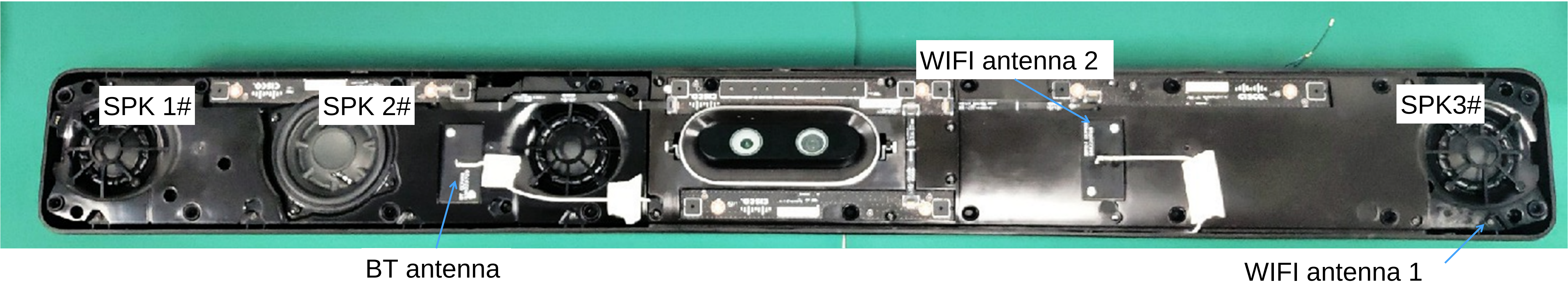


# Amphenol | Brooklyn antenna RF report 2022-11-28

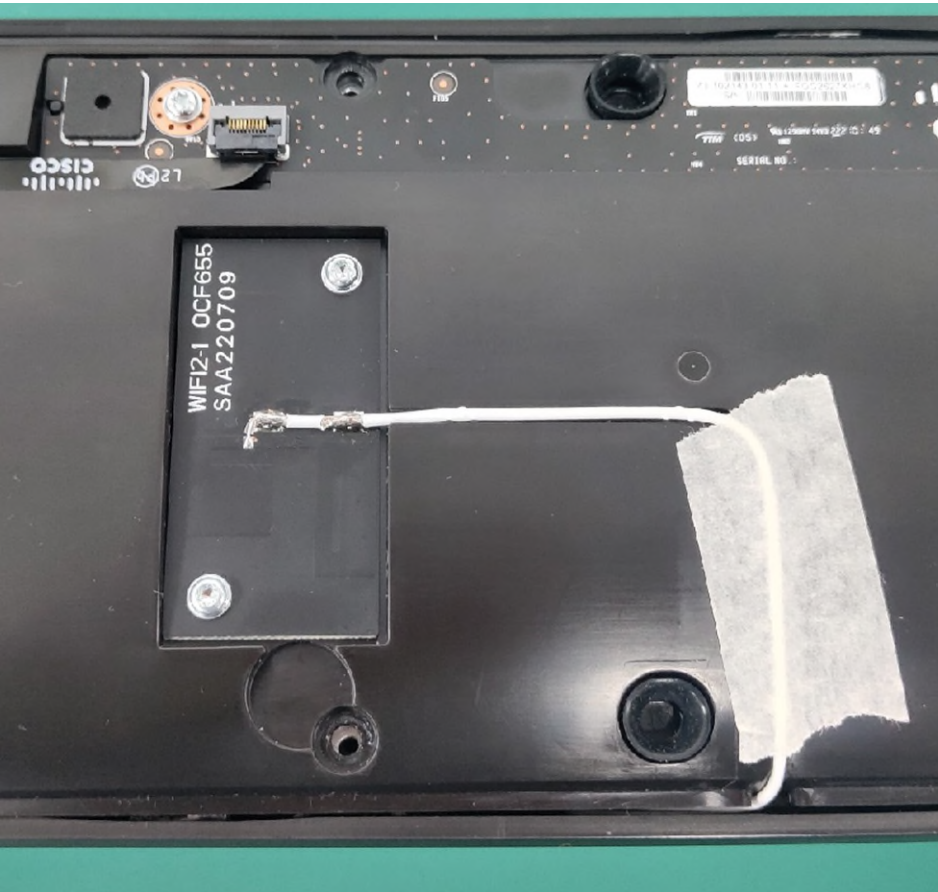
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| Date       | Version | Description                                             |
|------------|---------|---------------------------------------------------------|
| 2022.09.22 | 1.0     | Preliminary performance report base on real device.     |
| 2022.10.11 | 1.1     | I-PEX receptacle and transmission line impedance Study. |
| 2022.10.21 | 1.2     | Fine-tune antenna performance.                          |
| 2022.11.28 | 2.0     | Preliminary performance report base on DV unit.         |
|            |         |                                                         |
|            |         |                                                         |





BT antenna  
(50\*25\*1mm)



WIFI antenna 2  
(50\*25\*1mm)



WIFI antenna 1  
(50\*25\*1mm)



soldered to ground





| Antenna        | Frequency ranges (MHz)        | Return loss in a working range | Efficiency                                   |
|----------------|-------------------------------|--------------------------------|----------------------------------------------|
| WIFI antenna 1 | 2400-2500/5170-5835/5925-7125 | $\leq -10$ dB                  | $\geq 40\%$ at 5/6GHz, $\geq 50\%$ at 2.4GHz |
| WIFI antenna 2 | 2400-2500/5170-5835/5925-7125 | $\leq -10$ dB                  | $\geq 40\%$ at 5/6GHz, $\geq 50\%$ at 2.4GHz |
| BT antenna     | 2400-2500                     | $\leq -10$ dB                  | $\geq 50\%$                                  |

Isolation between antennas:

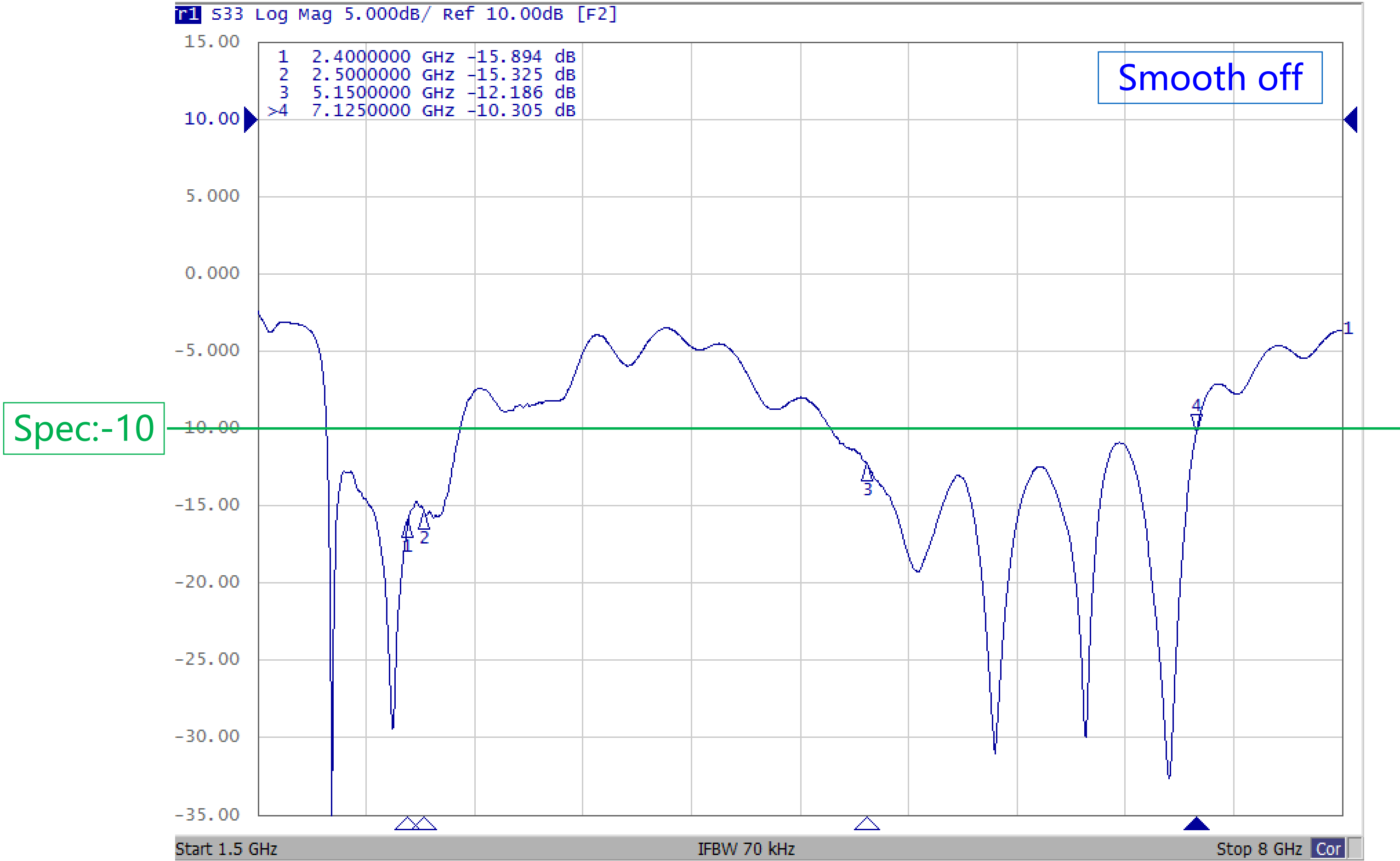
Isolation between WIFI antenna 1 and BT antenna at 2.4GHz band  $\geq 35$  dB

Isolation between WIFI antenna 2 and BT antenna at 2.4GHz band  $\geq 35$  dB

Isolation between WIFI antennas at target bands  $\geq 20$  dB

WIFI antenna 1

# Brooklyn antenna | S-parameter & antenna gain

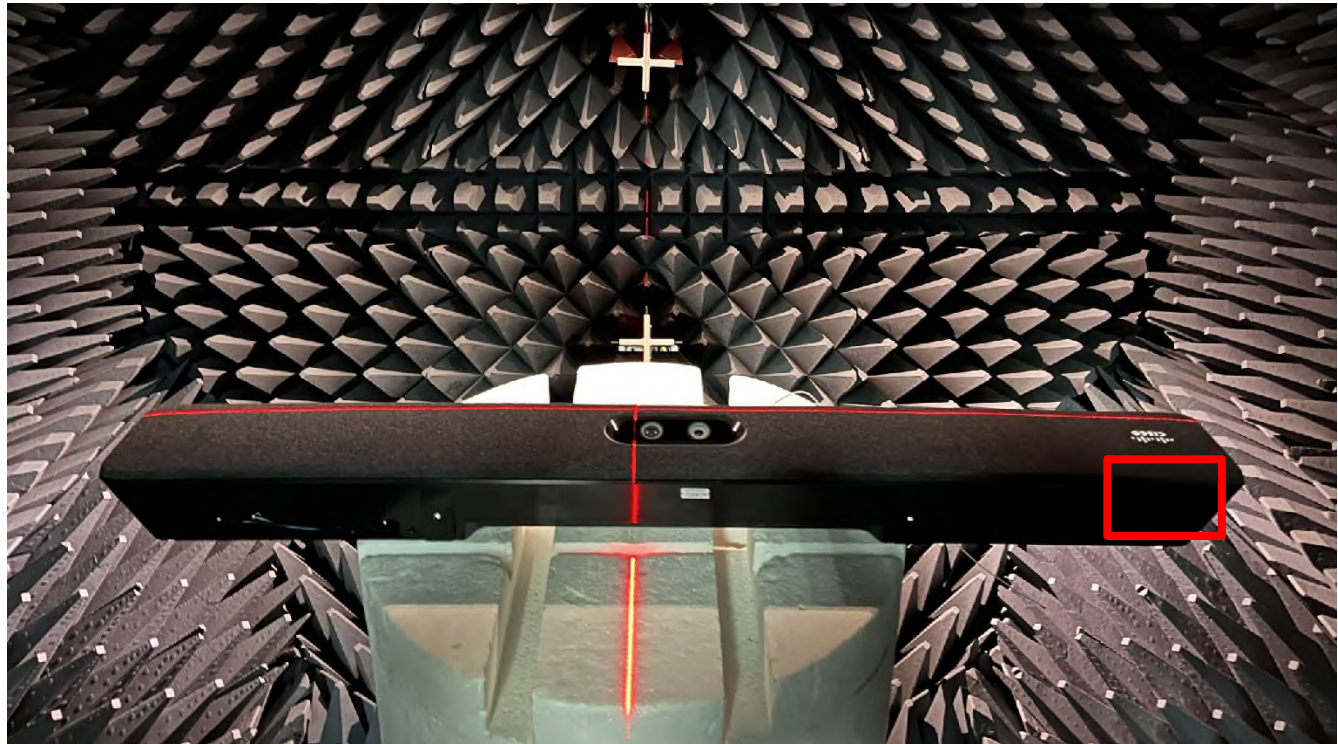


| Freq.(MHz) | Effi.(Pcent) | Effi.(dB) | Peak Gain(dB) |
|------------|--------------|-----------|---------------|
| 2400       | 67%          | -1.8      | 5.7           |
| 2450       | 65%          | -1.9      | 6.5           |
| 2500       | 69%          | -1.6      | 6.7           |
| AVG        | 67%          | -1.8      | 6.3           |
| 5150       | 55%          | -2.6      | 5.7           |
| 5250       | 59%          | -2.3      | 5.7           |
| 5350       | 59%          | -2.3      | 4.6           |
| 5450       | 59%          | -2.3      | 4.0           |
| 5550       | 60%          | -2.2      | 4.4           |
| 5650       | 60%          | -2.2      | 4.4           |
| 5750       | 62%          | -2.1      | 3.5           |
| 5850       | 60%          | -2.2      | 4.0           |
| AVG        | 59%          | -2.3      | 4.5           |
| 5950       | 58%          | -2.4      | 3.9           |
| 6050       | 59%          | -2.3      | 4.1           |
| 6150       | 62%          | -2.0      | 3.8           |
| 6250       | 60%          | -2.2      | 4.1           |
| 6350       | 54%          | -2.7      | 4.3           |
| 6450       | 54%          | -2.7      | 4.7           |
| 6550       | 55%          | -2.6      | 4.8           |
| 6650       | 55%          | -2.6      | 5.2           |
| 6750       | 52%          | -2.8      | 4.9           |
| 6850       | 49%          | -3.1      | 5.3           |
| 6950       | 45%          | -3.5      | 4.3           |
| 7050       | 40%          | -4.0      | 3.3           |
| 7150       | 41%          | -3.8      | 2.8           |
| AVG        | 53%          | -2.8      | 4.3           |

