

SPECIFICATION

Pinnacle

L60 Antenna

Product approval sheet

Customer		Band	5G
Project	L60	Colour	Black

Customer check:

Reach requirement of customer: ☒OK ☐NG

Manufacturer: Shenzhen Sanhao wireless communication Co., LTD

Address: 501-508, Jinfulai Building, 49-1 Dabao Road, Baoan District, Shenzhen, China

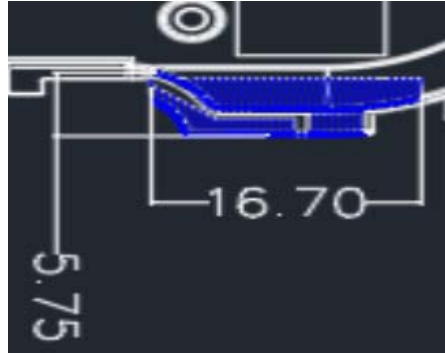
Contents

1 General description	3
1.1 Antenna appearing diagram	3
1.2 Matching circuits	4
1.3 Antenna PORT	7
1.4 Antenna location.....	7
1.5 RF port.....	8
2 Electrical performance	8
2.1 VSWR	8
2.2 Efficiency &Gain	13
2.3 3D Patternt	32

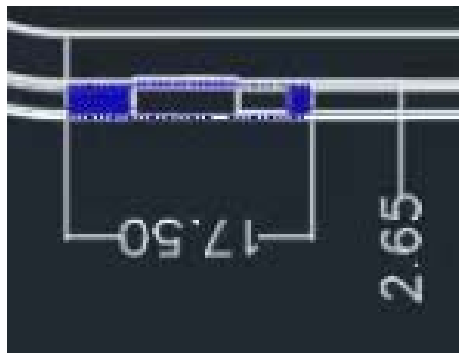
1 General description

1.1 Antenna appearing diagram

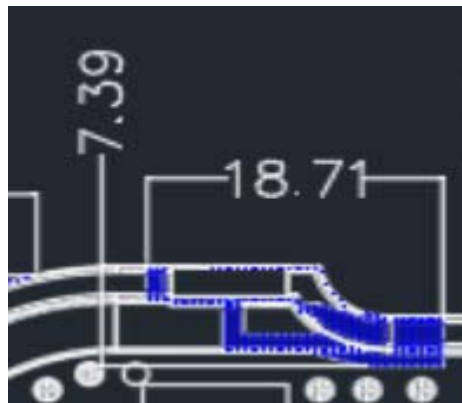
ANT0



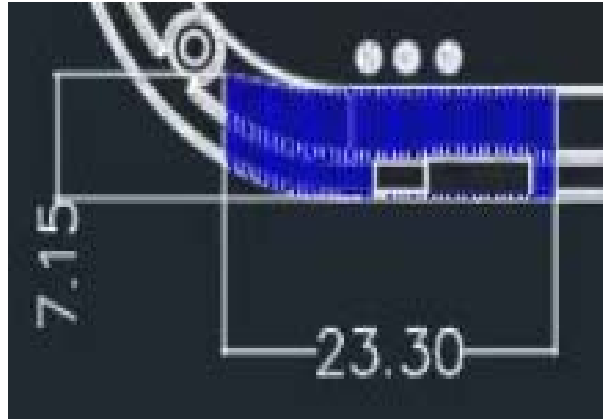
ANT1



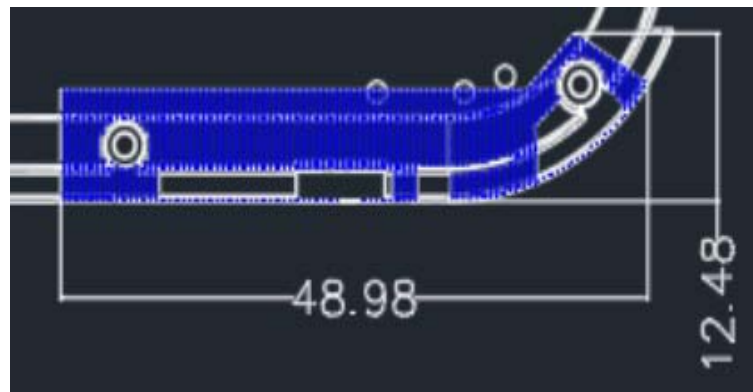
ANT2



ANT3



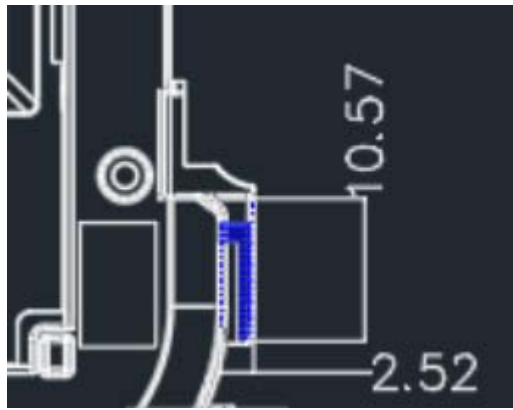
ANT4



WIFI-1



WIFI-2



GPS



1.2 Antenna Matching circuits

ANT0

NC

ANT2

NC

ANT4

ANT4	
Element	Value
R914	0欧姆
L912	8.2NH
C922	4.7PF
L911	NC
C930	33PF

ANT4线开关	
R901 (RF3)	0欧姆
R902 (RF2)	0欧姆
L901 (RF4)	22NH
L902 (RF1)	12NH
C913	33PF
C914	12NH

