

LTE/GPS/WIFI Antenna Parameter Testing Report

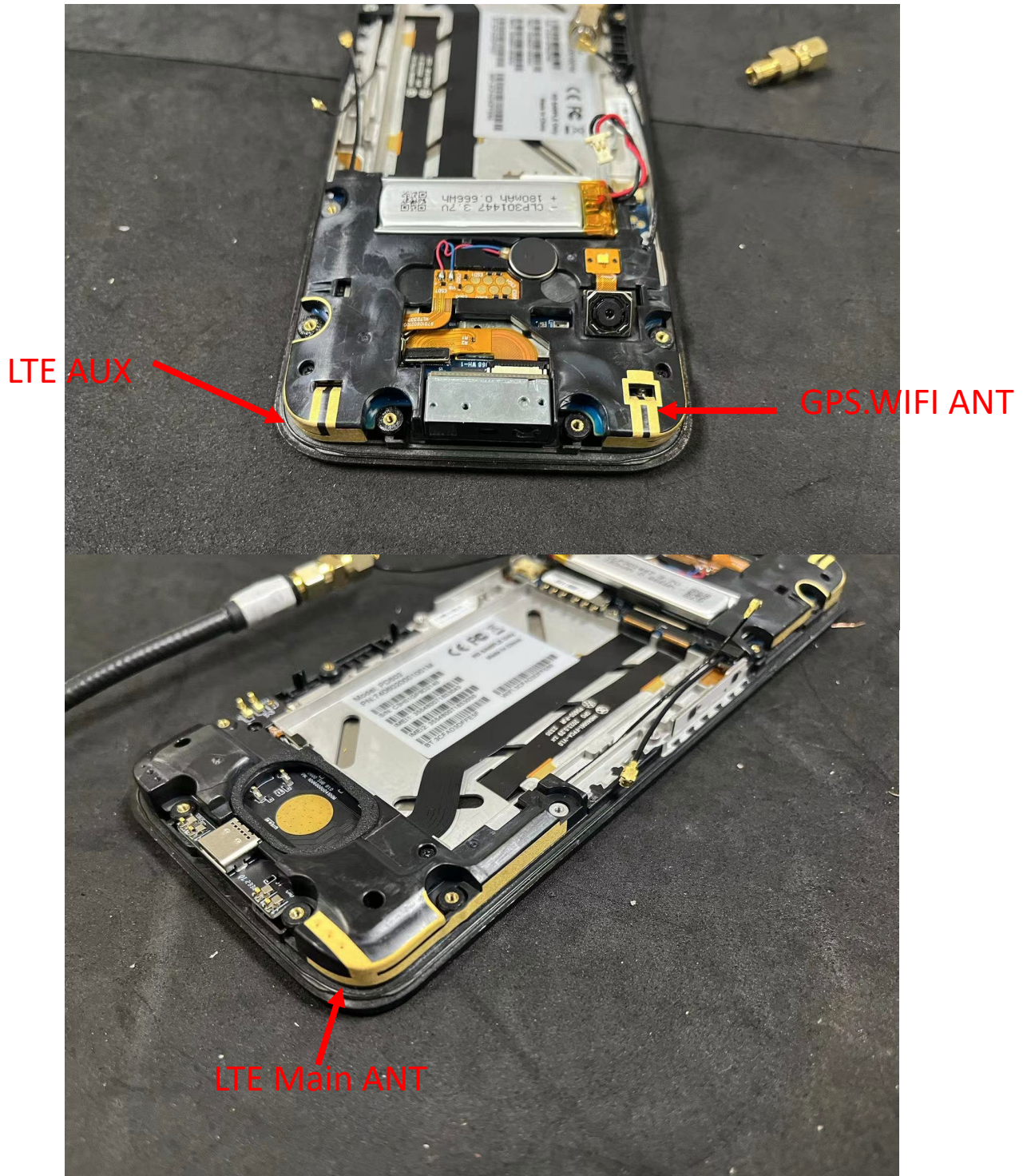


Customer :		Report Date	2023.10.20
Project		Report Version	1.0
Product Description	LTE*2+GPS/WIF Antenna	Prepared by	Chao xing.Wang
Sample Version	B02	Approved by	

