# Multi-Antenna Systems Directional Gain measurement

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|---|---|---|
| **APPLICANT** | **:** | **Vantiva USA LLC** |
| **EQUIPMENT** | **:** | **Ethernet Gateway** |
| **BRAND NAME** | **:** | **Vantiva** |
| **MODEL NAME** | **:** | **VTER11QELxyzn (xyz: each character cab be a-z or A-Z; n: 1-4 or blank)** |
| **ANTENNA TYPE** | **:** | **Dipole Antenna** |
| **TEST DATE(S)** | **:** | **Sep 23, 2024 ~ Sep. 29, 2024** |

**We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.**

**The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.**

***Sporton International Inc. (Kunshan)***
***No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China***

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# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| OQ483017A | 01 | Initial issue of report | Dec. 09, 2024 |
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# 1 General Description

## 1.1 Applicant

**Vantiva USA LLC**
4855 Peachtree Industrial Blvd. Suite 200 Norcross, Georgia 30092

## 1.2 Manufacturer

**Vantiva USA LLC**
4855 Peachtree Industrial Blvd. Suite 200 Norcross, Georgia 30092

## 1.3 Testing Laboratory

| | |
|---|---|
| **Test Firm** | Sporton International Inc. (Kunshan) |
| **Test Site Location** | No. 1098, Pengxi North Road, Kunshan Economic Development Zone<br>Jiangsu Province 215300 People's Republic of China<br>TEL : +86-512-57900158 |
| **Test Site No.** | TH01-KS; 03CH08-KS; |

## 1.4 Support Unit used in test configuration and system

| Item | Equipment | Brand Name | Model Name | FCC ID | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1. | Notebook | DELL | Inspiron 3501 | N/A | N/A | AC I/P:Unshielded,1.8m<br>DC O/P: shielded,1.8m |
| 2. | Mobile phone (Station) | N/A | N/A | N/A | N/A | NCR |

## 1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC KDB 662911 D3 MIMO Antenna Gain Measurement v01.
- ANSI C63.10-2013 - Clause 13
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01.

# 2 Test Result

## 2.1 Antenna information

| Frequency(MHz) | | Ant A(dBi) | Ant B(dBi) | Ant C(dBi) | Ant D(dBi) |
|---|---|---|---|---|---|
| 2.4G | 2400-2483.5 | 3.22 | 3.45 | 3.74 | 3.89 |
| UNII1 | 5150-5250 | 3.39 | 3.99 | 3.38 | 3.93 |
| UNII2A | 5250-5350 | 2.95 | 3.72 | 3.17 | 4.13 |
| UNII2C | 5470-5725 | 3.70 | 4.43 | 3.28 | 4.23 |
| UNII3 | 5725-5850 | 3.27 | 3.54 | 3.25 | 4.05 |

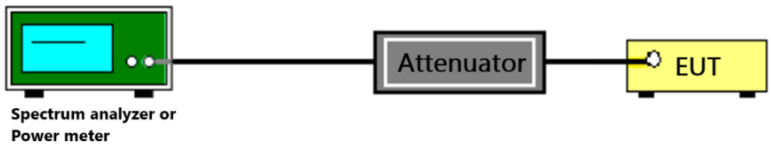
**Remark：Please refer to the specific details in Antenna Test report which is separately.**

## 2.2 Conducted Output Power measurement

### 2.2.1 Test Procedures

1. Configuration EUT transmitting packages to the communication emulator in Tx-beamforming mode.
2. Connect EUT to spectrum analyzer or power meter and record the power setting and frequency of EUT
3. The RF output of EUT is connected to the power meter or spectrum analyzer by RF cable and attenuator to measurement conducted power.
4. The pathloss is compensated to the results for each measurement.

### 2.2.2 Test Setup




### 2.2.3 Test Result of Conducted Power

| Channel | Power Setting | Frequency (MHz) | Power Meter Read Level(dBm) | | | | Cable Loss(dB) | Sum Power (dBm) | DT Factor (dB) | Final Power (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Port1 | Port2 | Port3 | Port4 | | | | |
| 7 | 20 | 2442 | -2.83 | -3.63 | -4.43 | -3.65 | 17.334 | 19.76 | 0.15 | 19.91 |
| 44 | 20 | 5220 | -3.23 | -4.21 | -3.48 | -4.71 | 18.351 | 20.50 | 0.15 | 20.65 |
| 60 | 20 | 5300 | -2.82 | -4.31 | -3.57 | -4.13 | 18.468 | 20.82 | 0.15 | 20.97 |
| 116 | 20 | 5580 | -4.56 | -3.05 | -3.93 | -3.97 | 18.453 | 20.63 | 0.15 | 20.78 |
| 157 | 20 | 5785 | -3.34 | -3.74 | -3.39 | -3.81 | 18.514 | 20.97 | 0.15 | 21.12 |
| Test mode:802.11be EHT20,Beamforming mode,4Tx,NSS=1 | | | | | | | | | | |

## 2.3 Radiated EIRP Measurement

### 2.3.1 Test environment and Procedures

Radiated Measurement Environment:

The semi anechoic chamber with the following specifications:

- Overall dimensions (L x W x H) : 9m x 6m x 6m (rectangular chamber)

- Antenna measured frequency range: 1GHz to 18GHz

- Radiated measurement test sites conform to the site validation criteria called out in CISPR16-1-4:2019 over the frequency range 1 GHz to 18 GHz. The test object is mounted on a positioner; The positioner is used to move the test object according to the sampling grid. A measurement antenna is placed in the chamber at 3m measurement antenna far-field distance.

### 2.3.2 Test Setup

The EIRP Pattern measurement is using the conical circle cut test system (refer to Figure 1). The EUT is positioned on center of turntable, Data (channel power level) is recorded using the spectrum analyzer for both theta and phi polarizations at each position (refer to Figure 2).

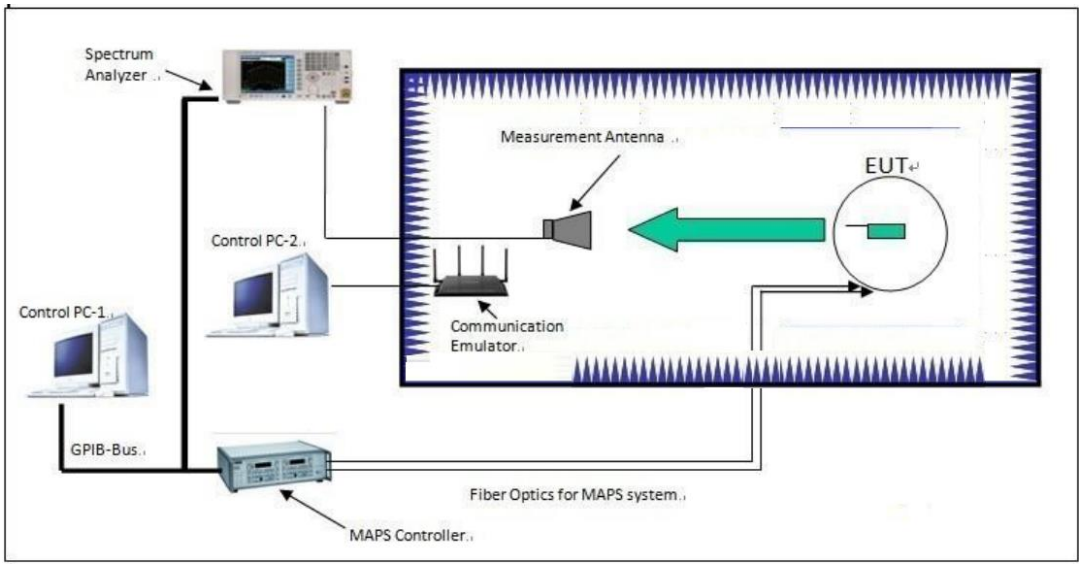



Figure 1-Conical circle cut test system.

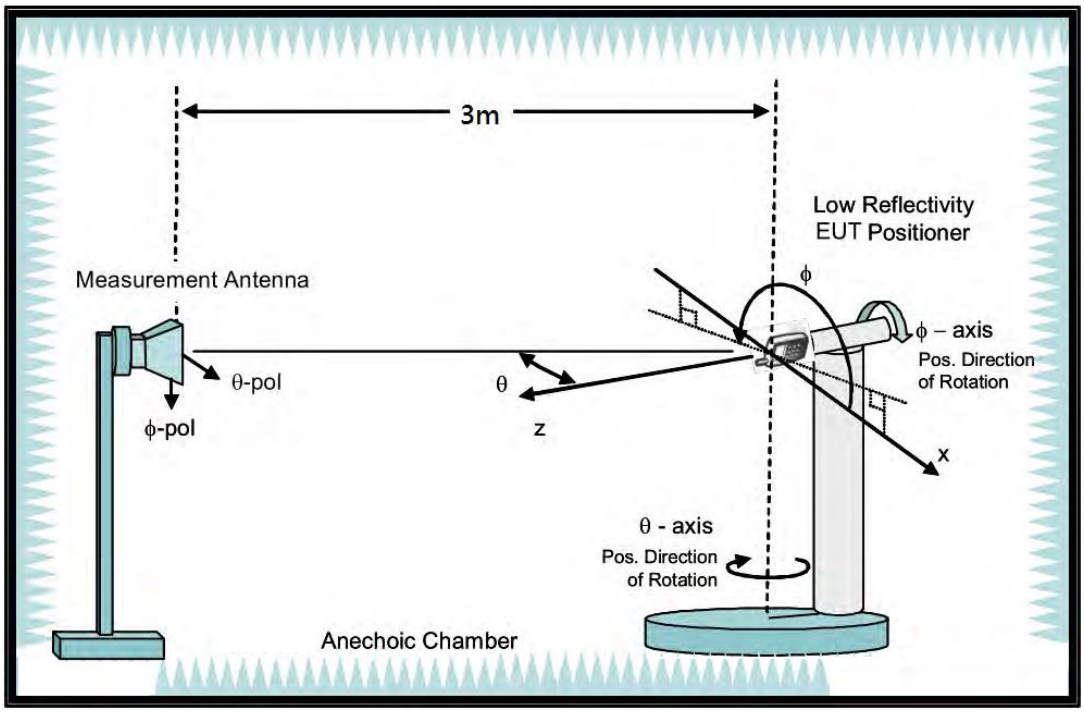



Figure 2-Configuration of Conical circle cut test system.

The figures (refer to section 4.2 Set up for Radiated EIRP Figure) illustrate that EUT operates as an AP (labeled as EUT), while the Communication Emulator serves as a station (labeled as Sta). EUT and Sta communicate with each other using the Tx-beamforming feature. STA is positioned at the same height and location in close proximity to the measurement antenna, ensuring that as EUT rotates along the Phi or Theta axis, EUT's Tx-Beamforming data stream consistently points towards STA and the measurement antenna.

a. Fix the EUT on the Positioner at center of turntable

b. Configuration EUT transmitting packages to the communication emulator in Tx-beamforming mode. Please refer to figure 1 for detail configuration.

c. Make sure that the power settings and frequency are the same as those used for conducted power measurement.

d. Setup the channel power function by spectrum analyzer. Refer C63.10-2013 11.9.2.2.7 AVGSA-3A:

1) Set RBW=1MHz

2) Set VBW=1/T (where T is duty cycle on time)

3) Sweep point≥ [2 × span / RBW].

4) Detector = peak

5) Sweep time=auto

6) average-VBW type=rms

7) Trace mode=max hold

8) Unit= dBµV

9) Compute power by integrating the spectrum across the 26 dB OBW of the signal using the instrument’s band power measurement function with band limits set equal to the OBW band edges.

e. Read the channel power level on spectrum analyzer and record in following positions.

