

# Specification For Approval

**Customer:** MTC

**Part name:** IPEX-2.4G-5dBi-White Knife Type Rubber Antenna-137 Gray-L220MM

**Part No:** 3. 08. 0102000016

**Customer Part No:** 304WIFI1292

| Manufacturer recognition                                                                                          |          |           |          |
|-------------------------------------------------------------------------------------------------------------------|----------|-----------|----------|
| Sales                                                                                                             | Drafters | check     | Approver |
| MeiLi                                                                                                             | Lizhxiao | Zhouxihua | Lihe     |
| Thank you for giving us the chance to approve samples. If you agree to pass it, please kindly send it back to us. |          |           |          |

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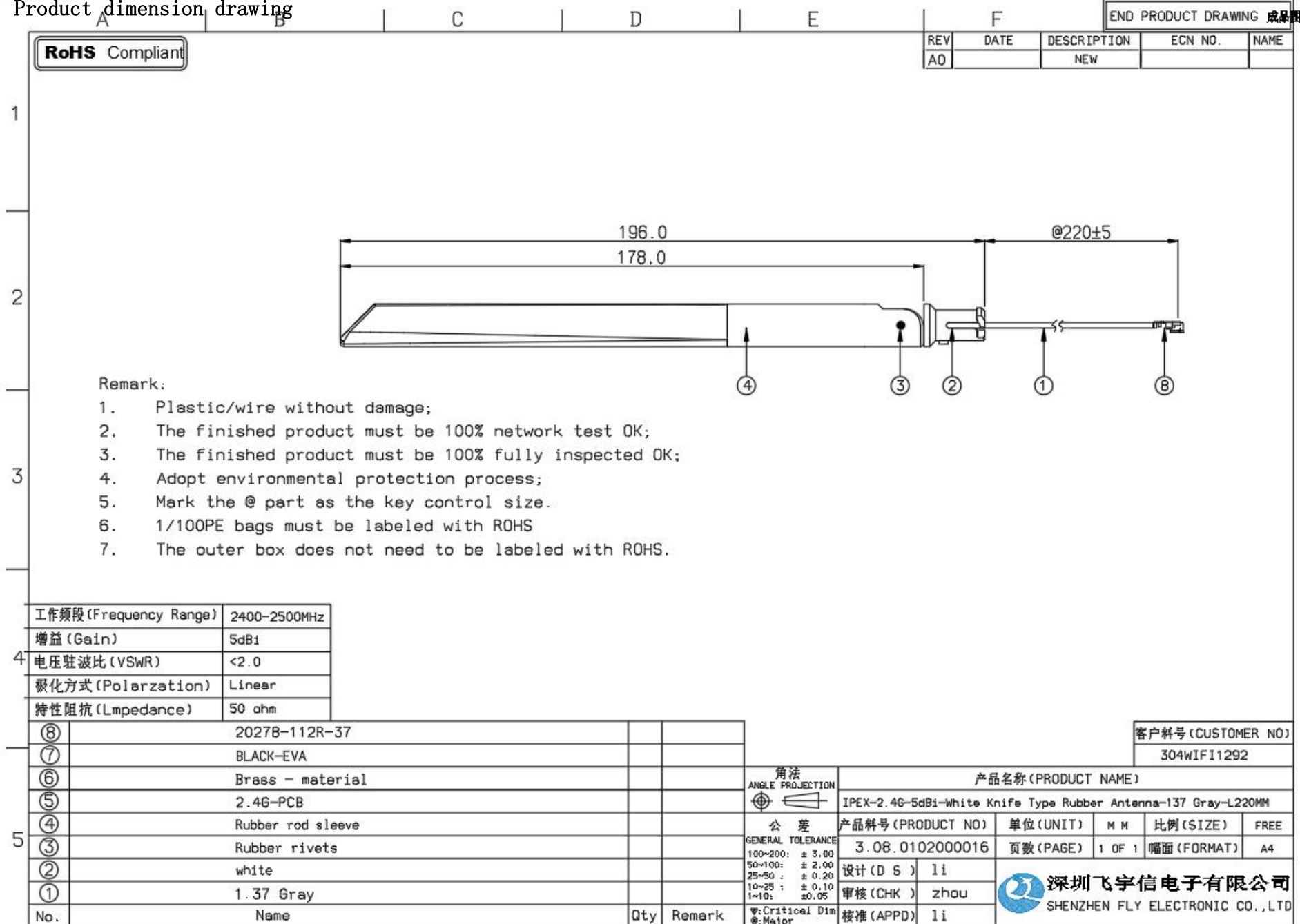
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## Modification record

