



Quectel

Bambu Lab / PT230

Antenna Debugging Report

2024.09.02



Project Overview

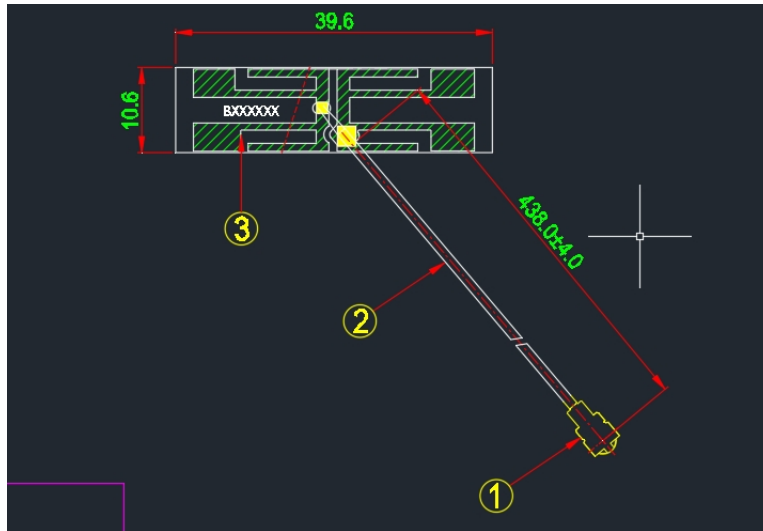
Antenna Performance Evaluation and Debugging
Conclusion and Suggestion

Build a Smarter World

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Project Overview



Prototype Schematic

- Mainboard Dimensions: 136mm*43mm
- Antenna Dimensions: 39.6*10.6mm
- Antenna Quantity: 1
- Antenna OC: Y0RRS0CA0AA
- Antenna Type: Internal antenna
- Network Standard and Frequency Band:
 - ✓ WIFI: 2400-2500MHz&5150-5850MHz



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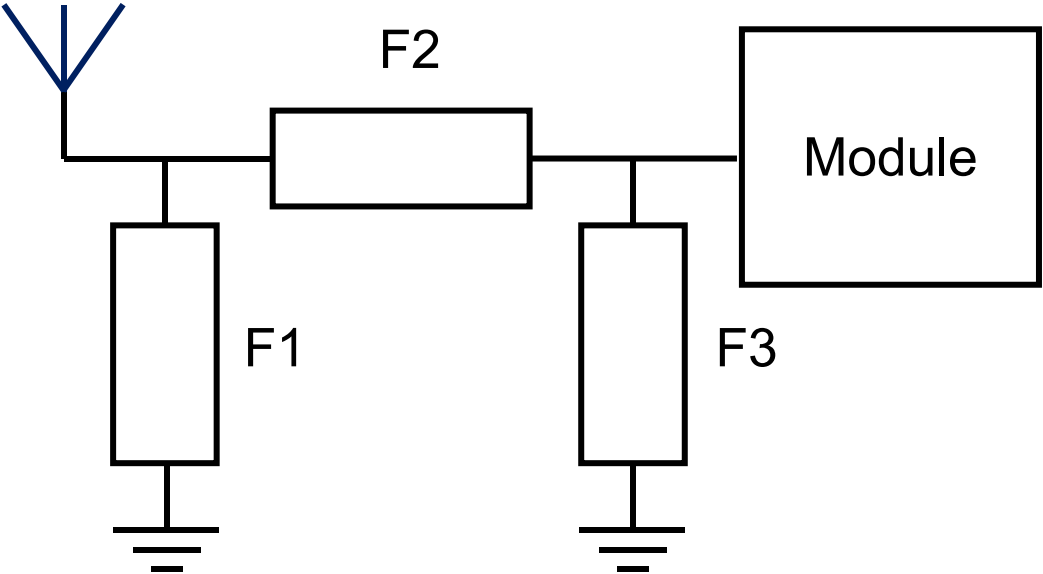
Antenna matching network