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1. Product Photos



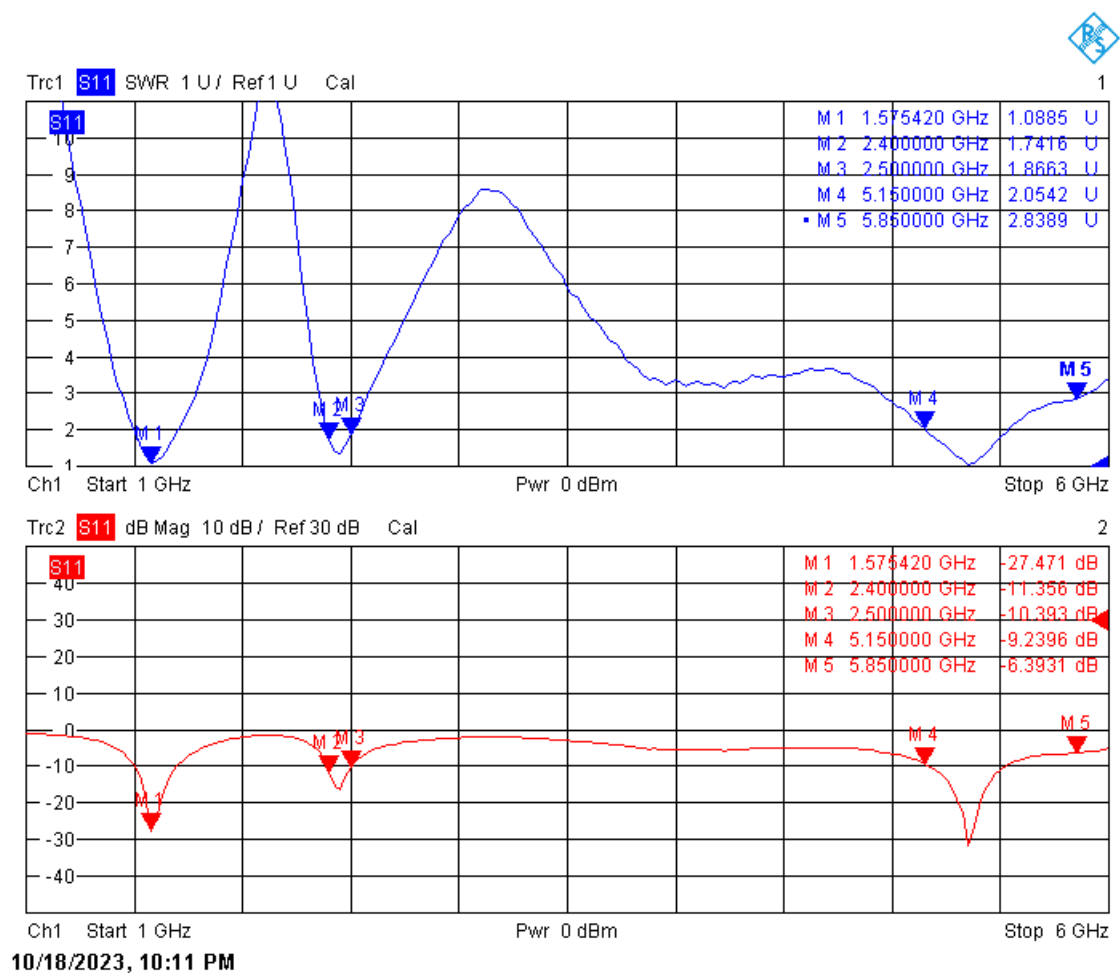
3. S Parameter Test

3.1 Test Cable Setup

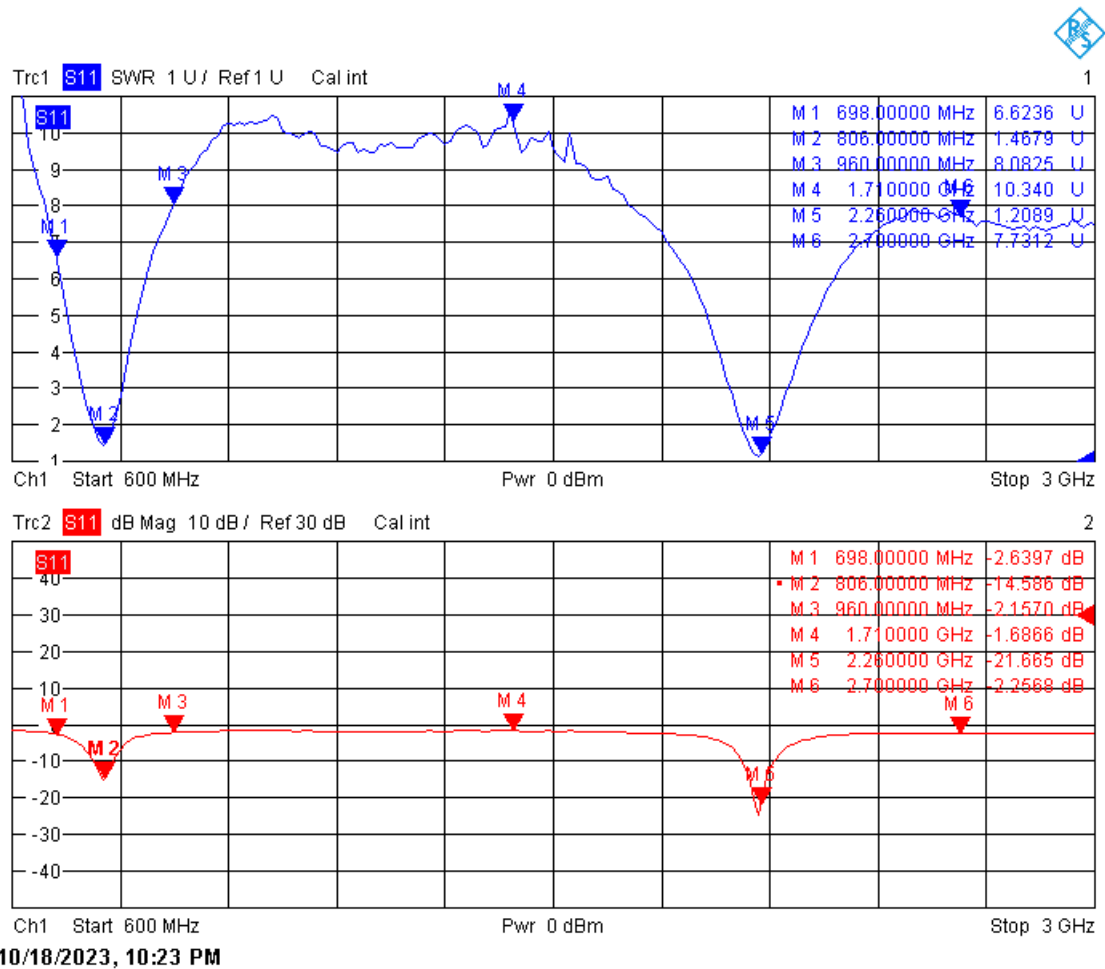


3.2 S.W.R & Return Loss Test Data

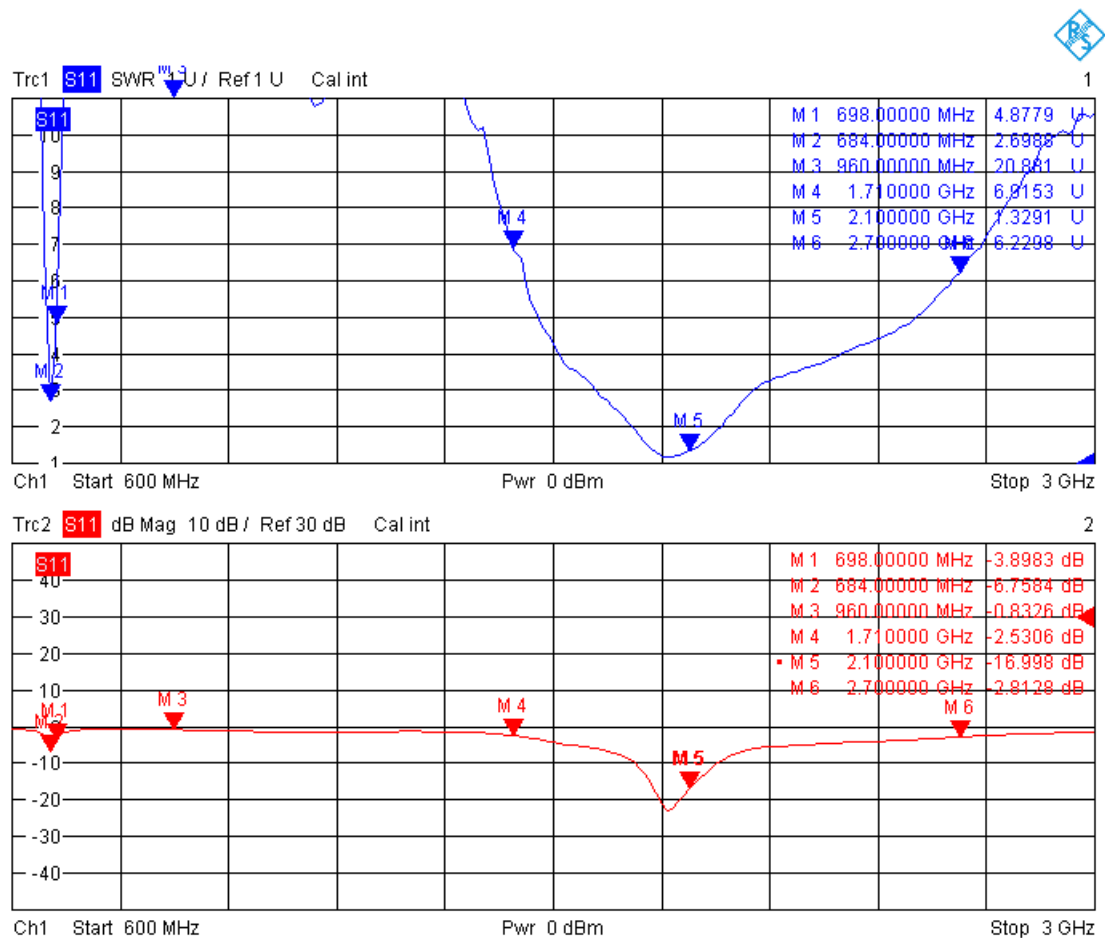
WIFI/GPS ANT



LTE Main ANT



LTE AUX ANT

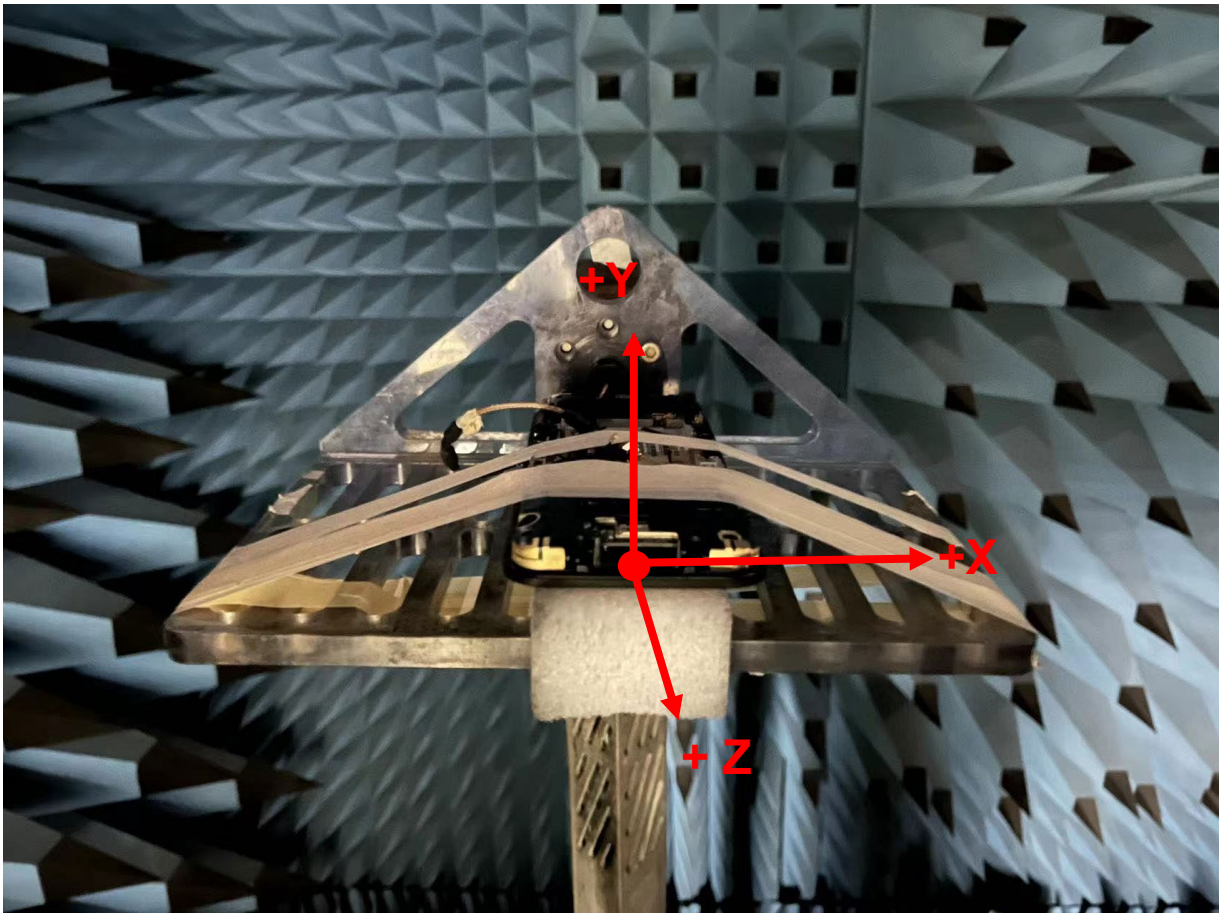


10/18/2023, 10:26 PM

4. Antenna Gain Test

4.1 Chamber Setup and Angle Definition

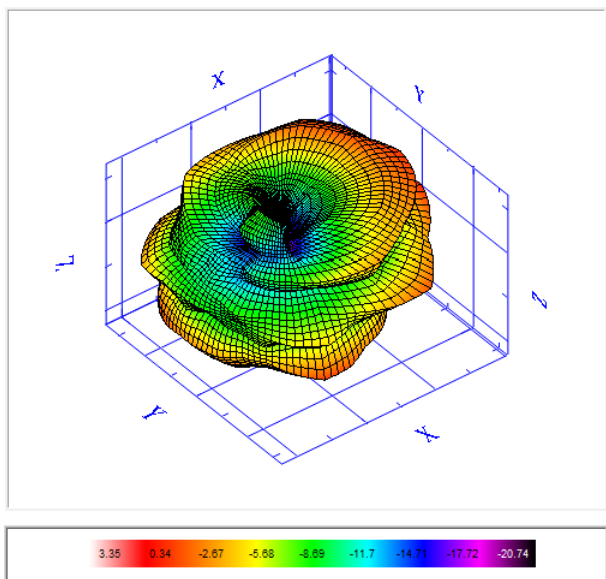
In free space



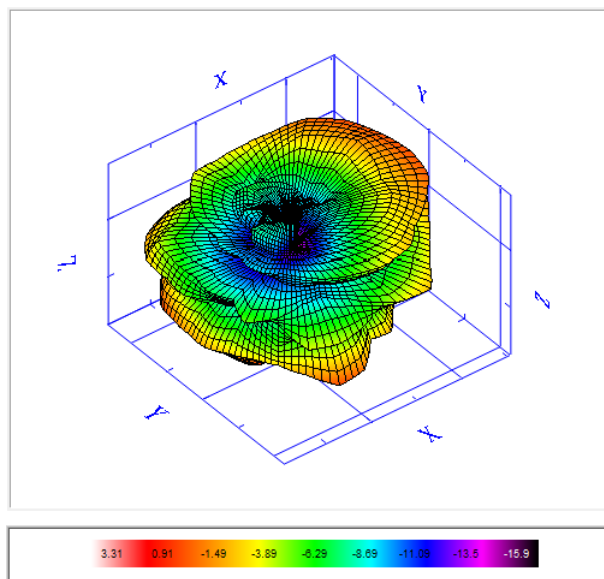
4. Antenna Gain Test