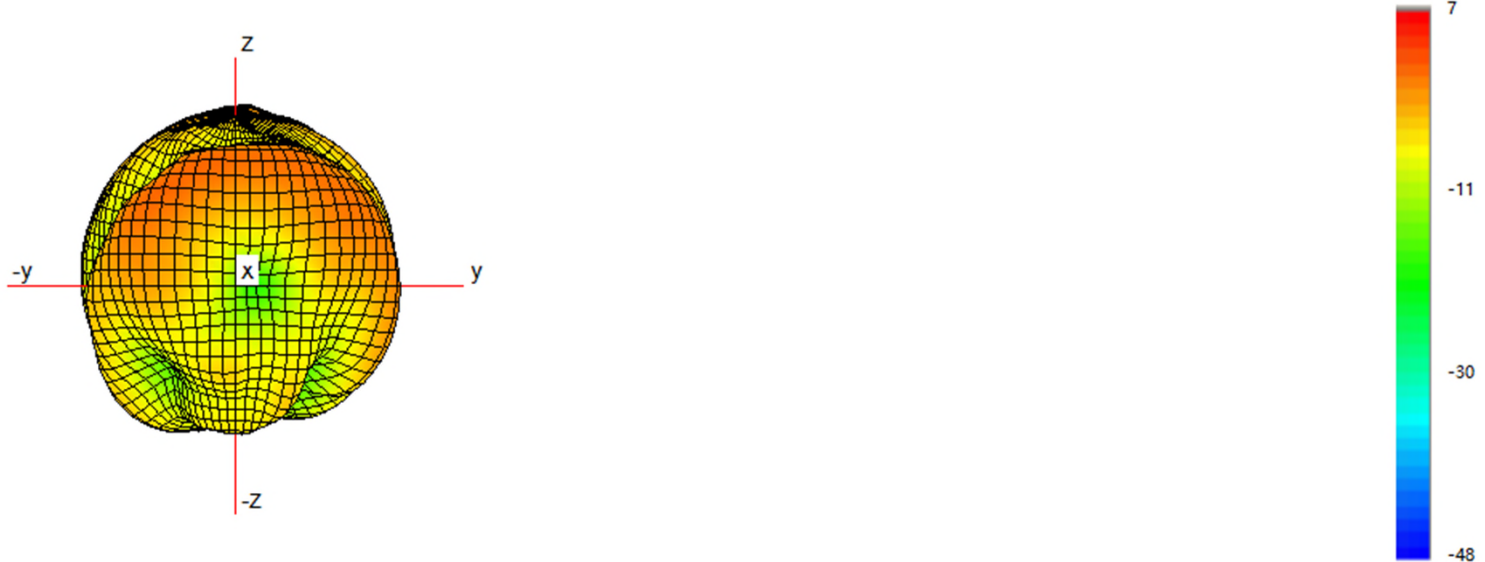
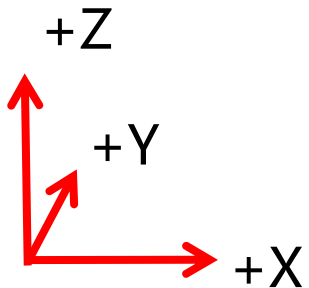
The S-parameter and efficiency can almost meet the spec.