- Matching network

- Value:

Antenna



No.	L/C
F1	NA
F2	0Ω
F3	NA

Active Test (OTA)

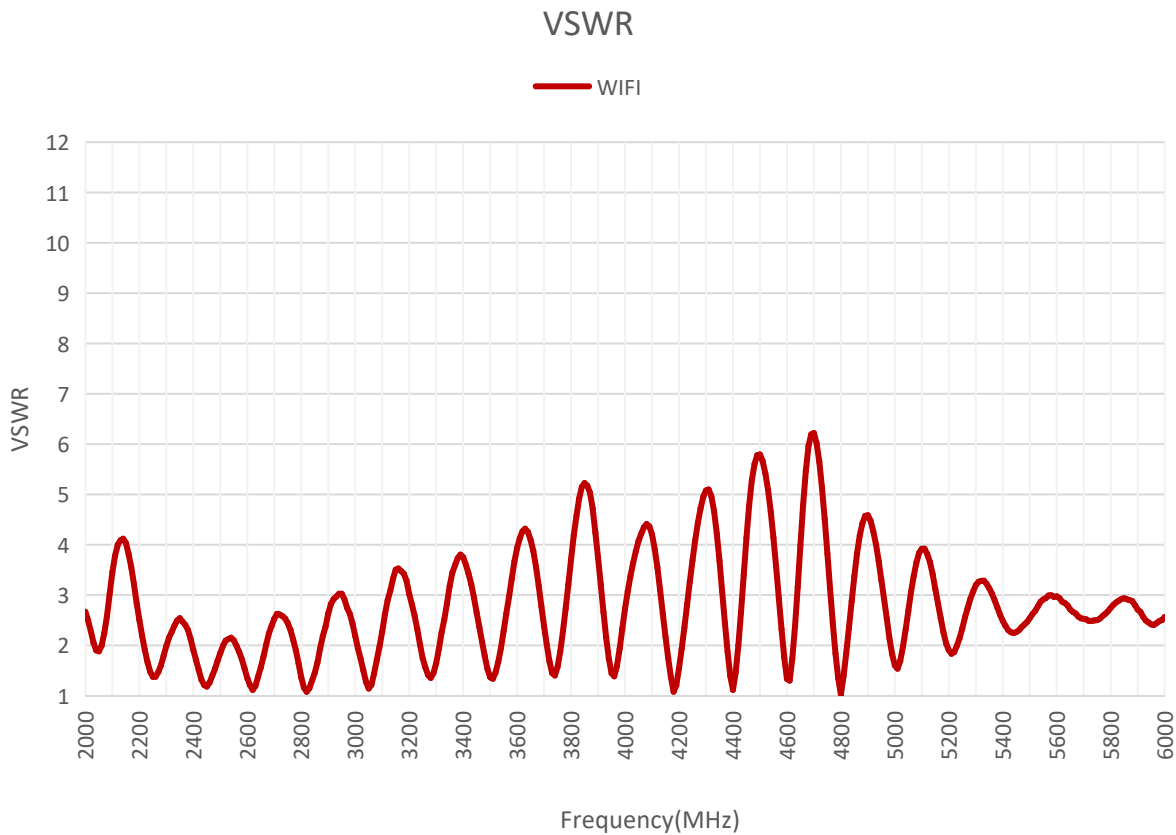


			Light up the screen		Close the screen
Band	Channel	Frequency	TRP (440mm)	Band	TIS (440mm)
B_1M	1	2412	15.34	B_11M	-87.24
	6	2437	15.49		-87.51
	13	2472	14.7		-86.69
A_6M	36	5180	15.62	A_54M	-74.62
	100	5500	15.09		-74.95
	165	5805	13.07		-74.55
G_6M	1	2412	15.27	G_54M	-76.17
	6	2437	15.33		-75.84
	13	2472	14.98		-74.32
N_MCS0	1	2412	15.18	N_MCS7	-71.23
	6	2437	14.36		-71.49
	13	2472	14.2		-70.02
N_MCS0	36	5180	16.89	N_MCS7	-69.88
	100	5500	17.03		-70.17
	165	5825	16.94		-70.52

