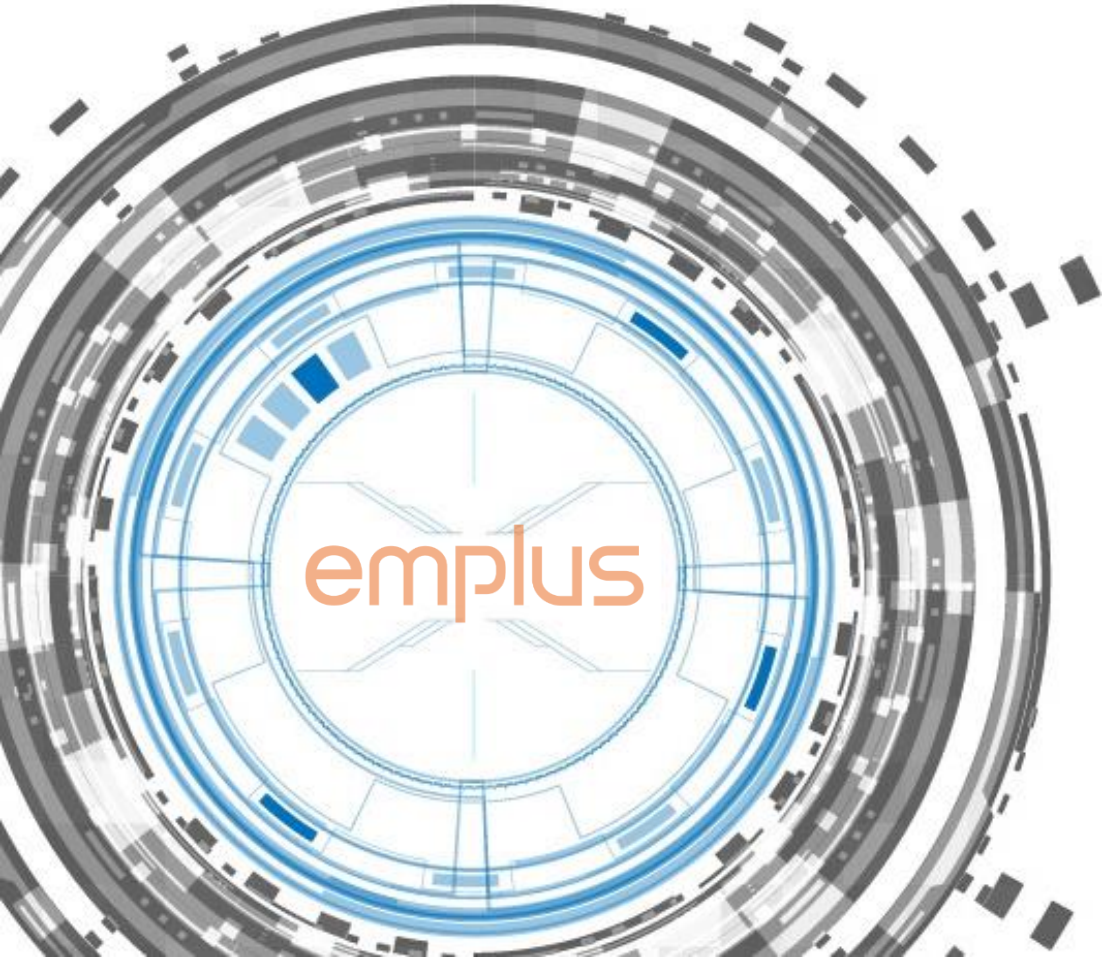


EWS276-FIT
Antenna design proposal

V1.3
Tim Chao
2023/07/31

Agenda

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

History

Date	Description	Version
2023/4/19		V1.0
2023/4/26		V1.1
2023/5/9	Add manufactory info and Part number	V1.2
2023/7/31	Remove DUT photo	V1.3

Antenna Placement

- EWS276-FIT have total eight antennas as below :
- 2.45GHz * 4
- 5GHz * 4

- Design criteria :
- Installation: Indoor/Wall mount
- Peak Gain: 2.4G:3.5dBi, 5G:4.5dBi
- Return loss: ≤ -10dB
- Isolation: ≤ -20dB
- Efficiency: ≥ 60 %

