

# IE154 RF Radiated data

| Prepared by                                                                                   | Checked by                                                                                    | Approved by                                                                                     |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
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## Table of Contents

|                                           |   |
|-------------------------------------------|---|
| <b>1. Frequency Band</b> .....            | 3 |
| <b>1-1. Measurement Engineer</b> .....    | 3 |
| <b>1-2. VSWR</b> .....                    | 4 |
| <b>1-3. Efficiency &amp; Gain</b> .....   | 4 |
| <b>1-4. 3D Radiated Pattern</b> .....     | 5 |
| <b>2. TEST METHOD</b> .....               | 5 |
| <b>2-1. Measurement information</b> ..... | 5 |
| <b>2-2. 3D Chamber</b> .....              | 6 |
| <b>3. Antenna Dimension</b> .....         | 7 |

## 1. Frequency Band

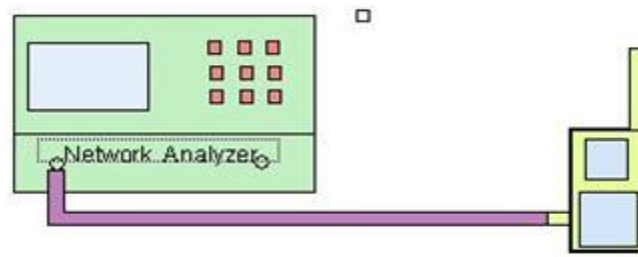
| Mode   | Frequency Band (MHz) |
|--------|----------------------|
| Zigbee | 2,400 ~ 2,500        |

