

# M071 Single head security lamp

## Antenna Passive Test Report

Customer	M071
Report Date	2022-11-04
Model name	Motion Sensor
Build stage	<input checked="" type="checkbox"/> HVT <input type="checkbox"/> DVT <input type="checkbox"/> PVT <input type="checkbox"/> MP
Report Version	HVT-1.0
Test Engineer	Ou Min
Protocol	BLE
Antenna Frequency	2400 ~ 2500 MHz
Antenna Type	IFA PCB antenna
PCB Version	D-SF-M71-03-A-V2.0-Y5
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	2022-11-04	Establish Report	Ou Min	Scott Li

## 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	1.87	< 2.5	PASS
OTA measurement	Antenna efficiency	-4.29 dB (Min.)	/	/
OTA measurement	Antenna gain	0.85 dBi (Peak)	/	/

### 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.

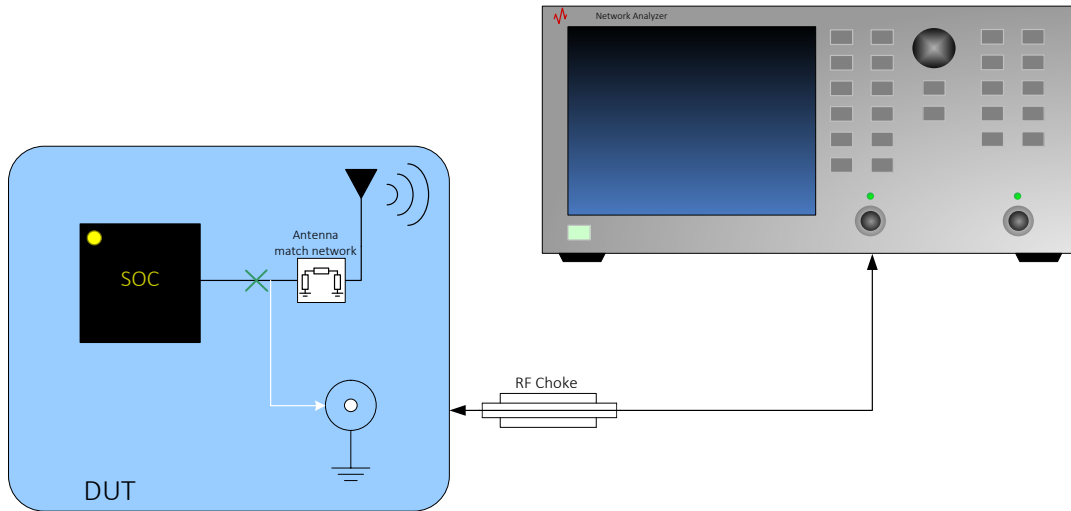


Figure 1 VNA Test topology

Instruments List:

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

#### 3.2 Test setting

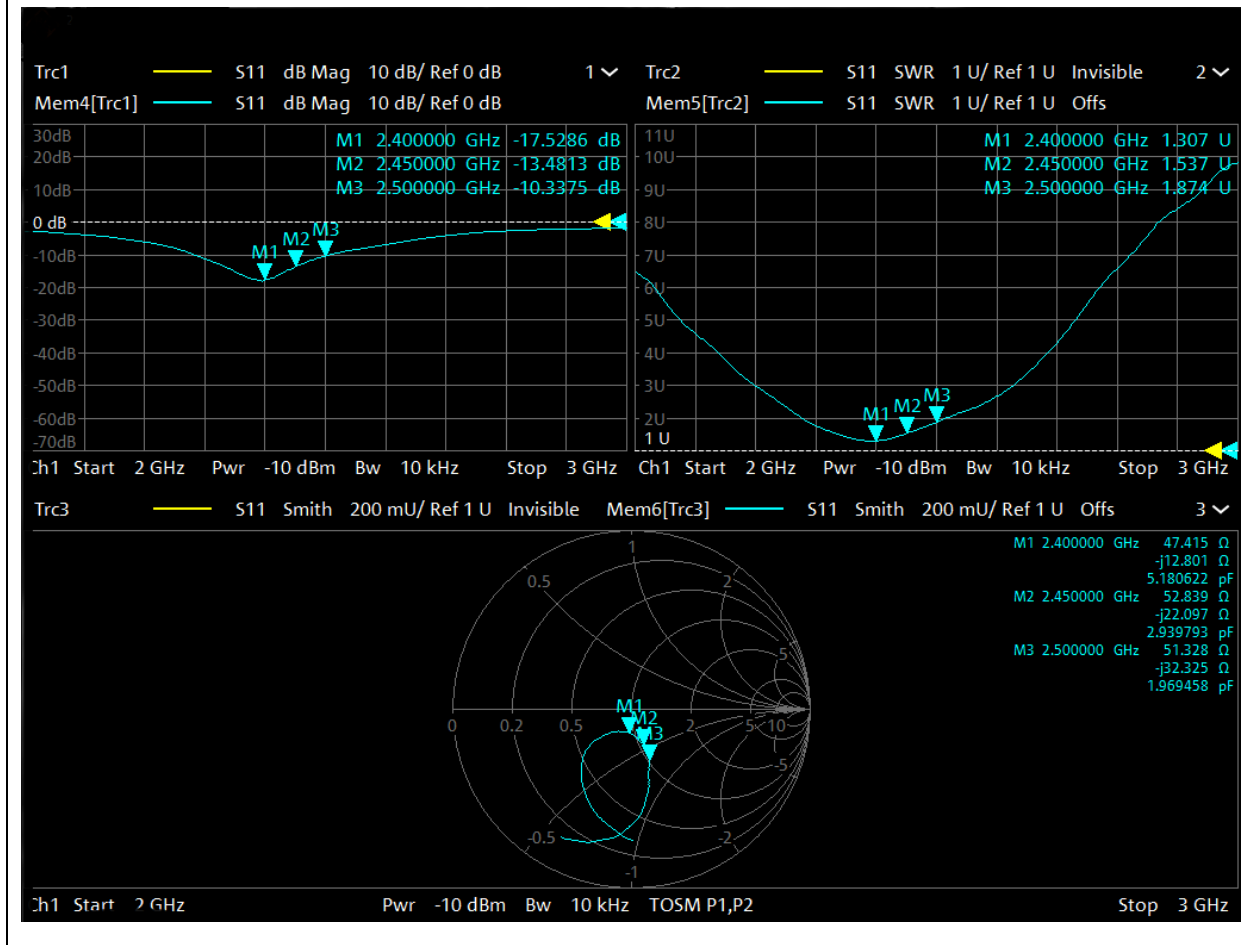


Figure 2 Coaxial cable setting

### 3.3 Test Result

Table 1 VSWR and Return Loss

Test item	Result
VSWR	1.87 (Max.)
Return Loss (dB)	10.34 (Min.)



