AUT Report

Product Model： RE505X

Manufacturer： tp-link

Test Date： 2023.8.31

Tested By： Zhao Han 赵涵

TP-Link Corporation Limited

Room 901, 9/F. , New East Ocean Centre,

9 Science Museum Road, Tsim Sha Tsui,

Kowloon, Hong Konga

TEL: 00852-37585503

http://www.tp-link.com/en

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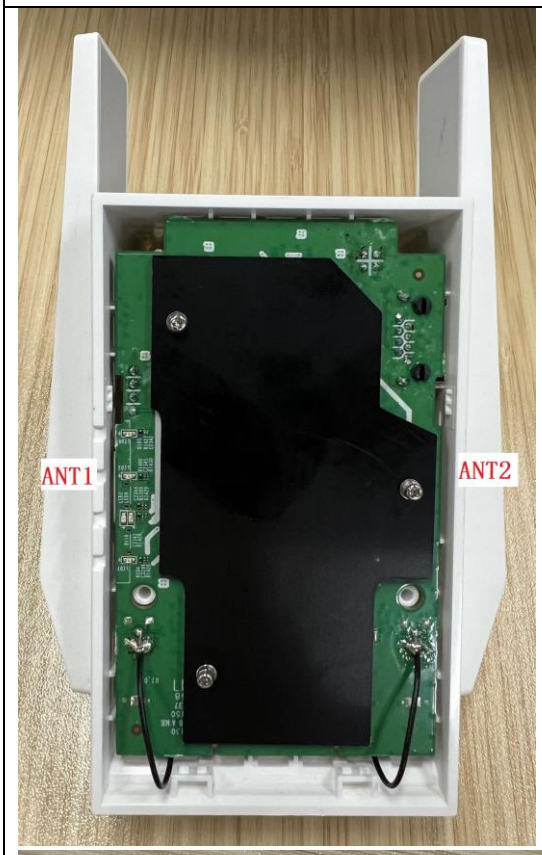
1. Antenna Distribution

RE505X


2. Electrical Characteristics

Ant1	
Frequency	2400~2500 &5150~5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	1.95dBi@2400~2500MHz 2.93dBi@5150~5850MHz
Radiation pattern	Omni-Directional
tp-link P/N	3101506324

Ant2	
Frequency	2400~2500 &5150~5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	1.82dBi@2400~2500MHz 2.93dBi@5150~5850MHz
Radiation pattern	Omni-Directional
tp-link P/N	3101506324

3. Gain and Radiation Pattern

3.1 Measurement Procedure

This measurement experiment adopted an antenna near-field measurement system, and the diagram of the measurement system was shown in Figure 3-1. The excitation signal was generated by the Keysight E5071C (300kHz-20GHz). Under the control of the central computer, the probe rotated in the θ direction, and the EUT rotated in the φ direction with the turntable. The probe sampling frame received and collected signals in the near-field range of the EUT. The software system which was controlled by the central computer completed the processing, output and display of the test data.

