785	0.0607	-0.0531	0.3108
89	-0.137	0.0997	0.3367	0.0581	-0.0747	0.274
90	-0.1062	0.1573	0.4629	0.0596	-0.0218	0.3361
91	-0.1262	0.1529	0.482	0.06	-0.0272	0.333
92	-0.0951	0.1458	0.4699	0.0567	-0.0244	0.3159
93	-0.0845	0.1643	0.4079	0.0567	-0.0059	0.3343
94	-0.0866	0.1538	0.5463	0.0589	-0.0229	0.3304
95	-0.136	0.1142	0.3378	0.056	-0.0538	0.2822

B/H=0.5 N=1 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5799	1.266	2.1343	0.2613	0.4822	2.0498
1	-0.6391	0.0094	0.392	0.0935	-0.2709	0.2898
2	-0.7342	0.0159	0.4245	0.1021	-0.2904	0.3221
3	-0.7922	0.0207	0.4692	0.1067	-0.2993	0.3407
4	-0.7683	0.0252	0.4475	0.1049	-0.2896	0.3399
5	-0.6999	0.0284	0.4242	0.0992	-0.269	0.3259
6	-1.0242	0.0398	0.4722	0.0989	-0.2569	0.3365
7	-0.6759	-0.011	0.4666	0.0936	-0.2918	0.2698
8	-0.5079	0.0443	0.3936	0.0776	-0.1886	0.2772
9	-0.4651	0.0472	0.4063	0.0793	-0.1908	0.2853
10	-0.4412	0.0599	0.4545	0.0826	-0.188	0.3078
11	-0.385	0.0597	0.4316	0.0786	-0.1762	0.2956
12	-0.3774	0.0643	0.456	0.0787	-0.172	0.3005
13	-0.6574	0.0431	0.3448	0.0764	-0.1875	0.2737
14	-0.4219	0.0573	0.3723	0.0738	-0.1641	0.2787
15	-0.3054	0.0632	0.4135	0.074	-0.1589	0.2852
16	-0.3107	0.0669	0.3942	0.0743	-0.1561	0.2898
17	-0.4143	0.0666	0.4165	0.0709	-0.1461	0.2792
18	-0.3014	0.0754	0.4324	0.0702	-0.1352	0.286
19	-0.4137	0.0805	0.3808	0.0696	-0.1282	0.2891
20	-0.5206	0.0659	0.4033	0.0712	-0.1477	0.2795
21	-0.2433	0.0725	0.3871	0.0691	-0.1348	0.2797
22	-0.2912	0.0838	0.3846	0.0681	-0.1204	0.288
23	-0.2573	0.0867	0.3808	0.0661	-0.1118	0.2851
24	-0.3479	0.0811	0.3918	0.0655	-0.1153	0.2776
25	-0.7038	0.0588	0.3324	0.07	-0.1533	0.267
26	-0.5541	0.0772	0.3769	0.0692	-0.1305	0.2849
27	-0.3159	0.0832	0.4132	0.0675	-0.1193	0.2857
28	-0.245	0.0914	0.4179	0.0639	-0.1004	0.2832
29	-0.3187	0.0903	0.3798	0.0615	-0.0944	0.2749
30	-0.2649	0.0896	0.3848	0.0619	-0.0962	0.2754
31	-0.5541	0.0772	0.3769	0.0692	-0.1305	0.2849
32	-0.3291	0.088	0.4094	0.0683	-0.1159	0.2929
33	-0.2364	0.0943	0.3939	0.0655	-0.1022	0.2909
34	-0.2327	0.103	0.3841	0.0617	-0.0822	0.2882
35	-0.1744	0.1028	0.4098	0.0602	-0.0778	0.2835
36	-0.2239	0.0997	0.378	0.0602	-0.081	0.2804
37	-0.528	0.0883	0.415	0.0642	-0.1043	0.2809
38	-0.2979	0.093	0.4139	0.0666	-0.1069	0.2929
39	-0.355	0.0992	0.4139	0.063	-0.0897	0.288
40	-0.1863	0.1048	0.4124	0.0588	-0.0718	0.2813
41	-0.2497	0.1035	0.3841	0.0574	-0.0686	0.2756
42	-0.1761	0.1018	0.3455	0.0579	-0.072	0.2758
43	-0.4902	0.0883	0.358	0.0619	-0.0973	0.2739
44	-0.3005	0.1041	0.3846	0.0607	-0.078	0.2862
45	-0.2027	0.1032	0.348	0.0568	-0.0673	0.2736
46	-0.1386	0.1013	0.3275	0.0534	-0.0588	0.2614
47	-0.161	0.0976	0.312	0.0538	-0.0638	0.259
48	-0.259	0.0506	0.2887	0.0552	-0.1149	0.2161
49	-0.392	0.0356	0.3413	0.0609	-0.1469	0.2182
50	-0.2563	0.1414	0.8687	0.1167	-0.2087	0.4915
51	-0.2754	0.1597	0.8234	0.1169	-0.191	0.5104
52	-0.2556	0.1889	1.2257	0.1322	-0.2078	0.5855
53	-0.7032	0.2195	1.07	0.1529	-0.2392	0.6783
54	-0.2393	0.2307	1.1741	0.1559	-0.237	0.6983
55	-0.176	0.0935	0.5814	0.0808	-0.1489	0.3359
56	-0.3077	0.0618	0.3766	0.0731	-0.1575	0.2611
57	-0.3727	0.0616	0.4164	0.0756	-0.1654	0.2885
58	-0.2731	0.0571	0.3855	0.0755	-0.1693	0.2836
59	-0.2453	0.1635	0.8131	0.1095	-0.1651	0.4921
60	-0.5735	0.0719	0.4307	0.0696	-0.1369	0.2807
61	-0.2605	0.0533	0.3468	0.0654	-0.1428	0.2494
62	-0.2148	0.0499	0.3546	0.0676	-0.153	0.2528
63	-0.2907	0.055	0.3577	0.0701	-0.1552	0.2651
64	-0.5519	0.1082	0.7358	0.0894	-0.1599	0.3763
65	-0.1724	0.0648	0.2911	0.0542	-0.0979	0.2275
66	-0.221	0.0572	0.2443	0.0536	-0.1035	0.218
67	-0.3421	0.0384	0.2868	0.0591	-0.139	0.2158
68	-0.3701	-0.0033	0.249	0.0656	-0.2002	0.1936
69	-0.1682	0.0664	0.2808	0.0536	-0.0946	0.2273
70	-0.2816	0.0576	0.2409	0.0555	-0.109	0.2243
71	-0.2394	0.0475	0.2762	0.0571	-0.1237	0.2187
72	-0.4783	-0.0142	0.2311	0.0671	-0.2156	0.1872
73	-0.1842	0.0611	0.2725	0.0533	-0.0989	0.221
74	-0.2309	0.053	0.2775	0.056	-0.1151	0.2211
75	-0.181	0.0551	0.3259	0.0539	-0.1063	0.2164
76	-0.3779	-0.0093	0.2305	0.0656	-0.2051	0.1874
77	-0.7071	-0.0099	0.3961	0.0978	-0.3034	0.2836
78	-0.3976	0.0356	0.3899	0.0656	-0.1612	0.2323
79	-0.3437	0.051	0.3929	0.0629	-0.1378	0.2398
80	-0.3513	0.0582	0.4188	0.0648	-0.1361	0.2525
81	-0.5022	0.063	0.3828	0.0659	-0.1347	0.2607
82	-0.3887	0.0415	0.3163	0.0607	-0.1407	0.2236
83	-0.5825	0.0177	0.332	0.0748	-0.2062	0.2416
84	-0.2889	0.0374	0.3378	0.0613	-0.1466	0.2215
85	-0.29	0.0493	0.3517	0.0602	-0.1314	0.2299
86	-0.3491	0.06	0.3544	0.0612	-0.1235	0.2436
87	-0.3858	0.0665	0.3581	0.062	-0.1195	0.2526
88	-0.2883	0.064	0.3308	0.0616	-0.1209	0.2489
89	-0.2655	0.0432	0.276	0.0557	-0.1238	0.2102
90	-0.4569	0.0424	0.3883	0.0658	-0.1549	0.2397
91	-0.2466	0.0415	0.3626	0.0587	-0.1347	0.2177
92	-0.2347	0.0471	0.3571	0.0577	-0.1259	0.2201
93	-0.2884	0.0641	0.333	0.0586	-0.1118	0.2399
94	-0.2342	0.0726	0.3184	0.0571	-0.0998	0.2438
95	-0.1855	0.0545	0.2939	0.0514	-0.0998	0.2085

B/H=0.5 N=2 0 degree

	0.4613	1.1062	1.9629	0.2574	0.3341	1.8784
1	-0.9123	0.0113	0.4588	0.095	-0.2739	0.2964
2	-0.6277	0.0198	0.4105	0.1008	-0.2825	0.322
3	-0.7506	0.0246	0.4171	0.1024	-0.2826	0.3318
4	-0.5871	0.0297	0.401	0.098	-0.2644	0.3238
5	-0.5866	0.0284	0.4099	0.094	-0.2536	0.3105
6	-0.5366	0.0324	0.5216	0.0966	-0.2574	0.3222
7	-0.6696	0.0031	0.4552	0.0942	-0.2795	0.2857
8	-0.7008	0.0406	0.5048	0.0798	-0.1989	0.28
9	-0.4331	0.0495	0.5231	0.08	-0.1906	0.2896
10	-0.3225	0.0571	0.3829	0.0788	-0.1793	0.2935
11	-0.3361	0.0565	0.4042	0.076	-0.1715	0.2846
12	-0.4189	0.0567	0.4619	0.0788	-0.1798	0.2931
13	-1.0386	0.0397	0.3989	0.0839	-0.2119	0.2913
14	-0.5154	0.0573	0.4678	0.0768	-0.1731	0.2877
15	-0.3693	0.0643	0.4651	0.0743	-0.1587	0.2872
16	-0.3133	0.0679	0.3944	0.0726	-0.15	0.2858
17	-0.3429	0.0656	0.4294	0.0733	-0.1543	0.2854
18	-0.2534	0.0746	0.4234	0.0707	-0.1378	0.2867
19	-0.3351	0.0783	0.4003	0.0694	-0.1299	0.2864
20	-0.3769	0.0646	0.4148	0.0738	-0.157	0.2861
21	-0.2571	0.0717	0.4575	0.0705	-0.1397	0.2832
22	-0.33	0.0799	0.3979	0.0684	-0.1254	0.2853
23	-0.3808	0.0807	0.3721	0.0673	-0.1212	0.2825
24	-0.2462	0.0756	0.3786	0.0677	-0.1278	0.2788
25	-0.4683	0.0516	0.3565	0.0745	-0.1718	0.2751
26	-0.2697	0.0727	0.4397	0.0713	-0.1412	0.2866
27	-0.2629	0.0778	0.4359	0.0687	-0.1285	0.284
28	-0.2972	0.0842	0.4034	0.0654	-0.1119	0.2803
29	-0.2348	0.0809	0.3862	0.0644	-0.1123	0.2741
30	-0.2413	0.0806	0.3832	0.0649	-0.1141	0.2752
31	-0.0994	0.1246	0.314	0.0344	0.0214	0.2278
32	-0.3543	0.0792	0.4172	0.0696	-0.1297	0.2881
33	-0.4554	0.084	0.3856	0.0671	-0.1174	0.2854
34	-0.3028	0.0911	0.3604	0.0641	-0.1012	0.2834
35	-0.2032	0.0893	0.3671	0.0628	-0.0991	0.2777
36	-0.2915	0.0856	0.402	0.0629	-0.1032	0.2744
37	-0.2518	0.0757	0.367	0.0679	-0.128	0.2795
38	-0.3844	0.0807	0.4705	0.0677	-0.1223	0.2838
39	-0.2429	0.0859	0.4296	0.0644	-0.1073	0.2792
40	-0.1943	0.0897	0.3917	0.0614	-0.0944	0.2739
41	-0.1537	0.0877	0.377	0.0602	-0.0929	0.2683
42	-0.2998	0.0858	0.3905	0.0604	-0.0954	0.267
43	-0.3798	0.0743	0.382	0.0645	-0.1191	0.2677
44	-0.3487	0.0846	0.3762	0.062	-0.1013	0.2705
45	-0.2531	0.0793	0.3375	0.059	-0.0977	0.2564
46	-0.187	0.0781	0.334	0.0565	-0.0913	0.2475
47	-0.1705	0.0747	0.3193	0.0568	-0.0958	0.2452
48	-0.2598	0.0263	0.3108	0.0603	-0.1547	0.2073
49	-0.3496	0.0164	0.373	0.0647	-0.1776	0.2105
50	-0.378	0.1345	1.0845	0.1223	-0.2326	0.5015
51	-0.3106	0.149	0.8587	0.1105	-0.1824	0.4803
52	-0.2645	0.1782	1.0019	0.1303	-0.2128	0.5691
53	-0.4474	0.1916	1.1226	0.1419	-0.2342	0.6173
54	-0.2717	0.2029	1.3282	0.1553	-0.253	0.6688
55	-0.3845	0.0629	0.5777	0.0851	-0.1925	0.3182
56	-0.4302	0.0405	0.3284	0.0725	-0.1771	0.2582
57	-0.282	0.0387	0.3591	0.0732	-0.1808	0.2583
58	-0.3234	0.0384	0.3636	0.0743	-0.1843	0.2612
59	-0.3246	0.1143	0.8161	0.1073	-0.2075	0.4362
60	-0.3683	0.0444	0.4823	0.0728	-0.1739	0.2626
61	-0.3413	0.0337	0.314	0.0702	-0.1768	0.2442
62	-0.3011	0.0351	0.353	0.0715	-0.1793	0.2495
63	-0.308	0.0409	0.3534	0.0731	-0.1785	0.2604
64	-0.5298	0.0799	0.5291	0.085	-0.1751	0.3348
65	-0.3215	0.0337	0.2996	0.0615	-0.1507	0.2181
66	-0.2901	0.0313	0.2738	0.0583	-0.1436	0.2063
67	-0.3772	0.0175	0.2705	0.0658	-0.1797	0.2148
68	-0.4305	-0.0161	0.2631	0.074	-0.238	0.2059
69	-0.3649	0.0346	0.3052	0.0622	-0.1521	0.2214
70	-0.3084	0.0355	0.2731	0.0605	-0.1459	0.2169
71	-0.5454	0.0279	0.2646	0.0647	-0.1662	0.222
72	-0.416	-0.0282	0.2576	0.0758	-0.2556	0.1992
73	-0.3591	0.0289	0.2808	0.0627	-0.1593	0.2171
74	-0.3019	0.0309	0.2822	0.0617	-0.1542	0.2161
75	-0.2503	0.0355	0.2913	0.0601	-0.1449	0.2157
76	-0.3419	-0.0214	0.2618	0.0741	-0.2438	0.2011
77	-1.0205	-0.0157	0.4184	0.1205	-0.3773	0.3458
78	-0.6004	0.0245	0.4499	0.0848	-0.2301	0.279
79	-0.4467	0.0364	0.6254	0.0795	-0.2022	0.275
80	-0.4179	0.0383	0.4511	0.0802	-0.2024	0.279
81	-0.5872	0.0421	0.4238	0.0798	-0.1973	0.2815
82	-0.4617	0.0258	0.363	0.0706	-0.1861	0.2376
83	-0.706	0.0053	0.3541	0.0896	-0.2634	0.274
84	-0.4234	0.0234	0.3828	0.0739	-0.1984	0.2452
85	-0.4625	0.0323	0.3884	0.0737	-0.1888	0.2535
86	-0.3855	0.0397	0.4081	0.0748	-0.1846	0.264
87	-0.4353	0.046	0.4179	0.0745	-0.1775	0.2694
88	-0.387	0.0419	0.4256	0.0729	-0.1769	0.2607
89	-0.3008	0.0281	0.3286	0.0645	-0.1675	0.2196
90	-0.376	0.032	0.4078	0.0709	-0.1808	0.2448
91	-0.3037	0.0286	0.3735	0.0662	-0.1702	0.2273
92	-0.2416	0.0306	0.4124	0.0678	-0.1729	0.234
93	-0.3501	0.0424	0.3883	0.0703	-0.1684	0.2533
94	-0.2668	0.0504	0.3513	0.0673	-0.1515	0.2523
95	-0.2353	0.0361	0.332	0.0592	-0.1414	0.2136

B/H=0.5 N=3 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4462	1.1185	1.9325	0.2468	0.378	1.8589
1	-0.5602	0.0101	0.5372	0.0932	-0.2695	0.2897
2	-0.6188	0.0198	0.5035	0.0969	-0.2709	0.3106
3	-0.761	0.0246	0.5155	0.0991	-0.2726	0.3218
4	-0.82	0.0261	0.4839	0.0936	-0.2548	0.3069
5	-0.5381	0.0181	0.4002	0.0897	-0.2511	0.2873
6	-0.5614	0.0227	0.464	0.0914	-0.2517	0.297
7	-0.6002	-0.0081	0.3978	0.0902	-0.2788	0.2625
8	-0.3649	0.0366	0.4585	0.0759	-0.1912	0.2643
9	-0.3784	0.0441	0.46	0.0763	-0.1849	0.2732
10	-0.4186	0.0505	0.4978	0.0757	-0.1767	0.2777
11	-0.4266	0.0455	0.4003	0.0726	-0.1724	0.2634
12	-0.2908	0.0476	0.3638	0.0732	-0.1718	0.2671
13	-0.4243	0.0311	0.3317	0.075	-0.1938	0.2561
14	-0.4202	0.0501	0.4251	0.0721	-0.1663	0.2665
15	-0.4027	0.0548	0.4134	0.0703	-0.1562	0.2658
16	-0.4144	0.0538	0.4694	0.0693	-0.1541	0.2618
17	-0.2799	0.0547	0.4243	0.069	-0.1522	0.2616
18	-0.3179	0.0609	0.388	0.0671	-0.1404	0.2622
19	-0.275	0.0639	0.3477	0.0662	-0.1346	0.2623
20	-0.3554	0.0547	0.4176	0.0695	-0.1537	0.2632
21	-0.2532	0.0583	0.3852	0.0667	-0.1416	0.2583
22	-0.2451	0.0653	0.3966	0.0653	-0.1305	0.2611
23	-0.1962	0.0652	0.3672	0.0644	-0.128	0.2583
24	-0.2625	0.0602	0.3451	0.0638	-0.1313	0.2517
25	-0.2803	0.0391	0.3521	0.0688	-0.1674	0.2458
26	-0.2838	0.0583	0.4159	0.0676	-0.1446	0.2613
27	-0.2291	0.0626	0.4149	0.0649	-0.1322	0.2575
28	-0.2366	0.0669	0.399	0.0627	-0.1211	0.2549
29	-0.2037	0.0623	0.3718	0.0617	-0.1229	0.2475
30	-0.2676	0.0609	0.349	0.0612	-0.1226	0.2445
31	-0.2838	0.0583	0.4159	0.0676	-0.1446	0.2613
32	-0.306	0.0602	0.3542	0.0661	-0.1381	0.2585
33	-0.29	0.0631	0.3598	0.0636	-0.1276	0.2538
34	-0.2407	0.0659	0.3341	0.0614	-0.1182	0.2501
35	-0.232	0.0645	0.3225	0.0605	-0.1169	0.2459
36	-0.202	0.0628	0.3294	0.0605	-0.1186	0.2442
37	-0.4252	0.0534	0.3697	0.065	-0.1417	0.2485
38	-0.3478	0.0566	0.375	0.0636	-0.1342	0.2474
39	-0.2456	0.0592	0.3574	0.0613	-0.1246	0.243
40	-0.1802	0.061	0.337	0.0594	-0.1173	0.2394
41	-0.2311	0.0608	0.3423	0.058	-0.1133	0.2348
42	-0.188	0.0597	0.3303	0.0588	-0.1168	0.2361
43	-0.3285	0.0496	0.3784	0.0626	-0.138	0.2373
44	-0.2957	0.0595	0.309	0.0603	-0.1214	0.2405
45	-0.2268	0.0526	0.2949	0.0582	-0.1219	0.227
46	-0.2077	0.0525	0.2581	0.0558	-0.1149	0.2199
47	-0.1927	0.0517	0.301	0.0566	-0.1181	0.2215
48	-0.2545	0.0101	0.3181	0.0596	-0.1698	0.1891
49	-0.4478	0.0001	0.3097	0.0639	-0.1916	0.1917
50	-0.2113	0.1571	1.1499	0.1323	-0.2398	0.554
51	-0.2268	0.152	0.8437	0.1066	-0.1678	0.4719
52	-0.1383	0.1716	0.9056	0.1205	-0.1899	0.5331
53	-0.1937	0.1983	1.0961	0.1352	-0.2074	0.604
54	-0.2564	0.2271	1.5743	0.1671	-0.2741	0.7282
55	-0.2719	0.0759	0.7551	0.0897	-0.1931	0.3449
56	-0.2936	0.0398	0.3223	0.0709	-0.1729	0.2525
57	-0.4456	0.0378	0.3362	0.0716	-0.1769	0.2525
58	-0.2855	0.0386	0.3398	0.0713	-0.1754	0.2525
59	-0.2584	0.1236	1.0729	0.1137	-0.2176	0.4648
60	-0.5646	0.0517	0.4547	0.0761	-0.1766	0.2801
61	-0.366	0.033	0.3471	0.0693	-0.1749	0.2409
62	-0.3721	0.0331	0.3044	0.0704	-0.1781	0.2443
63	-0.274	0.0398	0.3305	0.0705	-0.1716	0.2511
64	-0.3421	0.0835	0.6553	0.0886	-0.1822	0.3493
65	-0.2584	0.0203	0.2598	0.0604	-0.1608	0.2014
66	-0.2974	0.0159	0.2235	0.0577	-0.1572	0.189
67	-0.4109	-0.0012	0.2404	0.0659	-0.1988	0.1964
68	-0.5053	-0.036	0.2814	0.0737	-0.2573	0.1852
69	-0.2252	0.0236	0.2582	0.0609	-0.159	0.2062
70	-0.3073	0.0206	0.2334	0.0599	-0.1593	0.2004
71	-0.377	0.0138	0.3145	0.0642	-0.1789	0.2065
72	-0.5342	-0.0475	0.2537	0.0753	-0.2733	0.1783
73	-0.2728	0.0167	0.2567	0.0614	-0.1675	0.2009
74	-0.3836	0.0168	0.2724	0.0606	-0.1651	0.1986
75	-0.2306	0.0194	0.363	0.0613	-0.1645	0.2033
76	-0.4692	-0.0384	0.2604	0.072	-0.2545	0.1776
77	-0.975	-0.0282	0.456	0.1225	-0.3956	0.3392
78	-0.6692	0.0194	0.4053	0.0812	-0.2241	0.2629
79	-0.3785	0.0297	0.4085	0.0747	-0.1943	0.2537
80	-0.3953	0.0267	0.4384	0.075	-0.1983	0.2518
81	-0.3187	0.0283	0.3656	0.0737	-0.1928	0.2495
82	-0.3714	0.0045	0.3576	0.067	-0.1964	0.2055
83	-0.8773	-0.0085	0.3285	0.089	-0.2755	0.2586
84	-0.4065	0.0147	0.355	0.0696	-0.1939	0.2234
85	-0.3091	0.0244	0.3631	0.0695	-0.1842	0.2329
86	-0.4296	0.0289	0.3413	0.0707	-0.1832	0.241
87	-0.3419	0.0337	0.3782	0.0707	-0.1785	0.2459
88	-0.2985	0.0263	0.3144	0.0698	-0.1825	0.2352
89	-0.3201	0.0027	0.301	0.0623	-0.1842	0.1896
90	-0.2902	0.0209	0.4049	0.0887	-0.1853	0.2269
91	-0.2397	0.0198	0.3824	0.0641	-0.1724	0.212
92	-0.2832	0.0222	0.3685	0.0661	-0.1762	0.2206
93	-0.2602	0.0321	0.3682	0.0685	-0.1733	0.2375
94	-0.2651	0.0387	0.3236	0.0664	-0.1605	0.2378
95	-0.2649	0.0213	0.2958	0.0587	-0.1548	0.1974

B/H=0.5 N=8 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5083	1.1113	1.8584	0.243	0.3822	1.8404
1	-0.6213	-0.0077	0.4764	0.0902	-0.2783	0.2628
2	-0.8228	0.0029	0.4745	0.0928	-0.2755	0.2812
3	-0.6428	0.0108	0.44	0.0939	-0.271	0.2926
4	-0.4701	0.0059	0.4351	0.0874	-0.2564	0.2682
5	-0.5525	-0.0029	0.4385	0.0826	-0.2506	0.2448
6	-0.7198	0.0042	0.4283	0.0854	-0.252	0.2604
7	-0.5378	-0.0307	0.3132	0.0878	-0.294	0.2326
8	-0.7445	0.0182	0.3292	0.0721	-0.1981	0.2344
9	-0.4313	0.0211	0.3382	0.0716	-0.1938	0.236
10	-0.3274	0.0302	0.3614	0.0697	-0.1789	0.2393
11	-0.4247	0.0241	0.4098	0.0668	-0.1762	0.2244
12	-0.4711	0.027	0.3738	0.0683	-0.1778	0.2317
13	-0.5749	0.0096	0.3165	0.0718	-0.2057	0.2249
14	-0.6666	0.0285	0.3061	0.068	-0.1756	0.2325
15	-0.3033	0.0346	0.3131	0.0652	-0.161	0.2302
16	-0.3383	0.0334	0.3315	0.0635	-0.1571	0.2238
17	-0.4336	0.0316	0.3375	0.064	-0.1603	0.2236
18	-0.371	0.033	0.3222	0.0618	-0.1487	0.2247
19	-0.3014	0.0417	0.3297	0.0606	-0.1401	0.2234
20	-0.6457	0.0323	0.3524	0.0646	-0.1613	0.226
21	-0.422	0.0369	0.2927	0.062	-0.1491	0.2226
22	-0.2881	0.0416	0.3234	0.0598	-0.1377	0.2208
23	-0.2684	0.0427	0.3305	0.0587	-0.1333	0.2186
24	-0.3299	0.0367	0.3047	0.0591	-0.1405	0.2139
25	-0.433	0.0175	0.327	0.0658	-0.1794	0.2143
26	-0.5323	0.0346	0.3016	0.0623	-0.1525	0.2216
27	-0.4139	0.0395	0.2944	0.0604	-0.1416	0.2207
28	-0.2613	0.0431	0.3349	0.0573	-0.1289	0.215
29	-0.2178	0.0382	0.288	0.0583	-0.1307	0.207
30	-0.2348	0.0375	0.3124	0.0568	-0.133	0.208
31	-0.5323	0.0346	0.3016	0.0623	-0.1525	0.2216
32	-0.6149	0.0378	0.289	0.061	-0.1452	0.2209
33	-0.3727	0.0403	0.2935	0.0587	-0.1357	0.2164
34	-0.2154	0.0413	0.335	0.0564	-0.1278	0.2104
35	-0.2148	0.0387	0.3127	0.0554	-0.1275	0.205
36	-0.2358	0.0378	0.3211	0.0559	-0.13	0.2056
37	-0.2888	0.0277	0.311	0.0618	-0.1576	0.213
38	-0.4723	0.0299	0.3482	0.0592	-0.1478	0.2075
39	-0.329	0.0318	0.3093	0.057	-0.1392	0.2028
40	-0.282	0.0355	0.3087	0.055	-0.1296	0.2007
41	-0.1929	0.0342	0.2953	0.0538	-0.1273	0.1956
42	-0.1859	0.031	0.3202	0.0553	-0.1348	0.1968
43	-0.3088	0.0216	0.2947	0.0598	-0.1577	0.2009
44	-0.284	0.0294	0.2987	0.0581	-0.1448	0.2036
45	-0.2667	0.0211	0.2827	0.0565	-0.1485	0.1908
46	-0.2839	0.021	0.3043	0.0533	-0.1388	0.1807
47	-0.2517	0.0213	0.2859	0.0528	-0.1373	0.1798
48	-0.3251	-0.003	0.2915	0.0565	-0.1726	0.1667
49	-0.3932	-0.0122	0.296	0.0622	-0.1987	0.1742
50	-0.2476	0.178	1.3844	0.1422	-0.2486	0.6046
51	-0.2267	0.1552	0.9851	0.1054	-0.161	0.4715
52	-0.1784	0.1736	1.0159	0.1124	-0.1637	0.5109
53	-0.1885	0.2065	1.0469	0.1291	-0.1809	0.5938
54	-0.197	0.236	1.3494	0.1829	-0.2526	0.7246
55	-0.2582	0.0913	0.8199	0.0946	-0.1923	0.375
56	-0.2614	0.0391	0.3153	0.0671	-0.1621	0.2404
57	-0.2998	0.0385	0.3362	0.0667	-0.1616	0.2386
58	-0.4302	0.0365	0.3555	0.0669	-0.1643	0.2372
59	-0.2596	0.1329	0.8839	0.1133	-0.2071	0.4728
60	-0.2874	0.0556	0.4738	0.076	-0.1725	0.2838
61	-0.3256	0.0312	0.3199	0.065	-0.1637	0.2262
62	-0.3464	0.031	0.3384	0.0672	-0.1706	0.2325
63	-0.388	0.038	0.4005	0.0685	-0.1675	0.2435
64	-0.3642	0.0815	0.5641	0.0884	-0.1837	0.3468
65	-0.2978	0.005	0.2948	0.062	-0.181	0.191
66	-0.3275	0.0044	0.2673	0.0551	-0.1608	0.1696
67	-0.5521	-0.0124	0.2263	0.0613	-0.1962	0.1714
68	-0.4156	-0.0455	0.2355	0.07	-0.2556	0.1647
69	-0.3355	0.0078	0.2748	0.0629	-0.1809	0.1965
70	-0.318	0.0117	0.2635	0.0566	-0.1581	0.1814
71	-0.2979	0.003	0.2445	0.0599	-0.1768	0.1827
72	-0.4456	-0.0529	0.2162	0.071	-0.266	0.1602
73	-0.3559	0.0035	0.2811	0.0632	-0.1861	0.1931
74	-0.2929	0.008	0.3099	0.0566	-0.1618	0.1779
75	-0.279	0.0015	0.2991	0.0598	-0.178	0.1809
76	-0.3871	-0.0451	0.2341	0.069	-0.2521	0.1619
77	-0.8941	-0.0378	0.4012	0.1159	-0.3854	0.3098
78	-0.5212	0.0162	0.4225	0.0764	-0.2129	0.2453
79	-0.4091	0.0263	0.3228	0.0695	-0.1823	0.2348
80	-0.5087	0.0206	0.3927	0.0698	-0.1887	0.2299
81	-0.4812	0.0182	0.405	0.0693	-0.1898	0.2262
82	-0.3509	-0.009	0.3133	0.0634	-0.1992	0.1811
83	-0.75	-0.0171	0.3417	0.0886	-0.283	0.2488
84	-0.4294	0.0081	0.3296	0.069	-0.1989	0.2152
85	-0.349	0.0186	0.3677	0.0662	-0.1801	0.2172
86	-0.3604	0.0196	0.328	0.0673	-0.1822	0.2215
87	-0.2746	0.0247	0.3627	0.0673	-0.1773	0.2266
88	-0.2813	0.0156	0.3767	0.0665	-0.184	0.2152
89	-0.2623	-0.0103	0.2747	0.0606	-0.1927	0.1709
90	-0.567	0.009	0.382	0.0733	-0.2108	0.2289
91	-0.2919	0.0105	0.3174	0.0652	-0.1852	0.2062
92	-0.2544	0.0142	0.3615	0.0646	-0.1797	0.2081
93	-0.2532	0.0204	0.34	0.065	-0.1746	0.2154
94	-0.3073	0.0253	0.307	0.0636	-0.1654	0.2159
95	-0.2488	0.0052	0.2738	0.0578	-0.1683	0.1787

B/H=1 N=1 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4908	1.1517	2.0588	0.2501	0.4014	1.902
1	-0.8837	-0.1318	0.3889	0.1164	-0.4809	0.2173
2	-1.038	-0.1089	0.5447	0.1244	-0.4822	0.2644
3	-0.9769	-0.0785	0.4979	0.1297	-0.4875	0.3104
4	-1.1413	-0.0271	0.4784	0.1269	-0.4078	0.3536
5	-0.8917	0.0212	0.5069	0.1272	-0.3604	0.4027
6	-1.2836	-0.0528	0.4341	0.1636	-0.5435	0.438
7	-1.3106	-0.1927	0.3964	0.1841	-0.745	0.3595
8	-0.6461	-0.0528	0.3594	0.0937	-0.3339	0.2282
9	-0.5517	-0.0498	0.4118	0.0948	-0.334	0.2345
10	-0.7291	-0.0069	0.4061	0.0969	-0.2976	0.2837
11	-0.6422	0.0268	0.4129	0.0915	-0.2477	0.3012
12	-0.8316	0.0129	0.3943	0.1011	-0.2904	0.3162
13	-0.7252	-0.0265	0.3559	0.102	-0.3325	0.2796
14	-0.6586	-0.0256	0.3284	0.09	-0.2955	0.2444
15	-0.594	-0.0062	0.3946	0.0875	-0.2687	0.2563
16	-0.4904	0.0098	0.3946	0.0853	-0.2461	0.2658
17	-0.4866	-0.0097	0.3736	0.085	-0.2648	0.2455
18	-0.6503	0.0057	0.3451	0.0815	-0.2388	0.2503
19	-0.4479	0.0272	0.3631	0.0783	-0.2078	0.2621
20	-0.664	-0.0022	0.3609	0.0853	-0.2581	0.2537
21	-0.53	0.0084	0.3459	0.081	-0.2347	0.2515
22	-0.5835	0.0249	0.3255	0.0764	-0.2042	0.2539
23	-0.4032	0.0449	0.3413	0.0716	-0.1699	0.2598
24	-0.3472	0.0269	0.3231	0.0717	-0.188	0.2419
25	-0.5737	0.0018	0.3717	0.0839	-0.2499	0.2535
26	-0.5388	0.0034	0.3699	0.0801	-0.2368	0.2437
27	-0.4729	0.0109	0.3501	0.0769	-0.2197	0.2415
28	-0.4922	0.0368	0.3583	0.0705	-0.1746	0.2482
29	-0.2921	0.0446	0.3545	0.0665	-0.1549	0.2441
30	-0.3225	0.0462	0.3405	0.0688	-0.1541	0.2465
31	-0.5388	0.0034	0.3699	0.0801	-0.2368	0.2437
32	-0.6526	0.0139	0.3629	0.0771	-0.2173	0.2452
33	-0.399	0.0371	0.3711	0.0733	-0.1828	0.2571
34	-0.3113	0.0601	0.3724	0.0676	-0.1428	0.2631
35	-0.285	0.0465	0.3453	0.0652	-0.149	0.242
36	-0.3745	0.0438	0.296	0.0655	-0.1528	0.2405
37	-0.9405	0.0442	0.377	0.0732	-0.1756	0.2639
38	-0.5748	0.0416	0.3614	0.0754	-0.1844	0.2677
39	-0.4249	0.04	0.3319	0.0699	-0.1697	0.2496
40	-0.3352	0.0285	0.3183	0.0643	-0.1645	0.2214
41	-0.3577	0.0543	0.3175	0.062	-0.1316	0.2403
42	-0.2612	0.063	0.3271	0.0635	-0.1275	0.2535
43	-0.6068	0.0457	0.3568	0.0722	-0.1709	0.2624
44	-0.4088	0.0077	0.3322	0.0722	-0.2088	0.2242
45	-0.3868	0.0117	0.3559	0.0699	-0.1981	0.2214
46	-0.377	0.0154	0.3356	0.065	-0.1796	0.2105
47	-0.2904	0.0545	0.3833	0.0595	-0.124	0.2331
48	-0.2497	0.0709	0.3509	0.0655	-0.1255	0.2674
49	-0.8893	0.0676	0.4244	0.079	-0.1692	0.3045
50	-0.5591	0.1205	1.3744	0.1641	-0.3719	0.6129
51	-0.5395	0.2053	1.4938	0.223	-0.4635	0.8742
52	-0.5068	0.2909	1.7824	0.2377	-0.4222	1.0041
53	-0.4243	0.3896	2.0624	0.2709	-0.4231	1.2024
54	-0.2355	0.3492	1.7741	0.2475	-0.3932	1.0916
55	-0.5794	0.0306	1.0734	0.1409	-0.3922	0.4533
56	-0.5369	0.0097	0.7665	0.13	-0.3803	0.3997
57	-0.5545	0.0348	0.6868	0.1236	-0.3363	0.4055
58	-0.3204	0.1965	1.165	0.1532	-0.2629	0.656
59	-0.2838	0.3356	1.5709	0.2131	-0.3038	0.9751
60	-0.5458	-0.0157	0.957	0.1484	-0.4609	0.4294
61	-0.5317	-0.0173	0.414	0.1053	-0.3332	0.2986
62	-0.5063	0.0286	0.5417	0.0943	-0.2543	0.3116
63	-0.4744	0.0798	0.6306	0.1029	-0.2287	0.3884
64	-0.3701	0.2692	1.3303	0.1917	-0.306	0.8443
65	-0.5771	-0.0357	0.2645	0.0921	-0.312	0.2406
66	-0.5063	0.0093	0.2917	0.0746	-0.2146	0.2332
67	-0.2778	0.0552	0.3445	0.0665	-0.1444	0.2548
68	-0.4843	0.0705	0.4178	0.0789	-0.1662	0.3073
69	-0.6581	-0.0532	0.245	0.0979	-0.3469	0.2405
70	-0.5243	-0.0117	0.2759	0.0871	-0.2731	0.2497
71	-0.3808	0.043	0.3219	0.0711	-0.1702	0.2562
72	-0.353	0.0517	0.3288	0.0758	-0.1756	0.279
73	-0.6325	-0.0485	0.3205	0.0983	-0.3433	0.2462
74	-0.3765	0.0067	0.3543	0.0715	-0.2077	0.221
75	-0.341	0.0498	0.3155	0.0661	-0.1484	0.246
76	-0.4283	0.0568	0.3457	0.0795	-0.1816	0.2953
77	-1.3129	-0.1462	0.4157	0.1776	-0.879	0.3866
78	-1.1373	-0.0029	0.3608	0.1052	-0.3186	0.3128
79	-0.5134	0.0279	0.5456	0.0786	-0.206	0.2637
80	-0.5336	0.0541	0.4327	0.073	-0.165	0.2731
81	-0.7193	0.0644	0.5153	0.0752	-0.1611	0.2899
82	-0.6709	0.0891	0.4515	0.0776	-0.1437	0.3218
83	-1.5489	-0.1202	0.3667	0.1862	-0.6878	0.4293
84	-0.8727	0.003	0.4031	0.1011	-0.3005	0.3064
85	-0.3685	0.0272	0.4021	0.0765	-0.2023	0.2567
86	-0.3612	0.0564	0.4704	0.0716	-0.1584	0.2712
87	-0.3389	0.0579	0.4325	0.0701	-0.1525	0.2683
88	-0.3326	0.0648	0.4432	0.0722	-0.1517	0.2813
89	-0.4432	0.0886	0.4161	0.0745	-0.1349	0.3122
90	-1.2102	-0.0283	0.6266	0.1461	-0.4128	0.4159
91	-0.5465	0.021	0.4048	0.0829	-0.2575	0.2995
92	-0.3693	0.0135	0.4459	0.0771	-0.2178	0.2448
93	-0.3091	0.0676	0.4147	0.069	-0.1393	0.2745
94	-0.304	0.0782	0.4651	0.0688	-0.1276	0.284
95	-0.4748	0.1154	0.4654	0.0768	-0.1149	0.3459

