

#### APPLICATION OF CERTIFICATION

For

Altai Technologies Limited

Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

Model No: WA3311NAC-E

FCC ID: UCC-WA3311NAC-E

Prepared for: Altai Technologies Limited

Units 209, 2/F, Lakeside 2.10 Science Park West Avenue, Hong Kong Science Park, Shatin, Hong Kong, China

Prepared By: Audix Technology (Shenzhen) Co., Ltd.

No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China

Tel: (0755) 26639496 Fax: (0755) 26632877

Report Number : ACS- F16006

Date of Test : Dec.03~27, 2015

Date of Report : Jan.12, 2016



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### TEST REPORT CERTIFICATION

Applicant : Altai Technologies Limited

EUT Description : Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

FCC ID : UCC-WA3311NAC-E WA3311NAC-E

(A) Model No. : WA3311

(B) Power Supply : DC 56V

(C) Test Voltage : DC 56V From Adapter Input AC 120V/60Hz

Measurement Standard Used:

FCC CFR 47 Part 15 Subpart B Class B 2014, ICES-003 Issue 5: 2012

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits both conducted and radiated emissions. The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed of full responsibility for the accuracy and completeness of these tests. This report contains data that are not covered by the NVLAP accreditation.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test:	Dec.03~27, 2015	_Report of date: _	Jan.12, 2016
Prepared by:	Cindy Zhu / Assistant	Reviewed by :	Sunny Lu / Assistant Manager

AUDIX \*\* 信奉科技 (深圳) 有限公司
Audix Technology (Shenzhen) Go, Lid.

EMC 帮門報告專用章

Stamp only for EMC Dept. Report

Signature: David Jin / Manager

Approved & Authorized Signer:



# 1. SUMMARY OF STANDARDS AND RESULTS

# 1.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION							
<b>Description of Test Item</b>	Standard	Results	Remark				
Power Line Conducted Emission Test	FCC Part 15: 2014 ANSI C63.4: 2009	PASS	Minimum passing margin is 6.69dB at 0.345MHz				
Radiated Emission Test (30-1000MHz)	FCC Part 15: 2014 ANSI C63.4: 2009	PASS	Minimum passing margin is 3.13dB at 584.840MHz				
Radiated Emission Test (1-18GHz)	FCC Part 15: 2014 ANSI C63.4: 2009	PASS	Minimum passing margin is 14.53dB at 1210.41MHz				



#### 2. GENERAL INFORMATION

2.1.Description of Device (EUT)

Product Name : Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

Model Number : WA3311NAC-E

FCC ID : UCC-WA3311NAC-E

Operation Frequency : IEEE 802.11a: 5745MHz—5825MHz

> IEEE 802.11b: 2412MHz—2462MHz IEEE 802.11g: 2412MHz—2462MHz

IEEE 802.11n HT20: 2412MHz—2462MHz; 5745MHz—5825MHz IEEE 802.11n HT40: 2422MHz—2452MHz; 5755MHz—5795MHz

IEEE 802.11ac VHT20: 5745MHz—5825MHz IEEE 802.11ac VHT40: 5755MHz—5795MHz

IEEE 802.11ac VHT80: 5775MHz

Modulation Technology: IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)

IEEE 802.11a/g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac VHT20, VHT40, VHT80: OFDM(16QAM,

64QAM, 256QAM, QPSK, BPSK)

IEEE 802.11n HT20, HT40: OFDM (64QAM,

16QAM,QPSK,BPSK)

Antenna Assembly : Built-in Antenna,

2.4GHz: 12dBi gain, 5GHz: 13dBi gain Gain

Applicant : Altai Technologies Limited

Units 209, 2/F, Lakeside 2.10 Science Park West Avenue, Hong

Kong Science Park, Shatin, Hong Kong, China

Manufacturer : Altai Technologies Limited

Units 209, 2/F, Lakeside 2.10 Science Park West Avenue, Hong

Kong Science Park, Shatin, Hong Kong, China

AC Adapter : Manufacturer: FSGREAT;M/N: GRT-560110A

INPUT:AC 100-240V 50/60Hz

OUTPUT:56V 1100mA

Date of Test : Dec.03~27, 2015

Date of Receipt : Nov.24, 2015

Sample Type : Prototype production

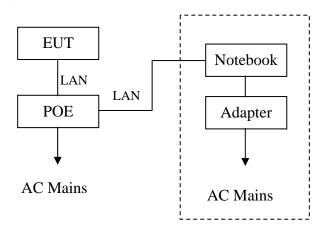


#### *FCC ID:UCC-WA3311NAC-E*

# 2.2.Tested Supporting System Details

No.	Description	ACS No.	Manufacturer	Model	Serial Number		
		N/A	DELL	PP09S	N/A		
1	1,000	Power Cord: Unshielded, Detachable, 1.8m Power Adapter: Manufacturer: DELL, M/N: LA65NS1-00 Cable: Unshielded, Detachable, 4.0m(Bond one ferrite core)					

# 2.3.Block Diagram of Connection between the EUT and Simulators



(EUT: Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP)



FCC\_ID:UCC-WA3311NAC-E

### 2.4.Test Facility

Site Description

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.

