# 产品规格承认书

Product specifications acknowledgment

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承认厂商：

**(Recognized manufacturers)**

制造厂商： Shenzhen Bat Wireless Technology Co.,Ltd.

**（Manufacturer）**

产品名称： FPC Antenna

**（Description）**

Address: 1409, Building A, Zhiyun One Industrial Park, No. 13 Huaxing Road, Henglang Community, Dalang Street, Shenzehn, Guangdong, China

## 1.1 Specifications

| | |
|---|---|
| 天线型号 Antennas Type | BW4GFND58-17B1L80 |
| 频率范围 Frequenc Range(MHz) | 700-2700 |
| 输入阻抗 Input Impendence (Ω) | 50Ω |
| 电压驻波比 V.S.W.R | <2 |
| 增益 Gain (dBi) | 3dBi |
| 极化形式 Polarization Type | 垂直 Vertical |
| 功率容量 Power Capacity (w) | 50 |
| 雷电保护 Lingtning Protection | None |
| 工作电压 DC Voltage (V) | None |
| 天线尺寸 Dimension (mm) | 58x17 |
| 接口形式/Connector Type: | IPEX-1 |
| 电缆型号 Cable type (mm) | ϕ1.13 |
| 电缆长度 Cable length(mm) | 80 |
| 辐射体 Radiator | |
| 天线颜色 Color | 黑色 Black |
| 重量 Weight(g) | None |
| 工作温度 Operating Temperature (℃) | -40~80 |
| 储藏温度 Storage Temperature (℃) | -20~85 |

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## 1.2 Antenna Picture

BW4GFND58-17B1L80

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# 2. Electrical Specification

## 2.1 Test Equipment

A. VSWR and input impedance: Agilent 8753/E5071 Network Analyzer

B. Antenna gain and efficiency: ETS three-dimensional anechoic chamber

## 2.2 Test Setup

### 2.2.1 Frequency Range

### 2.2.2 VSWR

Step 1: The antenna is arranged on the customer provided test fixture.

Step 2: The VSWR of the antenna is measured via Agilent 8720/8753 Network Analyzer (see figure. 1).

**Figure.1**

### 2.2.3 Radiation pattern and Gain

A. The 3D chamber provides less than -40dB reflectivity from 800MHz to 6GHz and a 40cm diameter spherical quiet zone. The measurement results are calibrated using both dipoles and standard gain horns (see figure. 2).

B. The antenna under tested is arranged in the turned table and a decoupling sleeve is used to reduce feed line radiation (see figure. 3).

C. The measured results of the radiation patterns and antenna gain are obtained from the control system and showed on the monitor (see figure. 4 and 5).

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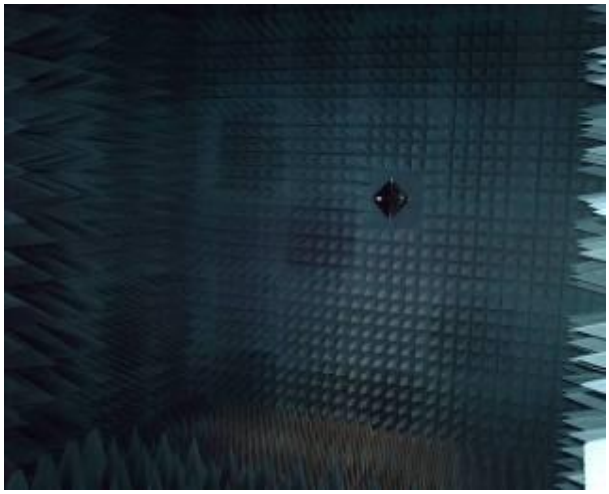


