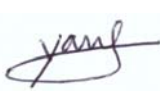


# Specifications of Ceramic Patch Ant.

MESSRS. (주)아이디로

ITEM : Ceramic Patch Antenna  
 PART NAME : MACRO130-919  
 FEATURES : 900 MHz ISM Band  
 Provide highly stabilized performance  
 Rectangular microstrip patch antenna  
 DATE : February 24, 2021  
 QUANTITY : pcs

| SUPPLIER : MAC technologies Inc.                                                    |                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| DRAWN                                                                               | CHECKED                                                                             | APPROVED                                                                             |
|  |  |  |

 **mac technologies**

# 615, Cheongju Techno S Tower, 530, Jikji-daero,

Heungdeok-gu, Cheongju-si, Chungbuk, KOREA, 28578

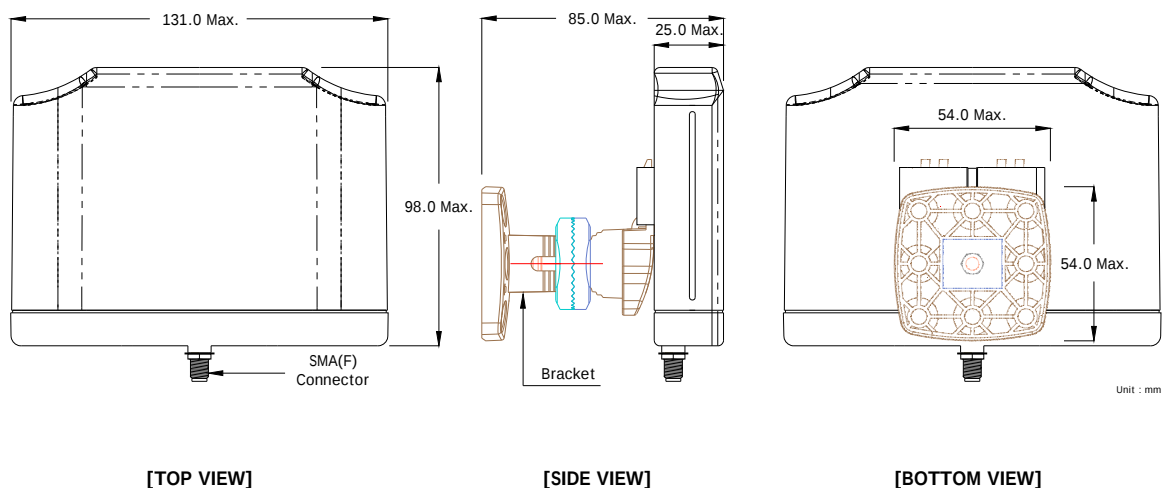
Tel : +82 43 275 2485 Fax : +82 43 275 2487

|                 |                                                   |
|-----------------|---------------------------------------------------|
| Title           | RFID Ceramic Patch Ant. Preliminary Specification |
| Document Number | MACQM730-05-21XXX                                 |
| Date            | February 24, 2021                                 |

## 1. Electrical Specifications.

| NO. | Parameter        | Spec.        | Unit  | Remark |
|-----|------------------|--------------|-------|--------|
| 1   | Center Frequency | 919.0 ± 3    | MHz   |        |
| 2   | Peak Gain        | 1.5 typ.     | dBi   |        |
|     |                  | 3.5 typ.     | dBic  |        |
| 3   | Polarization     | RHCP         |       |        |
| 4   | Beam Width       | 85 typ.      | Deg.  |        |
| 5   | Band Width       | 30 typ.      | MHz   |        |
| 6   | VSWR             | 2.0 : 1 max. | Ratio |        |
| 7   | Impedance        | 50           | Ohm   |        |

