



Antenna Approval Sheet

For

TS5000 Project

| | | | |
|----------|-----------------------------|---------|----------|
| Customer | 富士伟业 | Project | TS5000 |
| Band | WIFI2.4GHZ/BT/433MHZ/315MHZ | | |
| ZC PN | FC012-CA-93/FC012-XB-16 | | |
| Version | R:A | Data | 2023-8-8 |

| | | | |
|--------------|--|----|--|
| RF | | ME | |
| Checked By | | | |
| Confirmed By | | | |
| Cust Confirm | | | |



1. Summary of the DUT

TS5000 Picture



Antenna Picture



2. Electrical Specification:

| | |
|------------------|--|
| Antenna types | Built-in WIFI/BT Antenna/433MHZ/315MHZ Spring coil Antenna |
| Frequency | 2400-2500 MHz, 433MHZ, 315MHZ |
| Impedance | 50 Ω |
| VSWR | < 2.5 |
| Gain | 2.4GHZ 1.5 dbi, 433MHZ 0.8 dbi, 315MHZ 0.2dbi |
| Efficiency | >35 % |
| Antenna Material | FPCB+同轴线/Spring coil |
| Connector Type | 1.13 MHF-1-Plug/Soldering |



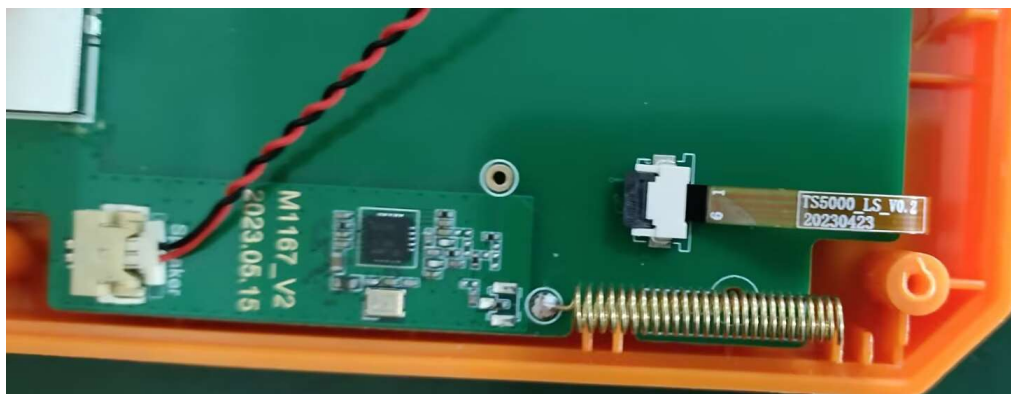
3. Test Condition

| 3.1 | 测试项目 | 测试设备和型号 | 备注 |
|--------|---|---|----|
| 1.有源测试 | 1. TRP 2. TIS | 1. 3D microwave darkroom (Satimo SG24) 2. Comprehensive test instrument (CMW500) 3. Agilent 8960 E5515C | |
| 2.无源测试 | 1. Antenna Gain 2. S.W.R 3. Return Loss 4. Radiation Pattern | 1. Network analyzer (R&S ZVL6) 2. Network analyzer (HP 8753D) | |



