



SHENZHEN ATN COMMUNICATION TECHNOLOGY CO., LTD.

SPECIFICATION FOR APPROVL

Sixing Intelligent Equipment

CUSTOMER:

Manufacturing Co., Ltd.

CUSTOMER PRJ:

BD1 lite (R)

CUSTOMER P/N:

1000065999

OUR PRJ:

ATN79030 (R)

SPECIFICATIONS:

2.4~2.48GHz

Q' TY:

1 PCS

DATE:

2026.4.17

| A T N |          |          | CUSTOMER   |              |          |
|-------|----------|----------|------------|--------------|----------|
| maker | reviewer | Approver | Structurer | Electronicer | Approver |
|       |          |          |            |              |          |

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| change record |         |                                                       |       |
|---------------|---------|-------------------------------------------------------|-------|
| Date          | Version | VersionContent                                        | Notes |
| 2026.3.23     | A0      | Initial release                                       |       |
| 2026.4.17     | A1      | DVT2 prototype debugging, updating drawings and data。 |       |
|               |         |                                                       |       |
|               |         |                                                       |       |

## 1、 Test Equipment&Conditions

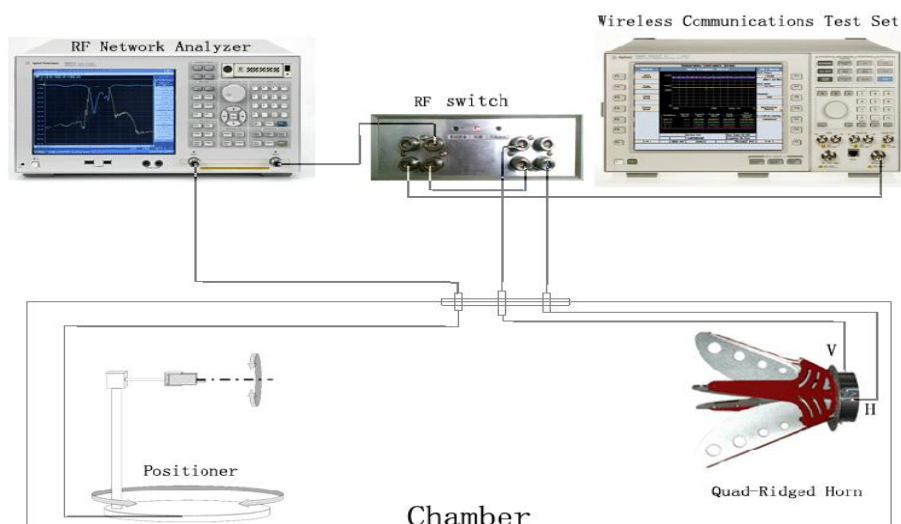
### 1.1 Network Analyzers

Agilent Technologies E5071B

### 1.2 Communications Test Set

CMW500

### 1.3 Test System



## 2、 Product Specification

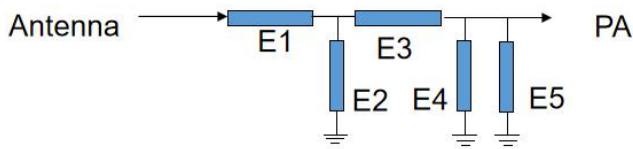
### 2.1、 Material&Mechanical Characteristics

|              |                  |
|--------------|------------------|
| Material     | FPC              |
| Antenna type | monopole antenna |

### 2.2、 Storage conditions

|                     |         |
|---------------------|---------|
| Storage Temperature | 22℃±5℃  |
| relative humidity   | 35-65%  |
| Storage life        | 360 day |