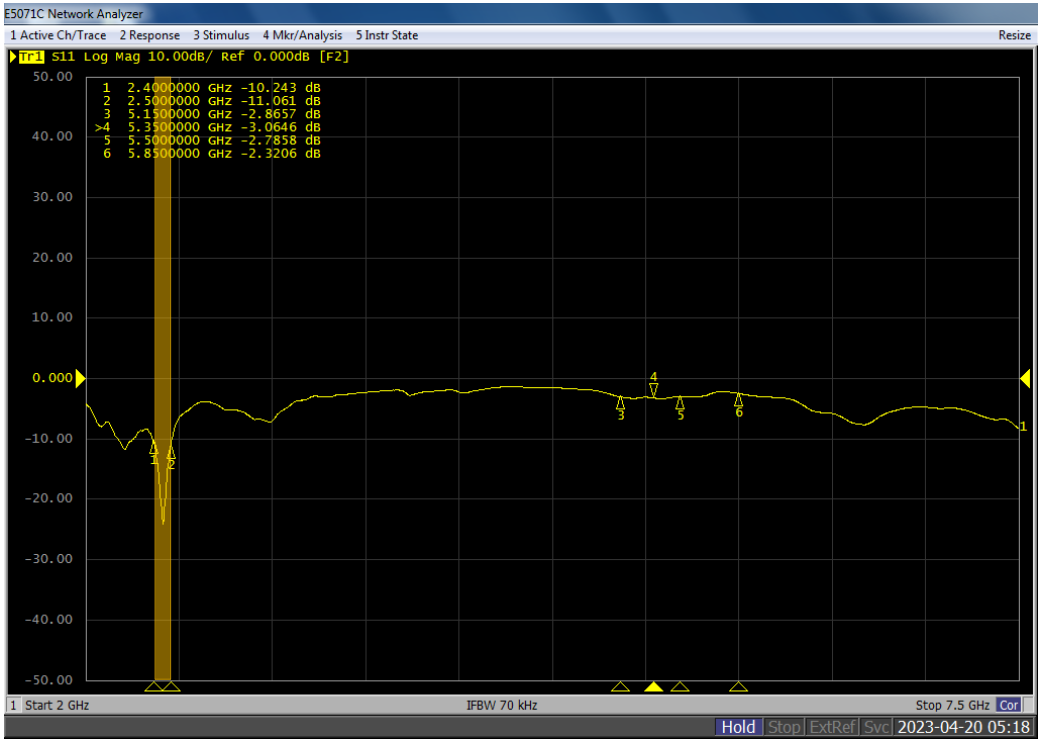
Antenna Information

Manufactory : Advanced wireless & antenna inc.

Add. : B2-F,No.207-1,Sec.3,Beixin Rd.,Xindian Dist.,New Taipei City,231,Taiwan

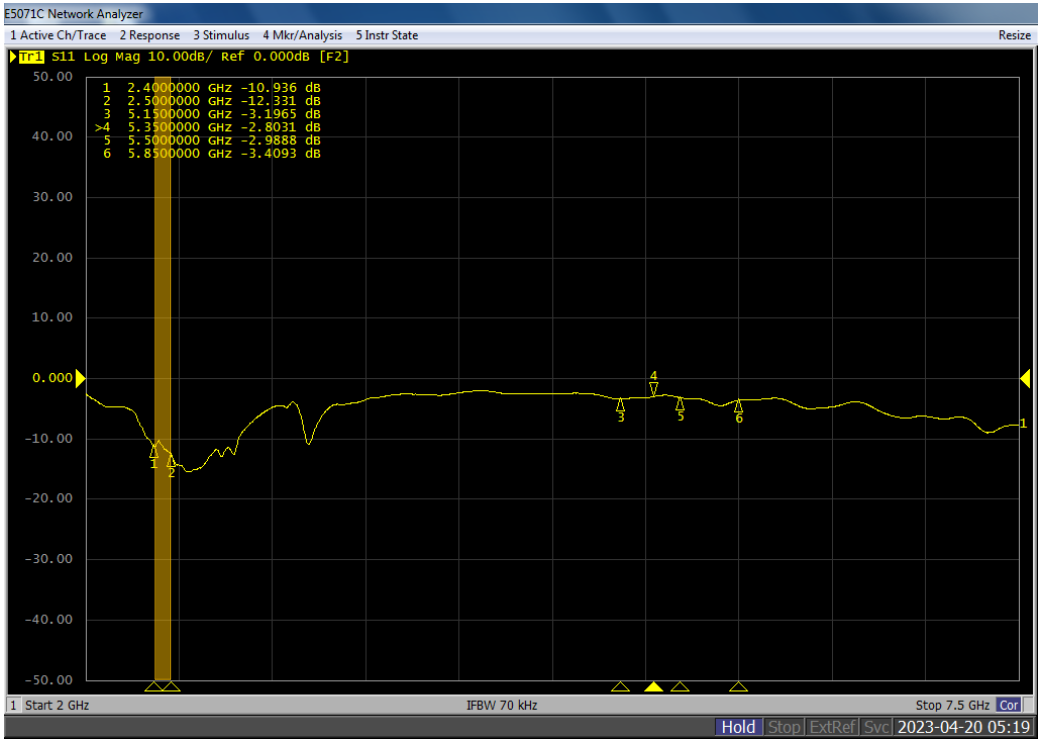
	Size(mm)	Material	Model Number	Type
2G-1	29x10x7	Metal	7102A0631000	PIFA
2G-2	32x9.9x5.3	Metal	7102A0632000	PIFA
2G-3	38.6x12x0.4	FR4	7102A0630000	Dipole
2G-4	35x18.22x0.8	FR4	7102A0633000	Dipole
5G-1	22x9.9x5.3	Metal	7102A0634000	PIFA
5G-2	22x9.9x5.3	Metal	7102A0627000	PIFA
5G-3	22x10x5	Metal	7102A0628000	PIFA
5G-4	22x9.9x5.3	Metal	7102A0629000	PIFA

