



GALTRONICS

A Baylin Technologies Company

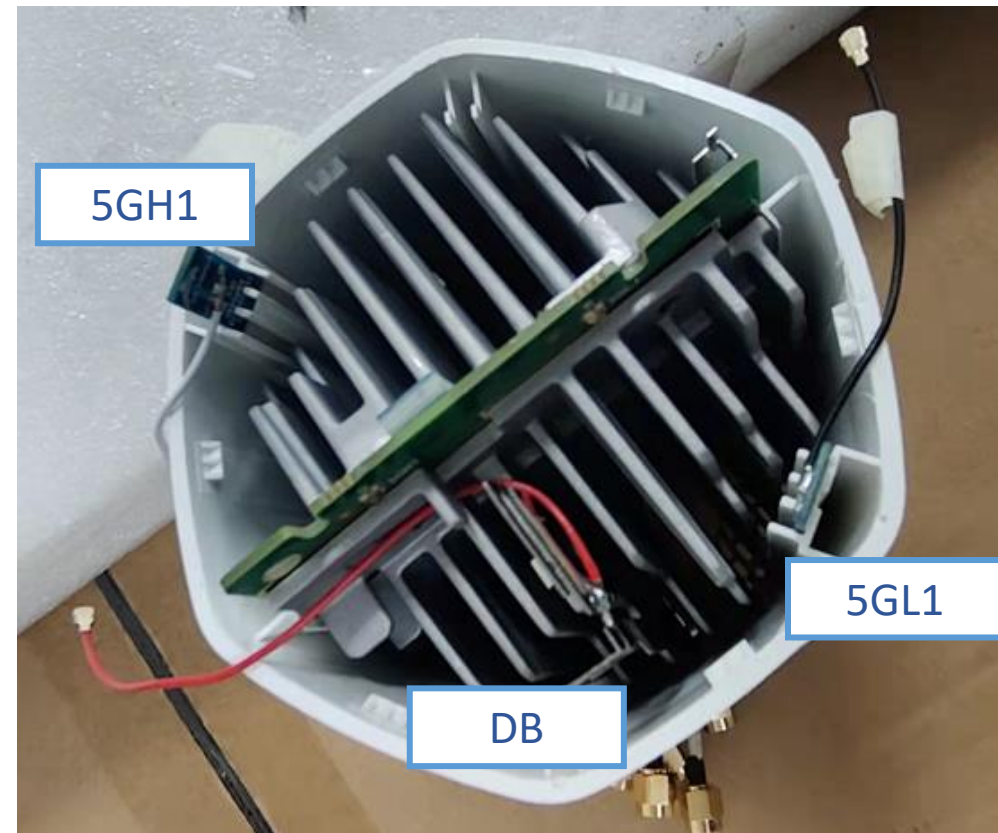
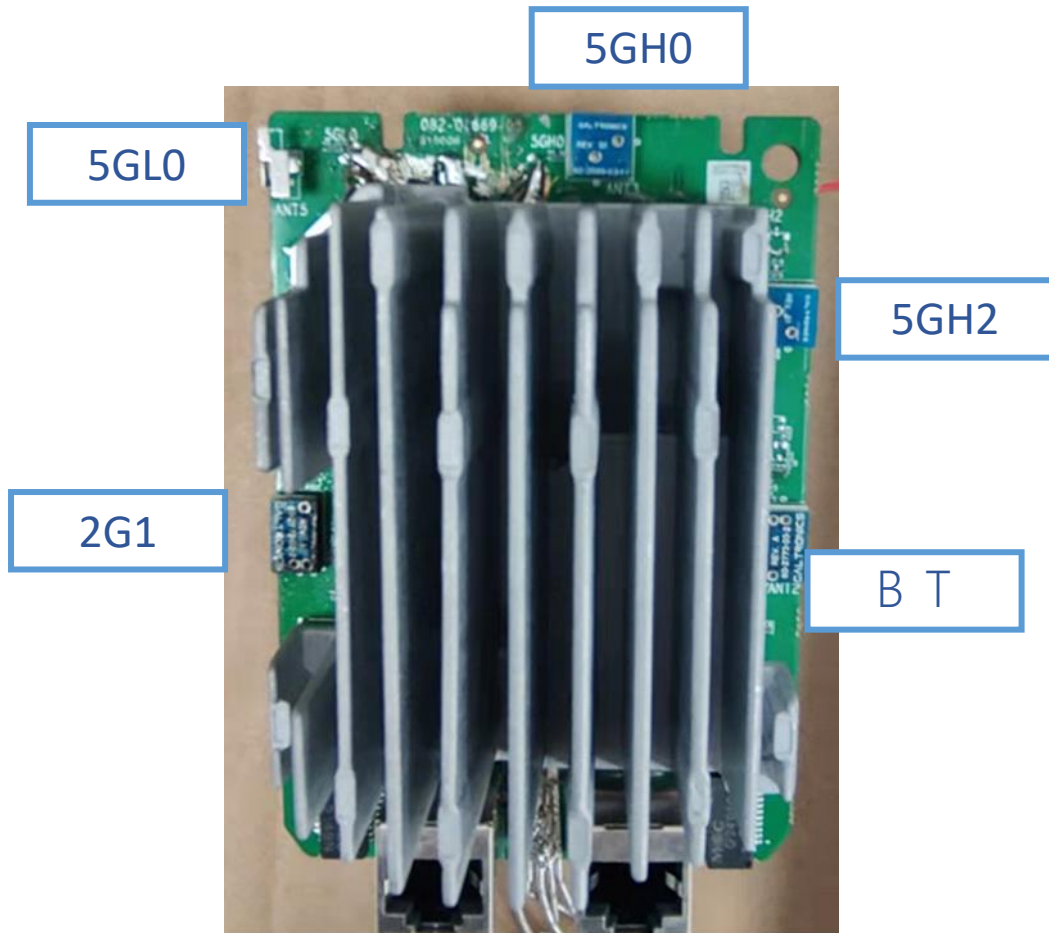
Wireless Infrastructure | Embedded & Home Networking

**Antenna Performance Report CIG
Triband Mesh Router WF810 (Galtronics
project :7647)**

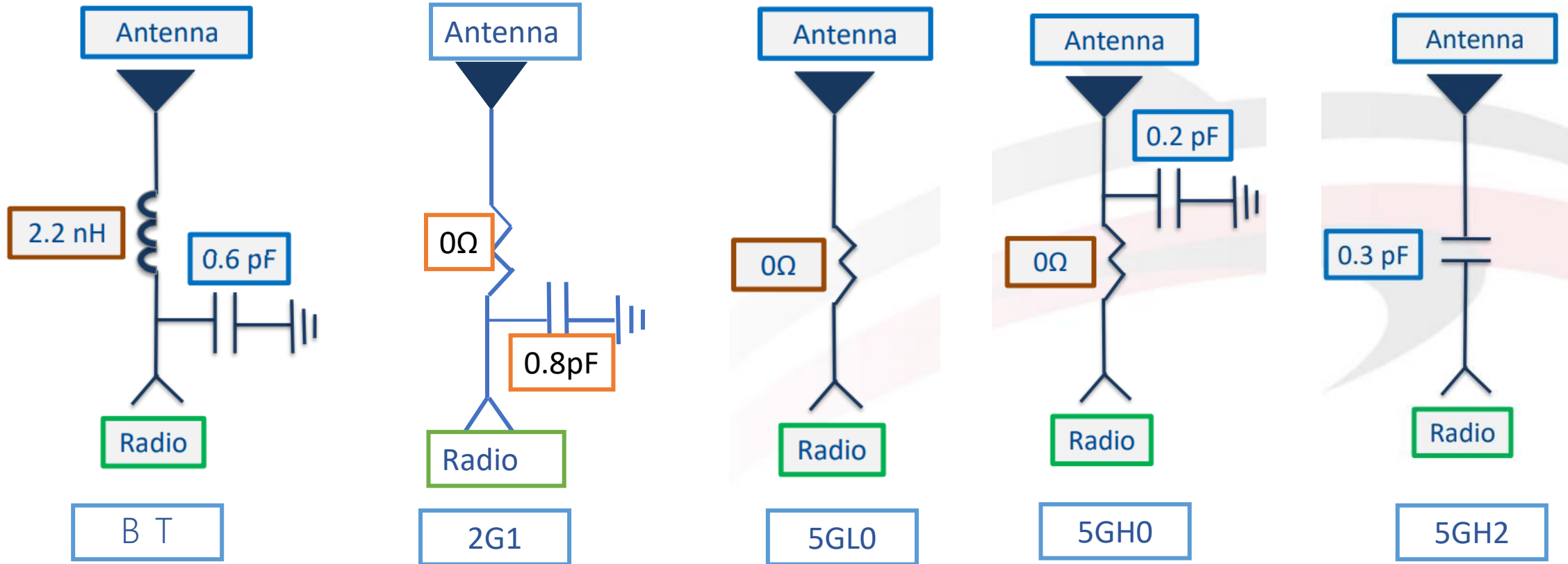
Introduction

- » Galtronics has provided a solution for CIG WF 810 Tri-band mesh router.
- » Galtronics received AM3 unit.
- » There are 8 antennas in this solution:
- » One on-board 2G1 antenna: 2.4GHz-2.5GHz
- » One on-board BT antenna: 2.4GHz-2.5GHz
- » Two 5G low band antennas designated by 5GL0 and 5GL1: 5150MHz-5350MHz.
- » 5GL0 is on-board. 5GL1 antenna is cabled.
- » Three 5G high band antennas designated by 5GH0, 5GH1 and 5GH2: 5490MHz-5835MHz.
- » 5GH0 and 5GH2 antennas are on-board. 5GH1 antenna is cabled.
- » One cabled metal DB antenna.
- » **5GL0 antenna modified for better performance. 2G1 changed LC Matching components.**

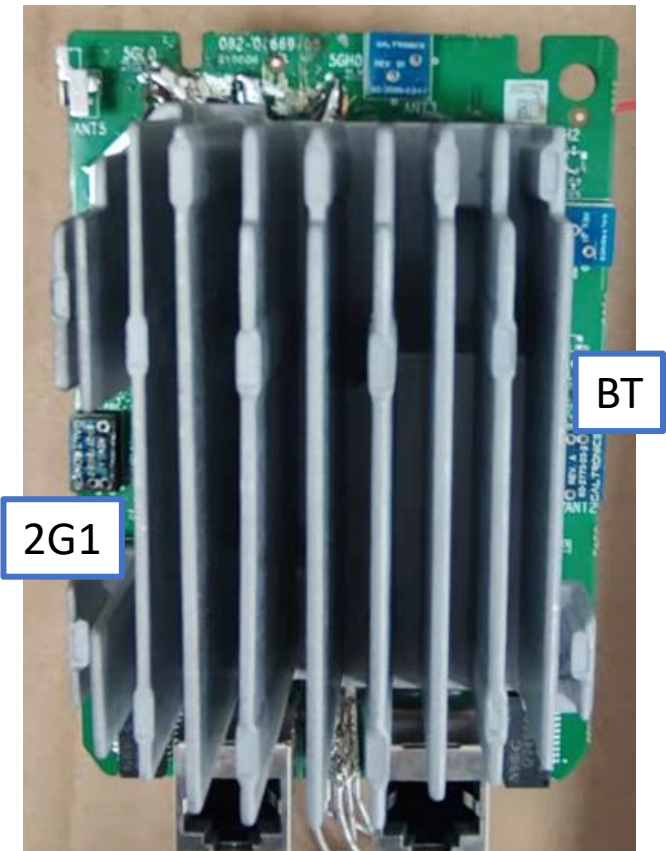
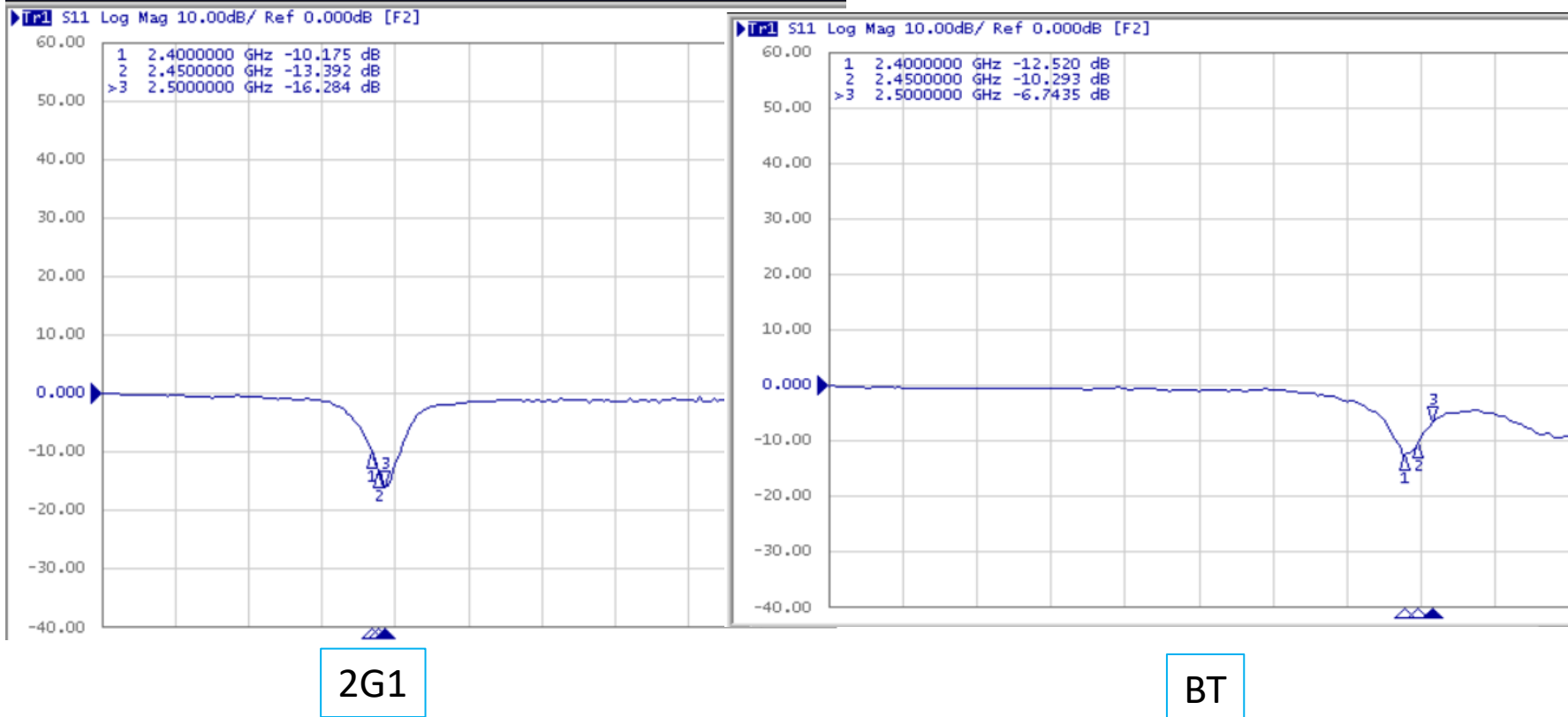
Antenna configuration



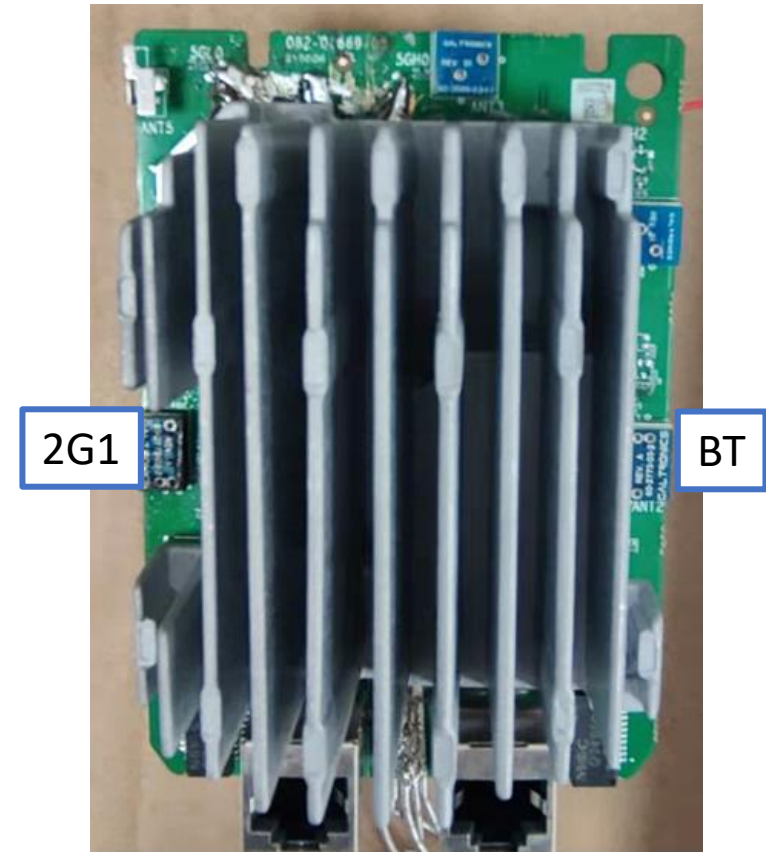
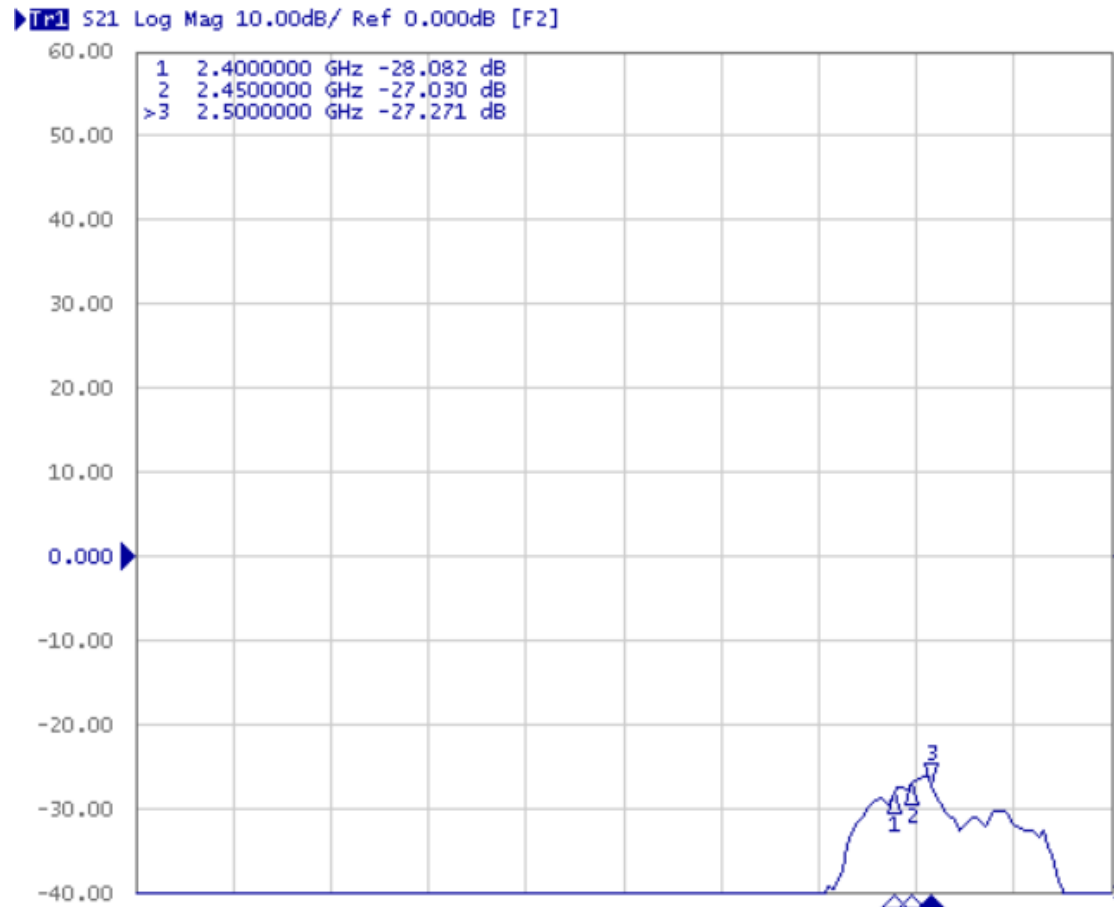
LC Matching components



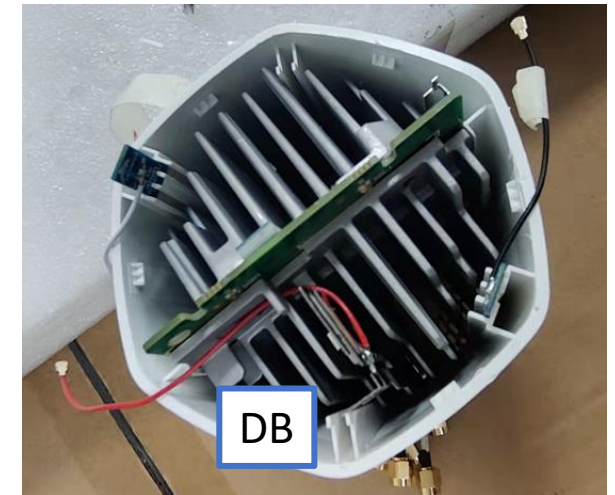
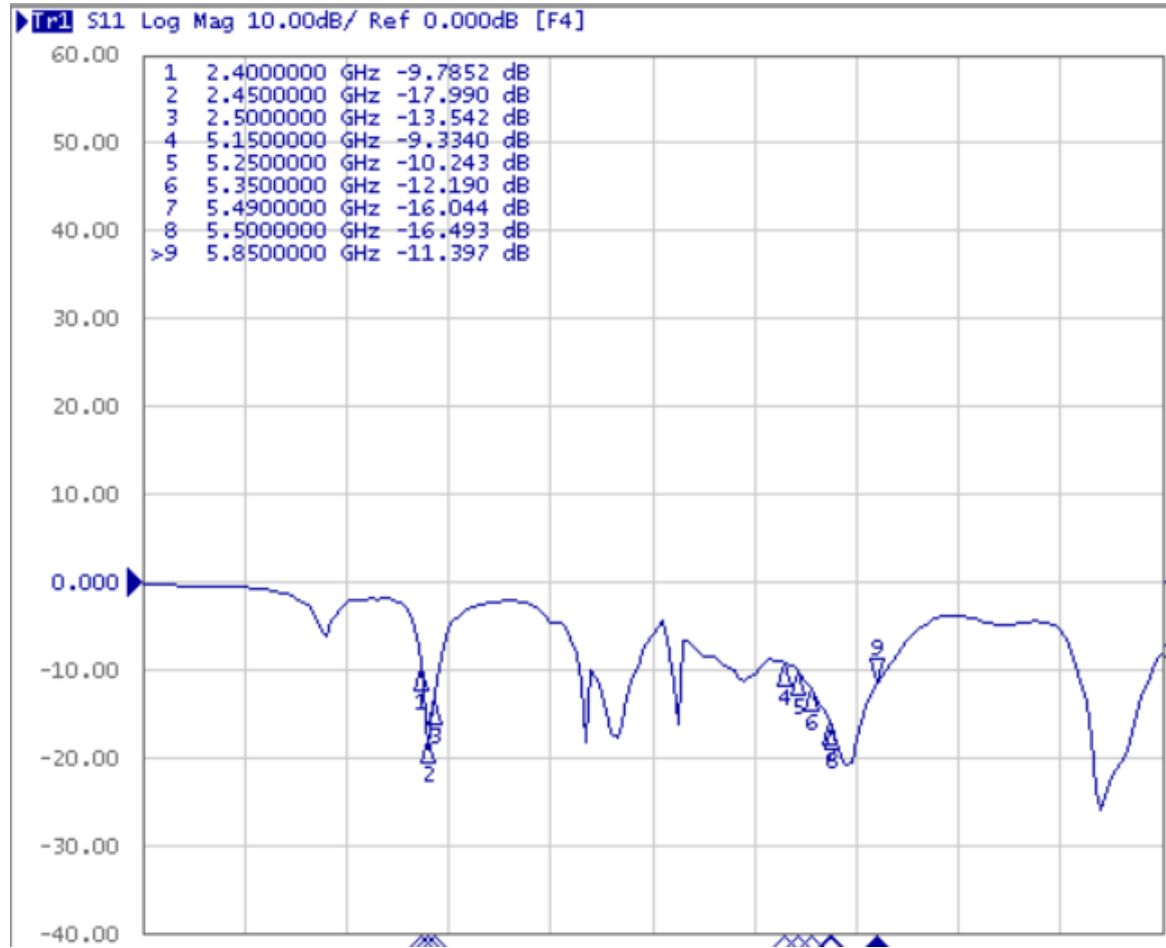
Antenna Return Loss of the 2G1/BT



