

S13A RF Radiated data

Prepared by	Checked by	Approved by
 SJ KIM	 YS LEE	 TH KIM

2026.01.23.

Table of Contents

1. Frequency Band	3
1-1. Measurement Engineer	3
1-2. VSWR	3
1-3. Efficiency & Gain	4
1-4. 3D Radiated Pattern	5
2. TEST METHOD	6
2-1. Measurement information	6
2-2. Return Loss & VSWR Test	6

1. Frequency Band

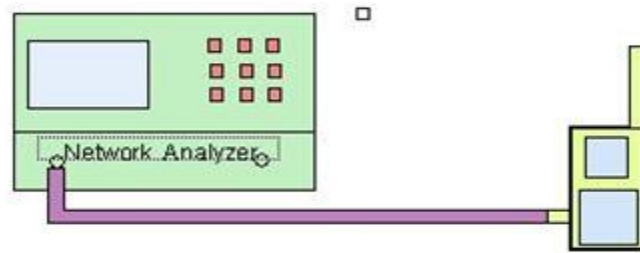
Mode	Frequency Band (MHz)
Zigbee	2,400 ~ 2,500

-

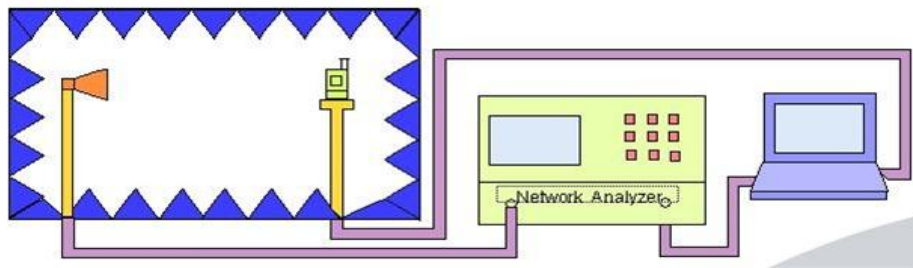
1-1. Measurement Engineer

- Connect the device under test and required test equipment (Network analyzer). Measuring VSWR and frequency. Measurements include the magnitude and phase of both the vertical and horizontal components of the 3-D antenna pattern of actual hardware in an anechoic chamber (Partron). all measurements are made with antennas installed.

- Frequency, VSWR measurement



- Gain measurement



- Co-Polarization, Cross-Polarization Meaning

- Co-Polarization : When Radiated Vertical and Horizontal Polarization in Source Ant.