No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China

3m Anechoic Chamber : Certificated by FCC, USA

Registration Number: 90454 Valid Date: Dec.30, 2017

3m & 10m Anechoic Chamber : Certificated by FCC, USA

Registration Number: 794232 Valid Date: Jul.12, 2016

EMC Lab. : Accredited by DAkkS, Germany

Registration No: D-PL-12151-01-00

Valid Date: Dec.15, 2016

: Accredited by NVLAP, USA

NVLAP Code: 200372-0 Valid Date: Mar.31, 2016

## 2.5. Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty		
Uncertainty for Conduction emission test in No. 1 Conduction	3.4dB (30MHz~30MHz)		
	2.6dB (30~200MHz, Polarization: H)		
Uncertainty for Radiation Emission test	2.6dB (30~200MHz, Polarization: V)		
in 3m chamber (Distance: 10m)	3.0dB (200M~1GHz, Polarization: H)		
	2.8dB (200M~1GHz, Polarization: V)		
Uncertainty for Radiation Emission test in	6.3dB (1GHz~6GHz, Distance: 3m)		
3m chamber (1GHz-18GHz)	5.7dB (6GHz~18GHz, Distance: 3m)		
Uncertainty for test site temperature and	0.6		
Uncertainty for test site temperature and humidity and pressure	3%		
numary and pressure	1kPa		

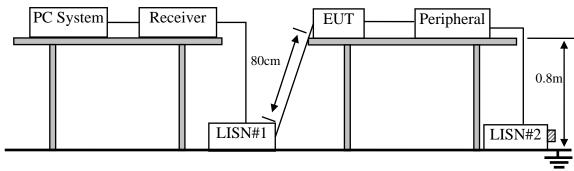


### 3. POWER LINE CONDUCTED EMISSION MEASUREMENT

## 3.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	1# Shielding Room	AUDIX	N/A	N/A	Apr.17,15	1 Year
2.	Test Receiver	Rohde & Schwarz	ESCI	100842	Apr.28,15	1 Year
3.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	100429	Oct.18,15	1 Year
4.	L.I.S.N#2	Kyoritsu	K NW-403D	8-1750-2	Apr.28,15	1 Year
5.	Terminator	Hubersuhner	50Ω	No.1	Apr.28,15	1 Year
6.	Terminator	Hubersuhner	50Ω	No.2	Apr.28,15	1 Year
7.	RF Cable	MIYAZAKI	3D-2W	No.1	Apr.28,15	1Year
8.	Coaxial Switch	Anritsu	MP59B	6200766906	Apr.28,15	1 Year
9.	Test Software	AUDIX	E3	6.100913a	N/A	N/A

### 3.2.Block Diagram of Test Setup



 $\square$  :50 $\Omega$  Terminator

### 3.3. Power Line Conducted Emission Test Limits(Class B)

	Maximum RF Line Voltage			
Frequency	Quasi-Peak Level	Average Level		
	$dB(\mu V)$	$dB(\mu V)$		
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*		
500kHz ~ 5MHz	56	46		
5MHz ~ 30MHz	60	50		

Notes: 1. \* Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.



### 3.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1. Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP (EUT)

Model Number : WA3311NAC-E

Serial Number : N/A

3.4.2. Support Equipment: As Tested Supporting System Detail, in Section 2.2.

### 3.5. Operating Condition of EUT

- 3.5.1. Setup the EUT and simulator as shown as Section 3.2.
- 3.5.2. Turn on the power of all equipments.
- 3.5.3. PC run test software to control EUT work in PC Link mode.

#### 3.6.Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. #1). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2009 on conducted Emission test.

The bandwidth of test receiver (R&S TEST RECEIVER ESCI) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked. The test results are reported on Section 3.7.

