

OAW-AP1542

Passive Measurement Report

V01

Tester: Zhihua

Date: 2025/11/27

Revision History



Version	Content	Reviser	Date
V01	New document	Zhihua	2025.11.27

CONTENTS

- ◆ **Purpose & Environment**
- ◆ **Dut Antenna**
- ◆ **Return loss(VSWR) and Isolation(Cable loss)**
- ◆ **2D/3D Radiation Pattern**
- ◆ **Peak Gain and Efficiency**
- ◆ **Summary**

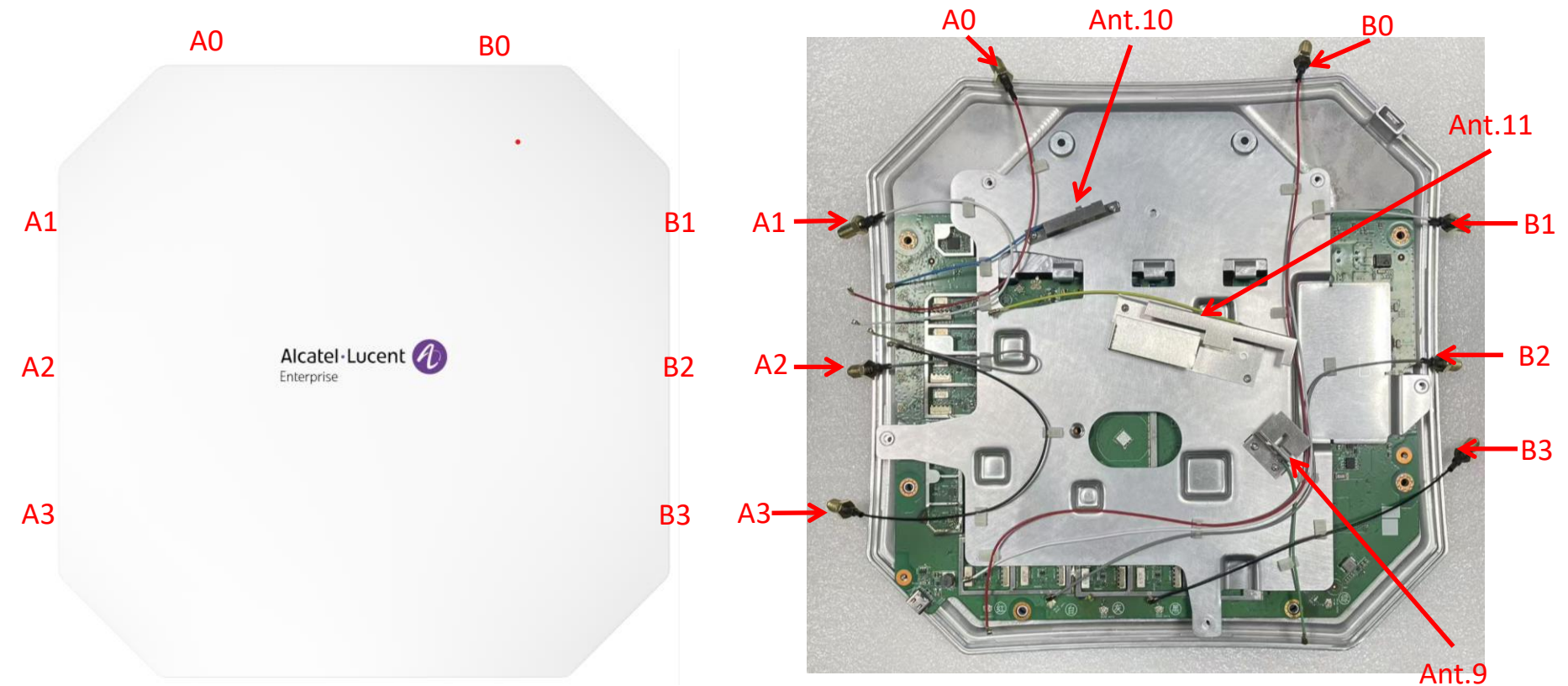
Purpose

- Meet the electrical performance index;
- Confirm the antenna scheme to meet the design requirements ;

Environment

- Test Condition: the network analyzer(E5071C) and Feitu microwave anechoic chamber;
- Passive measurement results are presented

Antenna Model



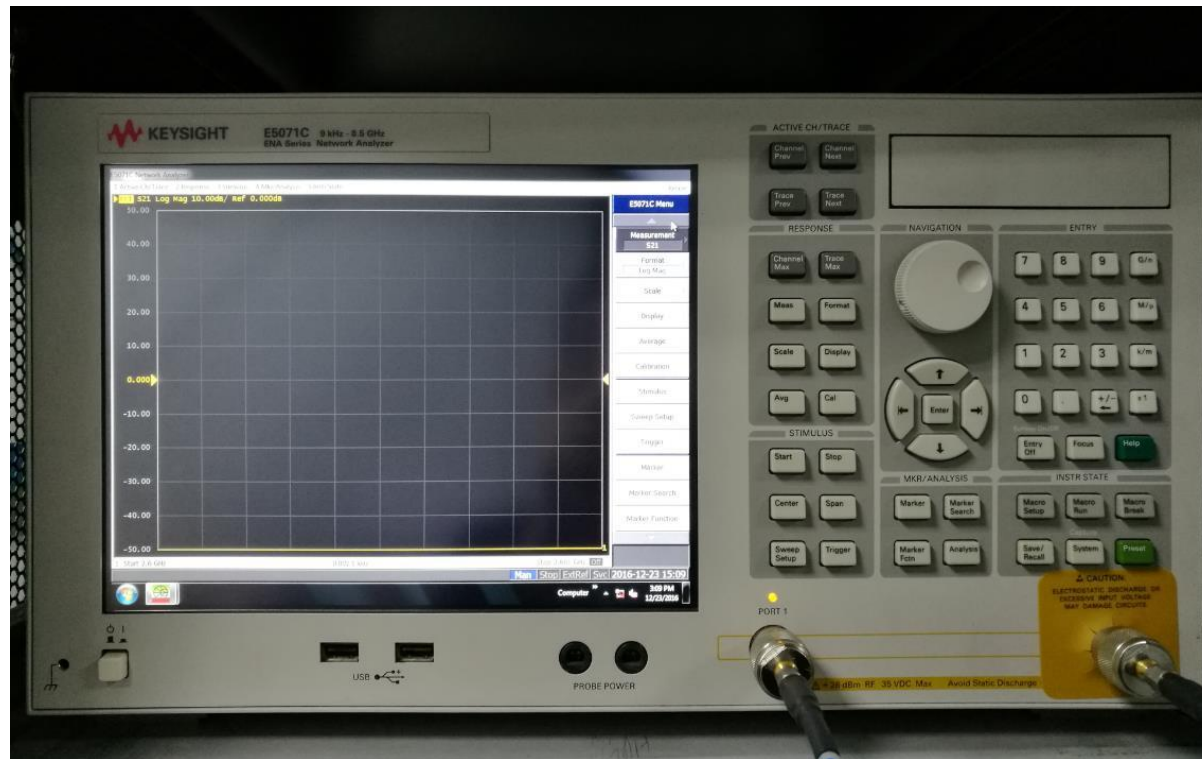
Antenna Model



Ant No.	W.Y.P/NO	Function	Operating Band	Type	Length	Polarization
A0	C6319-510391-A	RF Connection Cable	2400-7200 MHz	SMA	180mm	-
A1	C6319-510390-A	RF Connection Cable	2400-7200 MHz	SMA	180mm	-
A2	C6319-510389-A	RF Connection Cable	2400-7200 MHz	SMA	165mm	-
A3	C6319-510388-A	RF Connection Cable	2400-7200 MHz	SMA	205mm	-
B0	C6319-510387-A	RF Connection Cable	2400-7200 MHz	SMA	380mm	-
B1	C6319-510386-A	RF Connection Cable	2400-7200 MHz	SMA	350mm	-
B2	C6319-510385-A	RF Connection Cable	2400-7200 MHz	SMA	240mm	-
B3	C6319-510384-A	RF Connection Cable	2400-7200 MHz	SMA	165mm	-
Ant 9	-	Scan	2400-2500 MHz/5150-5850 MHz /5925-7125 MHz	PIFA	21.5*21.9*8.2 mm	Vertical
Ant 10	-	BLE	2400-2500 MHz	PIFA	43.3*7.1*9.6m m	Vertical
Ant 11	-	GPS	1164-1218 MHz/1558-1610 MHz	PIFA	79.1*24.4*8.8 mm	Vertical

