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PCB Type Antenna

External Antenna

ANTX100ETHAB24553 Series

Pulse
a YAGEO company



Features and Benefits

- *2.4GHz/ 5GHz dual band operator*
- *Omnidirectional radiation*

1. ORDERING INFORMATION - GLOBAL PART NUMBER, PHYCOMP CTC & 12NC

All part numbers are identified by the series, packing type, material, size, antenna type, working frequency and packing quantity.

ANT	X	100	E	THA	B	2455	3
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

(1) FAMILY

ANT= Antenna Products

(2) CONNECTOR TYPE

X= IPEX

(3) CABLE LENGTH

100=100 mm

(4) ANTENNA TYPE

E=External

(5) TOOLING CODE

THA

(6) PACKAGE TYPE

B=Bulk

(7) FREQUENCY BAND

2455=2.4&5GHz

(8)CABLE TYPE

3=1.13

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Specifications

A. Electrical Characteristics

Working Frequency	2400 ~ 2500 MHz 5150 ~ 5850 MHz
VSWR	<= 2.0 @ 2400 ~ 2500 MHz <= 2.5 @ 5150 ~ 5850 MHz
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	TPE / PC+ABS
Cable Type	O.D. 1.13 mm
Connector Type	Mini Connector

C. Environmental

Operation Temperature	- 40 ˚C ~ + 65 ˚C
Storage Temperature	- 40 ˚C ~ + 80 ˚C

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3.1 Test equipment

The equipment for the antenna measurement we used is as follows.

A. Agilent 8753ET / 8719D Network Analyzer to measure the VSWR and input impedance.
B. Three-dimensional anechoic chamber to measure the gain
(Standard dipole and horn were used to calibrate the chamber)
C. Digital caliper to measure the dimensions.
D. Climatic chamber for mechanical tests.

3.2 Test setup

3.2.1 Frequency Range

2400 ~ 2500MHz; 5150 ~ 5850MHz

3.2.2 Antenna configuration

The antenna basically has two parts; the stamping and the cable assembly with the connector on one side.
The detailed drawing is attached.

3.2.3 VSWR

The VSWR is measured with Agilent 8753ET / 8719D network analyzer. All the measurements are performed
with the customer provided fixture. Figure 1 shows the schematic diagram for measuring VSWR.

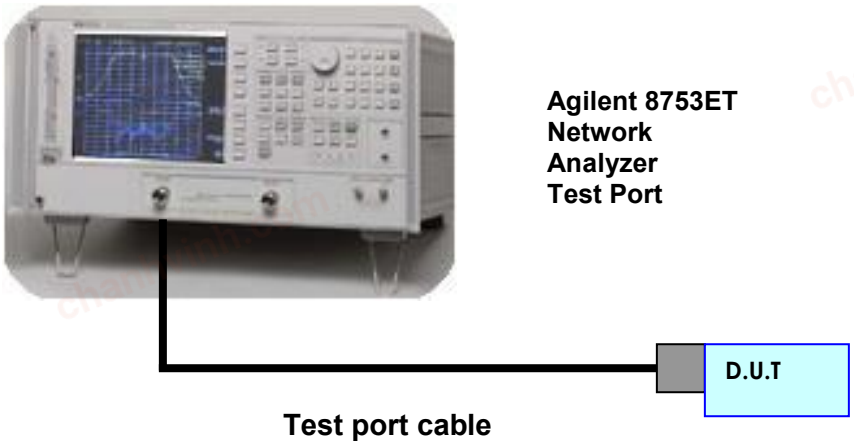


Figure 1. The schematic diagram for measuring VSWR

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3.2.4 Radiation pattern and gain

The radiation pattern must have the omni-directional characteristic in both positions. The radiation pattern measurements are performed in the three-dimensional anechoic chamber. The chamber provides less than –30dB reflectivity from 700MHz through 8GHz. The chamber is calibrated using both standard dipole and horn antenna. The gain here is expressed as dBi that standardizes the isotropic antenna. The gain measurements are also performed in the same chamber described previously. Figure 2 shows the schematic diagram for measuring radiation pattern and gain.

