



Antenna Test Report

Project No	CS2322B	PCB Version	MS15SF1_V1.0
Antenna Enginner	XuNing	Date	2025.3.12
Auditing		Date	
Approval		Date	

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1. Project Information

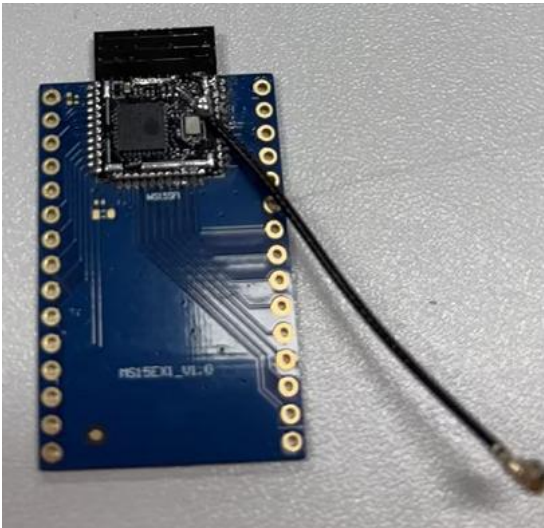
1.1. Antenna Coding: ANT-BBNCNC23027

1.2. Antenna Type: On board PCB Antenna

1.3. Model of the DUT: MS15SF1

1.4. Test Data : 2025.3.12

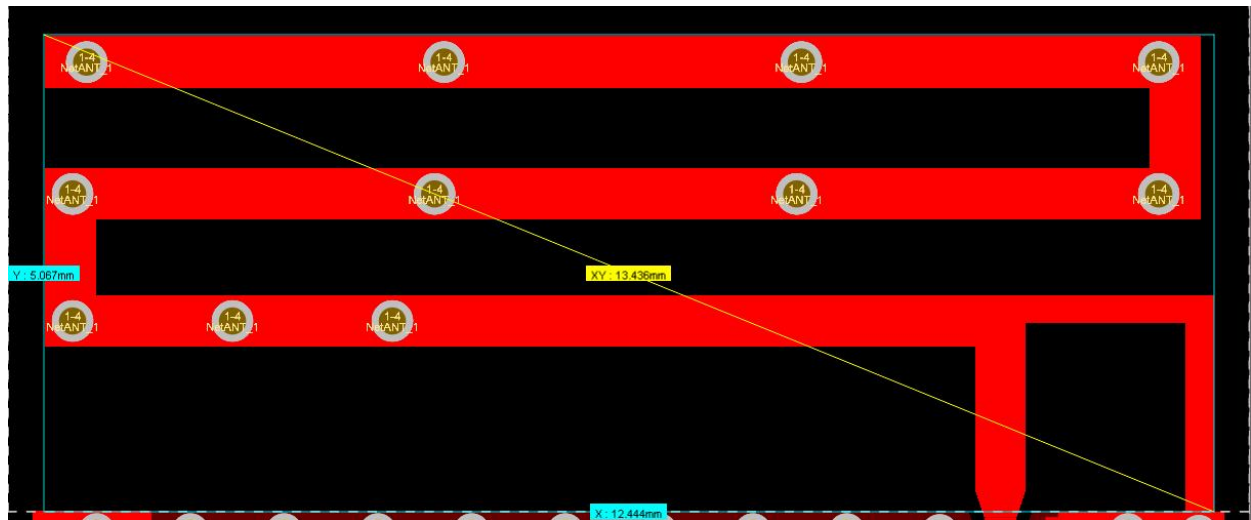
1.5. Product picture:

Product appearance	
PCB board and antenna	

2. Technical Specification

Electrical Specifications	
Frequency Range	2400-2480 MHz
Peak Gain	1.42dBi
Efficiency	40.62%
Return Loss	$\leq -10\text{dB}$
VSWR	≤ 2.0
Bandwidth (S11 $\leq -10\text{dB}$)	200MHz
Input Impedance	50 Ω
Radiation direction	Omni
Polarization Type	Linear
Lightning Protection	DC grounding
Power Capacity	1000mW (30dBm)
Mechanical Specifications	
Antenna Size	12.44 x 5.07 mm
Core Radiator	Copper
Substrate material	FR4
Substrate thickness	0.8mm
Coaxial wire	Not Required
Connect Type	Not Required
Operating Temperature	-20 to +60 $^{\circ}\text{C}$
Storage Temperature	-10 to +60 $^{\circ}\text{C}$

