

# Data Sheet

Product type	WLAN antenna
Model number	ASUS / A6
Revision	R06
Part No. / YAGEO / Main+ Aux	CAN4313 382 012501B
Part No. / ASUS / Main+ Aux	14G152043000

**Yageo (Taiwan) Ltd.**

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<b>2.45/5GHz Multi Band Antenna with Cable &amp; Connector for IEEE802.11b, 11g, 11a, UNII</b>	<b>Yageo Part Number: Main+ Aux: CAN4313 382 012501B</b>	R02	Nov. 01, 04
		R03	Nov. 08, 04
		R04	Aug. 17, 05
		R05	Nov. 16, 05
		BY / <b>Howard.Chuang</b>	DATE / <b>Jan. 04, 2006</b>

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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 ~ 5.85 for 802.11a</b>
<b>VSWR</b>	<b>2.50 for 2.4GHz band For WL 2.85 for 5.0GHz band For WL</b>
<b>Peak gain (dBi)</b>	<b>0.40 dBi for 2.4GHz band 0.67 dBi for 5.0GHz band</b>
<b>MiniPCI Connector</b>	<b>Ipex / Hirose or Compatible</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 Antenna Dimension / Cable length

<b>Product</b>	<b>ASUS / A6</b>
<b>Main antenna (LCD)</b>	<b>50.0*7.0*0.5 mm / 590.0 mm, Color Black</b>
<b>Aux antenna (LCD)</b>	<b>50.0*7.0*0.5 mm / 730.0 mm, Color White or Gray</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 Pictures



