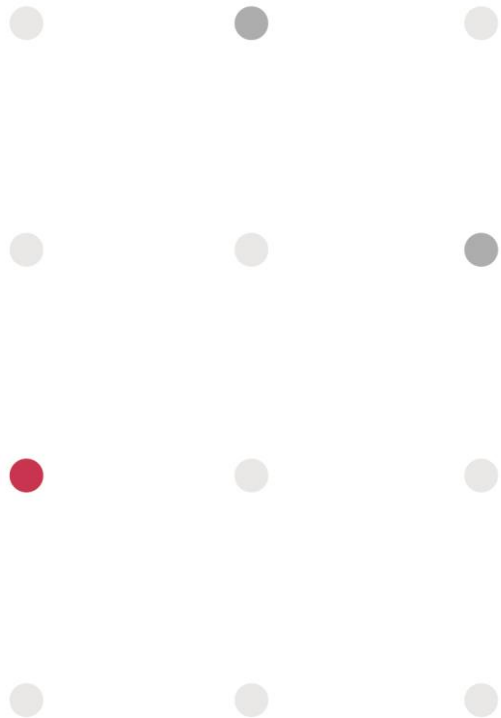


PSA

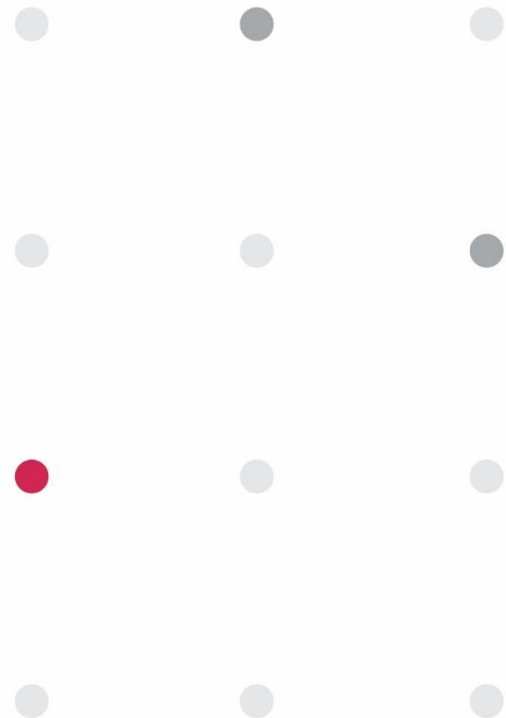
佳邦科技股份有限公司

INPAQ TECHNOLOGY CO., LTD.



PSA

PASSIVE SYSTEM ALLIANCE
INPAQ TECHNOLOGY CO., LTD.



BR-6886ZXV

Presented by :Ian Chen, RF R&D Dept.

Checked by :Leeting Hsieh

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INPAQ Technology Co., Ltd.

Last updated in Oct 6, 2023

Version:V2.2

Contents

Content Details

- Revised History
- Requirement of Antenna Design and Measurement
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- Results Summary (peak gain, Correlation table)
- Conclusion



Revision History

Released Date	Version	Record
Feb. 15 th , 2023	0.0	Initial Release
Mar. 31 th , 2023	1.0	Use real PCBA and test two heatsink
Apr. 27 th , 2023	1.1	finetune
Jul. 7 th , 2023	2.0	New CASE with new PCB
Sep. 4 th , 2023	2.1	Update the content of report
Oct. 6 th , 2023	2.2	Increase the performance of frequency 5836-5930MHz

Requirements of Antenna Design and Measurement

Requirements of Antenna Design

RF Function	Number of ANT	Frequency Band	Remark
WIFI 2.4G	3	2400-2500MHz	Printed antenna*1 PCB antenna*2
WIFI 5G	2	5150-5930MHz	PCB antenna
WIFI Dual band	2	2400-2500MHz/5150-5930MHz	PCB antenna

Requirements of Measurement

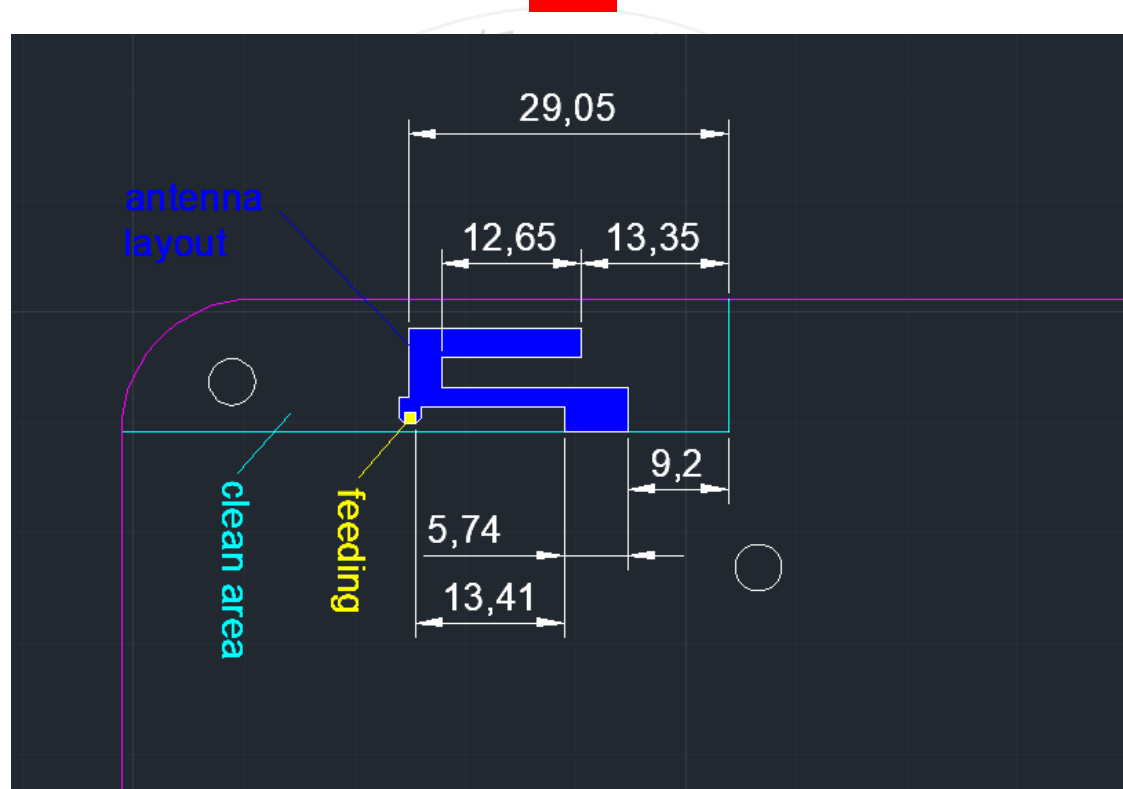
Test Item	Specification	Remark
Peak gain	2G:3dBi. 5G:3-4dBi	
Efficiency	>60%	
Return Loss	>11.7dB	
Isolation	>12dB	
Correlation	Less than 0.2	

Antenna Placement & Solution

Brand name	Antenna	PN	ANT Type	Size (L * W * H)	Cable Type
(PSA/INPAQ)	BT (WIFI 2.4G)	BT	Printed	Clearance area 55*12mm	Microstrip
(PSA/INPAQ)	2G1 (WIFI 2.4G)	WA-P-LA-06-008	PCB	30*13*1mm	165mm/1.13LLS_Red
(PSA/INPAQ)	2G2 (WIFI 2.4G)	WA-P-LA-05-015	PCB	30*13*1mm	115mm/1.13LLS_Blue
(PSA/INPAQ)	5G1 (WIFI 5G)	WA-P-LC-02-086	PCB	20*8*1mm	55mm/1.13LLS_Black
(PSA/INPAQ)	5G2 (WIFI 5G)	WA-P-LC-03-025	PCB	20*8*1mm	45mm/1.13LLS_Gray
(PSA/INPAQ)	DB1 (Dual band)	WA-P-LB-11-003	PCB	31*15*1mm	72mm/1.13LLS_Green
(PSA/INPAQ)	DB2 (Dual band)	WA-P-LB-01-323	PCB	31*15*1mm	77mm/1.13LLS_White