## 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:

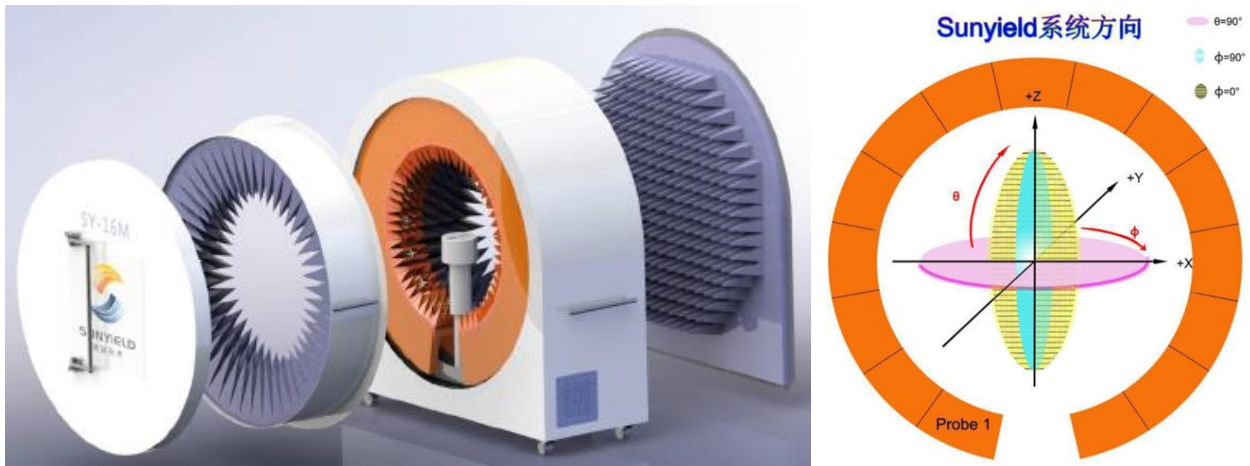


Figure 3 SY-16 OTA system

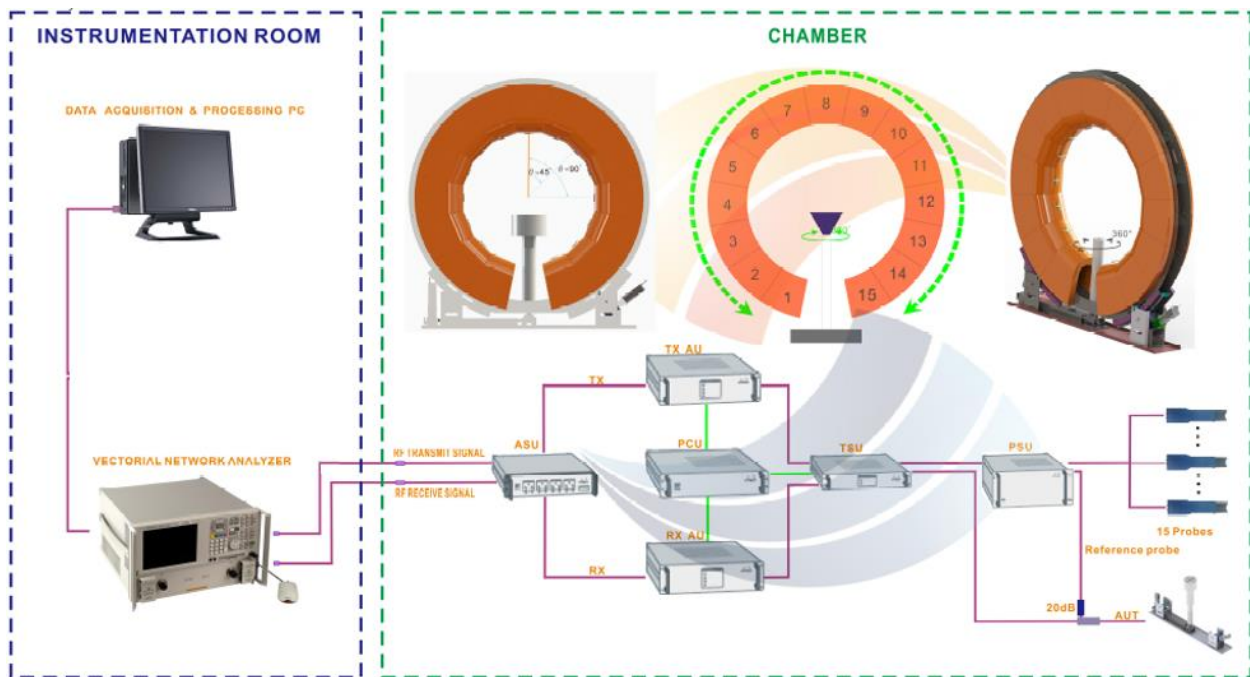


Figure 4 OTA measurement topology

## 4.2 Test Result

### 4.2.1 Efficiency and Gain

Table 2 Antenna Efficiency and Gain

Frequency (MHz)	Gain (dBi)	Efficiency (dB)	Efficiency (%)
2400	0.67	-4.08	39.05
2410	0.74	-3.98	39.97
2420	0.85	-3.81	41.55
2430	0.61	-4.13	38.64
2440	0.47	-4.16	38.38
2450	0.46	-4.08	39.05
2460	0.40	-4.08	39.06
2470	0.23	-4.12	38.74
2480	0.15	-4.18	38.17
2490	0.03	-4.25	37.60
2500	-0.13	-4.29	37.25

