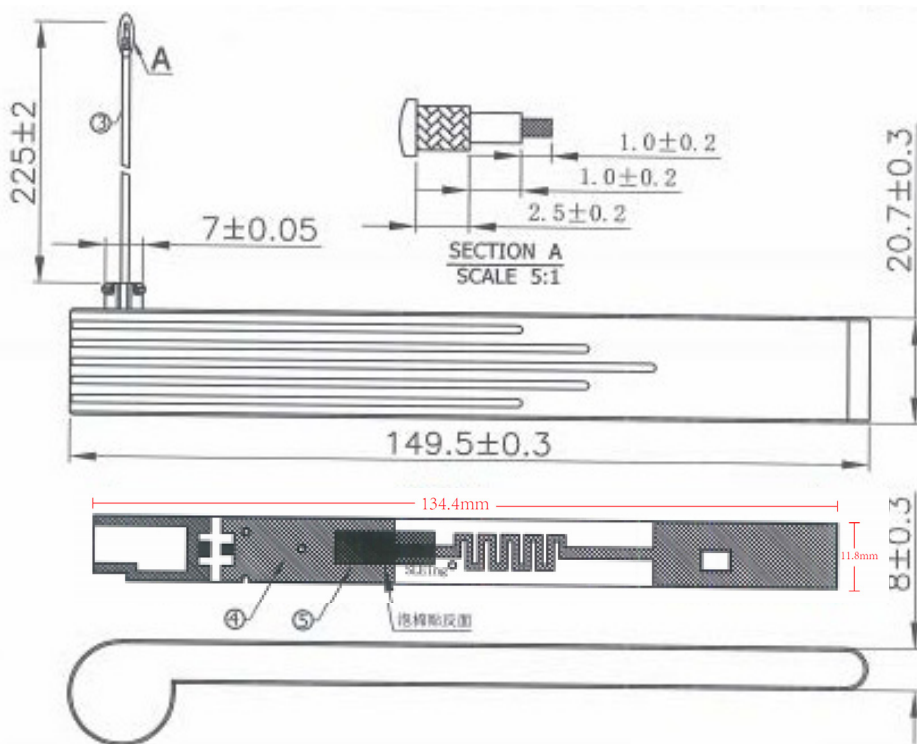


Antenna Specification

Technical Parameter	Indicator requirements
Antenna type	Monopole
Antenna size	2.4G:134.4*11.8mm(without cable) 5G:110.7*11.1mm(without cable)
Antenna polarization	Vertical polarization
Frequency range	2.4-2.5GHz 5.15-5.85GHz
VSWR	≤ -10
Isolation	≤ -20
Gain	5 $\pm$ 0.5dB
Efficiency	>60%
Manufacturer	Dongguan Senling Intelligent Technology Co., Ltd
Address	Room 402, Building 6, Modern Enterprise Accelerator, Dongguan City

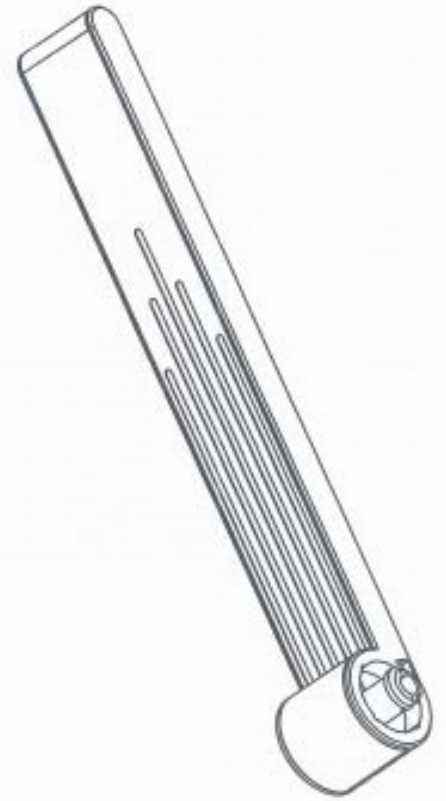
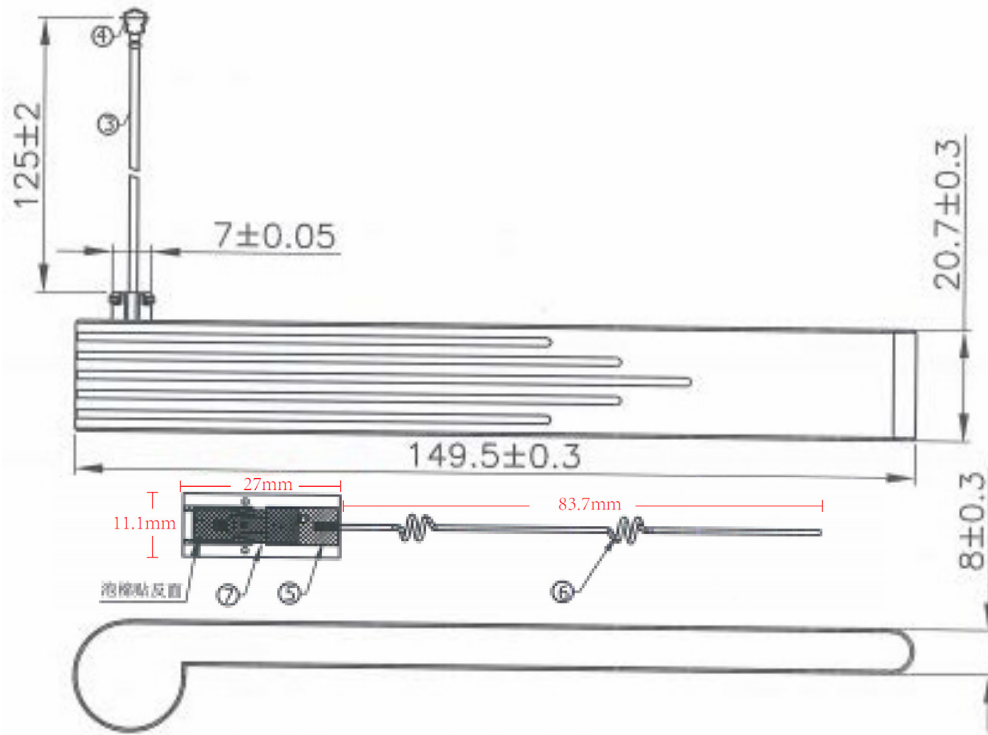
2.4G Antenna

Unit: mm



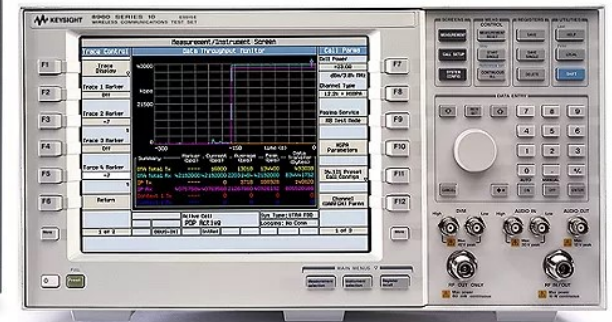
5G Antenna

Unit: mm



Test equipment and setup

1. Network Analyzers: Keysight E5063A ENA
2. Communications Test Set: Agilent E5515C
3. OTA Test System: 743 far-field method darkroom

