AUT Report

Product Model： Archer BE900

Manufacturer： TP-LINK CORPORATION PTE. LTD.

Test Date： 2023.12.21

Tested By： Yu Sunli

TP-LINK CORPORATION PTE. LTD.
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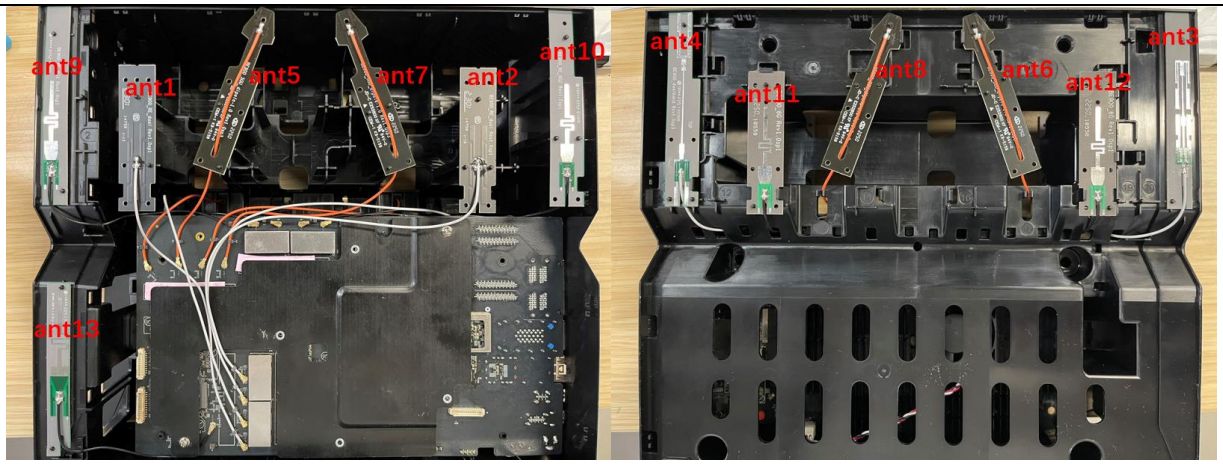
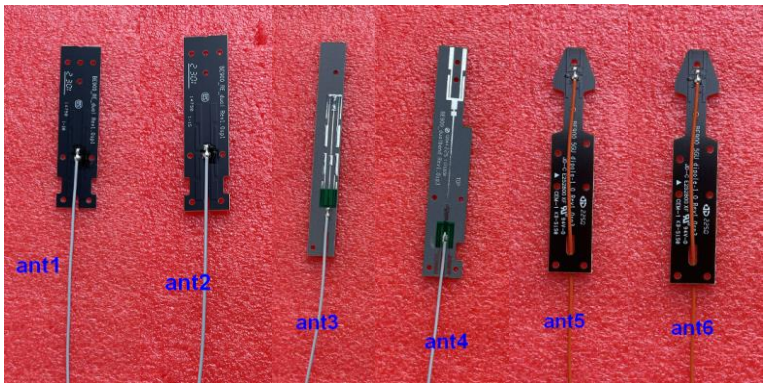
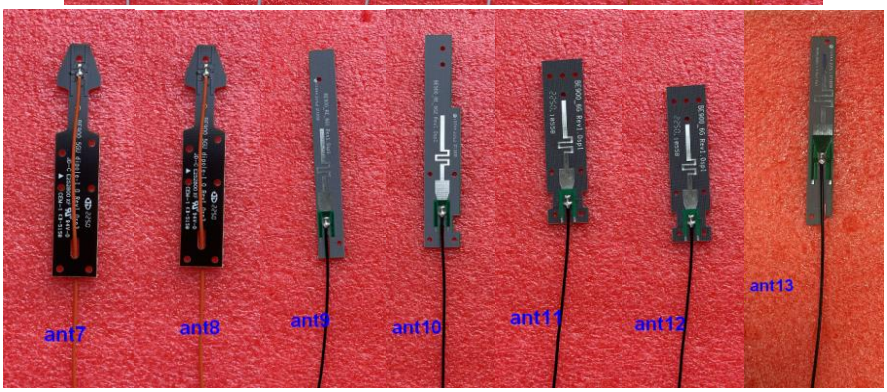
1. Antenna Distribution

Archer BE900







2. Electrical Characteristics

Ant1	
Frequency	2400~2500 &5150~5450MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	2.91dBi@2400~2500MHz 3.08dBi@5150~5450MHz
Radiation pattern	Omni-Directional

Ant2	
Frequency	2400~2500 &5150~5450MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	2.91dBi@2400~2500MHz 3.08dBi@5150~5450MHz

Radiation pattern	Omni-Directional

Ant3	
Frequency	2400~2500 &5150~5450MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	2.91dBi@2400~2500MHz 3.08dBi@5150~5450MHz
Radiation pattern	Omni-Directional

Ant4	
Frequency	2400~2500 &5150~5450MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	2.91dBi@2400~2500MHz 3.08dBi@5150~5450MHz
Radiation pattern	Omni-Directional

Ant5	
Frequency	5450~5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	3.13dBi@5450~5850MHz
Radiation pattern	Omni-Directional

Ant6	
Frequency	5450~5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	3.13dBi@5450~5850MHz
Radiation pattern	Omni-Directional

Ant7	
Frequency	5450~5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	3.13dBi@5450~5850MHz
Radiation pattern	Omni-Directional

Ant8	
Frequency	5450~5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	3.13dBi@5450~5850MHz
Radiation pattern	Omni-Directional

Ant9	
Frequency	5925~7125MHz
Impedance	50Ohm

Antenna Type	Dipole
Antenna Gain	3.44dBi@5925~7125MHz
Radiation pattern	Omni-Directional

Ant10	
Frequency	5925~7125MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	3.44dBi@5925~7125MHz
Radiation pattern	Omni-Directional

Ant11	
Frequency	5925~7125MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	3.44dBi@5925~7125MHz
Radiation pattern	Omni-Directional

Ant12	
Frequency	5925~7125MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	3.44dBi@5925~7125MHz
Radiation pattern	Omni-Directional

Ant13	
Frequency	5150~5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	3.00dBi@5150~5850MHz
Radiation pattern	Omni-Directional

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.

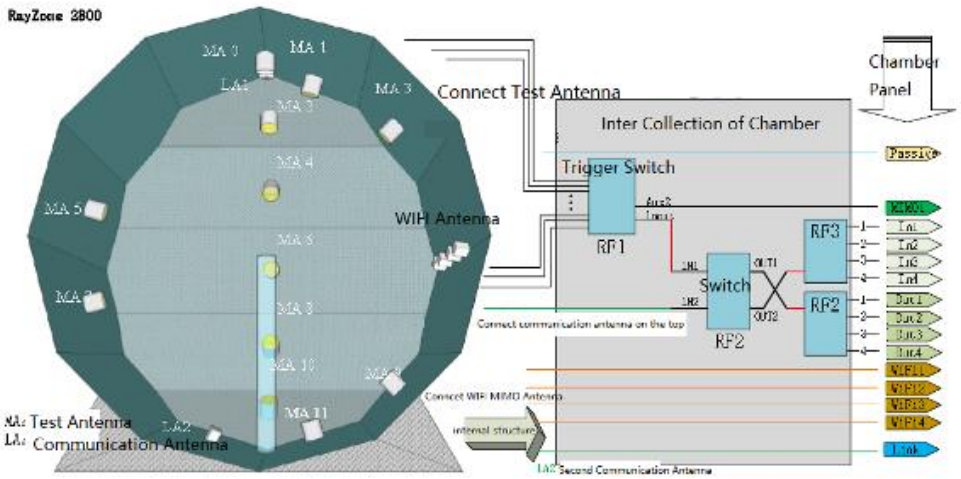


Figure 3-1

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.

