

BT & Wi-Fi Antenna Test Report

ACE – Antenna

RD Team

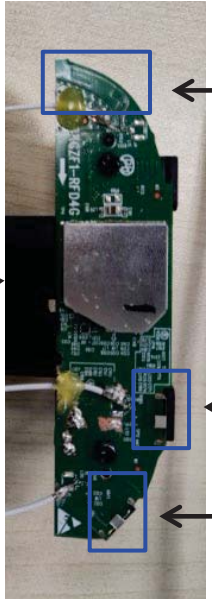
Meijun Fu

2/23/2023

- **Antenna Band Requirement**
- **Smart Speaker Antenna Test Result**
 - OTA Chamber Test Condition & Coordinate System
 - Antenna Return Loss
 - Antenna Gain & Efficiency
 - 2D & 3D Radiation Pattern
- **Smart TV Box Antenna Test Result**
 - OTA Chamber Test Condition & Coordinate System
 - Antenna Return Loss & Gain & Efficiency
 - 2D & 3D Radiation Pattern

Antenna Band Requirement

➤ Smart Speaker Antenna:

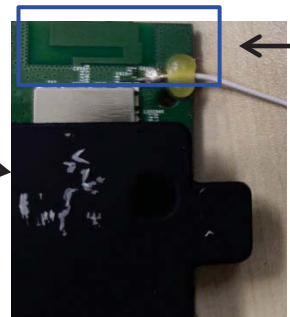
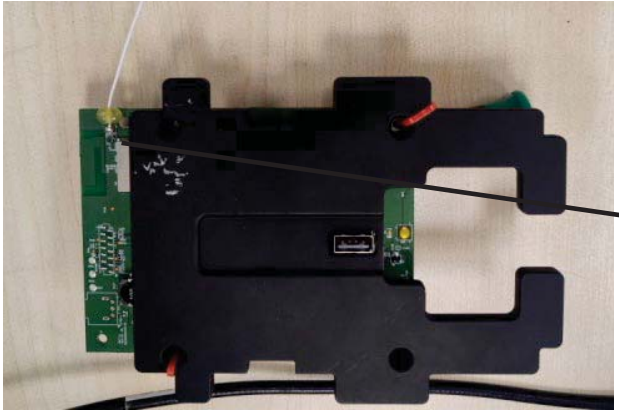


BT Antenna (2.4G)

Wi-Fi_2 Antenna (2.4G & 5G)

Wi-Fi_1 Antenna (2.4G & 5G)

➤ Smart TV Box Antenna:



Wi-Fi Antenna (2.4G & 5G)

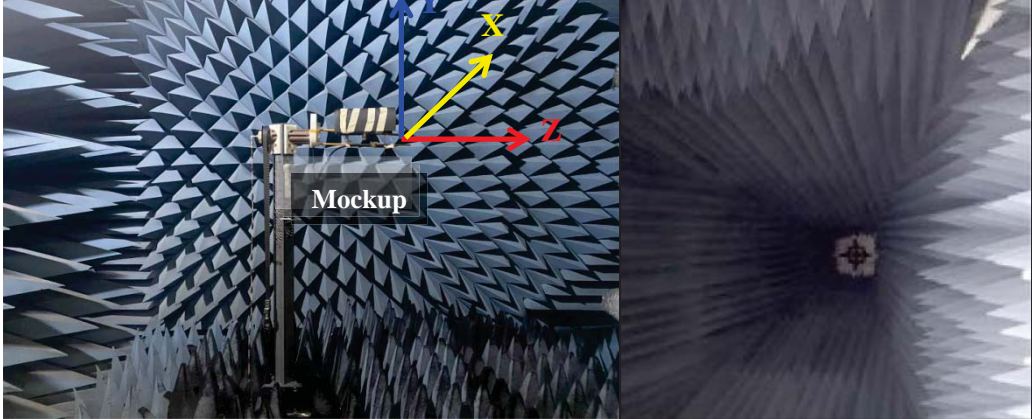
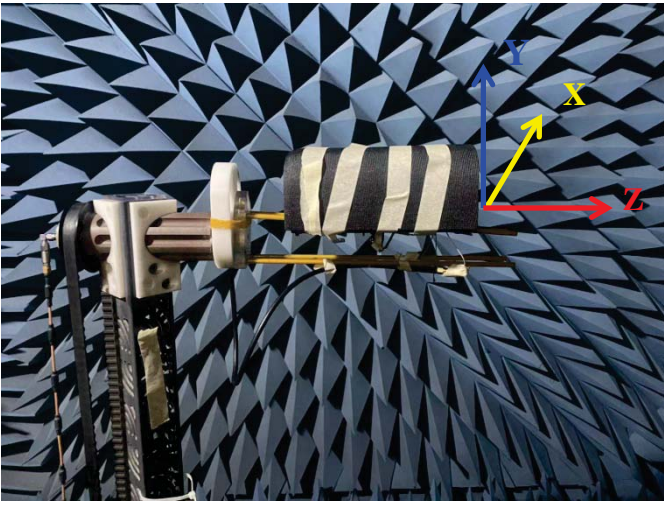
Smart Speaker Antenna Test Result