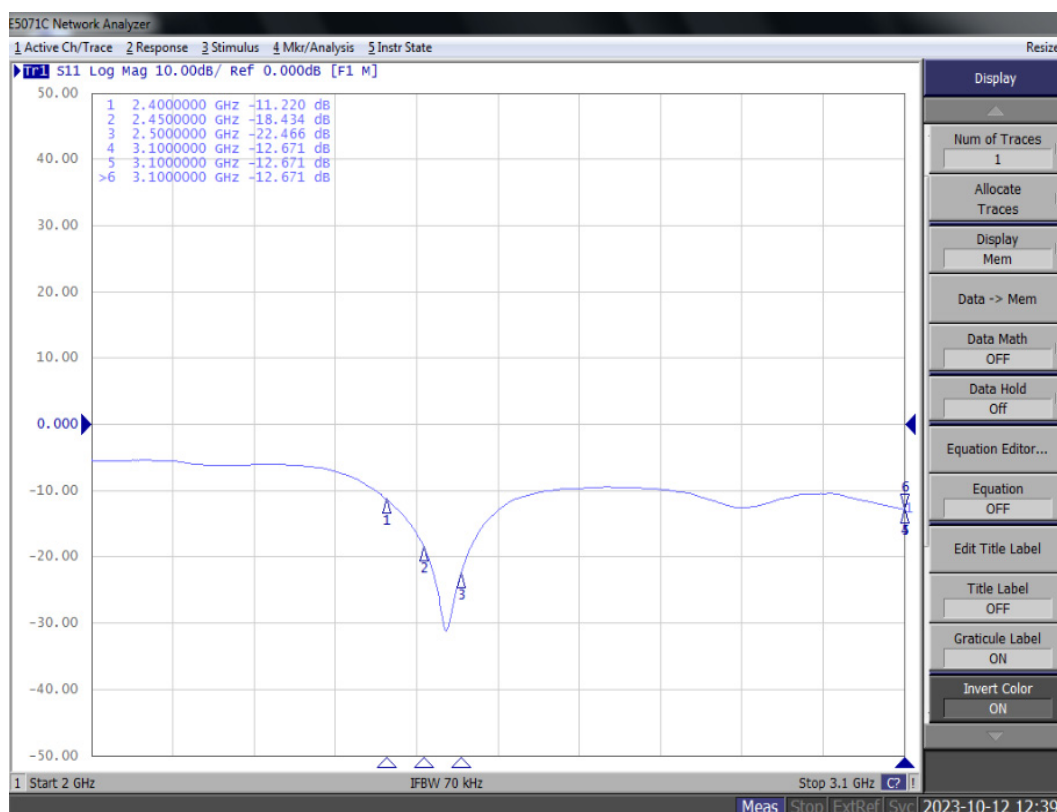


Test data

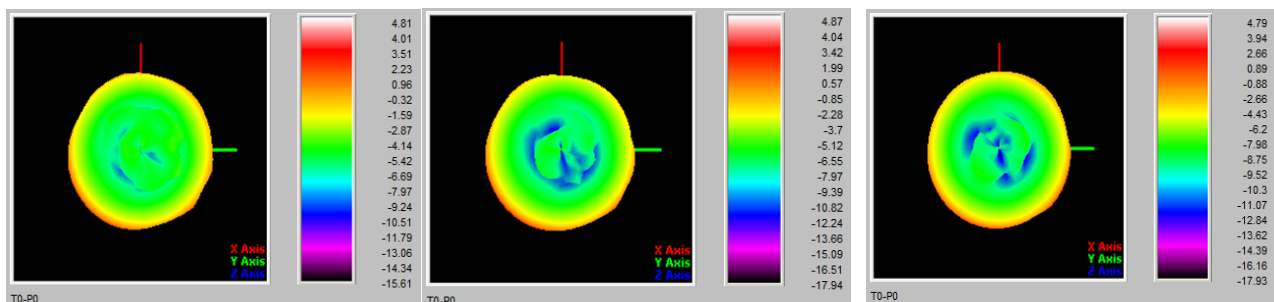
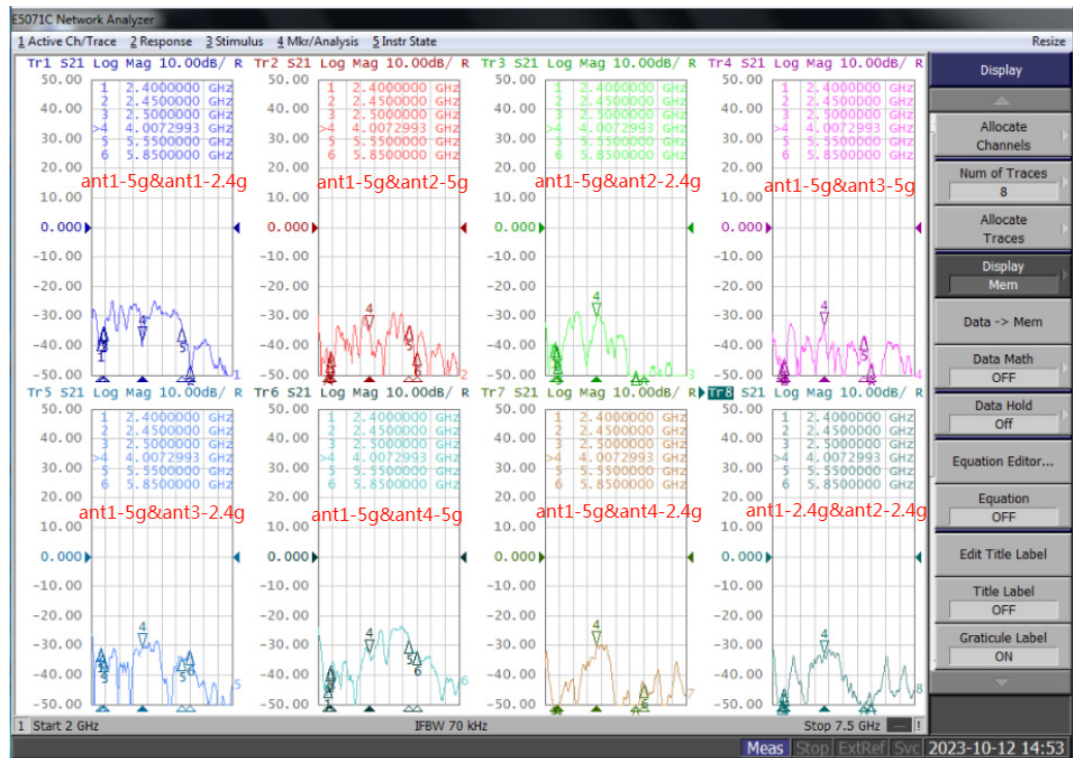
2.4G-1 Antenna: 2400-2500MHz

ANT1	gain	efficiency
Freq. (MHz)		
2400	4.81	65.5
2410	5.04	67.8
2420	5.16	68.6
2430	4.72	69.7
2440	4.69	67.9
2450	4.87	69.9
2460	5.13	70.4
2470	4.91	71.2
2480	4.73	70.5
2490	4.57	72.8
2500	4.79	73.3