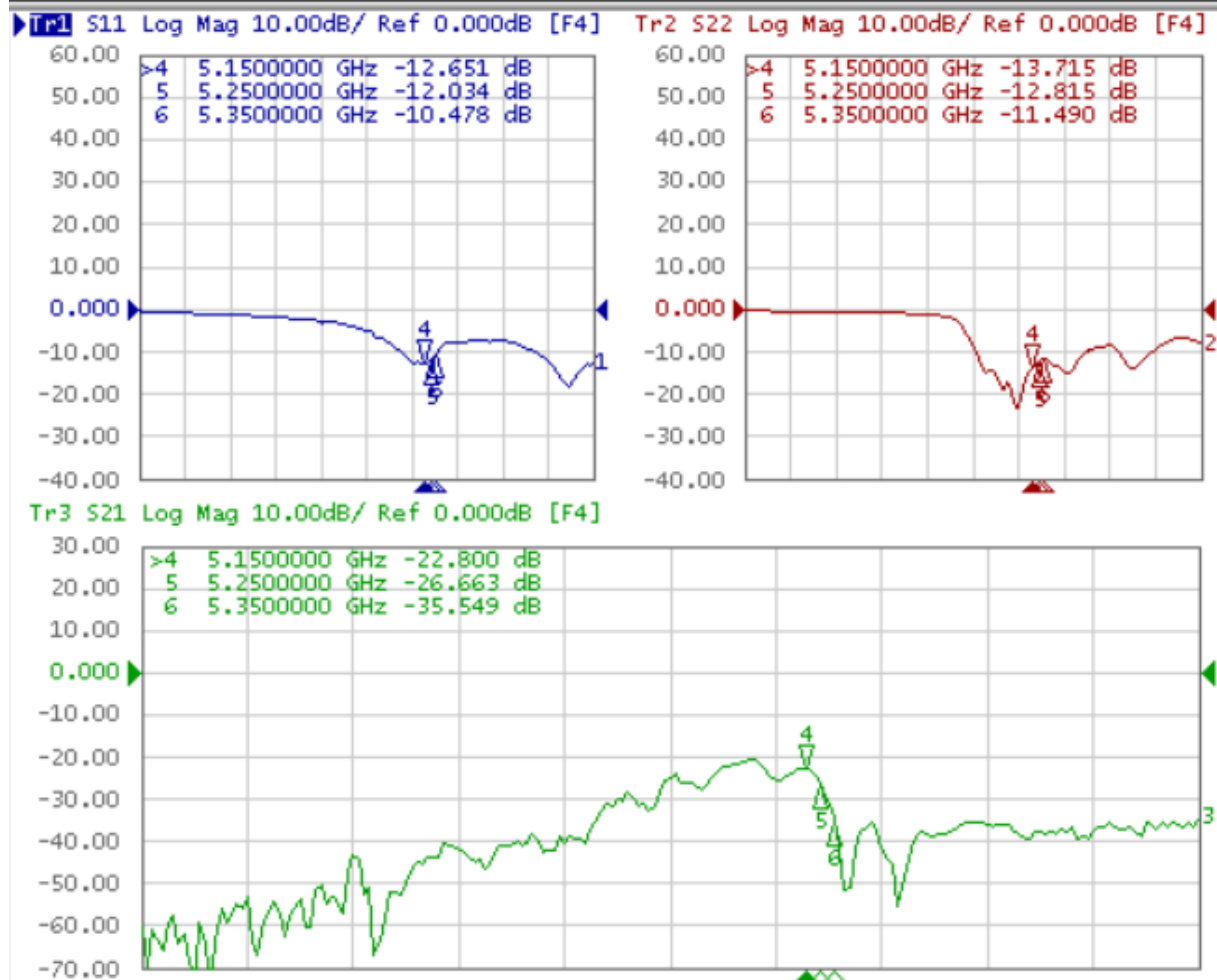
Antenna Isolation of the 2G1/BT



Antenna Return Loss of DB



Antenna Return Loss and Isolation of the 5GL



5GL0

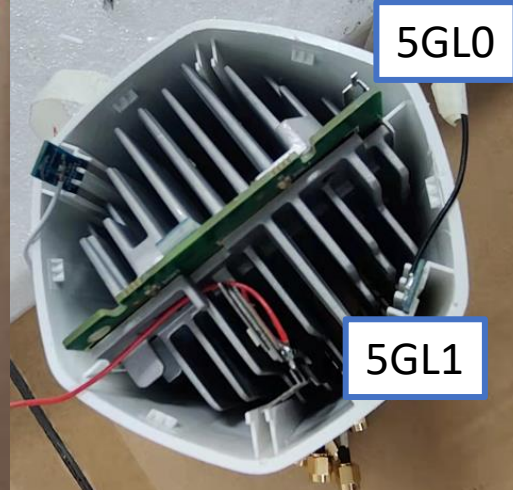


Port1=5GL0

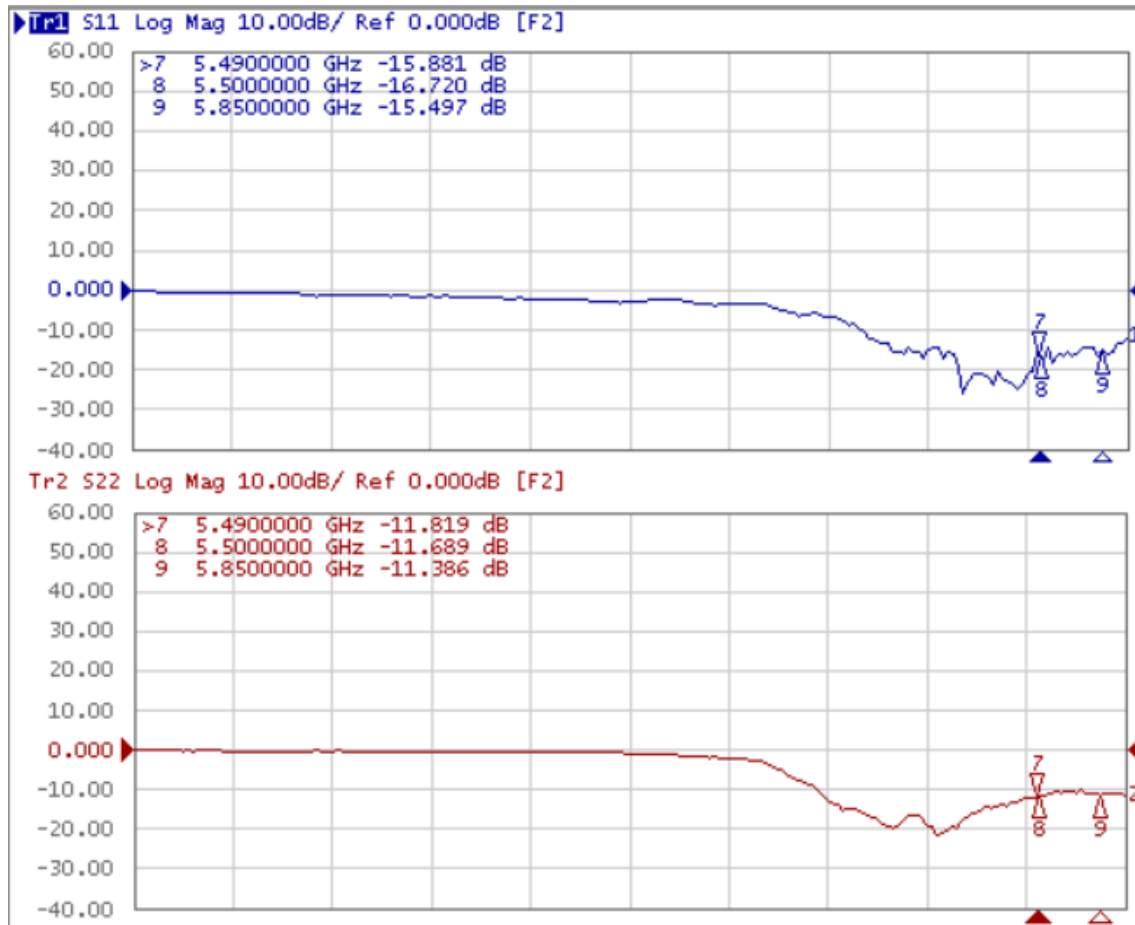
Port2=5GL1

5GL0

5GL1



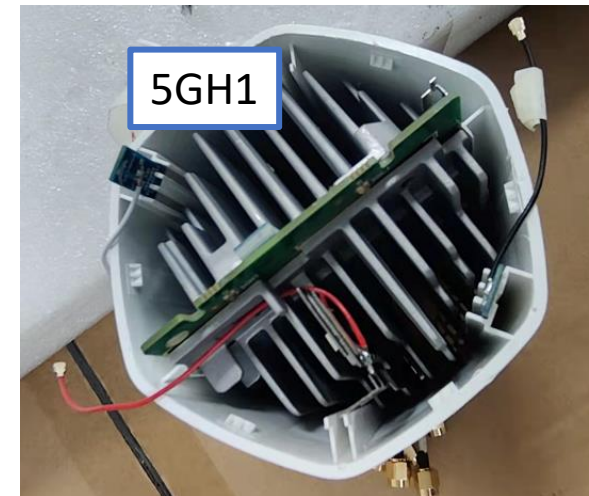
Antenna Return Loss of the 5GH0 and 5GH1



5GH0

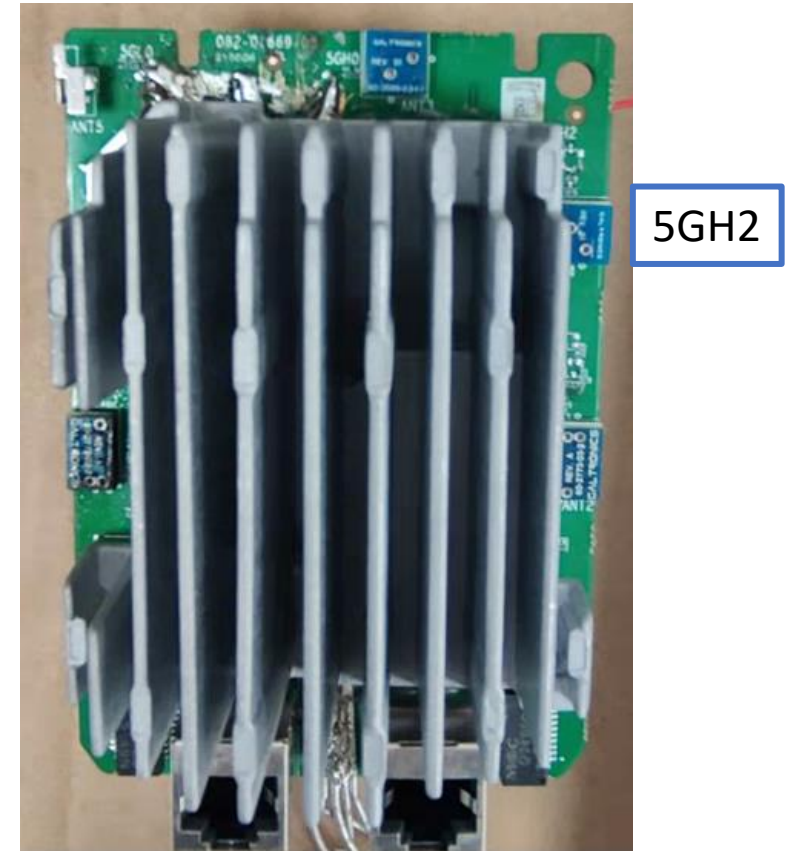
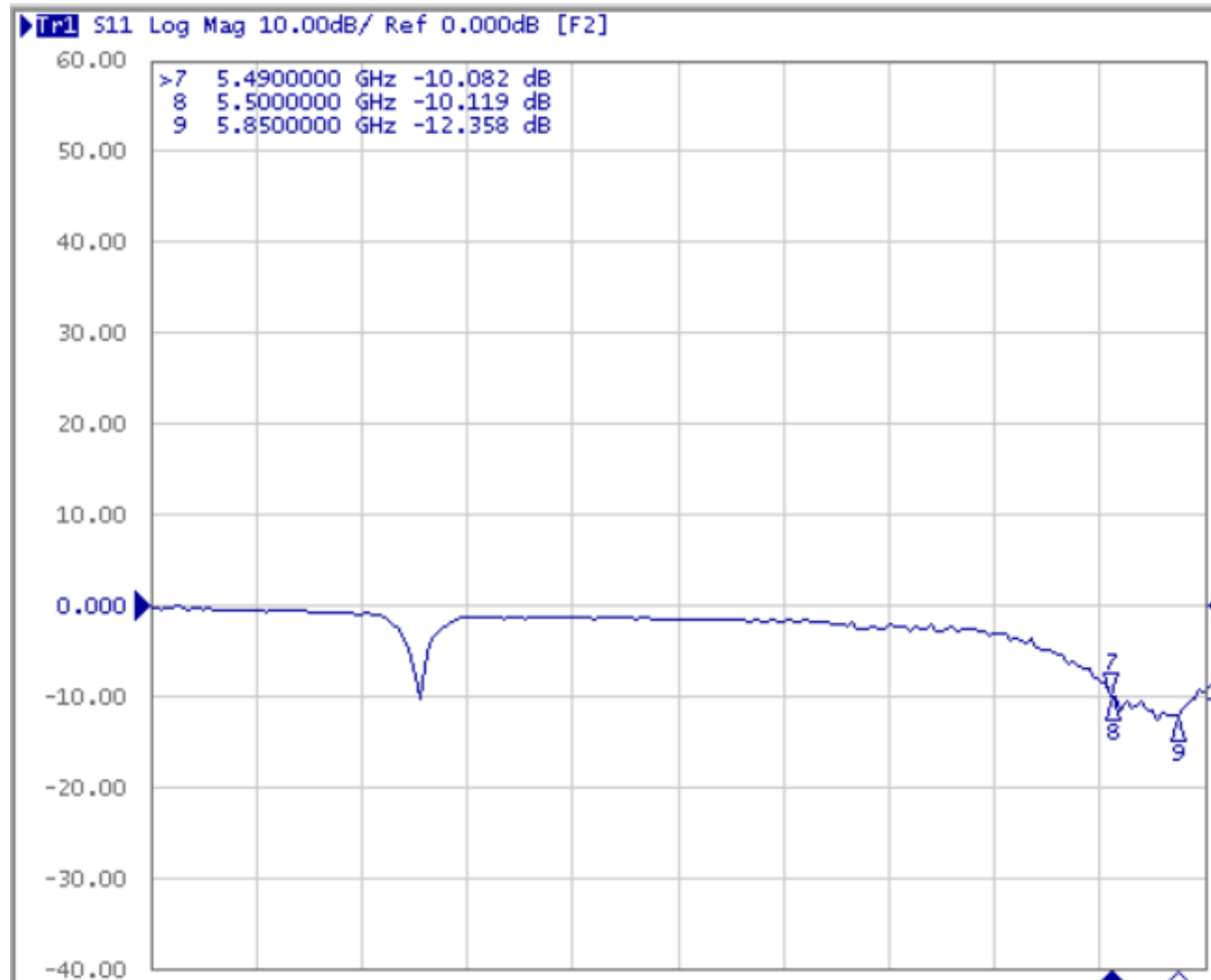
Port1=5GH0

