



AFC antenna

亚冠通信

深圳市亚冠天线连接器有限公司

联系人：李慧芹

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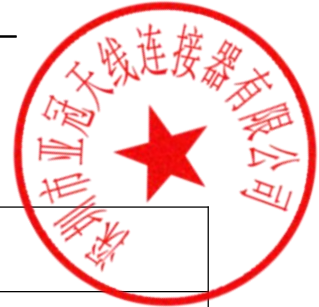
承 认 书

客户名称 : _____

名 称 : 橡皮天线 _____

规格型号: YH2. 4-5. 8G-SMA-109 _____

送样日期: 2016-3-18 _____



| 制作 drawing | 审核 check | 批准 approved |
|---------------|-------------|----------------|
| 高双玉 | 王玉美 | 蒋振华 |

客户承认 Customer Approve

| 审核 check | 批准 approved | 承认 approval |
|-------------|----------------|----------------|
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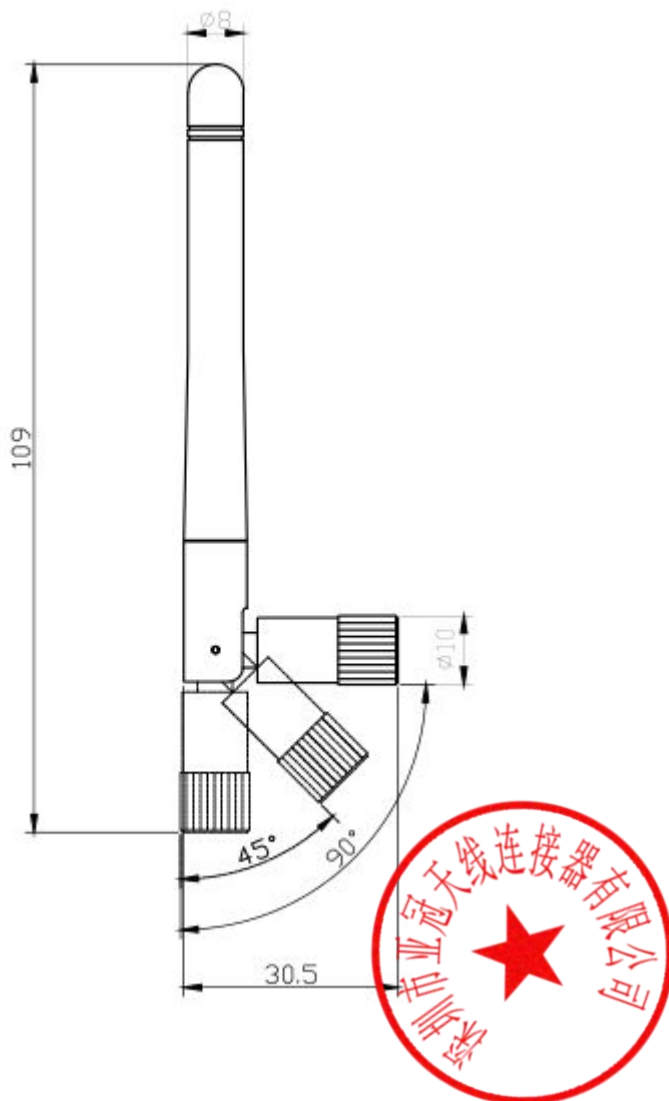
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一：尺寸图





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1. Revision History

| Revision | Date | Change Notification | Description |
|----------|------------|---------------------|-------------|
| 1.0 | 2016.03.17 | 初版 | |
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2. Specification

| Sample Photo | |
|---|--|
|  | |
| A. Electrical Characteristics | |
| Frequency | 2400 ~ 2500 MHz 5150 ~ 5850 MHz |
| S.W.R. | <= 2.0 @ 2400 ~ 2500 MHz <= 2.5 @ 5150 ~ 5850 MHz The data is tested with 1M cable |
| Peak Gain | 2.0 dBi @ 2400 ~ 2500 MHz 3.0 dBi @ 5150 ~ 5850 MHz |
| Polarization | Linear |
| Impedance | 50 Ohm |
| B. Material & Mechanical Characteristics | |
| Material of Radiator | CU |
| Material of Plastic | TPEE / ABS / POM |
| Cable Type | RG-178U-03 |
| Connector Type | SMA Male Reverse |
| C. Environmental | |
| Operation Temperature | - 40 °C ~ + 65 °C |
| Storage Temperature | - 40 °C ~ + 80 °C |
| Antenna Color Storage life | < 2 year |