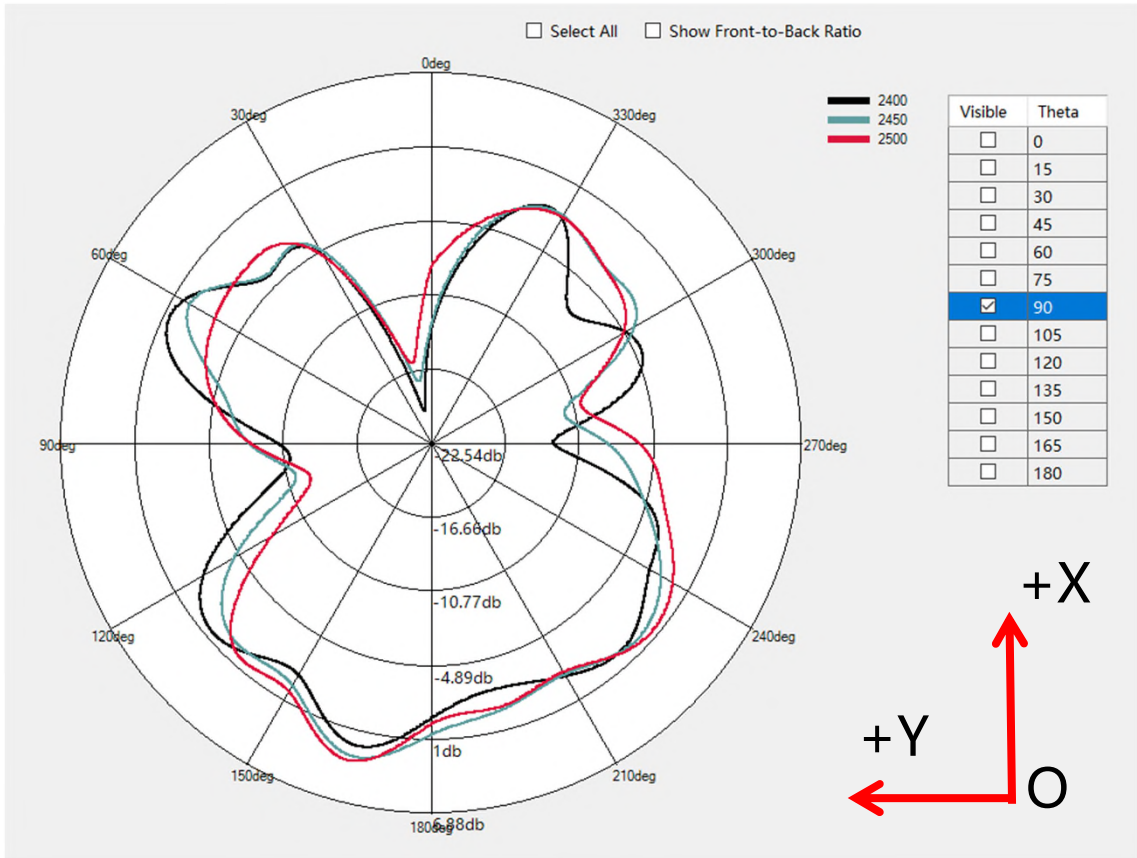
# Brooklyn antenna | Radiation Pattern



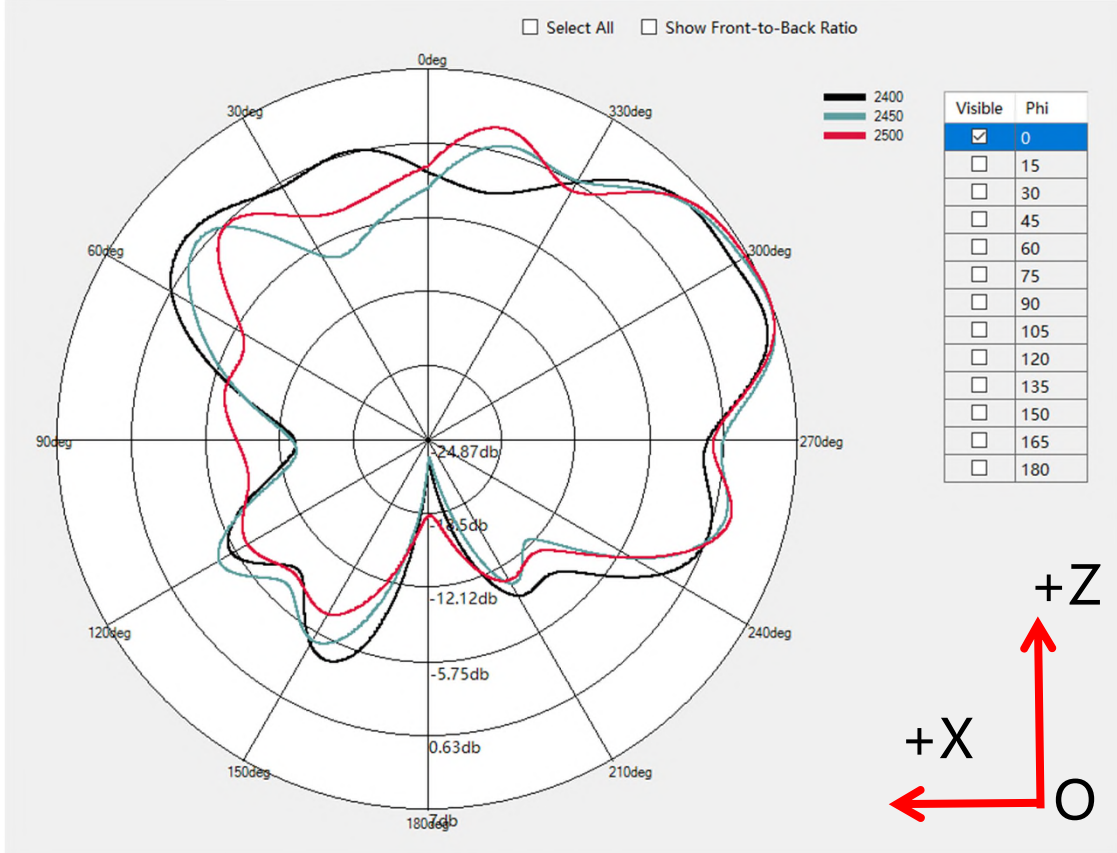
Chamber environment



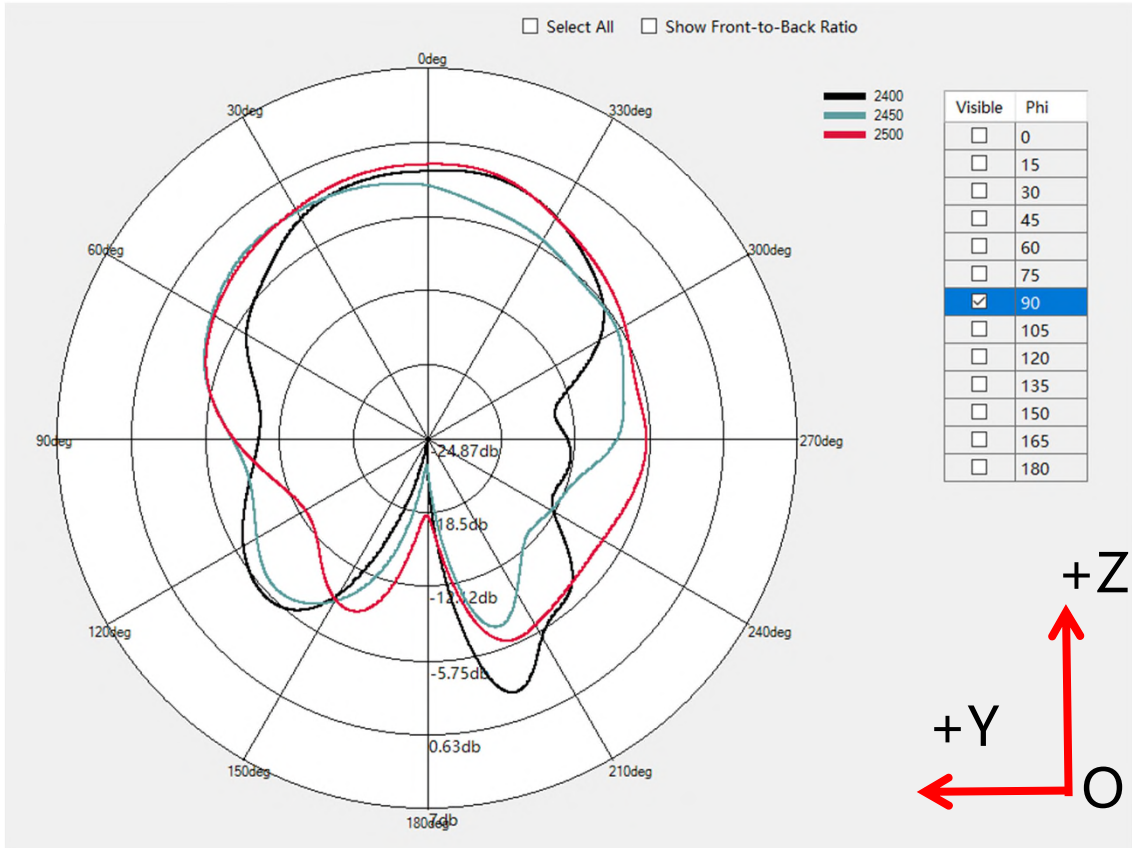
@2.45GHz



XOY plane



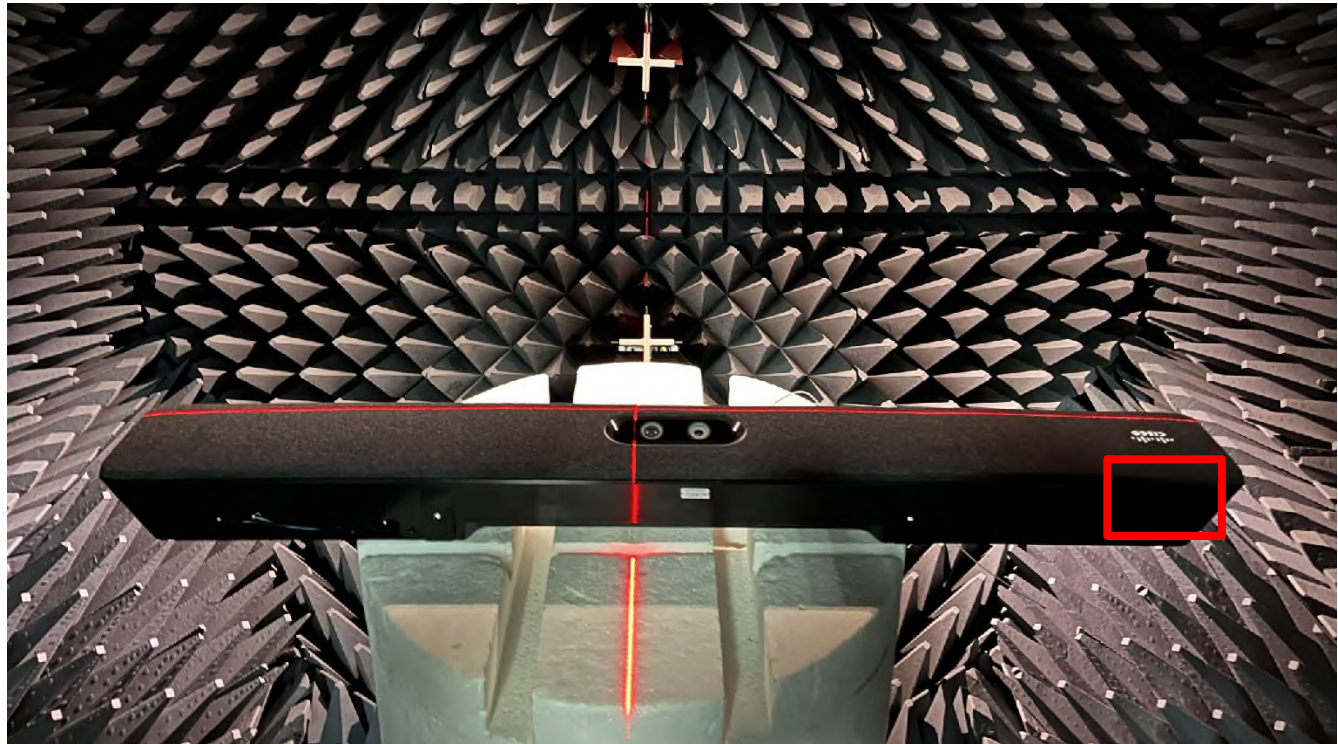
XOZ plane



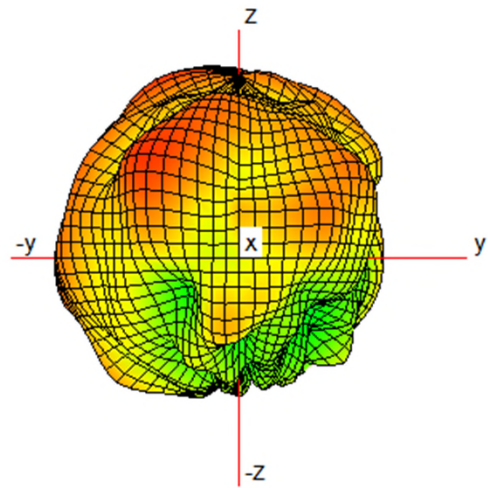
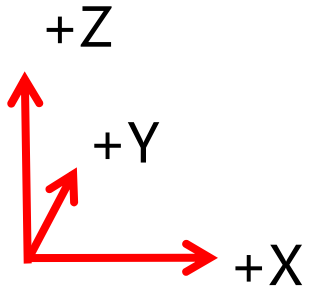
YOZ plane



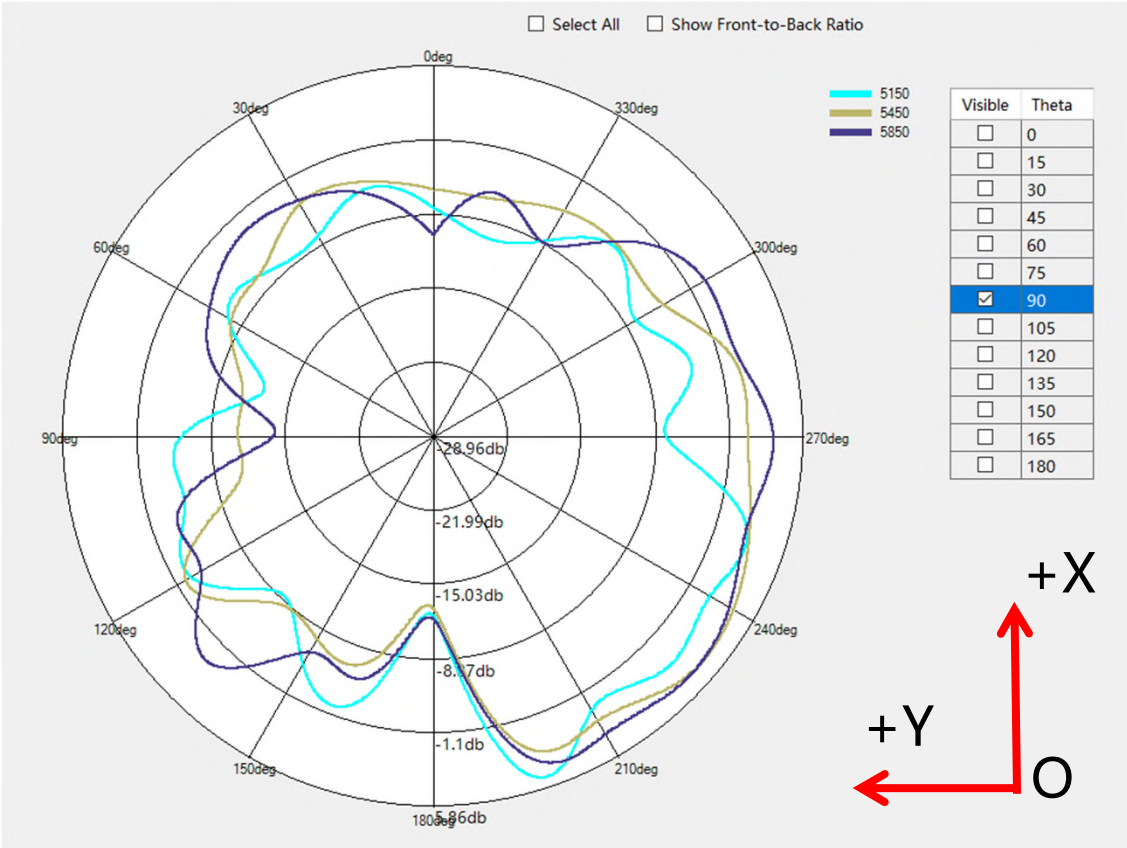
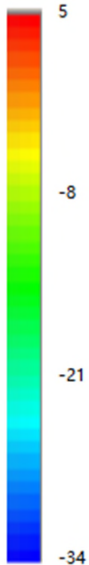
# Brooklyn antenna | Radiation Pattern