Figure.2

Figure.3

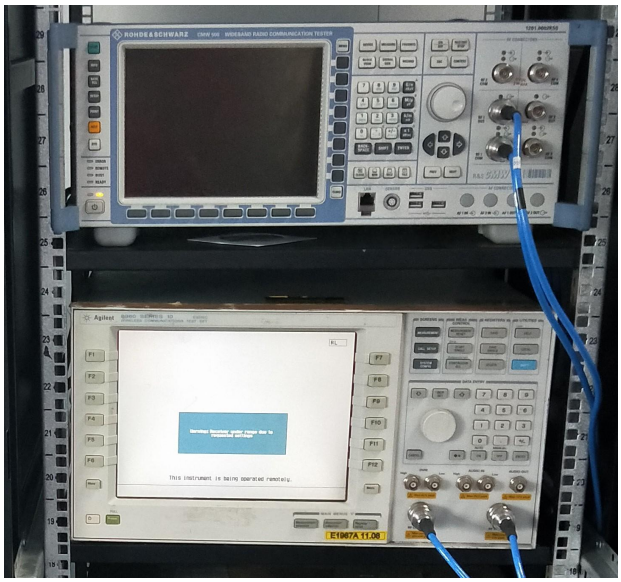



Figure.4

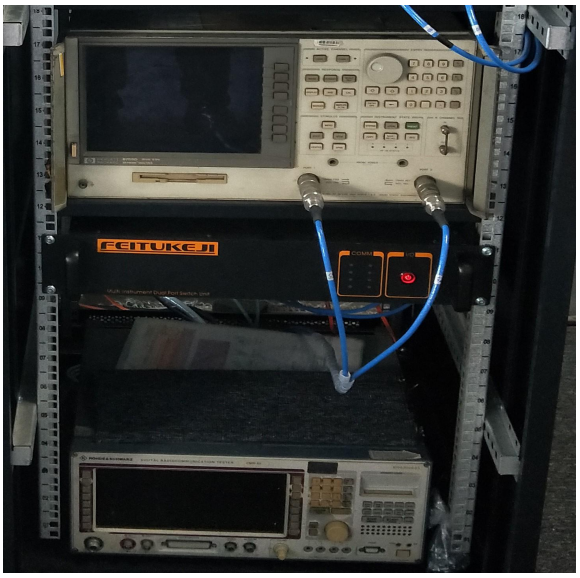
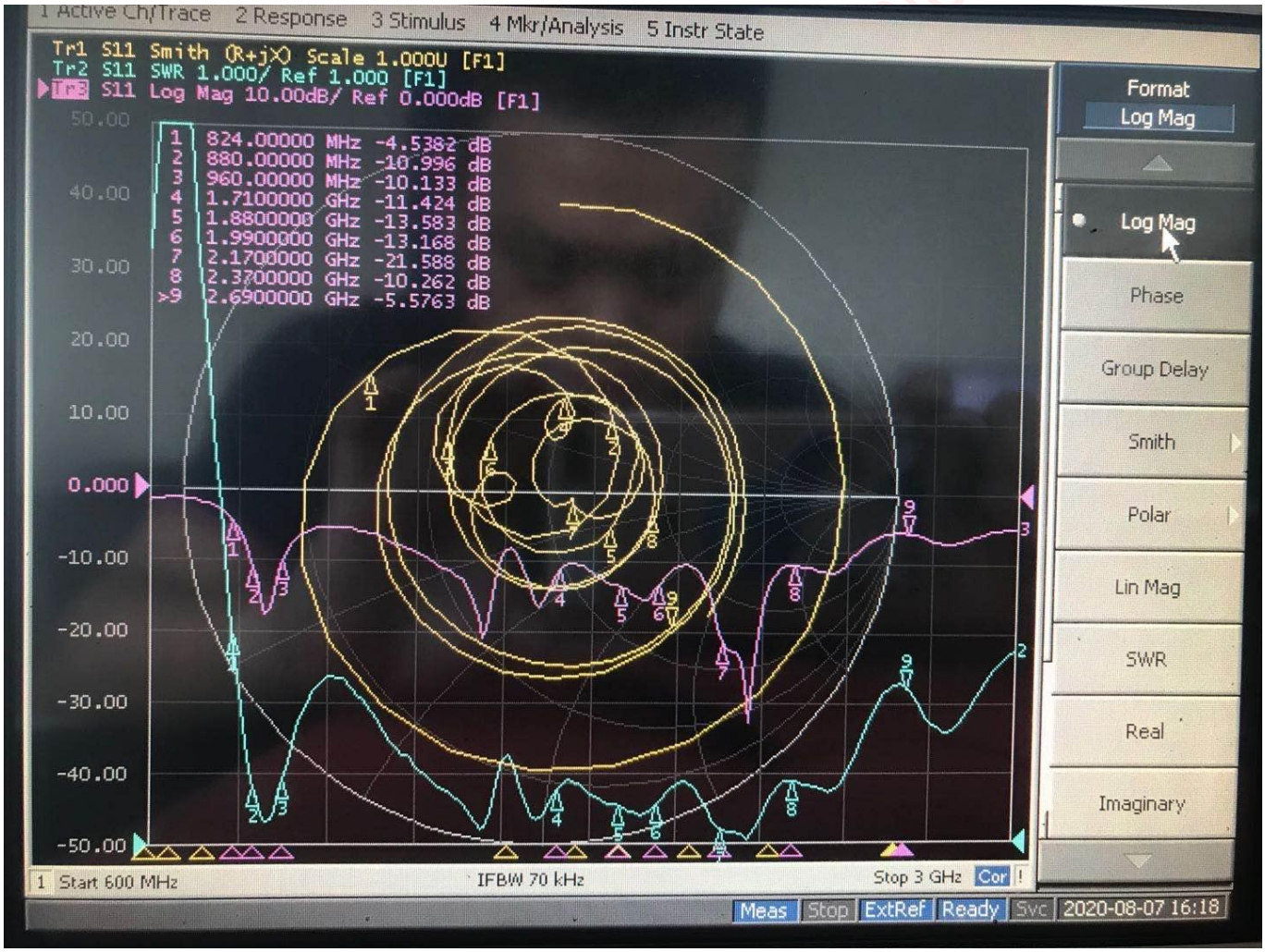