Antenna Placement & Solution

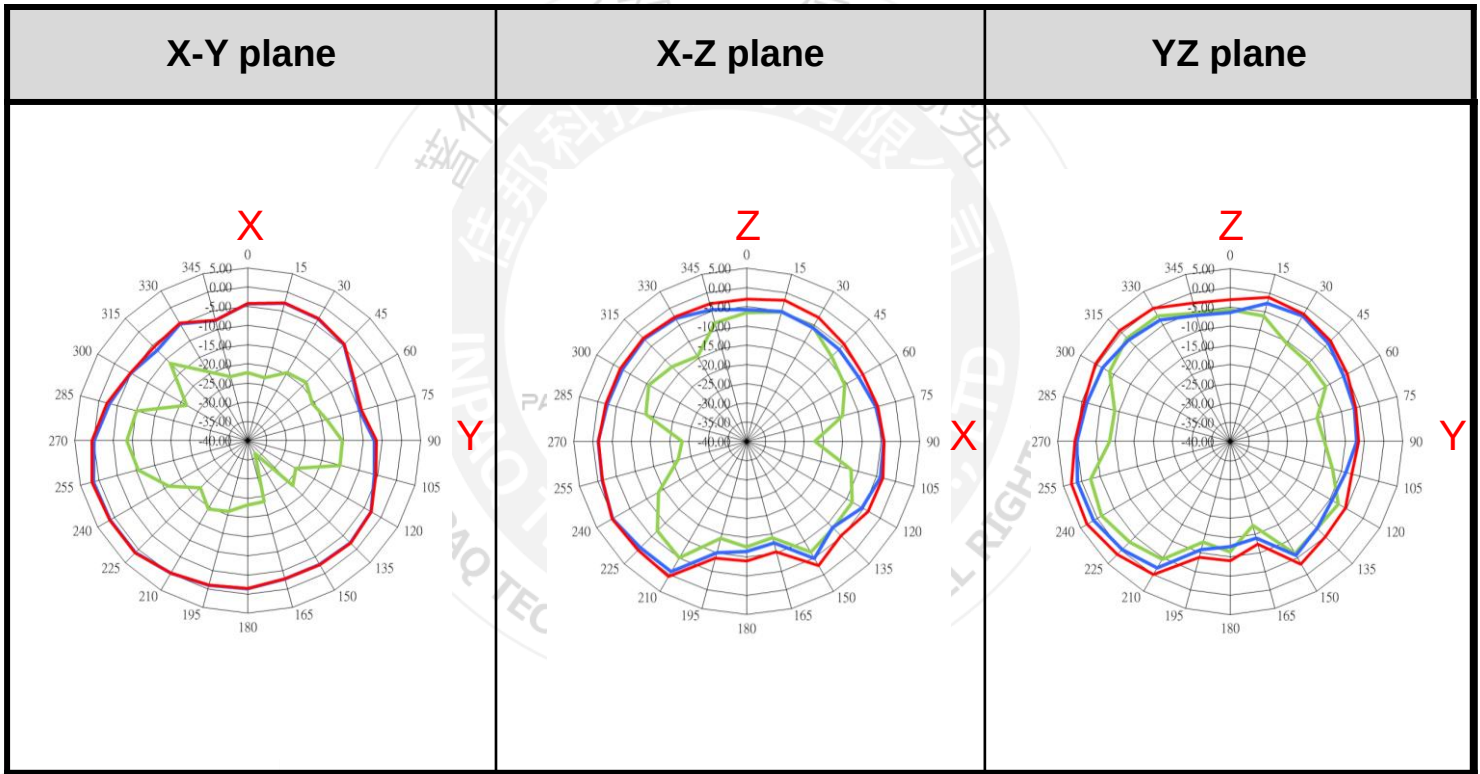
BT



Antenna Placement & Solution

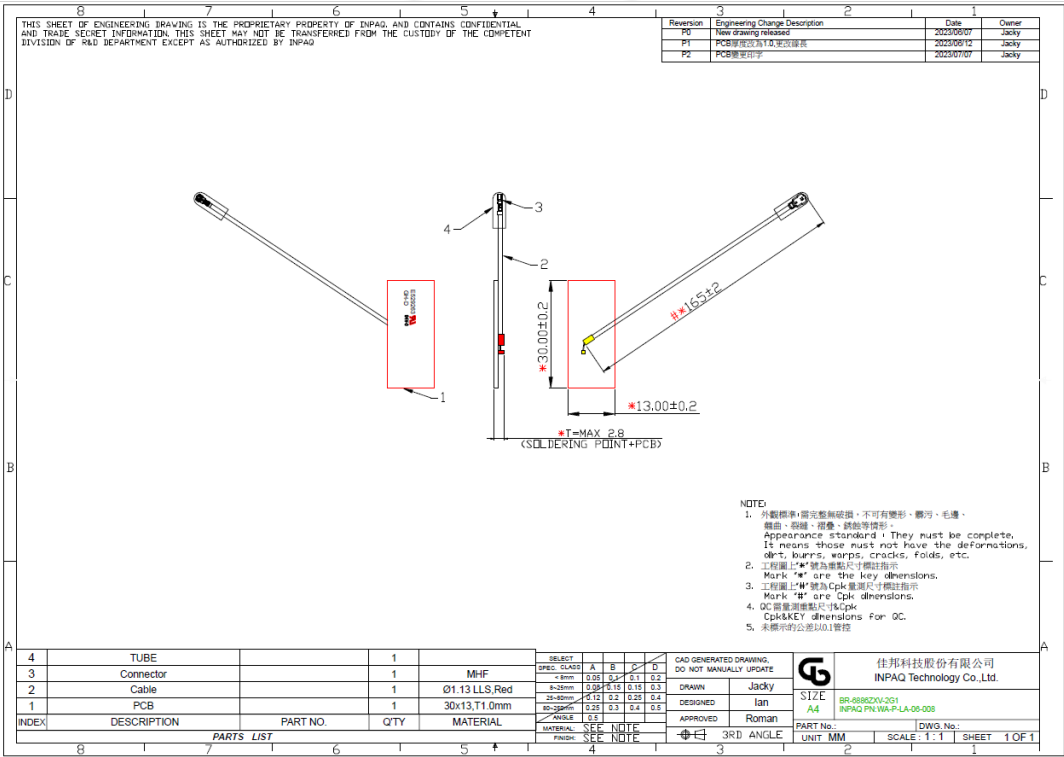
BT – 2450MHz

BT



Antenna Placement & Solution

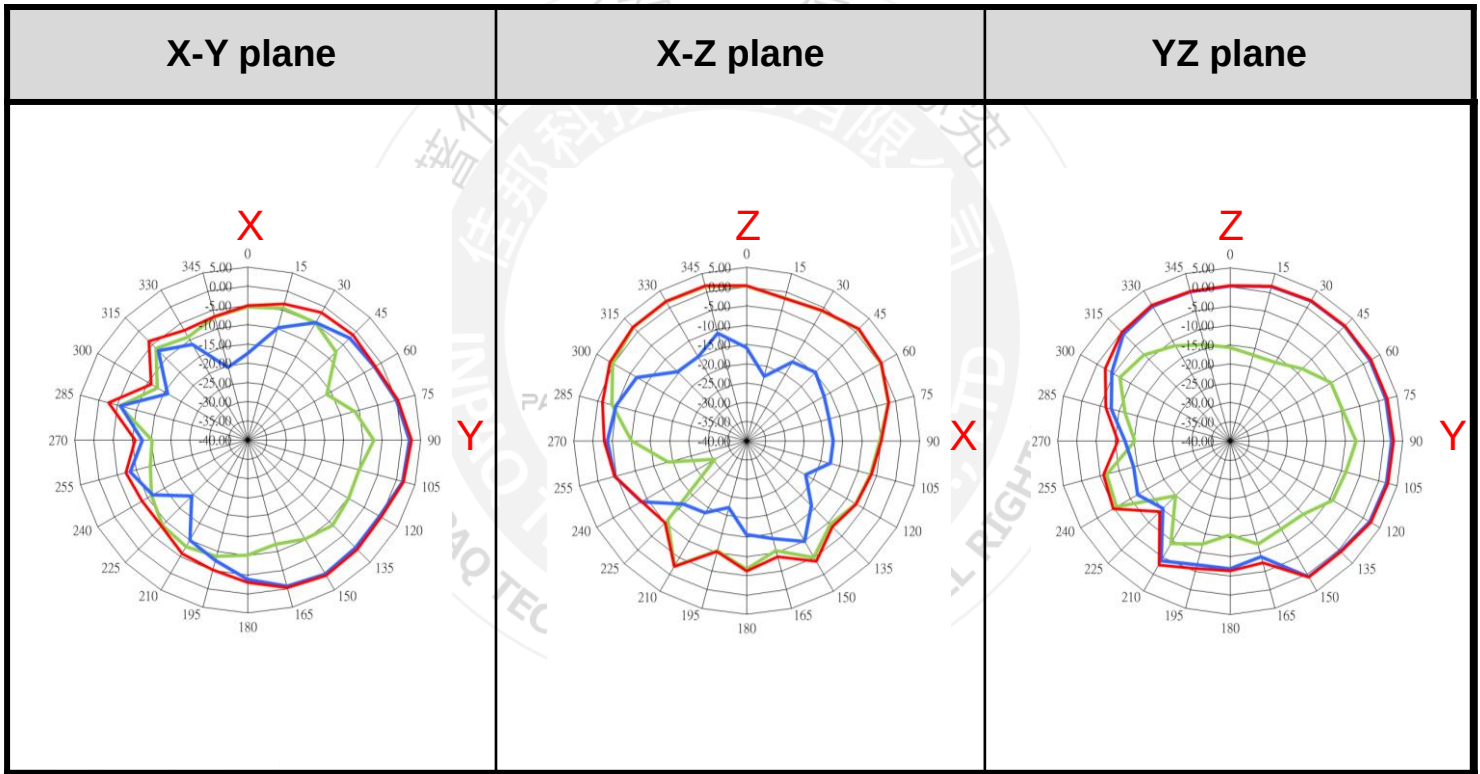
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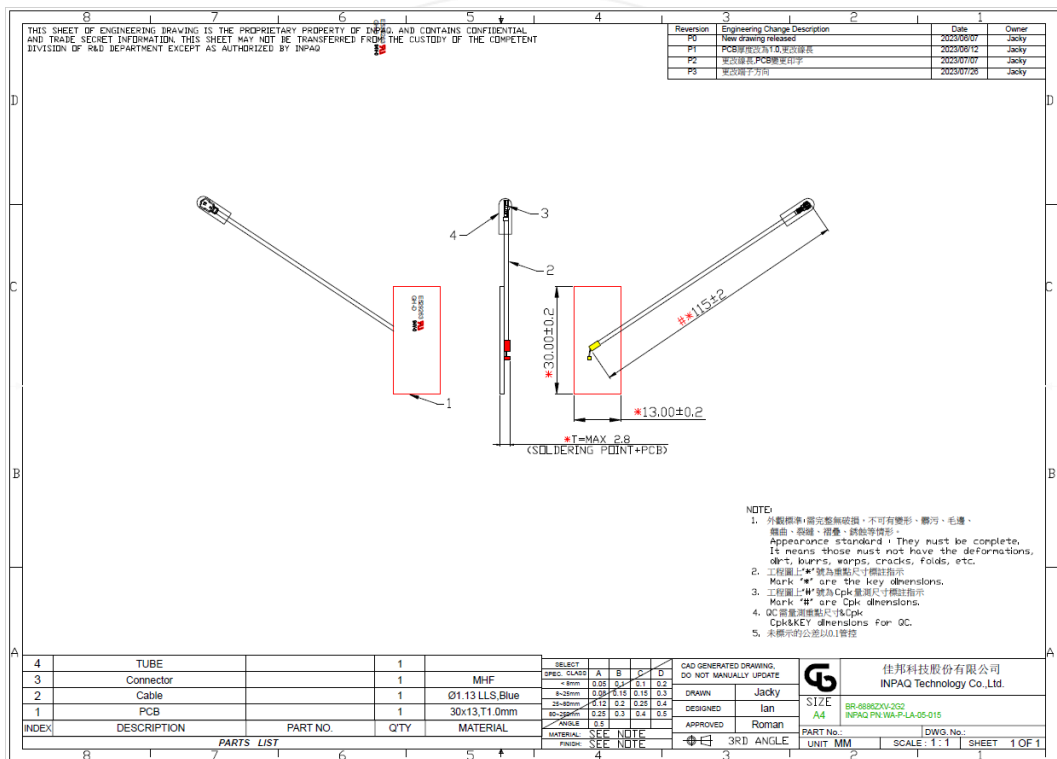
Antenna Placement & Solution