Port2=5GH1

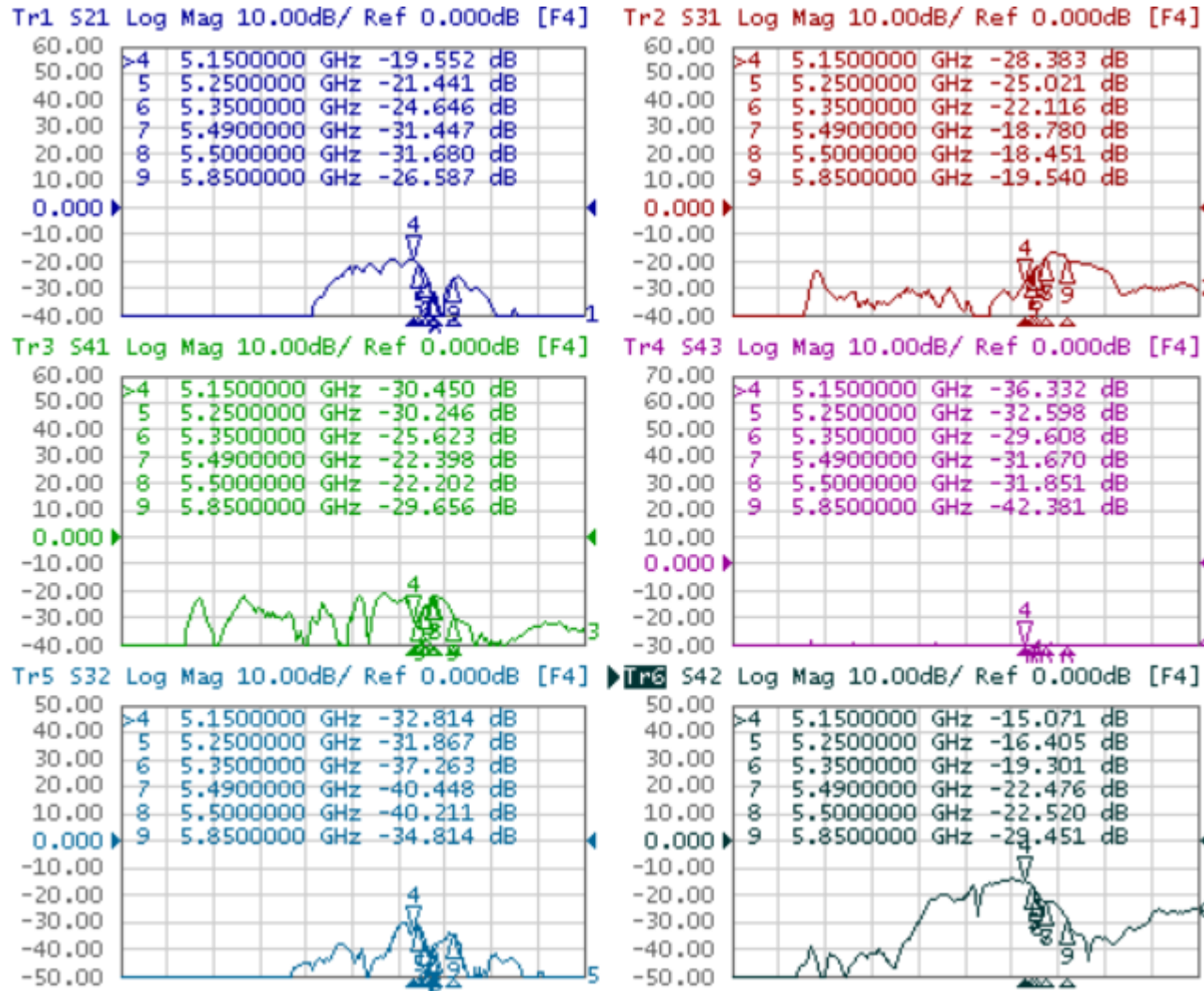


5GH1

Antenna Return Loss of the 5GH2



Antenna Isolation of the 5GH



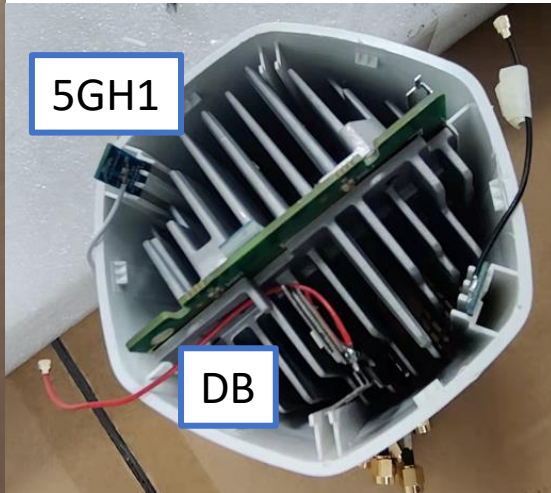
Port1=5GH0

Port2=5GH1

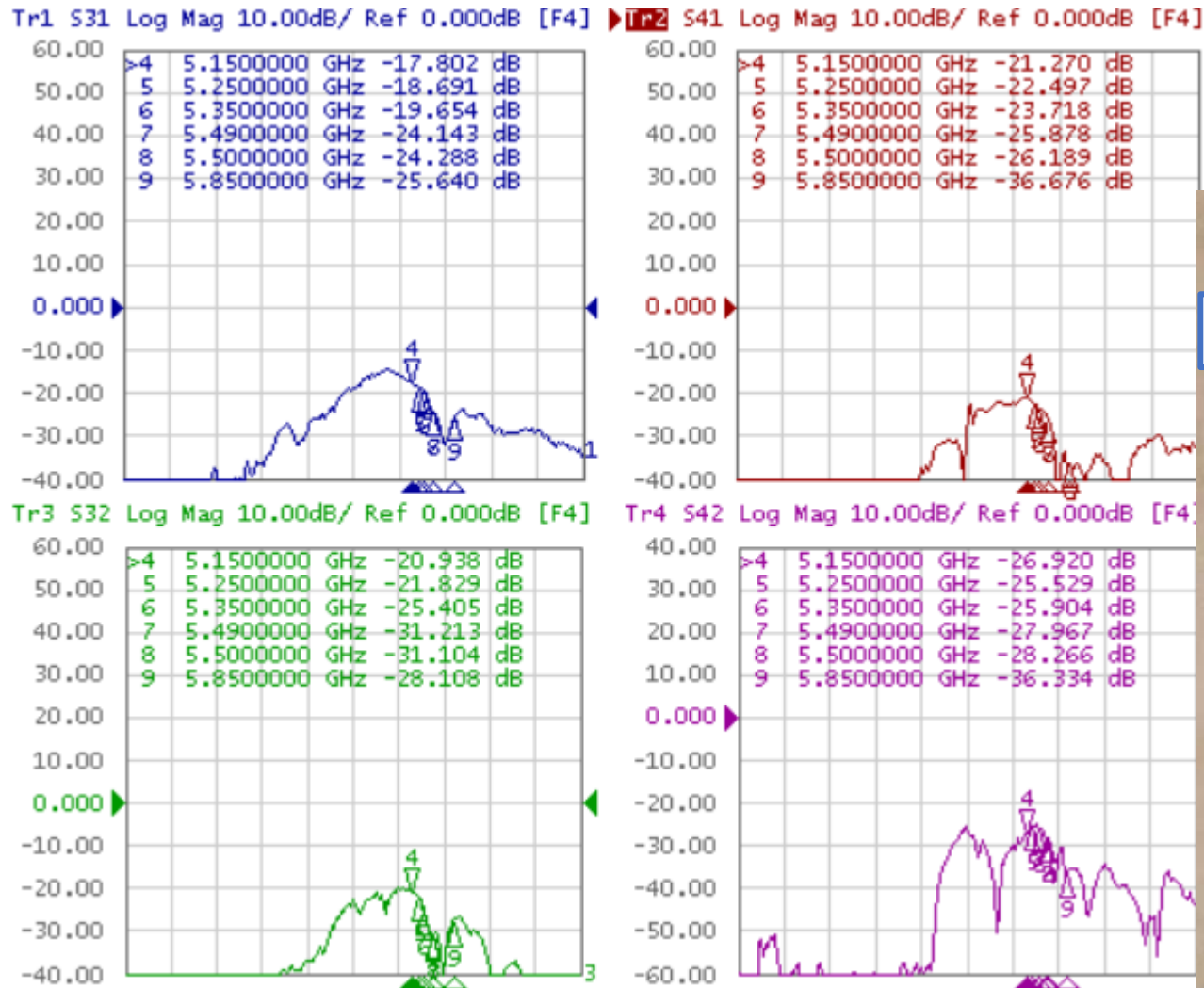
Port3=5GH2

Port4=DB

5GH0

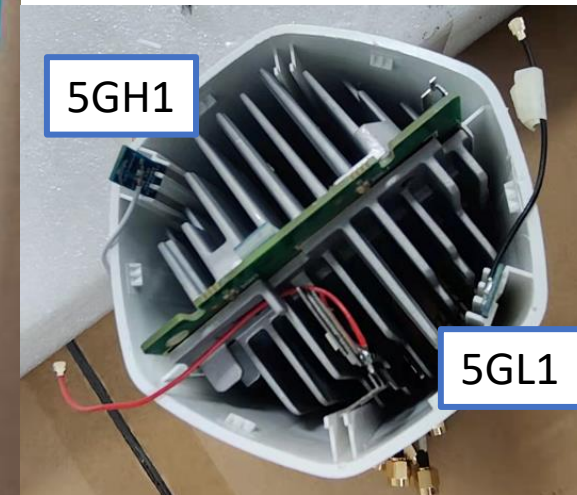


Antenna Isolation Between 5GL and 5GH

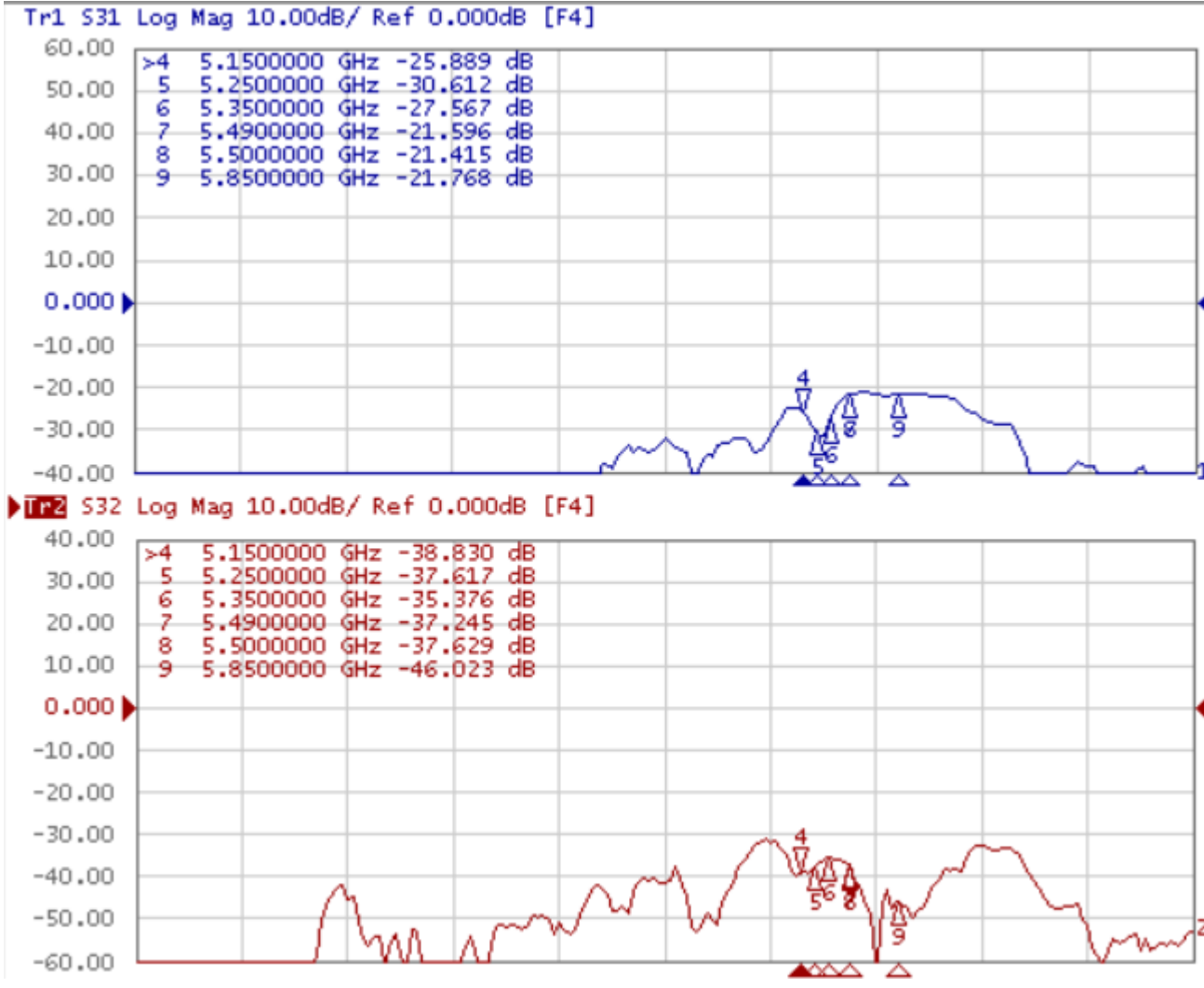


Port1=5GL0 Port2=5GL1

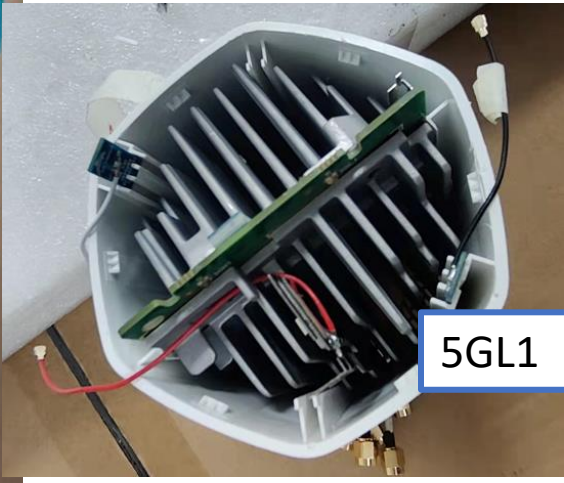
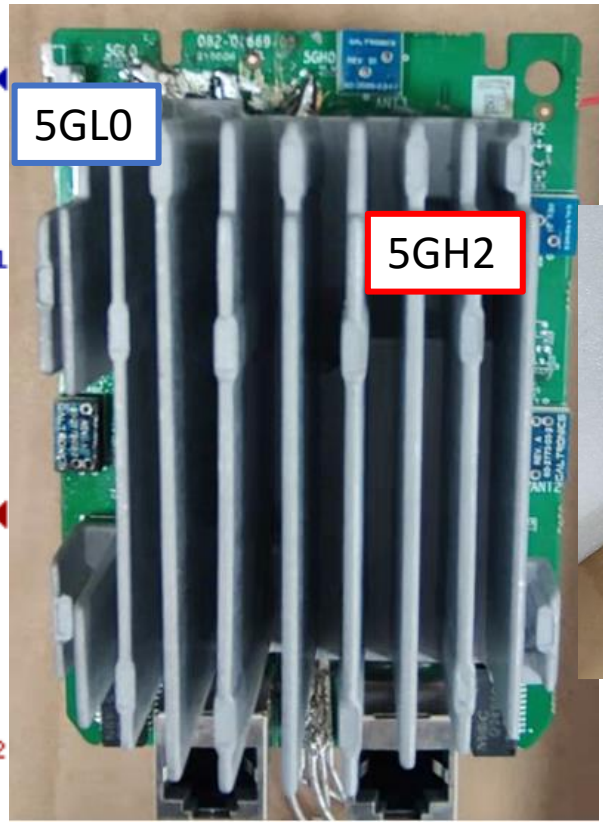
Port3=5GH0 Port4=5GH1



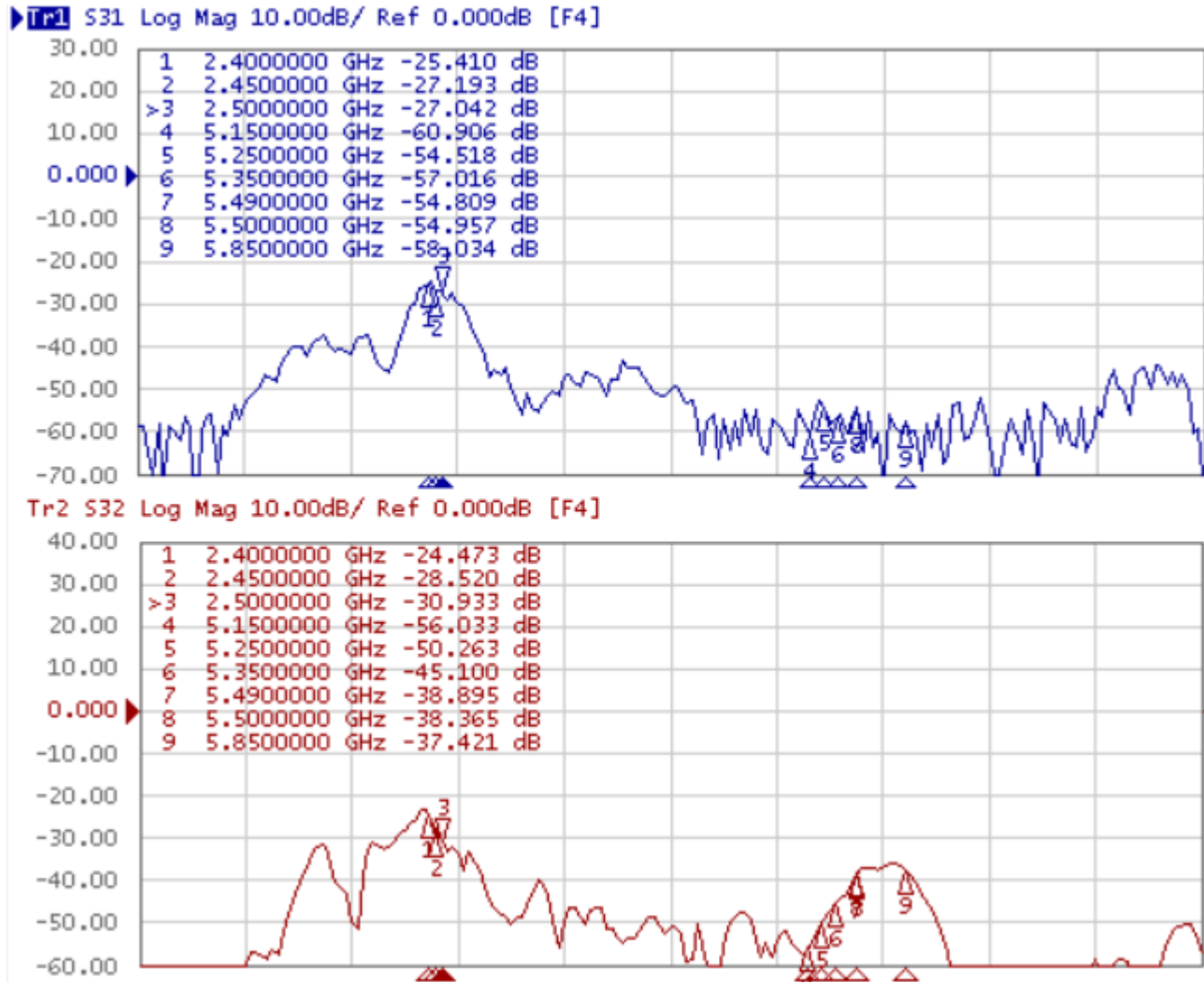
Antenna Isolation Between 5GL and 5GH



- Port1=5GL0
- Port2=5GL1
- Port3=5GH2



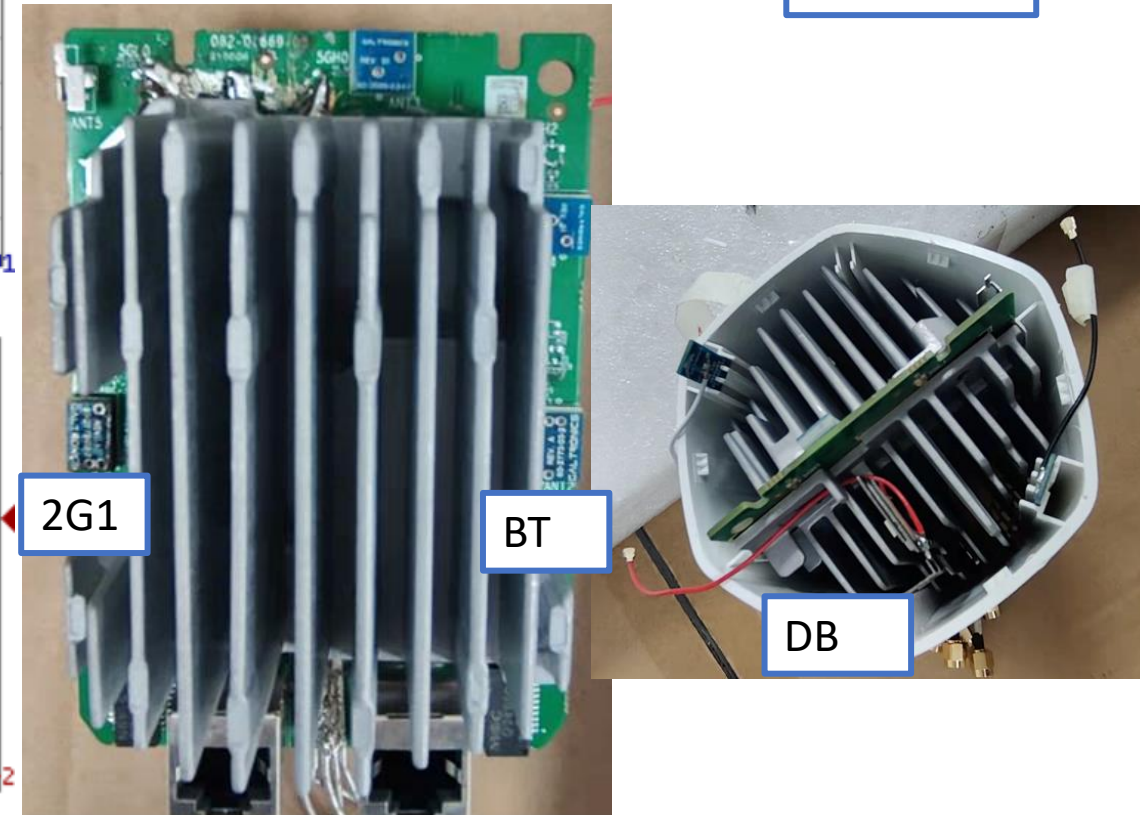
Antenna Isolation Between 2G1,BT and DB



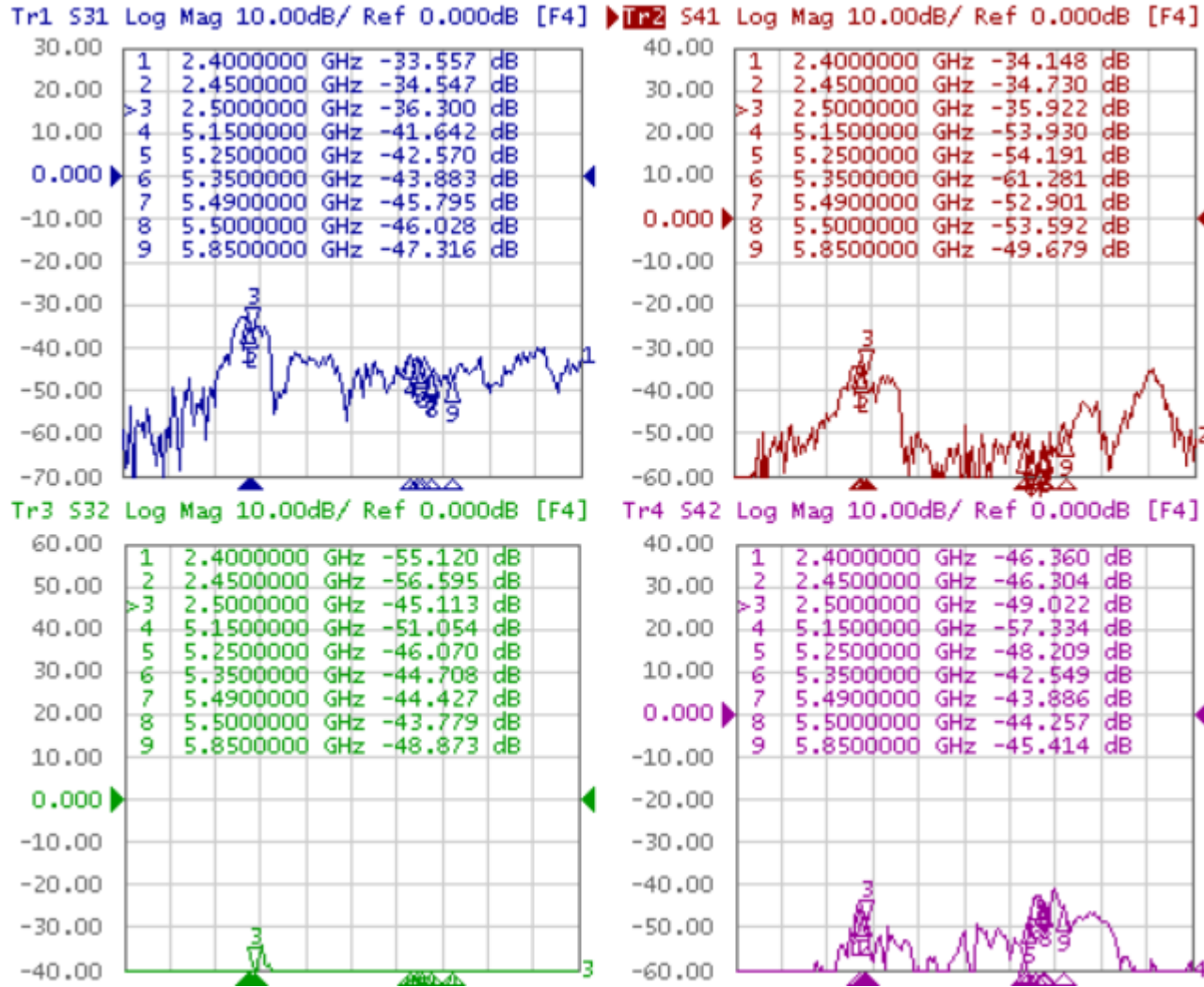
Port1=2G1

Port2=BT

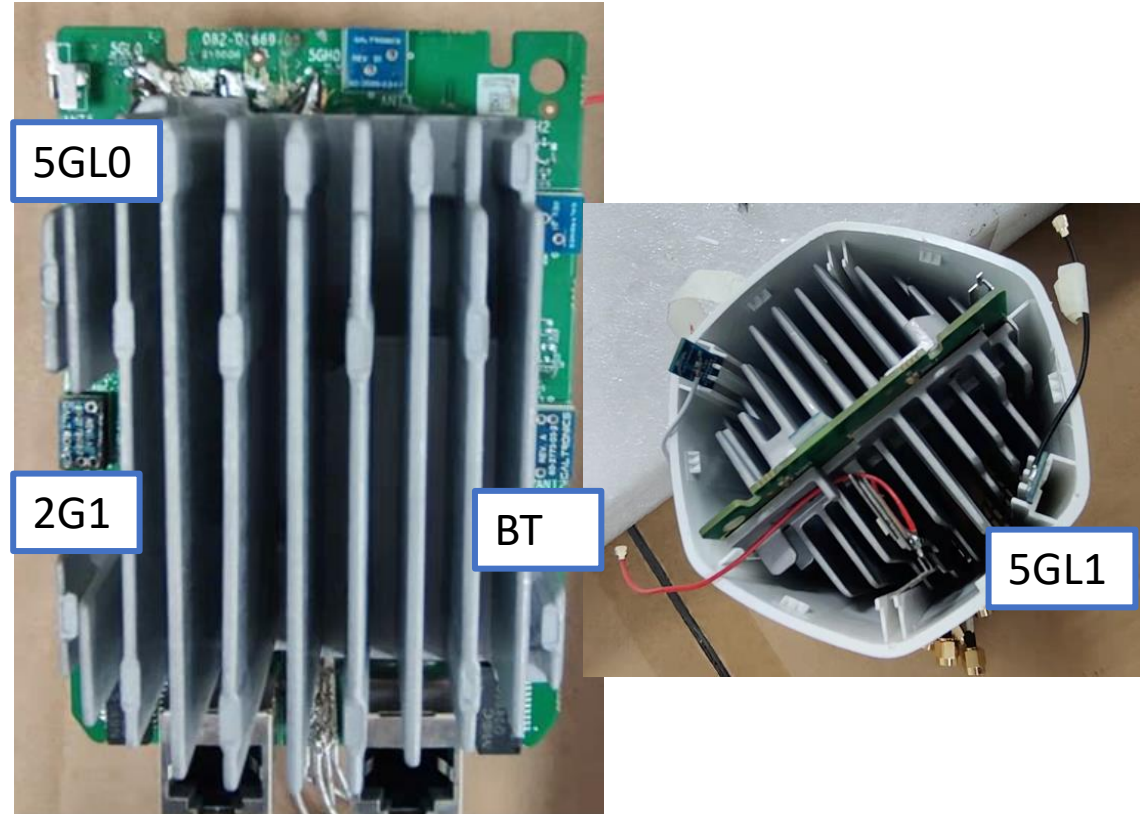
Port3=DB



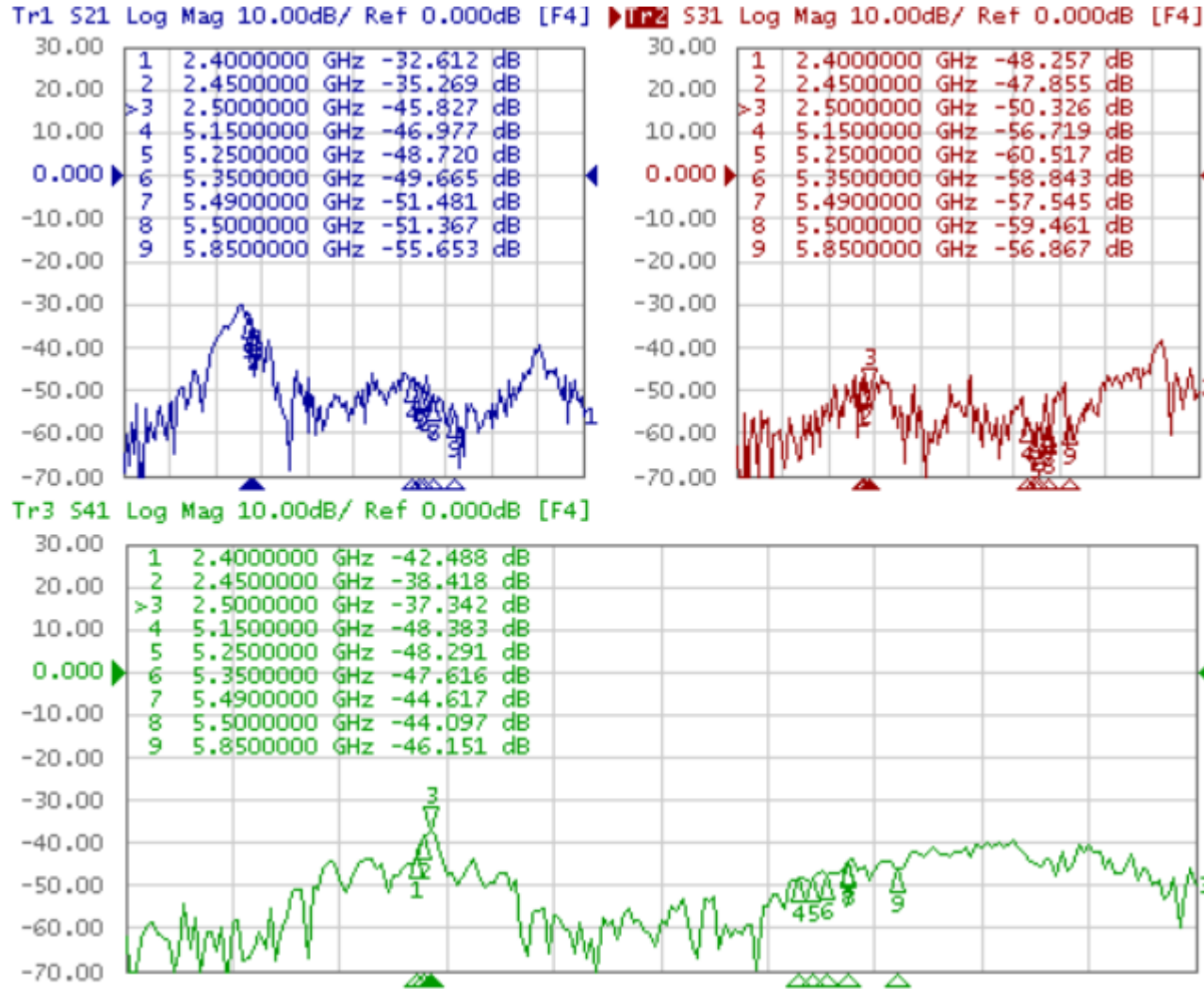
Antenna Isolation Between 2G1,BT and 5GL