Return Loss Test

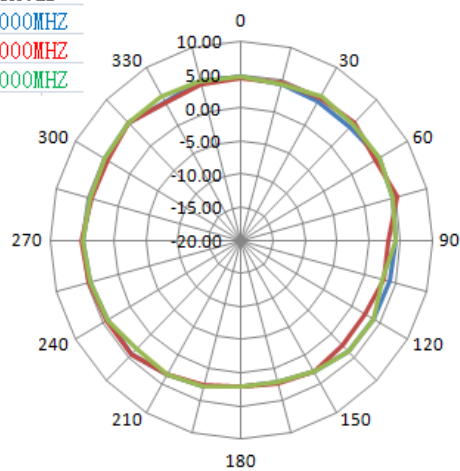


Isolation testing



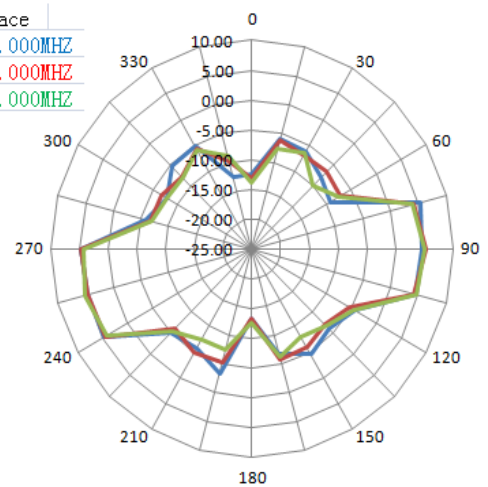
Horizontal

2400.000MHZ
2450.000MHZ
2500.000MHZ



E1 Face

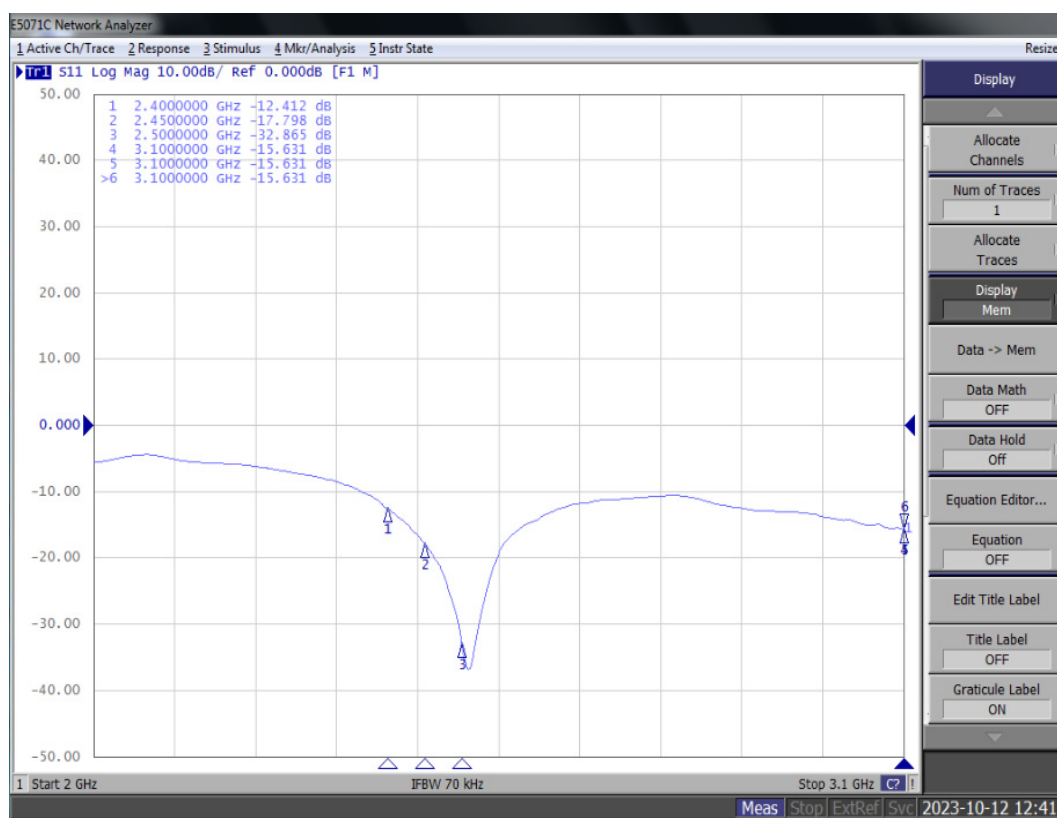
2400.000MHZ
2450.000MHZ
2500.000MHZ



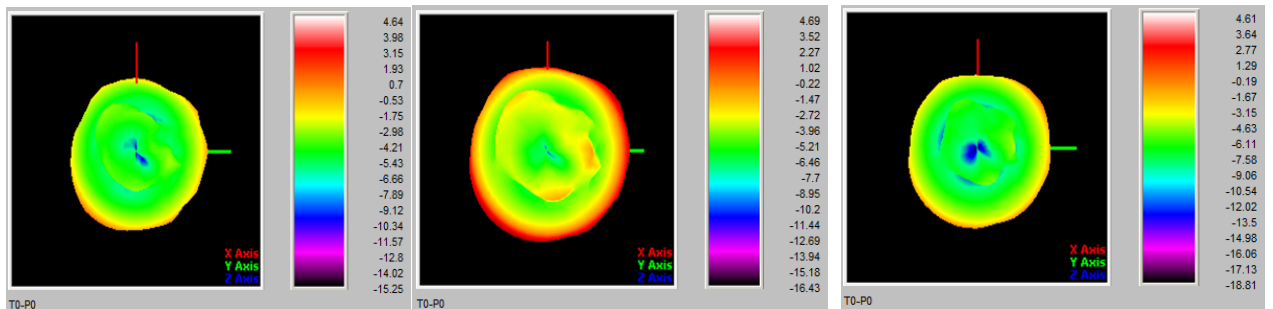
2.4G-2 Antenna: 2400-2500MHz

ANT2	gain	efficiency
Freq. (MHz)		
2400	4.64	64.3
2410	4.75	65.1
2420	4.56	66.7
2430	4.83	65.8
2440	4.71	66.9
2450	4.69	68.3
2460	4.53	69.7
2470	4.72	68.2
2480	4.86	69.4
2490	4.54	70.2
2500	4.61	71.8

Return Loss Test



Isolation testing

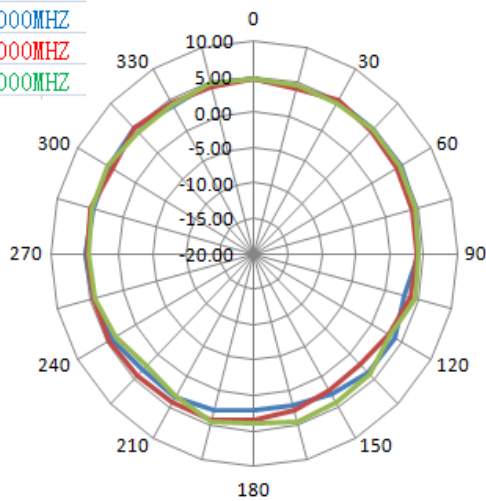


Horizontal

2400.000MHZ

2450.000MHZ

2500.000MHZ

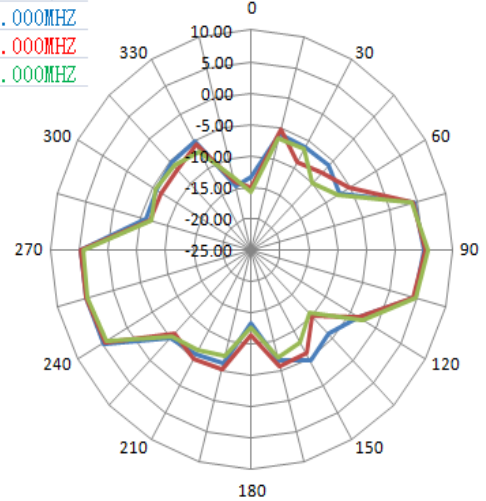


E1 Face

2400.000MHZ

2450.000MHZ

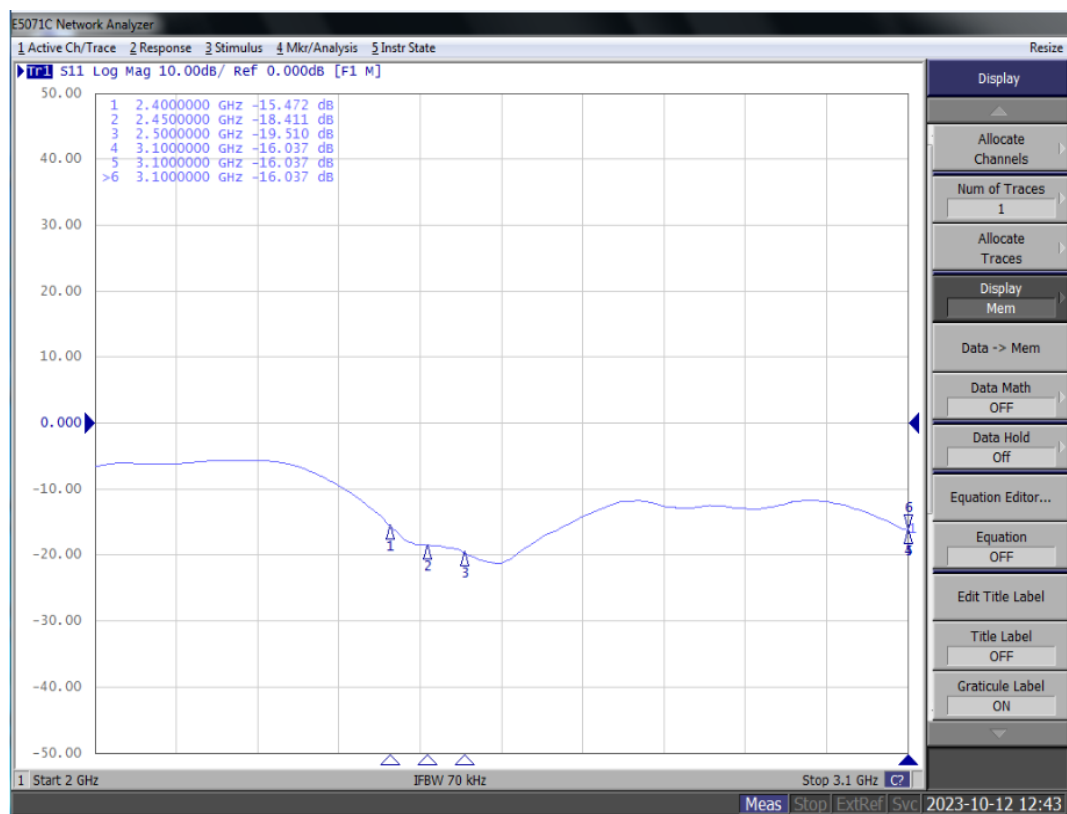
2500.000MHZ



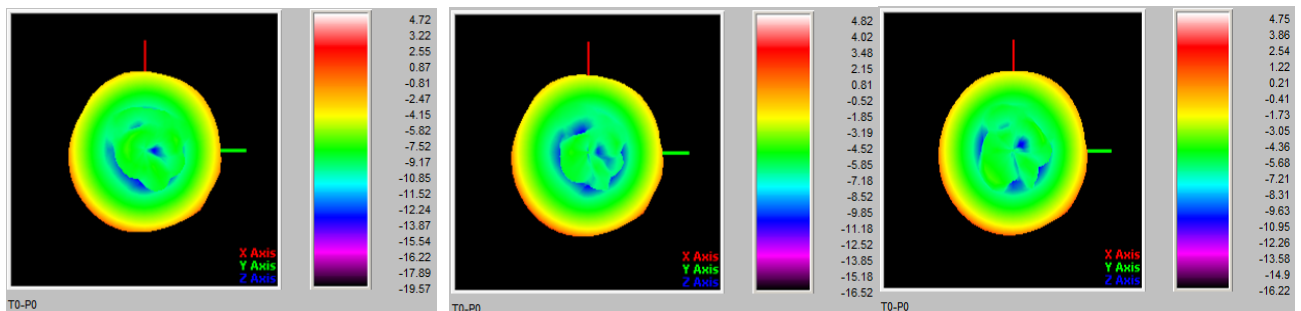
2.4G-3 Antenna: 2400-2500MHz

ANT3		
Freq. (MHz)	gain	efficiency
2400	4.72	65.3
2410	4.88	66.9
2420	5.02	67.4
2430	4.91	68.3
2440	4.77	66.7
2450	4.82	68.2
2460	5.05	69.7
2470	4.83	70.5
2480	4.65	69.4
2490	4.94	71.2
2500	4.75	72.1

