

# **IVI Project Antenna Performance Evaluation Report**

ACE – Antenna

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Approve By : York

11/15/2022

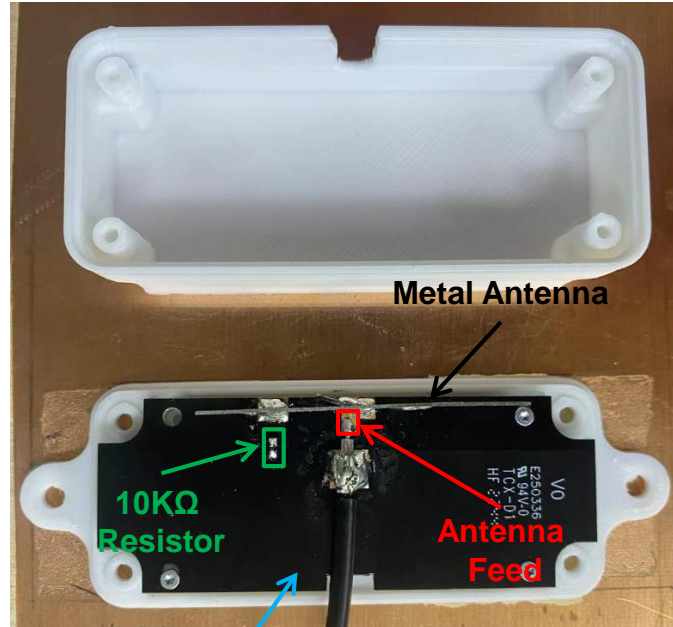
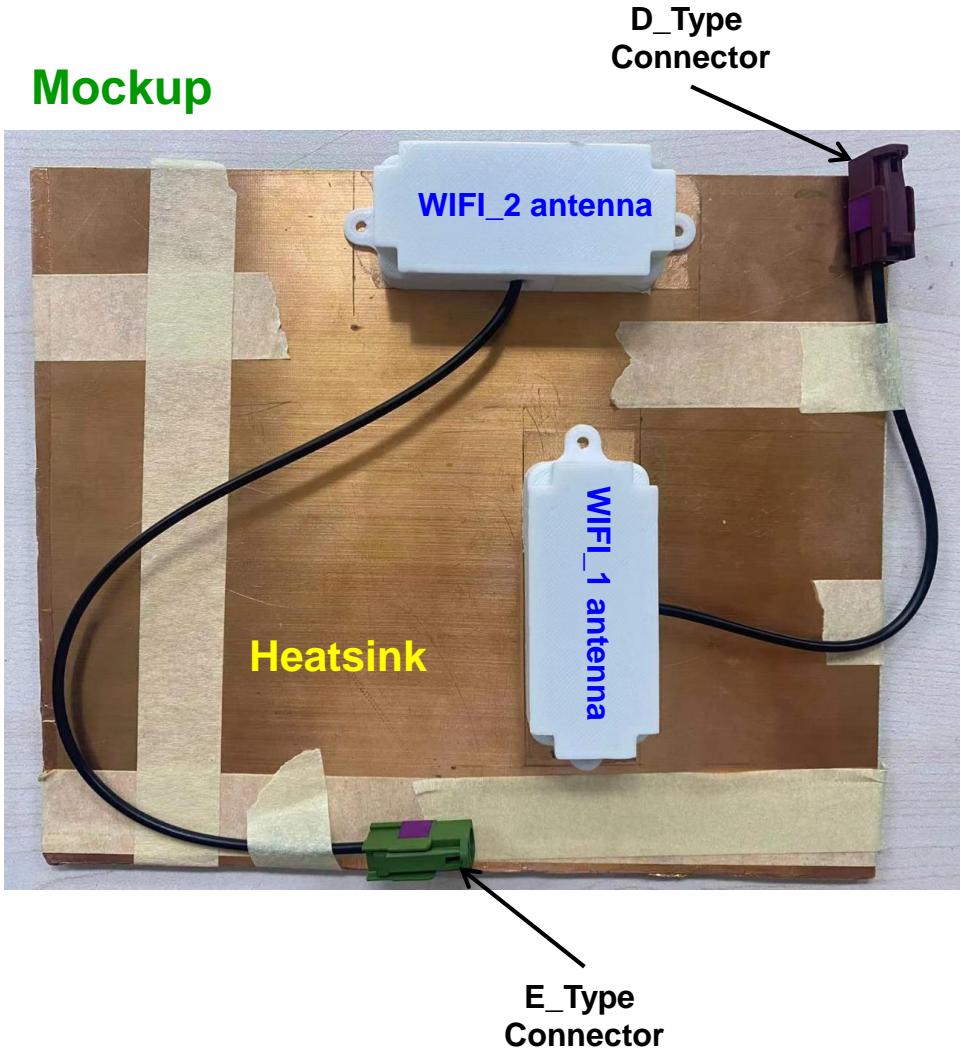
# Content

