

# S970 RF Radiated data

| Prepared by                                                                                   | Checked by                                                                                    | Approved by                                                                                     |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
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## 1. Frequency Band

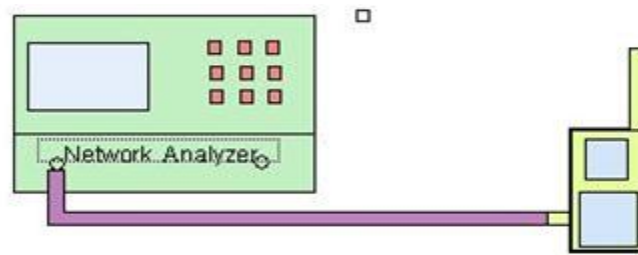
| Mode   | Frequency Band (MHz) |
|--------|----------------------|
| Zigbee | 2,400 ~ 2,500        |

-

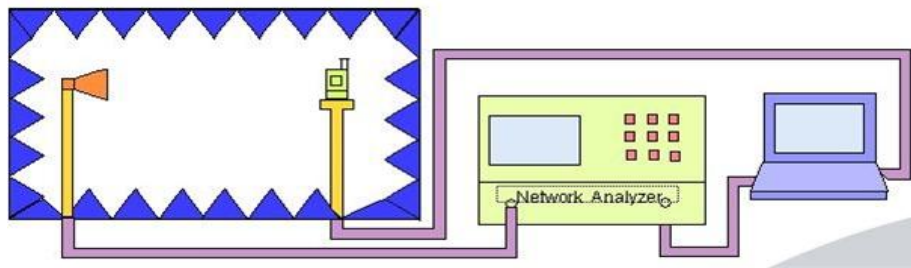
### 1-1. Measurement Engineer

- 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

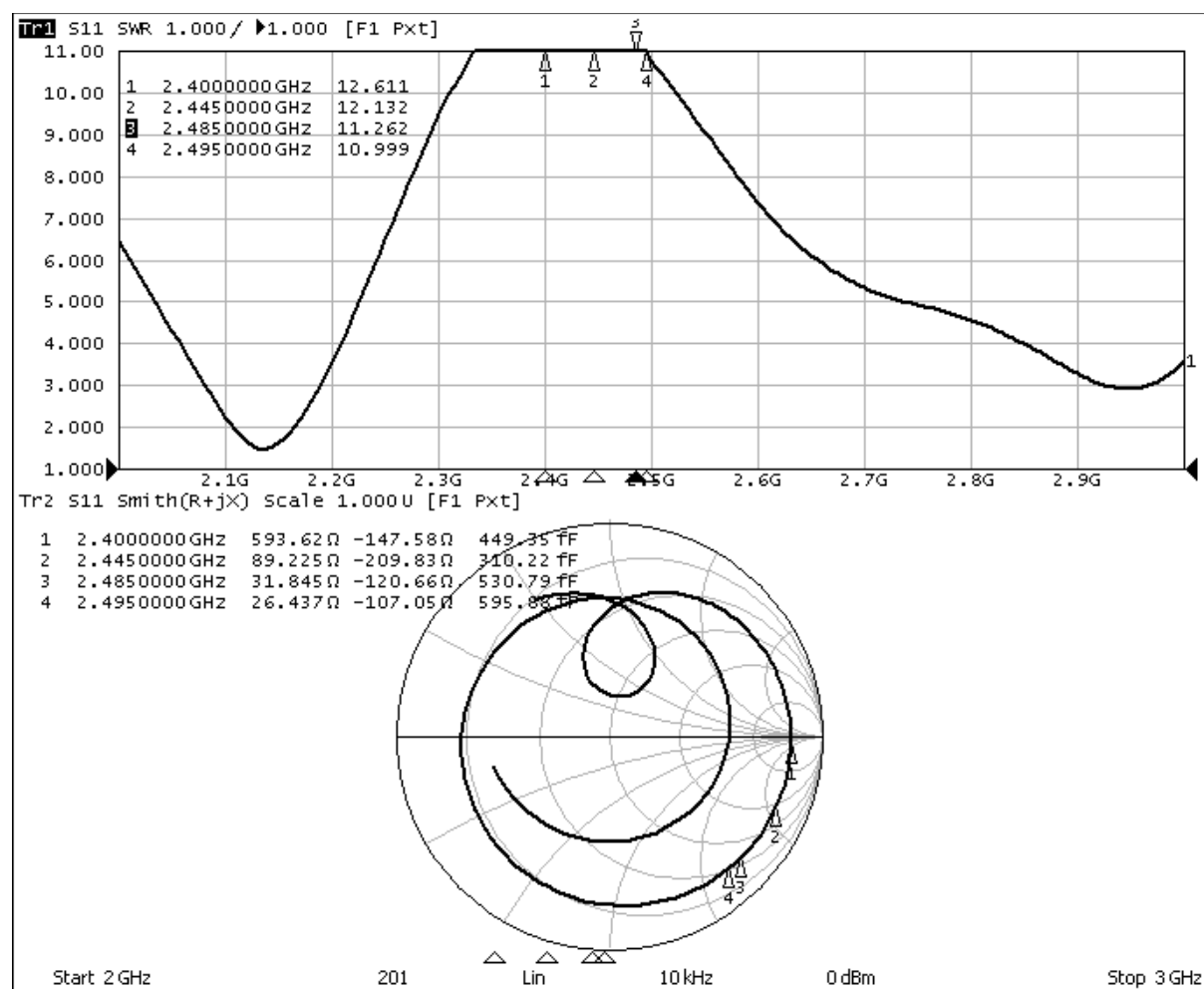
- Co-Polarization : When Radiated Vertical and Horizontal Polarization in Source Ant.