| edition | date        | ngineer | Modification |
|---------|-------------|---------|--------------|
| A0      | 2021. 1. 20 |         | New          |
|         |             |         |              |
|         |             |         |              |
|         |             |         |              |
|         |             |         |              |
|         |             |         |              |
|         |             |         |              |

1 Product dimension drawing



## 2. Product appearance

|        |           |            |             |
|--------|-----------|------------|-------------|
| Size   | Φ13*196MM | Fixed mode | magnetic    |
| Weight | /         | Connector  | IPEX        |
| colour | WHITE     | Cable      | RG137-220mm |

## 3. Antenna performance parameters

| Project               | Character             | Unit |
|-----------------------|-----------------------|------|
| Frequency domain      | 2400-2500             | MHz  |
| Output impedance      | 50                    | Ω    |
| SWR                   | Compare the waveform  | ——   |
| Gain                  | 5                     | dBi  |
| Polarization mode     | Vertical polarization |      |
| Radiation direction   | All-around            |      |
| Max input power       | 5                     | W    |
| Operating temperature | -40~+70               | ℃    |
| Storage temperature   | -45~+75               | ℃    |

## 4. Cable specification

RG 137



### Structure parameter

|                    | Material Science     | Diameter (mm) |
|--------------------|----------------------|---------------|
| 1. Inner conductor | Bare copper wire     | 7/0.102±0.02  |
| 2. Insulator       | FEP                  | Φ0.86±0.05    |
| 3. Outer conductor | Copper clad aluminum | 5*16/0.05mm   |
| 4. Sheath          | FEP                  | 1.37±0.05     |

### Electric performance parameters

|                                   |           |
|-----------------------------------|-----------|
| Capacitance (pF/m)                | 95.8 PF/M |
| Impedance (ohm)                   | 50±3      |
| Rate (%)                          | 69%       |
| Bending radius (mm)               | 7MM       |
| Maximum working voltage (VMS)     | 1000      |
| Maximum operating frequency (MHz) | 6000      |
| Operating temperature range (℃)   | -40 至 +80 |

| Attenuation |         |
|-------------|---------|
| (MHz)       | (≥dB/m) |
| 100         | 0.47    |
| 400         | 0.93    |
| 1000        | 1.48    |
| 2000        | 2.15    |
| 3000        | 2.65    |
| 4000        | 3.56    |
| 5000        | 4.10    |
| 6000        | 4.75    |

## 5. environmental test

### Environmental test report

#### 5.1 High and low temperature and humidity test

| Part No               |                                                                                                                                                                                                   |                                  | Product Specifications                                                                                                                                                                                                                                        |                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Test items            | High temperature, low temperature and constant humidity test                                                                                                                                      |                                  |                                                                                                                                                                                                                                                               |                 |
| Testing equipment     | Constant temperature and humidity test chamber                                                                                                                                                    | number of test; quantity of test |                                                                                                                                                                                                                                                               |                 |
| Inspection standard   | The coating on the metal surface does not fall off, crack, wrinkle and other defects; No discoloration, cracks, deformation, degumming and other phenomena are allowed on the non-metallic parts. |                                  |                                                                                                                                                                                                                                                               |                 |
| Test name             | Test items                                                                                                                                                                                        | requirement                      | test method                                                                                                                                                                                                                                                   | Result judgment |
| High temperature test | Temperature (°C)<br>Test sample temperature time (H)<br>Test duration (H)<br>recovery time (H)                                                                                                    | 85±3<br>1<br>96<br>2             | Test procedure:<br>a) Put the test piece into the test box, and then adjust the temperature of the high temperature box to 85 °C ± 3 °C, and monitor the time.<br>b) After the test, they were placed at room temperature for 2 hours for routine inspection. | OK              |
| low temperature test  | temperature (°C)<br>Temperature time of test sample (h)<br>Test duration (h)<br>recovery time (h)                                                                                                 | -40±3<br>1<br>96<br>2            | Test steps:<br>A) Put the tested parts into the test chamber, and then set the temperature of the cryogenic chamber to -40°C±3°C for monitoring time.<br>B) Place at room temperature for 2 hours after the test for routine                                  | OK              |