- IVI Project Antenna Band Requirement:
  - WIFI\_1 Antenna:
    - 2.4G + 5G
    - Cable: D-Type connector and cable length 160mm
  - WIFI\_2 Antenna:
    - WIFI / BT 2.4G + 5G
    - Cable: E-Type connector and cable length 260mm
- IVI Project Antenna Structure
- IVI Project Test Condition
- IVI Project Antenna Performance
  - WIFI\_1 antenna Return Loss , Efficiency and Radiation Pattern
  - WIFI\_2 antenna Return Loss , Efficiency and Radiation Pattern
  - Isolation
- Conclusion

# IVI Antenna Structure

➤ Mockup Antenna Structure:

Mockup



Metal Antenna

10KΩ Resistor

Antenna Feed

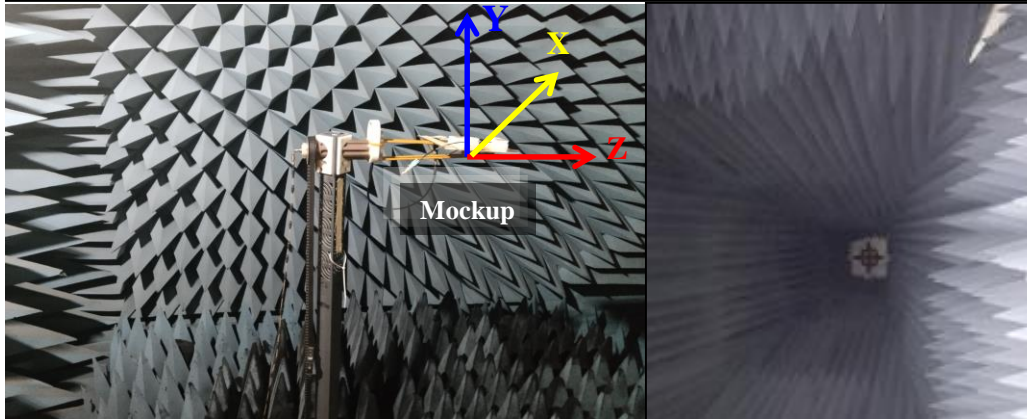
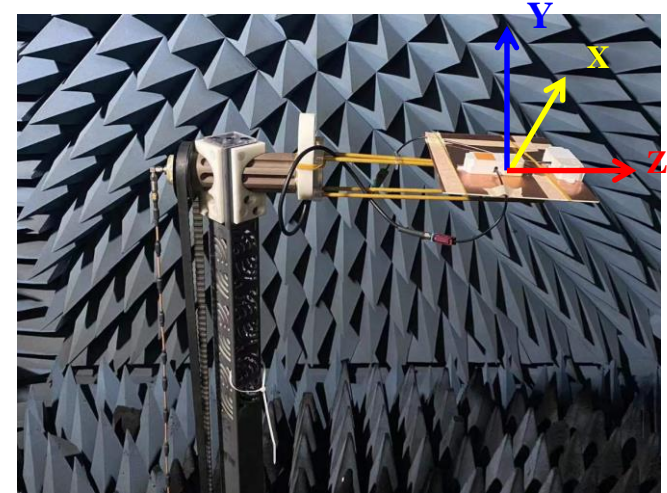
PCB size  
L\*W\*H= 65\*25\*1mm

