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| 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



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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 |
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**The Supplier acknowledges the signature that:**

| Responsible person / date |                  | IQC/ date           | Review / Date          | Approval / Date |
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| RF                        | <i>He lei</i>    |                     |                        |                 |

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| The demander the result: <input type="checkbox"/> qualified <input type="checkbox"/> unqualified |                     |                          |                                     |
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|  |                     |                          |                                     |

## 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<br>y  | test item | equipment                             |
|----------------|-----------|---------------------------------------|
| Active<br>test | TRP, TIS  | Integrated tester, microwave darkroom |

### 2.2 Active Reporting

#### 2.2.1 Test instructions

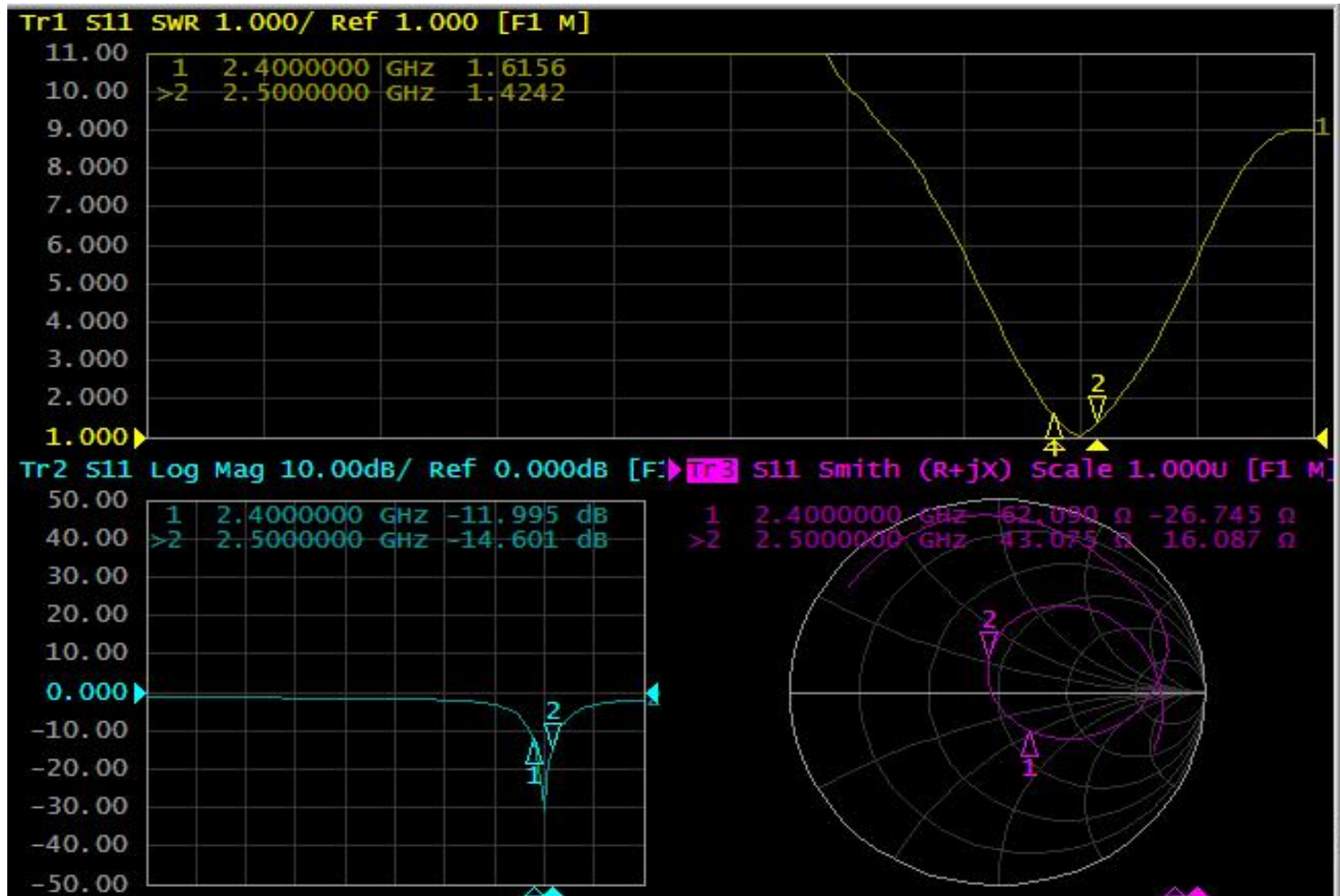
Test tools: Agilent8960 instrument, R & S CMW500, full wave far field ETS dark room, high precision positioning system and its controller and computer with automatic test program

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

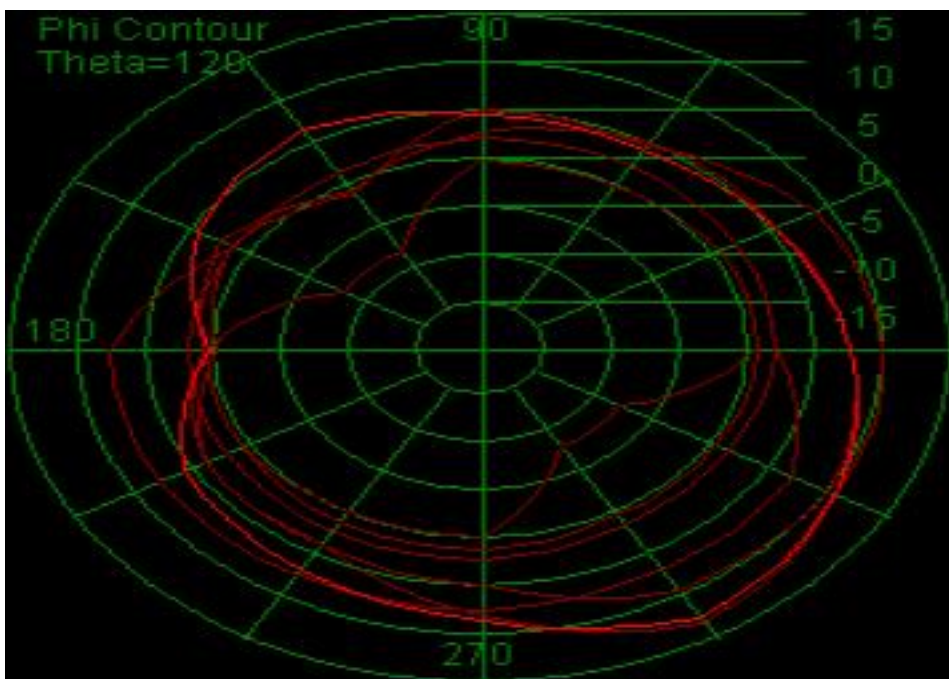
## 2.2.2 BT antenna (file LOGMAG + VSWR + SMITH)



