

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

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2.45/5GHz Multi Band Antenna with Cable & Connector for IEEE802.11b, 11g, 11a, UNII		Yageo Part Number: Main+ Aux: CAN4313 382 012501B		R02	Nov. 01, 04
				R03	Nov. 08, 04
				R04	Aug. 17, 05
				R05	Nov. 16, 05
BY /	Howard.Chuang	DATE /	Jan. 04, 2006	R06	Jan. 04, 06

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1. Specifications

1.1 Specifications for antennas

Frequency range (GHz)	2.40 ~ 2.50 for 802.11b/g 5.15 ~ 5.85 for 802.11a
VSWR	2.50 for 2.4GHz band For WL 2.85 for 5.0GHz band For WL
Peak gain (dBi)	0.40 dBi for 2.4GHz band 0.67 dBi for 5.0GHz band
MiniPCI Connector	Ipex / Hirose or Compatible
Impedance	50Ω
Operating Temperature	-40~90℃
Maximum Power	1W
Polarization	Linear
Radiation pattern	Omni-directional

1.2 Antenna Dimension / Cable length

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

1.3 Packing Spec.

Product	For Example
Inner tray	60
Carton box	265*100



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.

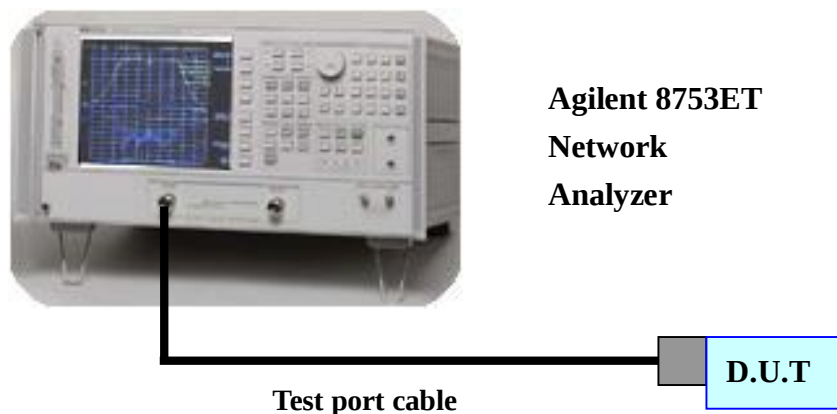


Figure 1. The schematic diagram for measuring VSWR

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 -30dB reflectivity from 800MHz through 8GHz . The chamber is calibrated using both standard dipole and horn antenna. The gain here is expressed as 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