# IVI Project Test Condition

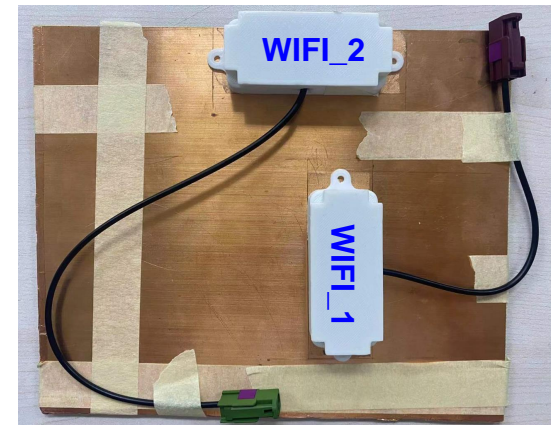
OTA Test System – ETS AMS8600



Antenna Photo



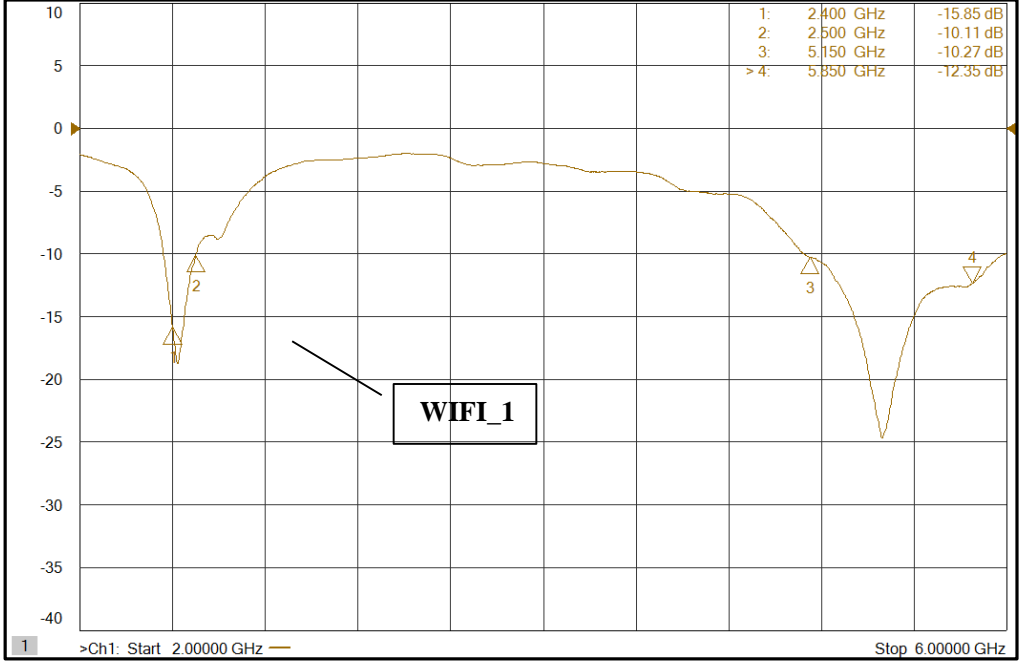
Mockup



# IVI Project Antenna Performance --- WIFI\_1 Antenna

- WIFI\_1 antenna Return Loss , Efficiency and Radiation Pattern.
- Antenna Frequency: 2400-2500MHz,5150-5850 MHz

Return Loss



Frequency(GHz)	2.4	2.5	5.15	5.85
Return Loss(dB)	-15.85	-10.11	-10.27	-12.35
Efficiency(dB)	-2.61	-2.20	-1.58	-2.54

Efficiency

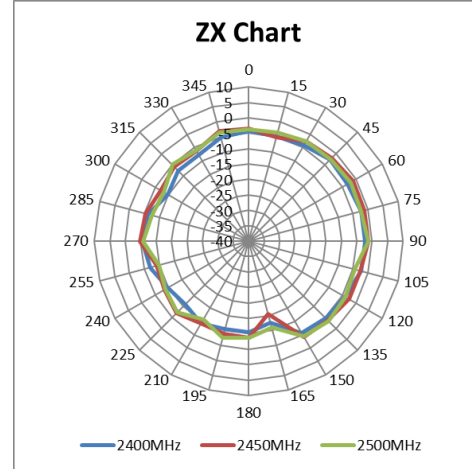
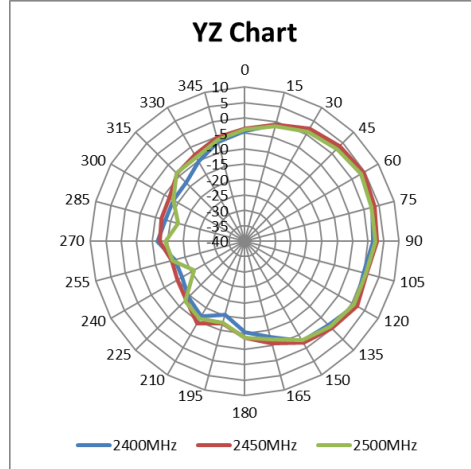
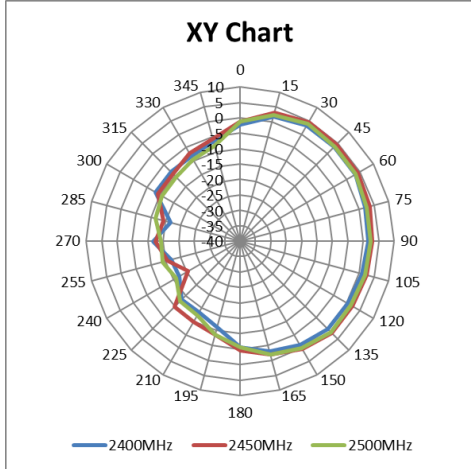
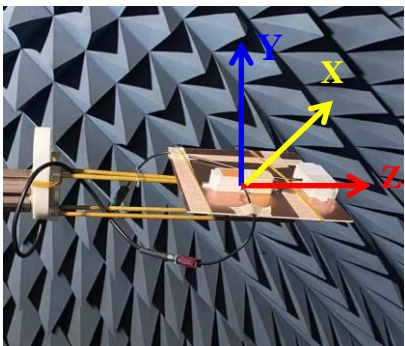
Frequency (MHz)	WIFI_1 Antenna		
	Efficiency (dB)	Efficiency (%)	Gain(dBi)
2400	-2.61	54.80	2.64
2410	-2.48	56.46	2.68
2420	-2.23	59.86	2.87
2430	-1.92	64.24	3.27
2440	-1.65	68.38	3.55
2450	-1.51	70.68	3.67
2460	-1.69	67.78	3.52
2470	-1.80	66.00	3.53
2480	-2.04	62.49	3.14
2490	-2.19	60.45	3.21
2500	-2.20	60.27	2.98
5150	-1.58	69.47	5.14
5200	-1.23	75.25	3.83
5250	-0.89	81.51	5.18
5300	-0.66	85.96	6.05
5350	-1.28	74.49	4.73
5400	-1.56	69.85	5.32
5450	-1.92	64.28	4.42
5500	-2.22	59.96	3.63
5550	-1.71	67.44	4.73
5600	-1.57	69.63	4.29
5650	-1.38	72.83	5.40
5700	-1.33	73.55	5.29
5750	-1.41	72.35	5.12
5800	-2.23	59.81	3.77
5850	-2.54	55.74	4.22

- Based on the WIFI\_1 Ant. structure , the 2.4G and 5G efficiency is more than 54%.The area has no risk for WIFI\_1 antenna performance.

