



## Specification For Approval

|             |                      |
|-------------|----------------------|
| Type        | SMA ANT              |
| Model Name  | TSW433N (SMA SP Ø10) |
| Part No     |                      |
| Issued Date | 2022. 04. 29         |

| Charge | Inspector                                                                             | Approval |
|--------|---------------------------------------------------------------------------------------|----------|
| 홍민     |  | 김민       |

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## 1. Revision History

[illegible]



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## 2. Specification

### 2.1. Electrical Specification

| Item              | Spec                | Remarks |
|-------------------|---------------------|---------|
| Center Frequency  | 433MHz              |         |
| Frequency Range   | 430MHz – 450MHz     |         |
| V.S.W.R           | Less Than 2.0       |         |
| Average Gain(dBi) | -1.0dBi (Max)       |         |
| Peak Gain(dBi)    | 3.1dBi (Max)        |         |
| Radiation pattern | Omni-directional    |         |
| Polarization      | Linear Vertical     |         |
| Impedance         | Nominal 50 $\Omega$ |         |

### 2.2. Mechanical Specification

| Item                  | Spec        | Remarks             |
|-----------------------|-------------|---------------------|
| Dimensions(L)         | 150mm       | (Drawing reference) |
| Connector             | SMA(M)      |                     |
| Color                 | Black,NI    |                     |
| Operating Temperature | -45℃ ~ +85℃ |                     |
| Weight                | 12 $\pm$ 2g |                     |

### 2.3. Major Materials of Parts

| Item      | Type      | Remarks |
|-----------|-----------|---------|
| Element   | SWC(cu)   |         |
| Sleeve    | Keyflex   |         |
| Joint     | Lumid     |         |
| Connector | Brass(NI) |         |



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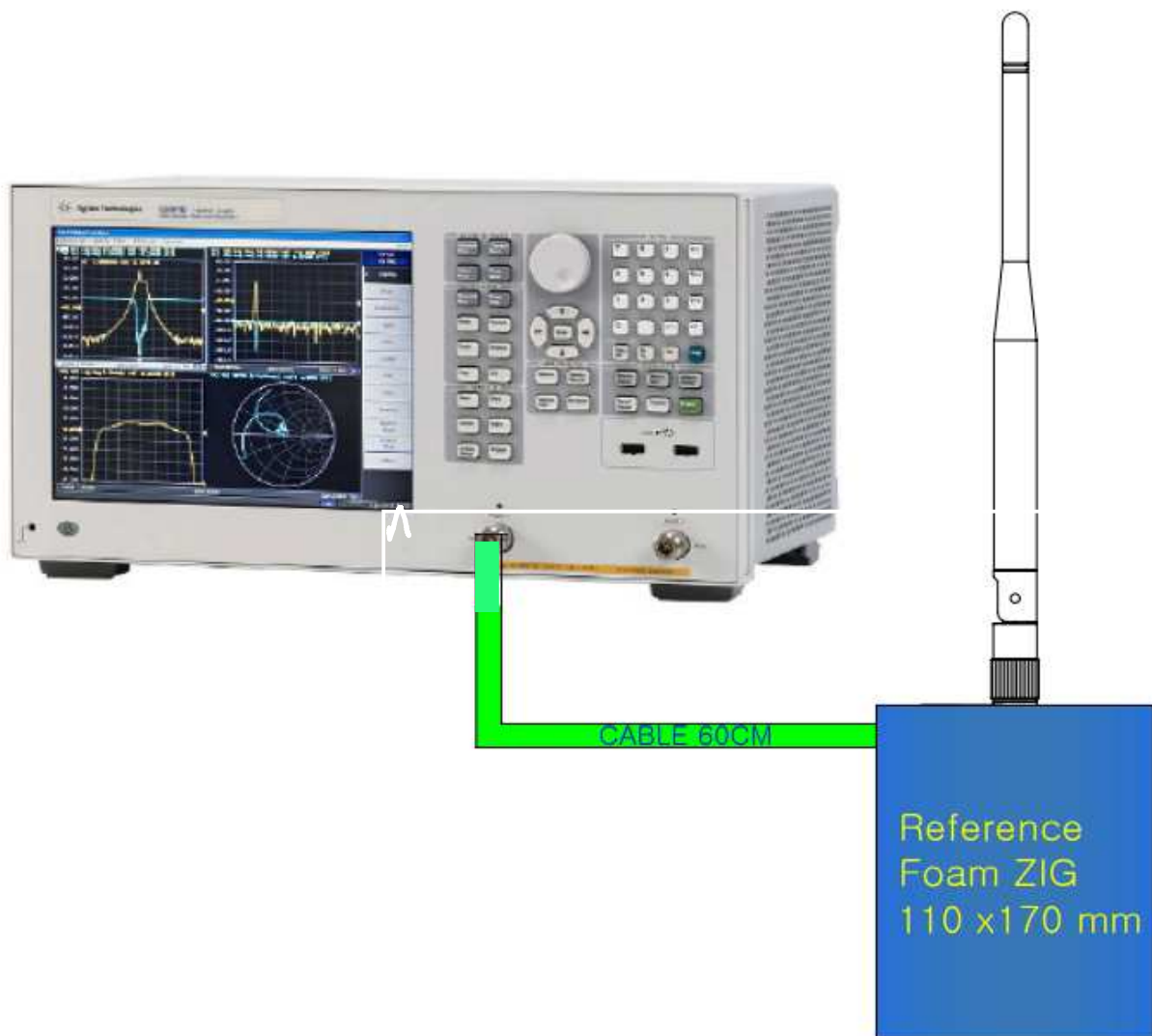
### 3. V.S.W.R Test