4.2 Antenna Radiation Pattern

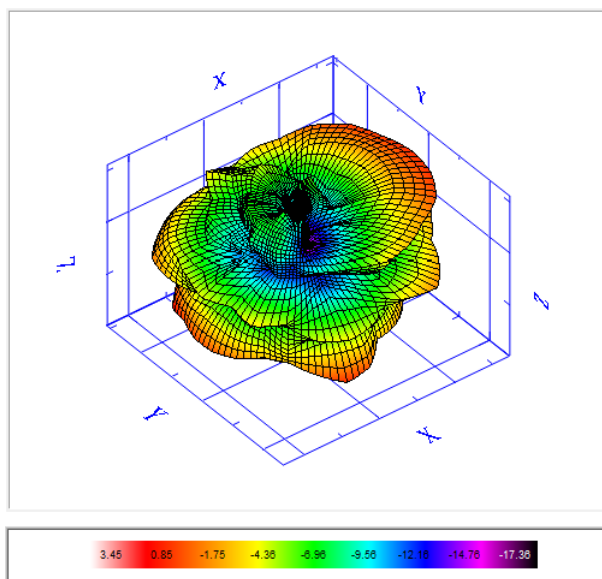
WiFi ANT



2400MHz

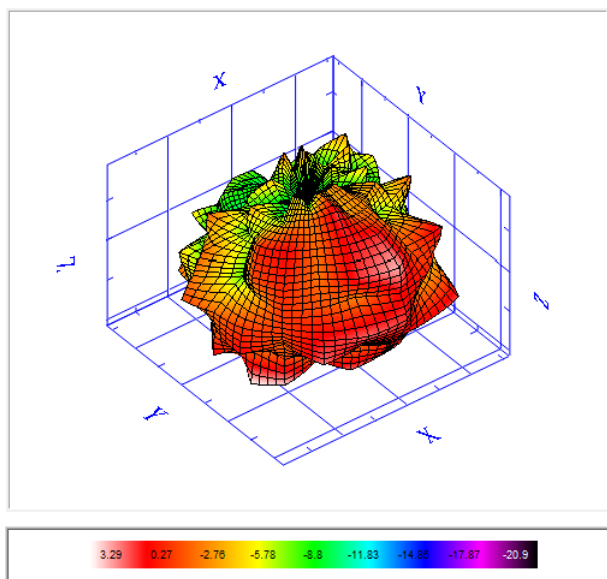


2450MHz

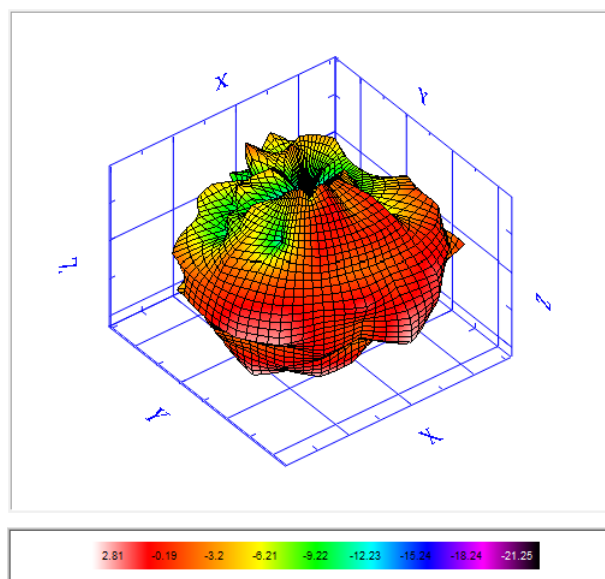


2500MHz

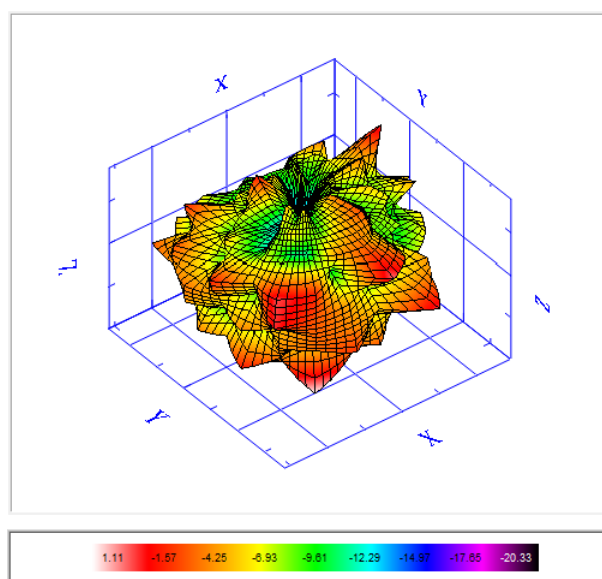
WiFi ANT



5150MHz

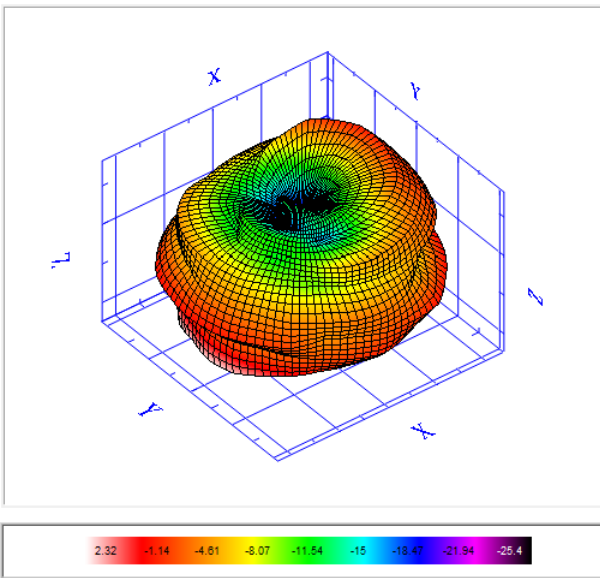


5500MHz

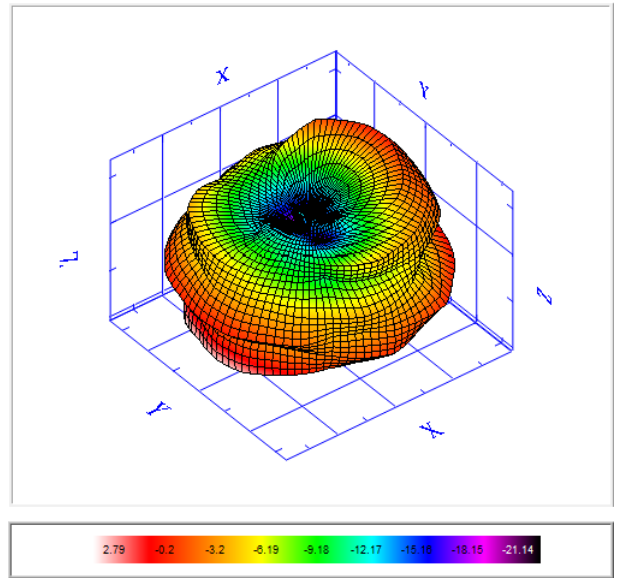


5850MHz

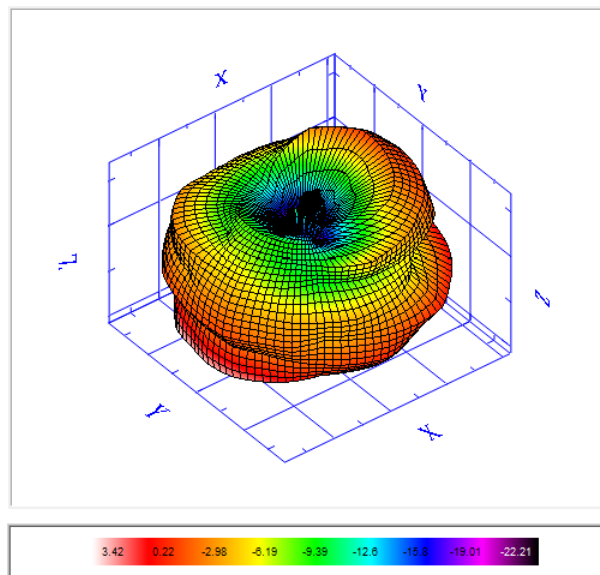
GPS ANT



1561MHz

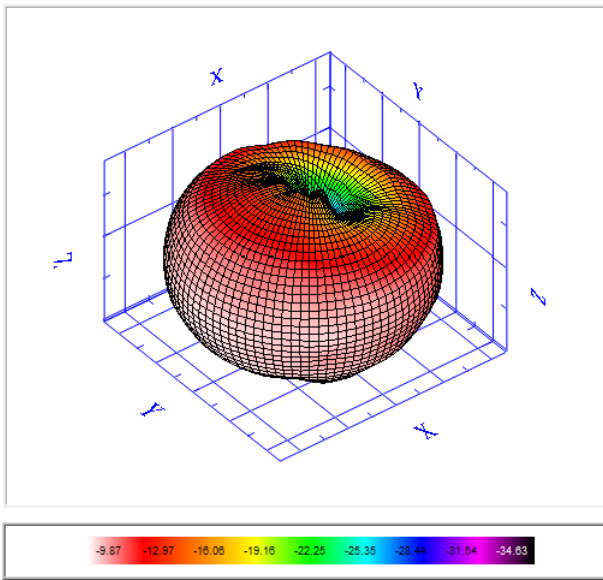


1575MHz

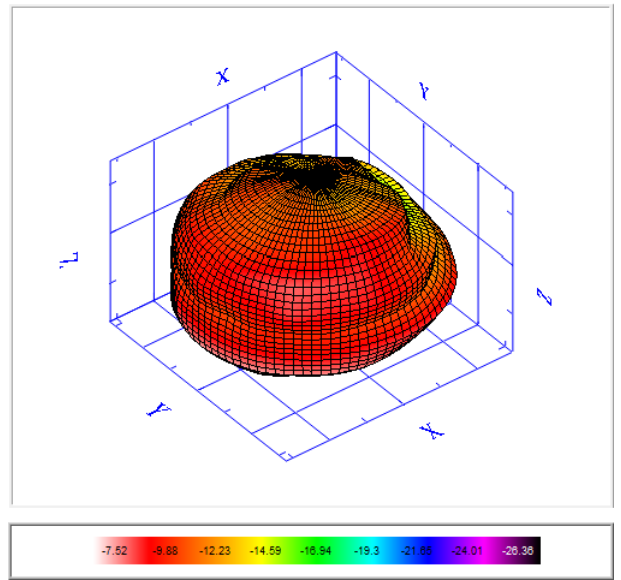


1602MHz

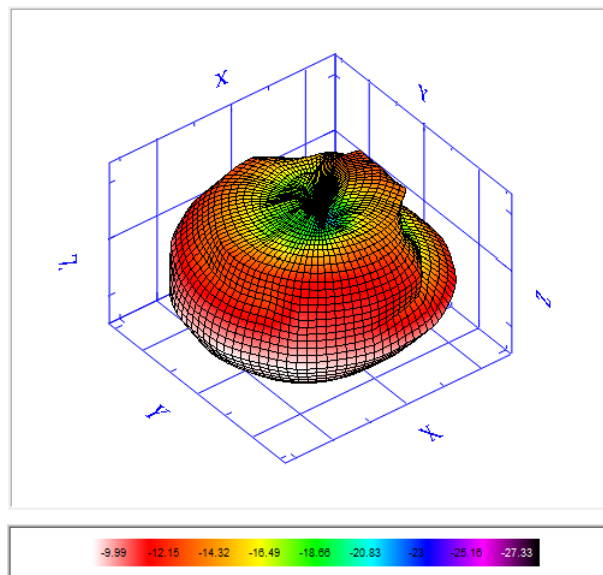
LTE Main ANT