B/H=1 N=1 10 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5221	1.1609	1.9543	0.2587	0.385	1.9369
1	-1.7142	-0.2905	0.4141	0.2016	-0.8954	0.3144
2	-1.5142	-0.2743	0.3404	0.1932	-0.854	0.3054
3	-1.4475	-0.2315	0.411	0.1973	-0.8234	0.3605
4	-1.3577	-0.1521	0.484	0.2054	-0.7683	0.464
5	-1.197	-0.0283	0.457	0.163	-0.5173	0.4608
6	-1.172	-0.0409	0.449	0.1307	-0.433	0.3512
7	-0.956	-0.1119	0.357	0.1094	-0.4399	0.2162
8	-0.8902	-0.0879	0.3744	0.1181	-0.4421	0.2663
9	-0.7699	-0.0997	0.3157	0.1227	-0.4677	0.2683
10	-0.7864	-0.0378	0.4118	0.1234	-0.4079	0.3324
11	-0.5834	0.0083	0.3917	0.1013	-0.2958	0.3123
12	-0.5872	-0.0079	0.4094	0.0936	-0.2887	0.2729
13	-0.7555	-0.0564	0.335	0.0863	-0.3154	0.2026
14	-0.7532	-0.0507	0.353	0.1028	-0.3592	0.2578
15	-0.6243	-0.0292	0.339	0.0955	-0.3157	0.2572
16	-0.5314	-0.0127	0.4003	0.0954	-0.2989	0.2735
17	-0.6871	-0.0369	0.3058	0.0906	-0.3088	0.2349
18	-0.6452	-0.0134	0.3144	0.0809	-0.2561	0.2292
19	-0.4443	0.0087	0.3245	0.0798	-0.2307	0.2481
20	-0.7739	-0.0343	0.314	0.0912	-0.308	0.2394
21	-0.645	-0.0125	0.3067	0.0815	-0.257	0.232
22	-0.5696	0.0059	0.3137	0.0762	-0.2229	0.2345
23	-0.3369	0.0299	0.3386	0.0722	-0.1866	0.2463
24	-0.4	0.0092	0.3943	0.0698	-0.2011	0.2176
25	-0.4822	-0.0206	0.3514	0.0785	-0.256	0.2148
26	-0.7191	-0.0211	0.3577	0.0831	-0.2703	0.2281
27	-0.5419	-0.0105	0.3383	0.0763	-0.2393	0.2183
28	-0.4705	0.0192	0.3092	0.0688	-0.1871	0.2254
29	-0.495	0.0296	0.3071	0.0656	-0.1671	0.2263
30	-0.3199	0.0327	0.3834	0.0656	-0.1641	0.2295
31	-0.126	0.0827	0.2303	0.0351	-0.0226	0.188
32	-0.6747	-0.0084	0.351	0.0843	-0.2614	0.2446
33	-0.488	0.0212	0.3406	0.0727	-0.1968	0.2392
34	-0.3854	0.0437	0.293	0.0658	-0.1537	0.2411
35	-0.3423	0.0291	0.2929	0.064	-0.1628	0.221
36	-0.2966	0.0306	0.303	0.0645	-0.1629	0.224
37	-0.5902	0.0345	0.4389	0.0742	-0.188	0.2571
38	-1.0032	0.0177	0.3585	0.0871	-0.2435	0.2789
39	-0.403	0.0225	0.32	0.0703	-0.1883	0.2333
40	-0.277	0.0056	0.2684	0.0628	-0.1629	0.1941
41	-0.302	0.0389	0.3238	0.0613	-0.1449	0.2227
42	-0.3047	0.0526	0.2971	0.0623	-0.1344	0.2395
43	-0.7877	0.0422	0.4246	0.0767	-0.188	0.2724
44	-1.0228	-0.0708	0.2577	0.0841	-0.323	0.1814
45	-0.6818	-0.055	0.2691	0.0692	-0.2625	0.1525
46	-0.4019	-0.0376	0.2119	0.0677	-0.2407	0.1655
47	-0.2324	0.0297	0.2874	0.0635	-0.1607	0.2201
48	-0.1612	0.0859	0.3674	0.0623	-0.1011	0.2729
49	-0.6667	0.0867	0.4504	0.0835	-0.1637	0.337
50	-0.5271	0.3558	2.0058	0.2329	-0.343	1.0547
51	-0.3396	0.4623	2.08	0.3233	-0.5075	1.4322
52	-0.4828	0.4106	1.9088	0.3013	-0.4933	1.3145
53	-0.3709	0.2425	1.4434	0.2169	-0.4081	0.8931
54	-0.3728	0.1293	1.2307	0.155	-0.3357	0.5942
55	-0.5845	0.314	1.7242	0.2215	-0.3506	0.9787
56	-0.4537	0.2559	1.0569	0.1777	-0.2771	0.7889
57	-0.5193	0.1039	0.9176	0.1481	-0.3404	0.5482
58	-0.4978	0.0417	0.5934	0.1195	-0.3168	0.4002
59	-0.5915	0.0474	0.9871	0.1205	-0.3142	0.409
60	-0.4827	0.2214	1.6671	0.2227	-0.4468	0.8895
61	-0.4066	0.1212	0.6126	0.1095	-0.2073	0.4496
62	-0.4012	0.0492	0.436	0.094	-0.233	0.3313
63	-0.6484	-0.0332	0.3688	0.103	-0.3423	0.2758
64	-1.0888	-0.0356	0.7698	0.1167	-0.3856	0.3145
65	-0.9387	-0.1532	0.2155	0.1086	-0.4789	0.1725
66	-0.6249	-0.0412	0.2423	0.0936	-0.3219	0.2395
67	-0.2576	0.0604	0.3685	0.067	-0.1405	0.2612
68	-0.2539	0.0914	0.4341	0.0691	-0.1159	0.2988
69	-1.0101	-0.176	0.2431	0.1119	-0.5115	0.1595
70	-0.806	-0.0745	0.2291	0.1111	-0.4079	0.2589
71	-0.3778	0.0278	0.3097	0.0773	-0.2041	0.2597
72	-0.2632	0.056	0.3166	0.0667	-0.1441	0.2561
73	-1.2135	-0.1572	0.2304	0.1139	-0.4989	0.1845
74	-0.4499	-0.0167	0.3991	0.0818	-0.262	0.2286
75	-0.3099	0.0412	0.3694	0.0688	-0.1651	0.2474
76	-0.2377	0.0619	0.3528	0.0662	-0.1366	0.2604
77	-1.0663	-0.1334	0.3246	0.1271	-0.5148	0.248
78	-0.8247	-0.0764	0.3107	0.1106	-0.4081	0.2553
79	-0.8247	-0.0217	0.3846	0.0988	-0.318	0.2746
80	-0.9661	0.0306	0.4099	0.0893	-0.2373	0.2984
81	-0.7334	0.0484	0.4324	0.0912	-0.2251	0.3218
82	-0.8709	0.089	0.4674	0.0895	-0.1796	0.3577
83	-1.1158	-0.1113	0.3638	0.1194	-0.4695	0.247
84	-0.8834	-0.0705	0.5436	0.0999	-0.3703	0.2293
85	-0.5952	-0.017	0.418	0.0881	-0.2813	0.2474
86	-0.6365	0.0279	0.4368	0.0822	-0.2186	0.2745
87	-0.4344	0.0145	0.3997	0.0776	-0.1982	0.2672
88	-0.5433	0.0496	0.4119	0.0761	-0.1788	0.278
89	-0.459	0.0896	0.374	0.0736	-0.1313	0.3104
90	-0.6932	-0.0712	0.3611	0.0963	-0.3601	0.2176
91	-0.444	-0.056	0.3818	0.0864	-0.3152	0.2031
92	-0.4362	-0.024	0.5023	0.0789	-0.2607	0.2127
93	-0.3831	0.0502	0.4305	0.0724	-0.1671	0.2675
94	-0.3708	0.0671	0.3523	0.0689	-0.1396	0.2739
95	-0.4413	0.1172	0.4319	0.0735	-0.1034	0.3378

B/H=1 N=1 20 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.3445	1.1618	1.9752	0.2573	0.39	1.9336
1	-1.6095	-0.381	0.4515	0.2263	-1.06	0.298
2	-1.6175	-0.3758	0.4543	0.2081	-1.0003	0.2486
3	-1.7774	-0.3206	0.4659	0.2024	-0.9277	0.2865
4	-1.8074	-0.2518	0.4367	0.2094	-0.8801	0.3764
5	-1.8481	-0.1173	0.5025	0.1845	-0.6708	0.4363
6	-1.3369	-0.085	0.4579	0.1463	-0.5238	0.3538
7	-1.0006	-0.1194	0.3296	0.1086	-0.4453	0.2065
8	-1.2988	-0.1729	0.4186	0.1365	-0.5823	0.2364
9	-1.0659	-0.1826	0.4082	0.133	-0.5815	0.2163
10	-0.9119	-0.1311	0.5015	0.1342	-0.5338	0.2715
11	-0.6813	-0.0504	0.4629	0.1112	-0.384	0.2833
12	-0.869	-0.0335	0.4091	0.0963	-0.3223	0.2553
13	-0.9712	-0.0697	0.2718	0.0835	-0.32	0.1807
14	-1.1064	-0.1264	0.4151	0.1185	-0.4819	0.2291
15	-0.8426	-0.0915	0.4087	0.1031	-0.4008	0.2179
16	-0.6027	-0.0775	0.4269	0.102	-0.3836	0.2286
17	-0.7145	-0.0976	0.3889	0.1035	-0.4081	0.2128
18	-0.6167	-0.062	0.3606	0.0869	-0.3226	0.1987
19	-0.4709	-0.0359	0.3689	0.0821	-0.2822	0.2103
20	-0.8443	-0.089	0.3402	0.1072	-0.4104	0.2325
21	-0.6537	-0.0625	0.3703	0.0915	-0.3369	0.2119
22	-0.4587	-0.0342	0.4052	0.0792	-0.2717	0.2034
23	-0.4899	-0.0008	0.3833	0.0742	-0.2233	0.2217
24	-0.3905	-0.0138	0.2934	0.0699	-0.2236	0.1959
25	-0.534	-0.0361	0.4291	0.0766	-0.2658	0.1937
26	-0.8477	-0.0579	0.3575	0.1023	-0.3647	0.2469
27	-0.5961	-0.0423	0.3561	0.0842	-0.295	0.2103
28	-0.3815	-0.0072	0.3002	0.0719	-0.2229	0.2085
29	-0.5392	0.0085	0.3069	0.0671	-0.1928	0.2099
30	-0.3562	0.0177	0.374	0.0655	-0.1787	0.2141
31	-0.0803	0.0789	0.2575	0.0349	-0.0259	0.1837
32	-0.8923	-0.0339	0.396	0.1044	-0.3472	0.2795
33	-0.6074	0.0082	0.423	0.0814	-0.2361	0.2525
34	-0.3277	0.028	0.331	0.0692	-0.1796	0.2355
35	-0.6098	0.0088	0.2828	0.0661	-0.1894	0.207
36	-0.3151	0.0148	0.3122	0.0649	-0.18	0.2096
37	-0.4323	0.0307	0.3737	0.0738	-0.1908	0.2521
38	-1.0907	0.0034	0.4201	0.1084	-0.3219	0.3287
39	-0.4582	0.0186	0.3661	0.079	-0.2183	0.2556
40	-0.3785	-0.0114	0.3155	0.0674	-0.2137	0.1908
41	-0.3194	0.0251	0.3676	0.0636	-0.1655	0.2158
42	-0.2953	0.0404	0.3516	0.0635	-0.1502	0.2309
43	-0.8048	0.0393	0.3624	0.0741	-0.183	0.2617
44	-0.8258	-0.097	0.2396	0.1031	-0.4062	0.2122
45	-0.551	-0.0648	0.2409	0.0772	-0.2963	0.1667
46	-0.578	-0.0535	0.2304	0.0771	-0.2846	0.1777
47	-0.325	0.0107	0.3429	0.0694	-0.1974	0.2187
48	-0.2283	0.0839	0.3479	0.065	-0.1112	0.2789
49	-0.5585	0.0917	0.4795	0.0784	-0.1433	0.3268
50	-0.4259	0.2889	1.8576	0.2352	-0.4168	0.9945
51	-0.3393	0.3345	1.9315	0.2815	-0.51	1.1789
52	-0.5621	0.4019	1.8773	0.2894	-0.4663	1.2702
53	-0.4006	0.2951	1.5527	0.2261	-0.3833	0.9734
54	-0.4222	0.164	1.3794	0.1674	-0.3382	0.6661
55	-0.5065	0.2394	1.5291	0.2393	-0.4788	0.9573
56	-0.2957	0.2256	1.1746	0.1671	-0.2757	0.7268
57	-0.3447	0.1506	0.9765	0.1486	-0.2953	0.5965
58	-0.5373	0.1017	0.7333	0.1239	-0.2701	0.4735
59	-0.3975	0.0494	0.6961	0.1094	-0.2789	0.3776
60	-0.6486	0.1119	1.4988	0.2338	-0.5895	0.8133
61	-0.3861	0.1135	0.6526	0.1182	-0.241	0.468
62	-0.458	0.0835	0.5831	0.0966	-0.2063	0.3733
63	-0.5295	0.0017	0.556	0.1024	-0.3055	0.309
64	-0.8766	-0.0383	0.6151	0.1114	-0.3726	0.296
65	-1.2668	-0.186	0.3277	0.1445	-0.6196	0.2475
66	-0.7471	-0.063	0.2988	0.1174	-0.4151	0.2891
67	-0.3916	0.0498	0.3505	0.076	-0.1781	0.2776
68	-0.2439	0.0912	0.4043	0.0693	-0.1168	0.2991
69	-1.106	-0.2102	0.2333	0.1416	-0.635	0.2146
70	-0.9304	-0.0888	0.3091	0.1349	-0.4934	0.3158
71	-0.4551	0.0251	0.3577	0.0895	-0.2435	0.2937
72	-0.2533	0.0583	0.3838	0.07	-0.1516	0.2681
73	-1.3885	-0.1779	0.2691	0.1444	-0.6112	0.2553
74	-0.6024	-0.0226	0.4654	0.0987	-0.3186	0.2735
75	-0.3569	0.049	0.4182	0.0755	-0.1774	0.2754
76	-0.2867	0.0676	0.4213	0.0712	-0.146	0.2813
77	-1.1343	-0.1423	0.3049	0.1244	-0.5156	0.231
78	-0.8525	-0.1048	0.3954	0.1144	-0.4478	0.2383
79	-0.7551	-0.0509	0.3843	0.1027	-0.3589	0.2571
80	-0.7422	0.0279	0.4096	0.0911	-0.2454	0.3012
81	-0.7527	0.052	0.4222	0.0906	-0.2197	0.3237
82	-0.7921	0.0962	0.4573	0.083	-0.1528	0.3453
83	-0.8857	-0.1216	0.3826	0.113	-0.4607	0.2175
84	-0.9227	-0.0994	0.323	0.0984	-0.3946	0.1958
85	-0.5278	-0.0506	0.3318	0.0926	-0.3284	0.2273
86	-0.4573	0.0157	0.4067	0.0849	-0.2389	0.2703
87	-0.4439	0.0271	0.3112	0.0806	-0.2146	0.2688
88	-0.4502	0.0472	0.3745	0.0779	-0.1867	0.281
89	-0.4587	0.0891	0.4028	0.0709	-0.1235	0.3017
90	-0.7699	-0.0917	0.3413	0.0923	-0.3685	0.1852
91	-0.63	-0.0895	0.2931	0.0841	-0.3418	0.1629
92	-0.4559	-0.0514	0.2924	0.0804	-0.2026	0.1897
93	-0.3923	0.0489	0.344	0.078	-0.185	0.2827
94	-0.4101	0.0839	0.3818	0.0746	-0.1598	0.2876
95	-0.2327	0.1164	0.4415	0.0723	-0.1004	0.3333

B/H=1 N=1 30 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5117	1.1079	1.8393	0.2468	0.3674	1.8483
1	-1.8062	-0.4378	0.2561	0.2451	-1.1731	0.2975
2	-1.8853	-0.4547	0.2668	0.2331	-1.1538	0.2445
3	-1.8061	-0.3855	0.2572	0.2109	-1.0182	0.2472
4	-1.7181	-0.3151	0.2709	0.2096	-0.9438	0.3136
5	-1.7455	-0.2121	0.4211	0.201	-0.8151	0.3909
6	-1.3923	-0.1743	0.4223	0.1721	-0.6907	0.3421
7	-1.1157	-0.175	0.2792	0.122	-0.5409	0.1909
8	-1.3713	-0.2747	0.2803	0.1769	-0.8054	0.256
9	-1.0303	-0.2514	0.2238	0.1469	-0.692	0.1892
10	-1.1451	-0.2299	0.29	0.1523	-0.6869	0.2271
11	-1.2114	-0.1422	0.4386	0.1377	-0.5554	0.2709
12	-1.0467	-0.0999	0.3045	0.1165	-0.4493	0.2495
13	-0.7634	-0.1172	0.2378	0.0864	-0.3764	0.1421
14	-1.2078	-0.2218	0.3983	0.1528	-0.6802	0.2366
15	-0.9296	-0.159	0.291	0.119	-0.516	0.1979
16	-0.8767	-0.1551	0.2976	0.1196	-0.5139	0.2036
17	-1.4026	-0.1755	0.3204	0.1349	-0.5803	0.2292
18	-0.8228	-0.1266	0.31	0.1072	-0.4482	0.1951
19	-0.7567	-0.0932	0.2746	0.0974	-0.3855	0.1991
20	-1.5558	-0.1598	0.4029	0.145	-0.5949	0.2754
21	-0.7625	-0.1275	0.3213	0.1167	-0.4776	0.2226
22	-0.6646	-0.0802	0.2806	0.0935	-0.3666	0.1942
23	-0.5043	-0.0496	0.3265	0.0862	-0.3082	0.2091
24	-0.555	-0.0575	0.3262	0.0794	-0.296	0.1805
25	-0.5508	-0.0746	0.2865	0.0753	-0.3005	0.1513
26	-1.1893	-0.1038	0.3749	0.14	-0.5238	0.3163
27	-0.6727	-0.0764	0.3545	0.1058	-0.3936	0.2409
28	-0.5675	-0.0423	0.287	0.0839	-0.2941	0.2095
29	-0.5	-0.0246	0.3125	0.0764	-0.2536	0.2045
30	-0.4215	-0.0145	0.3061	0.0729	-0.2313	0.2023
31	-0.1416	0.0501	0.2318	0.0359	-0.0576	0.1578
32	-1.1361	-0.0705	0.4153	0.1343	-0.4734	0.3324
33	-0.5597	-0.0074	0.3858	0.098	-0.3015	0.2866
34	-0.5742	0.0074	0.3271	0.0793	-0.2305	0.2453
35	-0.4315	-0.021	0.3382	0.0735	-0.2414	0.1994
36	-0.3795	-0.017	0.3175	0.0707	-0.229	0.1949
37	-0.4339	0.0057	0.3141	0.07	-0.2042	0.2157
38	-1.2733	-0.0282	0.422	0.1295	-0.4168	0.3604
39	-0.7617	-0.0003	0.3645	0.091	-0.2733	0.2728
40	-0.5326	-0.0413	0.2823	0.0739	-0.263	0.1803
41	-0.3903	-0.001	0.3208	0.0696	-0.2099	0.2078
42	-0.3288	0.0137	0.3209	0.0684	-0.1914	0.2188
43	-0.3527	0.0172	0.3522	0.0696	-0.1918	0.2259
44	-1.5305	-0.1496	0.2419	0.123	-0.5186	0.2195
45	-0.8413	-0.1041	0.2037	0.0845	-0.3577	0.1495
46	-0.5283	-0.1062	0.2611	0.0793	-0.3441	0.1316
47	-0.438	-0.0339	0.2817	0.075	-0.2589	0.1912
48	-0.3602	0.0658	0.4152	0.0721	-0.1504	0.2821
49	-0.5035	0.0872	0.4104	0.0752	-0.1382	0.3127
50	-0.8889	0.1828	1.5922	0.2358	-0.5246	0.8903
51	-0.6326	0.1792	1.5734	0.2088	-0.4472	0.8057
52	-0.6522	0.2786	1.5586	0.2416	-0.4462	1.0034
53	-0.3991	0.2477	1.4915	0.2089	-0.3791	0.8745
54	-0.651	0.1205	1.0596	0.1633	-0.3693	0.6102
55	-1.2534	0.1402	1.4816	0.2401	-0.58	0.8603
56	-0.4134	0.1519	1.0143	0.1518	-0.3036	0.6073
57	-0.4474	0.1338	0.9831	0.146	-0.3041	0.5717
58	-0.4379	0.1463	1.0321	0.1272	-0.2353	0.5278
59	-0.5184	0.0406	0.7401	0.1108	-0.2917	0.3729
60	-0.8546	0.0547	1.242	0.2334	-0.6455	0.7549
61	-0.3943	0.0915	0.8325	0.119	-0.2657	0.4486
62	-0.2568	0.1048	0.7177	0.1019	-0.201	0.4105
63	-0.369	0.0394	0.5417	0.0963	-0.2495	0.3283
64	-0.5865	-0.0237	0.7966	0.1137	-0.3649	0.3175
65	-1.4661	-0.2481	0.2258	0.1626	-0.7359	0.2397
66	-0.8527	-0.1325	0.3033	0.1266	-0.5124	0.2473
67	-0.5608	0.0135	0.3581	0.0872	-0.2482	0.2751
68	-0.3383	0.0805	0.4343	0.0745	-0.1431	0.3041
69	-1.2408	-0.2723	0.1842	0.1504	-0.7237	0.179
70	-0.9757	-0.1669	0.3241	0.1576	-0.6398	0.3059
71	-0.5994	-0.0161	0.3954	0.1034	-0.3262	0.2939
72	-0.3467	0.0402	0.4025	0.0772	-0.1915	0.2719
73	-1.1282	-0.2314	0.2312	0.148	-0.6752	0.2125
74	-0.6818	-0.0756	0.4681	0.1169	-0.4262	0.2751
75	-0.404	0.0366	0.3674	0.0874	-0.2256	0.2987
76	-0.3213	0.0633	0.3903	0.0781	-0.1708	0.2975
77	-1.4164	-0.1912	0.2174	0.1383	-0.6061	0.2237
78	-1.1624	-0.1557	0.3058	0.1233	-0.5255	0.2142
79	-0.6886	-0.0885	0.3722	0.105	-0.4035	0.2266
80	-0.5039	0.0226	0.3282	0.0778	-0.2109	0.2561
81	-0.6336	0.0548	0.3396	0.0739	-0.1668	0.2764
82	-0.4824	0.1013	0.3977	0.0737	-0.1198	0.3223
83	-1.0991	-0.1774	0.2014	0.1282	-0.5619	0.2071
84	-1.0582	-0.159	0.2283	0.1125	-0.4965	0.1786
85	-0.6237	-0.0956	0.2679	0.0986	-0.3914	0.2002
86	-0.5213	-0.0056	0.3015	0.0817	-0.2508	0.2393
87	-0.3523	0.0141	0.2852	0.0728	-0.2042	0.2323
88	-0.2583	0.0408	0.2956	0.0699	-0.1689	0.2505
89	-0.2375	0.0858	0.3919	0.0689	-0.121	0.2925
90	-1.5238	-0.1538	0.2352	0.1238	-0.5245	0.2169
91	-0.9794	-0.1518	0.2042	0.1079	-0.4754	0.1719
92	-0.499	-0.0908	0.2543	0.0854	-0.3468	0.1653
93	-0.3413	0.04	0.3507	0.0731	-0.1794	0.2593
94	-0.2849	0.0577	0.3796	0.0709	-0.155	0.2704
95	-0.2232	0.1177	0.4526	0.0727	-0.1004	0.3357

B/H=1 N=1 40 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.3758	1.069	1.9647	0.2496	0.3203	1.8171
1	-2.0046	-0.4671	0.3371	0.2612	-1.2509	0.3166
2	-1.9229	-0.507	0.2352	0.2638	-1.2985	0.2845
3	-1.7419	-0.4309	0.2765	0.2287	-1.1168	0.2551
4	-1.8826	-0.3432	0.3317	0.2178	-0.9968	0.3103
5	-1.9287	-0.2373	0.4763	0.2067	-0.8574	0.3829
6	-1.4029	-0.2179	0.3777	0.1835	-0.7686	0.3327
7	-1.1661	-0.2363	0.2992	0.1369	-0.6469	0.1743
8	-2.3491	-0.4051	0.3679	0.2513	-1.159	0.3488
9	-1.1987	-0.2895	0.2521	0.1593	-0.7673	0.1884
10	-1.3433	-0.2699	0.2809	0.1611	-0.7532	0.2133
11	-0.9542	-0.1821	0.3062	0.1479	-0.6259	0.2617
12	-1.0251	-0.1365	0.2957	0.1266	-0.5162	0.2431
13	-0.9968	-0.1705	0.1779	0.0938	-0.4519	0.1109
14	-1.8238	-0.3393	0.3341	0.2094	-0.9675	0.2889
15	-0.9443	-0.1993	0.254	0.1276	-0.5822	0.1835
16	-0.9378	-0.1919	0.2599	0.1257	-0.5688	0.1851
17	-1.2008	-0.2645	0.3321	0.1703	-0.7754	0.2465
18	-0.8223	-0.1864	0.3213	0.123	-0.5553	0.1826
19	-0.7063	-0.1329	0.3718	0.1038	-0.4442	0.1783
20	-1.5641	-0.247	0.408	0.1802	-0.7875	0.2935
21	-0.9398	-0.2019	0.3132	0.1454	-0.638	0.2343
22	-0.7188	-0.1301	0.2709	0.1003	-0.4311	0.1709
23	-0.5815	-0.087	0.3775	0.0918	-0.3623	0.1884
24	-0.6557	-0.1026	0.3281	0.0857	-0.3597	0.1544
25	-0.552	-0.13	0.1933	0.0791	-0.3673	0.1072
26	-1.6349	-0.1838	0.3885	0.1672	-0.6854	0.3177
27	-0.8851	-0.1424	0.3182	0.1295	-0.5308	0.246
28	-0.5592	-0.0884	0.2782	0.0944	-0.3716	0.1947
29	-0.4794	-0.063	0.2659	0.0815	-0.3076	0.1816
30	-0.4964	-0.0539	0.2875	0.0767	-0.2839	0.1761
31	-0.1269	0.0196	0.1807	0.0369	-0.0911	0.1303
32	-1.4147	-0.1529	0.45	0.1519	-0.6086	0.3027
33	-0.8705	-0.0724	0.4397	0.1121	-0.4087	0.2639
34	-0.5847	-0.0356	0.3182	0.0894	-0.3038	0.2327
35	-0.4887	-0.0621	0.3181	0.0802	-0.3027	0.1786
36	-0.4136	-0.0559	0.2782	0.0746	-0.2797	0.1679
37	-0.339	-0.0318	0.3155	0.0717	-0.2469	0.1834
38	-1.3004	-0.1122	0.4566	0.1478	-0.5556	0.3311
39	-0.8206	-0.0681	0.418	0.1012	-0.3717	0.2355
40	-0.562	-0.0926	0.2926	0.0801	-0.333	0.1479
41	-0.414	-0.0363	0.2942	0.0747	-0.2805	0.1879
42	-0.4594	-0.018	0.3623	0.0726	-0.2359	0.1999
43	-0.4231	-0.0184	0.2592	0.069	-0.2254	0.1887
44	-1.2176	-0.2038	0.2019	0.1279	-0.5875	0.1799
45	-0.7606	-0.1372	0.2213	0.0894	-0.4052	0.1309
46	-0.5777	-0.12	0.2706	0.0798	-0.3596	0.1195
47	-0.3733	-0.0553	0.2818	0.0755	-0.2817	0.1711
48	-0.3003	0.0535	0.3885	0.0736	-0.1673	0.2743
49	-0.3622	0.0725	0.404	0.0728	-0.1459	0.2909
50	-0.7119	0.1114	1.4807	0.218	-0.5424	0.7653
51	-0.7512	0.1344	1.4603	0.2066	-0.4855	0.7542
52	-0.5568	0.2551	1.5825	0.2422	-0.4714	0.9816
53	-0.468	0.2655	1.4367	0.227	-0.4155	0.9465
54	-0.5236	0.1192	1.174	0.1778	-0.4143	0.6527
55	-0.8772	0.0943	1.3986	0.2125	-0.5532	0.7218
56	-0.4713	0.1168	0.9331	0.1442	-0.3159	0.5494
57	-0.5417	0.123	0.9407	0.1485	-0.3225	0.5685
58	-0.3669	0.1787	0.9387	0.1367	-0.2315	0.5888
59	-0.4951	0.0471	1.0825	0.1346	-0.3566	0.4509
60	-1.4167	0.0526	1.2858	0.2246	-0.6212	0.7265
61	-0.551	0.0656	0.5995	0.1141	-0.2766	0.4078
62	-0.3958	0.1013	0.6437	0.0989	-0.1956	0.3981
63	-0.4381	0.0447	0.5399	0.0956	-0.242	0.3315
64	-0.8168	-0.0361	1.2341	0.1418	-0.4616	0.3894
65	-1.0602	-0.2119	0.3358	0.1374	-0.6241	0.2003
66	-0.8222	-0.1035	0.3143	0.1125	-0.4409	0.234
67	-0.4645	0.0062	0.3323	0.0859	-0.2515	0.2639
68	-0.3078	0.0653	0.3861	0.0735	-0.1551	0.2858
69	-1.0026	-0.2297	0.2431	0.1277	-0.6127	0.1534
70	-0.7977	-0.1225	0.3262	0.1316	-0.5171	0.2722
71	-0.4735	0.0017	0.3258	0.097	-0.2892	0.2926
72	-0.3383	0.0368	0.3543	0.0751	-0.1885	0.262
73	-1.095	-0.1855	0.3453	0.1295	-0.5741	0.2031
74	-0.6443	-0.0856	0.3403	0.1073	-0.4076	0.2365
75	-0.3366	0.0359	0.391	0.0841	-0.2163	0.2881
76	-0.2688	0.0632	0.3618	0.0751	-0.1621	0.2884
77	-1.832	-0.2875	0.1405	0.1807	-0.8297	0.2547
78	-1.6584	-0.2435	0.2246	0.16	-0.7234	0.2365
79	-1.2387	-0.1532	0.226	0.1217	-0.5182	0.2118
80	-0.4906	-0.0036	0.3297	0.0812	-0.2473	0.2401
81	-0.4416	0.033	0.3412	0.0712	-0.1805	0.2468
82	-0.2665	0.0906	0.3698	0.0707	-0.1215	0.3027
83	-1.8791	-0.282	0.1984	0.1778	-0.8154	0.2515
84	-1.3991	-0.2521	0.2158	0.1472	-0.6936	0.1895
85	-0.8127	-0.1638	0.2362	0.1203	-0.5246	0.1971
86	-0.5294	-0.0485	0.3018	0.0944	-0.3318	0.2348
87	-0.4611	-0.0206	0.2849	0.0799	-0.2602	0.219
88	-0.3382	0.0124	0.2963	0.0742	-0.2102	0.2349
89	-0.2357	0.073	0.3746	0.0697	-0.136	0.2821
90	-1.6851	-0.2524	0.3288	0.1675	-0.755	0.2501
91	-1.2173	-0.2443	0.2223	0.1437	-0.6753	0.1867
92	-0.689	-0.1345	0.3178	0.1039	-0.4461	0.1772
93	-0.5613	0.0128	0.3323	0.0843	-0.2402	0.2658
94	-0.4027	0.0246	0.3287	0.0804	-0.2165	0.2657
95	-0.2205	0.1032	0.4044	0.073	-0.1159	0.3223

B/H=1 N=1 50 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.2818	1.0015	1.8811	0.2423	0.2747	1.7284
1	-1.8998	-0.609	0.1413	0.2405	-1.3575	0.1396
2	-2.0084	-0.6195	0.251	0.2566	-1.3894	0.1503
3	-1.8166	-0.5369	0.1991	0.2261	-1.2153	0.1414
4	-1.7917	-0.4371	0.3214	0.2018	-1.0425	0.1683
5	-1.6965	-0.314	0.4019	0.1953	-0.9	0.272
6	-1.8714	-0.318	0.2964	0.1809	-0.8607	0.2247
7	-1.7275	-0.363	0.057	0.1475	-0.8055	0.0795
8	-2.5796	-0.6304	0.2378	0.2848	-1.4846	0.224
9	-1.4084	-0.4209	0.1507	0.1562	-0.8894	0.0476
10	-1.3815	-0.3761	0.1745	0.1453	-0.812	0.0598
11	-1.1844	-0.2852	0.2985	0.1355	-0.6917	0.1213
12	-1.2214	-0.2491	0.2309	0.1247	-0.6233	0.125
13	-1.0326	-0.2876	0.1168	0.0992	-0.5852	0.01
14	-2.1152	-0.5368	0.2935	0.2262	-1.2154	0.1418
15	-1.0079	-0.3194	0.2103	0.1271	-0.7007	0.0619
16	-1.0739	-0.2943	0.1633	0.116	-0.6422	0.0536
17	-1.4328	-0.44	0.2685	0.1804	-0.9813	0.1012
18	-1.0618	-0.3355	0.1812	0.1273	-0.7174	0.0463
19	-0.7539	-0.2514	0.1795	0.1026	-0.5593	0.0564
20	-1.7726	-0.4157	0.2719	0.195	-1.0009	0.1694
21	-1.4722	-0.356	0.2391	0.1517	-0.8111	0.0991
22	-0.8314	-0.2566	0.1826	0.1007	-0.5588	0.0455
23	-0.6521	-0.1925	0.1944	0.0911	-0.4659	0.0811
24	-0.6569	-0.2247	0.1684	0.0858	-0.482	0.0926
25	-0.69	-0.2459	0.0957	0.0848	-0.5004	0.0086
26	-1.6161	-0.3795	0.2444	0.1906	-0.9513	0.1923
27	-1.2089	-0.3064	0.1611	0.1361	-0.7148	0.102
28	-0.7101	-0.2226	0.2148	0.0968	-0.5131	0.0674
29	-0.6773	-0.1836	0.191	0.0948	-0.4381	0.0709
30	-0.5405	-0.1689	0.1905	0.0807	-0.411	0.0732
31	-0.2415	-0.0899	0.0764	0.0401	-0.2102	0.0303
32	-1.7213	-0.3573	0.2072	0.1802	-0.8979	0.1832
33	-0.9827	-0.2242	0.1815	0.1164	-0.5734	0.125
34	-0.9459	-0.1636	0.218	0.091	-0.4365	0.1094
35	-0.6844	-0.2032	0.1785	0.0829	-0.4519	0.0456
36	-0.626	-0.1896	0.1557	0.0794	-0.4277	0.0486
37	-0.6089	-0.1505	0.197	0.0776	-0.3833	0.0824
38	-1.8178	-0.2789	0.2924	0.1721	-0.7953	0.2375
39	-0.8962	-0.2135	0.2096	0.1088	-0.54	0.1129
40	-0.7178	-0.2442	0.0653	0.0821	-0.4907	0.0022
41	-0.5746	-0.1593	0.1505	0.0778	-0.3926	0.074
42	-0.5537	-0.1386	0.154	0.0758	-0.3658	0.0887
43	-0.4824	-0.1421	0.1844	0.0725	-0.3596	0.0754
44	-1.2789	-0.3344	0.122	0.134	-0.7364	0.0675
45	-0.8982	-0.2512	0.126	0.0934	-0.5314	0.029
46	-0.6598	-0.232	0.127	0.0812	-0.4757	0.0117
47	-0.6027	-0.1594	0.2255	0.0773	-0.3914	0.0726
48	-0.521	0.0222	0.3387	0.0754	-0.204	0.2483
49	-0.3411	0.0175	0.3745	0.0747	-0.2067	0.2416
50	-1.2705	0.0338	1.9208	0.2059	-0.5838	0.6514
51	-0.8884	0.0803	1.4564	0.1846	-0.4735	0.6341
52	-0.5481	0.2086	1.4916	0.2227	-0.4594	0.8765
53	-0.4879	0.2174	1.266	0.2223	-0.4494	0.8843
54	-0.605	0.0806	1.1027	0.192	-0.4954	0.6567
55	-1.3415	-0.0135	1.5041	0.1896	-0.5823	0.5552
56	-0.6288	0.0574	0.744	0.1306	-0.3344	0.4492
57	-0.697	0.0532	0.8969	0.1416	-0.3716	0.4779
58	-0.3917	0.155	0.9321	0.1345	-0.2484	0.5584
59	-0.6071	0.0596	1.032	0.1577	-0.4136	0.5328
60	-1.9992	-0.0633	1.5904	0.2054	-0.6796	0.5529
61	-0.4946	0.0068	0.5228	0.1061	-0.3115	0.325
62	-0.4012	0.0557	0.5802	0.102	-0.2504	0.3618
63	-0.5112	-0.0065	0.416	0.0998	-0.3088	0.2698
64	-0.883	-0.0484	1.2278	0.1725	-0.5658	0.469
65	-1.3276	-0.2249	0.1194	0.1205	-0.5864	0.1366
66	-0.6806	-0.1083	0.2809	0.0998	-0.4078	0.1911
67	-0.4958	-0.0214	0.4065	0.0847	-0.2755	0.2326
68	-0.5589	0.0175	0.4235	0.0763	-0.2116	0.2465
69	-1.2941	-0.2493	0.2372	0.1089	-0.576	0.0773
70	-0.6858	-0.1221	0.2449	0.099	-0.419	0.1749
71	-0.3817	0.0045	0.4262	0.0833	-0.2453	0.2543
72	-0.305	-0.0004	0.2698	0.0734	-0.2207	0.2199
73	-1.214	-0.1914	0.3235	0.1079	-0.5152	0.1324
74	-0.6988	-0.1012	0.319	0.0908	-0.3737	0.1713
75	-0.3154	0.0167	0.4173	0.0783	-0.2183	0.2516
76	-0.3212	0.0242	0.4659	0.0749	-0.2005	0.249
77	-1.8639	-0.3736	0.0707	0.1879	-0.9374	0.1903
78	-1.8142	-0.3075	0.1741	0.1694	-0.8158	0.2008
79	-1.0932	-0.1939	0.1958	0.1228	-0.5623	0.1746
80	-0.4674	-0.0338	0.307	0.0854	-0.2902	0.2225
81	-0.3452	-0.0099	0.2957	0.0744	-0.233	0.2132
82	-0.2505	0.0566	0.3947	0.0726	-0.1617	0.2749
83	-1.7146	-0.3709	0.2007	0.1901	-0.9412	0.1995
84	-1.2707	-0.3127	0.1748	0.1515	-0.7673	0.1419
85	-0.9452	-0.2147	0.1967	0.1302	-0.6053	0.1759
86	-0.5651	-0.0763	0.2874	0.0988	-0.3726	0.2199
87	-0.4694	-0.0677	0.2927	0.0842	-0.3203	0.1849
88	-0.4147	-0.0396	0.2302	0.0791	-0.2769	0.1976
89	-0.2403	0.035	0.3437	0.0726	-0.1833	0.2532
90	-1.7308	-0.3346	0.1469	0.1874	-0.8968	0.2276
91	-1.3221	-0.3092	0.1917	0.1504	-0.7604	0.1421
92	-0.7951	-0.1858	0.2813	0.1156	-0.5326	0.1609
93	-0.5881	-0.0259	0.3435	0.0924	-0.3031	0.2512
94	-0.4299	-0.0315	0.2819	0.0857	-0.2885	0.2255
95	-0.2354	0.0736	0.4317	0.075	-0.1515	0.2987