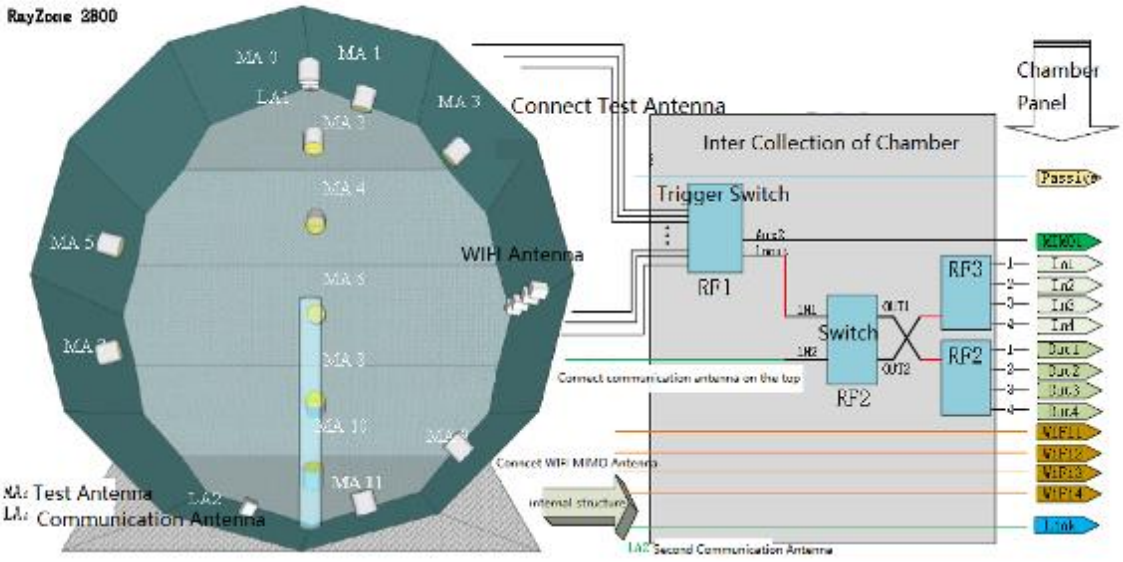


Figure 3-1

The test site was a full anechoic chamber with a size of 3.0m×3.1m×2.97m, which was built by GTS Rayzone2800. All six surfaces of the anechoic chamber were pasted with absorbing materials. And the

chamber was calibrated by the authoritative third-party lab every year. The antenna anechoic chamber measurement system adopted a 13-probe multi-probe system. The probe antennas were evenly distributed on the spherical surface surrounding the EUT, and theirs operating frequency was 600MHz~8.5GHz.

During the measurement, the probe antennas were rotated in the θ direction under the control of the probe holder to sample the near-field data at the θ angle. At the same time, the EUT rotated with the turntable in the φ direction to sample the near field data at the φ angle. The sampling accuracy was 15°. The system diagram was shown in Figure 3-2. From the sampling results, the EUT's near-field test data of θ component, φ component and total component could be obtained.

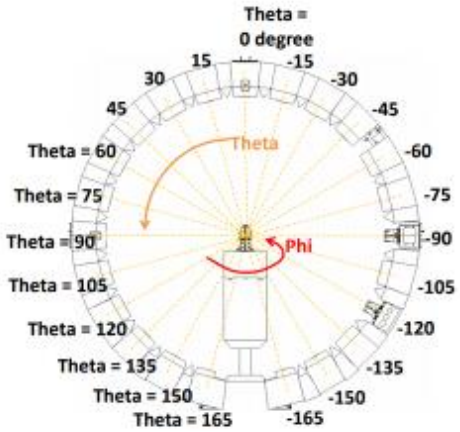


Figure 3-2

Before the measurement, calibrated the vector network analyzer, and then connected the input end of each antenna to the output end of the vector network analyzer, and evenly the antennas to be measured.

Test Equipment listed below:

Equipments	Model	Manufacturer	S/N	Cali. Interval	Cali. Due Date
Chamber	Rayzone2800	GTS(General Test System)	MY53470435	12months	2024/01/15
Vector Network Analyzer	E5071C	Keysight	MY46315238	24months	2024/03/13
GTS MaxSign100 Software	V2.1	GTS(General Test System)	/	/	/

3.2 Test Setup

The test setup was shown in Figure 3-3, 3-4:

Figure 3-3

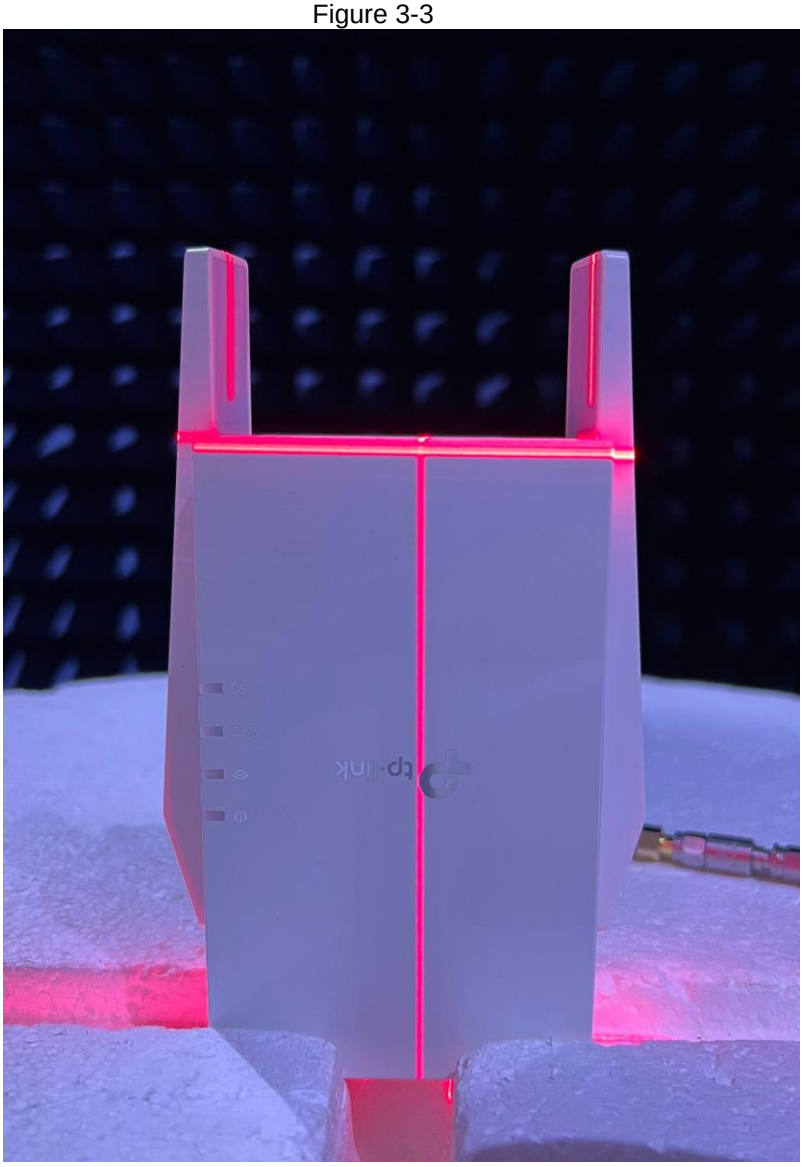
