



AP431 Antenna Spec

Feb. 17, 2023

Prepared by Stella Sun

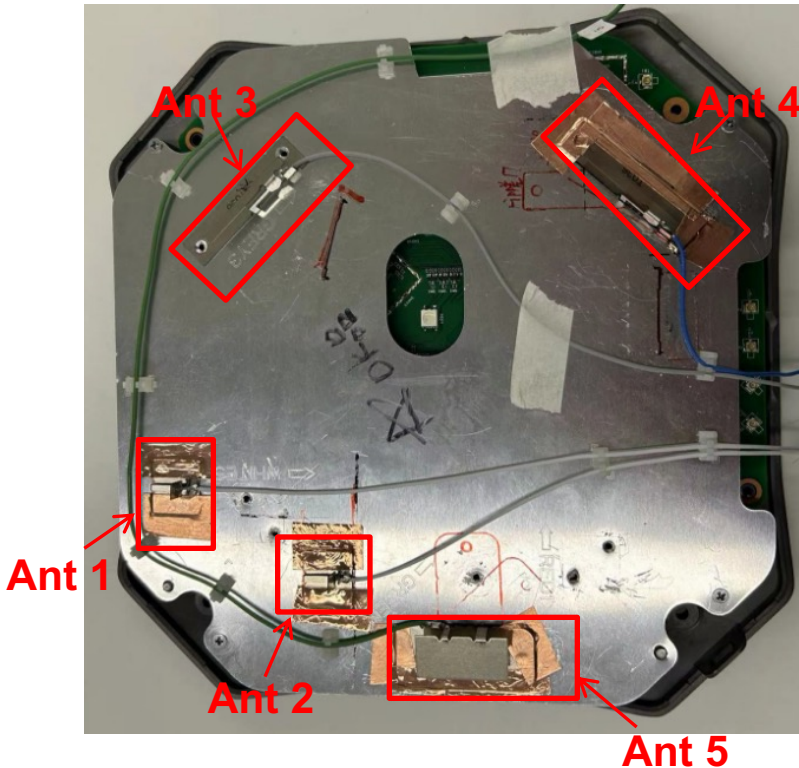
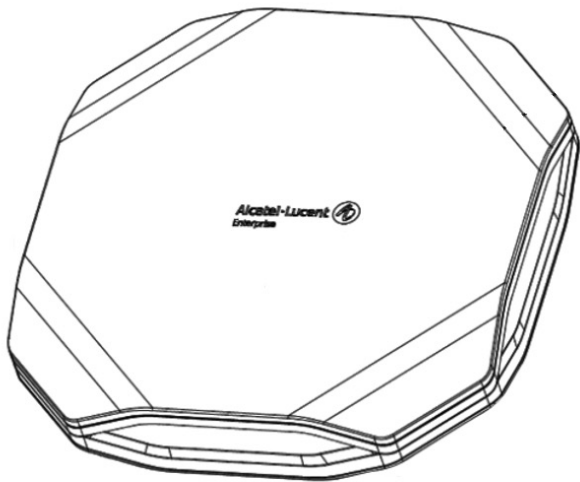
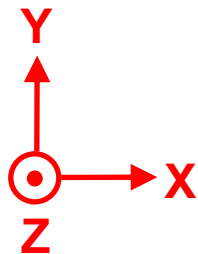
Outline

- Antenna Specification
- Antenna Structure & Placement
- Return Loss & Isolation
- Radiation Pattern
- Peak Gain & Efficiency

Antenna Specification

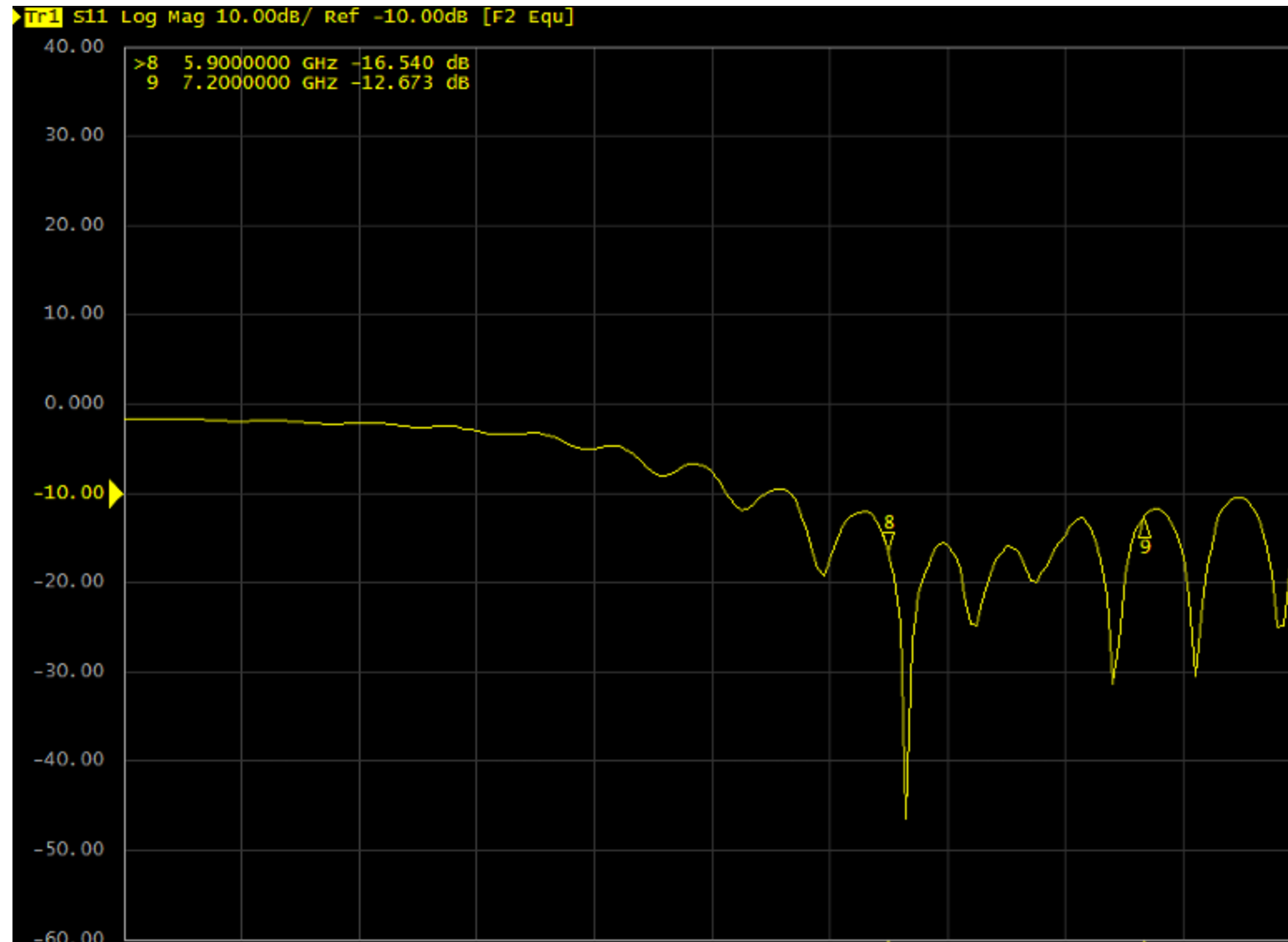
Antenna Specification	Comply
Peak Gain : > 3dBi (WiFi & BLE)	Yes
Efficiency : > 60% (WiFi & BLE)	Yes
Isolation : > 20dB (WiFi 2G)	Yes
Isolation : > 20dB (WiFi 5G)	Yes
Isolation : > 20dB (WiFi 6G)	Yes
Isolation : > 20dB (WiFi 2G & BLE)	Yes
Isolation : > 25dB (WiFi 5G & 6G)	Yes

Antenna Structure & Placement

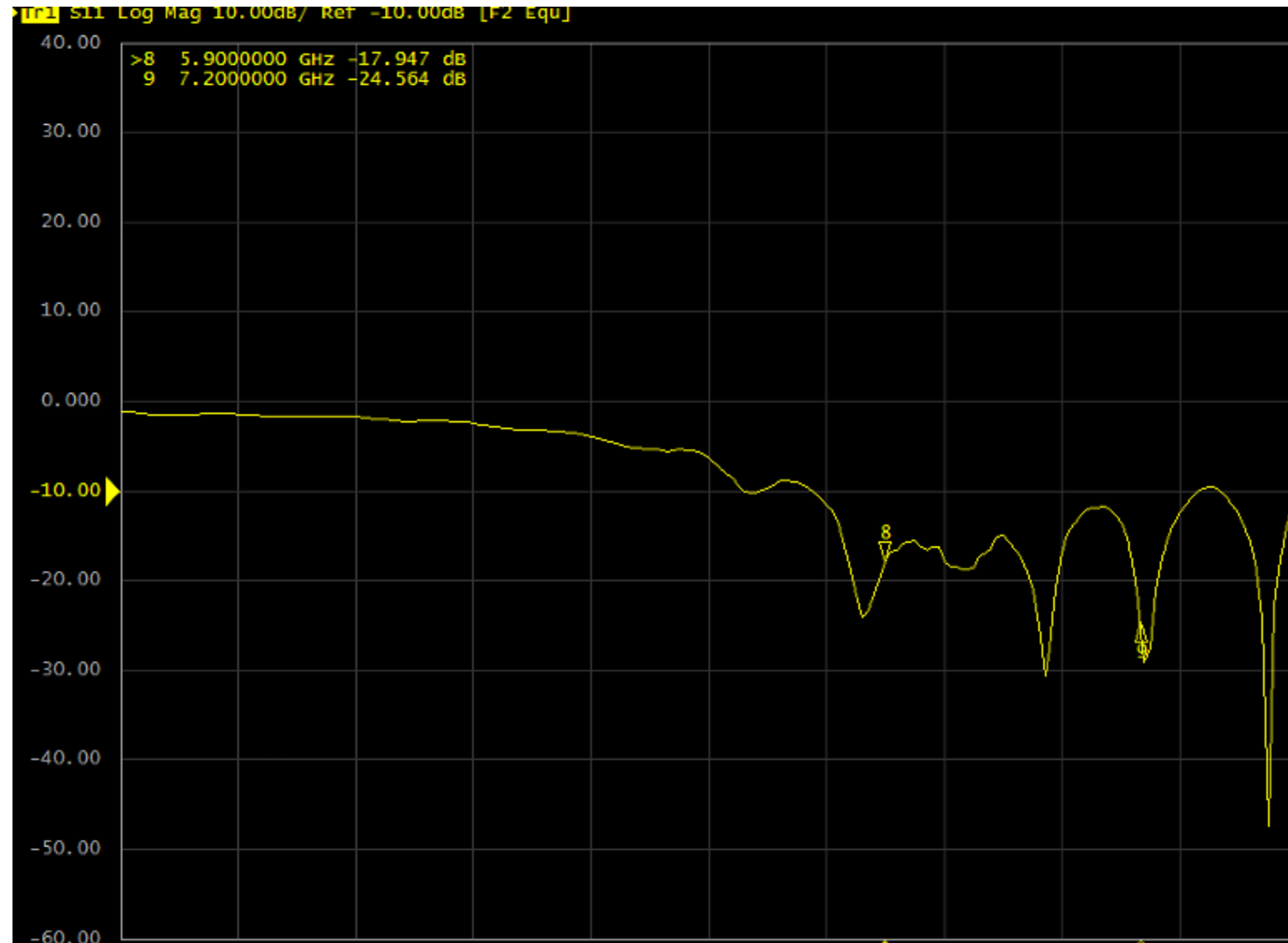


Ant No.	Function	Operating Band	Type	Material	Feeding	Dimension
Ant 1 - 2	WiFi 6G	5925 MHz ~ 7125 MHz	PIFA	Metal	Cable	16 x 14.9 x 9.5 mm ³
Ant 3 - 4	WiFi 2.4G/5G	2400 MHz ~ 2500 MHz 5150 MHz ~ 5850 MHz	PIFA	Metal	Cable	10 x 45 x 8.45 mm ³
Ant 5	BLE	2400MHz ~ 2500MHz	PIFA	Metal	Cable	40 x 18 x 8.7 mm ³

