

J1 NoteBook Embedded Antenna

Wistron P/N : Main/25.90050.001

SmartAnt P/N : ACR-05011

S/N : Main00001

Customer approved By : _____ Date : _____

Smartant approved By : Simon Date : 06-14-02

Smartant prepared By : Eric Date : 06-14-02



SmartAnt Telecom Co., Ltd



I N D E X

NB Embedded Antenna

1. Introduction.....	1
2. Outline Drawing	
2.1 Antenna Placement	2
2.2 Antenna Outline Drawing.....	3
2.3 Inspection Results.....	4
3. Product Specification	
3.1 Electrical Specification.....	5
3.2 Material Specification.....	5
3.3 Environmental Specification.....	6
4. Antenna Test Methods	
4.1 VSWR Test	7
4.2 Gain & Radiation pattern Test.....	9
4.3 YZ and XZ pattern plan.....	12
4.4 CPK.....	15
5. Package.....	16

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.**

General Dimension :32.8*5*5mm,

The antennas are special design for this environment.

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

I-pex MHF connector with Teflon coaxial Nissei cable $\phi = 1.13$ mm

➤ **Space and polarization diversity**

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

2.Antenna Placement & Outline drawing

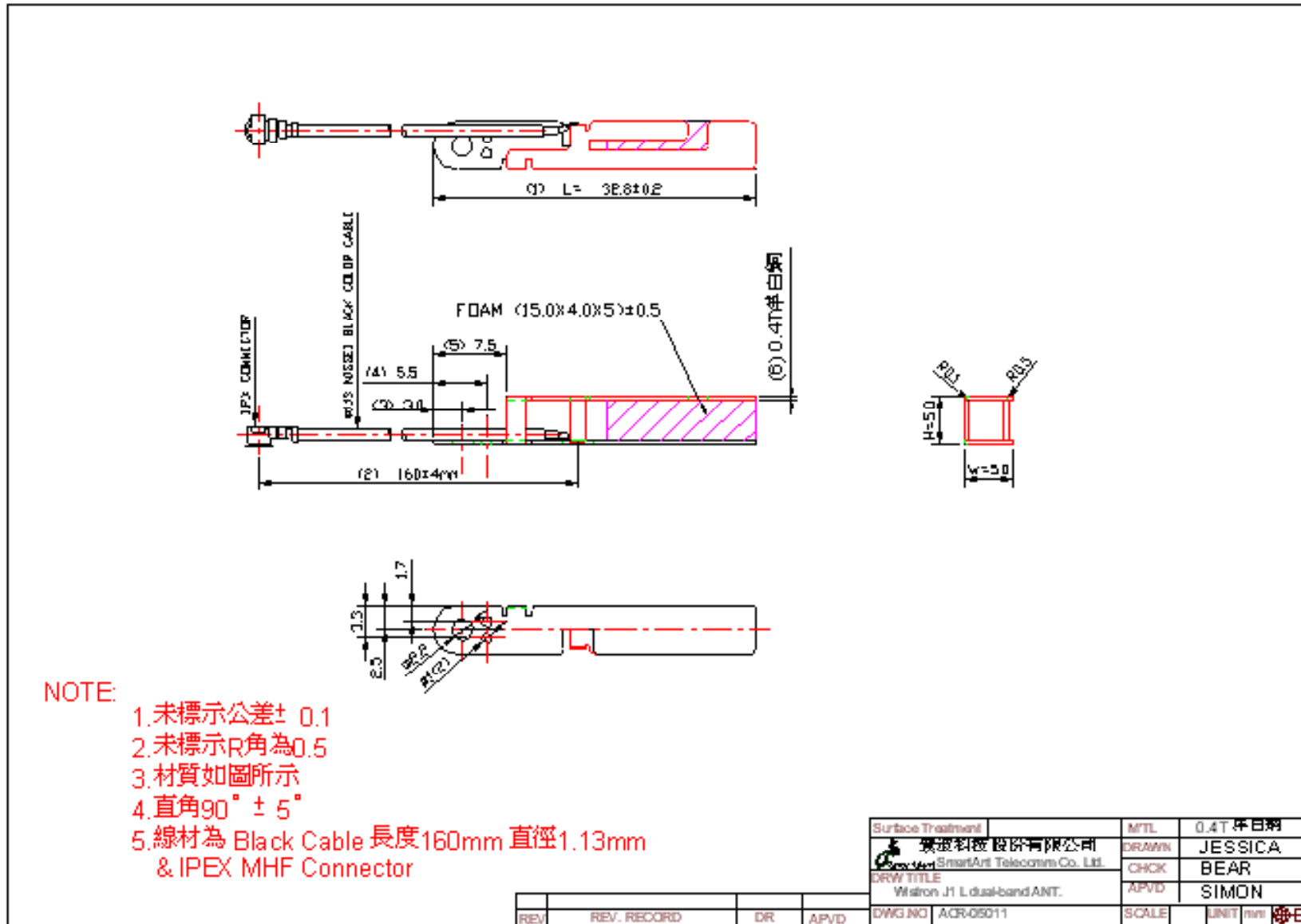
2.1 Antenna Placement



Antenna



2.2 Outline drawing





FAI DATA SHEET

Drawing Number:ACR-05011					Supplier : SmartAnt							Date: 2002/6/18				Wistron : SQM/Alex MH Lai	
Part Description: Embedded (left) Antenna					Inspected by: Ben			Manufacturing Site:ZZZZ				Gauge#/Unit: 游標卡尺 PC-08 (mm)					
Revision:0					Approved by: Eric			Production Line: A				Gauge/Unit: 尺 (mm)					
DRAWING SPECIFICATIONS					INSPECTION RESULTS							INSPECTION ANALYSIS				Inspection Method	Precision of Gauge
					Sample Number			Deviation from Nominal			Mean	% Tolerance		Acc/Rej			