### 3、Matching circuit

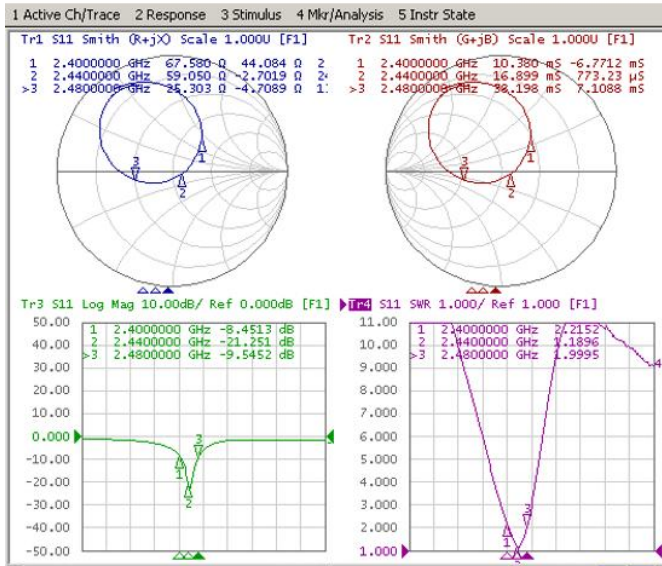


| R  |     |
|----|-----|
| E1 | OR  |
| E2 | NC  |
| E3 | OR  |
| E4 | NC  |
| E5 | ESD |

### 4、测试数据报告 Test Data Report

#### 4.1 S11 Parameter

R



#### 4.2 Gain & Efficiency

free space

head model

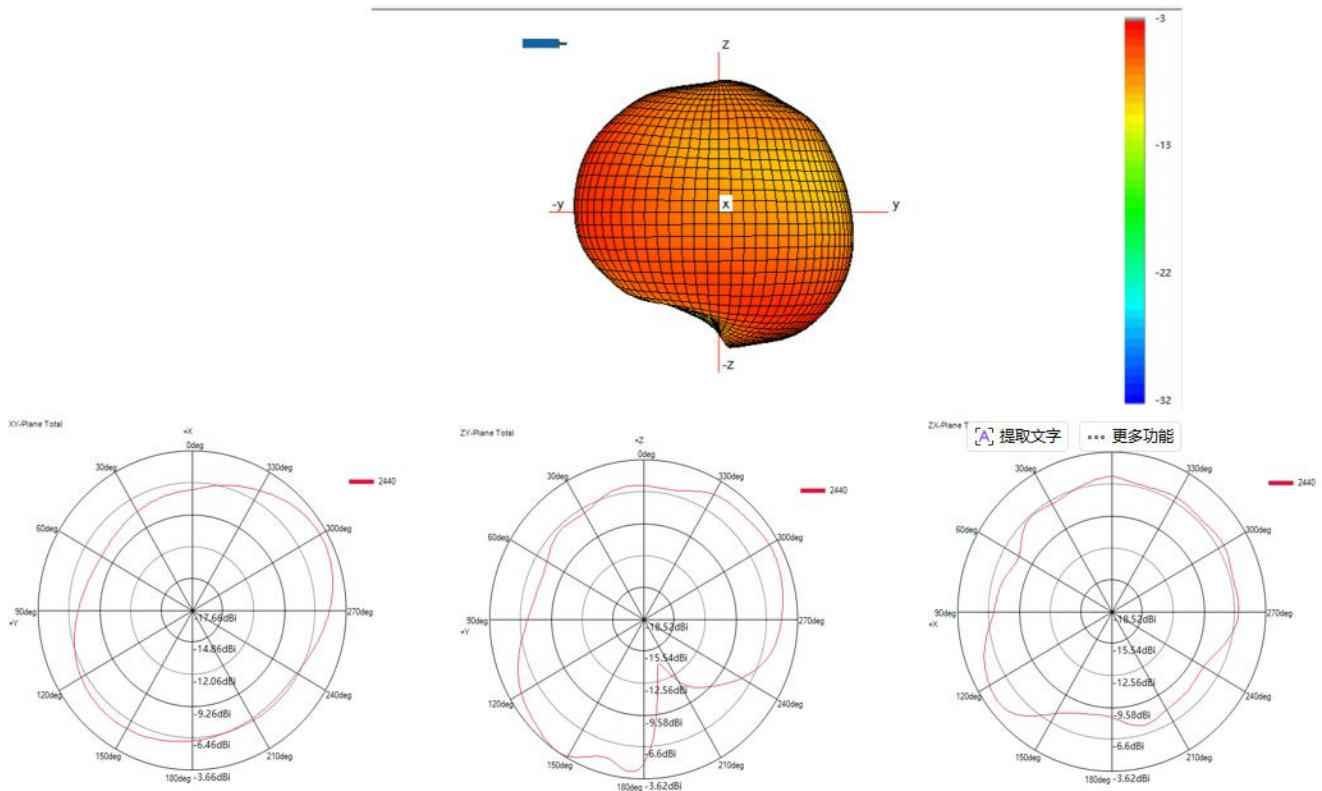
R

R

| Frequency MHz | Efficiency dB | Efficiency % | Gain dB |
|---------------|---------------|--------------|---------|
| 2400          | -7.09         | 19.55        | -4.41   |
| 2410          | -6.83         | 20.76        | -4.22   |
| 2420          | -6.64         | 21.68        | -3.95   |
| 2430          | -6.46         | 22.87        | -3.84   |
| 2440          | -6.33         | 23.27        | -3.78   |
| 2450          | -6.24         | 23.75        | -3.76   |
| 2460          | -6.37         | 23.07        | -3.94   |
| 2470          | -6.50         | 22.36        | -4.16   |
| 2480          | -6.73         | 21.21        | -4.44   |
| average       | -6.58         | 22.02        | -4.06   |