The following test positions are formulated with reference to clause 13 of ANSI C63.10-2013-Procedures for measuring device operating using antenna arrays with beam-steering and/or beamforming capability, to ensure that the maximum EIRP Power is obtained from the 3D Plane.

1) The EUT is then stepped between 0 to 360 degrees along the phi axis in 10-degree increments. At each phi position, the theta axis is continuous running from 0 to 360 degrees or from 360 to 0 degrees.

2) Data (channel power level) is recorded using the spectrum analyzer for every phi position of the EUT.

3) Further fine-tuning validation based on the Worst of Pre-Scan, adjusting the increment to 2-degree /Step to ensure measurement accuracy.

4) Change the polarization of the measurement antenna, repeat the above steps, and record the corresponding spectrum readings of the measurement antenna at theta and phi, respectively.

f. According to ANSI C63.10-2013 clause 10.3.8 Required corrections to the measured signal amplitude levels and clause 10.3.9 Determination of EIRP:

EIRP= [Reading Level + Correction Factor(Ant Factor + Cable loss - Amp Gain)] - 95.2

### 2.3.3 Test Results of Max. Radiated EIRP

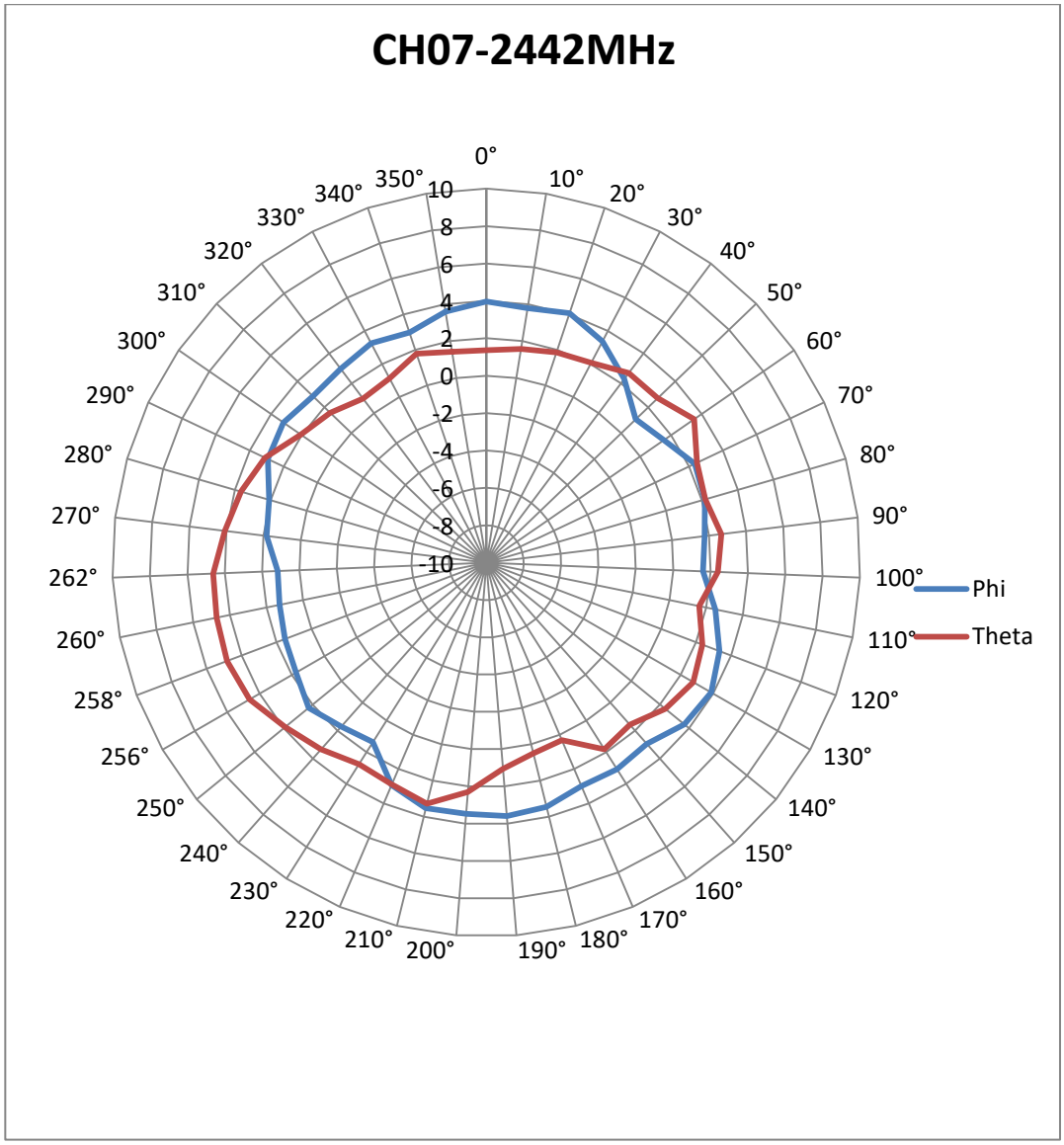
| Channel | Power Setting | Frequency (MHz) | Polarization (For Measurement Antenna) | Phi degree (For EUT) | Read Level (dBµV) | Max EIRP (dBm) |
|---|---|---|---|---|---|---|
| 7 | 20 | 2442 | Theta | 258° | 100.5 | 24.73 |
| 44 | 20 | 5220 | Theta | 92° | 93.42 | 24.59 |
| 60 | 20 | 5300 | Phi | 20° | 93.49 | 24.87 |
| 116 | 20 | 5580 | Phi | 36° | 93.26 | 25.23 |
| 157 | 20 | 5785 | Phi | 210° | 93.48 | 25.68 |
| Test mode: 802.11be EHT20,Beamforming mode,4Tx,NSS=1 | | | | | | |

