

RG-AP840-I(V2)

-天线无源预测试报告

V1.3

测试：邓文

日期：2022-06-15

审核：刘颖

日期：2022-06-15

批准：黄焕彬

日期：2022-06-15

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Purpose

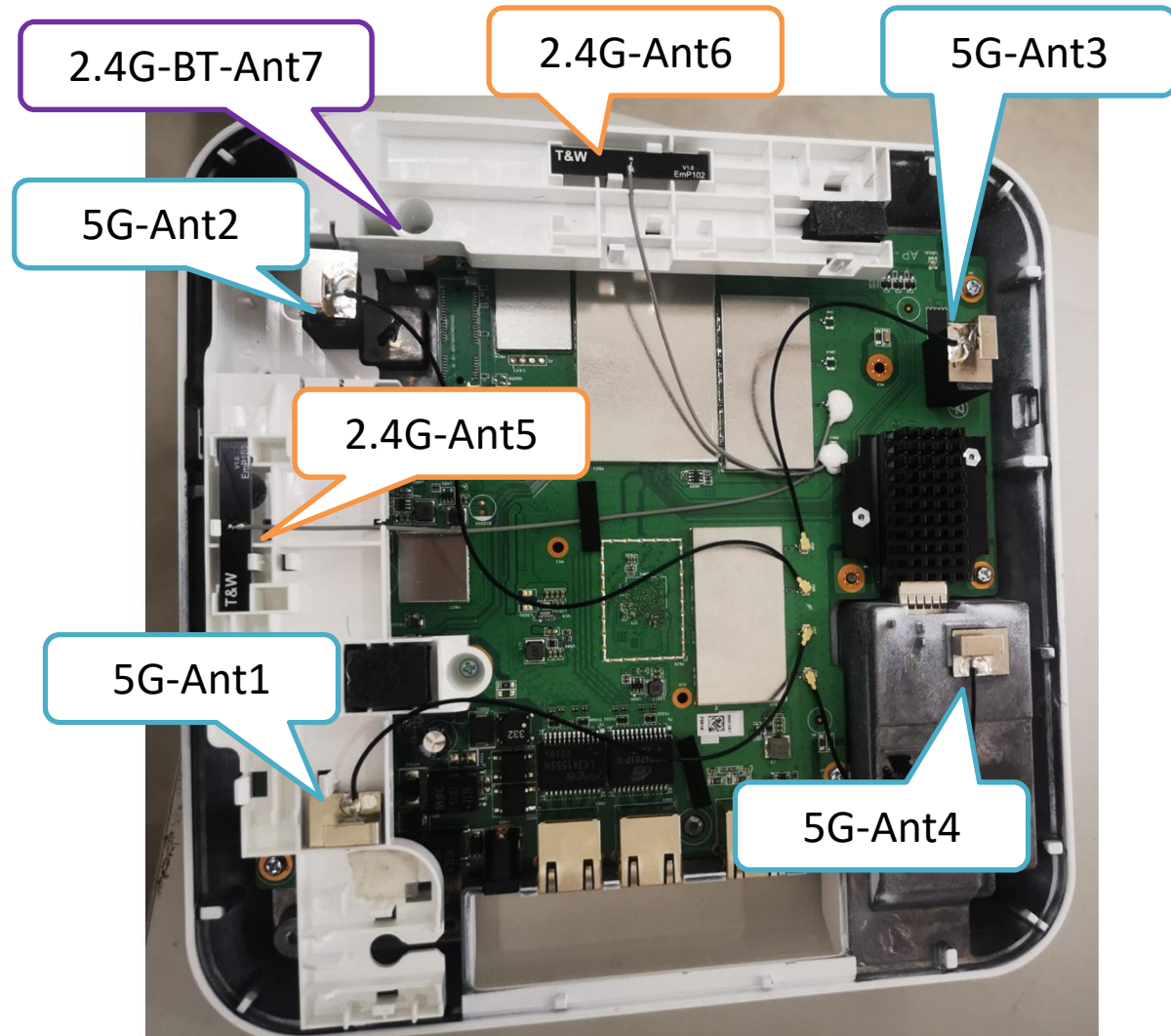
- Meet the electrical performance index ;
- Confirm the antenna scheme to meet the design requirements;

Environment

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

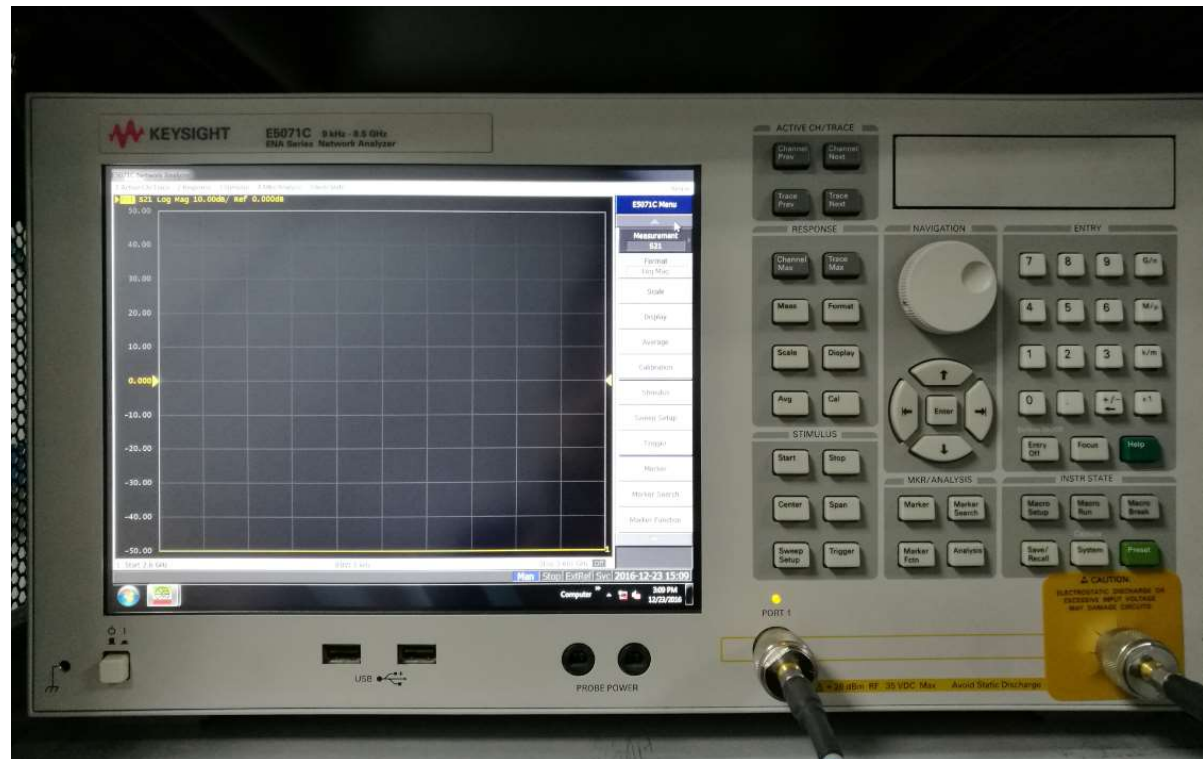
DUT Antenna

NO.	Frequency
5G-Ant1	5.15-5.85GHz
5G-Ant2	5.15-5.85GHz
5G-Ant3	5.15-5.85GHz
5G-Ant4	5.15-5.85GHz
2.4G-Ant5	2.4-2.5GHz
2.4G-Ant6	2.4-2.5GHz
2.4G-BT-Ant7	2.4-2.5GHz



Return Loss and Isolation

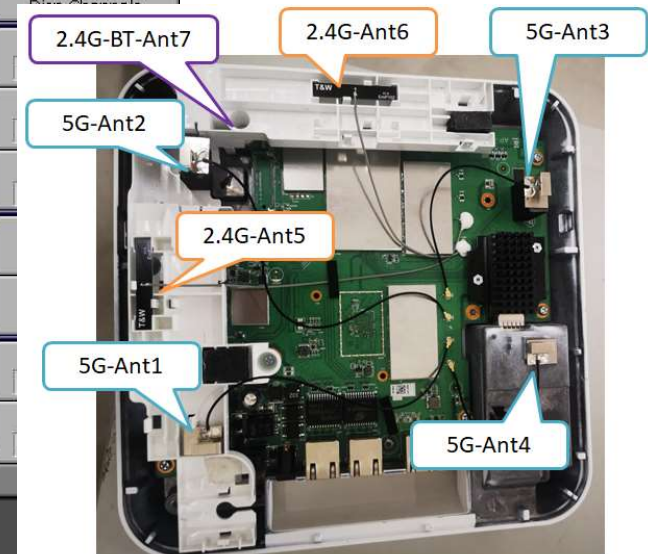
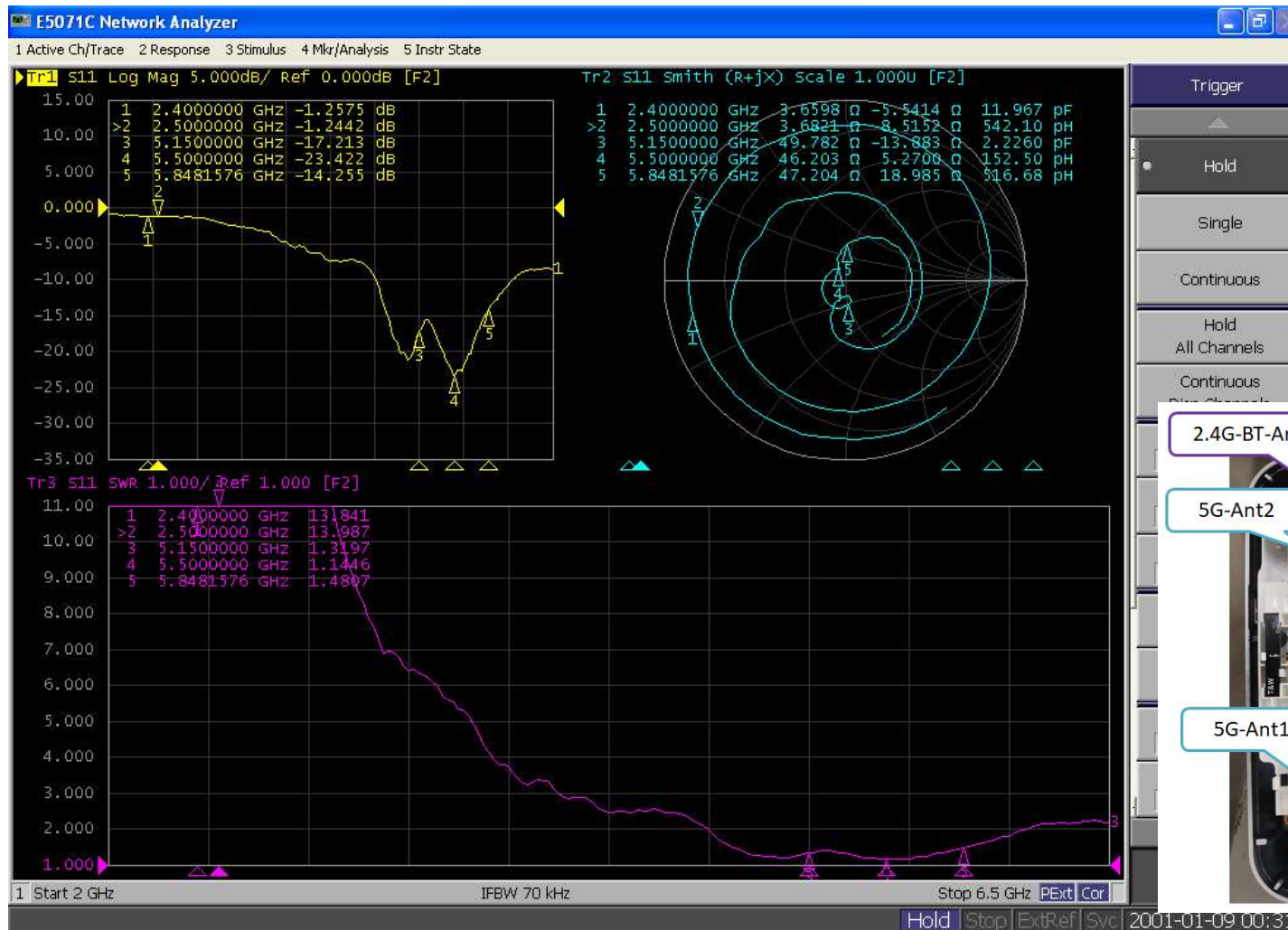
Test Condition



