AUT Report

Product Model： EAP668-Outdoor HD

Manufacturer： TP-Link Systems Inc.

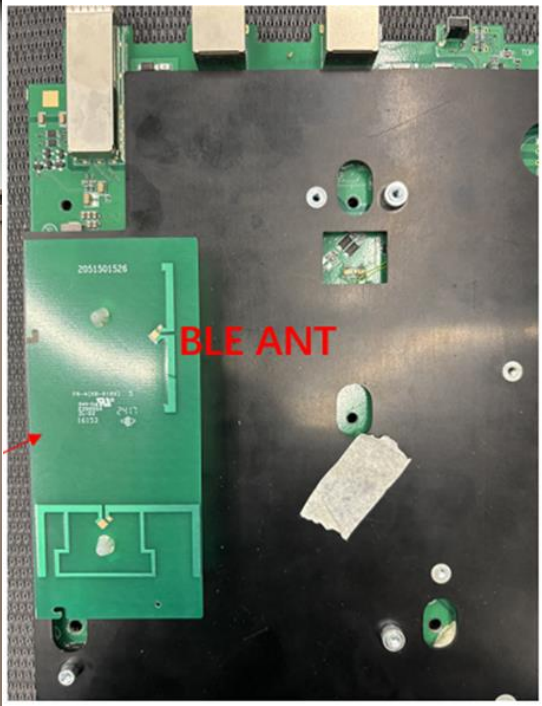
Test Date： 2025.03.04

Tested By： Fang Chao 

TP-Link Systems Inc.
10 Mauchly, Irvine, CA 92618

Index

1. Antenna Distribution

EAP668-Outdoor HD
 

2. Electrical Characteristics

Ant1	
Frequency	2400 ~ 2500&5150 ~ 5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	6.00dBi@2400~2500MHz 6.00dBi@5150~5850MHz
Radiation pattern	Omni-Directional
P/N	3101507038

Ant2	
Frequency	2400 ~ 2500&5150 ~ 5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	6.00dBi@2400~2500MHz 6.00dBi@5150~5850MHz
Radiation pattern	Omni-Directional
P/N	3101507038

Ant3	
Frequency	2400 ~ 2500&5150 ~ 5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	6.00dBi@2400~2500MHz 6.00dBi@5150~5850MHz

Radiation pattern	Omni-Directional
P/N	3101507038

Ant4	
Frequency	2400 ~ 2500&5150 ~ 5850MHz
Impedance	50Ohm
Antenna Type	Dipole
Antenna Gain	6.00dBi@2400~2500MHz 6.00dBi@5150~5850MHz
Radiation pattern	Omni-Directional
P/N	3101507038

BLE Ant	
Frequency	2400~2500MHz
Impedance	50Ohm
Antenna Type	dipole
Antenna Gain	5dBi
Radiation pattern	Omni-Directional
P/N	BLE-ANT

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.

