

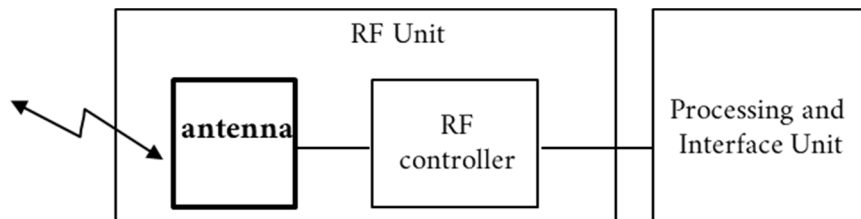
Antenna Under Test (AUT) Report for SWR-A001

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1. Overview

This document is reporting the result of measuring characteristics of the antenna of SWR-A001.



Figurer 1. Block diagram of the radar

2. Specification of Antenna

Table 1 shows antenna specifications.

Table 1. Antenna specifications

| No | ITEM | DESCRIPTION |
|----|-----------------|----------------------|
| 1 | Type | Patch antenna on PCB |
| 2 | Frequency range | 61 to 61.5GHz |
| 3 | Polarization | Vertical |
| 4 | Aperture area | 2.0 x 10.9 mm |

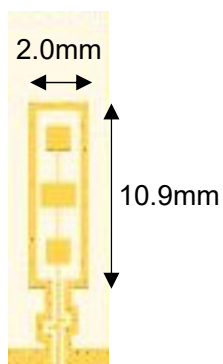


Figure 2. Antenna appearance

3. Measurement of the antenna

The measurement was operated as follows:

(1) Test date

November 15, 2022

(2) Location

Sumitomo Electric Industries, Ltd. 1-1-3, Konohana-ku, Osaka, 554-0024, Japan

(3) Test personnel

Yusuke Yahata, Junpei Nagareda, Kiyonobu Harada

(4) Measuring equipment

Table2. Measuring equipment

| No | Description | Manufacturer | Model | Serial No. |
|----|---------------------------|--------------|-------------|--------------------------|
| 1 | Vector Network Analyzer | Keysight | N5225B | MY58422090 |
| 2 | Millimeter-wave Converter | Keysight | N5262AW12 | US52250014 US55250015 |
| 3 | Horn Antenna | MI-WAVE | 261V-25/385 | 501YRD |
| 4 | Horn Antenna | FMI | 26240-25 | 27 |



Figure 3. Vector Network Analyzer



Figure 4. Millimeter-wave Converter with Power Supplies

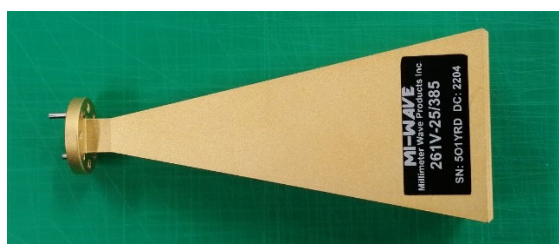


Figure 5. Horn Antenna (Model: 261V-25/385)



Figure 6. Horn Antenna (Model: 26240-25)

(5) Test setup

Antenna gain is measured by comparison with a standard gain antenna.

