Antenna Specification

Antenna picture	Please refer to the internal photos.
Antenna Type	Internal inverted F PCB antenna
Antenna Peak Gain	WIFI&BLE: 2.0 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	M3 pro IPD
DUT photo	Please refer to the external photos.
Test Equipment & Calibration Date	SY-16 OTA System 2023-02-06
Test Engineer	O.Young
Test Date	2023-10-19

1.1 Test Standard

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

1.2 Equipment List:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Network Analyzer	Keysight	E5071C	MY46527808	2024/1/9	2025/1/8
Anechoic Chamber	Sunyield	SY-16	SI1727	2023/5/10	2024/5/9

1.3 Test Software: EMQuest

1.4 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:

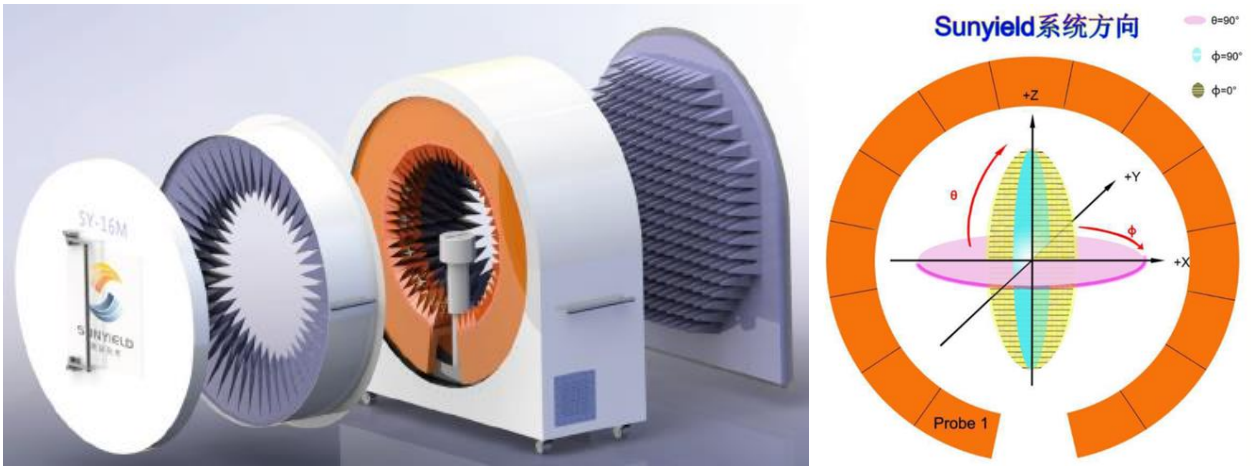


Figure 1 SY-16 OTA system

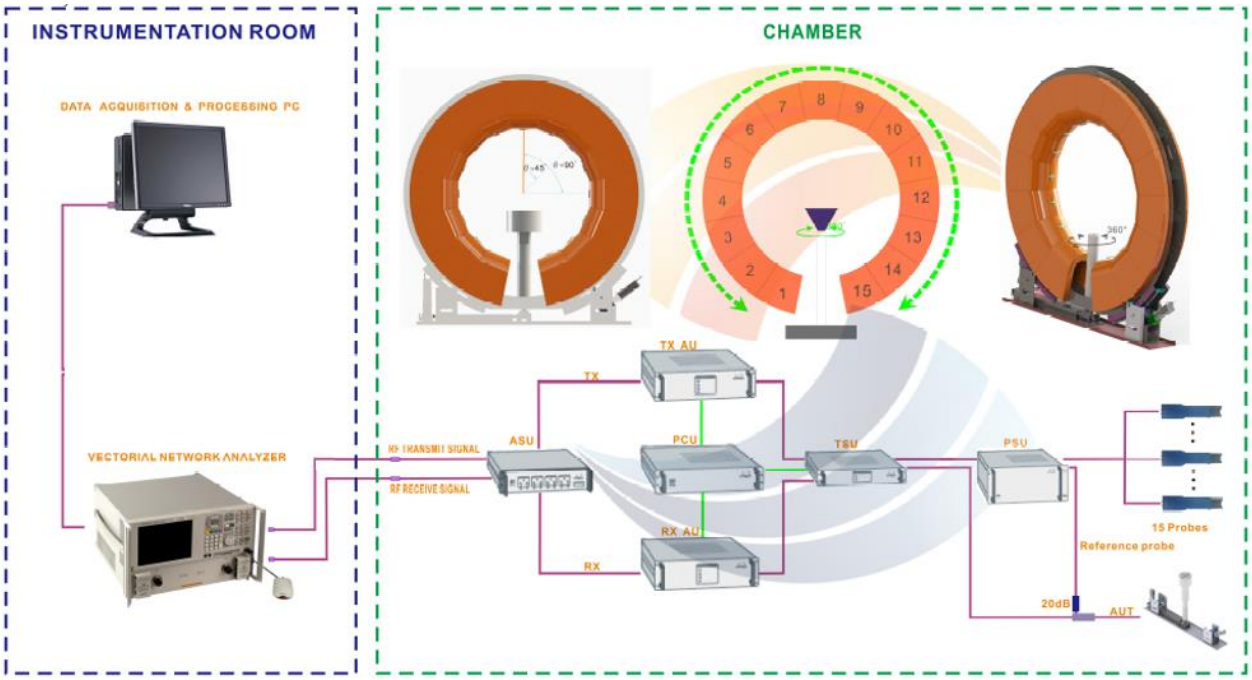


Figure 2 OTA measurement topology

Test Result

Efficiency and Gain

Table 1 Antenna Efficiency and Gain

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
2400	0.53	-4.07	39.19
2410	0.31	-4.22	37.83
2420	0.78	-3.93	40.41
2430	1.05	-3.81	41.63
2440	1.14	-3.82	41.48
2450	1.47	-3.71	42.55
2460	1.67	-3.31	46.69
2470	1.77	-3.16	48.30
2480	1.83	-3.05	49.56
2490	1.97	-2.84	51.97
2500	2.0	-2.63	54.60

Radiation Pattern

Table 2 Product coordinates

Product Coordinates
please refer to the antenna setup photo.