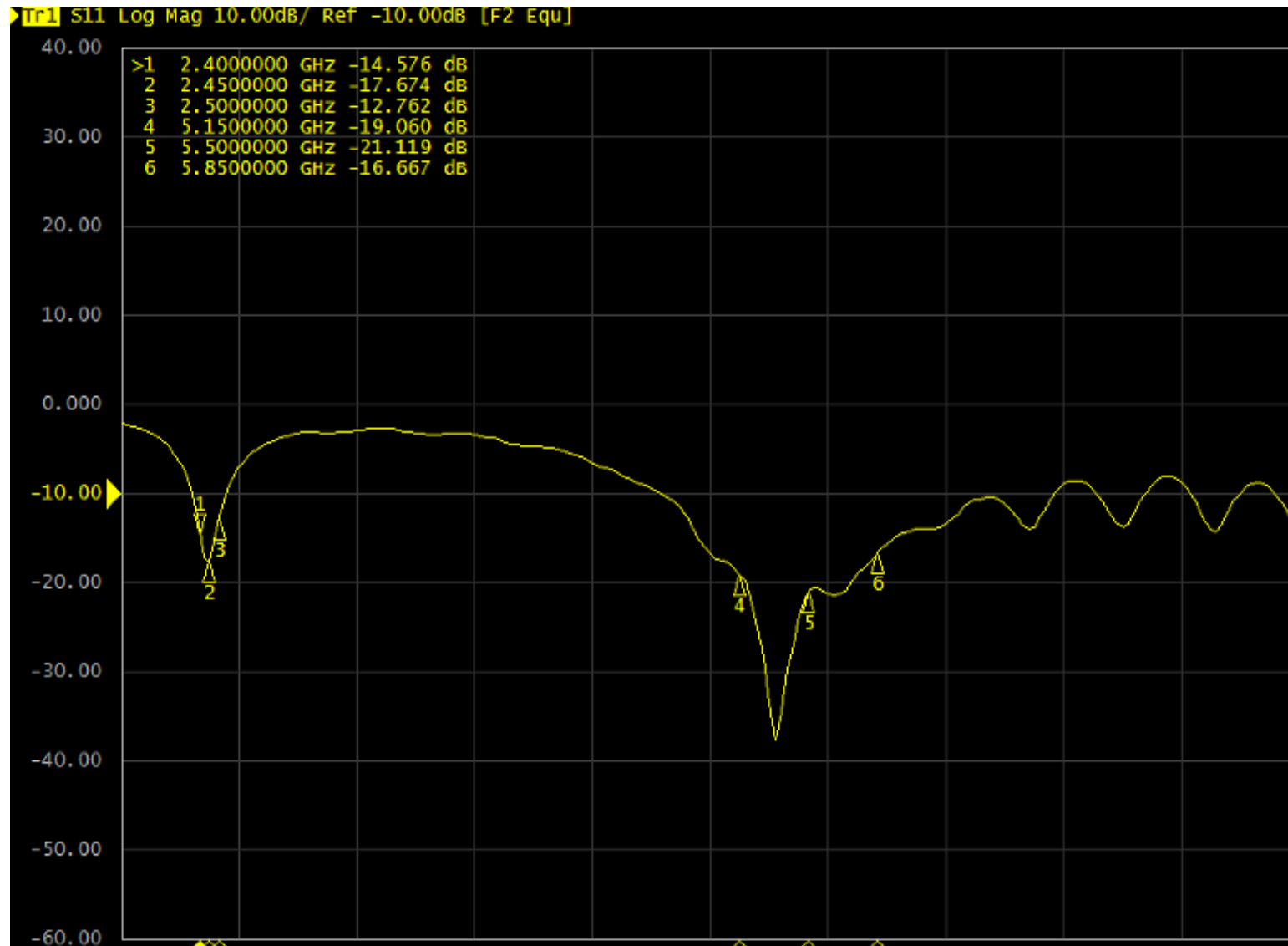
Return Loss – Ant 1



Return Loss – Ant 2

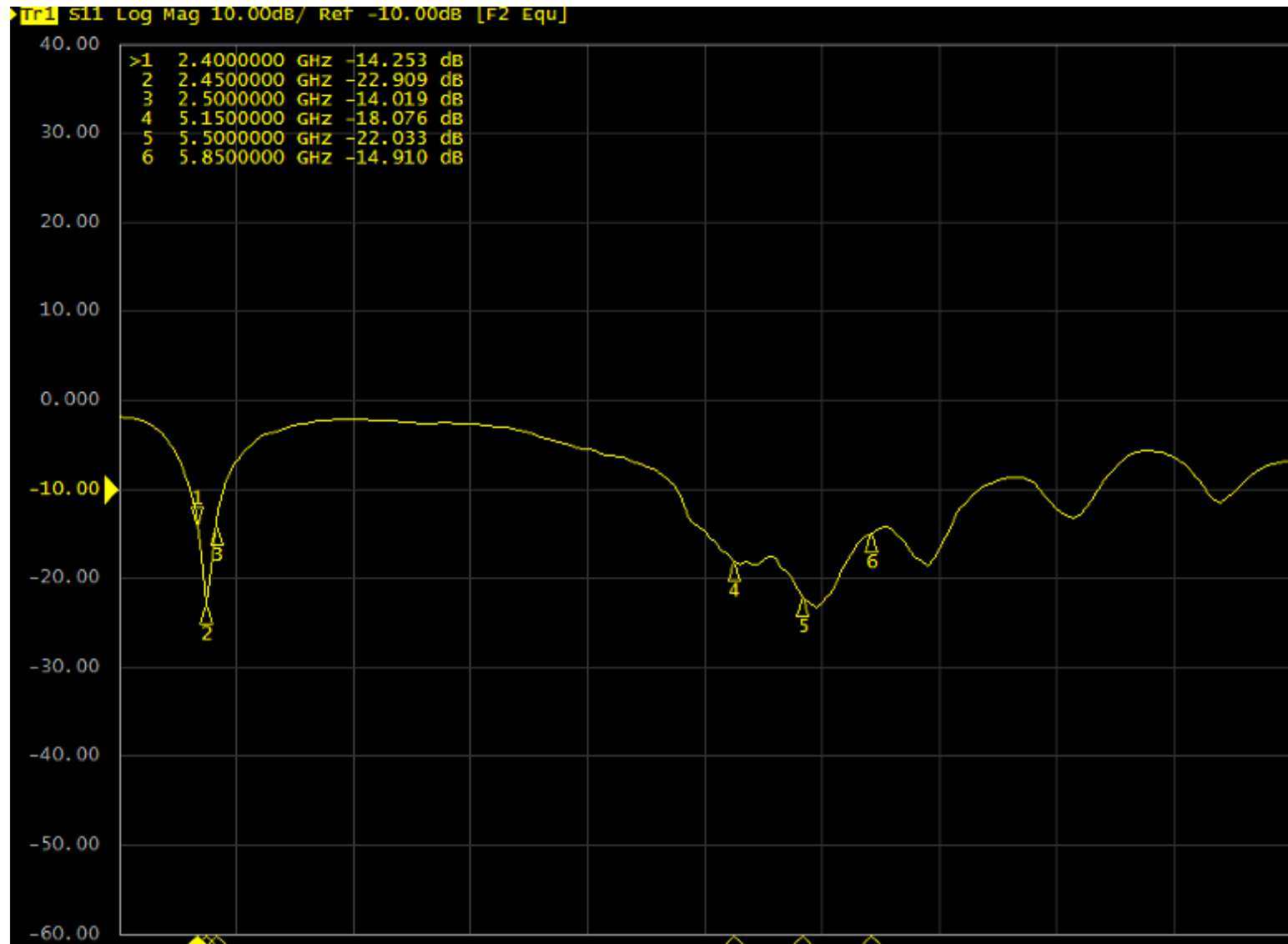


Return Loss – Ant 3



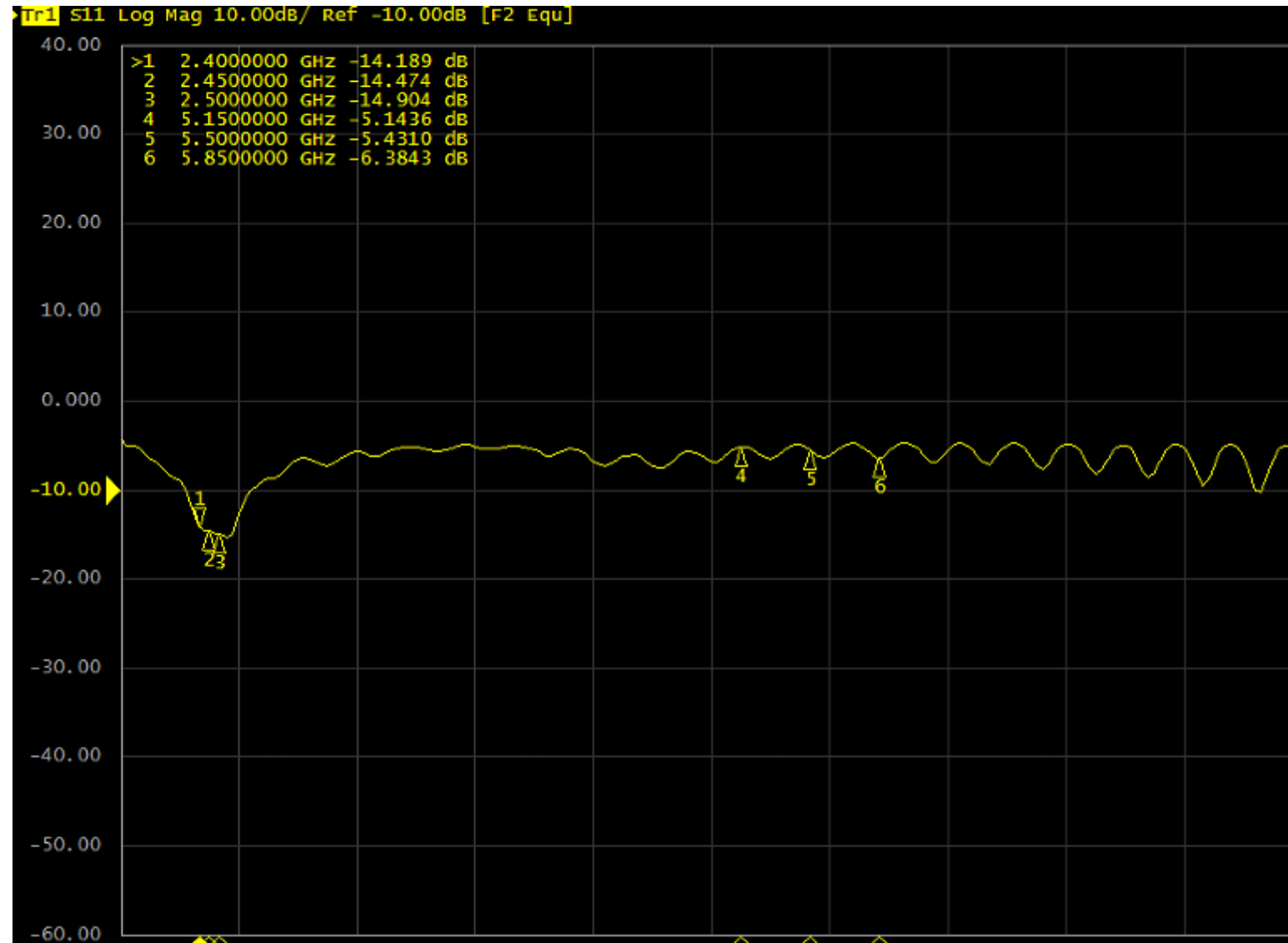
Spec : $RL \geq 10\text{dB}$

Return Loss – Ant 4



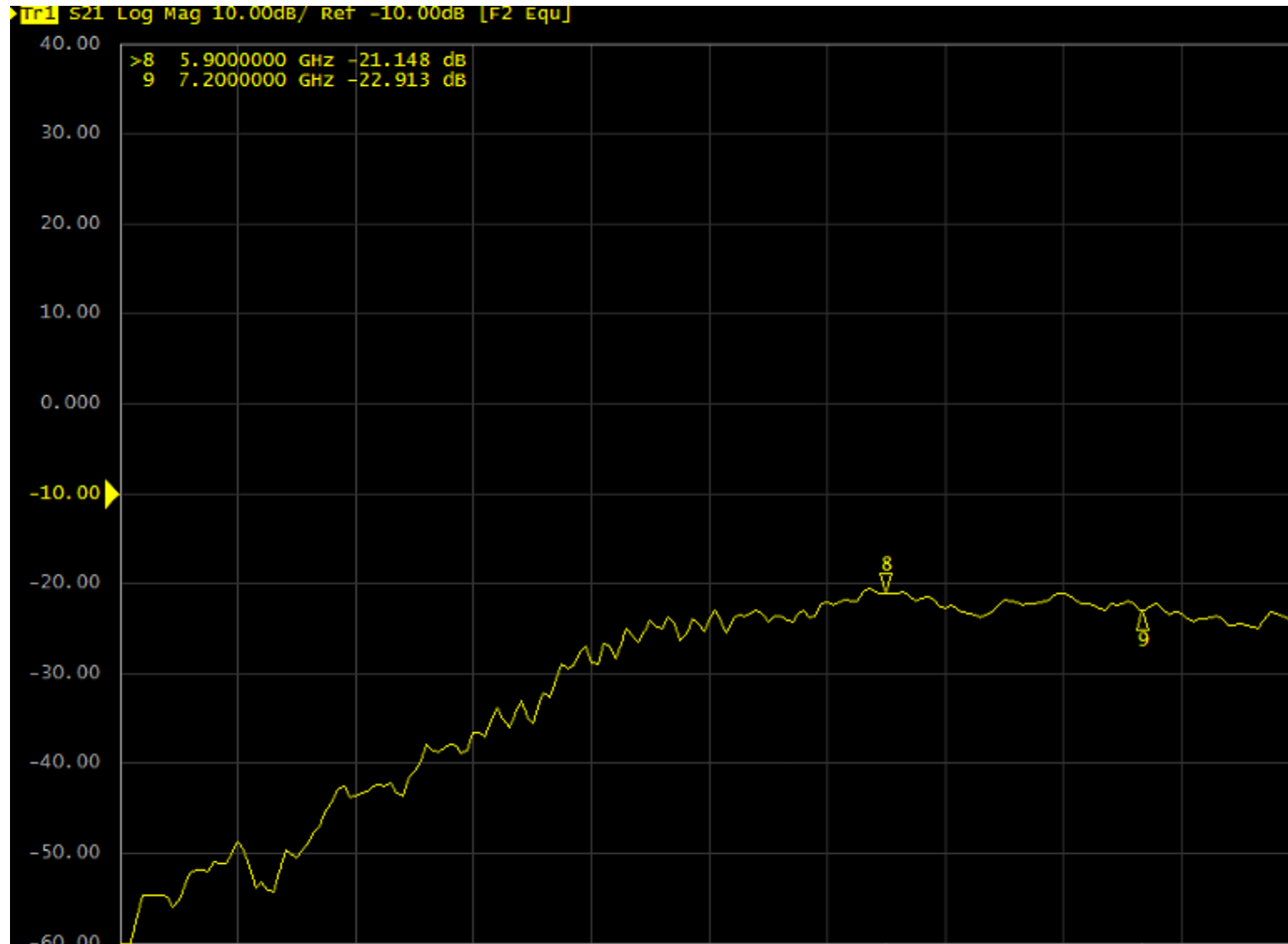