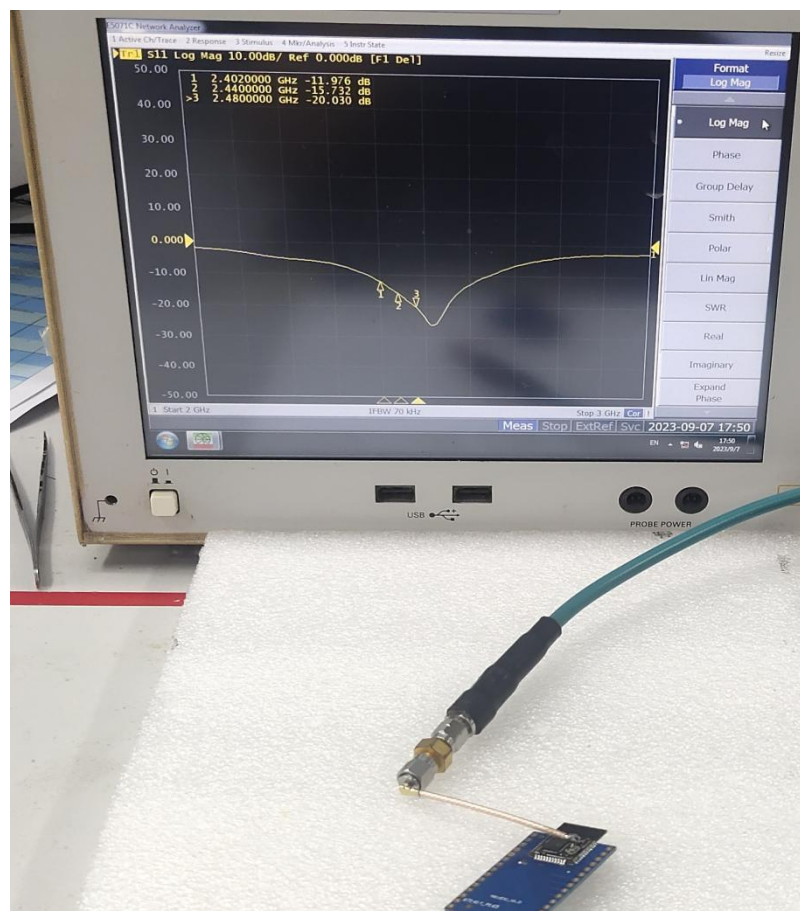
3. The shape and size of the antenna



Unit: mm

4. The result of the test

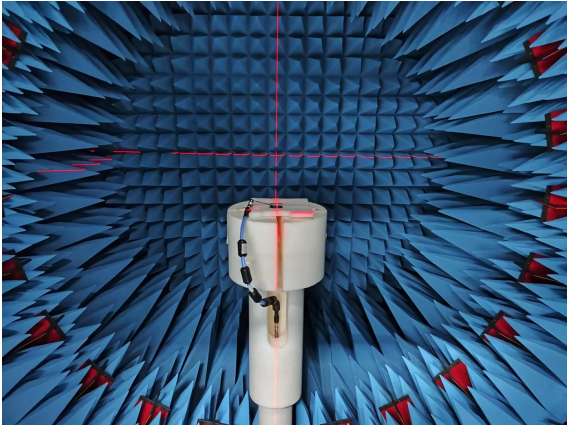
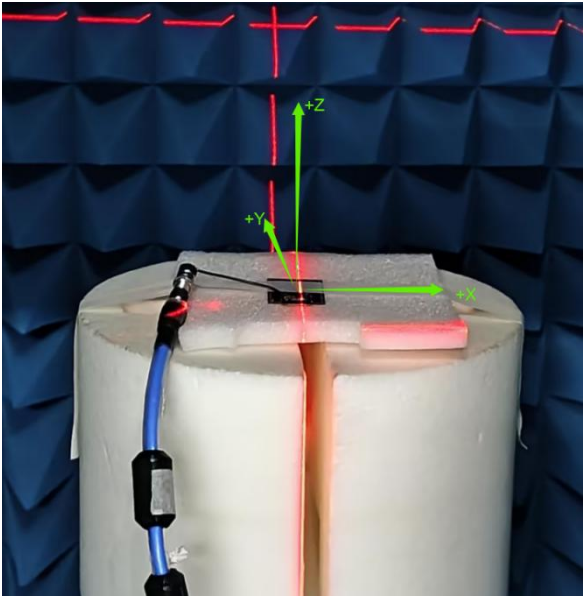
4.1. VSWR & Return loss & Smith



