

## APPROVAL SHEET

CUSTOMER NAME: TUYA

PRODUCT NAME: 2.4G FPC Inner Antenna L=35mm+terminal

CUSTOMER P/N:

UB Model: UB01C35F3D3297A REV: A

|              | MANUFACTURER<br>SIGNATURE                                                           | CUSTOMER<br>SIGNATURE |
|--------------|-------------------------------------------------------------------------------------|-----------------------|
| CHECKED BY:  |  |                       |
| APPROVED BY: |                                                                                     |                       |
| DATE:        | 2023/05/18                                                                          |                       |

# *Contents*

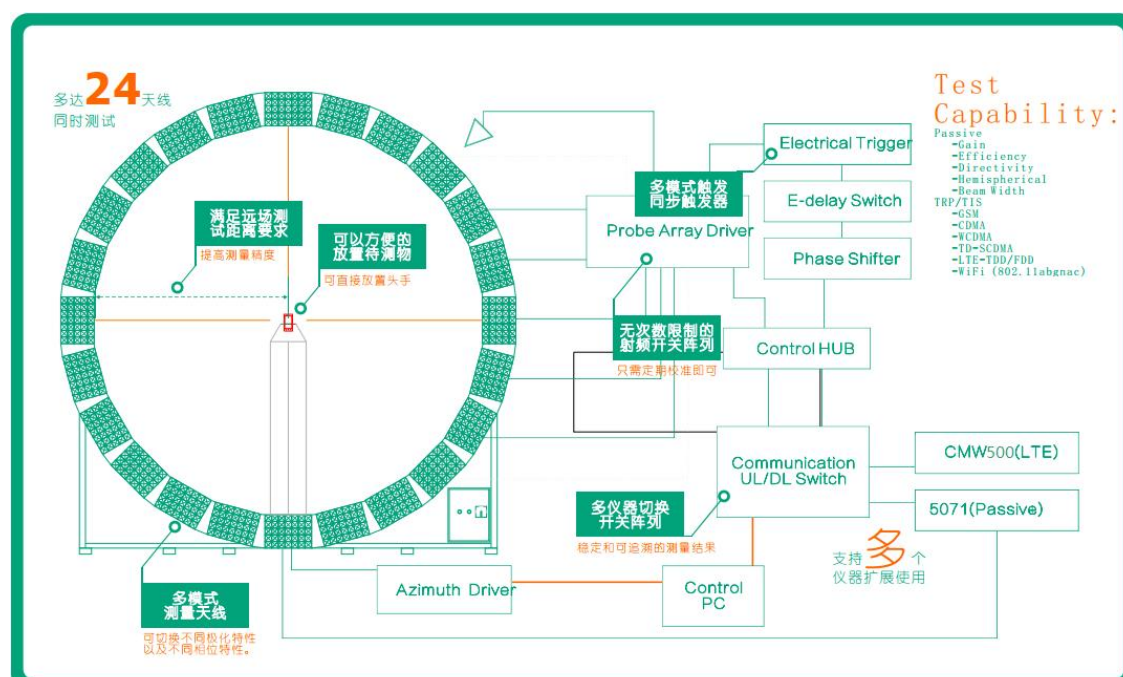
| <i>Item</i> | <i>Description</i>           |
|-------------|------------------------------|
| 1.-----     | Specification table          |
| 2.-----     | Test Items and Equipment     |
| 3.-----     | Mechanical Specification     |
| 4.-----     | Test report                  |
| 5.-----     | Active test data             |
| 6.-----     | Antenna installation diagram |