Passive Test

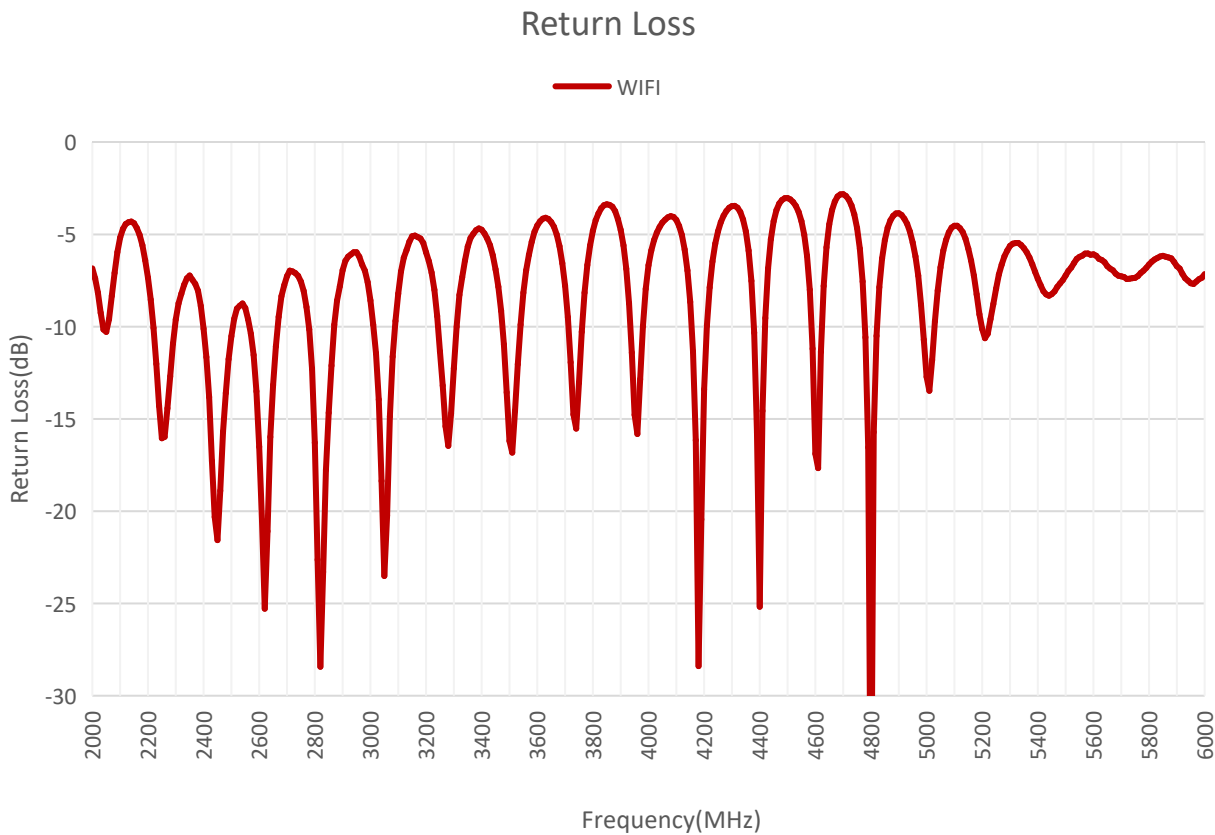


- VSWR



Frequency(MHz)	2400	2450	2500	5150	5500	5850
