

## Antenna specification of the W120 project

Customer name: Shenzhen Dunsh Electronics Co., Ltd

Customer product name: W120

Product name: Antenna assembly

Supplier Model Number: Right headphone antenna: 336039-IB

Supplier Address: 407-411, Floor 4, Building 2, Nantaiyun Chuanggu Park, southeast of the intersection of Guangming Avenue and Dongchang Road, Guangming District, Shenzhen City

### Change Content CV:

| order number | edition | state | Start and end date | person liable | page number | remarks |
|--------------|---------|-------|--------------------|---------------|-------------|---------|
| 1            | R:a     | R:a   | 2024-04-24         | Li Jieyi      | 10          |         |
|              |         |       |                    |               |             |         |

### The Supplier acknowledges the signature of the following documents:

| Responsible person / date |                              | IQC / Date-        | Review / Date          | Approval / Date                                                                       |
|---------------------------|------------------------------|--------------------|------------------------|---------------------------------------------------------------------------------------|
| MD                        | <i>Close industry wisdom</i> | <i>Su Guanfeng</i> | <i>Zeng Xiang good</i> |  |
| RF                        | Chen Kehong                  |                    |                        |                                                                                       |

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

|                                                                                                         |                     |                             |                                        |
|---------------------------------------------------------------------------------------------------------|---------------------|-----------------------------|----------------------------------------|
| The demander's judgment result: <input type="checkbox"/> qualified <input type="checkbox"/> unqualified |                     |                             |                                        |
| Development &<br>Design Engineer /<br>Date                                                              | SQE Engineer / Date | Purchasing Leader /<br>Date | Development Manager<br>approval / date |
|                                                                                                         |                     |                             |                                        |

# catalogue

|                                                       |           |
|-------------------------------------------------------|-----------|
| <b>1. OVERVIEW .....</b>                              | <b>3</b>  |
| 1.1 SCOPE OF APPLICATION .....                        | 3         |
| 1.2 PROJECT BASIC INFORMATION .....                   | 3         |
| <b>2. TECHNICAL INDEX REQUIREMENTS .....</b>          | <b>3</b>  |
| 2.1 INTRODUCTION OF TEST ITEMS AND EQUIPMENT .....    | 3         |
| 2.2 ACTIVE REPORTING .....                            | 3         |
| 2.2.1 TEST INSTRUCTIONS .....                         | 3         |
| 2.2.2 CONDUCTION DATA .....                           | 4         |
| 2.2.3 MATCH CIRCUIT IS SHOWN BELOW THE FIGURE-R ..... | 4         |
| 2.2.4 S11-R .....                                     | 4         |
| 2.2.5 NOTES FOR INSTALLATION .....                    | 5         |
| 2.2.6 PASSIVE DATA-R .....                            | 6         |
| 2.2.7 DIRECTION DIAGRAM-R .....                       | 6         |
| 2.2.8 ANTENNA OTA .....                               | 7         |
| <b>3. STRUCTURAL DRAWINGS .....</b>                   | <b>8</b>  |
| <b>4. BILL OF MATERIALS .....</b>                     | <b>9</b>  |
| <b>5. PACKAGE SCHEMATIC DIAGRAM .....</b>             | <b>10</b> |

## 1. Overview

### 1.1 Scope of application

This requirement, provided **W120** Antenna technical requirements and material requirements specifications.

This requirement applies to the selection, testing and acceptance of the W120 antenna.

### 1.2 Project basic information

|                    |                     |
|--------------------|---------------------|
| Antenna name:      | <b>W120</b>         |
| Antenna frequency: | BT: 2400MHz-2500MHz |
| Antenna material:  | FPC                 |

## 2. Technical index requirements

### 2.1 Introduction of test items and equipment

| inventory   | 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  $50\% \pm 15\%$

