

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

**【Material acknowledgement】**

CUSTOMER NAME:Shenzhen MTN Electronics Co., LTD

PRODUCT NAME: KE97(F065E9713910004)

CUSTOMER: 12.N3.5000NE5DB

Customer material name: MTO-WR1232AC

PRODUCT: Version number :V1.0; MTO-WR1232AC 5G antenna 2, 64.5 \*10\*0.6mm resonant frequency 5100~5800Mhz, standing wave ratio less than 2, return loss less than -10, efficiency  $\geq 60\%$ , gain 4dB, substrate FR4, copp-coated, black ink surface, back with 3M300LSE L=100 $\pm$ 5mm Color: Gray IPEX, screen printing: NDX MD13 5G-2 V0.1 meets 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

Address: Shenzhen Longhua District Dalang Street Zijing double creation Park 7 building 101

Telephone: 13823308576

Fax:

Contact person: zengqiuzhi

Mailbox: zengqiuzhi@innowave.cn

Website:

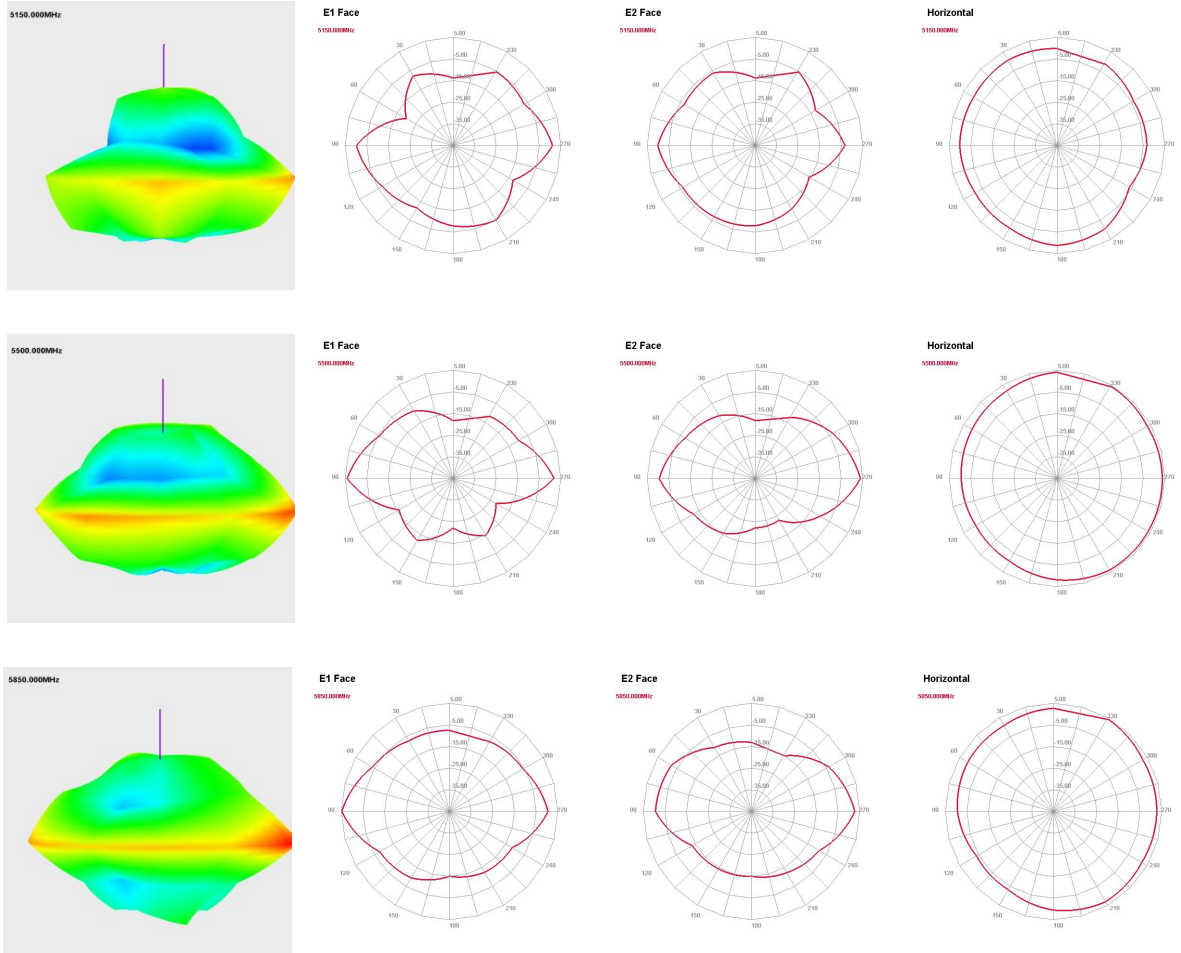
## (1) Antenna description

## Product main technical parameters

## Main technical specificationf

Main technical parameters		Main technical specifications	
Frequency Range (MHz)	5150-5850	Frequency Range (MHz)	5150-5850
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)
5150	71.4	2.52
5500	72.02	2.44
5850	69.26	2.31

## 4、 Bill of materials



KunShan Innwave Communication Technology CO.,Ltd.  
BOM

Client:	MTN	Type of aircraft:	MTO-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 type="checkbox"/>	P-BOM	2024/3/15			Initial release	Li Ji Sheng
BOM						Change date	Markers	Places	Change content	signature
Term	Change mark	New part number	Product name	Gauge lattice	Material (Surface treatment)	Colour	QTY	Customer part number	supplier	Reserve injection
1		F065E9713910004	KE97- Built-in 5G-2 antenna assembly	MTO-WR1232AC 5G-2 antenna grey line length 100mm	Halogen PCB* coaxial line + double-sided tape	Black	1 PCS		Innowave	self-control
2		M065E9736910004	KE97- Built-in 5G-2 antenna PCB	64.5*10*0.0mm	Halogen 0.0MM FR4 single panel. single side black oil OSP process	Black	1 PCS			Outsourcing
2		S065E9702930004	KE97- Built-in 5G-2 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	Gray	1 PCS		Innowave	self-control
3		T014P129	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)	Gray	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		M065E9719990001	KE97- Built-in 5G double-sided tape	63.9*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 Daung Jun
ETS	2024-05-23	2025-05-23	Li Daung Jun