

Aruba AP27 RF Performance report

Contents

- 1. Test Information**
- 2. Test Configuration**
- 3. Test Setup & Procedure**
- 4. Test Equipment & Calibration**
- 5. Antenna Details**
- 6. Antenna performance summary - Table**
- 7. Antenna performance_Return loss & Isolation & Efficiency**
- 8. Antenna performance_3D pattern & 2D pattern**
- 9. Summary**

Revision History

| Released Date | Version | Record |
|---------------|---------|-------------------|
| 2023/07/31 | Rev 1.0 | Initial Solution |
| 2023/11/02 | Rev 1.1 | Update the format |

Date: 02/11/2023

Author: Henry

1.Test Information

| Item | Description |
|------------------|--|
| Brand Name | HPE Aruba |
| DUT Equipment | AP-27 |
| Test Location | Beijing |
| Test Condition | RayZone 2800 |
| Test Engineer | Yanzhengsen |
| Test Environment | Microwave chamber |
| Manufacturer | Shanghai Amphenol Airwave Communication Electronics Co., Ltd. Beijing RD Branch Room5113,Hongxiang 1989 Cultural and Creative Industrial Park, Haidian District, Beijing |
| Test Date | 2023/07/31 |

Test engineer signature:



4. Test Equipment & Calibration

Network analyzer and reference antennas are used for calibration. Path loss and cable loss for different frequency bands can be checked and calculated.

| Instrument | Brand | Characteristics | Model No. | Serial No. | Calibration Date |
|--------------------------------|-------|------------------------|----------------|------------|--------------------------|
| Electric dipole sleeve antenna | GTS | 600 MHz ~ 700 MHz | RA-L0607DP | 19011002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 700 MHz ~ 800 MHz | RA-L0708DP | 19011001 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 800 MHz ~ 1000 MHz | RA-L0810DP | 19011002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 1100 MHz ~ 1300 MHz | RA-L1113DP | 19011002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 1400 MHz ~ 1700 MHz | RA-L1417DP | 19011002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 1700 MHz ~ 1900 MHz | RA-L1719DP | 19011002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 1900 MHz ~ 2300 MHz | RA-L1923DP | 19011002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 2300 MHz ~ 2900 MHz | RA-L2329DP | 19011002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 2900 MHz ~ 3200 MHz | RA-L2932DP | 19011002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 3200 MHz ~ 3800 MHz | RA-L3238DP | 19011002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 3800 MHz ~ 4400 MHz | RA-L3844DP | 19011002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 4400 MHz ~ 4900 MHz | RA-L4449DP | 202011003 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 4900 MHz ~ 5900 MHz | RA-L4959DP | 202101002 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 5900 MHz ~ 6900 MHz | RA-L5969DP | 202011003 | Dec.14, 2022 |
| Electric dipole sleeve antenna | GTS | 6900 MHz ~ 8000 MHz | RA-L6980DP | 202101002 | Dec.14, 2022 |
| MaxSign Libra | GTS | Control chamber System | RayZone2800C_Z | | Non-Calibration Required |

5. Antenna Details

| Ant No. | Part Number | Operating Band | Type | Size(L*W*H) | Cable Length(mm) | Polarization type | Cable type | Material |
|---------|----------------|----------------|--------|-------------|------------------|-------------------|-------------|----------|
| A1 | ANT1-AP27-Dual | WIFI 2+5G | Dipole | 27.0*21.0*1 | 150 | vertical | 1.37 normal | PCB |
| A2 | ANT2-AP27-Dual | WIFI 2+5G | Dipole | 36.7*36.7*1 | 174 | horizontal | 1.37 normal | PCB |

6. Antenna performance summary

| | S11(dB) | | Efficiency(%) | |
|-----------------|---------|--------------|---------------|----------------|
| | SPC | Test (Worst) | SPC | Test (Average) |
| Ant1 (2.4G+5G) | -10 | -12.7/-10.5 | 70 | 70.5/70.1 |
| Ant2 (2.4G+5G) | -10 | -10.6/-11.3 | 70 | 72.2/70.5 |

6. Antenna performance summary

| Item | SPC |
|------------------------------|---------------------|
| Peak Gain (dBi) | 3dBi<peak gain<5dBi |
| Horizontal cut Gain Flatness | <10dB |

| FR-4 | Ant1 (2.4G+5G V) | | | | | | Ant2 (2.4G+5G H) | | | | | |
|-----------------------|------------------|-------|-------|-------|-------|-------|------------------|-------|-------|-------|-------|-------|
| | 2.4 | 2.45 | 2.5 | 5.1 | 5.5 | 5.85 | 2.4 | 2.45 | 2.5 | 5.1 | 5.5 | 5.85 |
| Peak Gain (dBi) | 1.70 | 1.75 | 2.53 | 2.58 | 2.23 | 2.46 | 2.64 | 2.83 | 3.0 | 3.37 | 2.9 | 2.97 |
| Average Gain 85° | -0.85 | -0.91 | -0.94 | -0.74 | -1.37 | -1.13 | -0.69 | -0.45 | -0.60 | -1.00 | -2.34 | -2.47 |
| Average Gain Theta90 | -0.85 | -0.95 | -0.84 | -0.71 | -1.31 | -0.94 | -0.47 | -0.20 | -0.46 | -0.81 | -1.53 | -1.50 |
| Flatness(dB) 85° | 6.23 | 6.94 | 8.32 | 6.79 | 6.95 | 8.21 | 5.54 | 4.54 | 5.41 | 7.50 | 9.30 | 9.48 |
| Flatness(dB) Theta 90 | 7.60 | 8.56 | 9.34 | 6.70 | 7.77 | 8.35 | 5.26 | 3.81 | 4.97 | 6.85 | 8.02 | 8.87 |

| ANT1&ANT2 | 2.4 | 2.45 | 2.5 | 5.1 | 5.5 | 5.85 |
|---------------------------|------|------|------|------|------|------|
| Uncorrelated Gain (dBi) | 1.32 | 1.19 | 1.53 | 2.83 | 1.67 | 2.28 |