Return Loss : 2G-1



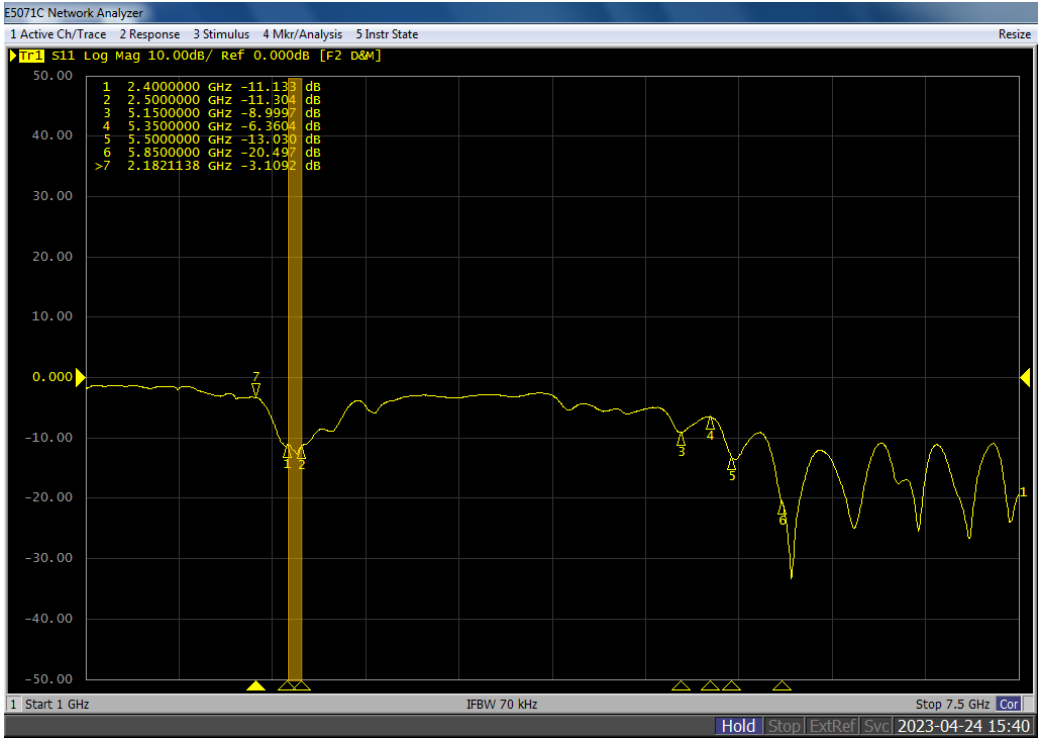
Criteria : ≤ -10dB

Return Loss : 2G-2



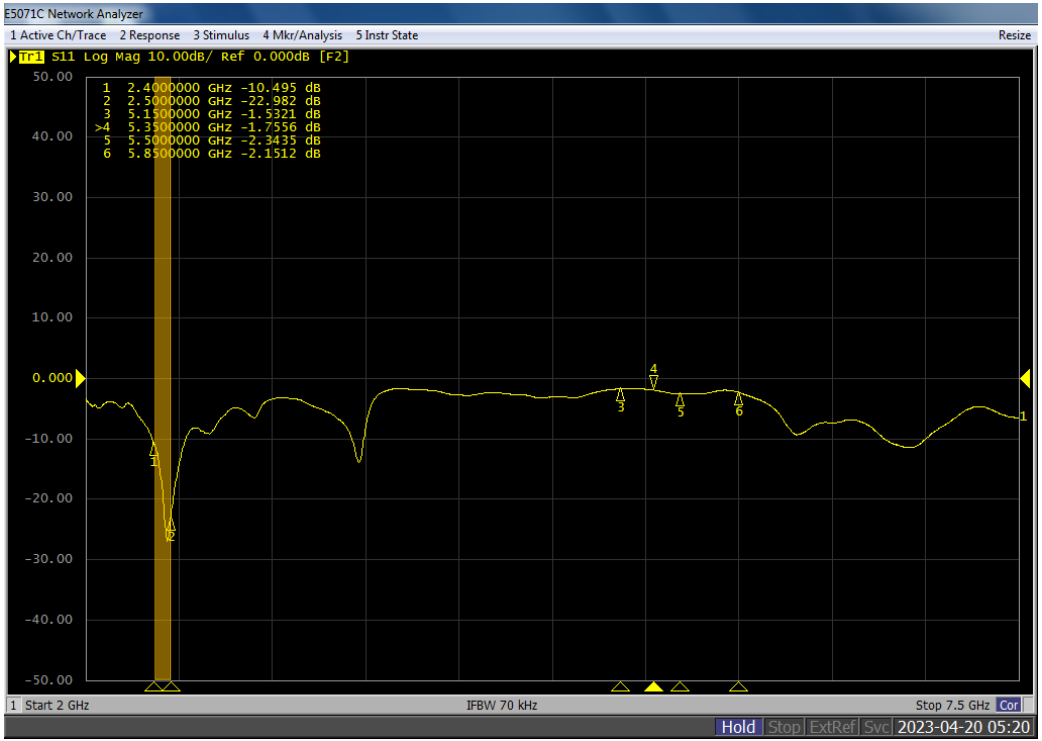
Criteria : ≤ -10dB

Return Loss : 2G-3



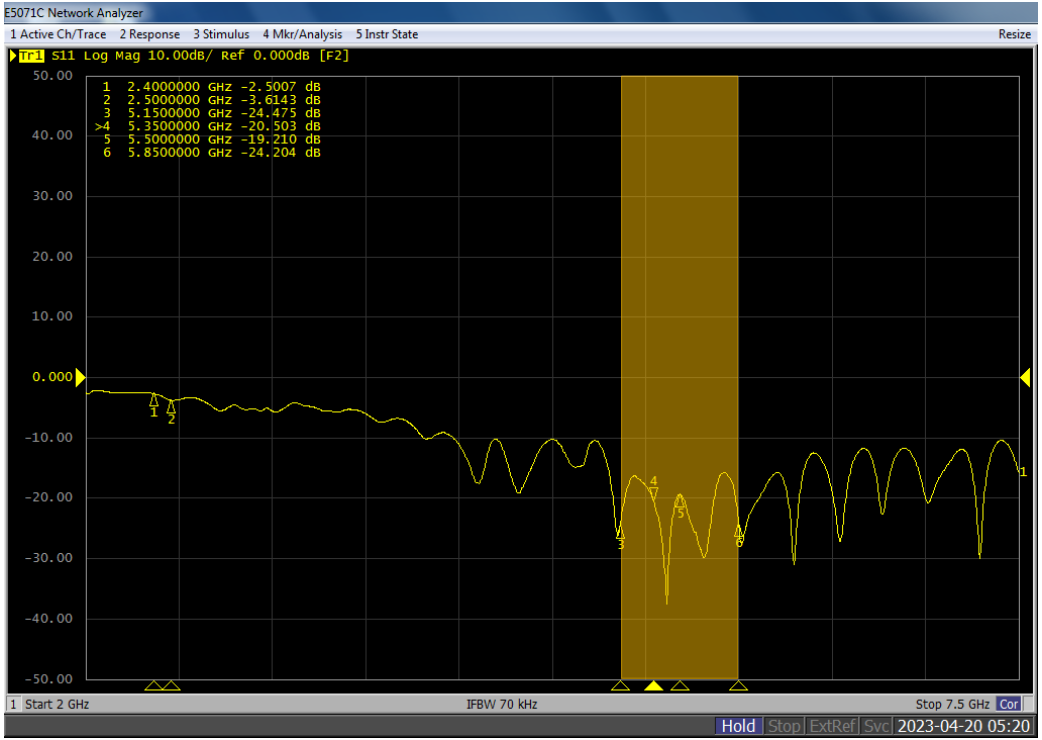
Criteria : ≤ -10dB

Return Loss : 2G-4



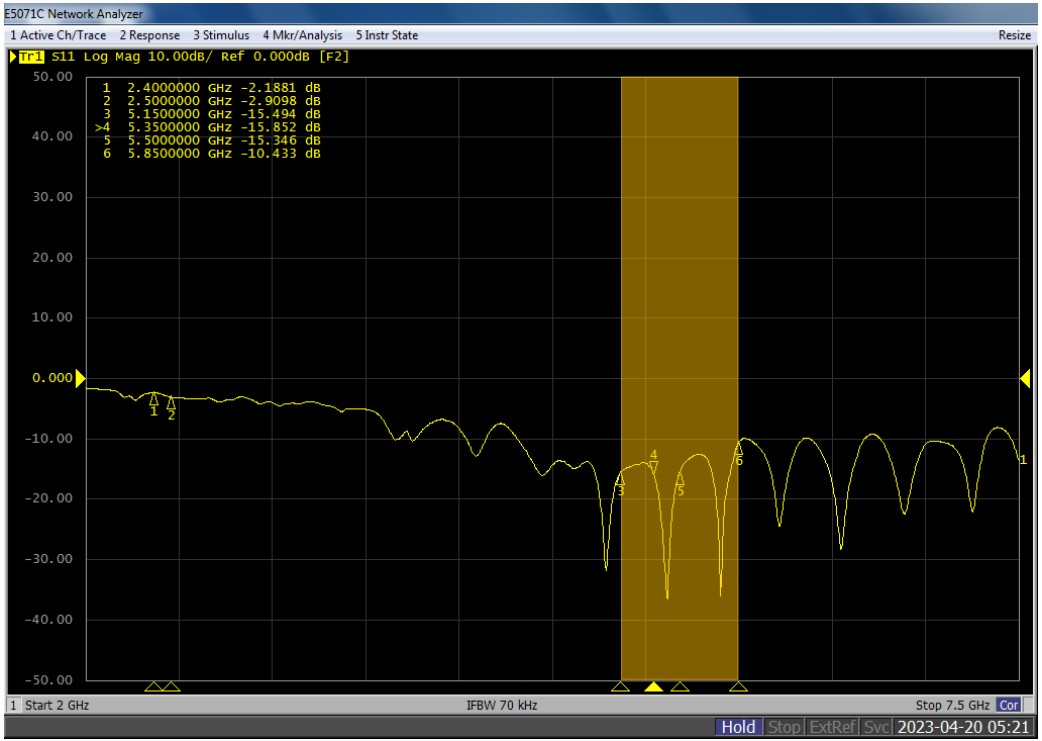
Criteria : ≤ -10dB

Return Loss : 5G-1



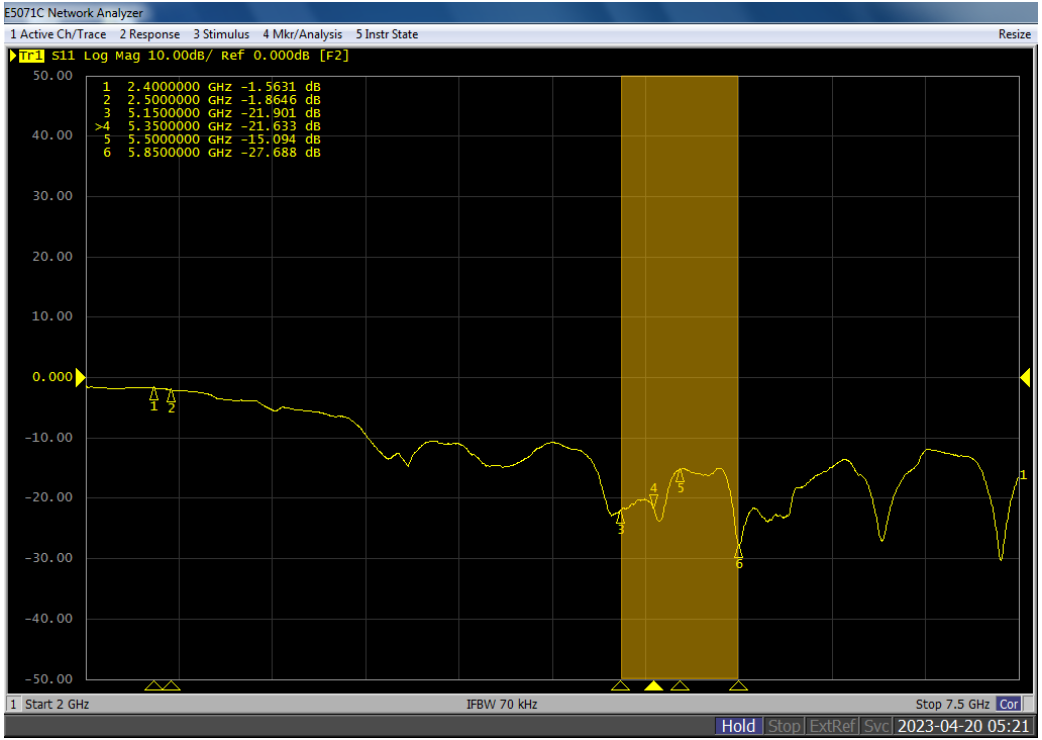
Criteria : ≤ -10dB

Return Loss : 5G-2



