



# 承认书

厂 商： 深圳市承拓电子有限公司

原厂名称： FPC-2.4/5.8G 天线

原厂料号： 01010E04001

原厂规格： 2.4/5.8G- FPC0015-1.37YX 黑-C13-150

| 文档编号         | 制<br>作 | 品质 | 工程 | 复核 | 签章 |
|--------------|--------|----|----|----|----|
| 20230110-001 |        |    |    |    |    |
| 日 期          |        |    |    |    |    |

客 户： 麦思美

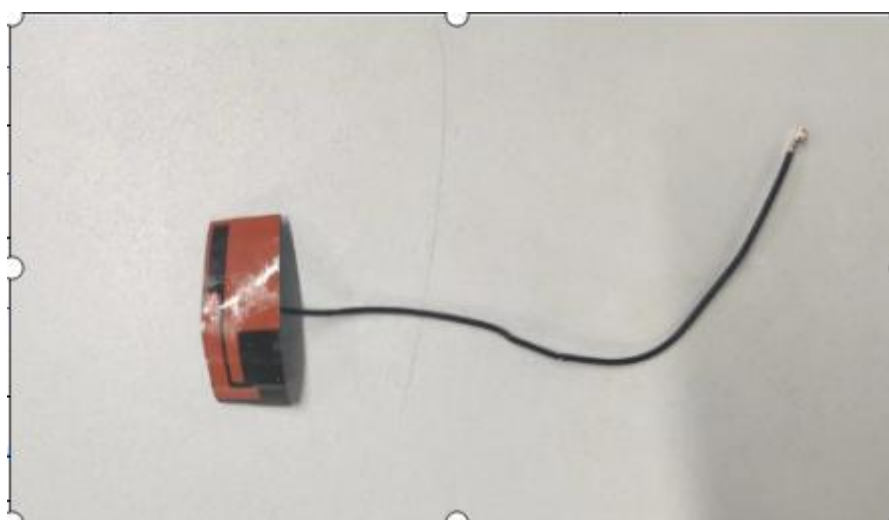
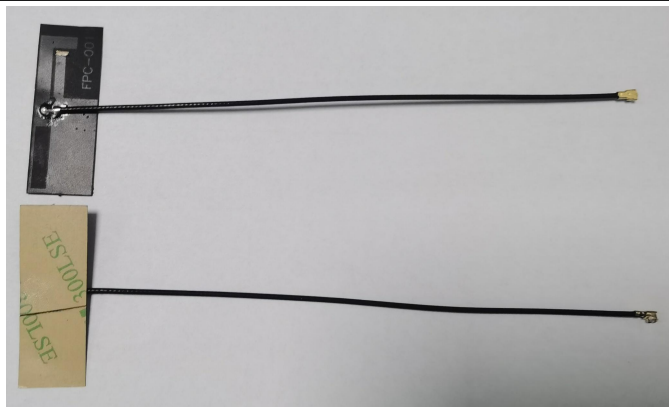
客户名称： 深圳市麦思美汽车电子有限公司

客户料号： 2-WX01-0150-01-YX-0

客户规格： WIFI/BT 天线

| 文档编号 | 承认人 | 日期 | 签章 |
|------|-----|----|----|
|      |     |    |    |

产品参  
考图片



注：承认书一式三份，供应商存档一份，客户存档二份。



深圳市承拓电子有限公司

## 产品规格书

### PRODUCT SPECIFICATION

Customer: shenzhen Chengtuo Electronic Co.,LTD

Customer's part number: 01010E04001

Product description: 2.4/5.8G ANTENNA(Paste type)

Uni Link's part number: 2.4/5.8G- FPC0015-1.37YX 黑-C13-150

Issue Date: 2023-01-10

Note: 2400-2500/5150-5850

| Customer Use         |  | Customer's authorized signature | Remarks |
|----------------------|--|---------------------------------|---------|
| Full approved        |  |                                 |         |
| Conditional approved |  |                                 |         |
| Rejected             |  |                                 |         |

