Specifications Sheet

Object	Internal Antenna	**Page**	1 of 7
Customer		**Date**	July 27, 2005
System	Tri-band GSM & DCS & UPCS	**Rev.**	IR
Model Name	W5I–GDUP–XX	**Written by**	

Electrical Specifications

Frequency Range (MHz)	880 ∽ 960	1710 ∽ 1990
Band Width (MHz)	80	280
V.S.W.R (Min)	3 : 1	1.9 : 1
Gain (Max)	0.26 ± 1 (dBi)	3.78 ± 1 (dBi)
Input Impedance	50 (Ω)	
Polarization	Linear	

Mechanical Specifications

Antenna Size (Width x Length x Height)	50 × 8 × 1 mm
Weight	N / A
Radiator Material	Copper
Cable Part Number	Optional (HRS U.FL or I-PEX MHF)
Cable Length	100 mm
Operation Temperature	– 30 ∽ 90 (℃)
Operation Humidity	10 ∽ 90 (%)

Option	
Remarks	

WINiZEN Co., Ltd.

Fig 1. Return Loss (Hewlett Packard 8714ES 300 KHz～3000 MHz RF Network Analyzer)

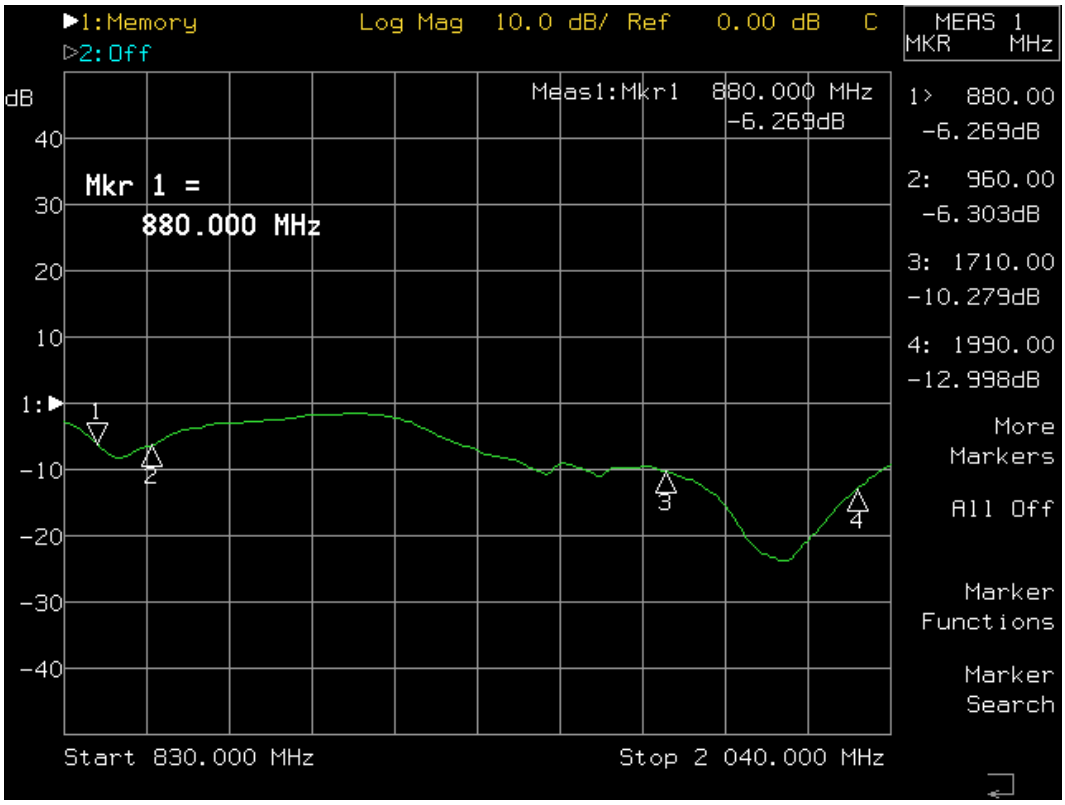


Fig 2. V.S.W.R (Hewlett Packard 8714ES 300 KHz～3000 MHz RF Network Analyzer)