Spec : RL $\geq$ 10dB

Return Loss – Ant 5



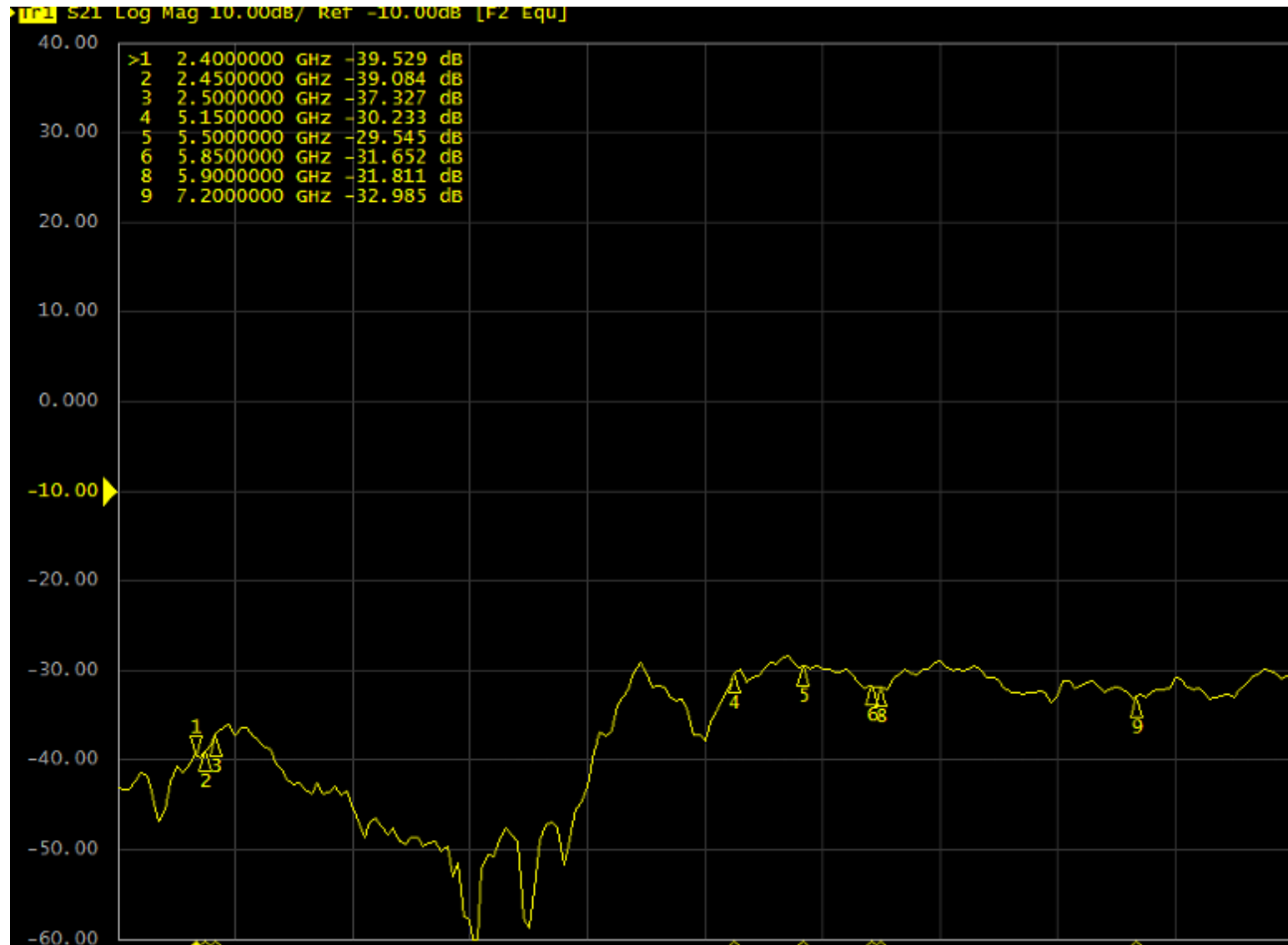
Spec : RL $\geq$ 10dB

Isolation – Ant 1 & Ant 2



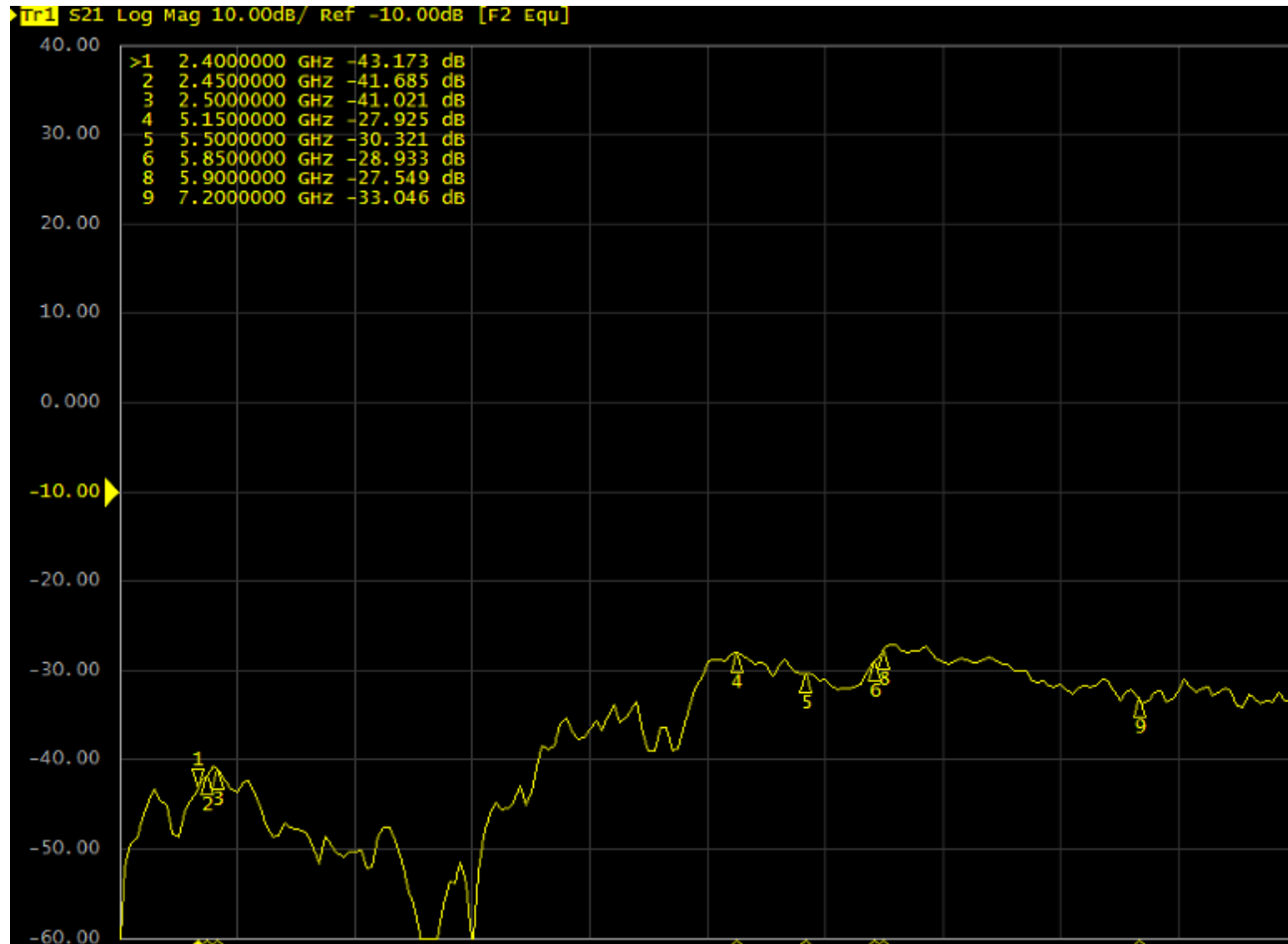
**Spec : Isolation
≥ 20dB (WiFi 6G)**

Isolation – Ant 1 & Ant 3



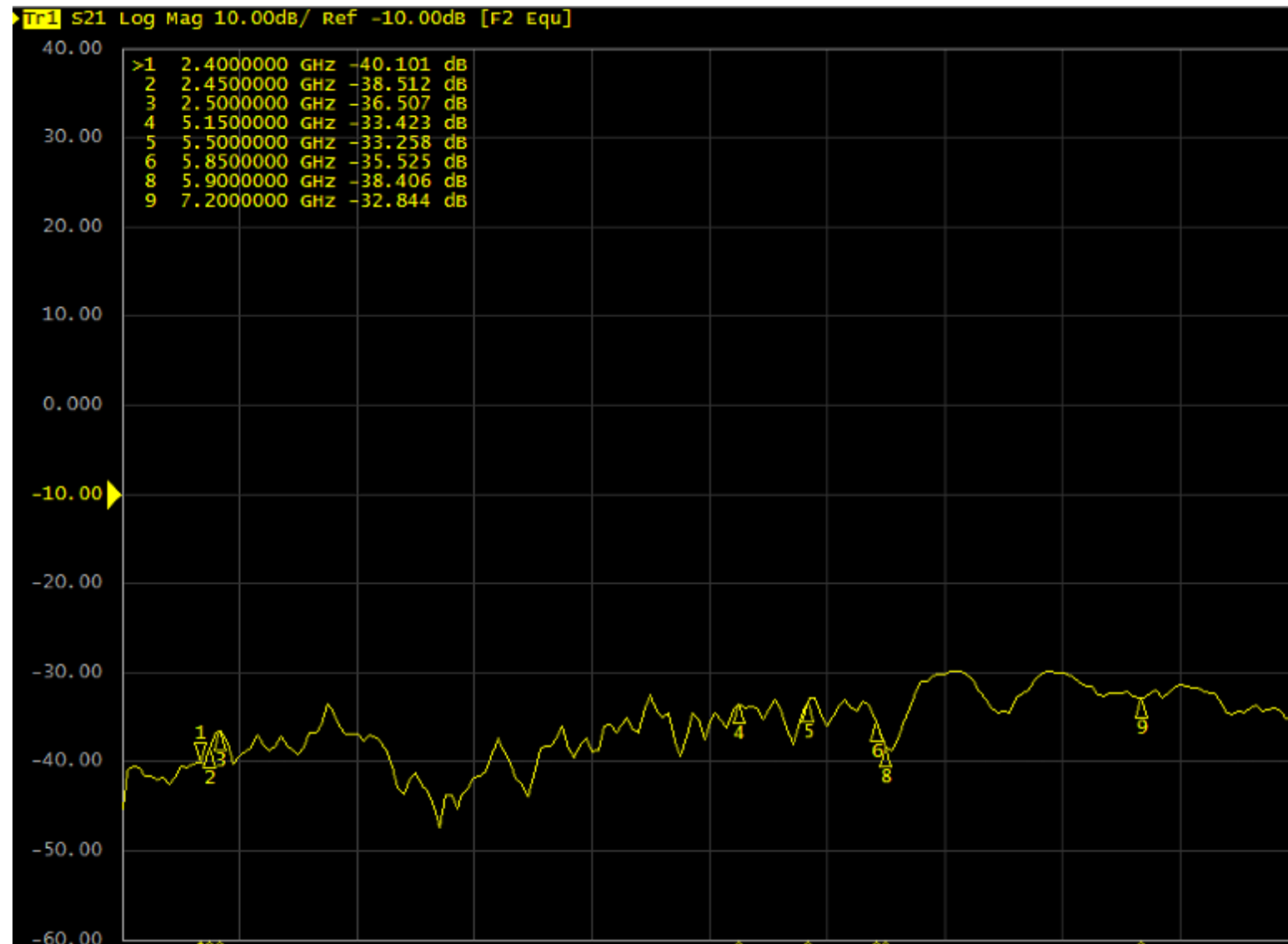