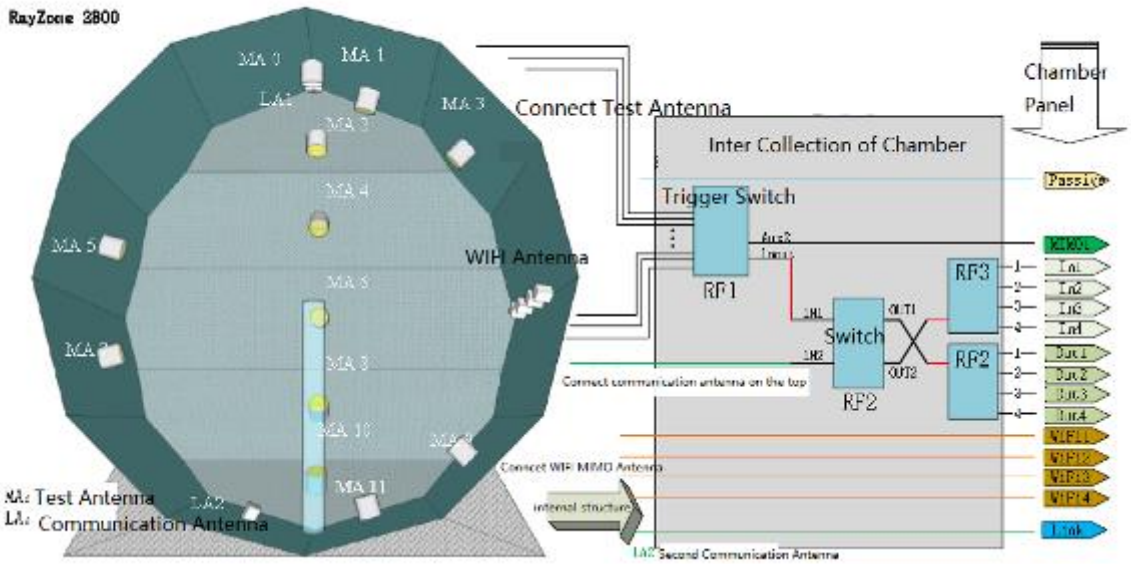


Figure 3-1

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.

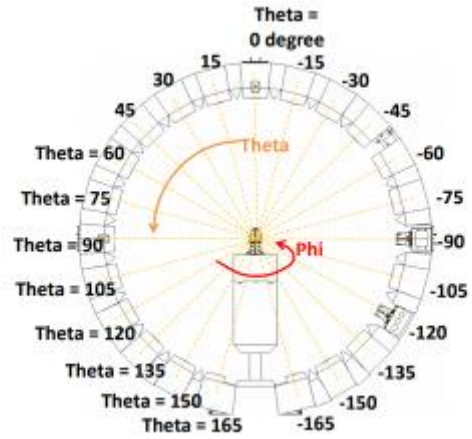


Figure 3-2

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	2026/01/15
Vector Network Analyzer	E5071C	Keysight	MY46315238	24months	2026/03/13