WIFI-1

NC

WIFI-2

NC

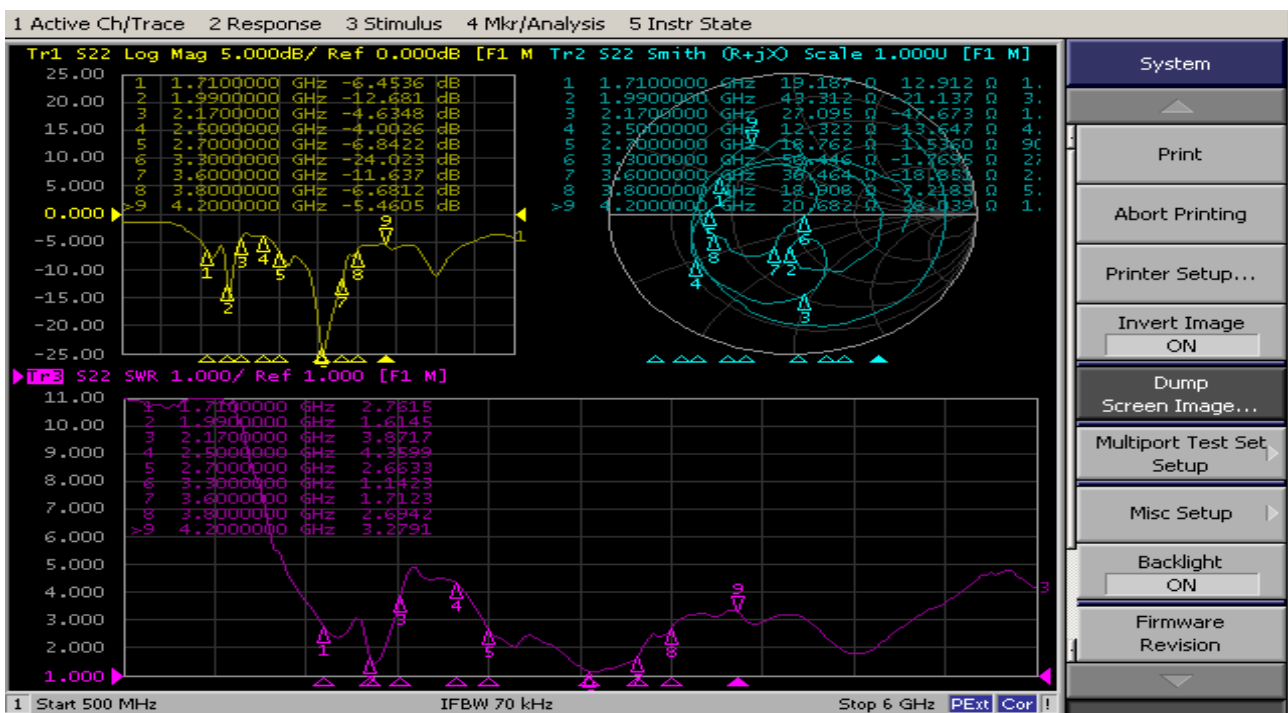
1.3 Antenna PORT

1.4 Antenna location

1.5 RF port

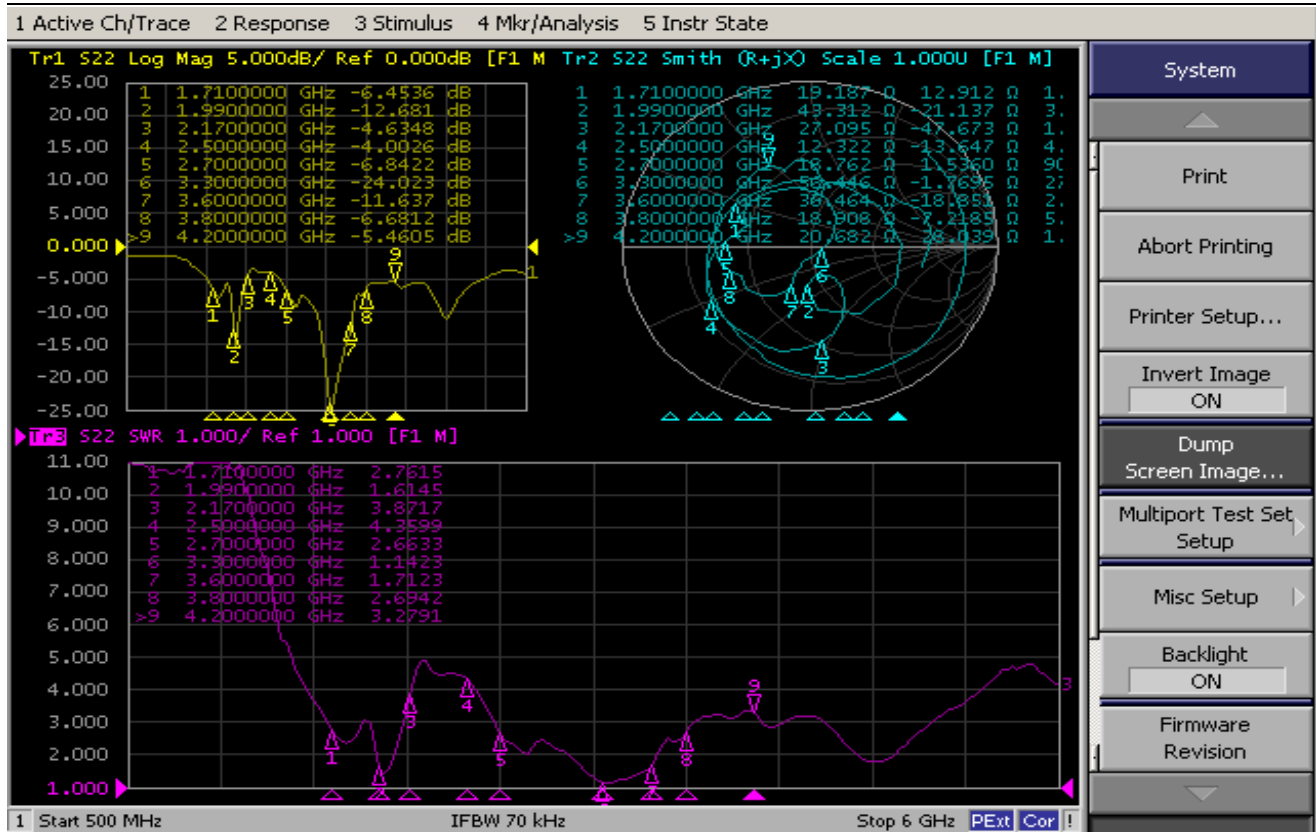
2 Electrical performance

2.1 VSWR

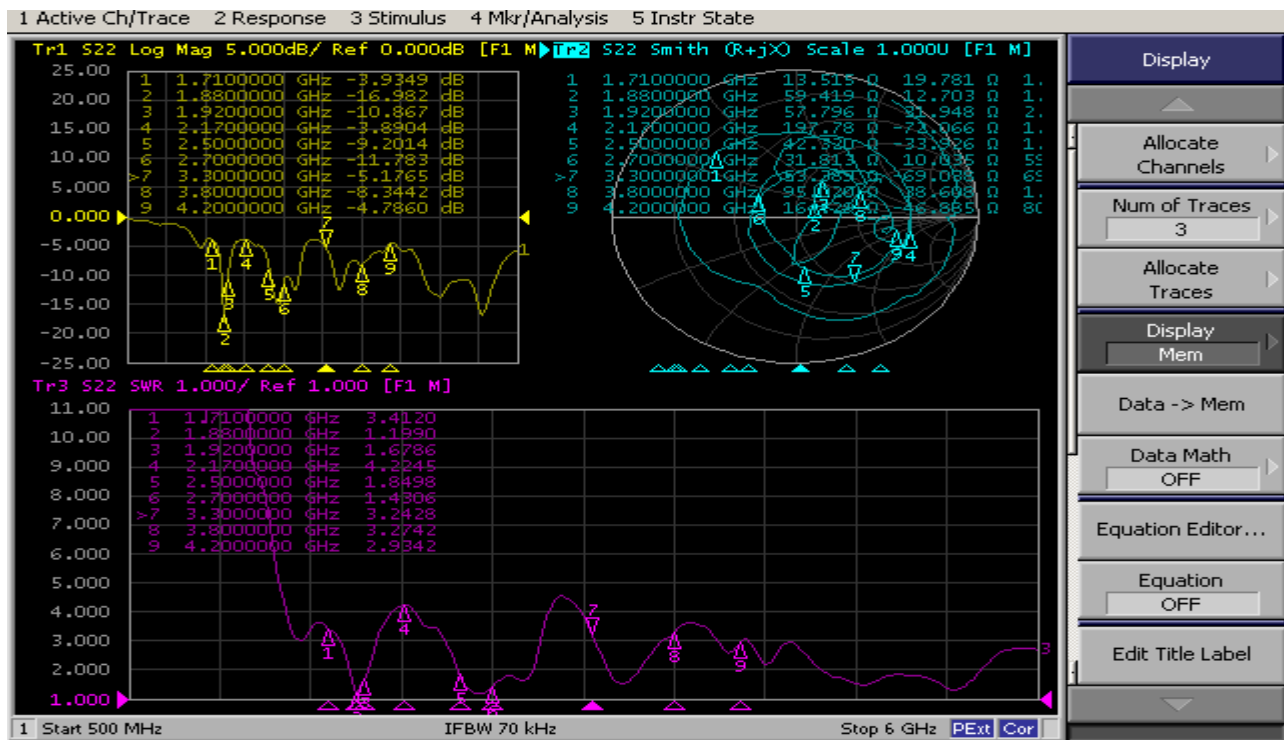


ANTO

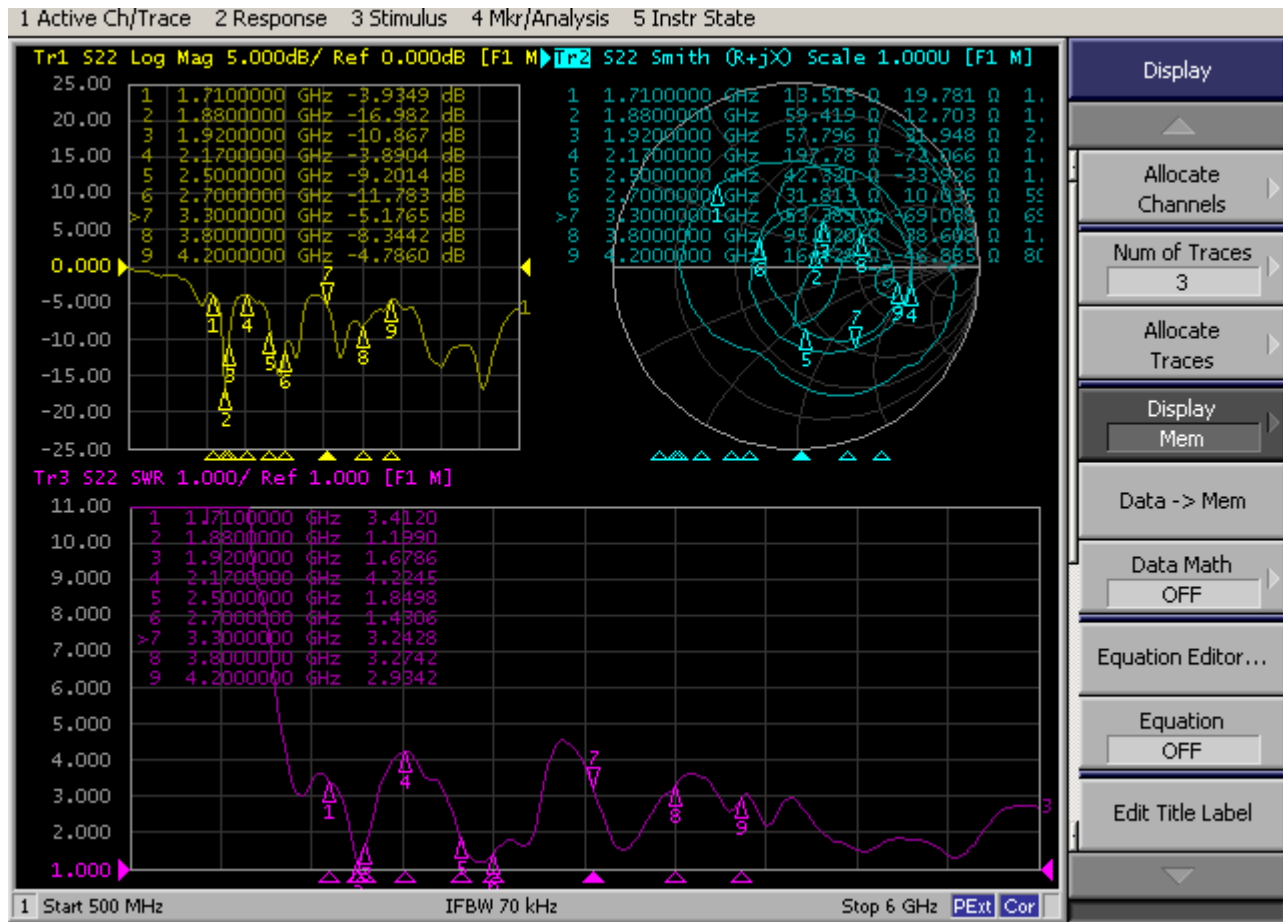
Confidential Information



ANT1

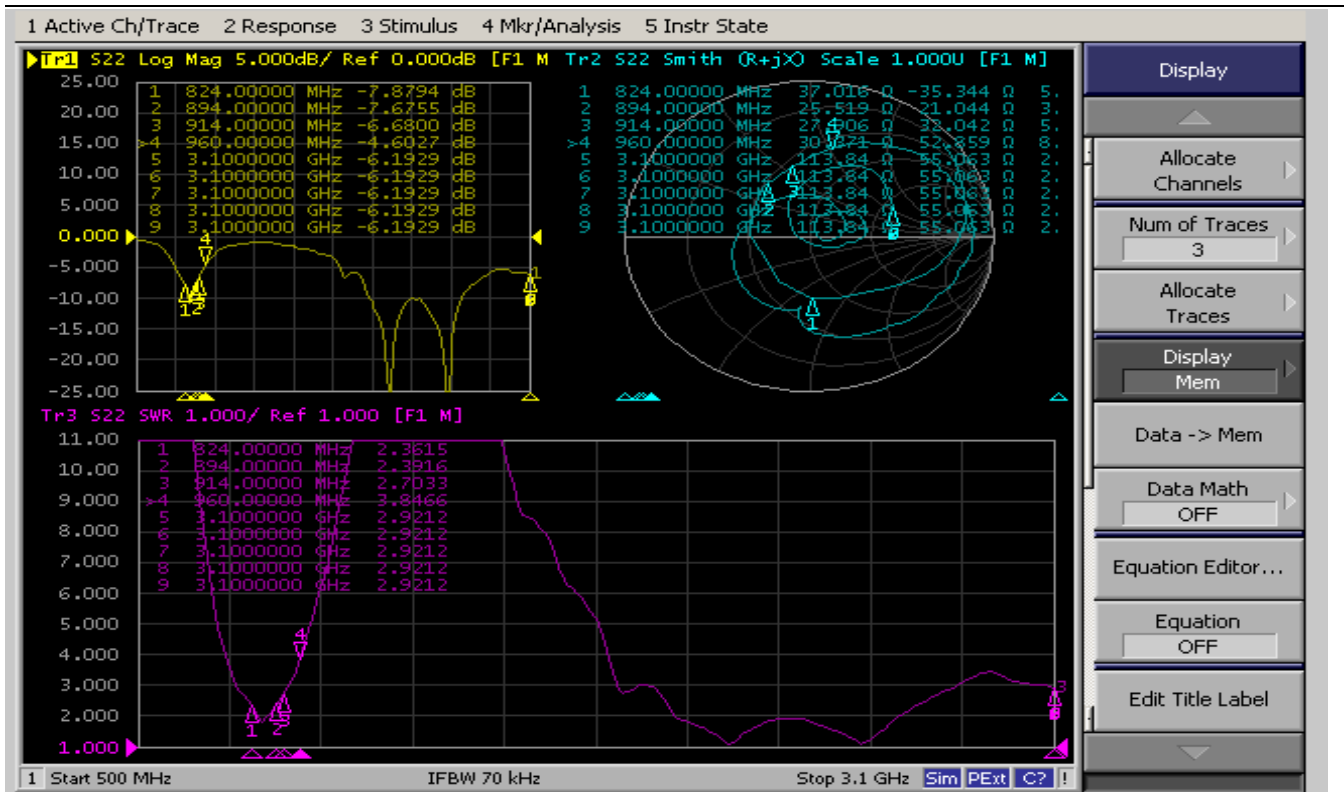


ANT2

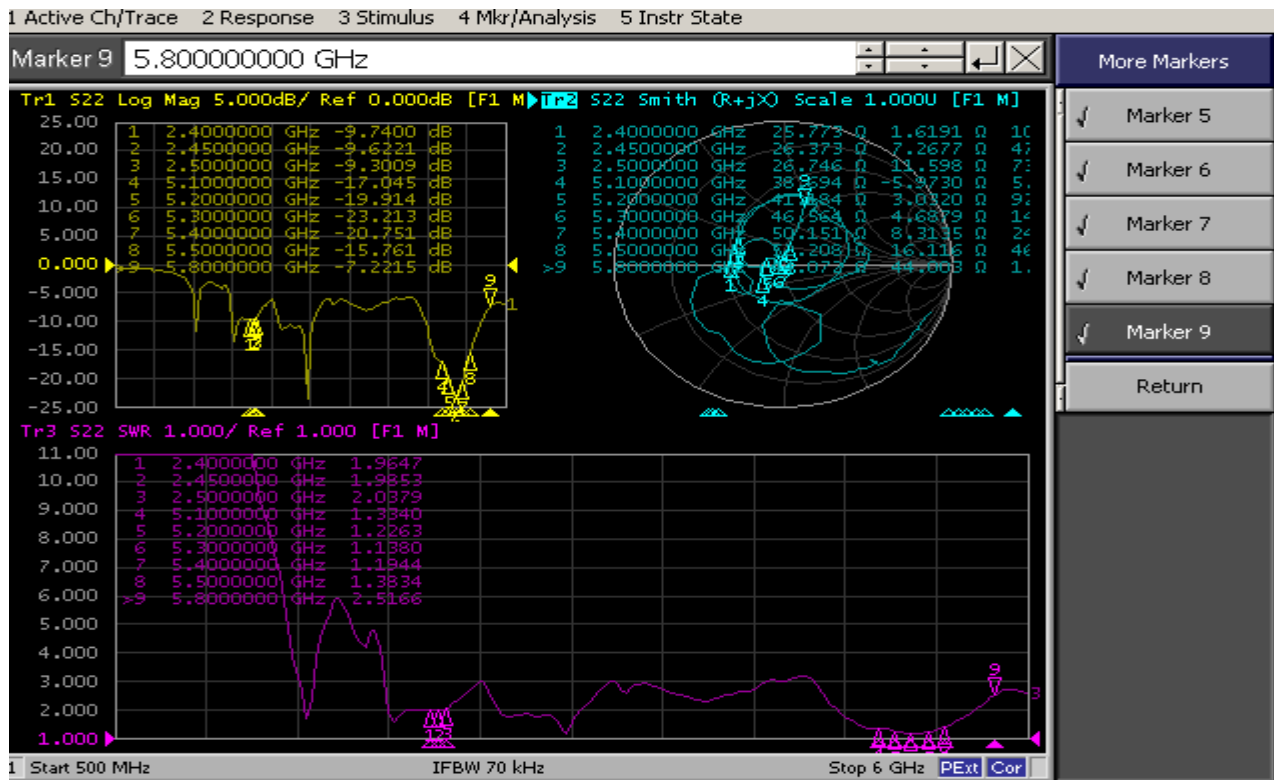


ANT3

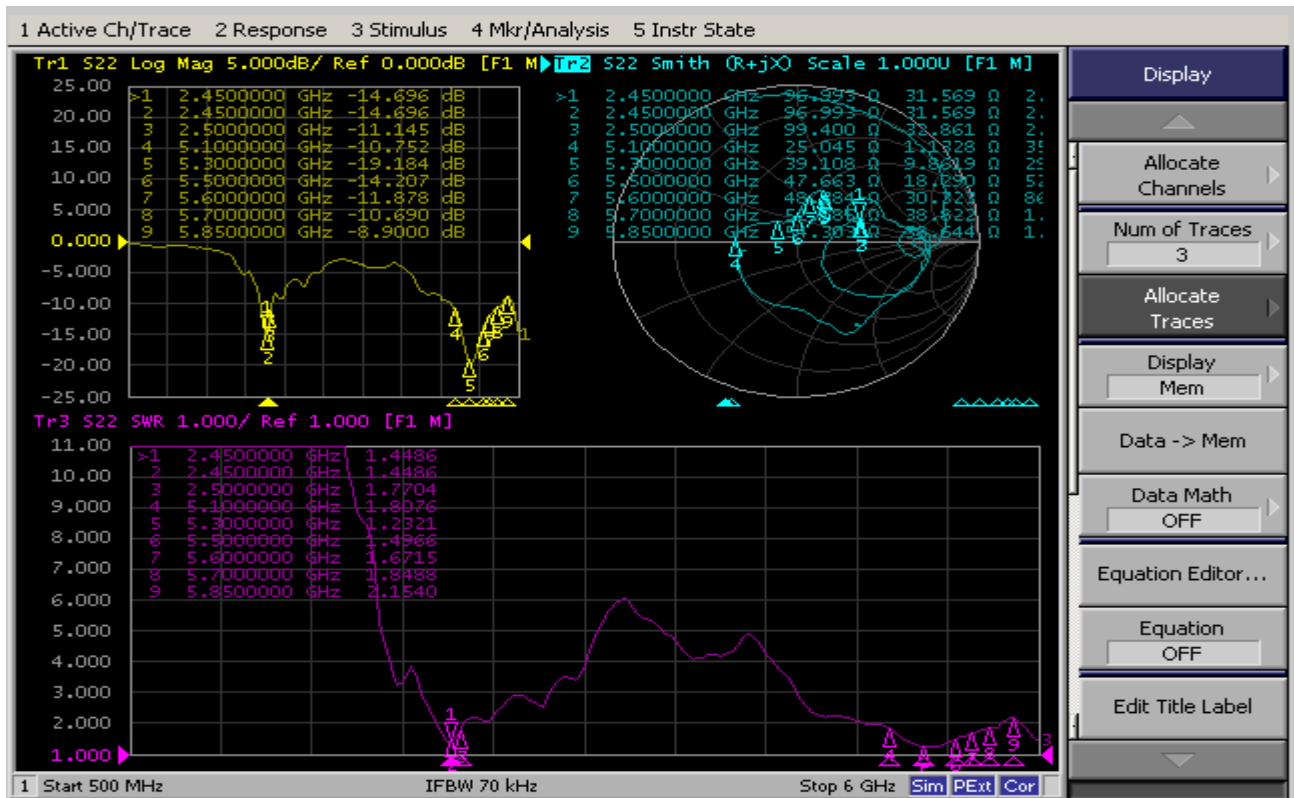
Confidential Information



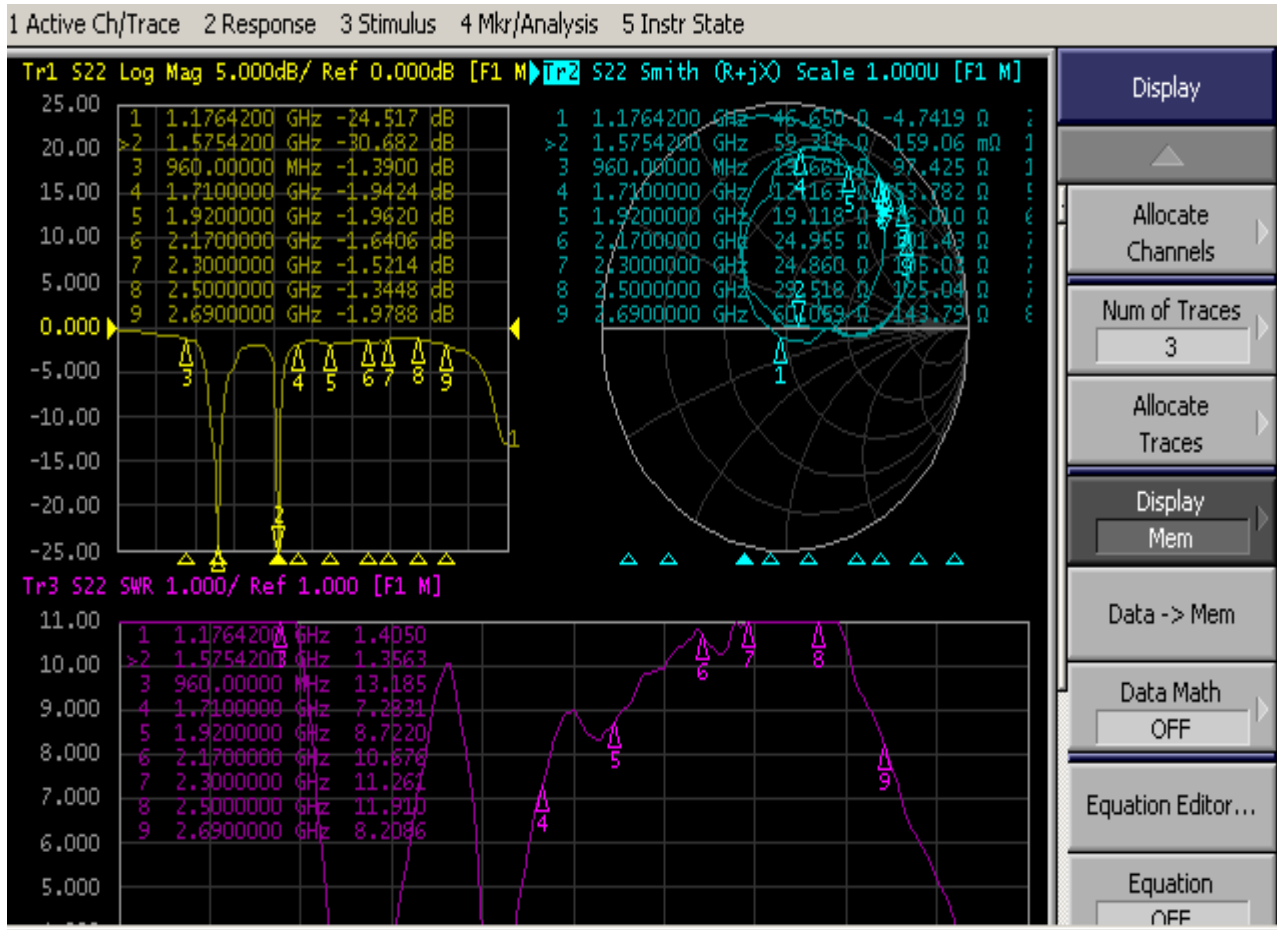
ANT4



WIFI-1



WIFI-2



GPS

2.2 Efficiency & Gain

ANTO

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1700	39.92	-3.99	1.47
1710	39.28	-4.06	1.29
1720	37.89	-4.22	0.96
1730	37.76	-4.23	0.8
1740	36.77	-4.35	0.37
1750	35.9	-4.45	0.21
1760	36.81	-4.34	0.23
1770	35.17	-4.54	-0.11
1780	36.64	-4.36	-0.08
1790	35.73	-4.47	0.29

Confidential Information

1800	34.54	-4.62	0.59
1810	34.04	-4.68	1.05
1820	35.46	-4.5	1.42
1830	37.94	-4.21	1.85
1840	42.93	-3.67	2.16
1850	48.86	-3.11	2.4
1860	51.75	-2.86	1.85
1870	52.06	-2.84	1.59
1880	50.87	-2.94	1.62
1890	49.75	-3.03	1.73
1900	49.71	-3.04	1.8
1910	45.82	-3.39	1.46
1920	41.96	-3.77	1.03
1930	40.98	-3.87	1.05
1940	38.05	-4.2	0.81
1950	39.57	-4.03	1.06
1960	38.79	-4.11	1.11
1970	38.25	-4.17	1.05
1980	39.95	-3.98	1.33
1990	42.08	-3.76	1.48
2000	43.61	-3.6	1.62
2010	43.99	-3.57	1.61
2020	40.17	-3.96	1.18
2030	37.9	-4.21	0.85
2040	35.22	-4.53	0.46
2050	34.15	-4.67	0.17
2060	37.04	-4.31	0.53
2070	39.96	-3.98	0.74
2080	39.95	-3.98	0.75
2090	41.38	-3.83	0.65
2100	43.04	-3.66	1.08
2110	36.89	-4.33	0.94
2120	35.47	-4.5	1.16
2130	34.9	-4.57	1.5
2140	35.03	-4.56	1.63
2150	34.49	-4.62	1.51
2160	34	-4.69	1.2
2170	33.65	-4.73	0.68

Confidential Information

2180	34.18	-4.66	0.1
2190	33.51	-4.75	-0.51
2200	33.26	-4.78	-1.03
2300	20.97	-6.79	-2.11
2310	22.51	-6.48	-2.08
2320	25.26	-5.98	-1.6
2330	27.78	-5.56	-1.39
2340	31.18	-5.06	-0.96
2350	31.46	-5.02	-0.79
2360	32.83	-4.84	-0.39
2370	32.41	-4.89	-0.32
2380	33.45	-4.76	-0.12
2390	33.3	-4.78	-0.17
2400	34.32	-4.64	-0.18
2500	30.98	-5.09	-1.2
2510	31.5	-5.02	-1.15
2520	30.57	-5.15	-1.1
2530	32.15	-4.93	-0.66
2540	31.7	-4.99	-0.34
2550	32.25	-4.92	-0.1
2560	31.52	-5.01	0.02
2570	32.16	-4.93	0.35
2580	29.46	-5.31	0.09
2590	28.14	-5.51	0.16
2600	29.17	-5.35	0.42