Frequency (MHz)	Return Loss (dB)	VSWR
2402	-11.97	1.62
2440	-15.73	1.33
2480	-20.03	1.21
Bandwidth (S11≤-10dB)	200	

4.2. Antenna Gain and Efficiency

4.2.1. Product coordinate axis position

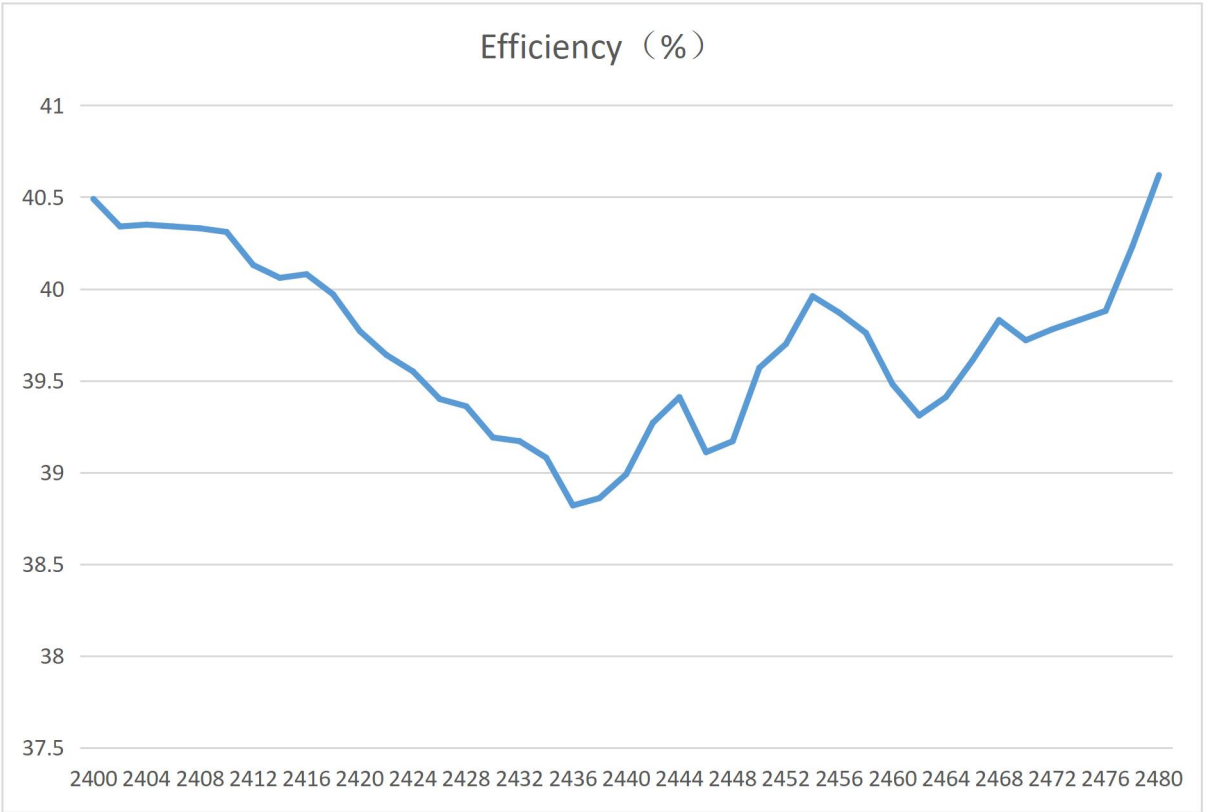
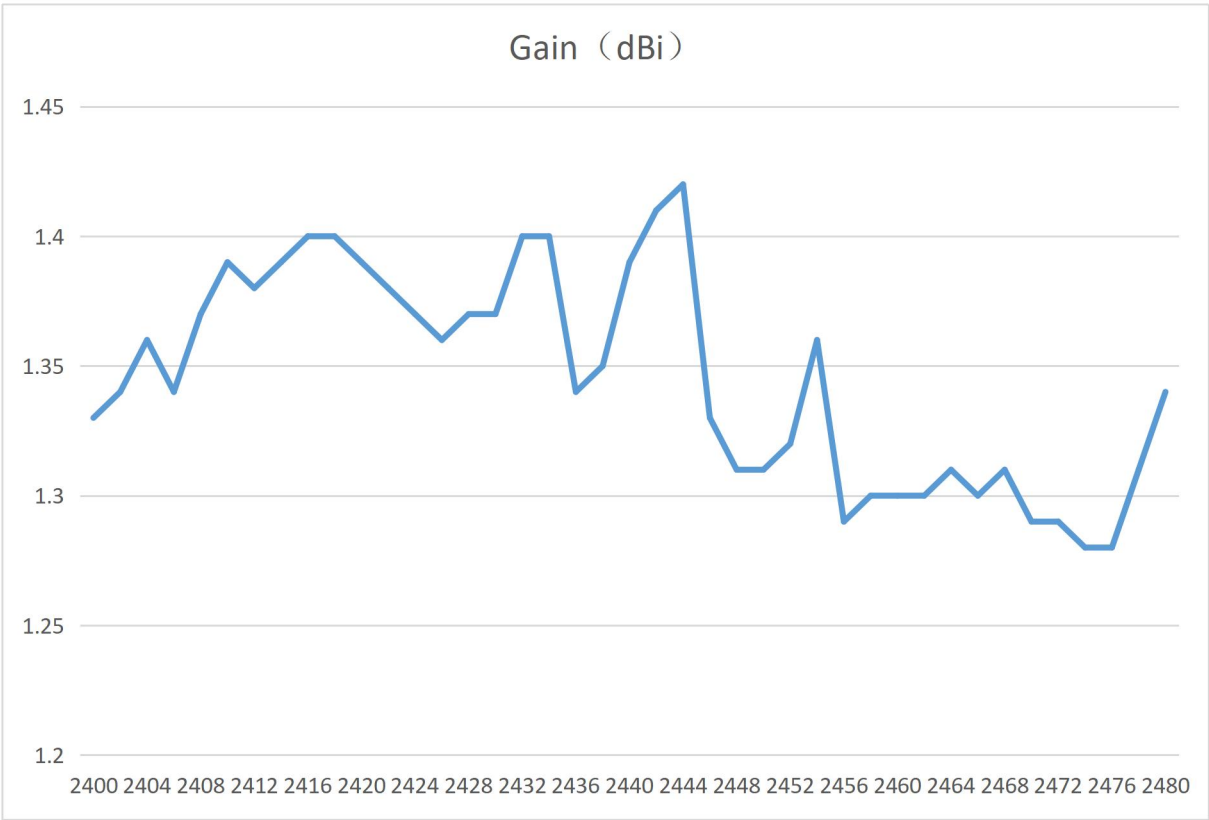
Inside the microwave anechoic chamber	Product coordinate axis position
	

Notes: The antenna towards to -Y.