ITEM	LOCATION	NOMINAL	+TOL	-TOL	1	2	3	1	2	3		UPPER	LOWER	HIGH	LOW		
	1	32.80	0.20	0.20	32.77	32.78	32.77	-0.03	-0.02	-0.03	32.77	0%	15%			游標卡尺	0.01mm
	2	160.00	4.00	4.00	160.00	160.00	160.00	0.00	0.00	0.00	160.00	0%	0%			尺	1mm
	3	3.00	0.10	0.10	3.05	3.03	3.03	0.05	0.03	0.03	3.04	50%	0%			游標卡尺	0.01mm
	4	5.50	0.10	0.10	5.52	5.53	5.50	0.02	0.03	0.00	5.52	30%	0%			游標卡尺	0.01mm
	5	7.50	0.10	0.10	7.45	7.47	7.47	-0.05	-0.03	-0.03	7.46	0%	50%			游標卡尺	0.01mm
	6	0.40	0.10	0.10	0.40	0.41	0.40	0.00	0.01	0.00	0.40	10%	0%			游標卡尺	0.01mm

Drawing Number:ACR-05012					Supplier : SmartAnt							Date: 2002/6/18				Wistron : SQM/Alex MH Lai	
Part Description: Embedded (right) Antenna					Inspected by: Ben			Manufacturing Site:ZZZZ				Gauge#/Unit: 游標卡尺 PC-08 (mm)					
Revision:0					Approved by: Eric			Production Line: A				Gauge/Unit: 尺 (mm)					
DRAWING SPECIFICATIONS					INSPECTION RESULTS							INSPECTION ANALYSIS				Inspection Method	Precision of Gauge
					Sample Number			Deviation from Nominal			Mean	% Tolerance		Acc/Rej			
ITEM	LOCATION	NOMINAL	+TOL	-TOL	1	2	3	1	2	3		UPPER	LOWER	HIGH	LOW		
	1	32.80	0.20	0.20	32.80	32.77	32.81	0.00	-0.03	0.01	32.79	5%	15%			游標卡尺	0.01mm
	2	160.00	4.00	4.00	160.00	160.00	160.00	0.00	0.00	0.00	160.00	0%	0%			尺	1mm
	3	3.00	0.10	0.10	3.01	3.03	3.03	0.01	0.03	0.03	3.02	30%	0%			游標卡尺	0.01mm
	4	5.50	0.10	0.10	5.50	5.52	5.50	0.00	0.02	0.00	5.51	20%	0%			游標卡尺	0.01mm
	5	7.50	0.10	0.10	7.47	7.48	7.48	-0.03	-0.02	-0.02	7.48	0%	30%			游標卡尺	0.01mm
	6	0.40	0.10	0.10	0.41	0.41	0.41	0.01	0.01	0.01	0.41	10%	0%			游標卡尺	0.01mm

3. Product Specification

3.1 Antenna Specification

1. VSWR

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

	2.4- 2.5 GHz	5.15- 5.35 GHz
Main antenna	2 max	2 max
Aux antenna	2 max	2 max

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.

