Test Report – 安普新 DVT1 Sparrow TX

Customer:	**安普新**
Project:	**Sparrow**
Stage	**DVT1**
Antenna:	**CW324S**
Version:	**B**
Release date:	**2023/10/27**

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Checked by:	**Sam Wu**
Approved by:	**Mike Yang**

Report Outline

Equipment

Equipment List

Equipment information

TYPE OF EQUIPMENT	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DUE DATE
(OTA2-3D ETS Chamber	ETS-844	N/A	N/A
Measurement Software	Maxwell V3.7.1	N/A	N/A
Multi-Axis Positioning System	N/A	N/A	N/A
switch control	MT8862A	SN6262021092	N/A
Network Analyzer	E5071C	MY46107724	2024.07.31

Measurement Setup

Measurement Setup

Reflection Coefficient Measurement

a. Equipment : Network Analyzer(Agilent E5071A)

b. Test items : S-parameters (Impedance, return loss, VSWR)

Figure. Network Analyzer(Agilent E5071A)

Measurement Setup

Radiation Pattern Measurement

a. Equipment : Anechoic Chamber, Network Analyzer (Agilent E5071C), Standard Horn.

b. Test items : Gain, efficiency, 2D gain pattern, 3D gain pattern

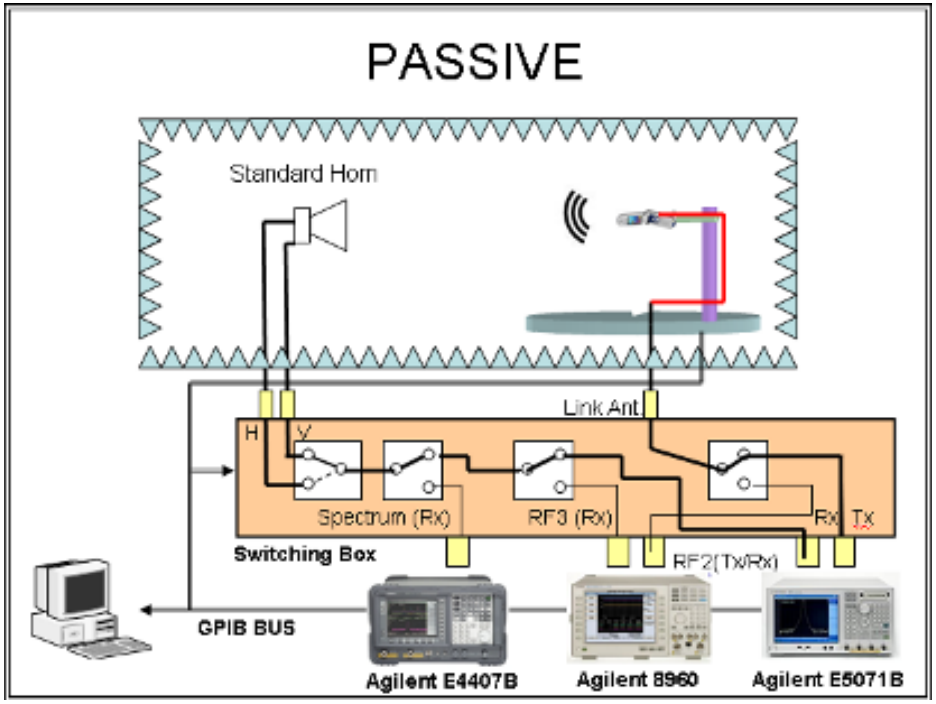


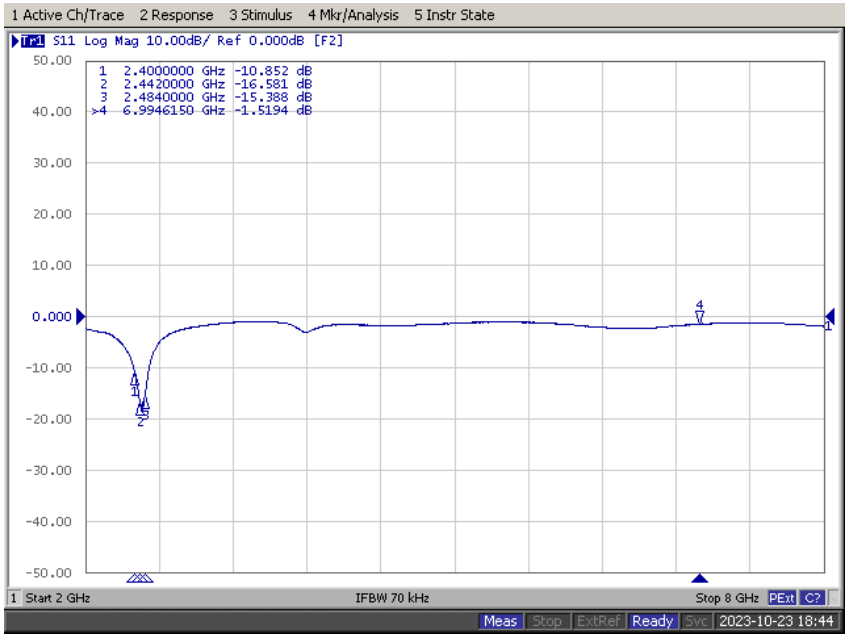
Figure. Scheme of radiation pattern measurement system

Experimental results

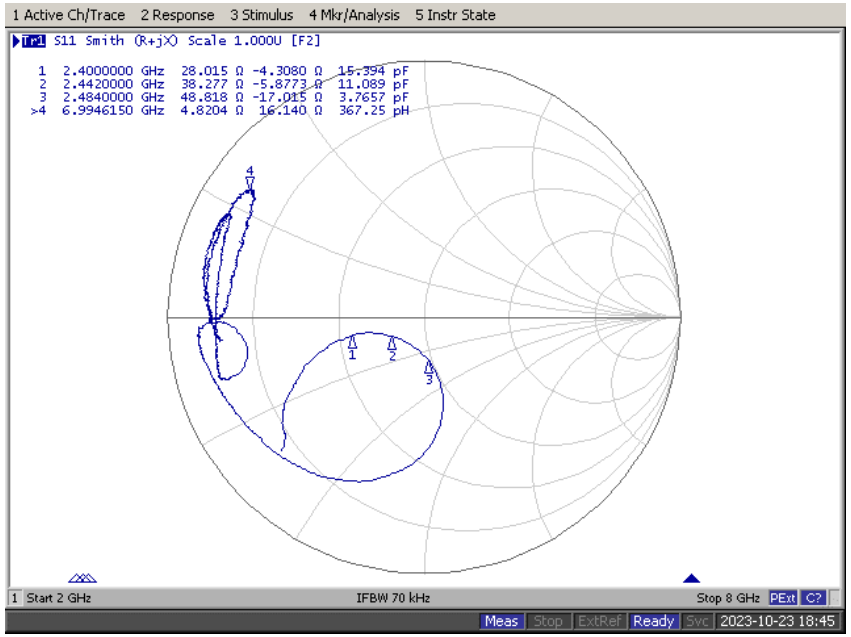
Experimental results

S-Parameters - TX-Short (Original RF matching components)