703MHz

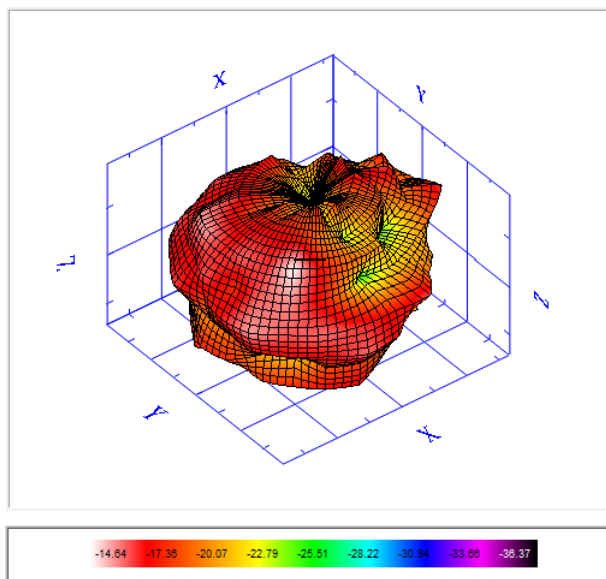


880MHz

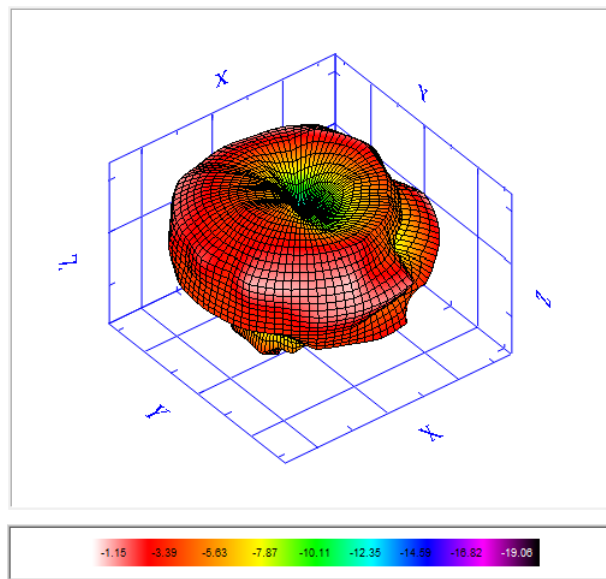


960MHz

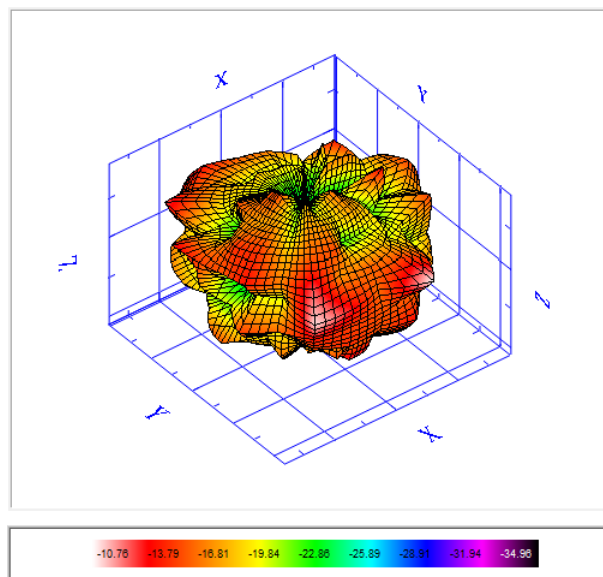
LTE Main ANT



1710MHz

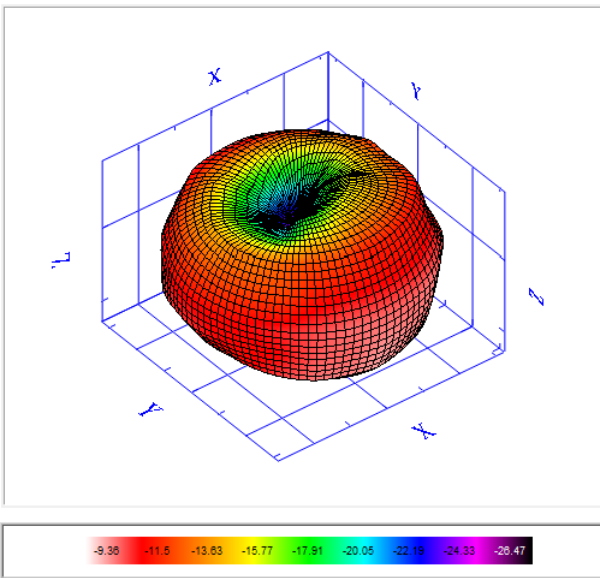


2170MHz

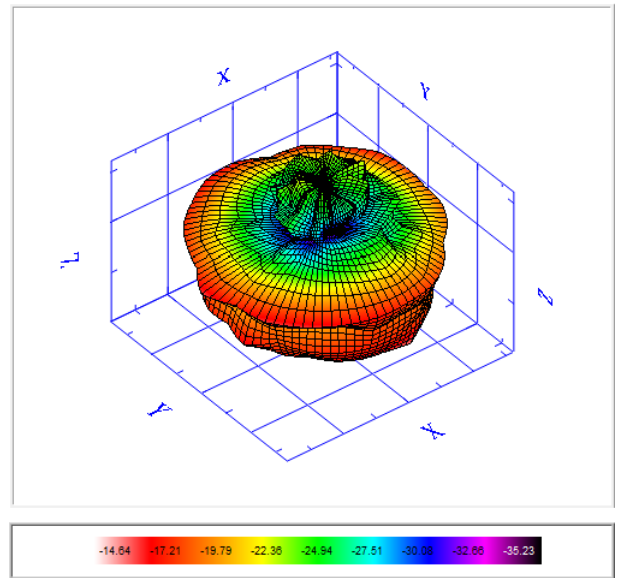


2690MHz

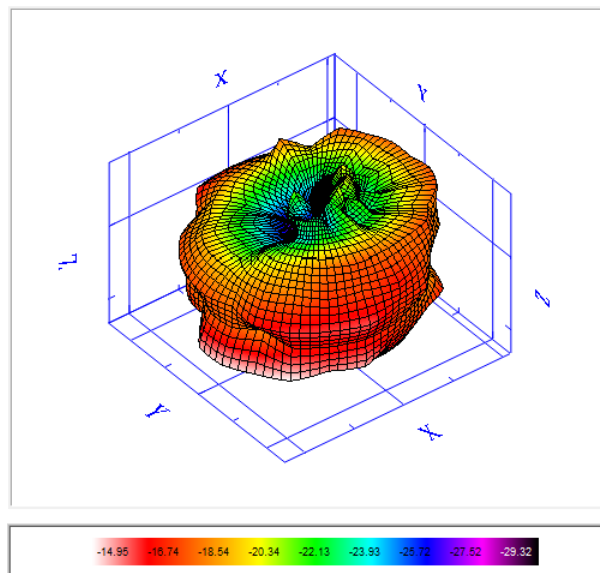
LTE AUX ANT



703MHz

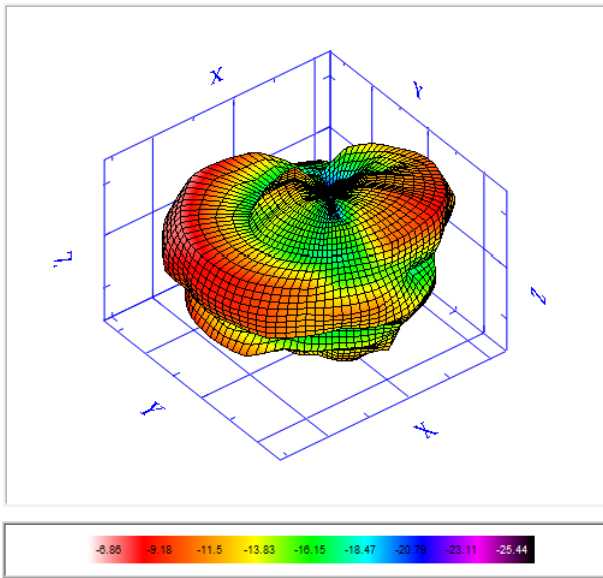


880MHz

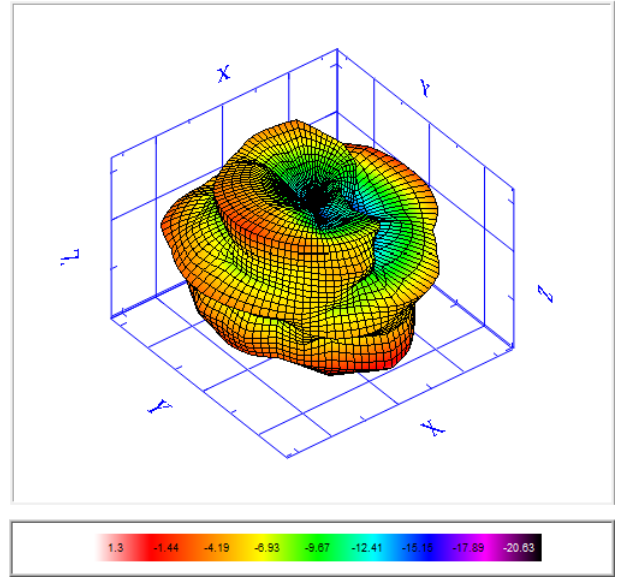


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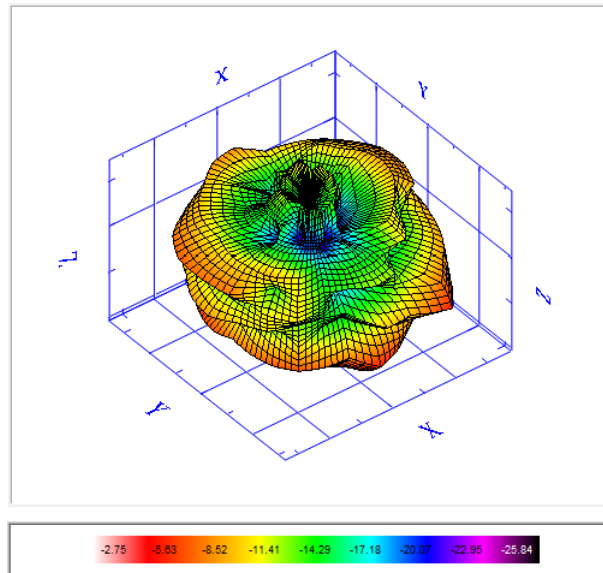
LTE AUX ANT



1710MHz



2170MHz



2690MHz