OTA Test Condition & Chamber Coordinate System

OTA Test System – ETS AMS8600



Antenna Photo

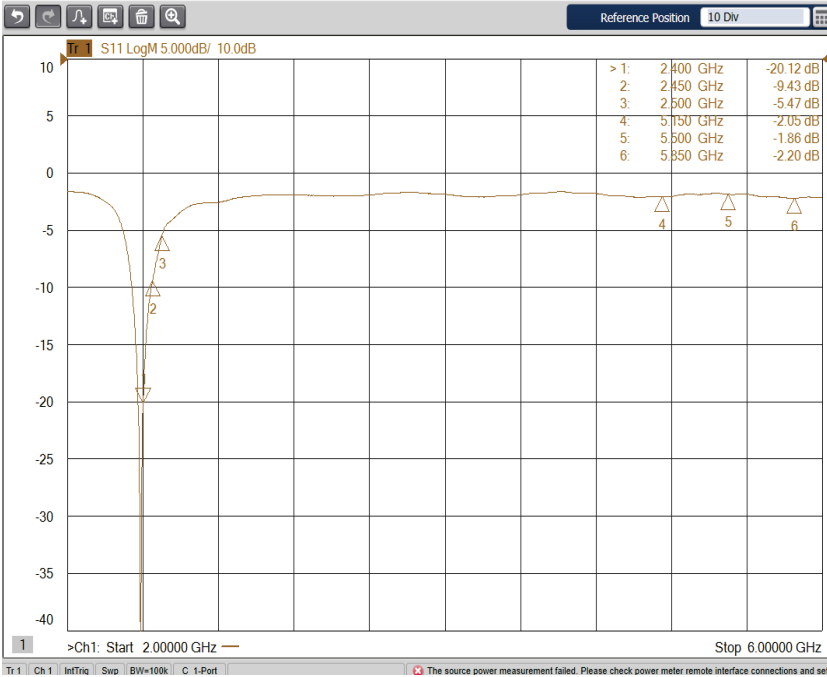


Mockup



Smart Speaker Antenna Test Result

➤ BT Antenna Return Loss & Efficiency & Gain



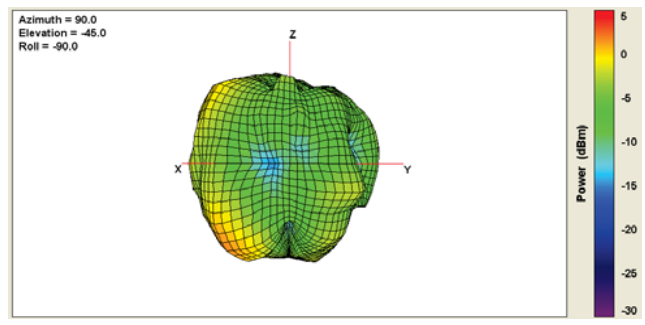
Frequency (MHz)	BT Antenna		
	Efficiency (dB)	Efficiency (%)	Gain(dBi)
2400	-3.55467	44.1096	2.98652
2410	-3.6284	43.367	2.70273
2420	-3.6075	43.5762	2.47704
2430	-3.59222	43.7299	2.63182
2440	-3.64492	43.2024	2.36086
2450	-3.66372	43.0158	2.20632
2460	-3.8421	41.2848	1.705
2470	-3.89202	40.813	1.68971
2480	-4.02215	39.6081	1.62491
2490	-4.10611	38.8498	1.76478
2500	-4.08666	39.0242	1.80091