Co-Polarization is Higher Polarization that is Ave. Gain Value

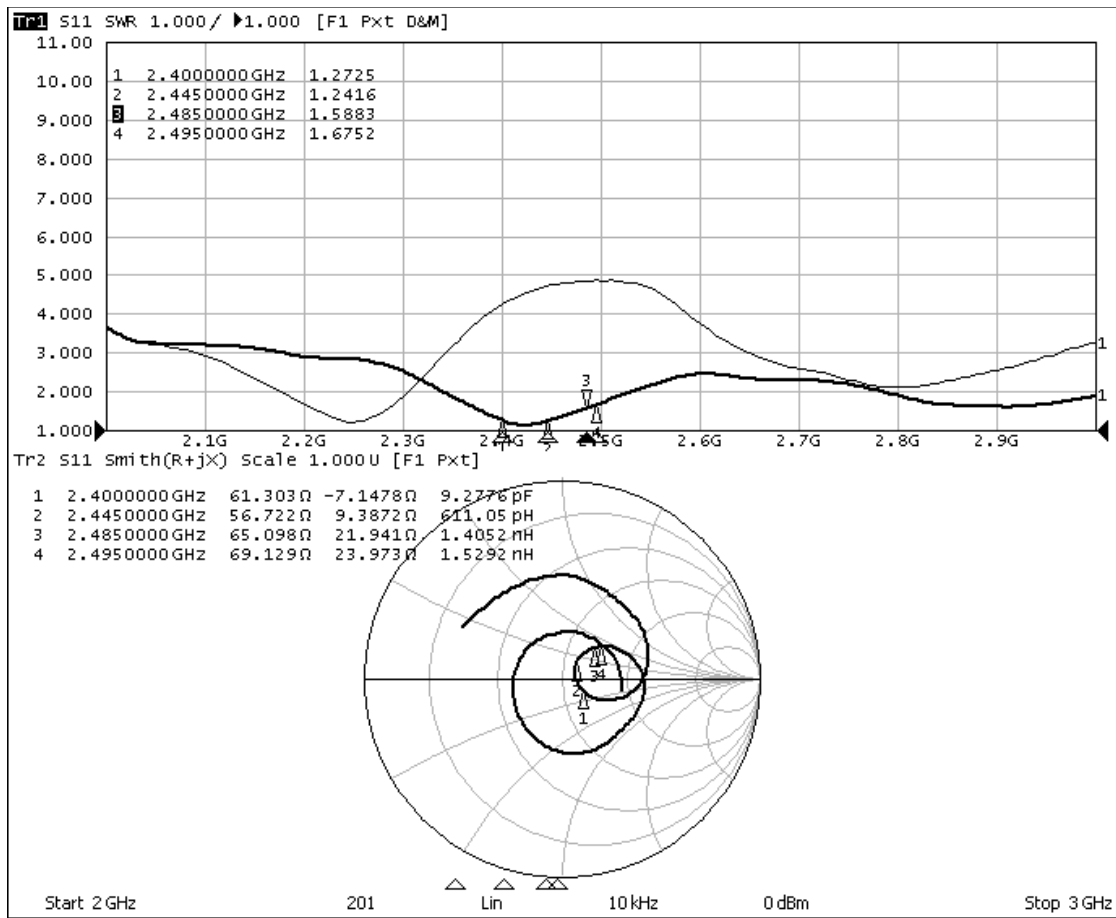
- Cross-Polarization : When Radiated Vertical and Horizontal Polarization in Source Ant.

Co-Polarization is Lower Polarization that is Ave. Gain Value

Antenna gain measurements were performed in a full anechoic chamber. The EUT was placed on a turntable of the chamber. During the test, the EUT was rotated through 360° and the measurement antenna height and polarization were varied to maximize the received emission level. The chamber walls, ceiling, and floor were lined with RF

absorbing material to minimize reflections and simulate free-space conditions.

