

环保：	
版本：	

Acknowledgment

SPECIFICATION FOR APPROVAL

customer name

Customer : Cosonic Intelligent Technologies Co., Ltd.

name of a part

Product : FPC antenna

Customer

material number

Part No.: 300116190164C00

Customer (Business) Approval Status :

Signature :

PASSED

REJECTED

产品资料 PRODUCT INFORMATION

Product : FPC antenna

Part No.: LIVE670

Samples No.:

Drawing No.: V0.5

Date: 2023.05.18

Prepared By	Proofed By	Checked By
Yuan Shujun	He lei	Sam
DATE:2023.03.30	DATE:2023.03.30	DATE:2023.03.22

Innovation INNOVATION Trust RELIABILITY satisfied SATISFACTION



Shenzhen Yusheng Communication Equipment Co., LTD

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ADDRESS: 4A, Floor 4, Building 2, Yuntai Chuanggu Park, southeast of the intersection of Guangming Avenue and Dongchang Road, Guangming District, Shenzhen

TEL : 0755-23984257 FAX : 0755-86090455

Form Number: CO-ENG-031A

LIVE670 Project, antenna material requirements specification

customer name: Cosonic Intelligent Technologies Co., Ltd.

Customer name: LIVE670

Product name: Bluetooth antenna assembly

size of product: BT-FPC/38.28*17.30*0.12mm/ Electrolyzed copper (half to half) black / coaxial

1.13*45.00MM single head 1 generation terminal black / welded

Material code: 300116190164C00

Change Content CV:

No	edition	state	availability date	person liable	page number	remarks
1	R:A	editio princeps	2023.05.18	Yuan Shujun	19	

The Supplier acknowledges the signature that:

Responsible person / date		IQC/ date	Review / Date	Approval / Date
MD	<i>Feng Jiwu</i>	<i>Zhong Guihong</i>	<i>Zeng Xiang good</i>	
RF	<i>He lei</i>			

The Demander acknowledges the signature (please send it back after confirmation):

The demander the result: ☐ qualified ☐ unqualified			
Development & Design Engineer / Date	SQE Engineer / Date	Purchasing Leader / Date	Development Manager approval / date

catalogue

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1. Overview

1.1 Scope of application

This requirement, provided LIVE670 Antenna technical requirements and material requirements specifications.

This requirement applies to LIVE670 Antenna type selection, test, and acceptance.

1.2 Project basic information

Antenna name:	<u>LIVE670</u>
Antenna frequency:	BT: 2.4G-2.5G
Antenna material:	FPC antenna + coaxial welding wire
Antenna version:	V0.5

2. Technical index requirements

2.1 Introduction of test items and equipment

inventor y	test item	equipment
Active test	TRP, TIS	Integrated tester, microwave darkroom

2.2 Active Reporting

2.2.1 Test instructions

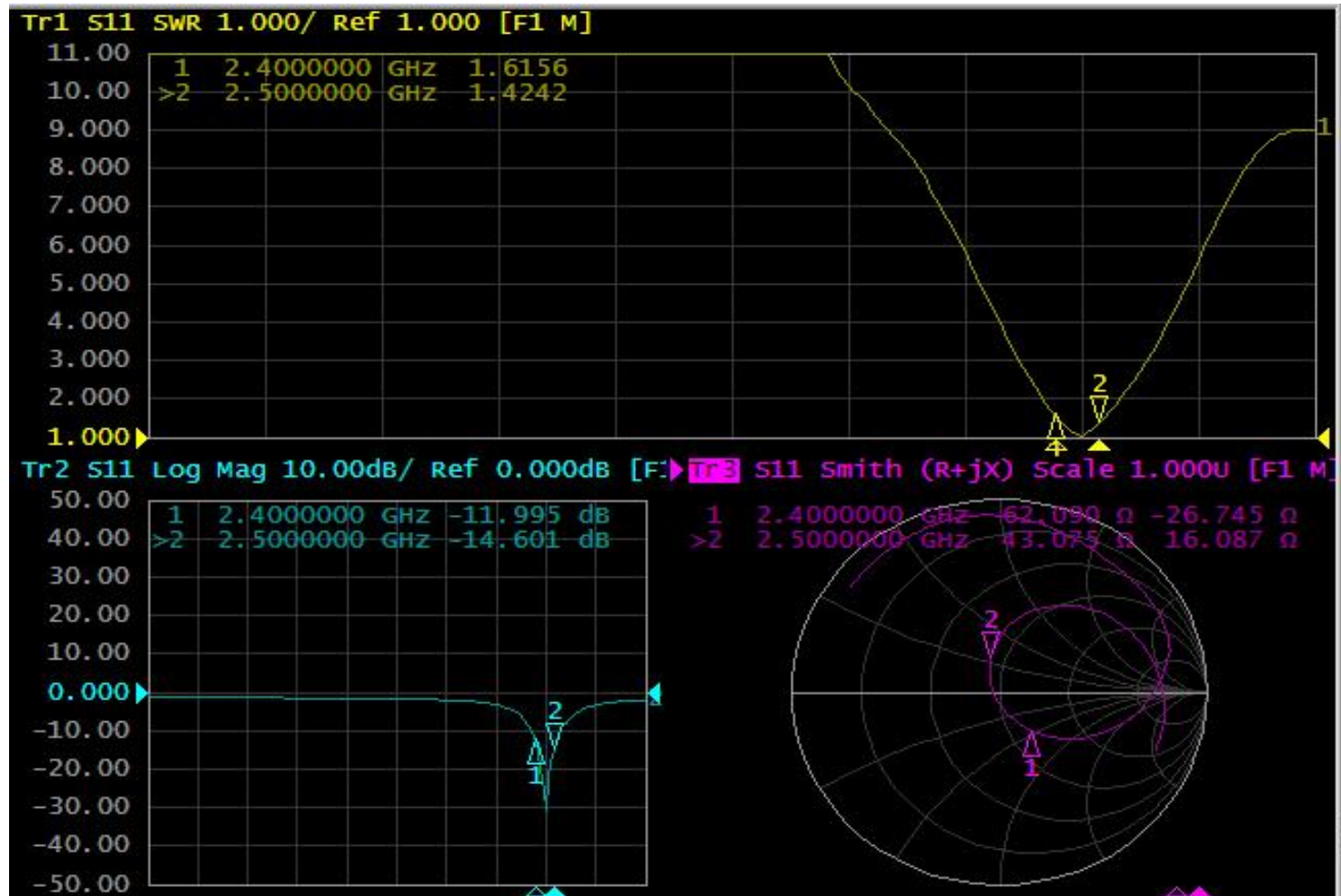
Test tools: Agilent8960 instrument, R & S CMW500, full wave far field ETS dark room, high precision positioning system and its controller and computer with automatic test program