Port1=2G1 Port2=BT
Port3=5GL0 Port4=5GL1



Antenna Isolation Between 2G1 and 5GH

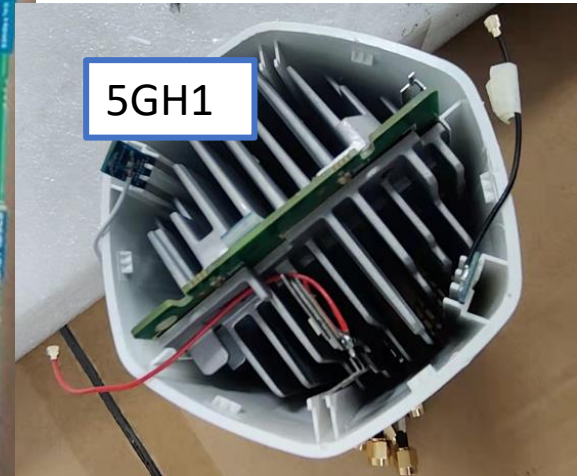
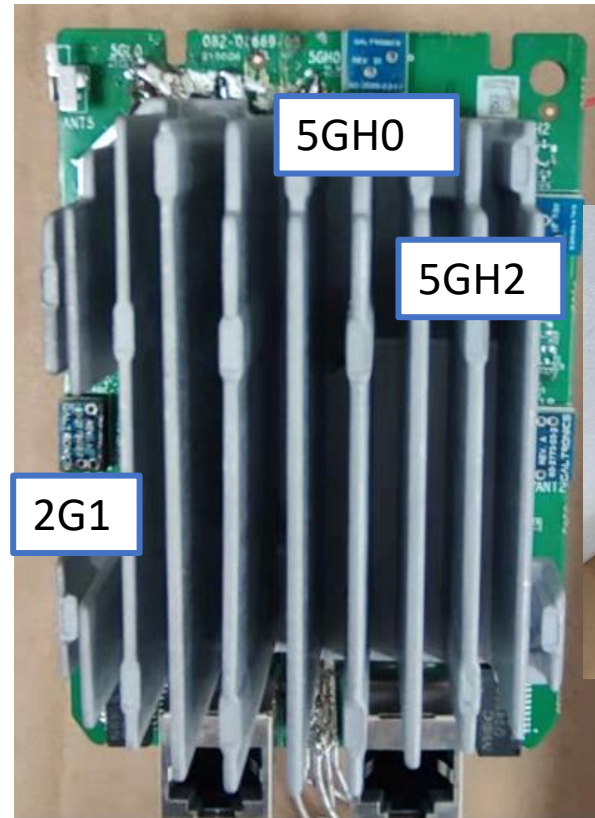


Port1=2G1

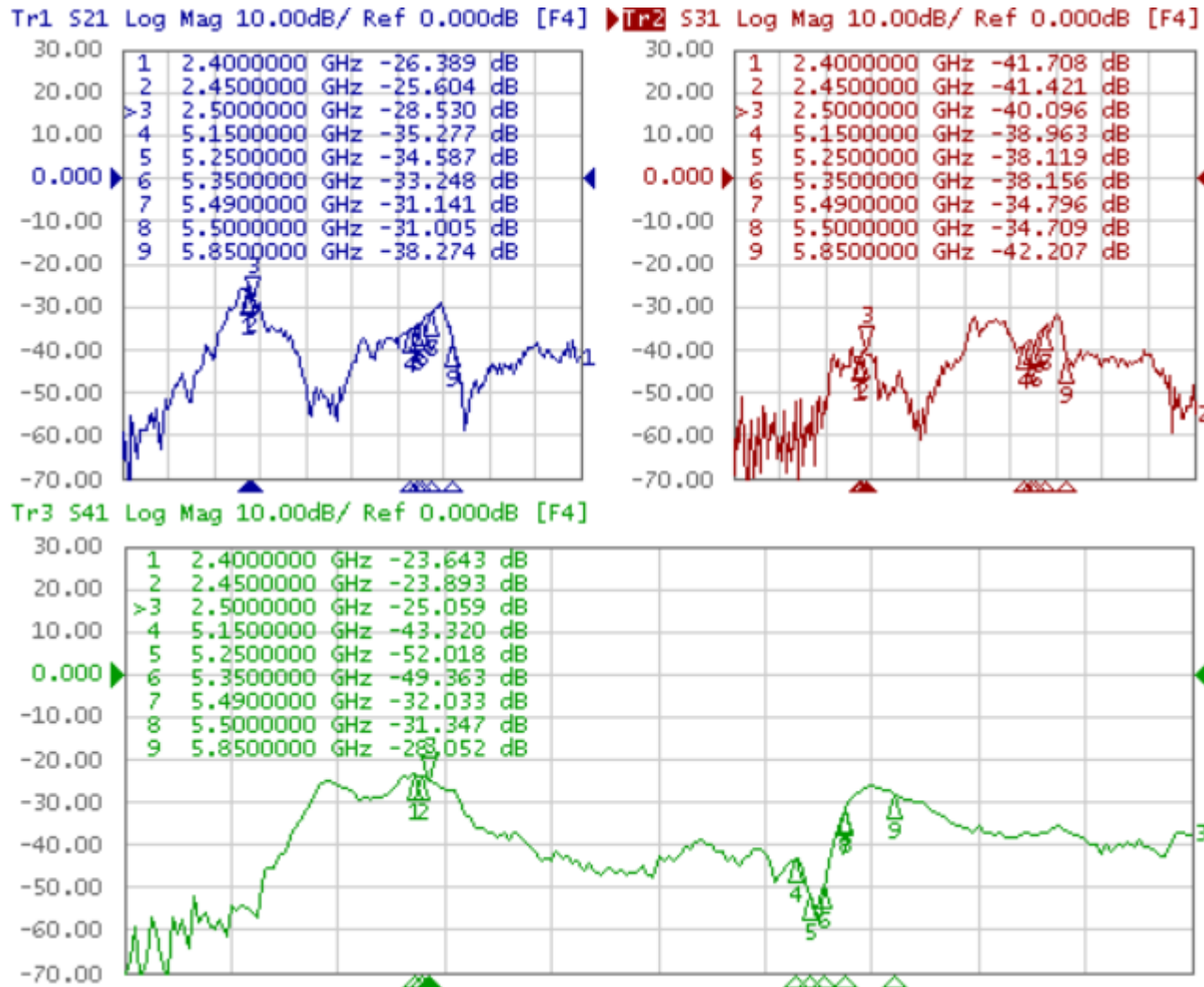
Port2=5GH0

Port3=5GH1

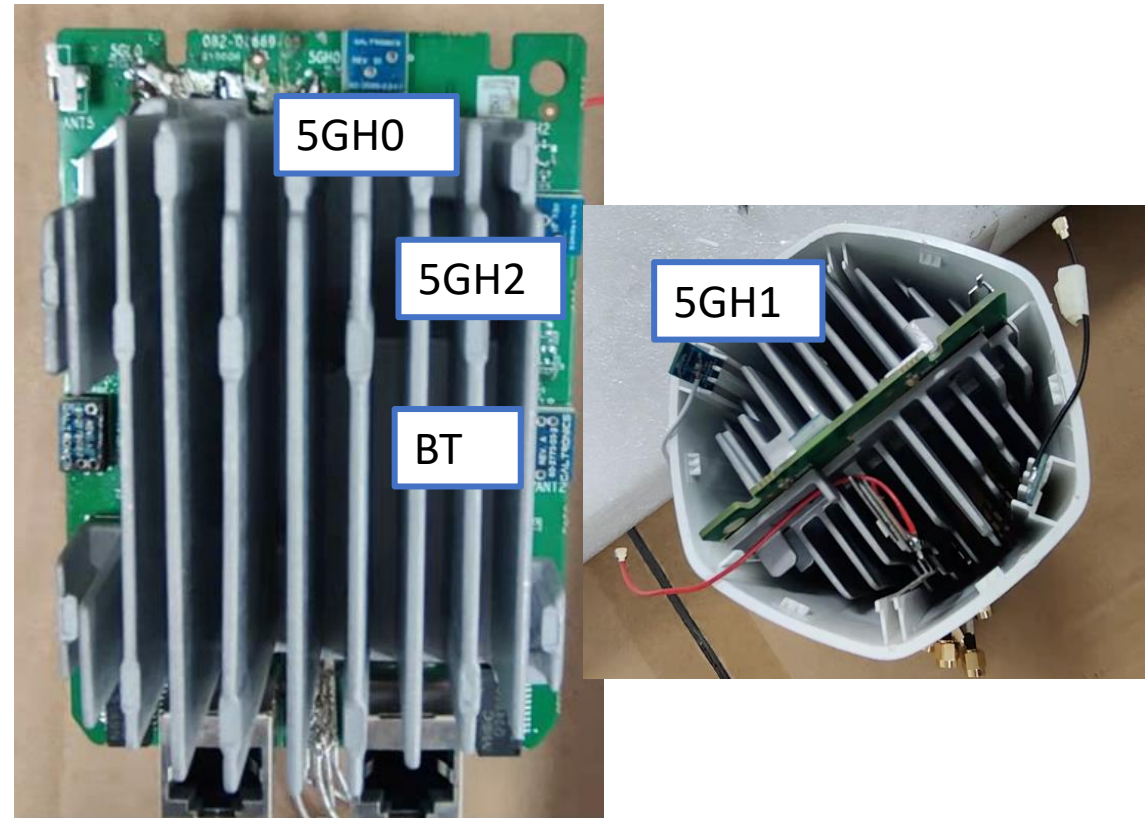
Port4=5GH2



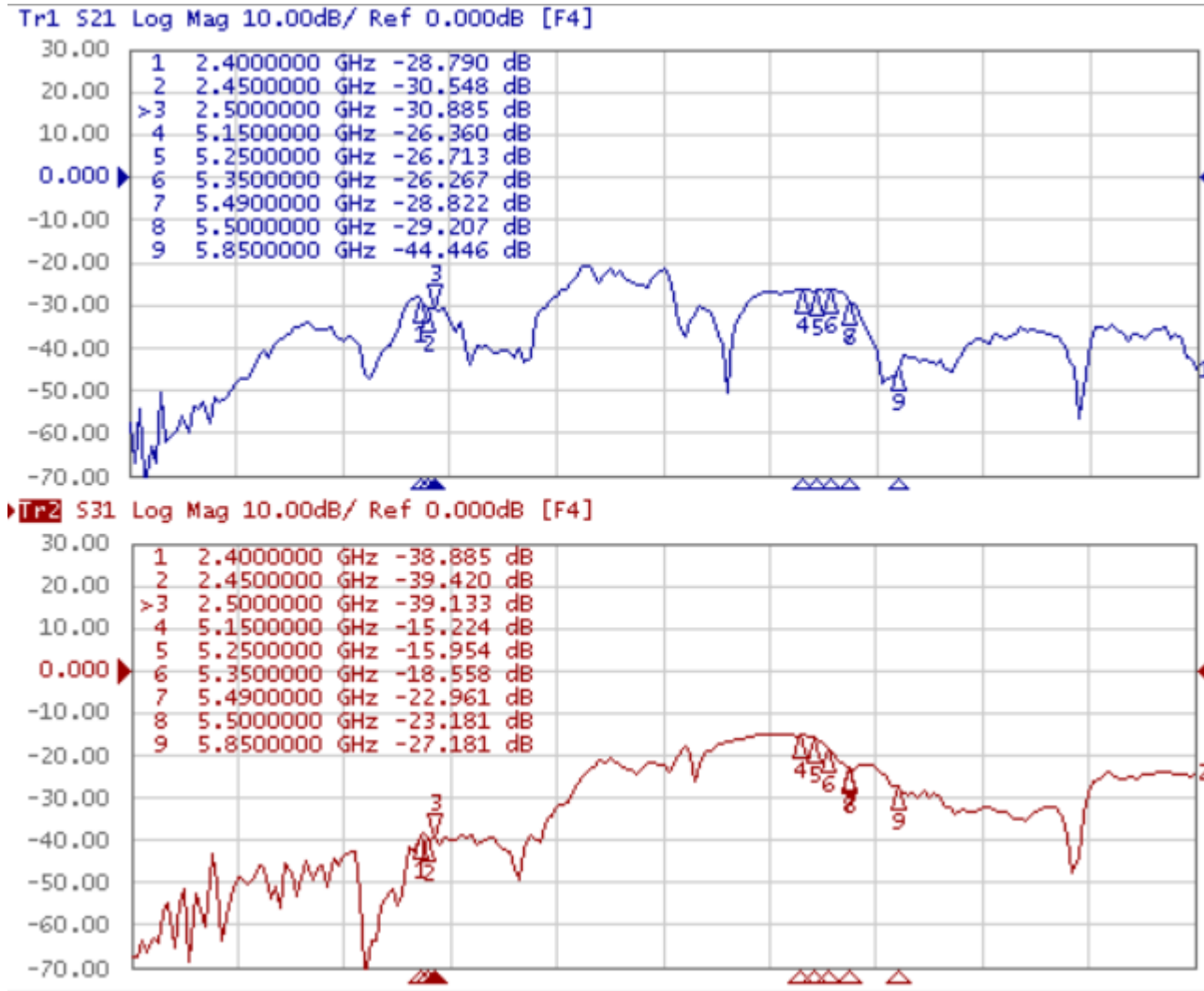
Antenna Isolation Between BT and 5GH



Port1=BT Port2=5GH0
Port3=5GH1 Port4=5GH2



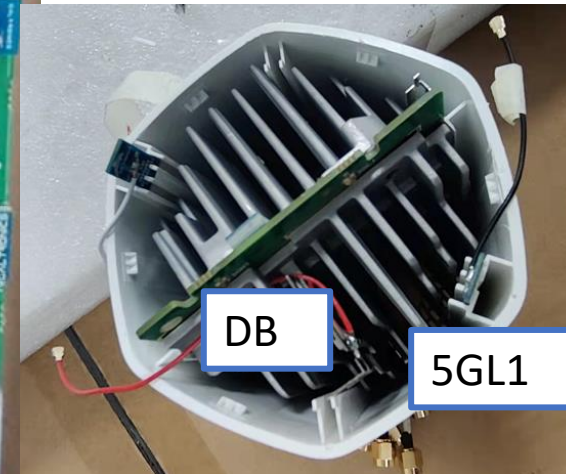
Antenna Isolation Between DB and 5GL



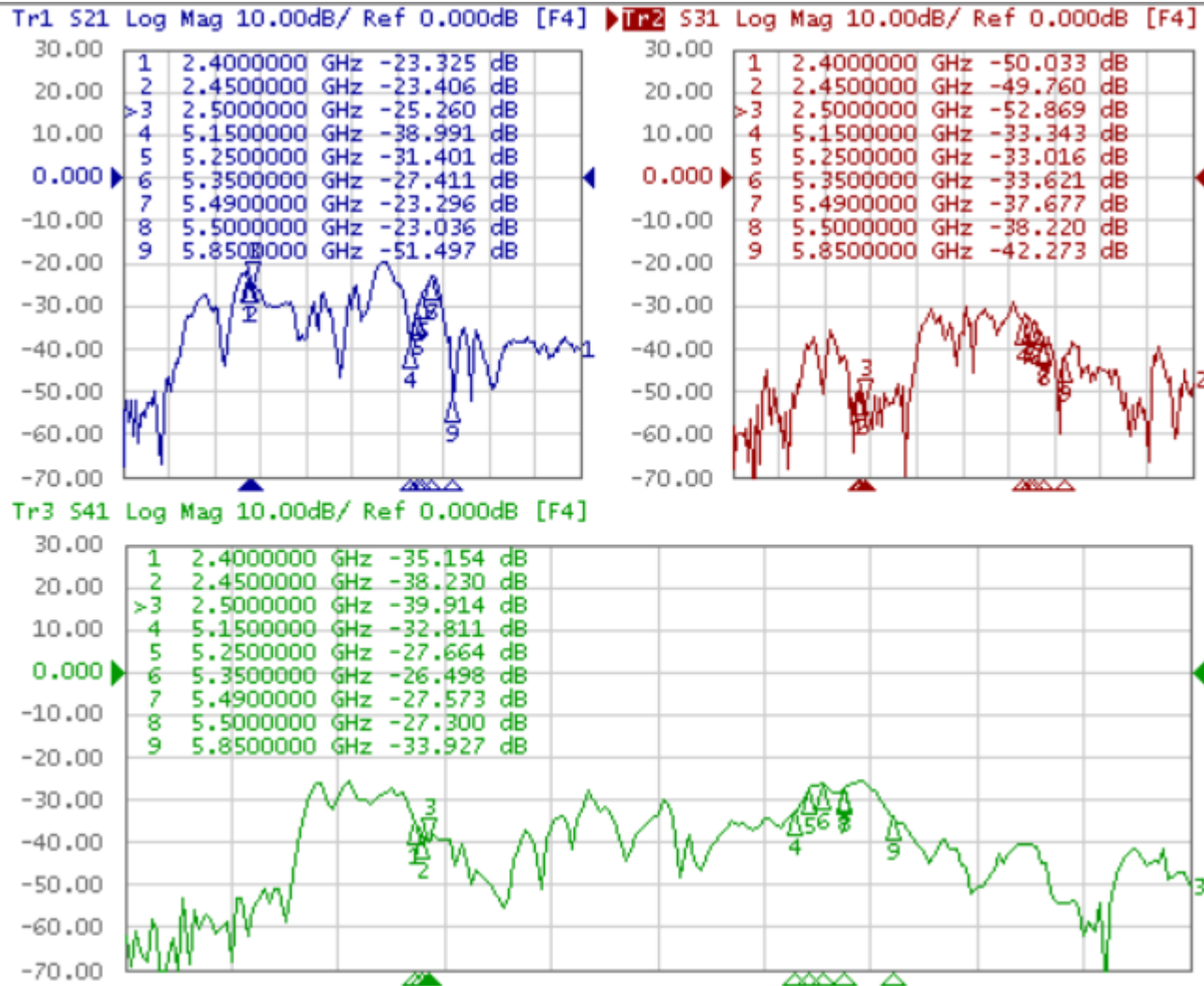
Port1=DB

Port2=5GL0

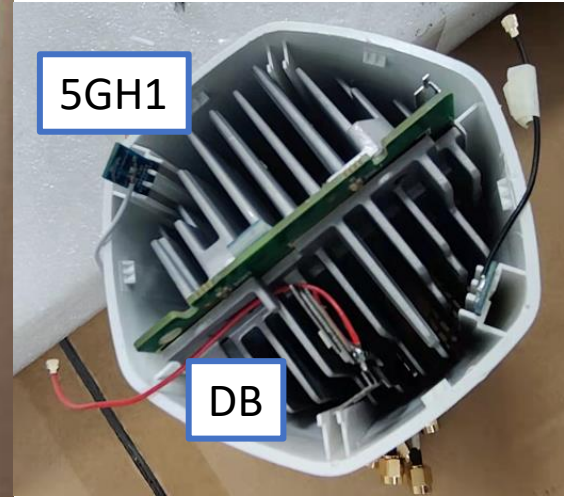
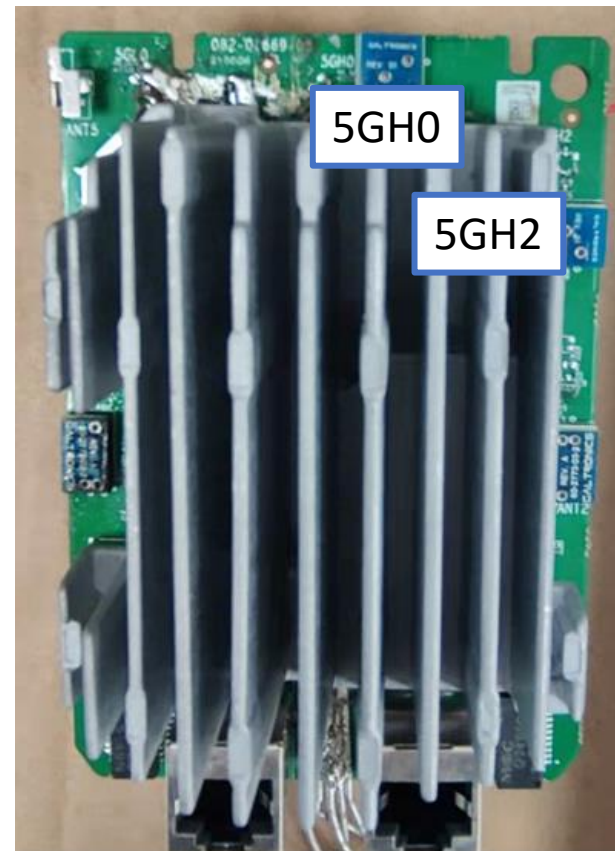
Port3=5GL1



Antenna Isolation Between DB and 5GH



Port1=DB Port2=5GH0
Port3=5GH1 Port4=5GH2



Antenna Peak Gain and Efficiency

2G	Freq (MHz)	Peak Gain(dBi)	Directivity(dB)	Efficiency
	2400	3.74	5.75	63.04
	2450	3.16	5.47	60.12
	2500	3.76	5.442	67.86
AVG				63.67

