



## SGS-CSTC Standards Technical Services Co., Ltd Shenzhen Branch

Report No.: SZOA2408000185AT01  
Rev.: 01  
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# ANTENNA PASSIVE TEST REPORT

Application No. SZOA2408000185AT  
Applicant SKULLCANDY, INC.  
Manufacturer SKULLCANDY, INC.  
Product Name CRUSHER PLYR 720 XB/ CRUSHER PLYR 720  
Model No. S6PXW / S6PCW  
Standards ANSI/IEEE Std 149-2021  
Date Initial Sample(s) Received Mar. 03, 2025  
Testing Start Date Mar. 03, 2025  
Testing Finish Date Mar. 12, 2025  
Report Issue Date May 15, 2025

\* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Turner He

Prepared by:  
Turner He/ Test Engineer

Ervin Li

Approved by:  
Ervin Li/ Technical Manager



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Shenzhen Branch / Wireless Laboratory

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Revision History

| Revision | Issue Date   | Description                |
|----------|--------------|----------------------------|
| 01       | May 15, 2025 | Initial creation of report |



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### 1 General Information

#### 1.1 Testing Laboratory

|          |  |
|----------|--|
| Test Lab | SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch  |
| Address  | No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057 |
| Contact  | Ervin Li   |
| Tel.     | +86 18823369694  |
| Fax      | +86-755-25328600   |
| E-mail   | Ervin.Li@sgs.com   |

#### 1.2 Details of Applicant

|                     |  |
|---------------------|--|
| Applicant's Name    | SKULLCANDY, INC.   |
| Applicant's Address | 6301 N Landmark Dr Park City, UT 84098, United States of America |
| Contact             | ANDREW CARTER  |
| Tel.                | 404-561-0830   |
| Fax                 | N/A  |
| E-mail              | andrew.carter@skullcandy.com                                     |

#### 1.3 Details of Manufacturer

|                        |  |
|------------------------|--|
| Manufacturer's Name    | SKULLCANDY, INC.   |
| Manufacturer's Address | 6301 N Landmark Dr Park City, UT 84098, United States of America |
| Contact                | ANDREW CARTER  |
| Tel.                   | 404-561-0830   |
| Fax                    | N/A  |
| E-mail                 | andrew.carter@skullcandy.com                                     |



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## 1.4 General Description of EUT

|                         |   |
|-------------------------|---|
| Device Description:     | S6PXW / S6PCW   |
| Device Manufacturer:    | SKULLCANDY, INC.  |
| Device Model:           | CRUSHER PLYR 720 XB/ CRUSHER PLYR 720                                 |
| Hardware Version:       | REV_1F  |
| Software Version:       | 1.0.0.25  |
| Air Interface Supported | 2.4GHz BLE & 2.4G proprietary   |
| Antenna Dimension:      | 20.00 mm * 7.00mm * 0.15mm(WW20D2)<br>3.20mm *1.60mm * 0.50mm(AA055U) |

## 1.5 Test Procedure

Testing is performed according to the **ANSI/IEEE Std 149-2021**.



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### 1.6 Test Specification

| Identity               | Document Title                             |
|------------------------|--|
| ANSI/IEEE Std 149-2008 | IEEE Standard Test Procedures for Antennas |

### 1.7 Laboratory Environment

|                   |                          |         |
|-------------------|--------------------------|---------|
| Temperature       | Min. =19°C , Max. = 25°C |         |
| Relative humidity | Min. =40% , Max. =72%    |         |
| Shield effect     | 0.7-6GHz                 | > 100dB |
| Ground resistance | <0.5Ω                    |         |



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## 2 OTA Measurements System Configuration

