

样品承认书

Parts Approval Sheet

| | | | |
|---------------|------------|-------------|----------------------|
| 生产供应商: | NQI | 物料名称: | Dongle ANT |
| Supplier | | Parts Name | |
| 适用项目: | G11 | NQI 料号: | NQI-G11-D-FB-V4 |
| Type/Spec | | Parts No | |
| 品 牌: | NQI | 客户料号: | ET.GZX11DBT14 |
| Brand | | Quantity | |
| 送样日期: | 2023/12/12 | 文件编号: | NQI-RD-SPEC-20231214 |
| Send out Date | | Document No | |
| 承认日期: | | 样品版本: | V4 |
| Approve Date | | Version | |

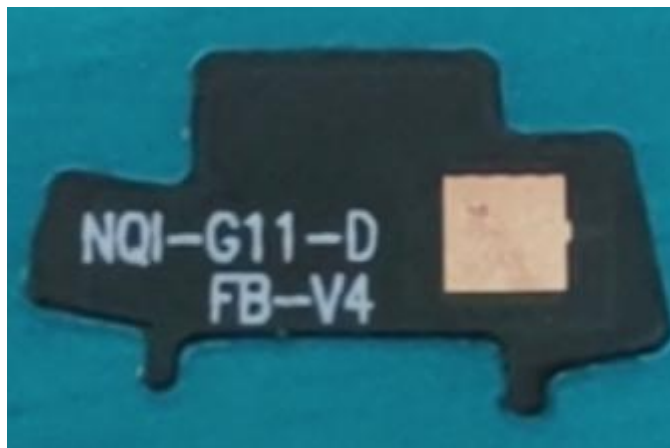
| Supplier | | Customer | |
|-------------|-------------|------------------|--------------|
| Approved By | Prepared By | Engineering Dept | Quality Dept |
| | | | |

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(Resume)

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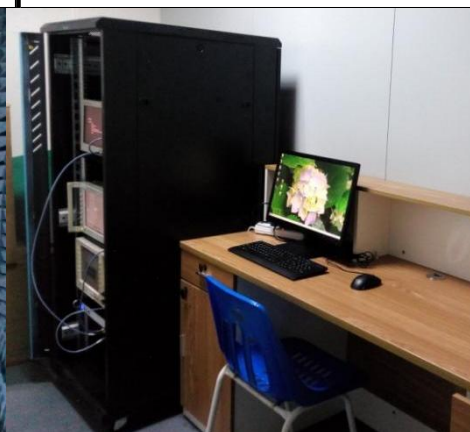
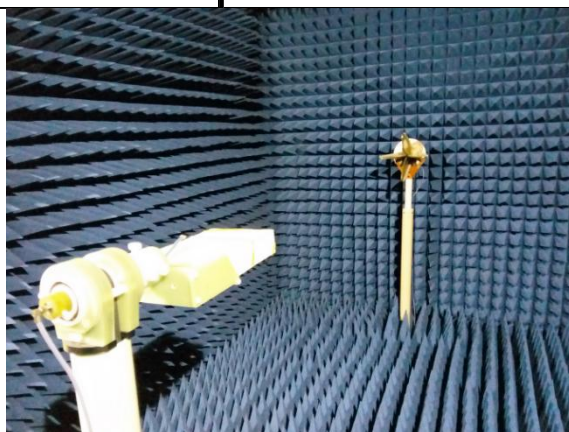