B/H=1 N=1 60 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4176	1.0059	1.7556	0.249	0.2589	1.7528
1	-2.3692	-0.6514	0.1298	0.2655	-1.4479	0.1452
2	-2.186	-0.5527	0.173	0.2261	-1.2311	0.1256
3	-1.7238	-0.4859	0.177	0.207	-1.1069	0.1352
4	-1.567	-0.405	0.1465	0.1668	-0.9056	0.0955
5	-1.4558	-0.2897	0.3153	0.1544	-0.7529	0.1734
6	-1.6399	-0.3144	0.2208	0.1503	-0.7653	0.1365
7	-1.5006	-0.351	0.1403	0.1315	-0.7454	0.0435
8	-2.3836	-0.6767	0.1545	0.2721	-1.493	0.1395
9	-1.5521	-0.4471	0.1179	0.1628	-0.9356	0.0413
10	-1.2196	-0.3589	0.1114	0.1242	-0.7316	0.0138
11	-1.3136	-0.2922	0.2043	0.1126	-0.6299	0.0455
12	-1.0261	-0.2729	0.2404	0.1076	-0.5955	0.0498
13	-1.1738	-0.2972	0.0851	0.0931	-0.5766	-0.0177
14	-1.8544	-0.56	0.1564	0.2227	-1.2291	0.1081
15	-1.1452	-0.3289	0.1285	0.1249	-0.7035	0.0457
16	-0.9759	-0.289	0.1212	0.1041	-0.6015	0.0234
17	-2.3307	-0.4542	0.2674	0.1964	-1.0432	0.1349
18	-1.219	-0.3423	0.1804	0.126	-0.7203	0.0358
19	-0.9784	-0.2609	0.22	0.0976	-0.5537	0.032
20	-2.5575	-0.4655	0.342	0.2464	-1.2046	0.2735
21	-1.6786	-0.3525	0.2802	0.1547	-0.8168	0.1117
22	-0.8491	-0.2668	0.203	0.0961	-0.5551	0.0215
23	-0.8998	-0.2076	0.1832	0.0864	-0.4669	0.0518
24	-0.8038	-0.2479	0.1357	0.0836	-0.4989	0.003
25	-0.677	-0.2622	0.0953	0.0826	-0.51	-0.0144
26	-1.9837	-0.4059	0.2858	0.2125	-1.0432	0.2315
27	-0.9722	-0.282	0.2232	0.1273	-0.664	0.1001
28	-0.7685	-0.2232	0.1833	0.0914	-0.4973	0.051
29	-0.7259	-0.1982	0.1901	0.0815	-0.4427	0.0462
30	-0.7283	-0.19	0.1897	0.0783	-0.4251	0.045
31	-0.2616	-0.0964	0.1183	0.0418	-0.2218	0.0289
32	-1.451	-0.3631	0.2482	0.1786	-0.8989	0.1727
33	-0.9571	-0.2115	0.2338	0.1076	-0.5345	0.1114
34	-0.8534	-0.1638	0.206	0.0851	-0.419	0.0915
35	-0.7502	-0.2167	0.1434	0.0791	-0.4541	0.0207
36	-0.7314	-0.2086	0.1334	0.0763	-0.4377	0.0204
37	-0.5635	-0.1694	0.1747	0.0735	-0.39	0.0512
38	-1.6266	-0.2788	0.2707	0.1635	-0.7694	0.2118
39	-0.9777	-0.2217	0.2194	0.1042	-0.5343	0.091
40	-0.7147	-0.2631	0.1719	0.0792	-0.5008	-0.0254
41	-0.623	-0.1716	0.16	0.0747	-0.3957	0.0525
42	-0.6459	-0.1545	0.2165	0.0737	-0.3756	0.0667
43	-0.6131	-0.1665	0.1938	0.0697	-0.3757	0.0427
44	-1.2321	-0.3397	0.225	0.127	-0.7206	0.0412
45	-0.9696	-0.2639	0.2136	0.0958	-0.5515	0.0236
46	-1.2144	-0.2505	0.2231	0.0854	-0.5068	0.0058
47	-1.0816	-0.1794	0.2031	0.091	-0.4226	0.0637
48	-1.0841	0.0052	0.3574	0.0817	-0.24	0.2504
49	-0.8825	-0.0136	0.3955	0.081	-0.2566	0.2294
50	-1.8794	-0.0536	1.1817	0.2172	-0.7052	0.598
51	-0.7193	0.0082	0.8169	0.1429	-0.4204	0.4367
52	-0.5802	0.1022	1.2423	0.1683	-0.4027	0.6071
53	-0.5667	0.0965	1.0869	0.1865	-0.4629	0.656
54	-0.5335	0.0139	1.2592	0.1738	-0.5075	0.5352
55	-1.7503	-0.1067	0.826	0.2048	-0.721	0.5077
56	-0.4781	0.0029	0.6268	0.1113	-0.3312	0.3369
57	-0.5402	-0.0173	0.6916	0.1197	-0.3764	0.3417
58	-0.5169	0.0929	0.8238	0.1229	-0.2759	0.4615
59	-0.5262	0.0299	0.9493	0.1381	-0.3843	0.444
60	-1.4379	-0.1487	1.0277	0.1887	-0.7149	0.4174
61	-0.4809	-0.0316	0.4973	0.0949	-0.3162	0.2531
62	-0.4525	0.0178	0.5032	0.0941	-0.2644	0.2999
63	-0.5546	-0.0433	0.38	0.0946	-0.3276	0.241
64	-0.7237	-0.0402	1.1668	0.1529	-0.4988	0.4183
65	-1.1051	-0.2068	0.2595	0.112	-0.5427	0.1291
66	-0.7866	-0.1049	0.2906	0.0999	-0.4046	0.1948
67	-1.052	-0.0423	0.3222	0.0941	-0.3246	0.2401
68	-1.1693	-0.019	0.3424	0.0942	-0.3017	0.2637
69	-0.9206	-0.2282	0.1695	0.0984	-0.5243	0.066
70	-0.5282	-0.1158	0.2233	0.0879	-0.3796	0.148
71	-0.5032	-0.003	0.3128	0.0792	-0.2405	0.2346
72	-0.5494	-0.0256	0.3208	0.0783	-0.2605	0.2092
73	-0.7354	-0.1794	0.2998	0.0989	-0.476	0.1172
74	-0.5854	-0.1079	0.2407	0.0793	-0.3457	0.1299
75	-0.3686	-0.0044	0.3395	0.0778	-0.2379	0.2291
76	-0.4108	-0.0067	0.3277	0.0794	-0.245	0.2317
77	-1.5259	-0.3157	0.1042	0.1456	-0.7526	0.1212
78	-1.6858	-0.2732	0.1515	0.1349	-0.678	0.1315
79	-1.2709	-0.1795	0.1836	0.1084	-0.5047	0.1456
80	-0.3647	-0.0317	0.3169	0.0772	-0.2632	0.1997
81	-0.4465	-0.0213	0.3626	0.0708	-0.2336	0.1911
82	-0.396	0.0284	0.4381	0.0771	-0.2019	0.2607
83	-1.5085	-0.3135	0.1448	0.1526	-0.7714	0.1445
84	-1.1433	-0.2619	0.1409	0.1288	-0.6683	0.1044
85	-0.9742	-0.2258	0.1738	0.1282	-0.6104	0.1589
86	-0.5626	-0.0838	0.2632	0.0911	-0.3569	0.1897
87	-0.422	-0.0797	0.2575	0.0752	-0.3053	0.1459
88	-0.4557	-0.0571	0.2934	0.0709	-0.2699	0.1557
89	-0.351	0.0081	0.3534	0.0746	-0.2159	0.232
90	-1.7346	-0.2988	0.1914	0.1614	-0.7829	0.1853
91	-1.0901	-0.2838	0.2476	0.1326	-0.6815	0.1143
92	-0.6764	-0.1926	0.3032	0.1044	-0.5056	0.1205
93	-0.3759	-0.041	0.2757	0.0814	-0.2853	0.2033
94	-0.4052	-0.0533	0.315	0.0755	-0.2797	0.1731
95	-0.2573	0.0485	0.4069	0.0753	-0.1793	0.2723

B/H=1 N=1 70 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.2295	0.9173	1.7452	0.2621	0.131	1.7035
1	-2.3838	-0.7587	0.3213	0.3008	-1.561	0.1435
2	-1.9526	-0.5165	0.262	0.196	-1.1047	0.0716
3	-2.0766	-0.4424	0.3888	0.1942	-1.0249	0.1401
4	-1.6828	-0.3922	0.3034	0.1548	-0.8567	0.0723
5	-1.5616	-0.2814	0.3458	0.1312	-0.6749	0.1122
6	-1.4367	-0.3163	0.2538	0.1265	-0.6957	0.063
7	-1.2444	-0.3389	0.1768	0.1142	-0.6814	0.0036
8	-2.4562	-0.7477	0.2032	0.2832	-1.5972	0.1018
9	-1.7724	-0.4847	0.2938	0.1781	-1.019	0.0497
10	-1.4287	-0.3515	0.259	0.1172	-0.7029	0
11	-1.0555	-0.2999	0.2466	0.1073	-0.6218	0.0219
12	-1.0085	-0.2931	0.2868	0.1023	-0.6001	0.0138
13	-0.8307	-0.3086	0.1732	0.0932	-0.5882	-0.029
14	-2.068	-0.6037	0.2059	0.2448	-1.3382	0.1307
15	-1.0784	-0.3381	0.3182	0.1305	-0.7296	0.0534
16	-1.0134	-0.2936	0.2009	0.1035	-0.604	0.0168
17	-1.8828	-0.4594	0.387	0.2178	-1.1129	0.1941
18	-1.7511	-0.3366	0.2096	0.129	-0.7237	0.0505
19	-0.8232	-0.2672	0.1961	0.0999	-0.5669	0.0326
20	-2.3979	-0.5123	0.4643	0.2975	-1.4049	0.3803
21	-1.4561	-0.3266	0.3073	0.1545	-0.79	0.1369
22	-0.7443	-0.272	0.1878	0.0994	-0.5704	0.0263
23	-0.7349	-0.2135	0.1781	0.0897	-0.4827	0.0557
24	-0.8932	-0.2652	0.1139	0.0871	-0.5266	-0.0039
25	-0.6984	-0.2816	0.0606	0.0831	-0.531	-0.0321
26	-1.788	-0.3787	0.325	0.2185	-1.0342	0.2768
27	-1.193	-0.2638	0.2219	0.1216	-0.6266	0.101
28	-1.1126	-0.2218	0.1449	0.0933	-0.5017	0.0582
29	-0.7734	-0.2016	0.1409	0.0857	-0.4586	0.0555
30	-0.7639	-0.1952	0.1387	0.082	-0.4412	0.0507
31	-0.2753	-0.108	0.1297	0.0441	-0.2403	0.0243
32	-1.7411	-0.3646	0.3525	0.1777	-0.8977	0.1685
33	-1.1314	-0.2368	0.3379	0.1194	-0.595	0.1215
34	-0.7784	-0.1768	0.2259	0.0944	-0.4599	0.1063
35	-0.7096	-0.235	0.107	0.0862	-0.4936	0.0236
36	-0.6717	-0.2231	0.1582	0.0818	-0.4685	0.0224
37	-0.5124	-0.1776	0.1564	0.0752	-0.4032	0.048
38	-1.6385	-0.3186	0.5321	0.1813	-0.8826	0.2253
39	-1.0137	-0.2757	0.358	0.1264	-0.6549	0.1034
40	-1.0061	-0.3101	0.1651	0.0957	-0.5974	-0.0229
41	-0.8057	-0.1975	0.1977	0.0873	-0.4594	0.0643
42	-0.6968	-0.1746	0.1797	0.0831	-0.424	0.0747
43	-0.6163	-0.1911	0.1901	0.0737	-0.4123	0.03
44	-1.5547	-0.3928	0.2808	0.1418	-0.8183	0.0327
45	-0.9807	-0.3119	0.2107	0.1136	-0.6528	0.029
46	-1.0966	-0.2929	0.2211	0.104	-0.6049	0.0192
47	-0.8341	-0.2234	0.258	0.0973	-0.5153	0.0685
48	-0.812	-0.0056	0.4163	0.0951	-0.2908	0.2797
49	-0.8686	-0.0327	0.3717	0.0919	-0.3084	0.2429
50	-2.1654	-0.1245	0.9706	0.2653	-0.9203	0.6713
51	-0.6526	-0.0155	0.8215	0.1193	-0.3735	0.3424
52	-0.4091	0.0583	1.0708	0.1276	-0.3246	0.4411
53	-0.4821	0.0196	0.9634	0.1448	-0.4149	0.4541
54	-0.5096	-0.0456	0.8129	0.1472	-0.4871	0.3959
55	-1.9563	-0.1582	0.6357	0.2504	-0.9095	0.5932
56	-0.5243	-0.0077	0.5873	0.1049	-0.3225	0.3072
57	-0.7481	-0.053	0.5835	0.1039	-0.3647	0.2586
58	-0.415	0.0618	0.6749	0.1058	-0.2557	0.3794
59	-0.5525	0.003	0.9062	0.1165	-0.3465	0.3524
60	-1.7129	-0.1519	0.7293	0.2046	-0.7656	0.4619
61	-0.6294	-0.0305	0.4686	0.0982	-0.325	0.264
62	-0.4962	0.0146	0.5752	0.0913	-0.2594	0.2686
63	-0.4832	-0.0633	0.4042	0.0894	-0.3314	0.2048
64	-0.6474	-0.0601	1.0842	0.117	-0.4111	0.2909
65	-1.3664	-0.2069	0.4744	0.1335	-0.6074	0.1937
66	-0.8268	-0.0937	0.4259	0.1114	-0.4281	0.2406
67	-0.9381	-0.0555	0.4778	0.1053	-0.3714	0.2603
68	-0.895	-0.039	0.3506	0.1054	-0.355	0.2771
69	-0.7775	-0.2187	0.332	0.1149	-0.5835	0.1261
70	-0.5228	-0.094	0.6507	0.0951	-0.3794	0.1914
71	-0.5027	-0.0008	0.4409	0.0893	-0.2687	0.2671
72	-0.5658	-0.0367	0.3274	0.0875	-0.2993	0.2259
73	-0.7694	-0.1474	0.3532	0.1043	-0.4603	0.1655
74	-0.4606	-0.1075	0.3242	0.0871	-0.3688	0.1537
75	-0.4261	-0.0128	0.3722	0.0834	-0.2629	0.2373
76	-0.4879	-0.0196	0.2847	0.084	-0.2716	0.2323
77	-1.2749	-0.2453	0.139	0.1214	-0.6094	0.1188
78	-1.2238	-0.2235	0.1422	0.1194	-0.5816	0.1346
79	-0.9948	-0.1595	0.251	0.1014	-0.4638	0.1447
80	-0.3509	0.0018	0.3475	0.0766	-0.2279	0.2315
81	-0.3144	-0.0111	0.3103	0.0718	-0.2265	0.2043
82	-0.3848	0.0239	0.3568	0.0848	-0.2307	0.2782
83	-1.1461	-0.2357	0.1829	0.1244	-0.609	0.1375
84	-0.9014	-0.2347	0.203	0.1209	-0.5975	0.128
85	-0.826	-0.2232	0.1785	0.1269	-0.604	0.1576
86	-0.4912	-0.057	0.2888	0.0881	-0.3214	0.2074
87	-0.3759	-0.0635	0.27	0.0753	-0.2895	0.1625
88	-0.3824	-0.0506	0.2831	0.073	-0.2695	0.1684
89	-0.3604	0.0053	0.3139	0.0834	-0.2448	0.2553
90	-1.396	-0.2322	0.2222	0.1261	-0.6103	0.146
91	-0.9471	-0.2584	0.2093	0.1321	-0.6557	0.1389
92	-0.7543	-0.1889	0.3451	0.1068	-0.5092	0.1314
93	-0.4122	-0.0203	0.3984	0.0824	-0.2675	0.227
94	-0.4193	-0.049	0.2702	0.0804	-0.2901	0.1922
95	-0.3701	0.0468	0.3583	0.0831	-0.2027	0.2059

B/H=1 N=1 80 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.3654	1.0147	1.9124	0.2516	0.2598	1.7696
1	-2.6174	-0.6095	0.2698	0.2592	-1.3872	0.1682
2	-1.4173	-0.347	0.1824	0.1386	-0.7629	0.0689
3	-1.3298	-0.2678	0.2387	0.1396	-0.6866	0.151
4	-1.1987	-0.2409	0.1775	0.1254	-0.6261	0.1262
5	-1.0647	-0.1695	0.2179	0.103	-0.4784	0.1394
6	-1.3409	-0.2081	0.1978	0.0957	-0.4952	0.079
7	-0.8244	-0.2067	0.1391	0.0863	-0.4657	0.0523
8	-2.2305	-0.561	0.3366	0.2518	-1.3164	0.1945
9	-1.6658	-0.338	0.2231	0.1431	-0.7674	0.0914
10	-0.8482	-0.2433	0.1414	0.0943	-0.5263	0.0397
11	-0.9132	-0.2002	0.1718	0.0894	-0.4683	0.0679
12	-1.237	-0.1978	0.1547	0.0864	-0.4569	0.0613
13	-0.8128	-0.1959	0.0947	0.0799	-0.4354	0.0437
14	-1.8694	-0.4142	0.2691	0.214	-1.0562	0.2278
15	-0.8646	-0.2221	0.2376	0.1082	-0.5468	0.1026
16	-0.7825	-0.2025	0.1714	0.0884	-0.4678	0.0628
17	-1.3609	-0.2805	0.2969	0.1709	-0.7932	0.2322
18	-1.0266	-0.2187	0.2001	0.1077	-0.5417	0.1043
19	-0.8365	-0.1793	0.3203	0.0891	-0.4466	0.088
20	-1.9228	-0.3238	0.3996	0.2429	-1.0522	0.405
21	-1.0322	-0.1974	0.236	0.121	-0.5603	0.1655
22	-0.8945	-0.1846	0.2538	0.0894	-0.4529	0.0837
23	-0.561	-0.1339	0.2845	0.081	-0.3768	0.109
24	-1.0516	-0.1825	0.1768	0.0768	-0.4128	0.0478
25	-0.7408	-0.1871	0.1739	0.0715	-0.4017	0.0275
26	-1.6375	-0.2835	0.4408	0.1633	-0.7535	0.2265
27	-1.1306	-0.2096	0.3249	0.1144	-0.5528	0.1337
28	-0.7415	-0.1618	0.3234	0.0906	-0.4336	0.1099
29	-0.597	-0.1365	0.2903	0.0807	-0.3786	0.1056
30	-0.7953	-0.128	0.2716	0.077	-0.3568	0.1049
31	-0.207	-0.0619	0.1277	0.041	-0.185	0.0611
32	-1.7303	-0.3186	0.3912	0.162	-0.8045	0.1673
33	-1.1812	-0.2132	0.4527	0.1202	-0.5736	0.1473
34	-0.8788	-0.1387	0.4663	0.0961	-0.4269	0.1495
35	-0.7664	-0.1831	0.2897	0.0851	-0.4385	0.0722
36	-0.7357	-0.166	0.218	0.0801	-0.4064	0.0745
37	-0.7812	-0.1159	0.2581	0.0718	-0.3312	0.0995
38	-2.0264	-0.2808	0.6026	0.1789	-0.8174	0.2558
39	-1.149	-0.2404	0.3979	0.1245	-0.6141	0.1332
40	-1.0575	-0.2645	0.1492	0.0989	-0.5611	0.0321
41	-0.6276	-0.1536	0.2595	0.0881	-0.4179	0.1106
42	-0.6923	-0.128	0.2459	0.0833	-0.378	0.122
43	-0.6887	-0.1441	0.1516	0.072	-0.36	0.0719
44	-1.4463	-0.3616	0.3359	0.1489	-0.8082	0.085
45	-1.1848	-0.2641	0.2651	0.1139	-0.6058	0.0775
46	-0.8851	-0.2333	0.3277	0.1007	-0.5354	0.0688
47	-0.9131	-0.1713	0.3713	0.0933	-0.4512	0.1087
48	-0.8439	0.0226	0.5083	0.0895	-0.2459	0.291
49	-0.617	-0.0113	0.4032	0.0843	-0.2643	0.2416
50	-1.3695	-0.1197	0.9194	0.2364	-0.8288	0.5894
51	-0.5118	0.0127	0.5409	0.0924	-0.2644	0.2897
52	-0.4268	0.064	0.9107	0.0898	-0.2053	0.3333
53	-0.5159	0.0063	1.02	0.0936	-0.2745	0.2871
54	-0.4607	-0.0413	0.5752	0.0811	-0.3144	0.2319
55	-1.8907	-0.1238	0.6301	0.2238	-0.7951	0.5475
56	-0.316	0.0273	0.4405	0.0876	-0.2356	0.2902
57	-0.3477	-0.0295	0.4859	0.0829	-0.2783	0.2193
58	-0.2722	0.0686	0.6674	0.0802	-0.172	0.3091
59	-0.3221	0.0301	0.5976	0.0795	-0.2095	0.2696
60	-1.4702	-0.0676	0.5807	0.1656	-0.5644	0.4292
61	-0.3729	0.0183	0.4467	0.0843	-0.2346	0.2712
62	-0.3329	0.0479	0.3618	0.0773	-0.1841	0.2799
63	-0.3464	-0.0327	0.3202	0.0744	-0.2558	0.1905
64	-0.376	-0.0178	0.6161	0.0769	-0.2485	0.2128
65	-1.3426	-0.1746	0.4825	0.1385	-0.59	0.2408
66	-0.7366	-0.0395	0.4927	0.1025	-0.3472	0.2681
67	-0.5816	-0.0139	0.4217	0.0944	-0.2971	0.2693
68	-0.9332	-0.0048	0.4292	0.0904	-0.276	0.2684
69	-0.8905	-0.1763	0.2781	0.1199	-0.5361	0.1836
70	-0.4624	-0.0355	0.3641	0.0913	-0.3095	0.2385
71	-0.3545	0.0399	0.3875	0.0841	-0.2124	0.2921
72	-0.4118	-0.0036	0.3401	0.0784	-0.2389	0.2316
73	-0.6732	-0.0891	0.4195	0.1077	-0.4122	0.234
74	-0.4184	-0.0535	0.3258	0.087	-0.3144	0.2074
75	-0.3005	0.0257	0.3796	0.0792	-0.2117	0.2632
76	-0.317	0.0098	0.3811	0.0739	-0.2119	0.2316
77	-0.7255	-0.091	0.2262	0.0624	-0.3682	0.1862
78	-0.7158	-0.0784	0.2583	0.0653	-0.3642	0.2074
79	-0.6841	-0.0534	0.3166	0.0802	-0.294	0.1873
80	-0.2396	0.0528	0.4137	0.0689	-0.154	0.2592
81	-0.3088	0.0167	0.3595	0.0687	-0.1893	0.2227
82	-0.3367	0.0393	0.4556	0.0784	-0.1958	0.2745
83	-0.6753	-0.075	0.2417	0.095	-0.36	0.2101
84	-0.749	-0.066	0.2712	0.1007	-0.388	0.2161
85	-0.7576	-0.0987	0.3035	0.0985	-0.3942	0.1959
86	-0.3758	0.0163	0.4088	0.0784	-0.213	0.2456
87	-0.3285	-0.0065	0.3563	0.0702	-0.2171	0.2041
88	-0.4199	-0.0137	0.2803	0.0687	-0.2196	0.1923
89	-0.3258	0.0278	0.4279	0.0766	-0.2021	0.2574
90	-0.7596	-0.0774	0.3238	0.097	-0.3684	0.2136
91	-0.8786	-0.1117	0.3018	0.1113	-0.4456	0.2223
92	-0.6019	-0.094	0.3462	0.0901	-0.3643	0.1762
93	-0.318	0.0377	0.4487	0.0751	-0.1877	0.2631
94	-0.4696	-0.0042	0.3238	0.0739	-0.2258	0.2174
95	-0.3459	0.0681	0.4261	0.0737	-0.1551	0.2873

B/H=1 N=1 90 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.3654	1.0215	1.9961	0.2571	0.2502	1.7928
1	-2.1834	-0.3866	0.2349	0.1792	-0.9242	0.1509
2	-1.2243	-0.2509	0.1704	0.1089	-0.5777	0.0759
3	-1.1955	-0.1707	0.258	0.1064	-0.49	0.1485
4	-1.0626	-0.1441	0.3151	0.1003	-0.4448	0.1507
5	-0.7681	-0.0728	0.3105	0.0872	-0.3344	0.1889
6	-0.7456	-0.1209	0.2593	0.0817	-0.366	0.1242
7	-0.4587	-0.0924	0.3235	0.0787	-0.3286	0.1437
8	-1.6088	-0.3226	0.4255	0.1851	-0.8778	0.2327
9	-1.0648	-0.2322	0.2638	0.1134	-0.5723	0.1079
10	-0.7209	-0.1838	0.2224	0.0884	-0.449	0.0813
11	-0.6224	-0.129	0.252	0.0818	-0.3743	0.1182
12	-0.553	-0.1234	0.2575	0.0794	-0.3615	0.1147
13	-0.4796	-0.0891	0.2784	0.0752	-0.3149	0.1366
14	-1.2068	-0.2434	0.432	0.1511	-0.6968	0.21
15	-0.7692	-0.1576	0.3753	0.1023	-0.4645	0.1492
16	-0.5937	-0.1477	0.333	0.0891	-0.4151	0.1196
17	-1.0029	-0.2153	0.3475	0.1332	-0.6147	0.1842
18	-0.7545	-0.1807	0.3045	0.1057	-0.4978	0.1363
19	-0.6679	-0.137	0.237	0.0936	-0.4178	0.1438
20	-1.7178	-0.2269	0.4571	0.1723	-0.7438	0.29
21	-1.2761	-0.1747	0.3382	0.1182	-0.5293	0.1798
22	-0.6998	-0.1512	0.2939	0.0957	-0.4385	0.136
23	-0.6394	-0.0864	0.3439	0.086	-0.3445	0.1717
24	-0.8335	-0.1287	0.2595	0.0807	-0.371	0.1135
25	-0.4986	-0.1039	0.2319	0.0738	-0.3252	0.1174
26	-2.1329	-0.2848	0.4274	0.1664	-0.784	0.2145
27	-0.9159	-0.2289	0.405	0.1279	-0.6128	0.1549
28	-0.6962	-0.1426	0.3112	0.1018	-0.4481	0.1628
29	-0.6843	-0.1	0.2985	0.0895	-0.3684	0.1684
30	-0.5923	-0.0787	0.2905	0.0818	-0.3241	0.1668
31	-0.1744	-0.0261	0.1788	0.0428	-0.1543	0.1022
32	-2.1232	-0.3054	0.4607	0.1762	-0.834	0.2232
33	-0.8796	-0.1823	0.5124	0.127	-0.5632	0.1987
34	-1.1561	-0.097	0.4198	0.1024	-0.4043	0.2102
35	-0.7049	-0.1432	0.2991	0.0894	-0.4113	0.1249
36	-0.7841	-0.1254	0.2379	0.0837	-0.3764	0.1255
37	-0.3653	-0.072	0.2564	0.073	-0.2911	0.1472
38	-2.3037	-0.2488	0.5785	0.2181	-0.903	0.4055
39	-1.0259	-0.1867	0.4269	0.1259	-0.5443	0.2109
40	-0.9034	-0.2116	0.2535	0.0956	-0.4983	0.0752
41	-0.6135	-0.1014	0.2878	0.0868	-0.3619	0.1591
42	-0.6774	-0.0813	0.3065	0.0816	-0.3262	0.1635
43	-0.473	-0.1233	0.1908	0.0689	-0.3301	0.0835
44	-1.7107	-0.3593	0.3541	0.1819	-0.905	0.1864
45	-0.9653	-0.1971	0.327	0.1162	-0.5457	0.1514
46	-1.1009	-0.1787	0.2409	0.1028	-0.4869	0.1296
47	-0.7701	-0.1193	0.3055	0.0905	-0.3909	0.1522
48	-0.5872	0.0658	0.4831	0.0844	-0.1875	0.3192
49	-0.4459	-0.0025	0.3003	0.0747	-0.2264	0.2215
50	-1.9967	-0.1032	0.736	0.1937	-0.6844	0.478
51	-0.397	0.0469	0.4261	0.0868	-0.2136	0.3073
52	-0.322	0.0993	0.5295	0.0802	-0.1415	0.34
53	-0.6149	0.0342	0.4322	0.0791	-0.203	0.2714
54	-0.3786	0.0212	0.413	0.078	-0.2127	0.2551
55	-1.6022	-0.1032	0.5267	0.1827	-0.6513	0.4448
56	-0.4464	0.0691	0.4264	0.0822	-0.1775	0.3157
57	-0.3571	0.0046	0.366	0.0768	-0.2257	0.2349
58	-0.3613	0.1068	0.4465	0.074	-0.1151	0.3287
59	-0.2099	0.1132	0.4726	0.0758	-0.114	0.3405
60	-0.9157	0.0557	0.6326	0.1368	-0.4662	0.3549
61	-0.2558	0.0694	0.4667	0.0789	-0.1674	0.3062
62	-0.2158	0.0983	0.4641	0.0739	-0.1234	0.3199
63	-0.3329	0.0093	0.3742	0.0717	-0.2059	0.2245
64	-0.2203	0.0675	0.4148	0.0732	-0.1522	0.2871
65	-1.4299	-0.046	0.4686	0.1239	-0.4176	0.3257
66	-0.5387	0.0593	0.468	0.0886	-0.2064	0.3251
67	-0.3437	0.0708	0.4799	0.0834	-0.1795	0.3211
68	-0.3557	0.0479	0.471	0.0768	-0.1826	0.2784
69	-0.6982	-0.0536	0.4949	0.1148	-0.3981	0.2908
70	-0.3477	0.0594	0.473	0.0833	-0.1905	0.3094
71	-0.242	0.124	0.5056	0.0784	-0.1111	0.3591
72	-0.2441	0.0475	0.3927	0.0703	-0.1633	0.2582
73	-0.6355	0.0339	0.5826	0.1044	-0.2794	0.3471
74	-0.3159	0.0338	0.4427	0.0822	-0.2128	0.2803
75	-0.1803	0.1041	0.5055	0.0752	-0.1214	0.3296
76	-0.2254	0.0618	0.3786	0.0679	-0.1419	0.2655
77	-0.253	0.0439	0.4244	0.0803	-0.1969	0.2847
78	-0.2377	0.0562	0.4283	0.0785	-0.1793	0.2917
79	-0.2545	0.0549	0.4259	0.0745	-0.1685	0.2783
80	-0.238	0.1095	0.4219	0.0701	-0.1009	0.3198
81	-0.3947	0.0187	0.3235	0.0703	-0.1922	0.2297
82	-0.4011	0.0334	0.3425	0.0753	-0.1924	0.2591
83	-0.2369	0.0649	0.446	0.0802	-0.1759	0.3056
84	-0.2535	0.0558	0.4001	0.0705	-0.1827	0.2942
85	-0.3068	0.026	0.3774	0.0752	-0.1997	0.2516
86	-0.3395	0.1034	0.3948	0.0714	-0.1107	0.3175
87	-0.304	0.0387	0.3762	0.0711	-0.1745	0.2518
88	-0.5964	-0.0136	0.3417	0.0776	-0.2468	0.2193
89	-0.4337	0.0218	0.348	0.0749	-0.2031	0.2466
90	-0.2332	0.0623	0.4548	0.0779	-0.1715	0.2961
91	-0.3706	0.0354	0.3669	0.077	-0.1957	0.2664
92	-0.371	0.0022	0.3666	0.0722	-0.2187	0.2144
93	-0.305	0.1039	0.4131	0.0722	-0.1128	0.3203
94	-0.2865	0.0347	0.5019	0.0733	-0.1854	0.2547
95	-0.2672	0.0696	0.3869	0.0715	-0.1447	0.284

B/H=1 N=1 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.45	1.1375	1.962	0.2621	0.3513	1.9238
1	-1.1512	-0.1696	0.3095	0.1286	-0.5556	0.2163
2	-1.2466	-0.1469	0.4726	0.1386	-0.5626	0.2688
3	-0.9975	-0.1061	0.5875	0.1418	-0.5313	0.3192
4	-0.9905	-0.0472	0.5858	0.1376	-0.4801	0.3657
5	-0.9956	0.0143	0.4982	0.1344	-0.3888	0.4173
6	-1.2818	-0.0672	0.47	0.1718	-0.5828	0.4483
7	-1.6929	-0.2004	0.3422	0.1875	-0.7628	0.362
8	-0.7266	-0.073	0.3397	0.1002	-0.3737	0.2276
9	-0.7753	-0.0589	0.4318	0.1021	-0.3652	0.2473
10	-0.6003	-0.025	0.4143	0.1018	-0.3304	0.2805
11	-0.6138	0.0097	0.4018	0.0953	-0.2762	0.2956
12	-0.6051	-0.0021	0.4157	0.104	-0.314	0.3099
13	-0.9163	-0.0325	0.411	0.1045	-0.3461	0.2811
14	-0.7051	-0.0346	0.354	0.0956	-0.3213	0.2521
15	-0.5068	-0.0214	0.3787	0.0921	-0.2976	0.2548
16	-0.5158	-0.0057	0.3824	0.0886	-0.2714	0.2601
17	-0.527	-0.0211	0.3649	0.0894	-0.2894	0.2472
18	-0.4831	-0.0052	0.3708	0.0838	-0.2565	0.2461
19	-0.4264	0.0156	0.3497	0.0801	-0.2246	0.2558
20	-0.7384	-0.0124	0.3648	0.0899	-0.2821	0.2573
21	-0.4465	0.0057	0.3943	0.0836	-0.2452	0.2566
22	-0.4149	0.0214	0.3552	0.0778	-0.212	0.2547
23	-0.2608	0.0443	0.3922	0.0735	-0.1762	0.2648
24	-0.3069	0.0172	0.3444	0.0741	-0.2051	0.2395
25	-0.5763	-0.0028	0.3285	0.0845	-0.2563	0.2506
26	-1.2514	-0.0058	0.3683	0.0837	-0.2568	0.2453
27	-0.4882	0.0009	0.3573	0.0788	-0.2355	0.2373
28	-0.3211	0.031	0.3843	0.0716	-0.1838	0.2458
29	-0.2226	0.0448	0.3428	0.0676	-0.159	0.2476
30	-0.3052	0.0466	0.3294	0.0681	-0.1578	0.251
31	-1.2514	-0.0058	0.3683	0.0837	-0.2568	0.2453
32	-0.7716	-0.0014	0.3556	0.0792	-0.2389	0.2362
33	-0.4695	0.0313	0.4192	0.075	-0.1937	0.2562
34	-0.2449	0.0664	0.441	0.0691	-0.1408	0.2735
35	-0.2645	0.0431	0.3239	0.0681	-0.1554	0.2415
36	-0.3415	0.0361	0.3287	0.0665	-0.1635	0.2356
37	-0.5712	0.04	0.3581	0.0731	-0.1794	0.2593
38	-0.6655	0.0435	0.3933	0.0774	-0.1889	0.2758
39	-0.3737	0.0365	0.3829	0.071	-0.1765	0.2495
40	-0.3701	0.0085	0.3198	0.0654	-0.1678	0.2048
41	-0.2416	0.0491	0.361	0.0626	-0.1388	0.237
42	-0.2587	0.0628	0.3639	0.064	-0.1293	0.255
43	-0.7306	0.039	0.3304	0.0724	-0.1784	0.2563
44	-0.5385	-0.0199	0.3942	0.0749	-0.2446	0.2048
45	-0.4158	-0.0141	0.3363	0.0732	-0.2337	0.2055
46	-0.3949	-0.0115	0.2803	0.0686	-0.2172	0.1942
47	-0.2819	0.0423	0.2955	0.0619	-0.1435	0.2281
48	-0.2219	0.0697	0.317	0.0644	-0.1234	0.2628
49	-0.4651	0.0638	0.4156	0.0792	-0.1737	0.3013
50	-0.4412	0.1368	1.2499	0.1762	-0.3919	0.6651
51	-0.5043	0.2178	1.6654	0.2351	-0.4876	0.9233
52	-0.4314	0.2972	1.5425	0.244	-0.4349	1.0293
53	-0.3585	0.3801	1.8273	0.2709	-0.4596	1.2198
54	-0.5135	0.3274	1.9515	0.2459	-0.4102	1.0649
55	-0.6469	0.0414	1.0701	0.153	-0.4177	0.5005
56	-0.623	0.0132	0.7803	0.1372	-0.3984	0.4249
57	-0.5554	0.0234	0.7115	0.1277	-0.3598	0.4067
58	-0.337	0.1977	1.0822	0.162	-0.2883	0.6837
59	-0.3083	0.3241	1.5684	0.2134	-0.316	0.9642
60	-0.6466	-0.012	0.8593	0.1624	-0.4993	0.4754
61	-0.6282	-0.0143	0.426	0.1096	-0.3431	0.3144
62	-0.4903	0.022	0.3823	0.0968	-0.2686	0.3125
63	-0.4003	0.0531	0.5581	0.1061	-0.2652	0.3715
64	-0.4851	0.2499	1.4583	0.191	-0.323	0.8228
65	-0.6738	-0.0914	0.2742	0.1051	-0.4068	0.2239
66	-0.4536	-0.0262	0.2576	0.0829	-0.2749	0.2225
67	-0.3245	0.0455	0.3308	0.0658	-0.152	0.243
68	-0.3949	0.0669	0.4263	0.0747	-0.1571	0.2908
69	-0.7888	-0.1105	0.2818	0.1138	-0.4519	0.2309
70	-0.5837	-0.059	0.2331	0.1019	-0.3647	0.2468
71	-0.4662	0.0338	0.2975	0.0746	-0.191	0.2577
72	-0.3519	0.0393	0.3299	0.0709	-0.1734	0.2519
73	-0.671	-0.1017	0.3056	0.1121	-0.438	0.2345
74	-0.5075	-0.0162	0.3187	0.0762	-0.2448	0.2125
75	-0.2686	0.0509	0.3409	0.0672	-0.1509	0.2526
76	-0.3295	0.0561	0.3836	0.0737	-0.1651	0.2772
77	-1.5231	-0.1645	0.4564	0.1805	-0.706	0.377
78	-1.1196	-0.0168	0.4172	0.105	-0.3317	0.2982
79	-0.7263	0.0123	0.3611	0.0806	-0.2294	0.254
80	-0.4495	0.0399	0.4332	0.0748	-0.1846	0.2645
81	-0.4285	0.0617	0.51	0.0765	-0.1678	0.2913
82	-0.3865	0.1013	0.4848	0.0787	-0.1346	0.3373
83	-1.5871	-0.1403	0.4413	0.1885	-0.7057	0.4251
84	-0.6989	-0.0034	0.4544	0.1023	-0.3102	0.3035
85	-0.6612	0.011	0.4102	0.0791	-0.2264	0.2483
86	-0.6823	0.059	0.4245	0.0739	-0.1627	0.2808
87	-0.651	0.041	0.3928	0.0719	-0.1746	0.2566
88	-0.276	0.0603	0.4328	0.0725	-0.1573	0.2779
89	-0.3826	0.0956	0.4284	0.0755	-0.1308	0.322
90	-1.312	-0.0287	0.4695	0.1492	-0.4764	0.419
91	-0.5708	0.0186	0.4112	0.095	-0.2684	0.3036
92	-0.4081	-0.0085	0.3757	0.0788	-0.245	0.228
93	-0.3052	0.0691	0.4479	0.0701	-0.1413	0.2765
94	-0.2617	0.0766	0.4269	0.069	-0.1305	0.2837
95	-0.344	0.1314	0.5213	0.0795	-0.1073	0.37