## 1. Specification table:

| Electrical Specification |                   |
|--------------------------|-------------------|
| Design Specifications    | Types             |
| Antenna Type             | FPC Inner antenna |
| Operating Frequency      | 2400-2500MHz      |
| Peak Gain                | 3.79 dBi          |
| Average Efficiency       | 53.16%            |
| VSWR                     | <2                |
| Polarization             | Linear            |
| Axial Ratio              | \                 |
| Radiation pattern        | Omnidirectional   |
| Impedance                | 50 ohm            |
| Power handling           | 1W                |
| Interface                | Cabel+terminal    |
| Overall dimensions       | 38x6.5,L=35mm     |
| Operating Temp.          | -20℃~+85℃         |
| Storage Temp.            | -20℃~+50℃         |

| Name                         | Parameter            | Method                                                               | Standard number        |
|------------------------------|----------------------|----------------------------------------------------------------------|------------------------|
| Mobile communication antenna | VSWR                 | Generic specification for antennas used in the mobile communications | GB/T 9410-2008         |
|                              | Gain                 |                                                                      |                        |
|                              | Radiation pattern    |                                                                      |                        |
| Antenna performance          | Radiation efficiency | IEEE Standard Test Procedures for Antennas                           | ANSI/IEEE Std 149-1979 |

| Equipment                    | Manufacturer  | Model No.             | Serial No.         | Last Cal.  | Due Date   |
|------------------------------|---------------|-----------------------|--------------------|------------|------------|
| Network Analyzer             | Agilent       | E5071C                | MY4631599<br>6     | 2022.08.25 | 2023.08.24 |
| Radio Communication Tester   | ROHDE&SCHWARZ | CMW500                | 0002K50-10<br>0844 | 2022.08.25 | 2023.08.24 |
| Ative Test Application       | XH-IOE        | TASuite<br>V3.6.2     |                    |            |            |
| Passive Test Application     | XH-IOE        | Pssive Test<br>V2.7.0 |                    |            |            |
| Passive Caculate Application | XH-IOE        | TemradioDP            |                    |            |            |