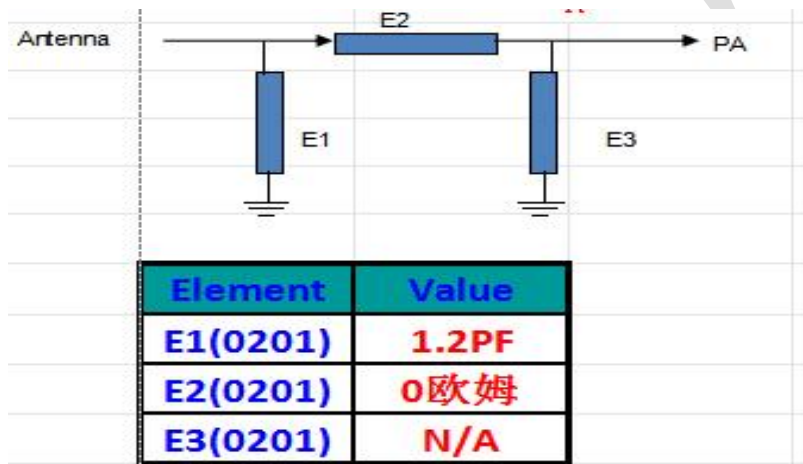
Test method: DUT is fixed in the center of the turntable with H plane, on the same horizontal line as the center of the horn antenna.

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.

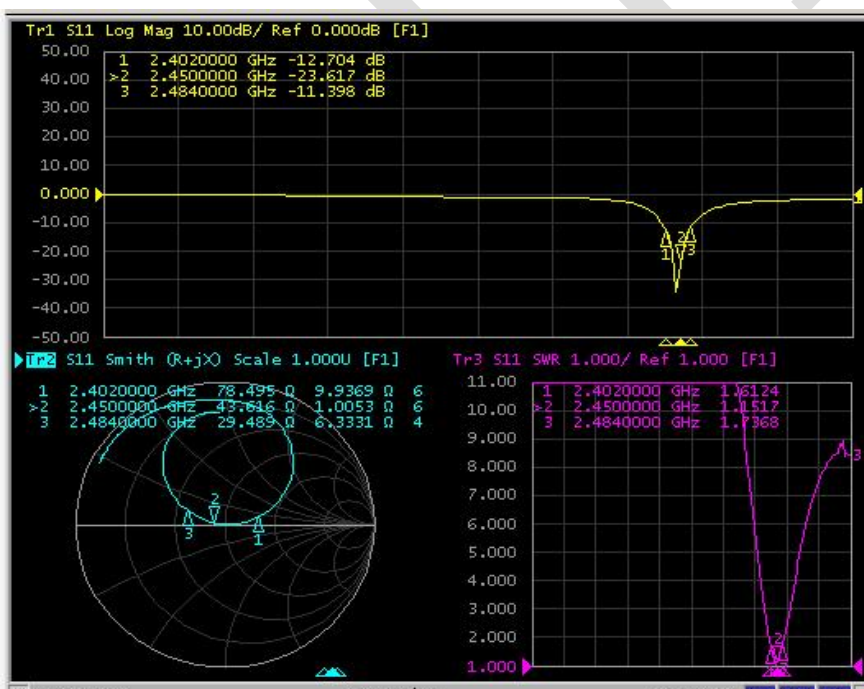
### 2.2.2 Conduction data

|   | Channel | power | sensitivity |
|---|---------|-------|-------------|
| R | 0       | 10.1  | -94.0       |
|   | 39      | 9.9   | -94.0       |
|   | 78      | 9.9   | -94.0       |