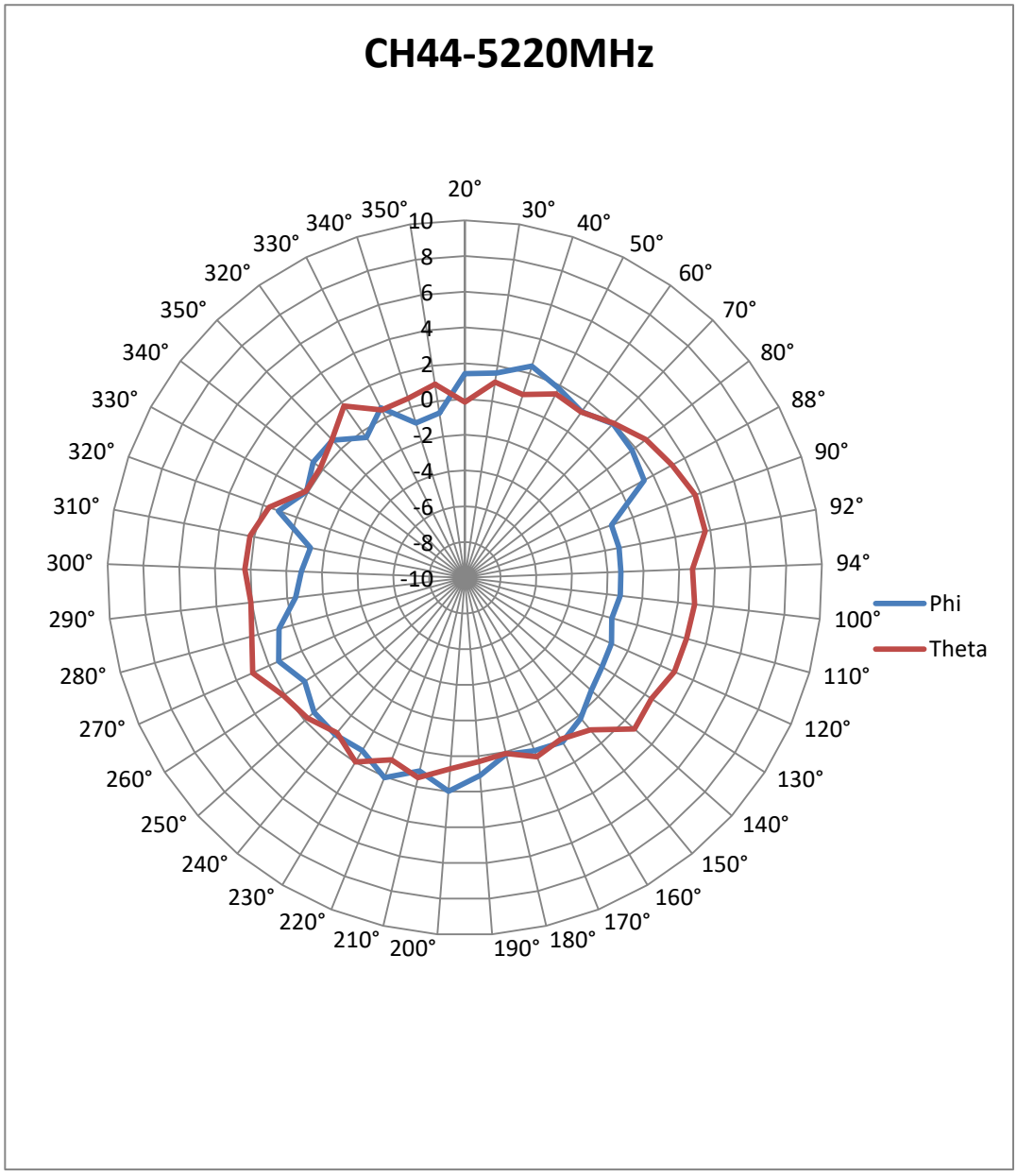
## 2.4 Directional Gain calculation

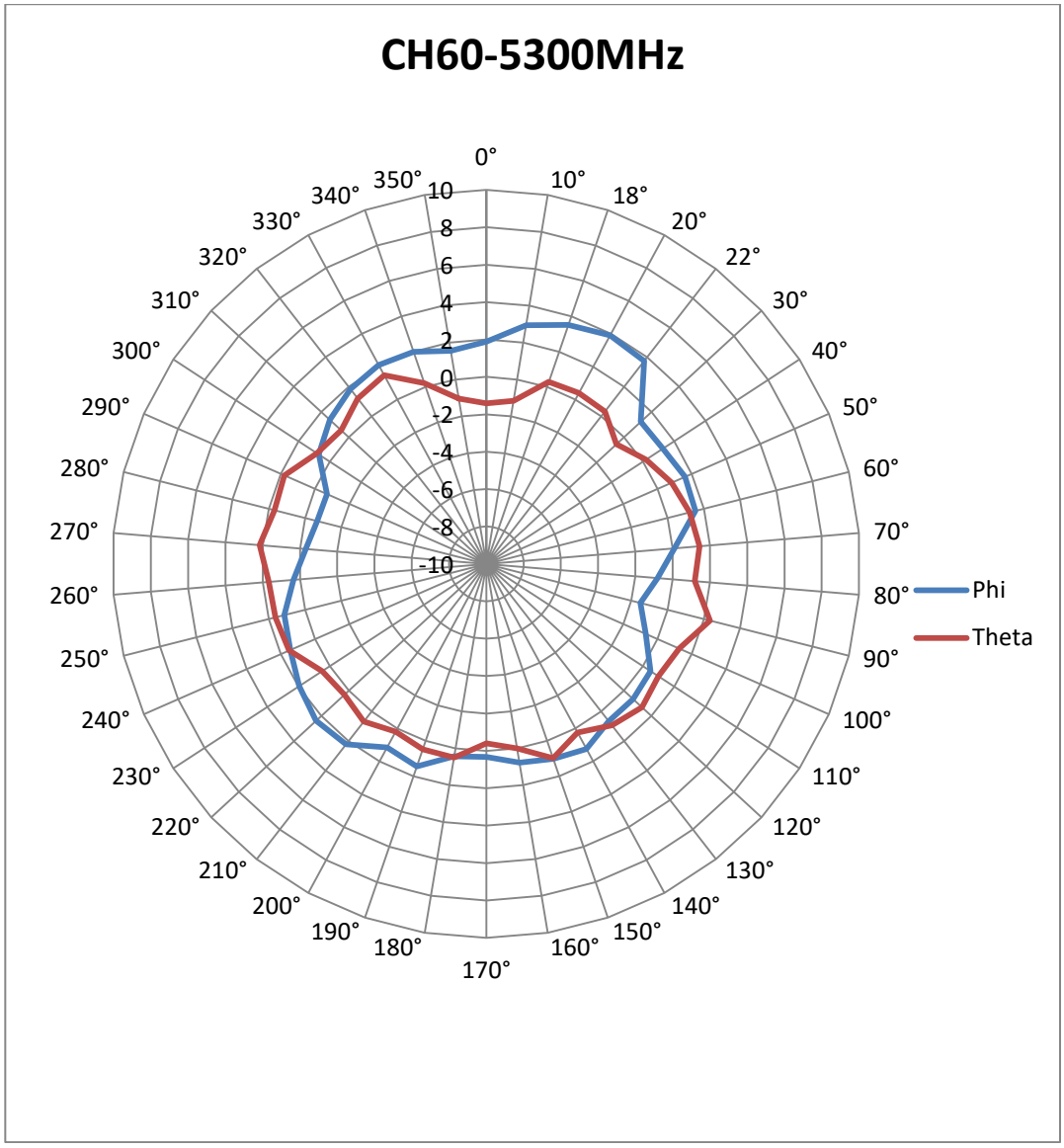
Directional Antenna Gain (dBi) = Max EIRP (dBm) – Total Conducted Power (dBm)

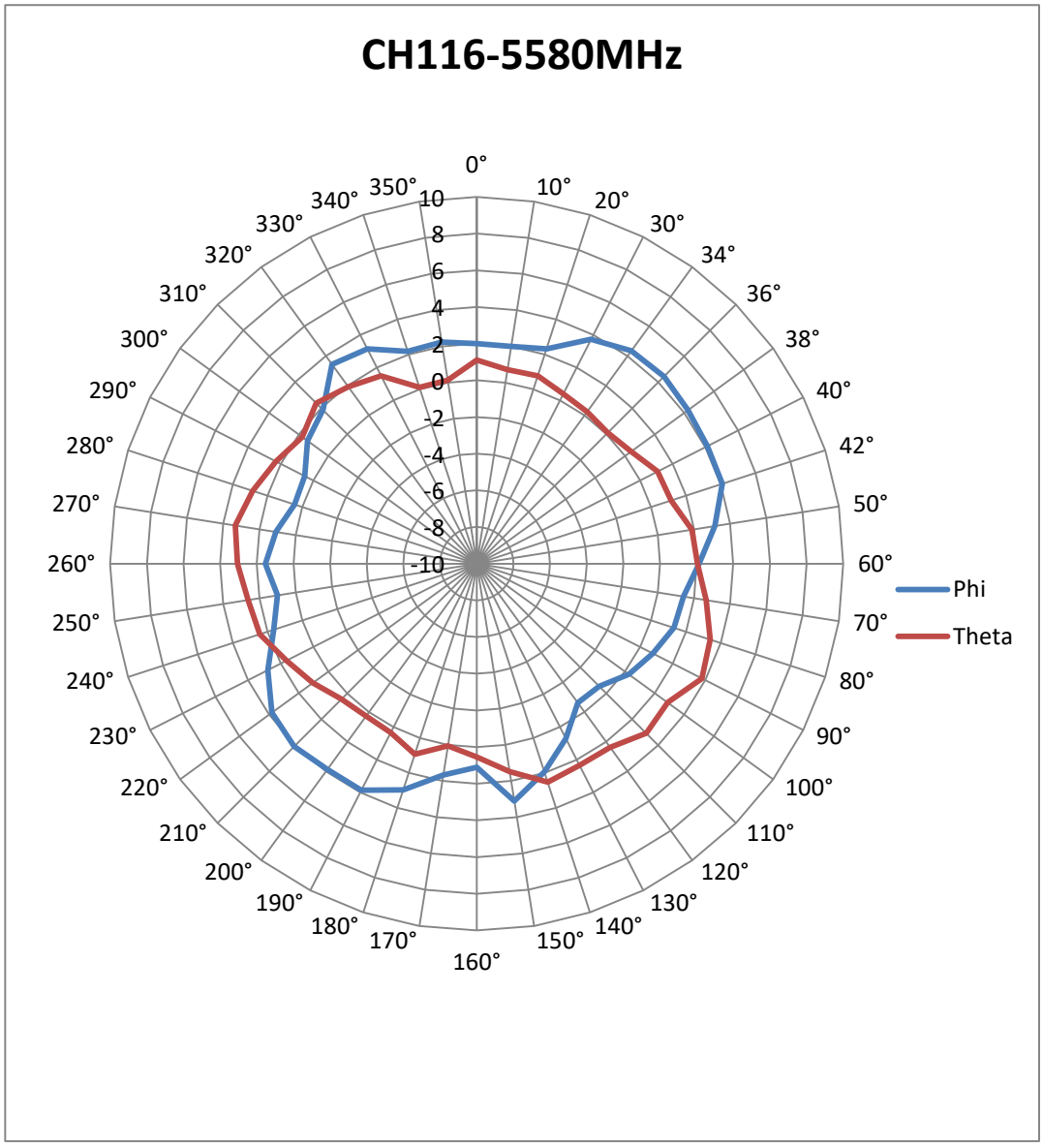
| Channel | Power Setting | Frequency (MHz) | Conducted Power (dBm) | Max EIRP (dBm) | Max Directional Gain (dBi) |
|---|---|---|---|---|---|
| 7 | 20 | 2442 | 19.91 | 24.73 | 4.82 |
| 44 | 20 | 5220 | 20.65 | 24.59 | 3.71 |
| 60 | 20 | 5300 | 20.97 | 24.87 | 3.90 |
| 116 | 20 | 5580 | 20.78 | 25.23 | 4.45 |
| 157 | 20 | 5785 | 21.12 | 25.68 | 4.56 |
| Max Directional Gain: 802.11 be EHT20,Beamforming mode,4Tx,NSS=1 | | | | | |

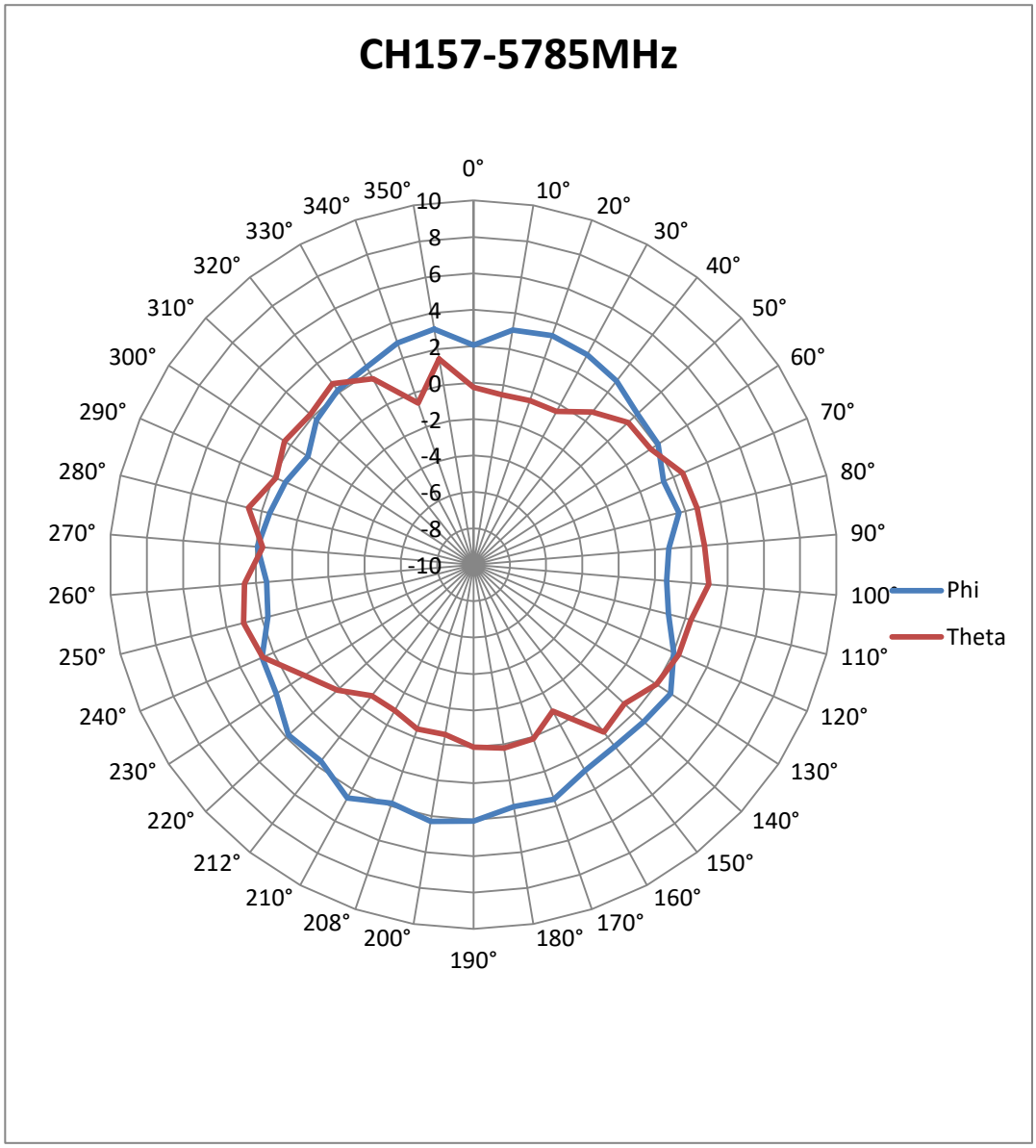
## 2.5 Directivity plots in 2D cuts




CH44-5220MHz
20°
30°
40°
50°
60°
70°
80°
88°
90°
92°
94°
100°
110°
120°
130°
140°
150°
160°
170°
180°
190°
200°
210°
220°
230°
240°
250°
260°
270°
280°
290°
300°
310°
320°
330°
340°
350°
340°
330°
320°
350°
340°
330°
320°
10
8
6
4
2
0
-2
-4
-6
-8
-10
Phi
Theta


CH60-5300MHz
0°
10°
18°
20°
22°
30°
40°
50°
60°
70°
80°
90°
100°
110°
120°
130°
140°
150°
160°
170°
180°
190°
200°
210°
220°
230°
240°
250°
260°
270°
280°
290°
300°
310°
320°
330°
340°
350°
10
8
6
4
2
0
-2
-4
-6
-8
-10
Phi
Theta


CH116-5580MHz
0°
10°
20°
30°
34°
36°
38°
40°
42°
50°
60°
70°
80°
90°
100°
110°
120°
130°
140°
150°
160°
170°
180°
190°
200°
210°
220°
230°
240°
250°
260°
270°
280°
290°
300°
310°
320°
330°
340°
350°
10
8
6
4
2
0
-2
-4
-6
-8
-10
Phi
Theta