### 4.2.2 Radiation Pattern

Table 3 Product coordinates

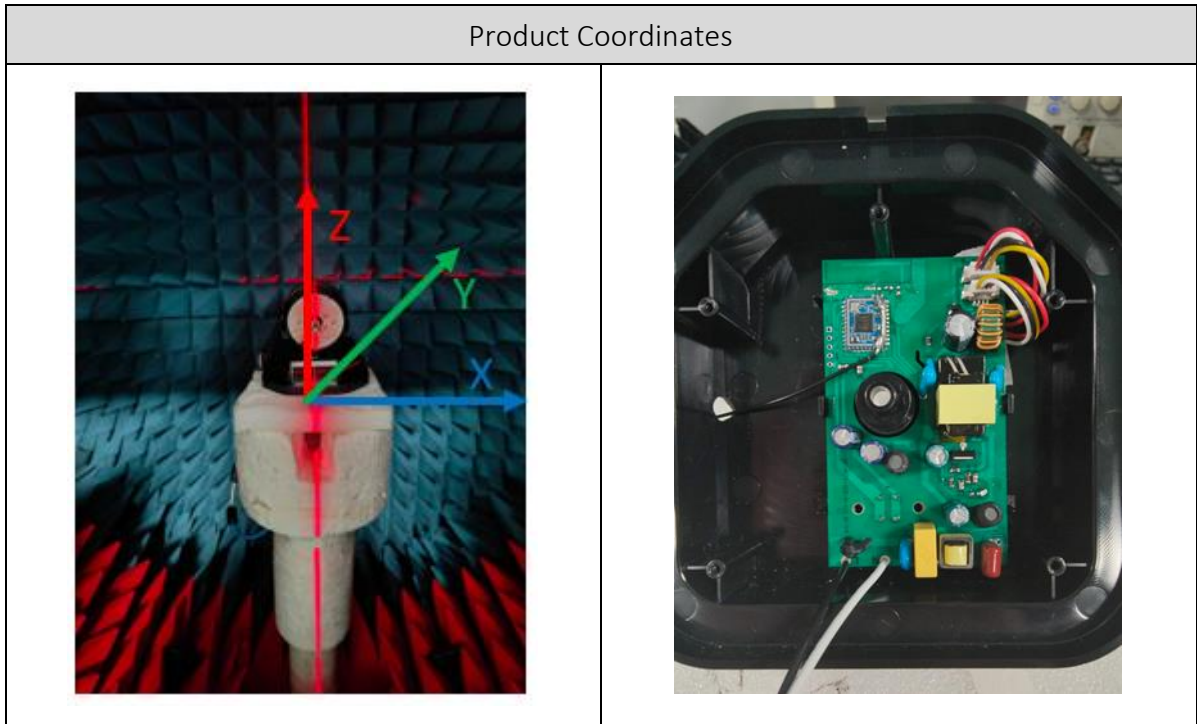


Table 4 3D radiation pattern

