

# acknowledgement

Product Description:

Manufacturer: Shenzhen Yusheng Communication Equipment Co., LTD

Material name: Bluetooth RF antenna

Material code: 3.01. IDW13F1001

Version No. : R:a

Project Model:

IDW13 Custom /FPC Bluetooth RF antenna /YS

Spec/Color: White

Date of signature: 2022-12-08

Remarks :(This cover needs to be stamped with supplier's seal)

Attachment:

Instructions for electrical and mechanic ☐ manufacturing flowchart ☐ CPK report ☐ full size survey report ☐ Raw Materials List /RoHS report /HF/REACH

Lay down QC engineer ☐ sample ☐ Reliability test report ☐ packing method

Supplier sign

Proposed: Review: Approved:

(All of the above require a hand signature, printing is not allowed)

(Everything that needs to be provided needs to be filled in color)

The above is to be filled out by the vendor and the following by Aidu

	Department	Confirm content				Confirm results	Confirm the person/date
Technical confirmation field	Supplier quality	<input type="checkbox"/> RoHS materials <input type="checkbox"/> Non-Rohs materials	<input type="checkbox"/> Meet the REACH requirements	<input type="checkbox"/> It meets the halogen free requirements	<input type="checkbox"/> Other environmental protection requirements		
	ID of Design Department:	<input type="checkbox"/> ID required by customer	<input type="checkbox"/> Color confirmation	<input type="checkbox"/> Surface workmanship is confirmed	<input type="checkbox"/> Shell, hardware, key material		
	Structural Engineer	<input type="checkbox"/> 2D drawing file size confirmation <input type="checkbox"/> Specifications technical	<input type="checkbox"/> Focus on size marking <input type="checkbox"/> Electrical performance	<input type="checkbox"/> Adaptation verification <input type="checkbox"/> Functions	<input type="checkbox"/> Shell, hardware, key material <input type="checkbox"/> Effect		
	Hardware Engineer	<input type="checkbox"/> 2D drawing file size confirmation <input type="checkbox"/> Specifications technical	<input type="checkbox"/> Focus on size marking <input type="checkbox"/> Electrical performance	<input type="checkbox"/> Adaptation verification <input type="checkbox"/> Functions	<input type="checkbox"/> Shell, hardware, key material <input type="checkbox"/> Effect		
	Research and development quality:	<input type="checkbox"/> Test standards confirmed <input type="checkbox"/> Appearance	<input type="checkbox"/> Specification of dimensions (key dimensions)	<input type="checkbox"/> Reliability verification <input type="checkbox"/> Adaptation Verification	<input type="checkbox"/> Function <input type="checkbox"/> Effect		

Final confirmationProject Manager: ☐ Acknowledge the ☐ Specifications a ☐ Electrical per ☐ Function ☐ effect

Conditions of rec☐ Formal recognition

☐ Limited recognition

☐ Denial of recognition

Distribution dep:☐ IQC ☐ Suppliers ☐ Customers ☐ After sales ☐ SQE/ Document Control

☐ Others \_\_\_\_\_

# Catalogue

1. Cover
- 2, Contents
- 3, Electrical, mechanical properties description (sp
4. Bill of materials.RoHS.REACH.HF report
5. Full scale measurement report
6. Cpk report
- 7, CPK Reliability test report
8. QC engineering drawing
9. Packaging Information
10. Material list MSDS(required to meet REACH, no halogen and other environmental requirements provided)
11. Environmental substance questionnaire (provided when the requirements meet REACH, halogen free and other environmental requirements)

## 1. Overview

### 1.1 Scope of application

This requirement specifies the antenna technical requirements and material requirements specification for IDW13 products. This requirement applies to antenna selection, testing and acceptance of IDW13 products.