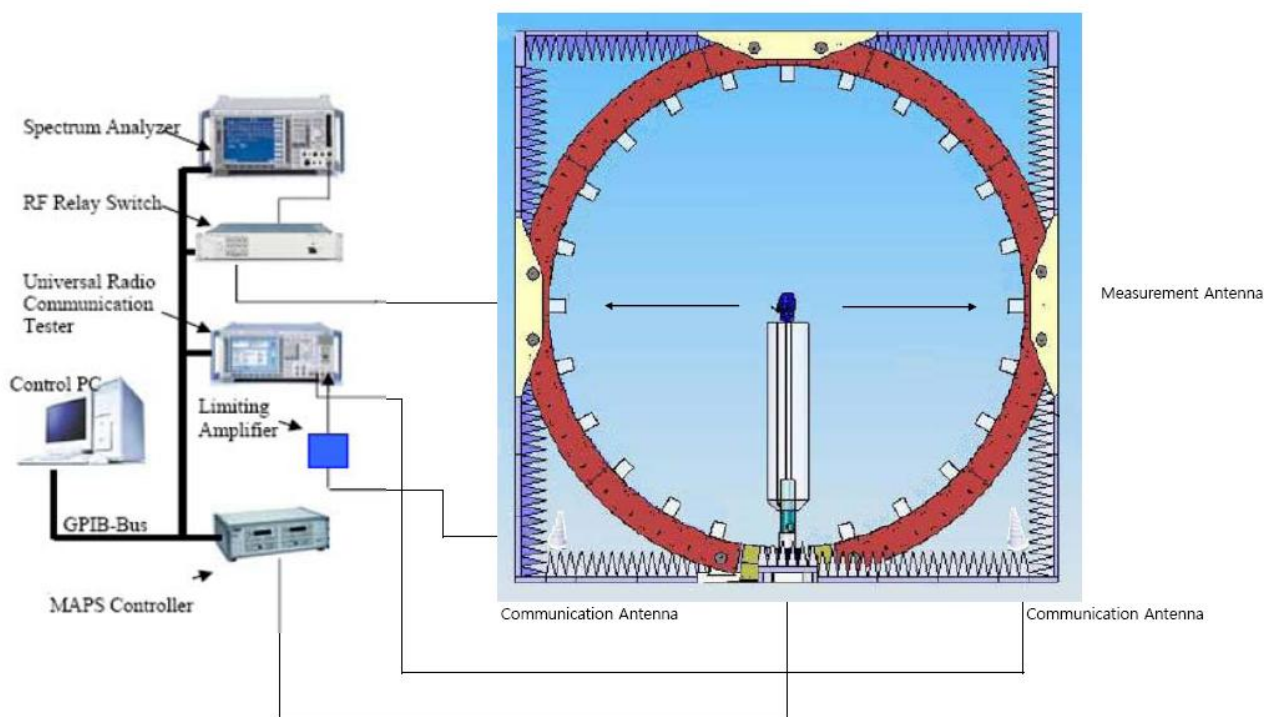
### 2.1 Test Configuration

#### Testing Condition:

- Temperature:  $22 \pm 3^{\circ}\text{C}$
- Humidity: <80%

#### Measurement Facility:

Great-Circle-Cut method is used to measure the antenna 3D GAIN of EUT in OTA qualified anechoic chamber. Equipment Under Test (EUT) geometry centre vertical projection at the centre of platform, the distance from EUT to measurement antenna is 5m



F-1. OTA Measurement System Configuration



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3 Test Equipment List

| Type of Equipment                         | Model Number               | Manufacture       | Calibration Date | Valid Period |
|---|----------------------------|-------------------|------------------|--------------|
| Network Analyzer                          | E5071C<br>S/N MY46523591   | Keysight          | 2024/12/19       | 2025/12/18   |
| Quad-Ridge Horn Antenna<br>700 MHz-10 GHz | EMCO 3164-08<br>S/N 161915 | ETS-Lindgren L.P. | N/A              | N/A          |
| MAPS Controller                           | EMCENTER<br>S/N 160485     | ETS-Lindgren L.P. | N/A              | N/A          |
| SAM V4.5BS Head Phantom                   | Head Phantom<br>S/N 3609   | SPEAG             | NCR              | NCR          |

**Definition of Acronyms:**  
NCR: No Calibration Requirement.



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4 Measurement Uncertainty

| Item  | 2400-2500 MHz (dB) |
|---|--------------------|
| Gain  | 0.88               |
| Efficiency  | 0.88               |
| Measurement Uncertainty (95% CONFIDENCE INTERVAL) K=2 |                    |



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### 5 Test Results

| Free Space WW20D2 #1 |                 |                |            |
|----------------------|-----------------|----------------|------------|
| Frequency (MHz)      | Efficiency (dB) | Efficiency (%) | Gain (dBi) |
| 2350                 | -4.37           | 36.60          | 0.52       |
| 2355                 | -4.48           | 35.63          | 0.37       |
| 2360                 | -4.23           | 37.79          | 0.55       |
| 2365                 | -4.37           | 36.57          | 0.43       |
| 2370                 | -4.49           | 35.56          | 0.15       |
| 2375                 | -4.51           | 35.42          | 0.18       |
| 2380                 | -4.56           | 34.98          | 0.07       |
| 2385                 | -4.33           | 36.87          | 0.41       |
| 2390                 | -4.34           | 36.78          | 0.43       |
| 2395                 | -4.08           | 39.07          | 0.81       |
| 2400                 | -4.23           | 37.76          | 0.84       |
| 2402                 | -4.36           | 36.65          | 0.62       |
| 2405                 | -4.39           | 36.38          | 0.47       |
| 2410                 | -4.34           | 36.85          | 0.62       |
| 2415                 | -4.42           | 36.11          | 0.48       |
| 2420                 | -4.24           | 37.66          | 0.78       |
| 2425                 | -4.29           | 37.21          | 0.73       |
| 2430                 | -4.42           | 36.15          | 0.70       |
| 2435                 | -4.46           | 35.84          | 0.73       |
| 2440                 | -4.52           | 35.31          | 0.72       |
| 2441                 | -4.50           | 35.51          | 0.70       |
| 2445                 | -4.36           | 36.67          | 0.93       |