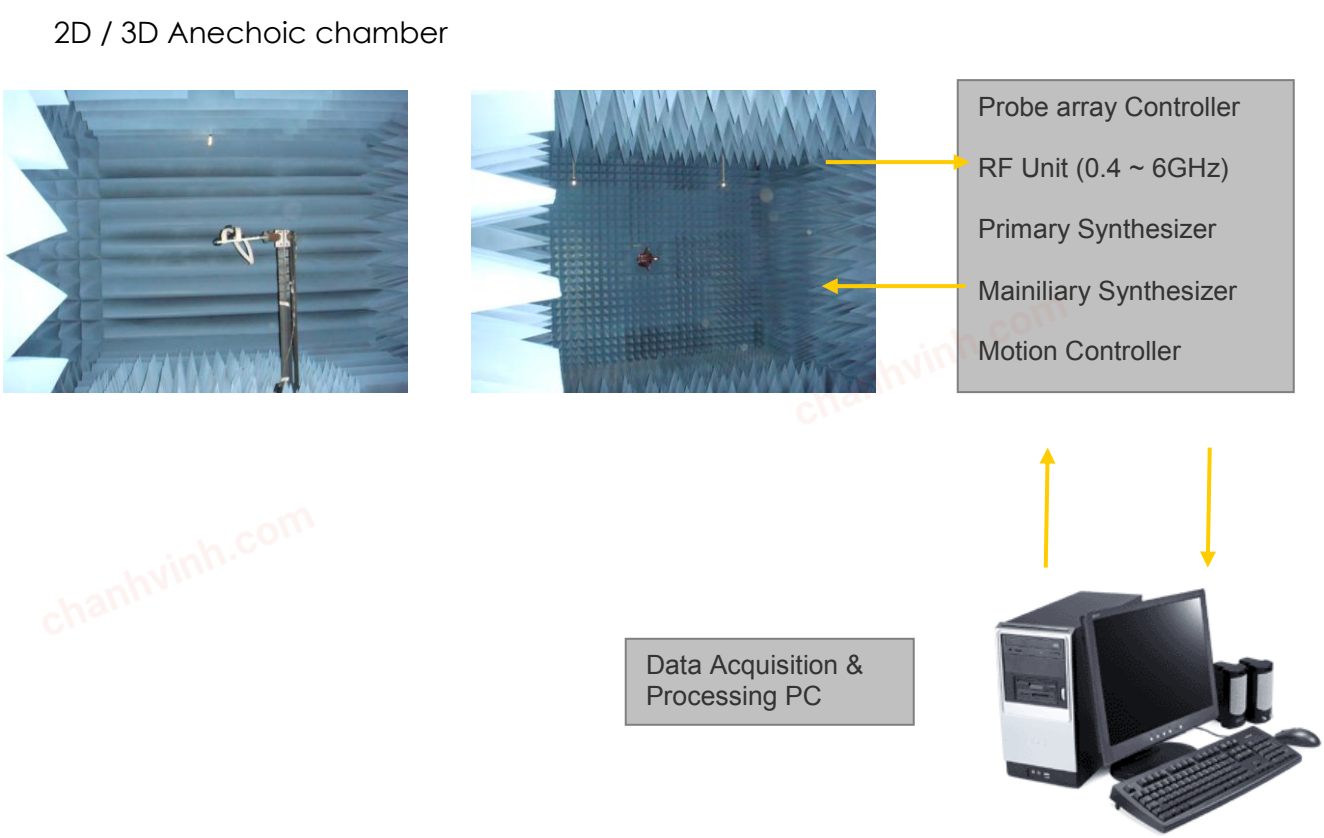
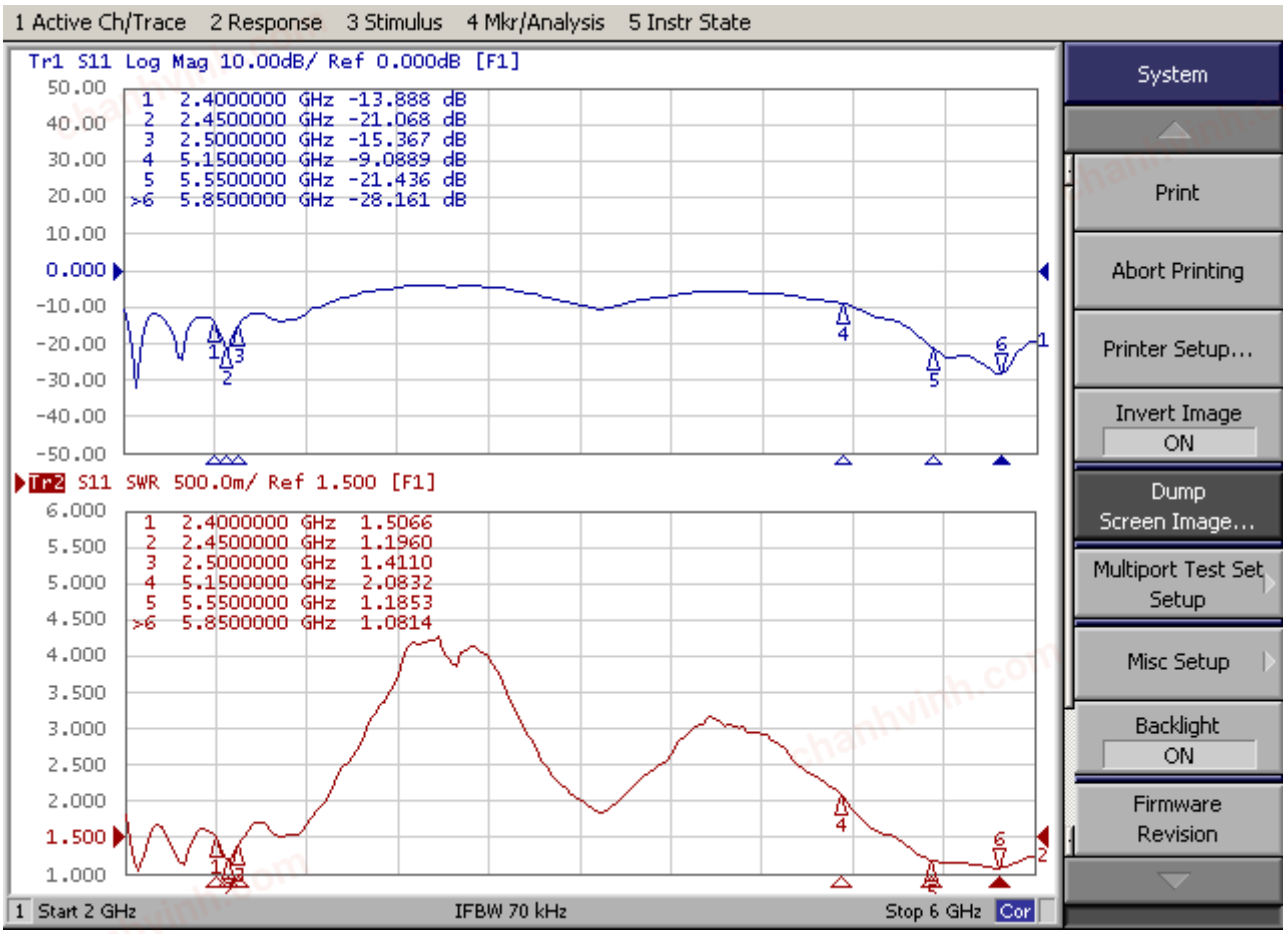