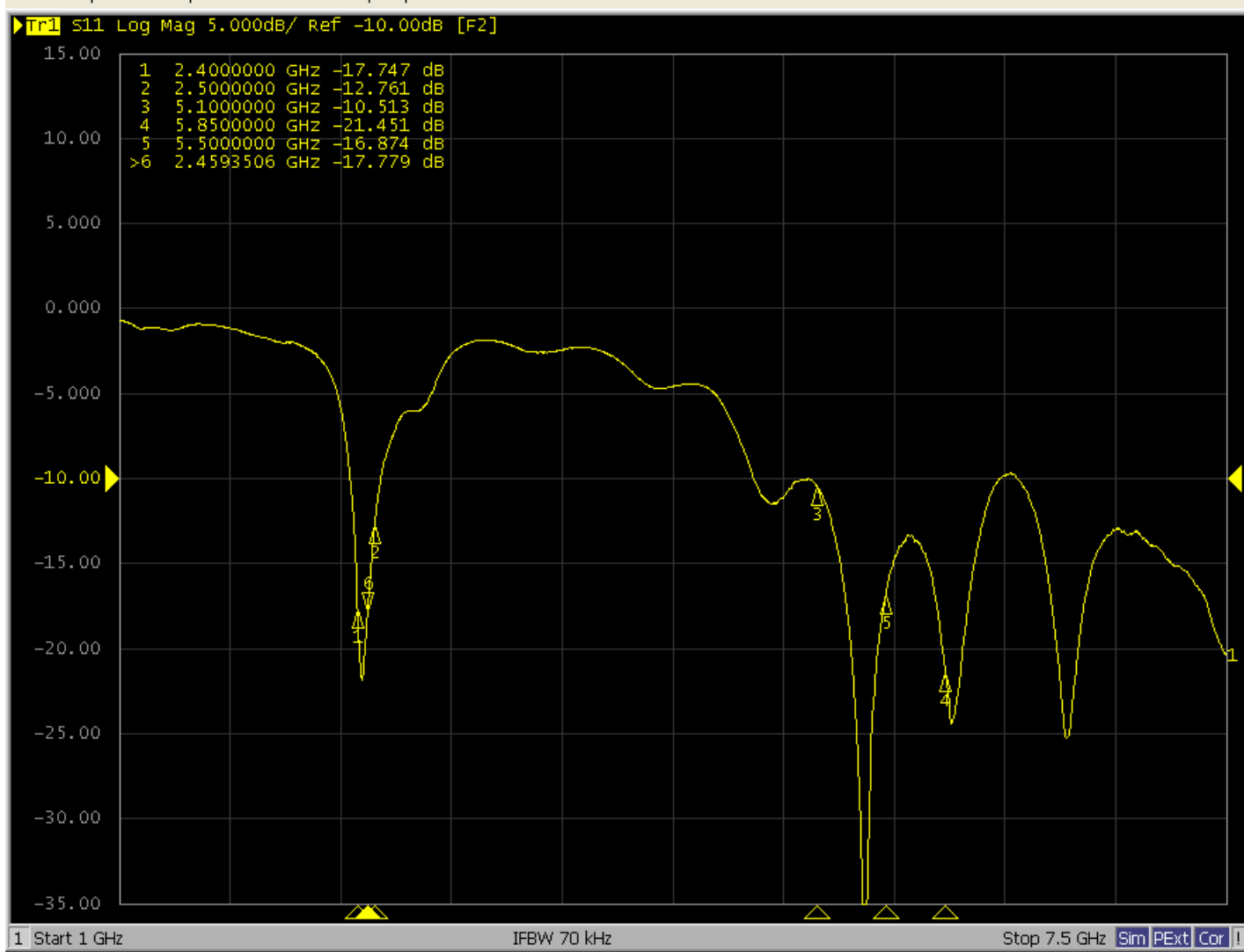
6. Antenna performance summary

SPC

| | | |
|------------------------|-------------------|-----------------|
| 频率 (GHz) 隔离度(dB) | 2.4----2.5(worst) | 5.1-5.85(worst) |
| | 20 | 20 |
| Ant1&Ant2 | | |

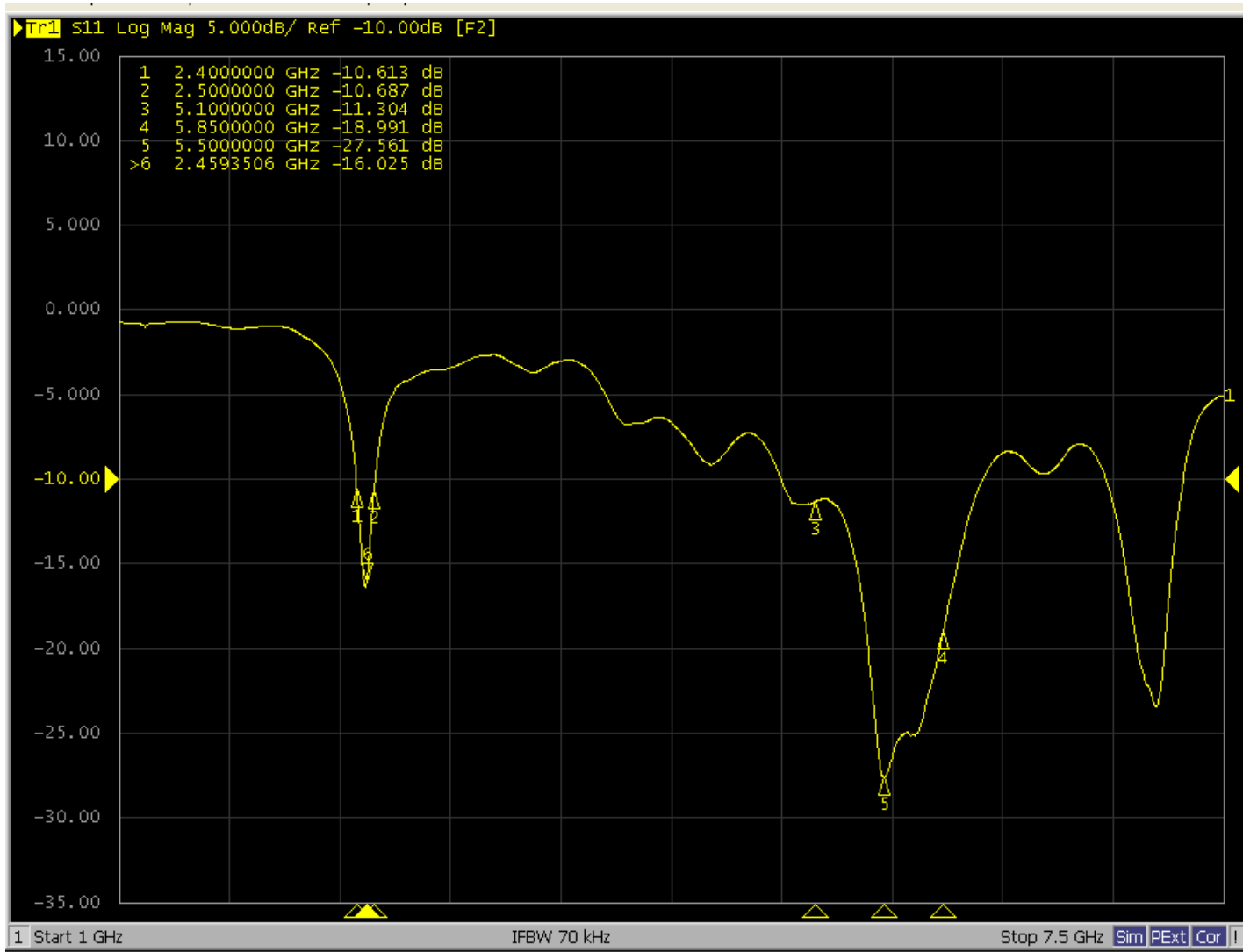
| | | |
|------------------------|-------------------|-----------------|
| 频率 (GHz) 隔离度(dB) | 2.4----2.5(worst) | 5.1-5.85(worst) |
| | 25 | 27 |
| Ant1&Ant2 | | |