GTS MaxSign100 Software	V2.1	GTS(General Test System)	/	/	/

3.2 Test Setup

*需提供测试时的样机状态图，如图 3-4。

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

Figure 3-3

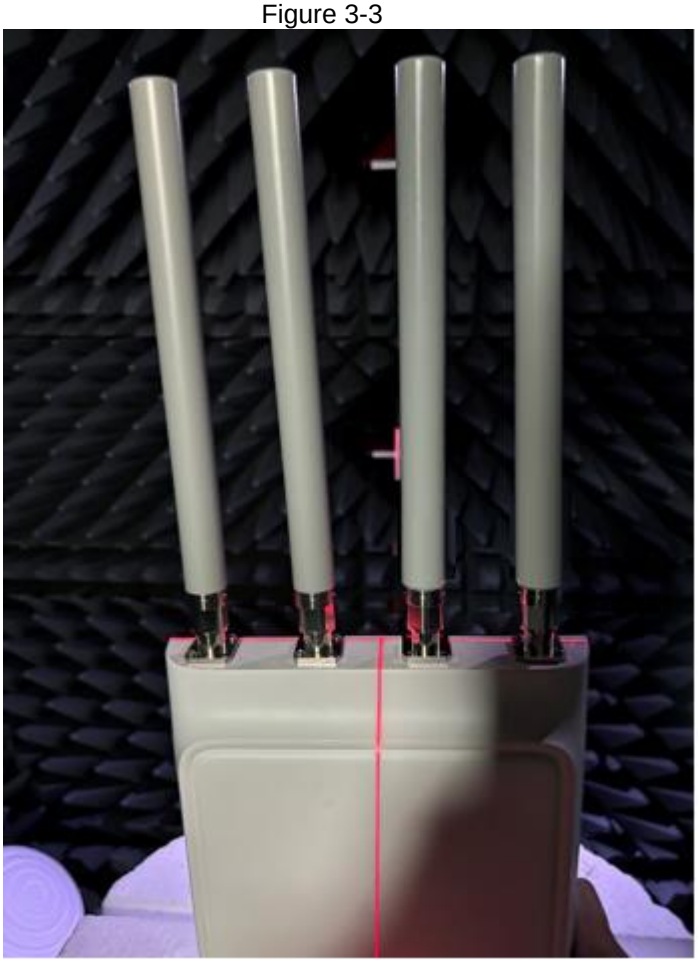
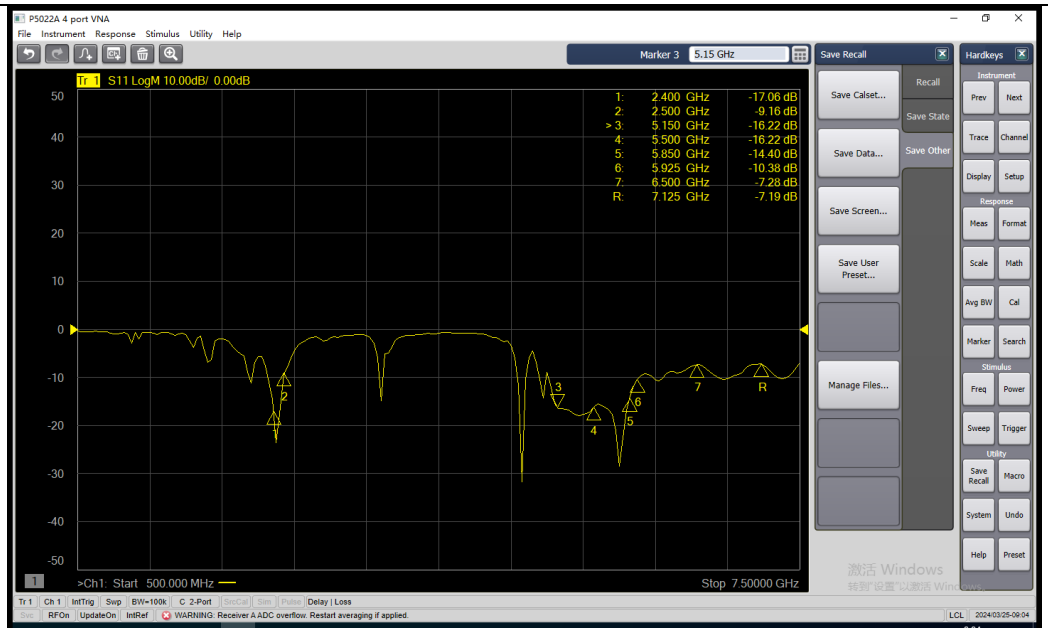