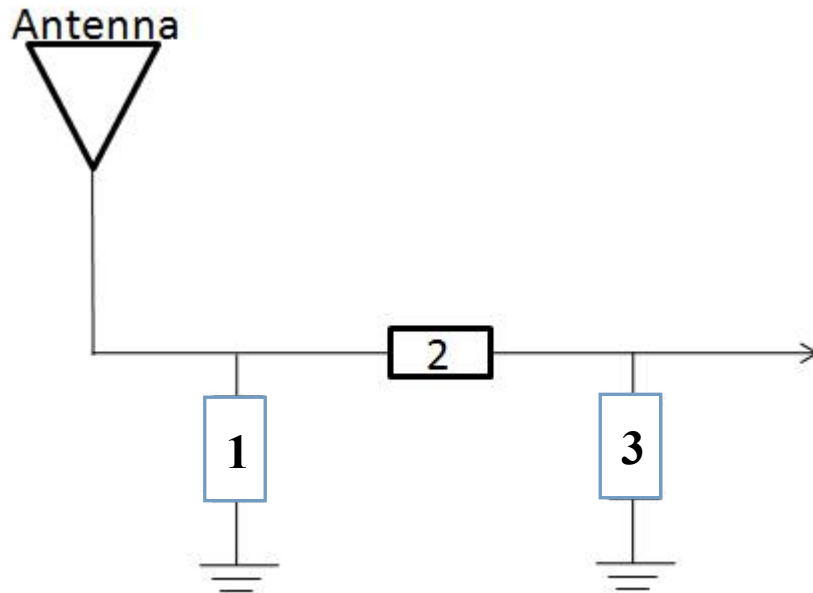


### 3. Mechanical Specification

**Please refer set up photo**

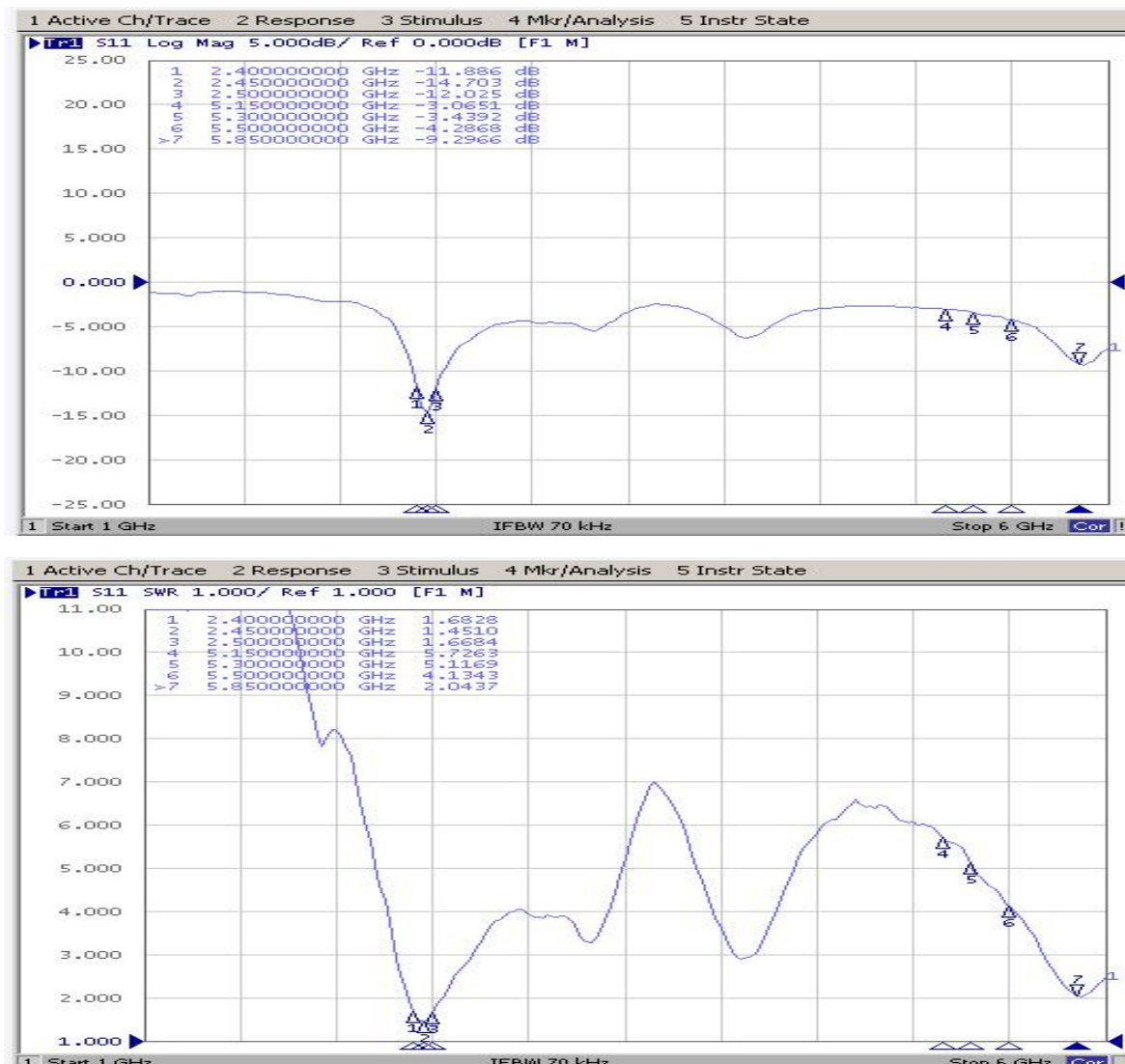
#### 4. test report:

##### Matching Circuits



| The Circuit matching system and components |             |           |
|--------------------------------------------|-------------|-----------|
| Location                                   | Description | Tolerance |
| 1                                          | —           | —         |
| 2                                          | RES         | 0 Ω       |
| 3                                          | —           | —         |

