

DATA SHEET

WIRELESS COMPONENTS

EXTERNAL 100MM ANTENNA

Part No / YAGEO: ANT-X100ETBAB24553

Part No / CUSTOMER:



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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 TBA 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=100mm

(4) ANTENNA TYPE

E=External

(5) TOOLING CODE

TBA

(6) PACKAGE TYPE

B=Bulk

(7) FREQUENCY BAND

2455=2.4&5GHz

(8) CABLE TYPE

3=1.13

2. SPECIFICATIONS

A. Electrical Characteristics

Working Frequency	2400 ~ 2500 MHz
	5150 ~ 5850 MHz
VSWR	≤ 2.0 @ 2400 ~ 2500 MHz
	≤ 2.5 @ 5150 ~ 5850 MHz
	The data is tested with 1M cable
Antenna Gain	2.5 ± 0.5 dBi @ 2400 ~ 2500 MHz
	3.0 ± 0.5 dBi @ 5150 ~ 5850 MHz
Polarization	Linear
Impedance	50 Ohm
Efficiency	70 % @ 2400 ~ 2500 MHz
	85 % @ 5150 ~ 5850 MHz

B. Material & Mechanical Characteristics

Material of Radiator	Cu
Material of Plastic	TPE / ABS
Antenna Body Color	Black
Cable Type	1.13
Connector Type	Mini Connector

C. Environmental

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

3. ANTENNA PICTURES

4 .TEST METHODOLOGY

4.1 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.

4.2 Test setup

4.2.1 Frequency Range

2400 ~ 2500MHz; 5150 ~ 5875MHz

4.2.2 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.

4.2.3 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.

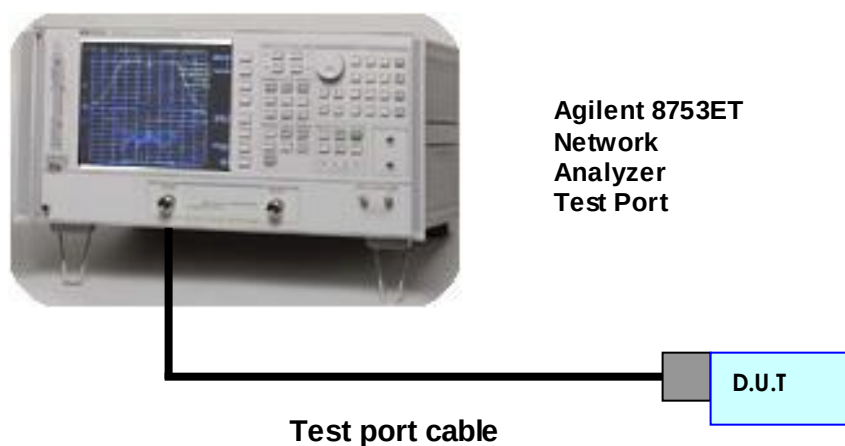


Figure 1. The schematic diagram for measuring VSWR

4.2.4 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.

