



QUECTEL

Rui Ming/ F1N

Antenna Test Report

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on date: 2025.08.04

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Version resume



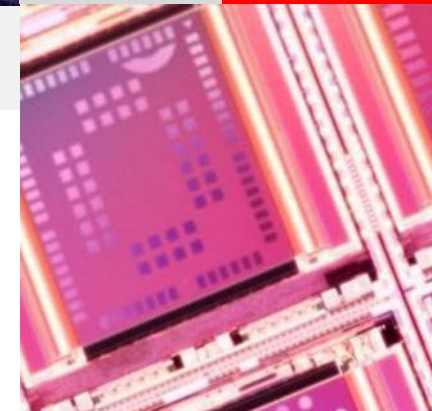
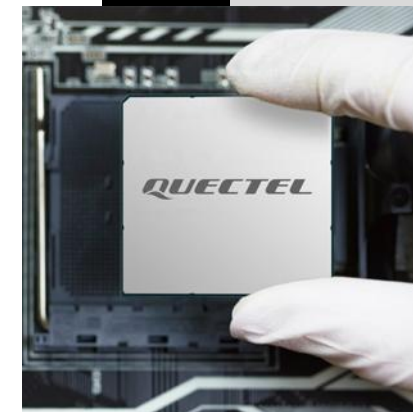
Version	Date	Reporter	Reviewer	Remarks
V1.0	2025/08/04	Ruean Liu	Jialin Chen	First Edition Prototype Debugging Antenna



Project Overview

Antenna
Performance
Evaluation and
Debugging
Conclusions and
Suggestions

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Project Overview



- Number of antennas: 1
- Network standard and frequency band:
WIFI: 2400-2480MHz & 5150-5825MHz

Schematic of prototype

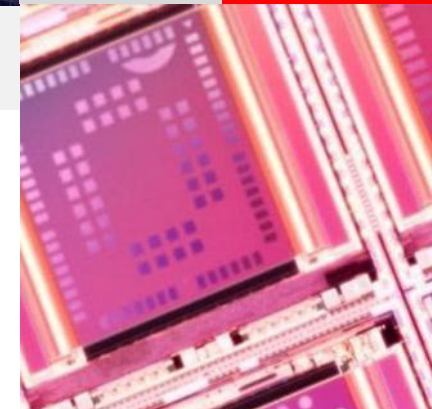
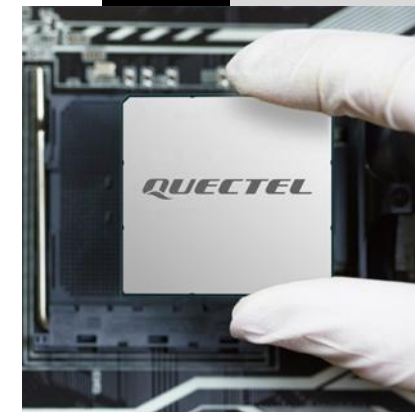