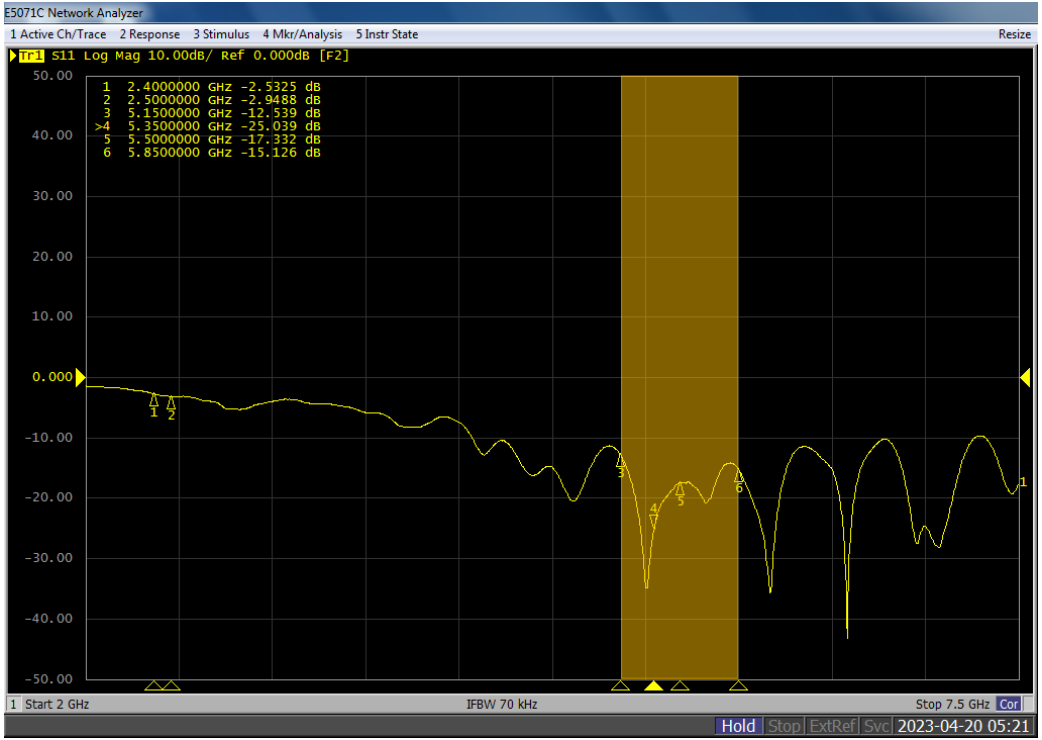
Criteria : ≤ -10dB

Return Loss : 5G-3



Criteria : ≤ -10dB

Return Loss : 5G-4



Criteria : ≤ -10dB

Return loss table

S11(dB)	2.4GHz	2.5GHz	5.15GHz	5.35GHz	5.5GHz	5.85GHz
2G-1	-10	-11				
2G-2	-10	-12				
2G-3	-11	-11				
2G-4	-10	-22				
5G-1			-24	-20	-19	-24
5G-2			-15	-15	-15	-10
5G-3			-21	-21	-15	-27
5G-4			-12	-25	-17	-15

Criteria :
S11 < -10dB
Result : PASS

Isolation at 2.45GHz

	2G-1	2G-2	2G-3	2G-4	5G-1	5G-2	5G-3	5G-4
2G-1	NA	-22	-26	-24	-20	-24	-30	-24
2G-2	NA	NA	-20	-20	-23	-23	-21	-27
2G-3	NA	NA	NA	-21	-38	-34	-20	-31
2G-4	NA	NA	NA	NA	-20	-32	-21	-31

Criteria : ≤ -20dB Result : Pass

Isolation at 5.5GHz

	5G-1	5G-2	5G-3	5G-4	2G-1	2G-2	2G-3	2G-4
5G-1	NA	-27	-32	-36	-20	-28	-36	-32
5G-2	NA	NA	-26	-30	-36	-27	-29	-37
5G-3	NA	NA	NA	-20	-35	-37	-22	-43
5G-4	NA	NA	NA	NA	-39	-40	-22	-49