#### 3.1.1 Test method

##### ① Network Analyzer Spec

| Equipment        | Model    | Specification                 |
|------------------|----------|-------------------------------|
| Network Analyzer | HP8753ES | · Freq. Range : 300KHz ~ 6GHz |
| Calibration Kit  | HP85032B | · DC ~ 6GHz (SMA-Type)        |

##### ② Network Analyzer test method



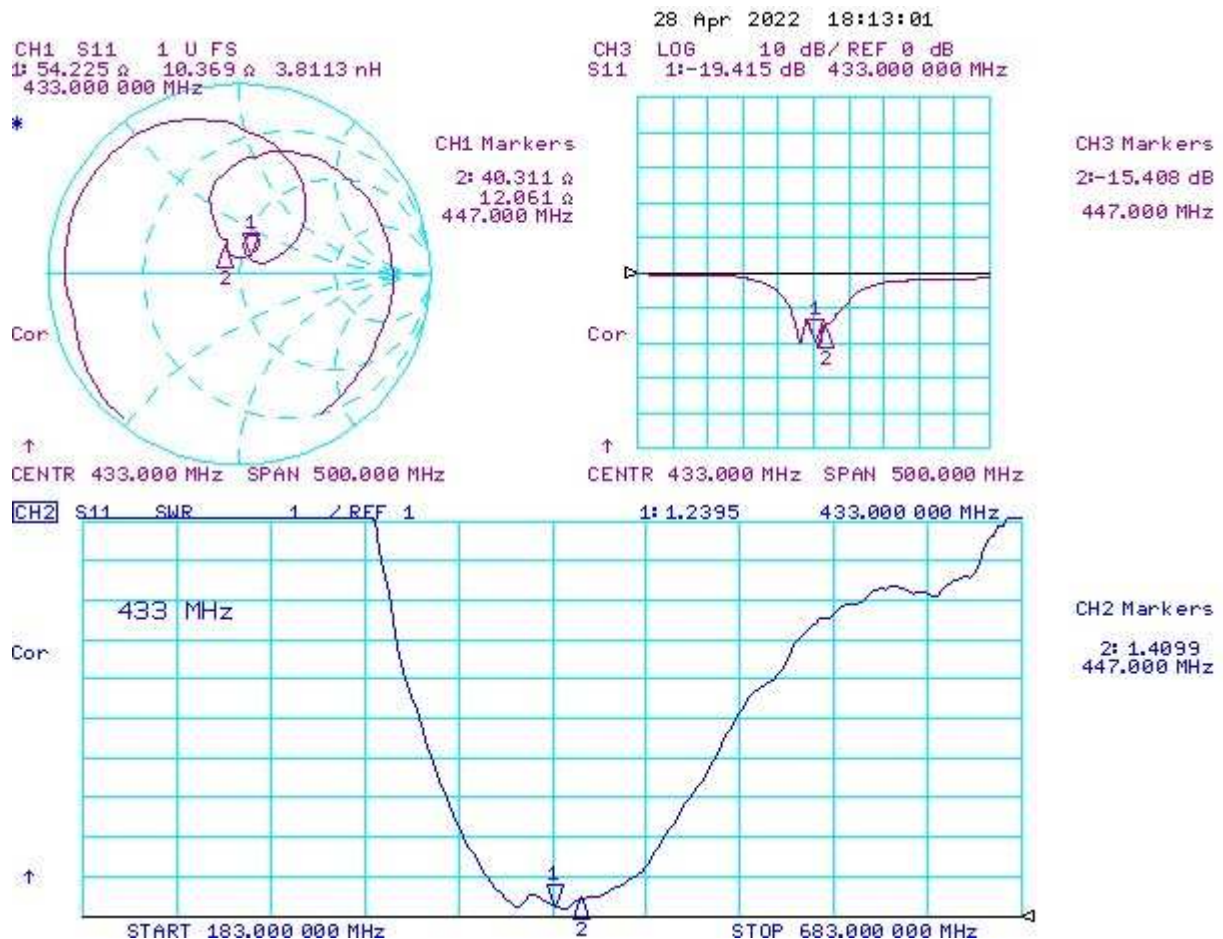


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### 3. Electrical Specification

#### 3.1.2 V.S.W.R

##### DATA





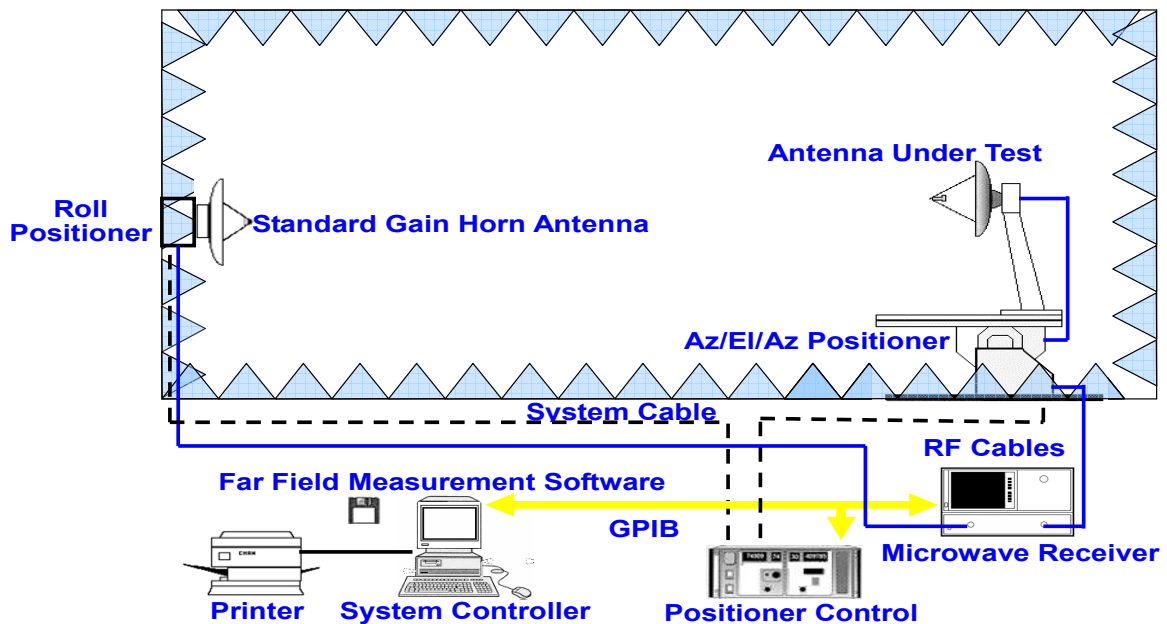
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### 3.2.1 Gain & Beam Pattern Test

