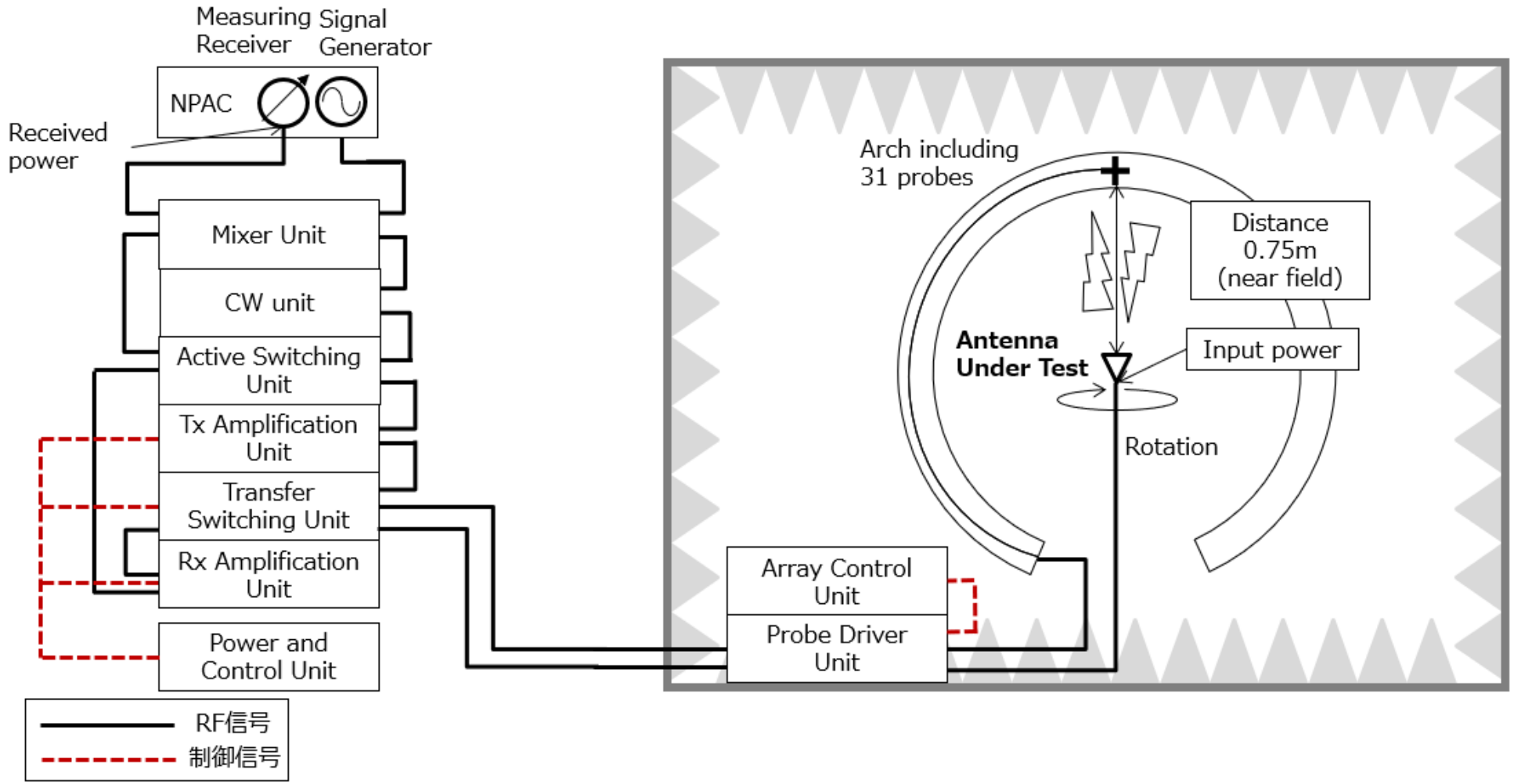
# 1.Measurement Procedure

- The antenna gain is measured in a fully anechoic chamber



# 2. Test Equipment and Measurement Software

| Used | Equipment Description | Model No. | Serial No. | Manufacturer | Cal. Interval | Last Cal. | Remark |
|---|---|---|---|---|---|---|---|
| Y | Absorber Chamber | B83117-A1421-T161 | 21061 | Albatross Projects | N/A | N/A | |
| Y | Multi-Probe Measurement System | SG32 | 1102611-0001 | MVG | 12 months | 2024.08.05 | |
| N | Dual-Ridge Horn Antenna (0.6-6.0 GHz) | SH600 | 30 | MVG | N/A | N/A | Reference Antenna |
| N | Sleeve-Dipole Antenna (0.69-0.8 GHz) | SD740 | 32 | MVG | N/A | N/A | Reference Antenna |
| N | Sleeve-Dipole Antenna (0.865-0.93 GHz) | SD900 | 153 | MVG | N/A | N/A | Reference Antenna |
| N | Radio Communication Tester | MT8821A | 6261711661 | ANRITSU | 12 months | 2022.06.20 | For OTA |
| Y | Signal Generator and Receiver | NPAC | 1102249-2495 | MVG | N/A | N/A | For Passive |
| Y | Mixer Unit | MU | 1102545-2491 | MVG | N/A | N/A | |
| Y | CW Unit | CWU | 1102188-2573 | MVG | N/A | N/A | |
| Y | Active Switching Unit | ASU | 1101217-2569 | MVG | 12 months | 2024.08.05 | |
| Y | Tx Amplification Unit | TxAU | 1102527-2493 | MVG | N/A | N/A | |