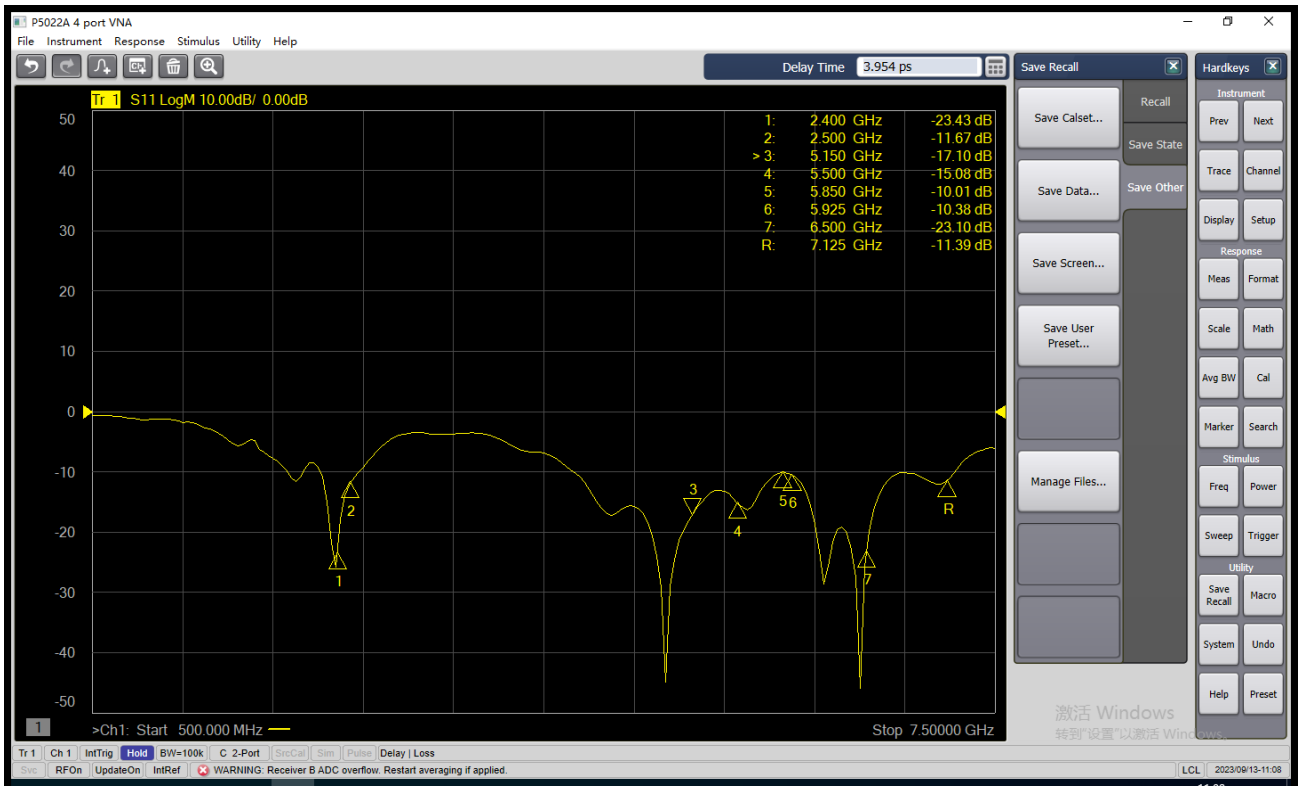