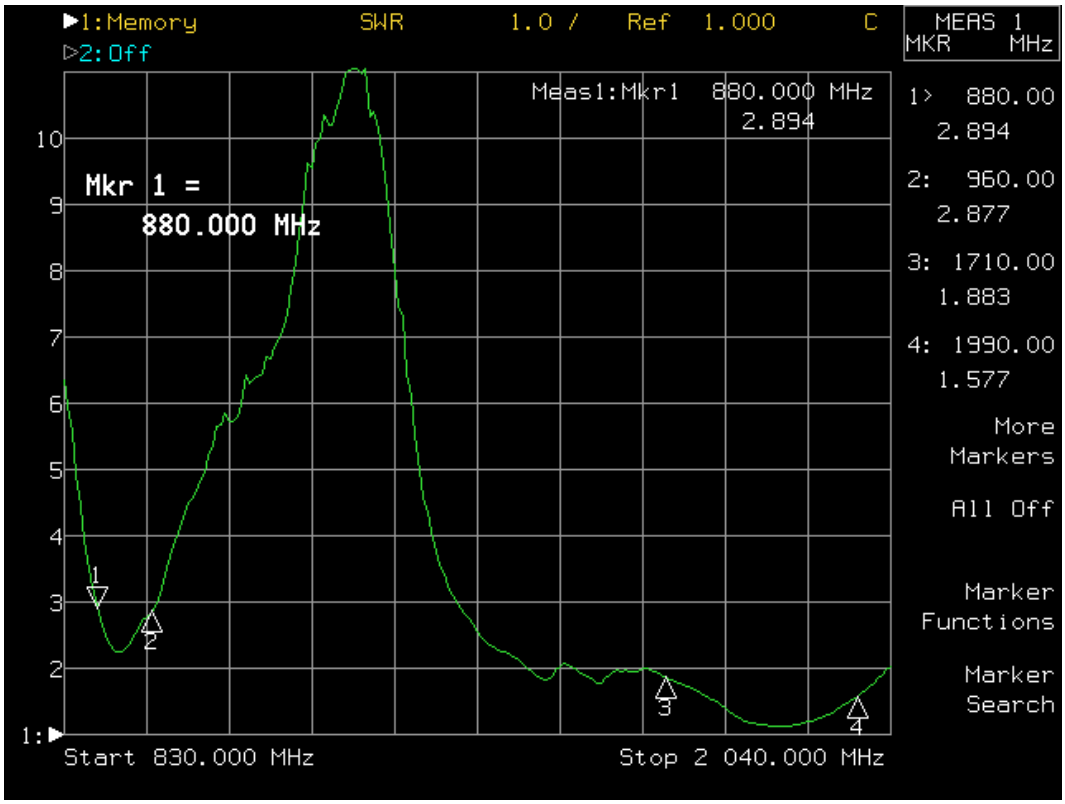


Fig 3. Smith Chart (Hewlett Packard 8714ES 300 KHz～3000 MHz RF Network Analyzer)

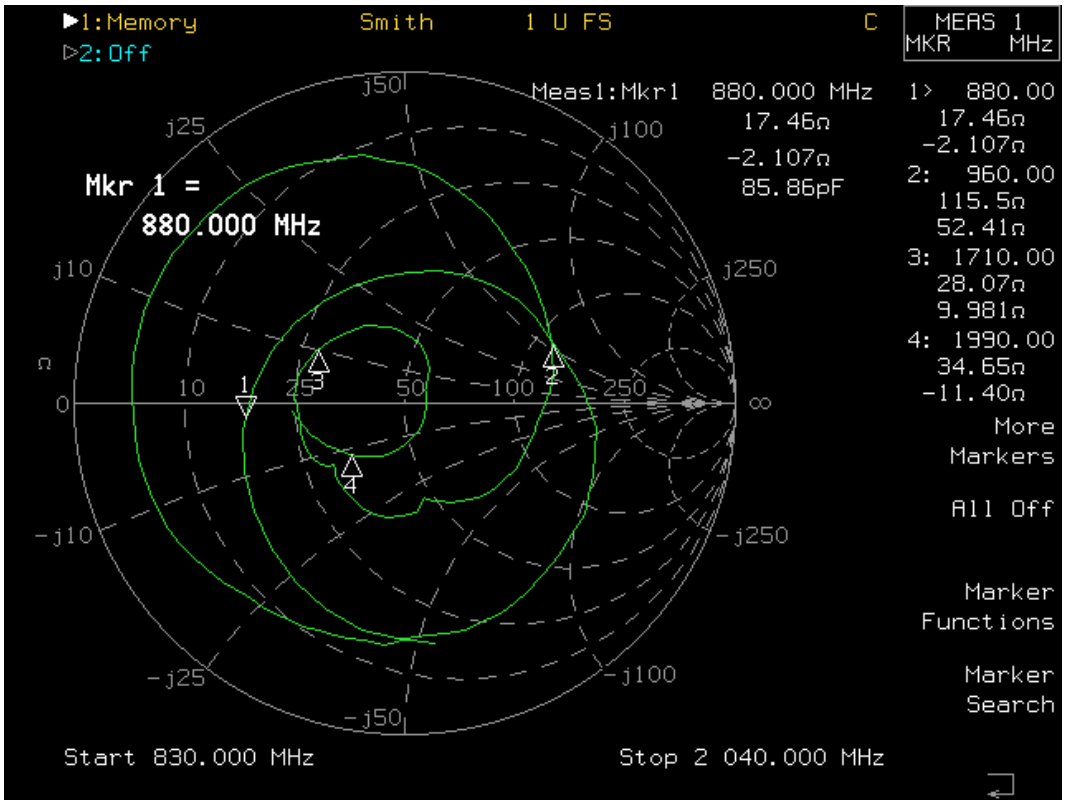
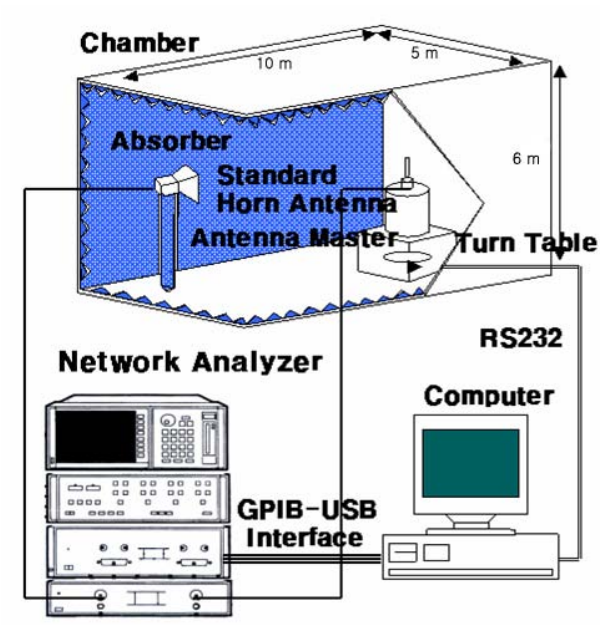


Fig 4. Measurement Configuration

(Hewlett Packard 8722ES 50 MHz～40 GHz S-Parameter Network Analyzer)