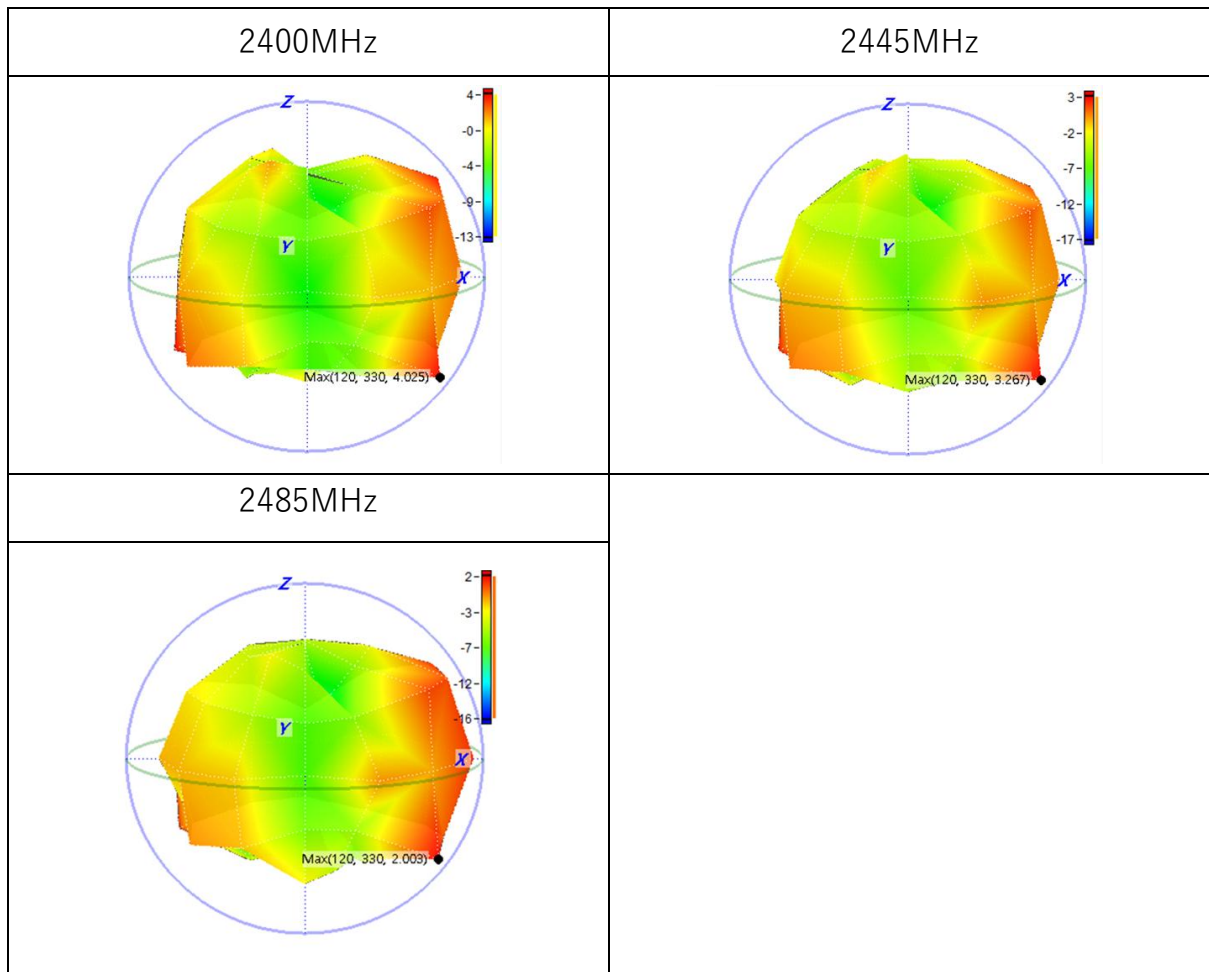
1-2. VSWR



1-3. Efficiency & Gain

Frequency	Peak Value		Minimum Value		Avg. Gain	Efficiency
	Value[dBi]	Degree	Value[dBi]	Degree		
[MHz]					[dBi]	[%]
2400.000	4.024745	120 / 330	-12.740072	180 / 210	-0.079101	98.195111
2415.000	2.345312	120 / 330	-15.645262	180 / 210	-1.955473	63.745970
2430.000	1.879381	120 / 330	-17.392106	180 / 210	-2.742835	53.176096
2445.000	3.267285	120 / 330	-16.570141	180 / 210	-1.406401	72.336908
2460.000	2.120041	120 / 330	-17.070936	180 / 210	-2.298731	58.901569
2465.000	1.161702	120 / 330	-17.970334	180 / 210	-3.458605	45.096156
2480.000	1.593027	120 / 330	-16.788480	180 / 210	-2.671916	54.051579
2485.000	2.002889	120 / 330	-16.283398	180 / 210	-2.162057	60.784700
2490.000	0.550278	120 / 330	-17.547410	180 / 210	-3.317505	46.585361
2500.000	0.558465	120 / 330	-17.153059	180 / 210	-3.317360	46.586920

1-4. 3D Radiated Pattern



2. TEST METHOD

2-1. Measurement information

Description	Manufacturer	Model	Calibration date
Network Analyzer	Anritsu	ME7848A	25.09.20
Horn Antenna	SCHWARZBECK	BBHA 9120 LF	25.07.21