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3. Characteristics and Reliability Test

| Test Items 測試項目 | | Test Condition and Procedure 測試方法 | Requirements 要求 | Result 結果 |
|-----------------|-------------------------------|---|---|-----------|
| C1 | V.S.W.R. 電壓駐波比 | Set DUT on Network Analyzer; make individual calibration to test 設置網路分析儀參數進行測試 | Directive DUT specification 符合待測物規範 | PASS |
| C2 | Insertion Loss 插入損失 | Set DUT on Network Analyzer; make individual calibration to test 設置網路分析儀參數進行測試 | Directive DUT specification 符合待測物規範 | N/A |
| C3 | Antenna Gain 天線增益 | Set DUT on Antenna Chamber; make individual calibration to test 設置天線暗室參數進行測試 | Directive DUT specification 符合待測物規範 | PASS |
| C4 | Voltage Breakdown 耐電壓 | Test voltage should be applied between insulated portions, or between ground as specified. 在絕緣部分測試電壓,或指定接地面之間 | Max Voltage \geq 500 V or directive material specification 最大電壓 \geq 500V 或符合材料規範 | N/A |
| C5 | Insulation Resistance 絕緣阻抗 | Set Voltage: 500 \pm 50V; between the insulated portions, or between ground as specified. 設置電壓 500 \pm 50V,在絕緣部份測試或指定接地面之間 | Resistance \geq 500 M ohm or directive material specification 阻抗 \geq 500M ohm 或符合材料規範 | N/A |
| C6 | Contact Resistance 接觸阻抗 | Air Temp: 26°C; measured with test equipment 室溫 26° C, 指定量測設備 | Directive material specification 符合材料規範 | N/A |
| M1 | Vibration 震動 | GB / T2423.48-2008 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80 to 20 Hz 3 directions; 2 hours for each direction 振幅 1.5mm; 頻率 20~80~20Hz; 3 個方向各 2H | 1. No Visual Damage 2. Frequency Tol. \leq 5% 無明顯外觀不良; 頻率偏移 \leq 5% | PASS |
| M2 | Random Drop 跌落 | GB / T2423.8-1995 Single: Height: 1.0 Meter; 3 directions; 1 time for each direction 單支天線, 高 1m; 3 個方向各 1 次 | 1. No parts separated、fracture 2. Frequency Tol. \leq 5% 產品無脫落、斷裂; 頻率偏移 \leq 5% | PASS |
| | | Packing: Height: 0.76 Meter; 1 corner, 3 edges, 6 surface 包裝: 高 0.76m, 一角、三棱、六面各一次 | | PASS |
| | | Antenna+Machine: Height: 0.76 Meter; 1 corner, 3 edges, 6 surface. 整機: 高 0.76m, 一角、三棱、六面各一次 | | N/A |



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| | | | | |
|----|--|--|--|------|
| M3 | Solderability 可焊性 | GB / T2423.28-2005 Temp: 260 ± 5° C; Duration: 5 seconds 溫度 260 ± 5° C; 持續 5 秒 | Tin evenly on full 上錫均勻飽滿 | N/A |
| M4 | Pull Test 拉力 | Holding with individual specification; force applied to axis of terminal .單獨定義產品端子拉力 | 1. Directive DUT specification 2. Frequency Tol. ≤ 5% 符合待測物規範; 頻率偏移 ≤ 5% | PASS |
| M5 | Torque Test 扭力 | Holding with individual specification; applied clockwise and counterclockwise to the axis of terminal 單獨定義產品端子之順時針及逆時針扭力 | 1. Directive DUT specification 2. Frequency Tol. ≤ 5% 符合待測物規範; 頻率偏移 ≤ 5% | PASS |
| M6 | Dimension 尺寸 | Inspection of dimension, color, material, package, surface process. 檢查尺寸, 顏色, 材料, 包裝, 表面處理 | Directive DUT specification 符合待測物規範 | PASS |
| E1 | Waterproof 防水 | With Reference to IEC 60529 // IP Code Definition 參考 IEC60529 IP 定義 | Directive DUT specification 符合待測物規範 | N/A |
| E2 | Salt Spray 鹽霧 | GB / T 2423.17-2008 Temp: 35°C; RH: ≥ 95%; NaCl solution: ≥ 5%; Time: 24H 溫度 35°C; 濕度 ≥ 95%; 鹽水濃度 ≥ 5%; 測試 24H | 1. No Visual Damage 2. Frequency Tol. ≤ 5% 無明顯外觀不良; 頻率偏移 ≤ 5% | PASS |
| E3 | Temperature and Humidity Chamber 恒溫恒濕 | GB / T 2423.3-2006 Temp: 80°C / 12 H; -40°C / 12H RH: ≥ 90%; Time: 24H 溫度 80°C 測試 12H 轉 -40°C 測試 12H; 濕度 ≥ 90%; 時間 24H | After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5% 恢復 2H 后, 無明顯外觀不良; 頻率偏移 ≤ 5% | PASS |
| E4 | Thermal Shock 冷熱衝擊 | GB / T 2423.22 - 2008 - 40° C (30 minutes) to + 80° C (30 minutes); Cycles: 24 - 40° C 測試 30 分轉 80° C 測試 30 分為一個週期; 共 24 週期 | After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5% 恢復 2H 后, 無明顯外觀不良; 頻率偏移 ≤ 5% | PASS |
| E5 | Aging test 老化 | GB / T 2423.2 - 2008 Temp: 80°C; Time: 24 hours 溫度 80° C, 測試 24H | After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤ 5% 無明顯外觀不良; 頻率偏移 ≤ 5% | PASS |
| E6 | High Temp. 高溫 | Temp. 270 ± 10° C; Times: 120 seconds 溫度 270 ± 10° C, 測試時間 120 秒 | No Visual Damage 無明顯外觀不良 | N/A |
| R1 | RoHS | With Reference to IEC 62321:2008 with flow chart 參考 IEC 62321 測試流程 | Directive RoHS 2011/65/EU 符合 RoHS 2011/65/EU 標準 | PASS |
| R2 | PFOS | With Reference to USA EPA 3550C:1996 by LC/MS 參考 USA EPA 3550C 測試流程 | Directive RoHS 2006/122/EC 符合 RoHS 2011/65/EU 標準 | PASS |