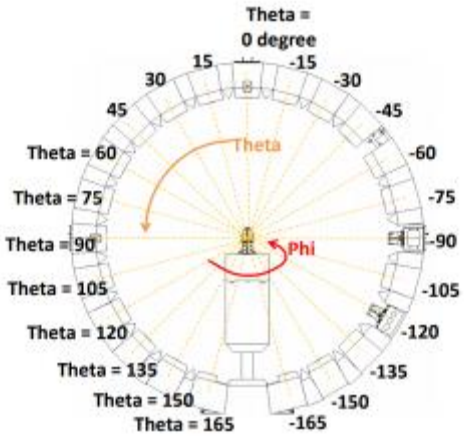


Figure 3-2

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

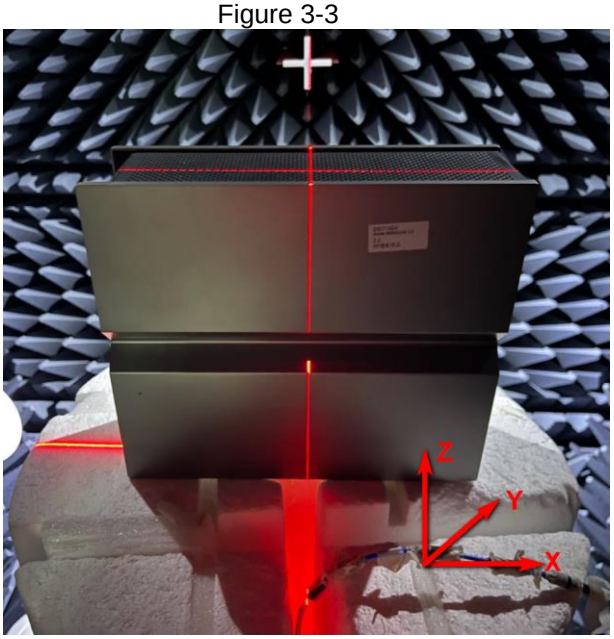
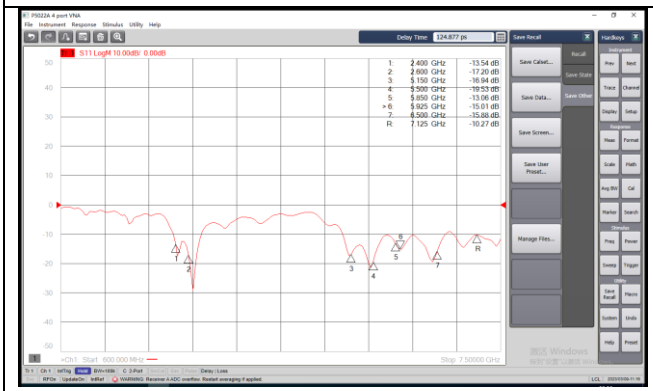
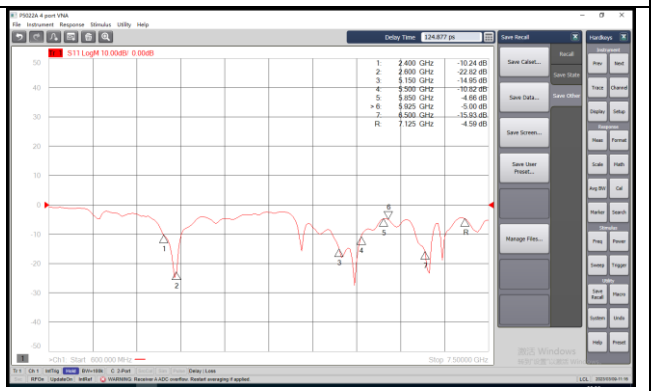
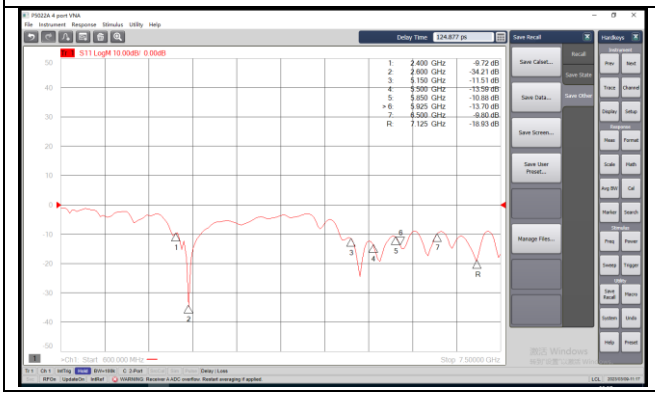
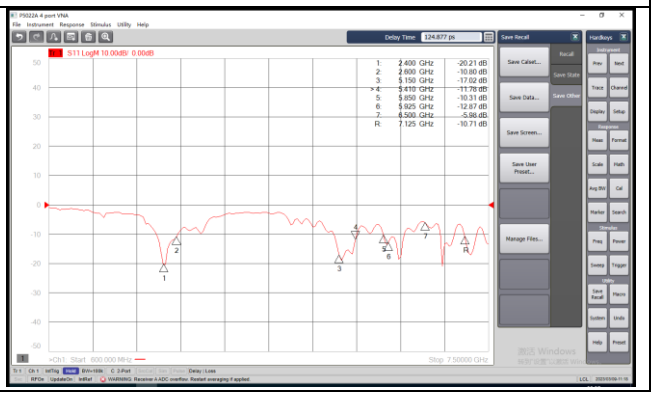
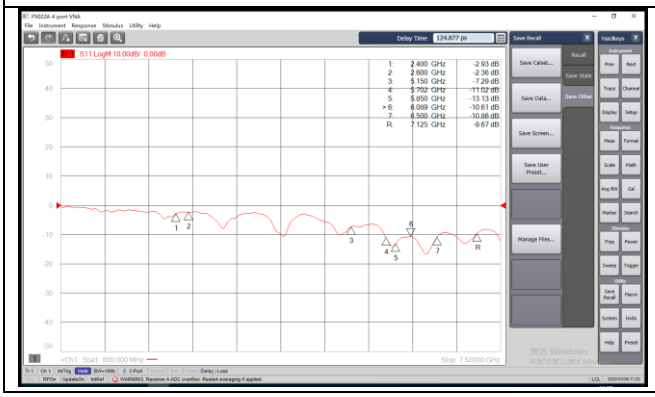
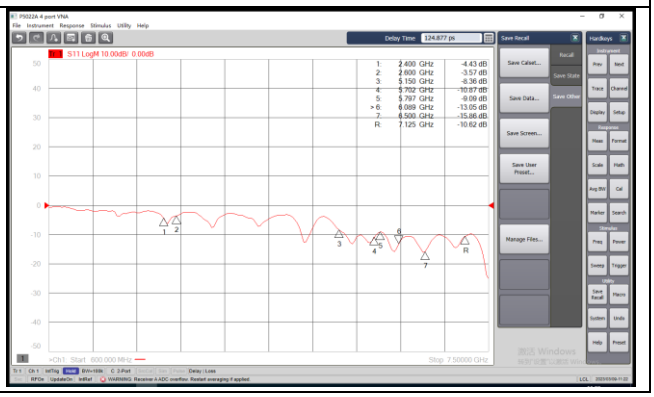
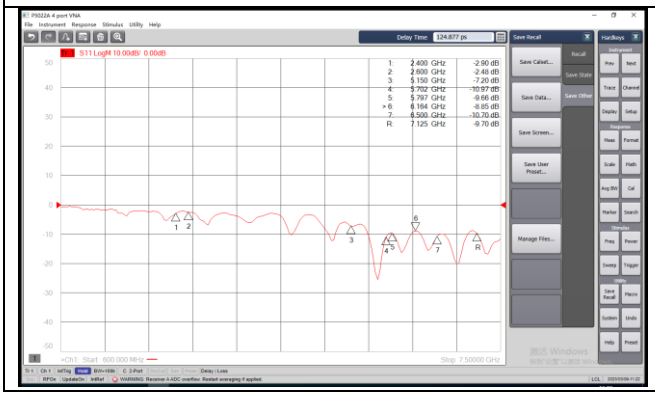