4. Antenna Gain Test

4.3 Gain and Efficiency Test Data

GPS/WiFi ANT

Frequency	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
E-Total Peak Gain (dBi)	3.35	3.72	3.83	3.62	3.25	3.31	3.38	3.23	2.87	2.77	3.45
Efficiency (%)	37.81	41	40.92	42.62	39.78	40.44	41.02	40.44	38.08	37.19	43.59
Average Gain (dB)	-4.22	-3.87	-3.88	-3.7	-4	-3.93	-3.87	-3.93	-4.19	-4.3	-3.61

Frequency	5150	5250	5350	5470	5600	5700	5725	5785	5800	5850
E-Total Peak Gain (dBi)	3.29	2.89	3.49	2.81	3.8	0.52	1.93	2.38	1.28	1.11
Efficiency (%)	41.86	42.4	46.64	45.97	47.01	24.37	29.41	32.08	27.49	22.09
Average Gain (dB)	-3.78	-3.73	-3.31	-3.37	-3.28	-6.13	-5.31	-4.94	-5.61	-6.56

Frequency	1561.1	1575.42	1602
E-Total Peak Gain (dBi)	2.32	2.79	3.42
Efficiency (%)	39.18	41.05	42.7
Average Gain (dB)	-4.07	-3.87	-3.7

LTE Main ANT

Frequency	698	724	769	799	824	854	880	899	934	960
E-Total Peak Gain (dBi)	-9.87	-7.74	-4.99	-2.22	-2.61	-5.65	-7.52	-8.18	-10.97	-9.99
Efficiency (%)	5.65	8.63	16.98	32.44	25.69	13.57	8.1	6.98	4.11	4.79
Average Gain (dB)	-12.48	-10.64	-7.7	-4.89	-5.9	-8.67	-10.91	-11.56	-13.86	-13.2

Frequency	1710	1880	1920	1990	2000	2100	2170	2200	2300	2400
