



# COMPAL ELECTRONIC, INC.

仁寶電腦

## Communication Approval Sheet Check List

是 否	Item	項 目	內 容
<input checked="" type="checkbox"/> <input type="checkbox"/>	1	Communication	<input type="checkbox"/> Modem <input type="checkbox"/> Lan <input type="checkbox"/> Wireless Lan <input type="checkbox"/> Bluetooth <input checked="" type="checkbox"/> Antenna <input type="checkbox"/> Touch pad <input type="checkbox"/>
<input checked="" type="checkbox"/> <input type="checkbox"/>	2	Electrical Characteristics	~~~對該各零件之電氣規格依設計需要明訂之~~~ <input checked="" type="checkbox"/> *.Features <input type="checkbox"/> *. Block Diagram <input type="checkbox"/> Touch pad <input type="checkbox"/> *. AC/DC Characteristics <input checked="" type="checkbox"/> *.Impedance (option) <input checked="" type="checkbox"/> *.Temperature
<input checked="" type="checkbox"/> <input type="checkbox"/>	3	Reliability Test	~~~對該各零件之信賴性格需要明訂之(With Vendor Test Reprot)~~~ <input type="checkbox"/> *.Vibration Test <input checked="" type="checkbox"/> *.Shock Test <input type="checkbox"/> *.Drop Test For Package <input checked="" type="checkbox"/> *.High Temperature Loading
<input checked="" type="checkbox"/> <input type="checkbox"/>	4	Mechanical Characteristics	*.Terminal Retention
<input checked="" type="checkbox"/> <input type="checkbox"/>	5	Environmental Test	<input checked="" type="checkbox"/> *.Moisture Resistance <input checked="" type="checkbox"/> *.High Temperature Loading <input type="checkbox"/> *.Cold Resistance Test
<input checked="" type="checkbox"/> <input type="checkbox"/>	6	MARKING (標示)	*. <b>Material's Marking</b> must be have clarify description. *. 元件上之Marking需有適當的說明
<input checked="" type="checkbox"/> <input type="checkbox"/>	7	*Outline Dimensions & Structural drawing (外觀尺寸&結構圖) *尺寸量測表明 *Physical weight (本體重量)	*.Physical Dimensions&Tolerance, Detailed Specifications (外型尺寸、公差、規格需標示清楚公差)。 *.Components perspective drawing (零件透視圖)。 *.Size measurement *.Must be described by <b>Weight</b> with <b>Graphic</b> 、 <b>Vendor's P/N</b> or Type. *.註明重量及以圖示&廠商編號P/N說明OR註明Type.
<input type="checkbox"/> <input checked="" type="checkbox"/>	8	Safety Recognized (安規認證文件)	*.Vendor must provide <b>UL/CSA/TUV certificates for modem(or combo)</b> . *.廠商須提供Modem (Combo card)之UL/CSA/TUV證書
<input type="checkbox"/> <input checked="" type="checkbox"/>	9	Plastics Material (塑膠材質)	*.Vendor must provide the <b>UL card for Mylar</b> *.廠商須提供Mylar之UL card
<input checked="" type="checkbox"/> <input type="checkbox"/>	10	Record (記錄)	*.Vendor's approval sheet's cover must be have <b>Revision</b> . *.廠商承認書SPEC封面需有Revision註明.

廠商主管: Cliff Wang

廠商工程師: WJ Tsai

確認廠商: Yageo

日期: 2004-12-16

# Data Sheet

Product type	WLAN antenna
Model number	Compal Pecos (EDX20)
Revision	A00
Part No. / Yageo / Main Antenna	CAN4313 371 012501B
Part No. / Yageo / Aux Antenna	CAN4313 371 022501B
Part No. / Compal / Main Antenna	DC330016600
Part No. / Compal / Aux Antenna	DC330016610

**Yageo (Taiwan) Ltd.**

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**Yageo Electronics (China) Co, Ltd**