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4. Antenna - S Parameter Test Data





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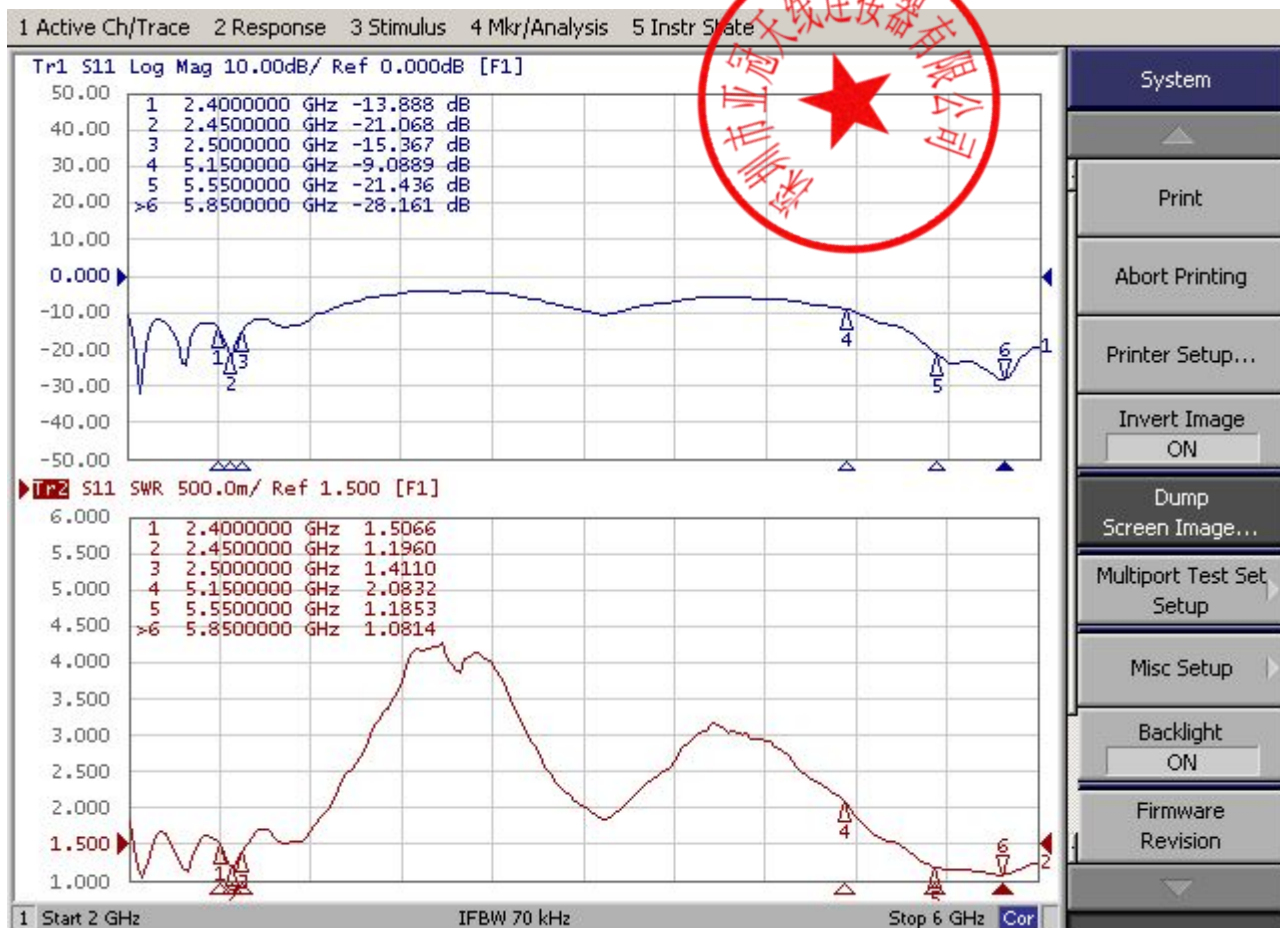
联系人: 李慧芹