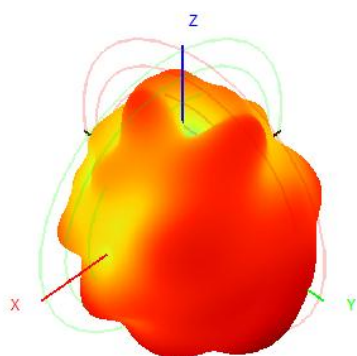
## 4.1: S-Parameter



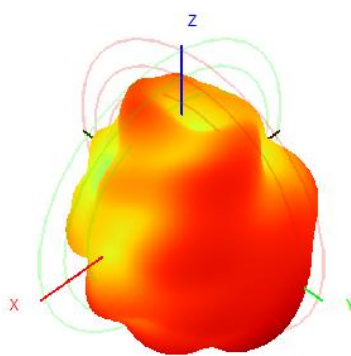
## 4.2: Efficiency and Gain

| Frequency / MHz | Efficiency / % | Gain/ dBi |
|-----------------|----------------|-----------|
| 2400            | 53.03          | 2.98      |
| 2450            | 53.18          | 3.79      |
| 2500            | 53.14          | 3.3       |

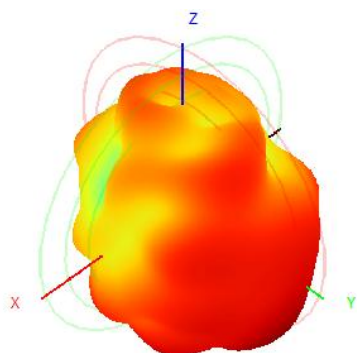
## 4.3: Antenna 2/3D Radiation Pattern



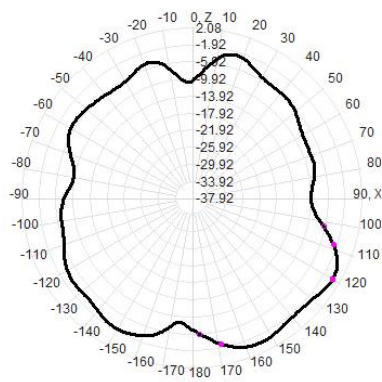
2400MHz



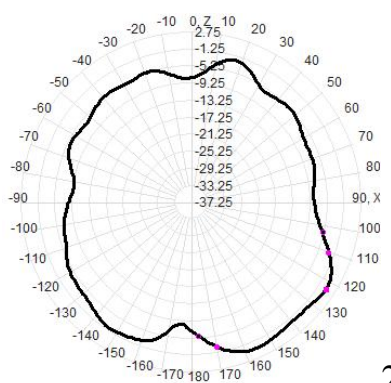
2450MHz



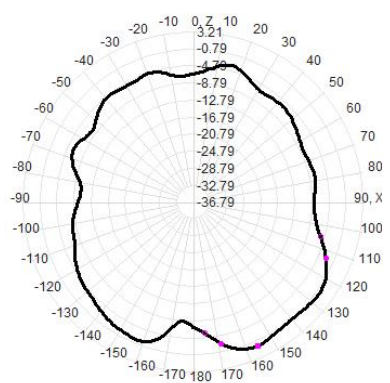
2500MHz



2400MHz



2450MHz



2500MHz



## 5.Active test data

| Item | Measurement | Total  |
|------|-------------|--------|
| 1    | TRP         | 16.14  |
| 6    | TRP         | 15.83  |
| 11   | TRP         | 15.43  |
| 1    | TIS(EIRP)   | -86.62 |
| 6    | TIS(EIRP)   | -86.47 |
| 11   | TIS(EIRP)   | -84.91 |

## 6.Antenna installation diagram

**Please refer set up photo**

## APPROVAL SHEET

CUSTOMER NAME: TUYA-SC022-BCI0

PRODUCT NAME: 433MHz Spring Antenna

CUSTOMER P/N:

UB Model : UB01NJ3D762A REV: A

|              |                                                                                     |                       |
|--------------|-------------------------------------------------------------------------------------|-----------------------|
|              | MANUFACTURER<br>SIGNATURE                                                           | CUSTOMER<br>SIGNATURE |
| CHECKED BY:  |  |                       |
| APPROVED BY: |                                                                                     |                       |
| DATE:        | 2023/05/18                                                                          |                       |

