

AN-520-O
Antenna design proposal

V2.1
2022/10/27
Tim Chao

Agenda

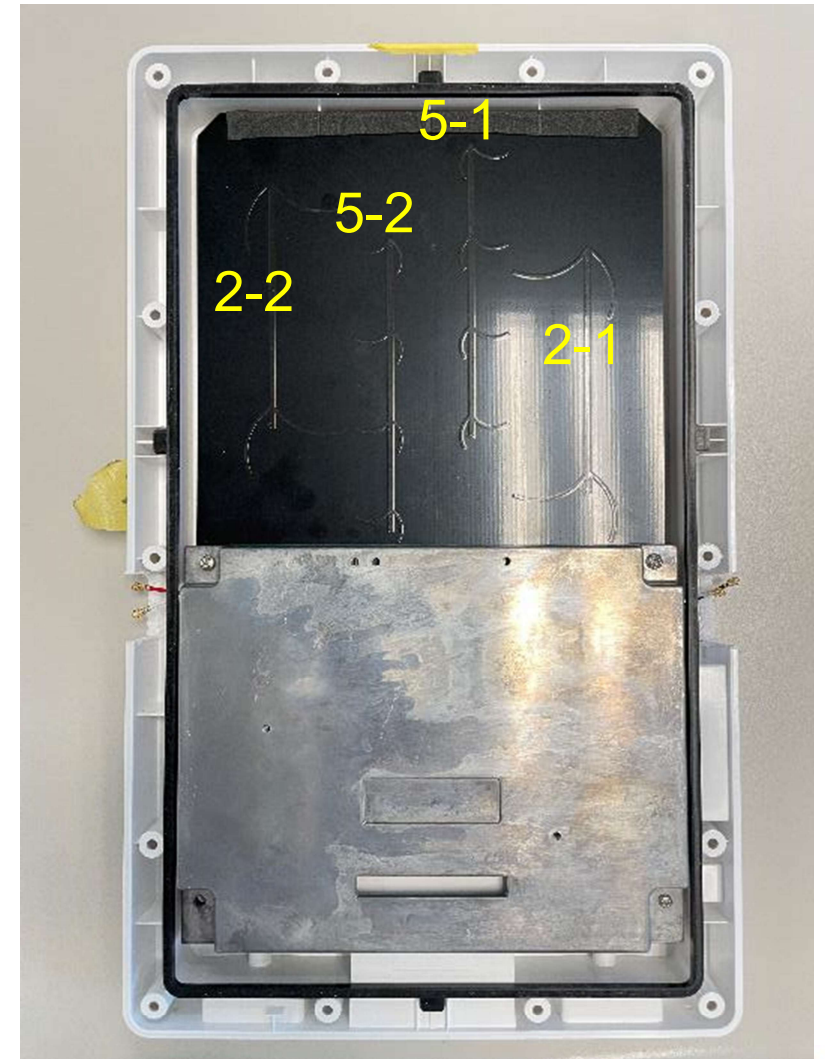
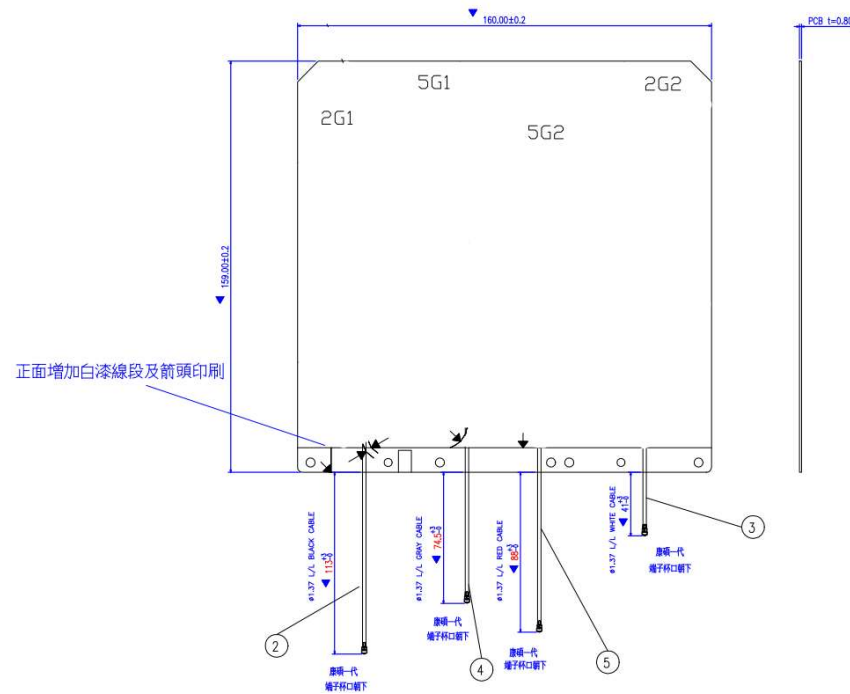
- History
- Antenna Placement
- Return Loss & Isolation
- Gain table
- 2D Radiation Pattern
- Combine Pattern