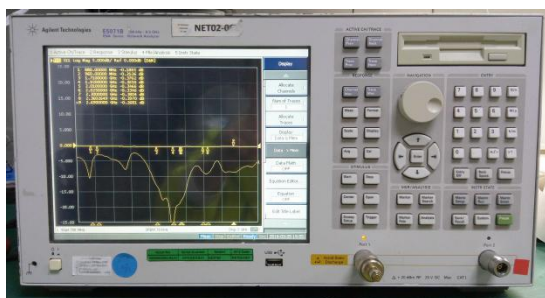
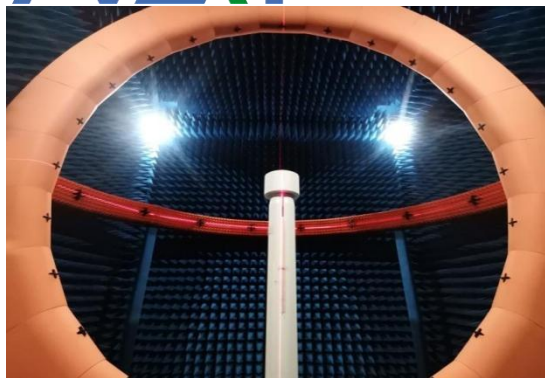
| 电气参数说明 (Electrical Specifications) | |
|---------------------------------------|----------------|
| 频率范围 (Frequency range) | (2400-2500)MHz |
| 特性阻抗 (impedance) | 50 ohm |
| 电压驻波比 (VSWR) | ≤ 2.75 |
| 峰值增益 (Gain) | 0.79dBi |
| 极化形式 (Polarization) | 水平 |
| 辐射方向 (Radiation direction) | 全向 |
| 连接方式说明 (Connection Mode Description) | |
| 连接器 (connector) | / |
| 线缆规格 (Cable specifications) | / |
| 工作/储存温度 (Working/Storage temperature) | |
| 工作温度 (Working temperature) | -30℃ ~ 65℃ |
| 储存温度 (Storage temperature) | -30℃ ~ 75℃ |

二. 测试设备及项目 (Test equipment and items) :

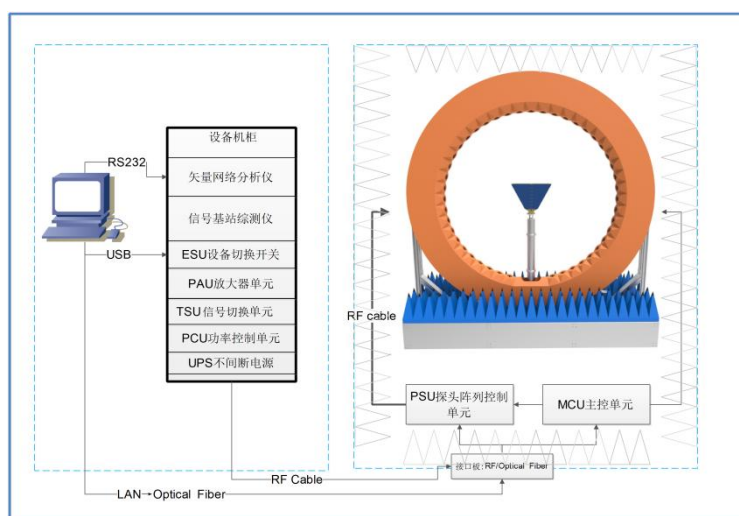


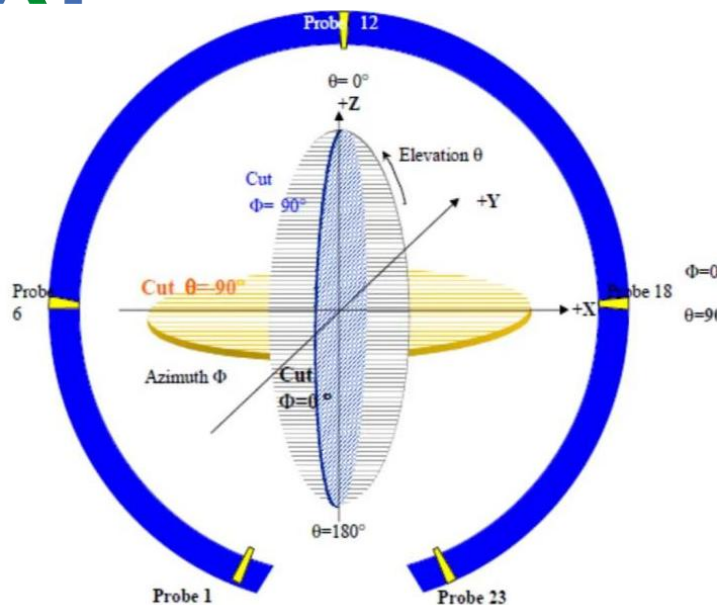
| 类别 (Class) | 测试项目 (Test item) | 设备 (Equipment) |
|----------------------------|--|--|
| 1. S parameter | 1. 回波损耗(RL) 2. 驻波比 (VSWR) 3. 史密斯原图(Smith chart) | 网分 (VNA) : Agilent E5071B R&S ZVB8 Protek A333 |
| 2. 耦合测试 (Coupling testing) | 1. 发射功率 (MAX Power) 2. 接收灵敏度 (MIN Sens) | 1. 2G/3G Tester: Agilent 8960 2. The coupling box: TESCO TC-5060A 3. 3D Chamber: ETS 3D Chamber (5x3x3) |
| 3. 3D 无源测试 (Passive Test) | 1. 效率 (Effeciency) 2. 增益 (Gain) 3. 辐射方向图 (Radiation pattern) | 1. 3D Chamber: TEM24 3D Chamber (5x5x5) ETS 3D Chamber (5x3x3) 2. 网分 (VNA) : Agilent E5071B R&S ZVB8 |
| 4. 3D 有源测试 (Active Test) | 1. 3D 功率 (TRP) 2. 3D 灵敏度 (TIS) 3. 吞吐率 (Throughput rate) | 1. 3D Chamber: TEM24 3D Chamber (5x5x5) ETS 3D Chamber (5x3x3) 2. 2G/3G Tester: Agilent 8960 3. 4G Tester: MT8820C/CMW500 4. WIFI/BT/NB-iot Tester: CMW500 5. 5G Tester: SP9500-CTS 6. Head: HEAD-P10 (FACE-P10) |