The network Analyzer

Return Loss

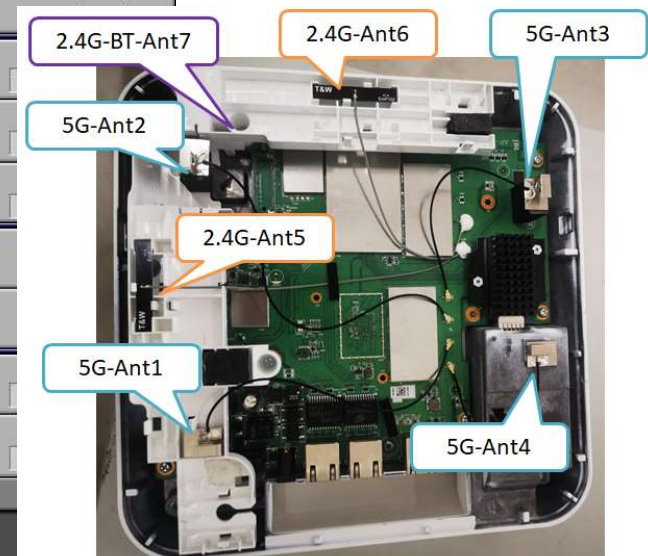
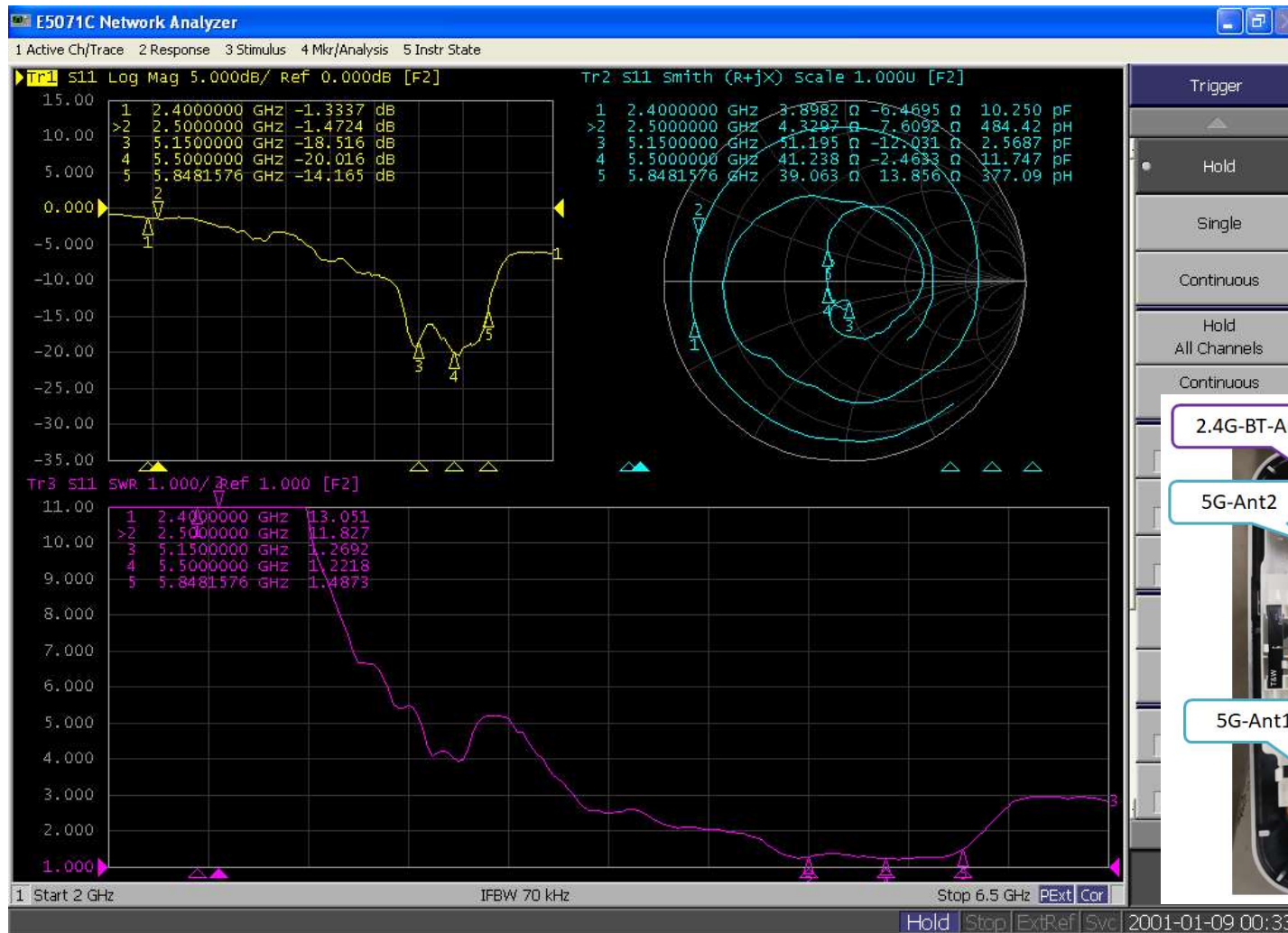
ANT1



Return Loss

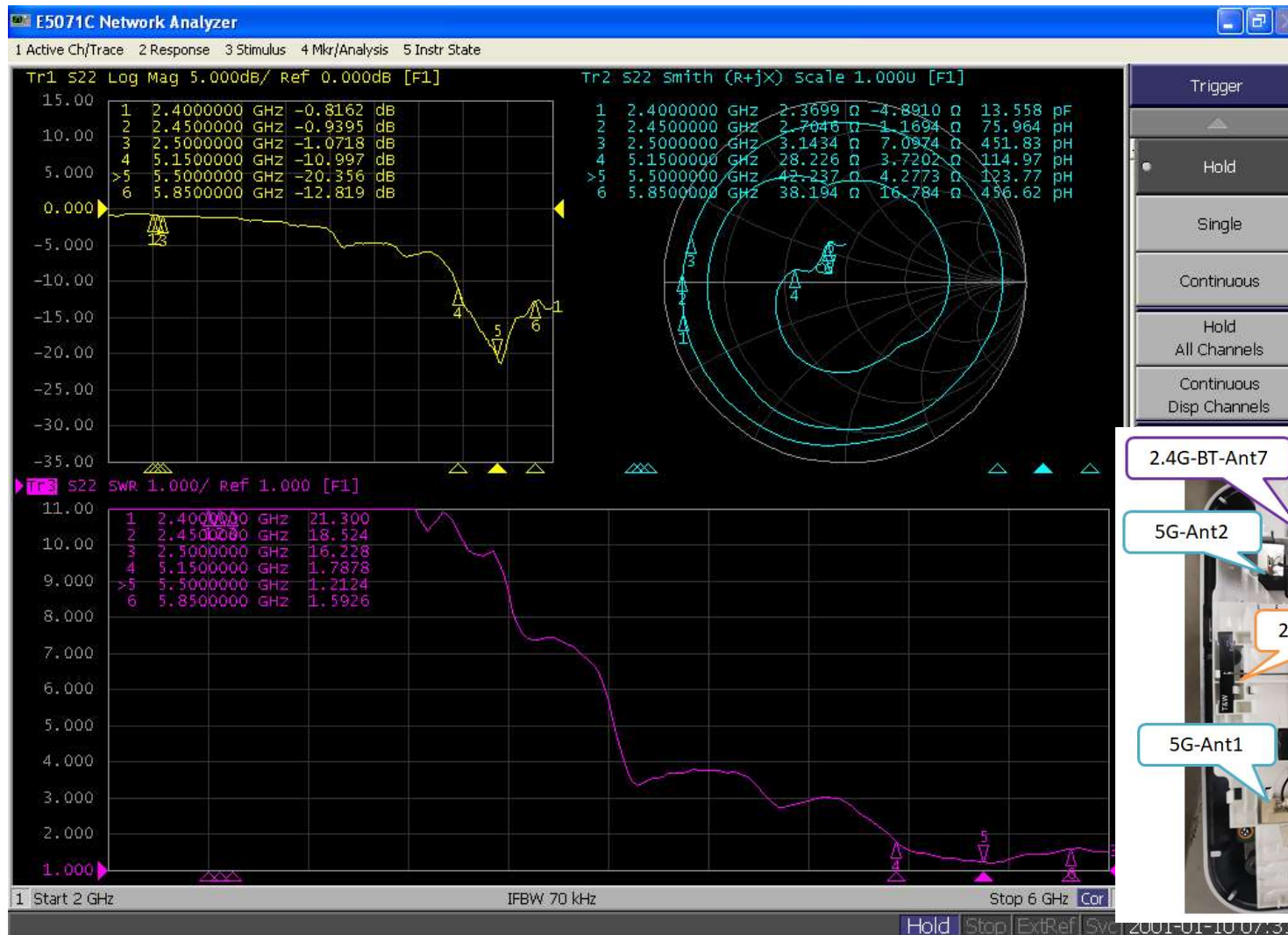
T&W

ANT2



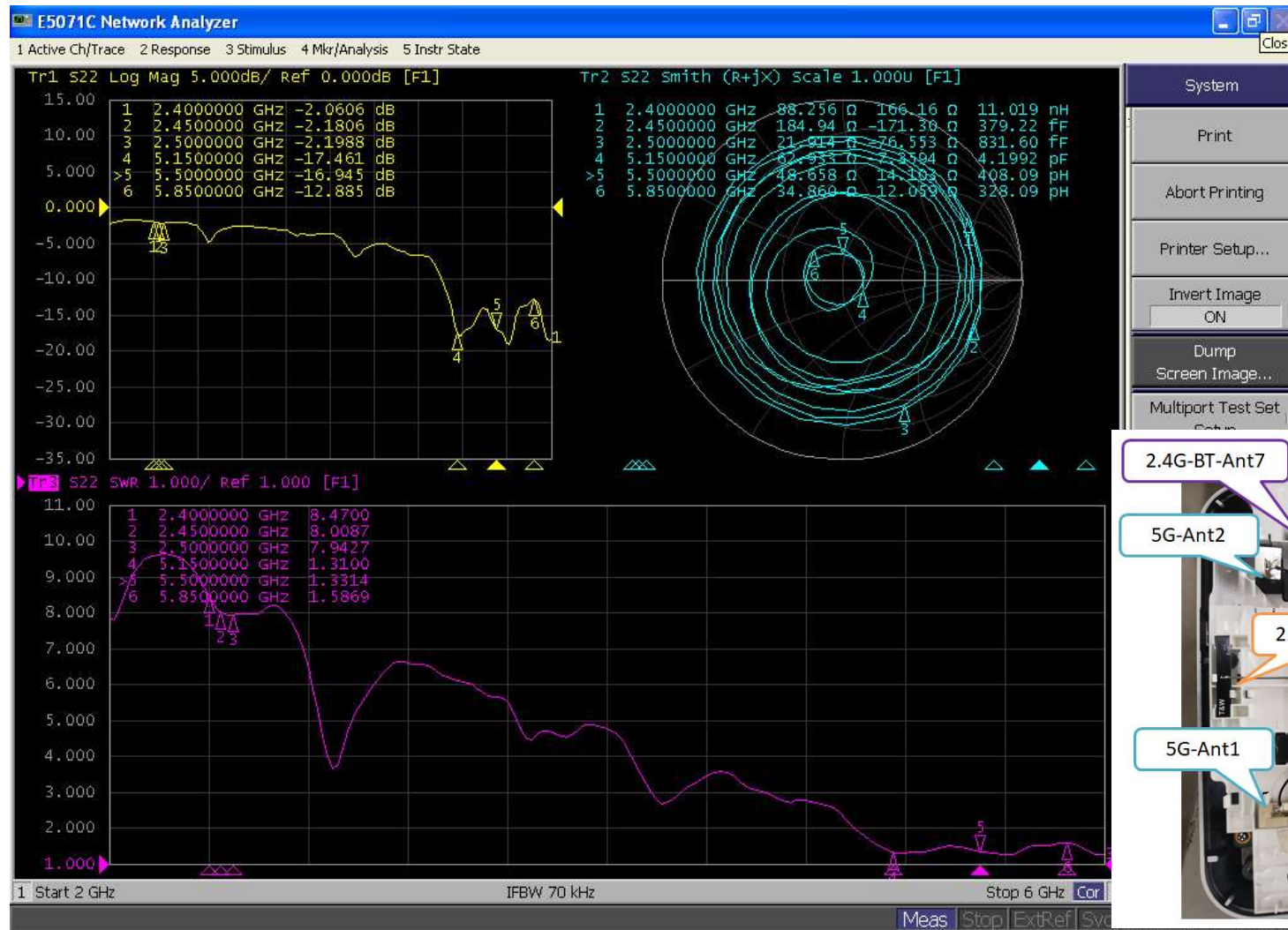
Return Loss

ANT3



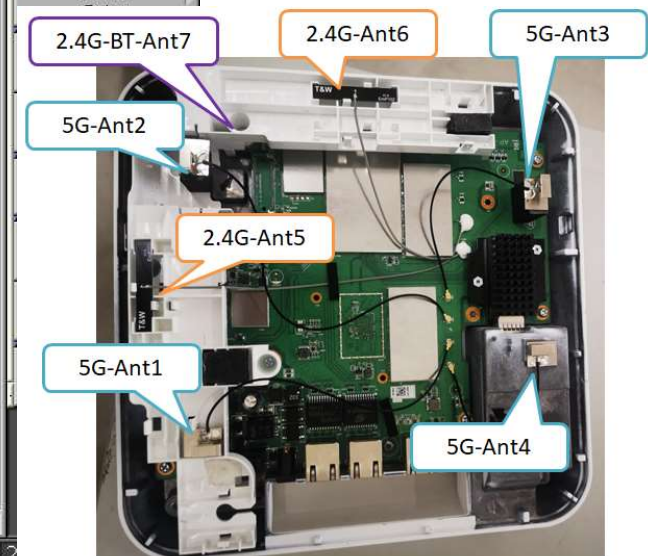
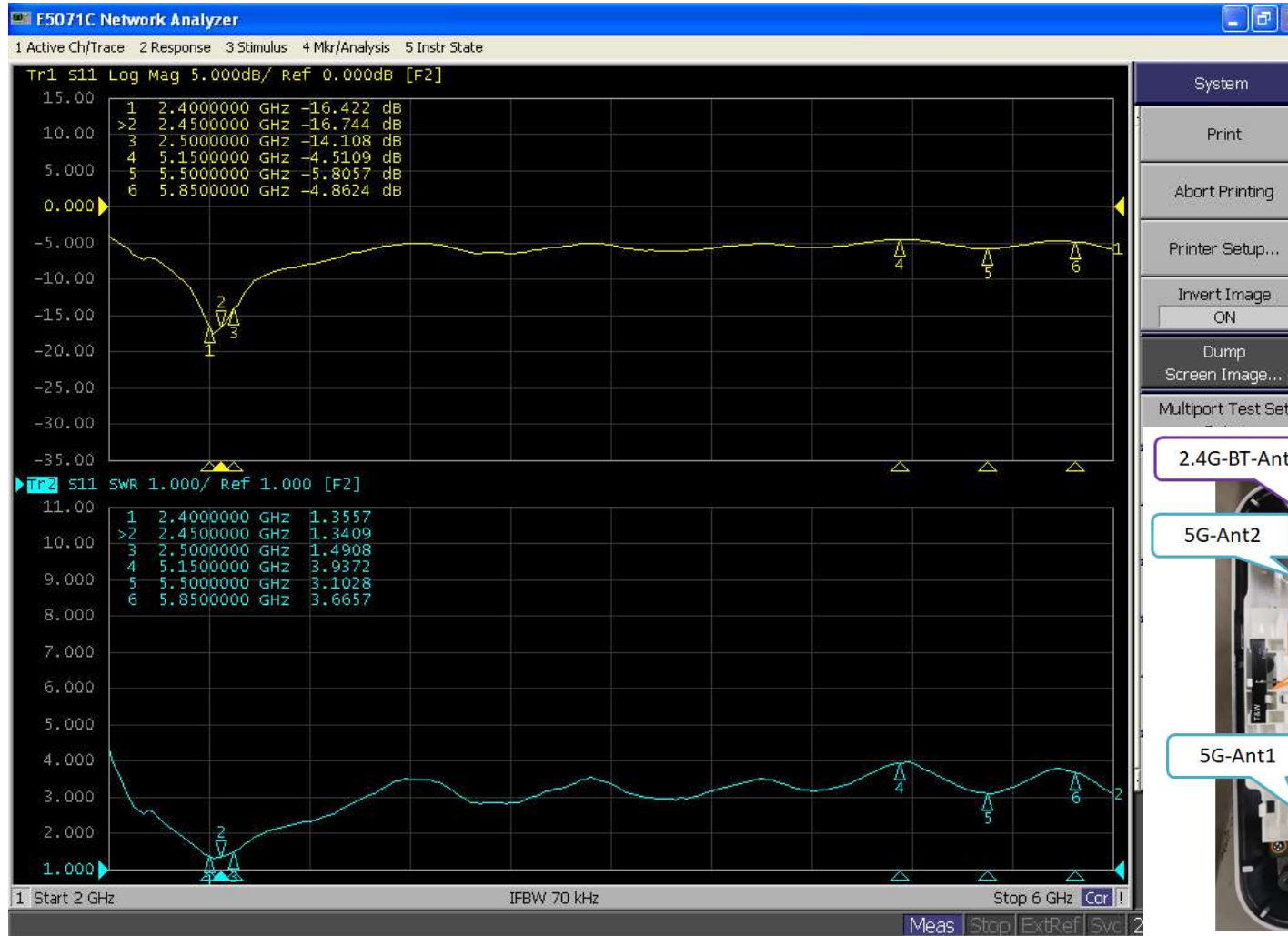
Return Loss

