



Sentinel Antenna Test Report

Aug. 17, 2023

Prepared by Shian Chuang

Outline

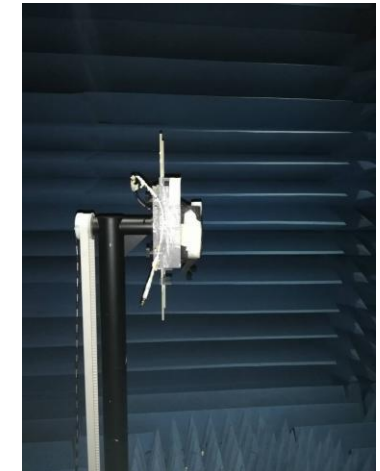
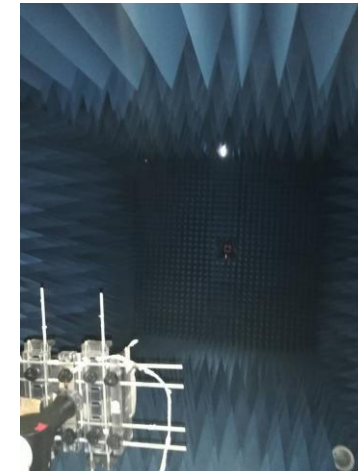
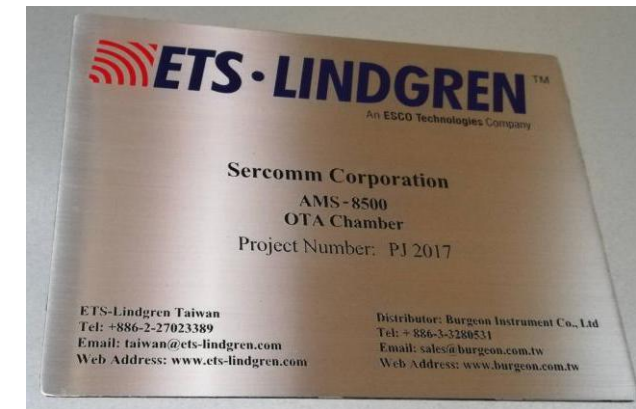
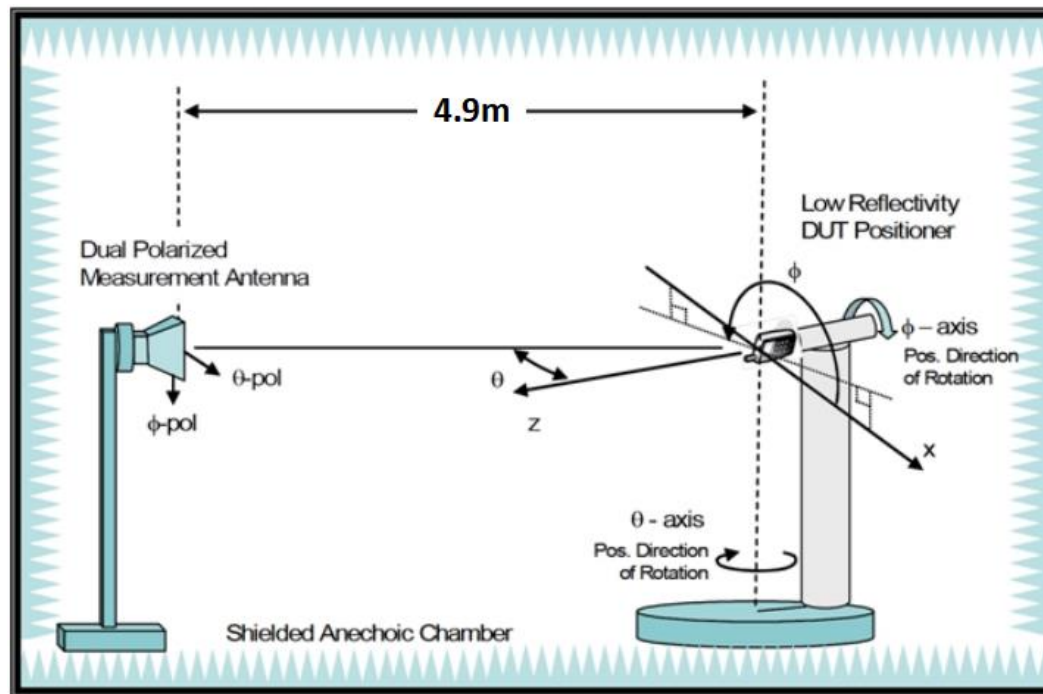
- Test Information
- Test Configuration
- Test Setup & Procedure
- Test Equipment & Calibration
- Antenna Specification
- Antenna Design Information
- Return Loss & Isolation
- Radiation Pattern
- Peak Gain & Efficiency
- Raw Data

Test Information

Item	Description
Brand Name	Canopy
Equipment	Sentinel
Test Location	8F, No. 3-1, YuanQu St. Taipei, Taiwan 115 R.O.C.
Test Condition	Radiation
Test Engineer	Shian Chuang, Sercomm
Test Environment	ETS-Lindgren AMS-8500 Antenna Measurement Chamber
Test Date	Jun. 1, 2023 ~ Jun. 30, 2023

Test Configuration

ETS-Lindgren AMS-8500 antenna measurement system with a size of $7.32(L) \times 3.66(W) \times 3.66(H)$ m³ is used for antenna performance test, which is based on the great-circle test method defined by CTIA. The multi-axis positioning system (MAPS) rotates the DUT around two orthogonal axes for full spherical coverage.

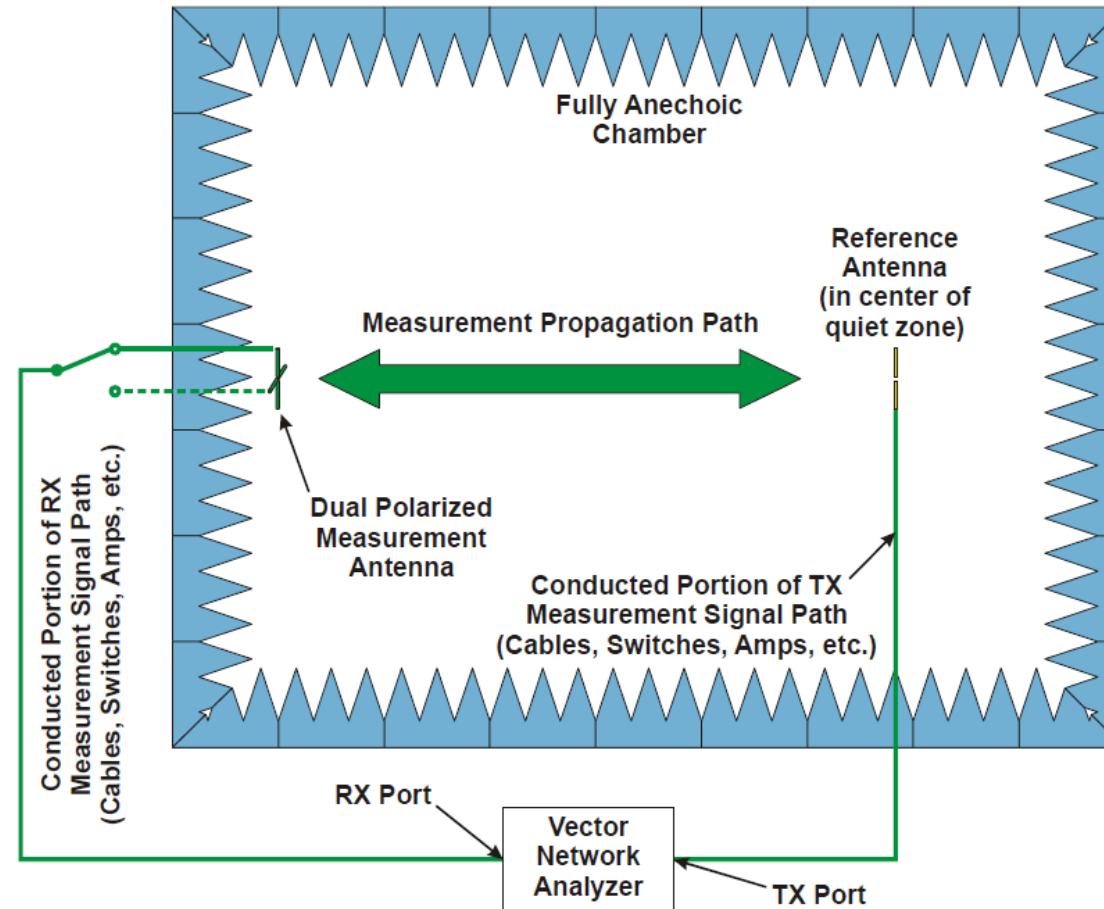


Test Setup & Procedure

1. Fix the DUT on the dielectric support structure and connect the feeding cable to the antenna used for test
2. Set measurement parameters such as frequency range and sampling angle
3. Perform test and then get far-field data (radiation pattern, gain, efficiency)
4. Repeat test procedure for other antennas

Test Equipment & Calibration

Network analyzer and reference antennas are used for calibration. Path loss and cable loss for different frequency bands can be checked and calculated.



Test Equipment & Calibration

Instrument	Brand	Characteristics	Model No.	Serial No.	Calibration Due Date
Precision Sleeve Dipole	ETS-Lindgren	700 MHz ~ 900 MHz	3126-700	00169715	Feb. 23, 2024
Precision Sleeve Dipole	ETS-Lindgren	900 MHz ~ 1000 MHz	3126-900	00169592	Feb. 23, 2024
Precision Sleeve Dipole	ETS-Lindgren	1400 MHz ~ 1700 MHz	3126-1550	00164599	Feb. 23, 2024
Precision Sleeve Dipole	ETS-Lindgren	1700 MHz ~ 2000 MHz	3126-1850	00169588	Feb. 23, 2024
Precision Sleeve Dipole	ETS-Lindgren	2000 MHz ~ 2300 MHz	3126-2150	00169593	Feb. 23, 2024
Precision Sleeve Dipole	ETS-Lindgren	2300 MHz ~ 2700 MHz	3126-2500	00169597	Feb. 23, 2024
Precision Sleeve Dipole	ETS-Lindgren	5000 MHz ~ 6000 MHz	3126-5500	00169728	Feb. 23, 2024
Horn Antenna	SCHWARZBECK	1 GHz ~ 18 GHz	BBHA 9120D	BBHA 9120D-1294	Apr. 7, 2024
EMQuest Antenna Measurement Software	ETS-Lindgren	Control chamber system	EMQ-100	1437	Non-Calibration Required

Antenna Specification

Item	Description									
Antenna	LTE Main Antenna			LTE Aux Antenna			WiFi Antenna		GPS Antenna	BLE Antenna
Operation Band	LTE B12	LTE B2	LTE B4	LTE B12	LTE B2	LTE B4	WiFi 2.4G	WiFi 5G	GPS L1	BLE
Frequency (MHz)	699~746	1850~1990	1710~2155	699~746	1850~1990	1710~2155	2400~2500	5150~5850	1575~1610	2400~2500
Peak Gain (dBi)	Tx: 1.24~1.32	Tx: 2.31~2.41	Tx: 2.18~2.23	Rx: 1.25~1.57	Rx: 1.70~2.15	Rx: 1.96~2.23	3.09~3.51	2.2~4.09	2.59~2.8	2.3~3.1
	Rx:1.27~1.35	Rx:2.32~2.41	Rx:2.16~2.25							
Efficiency (%)	56~62	62~65	57~63	56~61	56~57	58~61	68~73	62~69	61~68	71~73
Polarization	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Return Loss (dB)	≤ -6 dB	≤ -10dB	≤ -10dB	≤ -6 dB	≤ -10dB	≤ -10dB	≤ -10dB	≤ -10dB	≤ -10dB	≤ -10dB
Material	Metal			Metal			Metal		PCB	PCB
Type	PIFA			PIFA			PIFA		Dipole	Dipole
Feeding	Trace			Trace			Trace&Cable		Cable	Cable
Connector	-			-			-		Ipex MHF I	Ipex MHF I

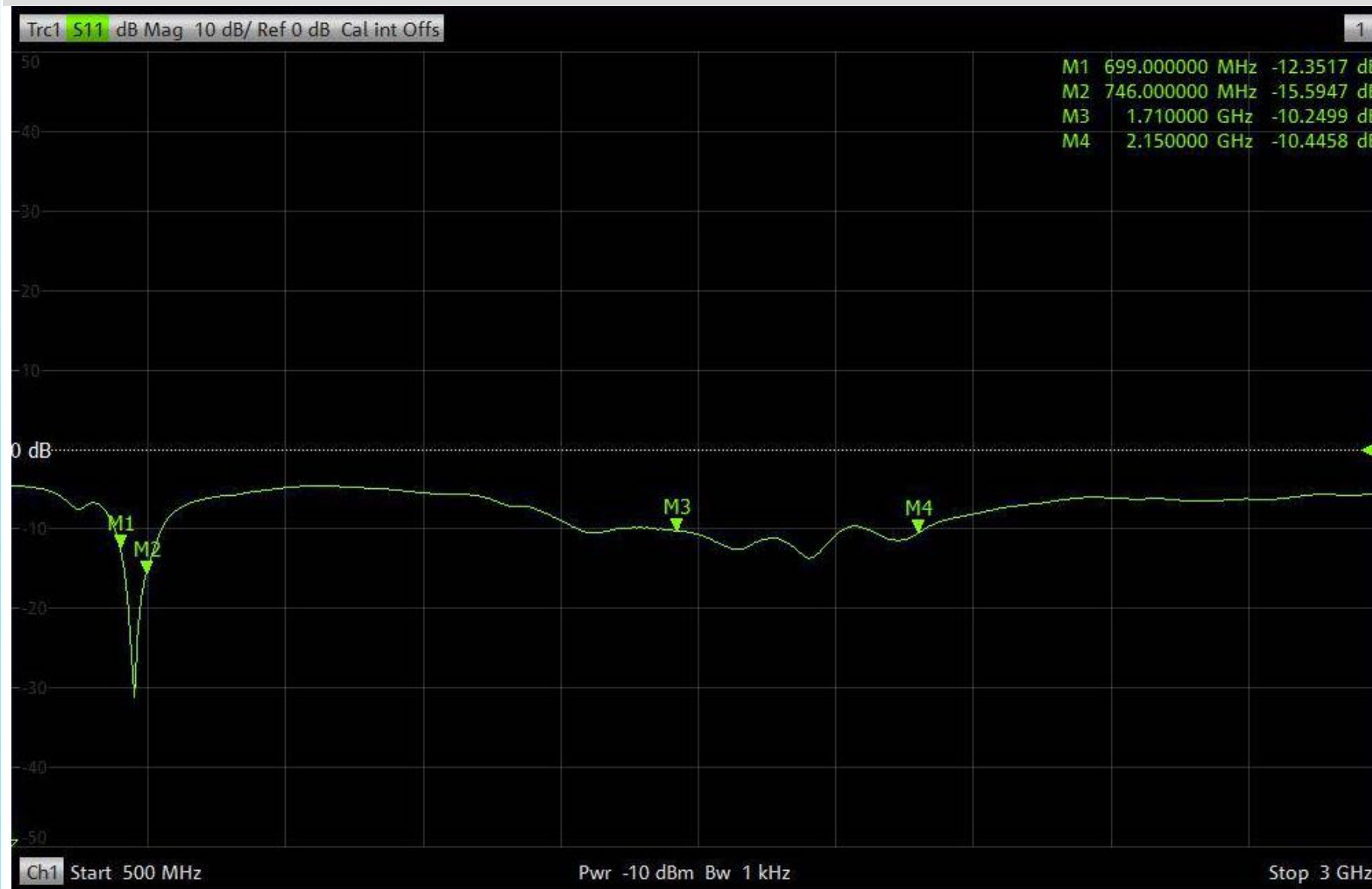
Antenna Design Information

Ant No.	Operating Band	Type	Material	Feeding	Dimension
LTE Main & Aux	B2/B4/B12	PIFA	Metal	RF Trace	75 x 18 x 13 mm ³
WiFi Ant	2400 MHz ~ 2500 MHz 5150 MHz ~ 5850 MHz	PIFA	Metal	RF Trace	25 x 7 x 10 mm ³
BLE Ant	2400 MHz ~ 2500 MHz	Dipole	PCB	1.13 Normal Cable	40 x 10 x 0.4 mm ³
GPS Ant	1575 MHz	Dipole	PCB	1.13 Normal Cable	65 x 10 x 0.4 mm ³

