



# Scroll Wheel Remote

## Antenna Passive Test Report

Customer	IKEA
Report Date	2024-8-20
Model name	Scroll Wheel Remote
Antenna Model No.	E2490
Build stage	<input type="checkbox"/> EVT <input checked="" type="checkbox"/> DVT <input type="checkbox"/> PVT <input type="checkbox"/> MP
Report Version	P1.2
Test Engineer	XiuWeiSong
Protocol	Matter
Antenna Frequency	2400 ~ 2500 MHz
Antenna Type	Stamping Antenna
PCB Version	P-SW-A2-01-A-V2.0
Factory	Haysonic IoT Technology Co. Ltd Xingtai Industrial Park, Economic Development Zone of Changtai County, Zhangzhou City, Fujian, P.R. China
DUT photo	

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TEST DATA

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# 1 General

## 1.1 Revision History

Version	Date	Change Essentials	Author	Approver
V1.0	2024-7-19	P1.1 Antenna passive test	XiuWeiSong	OuyangLongji
V2.0	2024-8-20	P1.2 Antenna passive test	XiuWeiSong	OuyangLongji

## 1.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

Term/Acronym	Description
DUT	Device under test
OTA	Over the Air
RF	Radio Frequency
VNA	Vector Network Analyzer
VSWR	Voltage Standing Wave Ratio

## 2 Summary of test results

Test method	Items	Result	Limit	Judgment
VNA measurement	VSWR		/	/
OTA measurement	Antenna efficiency		/	/
OTA measurement	Antenna gain		/	/

### 3 VNA measurement

#### 3.1 Test topology

The following diagram contain 3 devices: a DUT, a RF Choke, a VNA.

When a testing cable is attached to the pigtail of a fixture, some residual current will flow on the surface of the cable. The RF Choke is used to mitigate the current on the surface of the cable.

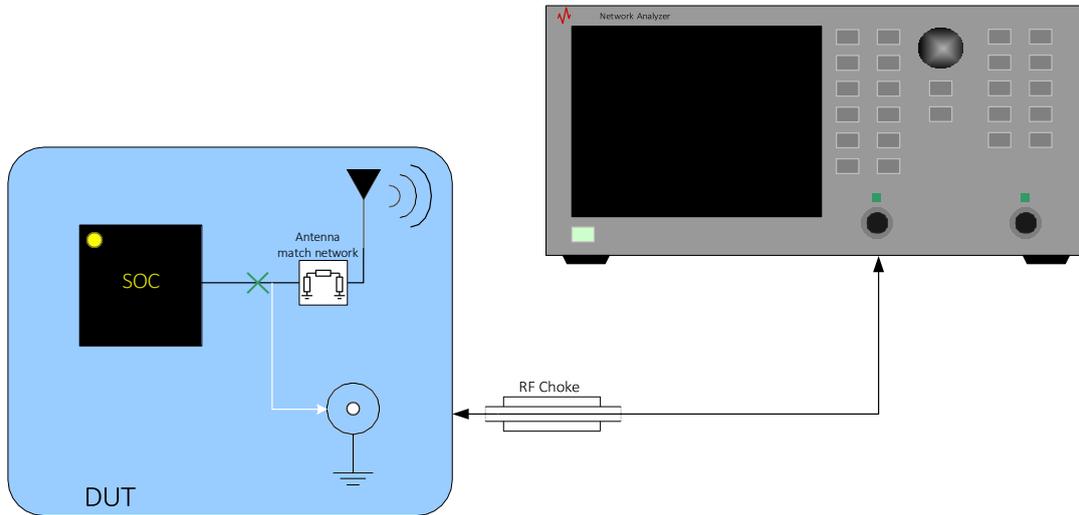


Figure 1 VNA Test topology

Instruments List:

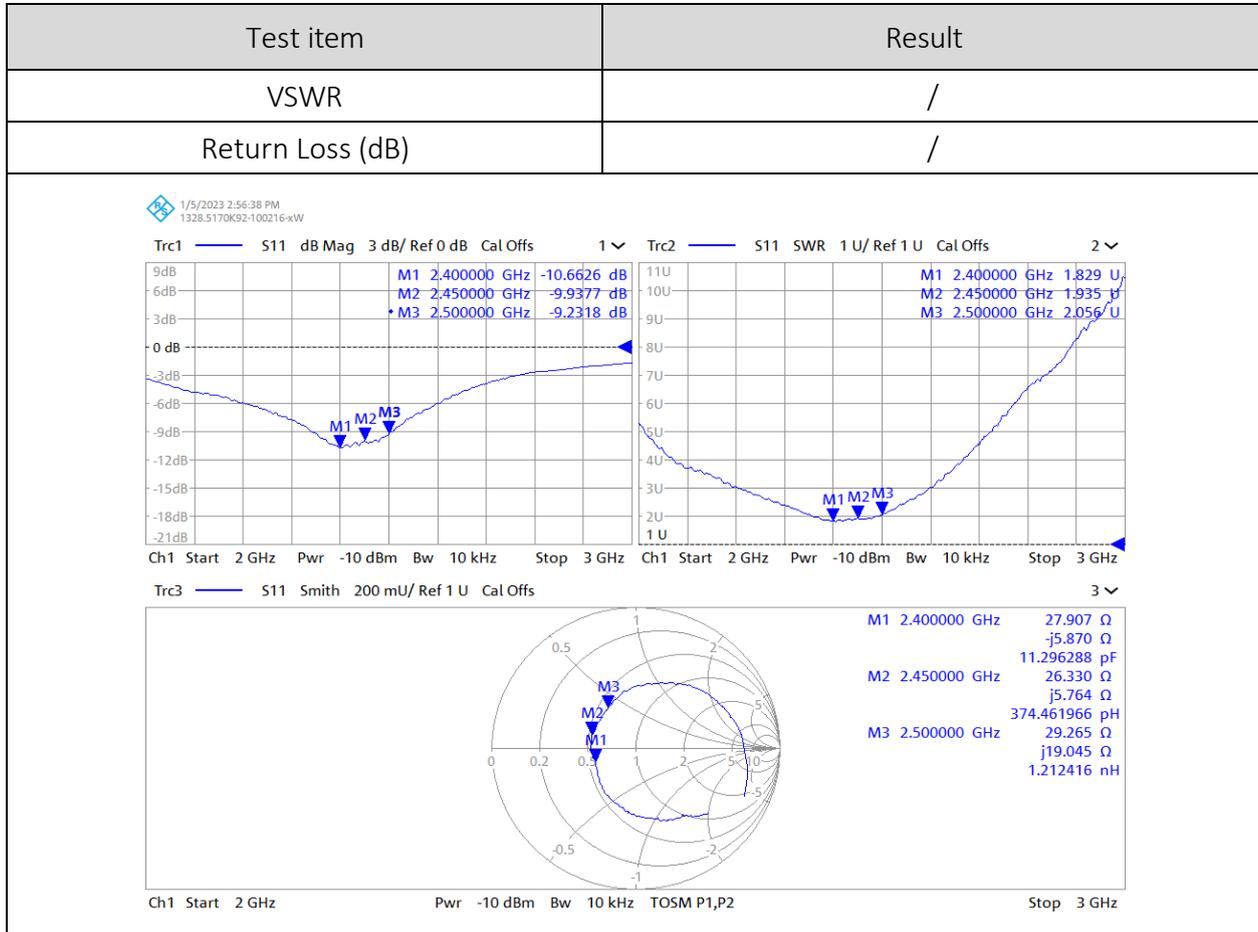
Kind of Equipment	Manufacturer	Type No.
Network Analyzer	R&S	ZND
RF Choke	LEEDARSON RF LAB.	/