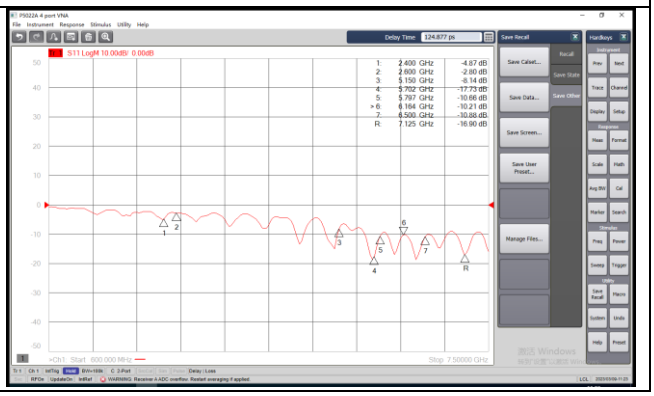
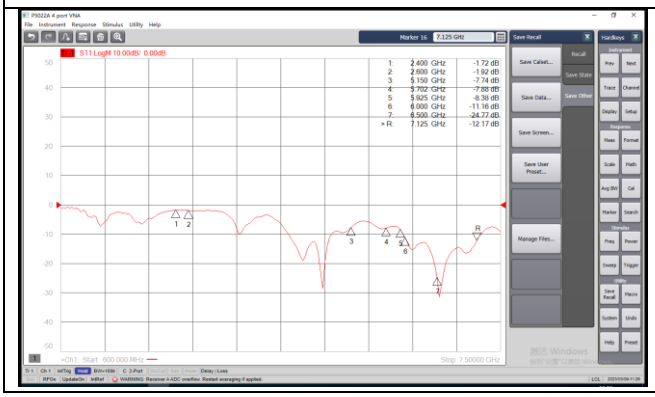
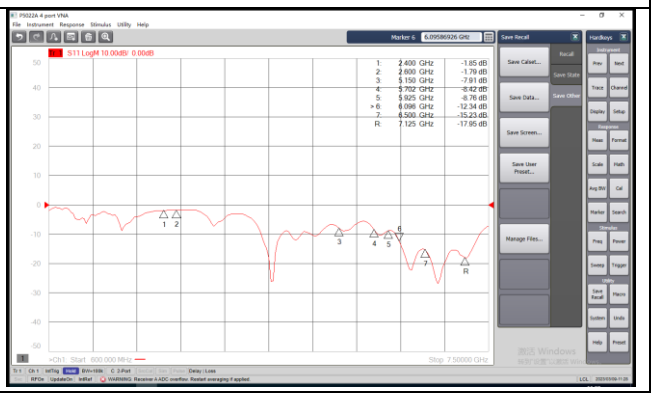
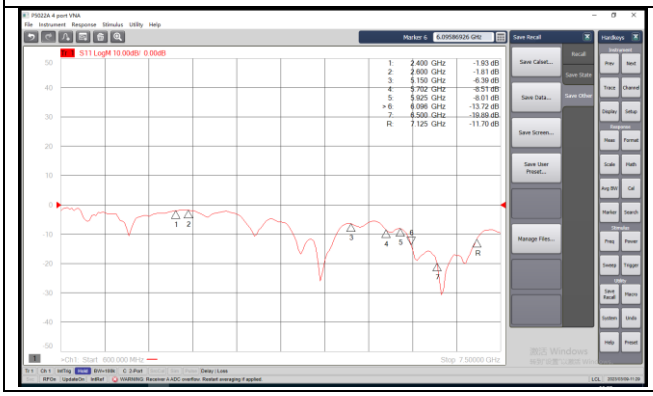
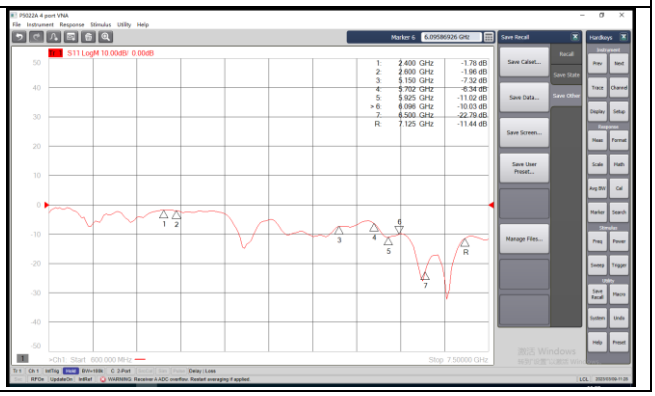


Figure 3-4

3.3 S Parameter Test Data

Ant1	Ant2
	

Ant3	Ant4
	
Ant5	**Ant6**
	
Ant7	**Ant8**
	
Ant9	**Ant10**
	

Ant11	Ant12
	

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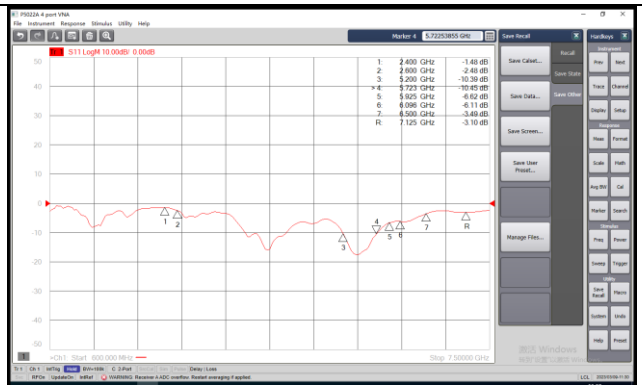