7. Antenna performance_Return loss



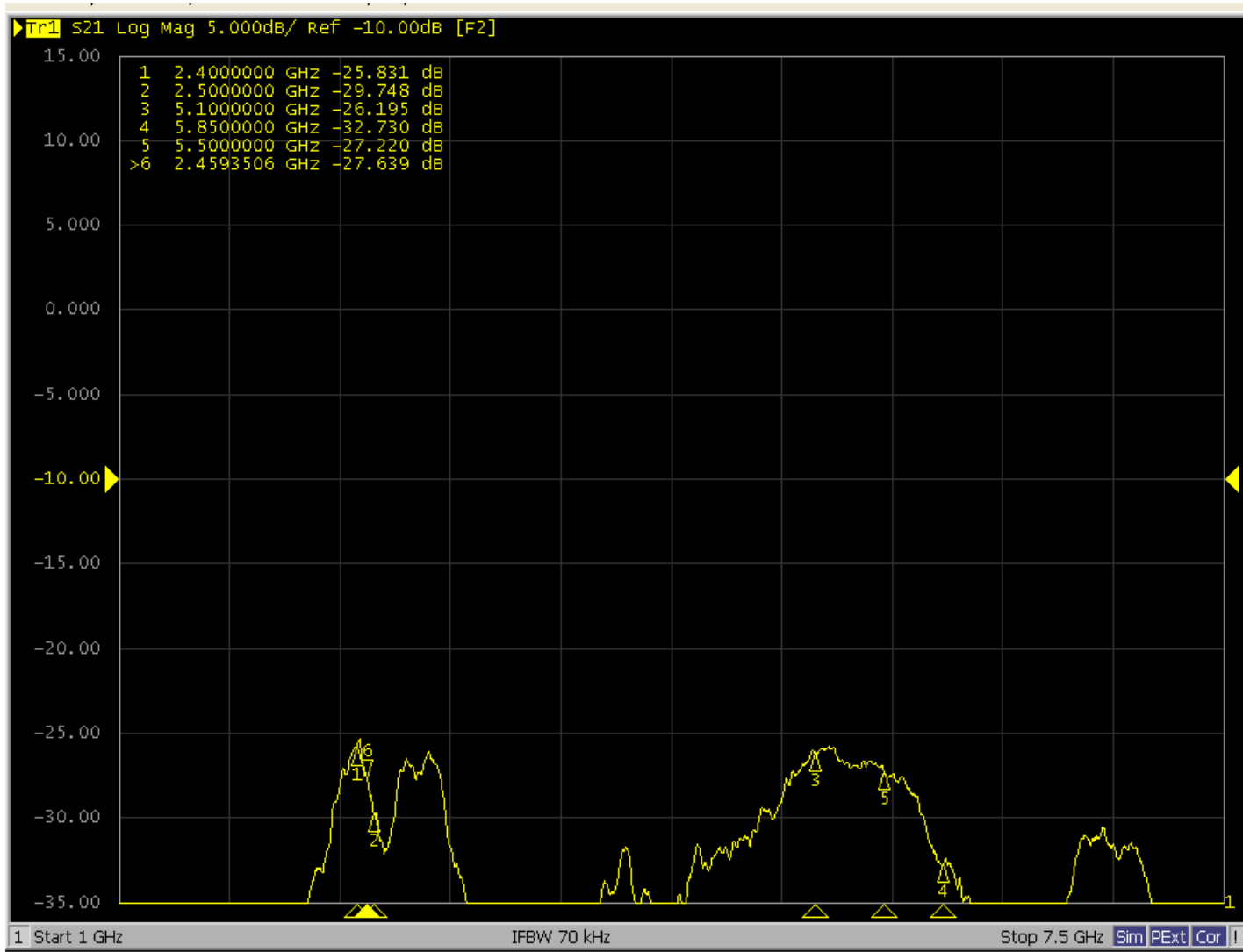
Ant1_V (2.4G+5G)

7. Antenna performance_Return loss



Ant2_H (2.4G+5G)

7. Antenna performance_Isolation



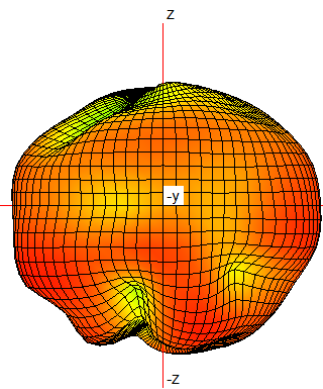
7. Antenna performance_Efficiency(%)

| Ant1 | | Ant2 | |
|----------|--------|----------|--------|
| Fre(Mhz) | Eff(%) | Fre(Mhz) | Eff(%) |
| 2.4 | 68.67 | 2.4 | 71.54 |
| 2.45 | 70.19 | 2.45 | 71.30 |
| 2.5 | 73.72 | 2.5 | 73.91 |
| 5.1 | 70.27 | 5.1 | 76.87 |
| 5.5 | 69.71 | 5.5 | 70.72 |
| 5.85 | 70.77 | 5.85 | 71.35 |