No. 10, Zhu Yuan Road, Suzhou New District, Suzhou, PRC

2.45/5GHz Multi Band Antenna with Cable & Connector for IEEE802.11b, 11g, 11a, UNII	Yageo Part Number:		A00	Dec 16, 04
	Main / Aux:			
	CAN4313 371 012501B / CAN4313 371 022501B			
	BY /	WJ Tsai	DATE /	Dec 16, 2004

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# 1. Specifications

## 1.1 Specifications for Antennas

<b>Frequency range (GHz)</b>	<b>2.40 ~ 2.50 for 802.11b/g 5.15 ~ 5.725 for 802.11a</b>
<b>VSWR</b>	<b>2.00 for 2.4GHz band 2.50 for 5.0GHz band</b>
<b>Peak gain (dBi)</b>	<b>0.02 dBi for 2.4GHz band 1.05 dBi for 5.0GHz band</b>
<b>MiniPCI Connector</b>	<b>IPex or Hirose</b>
<b>Impedance</b>	<b>50Ω</b>
<b>Operating Temperature</b>	<b>-40~90°C</b>
<b>Maximum Power</b>	<b>1W</b>
<b>Polarization</b>	<b>Linear</b>
<b>Radiation pattern</b>	<b>Omni-directional</b>

## 1.2 Cable Length / Cable Diameter

<b>Product</b>	<b>Compal / Pecos (EDX20) Antennas</b>
<b>Main antenna Cable</b>	<b>Length= 200 mm, Color=White or Gray / OD=1.13mm</b>
<b>Aux antenna Cable</b>	<b>Length= 200 mm, Color=Black / OD=1.13mm</b>

## 1.3 Packing Spec.

<b>Product</b>	<b>For Example</b>
<b>Inner tray</b>	<b>60</b>
<b>Carton box</b>	<b>265*100</b>



## 1.4 Antenna Picture



## 2. Test Methodology

### 2.1 Test Equipment

The equipment for the antenna measurement we used is as follows.

- A. Agilent 8753ET / 8719D Network Analyzer to measure the VSWR and input impedance.
- B. Three-dimensional anechoic chamber to measure the gain  
(Standard dipole and horn were used to calibrate the chamber)
- C. Digital caliper to measure the dimensions.
- D. Climatic chamber for mechanical tests.

### 2.2 Test Setup

#### 2.2.1 Frequency Range

2.40 ~ 2.50GHz, 5.15 ~ 5.85GHz

#### 2.2.2 Antenna Configuration

The antenna basically has two parts; the stamping and the cable assembly with the connector on one side. The detailed drawing is attached.

#### 2.2.3 VSWR

The VSWR is measured with Agilent 8753ET / 8719D network analyzer. All the measurements are performed with the customer provided fixture. Figure 1 shows the schematic diagram for measuring VSWR.

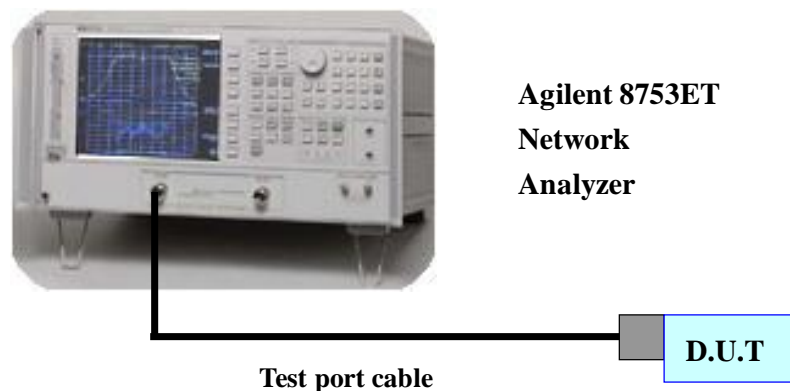


Figure 1. The schematic diagram for measuring VSWR

### 2.2.4 Radiation Pattern and Gain

The radiation pattern must have the omni-directional characteristic in both positions. The radiation pattern measurements are performed in the three-dimensional anechoic chamber. The chamber provides less than  $-30\text{dB}$  reflectivity from  $800\text{MHz}$  through  $8\text{GHz}$ . The chamber is calibrated using both standard dipole and horn antenna. The gain here is expressed as  $\text{dBi}$  that standardizes the isotropic antenna. The gain measurements are also performed in the same chamber described previously. Figure 2 shows the schematic diagram for measuring radiation pattern and gain.