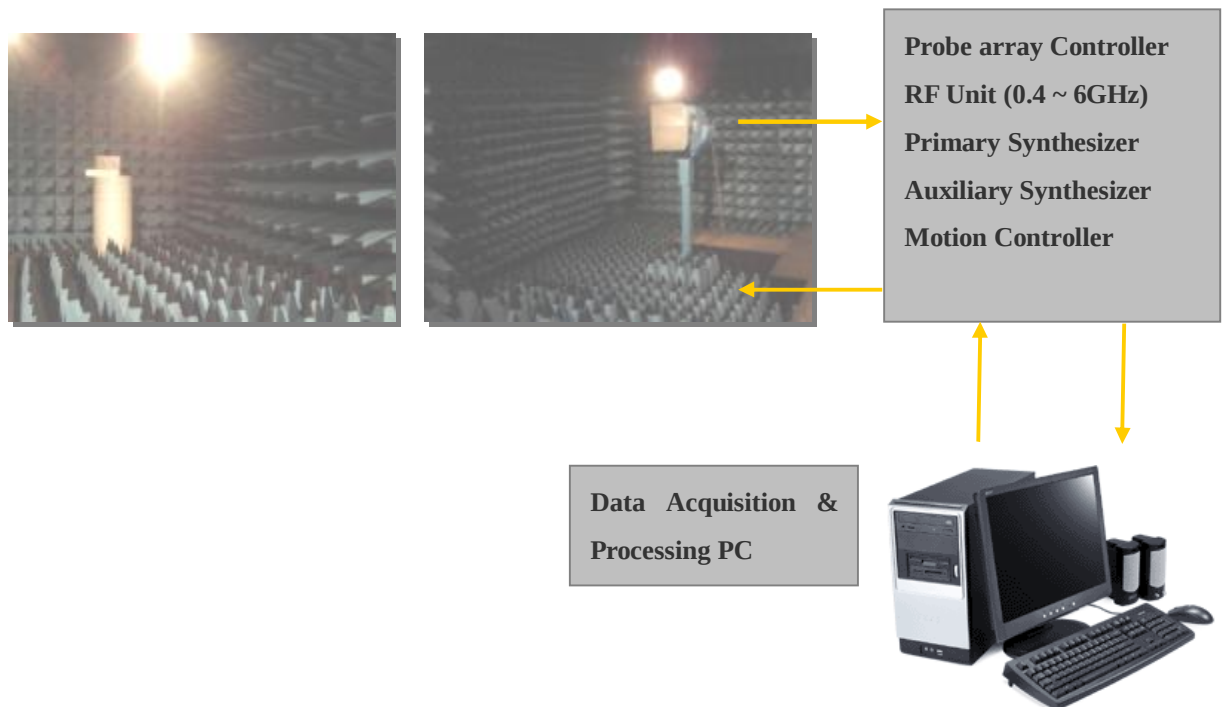
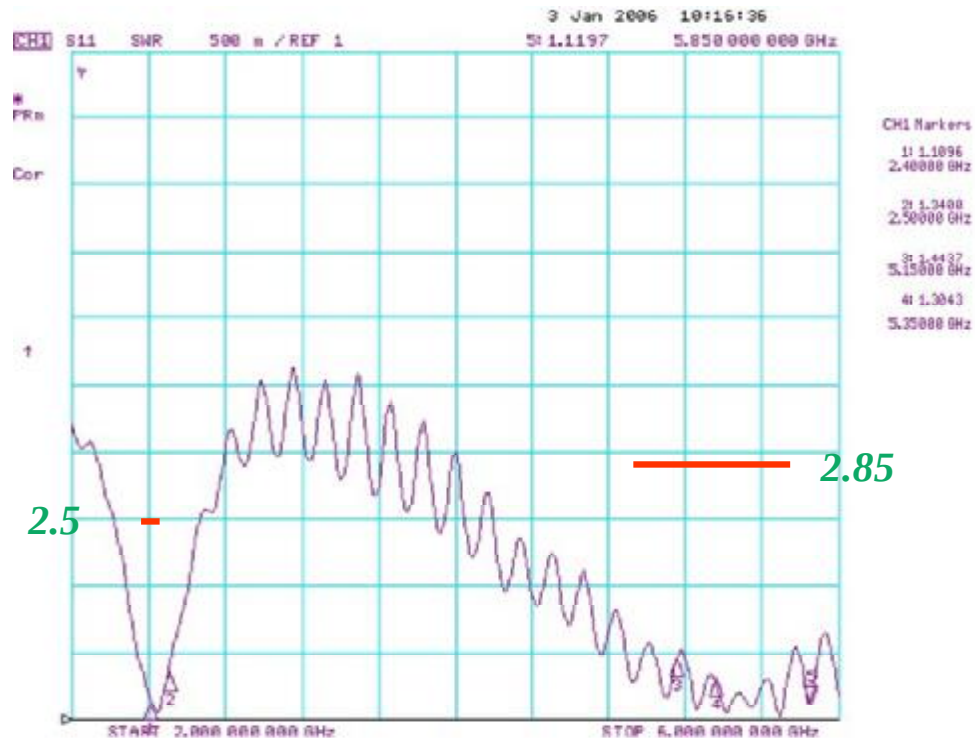


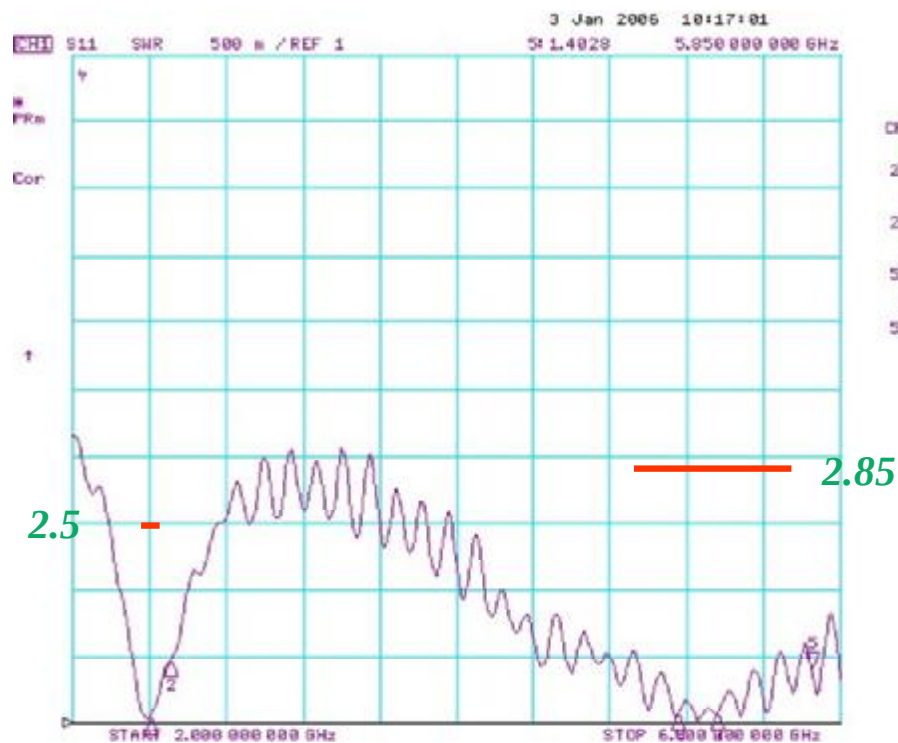
Figure 2. The schematic diagram for measuring radiation pattern and gain