B/H=1 N=2 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.2927	0.9863	1.8885	0.2662	0.1877	1.7848
1	-0.9618	-0.1571	0.4013	0.1346	-0.5609	0.2467
2	-1.5385	-0.1436	0.4442	0.1501	-0.5939	0.3067
3	-1.4546	-0.1001	0.5359	0.1525	-0.5577	0.3575
4	-1.2422	-0.0573	0.4982	0.1443	-0.4902	0.3755
5	-1.0942	-0.0066	0.5421	0.1391	-0.424	0.4108
6	-1.5653	-0.0767	0.4552	0.1526	-0.5346	0.3811
7	-1.1738	-0.1422	0.4801	0.1534	-0.6024	0.318
8	-0.9536	-0.051	0.3502	0.1016	-0.3556	0.2537
9	-0.938	-0.0417	0.3883	0.1027	-0.3497	0.2663
10	-0.5435	-0.0387	0.3501	0.1046	-0.3524	0.2751
11	-0.5498	-0.0171	0.4001	0.1003	-0.3179	0.2838
12	-0.6116	-0.0263	0.3605	0.1038	-0.3377	0.2851
13	-0.6955	-0.0294	0.4847	0.1006	-0.3312	0.2723
14	-1.0701	-0.0144	0.3547	0.0956	-0.3012	0.2724
15	-0.4298	-0.0111	0.3956	0.0918	-0.2866	0.2644
16	-0.5738	-0.0113	0.3777	0.09	-0.2813	0.2586
17	-0.6845	-0.012	0.3771	0.0889	-0.2787	0.2547
18	-0.4366	-0.0053	0.3294	0.0841	-0.2576	0.247
19	-0.397	0.0094	0.3718	0.0819	-0.2362	0.2549
20	-0.7263	-0.0012	0.3896	0.0899	-0.2709	0.2686
21	-0.4304	0.0145	0.3472	0.0842	-0.2382	0.2672
22	-0.4134	0.0139	0.3881	0.0802	-0.2267	0.2546
23	-0.3221	0.038	0.3676	0.0773	-0.1939	0.2699
24	-0.3322	-0.0015	0.3537	0.0774	-0.2337	0.2307
25	-0.5315	-0.012	0.3687	0.0857	-0.2691	0.245
26	-0.5514	-0.0146	0.3706	0.0856	-0.2714	0.2422
27	-0.4344	-0.0096	0.3157	0.0809	-0.2523	0.2331
28	-0.4539	0.0219	0.3286	0.0748	-0.2025	0.2462
29	-0.3409	0.0363	0.3743	0.072	-0.1798	0.2524
30	-0.3412	0.0396	0.3799	0.073	-0.1795	0.2588
31	-0.5514	-0.0146	0.3706	0.0856	-0.2714	0.2422
32	-0.7288	-0.0213	0.3456	0.0854	-0.2773	0.2348
33	-0.4446	0.027	0.3742	0.0793	-0.2109	0.265
34	-0.3503	0.0678	0.4835	0.0731	-0.1515	0.2872
35	-0.3987	0.0286	0.3034	0.0708	-0.1837	0.241
36	-0.4491	0.018	0.3571	0.0722	-0.1987	0.2347
37	-0.8009	0.0288	0.3502	0.0821	-0.2176	0.2752
38	-0.5799	0.0408	0.4745	0.0848	-0.2135	0.2951
39	-0.5509	0.0309	0.398	0.0772	-0.2008	0.2826
40	-0.3724	-0.0193	0.2598	0.0698	-0.2288	0.1902
41	-0.3824	0.0358	0.3334	0.068	-0.1683	0.2399
42	-0.3091	0.0546	0.4198	0.0699	-0.1552	0.2644
43	-0.9471	0.0208	0.4125	0.0829	-0.228	0.2696
44	-0.5895	-0.0532	0.3175	0.0866	-0.3129	0.2065
45	-0.4906	-0.0398	0.4977	0.0834	-0.2901	0.2105
46	-0.3788	-0.042	0.3013	0.0778	-0.2753	0.1912
47	-0.4016	0.0251	0.319	0.0683	-0.1769	0.2301
48	-0.3124	0.0558	0.3656	0.0694	-0.1525	0.2642
49	-0.5826	0.0382	0.4101	0.0886	-0.2275	0.304
50	-0.4872	0.2088	1.5717	0.2136	-0.4318	0.8495
51	-0.4894	0.2594	1.8516	0.2457	-0.4778	0.9965
52	-0.3088	0.2708	1.648	0.2349	-0.434	0.9756
53	-0.567	0.2846	1.9653	0.2694	-0.5237	1.0929
54	-0.4396	0.2174	1.6822	0.2346	-0.4865	0.9213
55	-0.5624	0.0791	1.2458	0.1658	-0.4183	0.5766
56	-0.5674	0.064	0.7484	0.1338	-0.3375	0.4655
57	-0.4706	0.0086	0.7352	0.1187	-0.3474	0.3647
58	-0.6601	0.1307	0.9982	0.1352	-0.2749	0.5362
59	-0.4927	0.1995	1.4878	0.1795	-0.3392	0.7382
60	-0.6418	0.0251	0.9562	0.1567	-0.4451	0.4952
61	-0.7127	0.0264	0.4435	0.1079	-0.2973	0.3502
62	-0.4034	0.0366	0.4301	0.0963	-0.2525	0.3256
63	-0.4966	-0.007	0.4691	0.0993	-0.3048	0.2908
64	-0.6049	0.1291	1.3284	0.1634	-0.361	0.6191
65	-1.0425	-0.1492	0.3052	0.1252	-0.5248	0.2264
66	-0.7008	-0.0508	0.2639	0.0955	-0.3472	0.2258
67	-0.3953	0.0236	0.35	0.0716	-0.1911	0.2383
68	-0.5134	0.0435	0.3649	0.0794	-0.1947	0.2818
69	-1.08	-0.1784	0.2459	0.1339	-0.5801	0.2232
70	-0.9671	-0.1076	0.2479	0.1171	-0.459	0.2437
71	-0.5263	0.0123	0.3317	0.0844	-0.2409	0.2655
72	-0.3945	0.0067	0.3121	0.0771	-0.2245	0.2378
73	-0.9004	-0.16	0.2721	0.133	-0.5589	0.2389
74	-0.4506	-0.0526	0.334	0.089	-0.3197	0.2145
75	-0.321	0.0322	0.3263	0.0752	-0.1933	0.2577
76	-0.3916	0.0278	0.3846	0.08	-0.2121	0.2677
77	-1.4766	-0.1608	0.4576	0.1809	-0.7036	0.362
78	-0.8872	-0.0388	0.4811	0.1154	-0.3849	0.3074
79	-0.5239	-0.0064	0.4164	0.0916	-0.2811	0.2684
80	-0.6443	0.0219	0.5111	0.0881	-0.2424	0.2663
81	-0.7742	0.0379	0.5883	0.0891	-0.2294	0.3051
82	-0.6881	0.0856	0.4666	0.0871	-0.1757	0.3469
83	-2.3935	-0.1291	0.4977	0.1819	-0.6749	0.4167
84	-0.682	-0.0216	0.4791	0.1062	-0.3401	0.2969
85	-0.4814	-0.009	0.3834	0.087	-0.2698	0.2519
86	-0.4127	0.0529	0.4544	0.0835	-0.1977	0.3035
87	-0.4815	0.0155	0.3836	0.0826	-0.2325	0.2634
88	-0.5037	0.035	0.4338	0.0827	-0.2132	0.2833
89	-0.4413	0.0795	0.4028	0.0816	-0.1653	0.3242
90	-1.2489	-0.0365	0.679	0.1415	-0.461	0.3881
91	-0.6583	-0.0058	0.4859	0.0989	-0.3026	0.291
92	-0.3985	-0.0313	0.3982	0.0839	-0.2829	0.2203
93	-0.4084	0.084	0.494	0.0788	-0.1723	0.3003
94	-0.4301	0.0596	0.3988	0.0766	-0.1703	0.2894
95	-0.3815	0.1268	0.5073	0.0832	-0.1228	0.3765

B/H=1 N=3 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.3346	1.0006	1.7834	0.255	-0.2355	1.7657
1	-0.9262	-0.1561	0.4393	0.1248	-0.5304	0.2182
2	-1.3289	-0.1315	0.5283	0.1384	-0.5468	0.2839
3	-1.2411	-0.0755	0.625	0.1384	-0.4907	0.3397
4	-0.7768	-0.0212	0.5676	0.1279	-0.4048	0.3624
5	-0.8542	0.0438	0.513	0.1253	-0.332	0.4196
6	-0.9967	-0.0641	0.4916	0.1544	-0.5272	0.3989
7	-1.3463	-0.166	0.358	0.1723	-0.6828	0.3507
8	-0.7743	-0.0549	0.3551	0.0994	-0.353	0.2432
9	-0.7412	-0.043	0.4476	0.0984	-0.3382	0.2522
10	-0.6405	-0.0348	0.471	0.0975	-0.3272	0.2577
11	-0.6355	0.0009	0.384	0.0931	-0.2784	0.2801
12	-0.7305	-0.0071	0.4299	0.0962	-0.2958	0.2815
13	-0.6646	-0.0152	0.4253	0.0947	-0.2994	0.269
14	-0.6327	-0.0176	0.3496	0.0938	-0.2989	0.2638
15	-0.5558	-0.0115	0.3696	0.0887	-0.2776	0.2546
16	-0.576	-0.0081	0.3723	0.0857	-0.2651	0.249
17	-0.5452	-0.0186	0.3609	0.0874	-0.2807	0.2435
18	-0.506	-0.0124	0.3139	0.0819	-0.2581	0.2333
19	-0.464	0.0058	0.3561	0.0786	-0.23	0.2417
20	-0.5924	-0.0064	0.3943	0.0894	-0.2746	0.2617
21	-0.5076	0.0092	0.3528	0.0825	-0.2383	0.2566
22	-0.3968	0.008	0.3292	0.0765	-0.2216	0.2376
23	-0.3908	0.0409	0.4355	0.0732	-0.1786	0.2604
24	-0.3704	-0.0051	0.3594	0.0724	-0.2222	0.2121
25	-0.423	-0.0108	0.3735	0.0805	-0.2523	0.2308
26	-0.7899	-0.0303	0.3546	0.084	-0.2824	0.2218
27	-0.8195	-0.0265	0.3429	0.078	-0.2605	0.2075
28	-0.3547	0.0116	0.3239	0.0717	-0.2034	0.2267
29	-0.2738	0.0309	0.3379	0.0684	-0.1743	0.236
30	-0.3151	0.0377	0.3745	0.0682	-0.1669	0.2424
31	-0.7899	-0.0303	0.3546	0.084	-0.2824	0.2218
32	-0.8137	-0.0403	0.3725	0.0819	-0.288	0.2054
33	-0.5888	0.0189	0.412	0.076	-0.2092	0.2469
34	-0.3676	0.0684	0.5794	0.0697	-0.1406	0.2773
35	-0.2777	0.0194	0.3221	0.0673	-0.1824	0.2211
36	-0.323	0.0086	0.3737	0.0669	-0.1921	0.2093
37	-0.574	0.0296	0.3532	0.0736	-0.1911	0.2504
38	-0.6127	0.0393	0.5604	0.0795	-0.1992	0.2779
39	-0.3926	0.027	0.4892	0.0734	-0.1931	0.2471
40	-0.3778	-0.0367	0.3528	0.0671	-0.2381	0.1648
41	-0.2543	0.0289	0.4104	0.0644	-0.1644	0.2222
42	-0.273	0.0515	0.3715	0.0648	-0.1428	0.2458
43	-0.8821	0.0166	0.3756	0.0735	-0.2038	0.237
44	-0.7162	-0.0517	0.4086	0.0842	-0.3044	0.201
45	-0.4295	-0.032	0.404	0.0836	-0.2827	0.2188
46	-0.3625	-0.0448	0.3186	0.076	-0.2729	0.1832
47	-0.2236	0.022	0.3574	0.065	-0.173	0.217
48	-0.2745	0.0425	0.3715	0.0689	-0.1643	0.2493
49	-0.506	0.0225	0.4498	0.0843	-0.2306	0.2755
50	-0.5656	0.185	1.8699	0.2153	-0.4609	0.8308
51	-0.6415	0.2211	1.6204	0.2386	-0.4948	0.937
52	-0.4672	0.2772	1.7889	0.2378	-0.4362	0.9905
53	-0.6287	0.3595	1.9489	0.3045	-0.5542	1.2731
54	-0.387	0.2888	1.8331	0.2738	-0.5326	1.1103
55	-0.7242	0.0328	1.9573	0.1718	-0.4627	0.5483
56	-0.7083	0.0167	0.7952	0.1361	-0.3915	0.4249
57	-0.6314	-0.025	0.6524	0.1181	-0.3794	0.3294
58	-0.4878	0.1755	1.0191	0.1632	-0.3141	0.6651
59	-0.4406	0.2805	1.6381	0.2207	-0.3815	0.9426
60	-0.8782	-0.0302	1.1829	0.1708	-0.5425	0.482
61	-0.5736	-0.0107	0.39	0.1125	-0.3482	0.3268
62	-0.6639	0.0212	0.3919	0.0973	-0.2708	0.3132
63	-0.5698	-0.0095	0.4739	0.1082	-0.3341	0.3151
64	-0.4956	0.2054	1.2532	0.2058	-0.4121	0.8228
65	-1.0603	-0.1481	0.3681	0.1282	-0.5307	0.2385
66	-0.5595	-0.066	0.2492	0.0934	-0.3463	0.2143
67	-0.3171	0.0058	0.3244	0.0717	-0.2094	0.221
68	-0.3919	0.0235	0.3597	0.0828	-0.225	0.272
69	-1.0869	-0.1829	0.2869	0.1309	-0.6025	0.2367
70	-0.8705	-0.1183	0.2753	0.1203	-0.4792	0.2426
71	-0.4962	0.0022	0.3044	0.0873	-0.2595	0.264
72	-0.4563	-0.0132	0.2852	0.0819	-0.2588	0.2324
73	-0.9442	-0.155	0.3588	0.1356	-0.5619	0.2519
74	-0.5327	-0.0616	0.3403	0.0878	-0.3249	0.2016
75	-0.3384	0.0238	0.3436	0.0741	-0.1986	0.2463
76	-0.466	0.0081	0.3221	0.086	-0.25	0.2662
77	-1.6287	-0.2074	0.3945	0.2033	-0.8174	0.4026
78	-1.6692	-0.0435	0.4304	0.1165	-0.999	0.3119
79	-1.0663	-0.0137	0.3876	0.0872	-0.2752	0.2479
80	-0.5223	0.0156	0.4587	0.0798	-0.2239	0.2551
81	-0.4871	0.026	0.5455	0.0793	-0.2119	0.264
82	-0.485	0.0775	0.4258	0.0815	-0.1671	0.3222
83	-1.6151	-0.1733	0.4131	0.2061	-0.7917	0.4452
84	-1.3286	-0.0262	0.4722	0.1093	-0.3542	0.3018
85	-0.6075	-0.0161	0.3558	0.0822	-0.2627	0.2305
86	-0.4876	0.0533	0.4248	0.0775	-0.1792	0.2858
87	-0.5462	0.0031	0.3895	0.0761	-0.2252	0.2314
88	-0.5073	0.0215	0.3739	0.0763	-0.2074	0.2504
89	-0.4125	0.0721	0.4196	0.0797	-0.1669	0.3111
90	-1.2763	-0.0456	0.5563	0.1649	-0.5405	0.4492
91	-0.6831	-0.001	0.5131	0.1036	-0.3119	0.31
92	-0.4177	-0.0416	0.3346	0.0821	-0.2879	0.2047
93	-0.4914	0.0659	0.3868	0.0744	-0.1573	0.2891
94	-0.309	0.0527	0.3701	0.073	-0.1663	0.2717
95	-0.208	0.135	0.5232	0.0845	-0.1184	0.3884

B/H=1 N=8 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5864	1.1778	1.941	0.2378	0.4643	1.8912
1	-1.1118	-0.035	0.3917	0.1069	-0.3556	0.2855
2	-1.5227	-0.0071	0.4753	0.1163	-0.3562	0.3419
3	-0.7997	0.0484	0.4488	0.116	-0.2996	0.3964
4	-0.8546	0.095	0.5101	0.1074	-0.2272	0.4171
5	-0.6531	0.1636	0.5811	0.102	-0.1424	0.4696
6	-0.9195	0.0548	0.5267	0.132	-0.3412	0.4507
7	-1.0902	-0.0261	0.4378	0.1493	-0.4739	0.4216
8	-0.4995	0.0588	0.3986	0.0855	-0.1976	0.3152
9	-0.6297	0.058	0.4079	0.0835	-0.1926	0.3087
10	-0.5887	0.0654	0.4269	0.0819	-0.1802	0.3111
11	-0.5045	0.1157	0.4854	0.0762	-0.1131	0.3444
12	-0.467	0.1095	0.4286	0.0769	-0.1213	0.3403
13	-0.5023	0.0937	0.3791	0.075	-0.1313	0.3187
14	-0.5644	0.0846	0.3599	0.0794	-0.1534	0.3227
15	-0.5759	0.0993	0.409	0.0748	-0.125	0.3236
16	-0.4097	0.1033	0.4136	0.0712	-0.1102	0.3169
17	-0.7556	0.0901	0.3432	0.0737	-0.1309	0.3111
18	-0.485	0.0958	0.3582	0.0683	-0.109	0.3006
19	-0.3501	0.1123	0.3906	0.0649	-0.0823	0.3069
20	-0.547	0.1046	0.3785	0.0748	-0.1197	0.3289
21	-0.4674	0.1106	0.3718	0.0683	-0.0943	0.3156
22	-0.2826	0.1034	0.3522	0.0633	-0.0866	0.2934
23	-0.2163	0.1438	0.4055	0.0599	-0.0359	0.3235
24	-0.1869	0.1063	0.4145	0.0587	-0.0699	0.2825
25	-0.4708	0.0941	0.3771	0.065	-0.1008	0.289
26	-0.6984	0.0741	0.3466	0.0695	-0.1345	0.2825
27	-0.3907	0.0703	0.3451	0.0643	-0.1227	0.2632
28	-0.4238	0.112	0.3712	0.0597	-0.0651	0.2892
29	-0.2414	0.1318	0.3663	0.0564	-0.0374	0.3009
30	-0.3128	0.1444	0.4082	0.0559	-0.0233	0.3121
31	-0.6984	0.0741	0.3466	0.0695	-0.1345	0.2826
32	-0.4844	0.0682	0.3615	0.0667	-0.1318	0.2682
33	-0.5459	0.127	0.4049	0.0621	-0.0594	0.3134
34	-0.4353	0.1735	0.4544	0.058	-0.0006	0.3477
35	-0.4808	0.1265	0.3913	0.0563	-0.0423	0.2953
36	-0.3688	0.1141	0.4008	0.0555	-0.0523	0.2805
37	-0.4419	0.1417	0.4559	0.0612	-0.0417	0.3252
38	-0.3983	0.1343	0.4761	0.0649	-0.0603	0.3289
39	-0.4522	0.1301	0.4521	0.0601	-0.0501	0.3103
40	-0.4943	0.0717	0.3911	0.0553	-0.0943	0.2377
41	-0.19	0.1322	0.4008	0.0533	-0.0276	0.2919
42	-0.4383	0.1513	0.4323	0.0542	-0.0114	0.314
43	-0.4256	0.1205	0.3805	0.0604	-0.0606	0.3016
44	-0.5378	0.0516	0.3454	0.0691	-0.1555	0.2588
45	-0.4936	0.0808	0.3524	0.0696	-0.1279	0.2895
46	-0.4457	0.08	0.335	0.0637	-0.1312	0.2513
47	-0.1077	0.1414	0.4042	0.0536	-0.0195	0.3022
48	-0.1764	0.0787	0.3723	0.0576	-0.094	0.2514
49	-0.4299	0.0568	0.4208	0.0721	-0.1595	0.2729
50	-0.4533	0.2012	1.7611	0.1958	-0.3862	0.7885
51	-0.487	0.2442	1.5312	0.2125	-0.3933	0.8818
52	-0.6438	0.2952	1.4299	0.1999	-0.3045	0.895
53	-0.3265	0.3571	1.7252	0.2484	-0.3881	1.1022
54	-0.26	0.2881	1.5673	0.2297	-0.4009	0.9771
55	-0.6441	0.0761	1.5175	0.16	-0.4037	0.556
56	-0.4946	0.0559	0.8025	0.1224	-0.3112	0.4231
57	-0.6888	-0.0024	0.4827	0.0971	-0.2938	0.289
58	-0.2958	0.1921	0.9655	0.1413	-0.2319	0.616
59	-0.3456	0.3095	1.4476	0.2017	-0.2957	0.9146
60	-0.5762	0.011	1.0244	0.1669	-0.4897	0.5118
61	-0.4175	0.0292	0.4314	0.0952	-0.2856	0.3239
62	-0.4374	0.0631	0.4418	0.0808	-0.1793	0.3055
63	-0.4159	0.0376	0.5293	0.0946	-0.2461	0.3214
64	-0.4496	0.2485	1.2079	0.1932	-0.3312	0.8283
65	-0.7434	-0.107	0.2094	0.112	-0.4431	0.229
66	-0.5961	-0.025	0.221	0.082	-0.2711	0.2211
67	-0.3046	0.0439	0.2931	0.06	-0.1363	0.224
68	-0.3426	0.0683	0.3828	0.0708	-0.1441	0.2807
69	-0.99	-0.1405	0.1491	0.1269	-0.5301	0.2311
70	-0.7923	-0.0755	0.1989	0.1137	-0.4165	0.2655
71	-0.4887	0.0432	0.3256	0.0799	-0.1904	0.2828
72	-0.2921	0.0439	0.3663	0.0676	-0.1597	0.2476
73	-0.7733	-0.1025	0.2183	0.1214	-0.4687	0.2618
74	-0.5184	-0.0231	0.3359	0.0759	-0.2508	0.2045
75	-0.2875	0.0545	0.3386	0.0655	-0.142	0.2509
76	-0.3279	0.0564	0.3608	0.0711	-0.157	0.2698
77	-1.1315	-0.1238	0.4216	0.1647	-0.618	0.3703
78	-0.8196	0.0181	0.4681	0.0952	-0.2676	0.3038
79	-0.3901	0.0482	0.4167	0.0693	-0.1596	0.2561
80	-0.5108	0.0805	0.4567	0.0637	-0.1107	0.2718
81	-0.4529	0.0643	0.4245	0.0645	-0.1291	0.2578
82	-0.267	0.1157	0.5553	0.0693	-0.0924	0.3237
83	-1.2307	-0.0832	0.3792	0.1704	-0.5944	0.428
84	-0.59	0.0394	0.3634	0.0873	-0.2227	0.3014
85	-0.422	0.0379	0.3589	0.0665	-0.1618	0.2375
86	-0.2672	0.0935	0.4297	0.0633	-0.0965	0.2835
87	-0.2701	0.0561	0.3987	0.0618	-0.1294	0.2415
88	-0.4218	0.0586	0.3724	0.0634	-0.1315	0.2487
89	-0.2845	0.1169	0.5093	0.0687	-0.0891	0.3229
90	-1.0073	0.0182	0.4822	0.1317	-0.3771	0.4134
91	-0.3771	0.0539	0.4069	0.0793	-0.1841	0.2918
92	-0.3253	0.0179	0.3924	0.0685	-0.1815	0.2174
93	-0.1815	0.1061	0.4609	0.0606	-0.0757	0.2879
94	-0.1748	0.0865	0.4808	0.0615	-0.0981	0.2712
95	-0.1258	0.181	0.5133	0.0759	-0.0467	0.4088

B/H=2 N=1 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4238	1.3474	2.8119	0.4023	0.1405	2.5543
1	-1.8364	-0.2231	0.344	0.2169	-0.8739	0.4277
2	-2.2405	-0.2084	0.3363	0.2204	-0.8696	0.4529
3	-1.7865	-0.1936	0.3859	0.2145	-0.8371	0.4498
4	-1.7011	-0.1659	0.4202	0.2234	-0.8362	0.5045
5	-1.776	-0.1865	0.4874	0.2433	-0.9165	0.5435
6	-1.7034	-0.2395	0.4968	0.2512	-0.9931	0.5142
7	-1.7108	-0.2969	0.3175	0.2414	-1.0211	0.4273
8	-0.9904	-0.0793	0.2895	0.1077	-0.4025	0.2439
9	-0.947	-0.0738	0.3214	0.1188	-0.4302	0.2826
10	-0.8481	-0.0396	0.3838	0.1241	-0.412	0.3329
11	-1.132	-0.0394	0.3476	0.1309	-0.4322	0.3535
12	-1.1934	-0.0741	0.43	0.1533	-0.5339	0.3858
13	-1.1806	-0.0873	0.2797	0.1203	-0.4481	0.2735
14	-1.0597	-0.0423	0.3323	0.0933	-0.3222	0.2376
15	-0.7174	-0.03	0.3697	0.0901	-0.3002	0.2402
16	-0.6396	-0.0158	0.3593	0.0919	-0.2913	0.2598
17	-0.9465	-0.0213	0.2728	0.0856	-0.2782	0.2355
18	-0.5175	-0.0048	0.2725	0.0742	-0.2275	0.216
19	-0.4052	0.0057	0.3381	0.0742	-0.2169	0.2284
20	-0.8472	-0.0289	0.2714	0.0925	-0.3064	0.2486
21	-0.7975	-0.0078	0.3142	0.0758	-0.2353	0.2197
22	-0.4215	0.0107	0.3286	0.0704	-0.2006	0.222
23	-0.6149	0.0145	0.2995	0.0689	-0.1922	0.2213
24	-0.4095	0.0112	0.2956	0.0685	-0.1943	0.2168
25	-1.0065	-0.0229	0.3243	0.0935	-0.3033	0.2576
26	-0.7897	-0.005	0.3417	0.0781	-0.2392	0.2292
27	-0.4936	0.0079	0.3154	0.07	-0.2021	0.2179
28	-0.3725	0.0191	0.3325	0.081	-0.184	0.2022
29	-0.2743	0.0197	0.3041	0.0587	-0.1565	0.196
30	-0.3168	0.0196	0.314	0.059	-0.1574	0.1966
31	-0.7897	-0.005	0.3417	0.0781	-0.2392	0.2292
32	-0.6012	0.0092	0.337	0.0717	-0.2059	0.2242
33	-0.4766	0.0136	0.3082	0.0662	-0.1851	0.2123
34	-0.3785	0.0248	0.2781	0.0573	-0.1471	0.1967
35	-0.2592	0.0273	0.2869	0.056	-0.1407	0.1954
36	-0.2674	0.028	0.3021	0.0571	-0.1432	0.1993
37	-0.6526	0.0102	0.3557	0.072	-0.2058	0.2262
38	-0.5039	0.0124	0.3522	0.071	-0.2007	0.2255
39	-0.4926	0.0164	0.3073	0.0658	-0.1809	0.2137
40	-0.2564	0.0268	0.2979	0.0567	-0.1432	0.1968
41	-0.2175	0.0288	0.3257	0.0544	-0.1348	0.1919
42	-0.2194	0.0331	0.3193	0.057	-0.1379	0.2041
43	-0.5805	0.0188	0.3546	0.0725	-0.1988	0.2363
44	-0.5721	0.0077	0.3804	0.0978	-0.2858	0.3012
45	-0.4879	-0.004	0.3811	0.1018	-0.3095	0.3015
46	-0.4352	-0.0017	0.3154	0.0885	-0.2673	0.264
47	-0.3195	0.0131	0.2772	0.0678	-0.1902	0.2165
48	-0.3877	0.0632	0.4809	0.0975	-0.2293	0.3557
49	-0.4835	0.0417	0.4346	0.1017	-0.2635	0.3469
50	-0.887	0.226	1.5013	0.2541	-0.5363	0.9883
51	-0.8154	0.2865	1.9881	0.2631	-0.5027	1.0758
52	-0.533	0.3741	1.7619	0.2694	-0.4343	1.1824
53	-0.4897	0.3802	2.071	0.2795	-0.4583	1.2187
54	-0.6025	0.3442	1.946	0.2769	-0.4866	1.175
55	-0.7338	0.1437	1.4534	0.2474	-0.5985	0.8859
56	-0.7256	0.2093	1.6999	0.2115	-0.4253	0.8438
57	-0.5004	0.2875	1.5464	0.2082	-0.3372	0.9122
58	-0.459	0.3071	1.4922	0.2312	-0.3865	1.0007
59	-0.6328	0.2814	1.9147	0.2603	-0.4994	1.0622
60	-0.8168	0.0792	1.7249	0.235	-0.6257	0.7841
61	-0.6419	0.1501	1.0692	0.1591	-0.3271	0.6272
62	-0.3444	0.1999	1.0222	0.1448	-0.2344	0.6343
63	-0.4695	0.2263	1.1353	0.1753	-0.2996	0.7521
64	-0.6713	0.2077	1.876	0.2459	-0.5301	0.9455
65	-0.9923	-0.0356	0.4243	0.1542	-0.4983	0.427
66	-0.715	-0.0346	0.288	0.1107	-0.3866	0.2974
67	-0.8388	-0.0031	0.3534	0.1091	-0.3303	0.3241
68	-0.7924	0.0166	0.4263	0.1437	-0.4144	0.4475
69	-0.9233	-0.0481	0.3025	0.1515	-0.5025	0.4063
70	-0.9401	-0.0709	0.2504	0.133	-0.4699	0.3281
71	-0.9557	-0.0433	0.2717	0.1291	-0.4306	0.3441
72	-1.0829	-0.0125	0.31	0.1435	-0.443	0.418
73	-0.9371	-0.0614	0.353	0.1593	-0.5393	0.4166
74	-0.7797	-0.0504	0.3113	0.1114	-0.3845	0.2838
75	-0.6162	-0.0252	0.3977	0.1103	-0.356	0.3056
76	-0.9065	-0.0013	0.4984	0.1546	-0.4652	0.4626
77	-2.0748	-0.2518	0.4011	0.2302	-0.9424	0.4388
78	-1.352	-0.0907	0.3823	0.1601	-0.571	0.3895
79	-0.7554	-0.0038	0.4247	0.0999	-0.3036	0.2961
80	-0.8263	0.0173	0.4201	0.0781	-0.211	0.2457
81	-0.5146	0.0416	0.4213	0.0727	-0.1764	0.2595
82	-0.4751	0.0432	0.4375	0.0953	-0.2426	0.3289
83	-1.6956	-0.2476	0.4723	0.2247	-0.9218	0.4266
84	-1.3055	-0.1041	0.515	0.1703	-0.6149	0.4067
85	-0.75	0.0143	0.4788	0.0896	-0.2545	0.2831
86	-0.5881	0.0267	0.3819	0.0774	-0.2054	0.2588
87	-0.4178	0.0371	0.3886	0.0716	-0.1783	0.2526
88	-0.4698	0.0489	0.4191	0.0717	-0.1682	0.262
89	-0.3725	0.0422	0.425	0.0978	-0.2511	0.3355
90	-1.6084	-0.1946	0.6181	0.2298	-0.8839	0.4946
91	-1.2012	-0.0745	0.521	0.1616	-0.5592	0.4103
92	-0.5771	0.0177	0.4174	0.0827	-0.2304	0.2657
93	-0.2897	0.0425	0.3757	0.0672	-0.1592	0.2442
94	-0.2711	0.0589	0.4426	0.0678	-0.1445	0.2623
95	-0.4951	0.061	0.6833	0.0998	-0.2385	0.3604

B/H=2 N=1 10 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4864	1.6881	2.6868	0.316	0.7402	2.636
1	-1.7378	-0.3765	0.2099	0.2522	-1.1332	0.3802
2	-2.1089	-0.4018	0.1706	0.247	-1.1428	0.3392
3	-1.8574	-0.3624	0.2638	0.2052	-0.9781	0.2533
4	-1.4807	-0.3322	0.2967	0.2	-0.9321	0.2677
5	-2.1397	-0.3143	0.3386	0.2297	-1.0034	0.3748
6	-1.7595	-0.23	0.3142	0.2271	-0.9114	0.4514
7	-0.9855	-0.1572	0.2721	0.1398	-0.5761	0.2616
8	-1.1029	-0.1458	0.3411	0.1292	-0.5335	0.2419
9	-1.2416	-0.1776	0.2311	0.1456	-0.6143	0.2591
10	-1.2161	-0.1936	0.3063	0.1637	-0.6847	0.2975
11	-1.2544	-0.139	0.3081	0.1574	-0.6112	0.3333
12	-1.5755	-0.0751	0.3747	0.126	-0.453	0.3029
13	-0.6817	-0.0853	0.2295	0.0828	-0.3338	0.1633
14	-1.027	-0.0955	0.2029	0.1135	-0.4361	0.2451
15	-1.0247	-0.0947	0.283	0.1037	-0.4059	0.2164
16	-0.9497	-0.1084	0.3053	0.1178	-0.4616	0.2449
17	-0.9285	-0.0719	0.2626	0.1039	-0.3837	0.2399
18	-0.5032	-0.0352	0.269	0.0792	-0.2727	0.2024
19	-0.478	-0.0329	0.2822	0.0764	-0.262	0.1963
20	-0.7741	-0.0888	0.2472	0.1075	-0.4113	0.2337
21	-0.6746	-0.0469	0.2635	0.0872	-0.3086	0.2147
22	-0.4447	-0.0197	0.2559	0.0713	-0.2336	0.1942
23	-0.4846	-0.0144	0.3014	0.0669	-0.2151	0.1864
24	-0.3524	-0.0119	0.2615	0.061	-0.1949	0.1711
25	-0.4672	-0.0466	0.2288	0.0626	-0.2345	0.1412
26	-1.0761	-0.0538	0.3045	0.0872	-0.3156	0.2079
27	-0.5823	-0.0349	0.2893	0.0811	-0.278	0.2083
28	-0.4258	-0.0062	0.2287	0.0629	-0.195	0.1826
29	-0.4221	-0.0014	0.3351	0.0548	-0.1659	0.163
30	-0.2717	0.0016	0.2254	0.0513	-0.1522	0.1554
31	-0.0791	0.0419	0.1665	0.0249	-0.0328	0.1166
32	-1.0873	-0.0362	0.3935	0.0873	-0.298	0.2256
33	-0.9957	-0.0253	0.3155	0.0792	-0.2627	0.2122
34	-0.5319	0.0023	0.2351	0.0609	-0.1805	0.1851
35	-0.3509	0.0096	0.2198	0.0524	-0.1475	0.1667
36	-0.3096	0.0142	0.2219	0.0491	-0.133	0.1614
37	-0.2989	0.007	0.2396	0.0524	-0.1502	0.1643
38	-0.8203	-0.0341	0.3475	0.091	-0.3069	0.2388
39	-0.9126	-0.0226	0.3274	0.0802	-0.2692	0.2179
40	-0.8252	0.0026	0.2567	0.0599	-0.177	0.1822
41	-0.3968	0.0143	0.272	0.0506	-0.1375	0.1661
42	-0.2874	0.0254	0.2362	0.0478	-0.1181	0.169
43	-0.8889	0.0255	0.3254	0.0535	-0.1349	0.1859
44	-0.9266	-0.0526	0.2853	0.0825	-0.3002	0.195
45	-0.6806	-0.0515	0.3106	0.0758	-0.2788	0.1758
46	-0.4558	-0.0244	0.3155	0.0699	-0.234	0.1852
47	-0.2804	0.0085	0.4812	0.0584	-0.1668	0.1839
48	-0.2368	0.1054	0.3376	0.055	-0.0597	0.2705
49	-0.581	0.0662	0.4813	0.0632	-0.1233	0.2557
50	-0.9835	0.2729	1.419	0.2501	-0.4773	1.0231
51	-0.4358	0.2812	1.4189	0.2185	-0.3743	0.9368
52	-0.4597	0.3499	1.8459	0.2446	-0.384	1.0837
53	-0.5694	0.3329	1.4201	0.2469	-0.4079	1.0738
54	-0.665	0.1769	1.1364	0.1932	-0.4026	0.7563
55	-0.8127	0.2607	1.4461	0.2368	-0.4491	0.9705
56	-0.376	0.2812	1.0997	0.192	-0.2948	0.8572
57	-0.3078	0.3148	1.5934	0.2027	-0.2933	0.9229
58	-0.4761	0.2614	1.2597	0.201	-0.3418	0.8645
59	-0.6915	0.0632	0.9576	0.1479	-0.3806	0.5069
60	-0.8605	0.2239	1.2216	0.2065	-0.3957	0.8435
61	-0.4016	0.2418	1.1173	0.1651	-0.2534	0.737
62	-0.2623	0.238	1.1695	0.1516	-0.2168	0.6929
63	-0.4154	0.1708	0.8858	0.1424	-0.2473	0.6088
64	-0.5888	-0.0192	0.8744	0.1038	-0.3307	0.2922
65	-0.8114	-0.0908	0.3128	0.1106	-0.4225	0.2409
66	-0.8506	-0.0519	0.2885	0.0968	-0.3422	0.2384
67	-0.3607	0.0178	0.2697	0.0604	-0.1633	0.1989
68	-0.3194	0.0619	0.3606	0.0597	-0.1172	0.241
69	-0.9101	-0.0971	0.2747	0.1107	-0.4291	0.235
70	-0.8182	-0.0667	0.2246	0.1106	-0.3984	0.2649
71	-0.4137	-0.0029	0.2437	0.0668	-0.2034	0.1977
72	-0.1949	0.0413	0.2675	0.0555	-0.1252	0.2077
73	-0.8288	-0.1101	0.228	0.1127	-0.4482	0.228
74	-0.5498	-0.0482	0.2089	0.0834	-0.2984	0.2021
75	-0.3285	0.0031	0.35	0.0622	-0.1836	0.1899
76	-0.2682	0.0504	0.391	0.0596	-0.1283	0.2292
77	-1.2152	-0.2168	0.1919	0.1434	-0.6471	0.2135
78	-1.1575	-0.1808	0.2072	0.1369	-0.5914	0.2298
79	-0.9224	-0.1244	0.2308	0.1189	-0.4811	0.2324
80	-0.7598	-0.0401	0.2686	0.0767	-0.2703	0.1901
81	-0.4517	0.0142	0.3295	0.0644	-0.179	0.2074
82	-0.9183	0.056	0.3758	0.0644	-0.1372	0.2493
83	-1.0307	-0.2162	0.2205	0.1348	-0.6207	0.1883
84	-1.1608	-0.1855	0.2145	0.1271	-0.587	0.1959
85	-0.8615	-0.1159	0.2387	0.1222	-0.4824	0.2506
86	-0.7281	-0.0625	0.237	0.0961	-0.3509	0.2258
87	-0.4814	-0.0247	0.27	0.0745	-0.248	0.1987
88	-0.4004	0.0101	0.2713	0.0626	-0.1776	0.1978
89	-0.2575	0.0544	0.3458	0.0573	-0.1174	0.2263
90	-0.9937	-0.1674	0.3194	0.1111	-0.5009	0.166
91	-0.8847	-0.1713	0.2339	0.1184	-0.5263	0.1838
92	-0.6732	-0.093	0.2512	0.0997	-0.3921	0.2082
93	-0.4017	-0.0068	0.3261	0.0709	-0.2194	0.2059
94	-0.291	0.0262	0.2923	0.0598	-0.1531	0.2056
95	-0.3202	0.0649	0.3956	0.0582	-0.1095	0.2394