#### 3.7. Conducted Emission at Mains Terminals Test Results

**PASS.** (All emissions not reported below are too low against the prescribed limits.)

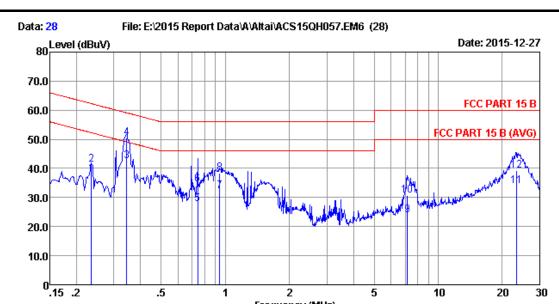
EUT: Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP Model No. : WA3311NAC-E

The EUT with the following test modes were tested and selected (No.1) to read Q.P and Average values, all the test results are listed in next pages.

Test Date: Dec.27, 2015 Temperature: 25.2 Humidity: 53%

The detail of test modes is as follow:

No	Test Mode	Reference Test Data No.			
No.	Test Mode	Line	Neutral		
1.	PC Link	# 28	# 27		



Frequency (MHz)

Trace: (Discrete)

Site no :1# Conduction Data No :28

Dis./Lisn :2015 ESH2-Z5 LINE

Limit :FCC PART 15 B

Env./Ins. :25.2\*C/53% Engineer :Leo-Li

EUT :Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

Power Rating :DC 56V From POE Input AC 120V/60Hz

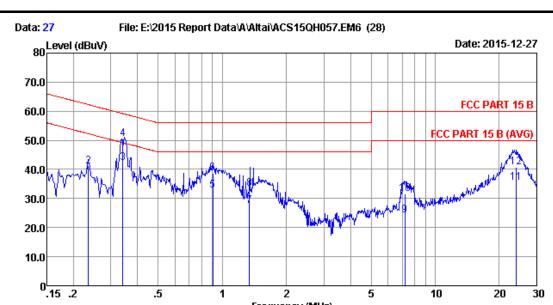
Test Mode : PC Link

M/N:WA3311NAC-E

	LISN	Cable		Emissio	n		
Freq	Factor	Loss	Reading	Level	Limits	Margin	Remark
(MHz)	(dB)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dB)	
	0.12	0.05	37.80	37.97	52.27	14.30	Average
0.235	0.12	0.05	41.10	41.27	62.27	21.00	QP
0.345	0.13	0.06	42.20	42.39	49.08	6.69	Average
0.345	0.13	0.06	50.20	50.39	59.08	8.69	QP
0.743	0.15	0.07	27.60	27.82	46.00	18.18	Average
0.743	0.15	0.07	34.30	34.52	56.00	21.48	QP
0.943	0.16	0.08	31.90	32.14	46.00	13.86	Average
0.943	0.16	0.08	38.00	38.24	56.00	17.76	QP
7.170	0.31	0.16	23.40	23.87	50.00	26.13	Average
7.170	0.31	0.16	30.30	30.77	60.00	29.23	QP
23.360	0.92	0.34	32.80	34.06	50.00	15.94	Average
23.360	0.92	0.34	38.00	39.26	60.00	20.74	QP
	(MHz)  0.235  0.235  0.345  0.743  0.743  0.943  0.943  7.170  7.170  23.360	Freq Factor (MHz) (dB)  0.235 0.12 0.235 0.12 0.345 0.13 0.345 0.13 0.743 0.15 0.743 0.15 0.943 0.16 0.943 0.16 7.170 0.31 7.170 0.31 23.360 0.92	Freq Factor Loss (MHz) (dB) (dB)  0.235 0.12 0.05 0.235 0.12 0.05 0.345 0.13 0.06 0.345 0.13 0.06 0.743 0.15 0.07 0.743 0.15 0.07 0.943 0.16 0.08 0.943 0.16 0.08 7.170 0.31 0.16 7.170 0.31 0.16 23.360 0.92 0.34	Freq Factor Loss Reading (MHz) (dB) (dB) (dBuV)  0.235 0.12 0.05 37.80 0.235 0.12 0.05 41.10 0.345 0.13 0.06 42.20 0.345 0.13 0.06 50.20 0.743 0.15 0.07 27.60 0.743 0.15 0.07 34.30 0.943 0.16 0.08 31.90 0.943 0.16 0.08 38.00 7.170 0.31 0.16 23.40 7.170 0.31 0.16 30.30 23.360 0.92 0.34 32.80	Freq Factor Loss Reading Level (MHz) (dB) (dB) (dBuV) (dBuV)  0.235 0.12 0.05 37.80 37.97 0.235 0.12 0.05 41.10 41.27 0.345 0.13 0.06 42.20 42.39 0.345 0.13 0.06 50.20 50.39 0.743 0.15 0.07 27.60 27.82 0.743 0.15 0.07 27.60 27.82 0.743 0.15 0.07 34.30 34.52 0.943 0.16 0.08 31.90 32.14 0.943 0.16 0.08 38.00 38.24 7.170 0.31 0.16 23.40 23.87 7.170 0.31 0.16 30.30 30.77 23.360 0.92 0.34 32.80 34.06	Freq Factor Loss Reading Level Limits (MHz) (dB) (dB) (dBuV) (dBuV) (dBuV)  0.235 0.12 0.05 37.80 37.97 52.27 0.235 0.12 0.05 41.10 41.27 62.27 0.345 0.13 0.06 42.20 42.39 49.08 0.345 0.13 0.06 50.20 50.39 59.08 0.743 0.15 0.07 27.60 27.82 46.00 0.743 0.15 0.07 34.30 34.52 56.00 0.743 0.15 0.07 34.30 34.52 56.00 0.943 0.16 0.08 31.90 32.14 46.00 0.943 0.16 0.08 38.00 38.24 56.00 7.170 0.31 0.16 23.40 23.87 50.00 7.170 0.31 0.16 30.30 30.77 60.00 23.360 0.92 0.34 32.80 34.06 50.00	Freq         Factor (MHz)         Loss (dB)         Reading (dBuV)         Level (dBuV)         Limits (dBuV)         Margin (dBuV)           0.235         0.12         0.05         37.80         37.97         52.27         14.30           0.235         0.12         0.05         41.10         41.27         62.27         21.00           0.345         0.13         0.06         42.20         42.39         49.08         6.69           0.345         0.13         0.06         50.20         50.39         59.08         8.69           0.743         0.15         0.07         27.60         27.82         46.00         18.18           0.743         0.15         0.07         34.30         34.52         56.00         21.48           0.943         0.16         0.08         31.90         32.14         46.00         13.86           0.943         0.16         0.08         38.00         38.24         56.00         17.76           7.170         0.31         0.16         23.40         23.87         50.00         26.13           7.170         0.31         0.16         30.30         30.77         60.00         29.23           23.360 <td< td=""></td<>