3.2 Matching Circuit The matching circuit was Default

3.3 Antenna installation diagram:





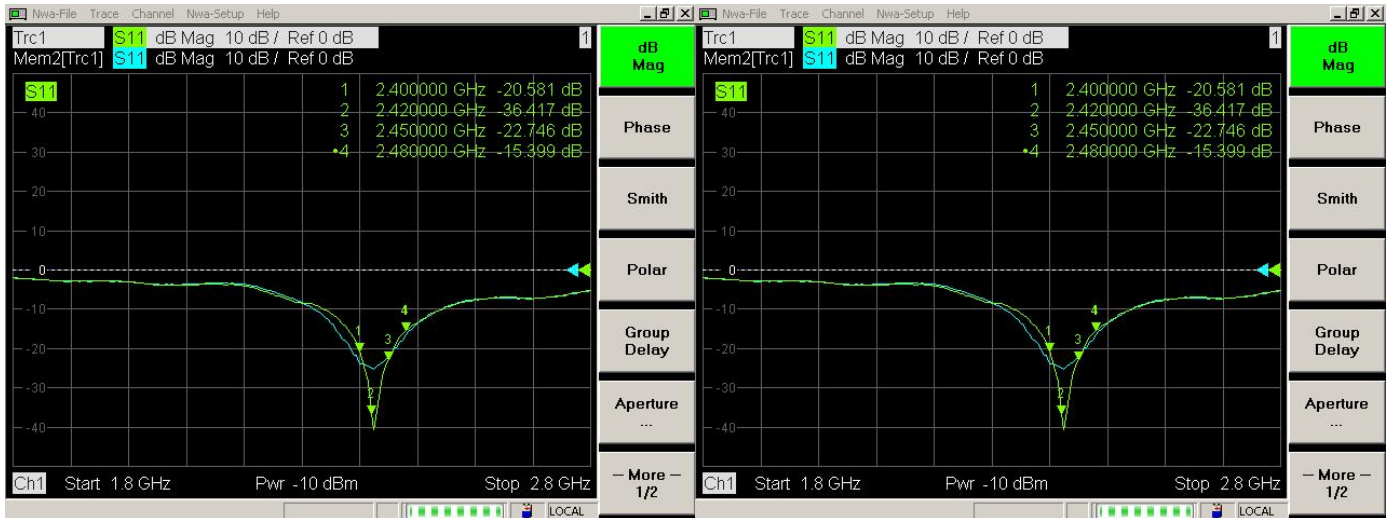
4.1 RF Performance –WIFI Antenna

4.1.1 Active test data

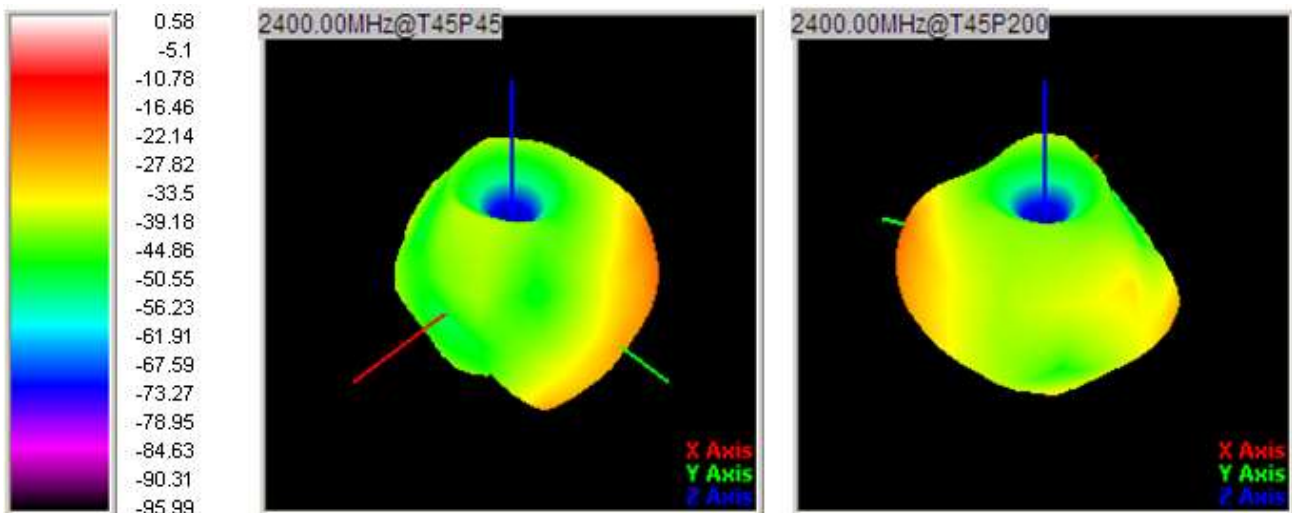
| Item | Standard | Band | Channel | Frequency | TRP | TIS |
|------|-----------|--------------|---------|-----------|--------------|---------------|
| 1 | WIFI (AP) | WIFI_B (11M) | 1 | 2412 | 14.97 | -81.12 |
| 2 | WIFI (AP) | WIFI_B (11M) | 6 | 2437 | 15.4 | -82.59 |
| 3 | WIFI (AP) | WIFI_B (11M) | 11 | 2462 | 15.35 | -81.61 |