	2.4- 2.5 GHz	5.15 – 5.35 GHz
Main antenna	-4 dBi min	-4.8 dBi min
Aux antenna	-4 dBi min	-4.8 dBi min

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

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

3.2 Material Specification Specification

Material	0.4t Cu-Zn-Ni
Sustentation	CR form
Cable&Connector	Black Nissei cable =1.13mm with the I-pex MHF connector

3.3 Environmental Specification

Storage

Condition : Non operating during test.

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

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

Humidity : +40 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 during 48h (IEC 68-2-1 standard Ab/Ad test)

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

Composite : - 10 to + 55 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.

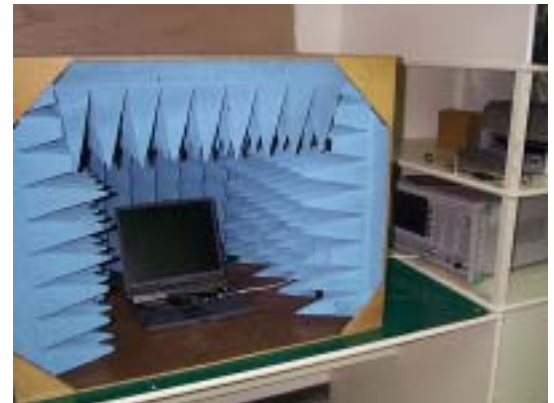
Guaranty of functionalities after test.

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 : **J1 Notebook (After coating)**



Specimens

Aux wireless LAN antenna
 Main wireless LAN antenna

Antenna type : **PIFA Antenna**

Wireless Antenna Test Data

2.4 ~ 2.5GHz

		2.4GHz	2.45GHz	2.5GHz
Aux Antenna	VSWR	1.25	1.13	1.51
	Peak	2.10	1.90	2.80
	Average	-3.20	-2.90	-3.55
Main 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
Aux Antenna	VSWR	1.22	1.15	1.45
	Peak	2.00	1.95	2.70
	Average	-3.57	-3.32	-3.50
Main Antenna	VSWR	1.27	1.18	1.47
	Peak	2.40	2.00	2.80
	Average	-3.11	-3.05	-3.52