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

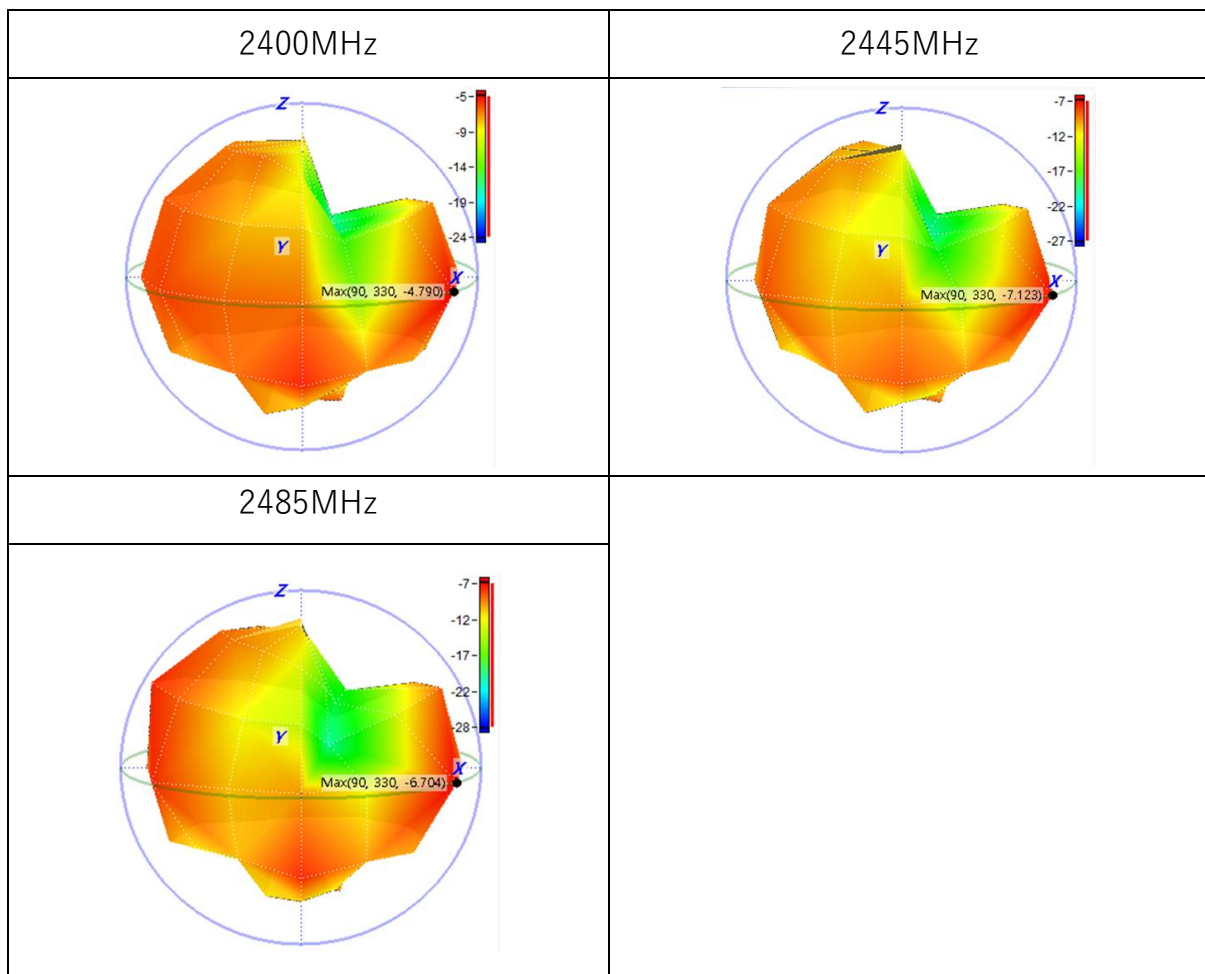
## 1-2. VSWR



## 1-3. Efficiency & Gain

| Frequency | Peak Value |          | Minimum Value |           | Avg. Gain  | Efficiency |
|-----------|------------|----------|---------------|-----------|------------|------------|
| [MHz]     | Value[dBi] | Degree   | Value[dBi]    | Degree    | [dBi]      | [%]        |
| 2400.000  | -4.789965  | 90 / 330 | -23.621303    | 180 / 210 | -8.174342  | 15.225296  |
| 2415.000  | -5.924867  | 90 / 330 | -25.650480    | 180 / 210 | -9.642902  | 10.856999  |
| 2430.000  | -8.618357  | 90 / 330 | -29.622794    | 180 / 210 | -12.650141 | 5.432327   |
| 2445.000  | -7.123355  | 90 / 330 | -27.479138    | 180 / 210 | -11.343843 | 7.338642   |
| 2460.000  | -5.247759  | 90 / 330 | -25.325139    | 180 / 210 | -9.419052  | 11.431278  |
| 2465.000  | -5.087866  | 90 / 330 | -25.237364    | 180 / 210 | -9.319844  | 11.695413  |
| 2480.000  | -7.157817  | 90 / 330 | -28.010650    | 180 / 240 | -11.225056 | 7.542136   |
| 2485.000  | -6.703681  | 90 / 330 | -27.702840    | 180 / 240 | -10.702750 | 8.505993   |
| 2490.000  | -6.813377  | 90 / 330 | -28.404809    | 180 / 240 | -10.652804 | 8.604381   |
| 2500.000  | -6.163231  | 90 / 330 | -27.151678    | 180 / 240 | -9.969768  | 10.069854  |