3. Performance Data

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



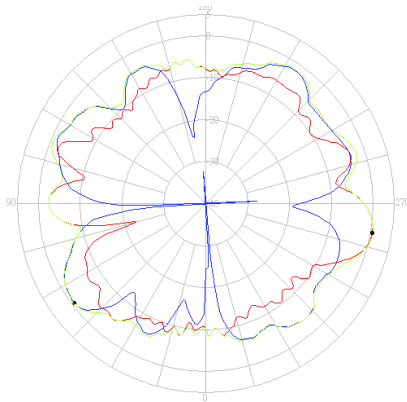
(Main antenna)



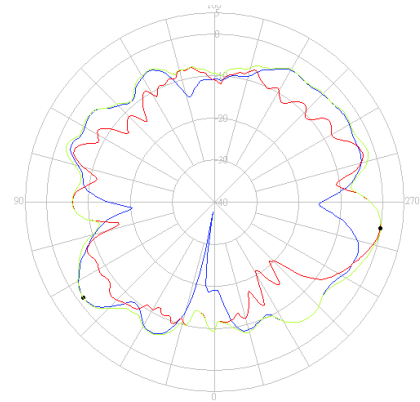
(Aux antenna)

3.2 Radiation pattern and gain

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

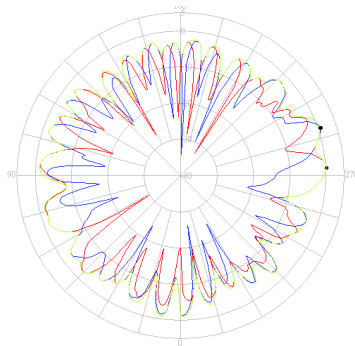


2.4GHz

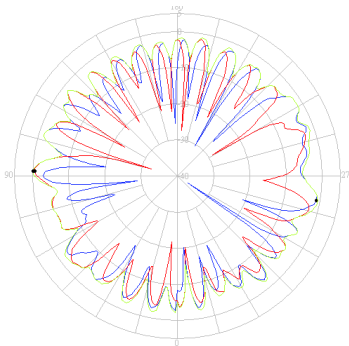


2.5GHz

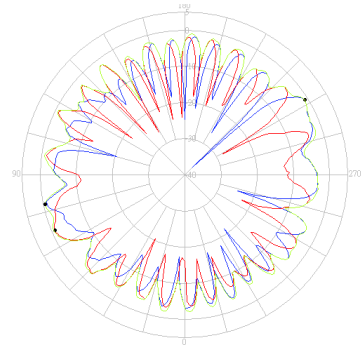
3.2.2 Middle Frequency (5.15GHz~5.35GHz) / Main Antenna