Table 3 3D radiation pattern

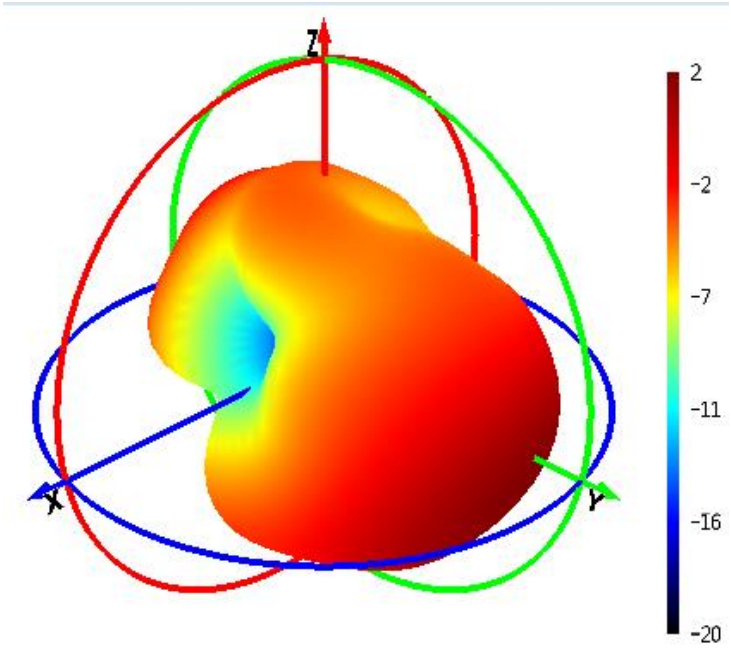
3D Radiation Pattern at 2450MHz


Table 4 Radiation pattern in XY Plane

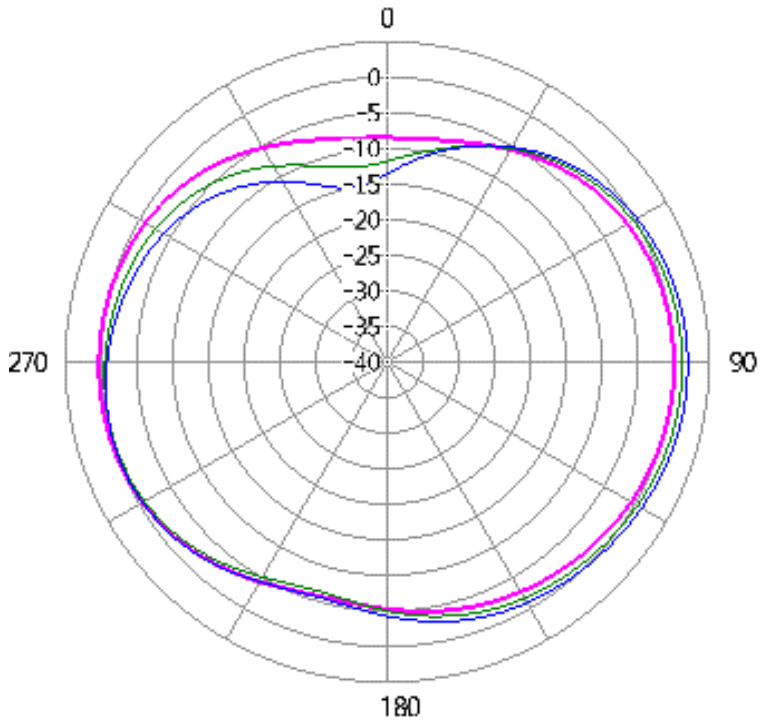
2D Radiation Pattern (θ = 90°, XY Plane)


Table 5 Radiation pattern in XZ Plane

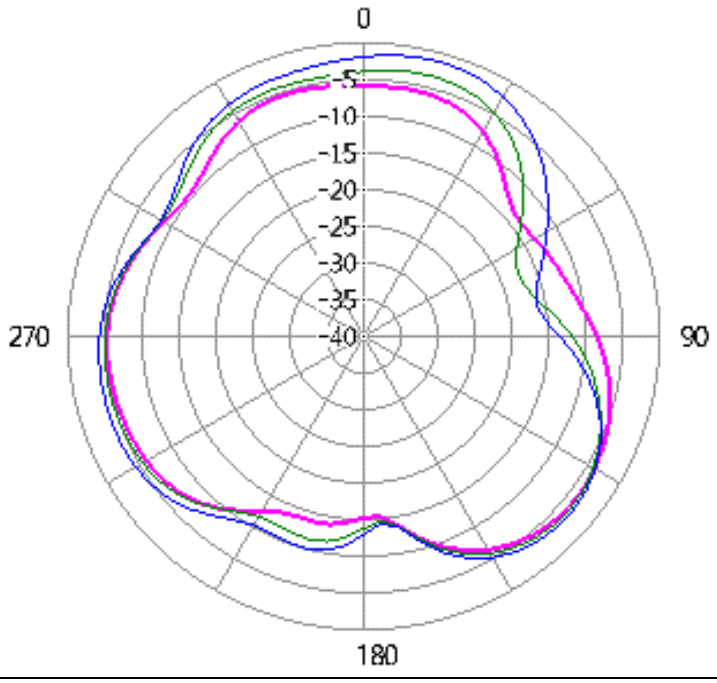
2D Radiation Pattern (ϕ = 0°, XZ Plane)


Table 6 Radiation pattern in YZ Plane

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