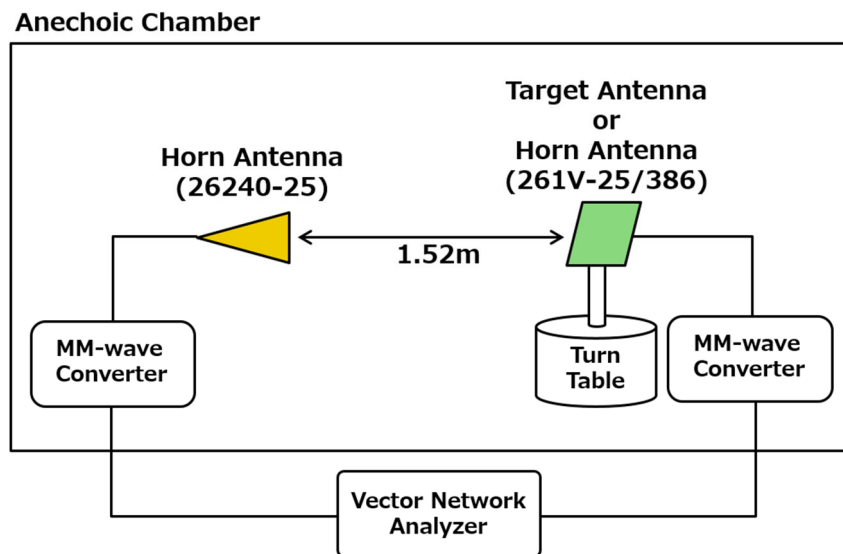


Figure 7. Test setup

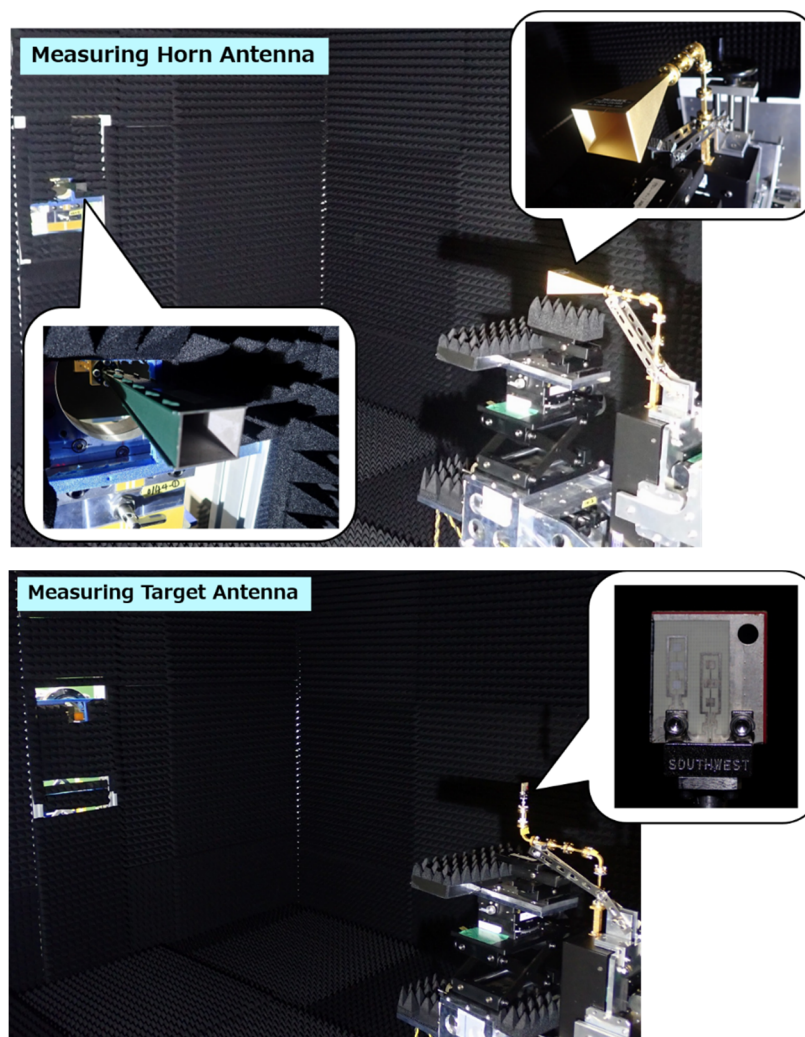


Figure 8. Test Scene

4. Results of Measurement

The characteristics measured with the test in the previous section are as follows:

(1) Summary of the characteristics

Table 3. Summary of the measurement results

| No | ITEM | FREQUENCY | | | | |
|----|-----------------------|-----------|-----------|-----------|-----------|-----------|
| | | 61.02 GHz | 61.13 GHz | 61.25 GHz | 61.36 GHz | 61.48 GHz |
| 1 | Maximum antenna gain | 8.01 dBi | 8.11 dBi | 8.21 dBi | 8.24 dBi | 8.24 dBi |
| 2 | Horizontal beam width | 64.15° | 64.80° | 63.77° | 64.44° | 65.45° |
| 3 | Vertical beam width | 25.33° | 25.33° | 25.68° | 24.99° | 24.64° |

(2) Directivity of the antenna

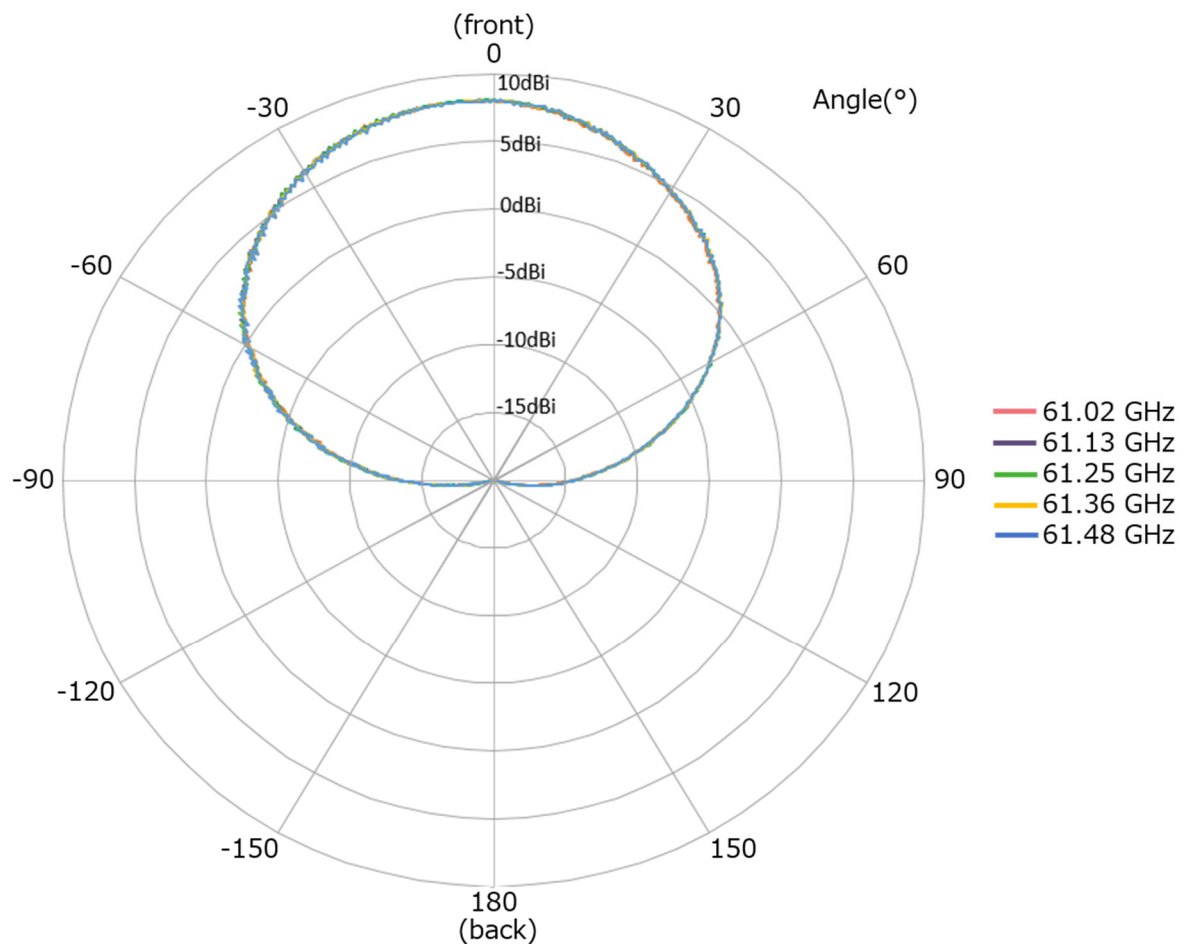


Figure 9. Horizontal pattern of antenna

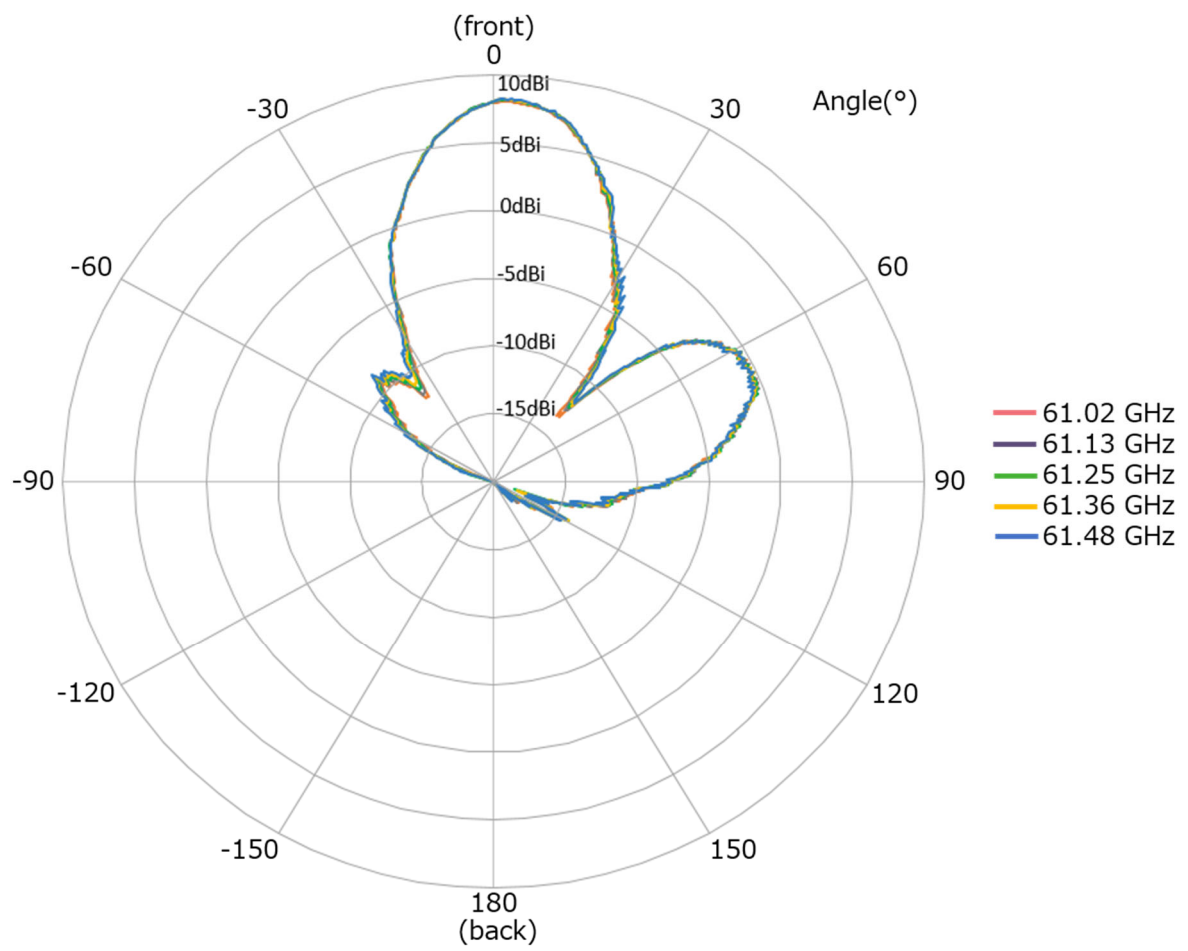


Figure 10. Vertical pattern of antenna