



好天线 · 优比造

东莞市优比电子有限公司

Dongguan UB Electronic Co.,Ltd

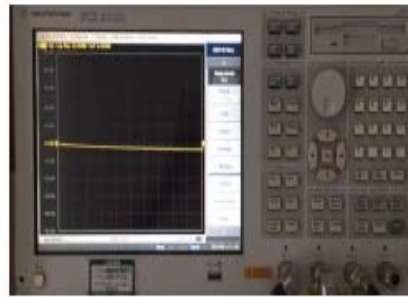
Room 101 Building2, No.9, Xinfu Road, Lin Village, Tangxia Town

Bigtmt Antenna Test Report

Project	D60 5G ---WiFi 5.8G PCB built-in antenna
Frequency band	4G:2/4/5/7/12/13/14/17/25/26/30/38/41/42/48/66/71 5G:2/5/7/12/41/48/66/71/77/78
Date	2023.2.16

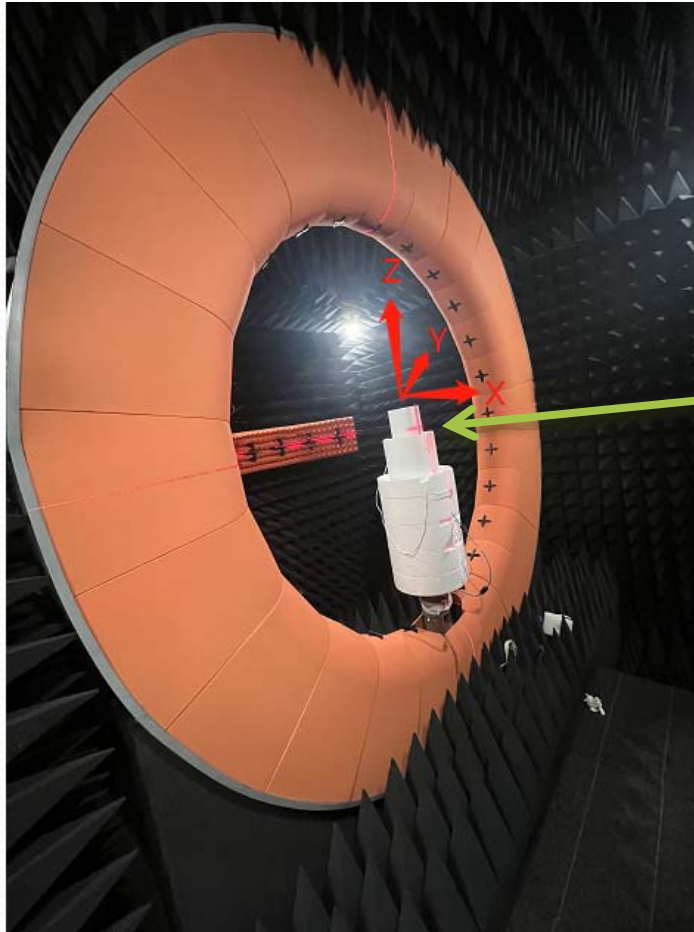
1.Test Equipment & Conditions

The whole machine of Active parameters	1. TRP	1. Microwave chamber 5M*5M*4M CMW 500
	2. TIS	
The whole machine of Passive parameters	1. S parameter	1. Network Analyzer E5071B
	2. Radiation Pattern	1. Microwave chamber 5M*5M*4M、 2. Network Analyzer E5071B



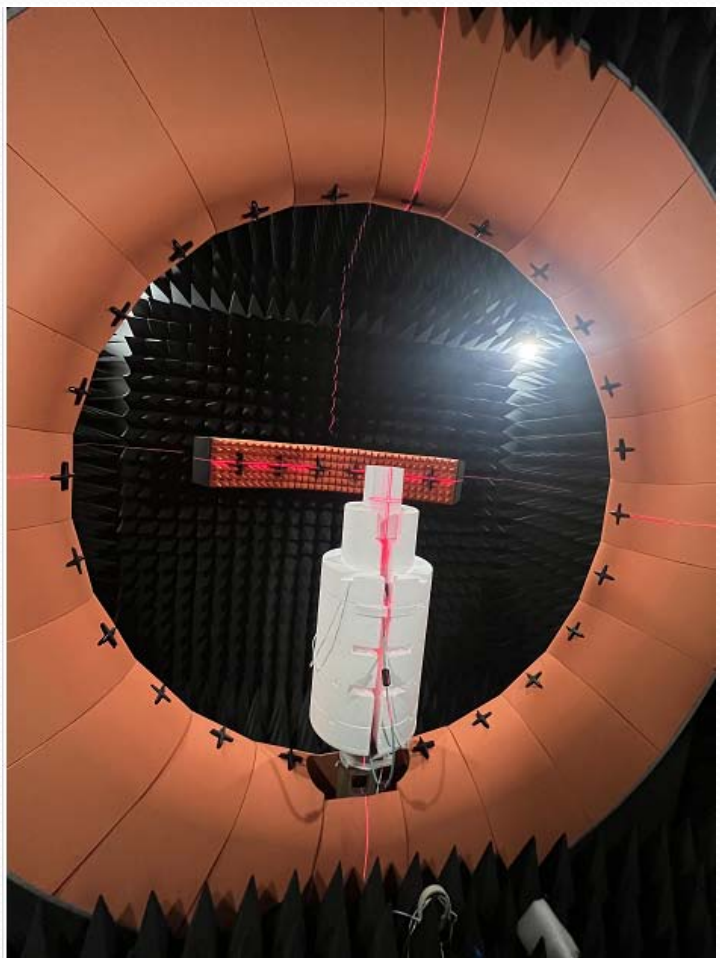
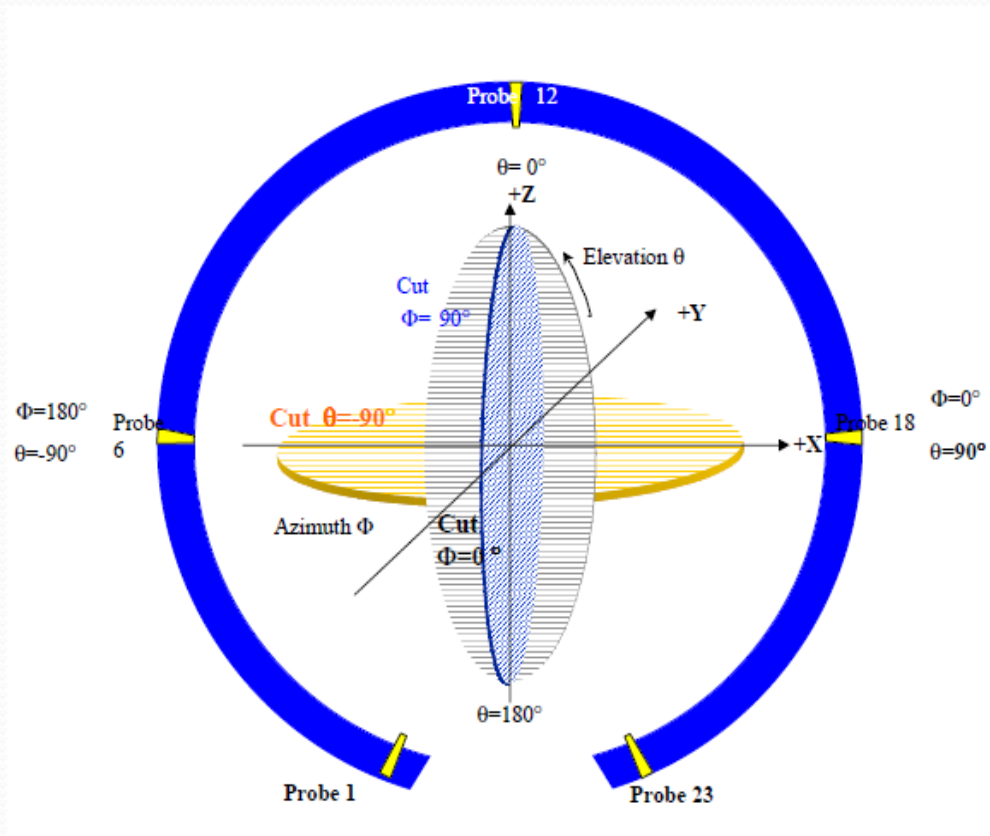
2.Test information