承拓电子

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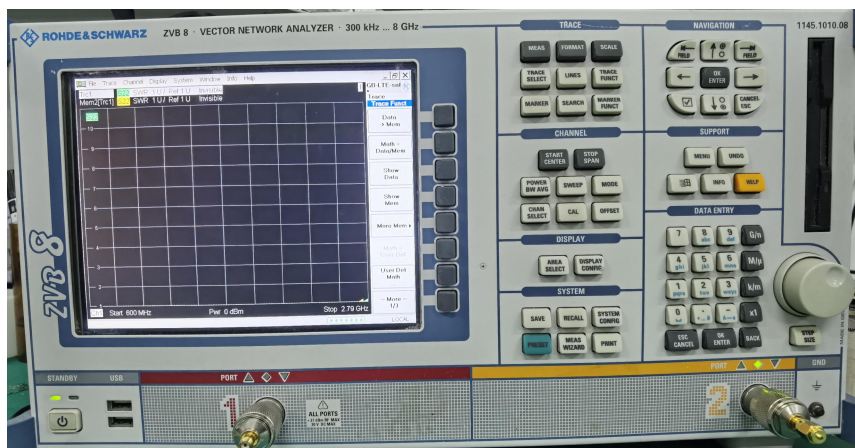
一、产品技术指标 (PRODUCT TECHNICAL SPECIFICATION)

| 电性能指标 Electrical Specifications |                     |
|---------------------------------|---------------------|
| 频率范围 Frequency Range (MHz)      | 2400-2500/5150-5850 |
| 机械指标 Mechanical Specifications  |                     |
| 天线长度 Antenna Length (mm)        | 42.3*15.3±0.5mm     |
| 电缆长度 Cable (mm)                 | 150±5mm             |
| 连接器型号 Connect Type              | IPEX                |
| 固定方式 Mounting                   | 粘贴式 Paste type      |
| 线材颜色 Color of Cable             | 黑色 Black            |
| 工作温度 (Operating Temperature)    | -30℃~+70℃           |
| 工作湿度 (%)                        | 0%-95%              |
| 贮藏温度 (Storing Temperature)      | -35℃~+75℃           |
| 贮藏湿度 (%)                        | 0%-95%              |

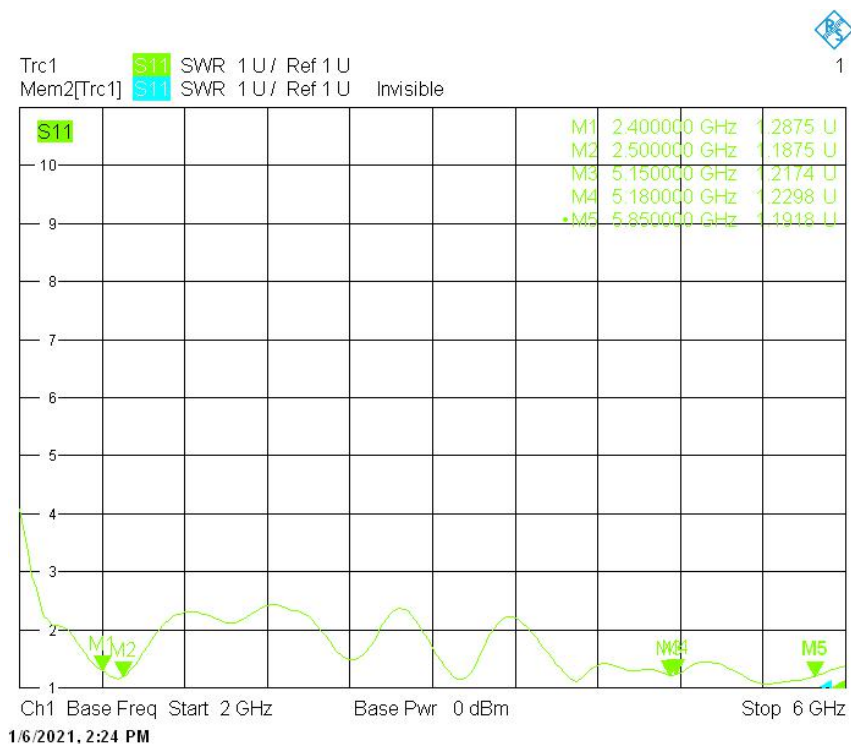
二、测试数据(test data):

1.驻波测试(Standing wave test):

测试仪器(test instrument): 罗德与施瓦茨 ZVB8(ROHDE&SCHWARZ ZVB8)