2G1 – 2450MHz

WA-P-LA-06-008_2G1



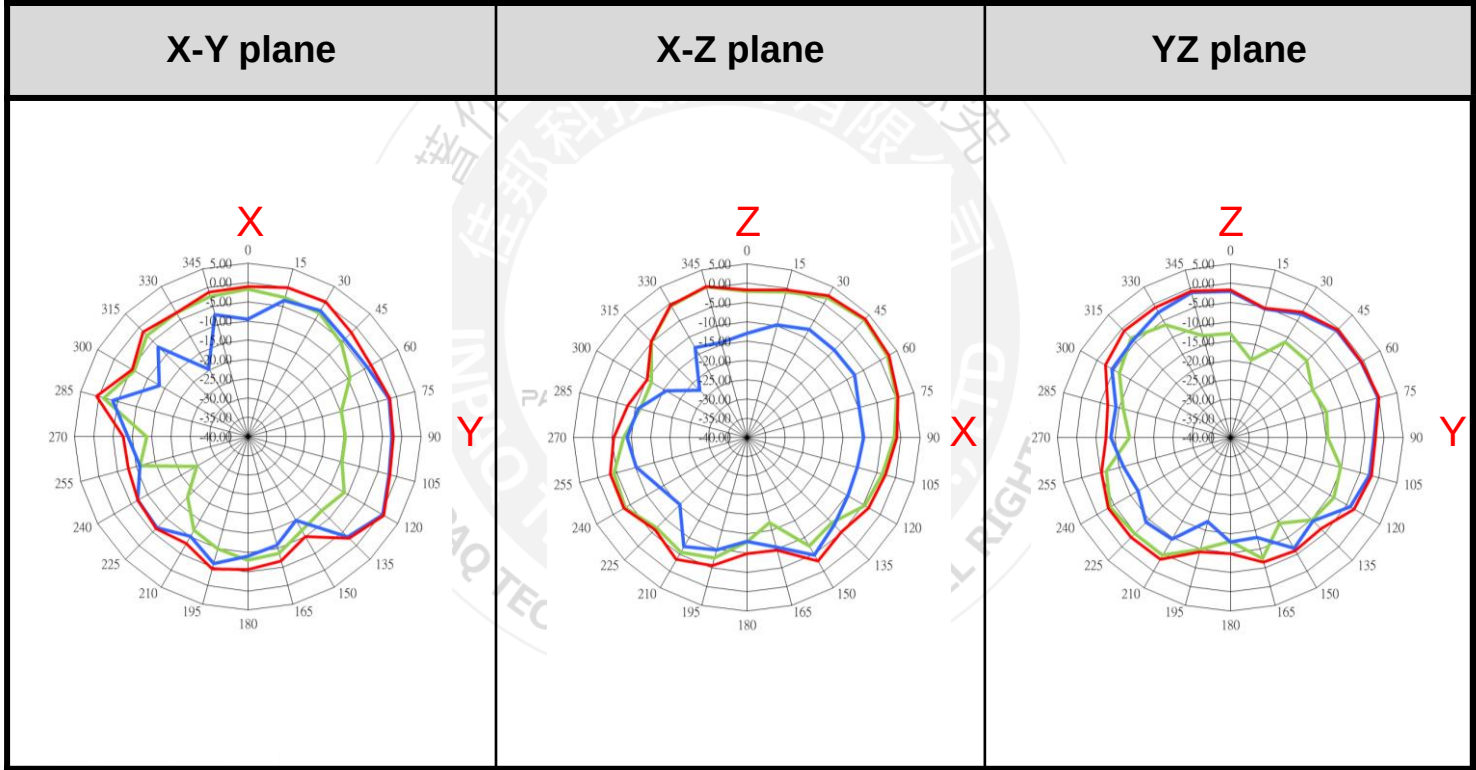
WA-P-LA-05-015_2G2



Antenna Placement & Solution

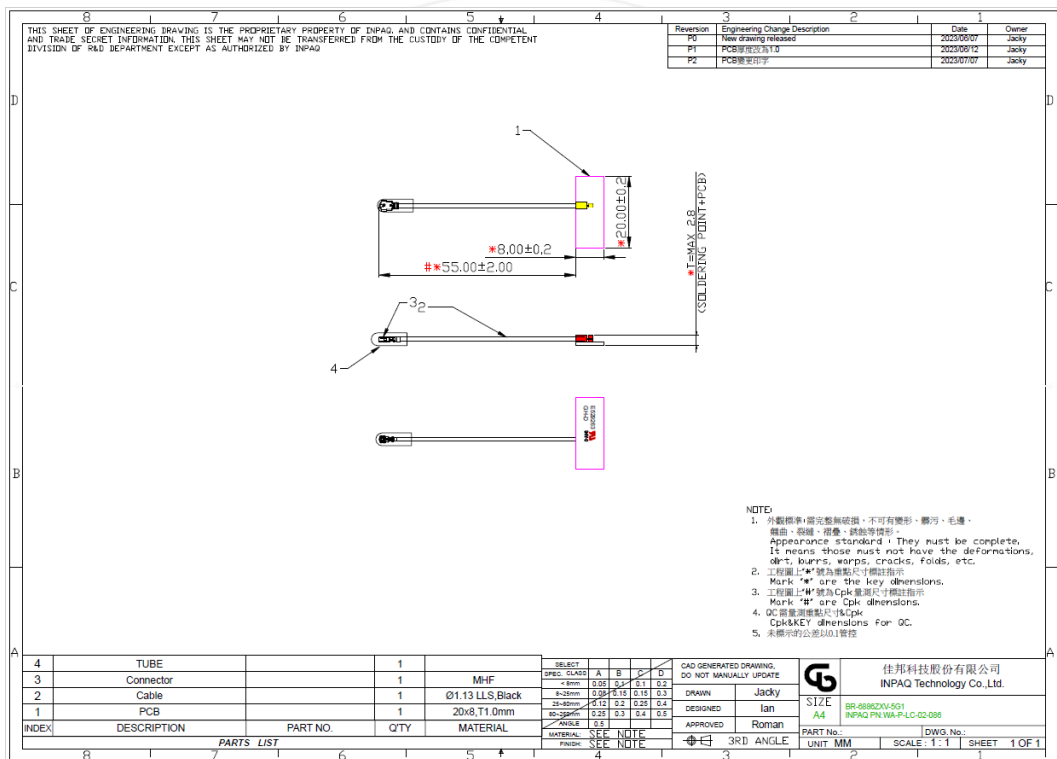
2G2 – 2450MHz

WA-P-LA-05-015_2G2



Antenna Placement & Solution

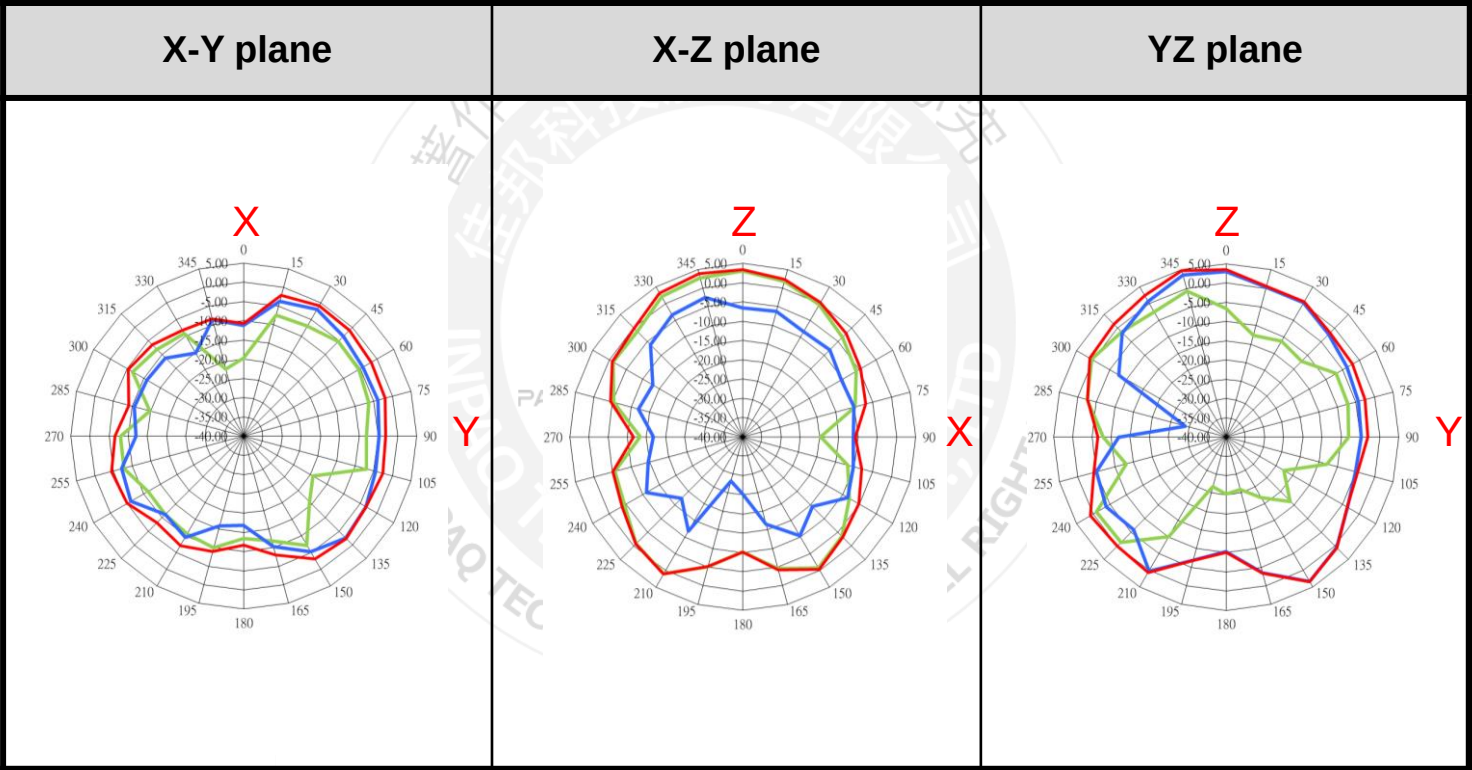
WA-P-LC-02-086_5G1



Antenna Placement & Solution

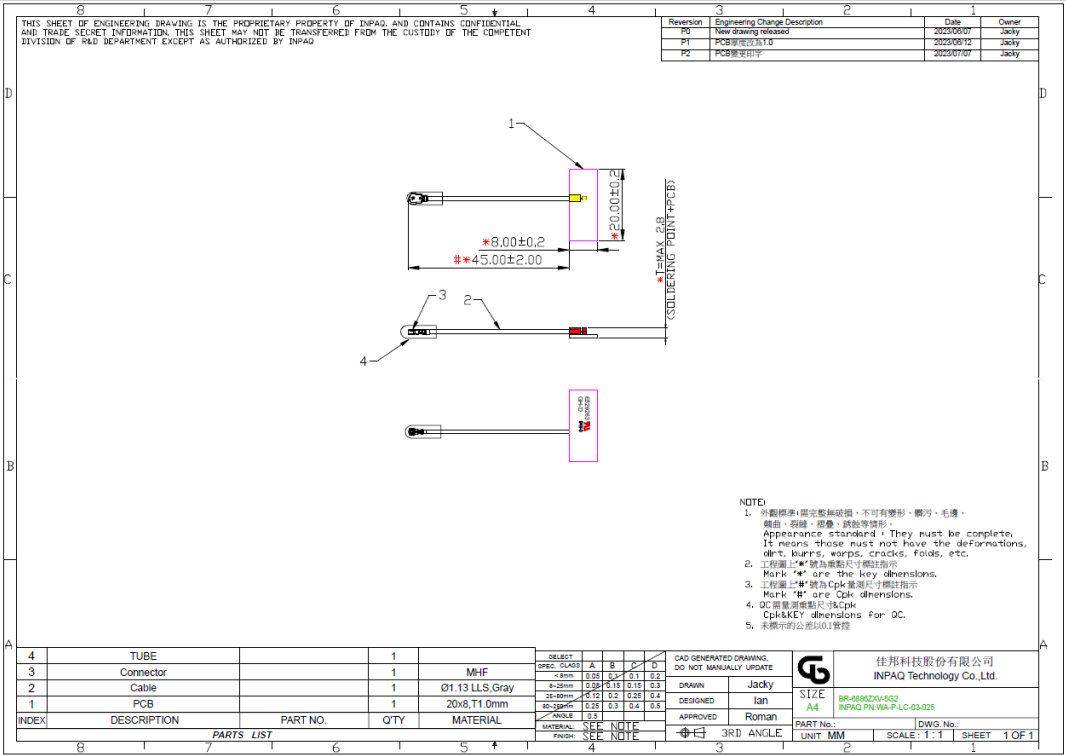
5G1 – 5470MHz

WA-P-LC-02-086_5G1