2-2. Return Loss & VSWR Test

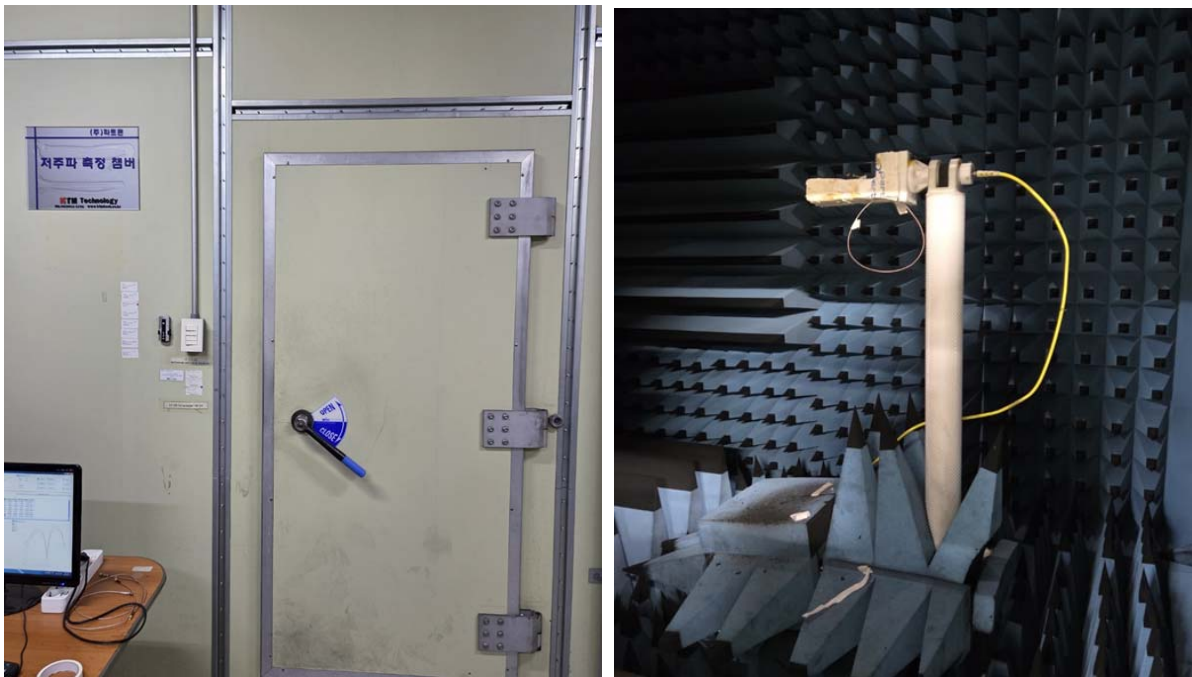
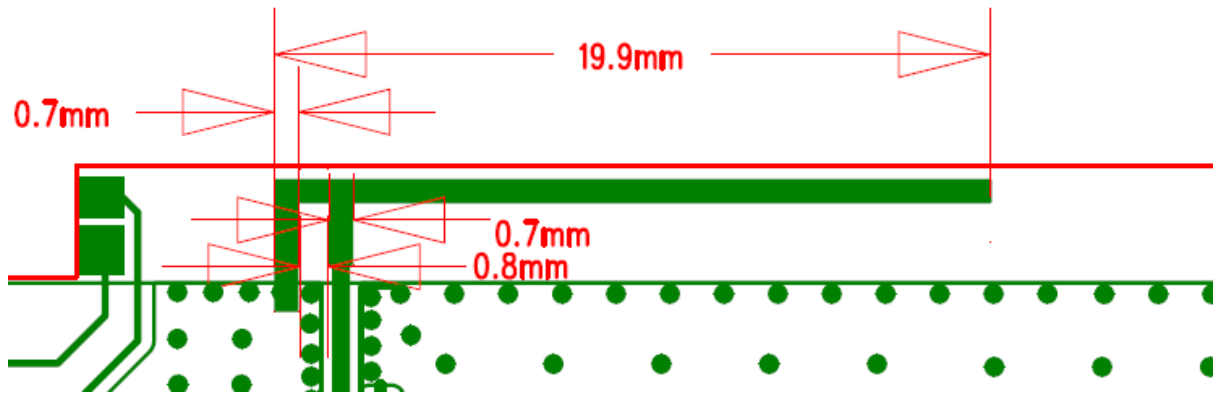


Figure 1: Testing with RF Chamber

Measurement facility: Partron, 3D Chamber

3. Antenna Dimension



Manufacturer: PartronESL Address :829-836,42,Changeop-ro,Sujeong-gu, Seongnam-si,Gyeonggi-do, SouthKorea