#### 2D Anechoic Chamber

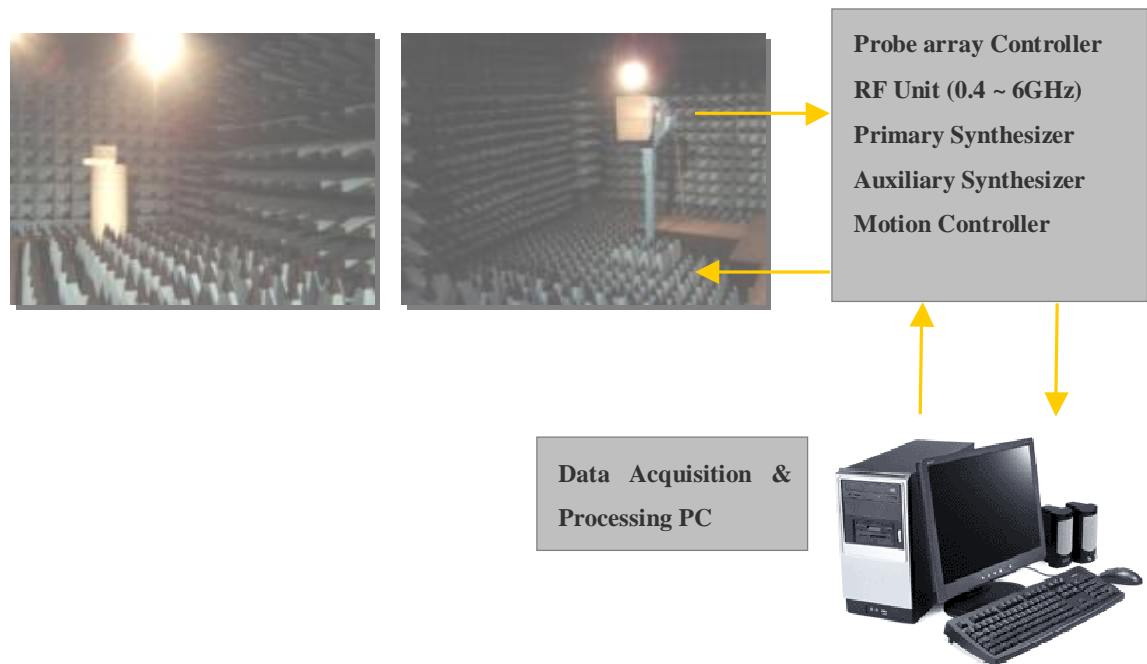
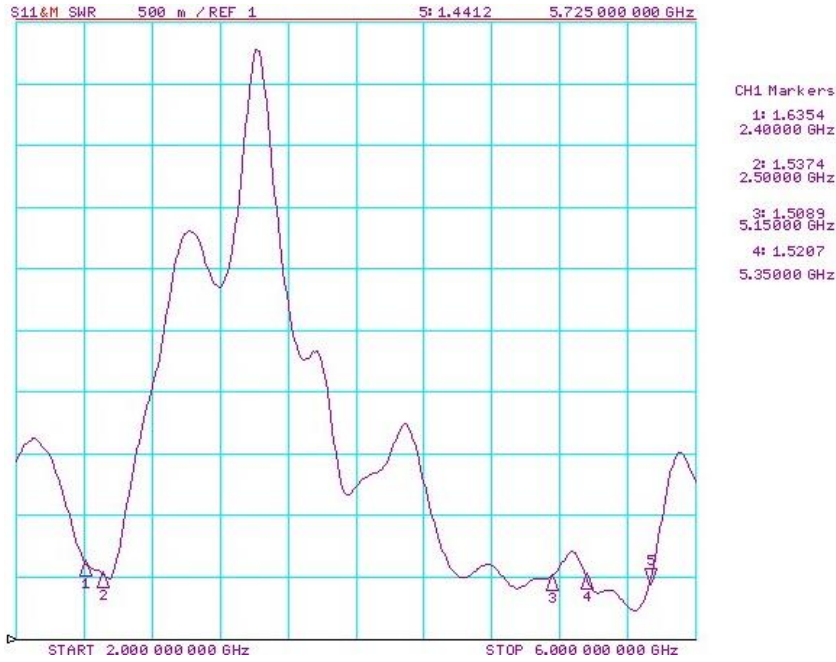


