



Quectel

Razer_Naomi Antenna Design Report

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Date: 2026.4.9

Build a Smarter World

Revision History



Revision	Date	Reporter	Reviewer	Note
V1.0	2026/02/09	Edwin Xiao	Ezail Tan	First version of antenna debugging report.
V1.1	2026/04/09	Edwin Xiao	Ezail Tan	Verification of the antenna performance of the EVT device



Project Overview

Antenna Performance Evaluation
Conclusion and Suggestion

Build a Smarter World





Project Overview

Antenna Performance Evaluation

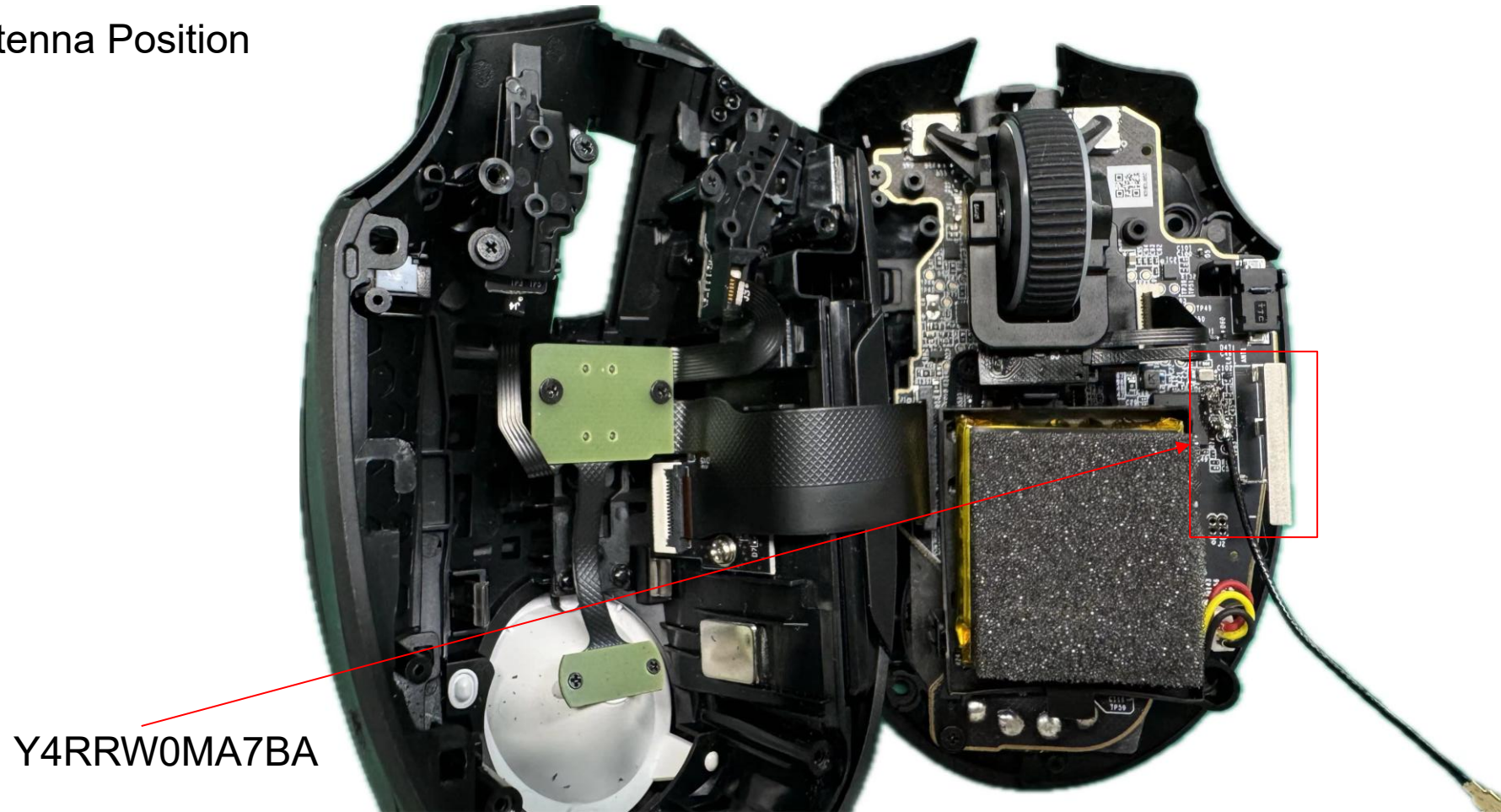
Conclusion and Suggestion

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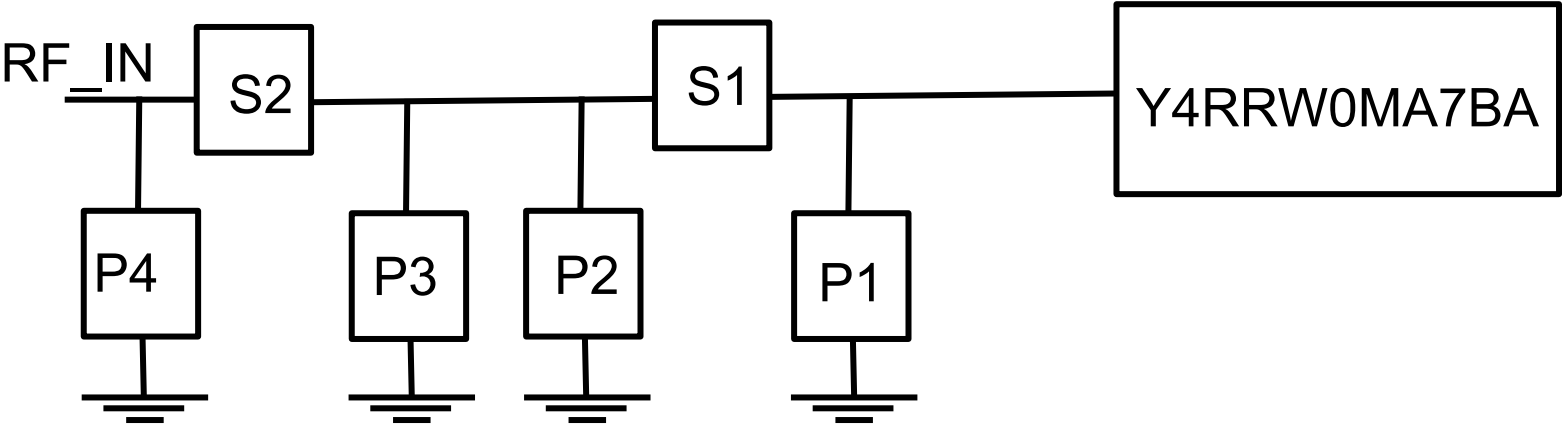


