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Antenna Design for Wireless AP

(BELKIN case)

V1.00

Document Number	
1st Released Date	**12/13/2010**
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Revised History

Date	Version	Revised Record
12/13/10	1.00	1st released

Specification

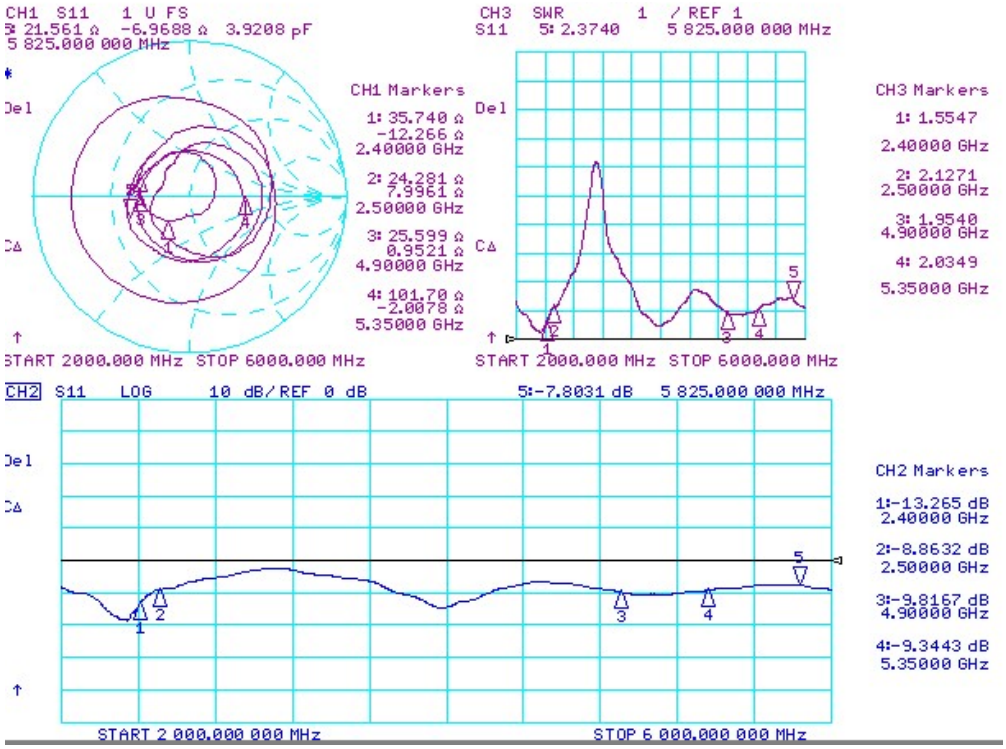
Rough description	2G/5G antenna for a Wireless AP. Isolation between antennas must be under 20dB minus.	
Item	Initial Specification	Final Specification
Dimensions	PCB : Ant2 49(L)*9(W)*0.8(H)mm	
Impedance	50Ω	
Test environment	With Housing	
Spectrum	802.11n	
Freq. Range	2.4~2.5GHz/4.9~5.825GHz	
Antenna type	PCB	
Gain	dBi	
VSWR	1.92：1	
Radiation	Omni	
Polarization	Linear	
HPBW / H	None	
HPBW / E	None	
Rad. efficiency	>70%	
Connector type	I-PEX	
Cable type	1.13	
Cable length	None	
Isolation	20dB	