Antenna Placement & Solution

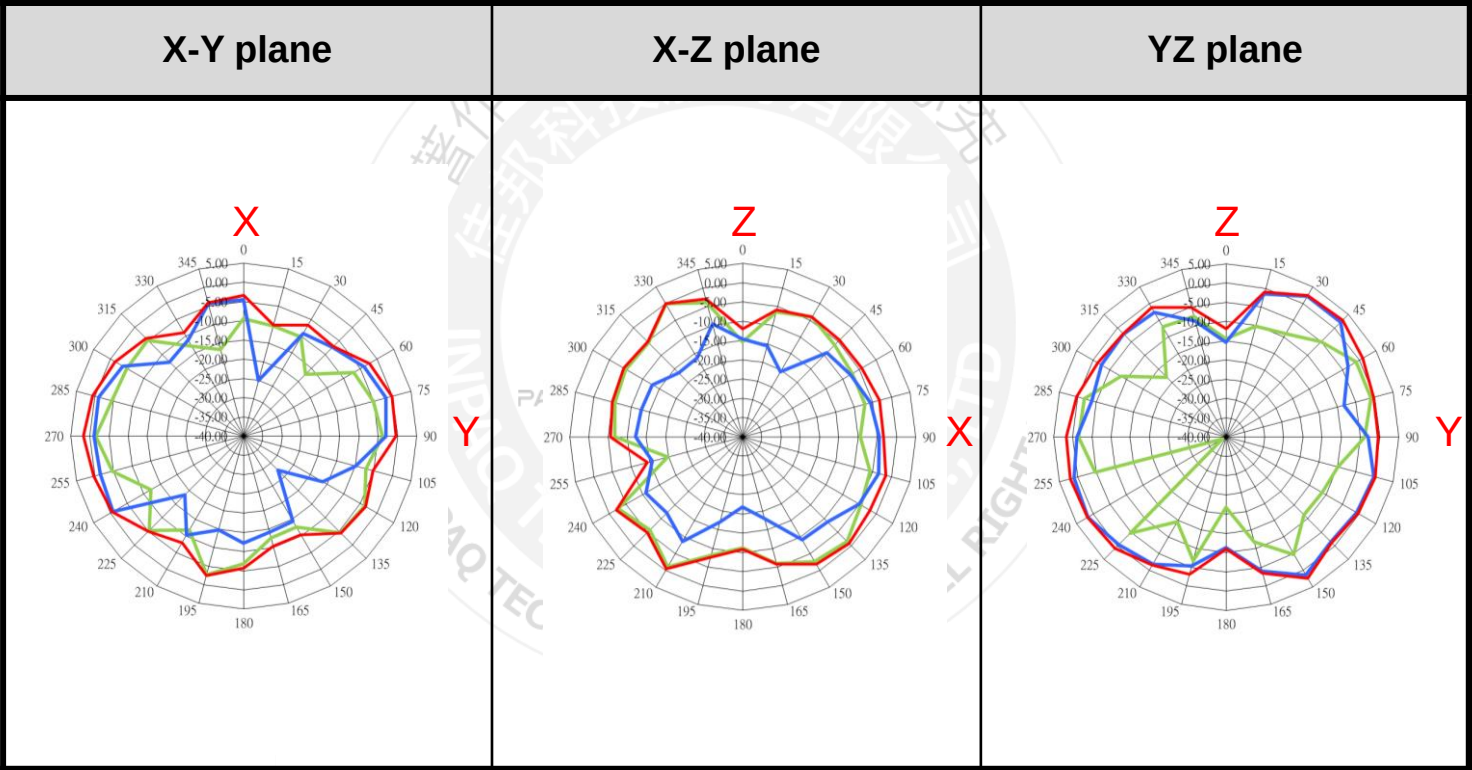
WA-P-LC-03-025_5G2



Antenna Placement & Solution

5G2 – 5470MHz

WA-P-LC-03-025_5G2



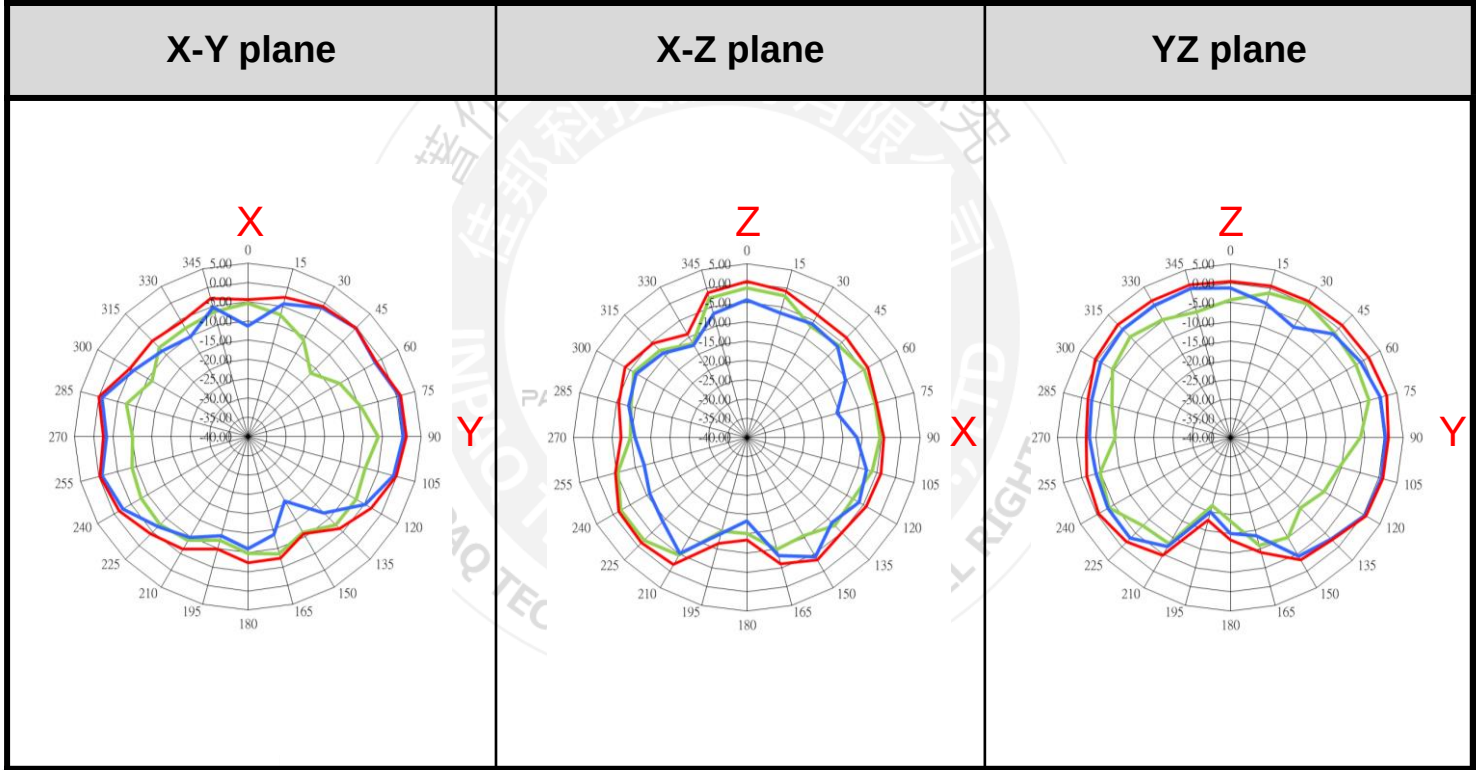
WA-P-LB-11-003_DB1



Antenna Placement & Solution

DB1 – 2450MHz

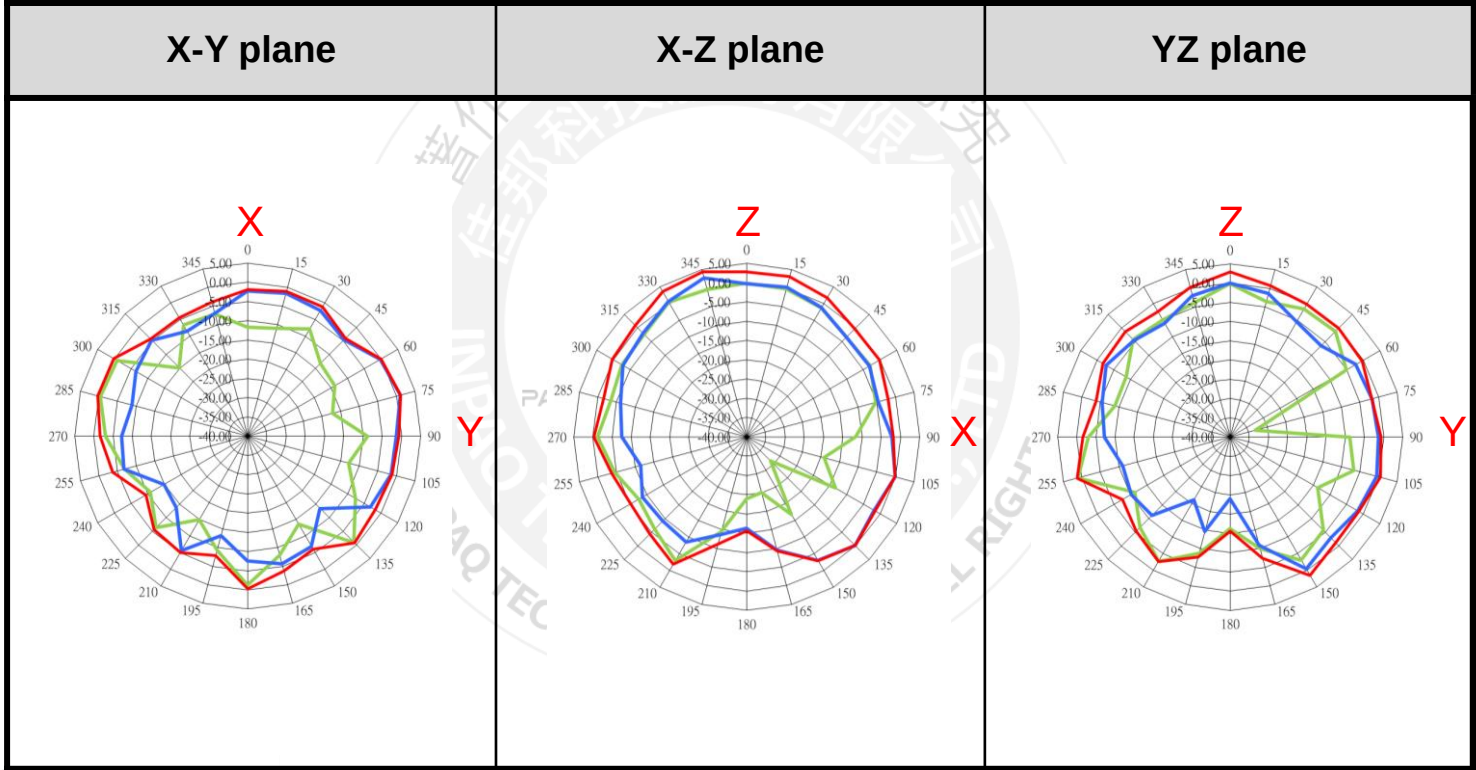
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Antenna Placement & Solution