Return loss(VSWR) and Isolation(Cable Loss)

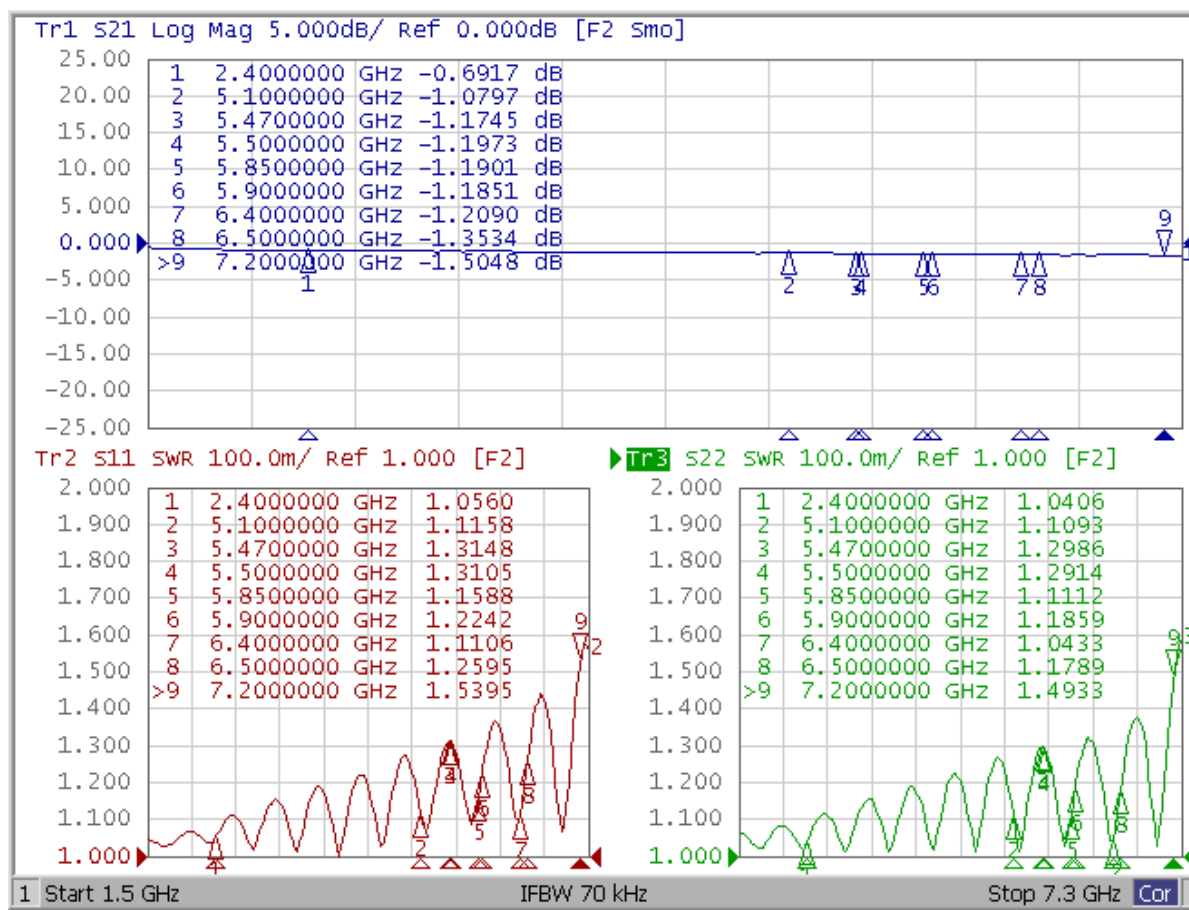
Measurement Condition



The network Analyzer

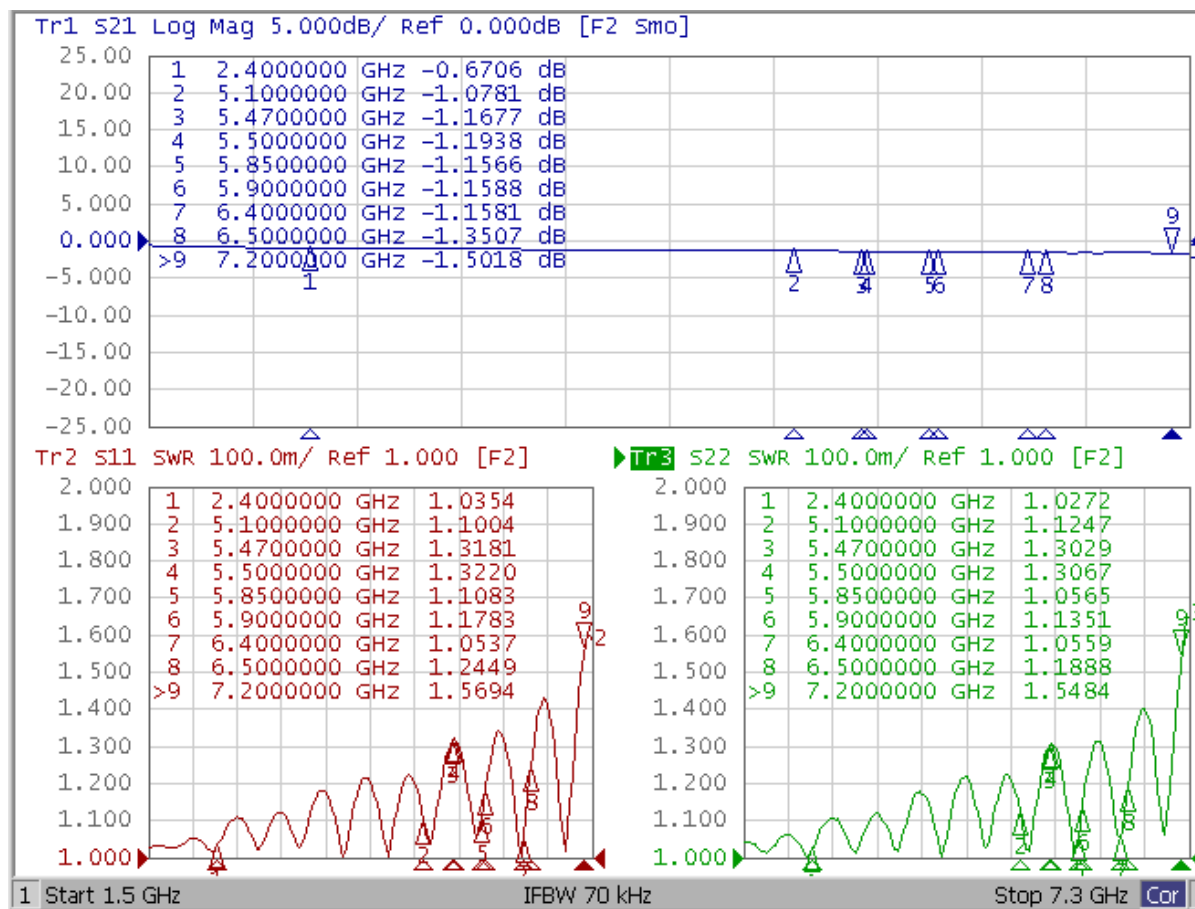
VSWR&Cable Loss

A0



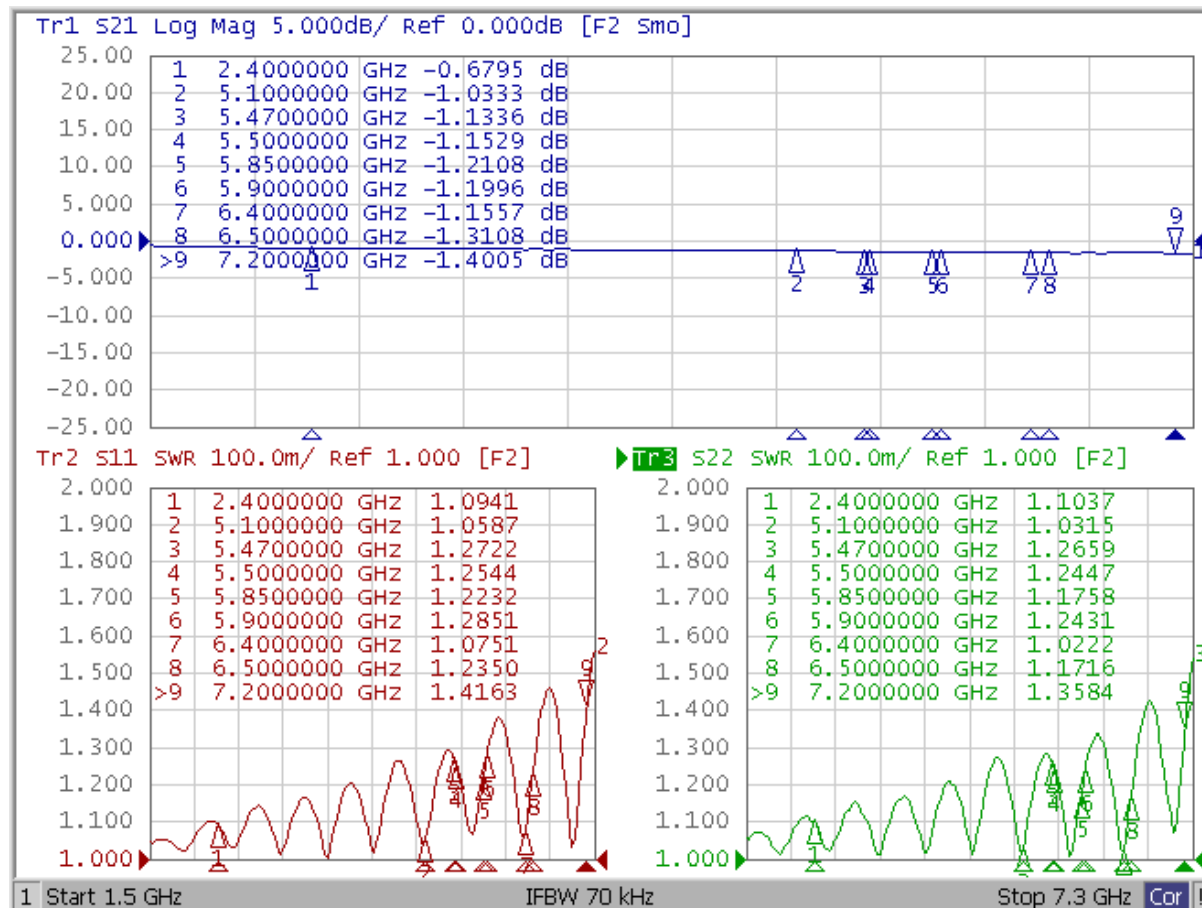
VSWR&Cable Loss

A1



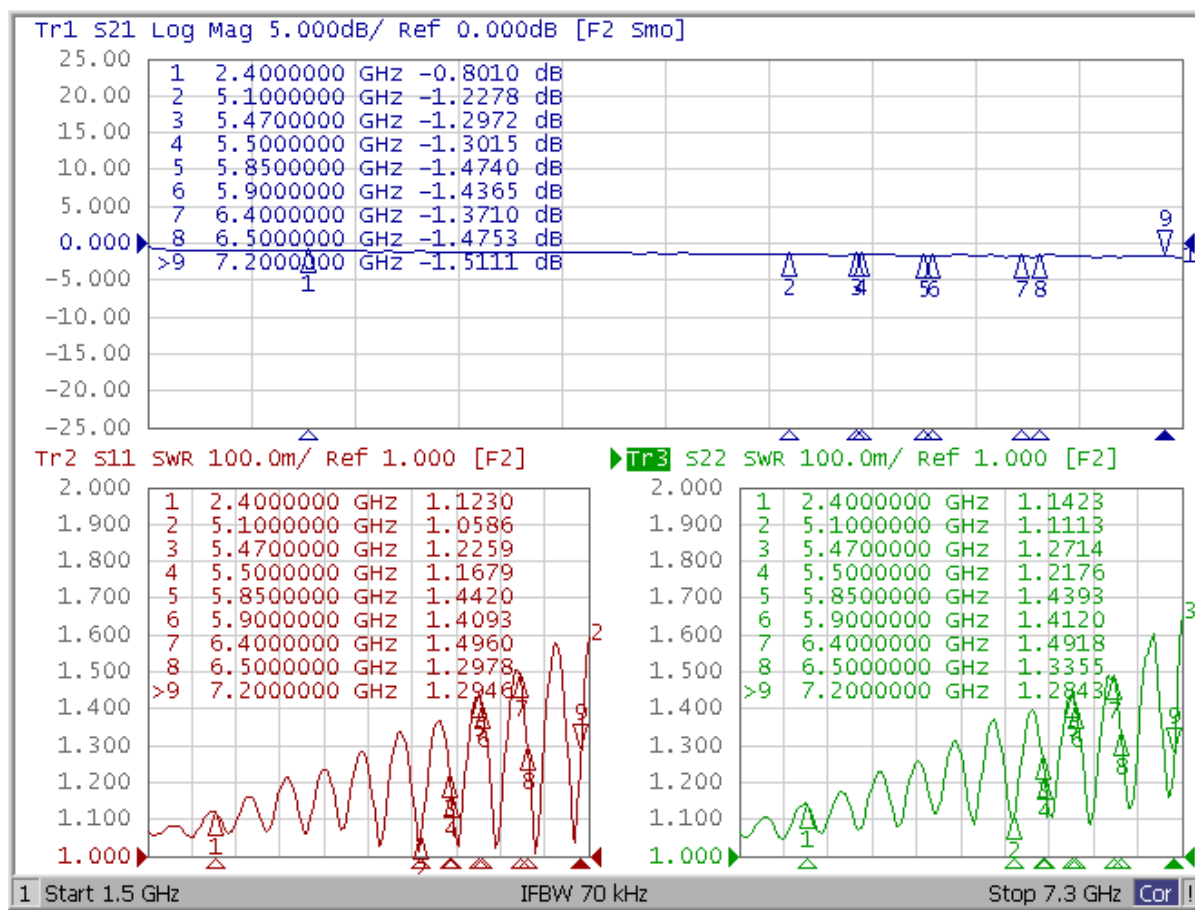
VSWR&Cable Loss

A2