Return Loss



Smith chart

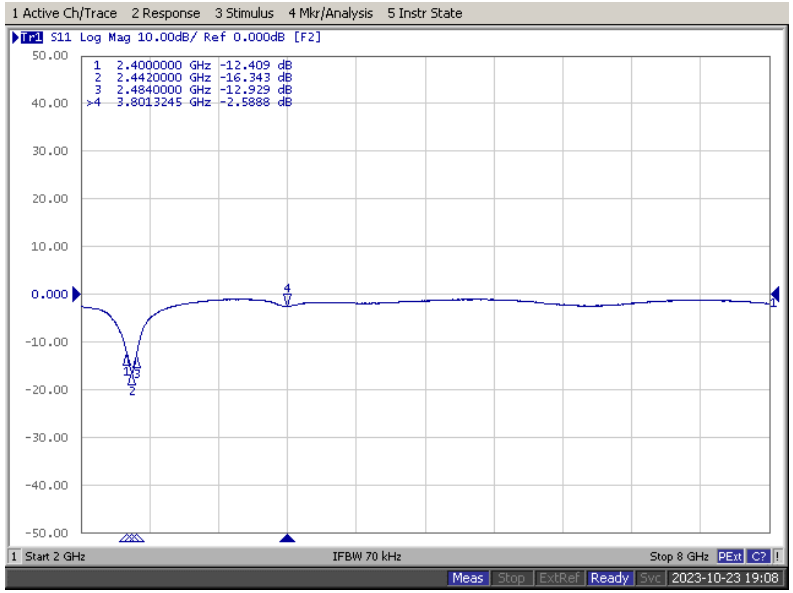


There is a slight frequency offset, so we suggest the RF matching components to be re-turned.

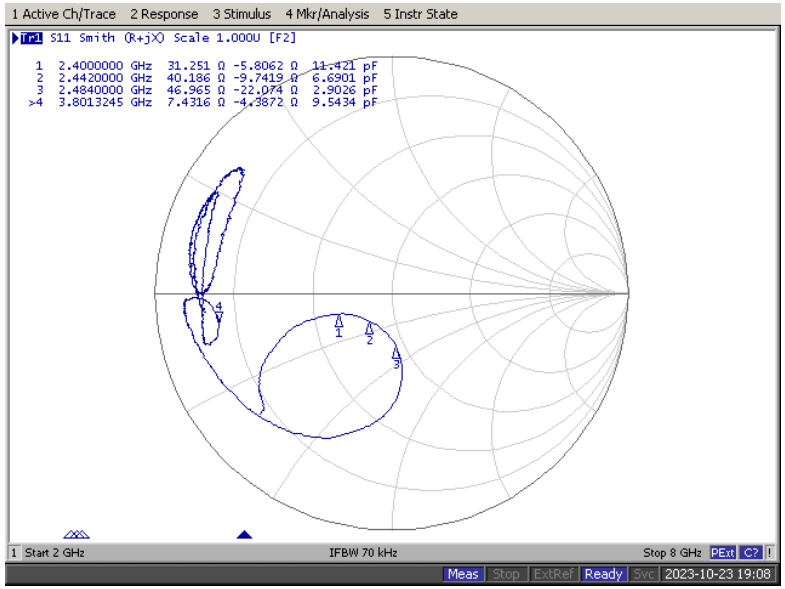
Experimental results

S-Parameters - TX-Short (Updated RF matching components)