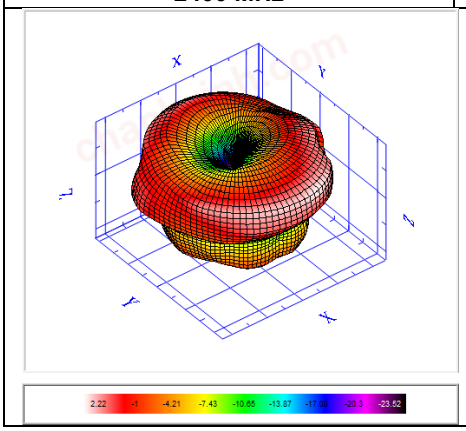
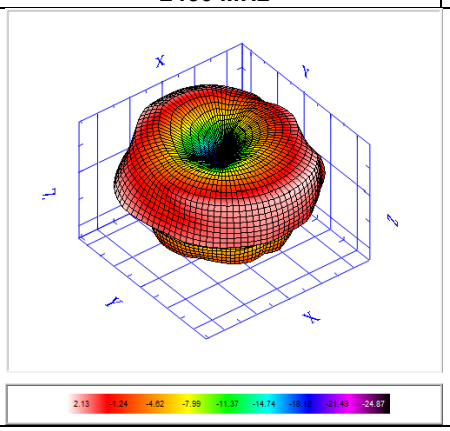
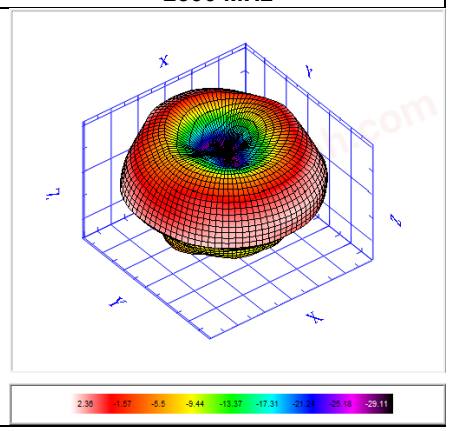
Figure 2. The schematic diagram for measuring radiation pattern and gain