#### ① Chamber Spec

| Section         | Specification             |
|-----------------|---------------------------|
| Chamber Size    | 6(L)m X 3(W)m X 3(H)m     |
| Frequency Range | 400MHz – 6GHz (Far Field) |
| Quiet Zone      | 1m X 1 m @ 1GHz           |
| Type            | Rectangular               |
| Antenna weight  | < 50 kg                   |

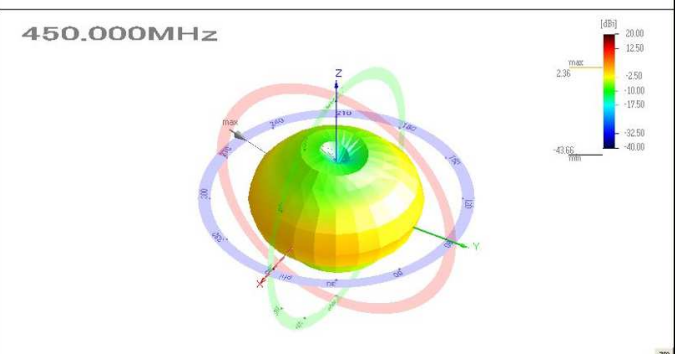
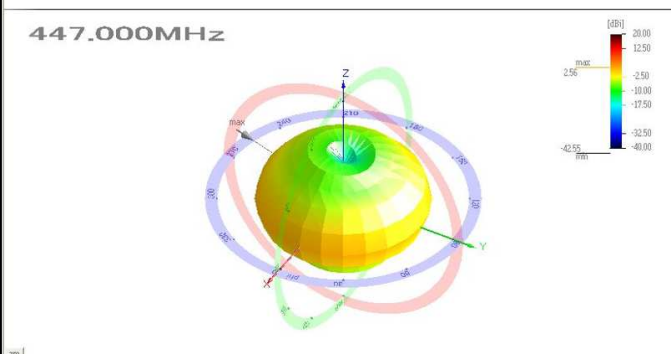
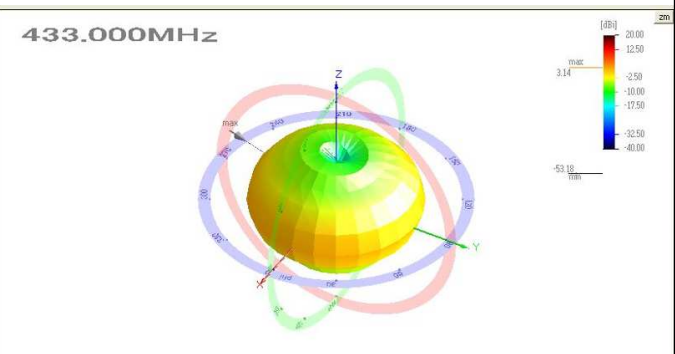
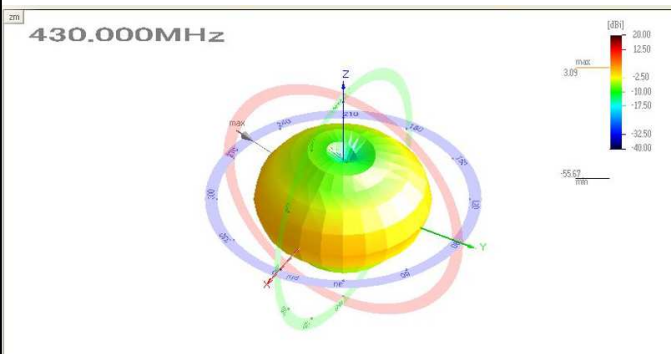
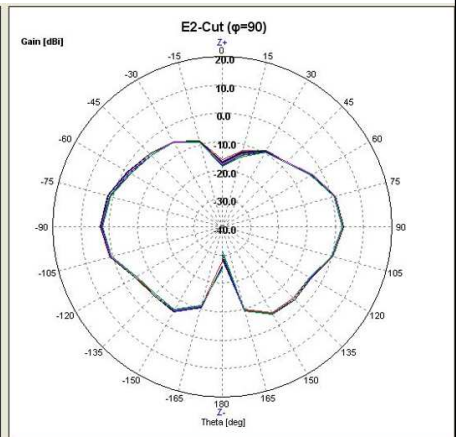
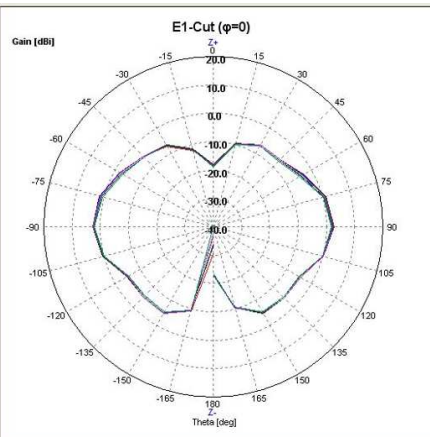
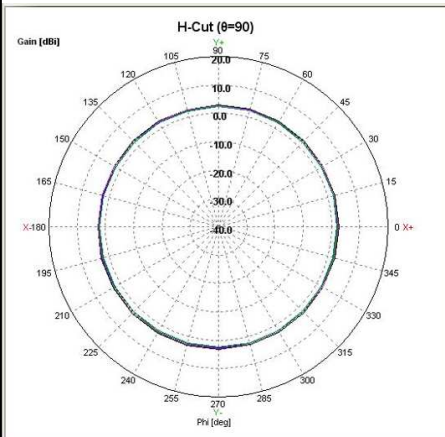
#### ② Chamber Test method