Project Overview

Antenna performance evaluation debugging

Conclusions and recommendations

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Antenna Layout Analysis



Antenna
Photo



Illustration 1



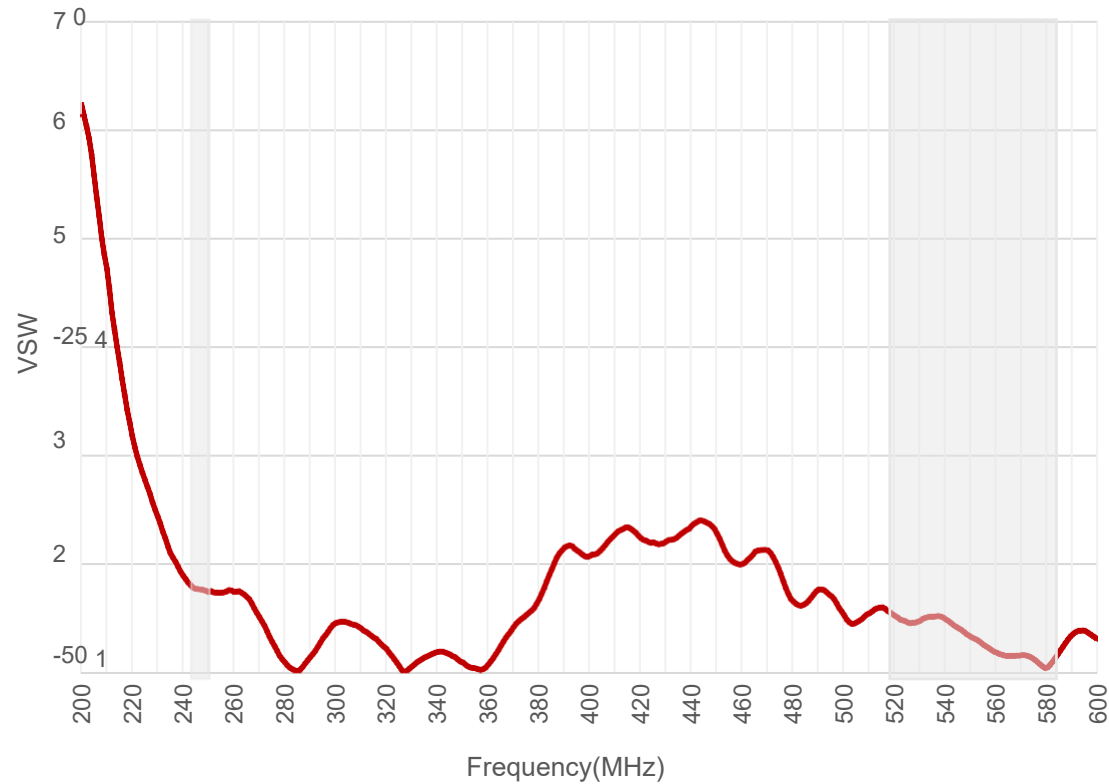
Illustration 2

Fig. 1: Main board and shell plan diagram Fig. 2: Main board and shell height diagram

Passive Testing

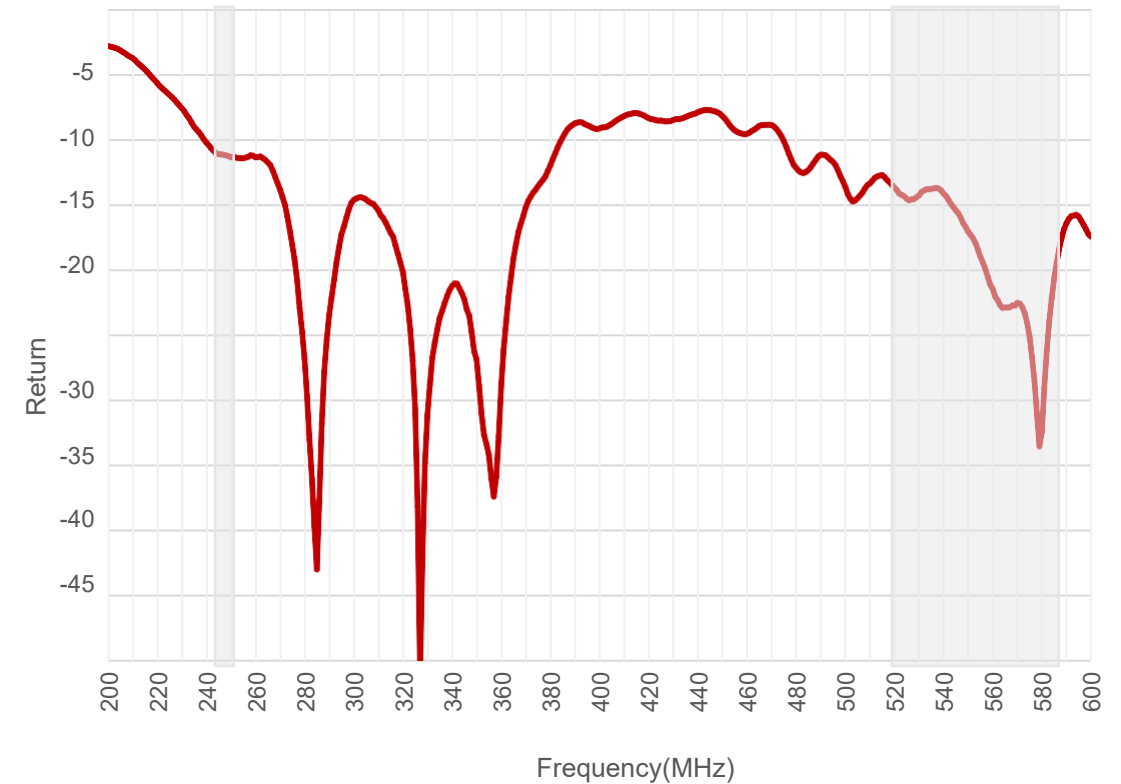


- Voltage standing wave ratio



Voltage standing wave
ratio:
2400MHz-2480MHz
Less than 2
5150MHz-5825MHz
Less than 2