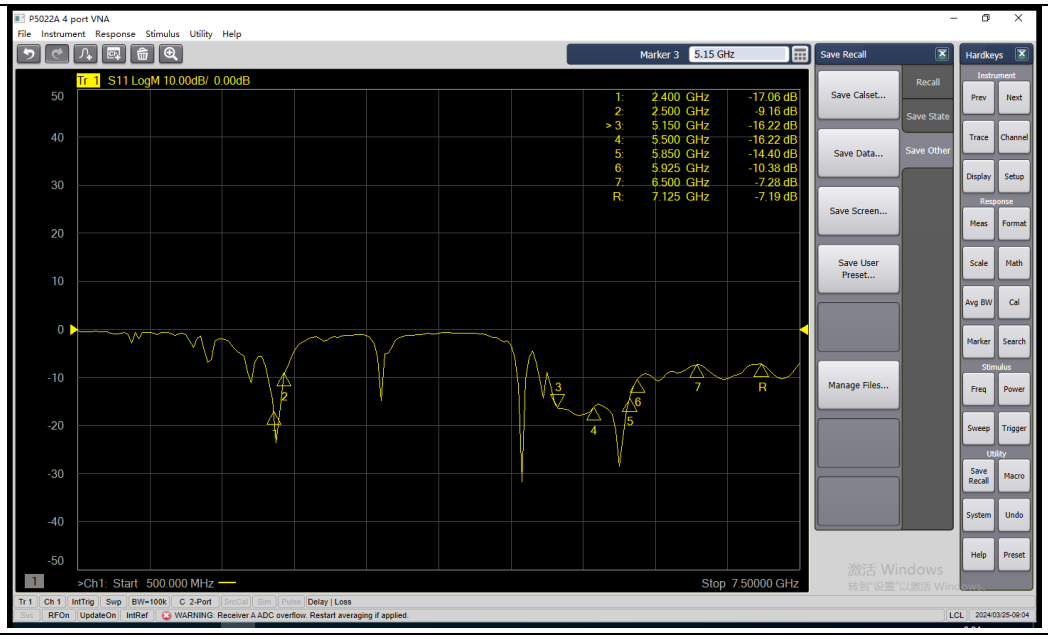
Figure 3-4

3.3 S Parameter Test Data

Ant1


P5022A 4 port VNA
File Instrument Response Stimulus Utility Help
Marker 3 5.15 GHz
Tr 1 S11 LogM 10.00dB/ 0.00dB
1: 2.400 GHz -17.06 dB
2: 2.500 GHz -9.16 dB
> 3: 5.150 GHz -16.22 dB
4: 5.500 GHz -16.22 dB
5: 5.850 GHz -14.40 dB
6: 5.925 GHz -10.38 dB
7: 6.500 GHz -7.28 dB
R: 7.125 GHz -7.19 dB
>Ch1: Start 500.000 MHz
Stop 7.50000 GHz
Save Recall
Save Calset...
Save Data...
Save Screen...
Save User Preset...
Manage Files...
Recall
Save State
Save Other
Hardkeys
Instrument
Prev
Next
Trace
Channel
Display
Setup
Response
Meas
Format
Scale
Math
Avg BW
Cal
Marker
Search
Stimulus
Freq
Power
Sweep
Trigger
Utility
Save Recall
Macro
System
Undo
Help
Preset
WARNING: Receiver A ADC overflow. Restart averaging if applied.

Ant2


P5022A 4 port VNA
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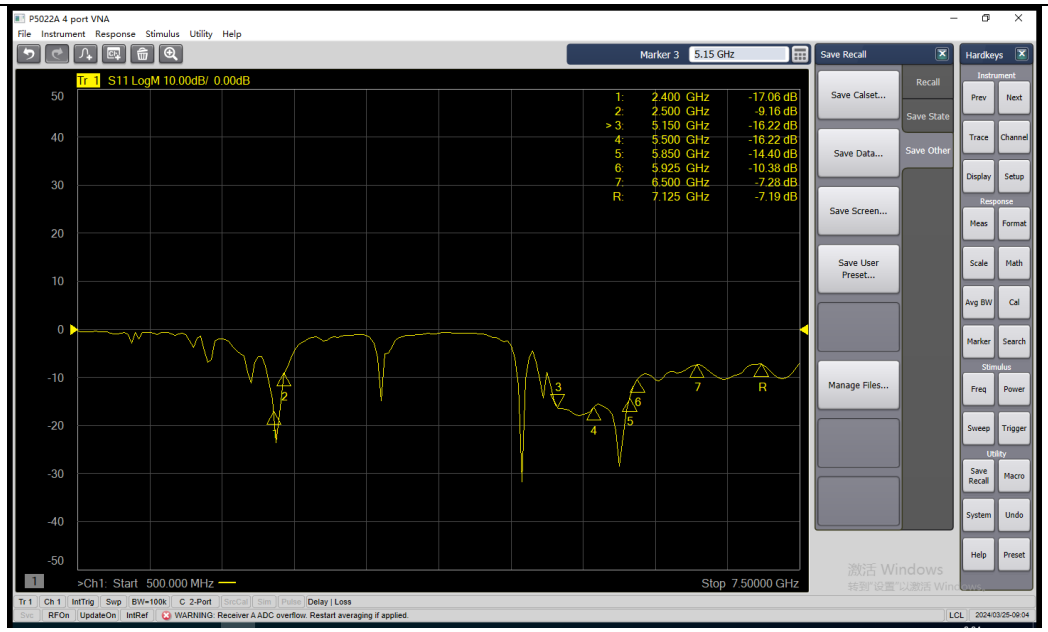
R: 7.125 GHz -7.19 dB
>Ch1: Start 500.000 MHz
Stop 7.50000 GHz
Save Recall
Save Calset...
Save Data...
Save Screen...
Save User Preset...
Manage Files...
Recall
Save State
Save Other
Hardkeys
Instrument
Prev
Next
Trace
Channel
Display
Setup
Response
Meas
Format
Scale
Math
Avg BW
Cal
Marker
Search
Stimulus
Freq
Power
Sweep
Trigger
Utility
Save Recall
Macro
System
Undo
Help
Preset
WARNING: Receiver A ADC overflow. Restart averaging if applied.

