OTA TEST REPORT

Applicant	Espressif Systems
Product	ESP-ANT A
Model	ESP-ANT A
Report No.	YXA1711-1424OTA01R3
Issue Date	November 27, 2020

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **ANSI/IEEE Std 149-2008.** The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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1. General Information

1.1. Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of TA technology (shanghai) co., Ltd.The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by any government agencies.

1.2. Testing laboratory

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	http://www.ta-shanghai.com
E-mail:	xukai@ta-shanghai.com

1.3. Laboratory Environment

Temperature	Min. =19℃，Max. = 25℃	
Relative humidity	Min. =40%，Max. =72%	
Shield effect	0.7-6GHz	> 100dB
Ground resistance	<0.5Ω	

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2. General Description of Equipment under Test

2.1. Applicant Information

Company: Espressif Systems

Address: #204, Block 2, 690 Bibo Road, Zhang Jiang High-Tech Park, Shanghai, P. R. China

2.2. Manufacturer Information

Company: Espressif Systems

Address: #204, Block 2, 690 Bibo Road, Zhang Jiang High-Tech Park, Shanghai, P. R. China

2.3. Information of EUT

General information

EUT Description	
Product Name:	ESP-ANT A
Model	ESP-ANT A
HW Version:	/
SW Version:	/
Antenna Type:	Fixed Antenna (PCB Antenna)
Antenna Manufacturer:	Espressif Systems
Test Frequency:	2400MHz ~ 2500MHz

Test lab. of the antenna gain and radiation pattern measurement: TA Technology (Shanghai) Co., Ltd.

This revised report (Report No.: YXA1711-1424OTA01R3) supersedes and replaces the previously issued report (Report No.: YXA1711-1424OTA01R2 & YXA1711-1424OTA01R1 & YXA1711-1424OTA). Please discard or destroy the previously issued report and dispose of it accordingly.

2.4. Test Date

The test is performed on August 30, 2017 and November 22, 2017.

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2.5. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test Method: **ANSI/IEEE Std 149-2008**

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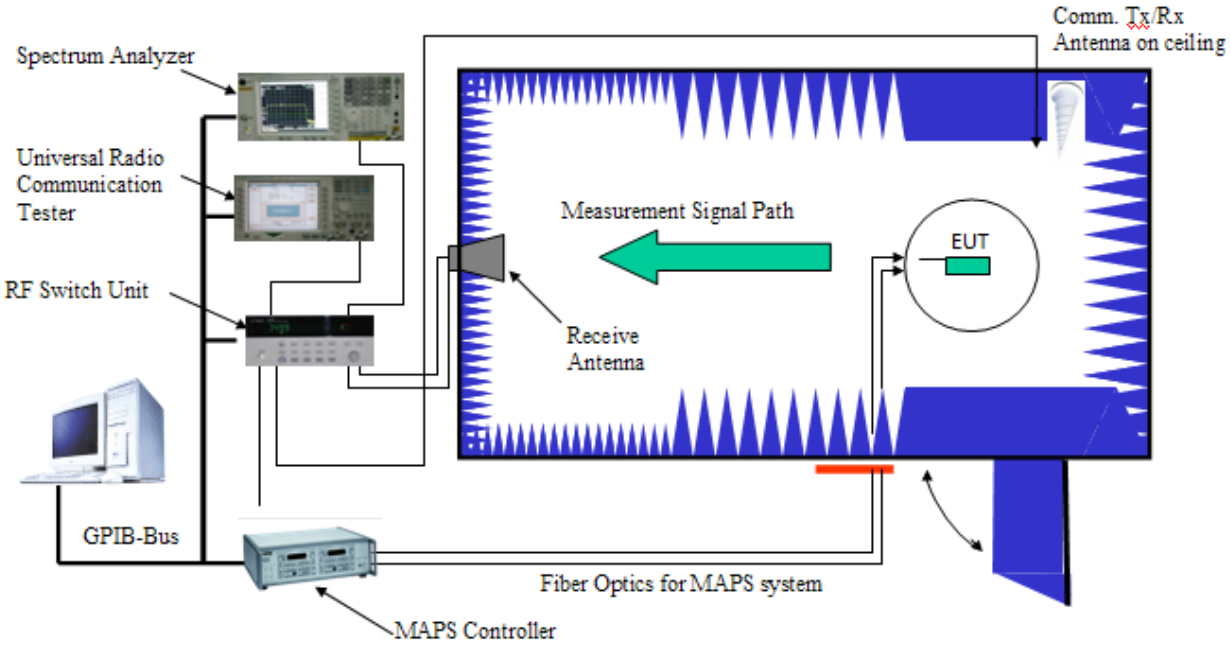
3. Test Conditions