5.15GHz

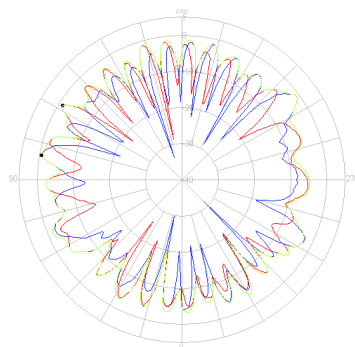


5.35GHz

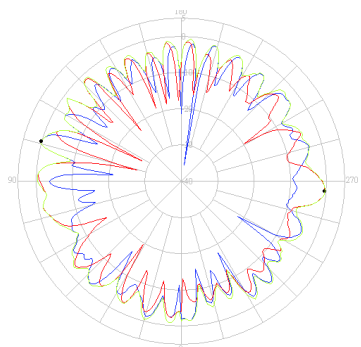


5.47GHz

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

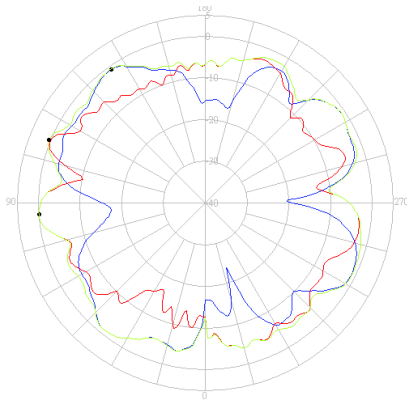


5.725GHz

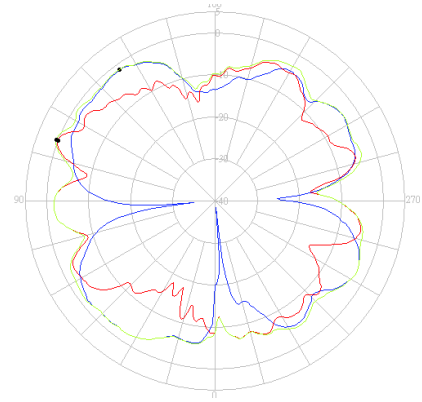


5.85GHz

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

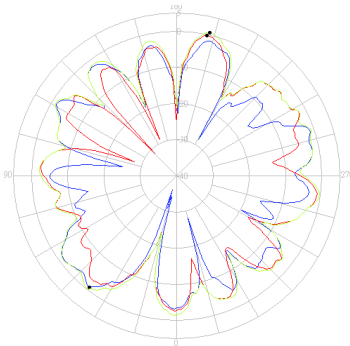


2.4GHz

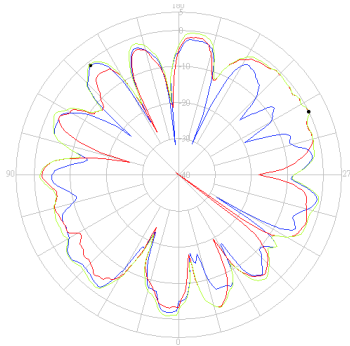


2.5GHz

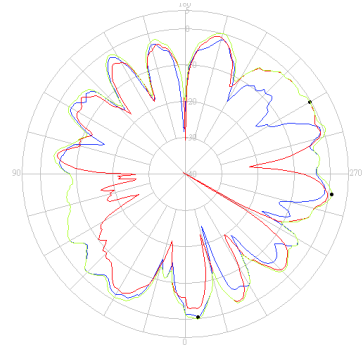
3.2.5 Middle Frequency (5.15GHz~5.35GHz) / Aux Antenna



5.15GHz

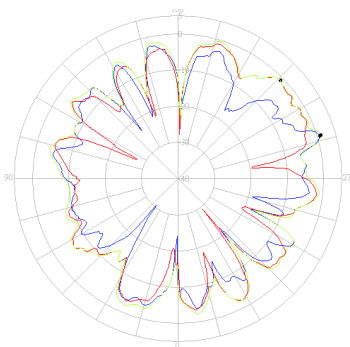


5.35GHz

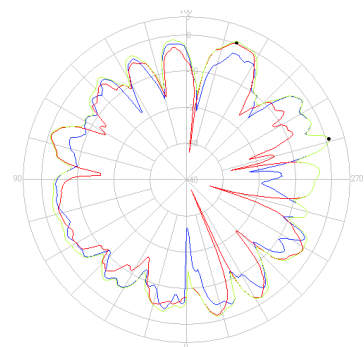


5.47GHz

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"