Ant3


P5022A 4 port VNA
File Instrument Response Stimulus Utility Help
Marker 3 5.15 GHz
Tr 1 S11 LogM 10.00dB/ 0.00dB
1: 2.400 GHz -17.06 dB
2: 2.500 GHz -9.16 dB
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4: 5.500 GHz -16.22 dB
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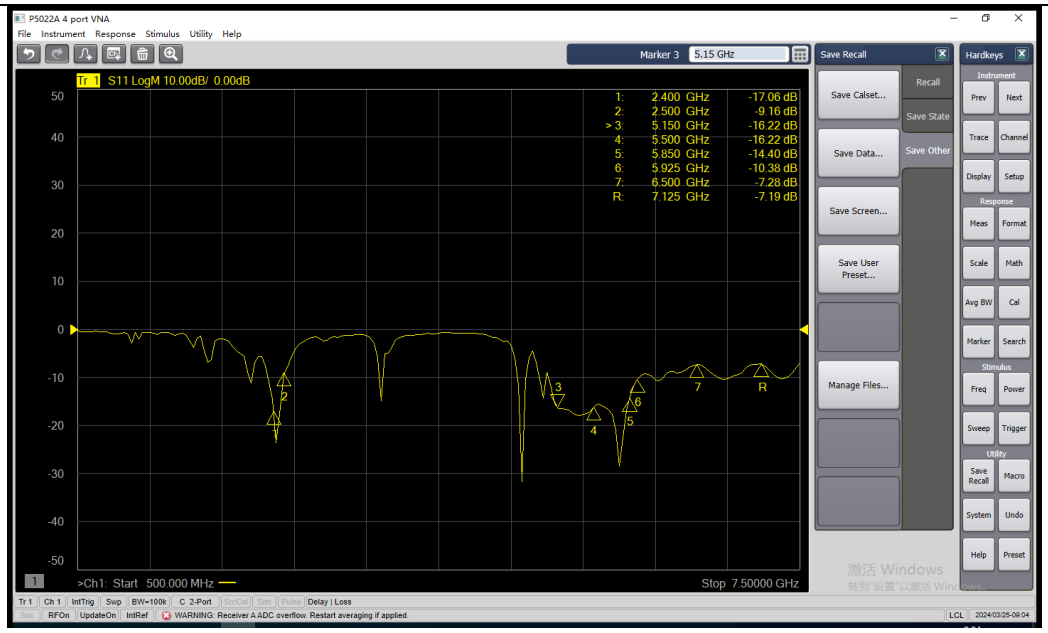
>Ch1: Start 500.000 MHz
Stop 7.50000 GHz
Save Recall
Save Calset...
Save Data...
Save Screen...
Save User Preset...
Manage Files...
Recall
Save State
Save Other
Hardkeys
Instrument
Prev
Next
Trace
Channel
Display
Setup
Response
Meas
Format
Scale
Math
Avg BW
Cal
Marker
Search
Stimulus
Freq
Power
Sweep
Trigger
Utility
Save Recall
Macro
System
Undo
Help
Preset
WARNING: Receiver A ADC overflow. Restart averaging if applied.

Ant4


P5022A 4 port VNA
File Instrument Response Stimulus Utility Help
Marker 3 5.15 GHz
Tr 1 S11 LogM 10.00dB/ 0.00dB
1: 2.400 GHz -17.06 dB
2: 2.500 GHz -9.16 dB
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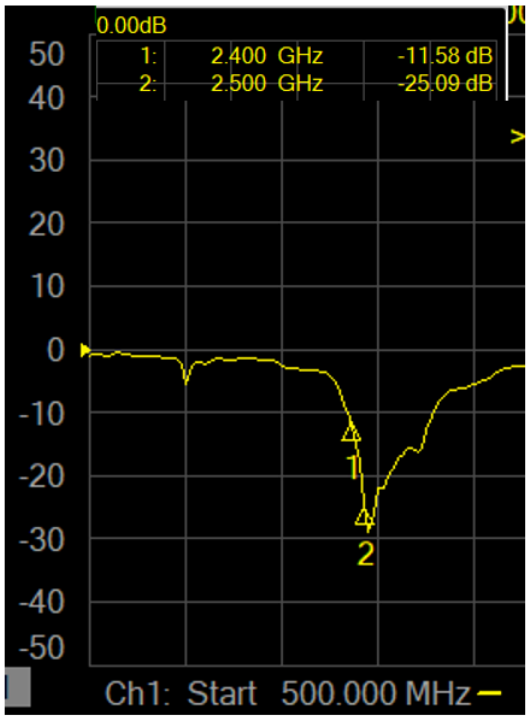
5: 5.850 GHz -14.40 dB
6: 5.925 GHz -10.38 dB
7: 6.500 GHz -7.28 dB
R: 7.125 GHz -7.19 dB
>Ch1: Start 500.000 MHz
Stop 7.50000 GHz
Save Recall
Save Calset...
Save Data...
Save Screen...
Save User Preset...
Manage Files...
Recall
Save State
Save Other
Hardkeys
Instrument
Prev
Next
Trace
Channel
Display
Setup
Response
Meas
Format
Scale
Math
Avg BW
Cal
Marker
Search
Stimulus
Freq
Power
Sweep
Trigger
Utility
Save Recall
Macro
System
Undo
Help
Preset
WARNING: Receiver A ADC overflow. Restart averaging if applied.