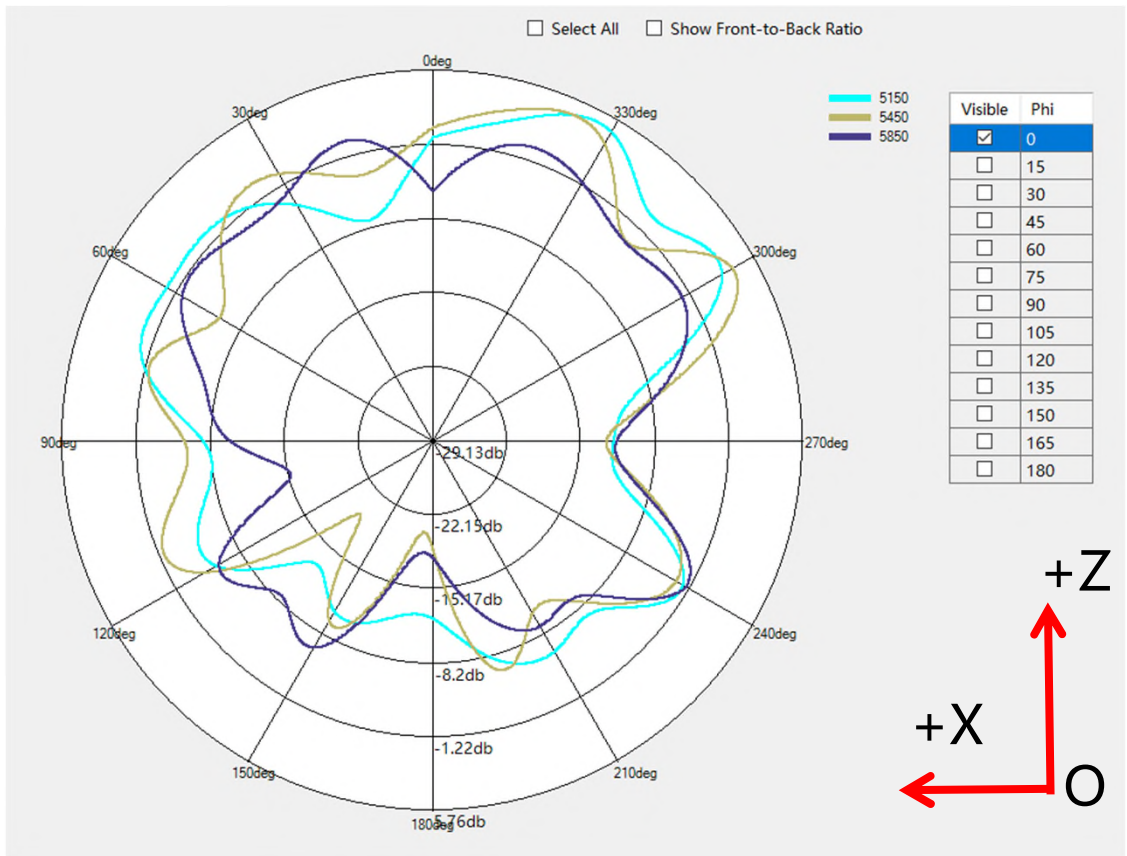
Chamber environment



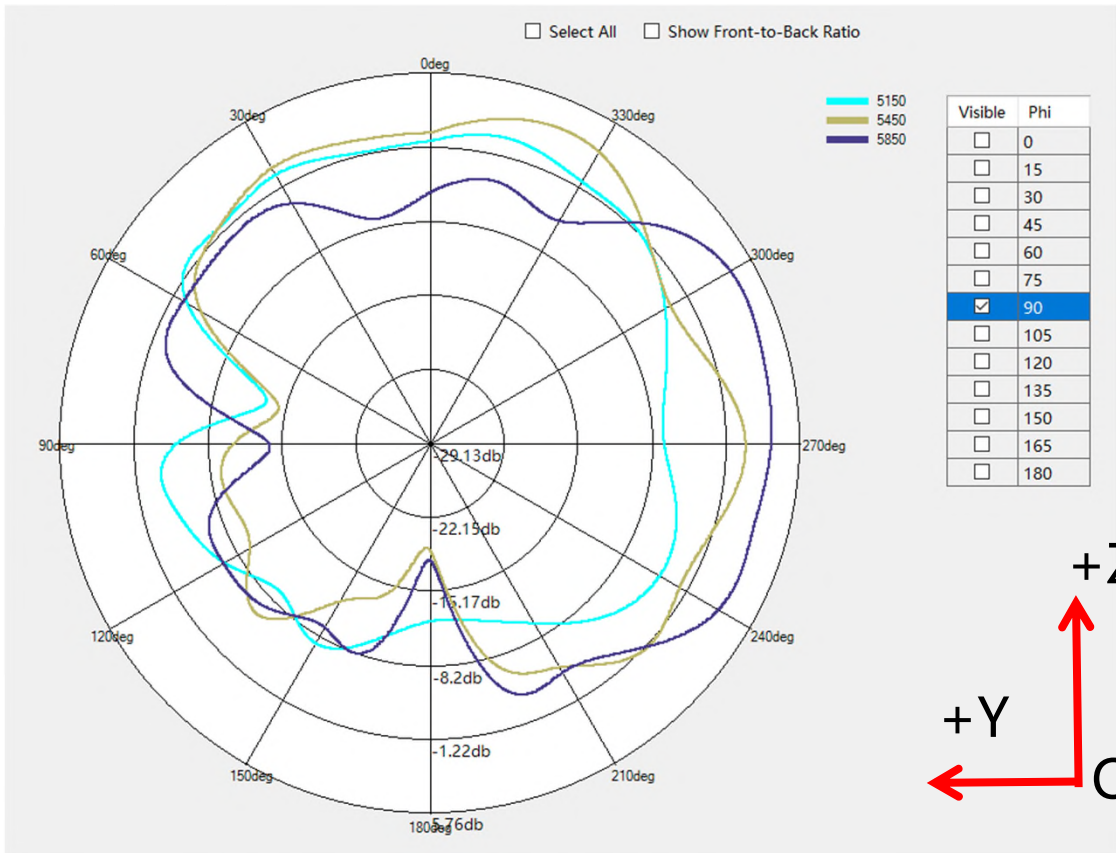
@5.5GHz



XOY plane



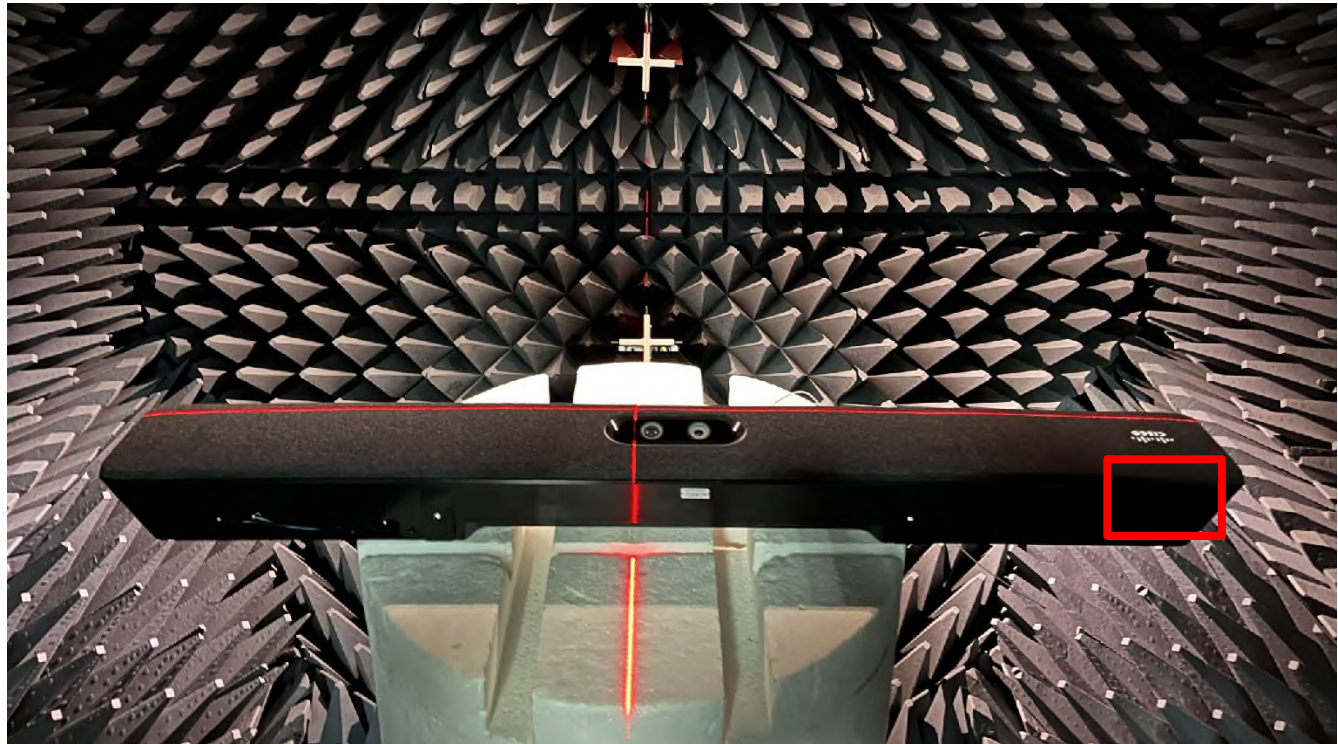
XOZ plane



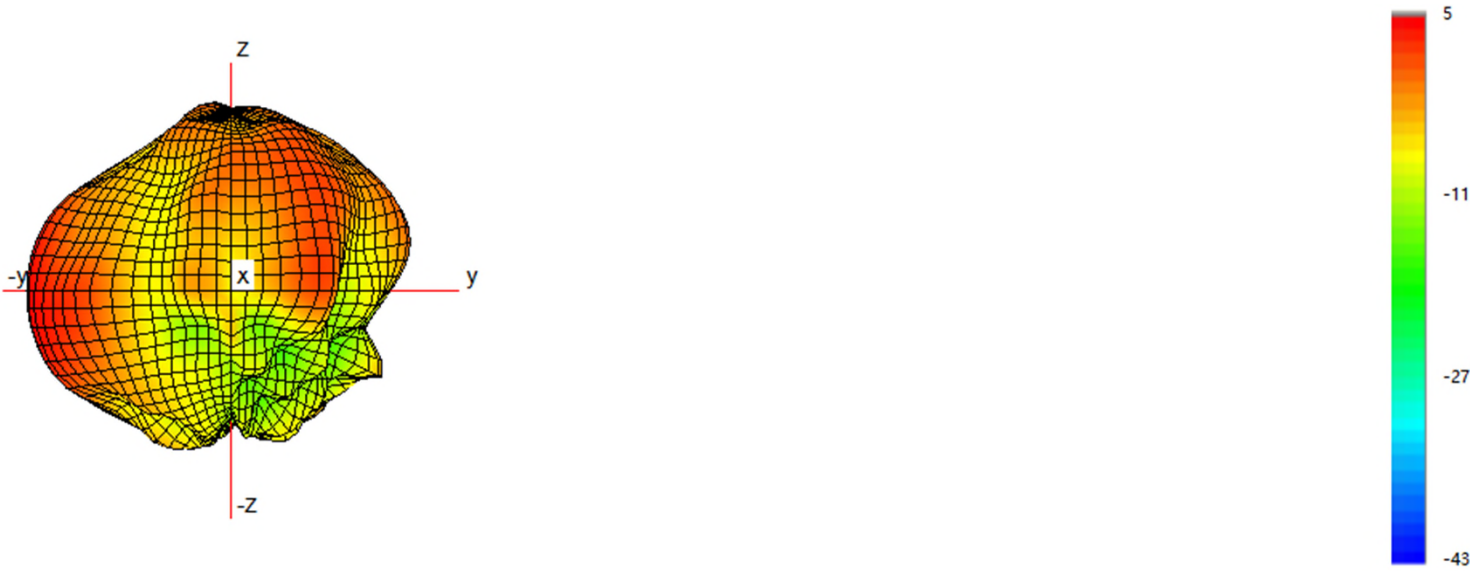
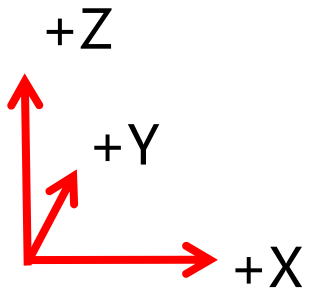
YOZ plane