Figure.5

# 3. Performance Data

## 3.1 Passive data

VSWR（电压驻波比）/Return Loss（回波损耗）/Smith Chart（史密斯圆图）



## 3. 天线 OTA 测试数据

| Test Result | LTE1 TRP | | |
|---|---|---|---|
| | 18050 | 18300 | 18550 |
| Frequency (MHz) | 1925 | 1950 | 1975 |
| Txp Ave(dBm) | 18.59 | 19.78 | 19.48 |
| NHPRP(dBm) | NULL | NULL | NULL |
| MAX(dBm) | 21.08 | 21.47 | 21.72 |
| EIRP peak | 21.08 | 21.47 | 21.72 |
| Min(dBm) | 3.78 | 9.56 | 7.02 |
| Attenuation Horizo | 39.55 | 40.14 | 39.99 |
| Attenuation Vertic | 39.42 | 39.99 | 39.84 |

| Test Result | LTE1 TIS |
|---|---|
| | 550 |
| Frequency (MHz) | 2165 |
| Sens Ave(dBm) | -90.4 |
| NHPIS(dBm) | NULL |
| MAX(dBm) | -93.66 |
| EIS peak | -93.66 |
| Min(dBm) | -85.91 |
| Attenuation Horizo | 39.46 |
| Attenuation Vertic | 39.05 |

| Test Result | LTE3 TRP | | |
|---|---|---|---|
| | 19250 | 19575 | 19900 |
| Frequency (MHz) | 1715 | 1747.5 | 1780 |
| Txp Ave(dBm) | 17.41 | 18.78 | 19.96 |
| NHPRP(dBm) | NULL | NULL | NULL |
| MAX(dBm) | 21.83 | 22.88 | 22.83 |
| EIRP peak | 21.83 | 22.88 | 22.83 |
| Min(dBm) | 4.37 | 5.94 | 6.44 |
| Attenuation Horizo | 38.82 | 38.14 | 38.7 |
| Attenuation Vertic | 38.81 | 38.06 | 38.43 |