1. Antennas' setup and environment

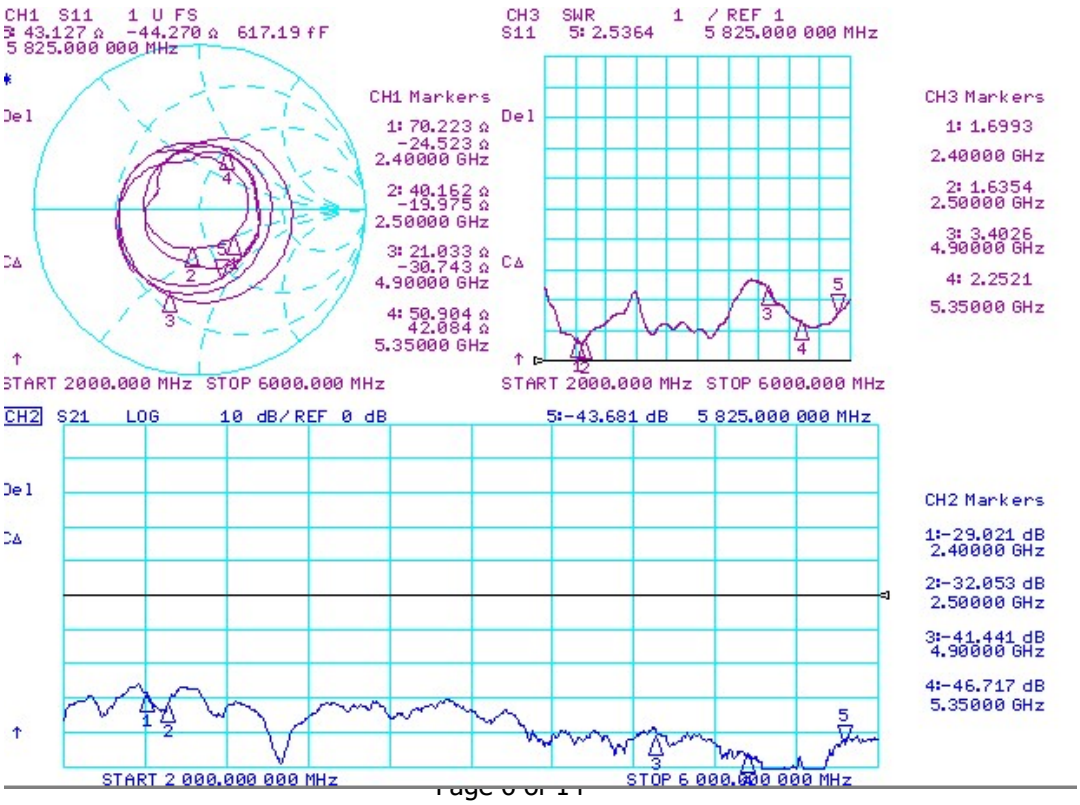
1.2 Ant 2

2.2 Ant2 S11 and S12 Test Results

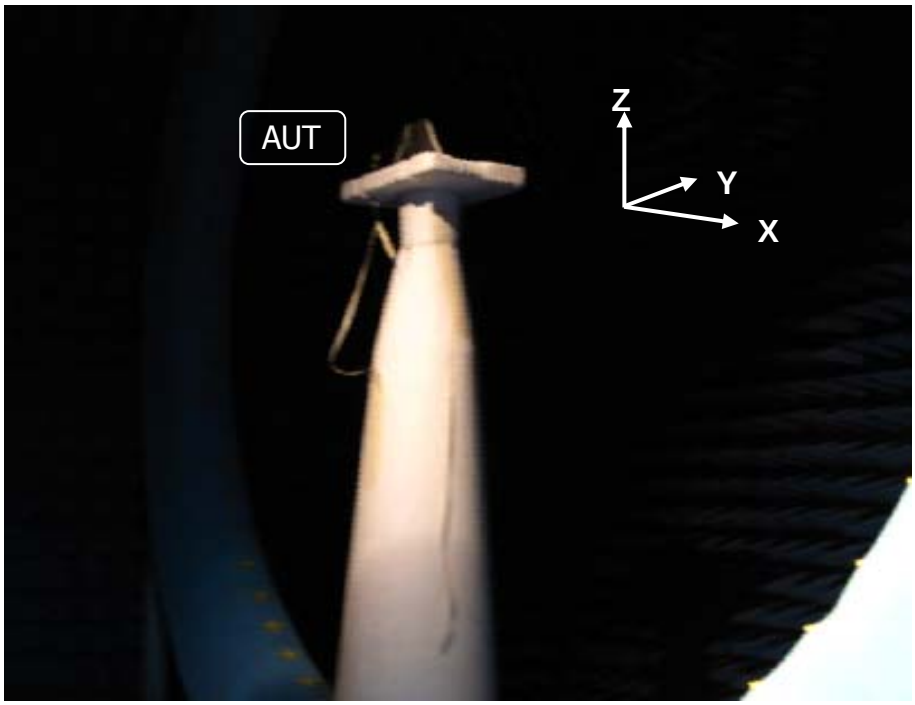
