

# The Antenna Sample Confirmation

File Number: SNW-QR-D-007/A.0

|                   |                                                 |                     |            |
|-------------------|-------------------------------------------------|---------------------|------------|
| Customer          | Shenzhen Alon Communication Technology Co., LTD |                     |            |
| Project Name      | T2 BWG antenna                                  | Date                | 2023-11-06 |
| Project NO.       | SN1135                                          | Notes               | LDS        |
| Frequency Range   | WIFI (2.4G/5G) /GPS                             |                     |            |
| Designed By       | RF Engineer                                     | Structural Engineer |            |
|                   |                                                 |                     |            |
| Checked By        | Engineering Manager                             |                     |            |
|                   |                                                 |                     |            |
| Client's Approval |                                                 |                     |            |

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## Catalogues

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## 1. Overview of specifications

This specification describes the condition of the T2 built-in WIFI LDS antenna in the 2.4G/5G/GPS frequency band

## 2. Antenna appearance



## 3. Electrical performance

### 3.1. Antenna frequency band

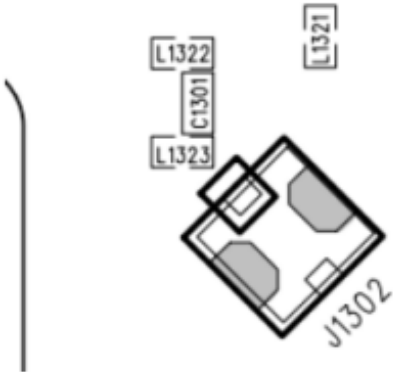
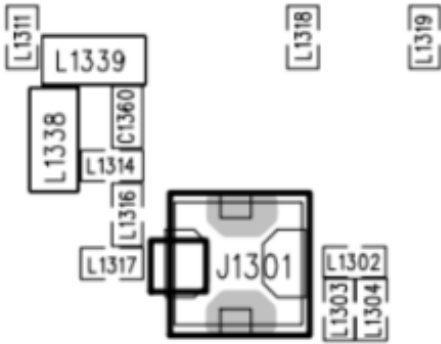
|                                  | Antenna      |
|----------------------------------|--------------|
| Transmit frequency band<br>(MHz) | 2.4G /5G/GPS |

3.2. Matching circuit

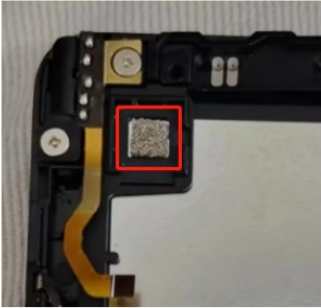
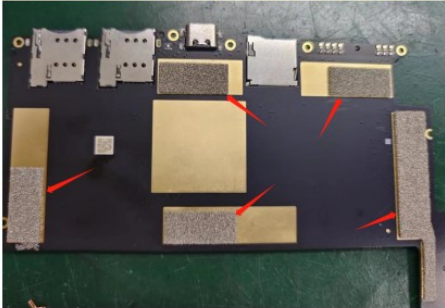
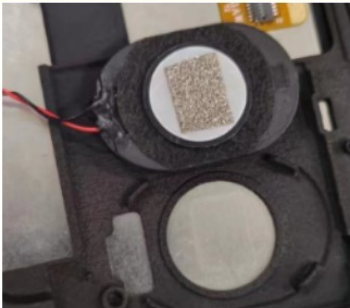
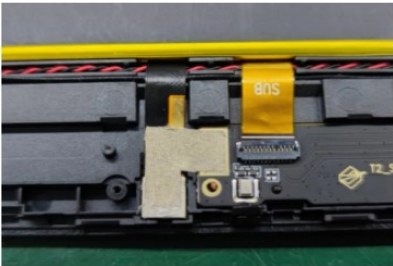
The test point is behind the antenna connector (RF test port), see the image below

1. Antenna matching.

Note: Antenna matching electronic material to use 1% accuracy material

| GPS/WIFI Antenna matching material                                                 |       |  |       |    |  |                                                                                     |    |  |       |    |  |
|------------------------------------------------------------------------------------|-------|--|-------|----|--|-------------------------------------------------------------------------------------|----|--|-------|----|--|
| GPS Antenna matching                                                               |       |  |       |    |  | 2.4G/5G WIFI Antenna matching                                                       |    |  |       |    |  |
|  |       |  |       |    |  |  |    |  |       |    |  |
| L1322                                                                              | 1.0PF |  | L1321 | 0Ω |  | L1317                                                                               | NC |  | L1311 | NC |  |
| C1301                                                                              | 0Ω    |  |       |    |  | L1316                                                                               | 0Ω |  | L1318 | NC |  |
| L1323                                                                              | NC    |  |       |    |  | L1314                                                                               | NC |  | L1319 | 0Ω |  |

### 3.3 Environmental Treatment

| Environmental treatment                                                            |                                                                                                        |                                                                                                     |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
|   |                      |                  |
| The camera is grounded with conductive foam as shown in the picture                | The mainboard is grounded with conductive foam as shown in the figure                                  | The horn is earthed with wire foam as shown in the figure                                           |
|  |                     |                  |
| Shield cover copper foil paste area                                                | The prototype small board is grounded with conductive cloth on the front camera as shown in the figure | Small board grounding mode: The small board is grounded with conductive foam as shown in the figure |

### 4. Exterior structure

#### 4.1. Antenna material: LDS

### 5. Remarks

(Electrical Performance test report)

In the electrical performance test report, 3D darkroom data provided by the manufacturer,  
The following table format

Appendix I: Structural drawings

Appendix 2: Electrical Performance test report

## Appendix I: LDS structural drawing

Technical drawing of a rectangular electronic component, likely an antenna, showing dimensions in millimeters (mm) and a table of specifications.