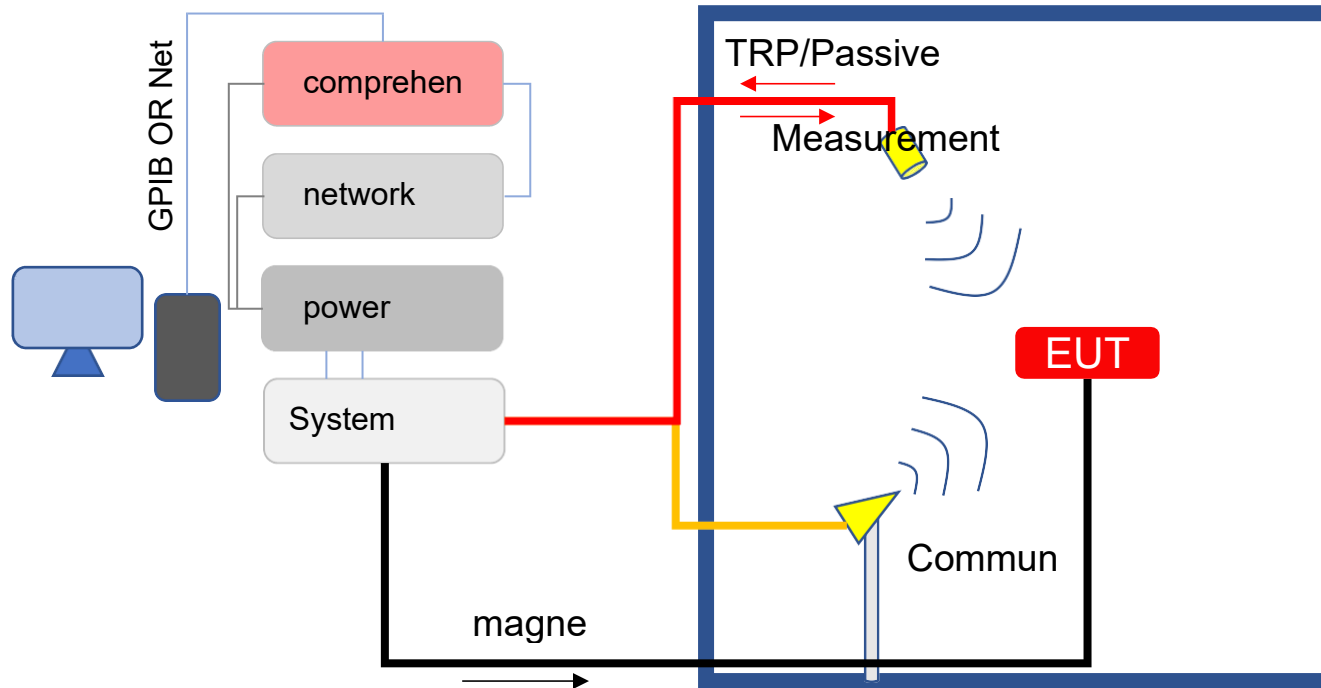
Return loss



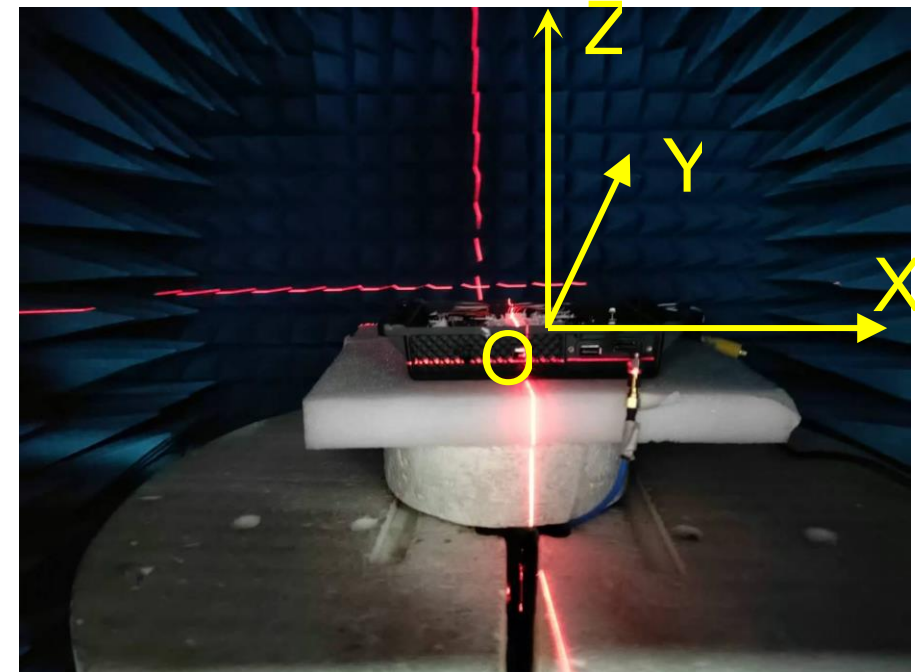
Return loss:
2400MHz-2480 MHz
less than -10dB