#### 3.2 Test setting

Figure 2 Coaxial cable setting

### 3.3 Test Result

Table 1 VSWR and Return Loss



## 4 OTA measurement

### 4.1 Test System

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

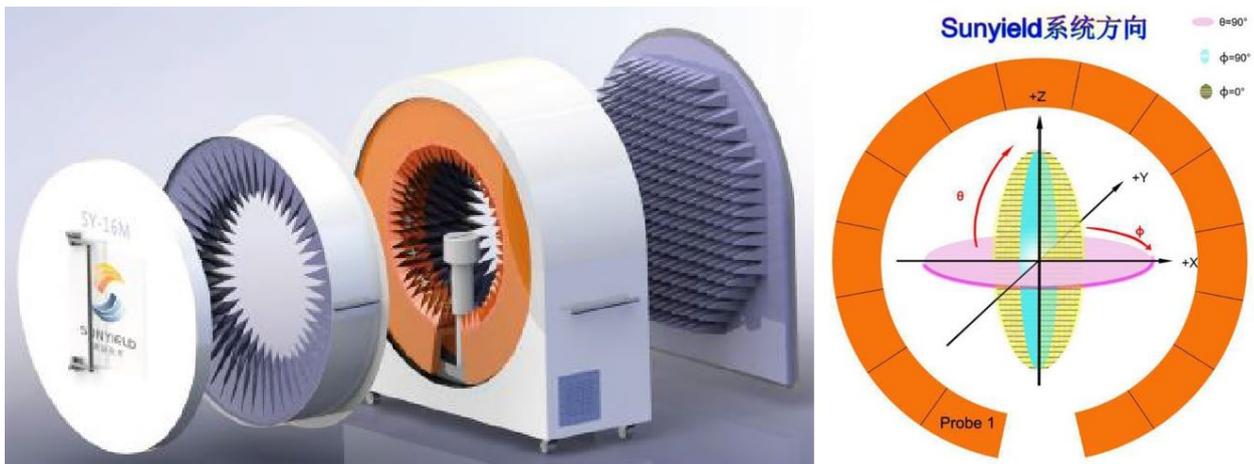


Figure 3 SY-16 OTA system

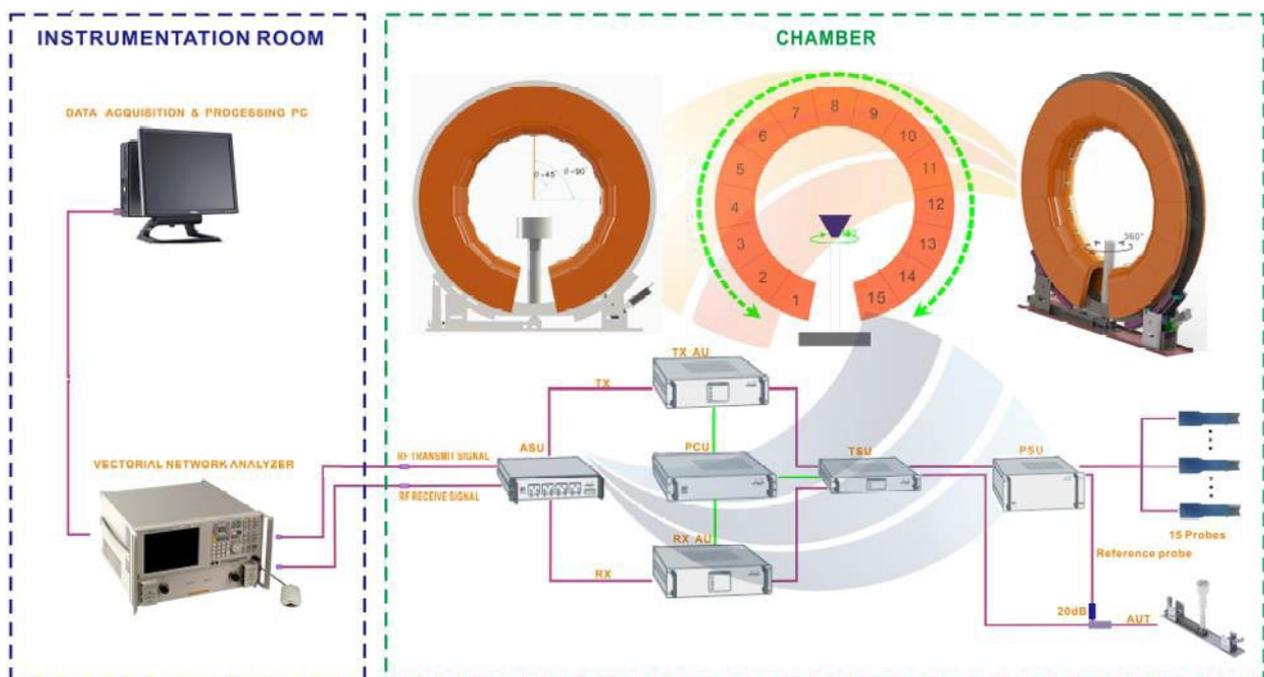


Figure 4 OTA measurement topology

## 4.2 Test Result

### 4.2.1 Efficiency and Gain

Table 2 Antenna Efficiency and Gain

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
2400	2.45	-4.70	33.92
2410	1.90	-5.23	29.99
2420	1.86	-5.24	29.95
2430	2.12	-5.24	29.94
2440	1.67	-5.60	27.56
2450	1.46	-5.93	25.54
2460	1.70	-5.67	27.09
2470	1.65	-5.61	27.45
2480	1.34	-5.93	25.54
2490	1.26	-5.97	25.27
2500	1.43	-5.75	26.63