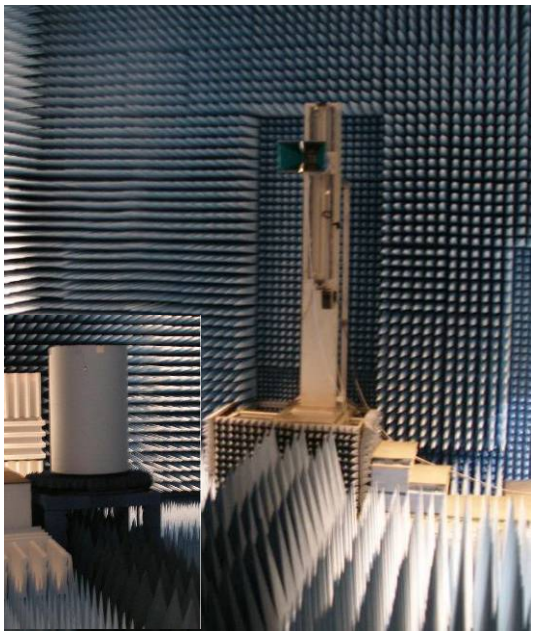
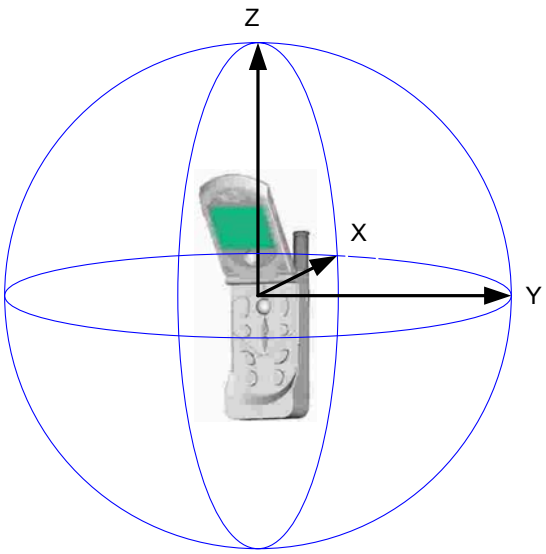
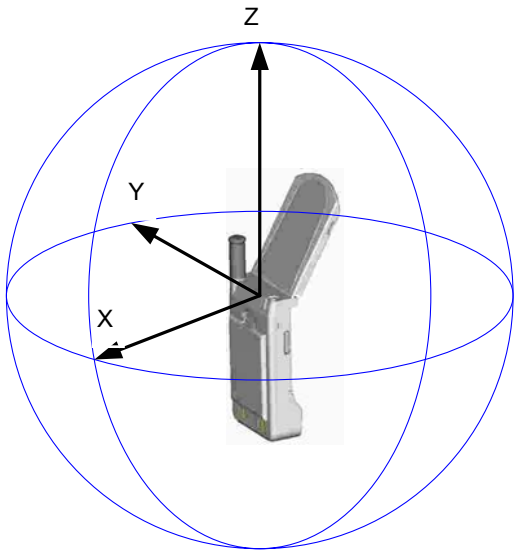


Fig 5. Axis Definitions (Antenna Center)





a. Azimuth Pattern (Co-pol) : XY Plane ; Horn Antenna Polarization : Vertical

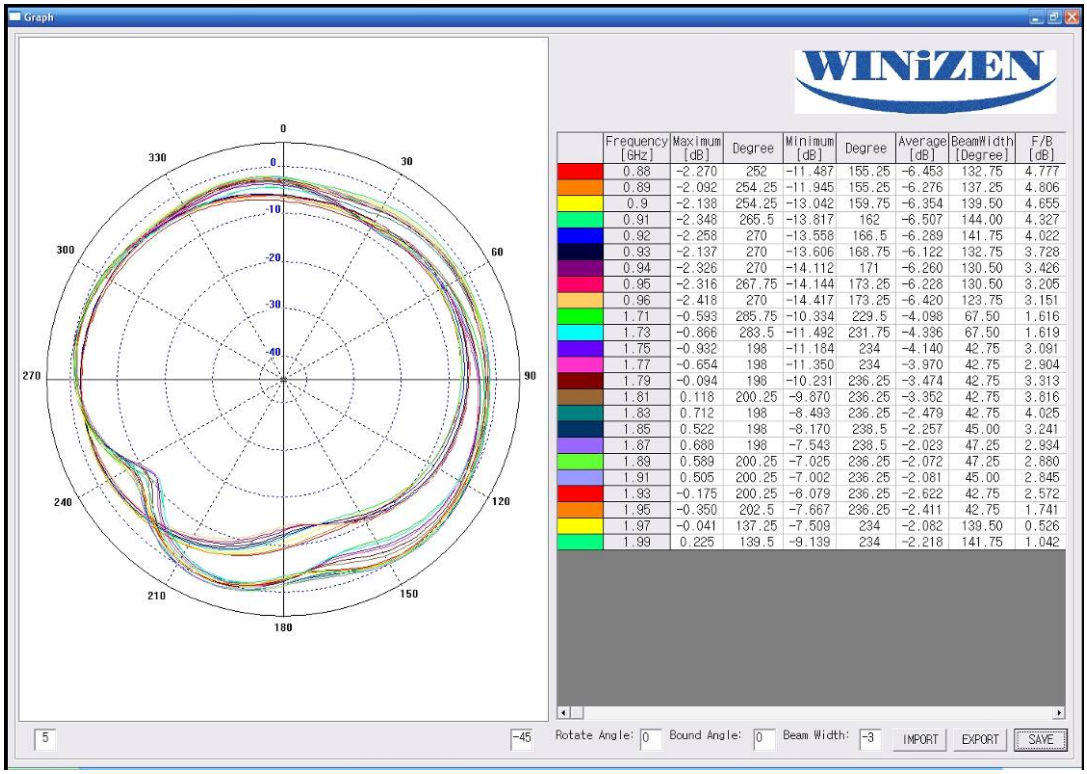
b. Elevation Pattern (Co-pol) : XZ Plane ; Horn Antenna Polarization : Horizontal

c. Elevation Side Pattern (Co-pol) : YZ Plane ; Horn Antenna Polarization : Horizontal