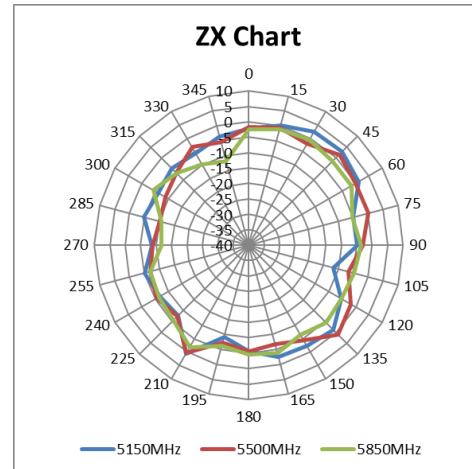
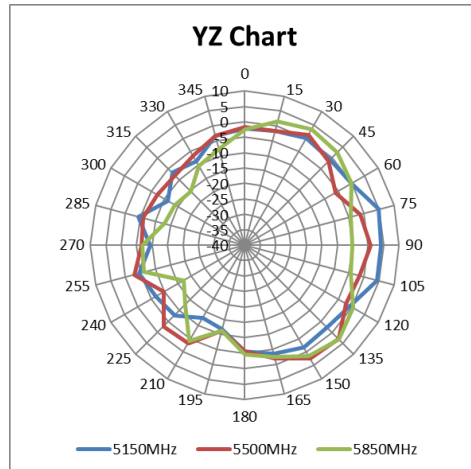
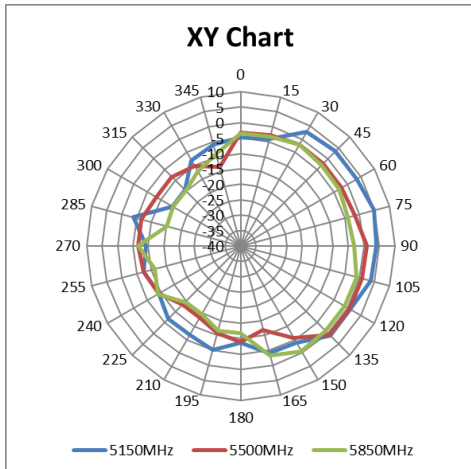
# IVI Project Antenna Performance --- WIFI\_1 Antenna

➤ WIFI\_1 antenna Radiation Pattern --- 2D:

WIFI\_1 - 2.4G 2D



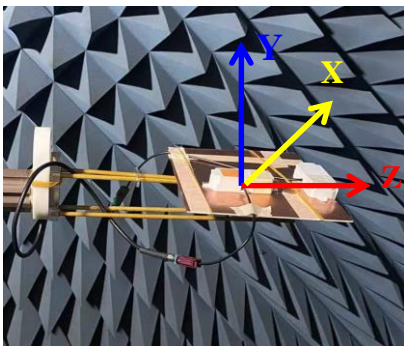
WIFI\_1 - 5G 2D



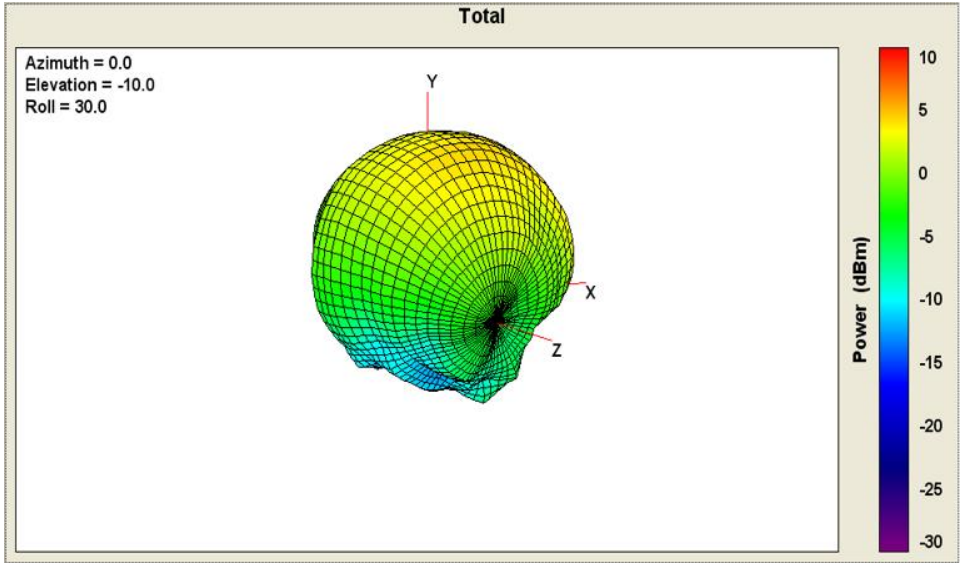
# IVI Project Antenna Performance --- WIFI\_1 Antenna