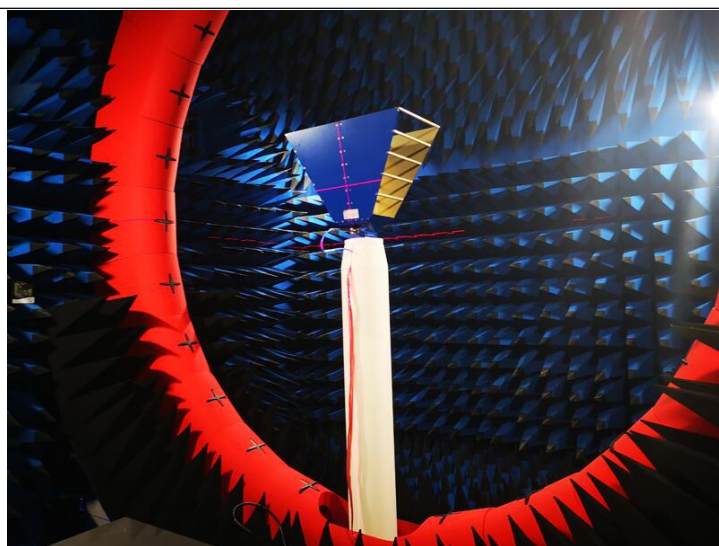
## 测试数据(test data):



## 2. OTA 测试(OTA test):

测试设备(test equipment): 24 探头球型微波暗测试室(Test room)

测试仪器(test instrument): 5071B, CMW500, E4438C





测试数据(testing dataset):

2.4G:

| Gain&Efficiency<br>增益和效率 |                 |                          |                         |                        |                       |                     |
|--------------------------|-----------------|--------------------------|-------------------------|------------------------|-----------------------|---------------------|
| frequency<br>频率(MHz)     | gain<br>增益(dBi) | mingain<br>最小增益<br>(dBi) | CP Gain<br>交叉极化<br>最大增益 | CO Gain<br>主极化最<br>大增益 | efficiency<br>效率(dBi) | efficiency<br>效率(%) |
| 2400                     | 5.29            | -28.44                   | 3.99                    | 3.53                   | -2.87                 | 51.60               |
| 2405                     | 6.31            | -26.73                   | 4.98                    | 4.63                   | -1.8                  | 66.07               |
| 2410                     | 5.36            | -27.26                   | 4.04                    | 3.71                   | -2.8                  | 52.47               |
| 2415                     | 6.42            | -25.11                   | 5.15                    | 4.79                   | -1.82                 | 65.82               |
| 2420                     | 5.22            | -25.08                   | 3.94                    | 3.63                   | -2.94                 | 50.81               |
| 2425                     | 5.89            | -22.32                   | 4.54                    | 4.35                   | -1.96                 | 63.61               |
| 2430                     | 5.07            | -22.88                   | 3.76                    | 3.52                   | -2.71                 | 53.53               |
| 2435                     | 5.93            | -23.79                   | 4.69                    | 4.39                   | -1.86                 | 65.23               |
| 2440                     | 5.71            | -26.83                   | 4.41                    | 4.26                   | -1.95                 | 63.77               |
| 2445                     | 5.64            | -28.29                   | 4.34                    | 4.25                   | -1.79                 | 66.18               |
| 2450                     | 5.59            | -33.59                   | 4.33                    | 4.27                   | -1.77                 | 66.49               |
| 2455                     | 5.49            | -36.62                   | 4.35                    | 4.17                   | -1.86                 | 65.12               |
| 2460                     | 5.46            | -34.05                   | 4.29                    | 4.2                    | -1.75                 | 66.81               |
| 2465                     | 5.58            | -32.72                   | 4.38                    | 4.34                   | -1.59                 | 69.39               |
| 2470                     | 5.65            | -28.68                   | 4.45                    | 4.39                   | -1.55                 | 70.04               |
| 2475                     | 5.59            | -28.42                   | 4.41                    | 4.32                   | -1.67                 | 68.10               |
| 2480                     | 5.63            | -26.82                   | 4.45                    | 4.36                   | -1.68                 | 68.00               |
| 2485                     | 5.77            | -25.57                   | 4.61                    | 4.48                   | -1.6                  | 69.21               |
| 2490                     | 5.76            | -25.31                   | 4.62                    | 4.45                   | -1.68                 | 67.98               |
| 2495                     | 5.7             | -24.48                   | 4.58                    | 4.38                   | -1.76                 | 66.65               |
| 2500                     | 5.74            | -23.8                    | 4.71                    | 4.4                    | -1.78                 | 66.32               |