CH157-5785MHz
0°
10°
20°
30°
40°
50°
60°
70°
80°
90°
100°
110°
120°
130°
140°
150°
160°
170°
180°
190°
200°
208°
210°
212°
220°
230°
240°
250°
260°
270°
280°
290°
300°
310°
320°
330°
340°
350°
10
8
6
4
2
0
-2
-4
-6
-8
-10
Phi
Theta

# 2.6 Raw Data

## 2.6.1 2442MHz-CH07

| Polarization (For Measurement Antenna) | Phi degree (For EUT) | Read Level (dBµV) | Ant Factor dB/m | Cable loss (dB) | Preamp Factor (dB) | Pre-Att (dB) | Measurement EIRP Power (dBm) | Conducted Power (dBm) | Directional Gain (dBi) |
|---|---|---|---|---|---|---|---|---|---|
| Phi | 0° | 99.64 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.87 | 19.91 | 3.96 |
| Phi | 10° | 99.46 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.69 | 19.91 | 3.78 |
| Phi | 20° | 99.74 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.97 | 19.91 | 4.06 |
| Phi | 30° | 99.04 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.27 | 19.91 | 3.36 |
| Phi | 40° | 97.97 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.20 | 19.91 | 2.29 |
| Phi | 50° | 96.76 | 32.28 | 8.15 | 30.95 | 9.9547 | 20.99 | 19.91 | 1.08 |
| Phi | 60° | 97.21 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.44 | 19.91 | 1.53 |
| Phi | 70° | 98.02 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.25 | 19.91 | 2.34 |
| Phi | 80° | 97.85 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.08 | 19.91 | 2.17 |
| Phi | 90° | 97.43 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.66 | 19.91 | 1.75 |
| Phi | 100° | 97.27 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.50 | 19.91 | 1.59 |
| Phi | 110° | 98.18 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.41 | 19.91 | 2.50 |
| Phi | 120° | 99.02 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.25 | 19.91 | 3.34 |
| Phi | 130° | 99.56 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.79 | 19.91 | 3.88 |
| Phi | 140° | 99.36 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.59 | 19.91 | 3.68 |
| Phi | 150° | 98.62 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.85 | 19.91 | 2.94 |
| Phi | 160° | 98.74 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.97 | 19.91 | 3.06 |
| Phi | 170° | 98.66 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.89 | 19.91 | 2.98 |
| Phi | 180° | 99.12 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.35 | 19.91 | 3.44 |
| Phi | 190° | 99.27 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.50 | 19.91 | 3.59 |
| Phi | 200° | 99.16 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.39 | 19.91 | 3.48 |
| Phi | 210° | 99.2 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.43 | 19.91 | 3.52 |
| Phi | 220° | 98.61 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.84 | 19.91 | 2.93 |
| Phi | 230° | 97.02 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.25 | 19.91 | 1.34 |
| Phi | 240° | 97.38 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.61 | 19.91 | 1.70 |
| Phi | 250° | 97.95 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.18 | 19.91 | 2.27 |
| Phi | 256° | 97.42 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.65 | 19.91 | 1.74 |
| Phi | 258° | 97.2 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.43 | 19.91 | 1.52 |
| Phi | 260° | 96.96 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.19 | 19.91 | 1.28 |
| Phi | 262° | 96.84 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.07 | 19.91 | 1.16 |
| Phi | 270° | 97.51 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.74 | 19.91 | 1.83 |
| Phi | 280° | 97.77 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.00 | 19.91 | 2.09 |
| Phi | 290° | 98.61 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.84 | 19.91 | 2.93 |
| Phi | 300° | 98.87 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.10 | 19.91 | 3.19 |
| Phi | 310° | 98.53 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.76 | 19.91 | 2.85 |
| Phi | 320° | 98.65 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.88 | 19.91 | 2.97 |
| Phi | 330° | 98.92 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.15 | 19.91 | 3.24 |
| Phi | 340° | 98.65 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.88 | 19.91 | 2.97 |
| Phi | 350° | 99.27 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.50 | 19.91 | 3.59 |
| Theta | 0° | 97.03 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.26 | 19.91 | 1.35 |
| Theta | 10° | 97.25 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.48 | 19.91 | 1.57 |
| Theta | 20° | 97.53 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.76 | 19.91 | 1.85 |
| Theta | 30° | 97.75 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.98 | 19.91 | 2.07 |
| Theta | 40° | 98.36 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.59 | 19.91 | 2.68 |
| Theta | 50° | 98.38 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.61 | 19.91 | 2.70 |
| Theta | 60° | 99.18 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.41 | 19.91 | 3.50 |
| Theta | 70° | 98.15 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.38 | 19.91 | 2.47 |
| Theta | 80° | 97.87 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.10 | 19.91 | 2.19 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Theta | 90° | 98.33 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.56 | 19.91 | 2.65 |
| Theta | 100° | 98.07 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.30 | 19.91 | 2.39 |
| Theta | 110° | 97.29 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.52 | 19.91 | 1.61 |
| Theta | 120° | 98.04 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.27 | 19.91 | 2.36 |
| Theta | 130° | 98.46 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.69 | 19.91 | 2.78 |
| Theta | 140° | 98.04 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.27 | 19.91 | 2.36 |
| Theta | 150° | 97.25 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.48 | 19.91 | 1.57 |
| Theta | 160° | 97.49 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.72 | 19.91 | 1.81 |
| Theta | 170° | 95.99 | 32.28 | 8.15 | 30.95 | 9.9547 | 20.22 | 19.91 | 0.31 |
| Theta | 180° | 96.18 | 32.28 | 8.15 | 30.95 | 9.9547 | 20.41 | 19.91 | 0.50 |
| Theta | 190° | 96.74 | 32.28 | 8.15 | 30.95 | 9.9547 | 20.97 | 19.91 | 1.06 |
| Theta | 200° | 97.98 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.21 | 19.91 | 2.30 |
| Theta | 210° | 98.96 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.19 | 19.91 | 3.28 |
| Theta | 220° | 98.57 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.80 | 19.91 | 2.89 |
| Theta | 230° | 98.42 | 32.28 | 8.15 | 30.95 | 9.9547 | 22.65 | 19.91 | 2.74 |
| Theta | 240° | 99.02 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.25 | 19.91 | 3.34 |
| Theta | 250° | 99.57 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.80 | 19.91 | 3.89 |
| Theta | 256° | 100.3 | 32.28 | 8.15 | 30.95 | 9.9547 | 24.53 | 19.91 | 4.62 |
| Theta | 258° | 100.5 | 32.28 | 8.15 | 30.95 | 9.9547 | 24.73 | 19.91 | 4.82 |
| Theta | 260° | 100.4 | 32.28 | 8.15 | 30.95 | 9.9547 | 24.63 | 19.91 | 4.72 |
| Theta | 262° | 100.3 | 32.28 | 8.15 | 30.95 | 9.9547 | 24.53 | 19.91 | 4.62 |
| Theta | 270° | 99.76 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.99 | 19.91 | 4.08 |
| Theta | 280° | 99.33 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.56 | 19.91 | 3.65 |
| Theta | 290° | 98.78 | 32.28 | 8.15 | 30.95 | 9.9547 | 23.01 | 19.91 | 3.10 |
| Theta | 300° | 97.73 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.96 | 19.91 | 2.05 |
| Theta | 310° | 97.25 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.48 | 19.91 | 1.57 |
| Theta | 320° | 96.65 | 32.28 | 8.15 | 30.95 | 9.9547 | 20.88 | 19.91 | 0.97 |
| Theta | 330° | 96.8 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.03 | 19.91 | 1.12 |
| Theta | 340° | 97.45 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.68 | 19.91 | 1.77 |
| Theta | 350° | 97.1 | 32.28 | 8.15 | 30.95 | 9.9547 | 21.33 | 19.91 | 1.42 |