VSWR	1.9	1.2	1.8	3.1	2.5	2.9

- Return Loss

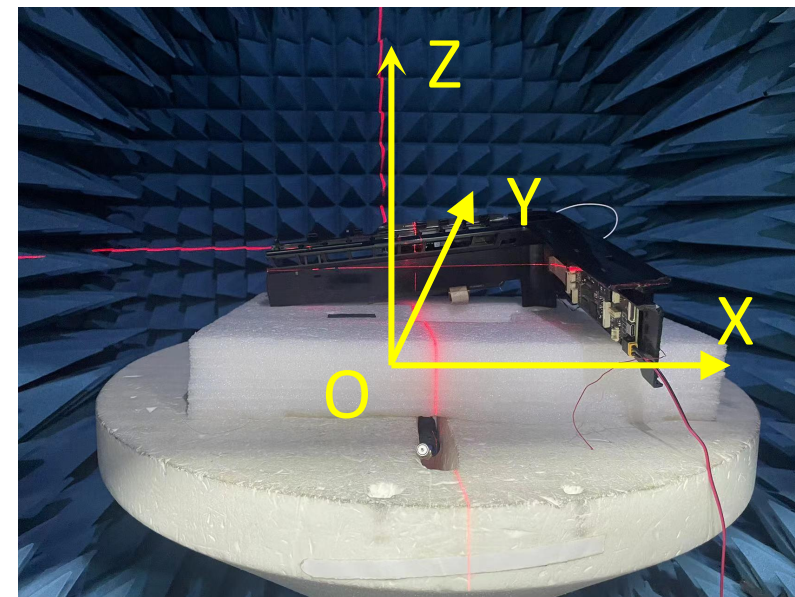
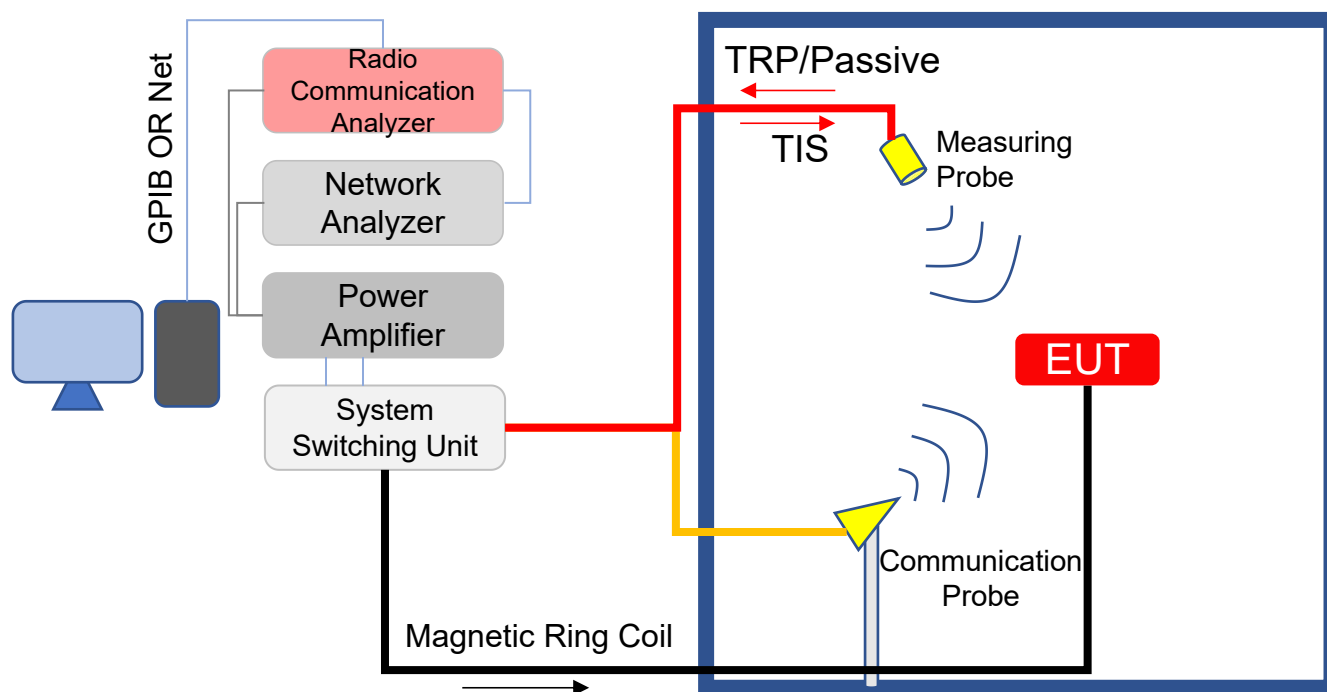