Spec : Isolation $\geq$ 25dB (WiFi 5G&6G)

Isolation – Ant 1 & Ant 4



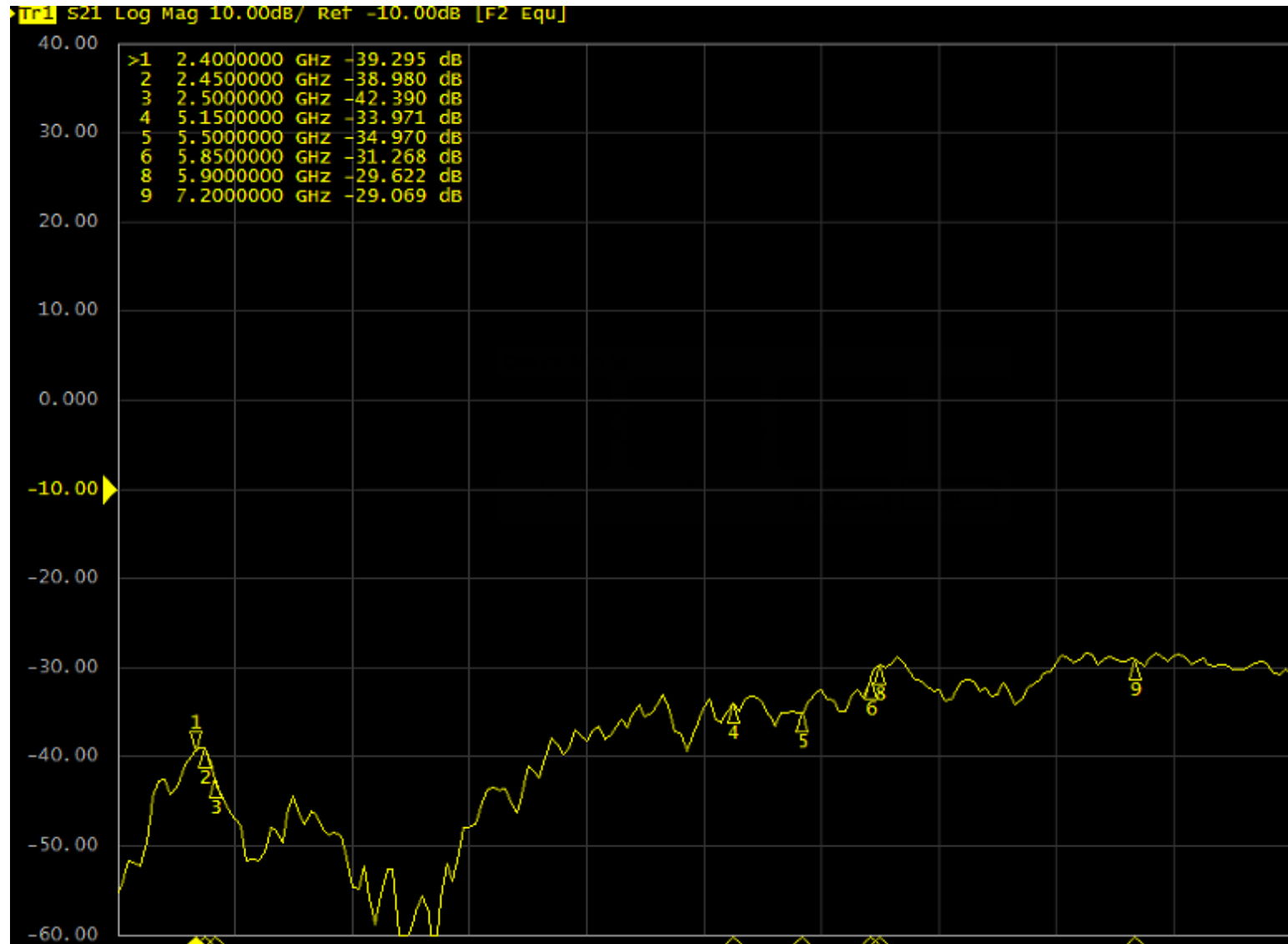
Spec : Isolation $\geq$ 25dB (WiFi 5G&6G)

Isolation – Ant 1 & Ant 5



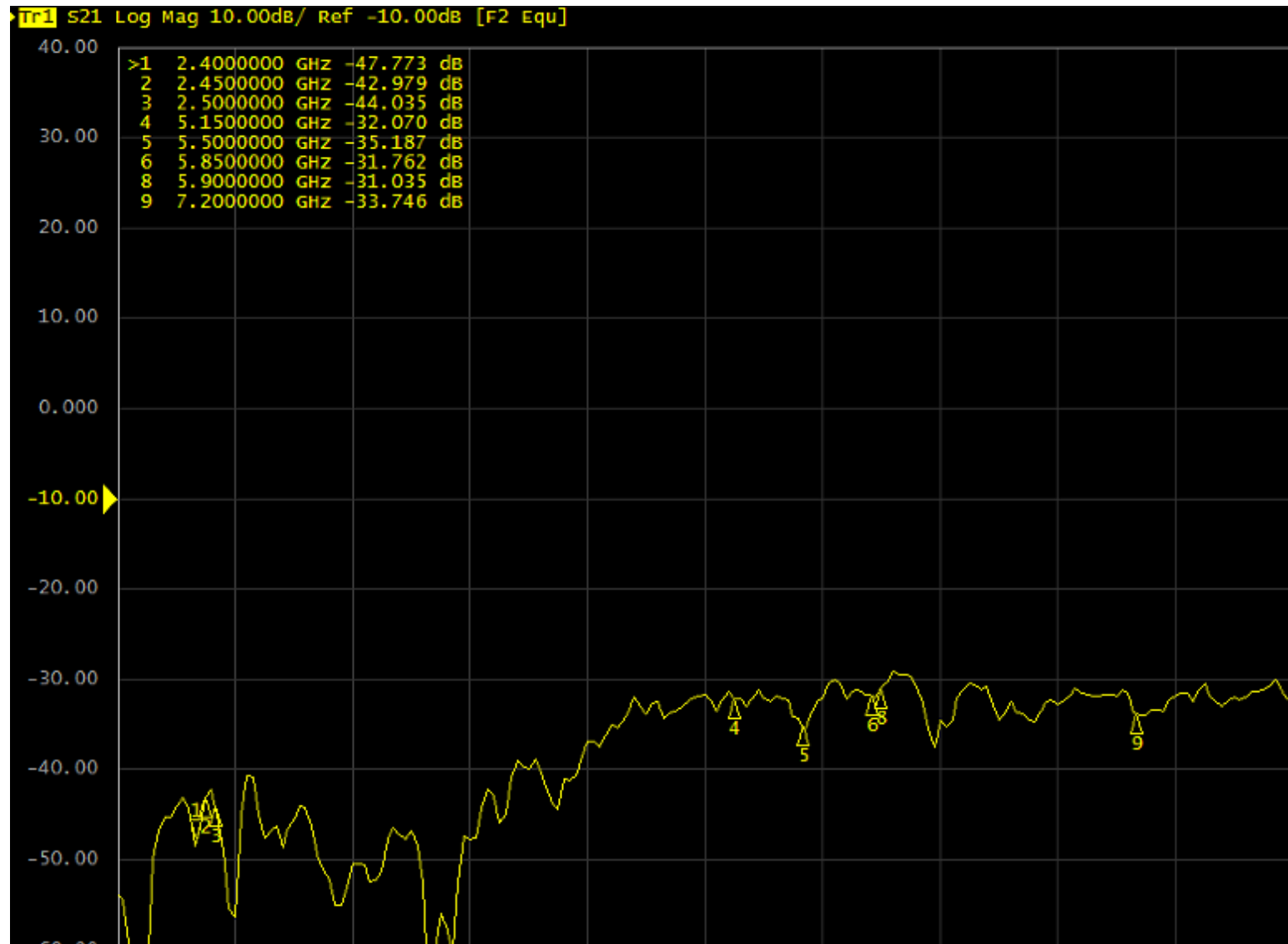
Spec : Isolation $\geq$ 20dB (BLE&6G)