3.4 Antenna Peak Gain

Frequency(GHz)	2.45	5.25
Ant1 MaxGain(dBi)	2.50	3.06
Ant2 MaxGain(dBi)	2.64	2.97
Ant3 MaxGain(dBi)	2.91	3.08
Ant4 MaxGain(dBi)	2.51	3.03
Ant1 Polarization/Φ (°)/θ (°)	Theta/270/75	Theta/180/90
Ant2 Polarization/Φ (°)/θ (°)	Theta/225/75	Theta/225/90
Ant3 Polarization/Φ (°)/θ (°)	Theta/255/105	Theta/210/105
Ant4 Polarization/Φ (°)/θ (°)	Theta/60/90	Theta/150/90
Max Gain(dBi)	2.91	3.08

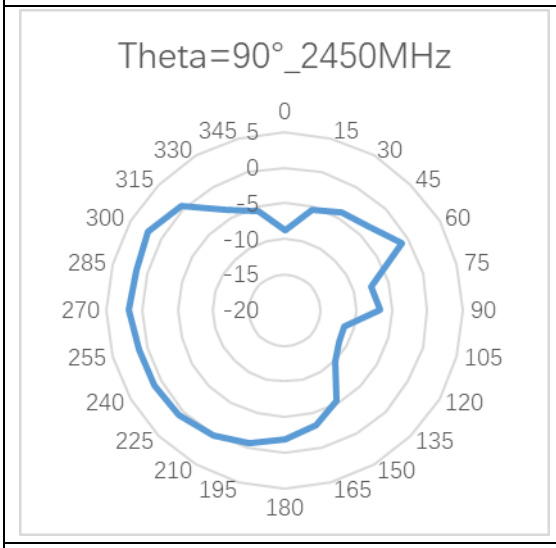
Frequency(GHz)	5.50	5.75
Ant5 MaxGain(dBi)	3.12	2.97
Ant6 MaxGain(dBi)	3.13	2.97
Ant7 MaxGain(dBi)	3.06	2.97
Ant8 MaxGain(dBi)	3.08	2.97
Ant5 Polarization/Φ (°) / θ (°)	Theta/180/60	Theta/165/45
Ant6 Polarization/Φ (°) / θ (°)	Theta/0/90	Theta/270/75
Ant7 Polarization/Φ (°) / θ (°)	Theta/240/120	Theta/180/90
Ant8 Polarization/Φ (°) / θ (°)	Theta/270/75	Theta/195/90
Max Gain(dBi)	3.13	2.97

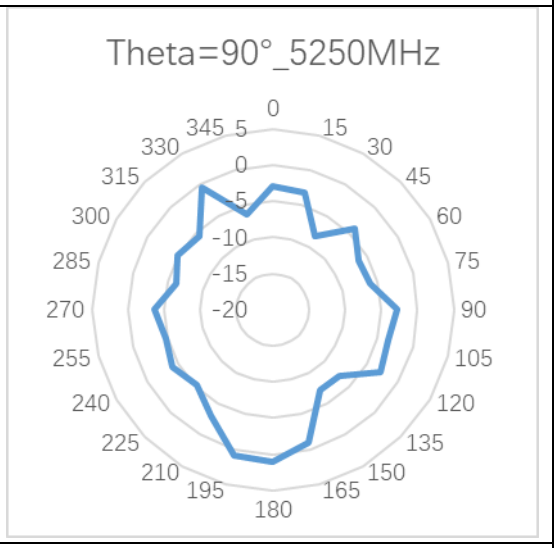
Frequency(GHz)	6.175	6.475	6.725	7.025
Ant9 MaxGain(dBi)	1.44	1.20	1.09	1.79
Ant10 MaxGain(dBi)	3.10	3.04	3.29	3.02
Ant11 MaxGain(dBi)	2.44	2.82	1.91	1.80
Ant12 MaxGain(dBi)	1.95	2.2	2.89	3.44
Ant9 Polarization/Φ (°) / θ (°)	Theta/15/75	Theta/15/75	Theta/0/75	Theta/0/75
Ant10 Polarization/Φ (°) / θ (°)	Theta/75/90	Theta/75/90	Theta/60/75	Theta/60/75
Ant11 Polarization/Φ (°) / θ (°)	Theta/240/90	Theta/240/90	Theta/180/75	Theta/180/75
Ant12 Polarization/Φ (°) / θ (°)	Theta/105/90	Theta/60/75	Theta/60/75	Theta/120/75
Max Gain(dBi)	3.10	3.04	3.29	3.44

Frequency(GHz)	5.25	5.50	5.75
Ant13 MaxGain(dBi)	2.77	2.68	2.97
Ant13 Polarization/Φ (°) / θ (°)	Theta/180/90	Theta/180/60	Theta/165/45
Max Gain(dBi)	3.00	2.98	2.97

3.5 Antenna Radiation Pattern

Ant1





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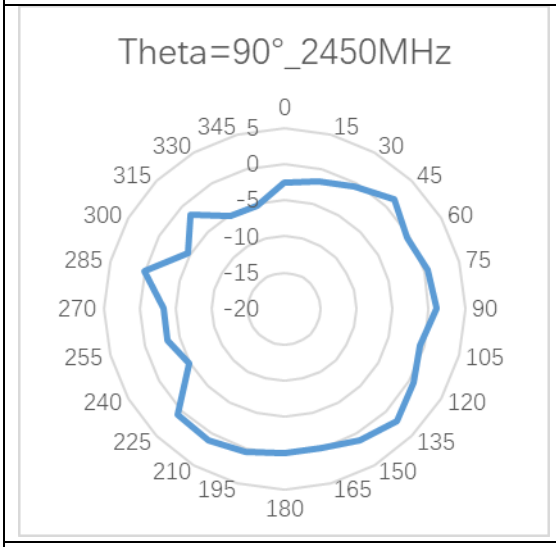

