

## Wistron Antenna Specification

### 1. VSWR

The VSWR is measured with antenna installed in notebook and LCD is open at 90 degrees.

	<b>2.4- 2.5 GHz</b>	<b>5.15- 5.35 GHz</b>
<b>Main antenna</b>	<b>2 max</b>	<b>2 max</b>
<b>Aux antenna</b>	<b>2 max</b>	<b>2 max</b>

### 2. Average Gain

The average gain is measured with antenna installed in notebook and LCD is open at 90 degrees. The data is from the pattern measurements in the azimuth plane.

	<b>2.4- 2.5 GHz</b>	<b>5.15 – 5.35 GHz</b>
<b>Main antenna</b>	<b>-4 dBi min</b>	<b>-4.8 dBi min</b>
<b>Aux antenna</b>	<b>-4 dBi min</b>	<b>-4.8 dBi min</b>

### 3. Peak Gain

The average gain is measured with antenna installed in notebook and LCD is open at 90 degrees. The data is from the pattern measurements in the azimuth plane.

	<b>2.4- 2.5 GHz</b>	<b>5.15 – 5.35 GHz</b>
<b>Main antenna</b>	<b>3 dBi max</b>	<b>4 dBi max</b>
<b>Aux antenna</b>	<b>N/A</b>	<b>N/A</b>



## 1. Introduction

- **Designed for IEEE 802.11b/802.11a wireless-Lan.**

The antennas are designed in 2.4~2.5 GHz 15.15~5.35GHz  
for dual band use.

- **Special design for Embedded use.**

According the J1 structure and available design size,  
The antennas are special design for this environment.

- **Ultra-Fine Teflon coaxial cable and connector.**

I-pex MHF Teflon coaxial cable  $\phi = 1.13 \text{ mm}$

- **Space and polarization diversity**

These 2 antennas are arrayed in different space and polarization  
to accomplish diversified radiation pattern.

### 3. Product Specification

#### 3.1 Electrical Specification

Frequency	2.4 GHz ~ 2.5 GHz / 5.15~5.35 GHz
VSWR	2.0 Max
Power	1 W Max
Input Independence	50 ohm
Average Gain ( when LCD open )	>-5dBi (azimuth plane + -45 degree)

#### 3.2 Material Specification

Material	0.4t Cu-Zn-Ni
Sustentation	CR form
Cable	Black cable with the connector $\Phi=1.13\text{mm}$

#### 3.3 Environmental Specification

##### Storage

Condition : Non operating during test.

Cold : - 40°C during 72h (IEC 68-2-1 standard Ab/Ad test)

Dry heat : +60°C during 96h (IEC 68-2-2 standard Bb/Bd test)

Humidity : +40°C at 95%R.H. during 4 days (IEC 68-2-56 standard Cb test)

Mandatory : No mechanical or visible damage tolerated.

Guaranty of functionalities after test.

##### Operation

Condition : Operating during test.

Cold : - 10°C during 48h (IEC 68-2-1 standard Ab/Ad test)

Dry heat : + 55°C during 48h (IEC 68-2-2 standard Bb/Bd test)

Composite : - 10°C to + 55°C 95%R.H. 4 cycles (IEC 68-2-30 standard Nb test)

Mandatory : No mechanical or visible damage tolerated.

Guaranty of functionalities during and after test.

##### Traction:

Tractions force applied 3 times on plugs during 15 second : 2 kg

Mandatory : No mechanical damage tolerated.

Guaranty of functionalities after test.

## 4. Antenna Test Methods

### 4.1 VSWR Test

#### Test condition

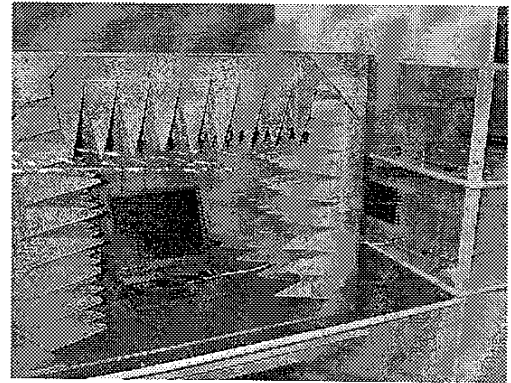
Connector : I-Pex MHF

Cable : RF-MF5016 (NISSEI Electric CO.,LTD)

Adopter : HRMP-U.FLJ (Hirose Electric CO.,LTD)

Network analyzer : HP 8753D

Housing : N34AS1 Notebook (After coating)



#### Specimens

right-side wireless LAN antenna

left-side wireless LAN antenna

Antenna type : PIFA Antenna

#### Wireless Antenna

2.4 ~ 2.5GHz

		2.4GHz	2.45GHz	2.5GHz
Right Antenna	VSWR	1.25	1.13	1.51
	Peak	2.10	1.90	2.80
	Average	-3.20	-2.90	-3.55
Left Antenna	VSWR	1.33	1.22	1.56
	Peak	2.50	2.10	2.90
	Average	-3.30	-3.00	-3.50



5.15~5.35GHz

		5.15GHz	5.25GHz	5.35GHz
Right Antenna	VSWR	1.22	1.15	1.45
	Peak	2.00	1.95	2.70
	Average	-3.57	-3.32	-3.50
Left Antenna	VSWR	1.27	1.18	1.47
	Peak	2.40	2.00	2.80
	Average	-3.11	-3.05	-3.52

### Cable length

left-side WLAN : 160mm (black)

Right-side WLAN : 300mm (gray)