5.8G:

| Gain&Efficiency<br>增益和效率 |                 |                          |                                  |                                 |                       |                     |
|--------------------------|-----------------|--------------------------|----------------------------------|---------------------------------|-----------------------|---------------------|
| frequency<br>频率(MHz)     | gain<br>增益(dBi) | mingain<br>最小增益<br>(dBi) | CP Gain<br>交叉极化<br>最大增益<br>(dBi) | CO Gain<br>主极化最<br>大增益<br>(dBi) | efficiency<br>效率(dBi) | efficiency<br>效率(%) |
| 5100                     | 3.9             | -30.64                   | 3.23                             | 3.47                            | -3.35                 | 46.23               |
| 5105                     | 4.24            | -30.54                   | 3.72                             | 3.86                            | -3                    | 50.10               |
| 5110                     | 3.9             | -32.49                   | 3.47                             | 3.52                            | -3.36                 | 46.11               |
| 5115                     | 4.45            | -31.98                   | 4.03                             | 4.03                            | -2.84                 | 52.01               |
| 5120                     | 3.98            | -33.22                   | 3.61                             | 3.52                            | -3.31                 | 46.65               |
| 5125                     | 4.47            | -31.16                   | 4.13                             | 4.11                            | -2.77                 | 52.80               |
| 5130                     | 4.15            | -31.82                   | 3.84                             | 3.79                            | -3.07                 | 49.31               |
| 5135                     | 4.49            | -30.99                   | 4.15                             | 4.1                             | -2.74                 | 53.17               |
| 5140                     | 4.03            | -30.94                   | 3.62                             | 3.57                            | -3.25                 | 47.29               |
| 5145                     | 4.49            | -29.88                   | 3.95                             | 3.98                            | -2.86                 | 51.74               |
| 5150                     | 4.26            | -29.96                   | 3.74                             | 3.71                            | -3.09                 | 49.04               |
| 5155                     | 4.97            | -28.84                   | 4.47                             | 4.39                            | -2.38                 | 57.75               |
| 5160                     | 4.47            | -29.05                   | 3.95                             | 3.86                            | -2.91                 | 51.13               |
| 5165                     | 5               | -27.8                    | 4.38                             | 4.4                             | -2.45                 | 56.88               |
| 5170                     | 4.71            | -27.71                   | 4.12                             | 4.11                            | -2.76                 | 52.93               |
| 5175                     | 5.24            | -26.28                   | 4.78                             | 4.65                            | -2.28                 | 59.12               |
| 5180                     | 4.57            | -27.09                   | 4.17                             | 3.99                            | -3.01                 | 49.96               |
| 5185                     | 5.02            | -27.1                    | 4.59                             | 4.42                            | -2.57                 | 55.33               |
| 5190                     | 4.7             | -27.87                   | 4.33                             | 4.09                            | -2.87                 | 51.68               |
| 5195                     | 5.22            | -27.56                   | 4.88                             | 4.59                            | -2.34                 | 58.38               |
| 5200                     | 4.76            | -28.85                   | 4.42                             | 4.12                            | -2.77                 | 52.81               |
| 5205                     | 5.13            | -30.05                   | 4.73                             | 4.48                            | -2.41                 | 57.39               |
| 5210                     | 4.68            | -32.64                   | 4.23                             | 4.03                            | -2.86                 | 51.78               |
| 5215                     | 5.12            | -32.28                   | 4.54                             | 4.45                            | -2.46                 | 56.78               |
| 5220                     | 4.58            | -32.4                    | 3.93                             | 3.91                            | -3.01                 | 49.98               |
| 5225                     | 5               | -29.9                    | 4.23                             | 4.35                            | -2.54                 | 55.72               |
| 5230                     | 4.9             | -28.52                   | 4.02                             | 4.25                            | -2.6                  | 54.96               |
| 5235                     | 5.26            | -27.25                   | 4.34                             | 4.61                            | -2.27                 | 59.23               |
| 5240                     | 4.79            | -27.17                   | 3.89                             | 4.13                            | -2.74                 | 53.16               |
| 5245                     | 5.07            | -26.79                   | 4.23                             | 4.41                            | -2.45                 | 56.86               |
| 5250                     | 4.54            | -27.57                   | 3.76                             | 3.87                            | -2.95                 | 50.73               |
| 5255                     | 4.97            | -27.49                   | 4.26                             | 4.28                            | -2.44                 | 57.05               |
| 5260                     | 4.38            | -28.69                   | 3.69                             | 3.68                            | -2.99                 | 50.28               |
| 5265                     | 4.9             | -28.84                   | 4.16                             | 4.19                            | -2.46                 | 56.69               |