Project: D60 5G



Test placement

3. Testing environment

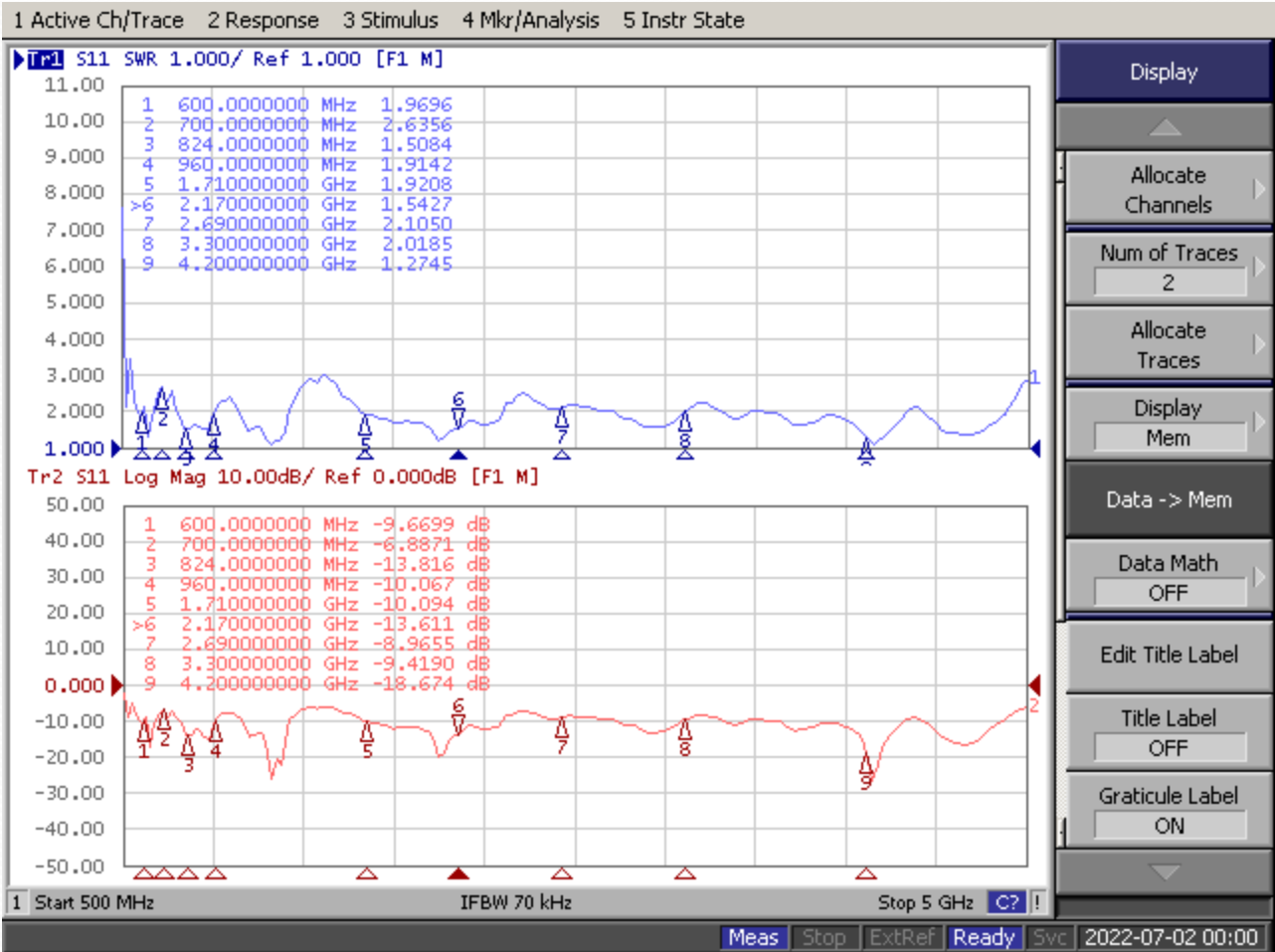


4.1 Antenna position



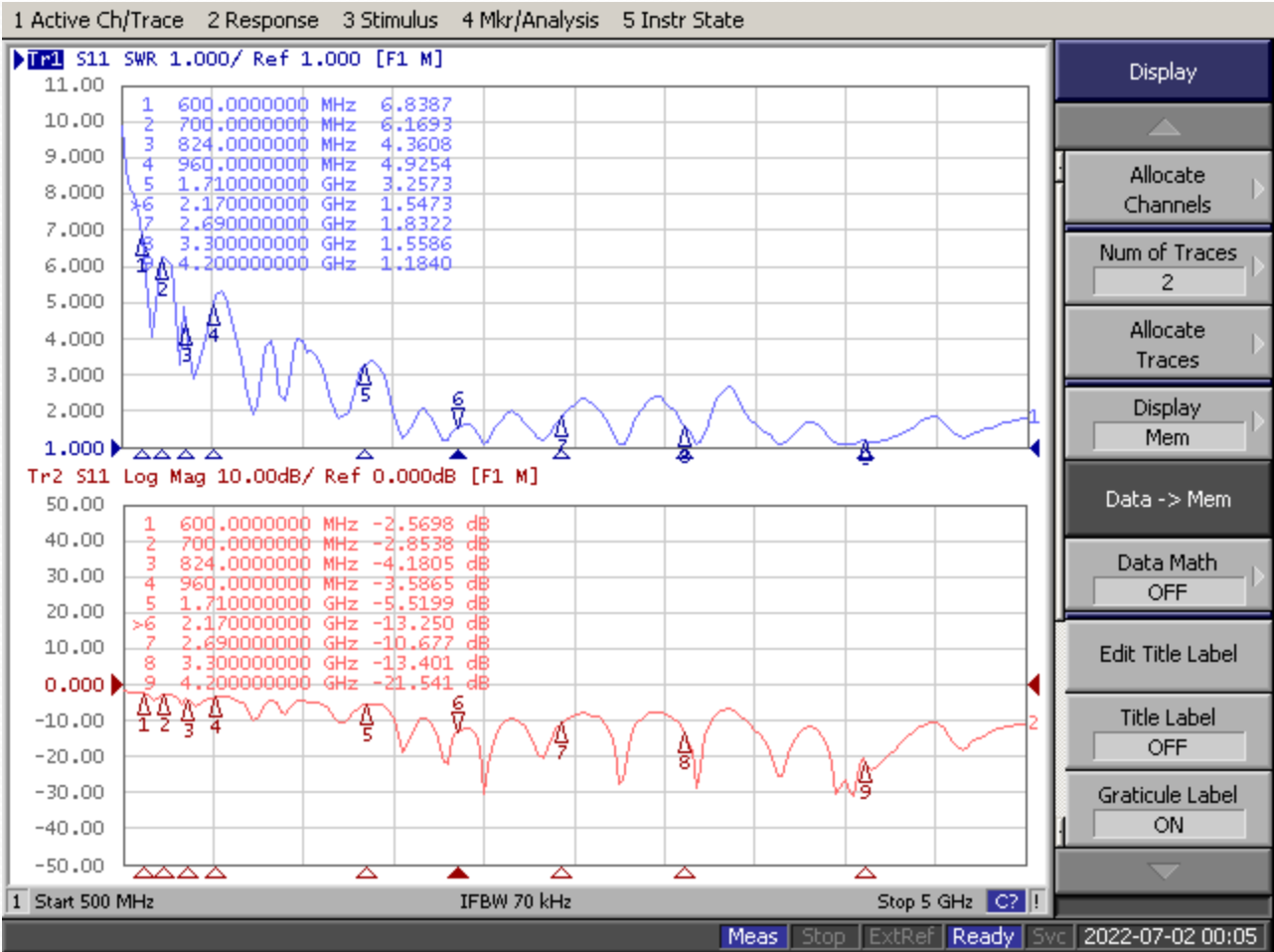
5.1 Return Loss/VSWR

ANTO



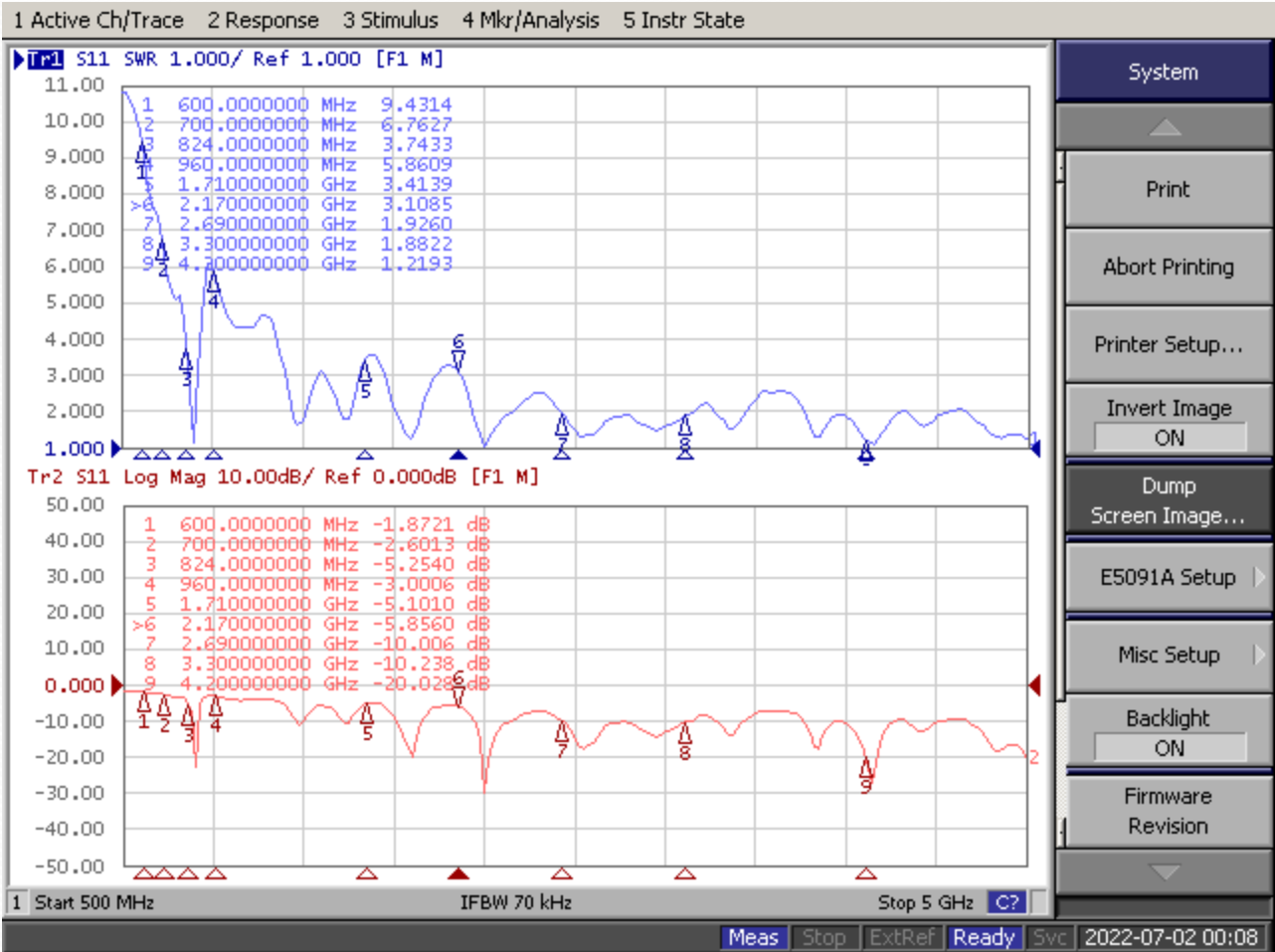
5.2 Return Loss/VSWR

ANT1



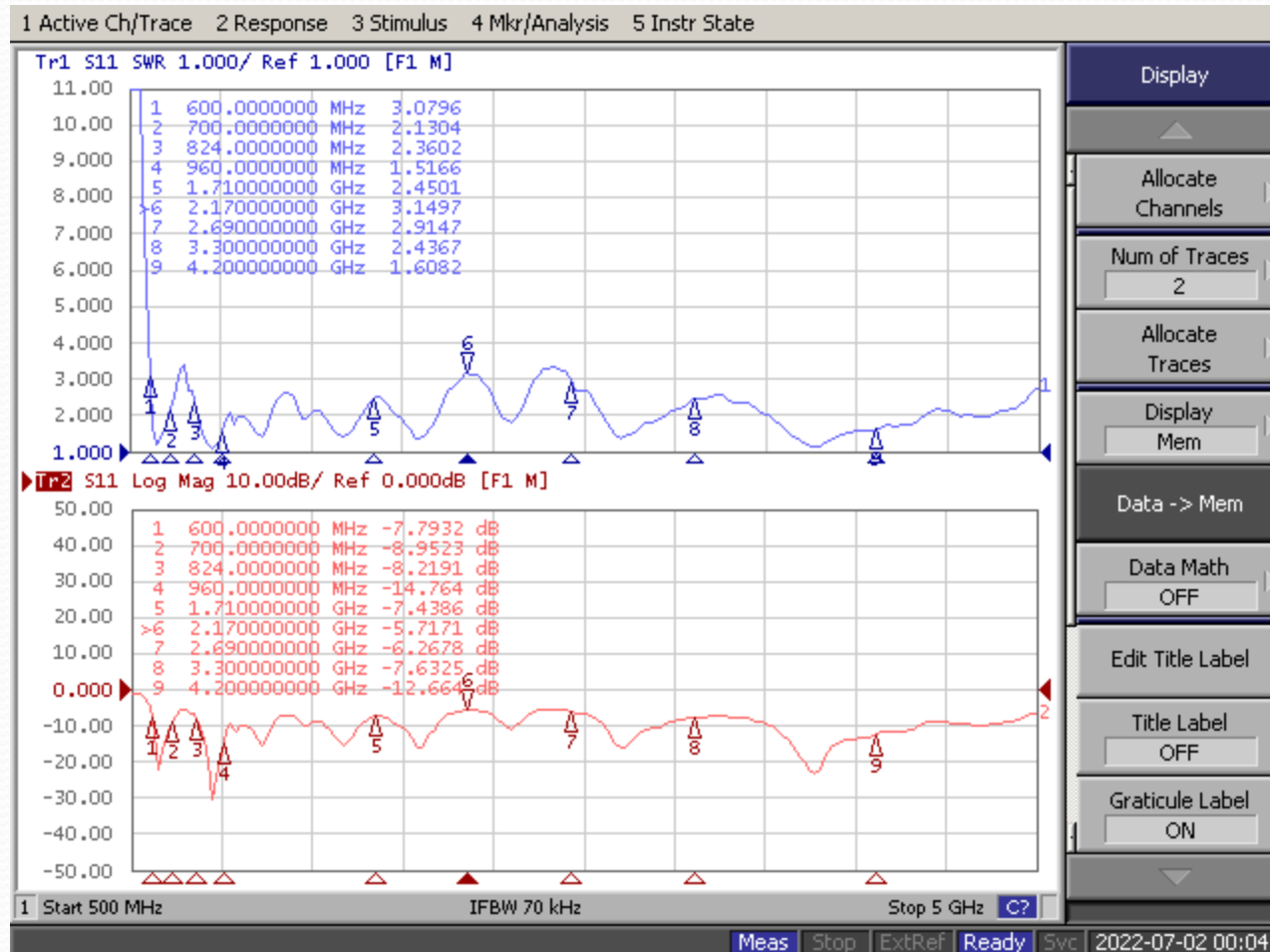
5.3 Return Loss/VSWR

ANT2