### 4.2.2 Radiation Pattern

Table 3 Product coordinates

Product Coordinates	

Table 4 3D radiation pattern

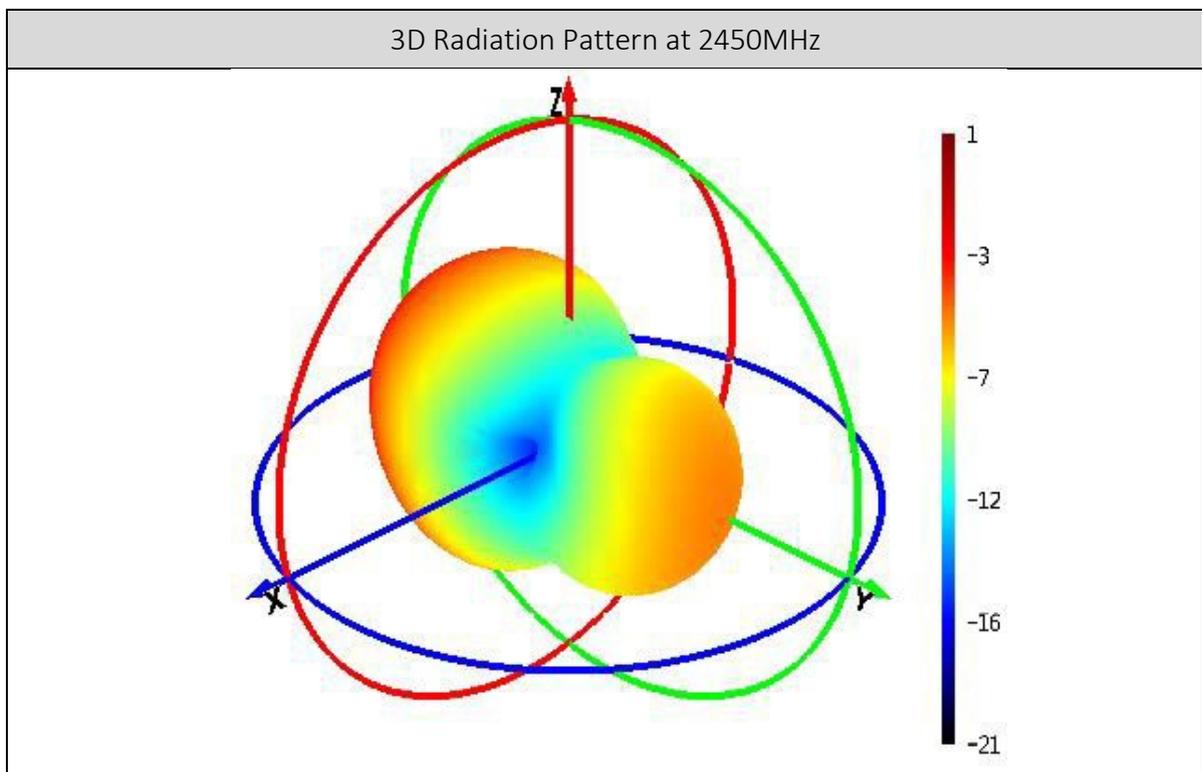


Table 5 Radiation pattern in XY Plane

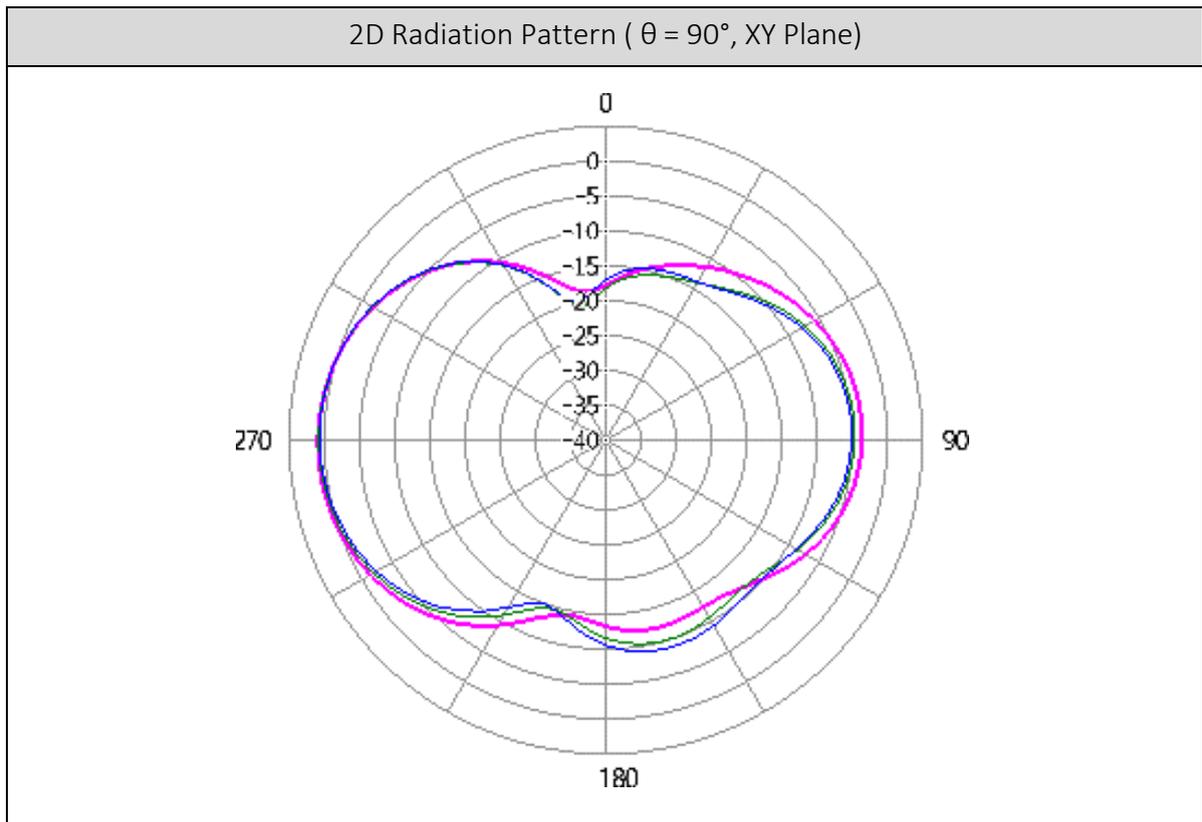


