

深圳市合拓科技有限公司

样品承认书

Sample Approved Sheet

合拓（HT-GP-A589-883/889）承认书

客户名称 深圳市强大创新科技实业有限公司

客户机型 GP-A589

物料编码

物料型号 HT-GP-A589-883/889

品 牌 合拓自产

合拓 判定审核组

制订	审核	批准	承认书完成时间
钟晓鸣	吴寿平	戴庭	2024.10.18

强大创新（客户）判定审核组

承认书编号

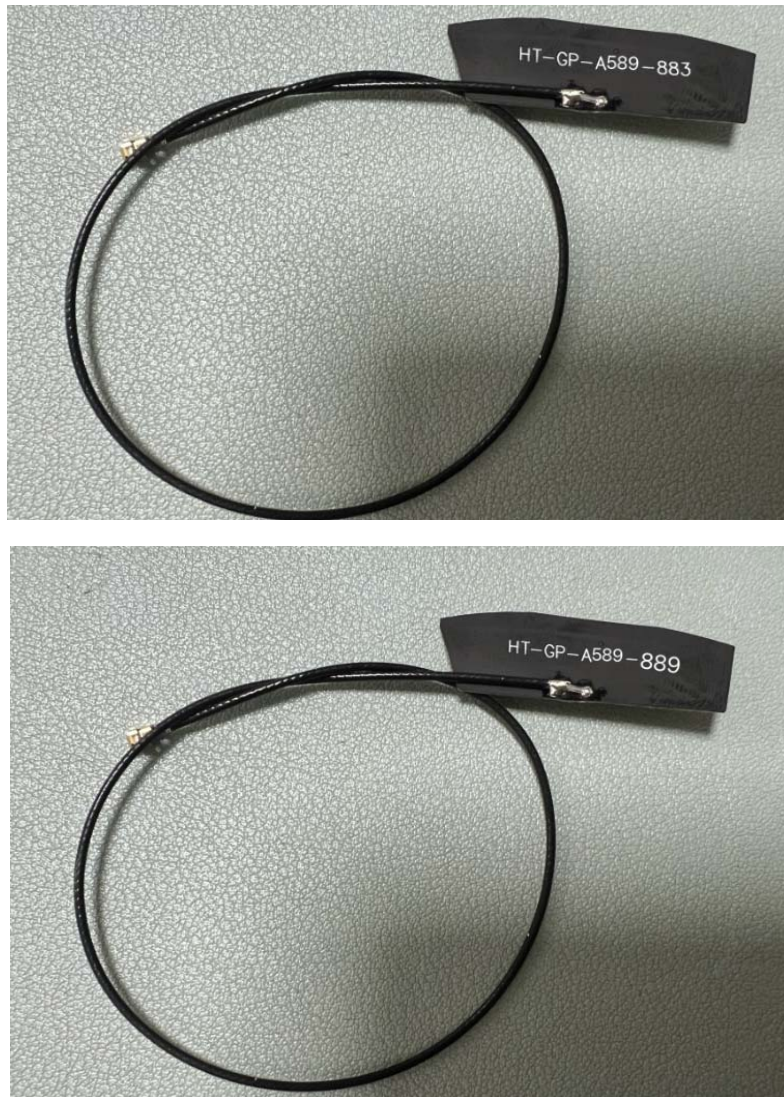
承认书提供时间

承认	审核	批准	承认日期
评审项目： ☐ 承认书 3 份 ☐ 规格书/图纸 ☐ 检测报告 ☐ 样品__PCS ☐ 安规 ☐ HSF			
评审结果： ☐ 接受 ☐ 有条件接受 ☐ 拒绝			

[illegible]

1. Antenna picture

The report mainly provides the test status of the electrical properties parameters of **HT-GP-A589-883/889**. The **HT-GP-A589-883/889** antenna is a **WIFI&BT** Band . The antenna Picture and assembly are shown below.



FPC Antenna picture & assembly picture

2. Antenna Test Equipment Introduction

Test of antenna input characteristics using **Agilent E5071C** and **Agilent 5062A** vector network analyzer; The radiation pattern of the antenna are tested using the Satimo starlab 3D near field Anechoic Chamber , and the instrument is used to agilent8960 E5515 and Agilent E4438C. The test coordinates of the darkroom are as follows:

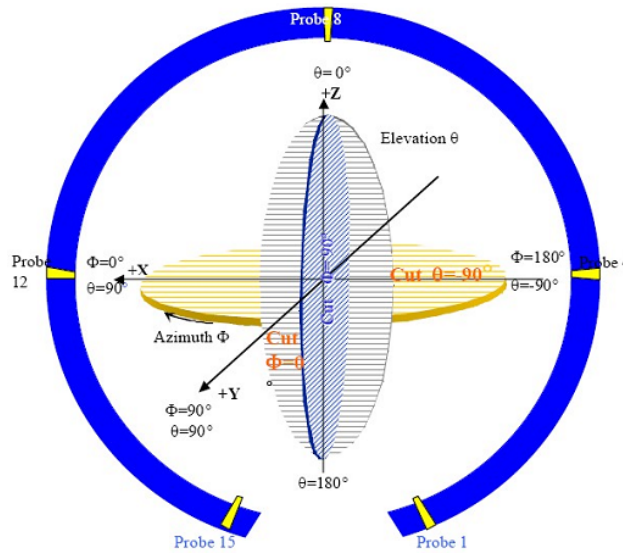


图4 3D微波暗室测试坐标系(back view)

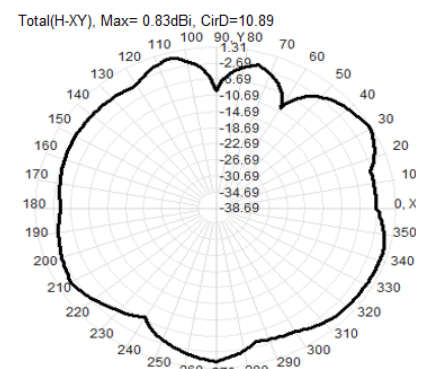
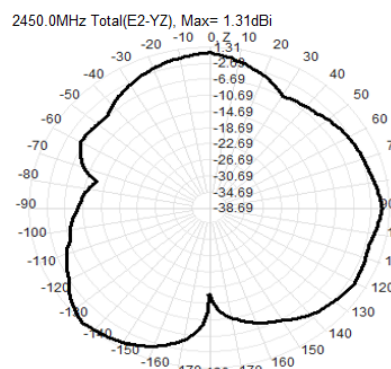
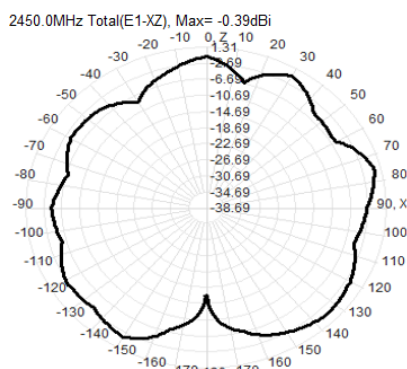
3. Electrical Specification

3-2 Passive S11 parameter

Measuring Method is a 50Ω coaxial cable is connected to the antenna. Then this cable is connected to a network analyzer to measure the S11 parameter, Keeping this fixture away from metal at least 20cm.