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

Test method: DUT is fixed in the center of the turntable on the same horizontal line as the center of the horn antenna.

The positioning system enables the DUT to rotate in the whole sphere to satisfy the high-precision 3 D positioning. Each RF instrument and turntable controller communicate with the PC with automatic test software through the GPIB interface

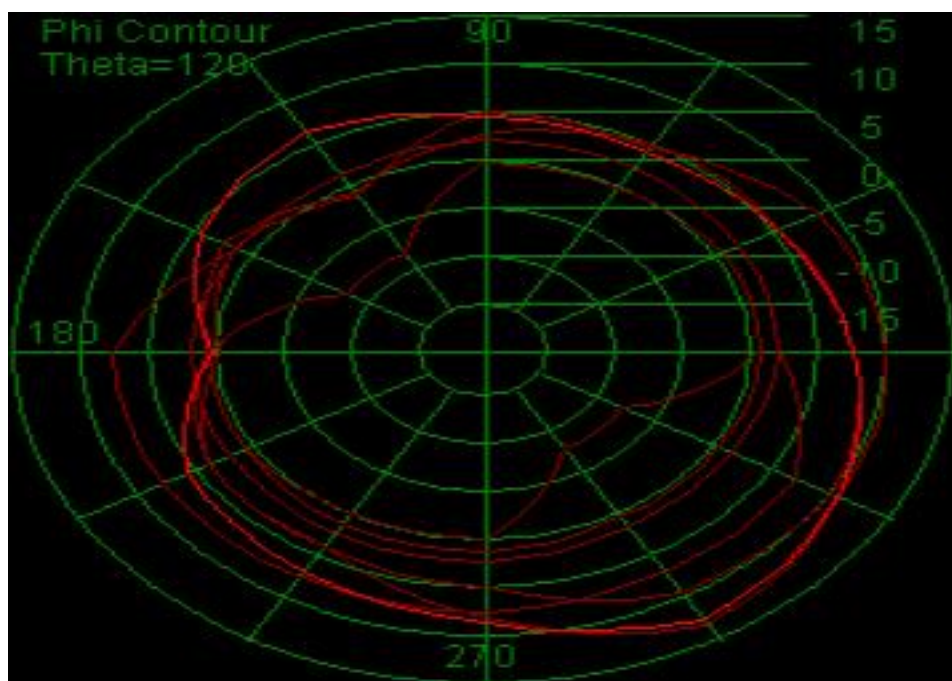
2.2.2 BT antenna (file LOGMAG + VSWR + SMITH)



