

Kunshan Innowave Communication Technology Co., Ltd.

PRODUCT SPECIFICATION

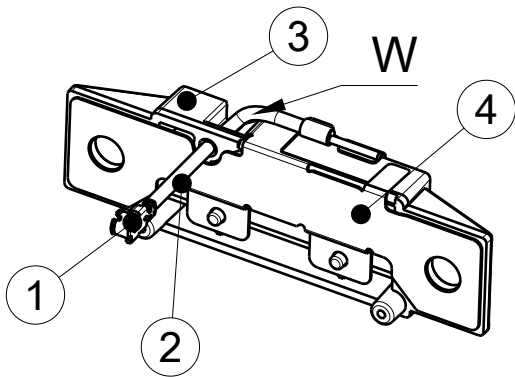
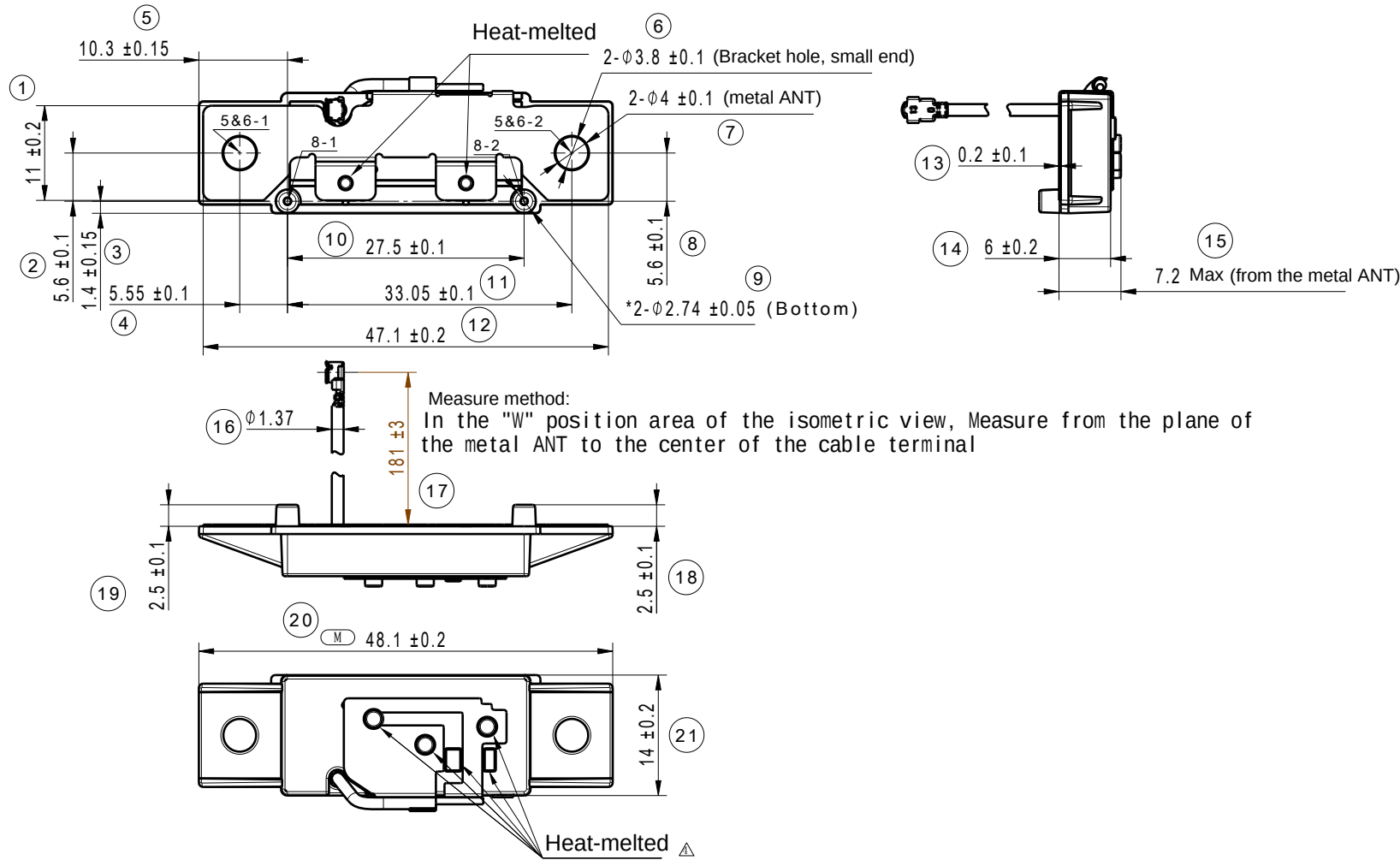
Product name: BT WIFI Antenna

Model: VU6983A

KunShan Innowave Communication Technology CO.,Ltd.