DB	Freq (MHz)	Peak Gain(dBi)	Directivity(dB)	Efficiency
	2400	4.03	5.91	64.94
	2450	4.22	5.94	67.38
	2500	3.96	5.95	63.11
AVG				65.14

BT	Freq (MHz)	Peak Gain(dBi)	Directivity(dB)	Efficiency
	2400	0.76	4.49	42.39
	2450	0.88	5.16	37.25
	2500	0.72	4.73	39.75
AVG				39.80

DB	Freq (MHz)	Peak Gain(dBi)	Directivity(dB)	Efficiency
	5500	6.14	8.51	72.29
	5725	6.61	7.74	78.07
	5825	5.95	7.65	67.71
AVG				72.69

Antenna Peak Gain and Efficiency

	Freq (MHz)	Peak Gain (dBi)	Directivity (dB)	Efficiency
5GL0	5150.00	3.32	5.28	63.67
	5250.00	4.67	6.11	71.60
	5350.00	4.40	5.83	71.96
	AVG			69.08

	Freq (MHz)	Peak Gain (dBi)	Directivity (dB)	Efficiency
5GH0	5500	3.96	5.54	69.59
	5725	3.80	5.16	73.16
	5825	3.53	5.70	60.72
	AVG			67.82

	Freq (MHz)	Peak Gain (dBi)	Directivity (dB)	Efficiency
5GL1	5150.00	4.31	6.20	71.40
	5250.00	4.31	5.54	77.70
	5350.00	4.21	5.85	72.00
	AVG			73.70

	Freq (MHz)	Peak Gain (dBi)	Directivity (dB)	Efficiency
5GH1	5500	5.48	6.53	78.46
	5725	5.17	6.53	79.20
	5825	4.33	5.96	68.68
	AVG			75.45

	Freq (MHz)	Peak Gain (dBi)	Directivity (dB)	Efficiency
5GH2	5500	4.44	6.64	60.31
	5725	5.16	7.08	64.27
	5825	4.13	6.25	61.46
	AVG			62.01

2GHz Band Horizontal, Vertical and Total Correlated/Uncorrelated Gain

Frequeccy (MHz)	Degree(°)		Gain(dBi)		Correlated Gain(dBi)-V-Pol
	Theta	Phi	2G1	DB	
2400	270	15	3.38	-0.85	4.53
2450	270	15	2.60	-0.46	4.22
2500	270	15	1.38	-0.63	3.45

Frequeccy (MHz)	Degree(°)		Gain(dBi)		Uncorrelated Gain(dBi)-V-Pol
	Theta	Phi	2G1	DB	
2400	270	15	3.375	-0.854	1.76
2450	270	15	2.603	-0.456	1.34
2500	135	105	-7.084	3.846	1.17

Frequeccy (MHz)	Degree(°)		Gain(dBi)		Correlated(dBi)-H-Pol
	Theta	Phi	2G1	DB	
2400	120	45	-4.35	-3.42	-0.86
2450	195	0	-11.48	-0.43	-1.29
2500	210	0	-6.10	-1.38	-0.41

Frequeccy (MHz)	Degree(°)		Gain(dBi)		Uncorrelated Gain(dBi)-H-Pol
	Theta	Phi	2G1	DB	
2400	195	15	-13.28	-0.31	-3.11
2450	195	15	-16.16	0.05	-2.85
2500	195	15	-11.06	-0.19	-2.86

Frequeccy (MHz)	Degree(°)		Gain(dBi)		Correlated Gain(dBi)-Total
	Theta	Phi	2G1	DB	
2400	270	15	3.459	-0.56	4.69
2450	270	15	2.741	-0.103	4.45
2500	135	120	-2.947	3.955	4.18

Frequeccy (MHz)	Degree(°)		Gain(dBi)		Uncorrelated(dBi)-Total
	Theta	Phi	2G1	DB	
2400	270	15	3.459	-0.56	1.90
2450	135	120	-6.682	4.223	1.55
2500	135	120	-2.947	3.955	1.75

5GL Band Horizontal, Vertical and Total Correlated/Uncorrelated Gain

Frequency (MHz)	Degree(°)		Gain(dBi)		Correlated Gain(dBi)-V-Pol
	Theta	Phi	5GL0	5GL1	
5150	90	15	0.346	4.234	5.52
5250	240	30	1.038	2.765	4.95
5350	255	165	-0.842	3.565	4.65

Frequency (MHz)	Degree(°)		Gain(dBi)		Correlated(dBi)-H-Pol
	Theta	Phi	5GL0	5GL1	
5150	195	135	0.712	-6.658	0.80
5250	225	15	-0.797	-2.25	1.52
5350	150	0	2.068	-6.071	1.93

Frequency (MHz)	Degree(°)		Gain (dBi)		Correlated Gain(dBi)-Total
	Theta	Phi	5GL0	5GL1	
5150	90	15	1.732	4.308	6.13
5250	240	30	2.496	2.917	5.72
5350	255	120	1.19	3.519	5.44

Frequency (MHz)	Degree(°)		Gain(dBi)		Uncorrelated Gain(dBi)-V-Pol
	Theta	Phi	5GL0	5GL1	
5150	90	15	0.346	4.234	2.71
5250	240	30	1.038	2.765	1.99
5350	255	165	-0.842	3.565	1.90

Frequency (MHz)	Degree(°)		Gain(dBi)		Uncorrelated Gain(dBi)-H-Pol
	Theta	Phi	5GL0	5GL1	
5150	195	135	0.71	-6.66	-1.57
5250	195	135	2.57	-12.75	-0.31
5350	150	0	2.07	-6.07	-0.32

Frequency (MHz)	Degree(°)		Gain(dBi)		Uncorrelated(dBi)-Total
	Theta	Phi	5GL0	5GL1	
5150	90	15	1.732	4.308	3.21
5250	240	30	2.496	2.917	2.71
5350	285	150	-0.571	4.503	2.67

5GH Band Horizontal, Vertical and Total Correlated/Uncorrelated Gain

Frequeccy (MHz)	Degree(°)		Gain(dBi)				Correlated Gain(dBi)-V-Pol
	Theta	Phi	5GH0	5GH1	5GH2	DB	
5500	75	45	-0.14	2.78	-5.01	3.20	6.78
5725	75	45	0.50	4.23	-4.04	4.38	7.91
5825	75	30	-0.99	3.48	-3.63	2.71	6.87

Frequeccy (MHz)	Degree(°)		Gain(dBi)				Uncorrelated Gain(dBi)-V-Pol
	Theta	Phi	5GH0	5GH1	5GH2	DB	
5500	75	45	-0.14	2.78	-5.01	3.20	1.19
5725	75	45	0.50	4.23	-4.04	4.38	2.37
5825	75	30	-0.99	3.48	-3.63	2.71	1.24

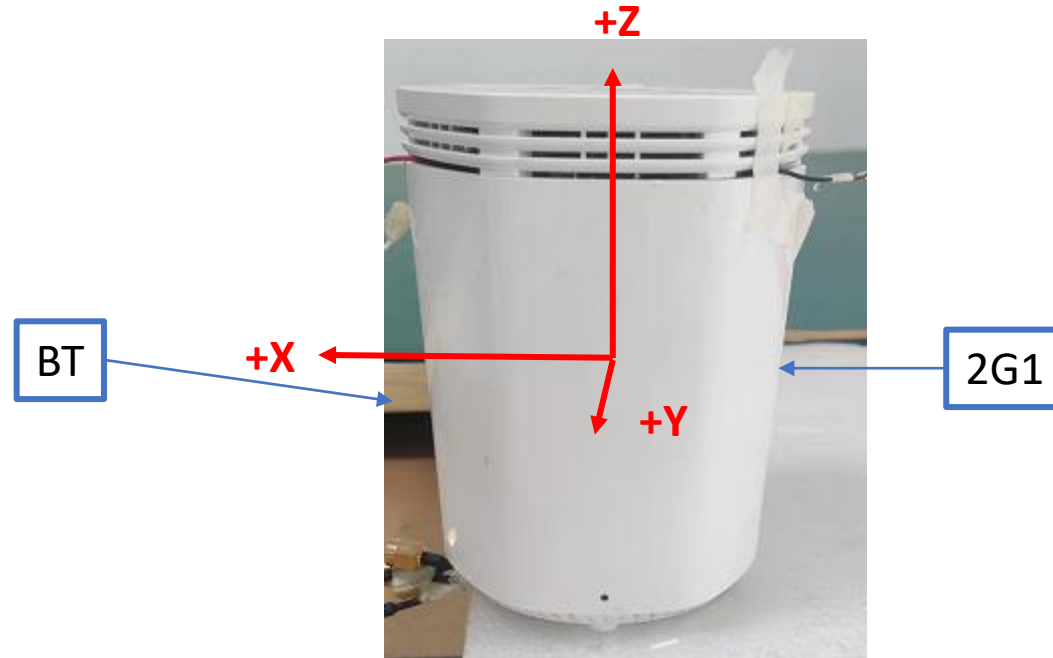
Frequeccy (MHz)	Degree(°)		Gain(dBi)				Correlated Gain(dBi)-H-Pol
	Theta	Phi	5GH0	5GH1	5GH2	DB	
5500	30	45	-9.57	-2.38	-1.66	2.71	4.31
5725	30	0	-4.76	-8.49	-0.42	2.36	4.13
5825	345	165	-15.39	-6.35	0.79	1.47	3.32

Frequeccy (MHz)	Degree(°)		Gain(dBi)				Uncorrelated Gain(dBi)-H-Pol
	Theta	Phi	5GH0	5GH1	5GH2	DB	
5500	30	45	-9.57	-2.38	-1.66	2.71	-0.92
5725	285	150	-7.31	-13.23	4.39	-4.04	-0.74
5825	285	150	-2.45	-17.65	3.14	-5.89	-1.39

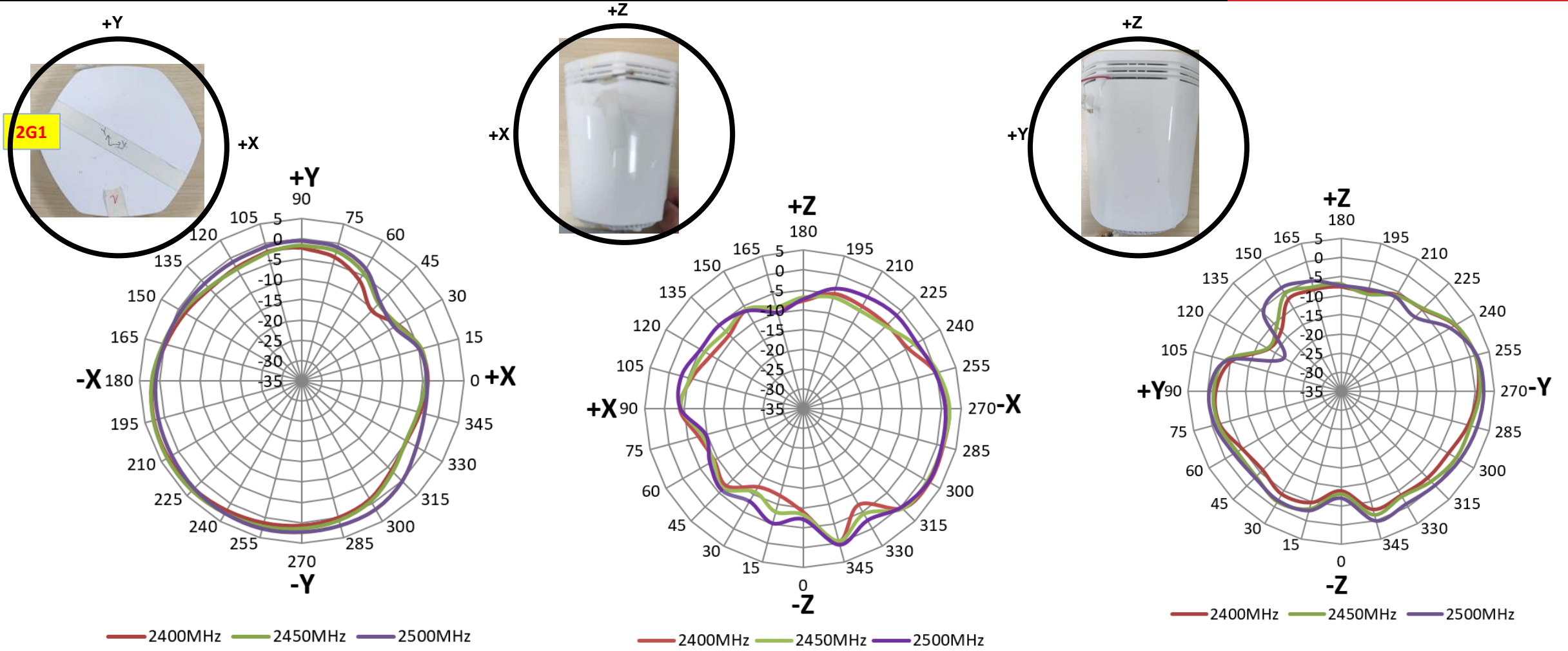
Frequeccy (MHz)	Degree(°)		Gain(dBi)				Correlated Gain(dBi)-Total
	Theta	Phi	5GH0	5GH1	5GH2	DB	
5500	60	45	0.53	4.78	-0.78	2.28	7.98
5725	75	45	0.60	4.34	-0.55	4.40	8.49
5825	75	30	-0.68	3.61	-1.20	2.79	7.40

Frequeccy (MHz)	Degree(°)		Gain(dBi)				Uncorrelated (dBi)-Total
	Theta	Phi	5GH0	5GH1	5GH2	DB	
5500	60	45	0.53	4.78	-0.78	2.28	2.21
5725	75	45	0.60	4.34	-0.55	4.40	2.73
5825	75	30	-0.68	3.61	-1.20	2.79	1.62