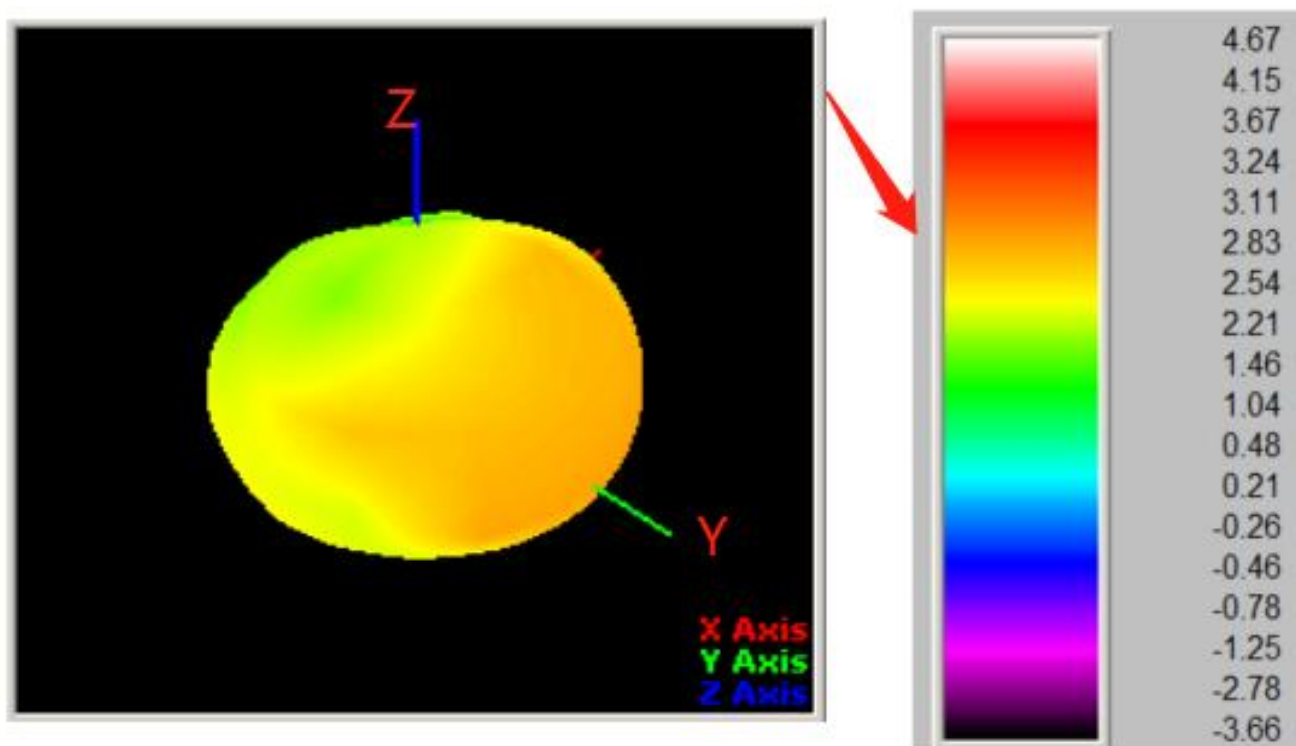
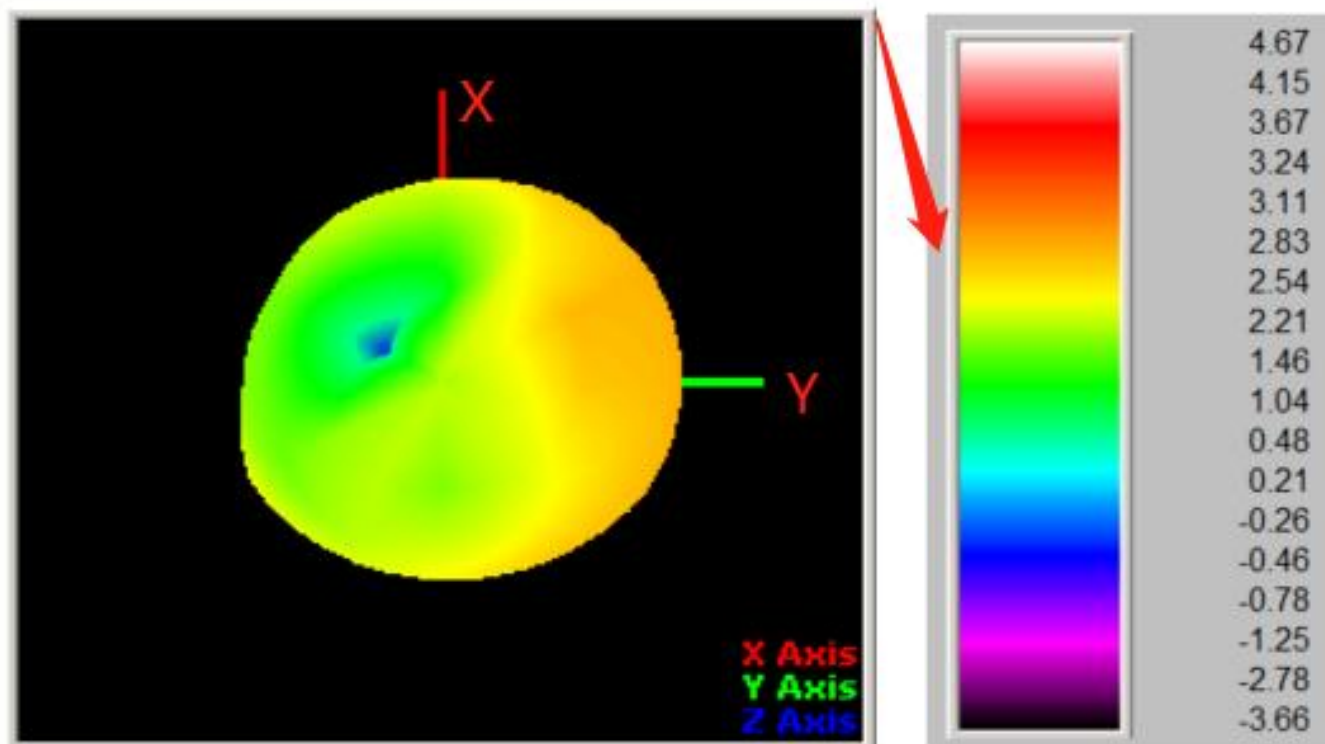
2.2.3 BT-antenna efficiency and gain