Remarks: 1. Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.

<sup>2.</sup> If the average limit is met when using a quasi-peak detector. the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



2

Frequency (MHz)

5

10

20

30

Trace: (Discrete)

Site no :1# Conduction Data No :27

Dis./Lisn :2015 ESH2-Z5 NEUTRAL

:FCC PART 15 B Limit

:25.2\*C/53% Engineer Env./Ins. :Leo-Li

:Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

Power Rating :DC 56V From POE Input AC 120V/60Hz

.5

Test Mode :Tx Mode

M/N:WA3311NAC-E

		LISN	Cable		Emissio	n		
No	Freq	Factor	Loss	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dB)	
1	0.235	0.13	0.05	37.40	37.58	52.27	14.69	Average
2	0.235	0.13	0.05	40.90	41.08	62.27	21.19	QP
3	0.341	0.13	0.06	42.10	42.29	49.18	6.89	Average
4	0.341	0.13	0.06	50.20	50.39	59.18	8.79	QP
5	0.903	0.16	0.07	32.50	32.73	46.00	13.27	Average
6	0.903	0.16	0.07	38.50	38.73	56.00	17.27	QP
7	1.344	0.18	0.09	27.09	27.36	46.00	18.64	Average
8	1.344	0.18	0.09	33.09	33.36	56.00	22.64	QP
9	7.190	0.35	0.16	23.71	24.22	50.00	25.78	Average
10	7.190	0.35	0.16	31.21	31.72	60.00	28.28	QP
11	24.010	1.10	0.35	33.90	35.35	50.00	14.65	Average
12	24.010	1.10	0.35	39.20	40.65	60.00	19.35	QP

Remarks: 1. Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.