B/H=2 N=1 20 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.3935	1.181	2.0351	0.2603	0.4001	1.9619
1	-3.0101	-0.405	0.424	0.3365	-1.4144	0.6044
2	-3.006	-0.4904	0.3559	0.349	-1.5373	0.5564
3	-2.4825	-0.4437	0.3512	0.2871	-1.3048	0.4175
4	-2.0622	-0.4001	0.5839	0.2619	-1.1858	0.3855
5	-2.3918	-0.4176	0.3773	0.2993	-1.3155	0.4802
6	-2.8653	-0.4184	0.482	0.3261	-1.3988	0.56
7	-1.9621	-0.291	0.4045	0.2366	-1.0007	0.4186
8	-1.8482	-0.2421	0.3868	0.2225	-0.9096	0.4253
9	-1.6575	-0.2273	0.401	0.2007	-0.8293	0.3747
10	-1.7508	-0.2921	0.495	0.217	-0.9432	0.359
11	-1.7453	-0.2554	0.3701	0.2237	-0.9264	0.4156
12	-1.6302	-0.1775	0.4665	0.2073	-0.7994	0.4444
13	-1.1259	-0.1454	0.4523	0.1361	-0.5546	0.2638
14	-1.9558	-0.1056	0.4023	0.2	-0.7955	0.4043
15	-1.1435	-0.1401	0.4252	0.151	-0.5931	0.3129
16	-1.2567	-0.1801	0.4452	0.166	-0.6781	0.3179
17	-1.7365	-0.1619	0.4153	0.1803	-0.7027	0.3789
18	-0.9598	-0.0791	0.4574	0.1305	-0.4706	0.3123
19	-1.0742	-0.0633	0.5144	0.1169	-0.4141	0.2875
20	-1.8519	-0.1752	0.5293	0.1814	-0.7193	0.3689
21	-1.4262	-0.1152	0.4808	0.157	-0.5862	0.3557
22	-0.7276	-0.0433	0.5307	0.1113	-0.3772	0.2907
23	-0.9002	-0.0347	0.4794	0.1057	-0.3518	0.2824
24	-0.8326	-0.0208	0.3453	0.0976	-0.3137	0.2721
25	-0.6457	-0.0605	0.3245	0.0915	-0.3351	0.2141
26	-2.8622	-0.12	0.4762	0.1761	-0.6482	0.4083
27	-1.7697	-0.088	0.4761	0.152	-0.5441	0.3681
28	-0.6619	-0.0125	0.5115	0.1065	-0.3319	0.3069
29	-0.6603	0.0057	0.4763	0.0895	-0.2626	0.2741
30	-0.5294	0.0151	0.3808	0.0813	-0.2287	0.259
31	-0.0891	0.0981	0.2551	0.0355	-0.0083	0.2045
32	-3.0224	-0.0955	0.5808	0.1834	-0.6458	0.4548
33	-2.9044	-0.0625	0.5411	0.1548	-0.527	0.4019
34	-0.562	0.008	0.4672	0.1044	-0.3071	0.319
35	-0.5217	0.0267	0.4562	0.0884	-0.2386	0.2921
36	-0.4198	0.0386	0.4567	0.0788	-0.1978	0.275
37	-0.5693	0.0403	0.388	0.0751	-0.1851	0.2658
38	-1.9381	-0.0865	0.5879	0.1916	-0.6613	0.4884
39	-1.4423	-0.0498	0.5212	0.1547	-0.5139	0.4142
40	-0.568	0.0131	0.4506	0.1011	-0.2902	0.3163
41	-0.501	0.0398	0.4161	0.0848	-0.2146	0.2939
42	-0.4192	0.0582	0.4273	0.0765	-0.1712	0.2875
43	-0.4879	0.0653	0.3995	0.0745	-0.1582	0.2889
44	-1.7055	-0.0628	0.665	0.1532	-0.5224	0.3969
45	-1.0975	-0.0393	0.5137	0.1214	-0.4037	0.325
46	-0.7366	-0.0034	0.4375	0.0909	-0.276	0.2691
47	-0.4782	0.0348	0.3895	0.0791	-0.2021	0.2716
48	-0.7394	0.0665	0.3987	0.0757	-0.1605	0.2934
49	-0.4582	0.0973	0.5007	0.085	-0.1577	0.3522
50	-1.5545	0.2016	1.8993	0.3193	-0.7564	1.1596
51	-0.8242	0.2378	1.7755	0.2643	-0.555	1.0306
52	-0.5648	0.3356	1.9035	0.2976	-0.5571	1.2284
53	-0.6952	0.4533	2.1085	0.3344	-0.5499	1.4585
54	-0.5422	0.3502	1.8647	0.2857	-0.507	1.2074
55	-1.1458	0.2007	2.1672	0.307	-0.7203	1.1218
56	-0.6565	0.2685	1.6664	0.2582	-0.4992	1.0382
57	-0.6563	0.335	2.0505	0.2593	-0.443	1.113
58	-0.3431	0.397	1.9489	0.2742	-0.4258	1.2196
59	-0.6542	0.1775	1.4546	0.207	-0.4435	0.7984
60	-1.8531	0.1739	1.6683	0.2878	-0.6897	1.0374
61	-0.8242	0.2527	1.4596	0.2351	-0.4527	0.9582
62	-0.6209	0.2839	1.3098	0.208	-0.3402	0.908
63	-0.4988	0.2837	1.568	0.2	-0.3163	0.8837
64	-0.6283	0.029	0.8816	0.1313	-0.365	0.423
65	-0.7701	-0.0789	0.4113	0.1129	-0.4176	0.2598
66	-0.8434	-0.059	0.3678	0.1058	-0.3765	0.2585
67	-0.9639	0.0232	0.3943	0.0824	-0.2241	0.2705
68	-0.7479	0.0822	0.4654	0.084	-0.1698	0.3341
69	-0.6241	-0.0779	0.3424	0.1068	-0.3982	0.2425
70	-0.6928	-0.0681	0.2737	0.1098	-0.3974	0.2613
71	-0.6284	-0.0019	0.331	0.0887	-0.2678	0.2641
72	-0.339	0.0537	0.4328	0.0827	-0.1944	0.3019
73	-0.7591	-0.0805	0.3795	0.1081	-0.4049	0.244
74	-0.6132	-0.0568	0.3551	0.0953	-0.3426	0.229
75	-0.4227	0.0087	0.3374	0.0822	-0.238	0.2555
76	-0.415	0.0785	0.473	0.0884	-0.1887	0.3437
77	-1.4831	-0.3162	0.2805	0.1807	-0.8584	0.226
78	-1.5698	-0.3061	0.242	0.1907	-0.8782	0.2661
79	-1.536	-0.2147	0.3534	0.1738	-0.736	0.3067
80	-0.7525	-0.0464	0.3557	0.0976	-0.3393	0.2465
81	-0.6358	0.0257	0.3872	0.0815	-0.2189	0.2704
82	-0.4817	0.085	0.4355	0.0815	-0.1595	0.3204
83	-1.3736	-0.3142	0.2545	0.1744	-0.8373	0.2089
84	-1.3124	-0.316	0.3114	0.1809	-0.8586	0.2266
85	-1.55	-0.2348	0.2975	0.1906	-0.8066	0.337
86	-1.0388	-0.1258	0.3032	0.1398	-0.5451	0.2935
87	-0.7087	-0.0517	0.4538	0.1027	-0.3598	0.2563
88	-0.4834	0.0014	0.3881	0.0841	-0.2508	0.2537
89	-0.4698	0.0735	0.434	0.0758	-0.1539	0.301
90	-1.16	-0.2782	0.1886	0.1634	-0.7683	0.2118
91	-1.286	-0.3089	0.2096	0.1817	-0.8542	0.2363
92	-1.059	-0.1833	0.3609	0.1563	-0.6521	0.2855
93	-0.7648	-0.0269	0.4882	0.1061	-0.3453	0.2915
94	-0.5605	0.023	0.4169	0.086	-0.235	0.2809
95	-0.3697	0.0893	0.4489	0.0792	-0.1483	0.3269

B/H=2 N=1 30 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5294	1.2109	2.0665	0.2458	0.4735	1.9483
1	-2.6295	-0.3641	0.6126	0.3243	-1.3371	0.6089
2	-2.6223	-0.4928	0.4748	0.3368	-1.5033	0.5178
3	-2.527	-0.4517	0.3956	0.2789	-1.2884	0.385
4	-1.9572	-0.391	0.4067	0.2459	-1.1286	0.3467
5	-2.7466	-0.3657	0.3857	0.2683	-1.1705	0.4392
6	-2.4674	-0.363	0.3904	0.2846	-1.2167	0.4908
7	-1.9919	-0.2662	0.2906	0.2118	-0.9015	0.3691
8	-2.2478	-0.2661	0.6229	0.2651	-1.0614	0.5203
9	-1.5008	-0.1973	0.514	0.1959	-0.788	0.3934
10	-1.3529	-0.2804	0.4312	0.2067	-0.9004	0.3396
11	-1.6678	-0.2484	0.378	0.2034	-0.8586	0.3617
12	-2.0911	-0.1887	0.4985	0.192	-0.7648	0.3874
13	-1.2623	-0.1442	0.2356	0.1322	-0.5408	0.2523
14	-1.9161	-0.2292	0.5732	0.2371	-0.9405	0.482
15	-1.0145	-0.1181	0.3813	0.1493	-0.5659	0.3297
16	-1.0275	-0.1603	0.4551	0.1584	-0.6386	0.3181
17	-1.5326	-0.2038	0.3697	0.2076	-0.8266	0.4191
18	-1.1781	-0.0845	0.3395	0.1381	-0.4989	0.33
19	-0.6783	-0.0502	0.3824	0.1125	-0.3876	0.2871
20	-1.8659	-0.2222	0.423	0.2093	-0.8501	0.4057
21	-1.5589	-0.1474	0.3898	0.1779	-0.6811	0.3862
22	-0.7982	-0.0351	0.3414	0.1076	-0.358	0.2878
23	-0.7128	-0.026	0.3722	0.0999	-0.3257	0.2739
24	-0.5902	-0.023	0.3812	0.091	-0.2961	0.25
25	-0.814	-0.0589	0.3416	0.0977	-0.3221	0.2042
26	-2.1345	-0.1746	0.5537	0.2097	-0.8037	0.4545
27	-1.5154	-0.1268	0.4905	0.1721	-0.6431	0.3895
28	-0.7651	-0.0157	0.4149	0.1066	-0.3355	0.304
29	-0.4892	0.0144	0.37	0.0849	-0.2402	0.2691
30	-0.4636	0.0235	0.3626	0.0765	-0.2058	0.2529
31	-0.0604	0.1018	0.2488	0.0322	0.0053	0.1983
32	-2.2037	-0.154	0.4879	0.2197	-0.813	0.505
33	-1.8309	-0.0939	0.4745	0.1699	-0.6036	0.4157
34	-0.585	0.0009	0.4188	0.1036	-0.3101	0.3118
35	-0.585	0.032	0.3877	0.0848	-0.2224	0.2863
36	-0.4813	0.0502	0.3734	0.0763	-0.1787	0.2792
37	-0.6974	0.0623	0.4229	0.0736	-0.1584	0.2831
38	-2.1271	-0.1459	0.4632	0.2241	-0.8181	0.5263
39	-1.7872	-0.0777	0.455	0.1635	-0.5683	0.4129
40	-0.5983	0.0014	0.4483	0.1008	-0.3009	0.3037
41	-0.4042	0.0416	0.4395	0.0821	-0.2046	0.2877
42	-0.4088	0.0704	0.4515	0.0758	-0.1589	0.2977
43	-0.4673	0.0955	0.4235	0.0756	-0.1312	0.3223
44	-1.5776	-0.1284	0.3834	0.1636	-0.6191	0.3623
45	-1.2489	-0.0918	0.3581	0.1246	-0.4655	0.2823
46	-0.638	-0.0492	0.3102	0.0942	-0.3318	0.2335
47	-0.4842	0.0195	0.382	0.0795	-0.2189	0.258
48	-0.2868	0.0805	0.4723	0.0779	-0.1533	0.3143
49	-0.5977	0.1387	0.5829	0.0887	-0.1213	0.3987
50	-1.0674	0.212	1.7551	0.2934	-0.6682	1.0923
51	-1.0855	0.2246	1.448	0.2245	-0.4489	0.8982
52	-0.618	0.2652	1.8272	0.2319	-0.4306	0.961
53	-0.4186	0.3346	2.0564	0.2756	-0.4923	1.1615
54	-0.7873	0.289	1.5013	0.2607	-0.4929	1.071
55	-1.2946	0.234	1.6532	0.2814	-0.6101	1.0781
56	-0.5741	0.2796	1.7478	0.2133	-0.3604	0.9196
57	-0.5812	0.2903	1.633	0.2003	-0.3104	0.8911
58	-0.5547	0.3241	1.5259	0.2211	-0.3392	0.9873
59	-0.5918	0.1646	1.0971	0.185	-0.3904	0.7197
60	-1.2726	0.2423	1.9275	0.2817	-0.6028	1.0874
61	-0.5724	0.2966	1.3753	0.2015	-0.308	0.9011
62	-0.4219	0.2812	1.3035	0.1651	-0.214	0.7765
63	-0.2879	0.2582	1.2851	0.1599	-0.2215	0.7379
64	-0.4751	0.045	0.6128	0.1142	-0.2975	0.3875
65	-1.3842	-0.1655	0.1943	0.1369	-0.5763	0.2453
66	-1.474	-0.1294	0.2777	0.119	-0.4863	0.2275
67	-0.4689	0.0164	0.376	0.087	-0.2446	0.2775
68	-0.6711	0.1153	0.5015	0.0849	-0.1394	0.37
69	-1.1368	-0.1762	0.1863	0.139	-0.5932	0.2408
70	-1.2248	-0.1855	0.3012	0.1518	-0.6409	0.27
71	-0.7158	-0.0551	0.3135	0.1144	-0.3982	0.2870
72	-0.3678	0.0546	0.3943	0.0871	-0.2066	0.3159
73	-1.0974	-0.1803	0.2477	0.1419	-0.606	0.2455
74	-0.7909	-0.1243	0.2364	0.1206	-0.486	0.2375
75	-0.5677	-0.0099	0.3841	0.0917	-0.285	0.2651
76	-0.3097	0.0962	0.6138	0.0901	-0.1742	0.3686
77	-1.437	-0.2412	0.3208	0.1559	-0.7088	0.2264
78	-1.5765	-0.243	0.2269	0.1609	-0.7258	0.2398
79	-1.2988	-0.1813	0.2686	0.1452	-0.6169	0.2542
80	-0.9389	-0.0099	0.3562	0.0883	-0.2748	0.255
81	-0.6486	0.0686	0.463	0.0795	-0.17	0.3072
82	-0.4698	0.1234	0.5285	0.0806	-0.1185	0.3653
83	-1.3396	-0.2388	0.2023	0.1512	-0.6923	0.2146
84	-1.2707	-0.2483	0.1932	0.1539	-0.7101	0.2135
85	-1.1257	-0.2052	0.2626	0.15	-0.6552	0.2448
86	-0.7731	-0.0961	0.3339	0.112	-0.4321	0.2399
87	-0.559	-0.0165	0.3575	0.0881	-0.2809	0.2476
88	-0.3208	0.0428	0.3432	0.0793	-0.1652	0.2805
89	-0.1708	0.1058	0.4512	0.074	-0.1183	0.3278
90	-1.1967	-0.224	0.2025	0.141	-0.6471	0.1991
91	-1.3764	-0.2511	0.308	0.1556	-0.7184	0.2162
92	-0.9754	-0.1802	0.2566	0.1289	-0.5669	0.2066
93	-0.5166	-0.0162	0.3749	0.0917	-0.2913	0.259
94	-0.2898	0.0555	0.4162	0.0806	-0.1661	0.2972
95	-0.2262	0.124	0.4764	0.08	-0.1159	0.3639

B/H=2 N=1 45 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5503	1.2375	2.0351	0.2535	0.477	1.9981
1	-2.6876	-0.1801	0.502	0.3009	-1.0828	0.7225
2	-3.0111	-0.4268	0.4646	0.4502	-1.7774	0.9238
3	-3.1802	-0.5048	0.4563	0.4142	-1.7475	0.7379
4	-2.9644	-0.4588	0.4334	0.3144	-1.4019	0.4843
5	-2.1014	-0.3867	0.3687	0.2586	-1.1624	0.389
6	-2.1634	-0.3676	0.3733	0.2458	-1.1052	0.3699
7	-1.8044	-0.3464	0.225	0.199	-0.9433	0.2505
8	-2.0318	-0.134	0.4603	0.2538	-0.8955	0.6275
9	-1.887	-0.0854	0.3483	0.1797	-0.6245	0.4536
10	-1.6624	-0.1857	0.4387	0.2505	-0.9371	0.5657
11	-1.5503	-0.2465	0.3782	0.2324	-0.9437	0.4507
12	-1.6932	-0.2122	0.3601	0.2042	-0.8249	0.4005
13	-1.4469	-0.2488	0.2976	0.161	-0.7319	0.2343
14	-2.0291	-0.1266	0.4261	0.2244	-0.7999	0.5467
15	-1.0686	-0.0472	0.3978	0.1398	-0.4665	0.372
16	-1.3849	-0.0453	0.3889	0.1511	-0.4986	0.4081
17	-1.3859	-0.1303	0.3876	0.1957	-0.7174	0.4567
18	-1.2669	-0.0583	0.3669	0.145	-0.4933	0.3766
19	-0.7813	-0.0099	0.3742	0.107	-0.331	0.3111
20	-1.4665	-0.1548	0.4553	0.1987	-0.751	0.4413
21	-1.1536	-0.102	0.3814	0.1735	-0.6225	0.4184
22	-0.7897	-0.0109	0.3944	0.1062	-0.3265	0.3078
23	-0.672	0.023	0.3557	0.0925	-0.2544	0.3004
24	-0.6299	0.0102	0.3382	0.0871	-0.2512	0.2715
25	-0.9195	-0.118	0.236	0.0824	-0.3953	0.1593
26	-1.8801	-0.1498	0.4894	0.1923	-0.7266	0.427
27	-1.4485	-0.1049	0.3944	0.1605	-0.5864	0.3767
28	-0.7654	-0.0102	0.4296	0.105	-0.3252	0.3047
29	-0.5208	0.0252	0.4041	0.0845	-0.2284	0.2788
30	-0.3504	0.0367	0.3462	0.0744	-0.1866	0.2601
31	-0.0245	0.1055	0.3126	0.0314	0.0113	0.1996
32	-1.8311	-0.1477	0.4774	0.2063	-0.7666	0.4712
33	-1.586	-0.0842	0.4643	0.1542	-0.5467	0.3784
34	-0.7705	0.0041	0.4189	0.0991	-0.2933	0.3016
35	-0.5631	0.0356	0.4541	0.0836	-0.2151	0.2863
36	-0.3566	0.0564	0.4447	0.0762	-0.1723	0.2852
37	-0.2911	0.0776	0.6228	0.0758	-0.1499	0.305
38	-2.1889	-0.1477	0.4201	0.2282	-0.8323	0.5369
39	-1.7921	-0.0663	0.4626	0.1527	-0.5244	0.3918
40	-0.8109	0.0069	0.3866	0.0931	-0.2724	0.2861
41	-0.4039	0.0481	0.4218	0.0806	-0.1935	0.29
42	-0.6384	0.0783	0.5777	0.0756	-0.1486	0.3052
43	-0.258	0.1164	0.5306	0.0766	-0.1134	0.3462
44	-1.2334	-0.0782	0.3919	0.1571	-0.5496	0.3933
45	-0.6892	-0.0256	0.3941	0.1072	-0.3472	0.2959
46	-0.6593	0.0073	0.4087	0.0832	-0.2423	0.2569
47	-0.3954	0.0565	0.5287	0.0782	-0.178	0.291
48	-0.3711	0.1038	0.4621	0.0789	-0.1329	0.3406
49	-0.511	0.154	0.5797	0.0847	-0.1	0.408
50	-1.2187	0.4096	2.0895	0.3933	-0.7704	1.5895
51	-0.575	0.3867	1.5186	0.2707	-0.4253	1.1987
52	-1.1671	0.3655	1.3978	0.2212	-0.2982	1.0291
53	-0.9454	0.34	1.3893	0.1984	-0.2553	0.9353
54	-0.5548	0.1583	1.2153	0.1813	-0.3856	0.7023
55	-1.586	0.4104	1.9946	0.3571	-0.6609	1.4816
56	-0.4786	0.4423	1.5349	0.2564	-0.3269	1.2116
57	-0.3755	0.3953	1.53	0.2035	-0.2152	1.0059
58	-0.3836	0.3575	1.1736	0.1706	-0.1542	0.8692
59	-0.7694	0.0695	0.8484	0.139	-0.3474	0.4865
60	-1.1718	0.4147	1.9871	0.2915	-0.4598	1.2892
61	-0.5034	0.4762	1.5815	0.224	-0.1959	1.1483
62	-0.199	0.4063	1.267	0.1704	-0.1049	0.9176
63	-0.2632	0.3235	1.0736	0.1406	-0.0983	0.7454
64	-0.4469	0.0005	0.6085	0.099	-0.2066	0.2976
65	-0.7173	-0.0589	0.3134	0.0967	-0.3489	0.231
66	-1.0261	-0.0433	0.3245	0.1057	-0.3605	0.2738
67	-0.9031	0.0506	0.4179	0.0946	-0.2331	0.3343
68	-1.3526	0.1242	0.5273	0.0927	-0.1539	0.4023
69	-0.7768	-0.0615	0.3087	0.0927	-0.3395	0.2165
70	-0.6192	-0.057	0.2193	0.0944	-0.34	0.2281
71	-0.4624	0.0252	0.4166	0.0834	-0.2252	0.2755
72	-0.4418	0.0887	0.4676	0.0848	-0.1658	0.3432
73	-0.8348	-0.0599	0.2331	0.0945	-0.3435	0.2237
74	-0.5762	-0.0413	0.3299	0.0897	-0.3104	0.2278
75	-0.3786	0.0418	0.3937	0.0826	-0.2061	0.2896
76	-0.4053	0.1201	0.5726	0.0956	-0.1668	0.4069
77	-1.3044	-0.3805	0.2029	0.1776	-0.9134	0.1523
78	-1.4	-0.4023	0.1686	0.1909	-0.9752	0.1705
79	-1.2616	-0.3409	0.2349	0.1674	-0.8432	0.1615
80	-0.5175	-0.0214	0.3577	0.0876	-0.2842	0.2414
81	-0.2811	0.0946	0.4902	0.0839	-0.1671	0.3362
82	-0.202	0.1486	0.5541	0.0839	-0.1032	0.4004
83	-1.4095	-0.3978	0.162	0.1853	-0.9537	0.1581
84	-1.4506	-0.4224	0.144	0.1951	-1.0078	0.163
85	-1.7039	-0.4667	0.1759	0.2269	-1.1473	0.2138
86	-0.9088	-0.2679	0.1958	0.1511	-0.7211	0.1853
87	-0.6209	-0.113	0.2295	0.1084	-0.4382	0.2121
88	-0.444	-0.0096	0.3358	0.0918	-0.285	0.2658
89	-0.1941	0.1054	0.4505	0.0803	-0.1356	0.3464
90	-1.107	-0.3705	0.1435	0.1631	-0.8597	0.1186
91	-1.3469	-0.4501	0.1171	0.2002	-1.0507	0.1505
92	-1.573	-0.4003	0.1765	0.1965	-0.9899	0.1893
93	-0.7478	-0.1172	0.3218	0.1156	-0.4839	0.2294
94	-0.3674	0.0066	0.3885	0.0899	-0.2631	0.2762
95	-0.1931	0.1319	0.5133	0.0826	-0.116	0.3797

B/H=2 N=1 60 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4457	1.1564	2.2757	0.276	0.3284	1.9844
1	-2.7441	-0.324	0.5751	0.2887	-1.1902	0.5422
2	-2.8604	-0.3648	0.5067	0.3046	-1.2786	0.5489
3	-2.757	-0.3534	0.516	0.2837	-1.2031	0.4962
4	-1.974	-0.3048	0.5111	0.246	-1.0426	0.4331
5	-2.4057	-0.2514	0.5983	0.236	-0.9594	0.4565
6	-2.5097	-0.2475	0.5479	0.2446	-0.9812	0.4862
7	-1.6307	-0.2172	0.4222	0.2036	-0.8281	0.3936
8	-2.4346	-0.3224	0.5104	0.3042	-1.2351	0.5902
9	-1.8607	-0.2166	0.4923	0.199	-0.8137	0.3805
10	-1.9512	-0.2153	0.5235	0.1956	-0.8111	0.3805
11	-1.7285	-0.1968	0.6101	0.1981	-0.7909	0.3974
12	-1.7016	-0.1605	0.5311	0.1868	-0.7209	0.4
13	-1.1136	-0.1455	0.4261	0.1513	-0.5993	0.3083
14	-1.7686	-0.2881	0.6452	0.2584	-1.0631	-0.487
15	-1.414	-0.1586	0.4255	0.1814	-0.6428	0.3256
16	-0.8958	-0.1291	0.4945	0.1468	-0.5696	0.3114
17	-1.9986	-0.2692	0.4148	0.2205	-0.9306	0.3922
18	-1.3182	-0.1869	0.4113	0.1738	-0.7081	0.3345
19	-0.7372	-0.0962	0.3647	0.1244	-0.4694	0.277
20	-1.9629	-0.2803	0.4252	0.2255	-0.9568	0.3962
21	-2.0771	-0.2384	0.3805	0.203	-0.8475	0.3706
22	-0.9193	-0.1002	0.4128	0.1255	-0.4767	0.2763
23	-0.7191	-0.042	0.4533	0.1105	-0.3734	0.2894
24	-0.6461	-0.0322	0.5111	0.1068	-0.3519	0.2876
25	-0.563	-0.0591	0.4016	0.1099	-0.3887	0.2705
26	-2.6673	-0.3174	0.4584	0.2816	-1.162	0.5273
27	-1.8441	-0.2401	0.4862	0.2209	-0.9029	0.4228
28	-0.9979	-0.0979	0.4866	0.1316	-0.4927	0.2968
29	-0.6743	-0.0366	0.4954	0.1048	-0.3511	0.2778
30	-0.596	-0.0048	0.5177	0.0958	-0.2922	0.2825
31	-0.0633	0.1171	0.316	0.0451	-0.0183	0.2525
32	-2.6925	-0.3743	0.5017	0.3447	-1.4084	0.6599
33	-1.8244	-0.2076	0.4969	0.2348	-0.9119	0.4967
34	-1.0751	-0.0543	0.4965	0.1313	-0.4482	0.3396
35	-0.862	-0.0221	0.426	0.1078	-0.3455	0.3013
36	-0.6922	0.0075	0.457	0.0961	-0.2809	0.2959
37	-0.3767	0.0399	0.4521	0.0835	-0.2107	0.2906
38	-2.5108	-0.3687	0.4851	0.3444	-1.4019	0.6645
39	-1.7233	-0.1505	0.5137	0.2179	-0.8041	0.503
40	-1.879	-0.0368	0.4416	0.1199	-0.3965	0.3228
41	-0.653	0.0066	0.4514	0.101	-0.2965	0.3097
42	-0.8473	0.0356	0.4364	0.0936	-0.2451	0.3162
43	-0.4183	0.066	0.4702	0.0828	-0.1824	0.3143
44	-1.6789	-0.2216	0.4104	0.2153	-0.8674	0.4242
45	-1.0928	-0.1216	0.3469	0.1409	-0.5442	0.301
46	-0.7242	-0.0781	0.3623	0.1046	-0.3918	0.2357
47	-0.4977	-0.0116	0.5005	0.093	-0.2906	0.2674
48	-1.3927	0.0405	0.5043	0.0947	-0.2435	0.3245
49	-0.5558	0.0928	0.5113	0.0976	-0.2001	0.3857
50	-1.8269	0.0497	1.6435	0.2919	-0.826	0.9255
51	-0.6154	0.1498	1.4965	0.2336	-0.5511	0.8507
52	-0.6673	0.1916	1.6994	0.2125	-0.4458	0.829
53	-0.8207	0.2062	1.2648	0.2002	-0.3945	0.8069
54	-0.5937	0.1276	1.2403	0.1769	-0.4032	0.6584
55	-1.9118	0.0848	1.8393	0.2764	-0.7442	0.9139
56	-0.6407	0.2152	1.5339	0.236	-0.493	0.9233
57	-0.4018	0.2175	1.3055	0.2041	-0.3947	0.8296
58	-0.4205	0.2392	1.2157	0.1795	-0.2992	0.7776
59	-0.6391	0.1101	1.2643	0.1579	-0.3636	0.5837
60	-1.8041	0.1773	1.7234	0.2737	-0.6438	0.9985
61	-0.4984	0.279	1.5824	0.2316	-0.4157	0.9736
62	-0.3136	0.2547	1.1648	0.1821	-0.2915	0.8009
63	-0.2619	0.2231	0.9914	0.1499	-0.2266	0.6727
64	-0.4591	0.0776	1.1369	0.1503	-0.3734	0.5287
65	-1.3908	-0.248	0.3353	0.1813	-0.7917	0.2958
66	-1.3539	-0.1983	0.2908	0.1651	-0.6936	0.297
67	-1.2001	-0.0543	0.4561	0.1299	-0.4441	0.3355
68	-1.0409	0.0498	0.5447	0.1158	-0.2977	0.3972
69	-1.2779	-0.2522	0.3496	0.1794	-0.7905	0.2862
70	-1.3904	-0.2444	0.2885	0.191	-0.8173	0.3286
71	-0.8574	-0.1069	0.4654	0.1408	-0.5292	0.3155
72	-0.5605	0.0018	0.4907	0.102	-0.3041	0.3077
73	-1.2475	-0.2565	0.358	0.1861	-0.8148	0.3018
74	-1.3959	-0.1965	0.3051	0.1528	-0.6548	0.2618
75	-0.8816	-0.0473	0.4022	0.1118	-0.3827	0.2882
76	-0.4338	0.0432	0.523	0.0986	-0.2527	0.339
77	-1.3564	-0.2398	0.3557	0.1619	-0.7255	0.246
78	-1.4219	-0.2227	0.4284	0.1675	-0.7251	0.2798
79	-0.9724	-0.1509	0.4207	0.1642	-0.6435	0.3417
80	-0.6221	-0.0108	0.4413	0.0933	-0.2907	0.2691
81	-0.7091	0.052	0.4749	0.0814	-0.1921	0.2962
82	-0.3442	0.0908	0.504	0.0878	-0.1726	0.3541
83	-1.2107	-0.2474	0.3754	0.1655	-0.7438	0.249
84	-1.3307	-0.2286	0.3758	0.1651	-0.7238	0.2666
85	-1.2558	-0.1812	0.352	0.1693	-0.7493	0.3868
86	-0.8694	-0.0891	0.3897	0.1448	-0.5234	0.3452
87	-0.5953	-0.0284	0.4238	0.1098	-0.3579	0.3012
88	-0.5308	0.0234	0.4057	0.091	-0.2497	0.2965
89	-0.2855	0.0751	0.4433	0.0821	-0.1713	0.3215
90	-1.5176	-0.2347	0.329	0.1682	-0.7394	0.2701
91	-1.1558	-0.2321	0.4605	0.1759	-0.7599	0.2957
92	-1.262	-0.1718	0.4284	0.1772	-0.7034	0.3598
93	-0.6178	-0.0201	0.4118	0.1121	-0.3624	0.3102
94	-0.5227	0.0386	0.4258	0.0891	-0.2267	0.3059
95	-0.2972	0.1025	0.4887	0.0869	-0.1583	0.3633

B/H=2 N=1 70 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.3293	1.1029	1.9487	0.25	0.3529	1.8528
1	-2.9218	-0.3568	0.5643	0.3332	-1.3563	0.6428
2	-2.3774	-0.2378	0.5677	0.232	-0.9339	0.4583
3	-1.9134	-0.2146	0.4671	0.2248	-0.889	0.4599
4	-1.5708	-0.1755	0.505	0.1965	-0.7649	0.4139
5	-1.5129	-0.1335	0.5263	0.1927	-0.7114	0.4445
6	-1.862	-0.1183	0.5255	0.1917	-0.6933	0.4567
7	-1.4769	-0.1014	0.5031	0.1732	-0.621	0.4182
8	-2.9626	-0.4715	0.4743	0.3693	-1.5793	0.6363
9	-1.9236	-0.2361	0.4675	0.2301	-0.9264	0.4542
10	-1.2953	-0.1026	0.6295	0.1683	-0.6075	0.4024
11	-1.2867	-0.0963	0.597	0.17	-0.6061	0.4136
12	-1.2153	-0.0791	0.5344	0.1613	-0.563	0.4048
13	-1.2734	-0.063	0.5364	0.1439	-0.4948	0.3689
14	-2.0985	-0.404	0.6229	0.3045	-1.3176	0.5096
15	-1.8276	-0.1529	0.4751	0.1793	-0.6908	0.3849
16	-0.8647	-0.0636	0.497	0.1459	-0.5014	0.3742
17	-2.5964	-0.3535	0.4304	0.2874	-1.1558	0.4487
18	-1.4004	-0.1979	0.4578	0.1932	-0.7777	0.3818
19	-0.9436	-0.0543	0.5093	0.1365	-0.4637	0.3551
20	-3.0743	-0.3821	0.4163	0.29	-1.2523	0.488
21	-2.4235	-0.2876	0.3959	0.2423	-1.0144	0.4391
22	-0.9841	-0.0573	0.4378	0.1369	-0.468	0.3534
23	-0.7352	0.0032	0.4561	0.1245	-0.3704	0.3767
24	-0.6239	0.0134	0.4618	0.1185	-0.3422	0.369
25	-0.911	0.0232	0.5564	0.1139	-0.3184	0.3647
26	-3.4729	-0.4272	0.5813	0.3561	-1.4953	0.641
27	-2.0458	-0.2292	0.5288	0.2587	-1.0051	0.5468
28	-1.2616	-0.0286	0.5358	0.1423	-0.4556	0.3984
29	-1.0146	0.0185	0.4528	0.1137	-0.3228	0.3597
30	-0.5971	0.042	0.4426	0.1024	-0.2652	0.3492
31	-0.0064	0.1647	0.3884	0.0433	0.0348	0.2946
32	-2.3901	-0.3743	0.6921	0.3722	-1.45[illegible]	0.7422
33	-2.1582	-0.1154	0.6291	0.2449	-0.6501	0.6192
34	-0.7597	0.0343	0.5585	0.1291	-0.3531	0.4218
35	-0.5364	0.0478	0.557	0.1073	-0.274	0.3696
36	-0.5238	0.0607	0.4771	0.0959	-0.227	0.3484
37	-0.4689	0.0754	0.4536	0.0828	-0.1729	0.3236
38	-2.4669	-0.2384	0.6779	0.3478	-1.2818	0.805
39	-1.3945	-0.0242	0.6623	0.1953	-0.6102	0.5617
40	-0.7078	0.0357	0.4651	0.1042	-0.2768	0.3483
41	-0.6678	0.064	0.5338	0.0935	-0.2165	0.3445
42	-0.667	0.0809	0.5365	0.0878	-0.1826	0.3444
43	-0.3699	0.0832	0.4561	0.0782	-0.1513	0.3177
44	-1.4557	-0.1265	0.4793	0.1983	-0.7153	0.4623
45	-0.9506	-0.0705	0.5285	0.1307	-0.4627	0.3217
46	-0.8569	-0.0427	0.3195	0.1046	-0.3563	0.271
47	-0.6823	0.0121	0.3998	0.0932	-0.2676	0.2918
48	-1.0088	0.0363	0.509	0.092	-0.2397	0.3124
49	-0.468	0.0736	0.5528	0.0925	-0.2041	0.3512
50	-2.0399	-0.0906	1.3698	0.2853	-0.9466	0.7653
51	-0.7872	0.0372	1.234	0.1579	-0.4364	0.5108
52	-0.6434	0.0654	1.1169	0.1506	-0.4134	0.5443
53	-0.5468	0.0817	1.1285	0.1625	-0.4057	0.5691
54	-0.8161	0.0888	1.1658	0.1739	-0.4327	0.6104
55	-2.1938	-0.0602	1.2193	0.2844	-0.9133	0.7929
56	-0.7567	0.0744	1.2248	0.157	-0.3965	0.5453
57	-0.5054	0.0856	1.1268	0.1551	-0.3797	0.551
58	-0.7432	0.1205	1.1572	0.1538	-0.341	0.582
59	-0.7095	0.1362	1.2298	0.197	-0.455	0.7273
60	-1.9595	0.0195	1.5968	0.2826	-0.8283	0.8673
61	-0.7281	0.1094	1.1466	0.1541	-0.353	0.5718
62	-0.4045	0.1204	0.9314	0.1417	-0.3046	0.5453
63	-0.6726	0.1439	1.158	0.1376	-0.269	0.5568
64	-1.0249	0.1937	1.8476	0.2302	-0.497	0.8844
65	-1.3859	-0.2686	0.3158	0.1939	-0.8504	0.3131
66	-1.4396	-0.2015	0.3708	0.1743	-0.7243	0.3213
67	-1.1124	-0.0691	0.5013	0.1359	-0.477	0.3387
68	-1.5795	0.0243	0.572	0.1302	-0.3664	0.415
69	-1.2788	-0.2667	0.2479	0.1838	-0.818	0.2846
70	-1.168	-0.2415	0.3767	0.1994	-0.8396	0.3567
71	-0.8052	-0.1155	0.3745	0.1441	-0.5479	0.3169
72	-1.0479	-0.0146	0.4974	0.1048	-0.3289	0.2997
73	-1.2219	-0.2767	0.3228	0.1898	-0.846	0.2926
74	-1.0115	-0.2032	0.3491	0.159	-0.6801	0.2738
75	-0.7271	-0.0648	0.5188	0.1189	-0.4214	0.2919
76	-0.6122	0.0157	0.4157	0.0992	-0.2818	0.3132
77	-1.5408	-0.1814	0.6691	0.186	-0.7395	0.3767
78	-1.8213	-0.1247	0.573	0.1749	-0.6493	0.3999
79	-1.1915	-0.0196	0.4654	0.1333	-0.4196	0.3803
80	-0.4476	0.0334	0.5112	0.088	-0.2306	0.2973
81	-0.2671	0.0533	0.4086	0.0769	-0.1774	0.2841
82	-0.3932	0.0611	0.521	0.0871	-0.2001	0.3224
83	-1.7973	-0.2214	0.5504	0.2104	-0.8526	0.4098
84	-1.523	-0.1368	0.4818	0.1709	-0.6494	0.3757
85	-0.9688	-0.031	0.4356	0.1295	-0.4196	0.3576
86	-0.6649	0.0184	0.4286	0.0984	-0.2768	0.3137
87	-0.5332	0.0349	0.4739	0.0822	-0.2116	0.2814
88	-0.3219	0.0462	0.3676	0.0761	-0.1821	0.2746
89	-0.3919	0.0543	0.4632	0.0837	-0.1968	0.3054
90	-2.0666	-0.2161	0.448	0.2372	-0.9276	0.4954
91	-1.9325	-0.1312	0.4134	0.1834	-0.6813	0.4189
92	-0.7957	-0.0267	0.4931	0.1193	-0.3848	0.3313
93	-0.4334	0.0325	0.5023	0.0871	-0.2269	0.2939
94	-0.3327	0.0522	0.4066	0.0761	-0.1762	0.2805
95	-0.4697	0.0733	0.5557	0.0842	-0.1795	0.326