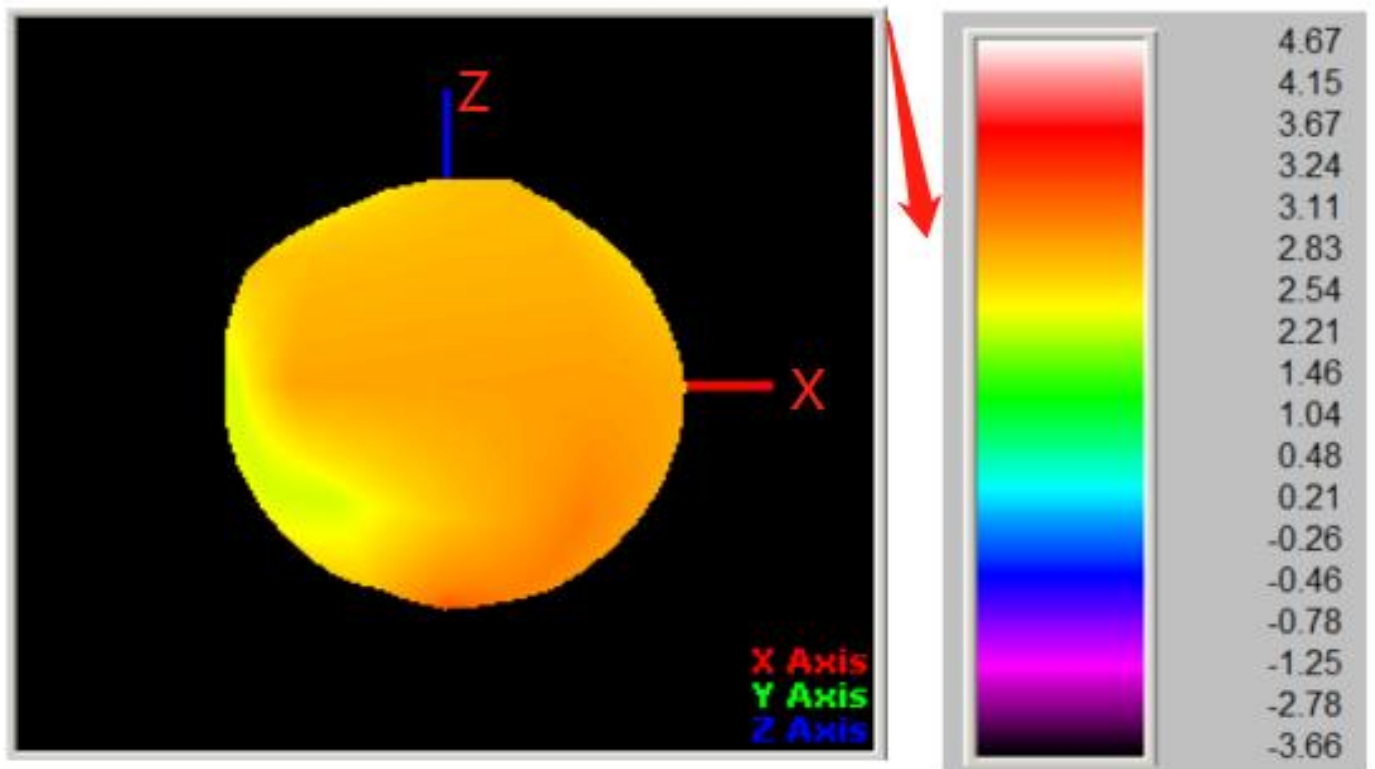
Passive Test For 2400MHz~2500MHz				
Freq	Effi	Gain		
(MHz)	(%)	(dBi)		
2400	46.5%	1.89		
2410	47.8%	2.04		
2420	48.6%	2.25		
2430	49.2%	2.31		
2440	50.7%	2.52		
2450	51.9%	2.83		
2460	50.6%	2.49		
2470	49.4%	2.27		
2480	48.9%	2.28		
2490	48.1%	2.19		
2500	47.3%	2.02		

2.3 antenna passive parameters-BT direction diagram



2.4 antenna passive parameters-BT Apple diagram





2.5 motherboard conduction data

Test	BT		
Result	1	39	78
TRP (dBm)	5.9	6.2	6.1
TIS (dBm)	-93.5	-94.0	-93.4

2.6 Antenna active parameters-Free space

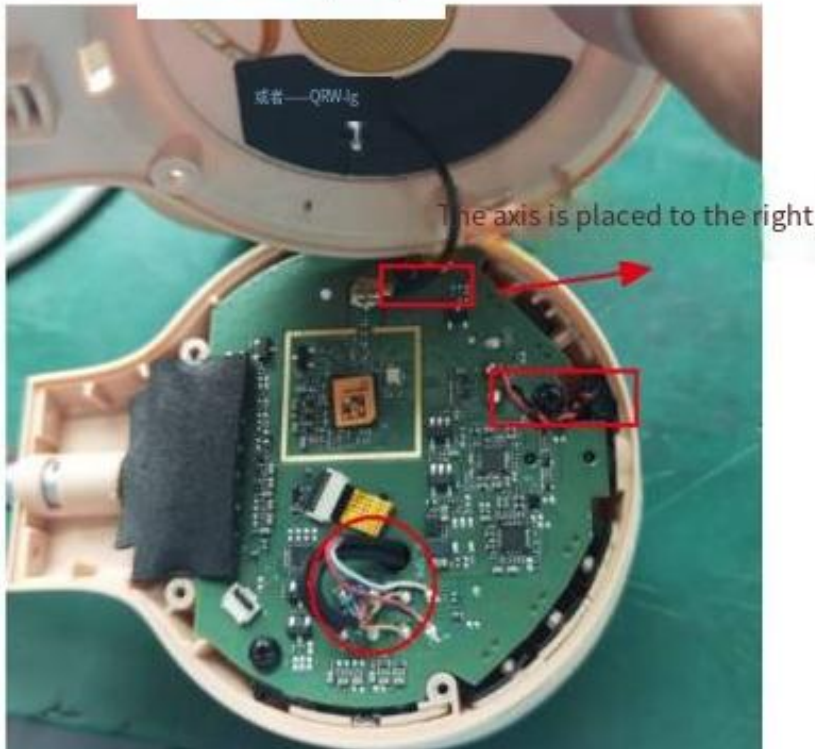
Test	BT		
Result	1	39	78
TRP (dBm)	1.25	1.75	2.09
TIS (dBm)	-90.45	-90.66	-90.78