Figure 2. The schematic diagram for measuring radiation pattern and gain

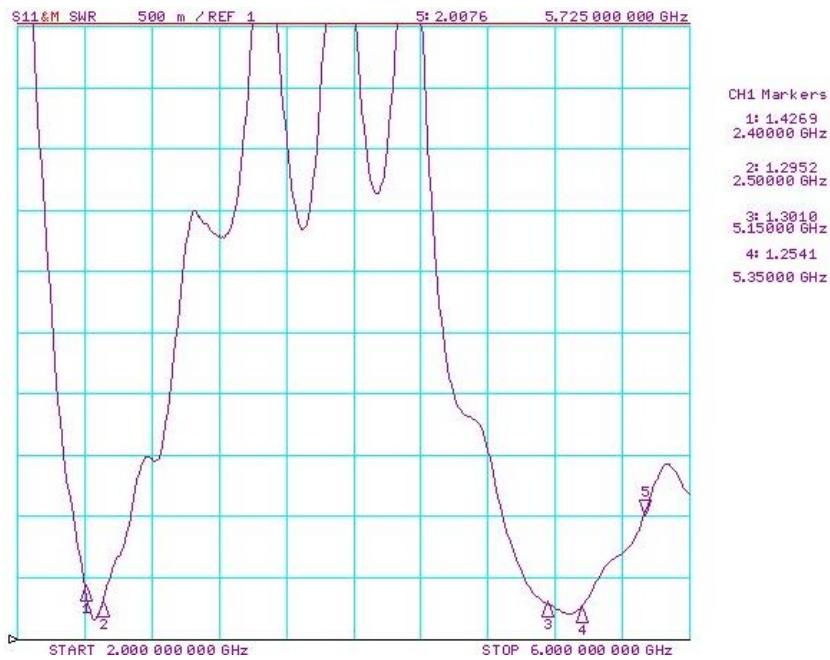
### 3. Performance Data

#### 3.1 VSWR Measurement of Main / Aux Antenna

##### Main Antenna VSWR

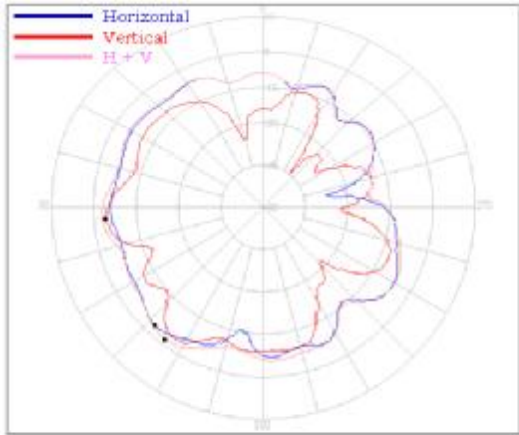


##### Aux Antenna VSWR

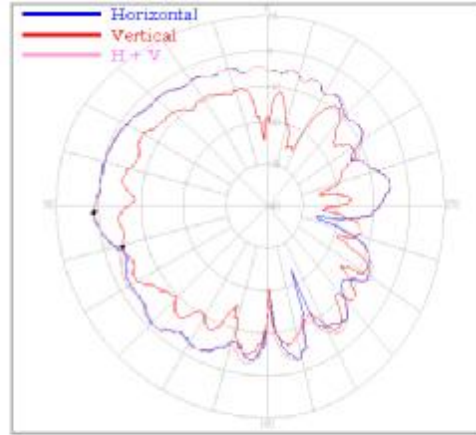


### 3.2 Radiation Pattern and Gain of Main / Aux Antenna

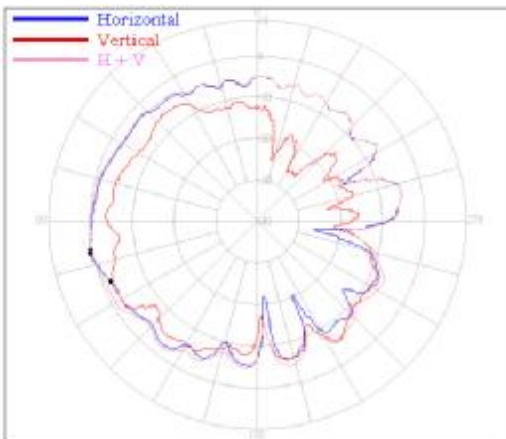
#### Main Antenna



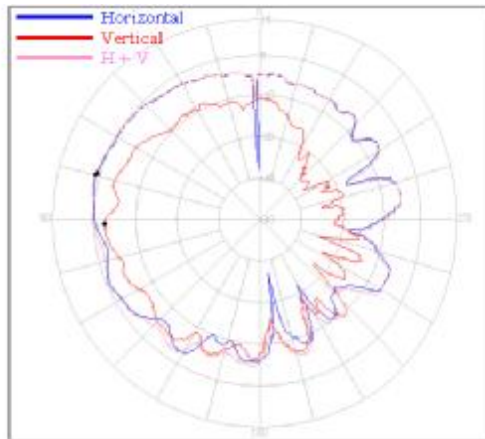
Freq(MHz)	Source Polarization	Max gain(dBi)	Avg. gain(dBi)
