

**KunShan Innowave Communication Technology CO.,Ltd.**

**【Material acknowledgement】**

CUSTOMER NAME:Shenzhen MTN Electronics Co., LTD

PRODUCT NAME: KE97 (F065E9713910001)

CUSTOMER: 12. N3. 2400NE6DB

Customer material name: MTO-WR1232AC

PRODUCT: Version number :V1.0; MTO-WR1232AC 2.4G antenna 1,55\*10\*0.6mm resonant frequency 2400~2500Mhz, standing wave ratio less than 2, return loss less than -10, efficiency  $\geq 60\%$ , gain 4dB, substrate FR4, screen printing, L=100 $\pm$ 5mm Color blue IPEX, meet ROHS2.0, Innowave

Factory signature:

| APPROVED BY | AUDITOR BY   | CHECKED BY |
|-------------|--------------|------------|
| Huang Chao  | Lin Quan Jun | Huang Lei  |

Customer acknowledges signature:

Acknowledge the result:  OK  NG

| APPROVED BY | APPROVED BY | APPROVED BY |
|-------------|-------------|-------------|
|             |             |             |

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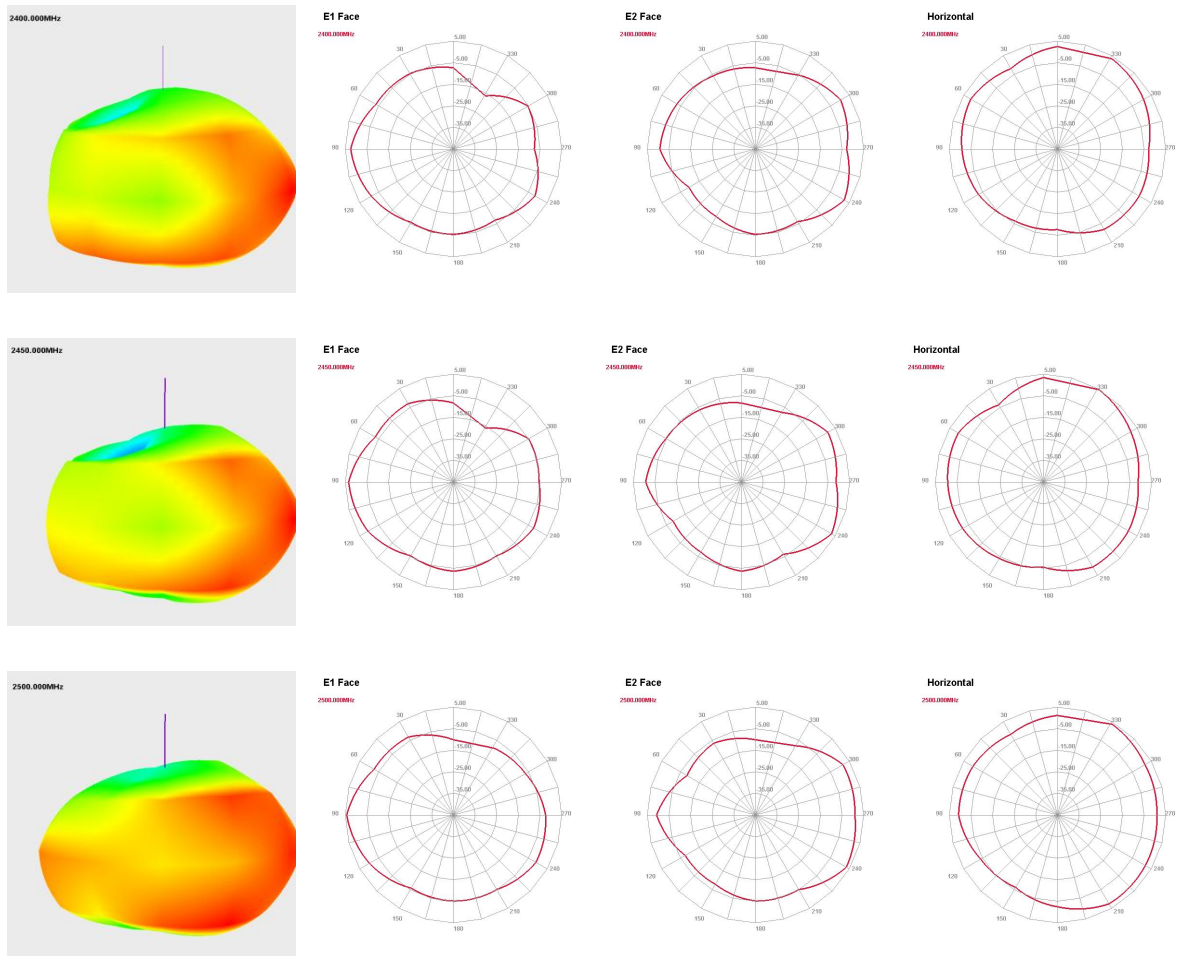
## (1) Antenna description