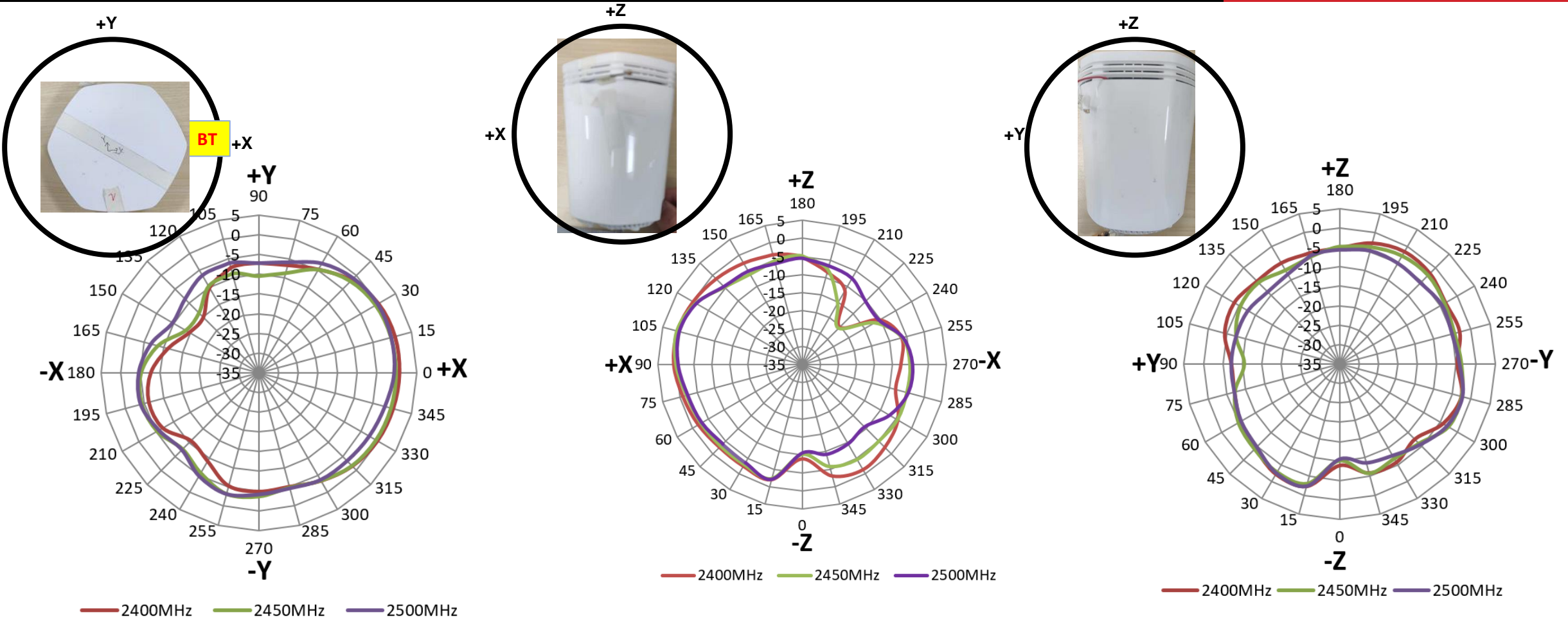
Chamber Coordinates



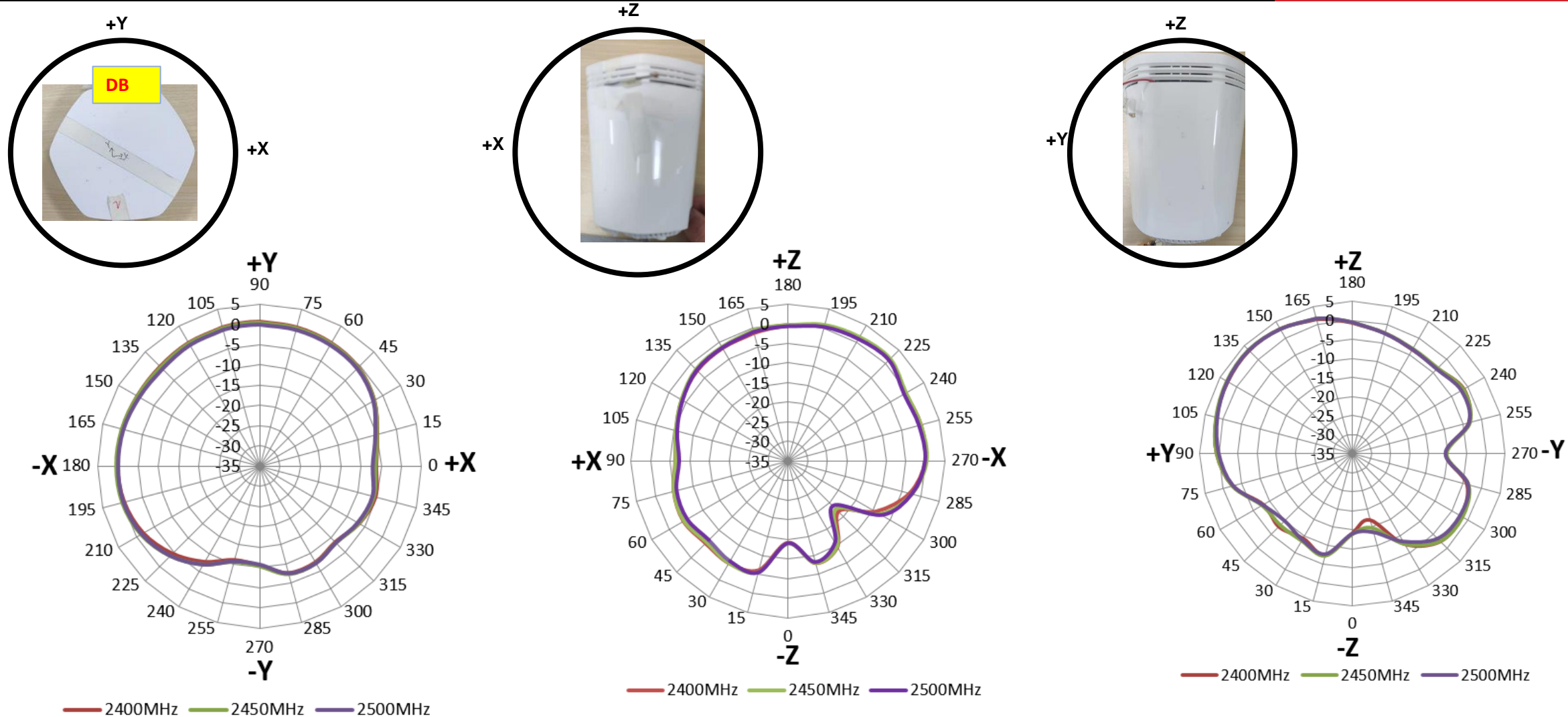
2G1 Antenna Power Sum Gain Patterns



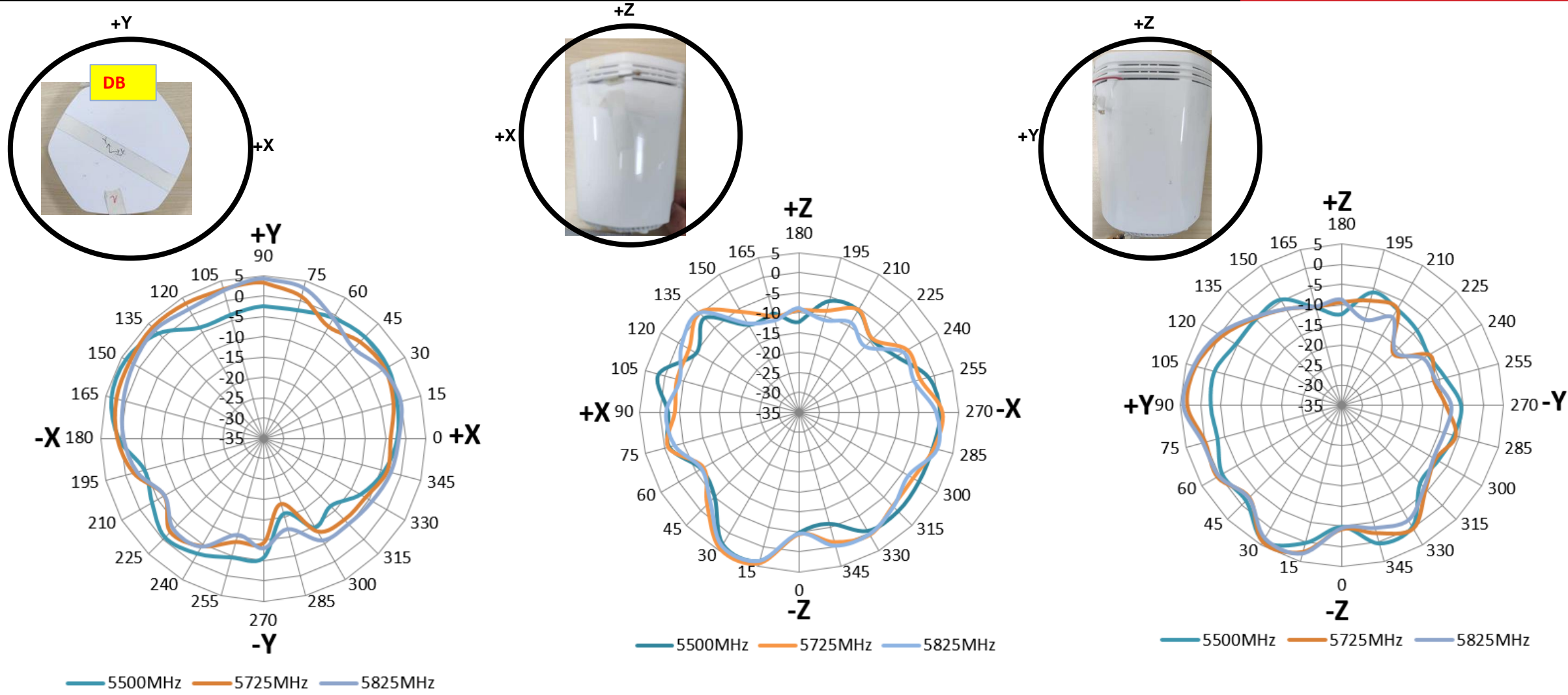
BT Antenna Power Sum Gain Patterns



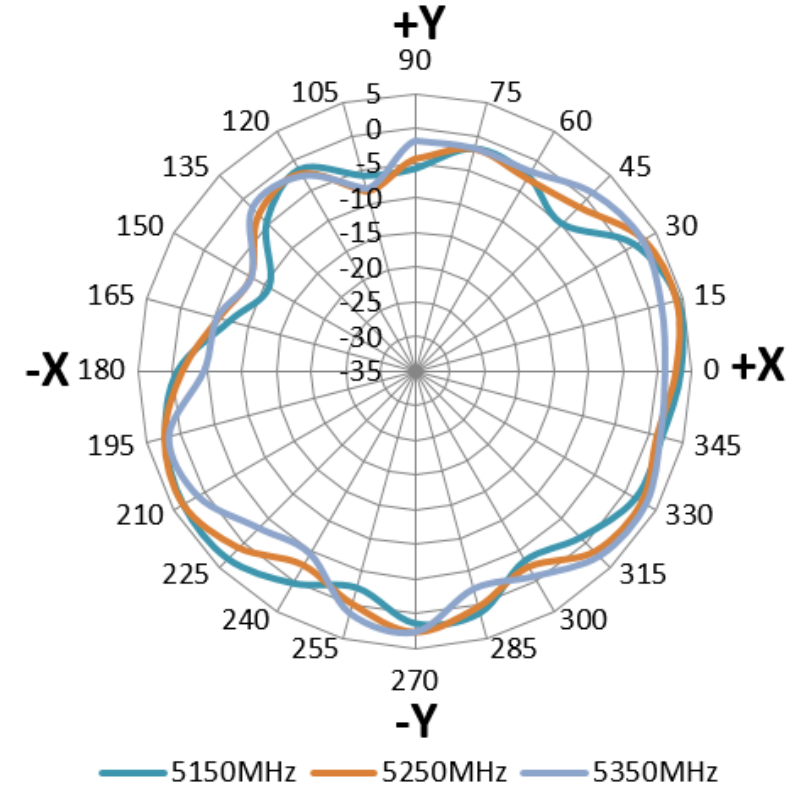
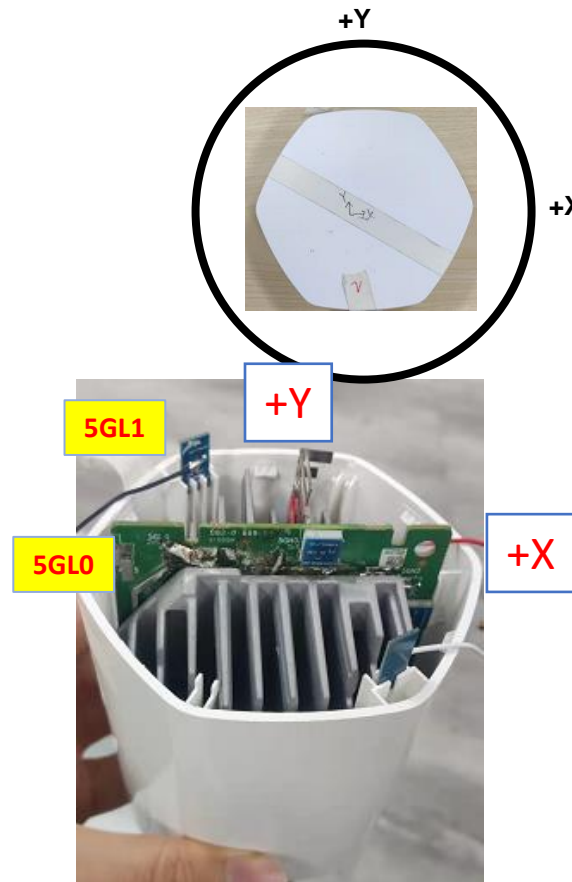
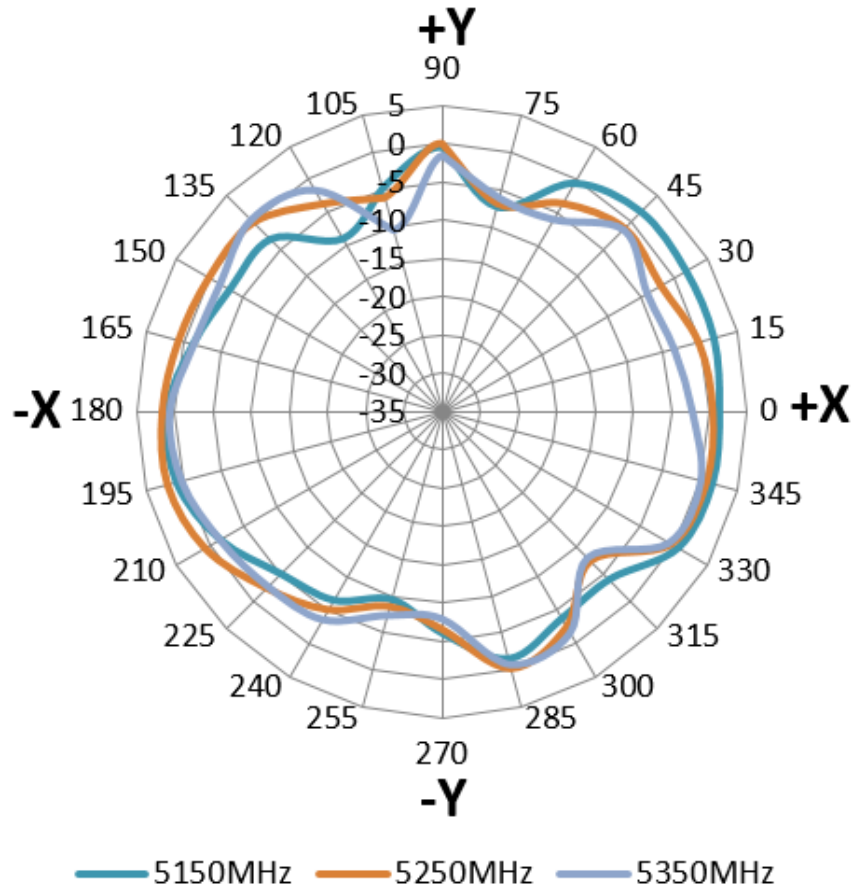
DB_2G Band Antenna Power Sum Gain Patterns



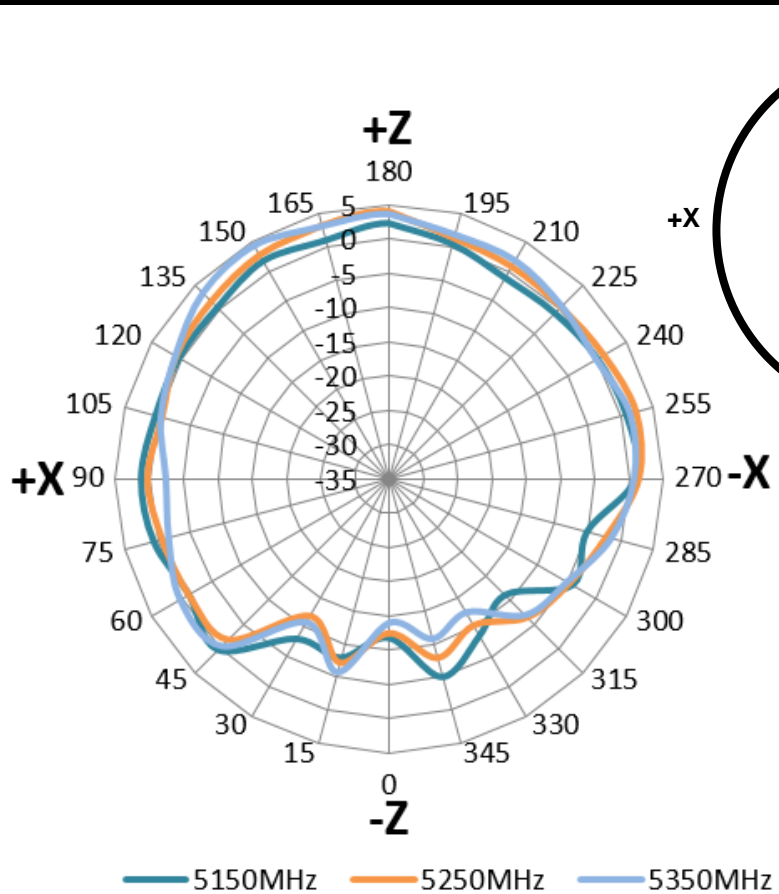
DB_5GH Band Antenna Power Sum Gain Patterns



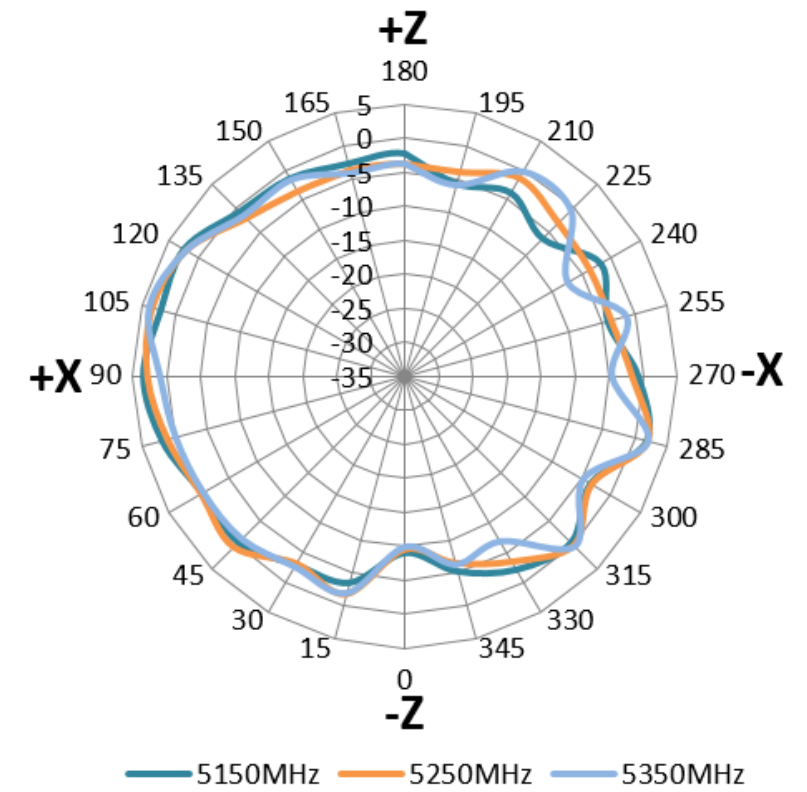
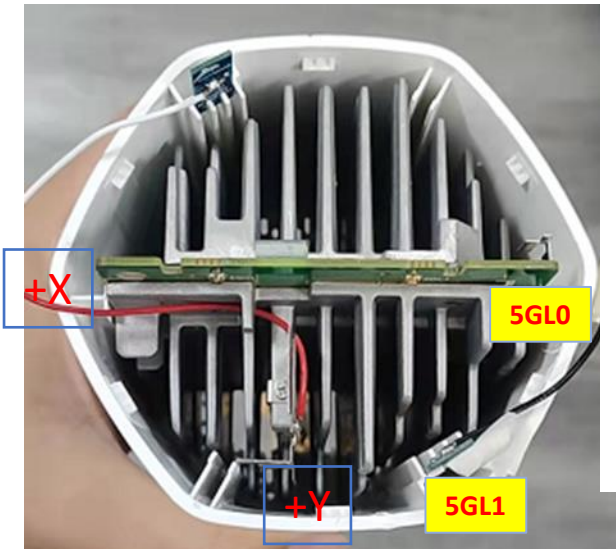
Azimuth Cut - Power Sum 5GL Antennas



Elevation Cut XZ - Power Sum 5GL Antennas

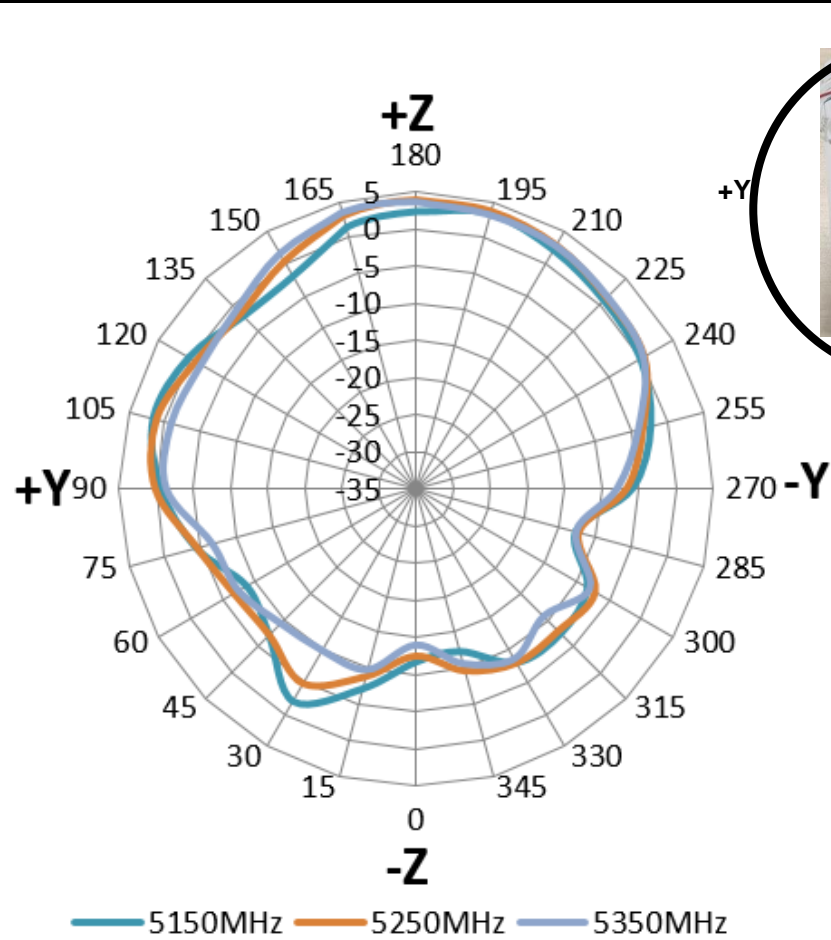


5GL0

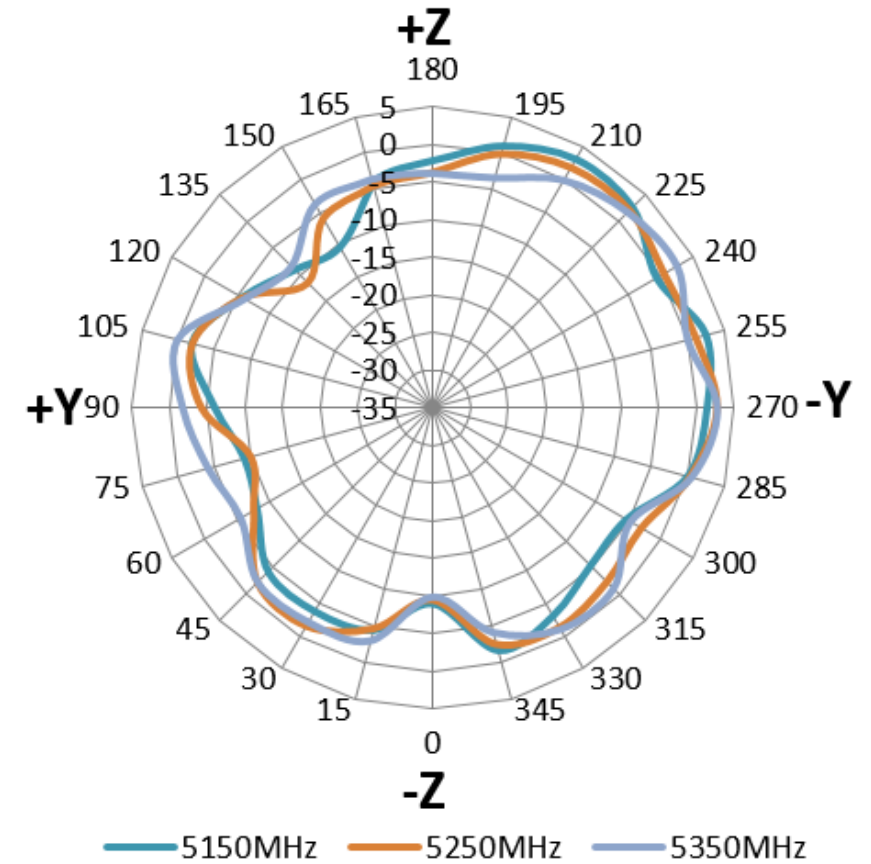
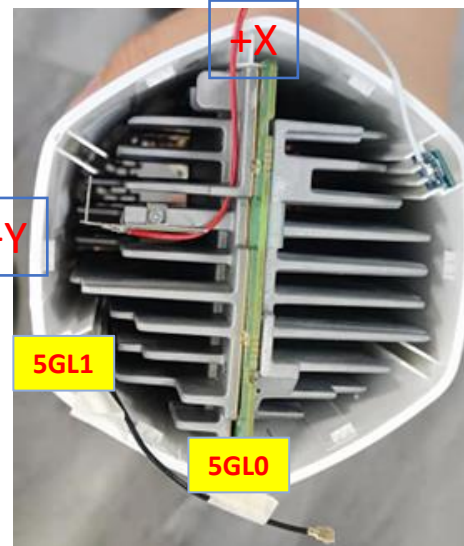
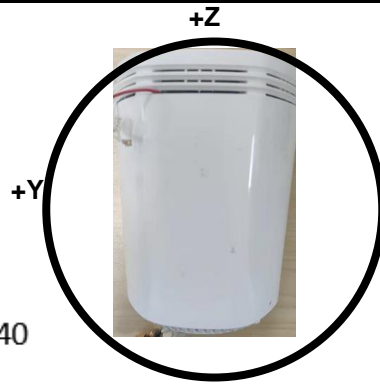


5GL1

Elevation Cut YZ - Power Sum 5GL Antennas

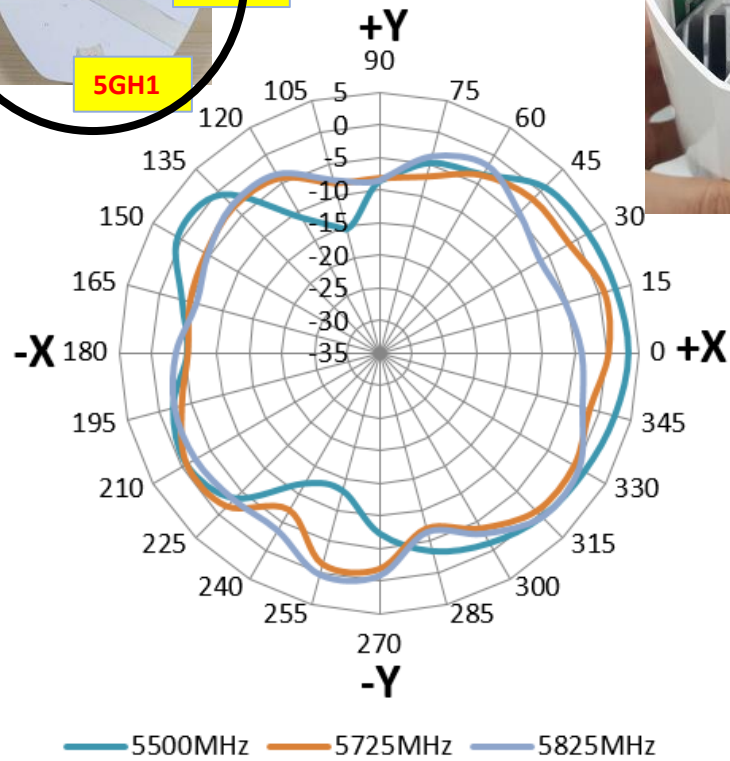
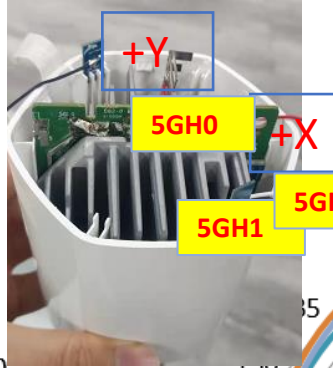
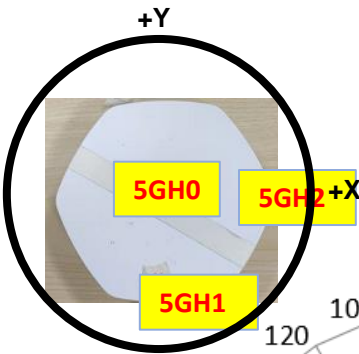