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|------|-------|-------|-------|
| 2450 | -4.33 | 36.89 | 0.97  |
| 2455 | -4.26 | 37.46 | 1.06  |
| 2460 | -4.41 | 36.20 | 1.01  |
| 2465 | -4.53 | 35.21 | 1.01  |
| 2470 | -4.73 | 33.67 | 1.02  |
| 2475 | -4.82 | 32.97 | 0.92  |
| 2480 | -4.92 | 32.24 | 1.00  |
| 2485 | -4.95 | 32.00 | 0.91  |
| 2490 | -4.95 | 32.02 | 1.09  |
| 2495 | -4.82 | 32.92 | 1.24  |
| 2500 | -4.80 | 33.14 | 1.33  |
| 2505 | -4.70 | 33.88 | 1.45  |
| 2510 | -4.74 | 33.60 | 1.31  |
| 2515 | -4.97 | 31.81 | 0.98  |
| 2520 | -5.30 | 29.50 | 0.48  |
| 2525 | -5.62 | 27.44 | 0.21  |
| 2530 | -5.87 | 25.87 | -0.14 |
| 2535 | -6.06 | 24.76 | -0.25 |
| 2540 | -6.11 | 24.48 | -0.34 |
| 2545 | -6.04 | 24.87 | -0.32 |
| 2550 | -6.08 | 24.67 | -0.47 |
| 2555 | -6.08 | 24.64 | -0.71 |
| 2560 | -6.25 | 23.74 | -0.99 |
| 2565 | -6.32 | 23.33 | -1.28 |
| 2570 | -6.41 | 22.86 | -1.48 |
| 2575 | -6.49 | 22.44 | -1.66 |
| 2580 | -6.39 | 22.96 | -1.45 |



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Report No.: SZOA2408000185AT01

Rev.: 01

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| Free Space AA055U #1 |                 |                |            |
|----------------------|-----------------|----------------|------------|
| Frequency (MHz)      | Efficiency (dB) | Efficiency (%) | Gain (dBi) |
| 2350                 | -5.40           | 28.82          | 0.14       |
| 2355                 | -5.48           | 28.31          | 0.32       |
| 2360                 | -5.23           | 30.02          | 0.56       |
| 2365                 | -5.31           | 29.46          | 0.50       |
| 2370                 | -5.26           | 29.77          | 0.53       |
| 2375                 | -5.26           | 29.76          | 0.33       |
| 2380                 | -5.11           | 30.84          | 0.50       |
| 2385                 | -4.83           | 32.88          | 0.56       |
| 2390                 | -4.69           | 33.94          | 0.62       |
| 2395                 | -4.49           | 35.57          | 0.78       |
| 2400                 | -4.69           | 33.93          | 0.41       |
| 2402                 | -4.77           | 33.33          | 0.38       |
| 2405                 | -4.79           | 33.19          | 0.41       |
| 2410                 | -4.78           | 33.28          | 0.43       |
| 2415                 | -4.67           | 34.13          | 0.62       |
| 2420                 | -4.42           | 36.16          | 0.81       |
| 2425                 | -4.44           | 36.00          | 0.64       |
| 2430                 | -4.52           | 35.29          | 0.59       |
| 2435                 | -4.68           | 34.06          | 0.27       |
| 2440                 | -4.73           | 33.67          | 0.24       |
| 2441                 | -4.70           | 33.85          | 0.31       |
| 2445                 | -4.64           | 34.37          | 0.34       |
| 2450                 | -4.59           | 34.78          | 0.48       |



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|      |       |       |       |
|------|-------|-------|-------|
| 2455 | -4.43 | 36.04 | 0.67  |
| 2460 | -4.56 | 35.03 | 0.44  |
| 2465 | -4.61 | 34.57 | 0.38  |
| 2470 | -4.90 | 32.37 | -0.02 |
| 2475 | -5.02 | 31.48 | -0.14 |
| 2480 | -5.15 | 30.54 | -0.19 |
| 2485 | -5.17 | 30.38 | -0.20 |
| 2490 | -5.08 | 31.07 | -0.08 |
| 2495 | -4.85 | 32.76 | 0.05  |
| 2500 | -4.74 | 33.57 | 0.05  |
| 2505 | -4.66 | 34.17 | 0.19  |
| 2510 | -4.82 | 32.99 | 0.00  |
| 2515 | -5.20 | 30.21 | -0.21 |
| 2520 | -5.55 | 27.84 | -0.58 |
| 2525 | -5.83 | 26.11 | -1.06 |
| 2530 | -5.90 | 25.68 | -1.11 |
| 2535 | -5.92 | 25.61 | -1.07 |
| 2540 | -5.88 | 25.80 | -1.09 |
| 2545 | -5.87 | 25.91 | -1.06 |
| 2550 | -6.00 | 25.13 | -1.08 |
| 2555 | -6.14 | 24.34 | -1.27 |
| 2560 | -6.22 | 23.86 | -1.10 |
| 2565 | -6.19 | 24.02 | -1.39 |
| 2570 | -6.09 | 24.62 | -1.26 |
| 2575 | -6.00 | 25.14 | -1.28 |
| 2580 | -6.03 | 24.95 | -1.50 |