## 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.

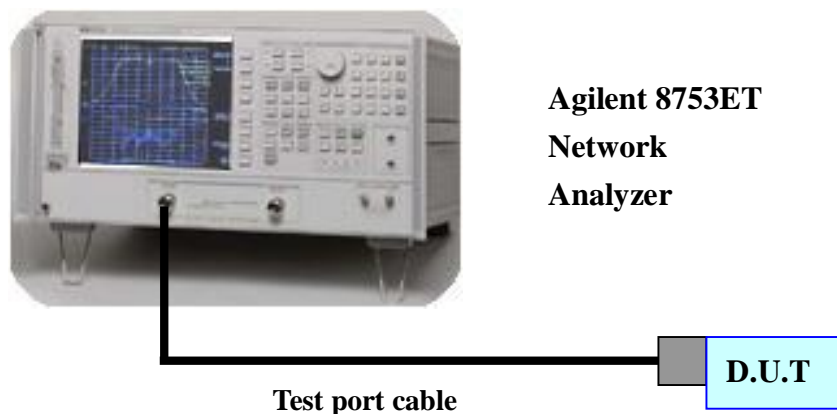


Figure 1. The schematic diagram for measuring VSWR

### 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

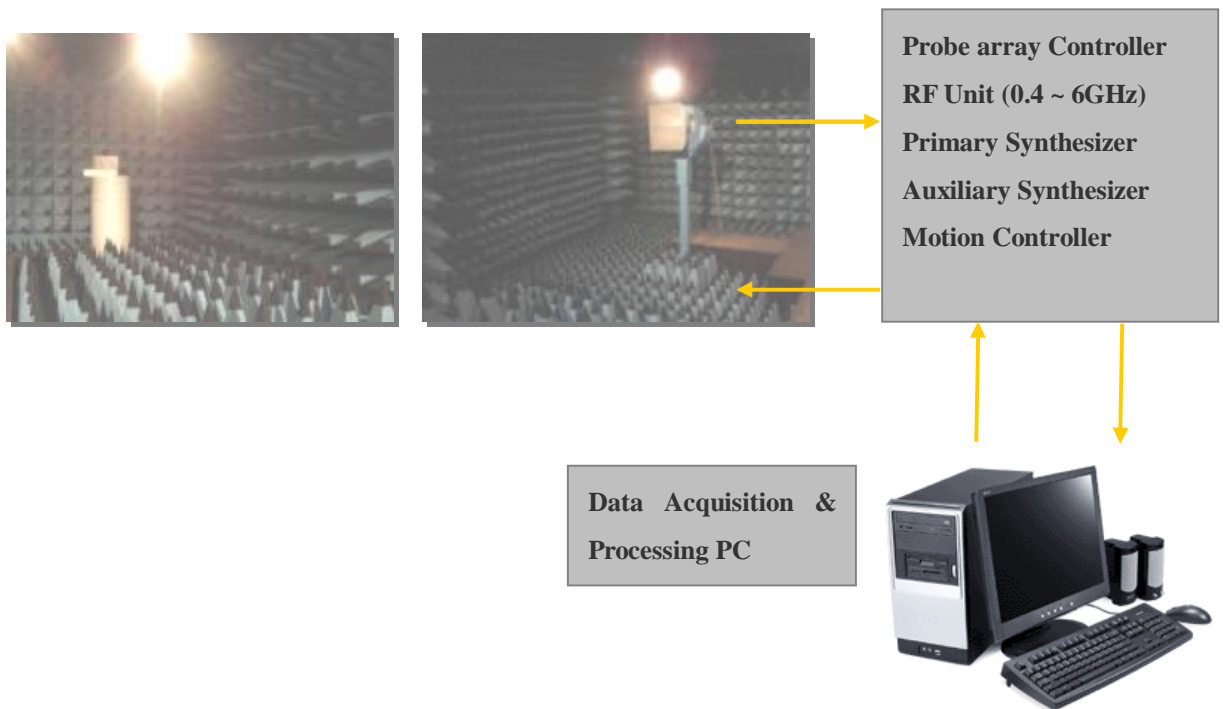
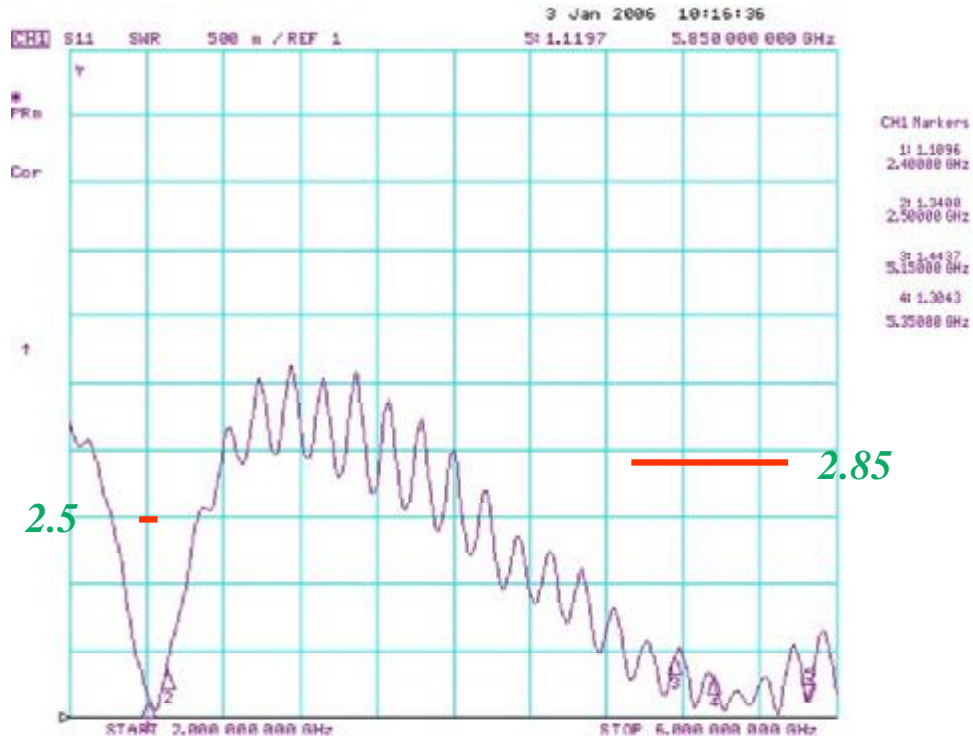


