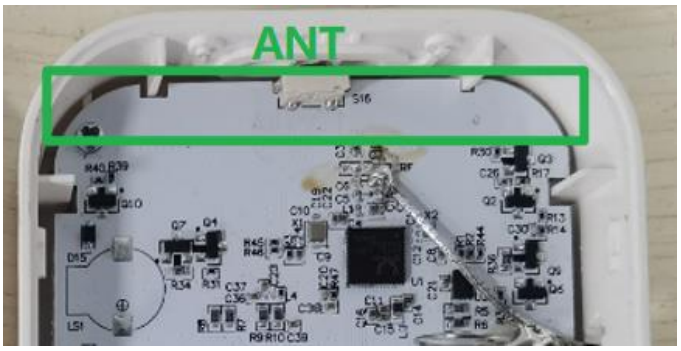
Antenna Specification

Antenna picture	
Antenna Type	Internal inverted F PCB antenna
Antenna Peak Gain	BLE: 4.86 dBi
Operating Band	2400 MHz ~ 2483.5 MHz
Test laboratory name and Address	IoT Antenna Test Laboratory, 3 / A,LEEDARSON LIGHTING CO., LTD. Xingtai Industrial Park, Changtai Economic Development Zone, Zhangzhou, 363900, China
Antenna Manufacturer	LEEDARSON LIGHTING CO., LTD.
Model name	Keypad
DUT photo	
Test System	SY-16 OTA System
Test Engineer	O.Young
Test Date	2023-10-17

Test Standard

Antenna Performance	Radiation Efficiency	IEEE Standard Test Procedures for Antennas	ANSI/IEEE Std 149-2021

Equipment List:

Equipment	Manufacturer	Model No.	Last Cal.	Due Date
Network Analyzer	Agilent	E5071C	2023.10.8	2024.10.7

Test Software: EMQuest

Test System

The SY-16 OTA system is an anechoic chamber, which can measures antenna passive data such as antenna efficiency, antenna gain, and 2D&3D pattern. The coordinates and topology are shown as follow:

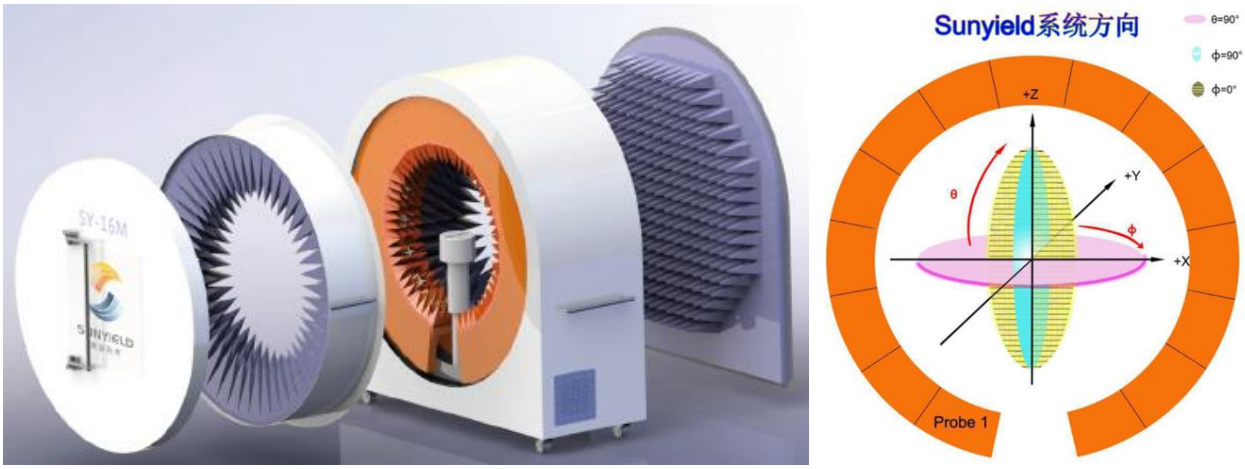


Figure 1 SY-16 OTA system

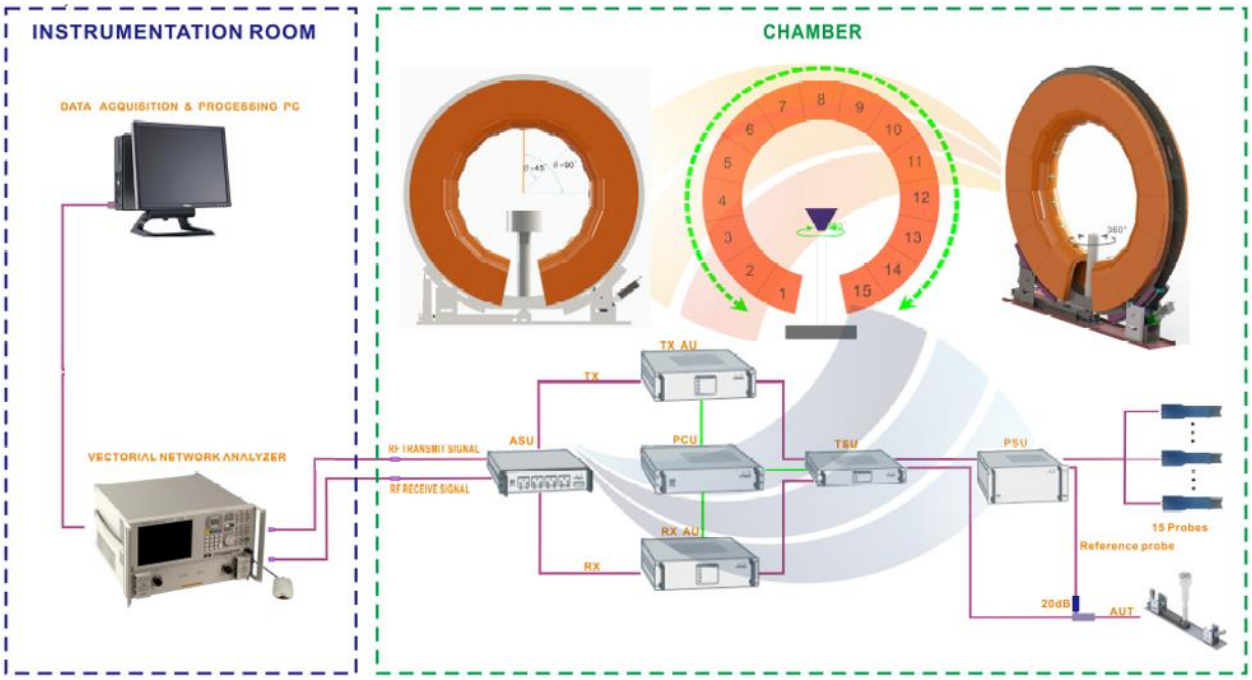


Figure 2 OTA measurement topology

Test Result

Efficiency and Gain

Table 1 Antenna Efficiency and Gain

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
2400	4.80	-1.53	70.36
2410	4.82	-1.61	69.05
2420	4.78	-1.58	69.48
2430	4.64	-1.61	69.03
2440	4.57	-1.60	69.12
2450	4.72	-1.58	69.52
2460	4.86	-1.43	71.90
2470	4.80	-1.54	70.11
2480	4.84	-1.63	68.78
2490	4.79	-1.42	72.14
2500	4.66	-1.46	71.41