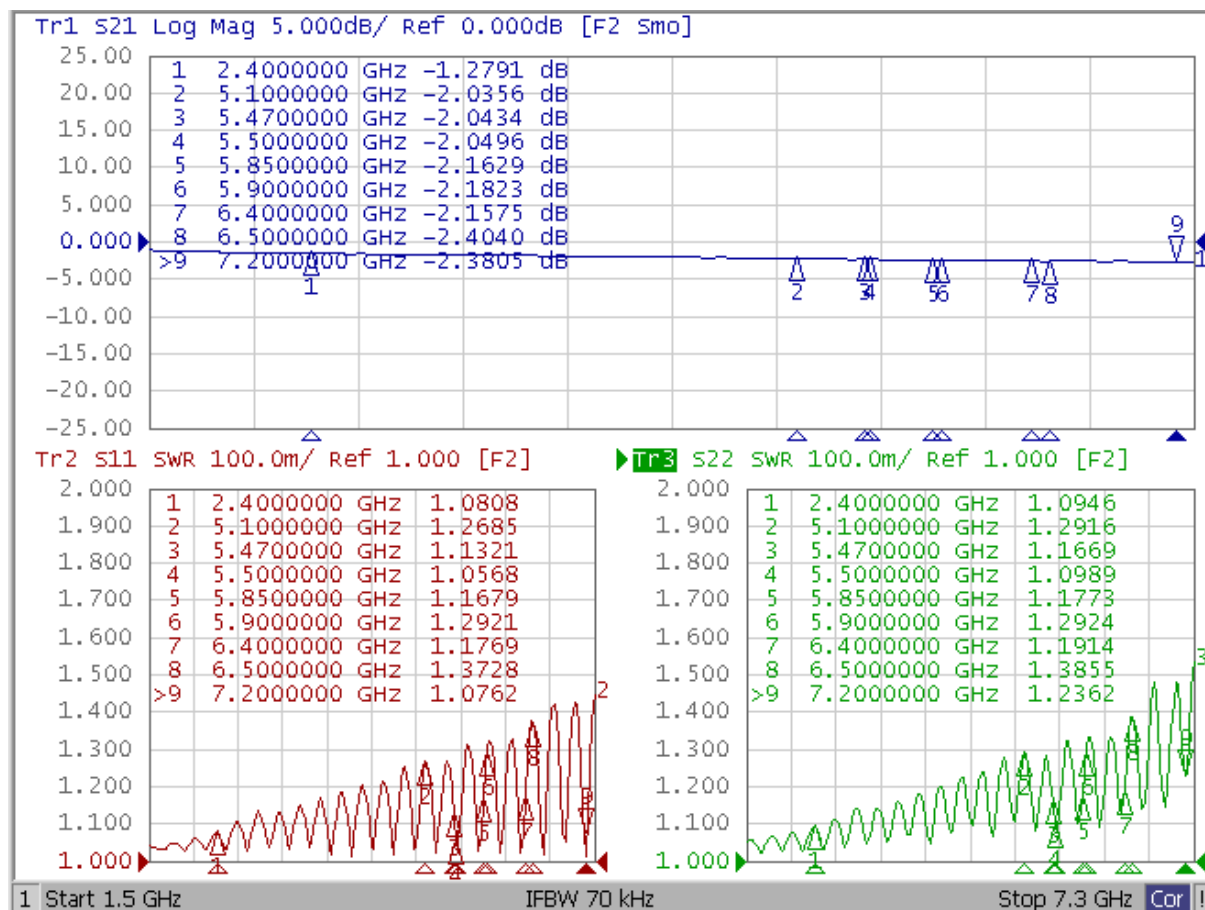
VSWR&Cable Loss

A3



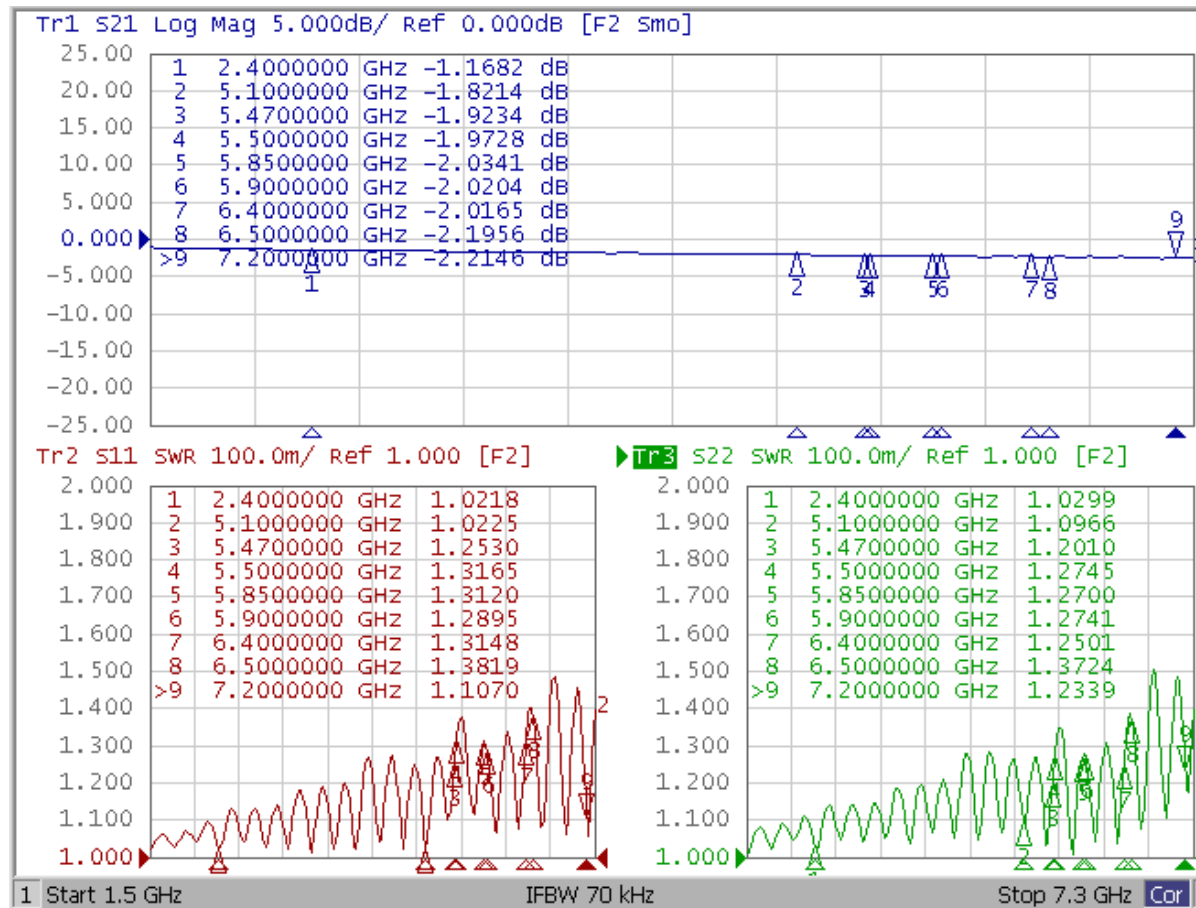
VSWR&Cable Loss

B0



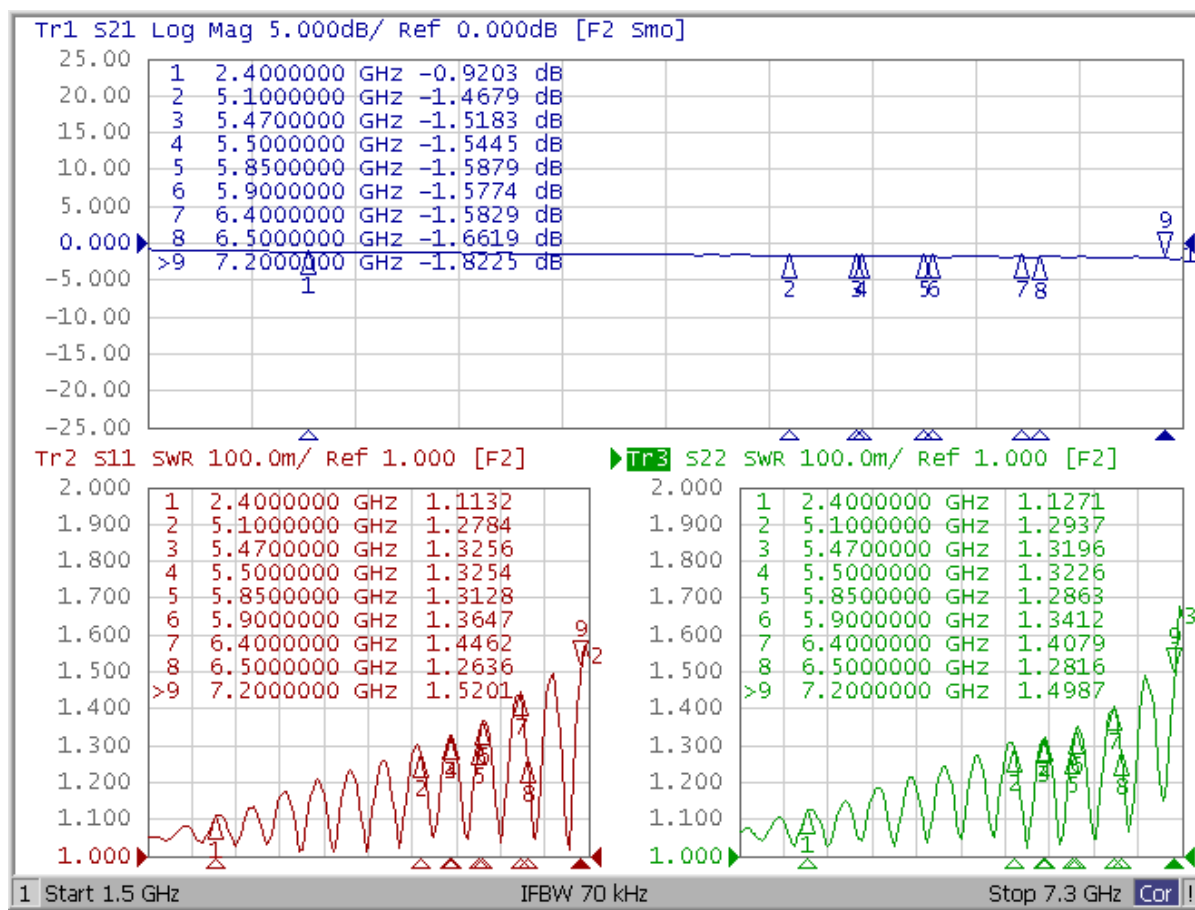
VSWR&Cable Loss

B1



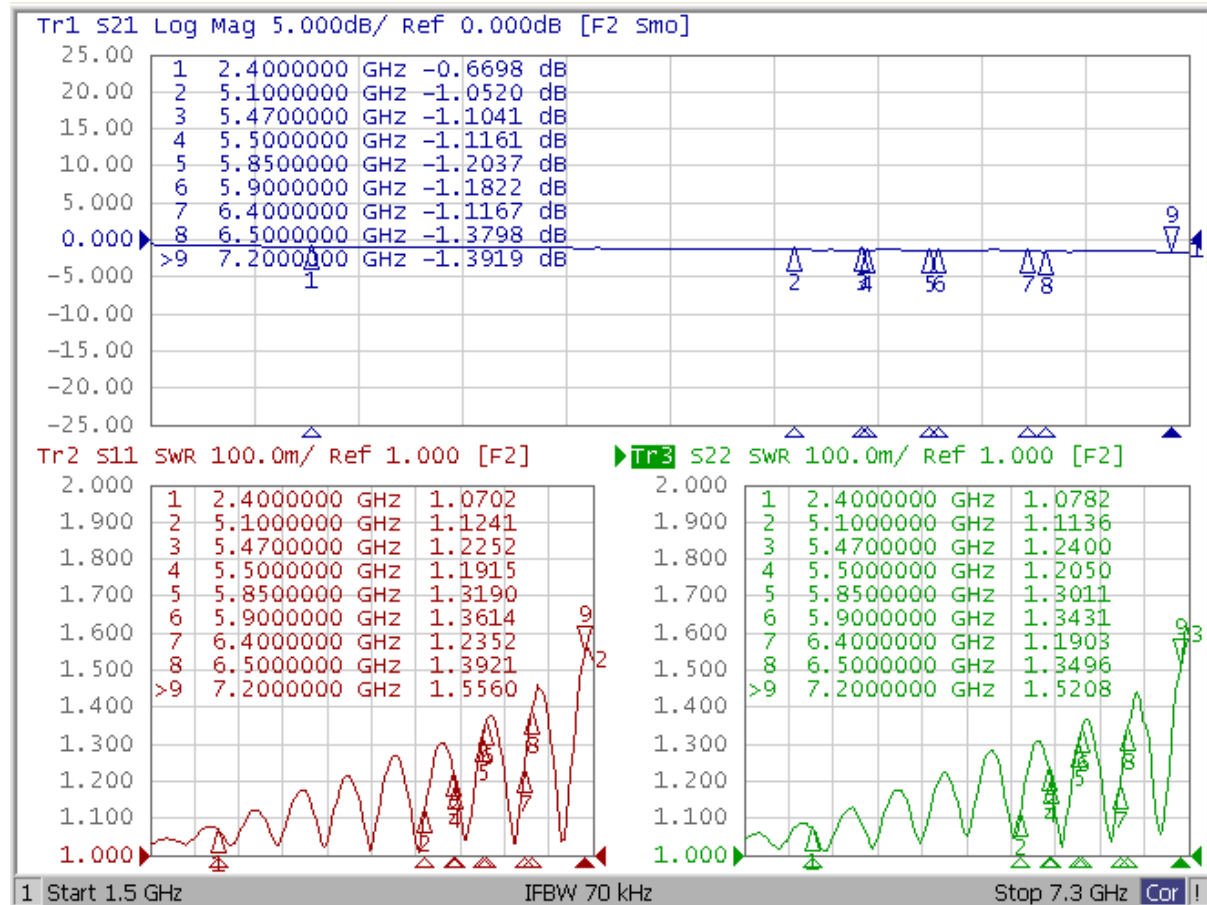
VSWR&Cable Loss

B2



VSWR&Cable Loss

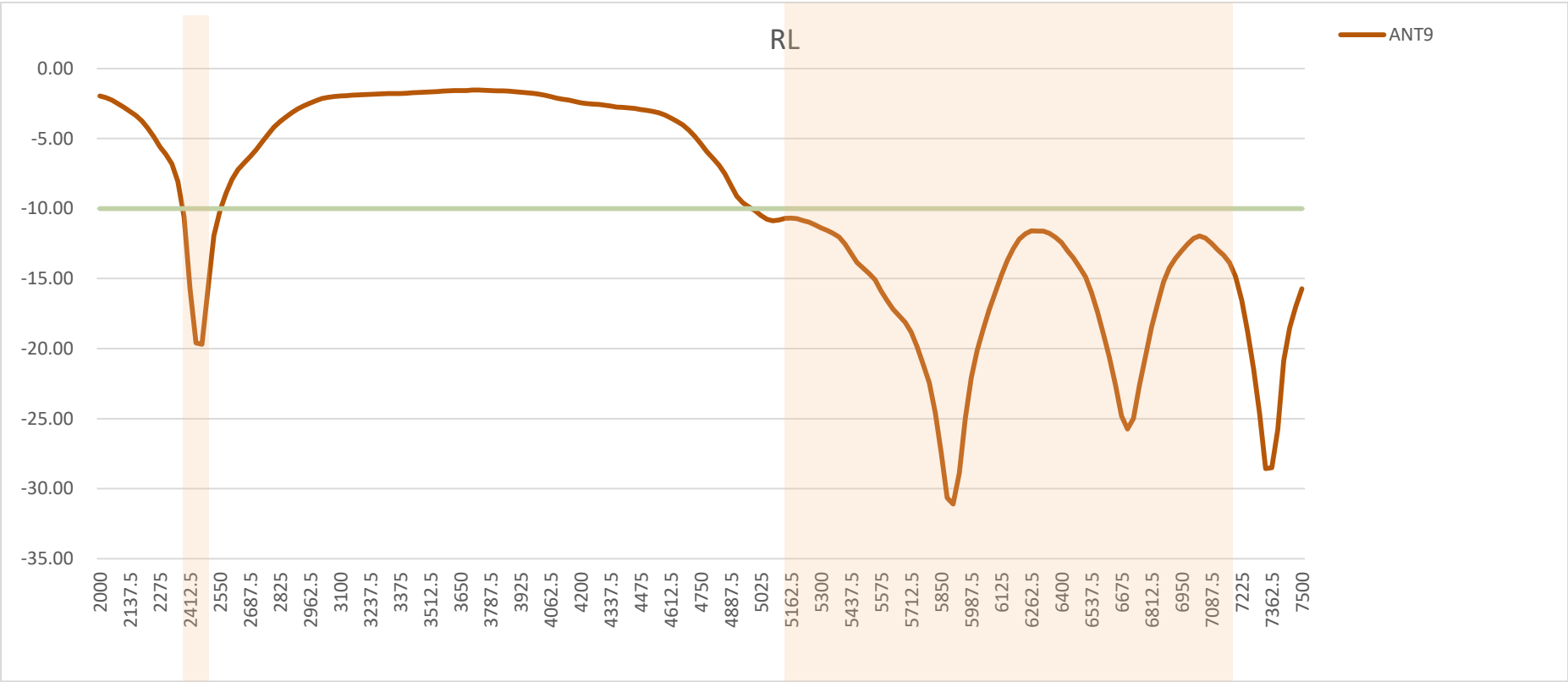
B3



Return loss