| Y | Rx Amplification Unit | RxAU | 1102537-2492 | MVG | N/A | N/A | |
| Y | Transfer Switching Unit | TSU | 1102181-2494 | MVG | N/A | N/A | |
| Y | Probe Driver Unit | PDU | 1102186-2487 | MVG | N/A | N/A | |
| Y | Power and Control Unit | PACU | 1102184-2529 | MVG | N/A | N/A | |
| Y | Array Control Unit | ACU | 1102345-2489 | MVG | N/A | N/A | |

- The calibration is valid until the end of the expiration month.

| Used | Software Description | Model No. | Version | Manufacturer | Remark |
|---|---|---|---|---|---|
| Y | Automated Antenna and OTA Measurement Software Suite | MVG WaveStudio | 24.2.6 | MVG | |
| Y | Near-Field to Far-Field Transformation Software | MV-Sphere | 3.4.4 | MVG | |

# 3. Antenna Specification

| | Type | BAND | No. | Country | Frequency | Antenna Gain | | Antenna Gain + Cable + ATT (Measured value) | Antenna Pattern Loss |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Peak Gain | Measured Frequency | | |
| Chain 0 | mono | 5GHz | 1 | FCC/ISED/ EU/JPN | 5180~5825 | **+0.96 dBi** | 5200MHz | +2.58 dBi | 1.62 dB |
| | | 2.4GHz | 2 | FCC/ISED/ EU/JPN | 2402~2480 | **+0.82 dBi** | 2460MHz | +1.57 dBi | 0.75 dB |

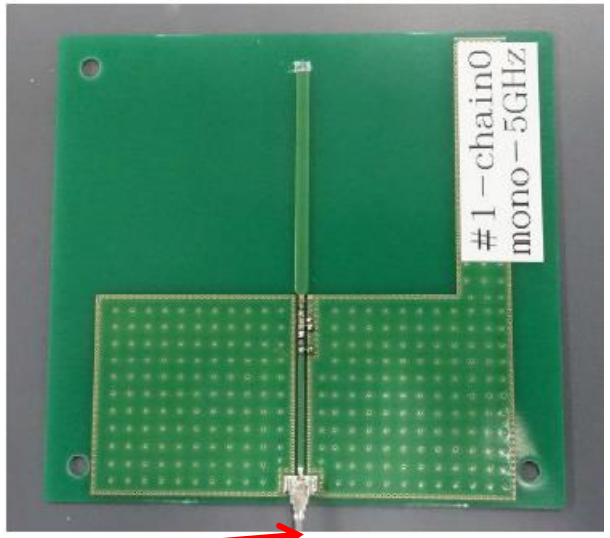
*Antenna Gain(Peak) = (Antenna Gain + Cable + ATT (Measured value)) – Antenna Pattern Loss