2D / 3D Anechoic chamber

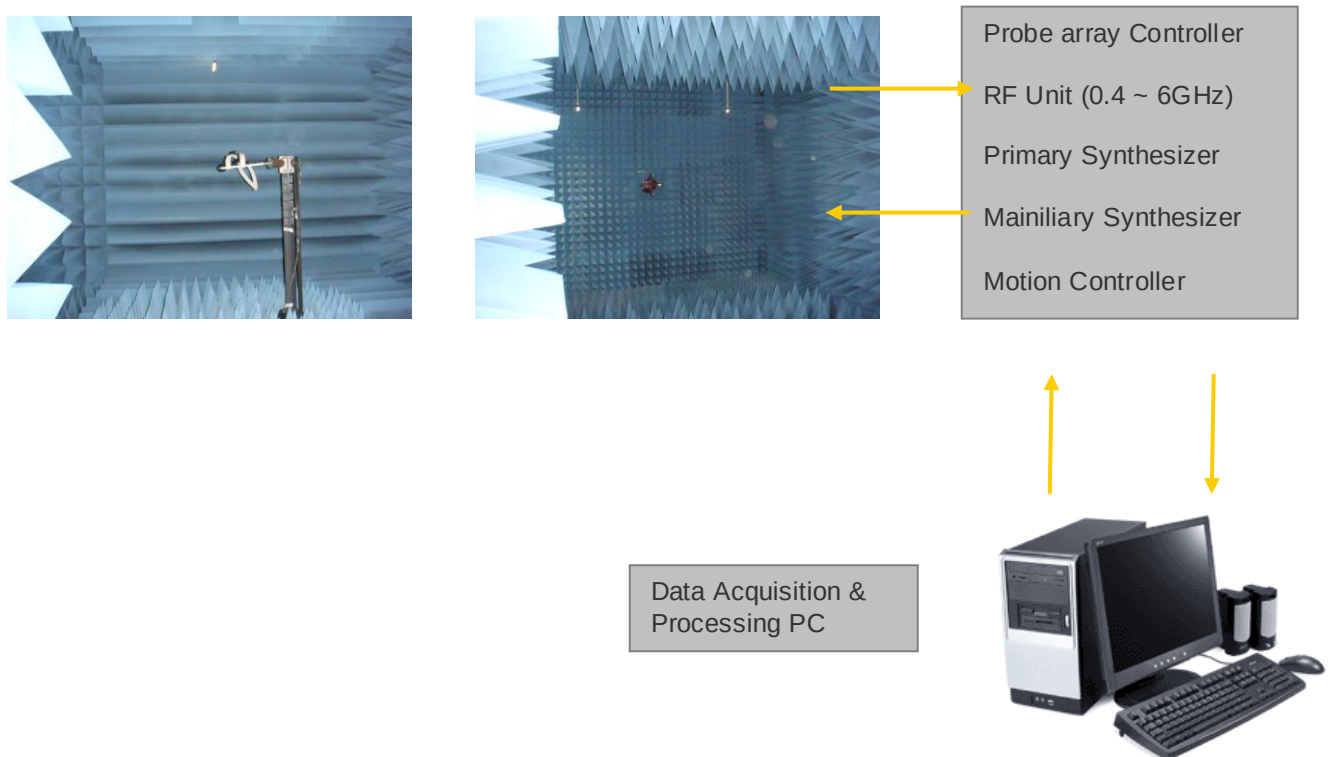
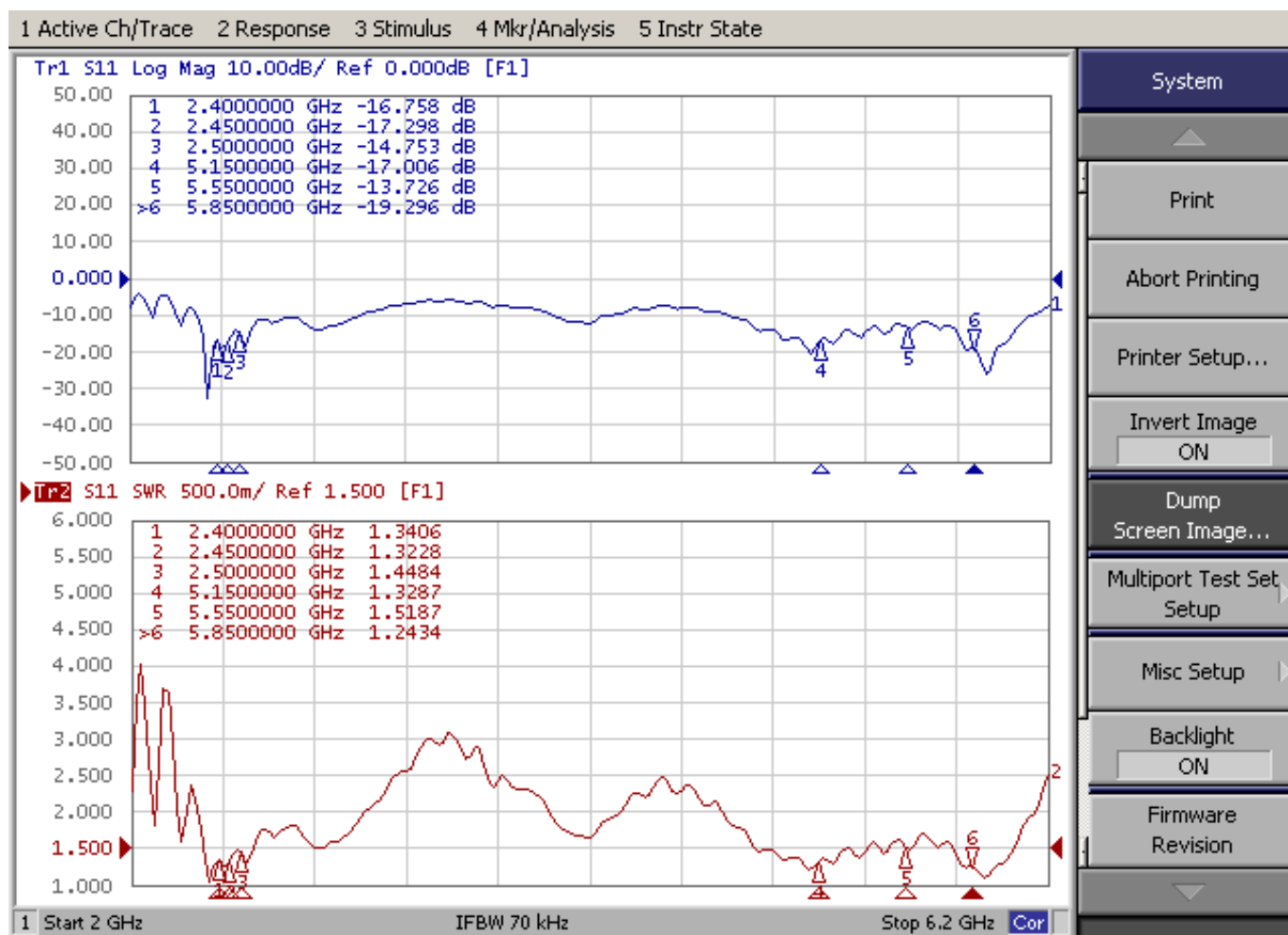