## Product main technical parameters

## Main technical specificationf

| Main technical parameters |                       | Main technical specifications |                       |
|---------------------------|-----------------------|-------------------------------|-----------------------|
| Frequency Range<br>(MHz)  | 2400-2500             | Frequency Range<br>(MHz)      | 2400-2500             |
| Impedance ( $\Omega$ )    | 50                    | Impedance ( $\Omega$ )        | 50                    |
| Peak Gain(dBi)            | 2.0                   | Peak Gain(dBi)                | 2.0                   |
| VSWR                      | $\cong 2.0$           | VSWR                          | $\cong 2.0$           |
| Polarization              | vertical polarization | Polarization                  | vertical polarization |
| Radiation                 | Omni-directional      | Radiation                     | Omni-directional      |
| Connector Type            | MHF Plug              | Connector Type                | MHF Plug              |
| Physical Properties       |                       | Physical Properties           |                       |
| Antenna Base              | FR-4                  | Antenna Base                  | FR-4                  |
| Operating Temp            | -40°C~+70°C           | Operating Temp                | -40°C~+70°C           |
| Storage Temp              | -40°C~+70°C           | Storage Temp                  | -40°C~+70°C           |

### 3.2: Darkroom 2D, 3DRaditation Pattern



### 3.3: Gain, efficiency meter

| Frequency(GHz) | Efficiency (%) | Gain(dBi) |
|----------------|----------------|-----------|
| 2400           | 77.07          | 2.32      |
| 2450           | 75.49          | 2.64      |
| 2500           | 73.38          | 2.43      |

## 4、 Bill of materials



KunShan Innwave Communication Technology CO.,Ltd.

BOM

| Client:         | MTN         | Type of aircraft: | HTO-WR1232AC  | <input type="checkbox"/>   | E-BOM   | 2024/5/10       | V1         | 6                    | 2.4G antenna added double-sided tape, 2.4G antenna PCB surface treatment changed. The | Li Ji Sheng                 |
|-----------------|-------------|-------------------|---|--|---|-----------------|------------|----------------------|---|-----------------------------|
| Project number: | KE97        | Edition:          | V1  | <input checked="" type="checkbox"/>                                      | P-BOM   | 2024/3/15       |            |                      | Initial release   | Li Ji Sheng                 |
| BOM             |             |                   |   |  |   |                 |            |                      |   |                             |
| Item            | Change mark | New part number   | Product name  | Gauge lattice  | Material (Surface treatment)  | Colour          | QTY        | Customer part number | supplier  | Reserve injection           |
| 1               |             | F065E9713910001   | KE97- Built-in 2.4G-1 antenna assembly                      | HTO-WR1232AC 2.4G-1 antenna The blue cable is 100mm long                 | Halogen PCB+ coaxial line + double-sided tape   | Black           | 1 PCS      |                      | Innowave  | self-control                |
| 2               |             | M065E9736910001   | KE97- Built-in 2.4G-1 antenna PCB                           | 55*10*0.6mm  | Halogen 0.0MM FR4 single panel, single side black oil OSP process                       | Black           | 1 PCS      |                      |   | Outsourcing                 |
| 2               |             | S065E9702950001   | KE97- Built-in 2.4G-1 RF cable                              | Φ1.37*100mm ordinary wire +1 generation domestic terminals               | Halogen-free copper wire, one end skinned with tin, one end hit the terminal            | Blue            | 1 PCS      |                      | Innowave  | self-control                |
| 3               |             | T011P161          | 1.37 Common coaxial line                                    | Φ1.37 common coaxial line  | Copper wire, both ends peeled with tin (line loss 0.5-1.0dB impedance 50 ohMs)          | Blue            | 0.100/M    |                      |   | Common materials/outsourced |
| 3               |             | T0360010          | Domestic 1 generation terminal                              | First generation terminal  | Halogen-free 1.37 wire  | Yellow          | 1 PCS      |                      |   | Common materials/outsourced |
| 3               |             | B15A0003          | Lead-free environmental protection high temperature tin bar | Lead-free environmental protection high temperature tin strip weight 1KG | Halogen-free tin content 99.3%  | silver          | 0.01g/pcs  |                      |   | Common materials/outsourced |
| 2               | V1          | M065E9719990002   | KE97- Built-in 2.4G double-sided tape                       | 54.4*9.4*0.15mm  | Halogen-free 3M9448A T0.15mm double-sided tape  | Natural quality | 1 pcs      |                      |   | Outsourcing                 |
| 2               |             | B15A0002          | Lead-free green tin wire 0.8mm diameter                     | Φ0.8mm   | Halogen-free rosin content 2.5-3.0% Weight 1KG  | silver          | 0.046g/pcs |                      |   | Outsourcing                 |
| 2               | V1          | B000B2D00021000   | Zip-lock bag 002  | 300*200mm  | The single layer thickness of halogen-free transparent anti-static self-sealing port is | Transparent     | 1/50PCS    |                      |   | Outsourcing                 |
| 2               |             | B01A0026          | Carton 350*350*250mm  | Carton 350*350*250mm   | Halogen-free carton 350*350*250mm   | Natural quality | 1/2000PCS  |                      |   | Outsourcing                 |

## 5 Equipment list

| Device name      | Calibration date | Equipment life | Test engineer |
|------------------|------------------|----------------|---------------|
| Network analyzer | 2024-05-23       | 2025-05-12     | Li Daung Jun  |
| ETS              | 2024-05-23       | 2025-05-23     | Li Daung Jun  |