## 2. Mechanical Dimensions.

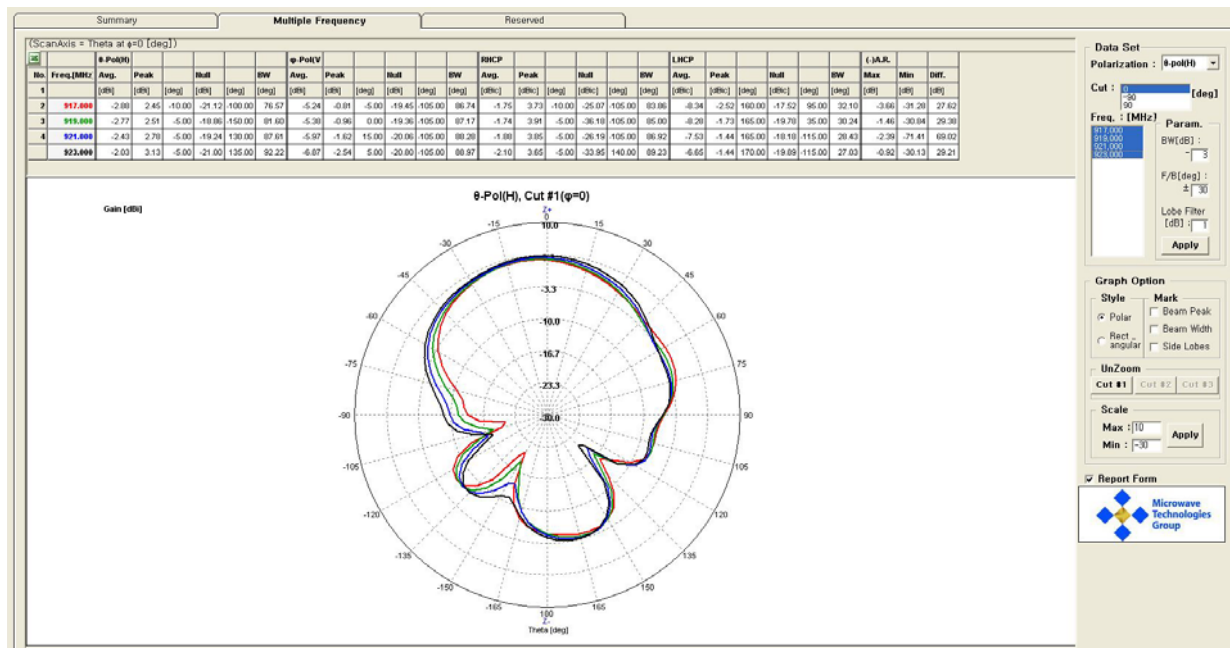




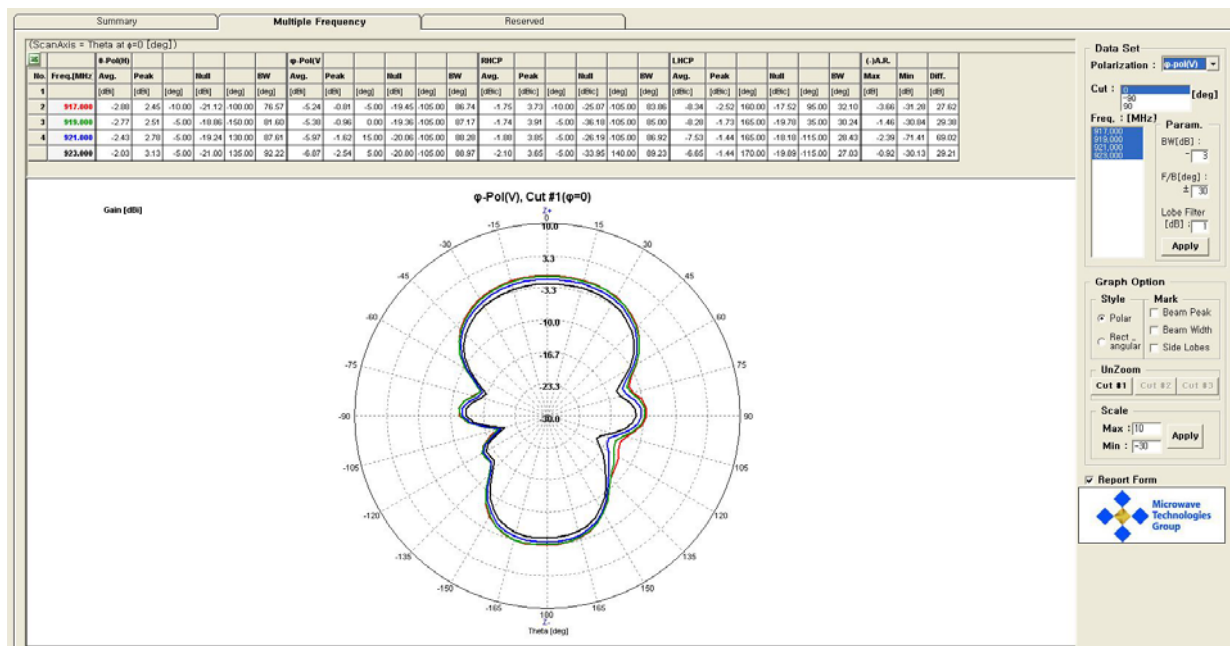
|                 |                                                   |
|-----------------|---------------------------------------------------|
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| Date            | February 24, 2021                                 |