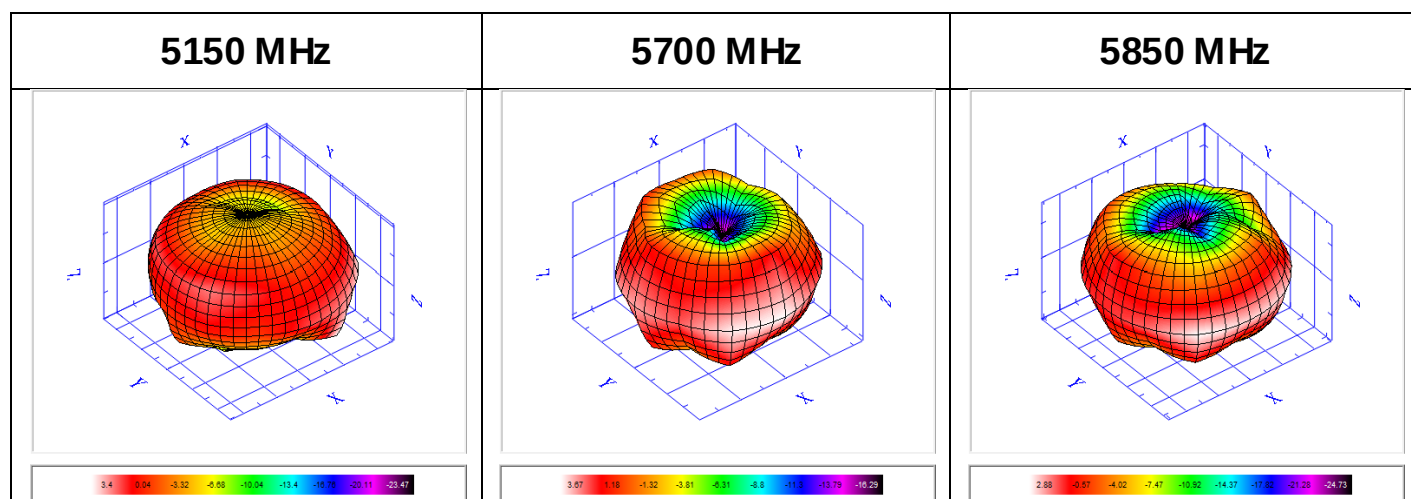
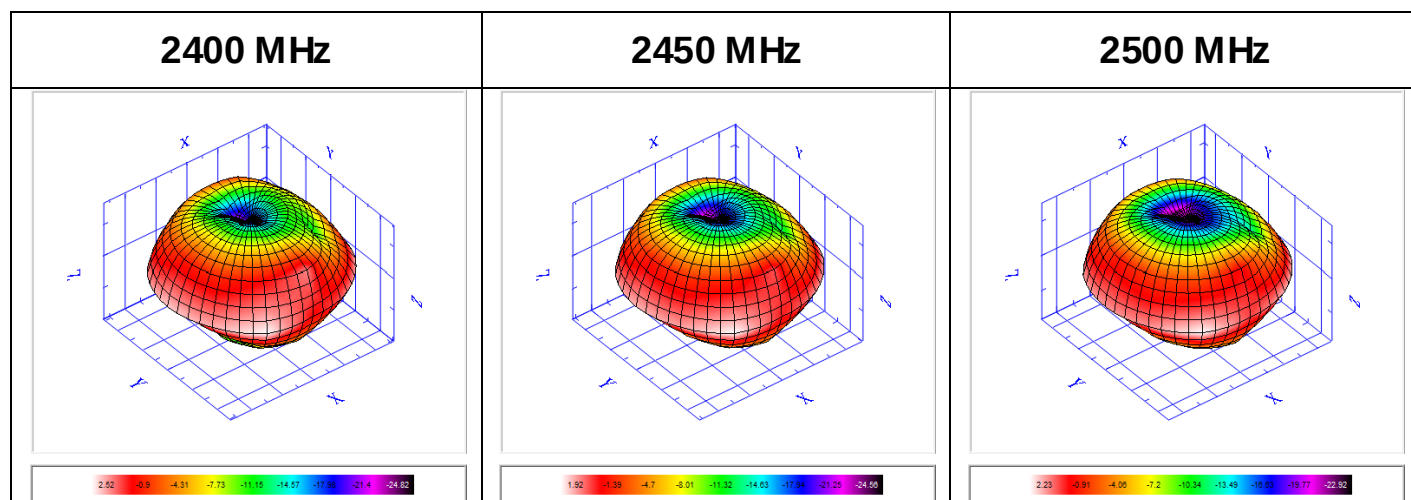
Figure 2. The schematic diagram for measuring radiation pattern and gain