**Dimensions (mm):**

- Overall length: 32.12 ± 0.1
- Overall width: 25.65 ± 0.1
- Top flange width: 18.14 ± 0.1
- Top flange thickness: 17.64 ± 0.1
- Top flange height: 9.52 ± 0.1
- Top flange depth: 8.92 ± 0.1
- Top flange radius: R0.5 ± 0.1
- Mounting hole diameter: 6.09 ± 0.1
- Mounting hole position: 5.59 ± 0.1
- Mounting hole offset: 5.09 ± 0.1
- Mounting hole diameter: 2.39 ± 0.1
- Bottom flange width: 18.48 ± 0.1
- Bottom flange thickness: 26.59 ± 0.1
- Bottom flange depth: 1.04 ± 0.1
- Bottom flange radius: R0.2 ± 0.1

**Table:**

| No. | Part name   | Material | Color           | Thickness |
|-----|-------------|----------|-----------------|-----------|
| 1   | BWG antenna | LRS      | Primary colours |           |

**Notes:**

- \* is the key dimension ;
- Please refer to the drawing if no dimension is indicated;
- Meet rohs2.0, reach environmental protection requirements.
- This drawing is an internal controlled document and is strictly prohibited from being disseminated in any form without our company's permission

**Company Information:**

司南微电子(深圳)有限公司  
SINAWELL Electronics (Shenzhen) Co., LTD

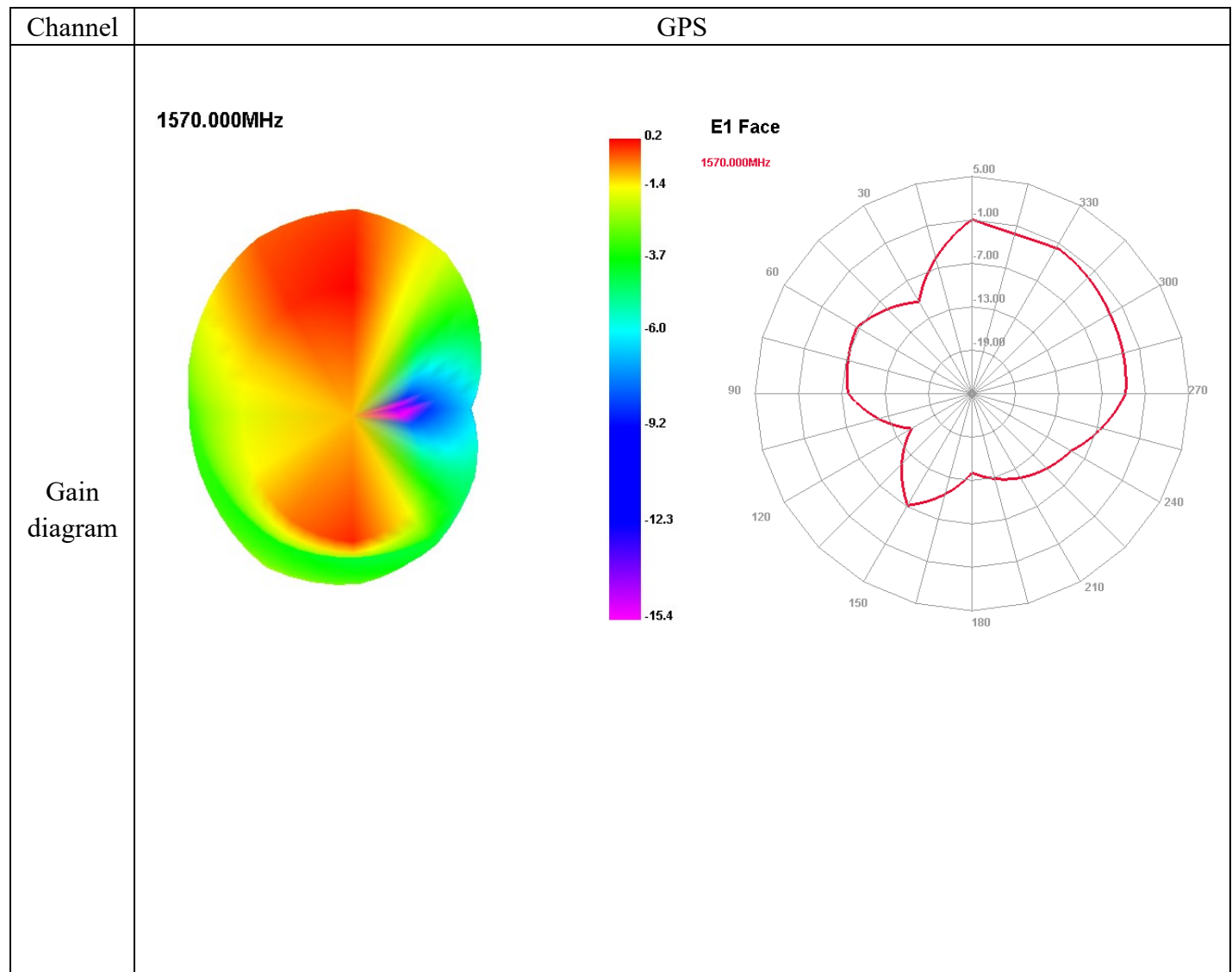
Project name: T2(SN135)  
Product name: BWG Antenna  
Material no.: SN135-BWG-03  
Material: ME  
RF  
Project  
Company: mm  
Scale: 1:1  
Rev. A