Frequency (MHz)	2400	2450	2500
Return Loss(dB)	-20.12	-9.43	-5.47

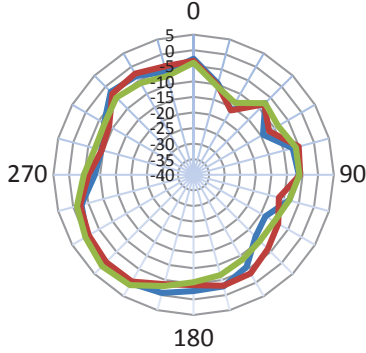
Smart Speaker Antenna Test Result

➤ BT Antenna 2D & 3D Radiation Pattern

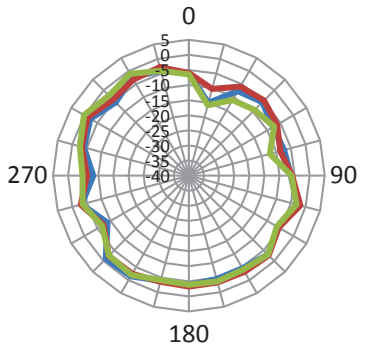
3D 2450MHz



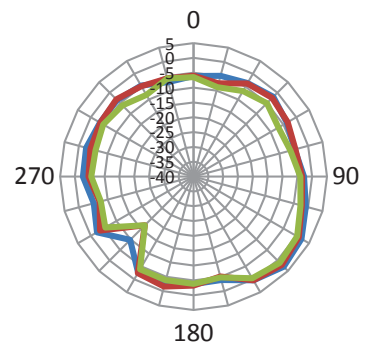
2D XOY



2D YOZ



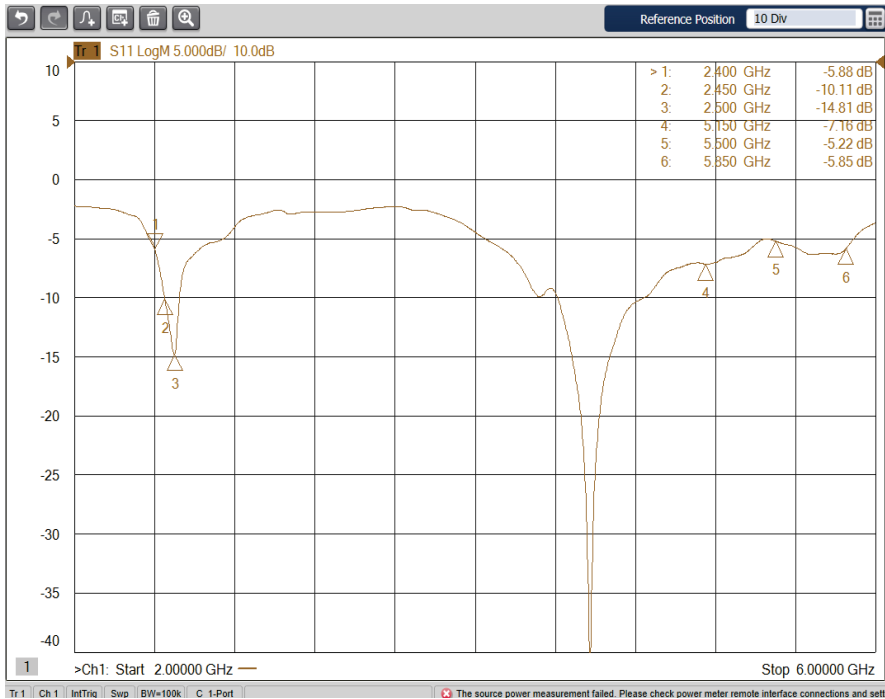
2D XOZ



— 2400MHz — 2450MHz — 2500MHz

Smart Speaker Antenna Test Result

Wi-Fi_1 Antenna Return Loss & Efficiency & Gain



Frequency (MHz)	Wi-Fi_1 Antenna		
	Efficiency (dB)	Efficiency (%)	Gain(dBi)
2400	-5.28672	29.6024	0.005893
2410	-5.2395	29.9261	0.378386
2420	-5.08086	31.0394	0.904936
2430	-4.93334	32.1119	1.18353
2440	-5.00959	31.553	1.03637
2450	-5.06803	31.1313	0.855017
2460	-5.25265	29.8356	0.885517
2470	-5.40825	28.7856	0.994306
2480	-5.63767	27.3044	0.542397