Criteria : ≤ -20dB Result : Pass

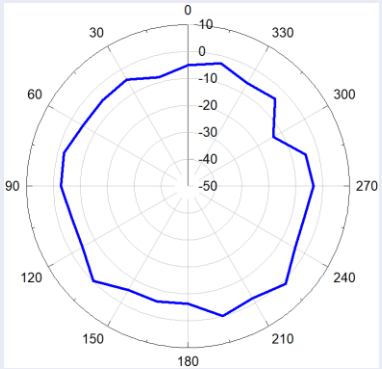
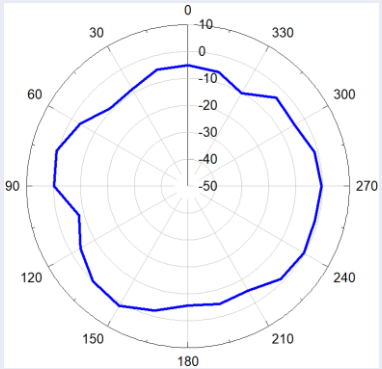
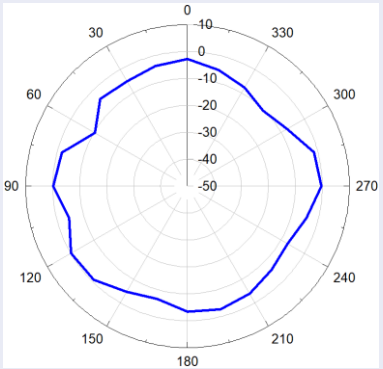
Gain table

Gain / Efficiency	Antenna	2.45GHz	5.15GHz	5.35GHz	5.5GHz	5.85GHz
2.45GHz	2G-1	3.5/65				
	2G-2	3.8/64				
	2G-3	4.3/63				
	2G-4	4.4/67				
5GHz	5G-1		4/63	3.8/65	5.2/64	4.6/66
	5G-2		4.2/64	3.3/60	3.8/60	5/60
	5G-3		5/68	4.9/65	5.2/68	6.7/72
	5G-4		3/61	4.6/70	5.2/70	4.6/72

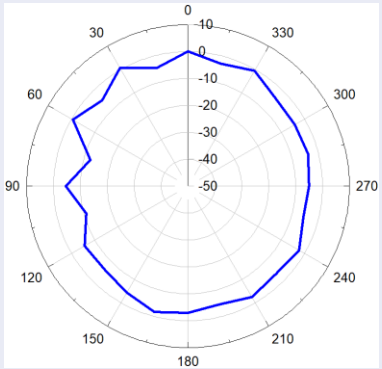
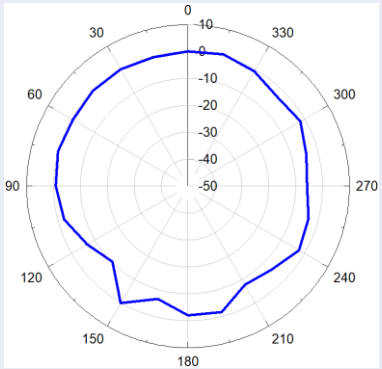
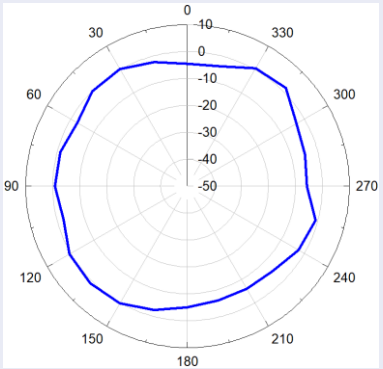
Criteria : Peak gain : 2.45G>3.5dBi ; 5G>4.5dBi
Efficiency : >60%

Result : PASS

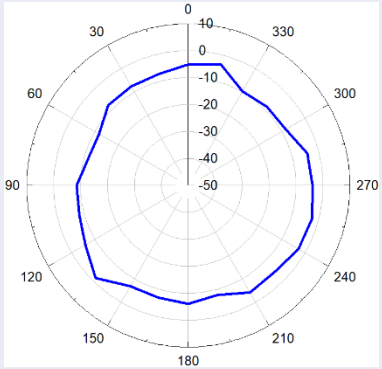
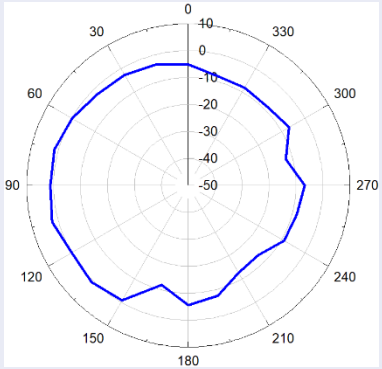
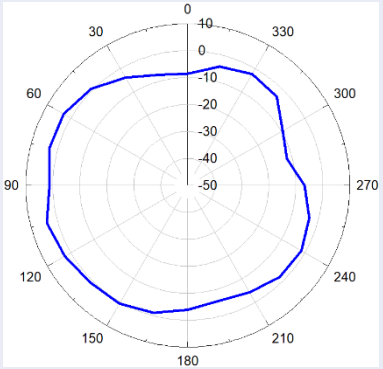
2D pattern : 2G-1