<sup>2.</sup>If the average limit is met when using a quasi-peak detector. the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



## 4. RADIATED EMISSION MEASUREMENT

### 4.1.Test Equipment

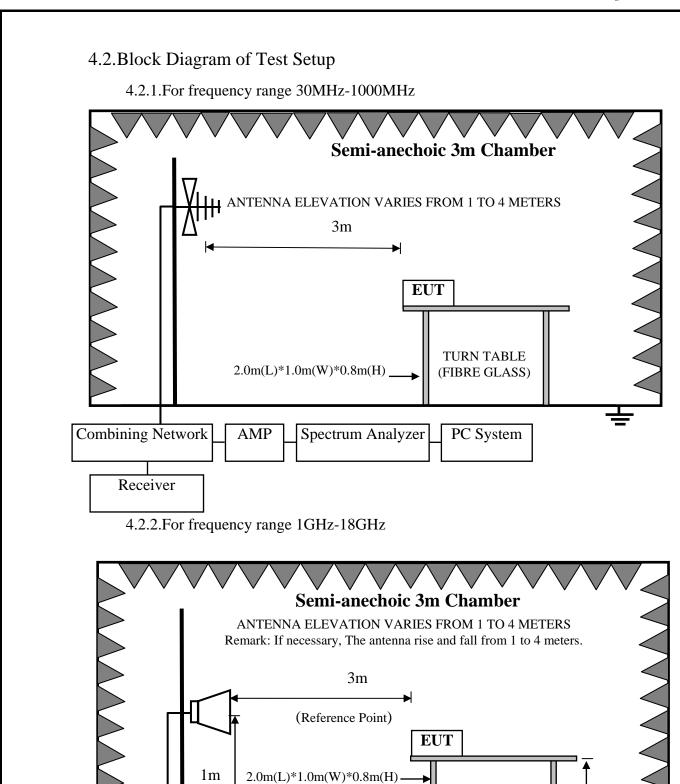
4.1.1.For frequency range 30MHz~1000MHz (In 3m Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	Mar.28,15	1 Year
2.	EMI Spectrum	Agilent	E4407B	MY41440292	Apr.28,15	1 Year
3.	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	Apr.28,15	1 Year
4.	Amplifier	HP	8447D	2648A04738	Apr.28,15	1 Year
5.	Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-493	May.06,15	1 Year
6.	RF Cable	MIYAZAKI	CFD400-N W(3.5M)	No.3	Apr.28,15	1 Year
7.	RF Cable	MIYAZAKI	CFD400-L W(22M)	No.7	Apr.28,15	1 Year
8.	Coaxial Switch	Anritsu	MP59B	6201397222	Apr.28,15	1 Year
9.	Test Software	AUDIX	E3	6.2009-5-21a(n)	N/A	N/A

### 4.1.2.For frequency range 1GHz~18GHz (In 3m Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	Mar.22,15	1 Year
2.	Spectrum Analyzer	Agilent	E4407B	MY41440292	Apr.28,15	1 Year
3.	Horn Antenna	ETC	MCTD 1209	DRH15F03007	Feb.03,15	1 Year
4.	Amplifier	Agilent	83017A	MY53270084	May.25,15	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX106	505238/6+28616/2	Apr.28,15	1 Year
6.	MPEG2 Measurement Generator	ROHDE&SCH WARZ	DVG	100319	Nov.2,15	1 Year
7.	Test Software	AUDIX	E3	6.2009-5-21a(n)	N/A	N/A





ABSORBER

**AMP** 

(30cm maximum)

(30cm)

Spectrum Analyzer

**TURN TABLE** 

(FIBRE GLASS)

PC System

0.8m



### 4.3. Radiated Emission Limit(Class B)

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBµV/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216~960	3	46.0
960~1000	3	54.0
Above 1000	3	74.0(Peak), 54.0(Average)

Remark: (1) Emission level = Antenna Factor + Cable Loss + Reading Emission level = Antenna Factor - Amp Factor + Cable Loss + Reading (above 1000MHz)

- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

### 4.4.EUT Configuration on Test

The configurations of EUT are listed in Section 3.4

### 4.5. Operating Condition of EUT

Same as Conducted Emission test that listed in Section 3.5. Except the test set up replaced as Section 4.2.

#### 4.6.Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2009 on Radiated Emission test.

The bandwidth setting on the test receiver (R&S TEST RECEIVER ESVS10) is 120 kHz.

The resolution bandwidth of the Agilent Spectrum Analyzer E4407B was set at 1MHz. (For above 1GHz)

The frequency range from 30MHz to 1000MHz was pre-scanned with a peak detector and all final readings of measurement from Test Receiver are Quasi-Peak values.

The frequency range from 1GHz to 18GHz was checked and all final readings of measurement were with Peak and Average detector, measurement distance was 3m at semi-anechoic chamber. The portion of the test volume that was obstructed by absorber placed on the floor (30cm maximum). The EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission.



Finally, selected operating situations at Anechoic Chamber measurement, all the test results are listed in section 4.7.