2490	-5.77116	26.4779	0.613635
2500	-5.78789	26.3761	0.190277
5150	-2.48565	56.4202	2.9645
5200	-2.21937	59.9878	2.59512
5250	-1.81235	65.8817	3.16846
5300	-2.43372	57.0989	2.39386
5350	-3.15757	48.3329	1.78547
5400	-3.825	41.4477	1.18747
5450	-4.62081	34.5079	0.248173
5500	-4.70198	33.869	-0.09762
5550	-4.9243	32.1788	0.006303
5600	-4.52409	35.2851	2.08048
5650	-4.61188	34.579	1.68897
5700	-4.31267	37.0453	2.30253
5750	-4.26751	37.4325	1.41337
5800	-5.2173	30.0795	0.165233
5850	-6.30151	23.4342	-0.69254

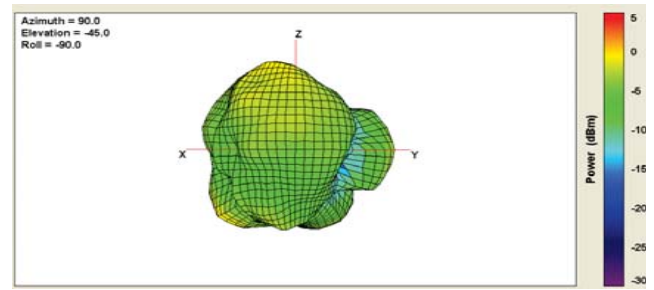
Frequency (MHz)	2400	2450	2500
Return Loss(dB)	-5.88	-10.11	-14.81
Frequency (MHz)	5150	5500	5850
Return Loss(dB)	-7.16	-5.22	-5.85

Smart Speaker Antenna Test Result

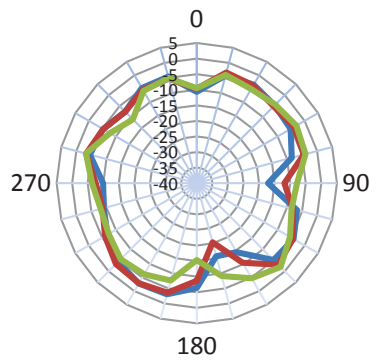
Wi-Fi_1 Antenna 2D & 3D Radiation Pattern