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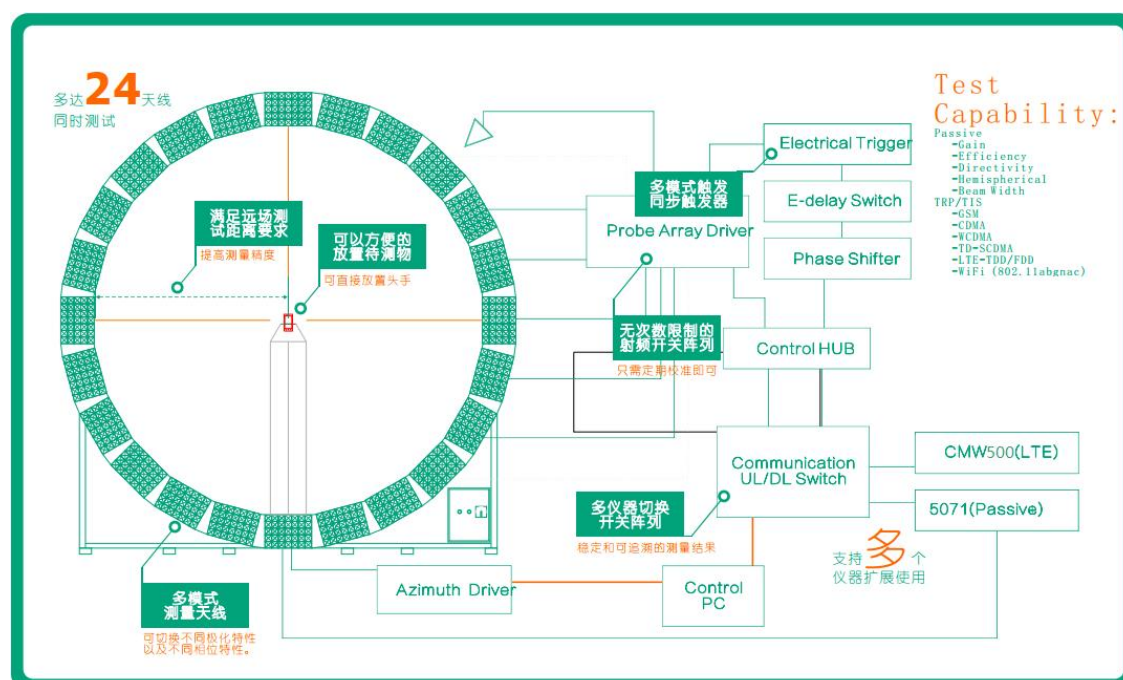
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| 1.-----     | Specification table          |
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| 3.-----     | Mechanical Specification     |
| 4.-----     | Test report                  |
| 5.-----     | Antenna Installation Diagram |

## 1. Specification table:

| Electrical Specification |                  |
|--------------------------|------------------|
| Design Specifications    | Types            |
| Antenna Type             | Spring Antenna   |
| Operating Frequency      | 433MHz           |
| Peak Gain                | -10.36 dBi       |
| Average Efficiency       | 4.15%            |
| VSWR                     | <3               |
| Polarization             | Linear           |
| Axial Ratio              | \                |
| Radiation pattern        | Omnidirectional  |
| Impedance                | 50 ohm           |
| Power handling           | 1W               |
| Interface                | DIP              |
| Overall dimensions       | Φ 4.0*20.9*0.5mm |
| Operating Temp.          | -20℃~+70℃        |
| Storage Temp.            | -20℃~+70℃        |

| Name                         | Parameter            | Method                                                               | Standard number        |
|------------------------------|----------------------|----------------------------------------------------------------------|------------------------|
| Mobile communication antenna | VSWR                 | Generic specification for antennas used in the mobile communications | GB/T 9410-2008         |
|                              | Gain                 |                                                                      |                        |
|                              | Radiation pattern    |                                                                      |                        |
| Antenna performance          | Radiation efficiency | IEEE Standard Test Procedures for Antennas                           | ANSI/IEEE Std 149-1979 |

