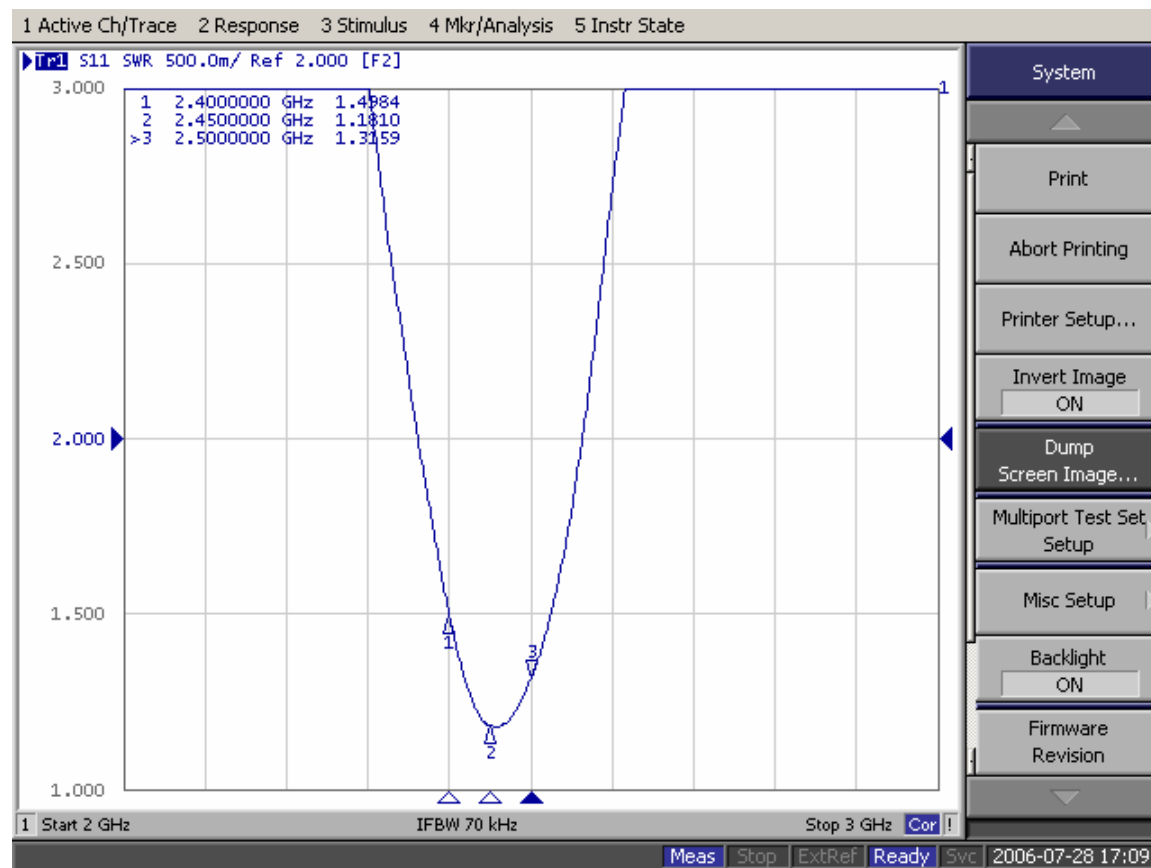
A decorative graphic consisting of a black crosshair. The vertical line passes through a blue square, and the horizontal line passes through a red square. A yellow square is positioned at the bottom left of the intersection.