5GL0

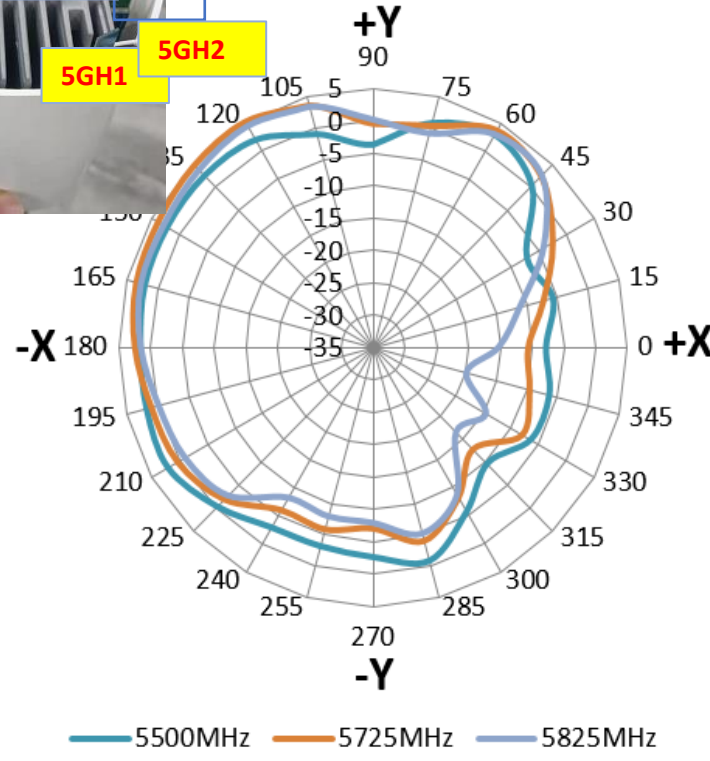


5GL1

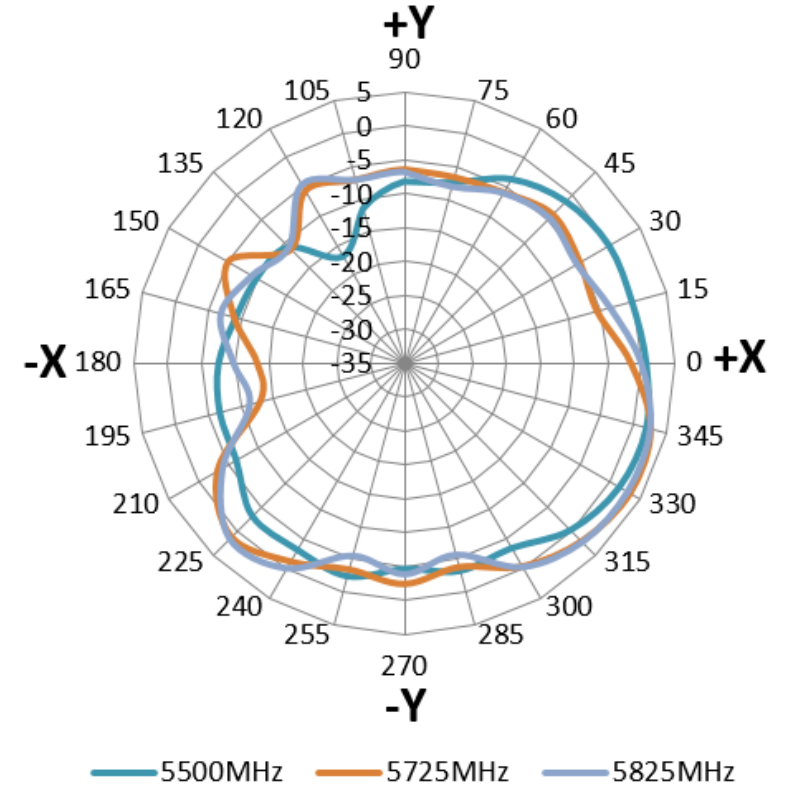
Azimuth Cut - Power Sum 5GH Antennas



5GH0

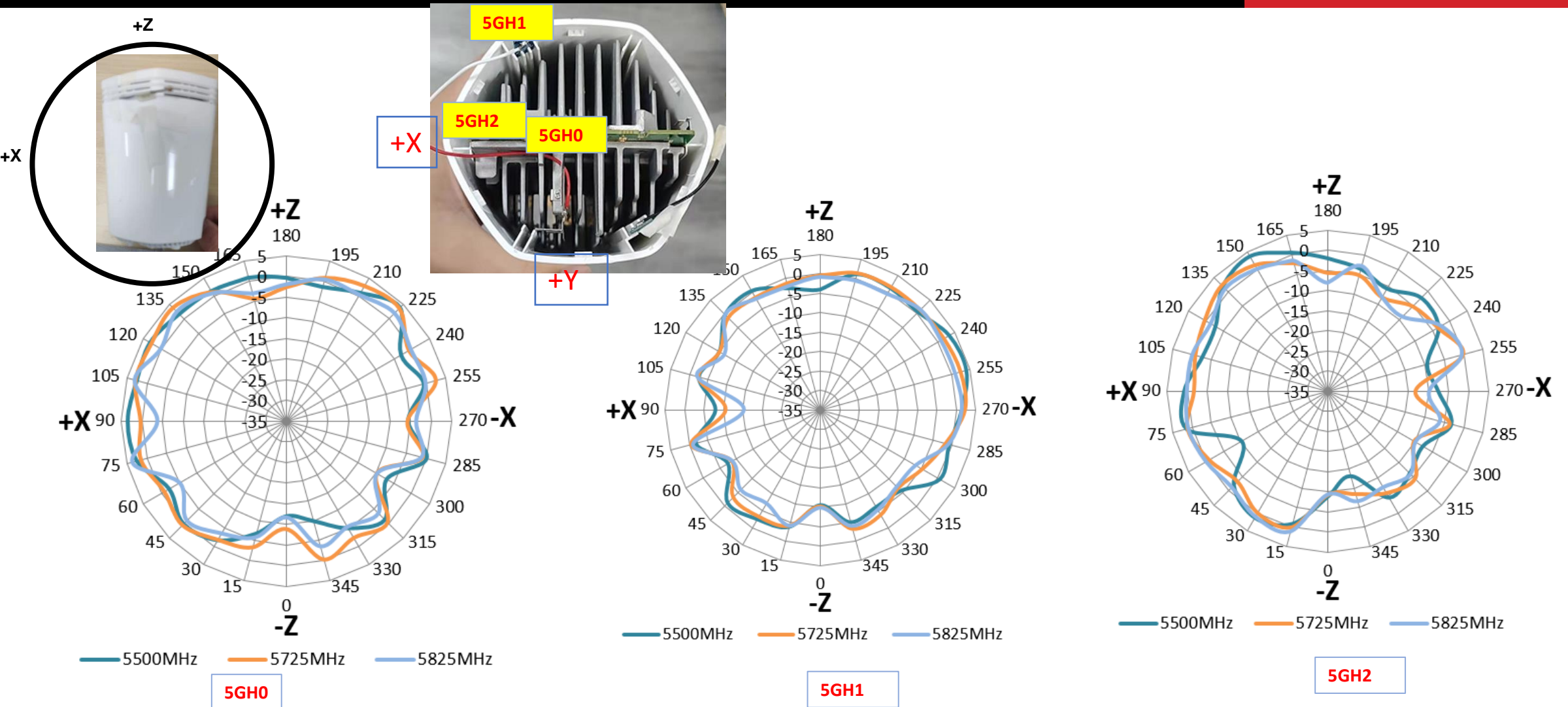


5GH1

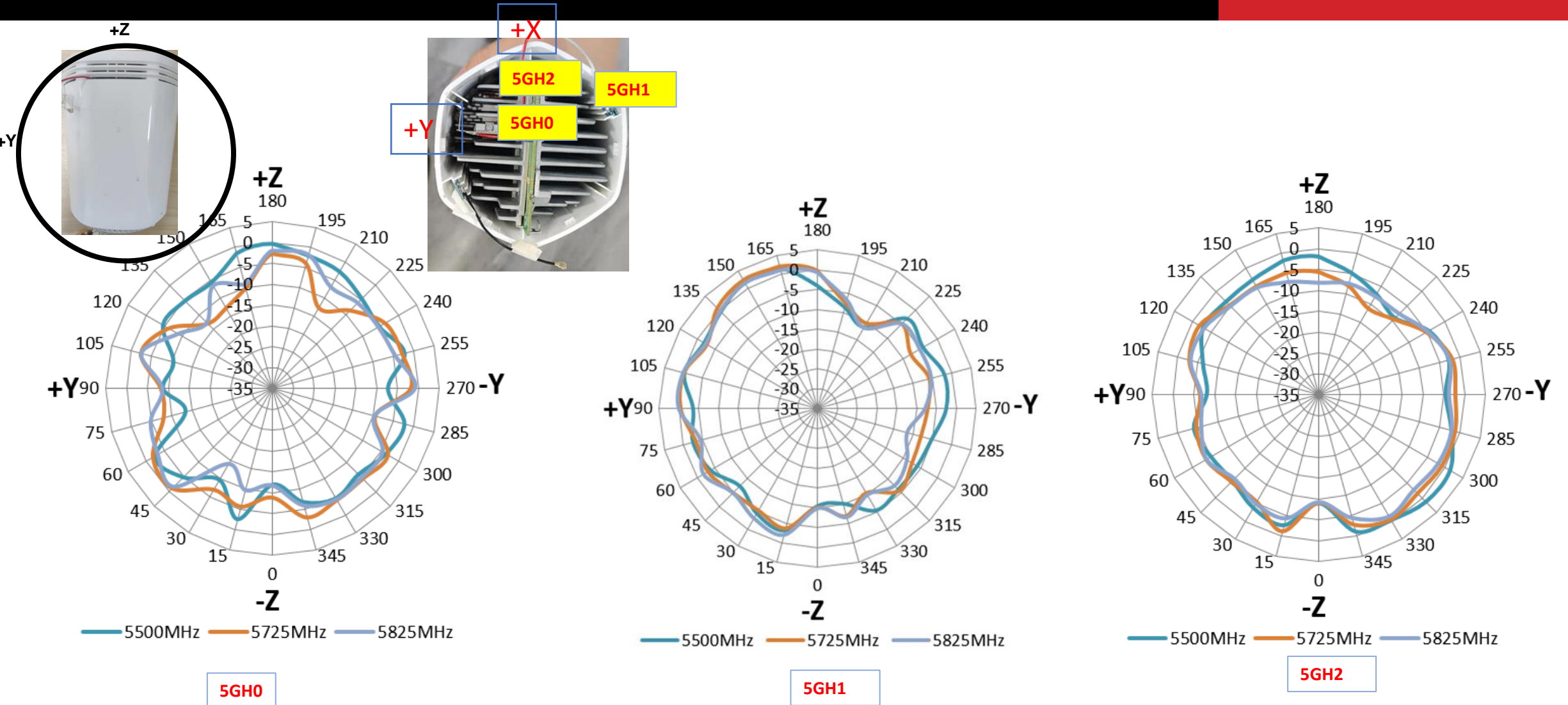


5GH2

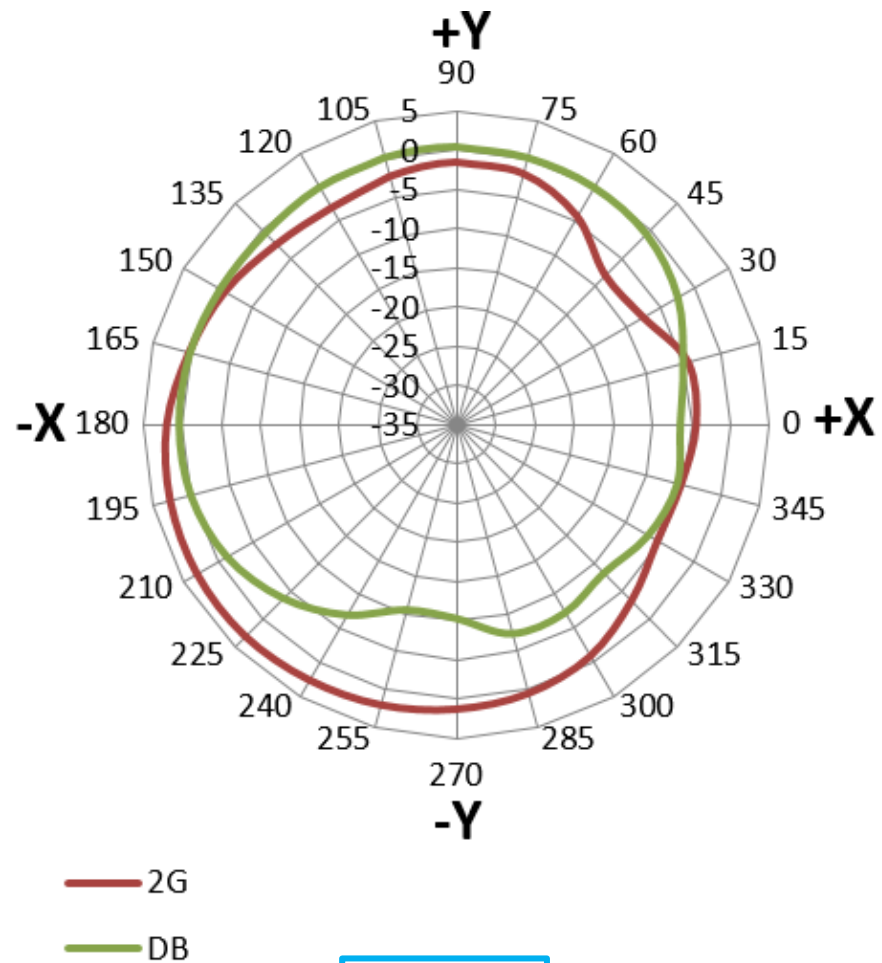
Elevation (XZ) Cut - Power Sum 5GH Antennas



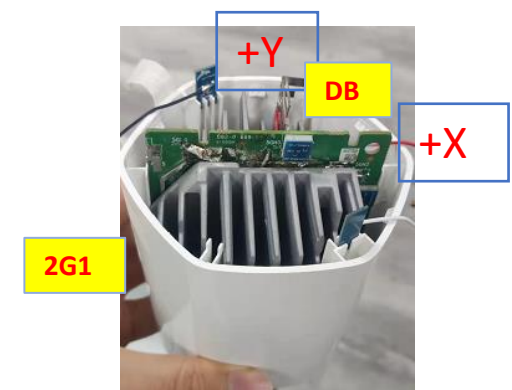
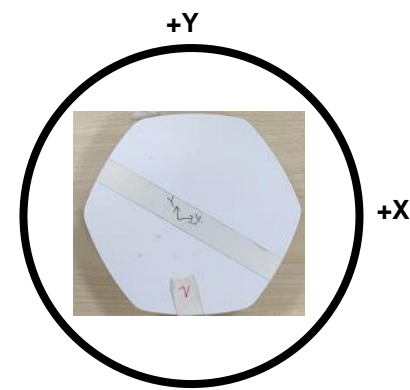
Elevation (YZ) Cut - Power Sum 5GH Antennas



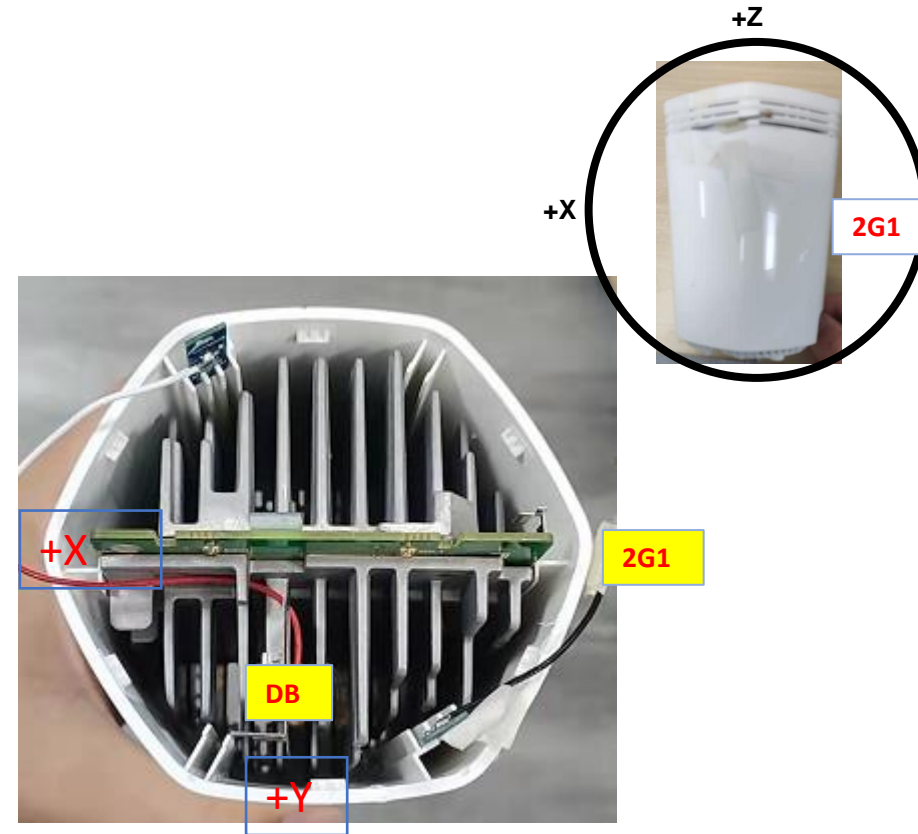
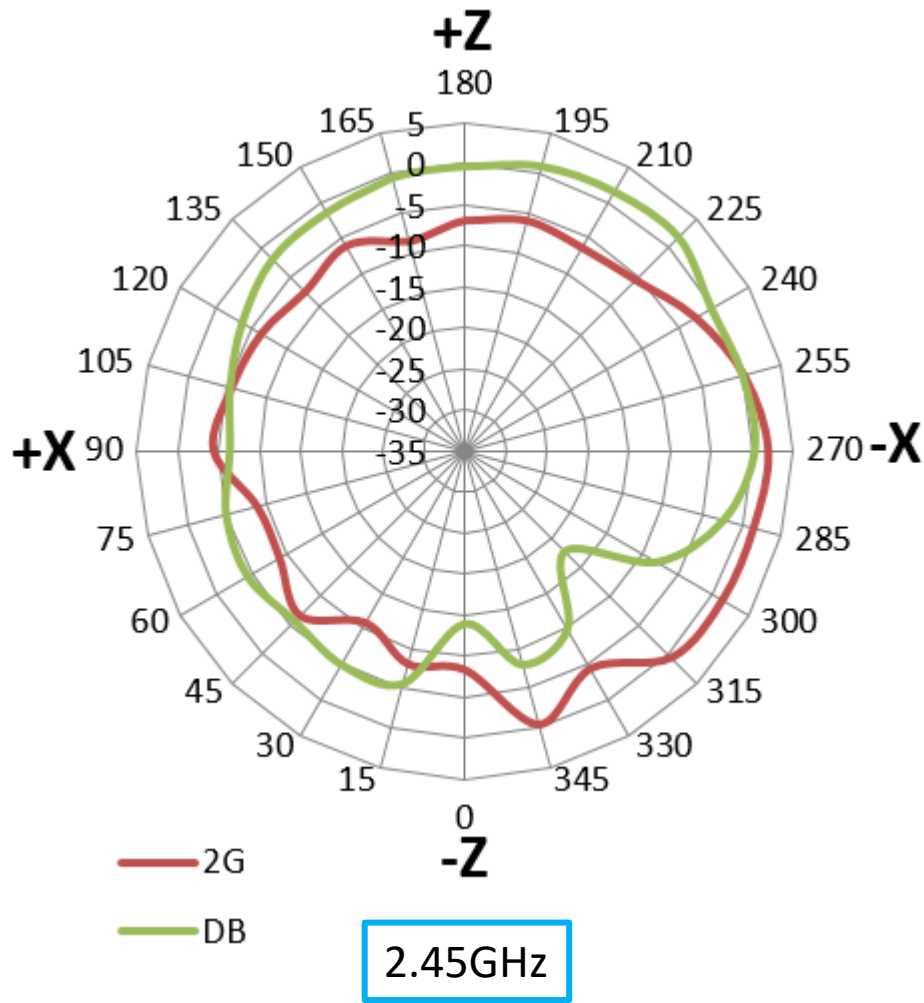
Azimuth Cut - Power Sum System Coverage - 2.45 GHz Band



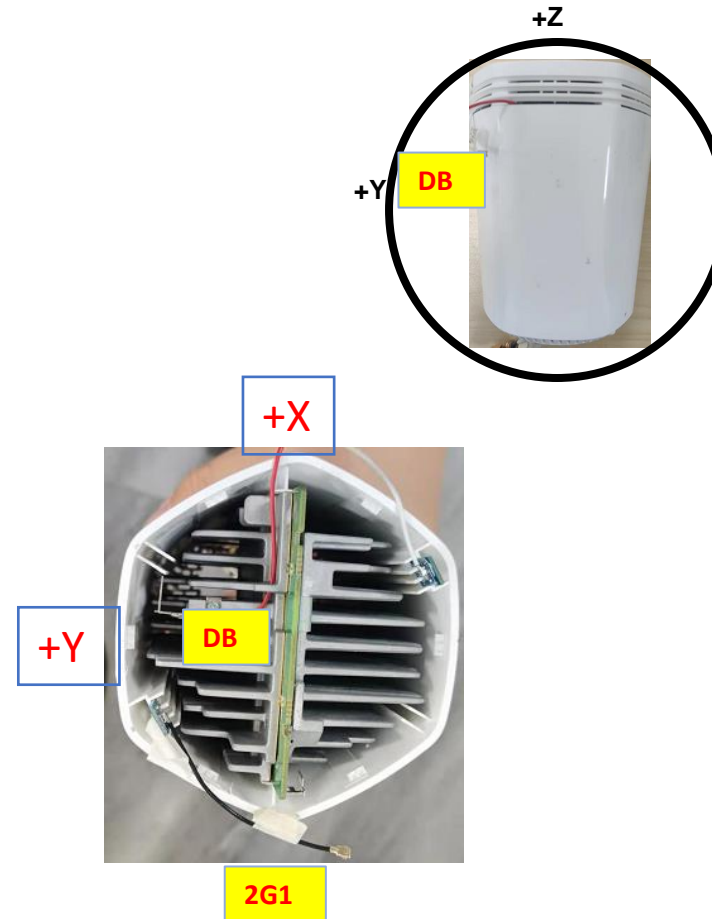
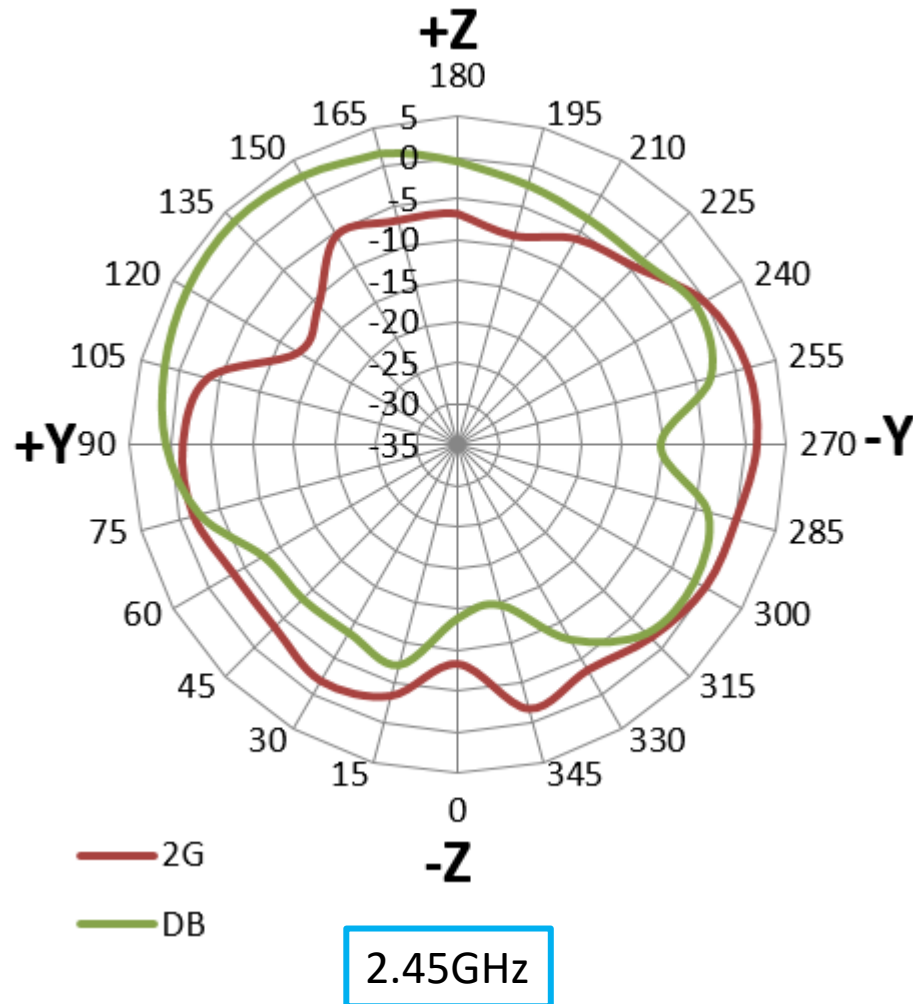
2.45GHz