5150MHz-5825MHz
Less than -10dB

Antenna test

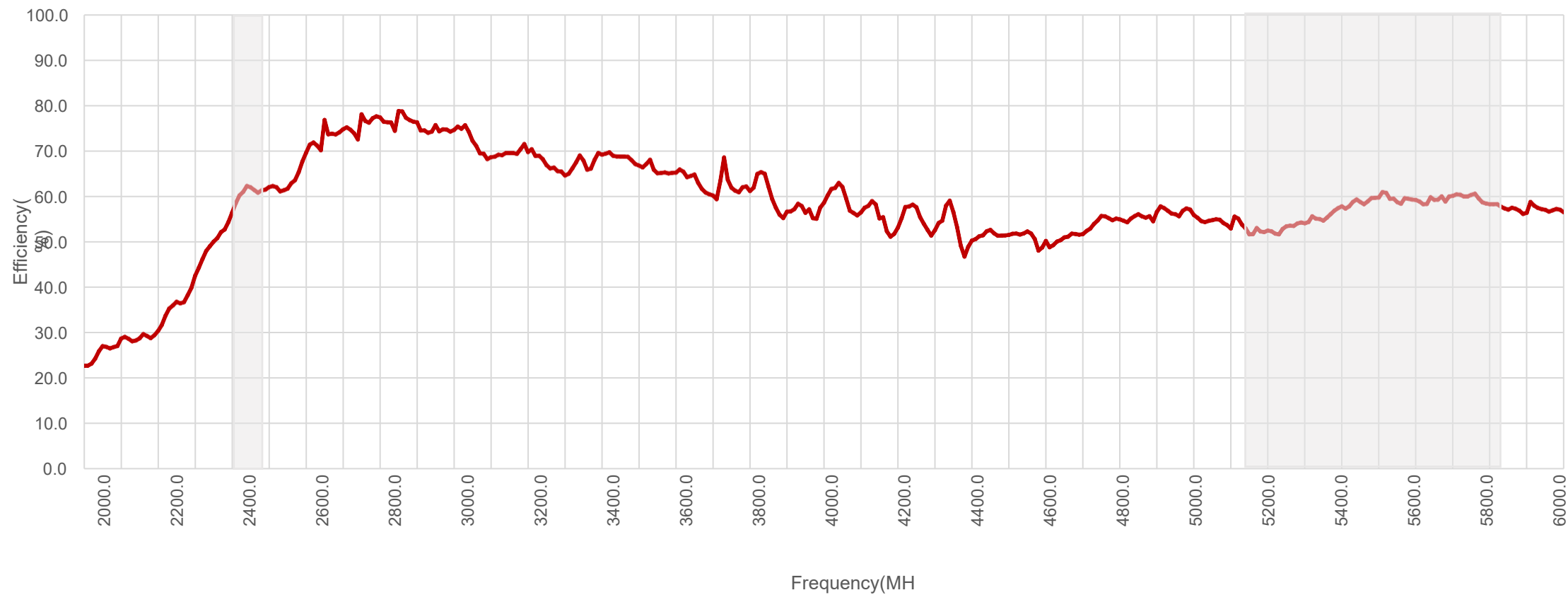
- Darkroom coordinate system SZ-S-1 (ID)