## 2.6.2 5220MHz-CH44

| Polarization (For Measurement Antenna) | Phi degree (For EUT) | Read Level (dBμV) | Ant Factor dB/m | Cable loss (dB) | Preamp Factor (dB) | Pre-Att (dB) | Measurement EIRP Power (dBm) | Conducted Power (dBm) | Directional Gain (dBi) |
|---|---|---|---|---|---|---|---|---|---|
| Phi | 0° | 91.14 | 34.34 | 12.09 | 30.17 | 10.106 | 22.31 | 20.88 | 1.43 |
| Phi | 10° | 91.31 | 34.34 | 12.09 | 30.17 | 10.106 | 22.48 | 20.88 | 1.60 |
| Phi | 20° | 92.14 | 34.34 | 12.09 | 30.17 | 10.106 | 23.31 | 20.88 | 2.43 |
| Phi | 30° | 91.54 | 34.34 | 12.09 | 30.17 | 10.106 | 22.71 | 20.88 | 1.83 |
| Phi | 40° | 91.06 | 34.34 | 12.09 | 30.17 | 10.106 | 22.23 | 20.88 | 1.35 |
| Phi | 50° | 91.66 | 34.34 | 12.09 | 30.17 | 10.106 | 22.83 | 20.88 | 1.95 |
| Phi | 60° | 91.49 | 34.34 | 12.09 | 30.17 | 10.106 | 22.66 | 20.88 | 1.78 |
| Phi | 70° | 91.13 | 34.34 | 12.09 | 30.17 | 10.106 | 22.30 | 20.88 | 1.42 |
| Phi | 80° | 88.43 | 34.34 | 12.09 | 30.17 | 10.106 | 19.60 | 20.88 | -1.28 |
| Phi | 88° | 88.51 | 34.34 | 12.09 | 30.17 | 10.106 | 19.68 | 20.88 | -1.20 |
| Phi | 90° | 88.45 | 34.34 | 12.09 | 30.17 | 10.106 | 19.62 | 20.88 | -1.26 |
| Phi | 92° | 88.47 | 34.34 | 12.09 | 30.17 | 10.106 | 19.64 | 20.88 | -1.24 |
| Phi | 94° | 88.25 | 34.34 | 12.09 | 30.17 | 10.106 | 19.42 | 20.88 | -1.46 |
| Phi | 100° | 88.7 | 34.34 | 12.09 | 30.17 | 10.106 | 19.87 | 20.88 | -1.01 |
| Phi | 110° | 88.86 | 34.34 | 12.09 | 30.17 | 10.106 | 20.03 | 20.88 | -0.85 |
| Phi | 120° | 89.19 | 34.34 | 12.09 | 30.17 | 10.106 | 20.36 | 20.88 | -0.52 |
| Phi | 130° | 89.9 | 34.34 | 12.09 | 30.17 | 10.106 | 21.07 | 20.88 | 0.19 |
| Phi | 140° | 90.4 | 34.34 | 12.09 | 30.17 | 10.106 | 21.57 | 20.88 | 0.69 |
| Phi | 150° | 90.14 | 34.34 | 12.09 | 30.17 | 10.106 | 21.31 | 20.88 | 0.43 |
| Phi | 160° | 89.86 | 34.34 | 12.09 | 30.17 | 10.106 | 21.03 | 20.88 | 0.15 |
| Phi | 170° | 90.8 | 34.34 | 12.09 | 30.17 | 10.106 | 21.97 | 20.88 | 1.09 |
| Phi | 180° | 91.69 | 34.34 | 12.09 | 30.17 | 10.106 | 22.86 | 20.88 | 1.98 |
| Phi | 190° | 90.82 | 34.34 | 12.09 | 30.17 | 10.106 | 21.99 | 20.88 | 1.11 |
| Phi | 200° | 91.76 | 34.34 | 12.09 | 30.17 | 10.106 | 22.93 | 20.88 | 2.05 |
| Phi | 210° | 90.95 | 34.34 | 12.09 | 30.17 | 10.106 | 22.12 | 20.88 | 1.24 |
| Phi | 220° | 91.1 | 34.34 | 12.09 | 30.17 | 10.106 | 22.27 | 20.88 | 1.39 |
| Phi | 230° | 91.02 | 34.34 | 12.09 | 30.17 | 10.106 | 22.19 | 20.88 | 1.31 |
| Phi | 240° | 90.38 | 34.34 | 12.09 | 30.17 | 10.106 | 21.55 | 20.88 | 0.67 |
| Phi | 250° | 91.13 | 34.34 | 12.09 | 30.17 | 10.106 | 22.30 | 20.88 | 1.42 |
| Phi | 260° | 90.5 | 34.34 | 12.09 | 30.17 | 10.106 | 21.67 | 20.88 | 0.79 |
| Phi | 270° | 89.25 | 34.34 | 12.09 | 30.17 | 10.106 | 20.42 | 20.88 | -0.46 |
| Phi | 280° | 88.86 | 34.34 | 12.09 | 30.17 | 10.106 | 20.03 | 20.88 | -0.85 |
| Phi | 290° | 88.51 | 34.34 | 12.09 | 30.17 | 10.106 | 19.68 | 20.88 | -1.20 |
| Phi | 300° | 90.79 | 34.34 | 12.09 | 30.17 | 10.106 | 21.96 | 20.88 | 1.08 |
| Phi | 310° | 89.8 | 34.34 | 12.09 | 30.17 | 10.106 | 20.97 | 20.88 | 0.09 |
| Phi | 320° | 90.38 | 34.34 | 12.09 | 30.17 | 10.106 | 21.55 | 20.88 | 0.67 |
| Phi | 330° | 90.4 | 34.34 | 12.09 | 30.17 | 10.106 | 21.57 | 20.88 | 0.69 |
| Phi | 340° | 89.3 | 34.34 | 12.09 | 30.17 | 10.106 | 20.47 | 20.88 | -0.41 |
| Phi | 350° | 90.32 | 34.34 | 12.09 | 30.17 | 10.106 | 21.49 | 20.88 | 0.61 |
| Theta | 0° | 88.79 | 34.34 | 12.09 | 30.17 | 10.106 | 19.96 | 20.88 | -0.92 |
| Theta | 10° | 89.05 | 34.34 | 12.09 | 30.17 | 10.106 | 20.22 | 20.88 | -0.66 |
| Theta | 20° | 89.54 | 34.34 | 12.09 | 30.17 | 10.106 | 20.71 | 20.88 | -0.17 |
| Theta | 30° | 90.78 | 34.34 | 12.09 | 30.17 | 10.106 | 21.95 | 20.88 | 1.07 |
| Theta | 40° | 90.46 | 34.34 | 12.09 | 30.17 | 10.106 | 21.63 | 20.88 | 0.75 |
| Theta | 50° | 91.19 | 34.34 | 12.09 | 30.17 | 10.106 | 22.36 | 20.88 | 1.48 |
| Theta | 60° | 91.04 | 34.34 | 12.09 | 30.17 | 10.106 | 22.21 | 20.88 | 1.33 |
| Theta | 70° | 91.71 | 34.34 | 12.09 | 30.17 | 10.106 | 22.88 | 20.88 | 2.00 |
| Theta | 80° | 92.46 | 34.34 | 12.09 | 30.17 | 10.106 | 23.63 | 20.88 | 2.75 |
| Theta | 88° | 92.91 | 34.34 | 12.09 | 30.17 | 10.106 | 24.08 | 20.88 | 3.20 |
| Theta | 90° | 93.41 | 34.34 | 12.09 | 30.17 | 10.106 | 24.58 | 20.88 | 3.70 |

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|---|---|---|---|---|---|---|---|---|---|
| Theta | 92° | 93.42 | 34.34 | 12.09 | 30.17 | 10.106 | 24.59 | 20.88 | 3.71 |
| Theta | 94° | 92.46 | 34.34 | 12.09 | 30.17 | 10.106 | 23.63 | 20.88 | 2.75 |
| Theta | 100° | 92.65 | 34.34 | 12.09 | 30.17 | 10.106 | 23.82 | 20.88 | 2.94 |
| Theta | 110° | 92.57 | 34.34 | 12.09 | 30.17 | 10.106 | 23.74 | 20.88 | 2.86 |
| Theta | 120° | 92.57 | 34.34 | 12.09 | 30.17 | 10.106 | 23.74 | 20.88 | 2.86 |
| Theta | 130° | 92.15 | 34.34 | 12.09 | 30.17 | 10.106 | 23.32 | 20.88 | 2.44 |
| Theta | 140° | 92.43 | 34.34 | 12.09 | 30.17 | 10.106 | 23.60 | 20.88 | 2.72 |
| Theta | 150° | 90.75 | 34.34 | 12.09 | 30.17 | 10.106 | 21.92 | 20.88 | 1.04 |
| Theta | 160° | 90.23 | 34.34 | 12.09 | 30.17 | 10.106 | 21.40 | 20.88 | 0.52 |
| Theta | 170° | 90.5 | 34.34 | 12.09 | 30.17 | 10.106 | 21.67 | 20.88 | 0.79 |
| Theta | 180° | 89.8 | 34.34 | 12.09 | 30.17 | 10.106 | 20.97 | 20.88 | 0.09 |
| Theta | 190° | 90.03 | 34.34 | 12.09 | 30.17 | 10.106 | 21.20 | 20.88 | 0.32 |
| Theta | 200° | 90.43 | 34.34 | 12.09 | 30.17 | 10.106 | 21.60 | 20.88 | 0.72 |
| Theta | 210° | 91.19 | 34.34 | 12.09 | 30.17 | 10.106 | 22.36 | 20.88 | 1.48 |
| Theta | 220° | 90.69 | 34.34 | 12.09 | 30.17 | 10.106 | 21.86 | 20.88 | 0.98 |
| Theta | 230° | 91.7 | 34.34 | 12.09 | 30.17 | 10.106 | 22.87 | 20.88 | 1.99 |
| Theta | 240° | 90.96 | 34.34 | 12.09 | 30.17 | 10.106 | 22.13 | 20.88 | 1.25 |
| Theta | 250° | 91.52 | 34.34 | 12.09 | 30.17 | 10.106 | 22.69 | 20.88 | 1.81 |
| Theta | 260° | 91.83 | 34.34 | 12.09 | 30.17 | 10.106 | 23.00 | 20.88 | 2.12 |
| Theta | 270° | 92.72 | 34.34 | 12.09 | 30.17 | 10.106 | 23.89 | 20.88 | 3.01 |
| Theta | 280° | 92.07 | 34.34 | 12.09 | 30.17 | 10.106 | 23.24 | 20.88 | 2.36 |
| Theta | 290° | 91.77 | 34.34 | 12.09 | 30.17 | 10.106 | 22.94 | 20.88 | 2.06 |
| Theta | 300° | 92.04 | 34.34 | 12.09 | 30.17 | 10.106 | 23.21 | 20.88 | 2.33 |
| Theta | 310° | 91.96 | 34.34 | 12.09 | 30.17 | 10.106 | 23.13 | 20.88 | 2.25 |
| Theta | 320° | 91.35 | 34.34 | 12.09 | 30.17 | 10.106 | 22.52 | 20.88 | 1.64 |
| Theta | 330° | 89.83 | 34.34 | 12.09 | 30.17 | 10.106 | 21.00 | 20.88 | 0.12 |
| Theta | 340° | 89.88 | 34.34 | 12.09 | 30.17 | 10.106 | 21.05 | 20.88 | 0.17 |
| Theta | 350° | 90.43 | 34.34 | 12.09 | 30.17 | 10.106 | 21.60 | 20.88 | 0.72 |
| Theta | 320° | 91.46 | 34.34 | 12.09 | 30.17 | 10.106 | 22.63 | 20.88 | 1.75 |
| Theta | 330° | 90.19 | 34.34 | 12.09 | 30.17 | 10.106 | 21.36 | 20.88 | 0.48 |
| Theta | 340° | 90.23 | 34.34 | 12.09 | 30.17 | 10.106 | 21.40 | 20.88 | 0.52 |
| Theta | 350° | 90.67 | 34.34 | 12.09 | 30.17 | 10.106 | 21.84 | 20.88 | 0.96 |