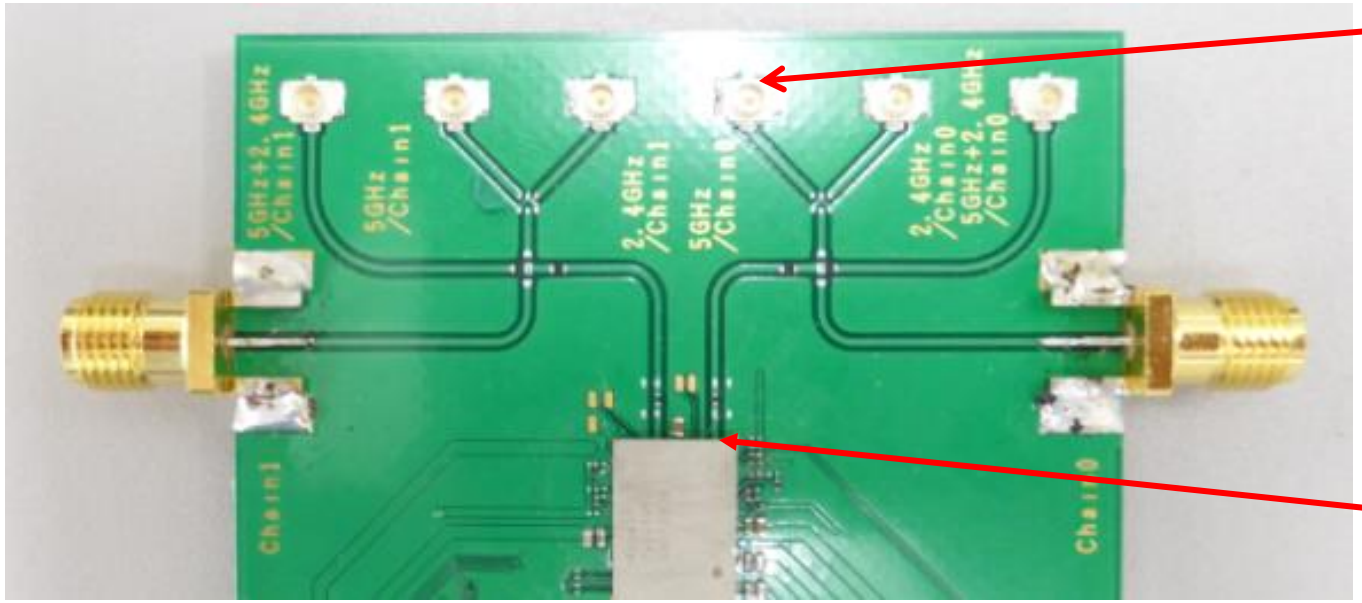
*Antenna pattern loss is the value in the Installation Manual Antenna section[From the RF OUT of the module Line loss information to each Port of board].

# 3. Antenna Specification

## Antenna1

Antenna Item Name : Monopole Antenna
Antenna Model Name : chain0_mono_5GHz
Antenna Type : Monopole Antenna
Antenna Peak Gain : +0.96dBi @ 5180-5825MHz（FCC/ISED/EU/JPN）




Connecting with coaxial cable(length 200mm)