Ant9-2G/5G/6G

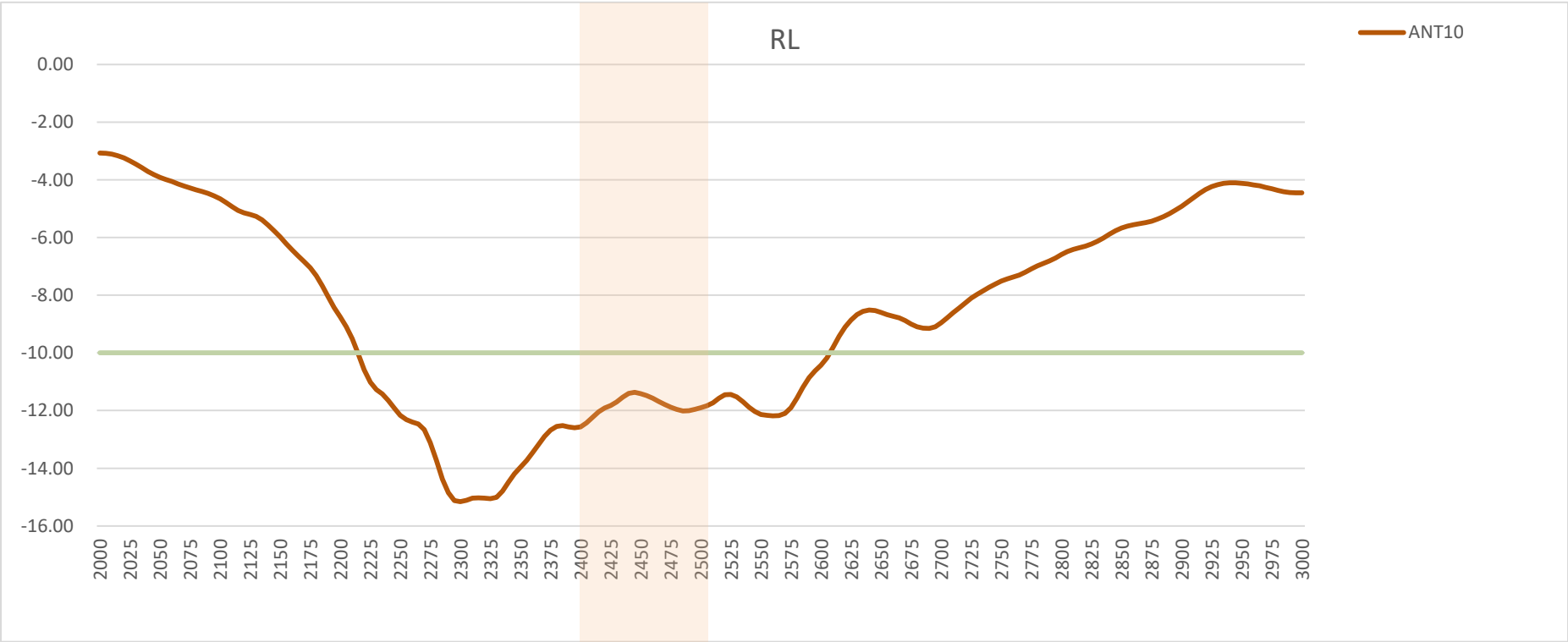


Return Loss < -10dB

Return loss



Ant10-2G

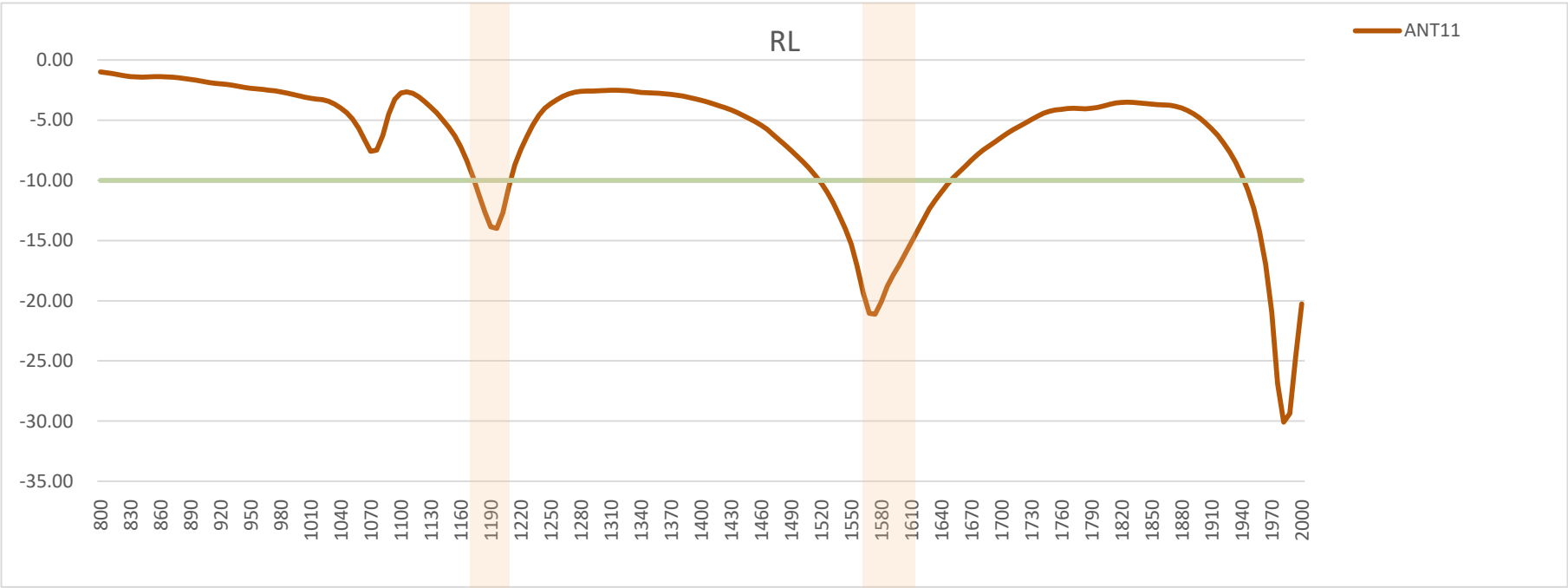


Return Loss < -10dB

Return loss



Ant11-GPS



Return Loss < -7.5dB

VSWR&Cable Loss

Test Results

Frequency (GHz)	Cable loss (dB)				
	2.4	5.1-5.47	5.5-5.85	5.9-6.4	6.5-7.2