## 2.6.3 5300MHz-CH60

| Polarization (For Measurement Antenna) | Phi degree (For EUT) | Read Level (dBμV) | Ant Factor dB/m | Cable loss (dB) | Preamp Factor (dB) | Pre-Att (dB) | Measurement EIRP Power (dBm) | Conducted Power (dBm) | Directional Gain (dBi) |
|---|---|---|---|---|---|---|---|---|---|
| Phi | 0° | 91.48 | 34.4 | 12.16 | 30.14 | 10.158 | 22.86 | 20.97 | 1.89 |
| Phi | 10° | 92.53 | 34.4 | 12.16 | 30.14 | 10.158 | 23.91 | 20.97 | 2.94 |
| Phi | 18° | 93.11 | 34.4 | 12.16 | 30.14 | 10.158 | 24.49 | 20.97 | 3.52 |
| Phi | 20° | 93.49 | 34.4 | 12.16 | 30.14 | 10.158 | 24.87 | 20.97 | 3.90 |
| Phi | 22° | 93.34 | 34.4 | 12.16 | 30.14 | 10.158 | 24.72 | 20.97 | 3.75 |
| Phi | 30° | 90.82 | 34.4 | 12.16 | 30.14 | 10.158 | 22.20 | 20.97 | 1.23 |
| Phi | 40° | 90.88 | 34.4 | 12.16 | 30.14 | 10.158 | 22.26 | 20.97 | 1.29 |
| Phi | 50° | 91.19 | 34.4 | 12.16 | 30.14 | 10.158 | 22.57 | 20.97 | 1.60 |
| Phi | 60° | 91.13 | 34.4 | 12.16 | 30.14 | 10.158 | 22.51 | 20.97 | 1.54 |
| Phi | 70° | 89.7 | 34.4 | 12.16 | 30.14 | 10.158 | 21.08 | 20.97 | 0.11 |
| Phi | 80° | 88.77 | 34.4 | 12.16 | 30.14 | 10.158 | 20.15 | 20.97 | -0.82 |
| Phi | 90° | 88.1 | 34.4 | 12.16 | 30.14 | 10.158 | 19.48 | 20.97 | -1.49 |
| Phi | 100° | 88.91 | 34.4 | 12.16 | 30.14 | 10.158 | 20.29 | 20.97 | -0.68 |
| Phi | 110° | 90.09 | 34.4 | 12.16 | 30.14 | 10.158 | 21.47 | 20.97 | 0.50 |
| Phi | 120° | 90.26 | 34.4 | 12.16 | 30.14 | 10.158 | 21.64 | 20.97 | 0.67 |
| Phi | 130° | 90.25 | 34.4 | 12.16 | 30.14 | 10.158 | 21.63 | 20.97 | 0.66 |
| Phi | 140° | 90.84 | 34.4 | 12.16 | 30.14 | 10.158 | 22.22 | 20.97 | 1.25 |
| Phi | 150° | 90.62 | 34.4 | 12.16 | 30.14 | 10.158 | 22.00 | 20.97 | 1.03 |
| Phi | 160° | 90.36 | 34.4 | 12.16 | 30.14 | 10.158 | 21.74 | 20.97 | 0.77 |
| Phi | 170° | 89.91 | 34.4 | 12.16 | 30.14 | 10.158 | 21.29 | 20.97 | 0.32 |
| Phi | 180° | 90.03 | 34.4 | 12.16 | 30.14 | 10.158 | 21.41 | 20.97 | 0.44 |
| Phi | 190° | 91.05 | 34.4 | 12.16 | 30.14 | 10.158 | 22.43 | 20.97 | 1.46 |
| Phi | 200° | 90.76 | 34.4 | 12.16 | 30.14 | 10.158 | 22.14 | 20.97 | 1.17 |
| Phi | 210° | 91.82 | 34.4 | 12.16 | 30.14 | 10.158 | 23.20 | 20.97 | 2.23 |
| Phi | 220° | 91.97 | 34.4 | 12.16 | 30.14 | 10.158 | 23.35 | 20.97 | 2.38 |
| Phi | 230° | 91.55 | 34.4 | 12.16 | 30.14 | 10.158 | 22.93 | 20.97 | 1.96 |
| Phi | 240° | 91.04 | 34.4 | 12.16 | 30.14 | 10.158 | 22.42 | 20.97 | 1.45 |
| Phi | 250° | 90.73 | 34.4 | 12.16 | 30.14 | 10.158 | 22.11 | 20.97 | 1.14 |
| Phi | 260° | 89.94 | 34.4 | 12.16 | 30.14 | 10.158 | 21.32 | 20.97 | 0.35 |
| Phi | 270° | 89.28 | 34.4 | 12.16 | 30.14 | 10.158 | 20.66 | 20.97 | -0.31 |
| Phi | 280° | 88.92 | 34.4 | 12.16 | 30.14 | 10.158 | 20.30 | 20.97 | -0.67 |
| Phi | 290° | 88.9 | 34.4 | 12.16 | 30.14 | 10.158 | 20.28 | 20.97 | -0.69 |
| Phi | 300° | 90.3 | 34.4 | 12.16 | 30.14 | 10.158 | 21.68 | 20.97 | 0.71 |
| Phi | 310° | 90.96 | 34.4 | 12.16 | 30.14 | 10.158 | 22.34 | 20.97 | 1.37 |
| Phi | 320° | 91.43 | 34.4 | 12.16 | 30.14 | 10.158 | 22.81 | 20.97 | 1.84 |
| Phi | 330° | 91.69 | 34.4 | 12.16 | 30.14 | 10.158 | 23.07 | 20.97 | 2.10 |
| Phi | 340° | 91.58 | 34.4 | 12.16 | 30.14 | 10.158 | 22.96 | 20.97 | 1.99 |
| Phi | 350° | 91.15 | 34.4 | 12.16 | 30.14 | 10.158 | 22.53 | 20.97 | 1.56 |
| Theta | 0° | 88.18 | 34.4 | 12.16 | 30.14 | 10.158 | 19.56 | 20.97 | -1.41 |
| Theta | 10° | 88.44 | 34.4 | 12.16 | 30.14 | 10.158 | 19.82 | 20.97 | -1.15 |
| Theta | 18° | 89.88 | 34.4 | 12.16 | 30.14 | 10.158 | 21.26 | 20.97 | 0.29 |
| Theta | 20° | 89.99 | 34.4 | 12.16 | 30.14 | 10.158 | 21.37 | 20.97 | 0.40 |
| Theta | 22° | 89.92 | 34.4 | 12.16 | 30.14 | 10.158 | 21.30 | 20.97 | 0.33 |
| Theta | 30° | 89.05 | 34.4 | 12.16 | 30.14 | 10.158 | 20.43 | 20.97 | -0.54 |
| Theta | 40° | 89.79 | 34.4 | 12.16 | 30.14 | 10.158 | 21.17 | 20.97 | 0.20 |
| Theta | 50° | 90.42 | 34.4 | 12.16 | 30.14 | 10.158 | 21.80 | 20.97 | 0.83 |
| Theta | 60° | 90.81 | 34.4 | 12.16 | 30.14 | 10.158 | 22.19 | 20.97 | 1.22 |
| Theta | 70° | 91.03 | 34.4 | 12.16 | 30.14 | 10.158 | 22.41 | 20.97 | 1.44 |
| Theta | 80° | 90.78 | 34.4 | 12.16 | 30.14 | 10.158 | 22.16 | 20.97 | 1.19 |
| Theta | 90° | 91.93 | 34.4 | 12.16 | 30.14 | 10.158 | 23.31 | 20.97 | 2.34 |

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|---|---|---|---|---|---|---|---|---|---|
| Theta | 100° | 90.87 | 34.4 | 12.16 | 30.14 | 10.158 | 22.25 | 20.97 | 1.28 |
| Theta | 110° | 90.59 | 34.4 | 12.16 | 30.14 | 10.158 | 21.97 | 20.97 | 1.00 |
| Theta | 120° | 90.91 | 34.4 | 12.16 | 30.14 | 10.158 | 22.29 | 20.97 | 1.32 |
| Theta | 130° | 90.54 | 34.4 | 12.16 | 30.14 | 10.158 | 21.92 | 20.97 | 0.95 |
| Theta | 140° | 89.85 | 34.4 | 12.16 | 30.14 | 10.158 | 21.23 | 20.97 | 0.26 |
| Theta | 150° | 90.58 | 34.4 | 12.16 | 30.14 | 10.158 | 21.96 | 20.97 | 0.99 |
| Theta | 160° | 89.6 | 34.4 | 12.16 | 30.14 | 10.158 | 20.98 | 20.97 | 0.01 |
| Theta | 170° | 89.19 | 34.4 | 12.16 | 30.14 | 10.158 | 20.57 | 20.97 | -0.40 |
| Theta | 180° | 90.1 | 34.4 | 12.16 | 30.14 | 10.158 | 21.48 | 20.97 | 0.51 |
| Theta | 190° | 90.07 | 34.4 | 12.16 | 30.14 | 10.158 | 21.45 | 20.97 | 0.48 |
| Theta | 200° | 89.8 | 34.4 | 12.16 | 30.14 | 10.158 | 21.18 | 20.97 | 0.21 |
| Theta | 210° | 90.27 | 34.4 | 12.16 | 30.14 | 10.158 | 21.65 | 20.97 | 0.68 |
| Theta | 220° | 89.91 | 34.4 | 12.16 | 30.14 | 10.158 | 21.29 | 20.97 | 0.32 |
| Theta | 230° | 90.07 | 34.4 | 12.16 | 30.14 | 10.158 | 21.45 | 20.97 | 0.48 |
| Theta | 240° | 91.11 | 34.4 | 12.16 | 30.14 | 10.158 | 22.49 | 20.97 | 1.52 |
| Theta | 250° | 91.23 | 34.4 | 12.16 | 30.14 | 10.158 | 22.61 | 20.97 | 1.64 |
| Theta | 260° | 91.26 | 34.4 | 12.16 | 30.14 | 10.158 | 22.64 | 20.97 | 1.67 |
| Theta | 270° | 91.76 | 34.4 | 12.16 | 30.14 | 10.158 | 23.14 | 20.97 | 2.17 |
| Theta | 280° | 91.28 | 34.4 | 12.16 | 30.14 | 10.158 | 22.66 | 20.97 | 1.69 |
| Theta | 290° | 91.39 | 34.4 | 12.16 | 30.14 | 10.158 | 22.77 | 20.97 | 1.80 |
| Theta | 300° | 90.41 | 34.4 | 12.16 | 30.14 | 10.158 | 21.79 | 20.97 | 0.82 |
| Theta | 310° | 90.15 | 34.4 | 12.16 | 30.14 | 10.158 | 21.53 | 20.97 | 0.56 |
| Theta | 320° | 90.8 | 34.4 | 12.16 | 30.14 | 10.158 | 22.18 | 20.97 | 1.21 |
| Theta | 330° | 91.06 | 34.4 | 12.16 | 30.14 | 10.158 | 22.44 | 20.97 | 1.47 |
| Theta | 340° | 89.82 | 34.4 | 12.16 | 30.14 | 10.158 | 21.20 | 20.97 | 0.23 |
| Theta | 350° | 88.56 | 34.4 | 12.16 | 30.14 | 10.158 | 19.94 | 20.97 | -1.03 |