History

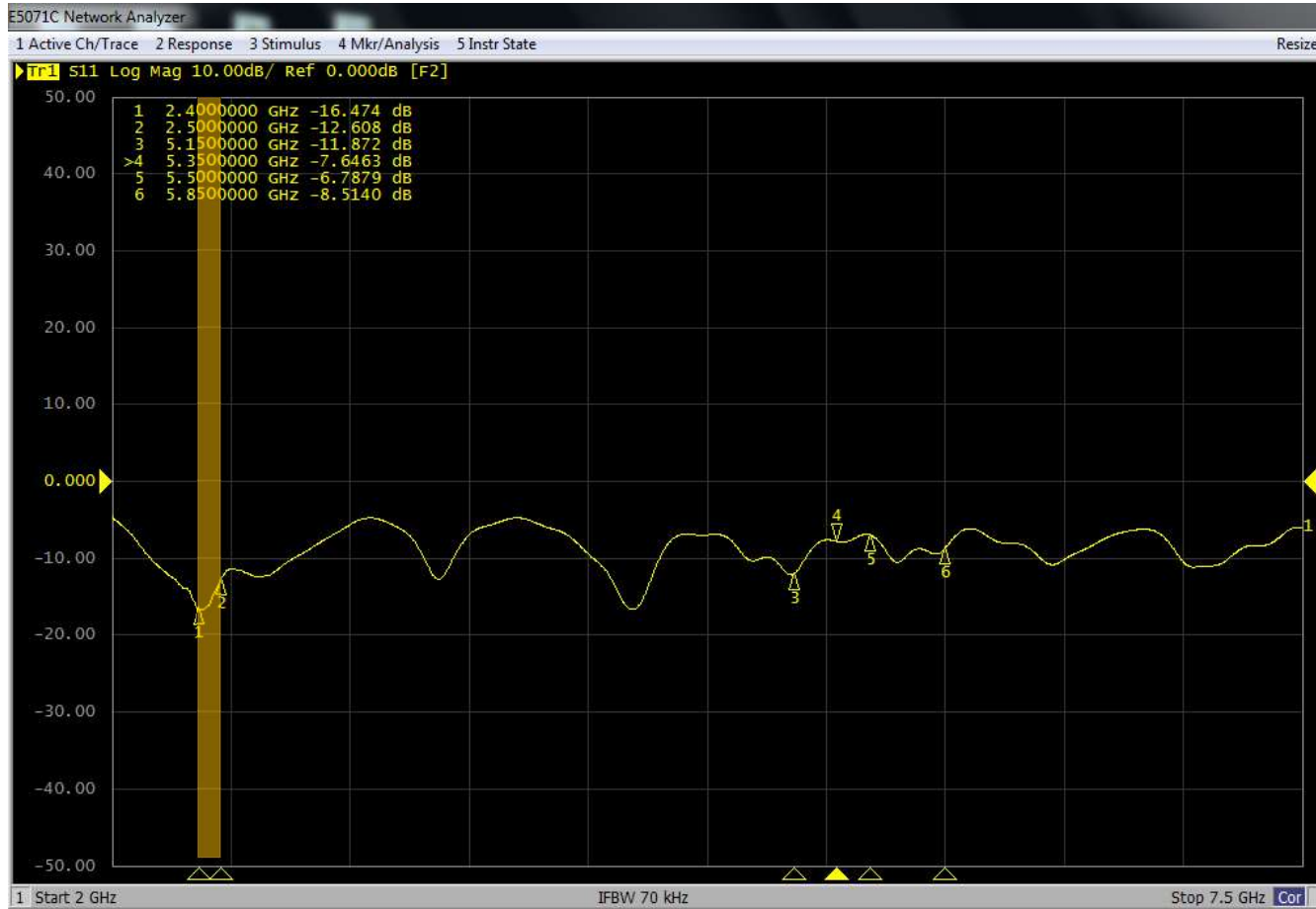
Date	Description	Version
2022/03/03	Mockup sample test	V1.0
2022/07/27	DVT sample test, factory antenna PCB	V2.0
2022/10/27	Add PCB size	V2.1