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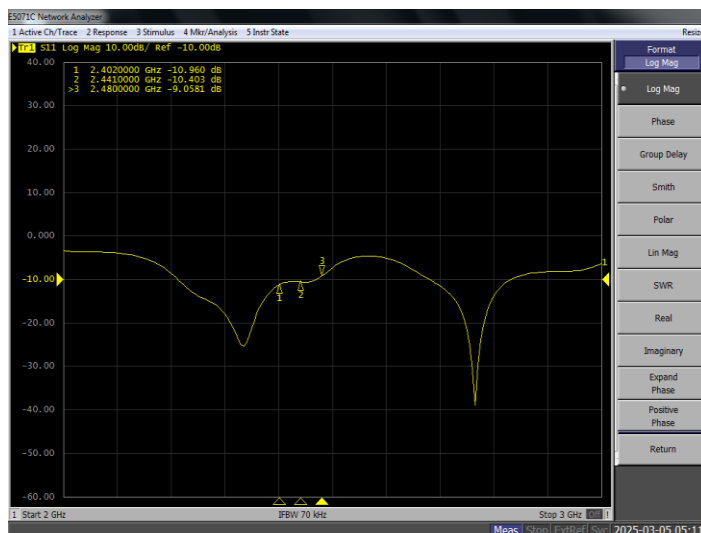
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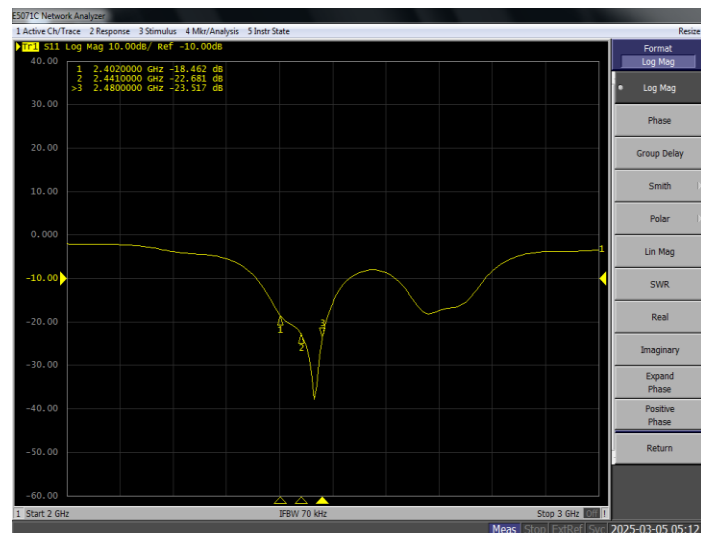
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## 6 Pattern Plots

### 6.1 Return Loss



Free Space WW20D2 #1



Free Space AA055U #1



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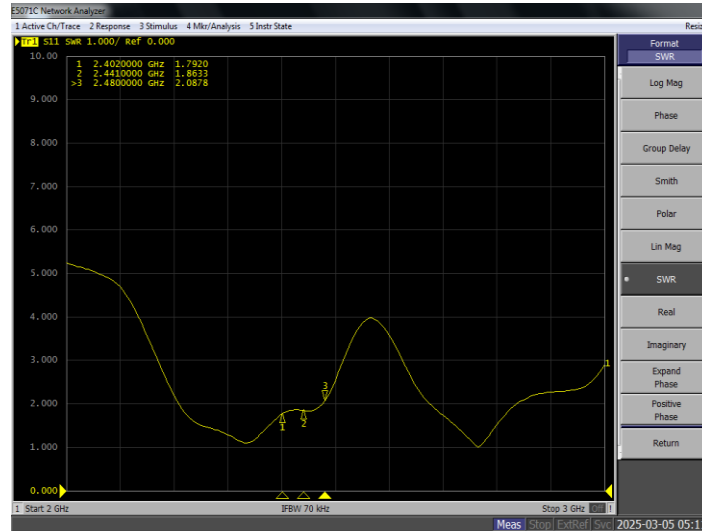
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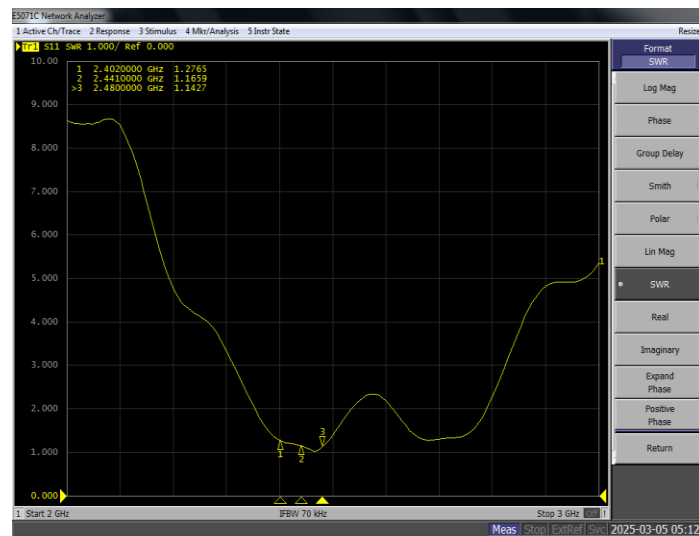
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### 6.2 VSWR