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



Passive



Efficiency:

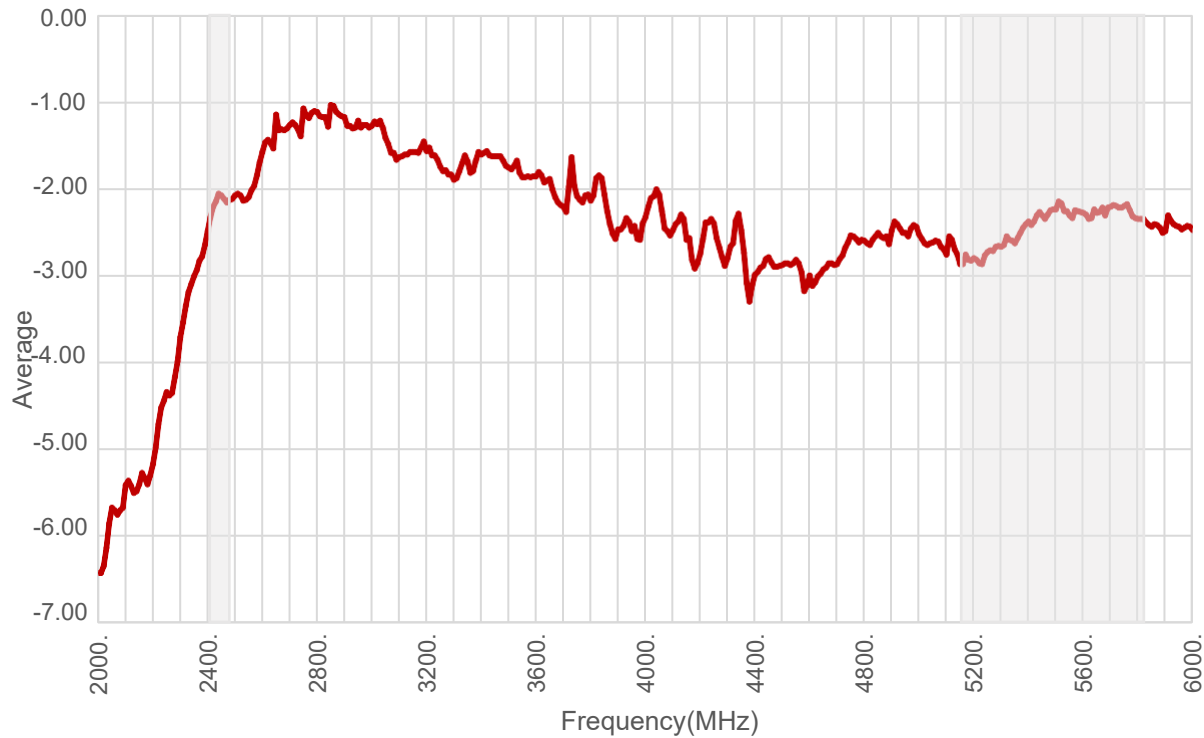
2400MHz-2480MHz greater than 56%

5150MHz-5825MHz greater than 51%

Passive Testing



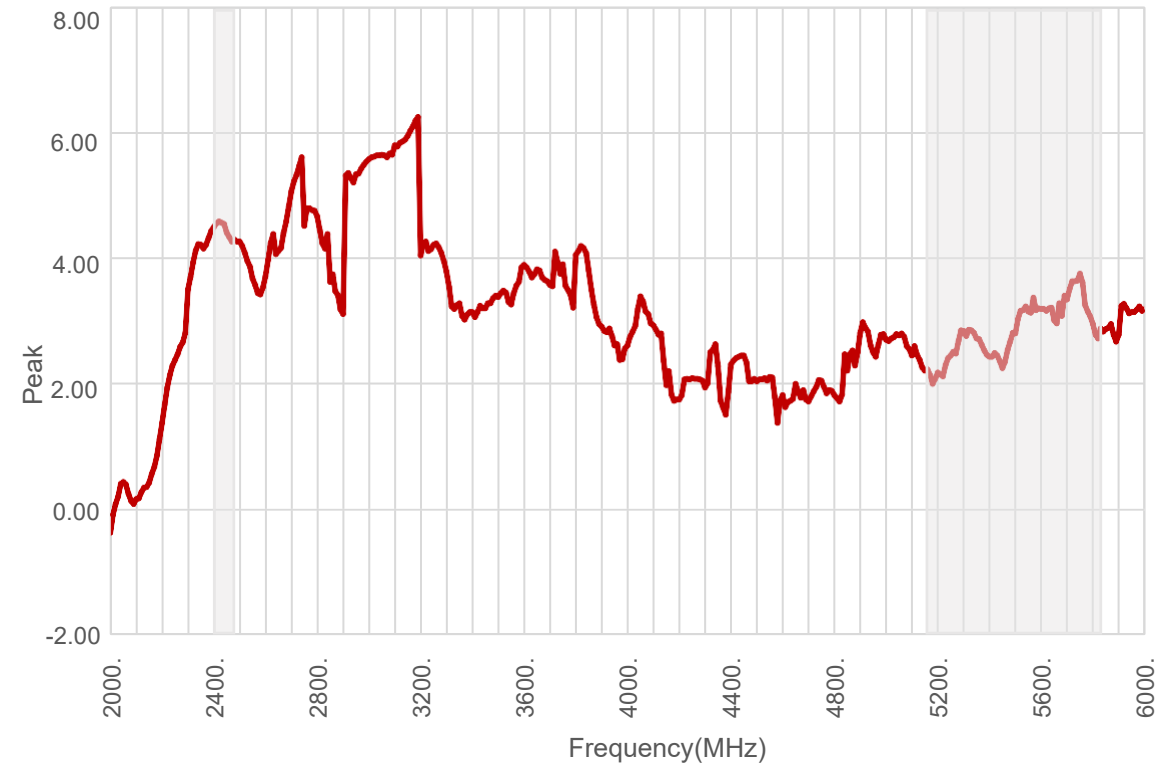
- Average gain



Average gain:

2400MHz-2480MHz greater
than -2.4dB
5150MHz-5825MHz greater
than -2.8dB

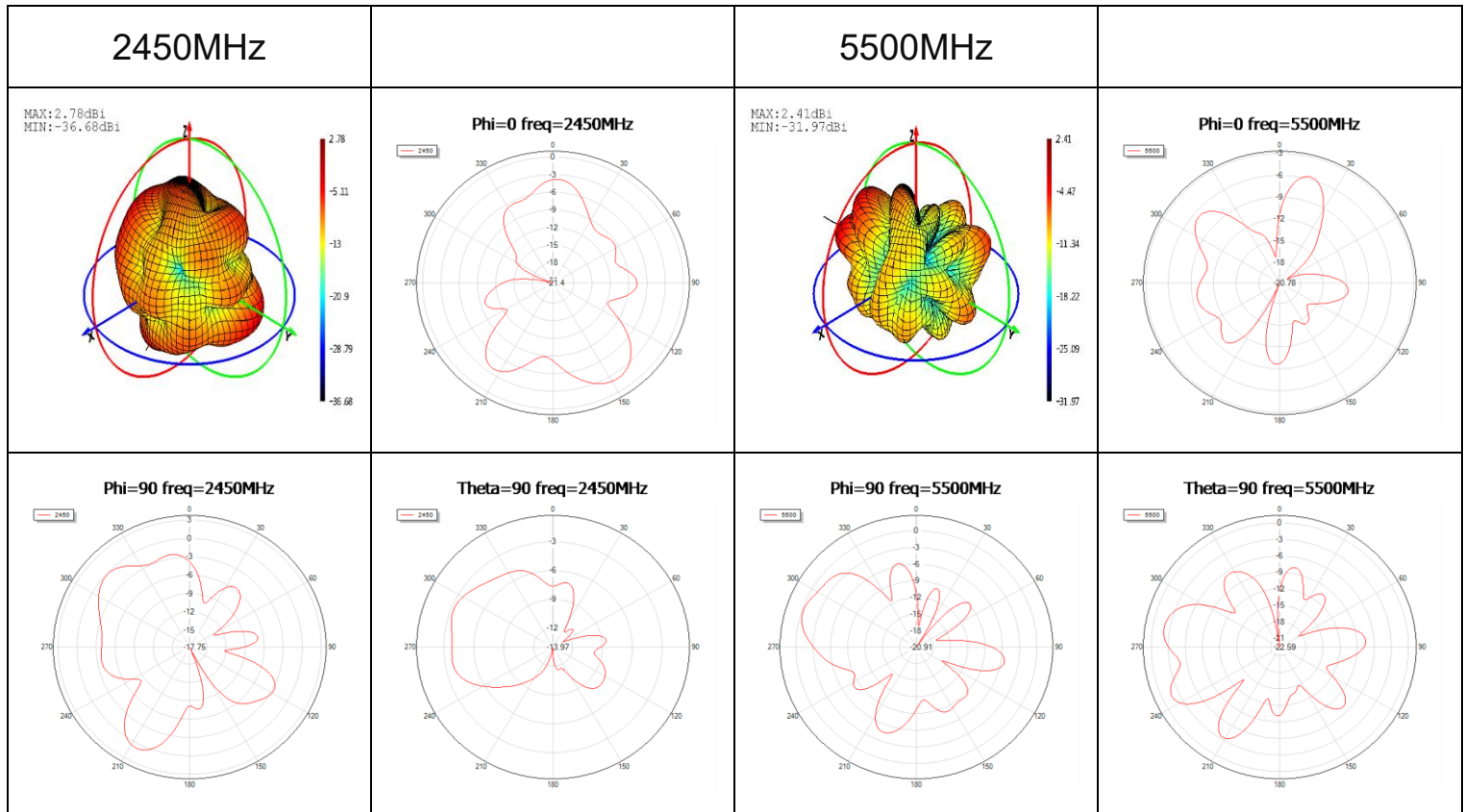
Maximum gain



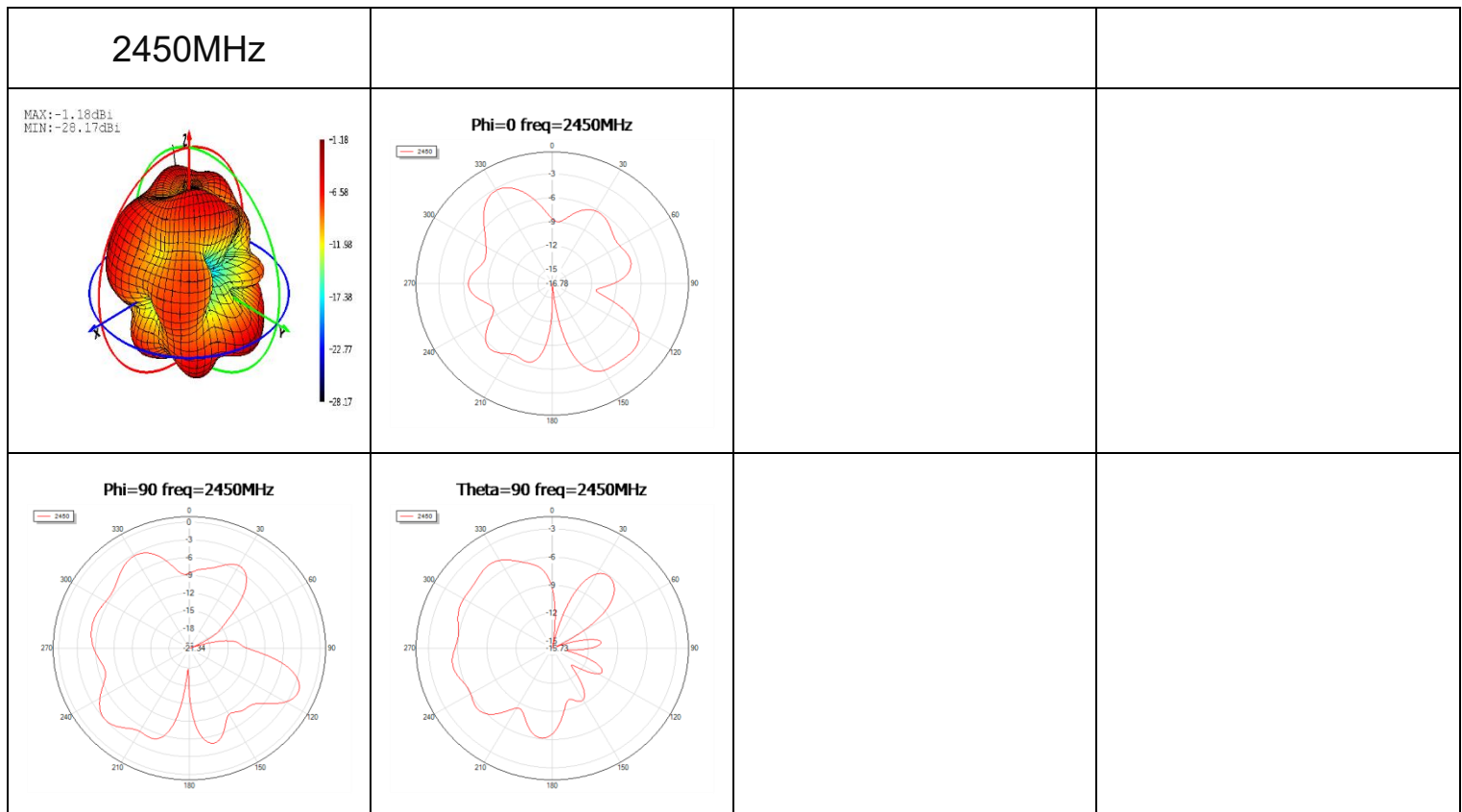
Maximum gain:

2400MHz-2480MHz: 4.58dBi
5150MHz-5825MHz: 3.75dBi

● WiFi



● BT



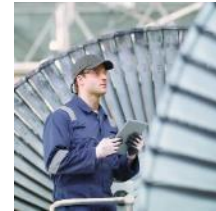
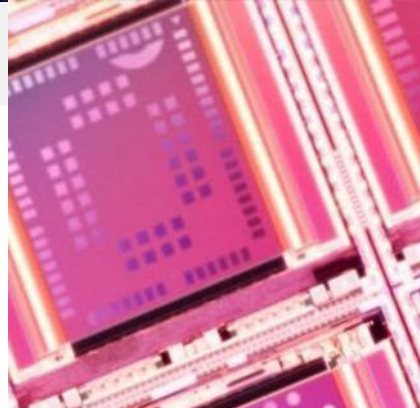
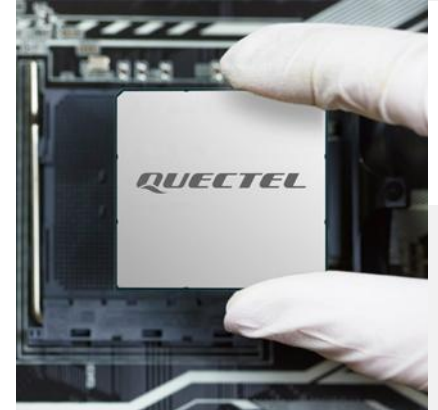


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Antenna performance evaluation and debugging

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Conclusions and recommendations



- antenna performance

The antenna is used in the F6N project antenna, after testing,

- Working bandwidth: covering 2.4G band and 5G band of WIFI, standing wave ratio is less than 2;
- Efficiency: greater than 50%;
- Maximum gain: 4.58dBi 2400MHz-2480 MHz, 5150MHz-5825 MHz: 3.75dBi.

The antenna performance meets the design requirements.



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- Introduces a wide range of antenna products with full custom antenna design, integration and manufacturing capabilities
- Provide IoT solutions to meet the needs of full-process solutions from hardware access to software applications
- Fully automated production line, test line, to ensure consistent product quality, while having high cost performance
- Established a leading R & D team in the industry to provide customers with timely, professional and considerate technical support services
- Continuously develop new technologies and new products, and take the lead in releasing products such as 5G, smart modules, LPWA, C-V2X, etc.
- Innovative international professional team, always ensure "customer first"

Thank You

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