### 1.2 Basic information of the

Antenna name:	IDW13
Antenna band:	BT: 2400-2500MHZ
Antenna material:	Electrolytic copper +PI gold plating
Antenna version:	V3

## 2. Technical specification:

### 2.1 Introduction of test item

List	Test items	Equipment
S11 parameters	Standing wave ratio, return loss	Network analyzer
Active testing	TRP,TIS	General tester, microwave darkroom
Passive testing	Gain, efficiency	Network analyzer

#### 2.2.1 Test instructions

Test tools: Agilent8960 integrometer, R&SCMW500, all-wave far-field ETS darkroom, high precision positioning system and its controller and computer with automatic test program

Test environment: temperature  $22^{\circ}\text{C}\pm 3^{\circ}\text{C}$ , humidity  $50\%\pm 15\%$

Test method: The DUT is fixed on the center position of the turntable with the H plane, and the center position of the horn antenna is on the same horizontal line. The positioning system makes the DUT rotate on the whole sphere to meet the high precision three-dimensional positioning. Each RF instrument, turntable controller and PC with automatic test software communicate through the GPIB interface

#### 2.2.2 Antenna passive paran



## 2.2.3 Antenna Passive Paran

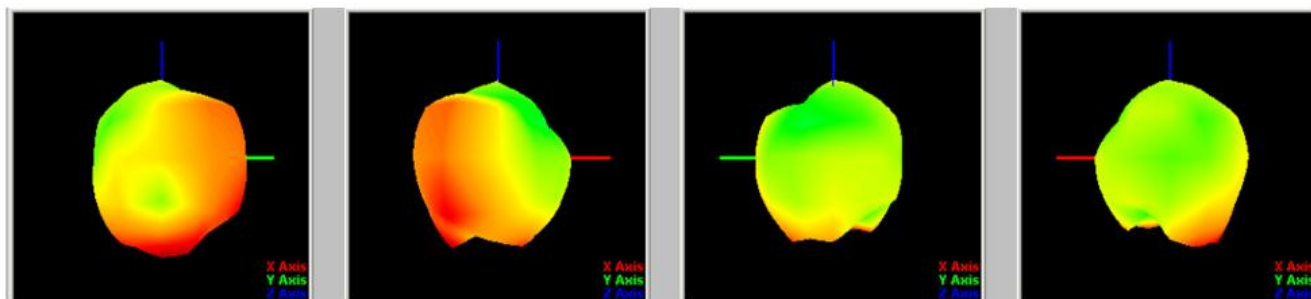
Test	Free-space								
Test Point ID	1	2	3	4	5	6	7	8	9
Freq. (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Efficiency (%)	24.6	25.7	26.1	26.4	27.2	26.4	26.1	25.5	24.8
效率(dB)	-6.1	-5.9	-5.8	-5.8	-5.6	-5.8	-5.8	-5.9	-6.1
增益(dBi)	-1.82	-1.57	-1.34	-1.19	-1.02	-1.36	-1.47	-1.74	-1.86

Test	ARM								
Test Point ID	1	2	3	4	5	6	7	8	9
Freq. (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Efficiency (%)	9.6	10.2	10.4	10.7	11.3	11.0	10.6	10.3	9.7
效率(dB)	-10.1	-9.9	-9.8	-9.7	-9.5	-9.5	-9.7	-9.8	-10.1
增益(dBi)	-5.56	-4.67	-4.36	-4.26	-3.87	-4.25	-4.56	-4.84	-5.39