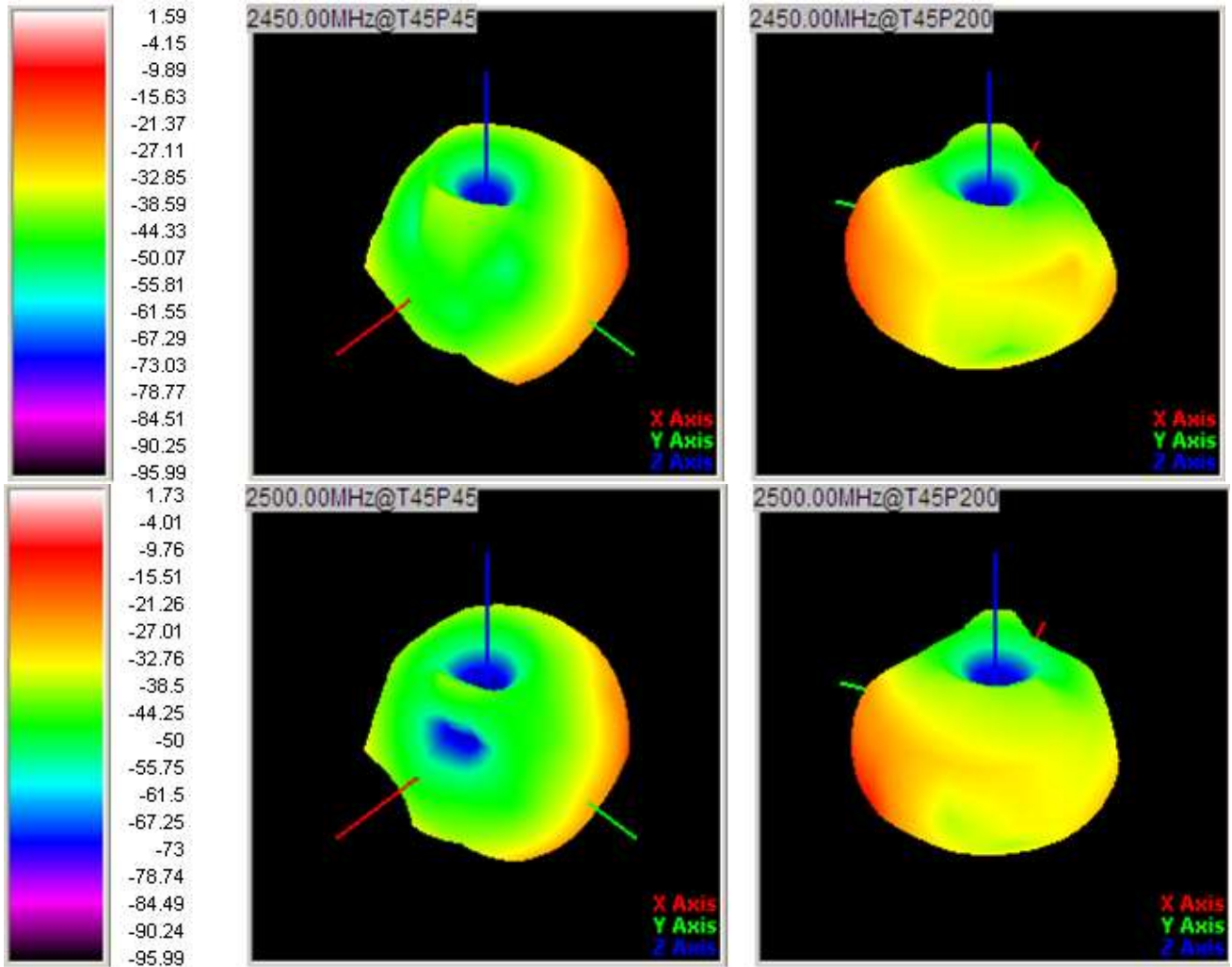
4.1.2 Passive parameters

| Freq. (MHz) | 2400 | 2410 | 2420 | 2430 | 2440 | 2450 | 2460 | 2470 | 2480 | 2490 | 2500 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Gain (dBi) | 0.58 | 0.66 | 1.1 | 1.02 | 1.17 | 1.59 | 0.72 | 0.08 | 0.72 | 1.19 | 1.73 |