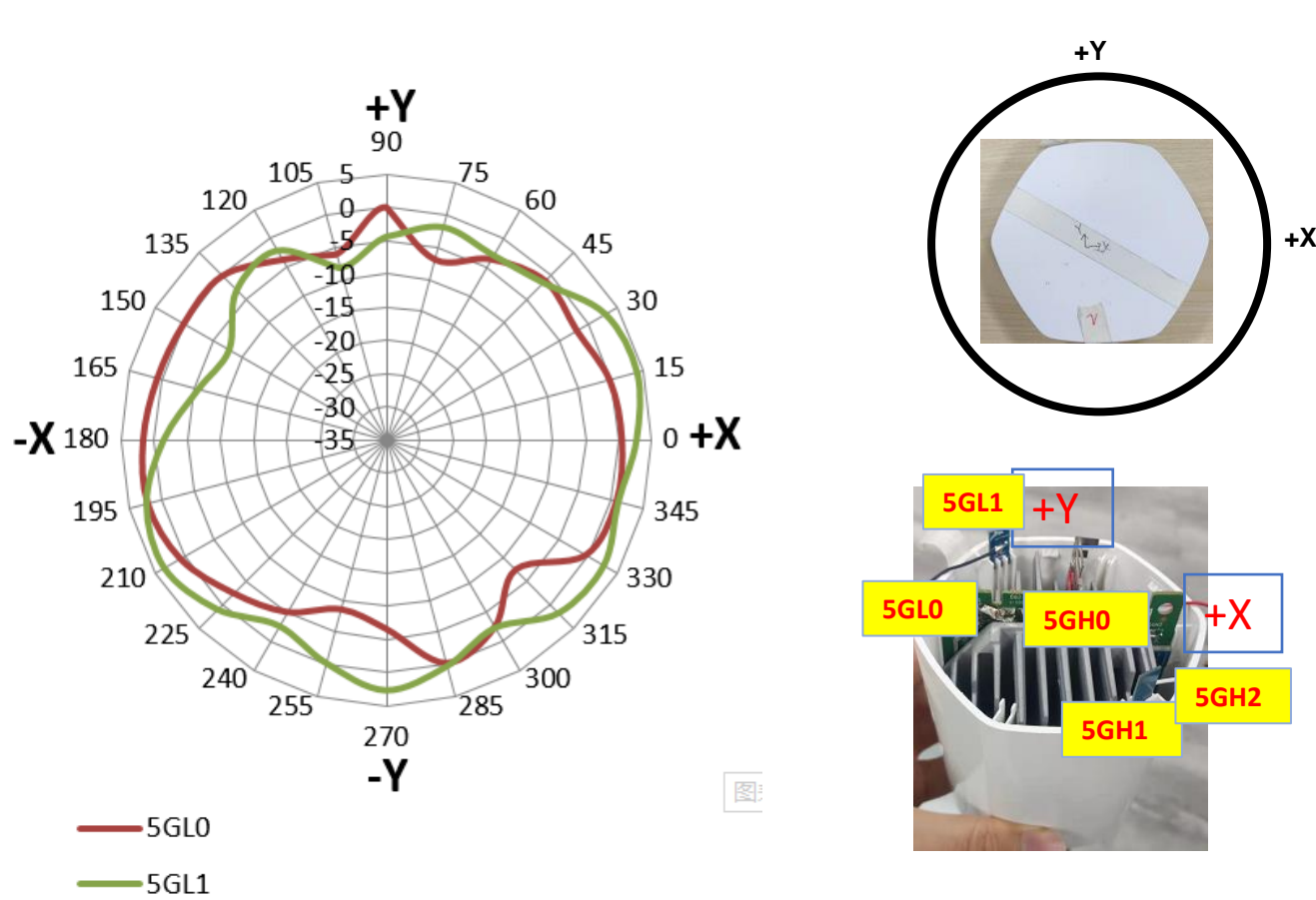
Elevation (XZ) Cut - Power Sum System Coverage - 2.45 GHz Band



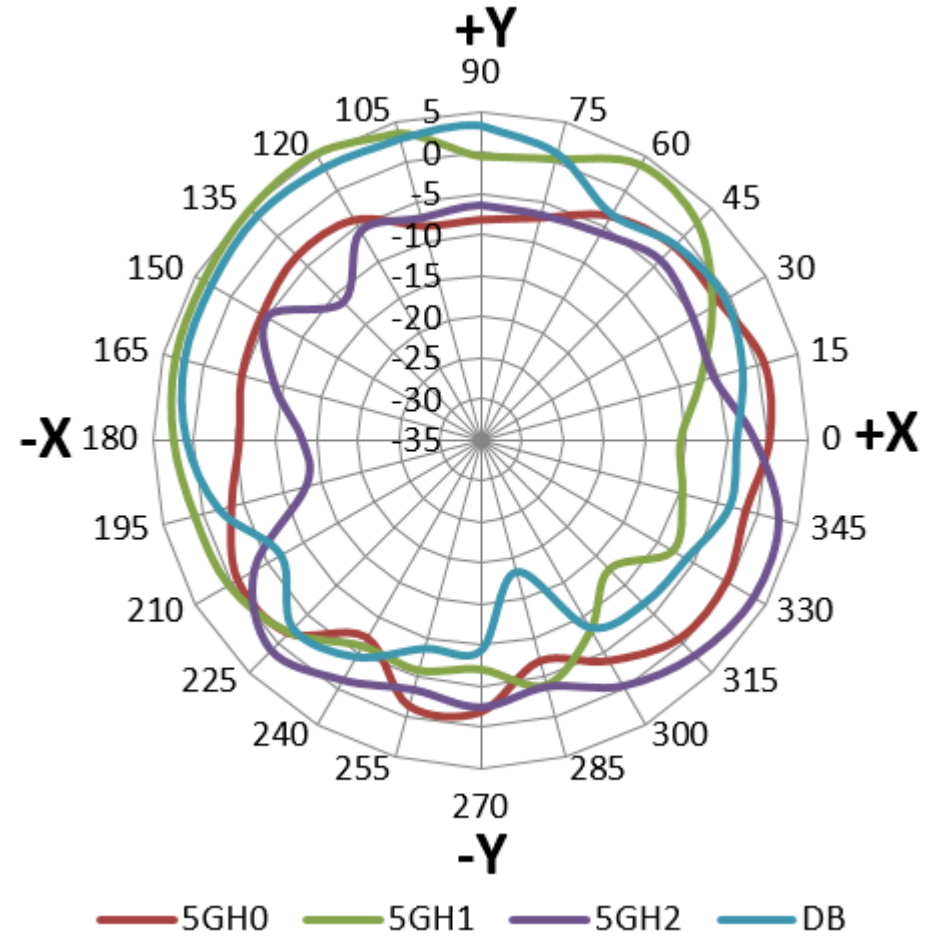
Elevation (YZ) Cut - Power Sum System Coverage - 2.45 GHz Band



Azimuth Cut - Power Sum System Coverage - 5GHz Band

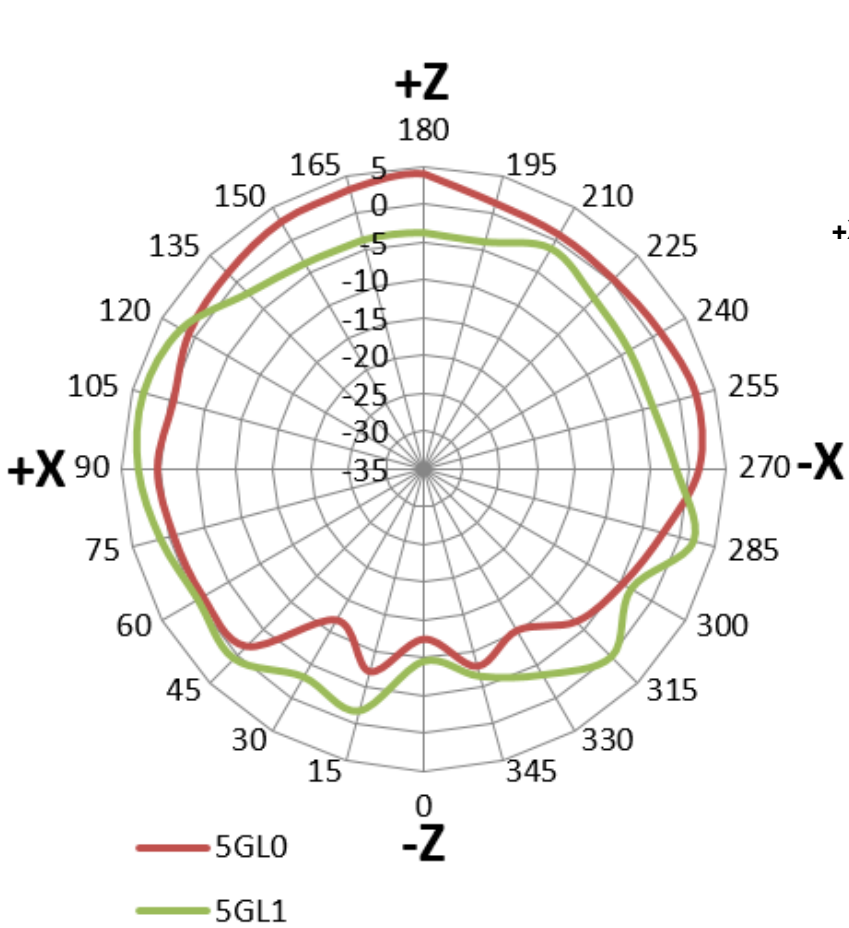


5GHz -5.25 GHz

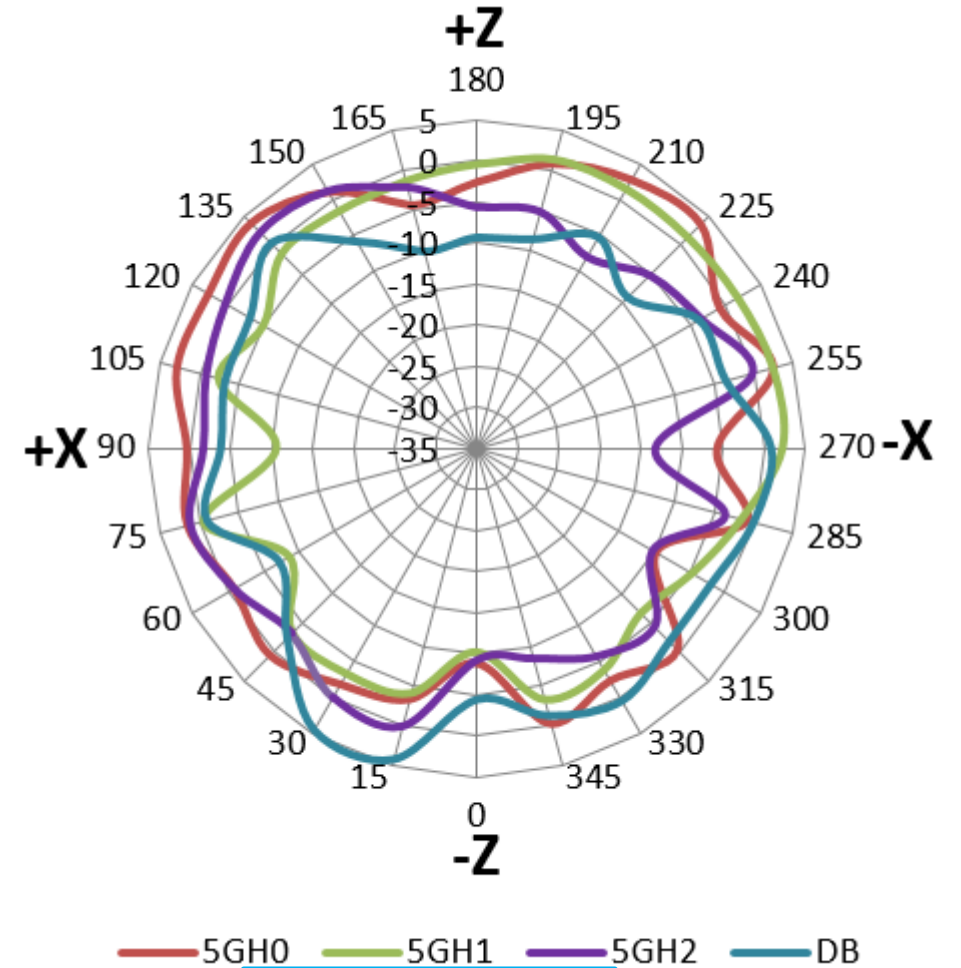
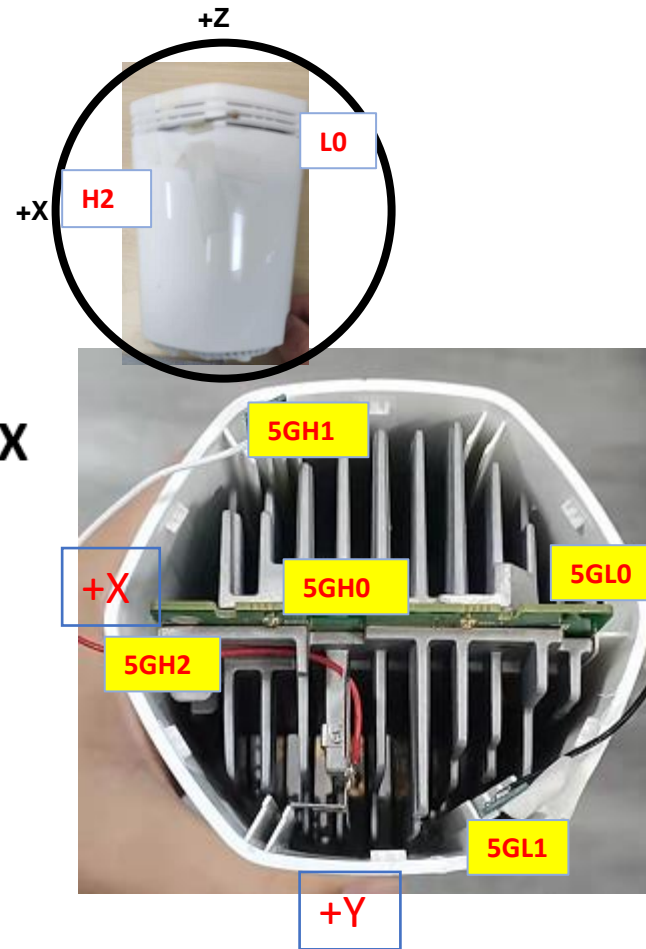


5GHz -5.725 GHz

Elevation (XZ) Cut - Power Sum System Coverage - 5GHz Band

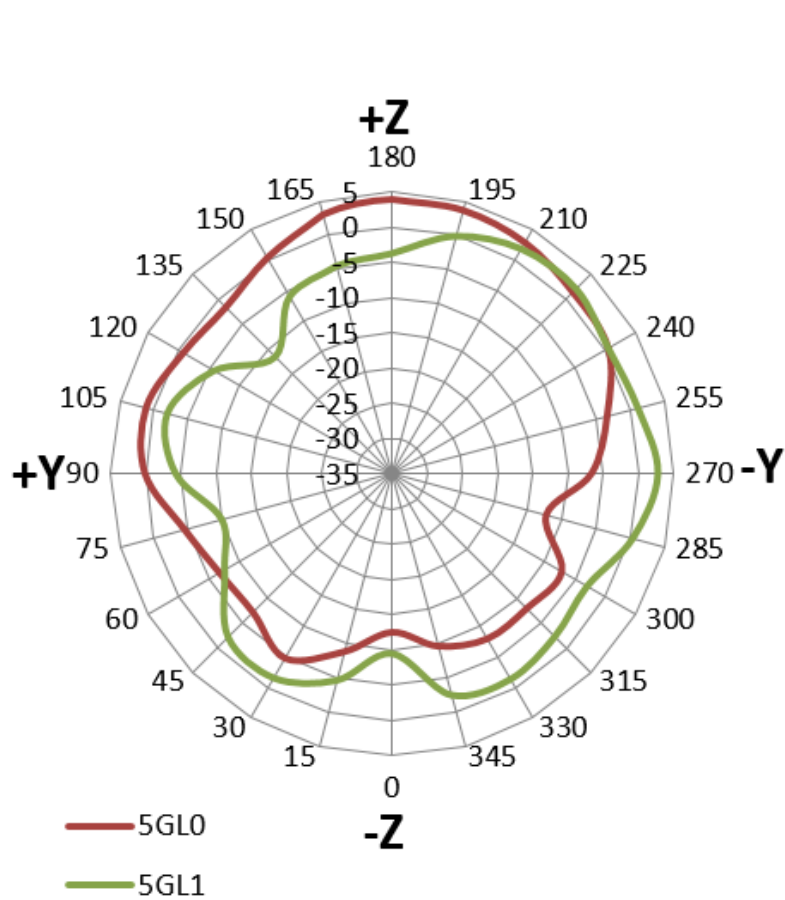


5GHz -5.25 GHz

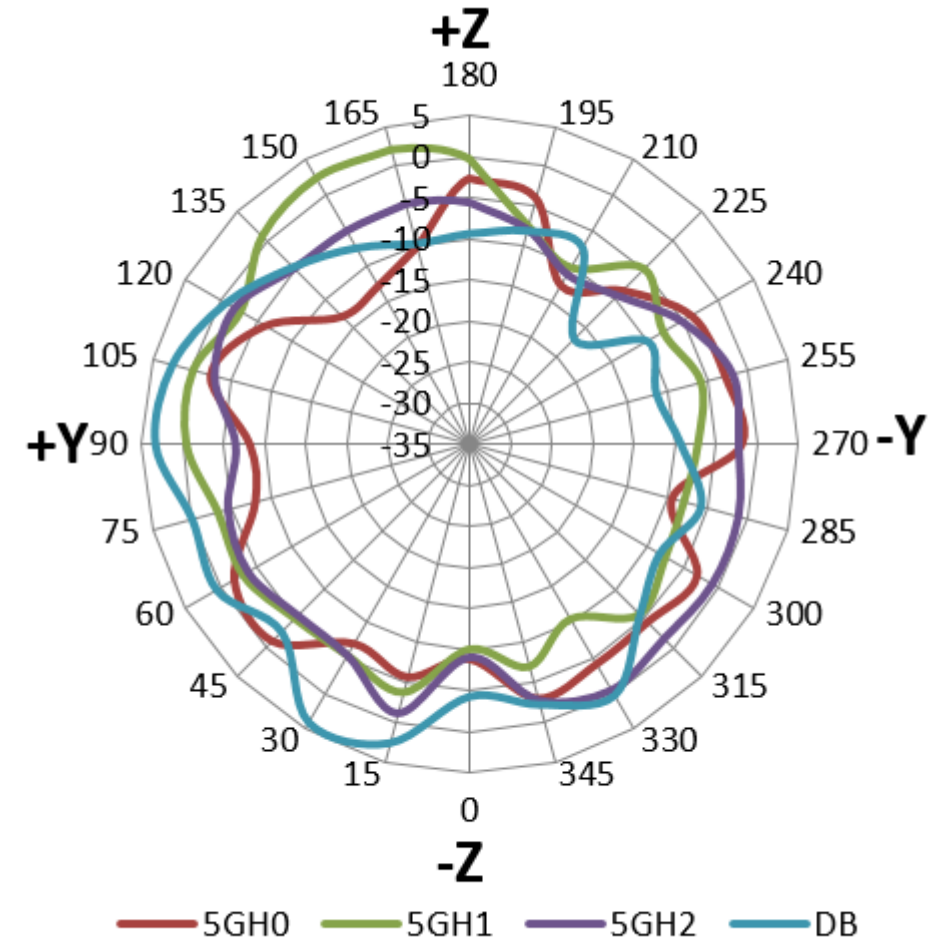
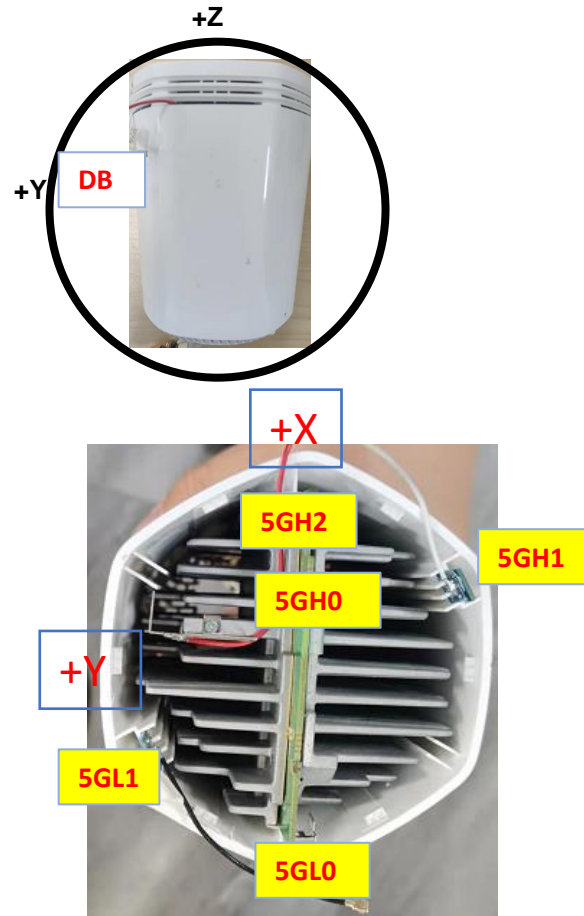


5GHz -5.725 GHz

Elevation (YZ) Cut - Power Sum System Coverage - 5GHz Band



5GHz -5.25 GHz



5GHz -5.725 GHz

Antenna Performance Summary

Antenna	Worst Case Return Loss (dB) 2.45 GHz Band	Worst Case Return Loss (dB) 5 GHz Low Band	Worst Case Return Loss (dB) 5 GHz High Band	Average Efficiency 2.45 GHz Band (%)	Average Efficiency 5 GHz Low Band (%)	Average Efficiency 5 GHz High Band (%)	Highest Peak Gain 2.45 GHz Band (dBi)	Highest Peak Gain 5 GHz Low Band (dBi)	Highest Peak Gain 5 GHz High Band (dBi)	Mutual Isolation (dB) 2.45 GHz Band			Mutual Isolation (dB) 5 GHz Low Band		Mutual Isolation (dB) 5 GHz High Band			
										2G1	BT	DB	5GL0	5GL1	5GH0	5GH1	5GH2	DB
2G1	-10.1			63.67			3.7											
DB	-9.7		-11.3	65.14			4.2			-25.4	-24		-26.3	-15.2	-23.2	-22.4	-27.3	
5GL0		-10.4			69.08		4.6			-33.5	-45.1	-28.8	-22.8		-24.1	-25.8	-21.4	-28.8
5GL1		-11.4			73.7		4.3			-34.1	-46.3	-38.8			-28.1	-27	-37.2	-22.9
5GH0			-15.4			67.8			3.9	-32.6	-25.4	-23.3	-17.8	-20.9				
5GH1			-11			75.45			5.4	-47.2	-40.1	-49.7	-21.3	-25.5	-26.5			
5GH2			-10			62.01			5.1	-37.3	-23.6	-35.1	-25.8	-35.3	-18	-34.8		
BT	-6.7			39.8			0.8					-24.5			-31.1	-34.7	-28	-37.4

Global Locations



USA Design Center

Galtronics USA Inc.
8930 South Beck Avenue
Suite #103
Tempe, AZ 85284 USA
Tel: +1-480-496-5100

Korea Design Center

Galtronics Korea Co.
#B214, Innoplex Bldg.,306, Sinwon-ro,
Yeongtong-gu, Suwon-si, Gyeonggi-do,
16675 Korea
Tel: + 82-32-227-0771

Corporate Headquarters

Baylin Technologies Inc.,
60 Columbia Way
Suite 205
Markham, ON L3R 0C9 Canada

Ottawa, Canada Design Center

Galtronics Canada Inc.
200 Terence Mathews Crescent,
Unit A
Kanata, ON K2M 2C6 Canada

Suzhou, China Design Center

Galtronics Electronics (Wuxi) Co.
No.28, Jinxing Rd, Metallurgical
Industrial Park (Jinfeng Town) ,
Zhangjiagang City, Jiangsu, China

China Factory

Galtronics Electronics (Wuxi) Co.
No. 1, Xishi Road,
Wuxi New District
Jiangsu Province 214028, China
Tel: +86-510-8866-5500

Vietnam Factory

Galtronics Vietnam
Lot G1 , G2, Que Vo Industrial Park,
Phuong Lieu commune, Que Vo district,
Bac Ninh province, Vietnam