## 4.2 Gain & Radiation Pattern Test

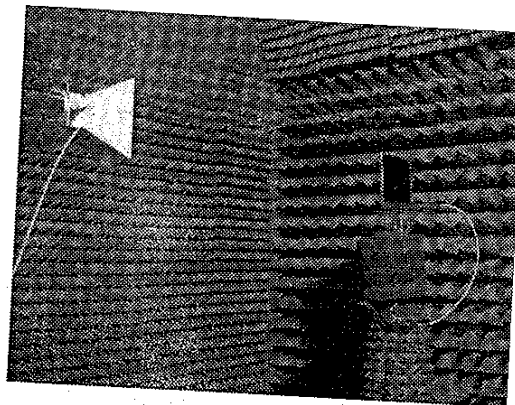
### Test condition

Network Analyzer : HP 8722D 30kHz ~ 40 GHz

Standard gain horn : EMCO Model 3115 Double Ridged Guide Antenna 1GHz ~18 GHz

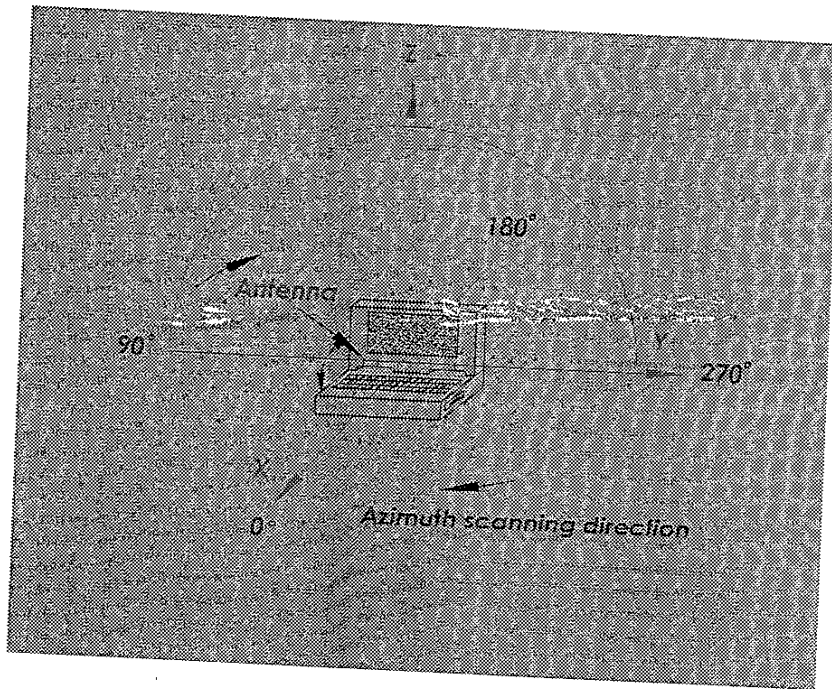
Anechoic Chamber : Antcom NFH003 (5'x5'x5') Hybrid Near-field System

- \* 450 MHz – 40 GHz
- \* 7 axes scanner system
- \* Planar, cylindrical, and spherical scanning
- \* Far-field scan option





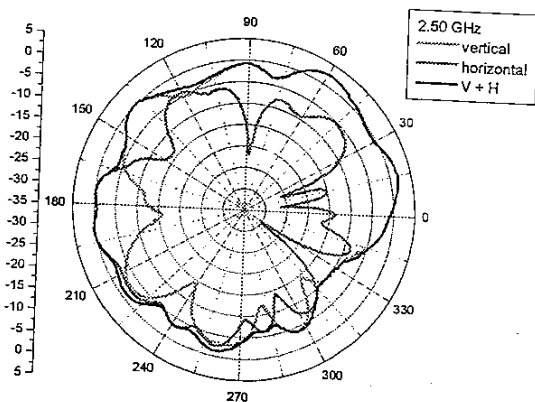
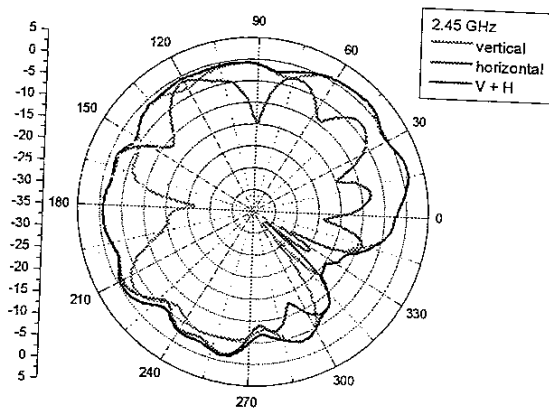
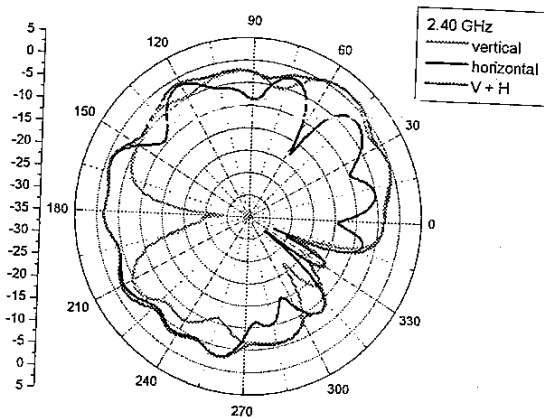
## Test configuration





## Radiation pattern (Average & Peak Gain)

Wireless LAN 2.4 ~ 2.5 GHz Leftside Antenna





## Wireless LAN 5.15 ~ 5.35 GHz Left-side Antenna