➤ WIFI\_1 antenna Radiation Pattern --- 3D:

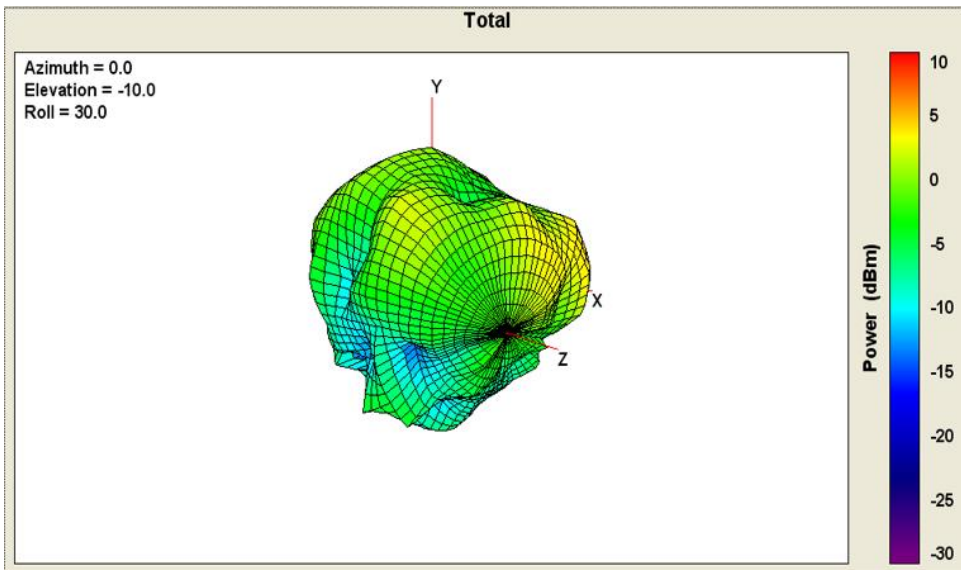
WIFI\_1 - 2.4G 3D



WIFI\_1 - 5G 3D



2450MHz

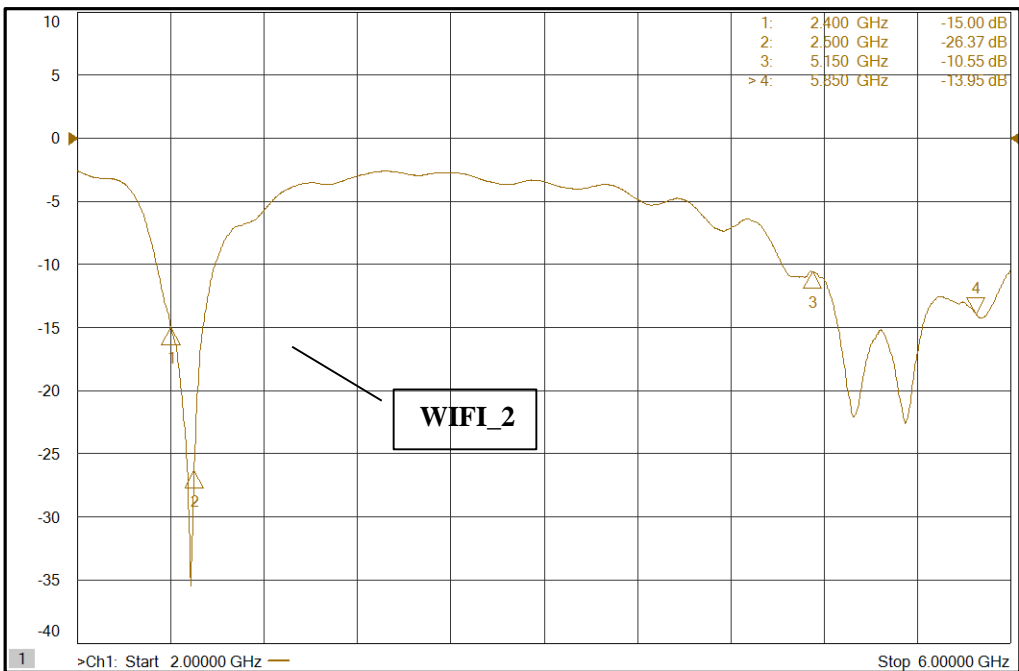


5500MHz

# IVI Project Antenna Performance --- WIFI\_2 Antenna

- WIFI\_2 antenna Return Loss , Efficiency and Radiation Pattern.
- Antenna Frequency: 2400-2500MHz,5150-5850 MHz

Return Loss



Frequency(GHz)	2.4	2.5	5.15	5.85
Return Loss(dB)	-15	-26.37	-10.55	-13.95
Efficiency(dB)	-2.05	-1.30	-2.51	-2.99