ANT4



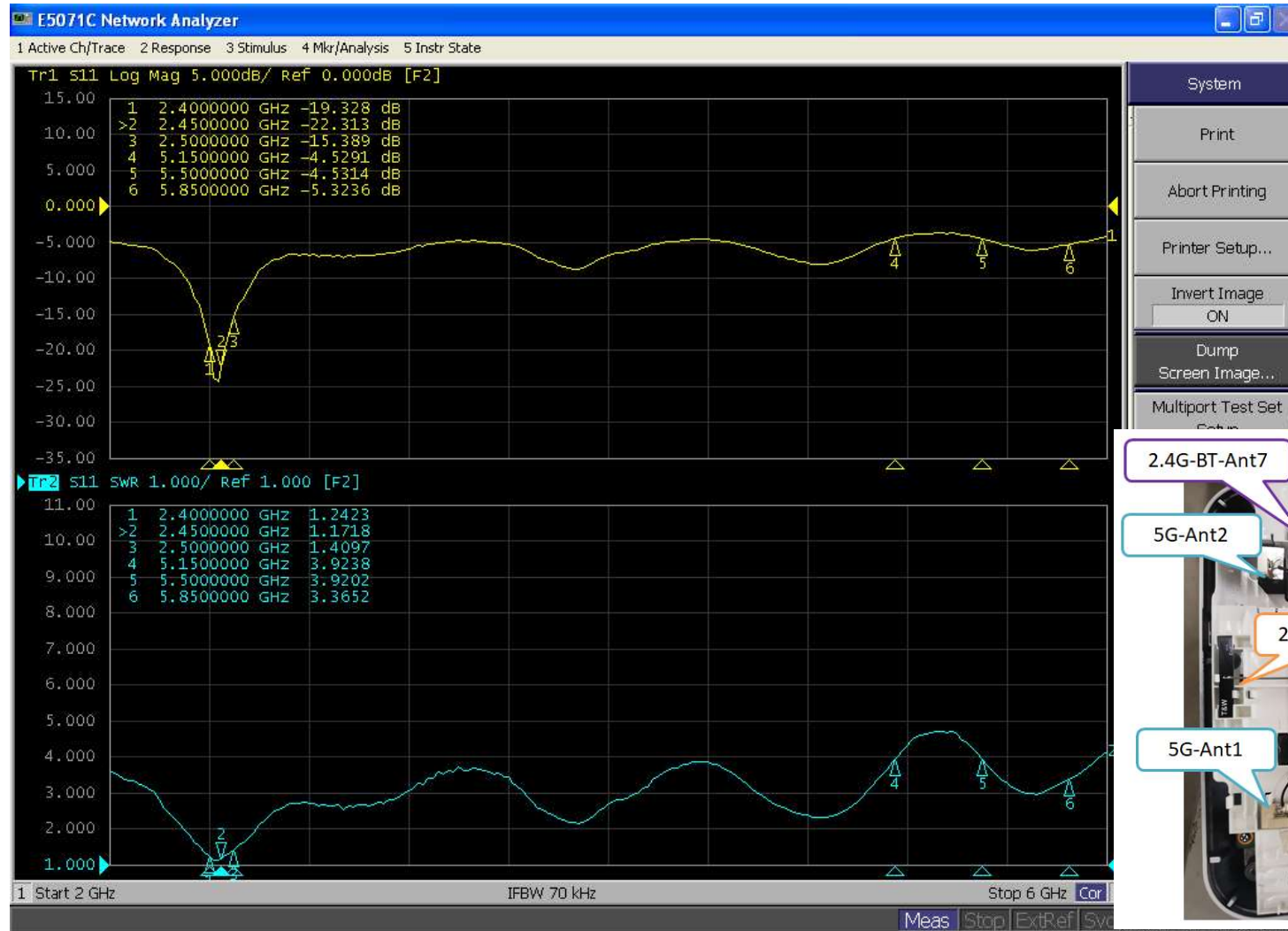
Return Loss

ANT5



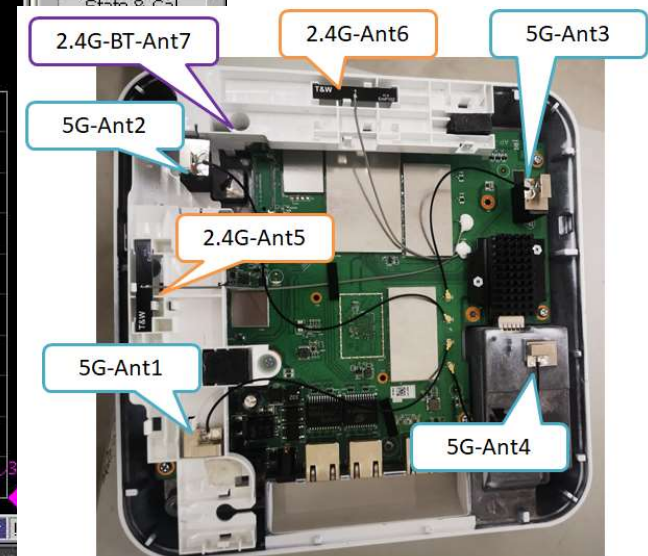
Return Loss

ANT6



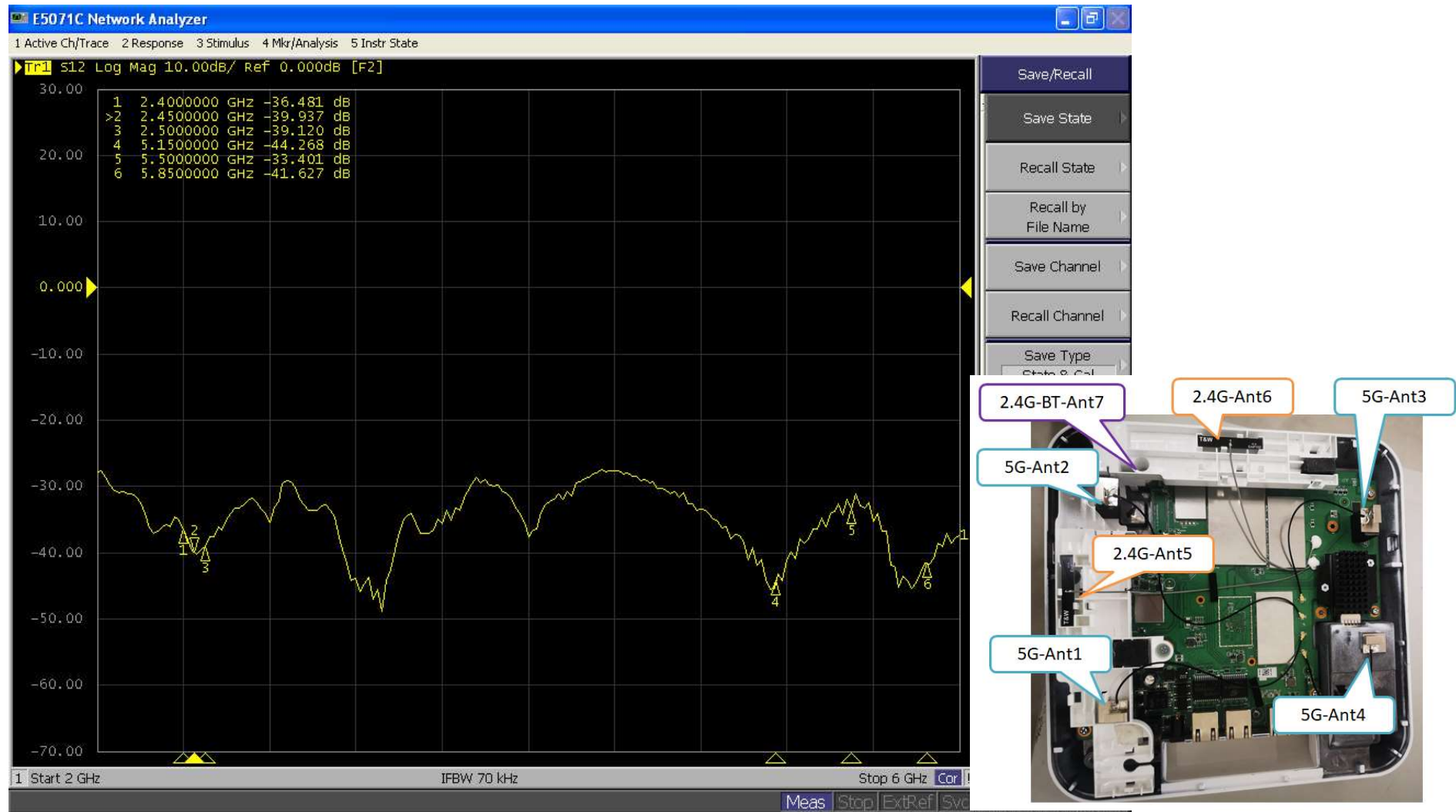
Return Loss

ANT7



Isolation

ANT1&ANT2



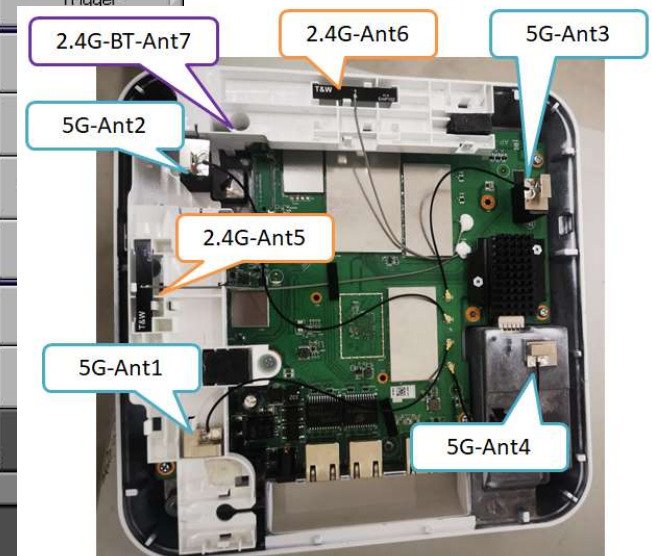
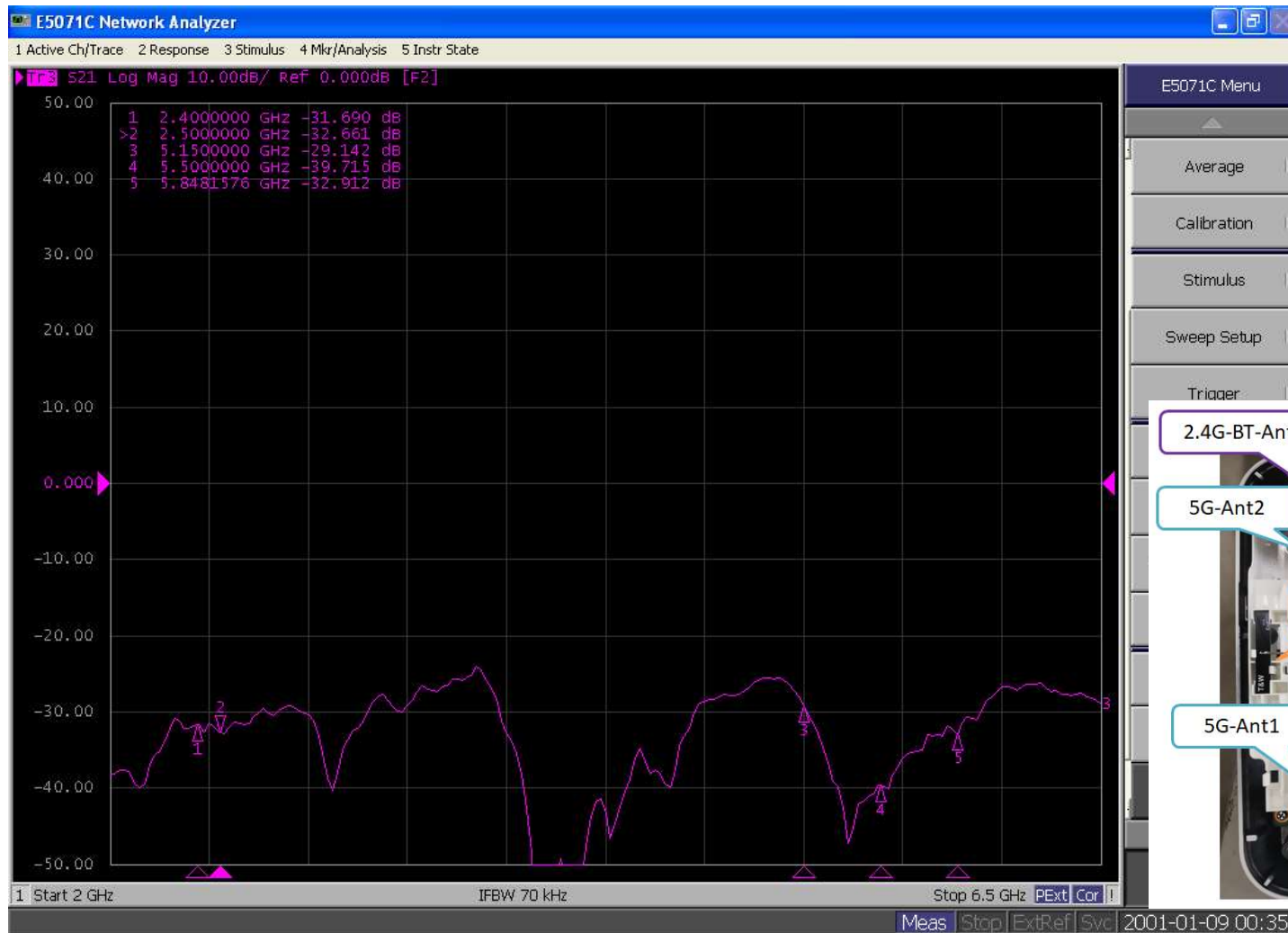
Isolation