2450	Horizontal	-2.14	-6.00
2450	Vertical	-2.68	-8.62
2450	H+V	-1.15	-5.25



Freq(MHz)	Source Polarization	Max gain(dBi)	Avg. gain(dBi)
5150	Horizontal	1.05	-4.21
5150	Vertical	-4.28	-8.96
5150	H+V	1.16	-3.91



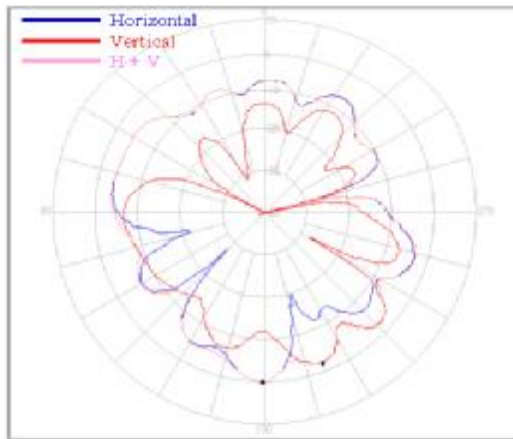
Freq(MHz)	Source Polarization	Max gain(dBi)	Avg. gain(dBi)
5470	Horizontal	0.67	-4.81
5470	Vertical	-2.08	-7.99
5470	H+V	0.81	-4.22



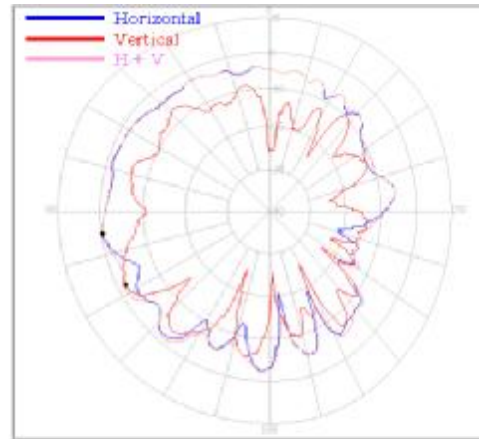
Freq(MHz)	Source Polarization	Max gain(dBi)	Avg. gain(dBi)
5725	Horizontal	0.86	-4.24
5725	Vertical	-2.48	-8.63
5725	H+V	1.12	-3.85