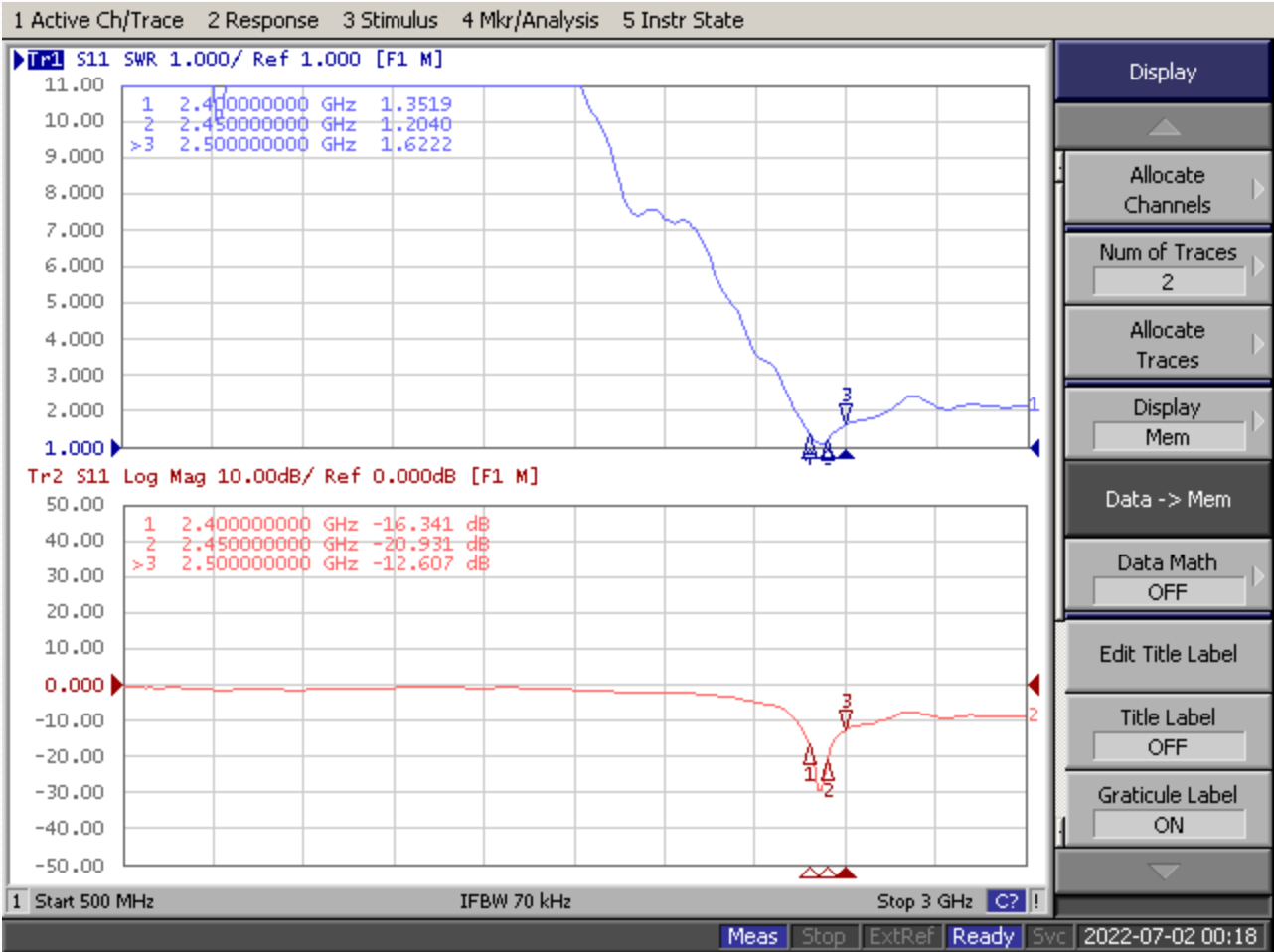
5.4 Return Loss/VSWR

ANT3



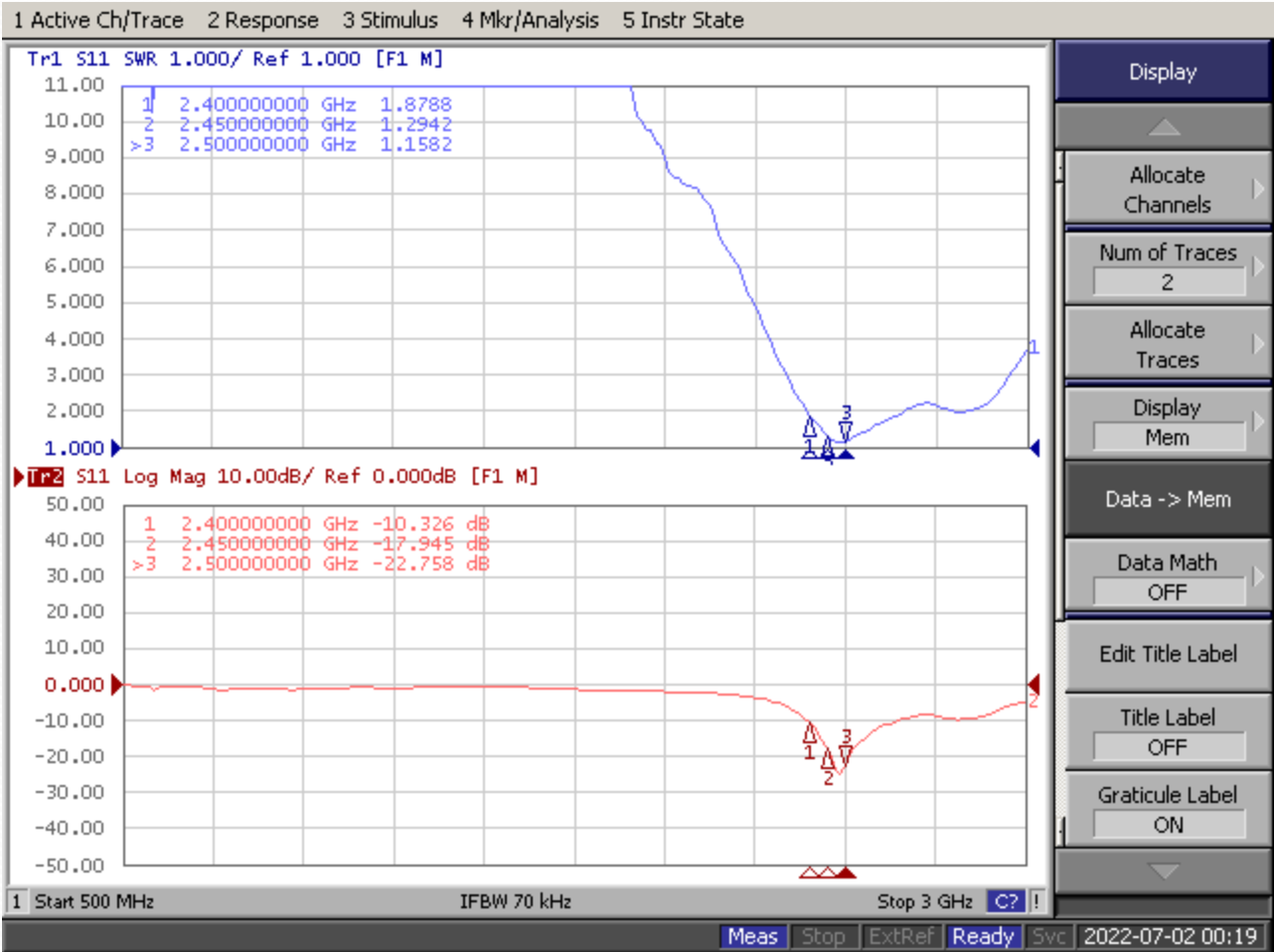
5.5 Return Loss/VSWR

WI-FI(1)



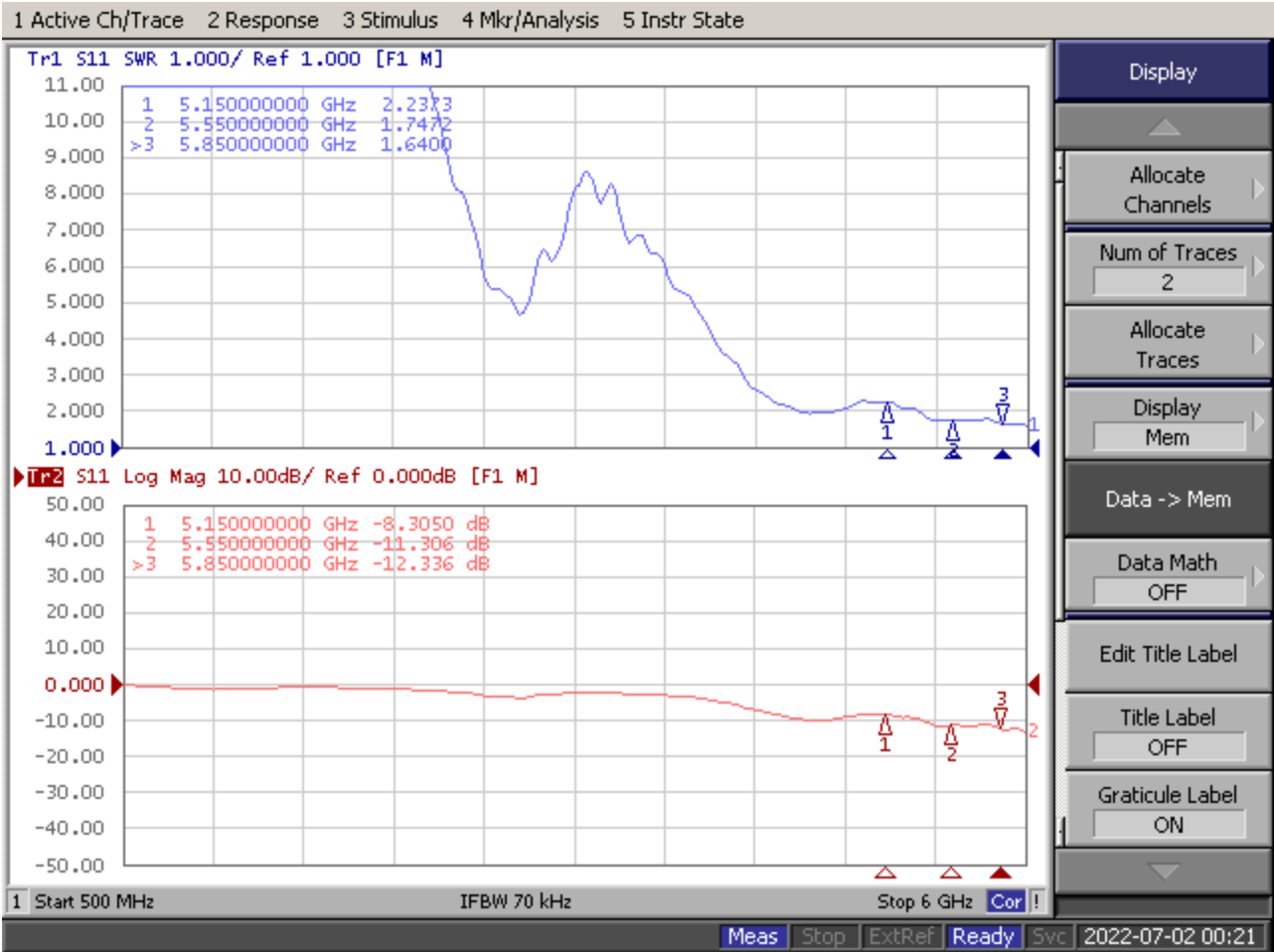
5.6 Return Loss/VSWR

WI-FI(2)



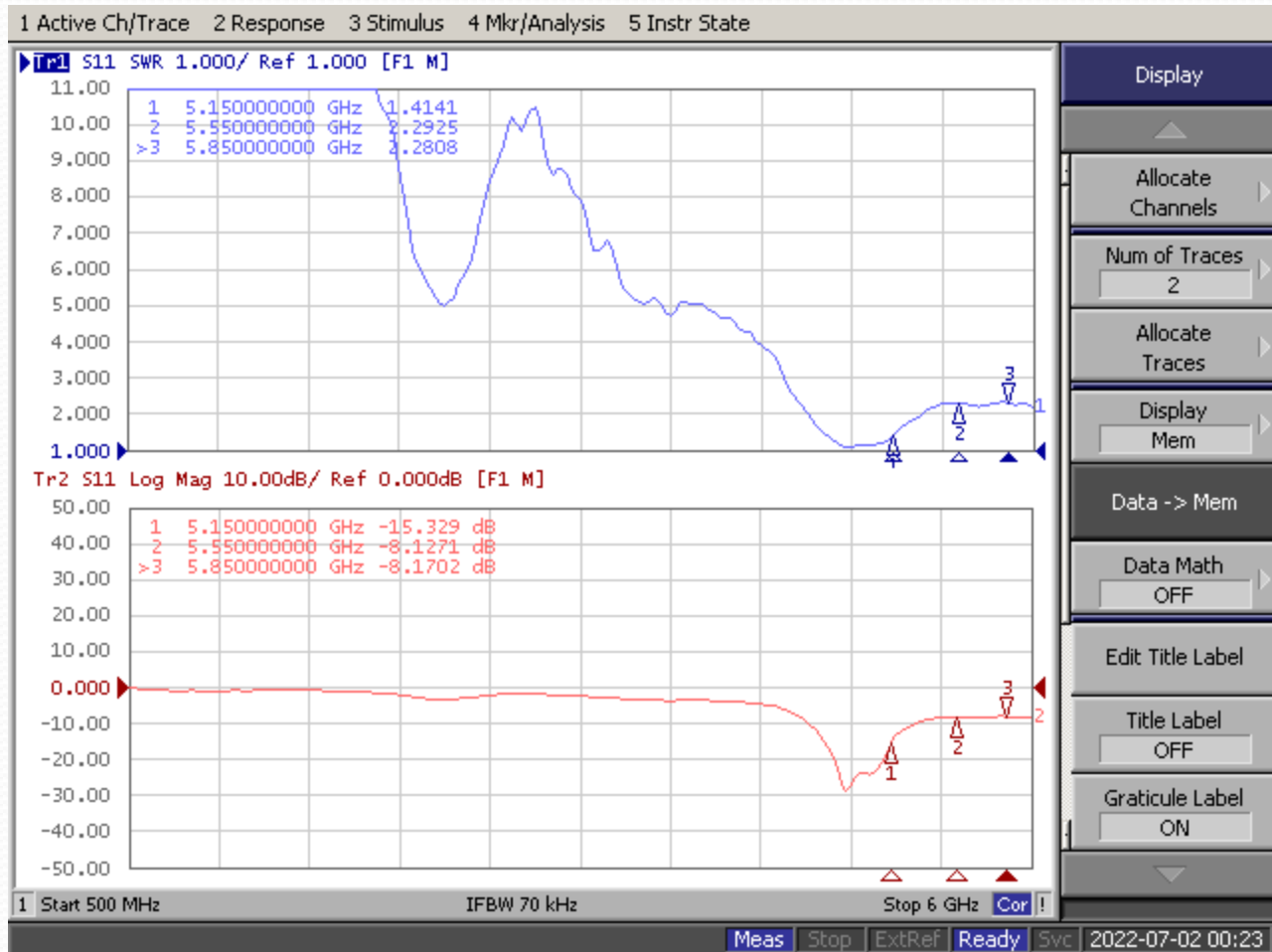
5.7 Return Loss/VSWR

WI-FI(3)



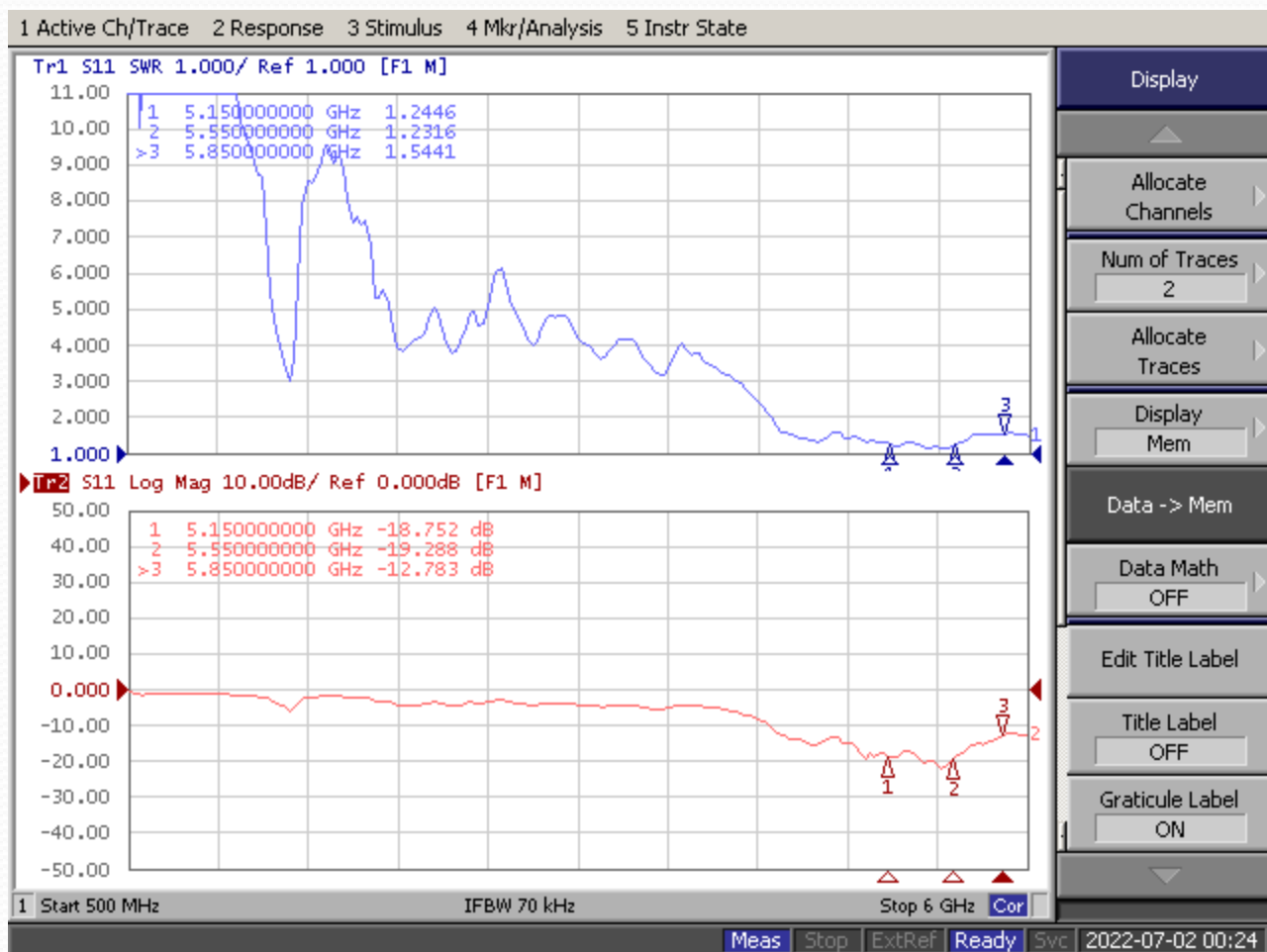
5.8 Return Loss/VSWR

WI-FI(4)