Cable length

Main WLAN : **160mm (black)**

Aux WLAN : **300mm (gray)**

4.2 Gain & Radiation Pattern Test

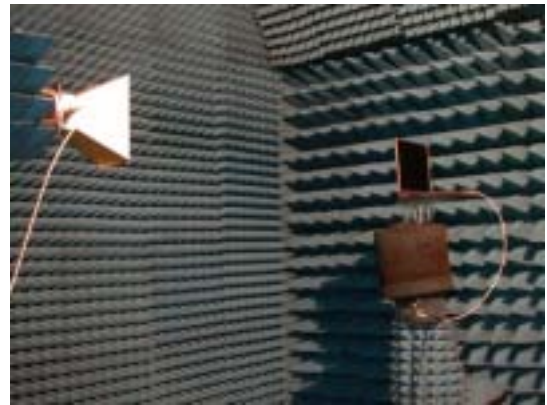
Test condition

Network Analyzer : HP 8722D 30kHz ~ 40 GHz

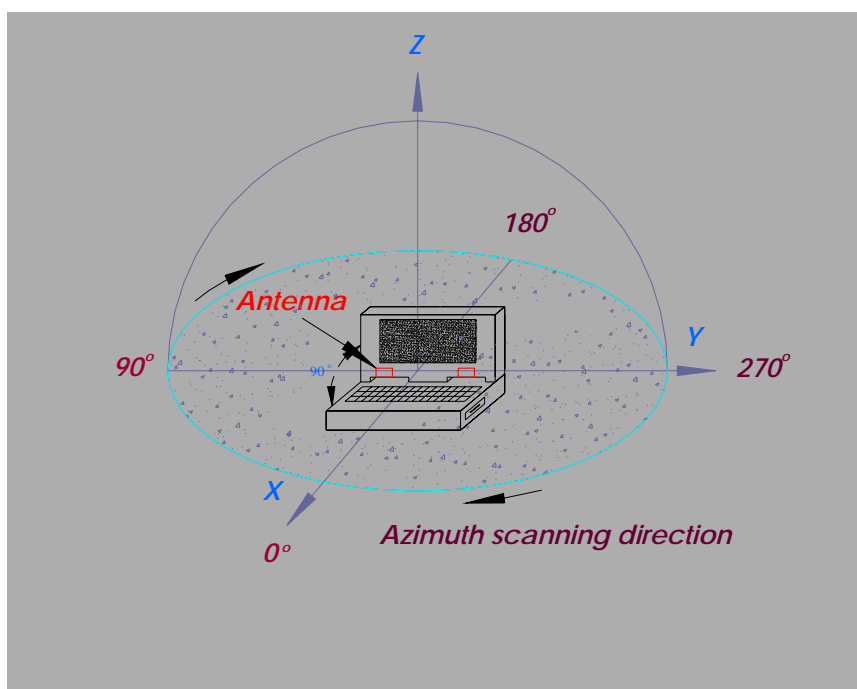
Standard gain horn : EMCO Model 3115 Double Ridged Guide Antenna 1GHz ~18 GHz

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

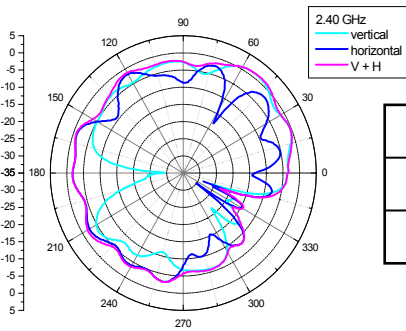
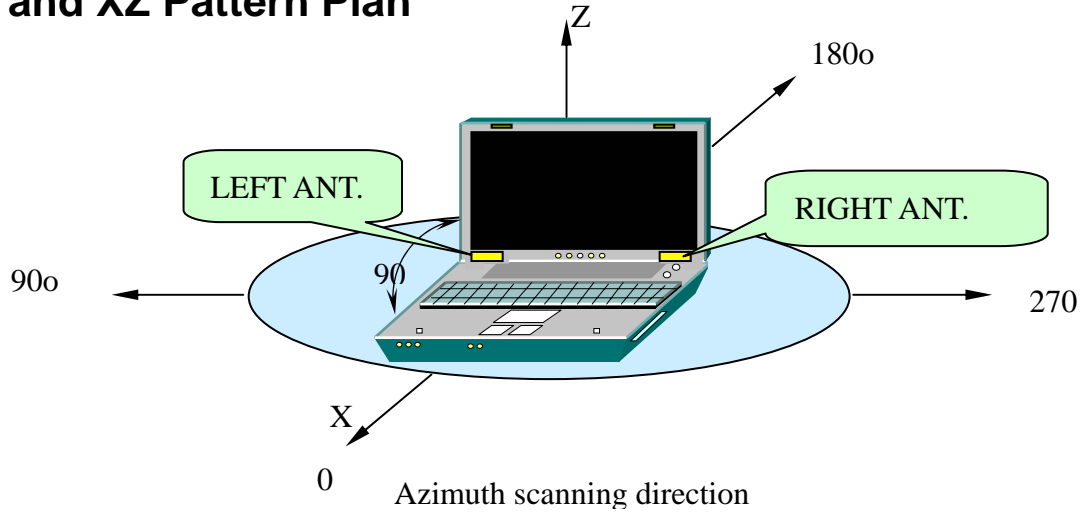
- * 450 MHz – 40 GHz
- * 7 axes scanner system
- * Planar, cylindrical, and spherical scanning
- * Far-field scan option