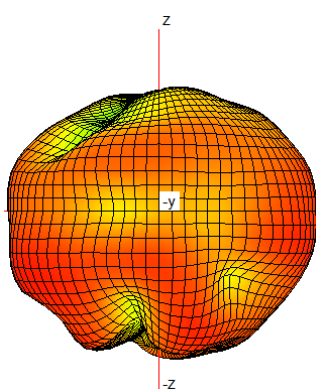
8. Antenna performance_3D Pattern

ANT1_V

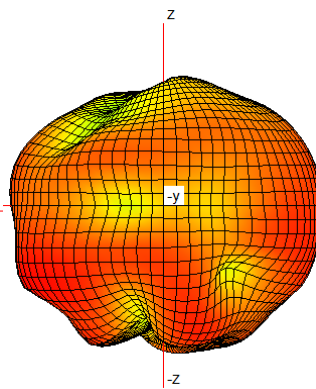
2.4G



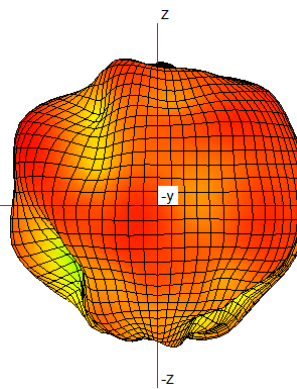
2.45G



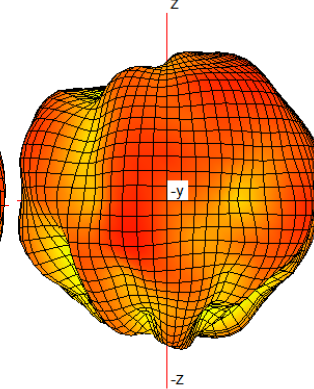
2.5G



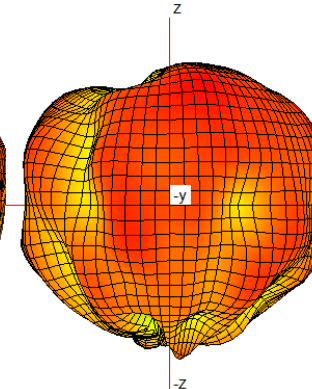
5.1G



5.5G

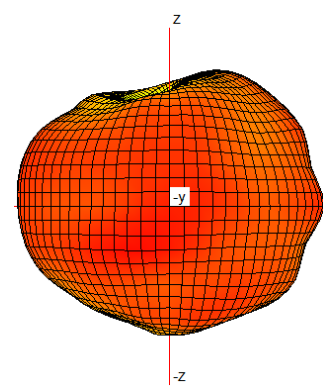


5.85G

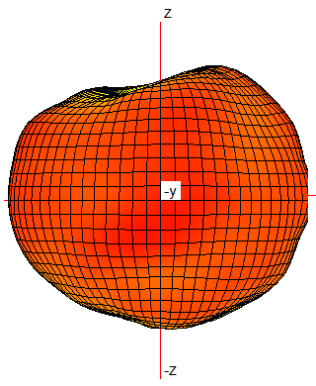


ANT2_H

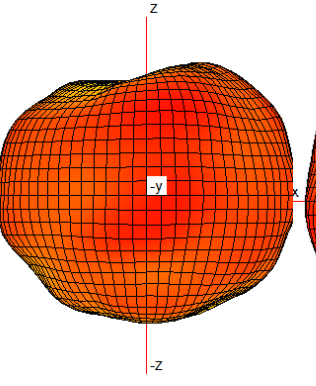