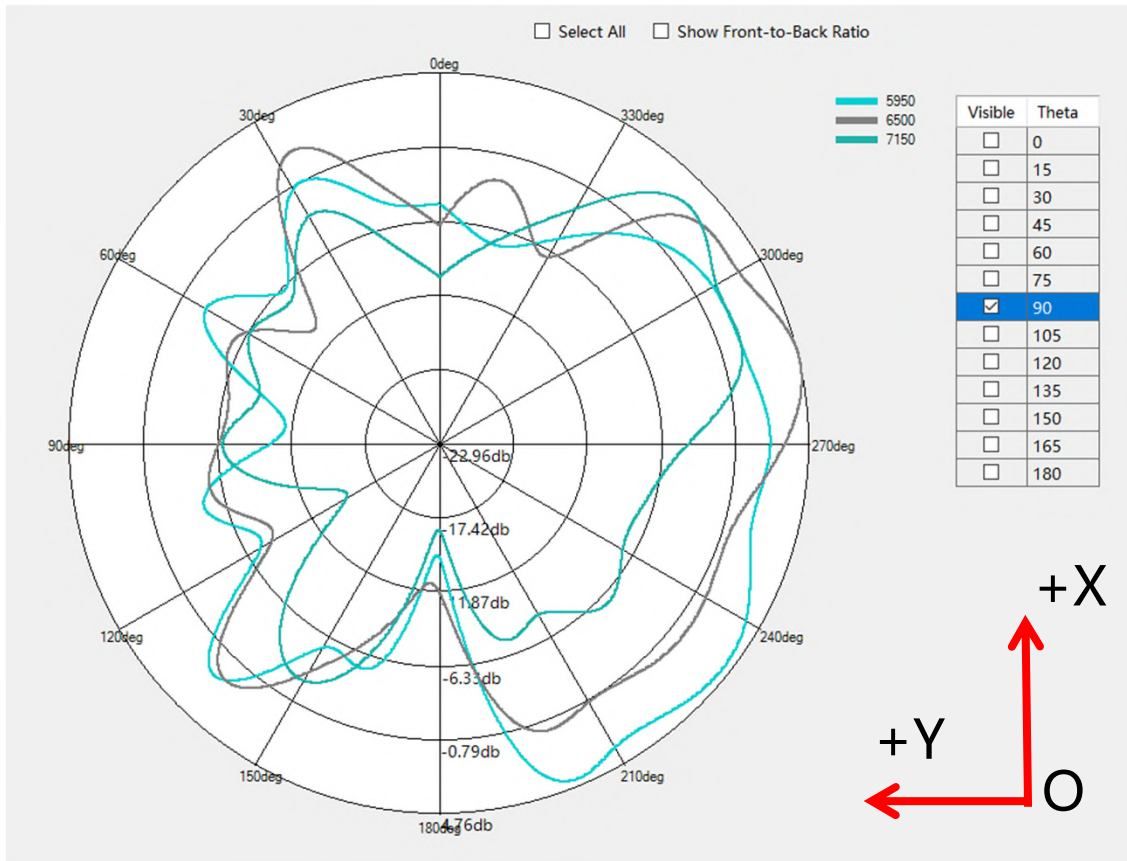
# Brooklyn antenna | Radiation Pattern



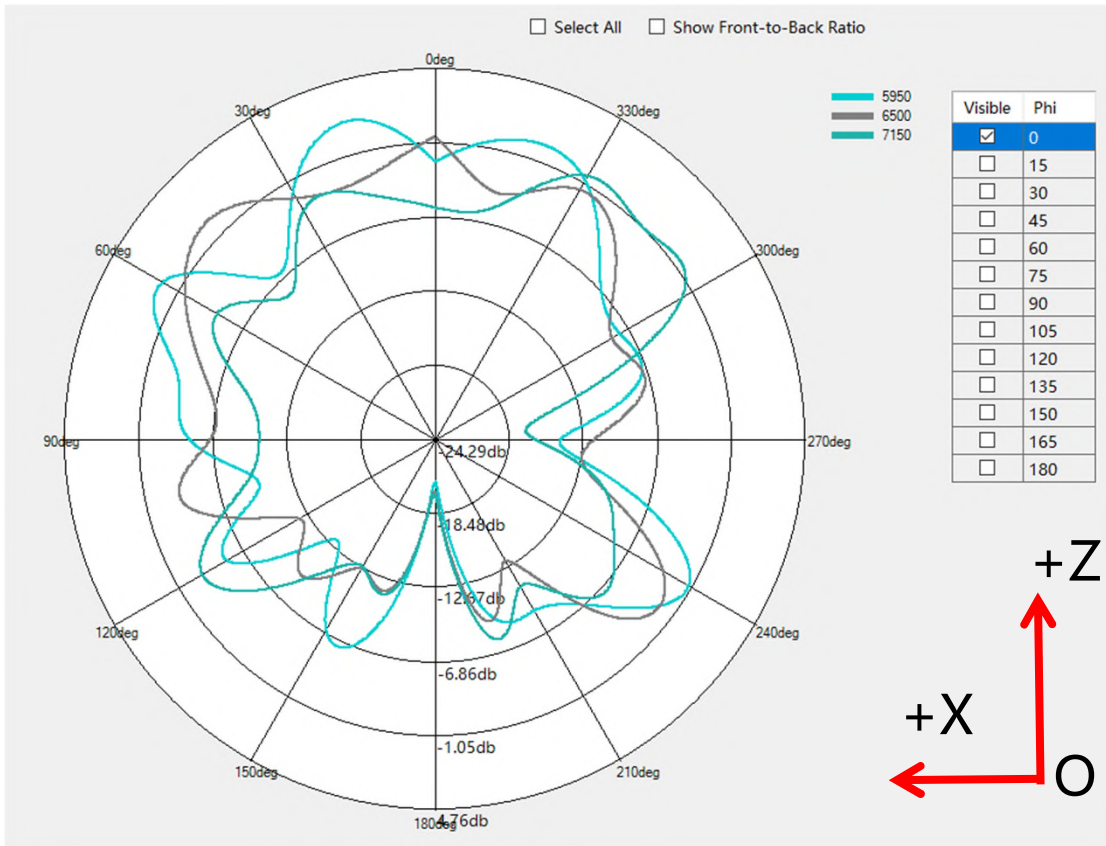
Chamber environment



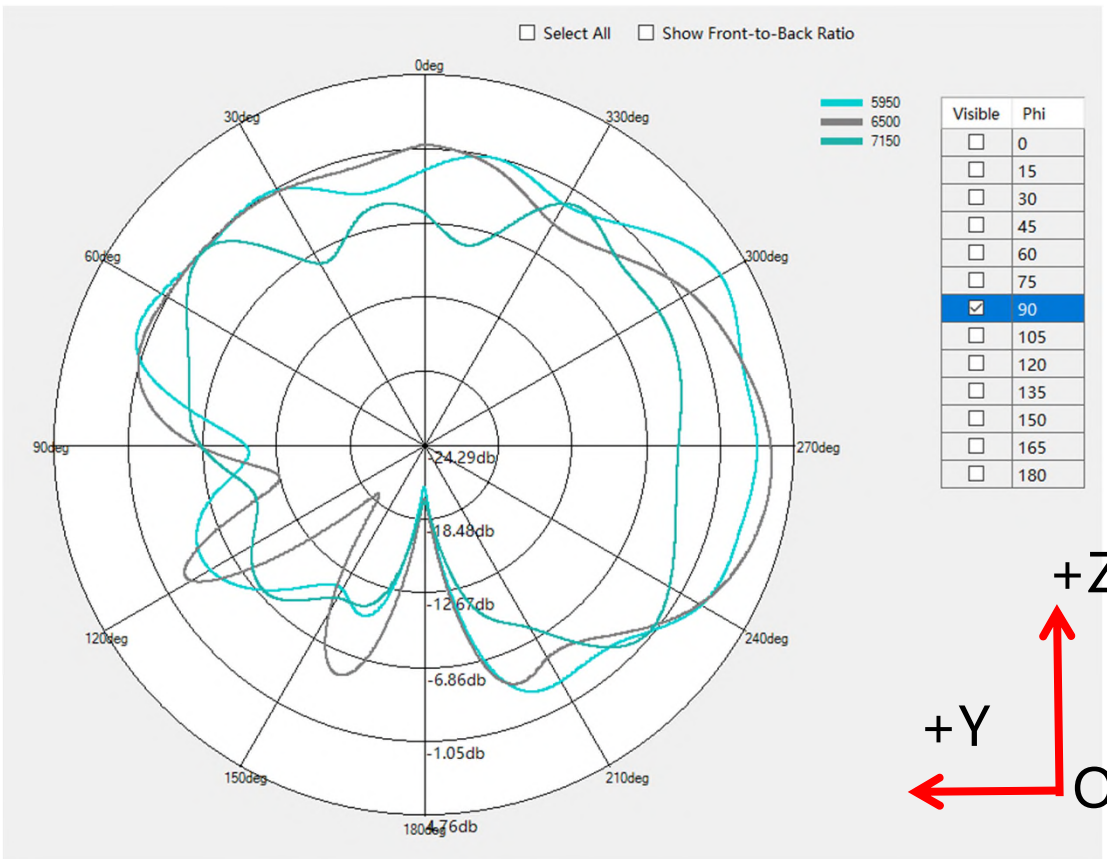
@6.5GHz



XOY plane



XOZ plane



YOZ plane



## WIFI antenna 2



# Brooklyn antenna | S-parameter & antenna gain

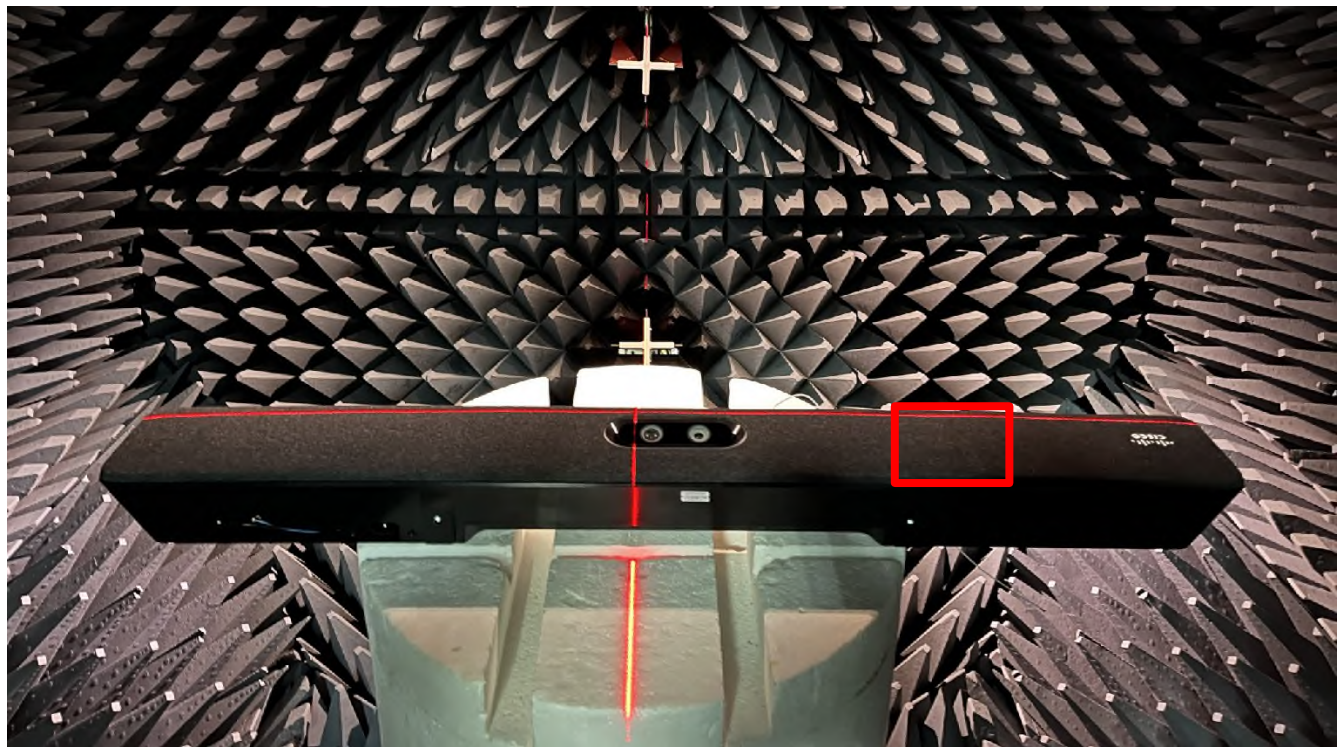


| Freq.(MHz) | Effi.(Pcent) | Effi.(dB) | Peak Gain(dB) |
|------------|--------------|-----------|---------------|
| 2400       | 68%          | -1.7      | 2.2           |
| 2450       | 67%          | -1.8      | 2.8           |
| 2500       | 68%          | -1.7      | 2.9           |
| AVG        | 68%          | -1.7      | 2.6           |
| 5150       | 55%          | -2.6      | 3.0           |
| 5250       | 58%          | -2.4      | 3.0           |
| 5350       | 57%          | -2.5      | 2.9           |
| 5450       | 57%          | -2.5      | 3.3           |
| 5550       | 57%          | -2.4      | 3.4           |
| 5650       | 58%          | -2.4      | 3.4           |
| 5750       | 59%          | -2.3      | 3.8           |
| 5850       | 57%          | -2.4      | 4.2           |
| AVG        | 57%          | -2.4      | 3.4           |
| 5950       | 57%          | -2.4      | 4.1           |
| 6050       | 60%          | -2.2      | 4.3           |
| 6150       | 61%          | -2.1      | 4.7           |
| 6250       | 57%          | -2.4      | 4.3           |
| 6350       | 53%          | -2.7      | 4.2           |
| 6450       | 53%          | -2.7      | 4.0           |
| 6550       | 52%          | -2.8      | 3.9           |
| 6650       | 48%          | -3.2      | 3.7           |
| 6750       | 46%          | -3.4      | 2.8           |
| 6850       | 48%          | -3.2      | 2.9           |
| 6950       | 43%          | -3.7      | 3.7           |
| 7050       | 40%          | -3.9      | 3.7           |
| 7150       | 40%          | -4.0      | 1.6           |
| AVG        | 51%          | -3.0      | 3.7           |

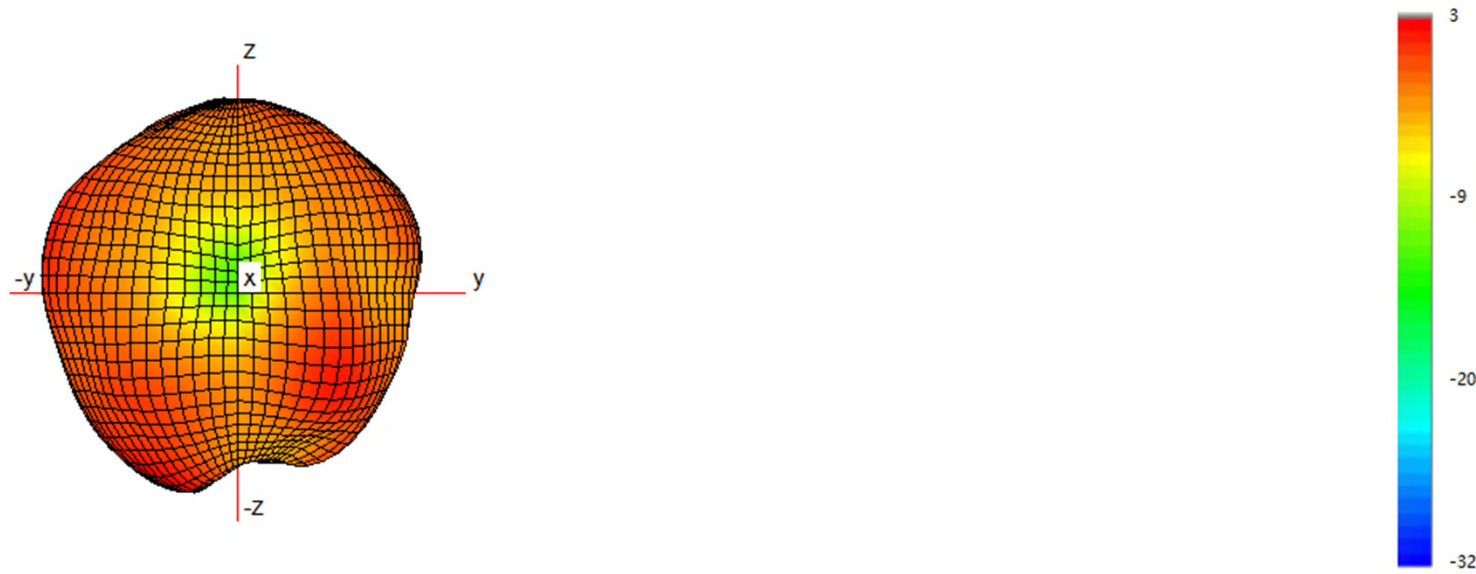
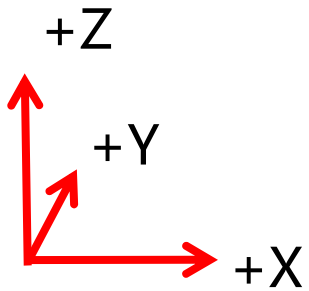
The S-parameter and efficiency can almost meet the spec.