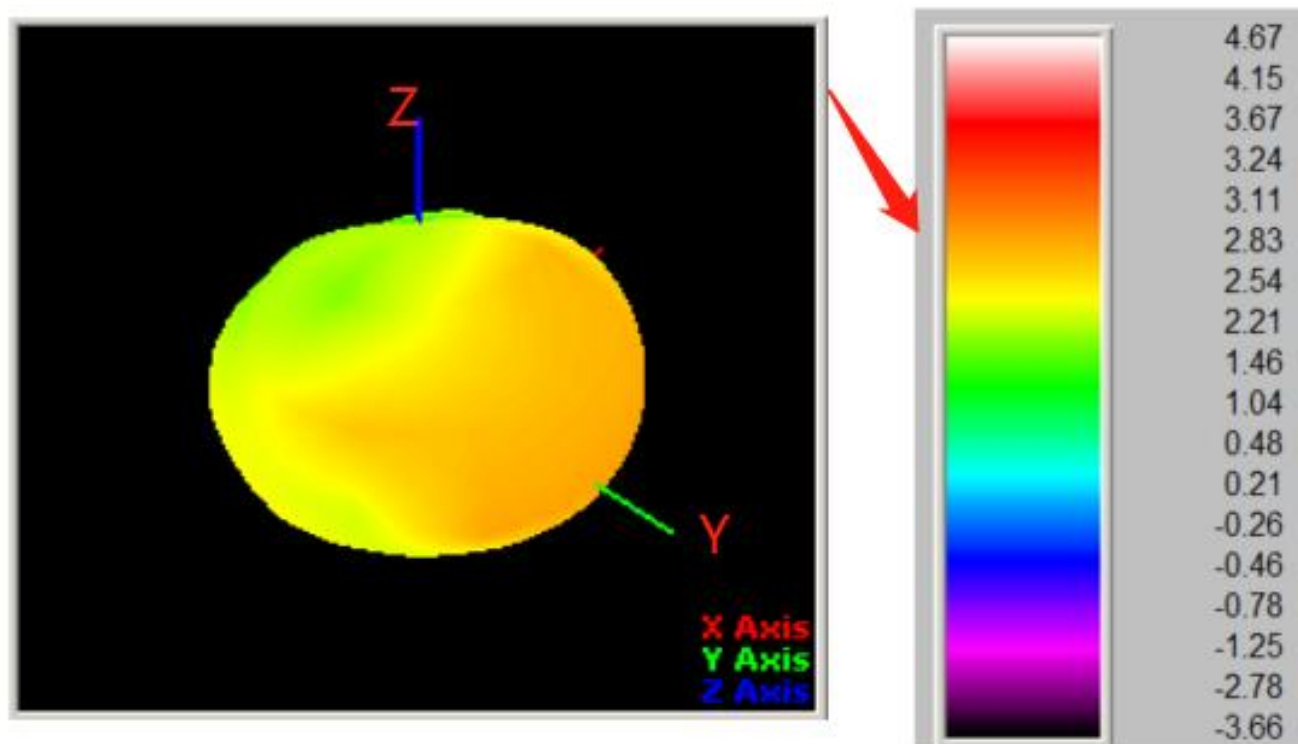
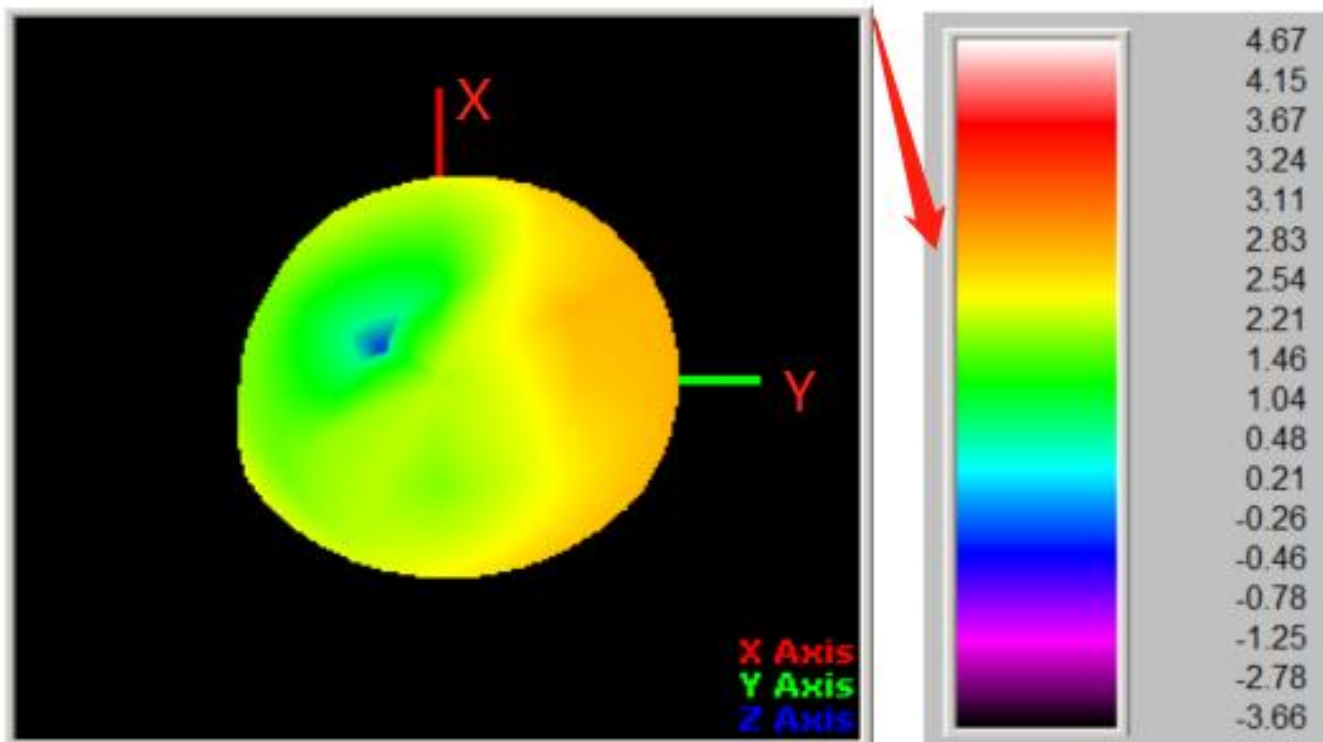
### 2.2.3 BT-antenna efficiency and gain

