

Product Number: TG0325-W113150BG

Product Name: Antenna

Specification For Approval

Date: 2021/11/10

File No.: 2021111001

Version: 1.0

Customer : WS

Customer P/N : ENAN2G406227BO-150MM_IPEX-K

RongHeP/N : TG0325-W113150BG

Description : 2.4G铜管天线 1.13黑色线 L=150mm+IPEX

Checked By:

Customer Approved By:

东莞市荣和电子科技有限公司

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3. Revision History

Revision	Date	Change Notification	Description
1.0	2021-11-10		

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4. Specification

A. Electrical Properties	
Frequency Rang 工作频段范围	2.4~2.5GHz
Impedance 特性阻抗	50Ω Nominal
VSWR 电压驻波比	2.0 Max.
注： 以上是内置天线配合终端产品的主板与机壳调试！	
Gain(peak)增 益（峰值）	2.0 dBi
Out of roundness 不圆度	3.0 dBi（Max.）
Radiation 辐射方式	Omni-Directional 全向
Polarization 极化方式	Linear Vertical 垂直
B. Physical Properties	
Connector Type 连接方式	IPEX
Cable Type 线材	OD:1.13mm CABLE
Antenna Body 天线本体	
C. Environmental	
Operating Temp 工作环境	-40℃ ~ +65℃
Storage Temp 存储环境	-40℃ ~ +80℃

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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. 在绝缘部分测试电压,或指定接地面之间	Max Voltage ≥ 500 V or directive material specification 最大電壓 ≥ 500 V 或符合材料規範	N/A
C5	Insulation Resistance 絕緣阻抗	Set Voltage: 500 ± 50 V; between the insulated portions, or between ground as specified. 設置電壓 500 ± 50 V, 在绝缘部份測試或指定接地面之間	Resistance ≥ 500 M ohm or directive material specification 阻抗 ≥ 500 M 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
M3	Solderability	GB / T2423.28-2005	Tin evenly on full	N/A

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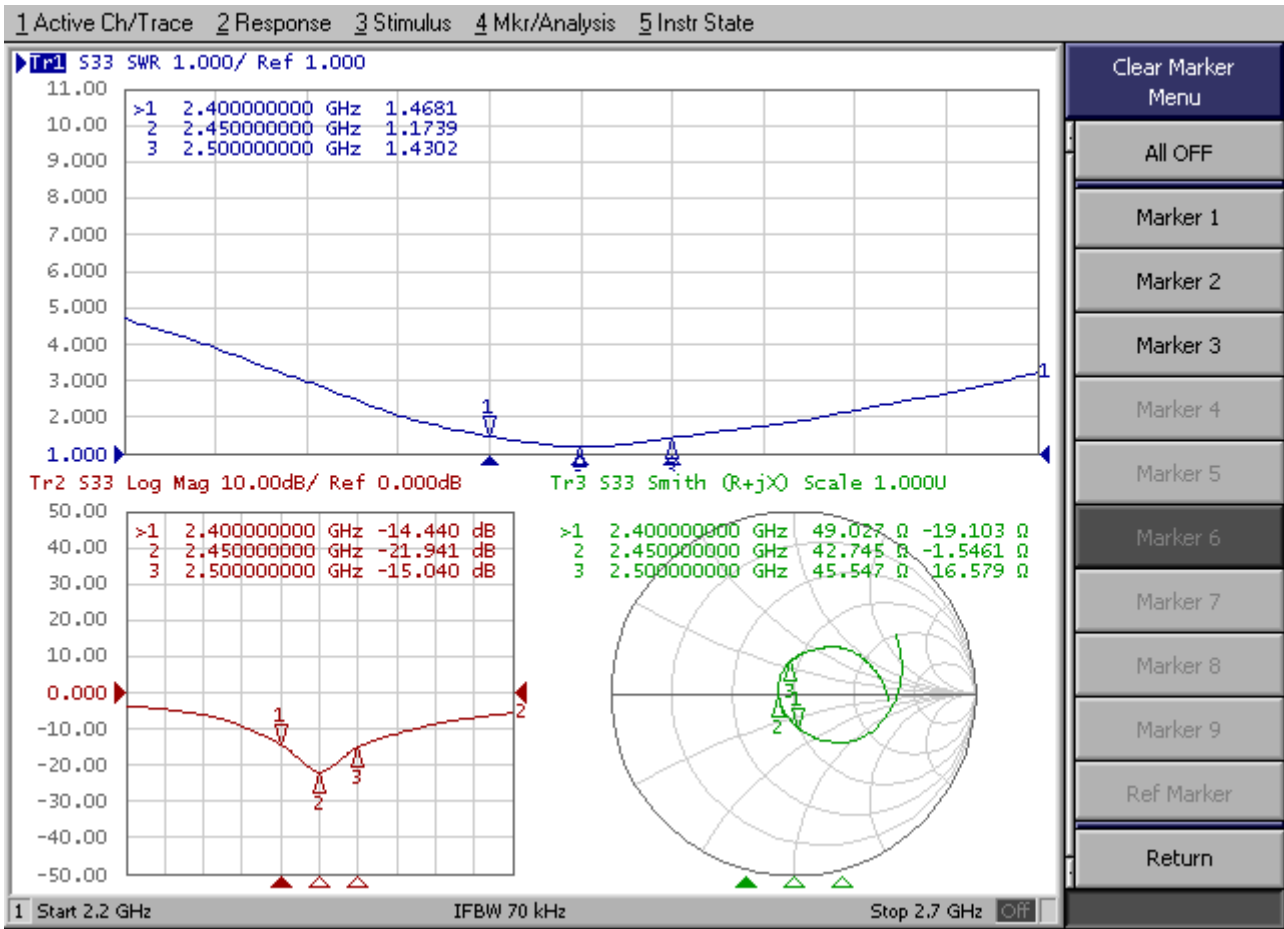
Product Name: Antenna