Antenna Analysis

- Antenna Position



- Matching Circuit Diagram



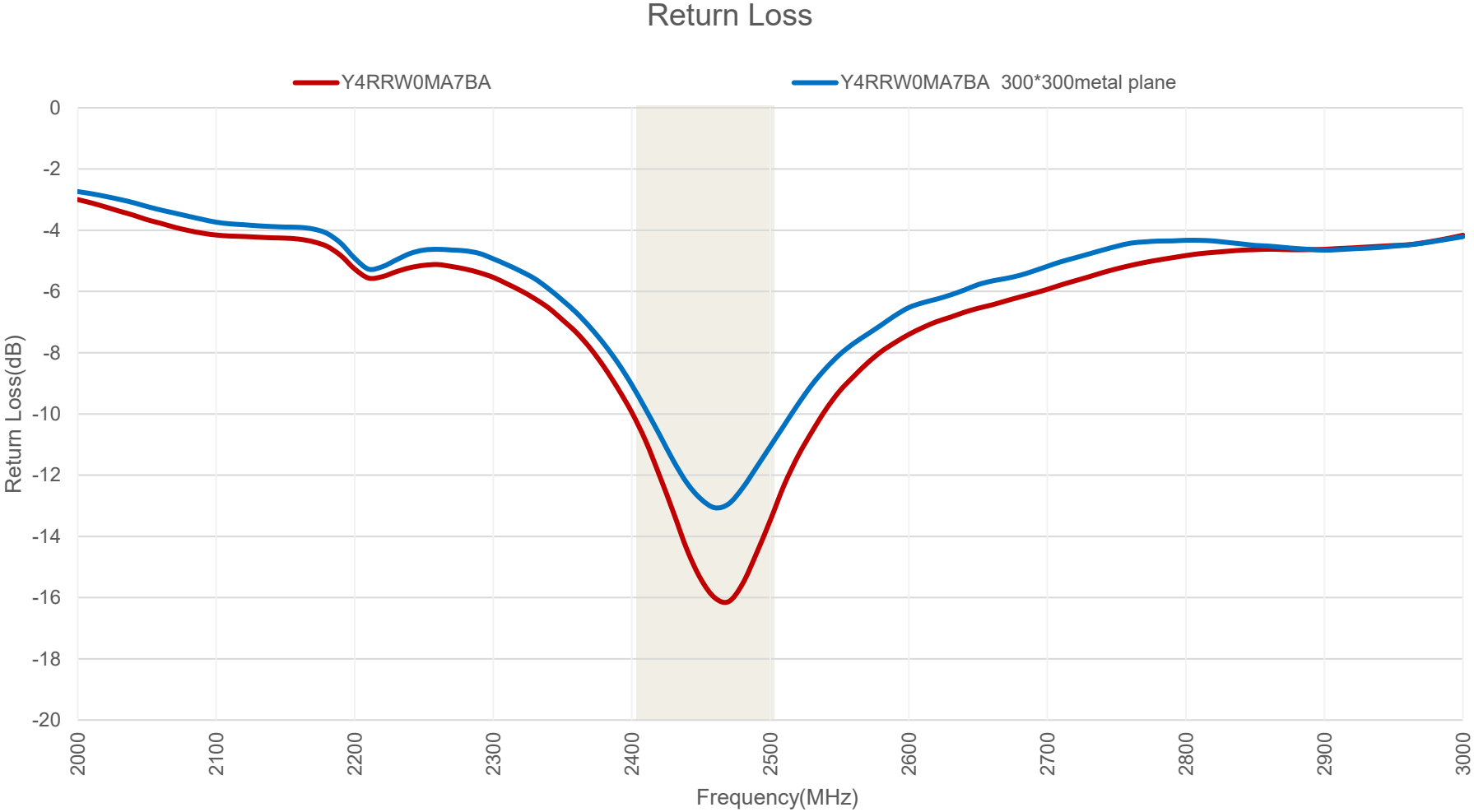
- Match Value:

No.	S1	P1	P2
Value	4.3nH	NA	NA

Passive Test



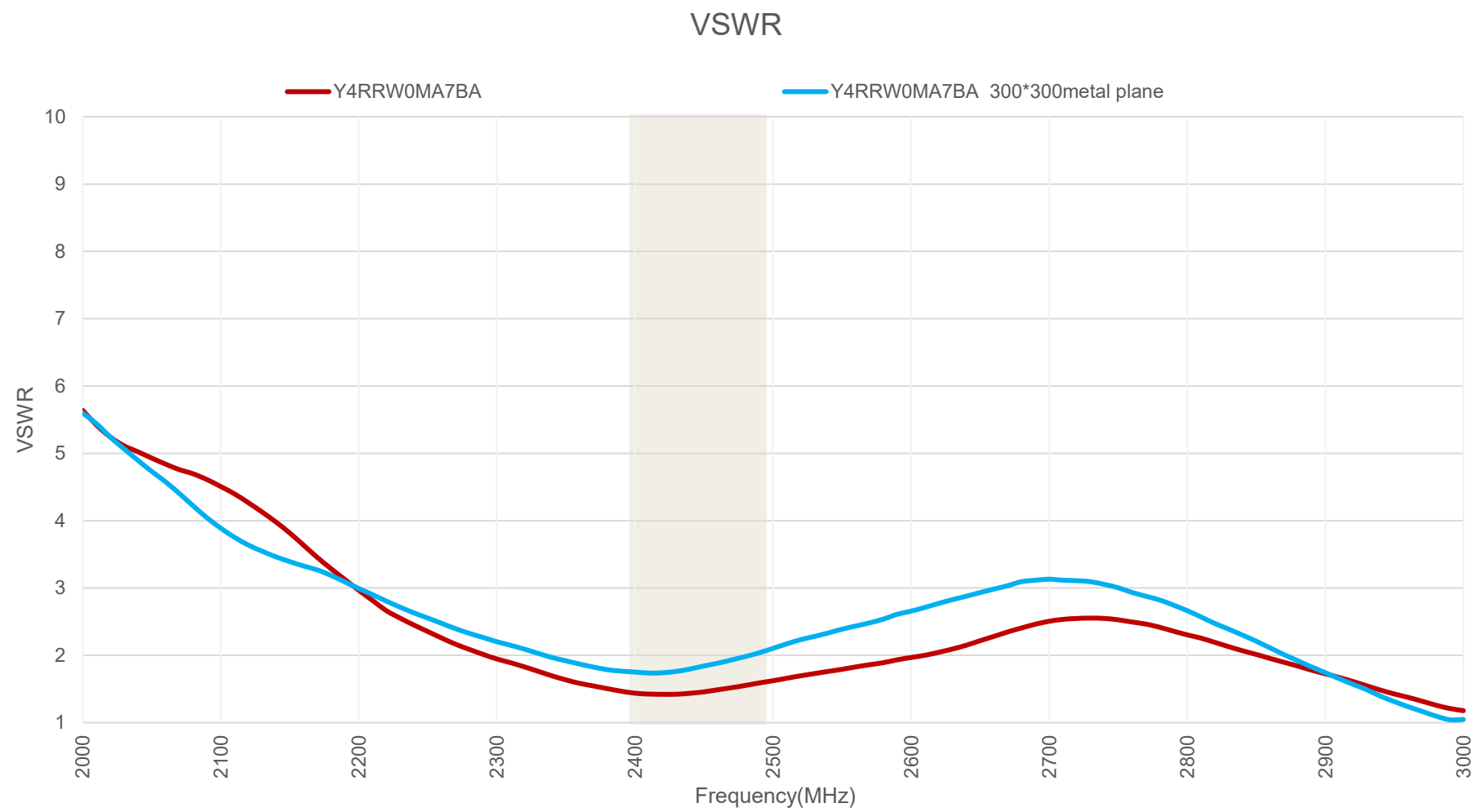
- Return Loss