ANT1&ANT3



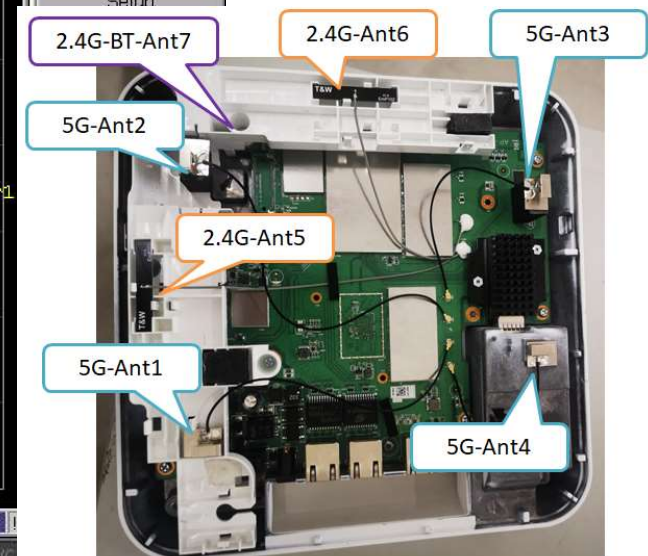
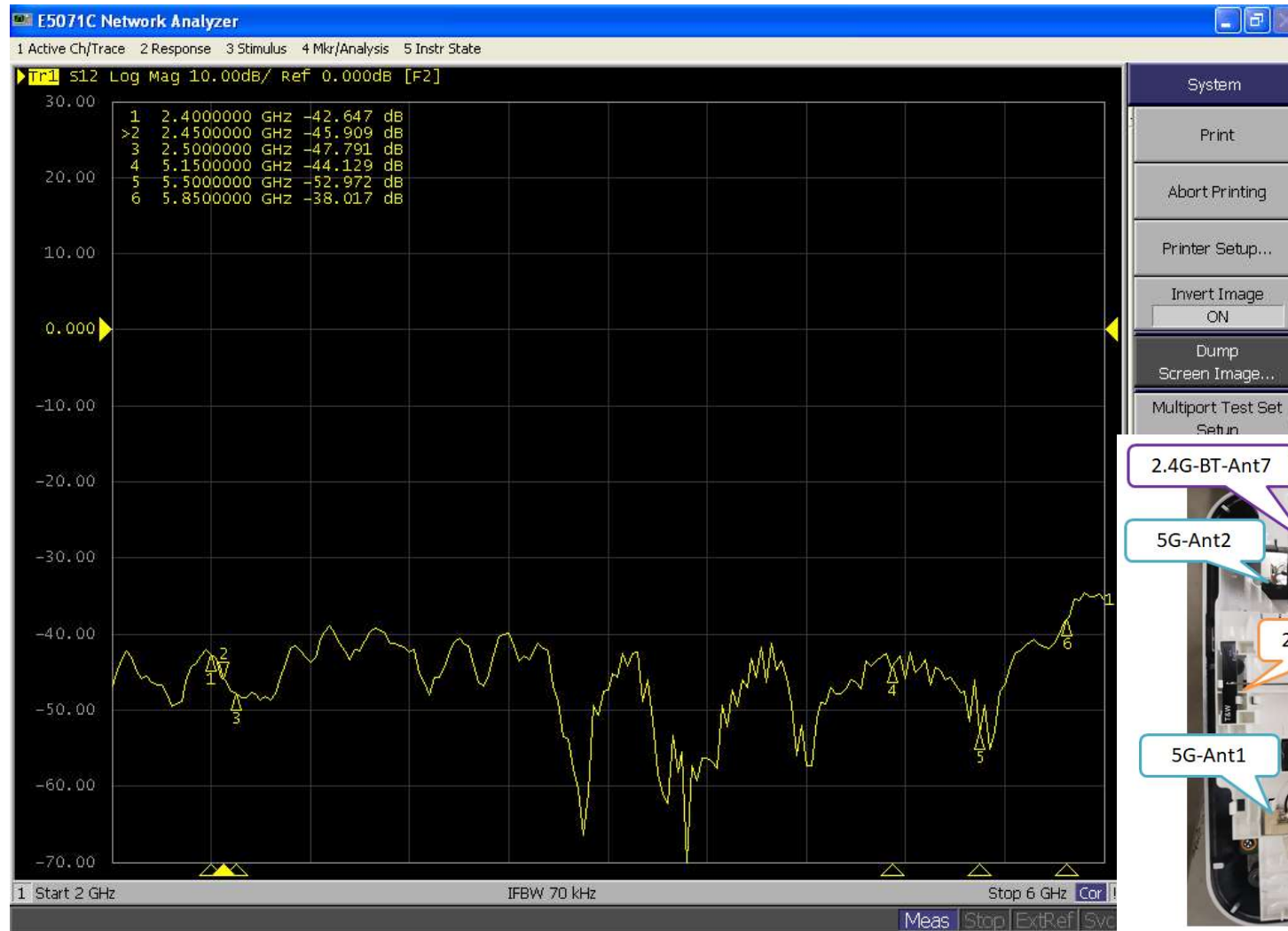
Isolation

ANT1&ANT4



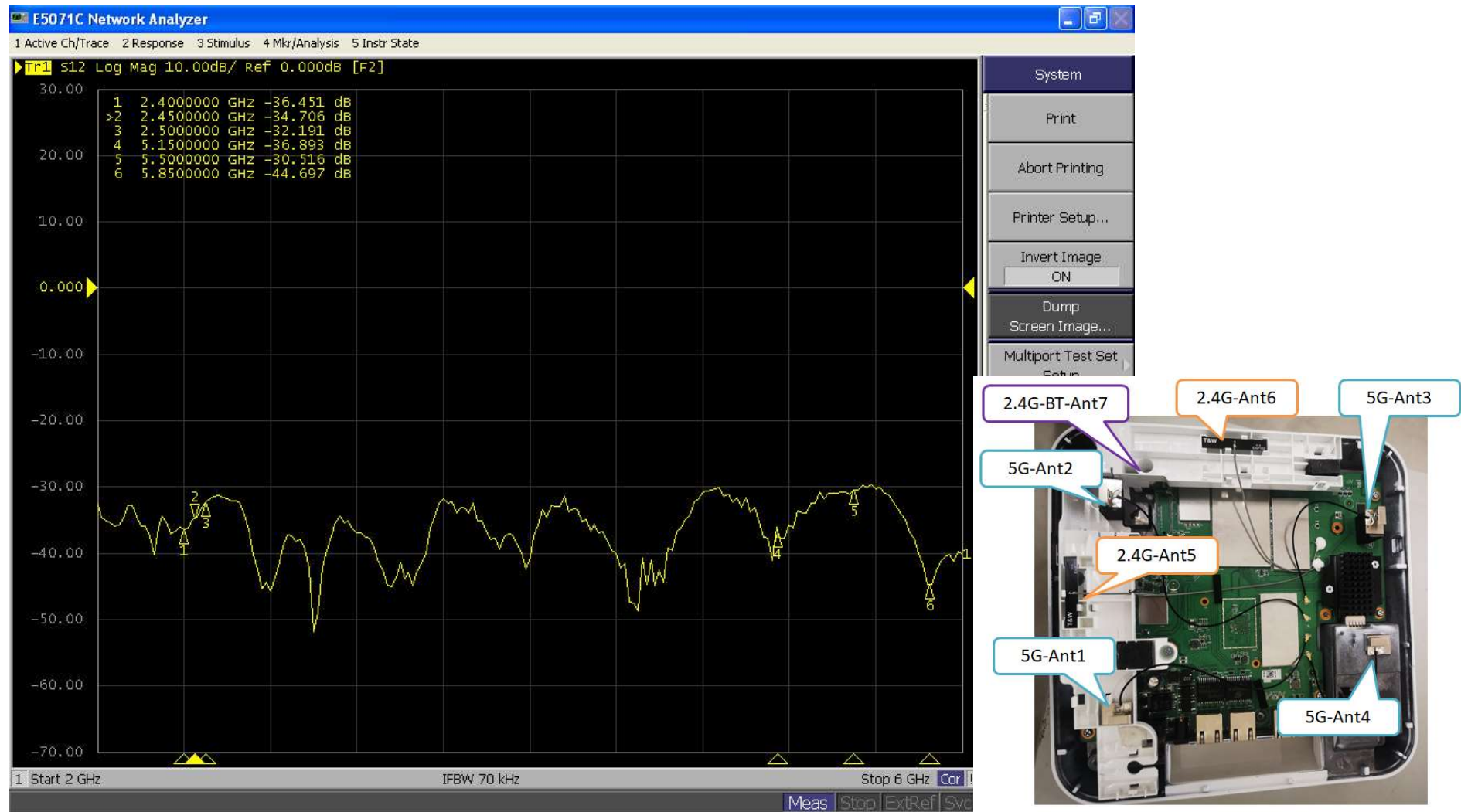
Isolation

ANT2&ANT3



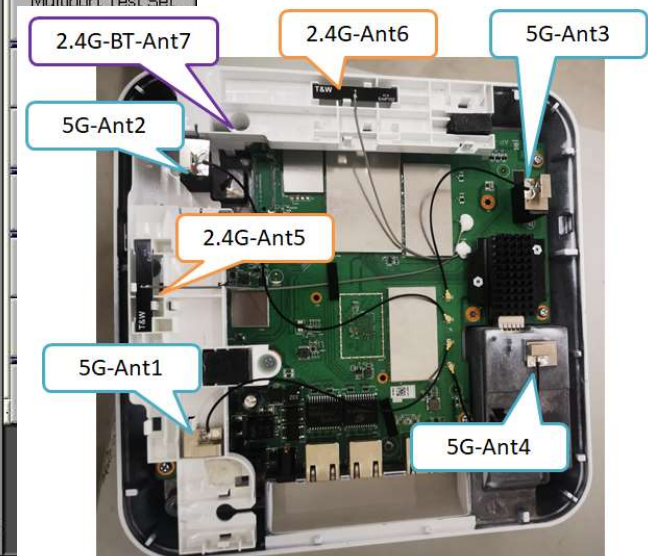
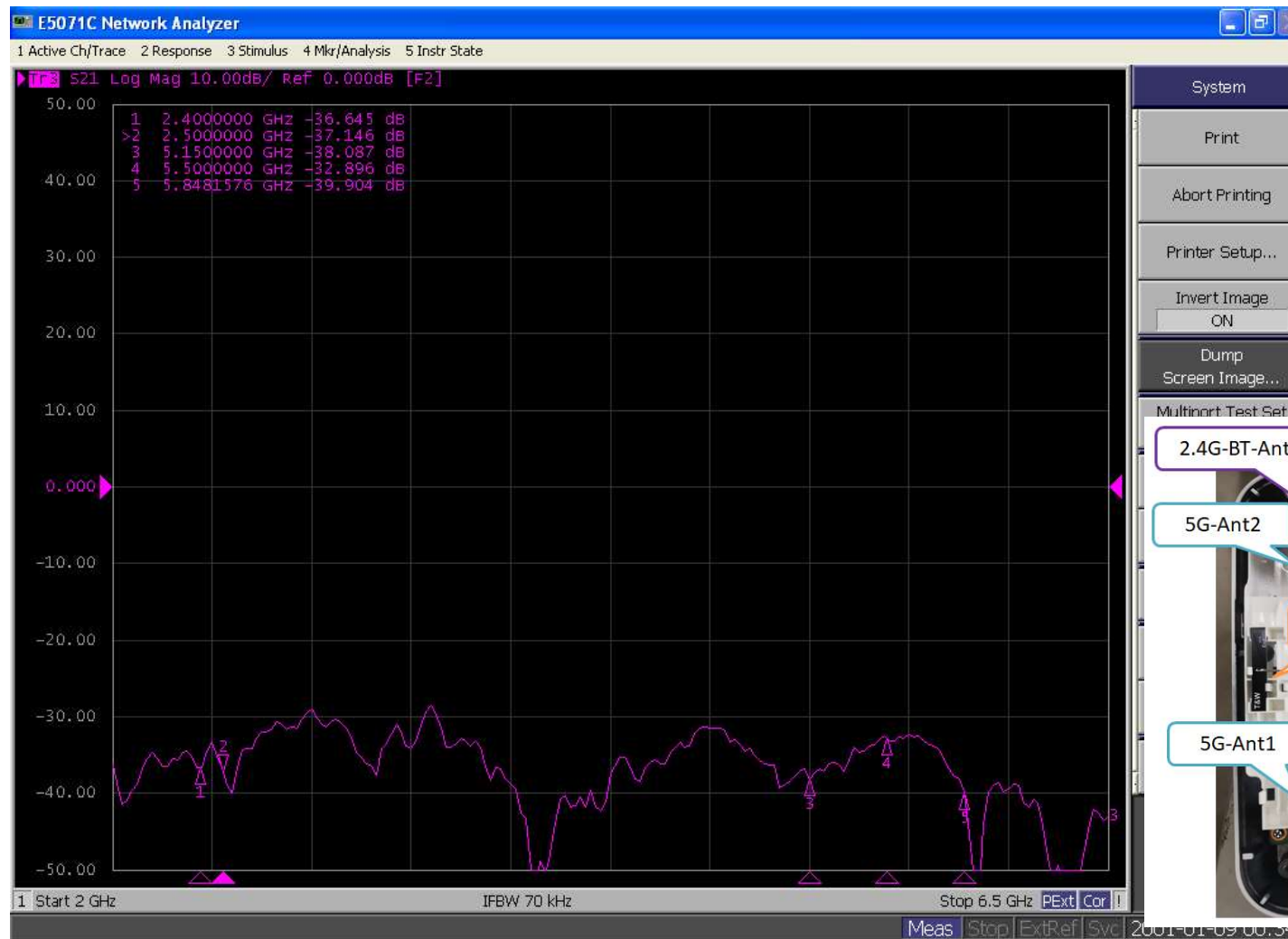
Isolation