WiFi_1 2.4G Band

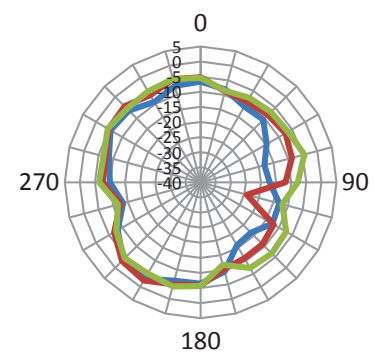
3D 2450MHz



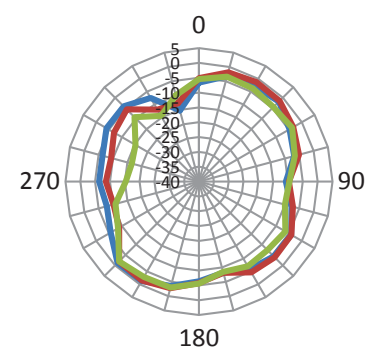
2D XOY



2D YOZ



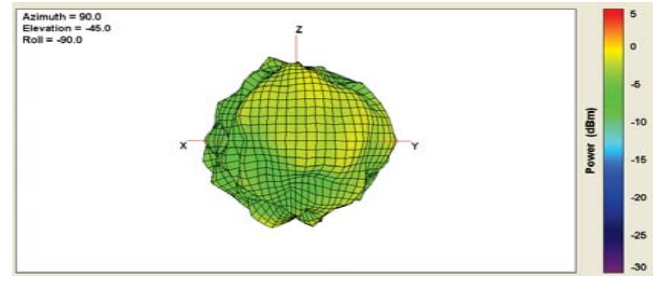
2D XOZ



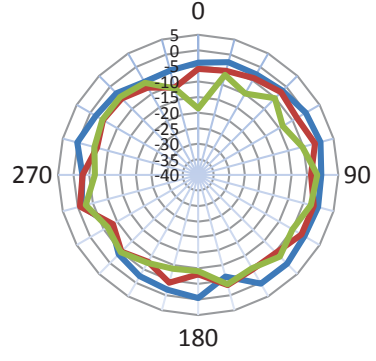
— 2400MHz — 2450MHz — 2500MHz

WiFi_1 5G Band

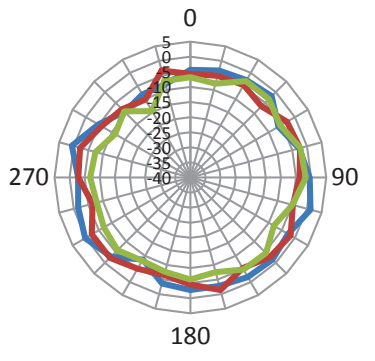
3D 5500MHz



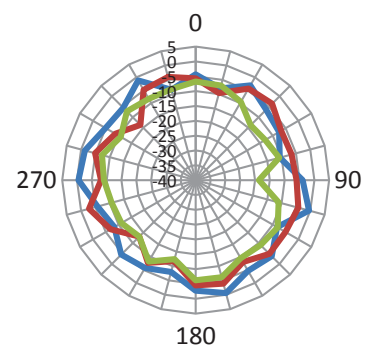
2D XOY



2D YOZ



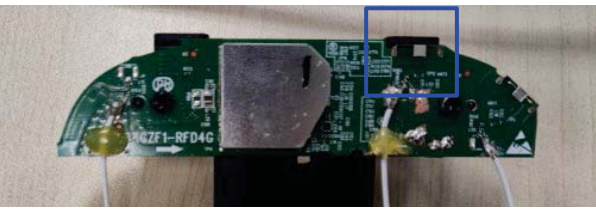
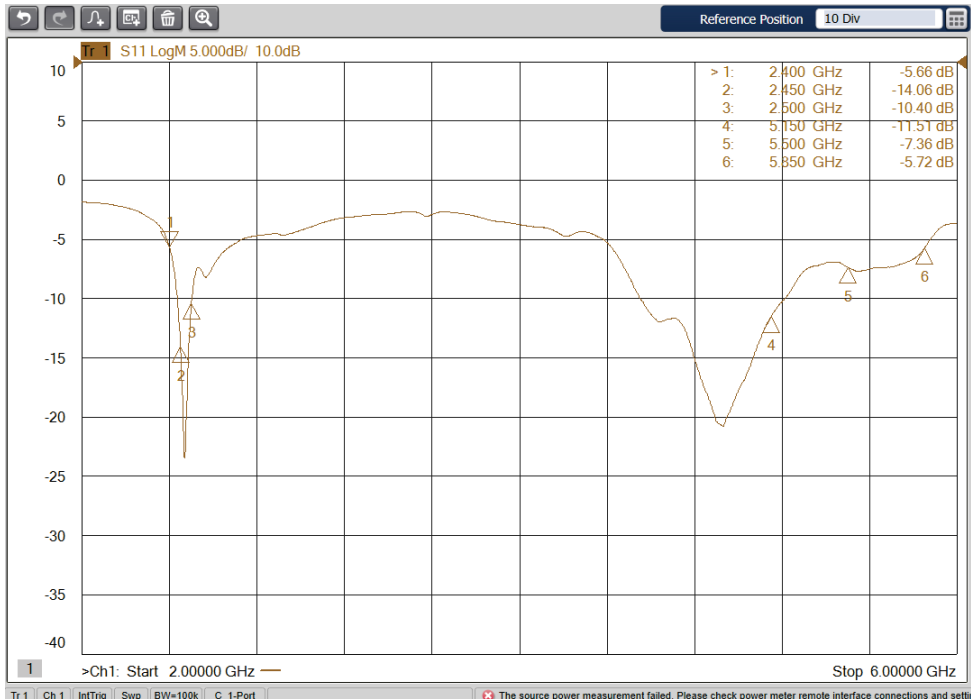
2D XOZ



— 5150MHz — 5500MHz — 5850MHz

Smart Speaker Antenna Test Result

Wi-Fi_2 Antenna Return Loss & Efficiency & Gain



Frequency (MHz)	WiFi_2 Antenna		
	Efficiency (dB)	Efficiency (%)	Gain(dBi)
2400	-5.71308	26.8344	-1.75643
2410	-5.59878	27.55	-1.57169
2420	-5.43471	28.6107	-1.22559
2430	-5.26686	29.7381	-0.64454
2440	-5.23005	29.9913	-0.75682