### 2.2.3 Match circuit is shown below the figure-R



### 2.2.4 S11-R



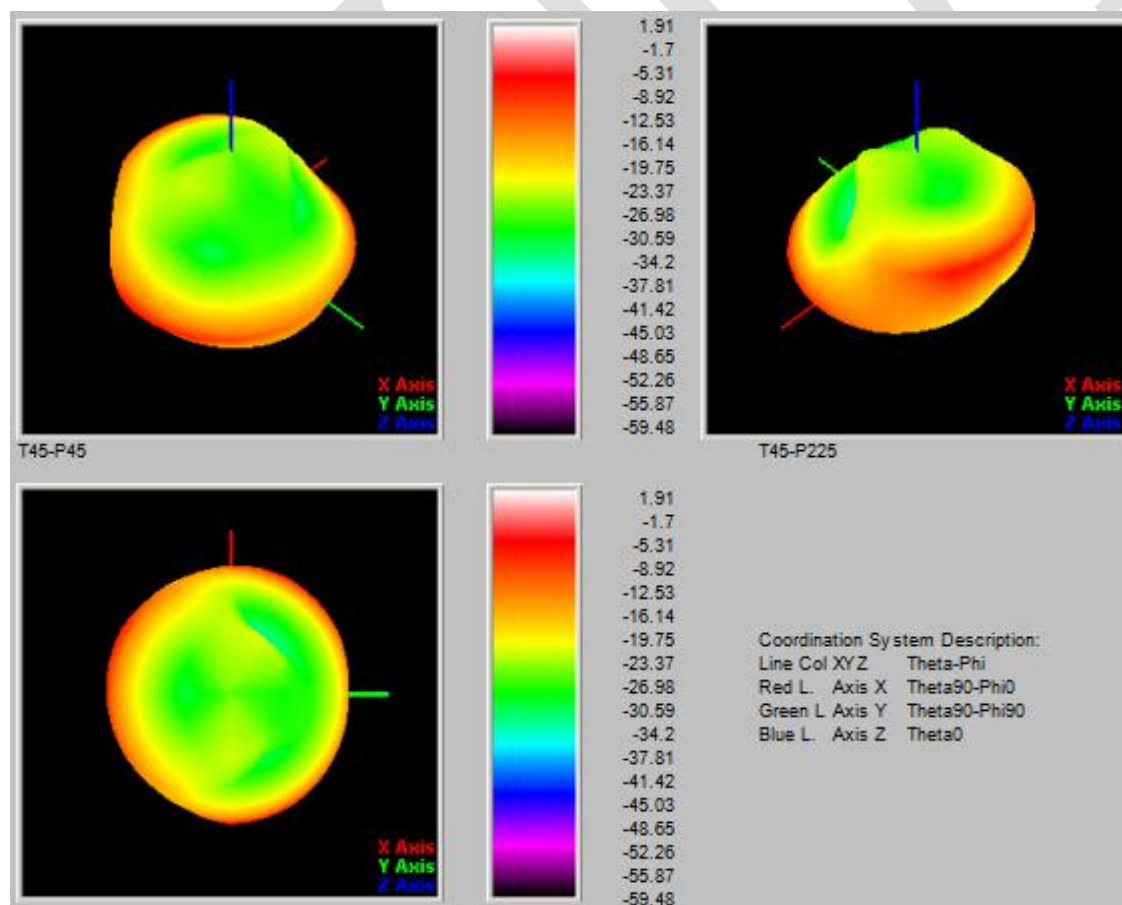
## 2.2.5 Notes for installation

THOT

## 2.2.6 passive data-R

| Freq<br>(MHz) | Effi<br>(%) | Gain<br>(dBi) |
|---------------|-------------|---------------|
| 2400          | 18          | 1.12          |
| 2410          | 19          | 1.2           |
| 2420          | 21          | 1.36          |
| 2430          | 22          | 1.41          |
| 2440          | 23          | 1.32          |
| 2450          | 24          | 1.48          |
| 2460          | 25          | 1.36          |
| 2470          | 24          | 1.52          |
| 2480          | 23          | 1.36          |
| 2490          | 20          | 1.20          |
| 2500          | 18          | 1.12          |

## 2.2.7 Direction diagram-R



### 2.2.8 Antenna OTA

| free<br>space |   | Channel | TRP (dBm) | TIS (dBm) |
|---------------|---|---------|-----------|-----------|
|               | R | 0       | 3.21      | -88.85    |
|               |   | 39      | 3.32      | -88.32    |
|               |   | 78      | 3.61      | -89.47    |

| Head<br>model<br>data |   | Channel | TRP (dBm) | TIS (dBm) |
|-----------------------|---|---------|-----------|-----------|
|                       | R | 0       | -0.86     | -82.79    |
|                       |   | 39      | -0.69     | -83.05    |
|                       |   | 78      | -0.57     | -83.4     |

### 2.2.9 Pull distance test

| model   | test       | BMI | time        | Host side | testing facility | Test location | distance | sum up                          |
|---------|------------|-----|-------------|-----------|------------------|---------------|----------|---------------------------------|
| machine | controller |     |             |           |                  |               |          |                                 |
| 1#      | layout     | 30  | 10:00-14:00 | auto      | iphone6          | THOT balcony  | 13m      | Distance can reach the standard |

3.structural drawings

skills requirements:

1. RF substrate specifications:

2. Electroplating specifications:

3. Surface ink requirements:

4. Reliability requirements:

5. Tolerance requirements:

PI substrate:

Electrolytic copper: 0.5oz(OD)

Double-sided tape: 3M-947138

Nickel plating: 3µm

Surface ink color: Gold: 0.025um

Print ink color: Matt black

Printing font height: According to drawings

1. Reliability test: salt spray test(rubber friction test)(alcohol 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.