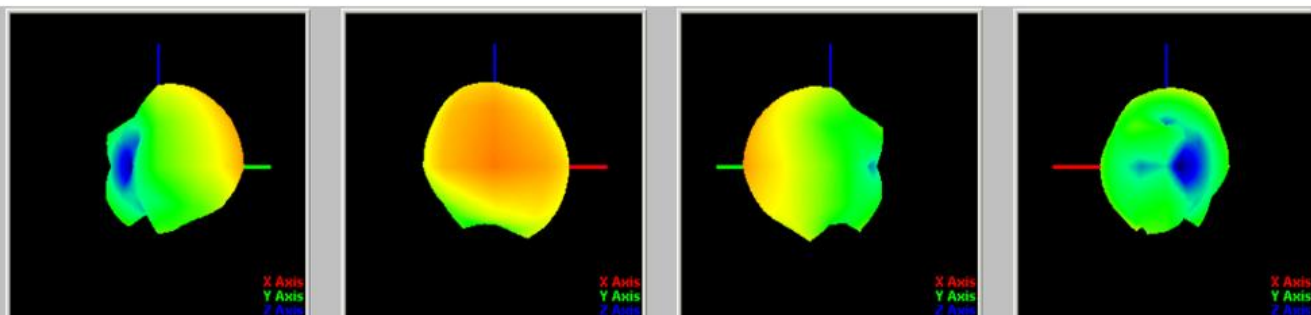
## 2.2.4 Antenna direction

Diagram -BT

FS



ARM



### 2.3 Motherboard Conductio

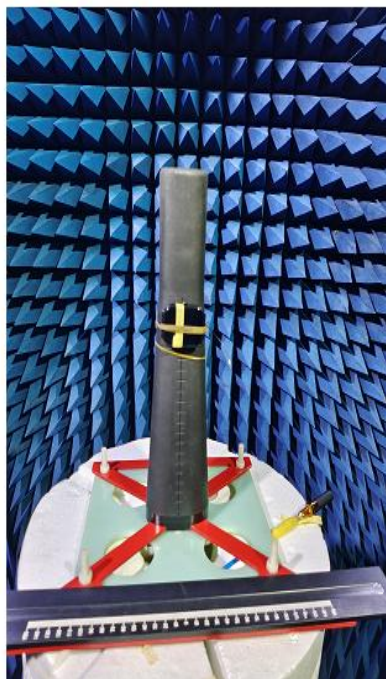
Test	BT		
Result	0	39	78
TRP (dBm)	8.27	8.55	8.34
TIS (dBm)	-93	-93	-93

### 2.4 Active antenna parameti

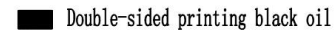
Test	天线OTA-FS		
Channel	0	19	38
TRP(dBm)	2.57	2.71	2.65
TIS(dBm)	-87.52	-87.19	-87.33

Test	天线OTA-Hand		
Channel	0	19	38
TRP(dBm)	-2.41	-2.13	-2.32
TIS(dBm)	-82.14	-82.26	-82.41

## 2.5 Antenna test environment



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






由 Autodesk 教育版产品制作

### 3.1. BOM list

YUSHENG COMMUNICATION TECHNOLOGY CO.,LTD.											
063007(IDW13) -BOM											
File number											
Edition: R:A Customer :063 Model: Date: 2022-12-01											
Item	Material number	Item name	Type	Version	Specifications	Material	Finish	Color	Units	Quantity	Craft
1	063007-IA	BT-FPC	Z	R:A	13.30 * 7.26 * 0.12 MM	Electrolytic Copper half and half /TESA 68532	Gilding	White	PCS	1	Pressing film
1.1	063007-IA-01	BT-FPC	Z	R:A	13.30 * 7.26 * 0.12 MM	Electrolytic Copper half and half /TESA 68532	Gilding	White	PCS	1	Pressing film
parts meet the environmental protection requirements of ROHS2.0/HF/Reach/GP, and comply with the company's harmful substances limit standard and m											
Type: W. outsourcing B. Semi-finished products Z. Finished products C. Customer supply											
Confirmation: Audit: Production: Feng Jiwu											