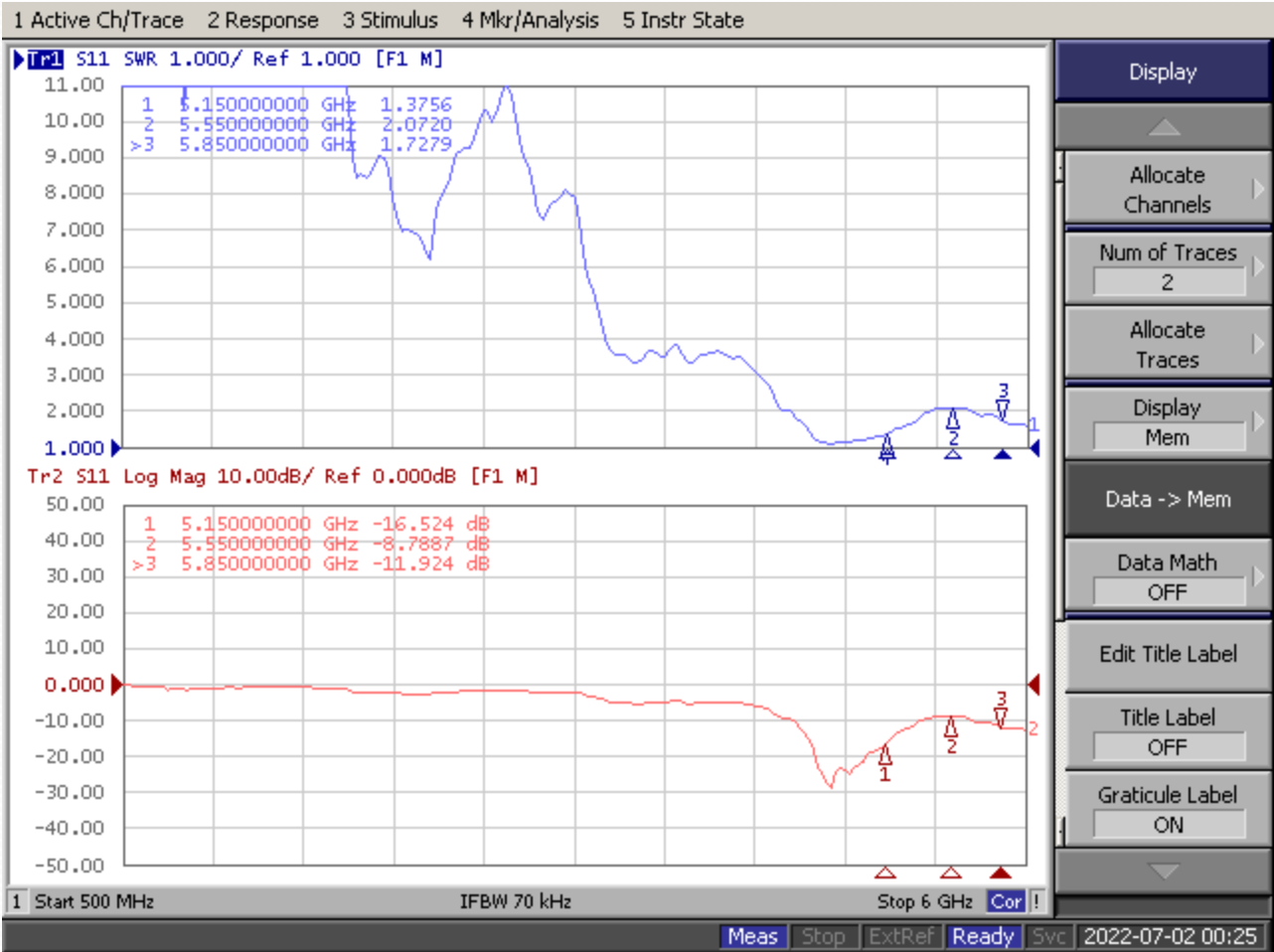
5.9 Return Loss/VSWR

WI-FI(5)



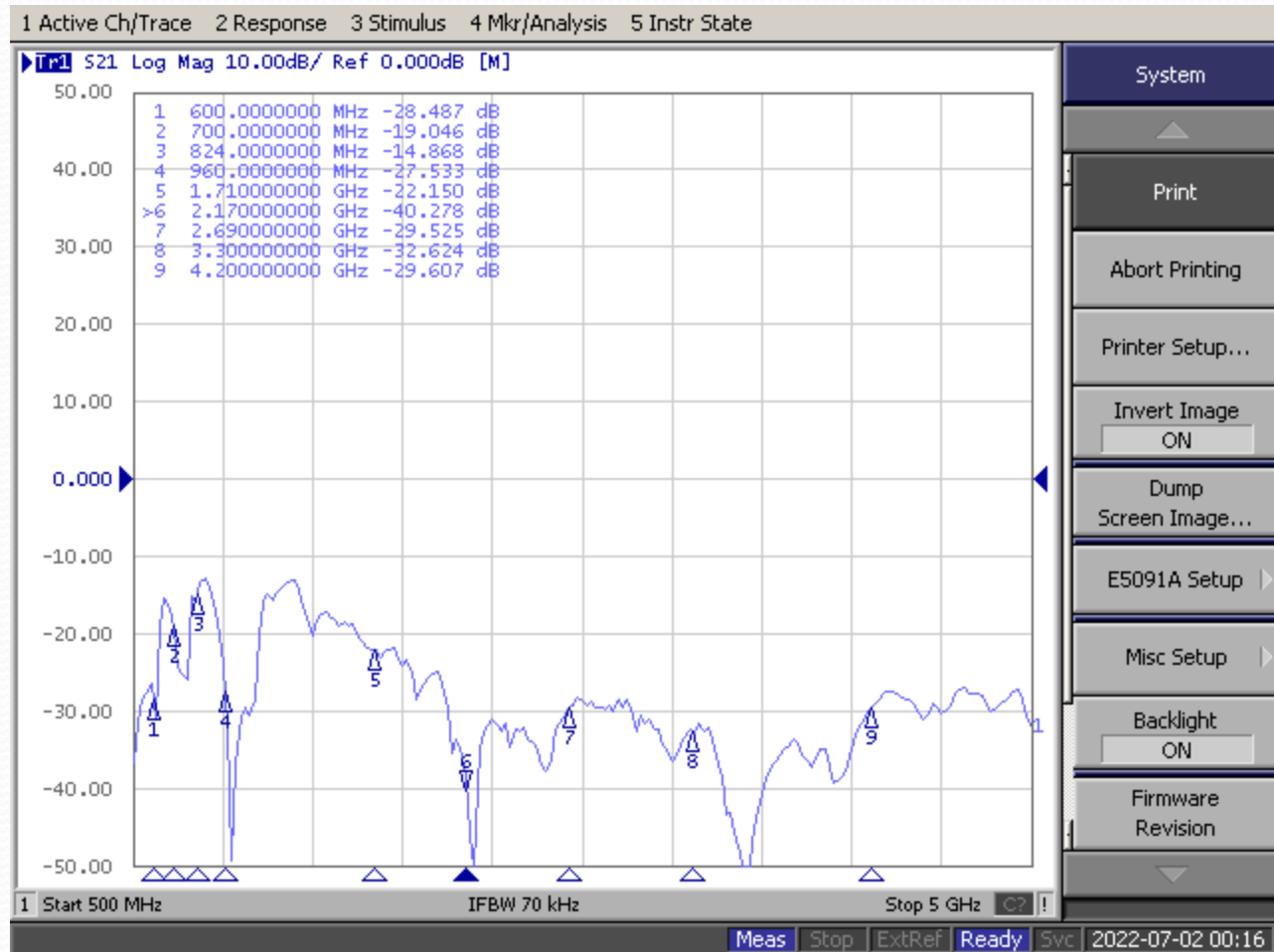
5.10 Return Loss/VSWR

WI-FI(6)