Radiation Pattern

Table 2 Product coordinates

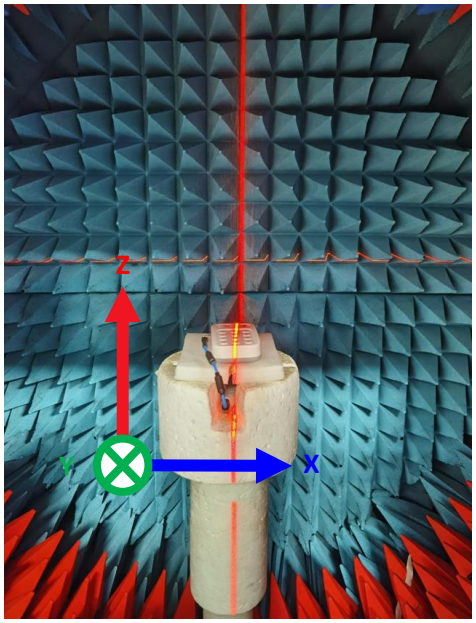
Product Coordinates	
	

Table 3 3D radiation pattern

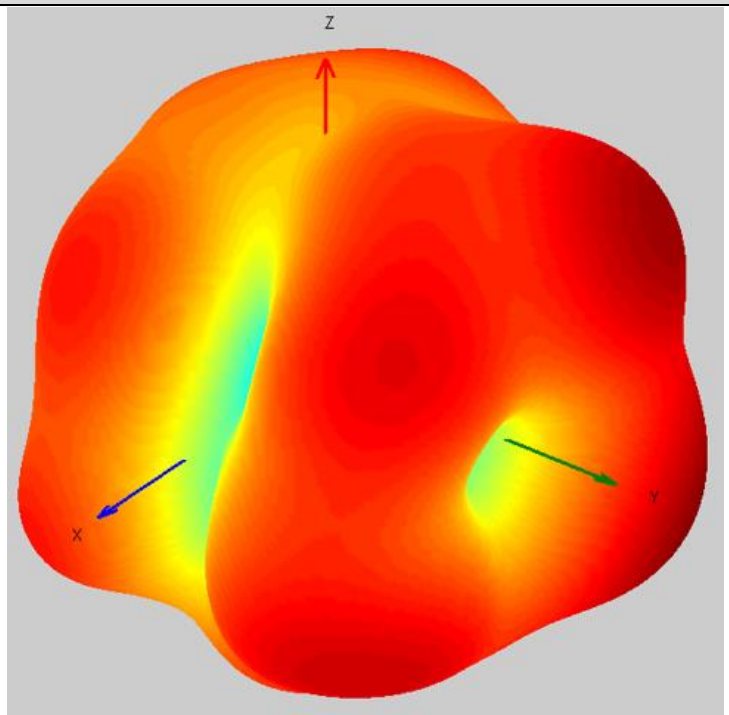
3D Radiation Pattern at 2450MHz


Table 4 Radiation pattern in XY Plane

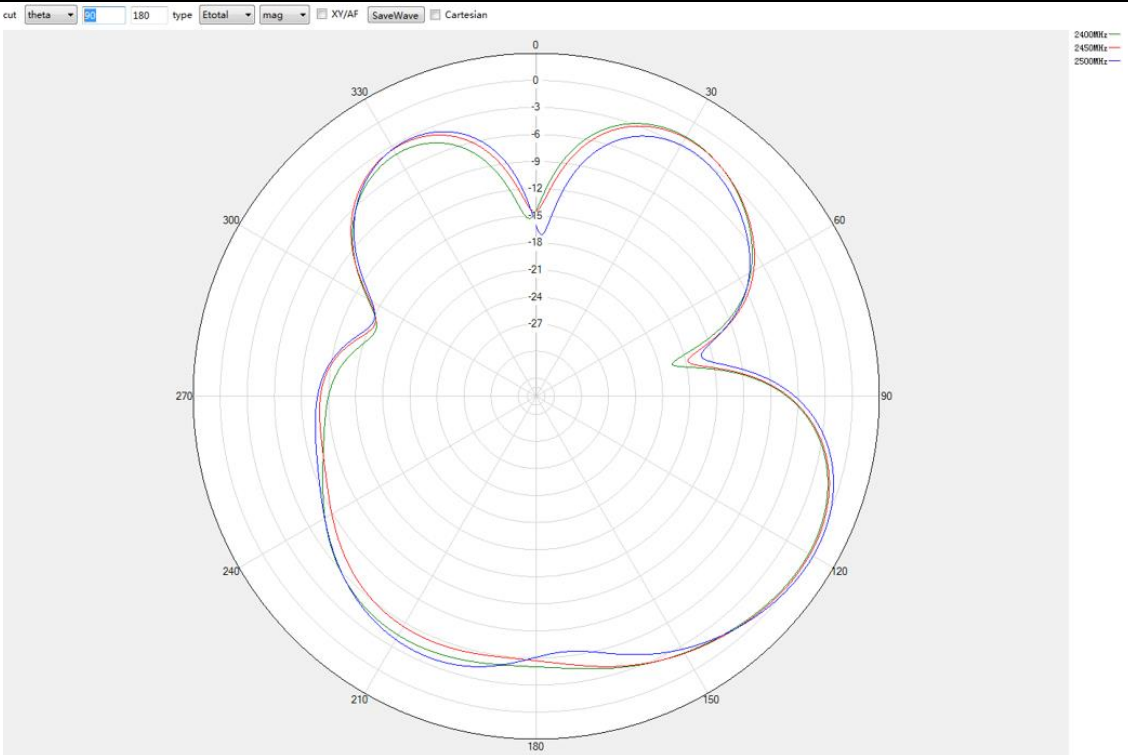
2D Radiation Pattern (θ = 90°, XY Plane)