# Bill of Materials /RoHS report

Material name:											
Material No. :											
Product Composition information											
Material No.	Material name	Raw material specifications	Material supplier	RoHS/REACH/HF			Test facility Test Lab	Report No.	Date of report	Notes	Electronic test report
				Compliance with RoHS	Whether it complies with REACH	Whether it complies with HF					
1	PI-CCL electrolytic flexible copper-clad plate	Halogen-free epoxy resin adhesives Halogen - free epoxy resin adhesives	CAI Lungerti	is	is	is	SGS	SHAEC23001049106 SHAEC23001049108	2023-02-15 2023-02-15	 电解 ROHS 卤素(3).pdf	
		copper foil								 电解SVHC(3).pdf	
		PI membrane PI membrane								 MSDS_无卤聚酰亚胺铜箔基板.pdf	
4	TESA 68532 Back glue	Polyester film	TESA	is	is	is	SGS	REACH:SHAEC221756903	REACH:2023-01-04	 SHAEC221756903 3M背胶 REACH	Note: The third party report should be inserted into the form or sent together with the acknowledgement package (named by material name + report number + report date). The report must be valid within one year;
		Acrylic Adhesive						卤素: SHAEC2217569207	卤素: 2023-01-04	 SHAEC2217569207 3M背胶 卤素 2	
		Aliphatic Hydrocarbon Resin						ROHS:SHAEC2217569205	ROHS:2023-01-04	 SHAEC2217569205 3M背胶 ROHS	
		Paper laminated with Polyethylene								 MSDS_3M背胶 9471.pdf	
5	Nickel Gold Plating	Ni nickel	Dried saint	is	is	is	NTEK North Test	ROHS:A2220283397101001C HF:A2220283397101002C REACH:A2220448917101001C	2022/07/06 2022/07/06 2022/10/10	 乾圣MSDS中文版 2019070210070	 A222028339710 1001C.pdf
gold Gold		 A222028339710 1002C.pdf									
7		Brightener								 A222044891710 1001C(1).pdf	
8	White covering film	Epoxy resin	Fubon	is	is	is	CTI	REACH: A2230108006102001E ROHS: A2230108006101003E	2023/3/25 2023/3/21	 2023富邦REACH检测报告A223010	
9		Flame retardants								 富邦 白膜 ROHS+ 卤素.pdf	
10		Rubber									
11		Curing agent								 富邦覆盖膜MSDS (2023中英互译版)	
Notes	All materials must be filled in and stated "RoHS report /REACH/HF meets requirements, confirm OK"										

at report One paper file report is required for each material.

# Shenzhen Yusheng Communication Equipment Co., LTD

## IDW13-FPC full-scale test report

Customer name	Aidu	Product name	IDW13		Ingredient number	063007
Mold hole number		The 1st inspection			Date	2022.1209

### Inspection of appearance

al num	Standard values		Measured value						Decision		Notes
			1	2	3	4	5	6	OK	NG	
1	13.30	+0.15 -0.15	13.35	13.4	13.36	13.37	13.38	13.36	OK		
2	7.26	+0.15 -0.15	7.29	7.29	7.28	7.32	7.31	7.31	OK		
3	2.10	+0.30 -0.30	2.23	2.3	2.04	2.06	2.19	2.29	OK		
4	1.05	+0.30 -0.30	1.05	1.06	1.04	1.09	1.06	1.08	OK		
5	9.59	+0.15 -0.15	9.65	9.63	9.65	9.68	9.67	9.68	OK		
6	1.85	+0.15 -0.15	1.88	1.80	1.89	1.87	1.86	1.89	OK		
7	1.10	+0.10 -0.10	1.09	1.08	1.09	1.12	1.12	1.12	OK		
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Judgment result: Qualified

Surveyor: Chung Qiu-hung

Confirmed: Feng Jiwu

# Process Capability Calculation Worksheet

Part Number: BT

Part Description: IDW13

Part Revision: FPC

Supplier :