| Test Result | LTE3 TIS |
|---|---|
| | 1900 |
| Frequency (MHz) | 1875 |
| Sens Ave(dBm) | -88.74 |
| NHPIS(dBm) | NULL |
| MAX(dBm) | -91.63 |
| EIS peak | -91.63 |
| Min(dBm) | -77.53 |
| Attenuation Horizo | 37.14 |
| Attenuation Vertic | 36.85 |

| Test Result | LTE5 TRP | | |
|---|---|---|---|
| | 20450 | 20525 | 20600 |
| Frequency (MHz) | 829 | 836.5 | 844 |
| Txp Ave(dBm) | 17.15 | 17.35 | 18.35 |
| NHPRP(dBm) | NULL | NULL | NULL |
| MAX(dBm) | 20.55 | 20.96 | 21.08 |
| EIRP peak | 20.55 | 20.96 | 21.08 |
| Min(dBm) | 5.6 | 5.4 | 6.21 |
| Attenuation Horizo | 33.15 | 33.71 | 33.8 |
| Attenuation Vertic | 33.43 | 34.09 | 34.23 |

| Test Result | LTE5 TIS |
|---|---|
| | 2600 |
| Frequency (MHz) | 889 |
| Sens Ave(dBm) | -87.87 |
| NHPIS(dBm) | NULL |
| MAX(dBm) | -91.7 |
| EIS peak | -91.7 |
| Min(dBm) | -79.13 |
| Attenuation Horizo | 34.89 |
| Attenuation Vertic | 35.24 |

| Test Result | LTE8 TRP | | |
|---|---|---|---|
| | 21500 | 21625 | 21750 |
| Frequency (MHz) | 885 | 897.5 | 910 |
| Txp Ave(dBm) | 17.43 | 18.37 | 19.67 |
| NHPRP(dBm) | NULL | NULL | NULL |
| MAX(dBm) | 20.08 | 21.28 | 22.63 |
| EIRP peak | 20.08 | 21.28 | 22.63 |
| Min(dBm) | 5.82 | 6.67 | 7.79 |
| Attenuation Horizo | 33.86 | 34.18 | 34.23 |
| Attenuation Vertic | 34.21 | 34.41 | 34.21 |

| Test Result | LTE8 TIS |
|---|---|
| | 3750 |
| Frequency (MHz) | 955 |
| Sens Ave(dBm) | -88.56 |
| NHPIS(dBm) | NULL |
| MAX(dBm) | -92.37 |
| EIS peak | -92.37 |
| Min(dBm) | -78.16 |
| Attenuation Horizo | 32.43 |
| Attenuation Vertic | 32.31 |

| Test Result | LTE38 TRP | | |
|---|---|---|---|
| | 37850 | 38000 | 38150 |
| Frequency (MHz) | 2580 | 2595 | 2610 |
| Txp Ave(dBm) | 19.48 | 19.1 | 18.27 |
| NHPRP(dBm) | NULL | NULL | NULL |
| MAX(dBm) | 25.44 | 24.66 | 23.65 |
| EIRP peak | 25.44 | 24.66 | 23.65 |
| Min(dBm) | 12.52 | 9.64 | 6.38 |
| Attenuation Horizo | 41.7 | 41.67 | 41.87 |
| Attenuation Vertic | 41.7 | 41.67 | 41.87 |

| Test Result | LTE38 TIS |
|---|---|
| | 38150 |
| Frequency (MHz) | 2610 |
| Sens Ave(dBm) | -90.21 |
| NHPIS(dBm) | NULL |
| MAX(dBm) | -95.51 |
| EIS peak | -95.51 |
| Min(dBm) | -78.27 |
| Attenuation Horizo | 42.46 |
| Attenuation Vertic | 42.46 |

| Test Result | LTE39 TRP | | |
|---|---|---|---|
| | 38350 | 38450 | 38550 |
| Frequency (MHz) | 1890 | 1900 | 1910 |
| Txp Ave(dBm) | 19.67 | 19.34 | 19.01 |
| NHPRP(dBm) | NULL | NULL | NULL |
| MAX(dBm) | 25.73 | 25.4 | 25.02 |
| EIRP peak | 25.73 | 25.4 | 25.02 |
| Min(dBm) | 12.09 | 11.67 | 11.53 |
| Attenuation Horizo | 39.42 | 39.28 | 39.27 |
| Attenuation Vertic | 39.07 | 38.97 | 39.05 |