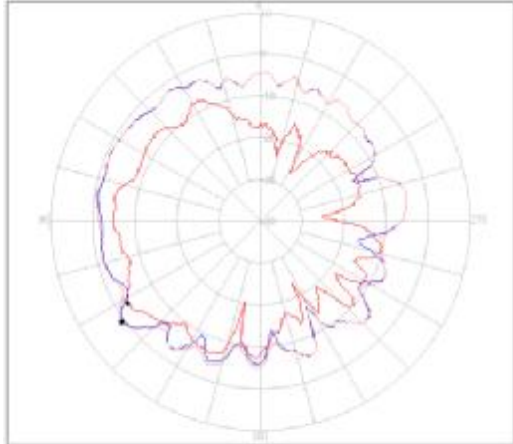
**Aux Antenna**



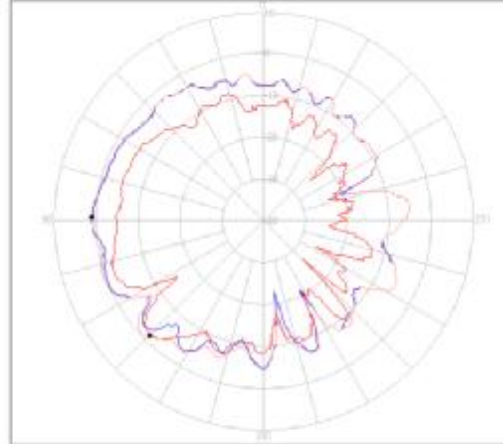
Freq(MHz)	Source Polarization	Max gain(dBi)	Avg. gain(dBi)
2450	Horizontal	0.02	-6.92
2450	Vertical	-1.95	-9.63
2450	H+V	0.03	-5.83



Freq(MHz)	Source Polarization	Max gain(dBi)	Avg. gain(dBi)
5150	Horizontal	-0.15	-5.07
5150	Vertical	-1.78	-9.43
5150	H+V	-0.10	-4.59



Freq(MHz)	Source Polarization	Max gain(dBi)	Avg. gain(dBi)
5470	Horizontal	0.67	-4.61
5470	Vertical	-2.67	-9.54
5470	H+V	1.01	-4.31