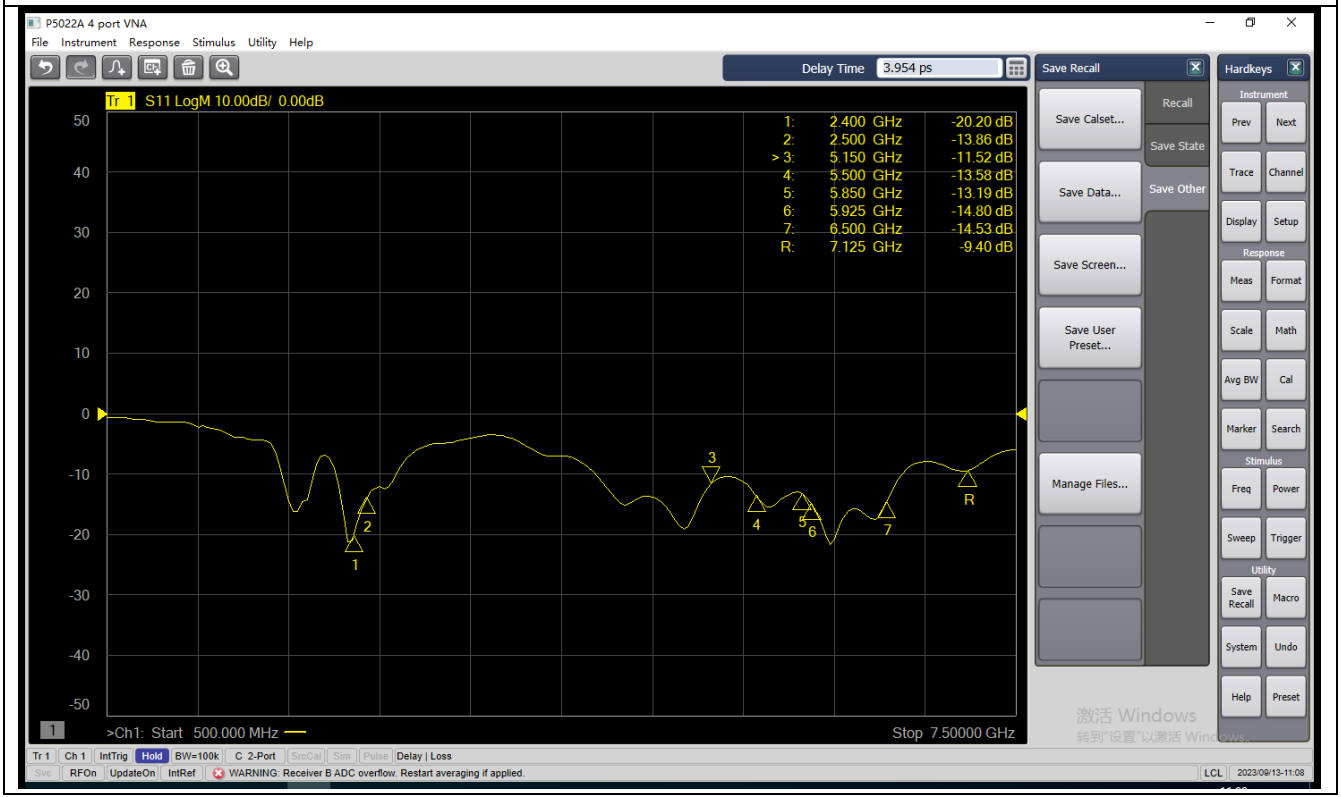
Figure 3-4

3.3 S Parameter Test Data

Ant1



Ant2



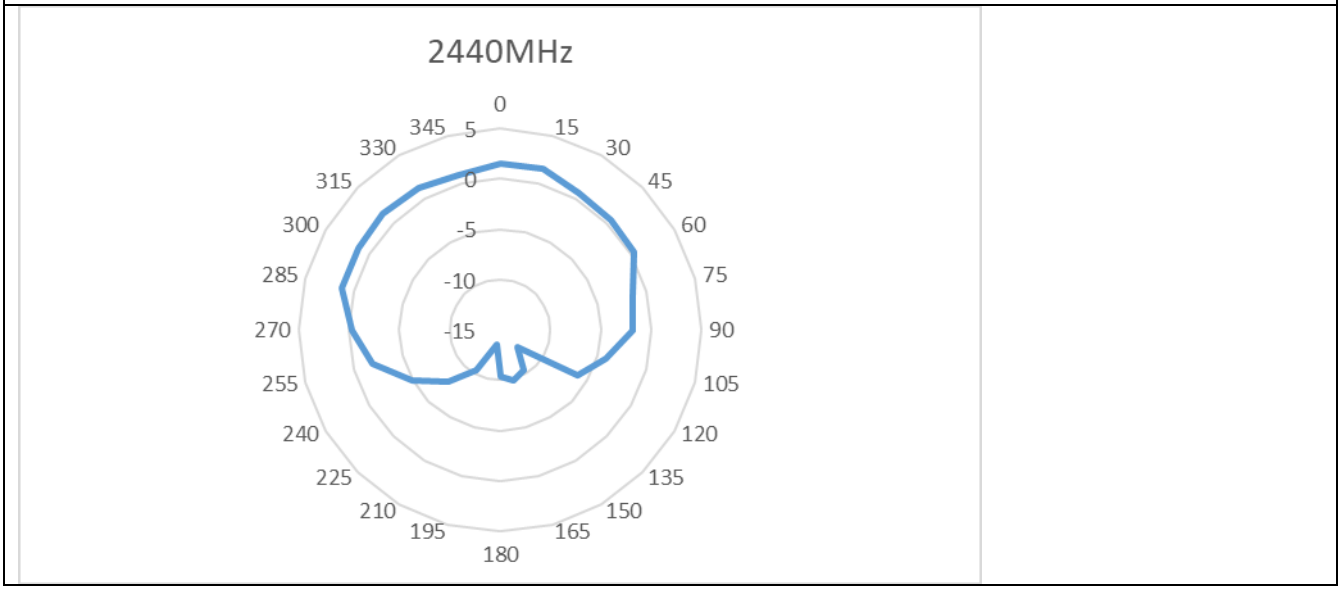
3.4 Antenna Peak Gain

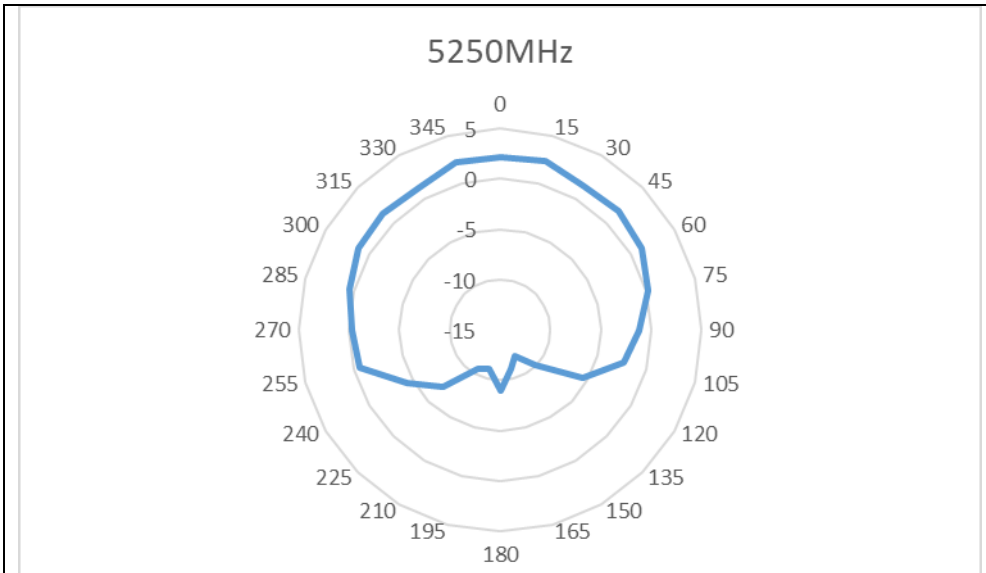
Ant1											
Frequency(MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Gain(dBi)	1.95	1.95	1.89	1.56	1.62	1.70	1.69	1.73	1.71	1.57	1.54
Frequency(MHz)	5150	5200	5250	5300	5350	5400	5450	5500	5550	5600	5650
Gain(dBi)	2.75	2.86	2.93	2.77	2.81	2.85	2.71	2.88	2.76	2.91	2.84
Frequency(MHz)	5700	5750	5800	5850							
Gain(dBi)	2.92	2.85	2.82	2.75							