-

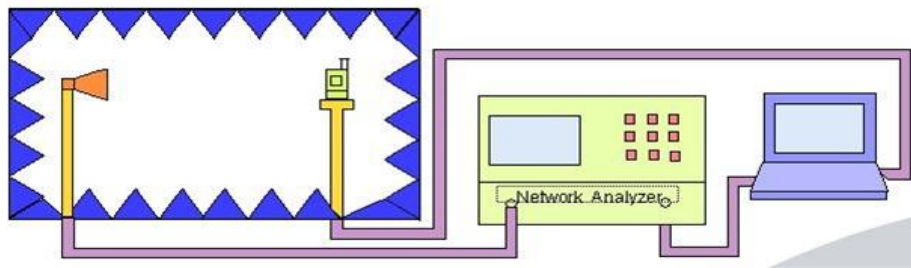
### 1-1. Measurement Engineer

- 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

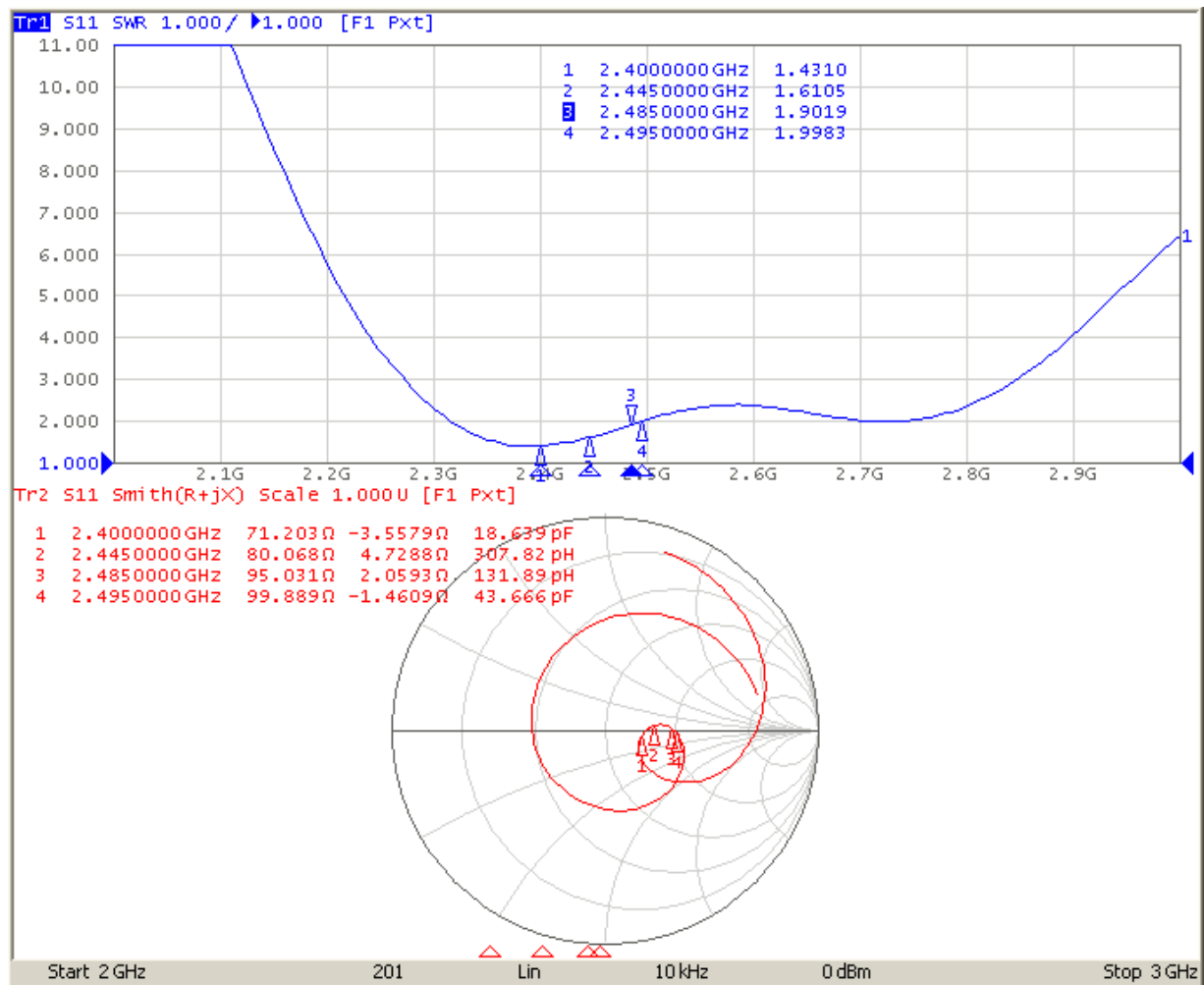
- Co-Polarization : When Radiated Vertical and Horizontal Polarization in Source Ant.