Submission Date: 09-12-2022

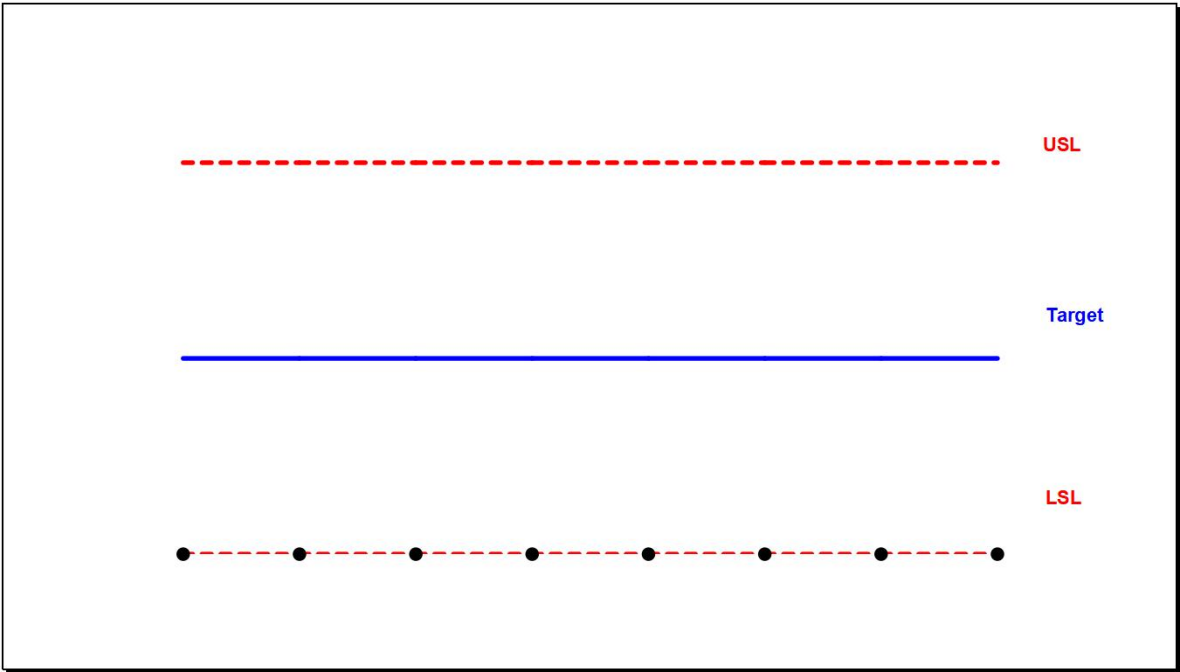
Cavity / Tool # : #REF!

Inspector:

## Cpk Data

	DRAWING SPECIFICATIONS							
	Cpk1 - #	Cpk2 - #	Cpk3 - #	Cpk4 - #	Cpk5 - #	Cpk6 - #	Cpk7 - #	Cpk8 - #
Nominal	7.260	13.300	2.100	1.050				
Upper Tol.	0.150	0.150	0.300	0.300				
Lower Tol.	0.150	0.150	0.300	0.300				
USL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LSL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Total Tol	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Xbar	0.000	0.000	0.000	0.000				
Stdv	0.000	0.000	0.000	0.000				
Zu	0.000	0.000	0.000	0.000				
Zl	0.000	0.000	0.000	0.000				
Cp	0.000	0.000	0.000	0.000				
Cpk	0.000	0.000	1.419	1.349				
Max	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Min	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000



DIMENSIONAL DATA								
Sample								
1	7.26	13.27	2.20	1.050				
2	7.24	13.29	2.32	1.105				
3	7.16	13.28	2.07	0.960				
4	7.25	13.29	2.05	0.980				
5	7.27	13.31	2.06	1.020				
6	7.28	13.32	2.06	1.050				
7	7.22	13.32	2.06	1.060				
8	7.26	13.32	2.05	1.019				
9	7.28	13.34	2.32	1.150				
10	7.24	13.36	2.11	1.160				
11	7.25	13.35	2.13	1.160				
12	7.22	13.33	2.15	1.150				
13	7.26	13.33	2.13	1.050				
14	7.28	13.32	2.05	1.060				
15	7.27	13.27	2.09	0.960				
16	7.19	13.29	2.07	0.980				
17	7.26	13.28	2.05	1.020				
18	7.26	13.29	2.06	1.050				
19	7.26	13.31	2.06	1.060				
20	7.27	13.32	2.06	1.019				
21	7.27	13.32	2.05	1.150				
22	7.26	13.32	2.04	1.160				
23	7.27	13.34	2.11	1.160				
24	7.26	13.36	2.13	1.160				
25	7.29	13.35	2.15	1.020				
26	7.25	13.33	2.13	1.050				
27	7.23	13.33	2.12	1.060				
28	7.21	13.32	2.13	1.019				
29	7.26	13.31	2.12	1.150				
30	7.23	13.31	2.12	1.160				
31	7.23	13.31	2.13	1.140				
32	7.25	13.30	2.13	1.140				