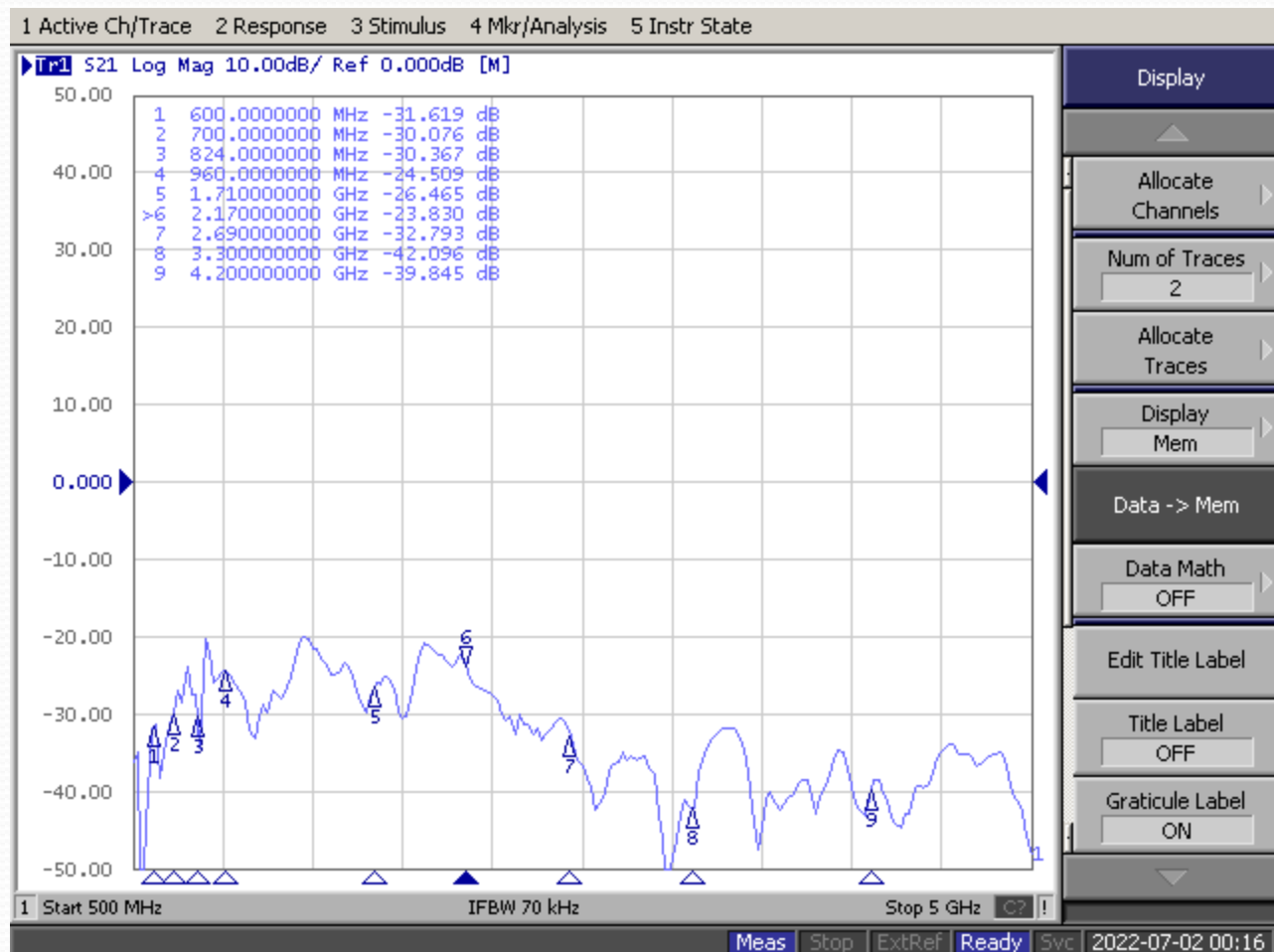
5.11 Isolation Degree

ANT0-ANT1



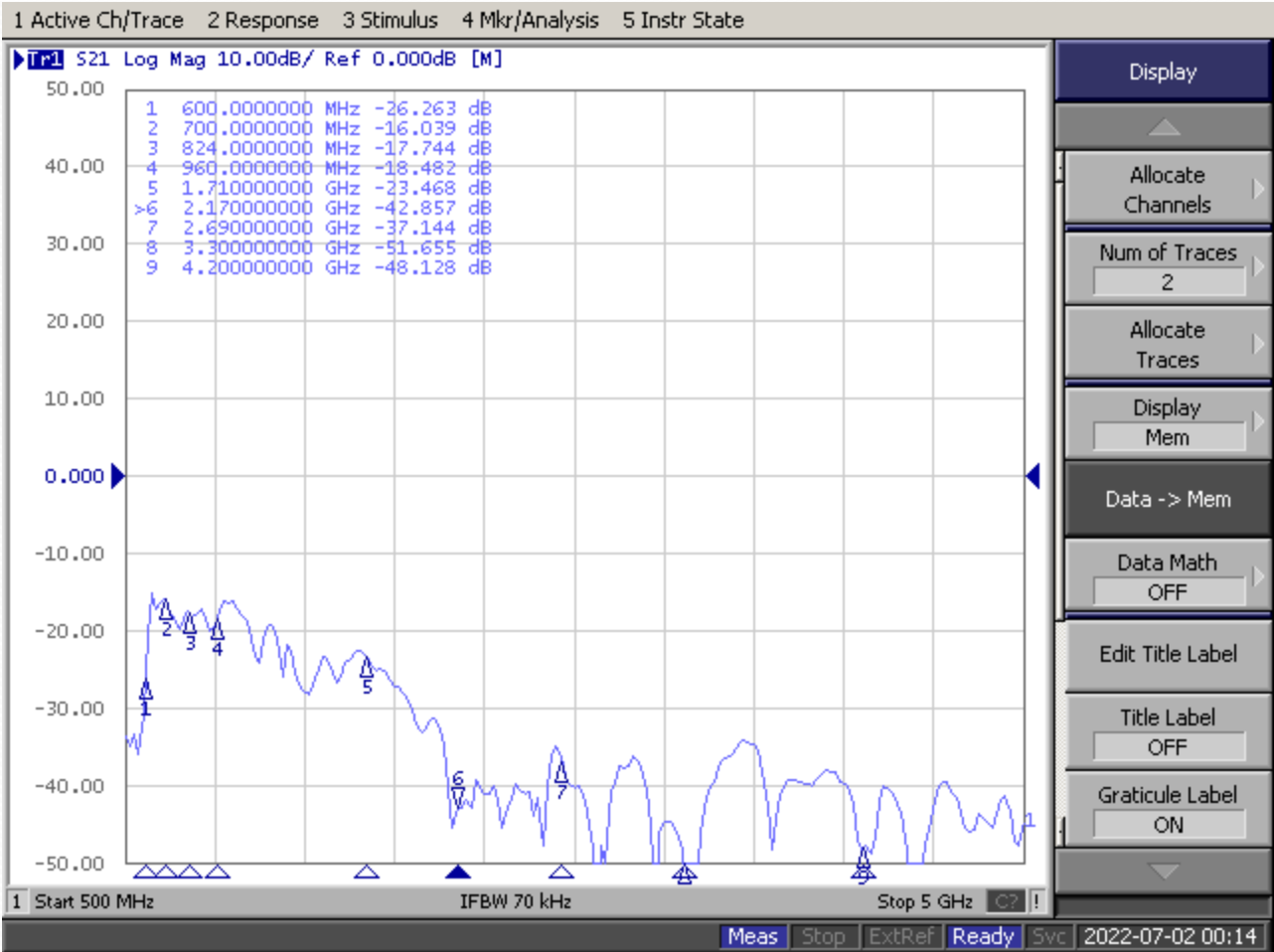
5.12 Isolation Degree

ANT0-ANT2



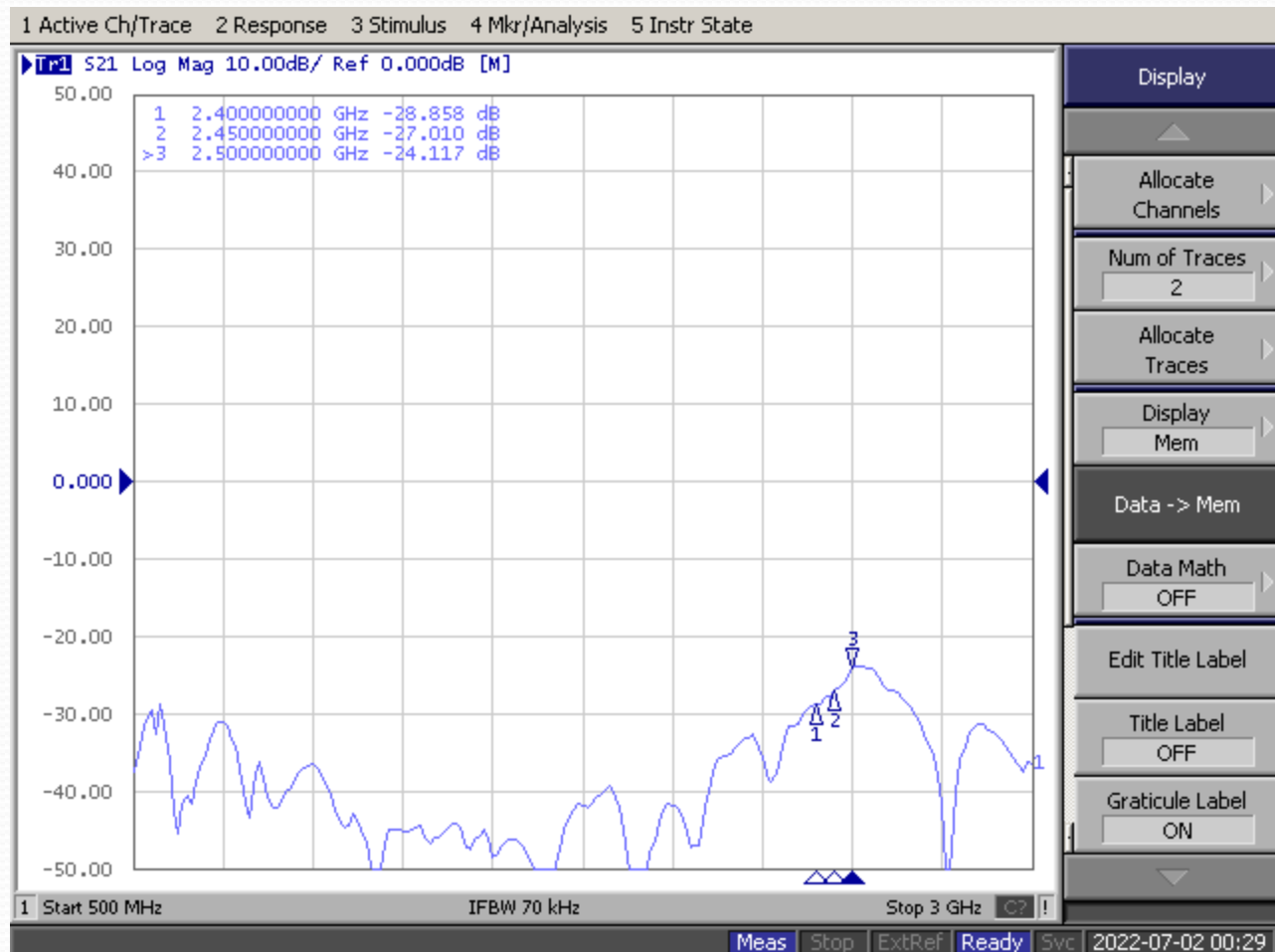
5.13 Isolation Degree

ANT0-ANT3



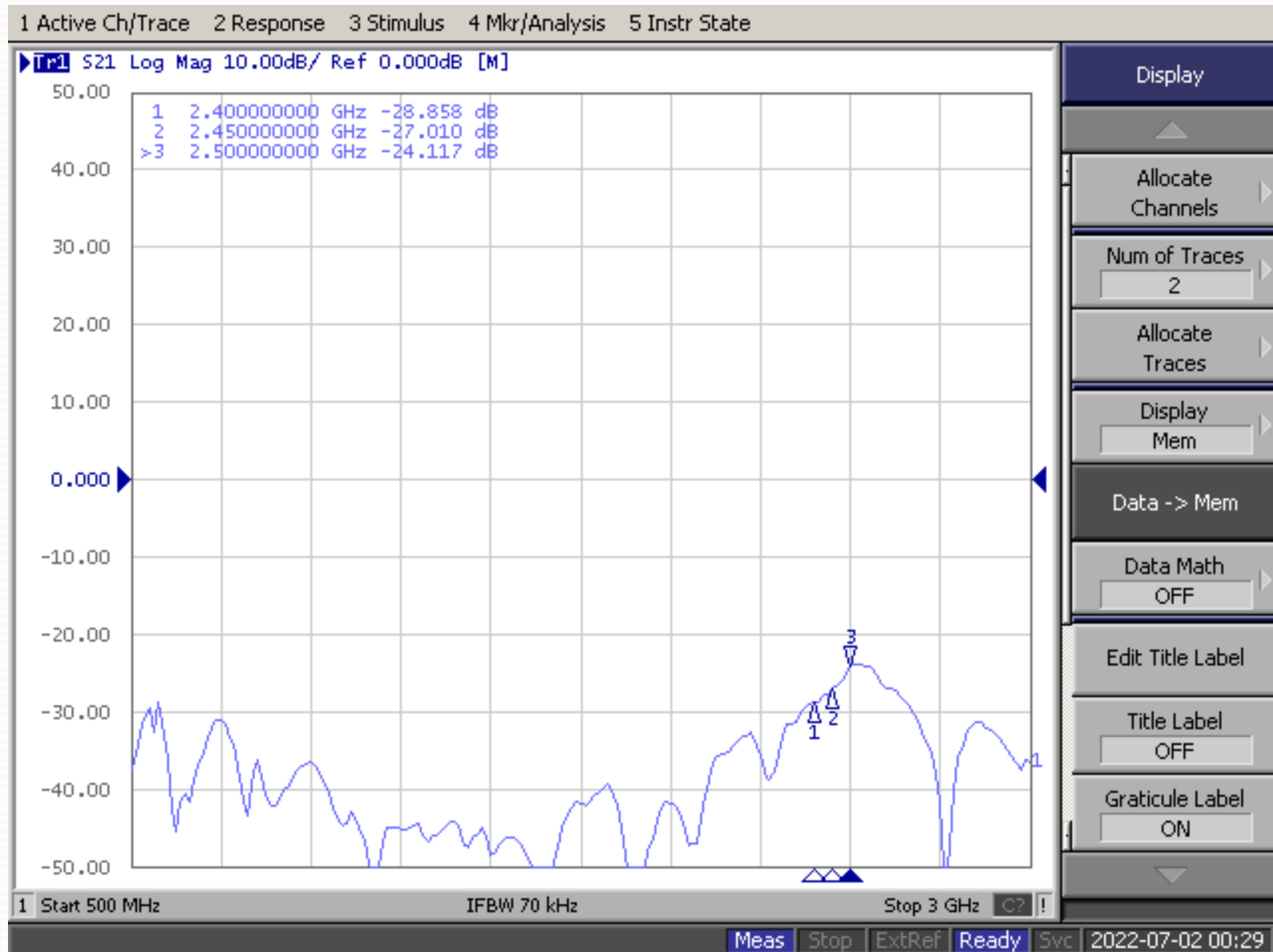
5.14 Isolation Degree

WIFI(1)-WIFI(2)



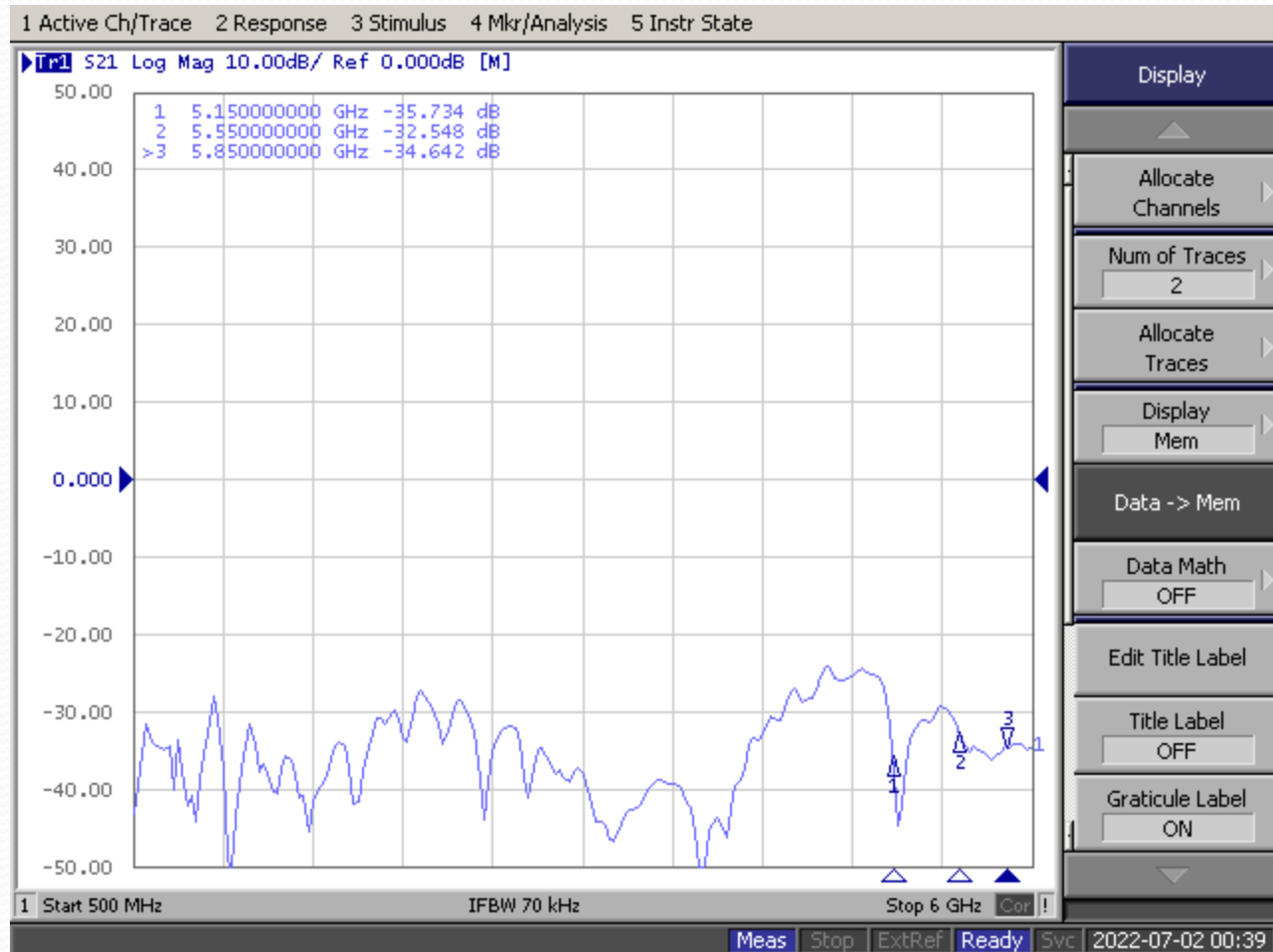
5.15 Resolution Degree

WIFI(1)-WIFI(2)



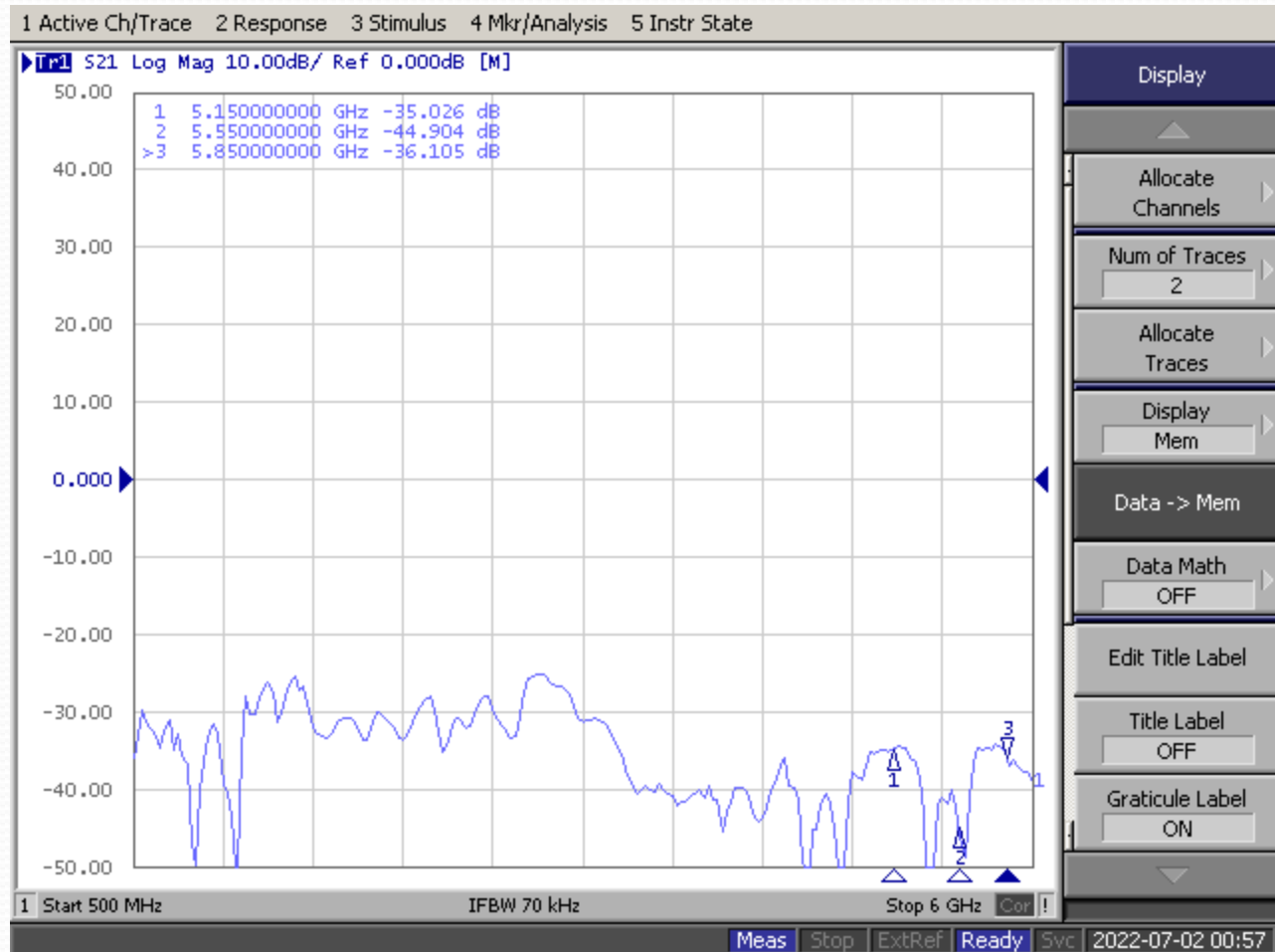
5.16 Isolation Degree

WIFI(3)-WIFI(4)