| Frequency MHz | Efficiency dB | Efficiency % | Gain dB |
|---------------|---------------|--------------|---------|
| 2400          | -13.18        | 4.81         | -7.87   |
| 2410          | -12.84        | 5.20         | -7.55   |
| 2420          | -12.62        | 5.47         | -7.32   |
| 2430          | -12.38        | 5.79         | -7.06   |
| 2440          | -12.22        | 5.99         | -6.92   |
| 2450          | -12.14        | 6.11         | -6.85   |
| 2460          | -12.21        | 6.01         | -6.90   |
| 2470          | -12.35        | 5.82         | -7.08   |
| 2480          | -12.52        | 5.60         | -7.10   |
| average       | -12.50        | 5.64         | -7.18   |

#### 4.3 Radiation pattern Radiation pattern (R)



#### 4.4 OTA Test Data

| OTA test      |         |       |                          |        |                          |
|---------------|---------|-------|--------------------------|--------|--------------------------|
| free space -R | Channel | TRP   | Deviation from mainboard | TIS    | Deviation from mainboard |
|               | CH 0    | -1.79 | 13.69                    | -85.25 | 9.75                     |
|               | CH39    | 0.24  | 11.16                    | -86.2  | 8.8                      |
|               | CH78    | 2.92  | 8.18                     | -87.24 | 7.76                     |
| head model -R | Channel | TRP   | Deviation from mainboard | TIS    | Deviation from mainboard |
|               | CH 0    | -4.66 | 16.56                    | -81.77 | 13.23                    |
|               | CH39    | -2.91 | 14.31                    | -82.52 | 12.48                    |
|               | CH78    | -0.71 | 11.81                    | -83.4  | 11.6                     |

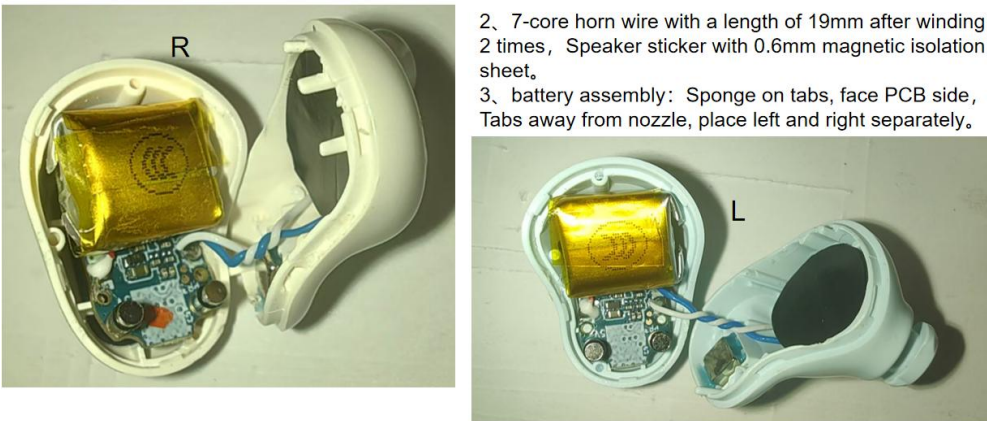
(head model)  
Conduction  
attenuation  
standard  
13dB