2.2.1 S11

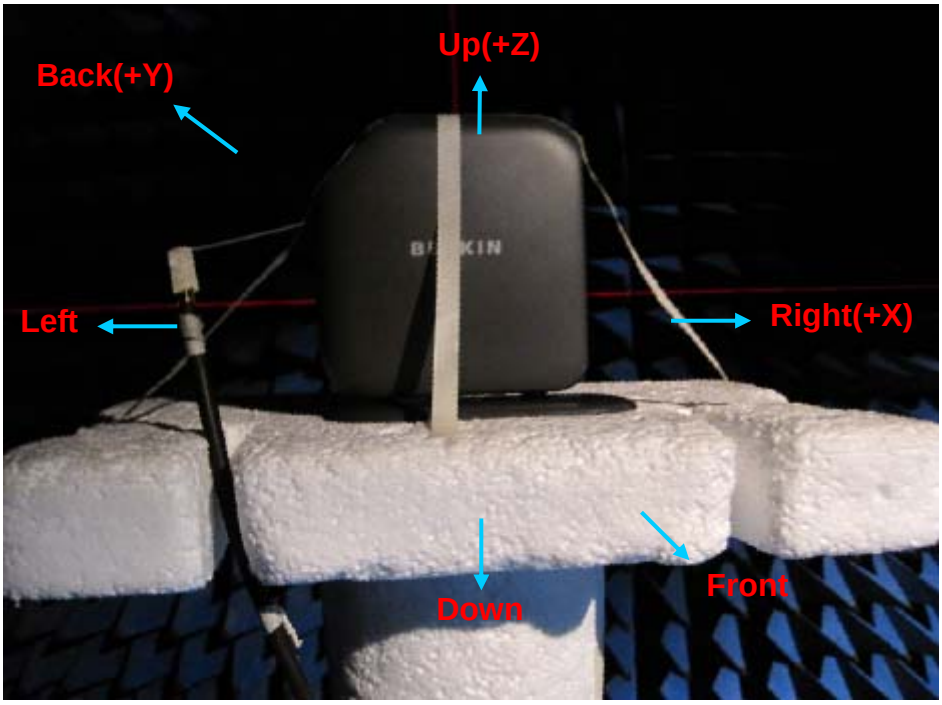


2.2.2 S12

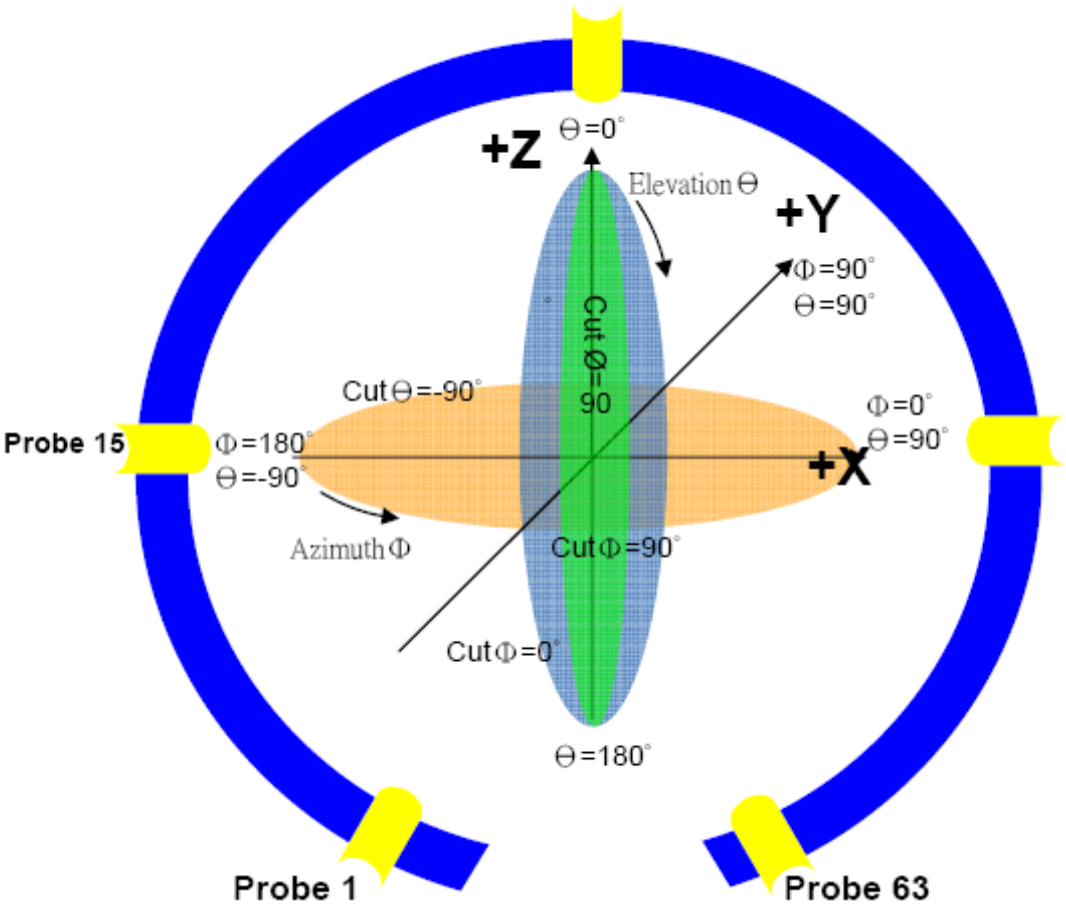


3.1 Measurement setting for Ant2