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4.1 Antenna-S Parameter Test Data



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2400 MHz	2450 MHz	2500 MHz
		

Frequency	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
TRP (dBm)	-2.29	-2.22	-2.11	-2.11	-2.15	-1.99	-2.14	-2.04	-1.99	-1.91	-1.75
Peak EIRP (dBm)	2.22	2	1.91	1.95	1.98	2.13	1.94	2.14	2.06	2.29	2.36
NHPRP +/- 45 (degree)	-3.15	-3.02	-2.86	-2.8	-2.78	-2.57	-2.68	-2.54	-2.45	-2.33	-2.13
NHPRP +/- 30 (degree)	-4.57	-4.4	-4.14	-4	-3.95	-3.68	-3.74	-3.55	-3.4	-3.21	-2.95
E-Theta Peak Gain (dBi)	-6.03	-6.35	-6.04	-6.35	-6.37	-6.64	-6.62	-7.35	-7.88	-8.23	-8.81
E-Phi Peak Gain (dBi)	2.2	1.95	1.89	1.92	1.98	2.07	1.89	2.13	2.06	2.28	2.36
E-Total Peak Gain (dBi)	2.22	2	1.91	1.95	1.98	2.13	1.94	2.14	2.06	2.29	2.36
Directivity (dBi)	4.52	4.22	4.02	4.06	4.12	4.12	4.08	4.18	4.05	4.2	4.11
Efficiency (%)	58.96	60	61.45	61.5	60.98	63.26	61.14	62.48	63.26	64.39	66.82

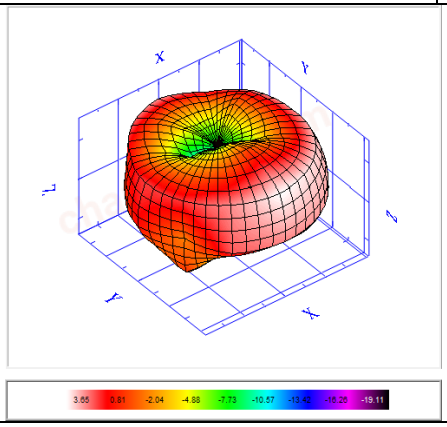
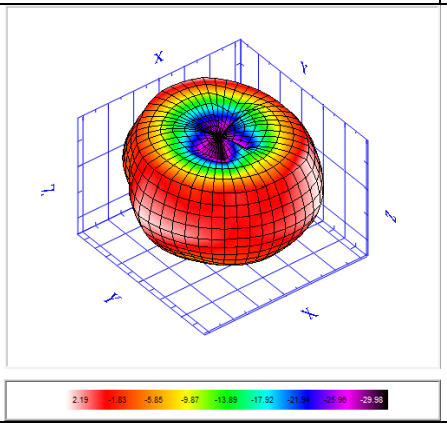
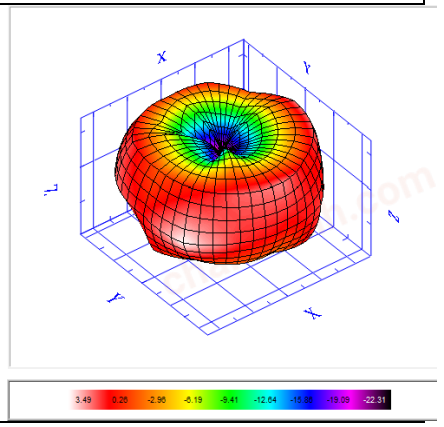
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5150 MHz	5600 MHz	5850 MHz
		