#### 4.5 PCBA

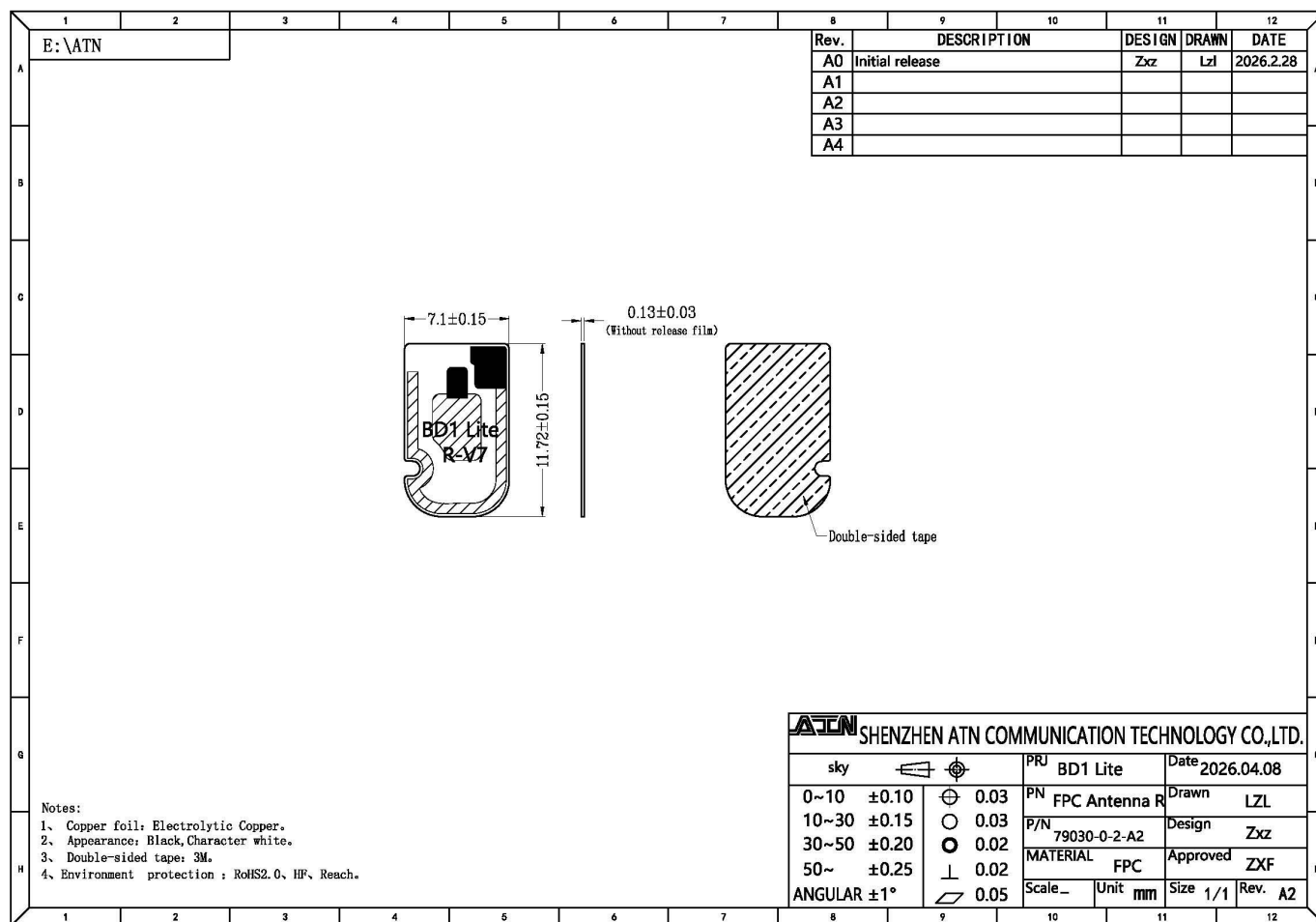
##### PCB conducted emission test data

| R | Channel | TRP  | TIS |
|---|---------|------|-----|
|   | CH 0    | 11.9 | -95 |
|   | CH39    | 11.4 | -95 |
|   | CH78    | 11.1 | -95 |

### 5、Assembly requirements

|   |                                                                                      |                                                                                                                                                                                                                                               |
|---|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 |   | 1、The length of the battery cable after winding 22.5mm                                                                                                                                                                                        |
| 2 |  | <p>2、7-core horn wire with a length of 19mm after winding 2 times, Speaker sticker with 0.6mm magnetic isolation sheet,</p> <p>3、battery assembly: Sponge on tabs, face PCB side, Tabs away from nozzle, place left and right separately.</p> |