SP310 Antenna Test Report

Prepared By Allen Yu
2006/09/30

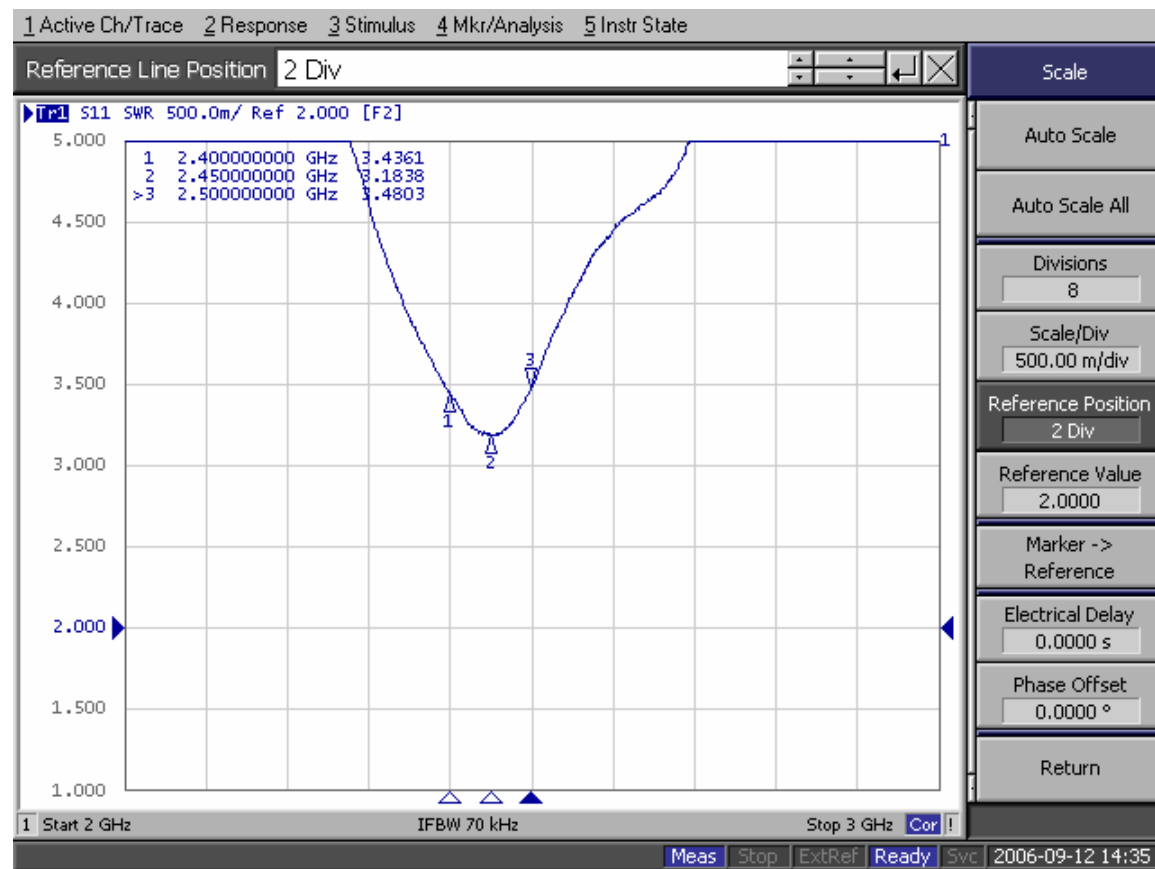
Test Result - VSWR

■ WLAN



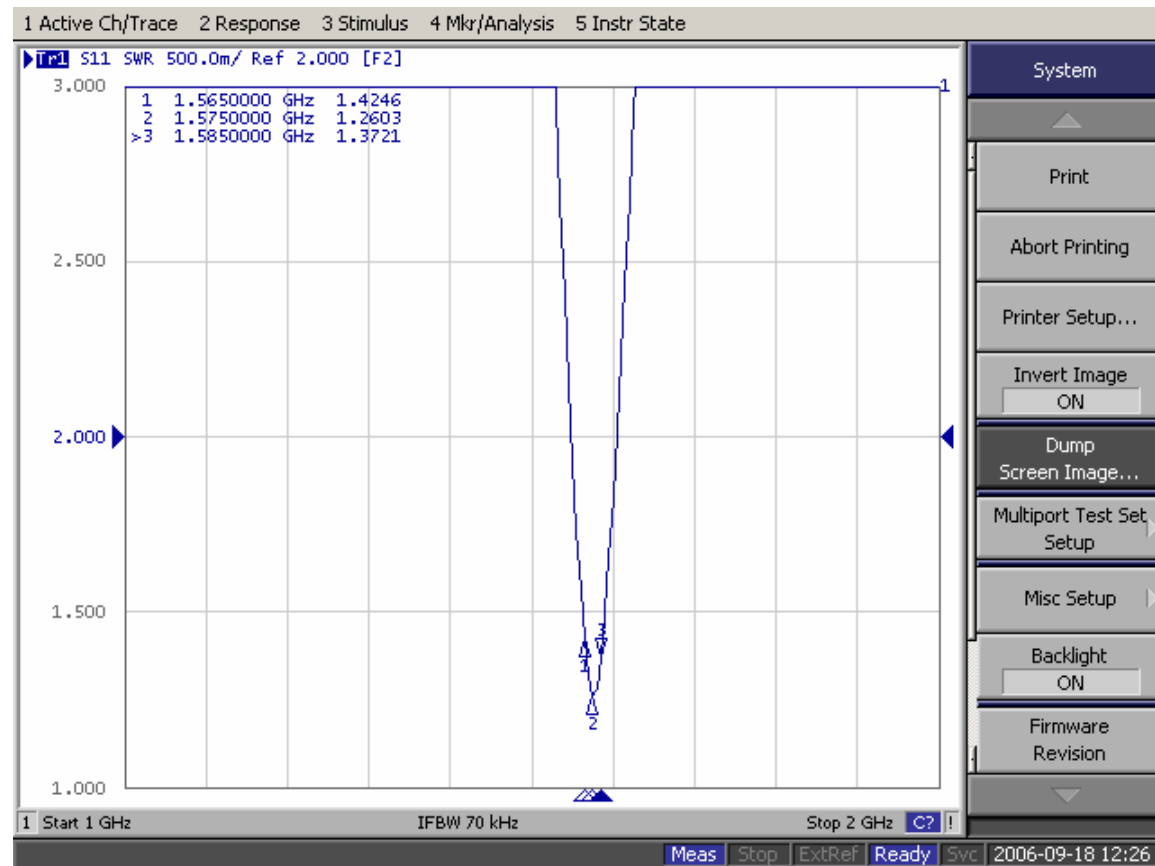
Test Result - VSWR

- Bluetooth