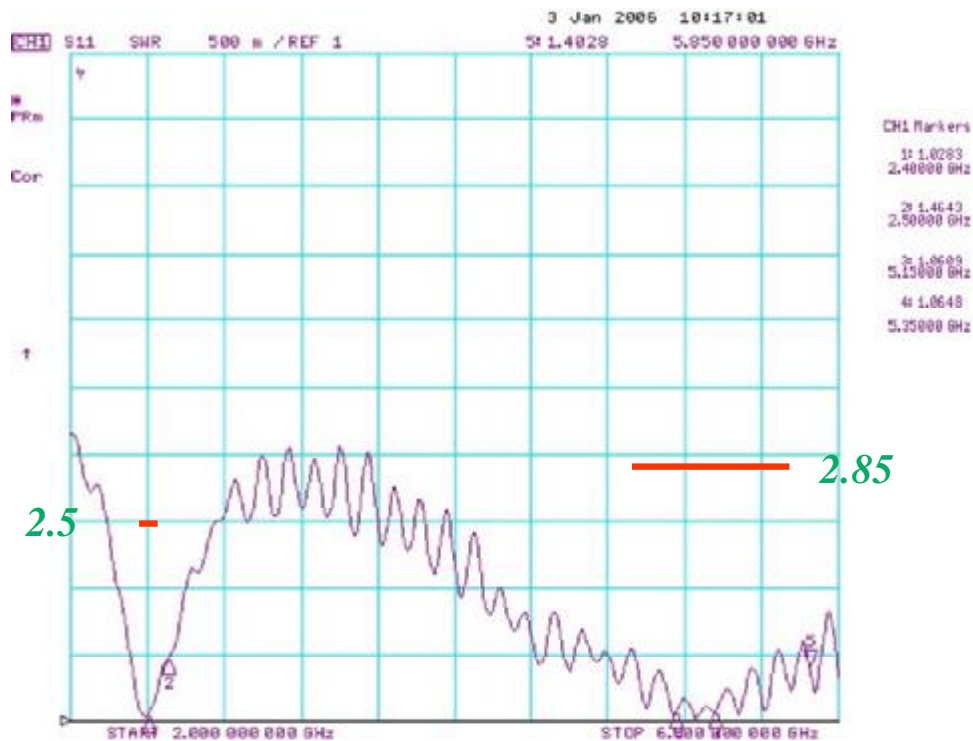
Figure 2. The schematic diagram for measuring radiation pattern and gain

### 3. Performance Data

#### 3.1 VSWR in the fixture (Main antenna) / 15"



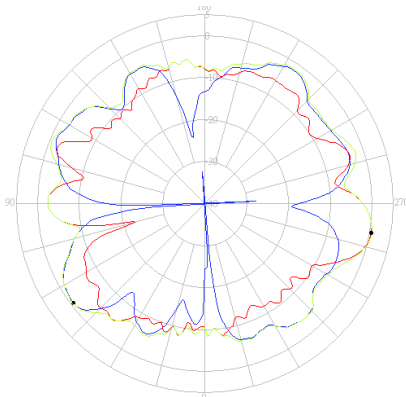
(Main antenna)



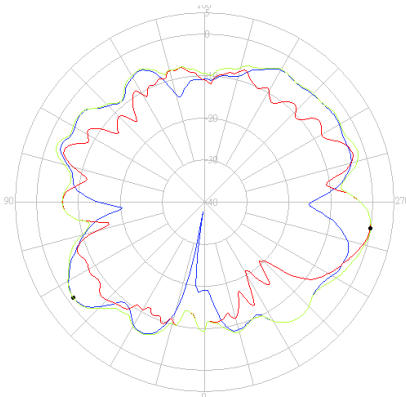
(Aux antenna)

**3.2 Radiation pattern and gain**

**3.2.1 Low Frequency (2.40GHz~2.50GHz) / Main Antenna / 15"**

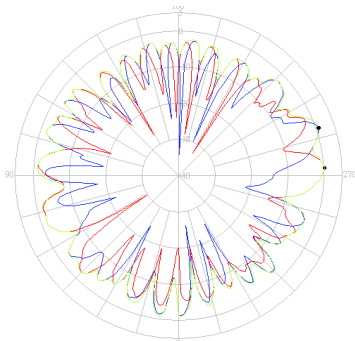


**2.4GHz**

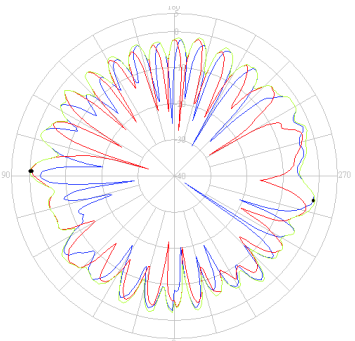


**2.5GHz**

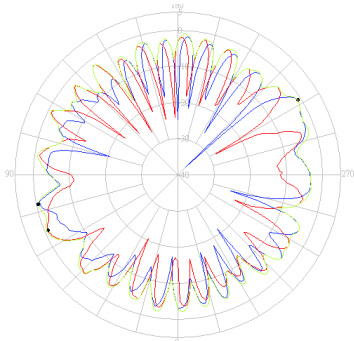
**3.2.2 Middle Frequency (5.15GHz~5.35GHz) / Main Antenna**