Frequency(MHz)	2400	2450	2500	5150	5500	5850
Return Loss(dB)	-10.1	-21.6	-10.5	-5.8	-7.2	-6.2

Antenna Test

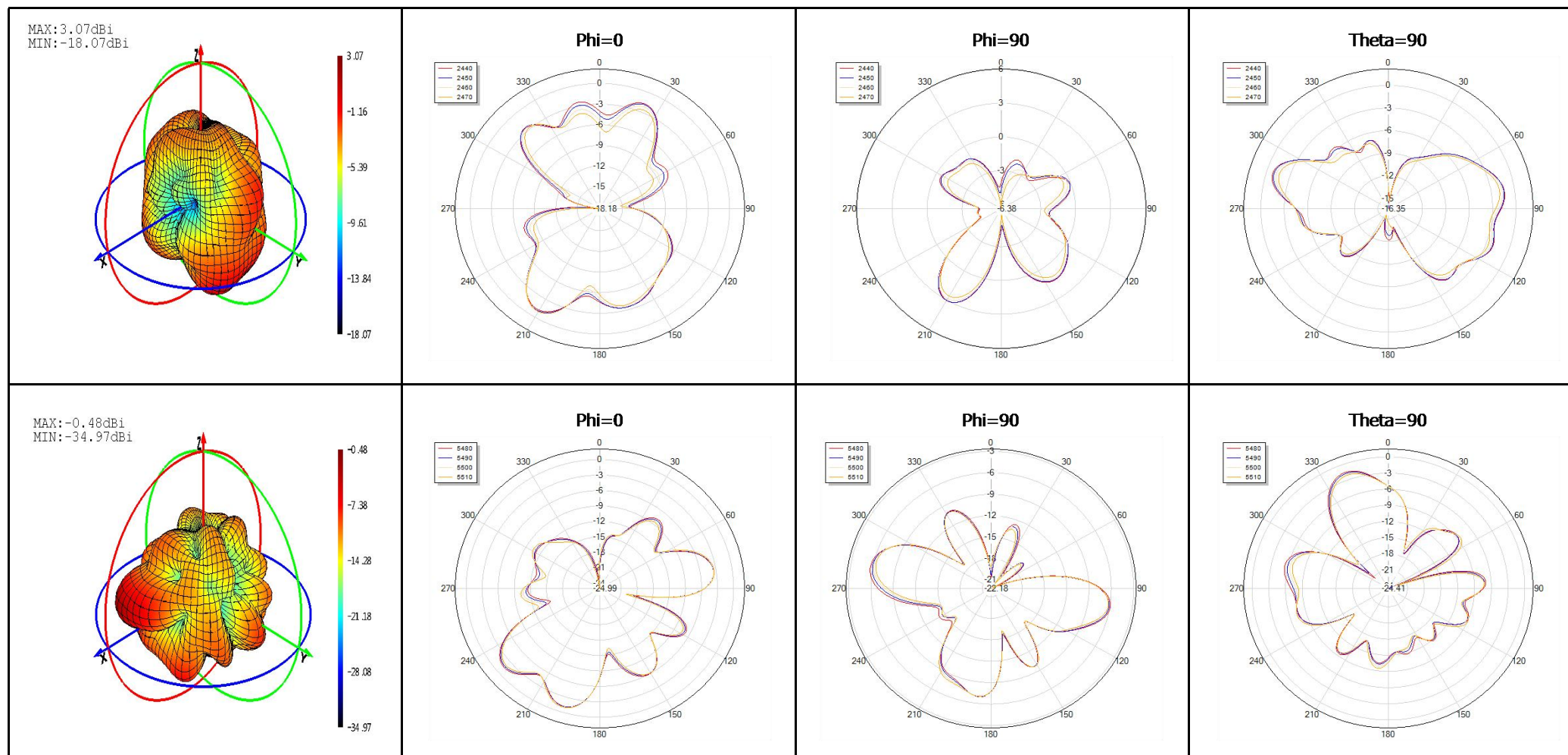
- Chamber Coordinate System SZ-S-1(ID)