|      |      |        |      |      |       |       |
|------|------|--------|------|------|-------|-------|
| 5270 | 4.63 | -29.6  | 3.92 | 3.91 | -2.67 | 54.08 |
| 5275 | 4.77 | -30.48 | 4.03 | 4.04 | -2.49 | 56.33 |
| 5280 | 4.36 | -32.32 | 3.54 | 3.63 | -2.91 | 51.22 |
| 5285 | 4.85 | -33.48 | 3.95 | 4.11 | -2.53 | 55.88 |
| 5290 | 4.33 | -35.72 | 3.42 | 3.57 | -3.11 | 48.82 |
| 5295 | 4.9  | -34.6  | 3.95 | 4.14 | -2.43 | 57.08 |
| 5300 | 4.48 | -34.64 | 3.4  | 3.71 | -2.82 | 52.19 |
| 5305 | 4.95 | -32.19 | 3.75 | 4.14 | -2.46 | 56.81 |
| 5310 | 4.59 | -31.57 | 3.38 | 3.75 | -2.85 | 51.93 |
| 5315 | 5.25 | -29.59 | 4.06 | 4.36 | -2.2  | 60.29 |
| 5320 | 4.65 | -29.11 | 3.45 | 3.72 | -2.83 | 52.07 |
| 5325 | 5.26 | -28.44 | 4.07 | 4.28 | -2.23 | 59.82 |
| 5330 | 4.86 | -29.27 | 3.68 | 3.83 | -2.62 | 54.68 |
| 5335 | 5.38 | -29.28 | 4.17 | 4.3  | -2.12 | 61.43 |
| 5340 | 5.29 | -29.09 | 4.11 | 4.18 | -2.19 | 60.42 |
| 5345 | 5.1  | -29.65 | 3.92 | 3.96 | -2.4  | 57.58 |
| 5350 | 5.23 | -28.98 | 3.98 | 4.05 | -2.3  | 58.86 |
| 5355 | 5.42 | -29.02 | 4.01 | 4.21 | -2.18 | 60.53 |
| 5360 | 4.42 | -29.69 | 2.95 | 3.18 | -3.22 | 47.66 |
| 5365 | 5.5  | -28.77 | 3.99 | 4.23 | -2.17 | 60.73 |
| 5370 | 4.52 | -31.7  | 2.94 | 3.23 | -3.17 | 48.22 |
| 5375 | 5.63 | -31.48 | 3.95 | 4.31 | -2.1  | 61.71 |
| 5380 | 5.68 | -29.58 | 3.88 | 4.3  | -2.11 | 61.48 |
| 5385 | 5.6  | -28.94 | 3.72 | 4.17 | -2.27 | 59.27 |
| 5390 | 5.86 | -29.38 | 3.87 | 4.4  | -2.1  | 61.67 |
| 5395 | 6.09 | -28.87 | 4.08 | 4.62 | -1.88 | 64.84 |
| 5400 | 5.99 | -30.9  | 3.92 | 4.47 | -2.03 | 62.62 |
| 5405 | 5.9  | -32.64 | 3.79 | 4.36 | -2.03 | 62.62 |
| 5410 | 5.98 | -34.03 | 3.88 | 4.44 | -1.79 | 66.26 |
| 5415 | 6    | -36.4  | 4    | 4.46 | -1.72 | 67.28 |
| 5420 | 5.82 | -34.35 | 3.85 | 4.24 | -1.9  | 64.50 |
| 5425 | 5.59 | -33.2  | 3.59 | 3.97 | -2.13 | 61.18 |
| 5430 | 5.66 | -34.64 | 3.71 | 4.03 | -2    | 63.09 |
| 5435 | 5.77 | -34.63 | 3.83 | 4.14 | -1.83 | 65.66 |
| 5440 | 5.64 | -33.66 | 3.73 | 4.1  | -1.9  | 64.52 |
| 5445 | 5.63 | -32.83 | 3.67 | 4.22 | -1.82 | 65.69 |
| 5450 | 5.65 | -33.51 | 3.65 | 4.37 | -1.7  | 67.63 |
| 5455 | 5.72 | -36.23 | 3.69 | 4.46 | -1.65 | 68.44 |
| 5460 | 5.64 | -34.04 | 3.59 | 4.39 | -1.75 | 66.89 |