2.4G



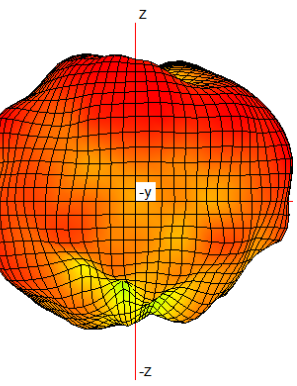
2.45G



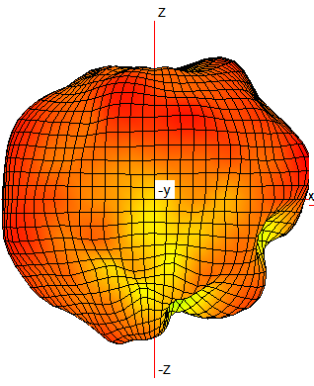
2.5G



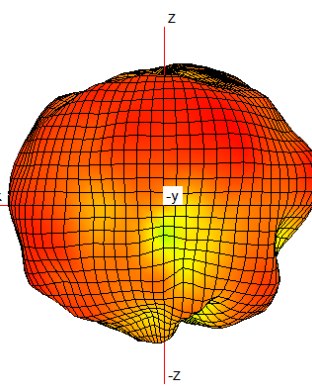
5.1G



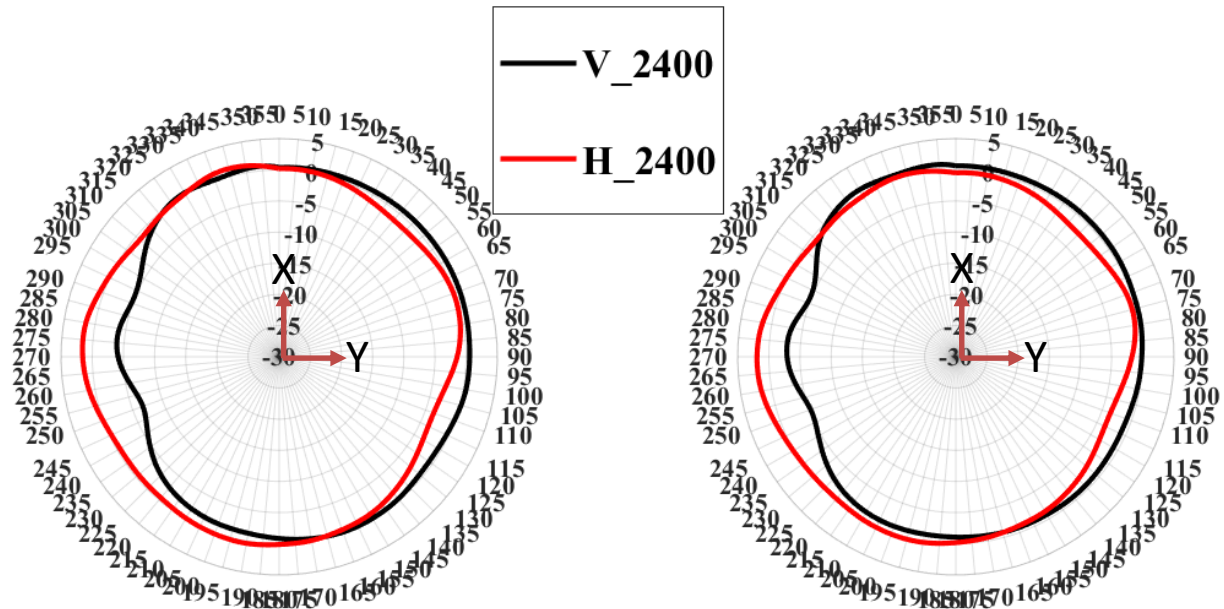
5.5G



5.85G

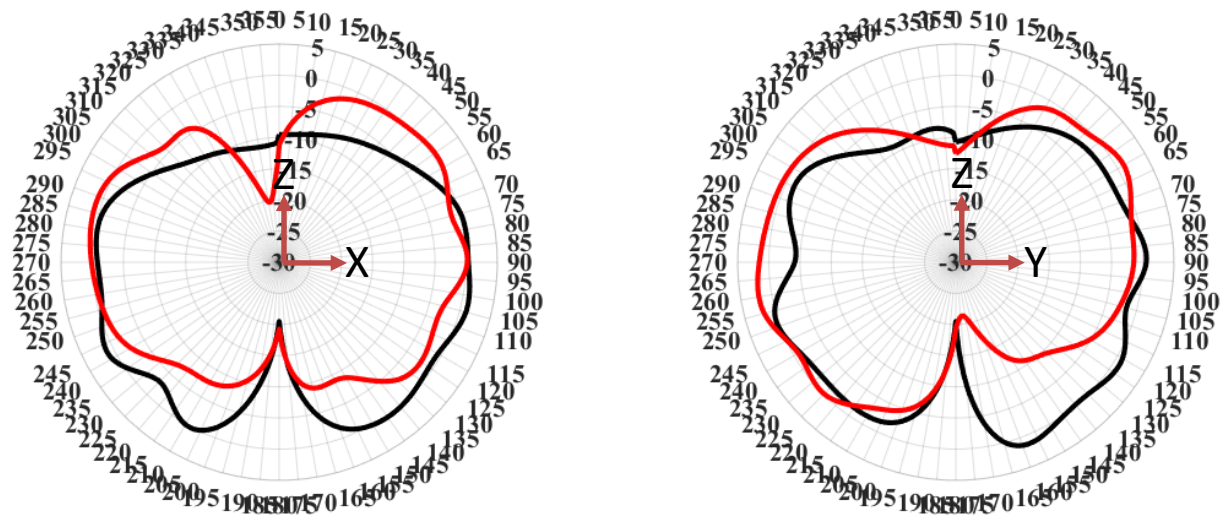


8. Antenna performance_2D Pattern



Theta 90° (xoy)

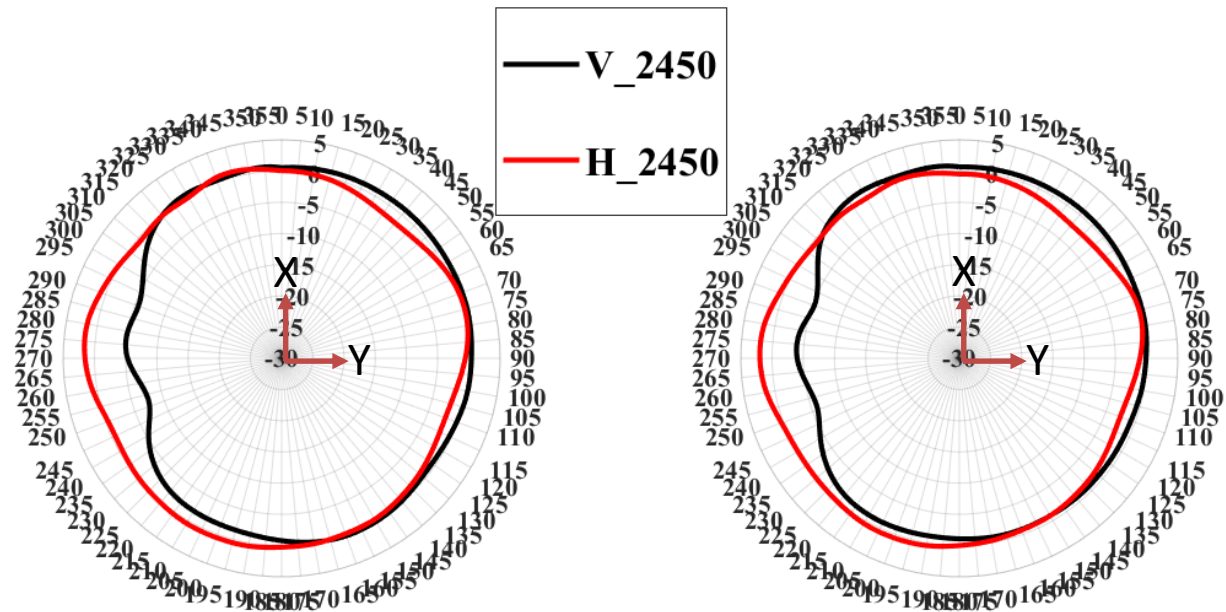
85° (xoy -5°)



Phi 0° (xoz)

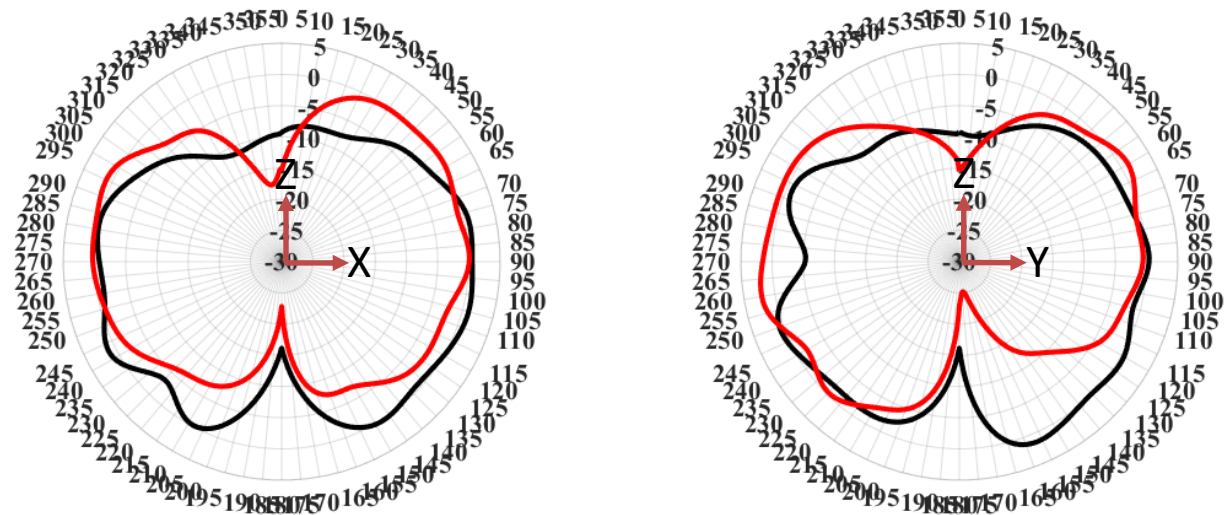
Phi 90° (yoz)