2.7 Antenna active parameters-Head model

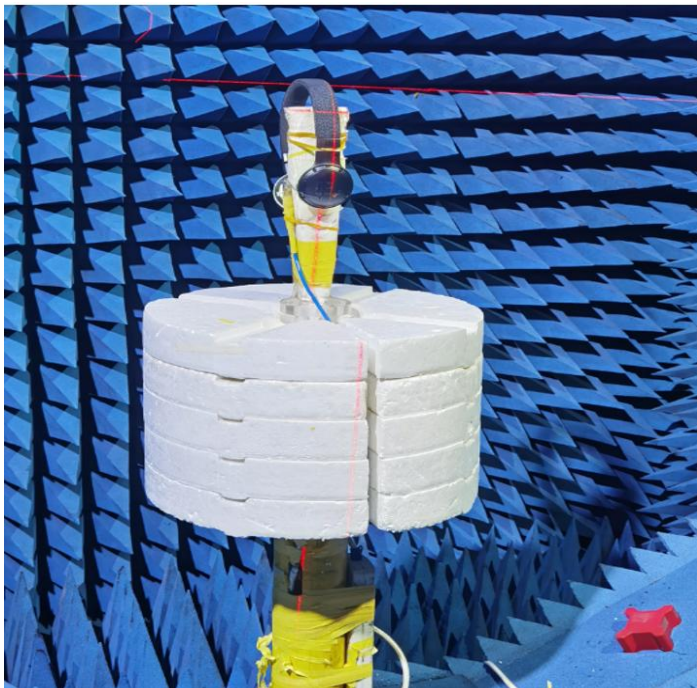
Test	BT		
Result	1	39	78
TRP (dBm)	-0.29	0.39	0.62
TIS (dBm)	-88.45	-88.67	-88.63

2.8 Assembly considerations

MIC display



2.9 Antenna active testing environment



Bluetooth active test puts the measured object into the dark room and tests the sensor to test the transmitting power sensitivity of the whole antenna.

3.0 Dark room environment



3.1 BT Disntance and Cross Body Test

BT Disntance and Cross Body Test																	
Project name	JBL LIVE 670NC				Test time	2023/3/9 14:30 - 17:30				Conclusion							
Project phase	EV				Test place	OCT				Pass/Fail							
HW version	V0.3				Weather	clear day											
SW version	JBL670_NC_V0.2.7_20230306.bin																
TX power setting	BR (Primary)	EDR (Primary)	BLE (Primary)		BR (Secondary)	EDR (Secondary)	BLE (Secondary)		RF OTA	TRP	Pass						
	5	2	0		NA	NA	NA			TIS	Pass						
BT codec setting	SBC bitpool (Pri)	AAC bitrate (Pri)		Latency (Primary)	SBC bitpool (Sec)	AAC bitrate (Sec)		Latency (Secondary)	Test	Pri	Pass						
	53bit	256kbps		125ms	53bit	256kbps		150ms	latency	Sec	Pass						
	Bitrate (Primary)			Latency (Primary)	Bitrate (Secondary)			Latency (Primary)	Test	Pri	Pass						
LC3 setting	192kbps			90ms+	NA			NA	latency	Sec	Pass						
	Bitrate (Primary)			Latency (Primary)	Bitrate (Secondary)			Latency (Primary)	Test	Pri	Pass						
LC3+ setting	TBD(source决定)			TBD(source决定)	NA			NA	latency	Sec	Pass						
Mobile phone	Samsung S8																
Test company	Yu Shen																
Tester	yuan				li												
BMI	38				38												
Sample	Range (m)	Cross body				Cross body				Cross body				Cross body			
		Left front	Right front	Left rear	Right rear	Left front	Right front	Left rear	Right rear	Left front	Right front	Left rear	Right rear	Left front	Right front	Left rear	Right rear
2	17	0	0	0	0	16	0	0	0	0	/	/	/	/	/	/	
4	16	0	0	0	0	16	0	0	0	0	/	/	/	/	/	/	
live 460	16	0	0	0	0	16	0	0	0	0							
Benchmark																	
Benchmark																	
Mobile phone	iphone 6																
Test company	Yu Shen																
Tester	yuan				li												
BMI	38				38												
Sample	Range (m)	Cross body				Cross body				Cross body				Cross body			
		Left front	Right front	Left rear	Right rear	Left front	Right front	Left rear	Right rear	Left front	Right front	Left rear	Right rear	Left front	Right front	Left rear	Right rear
2	15	0	0	0	0	15	0	0	0	0	/	/	/	/	/	/	
4	16	0	0	0	0	15	0	0	0	0	/	/	/	/	/	/	
live 460	16	0	0	0	0	15	0	0	0	0							
Benchmark																	
Benchmark																	