ANT2&ANT4



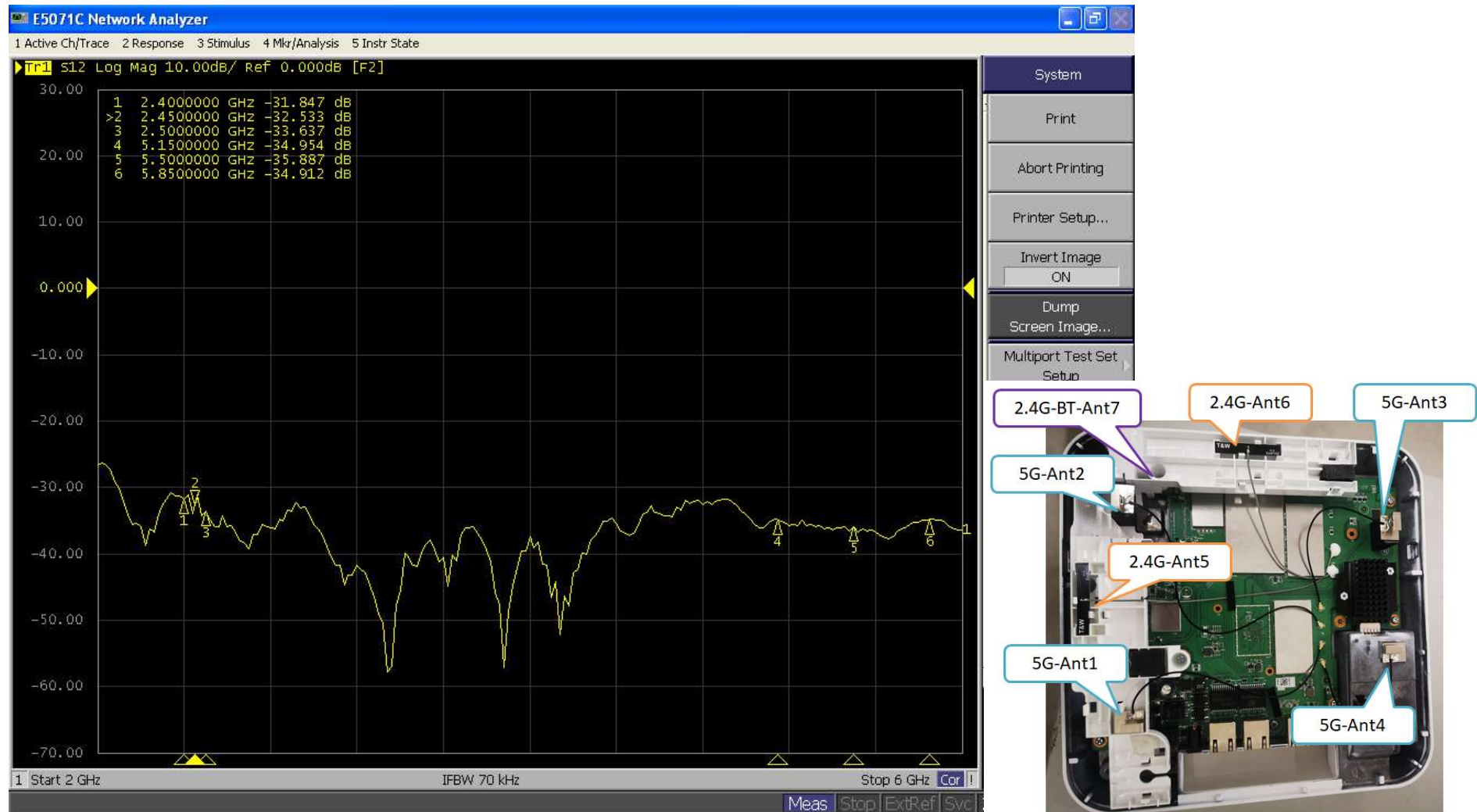
Isolation

ANT3&ANT4



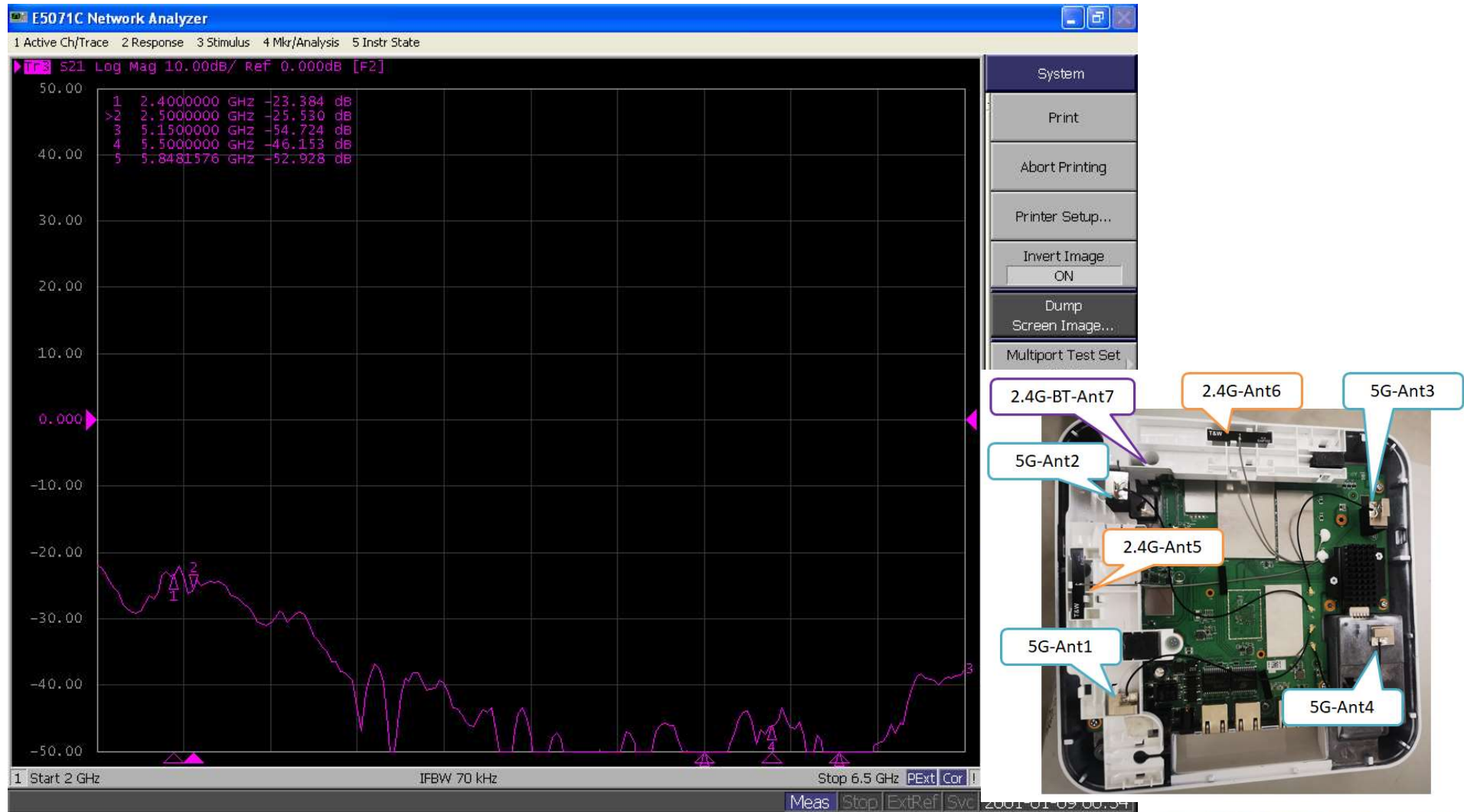
Isolation

ANT5&ANT6



Isolation

ANT6&ANT7



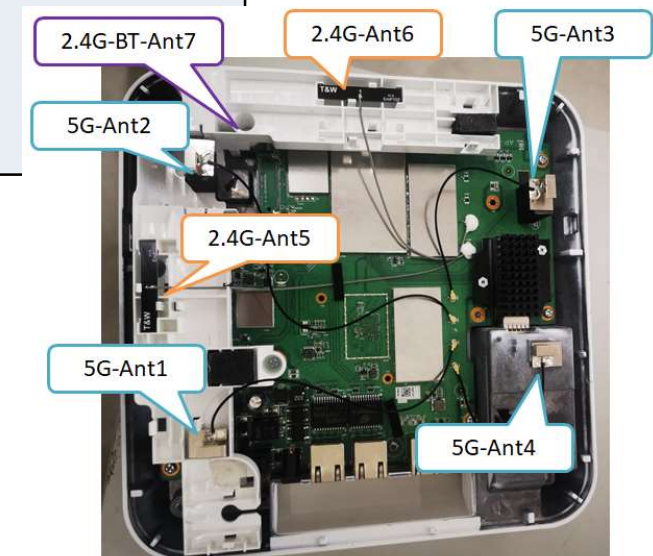
Return Loss and Isolation

Test results

	Return loss		Isolation	
Frequency (GHz)	2.4-2.5GHz	5.15-5.85GHz	2.4-2.5GHz	5.15-5.85GHz
5G-ANT1	NA	<-10dB	<-20dB	
5G-ANT2				
5G-ANT3				
5G-ANT4				
2.4G-ANT5	<-10dB	NA		
2.4G-ANT6				
2.4G-BT-ANT7				

2.4G-BT-Ant7

5G-Ant2



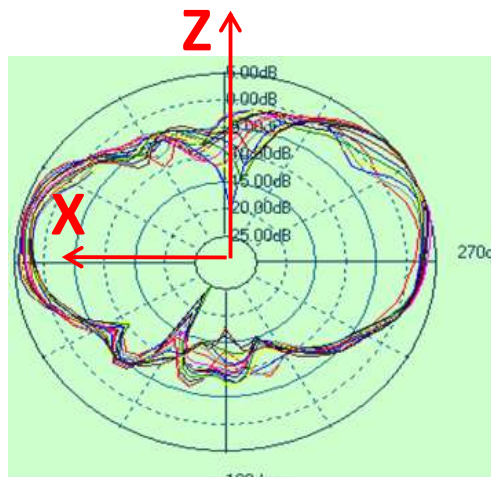
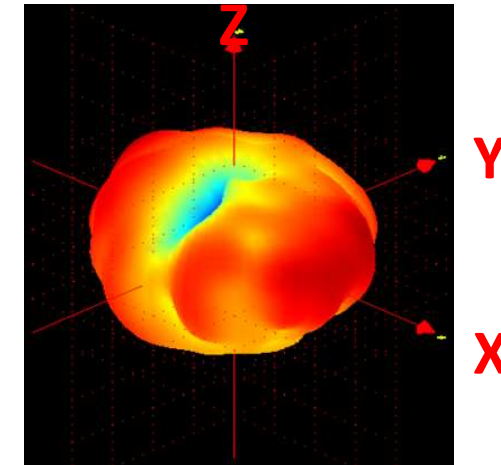
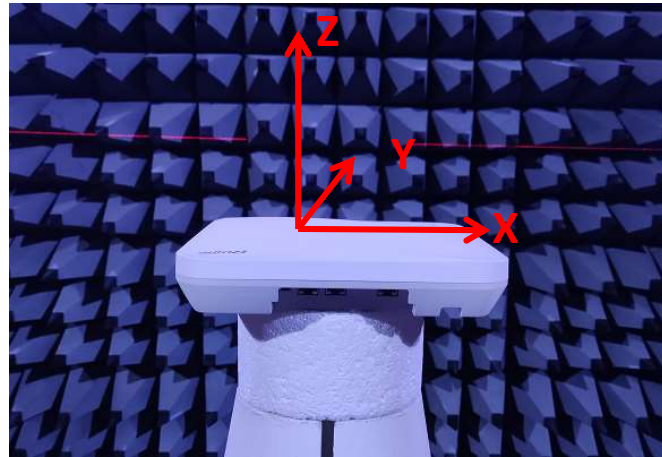
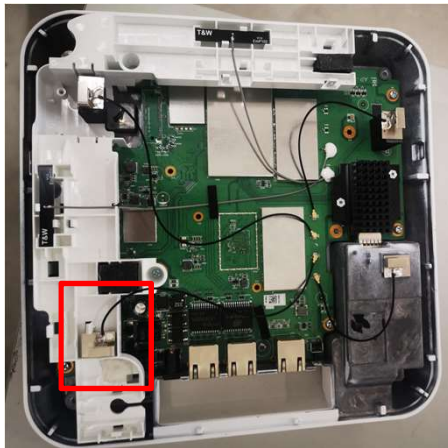
2D/3D Radiation pattern