Passive Test



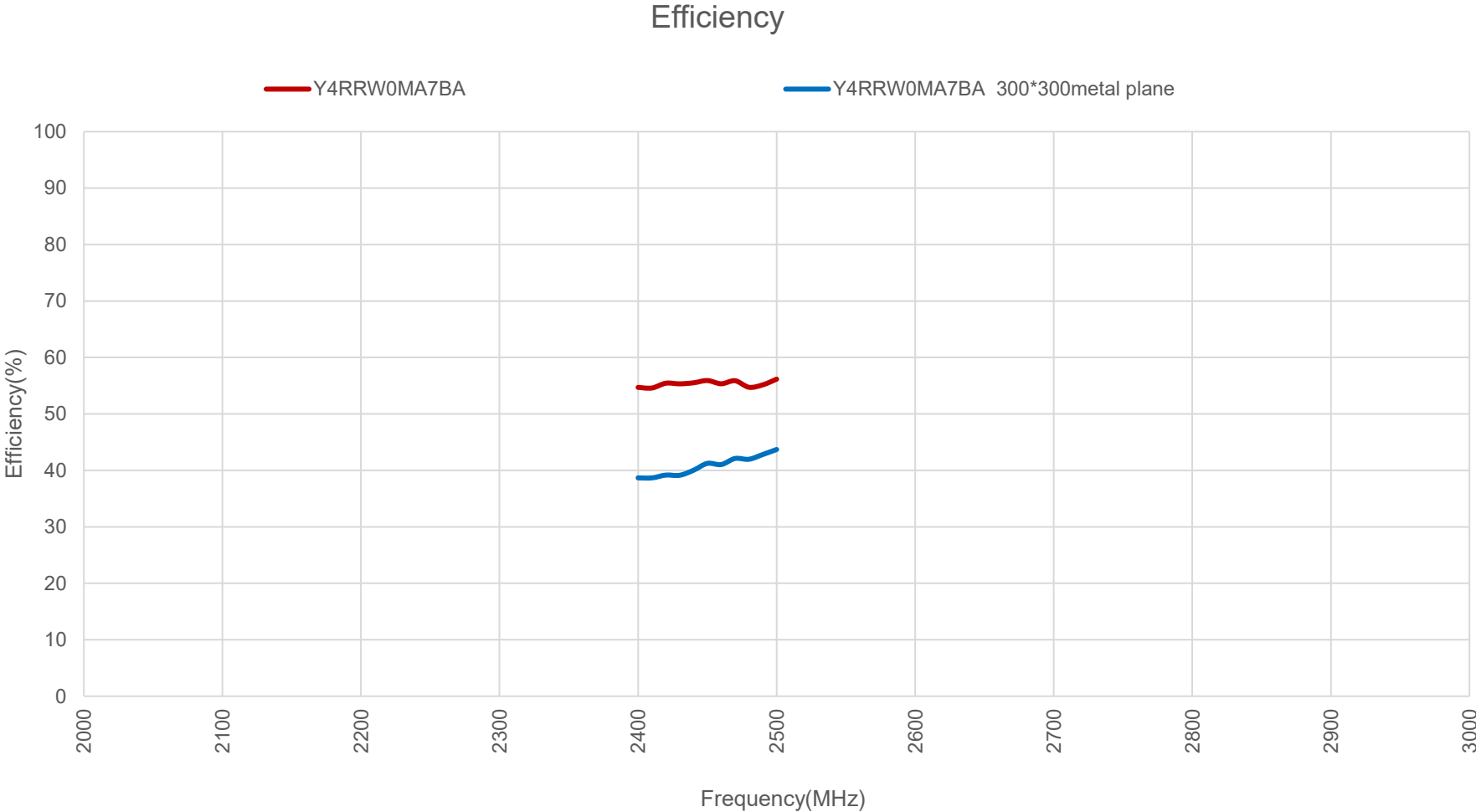
- VSWR



Passive Test



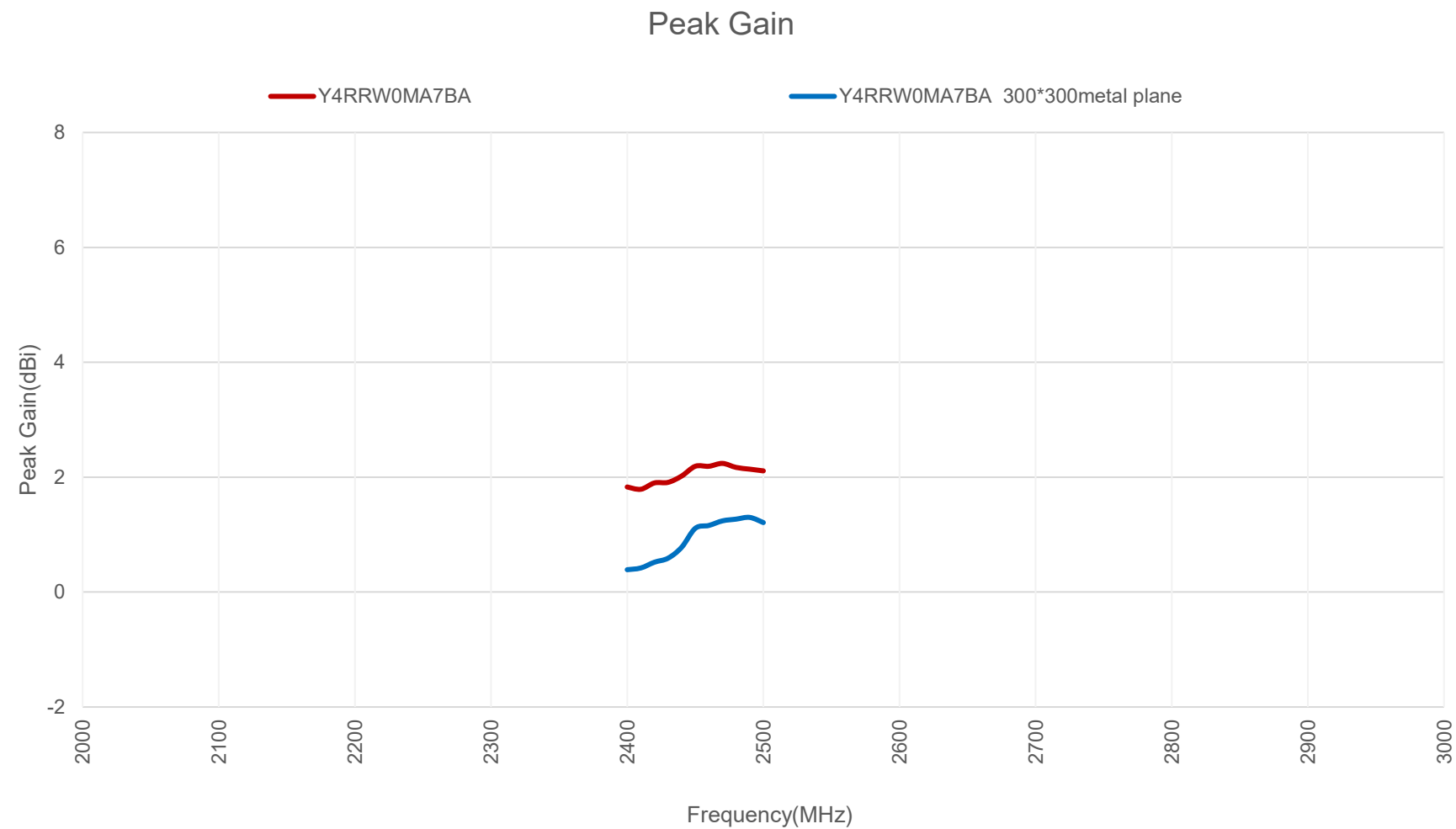