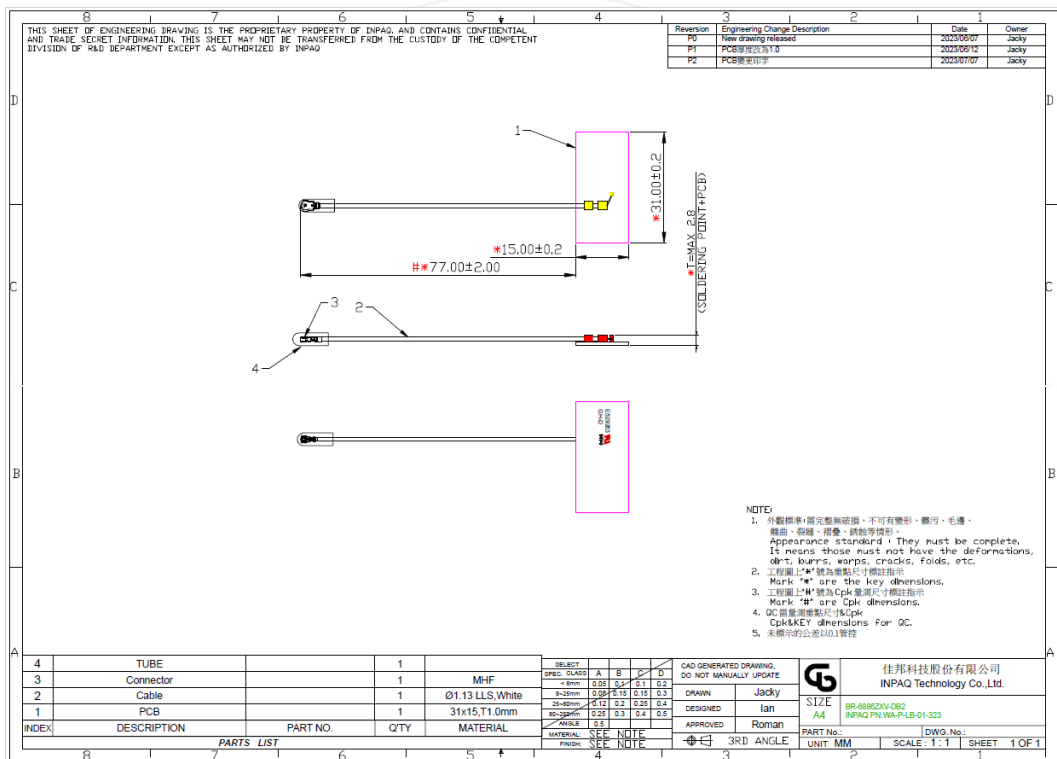
DB1 – 5470MHz

WA-P-LB-11-003_DB1



Antenna Placement & Solution

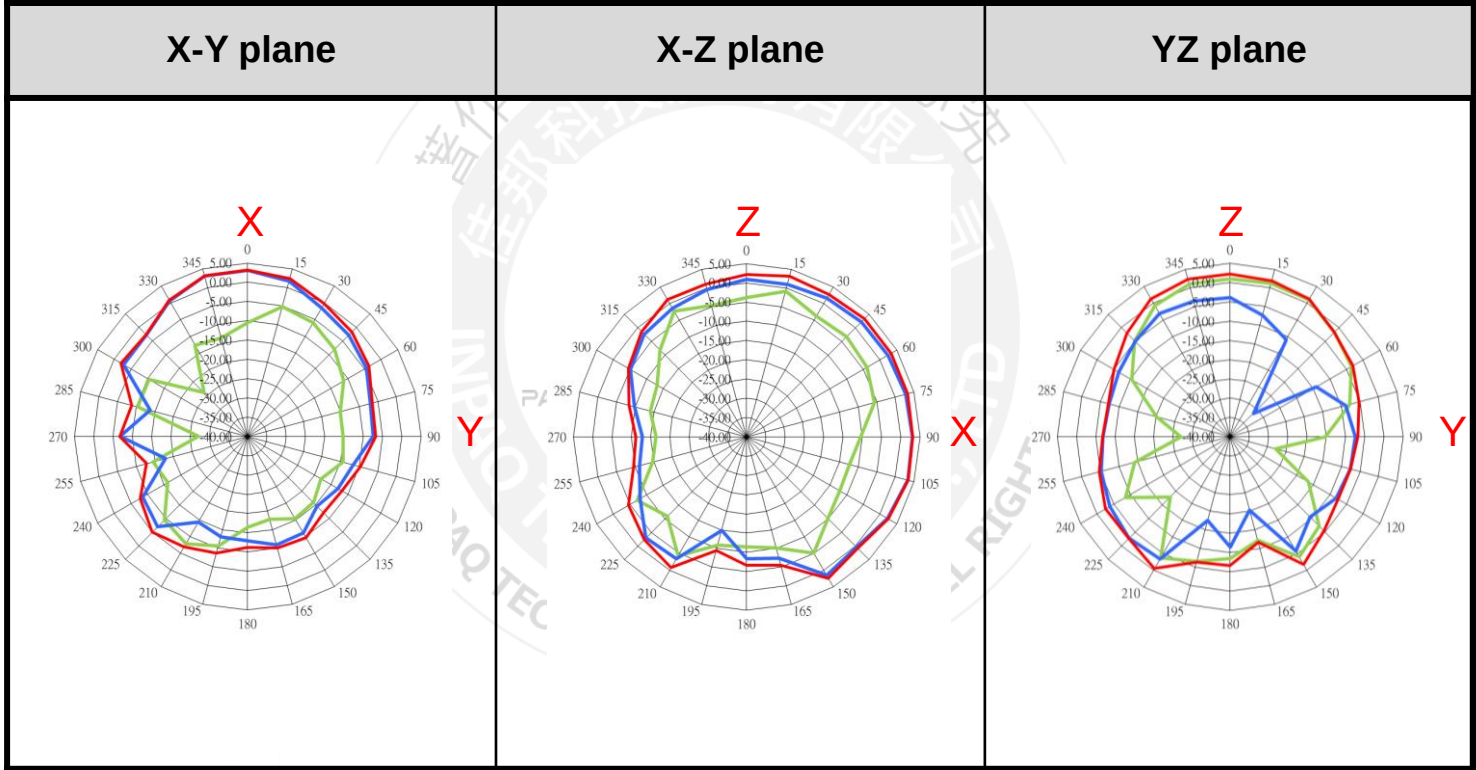
WA-P-LB-01-323_DB2



Antenna Placement & Solution

DB2 – 2450MHz

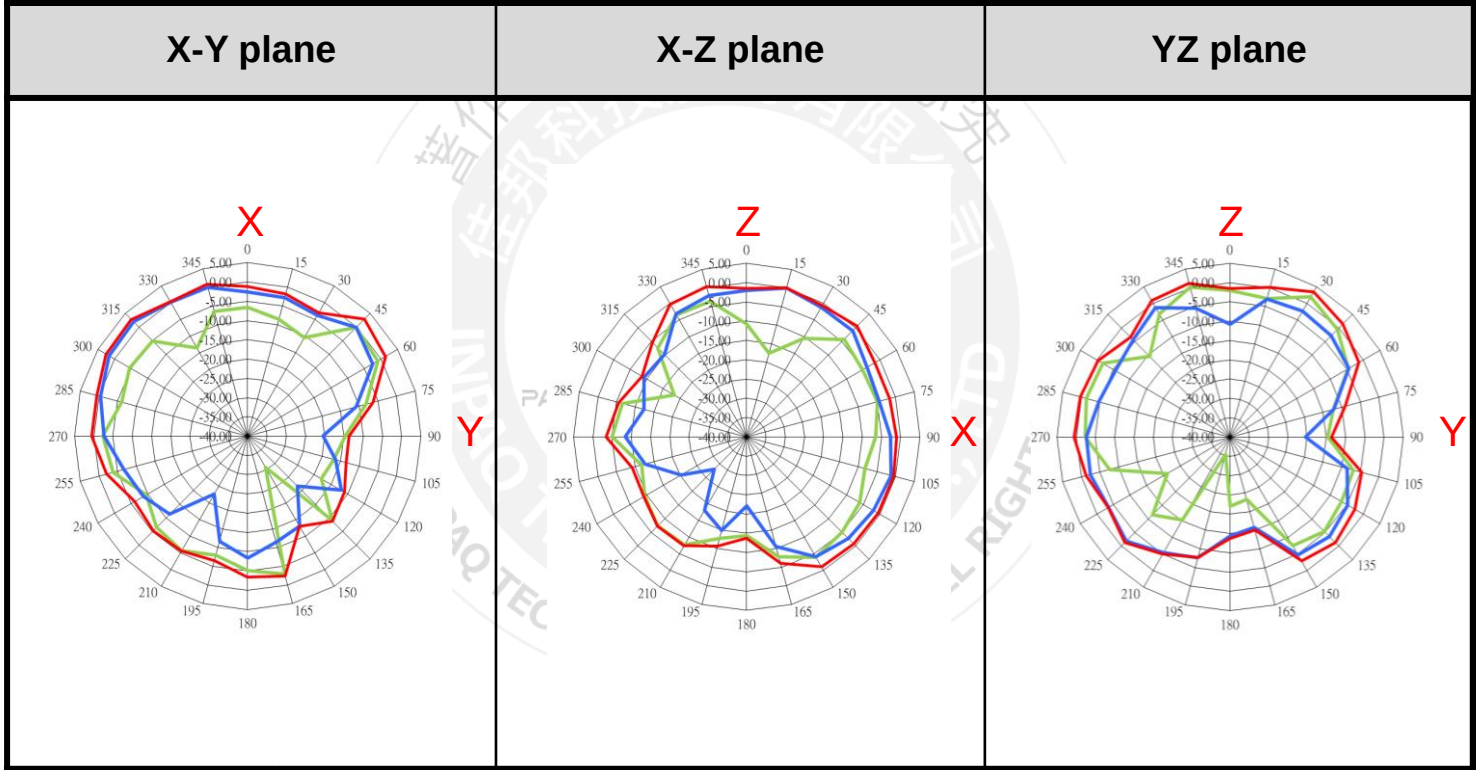
WA-P-LB-01-323_DB2



Antenna Placement & Solution

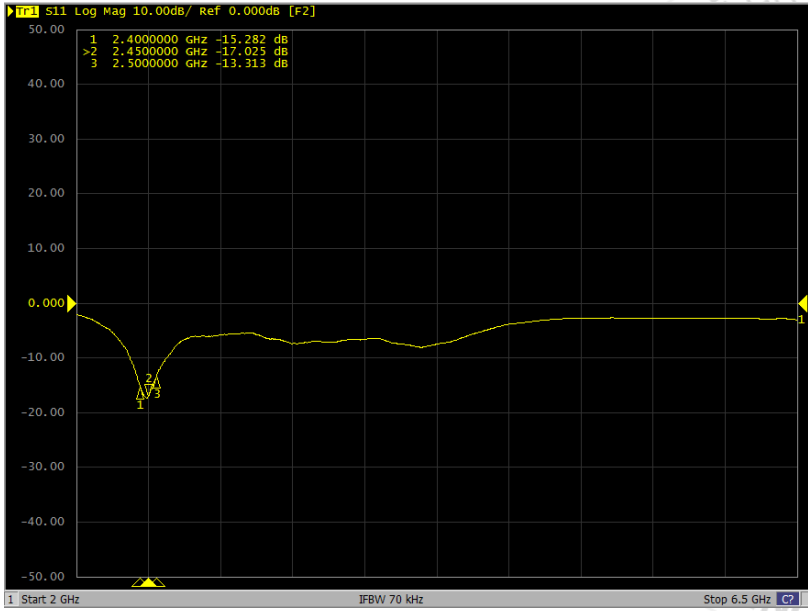
DB2 – 5470MHz

WA-P-LB-01-323_DB2

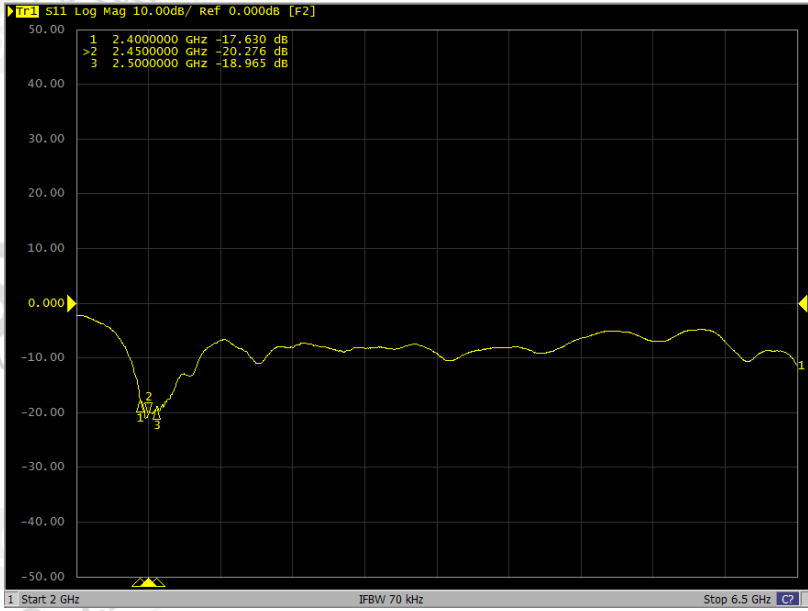


Return Loss

BT

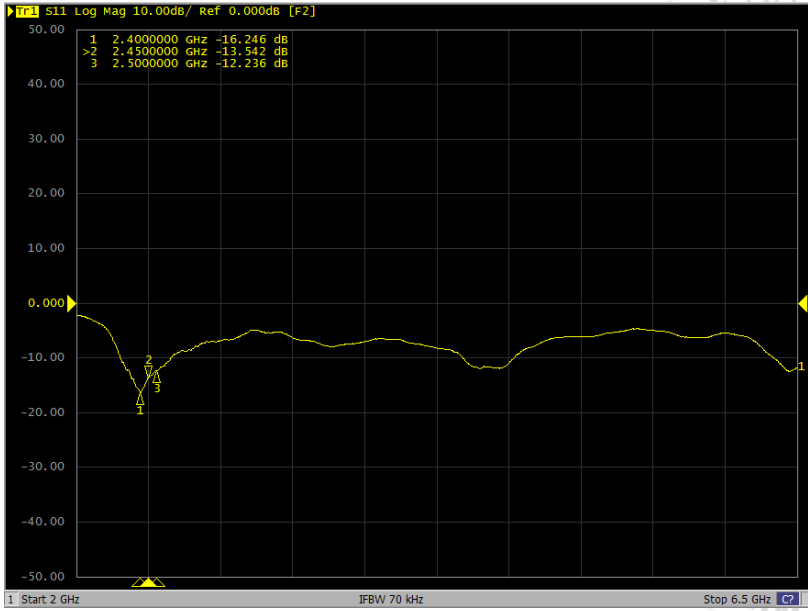


2G1

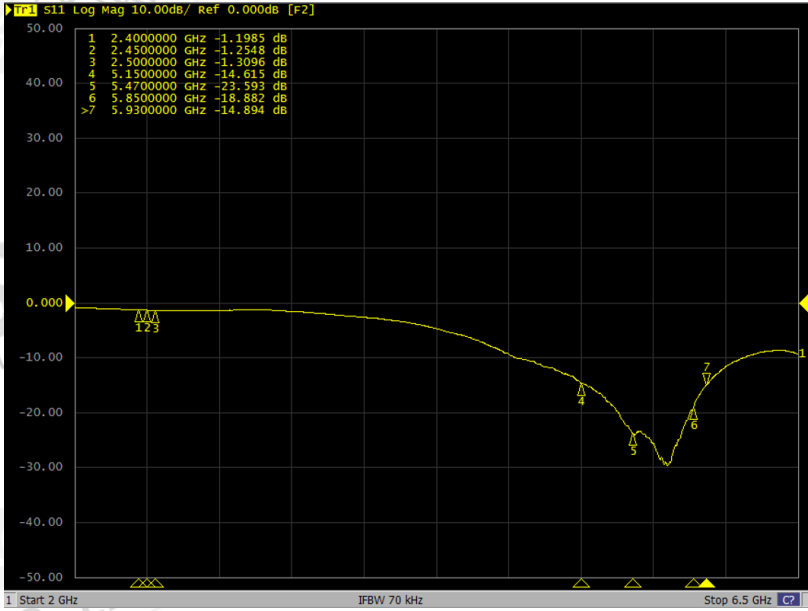


Return Loss

2G2

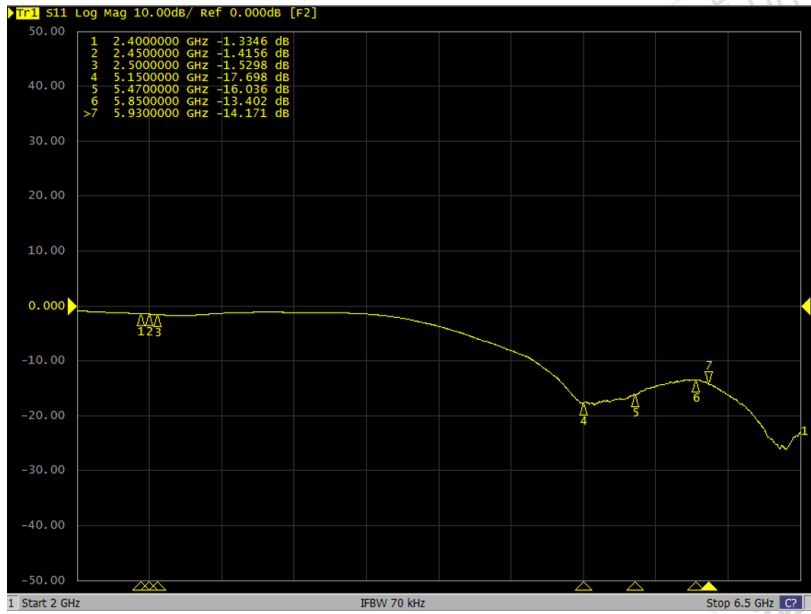


5G1

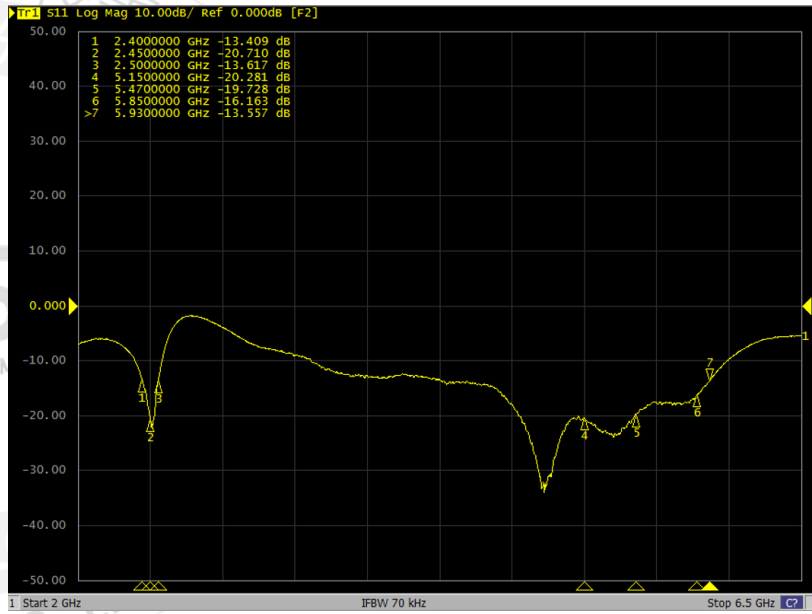


Return Loss

5G2

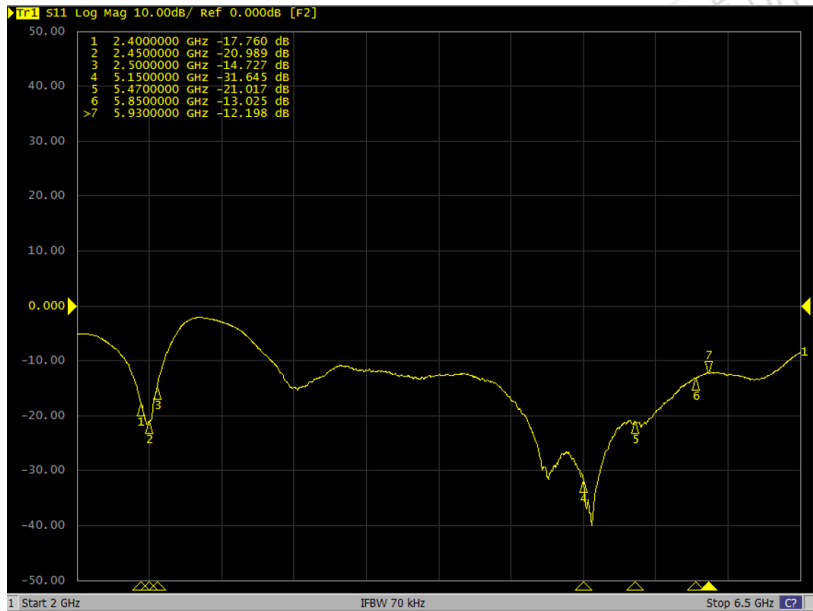


DB1



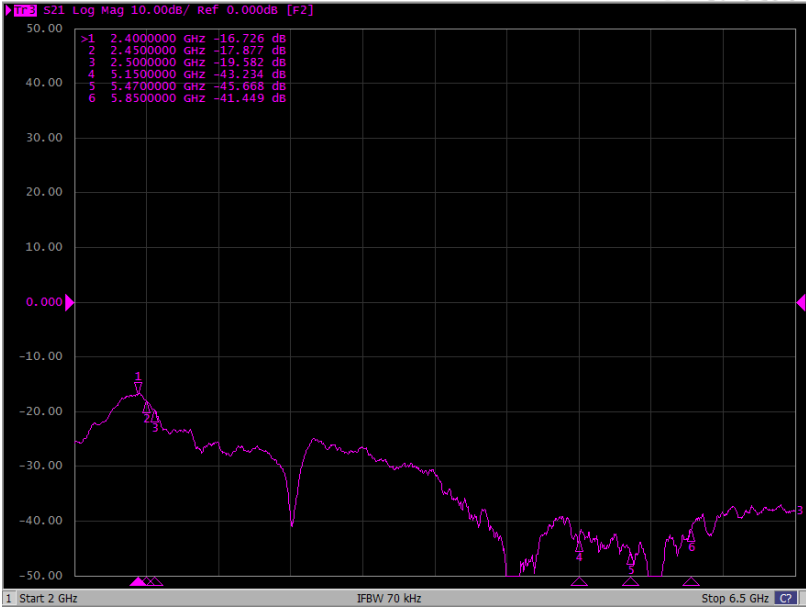
Return Loss

DB2

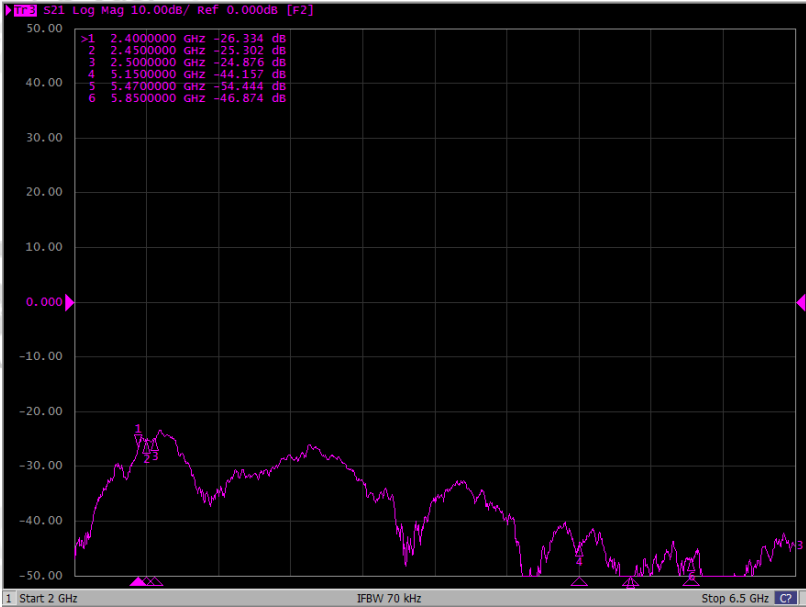


Isolation Results

BT&2G1

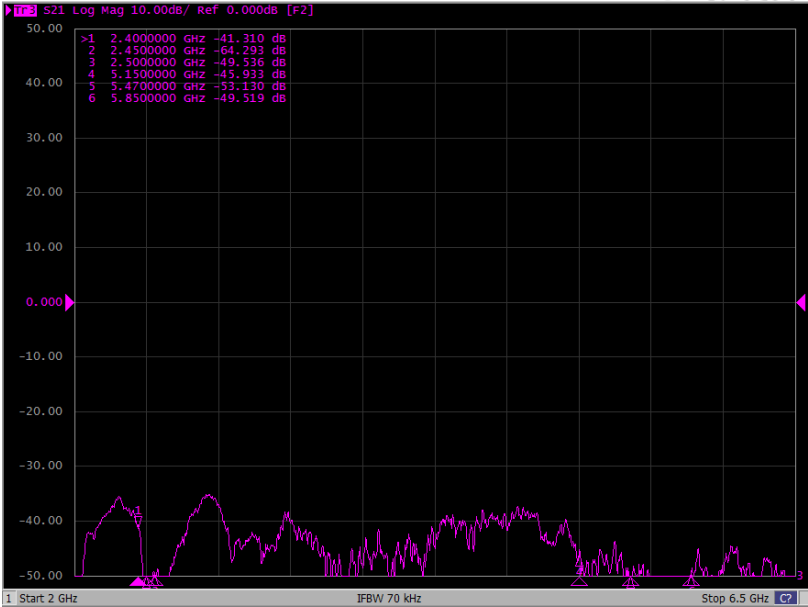


BT&2G2

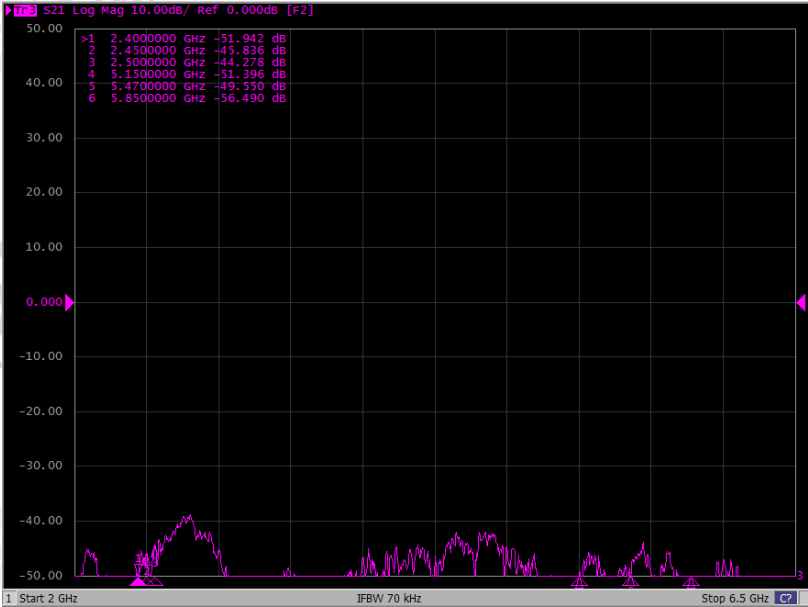


Isolation Results

BT&5G1

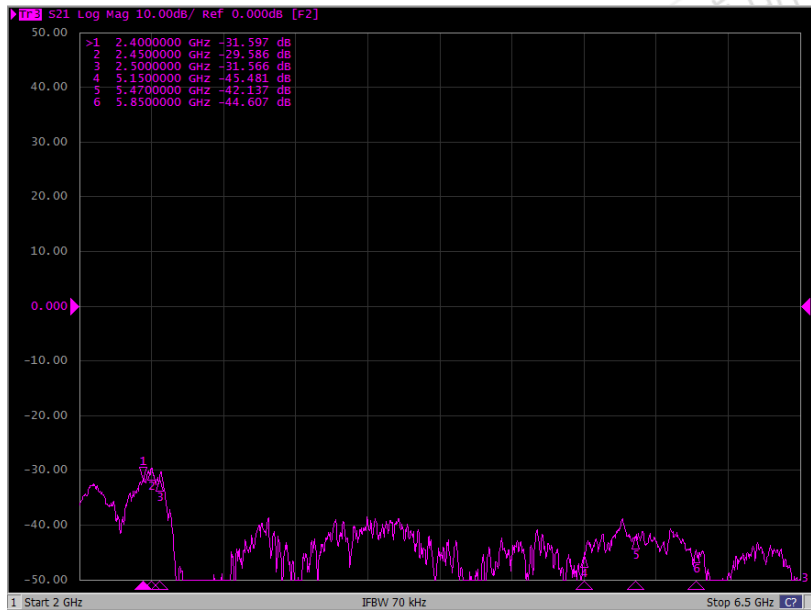


BT&5G2

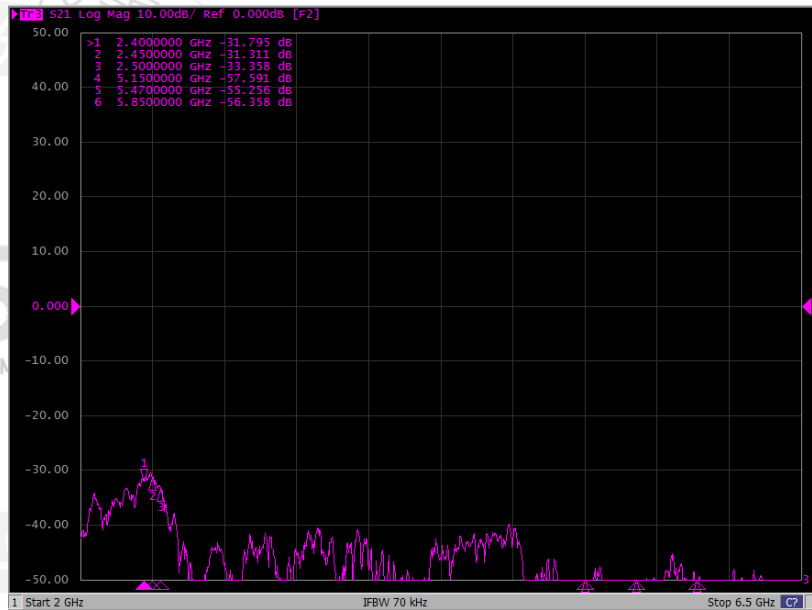


Isolation Results

BT&DB1

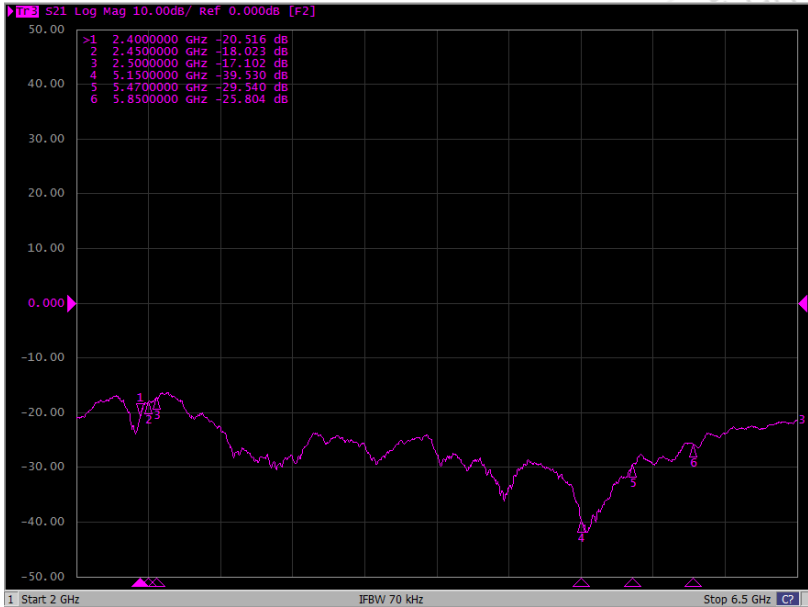


