



Antenna Test Report

Project No	CS2208B	PCB Version	MS88SF2_V1.2
Tester	XuNing	Date	2025.10.31
Auditing		Date	
Approval		Date	

Contents

1.Project Information	3rd
2.Technical Specification	4th
3.The shape and size of the antenna	5th
4.The result of the test	5th
4.1. VSWR & Return loss & Smith	5th
4.2. Antenna Gain and Efficiency	6th
4.3. Radiation Pattern	9th

1. Project Information

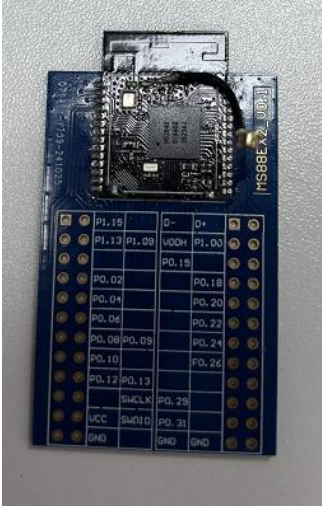
1.1. Antenna Coding: ANT-BBNCNC20009

1.2. Antenna Type: On board PCB Antenna

1.3. Model of the DUT: MS88SF2_V1.2

1.4. Test Data : 2025.10.31

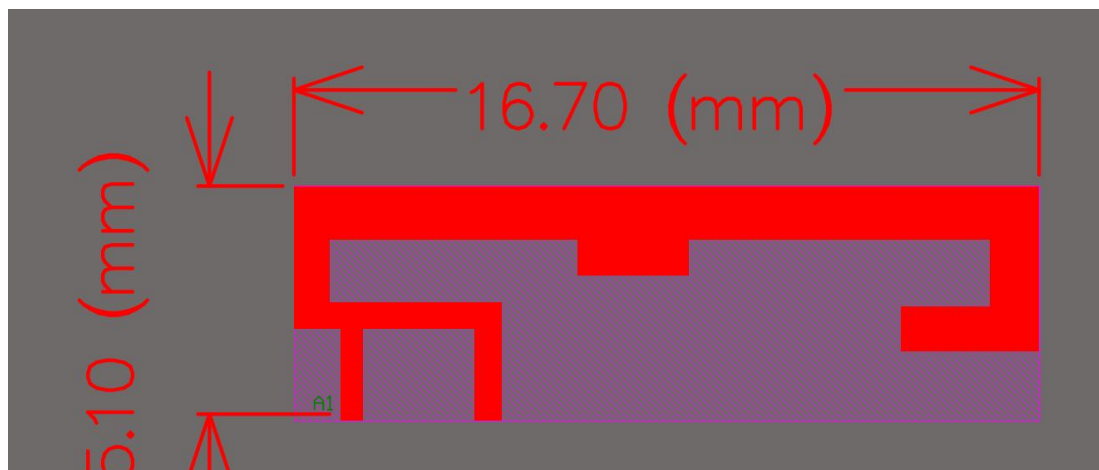
1.5. Product picture:

Product appearance	
PCB board and antenna	

2. Technical Specification

Electrical Specifications	
Frequency Range	2400-2480 MHz
Peak Gain	2.92 dBi
Efficiency	66.6%
Return Loss	$\leq 20\text{dB}(\text{max})$
VSWR	$\leq 1.22(\text{max})$
Bandwidth (S11 $\leq -10\text{dB}$)	300 MHz
Input Impedance	50 Ω
Radiation direction	Omni
Polarization Type	Linear
Lightning Protection	DC grounding
Power Capacity	1000mW (30dBm)
Mechanical Specifications	
Antenna Size	16.7 x 5.1 mm
Core Radiator	Copper
Substrate material	FR4
Substrate thickness	0.6mm
Coaxial wire	Not Required
Connect Type	Not Required
Operating Temperature	-40 to +85 $^{\circ}\text{C}$
Storage Temperature	-40 to +85 $^{\circ}\text{C}$