4.1.3 Antenna 3D Radiation Pattern (Unit:dbi)

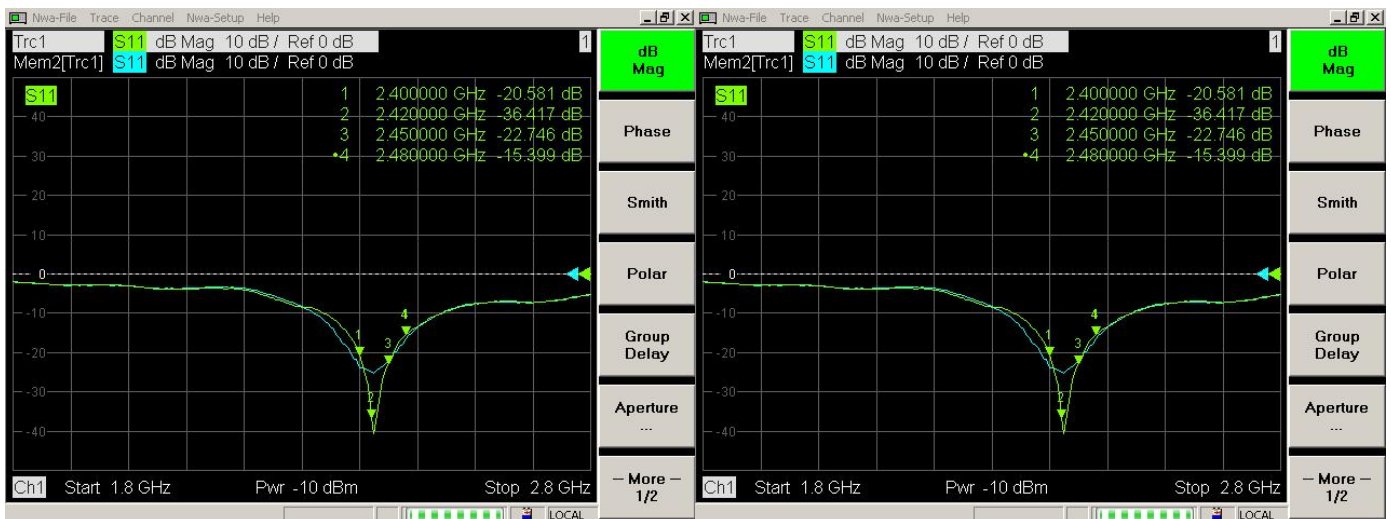




4.2 RF Performance –BT Antenna

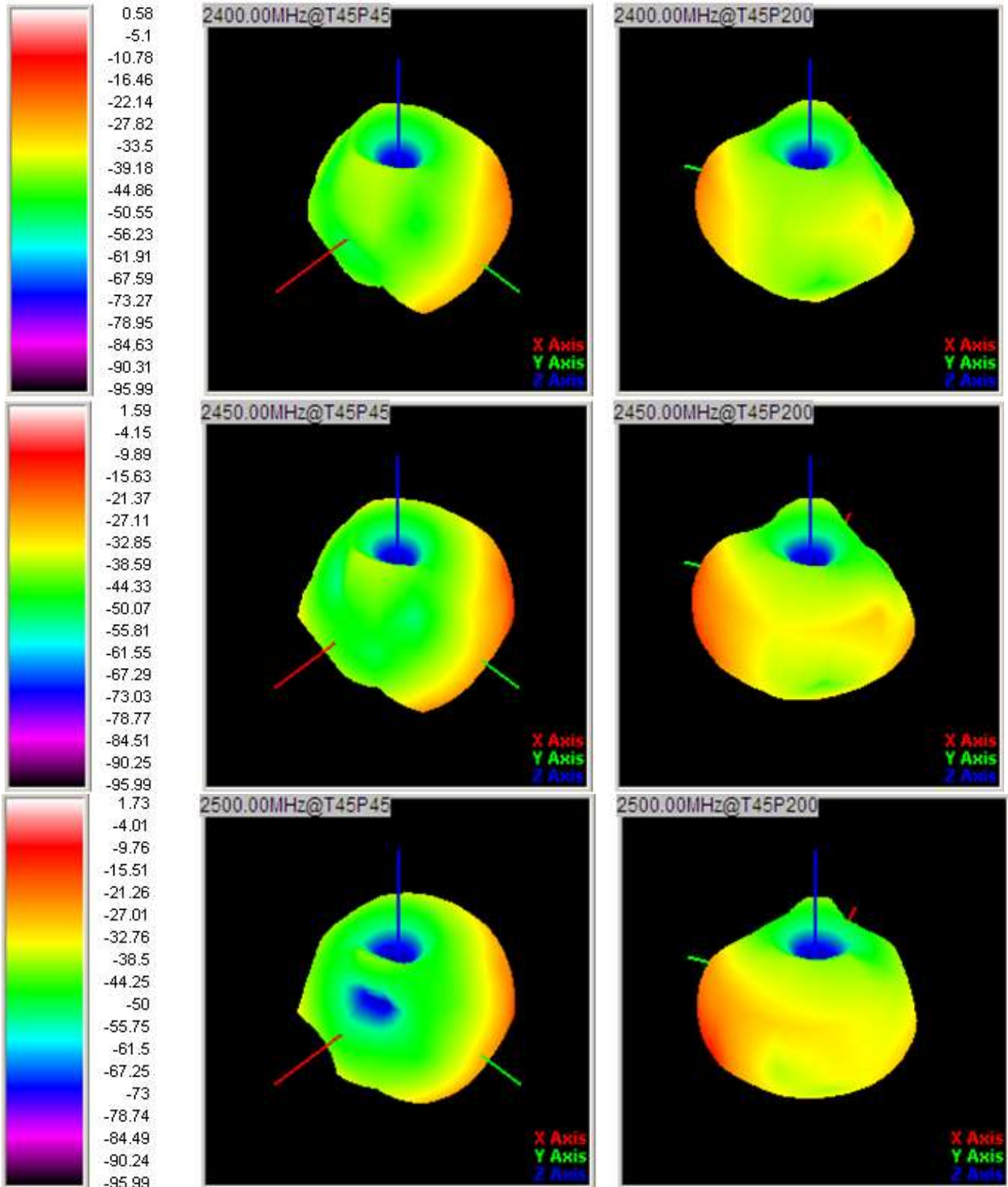
4.2.1 Passive parameters

| Freq. (MHz) | 2400 | 2410 | 2420 | 2430 | 2440 | 2450 | 2460 | 2470 | 2480 | 2490 | 2500 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Gain (dBi) | 0.58 | 0.66 | 1.1 | 1.02 | 1.17 | 1.59 | 0.72 | 0.08 | 0.72 | 1.19 | 1.73 |