## 4. Radiation Patterns.

### 4-1. H-Pol. (Frequency 917.0, 919.0, 921.0, 923.0 MHz)



### 4-2. V-Pol. (Frequency 917.0, 919.0, 921.0, 923.0 MHz)

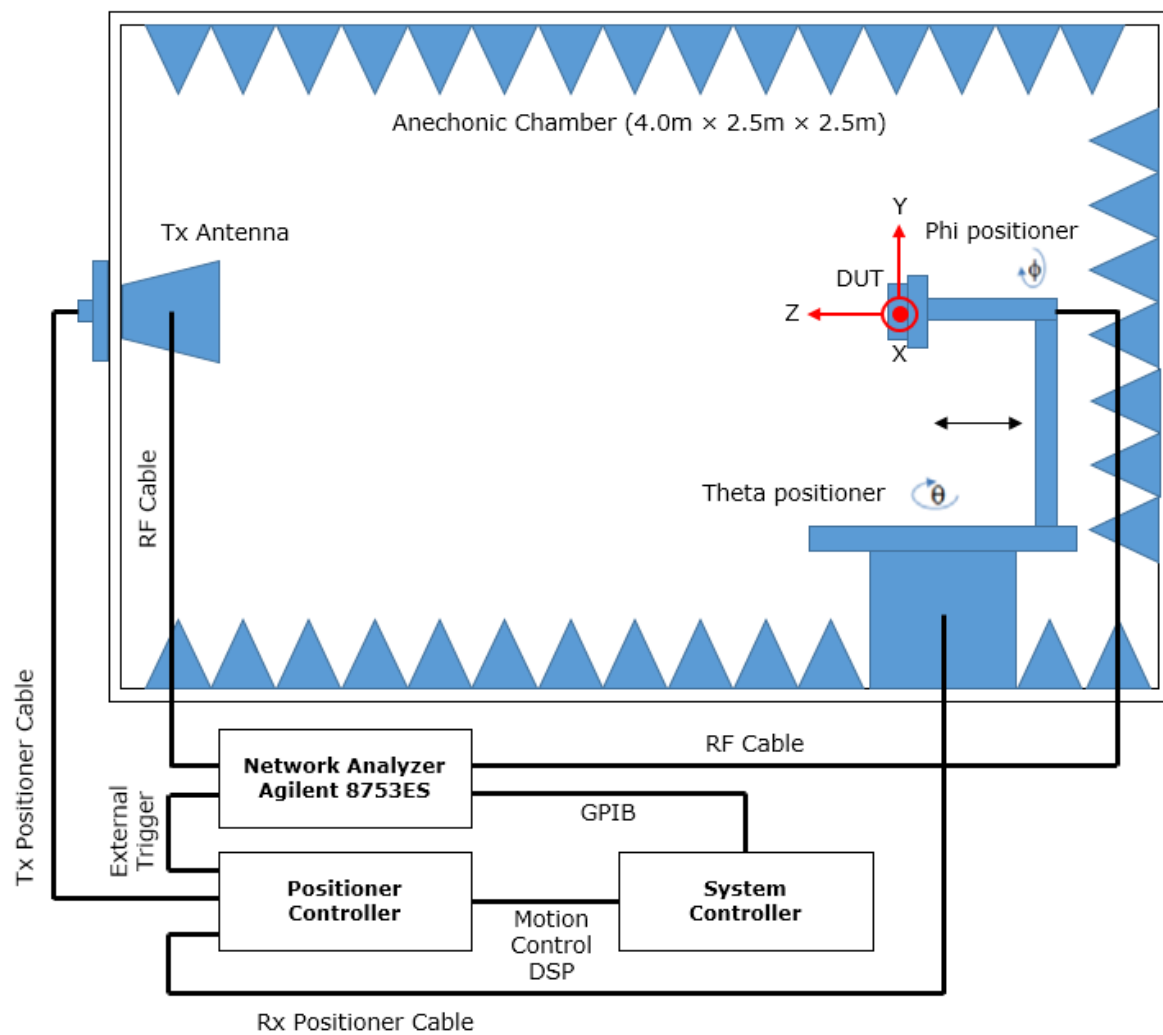


|                 |                                                   |
|-----------------|---------------------------------------------------|
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#### 4-3. Gain Test data

| Source Antenna Polarization | Gain      |           |           |           |
|-----------------------------|-----------|-----------|-----------|-----------|
|                             | 917.0 MHz | 919.0 MHz | 921.0 MHz | 923.0 MHz |
| H-Pol. (dBi)                | 2.45      | 2.51      | 2.78      | 3.13      |
| V-Pol. (dBi)                | -0.81     | -0.96     | -1.62     | -2.54     |
| RHCP (dBic)                 | 3.73      | 3.91      | 3.85      | 3.65      |

#### 4-4. Gain Measurement System



|                 |                                                   |
|-----------------|---------------------------------------------------|
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#### 4-5. List of utilized test equipment (MAC technologies Inc.)

| NO | Kind of Equipment and Precision               | Manufacturer                        | Model No.                 | Serial Number | Calibration Date | Specification                                          | Note      |
|----|-----------------------------------------------|-------------------------------------|---------------------------|---------------|------------------|--------------------------------------------------------|-----------|
| 1  | Anechoic Chamber                              | MTG                                 | Mobile Chamber            | -             | N/A              | 4.0 m X 2.5 m X 2.5 m<br>(0.4 ~ 3 GHz)                 |           |
| 2  | Network Analyzer                              | Agilent                             | 8753ES                    | US39173213    | 16/08/23         | 30 KHz ~ 6 GHz                                         |           |
| 3  | Dual-Polarization Horn Antenna with RF Switch | MTG                                 | QRH-004060/<br>RSW-001060 |               | -                | 0.4 MHz ~ 6 GHz                                        | Source    |
| 4  | Calibration Antenna                           | Schwarzbeck<br>Mess -<br>Elektronik | BBHA 9120 A               | 1201          | 10/04/30         | 0.7 MHz ~ 3 GHz                                        | Reference |
| 5  | Absorber Installation                         | EMERSON &<br>CUMING                 | SABS-003<br>18"           |               |                  | Reflectivity :<br>-25 dB @ 0.8 GHz<br>-30 dB @ 1.0 GHz |           |