#### 4.7. Radiated Emission Test Results

**PASS.** (All emissions not reported below are too low against the prescribed limits.)

EUT: Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

Model No.: WA3311NAC-E

#### For frequency range 30MHz~1000MHz

The EUT with the following test modes were tested and selected to read Q.P values, all the test results are listed in next pages.

Test Date: Dec.27, 2015 Temperature: 22.1 Humidity: 50%

The detail of test modes is as follow:

No	Test Mode	Reference Test Data No.			
No.	Test Mode	Horizontal	Vertical		
1.	PC Link	# 5	# 6		

#### For frequency range 1GHz~6GHz

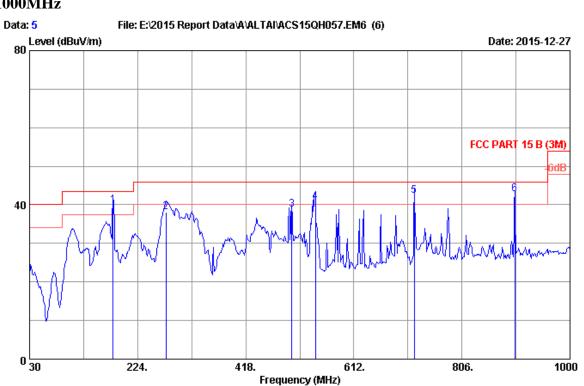
The EUT with below test mode were measured within anechoic chamber and the test results listed in next pages.

Test Date: Dec.03, 2015 Temperature: 24.6 Humidity: 52%

The detail of test modes is as follow:

No	Toot Mode	Reference Test Data No.			
NO.	No. Test Mode	Horizontal	Vertical		
1.	DC Link	# 21	# 22		
2.	PC Link	# 25	# 26		

# 30MHz~1000MHz



Site no. : 3m Chamber Data no. : 5

Dis. / Ant. : 3m 2015 CBL6112D 35375 Ant. pol. : HORIZONTAL

Limit : FCC PART 15 B (3M)

Env. / Ins. : 22.1\*C/50% Engineer : Leo-Li

EUT : Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

Power rating : DC 56V From POE Input AC 120V/60Hz

Test Mode : PC Link

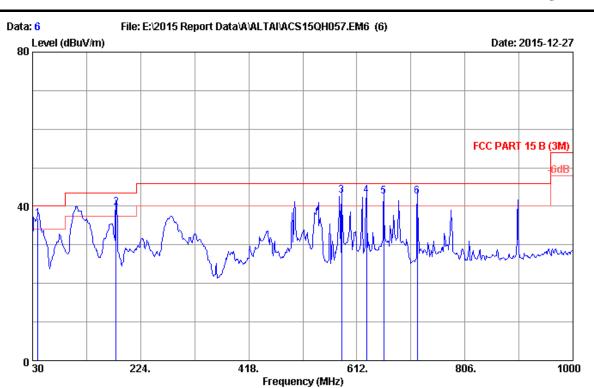
M/N: WA3311NAC-E

Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
180.350	10.02	1.43	28.46	39.91	43.50	3.59	QP
274.440	13.70	1.79	22.50	37.99	46.00	8.01	QP
500.450	18.40	2.51	17.88	38.79	46.00	7.21	QP
543.130	18.68	2.63	19.48	40.79	46.00	5.21	QP
720.640	20.11	3.07	19.12	42.30	46.00	3.70	QP
901.060	22.01	3.50	17.24	42.75	46.00	3.25	QP
	(MHz) 180.350 274.440 500.450 543.130 720.640	Freq. Factor (MHz) (dB/m) 180.350 10.02 274.440 13.70 500.450 18.40 543.130 18.68 720.640 20.11	Freq. Factor Loss (MHz) (dB/m) (dB) 180.350 10.02 1.43 274.440 13.70 1.79 500.450 18.40 2.51 543.130 18.68 2.63 720.640 20.11 3.07	Freq. Factor Loss Reading (MHz) (dB/m) (dB) (dBuV)  180.350 10.02 1.43 28.46 274.440 13.70 1.79 22.50 500.450 18.40 2.51 17.88 543.130 18.68 2.63 19.48 720.640 20.11 3.07 19.12	Freq. Factor Loss Reading Level (MHz) (dB/m) (dB) (dBuV) (dBuV/m)  180.350 10.02 1.43 28.46 39.91 274.440 13.70 1.79 22.50 37.99 500.450 18.40 2.51 17.88 38.79 543.130 18.68 2.63 19.48 40.79 720.640 20.11 3.07 19.12 42.30	Freq. Factor Loss Reading Level Limits (MHz) (dB/m) (dB) (dBuV) (dBuV/m) (dBuV/m)  180.350 10.02 1.43 28.46 39.91 43.50 274.440 13.70 1.79 22.50 37.99 46.00 500.450 18.40 2.51 17.88 38.79 46.00 543.130 18.68 2.63 19.48 40.79 46.00 720.640 20.11 3.07 19.12 42.30 46.00	Freq. Factor Loss Reading Level Limits Margin (MHz) (dB/m) (dB) (dBuV) (dBuV/m) (dBuV/m) (dBuV/m) (dB)  180.350 10.02 1.43 28.46 39.91 43.50 3.59 274.440 13.70 1.79 22.50 37.99 46.00 8.01 500.450 18.40 2.51 17.88 38.79 46.00 7.21 543.130 18.68 2.63 19.48 40.79 46.00 5.21 720.640 20.11 3.07 19.12 42.30 46.00 3.70