Fig 6. Gain Patterns

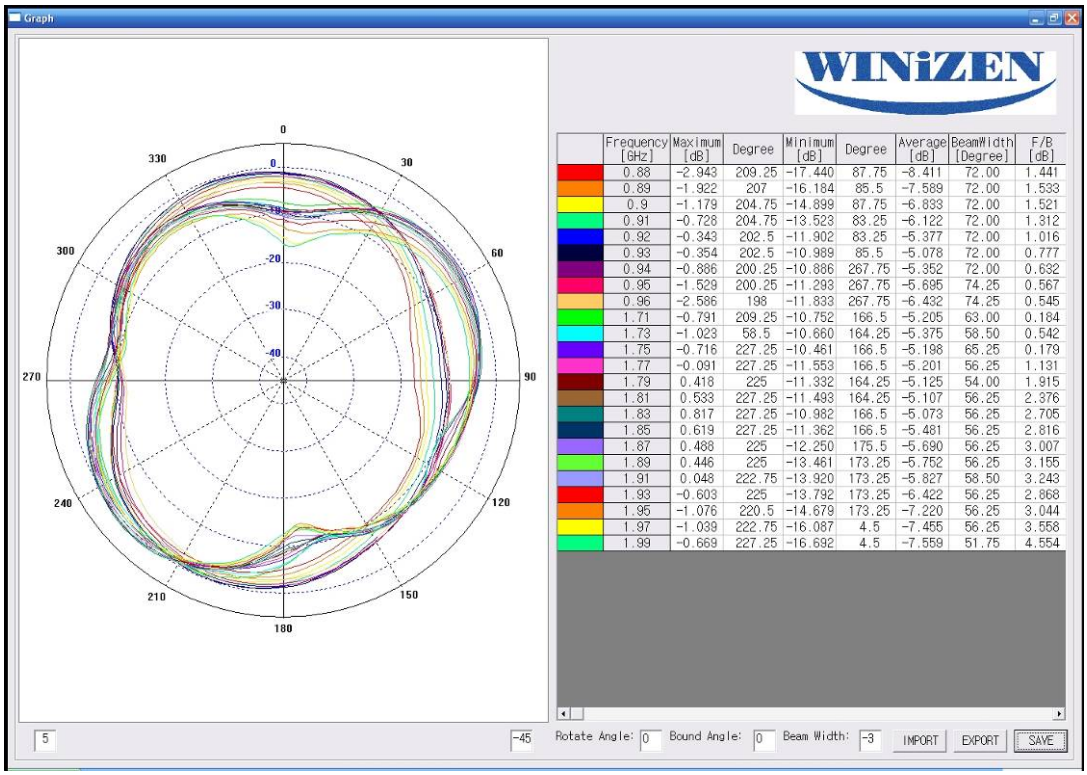
a. Azimuth Pattern

Co - pol



	Frequency [GHz]	Maximum [dB]	Degree	Minimum [dB]	Degree	Average [dB]	BeamWidth [Degree]	F/B [dB]
	0.88	-2.270	252	-11.487	155.25	-6.453	132.75	4.777
	0.89	-2.092	254.25	-11.945	155.25	-6.276	137.25	4.806
	0.9	-2.138	254.25	-13.042	159.75	-6.354	139.50	4.655
	0.91	-2.348	265.5	-13.817	162	-6.507	144.00	4.327
	0.92	-2.258	270	-13.558	166.5	-6.289	141.75	4.022
	0.93	-2.137	270	-13.606	168.75	-6.122	132.75	3.728
	0.94	-2.326	270	-14.112	171	-6.260	130.50	3.426
	0.95	-2.316	267.75	-14.144	173.25	-6.228	130.50	3.205
	0.96	-2.418	270	-14.417	173.25	-6.420	123.75	3.151
	1.71	-0.593	285.75	-10.334	229.5	-4.098	67.50	1.616
	1.73	-0.866	283.5	-11.492	231.75	-4.336	67.50	1.619
	1.75	-0.932	198	-11.184	234	-4.140	42.75	3.091
	1.77	-0.654	198	-11.350	234	-3.970	42.75	2.904
	1.79	-0.094	198	-10.231	236.25	-3.474	42.75	3.313
	1.81	0.118	200.25	-9.870	236.25	-3.352	42.75	3.816
	1.83	0.712	198	-8.493	236.25	-2.479	42.75	4.025
	1.85	0.522	198	-8.170	238.5	-2.257	45.00	3.241
	1.87	0.688	198	-7.543	238.5	-2.023	47.25	2.934
	1.89	0.589	200.25	-7.025	236.25	-2.072	47.25	2.880
	1.91	0.505	200.25	-7.002	236.25	-2.081	45.00	2.845
	1.93	-0.175	200.25	-8.079	236.25	-2.622	42.75	2.572
	1.95	-0.350	202.5	-7.667	236.25	-2.411	42.75	1.741
	1.97	-0.041	137.25	-7.509	234	-2.082	139.50	0.526
	1.99	0.225	139.5	-9.139	234	-2.218	141.75	1.042