Antenna location

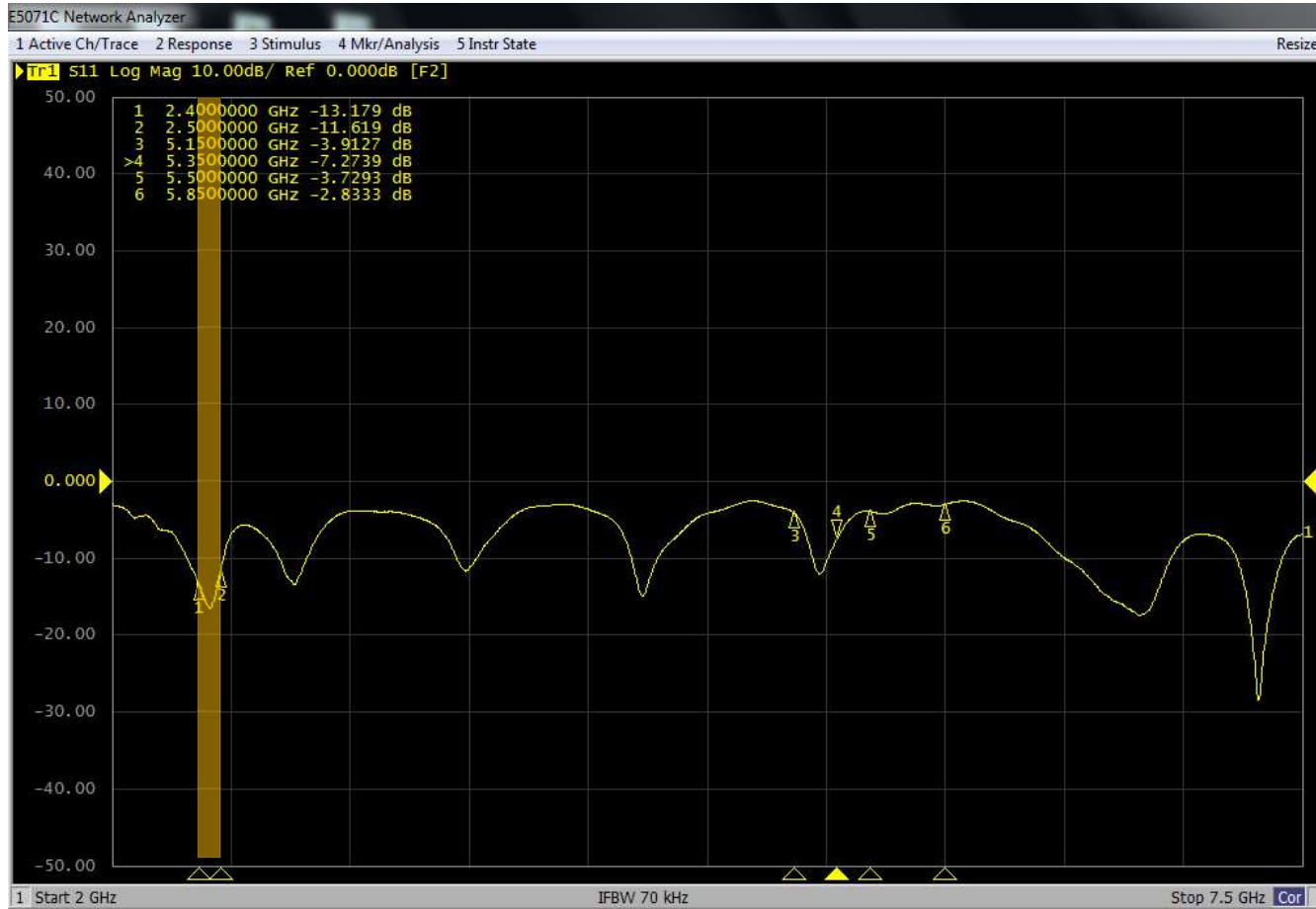
- AN-520-O have total four antennas as figure :
- 2.45GHz * 2
- 5GHz * 2