4.2.2. Gain and Efficiency data sheet

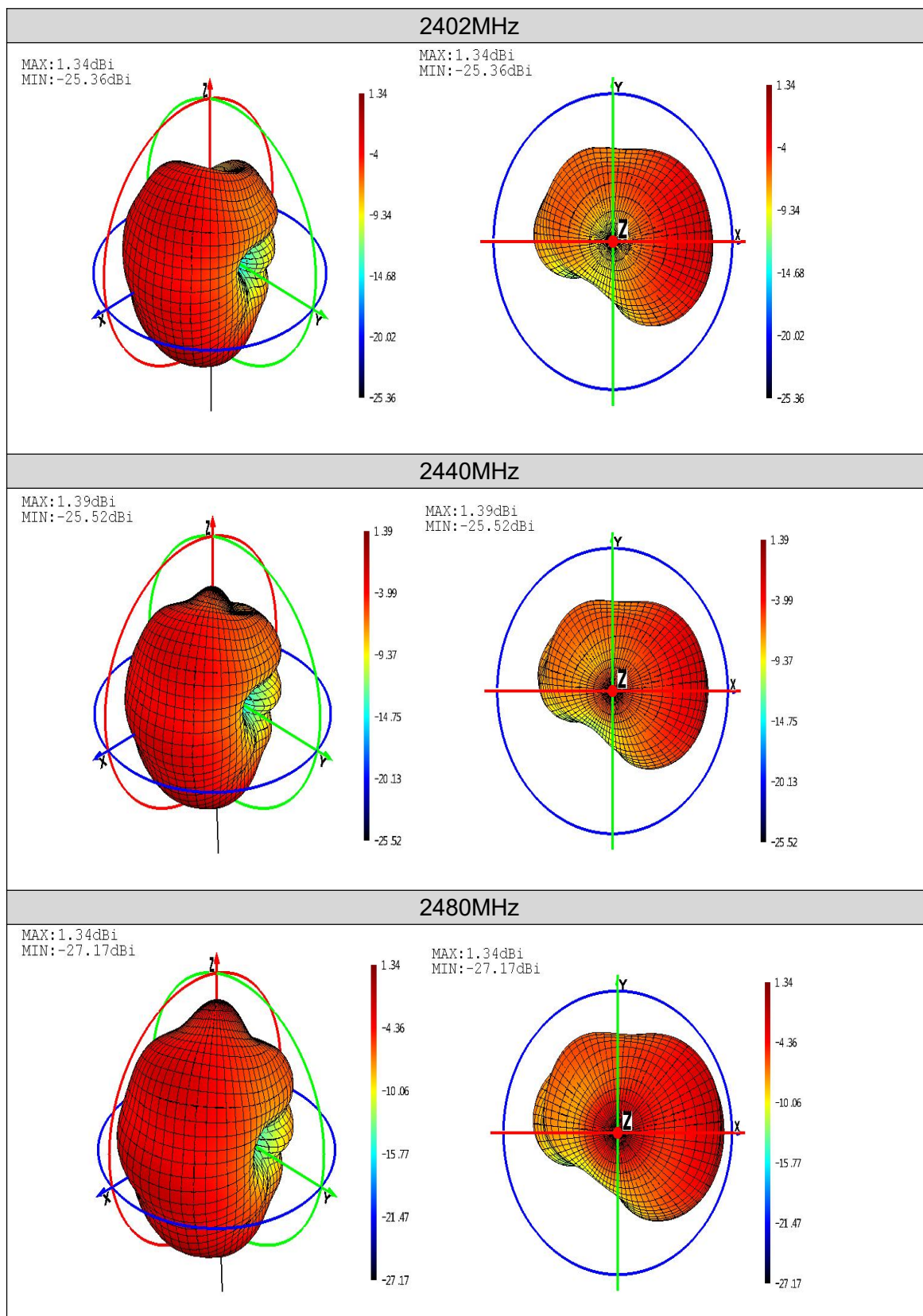
频率 (MHz)	增益 (dBi)	效率 (dB)	效率 (%)	PeakGain (dBi)
2400	1.33	-3.93	40.49	1.42
2402	1.34	-3.94	40.34	
2404	1.36	-3.94	40.35	
2406	1.34	-3.94	40.34	
2408	1.37	-3.94	40.33	
2410	1.39	-3.95	40.31	
2412	1.38	-3.97	40.13	
2414	1.39	-3.97	40.06	
2416	1.40	-3.97	40.08	
2418	1.40	-3.98	39.97	
2420	1.39	-4.00	39.77	
2422	1.38	-4.02	39.64	
2424	1.37	-4.03	39.55	
2426	1.36	-4.05	39.40	
2428	1.37	-4.05	39.36	
2430	1.37	-4.07	39.19	
2432	1.40	-4.07	39.17	
2434	1.40	-4.08	39.08	
2436	1.34	-4.11	38.82	
2438	1.35	-4.10	38.86	
2440	1.39	-4.09	38.99	
2442	1.41	-4.06	39.27	
2444	1.42	-4.04	39.41	
2446	1.33	-4.08	39.11	
2448	1.31	-4.07	39.17	
2450	1.31	-4.03	39.57	
2452	1.32	-4.01	39.70	
2454	1.36	-3.98	39.96	
2456	1.29	-3.99	39.87	
2458	1.30	-4.01	39.76	
2460	1.30	-4.04	39.48	
2462	1.30	-4.06	39.31	
2464	1.31	-4.04	39.41	
2466	1.30	-4.02	39.61	
2468	1.31	-4.00	39.83	
2470	1.29	-4.01	39.72	
2472	1.29	-4.00	39.78	
2474	1.28	-4.00	39.83	
2476	1.28	-3.99	39.88	
2478	1.31	-3.96	40.23	
2480	1.34	-3.91	40.62	