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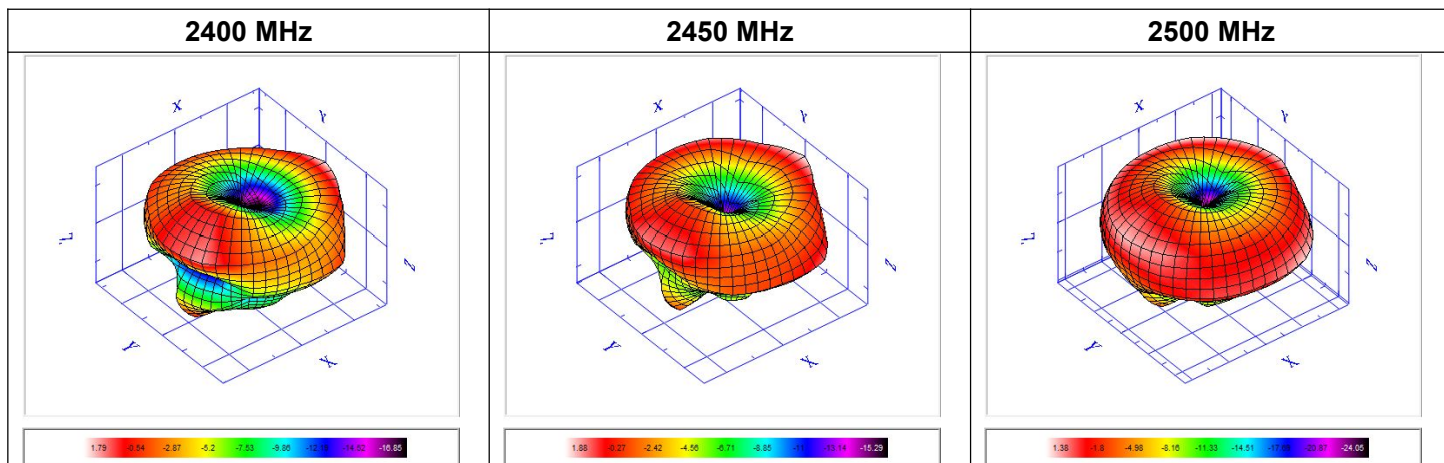
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5. Antenna - Radiation Pattern Test Data