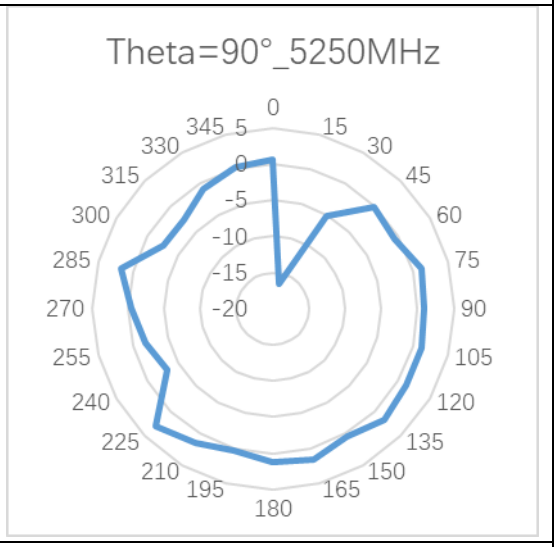

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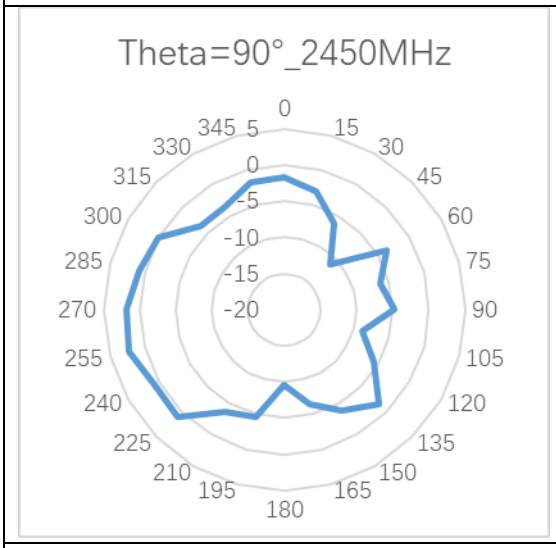

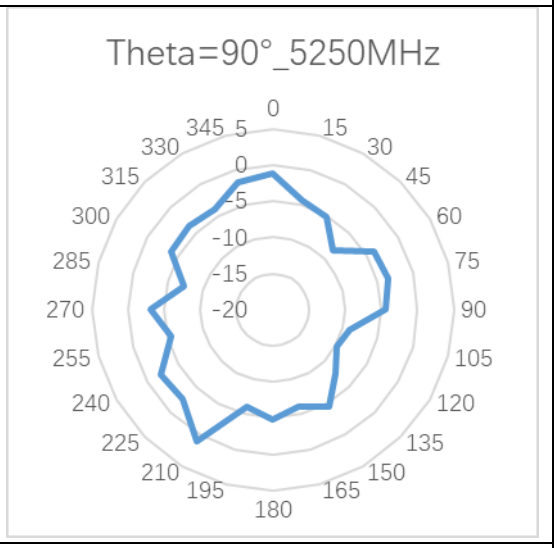

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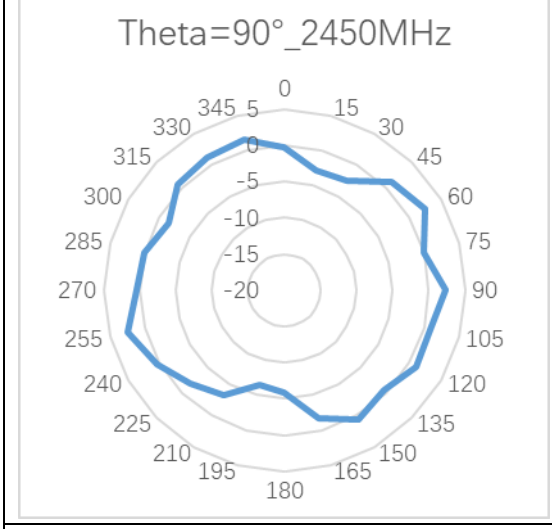

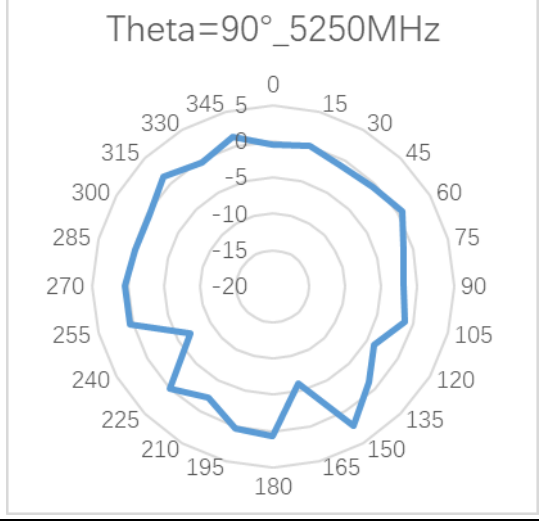

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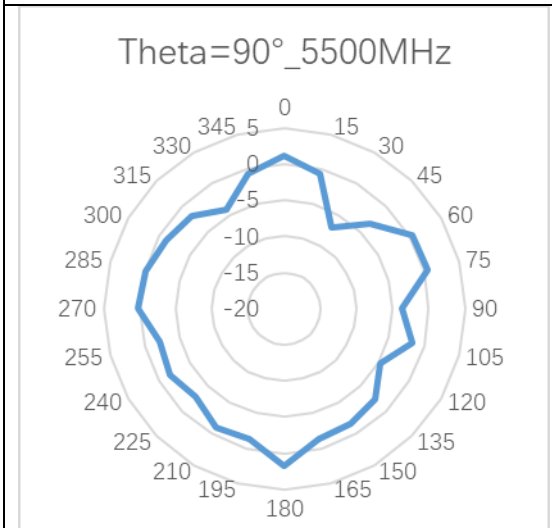

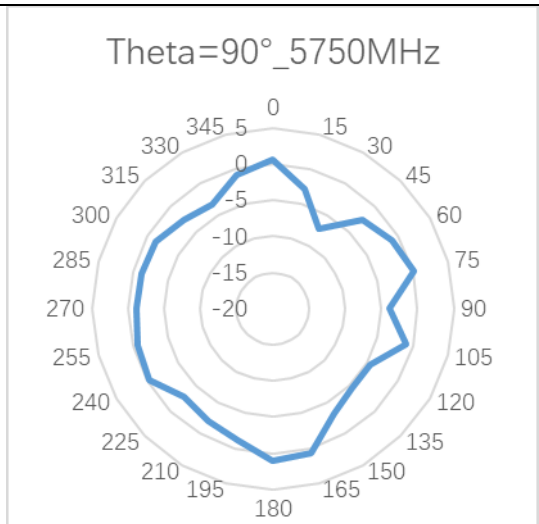

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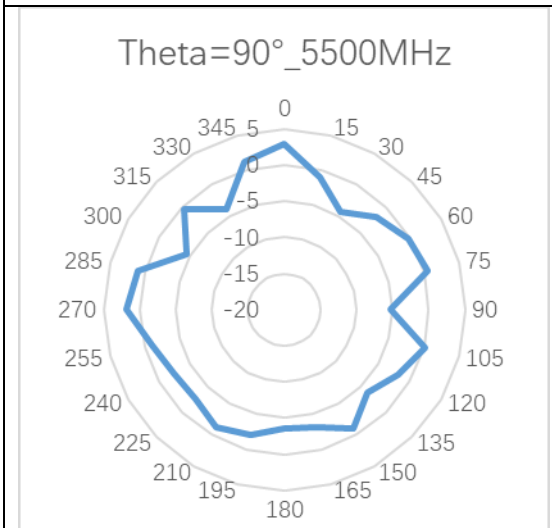