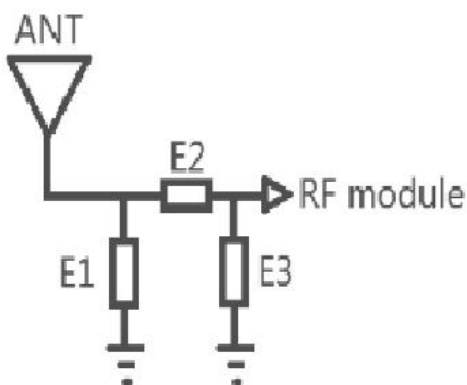


三. 暗室连接及坐标 (Chamber connection and coordinates) :





四. 天线匹配网络 (Antenna matching network) :



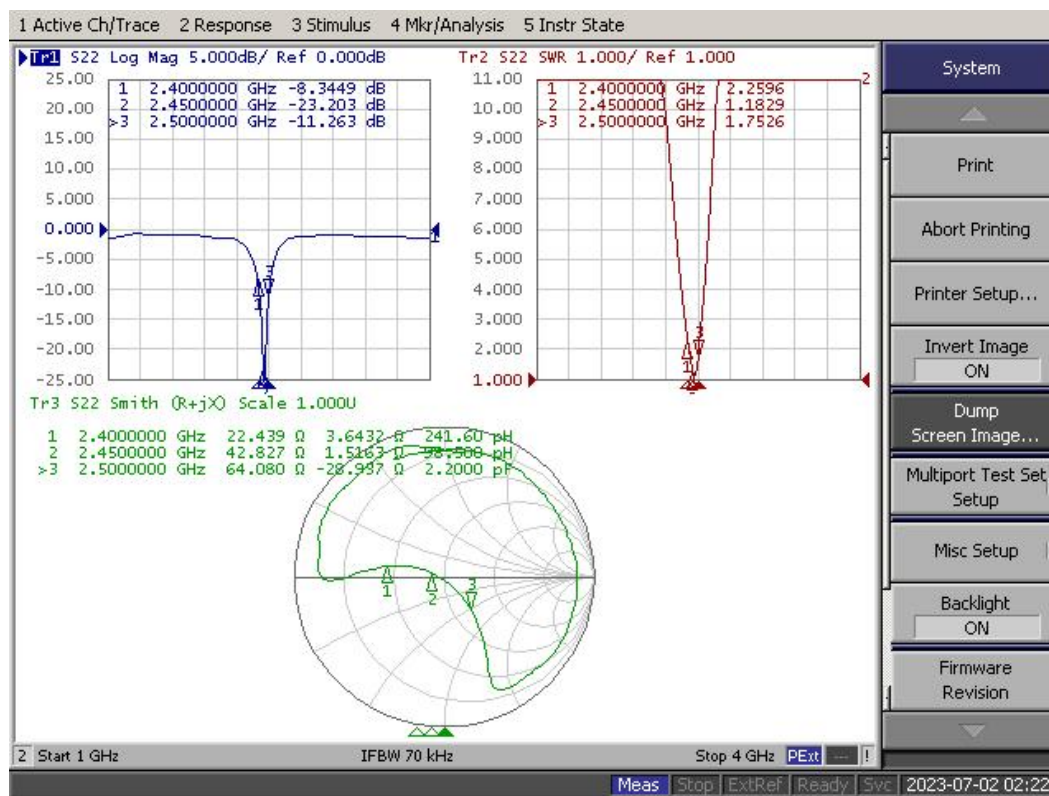
| Element | Value |
|----------|-------|
| E1(0201) | 1.5PF |
| E2(0201) | 0 Ω |
| E3(0201) | NF |