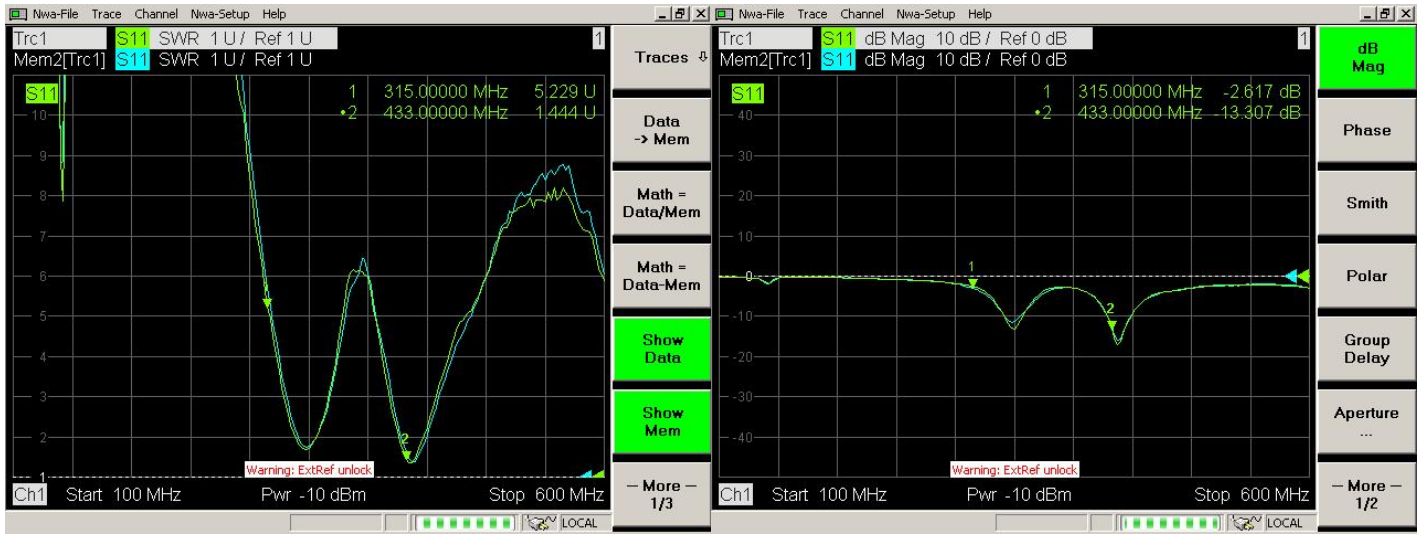
4.2.2 Antenna 3D Radiation Pattern (Unit:dbi)