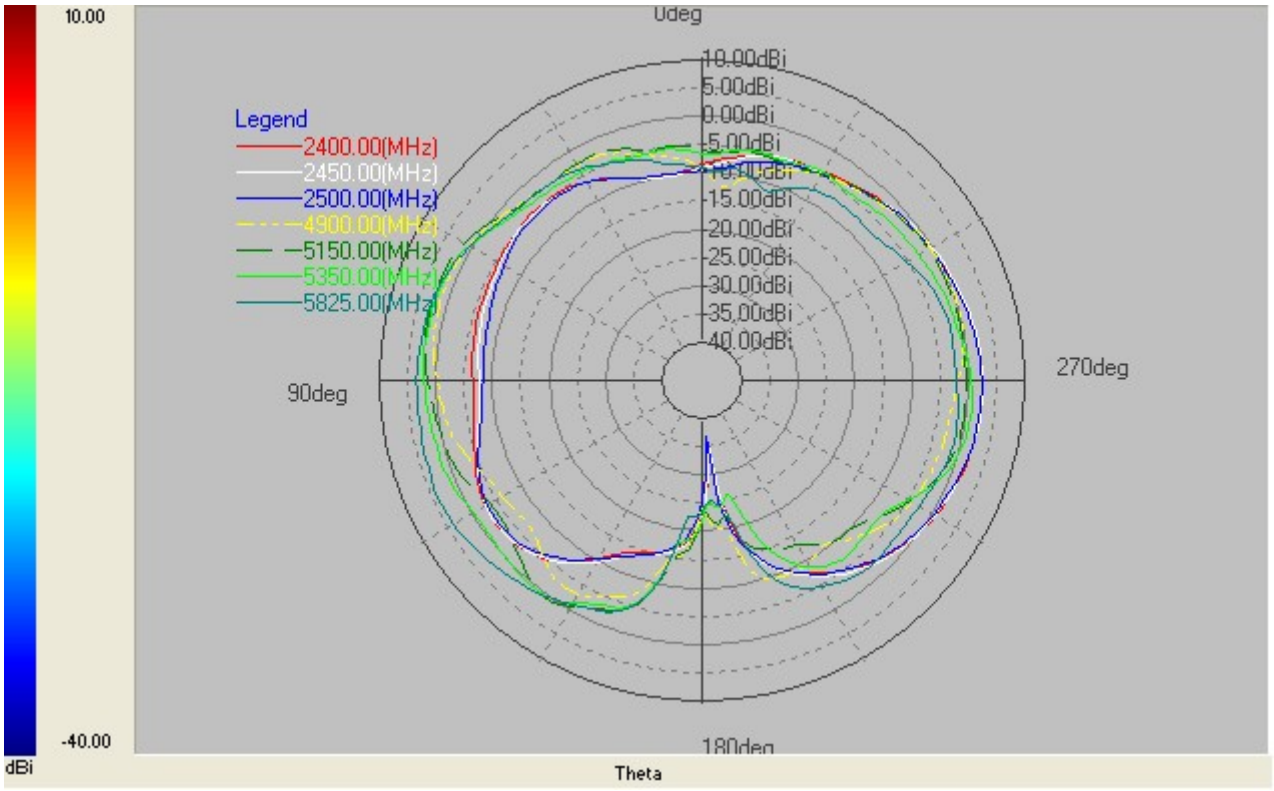
	XY	YZ	XZ
0°	Right	Up	Up
90°	Back	Back	Right
180°	Left	Down	Down
270°	Front	Front	Left