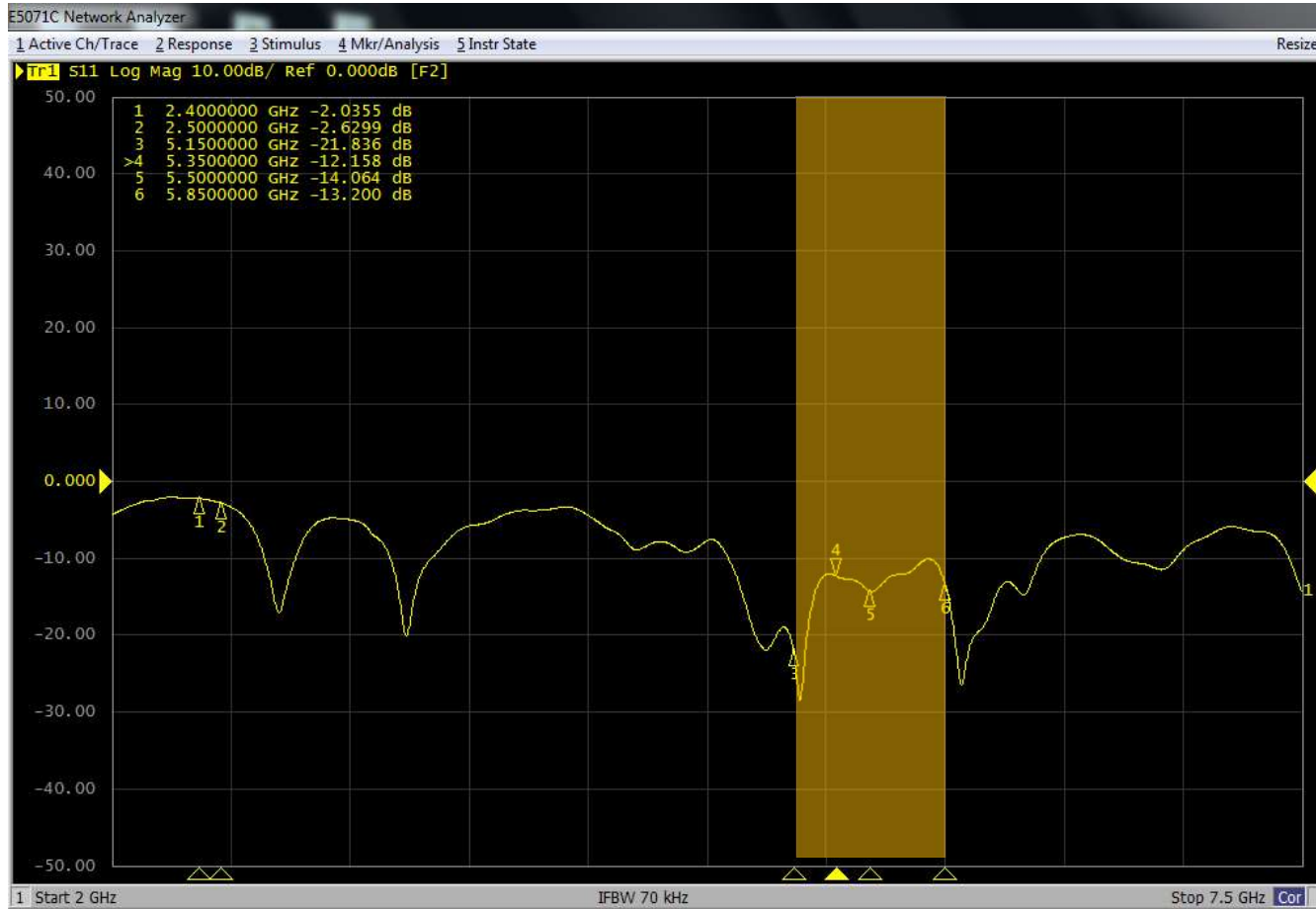
Return loss : 2-1



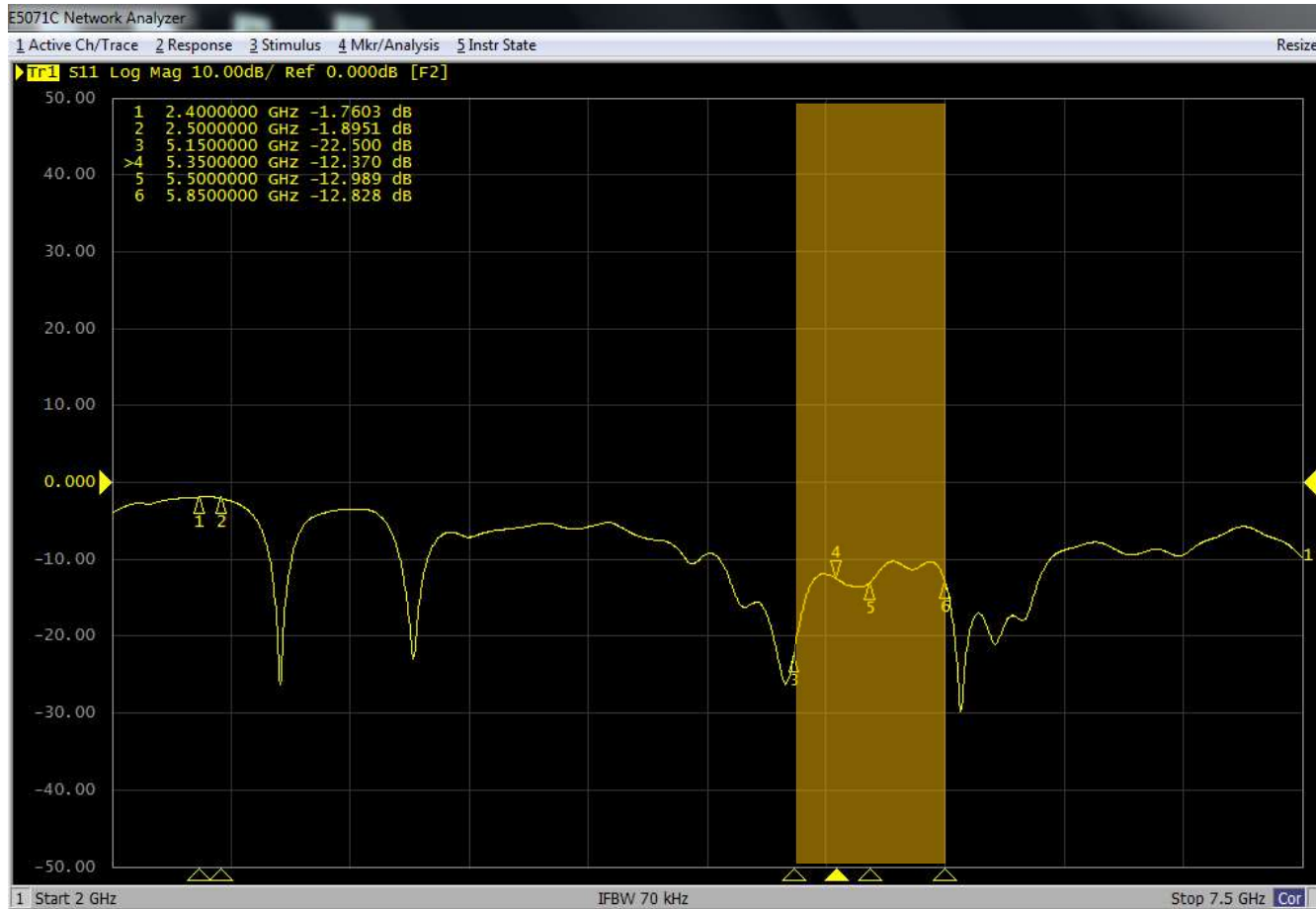
Return loss : 2-2



Return loss : 5-1



Return loss : 5-2



Return loss table

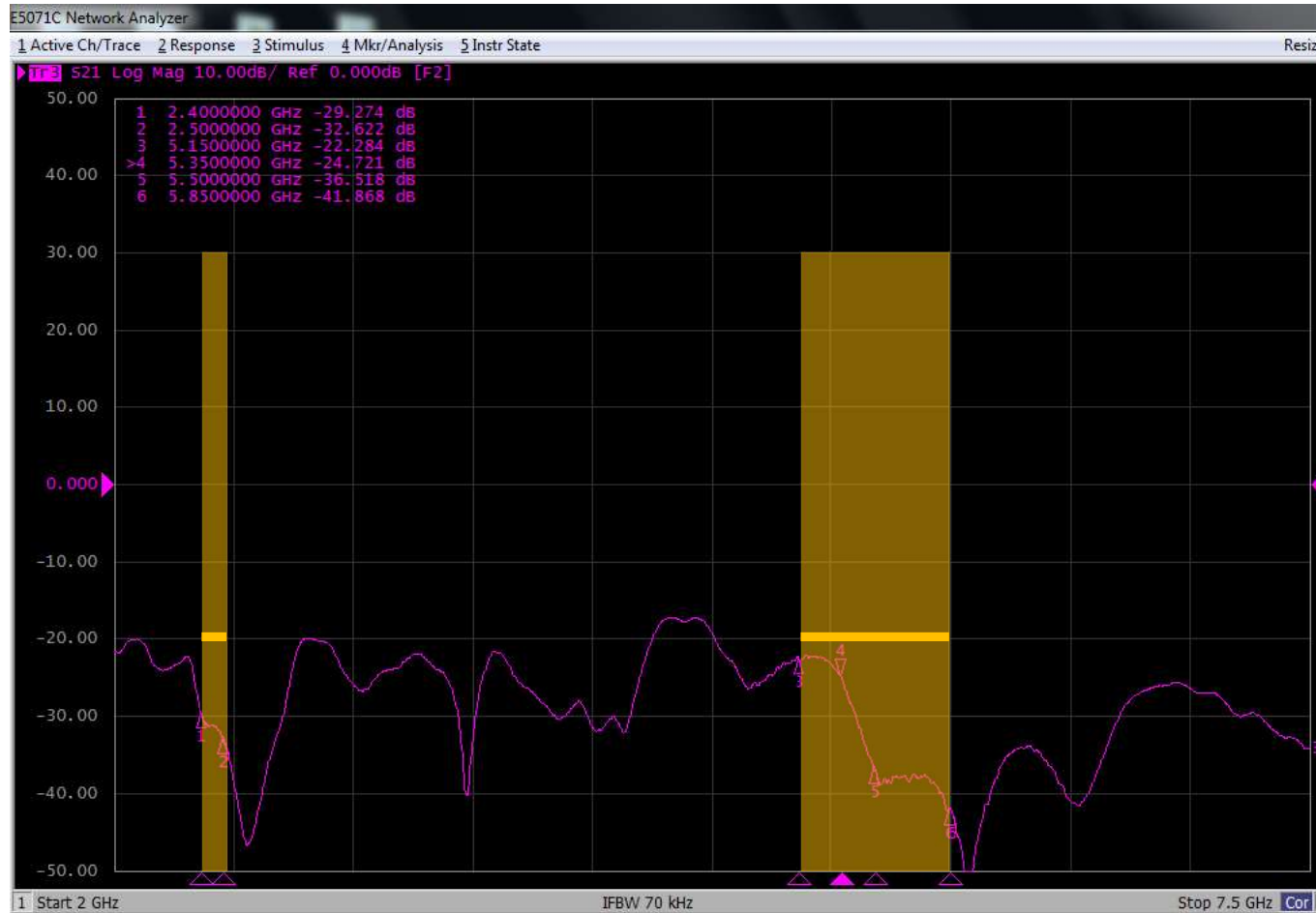
S11(dB)	2.4GHz	2.5GHz	5.15GHz	5.35GHz	5.5GHz	5.85GHz
2-1	-16.5	-12.6				
2-2	-13.2	-11.6				
5-1			-21.8	-12.2	-14.1	-13.2
5-2			-22.5	-12.4	-13.0	-12.8

Criteria :
S11 < -10dB
Result : PASS

Isolation : 2-1 to 2-2



Isolation : 5-1 to 5-2



Isolation table

Isolation (dB)	2.4GHz	2.5GHz	5.15GHz	5.35GHz	5.5GHz	5.85GHz
2-1 to 2-2	-25.6	-25.3	-49.6	-41.3	-32.0	-36.4
5-1 to 5-2	-29.3	-32.6	-22.3	-24.7	-36.5	-41.9