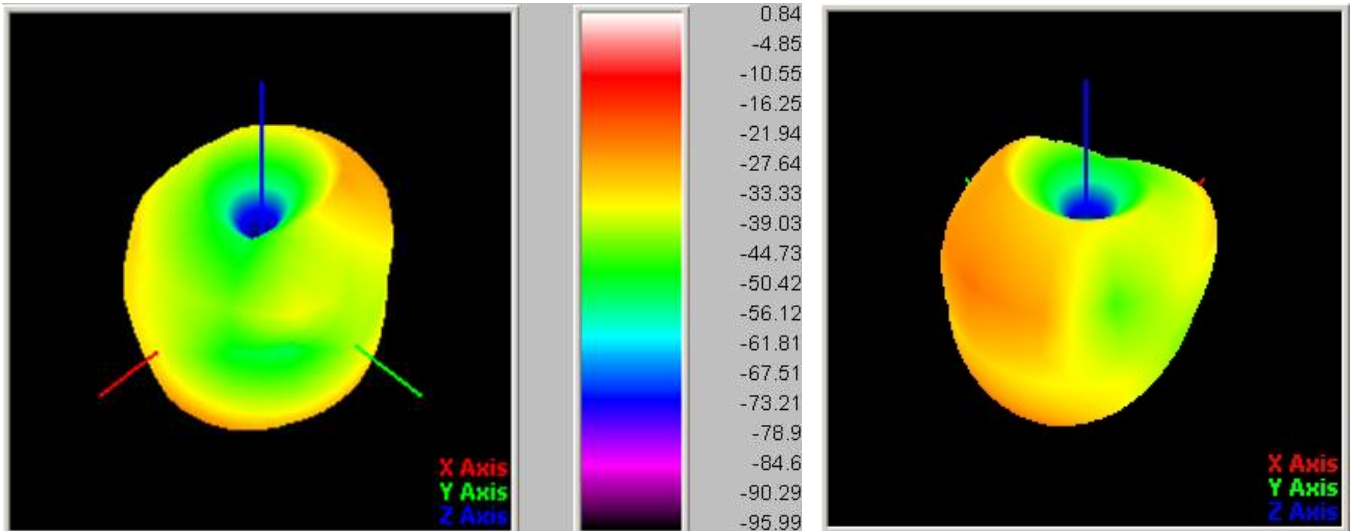
4.3 RF Performance-433/315MHZ Antenna

4.3.1 Passive parameters

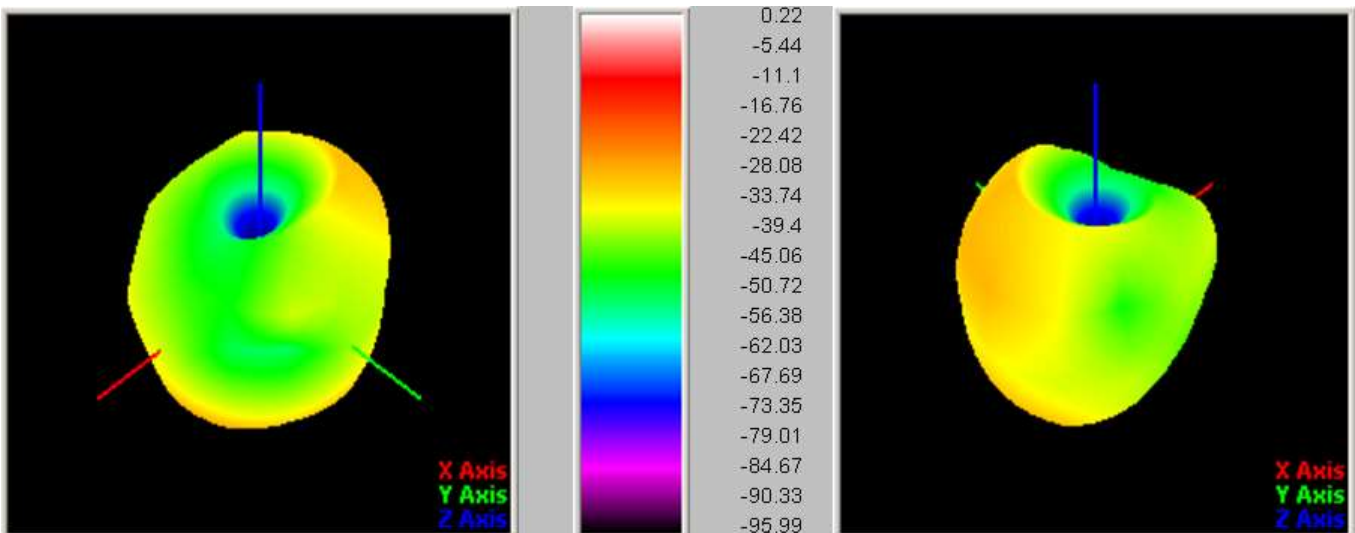
| Frequency (MHz) | Return Loss (dB) | VSWR | Gain (dBi) |
|-----------------|------------------|------|------------|
| 433 | -13.3 | 1.44 | 0.84 |
| 315 | -2.61 | 5.22 | 0.22 |