3.1. Test Configuration

Great-Circle-Cut method is used to measure the antenna 3D GAIN of EUT in OTA qualified anechoic chamber. Equipment Under Test (EUT) geometry centre vertical projection at the centre of platform, the distance from EUT to measurement antenna is 5m.



3.2. Test Measurement

Spherical coordinate system

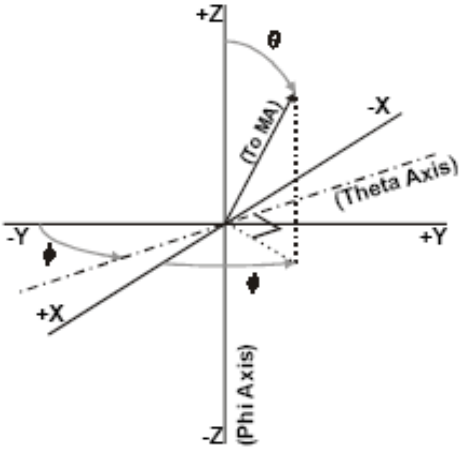


Figure 1 Test coordinate system

Note: Theta is from 0~180 degree. Phi is from 0~360. Rotate the EUT and record the Data, the step of rotation is 30 degree.

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4. Test Results

4.1. Gain and Efficiency

Model	Test Item	Test State	Frequency (MHz)	Efficiency (%)	Peak Gain (dBi)	Note
ESP-ANT A	Gain	Free Space	2400	67.24	3.08	Vertical 30°
			2402	68.24	3.18	
			2410	70.74	3.27	
			2420	77.67	3.66	
			2430	78.20	3.71	
			2440	78.11	3.68	
			2450	77.14	3.64	
			2460	74.79	3.52	
			2470	75.60	3.60	
			2480	74.55	3.52	
			2490	73.05	3.56	
			2500	71.38	3.48	