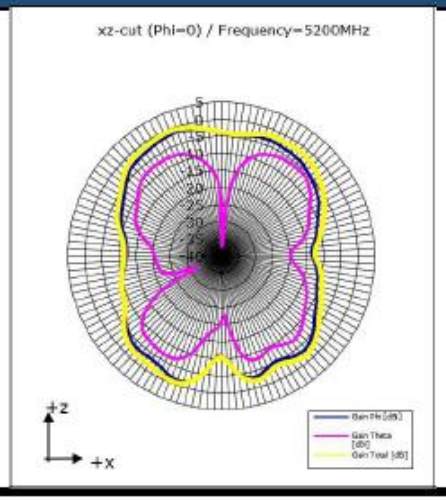
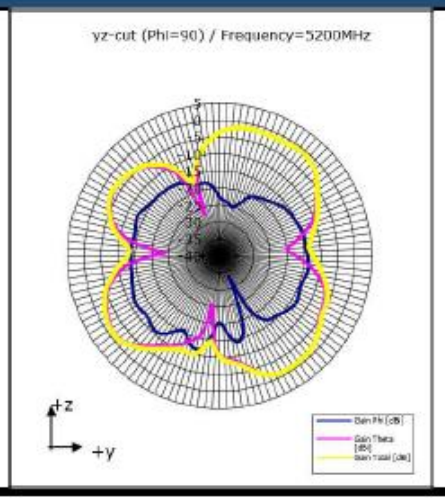
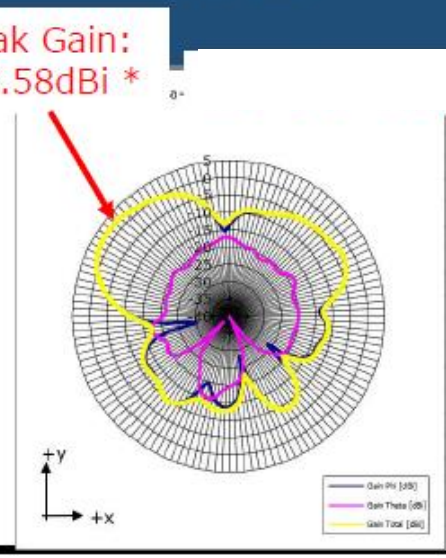
Feeding Point

Antenna 1

Date of Testing: August 28, 2024

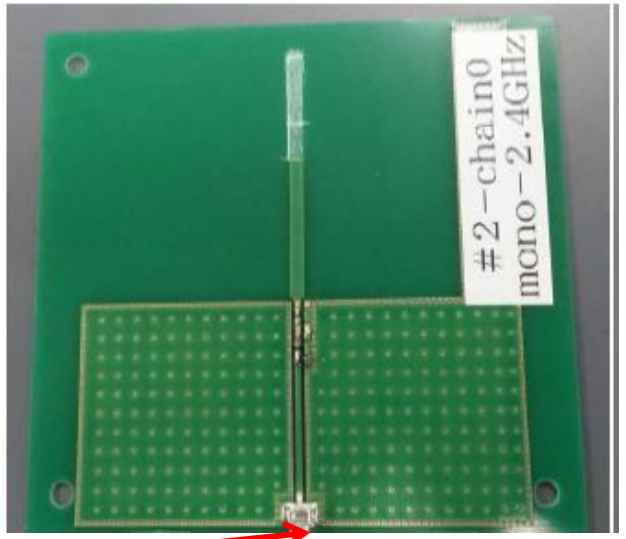
Tested Personnel: Takuma Asai

| Antenna | Frequency (MHz) | Peak Gain (dBi) | Remark |
|---|---|---|---|
| Antenna 1 | 5200 | +2.58 | Cable + Att |