Criteria :
Isolation < -20dB

Result : PASS



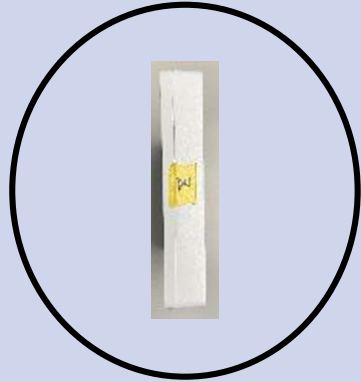
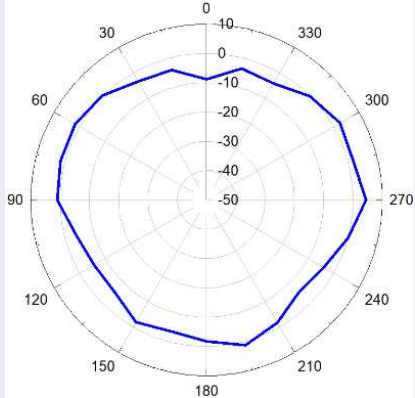
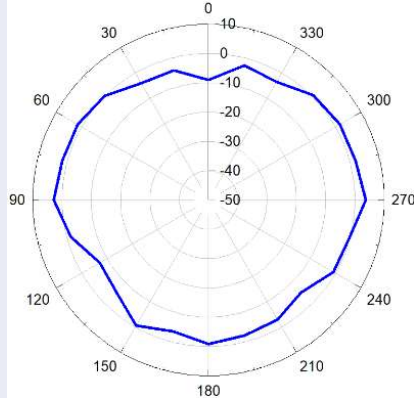
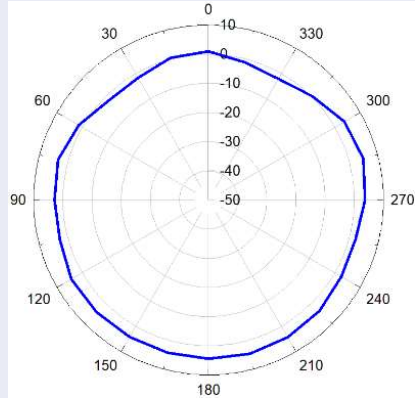
Gain table

	Antenna	Peak gain (dBi)	Efficiency (%)
2.45GHz	2-1	5.61	83.3
	2-2	4.85	88.8
5.15GHz	5-1	6.1	65.2
	5-2	7.0	64.6
5.5GHz	5-1	7.13	66.9
	5-2	7.33	66.9
5.85GHz	5-1	5.6	61.4
	5-2	5.8	61.3



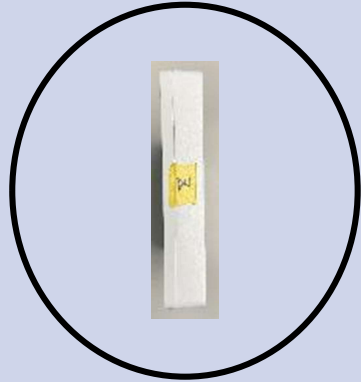
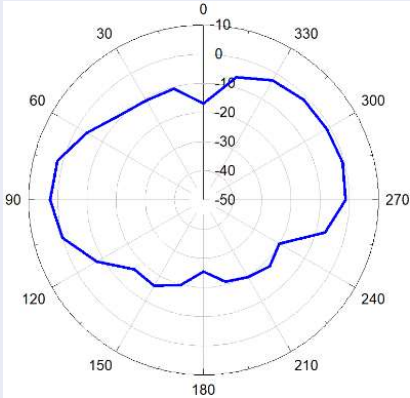
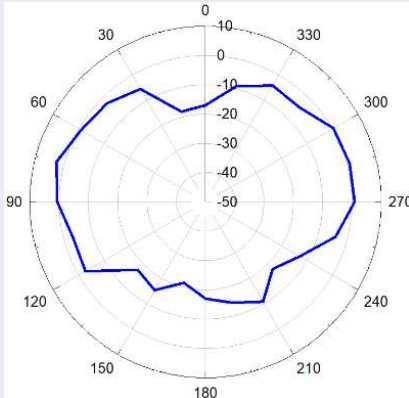
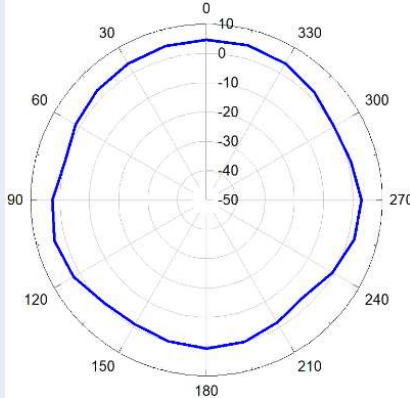
Criteria : 2.45GHz > 4.5dBi Result :
 Efficiency > 60% 5.5GHz > 5dBi PASS