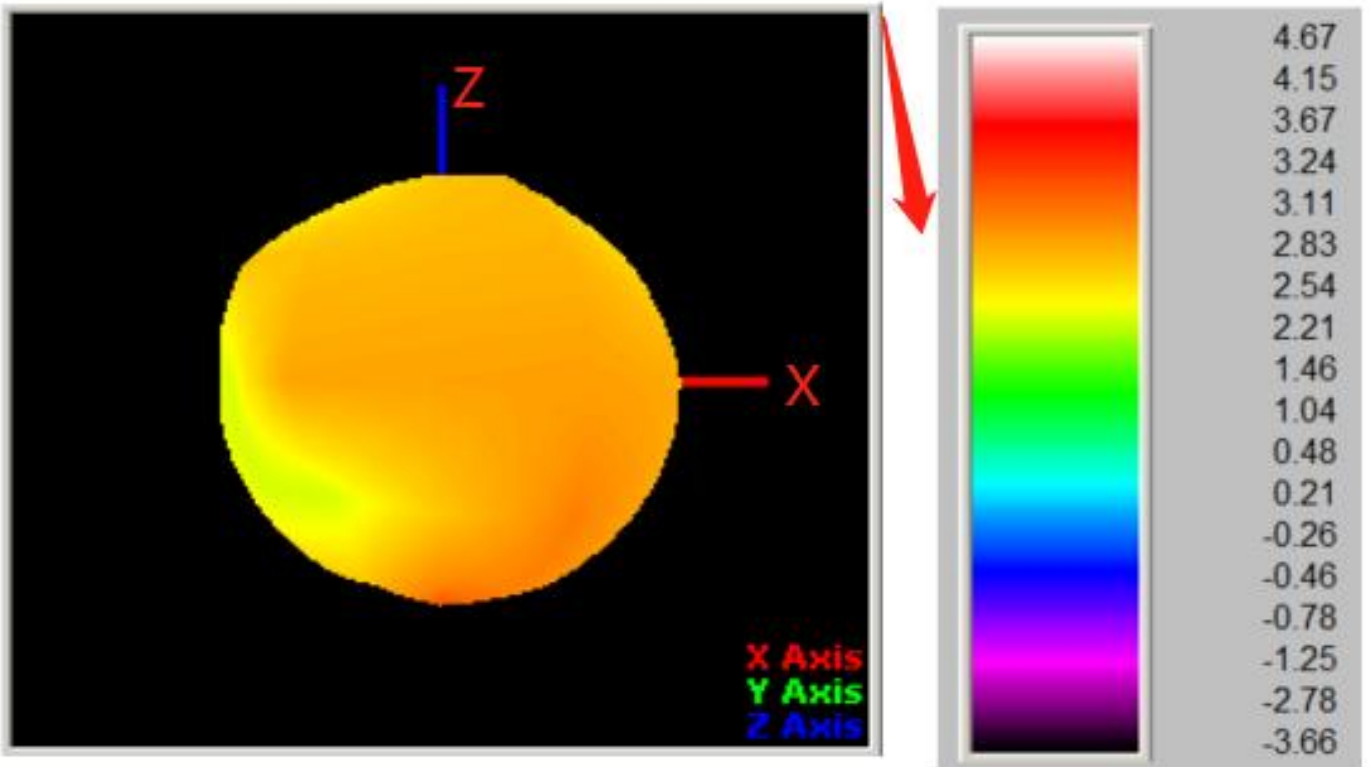
| Passive Test For 2400MHz~2500MHz |       |       |  |  |
|----------------------------------|-------|-------|--|--|
| Freq                             | Effi  | Gain  |  |  |
| (MHz)                            | (%)   | (dBi) |  |  |
| 2400                             | 46.5% | 1.89  |  |  |
| 2410                             | 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