Free Space WW20D2 #1



Free Space AA055U #1



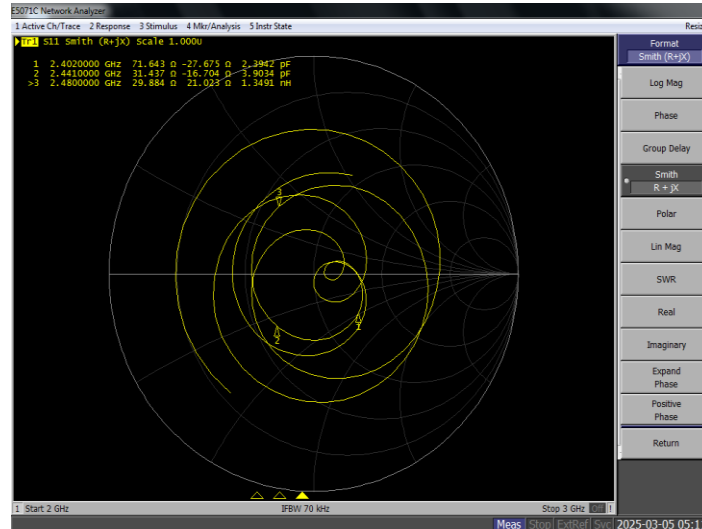
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### 6.3 Stimulus



Free Space WW20D2 #1



Free Space AA055U #1



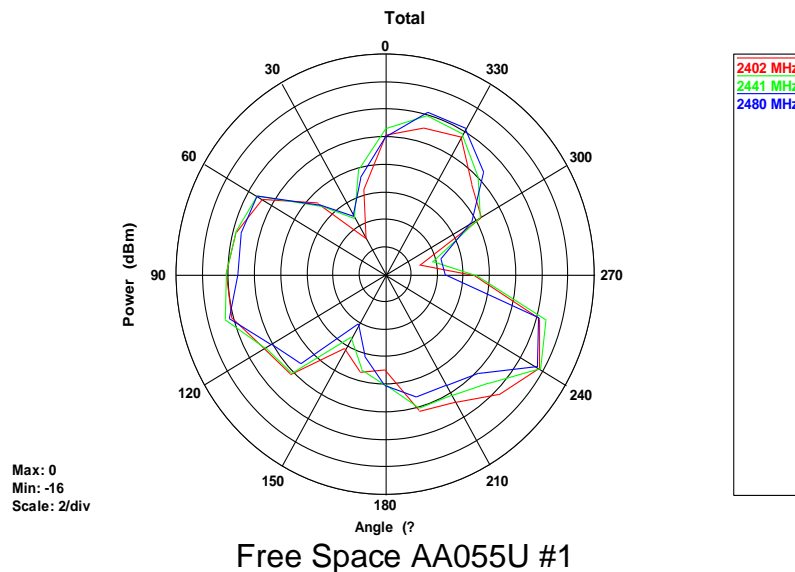
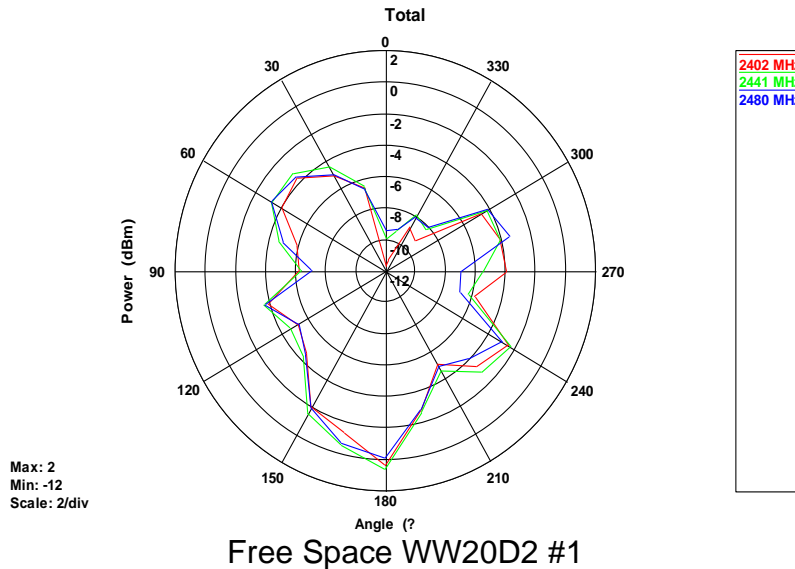
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### 7 2-D Antenna Pattern(Theta=90°)