五. 天线电性能测试数据 (Antenna electrical performance test data) :

5. 1. 天线无源参数 (Antenna passive parameters)



5.1.1. 天线回波损耗/驻波比/史密斯圆图 (RL/VSWR/Smith Chart)



5.1.2. 天线效率/增益 (Effeciency/Gain)

| Frequency (MHz) | Efficiency (%) | Gain (dBi) | Frequency (MHz) | Efficiency (%) | Gain (dBi) |
|-----------------|----------------|------------|-----------------|----------------|------------|
| 2400 | 17.58 | -1.89 | 2450 | 31.62 | -0.6 |
| 2410 | 19.28 | -1.67 | 2460 | 31.48 | -0.58 |
| 2420 | 22.91 | -0.99 | 2470 | 33.65 | 0.06 |
| 2430 | 24.49 | -0.97 | 2480 | 35.97 | 0.79 |
| 2440 | 29.44 | -0.47 | | | |

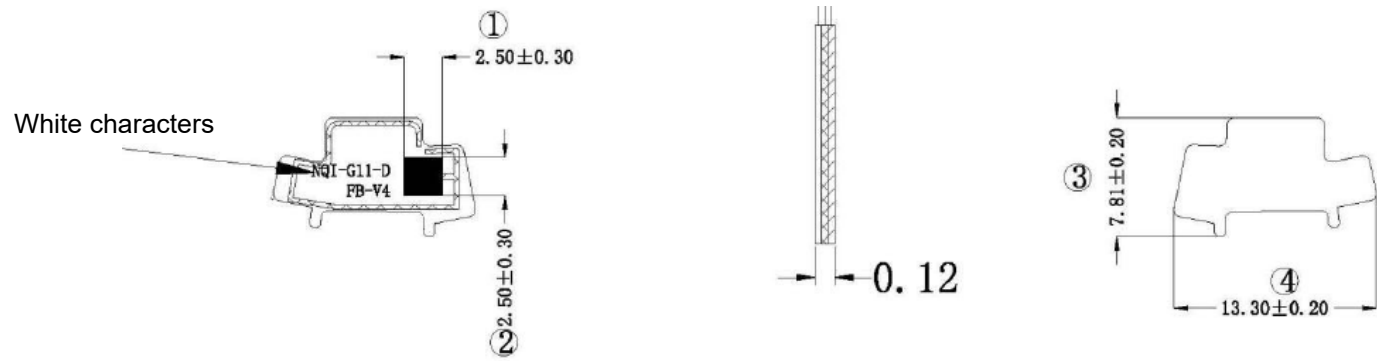
5.2 天线有源参数 (Antenna Active parameter)

5.2.1 TRP/TIS

| NQI ANT TRP&TIS parameter Summary of G11 | | | | |
|--|-----------|-------------------|--------|--------|
| 自由空间 | Test | Bluetooth TRP&TIS | | |
| | Result | 0 | 39 | 78 |
| | TRP (dBm) | 3.41 | 6.45 | 5.6 |
| | TIS (dBm) | -87.07 | -90.99 | -90.09 |



六. 天线结构图纸 (Antenna structure drawing) :





七. 天线包装图纸 (Antenna package drawing) :