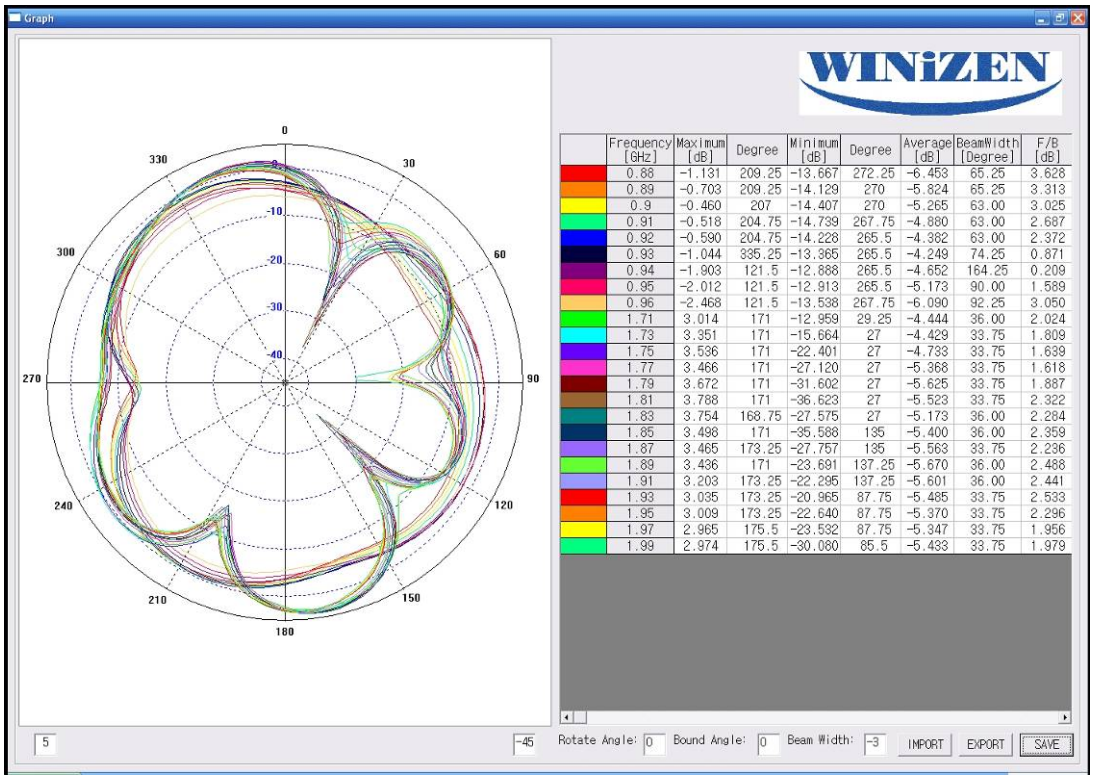
Cross - pol



	Frequency [GHz]	Maximum [dB]	Degree	Minimum [dB]	Degree	Average [dB]	BeamWidth [Degree]	F/B [dB]
	0.88	-2.943	209.25	-17.440	87.75	-8.411	72.00	1.441
	0.89	-1.922	207	-16.184	85.5	-7.589	72.00	1.533
	0.9	-1.179	204.75	-14.899	87.75	-6.833	72.00	1.521
	0.91	-0.728	204.75	-13.523	83.25	-6.122	72.00	1.312
	0.92	-0.343	202.5	-11.902	83.25	-5.377	72.00	1.016
	0.93	-0.354	202.5	-10.989	85.5	-5.078	72.00	0.777
	0.94	-0.886	200.25	-10.886	267.75	-5.352	72.00	0.632
	0.95	-1.529	200.25	-11.293	267.75	-5.695	74.25	0.567
	0.96	-2.586	198	-11.833	267.75	-6.432	74.25	0.545
	1.71	-0.791	209.25	-10.752	166.5	-5.205	63.00	0.184
	1.73	-1.023	58.5	-10.660	164.25	-5.375	58.50	0.542
	1.75	-0.716	227.25	-10.461	166.5	-5.198	65.25	0.179
	1.77	-0.091	227.25	-11.553	166.5	-5.201	56.25	1.131
	1.79	0.418	225	-11.332	164.25	-5.125	54.00	1.915
	1.81	0.533	227.25	-11.493	164.25	-5.107	56.25	2.376
	1.83	0.817	227.25	-10.982	166.5	-5.073	56.25	2.705
	1.85	0.619	227.25	-11.362	166.5	-5.481	56.25	2.816
	1.87	0.488	225	-12.250	175.5	-5.690	56.25	3.007
	1.89	0.446	225	-13.461	173.25	-5.752	56.25	3.155
	1.91	0.048	222.75	-13.920	173.25	-5.827	58.50	3.243
	1.93	-0.603	225	-13.792	173.25	-6.422	56.25	2.868
	1.95	-1.076	220.5	-14.679	173.25	-7.220	56.25	3.044
	1.97	-1.039	222.75	-16.087	4.5	-7.455	56.25	3.558
	1.99	-0.669	227.25	-16.692	4.5	-7.559	51.75	4.554