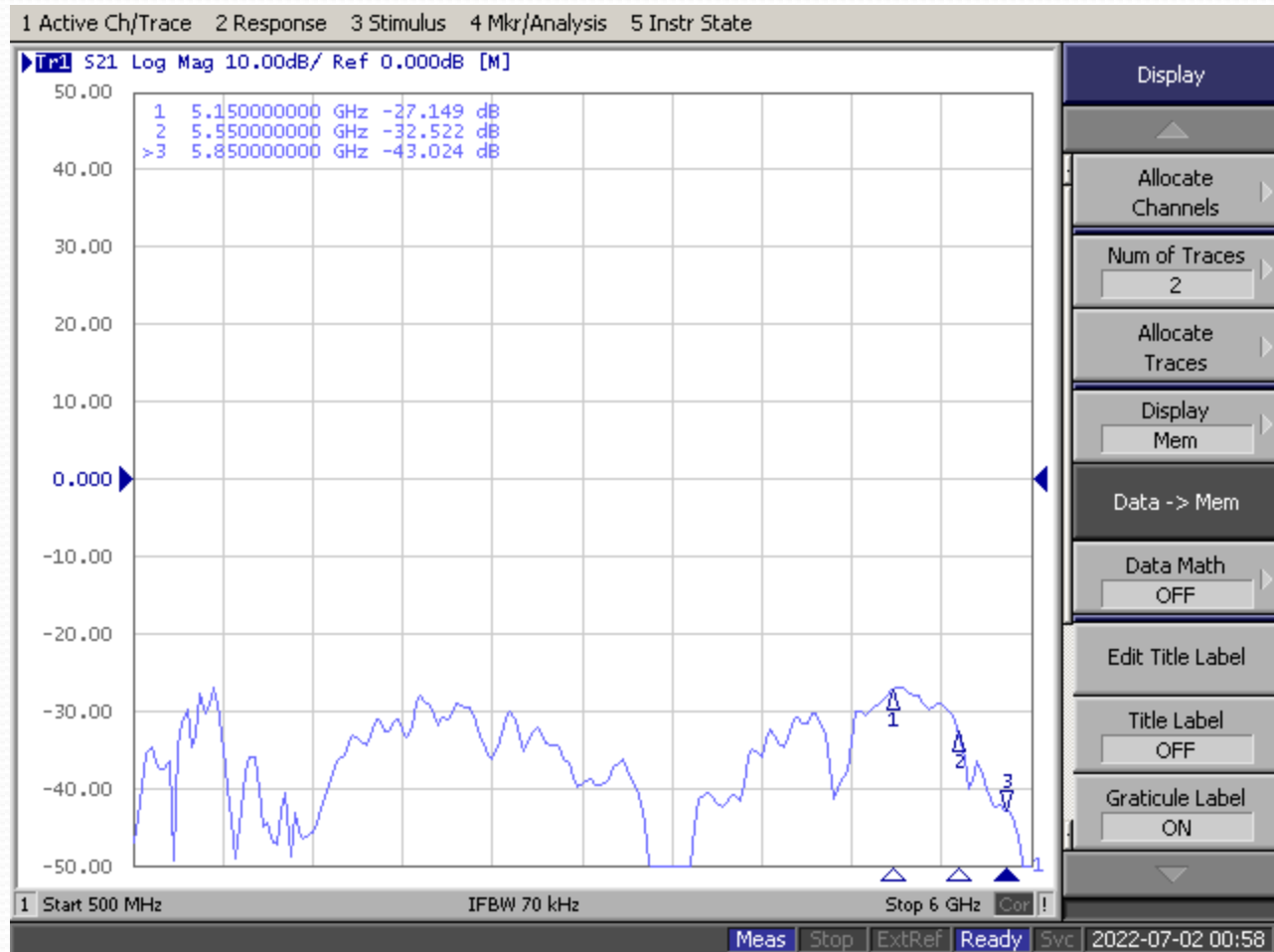
5.17 Isolation Degree

WIFI(3)-WIFI(5)



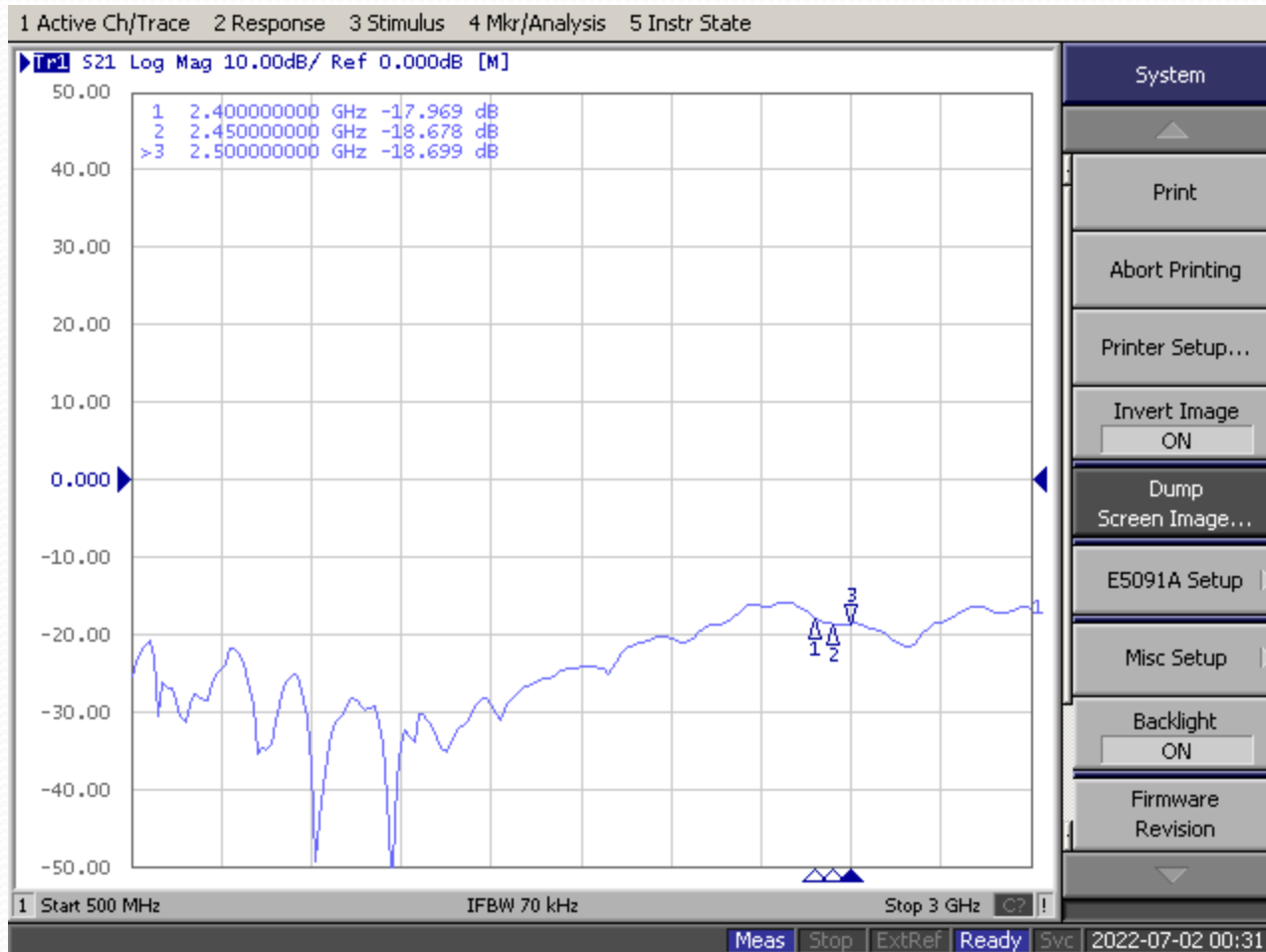
5.18 Isolation Degree

WIFI(3)-WIFI(6)



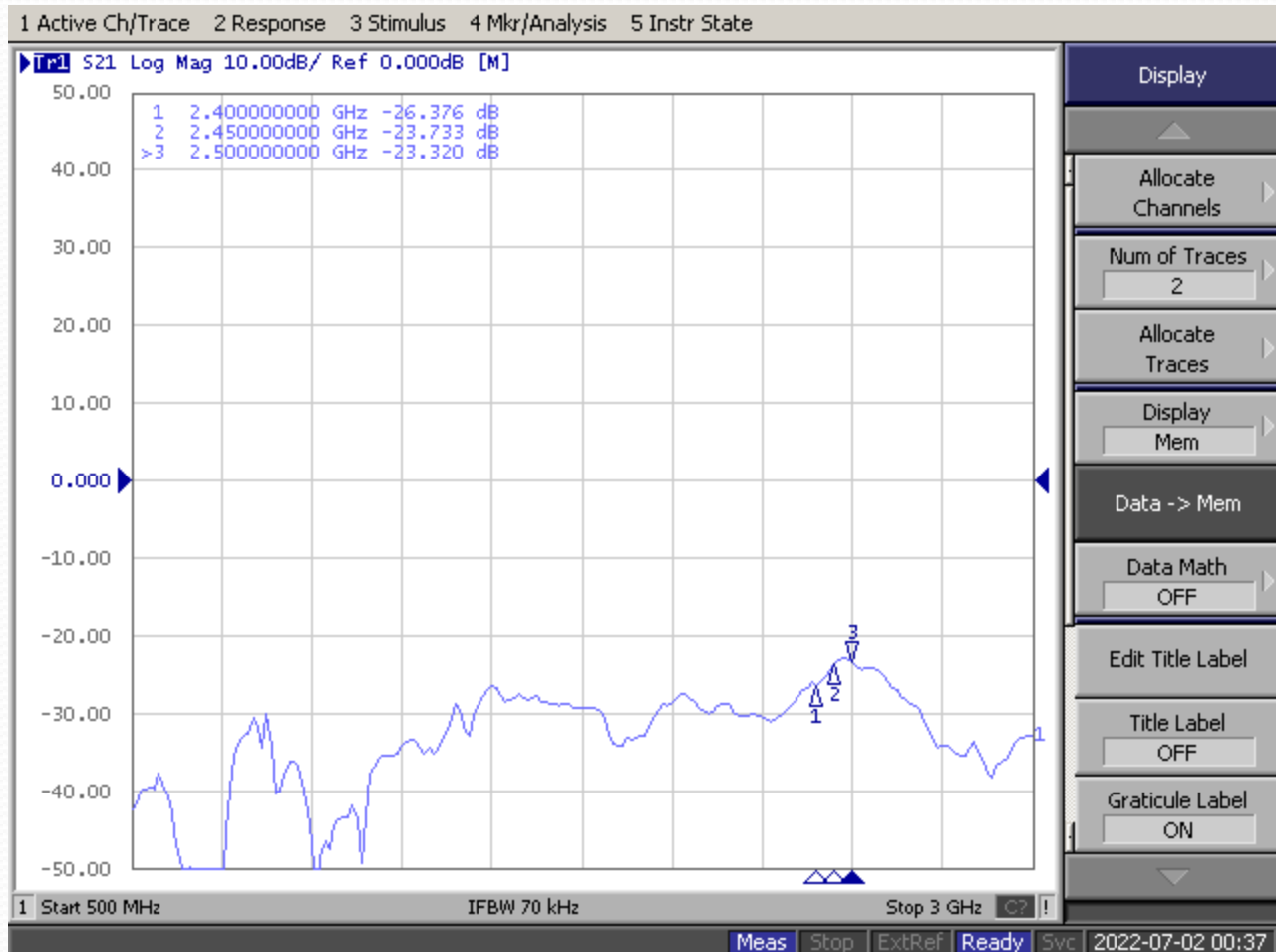
5.19 Isolation Degree

ANT0-WIFI(1)



5.20 Isolation Degree

ANT2-WIFI(2)



7.2 Wi-Fi Active test data

OTA					OTA				
Standard	Band	Channel	TRP	TIS	Standard	Band	Channel	TRP	TIS
WIFI (Station)	WIFI_B (11M)	1	/	/	WIFI (Station)	WIFI_A (54M)	36	19.68	-82.53
WIFI (Station)	WIFI_B (11M)	6	16.88	-81.8	WIFI (Station)	WIFI_A (54M)	149	-19.7	-83.54
WIFI (Station)	WIFI_B (11M)	11	16.44	-81.84	WIFI (Station)	WIFI_A (54M)	165	19.36	-84.57