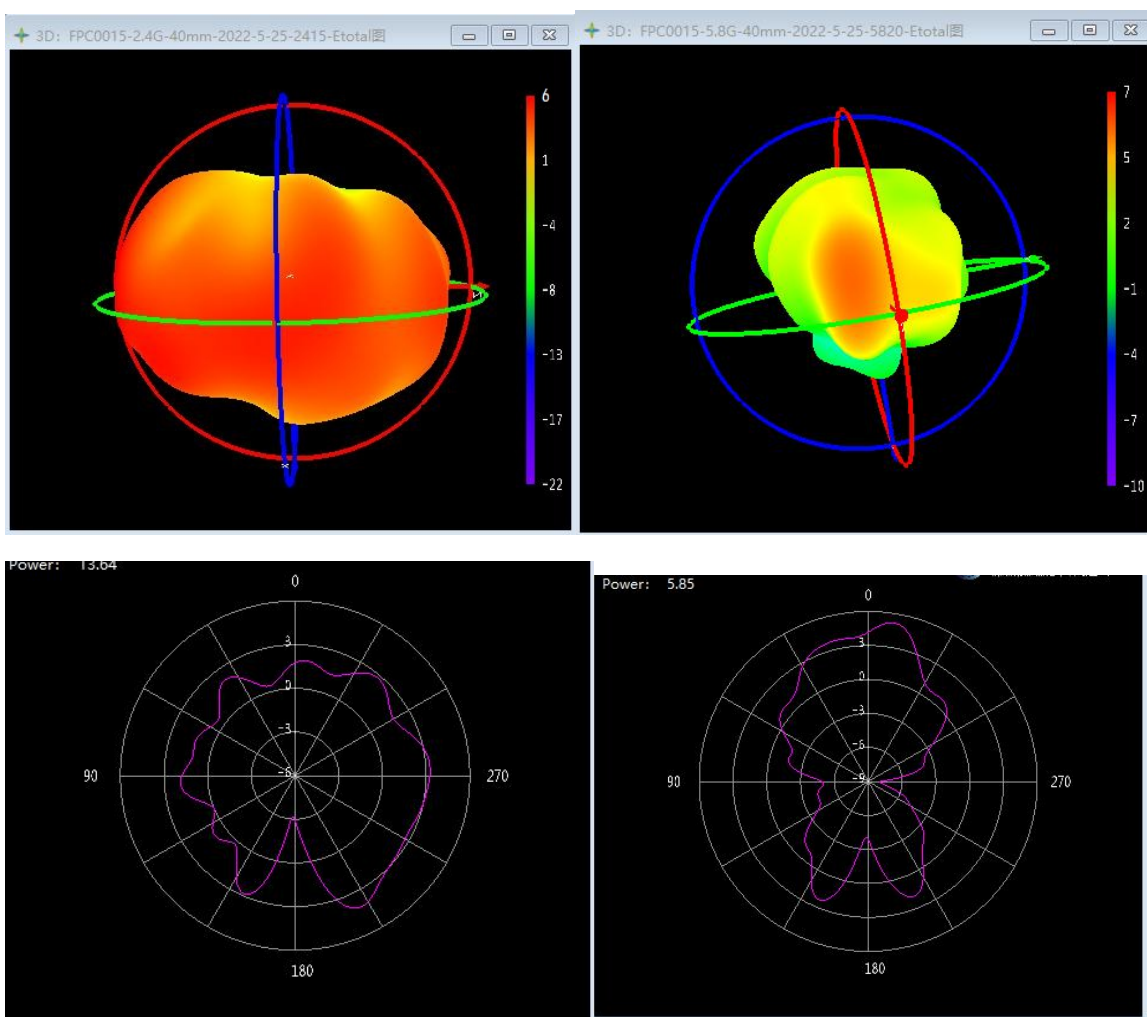
|      |      |        |      |      |       |       |
|------|------|--------|------|------|-------|-------|
| 5465 | 5.29 | -30.94 | 3.36 | 4.08 | -2.12 | 61.35 |
| 5470 | 5.32 | -32.48 | 3.41 | 4.05 | -2.2  | 60.22 |
| 5475 | 5.61 | -34.78 | 3.59 | 4.39 | -1.87 | 65.02 |
| 5480 | 5.6  | -34.66 | 3.56 | 4.52 | -1.76 | 66.72 |
| 5485 | 5.43 | -38.86 | 3.47 | 4.51 | -1.83 | 65.55 |
| 5490 | 5.38 | -32.4  | 3.43 | 4.54 | -1.85 | 65.31 |
| 5495 | 5.41 | -31.66 | 3.41 | 4.57 | -1.82 | 65.75 |
| 5500 | 5.33 | -30.87 | 3.34 | 4.57 | -1.84 | 65.47 |
| 5505 | 5.31 | -31.07 | 3.25 | 4.56 | -1.86 | 65.12 |
| 5510 | 4.37 | -31.34 | 2.19 | 3.55 | -2.84 | 51.99 |
| 5515 | 5.4  | -28.74 | 3.19 | 4.57 | -1.81 | 65.98 |
| 5520 | 5.4  | -27.2  | 3.07 | 4.58 | -1.82 | 65.73 |
| 5525 | 5.34 | -27.62 | 2.88 | 4.52 | -1.89 | 64.75 |
| 5530 | 5.28 | -27.96 | 2.78 | 4.46 | -1.92 | 64.23 |
| 5535 | 5.33 | -28.52 | 2.83 | 4.52 | -1.83 | 65.55 |
| 5540 | 5.27 | -29.25 | 2.68 | 4.45 | -1.89 | 64.71 |
| 5545 | 5.11 | -30.23 | 2.39 | 4.25 | -2.05 | 62.35 |
| 5550 | 5.14 | -43.06 | 2.42 | 4.32 | -1.95 | 63.77 |
| 5555 | 5.3  | -36.26 | 2.51 | 4.46 | -1.83 | 65.60 |
| 5560 | 5.3  | -34.54 | 2.4  | 4.4  | -1.88 | 64.91 |
| 5565 | 5.32 | -33.43 | 2.26 | 4.33 | -1.91 | 64.42 |
| 5570 | 5.34 | -33.77 | 2.19 | 4.3  | -1.94 | 63.96 |
| 5575 | 5.37 | -31.47 | 2.15 | 4.33 | -1.94 | 63.94 |
| 5580 | 5.45 | -30.89 | 2.29 | 4.36 | -1.86 | 65.22 |
| 5585 | 5.37 | -31.69 | 2.33 | 4.29 | -1.86 | 65.09 |
| 5590 | 5.28 | -32.26 | 2.3  | 4.24 | -1.93 | 64.15 |
| 5595 | 5.34 | -33.55 | 2.37 | 4.35 | -1.87 | 65.01 |
| 5600 | 5.38 | -37.14 | 2.45 | 4.38 | -1.81 | 65.89 |
| 5605 | 5.31 | -41.01 | 2.44 | 4.22 | -1.9  | 64.63 |
| 5610 | 5.28 | -37.54 | 2.47 | 4.18 | -1.9  | 64.52 |
| 5615 | 5.43 | -38.32 | 2.65 | 4.27 | -1.77 | 66.47 |
| 5620 | 5.5  | -37.66 | 2.78 | 4.24 | -1.7  | 67.57 |
| 5625 | 5.36 | -36.13 | 2.77 | 4    | -1.81 | 65.85 |
| 5630 | 6.5  | -32.98 | 3.93 | 5.01 | -0.76 | 83.90 |
| 5635 | 5.81 | -33.64 | 3.21 | 4.2  | -1.57 | 69.66 |
| 5640 | 5.82 | -35.05 | 3.28 | 4.09 | -1.6  | 69.21 |