BT&DB2

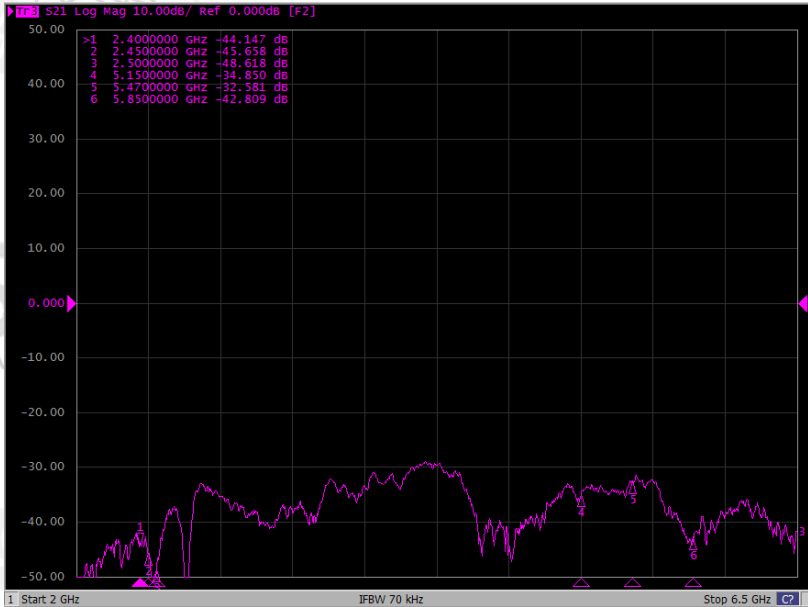


Isolation Results

2G1&2G2

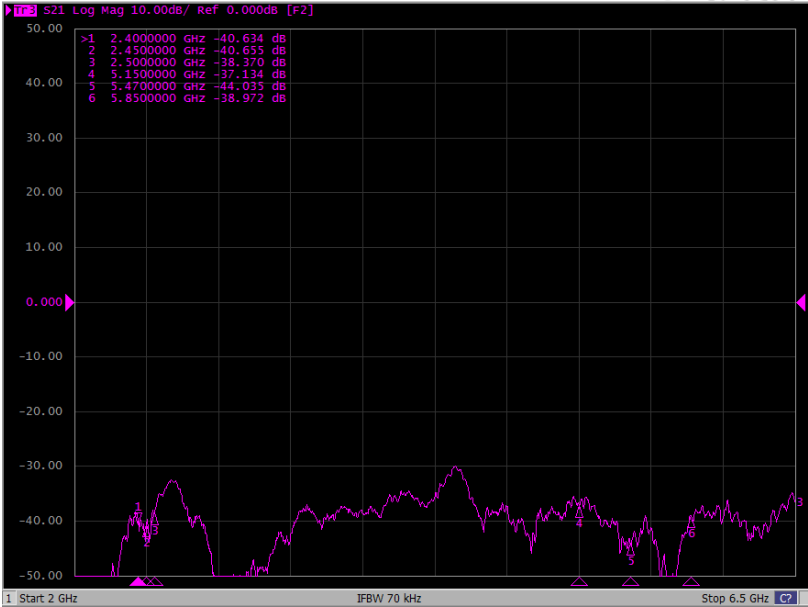


2G1&5G1

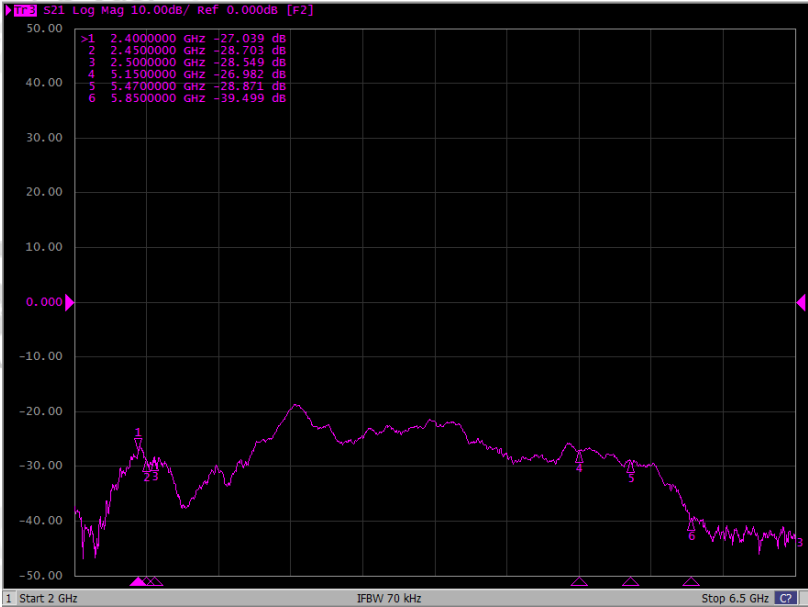


Isolation Results

2G1&5G2

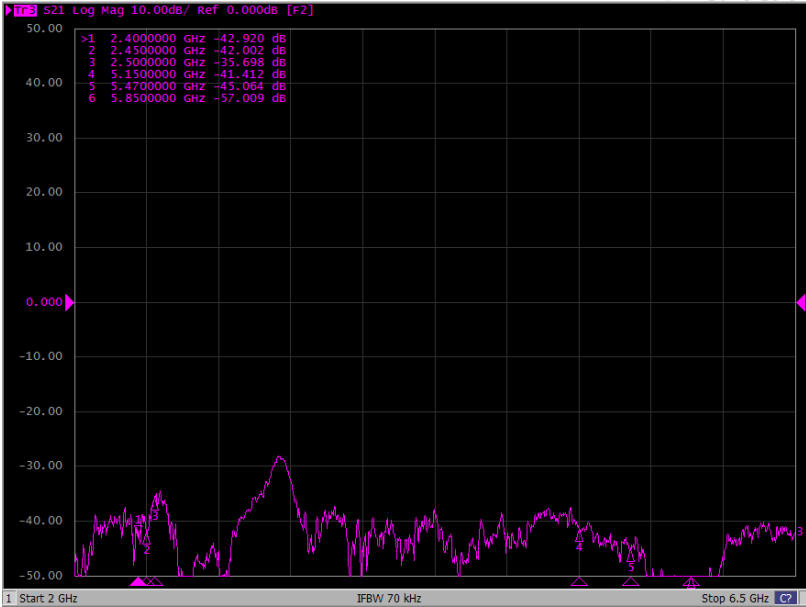


2G1&DB1

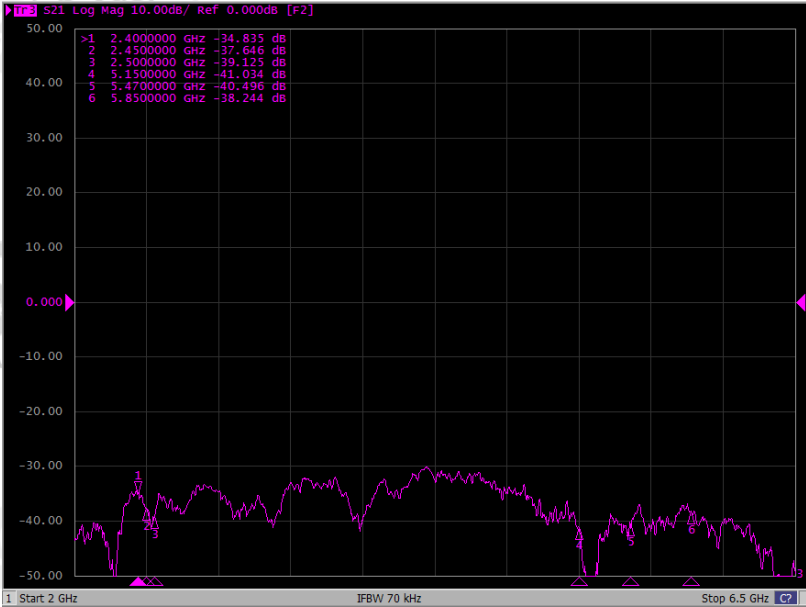


Isolation Results

2G1&DB2

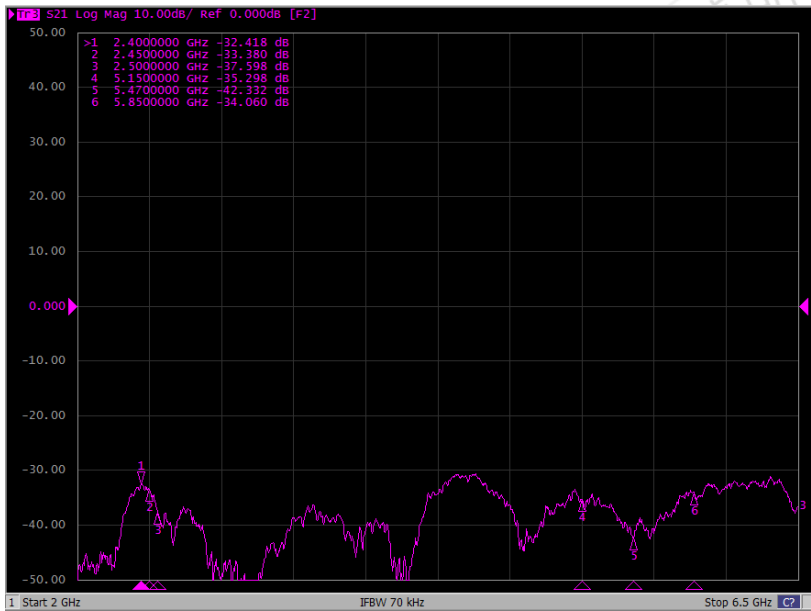


2G2&5G1

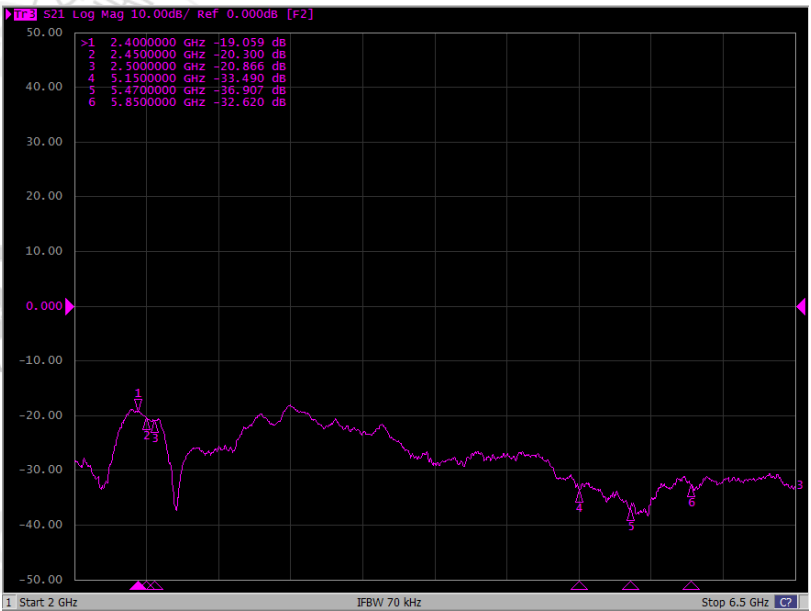


Isolation Results

2G2&5G2

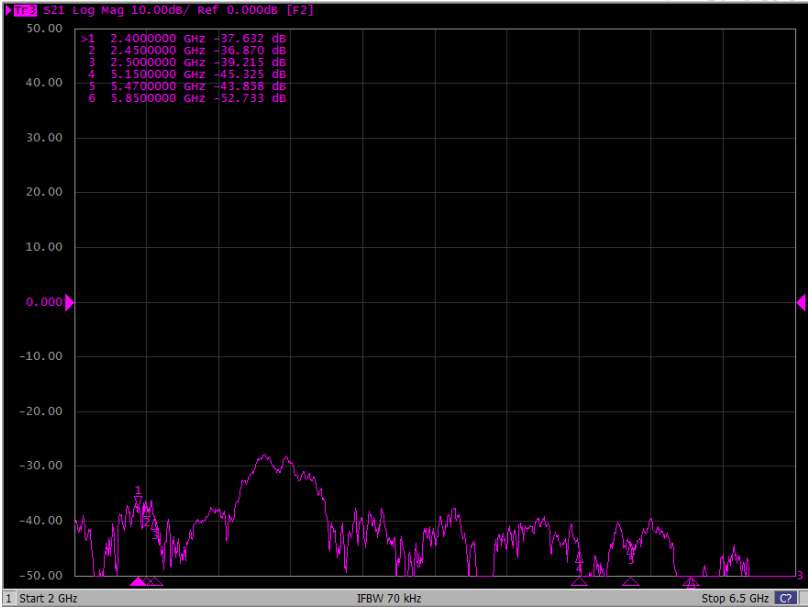


2G2&DB1

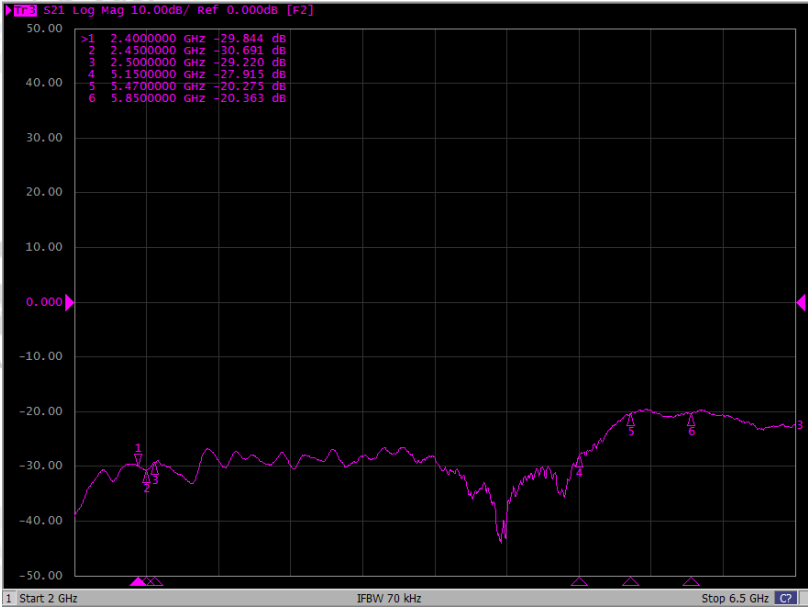


Isolation Results

2G2&DB2

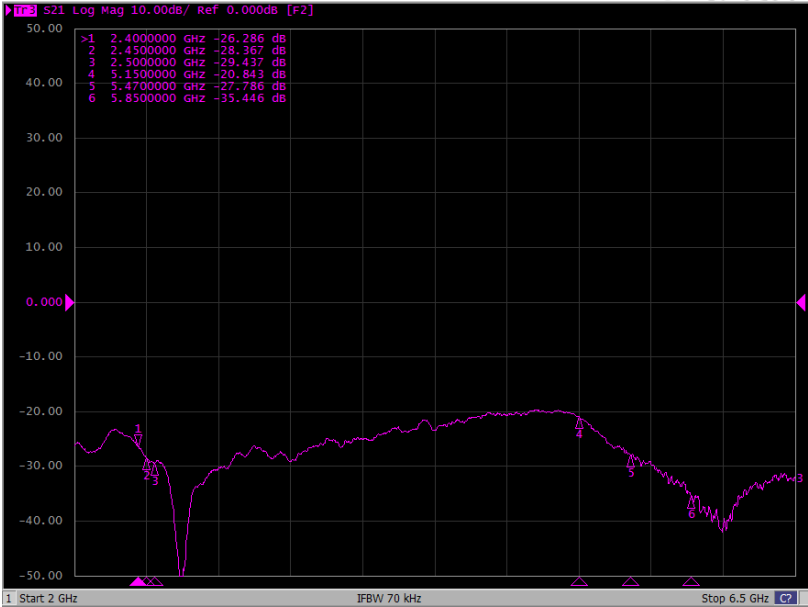


5G1&5G2

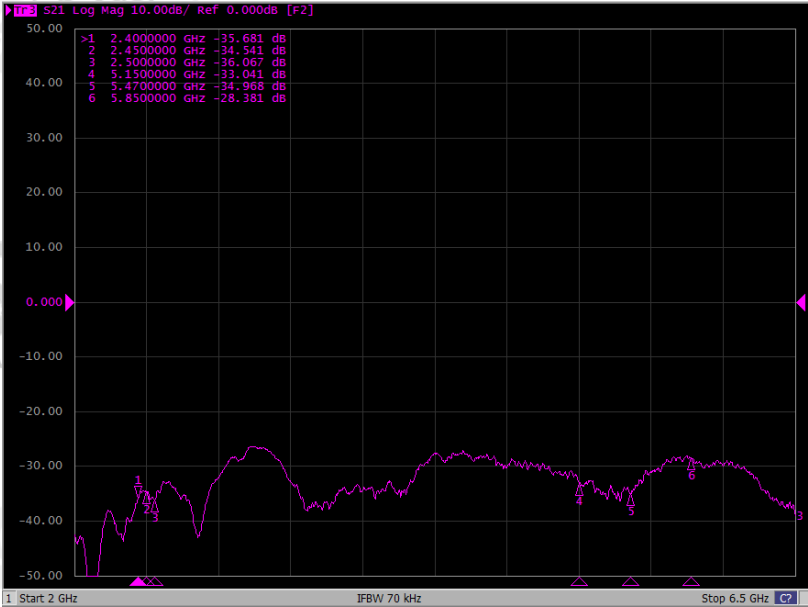


Isolation Results

5G1&DB1

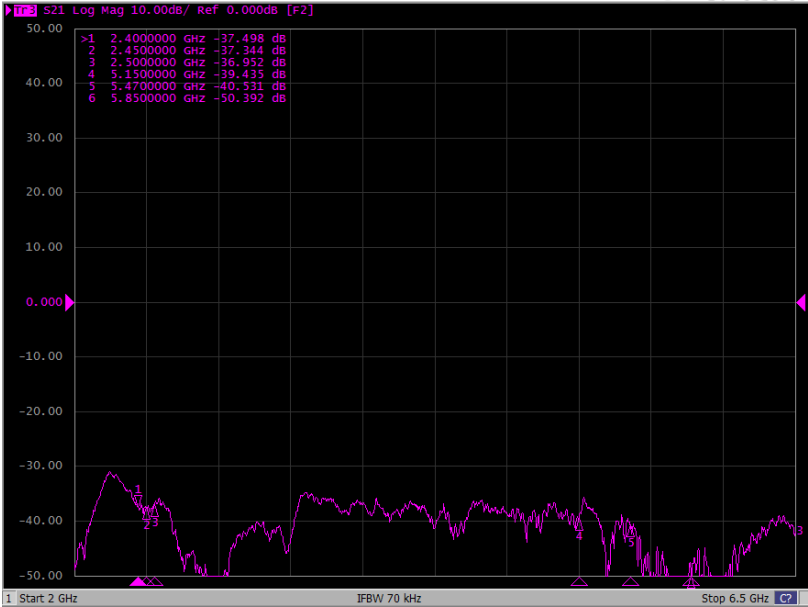


5G1&DB2

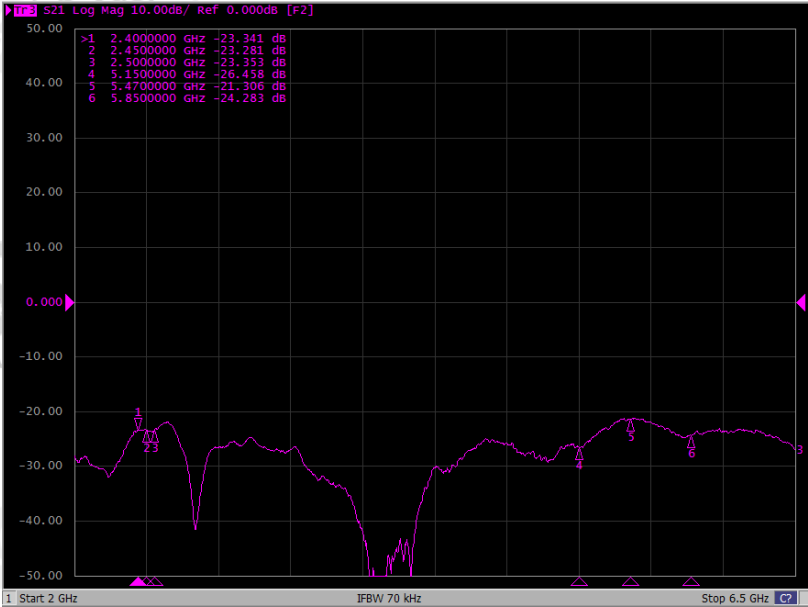


Isolation Results

5G2&DB1

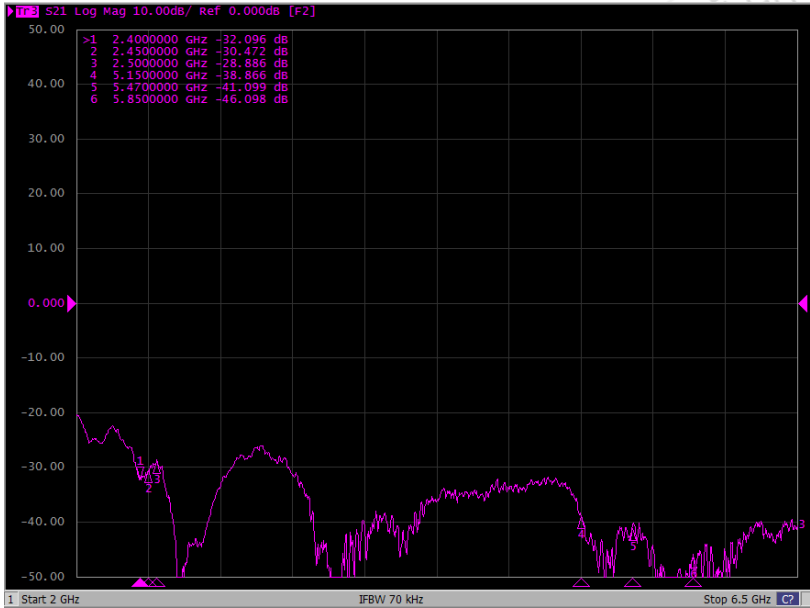


5G2&DB2



Isolation Results

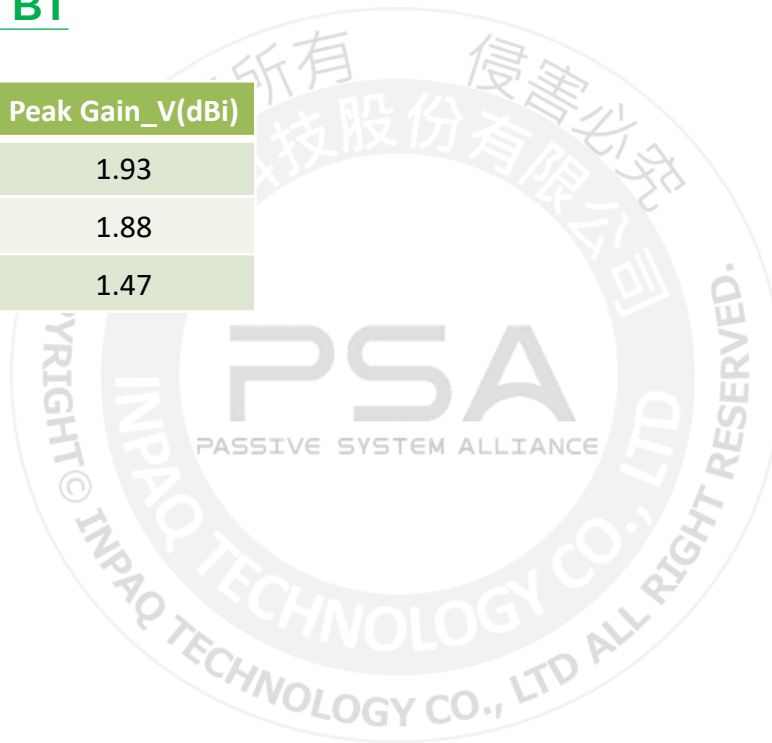
DB1&DB2



Results Summary

Peak gain & Efficiency – BT

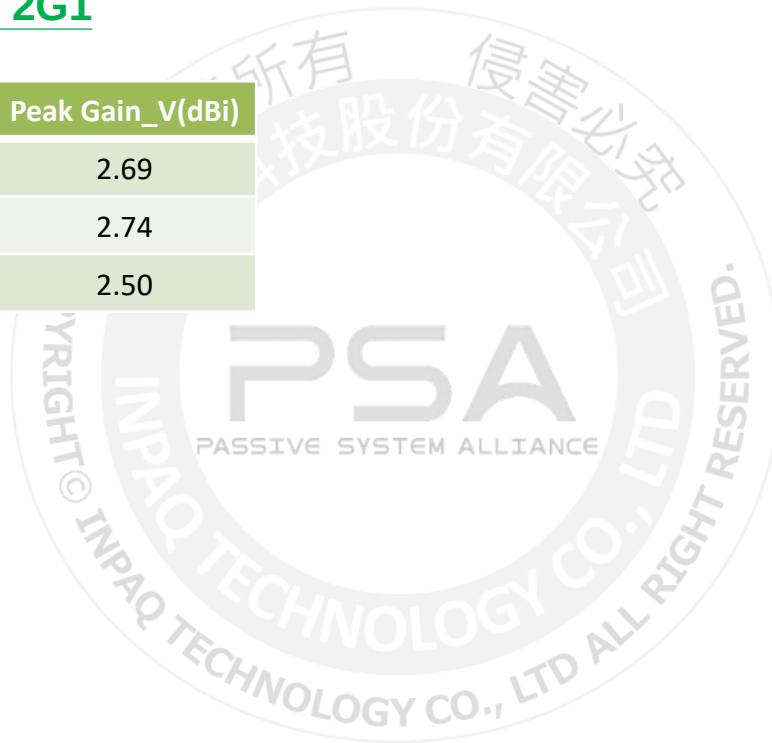
Frequency (MHz)	Peak Gain_H(dBi)	Peak Gain_V(dBi)
2400	0.55	1.93
2450	0.44	1.88