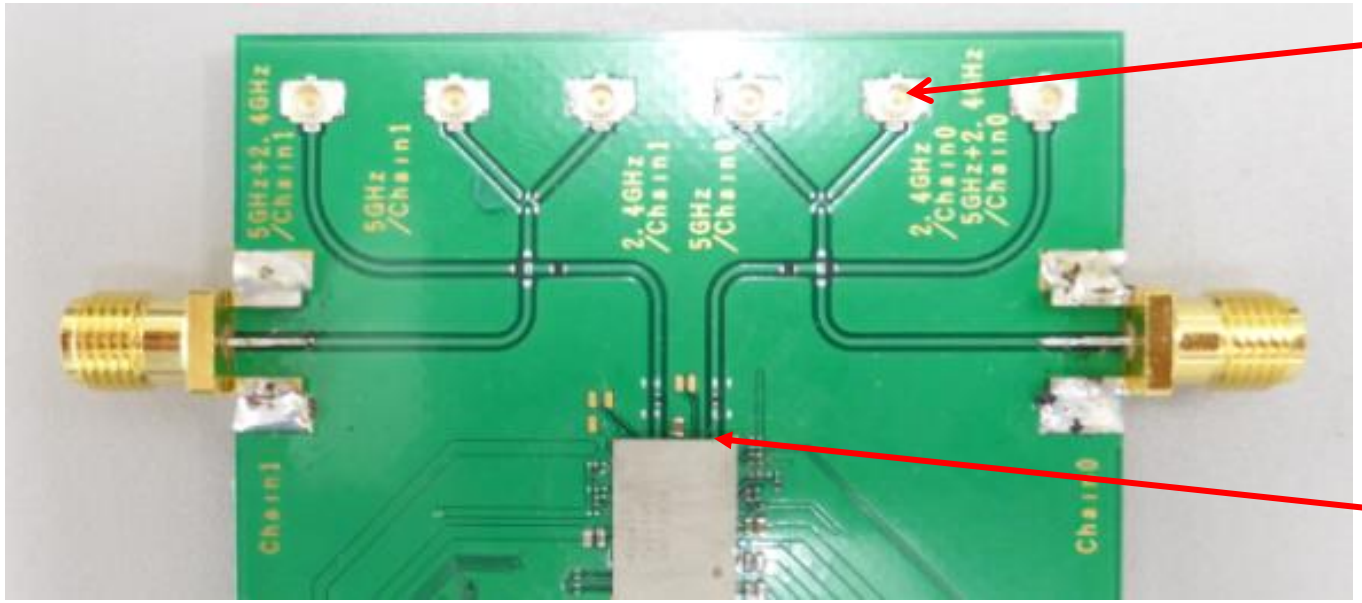
| Frequency Band | XZ-cut | YZ-cut | XY-cut |
|---|---|---|---|
| 5.2 GHz |  |  |  |

Antenna 2

Antenna Item Name : Monopole Antenna
Antenna Model Name : chain0_mono_2.4GHz
Antenna Type : Monopole Antenna
Antenna Peak Gain : +0.82dBi @ 2412-2472MHz（FCC/ISED/EU/JPN）




Connecting with coaxial cable(length 200mm)



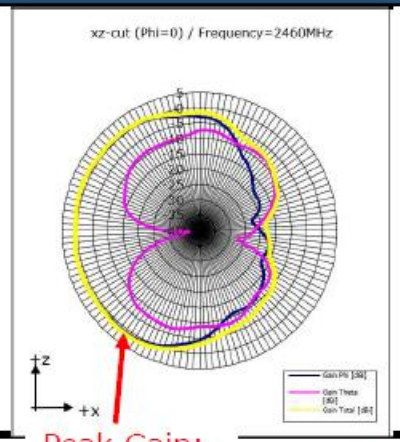
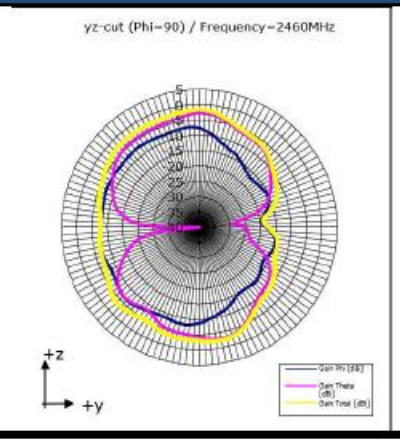
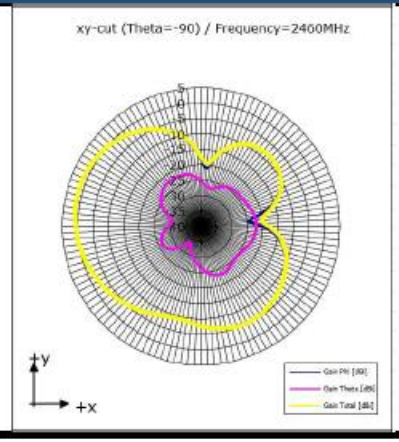