A0 (C6319-510391-A)	0.69	1.17	1.20	1.21	1.50
A1 (C6319-510390-A)	0.67	1.17	1.19	1.16	1.50
A2 (C6319-510389-A)	0.68	1.13	1.21	1.20	1.40
A3 (C6319-510388-A)	0.80	1.30	1.47	1.44	1.51
B0 (C6319-510387-A)	1.28	2.04	2.16	2.18	2.40
B1 (C6319-510386-A)	1.17	1.92	2.03	2.02	2.21
B2 (C6319-510385-A)	0.92	1.52	1.59	1.58	1.82
B3 (C6319-510384-A)	0.67	1.10	1.20	1.18	1.39

Return Loss and Isolation



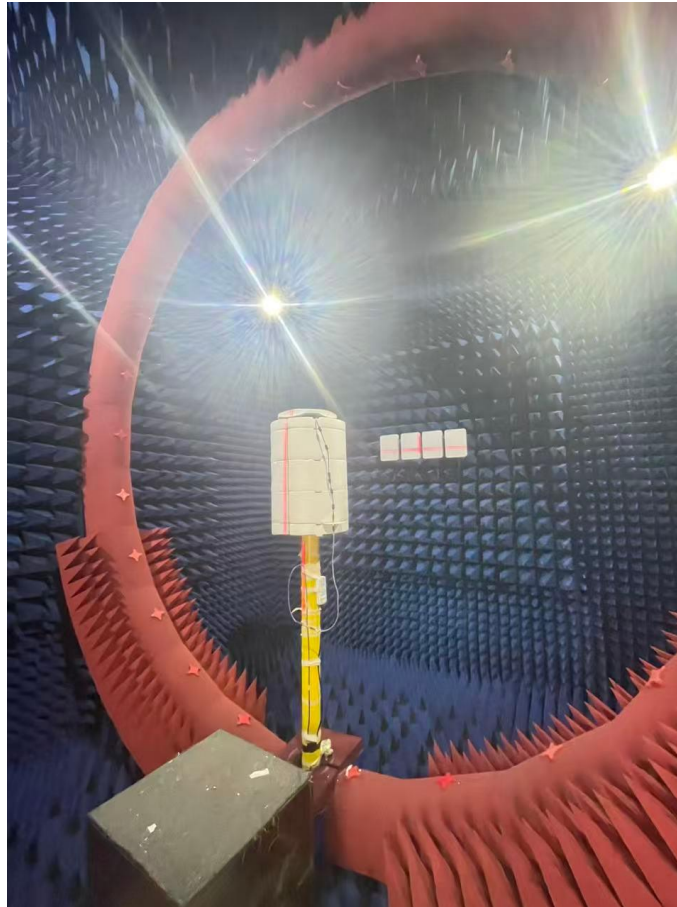
Test Results

	Return loss (dB)					
Frequency (GHz)	2.4	2.5	5.18	5.85	5.925	7.125
ANT-9	<-10	<-10	<-10	<-10	<-10	<-10
ANT-10	<-10	<-10	-	-	-	-

	Return loss (dB)			
Frequency (MHz)	1164	1218	1558	1610
ANT-11	<-7.5	<-7.5	<-10	<-10