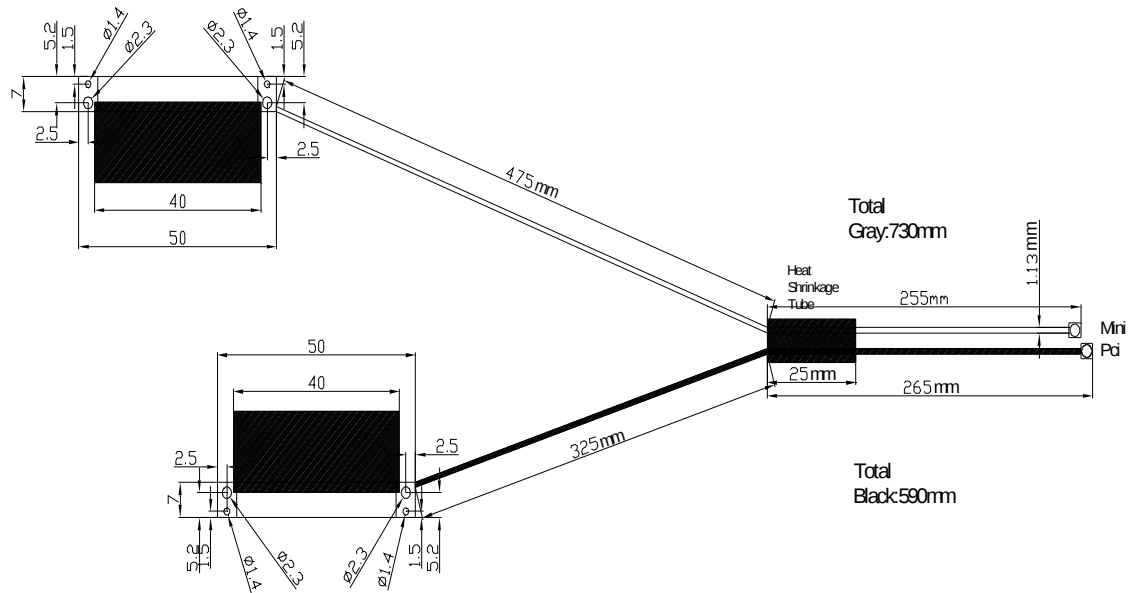
Aux Antenna Gain							
Frequency	Max Value (dBi)			Average (dBi)			PASS/NG
	H-pol	V-pol	Total	H-pol	V-pol	Total	
2400(MHz)	-0.84	-0.08	0.38	-4.90	-5.67	-3.20	PASS
2500(MHz)	-1.47	-0.05	0.36	-5.34	-6.80	-4.01	PASS
5150(MHz)	-0.86	-0.24	0.58	-5.95	-5.76	-3.99	PASS
5350(MHz)	-1.18	-0.02	-0.02	-5.88	-4.84	-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)
P/N: CAN4313382012501B Main Antenna 15" LCD	Yageo Corporation	PIFA	Connector: (Hirose U.FL-LP)	2400-2500MHz 0.40 dBi (peak)	2400-2500MHz 1.77 dBi (peak)	2400-2500MHz 2.50 max	2400-2500MHz 1.37 dBi (peak)
			(Iplex MHF)	5150-5350MHz 0.57 dBi (peak)	5150-5350MHz 1.90 dBi (peak)	5150-5350MHz 2.85 max	5150-5350MHz 1.33 dBi (peak)
			50 ohm Coaxial. Length: 590mm	5470-5725MHz -0.67 dBi (peak)	5470-5725MHz 1.37 dBi (peak)	5470-5725MHz 2.85 max	5470-5725MHz 2.04 dBi (peak)
			diameter: 1.13mm	5725-5850MHz 0.12 dBi (peak)	5725-5850MHz 2.38 dBi (peak)	5725-5850MHz 2.85 max	5725-5850MHz 2.26 dBi (peak)
P/N: CAN4313382012501B Auxiliary Antenna 15" LCD	Yageo Corporation	PIFA	Connector: (Hirose U.FL-LP)	2400-2500MHz -0.05 dBi (peak)	2400-2500MHz 1.44 dBi (peak)	2400-2500MHz 2.50 max	2400-2500MHz 1.49 dBi (peak)
			(Iplex MHF)	5150-5350MHz -0.02 dBi (peak)	5150-5350MHz 2.42 dBi (peak)	5150-5350MHz 2.85 max	5150-5350MHz 2.44 dBi (peak)
			50 ohm Coaxial. Length: 730mm	5470-5725MHz 0.67 dBi (peak)	5470-5725MHz 3.12 dBi (peak)	5470-5725MHz 2.85 max	5470-5725MHz 2.45 dBi (peak)
			diameter: 1.13mm	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 $\pm 6\%$
4.14	3(Ca)	Damp heat	500 $\pm$ 12 hours at 40 °C; 90 to 95 % RH	No visible damage 2 hours recovery Central Freq. Change $\pm 6\%$
4.15		Endurance	500 $\pm$ 12 hours at 90 °C;	No visible damage 2 hours recovery Central Freq. Change $\pm 6\%$

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

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.