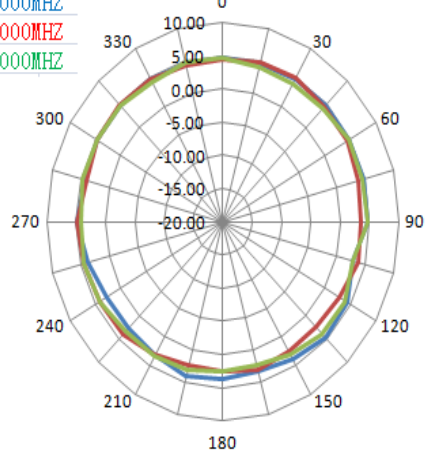
Return Loss Test



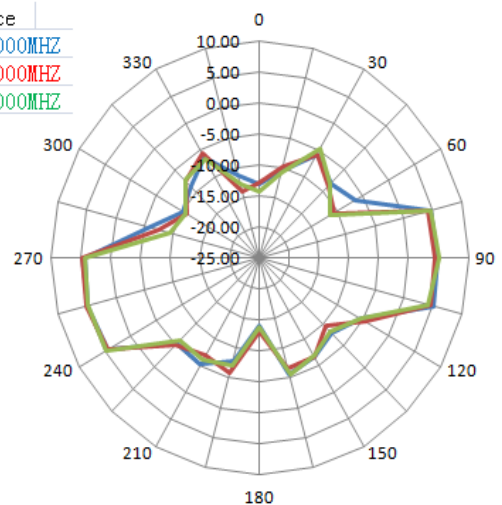
Isolation testing



Horizontal
2400.000MHZ
2450.000MHZ
2500.000MHZ



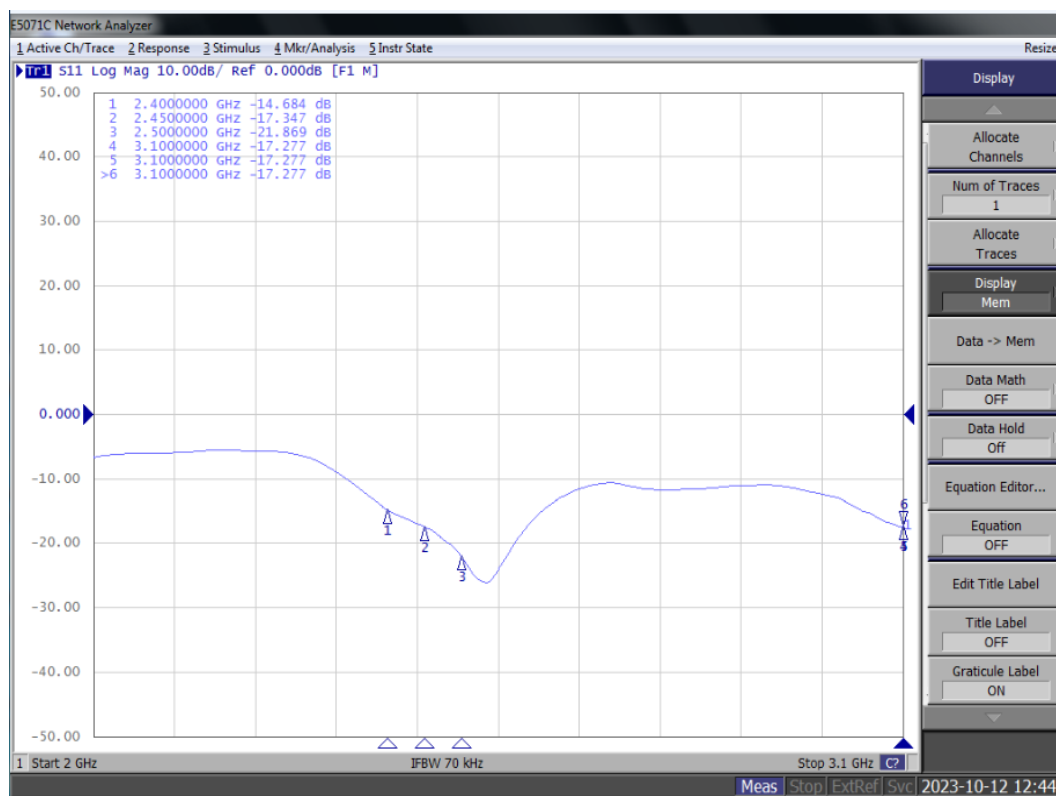
E1 Face
2400.000MHZ
2450.000MHZ
2500.000MHZ



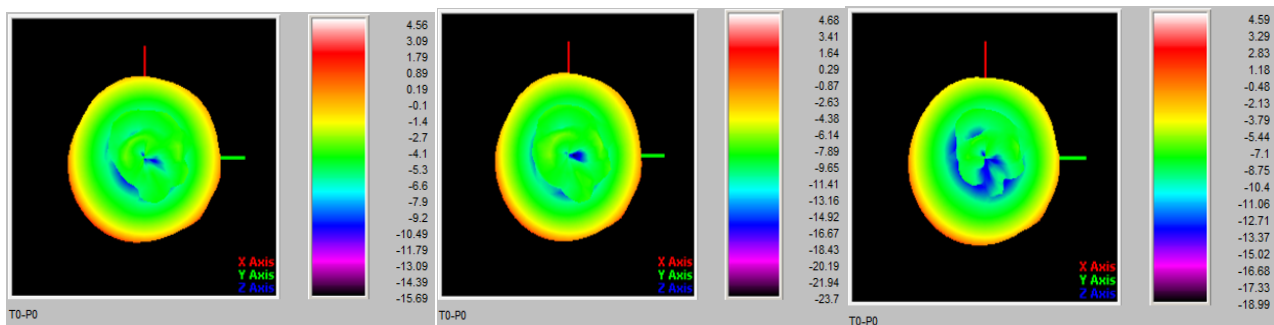
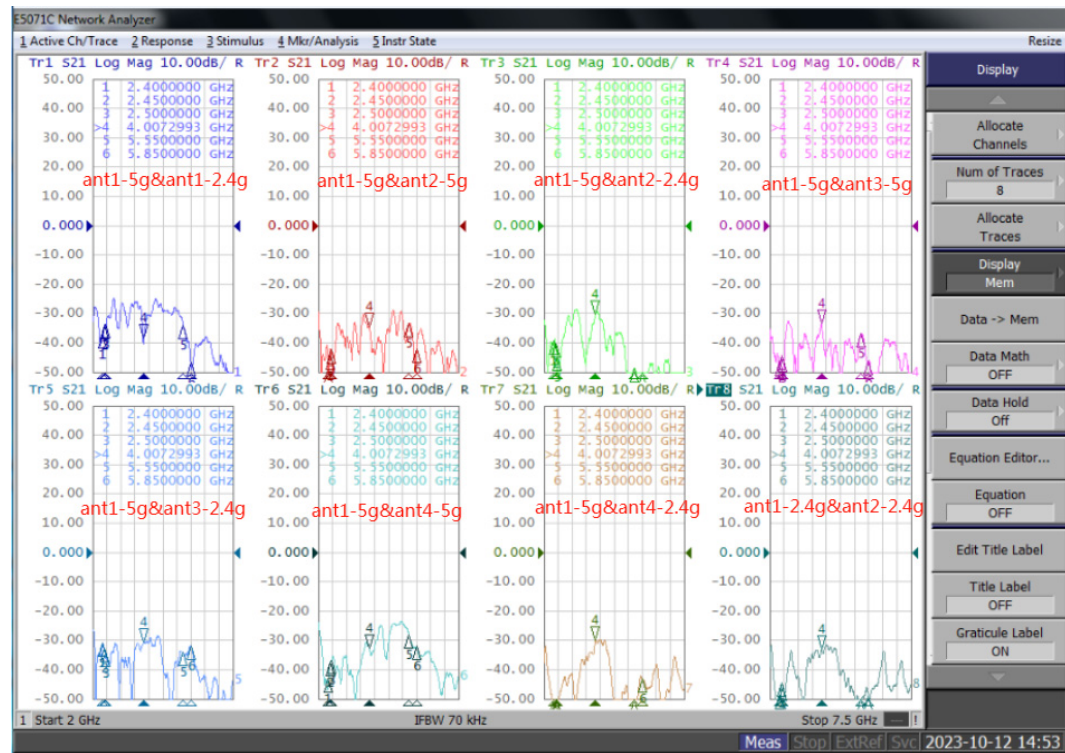
2.4G-4 Antenna: 2400-2500MHz

ANT4		
Freq. (MHz)	gain	efficiency
2400	4.56	65.9
2410	4.78	65.3
2420	4.86	66.7
2430	5.12	67.5
2440	4.94	68.4
2450	4.68	69.1
2460	5.01	71.2
2470	4.68	71.8
2480	4.81	72.5
2490	4.77	73.4
2500	4.59	74.2

