

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

**【Material acknowledgement】**

CUSTOMER NAME:Shenzhen MTN Electronics Co., LTD

PRODUCT NAME: KE97(F065E9713910002)

CUSTOMER: 12.N3.2400NE2DB

Customer material name: MTO-WR1232AC

PRODUCT: Version number :V1.0; MTO-WR1232AC 2.4G antenna 2,55\*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, copper coating, surface black ink, L=120 $\pm$ 5mm Color: White 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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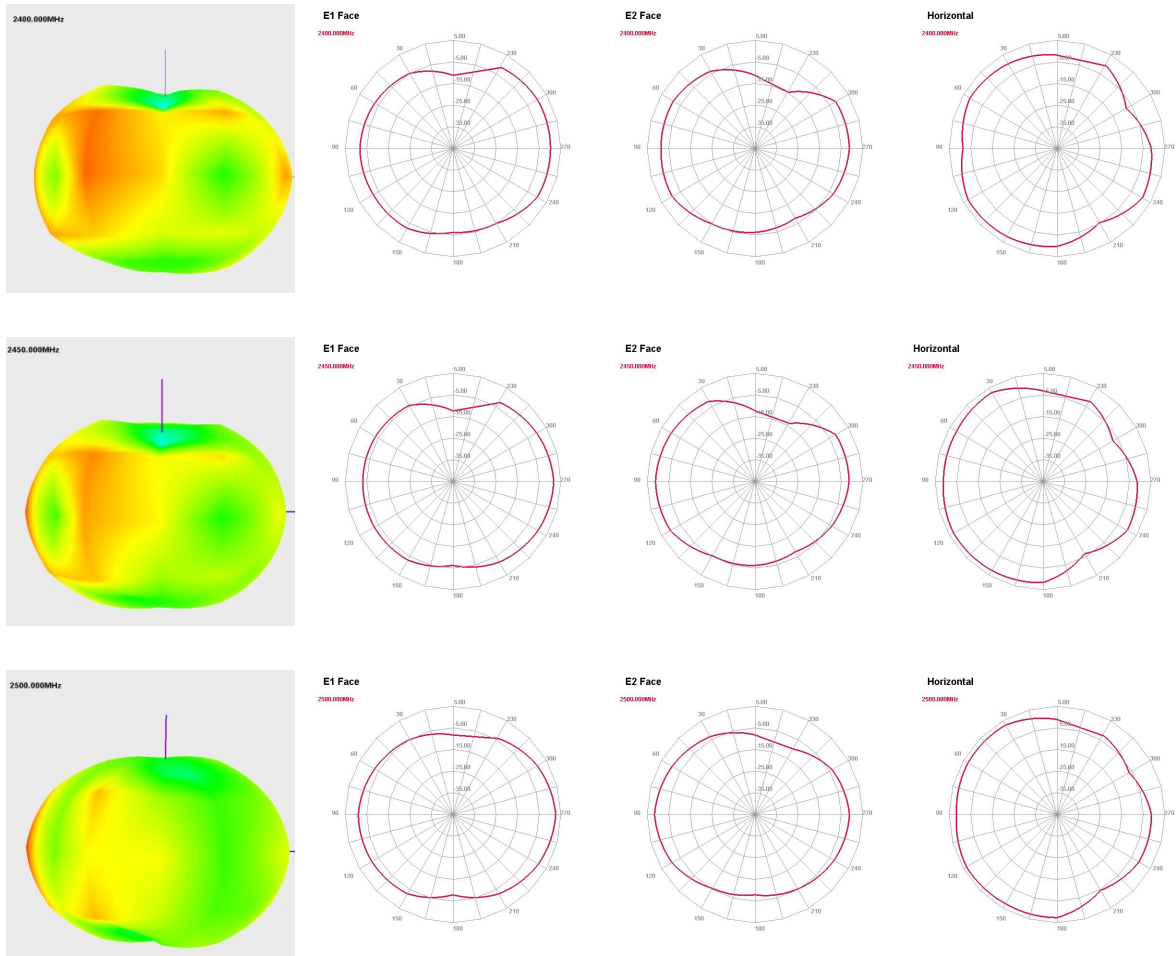
## (1) Antenna description

## Product main technical parameters

## Main technical specificationf

Main technical parameters		Main technical specifications	
Frequency Range (MHz)	2400-2500	Frequency Range (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	77.86	2.43
2450	77.03	2.37
2500	75.16	2.41

## 4、 Bill of materials



KunShan Innwave Communication Technology CO.,Ltd.

BOM

Client:	MIN	Type of aircraft:	MTO-WR1232AC	<input type="checkbox"/>	E-BOM						
Project number:	KB97	Edition:	V1	<input type="checkbox"/>	P-BOM	2024/5/10	V1	6	2.4G antenna added double-sided tape, 2.4G antenna PCB surface treatment changed; The	Li Ji Sheng	
BOM				<input type="checkbox"/>		2024/3/15			Initial release	Li Ji Sheng	
Term	Change mark	New part number	Product name	Gauge lattice	Material (Surface treatment)	Colour	QTY	Customer part number	supplier	Reserve injection	signature
1		F065E9713910002	KB97- Built-in 2.4G-2 antenna assembly	The MTO-WR1232AC 2.4G-2 antenna has a white cable length of 120mm	Halogen PCB+ coaxial line + double-sided tape	Black	1 PCS		Innwave	self-control	
2		M065E9736910002	KB97- Built-in 2.4G-1 antenna PCB	55*10*0.6mm	Halogen 0.6MM FR4 single panel, single side black oil OSP process	Black	1 PCS			Outsourcing	
2		S065E9702920002	KB97- Built-in 2.4G-1 RF cable	Φ1.37*120mm ordinary wire +1 generation domestic terminals	Halogen-free copper wire, one end skinned with tin, one end hit the terminal	white	1 PCS		Innwave	self-control	
	3	T0120124	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)	white	0.120/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	KB97- 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	B000BZD00021000	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 Gaung Jun
ETS	2024-05-23	2025-05-23	Li Gaung Jun