Efficiency

Frequency (MHz)	WIFI_2 Antenna		
	Efficiency (dB)	Efficiency (%)	Gain(dBi)
2400	-2.05	62.43	3.33
2410	-2.00	63.03	3.51
2420	-1.78	66.39	3.51
2430	-1.54	70.13	3.81
2440	-1.27	74.62	4.10
2450	-1.11	77.51	4.13
2460	-1.26	74.87	3.97
2470	-1.23	75.31	4.16
2480	-1.28	74.40	4.00
2490	-1.38	72.84	4.12
2500	-1.30	74.14	4.35
5150	-2.51	56.09	4.54
5200	-2.31	58.71	4.93
5250	-1.90	64.54	4.40
5300	-2.04	62.49	3.96
5350	-2.51	56.09	3.89
5400	-2.30	58.82	4.38
5450	-2.32	58.58	3.80
5500	-2.48	56.50	3.98
5550	-2.25	59.58	4.94
5600	-2.05	62.40	4.99
5650	-2.18	60.55	4.85
5700	-1.73	67.17	5.74
5750	-1.94	64.02	4.55
5800	-2.12	61.43	5.10
5850	-2.99	50.26	3.88

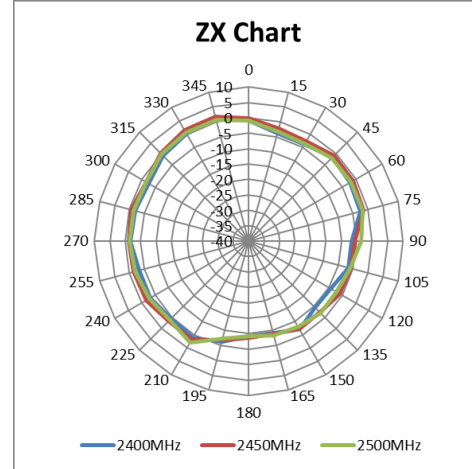
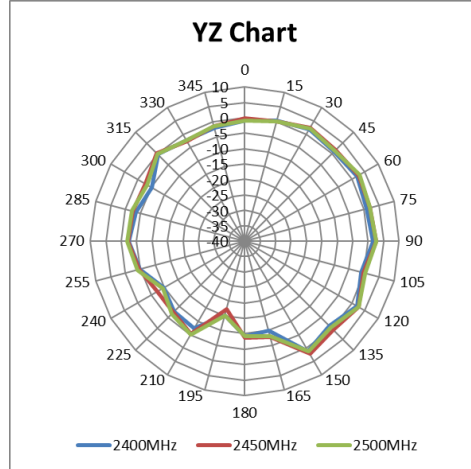
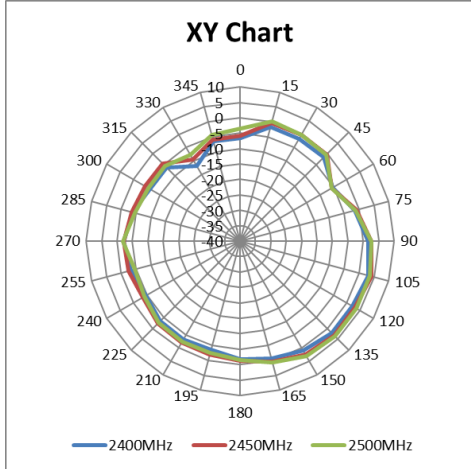
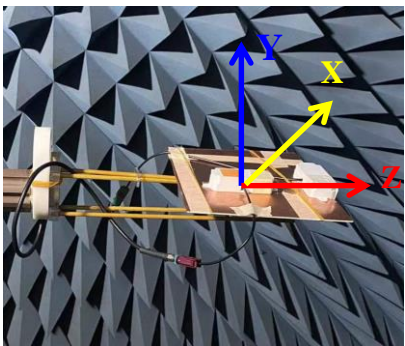
- Based on the WIFI\_2 Ant. structure , the 2.4G and 5G efficiency is more than 50%.The area has no risk for WIFI\_2 antenna performance.