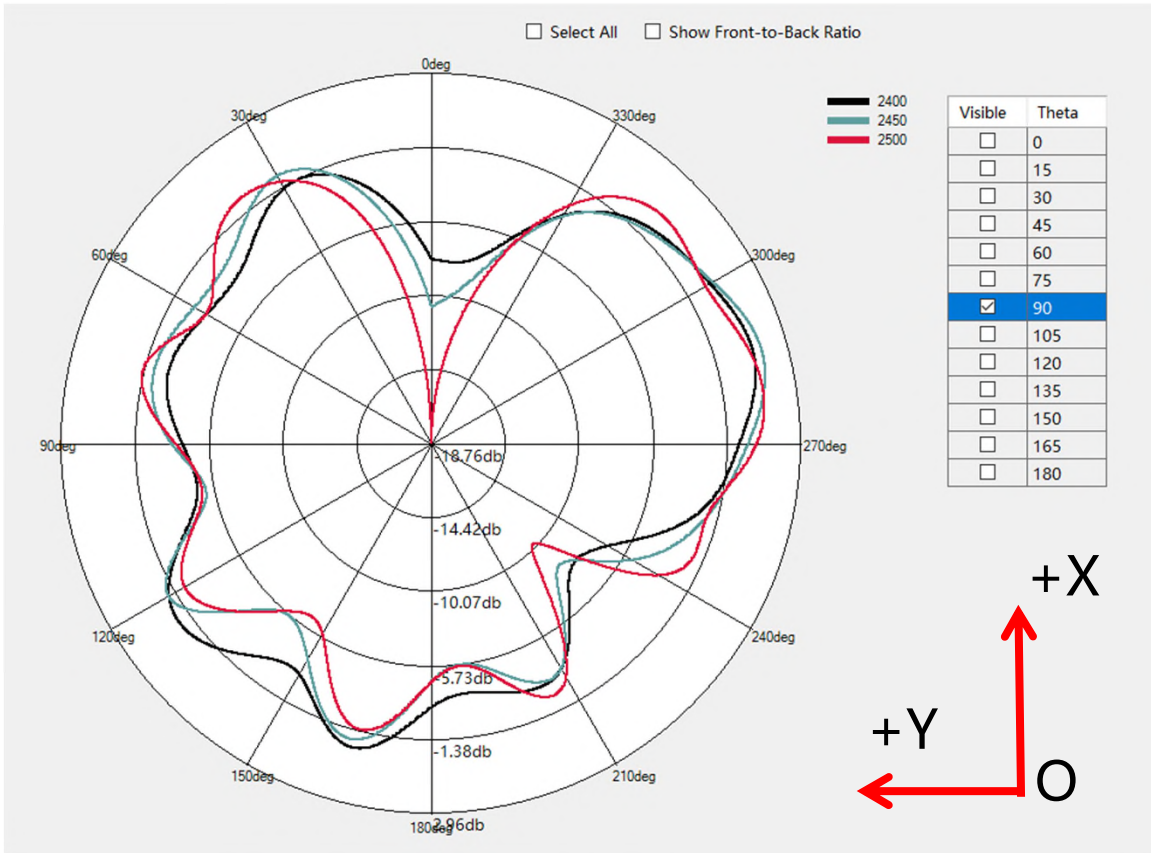
# Brooklyn antenna | Radiation Pattern



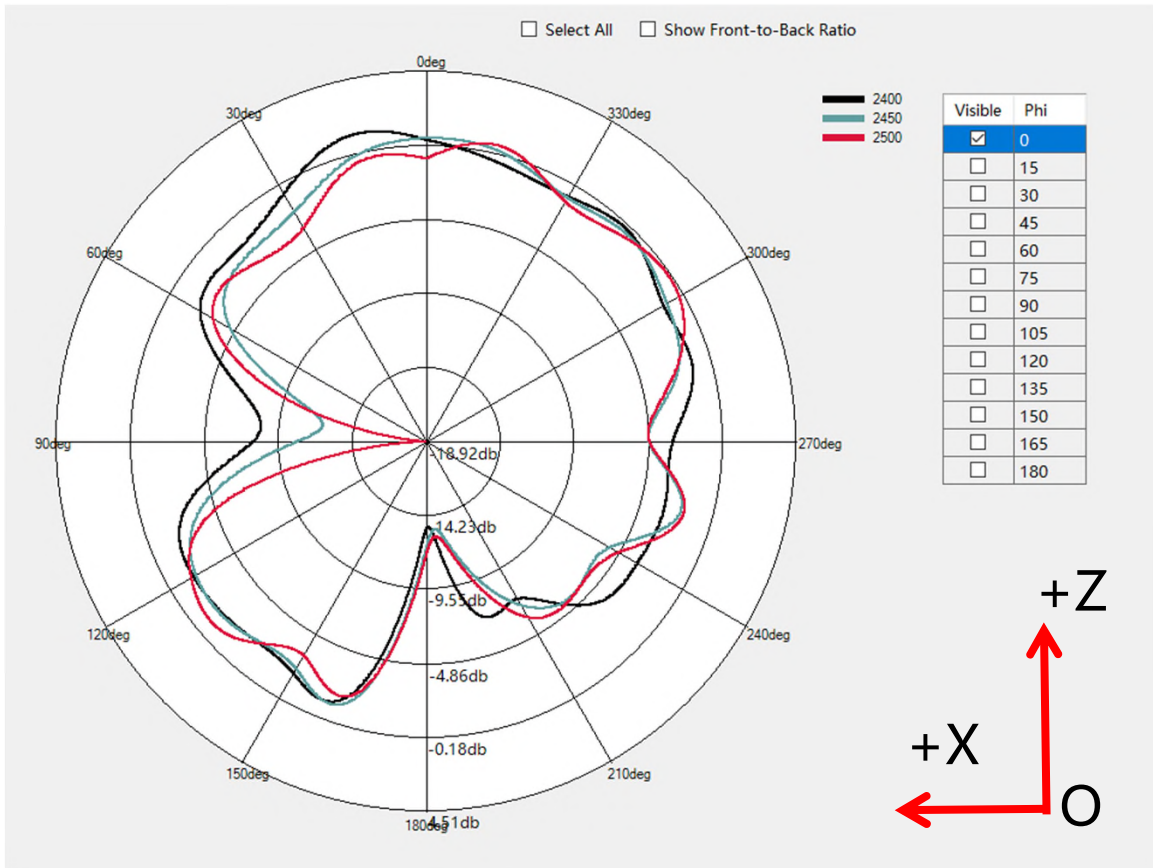
Chamber environment



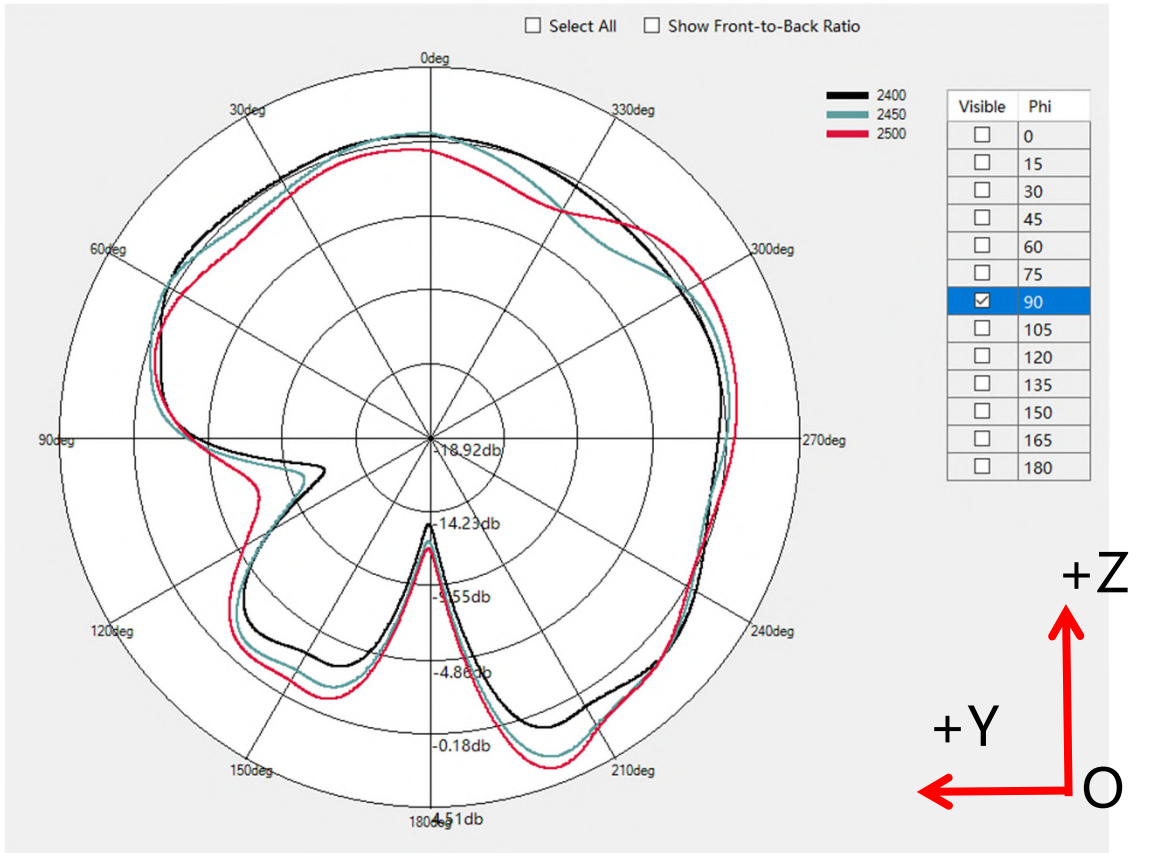
@2.45GHz



XOY plane



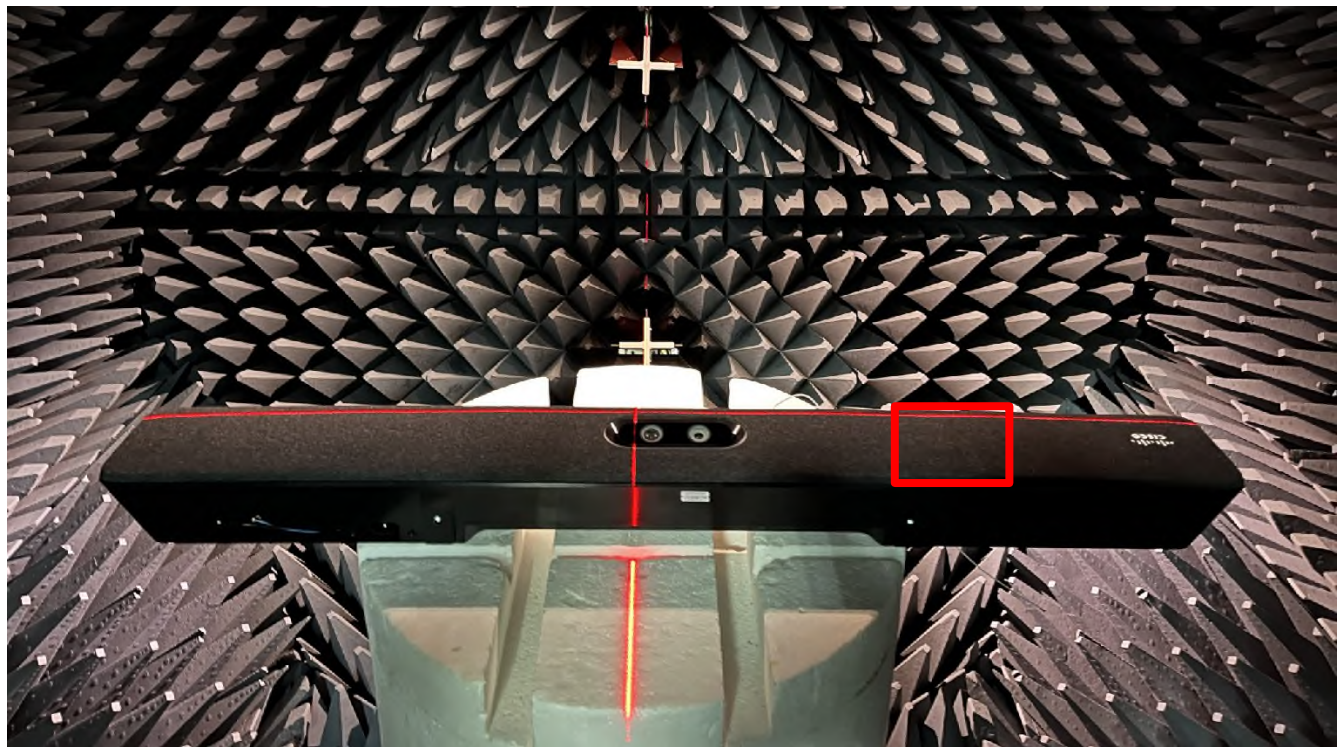
XOZ plane



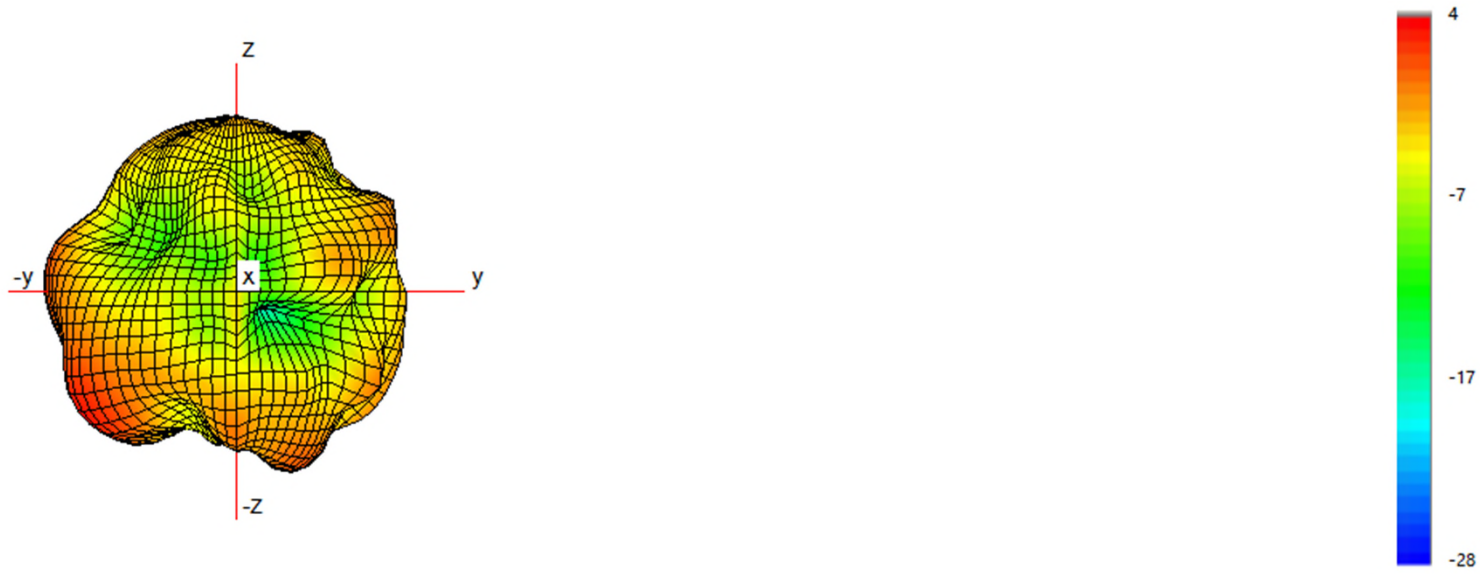
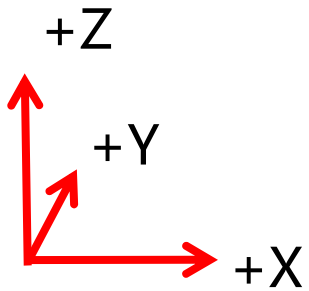
YOZ plane