8.1 Efficiency and gain

ANT0						ANT3					
Frequency/Mhz	MaxGain/dBi	Efficiency / %	Frequency/Mhz	MaxGain/dBi	Efficiency / %	Frequency/Mhz	MaxGain/dBi	Efficiency / %	Frequency/Mhz	MaxGain/dBi	Efficiency / %
600	2.81	46.67	3300	5.02	47.97	600	-0.73	28.31	3300	5.93	51.88
630	1.64	39.26	3400	4.42	48.64	630	0.96	39.08	3400	5.88	51.76
660	3.82	30.76	3500	3.26	47.64	660	5.2	41.21	3500	5.92	55.34
690	2.3	22.54	3600	4.85	58.21	690	3.87	32.96	3600	6.95	68.08
720	2.87	38.99	3700	3.97	55.98	720	2.56	28.31	3700	6.48	67.76
750	3.37	40.46	3800	3.95	59.43	750	2.38	26.67	3800	5.93	74.47
780	3.26	38.46	3900	5.08	65.16	780	0.71	26.42	3900	6.3	80.72
810	3.37	51.05	4000	4.4	52.12	810	0.91	38.19	4000	4.82	69.98
840	1.05	42.66	4100	3.81	50.47	840	1.14	38.55	4100	5.3	71.61
870	2.8	44.46	4200	3.8	52.84	870	1.26	33.11	4200	5.96	67.14
900	2	44.46	4300	3.18	48.19	900	0.96	40.93	4300	5.31	59.02
930	3.59	46.03	4400	3.49	44.67	930	0.94	41.02	4400	5.7	58.48
960	4.58	49.77	4500	3.04	38.46	960	3.07	46.24	4500	4.15	48.87
1710	4.8	59.7	4600	3.96	43.65	1710	4.8	49.09	4600	5.52	48.75
1760	4.8	64.42	4700	5.33	51.05	1760	4.8	50.82	4700	5.99	55.59
1810	5.39	70.79	4800	3.5	40.93	1810	4.86	59.98	4800	4.73	53.21
1860	5.84	69.82	4900	1.64	33.27	1860	5.6	61.09	4900	3.03	49.66
1910	4.97	64.27	5000	1.02	33.88	1910	5.44	64.12	5000	2.36	46.03
1960	4.06	62.95				1960	5.03	64.42			
2010	4.84	61.38				2010	5.29	63.83			
2060	4.38	58.61				2060	4.62	57.81			
2110	2.93	57.68				2110	3.28	51.64			
2160	3.32	58.21				2160	3.11	47.86			
2210	3.37	61.09				2210	2.87	43.15			
2260	4.33	62.37				2260	3.68	46.24			
2310	4.7	65.46				2310	4.59	53.83			
2360	4.35	61.66				2360	4.12	56.1			
2410	2.21	51.52				2410	4.4	56.89			
2460	3.67	54.83				2460	4.51	55.59			
2510	3.94	51.88				2510	3.84	49.43			
2560	3.52	57.68				2560	3.34	45.71			
2610	3.67	62.52				2610	3.13	46.88			
2660	3.97	63.24				2660	3.52	46.88			

8.2 Efficiency and gain

ANT1						ANT2					
Frequency /Mhz	MaxGain/ dBi	Efficiency / %	Frequency /Mhz	MaxGain/ dBi	Efficiency / %	Frequency /Mhz	MaxGain/ dBi	Efficiency / %	Frequency /Mhz	MaxGain/ dBi	Efficiency / %
1710	4.8	32.66	3300	3.73	35.56	1710	-0.65	24.27	3300	4.62	35.65
1760	-0.13	26.55	3400	3.63	35.48	1760	-0.17	26	3400	4.61	34.12
1810	1.1	31.19	3500	0.8	20.09	1810	1.52	35.08	3500	4.14	27.54
1860	3.36	42.07	3600	0.01	25.06	1860	2.9	44.67	3600	3.91	34.67
1910	3.68	44.57	3700	0.36	29.51	1910	3.02	47.53	3700	1.97	25.18
1960	2.96	42.95	3800	2.7	36.73	1960	1.94	44.36	3800	0.85	24.89
2010	3.45	41.5	3900	2.63	38.11	2010	1.88	39.26	3900	4.21	39.54
2060	3.53	42.17	4000	1.11	35.16	2060	1.65	31.99	4000	2.99	41.11
2110	4.87	52.6	4100	2.45	39.17	2110	1.36	28.77	4100	1.75	34.91
2160	4.43	49.09	4200	1.77	39.63	2160	1.19	27.73	4200	2.2	42.85
2210	2.91	42.66	4300	1.16	34.75	2210	2.33	30.55	4300	2.02	36.22
2260	2.1	46.34	4400	2.9	37.15	2260	4.02	40.74	4400	2.54	36.98
2310	2.58	50.93	4500	2.68	33.5	2310	4.94	50.58	4500	3.24	38.46
2360	2.99	47.64	4600	1.29	30.55	2360	4.75	48.08	4600	2.21	29.58
2410	2.28	43.65	4700	2.16	33.88	2410	4.04	44.46	4700	2.7	31.26
2460	2.86	43.25	4800	1.64	29.58	2460	5.36	43.85	4800	3.02	34.43
2510	3.51	42.07	4900	1.02	29.04	2510	5.15	38.28	4900	1.75	31.48
2560	4.07	43.75	5000	0.81	25.06	2560	4.57	35.08	5000	1.01	29.65
2610	4.37	47.32				2610	4.19	36.9			
2660	4.48	46.56				2660	4.01	38.55			

8.3 Efficiency and gain

Wi-Fi-1			Wi-Fi-2		
Frequenc y / MHz	Gain/ dB	Efficiency / %	Frequenc y / MHz	Gain/ dB	Efficiency / %
2400	2.15	60.81	2400	3.9	65.77
2410	2.33	61.8	2410	4.04	68.08
2420	2.16	62.23	2420	4.27	70.63
2430	1.97	60.39	2430	4.33	70.63
2440	2.1	62.23	2440	4.33	73.45
2450	2.11	62.37	2450	4.25	74.13
2460	2.27	62.81	2460	4.21	75.16
2470	2.61	62.23	2470	4.12	74.3
2480	2.9	64.71	2480	4.27	76.91
2490	3.3	62.37	2490	4.21	72.61
2500	3.74	67.92	2500	4.26	78.89

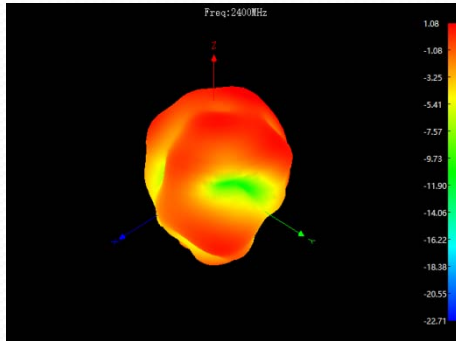


8.4 WI-FI Efficiency and gain

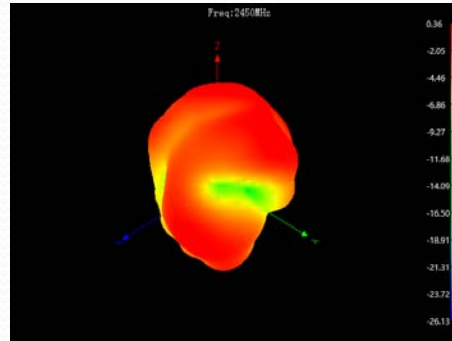
Wi-Fi-3			Wi-Fi-4			Wi-Fi-5			Wi-Fi-6		
Frequenc y / MHz	Gain/ dB	Efficiency / %	Frequenc y / MHz	Gain/ dB	Efficiency / %	Frequenc y / MHz	Gain/ dB	Efficiency / %	Frequenc y / MHz	Gain/ dB	Efficiency / %
5150	3.88	56.89	5150	2.86	54.08	5150	5.48	58.75	5150	3.68	-2.53
5200	3.74	60.26	5200	2.77	47.42	5200	5.22	58.75	5200	4.18	-2.55
5250	2.94	61.38	5250	2.38	45.19	5250	5.06	58.21	5250	4.11	-2.52
5300	2.04	60.53	5300	2.46	44.87	5300	5.53	55.46	5300	4.32	-2.53
5350	2.62	62.37	5350	2.24	48.31	5350	5.08	55.59	5350	4.38	-2.41
5400	3.03	64.27	5400	2.73	51.76	5400	5	56.75	5400	4.51	-2.35
5450	3.58	65.31	5450	3.11	54.83	5450	5.38	61.94	5450	4.22	-2.2
5500	4.46	67.61	5500	3.77	58.75	5500	6.29	66.99	5500	4.35	-1.96
5550	4.62	67.92	5550	3.79	61.8	5550	6.48	68.23	5550	4.7	-1.83
5600	4.49	67.45	5600	4.11	63.97	5600	6.14	67.45	5600	4.63	-1.78
5650	4.45	67.14	5650	3.7	63.97	5650	6.39	69.82	5650	5.13	-1.75
5700	4.54	67.61	5700	3.68	65.31	5700	6.74	72.28	5700	5.43	-1.63
5750	4.7	68.39	5750	3.92	68.39	5750	6.64	73.45	5750	5.11	-1.52
5800	4.9	69.5	5800	3.95	69.18	5800	6.58	76.03	5800	5.08	-1.42
5850	4.93	69.34	5850	4.01	67.76	5850	6.21	74.3	5850	4.99	-1.49

8.5 Radiation Pattern

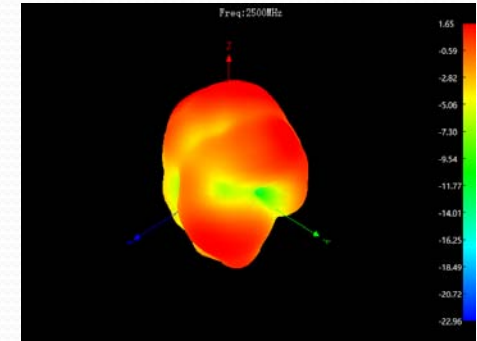
Wi-Fi 2.4G (1)



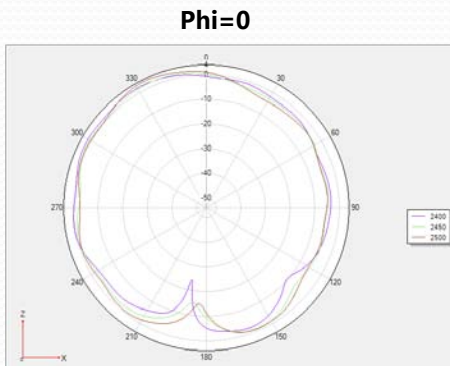
2400Mhz



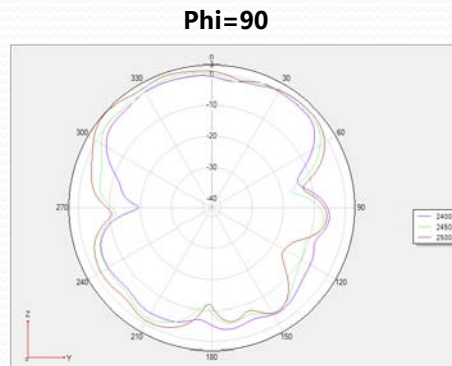
2450Mhz



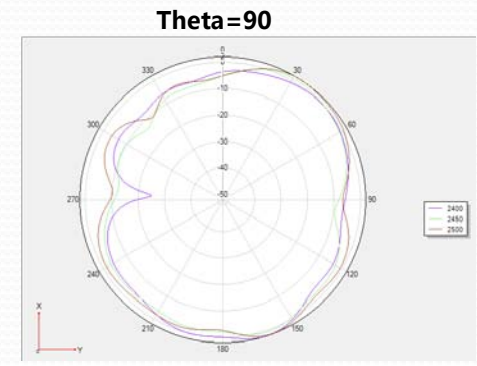
2500Mhz



2400Mhz



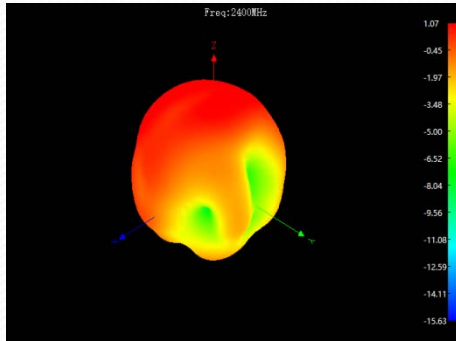
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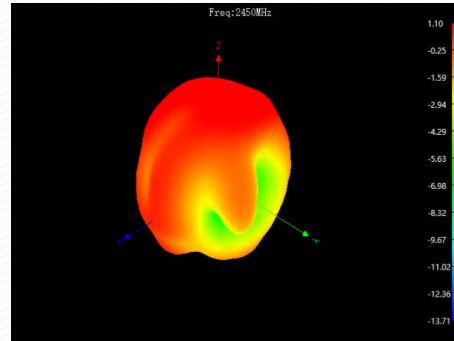
2500Mhz

8.6 Radiation Pattern

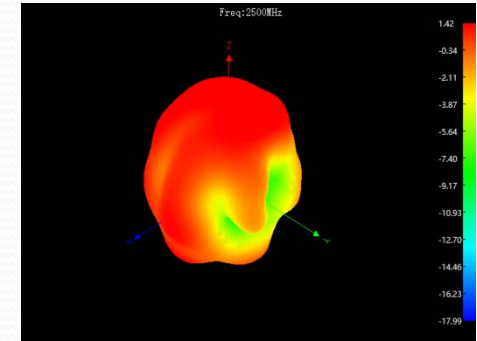
Wi-Fi 2.4G (2)