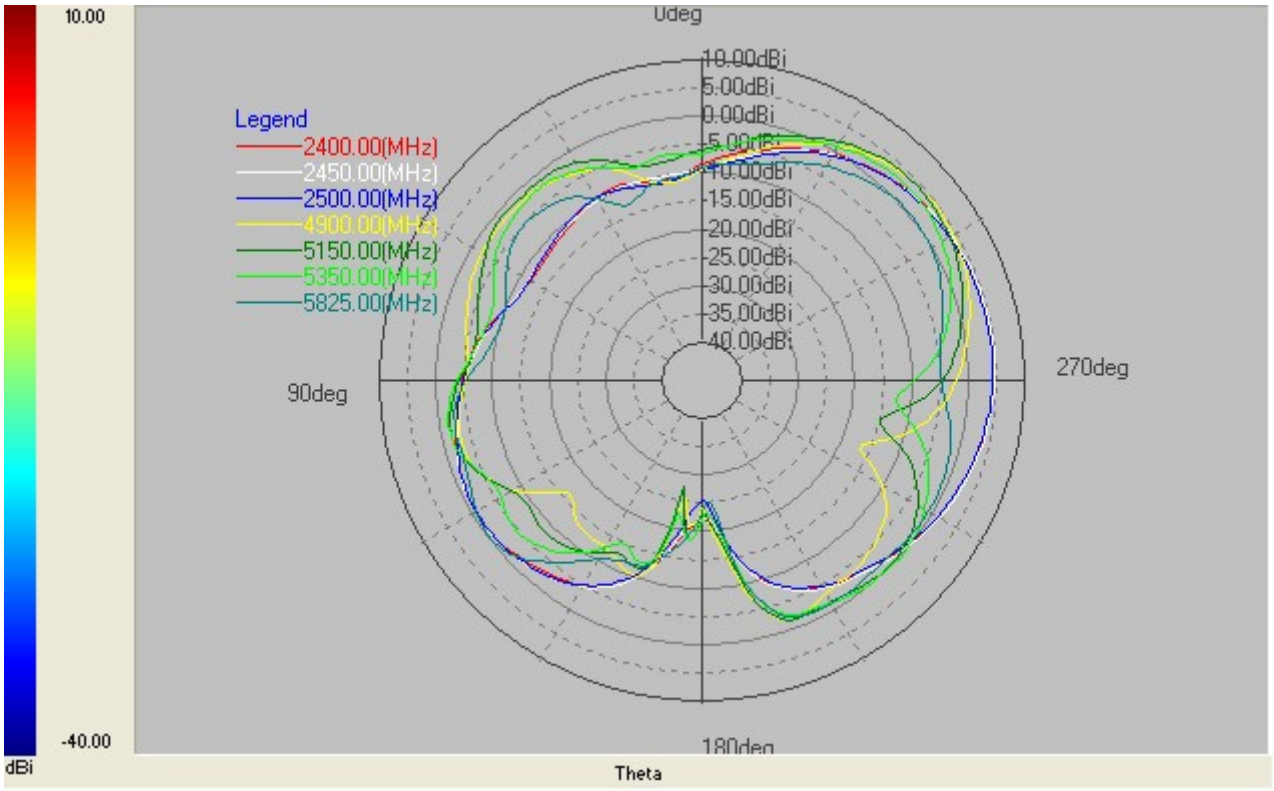
	θ	φ
Total angle	175°	360°
How many angle scan one point	5°	5°
Total scan point	36	73