Isolation – Ant 2 & Ant 3



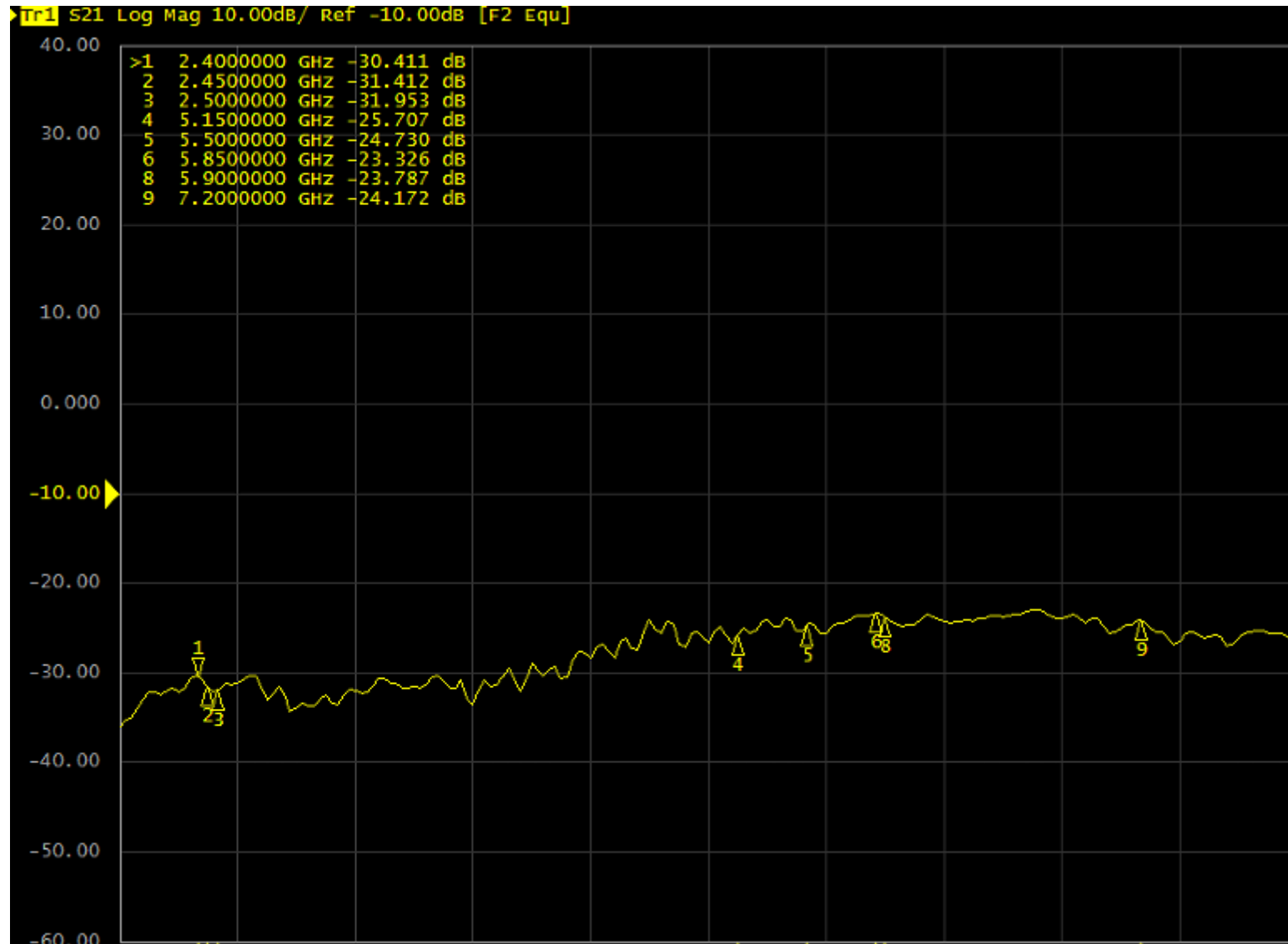
Spec : Isolation $\geq$ 25dB (WiFi 5G&6G)

Isolation – Ant 2 & Ant 4



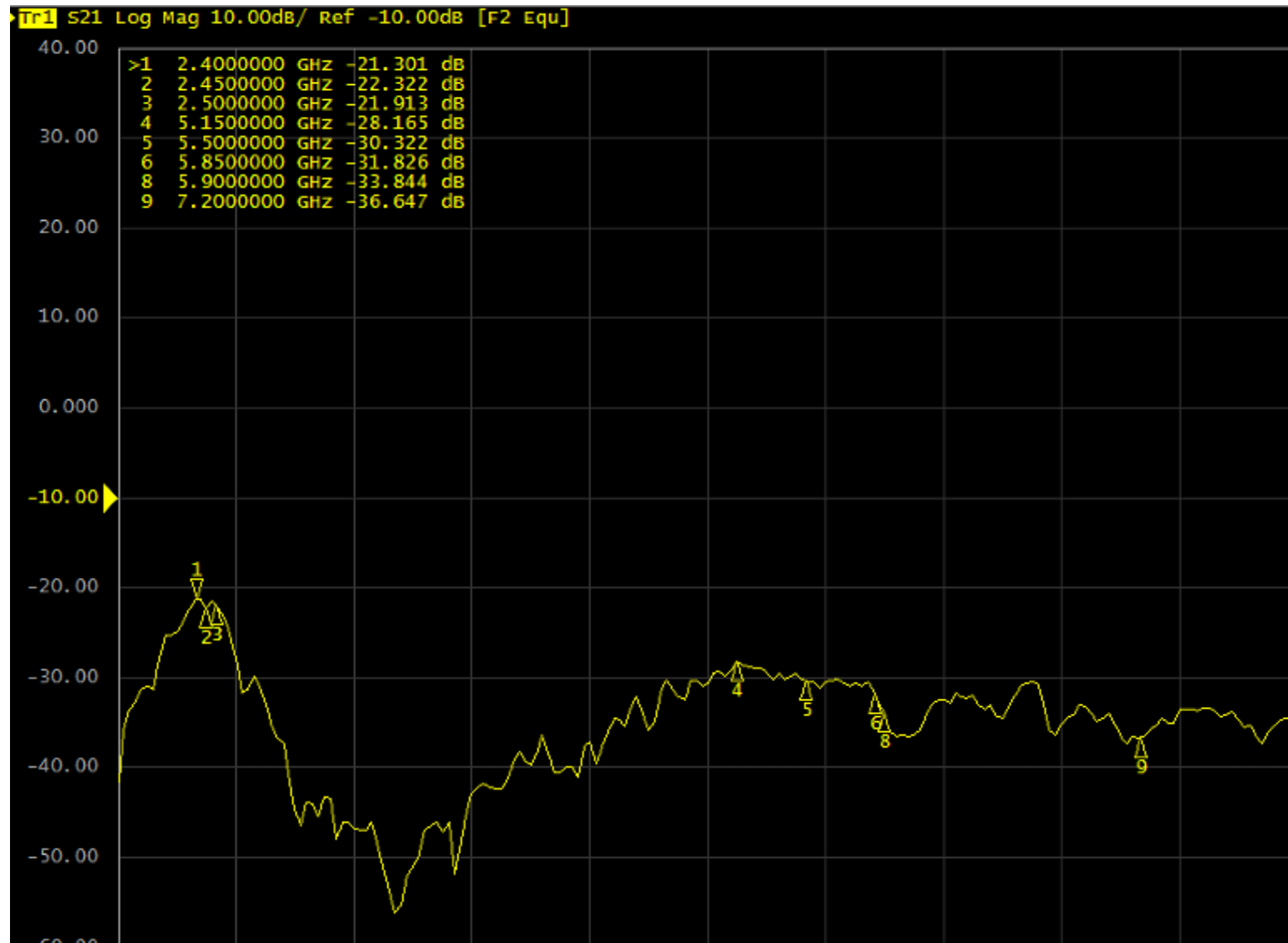
**Spec : Isolation $\geq$
25dB (WiFi 5G&6G)**

Isolation – Ant 2 & Ant 5



Spec : Isolation $\geq$ 20dB (BLE&6G)