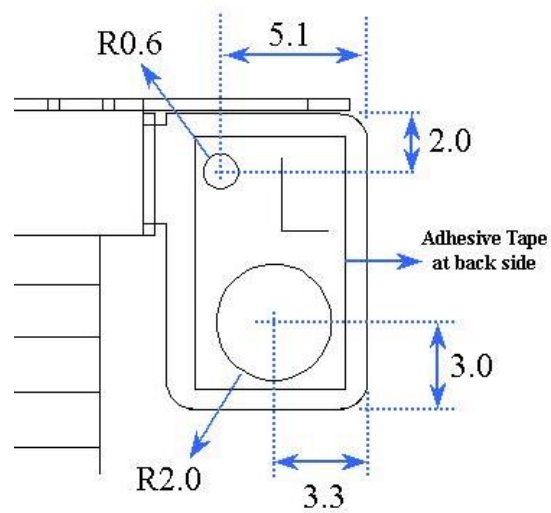
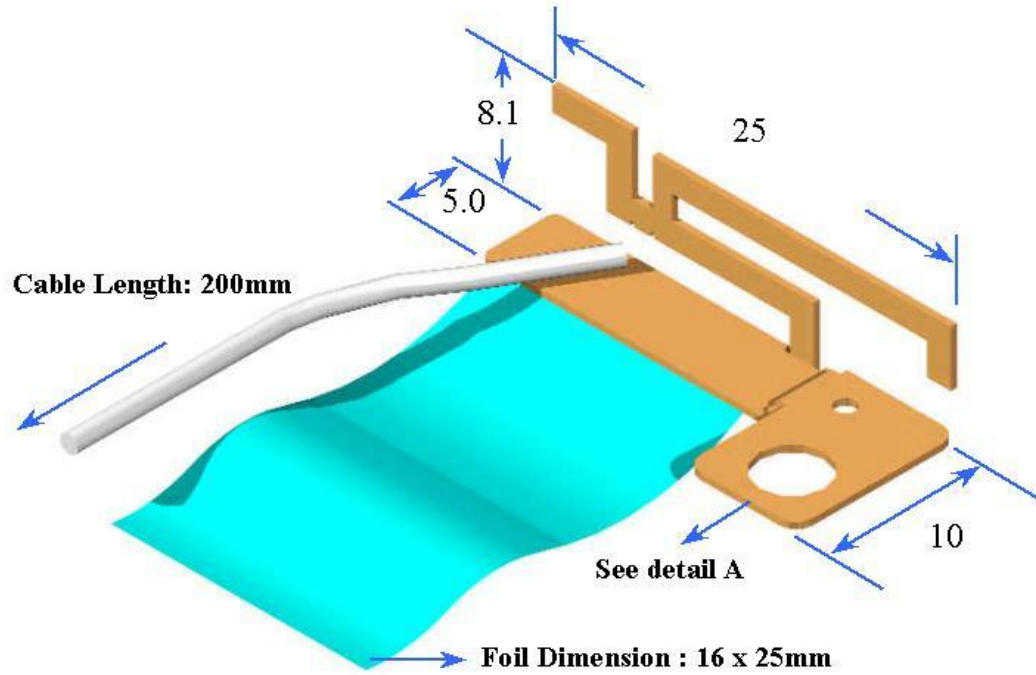


Freq(MHz)	Source Polarization	Max gain(dBi)	Avg. gain(dBi)
5725	Horizontal	1.02	-4.78
5725	Vertical	-1.48	-8.64
5725	H+V	1.19	-4.32