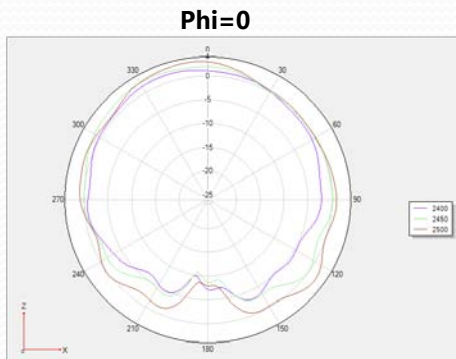
2400Mhz



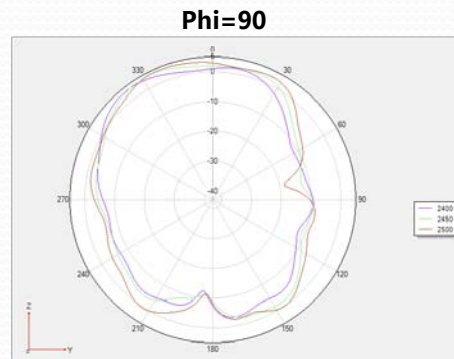
2450Mhz



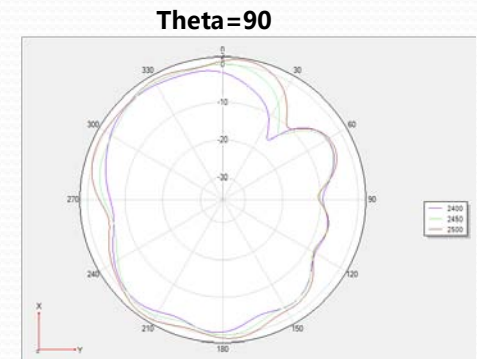
2500Mhz



2400Mhz



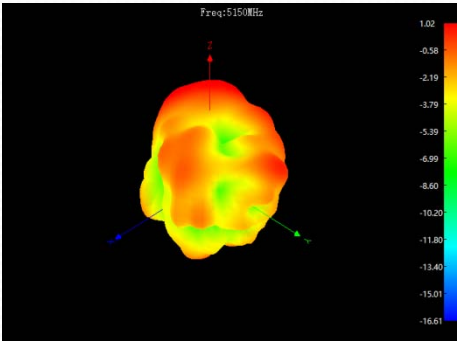
2450Mhz



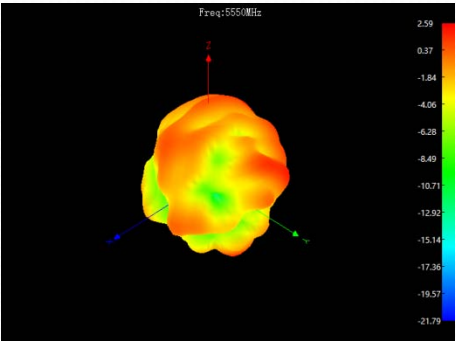
2500Mhz

8.7 Radiation Pattern

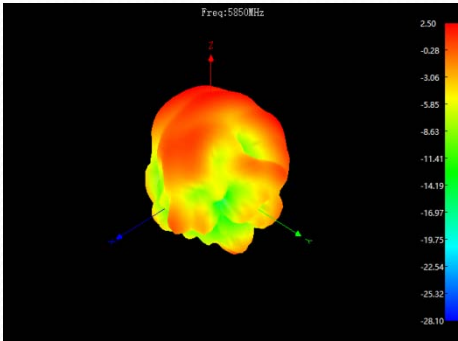
Wi-Fi 5.8G (3)



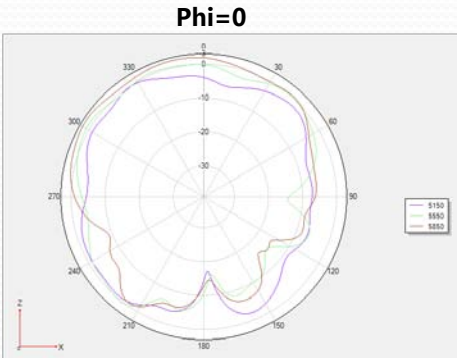
5150Mhz



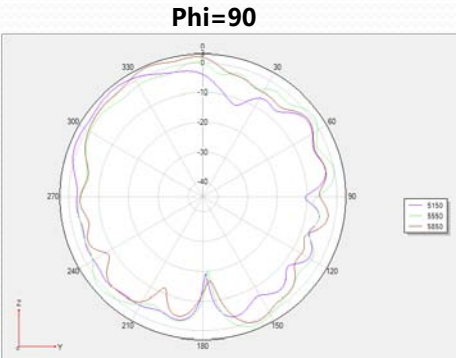
5550Mhz



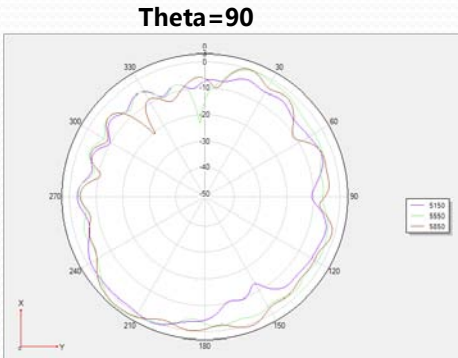
5850Mhz



5150Mhz



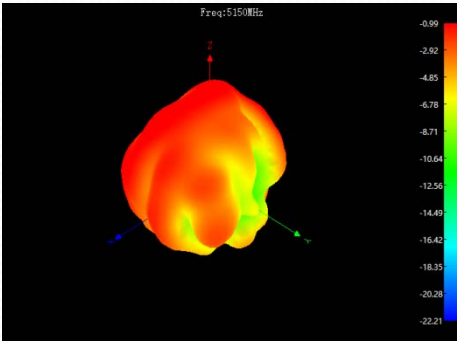
5550Mhz



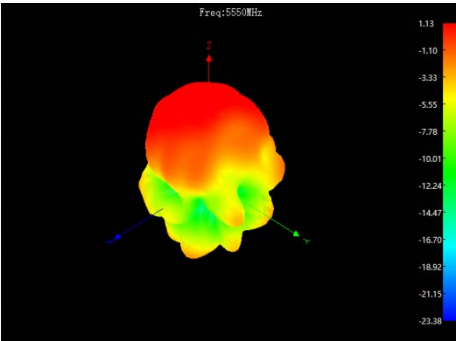
5850Mhz

8.8 Radiation Pattern

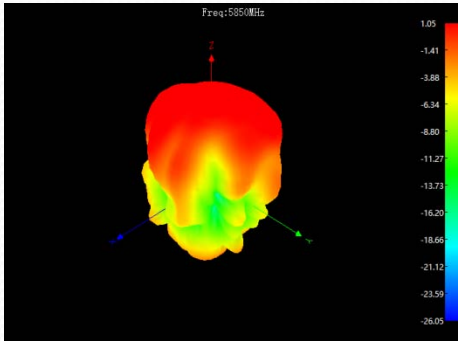
Wi-Fi 5.8G (4)



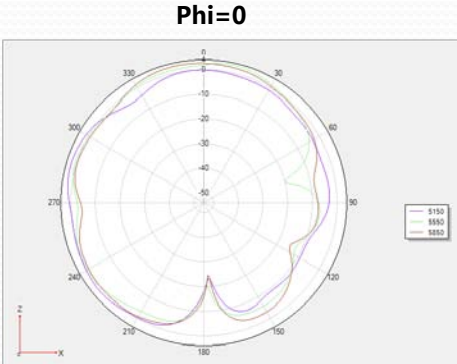
5150Mhz



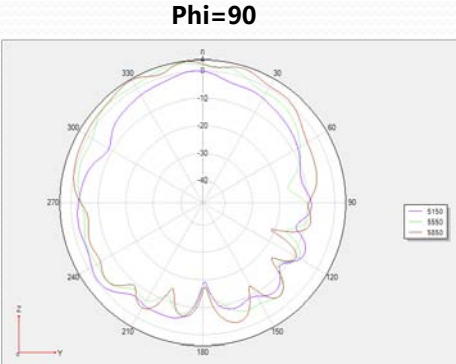
5550Mhz



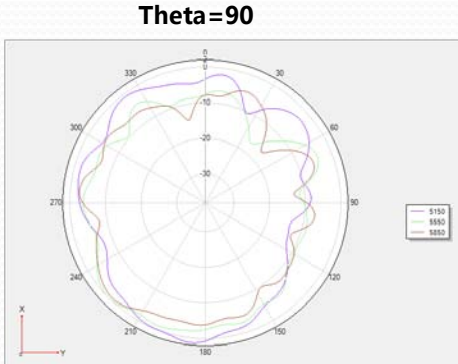
5850Mhz



5150Mhz



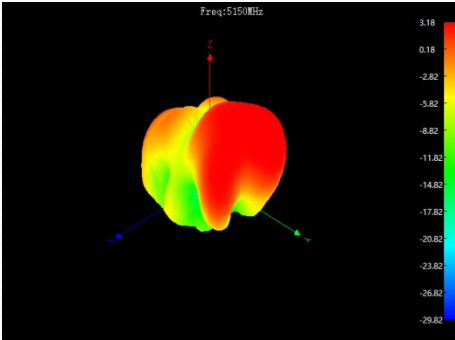
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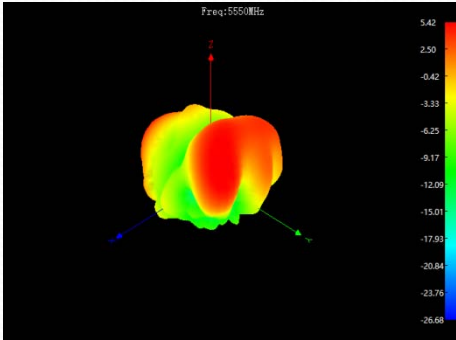
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8.9 Radiation Pattern

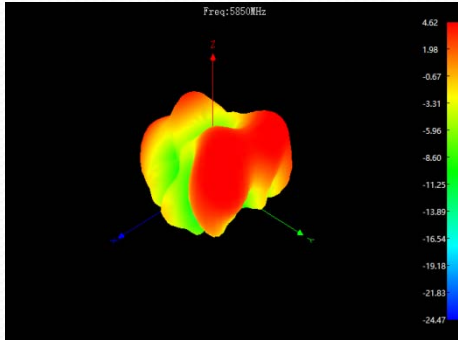
Wi-Fi 5.8G (5)



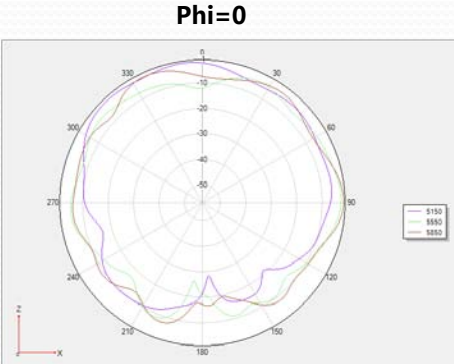
5150Mhz



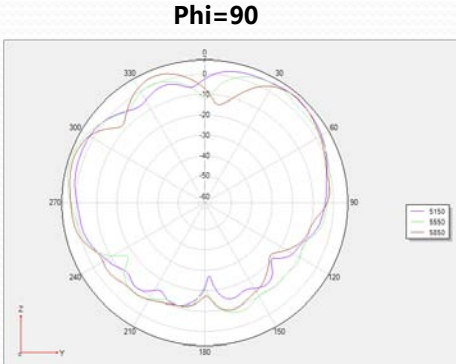
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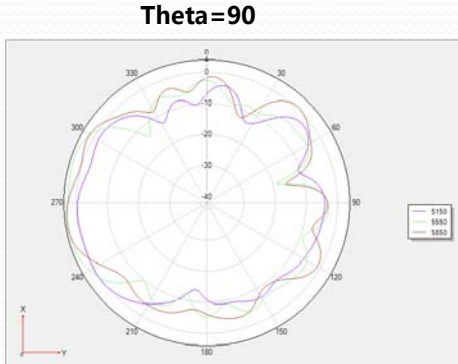
5850Mhz



5150Mhz



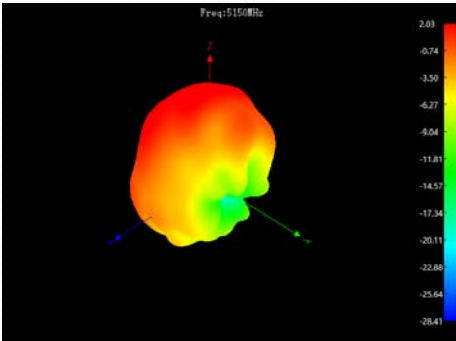
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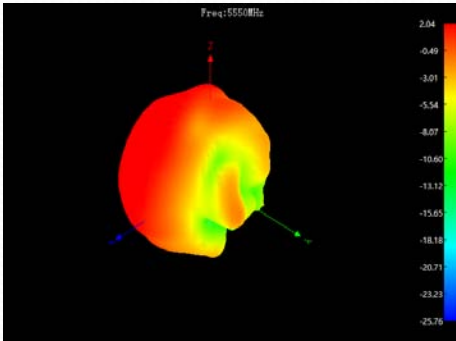
5850Mhz

8.10 Radiation Pattern

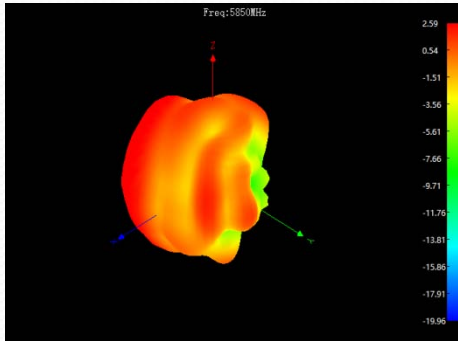
Wi-Fi 5.8G (6)



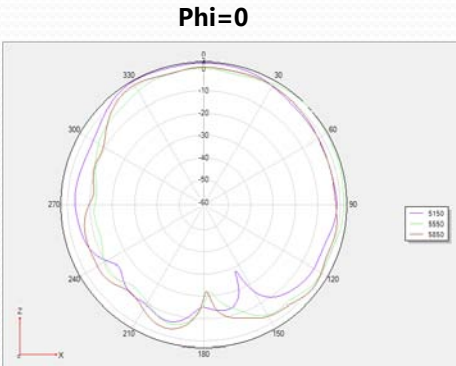
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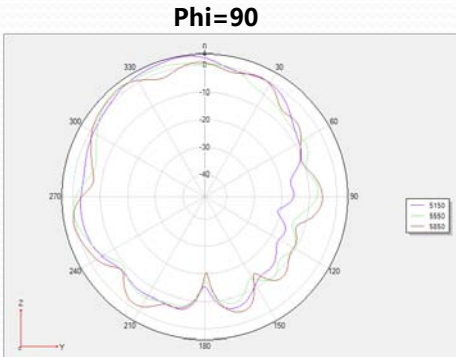
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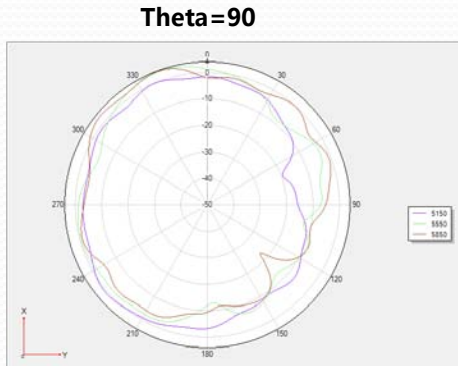
5850Mhz



5150Mhz



5550Mhz



5850Mhz

9.1 Ipex cable



Ipex cable position