## 1-4. 3D Radiated Pattern



## 2. TEST METHOD

### 2-1. Measurement information

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

## 2-2. 3D Chamber

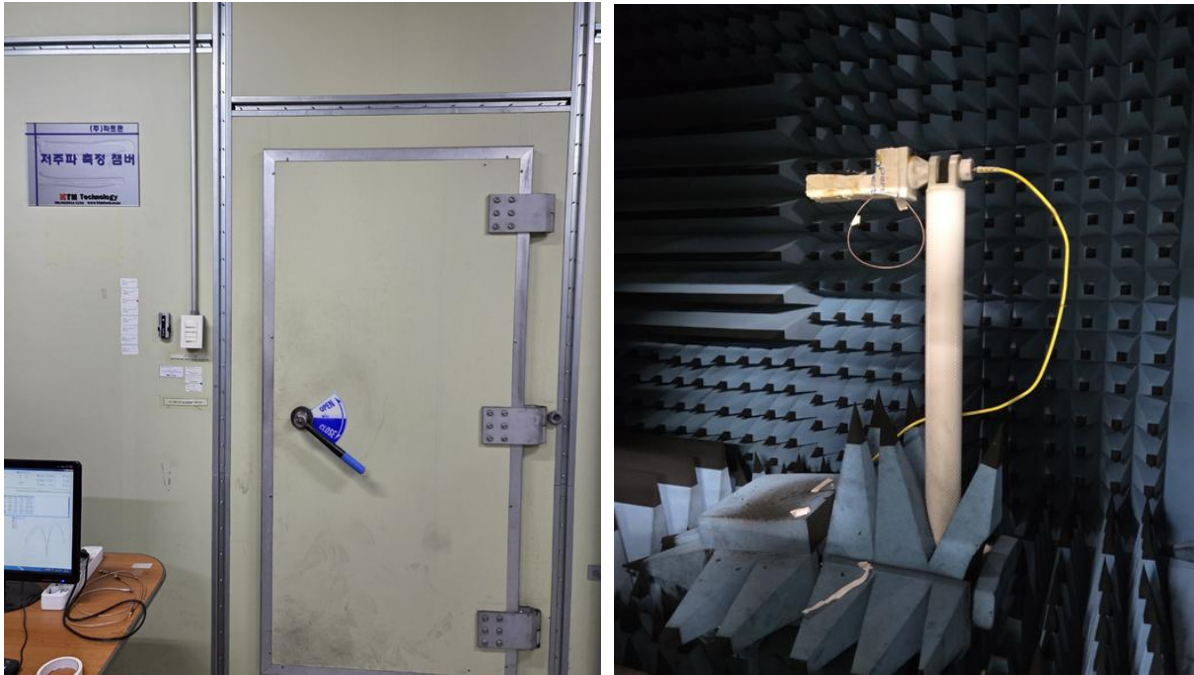
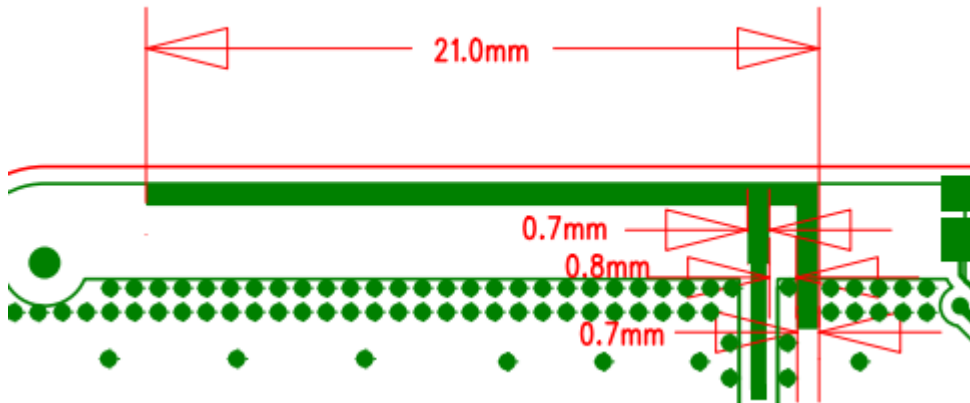


Figure 1: Testing with RF Chamber

Measurement facility: Partron ESL, 3D Chamber

### 3. Antenna Dimension



Manufacturer: Partron ESL