Add: Building H, No. 55 Shengchuang Road, Yushan Town, Kunshan City, Jiangsu Province

REV	SYMB	DESCRIPTION	DWN	DATE
T01		Initial 2D	YanLi	20231108
T02		Change calbe length and terminal	YanLi	20231208
T03		Change metal antenna shape	YanLi	20240119
T04		Change terminal	YanLi	20240305
T05	△	Change calbe color and basket pillar	YanLi	20240513
V01		Change to V01 version	YanLi	20240919



Isometric View

1. "M" comply with $CPK \geq 1.33$; "*" key dimensions, and undimensioned features are defined by the 3D model;
2. Coaxial cable diameter: 1.37mm; cable pull-off force $> 5N$; the initial holding force of the terminal $> 8N$, and the terminal holding force $> 4N$ after 30 match cycles; the coaxial cable and metal antenna must have no virtual welding, and solder joints must be free of burrs; coaxial cable and terminal must withstand $85^{\circ}C$;
3. Using a bending test fixture, a 500g weight is suspended from the cable terminal assembly for 1 minute, then this process is repeated for 10 cycles; after testing, the terminal must conduct properly with no visible damage;
4. The cable and metal antenna soldering must be uniform; solder pull strength: vertical pull $\geq 3N$; horizontal pull $\geq 6N$;
5. Cable pull strength: 1.5 kg/f;
6. Flammability characteristics meet UL94 V-0 standard;
7. Material emission performance meet the BT/SGMWJ-0872 2020 standard;
8. Prohibited substances comply with the BT/SGMWJ-0849 2015 standard;
9. High temperature operation: $85^{\circ}C$; low temperature operation: $-40^{\circ}C$;
10. Salt spray test: Conducted according to GMW3172-2018_9.4.7, test method per IEC 60068-2-52, Test Kb, with 1 cycle (24 hours), each cycle including 2 hours of salt spray; product surface must have no red rust;
11. Packaging specifications follow Huaqin Automotive Electronics packaging standards;
12. Product appearance must be free of cracks, deformation, burrs, and other defects; detailed appearance quality standards follow Huaqin Automotive Electronics appearance quality standards;
13. Metal Antenna must be heat-melted onto the bracket, fixed without loosening, deformation, or warping; according to the drop test standard GMW3172-2018-9.3.11: drop height is 1m; first test the X-axis front face, then the X-axis reverse face; repeat the same procedure for the Y and Z axes. Requirement: after the drop, the metal antenna must remain attached to the bracket.

Special Characteristics	Description	Quantity
◇	Function	/
R	Law/Regulation	3
M	Installation	1
▽	Safety	/

Antenna RF performance			
Name	SYMB	Typical value	Note
Frequency		WIFI BTG: 2.4G+5G	
Standing wave	VSWR	2.4G < 2; 5G < 1.5	
Efficient	%	> 60%	
Impedance	Ω	50	
Connector	Connector	818000189 ECT Gen 1	
Cable	Cable	φ1.37mm black color	

NO.	Part Name	Material	Quantity	Note
1	Terminal	/	1	ECT Gen 1 terminal
2	Cable	φ1.37mm	1	/
3	Bracket	PC+ABS	1	black color
4	Metal ANT	SUS 304 T=0.2mm	1	Ni Tin plating

Select Tol	Material	Detail see the table	Project NO.	ZD76	Vehicle	Part name	ZD76 BT WIFI 天线
>150	±0.2		Finish		N/A		
50~150	±0.15	Design Yan Li 09192024	Third angle	☐ ⊕	Mass		
10~50	±0.1	R F Min Zhou 09192024	State symbol	☐ ⊕	Scale	REV	Size
<= 10	±0.05	Check Ping Yang 09192024		B	1: 1	V01	A3
Angle	±1 °C	Approve Xudong Zhang 09192024	SHT 1 OF 1		Unite	mm	

INNOWAVE

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0.1 Electrical performance

0.1-1 Specification standard

ZD76 antenna – steel sheet antenna finished product. The WiFi antenna operates within the frequency bands of 2400–2500 MHz and 5150–5850 MHz, generating resonance.

0.1-2 Antenna matching circuit

The design of the matching circuit is to match the motherboard with the antenna, so that the host can achieve the best RF performance within the operating frequency band. The main path of the antenna has a matching series of $0\ \Omega$ (the matching circuit was not adjusted using any other matching methods).

0.2 Test of return loss ratio

0.2-1 The test setup

The test device for return loss is connected in sequence as follows: E5071C network analyzer → 150mm long coaxial cable with 50 ohms → test fixture.

Handling of the test fixture: From the 50-ohm test point of the host PCB antenna, a hard cable is used to lead out the SMA-J connector, which is then connected to the copper tube with a choke coil, and other devices are connected in sequence.

0.2-2 Return loss



0.2-3 Efficiency (Free State)

Freq (MHz)	Effi	Effi (dB)	Gain (dB)	Freq (MHz)	Effi	Effi (dB)	Gain (dB)
2400	58%	-2.4	2.1	5150	73%	-1.4	6.2
2410	57%	-2.5	1.8	5200	68%	-1.7	5.6
2420	58%	-2.4	2.7	5250	68%	-1.7	5.8
2430	59%	-2.3	3.1	5300	68%	-1.7	5.9
2440	56%	-2.5	2.9	5350	68%	-1.7	6.1
2450	46%	-3.4	2.5	5400	65%	-1.9	5.8
2460	49%	-3.1	2.3	5450	66%	-1.8	5.9
2470	49%	-3.1	2.4	5500	60%	-2.2	5.4
2480	46%	-3.4	3.2	5550	57%	-2.4	5.0
2490	46%	-3.4	4.0	5600	59%	-2.3	5.2
2500	45%	-3.5	4.2	5650	67%	-1.7	5.9
Avg	52%	-2.9	2.8	5700	61%	-2.1	5.5
				5750	62%	-2.1	5.6
				5800	65%	-1.9	5.9
				5850	60%	-2.2	5.7
				Avg	63%	-2.0	5.6