3.2 BT Audio Drop Test Report (AAC)

BT Audio Drop Test Report (AAC)																													
Project name: L LIVE670NC			Project ph: EV			Test Venue 蛇口老街			Test Time 2023/3/9 14:30 -17:30Weather: clear day			Conducted By: yuan			Conclusion:														
HW Version: V0.3						SW VersionBL670_NC_V0.2.7_20230305 bin																							
Test Condition															Audio Drop Description														
Sample #	Tester	BMI	Height	Test Device	Primary Side	Short drop (No audio output for < 1sec and back to normal quickly)			Long Drop (No audio output for a period of time, describe the duration)			Continuous drop (Continual short drop with short intervals)			Can't play (Audio drops all the time)			Total											
						Times	Drop Location	Duration (s)	Times	Drop Location	Repetab ility	Duration (s)	Times	Drop Location	Repetab ility	Durat on(s)	Drop Location		Repetabil ity										
2#	李工	38		Samsung S8	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	1									
					L	1		0	0	0	No	0	0	0	0	No	0	0	No										
4#	李工	38		Samsung S8	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	1									
					L	1		0	0	0	No	0	0	0	0	No	0	0	No										
2#	袁工	38		Samsung S8	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	1									
					L	2		0	0	0	No	0	0	0	0	No	0	0	No	1									
4#	袁工	38		Samsung S8	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	1									
					L	2		0	0	0	No	0	0	0	0	No	0	0	No	1									
2#	李工	38		Xiaomi POCO	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	1									
					L	1		0	0	0	No	0	0	0	0	No	0	0	No										
4#	李工	38		Xiaomi POCO	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	1									
					L	2		0	0	0	No	0	0	0	0	No	0	0	No	1									
2#	袁工	38		Xiaomi POCO	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	1									
					L	2		0	0	0	No	0	0	0	0	No	0	0	No	1									
4#	袁工	38		Xiaomi POCO	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	1									
					L	2		0	0	0	No	0	0	0	0	No	0	0	No	1									
LIVE 460	李工	38		Samsung S8	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	1									
					L	1		0	0	0	No	0	0	0	0	No	0	0	No										
LIVE 460	袁工	38		Samsung S8	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	1									
					L	1		0	0	0	No	0	0	0	0	No	0	0	No										
TWS 120	李工	38		Xiaomi POCO	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	3									
					L	3		0	0	0	No	0	0	0	0	No	0	0	No										
TWS 120	袁工	38		Xiaomi POCO	R	/	/	/	/	/	No	/	/	/	/	No	/	/	No	3									
					L	3		0	0	0	No	0	0	0	0	No	0	0	No										
Remarks: Latency 200ms AAC 256kbps, SBC bitpool 53 For TWS, primary side has L or R. For headphone, there's no L or R side difference.																													