Return Loss – LTE Main Ant



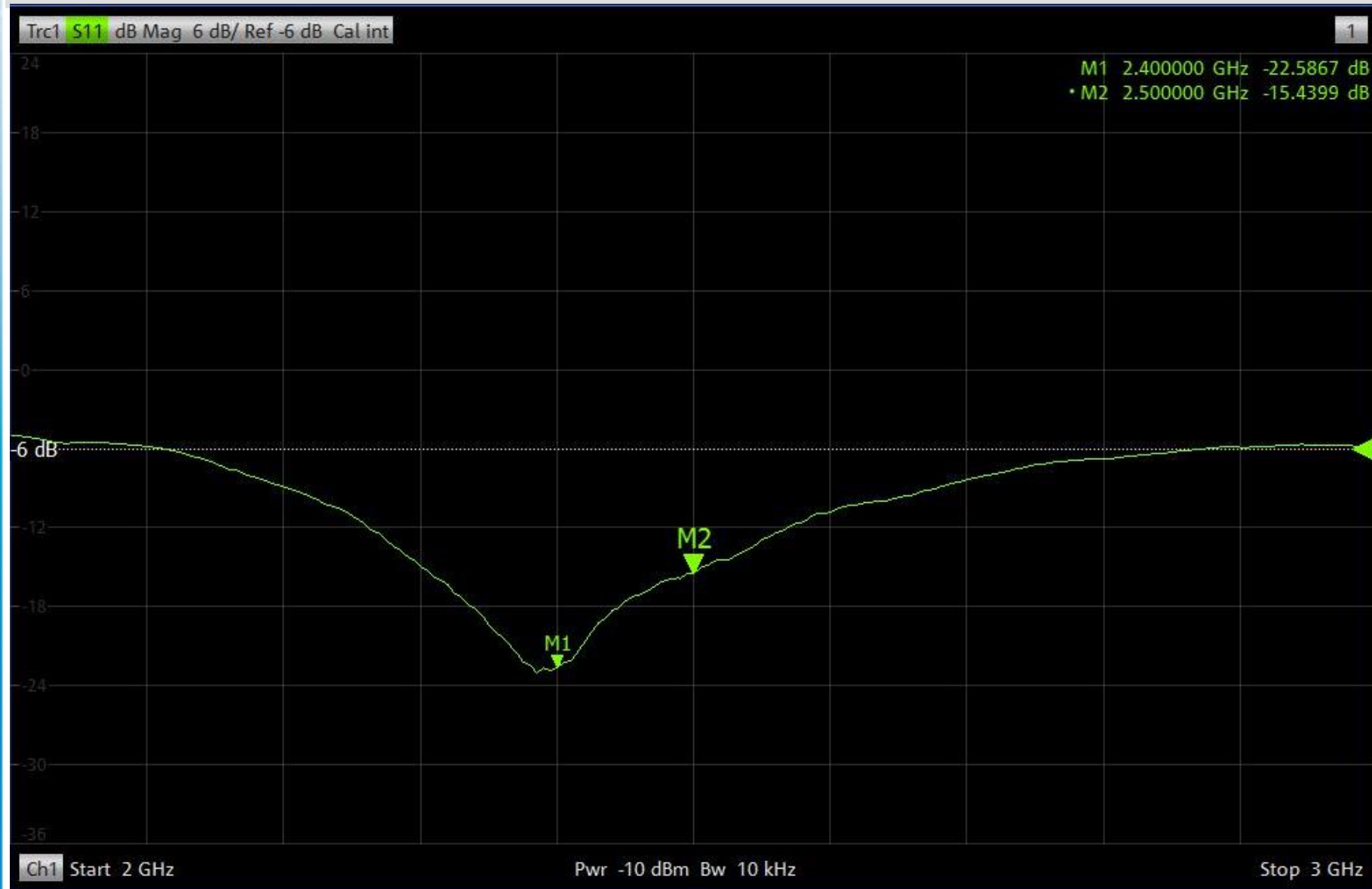
Return Loss – LTE Aux Ant



Return Loss – WiFi Ant



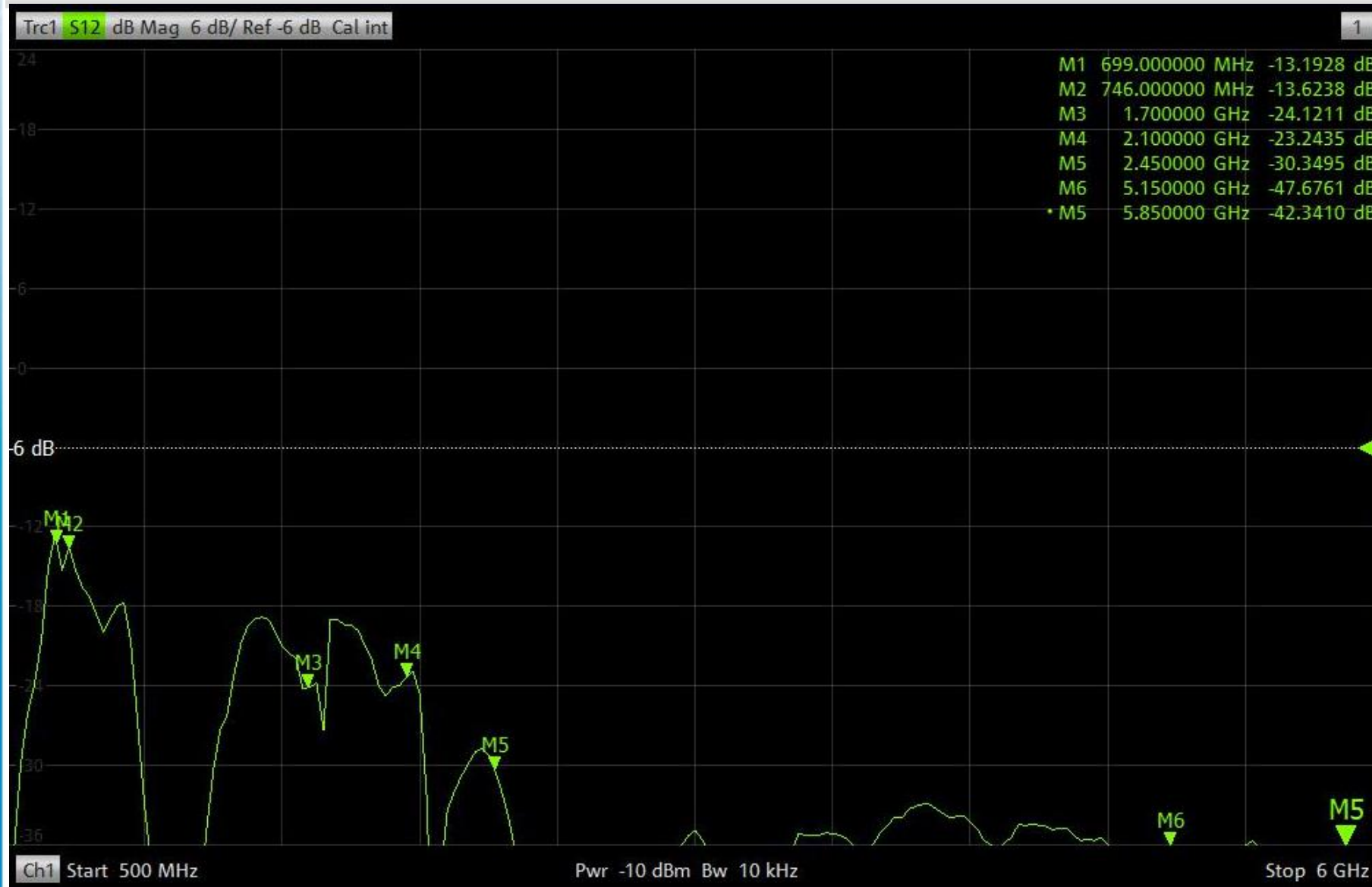
Return Loss – BLE Ant



Return Loss – GPS Ant



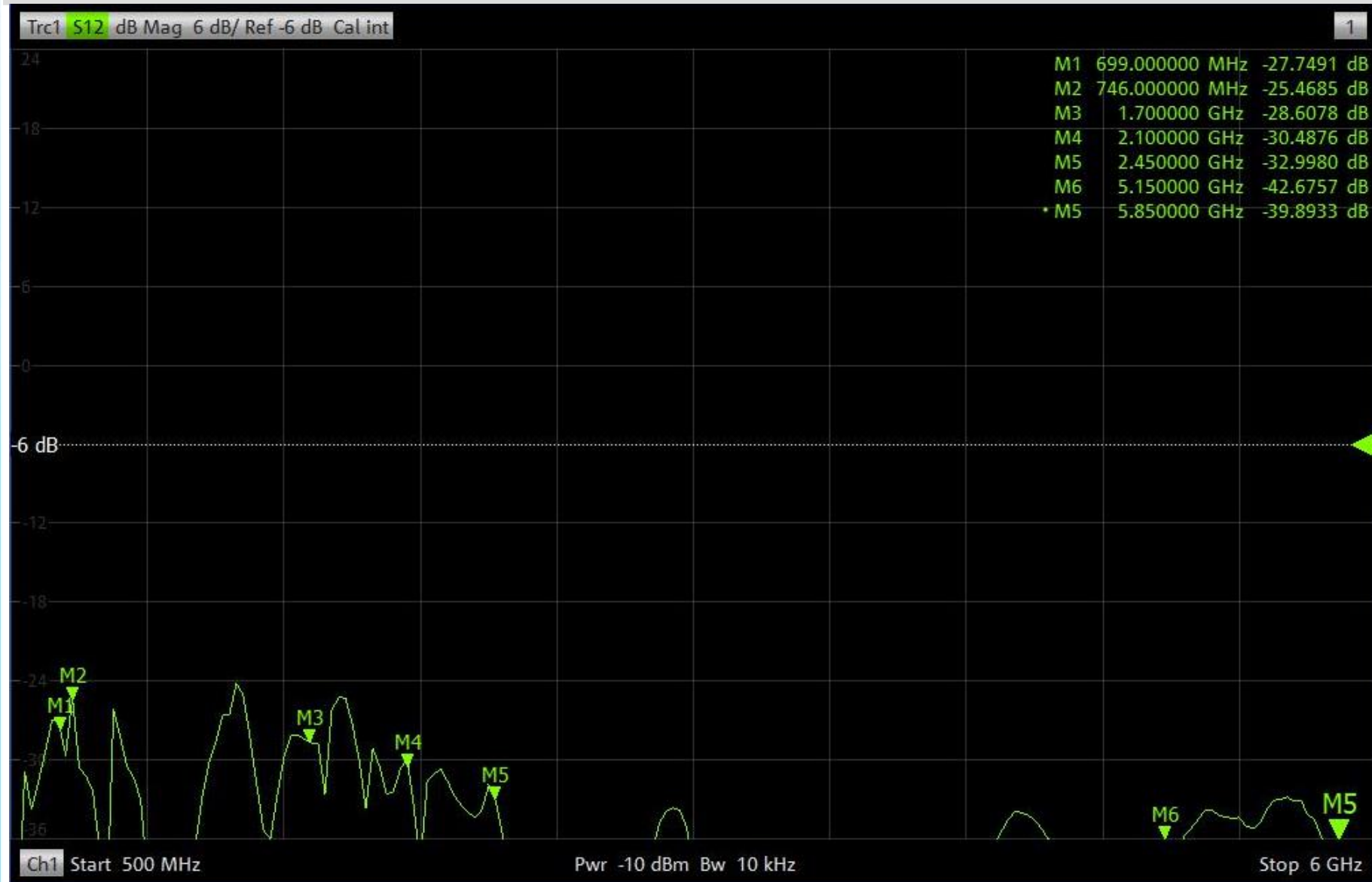
Isolation – LTE Main Ant & LTE Aux Ant



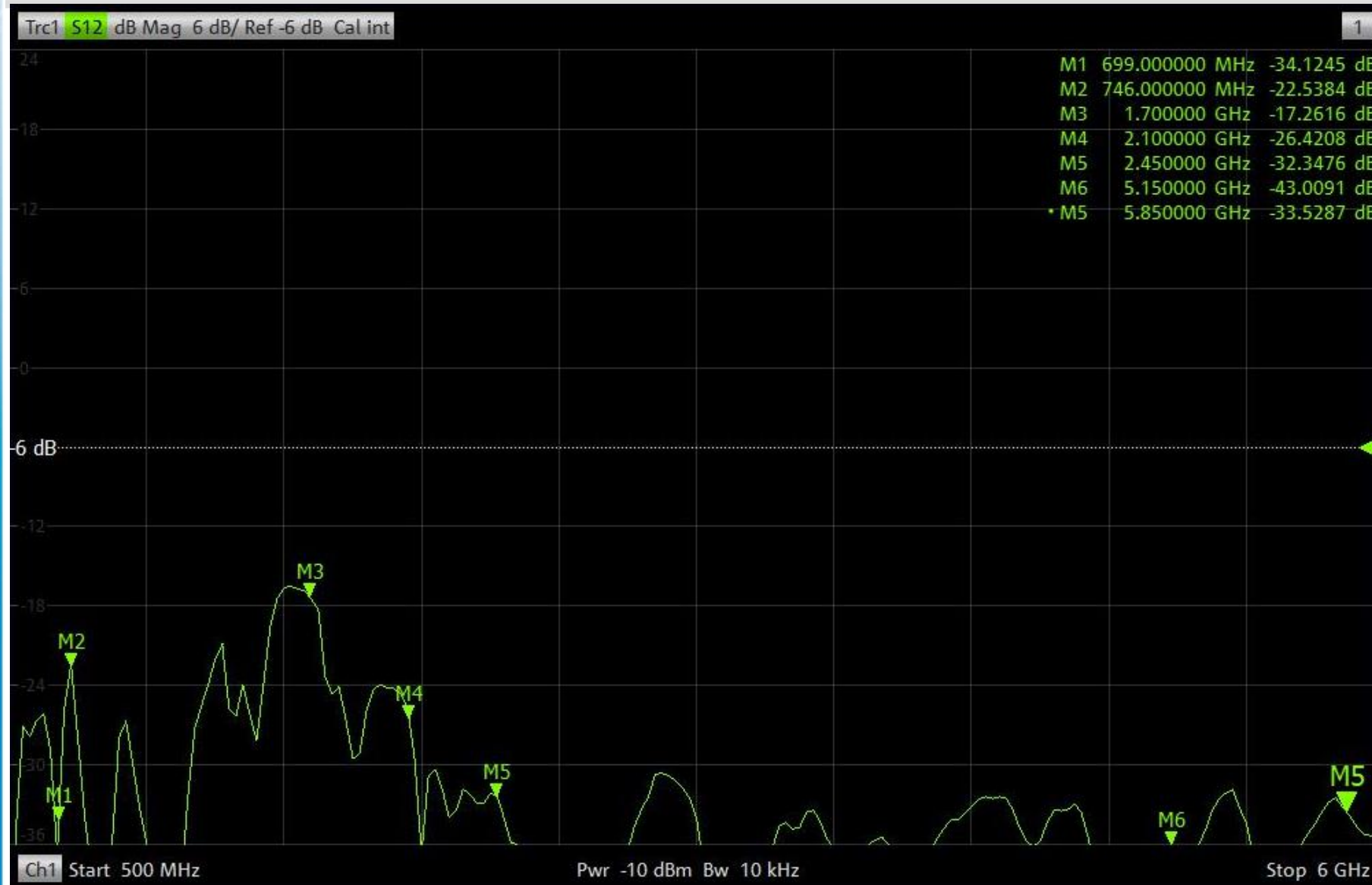
Isolation – LTE Main Ant & WiFi Ant



Isolation – LTE Main Ant & BLE Ant



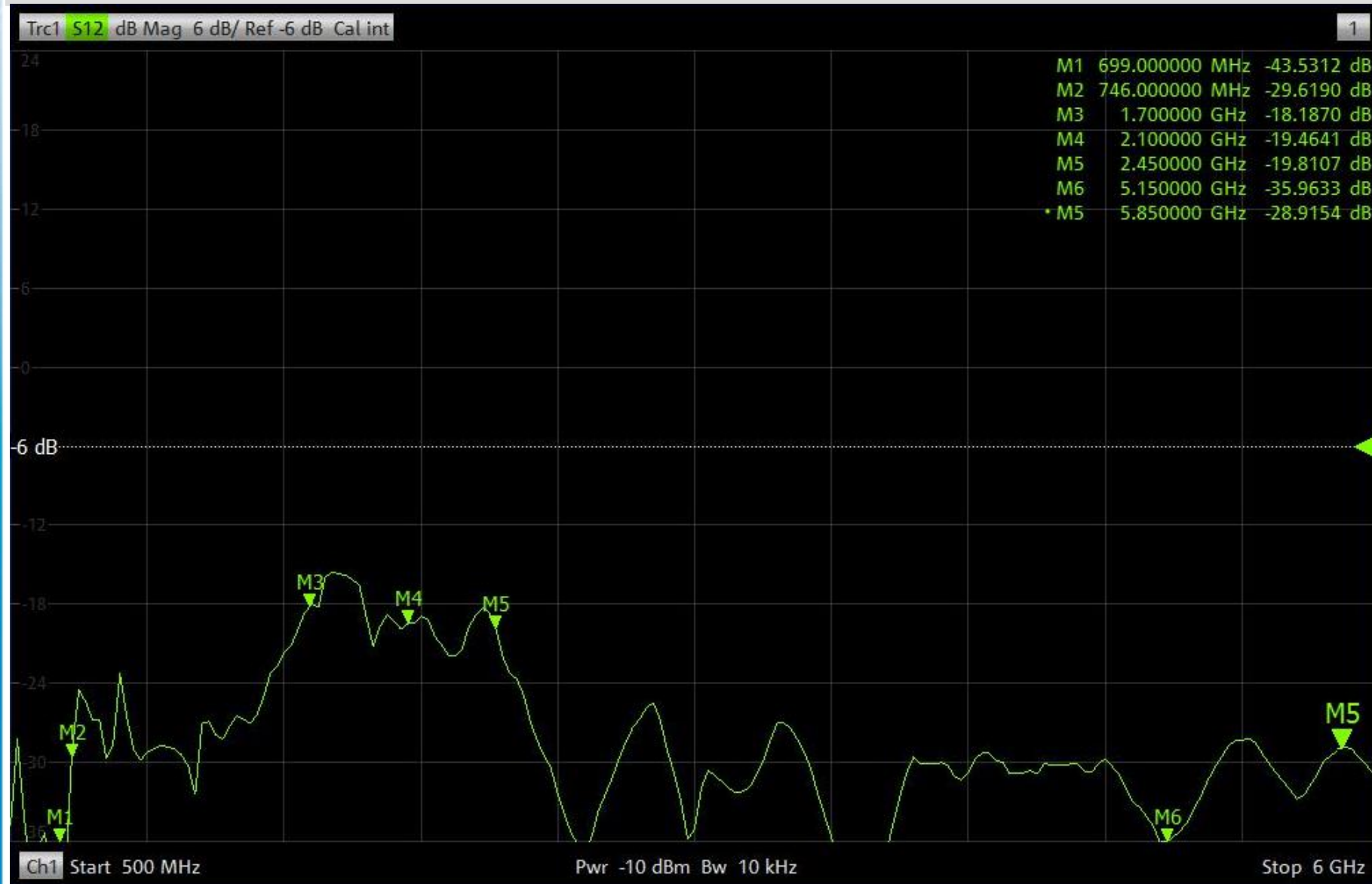
Isolation – LTE Main Ant & GPS Ant



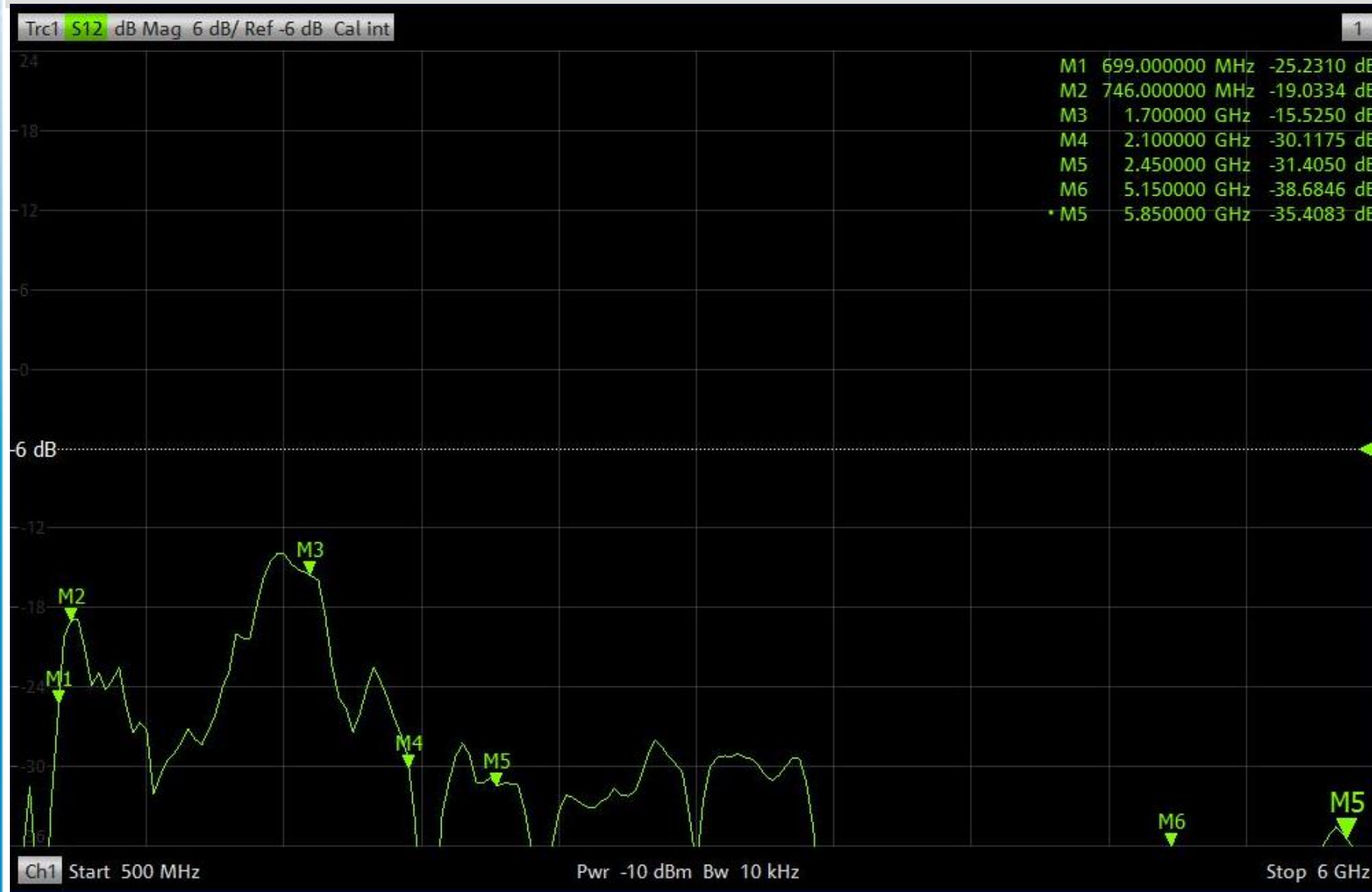
Isolation – LTE Aux Ant & WiFi Ant



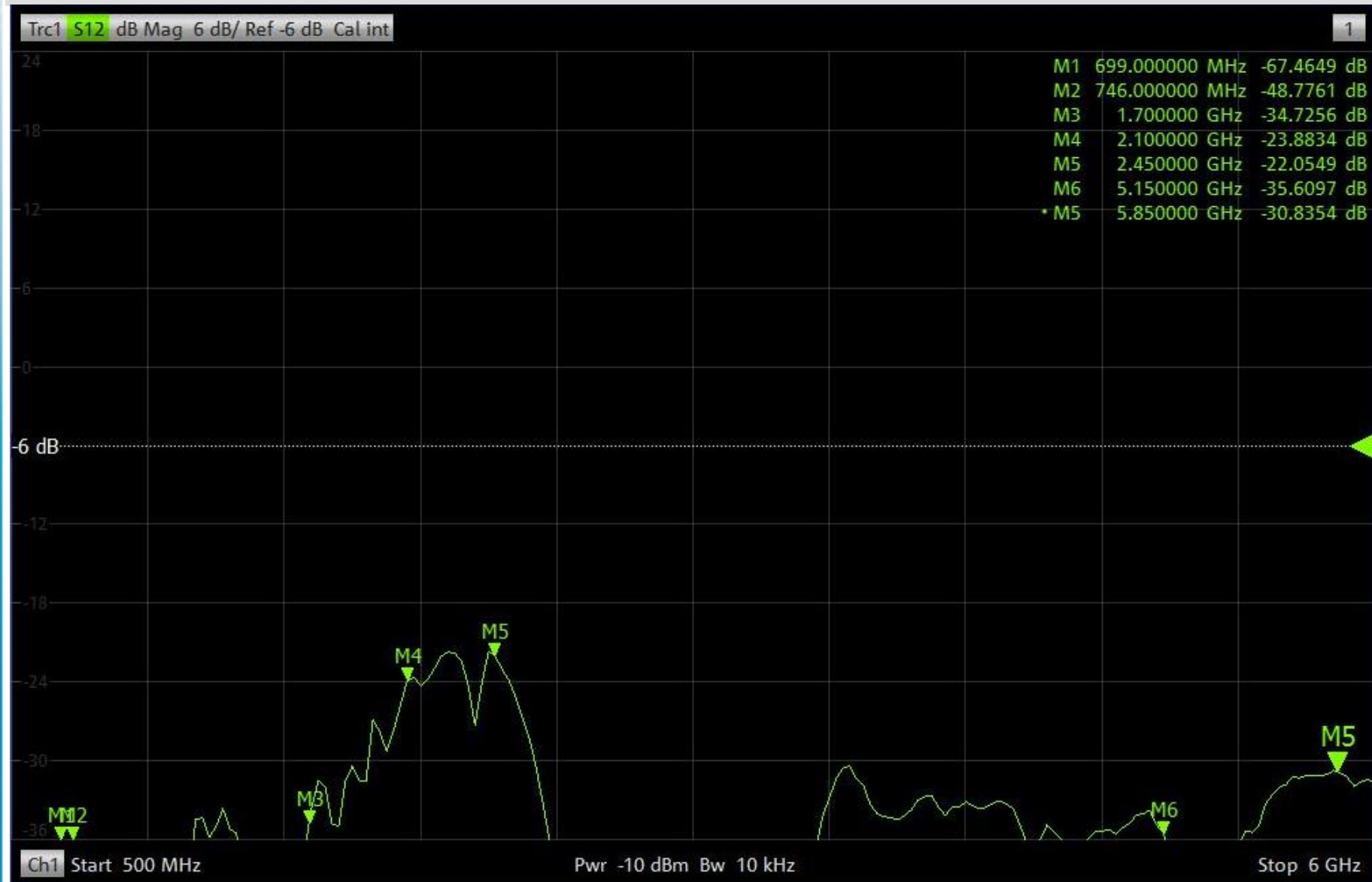
Isolation – LTE Aux Ant & BLE Ant



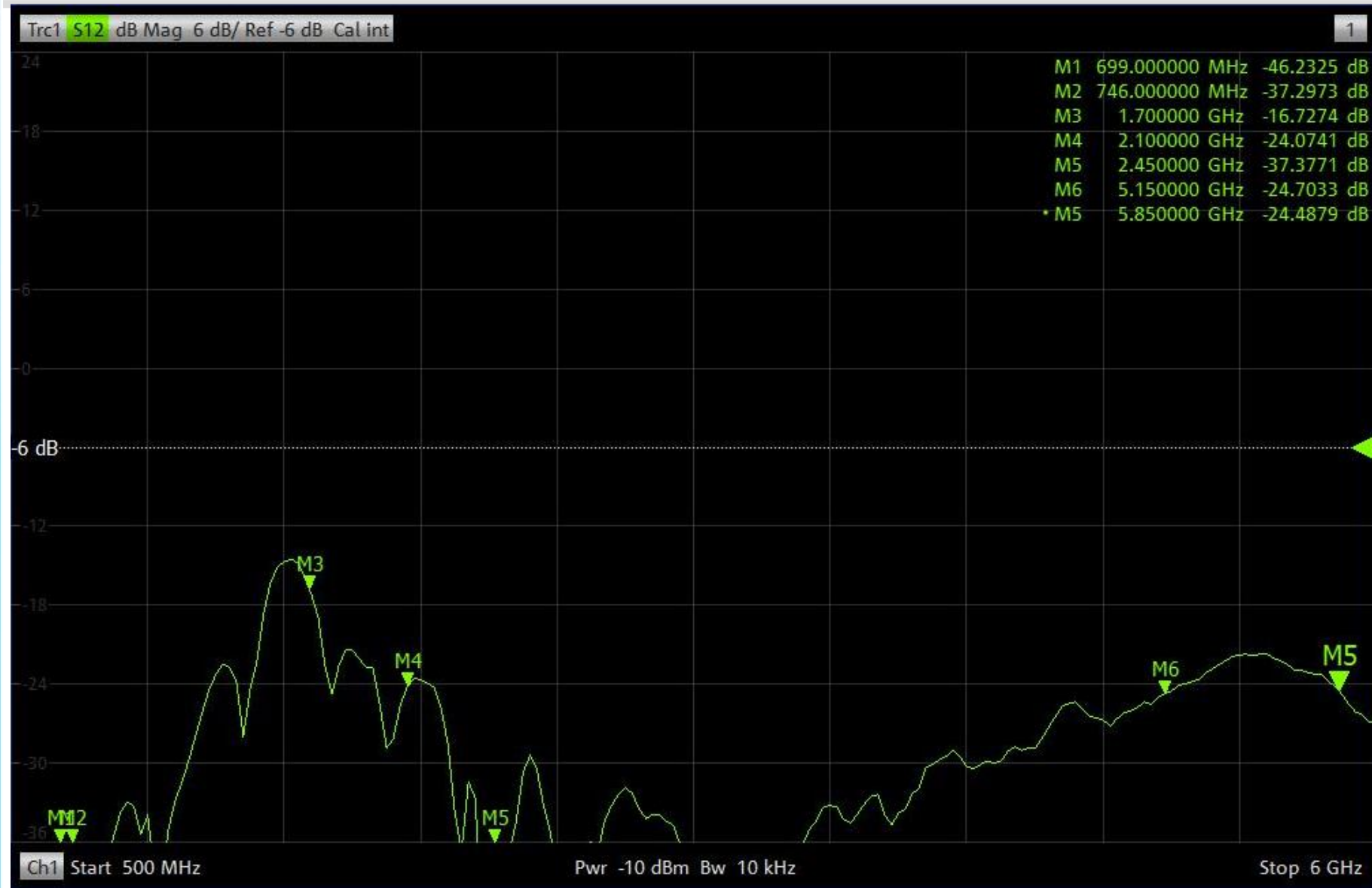
Isolation – LTE Aux Ant & GPS Ant



Isolation – WiFi Ant & BLE Ant



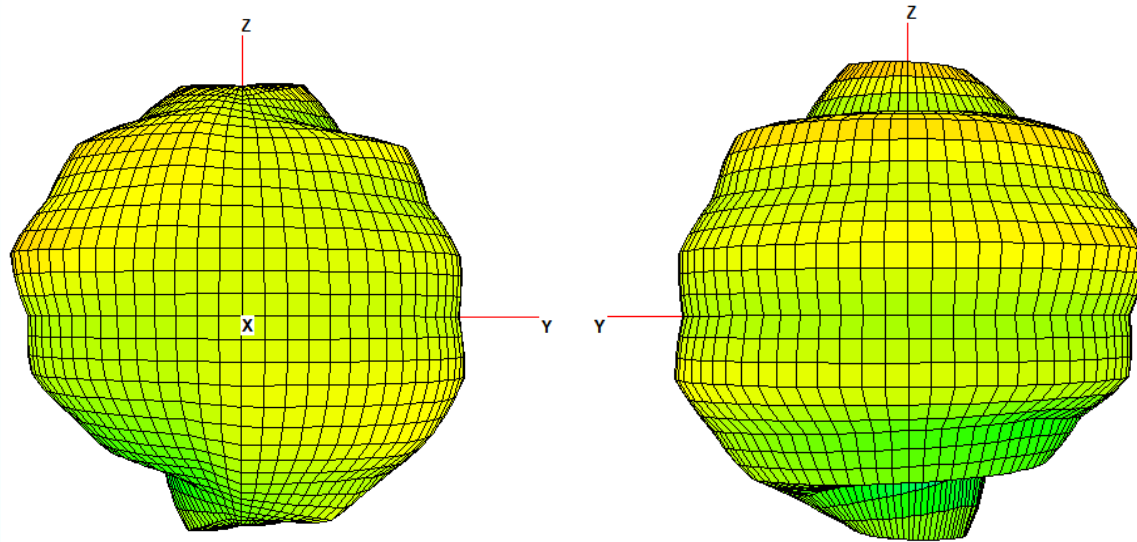
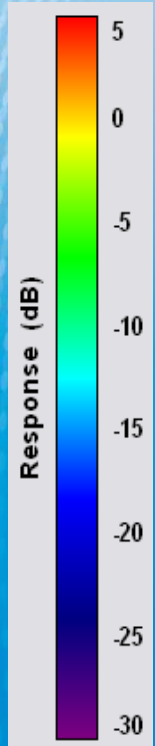
Isolation – WiFi Ant & GPS Ant



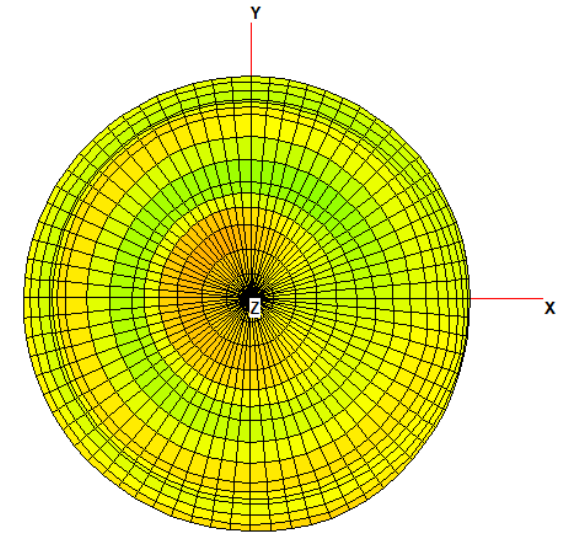
Isolation – BLE Ant & GPS Ant



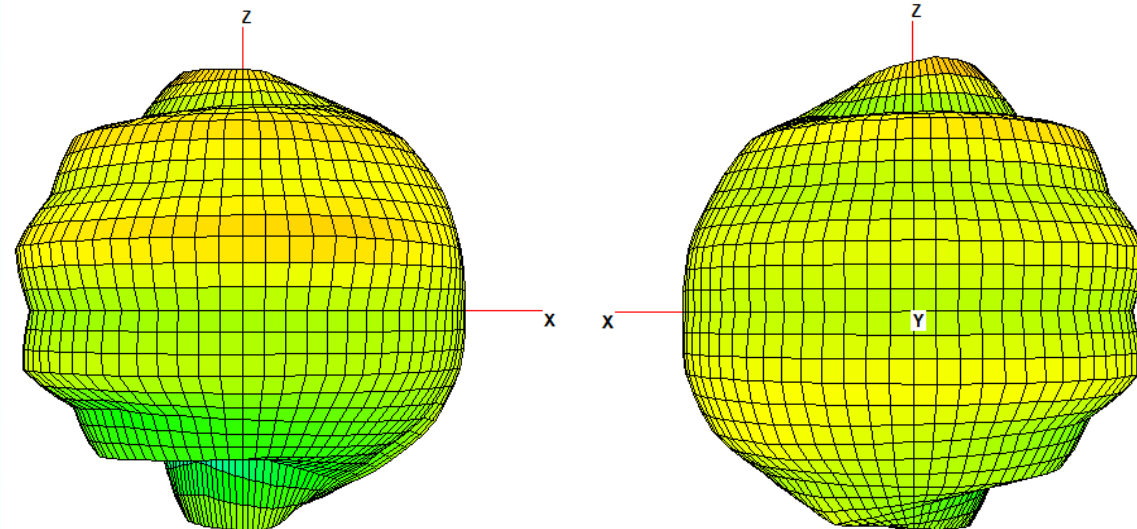
3D Radiation Pattern – LTE Main Ant @ B12