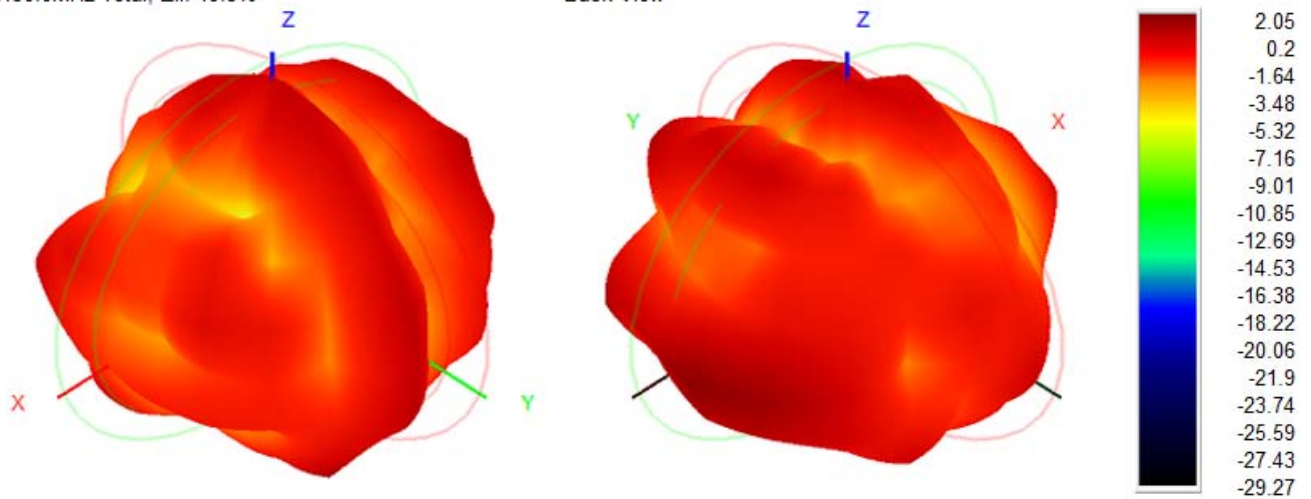
Efficiency TEST

 深圳市合拓科技有限公司 <table> <tr> <th>Frequency ID</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th></tr> <tr> <th>Frequency (MHz)</th><td>2400.0</td><td>2410.0</td><td>2420.0</td><td>2430.0</td><td>2440.0</td><td>2450.0</td><td>2460.0</td><td>2470.0</td><td>2480.0</td><td>2490.0</td><td>2500.0</td></tr> <tr> <th>Efficiency (dBi)</th><td>-4.03</td><td>-3.40</td><td>-3.25</td><td>-2.94</td><td>-2.97</td><td>-3.07</td><td>-3.12</td><td>-3.28</td><td>-3.50</td><td>-3.32</td><td>-3.03</td></tr> <tr> <th>Gain (dBi)</th><td>1.36</td><td>1.94</td><td>2.03</td><td>1.94</td><td>1.62</td><td>2.05</td><td>2.09</td><td>1.85</td><td>1.69</td><td>1.68</td><td>2.12</td></tr> <tr> <th>Efficiency (%)</th><td>39.54</td><td>45.76</td><td>47.37</td><td>50.85</td><td>50.49</td><td>49.33</td><td>48.78</td><td>46.98</td><td>44.68</td><td>46.60</td><td>49.76</td></tr> <tr> <th>Directivity (dB)</th><td>5.39</td><td>5.33</td><td>5.28</td><td>4.88</td><td>4.59</td><td>5.11</td><td>5.21</td><td>5.13</td><td>5.19</td><td>4.99</td><td>5.15</td></tr> <tr> <th>Peak Gain Position (Theta)</th><td>75.00</td><td>75.00</td><td>75.00</td><td>75.00</td><td>75.00</td><td>135.00</td><td>135.00</td><td>135.00</td><td>90.00</td><td>90.00</td><td>90.00</td></tr> <tr> <th>Peak Gain Position (Phi)</th><td>210.00</td><td>210.00</td><td>210.00</td><td>210.00</td><td>195.00</td><td>150.00</td><td>150.00</td><td>150.00</td><td>75.00</td><td>75.00</td><td>75.00</td></tr> <tr> <th>Efficiency ThetaPol (%)</th><td>18.74</td><td>20.84</td><td>20.52</td><td>21.26</td><td>20.25</td><td>19.01</td><td>18.57</td><td>17.88</td><td>17.53</td><td>18.45</td><td>20.62</td></tr> <tr> <th>Efficiency PhiPol (%)</th><td>20.79</td><td>24.92</td><td>26.85</td><td>29.59</td><td>30.24</td><td>30.32</td><td>30.21</td><td>29.10</td><td>27.15</td><td>28.15</td><td>29.14</td></tr> <tr> <th>Upper Hem. Efficiency (%)</th><td>20.26</td><td>22.99</td><td>23.05</td><td>24.23</td><td>24.42</td><td>23.65</td><td>23.51</td><td>22.18</td><td>21.26</td><td>22.09</td><td>23.92</td></tr> <tr> <th>Lower Hem. Efficiency (%)</th><td>19.27</td><td>22.77</td><td>24.32</td><td>26.62</td><td>26.07</td><td>25.68</td><td>25.27</td><td>24.80</td><td>23.42</td><td>24.51</td><td>25.85</td></tr> </table>												Frequency ID	1	2	3	4	5	6	7	8	9	10	11	Frequency (MHz)	2400.0	2410.0	2420.0	2430.0	2440.0	2450.0	2460.0	2470.0	2480.0	2490.0	2500.0	Efficiency (dBi)	-4.03	-3.40	-3.25	-2.94	-2.97	-3.07	-3.12	-3.28	-3.50	-3.32	-3.03	Gain (dBi)	1.36	1.94	2.03	1.94	1.62	2.05	2.09	1.85	1.69	1.68	2.12	Efficiency (%)	39.54	45.76	47.37	50.85	50.49	49.33	48.78	46.98	44.68	46.60	49.76	Directivity (dB)	5.39	5.33	5.28	4.88	4.59	5.11	5.21	5.13	5.19	4.99	5.15	Peak Gain Position (Theta)	75.00	75.00	75.00	75.00	75.00	135.00	135.00	135.00	90.00	90.00	90.00	Peak Gain Position (Phi)	210.00	210.00	210.00	210.00	195.00	150.00	150.00	150.00	75.00	75.00	75.00	Efficiency ThetaPol (%)	18.74	20.84	20.52	21.26	20.25	19.01	18.57	17.88	17.53	18.45	20.62	Efficiency PhiPol (%)	20.79	24.92	26.85	29.59	30.24	30.32	30.21	29.10	27.15	28.15	29.14	Upper Hem. Efficiency (%)	20.26	22.99	23.05	24.23	24.42	23.65	23.51	22.18	21.26	22.09	23.92	Lower Hem. Efficiency (%)	19.27	22.77	24.32	26.62	26.07	25.68	25.27	24.80	23.42	24.51	25.85
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2450.0MHz Total, Eff: 49.3%