2610	27.96	-5.54	0.36
2620	26.01	-5.85	0.03
2630	25.58	-5.92	-0.03
2640	27.02	-5.68	0.25
2650	27.25	-5.65	0.26
2660	28.62	-5.43	0.53
2670	29.26	-5.34	0.57
2680	29.87	-5.25	0.74
2690	29.69	-5.27	0.71
2700	29.87	-5.25	0.63

ANT1

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1700	25.59	-5.92	1.18
1710	27.2	-5.65	1.56
1720	30.47	-5.16	1.93

Confidential Information

1730	30.45	-5.16	1.8
1740	30.18	-5.2	1.38
1750	31.71	-4.99	1.28
1760	33.3	-4.78	1.44
1770	35.74	-4.47	1.56
1780	36.88	-4.33	1.52
1790	35.64	-4.48	1.28
1800	35.54	-4.49	1.28
1810	35.47	-4.5	1.16
1820	34.07	-4.68	0.89
1830	32.65	-4.86	1.08
1840	31.4	-5.03	1.58
1850	30.81	-5.11	1.92
1860	32.12	-4.93	2.17
1870	31.15	-5.07	1.99
1880	30.06	-5.22	1.72
1890	30.55	-5.15	1.62
1900	34.26	-4.65	0.86
1910	39.62	-4.02	1.29
1920	45.13	-3.46	2.4
1930	46.27	-3.35	2.95
1940	42.92	-3.67	2.93
1950	40.53	-3.92	3.04
1960	36.29	-4.4	2.79
1970	32.63	-4.86	2.45
1980	30.89	-5.1	2.23
1990	28.54	-5.45	1.83
2000	28	-5.53	1.54
2010	27.62	-5.59	1.17
2020	26.51	-5.77	0.58
2030	27.55	-5.6	0.41
2040	29.03	-5.37	0.13
2050	31.35	-5.04	-0.13
2060	34.14	-4.67	0.48
2070	35.49	-4.5	1.11
2080	34.84	-4.58	1.35
2090	35.61	-4.48	1.89
2100	36.2	-4.41	1.85
2110	33.06	-4.81	1.3
2120	32.67	-4.86	1
2130	33.48	-4.75	1.17
2140	34.12	-4.67	1.18
2150	33.21	-4.79	1.01
2160	32.33	-4.9	0.77

Confidential Information

2170	32.58	-4.87	0.94
2180	32.08	-4.94	1.08
2190	32.51	-4.88	1.31
2200	32.63	-4.86	1.56
2300	30.76	-5.12	0.1
2310	30.19	-5.2	0.13
2320	30.5	-5.16	0.44
2330	32.06	-4.94	1.03
2340	33.55	-4.74	1.48
2350	32.8	-4.84	1.63
2360	33.82	-4.71	1.67
2370	32.97	-4.82	1.6
2380	35.13	-4.54	1.65
2390	36.87	-4.33	1.88
2400	37.7	-4.24	1.87
2410	37.27	-4.29	1.88
2420	38.28	-4.17	2.01
2430	37.73	-4.23	2.01
2440	39.61	-4.02	2.24
2450	40.36	-3.94	2.36
2460	38.68	-4.13	2.21
2470	36.99	-4.32	1.97
2480	36.22	-4.41	1.86
2490	35.97	-4.44	1.78
2500	36.49	-4.38	1.76
2510	34.86	-4.58	1.41
2520	33.79	-4.71	0.95
2530	33.92	-4.7	0.76
2540	32.1	-4.94	0.29
2550	32.67	-4.86	0.56
2560	32.99	-4.82	0.76
2570	33.48	-4.75	0.92
2580	33.37	-4.77	0.94
2590	33.15	-4.79	0.73
2600	32.9	-4.83	0.62
2610	32.62	-4.87	0.43
2620	30.24	-5.19	0.09
2630	29.89	-5.24	-0.04
2640	31.24	-5.05	0.21
2650	31.66	-4.99	0.32
2660	32.34	-4.9	0.37
2670	32.67	-4.86	0.46
2680	31.48	-5.02	0.26
2690	30.96	-5.09	0.14