2500	0.78	1.47



Results Summary

Peak gain & Efficiency – 2G1

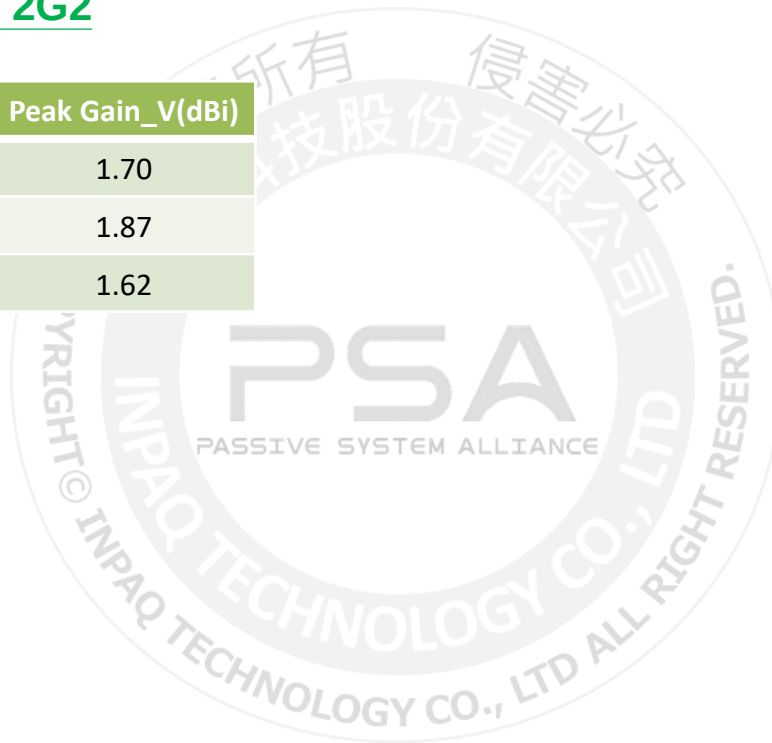
Frequency (MHz)	Peak Gain_H(dBi)	Peak Gain_V(dBi)
2400	2.18	2.69
2450	1.93	2.74
2500	2.02	2.50



Results Summary

Peak gain & Efficiency – 2G2

Frequency (MHz)	Peak Gain_H(dBi)	Peak Gain_V(dBi)
2400	3.60	1.70
2450	3.65	1.87
2500	3.57	1.62



Results Summary

Peak gain & Efficiency – 5G1

Frequency (MHz)	Peak Gain_H(dBi)	Peak Gain_V(dBi)
5150-5250	4.34	4.46
5251-5300	4.18	4.54
5301-5490	3.63	4.26
5491-5725	3.42	4.07
5726-5835	3.42	4.07
5836-5930	3.40	4.01

Results Summary

Peak gain & Efficiency – 5G2

Frequency (MHz)	Peak Gain_H(dBi)	Peak Gain_V(dBi)
5150-5250	3.18	4.44
5251-5300	2.94	4.33
5301-5490	2.48	4.26
5491-5725	2.05	4.63
5726-5835	2.08	4.58
5836-5930	2.13	4.61

Results Summary

Peak gain & Efficiency – DB1

Frequency (MHz)	Peak Gain_H(dBi)	Peak Gain_V(dBi)
2400-2500	3.44	1.97
5150-5250	4.51	3.98
5251-5300	4.60	4.27
5301-5490	4.60	4.27
5491-5725	4.15	4.02
5726-5835	4.23	4.61
5836-5930	4.20	4.57

Results Summary

Peak gain & Efficiency – DB2

Frequency (MHz)	Peak Gain_H(dBi)	Peak Gain_V(dBi)