## Reliability test report

Cold and heat shock test report									
Customer	Aidu		Date	2022-12-05		In-plant number	THOT-063007-001		
Ingredient number	IDW13		Quantity	5PCS each		Testing time	48H		
Material specification	Single side half and half electrolytic copper		Suppliers	Yu Sheng		Reference standard	MIL-SDT-202Method017IEC60749-25 JEDEC JESD22-A104-B IEC68-2-1MIL-STD-2168-85		
Test purpose: To test the reliability of the product and the binding force of the coating, the oxidation resistance and corrosion resistance of the coating.									
Name of equipment: high and low temperature test box									
Laboratory environment									
Temperature	22 to 26 °C		Relative humidity	65-75%		Atmospheric pressure	1MPA		
Test parameters									
Temperature	High temperature		80 °C	Low temperature	-40C		Temperature tolerance	2 °C	
Time	Constant temperature	High temperature	0.30 H.	High temperature warming	10min		Notes	2. Low temperature cooling refers to falling from the set high temperature to the set low temperature	
		Low temperature	0.30 H.	Low temperature cooling	10min				
Number of cycles	32 cycles		Other	Relative humidity	95%				
Inspection of appearance	Layering	ACC	Oxidation	ACC	Blistering	ACC	Peeling ink	ACC	
Testing	Peel resistance	Acuity 0.8 KGF/cm2	Spot welding	ACC	Hundred-cell test	ACC	Wear resistance	ACC	
Test record:									
Product No.		Product test results					Decision		
		After the end of the experiment, the product has no warping, no rubber overflow.					ACC		
<div style="display: flex; justify-content: space-between;"> <span>Producer: Chung Qiu-hung</span> <span>Confirmed: Feng Jiwu</span> </div>									

Shenzhen Yusheng Communication Equipment Co., LTD			
Salt spray test report			
Client:	Aidu		Model number: IDW13
Sample condition	Number of samples: 5PCS		
	Material: single side half and half electrolytic copper	Coating: Gold plating	
The start time of the experiment: a total of 48 hours from 09/25 on December 05, 2022 to 09/25 on December 07, 2022			
Types of experiments	<input checked="" type="checkbox"/> NSS <input type="checkbox"/> ASS <input type="checkbox"/> CASS		
Experimental conditions	Salt solution: 5%	PH: 7.0	
	Temperature in box 35-C	Relative humidity: 85%℃	
	Spray method: <input checked="" type="checkbox"/> Continuous <input type="checkbox"/> intermittent	Compressed air pressure: 1kg/ square meter	
	Salt spray settlement rate:	Mist collection: PH7.0anc	
	Experiment period: 1-- cycle	Spray time: 48H	
		Placement time: 2H	
Observe results every 16 hours	The test temperature was: 36℃	The pressure barrel temperature is: 47.5℃	
Experimental results	Appearance after experiment: appearance intact and undamaged, no obvious changes		
	Coating: No peeling, no rust		
	Surface spraying, screen printing: no shedding, no bubbles		
Producer:	Chung Qiu-hung		Confirmed: Feng Jiwu

Packing			
Aidu Material Number:		Product Name:	
Product Specifications:		Packing material:	Cardboard boxes/waterproof bags
Number of packages:	Subject to actual conditions	Packing method:	Semi-sticky process shipping
Packing quantity:	Maximum quantity in a box: 10000PCS		
Figure 1: Single package (semi-sticky process full plate shipment)		Figure 2: Packing method (2000/ pack label in small package)	



Figure 3: View of packing box (front, side, top)



Figure 4: Outer box label 100\*100mm



深圳市昱晟通讯设备有限公司	
客户名称	深圳市爱都科技有限公司
订单编号	PO2022*****
项目名称	IDW13
物料代码	3.01.IDW13F1001
规格型号	IDW13定制/FPC蓝牙RF天线/YS
数 量	2000PCS
出货日期	2022-12-09
地址：深圳市光明新区光明大道南太云创谷园区2栋4楼4A	

Remarks: (Fill in the name and quantity of materials used in packing in the remarks column)

Materials used: covering mold/waterproof bag/carton  
Quantity: The quantity used depends on the order quantity