Frequency	5150	5250	5350	5470	5600	5725	5785	5800	5850
TRP (dBm)	-0.74	-0.92	-0.97	-0.74	-1.2	-0.77	-1.03	-0.86	-0.71
Peak EIRP (dBm)	3.65	3.13	3.25	3.8	2.19	2.71	2.33	2.47	3.49
NHPRP +/- 45 (degree)	-1.36	-1.5	-1.47	-1.02	-1.31	-0.88	-1.16	-0.99	-0.9
NHPRP +/- 30 (degree)	-1.18	-1.42	-1.5	-1.2	-1.67	-1.17	-1.42	-1.23	-1.05
E-Theta Peak Gain (dBi)	-9.54	-7.99	-6.78	-9.85	-6.8	-7	-7.9	-9.7	-8.51
E-Phi Peak Gain (dBi)	3.6	3.04	3.16	3.74	1.96	2.68	2.27	2.45	3.41
E-Total Peak Gain (dBi)	3.65	3.13	3.25	3.8	2.19	2.71	2.33	2.47	3.49
Directivity (dBi)	4.4	4.05	4.21	4.54	3.39	3.49	3.36	3.33	4.2
Efficiency (%)	84.28	80.89	80.03	84.32	75.91	83.68	78.86	82.08	84.99

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Characteristics and Reliabilty Test

Test Items 測試項目		Test Condition and Procedure 測試方法	Requirements 要求	Result 結果
C 1	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
C 2	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
C 3	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
C 4	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≥ 500V 或符合材料規範	N/A
C 5	Insulation Resistance 絕緣阻抗	Set Voltage: 500 ± 50V; between the insulated portions, or between ground as specified. 設置電壓 500 ± 50V,在绝缘部份測試或指定接地面之间	Resistance≥500 M ohm or directive material specification 阻抗≥500M ohm 或符合材料規範	N/A
C 6	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
M 1	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.≤5% 無明顯外觀不良;頻率偏移≤ 5%	PASS
M 2	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.≤5% 產品無脫落、斷裂;頻率偏移≤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
M 3	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
M 4	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
M 5	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
M 6	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

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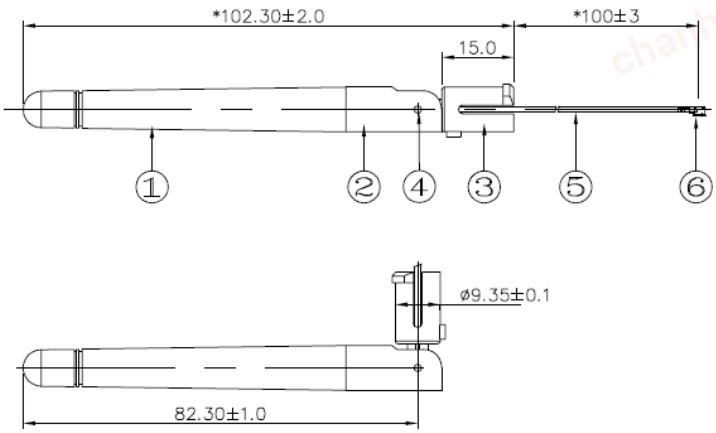
E 1	Waterproof 防水	With Reference to IEC 60529 // IP Code Definition 參考 IEC60529 IP 定義	Directive DUT specification 符合待測物規範	N/A
E 2	Salt Spray 鹽霧	GB / T 2423.17-2008 Temp: 35°C; RH: ≥ 95%; NaCl solution: ≥ 5%;Time: 24H 溫度 35°C；濕度≥95%;鹽水濃度≥5%；測試 24H	1. No Visual Damage 2. Frequency Tol.≤5% 無明顯外觀不良;頻率偏移≤ 5%	PASS
E 3	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
E 4	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
E 5	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
E 6	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
R 1	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
R 2	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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ANTX100P002B24553 Series

Antenna Drawing



Note:
1. Dimension: Take * is the important dimension
2. Tolerance: Unmarked tolerance refer to the standard tolerance please

No.	Part Number	Description	Material	Finish	Q'ty
6	RF Connector	Conn		IPEX-20278	1
5	Mini coaxial	Cable		ø1.13 Black	1
4	R-AN01-1213Z	Hinge Pin	Cu	Black Zn Plated	2
3	R-AN3701-01A	Body3	PC+ABS	Black	1
2	AN5701-05B	Body2	PC+ABS	Black	1
1	AN5701-03B	Body1	TPE	Black	1

For More Information:

Americas - prodinfo_power_americas@yageo.com | **Europe -** prodinfo_power_emea@yageo.com | **Asia -** prodinfo_power_asia@yageo.com

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