3.3 BT Audio Drop Test Report (SBC)

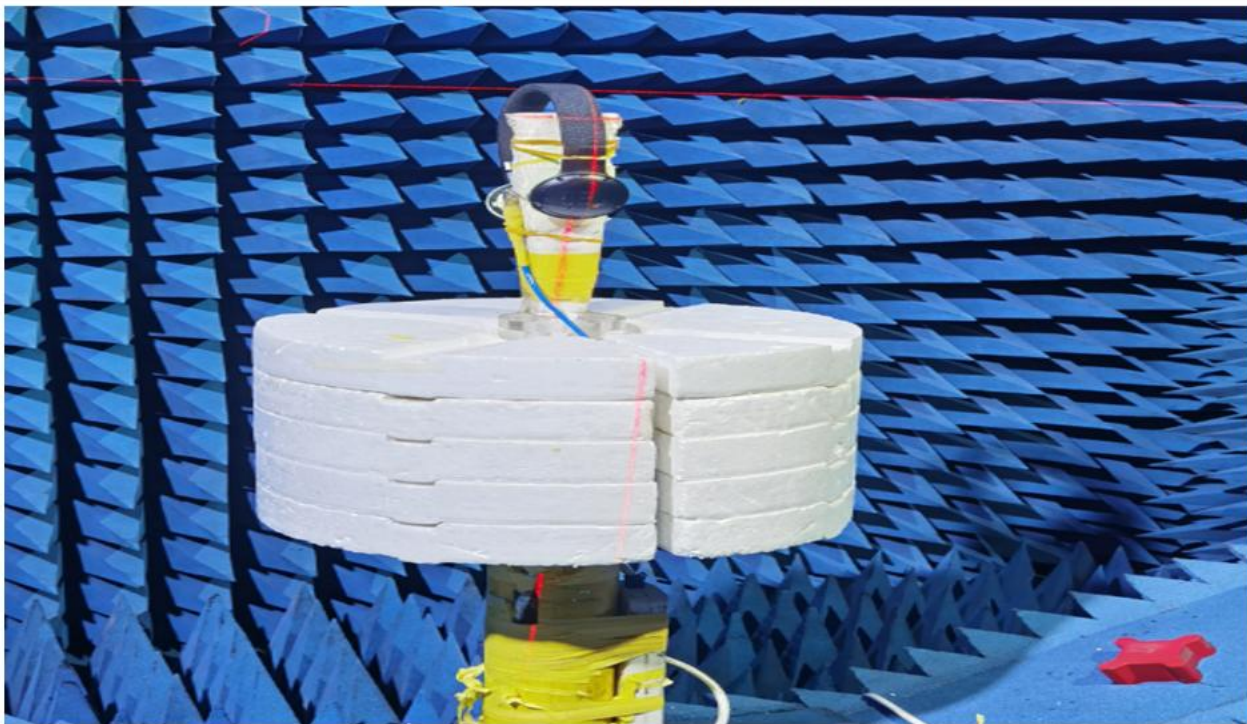
BT Audio Drop Test Report (SBC)																				
Project name: JBL LIVE830C HW		Project ph		EV		Test Venue: 海上世界		Test Time 2023/03/09 11:30 - 14:30		Weather: clear day		Conducted By: yuan		Conclusion:						
V0.3						SW Version JBL670_NC_V0.2.7_20230306.bin														
TX power setting	BR (Primary)	EDR (Primary)	BLE (Primary)	BR (Secondary)	EDR (Secondary)	BLE (Secondary)	RF OTA		TRP		PASS									
	5	2	0	NA	NA	NA			TIS		PASS									
BT codec setting	SBC bitpool (Pri)	AAC bitrate (Pri)	Latency (Primary)	SBC bitpool (Sec)	AAC bitrate (Sec)	Latency (Secondary)	Test latency		Primary		PASS									
	53bit	256kpbs	125ms	53bit	256kpbs	150ms			Secondary		PASS									
LC3 setting	Bitrate (Primary)		Latency (Primary)	Bitrate (Secondary)		Latency (Primary)	Test latency		Primary		PASS									
	192kpbs		90ms+	NA		NA			Secondary		PASS									
LC3+ setting	Bitrate (Primary)		Latency (Primary)	Bitrate (Secondary)		Latency (Primary)	Test latency		Primary		PASS									
	TBD(source决定)		TBD(source决定)	NA		NA			Secondary		PASS									
Test Condition					Audio Drop Description															
Sample #	Tester	BMI	Height	Test Device	Primary Side	Short drop (No audio output for < 1sec and back to normal quickly)			Long Drop (No audio output for a period of time, describe the duration)			Continuous drop (Continual short drop with short intervals)					Can't play (Audio drops all the time)			Total
						Times	Drop Location	Duration(s)	Times	Drop Location	Repeatability	Duration (s)	Times	Drop Location	Repeatability	Duration (s)	Drop Location	Repeatability		
2#	李工	38		Xiaomi POCO	R	8	/	0	0	0	No	0	0	0	No	0	0	No	8	
					L						No				No					
					R	8	/	0	0	0	No	0	0	0	No	0	0	No	9	
					L						No				No					
4#	李工	38		Xiaomi POCO	L						No				No					
					R	8	/	0	0	0	No	0	0	0	No	0	0	No	8	
					L						No				No					
2#	袁工	38		Xiaomi POCO	L						No				No					
					R	8	/	0	0	0	No	0	0	0	No	0	0	No	8	
					L						No				No					
4#	袁工	38		Xiaomi POCO	L						No				No					
					R	12	/	0	0	0	No	0	0	0	No	0	0	No	12	
					L						No				No					
LIVE460	袁工	38		Xiaomi POCO	L						No				No					
					R	15	/	0	0	0	No	0	0	0	No	0	0	No	15	
LIVE460	李工	38		Xiaomi POCO	L						No				No					

Remark:
Latency 140ms, AAC 256kpbs, SBC bitpool 53
For TVs, primary side has L or R. For headphone, there's no L or R side difference.

Remark:
Latency: 140ms, AAC 256kpbs, SBC bitpool 53
For TWS, primary side has L or R. For headphone, there's no L or R side difference.

3.4 Free Space-Test

Free space test environment picture



3.5 head ear-test

Head model test environment picture



3.6 Location of the antenna paste



4. Structural drawings

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1		2		3		4		5		6		7		8					
skills requirements: 1. PCB substrate specifications: 2. Electroplating specifications: 3. Surface ink requirements:		PC substrate: Electrolytic copper: Double-sided tape: Nickel plating 30um: Surface ink color: Printing font height:		0.5mm 0.5mm (0.5) 3M 4711SS 0.05mm Bright black According to drawings		4. Reliability requirements: 1. Reliability test: salt spray test (neutral friction test) (1000h) resistance test (100 grid test). 2. The front ink, the surface of the ink is required to be folded in half without cracking, scratching, etc.		5. Tolerance requirements: 1. Shape tolerance ±0.10; 2. Copper foil circuit tolerance ±0.05; 3. The position of the copper foil to the shape is ±0.15; 4. Hole-to-hole position tolerance ±0.10; hole-to-shape position tolerance ±0.15; 5. The size tolerance of gold finger is ±0.20; 6. For other unmarked dimensions, refer to 2D drawings.		6. Key control also: The dimensions marked with numbers are regarded as important dimensions, and the others refer to 2D drawings		7. Environmental requirements: Particulate matter: 0.05/0.02/0.01 environmental protection requirements		8. Packaging requirements: Packed in 75 bags, the quantity of each bag is 10PCS, there is a mark on the outside of the bag		DATE Modify the content Version Revise		DATE Modify the content Version Revise	
1		2		3		4		5		6		7		8					
Shenzhen Yu Sheng Communication Equipment Co., Ltd.		Model Part NO Material quality Build surface treatment		DATE Design Review CONFIRM		UNIT mm proportion FIT Revise R.A		0.10 10~20 20~40 40~50		±0.10 ±0.12 ±0.15 ±0.20		0.02 0.03 0.02 0.04 0.02		0.02 0.03 0.02 0.04 0.02		0.02 0.03 0.02 0.04 0.02			