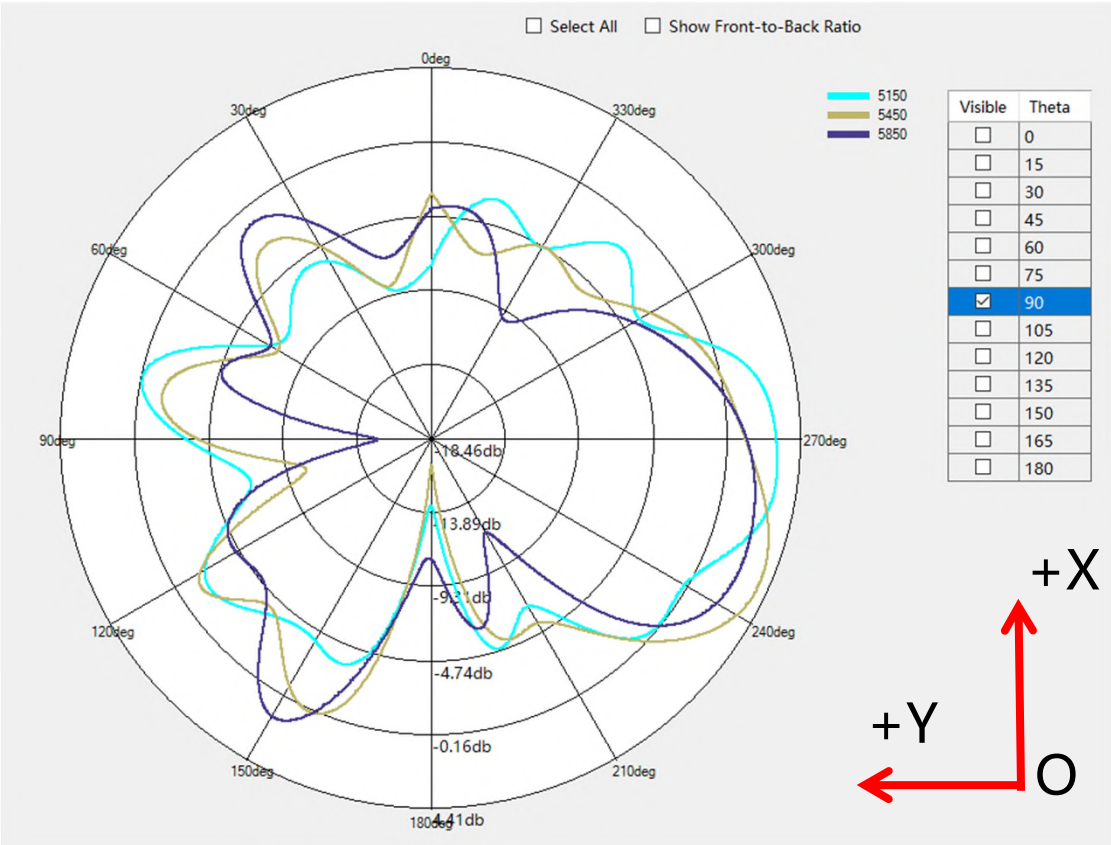
# Brooklyn antenna | Radiation Pattern



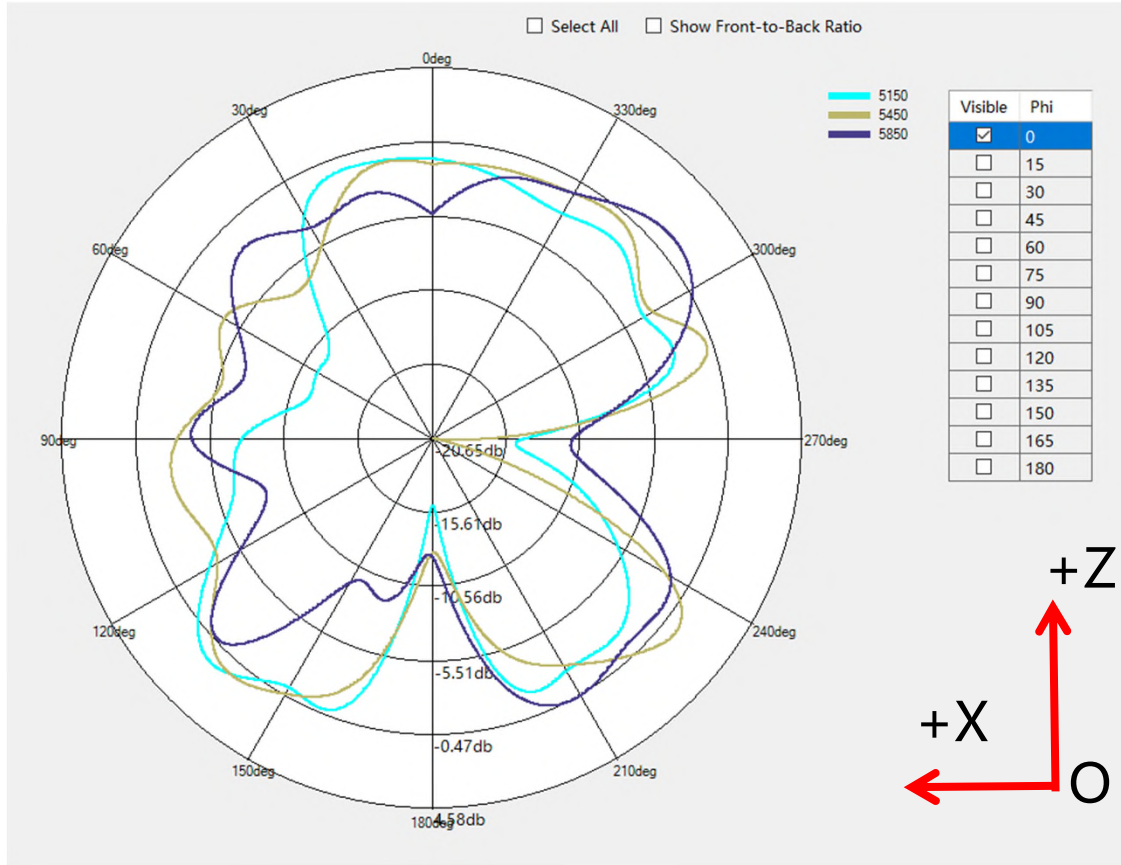
Chamber environment



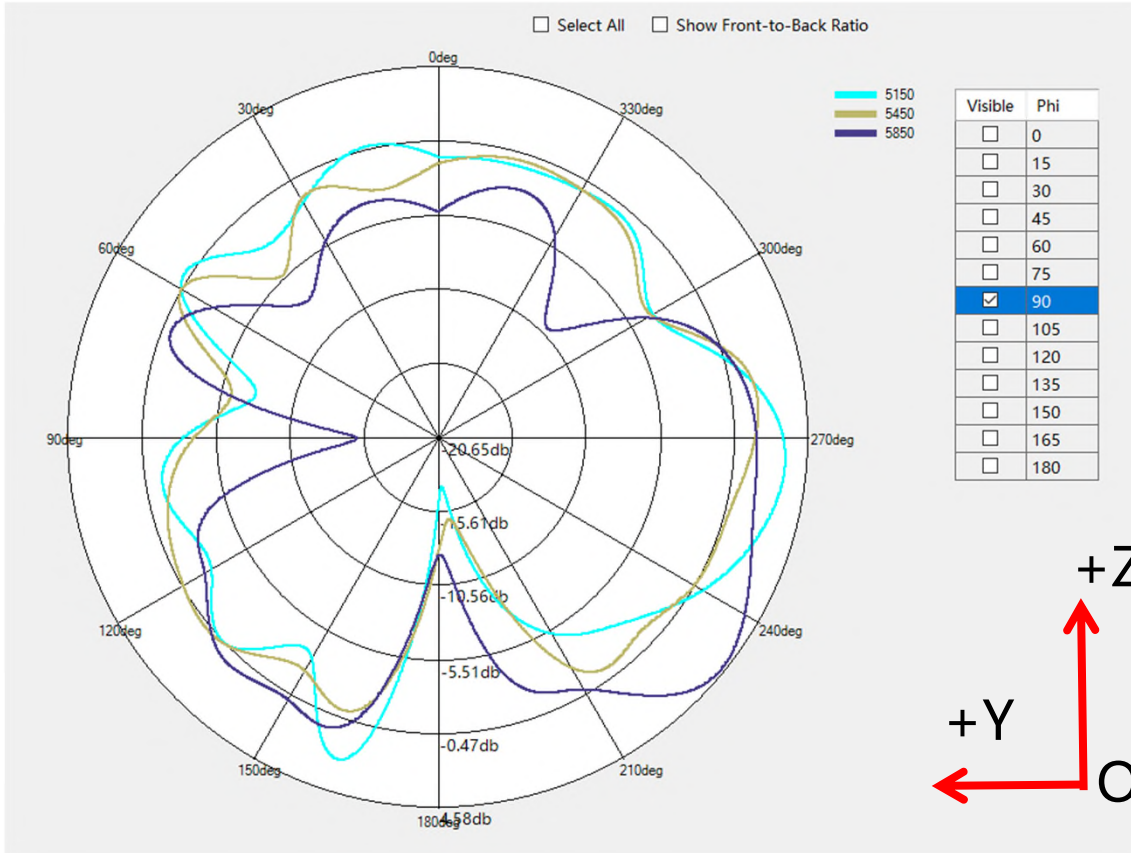
@5.5GHz



XOY plane



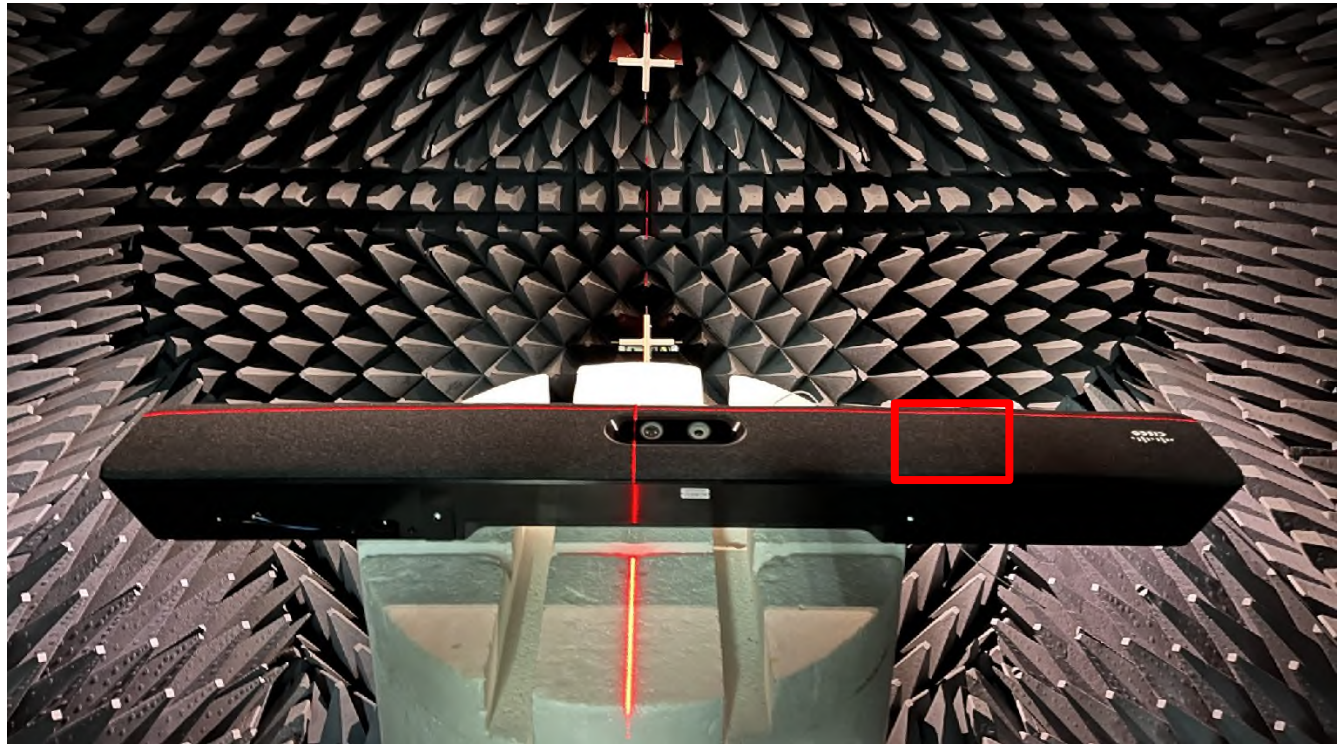
XOZ plane



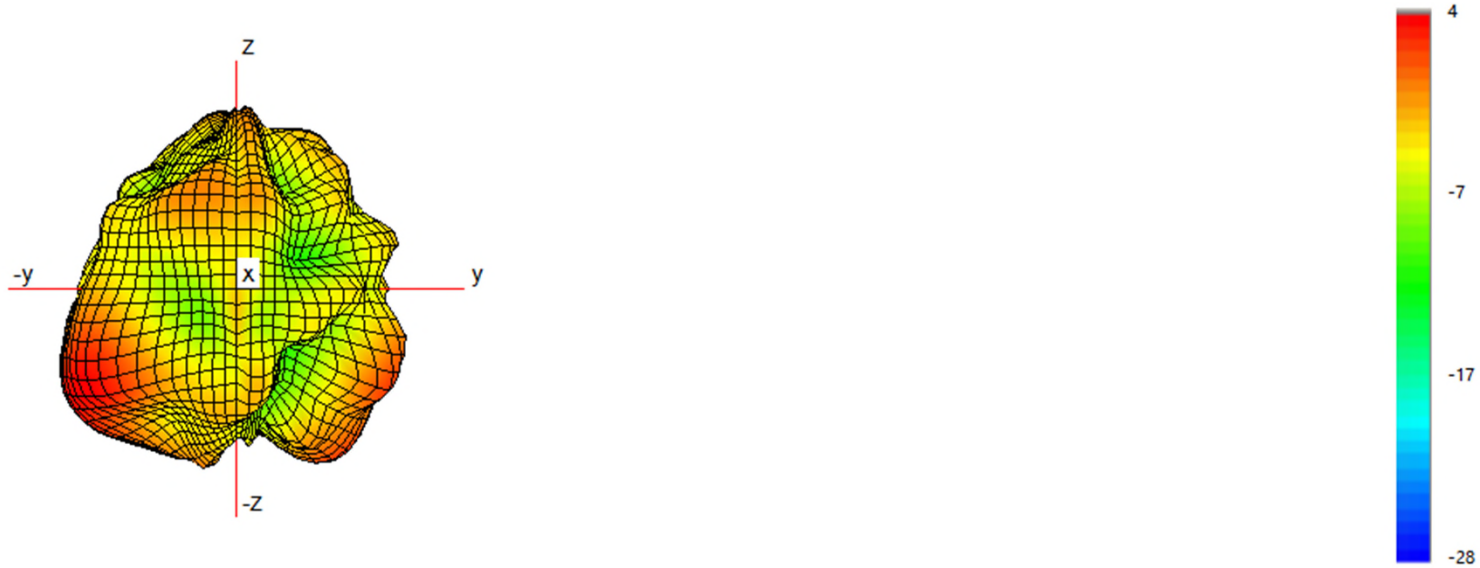
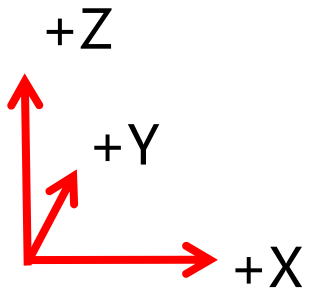
YOZ plane