Test condition

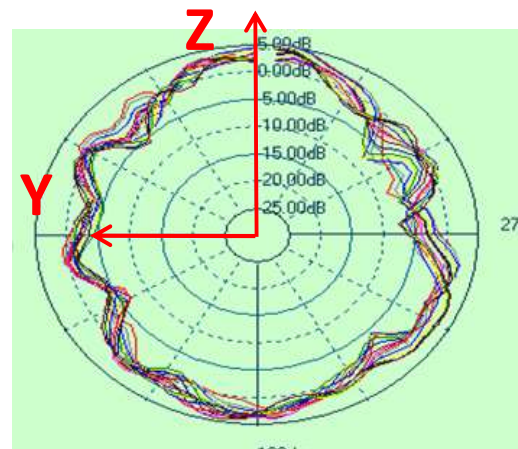


2D/3D Radiation pattern 5G-ANT1

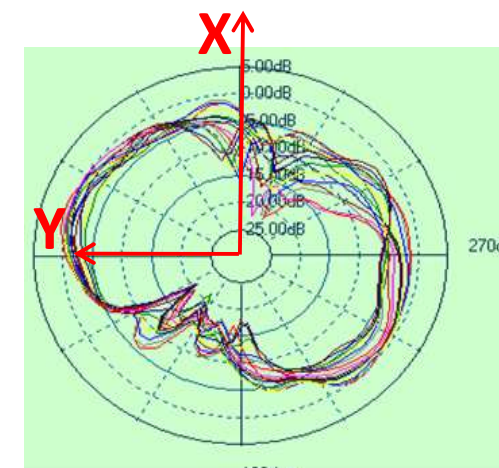
T&W



H (Theta=90)

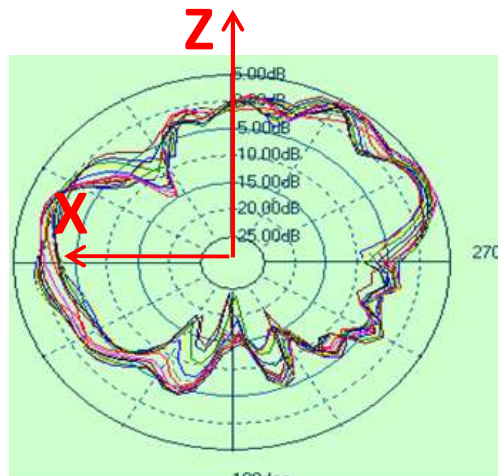
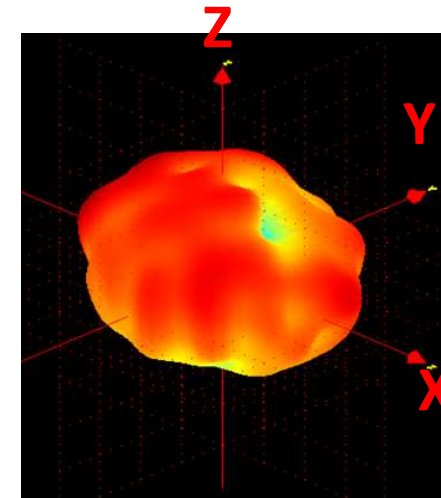
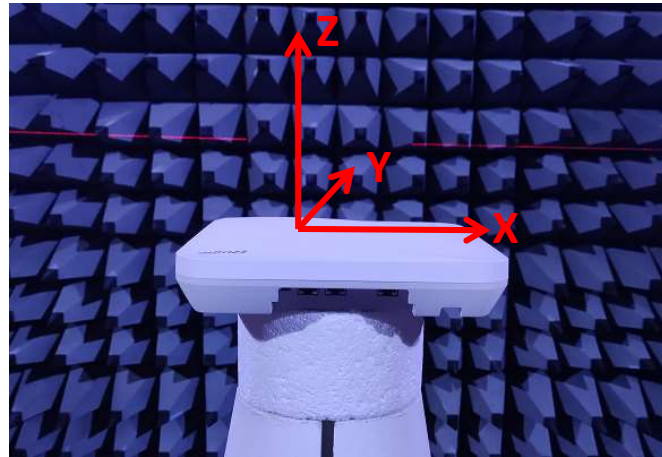
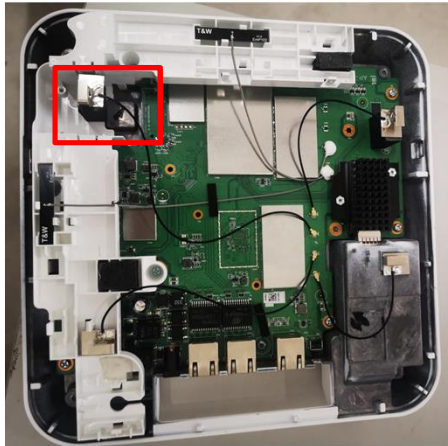


E1 (Phi=0)

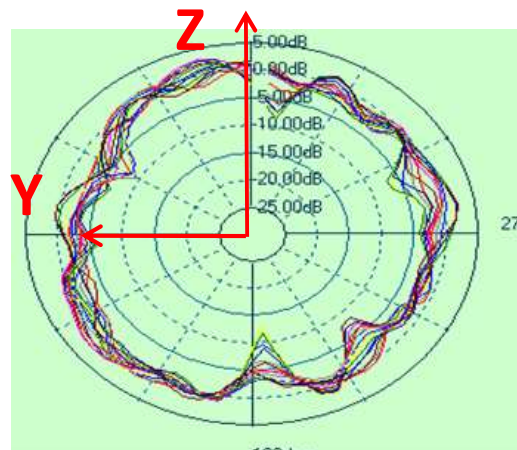


E2 (Phi=90)

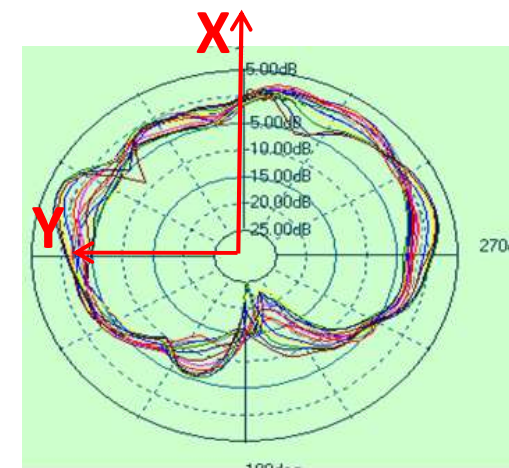
2D/3D Radiation pattern 5G-ANT2



H (Theta=90)



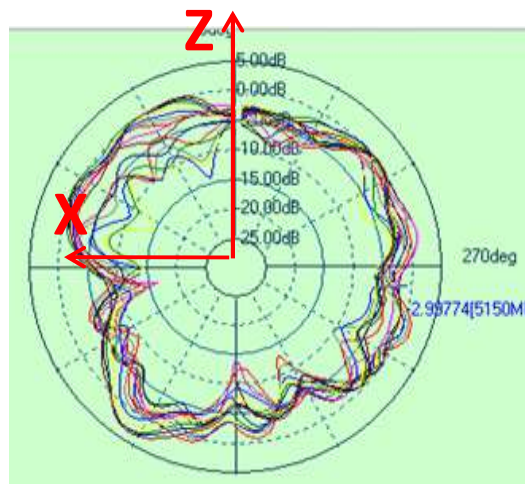
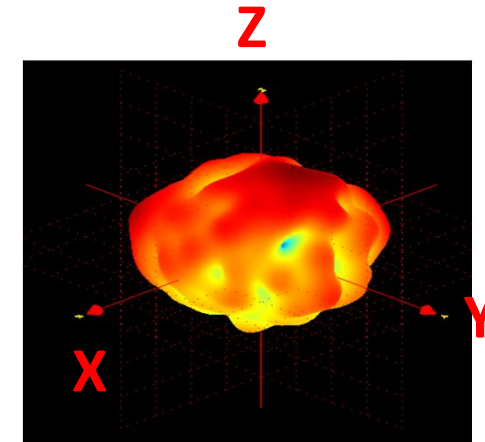
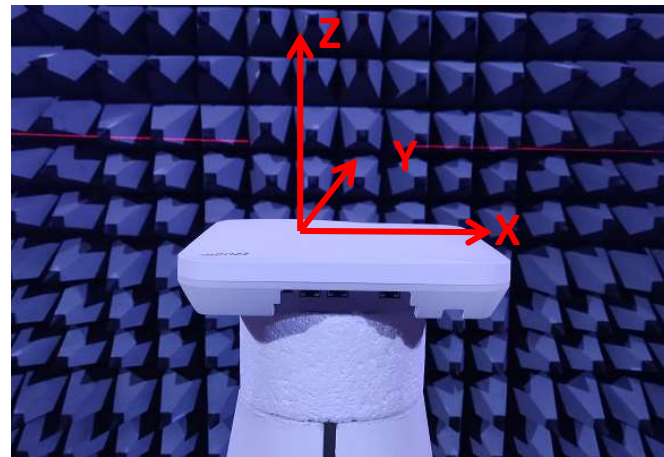
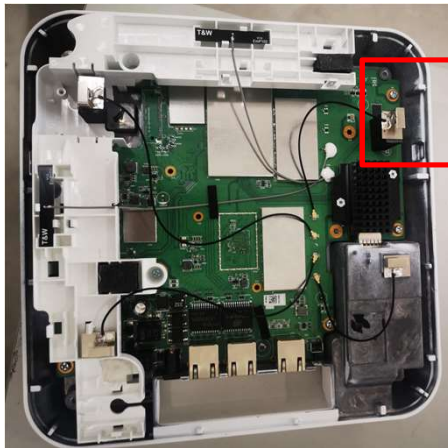
E1 (Phi=0)



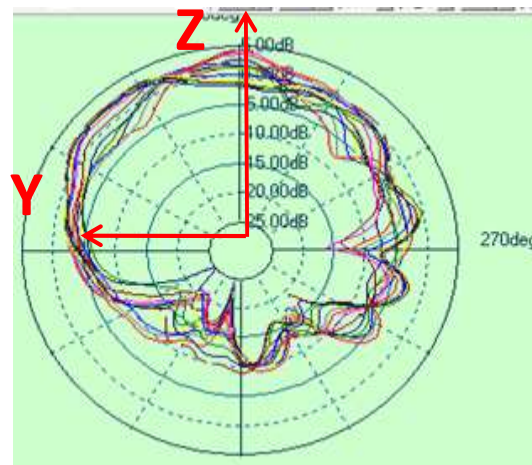
E2 (Phi=90)

2D/3D Radiation pattern 5G-ANT3

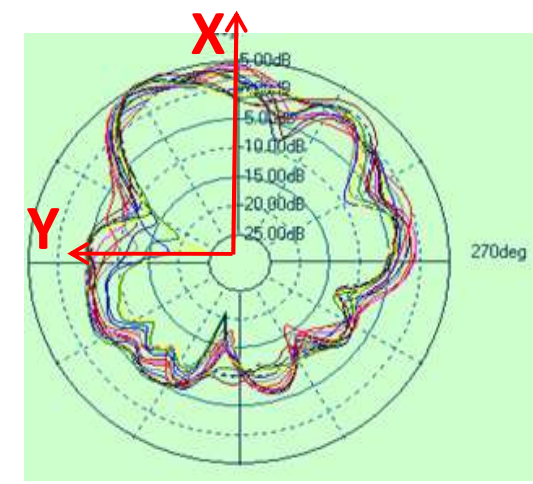
T&W



H (Theta=90)



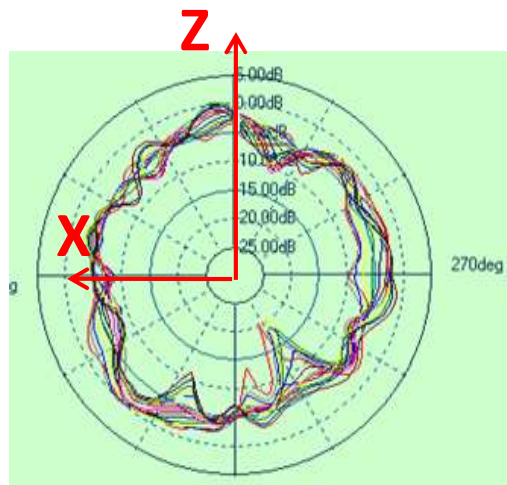
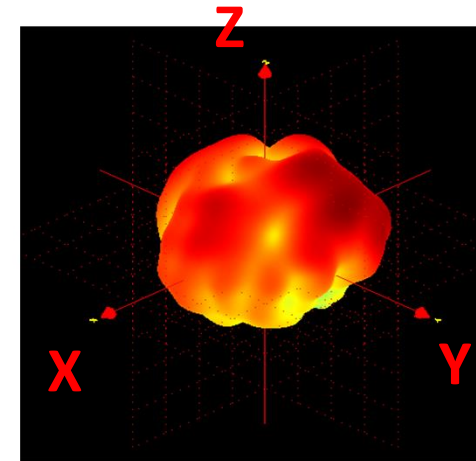
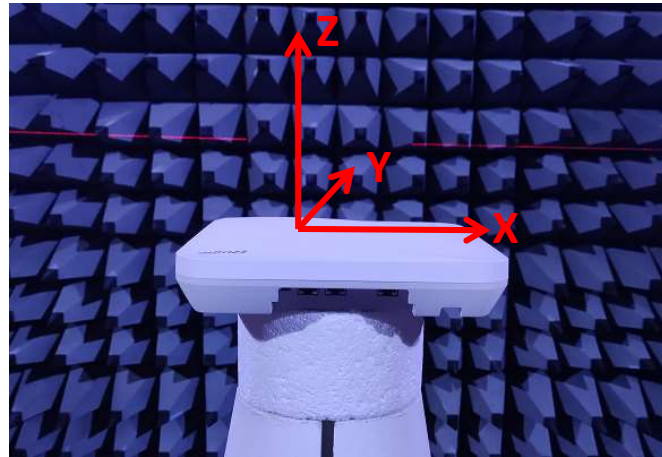
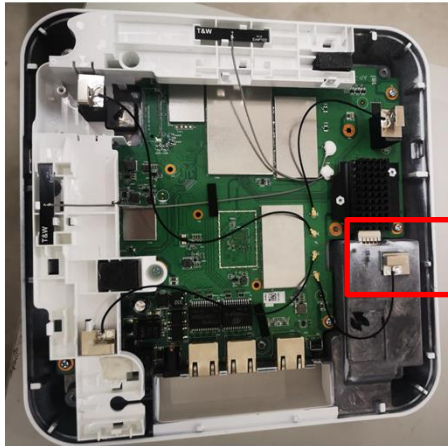
E1 (Phi=0)