E-Total Peak Gain (dBi)	-14.64	-11.04	-10.66	-3.33	-2.98	-0.46	-1.15	-1.36	-3.6	-6.57
Efficiency (%)	1.1	1.85	2.74	17.72	18.62	32.91	32.39	28.22	15.96	7.99
Average Gain (dB)	-19.58	-17.33	-15.61	-7.51	-7.3	-4.83	-4.9	-5.49	-7.97	-10.98

Frequency	2500	2600	2690	2700
E-Total Peak Gain (dBi)	-8.97	-10.74	-10.76	-11.9
Efficiency (%)	3.64	2.15	1.81	1.65
Average Gain (dB)	-14.39	-16.67	-17.43	-17.83

LTE AUX ANT

Frequency	698	724	769	799	824	854	880	899	934	960
E-Total Peak Gain (dBi)	-9.36	-12.51	-14.68	-15.23	-14.68	-13.91	-14.64	-15.31	-15.74	-14.95
Efficiency (%)	5.74	2.64	1.05	1.21	1.13	1.59	0.95	0.98	0.97	1.35
Average Gain (dB)	-12.41	-15.79	-19.78	-19.19	-19.46	-17.99	-20.23	-20.07	-20.14	-18.71

Frequency	1710	1880	1920	1990	2000	2100	2170	2200	2300	2400
E-Total Peak Gain (dBi)	-6.86	-0.19	0.61	0.91	0.34	2.48	1.3	-0.1	0.29	0.5
Efficiency (%)	7.17	26.08	31.74	32.24	31.54	40	31.38	24.36	23.78	24.21
Average Gain (dB)	-11.45	-5.84	-4.98	-4.92	-5.01	-3.98	-5.03	-6.13	-6.24	-6.16

Frequency	2500	2600	2690	2700
E-Total Peak Gain (dBi)	-0.79	-3.41	-2.75	-3.39
Efficiency (%)	19.3	12.22	10.82	9.01
Average Gain (dB)	-7.15	-9.13	-9.66	-10.45