Return Loss

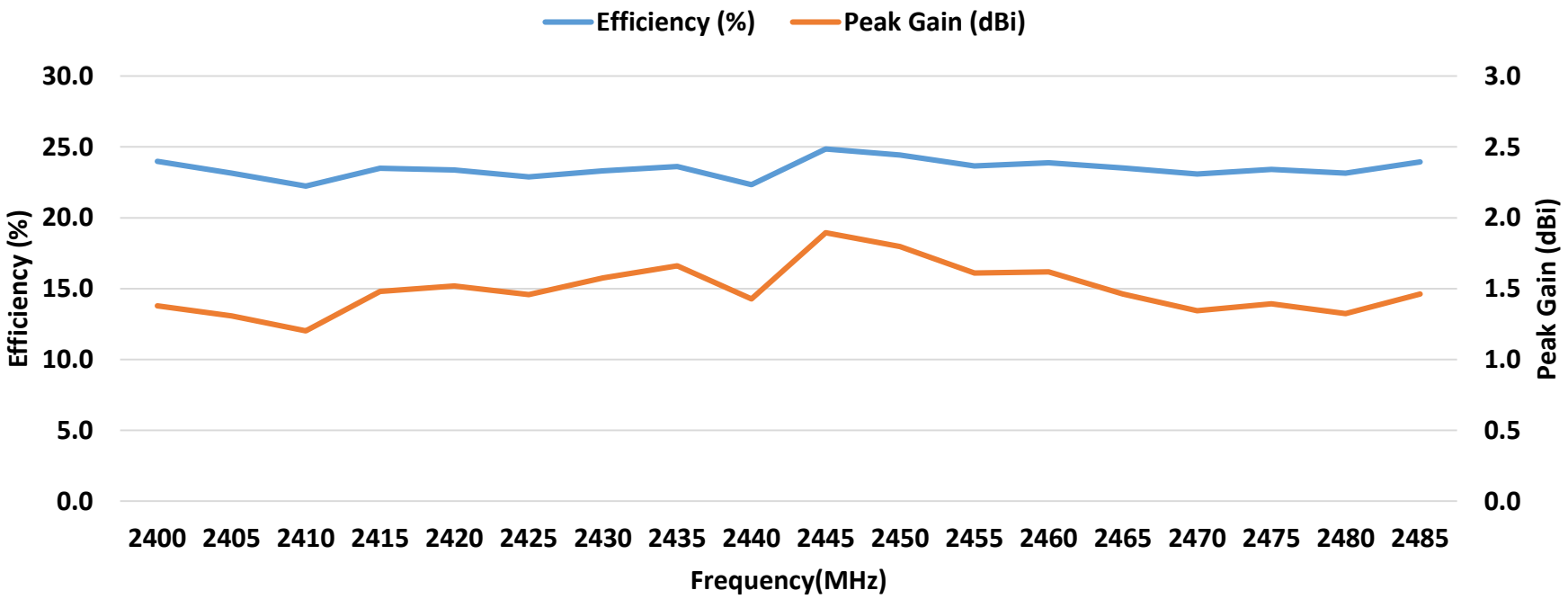


Smith chart



Experimental results

Radiation efficiency and peak gain - TX-Short (Updated RF matching)