**5.15GHz**

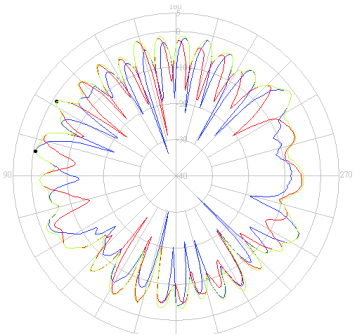


**5.35GHz**

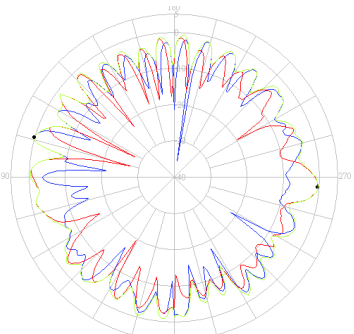


**5.47GHz**

**3.2.3 High Frequency (5.47GHz~5.85GHz) / Main Antenna**

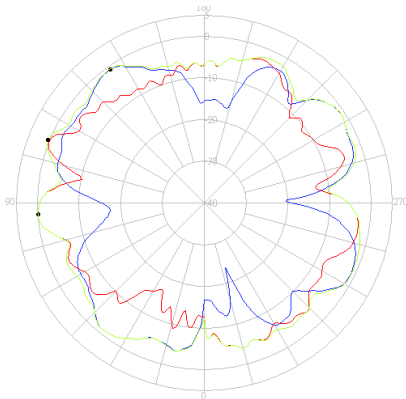


**5.725GHz**

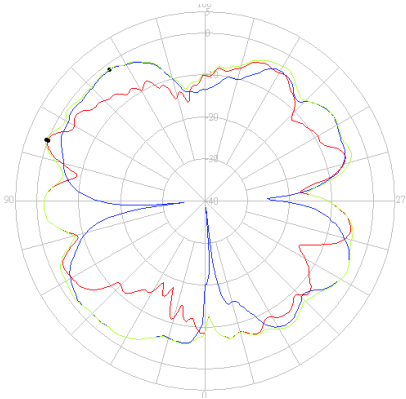


**5.85GHz**

**3.2.4 Low Frequency (2.40GHz~2.50GHz) / Aux Antenna / 15”**

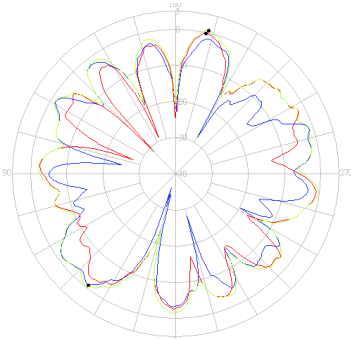


**2.4GHz**

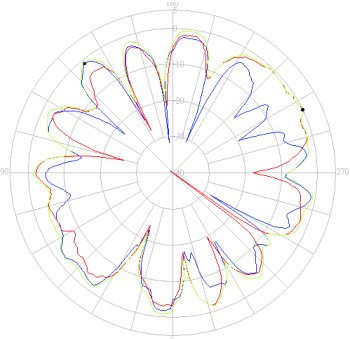


**2.5GHz**

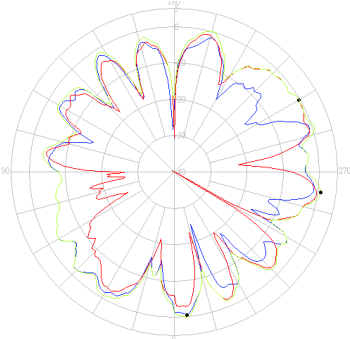
**3.2.5 Middle Frequency (5.15GHz~5.35GHz) / Aux Antenna**