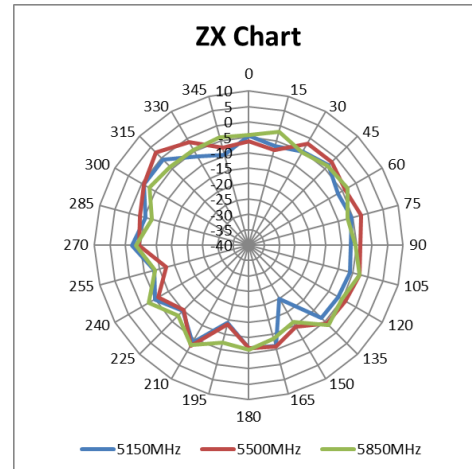
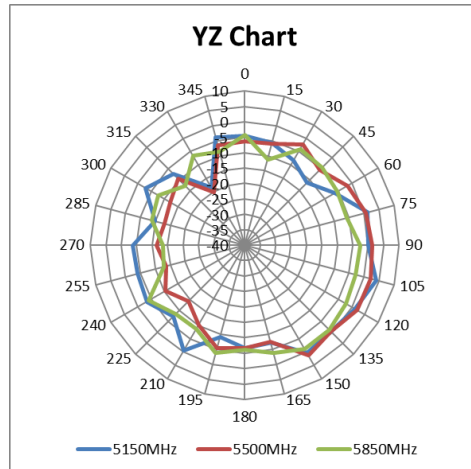
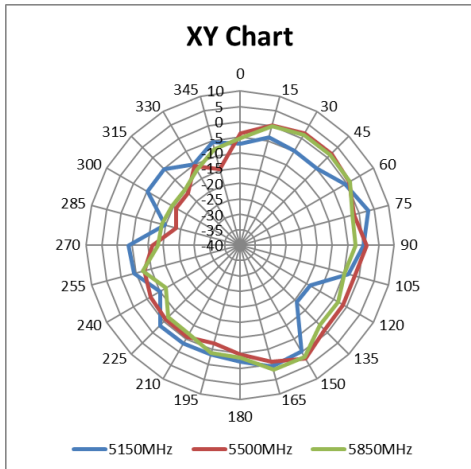
# IVI Project Antenna Performance --- WIFI\_2 Antenna

➤ WIFI\_2 antenna Radiation Pattern --- 2D:

WIFI\_2 - 2.4G 2D



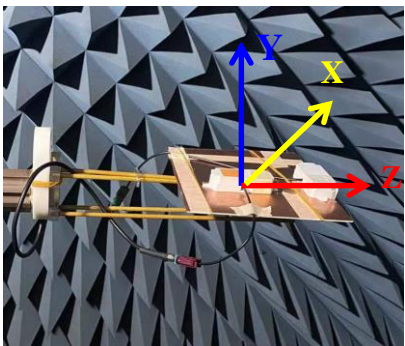
WIFI\_2 - 5G 2D



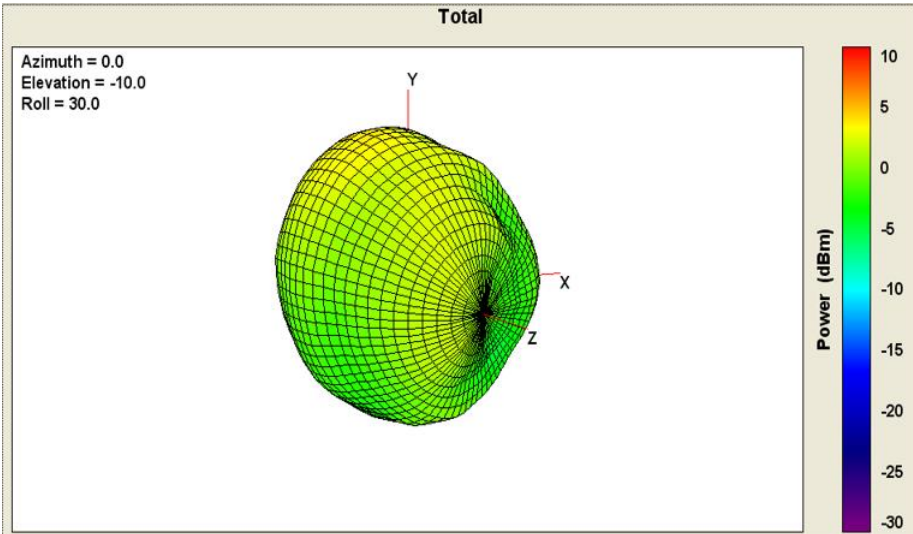
# IVI Project Antenna Performance --- WIFI\_2 Antenna

➤ WIFI\_2 antenna Radiation Pattern --- 3D:

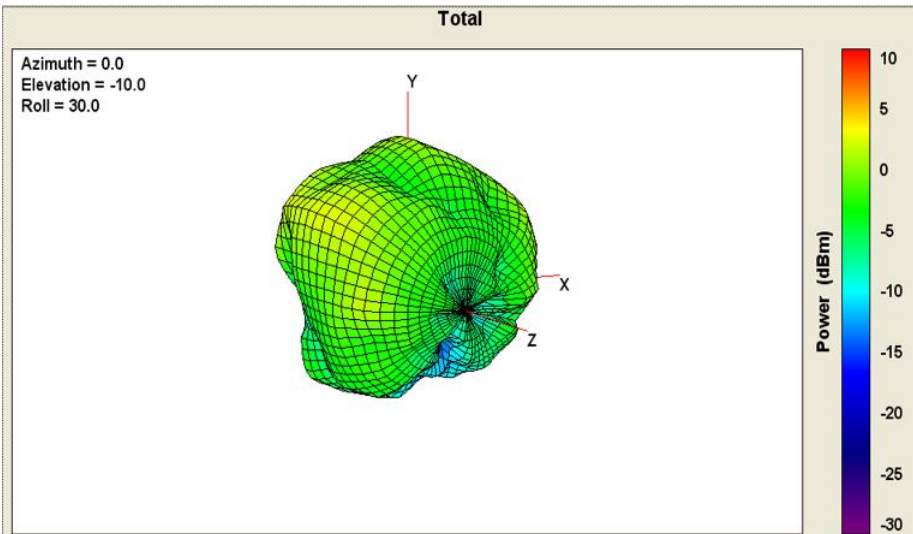
WIFI\_2 - 2.4G 3D



WIFI\_2 - 5G 3D



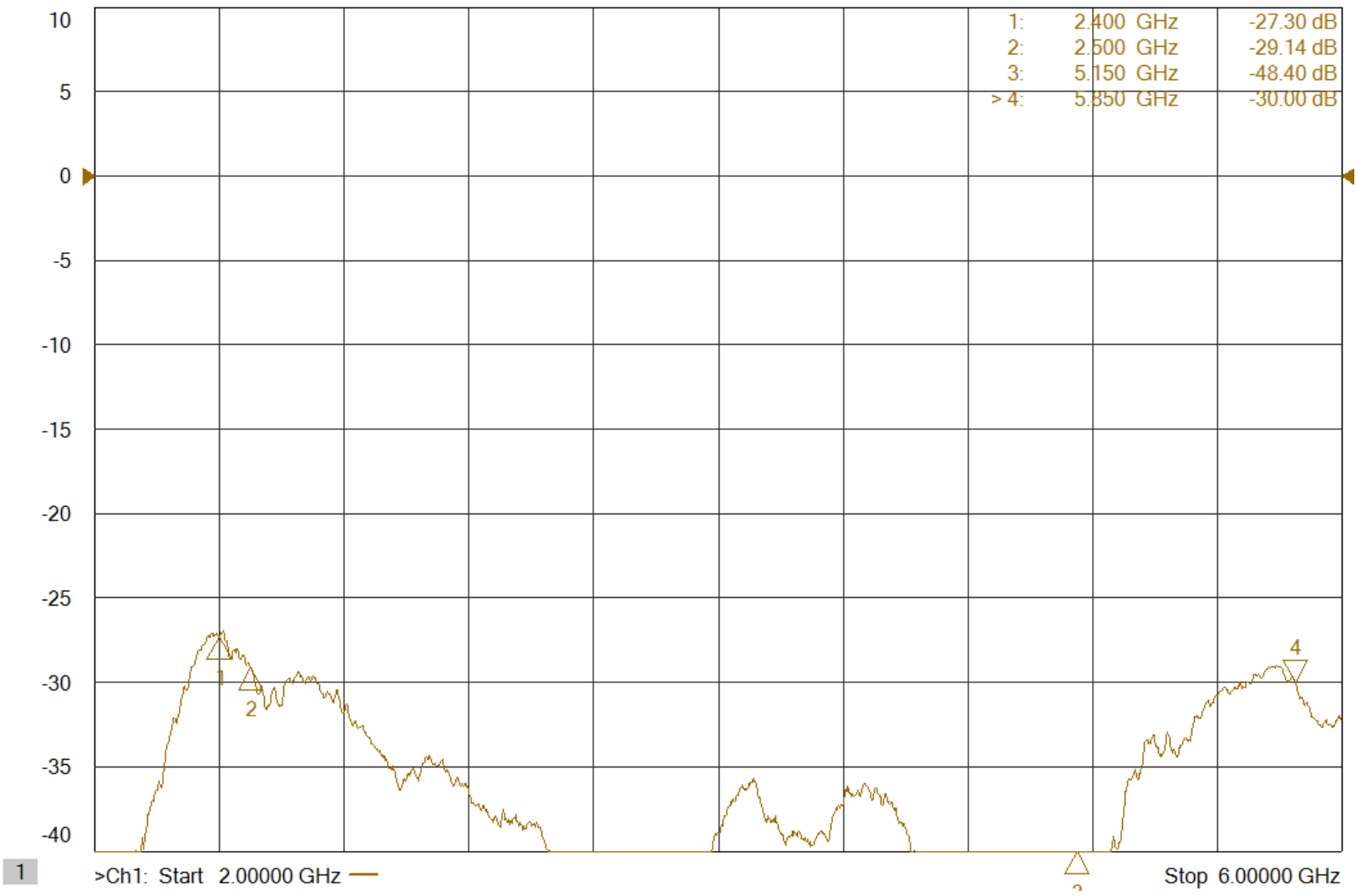
2450MHz



5500MHz

# IVI Project Antenna Performance --- Isolation

## ➤ Isolation between WIFI\_1 Antenna and WIFI\_2 Antenna



WIFI\_1 and WIFI\_2 Antenna Isolation

# Conclusion

- Based on the Mockup structure:
  - For WIFI\_1 Ant. the 2.4G and 5G efficiency is more than 54%.The area has no risk for WIFI\_1 antenna performance.
  - For WIFI\_2 Ant. the 2.4G and 5G efficiency is more than 50%.The area has no risk for WIFI\_2 antenna performance.
  - WIFI\_1 and WIFI\_2 antenna isolation is better than -26dB.

**Thank You!**