YZ-Plane

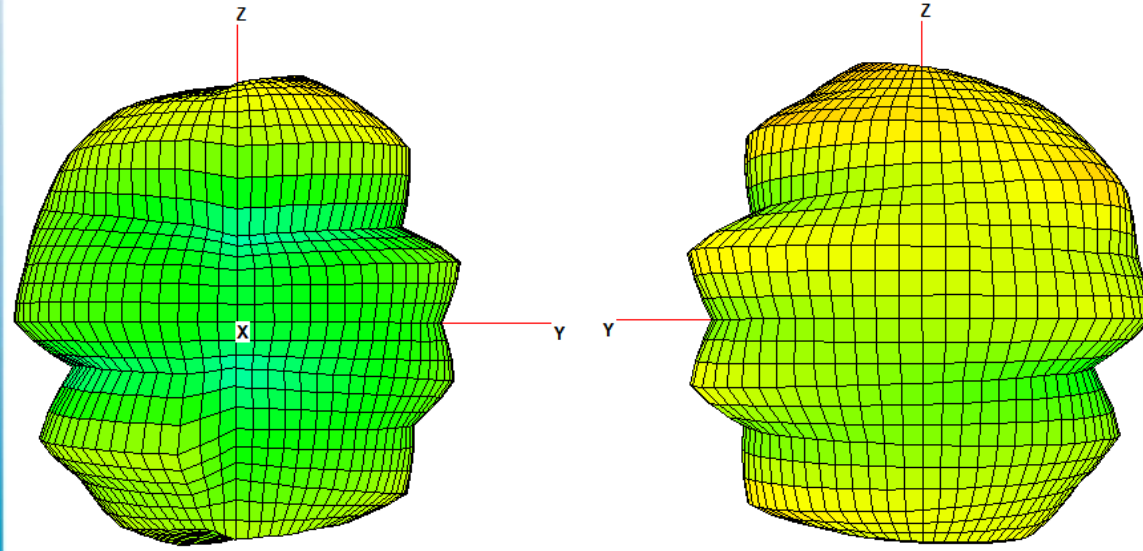
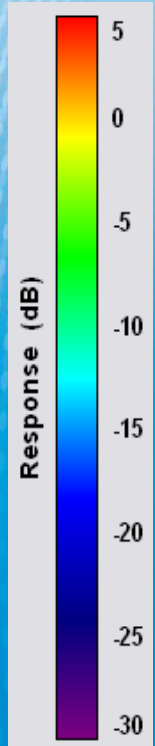


XY-Plane

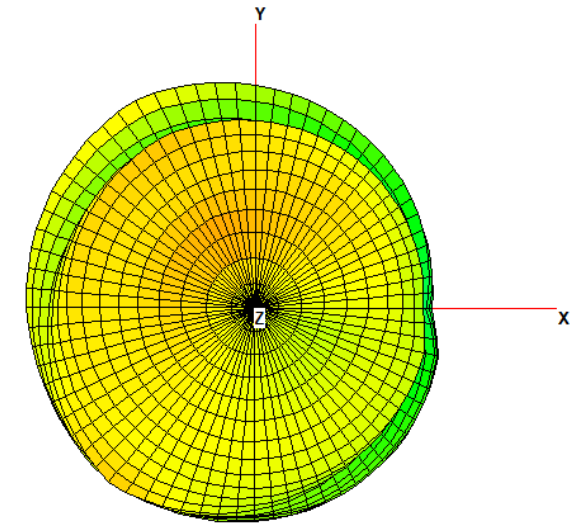


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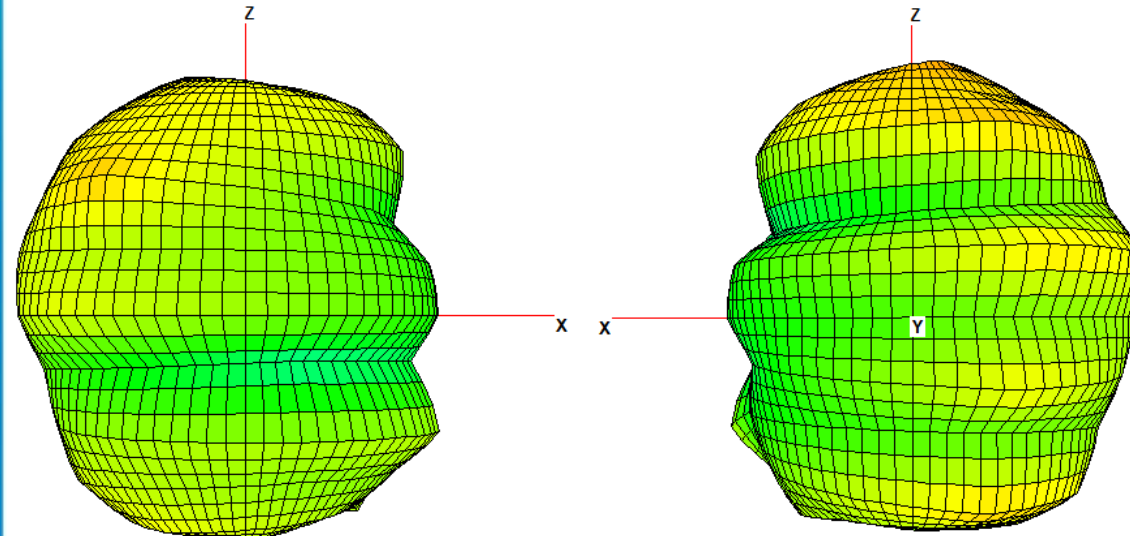
3D Radiation Pattern – LTE Main Ant @ B4



YZ-Plane

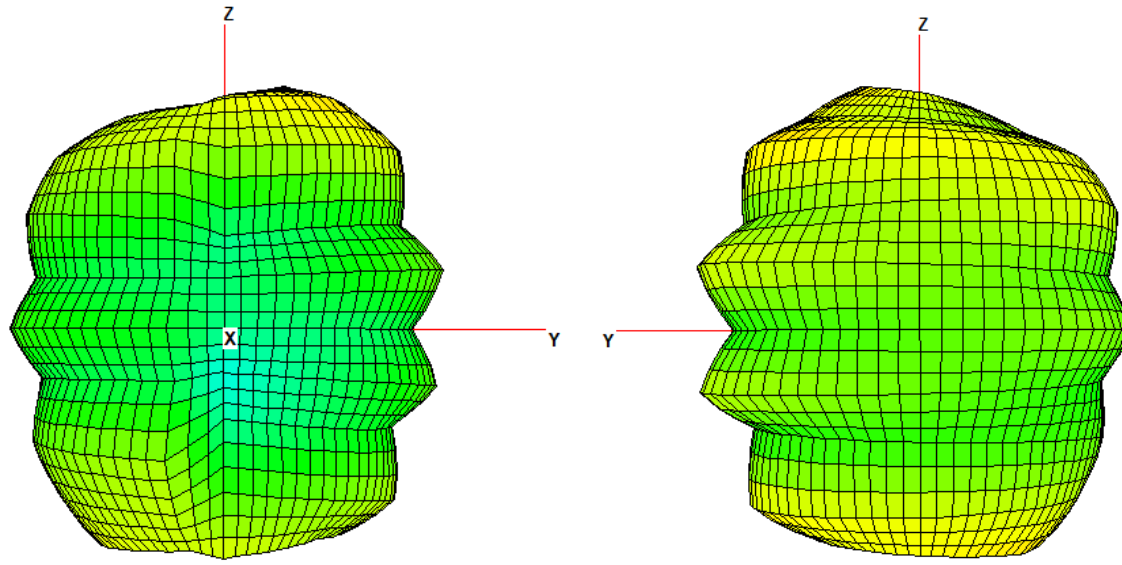
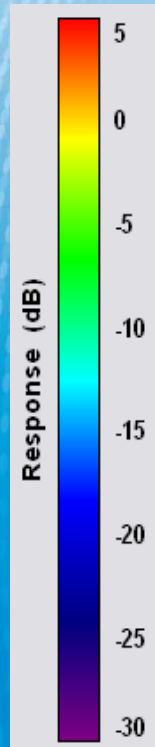


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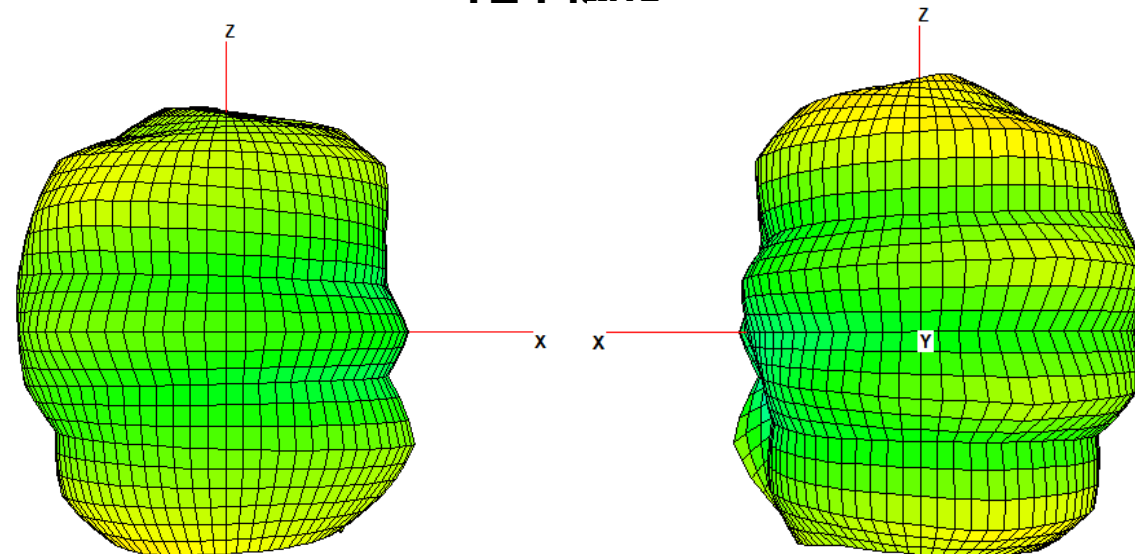


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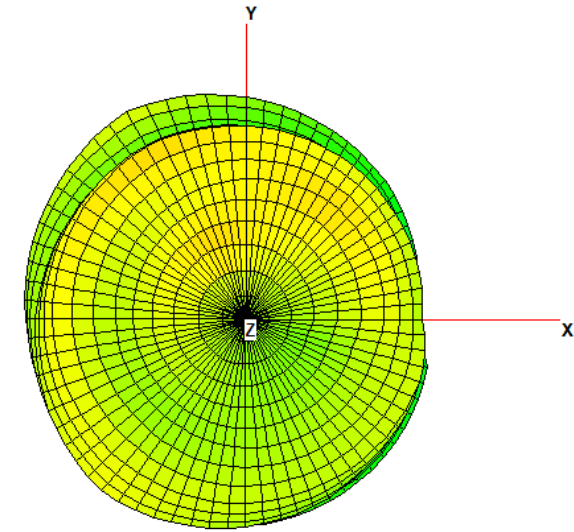
3D Radiation Pattern – LTE Main Ant @ B2



YZ-Plane

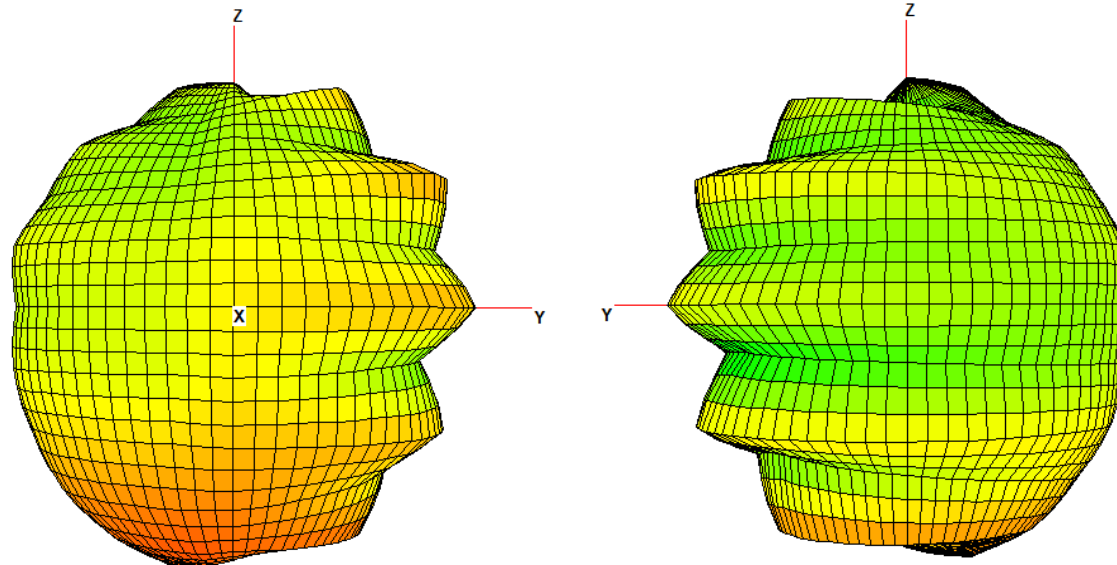
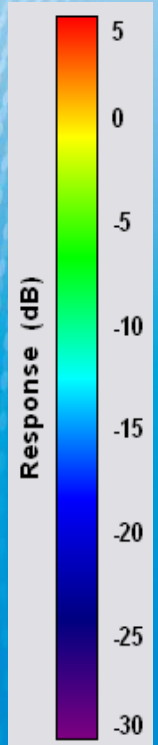


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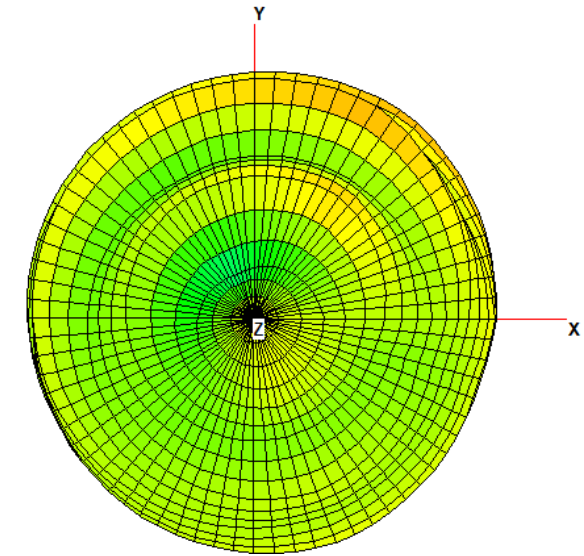


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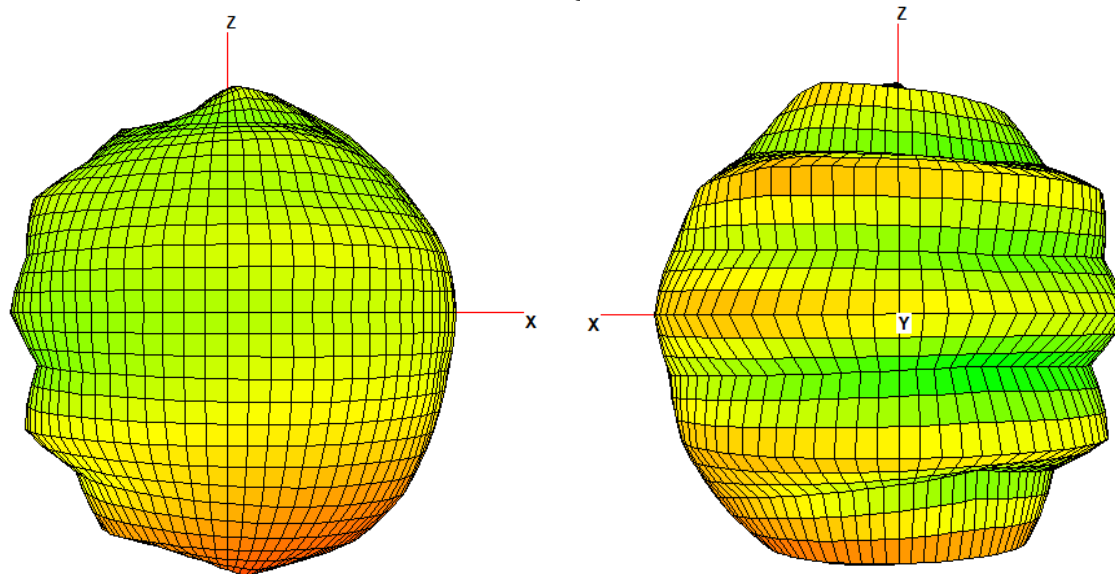
3D Radiation Pattern – Aux Main Ant @ B12



YZ-Plane

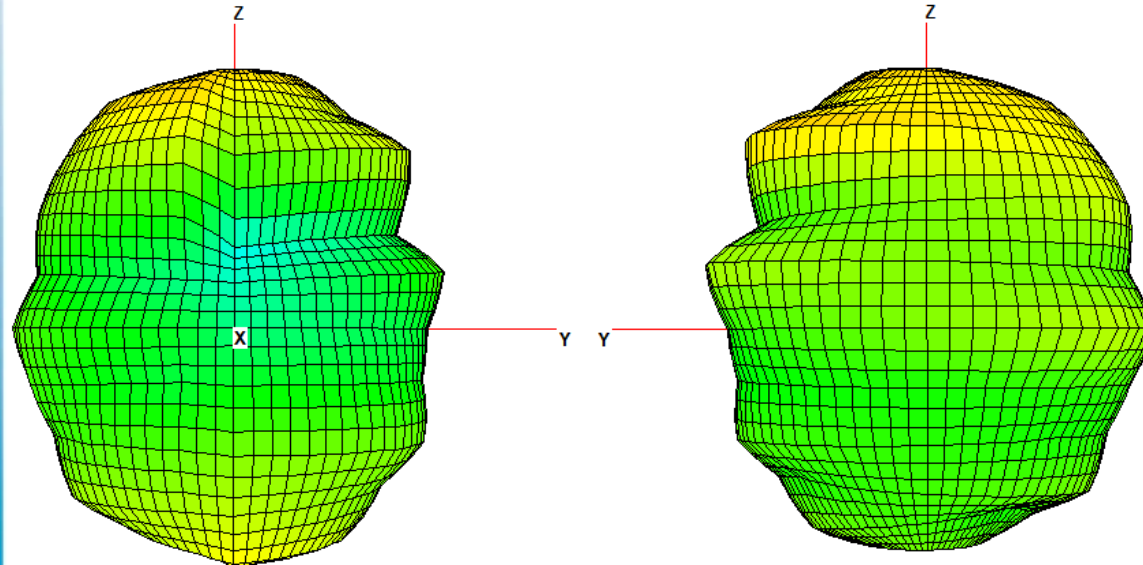
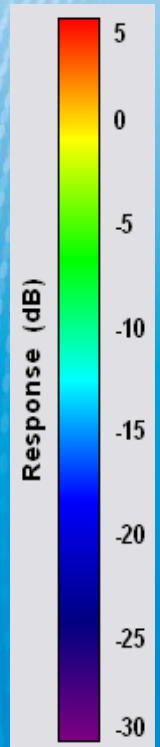


XY-Plane

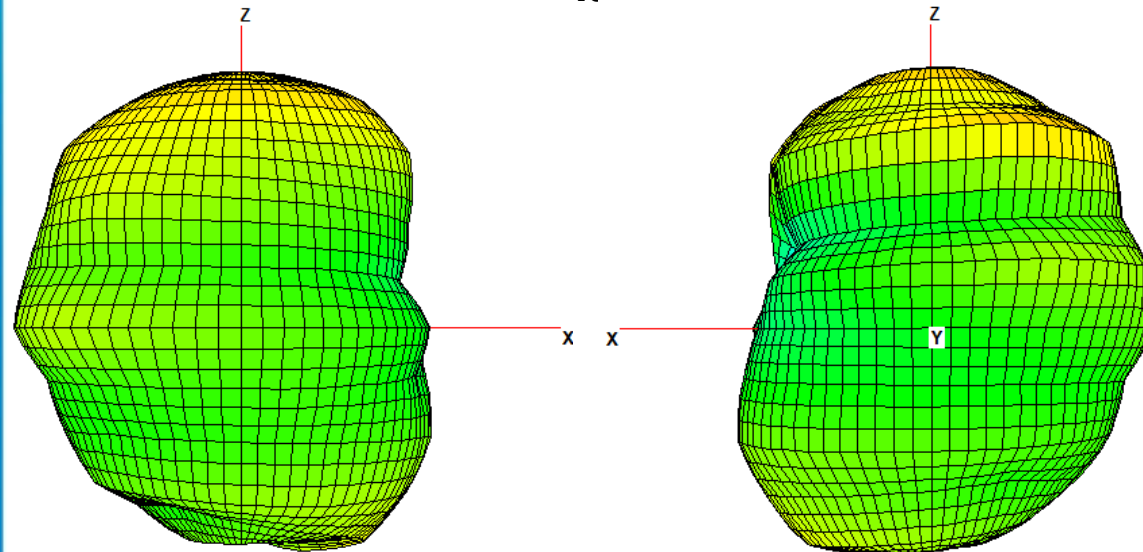


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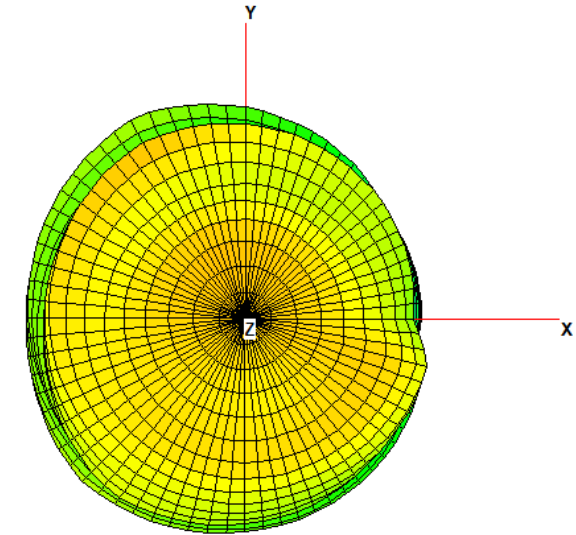
3D Radiation Pattern – Aux Main Ant @ B4



YZ-Plane

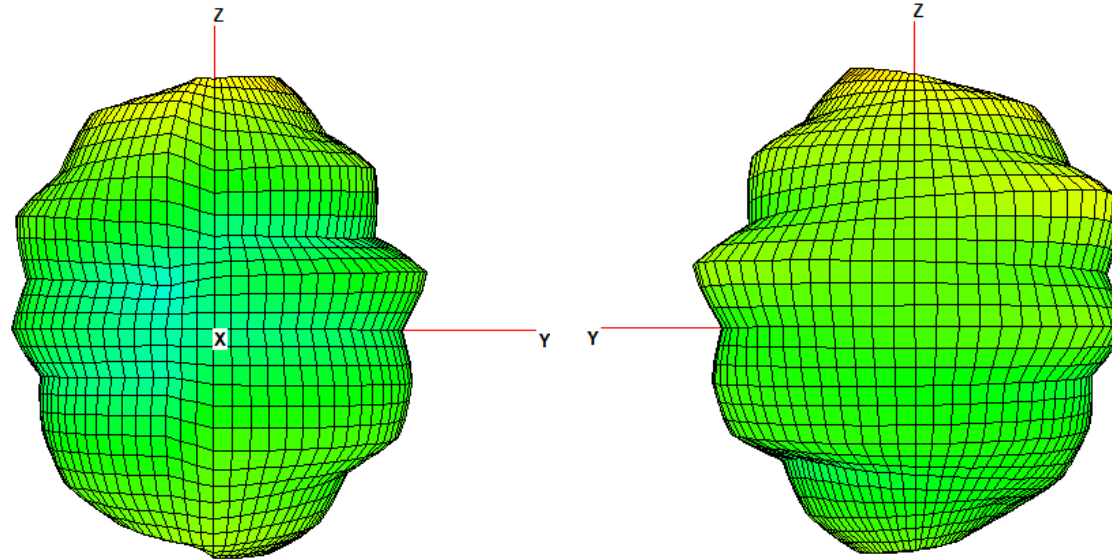
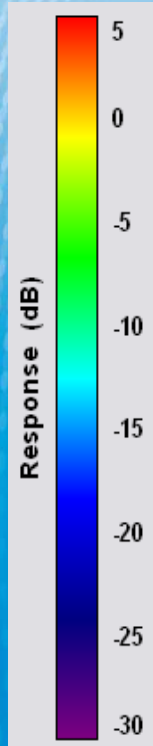


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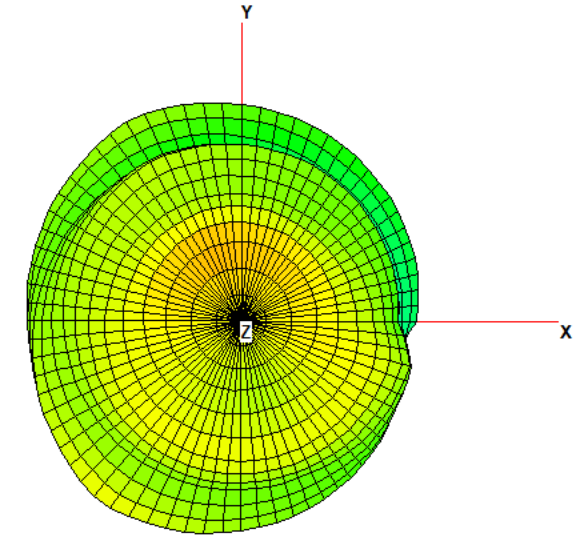


XY-Plane

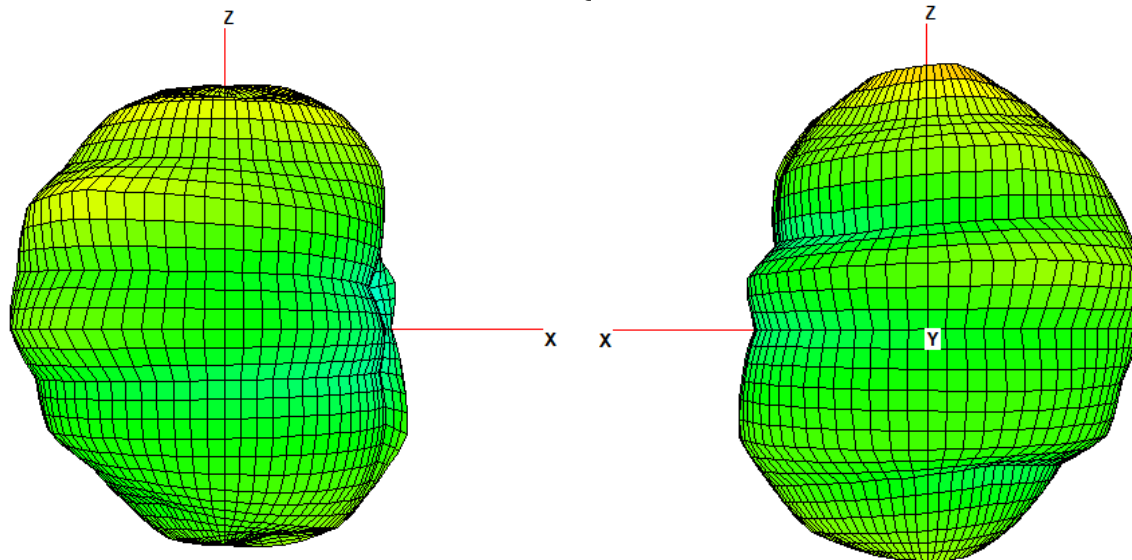
3D Radiation Pattern – Aux Main Ant @ B2