Return Loss Test

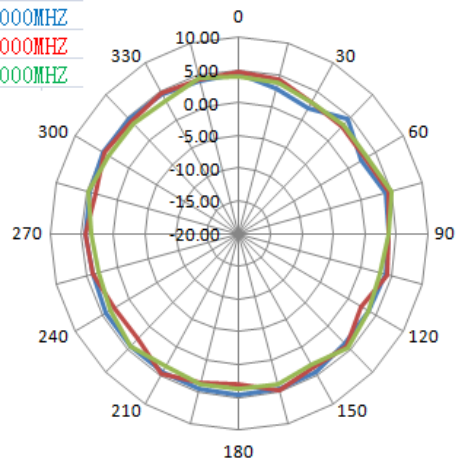


Isolation testing



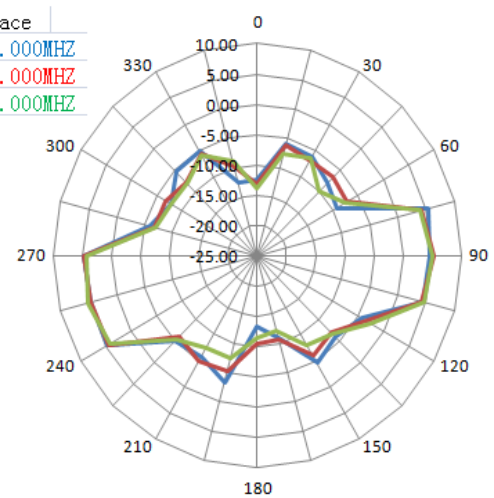
Horizontal

2400.000MHZ
2450.000MHZ
2500.000MHZ



E1 Face

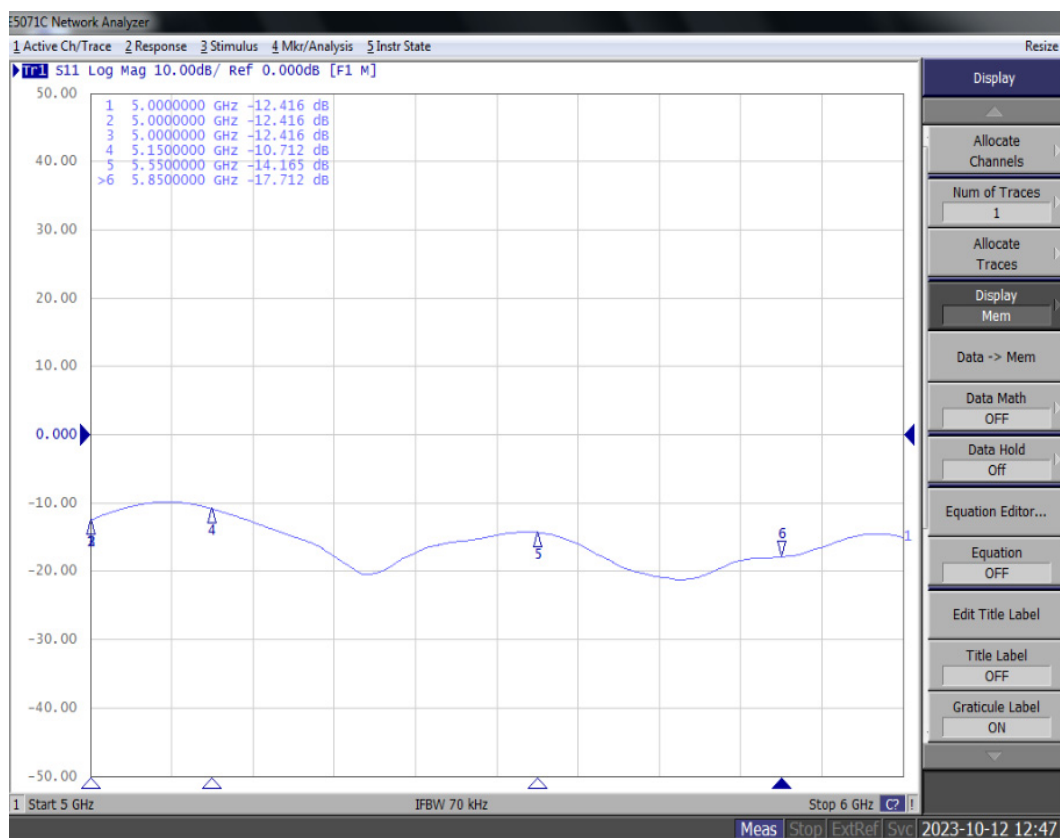
2400.000MHZ
2450.000MHZ
2500.000MHZ



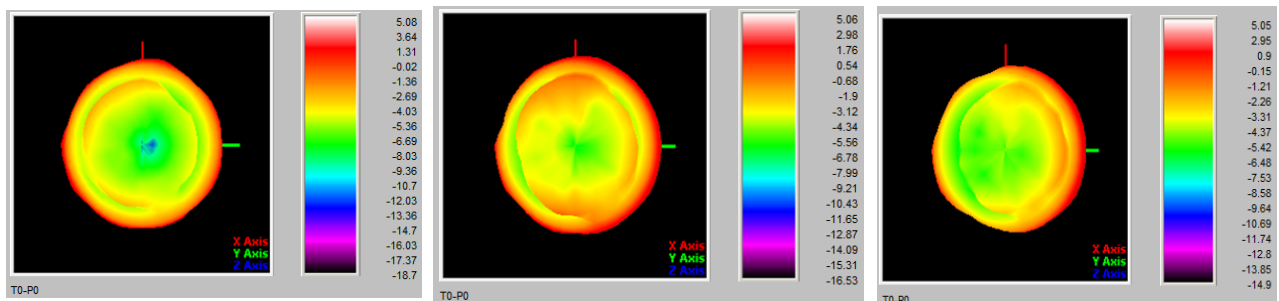
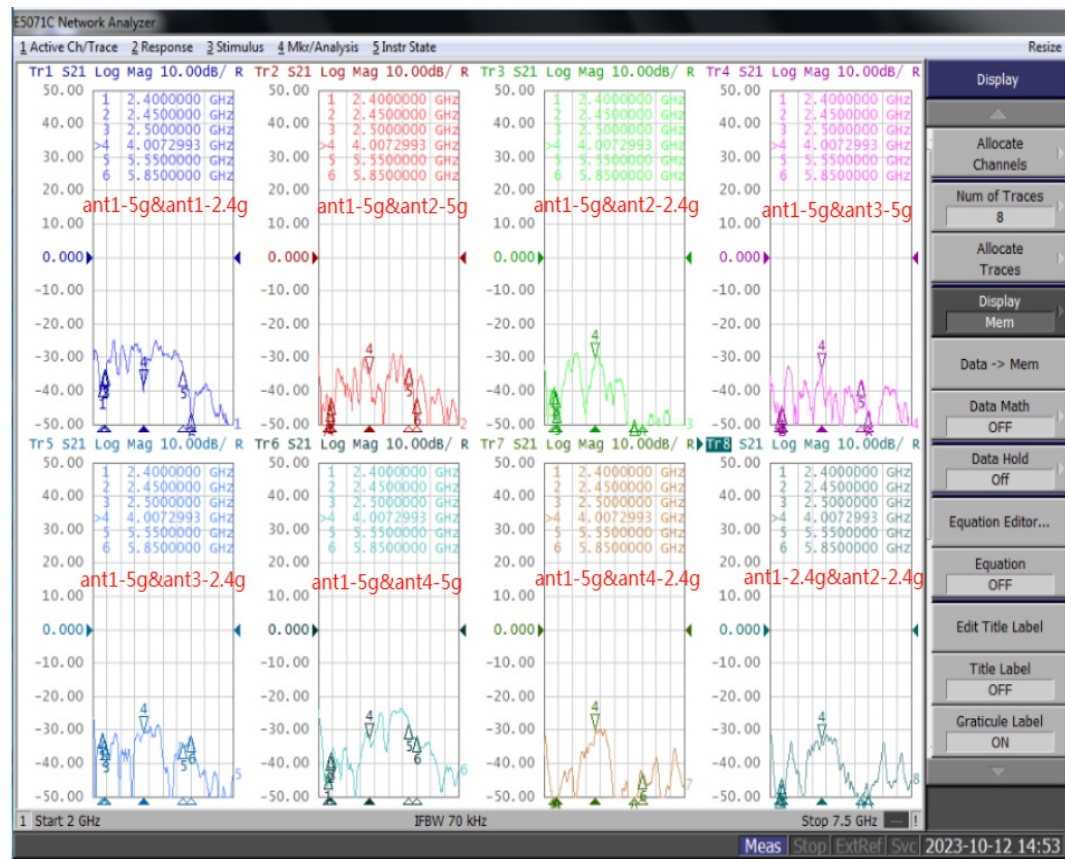
5G-1 Antenna: 5150-5850MHz

ANT1	gain	efficiency
Freq. (MHz)		
5150	5.08	68.5
5200	4.83	67.1
5250	4.92	69.3
5300	5.11	67.2
5350	4.92	65.8
5400	4.81	66.4
5450	5.13	67.2
5500	5.06	69.1
5550	4.78	65.5
5600	4.69	67.9
5650	4.98	68.7
5700	5.09	65.9
5750	4.81	69.2
5800	4.93	67.1
5850	5.05	66.5