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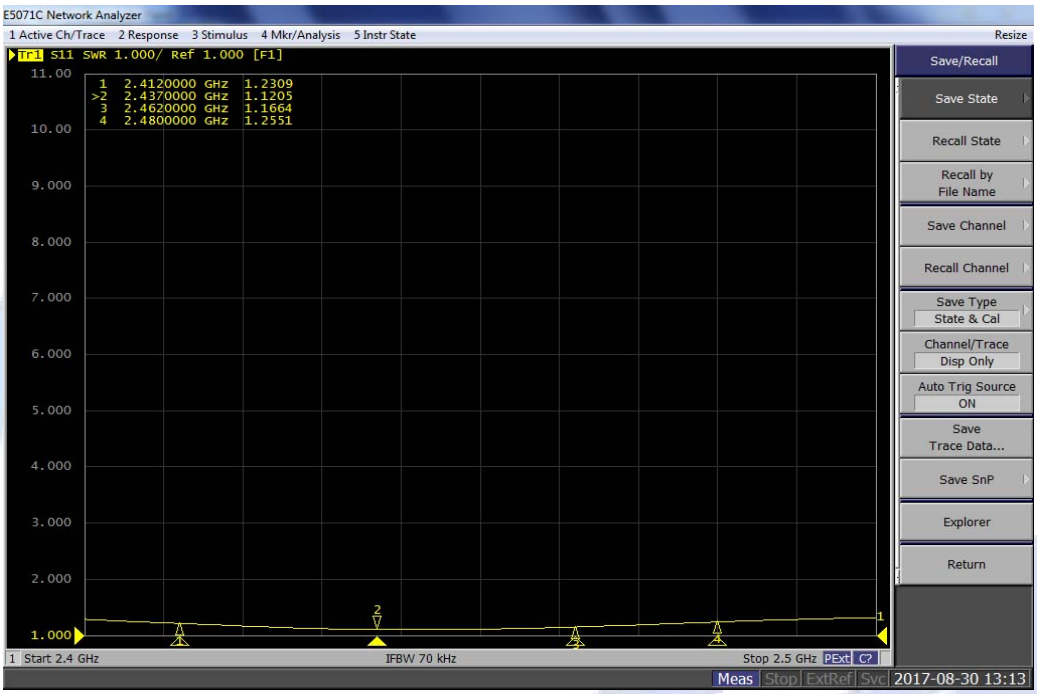
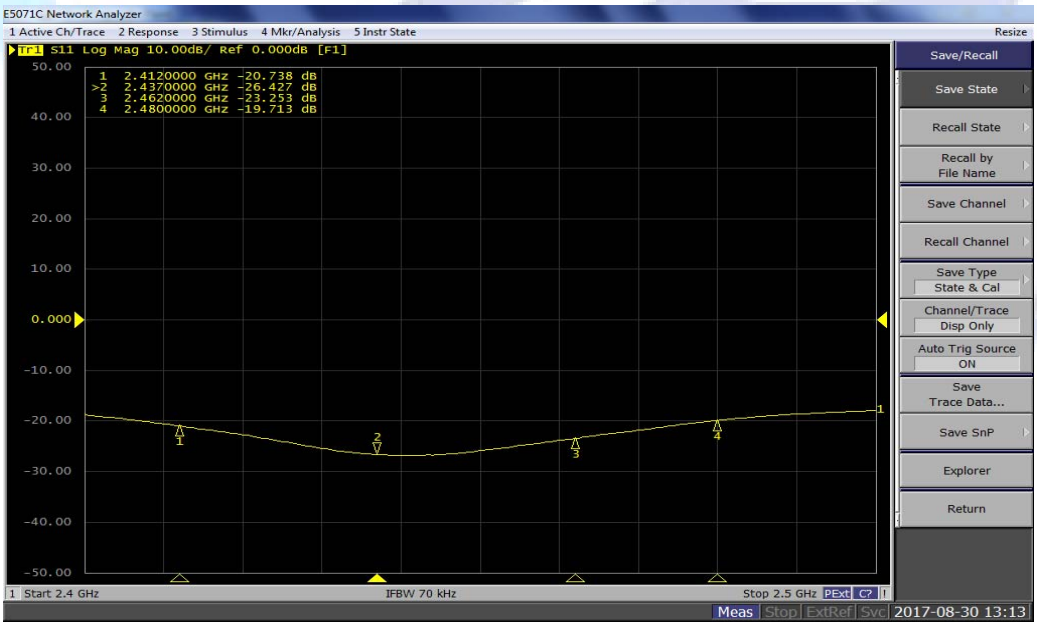
4.2. Voltage Standing Wave Ratio (VSWR)



Frequency (MHz)	2412	2437	2462	2480
VSWR	1.23	1.12	1.17	1.26

4.3. Antenna S11



Frequency (MHz)	2412	2437	2462	2480
S11(dB)	-20.74	-26.43	-23.25	-19.71

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5. Test Equipment List

Type of Equipment	Model Number	SN	Manufacture	Calibration Date	Expiration Time
Network Analyzer	E5071B	MY48360957	Agilent	2017-05-20	2018-05-19
Quad-Ridge Horn Antenna 700 MHz-6 GHz	3164-04	00062743	ETS	2017-05-20	2018-05-19
MAPS Controller	7006	00059957	ETS	2016-12-16	2017-12-15
Switch Control System	7001	MY42001152	ETS	2016-12-16	2017-12-15