5. PERFORMANCE DATA

5.1 Antenna-S Parameter Test Data



5.2 Antenna-Radiation Pattern Test Data



Frequency	2400	2450	2500	5150	5400	5700	5850
TRP (dBm)	-1.53	-1.94	-1.41	-0.01	-1.03	-0.4	-1.61
Peak EIRP (dBm)	2.52	1.92	2.23	3.4	2.88	3.67	2.88
NHPRP +/- 45 (degree)	-1.78	-2.18	-1.65	-0.53	-1.49	-0.61	-1.83
NHPRP +/- 30 (degree)	-2.05	-2.42	-1.86	-0.55	-1.45	-0.62	-1.83
E-Theta Peak Gain (dBi)	-8.89	-10.29	-10.79	-9.25	-9.01	-7.78	-10.51
E-Phi Peak Gain (dBi)	2.5	1.9	2.2	3.36	2.88	3.62	2.88
E-Total Peak Gain (dBi)	2.52	1.92	2.23	3.4	2.88	3.67	2.88
Directivity (dBi)	4.05	3.86	3.63	3.41	3.91	4.07	4.49
Efficiency (%)	70.33	64.02	72.34	99.8	78.94	91.22	69.08

6. 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间	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 可焊性	GB / T2423.28-2005 Temp: $260 \pm 5^{\circ}\text{C}$; Duration: 5 seconds 溫度 $260 \pm 5^{\circ}\text{C}$; 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. $\leq 5\%$ 符合待測物規範; 頻率偏移 $\leq 5\%$	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. $\leq 5\%$ 符合待測物規範; 頻率偏移 $\leq 5\%$	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	With Reference to IEC 60529 // IP Code Definition	Directive DUT specification	N/A

Wireless Components

	防水	參考 IEC60529 IP 定義	符合待測物規範	
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%	PAS S
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%	PAS S
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%	N/A
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%	PAS S
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	PAS S
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	PAS S

7. Revision History

Revision	Date Change Notification	Description
R01	2017-07-12	New Release
R02	2018-05-31	Update