8. Antenna performance_2D Pattern



Theta 90 (xoy)

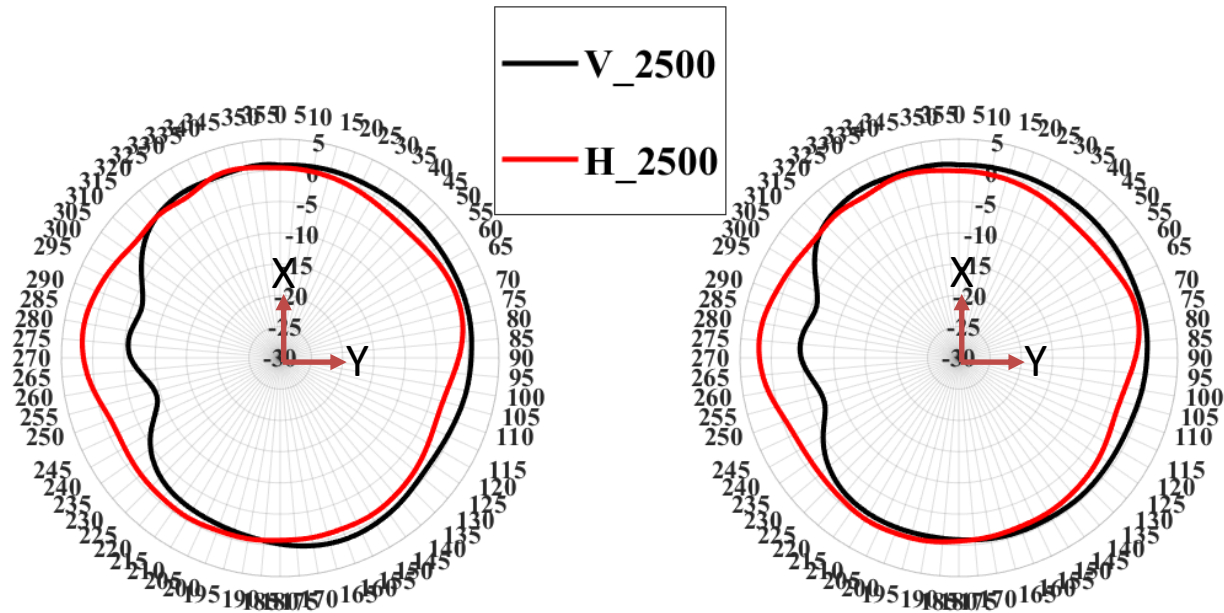
85° (xoy -5°)



Phi 0° (xoz)

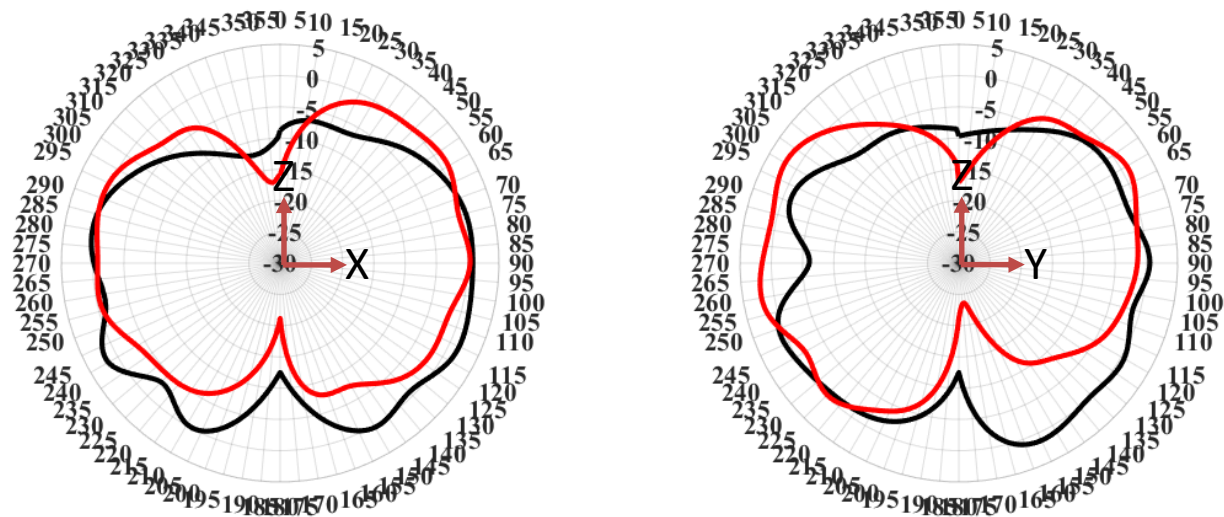
Phi 90° (yoz)

8. Antenna performance_2D Pattern



Theta 90 (xoy)