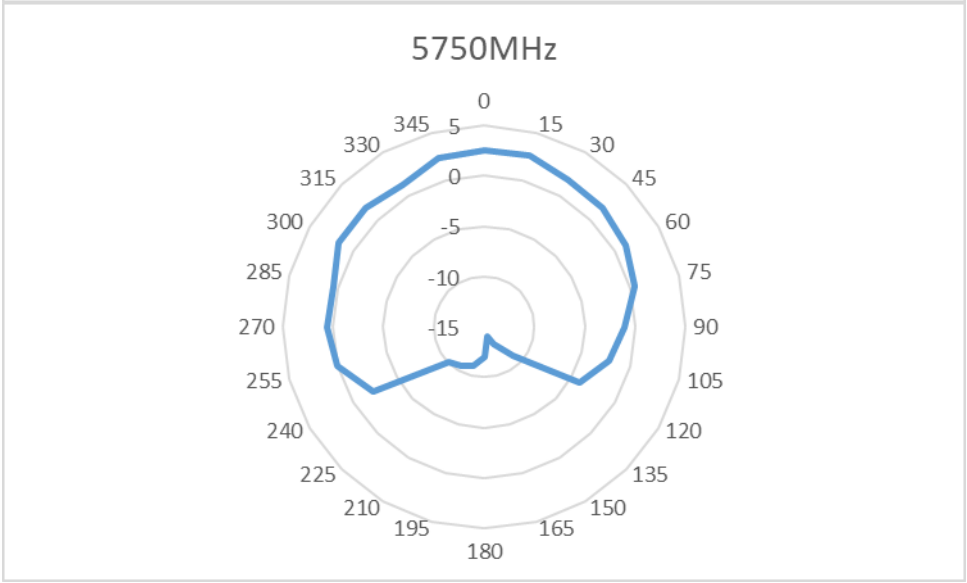
Ant2											
Frequency(MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Gain(dBi)	1.81	1.82	1.73	1.69	1.75	1.72	1.71	1.75	1.82	1.91	1.83
Frequency(MHz)	5150	5200	5250	5300	5350	5400	5450	5500	5550	5600	5650
Gain(dBi)	2.71	2.82	2.84	2.87	2.72	2.78	2.81	2.88	2.9	2.91	2.87
Frequency(MHz)	5700	5750	5800	5850							
Gain(dBi)	2.93	2.88	2.81	2.88							