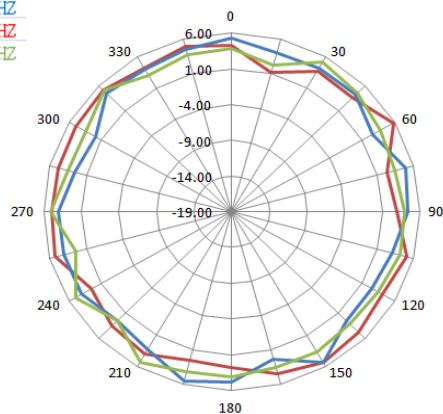
Return Loss Test



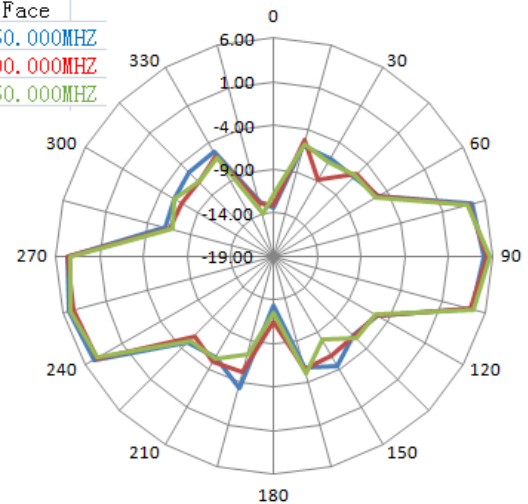
Isolation testing



Horizontal
5150.000MHZ
5500.000MHZ
5850.000MHZ



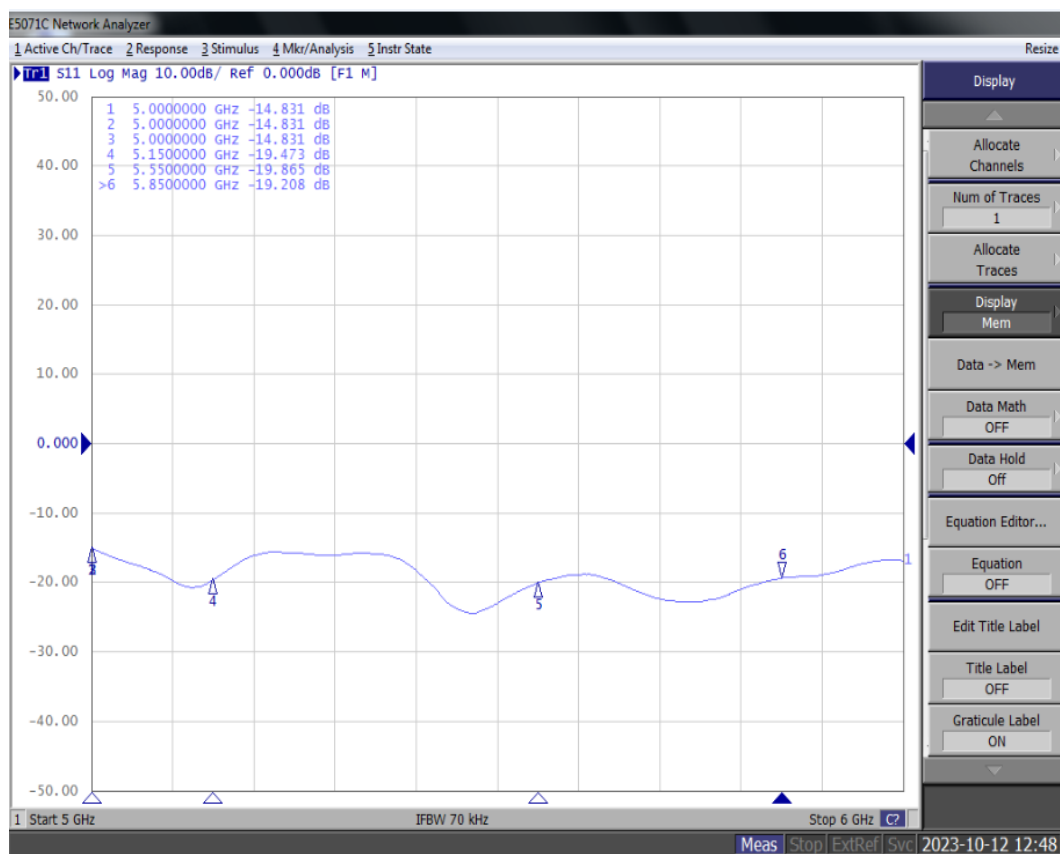
E1 Face
5150.000MHZ
5500.000MHZ
5850.000MHZ



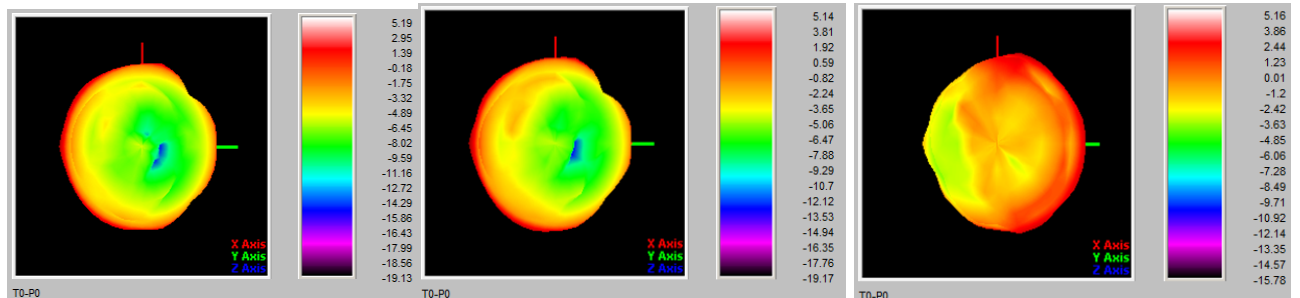
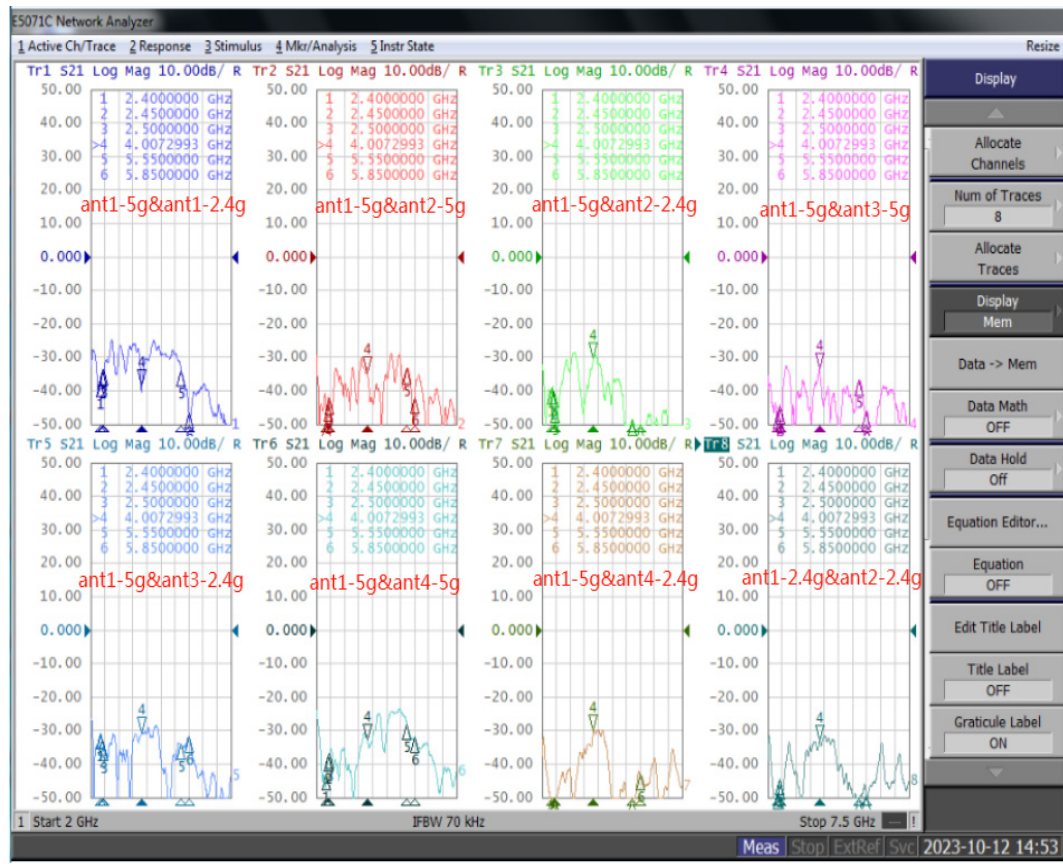
5G-2 Antenna: 5150-5850MHz

ANT2	gain	efficiency
Freq. (MHz)		
5150	5.19	67.2
5200	4.78	65.8
5250	5.12	66.3
5300	4.89	69.1
5350	4.79	67.5
5400	4.93	65.9
5450	5.01	68.4
5500	5.14	67.2
5550	4.94	68.5
5600	4.87	66.8
5650	4.75	67.3
5700	4.89	68.1
5750	4.79	66.9
5800	5.02	65.9
5850	5.16	68.7