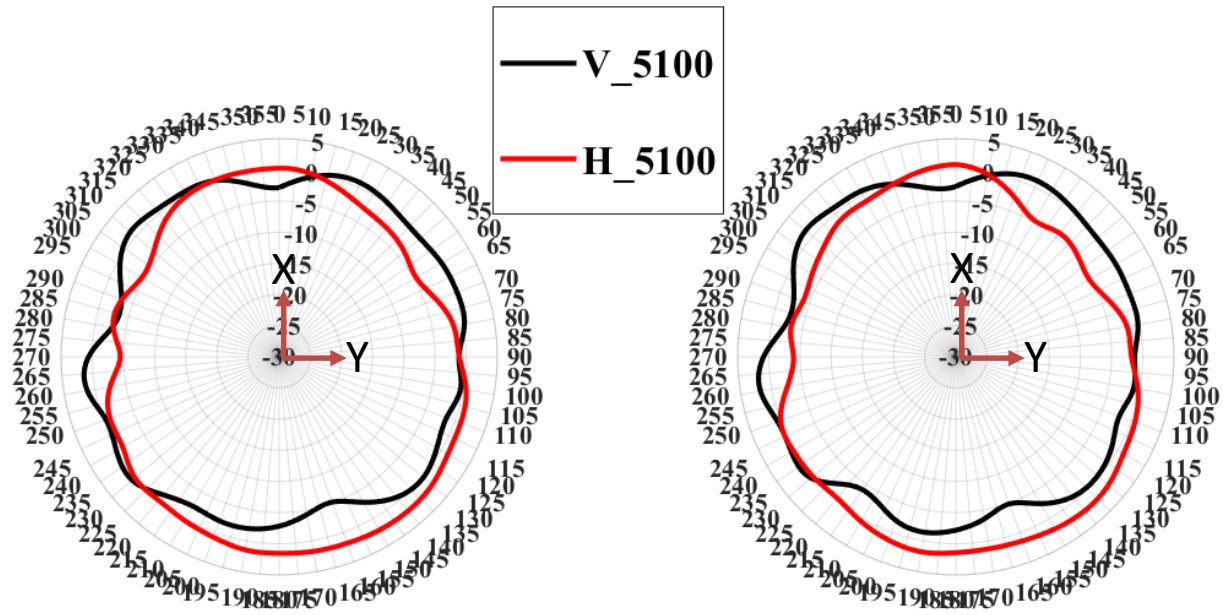
85° (xoy -5°)



PHI 0° (xoz)

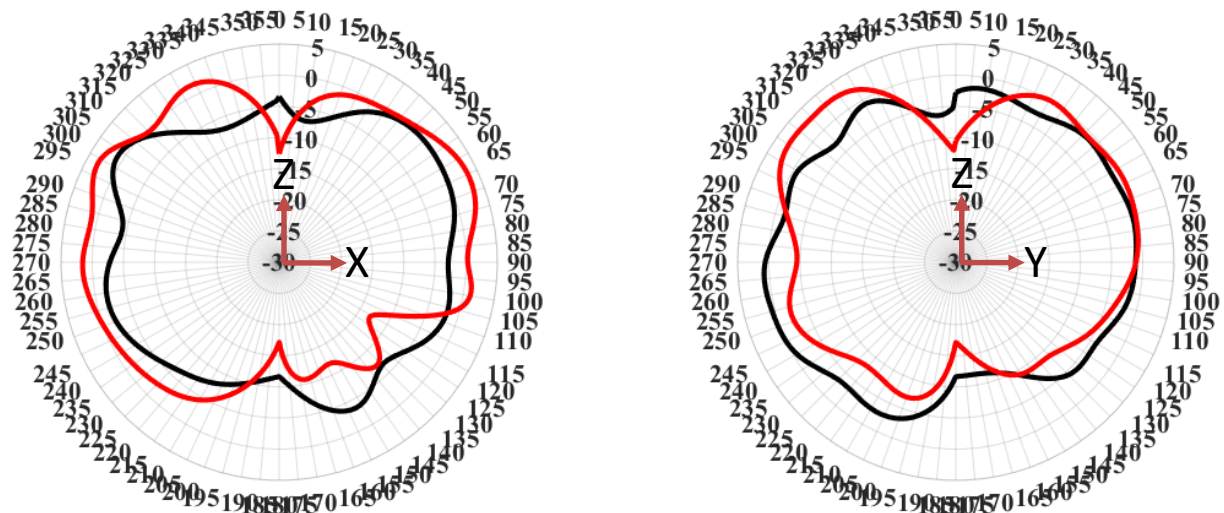
PHI 90° (yoz)

8. Antenna performance_2D Pattern



Theta 90 (xoy)

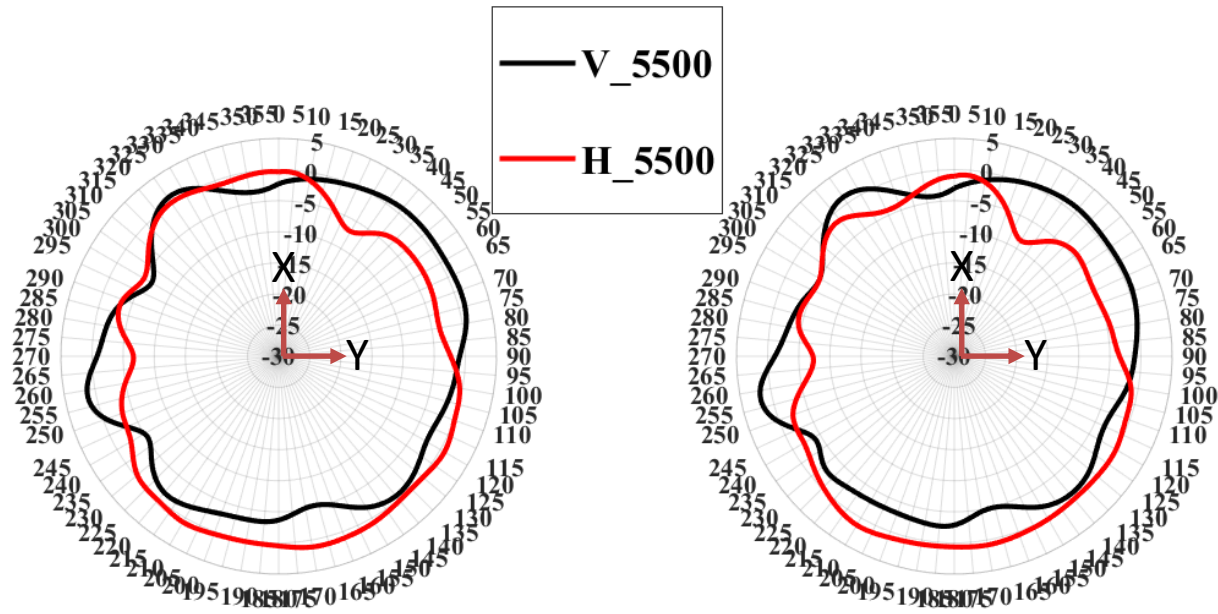
85° (xoy -5°)



PHI 0° (xoz)