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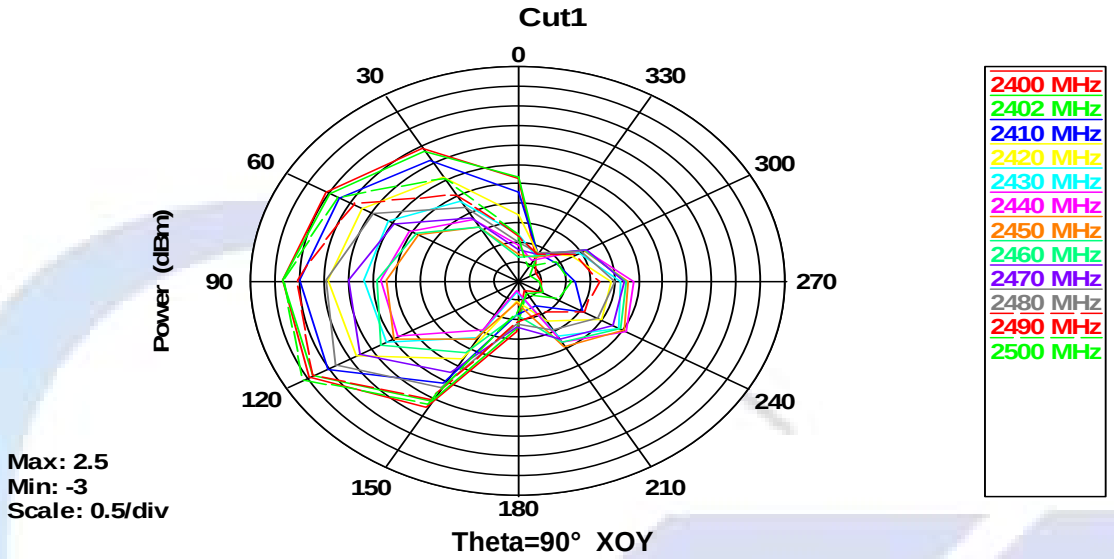
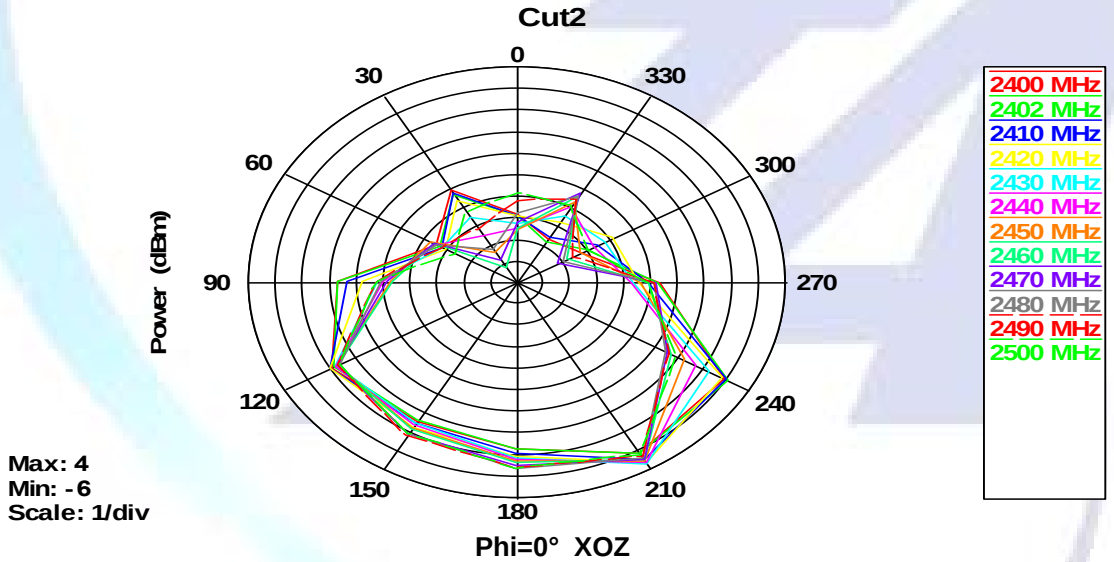
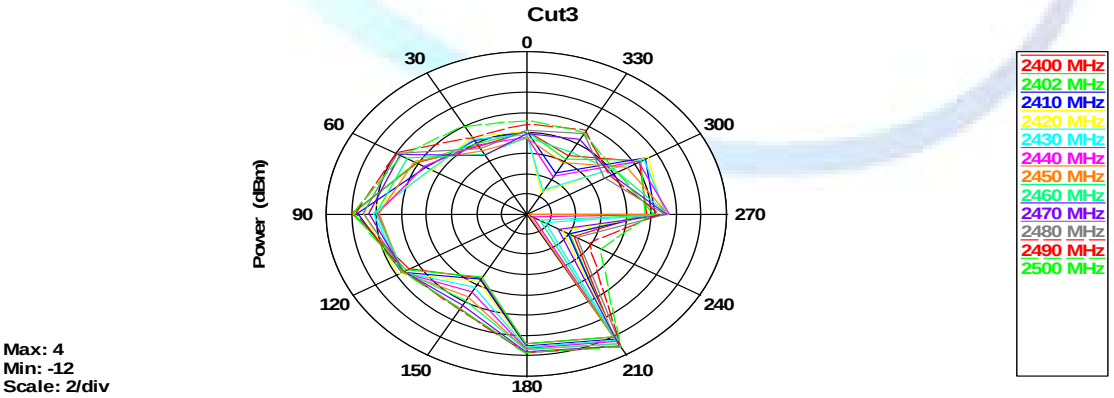
APPENDIX A: 2-D Pattern Plots