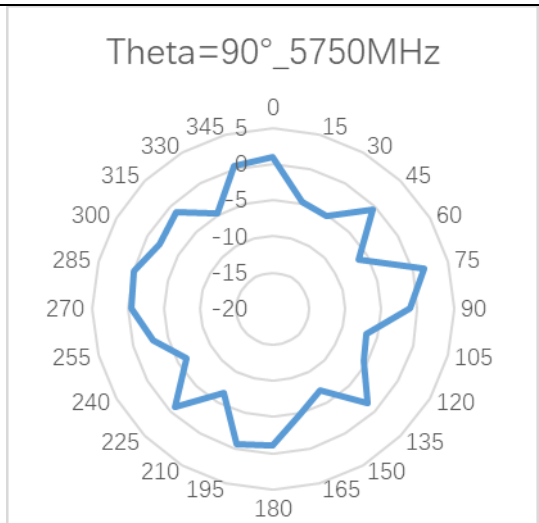

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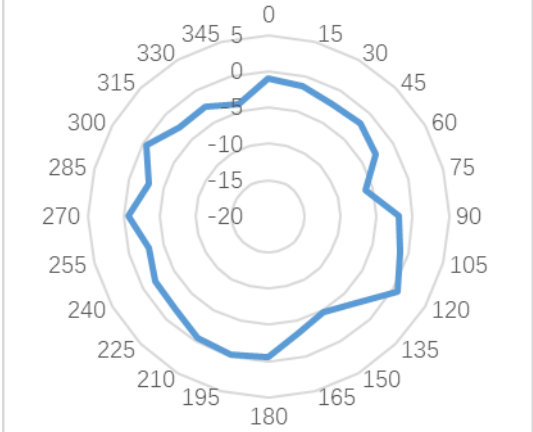
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15
30
45
60
75
90
105
120
135
150
165
180
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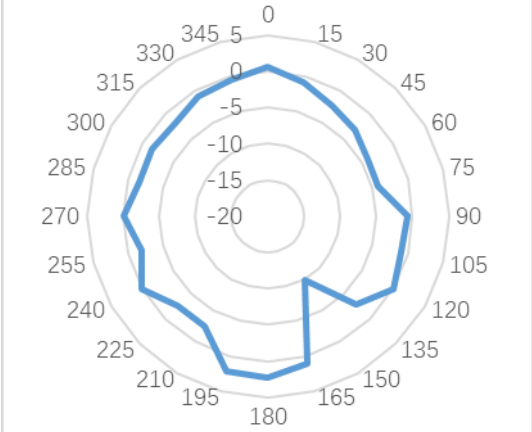
225
240
255
270
285
300
315
330
345
5
0
-5
-10
-15
-20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150
165
180
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255
270
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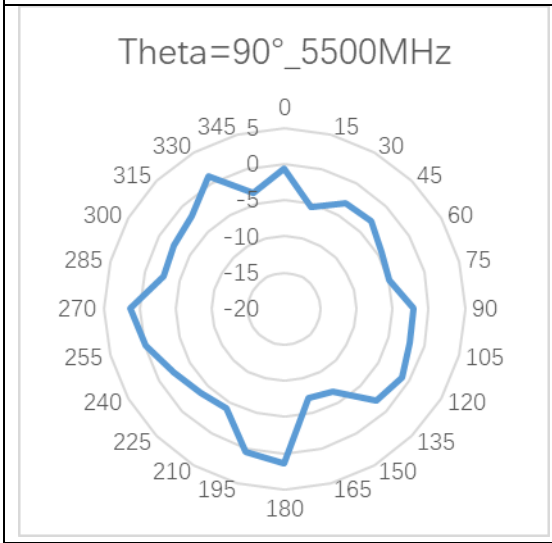
300
315
330
345
5
0
-5
-10
-15
-20

Ant8


Theta=90°_5500MHz
0
15
30
45
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75
90
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120
135
150
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5
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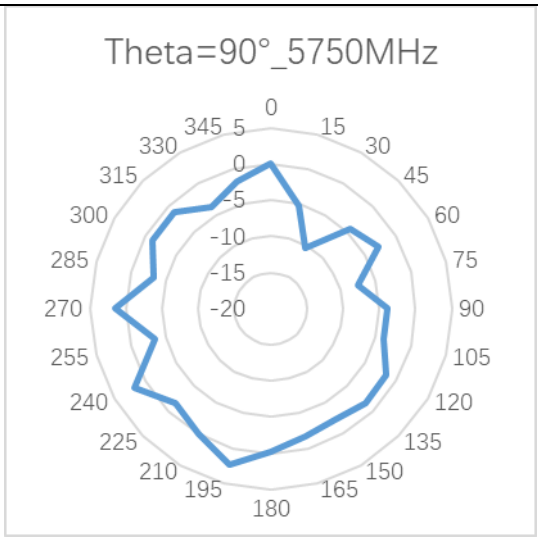
-15
-20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150
165
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300
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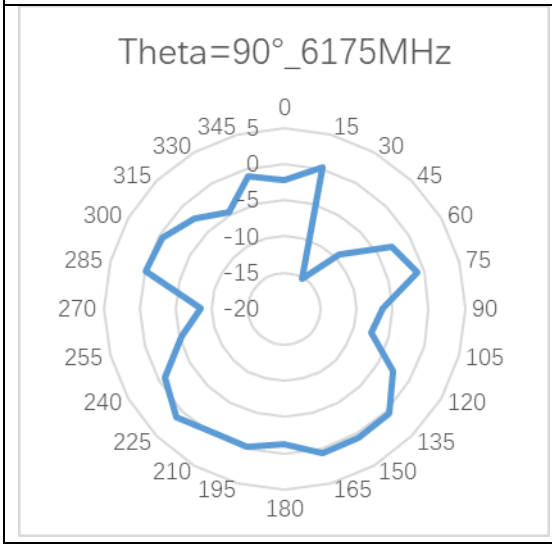
-10
-15
-20

Ant9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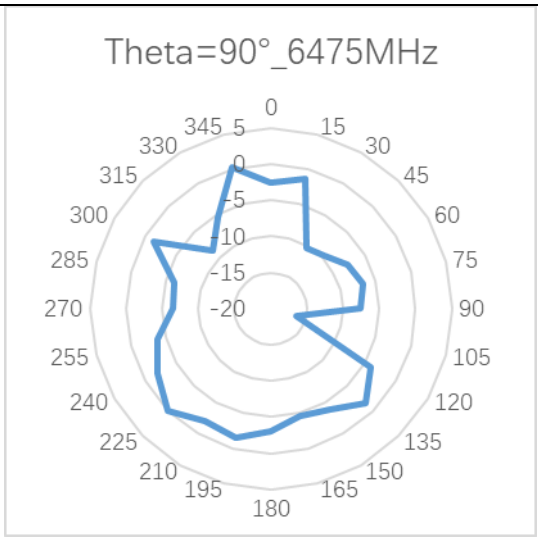
-20