2450	-5.38669	28.9289	-0.53907
2460	-5.7073	26.8701	-0.76746
2470	-6.04476	24.8613	-0.75756
2480	-6.4697	22.5439	-0.96172
2490	-6.78107	20.9842	-0.89322
2500	-6.86178	20.5978	-0.91489
5150	-2.20669	60.1632	2.90517
5200	-2.30912	58.7609	3.46228
5250	-2.0545	62.3088	3.77079
5300	-2.1624	60.7799	2.93455
5350	-2.90875	51.1829	2.45759
5400	-2.83163	52.1	2.76779
5450	-3.74329	42.2349	1.57534
5500	-3.88759	40.8546	0.883172
5550	-3.58233	43.8295	2.12759
5600	-3.94293	40.3373	1.42749
5650	-3.68892	42.767	1.65987
5700	-3.84503	41.2569	1.46824
5750	-3.64064	43.245	1.41164
5800	-4.98839	31.7074	0.129529
5850	-6.71376	21.312	-0.84007

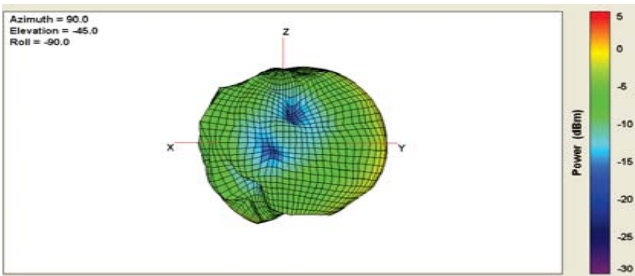
Frequency (MHz)	2400	2450	2500
Return Loss(dB)	-5.66	-14.06	-10.4
Frequency (MHz)	5150	5500	5850
Return Loss(dB)	-11.51	-7.36	-5.72