YZ-Plane

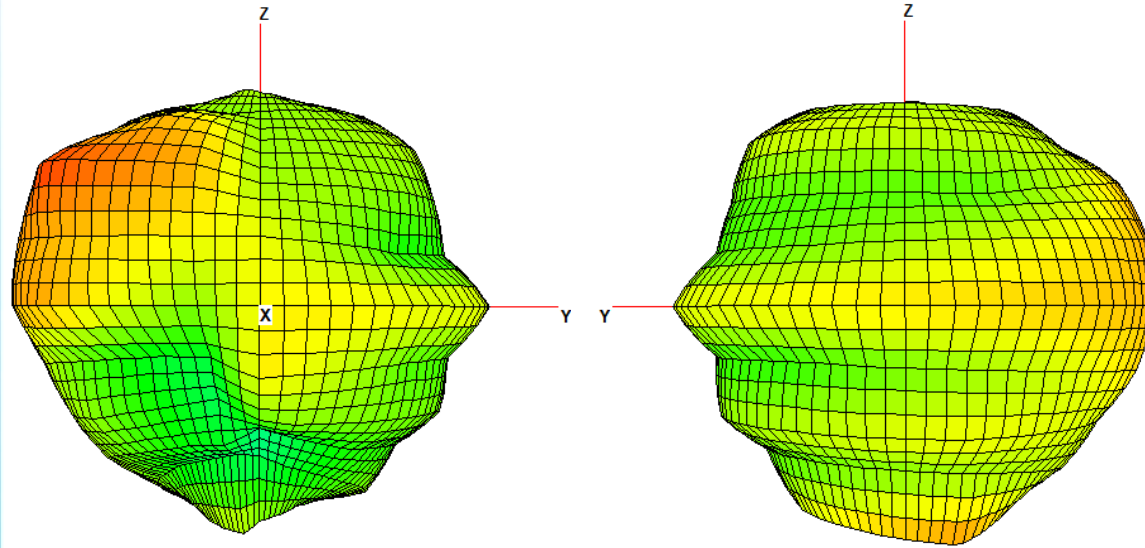
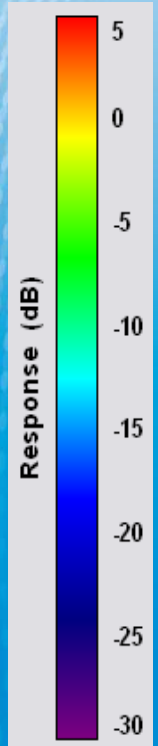


XY-Plane

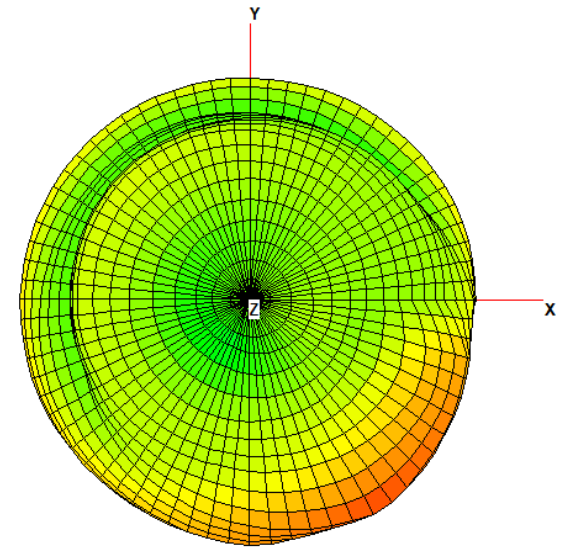


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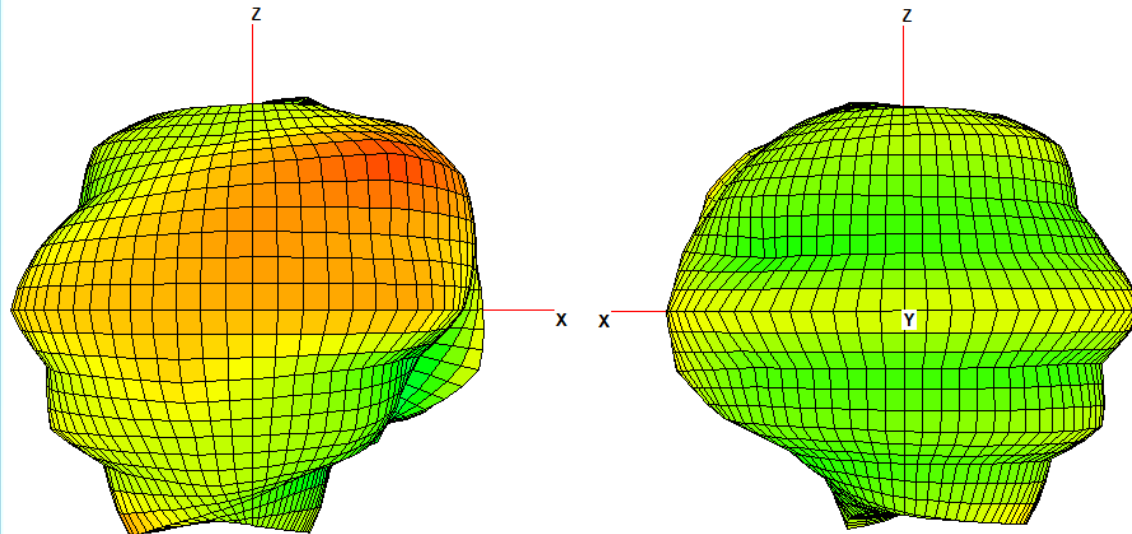
3D Radiation Pattern – WiFi Ant @ 2.4GHz



YZ-Plane

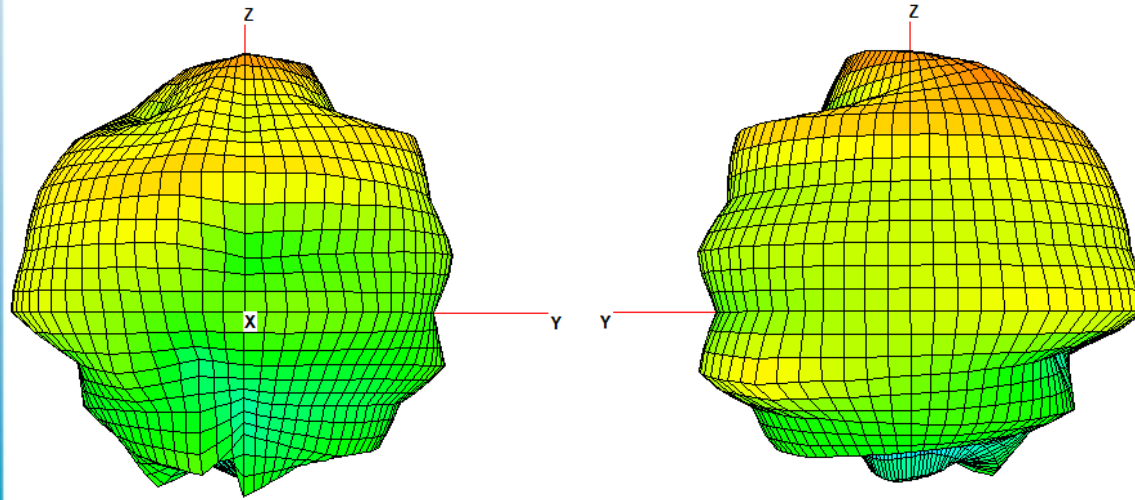
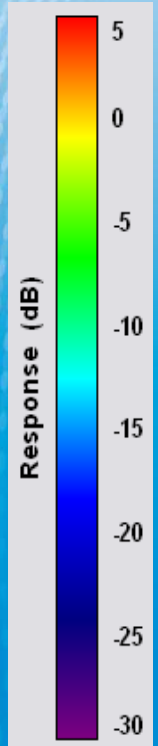


XY-Plane

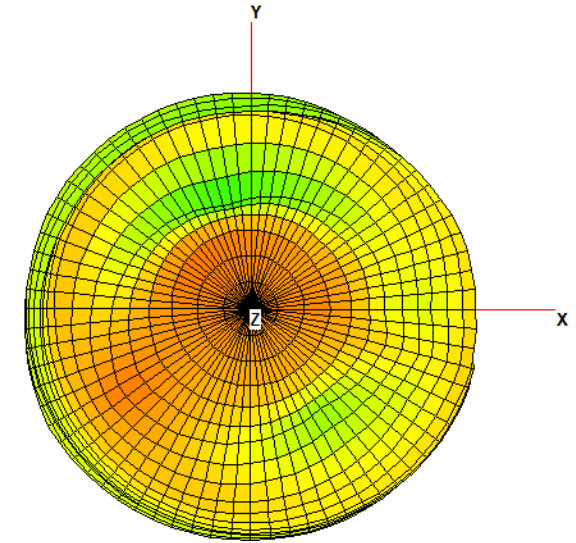


XZ-Plane

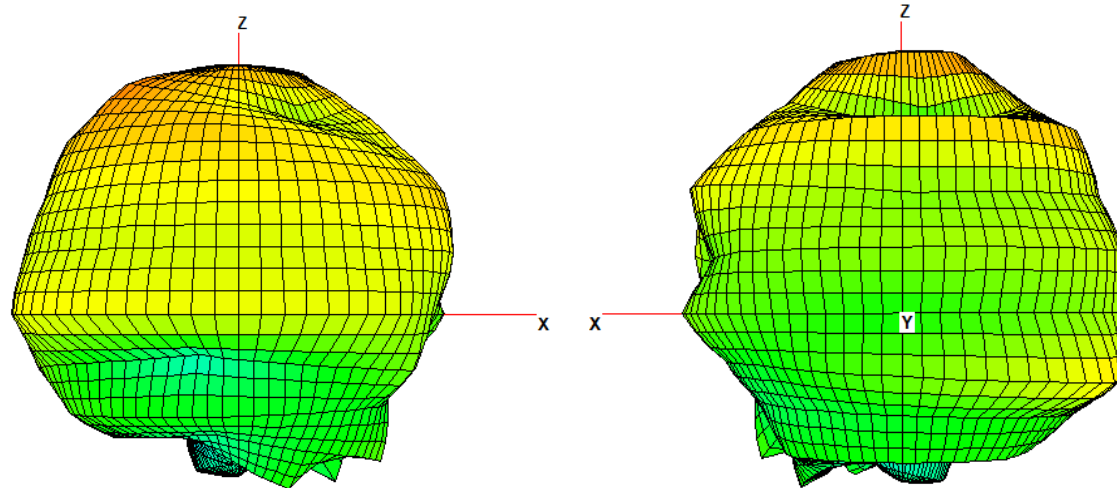
3D Radiation Pattern – WiFi Ant @ 5GHz



YZ-Plane

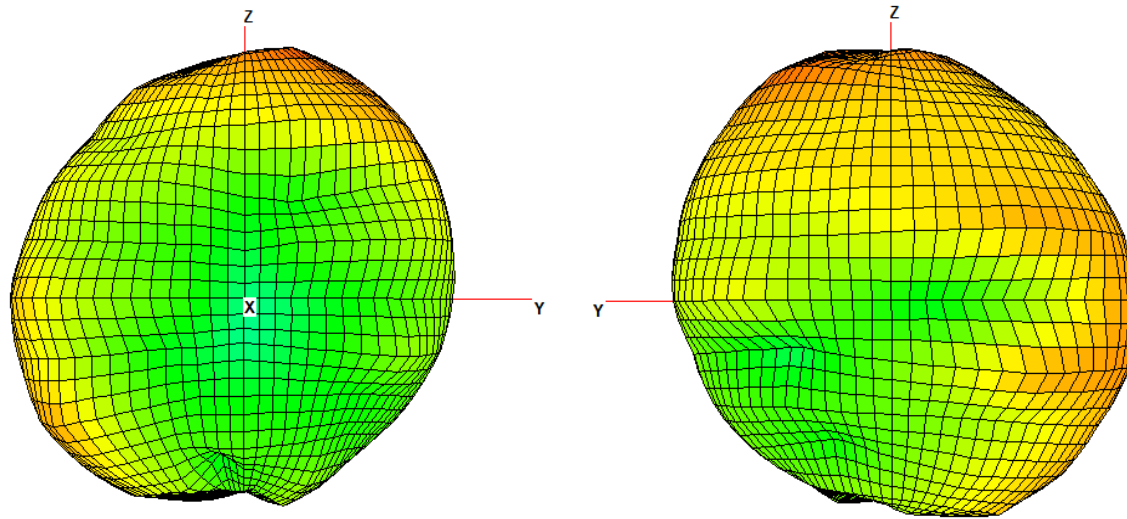
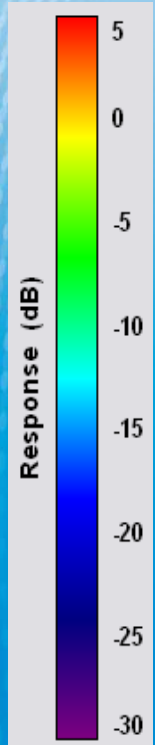


XY-Plane

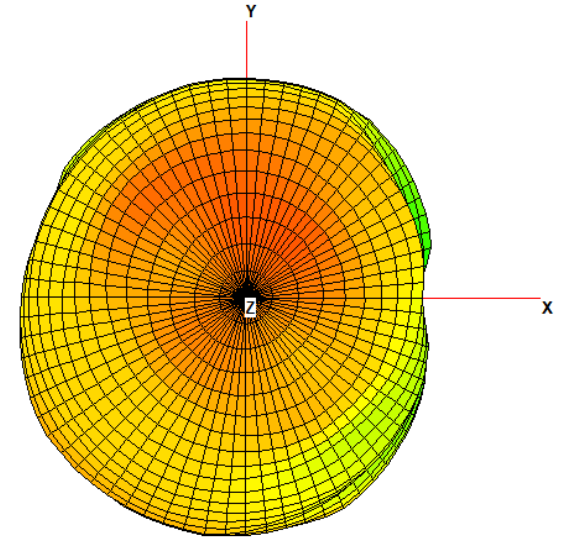


XZ-Plane

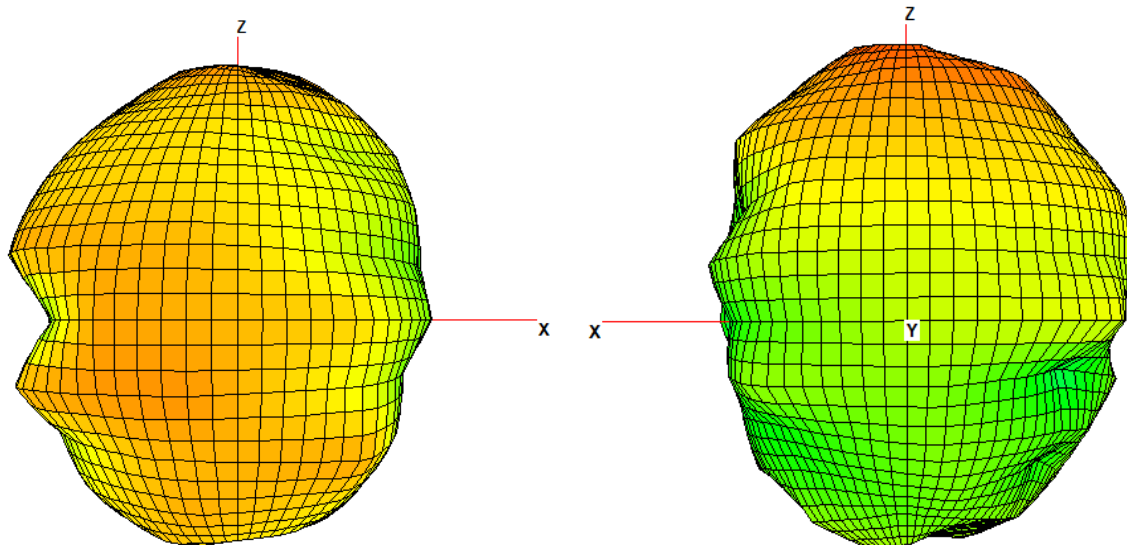
3D Radiation Pattern – BLE Ant @ 2.4GHz



YZ-Plane

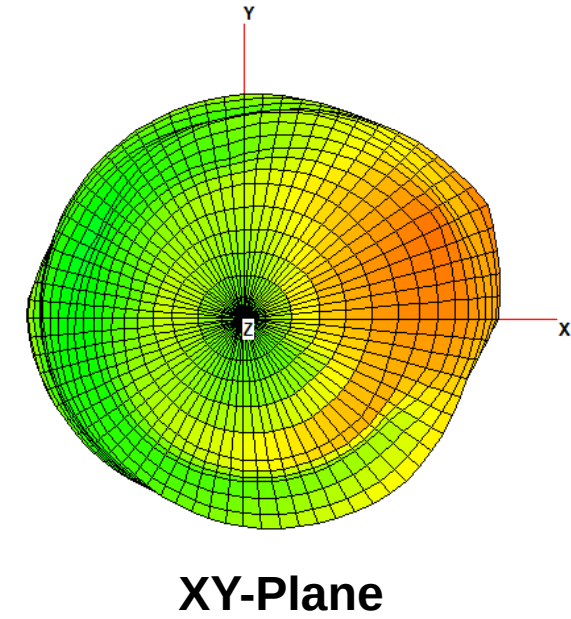
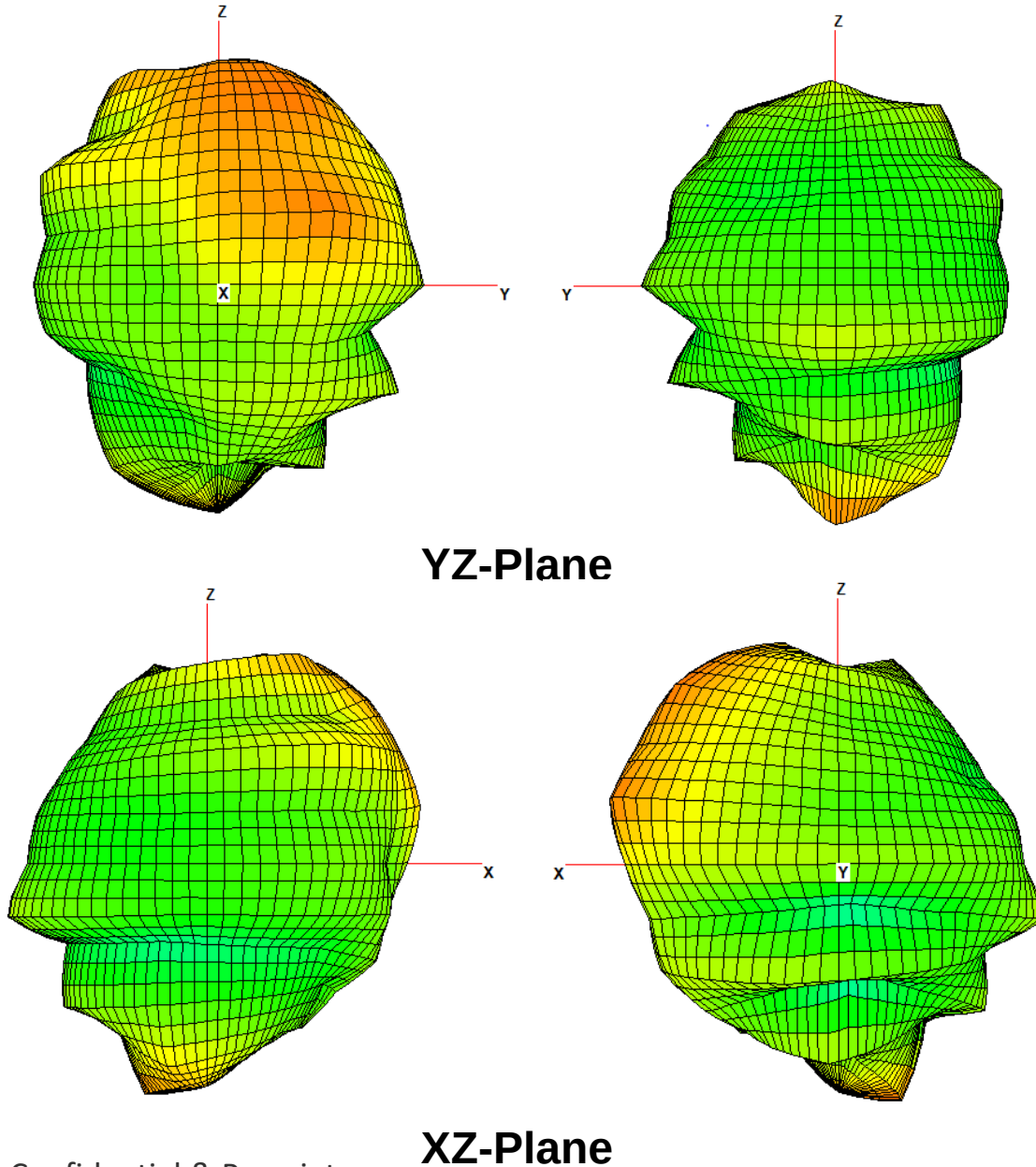
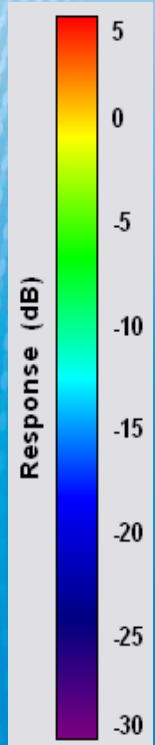


XY-Plane

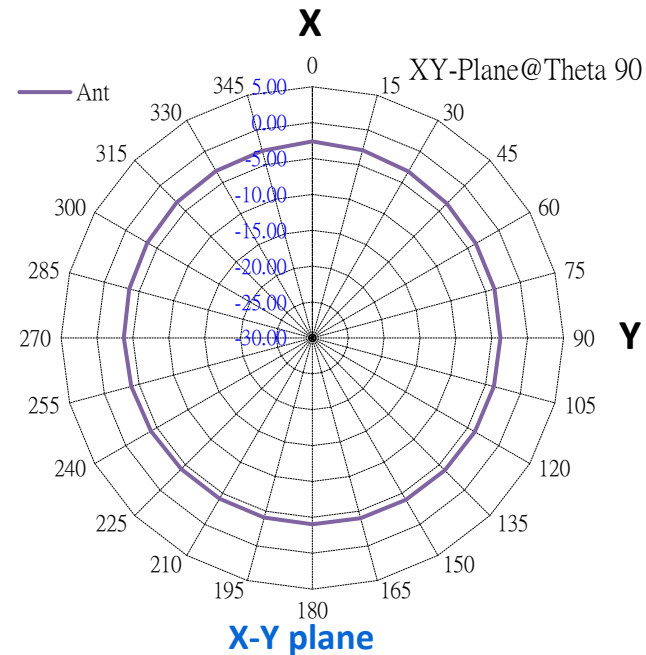
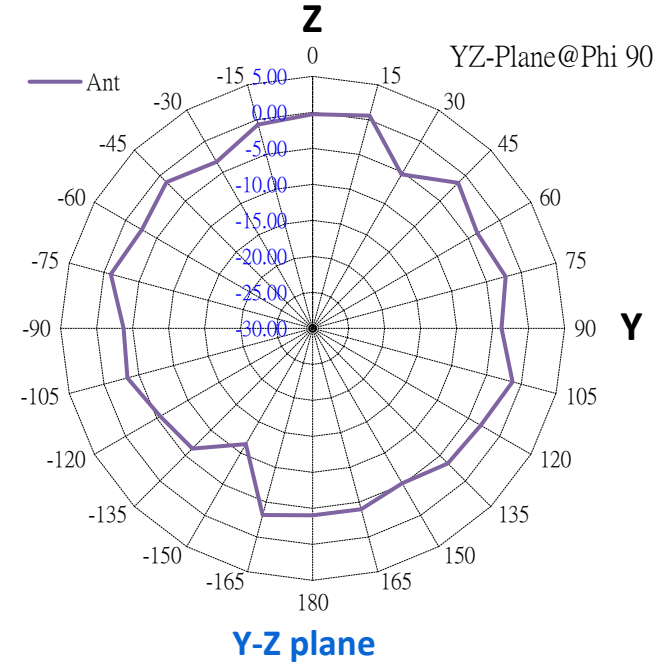
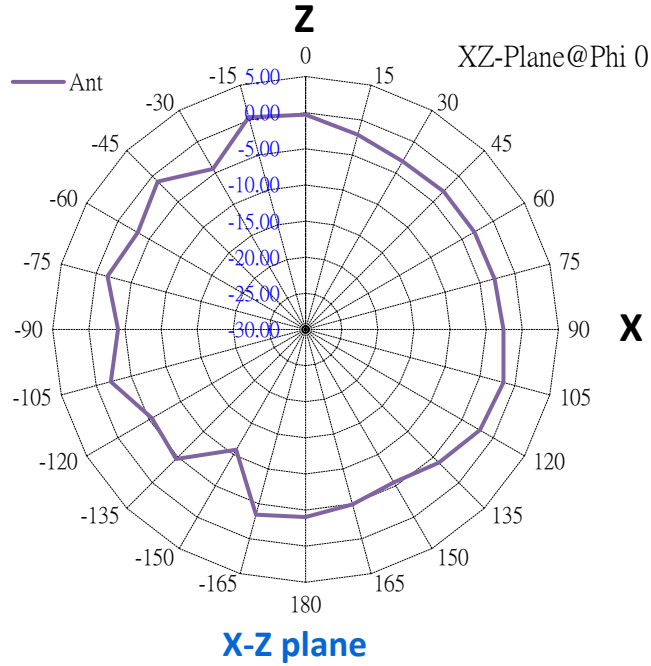


XZ-Plane

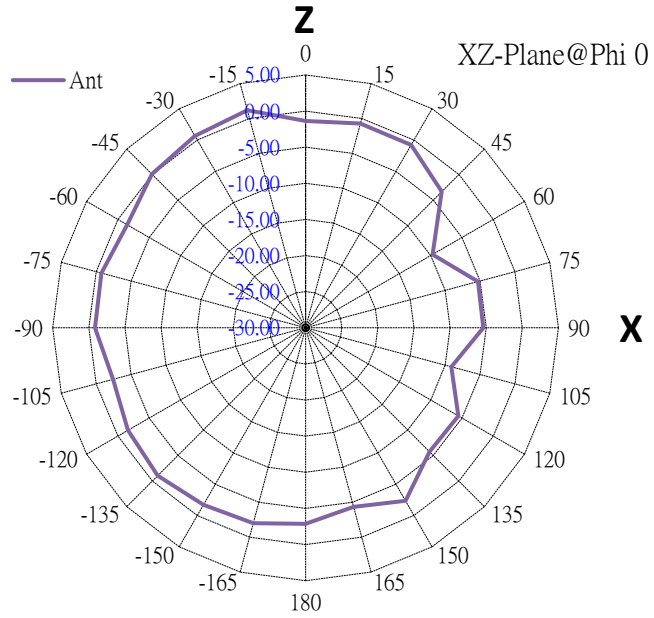
3D Radiation Pattern – GPS Ant @ 1.575GHz