## 2.6.4 5580MHz-CH116

| Polarization (For Measurement Antenna) | Phi degree (For EUT) | Read Level (dBμV) | Ant Factor dB/m | Cable loss (dB) | Preamp Factor (dB) | Pre-Att (dB) | Measurement EIRP Power (dBm) | Conducted Power (dBm) | Directional Gain (dBi) |
|---|---|---|---|---|---|---|---|---|---|
| Phi | 0° | 90.81 | 34.5 | 12.49 | 30.02 | 10.2 | 22.78 | 20.78 | 2.00 |
| Phi | 10° | 90.8 | 34.5 | 12.49 | 30.02 | 10.2 | 22.77 | 20.78 | 1.99 |
| Phi | 20° | 91.13 | 34.5 | 12.49 | 30.02 | 10.2 | 23.10 | 20.78 | 2.32 |
| Phi | 30° | 92.54 | 34.5 | 12.49 | 30.02 | 10.2 | 24.51 | 20.78 | 3.73 |
| Phi | 34° | 93.16 | 34.5 | 12.49 | 30.02 | 10.2 | 25.13 | 20.78 | 4.35 |
| Phi | 36° | 93.26 | 34.5 | 12.49 | 30.02 | 10.2 | 25.23 | 20.78 | 4.45 |
| Phi | 38° | 93.06 | 34.5 | 12.49 | 30.02 | 10.2 | 25.03 | 20.78 | 4.25 |
| Phi | 40° | 92.93 | 34.5 | 12.49 | 30.02 | 10.2 | 24.90 | 20.78 | 4.12 |
| Phi | 42° | 92.9 | 34.5 | 12.49 | 30.02 | 10.2 | 24.87 | 20.78 | 4.09 |
| Phi | 50° | 91.96 | 34.5 | 12.49 | 30.02 | 10.2 | 23.93 | 20.78 | 3.15 |
| Phi | 60° | 90.94 | 34.5 | 12.49 | 30.02 | 10.2 | 22.91 | 20.78 | 2.13 |
| Phi | 70° | 90.23 | 34.5 | 12.49 | 30.02 | 10.2 | 22.20 | 20.78 | 1.42 |
| Phi | 80° | 90.12 | 34.5 | 12.49 | 30.02 | 10.2 | 22.09 | 20.78 | 1.31 |
| Phi | 90° | 89.6 | 34.5 | 12.49 | 30.02 | 10.2 | 21.57 | 20.78 | 0.79 |
| Phi | 100° | 89.07 | 34.5 | 12.49 | 30.02 | 10.2 | 21.04 | 20.78 | 0.26 |
| Phi | 110° | 88.26 | 34.5 | 12.49 | 30.02 | 10.2 | 20.23 | 20.78 | -0.55 |
| Phi | 120° | 88.19 | 34.5 | 12.49 | 30.02 | 10.2 | 20.16 | 20.78 | -0.62 |
| Phi | 130° | 89.52 | 34.5 | 12.49 | 30.02 | 10.2 | 21.49 | 20.78 | 0.71 |
| Phi | 140° | 90.75 | 34.5 | 12.49 | 30.02 | 10.2 | 22.72 | 20.78 | 1.94 |
| Phi | 150° | 91.91 | 34.5 | 12.49 | 30.02 | 10.2 | 23.88 | 20.78 | 3.10 |
| Phi | 160° | 89.92 | 34.5 | 12.49 | 30.02 | 10.2 | 21.89 | 20.78 | 1.11 |
| Phi | 170° | 90.47 | 34.5 | 12.49 | 30.02 | 10.2 | 22.44 | 20.78 | 1.66 |
| Phi | 180° | 91.78 | 34.5 | 12.49 | 30.02 | 10.2 | 23.75 | 20.78 | 2.97 |
| Phi | 190° | 92.68 | 34.5 | 12.49 | 30.02 | 10.2 | 24.65 | 20.78 | 3.87 |
| Phi | 200° | 92.68 | 34.5 | 12.49 | 30.02 | 10.2 | 24.65 | 20.78 | 3.87 |
| Phi | 210° | 92.9 | 34.5 | 12.49 | 30.02 | 10.2 | 24.87 | 20.78 | 4.09 |
| Phi | 220° | 92.63 | 34.5 | 12.49 | 30.02 | 10.2 | 24.60 | 20.78 | 3.82 |
| Phi | 230° | 91.6 | 34.5 | 12.49 | 30.02 | 10.2 | 23.57 | 20.78 | 2.79 |
| Phi | 240° | 90.45 | 34.5 | 12.49 | 30.02 | 10.2 | 22.42 | 20.78 | 1.64 |
| Phi | 250° | 89.82 | 34.5 | 12.49 | 30.02 | 10.2 | 21.79 | 20.78 | 1.01 |
| Phi | 260° | 90.34 | 34.5 | 12.49 | 30.02 | 10.2 | 22.31 | 20.78 | 1.53 |
| Phi | 270° | 89.9 | 34.5 | 12.49 | 30.02 | 10.2 | 21.87 | 20.78 | 1.09 |
| Phi | 280° | 89.26 | 34.5 | 12.49 | 30.02 | 10.2 | 21.23 | 20.78 | 0.45 |
| Phi | 290° | 89.35 | 34.5 | 12.49 | 30.02 | 10.2 | 21.32 | 20.78 | 0.54 |
| Phi | 300° | 90.21 | 34.5 | 12.49 | 30.02 | 10.2 | 22.18 | 20.78 | 1.40 |
| Phi | 310° | 90.68 | 34.5 | 12.49 | 30.02 | 10.2 | 22.65 | 20.78 | 1.87 |
| Phi | 320° | 92.24 | 34.5 | 12.49 | 30.02 | 10.2 | 24.21 | 20.78 | 3.43 |
| Phi | 330° | 91.95 | 34.5 | 12.49 | 30.02 | 10.2 | 23.92 | 20.78 | 3.14 |
| Phi | 340° | 90.99 | 34.5 | 12.49 | 30.02 | 10.2 | 22.96 | 20.78 | 2.18 |
| Phi | 350° | 91.04 | 34.5 | 12.49 | 30.02 | 10.2 | 23.01 | 20.78 | 2.23 |
| Theta | 0° | 89.92 | 34.5 | 12.49 | 30.02 | 10.2 | 21.89 | 20.78 | 1.11 |
| Theta | 10° | 89.53 | 34.5 | 12.49 | 30.02 | 10.2 | 21.50 | 20.78 | 0.72 |
| Theta | 20° | 89.58 | 34.5 | 12.49 | 30.02 | 10.2 | 21.55 | 20.78 | 0.77 |
| Theta | 30° | 89.2 | 34.5 | 12.49 | 30.02 | 10.2 | 21.17 | 20.78 | 0.39 |
| Theta | 34° | 89.05 | 34.5 | 12.49 | 30.02 | 10.2 | 21.02 | 20.78 | 0.24 |
| Theta | 36° | 88.92 | 34.5 | 12.49 | 30.02 | 10.2 | 20.89 | 20.78 | 0.11 |
| Theta | 38° | 89.23 | 34.5 | 12.49 | 30.02 | 10.2 | 21.20 | 20.78 | 0.42 |
| Theta | 40° | 89.89 | 34.5 | 12.49 | 30.02 | 10.2 | 21.86 | 20.78 | 1.08 |
| Theta | 42° | 89.96 | 34.5 | 12.49 | 30.02 | 10.2 | 21.93 | 20.78 | 1.15 |
| Theta | 50° | 90.69 | 34.5 | 12.49 | 30.02 | 10.2 | 22.66 | 20.78 | 1.88 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Theta | 60° | 90.86 | 34.5 | 12.49 | 30.02 | 10.2 | 22.83 | 20.78 | 2.05 |
| Theta | 70° | 91.49 | 34.5 | 12.49 | 30.02 | 10.2 | 23.46 | 20.78 | 2.68 |
| Theta | 80° | 92.21 | 34.5 | 12.49 | 30.02 | 10.2 | 24.18 | 20.78 | 3.40 |
| Theta | 90° | 92.6 | 34.5 | 12.49 | 30.02 | 10.2 | 24.57 | 20.78 | 3.79 |
| Theta | 100° | 91.69 | 34.5 | 12.49 | 30.02 | 10.2 | 23.66 | 20.78 | 2.88 |
| Theta | 110° | 91.89 | 34.5 | 12.49 | 30.02 | 10.2 | 23.86 | 20.78 | 3.08 |
| Theta | 120° | 91.2 | 34.5 | 12.49 | 30.02 | 10.2 | 23.17 | 20.78 | 2.39 |
| Theta | 130° | 91.15 | 34.5 | 12.49 | 30.02 | 10.2 | 23.12 | 20.78 | 2.34 |
| Theta | 140° | 91.34 | 34.5 | 12.49 | 30.02 | 10.2 | 23.31 | 20.78 | 2.53 |
| Theta | 150° | 90.29 | 34.5 | 12.49 | 30.02 | 10.2 | 22.26 | 20.78 | 1.48 |
| Theta | 160° | 89.36 | 34.5 | 12.49 | 30.02 | 10.2 | 21.33 | 20.78 | 0.55 |
| Theta | 170° | 88.87 | 34.5 | 12.49 | 30.02 | 10.2 | 20.84 | 20.78 | 0.06 |
| Theta | 180° | 89.73 | 34.5 | 12.49 | 30.02 | 10.2 | 21.70 | 20.78 | 0.92 |
| Theta | 190° | 89.15 | 34.5 | 12.49 | 30.02 | 10.2 | 21.12 | 20.78 | 0.34 |
| Theta | 200° | 89.08 | 34.5 | 12.49 | 30.02 | 10.2 | 21.05 | 20.78 | 0.27 |
| Theta | 210° | 89.25 | 34.5 | 12.49 | 30.02 | 10.2 | 21.22 | 20.78 | 0.44 |
| Theta | 220° | 89.87 | 34.5 | 12.49 | 30.02 | 10.2 | 21.84 | 20.78 | 1.06 |
| Theta | 230° | 90.46 | 34.5 | 12.49 | 30.02 | 10.2 | 22.43 | 20.78 | 1.65 |
| Theta | 240° | 91.26 | 34.5 | 12.49 | 30.02 | 10.2 | 23.23 | 20.78 | 2.45 |
| Theta | 250° | 91.44 | 34.5 | 12.49 | 30.02 | 10.2 | 23.41 | 20.78 | 2.63 |
| Theta | 260° | 91.86 | 34.5 | 12.49 | 30.02 | 10.2 | 23.83 | 20.78 | 3.05 |
| Theta | 270° | 92.14 | 34.5 | 12.49 | 30.02 | 10.2 | 24.11 | 20.78 | 3.33 |
| Theta | 280° | 91.67 | 34.5 | 12.49 | 30.02 | 10.2 | 23.64 | 20.78 | 2.86 |
| Theta | 290° | 91.1 | 34.5 | 12.49 | 30.02 | 10.2 | 23.07 | 20.78 | 2.29 |
| Theta | 300° | 90.58 | 34.5 | 12.49 | 30.02 | 10.2 | 22.55 | 20.78 | 1.77 |
| Theta | 310° | 91.2 | 34.5 | 12.49 | 30.02 | 10.2 | 23.17 | 20.78 | 2.39 |
| Theta | 320° | 90.73 | 34.5 | 12.49 | 30.02 | 10.2 | 22.70 | 20.78 | 1.92 |
| Theta | 330° | 90.31 | 34.5 | 12.49 | 30.02 | 10.2 | 22.28 | 20.78 | 1.50 |
| Theta | 340° | 88.93 | 34.5 | 12.49 | 30.02 | 10.2 | 20.90 | 20.78 | 0.12 |
| Theta | 350° | 88.94 | 34.5 | 12.49 | 30.02 | 10.2 | 20.91 | 20.78 | 0.13 |