**5.15GHz**

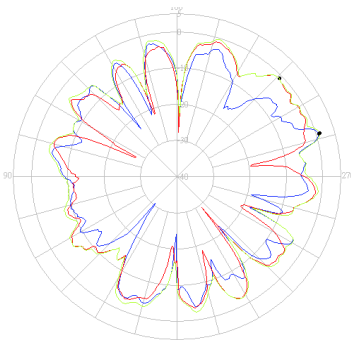


**5.35GHz**

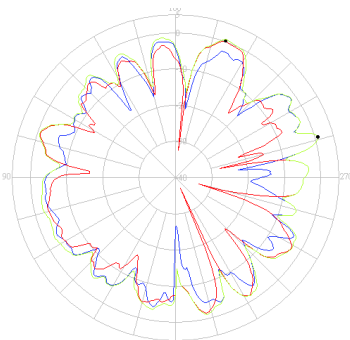


**5.47GHz**

**3.2.6 High Frequency (5.47GHz~5.85GHz) / Aux Antenna**



**5.725GHz**



**5.85GHz**



### 3.2.7 Average gain (dBi) summary

Main Antenna Gain							
Frequency	Max Value (dBi)			Average (dBi)			PASS/NG
	H-pol	V-pol	Total	H-pol	V-pol	Total	
2400(MHz)	-0.58	0.40	0.42	-5.80	-6.51	-4.12	PASS
2500(MHz)	-1.42	-0.09	-0.04	-6.25	-7.60	-4.91	PASS
5150(MHz)	0.57	0.13	0.79	-6.16	-5.98	-3.96	PASS
5350(MHz)	-1.04	-0.64	-0.18	-5.70	-6.05	-3.87	PASS
5470(MHz)	-0.89	-0.94	-0.56	-5.85	-6.08	-3.99	PASS
5725(MHz)	-0.67	-1.22	-0.62	-6.88	-6.62	-4.74	PASS
5850(MHz)	0.12	-0.46	0.12	-5.84	-5.62	-3.74	PASS

Main For 15"

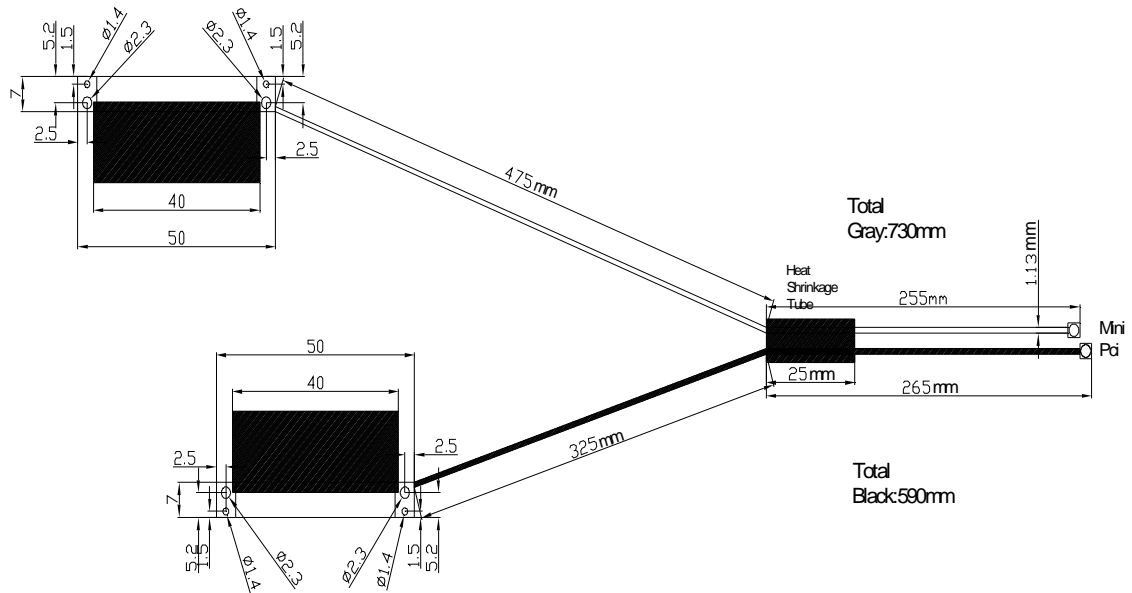
Aux Antenna Gain							
Frequency	Max Value (dBi)			Average (dBi)			PASS/NG
	H-pol	V-pol	Total	H-pol	V-pol	Total	
2400(MHz)	-0.84	-0.08	0.38	-4.90	-5.67	-3.20	PASS
2500(MHz)	-1.47	-0.05	0.36	-5.34	-6.80	-4.01	PASS
5150(MHz)	-0.86	-0.24	0.58	-5.95	-5.76	-3.99	PASS
5350(MHz)	-1.18	-0.02	-0.02	-5.88	-4.84	-3.48	PASS
5470(MHz)	-0.55	-0.25	0.68	-5.57	-5.53	-3.65	PASS
5725(MHz)	0.67	-1.02	0.97	-7.23	-5.85	-4.65	PASS
5850(MHz)	0.66	0.16	0.66	-6.04	-5.96	-4.12	PASS