## Appendix II: 3D Test report

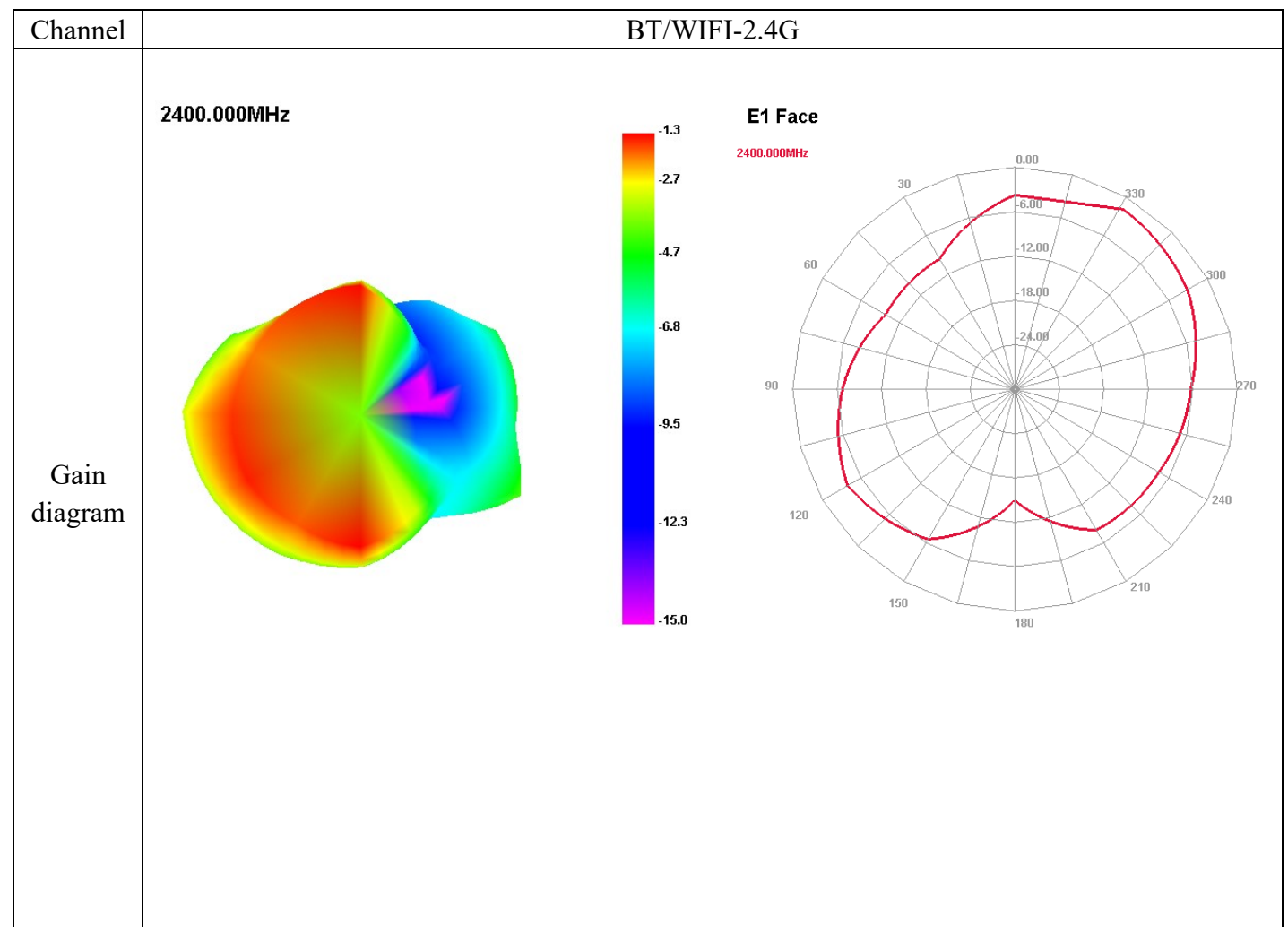
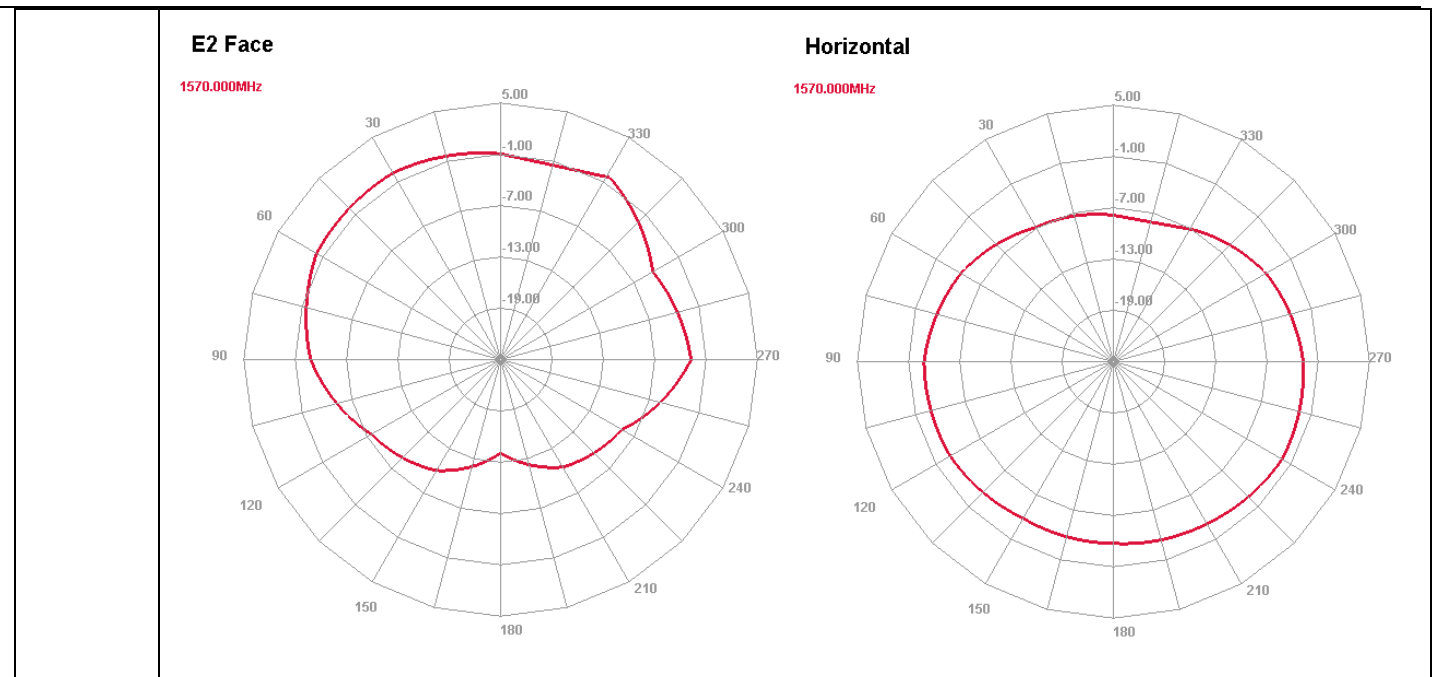
| 2.4 G | Data Rate | Channel | TRP   | TIS    |
|-------|-----------|---------|-------|--------|
| 11B   | 11M       | 1       | 13.14 | 81.06  |
|       |           | 6       | 13.26 | 81.85  |
|       |           | 11      | 12.89 | 81.71  |
| 5G    | Data Rate | Channel | TRP   | TIS    |
| 11A   | 6M        | 40      | 9.68  | 86.64  |
|       |           | 56      | 9.93  | 86.41  |
|       |           | 157     | 10.32 | 86.47  |
| GPS   | Channel   |         | TRP   | TIS    |
| GPS   | 0         |         | 41.63 | 153.59 |