3.2 Ant 2

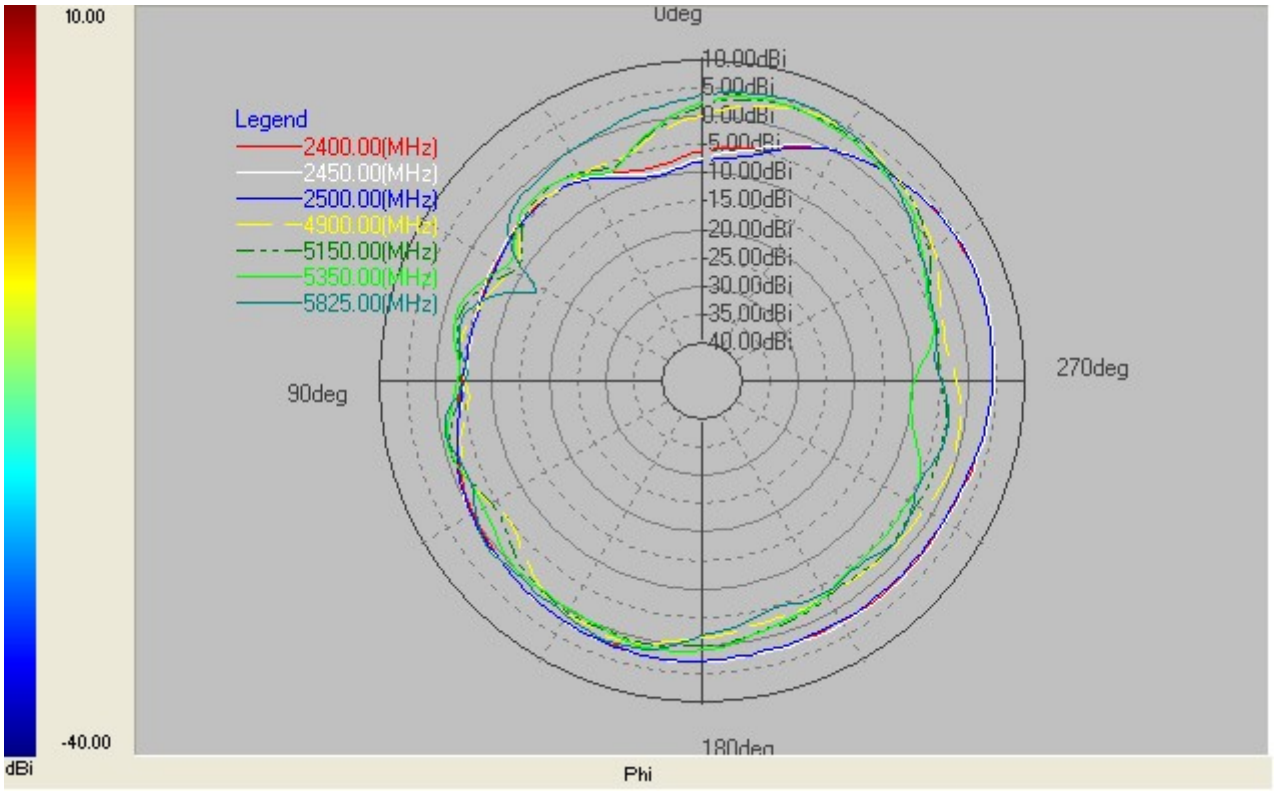
2.4~2.5GHz/4.9~5.825GHz



X-Z Plane (E-total)



Y-Z Plane (E-total)



X-Y Plane (E-total)

4. Summary

4.1 Return Loss

Frequency	Ant2 (dB)	
2400MHz	-13	
2450MHz	-10	
2500MHz	-8	
4900MHz	-9	
5150MHZ	-9	
5350MHZ	-9	
5825MHZ	-7	

4.2 Isolation

Frequency	ANT2 (dB)	
2400MHz	-29	
2450MHz	-30	
2500MHz	-32	
4900MHz	-41	
5150MHZ	-41	
5350MHZ	-46	
5825MHZ	-41	

4.3 3D total Peak Gain & Efficiency

Frequency	Ant2			
	Peak Gain (dBi)	Efficiency (%)		
2400MHz	4.3	75		
2450MHz	4.9	83		
2500MHz	4.8	80		
4900MHz	5.2	64		
5150MHZ	5.2	72		
5350MHZ	4.2	69		
5825MHZ	5.9	74		