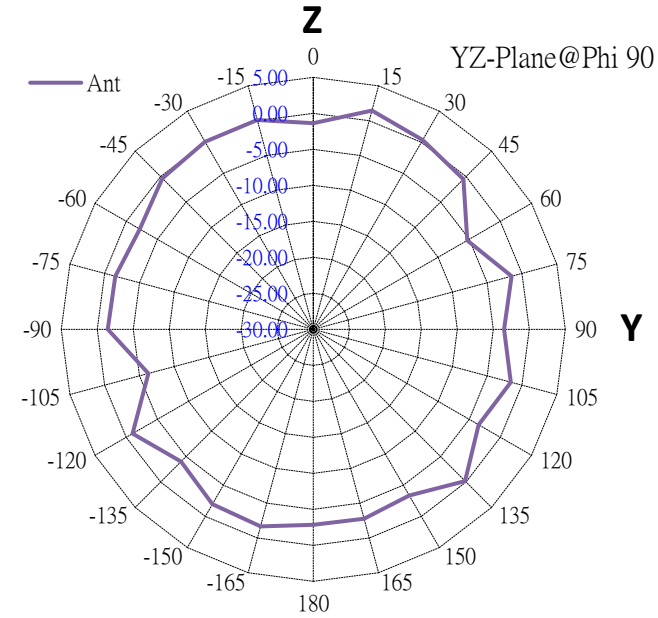
2D Radiation Pattern – LTE Main Ant @ B12



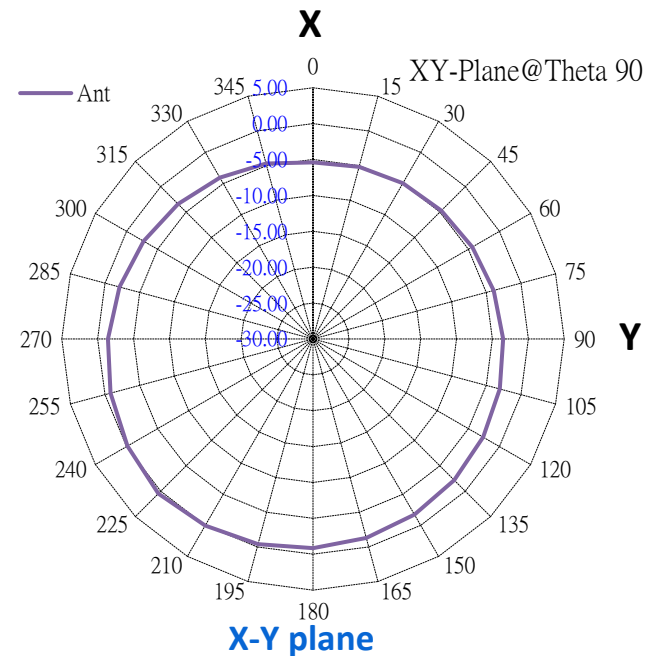
2D Radiation Pattern – LTE Main Ant @ B4



X-Z plane

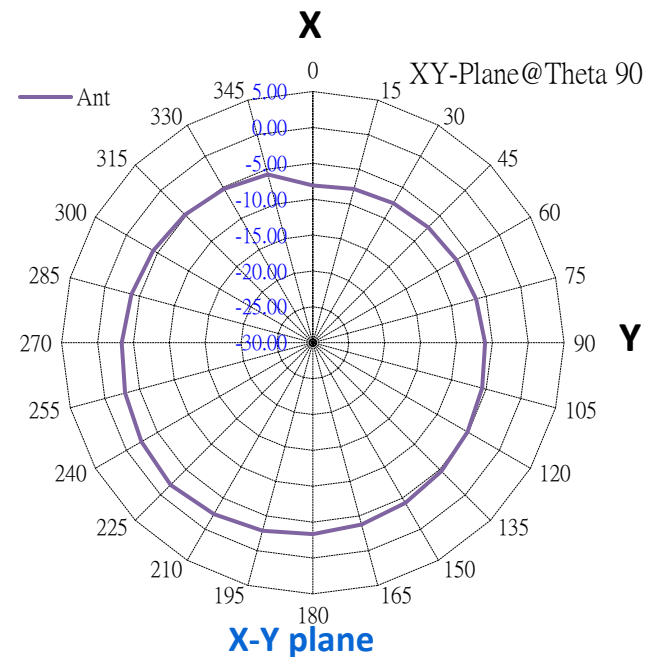
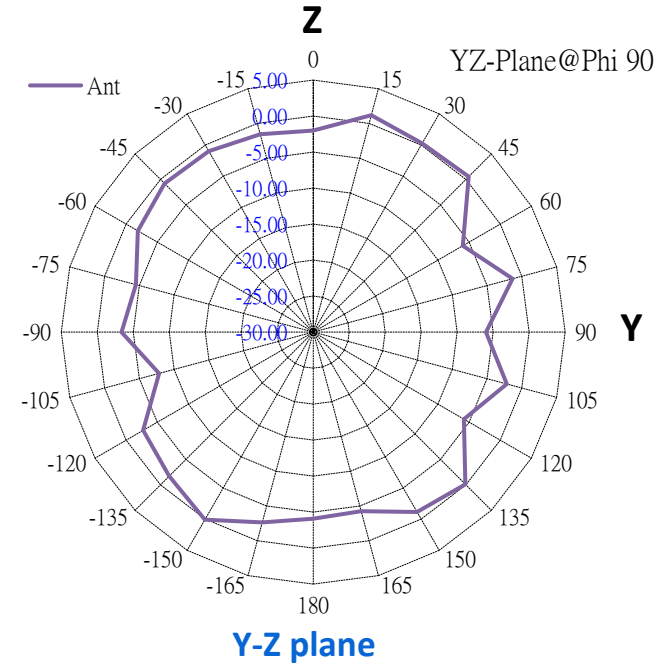
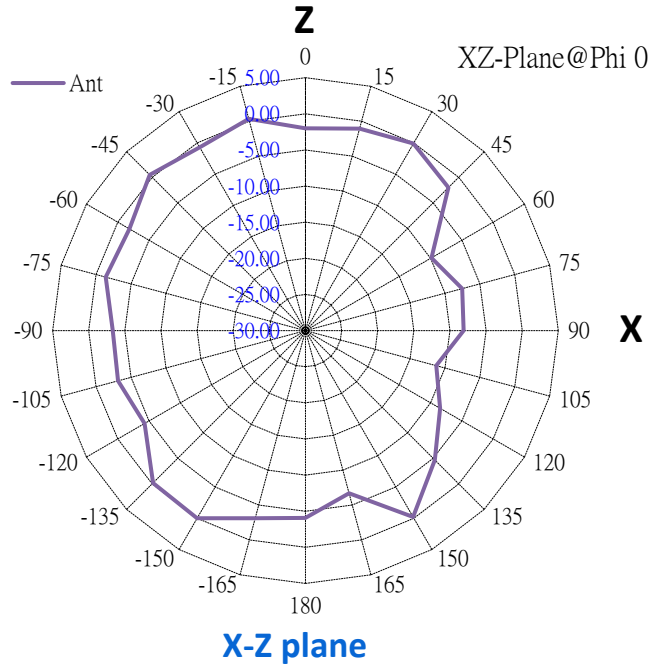


Y-Z plane

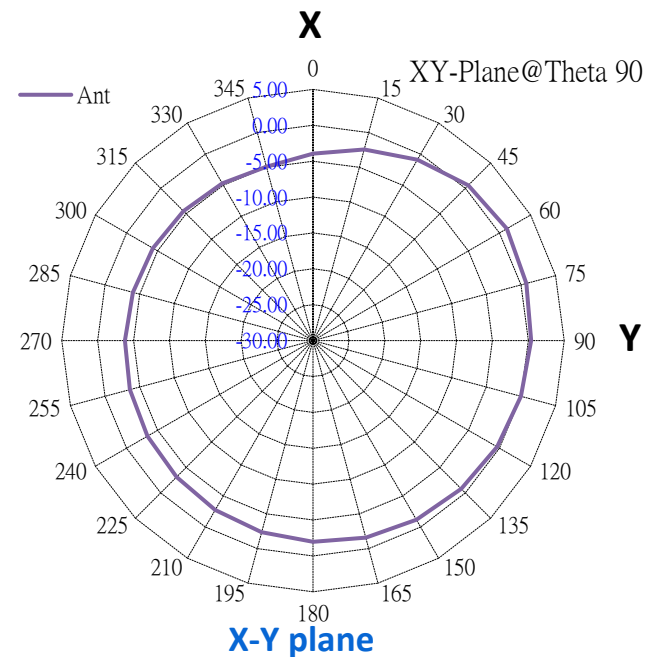
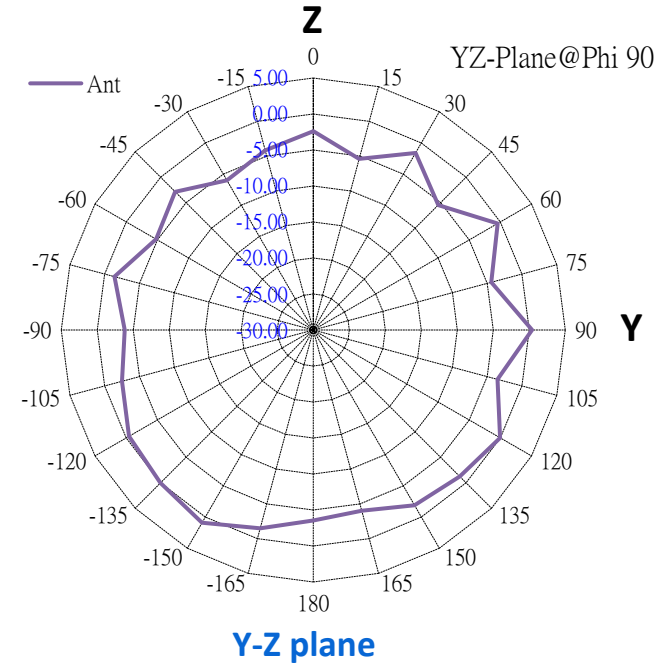
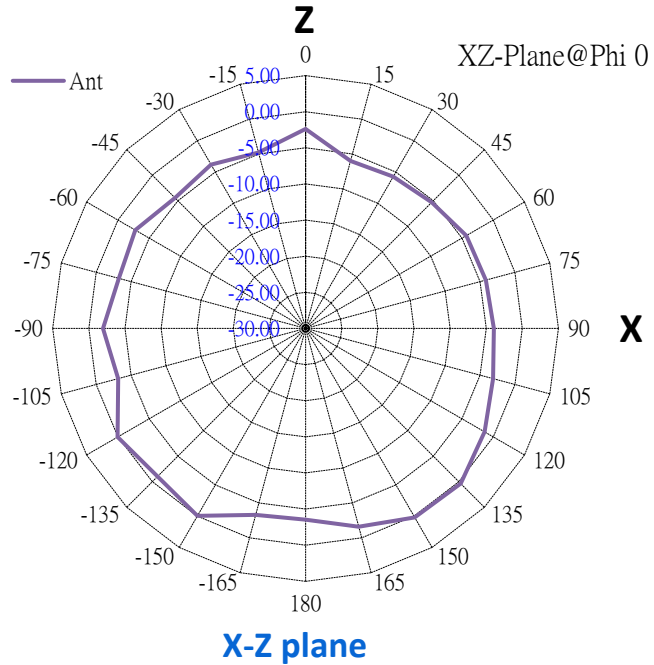


X-Y plane

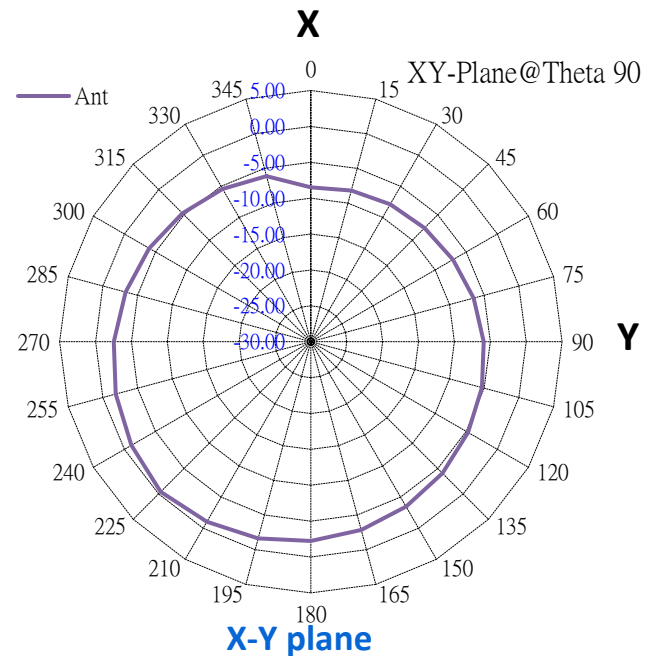
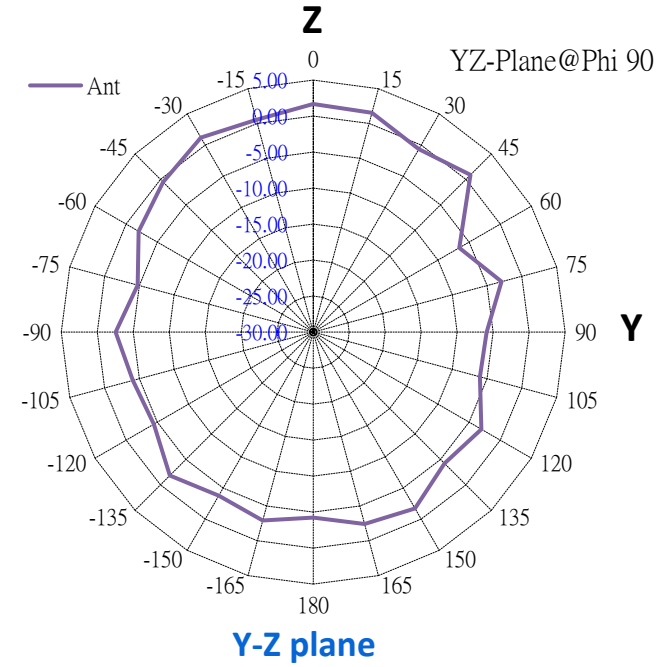
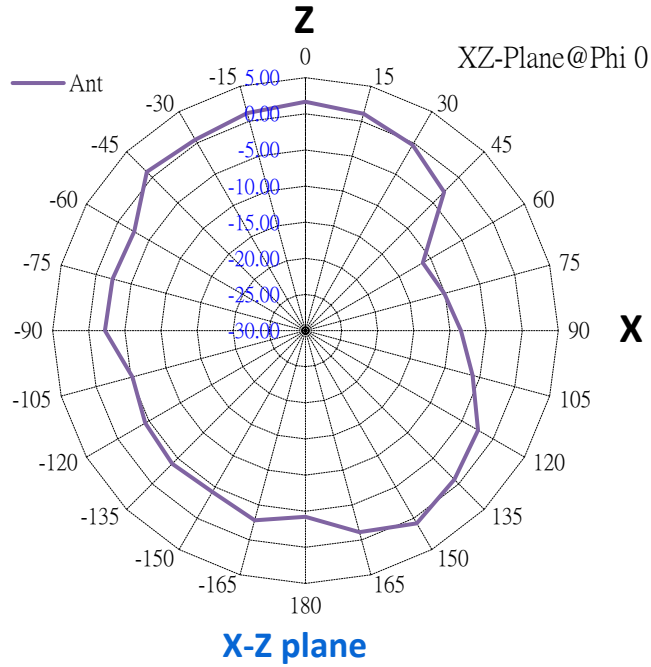
2D Radiation Pattern – LTE Main Ant @ B2



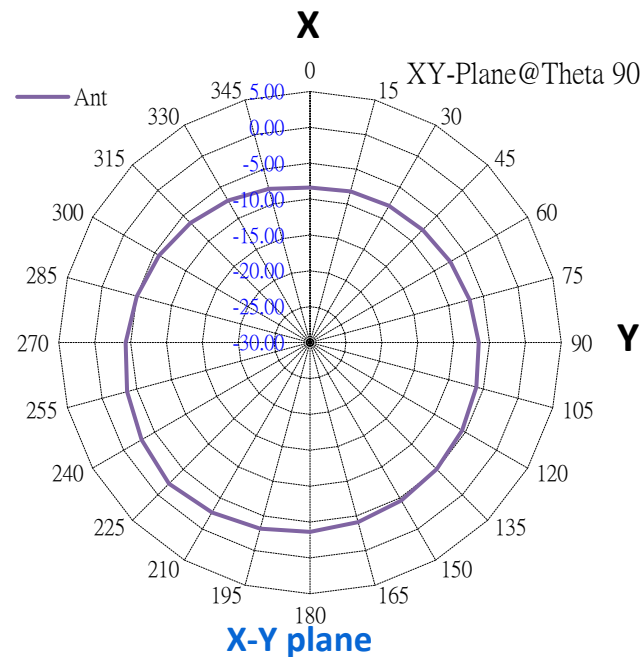
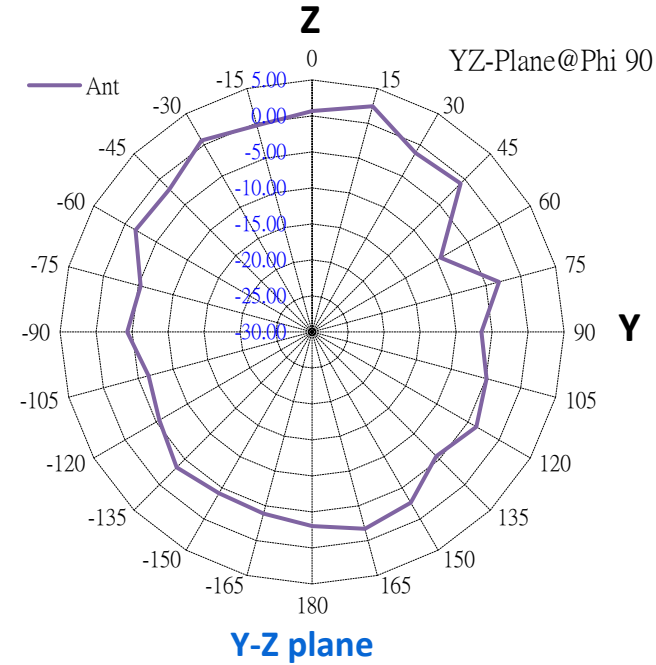
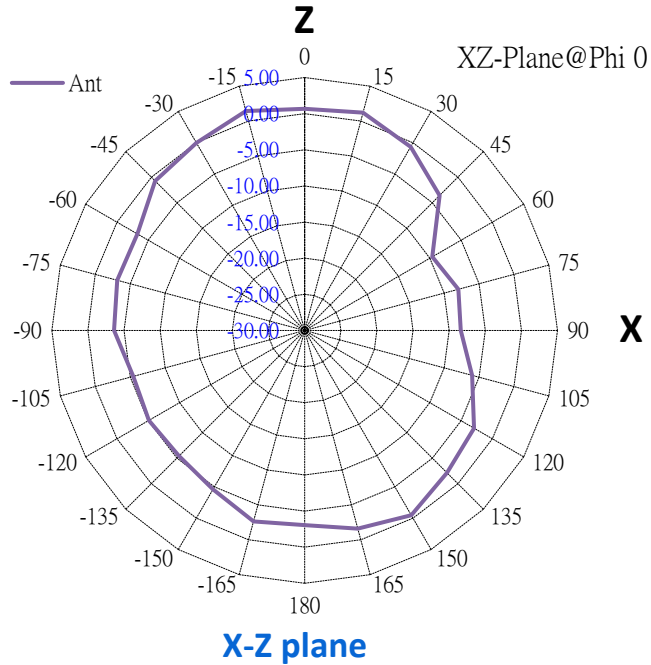
2D Radiation Pattern – LTE Aux Ant @ B12



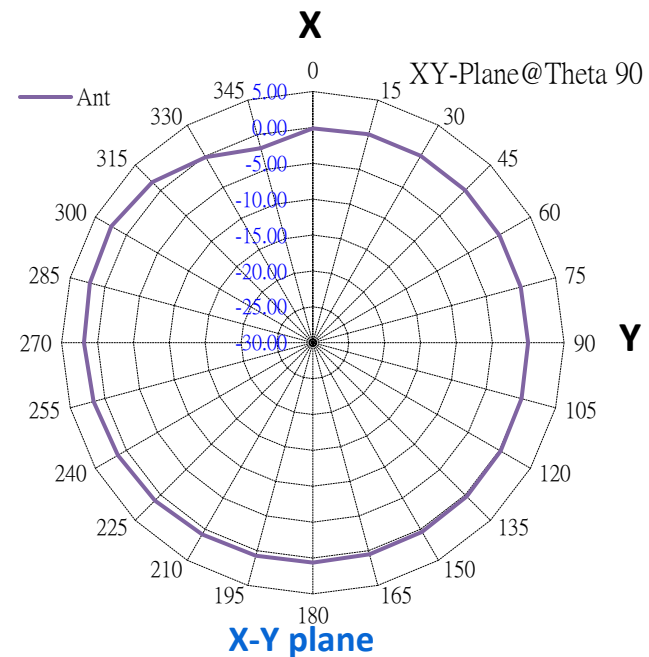
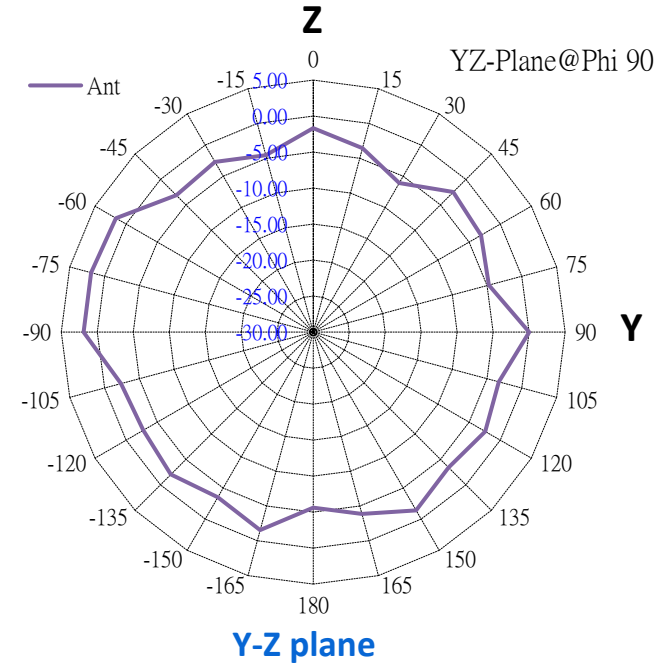
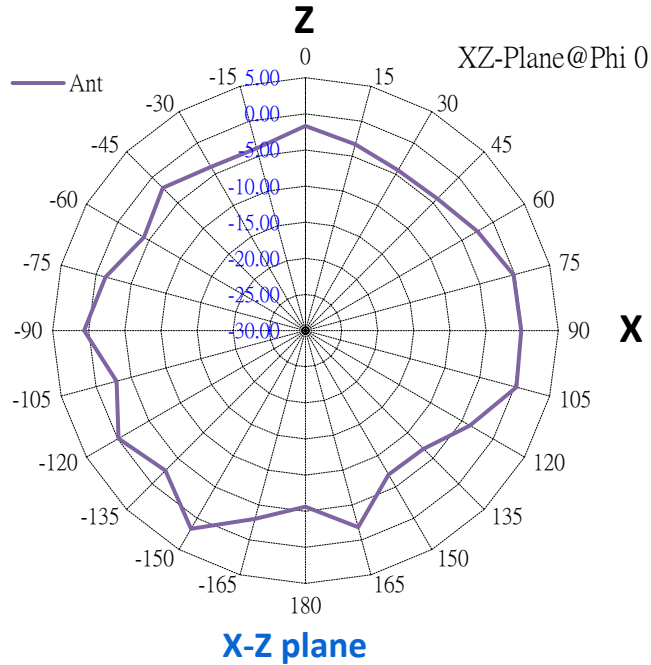
2D Radiation Pattern – LTE Aux Ant @ B4