Table 5 Radiation pattern in XZ Plane

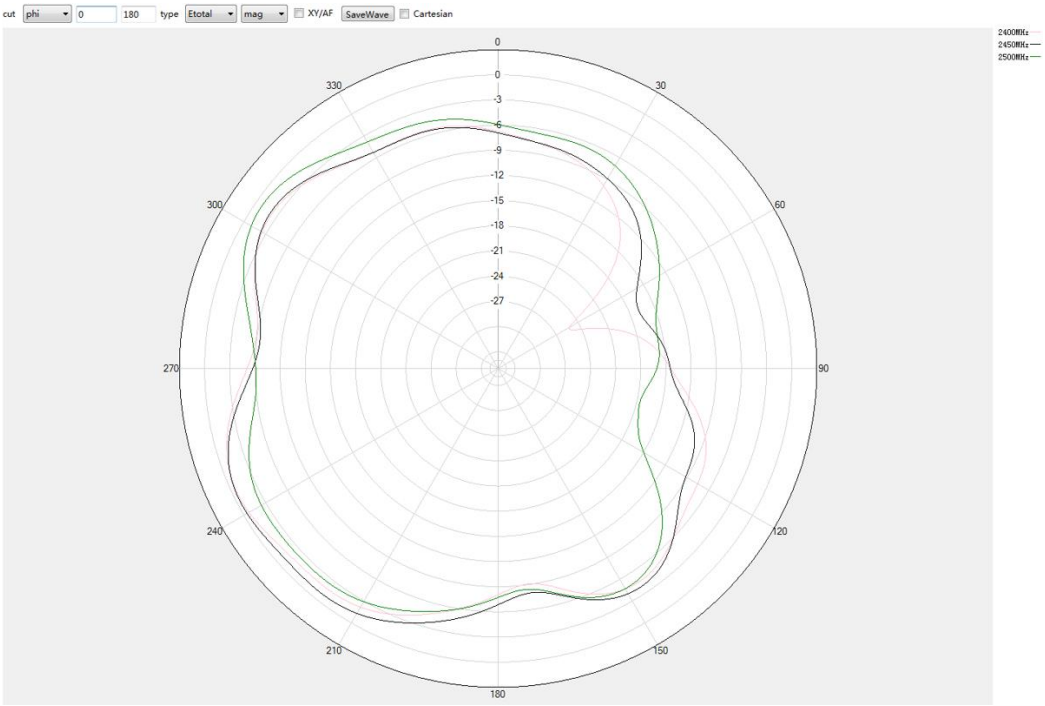
2D Radiation Pattern (ϕ = 0°, XZ Plane)


Table 6 Radiation pattern in YZ Plane

2D Radiation Pattern (ϕ = 90°, YZ Plane)