Return Loss Test

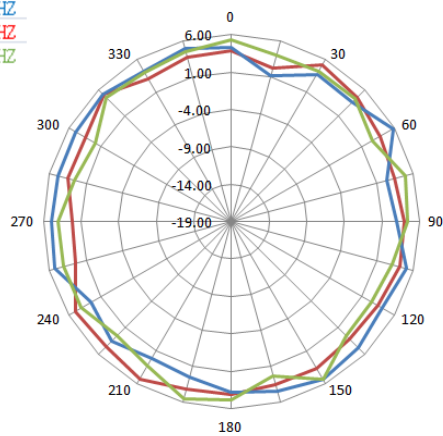


Isolation testing



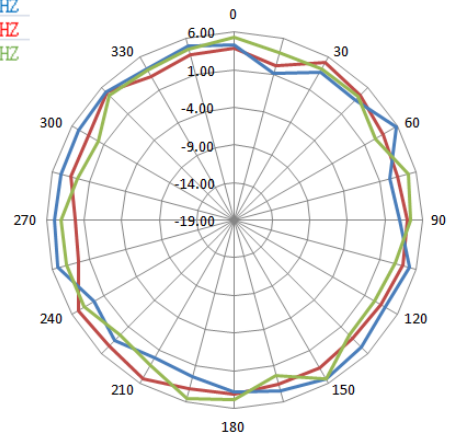
Horizontal

5150.000MHZ
5500.000MHZ
5850.000MHZ



Horizontal

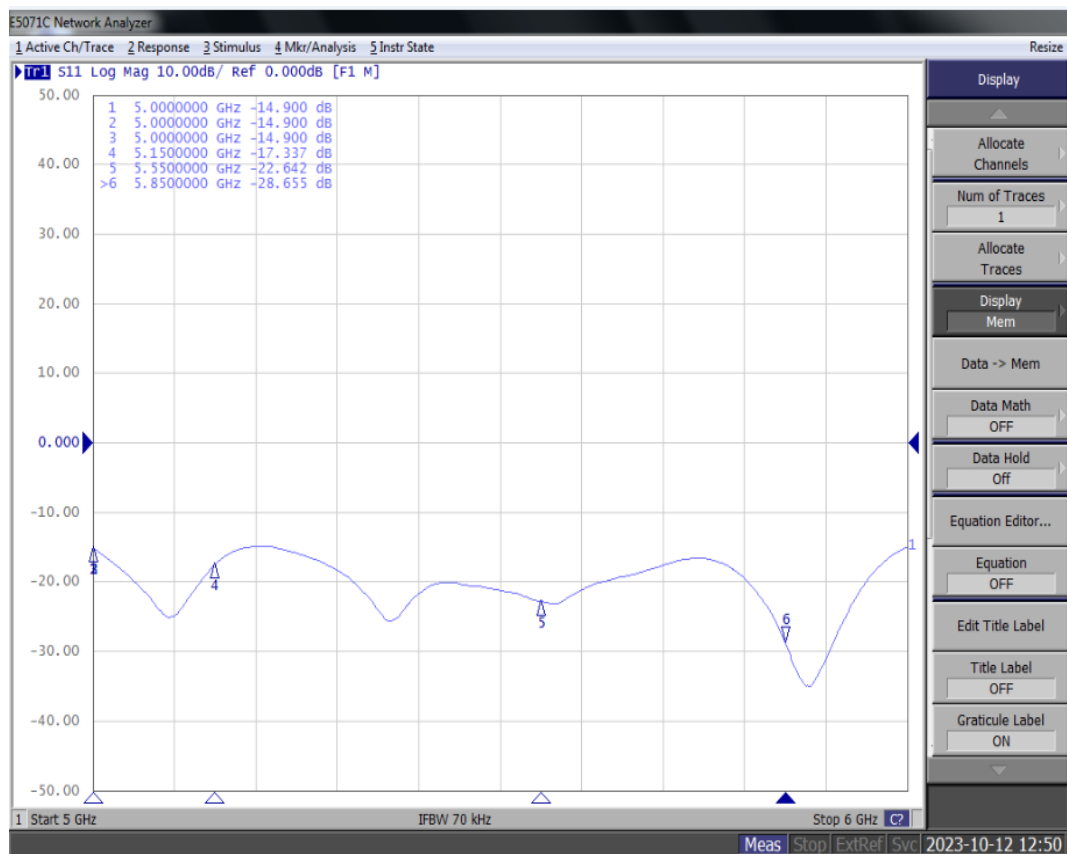
5150.000MHZ
5500.000MHZ
5850.000MHZ



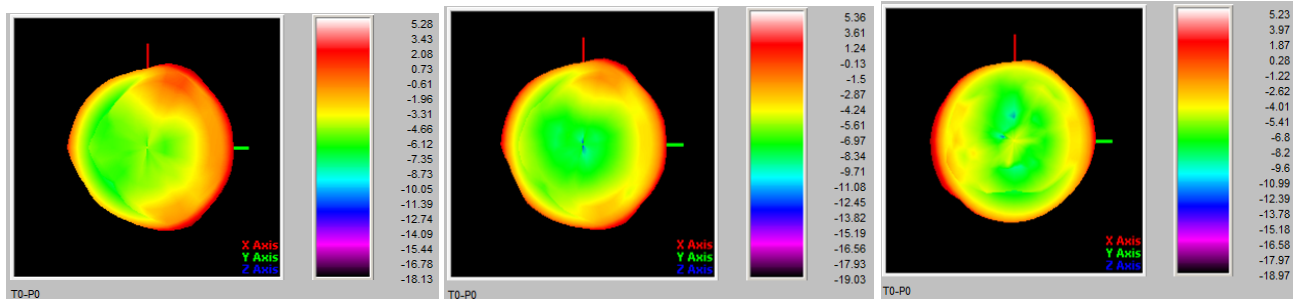
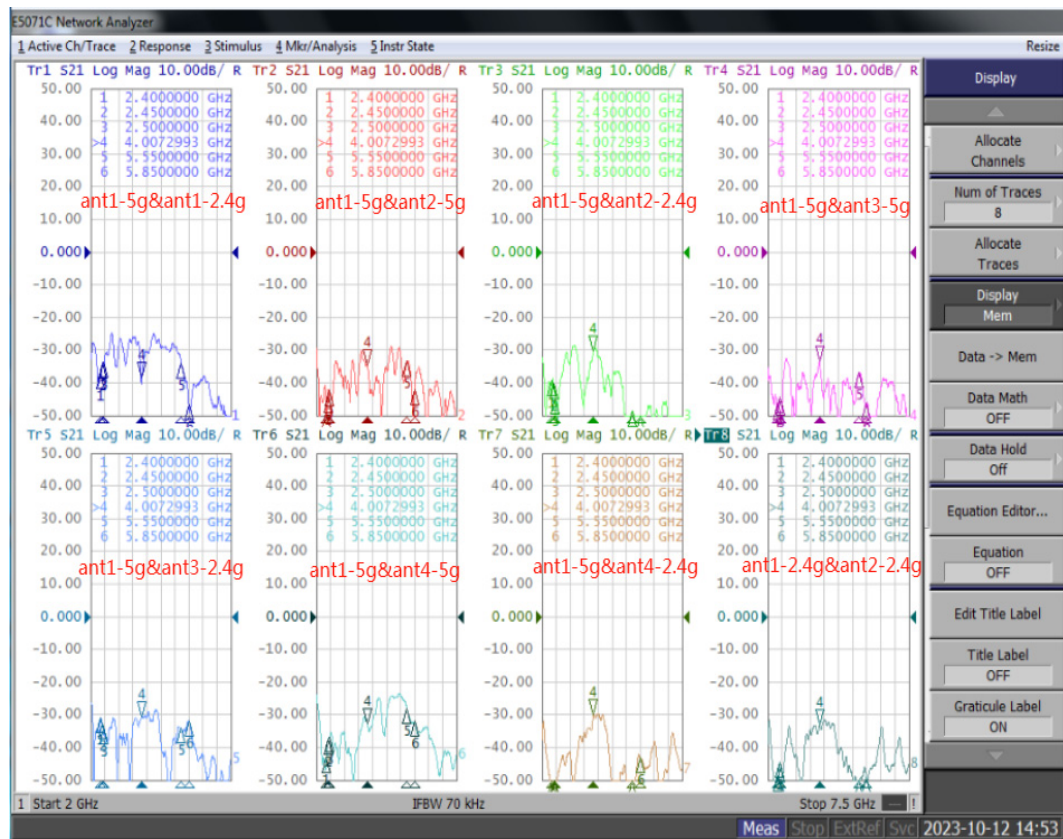
5G-3 Antenna: 5150-5850MHz

ANT3		
Freq. (MHz)	gain	efficiency
5150	5.28	68.9
5200	5.02	66.9
5250	5.13	67.8
5300	5.37	66.5
5350	4.93	69.4
5400	4.75	67.6
5450	5.14	69.1
5500	5.36	67.3
5550	5.15	66.8
5600	4.87	69.9
5650	4.78	65.7
5700	5.17	66.4
5750	4.82	67.8
5800	4.98	66.7
5850	5.23	68.8