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

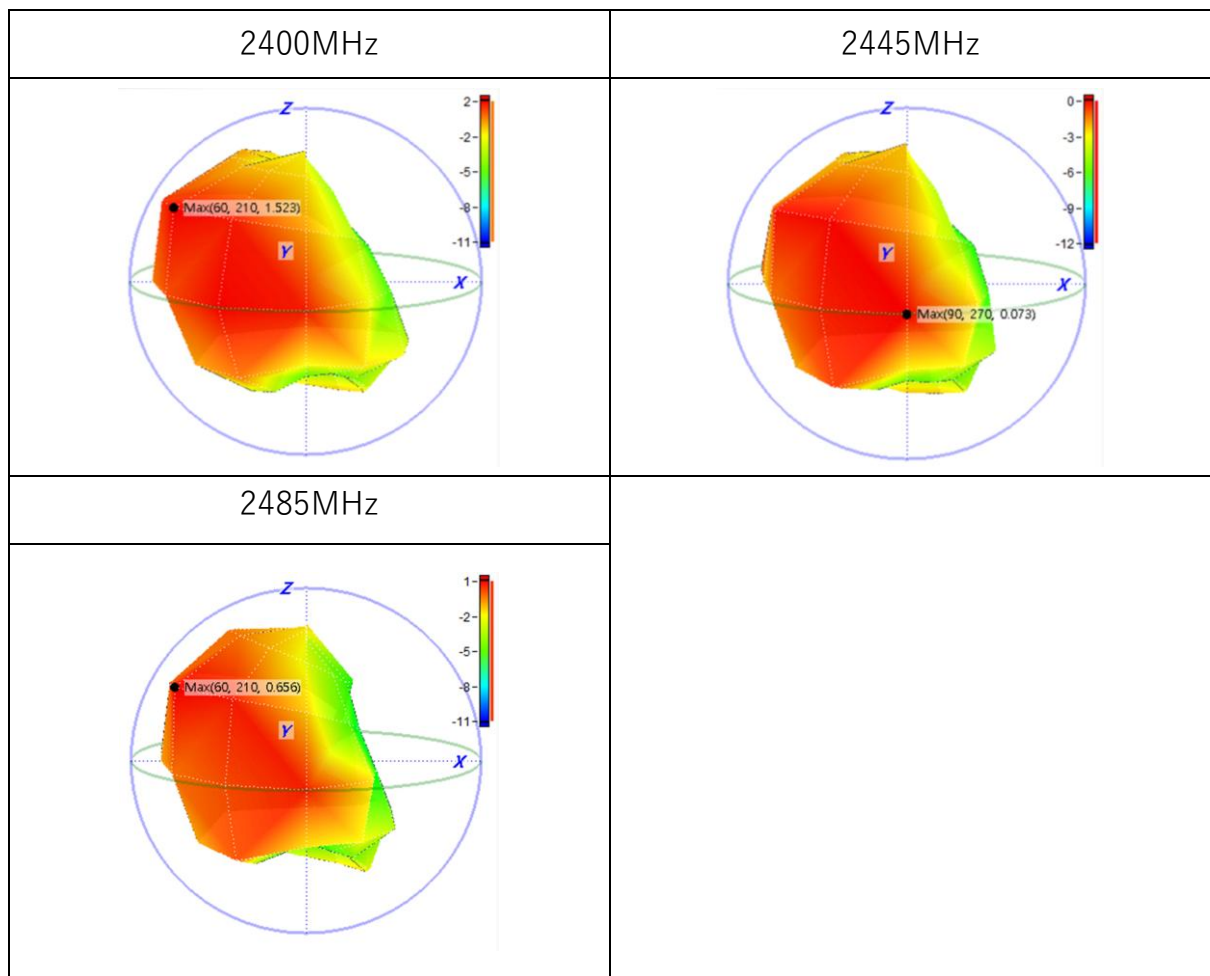
## 1-2. VSWR



## 1-3. Efficiency & Gain

| Frequency | Peak Value |          | Minimum Value |           | Avg. Gain | Efficiency |
|-----------|------------|----------|---------------|-----------|-----------|------------|
| [MHz]     | Value[dBi] | Degree   | Value[dBi]    | Degree    | [dBi]     | [%]        |
| 2400.000  | 1.522516   | 60 / 210 | -11.340048    | 180 / 120 | -1.678213 | 67.948312  |
| 2415.000  | 1.812486   | 60 / 210 | -11.091206    | 180 / 120 | -1.409636 | 72.283041  |
| 2430.000  | 0.230715   | 90 / 270 | -12.261667    | 180 / 120 | -2.868310 | 51.661740  |
| 2445.000  | 0.072596   | 90 / 270 | -12.162298    | 180 / 120 | -3.115501 | 48.803377  |
| 2460.000  | 0.952399   | 60 / 210 | -11.106513    | 180 / 120 | -2.271278 | 59.275089  |
| 2465.000  | 1.129971   | 60 / 240 | -10.738117    | 90 / 0    | -2.024795 | 62.736531  |
| 2480.000  | 0.739757   | 60 / 210 | -11.273578    | 90 / 0    | -2.603915 | 54.904577  |
| 2485.000  | 0.656334   | 60 / 210 | -11.460308    | 180 / 90  | -2.720431 | 53.451134  |
| 2490.000  | 1.522516   | 60 / 210 | -11.340048    | 180 / 120 | -1.678213 | 67.948312  |
| 2500.000  | 1.812486   | 60 / 210 | -11.091206    | 180 / 120 | -1.409636 | 72.283041  |