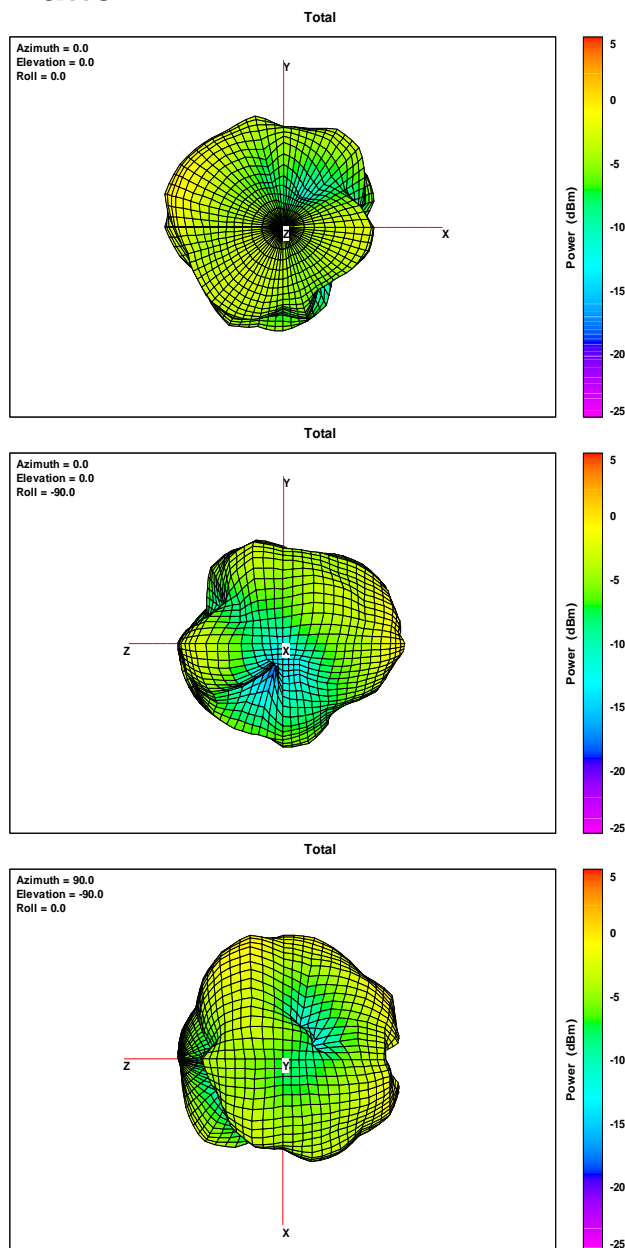


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## 8 3-D Antenna Pattern



Free Space WW20D2 #1

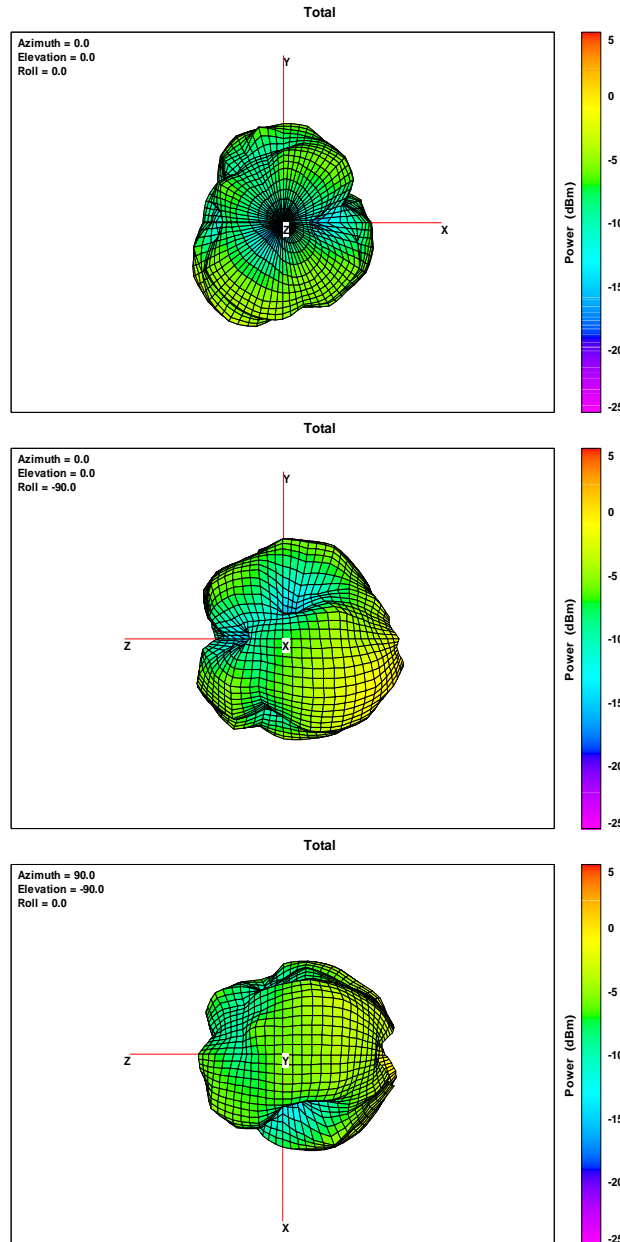


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Free Space AA055U #1



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## 9 The EUT and Test Configuration