|      |      |        |      |      |       |       |
|------|------|--------|------|------|-------|-------|
| 5645 | 5.74 | -34.73 | 3.21 | 3.93 | -1.73 | 67.15 |
| 5650 | 5.47 | -34.82 | 2.98 | 3.61 | -2.04 | 62.46 |
| 5655 | 5.79 | -31.96 | 3.39 | 3.95 | -1.72 | 67.37 |
| 5660 | 5.8  | -30.39 | 3.46 | 3.99 | -1.7  | 67.60 |
| 5665 | 5.71 | -29.84 | 3.39 | 3.98 | -1.79 | 66.16 |
| 5670 | 5.56 | -28.89 | 3.3  | 3.92 | -1.91 | 64.38 |
| 5675 | 5.52 | -28.1  | 3.34 | 3.98 | -1.91 | 64.38 |
| 5680 | 5.54 | -28.51 | 3.36 | 4.08 | -1.9  | 64.51 |
| 5685 | 5.47 | -29.97 | 3.18 | 4.03 | -2.08 | 61.89 |
| 5690 | 5.31 | -31.76 | 3.03 | 3.93 | -2.28 | 59.17 |
| 5695 | 5.31 | -31.03 | 3.17 | 4.06 | -2.19 | 60.35 |
| 5700 | 5.39 | -30.46 | 3.23 | 4.16 | -2.16 | 60.85 |
| 5705 | 5.45 | -28.22 | 3.41 | 4.27 | -2    | 63.09 |
| 5710 | 5.74 | -28.08 | 3.82 | 4.52 | -1.72 | 67.33 |
| 5715 | 5.92 | -28.95 | 4.05 | 4.73 | -1.55 | 70.02 |
| 5720 | 5.9  | -31.79 | 4.07 | 4.7  | -1.56 | 69.76 |
| 5725 | 5.51 | -35.85 | 3.76 | 4.35 | -1.89 | 64.69 |
| 5730 | 5.43 | -34.91 | 3.67 | 4.27 | -2.02 | 62.82 |
| 5735 | 5.51 | -33.37 | 3.73 | 4.35 | -2    | 63.06 |
| 5740 | 5.23 | -33.63 | 3.48 | 4.07 | -2.27 | 59.27 |
| 5745 | 5.58 | -41.1  | 3.73 | 4.42 | -1.99 | 63.24 |
| 5750 | 5.3  | -37.09 | 3.39 | 4.12 | -2.37 | 57.99 |
| 5755 | 5.3  | -31.55 | 3.4  | 4.12 | -2.39 | 57.70 |
| 5760 | 6.5  | -30.13 | 4.6  | 5.32 | -1.21 | 75.65 |
| 5765 | 5.6  | -32.93 | 3.71 | 4.42 | -2.14 | 61.06 |
| 5770 | 6.54 | -30.4  | 4.68 | 5.36 | -1.22 | 75.50 |
| 5775 | 5.56 | -30.78 | 3.7  | 4.38 | -2.23 | 59.82 |
| 5780 | 5.78 | -31.68 | 3.85 | 4.58 | -2.1  | 61.69 |
| 5785 | 5.95 | -33.71 | 3.91 | 4.74 | -2.06 | 62.29 |
| 5790 | 5.87 | -36.57 | 3.79 | 4.64 | -2.17 | 60.61 |
| 5795 | 5.84 | -37.86 | 3.84 | 4.6  | -2.15 | 61.02 |
| 5800 | 7.04 | -35.21 | 4.95 | 5.79 | -1.02 | 79.06 |
| 5805 | 6.17 | -34.19 | 3.95 | 4.9  | -2    | 63.02 |
| 5810 | 6.07 | -33.79 | 3.89 | 4.79 | -2.09 | 61.84 |
| 5815 | 5.92 | -32.21 | 3.76 | 4.62 | -2.24 | 59.72 |
| 5820 | 7.12 | -31.45 | 4.87 | 5.8  | -1.13 | 77.02 |
| 5825 | 6.3  | -33.61 | 3.99 | 4.95 | -2.03 | 62.70 |
| 5830 | 6.09 | -35.72 | 3.86 | 4.72 | -2.21 | 60.15 |
| 5835 | 5.97 | -36.31 | 3.88 | 4.58 | -2.24 | 59.71 |