## 1-4. 3D Radiated Pattern



## 2. TEST METHOD

### 2-1. Measurement information

| Description      | Manufacturer | Model   |
|------------------|--------------|---------|
| Network Analyzer | Anritsu      | ME7848A |

## 2-2. 3D Chamber

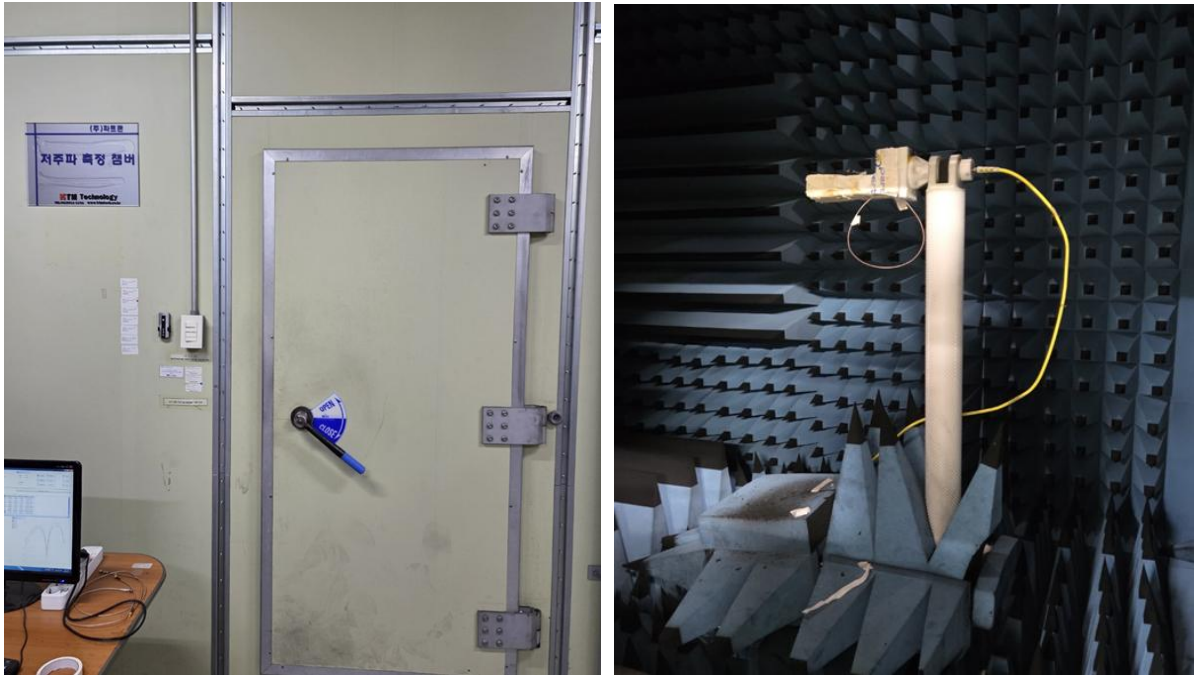
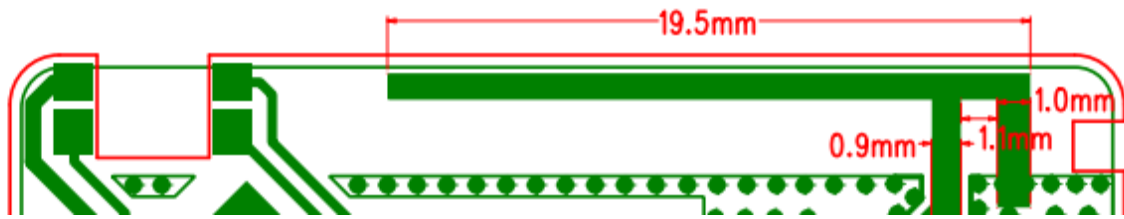


Figure 1: Testing with RF Chamber

Measurement facility: Partron ESL, 3D Chamber

### 3. Antenna Dimension



Manufacturer : Partron ESL

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