2D/3D Radiation pattern

Measurement Condition



Radiation 2D&3D Pattern



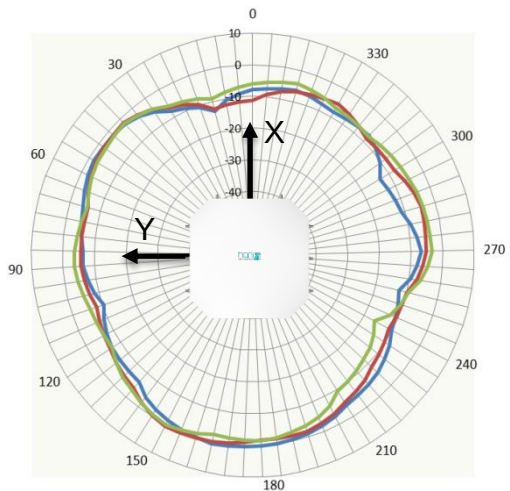
ANT9-2G

—2400MHz

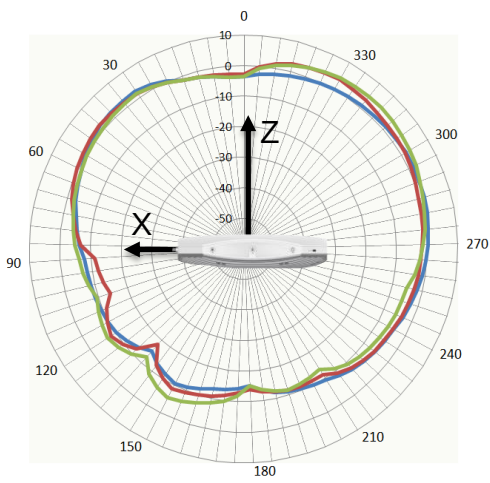
—2450MHz

—2500MHz

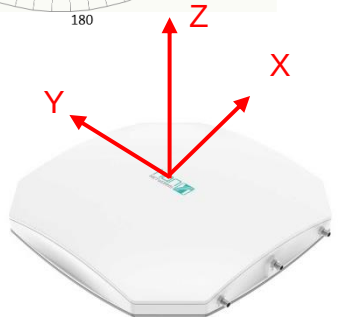
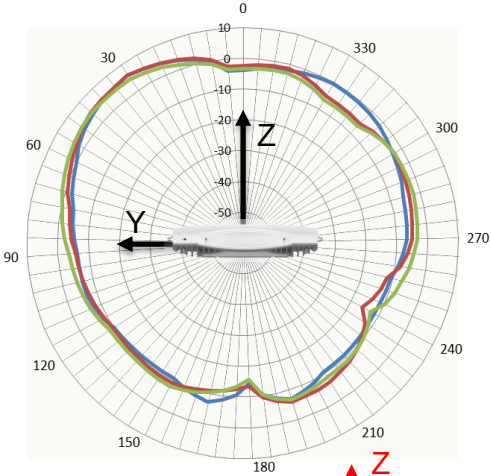
Theta=90°



Phi=0°



Phi=90°



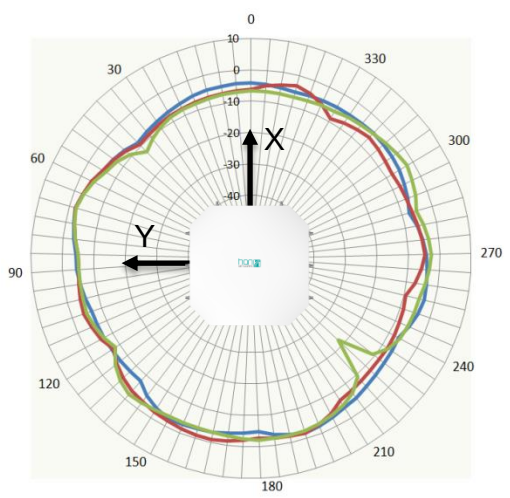
Radiation 2D&3D Pattern



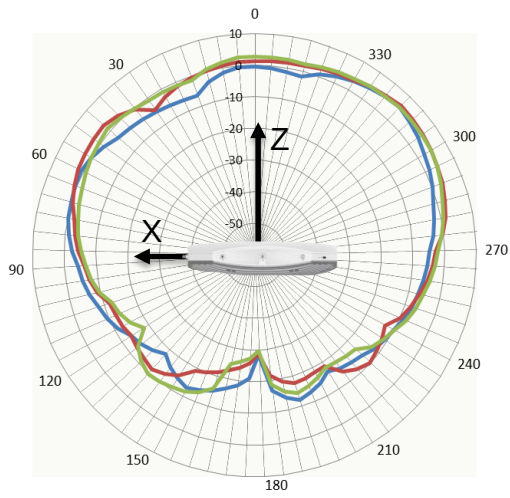
ANT9-5G

- 5150MHz
- 5550MHz
- 5850MHz

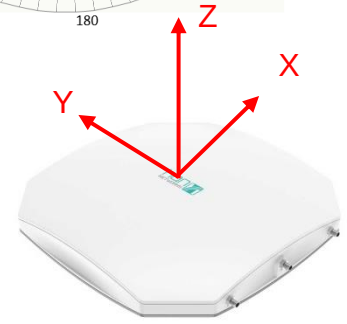
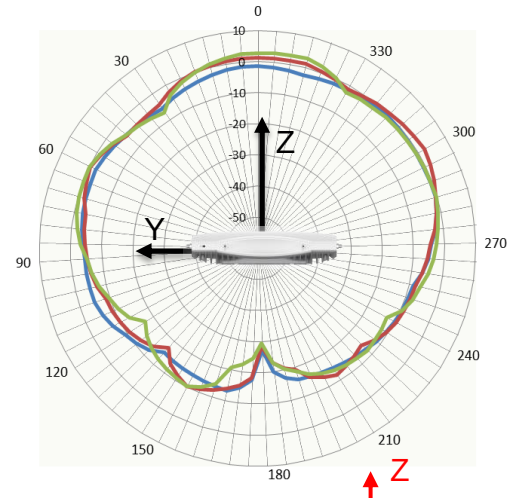
Theta=90°



Phi=0°



Phi=90°



Radiation 2D&3D Pattern



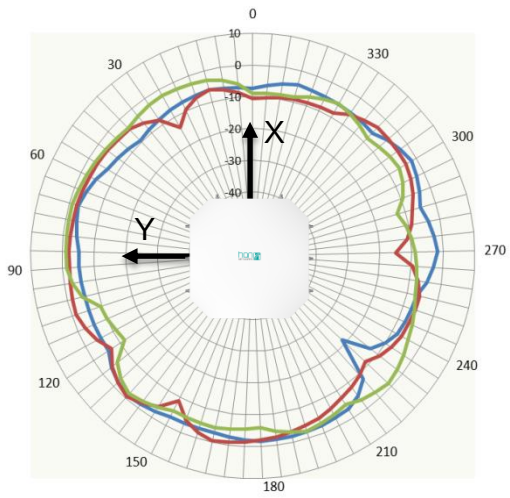
ANT9-6G

5925MHz

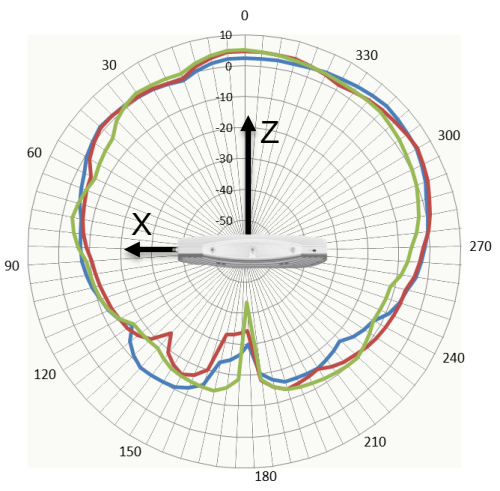
6550MHz

7125MHz

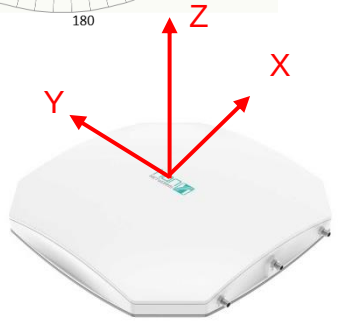
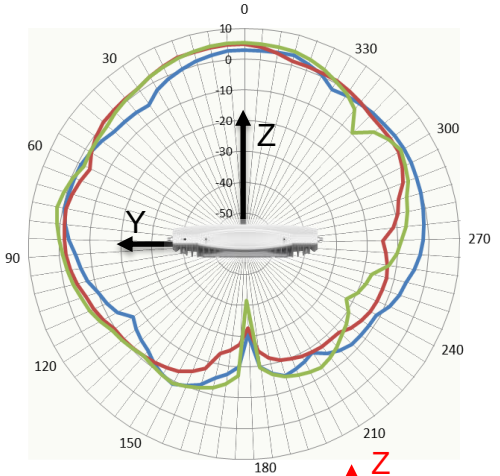
Theta=90°