BLE Ant



3.4 Antenna Gain

3.4.1 Peak Gain

Frequency	2.45GHz 2400~2500MHz	5.2GHz 5150~5250MHz	5.3GHz 5250~5350MHz	5.6GHz 5470~5725MHz
Ant1 MaxGain(dBi)	6.00	3.30	3.70	5.00
Ant2 MaxGain(dBi)	6.00	3.30	3.70	5.00
Ant3 MaxGain(dBi)	6.00	3.30	3.70	5.00
Ant4 MaxGain(dBi)	6.00	3.30	3.70	5.00
BLE Ant MaxGain(dBi)	5.00	\	\	\
Ant1 Polarization/Φ (°)/θ (°)	Theta/90/90	Theta/90/60	Theta/90/45	Theta/90/45
Ant2 Polarization/Φ (°)/θ (°)	Theta/90/45	Theta/90/45	Theta/90/45	Theta/90/60
Ant3 Polarization/Φ (°)/θ (°)	Theta/90/60	Theta/90/60	Theta/95/60	Theta/90/60
Ant4 Polarization/Φ (°)/θ (°)	Theta/90/60	Theta/90/60	Theta/90/60	Theta/90/45
BLE Ant Polarization/Φ (°)/θ (°)	Theta/90/60	\	\	\
Max Gain(dBi)	6.00	3.30	3.70	5.00

Frequency	5.8GHz 5725~5895MHz
Ant1 MaxGain(dBi)	6.00

Ant2 MaxGain(dBi)	6.00
Ant3 MaxGain(dBi)	6.00
Ant4 MaxGain(dBi)	6.00
Ant1 Polarization/Φ (°) / θ (°)	Theta/90/90
Ant2 Polarization/Φ (°) / θ (°)	Theta/90/45
Ant3 Polarization/Φ (°) / θ (°)	Theta/90/60
Ant4 Polarization/Φ (°) / θ (°)	Theta/90/60
Max Gain(dBi)	6.00

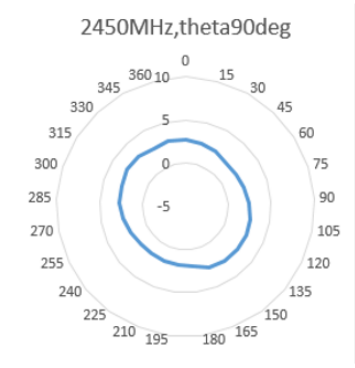
3.4.2 Horizontal plane Gain

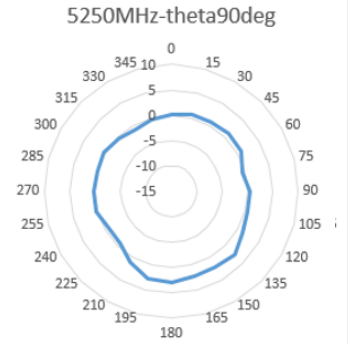
3.4.2.1. 5150~5250MHz

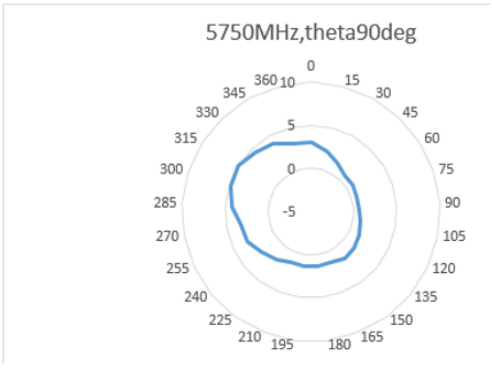
θ	>30°
Ant1 MaxGain(dBi)	-7.36
Ant2 MaxGain(dBi)	-7.36
Ant3 MaxGain(dBi)	-7.36
Ant4 MaxGain(dBi)	-7.36
Max Gain(dBi)	-7.36