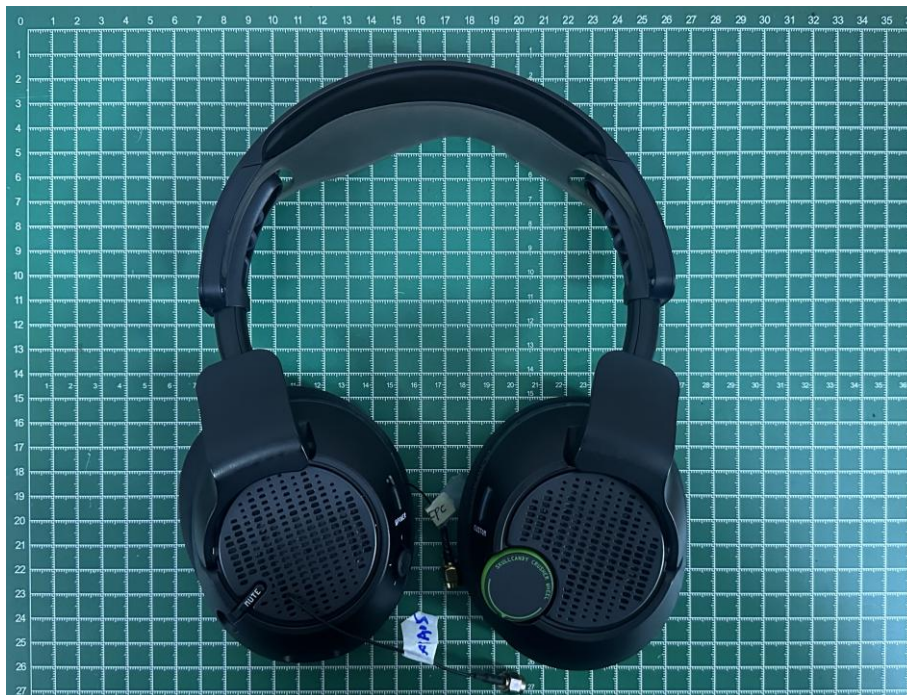


Photo of EUT



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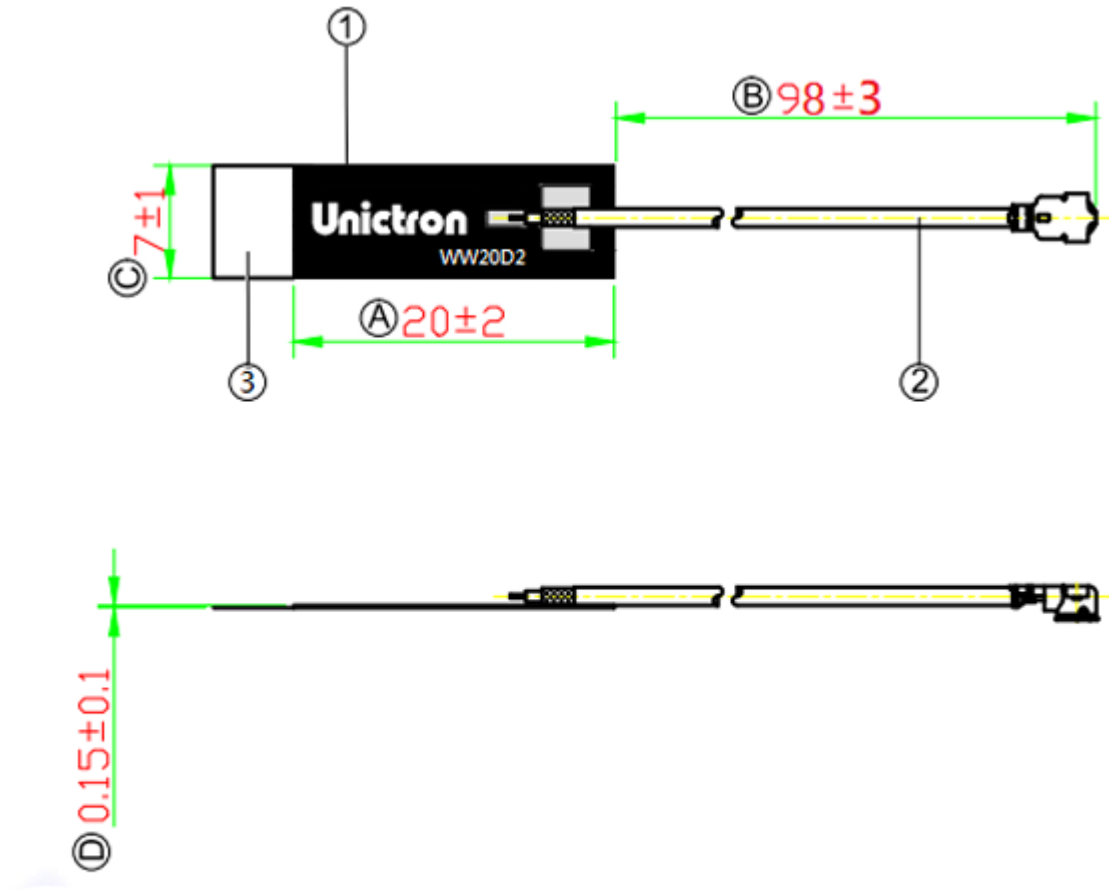
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### NOTE:

1. All materials are RoHS 2.0 compliant.
2. "A~D" Critical Dimensions.
3. "( )" Reference Dimensions.