## 3.2.2 Gain &amp; Beam Pattern

| No. | Freq.   | $\theta$ -Pol(H) |           | Peak[dBi] | $\theta$ [deg] | $\phi$ [deg] | H( $\theta=90$ ) |           | $\phi$ [deg] | BW[deg] |
|-----|---------|------------------|-----------|-----------|----------------|--------------|------------------|-----------|--------------|---------|
|     |         | Eff.[%]          | Avg.[dBi] |           |                |              | Avg.[dBi]        | Peak[dBi] |              |         |
| 1   | 430.000 | 75.37            | -1.23     | 3.09      | 90.00          | 255.00       | 2.63             | 3.09      | 255.00       | 999.00  |
| 2   | 433.000 | 77.86            | -1.09     | 3.14      | 90.00          | 255.00       | 2.77             | 3.14      | 255.00       | 999.00  |
| 3   | 435.000 | 79.42            | -1.00     | 3.20      | 90.00          | 255.00       | 2.86             | 3.20      | 255.00       | 999.00  |
| 4   | 437.000 | 79.30            | -1.01     | 3.15      | 90.00          | 255.00       | 2.86             | 3.15      | 255.00       | 999.00  |
| 5   | 440.000 | 75.83            | -1.20     | 2.94      | 90.00          | 255.00       | 2.68             | 2.94      | 255.00       | 999.00  |
| 6   | 442.000 | 72.59            | -1.39     | 2.73      | 90.00          | 255.00       | 2.49             | 2.73      | 255.00       | 999.00  |
| 7   | 445.000 | 70.47            | -1.52     | 2.61      | 90.00          | 255.00       | 2.38             | 2.61      | 255.00       | 999.00  |
| 8   | 447.000 | 69.90            | -1.56     | 2.56      | 90.00          | 255.00       | 2.35             | 2.56      | 255.00       | 999.00  |
| 9   | 450.000 | 66.67            | -1.76     | 2.36      | 90.00          | 255.00       | 2.16             | 2.36      | 255.00       | 999.00  |





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## 4. Drawing