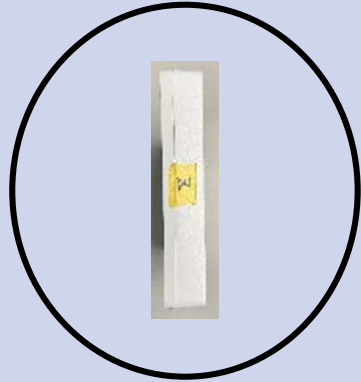
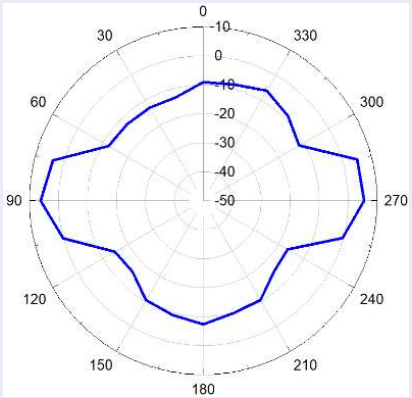
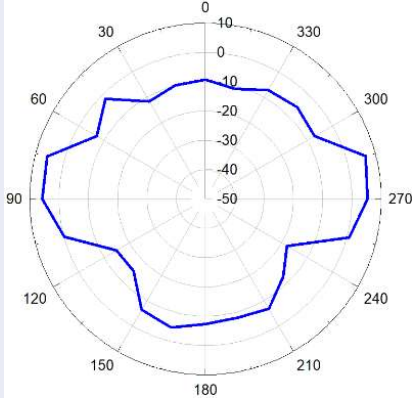
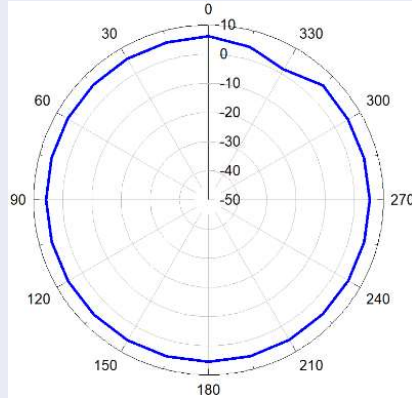
2D pattern : 2-1

Frequency	XZ Plane	YZ Plane	XY Plane
2.45GHz			
			



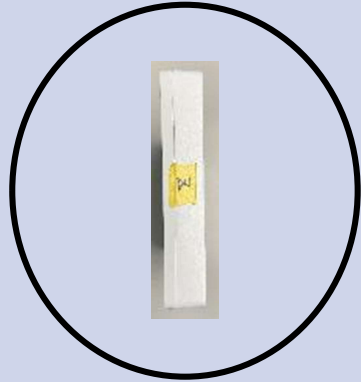
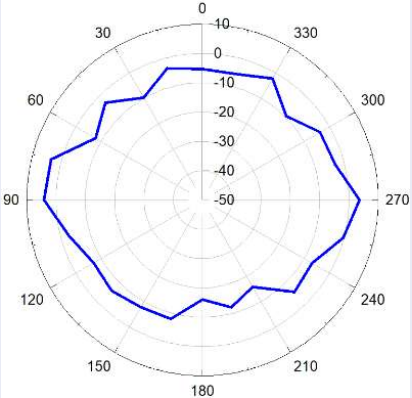
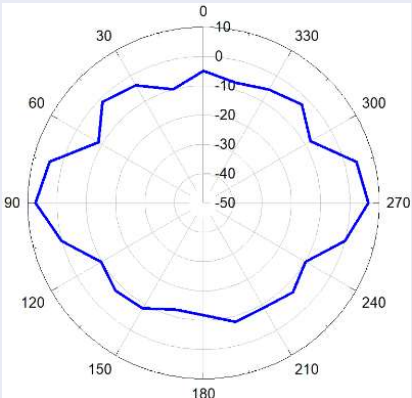
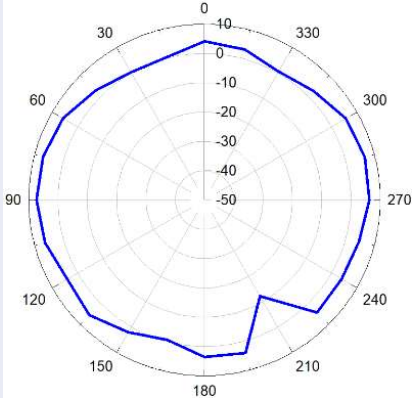
2D pattern : 2-2