Confidential Information

2700	30.51	-5.16	0.24
3300	47.44	-3.24	2.86
3310	51.42	-2.89	3.08
3320	53.37	-2.73	3.16
3330	52.35	-2.81	3.03
3340	50.41	-2.97	2.71
3350	53	-2.76	2.79
3360	54.06	-2.67	2.68
3370	50.5	-2.97	2.32
3380	50.39	-2.98	2.29
3390	54.04	-2.67	2.62
3400	55.92	-2.52	2.89
3410	47.7	-3.21	2.48
3420	48.58	-3.13	2.61
3430	52.5	-2.8	2.93
3440	51.97	-2.84	2.7
3450	47.58	-3.23	2.19
3460	44.62	-3.5	1.83
3470	45.77	-3.39	2.06
3480	48.82	-3.11	2.42
3490	46.66	-3.31	2.19
3500	45.58	-3.41	2.09
3510	48.73	-3.12	2.42
3520	50.2	-2.99	2.69
3530	48.77	-3.12	2.58
3540	48.86	-3.11	2.67
3550	54.43	-2.64	3.16
3560	53.96	-2.68	3.1
3570	52.14	-2.83	2.91
3580	47.66	-3.22	2.5
3590	50.12	-3	2.67
3600	50.38	-2.98	2.65
3610	48.18	-3.17	2.33
3620	43.44	-3.62	1.99
3630	44.47	-3.52	2.15
3640	45.54	-3.42	2.36
3650	45.04	-3.46	2.37
3660	42.02	-3.77	2.23
3670	38.72	-4.12	1.75
3680	37.61	-4.25	1.64
3690	35.57	-4.49	1.17
3700	36.37	-4.39	1.19
3710	39.33	-4.05	1.32
3720	40.92	-3.88	1.47

Confidential Information

3730	38.33	-4.16	1.19
3740	34.16	-4.66	0.61
3750	35.57	-4.49	0.81
3760	39.6	-4.02	1.31
3770	39.34	-4.05	1.27
3780	35.3	-4.52	0.97
3790	34.75	-4.59	1.01
3800	36.67	-4.36	1.4
3810	42.04	-3.76	1.95
3820	40.53	-3.92	1.76
3830	37.63	-4.24	1.33
3840	37.32	-4.28	1.36
3850	38.96	-4.09	1.6
3860	39.05	-4.08	1.53
3870	41.62	-3.81	1.73
3880	45.7	-3.4	2.2
3890	47.22	-3.26	2.64
3900	49.91	-3.02	3.21
3910	50.72	-2.95	3.46
3920	55.8	-2.53	4.06
3930	60.38	-2.19	4.6
3940	62.88	-2.02	4.85
3950	58.07	-2.36	4.51
3960	60.4	-2.19	4.72
3970	67.23	-1.72	5.29
3980	68.92	-1.62	5.43
3990	65.54	-1.83	5.15
4000	58.95	-2.3	4.73
4010	57.38	-2.41	4.66
4020	58.9	-2.3	4.85
4030	60.64	-2.17	5.07
4040	59.68	-2.24	5.05
4050	61.5	-2.11	5.2
4060	56.79	-2.46	4.95
4070	53.74	-2.7	4.7
4080	56.46	-2.48	4.95
4090	61.11	-2.14	5.29
4100	59.03	-2.29	5.1
4110	53.06	-2.75	4.55
4120	49	-3.1	4.25
4130	52.45	-2.8	4.4
4140	53.38	-2.73	4.36
4150	55.3	-2.57	4.44
4160	48.94	-3.1	3.79

Confidential Information

4170	46.67	-3.31	3.4
4180	44.38	-3.53	3.08
4190	45.98	-3.37	2.96
4200	45.79	-3.39	2.7

ANT2

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
3300	23.18	-6.35	-0.64
3310	23.13	-6.36	-0.54
3320	22.37	-6.5	-0.74
3330	23.22	-6.34	-0.39
3340	22.21	-6.53	-0.63
3350	22.89	-6.4	-0.59
3360	22.66	-6.45	-0.65
3370	22.2	-6.54	-0.77
3380	21.1	-6.76	-0.79
3390	20.73	-6.83	-1.11
3400	22.17	-6.54	-0.72
3410	21.97	-6.58	-0.7
3420	22.27	-6.52	-0.57
3430	20.54	-6.87	-1.06
3440	24.61	-6.09	-0.65
3450	23.89	-6.22	-0.85
3460	23.99	-6.2	-0.87
3470	23.89	-6.22	-0.85
3480	23.99	-6.2	-0.87
3490	24.55	-6.1	-0.57
3500	25.15	-6	-0.37
3510	24.85	-6.05	-0.47
3520	24.78	-6.06	-0.27
3530	24.44	-6.12	-0.25
3540	24.45	-6.12	-0.36
3550	24.61	-6.09	-0.65
3560	29.11	-5.36	-0.65
3570	30.24	-5.19	-0.62
3580	31.06	-5.08	-0.25
3590	33.74	-4.72	-0.14
3600	33.63	-5.59	-1.36
3610	33.64	-5.58	-0.88

Confidential Information

3620	33.87	-5.55	-0.73
3630	32.29	-5.8	-0.51
3640	31	-6.02	-0.66
3650	30.55	-6.1	-0.38
3660	29.86	-6.22	-0.54
3670	30.22	-6.16	-0.26
3680	33.06	-4.81	-0.29
3690	32.65	-4.86	-0.38
3700	31.39	-5.03	-0.77
3710	31.22	-5.06	-0.71
3720	33.06	-4.81	-0.29
3730	32.65	-4.86	-0.38
3740	31.39	-5.03	-0.77
3750	31.22	-5.06	-0.71
3760	34.99	-4.56	-0.67
3770	34.88	-4.57	-0.75
3780	34.77	-4.59	-0.29
3790	33.44	-4.76	-0.07
3800	31.73	-4.99	-0.36
3810	39.72	-4.01	1.53
3820	40.57	-3.92	1.57
3830	40.63	-3.91	1.68
3840	41.08	-3.86	1.69
3850	43.55	-3.61	2.11
3860	42.9	-3.68	2.06
3870	43.71	-3.59	2.01
3880	46.65	-3.31	2.13
3890	47.48	-3.23	2.18
3900	47.82	-3.2	2.26
3910	46.3	-3.34	2.05
3920	49.3	-3.07	2.4
3930	51.7	-2.87	2.53
3940	52.99	-2.76	2.65
3950	46.78	-3.3	2.13
3960	46.84	-3.29	2.05
3970	51.2	-2.91	2.34
3980	53.42	-2.72	2.52
3990	51.43	-2.89	2.4
4000	46.07	-3.37	1.7
4010	44.97	-3.47	1.6
4020	46.12	-3.36	1.68
4030	46.8	-3.3	1.77

Confidential Information

4040	46.99	-3.28	2.01
4050	49.2	-3.08	2.08
4060	45.04	-3.46	1.63
4070	43.83	-3.58	1.47
4080	45.36	-3.43	1.63
4090	49.22	-3.08	1.77
4100	47.91	-3.2	1.63
4110	44.12	-3.55	1.03
4120	41.4	-3.83	1.54
4130	45.68	-3.4	1.91
4140	46.86	-3.29	1.85
4150	49.51	-3.05	1.93
4160	46.79	-3.3	1.51
4170	47.73	-3.21	1.4
4180	47.37	-3.24	1.22
4190	47.87	-3.2	0.97
4200	48.6	-3.13	1.13

ANT3

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1700	25.77	-5.89	-1.31
1710	25.12	-6	-1.56
1720	23.96	-6.21	-1.84
1730	23.57	-6.28	-2.11
1740	23.25	-6.33	-1.95
1750	23.74	-6.25	-1.44
1760	25.12	-6	-0.92
1770	24.89	-6.04	-0.69
1780	27.05	-5.68	-0.1
1790	27.6	-5.59	0.04
1800	27.08	-5.67	0.01
1810	25.7	-5.9	-0.52
1820	27.51	-5.6	-0.69
1830	31.01	-5.09	-0.82
1840	36.99	-4.32	-0.7
1850	42.95	-3.67	-0.59
1860	46.58	-3.32	-0.15
1870	49.95	-3.01	0.17
1880	53.82	-2.69	0.54
1890	56.31	-2.49	0.98
1900	58.77	-2.31	1.45

Confidential Information

1910	57.56	-2.4	1.62
1920	55.07	-2.59	1.68
1930	51.1	-2.92	1.4
1940	44.83	-3.48	0.95
1950	42.94	-3.67	0.65
1960	38.4	-4.16	0.06
1970	34.07	-4.68	-0.38
1980	32.25	-4.91	-0.84
1990	30.38	-5.17	-1.29
2000	29.07	-5.37	-1.77
2010	28.27	-5.49	-1.71
2020	24.83	-6.05	-1.97
2030	24.37	-6.13	-1.8
2040	25.58	-5.92	-1.42
2050	27.84	-5.55	-1.06
2060	32.09	-4.94	-0.65
2070	34.26	-4.65	-0.58
2080	32.53	-4.88	-1.14
2090	33.6	-4.74	-1.21
2100	35.81	-4.46	-0.58
2110	30.66	-5.13	-1
2120	30.43	-5.17	-0.89
2130	30.26	-5.19	-0.81
2140	30.79	-5.12	-0.71
2150	30.56	-5.15	-0.85
2160	30.19	-5.2	-1.09
2170	29.56	-5.29	-1.31
2180	30.28	-5.19	-1.46
2190	28.92	-5.39	-1.77
2200	29.56	-5.29	-2.13
2300	33.92	-4.7	-1.38
2310	35.22	-4.53	-1.19
2320	38	-4.2	-0.85
2330	39.73	-4.01	-0.41
2340	42.78	-3.69	-0.03
2350	43.21	-3.64	0.09
2360	43.42	-3.62	0.04
2370	41.97	-3.77	-0.11
2380	41.52	-3.82	-0.18
2390	39.89	-3.99	-0.36
2400	40.25	-3.95	-0.23
2410	39	-4.09	-0.2
2420	39.73	-4.01	0.05
2430	39.7	-4.01	0.13

Confidential Information

2440	38.42	-4.15	-0.06
2450	39.13	-4.07	-0.01
2460	38.88	-4.1	-0.12
2470	38.38	-4.16	-0.12
2480	39.84	-4	-0.03
2490	43.43	-3.62	0.47
2500	43.87	-3.58	0.33
2510	45.25	-3.44	0.37
2520	45.37	-3.43	0.1
2530	47.93	-3.19	0.34
2540	48.42	-3.15	0.43
2550	50.45	-2.97	0.68
2560	51.34	-2.9	0.86
2570	52.98	-2.76	1.06
2580	50.35	-2.98	0.91
2590	48.86	-3.11	0.81
2600	50.73	-2.95	1.02
2610	49.45	-3.06	0.87
2620	46.26	-3.35	0.66
2630	45.75	-3.4	0.73
2640	48.27	-3.16	1.03
2650	49.11	-3.09	1.24
2660	50.24	-2.99	1.39
2670	50.84	-2.94	1.47
2680	51.51	-2.88	1.49
2690	50.19	-2.99	1.35
2700	49.65	-3.04	1.31
3300	28.73	-5.42	-1.95
3310	24.20	-6.16	-1.65
3320	26.57	-5.76	-1.23
3330	26.48	-5.77	-1.23
3340	24.31	-6.14	-1.75
3350	27.96	-5.53	-1.52
3360	31.14	-5.07	-1.25
3370	32.06	-4.94	-1.23
3380	33.39	-4.76	-1.09
3390	31.42	-5.03	-1.22
3400	32.13	-4.93	-1.43
3410	31.88	-4.96	-1.29
3420	31.38	-5.03	-1.49
3430	32.84	-4.84	-1.87
3440	26.92	-5.70	-1.74
3450	28.22	-5.49	-1.26
3460	31.00	-5.09	-1.05