| GPS/WIFI  |       |       |       |
|-----------|-------|-------|-------|
| Freq      | Effi  | Effi  | Gain  |
| (Mhz)     | (%)   | (dbm) | (dbi) |
| 1510~1590 | 38.19 | -4.18 | 0.23  |
| 2400~2500 | 40.07 | -3.91 | -1.46 |
| 5150~5850 | 45.22 | -3.45 | 0.35  |

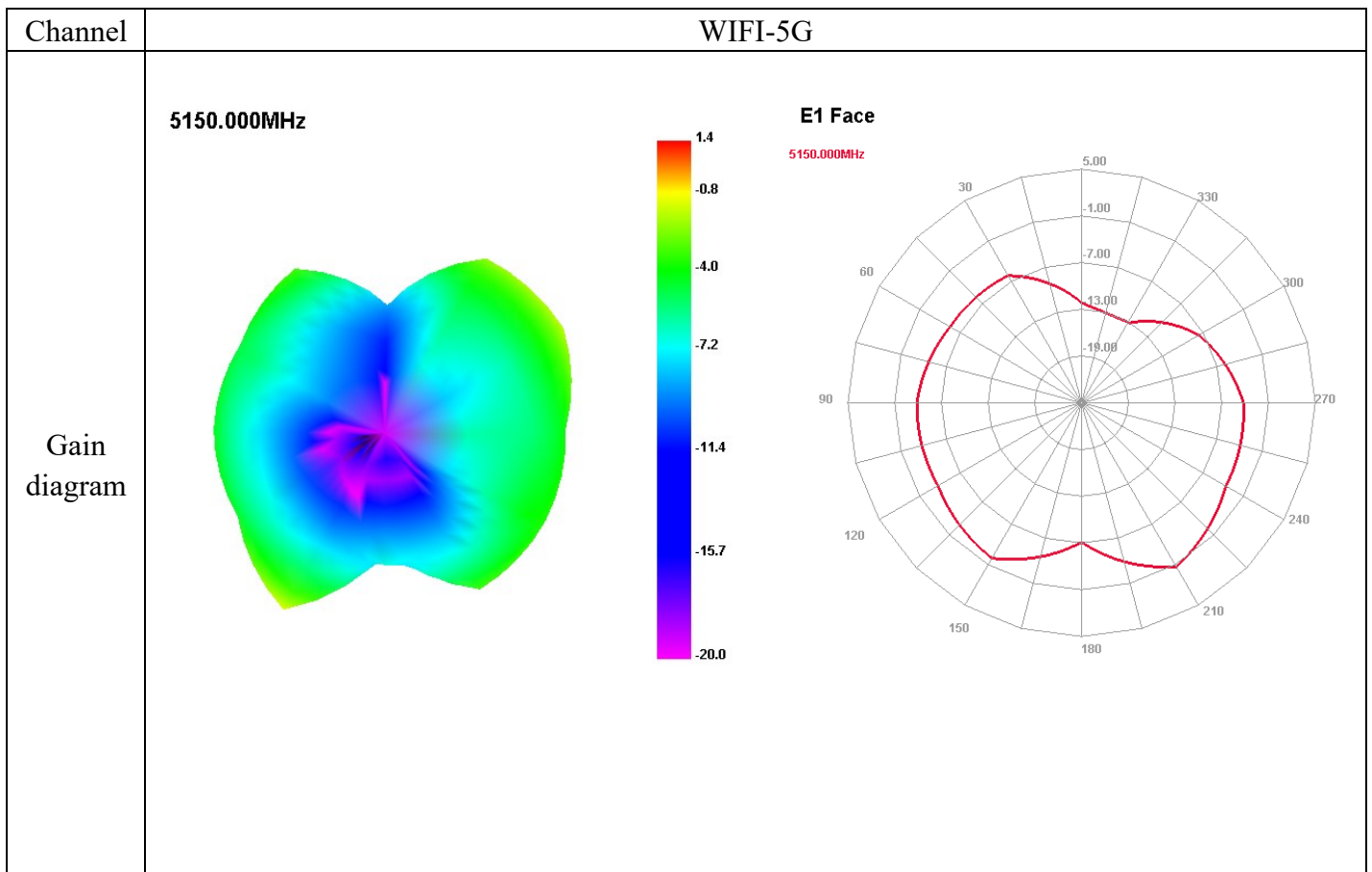
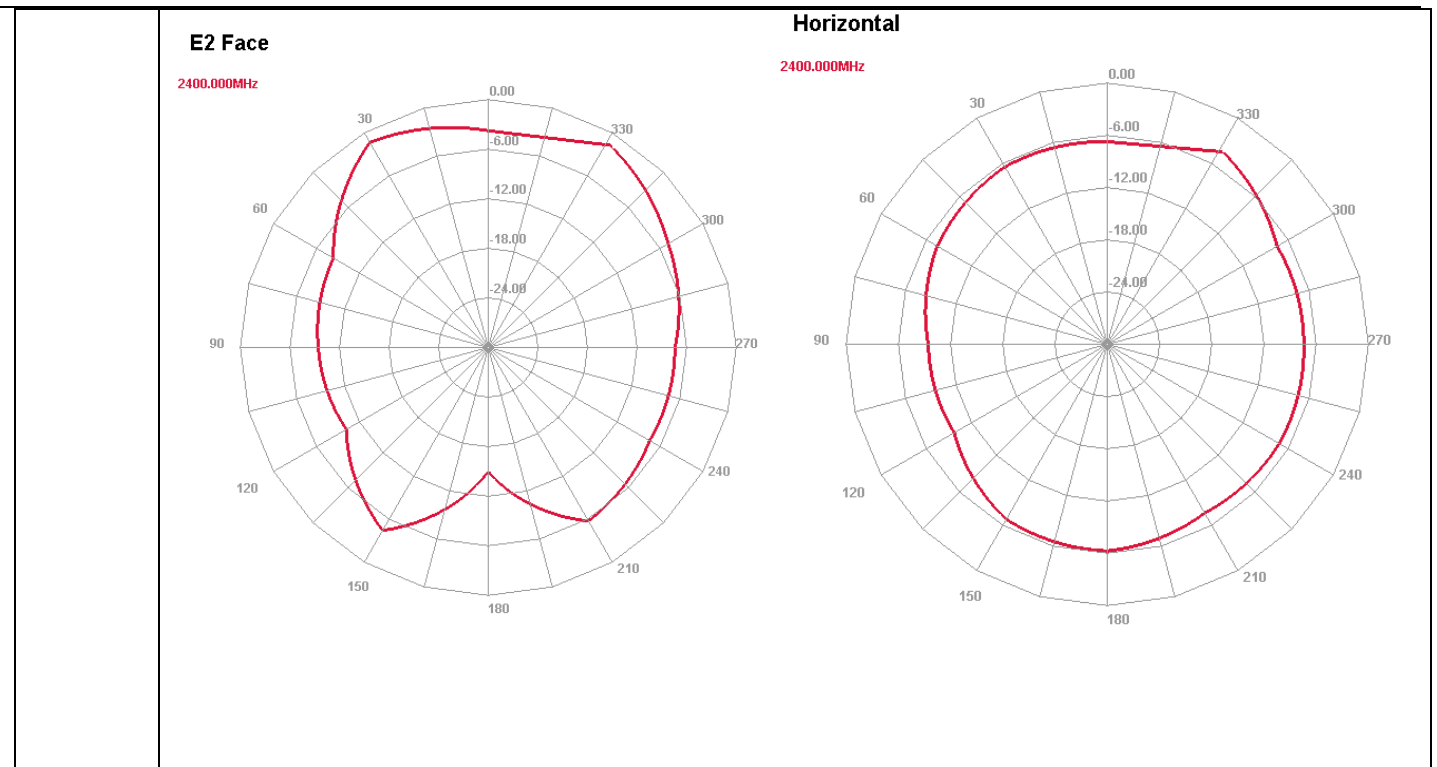
Field intensity pattern