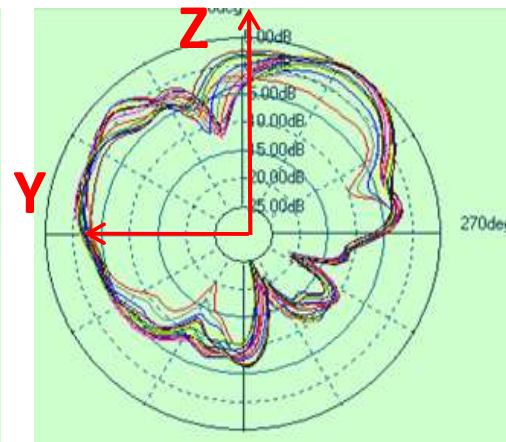
E2 (Phi=90)

2D/3D Radiation pattern 5G-ANT4

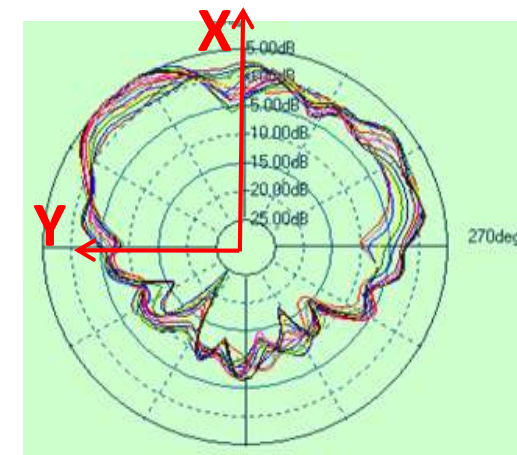
T&W



H (Theta=90)



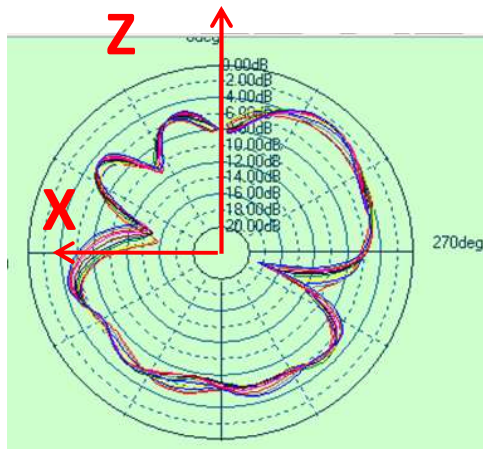
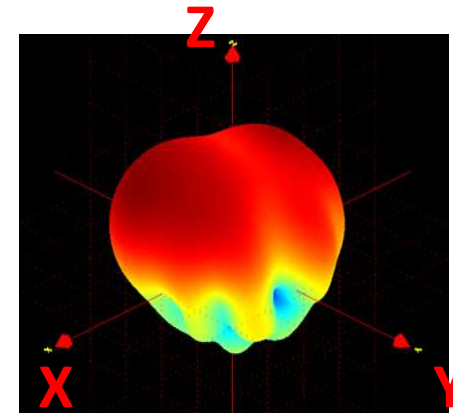
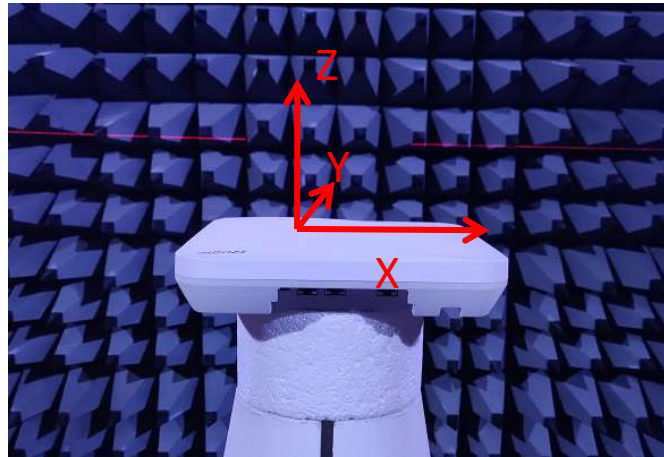
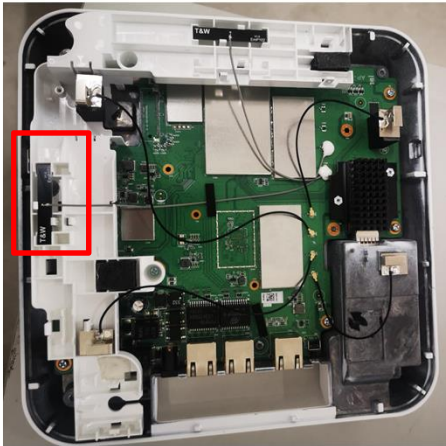
E1 (Phi=0)



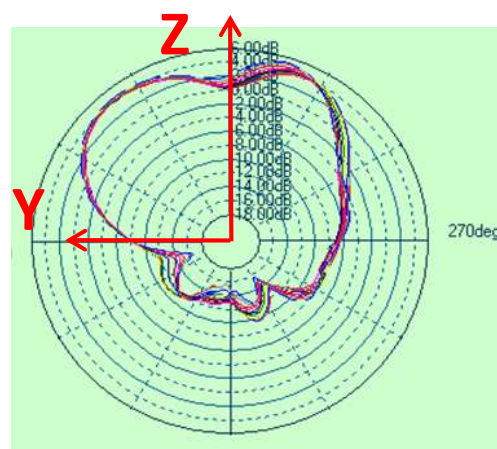
E2 (Phi=90)

2D/3D Radiation pattern 2.4G-ANT5

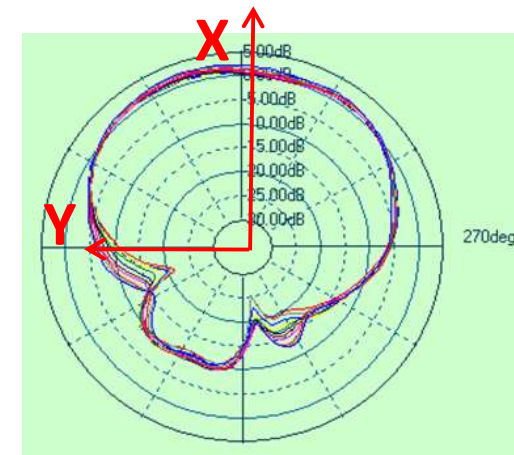
T&W



H (Theta=90)



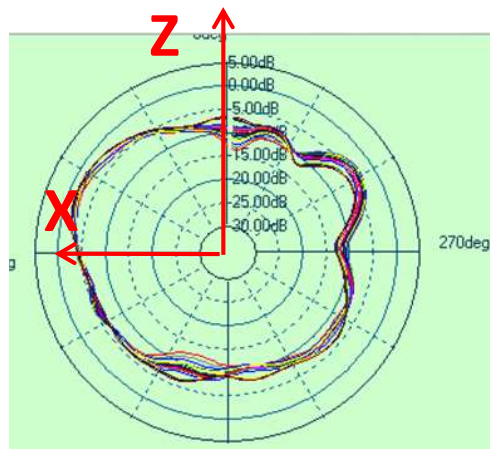
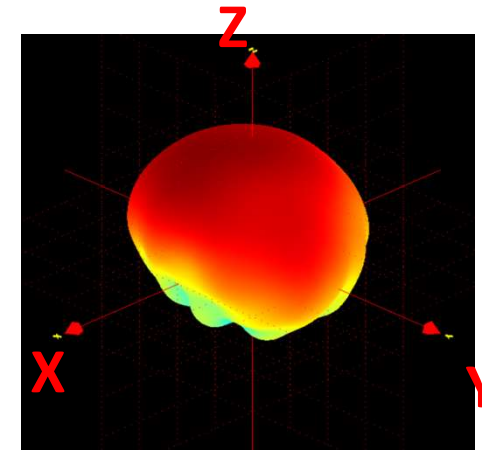
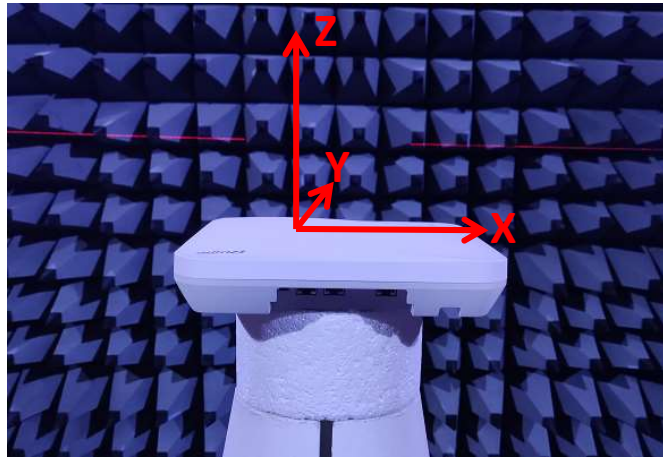
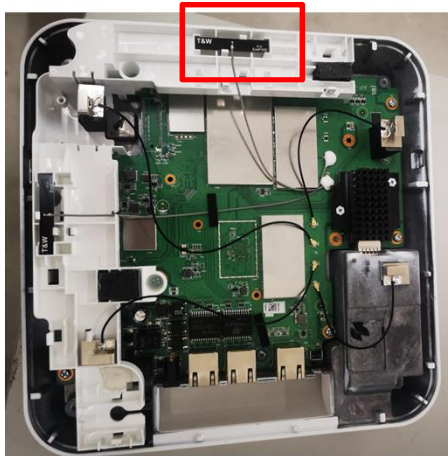
E1 (Phi=0)



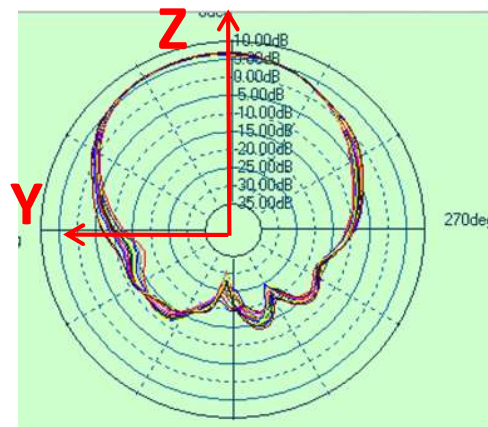
E2 (Phi=90)

2D/3D Radiation pattern 2.4G-ANT6

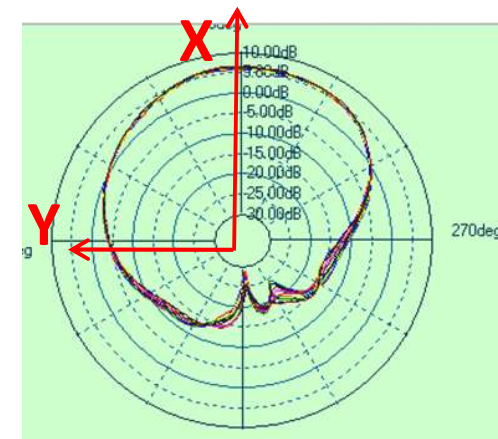
T&W



H (Theta=90)