Frequency	XZ Plane	YZ Plane	XY Plane
2.45GHz			

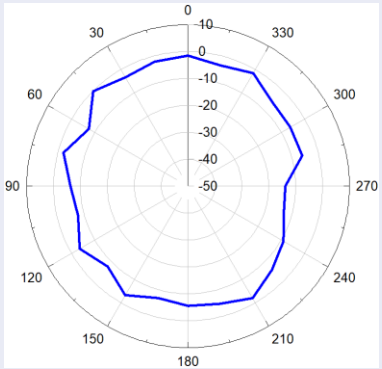
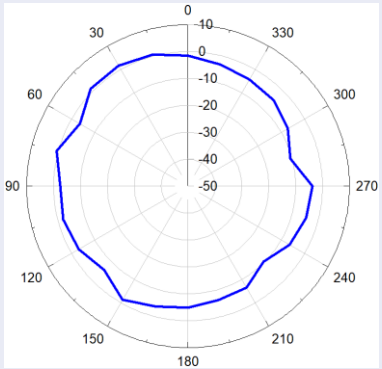
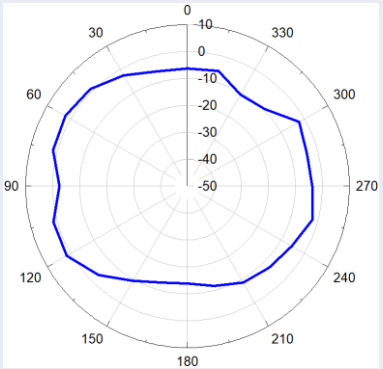
2D pattern : 2G-2

Frequency	XZ Plane	YZ Plane	XY Plane
2.45GHz			

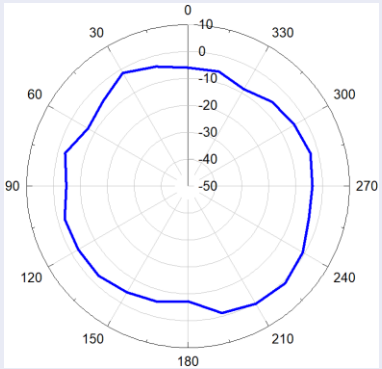
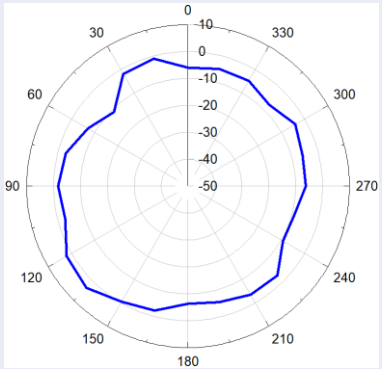
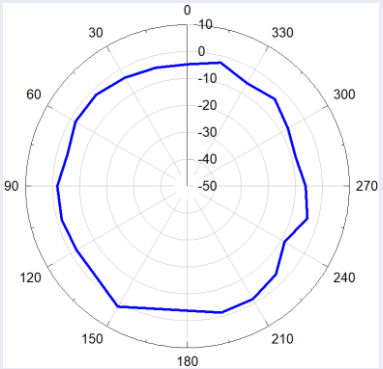
2D pattern : 2G-3

Frequency	XZ Plane	YZ Plane	XY Plane
2.45GHz			

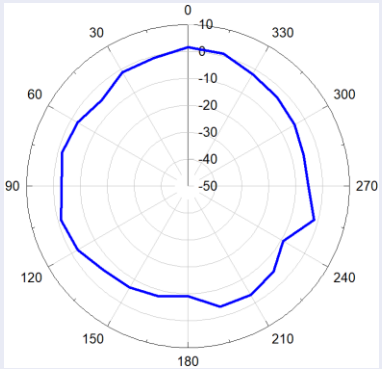
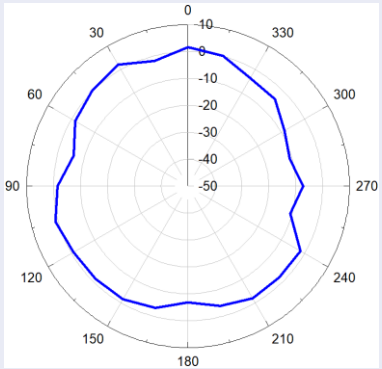
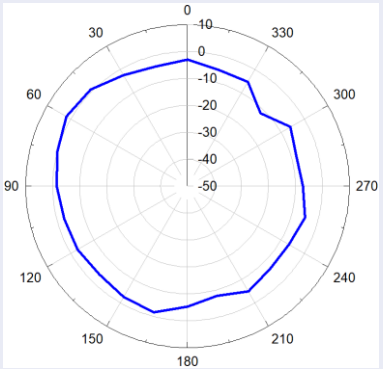
2D pattern : 2G-4

Frequency	XZ Plane	YZ Plane	XY Plane
2.45GHz			

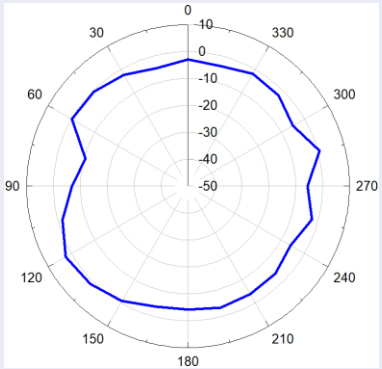
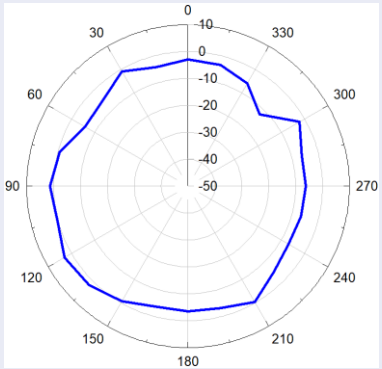
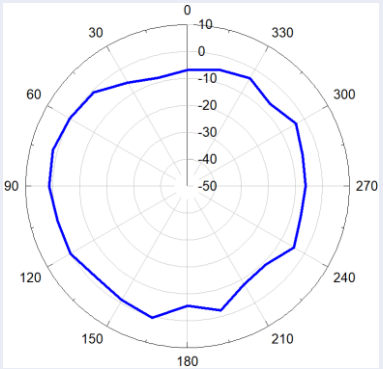
2D pattern : 5G-1