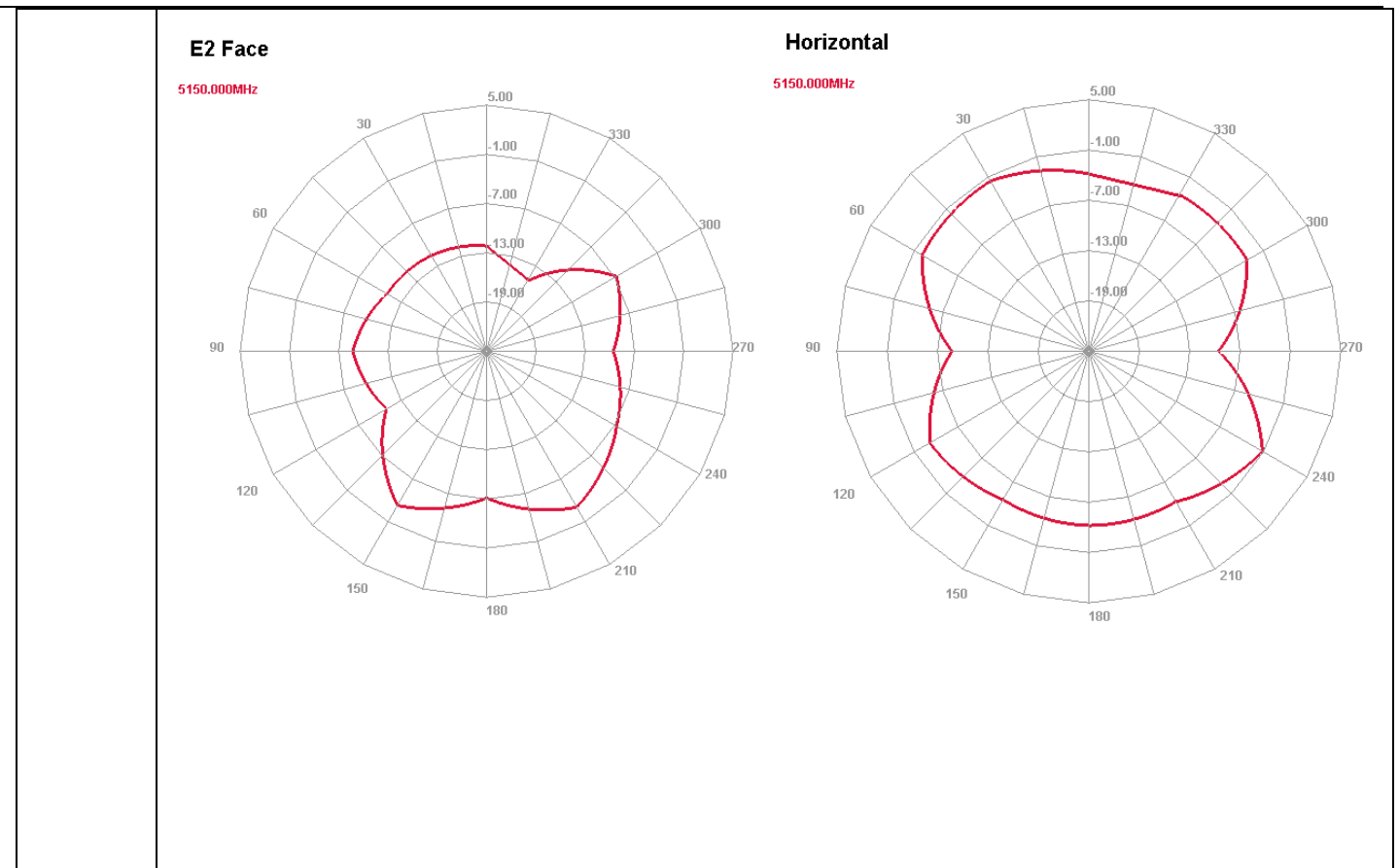
## Confirmation of Sample



## Confirmation of Sample



## Confirmation of Sample



## Foot-inch reported

|    | Client  | Aron Communications | Project name    | T2 BWG antenna      |                     | Date of measurement  | 2023-11-06          |         |
|----|---------|---------------------|-----------------|---------------------|---------------------|----------------------|---------------------|---------|
|    | VENDORS | Sinanwei            | Measuring tools | Quadratic element   |                     | Units of measurement | mm                  |         |
| NO | Size    | Tolerances          | Measured 1      | Field Measurement 2 | Field Measurement 3 | Field Measurement 4  | Field Measurement 5 | Judging |
| 1  | 25.15   | + / - 0.10          | 25.19           | 25.22               | 25.17               | 25.21                | 25.19               | OK      |
| 2  | 17.64   | + / - 0.10          | 17.60           | 17.59               | 17.62               | 17.64                | 17.62               | OK      |
| 3  | 26.59   | + / - 0.10          | 26.63           | 26.62               | 26.64               | 26.60                | 26.64               | OK      |
| 4  | 0.2     | + / - 0.10          | 0.24            | 0.23                | 0.25                | 0.24                 | 0.22                | OK      |
| 5  |         |                     |                 |                     |                     |                      |                     |         |
| 6  |         |                     |                 |                     |                     |                      |                     |         |
| 7  |         |                     |                 |                     |                     |                      |                     |         |
| 8  |         |                     |                 |                     |                     |                      |                     |         |
| 9  |         |                     |                 |                     |                     |                      |                     |         |

## Confirmation of Sample

|    |  |  |  |  |  |  |  |  |
|----|--|--|--|--|--|--|--|--|
| 10 |  |  |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |  |  |
| 13 |  |  |  |  |  |  |  |  |
| 14 |  |  |  |  |  |  |  |  |
| 15 |  |  |  |  |  |  |  |  |
| 16 |  |  |  |  |  |  |  |  |
| 17 |  |  |  |  |  |  |  |  |
| 18 |  |  |  |  |  |  |  |  |
| 19 |  |  |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |  |  |
| 21 |  |  |  |  |  |  |  |  |
| 22 |  |  |  |  |  |  |  |  |
|    |  |  |  |  |  |  |  |  |

Watchmaking: Yeo Shimei Audited: Chen De

## Salt spray report

|                           |                                                      |              |                |                                                                                       |            |
|---------------------------|------------------------------------------------------|--------------|----------------|---------------------------------------------------------------------------------------|------------|
| Customer name             | Aron<br><br>Communications                           | Project name | T2 BWG antenna | TESTERS                                                                               | Yeo Shimei |
| Number of tests           | 5PCS                                                 | Test items   | Salt Spray     | Test date                                                                             | 2023-11-06 |
| Testing<br><br>Conditions | 1. Temperature: 35°C                                 |              |                |  |            |
|                           | Humidity: 98%, PH: 6.5-7.2                           |              |                |                                                                                       |            |
|                           | 3. Inside temperature: 37°C                          |              |                |                                                                                       |            |
|                           | 4. Test duration: 48 hours                           |              |                |                                                                                       |            |
|                           | 5. Potion concentration: 5%NaCl                      |              |                |                                                                                       |            |
|                           | Steps 1 Place the product inside the salt spray case |              |                |                                                                                       |            |

## Confirmation of Sample

|            |                                                                                                                                                |          |                |              |         |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------|--------------|---------|