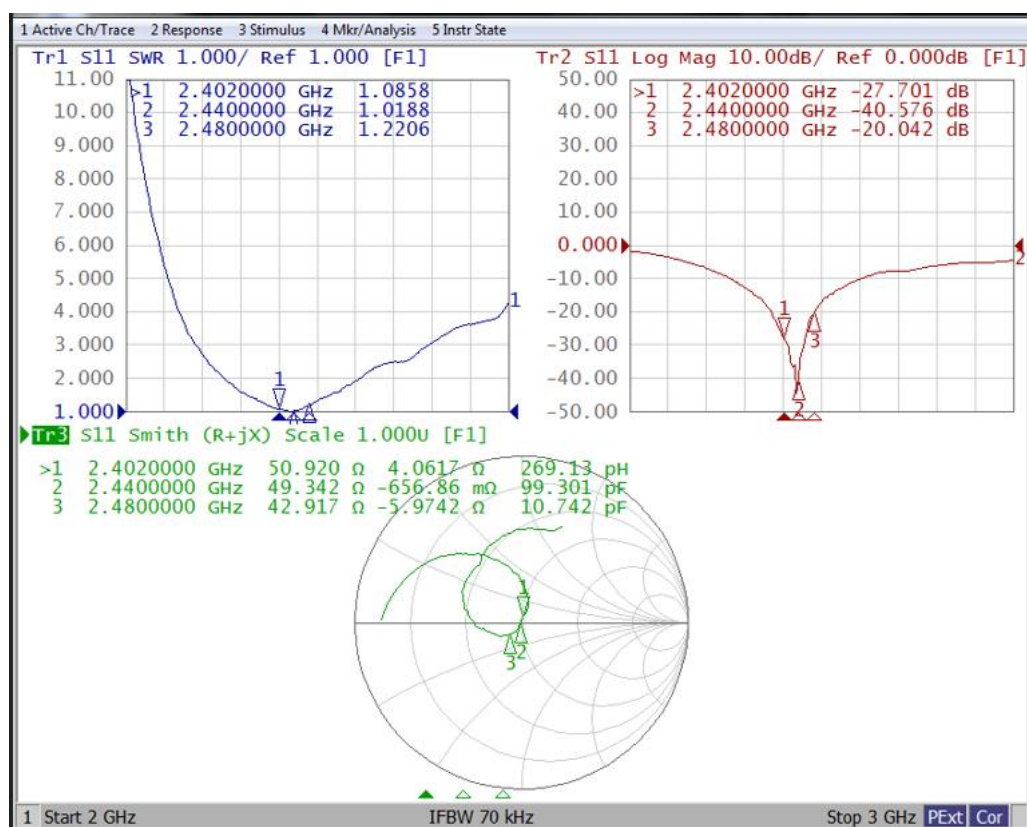
3. The shape and size of the antenna



Unit: mm

4. The result of the test

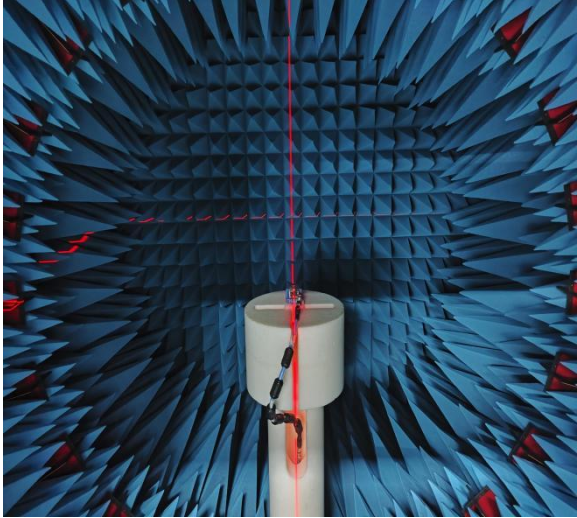
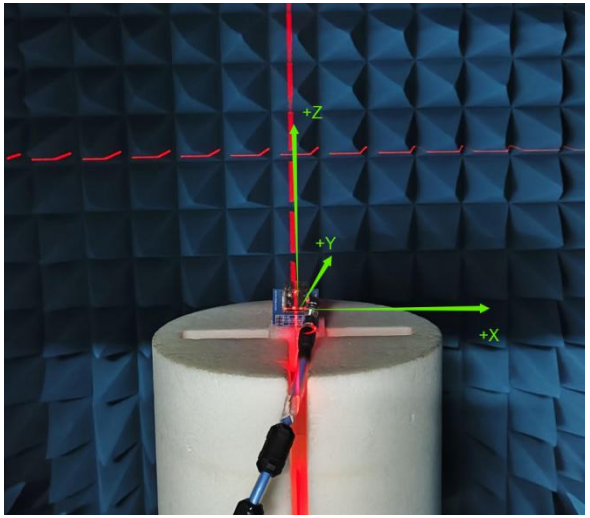
4.1. VSWR & Return loss & Smith