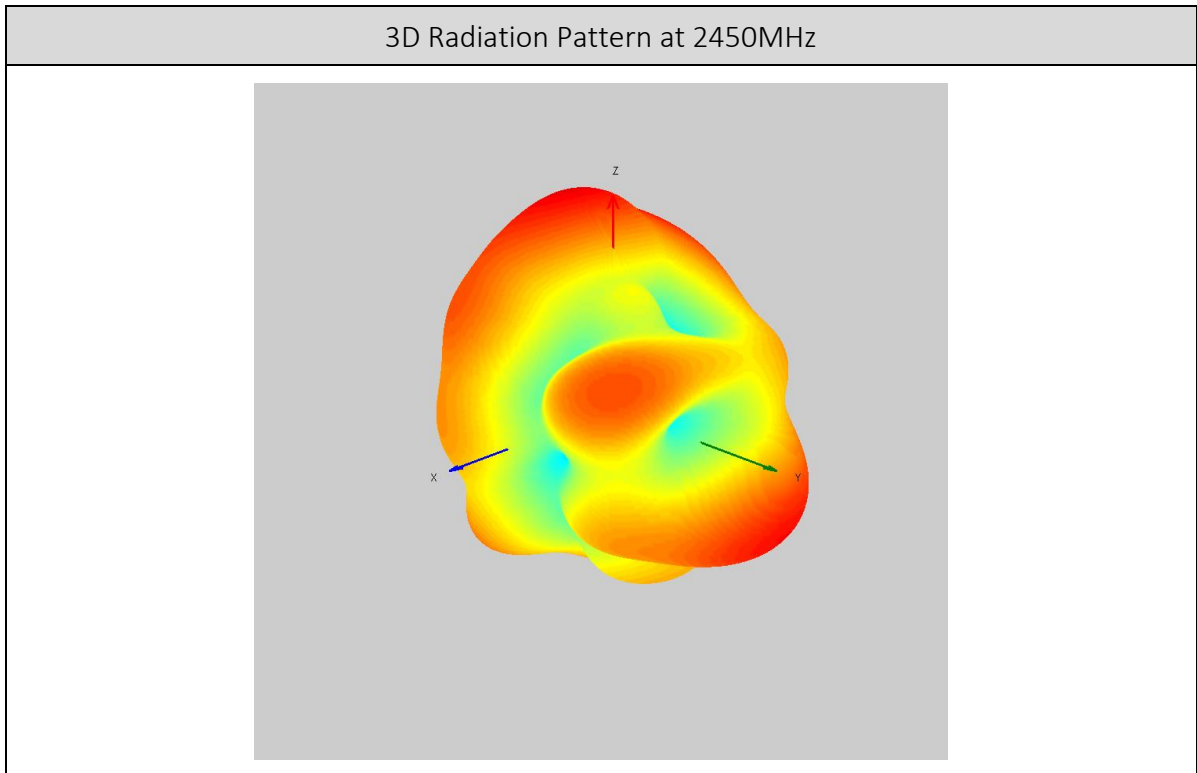




Table 5 Radiation pattern in XY Plane

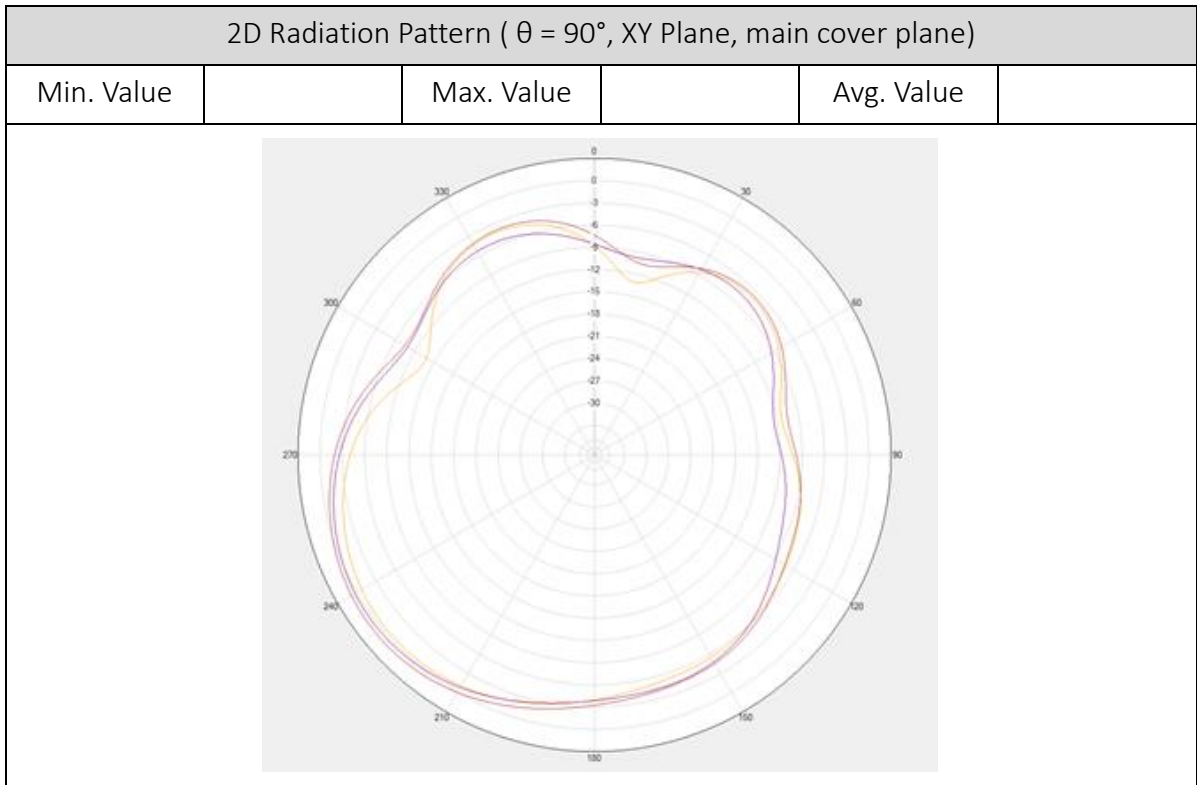