B/H=2 N=1 80 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4129	1.1219	2.3875	0.2547	0.3579	1.8859
1	-2.6967	-0.5201	0.4575	0.3713	-1.6342	0.5939
2	-1.4812	-0.2159	0.47	0.1907	-0.7881	0.3563
3	-2.2715	-0.1533	0.5637	0.1902	-0.724	0.4173
4	-1.6704	-0.1291	0.5354	0.1821	-0.6754	0.4172
5	-2.3141	-0.0992	0.6409	0.1596	-0.578	0.3796
6	-1.7447	-0.1009	0.5262	0.1474	-0.5431	0.3413
7	-1.0305	-0.1325	0.5227	0.142	-0.5585	0.2934
8	-3.0043	-0.5905	0.3833	0.3579	-1.6643	0.4833
9	-1.9676	-0.3055	0.4212	0.2491	-1.0529	0.4418
10	-1.1801	-0.0595	0.4604	0.1308	-0.4518	0.3328
11	-1.4962	-0.0626	0.4685	0.1358	-0.47	0.3447
12	-1.3745	-0.0675	1.0066	0.1308	-0.46	0.325
13	-0.8227	-0.1126	0.435	0.136	-0.5205	0.2652
14	-2.2886	-0.4969	0.3687	0.3104	-1.4281	0.4342
15	-1.2978	-0.1649	0.5665	0.1801	-0.7051	0.3754
16	-0.8035	-0.0418	0.5722	0.1179	-0.3955	0.312
17	-2.1182	-0.4042	0.4135	0.2922	-1.2807	0.4722
18	-1.3186	-0.1745	0.3922	0.1977	-0.7677	0.4186
19	-0.779	-0.0383	0.4266	0.1189	-0.3951	0.3184
20	-2.4691	-0.4693	0.3633	0.3228	-1.4378	0.4692
21	-1.9912	-0.2692	0.4747	0.2554	-1.0355	0.497
22	-0.8787	-0.0367	0.4685	0.1208	-0.3991	0.3257
23	-0.6477	0.0007	0.4297	0.097	-0.2905	0.2918
24	-0.9115	-0.0132	0.4251	0.0911	-0.2864	0.26
25	-0.706	-0.0607	0.4479	0.1165	-0.4101	0.2887
26	-2.8568	-0.3483	0.5905	0.3572	-1.42	0.7233
27	-1.6896	-0.1245	0.5104	0.2319	-0.8202	0.5712
28	-0.7338	-0.0056	0.4808	0.1101	-0.3358	0.3245
29	-0.5531	0.0077	0.3528	0.0875	-0.2549	0.2703
30	-0.6154	0.0096	0.3594	0.0801	-0.2307	0.2498
31	-0.0442	0.0966	0.3534	0.0394	-0.0215	0.2148
32	-2.01	-0.1842	0.8117	0.3037	-1.0952	0.7266
33	-1.5102	-0.031	0.5707	0.1678	-0.5344	0.4724
34	-0.6379	0.0225	0.3909	0.0952	-0.2631	0.3081
35	-0.5375	0.0162	0.4146	0.083	-0.2328	0.2653
36	-0.879	0.0184	0.4112	0.0789	-0.2182	0.255
37	-0.4132	0.025	0.3887	0.0819	-0.2206	0.2706
38	-1.9494	-0.1072	0.63	0.2397	-0.8262	0.6118
39	-1.1512	-0.0252	0.4797	0.138	-0.4391	0.3887
40	-0.753	-0.0179	0.343	0.0933	-0.2978	0.262
41	-0.8657	0.0124	0.3613	0.0843	-0.2405	0.2653
42	-0.6181	0.0266	0.4149	0.0814	-0.2177	0.2708
43	-0.4459	0.031	0.4301	0.084	-0.2211	0.2831
44	-1.7272	-0.1428	0.4896	0.1614	-0.6271	0.3415
45	-0.9249	-0.1025	0.4137	0.1274	-0.4847	0.2797
46	-0.9533	-0.0743	0.4196	0.1146	-0.4181	0.2696
47	-0.7954	-0.0366	0.5079	0.1085	-0.3622	0.289
48	-0.723	-0.0249	0.4805	0.1082	-0.3494	0.2996
49	-0.6425	0.0112	0.5434	0.1071	-0.3101	0.3325
50	-2.3089	-0.2847	0.9	0.3538	-1.3461	0.7767
51	-0.956	0	0.8578	0.1208	-0.3625	0.3624
52	-0.9011	0.0117	0.7241	0.1185	-0.3439	0.3674
53	-0.6099	0.0107	0.7569	0.1156	-0.3362	0.3575
54	-0.7509	-0.0278	0.9082	0.1472	-0.4695	0.4139
55	-2.1867	-0.2563	0.9375	0.3448	-1.2908	0.7782
56	-0.8458	0.021	0.7958	0.1185	-0.3347	0.3766
57	-0.5287	0.013	0.7035	0.115	-0.3321	0.3582
58	-0.6168	0.0398	0.8773	0.1124	-0.2973	0.3769
59	-0.8982	0.004	1.0885	0.1859	-0.5538	0.5618
60	-2.0875	-0.1867	0.997	0.3256	-1.1434	0.8101
61	-0.5487	0.036	0.7387	0.1165	-0.3137	0.3858
62	-0.5401	0.0412	0.8012	0.1095	-0.2872	0.3696
63	-0.5692	0.0471	1.1384	0.1084	-0.278	0.3722
64	-0.5593	0.0423	1.3465	0.2155	-0.6041	0.6887
65	-1.2846	-0.2001	0.505	0.1701	-0.7104	0.3101
66	-1.8945	-0.1409	0.4525	0.1587	-0.617	0.3353
67	-1.4647	-0.0841	0.4928	0.1477	-0.5272	0.359
68	-2.126	-0.0414	0.5317	0.1609	-0.5242	0.4413
69	-1.2371	-0.1884	0.4237	0.1514	-0.6425	0.2656
70	-1.1852	-0.128	0.3981	0.1446	-0.562	0.3059
71	-0.9126	-0.066	0.5596	0.1322	-0.4626	0.3307
72	-1.0904	-0.0355	0.4789	0.1325	-0.4332	0.3621
73	-1.1607	-0.1719	0.4287	0.1364	-0.5812	0.2374
74	-1.034	-0.1269	0.4621	0.125	-0.502	0.2481
75	-0.7442	-0.0559	0.4122	0.1148	-0.4002	0.2884
76	-1.2957	-0.0205	0.4189	0.1295	-0.4089	0.3679
77	-1.3621	-0.2523	0.4653	0.2098	-0.8817	0.377
78	-1.7021	-0.2315	0.4161	0.2343	-0.9344	0.4715
79	-1.7128	-0.1483	0.3864	0.1857	-0.7054	0.4088
80	-0.9919	-0.0235	0.3823	0.0979	-0.3173	0.2703
81	-0.3751	0.0038	0.4629	0.0891	-0.2635	0.2711
82	-0.5683	0.0151	0.6131	0.1029	-0.2936	0.3238
83	-1.7886	-0.2893	0.3739	0.2199	-0.9485	0.37
84	-1.7156	-0.2472	0.4339	0.228	-0.9313	0.4368
85	-1.5858	-0.1853	0.3298	0.2144	-0.8284	0.4578
86	-0.8176	-0.0789	0.3203	0.1255	-0.4555	0.2977
87	-0.7166	-0.0388	0.2944	0.0926	-0.3146	0.241
88	-0.5651	-0.0206	0.3995	0.0884	-0.2858	0.2447
89	-0.6155	-0.0036	0.4453	0.1042	-0.3161	0.3089
90	-1.8405	-0.2749	0.4002	0.2113	-0.9089	0.359
91	-1.5037	-0.2542	0.3658	0.2334	-0.9545	0.446
92	-1.0921	-0.1436	0.3923	0.1652	-0.6393	0.3521
93	-0.7819	-0.0538	0.2959	0.1087	-0.3798	0.2721
94	-0.5521	-0.02	0.3891	0.0975	-0.3124	0.2724
95	-0.5441	0.0167	0.5154	0.1046	-0.2972	0.3305

B/H=2 N=1 90 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.5487	1.222	2.3143	0.2599	0.4423	2.0018
1	-2.2253	-0.2394	0.3664	0.2583	-1.0142	0.5355
2	-1.2606	-0.068	0.4136	0.1325	-0.4654	0.3295
3	-1.1848	-0.0202	0.4652	0.1289	-0.407	0.3666
4	-0.9449	0.0066	0.3666	0.1204	-0.3546	0.3678
5	-1.3217	0.0381	0.4488	0.1004	-0.2631	0.3393
6	-0.6563	0.0376	0.4655	0.0945	-0.2459	0.3212
7	-0.8086	0.0404	0.6172	0.1302	-0.3503	0.4311
8	-1.9219	-0.234	0.5042	0.2652	-1.0296	0.5617
9	-1.428	-0.081	0.4131	0.1604	-0.5621	0.4001
10	-0.6297	0.0219	0.4142	0.0948	-0.2625	0.3063
11	-0.7619	0.039	0.4027	0.0878	-0.2244	0.3024
12	-0.6106	0.0482	0.5083	0.0871	-0.2132	0.3097
13	-0.507	0.0411	0.5458	0.1333	-0.3589	0.4412
14	-1.5918	-0.159	0.6224	0.2319	-0.8548	0.5366
15	-0.7007	-0.0054	0.4786	0.1158	-0.3527	0.3419
16	-0.4988	0.0326	0.3889	0.0891	-0.2348	0.2998
17	-1.5109	-0.0786	0.5825	0.1955	-0.6651	0.508
18	-0.784	0.0063	0.4575	0.118	-0.3476	0.3603
19	-0.434	0.0403	0.4681	0.0888	-0.2262	0.3069
20	-1.9793	-0.1164	0.5695	0.2422	-0.8431	0.6104
21	-1.1542	-0.0149	0.5144	0.1464	-0.4541	0.4243
22	-0.438	0.0438	0.4739	0.0891	-0.2238	0.3112
23	-0.3623	0.068	0.4116	0.0774	-0.1843	0.3003
24	-0.51	0.0612	0.4079	0.0758	-0.1563	0.2886
25	-0.5405	0.0469	0.5435	0.1108	-0.2854	0.3791
26	-1.4425	-0.0501	0.6561	0.2098	-0.6796	0.5793
27	-0.9785	0.026	0.5378	0.1316	-0.3688	0.4208
28	-0.53	0.0547	0.5089	0.0891	-0.2125	0.3219
29	-0.3974	0.0662	0.5019	0.0757	-0.1609	0.2933
30	-0.3129	0.0747	0.3734	0.0712	-0.1388	0.2881
31	-0.0145	0.1279	0.2984	0.0362	0.0193	0.2366
32	-1.5251	-0.0697	0.7452	0.2234	-0.7398	0.6003
33	-0.9393	0.0266	0.6466	0.1322	-0.3699	0.4231
34	-0.3857	0.066	0.4859	0.0895	-0.2026	0.3346
35	-0.4841	0.0634	0.3806	0.0775	-0.1691	0.2958
36	-0.2954	0.0697	0.404	0.074	-0.1524	0.2918
37	-0.2829	0.0878	0.5757	0.0842	-0.1648	0.3404
38	-2.0835	-0.1493	0.7369	0.2676	-0.9521	0.6534
39	-1.2497	-0.0205	0.554	0.1551	-0.4658	0.4447
40	-0.5512	0.0215	0.4372	0.0899	-0.2482	0.2913
41	-0.419	0.0611	0.4817	0.0813	-0.1828	0.305
42	-0.369	0.0742	0.5273	0.0817	-0.1709	0.3193
43	-0.5519	0.0536	0.5536	0.118	-0.3005	0.4077
44	-2.0959	-0.2484	0.5172	0.273	-1.0675	0.5707
45	-1.2651	-0.0764	0.4505	0.1463	-0.5153	0.3626
46	-0.8929	-0.0087	0.5172	0.122	-0.3728	0.3594
47	-0.8358	0.0282	0.5542	0.1048	-0.2863	0.3426
48	-0.9196	0.0299	0.4685	0.1015	-0.2744	0.3343
49	-0.5433	0.0228	0.6385	0.1435	-0.4076	0.4532
50	-2.1532	-0.2037	0.5122	0.2615	-0.9882	0.5809
51	-1.0913	0.013	0.4895	0.1163	-0.3359	0.3618
52	-0.685	0.0412	0.5123	0.1018	-0.2641	0.3466
53	-0.8259	0.04	0.5522	0.1003	-0.2609	0.3409
54	-1.1511	0.0311	0.663	0.1313	-0.3627	0.4249
55	-1.7585	-0.1917	0.6394	0.2567	-0.9619	0.5784
56	-0.7577	0.0267	0.562	0.1084	-0.2964	0.3537
57	-0.7678	0.028	0.5482	0.0986	-0.2677	0.3238
58	-0.4428	0.0589	0.5189	0.0966	-0.2308	0.3486
59	-1.0087	0.0389	0.6491	0.1416	-0.3859	0.4637
60	-1.8703	-0.1355	0.7559	0.2373	-0.8474	0.5764
61	-0.5133	0.0391	0.5722	0.1031	-0.2702	0.3485
62	-0.3564	0.0575	0.5517	0.0913	-0.2185	0.3315
63	-0.3913	0.0467	0.4722	0.0905	-0.2249	0.3183
64	-0.6323	0.0372	0.7044	0.1399	-0.3824	0.4568
65	-1.4203	-0.0975	0.5708	0.1747	-0.6217	0.4267
66	-0.6796	0.0088	0.6576	0.1216	-0.3561	0.3738
67	-0.6036	0.0374	0.5801	0.1088	-0.2891	0.3639
68	-1.0403	0.0435	0.5911	0.1265	-0.3359	0.4229
69	-1.1833	-0.0966	0.6001	0.1836	-0.6474	0.4542
70	-0.6461	0.0288	0.5695	0.1138	-0.3127	0.3703
71	-0.4303	0.0607	0.5508	0.1053	-0.2551	0.3765
72	-0.4565	0.0421	0.643	0.1267	-0.338	0.4223
73	-1.2141	-0.061	0.7286	0.1717	-0.5761	0.4541
74	-0.4672	0.0247	0.4697	0.108	-0.2992	0.3486
75	-0.4671	0.059	0.585	0.0981	-0.2352	0.3532
76	-0.4588	0.0582	0.6377	0.1207	-0.304	0.4205
77	-1.4186	-0.0199	0.6689	0.2055	-0.6363	0.5964
78	-1.4906	-0.0255	0.6522	0.2171	-0.6768	0.6257
79	-1.066	-0.0026	0.5412	0.164	-0.4948	0.4895
80	-0.5513	0.0604	0.5073	0.0861	-0.1979	0.3188
81	-1.022	-0	0.5936	0.1606	-0.4817	0.4817
82	-1.069	-0.0019	0.5629	0.2032	-0.6115	0.6077
83	-1.395	-0.0324	0.623	0.2119	-0.6682	0.6033
84	-1.6753	-0.043	0.616	0.2182	-0.6974	0.6115
85	-1.5833	-0.0481	0.4111	0.1884	-0.6134	0.5171
86	-0.8094	0.0204	0.3586	0.1038	-0.2909	0.3317
87	-0.8021	0.0106	0.3258	0.1033	-0.2993	0.3205
88	-1.1345	-0.0418	0.4193	0.1848	-0.5957	0.5121
89	-1.0153	-0.0151	0.5556	0.2097	-0.6443	0.614
90	-1.0206	-0.0223	0.6444	0.2073	-0.6443	0.5997
91	-1.4364	-0.0512	0.5597	0.2309	-0.744	0.6416
92	-0.9457	-0.0333	0.3884	0.16	-0.5132	0.4466
93	-0.5273	0.0222	0.4351	0.1041	-0.2899	0.3344
94	-1.2204	-0.0143	0.4233	0.1598	-0.4936	0.465
95	-0.8679	0.0067	0.6525	0.2081	-0.6117	0.6251

B/H=2 N=2 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.2533	1.0627	2.0166	0.2586	0.287	1.8385
1	-2.0125	-0.2499	0.4092	0.2807	-1.092	0.5923
2	-2.9762	-0.2451	0.4884	0.2924	-1.1224	0.6321
3	-2.4154	-0.2216	0.529	0.2874	-1.0838	0.6406
4	-2.4308	-0.1928	0.594	0.29	-1.0627	0.677
5	-2.46	-0.1781	0.6684	0.2962	-1.0667	0.7104
6	-2.2846	-0.2294	0.5566	0.3096	-1.1583	0.6995
7	-2.0569	-0.2703	0.4555	0.2957	-1.1574	0.6168
8	-1.3299	-0.0528	0.5321	0.1375	-0.4653	0.3597
9	-1.0938	-0.0626	0.441	0.1511	-0.5159	0.3908
10	-1.2595	-0.0326	0.5409	0.1629	-0.5213	0.4561
11	-1.2336	-0.011	0.5233	0.1601	-0.4914	0.4693
12	-1.4559	-0.0488	0.4691	0.1885	-0.6144	0.5168
13	-1.5429	-0.063	0.4703	0.1464	-0.5021	0.3761
14	-1.0691	-0.0077	0.4052	0.1166	-0.3575	0.3422
15	-0.9129	0.0086	0.5767	0.1139	-0.333	0.3502
16	-0.7086	0.0179	0.4066	0.1146	-0.3265	0.3622
17	-0.8081	0.0171	0.4889	0.1086	-0.3087	0.343
18	-0.6209	0.0328	0.4811	0.0958	-0.2546	0.3203
19	-0.4887	0.0433	0.4507	0.0931	-0.236	0.3227
20	-1.3058	0.0121	0.3874	0.1144	-0.331	0.3551
21	-0.7061	0.0335	0.4674	0.0973	-0.2585	0.3255
22	-0.4979	0.0438	0.4695	0.0889	-0.2231	0.3106
23	-0.4869	0.0553	0.4237	0.0871	-0.2061	0.3168
24	-0.5842	0.0419	0.3676	0.0853	-0.2141	0.2979
25	-1.5287	0.0064	0.4305	0.1115	-0.328	0.3408
26	-0.8219	0.0221	0.5529	0.1004	-0.2792	0.3234
27	-0.7548	0.0327	0.5622	0.0918	-0.2427	0.3081
28	-0.507	0.0534	0.4563	0.08	-0.1867	0.2935
29	-0.4428	0.0555	0.36	0.0771	-0.1759	0.2869
30	-0.4764	0.058	0.3749	0.0772	-0.1736	0.2896
31	-0.8219	0.0221	0.5529	0.1004	-0.2792	0.3234
32	-0.7673	0.0269	0.4695	0.0946	-0.2569	0.3107
33	-0.7178	0.05	0.4929	0.0872	-0.2115	0.3116
34	-0.349	0.0688	0.416	0.0768	-0.1615	0.2991
35	-0.4357	0.059	0.3664	0.0736	-0.1623	0.2803
36	-0.5776	0.0593	0.3844	0.0747	-0.1648	0.2834
37	-0.9574	0.0468	0.58	0.0931	-0.2328	0.3261
38	-0.6969	0.0417	0.5079	0.0949	-0.2428	0.3263
39	-0.5498	0.0471	0.4684	0.0864	-0.212	0.3062
40	-0.4079	0.0464	0.3459	0.0745	-0.177	0.2698
41	-0.3324	0.063	0.3769	0.071	-0.1499	0.2759
42	-0.4041	0.0705	0.378	0.0729	-0.1481	0.2892
43	-0.5633	0.0491	0.5817	0.0929	-0.2297	0.3279
44	-0.7648	0.0129	0.618	0.1261	-0.3654	0.3913
45	-0.8463	0.0119	0.583	0.132	-0.384	0.4079
46	-0.5564	0.0097	0.4441	0.116	-0.3382	0.3575
47	-0.3318	0.0409	0.3934	0.0862	-0.2177	0.2995
48	-0.4633	0.0418	0.4056	0.1036	-0.269	0.3527
49	-0.8216	0.0422	0.5776	0.12	-0.3179	0.4023
50	-0.771	0.322	2.1124	0.3427	-0.7059	1.35
51	-0.991	0.4173	2.4549	0.3682	-0.6873	1.522
52	-0.805	0.4732	2.2031	0.361	-0.6099	1.5563
53	-0.8042	0.4391	2.5154	0.3662	-0.6594	1.5376
54	-0.7556	0.3625	2.0944	0.3437	-0.6886	1.3936
55	-0.9261	0.2268	1.9488	0.3262	-0.7517	1.2054
56	-0.7127	0.3125	1.8031	0.2966	-0.5774	1.2024
57	-0.6773	0.3345	1.8728	0.2793	-0.5032	1.1723
58	-0.9527	0.3467	2.0897	0.3036	-0.5842	1.2575
59	-0.7992	0.2904	1.9496	0.3173	-0.6615	1.2422
60	-1.0819	0.1533	1.8718	0.3047	-0.7607	1.0674
61	-0.5352	0.224	1.663	0.2233	-0.4458	0.8938
62	-0.3749	0.2531	1.5002	0.1935	-0.3275	0.8338
63	-0.542	0.2367	1.5954	0.2298	-0.4527	0.926
64	-1.1365	0.1994	1.8398	0.2907	-0.6726	1.0713
65	-1.434	-0.0837	0.5138	0.2039	-0.6954	0.5281
66	-0.9991	-0.0568	0.3298	0.1505	-0.5082	0.3946
67	-1.4573	-0.0006	0.3675	0.1248	-0.3752	0.3739
68	-0.9953	0.0267	0.6137	0.1589	-0.4501	0.5035
69	-1.7311	-0.1101	0.368	0.2054	-0.7262	0.5061
70	-1.5252	-0.1051	0.3288	0.1858	-0.6624	0.4522
71	-1.1027	-0.0398	0.3634	0.1477	-0.4827	0.4034
72	-1.1536	-0.005	0.4225	0.1566	-0.4749	0.4649
73	-1.6922	-0.1065	0.657	0.2163	-0.7555	0.5424
74	-1.012	-0.0816	0.3855	0.1512	-0.5351	0.3719
75	-0.9502	-0.0319	0.5156	0.1328	-0.4303	0.3665
76	-1.0356	0.0098	0.5634	0.1696	-0.4991	0.5187
77	-2.1138	-0.2667	0.819	0.282	-1.1128	0.5794
78	-1.6556	-0.1047	0.5664	0.205	-0.7197	0.5102
79	-0.8527	-0.0017	0.5898	0.1284	-0.39	0.3866
80	-0.7425	0.0312	0.653	0.1016	-0.2737	0.3361
81	-0.6056	0.0427	0.6336	0.0967	-0.2474	0.3327
82	-0.7559	0.0572	0.599	0.1148	-0.2873	0.4017
83	-1.7127	-0.2494	0.6429	0.2687	-1.0555	0.5568
84	-1.8659	-0.1158	0.6853	0.2092	-0.7435	0.5119
85	-1.0789	0.0171	0.5746	0.1165	-0.3324	0.3666
86	-0.7464	0.0381	0.7894	0.102	-0.2679	0.3442
87	-0.6476	0.0481	0.6244	0.0948	-0.2383	0.3305
88	-0.4936	0.0482	0.6799	0.0937	-0.2329	0.3292
89	-0.5764	0.0593	0.6003	0.1159	-0.2883	0.4069
90	-2.1316	-0.1983	0.5824	0.2704	-1.0076	0.615
91	-1.7063	-0.079	0.4989	0.1946	-0.6627	0.5048
92	-0.6811	0.0204	0.6548	0.1032	-0.2891	0.33
93	-0.5329	0.0604	0.6789	0.0883	-0.2044	0.3252
94	-0.3717	0.0711	0.5368	0.0877	-0.1919	0.3341
95	-0.4279	0.0921	0.735	0.1188	-0.2643	0.4486

B/H=2 N=3 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.2128	1.0129	1.7671	0.2492	0.2653	1.7605
1	-2.1936	-0.2161	0.6333	0.2839	-1.0677	0.6355
2	-2.5769	-0.2128	0.8692	0.2984	-1.1081	0.6825
3	-1.9123	-0.1977	0.928	0.2891	-1.065	0.6696
4	-2.3292	-0.1816	0.8337	0.2896	-1.0503	0.6871
5	-1.956	-0.1992	0.5883	0.3011	-1.1025	0.7041
6	-1.7574	-0.2477	0.6696	0.307	-1.1686	0.6732
7	-2.4643	-0.2842	0.522	0.3055	-1.2007	0.6322
8	-1.2131	-0.05	0.4657	0.1409	-0.4726	0.3726
9	-1.8355	-0.0474	0.5273	0.1592	-0.5251	0.4303
10	-1.44	-0.0273	0.5731	0.1733	-0.5473	0.4926
11	-1.3039	-0.024	0.4955	0.1763	-0.5529	0.505
12	-1.7233	-0.0636	0.5345	0.197	-0.6547	0.5274
13	-1.0736	-0.062	0.4622	0.1483	-0.5068	0.3827
14	-1.0648	-0.005	0.5206	0.1216	-0.3699	0.36
15	-0.7984	0.0088	0.5449	0.1209	-0.3539	0.3715
16	-0.8037	0.0137	0.512	0.1252	-0.3617	0.3892
17	-1.0875	0.0184	0.4846	0.1143	-0.3246	0.3613
18	-0.6084	0.0367	0.5118	0.102	-0.2693	0.3427
19	-0.6979	0.0436	0.4834	0.1003	-0.2573	0.3446
20	-1.1021	0.0149	0.4638	0.1178	-0.3385	0.3683
21	-0.8186	0.0349	0.4375	0.1032	-0.2748	0.3447
22	-0.5365	0.0476	0.4567	0.0957	-0.2394	0.3346
23	-0.4664	0.0514	0.5302	0.0942	-0.2312	0.3341
24	-0.5349	0.0456	0.5093	0.0931	-0.2337	0.325
25	-0.8797	0.0094	0.4024	0.1153	-0.3366	0.3555
26	-1.1041	0.0305	0.5031	0.1046	-0.2833	0.3442
27	-0.9947	0.0427	0.5073	0.0963	-0.2463	0.3318
28	-0.4769	0.0563	0.4371	0.0845	-0.1971	0.3098
29	-0.5071	0.0533	0.4112	0.0826	-0.1946	0.3011
30	-0.455	0.0531	0.435	0.0827	-0.1949	0.3011
31	-1.1041	0.0305	0.5031	0.1046	-0.2833	0.3442
32	-1.1913	0.0392	0.4817	0.0997	-0.26	0.3384
33	-0.936	0.0504	0.4654	0.0911	-0.2229	0.3238
34	-0.3496	0.062	0.4406	0.081	-0.1811	0.3051
35	-0.3629	0.0597	0.4546	0.0792	-0.178	0.2974
36	-0.3659	0.0581	0.404	0.0784	-0.1799	0.2962
37	-0.9152	0.0388	0.4822	0.097	-0.2523	0.3298
38	-0.9038	0.0404	0.4494	0.0996	-0.2585	0.3394
39	-0.8413	0.0466	0.4299	0.0916	-0.228	0.3213
40	-0.3226	0.0541	0.4174	0.0799	-0.1856	0.2939
41	-0.3079	0.0586	0.4304	0.0765	-0.1709	0.2882
42	-0.3221	0.0604	0.4093	0.0783	-0.1746	0.2953
43	-0.8001	0.04	0.4599	0.0978	-0.2533	0.3333
44	-0.6134	0.0271	0.5781	0.1294	-0.3612	0.4153
45	-0.6329	0.0197	0.6094	0.135	-0.3855	0.4248
46	-0.6128	0.0166	0.4644	0.1202	-0.3441	0.3772
47	-0.4028	0.0321	0.3827	0.0931	-0.2473	0.3115
48	-0.5319	0.0331	0.4473	0.1144	-0.3102	0.3764
49	-0.7132	0.037	0.5771	0.1275	-0.3455	0.4195
50	-0.9076	0.2994	2.4524	0.3386	-0.7164	1.3152
51	-0.8339	0.4012	2.9915	0.3606	-0.6805	1.4828
52	-0.7265	0.4524	2.2114	0.3596	-0.6264	1.5313
53	-0.7351	0.4492	2.2256	0.3636	-0.6418	1.54
54	-0.8457	0.3879	2.1082	0.3546	-0.6759	1.4517
55	-0.8208	0.2022	2.139	0.3206	-0.7596	1.164
56	-0.6064	0.2988	2.3634	0.2921	-0.5796	1.1732
57	-1.0302	0.3431	1.9647	0.2833	-0.5068	1.193
58	-0.6377	0.3605	1.917	0.3096	-0.5684	1.2894
59	-0.8262	0.3149	2.026	0.334	-0.6871	1.317
60	-0.9236	0.1436	2.313	0.3004	-0.7575	1.0447
61	-0.504	0.2198	1.7127	0.2234	-0.4503	0.8899
62	-0.3872	0.2575	1.4391	0.2033	-0.3523	0.8673
63	-0.9578	0.266	1.5418	0.2435	-0.4644	0.9965
64	-0.9900	0.2349	1.7497	0.3094	-0.6934	1.1633
65	-1.7142	-0.0533	0.5076	0.2044	-0.6666	0.56
66	-1.2792	-0.0473	0.4088	0.1539	-0.509	0.4144
67	-1.0716	-0.0138	0.4712	0.1415	-0.4383	0.4108
68	-1.487	0.0075	0.4771	0.1817	-0.5374	0.5525
69	-1.435	-0.0714	0.4285	0.2007	-0.6734	0.5307
70	-1.4422	-0.092	0.3439	0.1853	-0.6481	0.464
71	-1.1968	-0.0602	0.3448	0.167	-0.5613	0.4409
72	-1.3639	-0.0267	0.442	0.1775	-0.5592	0.5058
73	-1.2866	-0.0768	0.6698	0.2123	-0.7136	0.5604
74	-0.9432	-0.0884	0.4744	0.1527	-0.5264	0.3897
75	-1.0635	-0.0423	0.4692	0.1476	-0.485	0.4004
76	-1.2122	-0.0119	0.5771	0.1935	-0.5925	0.5686
77	-2.4636	-0.2518	0.9082	0.2876	-1.1145	0.611
78	-1.5443	-0.082	0.8579	0.2027	-0.6902	0.5262
79	-1.1222	0.0159	0.6558	0.1298	-0.3735	0.4053
80	-1.2483	0.0333	0.7189	0.1042	-0.2792	0.3459
81	-0.6035	0.047	0.6775	0.1011	-0.2563	0.3504
82	-0.8696	0.0452	0.5392	0.1242	-0.3275	0.4179
83	-1.6336	-0.2443	0.902	0.2758	-1.0717	0.5832
84	-1.3135	-0.0982	0.8372	0.2118	-0.7335	0.537
85	-0.8729	0.0346	0.6352	0.1186	-0.3214	0.3905
86	-0.6502	0.0488	0.613	0.1047	-0.2672	0.3608
87	-0.4035	0.0549	0.6464	0.0998	-0.2438	0.3537
88	-0.5083	0.0535	0.6347	0.0992	-0.2441	0.351
89	-0.6399	0.0466	0.5568	0.1273	-0.3354	0.4287
90	-2.1357	-0.1862	0.8769	0.2738	-1.0077	0.6353
91	-1.441	-0.0645	0.7838	0.199	-0.6617	0.5326
92	-0.7553	0.0386	0.6428	0.1089	-0.288	0.3852
93	-0.8356	0.0608	0.6698	0.0926	-0.2175	0.3391
94	-0.4576	0.0725	0.6255	0.0942	-0.2101	0.3551
95	-0.5939	0.072	1.1528	0.1299	-0.3178	0.4618