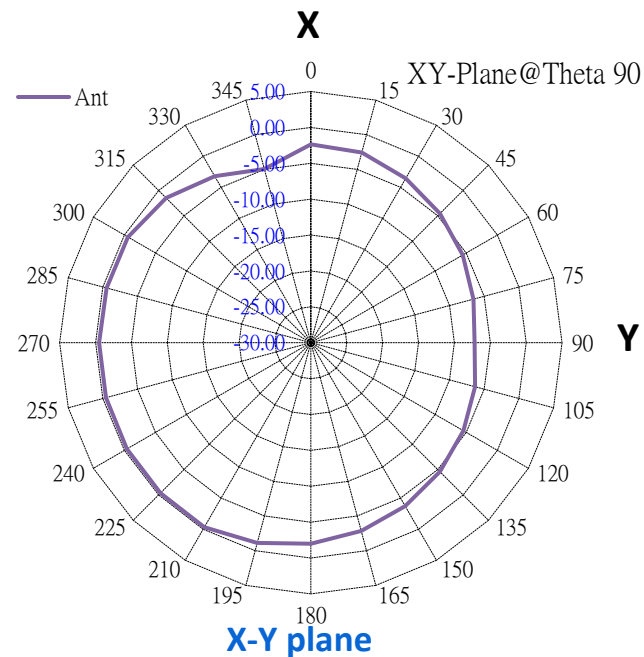
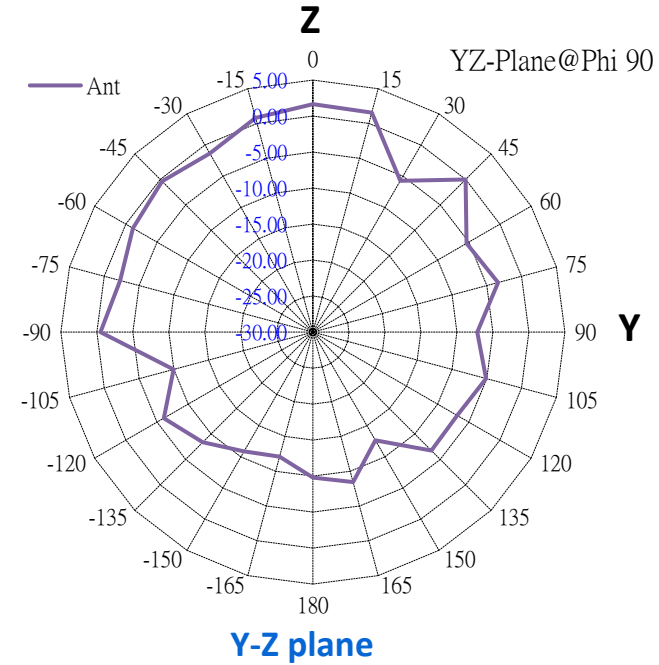
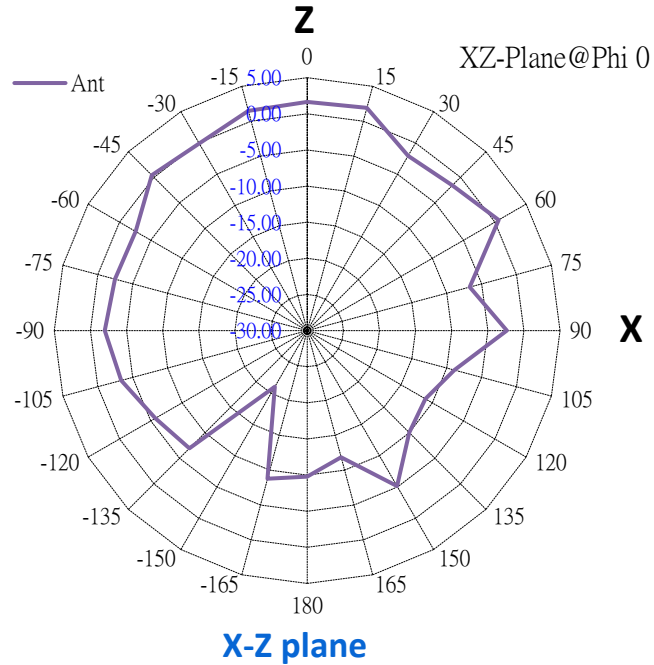
2D Radiation Pattern – LTE Aux Ant @ B2



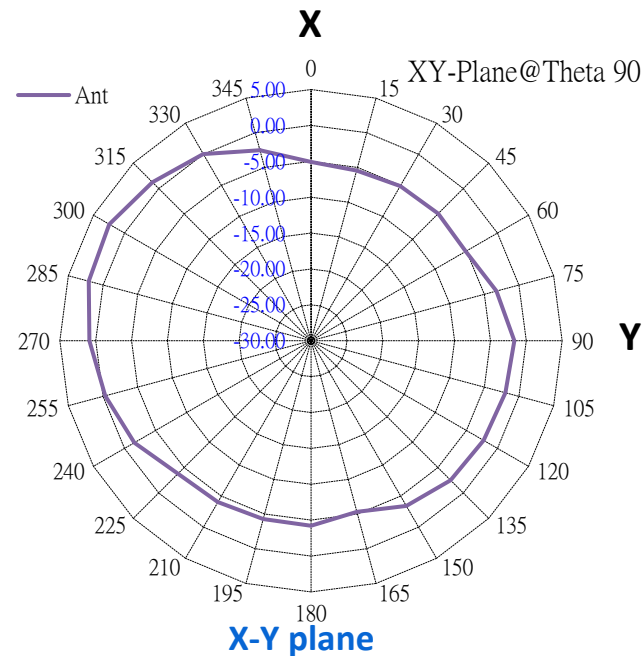
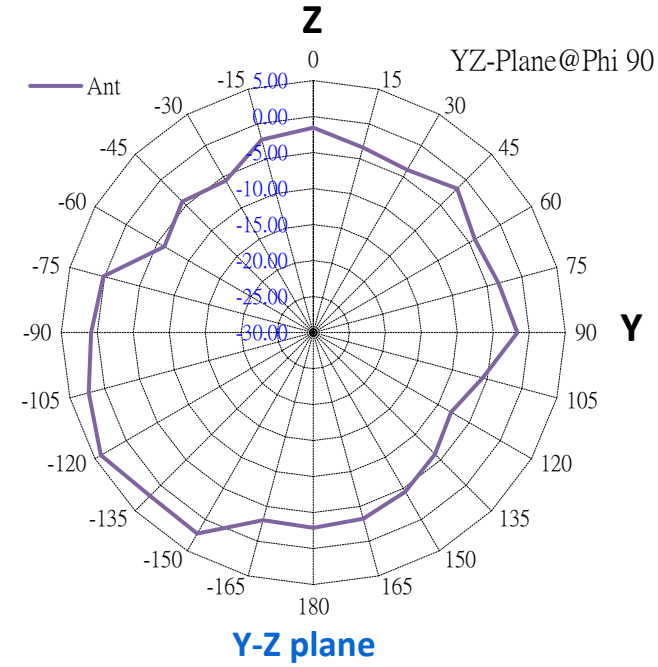
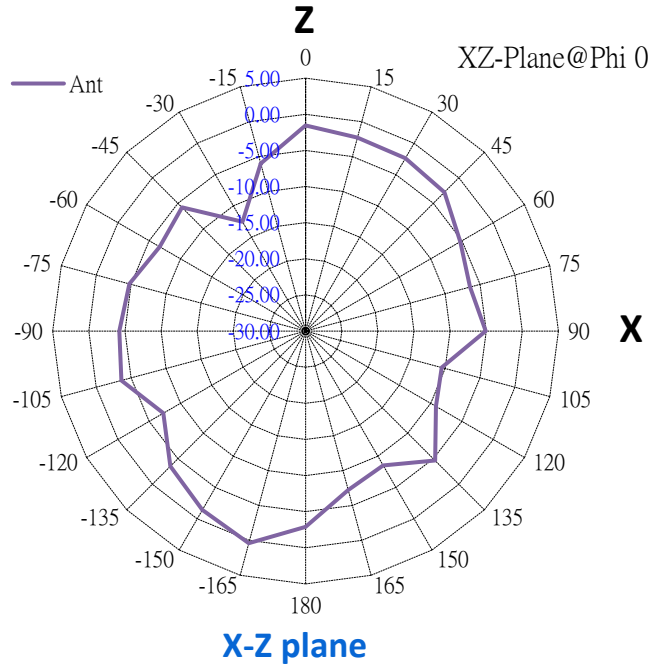
2D Radiation Pattern – WiFi Ant @ 2.4GHz



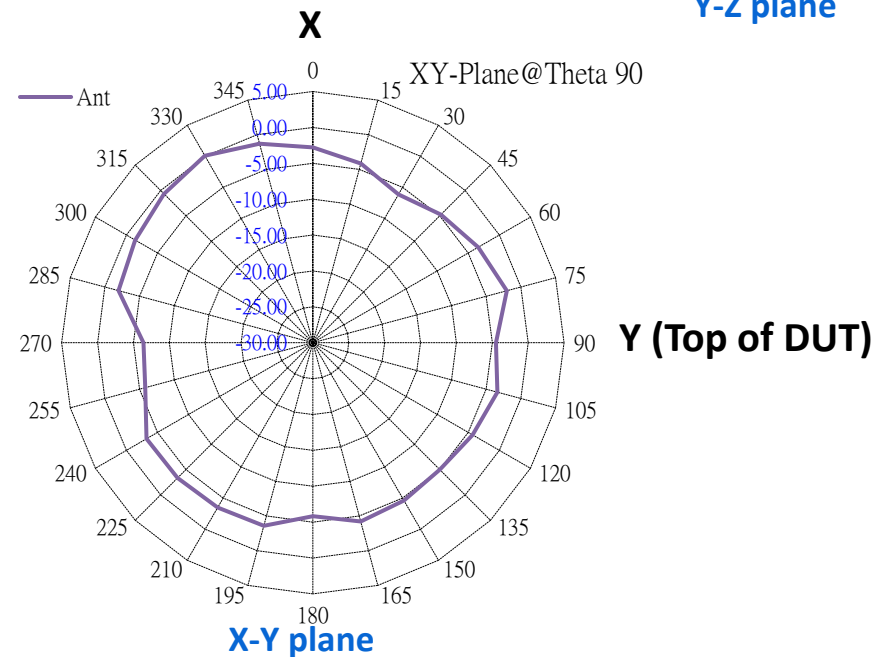
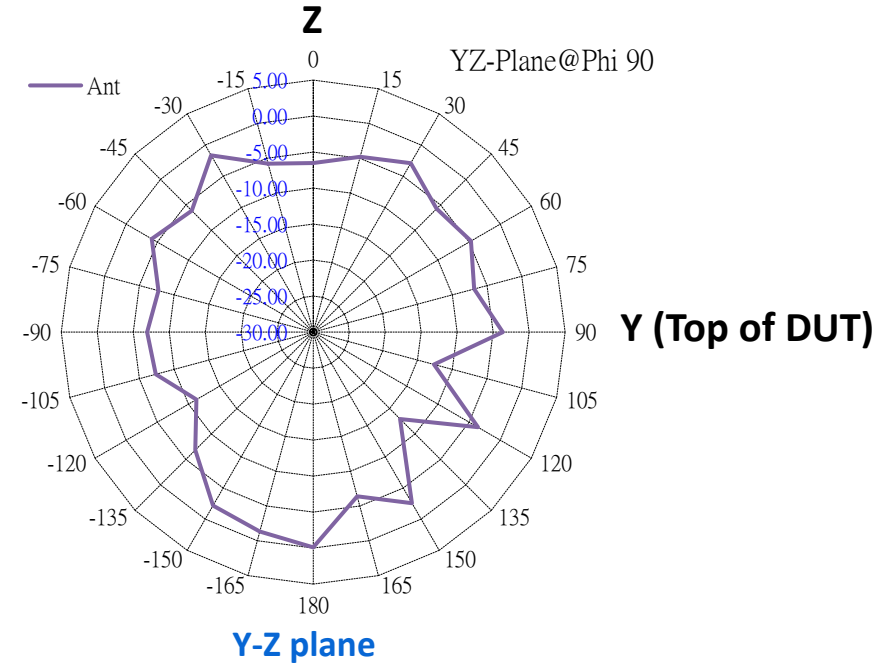
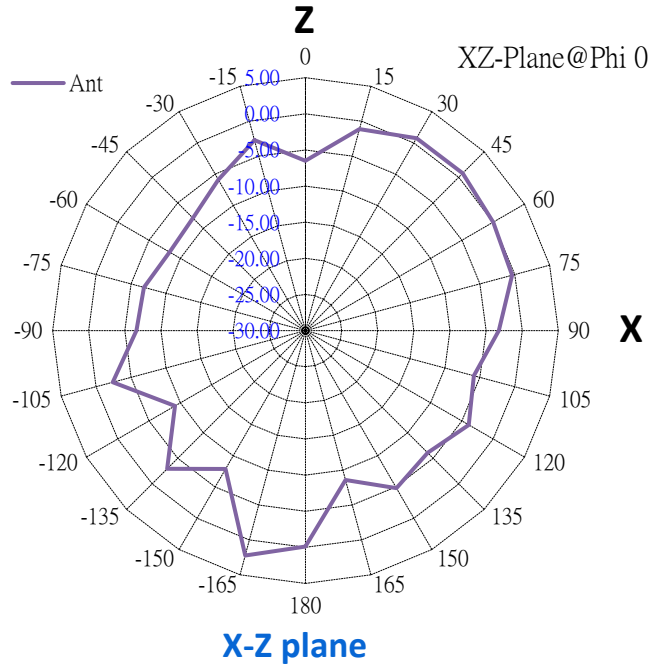
2D Radiation Pattern – WiFi Ant @ 5GHz



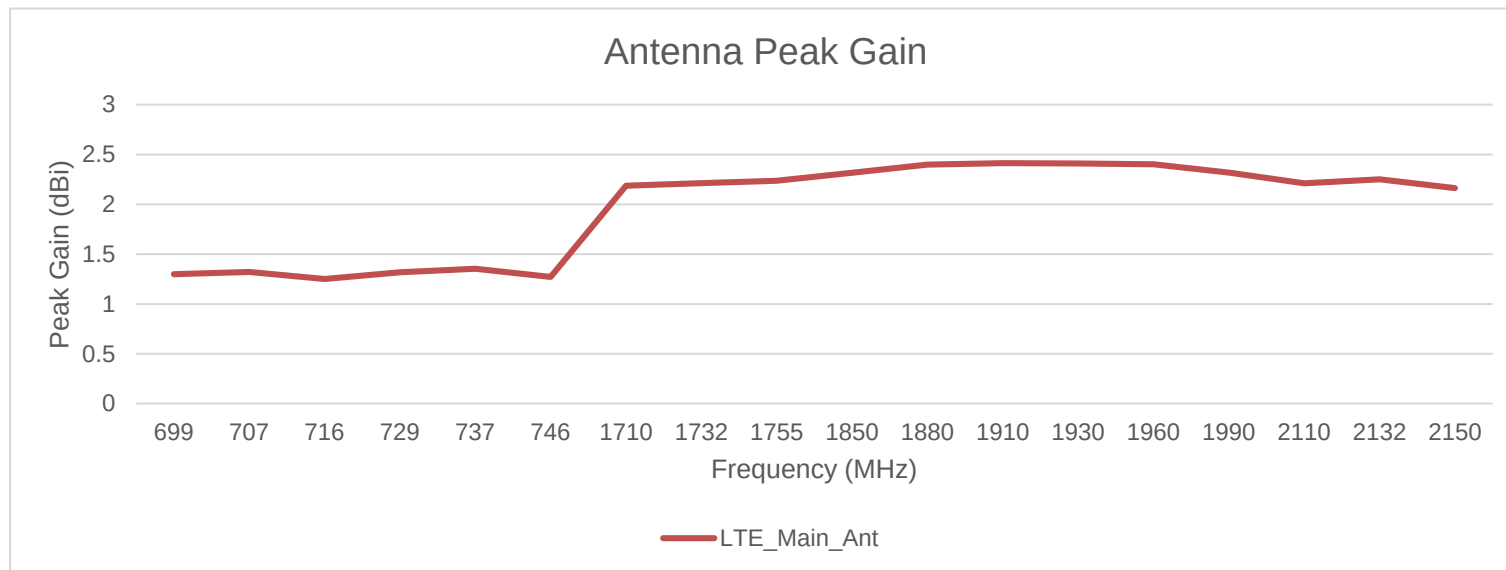
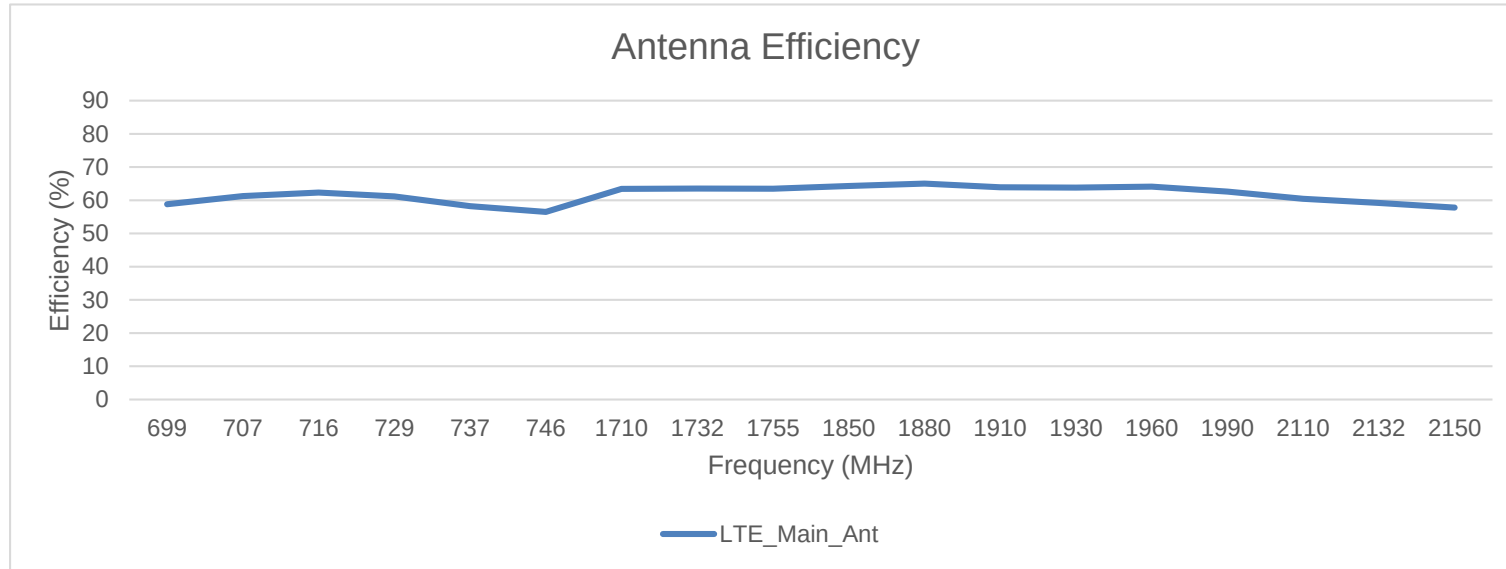
2D Radiation Pattern – BLE Ant @ 2.4GHz



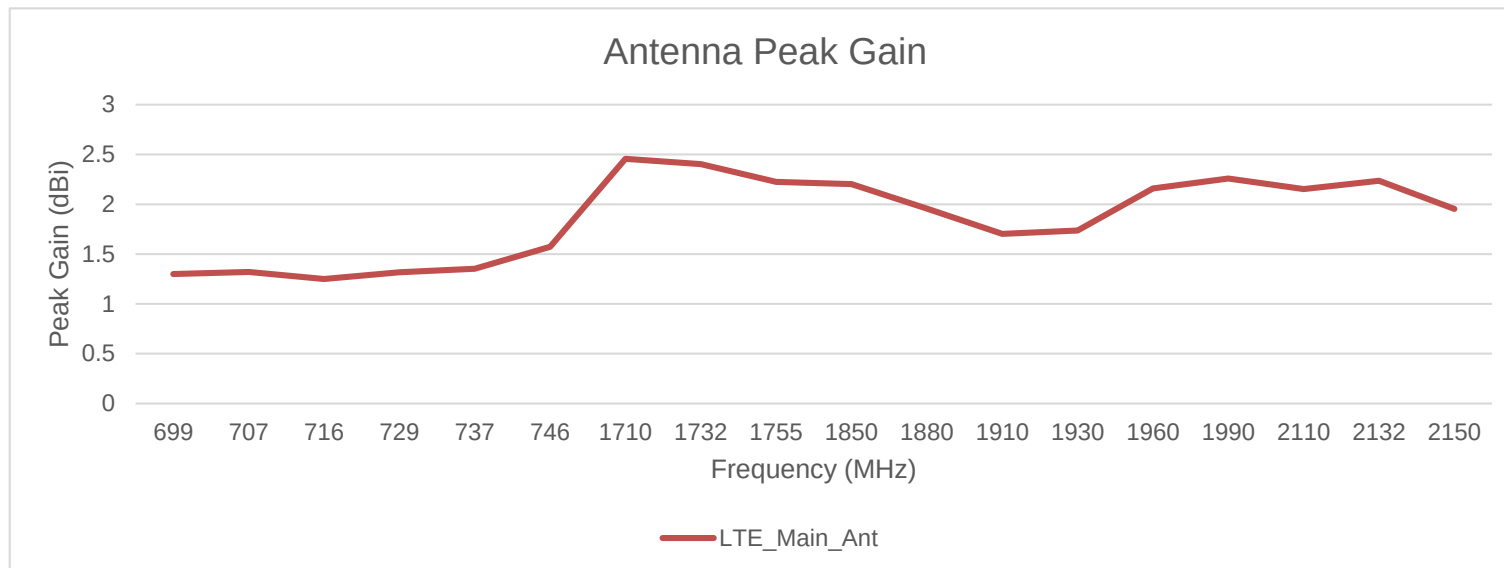
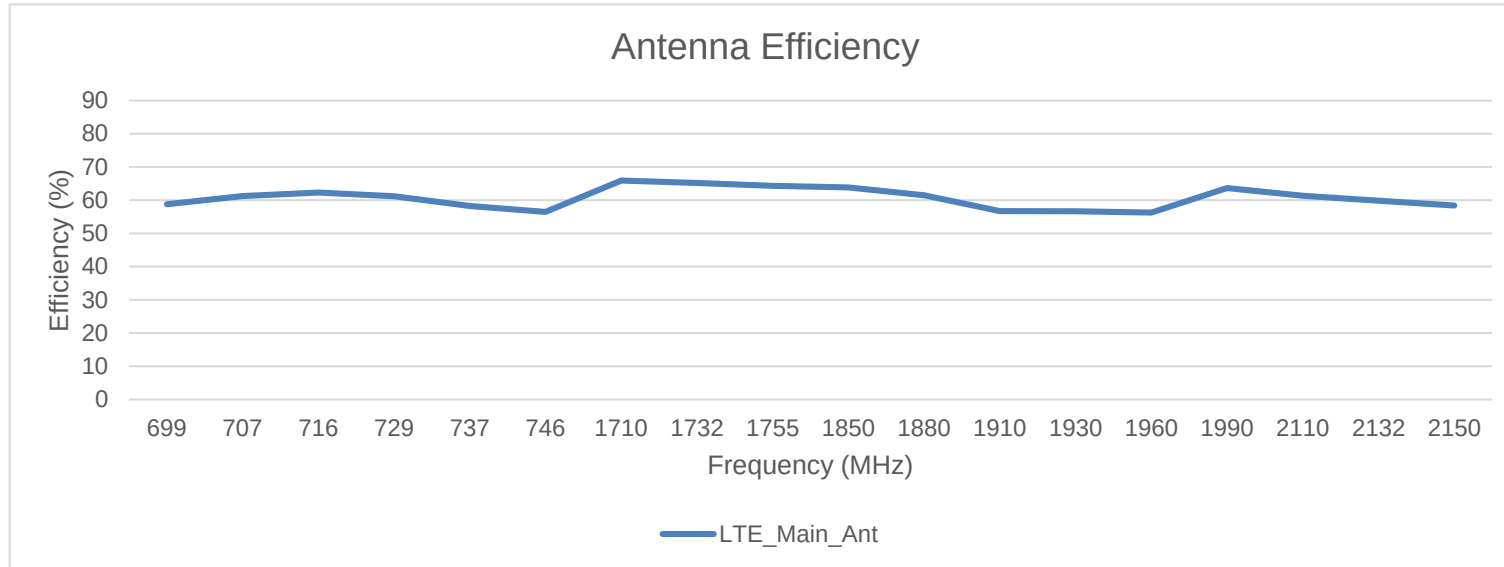
2D Radiation Pattern – GPS Ant @ 1.575GHz



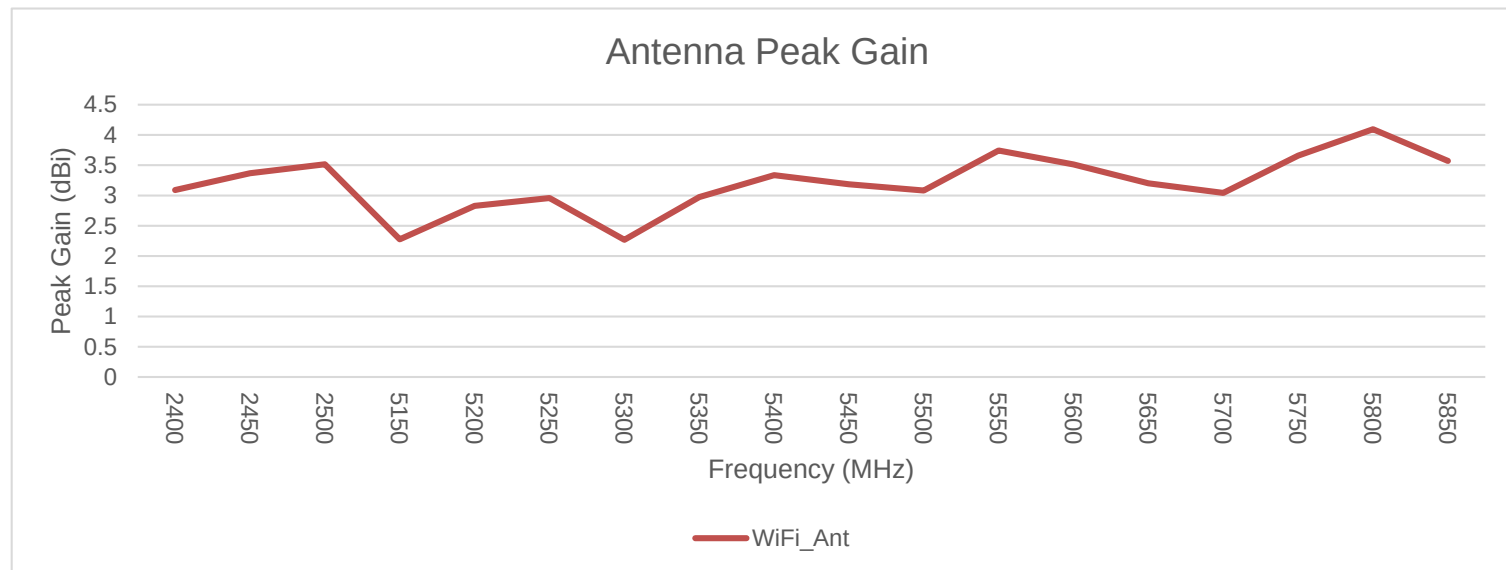
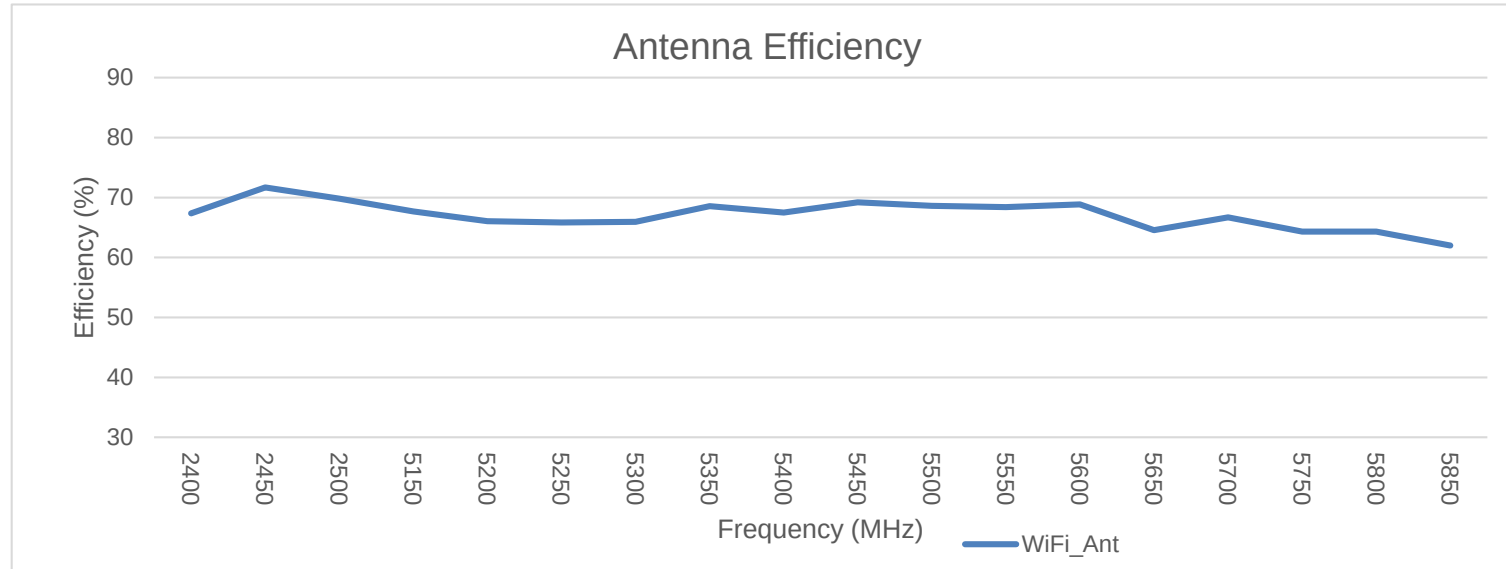
Peak Gain & Efficiency - LTE Main Ant