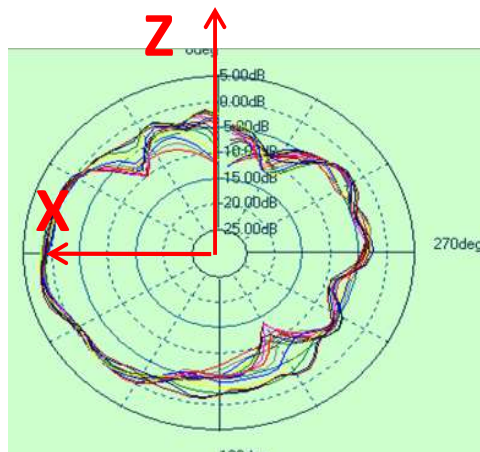
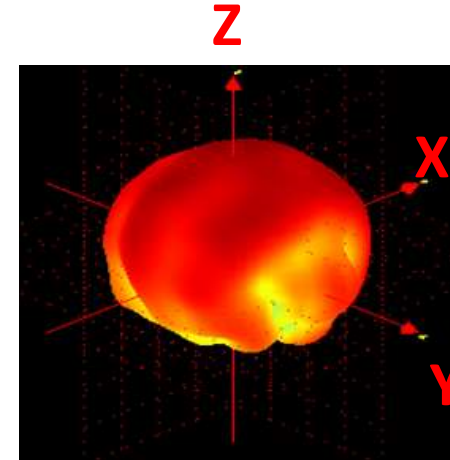
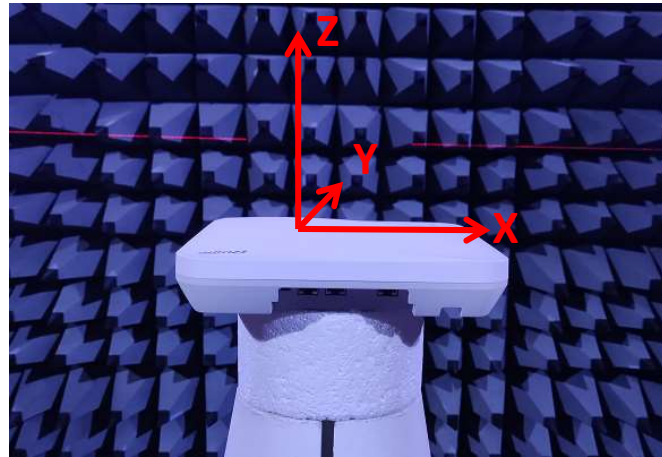
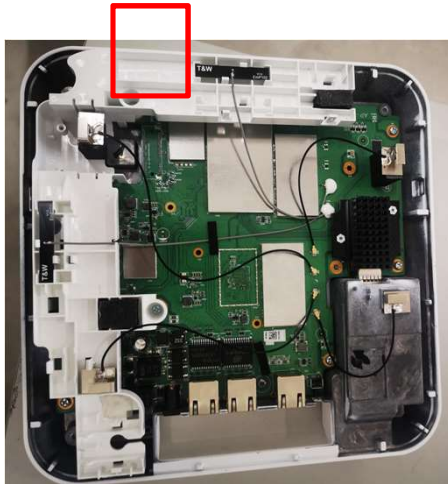
E1 (Phi=0)



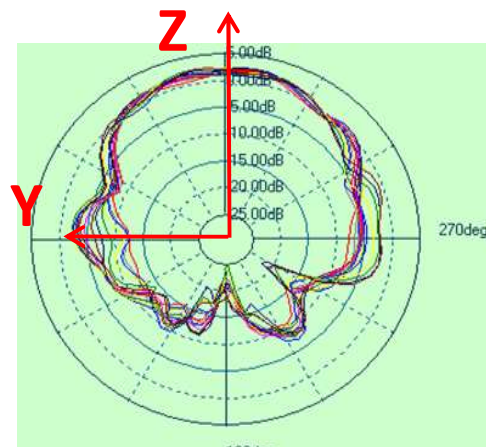
E2 (Phi=90)

2D/3D Radiation pattern 2.4G-BT-ANT7

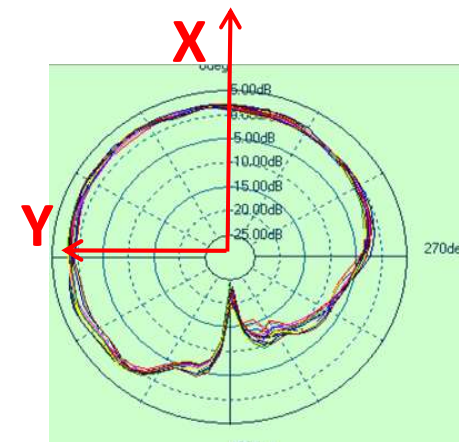
T&W



H (Theta=90)



E1 (Phi=0)



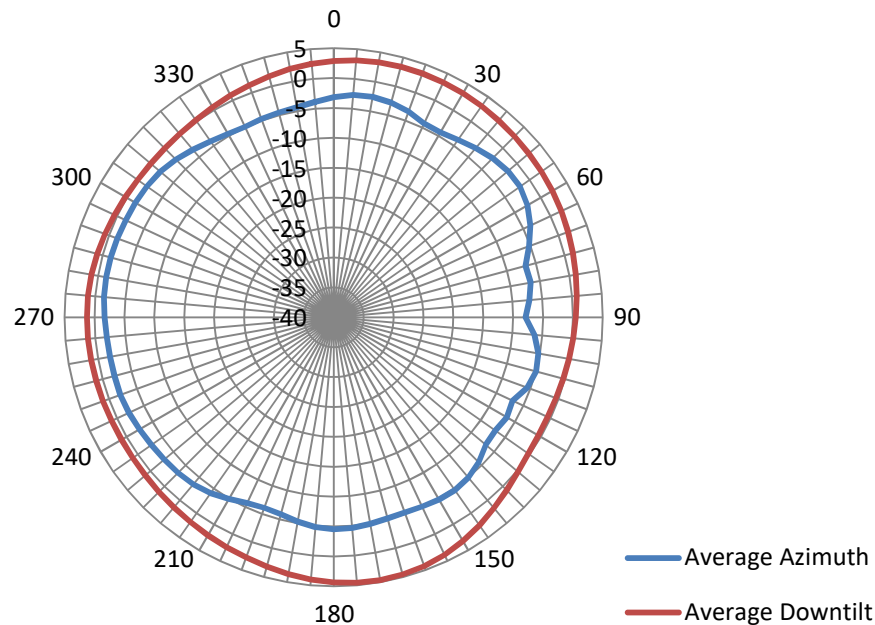
E2 (Phi=90)

2D/3D Radiation pattern(Combination)

Horizontal planes (Top view)

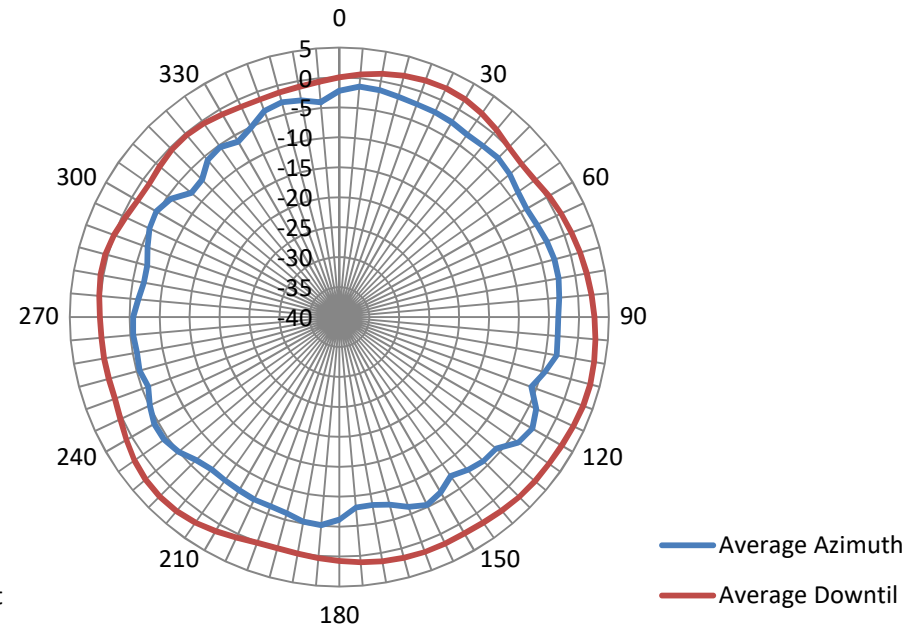
Showing azimuth (0 degrees) and 35 degrees downtilt patterns (averaged patterns for all applicable antennas)

2.45GHz



2.45GHz(ANT5,6)

5.5GHz



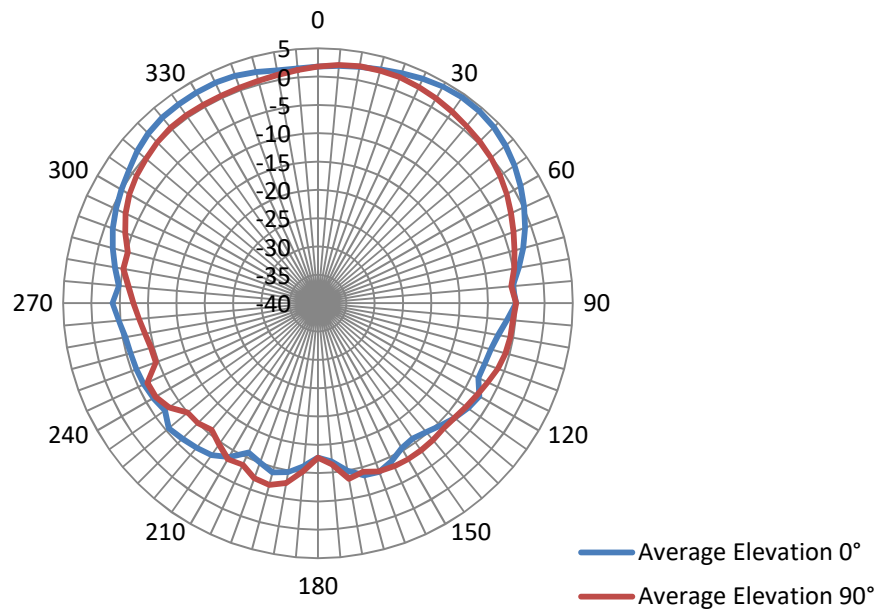
5.5GHz(ANT1,2,3,4)

2D/3D Radiation pattern(Combination)

Vertical (elevation) planes (side view. AP facing up)

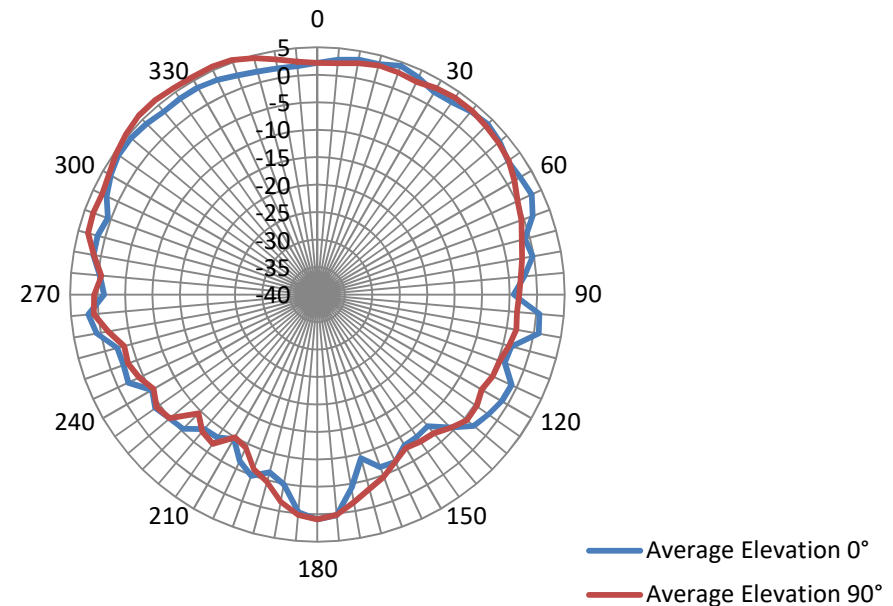
Showing side view with AP rotated 0 and 90 degrees (averaged patterns for all applicable antennas)

2.45GHz



2.45GHz(ANT5,6)

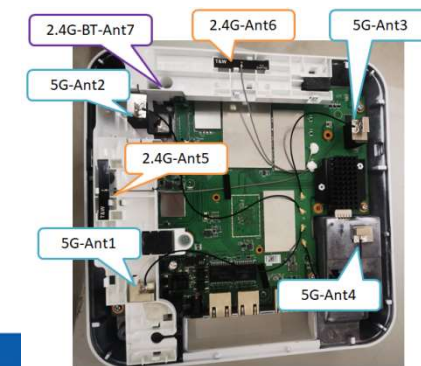
5.5GHz



5.5GHz(ANT1,2,3,4)

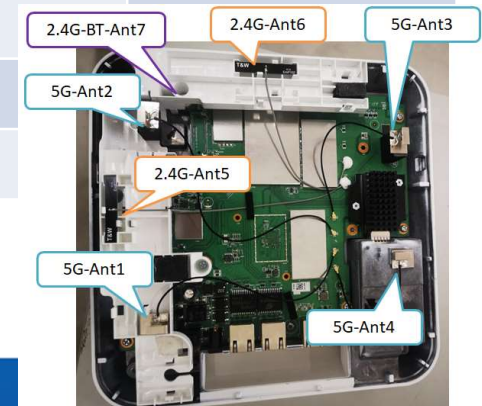
Peak Gain and Efficiency

ANT	Frequency (GHz)	Peak Gain (dBi)	Efficiency (%)	Results
2.4G-ANT5	2.4	4.71	65.7	PASS
	2.45	4.75	66.4	
	2.5	4.92	68.8	
2.4G-ANT6	2.4	5.81	72.5	
	2.45	5.72	74.1	
	2.5	5.92	75.2	
2.4G-BT-ANT7	2.4	4.21	62.5	
	2.45	4.45	63.4	
	2.5	4.50	65.2	



Peak Gain and Efficiency

ANT	Frequency (GHz)	Peak Gain (dBi)	Efficiency (%)	Results
5G-ANT1	5.15	6.25	69.7	Pass
	5.50	5.87	71.3	
	5.85	5.78	70.5	
5G-ANT2	5.15	5.49	70.7	
	5.50	6.01	69.9	
	5.85	5.76	67.3	
5G-ANT3	5.15	5.73	68.4	
	5.50	5.86	72.0	
	5.85	5.92	71.7	
5G-ANT4	5.15	5.57	72.4	
	5.50	5.99	70.5	
	5.85	6.02	69.3	



Summary

1. 天线Return loss < -10dB; Isolation < -20dB;
2. 由于底壳是金属材质，信号反射比较强，天线增益都比较高，符合吸顶产品使用，性能满足应用场景；
3. 组合增益

Frequency (GHz)	Uncorrelated Gain	Correlated Gain
2.4	2.42	4.98
2.45	2.53	5.01
2.5	2.68	5.11
5.15	2.18	7.12
5.50	2.25	7.44
5.85	2.35	7.37

Thanks!