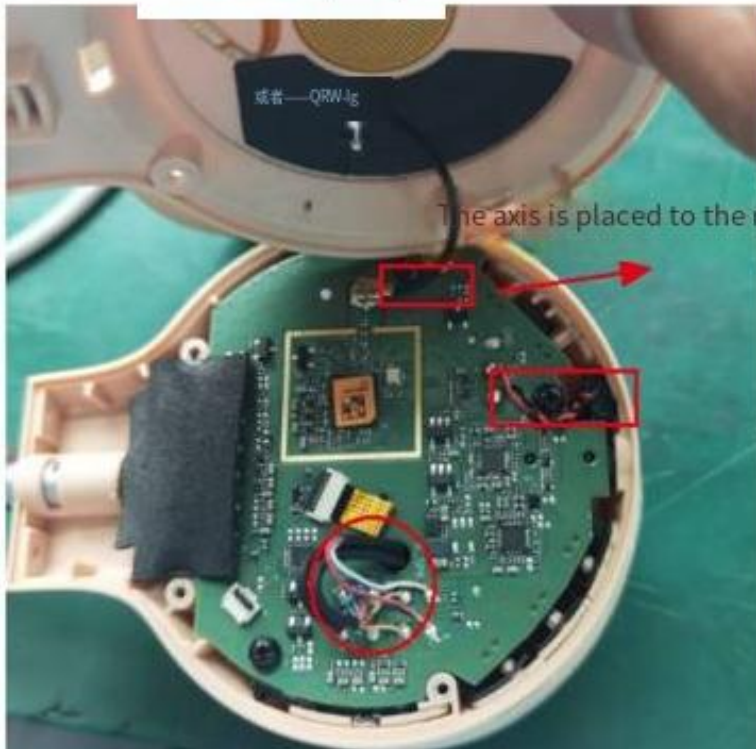
| Test      | BT     |        |        |
|-----------|--------|--------|--------|
| Result    | 1      | 39     | 78     |
| TRP (dBm) | 1.25   | 1.75   | 2.09   |
| TIS (dBm) | -90.45 | -90.66 | -90.78 |

### 2.7 Antenna active parameters-Head model

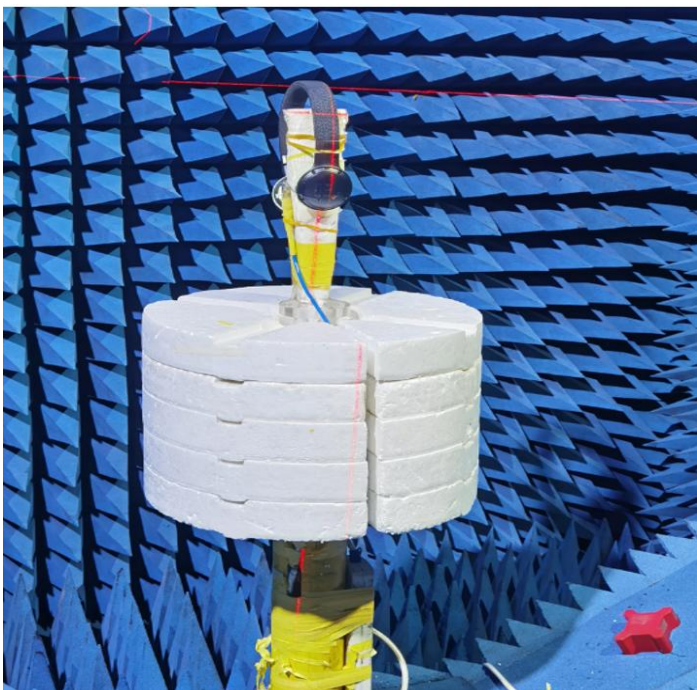
| Test      | BT     |        |        |
|-----------|--------|--------|--------|
| Result    | 1      | 39     | 78     |
| TRP (dBm) | -0.29  | 0.39   | 0.62   |
| TIS (dBm) | -88.45 | -88.67 | -88.63 |

## 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       |            |             |           |            |
| LC3 setting                      | Bitrate (Primary)             | Latency (Primary) |                   | Bitrate (Secondary) | Latency (Secondary)   |                     | Test        | Pri        | Pass       |            |             |           |            |
|                                  | 192kbps                       | 90ms+             |                   | NA                  | NA                    |                     | latency     | Sec        | Pass       |            |             |           |            |
| LC3+ setting                     | Bitrate (Primary)             | Latency (Primary) |                   | Bitrate (Secondary) | Latency (Secondary)   |                     | Test        | Pri        | Pass       |            |             |           |            |
|                                  | TBD(source决定)                 | TBD(source决定)     |                   | NA                  | NA                    |                     | latency     | Sec        | Pass       |            |             |           |            |
| Mobile phone                     | yuan                          |                   |                   | Samsung S8          |                       |                     |             |            |            |            |             |           |            |
| Test company                     | yuan                          |                   |                   | Yu Shen             |                       |                     |             |            |            |            |             |           |            |
| BMI                              | 38                            |                   |                   | 38                  |                       |                     |             |            |            |            |             |           |            |
| Sample                           | Range (m)                     | 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 |
| 2                                | 17                            | 0                 | 0                 | 0                   | 0                     | 16                  | 0           | 0          | 0          | /          | /           | /         | /          |
| 4                                | 16                            | 0                 | 0                 | 0                   | 0                     | 16                  | 0           | 0          | 0          | /          | /           | /         | /          |
| live 460                         | 16                            | 0                 | 0                 | 0                   | 0                     | 16                  | 0           | 0          | 0          |            |             |           |            |
| Benchmark                        |                               |                   |                   |                     |                       |                     |             |            |            |            |             |           |            |
| Benchmark                        |                               |                   |                   |                     |                       |                     |             |            |            |            |             |           |            |
| Mobile phone                     | iphone 6                      |                   |                   | Samsung S8          |                       |                     |             |            |            |            |             |           |            |
| Test company                     | yu Shen                       |                   |                   | Yu Shen             |                       |                     |             |            |            |            |             |           |            |
| Tester                           | yuan                          |                   |                   | li                  |                       |                     |             |            |            |            |             |           |            |
| BMI                              | 38                            |                   |                   | 38                  |                       |                     |             |            |            |            |             |           |            |
| Sample                           | Range (m)                     | 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 |
| 2                                | 15                            | 0                 | 0                 | 0                   | 0                     | 15                  | 0           | 0          | 0          | /          | /           | /         | /          |
| 4                                | 16                            | 0                 | 0                 | 0                   | 0                     | 15                  | 0           | 0          | 0          | /          | /           | /         | /          |
| live 460                         | 16                            | 0                 | 0                 | 0                   | 0                     | 15                  | 0           | 0          | 0          |            |             |           |            |
| Benchmark                        |                               |                   |                   |                     |                       |                     |             |            |            |            |             |           |            |
| Benchmark                        |                               |                   |                   |                     |                       |                     |             |            |            |            |             |           |            |