3.5 Antenna Radiation Pattern

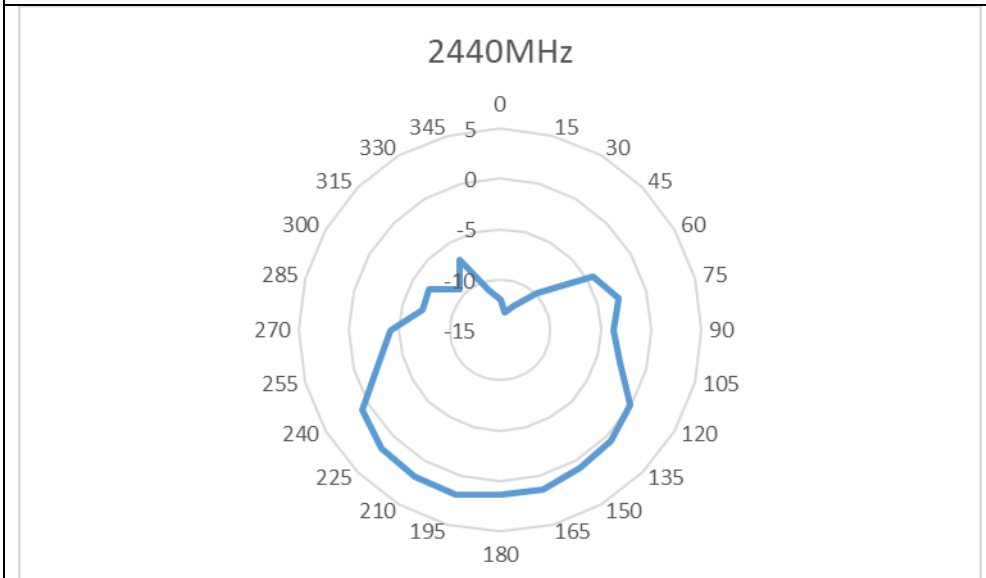
Ant1

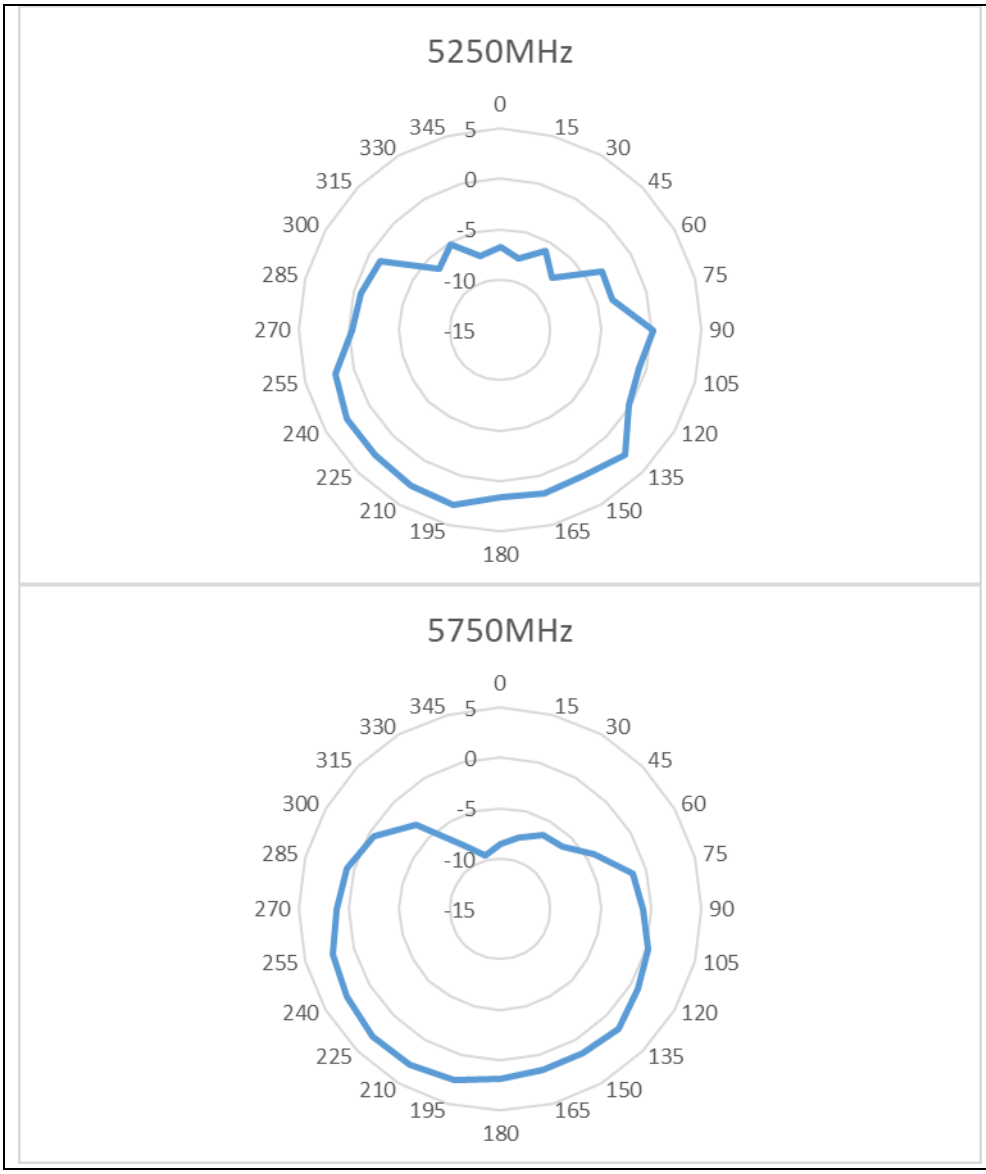



5250MHz
0
15
30
45
60
75
90
105
120
135
150
165
180
195
210
225
240
255
270
285
300
315
330
345
5
0
-5
-10
-15


5750MHz
0
15
30
45
60
75
90
105
120
135
150
165
180
195
210
225
240
255
270
285
300
315
330
345
5
0
-5
-10
-15

Ant2


2440MHz
0
15
30
45
60
75
90
105
120
135
150
165
180
195
210
225
240
255
270
285
300
315
330
345
5
0
-5
-10
-15


5250MHz
0
15
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150
165
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195
210
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5750MHz
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