| Test Result | LTE39 TIS |
|---|---|
| | 38550 |
| Frequency (MHz) | 1910 |
| Sens Ave(dBm) | -93.31 |
| NHPIS(dBm) | NULL |
| MAX(dBm) | -99.57 |
| EIS peak | -99.57 |
| Min(dBm) | -85.84 |
| Attenuation Horizo | 39.4 |
| Attenuation Vertic | 39.18 |

| Test Result | LTE40 TRP | | |
|---|---|---|---|
| | 38750 | 39150 | 39550 |
| Frequency (MHz) | 2310 | 2350 | 2390 |
| Txp Ave(dBm) | 20.83 | 20.33 | 20.99 |
| NHPRP(dBm) | NULL | NULL | NULL |
| MAX(dBm) | 26.14 | 25.86 | 26.78 |
| EIRP peak | 26.14 | 25.86 | 26.78 |
| Min(dBm) | 8.08 | 6.69 | 13 |
| Attenuation Horizo | 44.15 | 44.2 | 45.16 |
| Attenuation Vertic | 43.99 | 43.93 | 45.1 |

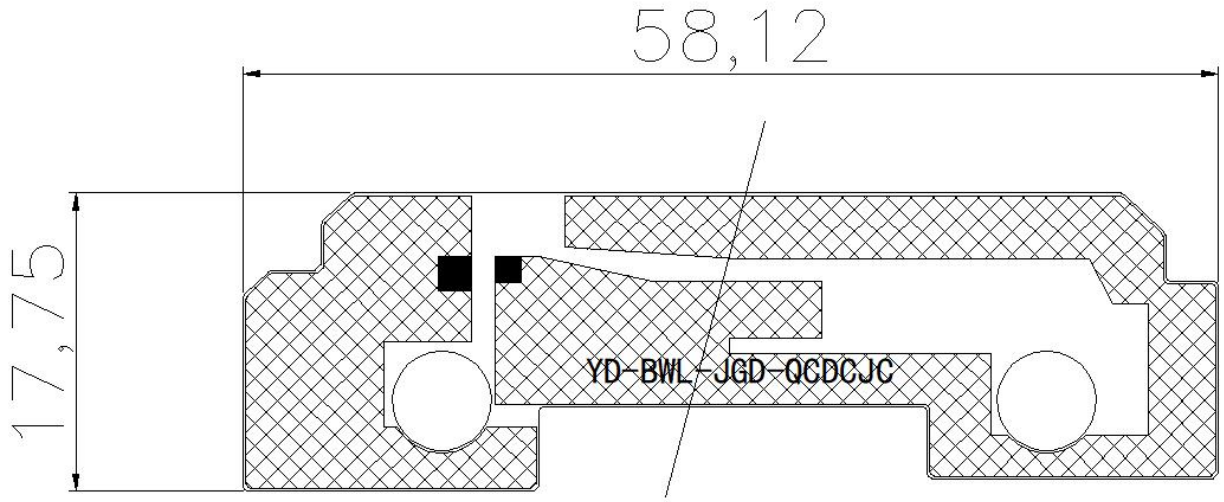
| Test Result | LTE40 TIS |
|---|---|
| | 39550 |
| Frequency (MHz) | 2390 |
| Sens Ave(dBm) | -90.7 |
| NHPIS(dBm) | NULL |
| MAX(dBm) | -96.47 |
| EIS peak | -96.47 |
| Min(dBm) | -82.68 |
| Attenuation Horizo | 43.32 |
| Attenuation Vertic | 43.26 |

| Test Result | LTE41 TRP |
|---|---|
| | 40620 |
| Frequency (MHz) | 2593 |
| Txp Ave(dBm) | 18.41 |
| NHPRP(dBm) | NULL |
| MAX(dBm) | 24.02 |
| EIRP peak | 24.02 |
| Min(dBm) | 9.07 |
| Attenuation Horizo | 41.32 |
| Attenuation Vertic | 40.7 |