| Test steps | 2. Place the product at the correct Angle                                                                                                      |          |                |              |         |
|            | 3. Set the relevant parameters and start spraying                                                                                              |          |                |              |         |
|            | 4. After taking out the experimental product, rinse the product with clean water and place it at room temperature for two hours before testing |          |                |              |         |
| Test       | Items                                                                                                                                          | Pre-test | After the test | Test results | Remarks |
|            | Plating                                                                                                                                        | Good     | good           | Qualified    |         |
|            | Electrical conductivity                                                                                                                        | Good     | Good           | Qualified    |         |
|            | Resistance                                                                                                                                     | Good     | Good           | Qualified    |         |
|            | Binding force                                                                                                                                  | Good     | Good           | Qualified    |         |

Tabulation: Yeo Shimei

Audited: Chen De

## High temperature, high humidity test

|                    |                                                                                                                                                                                                              |              |                                                                                      |           |             |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------|-----------|-------------|
| Customer name      | Aron Communications                                                                                                                                                                                          | Project name | T2 BWG antenna                                                                       | Test Man  | Yeo Sai Mei |
| Number of tests    | 5PCS                                                                                                                                                                                                         | Test items   | High low temperature                                                                 | Test date | 2023-11-09  |
| Purpose of testing | Used to test and evaluate the product in high, low temperature, constant humid heat environment load, storage, its electrical performance and the structure or components can meet the relevant requirements |              |  |           |             |
| Test conditions    | 1. Temperature: High temperature 80°C                                                                                                                                                                        |              |                                                                                      |           |             |
|                    | 2. Humidity: 95%                                                                                                                                                                                             |              |                                                                                      |           |             |
|                    | 3. Duration of test: 12H                                                                                                                                                                                     |              |                                                                                      |           |             |
|                    | 4. Before the test, the function, safety and appearance of the product must be tested, and the test can be carried out after it is confirmed that it is normal                                               |              |                                                                                      |           |             |
| Test steps         | 1. Place the test OK sample into the test chamber                                                                                                                                                            |              |                                                                                      |           |             |
|                    | 2. Place the product in accordance with the correct Angle. If necessary, the product can be continuously outside through the special window with a wire or other tools                                       |              |                                                                                      |           |             |