H Plane : XY
E1 Plane : XZ
E2 Plane : YZ



Passive Test

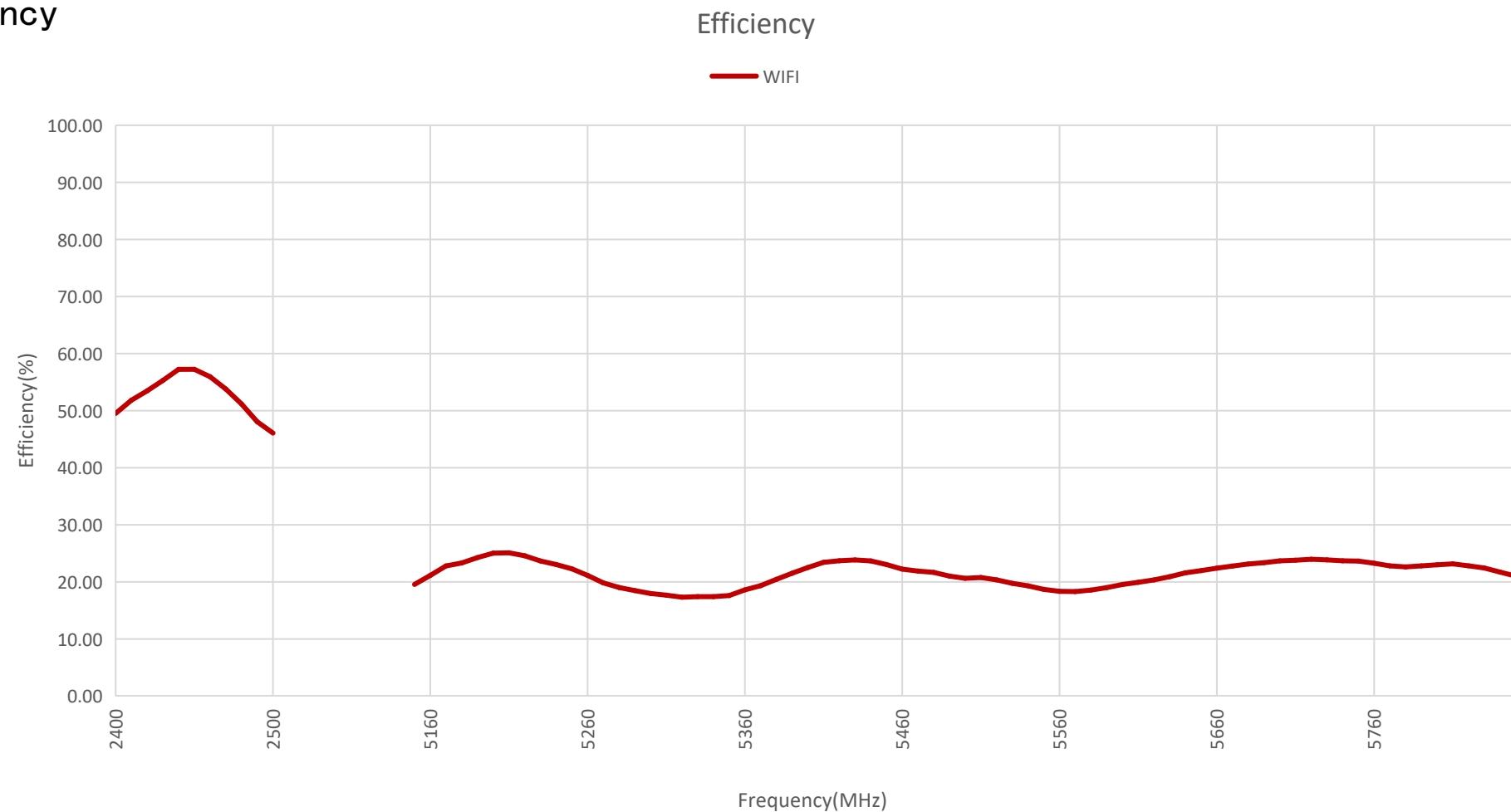
- Radiation Pattern



Passive Test