Confidential Information

3470	39.44	-4.04	-1.10
3480	38.94	-4.10	-1.09
3490	34.88	-4.57	-1.30
3500	33.69	-4.72	-1.15
3510	36.13	-4.42	-1.31
3520	38.03	-4.20	-1.74
3530	36.10	-4.42	-1.41
3540	34.60	-4.61	-1.18
3550	39.17	-4.07	-1.45
3560	40.91	-3.88	-1.30
3570	39.85	-4.00	-1.12
3580	35.76	-4.47	-1.17
3590	36.59	-4.37	-1.09
3600	37.09	-4.31	-1.30
3610	35.93	-4.45	-1.31
3620	32.59	-4.87	-1.03
3630	33.47	-4.75	-1.33
3640	34.76	-4.59	-1.59
3650	34.70	-4.60	-1.80
3660	32.27	-4.91	-1.72
3670	29.34	-5.33	-1.48
3680	28.55	-5.44	-1.58
3690	26.46	-5.77	-1.30
3700	27.65	-5.58	-1.48
3710	30.50	-5.16	-1.72
3720	32.03	-4.94	-1.85
3730	29.23	-5.34	-1.54
3740	24.94	-6.03	-1.14
3750	26.39	-5.79	-1.05
3760	30.74	-5.12	-1.27
3770	30.94	-5.09	-1.30
3780	27.13	-5.67	-1.15
3790	26.77	-5.72	-1.28
3800	28.10	-5.51	-1.32
3810	40.03	-3.98	-0.31
3820	39.09	-4.08	-0.25
3830	36.36	-4.39	0
3840	34.77	-4.59	-0.14
3850	34.65	-4.6	0.13
3860	33.58	-4.74	0.11
3870	34.64	-4.6	0.18
3880	36.32	-4.4	0.52
3890	35.56	-4.49	0.42
3900	34.03	-4.68	0.23

Confidential Information

3910	33.08	-4.8	0.13
3920	36	-4.44	0.58
3930	37.83	-4.22	0.6
3940	36.18	-4.42	0.42
3950	32.04	-4.94	-0.02
3960	32.55	-4.88	-0.06
3970	38.15	-4.19	0.62
3980	40.81	-3.89	0.85
3990	38.45	-4.15	0.67
4000	35.09	-4.55	0.16
4010	35.69	-4.47	0.34
4020	38.96	-4.09	0.83
4030	43.24	-3.64	1.3
4040	44.85	-3.48	1.27
4050	45.49	-3.42	1.38
4060	42.88	-3.68	1.35
4070	43.47	-3.62	1.4
4080	48.53	-3.14	1.8
4090	53.11	-2.75	2.31
4100	49.23	-3.08	2.02
4110	43.01	-3.66	1.56
4120	40.79	-3.89	1.52
4130	45.2	-3.45	1.91
4140	46.06	-3.37	2.04
4150	44.31	-3.54	1.95
4160	38.7	-4.12	1.35
4170	37.84	-4.22	1.45
4180	37.54	-4.25	1.45
4190	38.11	-4.19	1.5
4200	36.64	-4.36	1.35

ANT4

(MHz)	(%)	(dB)	(dBi)
620	2.02	-16.94	-11.89
630	2.23	-16.52	-11.64
640	6.35	-11.97	-7.38
650	6.03	-12.2	-7.81
660	5.43	-12.65	-8.67
670	10.78	-9.67	-5.36
680	11.75	-9.3	-4.93
690	13.95	-8.56	-3.73

Confidential Information

700	16.45	-7.84	-2.76
710	17.09	-7.67	-2.61
720	20.35	-6.91	-1.4
730	21.94	-6.59	-1.37
740	22.67	-6.45	-1.27
750	23.71	-6.25	-2.88
760	28.71	-5.42	-2.06
770	27.1	-5.67	-2.47
780	27.82	-5.56	-2.58
790	34.14	-4.67	-1.8
800	45.42	-3.43	-0.73
810	45.66	-3.4	-0.7
820	38.31	-4.17	-1.14
830	24.88	-6.04	-2.91
840	29.65	-5.28	-2.39
850	25.82	-5.88	-2.55
860	31.42	-5.03	-1.34
870	35.37	-4.51	-1.09
880	41.23	-3.85	-0.55
890	43.5	-3.61	-0.65
900	47.28	-3.25	0.84
910	47.76	-3.21	1.14
920	45.02	-3.47	0.92
930	38.89	-4.1	0.69
940	32.62	-4.87	0.28
950	29.52	-5.3	0.22
960	23.95	-6.21	-0.61
970	21.36	-6.7	-1.12
980	16.96	-7.7	-2.16
990	12.51	-9.03	-3.71
1000	11.66	-9.33	-4.14

WIFI-1

(MHz)	(%)	(dB)	(dBi)
2400	38.25	-4.17	0.7
2410	38.42	-4.15	0.85
2420	38.68	-4.13	0.71
2430	39.5	-4.03	0.72
2440	38.56	-4.14	0.47
2450	39.23	-4.06	0.58

Confidential Information

2460	39.03	-4.09	0.62
2470	37.87	-4.22	0.41
2480	38.76	-4.12	0.5
2490	41.15	-3.86	0.63
2500	40.29	-3.95	0.64
5150	34.27	-4.65	1.27
5160	33.74	-4.72	1.16
5170	32.74	-4.85	1.11
5180	31.76	-4.98	0.97
5190	31.48	-5.02	0.82
5200	31.26	-5.05	0.87
5210	31.76	-4.98	0.92
5220	30.71	-5.13	0.83
5230	31.16	-5.06	0.82
5240	29.75	-5.27	0.64
5250	29.02	-5.37	0.62
5260	29.13	-5.36	0.6
5270	28.01	-5.53	0.53
5280	28.38	-5.47	0.51
5290	29.28	-5.33	0.68
5300	28.07	-5.52	0.48
5310	28.68	-5.42	0.68
5320	29.55	-5.3	0.75
5330	29.02	-5.37	0.68
5340	29.86	-5.25	0.78
5350	31.66	-4.99	1.01
5360	32.13	-4.93	1.02
5370	33.42	-4.76	1.14
5380	33.68	-4.73	1.03
5390	31.75	-4.98	0.69
5400	38.19	-4.18	1.39
5410	40.47	-3.93	1.59
5420	40.82	-3.89	1.67
5430	41.03	-3.87	1.52
5440	40.89	-3.88	1.44
5450	40.59	-3.92	1.37
5460	42.54	-3.71	1.58
5470	42.02	-3.77	1.35
5480	41.8	-3.79	1.35
5490	40.96	-3.88	1.12
5500	40.21	-3.96	1.04
5510	39.59	-4.02	0.92

Confidential Information

5520	40.63	-3.91	1.02
5530	41.3	-3.84	1.11
5540	40.76	-3.9	0.9
5550	39.49	-4.03	0.82
5560	38.65	-4.13	0.68
5570	39.69	-4.01	0.82
5580	40.31	-3.95	0.81
5590	39.7	-4.01	0.72
5600	39.81	-4	0.74
5610	40.27	-3.95	0.78
5620	40.53	-3.92	0.61
5630	41.61	-3.81	0.68
5640	41.13	-3.86	0.44
5650	42.6	-3.71	0.68
5660	43.82	-3.58	0.74
5670	42.44	-3.72	0.42
5680	43.6	-3.61	0.43
5690	44.57	-3.51	0.58
5700	45.35	-3.43	0.42
5710	44.66	-3.5	0.55
5720	43.81	-3.58	0.18
5730	43.89	-3.58	0.25
5740	45.64	-3.41	0.39
5750	46.24	-3.35	0.33
5760	44.93	-3.47	0.28
5770	44.13	-3.55	0.25
5780	42.48	-3.72	0.25
5790	42.4	-3.73	0.18
5800	41.74	-3.79	0.39
5810	41.67	-3.8	0.44
5820	42.08	-3.76	0.47
5830	41.88	-3.78	0.42
5840	42.64	-3.7	0.68
5850	44.95	-3.47	1

WIFI-2

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	39.78	-4	0.56
2405	39.33	-4.05	0.58

Confidential Information

2410	39.05	-4.08	0.58
2415	39.79	-4	0.71
2420	40.22	-3.96	0.78
2425	40.2	-3.96	0.83
2430	40.62	-3.91	0.94
2435	41.56	-3.81	1.17
2440	41.94	-3.77	1.22
2445	41.36	-3.83	1.12
2450	39.07	-4.08	0.93
2455	39.08	-4.08	1.15
2460	39.43	-4.04	1.37
2465	39.72	-4.01	1.39
2470	38.93	-4.1	1.34
2475	39.15	-4.07	1.47
2480	39.67	-4.02	1.62
2485	40.46	-3.93	1.62
2490	40.17	-3.96	1.54
2495	39.8	-4	1.45
2500	39.49	-4.04	1.36
5150	31.25	-5.05	0.92
5178	28.96	-5.38	0.43
5206	30.73	-5.12	0.32
5234	32.04	-4.94	-0.13
5262	32.56	-4.87	-0.2
5290	35.21	-4.53	0.28
5318	36.92	-4.33	0.67
5346	40.6	-3.92	1.02
5374	42.09	-3.76	1.27
5402	45.68	-3.4	1.6
5430	43.19	-3.65	1.14
5458	45.07	-3.46	1.47
5486	42.53	-3.71	1.18
5514	43.28	-3.64	1.14
5542	42.76	-3.69	1.16
5570	46.28	-3.35	1.58
5598	48.85	-3.11	1.69
5626	51.89	-2.85	1.91
5654	48.78	-3.12	1.72
5682	48.53	-3.14	1.61
5710	48.42	-3.15	1.72
5738	48.82	-3.11	1.69
5766	47.85	-3.2	1.55

Confidential Information

5794	46.78	-3.3	1.7
5822	47.64	-3.22	1.98
5850	47.19	-3.26	1.9

GPS

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1151	46.71	-3.31	-0.56
1156	50.04	-3.01	-0.36
1161	52.35	-2.81	0
1166	51.85	-2.85	0.06
1171	52.77	-2.78	0.12
1176	51.14	-2.91	-0.05
1181	49.39	-3.06	-0.1
1186	48.88	-3.11	0.04
1191	48.3	-3.16	0.1
1196	49.39	-3.06	0.28
1201	48.28	-3.16	0.22
1206	49.07	-3.09	0.43
1550	37.17	-4.3	0.34
1555	37.38	-4.27	0.23
1560	37.78	-4.23	0.13
1565	37.46	-4.26	-0.05
1570	40.99	-3.87	0.2
1575	42.13	-3.75	0.2
1580	38.39	-4.16	-0.44
1585	36.79	-4.34	-0.57
1590	33.88	-4.7	-0.17
1595	33.76	-4.72	-0.03
1600	32.75	-4.85	-0.15