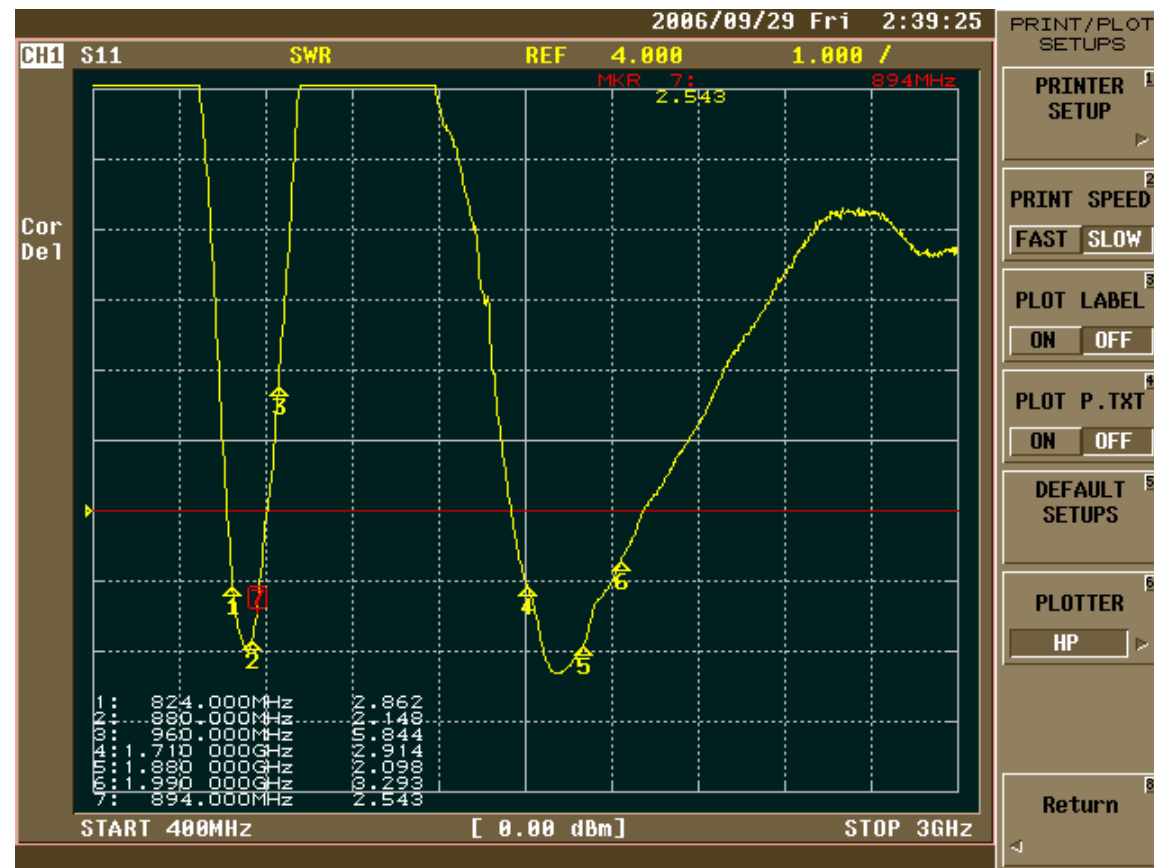
Test Result - VSWR

- GPS

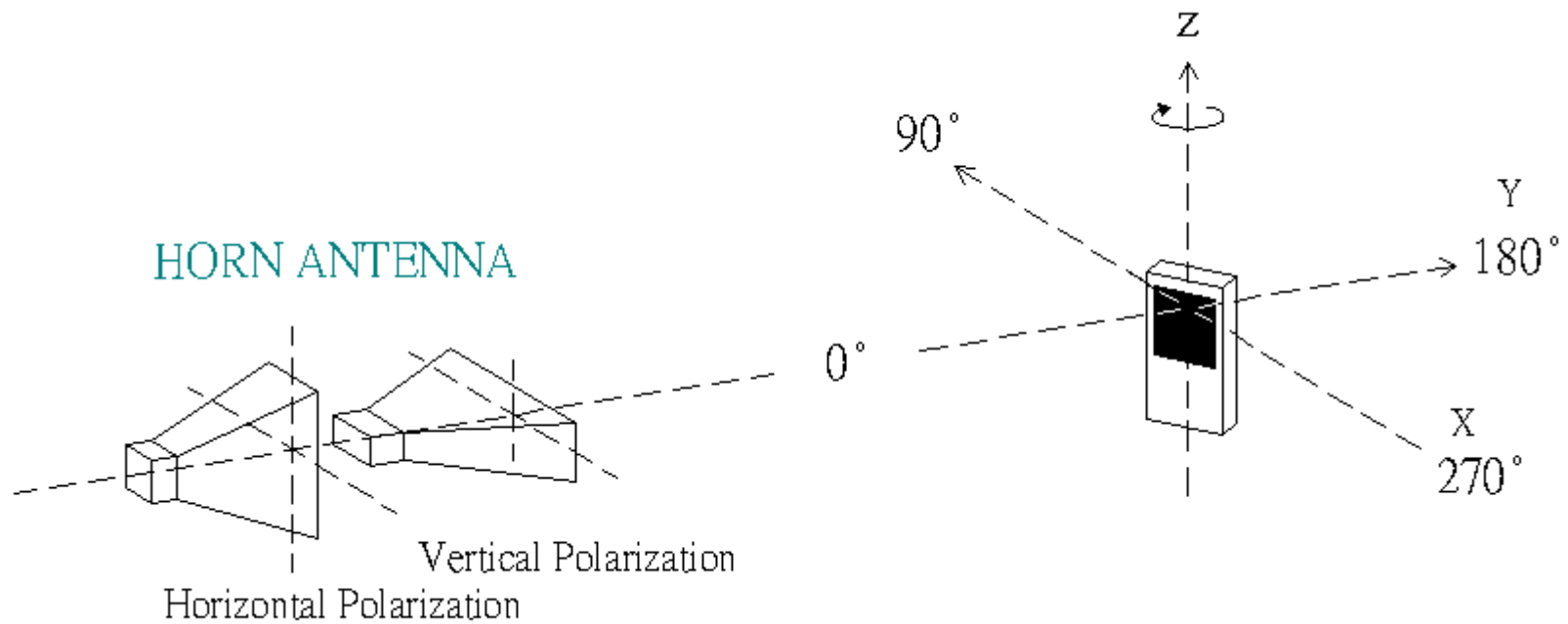


Test Result - VSWR

- GSM



Test Configuration



Test Result - Antenna Gain

WLAN	Peak Gain (dBi)			Average Gain (dBi)		
Frequency	2.4GHz	2.45GHz	2.5GHz	2.4GHz	2.45GHz	2.5GHz
XY Plane	-1.34	-1.39	-1.96	-4.31	-4.25	-4.44
XZ Plane	-2.18	-4.01	-6.01	-6.24	-6.91	-7.56
YZ Plane	1.48	1.31	0.63	-2.51	-2.53	-2.72