- Efficiency

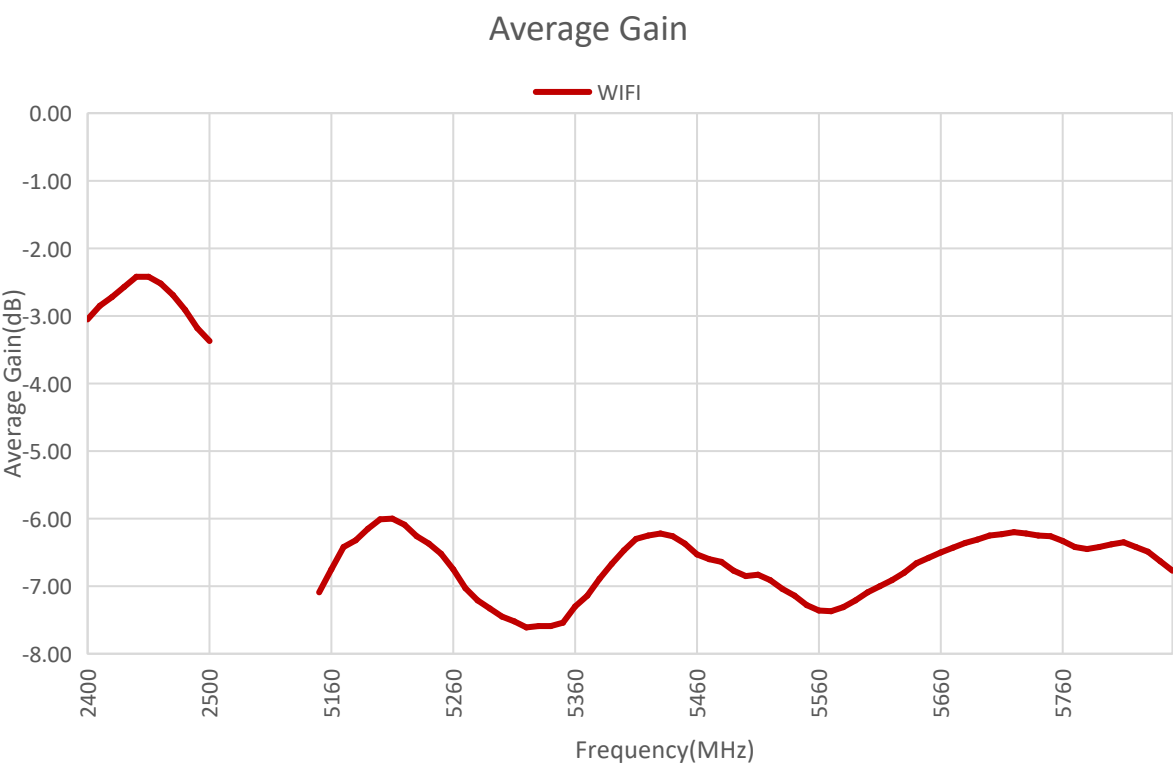


Frequency(MHz)	2400	2450	2500	5150	5500	5850
Efficiency(%)	49.5	57.3	46.1	19.6	20.6	21.0