Aux For 15"

## 4. Antenna Assembly Summary

1A Antenna Part Number	1B Manufacture	1C Antenna Type	1D Cable Assembly Part Number and Information	1E Peak Gain W/ Cable loss (dBi)	1F Peak Gain w/o Cable Loss (dBi)	1G VSWR	1H Cable Loss (dBi)
<b>P/N:</b> <b>CAN4313382012501B</b> Main Antenna 15" LCD	Yageo Corporation	PIFA	Connector: (Hirose U.FL-LP) (Iplex MHF) 50 ohm Coaxial. Length: 590mm diameter: 1.13mm	2400-2500MHz 0.40 dBi (peak)	2400-2500MHz 1.77 dBi (peak)	2400-2500MHz 2.50 max	2400-2500MHz 1.37 dBi (peak)
				5150-5350MHz 0.57 dBi (peak)	5150-5350MHz 1.90 dBi (peak)	5150-5350MHz 2.85 max	5150-5350MHz 1.33 dBi (peak)
				5470-5725MHz -0.67 dBi (peak)	5470-5725MHz 1.37 dBi (peak)	5470-5725MHz 2.85 max	5470-5725MHz 2.04 dBi (peak)
				5725-5850MHz 0.12 dBi (peak)	5725-5850MHz 2.38 dBi (peak)	5725-5850MHz 2.85 max	5725-5850MHz 2.26 dBi (peak)
<b>P/N:</b> <b>CAN4313382012501B</b> Auxiliary Antenna 15" LCD	Yageo Corporation	PIFA	Connector: (Hirose U.FL-LP) (Iplex MHF) 50 ohm Coaxial. Length: 730mm diameter: 1.13mm	2400-2500MHz -0.05 dBi (peak)	2400-2500MHz 1.44 dBi (peak)	2400-2500MHz 2.50 max	2400-2500MHz 1.49 dBi (peak)
				5150-5350MHz -0.02 dBi (peak)	5150-5350MHz 2.42 dBi (peak)	5150-5350MHz 2.85 max	5150-5350MHz 2.44 dBi (peak)
				5470-5725MHz 0.67 dBi (peak)	5470-5725MHz 3.12 dBi (peak)	5470-5725MHz 2.85 max	5470-5725MHz 2.45 dBi (peak)
				5725-5850MHz 0.67 dBi (peak)	5725-5850MHz 3.31 dBi (peak)	5725-5850MHz 2.85 max	5725-5850MHz 2.64 dBi (peak)

## 5. Antenna Drawing



## 6. 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%

## **7. 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 82    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**

**82 = 50.0\*7.0\*0.5 mm Main Antenna;50.0\*7.0\*0.5 mm Aux Antenna;**

### **T. Tolerance/Cable**

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

### **A. Working Frequency**

**250 = 2.45/5 GHz Dual Band**

### **P. Packing**

**1B = 1000 pcs packing**

## 8. Revision Control

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Revision	Date	Content	Remark
R01	Oct. 16, 2004	New issued, metal antenna	N/A.
R02	Nov. 01, 2004	Main Cable Length Update For M/E Request	N/A.
R03	Nov. 08, 2004	Aluminum Foil Material Change For M/E Request	N/A.
R04	Aug. 17, 2005	Add Assembly Summary For M/E Request	N/A.
R05	Nov. 16, 2005	ASUS P/N Updated For ASUS Request	N/A.
R06	Jan. 04, 2006	P/R System Performance Double Check	N/A.