Bluetooth	Peak Gain (dBi)			Average Gain (dBi)		
Frequency	2.4GHz	2.45GHz	2.5GHz	2.4GHz	2.45GHz	2.5GHz
XY Plane	-1.57	-1.62	-1.57	-4.07	-4.77	-5.25
XZ Plane	-2.24	-2.71	-3.42	-5.78	-6.33	-6.29
YZ Plane	-0.56	-1.04	-2.35	-2.82	-3.10	-3.28

GPS	Peak Gain (dBi)			Average Gain (dBi)		
Frequency	1.565GHz	1.575GHz	1.585GHz	1.565GHz	1.575GHz	1.585GHz
XY Plane	-3.56	-3.48	-3.54	-5.60	-5.53	-5.59
XZ Plane	0.94	1.06	0.99	-3.95	-3.80	-3.81
YZ Plane	-1.34	-1.17	-1.21	-3.32	-3.11	-3.09

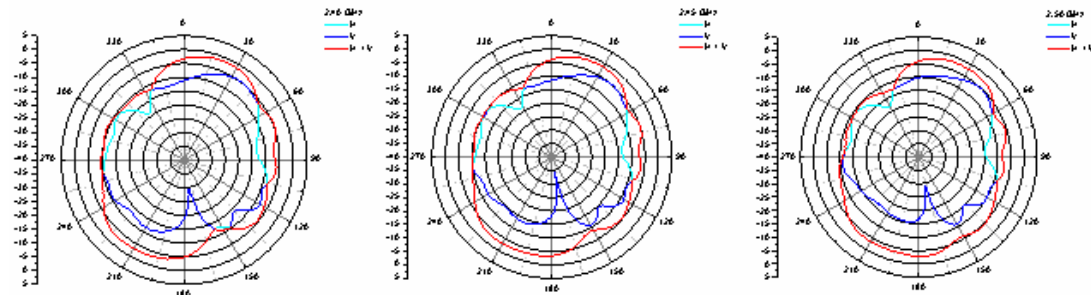
Test Result - GSM Efficiency

Frequency(MHz)	Efficiency(%)	Peak Gain(dBi)
824	30.50	-3.08
836	38.67	-2.03
849	46.57	-1.46
869	49.70	-1.48
880	48.41	-1.67
900	45.38	-2.23
915	43.20	-2.88
925	44.23	-3.09
940	34.33	-3.82
960	22.03	-5.19

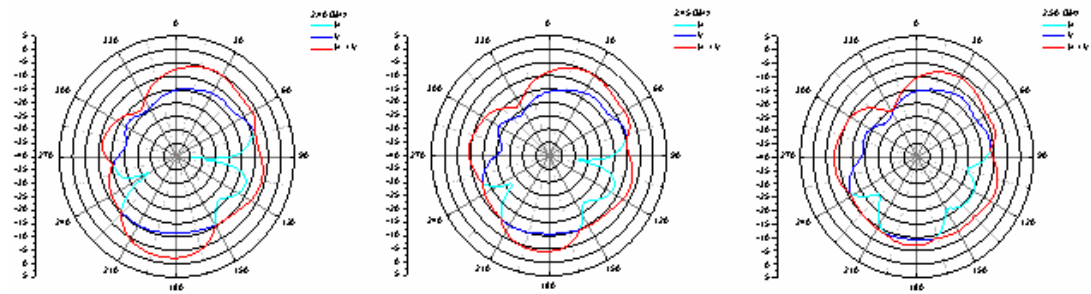
Frequency(MHz)	Efficiency(%)	Peak Gain(dBi)
1710	40.53	-1.43
1750	44.19	-0.41
1785	55.83	1.38
1805	60.87	1.67
1840	66.61	2.10
1850	64.71	1.93
1880	61.33	1.28
1910	48.80	-0.12
1920	47.89	-0.22
1930	46.78	-0.35
1950	49.81	-0.54
1960	46.90	-0.92
1980	42.90	-1.23
1990	41.68	-1.13