### 3.2 BT Audio Drop Test Report (AAC)

| Project name     |        | LIVE6TONC  |        | Project phi                       |              | EV                           |               | Test Venue                 |       | 虹口老街                         |               | Test Time   |       | 2023/3/9 14:30-17:30   |               | Weather  |       | clear day                                |               | Conducted By |       | yuan          |               | Conclusion   |       |               |               |    |
|------------------|--------|--|--------|-----------------------------------|--------------|------------------------------|---------------|----------------------------|-------|------------------------------|---------------|---|-------|--|---------------|--|-------|--|---------------|--------------|-------|---------------|---------------|--------------|-------|---------------|---------------|----|
| HW Version       |        | V0.3   |        | SW Version                        |              | BL570_NC_V0.2.7_20230306 bin |               |                            |       |                              |               |   |       |  |               |  |       |  |               |              |       |               |               |              |       |               |               |    |
| TX power setting |        | BR (Primary)<br>5  |        | EDR (Primary)<br>2                |              | BLE (Primary)<br>0           |               | BR (Secondary)<br>NA       |       | EDR (Secondary)<br>NA        |               | BLE (Secondary)<br>NA   |       | RF OTA   |               | TRP  |       | TIS                                      |               | PASS         |       | PASS          |               |              |       |               |               |    |
| BT codec setting |        | SBC bitpool (Pri)<br>53bit   |        | AAC bitrate (Pri)<br>256kpbs      |              | Latency (Primary)<br>125ms   |               | SBC bitpool (Sec)<br>53bit |       | AAC bitrate (Sec)<br>256kpbs |               | Latency (Primary)<br>150ms  |       | Test<br>latency  |               | Secondary  |       | Primary                                  |               | PASS         |       | PASS          |               |              |       |               |               |    |
| LC3 setting      |        | Bitrate (Primary)<br>192kpbs   |        | Latency (Primary)<br>90ms+        |              | Bitrate (Secondary)<br>NA    |               | Latency (Primary)<br>NA    |       | Latency (Primary)<br>NA      |               | Test<br>latency   |       | Secondary  |               | Primary  |       | PASS                                     |               | PASS         |       | PASS          |               |              |       |               |               |    |
| LC3+ setting     |        | Bitrate (Primary)<br>TBD(ource决定)  |        | Latency (Primary)<br>TBD(ource决定) |              | Bitrate (Secondary)<br>NA    |               | Latency (Primary)<br>NA    |       | Latency (Primary)<br>NA      |               | Test<br>latency   |       | Secondary  |               | Primary  |       | PASS                                     |               | PASS         |       | PASS          |               |              |       |               |               |    |
| Test Condition   |        | Tester   |        | BMI                               |              | Height                       |               | Test Device                |       | Primary Side                 |               | Short drop<br>(No audio output for < 1sec and back to normal quickly) |       | Long Drop<br>(No audio output for a period of time, describe the duration) |               | Continuous drop<br>(Continual short drop with short intervals) |       | Can't play<br>(Audio drops all the time) |               | Total        |       |               |               |              |       |               |               |    |
| Sample #         | Tester | BMI  | Height | Test Device                       | Primary Side | Times                        | Drop Location | Duration (s)               | Times | Drop Location                | Repeatability | Duration (s)  | Times | Drop Location  | Repeatability | Duration (s)   | Times | Drop Location                            | Repeatability | Duration (s) | Times | Drop Location | Repeatability | Duration (s) | Times | Drop Location | Repeatability |    |
| 2#               | 李工     | 38   |        | Samsung S8                        | R            | /                            | /             | /                          | /     | /                            | No            | /   | /     | /  | No            | /  | /     | /  | /             | /            | /     | No            | /             | /            | /     | /             | No            |    |
| 2#               | 李工     | 38   |        | Samsung S8                        | L            | 1                            | /             | 0                          | 0     | 0                            | No            | 0   | 0     | 0  | No            | 0  | 0     | 0  | 0             | 0            | No    | 0             | 0             | 0            | 0     | 0             | 0             | No |
| 4#               | 李工     | 38   |        | Samsung S8                        | R            | /                            | /             | /                          | /     | /                            | No            | /   | /     | /  | No            | /  | /     | /  | /             | /            | /     | No            | /             | /            | /     | /             | No            |    |
| 2#               | 李工     | 38   |        | Samsung S8                        | L            | 2                            | /             | 0                          | 0     | 0                            | No            | 0   | 0     | 0  | No            | 0  | 0     | 0  | 0             | 0            | No    | 0             | 0             | 0            | 0     | 0             | 0             | No |
| 4#               | 李工     | 38   |        | Samsung S8                        | R            | /                            | /             | /                          | /     | /                            | No            | /   | /     | /  | No            | /  | /     | /  | /             | /            | /     | No            | /             | /            | /     | /             | No            |    |
| 2#               | 李工     | 38   |        | Xiaomi POCO                       | L            | 1                            | /             | 0                          | 0     | 0                            | No            | 0   | 0     | 0  | No            | 0  | 0     | 0  | 0             | 0            | No    | 0             | 0             | 0            | 0     | 0             | 0             | No |
| 4#               | 李工     | 38   |        | Xiaomi POCO                       | R            | /                            | /             | /                          | /     | /                            | No            | /   | /     | /  | No            | /  | /     | /  | /             | /            | /     | No            | /             | /            | /     | /             | No            |    |
| 2#               | 李工     | 38   |        | Xiaomi POCO                       | L            | 2                            | /             | 0                          | 0     | 0                            | No            | 0   | 0     | 0  | No            | 0  | 0     | 0  | 0             | 0            | No    | 0             | 0             | 0            | 0     | 0             | 0             | No |
| 4#               | 李工     | 38   |        | Xiaomi POCO                       | R            | /                            | /             | /                          | /     | /                            | No            | /   | /     | /  | No            | /  | /     | /  | /             | /            | /     | No            | /             | /            | /     | /             | No            |    |
| 2#               | 李工     | 38   |        | Xiaomi POCO                       | L            | 2                            | /             | 0                          | 0     | 0                            | No            | 0   | 0     | 0  | No            | 0  | 0     | 0  | 0             | 0            | No    | 0             | 0             | 0            | 0     | 0             | 0             | No |
| 4#               | 李工     | 38   |        | Xiaomi POCO                       | R            | /                            | /             | /                          | /     | /                            | No            | /   | /     | /  | No            | /  | /     | /  | /             | /            | /     | No            | /             | /            | /     | /             | No            |    |
| 2#               | 李工     | 38   |        | Xiaomi POCO                       | L            | 1                            | /             | 0                          | 0     | 0                            | No            | 0   | 0     | 0  | No            | 0  | 0     | 0  | 0             | 0            | No    | 0             | 0             | 0            | 0     | 0             | 0             | No |
| 4#               | 李工     | 38   |        | Xiaomi POCO                       | R            | /                            | /             | /                          | /     | /                            | No            | /   | /     | /  | No            | /  | /     | /  | /             | /            | /     | No            | /             | /            | /     | /             | No            |    |
| 2#               | 李工     | 38   |        | Samsung S8                        | L            | 1                            | /             | 0                          | 0     | 0                            | No            | 0   | 0     | 0  | No            | 0  | 0     | 0  | 0             | 0            | No    | 0             | 0             | 0            | 0     | 0             | 0             | No |
| 4#               | 李工     | 38   |        | Samsung S8                        | R            | /                            | /             | /                          | /     | /                            | No            | /   | /     | /  | No            | /  | /     | /  | /             | /            | /     | No            | /             | /            | /     | /             | No            |    |
| 2#               | 李工     | 38   |        | Xiaomi POCO                       | L            | 3                            | /             | 0                          | 0     | 0                            | No            | 0   | 0     | 0  | No            | 0  | 0     | 0  | 0             | 0            | No    | 0             | 0             | 0            | 0     | 0             | 0             | No |
| 4#               | 李工     | 38   |        | Xiaomi POCO                       | R            | /                            | /             | /                          | /     | /                            | No            | /   | /     | /  | No            | /  | /     | /  | /             | /            | /     | No            | /             | /            | /     | /             | No            |    |
| 2#               | 李工     | 38   |        | Xiaomi POCO                       | L            | 3                            | /             | 0                          | 0     | 0                            | No            | 0   | 0     | 0  | No            | 0  | 0     | 0  | 0             | 0            | No    | 0             | 0             | 0            | 0     | 0             | 0             | No |
| 4#               | 李工     | 38   |        | Xiaomi POCO                       | R            | /                            | /             | /                          | /     | /                            | No            | /   | /     | /  | No            | /  | /     | /  | /             | /            | /     | No            | /             | /            | /     | /             | No            |    |
| Remarks:         |        | Latency / 200ms AAC 256kpbs, SBC bitpool 53<br>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 LIVESTRONG V03 Project ph: EV Test Venue: 海上世界 Test Time: 2023/03/09 Weather: clear day Conducted By: yuan Conclusion:

SW Version: JBL670\_NC\_V0.2.7\_20230306.bin

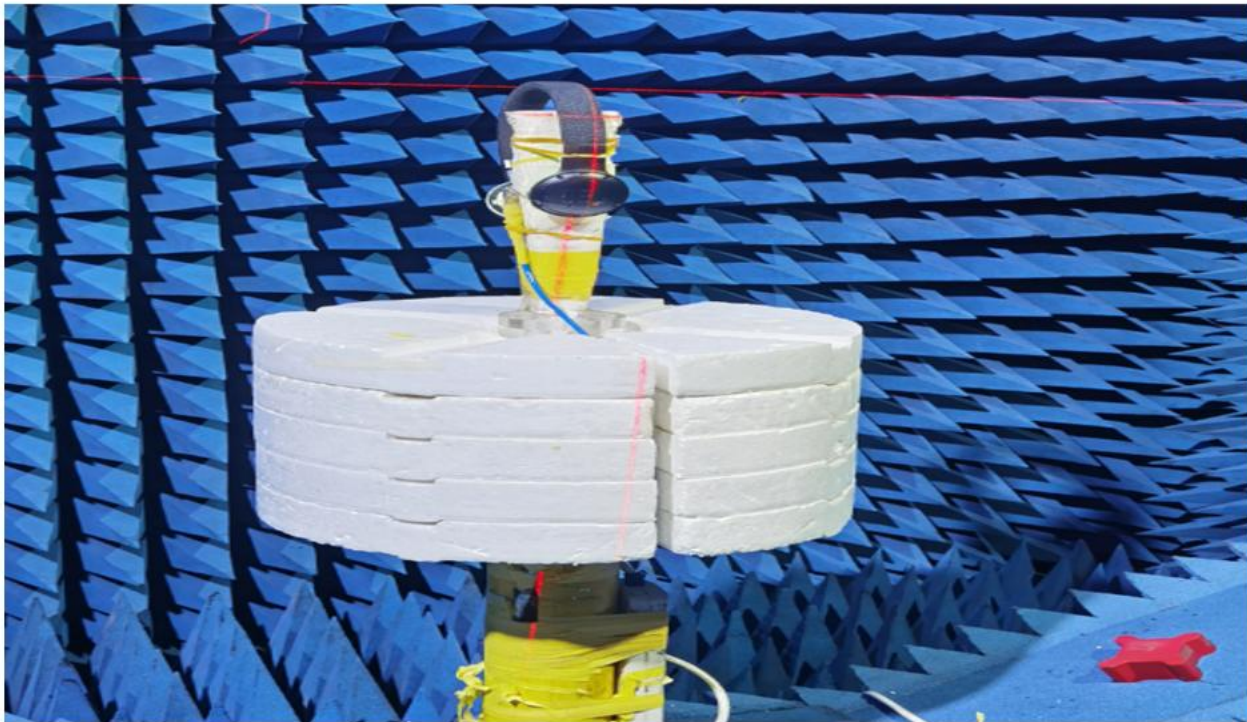
| TX power setting | BR (Primary)      | EDR (Primary)     | BLE (Primary)     | BR (Secondary)      | EDR (Secondary)   | BLE (Secondary)     | RF OTA       |           |      |
|------------------|-------------------|-------------------|-------------------|---------------------|-------------------|---------------------|--------------|-----------|------|
|                  | 5                 | 2                 | 0                 | NA                  | NA                | NA                  | TRP 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               | Test latency | Secondary | PASS |
| LC3 setting      | Bitrate (Primary) |                   | Latency (Primary) | Bitrate (Secondary) |                   | Latency (Primary)   | Test latency | Primary   | PASS |
|                  | 192kpbs           |                   | 90ms+             | NA                  |                   | NA                  | Test latency | 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                  | Test latency | Secondary | PASS |