Characteristics and Reliability Test

	可焊性	Temp: 260±5° C; Duration: 5 seconds 溫度 260±5° C; 持續 5 秒	上錫均勻飽滿	
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%	N/A
M6	Dimension 尺寸	Inspection of dimension, color, material, package, surface process. 检查尺寸, 颜色, 材料, 包装, 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% 恢復 2H 后, 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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6. Antenna - S Parameter Test Data



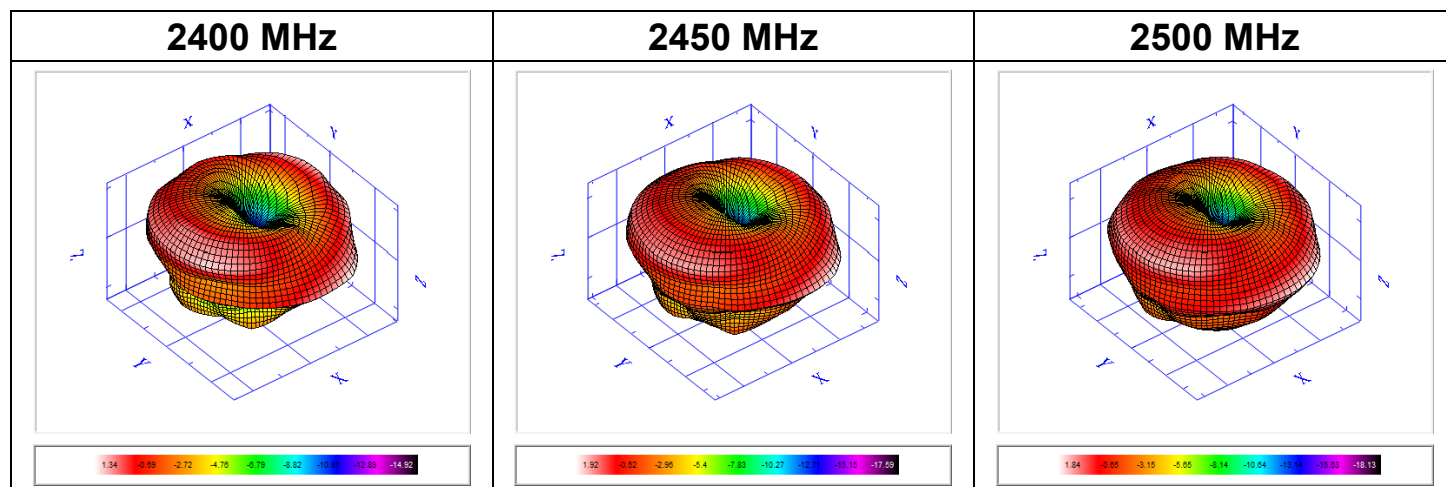
无源测试数据:

Frequency	2.38G	2.39G	2.4G	2.41G	2.42G	2.43G	2.44G	2.45G	2.46G	2.47G	2.48G	2.49G	2.5G	2.51G	2.52G
Efficiency Total (%)	43.65	44.06	41.11	39.45	39.17	38.9	37.41	34.99	35.81	36.14	32.06	32.36	30.27	27.67	28.91
Gain Total (dBi)	0.79	0.76	0.53	0.61	0.64	0.85	0.81	0.39	0.86	0.58	0.3	0.29	0.1	-0.37	-0.07

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7. Antenna - Radiation Pattern Test Data