| Equipment                    | Manufacturer  | Model No.             | Serial No.         | Last Cal.  | Due Date   |
|------------------------------|---------------|-----------------------|--------------------|------------|------------|
| Network Analyzer             | Agilent       | E5071C                | MY4631599<br>6     | 2022.08.25 | 2023.08.24 |
| Radio Communication Tester   | ROHDE&SCHWARZ | CMW500                | 0002K50-10<br>0844 | 2022.08.25 | 2023.08.24 |
| Ative Test Application       | XH-IOE        | TASuite<br>V3.6.2     |                    |            |            |
| Passive Test Application     | XH-IOE        | Pssive Test<br>V2.7.0 |                    |            |            |
| Passive Caculate Application | XH-IOE        | TemradioDP            |                    |            |            |

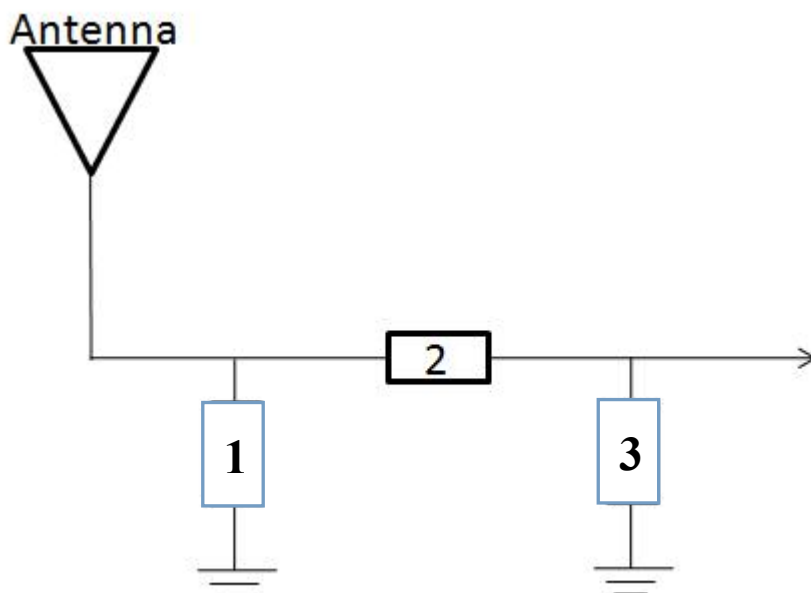


### 3. Mechanical Specification

Please refer set up photo