Frequency	XZ Plane	YZ Plane	XY Plane
5.5GHz			

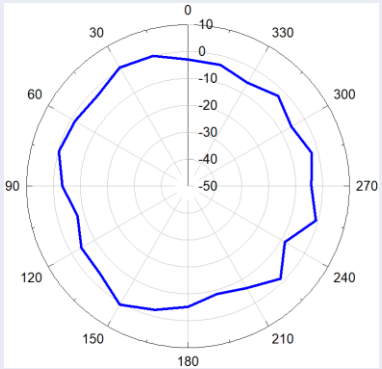
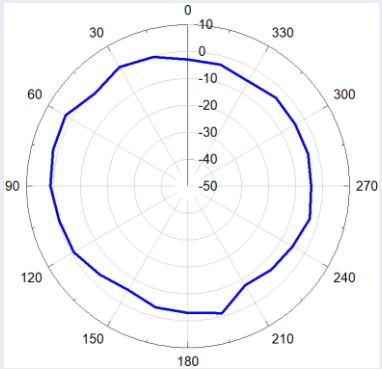
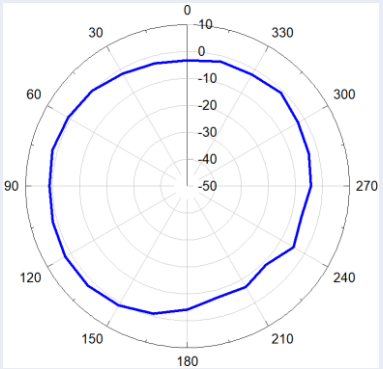
2D pattern : 5G-2

Frequency	XZ Plane	YZ Plane	XY Plane
5.5GHz			

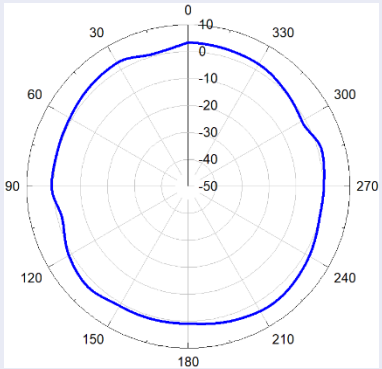
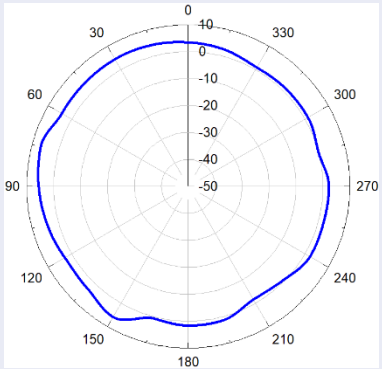
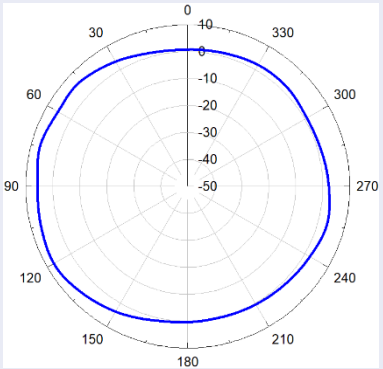
2D pattern : 5G-3

Frequency	XZ Plane	YZ Plane	XY Plane
5.5GHz			

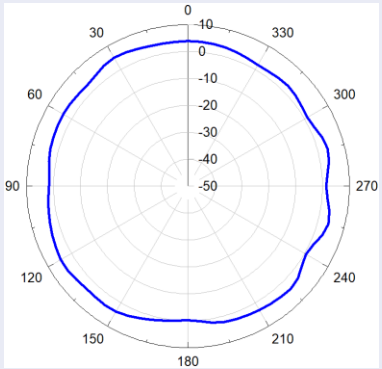
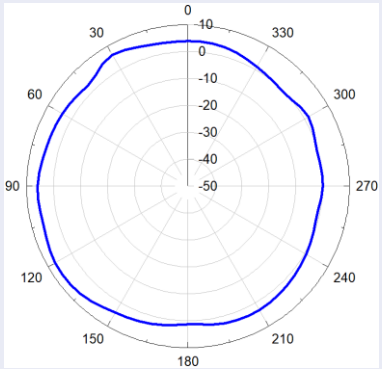
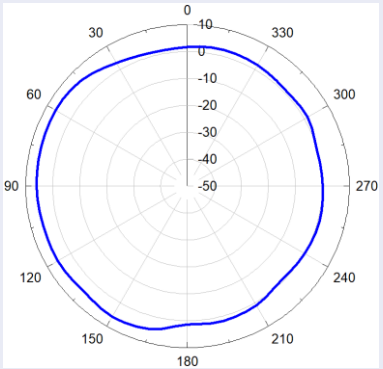
2D pattern : 5G-4

Frequency	XZ Plane	YZ Plane	XY Plane
5.5GHz			

Combine pattern : 2.4GHz

Frequency	XZ Plane	YZ Plane	XY Plane
2.45GHz			

Combine pattern : 5GHz

Frequency	XZ Plane	YZ Plane	XY Plane
5.5GHz			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