Frequency	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
TRP (dBm)	-2.37	-2.38	-2.23	-2.15	-1.89	-1.89	-1.71	-1.81	-1.7	-1.84	-1.57
Peak EIRP (dBm)	1.34	1.13	1.41	1.64	1.72	1.92	2.2	2.11	2.1	1.75	1.84
NHPRP +/- 45 (degree)	-2.89	-2.88	-2.72	-2.65	-2.39	-2.39	-2.21	-2.3	-2.17	-2.3	-2.02
NHPRP +/- 30 (degree)	-3.89	-3.88	-3.71	-3.6	-3.35	-3.33	-3.14	-3.23	-3.06	-3.18	-2.91
E-Theta Peak Gain (dBi)	-9.41	-9.3	-8.17	-8.81	-8.31	-9.05	-9.2	-9.31	-9.26	-9.05	-9.31
E-Phi Peak Gain (dBi)	1	0.84	1.15	1.46	1.46	1.63	1.93	1.89	1.91	1.56	1.68
E-Total Peak Gain (dBi)	1.34	1.13	1.41	1.64	1.72	1.92	2.2	2.11	2.1	1.75	1.84
Directivity (dBi)	3.71	3.51	3.64	3.79	3.62	3.8	3.92	3.92	3.8	3.58	3.41
Efficiency (%)	57.9	57.79	59.85	60.94	64.66	64.78	67.4	65.84	67.68	65.54	69.69

1		2		3		4		5		6		7		8							
HF ☐										SIGN △		DATE		DESCRIPTION		APPROVER					
RoHS ☒										△											
REACH ☐										△											
CONFIDENTIAL										△											
1 IPEX 1 Ø1.13mm Cable Color:Black 3 2																					
3 2 1 NO. Name Finished																					
1		2		3		4		5		6		7		8							
子												子									
TITLE: 2.4G Antenna												CUSTOMER P/N: /									
PART NO.: TG0325-W113150BG												⊕		⊖		Standard Tolerance					
APP BY												CHK BY		RF BY		DES BY		X.X ±2		O 0.02	
Darren 2021/11/10												Yixin 2021/11/10				XRS 2021/11/10		X.XX ±1		⊙ 0.03	
																		X° ±1		▱ 0.05	
																		UNITS: mm		// 0.03	
																		SCALE: 1/1		⊥ 0.05	
																		REVISION: A		≡ 0.05	

產品包裝規範

PACKING CRITERION

Date: 2021/11/10

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Part Number :TG0325-W113150BG

Revision : A

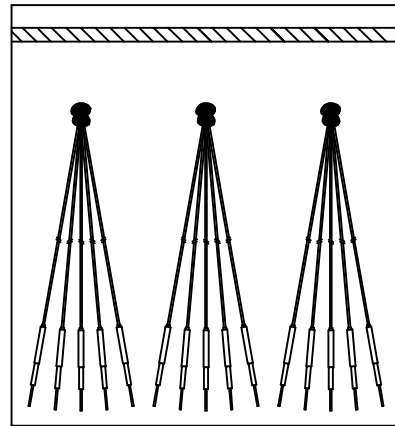
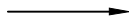
Name: 2.4G Antenna

Customer :

一. WITH THE ANT INTO THE PE BAG



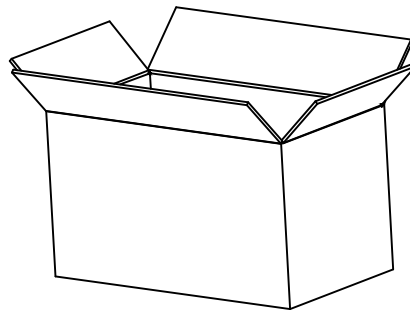
50PCS一扎用珍珠棉将端子一端扎紧



封口

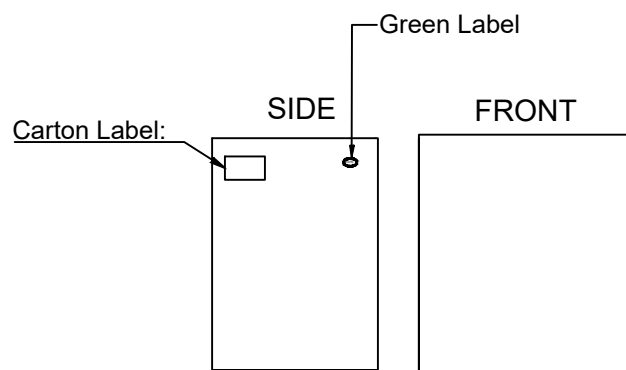
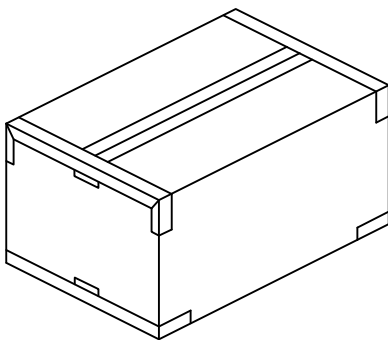
10扎装一袋500PCS/PE

二. PACKING



10000PCS/CARTON

三. SEALING



APPROVED BY : Darren

CHECKED BY : Yixin

DESIGNED BY : XRS