## 4. Antenna Drawing

Main Antenna (Left Antenna) Metal thickness : 0.4mm

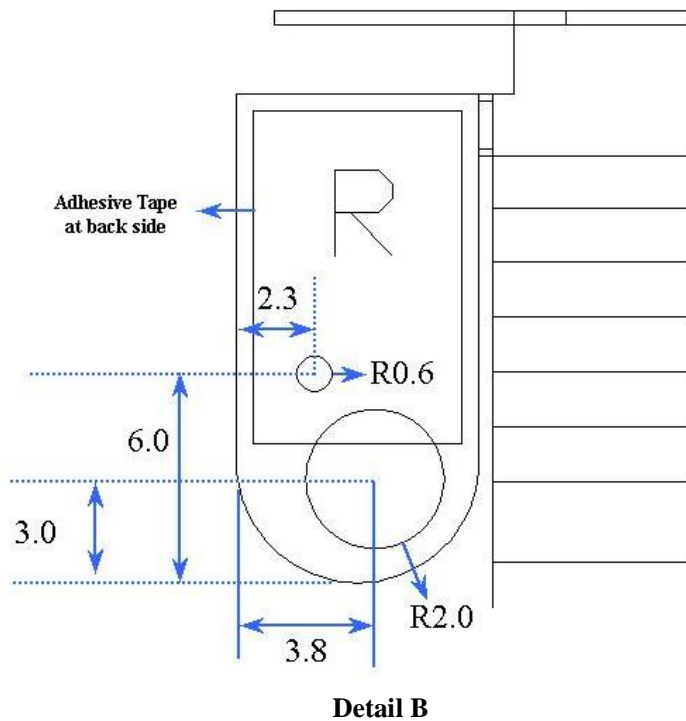
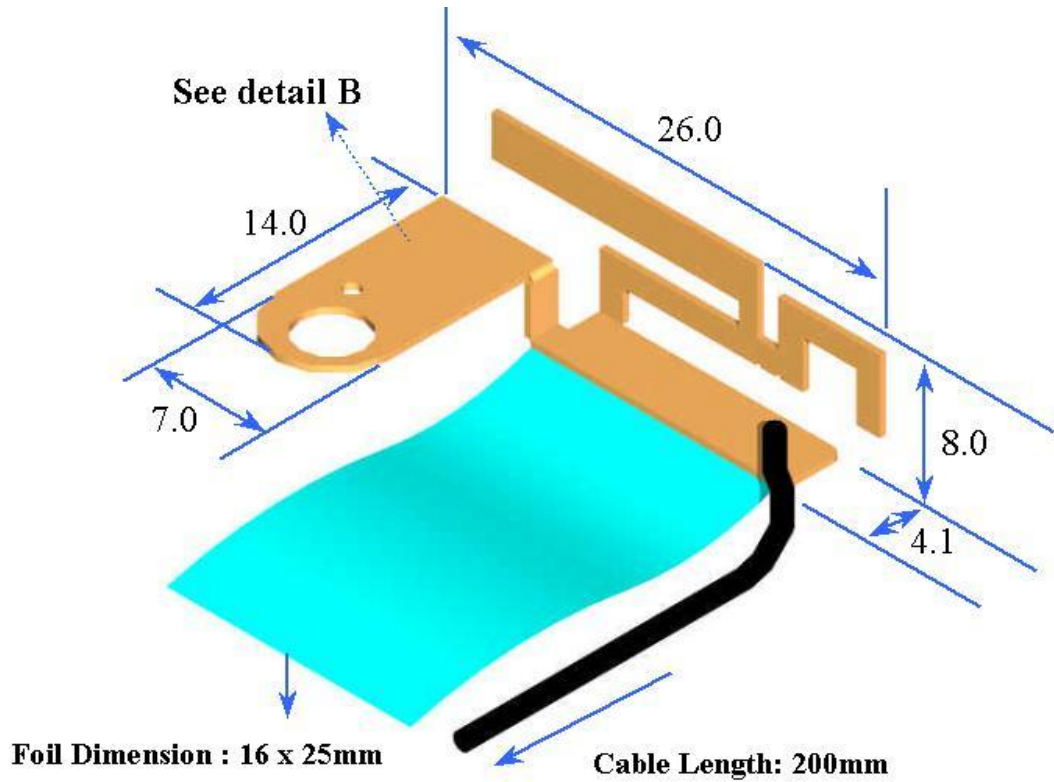
Unit: mm



Detail A

**Aux Antenna (Right Antenna) Metal thickness: 0.4mm**

**Unit : mm**



## 5. Reliability Data For Antenna Patch (Reference To IEC)

IEC 384-10/ CECC 32 100 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
4.12	4(Na)	Rapid change of temperature	-40 °C (30 minutes) to +90 °C (30 minutes); 5 cycles	No visible damage Central Freq. Change ± 6%
4.14	3(Ca)	Damp heat	500 ± 12 hours at 40 °C; 90 to 95 % RH	No visible damage 2 hours recovery Central Freq. Change ± 6%
4.15		Endurance	500 ± 12 hours at 90 °C;	No visible damage 2 hours recovery Central Freq. Change ± 6%

## 6. Ordering Information: Yageo Ordering P/N Code

The antennas may be ordered by using the Yageo P/N ordering code. These code numbers can be determined by the following rules:

**CAN4313 3 83 01 250 1B**  
**F C M S T A P**

### F. Family Code

CAN43 = Antenna

### C. Packing Type Code

13 = Bulk (1000 pcs)

### M. Materials Code

3 = High Frequency Material

### S. Size/Series Code

83 = 50\*6\*0.4 mm Main Antenna; 50\*6\*0.4 mm Aux Antenna

### T. Tolerance/Cable

01 = Cable 1 Main / Aux Antenna, Right, Black; Left, Black

### A. Working Frequency

250 = 2.45/5 GHz Dual Band

### P. Packing

1B = 1000 pcs packing

## 7. Revision Control

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Revision	Date	Content	Remark
A00	Dec 16, 2004	New issued	N/A