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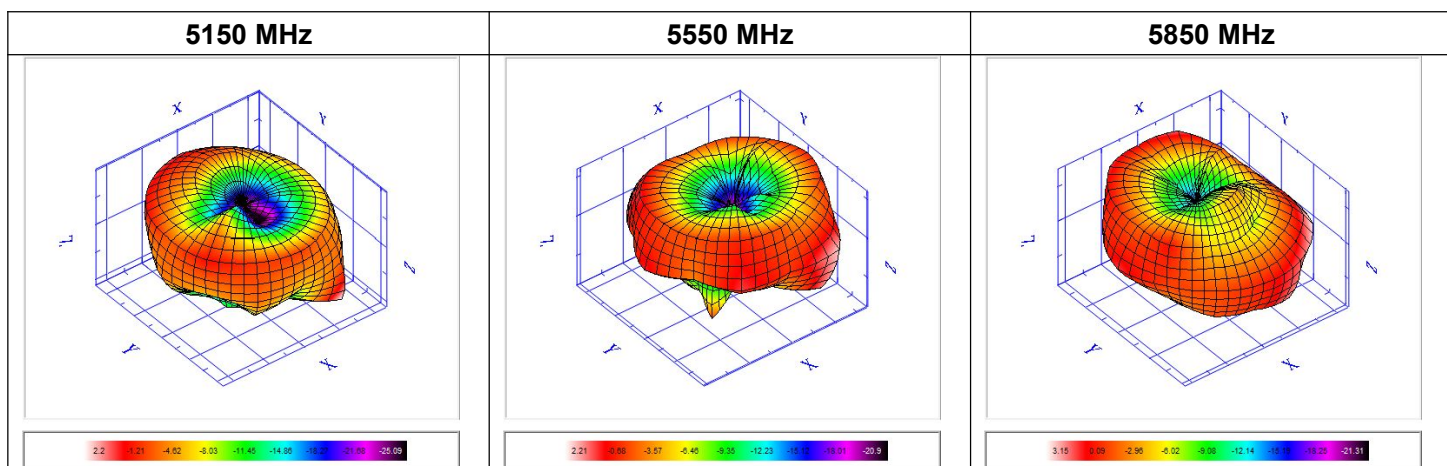
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| | | | | | | | | | | | |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| Frequency | 2400 | 2410 | 2420 | 2430 | 2440 | 2450 | 2460 | 2470 | 2480 | 2490 | 2500 |
| TRP (dBm) | -2.13 | -2.02 | -2.1 | -2.11 | -2.08 | -2.3 | -2.24 | -2.26 | -2.25 | -2.15 | -2.33 |
| Peak EIRP (dBm) | 1.79 | 1.78 | 1.91 | 1.95 | 1.89 | 1.88 | 1.81 | 1.76 | 1.56 | 1.57 | 1.38 |
| NHPRP +/- 45 (degree) | -2.62 | -2.48 | -2.54 | -2.5 | -2.48 | -2.7 | -2.67 | -2.71 | -2.71 | -2.61 | -2.75 |
| NHPRP +/- 30 (degree) | -3.43 | -3.29 | -3.33 | -3.24 | -3.18 | -3.29 | -3.18 | -3.17 | -3.14 | -2.99 | -3.14 |
| E-Theta Peak Gain (dBi) | -8.61 | -8 | -8.26 | -8.75 | -8.39 | -8.48 | -9.35 | -9.78 | -9.95 | -10.19 | -10.95 |
| E-Phi Peak Gain (dBi) | 1.68 | 1.68 | 1.8 | 1.85 | 1.8 | 1.8 | 1.73 | 1.63 | 1.46 | 1.46 | 1.34 |
| E-Total Peak Gain (dBi) | 1.79 | 1.78 | 1.91 | 1.95 | 1.89 | 1.88 | 1.81 | 1.76 | 1.56 | 1.57 | 1.38 |
| Directivity (dBi) | 3.92 | 3.81 | 4.01 | 4.05 | 3.97 | 4.17 | 4.05 | 4.03 | 3.81 | 3.73 | 3.71 |
| Efficiency (%) | 61.25 | 62.75 | 61.64 | 61.55 | 61.93 | 58.93 | 59.67 | 59.37 | 59.53 | 60.85 | 58.45 |



| | | | | | | | |
|-------------------------|-------|--------|--------|-------|--------|--------|--------|
| Frequency | 5150 | 5200 | 5400 | 5550 | 5600 | 5800 | 5850 |
| TRP (dBm) | -2.9 | -2.56 | -2.69 | -2.89 | -3.56 | -3.13 | -2.26 |
| Peak EIRP (dBm) | 2.2 | 3.56 | 2.75 | 2.21 | 1.23 | 1.45 | 3.15 |
| NHPRP +/- 45 (degree) | -3.28 | -2.84 | -2.94 | -3.05 | -3.64 | -3.3 | -2.46 |
| NHPRP +/- 30 (degree) | -3.72 | -3.2 | -3.07 | -3.38 | -4.21 | -3.55 | -2.74 |
| E-Theta Peak Gain (dBi) | -8.9 | -11.27 | -10.04 | -9.9 | -12.09 | -12.77 | -10.32 |
| E-Phi Peak Gain (dBi) | 2.01 | 3.5 | 2.6 | 2.18 | 1.2 | 1.43 | 3.02 |
| E-Total Peak Gain (dBi) | 2.2 | 3.56 | 2.75 | 2.21 | 1.23 | 1.45 | 3.15 |
| Directivity (dBi) | 5.1 | 6.12 | 5.44 | 5.1 | 4.79 | 4.58 | 5.41 |
| Efficiency (%) | 51.26 | 55.4 | 53.88 | 51.35 | 44.08 | 48.69 | 59.38 |