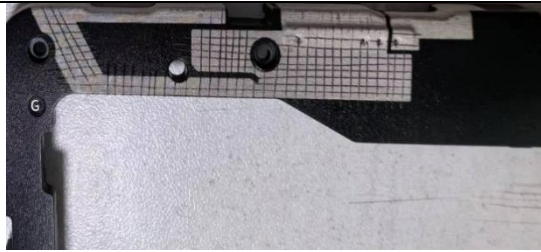
## Confirmation of Sample

|      |                                                                                                                                                       |                                                              |           |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-----------|
|      | 3. Set the relevant parameters, edit the program, press the start button to test                                                                      |                                                              |           |
|      | 4. When you need to observe or verify the results in stages, you can complete it through a special window, or take out part of the sample for testing |                                                              |           |
|      | 5. Take out the product after the test, and place the product at room temperature for 2 hours before the test                                         |                                                              |           |
| Test | Items                                                                                                                                                 |                                                              | Judgement |
|      | Step 1 Look                                                                                                                                           | No peeling or peeling of the coating                         | OK        |
|      | 2 Melt the plating                                                                                                                                    | No abnormalities (no shedding, no oxidation, no deformation) | OK        |
|      | 3 Conductivity                                                                                                                                        | Good                                                         | OK        |
|      | Step 4: Resistance                                                                                                                                    | Less than 1Ω                                                 | OK        |
|      | 5 Join forces                                                                                                                                         | The Hundred grid Test                                        | OK        |

Tabulation: Yeo Shimei Audited: Chen De

|                                                                                                                                              |                     |                                                                                                                                               |                 |           |             |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|-------------|
| Client Name                                                                                                                                  | Aron Communications | Project name                                                                                                                                  | T2 main antenna | Test Man  | Yang Shimei |
| Number of tests                                                                                                                              | 5PCS                | Test items                                                                                                                                    | Bonding Power   | Test date | 2023-11-06  |
| 1. Test purpose: The purpose of this test is to study the reliability of the coating or the adhesion between the coating and the collective. |                     |                                                                                                                                               |                 |           |             |
| 2. Test tool: 3M610 tape                                                                                                                     |                     |                                                                                                                                               |                 |           |             |
| 3. Test conditions: at room temperature (20-25°C)                                                                                            |                     |                                                                                                                                               |                 |           |             |
| 4. Test steps: A. According to the binding force test requirements, use the product after 3-4 hours of drying.                               |                     |                                                                                                                                               |                 |           |             |
| B. In the designated 10×10MM area to mark 1X1 mm square.                                                                                     |                     |                                                                                                                                               |                 |           |             |
| C. Mark off part of the depth should reach the substrate.                                                                                    |                     |                                                                                                                                               |                 |           |             |
| E.. Peel off the tape instantaneously at an Angle of 45-90°.                                                                                 |                     |                                                                                                                                               |                 |           |             |
| F. Repeat 3 times, judging by how the scratched area falls.                                                                                  |                     |                                                                                                                                               |                 |           |             |
| 5. Acceptance criteria: Use 3M610 to reach level 0-1 or according to the product sample provided, but can not exceed level 2.                |                     |                                                                                                                                               |                 |           |             |
| Inspection                                                                                                                                   | Grade               | Description                                                                                                                                   |                 |           |             |
|                                                                                                                                              | 0                   | Cut edges smooth with no bars falling.                                                                                                        |                 |           |             |
|                                                                                                                                              | 1                   | A little adhesive layer falls at the intersection of the incision, but the cross-cutting area can not be significantly more than 5% affected. |                 |           |             |

## Confirmation of Sample

|              |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                       |                 |    |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----|
| standard     | 2                                                                                                                                                                                  | At the intersection of the incision and/or the edge of the extended incision, the adhesive layer is shed, and the affected cross-cutting area is significantly greater than 5%, but not significantly greater than 15%                                                |                 |    |
|              | 3                                                                                                                                                                                  | Part or all of the cutting edge of the adhesive layer is peeled off in large pieces, or/and part or all of the different parts on the grid are peeled off, and the affected cross-cutting area is obviously greater than 15%, but not significantly greater than 35%. |                 |    |
|              | 4                                                                                                                                                                                  | A large strip of the extended cut edge of the coating, or/and some lattice partially or completely off, the affected cross-cut area is significantly greater than 35%, but not significantly greater than 65%.                                                        |                 |    |
|              | 5                                                                                                                                                                                  | Flaking is more than grade 4.                                                                                                                                                                                                                                         |                 |    |
| Picture area |                                                                                                 |                                                                                                                                                                                                                                                                       |                 |    |
| Test level   | <input checked="" type="checkbox"/> Level 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 |                                                                                                                                                                                                                                                                       | Decision Result | OK |

## Hundred test report