2.3 3D Pattern

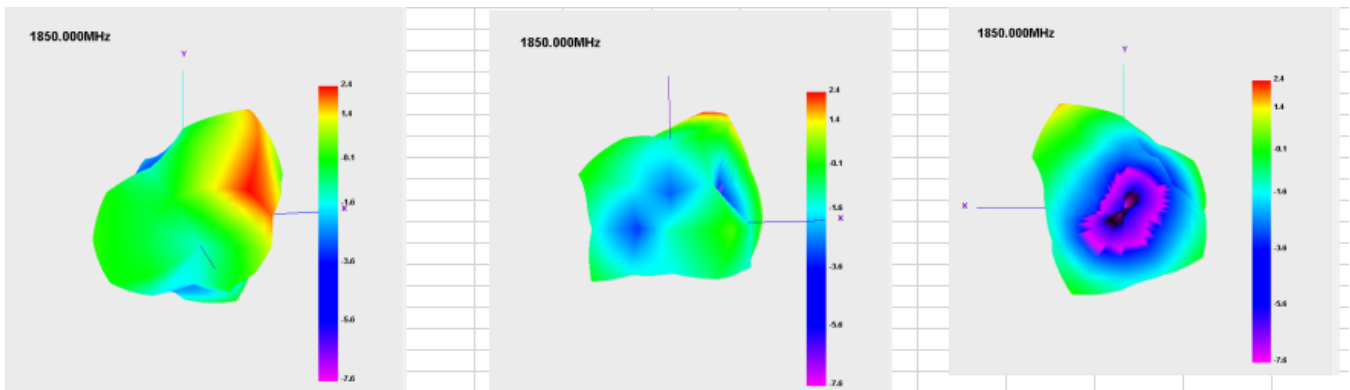
ANT0

WCDMA B2

H plane

E1 plane

E2 plane

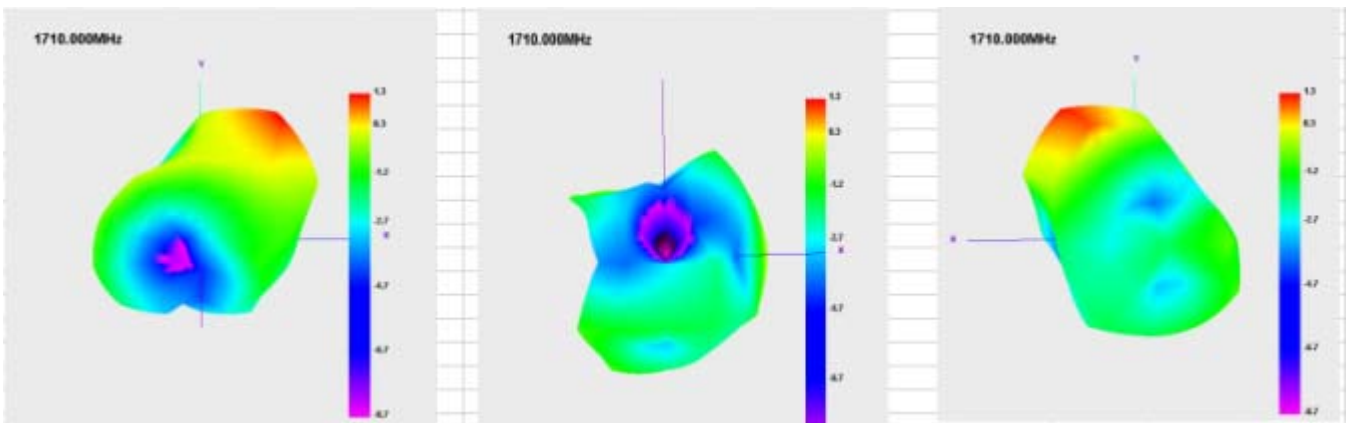


WCDMA B4

H plane

E1 plane

E2 plane

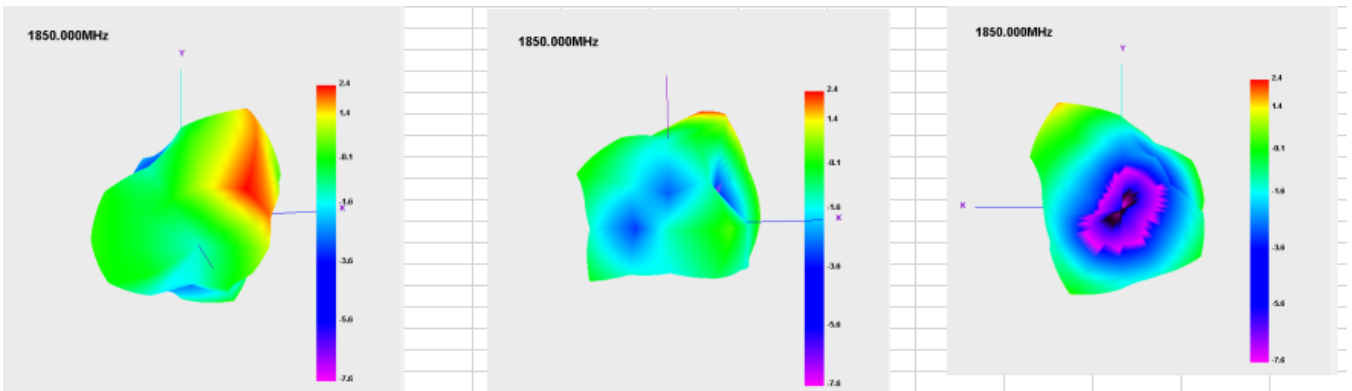


LTE B2

H plane

E1 plane

E2 plane

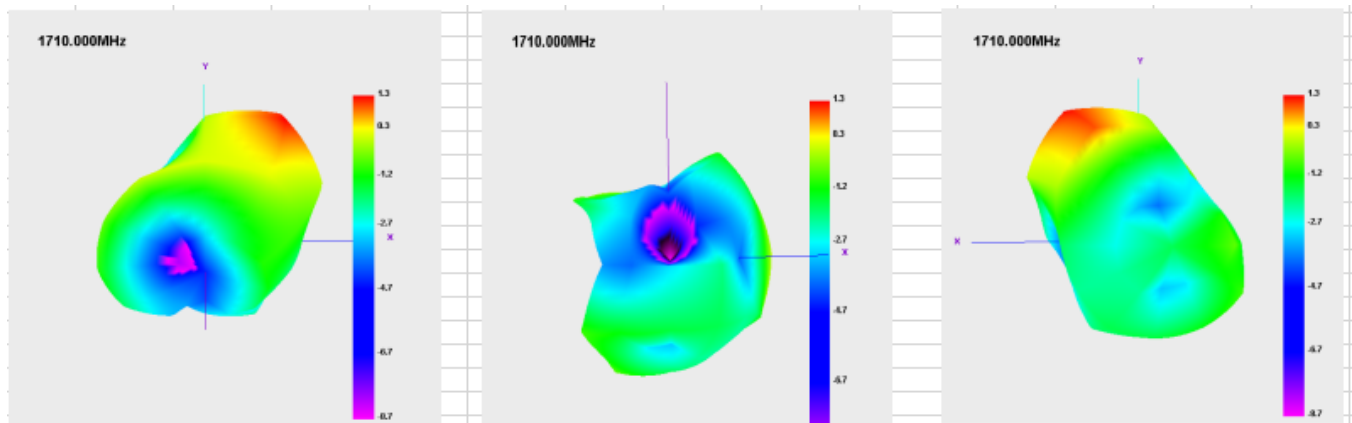


LTE B4

H plane

E1 plane

E2 plane

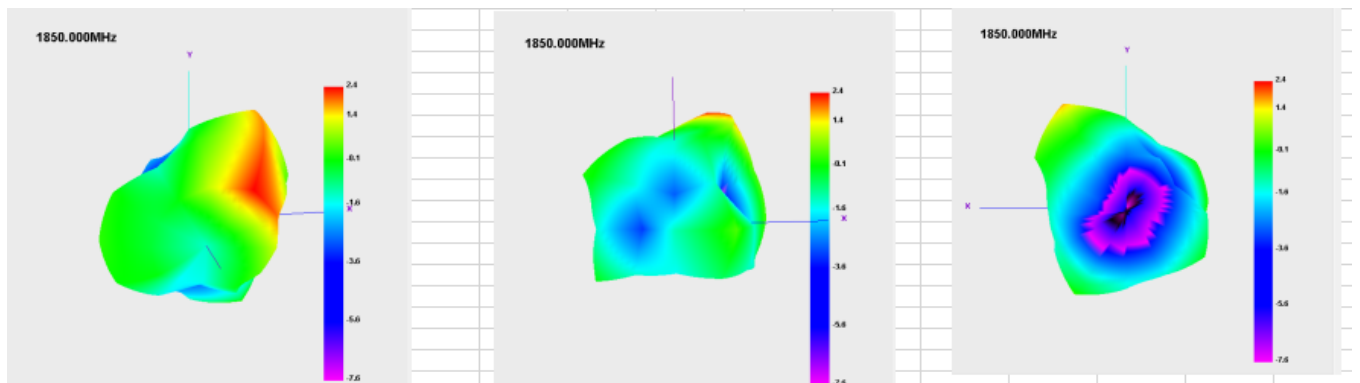


LTE B25

H plane

E1 plane

E2 plane

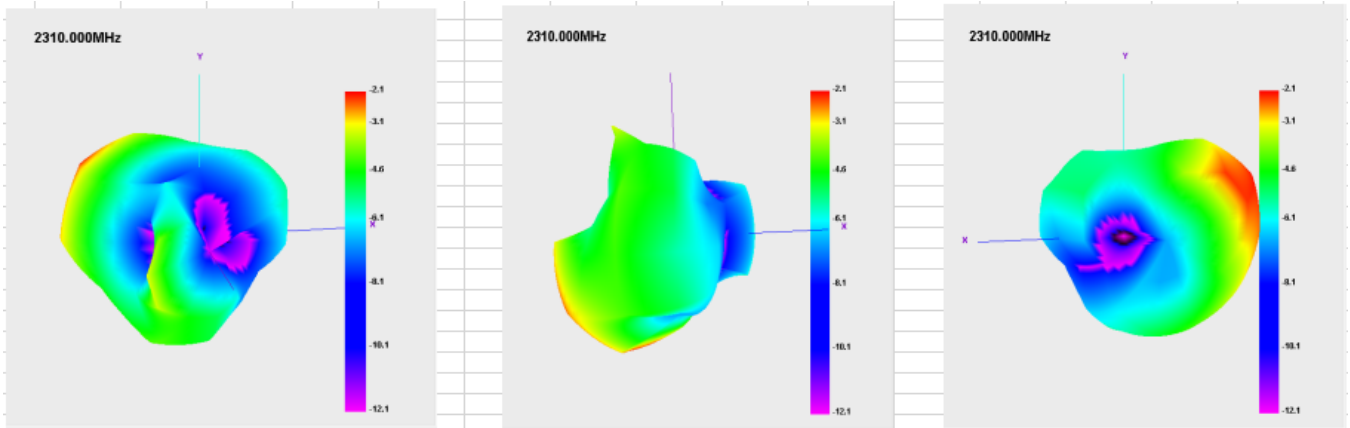


LTE B30

H plane

E1 plane

E2 plane

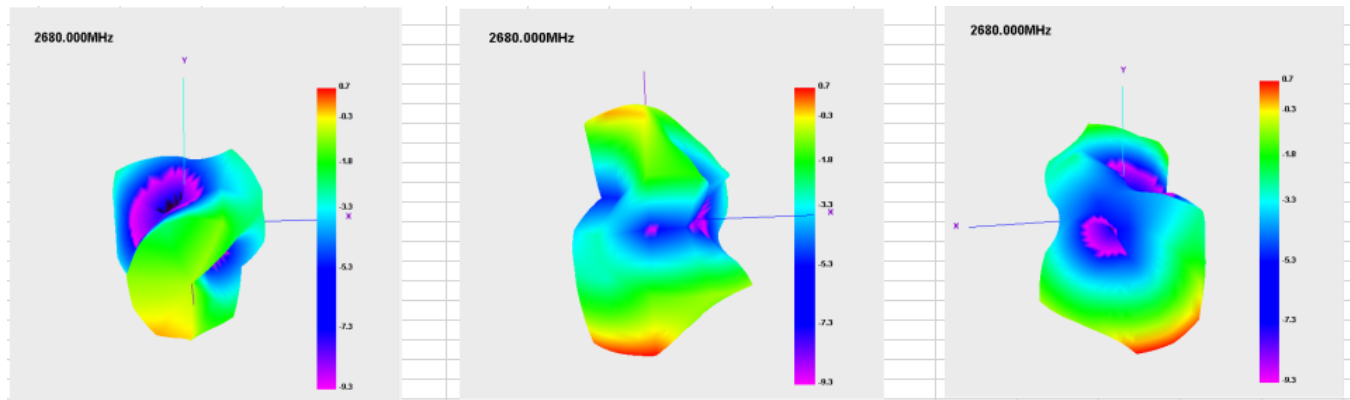


TE B41

H plane

E1 plane

E2 plane

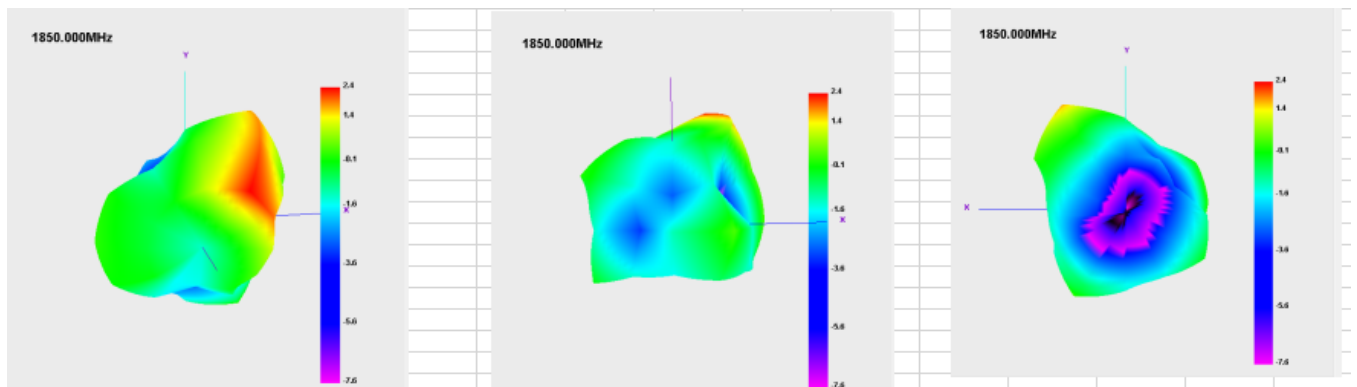


NR N2

H plane