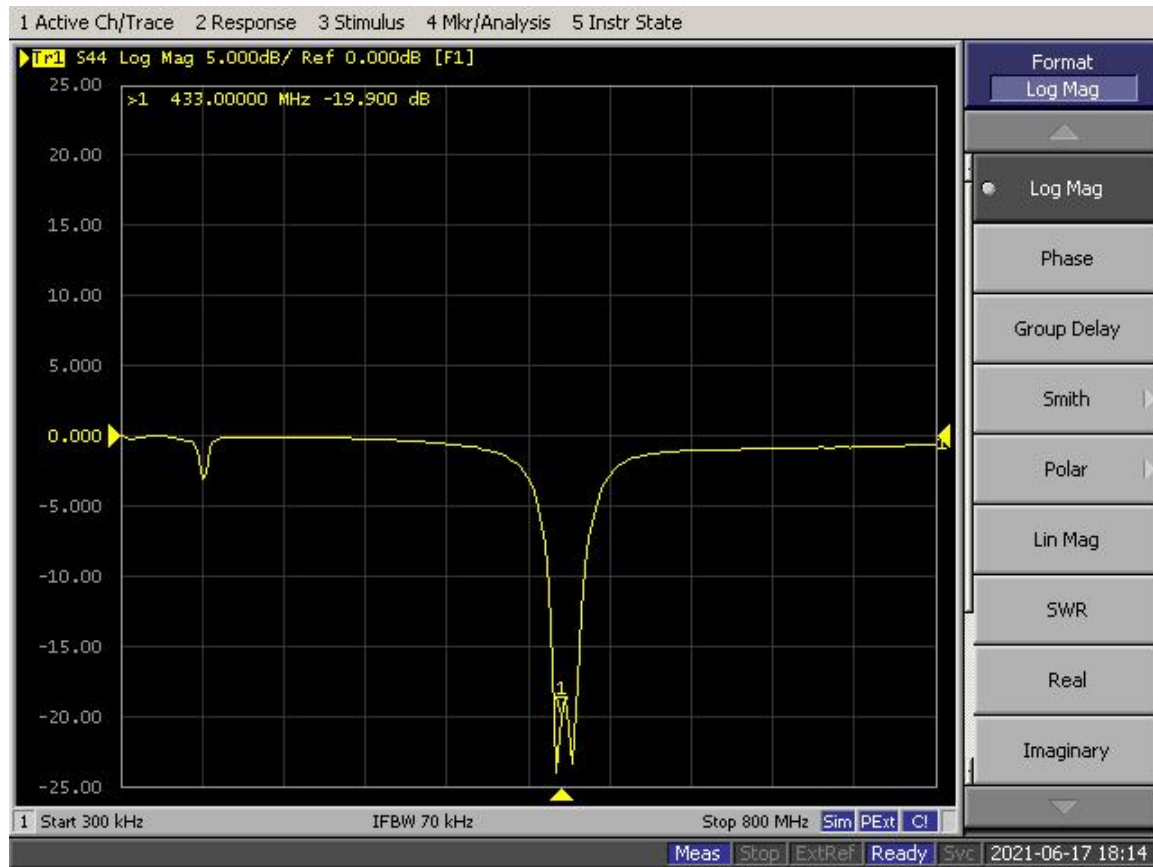
#### 4. test report:

##### Matching Circuits



| The Circuit matching system and components |             |           |
|--------------------------------------------|-------------|-----------|
| Location                                   | Description | Tolerance |
| 1                                          | —           | —         |
| 2                                          | RES         | 0 Ω       |
| 3                                          | —           | —         |

## 4.1: S-Parameter

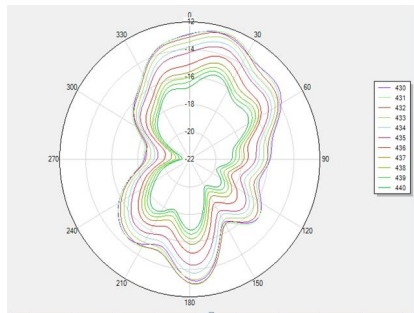




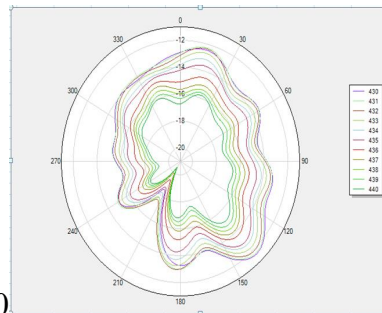
## 4.2: Efficiency and Gain

| Frequency / MHz | Efficiency / % | Gain/ dBi |
|-----------------|----------------|-----------|
| 433             | 4.15           | -10.36    |

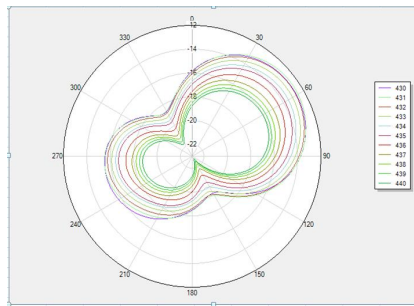
## 4.3: Antenna 2/3D Radiation Pattern



Phi 0



Phi 90



Theta 90