Table 6 Radiation pattern in XZ Plane

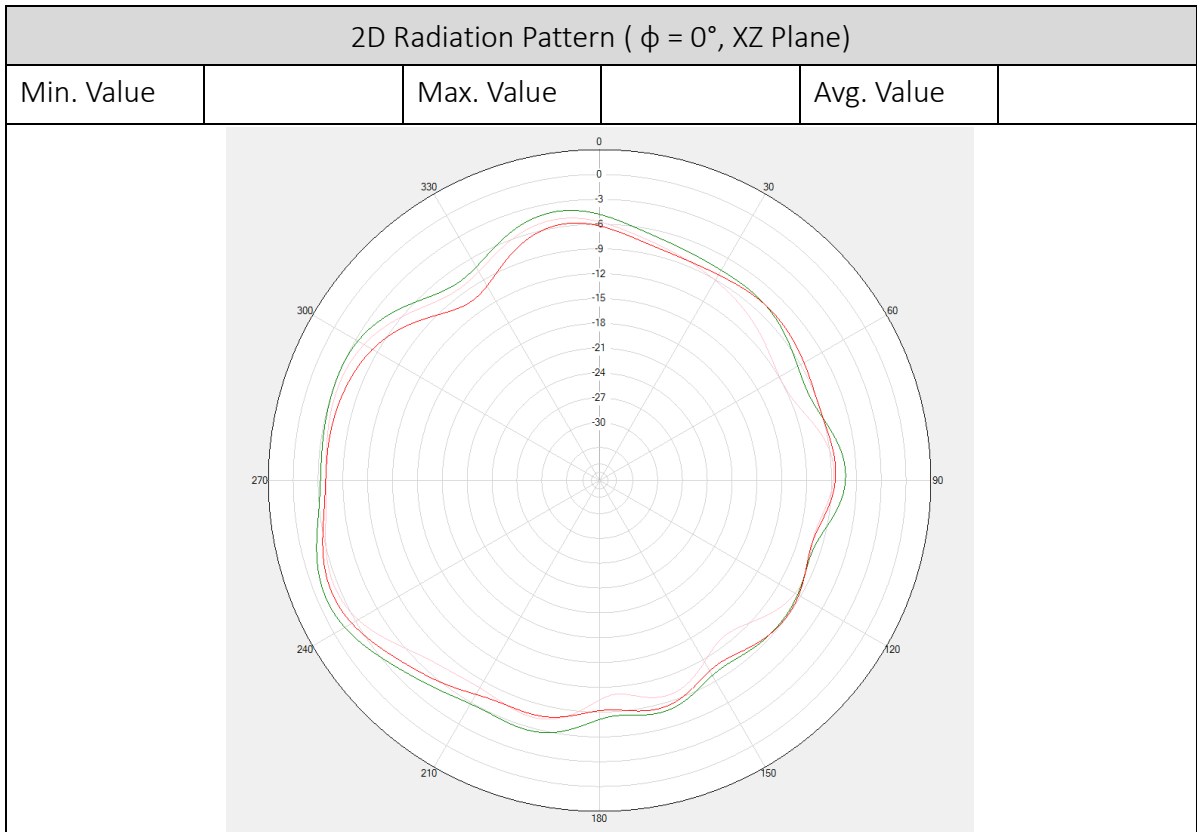


Table 7 Radiation pattern in YZ Plane