Test Result - Radiation Patter (WLAN)

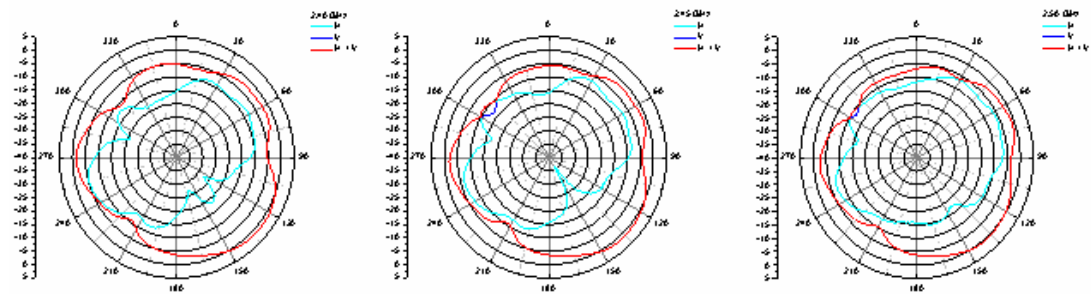
XY Plane



XZ Plane

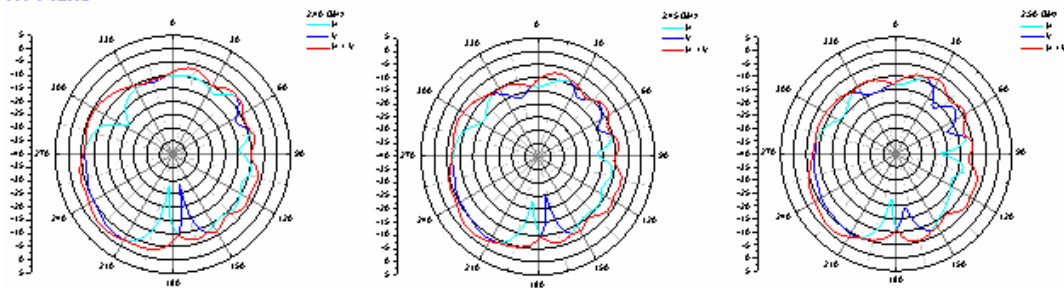


YZ Plane

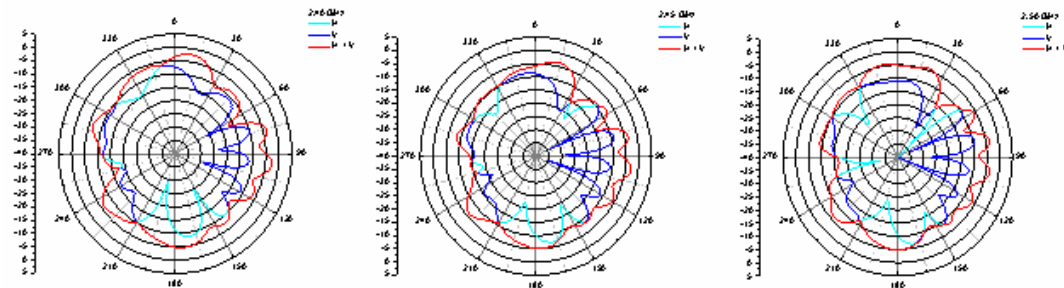


Test Result - Radiation Patter (Bluetooth)