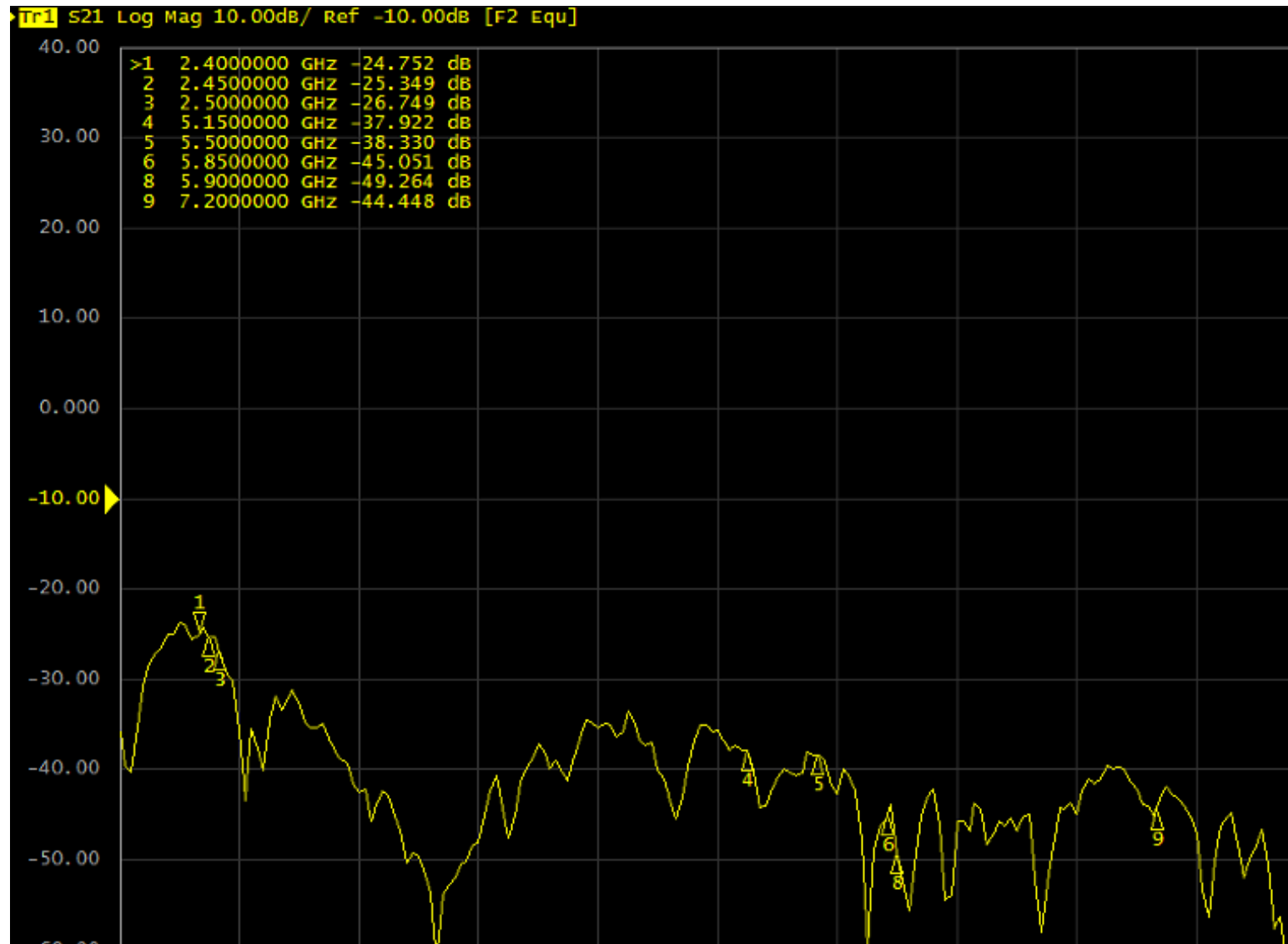
Isolation – Ant 3 & Ant 4



**Spec : Isolation
≥ 20dB (WiFi 2G)**

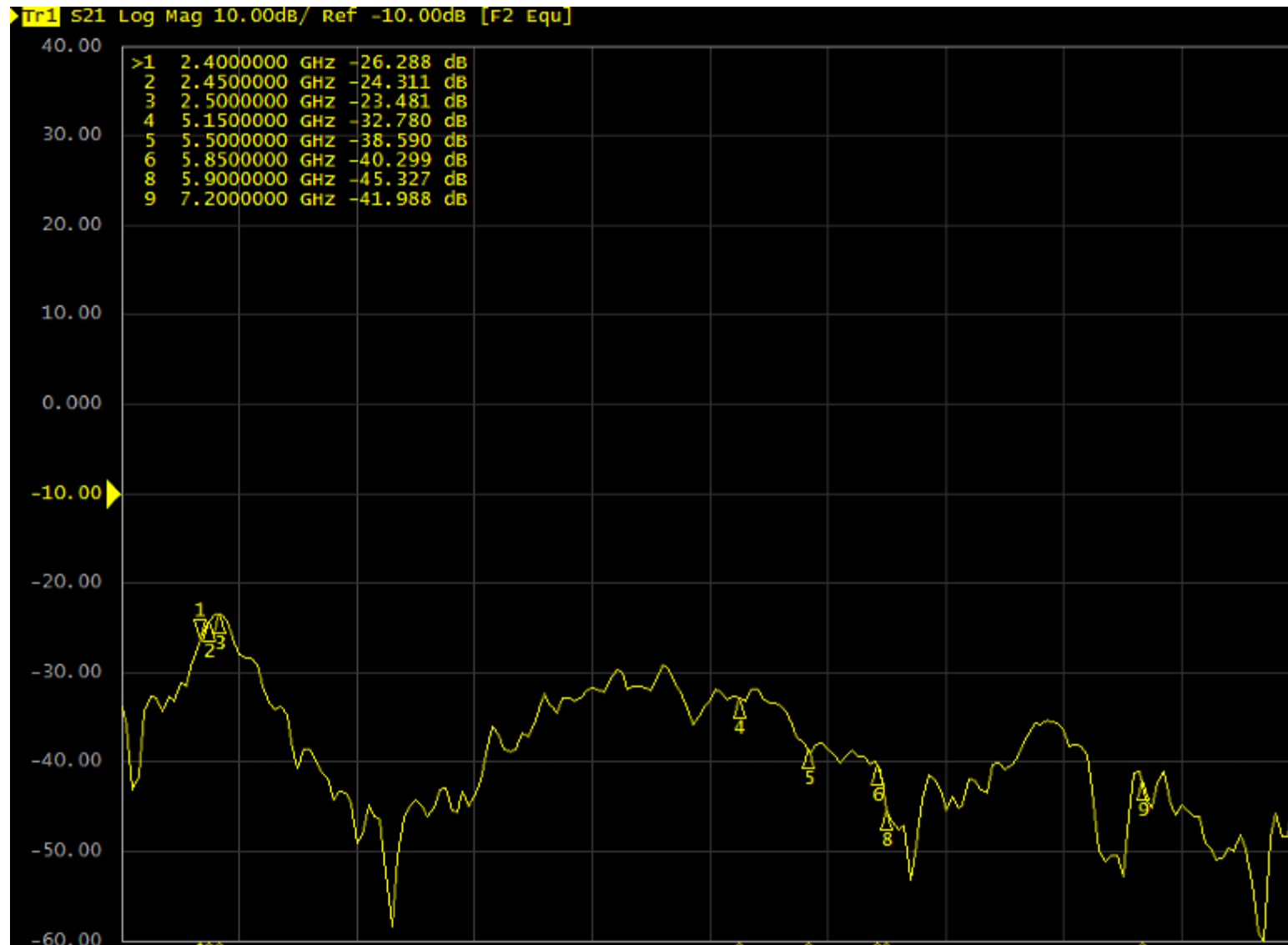
**Spec : Isolation
≥ 20dB (WiFi 5G)**

Isolation – Ant 3 & Ant 5



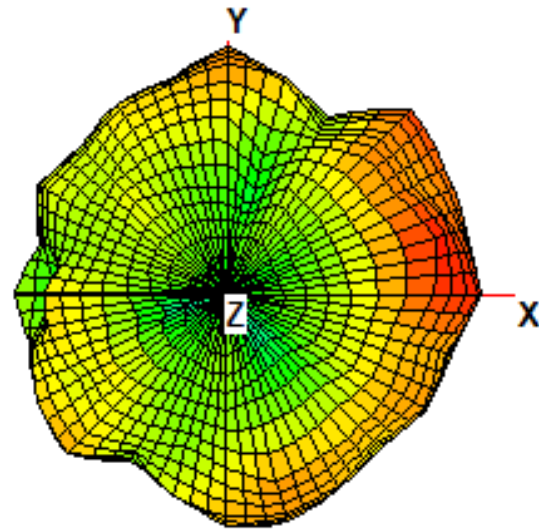
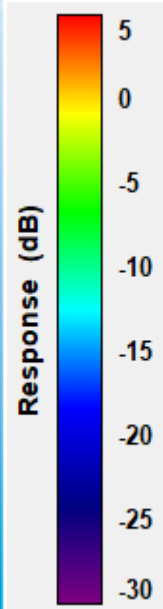
Spec : Isolation $\geq$ 20dB (WiFi 2G&BLE)

Isolation – Ant 4 & Ant 5

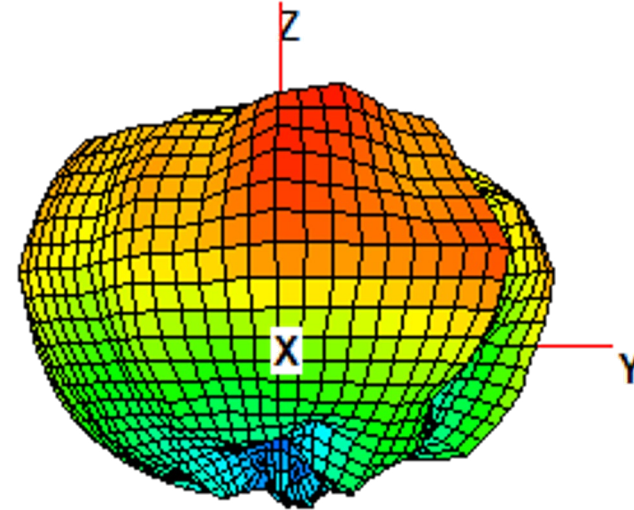


Spec : Isolation $\geq$ 20dB (WiFi 2G&BLE)

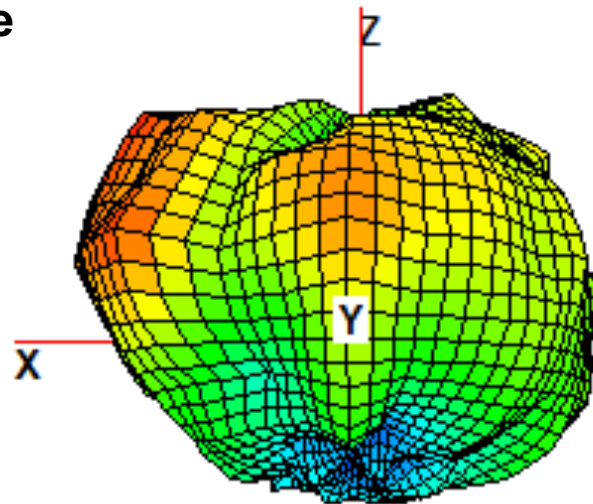
3D Radiation Pattern – Ant 1, WiFi 6E @6500MHz



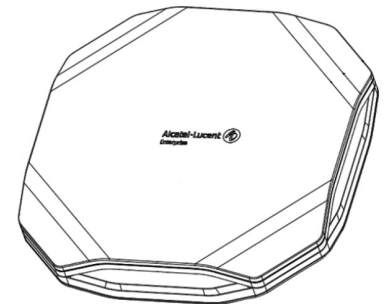
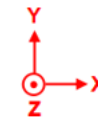
XY-plane



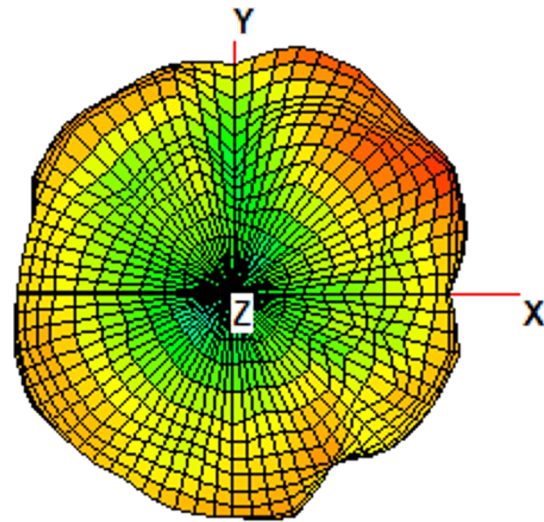
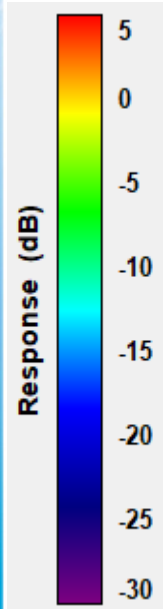
ZY-plane