- Efficiency



Passive Test

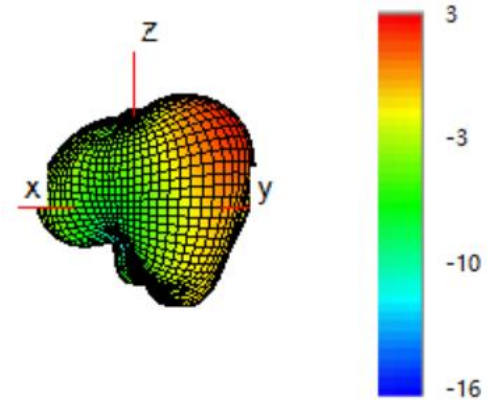


- Peak Gain

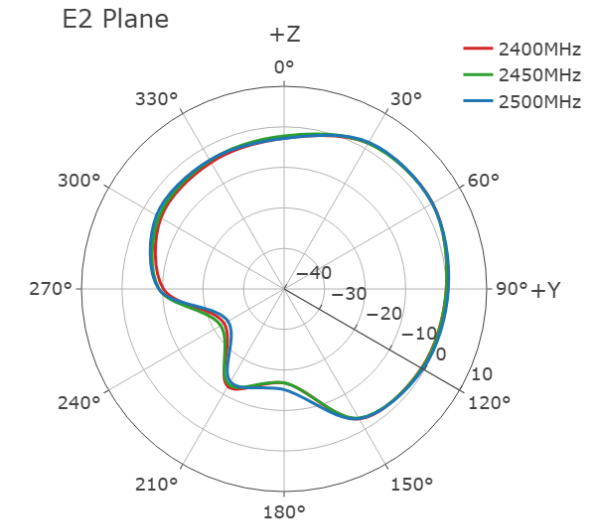
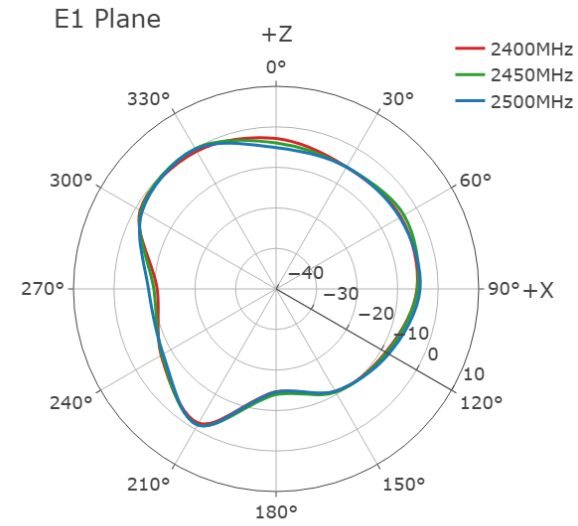
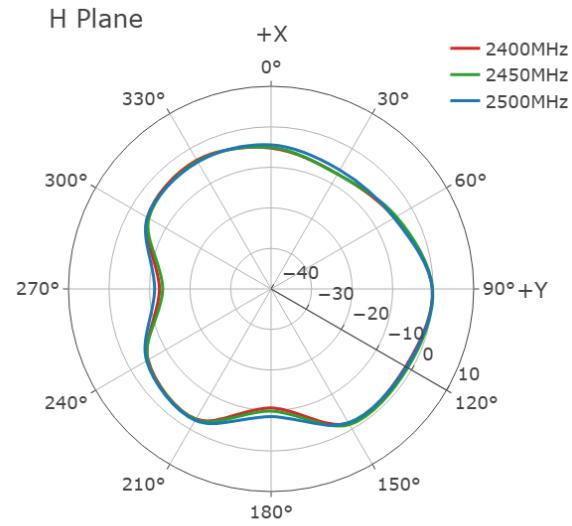