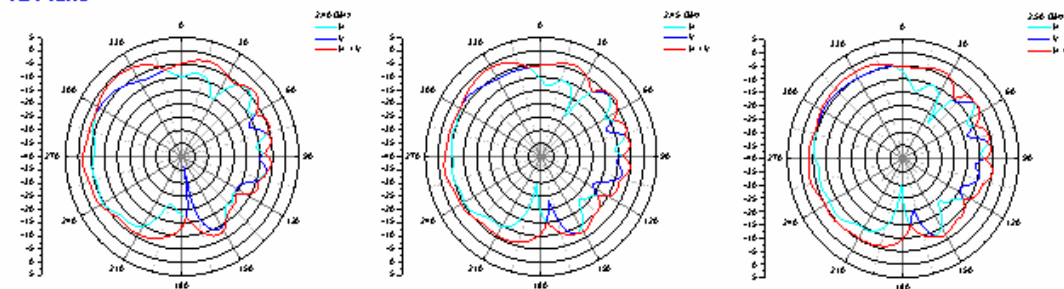
XY Plane



XZ Plane

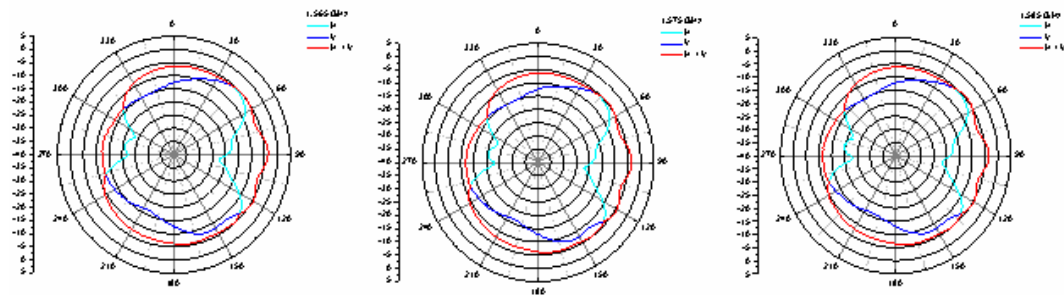


YZ Plane

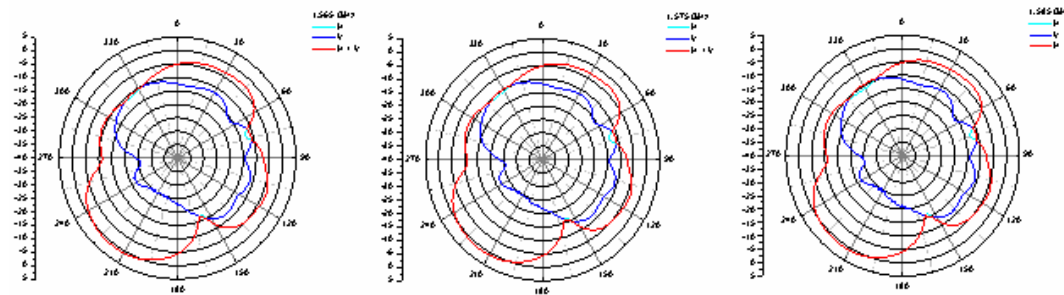


Test Result - Radiation Patter (GPS)

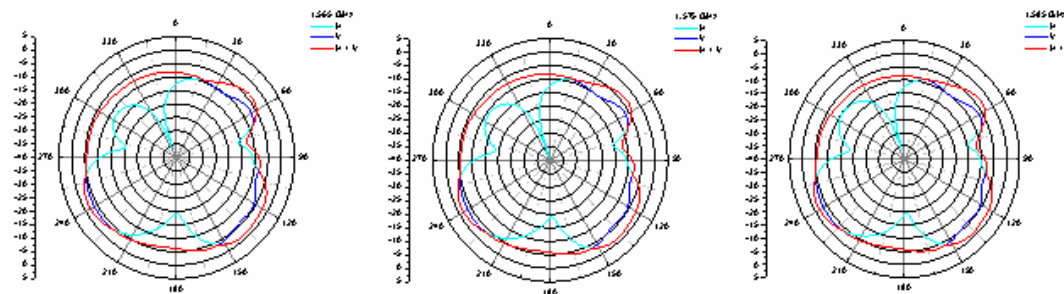
XY Plane



XZ Plane



YZ Plane



Test Result – CTIA Testing

SAM Head Phantom - Right Ear							
			Tx				TIS Rx unit:dBm
Band	Freq/Mhz	TCH	SP310	Band	Freq/Mhz	TCH	SP310
850	824.2	128	19.49	850	869.2	128	
	836.6	190	21.09		881.6	190	
	848.8	251	23.22		893.8	251	
1900	1850.2	512	25.34	1900	1930.2	512	
	1880.0	660	22.88		1960.0	660	
	1909.8	810	21.33		1988.8	810	
900	880.2	975	25.34	900	925.2	975	
	897.4	37	22.18		942.4	37	
	914.8	124	20.25		959.8	124	
1800	1710.2	512	25.07	1800	1805.2	512	
	1747.4	698	26.56		1842.4	698	
	1784.8	885	24.76		1879.8	885	