Frequency	XZ Plane	YZ Plane	XY Plane
2.45GHz			
			

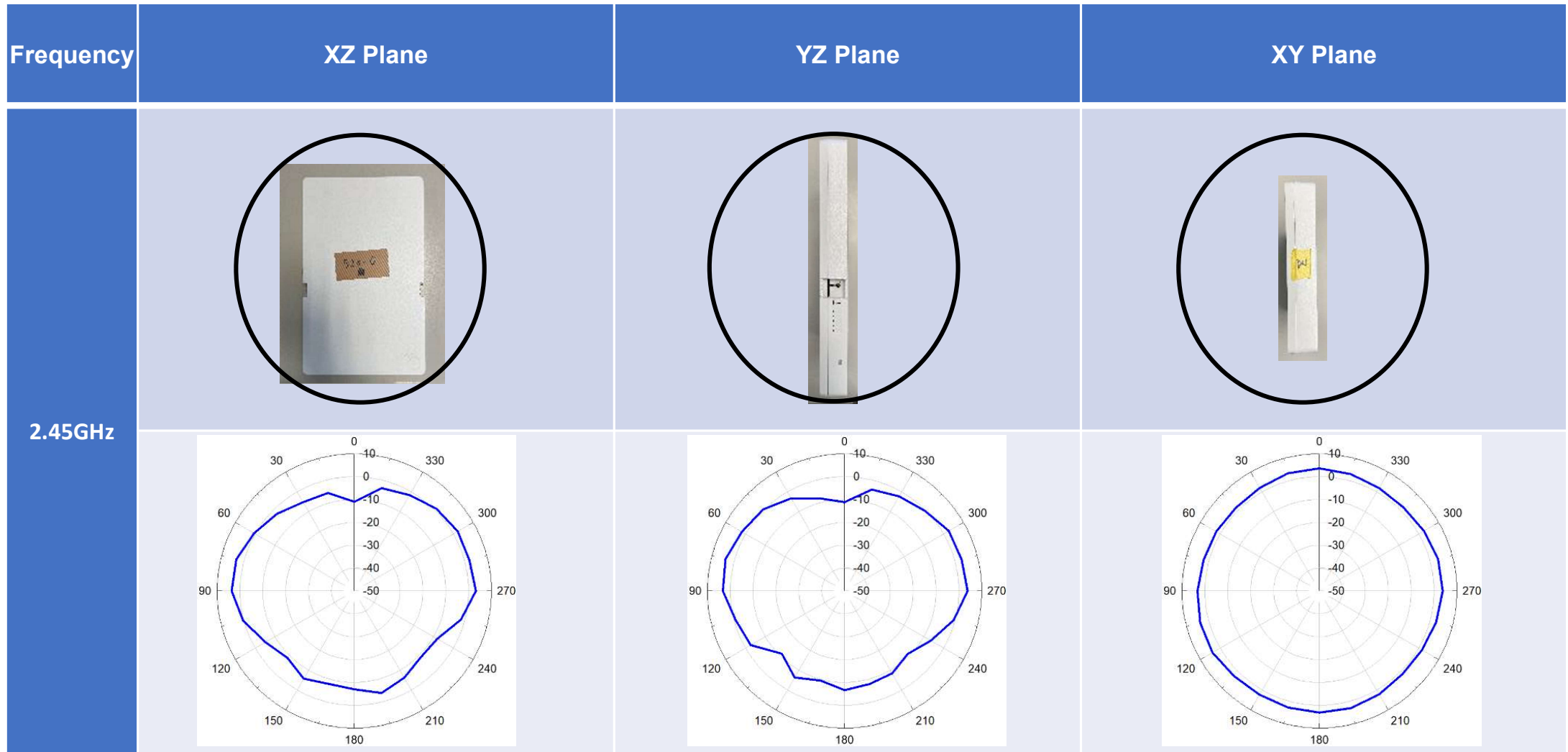
2D pattern : 5-1

Frequency	XZ Plane	YZ Plane	XY Plane
5.5GHz			
			


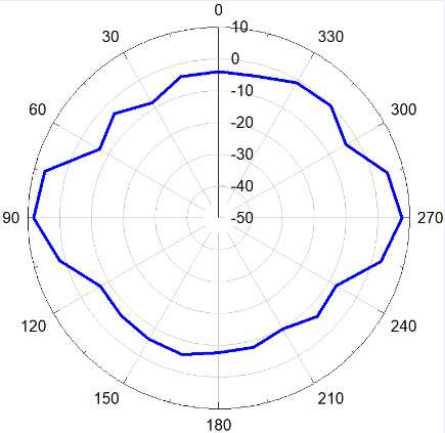

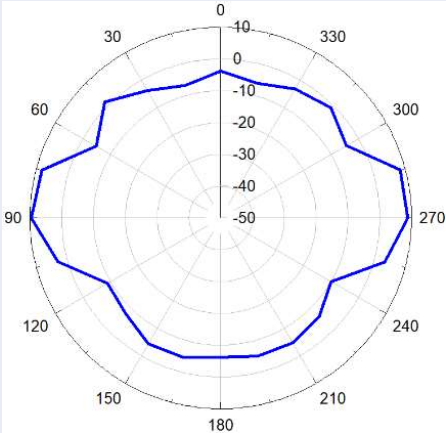
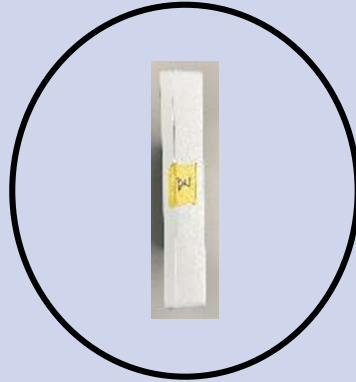
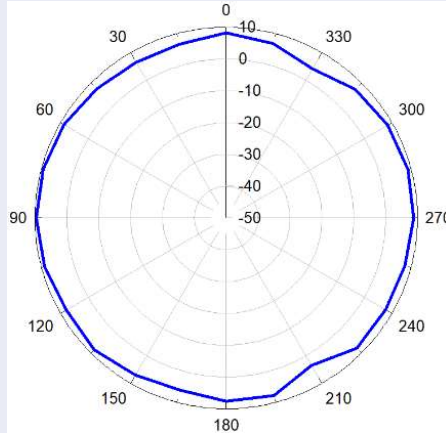
2D pattern : 5-2

Frequency	XZ Plane	YZ Plane	XY Plane
5.5GHz			
			

Combine pattern : 2.4GHz



Combine pattern : 5GHz

Frequency	XZ Plane	YZ Plane	XY Plane
5.5GHz	 	 	 



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