## 2.6.5 5785MHz-CH157

| Polarization (For Measurement Antenna) | Phi degree (For EUT) | Read Level (dBμV) | Ant Factor dB/m | Cable loss (dB) | Preamp Factor (dB) | Pre-Att (dB) | Measurement EIRP Power (dBm) | Conducted Power (dBm) | Directional Gain (dBi) |
|---|---|---|---|---|---|---|---|---|---|
| Phi | 0° | 90.98 | 34.77 | 12.75 | 30.25 | 10.127 | 23.18 | 21.12 | 2.06 |
| Phi | 10° | 91.98 | 34.77 | 12.75 | 30.25 | 10.127 | 24.18 | 21.12 | 3.06 |
| Phi | 20° | 92.23 | 34.77 | 12.75 | 30.25 | 10.127 | 24.43 | 21.12 | 3.31 |
| Phi | 30° | 92.04 | 34.77 | 12.75 | 30.25 | 10.127 | 24.24 | 21.12 | 3.12 |
| Phi | 40° | 91.72 | 34.77 | 12.75 | 30.25 | 10.127 | 23.92 | 21.12 | 2.80 |
| Phi | 50° | 91.15 | 34.77 | 12.75 | 30.25 | 10.127 | 23.35 | 21.12 | 2.23 |
| Phi | 60° | 91.03 | 34.77 | 12.75 | 30.25 | 10.127 | 23.23 | 21.12 | 2.11 |
| Phi | 70° | 90.32 | 34.77 | 12.75 | 30.25 | 10.127 | 22.52 | 21.12 | 1.40 |
| Phi | 80° | 90.57 | 34.77 | 12.75 | 30.25 | 10.127 | 22.77 | 21.12 | 1.65 |
| Phi | 90° | 89.69 | 34.77 | 12.75 | 30.25 | 10.127 | 21.89 | 21.12 | 0.77 |
| Phi | 100° | 89.57 | 34.77 | 12.75 | 30.25 | 10.127 | 21.77 | 21.12 | 0.65 |
| Phi | 110° | 89.97 | 34.77 | 12.75 | 30.25 | 10.127 | 22.17 | 21.12 | 1.05 |
| Phi | 120° | 90.94 | 34.77 | 12.75 | 30.25 | 10.127 | 23.14 | 21.12 | 2.02 |
| Phi | 130° | 91.85 | 34.77 | 12.75 | 30.25 | 10.127 | 24.05 | 21.12 | 2.93 |
| Phi | 140° | 91.63 | 34.77 | 12.75 | 30.25 | 10.127 | 23.83 | 21.12 | 2.71 |
| Phi | 150° | 91.56 | 34.77 | 12.75 | 30.25 | 10.127 | 23.76 | 21.12 | 2.64 |
| Phi | 160° | 91.78 | 34.77 | 12.75 | 30.25 | 10.127 | 23.98 | 21.12 | 2.86 |
| Phi | 170° | 92.54 | 34.77 | 12.75 | 30.25 | 10.127 | 24.74 | 21.12 | 3.62 |
| Phi | 180° | 92.39 | 34.77 | 12.75 | 30.25 | 10.127 | 24.59 | 21.12 | 3.47 |
| Phi | 190° | 93 | 34.77 | 12.75 | 30.25 | 10.127 | 25.20 | 21.12 | 4.08 |
| Phi | 200° | 93.21 | 34.77 | 12.75 | 30.25 | 10.127 | 25.41 | 21.12 | 4.29 |
| Phi | 208° | 92.77 | 34.77 | 12.75 | 30.25 | 10.127 | 24.97 | 21.12 | 3.85 |
| Phi | 210° | 93.48 | 34.77 | 12.75 | 30.25 | 10.127 | 25.68 | 21.12 | 4.56 |
| Phi | 212° | 92.58 | 34.77 | 12.75 | 30.25 | 10.127 | 24.78 | 21.12 | 3.66 |
| Phi | 220° | 92.73 | 34.77 | 12.75 | 30.25 | 10.127 | 24.93 | 21.12 | 3.81 |
| Phi | 230° | 91.86 | 34.77 | 12.75 | 30.25 | 10.127 | 24.06 | 21.12 | 2.94 |
| Phi | 240° | 91.61 | 34.77 | 12.75 | 30.25 | 10.127 | 23.81 | 21.12 | 2.69 |
| Phi | 250° | 90.57 | 34.77 | 12.75 | 30.25 | 10.127 | 22.77 | 21.12 | 1.65 |
| Phi | 260° | 90.33 | 34.77 | 12.75 | 30.25 | 10.127 | 22.53 | 21.12 | 1.41 |
| Phi | 270° | 90.83 | 34.77 | 12.75 | 30.25 | 10.127 | 23.03 | 21.12 | 1.91 |
| Phi | 280° | 90.47 | 34.77 | 12.75 | 30.25 | 10.127 | 22.67 | 21.12 | 1.55 |
| Phi | 290° | 90.21 | 34.77 | 12.75 | 30.25 | 10.127 | 22.41 | 21.12 | 1.29 |
| Phi | 300° | 89.79 | 34.77 | 12.75 | 30.25 | 10.127 | 21.99 | 21.12 | 0.87 |
| Phi | 310° | 90.65 | 34.77 | 12.75 | 30.25 | 10.127 | 22.85 | 21.12 | 1.73 |
| Phi | 320° | 91.07 | 34.77 | 12.75 | 30.25 | 10.127 | 23.27 | 21.12 | 2.15 |
| Phi | 330° | 91.26 | 34.77 | 12.75 | 30.25 | 10.127 | 23.46 | 21.12 | 2.34 |
| Phi | 340° | 91.79 | 34.77 | 12.75 | 30.25 | 10.127 | 23.99 | 21.12 | 2.87 |
| Phi | 350° | 92.04 | 34.77 | 12.75 | 30.25 | 10.127 | 24.24 | 21.12 | 3.12 |
| Theta | 0° | 88.66 | 34.77 | 12.75 | 30.25 | 10.127 | 20.86 | 21.12 | -0.26 |
| Theta | 10° | 88.38 | 34.77 | 12.75 | 30.25 | 10.127 | 20.58 | 21.12 | -0.54 |
| Theta | 20° | 88.45 | 34.77 | 12.75 | 30.25 | 10.127 | 20.65 | 21.12 | -0.47 |
| Theta | 30° | 88.49 | 34.77 | 12.75 | 30.25 | 10.127 | 20.69 | 21.12 | -0.43 |
| Theta | 40° | 89.54 | 34.77 | 12.75 | 30.25 | 10.127 | 21.74 | 21.12 | 0.62 |
| Theta | 50° | 90.46 | 34.77 | 12.75 | 30.25 | 10.127 | 22.66 | 21.12 | 1.54 |
| Theta | 60° | 90.54 | 34.77 | 12.75 | 30.25 | 10.127 | 22.74 | 21.12 | 1.62 |
| Theta | 70° | 91.46 | 34.77 | 12.75 | 30.25 | 10.127 | 23.66 | 21.12 | 2.54 |
| Theta | 80° | 91.59 | 34.77 | 12.75 | 30.25 | 10.127 | 23.79 | 21.12 | 2.67 |
| Theta | 90° | 91.65 | 34.77 | 12.75 | 30.25 | 10.127 | 23.85 | 21.12 | 2.73 |
| Theta | 100° | 91.9 | 34.77 | 12.75 | 30.25 | 10.127 | 24.10 | 21.12 | 2.98 |
| Theta | 110° | 91.24 | 34.77 | 12.75 | 30.25 | 10.127 | 23.44 | 21.12 | 2.32 |

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|---|---|---|---|---|---|---|---|---|---|
| Theta | 120° | 91.23 | 34.77 | 12.75 | 30.25 | 10.127 | 23.43 | 21.12 | 2.31 |
| Theta | 130° | 90.93 | 34.77 | 12.75 | 30.25 | 10.127 | 23.13 | 21.12 | 2.01 |
| Theta | 140° | 90.19 | 34.77 | 12.75 | 30.25 | 10.127 | 22.39 | 21.12 | 1.27 |
| Theta | 150° | 90.57 | 34.77 | 12.75 | 30.25 | 10.127 | 22.77 | 21.12 | 1.65 |
| Theta | 160° | 88.06 | 34.77 | 12.75 | 30.25 | 10.127 | 20.26 | 21.12 | -0.86 |
| Theta | 170° | 89.03 | 34.77 | 12.75 | 30.25 | 10.127 | 21.23 | 21.12 | 0.11 |
| Theta | 180° | 89.13 | 34.77 | 12.75 | 30.25 | 10.127 | 21.33 | 21.12 | 0.21 |
| Theta | 190° | 88.94 | 34.77 | 12.75 | 30.25 | 10.127 | 21.14 | 21.12 | 0.02 |
| Theta | 200° | 88.37 | 34.77 | 12.75 | 30.25 | 10.127 | 20.57 | 21.12 | -0.55 |
| Theta | 208° | 88.45 | 34.77 | 12.75 | 30.25 | 10.127 | 20.65 | 21.12 | -0.47 |
| Theta | 210° | 88.02 | 34.77 | 12.75 | 30.25 | 10.127 | 20.22 | 21.12 | -0.90 |
| Theta | 212° | 88.04 | 34.77 | 12.75 | 30.25 | 10.127 | 20.24 | 21.12 | -0.88 |
| Theta | 220° | 89.09 | 34.77 | 12.75 | 30.25 | 10.127 | 21.29 | 21.12 | 0.17 |
| Theta | 230° | 90.04 | 34.77 | 12.75 | 30.25 | 10.127 | 22.24 | 21.12 | 1.12 |
| Theta | 240° | 91.57 | 34.77 | 12.75 | 30.25 | 10.127 | 23.77 | 21.12 | 2.65 |
| Theta | 250° | 91.95 | 34.77 | 12.75 | 30.25 | 10.127 | 24.15 | 21.12 | 3.03 |
| Theta | 260° | 91.55 | 34.77 | 12.75 | 30.25 | 10.127 | 23.75 | 21.12 | 2.63 |
| Theta | 270° | 90.54 | 34.77 | 12.75 | 30.25 | 10.127 | 22.74 | 21.12 | 1.62 |
| Theta | 280° | 91.67 | 34.77 | 12.75 | 30.25 | 10.127 | 23.87 | 21.12 | 2.75 |
| Theta | 290° | 90.77 | 34.77 | 12.75 | 30.25 | 10.127 | 22.97 | 21.12 | 1.85 |
| Theta | 300° | 91.33 | 34.77 | 12.75 | 30.25 | 10.127 | 23.53 | 21.12 | 2.41 |
| Theta | 310° | 91.1 | 34.77 | 12.75 | 30.25 | 10.127 | 23.30 | 21.12 | 2.18 |
| Theta | 320° | 91.52 | 34.77 | 12.75 | 30.25 | 10.127 | 23.72 | 21.12 | 2.60 |
| Theta | 330° | 90.53 | 34.77 | 12.75 | 30.25 | 10.127 | 22.73 | 21.12 | 1.61 |
| Theta | 340° | 88.3 | 34.77 | 12.75 | 30.25 | 10.127 | 20.50 | 21.12 | -0.62 |
| Theta | 350° | 90.37 | 34.77 | 12.75 | 30.25 | 10.127 | 22.57 | 21.12 | 1.45 |

# 3 List of Measuring Equipment

| Instrument | Brand Name | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|---|---|---|---|---|---|---|---|---|
| Power Meter | Anritsu | ML2495A | 1005002 | 50MHz Bandwidth | Jan 02, 2024 | Sep 28, 2024 ~Sep 29, 2024 | Jan. 01, 2025 | Conducted (TH01-KS) |
| Combiner | MTJ Cooperation | MTJ7018-N | 16072602 | 50ohm N RESISTIVE POWER DIVIDER 2WAY DC-18 GHZ | NCR | Sep 28, 2024 ~Sep 29, 2024 | NCR | Conducted (TH01-KS) |
| 10dB attenuator | TOJOIN | SMA(JK) | TH01KS01 | 2W/DC-18G | NCR | Sep 28, 2024 ~Sep 29, 2024 | NCR | Conducted (TH01-KS) |
| EXA Spectrum Analyzer | Keysight | N9010A | MY55370528 | 10Hz-44G,MAX 30dB | Oct 10, 2023 | Sep 23, 2024 ~Sep 29, 2024 | Oct. 10, 2024 | Radiation (03CH08-KS) |
| Double Ridge Horn Antenna | ETS-Lindgren | 3117 | 75959 | 1GHz~18GHz | Mar 01, 2024 | Sep 23, 2024 ~Sep 29, 2024 | Mar. 01, 2025 | Radiation (03CH08-KS) |
| Amplifier | Keysight | 83017A | MY53270319 | 500MHz~26.5GHz | Oct 10, 2023 | Sep 23, 2024 ~Sep 29, 2024 | Oct. 09, 2024 | Radiation (03CH08-KS) |
| AC Power Source | Chroma | 61601 | 616010002473 | N/A | NCR | Sep 23, 2024 ~Sep 29, 2024 | NCR | Radiation (03CH08-KS) |
| Antenna Mast | EM | EM 1000-A | N/A | 1 m~4 m | NCR | Sep 23, 2024 ~Sep 29, 2024 | NCR | Radiation (03CH08-KS) |
| RF Cable | HUBER+SUHNER | SUCOFLEX102E | 03CH08KS01 | 30Mhz-40Ghz | Mar 30, 2024 | Sep 23, 2024 ~Sep 29, 2024 | Mar. 30, 2025 | Radiation (03CH08-KS) |
| RF Cable | HUBER+SUHNER | SUCOFLEX102E | 03CH08KS02 | 30Mhz-40Ghz | Mar 30, 2024 | Sep 23, 2024 ~Sep 29, 2024 | Mar. 30, 2025 | Radiation (03CH08-KS) |
| RF Cable | HUBER+SUHNER | SUCOFLEX102E | 03CH08KS03 | 30Mhz-40Ghz | Mar 30, 2024 | Sep 23, 2024 ~Sep 29, 2024 | Mar. 30, 2025 | Radiation (03CH08-KS) |
| 10dB attenuator | TOJOIN | SMA(JK) | 03CH08KS08 | 2W/DC-18G | NCR | Sep 23, 2024 ~Sep 29, 2024 | NCR | Radiation (03CH08-KS) |
| Phi & Theta axis instrument | EM | Phi1600 Theta800 | 060947 | N/A | NCR | Sep 23, 2024 ~Sep 29, 2024 | NCR | Radiation (03CH08-KS) |
| Turn Table Master | ChainTek | EM2000 | 060947 | N/A | NCR | Sep 23, 2024 ~Sep 29, 2024 | NCR | Radiation (03CH08-KS) |

NCR: No Calibration Required