Passive Test

- 3D Radiation Pattern

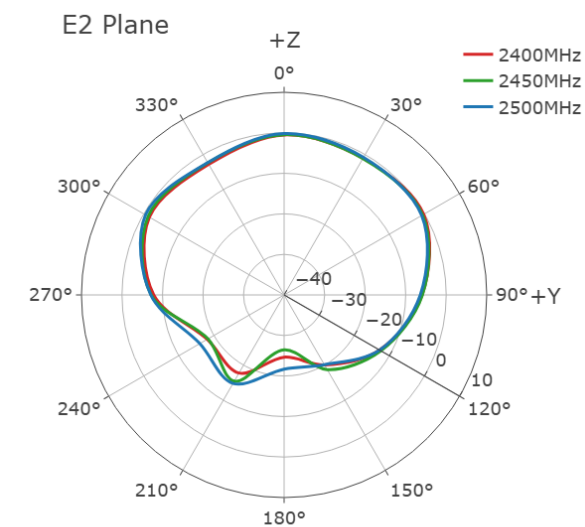
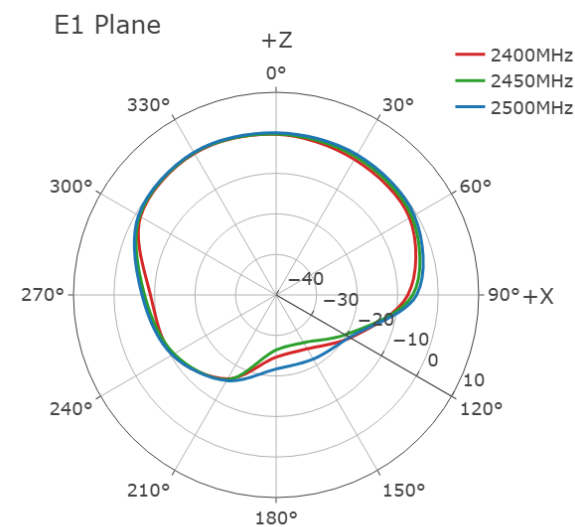
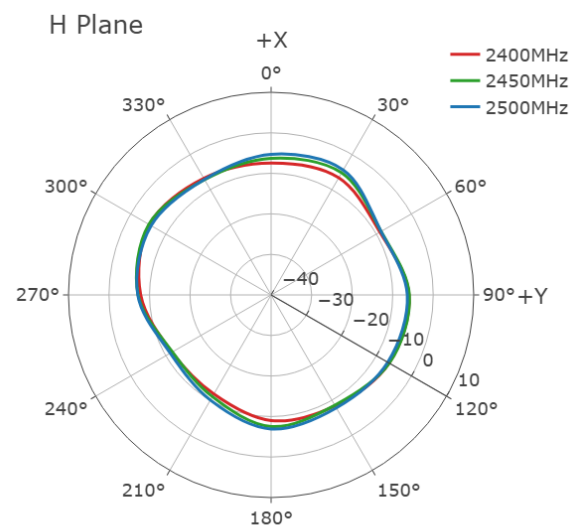
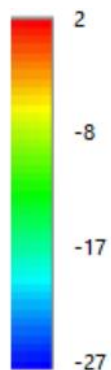
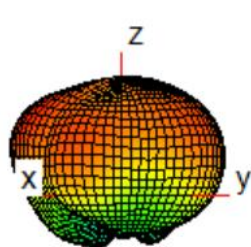


2450MHz



Passive Test

- 3D Radiation Pattern)_On 300mm*300mm metal plane



2450MHz



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- **Antenna Performance**

➤ The antenna performance of the EVT device is comparable to that of the previous version of the device. When the device is placed in a free-space environment, the average efficiency of the 2.4G Wi-Fi antenna is around 55%. When the device is placed on a 300mm*300mm metal plane, the average efficiency of the 2.4G Wi-Fi antenna is around 40%.

2.4G Wi-Fi						
	On Free space			On 300mm*300mm metal plane		
Frequency(MHz)	2400	2450	2500	2400	2450	2500
VSWR	1.4	1.5	1.6	1.8	1.8	2.1
Efficiency(%)	54.7	55.9	56.2	38.7	41.2	43.7
Peak Gain(dBi)	1.8	2.2	2.1	0.4	1.1	1.2



**We are a global IoT solutions provider,
backed by outstanding support and
services, to deliver a smarter world.**

- Unbeatable choice from the broadest module portfolio in the world
- High quality range of off-the-shelf and customized antennas
- Superb support with the largest R&D team in the industry
- Continuous innovation – in 5G, LPWA, Automotive, Smart module technology
- A passionate, dedicated team of "Quectelers" ensures our customers always come first

Thank You

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