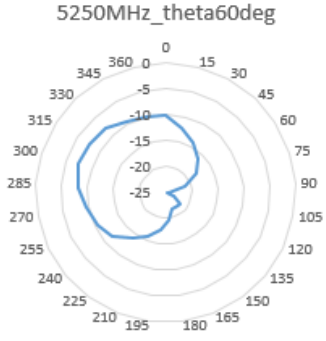
3.5 Antenna Radiation Pattern

Ant1

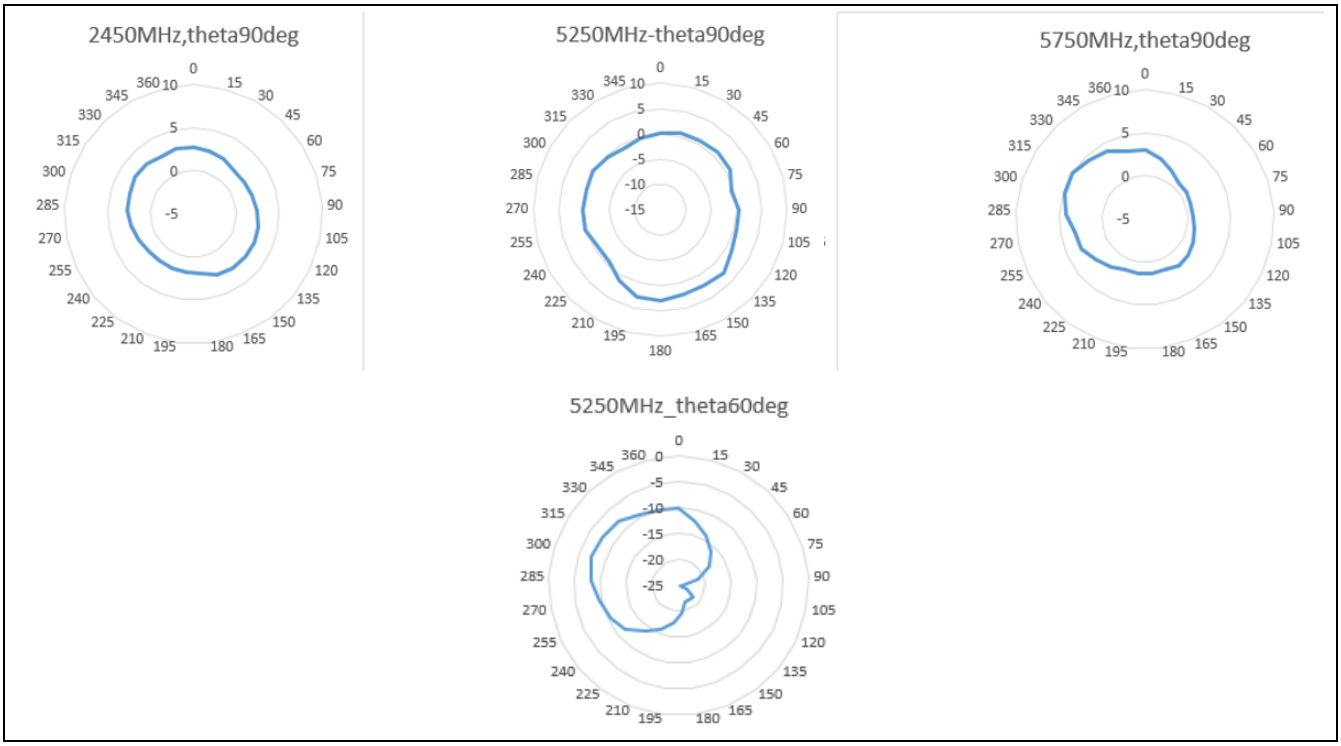




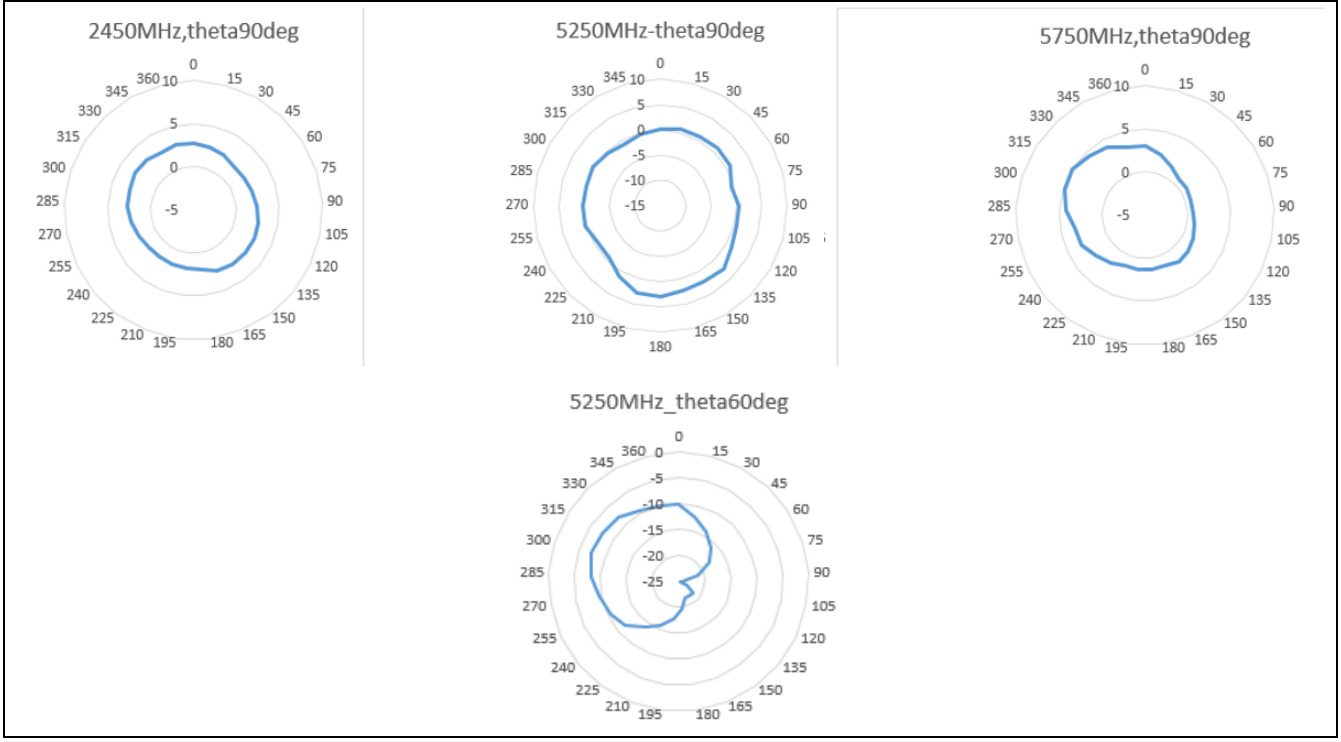




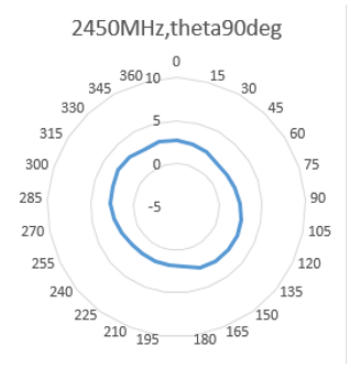
Ant2

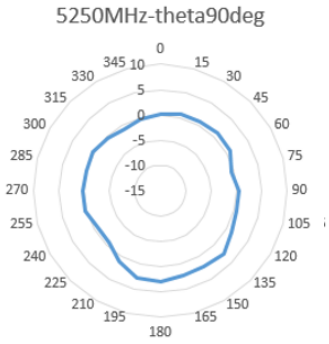

2450MHz,theta90deg
5250MHz-theta90deg
5750MHz,theta90deg
5250MHz_theta60deg

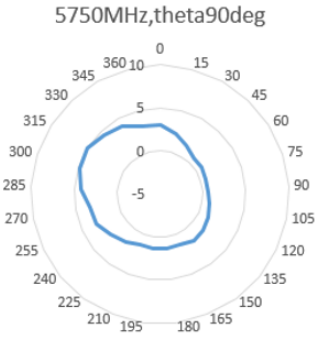
Ant3

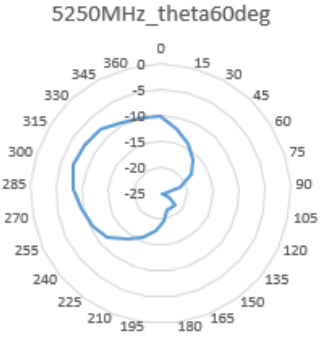

2450MHz,theta90deg
5250MHz-theta90deg
5750MHz,theta90deg
5250MHz_theta60deg

Ant4


2450MHz,theta90deg


5250MHz-theta90deg


5750MHz,theta90deg


5250MHz_theta60deg

BLE Ant