Back View

**OTA TEST**

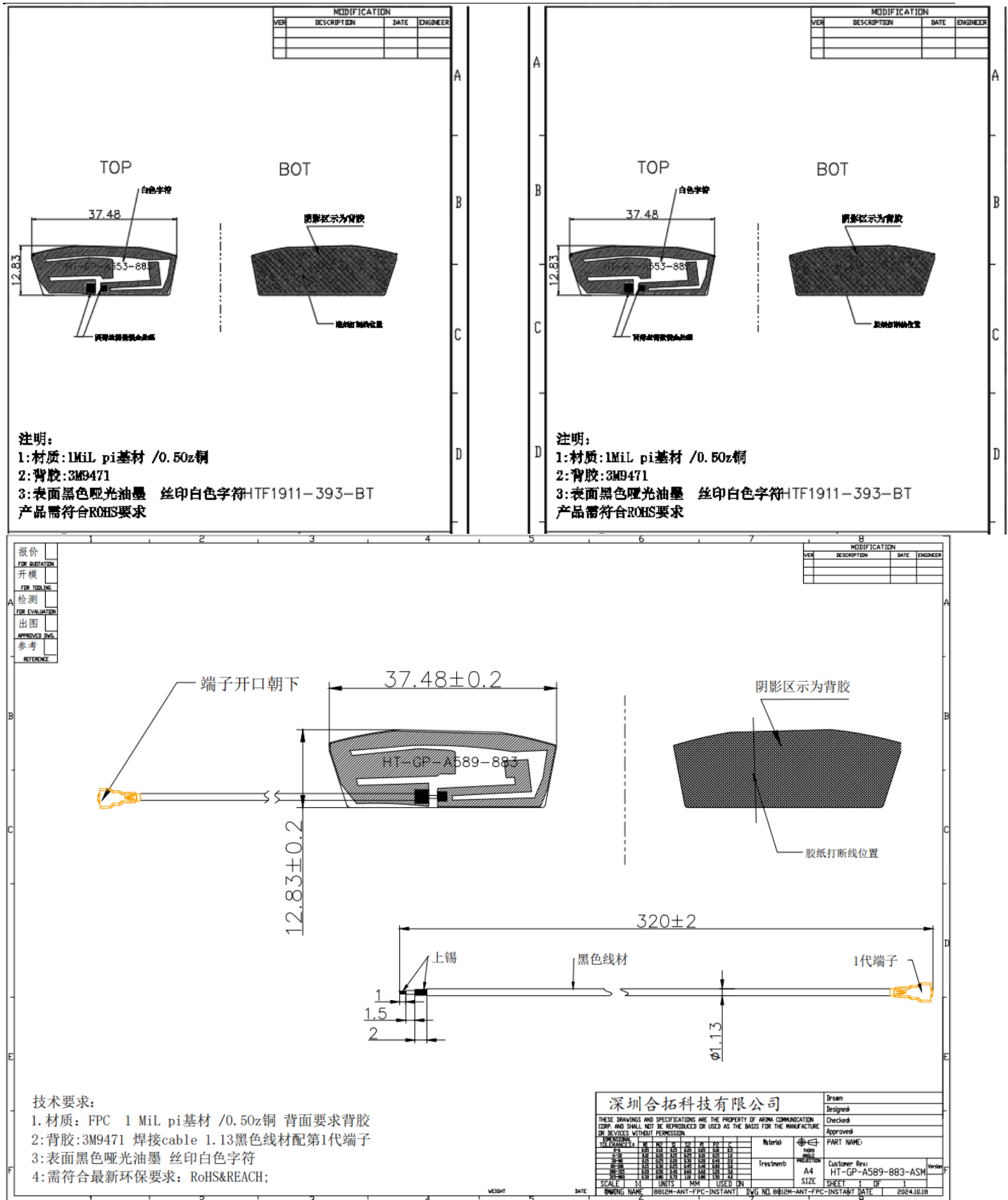
GP-A589-883/889 OTA测试			
BT Test			
CH	TRP	TIS	
0	7.15	-88.32	
39	7.33	-87.78	
78	6.89	-87.02	

4. Mechanical Specification:

Mechanical Configuration (Unit: mm)

The appearance of the antenna is according to drawing Figure 10

Confidential Information



Confidential Information