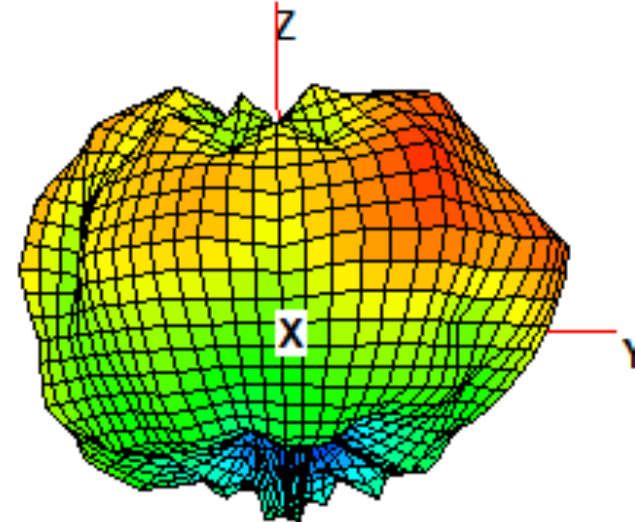
ZX-plane



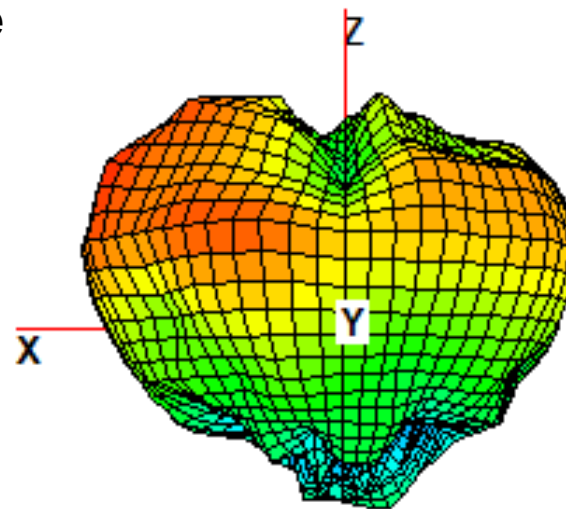
3D Radiation Pattern – Ant 2, WiFi 6G @6500MHz



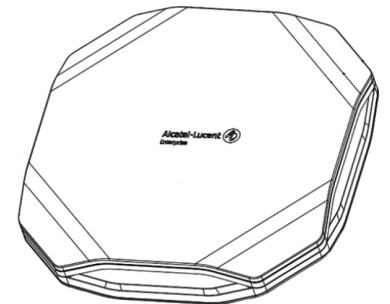
XY-plane



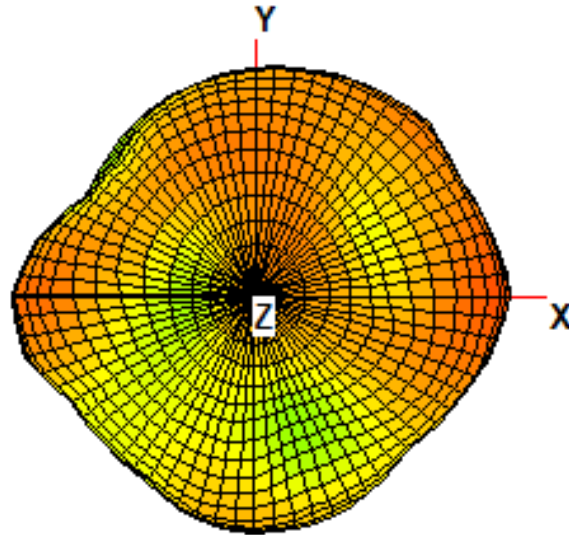
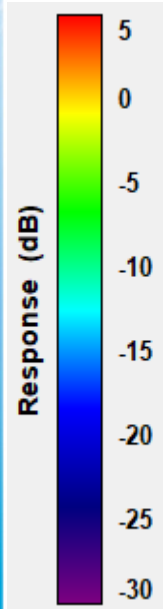
ZY-plane



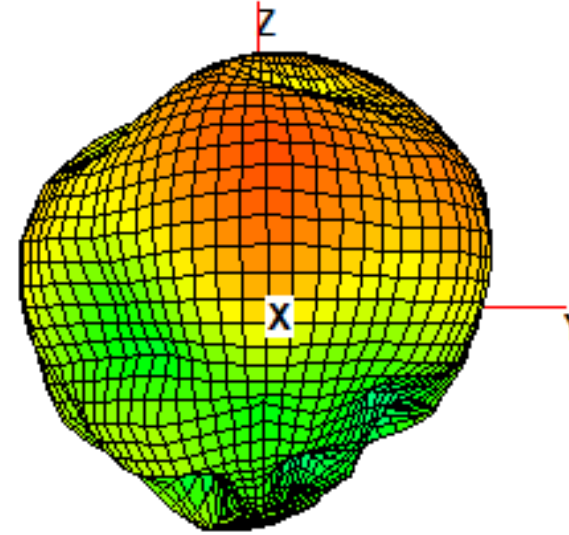
ZX-plane



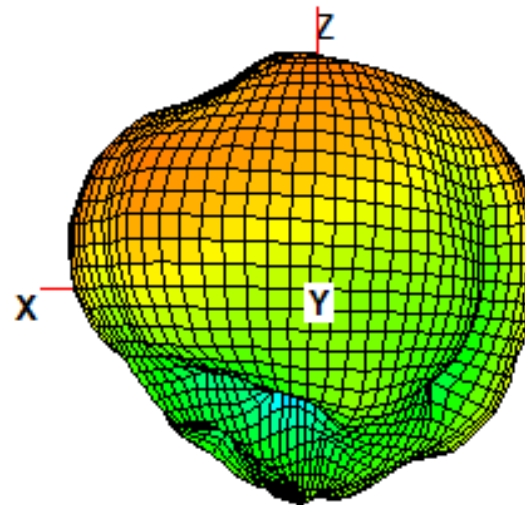
3D Radiation Pattern – Ant 3, WiFi 2G/5G @2450MHz



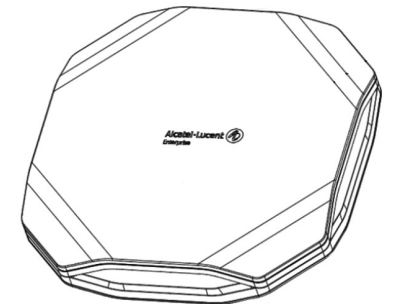
XY-plane



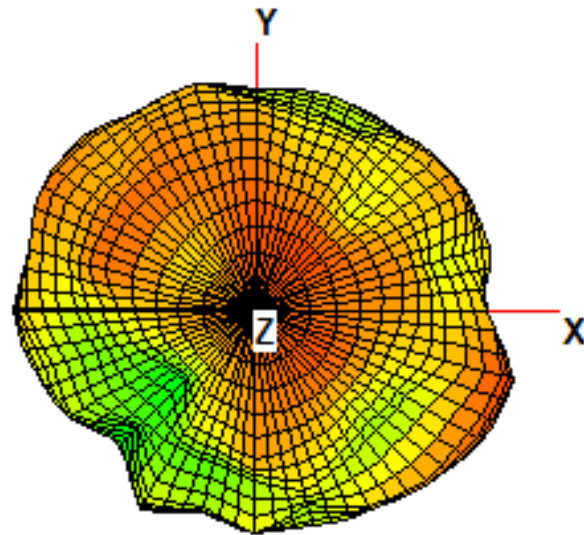
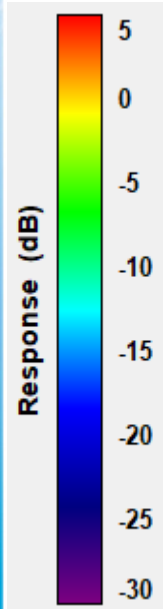
ZY-plane



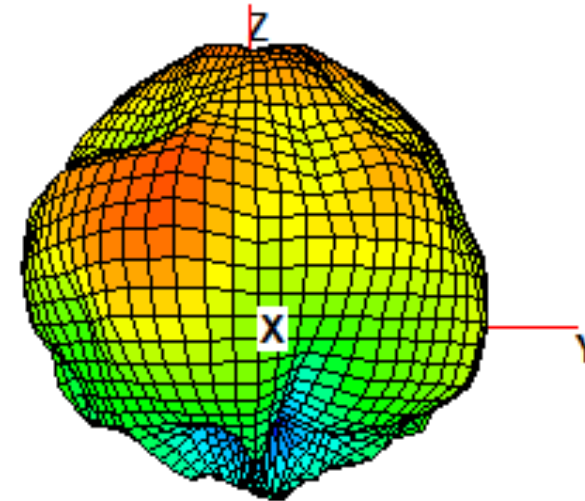
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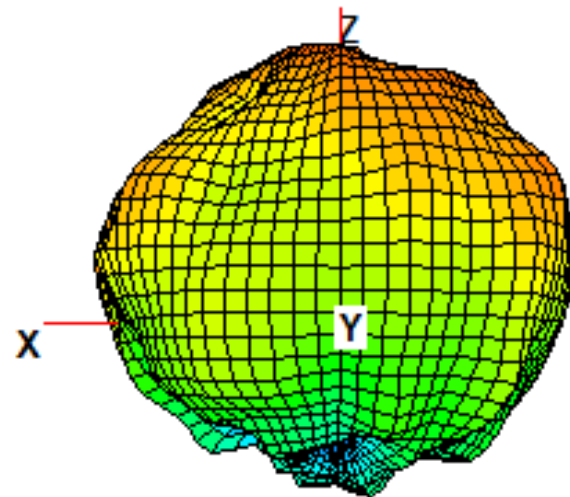
3D Radiation Pattern – Ant 3, WiFi 2G/5G @5500MHz



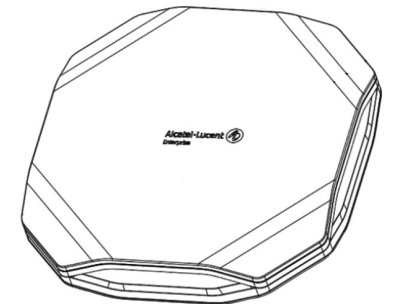
XY-plane



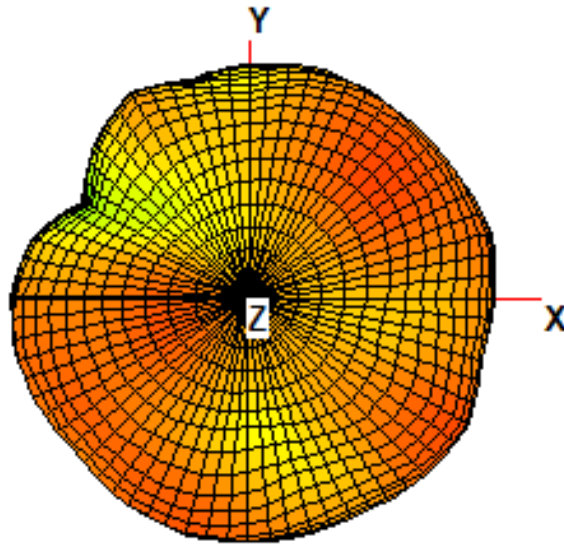
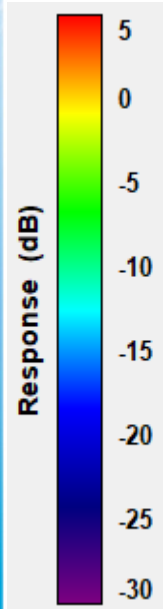
ZY-plane