### WW20D2 Antenna Dimensions



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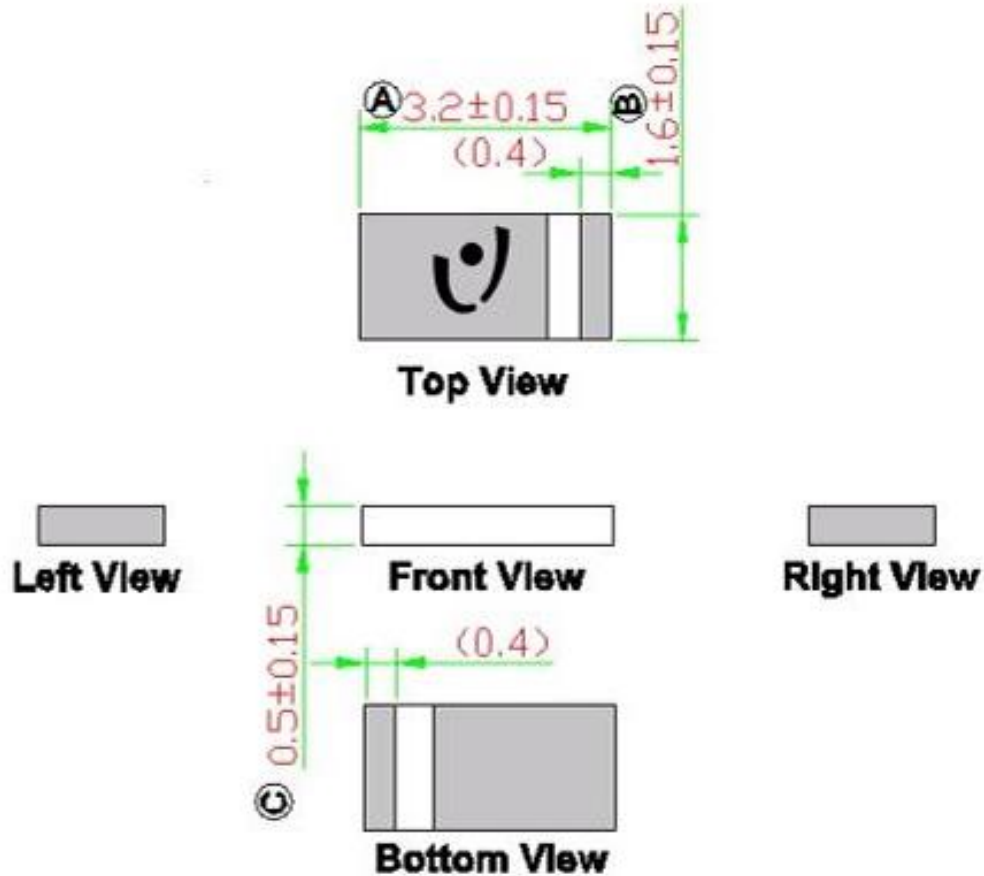
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3. "( )" Reference Dimensions.

### AA055U Antenna Dimensions



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Free Space View



Free Space Impedance Setup

---END---



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