Feeding Point

# Antenna 2

Date of Testing: August 28, 2024

Tested Personnel: Takuma Asai

| Antenna | Frequency (MHz) | Peak Gain (dBi) | Remark |
|---|---|---|---|
| Antenna 2 | 2460 | +1.57 | Cable + Att |

| Frequency Band | XZ-cut | YZ-cut | XY-cut |
|---|---|---|---|
| 2.46 GHz |  |  |  |



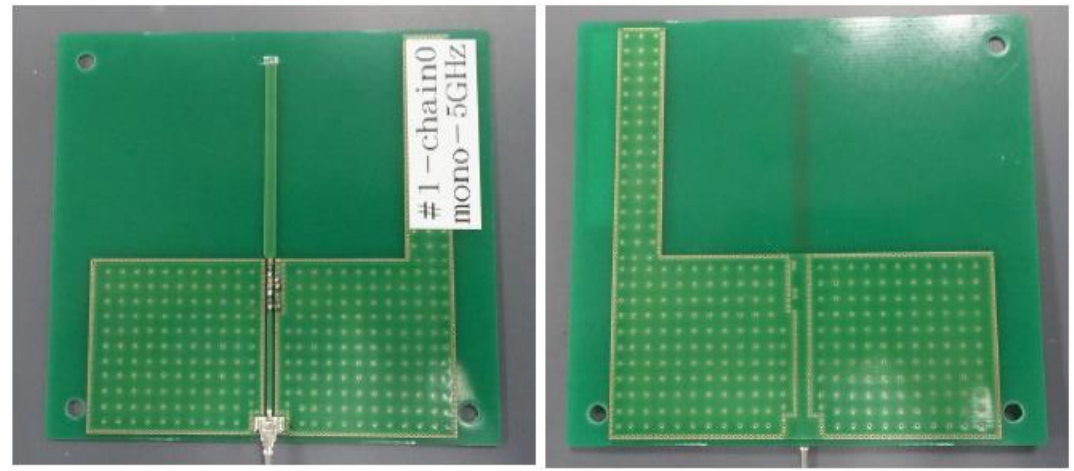
Peak Gain:
+1.57dBi *

## Antenna 1

Antenna Model Name: ①chain0_mono_5GHz

Antenna Type: Monopole

Input Impedance: 50 ohm



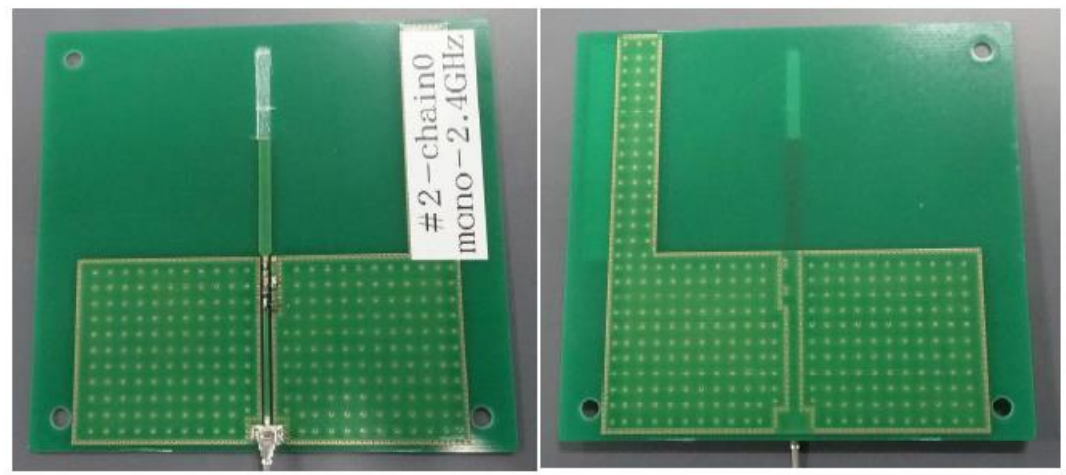

---

## Antenna 2

Antenna Model Name: ②chain0_mono_2.4Hz

Antenna Type: Monopole

Input Impedance: 50 ohm



# Appendix. Photographs of Test Setup