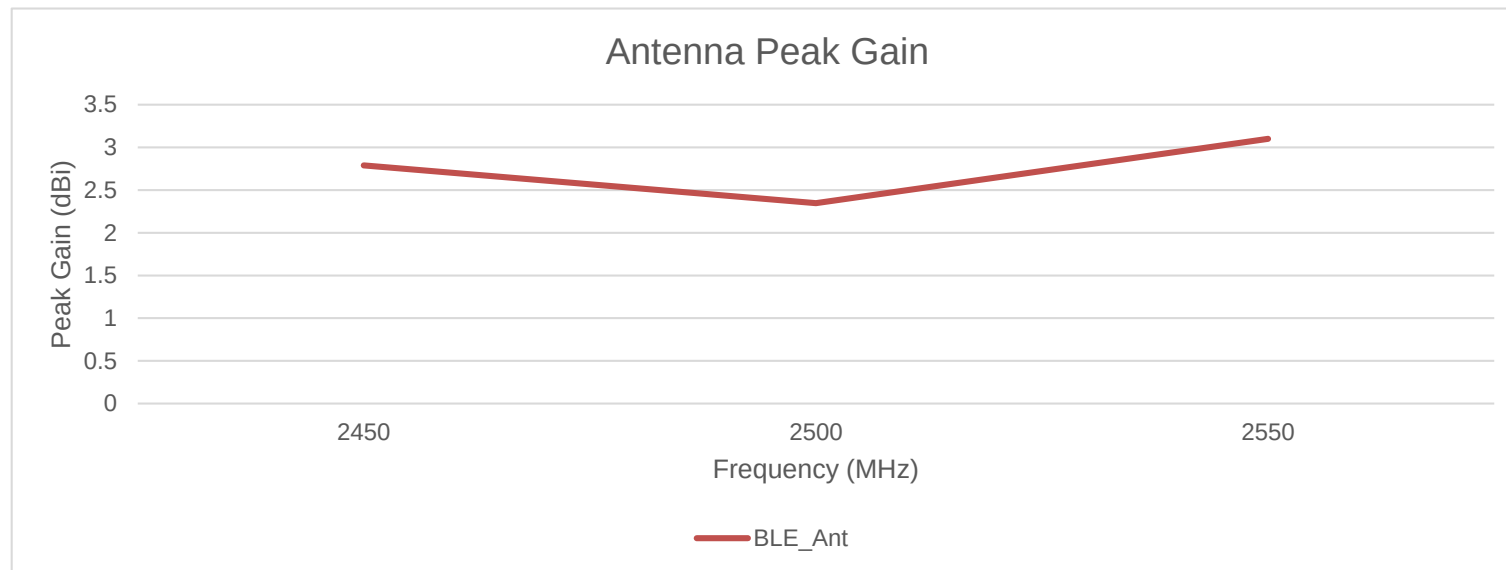
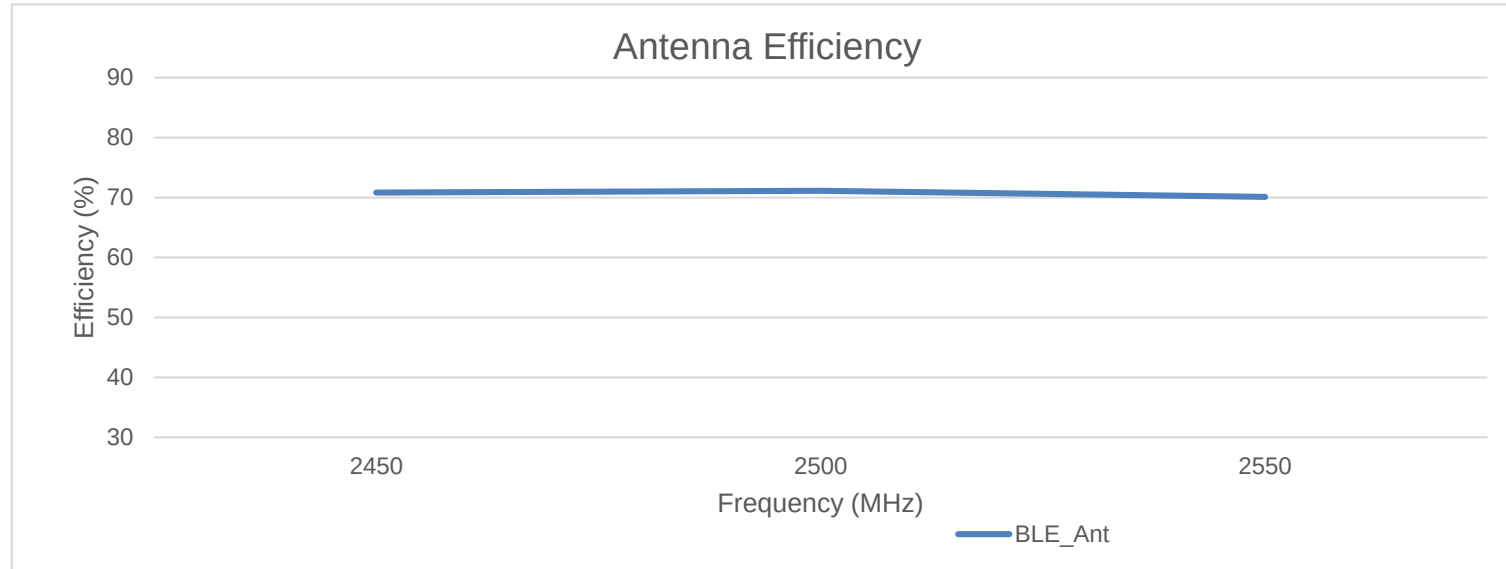
Peak Gain & Efficiency - LTE Aux Ant



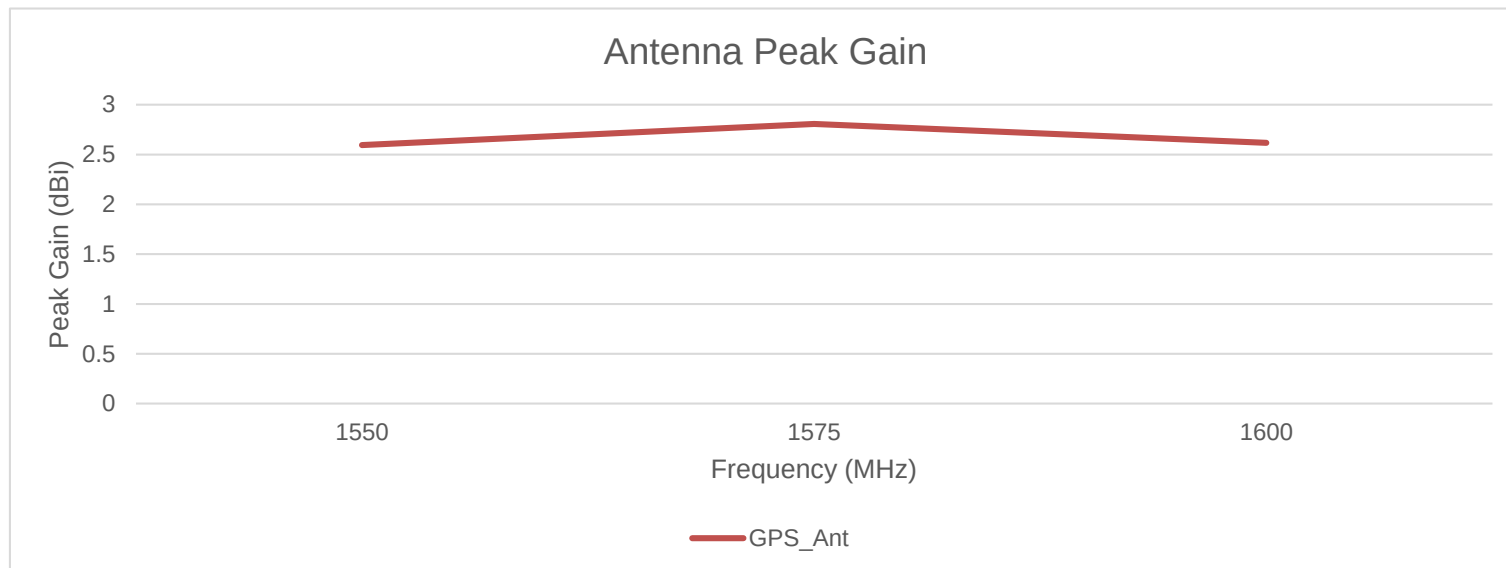
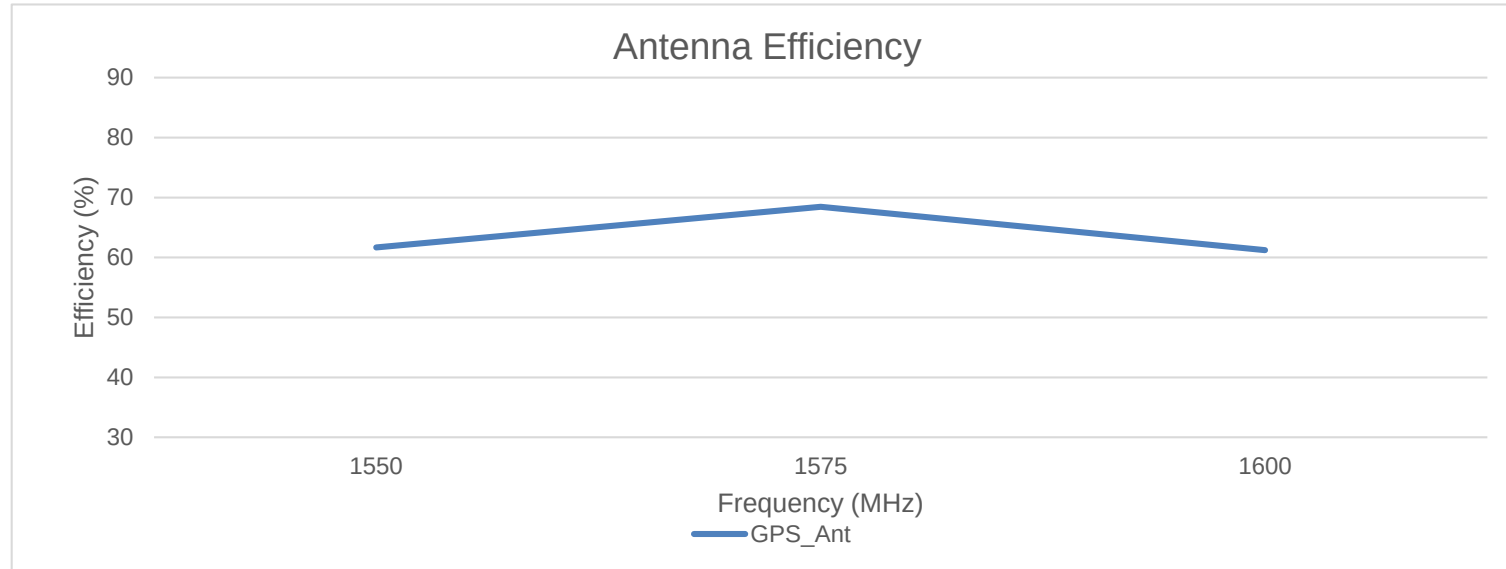
Peak Gain & Efficiency - WiFi Ant



Peak Gain & Efficiency - BLE Ant



Peak Gain & Efficiency - GPS Ant



Raw Data (LTE Main Ant@B12)

707	Theta Angl	0	15	30	45	60	75	90	105	120	135	150	165	180	
	Phi Angle	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	(dB)
	0	-0.48	-2.05	-1.98	-1.39	-1.39	-1.58	-1.79	-1.22	-1.65	-2.99	-4.29	-4.03	-3.2	
	15	-0.48	-1.6	-2.55	-1.18	-1.7	-1.52	-1.95	-1.13	-1.38	-2.93	-3.42	-3.9	-3.2	
	30	-0.48	-1.15	-3.11	-0.96	-2	-1.45	-2.12	-1.05	-1.12	-2.86	-2.56	-3.76	-3.2	
	45	-0.48	-0.7	-3.67	-0.75	-2.31	-1.39	-2.29	-0.97	-0.85	-2.8	-1.69	-3.63	-3.2	
	60	-0.48	-0.25	-3.88	-0.54	-2.59	-1.33	-2.42	-0.88	-0.99	-2.74	-1.98	-3.49	-3.2	
	75	-0.48	0.21	-3.8	-0.33	-2.53	-1.26	-2.51	-0.8	-1.53	-2.67	-2.95	-3.36	-3.2	
	90	-0.48	0.66	-3.71	-0.11	-2.46	-1.2	-2.6	-0.72	-2.06	-2.61	-3.92	-3.23	-3.2	
	105	-0.48	1.11	-3.62	0.1	-2.39	-1.14	-2.69	-0.64	-2.59	-2.55	-4.89	-3.09	-3.2	
	120	-0.48	1.32	-3.54	0.3	-2.33	-1.07	-2.78	-0.65	-3.12	-2.68	-5.86	-2.96	-3.2	
	135	-0.48	1.18	-3.45	0.27	-2.26	-0.94	-2.88	-0.8	-3.65	-2.98	-6.83	-2.87	-3.2	
	150	-0.48	1.08	-3.36	0.25	-2.2	-0.8	-2.97	-0.96	-4.19	-3.28	-7.8	-2.79	-3.2	
	165	-0.48	0.98	-3.28	0.22	-2.13	-0.67	-3.06	-1.12	-4.72	-3.59	-8.77	-2.71	-3.2	
	180	-0.48	0.89	-3.19	0.2	-2.06	-0.53	-3.15	-1.28	-5.25	-3.89	-9.74	-2.62	-3.2	
	195	-0.48	0.79	-3.1	0.18	-2	-0.4	-3.24	-1.44	-5.78	-4.2	-10.71	-2.54	-3.2	
	210	-0.48	0.7	-3.02	0.15	-1.93	-0.26	-3.34	-1.59	-6.32	-4.5	-11.68	-2.46	-3.2	
	225	-0.48	0.6	-2.93	0.13	-1.87	-0.13	-3.43	-1.75	-6.78	-4.81	-12.65	-2.37	-3.2	
	240	-0.48	0.51	-2.73	0.1	-1.75	0	-3.29	-1.91	-6.36	-5.11	-12.55	-2.29	-3.2	
	255	-0.48	0.41	-2.53	0.08	-1.61	0.14	-3.15	-2.07	-5.93	-5.42	-11.54	-2.21	-3.2	
	270	-0.48	0.32	-2.33	0.05	-1.46	0.27	-3.01	-2.23	-5.5	-5.72	-10.52	-2.13	-3.2	
	285	-0.48	0.21	-2.13	0.03	-1.31	0.41	-2.87	-2.38	-5.08	-6.02	-9.51	-2.04	-3.2	
	300	-0.48	-0.24	-1.93	-0.07	-1.16	0.21	-2.73	-2.38	-4.65	-5.78	-8.49	-2.3	-3.2	
	315	-0.48	-0.68	-1.73	-0.22	-1.01	-0.32	-2.58	-2.35	-4.23	-5.54	-7.47	-2.89	-3.2	
	330	-0.48	-1.13	-1.53	-0.37	-0.87	-0.86	-2.44	-2.32	-3.8	-5.3	-6.46	-3.49	-3.2	
	345	-0.48	-1.58	-1.34	-0.52	-0.72	-1.39	-2.3	-2.29	-3.38	-5.05	-5.44	-4.09	-3.2	

Raw Data (LTE Main Ant@B4)

1732	Theta Angl	0	15	30	45	60	75	90	105	120	135	150	165	180	
	Phi Angle	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response (dB)
	0	-1.57	-0.14	-1.06	-3.2	-11.38	-8.05	-7.57	-10.99	-7.2	-5.97	-2.22	-5.73	-3.76	
	15	-1.57	0.23	-0.78	-2.72	-10.68	-7.02	-7.24	-9.59	-6.9	-5.11	-2.49	-5.51	-3.76	
	30	-1.57	0.59	-0.49	-2.25	-9.98	-5.98	-6.92	-8.2	-6.59	-4.25	-2.77	-5.29	-3.76	
	45	-1.57	0.96	-0.2	-1.78	-9.28	-4.95	-6.59	-6.8	-6.29	-3.39	-3.04	-5.07	-3.76	
	60	-1.57	1.33	-0.1	-1.31	-8.57	-3.91	-6.2	-5.41	-5.99	-2.54	-3.03	-4.85	-3.76	
	75	-1.57	1.7	-0.14	-0.83	-7.77	-2.88	-5.74	-4.01	-5.68	-1.68	-2.86	-4.63	-3.76	
	90	-1.57	2.07	-0.18	-0.36	-6.97	-1.85	-5.27	-2.62	-5.37	-0.82	-2.68	-4.41	-3.76	
	105	-1.57	2.23	-0.23	0.11	-6.17	-0.81	-4.81	-1.22	-5.07	0.03	-2.51	-4.19	-3.76	
	120	-1.57	2.17	-0.27	0.55	-5.37	0.22	-4.35	-0.71	-4.76	0.25	-2.33	-3.97	-3.76	
	135	-1.57	2.21	-0.32	0.36	-4.58	-0.14	-3.88	-1.6	-4.45	-0.12	-2.16	-3.83	-3.76	
	150	-1.57	1.95	-0.36	0.17	-3.78	-0.5	-3.42	-2.49	-4.15	-0.49	-1.98	-3.7	-3.76	
	165	-1.57	1.69	-0.4	-0.02	-2.98	-0.86	-2.95	-3.38	-3.84	-0.86	-1.81	-3.57	-3.76	
	180	-1.57	1.43	-0.45	-0.21	-2.18	-1.22	-2.49	-4.27	-3.53	-1.23	-1.64	-3.44	-3.76	
	195	-1.57	1.17	-0.49	-0.4	-1.38	-1.58	-2.03	-5.16	-3.23	-1.61	-1.46	-3.31	-3.76	
	210	-1.57	0.91	-0.54	-0.59	-0.58	-1.94	-1.56	-6.05	-2.92	-1.98	-1.29	-3.18	-3.76	
	225	-1.57	0.65	-0.58	-0.78	0.22	-2.3	-1.1	-6.94	-2.63	-2.35	-1.11	-3.05	-3.76	
	240	-1.57	0.39	-0.69	-0.98	-0.14	-2.66	-1.69	-7.83	-2.59	-2.72	-1.2	-2.92	-3.76	
	255	-1.57	0.13	-0.8	-1.17	-1.42	-3.02	-2.31	-8.72	-2.54	-3.1	-1.52	-2.79	-3.76	
	270	-1.57	-0.13	-0.91	-1.36	-2.71	-3.38	-2.93	-9.61	-2.5	-3.47	-1.84	-2.66	-3.76	
	285	-1.57	-0.39	-1.01	-1.55	-3.99	-3.74	-3.56	-10.5	-2.45	-3.84	-2.16	-2.53	-3.76	
	300	-1.57	-0.61	-1.12	-1.72	-5.27	-4.26	-4.18	-10.24	-2.41	-3.82	-2.48	-2.85	-3.76	
	315	-1.57	-0.83	-1.23	-1.88	-6.55	-4.94	-4.8	-9.81	-2.36	-3.8	-2.8	-3.64	-3.76	
	330	-1.57	-1.05	-1.34	-2.04	-7.84	-5.62	-5.42	-9.38	-2.32	-3.78	-3.11	-4.43	-3.76	
	345	-1.57	-1.27	-1.44	-2.2	-9.12	-6.3	-6.05	-8.95	-2.27	-3.76	-3.43	-5.21	-3.76	

Raw Data (LTE Main Ant@B2)

1880	Theta Angl	0	15	30	45	60	75	90	105	120	135	150	165	180	
	Phi Angle	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	(dB)
	0	-2.51	0.05	-0.4	-2.53	-10.68	-8.24	-8.57	-11.85	-8.94	-5.61	-1.11	-7.14	-4.71	
	15	-2.51	0.41	-0.18	-2.09	-10.12	-7.19	-8.27	-10.36	-8.4	-4.83	-1.52	-6.8	-4.71	
	30	-2.51	0.78	0.05	-1.66	-9.57	-6.15	-7.97	-8.86	-7.86	-4.04	-1.94	-6.45	-4.71	
	45	-2.51	1.14	0.28	-1.22	-9.01	-5.11	-7.67	-7.36	-7.32	-3.25	-2.35	-6.11	-4.71	
	60	-2.51	1.5	0.31	-0.79	-8.45	-4.06	-7.31	-5.86	-6.92	-2.47	-2.39	-5.77	-4.71	
	75	-2.51	1.86	0.18	-0.35	-7.71	-3.02	-6.88	-4.37	-6.66	-1.68	-2.2	-5.43	-4.71	
	90	-2.51	2.23	0.06	0.08	-6.97	-1.98	-6.45	-2.87	-6.4	-0.89	-2.02	-5.09	-4.71	
	105	-2.51	2.41	-0.07	0.52	-6.24	-0.94	-6.02	-1.37	-6.13	-0.1	-1.83	-4.74	-4.71	
	120	-2.51	2.25	-0.2	0.92	-5.5	0.1	-5.58	-0.77	-5.87	0.14	-1.65	-4.4	-4.71	
	135	-2.51	2.29	-0.32	0.7	-4.76	-0.39	-5.15	-1.6	-5.61	-0.14	-1.46	-4.28	-4.71	
	150	-2.51	1.98	-0.45	0.48	-4.02	-0.88	-4.72	-2.43	-5.34	-0.41	-1.28	-4.18	-4.71	
	165	-2.51	1.68	-0.58	-0.26	-3.29	-1.38	-4.29	-3.27	-5.08	-0.68	-1.09	-4.07	-4.71	
	180	-2.51	1.37	-0.7	0.03	-2.55	-1.87	-3.86	-4.1	-4.82	-0.96	-0.91	-3.97	-4.71	
	195	-2.51	1.06	-0.83	-0.19	-1.81	-2.36	-3.42	-4.93	-4.56	-1.23	-0.72	-3.86	-4.71	
	210	-2.51	0.76	-0.96	-0.41	-1.07	-2.86	-2.99	-5.76	-4.29	-1.5	-0.54	-3.76	-4.71	
	225	-2.51	0.45	-1.08	-0.63	-0.34	-3.35	-2.56	-6.59	-4.03	-1.77	-0.35	-3.65	-4.71	
	240	-2.51	0.14	-1.04	-0.85	-0.57	-3.84	-3.02	-7.42	-3.8	-2.05	-0.4	-3.55	-4.71	
	255	-2.51	-0.16	-1.01	-1.07	-1.58	-4.34	-3.5	-8.26	-3.56	-2.32	-0.63	-3.44	-4.71	
	270	-2.51	-0.47	-0.97	-1.29	-2.59	-4.83	-3.99	-9.09	-3.33	-2.59	-0.87	-3.34	-4.71	
	285	-2.51	-0.77	-0.94	-1.51	-3.6	-5.32	-4.47	-9.92	-3.09	-2.86	-1.11	-3.23	-4.71	
	300	-2.51	-0.9	-0.9	-1.58	-4.61	-5.86	-4.95	-9.81	-2.86	-2.74	-1.35	-3.62	-4.71	
	315	-2.51	-1.04	-0.87	-1.52	-5.62	-6.44	-5.44	-9.56	-2.62	-2.62	-1.59	-4.51	-4.71	
	330	-2.51	-1.17	-0.84	-1.47	-6.63	-7.02	-5.92	-9.3	-2.39	-2.5	-1.83	-5.4	-4.71	
	345	-2.51	-1.3	-0.8	-1.41	-7.64	-7.6	-6.41	-9.05	-2.16	-2.38	-2.07	-6.3	-4.71	

Raw Data (LTE Aux Ant@B12)