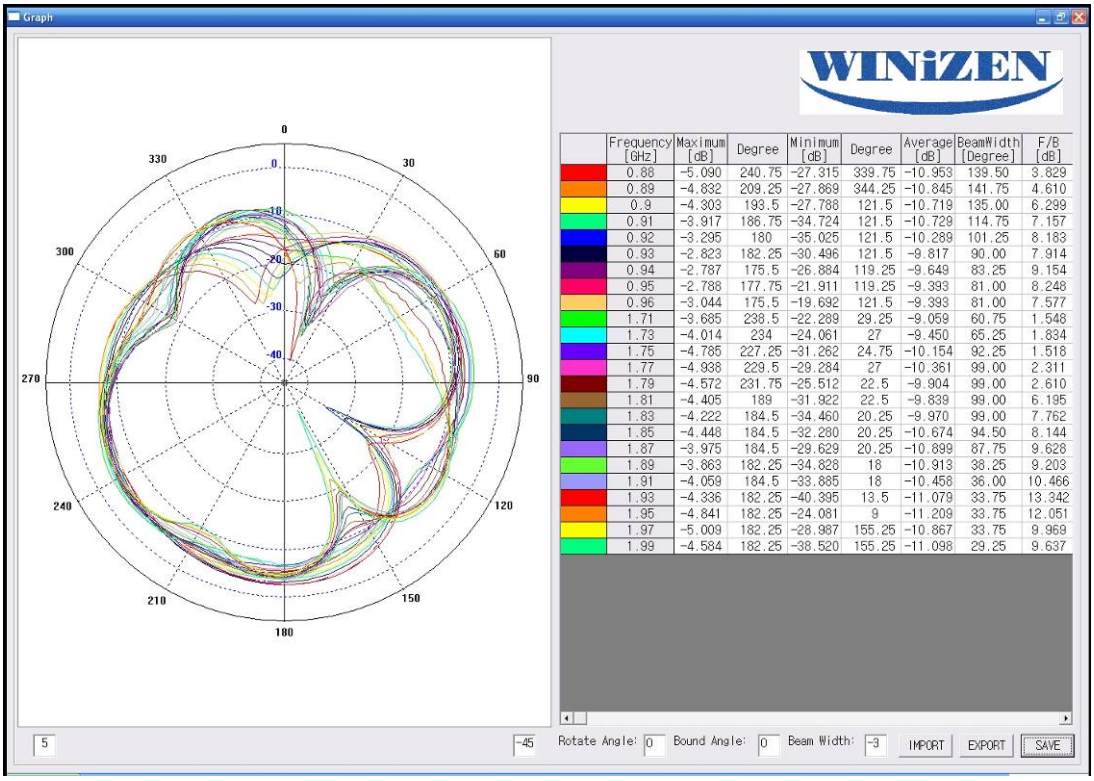
b. Elevation Pattern

Co - pol



	Frequency [GHz]	Maximum [dB]	Degree	Minimum [dB]	Degree	Average [dB]	BeamWidth [Degree]	F/B [dB]
	0.88	-1.131	209.25	-13.667	272.25	-6.453	65.25	3.628
	0.89	-0.703	209.25	-14.129	270	-5.824	65.25	3.313
	0.9	-0.460	207	-14.407	270	-5.265	63.00	3.025
	0.91	-0.518	204.75	-14.739	267.75	-4.880	63.00	2.687
	0.92	-0.590	204.75	-14.228	265.5	-4.382	63.00	2.372
	0.93	-1.044	335.25	-13.365	265.5	-4.249	74.25	0.871
	0.94	-1.903	121.5	-12.888	265.5	-4.652	164.25	0.209
	0.95	-2.012	121.5	-12.913	265.5	-5.173	90.00	1.589
	0.96	-2.468	121.5	-13.538	267.75	-6.090	92.25	3.050
	1.71	3.014	171	-12.959	29.25	-4.444	36.00	2.024
	1.73	3.351	171	-15.664	27	-4.429	33.75	1.809
	1.75	3.536	171	-22.401	27	-4.733	33.75	1.639
	1.77	3.466	171	-27.120	27	-5.368	33.75	1.618
	1.79	3.672	171	-31.602	27	-5.625	33.75	1.887
	1.81	3.788	171	-36.623	27	-5.523	33.75	2.322
	1.83	3.754	168.75	-27.575	27	-5.173	36.00	2.284
	1.85	3.498	171	-35.588	135	-5.400	36.00	2.359
	1.87	3.465	173.25	-27.757	135	-5.563	33.75	2.236
	1.89	3.436	171	-23.691	137.25	-5.670	36.00	2.488
	1.91	3.203	173.25	-22.295	137.25	-5.601	36.00	2.441
	1.93	3.035	173.25	-20.965	87.75	-5.485	33.75	2.533
	1.95	3.009	173.25	-22.640	87.75	-5.370	33.75	2.296
	1.97	2.965	175.5	-23.532	87.75	-5.347	33.75	1.956
	1.99	2.974	175.5	-30.080	85.5	-5.433	33.75	1.979