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

- The emission levels that are 20dB below the official limit are not reported.
- 3. The worst emission was detected at 901.060 MHz with corrected signal level 42.75dB $\mu$ V/m (Antenna height1.1m; Turntable degree218°).
- 4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.





Site no. : 3m Chamber Data no. : 6

Dis. / Ant. : 3m 2015 CBL6112D 35375 Ant. pol. : VERTICAL

Limit : FCC PART 15 B (3M)

Env. / Ins. : 22.1\*C/50% Engineer : Leo-Li

EUT : Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

Power rating: DC 56V From POE Input AC 120V/60Hz

Test Mode : PC Link

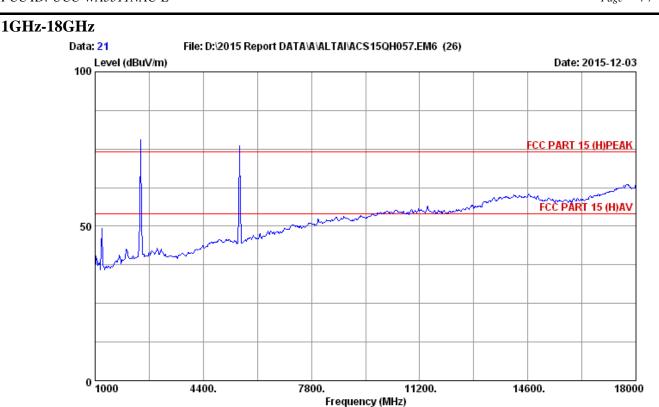
M/N: WA3311NAC-E

_	No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
	1	39.700	14.28	0.71	21.70	36.69	40.00	3.31	QP
	2	180.350	10.02	1.43	28.27	39.72	43.50	3.78	QP
	3	584.840	19.22	2.74	20.91	42.87	46.00	3.13	QP
	4	629.460	19.79	2.84	20.07	42.70	46.00	3.30	QP
	5	660.500	19.90	2.91	19.75	42.56	46.00	3.44	QP
	6	720.640	20.11	3.07	19.29	42.47	46.00	3.53	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

- 2. The emission levels that are 20dB below the official limit are not reported.
- 3. The worst emission was detected at 584.840 MHz with corrected signal level 42.87 dB $\mu$ V/m (Antenna height2.0m; Turntable degree 56°).
- 4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

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Site no. : 10m Chamber Data no. : 21

Dis. / Ant. : 3m Ant. pol. : HORIZONTAL

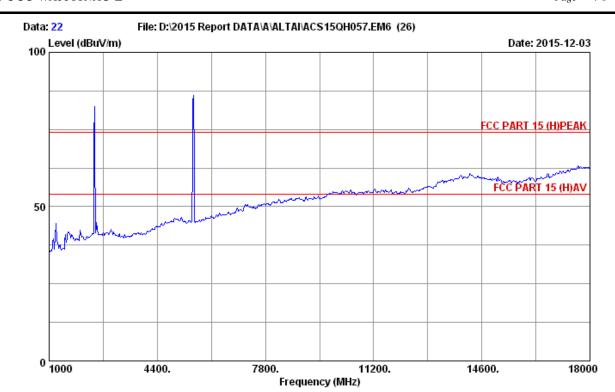
Limit : FCC PART 15 (H) PEAK

Env. / Ins. : 24.6  $\pm$  C/52  $\pm$  Engineer : Faker EUT : Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