746	Theta Angl	0	15	30	45	60	75	90	105	120	135	150	165	180	
	Phi Angle	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	(dB)
	0	-0.79	-1.88	-2.19	-2.2	-1.59	-0.56	-0.01	0.26	1.32	1.4	1.54	1.48	0.72	
	15	-0.79	-2.77	-1.35	-2.6	-0.7	-1.2	0.31	-0.43	1.17	1.55	1.56	1.02	0.72	
	30	-0.79	-3.65	-0.51	-2.99	0.19	-1.85	0.62	-1.12	1.02	0.69	1.57	0.35	0.72	
	45	-0.79	-4.53	0.34	-3.39	1.07	-2.5	0.93	-1.81	0.87	-0.16	1.55	-0.31	0.72	
	60	-0.79	-5.42	0.79	-3.78	1.46	-3.14	0.91	-2.51	0.72	-1.01	1.47	-0.98	0.72	
	75	-0.79	-6.3	0.5	-4.18	1.49	-3.79	0.55	-3.2	0.56	-1.87	1.55	-1.64	0.72	
	90	-0.79	-7.19	0.2	-4.57	1.39	-4.44	0.19	-3.89	0.4	-2.72	1.42	-2.3	0.72	
	105	-0.79	-8.07	-0.09	-4.97	1.09	-5.09	-0.17	-4.59	0.24	-3.57	1.29	-2.97	0.72	
	120	-0.79	-8.23	-0.38	-5.35	0.79	-5.6	-0.53	-4.83	0.08	-4.39	1.16	-3.04	0.72	
	135	-0.79	-7.71	-0.67	-5.14	0.49	-5.29	-0.89	-4.47	-0.08	-3.83	1.03	-2.43	0.72	
	150	-0.79	-7.18	-0.96	-4.92	0.18	-4.97	-1.25	-4.12	-0.24	-3.26	0.9	-1.81	0.72	
	165	-0.79	-6.66	-1.26	-4.7	-0.12	-4.66	-1.61	-3.76	-0.4	-2.69	0.77	-1.19	0.72	
	180	-0.79	-6.14	-1.55	-4.48	-0.42	-4.34	-1.97	-3.41	-0.55	-2.13	0.64	-0.58	0.72	
	195	-0.79	-5.61	-1.84	-4.26	-0.72	-4.03	-2.33	-3.05	-0.71	-1.56	0.51	0.04	0.72	
	210	-0.79	-5.09	-2.13	-4.04	-1.02	-3.72	-2.69	-2.69	-0.87	-0.99	0.38	0.66	0.72	
	225	-0.79	-4.57	-2.43	-3.82	-1.32	-3.4	-3.05	-2.34	-1.03	-0.43	0.25	1.28	0.72	
	240	-0.79	-4.04	-2.6	-3.6	-1.57	-3.09	-2.84	-1.98	-0.84	0.14	0.37	1.49	0.72	
	255	-0.79	-3.52	-2.76	-3.38	-1.76	-2.77	-2.62	-1.63	-0.62	0.71	0.63	1.51	0.72	
	270	-0.79	-3	-2.92	-3.16	-1.94	-2.46	-2.41	-1.27	-0.41	1.27	0.89	1.13	0.72	
	285	-0.79	-2.48	-3.07	-2.95	-2.13	-2.14	-2.2	-0.92	-0.2	1.44	1.15	1.54	0.72	
	300	-0.79	-2.39	-3.23	-2.98	-2.32	-1.99	-1.98	-0.88	0.01	1.16	1.41	1.43	0.72	
	315	-0.79	-2.3	-3.38	-3.25	-2.5	-1.92	-1.77	-0.86	0.23	1.24	1.47	1.06	0.72	
	330	-0.79	-2.22	-3.54	-3.53	-2.69	-1.85	-1.56	-0.84	0.44	1.32	1.53	1.5	0.72	
	345	-0.79	-2.13	-3.7	-3.8	-2.88	-1.79	-1.34	-0.82	0.65	1.4	1.19	1.33	0.72	

Raw Data (LTE Aux Ant@B4)

2132	Theta Angl	0	15	30	45	60	75	90	105	120	135	150	165	180	
	Phi Angle	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	(dB)
	0	0.56	0.06	-0.61	-3.92	-12.55	-10.72	-9.63	-6.98	-3.65	-2.24	-0.52	-2.34	-5.38	
	15	0.56	0.99	-0.81	-3.35	-12.09	-9.67	-9.39	-6.99	-3.65	-2.77	-0.92	-2.51	-5.38	
	30	0.56	1.11	-1	-2.79	-11.64	-8.63	-9.16	-7	-3.66	-3.29	-1.33	-2.67	-5.38	
	45	0.56	1.24	-1.2	-2.22	-11.18	-7.58	-8.92	-7.01	-3.66	-3.82	-1.73	-2.84	-5.38	
	60	0.56	1.36	-1.28	-1.66	-10.73	-6.54	-8.52	-7.02	-3.8	-4.34	-2.13	-3	-5.38	
	75	0.56	1.98	-1.14	-1.09	-9.94	-5.49	-7.96	-7.03	-4.1	-4.87	-2.54	-3.16	-5.38	
	90	0.56	2.11	-1	-0.53	-9.14	-4.44	-7.4	-7.04	-4.4	-5.39	-2.94	-3.33	-5.38	
	105	0.56	2.23	-0.85	0.04	-8.35	-3.4	-6.83	-7.06	-4.7	-5.92	-3.34	-3.49	-5.38	
	120	0.56	2.21	-0.71	0.59	-7.55	-2.54	-6.27	-7	-5	-6.42	-3.75	-3.62	-5.38	
	135	0.56	2.06	-0.57	0.35	-6.75	-2.89	-5.71	-6.87	-5.31	-6.11	-4.15	-3.7	-5.38	
	150	0.56	1.91	-0.43	0.11	-5.95	-3.23	-5.15	-6.74	-5.61	-5.79	-4.56	-3.77	-5.38	
	165	0.56	1.76	-0.28	-0.13	-5.16	-3.57	-4.58	-6.6	-5.91	-5.48	-4.96	-3.85	-5.38	
	180	0.56	1.61	-0.14	-0.37	-4.36	-3.92	-4.02	-6.47	-6.21	-5.16	-5.36	-3.93	-5.38	
	195	0.56	1.46	0	-0.61	-3.56	-4.26	-3.46	-6.34	-6.51	-4.85	-5.77	-4.01	-5.38	
	210	0.56	1.31	0.14	-0.85	-2.76	-4.6	-2.89	-6.2	-6.81	-4.54	-6.17	-4.09	-5.38	
	225	0.56	1.15	0.28	-1.09	-1.97	-4.95	-2.33	-6.07	-7.11	-4.22	-6.57	-4.17	-5.38	
	240	0.56	1	0.38	-1.33	-1.86	-5.29	-2.98	-5.94	-6.82	-3.91	-6.28	-4.25	-5.38	
	255	0.56	0.85	0.47	-1.57	-2.54	-5.63	-3.62	-5.8	-6.5	-3.59	-5.6	-4.32	-5.38	
	270	0.56	0.7	0.55	-1.81	-3.22	-5.98	-4.27	-5.67	-6.18	-3.28	-4.91	-4.4	-5.38	
	285	0.56	0.07	0.64	-2.05	-3.9	-6.32	-4.91	-5.54	-5.86	-2.96	-4.22	-4.48	-5.38	
	300	0.56	0.34	0.72	-2.03	-4.58	-7.07	-5.56	-6.17	-5.54	-2.8	-3.54	-4.37	-5.38	
	315	0.56	0.61	0.81	-1.78	-5.26	-8.05	-6.21	-6.85	-5.21	-2.78	-2.85	-4.26	-5.38	
	330	0.56	0.88	0.9	-1.53	-5.94	-9.03	-6.85	-7.53	-4.89	-2.76	-2.16	-4.14	-5.38	
	345	0.56	1.15	0.98	-1.28	-6.62	-10.01	-7.5	-8.22	-4.57	-2.73	-1.47	-4.03	-5.38	

Raw Data (LTE Aux Ant@B2)

1990	Theta Angl	0	15	30	45	60	75	90	105	120	135	150	165	180	
	Phi Angle	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	(dB)
	0	-0.98	0.87	-2.48	-5.92	-10.1	-8.74	-10.02	-7.87	-4.68	-4.03	-2.6	-3.06	-4.08	
	15	-0.98	1.08	-2.9	-5.45	-10.03	-7.92	-9.74	-7.51	-4.72	-4.68	-2.96	-3.04	-4.08	
	30	-0.98	1.93	-3.32	-4.97	-9.95	-7.1	-9.46	-7.16	-4.75	-5.33	-3.33	-3.01	-4.08	
	45	-0.98	2.15	-3.73	-4.5	-9.88	-6.28	-9.18	-6.81	-4.78	-5.98	-3.69	-2.99	-4.08	
	60	-0.98	2.07	-3.91	-4.02	-9.8	-5.45	-8.79	-6.46	-4.85	-6.63	-4.04	-2.97	-4.08	
	75	-0.98	1.93	-3.64	-3.55	-9.02	-4.63	-8.3	-6.11	-4.96	-7.27	-4.3	-2.95	-4.08	
	90	-0.98	1.05	-3.36	-3.08	-8.21	-3.81	-7.81	-5.75	-5.07	-7.92	-4.57	-2.93	-4.08	
	105	-0.98	2.07	-3.08	-2.6	-7.4	-2.99	-7.32	-5.4	-5.18	-8.57	-4.83	-2.91	-4.08	
	120	-0.98	1.72	-2.81	-2.14	-6.59	-2.34	-6.83	-5.35	-5.29	-9.2	-5.09	-3	-4.08	
	135	-0.98	1.37	-2.53	-2.35	-5.78	-2.83	-6.34	-5.71	-5.41	-8.8	-5.36	-3.22	-4.08	
	150	-0.98	1.02	-2.26	-2.56	-4.97	-3.32	-5.85	-6.06	-5.52	-8.41	-5.62	-3.44	-4.08	
	165	-0.98	0.67	-1.98	-2.76	-4.16	-3.8	-5.35	-6.41	-5.63	-8.02	-5.89	-3.67	-4.08	
	180	-0.98	0.32	-1.7	-2.97	-3.35	-4.29	-4.86	-6.76	-5.74	-7.63	-6.15	-3.89	-4.08	
	195	-0.98	-0.03	-1.43	-3.18	-2.54	-4.77	-4.37	-7.11	-5.85	-7.23	-6.41	-4.12	-4.08	
	210	-0.98	-0.37	-1.15	-3.39	-1.74	-5.26	-3.88	-7.46	-5.96	-6.84	-6.68	-4.34	-4.08	
	225	-0.98	-0.72	-0.87	-3.6	-0.93	-5.74	-3.39	-7.81	-6.07	-6.45	-6.94	-4.56	-4.08	
	240	-0.98	-1.07	-0.86	-3.8	-0.96	-6.23	-4.28	-8.16	-6.25	-6.05	-6.69	-4.79	-4.08	
	255	-0.98	-1.42	-0.91	-4.01	-1.94	-6.71	-5.18	-8.51	-6.44	-5.66	-6.15	-5.01	-4.08	
	270	-0.98	-1.75	-0.95	-4.22	-2.92	-7.2	-6.07	-8.87	-6.62	-5.27	-5.61	-5.23	-4.08	
	285	-0.98	-1.13	-0.99	-4.43	-3.9	-7.68	-6.96	-9.22	-6.81	-4.88	-5.07	-5.46	-4.08	
	300	-0.98	-0.51	-1.03	-4.35	-4.89	-8.59	-7.86	-9.55	-6.99	-4.71	-4.53	-5.31	-4.08	
	315	-0.98	0.11	-1.07	-4.01	-5.87	-9.73	-8.75	-9.88	-7.18	-4.76	-3.99	-5.14	-4.08	
	330	-0.98	0.73	-1.11	-3.67	-6.85	-10.87	-9.64	-10.21	-7.36	-4.8	-3.45	-4.97	-4.08	
	345	-0.98	-0.46	-1.15	-3.33	-7.83	-12.01	-10.53	-10.53	-7.55	-4.85	-2.9	-4.8	-4.08	

Raw Data (WiFi Ant@2450MHz)

2450	Theta Angl	0	15	30	45	60	75	90	105	120	135	150	165	180	
	Phi Angle	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	(dB)
	0	-1.67	-3.3	-4.36	-4.19	-2.52	-0.18	-0.13	0.24	-3.71	-6.87	-6.98	-1.82	-5.62	
	15	-1.67	-3.44	-4.89	-4.12	-2.66	-2.29	0.06	-0.84	-3.04	-5.57	-7.01	-2.59	-5.62	
	30	-1.67	-3.58	-5.29	-4.04	-2.76	-4.41	0.05	-1.92	-2.98	-4.28	-6.14	-3.37	-5.62	
	45	-1.67	-3.65	-5.5	-3.79	-2.85	-6.46	0.03	-3	-2.92	-3.58	-4.96	-4.14	-5.62	
	60	-1.67	-3.61	-5.7	-3.36	-2.93	-5.89	0.01	-3.11	-2.85	-3.53	-3.77	-4.05	-5.62	
	75	-1.67	-3.58	-5.9	-2.92	-3.01	-5.31	-0.01	-3.21	-2.79	-3.48	-2.59	-3.96	-5.62	
	90	-1.67	-3.54	-6.1	-2.49	-3.09	-4.74	0	-3.31	-2.41	-3.42	-1.4	-3.87	-5.62	
	105	-1.67	-3.51	-6.21	-2.06	-3.25	-4.17	0.1	-3.41	-2.02	-3.37	-0.78	-3.78	-5.62	
	120	-1.67	-3.47	-5.73	-1.62	-3.44	-3.6	0.21	-3.52	-1.64	-3.32	-0.29	-3.69	-5.62	
	135	-1.67	-3.44	-5.26	-1.19	-3.63	-3.02	0.31	-3.62	-1.26	-3.26	0.2	-3.6	-5.62	
	150	-1.67	-3.55	-4.78	-1.42	-3.82	-2.45	0.42	-3.58	-0.87	-3.05	0.69	-3.51	-5.62	
	165	-1.67	-3.72	-4.3	-1.74	-4.01	-1.9	0.52	-3.25	-0.49	-2.82	1.18	-3.27	-5.62	
	180	-1.67	-3.89	-3.83	-2.07	-4.19	-1.35	0.63	-2.93	-0.11	-2.59	1.68	-3.02	-5.62	
	195	-1.67	-4.06	-3.35	-2.4	-4.38	-0.81	0.73	-2.6	0.19	-2.37	2.17	-2.77	-5.62	
	210	-1.67	-4.23	-2.88	-2.73	-3.83	-0.26	0.85	-2.28	-0.4	-2.14	1.76	-2.52	-5.62	
	225	-1.67	-4.41	-2.78	-3.05	-2.46	0.29	1.11	-1.95	-0.99	-1.91	0.44	-2.27	-5.62	
	240	-1.67	-4.58	-2.76	-3.38	-1.1	0.83	1.37	-1.63	-1.58	-1.68	-0.88	-2.03	-5.62	
	255	-1.67	-4.63	-2.73	-3.71	0.27	1.38	1.64	-1.31	-2.16	-1.46	-2.2	-1.78	-5.62	
	270	-1.67	-4.55	-2.7	-3.12	1.64	1.93	1.9	-2.37	-2.75	-2.04	-3.52	-1.53	-5.62	
	285	-1.67	-4.48	-2.68	-2.25	3.01	1.85	2.16	-3.42	-3.34	-2.83	-4.84	-1.37	-5.62	
	300	-1.67	-4.41	-2.65	-1.38	3.51	1.75	2.43	-4.48	-3.92	-3.63	-6.16	-1.21	-5.62	
	315	-1.67	-4.33	-2.93	-0.51	3.34	1.66	1.65	-5.54	-5.01	-4.42	-6.74	-1.06	-5.62	
	330	-1.67	-3.78	-3.4	0.36	2.87	1.57	-0.15	-6.32	-6.1	-5.21	-7.25	-0.9	-5.62	
	345	-1.67	-2.56	-3.88	-0.73	2	1.22	-1.94	-5.81	-7.19	-5.44	-7.76	-0.66	-5.62	

Raw Data (WiFi Ant@5800MHz)

5800	Theta Angl	0	15	30	45	60	75	90	105	120	135	150	165	180	
	Phi Angle	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	(dB)
	0	1.74	2.16	-2.28	-0.79	1.04	-5.85	-2.46	-7.1	-10.52	-8.41	-4.48	-9.61	-9.34	
	15	1.74	1.94	-1.9	-0.4	0.61	-5.39	-2.74	-8.41	-9.92	-7.85	-6.95	-9.33	-9.34	
	30	1.74	1.73	-1.96	-0.01	-0.57	-4.94	-4.12	-9.72	-8.98	-7.28	-8.57	-9.05	-9.34	
	45	1.74	1.63	-2.66	0.18	-2.08	-4.49	-5.5	-11.03	-8.03	-6.83	-9.89	-8.77	-9.34	
	60	1.74	1.71	-3.35	0.18	-3.6	-4.38	-6.88	-9.45	-7.09	-6.5	-11.2	-8.37	-9.34	
	75	1.74	1.78	-4.05	0.18	-5.11	-4.28	-8.26	-7.87	-6.15	-6.16	-12.52	-7.97	-9.34	
	90	1.74	1.86	-4.74	0.18	-6.62	-4.17	-9.14	-6.28	-6.14	-5.83	-13.83	-7.57	-9.34	
	105	1.74	1.94	-5.16	0.18	-6.33	-4.06	-8.02	-4.69	-6.13	-5.49	-14.13	-7.17	-9.34	
	120	1.74	2.02	-4.01	0.18	-5.48	-3.96	-6.9	-3.11	-6.11	-5.16	-14.19	-6.77	-9.34	
	135	1.74	2.09	-2.86	0.18	-4.62	-3.85	-5.78	-1.52	-6.1	-4.82	-14.25	-6.38	-9.34	
	150	1.74	2.02	-1.7	0.22	-3.77	-3.74	-4.66	-0.87	-6.08	-5.03	-14.31	-5.98	-9.34	
	165	1.74	1.89	-0.55	0.26	-2.92	-3.45	-3.54	-2.15	-6.07	-5.28	-14.37	-6.46	-9.34	
	180	1.74	1.75	0.61	0.3	-2.06	-3.16	-2.42	-3.43	-6.06	-5.53	-14.43	-7.06	-9.34	
	195	1.74	1.62	2.76	0.35	-1.21	-2.86	-1.3	-4.71	-6.03	-5.79	-14.49	-7.65	-9.34	
	210	1.74	1.49	4.09	0.39	-0.75	-2.56	-0.26	-5.99	-5.91	-6.04	-13.76	-8.24	-9.34	
	225	1.74	1.35	3.2	0.43	-0.72	-2.26	-0.27	-7.27	-5.78	-6.29	-12.23	-8.83	-9.34	
	240	1.74	1.22	1.13	0.47	-0.7	-1.97	-0.28	-8.56	-5.66	-6.54	-10.7	-9.43	-9.34	
	255	1.74	1.13	0.07	0.51	-0.67	-1.67	-0.29	-9.83	-5.53	-6.8	-9.17	-10.02	-9.34	
	270	1.74	1.08	-0.99	0.12	-0.65	-1.37	-0.3	-8.54	-5.41	-6.28	-7.64	-10.61	-9.34	
	285	1.74	1.04	-2.06	-0.42	-0.62	-1.49	-0.32	-7.25	-5.28	-5.55	-6.11	-10.27	-9.34	
	300	1.74	1	-3.12	-0.96	-0.6	-1.6	-0.33	-5.96	-5.16	-4.83	-4.57	-9.85	-9.34	
	315	1.74	0.95	-3.28	-1.49	-0.51	-1.72	-1.17	-4.67	-6.23	-4.11	-7.14	-9.44	-9.34	
	330	1.74	1.07	-2.83	-2.03	-0.42	-1.84	-2.83	-4.23	-7.3	-3.38	-10.1	-9.03	-9.34	
	345	1.74	1.41	-2.39	-0.77	-0.32	-2.56	-4.49	-7.87	-8.37	-2.04	-13.06	-8.84	-9.34	

Raw Data (BLE Ant@2450MHz)

2450	Theta Angl	0	15	30	45	60	75	90	105	120	135	150	165	180	
	Phi Angle	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	(dB)
	0	-1.43	-2.62	-2.5	-3	-5.12	-6.73	-5.03	-9.9	-8.24	-5.67	-7.72	-6.61	-2.56	
	15	-1.43	1.24	-1.84	-1.35	-8.45	-4.41	-5.01	-6.34	-5.52	-6.51	-4.25	-4.27	-2.56	
	30	-1.43	1.85	-2.5	0.3	-7.77	-2.1	-4.97	-5.78	-6.3	-6.34	-4.46	-3.94	-2.56	
	45	-1.43	1.73	-1.38	1.84	-6.01	-0.54	-4.91	-5.75	-7.18	-6.18	-4.67	-3.67	-2.56	
	60	-1.43	0.84	-0.25	0.55	-4.26	-2.24	-5.05	-7.04	-8.07	-6.77	-4.88	-4.19	-2.56	
	75	-1.43	-0.05	0.87	-0.74	-2.5	-3.93	-3.72	-8.33	-8.95	-7.44	-5.09	-4.72	-2.56	
	90	-1.43	-0.94	2	-2.04	-0.74	-5.62	-2.58	-9.62	-9.84	-8.1	-5.21	-5.24	-2.56	
	105	-1.43	-1.84	2.75	-3.33	0.38	-7.32	-2.5	-10.91	-9.35	-8.76	-4.98	-5.77	-2.56	
	120	-1.43	-2.73	1.9	-4.62	-0.17	-9.01	-2.5	-12.2	-8.76	-9.43	-4.75	-6.29	-2.56	
	135	-1.43	-3.05	1.06	-5.91	-0.73	-10.7	-2.54	-13.49	-8.16	-10.09	-4.52	-6.81	-2.56	
	150	-1.43	-2.1	0.21	-7.2	-1.28	-10.2	-3.49	-11.73	-7.56	-10.53	-4.29	-6.78	-2.56	
	165	-1.43	-1.16	-7.64	-6.27	-1.84	-8.75	-5.05	-9.66	-6.97	-9.01	-4.06	-6.19	-2.56	
	180	-1.43	-5.21	-10.48	-5.24	-6.39	-5.29	-4.8	-4.59	-6.37	-3.49	-1.83	0.1	-2.56	
	195	-1.43	0.74	-6.33	-4.91	-4.94	-5.83	-4.65	-5.52	-5.78	-5.97	-3.59	-4.99	-2.56	
	210	-1.43	1.68	-3.18	-3.19	-3.5	-4.38	-4.55	-3.45	-5.04	-4.44	-3.35	-4.39	-2.56	
	225	-1.43	2.63	-2.53	-2.16	-3.15	-2.92	-4.02	-1.37	-4.19	-2.92	-2.95	-3.79	-2.56	
	240	-1.43	3.1	-1.6	-1.13	-2.79	-1.46	-1.74	-0.16	-3.34	-1.4	-2.56	-3.19	-2.56	
	255	-1.43	2.09	-0.68	-0.11	-2.43	-1.15	0.09	0.12	-2.49	0.12	-2.17	-2.89	-2.56	
	270	-1.43	-2.3	-5.24	-4.9	-5.07	0.09	1.12	2.43	3.1	2.52	2.24	-3.62	-2.56	
	285	-1.43	-0.35	1.16	0.26	-1.71	-3.71	1.92	-4.43	-0.79	-1.71	-1.38	-4.31	-2.56	
	300	-1.43	-1.57	2.08	-0.38	-1.35	-4.99	2.09	-6.71	0.06	-3.05	-0.98	-5.02	-2.56	
	315	-1.43	-2.79	2.07	-1.03	-2.06	-6.27	1.02	-8.98	-2.28	-4.4	-0.87	-5.73	-2.56	
	330	-1.43	-1.53	1.33	-1.67	-3.24	-7.85	-0.13	-9.96	-4.83	-5.77	-1.04	-5.82	-2.56	
	345	-1.43	0.35	0.59	-2.25	-4.41	-9.85	-2.54	-9.54	-7.37	-9.01	-1.2	-4.49	-2.56	

Raw Data (GPS Ant@1575MHz)

1575	Theta Angle	0	15	30	45	60	75	90	105	120	135	150	165	180
	Phi Angle	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response	Response (dB)
	0	-5.84	-1.84	1.71	1.61	0.3	-0.53	-2.78	-5.09	-4.36	-5.89	-5	-7.07	-0.29
	15	-5.84	-7.48	-3.31	0.45	1.34	-0.49	-4.15	-4.96	-8.01	-4.22	-3.95	-1.09	-0.29
	30	-5.84	-7.2	-3.86	0.69	0.18	-0.71	-6.13	-3.85	-6.14	-3.98	0.53	-0.09	-0.29
	45	-5.84	-6.91	-3.96	0.92	-1.81	-0.94	-4.76	-2.73	-4.47	-3.74	0.04	0.83	-0.29
	60	-5.84	-7.18	-4.06	0.5	-3.89	-1.57	-3.4	-3.1	-2.79	-3.24	-0.45	-1.08	-0.29
	75	-5.84	-7.59	-4.16	-5.31	-5.98	-2.65	-2.03	-6.07	-2.6	-2.7	-1.29	-2.98	-0.29
	90	-5.84	-4.71	-3.38	-6.12	-5.53	-6.73	-4.49	-12.04	-4.16	-12.16	-2.18	-6.89	-0.29
	105	-5.84	-8.15	-4.64	-3.92	-5.84	-4.81	-3.39	-7.99	-3.71	-7.65	-3.08	-2.42	-0.29
	120	-5.84	-7	-4.9	-2.16	-5.15	-4.29	-4.3	-6.68	-4.26	-3.25	-3.34	-2.6	-0.29
	135	-5.84	-5.85	-4.96	-2.4	-4.47	-3.51	-4.99	-7.37	-4.46	-4.86	-2.35	-2.78	-0.29
	150	-5.84	-4.7	-4.13	-5.63	-4.7	-2.73	-4.6	-2.07	-4.53	-6.47	-1.36	-2.95	-0.29
	165	-5.84	-2.28	-4.29	-6.41	-5.04	-4.41	-4.22	-2.89	-4.61	-7.86	-4.36	1.4	-0.29
	180	-5.84	-2.48	-5.45	-7.49	-6.38	-6.13	-5.83	-2.96	-6.68	-2.38	-7.56	2.8	-0.29
	195	-5.84	-2.67	-4.04	-5.57	-5.79	-5.85	-3.59	-6.03	-4.91	-4.89	-4.62	1.24	-0.29
	210	-5.84	-2.83	-3.18	-6.65	-6.34	-7.57	-3.47	-5.11	-5.16	-3.4	-1.22	-0.77	-0.29
	225	-5.84	-4.12	-2.32	-5.98	-6.88	-7.77	-3.35	-4.55	-5.41	-3.12	-1.82	-0.37	-0.29
	240	-5.84	-3.41	-2.46	-5.21	-7.43	-6.84	-3.23	-3.99	-6.41	-3.55	-2.43	0.03	-0.29
	255	-5.84	-2.7	-2.66	-4.43	-6.28	-5.91	-5.81	-3.43	-8.35	-3.97	-3.05	0.43	-0.29
	270	-5.84	-5.68	-1.88	-5.62	-4.71	-5.97	-6.39	-6.05	-7.28	-2.4	-1.97	-1.67	-0.29
	285	-5.84	-3.65	-3.1	-2.66	-2.55	-3.81	-1.97	-2.97	-10.21	-3.92	-4.13	-2.07	-0.29
	300	-5.84	-4.62	-3.29	-1.7	-0.7	-2.64	-1.42	-2.89	-10.79	-3.08	-3.42	-3.48	-0.29
	315	-5.84	-5.59	-3.4	-0.72	0.77	-1.48	-0.67	-2.82	-6.13	-2.24	-2.71	-4.43	-0.29
	330	-5.84	-6.38	-3.51	0.96	2.24	-0.31	0.08	-3.28	-1.48	-1.79	-1.86	-3.61	-0.29
	345	-5.84	-7.12	-3.27	2.21	1.84	1.19	-1.3	-3.65	-1.37	-2.2	-0.36	-2.36	-0.29

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