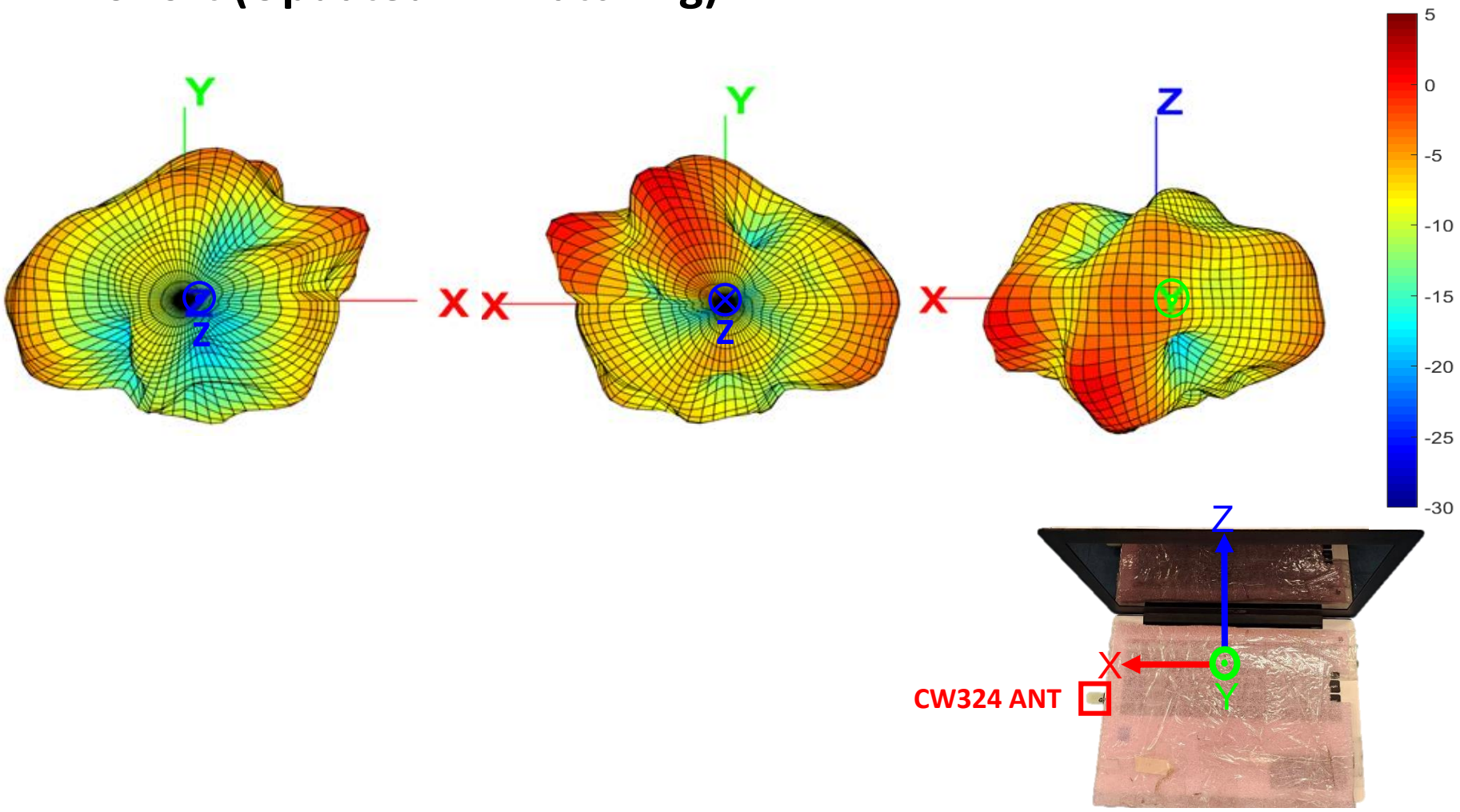


2400-2485 MHz

Frequency (MHz)	2400	2405	2410	2415	2420	2425	2430	2435	2440	2445	2450	2455	2460	2465	2470	2475	2480	2485
Efficiency (dB)	-6.2	-6.4	-6.5	-6.3	-6.3	-6.4	-6.3	-6.3	-6.5	-6.0	-6.1	-6.3	-6.2	-6.3	-6.4	-6.3	-6.4	-6.2
Efficiency (%)	24.0	23.2	22.2	23.5	23.4	22.9	23.3	23.6	22.3	24.9	24.4	23.7	23.9	23.5	23.1	23.4	23.1	23.9
Peak Gain (dBi)	1.4	1.3	1.2	1.5	1.5	1.5	1.6	1.7	1.4	1.9	1.8	1.6	1.6	1.5	1.3	1.4	1.3	1.5

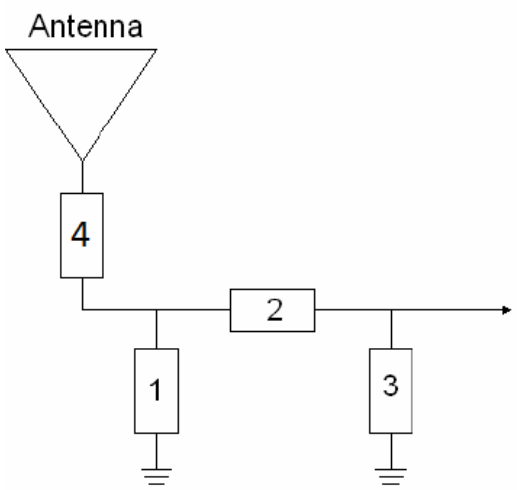
Experimental results

3D Gain Pattern (Radiation Pattern @ 2445 MHz) (unit: dBi)
- TX-Short (Updated RF matching)



Experimental results

Matching Circuit - TX-Short



System Matching Circuit Component			
Location	Description	Vendor	P/N
1	N/A	-	-
2	0Ω	-	-
3	0.9pF, (0201)	MURATA	GRM0335C1HR90WA01D
4	7.5nH, (0201)	MURATA	LQP03TG7N5H02D

Conclusion

1. After re-tuning, the average efficiencies are shown as below.

   TX Long : 21.8%
   TX Short : 23.4%

2. The updated RF matching components are displayed on pages 18 and 19. The components marked in red are the updated parts for the DVT2 stage.