Table 6 Radiation pattern in XZ Plane

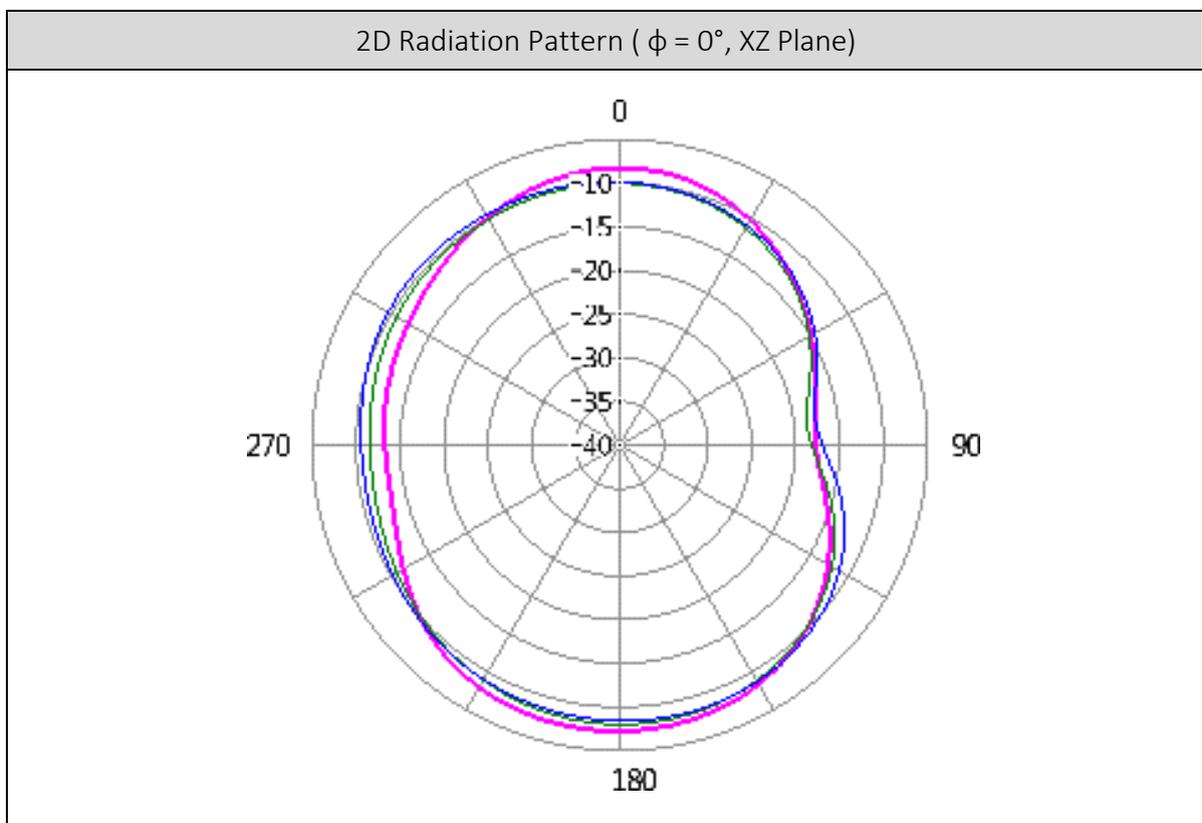


Table 7 Radiation pattern in YZ Plane