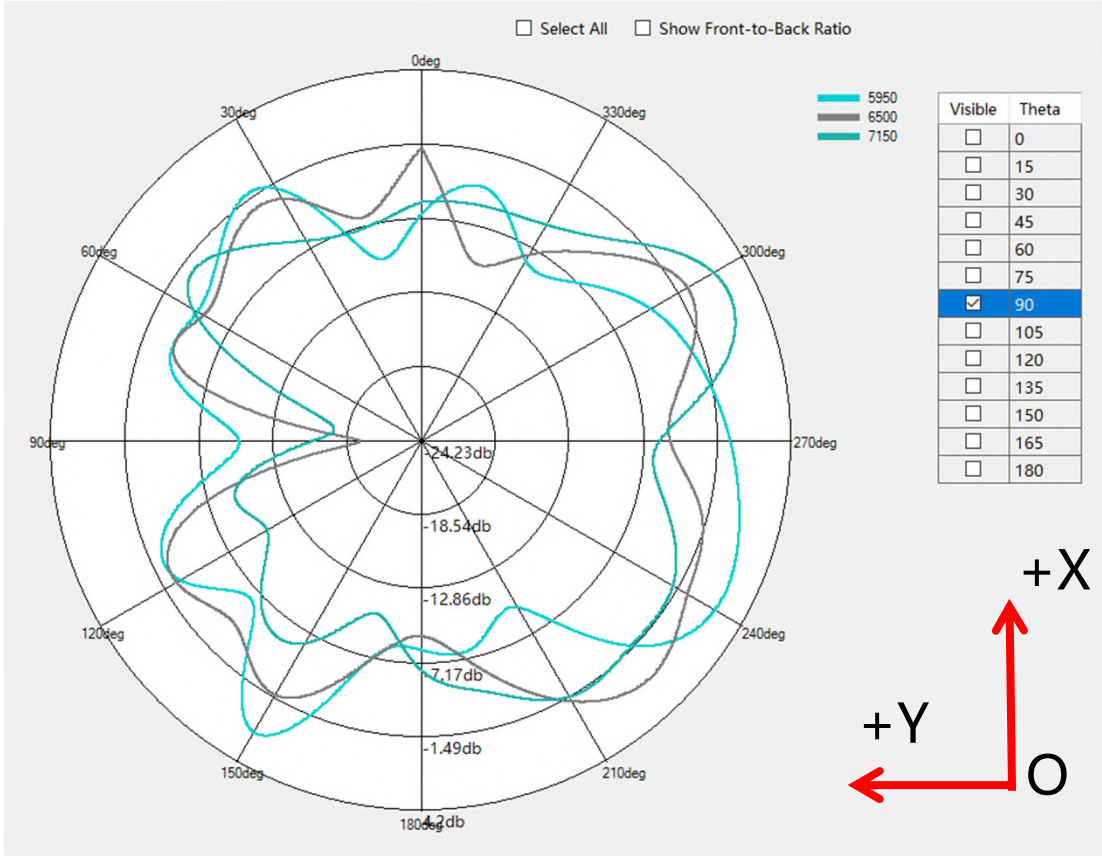
# Brooklyn antenna | Radiation Pattern



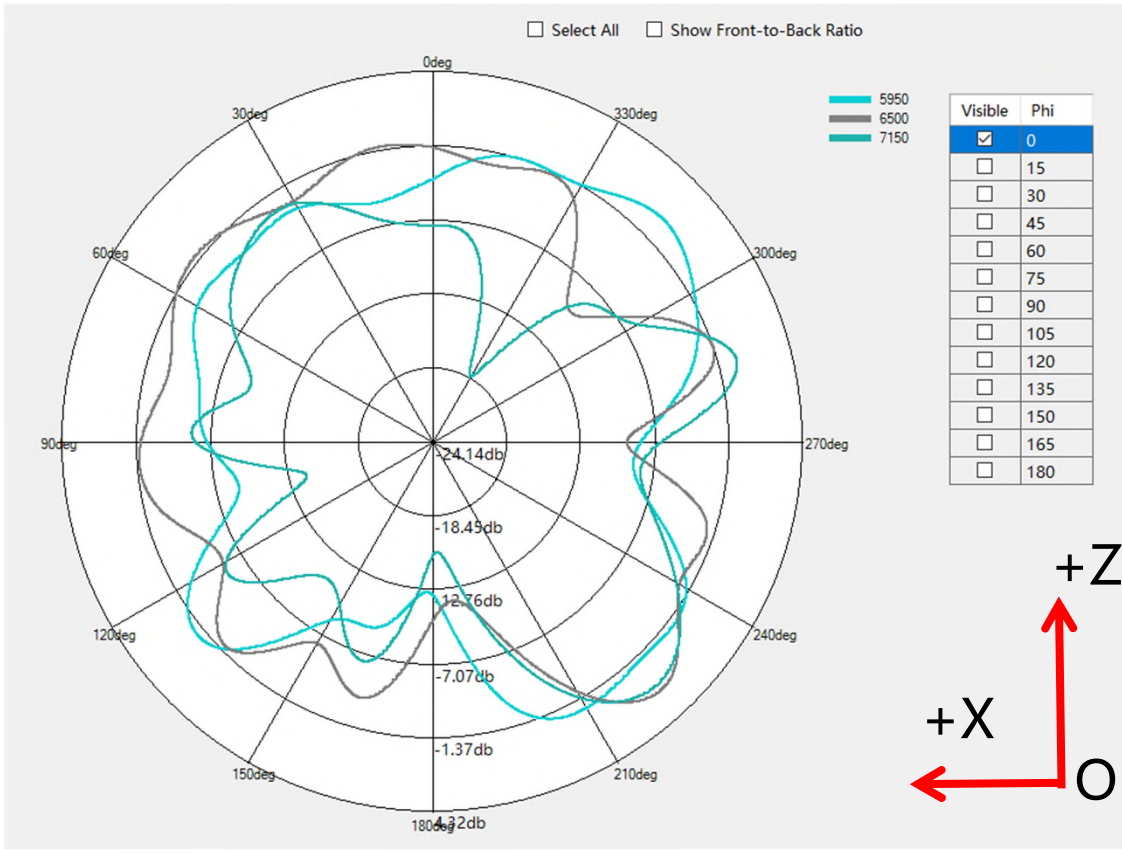
Chamber environment



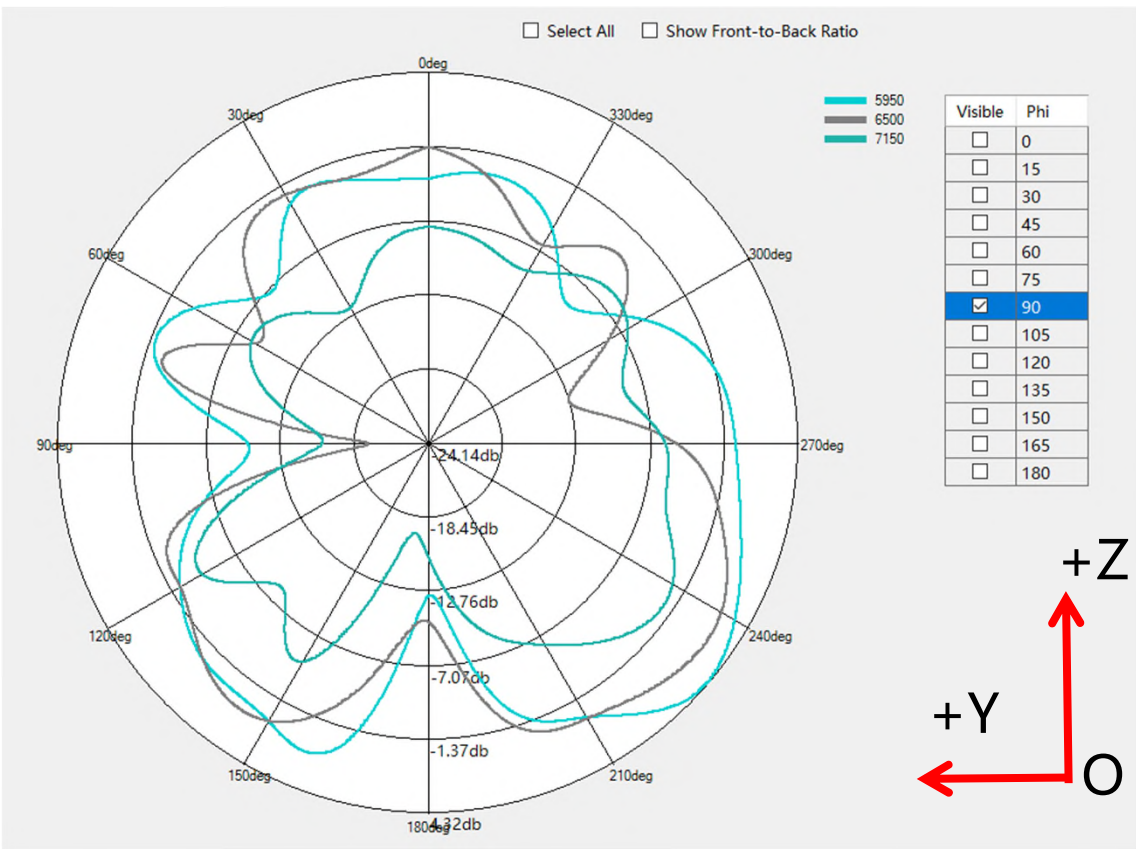
@6.5GHz



XOY plane



XOZ plane



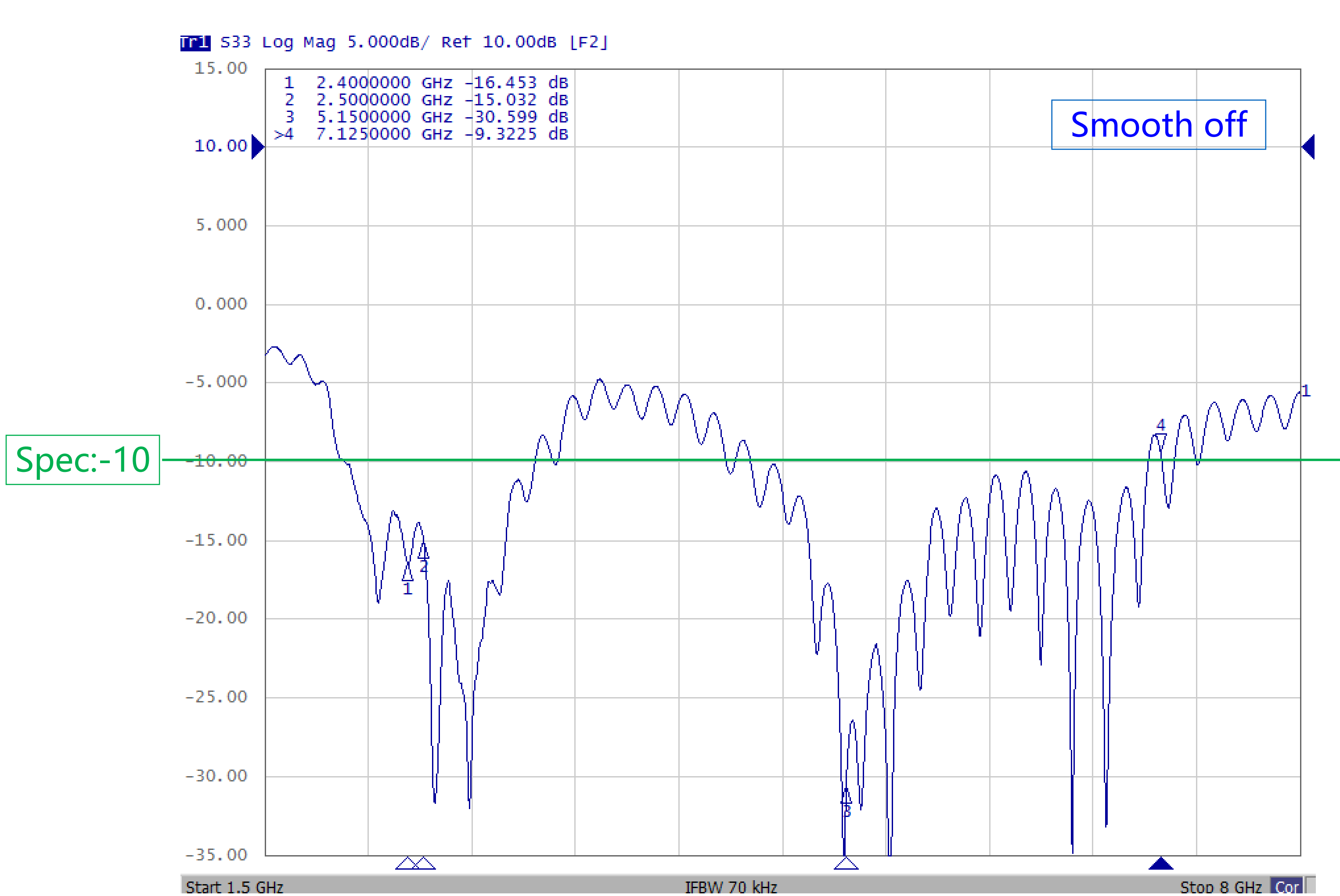
YOZ plane



BT antenna



# Brooklyn antenna | S-parameter & antenna gain



| Freq.(MHz) | Effi.(Pcent) | Effi.(dB) | Peak Gain(dB) |
|------------|--------------|-----------|---------------|
| 2400       | 54%          | -2.7      | 2.5           |
| 2450       | 53%          | -2.8      | 2.0           |
| 2500       | 57%          | -2.5      | 2.5           |
| AVG        | 54%          | -2.6      | 2.3           |
| 5150       | 51%          | -3.0      | 3.3           |
| 5250       | 51%          | -2.9      | 2.8           |
| 5350       | 50%          | -3.0      | 2.7           |
| 5450       | 49%          | -3.1      | 2.6           |
| 5550       | 48%          | -3.1      | 2.1           |
| 5650       | 46%          | -3.4      | 1.7           |
| 5750       | 46%          | -3.3      | 2.6           |
| 5850       | 47%          | -3.3      | 2.1           |
| AVG        | 49%          | -3.1      | 2.5           |
| 5950       | 46%          | -3.3      | 1.8           |
| 6050       | 47%          | -3.3      | 2.9           |
| 6150       | 48%          | -3.2      | 3.1           |
| 6250       | 46%          | -3.4      | 2.7           |
| 6350       | 43%          | -3.7      | 1.9           |
| 6450       | 42%          | -3.8      | 1.2           |
| 6550       | 43%          | -3.7      | 1.6           |
| 6650       | 38%          | -4.1      | 1.4           |
| 6750       | 37%          | -4.4      | 0.9           |
| 6850       | 34%          | -4.6      | 1.3           |
| 6950       | 27%          | -5.6      | 1.3           |
| 7050       | 24%          | -6.2      | 1.3           |
| 7150       | 25%          | -6.0      | 0.9           |
| AVG        | 39%          | -4.3      | 1.7           |

The S-parameter and efficiency can almost meet the spec.