Smart Speaker Antenna Test Result

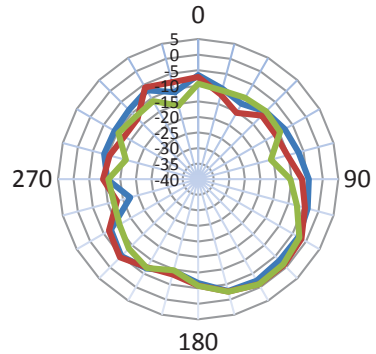
➤ Antenna 2D & 3D Radiation Pattern

➤ WiFi_2 2.4G Band

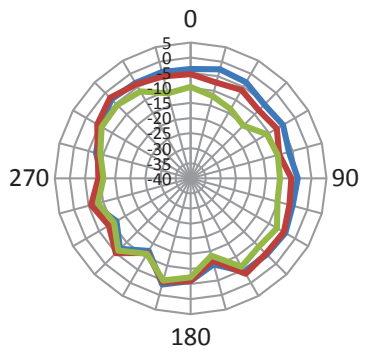
3D 2450MHz



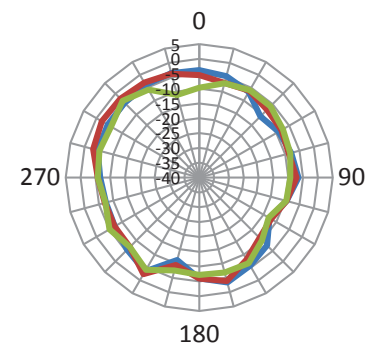
2D XOY



2D YOZ



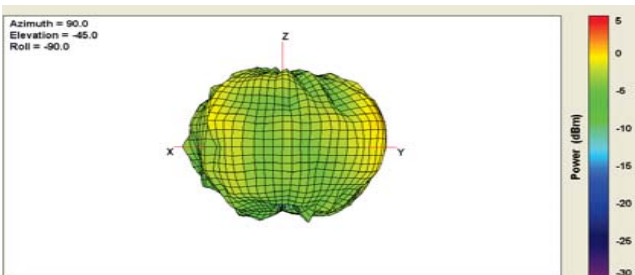
2D XOZ



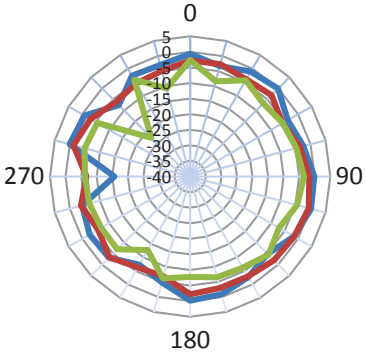
— 2400MHz — 2450MHz — 2500MHz

➤ WiFi_2 5G Band

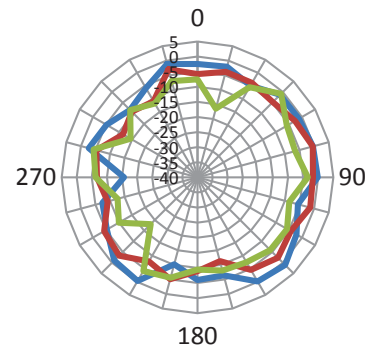
3D 5500MHz



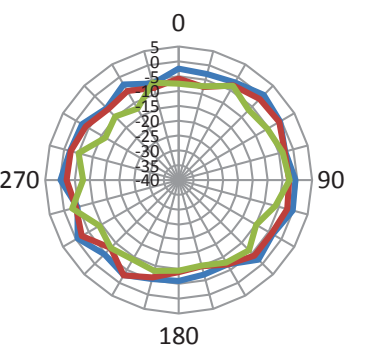
2D XOY



2D YOZ



2D XOZ



— 5150MHz — 5500MHz — 5850MHz