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Shenzhen Yusheng Communication Equipment Co., LTD

5. List of materials

Shenzhen Yusheng Communication Equipment Co., LTD

336025 (LIVE670) -BOM table

document number

Version: R: A Customer: 336 Type: 336025 Date: 20230329

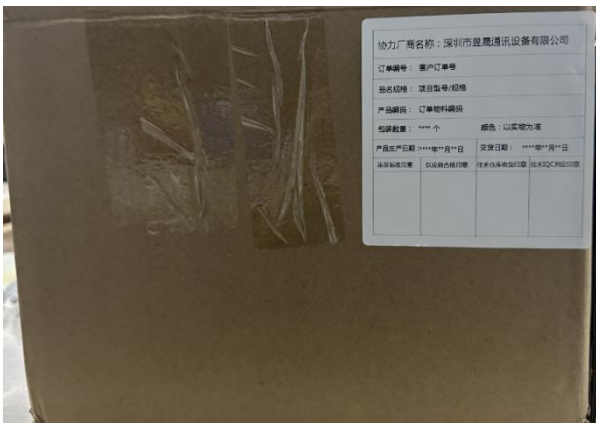
Item times	P / N	name of a part	type	edition	specifications	material quality	pigment	unit	quantity	technology
1	336025-IA	BT assembly	Z	R:A	38.28*17.30*1.70 mm	Electrolytic copper (half half)	black	PCS	1	weld
1.1	336025-IA-01	BT-FPC	W	R:A	38.28*17.30*0.12 mm	Electrolytic copper (half half)	black	PCS	1	weld
1.2	336025-IA-02	coaxial cable	W	R:A	1.13*45.00 MM	Single head 1 terminal	black	PCS	1	weld

The above parts meet the ROHS 2.0 HF Reach GP

type:W.outsourcing B.semi-manufactures Z.end product C.provided by customer

Confirmation: audit: Production: Jiang Fangbai

6. Package schematic diagram

Packaging (Packing)																			
Jiahe material number:		project name:	LIVE670																
size of product:	FPC antenna	packing material:	Carton / Waterproof Bag																
package quantity:	Minimum package: 100 PCS / package	manner of packing:	Waterproof bag / carton packaging																
packing quantity:	Shipment by order quantity																		
Note: The following is the packaging schematic diagram, and the final physical object is subject to the mass production;																			
Figure 1: Single-piece packaging method (100 PCS / packet shipment)		Figure 2: packing method (1000 PCS waterproof bag shipment)																	
																			
Figure 3: Box view (carton packaging)		Figure 4: Outer box label: 100 * 100mm																	
		<table><tr><th colspan="2">SHENZHEN YUSHENG COMMUNICATION EQUIPMENT CO., LTD</th></tr><tr><td>Customer name 客户名称</td><td>*****</td></tr><tr><td>Order reference 订单编号</td><td>*****</td></tr><tr><td>Project name 项目名称</td><td>*****</td></tr><tr><td>Material code 物料编码</td><td>*****</td></tr><tr><td>Quantity 出货数量</td><td>****PCS</td></tr><tr><td>Date 出货日期</td><td>*****</td></tr><tr><td colspan="2">Address: 407-411, Floor 4, Building 2, Yuntai Chuanggu Park, southeast of the intersection of Guangming Avenue and Dongchang Road, Guangming District, Shenzhen</td></tr></table>		SHENZHEN YUSHENG COMMUNICATION EQUIPMENT CO., LTD		Customer name 客户名称	*****	Order reference 订单编号	*****	Project name 项目名称	*****	Material code 物料编码	*****	Quantity 出货数量	****PCS	Date 出货日期	*****	Address: 407-411, Floor 4, Building 2, Yuntai Chuanggu Park, southeast of the intersection of Guangming Avenue and Dongchang Road, Guangming District, Shenzhen	
SHENZHEN YUSHENG COMMUNICATION EQUIPMENT CO., LTD																			
Customer name 客户名称	*****																		
Order reference 订单编号	*****																		
Project name 项目名称	*****																		
Material code 物料编码	*****																		
Quantity 出货数量	****PCS																		
Date 出货日期	*****																		
Address: 407-411, Floor 4, Building 2, Yuntai Chuanggu Park, southeast of the intersection of Guangming Avenue and Dongchang Road, Guangming District, Shenzhen																			
Remarks: (Name and quantity of packaging materials used in the remarks column) Materials used: waterproof bag / carton Quantity: The quantity used is based on the order quantity																			

Composed: Zhong Qiuhong

examine and verify:

Feng
Jiwu

QF-QMP-QA01-01