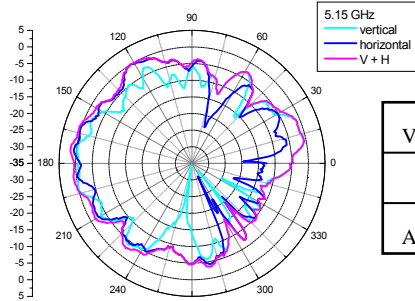
Test configuration



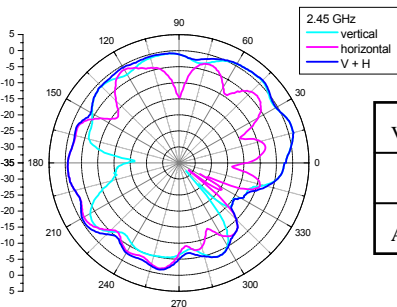
4.3 YZ and XZ Pattern Plan



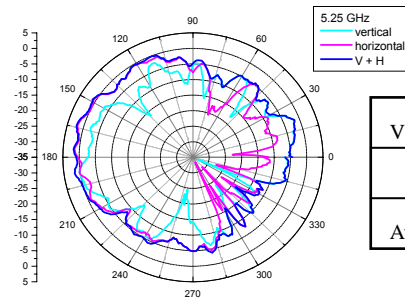
VSWR	1.33
Peak	2.50
Average	-3.30



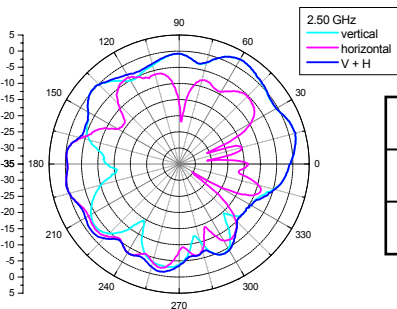
VSWR	1.27
Peak	2.40
Average	-3.11



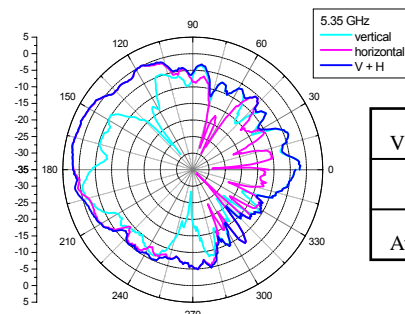
VSWR	1.22
Peak	2.10
Average	-3.00



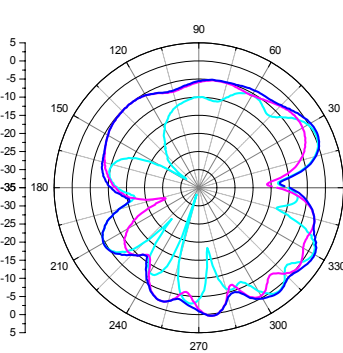
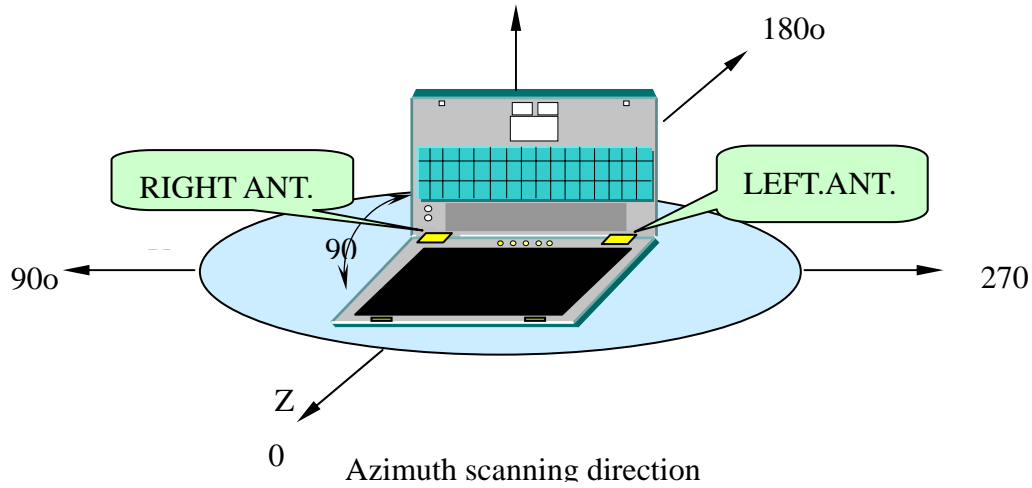
VSWR	1.18
Peak	2.00
Average	-3.05