4.2.3. Graphs of Gain and Efficiency

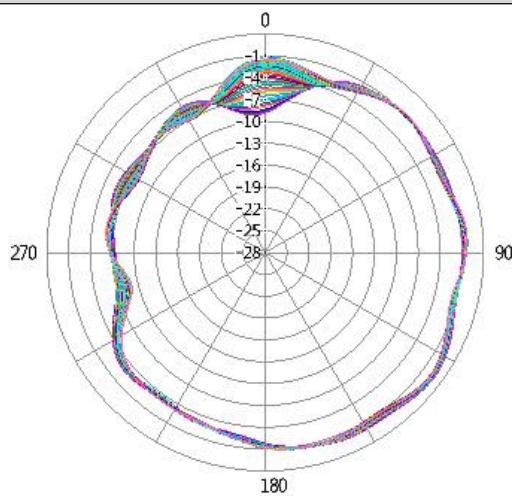
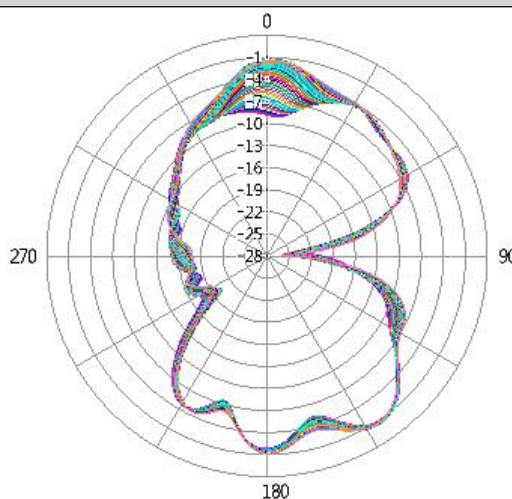


4.3.Radiation Pattern

4.3.1. 3D Radiation Pattern



4.3.2. 2D Radiation Pattern

E1, XZ-Face, $\phi=0^\circ$; (E1, $\theta=0^\circ\sim 360^\circ$, $\phi=0^\circ$)E2, YZ-Face, $\phi=90^\circ$; (E2, $\theta=0^\circ\sim 360^\circ$, $\phi=90^\circ$)H, XY-Face, $\theta=90^\circ$; (H, $\phi=0^\circ\sim 360^\circ$, $\theta=90^\circ$)