| Sample # | Tester | BMI | Height | Test Device | Primary Side | Short drop (No audio output for < 15sec 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) |   | Repeatability   |    | Times |   | Drop Location |   | Repeatability   |    | Duration (s) |   | Drop Location |   | Repeatability                         |    | Duration (s) |   | Drop Location |   |       | Repeatability |  |
|          |        |     |        |             |              |   |   |               |   |              |   |   |    |       |   |               |   |   |    |              |   |               |   |                                       |    |              |   |               |   |       |               |  |
| 2#       | 李工     | 38  |        | Xiaomi POCO | R            | 8   | / | 0             | 0 | No           | 0 | 0   | No | 0     | 0 | No            | 0 | 0   | No | 0            | 0 | No            | 0 | 0                                     | No | 0            | 0 | No            | 8 |       |               |  |
|          |        |     |        |             | L            |   |   |               |   |              |   |   |    |       |   |               |   |   |    |              |   |               |   |                                       |    |              |   |               |   |       |               |  |
| 4#       | 李工     | 38  |        | Xiaomi POCO | R            | 8   | / | 0             | 0 | No           | 0 | 0   | No | 0     | 0 | No            | 0 | 0   | No | 0            | 0 | No            | 0 | 0                                     | No | 0            | 0 | No            | 0 | 0     | 8             |  |
|          |        |     |        |             | L            |   |   |               |   |              |   |   |    |       |   |               |   |   |    |              |   |               |   |                                       |    |              |   |               |   |       |               |  |
| 2#       | 袁工     | 38  |        | Xiaomi POCO | R            | 8   | / | 0             | 0 | No           | 0 | 0   | No | 0     | 0 | No            | 0 | 0   | No | 0            | 0 | No            | 0 | 0                                     | No | 0            | 0 | No            | 0 | 0     | 8             |  |
|          |        |     |        |             | L            |   |   |               |   |              |   |   |    |       |   |               |   |   |    |              |   |               |   |                                       |    |              |   |               |   |       |               |  |
| 4#       | 袁工     | 38  |        | Xiaomi POCO | R            | 12  | / | 0             | 0 | No           | 0 | 0   | No | 0     | 0 | No            | 0 | 0   | No | 0            | 0 | No            | 0 | 0                                     | No | 0            | 0 | No            | 0 | 0     | 12            |  |
|          |        |     |        |             | L            |   |   |               |   |              |   |   |    |       |   |               |   |   |    |              |   |               |   |                                       |    |              |   |               |   |       |               |  |
| LIVE480  | 袁工     | 38  |        | Xiaomi POCO | R            | 15  | / | 0             | 0 | No           | 0 | 0   | No | 0     | 0 | No            | 0 | 0   | No | 0            | 0 | No            | 0 | 0                                     | No | 0            | 0 | No            | 0 | 0     | 15            |  |
|          |        |     |        |             | L            |   |   |               |   |              |   |   |    |       |   |               |   |   |    |              |   |               |   |                                       |    |              |   |               |   |       |               |  |