4.3.2 Radiation Pattern (Unit:dbi)



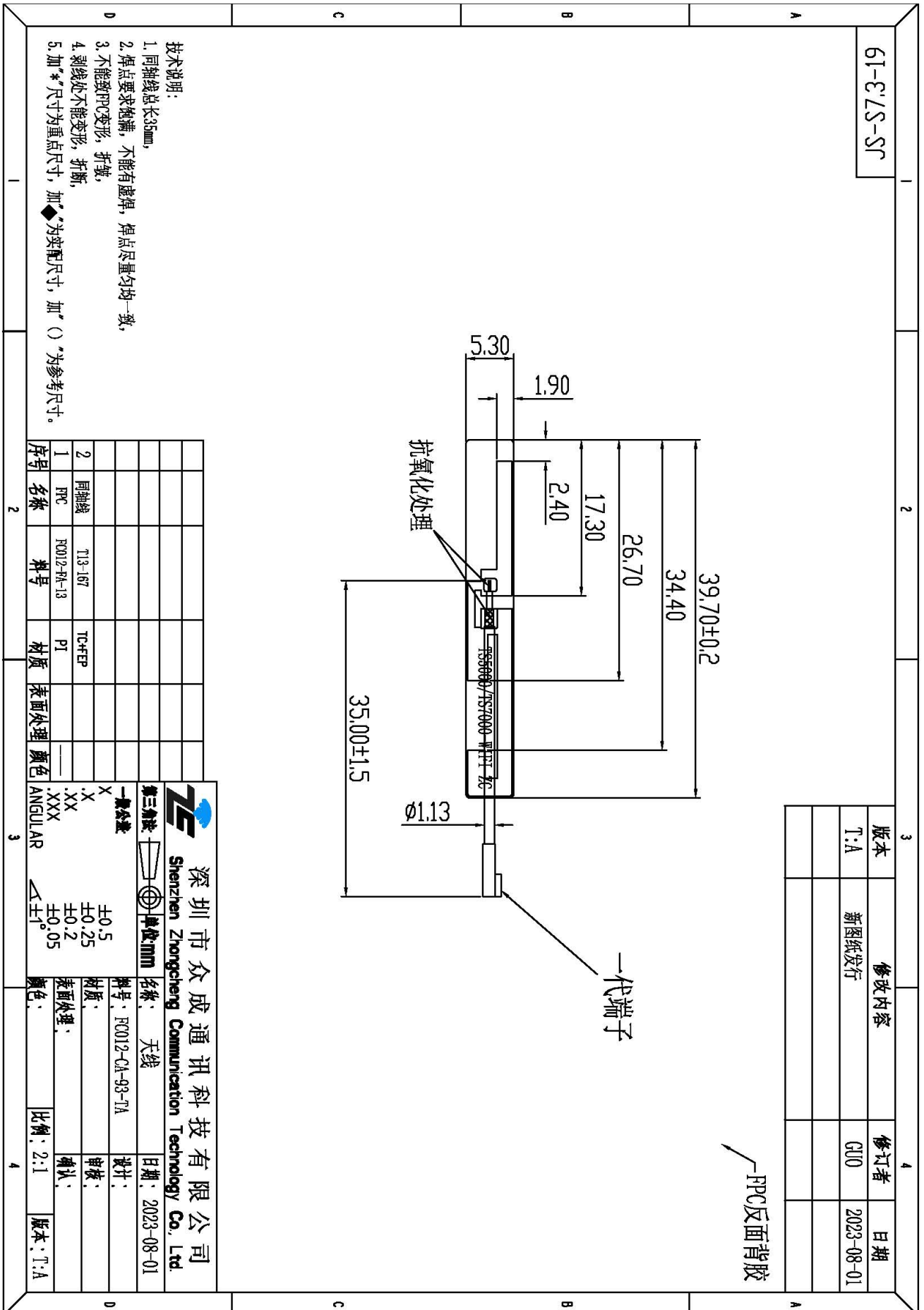
Passive -Freq443.00MHZ



Passive -Freq315.00MHZ

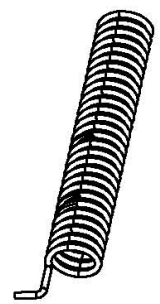
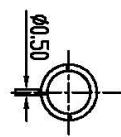
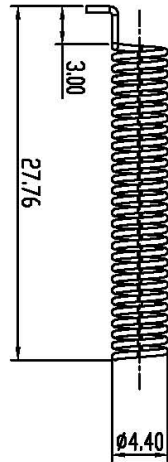


5. ME Drawing for the antenna





| 3 | 4 | 4 |
|------------|-------|-----|
| 版本 | 修改内容 | 修订者 |
| T:A | 新图纸发行 | GUO |
| | | |
| | | |
| 日期 | | |
| 2023-06-10 | | |



- 技术说明:
- 1.一段螺距, 每段螺距要等距,
 - 2.外径要一致, 不能变形, 不能有脏污、色斑、氧化,
 - 3.加"*"尺寸为重点尺寸, 加"◆"为实配尺寸, 加"()"为参考尺寸,
 - 4.未注公差按一般公差, 未注圆角R0.2,

| | | | |
|--|---|--|---|
| | | 深圳市众成通讯科技有限公司 Shenzhen Zhongcheng Communication Technology Co., Ltd. | |
| 第三阶段 一般公差 X .X .XX .XXX ANGULAR | 单位:mm ±0.5 ±0.25 ±0.10 ±0.05 ±1° | 名称: 弹簧线圈 料号: FC012-XB-16-7A 材质: 镀锌钢丝 表面处理: 颜色: | 日期: 2023-08-01 设计: 审核: 确认: 比例: 2:1 版本: T:A |