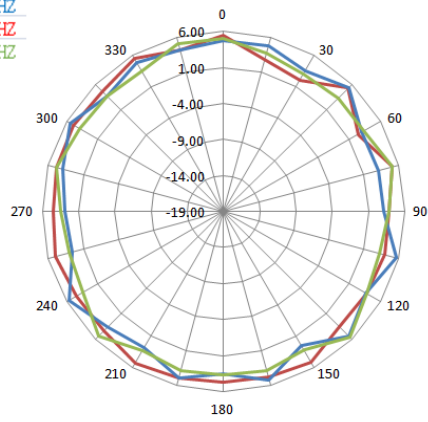
Return Loss Test



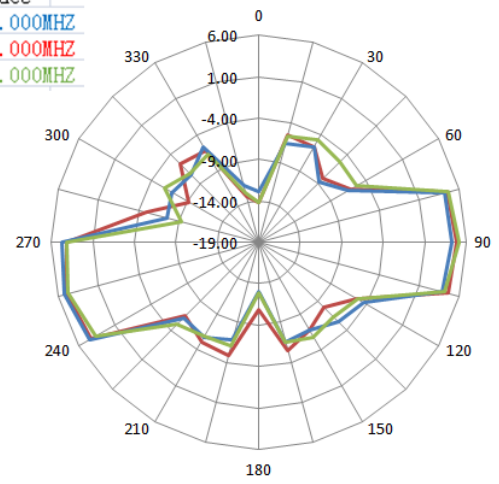
Isolation testing



Horizontal
5150.000MHZ
5500.000MHZ
5850.000MHZ



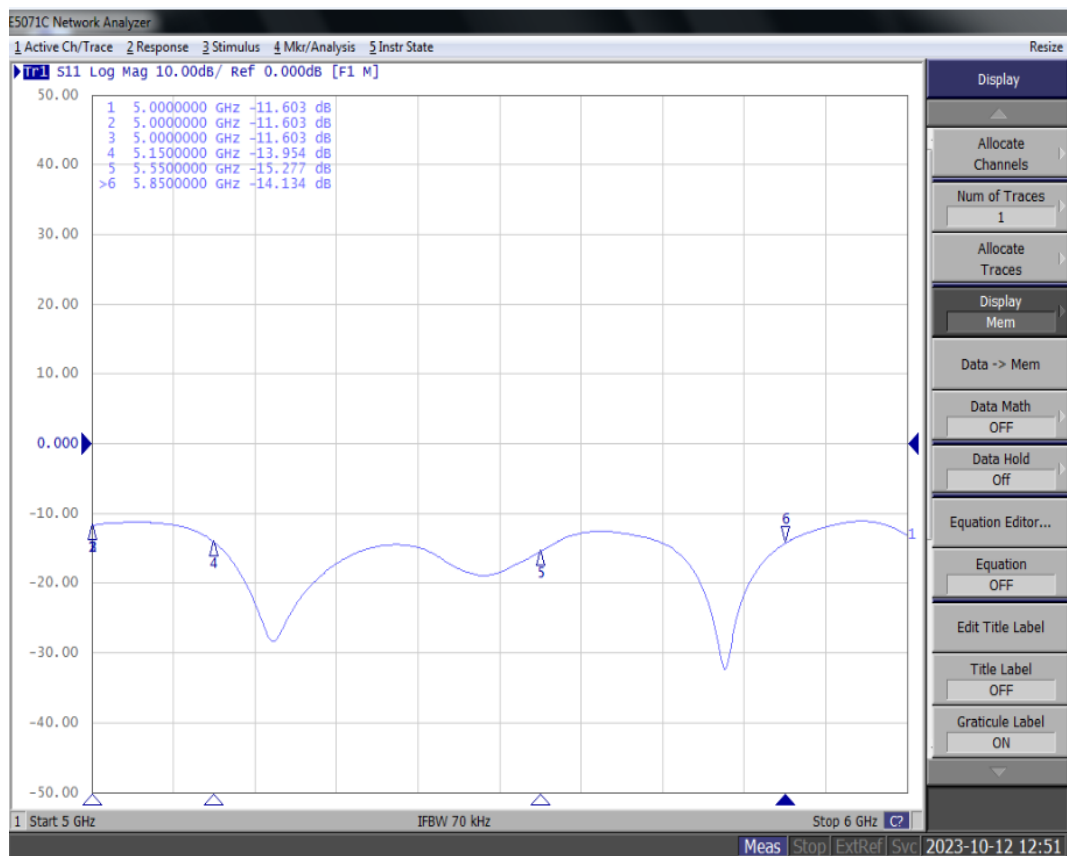
E1 Face
5150.000MHZ
5500.000MHZ
5850.000MHZ



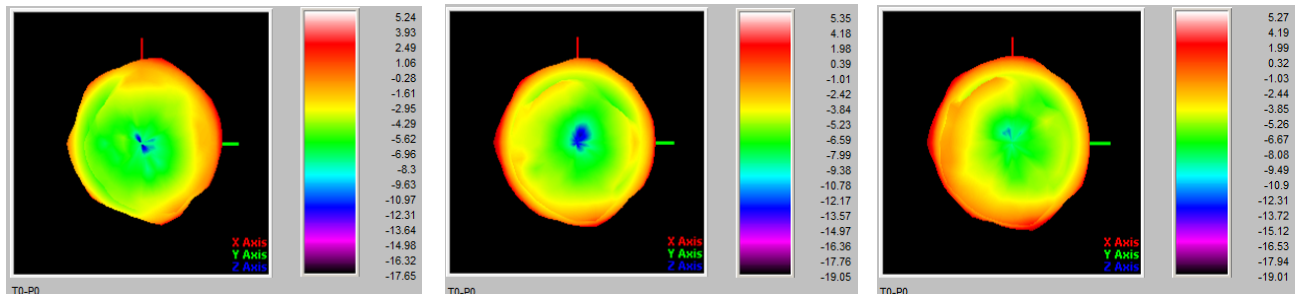
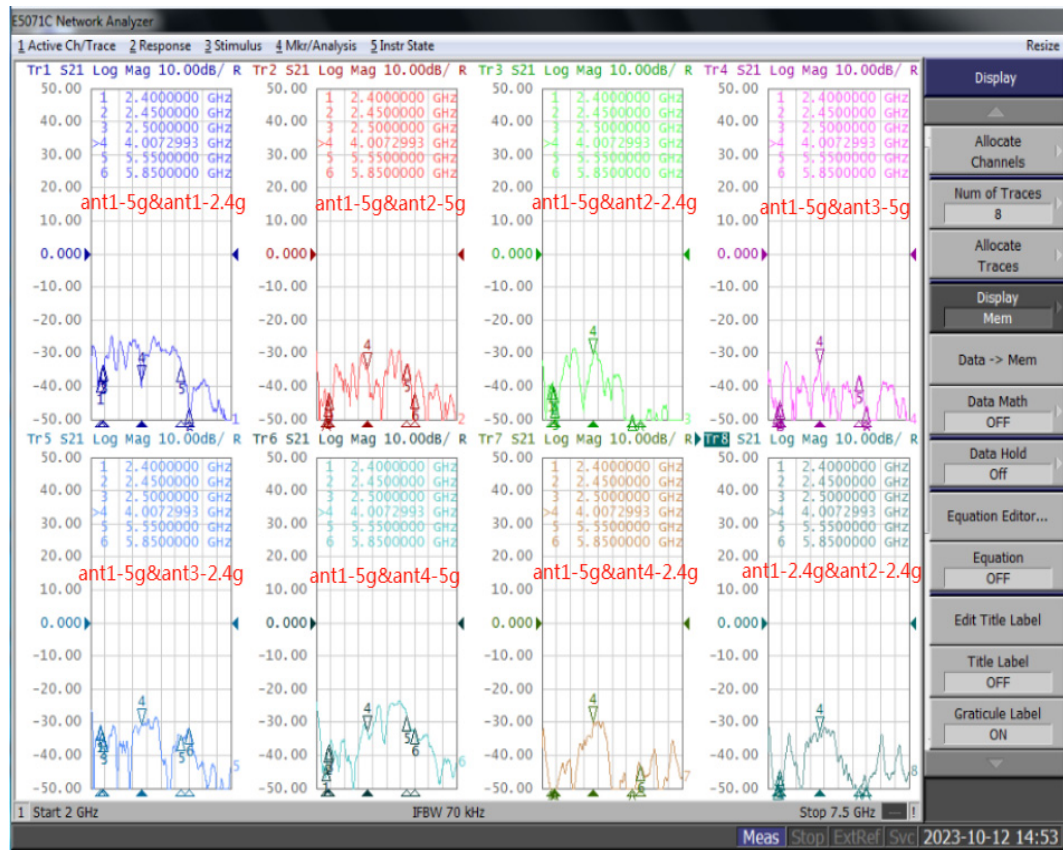
5G-4 Antenna: 5150-5850MHz

ANT4		
Freq. (MHz)	gain	efficiency
5150	5.24	69.2
5200	4.81	66.8
5250	4.98	67.3
5300	5.28	65.7
5350	4.83	69.6
5400	4.97	67.4
5450	5.19	65.2
5500	5.35	66.1
5550	4.88	69.5
5600	4.95	68.8
5650	5.16	67.7
5700	5.29	66.9
5750	4.92	65.2
5800	5.13	69.1
5850	5.27	68.3

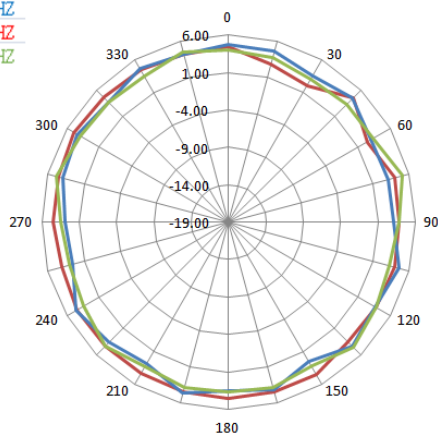
Return Loss Test



Isolation testing



Horizontal
5150.000MHZ
5500.000MHZ
5850.000MHZ



E1 Face
5150.000MHZ
5500.000MHZ
5850.000MHZ