B/H=2 N=8 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.2139	0.9829	1.7622	0.2488	0.2364	1.7294
1	-2.6345	-0.2101	0.6171	0.2769	-1.0407	0.6206
2	-2.0321	-0.2039	0.6648	0.2892	-1.0714	0.6636
3	-2.1337	-0.1897	0.6363	0.2867	-1.0499	0.6705
4	-3.7337	-0.1692	0.7003	0.2925	-1.0466	0.7082
5	-2.0078	-0.2019	0.7866	0.3157	-1.1489	0.7451
6	-2.4923	-0.2551	0.9001	0.3264	-1.2343	0.7241
7	-2.2452	-0.2958	0.5659	0.3256	-1.2726	0.6809
8	-1.4416	-0.0427	0.6585	0.1396	-0.4615	0.3762
9	-1.4622	-0.0425	0.5448	0.1549	-0.5072	0.4222
10	-1.2082	-0.0127	0.598	0.1699	-0.5224	0.4971
11	-1.5594	-0.0153	0.6255	0.1826	-0.5636	0.5331
12	-1.4967	-0.0597	0.6945	0.2158	-0.7072	0.5877
13	-1.4842	-0.0604	0.5594	0.1595	-0.539	0.4181
14	-1.102	0.0012	0.5258	0.1215	-0.3633	0.3659
15	-0.6849	0.0169	0.5042	0.119	-0.3401	0.374
16	-0.9471	0.0251	0.5608	0.1238	-0.3464	0.3956
17	-0.7019	0.0229	0.5294	0.1121	-0.3133	0.3592
18	-0.801	0.0415	0.4798	0.1016	-0.2634	0.3464
19	-0.6513	0.0499	0.462	0.1002	-0.2508	0.3506
20	-1.0852	0.017	0.5617	0.1168	-0.3334	0.3674
21	-0.6822	0.0363	0.4482	0.102	-0.2698	0.3424
22	-0.899	0.0523	0.4587	0.0957	-0.2347	0.3393
23	-0.3949	0.0579	0.4601	0.0938	-0.2235	0.3394
24	-0.5116	0.056	0.4881	0.0925	-0.2215	0.3335
25	-0.8291	0.0192	0.5173	0.1149	-0.3256	0.364
26	-0.8054	0.0337	0.4702	0.1031	-0.2755	0.3429
27	-0.8533	0.0458	0.4495	0.0952	-0.2398	0.3313
28	-0.4704	0.0605	0.4914	0.0854	-0.1957	0.3166
29	-0.4342	0.0588	0.421	0.0831	-0.1904	0.308
30	-0.4028	0.061	0.4945	0.0823	-0.186	0.308
31	-0.8054	0.0337	0.4702	0.1031	-0.2755	0.3429
32	-0.7947	0.0438	0.5234	0.0987	-0.2523	0.3399
33	-0.8995	0.0524	0.5708	0.0903	-0.2186	0.3233
34	-0.3521	0.0618	0.416	0.0812	-0.1819	0.3054
35	-0.4534	0.0664	0.4796	0.0791	-0.1709	0.3036
36	-0.3773	0.0677	0.4594	0.0794	-0.1704	0.3058
37	-1.5091	0.0482	0.5062	0.0971	-0.243	0.3394
38	-0.8428	0.0391	0.488	0.0969	-0.2517	0.3298
39	-0.5687	0.0453	0.475	0.0891	-0.2219	0.3124
40	-0.4274	0.0586	0.4207	0.0789	-0.1779	0.2952
41	-0.5568	0.0621	0.5202	0.0767	-0.168	0.2921
42	-0.4469	0.0675	0.3994	0.0781	-0.1668	0.3018
43	-0.8684	0.0496	0.5054	0.0962	-0.2389	0.3381
44	-0.7091	0.0177	0.584	0.1277	-0.3653	0.4009
45	-0.5594	0.0062	0.5258	0.1326	-0.3917	0.404
46	-0.4822	0.0087	0.4372	0.1164	-0.3405	0.3579
47	-0.6029	0.0369	0.4236	0.0902	-0.2336	0.3074
48	-0.4546	0.0458	0.5403	0.1111	-0.2875	0.3791
49	-0.7673	0.0582	0.5918	0.1273	-0.3238	0.4402
50	-0.914	0.3008	2.2787	0.3401	-0.7194	1.321
51	-0.6944	0.4075	2.4443	0.3588	-0.6689	1.4838
52	-0.492	0.4781	2.1069	0.362	-0.6078	1.564
53	-0.58	0.4868	2.2262	0.3701	-0.6236	1.5971
54	-0.7215	0.4236	2.1423	0.3546	-0.6403	1.4874
55	-0.9086	0.1983	2.2262	0.3195	-0.7602	1.1568
56	-0.6769	0.2993	1.8806	0.2863	-0.5595	1.158
57	-0.3999	0.3667	1.7052	0.2827	-0.4814	1.2147
58	-0.4897	0.3905	1.8757	0.3181	-0.5638	1.3449
59	-0.6389	0.345	2.0396	0.3357	-0.662	1.3521
60	-1.4842	0.1428	1.7824	0.3004	-0.7586	1.0439
61	-0.6361	0.2234	1.4335	0.2181	-0.431	0.8777
62	-0.3005	0.2778	1.2368	0.2072	-0.344	0.8995
63	-0.4821	0.3003	1.6038	0.2511	-0.453	1.0535
64	-1.2579	0.2656	2.0088	0.3134	-0.6746	1.2058
65	-1.2907	-0.073	0.4745	0.1988	-0.6694	0.5233
66	-1.2545	-0.0558	0.3401	0.1475	-0.4982	0.3867
67	-0.8839	0.0067	0.4278	0.1322	-0.3899	0.4033
68	-1.3088	0.039	0.5822	0.1725	-0.4784	0.5565
69	-1.2262	-0.0916	0.3956	0.198	-0.6857	0.5025
70	-1.1609	-0.1049	0.3089	0.1803	-0.6458	0.4359
71	-1.1841	-0.0463	0.2999	0.1551	-0.5114	0.4189
72	-1.1008	0.0011	0.4585	0.1683	-0.5037	0.506
73	-1.1712	-0.1058	0.5308	0.2123	-0.7428	0.5312
74	-0.9726	-0.0796	0.406	0.1526	-0.5375	0.3784
75	-0.9411	-0.0306	0.6383	0.142	-0.4565	0.3952
76	-1.2369	0.0191	0.7229	0.1854	-0.5372	0.5755
77	-1.8887	-0.2799	0.8128	0.2949	-1.1644	0.6047
78	-1.67	-0.1001	0.707	0.2161	-0.7484	0.5481
79	-1.2487	0.0204	0.6701	0.1282	-0.3643	0.4052
80	-0.5792	0.0371	0.5668	0.1007	-0.2649	0.3392
81	-0.6526	0.0532	0.6101	0.0987	-0.2429	0.3493
82	-0.7046	0.0614	0.5656	0.1221	-0.3047	0.4276
83	-2.0879	-0.2712	0.7801	0.2812	-1.1149	0.5724
84	-1.4796	-0.1157	0.7048	0.2246	-0.7893	0.558
85	-1.0507	0.0396	0.6154	0.1166	-0.3103	0.3894
86	-0.8174	0.0466	0.5891	0.1024	-0.2606	0.3539
87	-0.4686	0.0559	0.641	0.0958	-0.2315	0.3432
88	-0.4333	0.0584	0.5693	0.0968	-0.232	0.3487
89	-0.5907	0.0594	0.5978	0.1246	-0.3143	0.4331
90	-2.0262	-0.2156	0.7015	0.2876	-1.0785	0.6474
91	-1.3573	-0.0834	0.7288	0.2134	-0.7237	0.5569
92	-0.8625	0.0414	0.6391	0.1065	-0.278	0.3608
93	-0.3875	0.0575	0.6938	0.0907	-0.2146	0.3297
94	-0.3668	0.07	0.6005	0.0923	-0.2069	0.3468
95	-0.5022	0.0802	0.7585	0.126	-0.2977	0.458

B/H=4 N=1 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4802	1.1235	1.9781	0.2363	0.4147	1.8324
1	-3.3727	-0.753	0.237	0.3981	-1.9472	0.4411
2	-3.8054	-0.7267	0.2905	0.3882	-1.8913	0.439
3	-2.7474	-0.6918	0.3215	0.3532	-1.7515	0.3679
4	-3.6117	-0.6756	0.335	0.3522	-1.7321	0.3808
5	-3.0507	-0.6807	0.2685	0.3569	-1.7515	0.3901
6	-2.8338	-0.6754	0.3653	0.3479	-1.7191	0.3684
7	-3.0558	-0.672	0.253	0.3401	-1.6922	0.3482
8	-1.7781	-0.3756	0.2966	0.2211	-1.0389	0.2878
9	-1.9881	-0.4596	0.3246	0.2791	-1.297	0.3777
10	-2.2597	-0.47	0.6067	0.292	-1.3461	0.406
11	-2.1706	-0.4596	0.3602	0.2892	-1.3271	0.408
12	-3.0613	-0.4484	0.3851	0.2828	-1.2967	0.4
13	-1.542	-0.3486	0.2642	0.2047	-0.9627	0.2655
14	-1.693	-0.223	0.3244	0.1615	-0.7075	0.2616
15	-2.1035	-0.27	0.3995	0.203	-0.879	0.3389
16	-1.8295	-0.2944	0.4129	0.2261	-0.9726	0.3837
17	-1.8449	-0.1226	0.3601	0.1291	-0.5101	0.2648
18	-0.8516	-0.1125	0.4883	0.1158	-0.46	0.235
19	-0.9976	-0.1238	0.4812	0.1311	-0.5172	0.2695
20	-1.5668	-0.1259	0.3235	0.1527	-0.5841	0.3323
21	-1.3824	-0.0871	0.4127	0.1044	-0.4004	0.2262
22	-0.7614	-0.0925	0.5037	0.1136	-0.4331	0.2482
23	-1.31	-0.093	0.475	0.1153	-0.4388	0.2528
24	-1.2031	-0.0988	0.3974	0.1082	-0.4235	0.2259
25	-1.3278	-0.1417	0.3479	0.1468	-0.5819	0.2986
26	-1.2008	-0.0772	0.4483	0.1166	-0.4271	0.2727
27	-1.358	-0.0551	0.4878	0.1036	-0.3659	0.2557
28	-0.625	-0.0342	0.3534	0.0808	-0.2766	0.2092
29	-0.5642	-0.0362	0.3839	0.0807	-0.2784	0.206
30	-0.4307	-0.0358	0.3582	0.0791	-0.273	0.2013
31	-1.2008	-0.0772	0.4483	0.1166	-0.4271	0.2727
32	-0.8854	-0.0492	0.2744	0.0949	-0.3339	0.2356
33	-0.9295	-0.0278	0.2971	0.0934	-0.308	0.2524
34	-0.3774	-0.0029	0.2897	0.0712	-0.2164	0.2107
35	-0.4767	-0.016	0.2752	0.0714	-0.2303	0.1982
36	-0.4178	-0.0185	0.3383	0.07	-0.2286	0.1917
37	-0.8589	-0.0442	0.3101	0.0914	-0.3183	0.2299
38	-0.9917	-0.023	0.2885	0.0835	-0.2736	0.2276
39	-0.8208	-0.022	0.2701	0.083	-0.2711	0.2271
40	-0.5512	-0.016	0.2926	0.066	-0.2141	0.182
41	-0.4116	-0.0061	0.3003	0.0651	-0.2014	0.1893
42	-0.4622	-0.0036	0.3198	0.0661	-0.2019	0.1947
43	-0.8862	-0.0353	0.3586	0.0808	-0.2778	0.2071
44	-0.4795	-0.0159	0.2616	0.0662	-0.2144	0.1827
45	-0.5285	-0.0191	0.2639	0.0642	-0.2117	0.1734
46	-0.4011	-0.0218	0.216	0.0608	-0.2043	0.1607
47	-0.3016	-0.0171	0.2539	0.0574	-0.1893	0.155
48	-0.3924	-0.0164	0.2455	0.0632	-0.2061	0.1732
49	-0.74	-0.0208	0.2431	0.0689	-0.2276	0.186
50	-0.6369	0.4114	2.1367	0.3434	-0.6188	1.4415
51	-0.5435	0.4091	2.1372	0.3045	-0.5045	1.3226
52	-0.4833	0.4109	2.1671	0.311	-0.5221	1.344
53	-0.5227	0.3922	2.0209	0.3024	-0.5148	1.2993
54	-1.0014	0.3633	2.0427	0.3271	-0.618	1.3446
55	-0.7806	0.3723	2.0185	0.3254	-0.6039	1.3486
56	-0.3043	0.4452	2.1316	0.2617	-0.34	1.2303
57	-0.2562	0.4304	1.8929	0.2591	-0.3468	1.2076
58	-0.2769	0.4255	1.9265	0.258	-0.344	1.2039
59	-0.7191	0.3309	2.0583	0.3064	-0.5883	1.2502
60	-0.5585	0.2685	1.9147	0.2871	-0.5927	1.1297
61	-0.1941	0.3841	1.6094	0.2099	-0.2457	1.0139
62	-0.2769	0.3814	1.7019	0.1963	-0.2074	0.9702
63	-0.3063	0.3443	1.5012	0.2037	-0.2669	0.9554
64	-0.7309	0.2062	1.7222	0.2716	-0.6088	1.021
65	-0.4477	-0.0352	0.1881	0.0649	-0.2298	0.1594
66	-0.3429	-0.0375	0.1991	0.0642	-0.2302	0.1552
67	-0.5725	-0.0432	0.3002	0.066	-0.2413	0.1549
68	-0.3671	-0.0396	0.2162	0.0662	-0.2381	0.1589
69	-0.4263	-0.0404	0.1979	0.065	-0.2355	0.1547
70	-0.3922	-0.0433	0.24	0.064	-0.2352	0.1487
71	-0.3629	-0.043	0.2362	0.0662	-0.2416	0.1555
72	-0.4113	-0.0508	0.1837	0.0663	-0.2497	0.1481
73	-0.4558	-0.047	0.1978	0.0678	-0.2505	0.1565
74	-0.3749	-0.0509	0.2214	0.0683	-0.2557	0.1538
75	-0.3596	-0.0445	0.2845	0.0698	-0.254	0.165
76	-0.4419	-0.0478	0.2065	0.0711	-0.261	0.1655
77	-2.6709	-0.5981	0.5028	0.303	-1.4971	0.321
78	-1.8948	-0.3808	0.4244	0.2707	-1.1929	0.4313
79	-2.0948	-0.1559	0.3169	0.2026	-0.7636	0.4518
80	-1.1504	-0.0568	0.3185	0.1121	-0.3931	0.2795
81	-0.6719	-0.0248	0.3662	0.0826	-0.2725	0.2228
82	-0.4748	-0.0085	0.2999	0.067	-0.2094	0.1923
83	-2.3195	-0.5565	0.6188	0.2901	-1.4267	0.3137
84	-1.9682	-0.4085	0.5243	0.2789	-1.2392	0.4222
85	-1.6441	-0.1334	0.4381	0.1891	-0.7006	0.4337
86	-1.1059	-0.056	0.3709	0.1373	-0.4678	0.3558
87	-0.7759	-0.0372	0.3495	0.1046	-0.3511	0.2766
88	-0.5494	-0.0247	0.3631	0.085	-0.2795	0.2304
89	-0.3867	-0.0109	0.2705	0.0666	-0.2106	0.1888
90	-2.4932	-0.4719	0.5911	0.2788	-1.3083	0.3644
91	-1.8426	-0.3781	0.5537	0.2626	-1.1639	0.4117
92	-1.2312	-0.1425	0.4145	0.1711	-0.6559	0.3708
93	-0.8722	-0.0131	0.4076	0.0949	-0.2978	0.2716
94	-0.4575	0.0013	0.3761	0.0758	-0.226	0.2286
95	-0.3581	0.0134	0.2834	0.0666	-0.1884	0.2132

B/H=4 N=2 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4177	1.0884	1.9487	0.2429	0.3596	1.8171
1	-3.2715	-0.6971	0.1612	0.364	-1.7891	0.3949
2	-4.3782	-0.6801	0.1859	0.3654	-1.7762	0.4159
3	-2.9327	-0.6509	0.2939	0.336	-1.6589	0.3572
4	-3.3854	-0.638	0.2243	0.3395	-1.6566	0.3806
5	-3.4276	-0.6493	0.2604	0.3523	-1.7064	0.4077
6	-4.1731	-0.6295	0.4902	0.349	-1.6764	0.4174
7	-2.9344	-0.6338	0.4361	0.344	-1.6657	0.3981
8	-2.5208	-0.3366	0.2681	0.211	-0.9696	0.2964
9	-2.226	-0.4082	0.3394	0.2578	-1.1817	0.3653
10	-2.5225	-0.4327	0.3973	0.2804	-1.2738	0.4083
11	-2.4677	-0.4263	0.3362	0.2828	-1.2747	0.4221
12	-2.3387	-0.4096	0.52	0.278	-1.2435	0.4243
13	-1.8207	-0.3083	0.4085	0.2011	-0.9118	0.2951
14	-2.2051	-0.1883	0.3543	0.1583	-0.6632	0.2866
15	-1.8204	-0.2306	0.5201	0.1908	-0.8032	0.3419
16	-1.9398	-0.2569	0.4063	0.2144	-0.9002	0.3864
17	-1.5889	-0.0868	0.3803	0.1282	-0.4715	0.2979
18	-0.8063	-0.076	0.5439	0.1142	-0.4186	0.2665
19	-0.9081	-0.0887	0.5427	0.1266	-0.4688	0.2912
20	-1.3392	-0.0872	0.3634	0.1383	-0.5021	0.3277
21	-1.3477	-0.0554	0.4151	0.106	-0.3734	0.2627
22	-0.7695	-0.059	0.4674	0.1101	-0.3892	0.2712
23	-0.7874	-0.0611	0.4364	0.1125	-0.3986	0.2764
24	-1.1005	-0.0607	0.3728	0.1065	-0.3804	0.2599
25	-1.6889	-0.1071	0.3627	0.1402	-0.5276	0.3134
26	-0.9177	-0.0415	0.3197	0.1078	-0.365	0.282
27	-1.1607	-0.0241	0.324	0.0984	-0.3192	0.271
28	-0.3656	-0.0062	0.3201	0.0798	-0.2458	0.2333
29	-0.548	-0.0101	0.323	0.0804	-0.2514	0.2312
30	-0.5904	-0.0092	0.3402	0.0798	-0.2486	0.2302
31	-0.9177	-0.0415	0.3197	0.1078	-0.365	0.282
32	-0.7167	-0.0192	0.3221	0.0911	-0.2925	0.2542
33	-0.6635	-0.003	0.3487	0.0875	-0.2654	0.2565
34	-0.3166	0.0162	0.3248	0.0717	-0.1987	0.2312
35	-0.4458	0.0081	0.3653	0.0719	-0.2075	0.2237
36	-0.413	0.0062	0.3919	0.0714	-0.208	0.2204
37	-0.8384	-0.0206	0.3208	0.0912	-0.2941	0.2529
38	-0.8554	-0.0045	0.3071	0.0813	-0.2486	0.2365
39	-0.5863	-0.001	0.286	0.0781	-0.2353	0.2333
40	-0.4859	0.007	0.3484	0.0668	-0.1928	0.2068
41	-0.3041	0.014	0.3688	0.0648	-0.1805	0.2085
42	-0.4082	0.0148	0.3248	0.0662	-0.1839	0.2135
43	-0.8605	-0.0131	0.2852	0.0815	-0.2576	0.2314
44	-0.7179	0.0028	0.2692	0.0666	-0.1968	0.2025
45	-0.5535	-0.0009	0.2452	0.064	-0.193	0.1912
46	-0.3513	-0.0025	0.2198	0.0609	-0.185	0.18
47	-0.2474	0.0049	0.2635	0.0574	-0.1674	0.1772
48	-0.5042	-0.019	0.2298	0.0631	-0.2084	0.1704
49	-0.6059	-0.0192	0.2883	0.0701	-0.2296	0.1912
50	-0.8129	0.3951	1.9764	0.3251	-0.5801	1.3703
51	-0.7007	0.4156	2.0168	0.3003	-0.4853	1.3165
52	-0.6007	0.4158	2.0472	0.307	-0.5052	1.3368
53	-0.5912	0.4008	1.9933	0.3036	-0.5089	1.3115
54	-0.8089	0.3655	1.929	0.3218	-0.5999	1.331
55	-0.6121	0.3534	1.9298	0.309	-0.5735	1.2803
56	-0.2454	0.4438	2.1356	0.2579	-0.3298	1.2173
57	-0.3074	0.435	1.9128	0.2588	-0.3414	1.2115
58	-0.3579	0.4302	1.9785	0.2606	-0.3525	1.217
59	-0.7884	0.3315	1.9135	0.3018	-0.5739	1.2369
60	-0.5639	0.2525	1.677	0.2733	-0.5673	1.0723
61	-0.2748	0.3831	1.5949	0.2075	-0.2392	1.0055
62	-0.2118	0.3913	1.7061	0.201	-0.2119	0.9944
63	-0.2459	0.3585	1.5884	0.2052	-0.257	0.974
64	-0.5775	0.2151	2.1887	0.2704	-0.596	1.0263
65	-0.364	-0.0298	0.2299	0.0682	-0.2343	0.1747
66	-0.319	-0.0326	0.2163	0.0669	-0.2334	0.1681
67	-0.3502	-0.0333	0.2154	0.0676	-0.2362	0.1696
68	-0.4554	-0.0283	0.2104	0.0689	-0.235	0.1785
69	-0.3508	-0.0335	0.2288	0.0696	-0.2422	0.1752
70	-0.3253	-0.035	0.2005	0.0674	-0.2374	0.1673
71	-0.329	-0.0348	0.299	0.0682	-0.2392	0.17
72	-0.4675	-0.0386	0.2192	0.0694	-0.2467	0.1695
73	-0.3994	-0.0403	0.251	0.073	-0.2593	0.1787
74	-0.4021	-0.0439	0.2447	0.0721	-0.2603	0.1726
75	-0.367	-0.0415	0.3031	0.0718	-0.2568	0.1739
76	-0.5175	-0.0393	0.1927	0.0736	-0.2602	0.1816
77	-2.2432	-0.5595	0.5392	0.3038	-1.4708	0.3518
78	-2.4338	-0.3607	0.3737	0.2706	-1.1726	0.4513
79	-1.6673	-0.1381	0.3469	0.1977	-0.7311	0.4549
80	-1.3204	-0.0452	0.3725	0.1117	-0.3803	0.2899
81	-0.5457	-0.0174	0.3328	0.0821	-0.2637	0.2299
82	-0.5319	-0.0066	0.2513	0.068	-0.2106	0.1973
83	-2.5356	-0.5302	0.6199	0.2887	-1.3902	0.3297
84	-2.4043	-0.3925	0.5001	0.2789	-1.2291	0.4442
85	-1.3826	-0.1218	0.5418	0.185	-0.677	0.4333
86	-1.2408	-0.0493	0.3906	0.1314	-0.4434	0.3448
87	-0.9449	-0.0271	0.3613	0.1009	-0.3298	0.2755
88	-0.6815	-0.0199	0.3445	0.0841	-0.2722	0.2324
89	-0.3663	-0.0111	0.3381	0.0668	-0.2107	0.1886
90	-2.8864	-0.4525	0.4811	0.2729	-1.2713	0.3663
91	-1.7275	-0.366	0.4916	0.2599	-1.1457	0.4136
92	-1.0683	-0.1308	0.4493	0.1701	-0.6409	0.3794
93	-0.8362	-0.0117	0.3633	0.094	-0.2937	0.2703
94	-0.635	0.0038	0.3735	0.0749	-0.2212	0.2285
95	-0.3421	0.0081	0.257	0.0661	-0.1903	0.2065

B/H=4 N=3 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.3871	1.0413	1.8226	0.2439	0.3097	1.7729
1	-3.0372	-0.6697	0.1927	0.3829	-1.8185	0.4791
2	-4.0098	-0.6537	0.3199	0.3797	-1.7926	0.4854
3	-3.2751	-0.6193	0.295	0.3453	-1.6553	0.4168
4	-3.0566	-0.6038	0.3771	0.3425	-1.6312	0.4236
5	-3.1516	-0.608	0.4437	0.3519	-1.6638	0.4479
6	-2.8939	-0.5951	0.31	0.3381	-1.6093	0.4191
7	-2.9371	-0.5928	0.3525	0.3398	-1.6121	0.4265
8	-1.6604	-0.3054	0.311	0.2074	-0.9276	0.3168
9	-2.0729	-0.385	0.3241	0.2601	-1.1653	0.3952
10	-2.1126	-0.4126	0.4123	0.2848	-1.2669	0.4417
11	-2.5196	-0.4031	0.4872	0.2817	-1.2482	0.4419
12	-2.2544	-0.3874	0.4327	0.2743	-1.2102	0.4354
13	-2.1605	-0.2856	0.361	0.2005	-0.8872	0.316
14	-2.0174	-0.1665	0.3256	0.1561	-0.6348	0.3018
15	-1.3511	-0.2064	0.429	0.1898	-0.7757	0.3629
16	-1.5204	-0.2371	0.5917	0.2177	-0.8901	0.4159
17	-1.7604	-0.0701	0.3764	0.1344	-0.4731	0.333
18	-0.9366	-0.053	0.4637	0.1151	-0.3984	0.2924
19	-1.1528	-0.0638	0.6638	0.1286	-0.4495	0.3218
20	-1.673	-0.0705	0.3863	0.1479	-0.5144	0.3733
21	-1.403	-0.0324	0.4122	0.1097	-0.3616	0.2967
22	-1.1381	-0.0339	0.494	0.1133	-0.3739	0.3061
23	-0.823	-0.0367	0.4729	0.1168	-0.3871	0.3137
24	-0.8182	-0.0389	0.4999	0.1081	-0.3631	0.2852
25	-1.4979	-0.0837	0.3934	0.1403	-0.5045	0.3371
26	-1.1825	-0.0255	0.3555	0.1172	-0.377	0.326
27	-1.4432	-0.0089	0.3717	0.1057	-0.3261	0.3082
28	-0.6741	0.0161	0.3993	0.0842	-0.2366	0.2687
29	-0.544	0.0131	0.3576	0.0847	-0.2411	0.2673
30	-1.018	0.0142	0.4143	0.0823	-0.2327	0.2611
31	-1.1825	-0.0255	0.3555	0.1172	-0.377	0.326
32	-0.9799	-0.0028	0.3504	0.0995	-0.3013	0.2957
33	-1.078	0.0162	0.3334	0.0952	-0.2695	0.3019
34	-0.7605	0.0405	0.3928	0.0761	-0.1878	0.2688
35	-0.5872	0.0326	0.4295	0.0757	-0.1944	0.2596
36	-0.503	0.028	0.4456	0.0745	-0.1954	0.2515
37	-0.7928	0.0031	0.3829	0.0941	-0.2791	0.2852
38	-0.9837	0.0168	0.3231	0.0888	-0.2497	0.2829
39	-0.8769	0.0206	0.315	0.086	-0.2374	0.2785
40	-0.4161	0.0265	0.3959	0.0705	-0.1849	0.2379
41	-0.4007	0.0376	0.3841	0.0698	-0.1717	0.247
42	-0.2911	0.0395	0.3453	0.0698	-0.1699	0.2489
43	-0.7229	0.0097	0.3197	0.0847	-0.2444	0.2637
44	-0.5803	0.0241	0.3132	0.0709	-0.1887	0.2369
45	-0.4964	0.0224	0.3216	0.0688	-0.1839	0.2286
46	-0.3888	0.0193	0.2932	0.0653	-0.1765	0.2151
47	-0.2539	0.0288	0.2825	0.0625	-0.1586	0.2162
48	-0.3874	-0.0108	0.2864	0.0671	-0.212	0.1904
49	-0.5561	-0.0153	0.294	0.0733	-0.2352	0.2046
50	-0.8008	0.3932	2.6039	0.3226	-0.5747	1.3611
51	-0.6045	0.4201	2.3507	0.3069	-0.5007	1.3409
52	-0.5179	0.4205	2.0404	0.3118	-0.5148	1.3558
53	-1.3897	0.3981	2.1772	0.3068	-0.5222	1.3184
54	-0.6229	0.3574	2.0537	0.3282	-0.6271	1.3419
55	-0.7665	0.3507	2.3917	0.3056	-0.5661	1.2675
56	-0.3521	0.4513	2.0043	0.2669	-0.3484	1.252
57	-0.3006	0.4335	2.0496	0.2681	-0.3707	1.2376
58	-0.4733	0.4336	2.0096	0.2642	-0.359	1.2261
59	-0.7727	0.3295	2.1198	0.3063	-0.5894	1.2483
60	-0.8629	0.2502	1.6778	0.276	-0.5777	1.0781
61	-0.3057	0.3903	1.897	0.2162	-0.2584	1.0389
62	-0.1989	0.3913	1.6802	0.2068	-0.229	1.0116
63	-0.2535	0.3574	1.7767	0.208	-0.2666	0.9815
64	-0.7058	0.2144	2.0207	0.2691	-0.593	1.0217
65	-0.4033	-0.0283	0.2553	0.0688	-0.2345	0.178
66	-0.438	-0.0281	0.2241	0.069	-0.2351	0.179
67	-0.5107	-0.0313	0.226	0.0712	-0.2446	0.1822
68	-0.508	-0.0259	0.2581	0.0719	-0.2415	0.1897
69	-0.414	-0.0323	0.2762	0.07	-0.2423	0.1776
70	-0.4064	-0.0322	0.2324	0.07	-0.2421	0.1778
71	-0.5794	-0.0291	0.2276	0.0719	-0.2446	0.1865
72	-0.556	-0.0379	0.2238	0.0728	-0.2562	0.1804
73	-0.5045	-0.0385	0.2845	0.0731	-0.2579	0.1809
74	-0.3772	-0.0428	0.2427	0.0736	-0.2637	0.1781
75	-0.6395	-0.037	0.2421	0.0747	-0.2612	0.1872
76	-0.4551	-0.0376	0.2303	0.0767	-0.2675	0.1924
77	-2.4597	-0.5284	0.6823	0.3002	-1.4291	0.3723
78	-1.969	-0.3513	0.544	0.2644	-1.1444	0.4417
79	-1.5635	-0.1333	0.4028	0.1975	-0.7257	0.4592
80	-1.1955	-0.0402	0.3955	0.1132	-0.3797	0.2993
81	-0.7657	-0.0151	0.4281	0.0846	-0.289	0.2388
82	-0.417	-0.0034	0.2715	0.0705	-0.2151	0.2082
83	-2.7004	-0.5015	0.9367	0.2886	-1.3673	0.3644
84	-2.1655	-0.3807	0.7447	0.2737	-1.202	0.4405
85	-1.6101	-0.1198	0.4549	0.1863	-0.6787	0.4391
86	-1.2403	-0.0429	0.3694	0.1336	-0.4438	0.358
87	-1.1917	-0.0229	0.3981	0.106	-0.3409	0.2951
88	-0.5818	-0.0163	0.3561	0.0875	-0.2789	0.2463
89	-0.3742	-0.0057	0.2956	0.0692	-0.2132	0.2019
90	-2.6582	-0.4308	0.7089	0.2747	-1.255	0.3934
91	-2.1311	-0.3475	0.701	0.2603	-1.1283	0.4334
92	-1.3457	-0.1243	0.4266	0.1716	-0.6392	0.3906
93	-1.0758	-0.0039	0.4275	0.097	-0.2948	0.287
94	-0.5313	0.0097	0.3616	0.0777	-0.2234	0.2428
95	-0.3148	0.0182	0.3285	0.0687	-0.1879	0.2242

B/H=4 N=8 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.3203	0.9787	2.072	0.2449	0.2439	1.7134
1	-4.1124	-0.6845	0.218	0.3946	-1.8683	0.4994
2	-3.5682	-0.673	0.5008	0.3904	-1.8443	0.4982
3	-3.049	-0.6436	0.4875	0.3568	-1.7141	0.4268
4	-2.7635	-0.6356	0.3564	0.357	-1.7065	0.4353
5	-3.2485	-0.6485	0.3475	0.3711	-1.7618	0.4648
6	-3.1487	-0.6299	0.5174	0.3617	-1.715	0.4552
7	-2.8481	-0.6204	0.3315	0.3512	-1.674	0.4333
8	-2.2521	-0.3313	0.4273	0.2224	-0.9964	0.3359
9	-2.43	-0.4071	0.4153	0.2767	-1.2371	0.4228
10	-2.2708	-0.4271	0.4357	0.2957	-1.3142	0.4599
11	-2.5188	-0.4239	0.4578	0.2949	-1.3086	0.4607
12	-2.0601	-0.4101	0.4307	0.2875	-1.2725	0.4524
13	-2.129	-0.3059	0.2307	0.2089	-0.9326	0.3208
14	-2.0161	-0.1879	0.4249	0.1656	-0.6846	0.3088
15	-1.8827	-0.2282	0.5376	0.2025	-0.8358	0.3794
16	-1.9883	-0.2543	0.4938	0.2262	-0.9326	0.4242
17	-1.6563	-0.0849	0.4067	0.1319	-0.4805	0.3107
18	-1.0981	-0.0719	0.4805	0.1209	-0.4346	0.2908
19	-1.2992	-0.0824	0.5064	0.135	-0.4875	0.3226
20	-1.2668	-0.0856	0.4732	0.1458	-0.5229	0.3518
21	-1.0969	-0.052	0.5116	0.1123	-0.389	0.285
22	-0.8997	-0.0512	0.4993	0.1163	-0.4	0.2977
23	-0.8246	-0.0547	0.4525	0.1199	-0.4144	0.305
24	-0.8061	-0.0503	0.5039	0.1133	-0.3902	0.2896
25	-1.4392	-0.1	0.4283	0.1458	-0.5373	0.3373
26	-0.8713	-0.032	0.4148	0.1122	-0.3685	0.3045
27	-1.0583	-0.0143	0.3951	0.102	-0.3204	0.2918
28	-0.4608	0.0016	0.3902	0.0882	-0.263	0.2662
29	-0.5322	-0.0023	0.4092	0.0877	-0.2655	0.2608
30	-0.5193	-0.0017	0.4208	0.0858	-0.2591	0.2557
31	-0.8713	-0.032	0.4148	0.1122	-0.3685	0.3045
32	-1.0908	-0.0086	0.3798	0.0985	-0.3039	0.2868
33	-0.9555	0.0025	0.3971	0.0941	-0.2797	0.2847
34	-0.3372	0.0199	0.4207	0.0794	-0.2184	0.2582
35	-0.6193	0.02	0.3781	0.0793	-0.218	0.2579
36	-0.3932	0.0196	0.4269	0.0787	-0.2164	0.2557
37	-1.0983	-0.0096	0.298	0.1006	-0.3113	0.2922
38	-1.2214	0.0022	0.3795	0.0889	-0.2644	0.2689
39	-1.5906	0.0091	0.3885	0.0871	-0.2529	0.2705
40	-0.3604	0.0274	0.3953	0.0739	-0.1943	0.2492
41	-0.2574	0.0295	0.3591	0.0726	-0.1883	0.2473
42	-0.3762	0.0272	0.3462	0.0739	-0.1946	0.249
43	-0.8242	0.0002	0.3958	0.0902	-0.2703	0.2707
44	-0.6919	0.014	0.3472	0.0747	-0.21	0.2379
45	-0.4978	0.0071	0.3089	0.0719	-0.2086	0.2227
46	-0.2034	0.0091	0.2906	0.068	-0.1948	0.213
47	-0.4217	0.0178	0.3257	0.0642	-0.1747	0.2103
48	-0.4809	-0.0023	0.2927	0.07	-0.2122	0.2077
49	-0.6782	-0.0008	0.329	0.076	-0.2349	0.2333
50	-1.117	0.3958	2.3081	0.336	-0.6121	1.4037
51	-0.6158	0.4331	2.1306	0.3196	-0.5258	1.3921
52	-0.5768	0.4375	2.353	0.3294	-0.5508	1.4257
53	-0.4276	0.4366	2.6123	0.3263	-0.5422	1.4155
54	-0.8369	0.3831	2.078	0.3342	-0.6197	1.3858
55	-0.8945	0.3631	2.3126	0.3251	-0.6122	1.3384
56	-0.3822	0.4645	1.9847	0.2815	-0.3799	1.3088
57	-0.2517	0.4665	2.4357	0.2863	-0.3923	1.3253
58	-0.2509	0.4579	2.3103	0.2842	-0.3947	1.3105
59	-0.7484	0.3406	1.8778	0.3117	-0.5944	1.2756
60	-0.7881	0.2648	1.9502	0.2896	-0.604	1.1336
61	-0.2171	0.4042	1.7737	0.2286	-0.2816	1.0899
62	-0.1461	0.4112	1.9016	0.2217	-0.2539	1.0764
63	-0.2153	0.3887	1.744	0.2209	-0.2739	1.0513
64	-0.6095	0.2214	1.582	0.2693	-0.5866	1.0294
65	-0.5811	-0.0244	0.2277	0.0755	-0.2509	0.202
66	-0.4731	-0.03	0.2281	0.0734	-0.25	0.1901
67	-0.5087	-0.0273	0.2499	0.0731	-0.2466	0.192
68	-0.503	-0.0209	0.2933	0.0745	-0.2443	0.2025
69	-0.6225	-0.027	0.2162	0.0768	-0.2575	0.2035
70	-0.5279	-0.0324	0.2374	0.0746	-0.2561	0.1912
71	-0.4752	-0.0339	0.2071	0.0731	-0.2531	0.1854
72	-0.5678	-0.0333	0.2582	0.0745	-0.2568	0.1902
73	-0.5939	-0.0419	0.2726	0.0788	-0.2783	0.1945
74	-0.6506	-0.0407	0.2311	0.0773	-0.2726	0.1911
75	-0.5363	-0.04	0.2726	0.0763	-0.2689	0.1889
76	-0.4931	-0.0322	0.2642	0.0782	-0.2669	0.2024
77	-2.5206	-0.5308	0.7269	0.3087	-1.4569	0.3954
78	-2.4693	-0.3536	0.5925	0.2744	-1.1768	0.4695
79	-1.7977	-0.1343	0.4533	0.2126	-0.7722	0.5036
80	-1.3371	-0.0419	0.4509	0.1212	-0.4056	0.3217
81	-0.9572	-0.0119	0.3739	0.0904	-0.2831	0.2592
82	-0.6261	-0.0037	0.3571	0.0748	-0.2276	0.2201
83	-2.2688	-0.5045	0.9564	0.2933	-1.3845	0.3754
84	-2.672	-0.3849	0.8333	0.285	-1.24	0.4702
85	-1.7842	-0.1143	0.4941	0.2032	-0.724	0.4953
86	-1.2856	-0.0442	0.5284	0.146	-0.4823	0.3938
87	-0.9341	-0.0131	0.4057	0.1112	-0.3468	0.3205
88	-0.7256	-0.0039	0.4031	0.0922	-0.2805	0.2728
89	-0.5908	0.0005	0.3408	0.0735	-0.2199	0.2208
90	-2.8864	-0.4271	1.005	0.2799	-1.2667	0.4125
91	-2.1178	-0.3486	0.8458	0.2668	-1.1491	0.452
92	-1.4588	-0.1133	0.5238	0.1806	-0.6551	0.4285
93	-0.769	0.0004	0.3776	0.1018	-0.305	0.3057
94	-0.4467	0.0189	0.3533	0.0827	-0.2293	0.2671
95	-0.3437	0.0205	0.365	0.0726	-0.1979	0.2383