Power rating : DC 56V From POE Input AC 120V/60Hz

Test Mode : PC LINK

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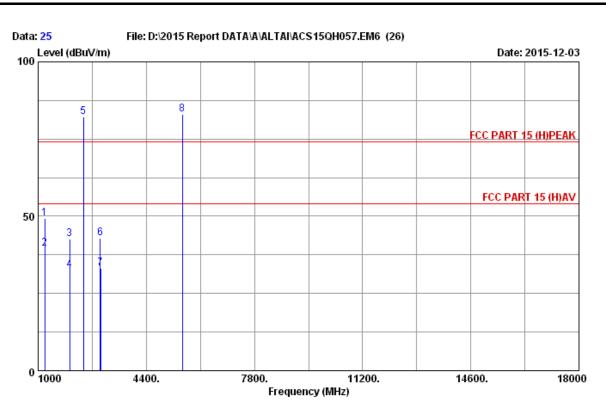


Site no. : 10m Chamber Data no. : 22 Ant. pol. : VERTICAL Dis. / Ant. : 3m

Limit : FCC PART 15 (H) PEAK Env. / Ins. : 24.6\*C/52% Engineer : Faker : Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

Power rating: DC 56V From POE Input AC 120V/60Hz

Test Mode : PC LINK



Site no. : 10m Chamber Data no. : 25

Dis. / Ant. : 3m Ant. pol. : HORIZONTAL

Limit : FCC PART 15 (H) PEAK

Power rating : DC 56V From POE Input AC 120V/60Hz

Test Mode : PC LINK

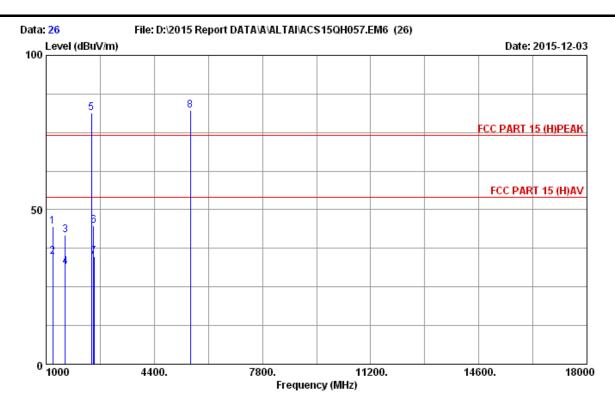
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1206.75	25.03	1.82	36.29	58.85	49.41	74.00	24.59	Peak
2	1210.41	25.04	1.82	36.28	48.89	39.47	54.00	14.53	Average
3	1987.60	26.96	2.40	35.12	48.42	42.66	74.00	31.34	Peak
4	1991.82	26.98	2.40	35.11	38.46	32.73	54.00	21.27	Average
5	2425.00	27.86	2.76	34.72	86.37	82.27	74.00	-8.27	Peak
6	2956.36	28.28	3.11	34.24	45.79	42.94	74.00	31.06	Peak
7	2961.31	28.28	3.11	34.23	35.86	33.02	54.00	20.98	Average
8	5535.00	32.68	4.46	34.65	80.46	82.95	74.00	-8.95	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading  $-{\rm Amp}$  Factor

2. The emission levels that are 20dB below the official limit are not reported.

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Site no. : 10m Chamber Data no. : 26

Dis. / Ant. : 3m Ant. pol. : VERTICAL

Limit : FCC PART 15 (H) PEAK

Env. / Ins. : 24.6\*C/52% Engineer : Faker
EUT : Altai A3-Ei Dual-band 3X3 802.11ac WiFi AP

Power rating : DC 56V From POE Input AC 120V/60Hz

Test Mode : PC LINK

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1205.55	25.03	1.82	36.29	54.06	44.62	74.00	29.38	Peak
2	1209.47	25.03	1.82	36.29	44.17	34.73	54.00	19.27	Average
3	1594.92	25.66	2.11	35.71	49.86	41.92	74.00	32.08	Peak
4	1598.61	25.68	2.11	35.70	39.51	31.60	54.00	22.40	Average
5	2425.00	27.86	2.76	34.72	85.53	81.43	74.00	-7.43	Peak
6	2496.72	27.99	2.82	34.65	48.56	44.72	74.00	29.28	Peak
7	2500.21	28.00	2.82	34.65	38.64	34.81	54.00	19.19	Average
8	5535.00	32.68	4.46	34.65	79.55	82.04	74.00	-8.04	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor

2. The emission levels that are 20dB below the official limit are not reported.