|      |      |        |      |      |       |       |
|------|------|--------|------|------|-------|-------|
| 5840 | 6.15 | -38.44 | 4.11 | 4.75 | -2.06 | 62.21 |
| 5845 | 6.22 | -40.93 | 4.2  | 4.79 | -2.01 | 62.89 |
| 5850 | 6.13 | -39.86 | 4.19 | 4.69 | -2.08 | 61.95 |
| 5855 | 6.07 | -37.86 | 4.14 | 4.62 | -2.17 | 60.69 |
| 5860 | 6.22 | -36.49 | 4.3  | 4.77 | -2.04 | 62.45 |
| 5865 | 6.34 | -34.07 | 4.41 | 4.88 | -1.95 | 63.76 |
| 5870 | 6.23 | -34.72 | 4.3  | 4.77 | -2.1  | 61.71 |
| 5875 | 6.32 | -34.18 | 4.38 | 4.86 | -2.06 | 62.30 |
| 5880 | 6.37 | -32.15 | 4.43 | 4.91 | -2.02 | 62.81 |
| 5885 | 6.38 | -30.64 | 4.42 | 4.9  | -2.07 | 62.13 |
| 5890 | 6.37 | -31.35 | 4.38 | 4.88 | -2.13 | 61.27 |
| 5895 | 6.35 | -36.74 | 4.33 | 4.84 | -2.19 | 60.41 |
| 5900 | 6.46 | -40.11 | 4.43 | 4.91 | -2.1  | 61.60 |

### 3D



注：测试数据以我司实验室为准(The test data shall be subject to our laboratory)。



三、安装位置示意图(installation site):