1. Shape tolerance ±0.15;

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 size:

7. Environmental requirements:

8. Packaging requirements:

The dimensions marked with numbers are regarded as important dimensions, and the others refer to 2D drawings

Parts meet ROHS2.0/REACH/2 environmental protection requirements

The packaging shall be in PE bags, the quantity of each bag shall be 100PCS, and the packing bag shall be marked

DATE

Modify the content

Version

Revise

1

2

3

4

5

6

7

8

12.87±0.15

10.51±0.15

\*0.11±0.03

ShenZhen Yu Sheng Communication Equipment Co., Ltd.

Model

WT20

DATE

2024-05-13

Name

RF-2

Design

FJW

Part NO

336039-1B-RA

Review

MD

Material quality

Electrolytic copper (half to half)

RF

CKH

Build surface treatment

confirm

Appearance treatment

INIT

mm

proportion

FIT

Revise

R:A

由 Autodesk 教育版产品制作

810

致力于为客户提供专业级天线解决方案

## 4. Bill Of Material

### 336039 (W120) BOM表

edition: T:A

client: 336

Type of aircraft: 336039

Set a date: 2024-05-13

| Item | *Material code  | *Material name         | name | *Machine type | Specification and model                                                    | colour | *UNIT | dosage | remark                 |
|------|-----------------|------------------------|------|---------------|----------------------------------------------------------------------------|--------|-------|--------|------------------------|
| 1    | 336039-IA-TA    | black BT-L assembly    |      | W120          | FPC+Shell components+assemble                                              |        | PCS   | 1      |                        |
| 1.1  | 336039-IA-01-TA | L-FPC                  |      | W120          | black L-FPC Electrolytic copper (half to half)<br>gold 10.85*10.26*0.11 mm | black  | PCS   | 1      |                        |
| 1.2  | 336039-IA-02-TA | black Shell components |      | W120          | black Shell components                                                     | black  | PCS   | 1      | Outsourced procurement |
| 1.3  | 336039-IA-03-TA | assemble               |      | W120          | assemble                                                                   |        | PCS   | 1      |                        |
| 2    | 336039-IB-TA    | black BT-R assembly    |      | W120          | FPC+Shell components+assemble                                              |        | PCS   | 1      |                        |
| 2.1  | 336039-IB-01-TA | R-FPC                  |      | W120          | black R-FPC Electrolytic copper (half to half)<br>gold 12.87*10.57*0.11 mm | black  | PCS   | 1      |                        |
| 2.2  | 336039-IB-02-TA | black Shell components |      | W120          | black Shell components                                                     | black  | PCS   | 1      | Outsourced procurement |
| 2.3  | 336039-IB-03-TA | assemble               |      | W120          | assemble                                                                   |        | PCS   | 1      |                        |
| 3    | 336039-IC-TA    | WHITE BT-L assembly    |      | W120          | FPC+Shell components+assemble                                              |        | PCS   | 1      |                        |
| 3.1  | 336039-IA-01-TA | L-FPC                  |      | W120          | WHITE L-FPC Electrolytic copper (half to half)<br>gold 10.85*10.26*0.11 mm | black  | PCS   | 1      |                        |
| 3.2  | 336039-IC-02-TA | WHITE Shell components |      | W120          | WHITE Shell components                                                     | WHITE  | PCS   | 1      | Outsourced procurement |
| 3.3  | 336039-IC-03-TA | assemble               |      | W120          | assemble                                                                   |        | PCS   | 1      |                        |
| 4    | 336039-ID-TA    | WHITE BT-R assembly    |      | W120          | FPC+Shell components+assemble                                              |        | PCS   | 1      |                        |
| 4.1  | 336039-IB-01-TA | R-FPC                  |      | W120          | WHITE R-FPC Electrolytic copper (half to half)<br>gold 12.87*10.57*0.11 mm | black  | PCS   | 1      |                        |