|                                                                                                      |                                                                                     |                        |                                                                                                                                                                                                                                            |    |
|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|                                                                                                      |                                                                                     |                        | inspection.                                                                                                                                                                                                                                |    |
| steady-state<br>damp heat<br>test                                                                    | temperature (°C)<br>relative humidity (%)<br>Test duration (h)<br>recovery time (h) | +85±2<br>85<br>96<br>2 | A) Put the tested parts into the test chamber, then set the temperature of the chamber to +85 ° C ±2 ° C and the humidity to 85%, and monitor the time.<br>B) Place at room temperature for 2 hours after the test for routine inspection. | OK |
| inspector: Luxiaojun                      audit: Liuxiaoping                      ratify: Liuzaiping |                                                                                     |                        |                                                                                                                                                                                                                                            |    |

### 5.2 Free drop test

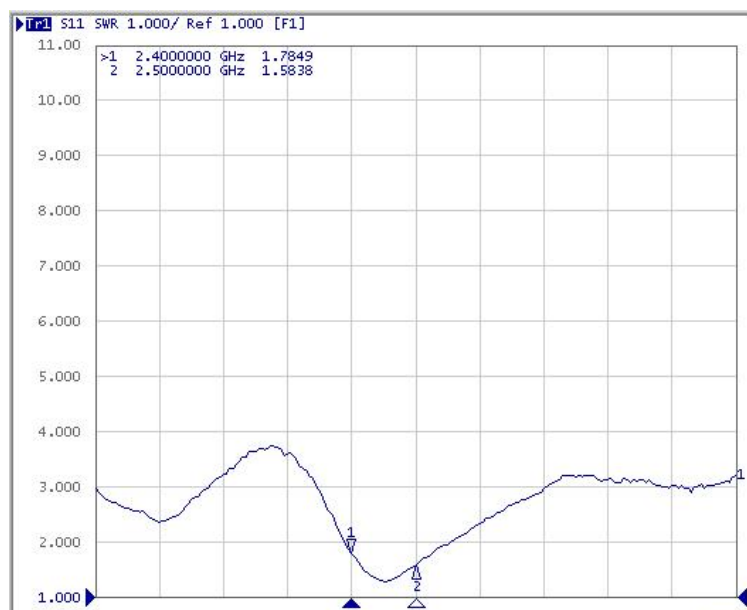
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|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------|
| P/N                                                                                                  |                                                                                                                                 | Commodity specification    |                                                                                                             |                       |
| test item                                                                                            | Free drop test                                                                                                                  |                            |                                                                                                             |                       |
| checkout equipment                                                                                   | One meter high table top                                                                                                        | number of test             |                                                                                                             |                       |
| inspection standard                                                                                  | 1. The product falls at a height of 1 meter without falling off, cracking or other defects, and without appearance deformation. |                            |                                                                                                             |                       |
| Name of test                                                                                         | test item                                                                                                                       | ask for                    | test method                                                                                                 | results of evaluation |
| Free drop test                                                                                       | Drop height: 1000mm                                                                                                             | It's going to fall 2 times | Test steps:<br>A) Drop the tested part at a height of 1000mm and conduct routine inspection after the test. | OK                    |
| inspector: Luxiaojun                      audit: Liuxiaoping                      ratify: Liuzaiping |                                                                                                                                 |                            |                                                                                                             |                       |