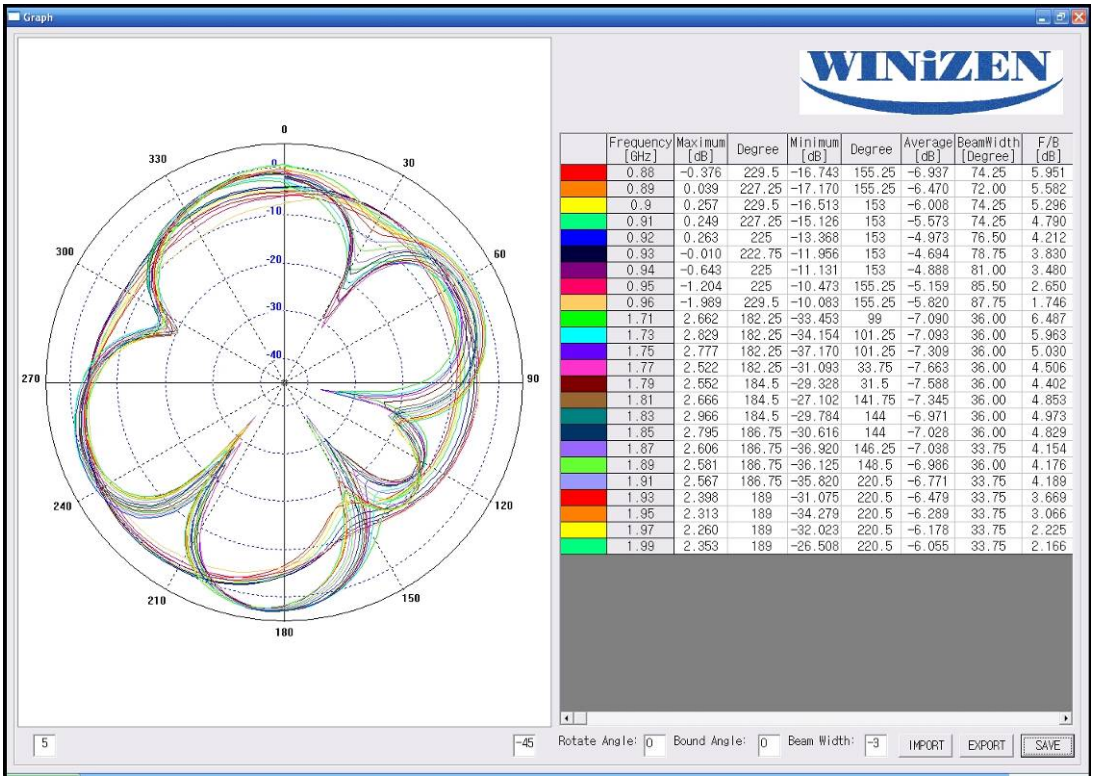
Cross - pol



	Frequency [GHz]	Maximum [dB]	Degree	Minimum [dB]	Degree	Average [dB]	BeamWidth [Degree]	F/B [dB]
	0.88	-5.090	240.75	-27.315	339.75	-10.953	139.50	3.829
	0.89	-4.832	209.25	-27.869	344.25	-10.845	141.75	4.610
	0.9	-4.303	193.5	-27.788	121.5	-10.719	135.00	6.299
	0.91	-3.917	186.75	-34.724	121.5	-10.729	114.75	7.157
	0.92	-3.295	180	-35.025	121.5	-10.289	101.25	8.183
	0.93	-2.823	182.25	-30.496	121.5	-9.817	90.00	7.914
	0.94	-2.787	175.5	-26.884	119.25	-9.649	83.25	9.154
	0.95	-2.788	177.75	-21.911	119.25	-9.393	81.00	8.248
	0.96	-3.044	175.5	-19.692	121.5	-9.393	81.00	7.577
	1.71	-3.685	238.5	-22.289	29.25	-9.059	60.75	1.548
	1.73	-4.014	234	-24.061	27	-9.450	65.25	1.834
	1.75	-4.785	227.25	-31.262	24.75	-10.154	92.25	1.518
	1.77	-4.938	229.5	-29.284	27	-10.361	99.00	2.311
	1.79	-4.572	231.75	-25.512	22.5	-9.904	99.00	2.610
	1.81	-4.405	189	-31.922	22.5	-9.839	99.00	6.195
	1.83	-4.222	184.5	-34.460	20.25	-9.970	99.00	7.762
	1.85	-4.448	184.5	-32.280	20.25	-10.674	94.50	8.144
	1.87	-3.975	184.5	-29.629	20.25	-10.899	87.75	9.628
	1.89	-3.863	182.25	-34.828	18	-10.913	38.25	9.203
	1.91	-4.059	184.5	-33.885	18	-10.458	36.00	10.466
	1.93	-4.336	182.25	-40.395	13.5	-11.079	33.75	13.342
	1.95	-4.841	182.25	-24.081	9	-11.209	33.75	12.051
	1.97	-5.009	182.25	-28.987	155.25	-10.867	33.75	9.969
	1.99	-4.584	182.25	-38.520	155.25	-11.098	29.25	9.637