Frequency (MHz)	Return Loss (dB)	VSWR
2402	-27.7	1.08
2440	-40.5	1.01
2480	-20	1.22
Bandwidth (S11≤-10dB)	300MHz	

4.2. Antenna Gain and Efficiency

4.2.1. Product coordinate axis position

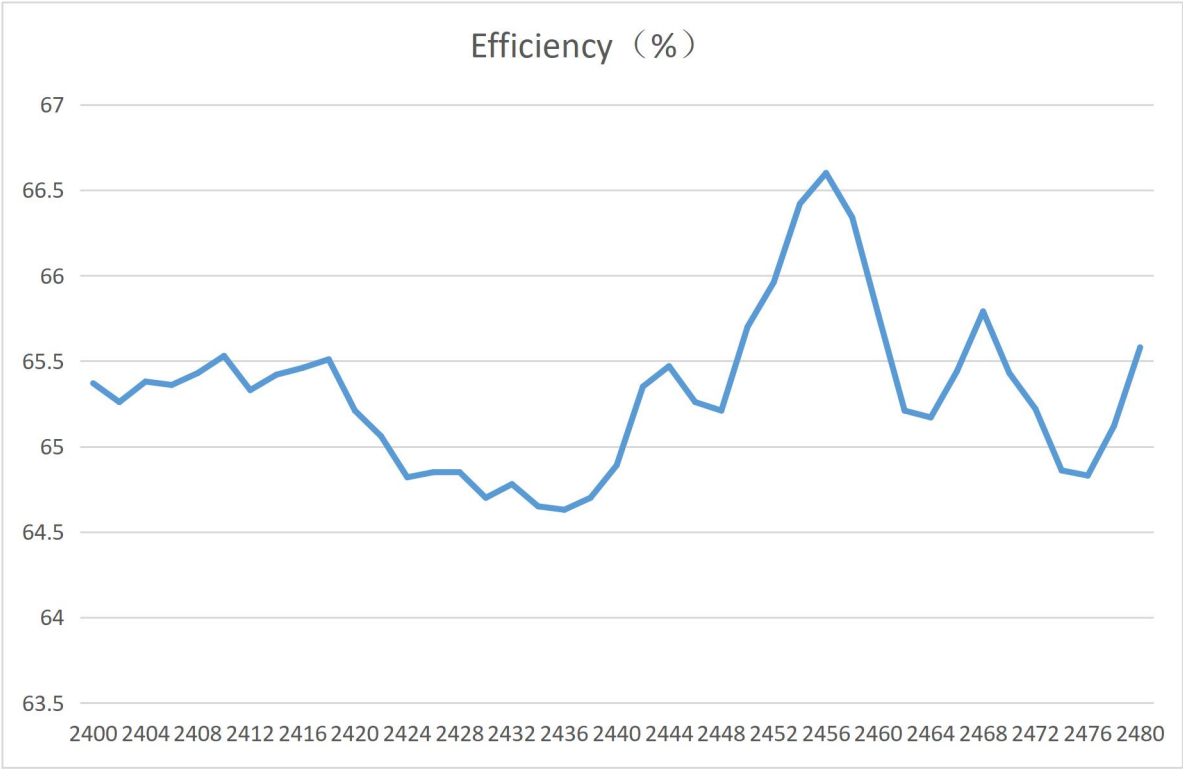
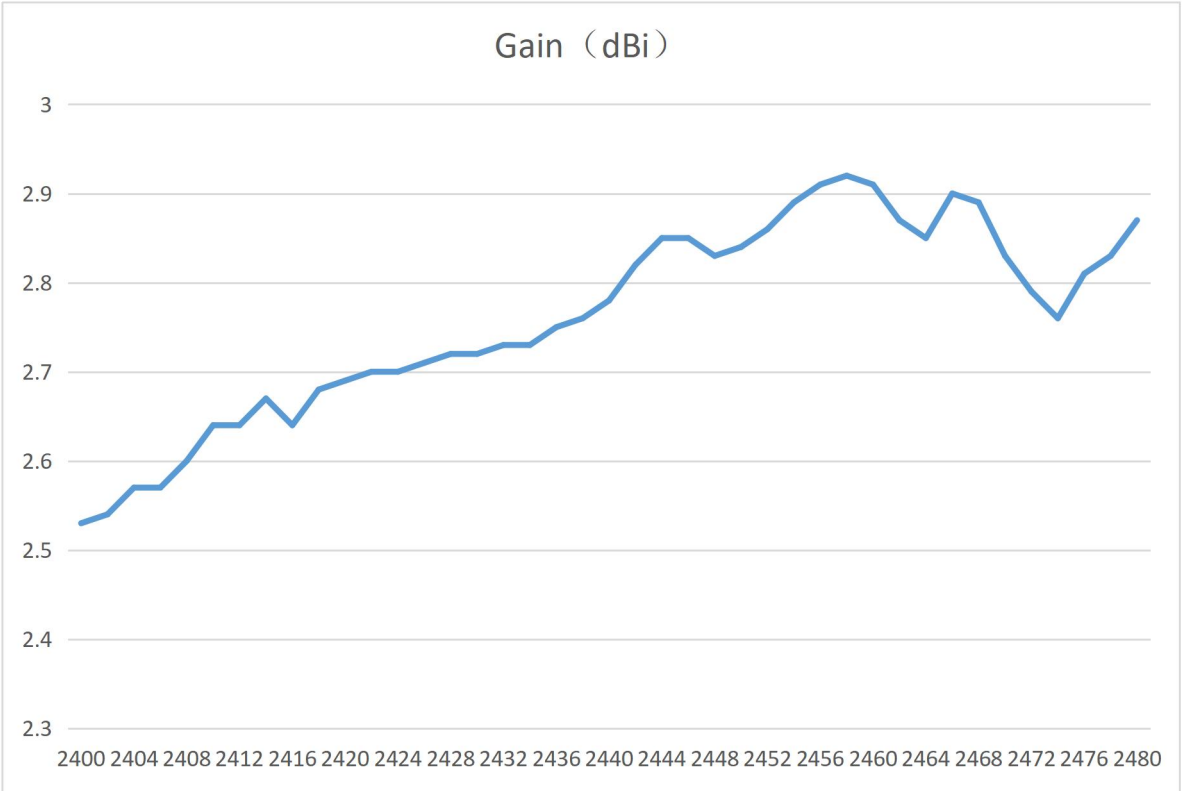
Inside the microwave anechoic chamber	Product coordinate axis position
	