Phi=0°



Phi=90°



Radiation 2D&3D Pattern



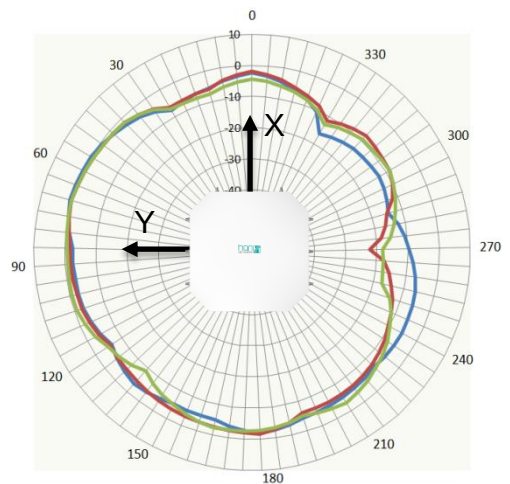
ANT10-2G

—2400MHz

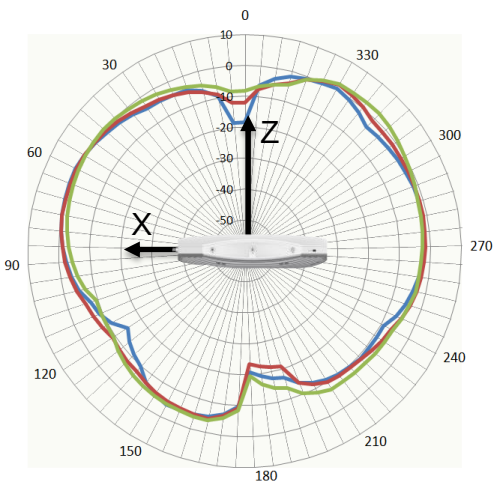
—2450MHz

—2500MHz

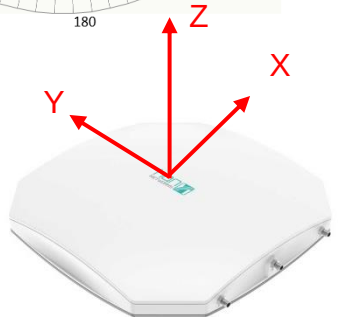
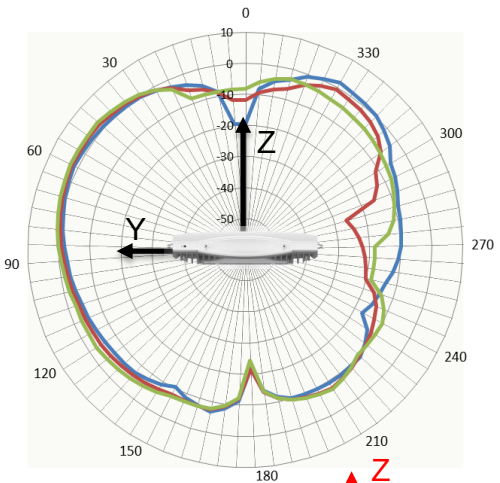
Theta=90°



Phi=0°



Phi=90°



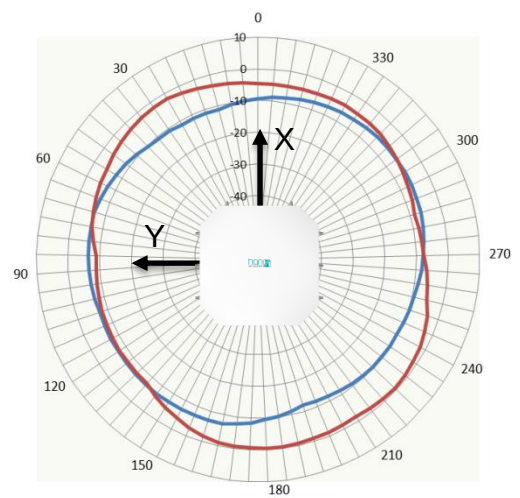
Radiation 2D&3D Pattern



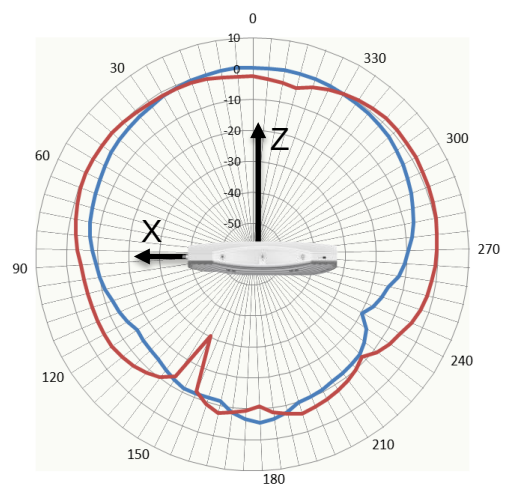
ANT11-1.218/1.575GHz

—1218MHz
—1575MHz

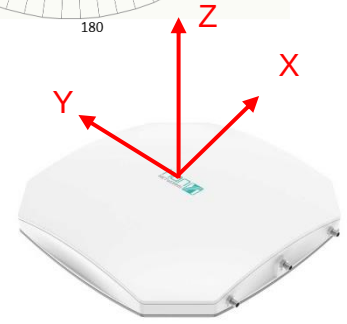
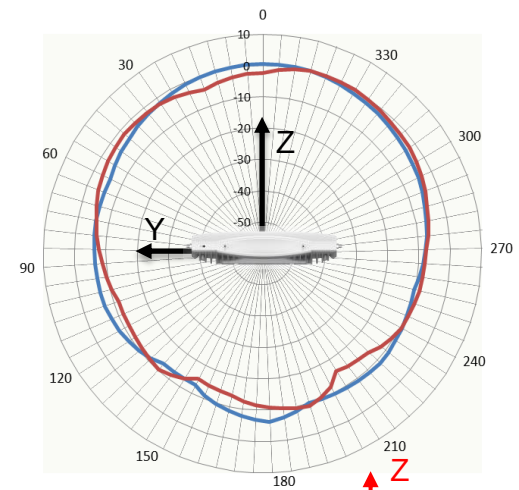
Theta=90°



Phi=0°



Phi=90°



Efficiency and Peak Gain



Frequency (MHz)	Peak Gain (dBi) ANT-9	Efficiency (%) ANT-9
2400	6.35	52.61
2410	6.75	54.68
2420	6.68	55.08
2430	6.35	54.06
2440	6.04	54.59
2450	5.96	58.69
2460	5.93	61.40
2470	5.45	58.08
2480	5.39	60.49
2490	5.09	58.98
2500	4.88	58.02
5150	5.42	53.37
5250	5.79	55.85
5350	5.52	54.88
5450	4.62	54.05
5550	6.22	55.83
5650	4.97	55.30
5750	5.60	57.08
5850	5.74	59.33

Frequency (MHz)	Peak Gain (dBi) ANT-9	Efficiency (%) ANT-9
5925	5.66	61.74
6150	5.44	56.73
6350	5.80	56.14
6550	6.44	55.94
6750	6.11	54.66
6950	5.51	53.87
7125	5.99	52.05

Efficiency and Peak Gain

Frequency (MHz)	Peak Gain (dBi) ANT-10	Efficiency (%) ANT-10
2400	3.68	51.92
2410	3.69	50.85
2420	3.91	51.40
2430	3.88	50.78
2440	4.09	52.54
2450	3.83	50.30
2460	4.19	50.48
2470	4.25	51.20
2480	4.57	53.82
2490	4.33	52.18
2500	4.59	54.00

Frequency (MHz)	Peak Gain (dBi) ANT-11	Efficiency (%) ANT-11
1164	0.94	35.64
1170	0.55	34.92
1180	1.02	34.58
1190	0.76	32.55
1200	1.12	32.35
1210	0.94	30.70
1218	0.57	26.83
1558	3.10	50.69
1561	3.15	50.62
1575	3.05	50.37
1581	2.70	48.58
1591	2.06	45.59
1602	1.69	43.09
1610	1.72	42.52

- All antennas` Return loss are $\leq -10\text{dB}$ @ 2.4G
- All antennas` Return loss are $\leq -10\text{dB}$ @ 5G
- All antennas` Return loss are $\leq -10\text{dB}$ @ 6G
- ANT efficiency: 50%~70%@wifi 2.4G, 50%~65%@wifi 5G, 50%~65%@wifi 6G
- ANT efficiency: 50%~65%@Scanning ANT, 50%~60%@BT ANT
- 2.4G ANT peak gain $>3\text{dBi}$
- 5G ANT peak gain $>2\text{dBi}$
- 6G ANT peak gain $>2\text{dBi}$

Thanks!