## 6、工程图纸 Product Drawing



## 7、 Dimensional Inspection Report

### Dimensional Inspection Report

|                                 |                                                            |                             |   |   |                  |           |
|---------------------------------|------------------------------------------------------------|-----------------------------|---|---|------------------|-----------|
| project:                        | BD1 lite                                                   | Product Name: FPC antenna R |   |   |                  |           |
| category:                       | FPC                                                        | Quantity: 5 pcs             |   |   | Date: 2026.04.17 |           |
| Inspection basis and standard   | ■Engineering drawings<br>□Standard template<br>□Other_____ |                             |   |   |                  |           |
| Measurement equipment &accuracy | Vernier caliper & 0.02mm                                   |                             |   |   |                  |           |
| Inspection items                | test value                                                 |                             |   |   |                  | determine |
|                                 | 1                                                          | 2                           | 3 | 4 | 5                |           |



|                        |     |            |       |       |       |       |       |    |
|------------------------|-----|------------|-------|-------|-------|-------|-------|----|
| Dimensional inspection | 1.  | 7.1±0.15   | 7.16  | 7.14  | 7.18  | 7.10  | 7.14  | OK |
|                        | 2.  | 11.72±0.15 | 11.78 | 11.72 | 11.76 | 11.74 | 11.76 | OK |
|                        | 3.  | 0.13±0.03  | 0.12  | 0.12  | 0.12  | 0.12  | 0.12  | OK |
|                        | 4.  | /          |       |       |       |       |       |    |
|                        | 5.  |            |       |       |       |       |       |    |
|                        | 6.  |            |       |       |       |       |       |    |
|                        | 7.  |            |       |       |       |       |       |    |
|                        | 8.  |            |       |       |       |       |       |    |
|                        | 9.  |            |       |       |       |       |       |    |
|                        | 10. |            |       |       |       |       |       |    |
|                        | 11. |            |       |       |       |       |       |    |
|                        | 12. |            |       |       |       |       |       |    |

## 8、reliability test report

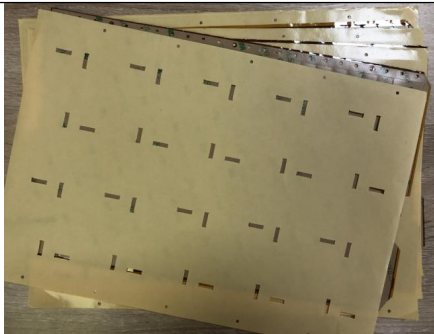
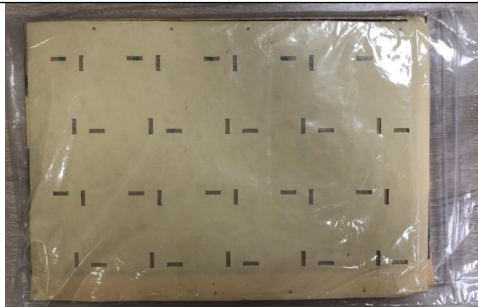
### reliability test report

|               |                          |                     |                                                                                                                                                                                                                                                                                                                |               |                                                                                                              |              |       |
|---------------|--------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------|--------------|-------|
| project:      |                          | BD1 lite            |                                                                                                                                                                                                                                                                                                                | Product Name: | FPC antenna R                                                                                                |              |       |
| Test quantity |                          | 5 pcs per test item |                                                                                                                                                                                                                                                                                                                |               |                                                                                                              |              |       |
| No.           | Test item                | esting equipment    | Testing procedure                                                                                                                                                                                                                                                                                              |               | Acceptance criteria                                                                                          | Test results | notes |
| 1             | 24 hours salt spray test | Salt spray tester   | 1.Test environment:Brine tank temperature: 35℃Saturated air barrel temperature: 47℃Pressure: 1kg/cm²<br>2.Place the test samples into salt spray tester with 5%±1 NaCl solution.Position samples at 30° inclination, test for 24 hours.<br>3.Take out samples after test, clean and dry them before inspection |               | No delamination, peeling or rust on product plating; no coating peeling off surface spraying, judged as OK.。 | OK           |       |

|        |                     |                                      |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                  |    |  |
|--------|---------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----|--|
| 2      | H/L<br>Temp<br>Test | Temperature<br>& Humidity<br>Chamber | <p>1. Place the products in an environment of <math>80\pm 2^{\circ}\text{C}</math> for 24 hours.</p> <p>2. Place at room temperature for 2 hours to cool down, then store in low-temperature environment of <math>-40\pm 2^{\circ}\text{C}</math> for 24 hours.</p> <p>3. After the test, place at room temperature for 2 hours then proceed with inspection.。</p> | No crack, deformation or shedding on products, electrical performance test passed, judged as OK. | OK |  |
| notes: |                     |                                      |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                  |    |  |

## 9、Manner of packing

### Product packaging Manner of packing

|                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| edition: : A0                                                                       | Page: 1/1                                                                            |
| 1.Layer paper protection produc                                                     | 2.Put into PE bag                                                                    |
|  |  |
| 3.Carton sealing effect                                                             |                                                                                      |
|  |                                                                                      |