Theta=90°_6475MHz
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15
30
45
60
75
90
105
120
135
150
165
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300
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5
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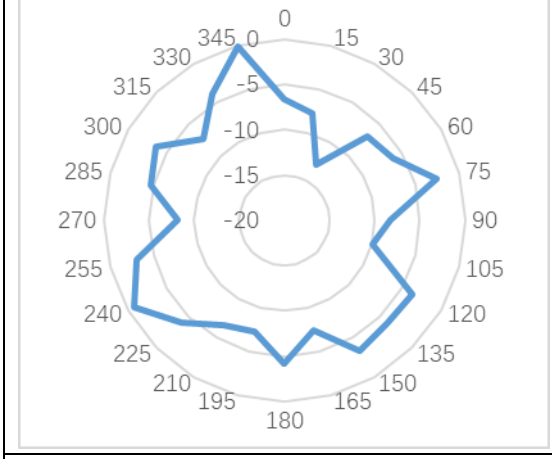
-5
-10
-15
-20


Theta=90°_6725MHz
0
15
30
45
60
75
90
105
120
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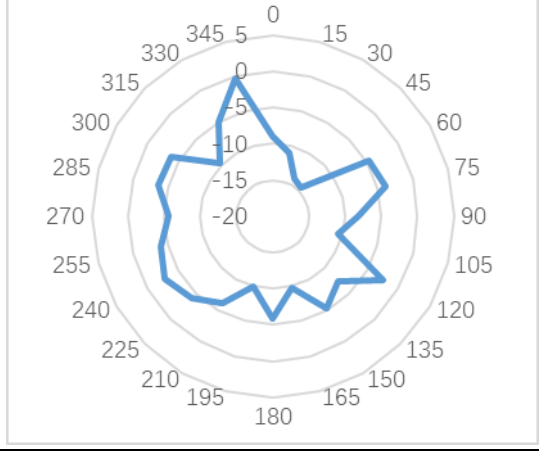
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300
315
330
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-10
-15
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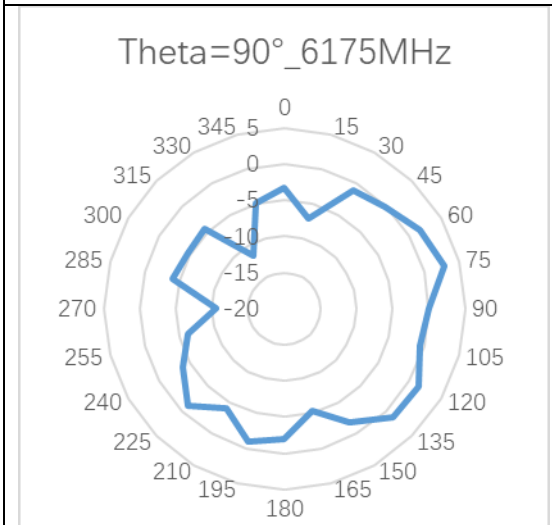
Ant10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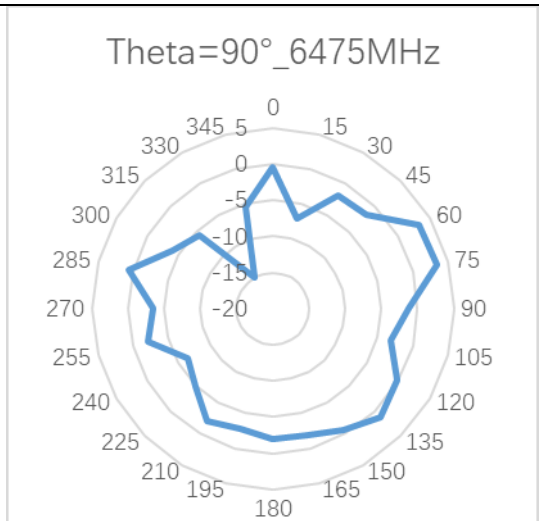
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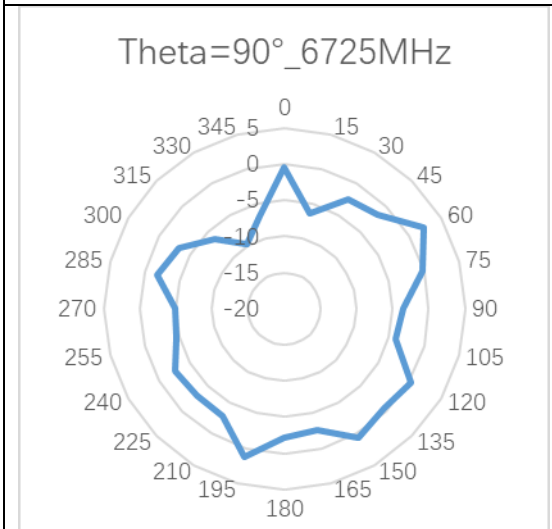
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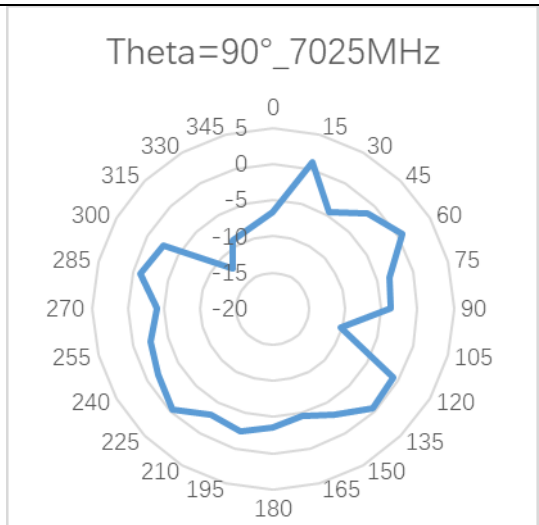
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-10
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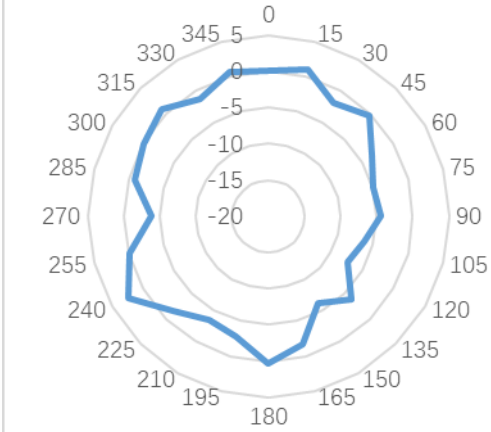
Ant11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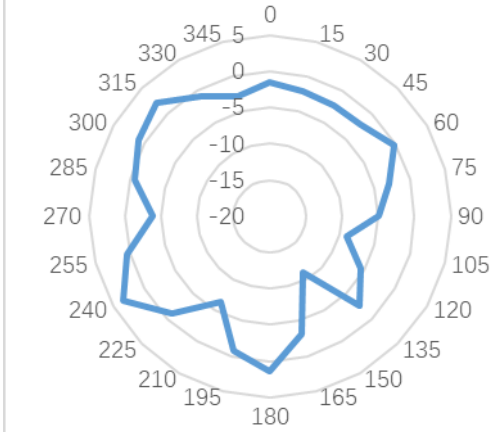
Theta=90°_6475MHz
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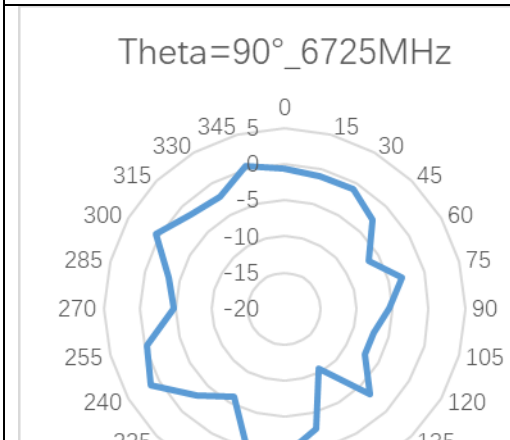
Theta=90°_6725MHz
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-10
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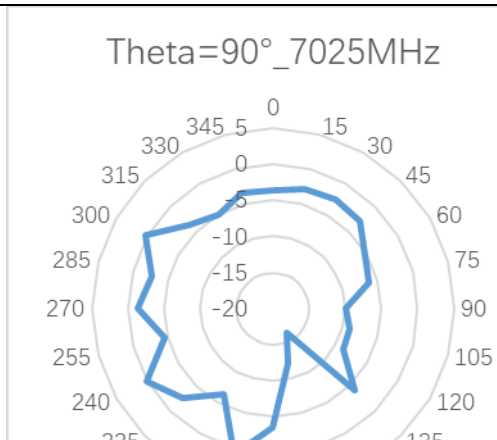
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75
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105
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135
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255
270
285
300
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-5
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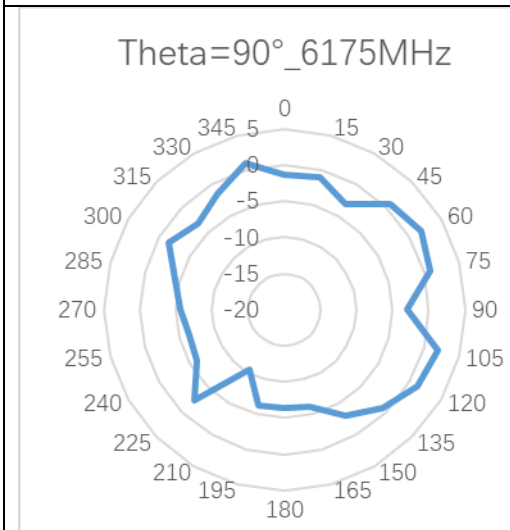
Ant12