Theta=90° XOY



Phi=0° XOZ



Phi=90° YOZ

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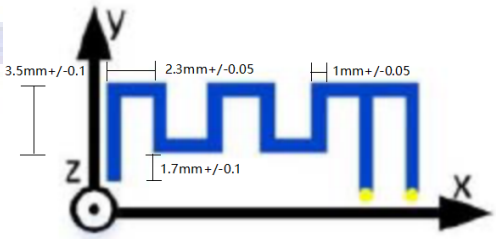
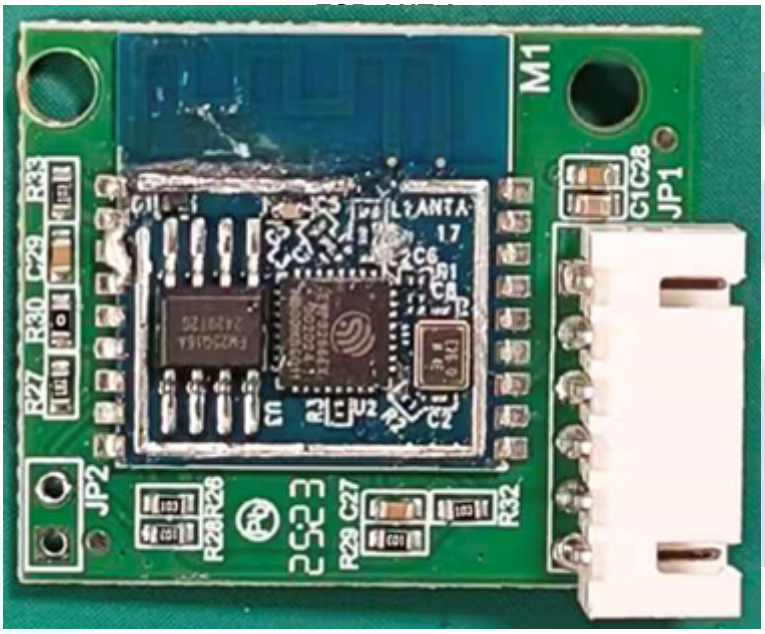
APPENDIX B: The EUT Appearance and Test Configuration

B.1 EUT Appearance





Picture 1 Constituents of EUT

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