Passive Test

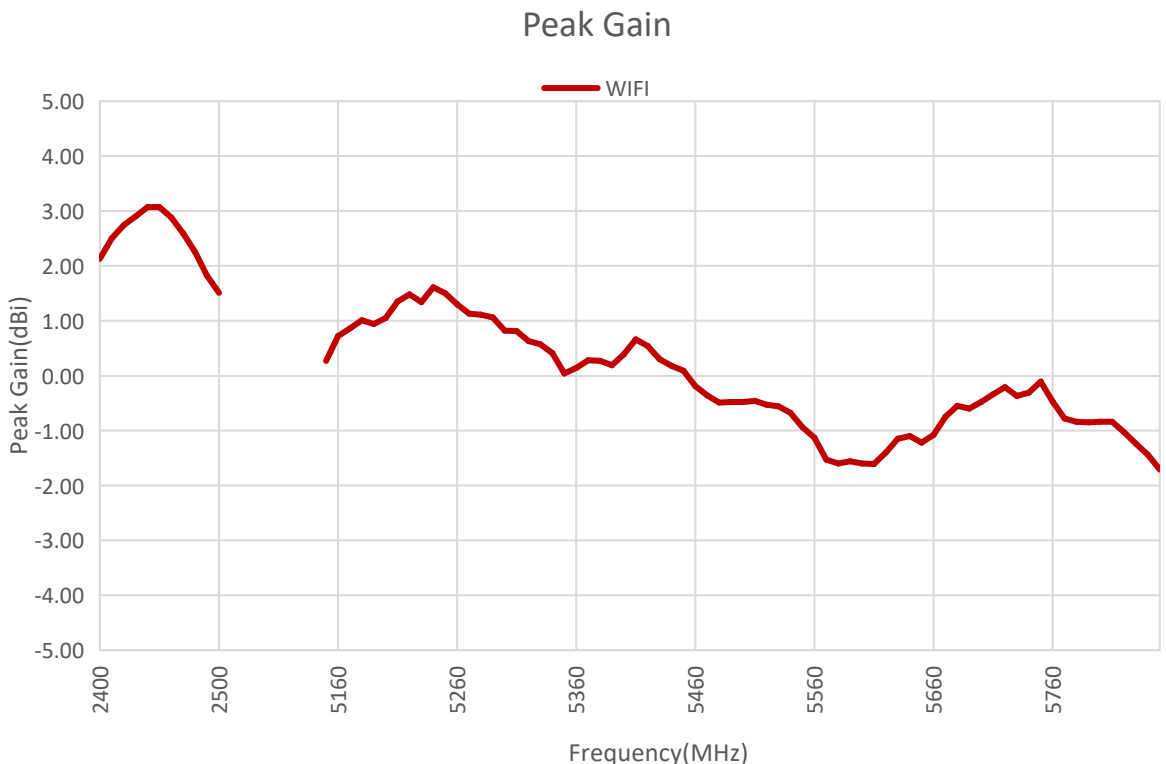


- Average Gain



Frequency (MHz)	2400	2450	2500	5150	5500	5850
Average Gain(dB)	-3.1	-2.4	-3.4	-7.1	-6.9	-6.8

- Peak Gain



Frequency (MHz)	2400	2450	2500	5150	5300	5500	5600	5850
Peak Gain(dBi)	2.1	3.1	1.5	0.3	0.82	-0.5	-1.6	-1.7



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Conclusion and Suggestion

➤ Antenna Performance

- The latest antenna line length is extended to 440mm, simulating the metal cable close to the cable line, OTA performance theoretically meets the needs of use, it is recommended to install measurement.