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



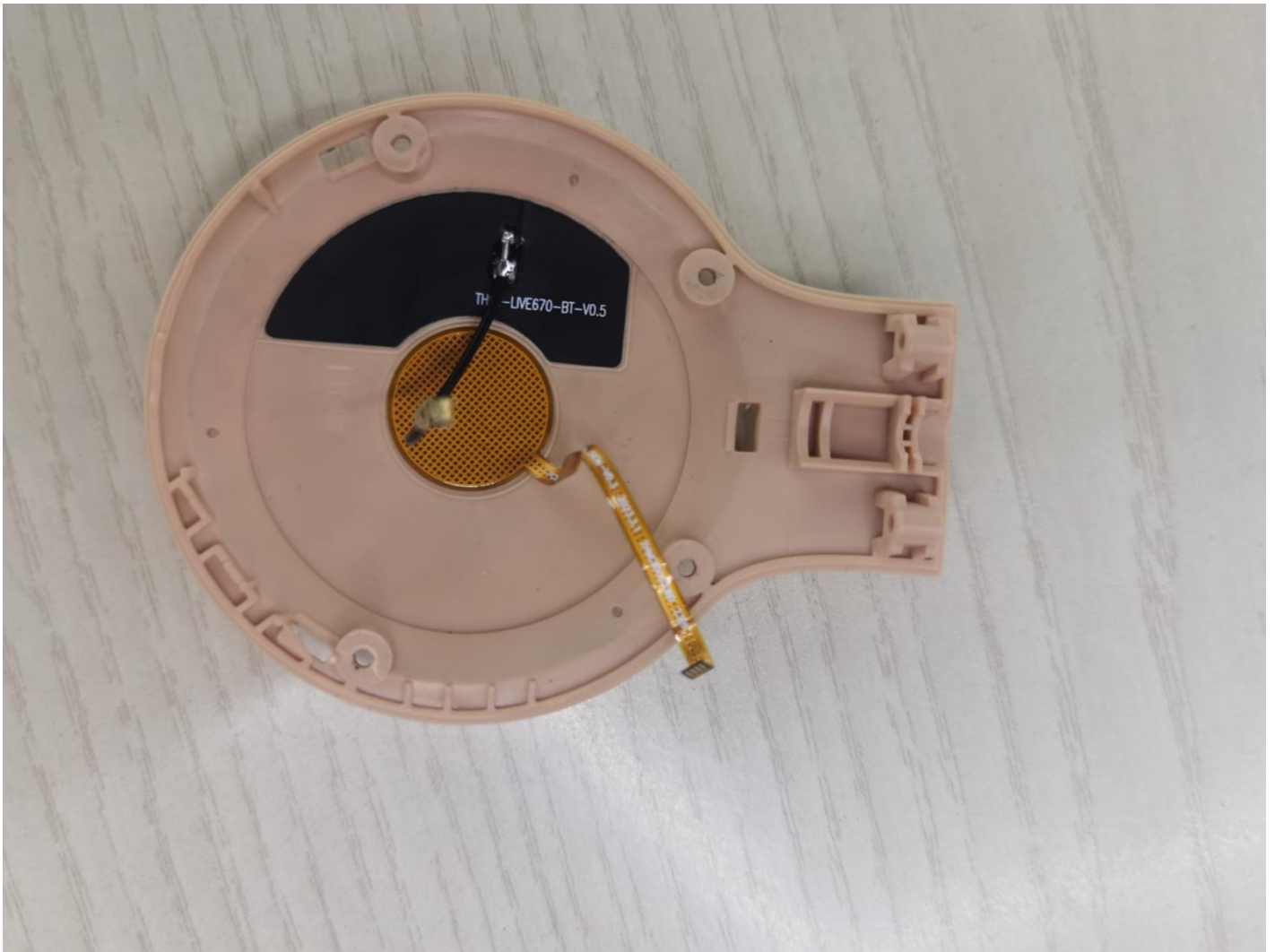
### 3.5 head ear-test

Head model test environment picture





**3.6 Location of the antenna paste**





# 4. Structural drawings

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|  |          |          |   |          |          |   |          |  |   |  |  |  |  |  |  |  |  |
|--|----------|----------|---|----------|----------|---|----------|--|---|--|--|--|--|--|--|--|--|
| <b>A</b>   | <b>B</b> | <b>C</b> | <b>D</b>  | <b>5</b> | <b>6</b> | <b>7</b>  | <b>8</b> |  |   |  |  |  |  |  |  |  |  |
| <b>skills requirements:</b><br>1. IPC substrate specifications:<br>Electrolytic copper: 0.5oz(18)<br>Double-sided tape: 3M 4713SE<br>2. Electroplating specifications:<br>Nickel plating: 30um<br>Surface ink color: Matt black<br>3. Surface ink requirements:<br>Printing ink color: Bright black<br>Printing font height: According to drawings |          |          | <b>4. Reliability requirements:</b><br>1. Reliability test: salt spray test/neutral friction test/ultrasonic resistance test/100 grid test.<br>2. The front ink, the surface of the ink is required to be folded in half without cracking, scratching, etc. |          |          | <b>5. Tolerance requirements:</b><br>1. Slope tolerance ±0.10;<br>2. Copper foil circuit tolerance ±0.06;<br>3. The position of the copper foil to the slope is ±0.15;<br>4. Half-circle position tolerance ±0.10, half-circle position tolerance ±0.15;<br>5. The size tolerance of gold finger is ±0.25;<br>6. For other unmarked dimensions, refer to 2D drawings. |          |  | <b>6. Key control size:</b><br>The dimensions marked with numbers are regarded as important dimensions, and the others refer to 2D drawings |  |  | <b>7. Environmental requirements:</b><br>Parts meet MIL-STD-883C environmental protection requirements |  |  | <b>8. Packaging requirements:</b><br>Packed in PE bags, the quantity of each bag is 10PCS, there is a mark on the outside of the bag |  |  |
| DATE   |          | Version  |   | Revision |          |   |          |  |   |  |  |  |  |  |  |  |  |
| 1  |          | 2        |   | 3        |          | 4   |          |  |   |  |  |  |  |  |  |  |  |
| Modify the content   |          | Version  |   | Revise   |          |   |          |  |   |  |  |  |  |  |  |  |  |

Shenzhen Yu Sheng Communication Equipment Co., Ltd

|                                |                                    |                |            |
|--------------------------------|------------------------------------|----------------|------------|
| <b>Model</b>                   | L17870                             | <b>DATE</b>    | 20230518   |
| <b>Name</b>                    | RF Assembly drawing file           | <b>Design</b>  | FJW        |
| <b>Part NO</b>                 | 339025-1A                          | <b>Review</b>  | JFB        |
| <b>Material quality</b>        | Electrolytic copper (half to half) | <b>RF</b>      | CKH        |
| <b>Build surface treatment</b> |                                    | <b>confirm</b> |            |
| <b>Appearance treatment</b>    |                                    | <b>UNIT</b>    | mm         |
| <b>position</b>                |                                    | <b>FIT</b>     | protection |
| <b>Revision</b>                |                                    | <b>R.A</b>     |            |

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## 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



| SHENZHEN YUSHENG COMMUNICATION EQUIPMENT CO., LTD   |         |
|---|---------|
| Customer name<br>客户名称   | *****   |
| Order reference<br>订单编号   | *****   |
| Project name<br>项目名称  | *****   |
| Material code<br>物料编码   | *****   |
| Quantity<br>出货数量  | ****PCS |
| Date<br>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 Qihong

Feng  
examine and verify: Jiwu

QF-QMP-QA01-01