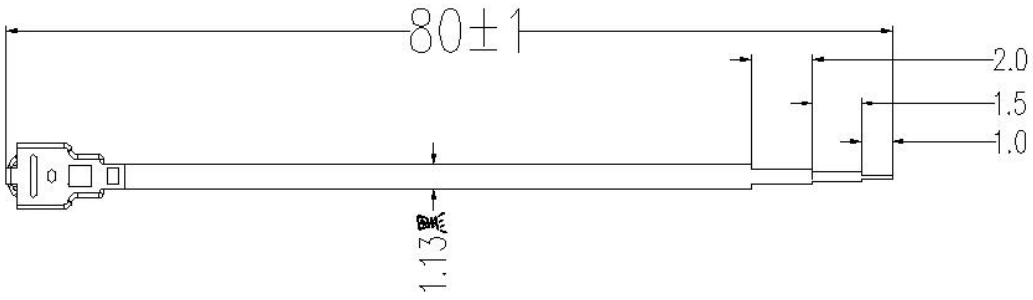
| Test Result | LTE41 TIS |
|---|---|
| | 40620 |
| Frequency (MHz) | 2593 |
| Sens Ave(dBm) | -89.1 |
| NHPIS(dBm) | NULL |
| MAX(dBm) | -94.73 |
| EIS peak | -94.73 |
| Min(dBm) | -79.65 |
| Attenuation Horizo | 41.32 |
| Attenuation Vertic | 40.7 |

# 4.Mechanical Specification

## 4.1 Assembly Drawing




IPEX



## 5. RF113

1. 适用范围
本规格书制定了电线的结构和电气特性

1. Scope
This specification covers the construction and the electrical properties of wire.

同轴线
AWG 32

Coaxial Wire
AWG 32

2. 结构/Construction

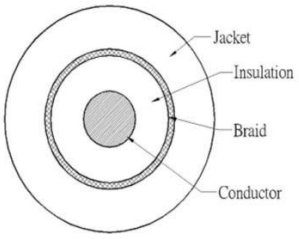
单位/Unit: mm

| 项目/Item | | 单位/Unit | 详细资料/Details |
|---|---|---|---|
| Conductor 导 体 | 材料/Material | - | 绞合镀银铜丝 Silver-coated copper wire |
| | 构成/Composition | (No./mm) | 7/0.08 |
| | 外径/OD. | mm | 0.24 |
| | 绞向/Orientation | - | S |
| Insulation 绝缘层 | 材料/Material | - | FEP(进口料) |
| | 绝缘颜色/Insulation color | - | 本色/Natural |
| | 标称绝缘厚度/ | mm | 0.22 |
| | 绝缘线径/OD. | mm | 0.69 |
| Braid Shield 编织 | 材料/Material | - | 镀锡铜丝 Tinned copper wire |
| | 构成/Composition | (No./mm) | 16/4/0.05 |
| | 编织密度/Coverage | (%) | >=90 |
| Jacket 外 被 | 材料/Material | - | FEP |
| | 标称绝缘厚度/ Nom. Thickness | mm | 0.12 |
| | 外径/OD. | mm | 1.13±0.10 |

3. Electrical Properties (at 20℃) /电气特性(20℃时)

| 项目/Item | 单位/Unit | 详细资料/Details |
|---|---|---|
| 导体电阻/Conductor Resistance | Ω/km | 571(Max.) |
| 绝缘电阻/Insulation Resistance | MΩ・km | 100(Min.) |
| 耐压强度(AC)/Dielectric Strength(AC) | V/ 1 Min | 500 |
| 特性阻抗/Impedance | Ω | 50±3 |
| 耐温等级/ Temperature | ℃ | 200 |
| 额定电压/rated voltage | V | 30 |

4. 电线截面图示如下:



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We statement that All measurements were performed radiated and therefore additional antenna gain documentation is not required.