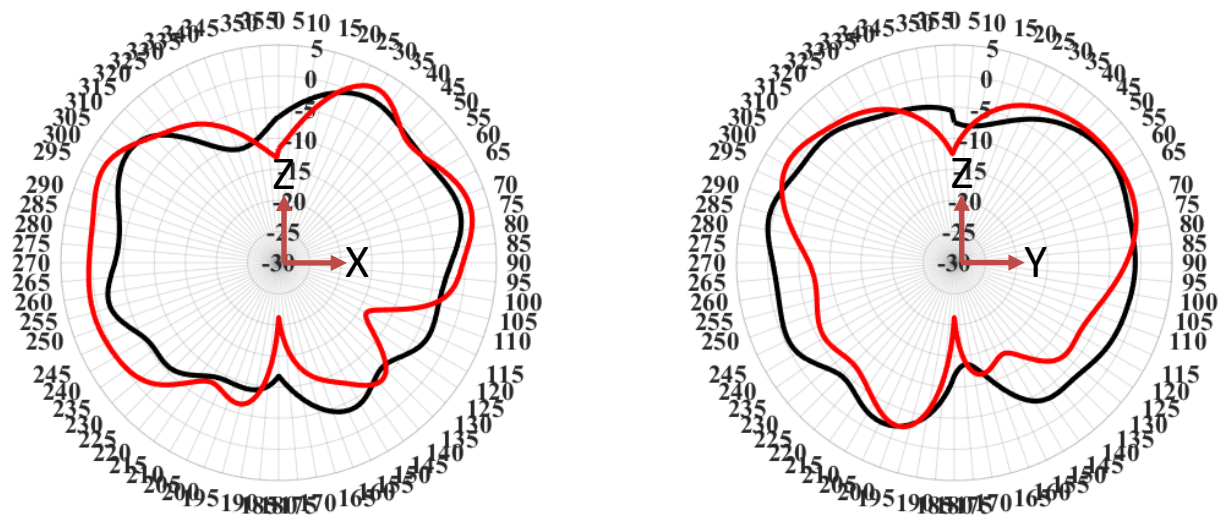
PHI 90° (yoz)

8. Antenna performance_2D Pattern



Theta 90° (xoy)

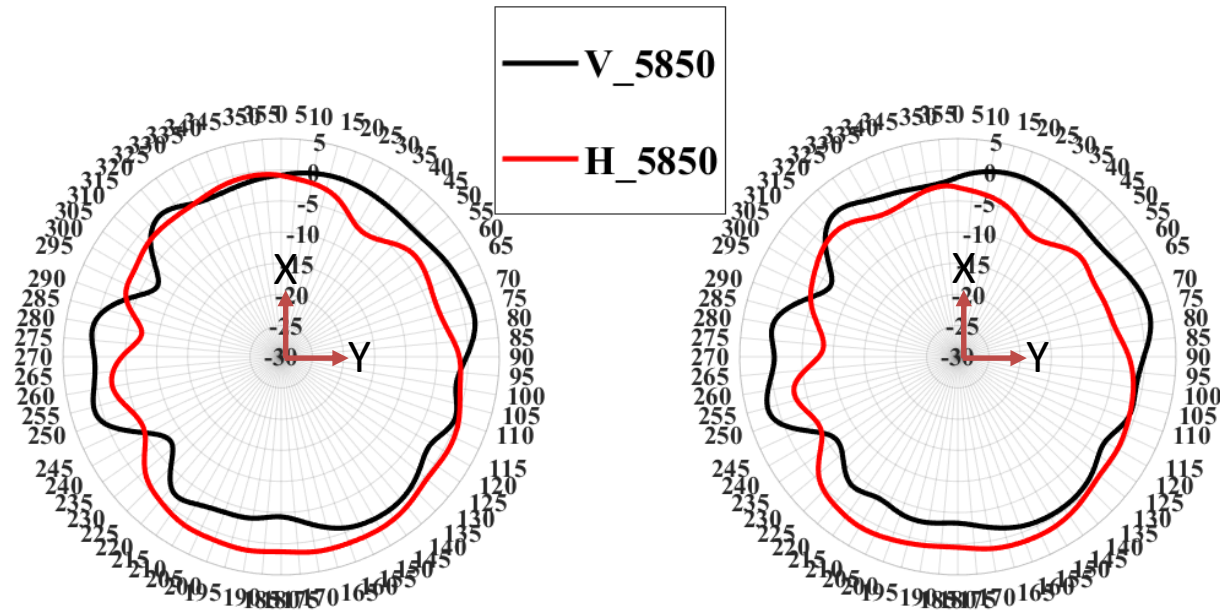
85° (xoy -5°)



PHI 0° (xoz)

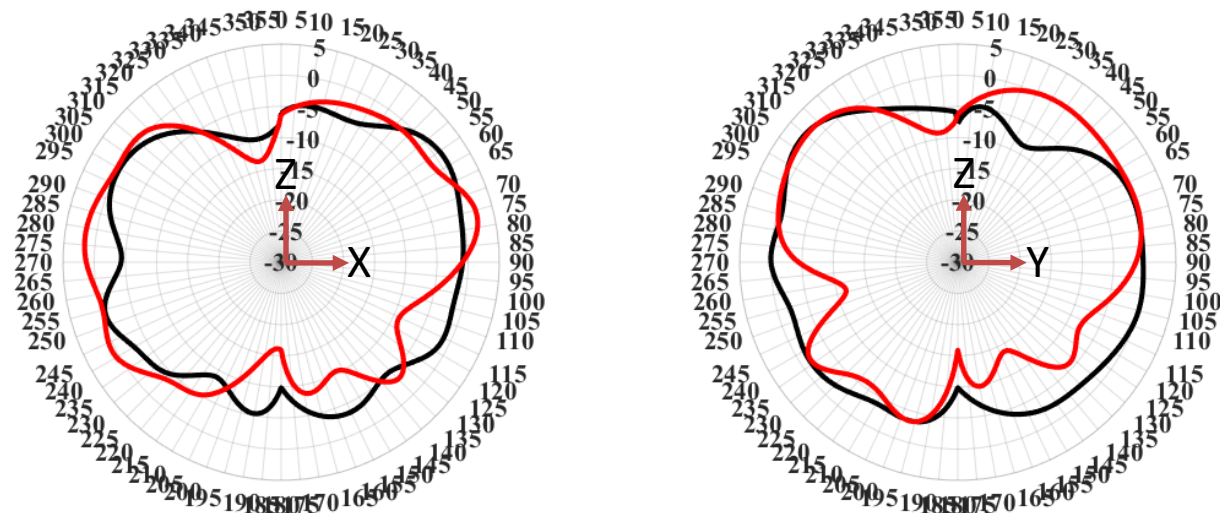
PHI 90° (yoz)

8. Antenna performance_2D Pattern



Theta 90 (xoy)

85° (xoy -5°)



Phi 0° (xoz)

Phi 90° (yoz)

9. Summary

S11, S21 ,Efficiency and Flatness can meet the SPC.