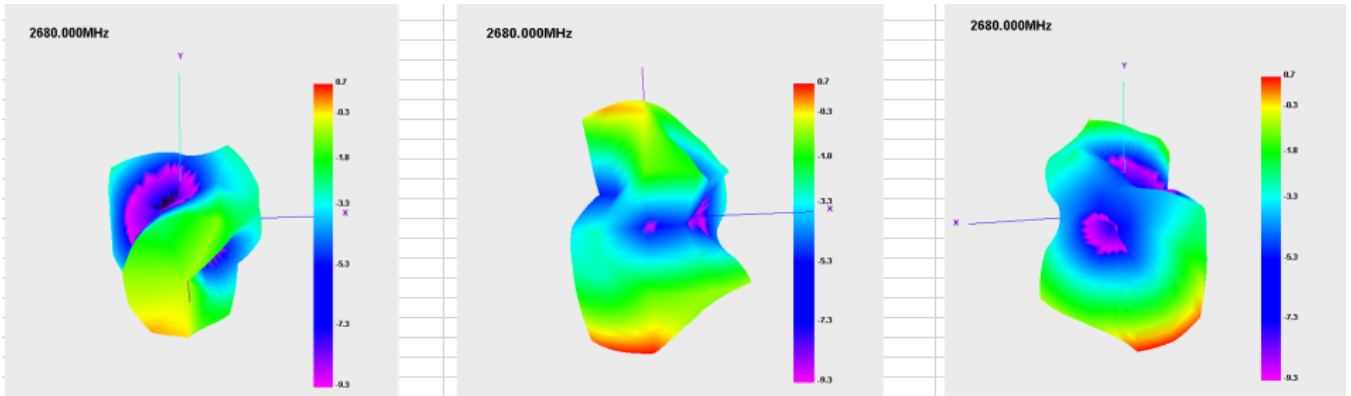
E1 plane

E2 plane

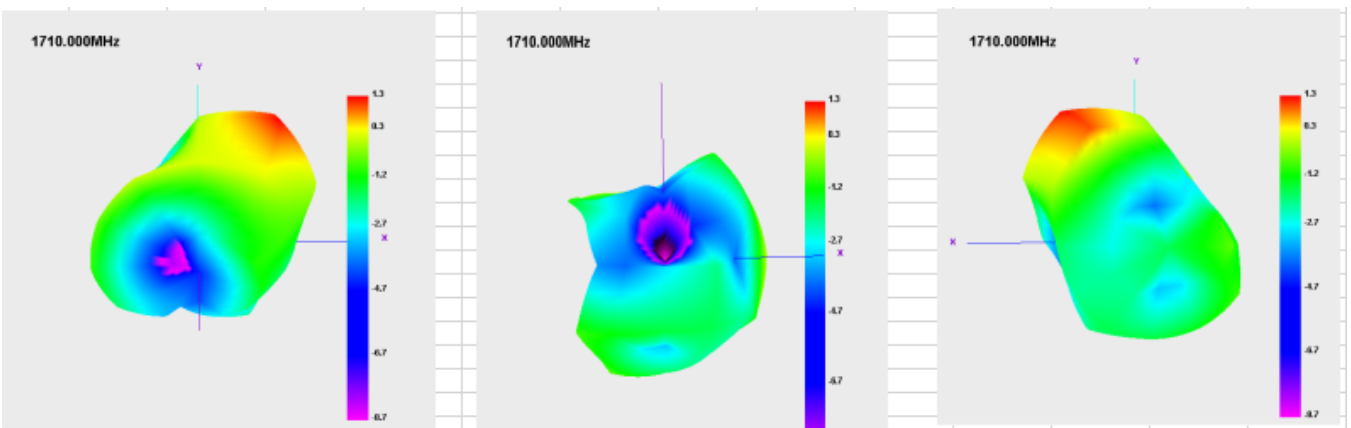


NR N41

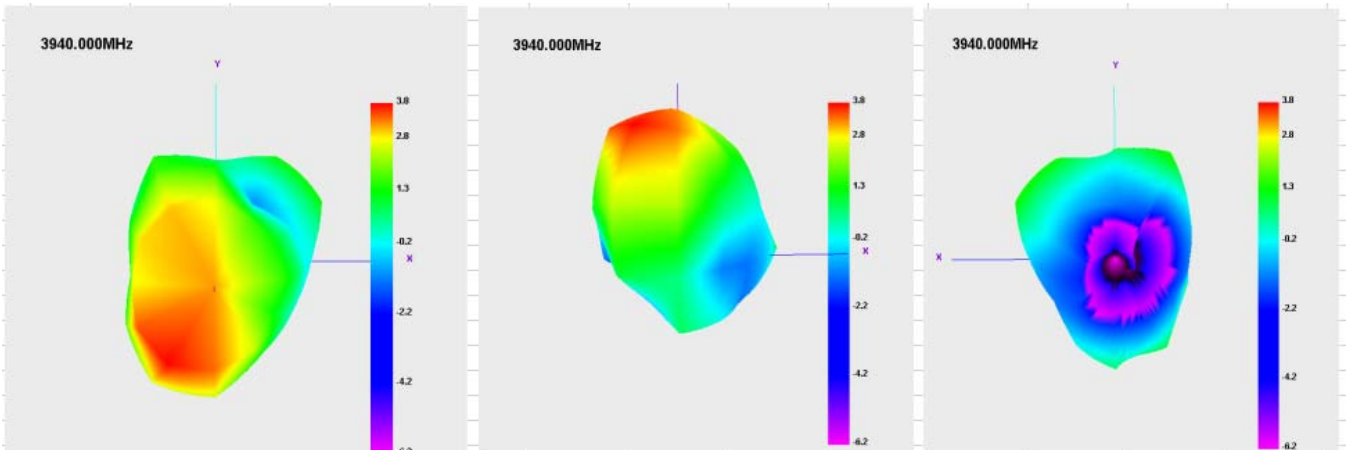
E2 plane



E2 plane



E2 plane



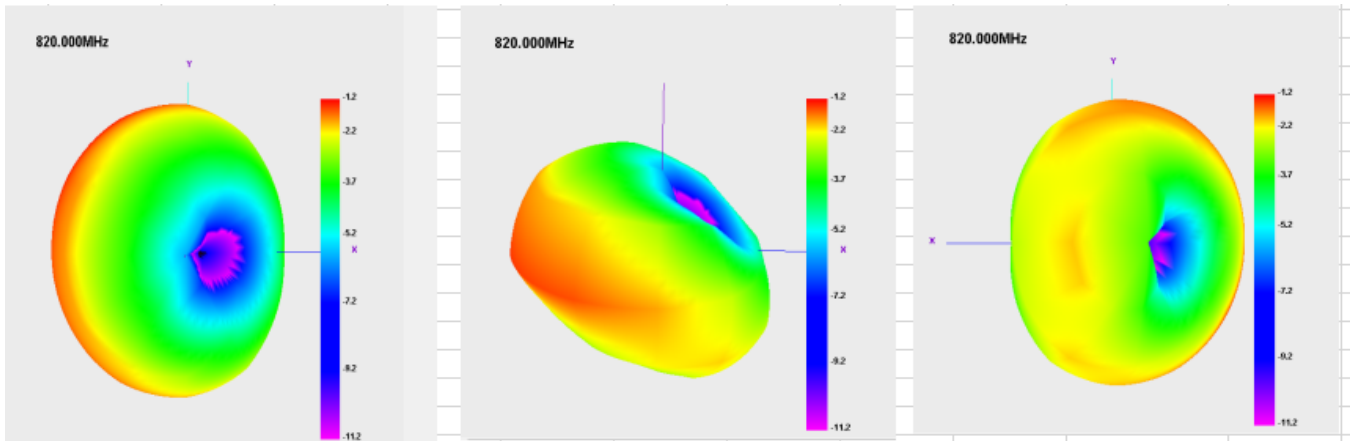
ANT4

LTE B5

H plane

E1 plane

E2 plane

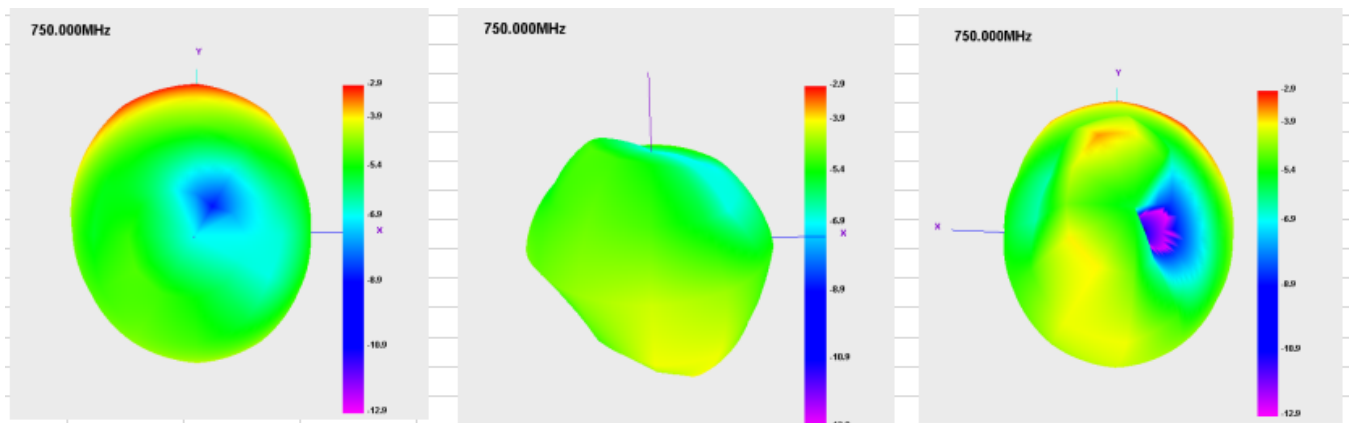


LTE B12

H plane

E1 plane

E2 plane

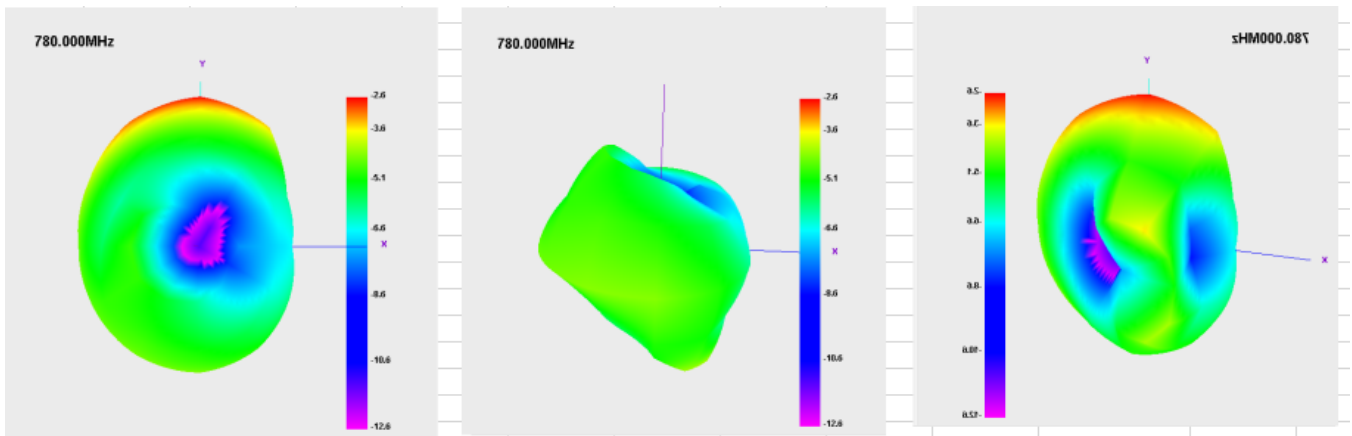


LTE B13

H plane

E1 plane

E2 plane

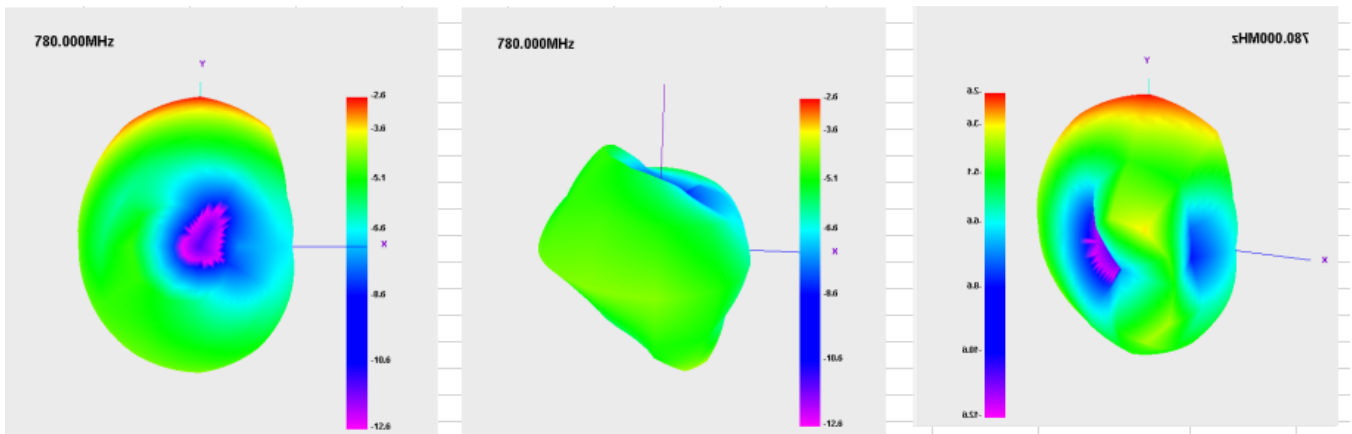


LTE B14

H plane

E1 plane

E2 plane

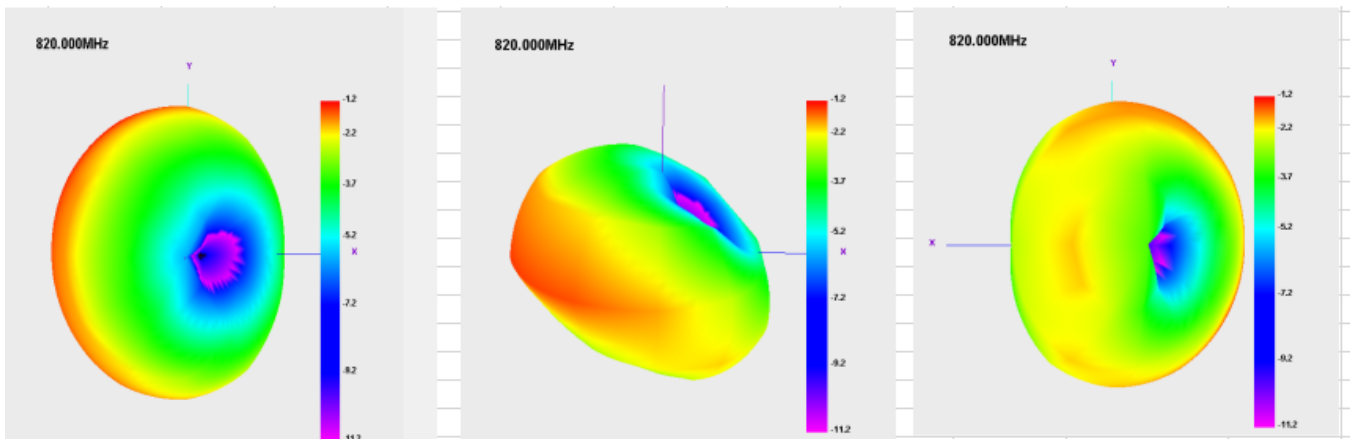


LTE B26

H plane

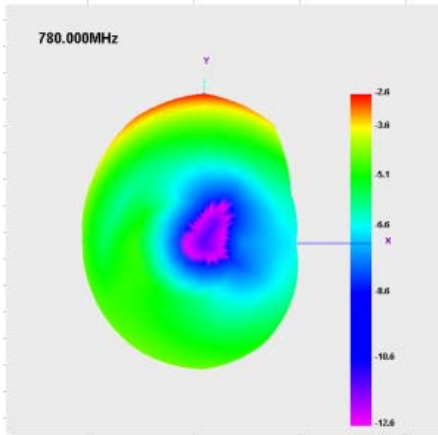
E1 plane

E2 plane