2400-2500	2.12	3.61
5150-5250	2.52	4.36
5251-5300	3.60	3.83
5301-5490	3.88	3.19
5491-5725	4.01	3.03
5726-5835	4.38	2.87
5836-5930	4.22	3.00

Results Summary

Correlation table (ECC) _2G

Frequency (MHz)	BT&2G1	BT&2G2	BT&DB1	BT&DB2	2G1&2G2
2400	0.1579	0.1366	0.1201	0.1164	0.1906
2450	0.1723	0.1457	0.1296	0.1215	0.1932
2500	0.1421	0.1388	0.1177	0.0921	0.1893

Results Summary

Correlation table (ECC) _2G

Frequency (MHz)	2G1&DB1	2G1&DB2	2G2&DB1	2G2&DB2	DB1&DB2
2400	0.1604	0.0855	0.1624	0.1428	0.1336
2450	0.1523	0.0940	0.1675	0.1359	0.1430
2500	0.1569	0.0842	0.1693	0.1461	0.1256

Results Summary

Correlation table (ECC) _5G

Frequency (MHz)	5G1&5G2	5G1&DB1	5G1&DB2	5G2&DB1	5G2&DB2	DB1&DB2
5150	0.1777	0.0766	0.0498	0.0280	0.1420	0.0523
5470	0.1862	0.0639	0.0321	0.0737	0.1266	0.0952
5850	0.1723	0.0571	0.0262	0.0455	0.1298	0.1177

Conclusion

Antenna Performance Summary

- The report use new case with new PCB and follow the new cable routing.
- The efficiency of BT & 2G1-2G2 & 5G1-5G2 & DB1-DB2 are all higher than 65 %.
- The Correlation data (**ECC**) are all less than 0.2 between 2G& 5G respectively.