B/H=6 N=1 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4694	1.1368	1.8671	0.2393	0.419	1.6546
1	-3.6352	-0.875	0.0816	0.4251	-2.1503	0.4002
2	-3.8746	-0.8371	0.1124	0.4	-2.0372	0.363
3	-4.3929	-0.7926	0.1768	0.3623	-1.8796	0.2944
4	-3.1525	-0.7375	0.1255	0.3381	-1.752	0.2769
5	-3.4436	-0.7283	0.1773	0.3497	-1.7775	0.3209
6	-3.9304	-0.7306	0.2164	0.3423	-1.7636	0.2904
7	-3.2493	-0.794	0.1308	0.3659	-1.8917	0.3036
8	-2.444	-0.5681	0.4125	0.2816	-1.413	0.2768
9	-2.3537	-0.6875	0.335	0.328	-1.6516	0.3166
10	-3.3484	-0.6751	0.4132	0.3262	-1.6538	0.3035
11	-3.1193	-0.6596	0.4284	0.3317	-1.6546	0.3355
12	-2.8398	-0.645	0.3018	0.3153	-1.591	0.301
13	-2.0951	-0.5006	0.1709	0.2492	-1.2482	0.2471
14	-2.4692	-0.3799	0.4117	0.2229	-1.0484	0.2687
15	-2.1121	-0.4733	0.4603	0.2667	-1.2735	0.3269
16	-2.9304	-0.5148	0.5564	0.2898	-1.3842	0.3546
17	-1.7968	-0.1831	0.3762	0.1629	-0.6716	0.3055
18	-1.3976	-0.1925	0.6188	0.1632	-0.682	0.2971
19	-1.4292	-0.2353	0.6086	0.1892	-0.803	0.3324
20	-1.6177	-0.163	0.3483	0.1659	-0.6606	0.3347
21	-1.3311	-0.1329	0.5063	0.1342	-0.5355	0.2696
22	-1.4108	-0.1657	0.5577	0.1586	-0.6415	0.3101
23	-1.2374	-0.1865	0.4606	0.1663	-0.6854	0.3123
24	-1.0258	-0.1685	0.4227	0.1504	-0.6197	0.2827
25	-1.6385	-0.2021	0.3258	0.1662	-0.7007	0.2965
26	-1.0391	-0.078	0.3649	0.1228	-0.4464	0.2905
27	-1.2239	-0.0562	0.3388	0.1104	-0.3873	0.2748
28	-0.6934	-0.0447	0.4881	0.0966	-0.3346	0.2451
29	-1.1668	-0.0569	0.5134	0.0999	-0.3567	0.243
30	-0.6291	-0.0571	0.4275	0.0952	-0.3428	0.2285
31	-1.0391	-0.078	0.3649	0.1228	-0.4464	0.2905
32	-0.8547	-0.0431	0.3163	0.0999	-0.3428	0.2566
33	-0.9416	-0.0301	0.4343	0.0956	-0.3168	0.2566
34	-0.7003	-0.0156	0.4151	0.0772	-0.2473	0.2161
35	-0.5535	-0.0223	0.388	0.079	-0.2594	0.2148
36	-0.495	-0.0248	0.3829	0.0795	-0.2632	0.2136
37	-0.7561	-0.0601	0.3493	0.0974	-0.3524	0.2322
38	-0.9391	-0.0342	0.3492	0.0851	-0.2894	0.221
39	-0.7539	-0.0274	0.3122	0.084	-0.2793	0.2246
40	-0.6038	-0.0126	0.3209	0.0687	-0.2187	0.1935
41	-0.4247	-0.0129	0.3834	0.0682	-0.2177	0.1918
42	-0.4933	-0.0145	0.3601	0.0704	-0.2257	0.1966
43	-0.6356	-0.0436	0.3123	0.0846	-0.2981	0.2108
44	-0.5339	-0.0319	0.26	0.0655	-0.2284	0.1646
45	-0.3993	-0.0394	0.2287	0.0626	-0.227	0.1483
46	-0.345	-0.0392	0.2147	0.059	-0.2162	0.1378
47	-0.2942	-0.0385	0.2256	0.0584	-0.2078	0.1308
48	-0.4291	-0.0581	0.2482	0.0633	-0.249	0.1318
49	-0.562	-0.0524	0.2691	0.0711	-0.2656	0.1608
50	-0.527	0.4181	1.9145	0.3125	-0.5193	1.3555
51	-0.5236	0.4378	2.0725	0.2876	-0.425	1.3006
52	-0.3415	0.4143	2.2975	0.2835	-0.4361	1.2647
53	-0.4933	0.4095	2.3647	0.2816	-0.4353	1.2543
54	-0.6203	0.3535	1.7376	0.3046	-0.5604	1.2673
55	-0.6339	0.4012	2.4346	0.2961	-0.4872	1.2896
56	-0.19	0.5207	2.0962	0.2766	-0.3091	1.3505
57	-0.2372	0.4931	2.0172	0.2681	-0.3053	1.2915
58	-0.2863	0.4746	2.1038	0.2639	-0.3172	1.2663
59	-0.7519	0.3217	1.7264	0.2834	-0.5285	1.1718
60	-0.5952	0.3017	1.7547	0.2582	-0.4727	1.0762
61	-0.1178	0.4646	1.9692	0.2394	-0.2535	1.1827
62	-0.2266	0.4488	2.0048	0.2258	-0.2285	1.1261
63	-0.1961	0.4125	1.7983	0.2199	-0.2472	1.0722
64	-0.6269	0.1963	1.4869	0.2409	-0.5263	0.9189
65	-0.328	-0.0685	0.1682	0.063	-0.2575	0.1205
66	-0.3744	-0.0776	0.1436	0.0601	-0.2578	0.1026
67	-0.4597	-0.0835	0.1967	0.064	-0.2755	0.1086
68	-0.467	-0.0736	0.2453	0.0656	-0.2703	0.1231
69	-0.3706	-0.0693	0.1593	0.0632	-0.2589	0.1202
70	-0.3634	-0.0803	0.1466	0.06	-0.2601	0.0906
71	-0.4938	-0.0895	0.1801	0.0643	-0.2825	0.1034
72	-0.3961	-0.0877	0.2278	0.0659	-0.2853	0.1099
73	-0.3691	-0.0839	0.1486	0.0635	-0.2834	0.1157
74	-0.3517	-0.0869	0.1365	0.0632	-0.2767	0.1028
75	-0.3926	-0.0948	0.1789	0.0674	-0.2971	0.1074
76	-0.4026	-0.0869	0.2237	0.0693	-0.2948	0.121
77	-2.6713	-0.598	0.3518	0.2896	-1.4667	0.2707
78	-2.5685	-0.5035	0.409	0.2871	-1.3647	0.3577
79	-2.3669	-0.2588	0.408	0.2459	-0.9963	0.4788
80	-1.6941	-0.1126	0.5233	0.1457	-0.5495	0.3244
81	-1.023	-0.0613	0.4588	0.0996	-0.3601	0.2375
82	-0.5587	-0.0561	0.3221	0.0738	-0.2775	0.1653
83	-2.4021	-0.5864	0.6347	0.2716	-1.3814	0.2485
84	-2.2398	-0.5101	0.5239	0.2851	-1.3654	0.3452
85	-1.6801	-0.2543	0.7388	0.234	-0.9562	0.4477
86	-1.279	-0.1325	0.3852	0.1728	-0.6508	0.3858
87	-1.0452	-0.08	0.3702	0.1282	-0.4644	0.3045
88	-0.8592	-0.0618	0.3998	0.102	-0.3678	0.2441
89	-0.4961	-0.0588	0.2977	0.0718	-0.2743	0.1568
90	-2.5547	-0.4813	0.6263	0.2544	-1.2446	0.282
91	-2.0962	-0.4586	0.5245	0.2631	-1.2479	0.3307
92	-1.4435	-0.254	0.5167	0.2107	-0.886	0.3781
93	-0.8667	-0.0685	0.4548	0.1197	-0.4277	0.2907
94	-0.6823	-0.033	0.3504	0.0894	-0.3013	0.2353
95	-0.444	-0.0379	0.2559	0.0699	-0.2478	0.1719

B/H=6 N=2 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4172	1.0607	1.8671	0.248	0.3167	1.8048
1	-3.6164	-0.884	0.0772	0.4333	-2.1839	0.4159
2	-4.1316	-0.8521	0.0997	0.426	-2.13	0.4259
3	-3.4322	-0.7966	0.0889	0.3746	-1.9205	0.3272
4	-3.7302	-0.734	0.1345	0.3537	-1.7952	0.3271
5	-3.4478	-0.7177	0.1599	0.3595	-1.7961	0.3607
6	-3.8025	-0.739	0.242	0.3553	-1.8049	0.3268
7	-3.3233	-0.7914	0.0708	0.3869	-1.9519	0.3692
8	-2.6877	-0.5573	0.2664	0.2816	-1.4022	0.2875
9	-3.0532	-0.5555	0.1671	0.3271	-1.6369	0.3259
10	-3.1324	-0.6786	0.4723	0.3388	-1.689	0.3319
11	-3.2937	-0.6659	0.274	0.3373	-1.6779	0.346
12	-2.6104	-0.6554	0.3434	0.3267	-1.6356	0.3248
13	-2.1266	-0.4879	0.1438	0.2506	-1.2395	0.2638
14	-2.9263	-0.367	0.3031	0.22	-1.027	0.293
15	-1.8943	-0.467	0.4743	0.2655	-1.2634	0.3294
16	-2.4968	-0.5171	0.4598	0.2893	-1.3851	0.3509
17	-2.6825	-0.1858	0.4235	0.1669	-0.6866	0.3149
18	-1.4774	-0.1936	0.3893	0.1629	-0.6823	0.2951
19	-1.3645	-0.2357	0.5548	0.1851	-0.7909	0.3195
20	-1.9774	-0.1669	0.412	0.1715	-0.6814	0.3477
21	-1.7494	-0.1312	0.5125	0.1376	-0.544	0.2817
22	-1.0567	-0.1648	0.5675	0.1564	-0.634	0.3043
23	-1.1179	-0.1794	0.5035	0.1659	-0.6771	0.3184
24	-1.2723	-0.1703	0.4834	0.1528	-0.6266	0.2879
25	-1.5363	-0.2003	0.3682	0.1725	-0.7177	0.3172
26	-1.4477	-0.086	0.512	0.1284	-0.4712	0.2992
27	-1.8016	-0.0643	0.3531	0.1171	-0.4156	0.287
28	-0.5096	-0.0471	0.4434	0.0993	-0.3451	0.2509
29	-0.7328	-0.0522	0.4327	0.1013	-0.3562	0.2518
30	-0.6441	-0.0518	0.4862	0.0992	-0.3494	0.2458
31	-1.4477	-0.086	0.512	0.1284	-0.4712	0.2992
32	-1.2548	-0.0553	0.3489	0.1068	-0.3755	0.265
33	-1.2517	-0.0313	0.4351	0.1012	-0.335	0.2724
34	-0.6666	-0.006	0.3925	0.0816	-0.251	0.2389
35	-0.7885	-0.0209	0.3399	0.0823	-0.2679	0.2261
36	-0.5101	-0.0258	0.349	0.0823	-0.2727	0.2212
37	-1.0229	-0.0563	0.3339	0.1043	-0.3693	0.2567
38	-1.1898	-0.0283	0.3839	0.0927	-0.3063	0.2497
39	-1.1616	-0.024	0.3548	0.0898	-0.2933	0.2453
40	-0.5562	-0.0235	0.3541	0.0735	-0.244	0.1971
41	-0.4744	-0.0115	0.334	0.0719	-0.2273	0.2043
42	-0.4293	-0.0076	0.3363	0.0721	-0.2239	0.2087
43	-1.1459	-0.0436	0.267	0.0903	-0.3143	0.2272
44	-1.2472	-0.0334	0.2591	0.0708	-0.2459	0.179
45	-0.4789	-0.0356	0.2451	0.0673	-0.2375	0.1663
46	-0.3901	-0.0405	0.2199	0.0631	-0.2298	0.1488
47	-0.3762	-0.0361	0.2215	0.0603	-0.217	0.1447
48	-0.3863	-0.0616	0.1819	0.0671	-0.2628	0.1395
49	-0.6667	-0.0639	0.2241	0.076	-0.2919	0.1641
50	-0.6653	0.4101	2.0218	0.3181	-0.5442	1.3644
51	-0.2725	0.4401	2.1892	0.2953	-0.4457	1.3259
52	-0.2787	0.4253	2.2437	0.2855	-0.4312	1.2818
53	-0.3318	0.4054	2.0234	0.2838	-0.446	1.2568
54	-0.5125	0.3493	2.1131	0.3117	-0.586	1.2845
55	-0.5307	0.3827	2.0087	0.3019	-0.5229	1.2883
56	-0.2467	0.5204	2.3215	0.2806	-0.3215	1.3623
57	-0.1645	0.49	2.2958	0.2688	-0.3163	1.2963
58	-0.2633	0.4878	1.9713	0.2656	-0.309	1.2846
59	-0.5836	0.339	2.1648	0.2947	-0.5452	1.2232
60	-0.6405	0.28	1.8379	0.2655	-0.5164	1.0764
61	-0.2142	0.4565	1.6727	0.2382	-0.258	1.171
62	-0.1629	0.4476	2.0393	0.2227	-0.2206	1.1158
63	-0.3068	0.3977	1.7145	0.221	-0.2653	1.0606
64	-0.5563	0.2055	1.9494	0.2552	-0.5601	0.9711
65	-0.4437	-0.0808	0.1598	0.0673	-0.2829	0.1212
66	-0.4012	-0.0859	0.1541	0.0649	-0.2805	0.1088
67	-0.4048	-0.0911	0.1718	0.0688	-0.2975	0.1152
68	-0.4682	-0.085	0.1985	0.0714	-0.2992	0.1292
69	-0.4077	-0.0845	0.1497	0.0679	-0.2882	0.1193
70	-0.409	-0.0932	0.1376	0.0657	-0.2902	0.1038
71	-0.4122	-0.0872	0.1506	0.069	-0.2941	0.1197
72	-0.467	-0.1041	0.1699	0.0712	-0.3176	0.1095
73	-0.4276	-0.0945	0.1592	0.0711	-0.3078	0.1188
74	-0.4188	-0.0993	0.1567	0.0686	-0.3052	0.1065
75	-0.4415	-0.0925	0.1813	0.0723	-0.3093	0.1243
76	-0.4856	-0.0963	0.2073	0.0739	-0.3179	0.1253
77	-3.6833	-0.5978	0.4415	0.2913	-1.4716	0.2761
78	-2.2345	-0.5033	0.3132	0.2878	-1.3668	0.3599
79	-2.1908	-0.2624	0.6645	0.2488	-1.0089	0.4841
80	-1.4007	-0.1183	0.3366	0.1465	-0.5578	0.3212
81	-1.1942	-0.0658	0.3502	0.1014	-0.37	0.2385
82	-0.7916	-0.0565	0.2808	0.0771	-0.2879	0.1749
83	-2.1774	-0.5509	0.4076	0.2738	-1.3823	0.2604
84	-2.411	-0.5056	0.3826	0.2884	-1.3709	0.3597
85	-2.0099	-0.2579	0.4657	0.2363	-0.9668	0.4511
86	-1.4033	-0.1243	0.4788	0.1751	-0.6497	0.401
87	-1.2491	-0.0904	0.3859	0.1307	-0.4826	0.3019
88	-0.8205	-0.0676	0.3271	0.1031	-0.3769	0.2417
89	-0.4892	-0.063	0.2445	0.0745	-0.2865	0.1604
90	-2.8658	-0.475	0.5982	0.2604	-1.2562	0.3062
91	-2.0431	-0.4522	0.508	0.2669	-1.253	0.3487
92	-1.2515	-0.2609	0.5316	0.2083	-0.8857	0.3639
93	-0.9602	-0.0642	0.3613	0.1188	-0.4201	0.2916
94	-0.7529	-0.0345	0.3865	0.0892	-0.3021	0.2331
95	-0.3998	-0.0331	0.3089	0.0727	-0.251	0.1849

B/H=6 N=3 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4287	1.0498	1.9091	0.2392	0.3322	1.7673
1	-3.7218	-0.6936	0.3621	0.4391	-2.2108	0.4236
2	-3.9075	-0.8594	0.3697	0.4176	-2.112	0.3933
3	-3.411	-0.8032	0.2676	0.3741	-1.9254	0.3191
4	-4.6553	-0.7431	0.2791	0.3556	-1.8099	0.3238
5	-5.1383	-0.7274	0.1184	0.3717	-1.8425	0.3878
6	-3.4931	-0.7444	0.0688	0.3659	-1.8422	0.3534
7	-3.9537	-0.7984	0.1654	0.3847	-1.9526	0.3557
8	-2.9427	-0.5618	0.2022	0.2942	-1.4445	0.3209
9	-2.5978	-0.6704	0.3137	0.3381	-1.6845	0.3438
10	-2.4787	-0.6853	0.2852	0.3407	-1.7073	0.3367
11	-2.9011	-0.6656	0.3178	0.3461	-1.7038	0.3727
12	-3.1757	-0.6547	0.2693	0.3317	-1.6498	0.3404
13	-2.2834	-0.494	0.182	0.2589	-1.2707	0.2826
14	-2.5458	-0.3694	0.4084	0.2299	-1.059	0.3202
15	-2.1491	-0.4694	0.4039	0.2742	-1.2919	0.353
16	-2.4502	-0.5179	0.4377	0.2979	-1.4117	0.3759
17	-1.7552	-0.1828	0.5406	0.17	-0.6926	0.3271
18	-1.3713	-0.1866	0.4614	0.1639	-0.6782	0.3051
19	-1.6032	-0.2318	0.7433	0.1915	-0.8062	0.3426
20	-1.7736	-0.166	0.396	0.1803	-0.707	0.3749
21	-1.6085	-0.1279	0.5731	0.1393	-0.5458	0.2901
22	-1.2039	-0.1605	0.6961	0.1611	-0.6438	0.3228
23	-1.1856	-0.1766	0.7301	0.1693	-0.6846	0.3314
24	-1.2234	-0.1677	0.5888	0.1558	-0.6351	0.2997
25	-1.5762	-0.1982	0.5946	0.1741	-0.7206	0.3242
26	-1.2028	-0.0811	0.3431	0.1319	-0.4766	0.3145
27	-1.2966	-0.0597	0.3673	0.1228	-0.428	0.3086
28	-0.8106	-0.0372	0.4597	0.1003	-0.3381	0.2637
29	-0.6189	-0.0466	0.4212	0.1032	-0.3564	0.2631
30	-0.7416	-0.0457	0.4237	0.1008	-0.3482	0.2568
31	-1.2028	-0.0811	0.3431	0.1319	-0.4766	0.3145
32	-0.9222	-0.0481	0.3284	0.109	-0.3751	0.2789
33	-0.9642	-0.0262	0.4681	0.1065	-0.3456	0.2933
34	-0.5587	-0.0004	0.4305	0.0833	-0.2502	0.2495
35	-0.6463	-0.013	0.43	0.0845	-0.2665	0.2408
36	-0.9543	-0.0182	0.3665	0.0836	-0.2691	0.2327
37	-1.215	-0.0488	0.322	0.1066	-0.3687	0.271
38	-0.8379	-0.0239	0.3427	0.0929	-0.3025	0.2547
39	-0.7014	-0.0188	0.3783	0.0912	-0.2925	0.2549
40	-0.5212	-0.0116	0.3041	0.0747	-0.2356	0.2125
41	-0.4913	-0.0052	0.2844	0.073	-0.2241	0.2139
42	-0.5423	-0.0029	0.3161	0.0737	-0.2239	0.2182
43	-0.8714	-0.0364	0.2793	0.0909	-0.3091	0.2362
44	-0.5952	-0.0267	0.2822	0.0724	-0.2439	0.1904
45	-0.697	-0.0285	0.2266	0.0693	-0.2363	0.1792
46	-0.3707	-0.0316	0.2417	0.0641	-0.224	0.1609
47	-0.4036	-0.0297	0.2179	0.0608	-0.2122	0.1527
48	-0.4234	-0.0571	0.2102	0.0657	-0.2542	0.1399
49	-0.6166	-0.0583	0.331	0.0748	-0.2827	0.1661
50	-0.7331	0.4234	1.9871	0.3265	-0.556	1.4029
51	-0.4114	0.4523	2.355	0.3018	-0.453	1.3576
52	-0.3097	0.4418	2.134	0.2995	-0.4569	1.3404
53	-0.3714	0.4265	2.5149	0.2972	-0.4651	1.318
54	-0.6898	0.3666	1.8721	0.3175	-0.5861	1.3192
55	-0.7383	0.41	2.1494	0.3181	-0.5444	1.3643
56	-0.3184	0.5363	2.2596	0.2919	-0.3393	1.4119
57	-0.1721	0.5064	2.316	0.28	-0.3336	1.3464
58	-0.2996	0.502	2.2067	0.2761	-0.3263	1.3304
59	-0.7056	0.3454	1.9759	0.295	-0.5396	1.2303
60	-0.6649	0.3015	1.8082	0.2801	-0.5388	1.1417
61	-0.2654	0.4735	1.8603	0.251	-0.2797	1.2266
62	-0.1809	0.4623	2.0753	0.232	-0.2338	1.1584
63	-0.1806	0.4187	2.0842	0.2287	-0.2674	1.1047
64	-0.7164	0.208	1.8155	0.252	-0.5479	0.9639
65	-0.5527	-0.0754	0.1677	0.0708	-0.2878	0.1369
66	-0.3958	-0.0821	0.1504	0.0667	-0.2823	0.118
67	-0.4321	-0.0918	0.1632	0.0685	-0.2972	0.1137
68	-0.4933	-0.0834	0.1947	0.0713	-0.2971	0.1304
69	-0.6098	-0.0811	0.1411	0.071	-0.2942	0.1319
70	-0.4515	-0.0847	0.1643	0.0678	-0.2876	0.1181
71	-0.4405	-0.0896	0.1778	0.0693	-0.2976	0.1185
72	-0.4406	-0.0961	0.1849	0.0717	-0.3112	0.119
73	-0.6214	-0.0984	0.1488	0.0746	-0.3121	0.1353
74	-0.4867	-0.0945	0.1393	0.0709	-0.3071	0.1181
75	-0.4867	-0.0946	0.1662	0.0723	-0.3114	0.1222
76	-0.5106	-0.0918	0.1915	0.0744	-0.315	0.1314
77	-3.2279	-0.601	0.3578	0.2978	-1.4945	0.2925
78	-2.8056	-0.5123	0.4343	0.2999	-1.412	0.3873
79	-2.2153	-0.2653	0.3727	0.2581	-1.0397	0.5091
80	-1.4028	-0.1104	0.3314	0.1487	-0.5564	0.3356
81	-1.431	-0.0635	0.3292	0.1021	-0.3698	0.2429
82	-1.1835	-0.0551	0.2402	0.0788	-0.2915	0.1813
83	-2.5959	-0.5626	0.5199	0.2824	-1.4097	0.2846
84	-2.6243	-0.5122	0.4763	0.296	-1.4003	0.3759
85	-1.8672	-0.2592	0.4055	0.2476	-1.002	0.4837
86	-1.3202	-0.129	0.3883	0.1799	-0.6686	0.4106
87	-1.0776	-0.0837	0.4016	0.1323	-0.4807	0.3132
88	-0.7731	-0.0681	0.3096	0.1043	-0.3791	0.2469
89	-0.8317	-0.0595	0.2285	0.0753	-0.2855	0.1664
90	-2.9389	-0.481	0.4685	0.264	-1.2729	0.311
91	-2.0402	-0.4634	0.5889	0.2761	-1.2916	0.3649
92	-1.563	-0.2611	0.3732	0.2164	-0.9103	0.388
93	-1.0386	-0.0643	0.4179	0.124	-0.4382	0.3078
94	-0.8945	-0.033	0.3692	0.0927	-0.311	0.245
95	-0.4912	-0.0309	0.2888	0.0734	-0.2511	0.1892

B/H=6 N=8 0 degree

# of tap	Min	Mean	max	STDV	- peak	+ peak
	0.4	1.0443	1.8777	0.2367	0.3344	1.7543
1	-4.1165	-0.8761	0.1012	0.4496	-2.2248	0.4727
2	-5.9973	-0.8456	0.0268	0.4413	-2.1696	0.4784
3	-4.5602	-0.7906	0.14	0.3809	-1.9331	0.352
4	-3.3213	-0.733	0.1563	0.3532	-1.7926	0.3266
5	-3.0229	-0.7135	0.134	0.3494	-1.7618	0.3348
6	-2.9865	-0.727	0.1898	0.3523	-1.7838	0.3299
7	-4.2185	-0.7847	0.1069	0.386	-1.9428	0.3734
8	-2.5742	-0.5421	0.1636	0.2809	-1.3849	0.3007
9	-2.7835	-0.6555	0.3743	0.3348	-1.6599	0.3489
10	-3.6011	-0.6712	0.1983	0.3389	-1.6878	0.3454
11	-2.5326	-0.658	0.3586	0.3373	-1.67	0.3539
12	-3.1834	-0.6468	0.2923	0.3319	-1.6425	0.3488
13	-2.459	-0.4856	0.2932	0.2566	-1.2556	0.2843
14	-1.8916	-0.3603	0.3346	0.2224	-1.0276	0.3069
15	-2.1758	-0.459	0.5177	0.269	-1.2661	0.3481
16	-2.5745	-0.5166	0.3999	0.3004	-1.4179	0.3847
17	-1.6978	-0.1747	0.4518	0.166	-0.6727	0.3232
18	-1.3716	-0.1798	0.4764	0.1622	-0.6665	0.3069
19	-1.6463	-0.2255	0.5466	0.19	-0.7955	0.3444
20	-1.5338	-0.1591	0.4512	0.1753	-0.6852	0.3669
21	-1.2177	-0.1217	0.5836	0.1368	-0.5316	0.2881
22	-1.0542	-0.1544	0.5602	0.1598	-0.6338	0.325
23	-1.554	-0.1767	0.5448	0.1719	-0.6924	0.339
24	-1.5189	-0.1575	0.5708	0.1589	-0.6342	0.3192
25	-2.2203	-0.1874	0.4376	0.1892	-0.695	0.3201
26	-1.4258	-0.0709	0.4127	0.131	-0.4638	0.322
27	-1.265	-0.0478	0.4694	0.1171	-0.3991	0.3035
28	-0.6117	-0.0312	0.4264	0.0985	-0.3266	0.2642
29	-0.8643	-0.0414	0.5489	0.1048	-0.3557	0.2728
30	-0.8616	-0.0422	0.4086	0.1011	-0.3456	0.2612
31	-1.4258	-0.0709	0.4127	0.131	-0.4638	0.322
32	-1.2276	-0.0368	0.3222	0.1075	-0.3594	0.2857
33	-1.0219	-0.0206	0.3355	0.1046	-0.3344	0.2931
34	-0.4733	-0.0009	0.3696	0.0817	-0.246	0.2443
35	-0.5034	-0.0058	0.3689	0.0835	-0.2562	0.2446
36	-0.4653	-0.0103	0.4097	0.0832	-0.2598	0.2393
37	-0.9166	-0.0413	0.4017	0.1032	-0.351	0.2683
38	-0.8275	-0.0239	0.2731	0.0914	-0.2982	0.2504
39	-0.6625	-0.0166	0.3543	0.0907	-0.2887	0.2555
40	-0.4712	0.0015	0.3291	0.0728	-0.2169	0.2198
41	-0.5082	0.0009	0.3232	0.0727	-0.2171	0.2189
42	-0.6568	0.0008	0.3611	0.0744	-0.2225	0.2241
43	-0.698	-0.0281	0.3159	0.0898	-0.2975	0.2412
44	-0.8038	-0.0191	0.2981	0.0712	-0.2326	0.1944
45	-0.4339	-0.0231	0.2379	0.0669	-0.2239	0.1776
46	-0.4443	-0.0229	0.215	0.0626	-0.2108	0.165
47	-0.35	-0.0233	0.2152	0.0603	-0.204	0.1575
48	-0.4812	-0.0545	0.2011	0.0662	-0.2531	0.144
49	-0.624	-0.0504	0.2668	0.0742	-0.273	0.1721
50	-0.6616	0.4179	2.076	0.3263	-0.5611	1.3969
51	-0.536	0.4492	2.4167	0.2933	-0.4306	1.329
52	-0.3945	0.4276	2.2235	0.285	-0.4273	1.2825
53	-0.4693	0.4251	1.9808	0.2885	-0.4404	1.2906
54	-0.6571	0.3611	1.9798	0.3124	-0.576	1.2982
55	-0.6258	0.4042	2.1162	0.3126	-0.5336	1.3421
56	-0.2207	0.5233	2.4634	0.2796	-0.3154	1.3619
57	-0.2685	0.4993	2.0492	0.2702	-0.3114	1.3099
58	-0.2518	0.4879	2.1598	0.2717	-0.3271	1.3028
59	-0.6399	0.3295	1.929	0.2921	-0.5467	1.2057
60	-0.6011	0.3048	1.8768	0.2761	-0.5236	1.1332
61	-0.1746	0.4661	1.8922	0.2455	-0.2703	1.2025
62	-0.224	0.4552	1.7099	0.2306	-0.2366	1.147
63	-0.8011	0.4206	2.0219	0.2288	-0.2652	1.1064
64	-0.7062	0.2011	1.7215	0.2477	-0.5421	0.9444
65	-0.4111	-0.0708	0.2153	0.0673	-0.2727	0.131
66	-0.4023	-0.0805	0.1523	0.0642	-0.273	0.112
67	-0.4904	-0.0877	0.1651	0.0685	-0.2931	0.1177
68	-0.5184	-0.0771	0.1708	0.07	-0.2871	0.1329
69	-0.4199	-0.0728	0.1711	0.0677	-0.2758	0.1302
70	-0.4121	-0.0793	0.1742	0.0649	-0.274	0.1155
71	-0.4145	-0.0891	0.1389	0.0688	-0.2954	0.1172
72	-0.5443	-0.0903	0.1812	0.0707	-0.3023	0.1217
73	-0.5075	-0.0833	0.1792	0.0711	-0.2967	0.13
74	-0.5006	-0.0885	0.1701	0.068	-0.2924	0.1154
75	-0.4889	-0.0962	0.1555	0.0719	-0.312	0.1195
76	-0.4198	-0.0858	0.1972	0.0732	-0.3054	0.1337
77	-2.5754	-0.5924	0.2782	0.2975	-1.4848	0.3
78	-2.3101	-0.5047	0.4374	0.2943	-1.3876	0.3783
79	-2.6994	-0.2603	0.3784	0.2528	-1.0187	0.4981
80	-1.2569	-0.1105	0.3693	0.1485	-0.5559	0.3348
81	-0.9582	-0.0615	0.2808	0.1007	-0.3636	0.2405
82	-0.7395	-0.0566	0.2122	0.0771	-0.2883	0.1744
83	-2.5073	-0.5606	0.3843	0.2815	-1.4051	0.2839
84	-2.6865	-0.5117	0.3797	0.2928	-1.3899	0.3666
85	-1.910	-0.2544	0.4354	0.2388	-0.9702	0.4614
86	-1.4392	-0.1288	0.4225	0.1768	-0.6593	0.4017
87	-1.4224	-0.0761	0.4353	0.1313	-0.47	0.3178
88	-0.8937	-0.0602	0.3138	0.1027	-0.3685	0.248
89	-1.4683	-0.0584	0.2257	0.0751	-0.2836	0.1668
90	-3.1796	-0.4791	0.5772	0.2664	-1.2784	0.3202
91	-2.5863	-0.46	0.5271	0.2681	-1.2642	0.3443
92	-1.4797	-0.2542	0.5087	0.2132	-0.8937	0.3853
93	-0.9859	-0.067	0.3977	0.1225	-0.4345	0.3006
94	-0.6925	-0.0296	0.4536	0.0903	-0.3005	0.2413
95	-0.3606	-0.0333	0.2674	0.0713	-0.2472	0.1806

Appendix D

Concentration

This appendix presents the values of mean relative concentration for 45 concentration taps on the surface of testing building.

	C0=1000000							
	B/H=0.5				B/H=1			
Tap #	N=1	N=2	N=3	N=8	N=1	N=2	N=3	N=8
1	0.00024	0.000176	0.000053	0	2.09E-05	0.000052	6.36E-05	7.47E-05
2	0.001366	0.001235	0.001187	0.001003	0.00139	0.001373	0.001326	0.002026
3	0.001655	0.001493	0.001425	0.00128	0.001759	0.001703	0.001619	0.002495
5	0.002738	0.002405	0.002106	0.001732	0.002893	0.002738	0.002483	0.003766
6	0.004432	0.003962	0.003375	0.002804	0.004268	0.003807	0.003487	0.005143
7	0.001255	0.001491	0.001379	0.00152	0.001642	0.001684	0.00197	0.003335
8	0.00142	0.001623	0.001547	0.001675	0.001945	0.002113	0.002659	0.004701
9	0.001572	0.001684	0.00164	0.001753	0.002189	0.002327	0.002953	0.005432
10	0.001029	0.000802	0.000761	0.000862	0.001631	0.001394	0.001365	0.002223
11	0.001227	0.000859	0.000877	0.000966	0.00201	0.001745	0.001704	0.002756
12	0.001403	0.001059	0.001042	0.00115	0.002236	0.002015	0.001895	0.003278
13	0.000591	0.000546	0.000544	0.00053	0.000307	0.000341	0.000349	0.000539
14	0.000851	0.00073	0.000747	0.000701	0.000308	0.000338	0.000333	0.000538
15	0.001355	0.001063	0.00114	0.001046	0.000312	0.000332	0.00034	0.000575
16	0.002555	0.001944	0.001906	0.001705	0.000285	0.00019	0.000288	0.000477
17	0.000558	0.00057	0.000555	0.00058	0.000292	0.00033	0.00035	0.000578
18	0.000913	0.000915	0.000927	0.000932	0.000334	0.000374	0.000397	0.000688
19	0	0	0	0	0.000288	0.000306	0.000321	0.000535
20	0.000468	0.000578	0.000551	0.000581	0.000408	0.000427	0.000545	0.001041
21	0.000607	0.000766	0.00076	0.000769	0.00041	0.000448	0.000577	0.001103
22	0.000892	0.001141	0.001135	0.001149	0.00032	0.000357	0.000434	0.00076
23	0.000297	0.000287	0.000275	0.00026	0.000229	0.000257	0.000267	0.000421
24	0.000158	0.000161	0.000162	0.000167	0.000166	0.000185	0.000187	0.000306
25	0.000109	0.000113	0.000111	0.000119	0.000137	0.000146	0.000151	0.00024
26	0.000083	0.000082	0.000086	0.000087	0.00012	0.000123	0.000128	0.00021
27	0.000068	0.000065	0.000068	0.000069	0.000107	0.000105	0.000109	0.000179
28	0.000057	0.000054	0.000056	0.000055	0.000098	0.000094	9.66E-05	0.00016
29	0.000298	0.000337	0.000325	0.000385	0.000262	0.000289	0.00031	0.00052
30	0.000163	0.000195	0.00019	0.000204	0.000189	0.000213	0.00023	0.000383
31	0.000159	0.000134	0.000162	0.000175	0.000151	0.000167	0.000179	0.000301
32	0.000306	0.000365	0.000346	0.000369	0.000353	0.000379	0.000469	0.000844
33	0.00017	0.000209	0.000196	0.000201	0.000236	0.000258	0.000303	0.000558
34	0.00012	0.000148	0.000138	0.000145	0.00018	0.000196	0.00023	0.000411
35	0.000092	0.000113	0.000107	0.000115	0.000143	0.000155	0.000184	0.000322
36	0.000074	0.000092	0.00009	0.000092	0.000121	0.000131	0.000147	0.00027
37	0.000064	0.00008	0.000078	0.000086	0.000104	0.000111	0.000132	0.000236
38	0.000254	0.000204	0.000174	0.000175	0.000381	0.000325	0.000325	0.000579
39	0.000143	0.000115	0.000101	0.000105	0.000255	0.000217	0.000221	0.000382
40	0.000223	0.000354	0.00034	0.000356	0.000287	0.000353	0.000479	0.000981
41	0.000164	0.000277	0.00026	0.000264	0.000212	0.000256	0.000348	0.000753
42	0.000142	0.000232	0.000218	0.000235	0.000166	0.000199	0.000272	0.000575
43	0.000289	0.000454	0.000458	0.000498	0.000267	0.000329	0.00043	0.000871
44	0.000217	0.000355	0.000357	0.00039	0.000203	0.000248	0.00032	0.000661
45	0.000186	0.000303	0.000305	0.000315	0.000171	0.000198	0.000258	0.000547
46	0.000214	0.000209	0.000255	0.000278	0.000253	0.000308	0.00039	0.000801
47	0.000169	0.000198	0.000236	0.000249	0.000205	0.000238	0.000314	0.000644

	B/H=2				B/H=4			
Tap #	N=1	N=2	N=3	N=8	N=1	N=2	N=3	N=8
1	0	0	0	0	0.000004	0.000018	0.000025	0
2	0.001445	0.001395	0.001246	0.001241	0.001087	0.001192	0.001323	0.001401
3	0.001613	0.001554	0.0014	0.001411	0.001139	0.001246	0.001367	0.00149
5	0.001931	0.001725	0.001555	0.001604	0.001183	0.001317	0.00142	0.001611
6	0.002129	0.002032	0.001821	0.001795	0.001284	0.00144	0.001551	0.001836
7	0.001097	0.00102	0.001022	0.000959	0.000986	0.00114	0.001255	0.00143
8	0.001177	0.001112	0.001139	0.001049	0.001045	0.001217	0.001357	0.001511
9	0.001209	0.001123	0.001234	0.001112	0.001096	0.001281	0.001436	0.001685
10	0.001069	0.001046	0.000991	0.000941	0.001032	0.00113	0.001248	0.001436
11	0.001117	0.001043	0.001055	0.00101	0.001105	0.001224	0.001345	0.001501
12	0.001198	0.00106	0.00101	0.000996	0.001087	0.001192	0.001313	0.001489
13	0.000153	0.000125	0.000123	0.00011	0.000099	0.000098	0.000109	0.000112
14	0.000126	0.000125	0.000121	0.00011	0.000102	0.0001	0.000111	0.000124
15	0.000121	0.000121	0.00011	0.000104	0.000103	0.000104	0.000115	0.00013
16	0.000119	0.000115	0.000106	0.000103	0.000107	0.000109	0.000121	0.000141
17	0.000133	0.000129	0.000123	0.000112	0.000096	0.000097	0.000108	0.000116
18	0.00013	0.000126	0.000118	0.000108	0.000102	0.000102	0.000113	0.000125
19	0.000124	0	0	0	0	0	0	0
20	0.000149	0.000158	0	0.000134	0.00009	0.000092	0.000103	0.000113
21	0.000146	0.000145	0.000138	0.000127	0.000095	0.000099	0.000107	0.000121
22	0.000128	0.000129	0.000116	0.000102	0.000104	0.000107	0.000119	0.00013
23	0.000129	0.000131	0.000117	0.000115	0.000098	0.000098	0.00011	0.000125
24	0.00011	0.000108	9.85E-05	0.000096	0.000086	0.000087	0.000097	0.000113
25	9.75E-05	0.000097	8.65E-05	8.25E-05	0.000078	0.000076	0.000085	0.000097
26	8.75E-05	8.35E-05	0.000076	0.000073	0.000068	0.000067	0.000076	0.000087
27	7.75E-05	0.000075	6.65E-05	6.45E-05	0.000061	0.000059	0.000068	0.000079
28	0.00007	0.000067	0.00006	0.000058	0.000056	0.000054	0.000061	0.000068
29	0.000147	0.000151	0.000136	0.000127	0.000094	0.000097	0.000109	0.000112
30	0.000119	0.000118	0.00011	0.000101	0.000083	0.000085	0.000095	0.000102
31	0.000102	0.000101	9.25E-05	8.45E-05	0.000074	0.000076	0.000087	0.000096
32	0.000153	0.000157	0.000149	0.000137	0.000087	0.000092	0.000101	0.00012
33	0.00012	0.000126	0.000117	0.000106	0.000075	0.000079	0.000088	0.000099
34	0.000102	0.0001	0.000067	8.85E-05	0.000067	0.00007	0.000078	0.000089
35	0.000089	0.000089	0.000083	7.55E-05	0.00006	0.000063	0.000071	0.000089
36	0.000078	7.65E-05	7.35E-05	0.000066	0.000055	0.000057	0.000065	0.000071
37	7.05E-05	7.05E-05	6.55E-05	0.00006	0.00005	0.000056	0.000059	0.000065
38	0.000115	0.000123	0.000113	0.000123	0.000087	0.000085	0.000099	0.000109
39	0.000093	0.000089	0.000087	9.55E-05	0.000075	0.000072	0.000084	0.000098
40	0.000128	0.000139	0.000132	0.000124	0.000084	0.000091	0.000098	0.00011
41	0.000105	0.000112	0.000108	0.000102	0.000073	0.000079	0.000086	0.000098
42	0.000089	0.000096	0.000091	8.35E-05	0.000066	0.000071	0.000077	0.000086
43	0.00013	0.00014	0.000135	0.000125	0.000093	0.000099	0.000107	0.000119
44	0.000108	0.000115	0.000114	0.000103	0.000081	0.000087	0.000094	0.000108
45	9.15E-05	9.75E-05	0.000097	8.65E-05	0.000073	0.000078	0.000085	0.000096
46	0.000077	0.000077	7.35E-05	6.75E-05	0.000102	0.000106	0.000115	0.000129
47	7.25E-05	0.00009	9.15E-05	0.000087	0.000091	0.000096	0.000104	0.000116