VSWR	1.56
Peak	2.90
Average	-3.50

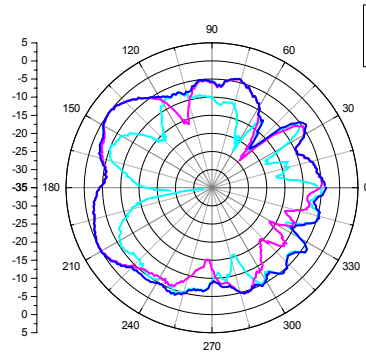


VSWR	1.47
Peak	2.80
Average	-3.52



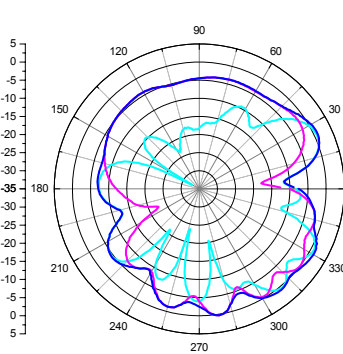
2.40 GHz
 vertical
 horizontal
 V + H

VSWR	1.60
Peak	2.78
Average	-3.52



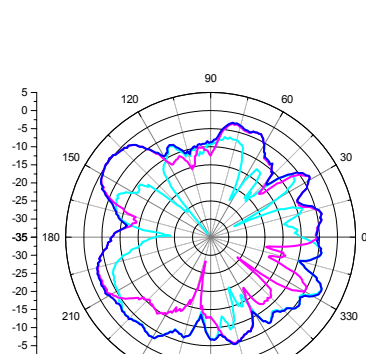
5.35 GHz
 vertical
 horizontal
 V + H

VSWR	1.53
Peak	1.78
Average	-3.78



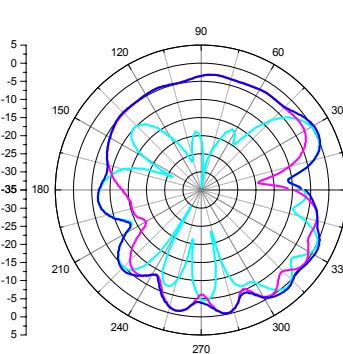
2.45 GHz
 vertical
 horizontal
 V + H

VSWR	1.53
Peak	2.53
Average	-3.62



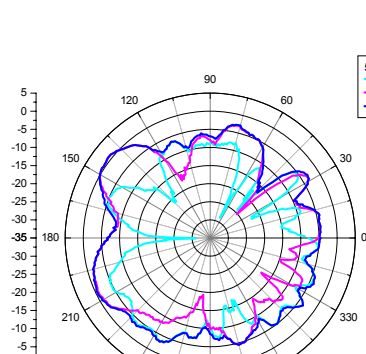
5.15 GHz
 vertical
 horizontal
 V + H

VSWR	1.56
Peak	2.01
Average	-3.33