Theta=90°_6175MHz
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60
75
90
105
120
135
150
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225
240
255
270
285
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330
345
5
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-5
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-15
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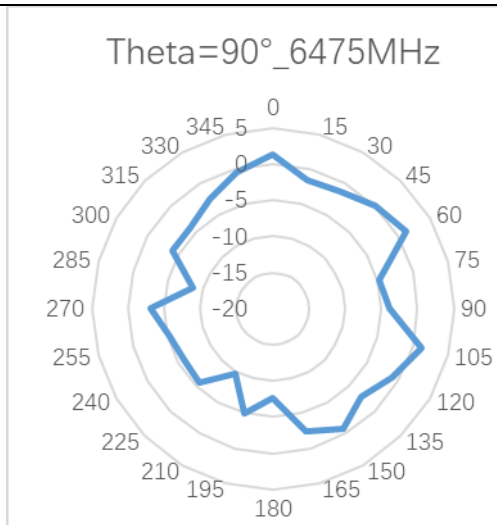
Theta=90°_6475MHz
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75
90
105
120
135
150
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240
255
270
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300
315
330
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5
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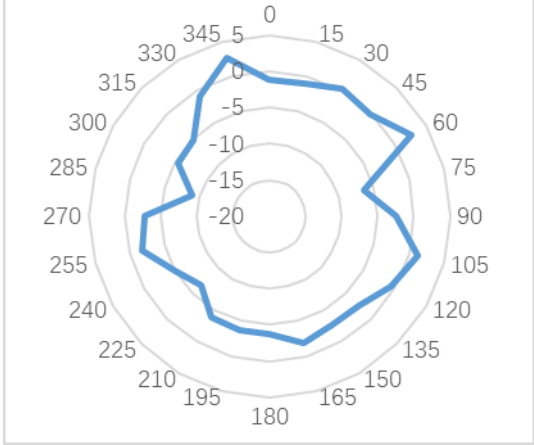
-5
-10
-15
-20


Theta=90°_6725MHz
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45
60
75
90
105
120
135
150
165
180
195
210
225
240
255
270
285
300
315
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345
5
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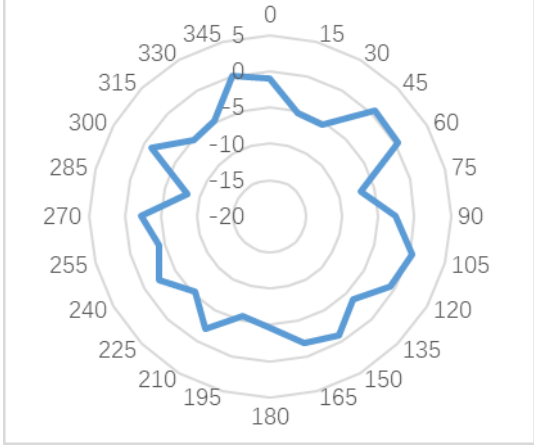
-10
-15
-20


Theta=90°_7025MHz
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75
90
105
120
135
150
165
180
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210
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240
255
270
285
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345
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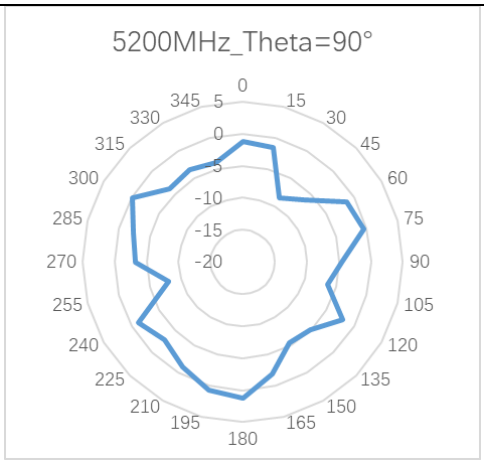
-5
-10
-15
-20

Ant13


5200MHz_Theta=90°
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300
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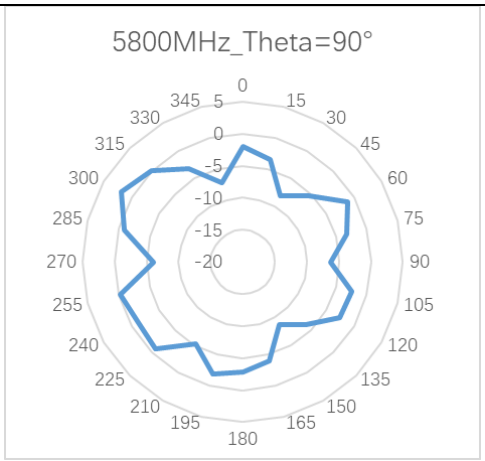
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240
255
270
285
300
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330
345
5
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-10
-15
-20