FCC/ IC TEST REPORT

According to

CFR47 §15.247/ RSS-247 Issue 1

Applicant	:	**Qualcomm Atheros, Inc.**
Address	:	**1700 Technology Drive, San Jose, CA 95110**
Manufacturer	:	**Qualcomm Atheros, Inc.**
Address	:	**1700 Technology Drive, San Jose, CA 95110**
Equipment	:	**802.11a/b/g/n/ac + BT 4.1 M.2 2230 Type Card**
Brand	:	**Qualcomm Atheros**
Model No.	:	**QCNFA344A**
FCC ID	:	**PPD-QCNFA344AH**
IC ID	:	**4104A-QCNFA344A**

■ The test result refers exclusively to the test presented test model / sample.

■ Without written approval of ***Cerpass Technology (Suzhou) Co., Ltd.***the test report shall not be reproduced exc- ept in full.

I HEREBY CERTIFY THAT :
The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.10 – 2013** and the energy emitted by this equipment was ***passed.***
CISPR PUB. 22 and FCC Part 15 in both radiated and conducted emission class B limits. Testing was carried out on Jul 01,2016~Jul 25,2016 at ***Cerpass Technology (Suzhou) Co., Ltd.***

Approved by:

Miro Chueh
EMC/RF Manager

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory

☐

NVLAP LAB Code:	**200954-0**
TAF LAB Code:	**1439**

Cerpass Technology (SuZhou) Co., Ltd.

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NVLAP LAB Code:	**200814-0**
CNAS LAB Code:	**L5515**

Release History

Attachment No.	Version	Date	Description
SEDJ1606081	Rev 01	2016-07-26	Initial release

Table of Contents

1. Report of Measurements and Examinations

1.1 List of Measurements and Examinations

Performed Test Item	Normative References	Test Performed	Deviation	Result
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2014 Section 15.209 RSS-Gen Issue 4 November 2014 Section 6.13	Yes	No	Pass
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2014 15.247(d) RSS-247 Issue 1 May 2015 Section 5.5	Yes	No	Pass
Output Power	FCC CFR Title 47 Part 15 Subpart C: 2014 Section 15.247(b)(3) RSS-247 Issue 1 May 2015 Section 5.4(4)	Yes	No	Pass

2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

BT Specification	BT 4.0
BT Frequency	2402~2480MHz
BT Channel Number	40
BT Channel Separation	2MHz
BT Type of Modulation	GFSK
BT Data Rate	1Mbps(GFSK)
Channel Control	Auto
Antenna Type	See antenna requirement

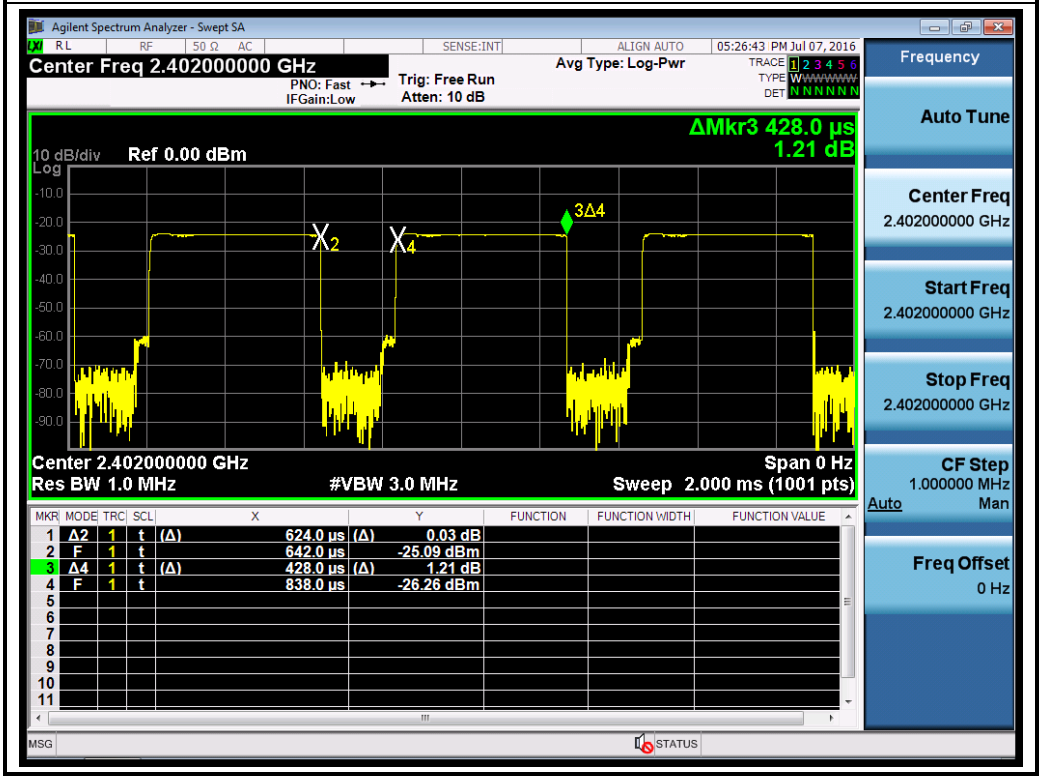
Host Details,

Host Manufacture	Host Type	Host Model
Lenovo	Notebook Computer	Lenovo YOGA 710-11IKB