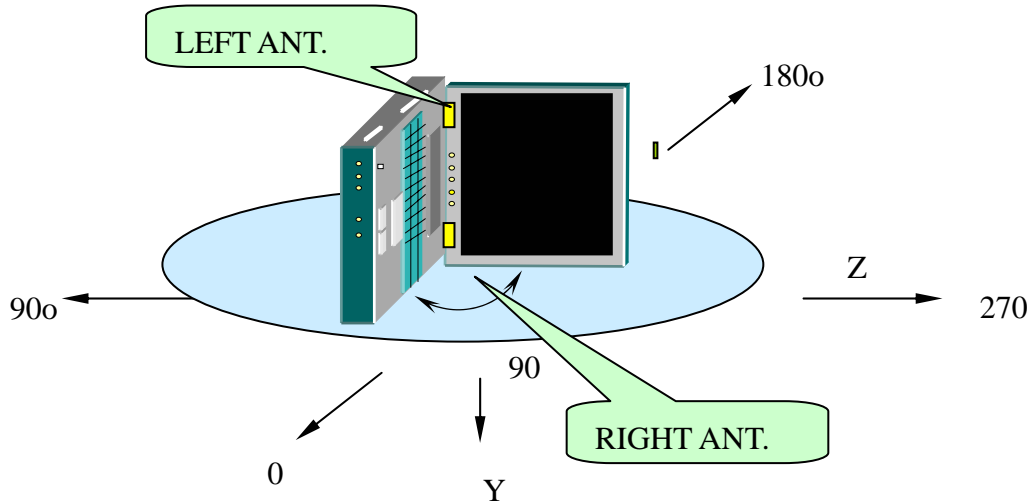
2.50 GHz
 vertical
 horizontal
 V + H

VSWR	1.45
Peak	2.11
Average	-3.49

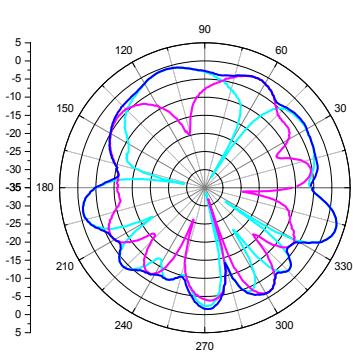


5.25 GHz
 vertical
 horizontal
 V + H

VSWR	1.78
Peak	2.64
Average	-3.32

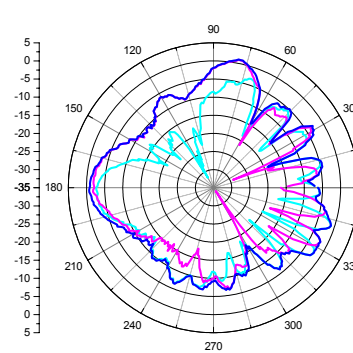


Azimuth scanning direction



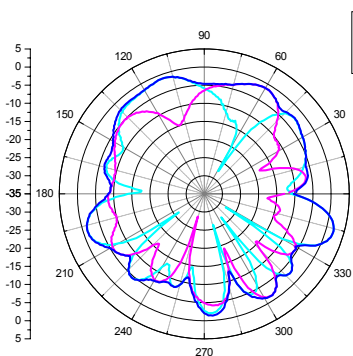
2.40 GHz
vertical
horizontal
V + H

VSWR	1.45
Peak	2.93
Average	-3.23



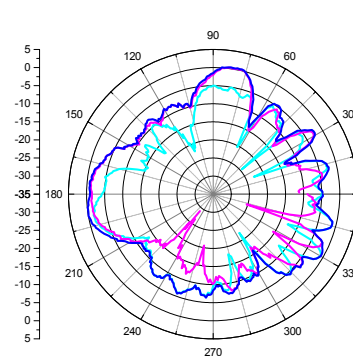
5.15 GHz
vertical
horizontal
V + H

VSWR	1.28
Peak	1.90
Average	-3.44



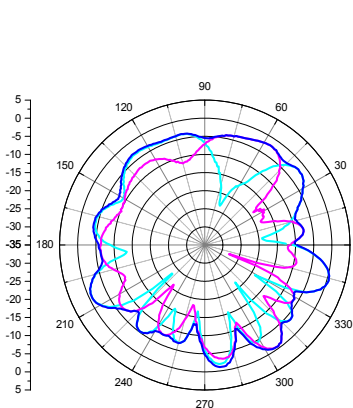
2.45 GHz
vertical
horizontal