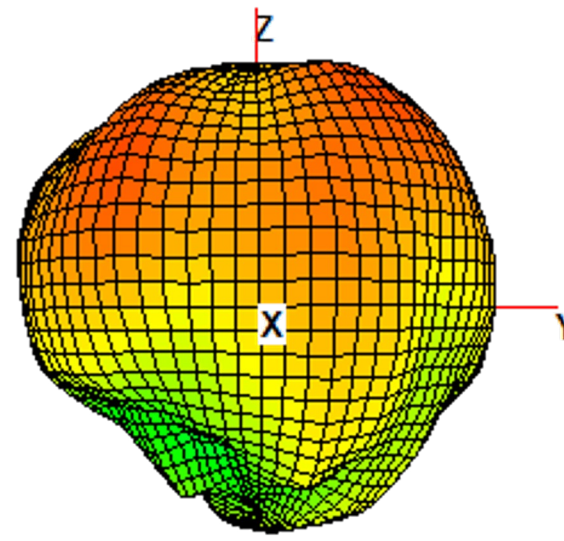
ZX-plane



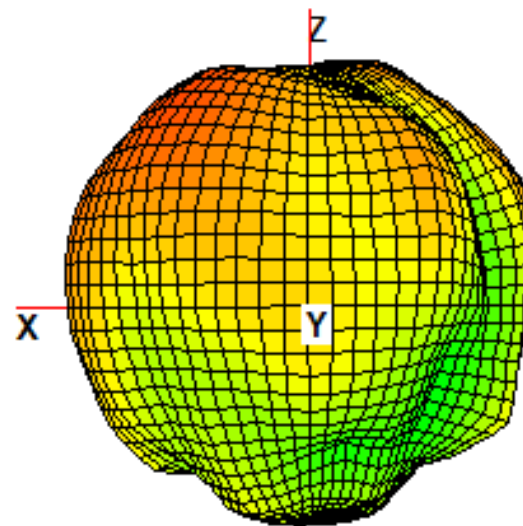
3D Radiation Pattern – Ant 4, WiFi 2G/5G @2450MHz



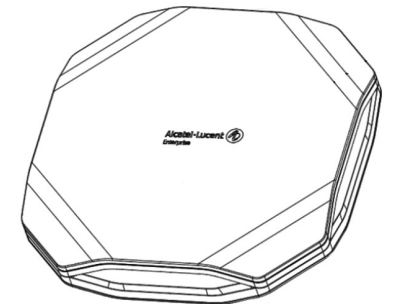
XY-plane



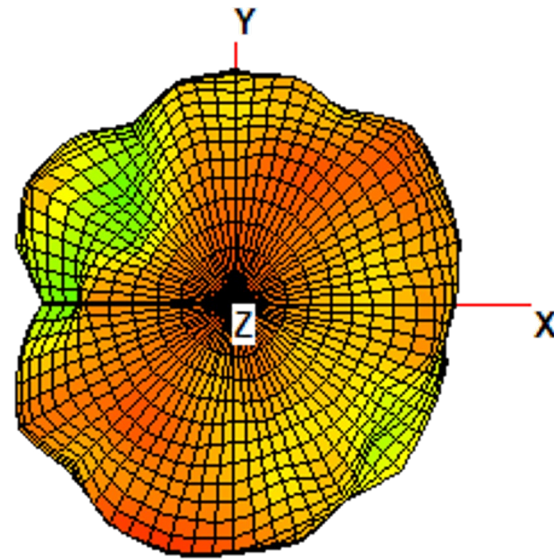
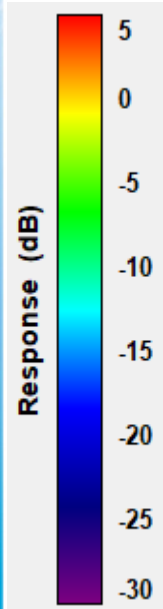
ZY-plane



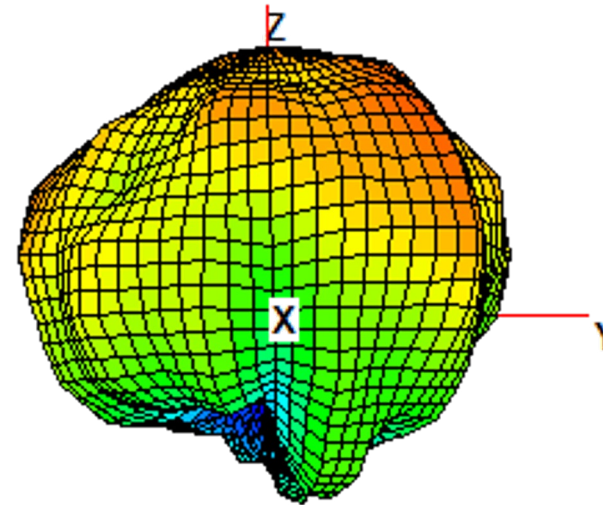
ZX-plane



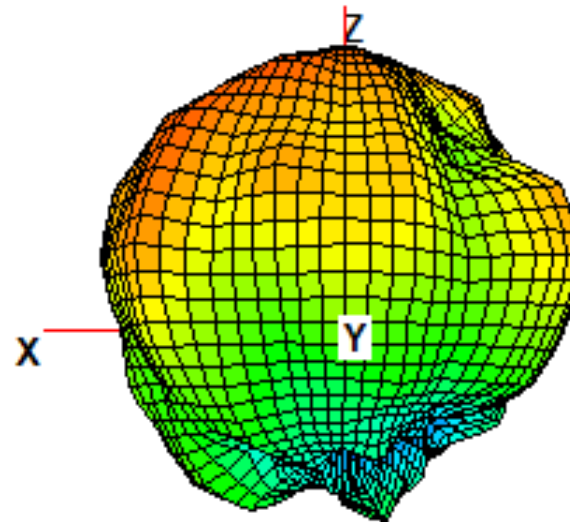
3D Radiation Pattern – Ant 4, WiFi 2G/5G @5500MHz



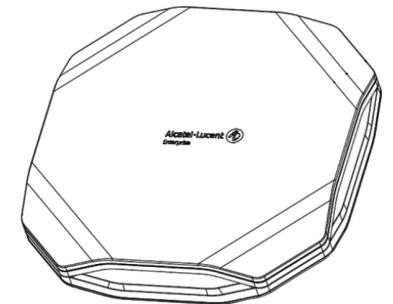
XY-plane



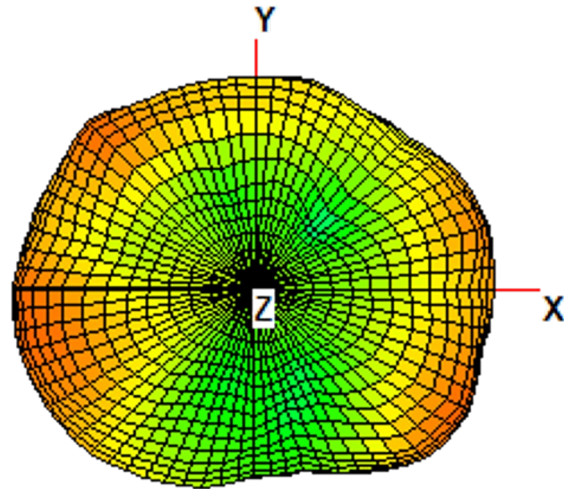
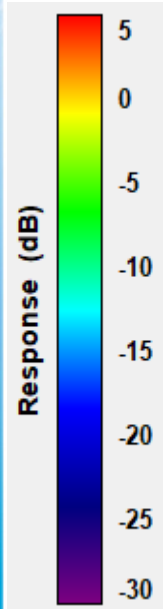
ZY-plane



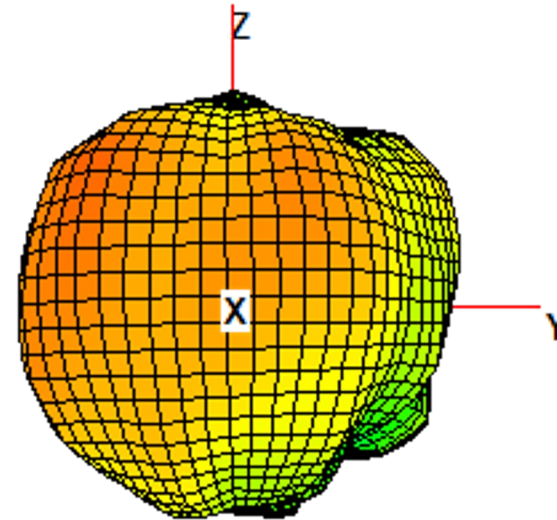
ZX-plane



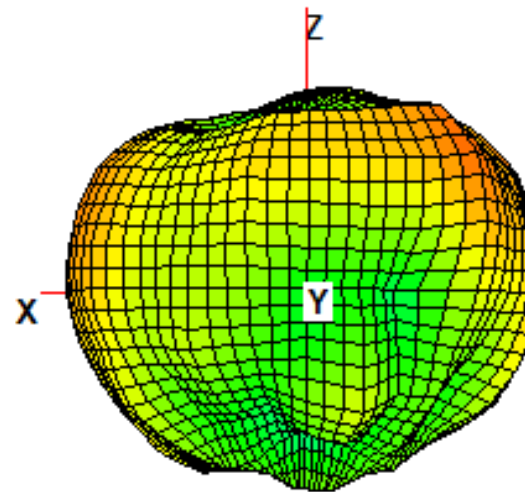
3D Radiation Pattern – Ant 5, BLE @2450MHz



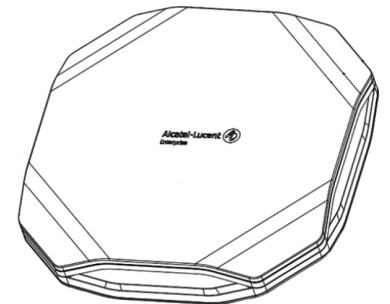
XY-plane



ZY-plane



ZX-plane



Peak Gain & Efficiency

Ant 1 (WiFi 6G)	
Frequency (MHz)	Peak Gain (dBi)
5900	4.15
5925	4.05
6200	4.33
6425	4.27
6500	4.77
6525	3.59
6800	3.6
6875	3.22
7000	3.41
7100	3.51
7200	3.67

Ant 2 (WiFi 6G)	
Frequency (MHz)	Peak Gain (dBi)
5900	3.37
5925	2.95
6200	3.02
6425	3.01
6500	3.49
6525	3.31
6800	4.59
6875	3.34
7000	3.53
7100	3.64
7200	4.01

Peak Gain & Efficiency

Ant 3 (WiFi 2G/5G)	
Frequency (MHz)	Peak Gain (dBi)
2400	4.15
2450	3.84
2500	3.43
5150	4.57
5250	4.55
5350	4.34
5470	3.96
5550	4.07
5725	4.03
5850	4.3

Ant 4 (WiFi 2G/5G)	
Frequency (MHz)	Peak Gain (dBi)
2400	3.49
2450	3.07
2500	3.79
5150	4.57
5250	4.34
5350	4.09
5470	4.15
5550	4.31
5725	4.06
5850	4.14

Ant 5 (BLE)	
Frequency (MHz)	Peak Gain (dBi)
2400 MHz	3.04
2450 MHz	3.05
2500 MHz	4.13

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