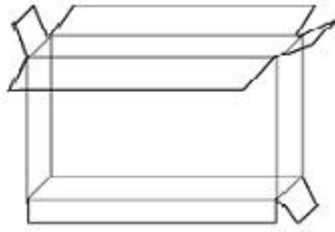
|     |                 |                        |  |      |                                                                           |       |     |   |                        |
|-----|-----------------|------------------------|--|------|---------------------------------------------------------------------------|-------|-----|---|------------------------|
| 4.2 | 336039-ID-02-TA | WHITE Shell components |  | W120 | WHITE Shell components                                                    | WHITE | PCS | 1 | Outsourced procurement |
| 4.3 | 336039-ID-03-TA | assemble               |  | W120 | assemble                                                                  |       | PCS | 1 |                        |
| 5   | 336039-IE-TA    | Pink BT-L assembly     |  | W120 | FPC+Shell components+assemble                                             |       | PCS | 1 |                        |
| 5.1 | 336039-IA-01-TA | L-FPC                  |  | W120 | Pink L-FPC Electrolytic copper (half to half)<br>gold 10.85*10.26*0.11 mm | black | PCS | 1 |                        |
| 5.2 | 336039-IE-02-TA | Pink Shell components  |  | W120 | Pink Shell components                                                     | Pink  | PCS | 1 | Outsourced procurement |
| 5.3 | 336039-IE-03-TA | assemble               |  | W120 | assemble                                                                  |       | PCS | 1 |                        |
| 6   | 336039-IF-TA    | Pink BT-R assembly     |  | W120 | FPC+Shell components+assemble                                             |       | PCS | 1 |                        |
| 6.1 | 336039-IB-01-TA | R-FPC                  |  | W120 | Pink R-FPC Electrolytic copper (half to half)<br>gold 12.87*10.57*0.11 mm | black | PCS | 1 |                        |
| 6.2 | 336039-IF-02-TA | Pink Shell components  |  | W120 | Pink Shell components                                                     | Pink  | PCS | 1 | Outsourced procurement |
| 6.3 | 336039-IF-03-TA | assemble               |  | W120 | assemble                                                                  |       | PCS | 1 |                        |
| 7   | 336039-IG-TA    | blue BT-L assembly     |  | W120 | FPC+Shell components+assemble                                             |       | PCS | 1 |                        |
| 7.1 | 336039-IA-01-TA | L-FPC                  |  | W120 | blue L-FPC Electrolytic copper (half to half)<br>gold 10.85*10.26*0.11 mm | black | PCS | 1 |                        |
| 7.2 | 336039-IG-02-TA | blue Shell components  |  | W120 | blue Shell components                                                     | blue  | PCS | 1 | Outsourced procurement |
| 7.3 | 336039-IG-03-TA | assemble               |  | W120 | assemble                                                                  |       | PCS | 1 |                        |
| 8   | 336039-IH-TA    | blue BT-R assembly     |  | W120 | FPC+Shell components+assemble                                             |       | PCS | 1 |                        |
| 8.1 | 336039-IB-01-TA | R-FPC                  |  | W120 | blue R-FPC Electrolytic copper (half to half)<br>gold 12.87*10.57*0.11 mm | black | PCS | 1 |                        |
| 8.2 | 336039-IH-02-TA | blue Shell components  |  | W120 | blue Shell components                                                     | blue  | PCS | 1 | Outsourced procurement |
| 8.3 | 336039-IH-03-TA | assemble               |  | W120 | assemble                                                                  |       | PCS | 1 |                        |

verify:

examine:

manufacture: BYZ

## 5.Schematic diagram of packaging

| Packaging method diagram                                                                                                                                                   |                                                                                                                                        |                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| product name                                                                                                                                                               | Antenna components                                                                                                                     |                                                                                    |
| P / N                                                                                                                                                                      | 336039                                                                                                                                 |                                                                                    |
| Project model                                                                                                                                                              | W120                                                                                                                                   |                                                                                    |
| File details                                                                                                                                                               | Carton Size 1:<br>270*260*200MM<br>Carton Size 2:<br>260*200*200MM<br>Carton Size 3:<br>Depending on the<br>order quantity /<br>volume |  |
|                                                                                                                                                                            | Boating method                                                                                                                         | Packaging by order quantity                                                        |
|                                                                                                                                                                            | Total number of binning                                                                                                                | Packaging by order quantity                                                        |
| labeling requirement                                                                                                                                                       | Tag Size 1:<br>Universal use 100 *<br>100mm<br>Tag Size 2:<br>According to<br>customer<br>requirements                                 |                                                                                    |
| matters need attention                                                                                                                                                     |                                                                                                                                        |                                                                                    |
| 1. Due to the limitation of order quantity, the packing method of each material is the size of the box according to the total quantity of the order or the physical volume |                                                                                                                                        |                                                                                    |
| 2. Storage temperature: room temperature                                                                                                                                   |                                                                                                                                        |                                                                                    |
| 3. Preservation conditions: store them in a cool and dry place                                                                                                             |                                                                                                                                        |                                                                                    |