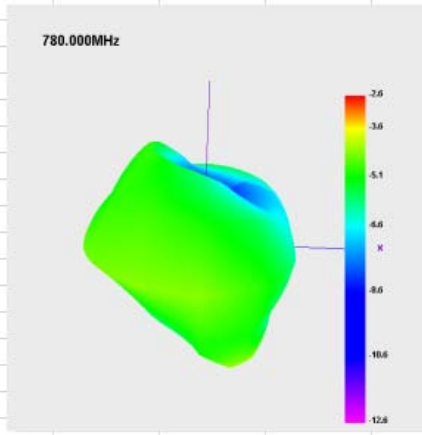


LTE B28

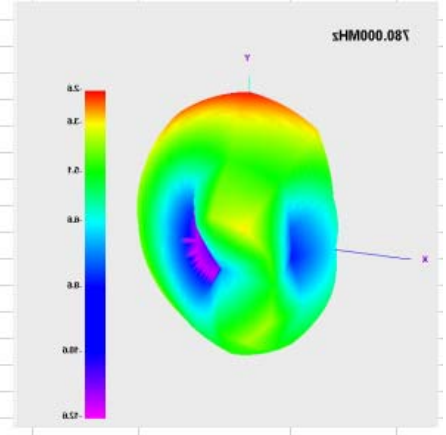
H plane



E1 plane

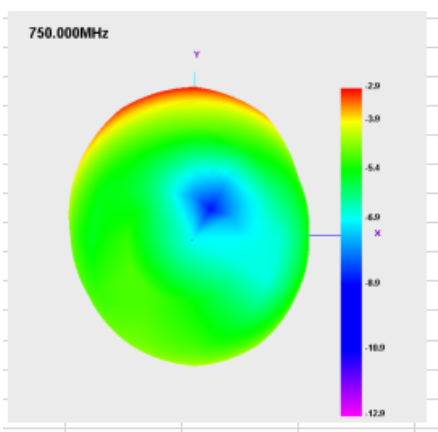


E2 plane

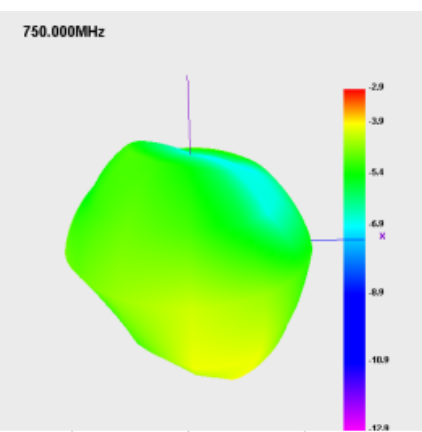


LTE B29

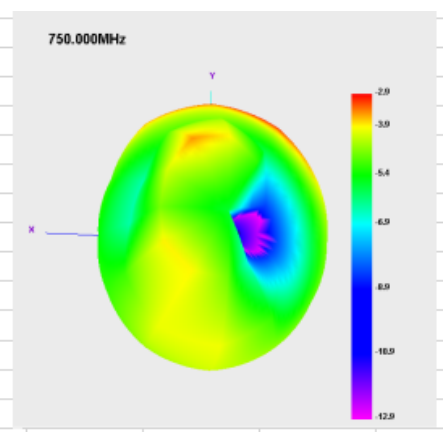
H plane



E1 plane



E2 plane

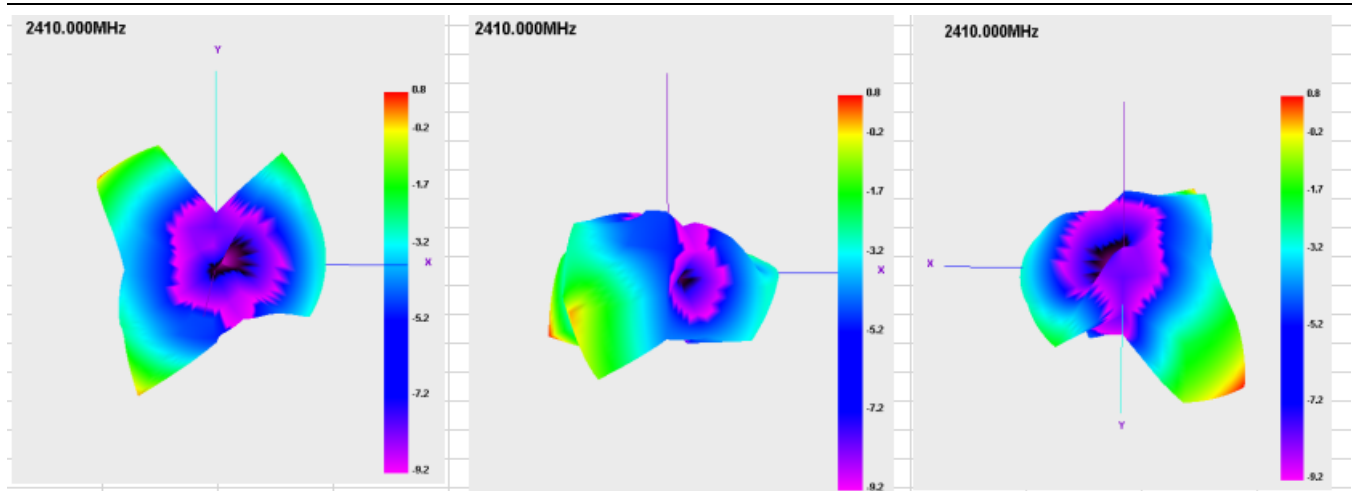


WIFI-1

2.4G H plane

E1 plane

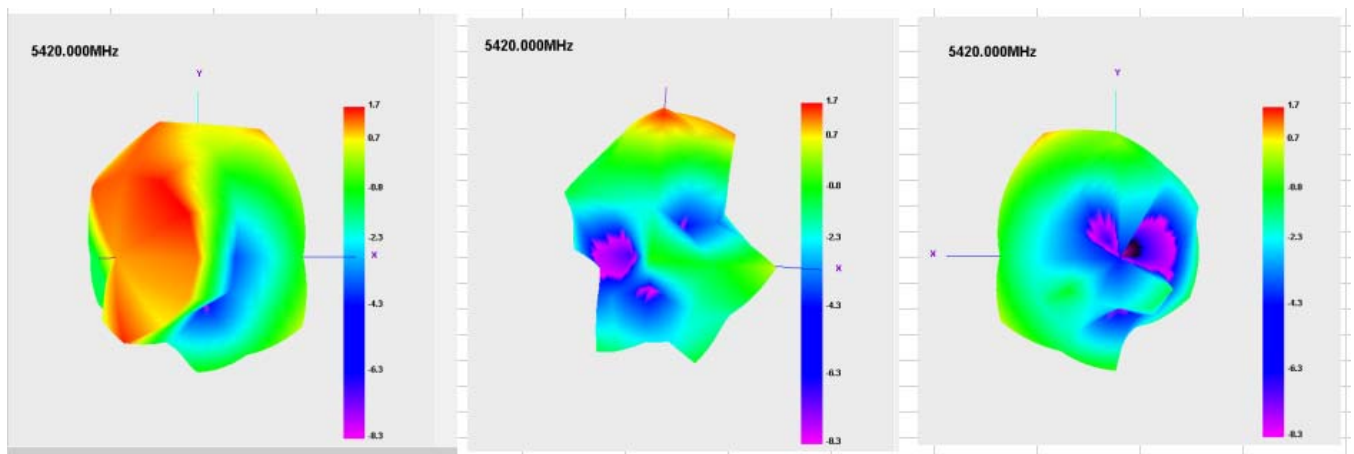
E2 plane



5G H plane

E1 plane

E2 plane

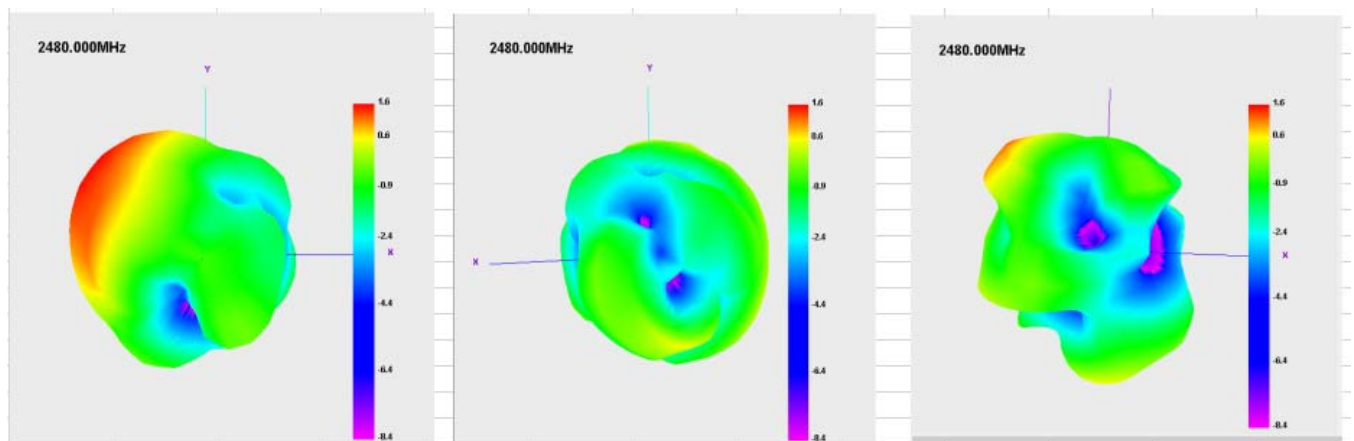


WIFI-2

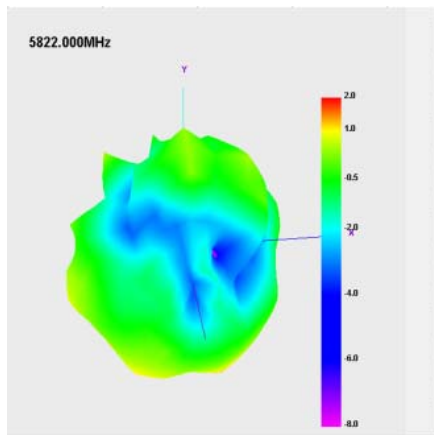
2.4G H plane

E1 plane

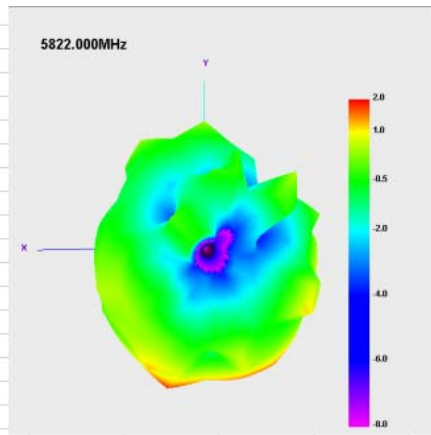
E2 plane



5 G H plane



E1 plane



E2 plane