V + H

VSWR	1.46
Peak	2.23
Average	-3.11



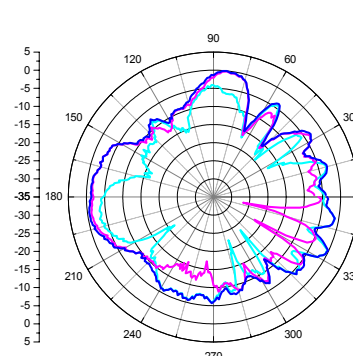
5.25 GHz
vertical
horizontal
V + H

VSWR	1.58
Peak	2.26
Average	-3.78



2.50 GHz
vertical
horizontal
V + H

VSWR	1.81
Peak	2.73
Average	-3.42



5.35 GHz
vertical
horizontal
V + H

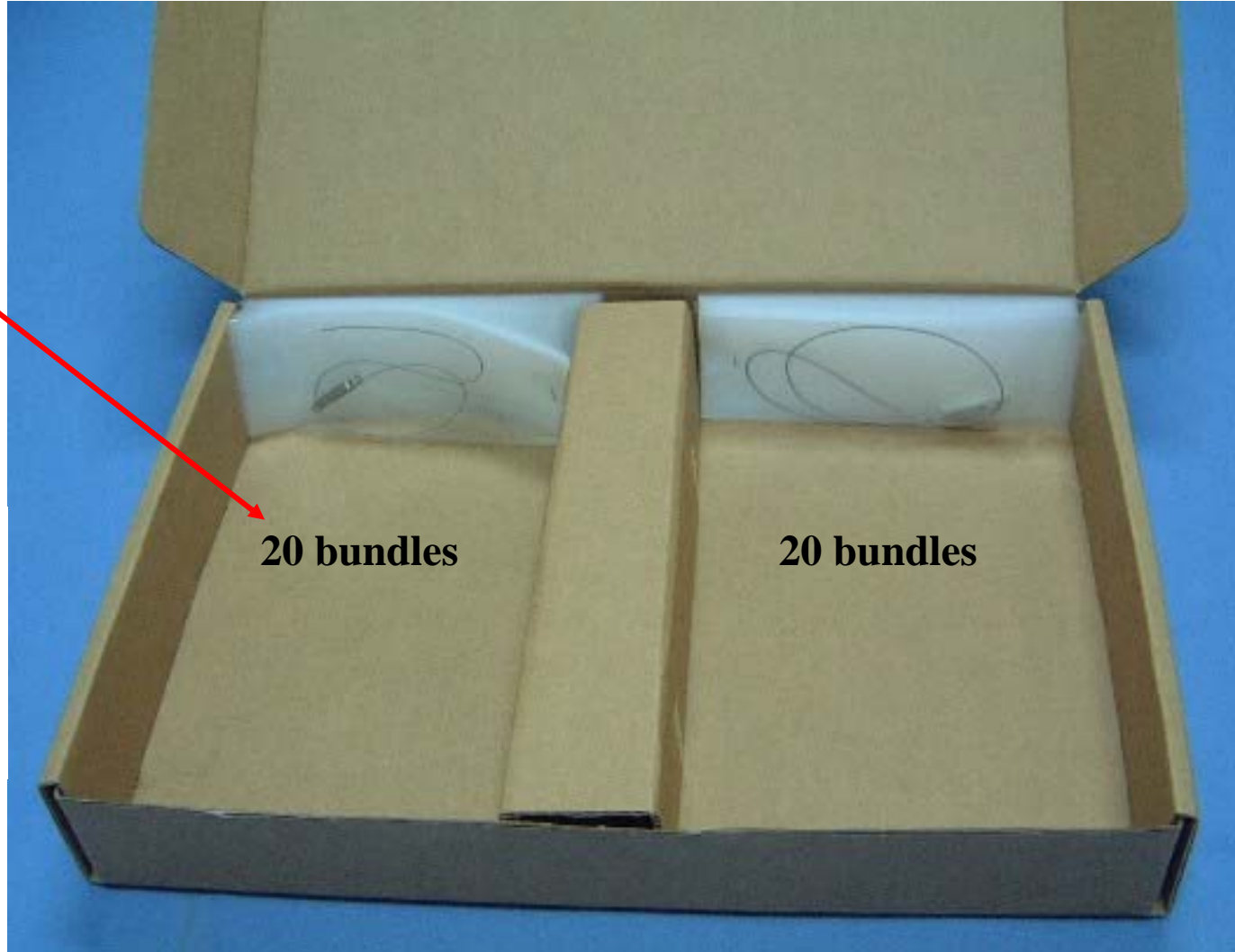
VSWR	1.46
Peak	2.79
Average	-3.33

5.Package

Total: 400 pcs



A bundle consists of 10 pcs of antennas.



20 bundles

20 bundles

A carton consists of 10 pcs of antennas.
Total :4000pcs

Every box consists of 20 bundles of antenna,and every bundle consists of 10 pcs of antenna.