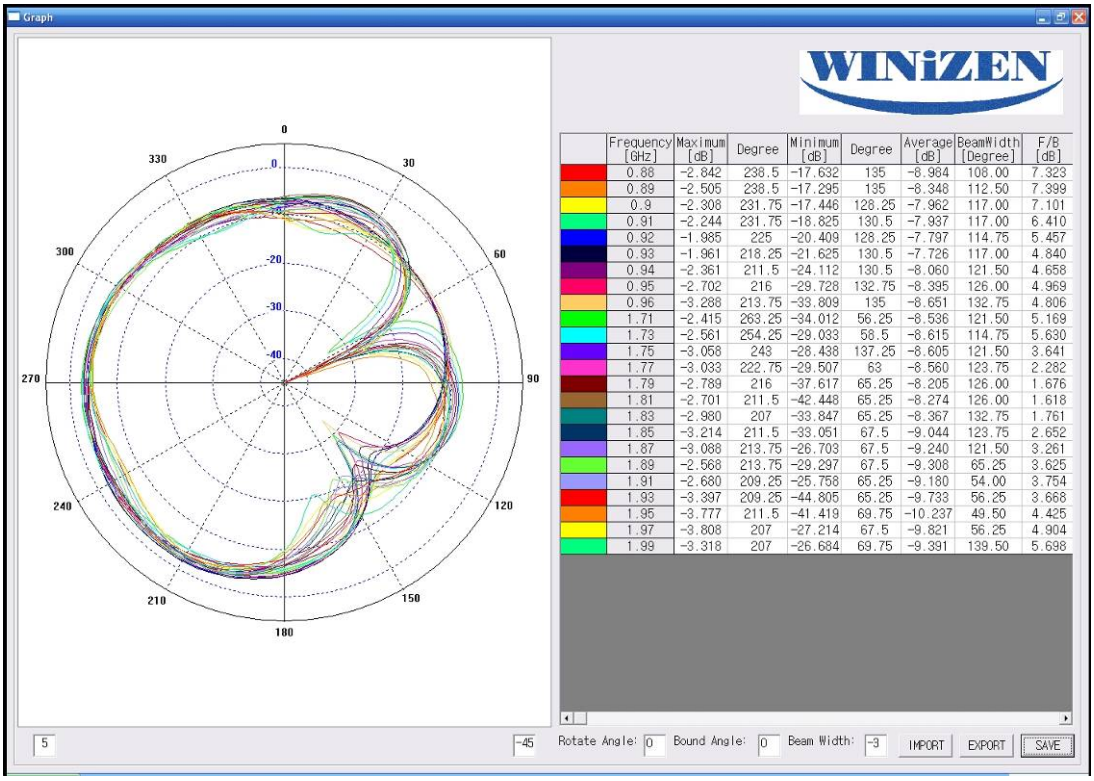
c. Elevation Side Pattern

Co - pol



	Frequency [GHz]	Maximum [dB]	Degree	Minimum [dB]	Degree	Average [dB]	BeamWidth [Degree]	F/B [dB]
	0.88	-0.376	229.5	-16.743	155.25	-6.937	74.25	5.951
	0.89	0.039	227.25	-17.170	155.25	-6.470	72.00	5.582
	0.9	0.257	229.5	-16.513	153	-6.008	74.25	5.296
	0.91	0.249	227.25	-15.126	153	-5.573	74.25	4.790
	0.92	0.263	225	-13.368	153	-4.973	76.50	4.212
	0.93	-0.010	222.75	-11.956	153	-4.694	78.75	3.830
	0.94	-0.643	225	-11.131	153	-4.888	81.00	3.480
	0.95	-1.204	225	-10.473	155.25	-5.159	85.50	2.650
	0.96	-1.989	229.5	-10.083	155.25	-5.820	87.75	1.746
	1.71	2.662	182.25	-33.453	99	-7.090	36.00	6.487
	1.73	2.829	182.25	-34.154	101.25	-7.093	36.00	5.963
	1.75	2.777	182.25	-37.170	101.25	-7.309	36.00	5.030
	1.77	2.522	182.25	-31.093	33.75	-7.663	36.00	4.506
	1.79	2.552	184.5	-29.328	31.5	-7.588	36.00	4.402
	1.81	2.666	184.5	-27.102	141.75	-7.345	36.00	4.853
	1.83	2.966	184.5	-29.784	144	-6.971	36.00	4.973
	1.85	2.795	186.75	-30.616	144	-7.028	36.00	4.829
	1.87	2.606	186.75	-36.920	146.25	-7.038	33.75	4.154
	1.89	2.581	186.75	-36.125	148.5	-6.986	36.00	4.176
	1.91	2.567	186.75	-35.820	220.5	-6.771	33.75	4.189
	1.93	2.398	189	-31.075	220.5	-6.479	33.75	3.669
	1.95	2.313	189	-34.279	220.5	-6.289	33.75	3.066
	1.97	2.260	189	-32.023	220.5	-6.178	33.75	2.225
	1.99	2.353	189	-26.508	220.5	-6.055	33.75	2.166

Cross - pol



	Frequency [GHz]	Maximum [dB]	Degree	Minimum [dB]	Degree	Average [dB]	BeamWidth [Degree]	F/B [dB]
	0.88	-2.842	238.5	-17.632	135	-8.984	108.00	7.323
	0.89	-2.505	238.5	-17.295	135	-8.348	112.50	7.399
	0.9	-2.308	231.75	-17.446	128.25	-7.962	117.00	7.101
	0.91	-2.244	231.75	-18.825	130.5	-7.937	117.00	6.410
	0.92	-1.985	225	-20.409	128.25	-7.797	114.75	5.457
	0.93	-1.961	218.25	-21.625	130.5	-7.726	117.00	4.840
	0.94	-2.361	211.5	-24.112	130.5	-8.060	121.50	4.658
	0.95	-2.702	216	-29.728	132.75	-8.395	126.00	4.969
	0.96	-3.288	213.75	-33.809	135	-8.651	132.75	4.806
	1.71	-2.415	263.25	-34.012	56.25	-8.536	121.50	5.169
	1.73	-2.561	254.25	-29.033	58.5	-8.615	114.75	5.630
	1.75	-3.058	243	-28.438	137.25	-8.605	121.50	3.641
	1.77	-3.033	222.75	-29.507	63	-8.560	123.75	2.282
	1.79	-2.789	216	-37.617	65.25	-8.205	126.00	1.676
	1.81	-2.701	211.5	-42.448	65.25	-8.274	126.00	1.618
	1.83	-2.980	207	-33.847	65.25	-8.367	132.75	1.761
	1.85	-3.214	211.5	-33.051	67.5	-9.044	123.75	2.652
	1.87	-3.088	213.75	-26.703	67.5	-9.240	121.50	3.261
	1.89	-2.568	213.75	-29.297	67.5	-9.308	65.25	3.625
	1.91	-2.680	209.25	-25.758	65.25	-9.180	54.00	3.754
	1.93	-3.397	209.25	-44.805	65.25	-9.733	56.25	3.668
	1.95	-3.777	211.5	-41.419	69.75	-10.237	49.50	4.425
	1.97	-3.808	207	-27.214	67.5	-9.821	56.25	4.904
	1.99	-3.318	207	-26.684	69.75	-9.391	139.50	5.698