Notes: The antenna towards to +Z.

4.2.2. Gain and Efficiency data sheet

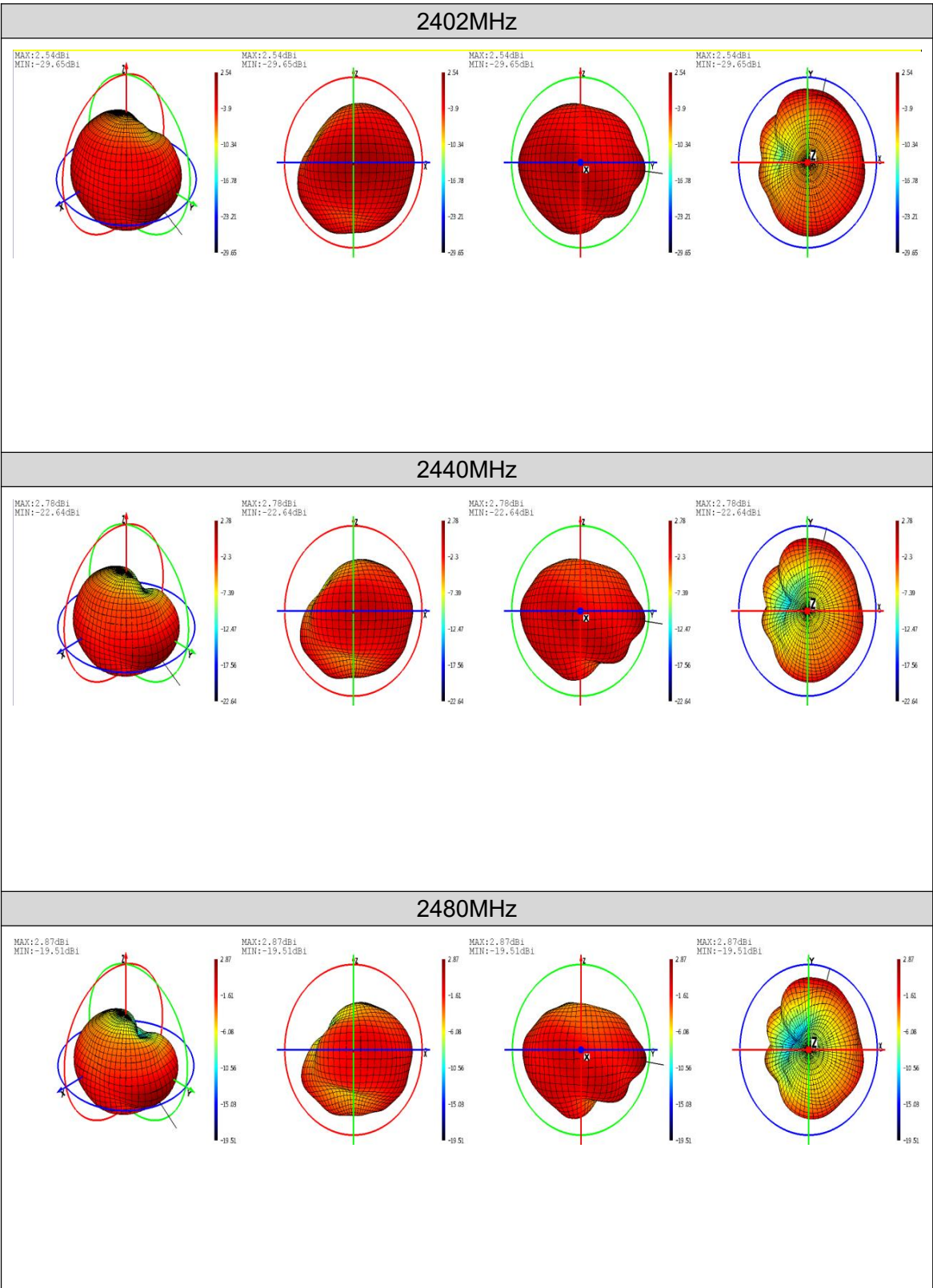
Frequency(MHz)	Gain(dBi)	Efficiency(dB)	Efficiency(%)	PeakGain (dBi)
2400	2.53	-1.85	65.37	2.92
2402	2.54	-1.85	65.26	
2404	2.57	-1.85	65.38	
2406	2.57	-1.85	65.36	
2408	2.6	-1.84	65.43	
2410	2.64	-1.84	65.53	
2412	2.64	-1.85	65.33	
2414	2.67	-1.84	65.42	
2416	2.64	-1.84	65.46	
2418	2.68	-1.84	65.51	
2420	2.69	-1.86	65.21	
2422	2.7	-1.87	65.06	
2424	2.7	-1.88	64.82	
2426	2.71	-1.88	64.85	
2428	2.72	-1.88	64.85	
2430	2.72	-1.89	64.7	
2432	2.73	-1.89	64.78	
2434	2.73	-1.89	64.65	
2436	2.75	-1.9	64.63	
2438	2.76	-1.89	64.7	
2440	2.78	-1.88	64.89	
2442	2.82	-1.85	65.35	
2444	2.85	-1.84	65.47	
2446	2.85	-1.85	65.26	
2448	2.83	-1.86	65.21	
2450	2.84	-1.82	65.7	
2452	2.86	-1.81	65.96	
2454	2.89	-1.78	66.42	
2456	2.91	-1.77	66.6	
2458	2.92	-1.78	66.34	
2460	2.91	-1.82	65.77	
2462	2.87	-1.86	65.21	
2464	2.85	-1.86	65.17	
2466	2.9	-1.84	65.44	
2468	2.89	-1.82	65.79	
2470	2.83	-1.84	65.43	
2472	2.79	-1.86	65.22	
2474	2.76	-1.88	64.86	
2476	2.81	-1.88	64.83	
2478	2.83	-1.86	65.12	
2480	2.87	-1.83	65.58	

4.2.3. Graphs of Gain and Efficiency



4.3.Radiation Pattern

4.3.1. 3D Radiation Pattern



4.3.2. 2D Radiation Pattern