### 6.3salt spray test

|                     |                                                                                                                           |                                         |                                                |                       |  |
|---------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------------------------------------------|-----------------------|--|
| P/N                 |                                                                                                                           |                                         | Commodity specification                        |                       |  |
| test item           | salt spray test                                                                                                           |                                         |                                                |                       |  |
| checkout equipment  | Fog tester                                                                                                                |                                         | number of test                                 |                       |  |
| inspection standard | 1. The metal surface coating does not fall off;Appearance without rust, corrosion, oxidation and other adverse phenomena. |                                         |                                                |                       |  |
| Name of test        | test item                                                                                                                 | ask for                                 | test method                                    | results of evaluation |  |
| salt spray test     | 1. NaCl concentration:<br>2. air pressure:                                                                                | 40-60g/1kg<br>1.0±0.01kgf m²<br>6.5-7.2 | A. Laboratory temperature:<br>B. Pressure drum | OK                    |  |

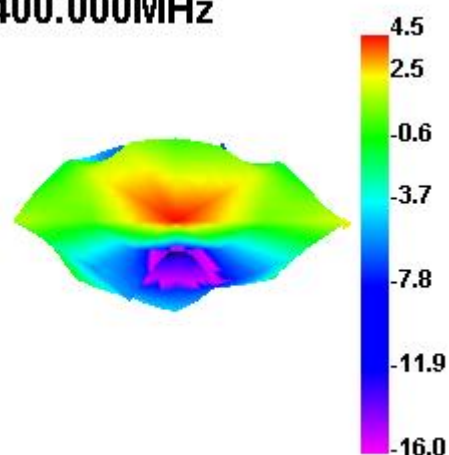
|                      |                                                                                                                                                                                |                                                 |                                                                                                                                                                                                                                                                                                                                                           |                    |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|                      | 3. PH price:<br>4. volume of spray:<br>5. 5. Salt water<br>test temperature<br>setting<br>A. Laboratory<br>temperature:<br>B. Pressure barrel<br>temperature:<br>6. Test time: | 1. 0-2. 0ml/80c/h。<br><br>35±1℃<br>47±1℃<br>24H | temperature: Test<br>procedure:<br>A) Modulate the salt<br>spray tester to<br>relevant test<br>conditions.<br>B) Place the tested<br>part in the salt<br>spray tester for 24<br>hours. After the<br>test, rinse with<br>clean water,<br>visually inspect<br>the appearance of<br>the tested parts,<br>and conduct routine<br>inspection.<br>6. Test time: |                    |
| inspector: Luxiaojun |                                                                                                                                                                                | audit: Liuxiaoping                              |                                                                                                                                                                                                                                                                                                                                                           | ratify: Liuzaiping |

## 6. Antenna performance tes

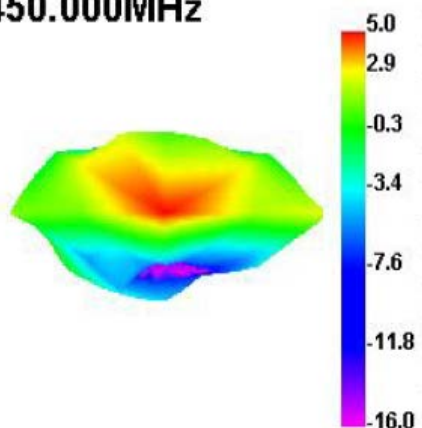


| Passive Test For 2400-2500 |             |               |
|----------------------------|-------------|---------------|
| Freq<br>(MHz)              | Effi<br>(%) | Gain<br>(dBi) |
| 2400                       | 63.61       | 4.53          |
| 2450                       | 61.94       | 5.00          |
| 2500                       | 60.09       | 4.54          |

2400.000MHz



2450.000MHz



2500.000MHz