2.2 Duty Cycle

Test Mode	Frequency (MHz)	Duty Cycle
BLE	2402	68.59%

Transmit at 2402MHz by BLE



2.3 Carrier Frequency of Channels

Bluetooth Working Frequency of Each Channel: (For BLE)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2404 MHz	02	2406 MHz	03	2408 MHz
04	2410 MHz	05	2412 MHz	06	2414 MHz	07	2416 MHz
08	2418 MHz	09	2420 MHz	10	2422 MHz	11	2424 MHz
12	2426 MHz	13	2428 MHz	14	2430 MHz	15	2432 MHz
16	2434 MHz	17	2436 MHz	18	2438 MHz	19	2440 MHz
20	2442 MHz	21	2444 MHz	22	2446 MHz	23	2448 MHz
24	2450 MHz	25	2452 MHz	26	2454 MHz	27	2456 MHz
28	2458 MHz	29	2460 MHz	30	2462 MHz	31	2464 MHz
32	2466 MHz	33	2468 MHz	34	2470 MHz	35	2472 MHz
36	2474 MHz	37	2476 MHz	38	2478 MHz	39	2480 MHz

2.4 Test Manner

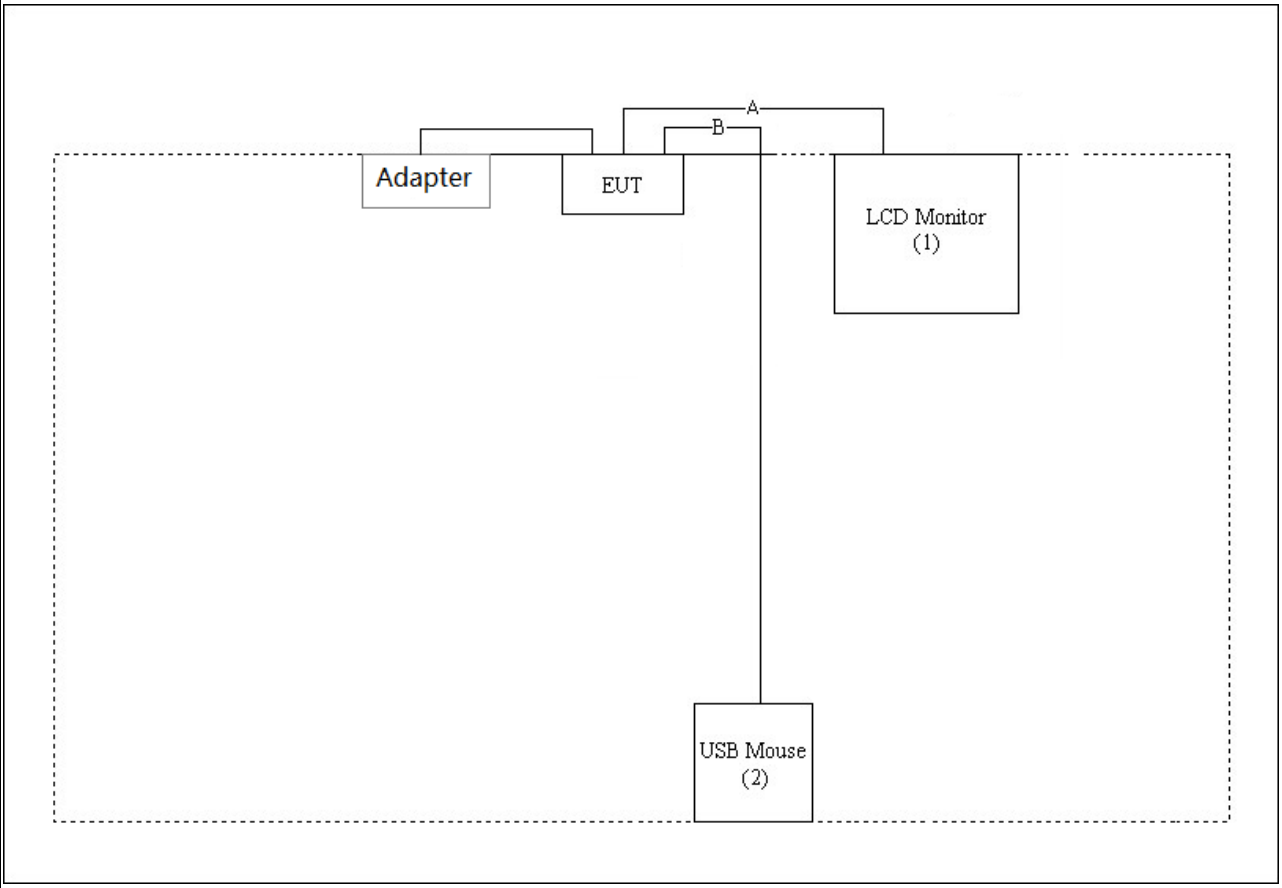
Test Manner	
1	During testing, the interface cables and equipment positions were varied according to RSS-247 Issue 1
2	Adjust the EUT at the test mode and the test channel. Then test.
Test mode	
1	Transmit by 802.11BLE

2.5 Description of Test System

Product		Manufacturer	Model No.	Power Cord
1	LCD Monitor	DELL	U2713HMt	Non-Shielded, 1.8m
2	USB Mouse	LENOVO	M-U0025-O	Power by Notebook

2.6 Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	HDMI Cable	Shielded, 1.8m
B	USB Mouse Cable	Shielded, 1.8m

2.7 General Information of Test

Test Site:	Cerpass Technology Corp.
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2

2.8 Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Radiated Emission	30 MHz ~ 40GHz	Vertical	±4.11 dB
		Horizontal	±4.10 dB
Maximum Peak Output Power	---	---	±1.4 dB

3. Antenna Requirements

3.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3.2 Antenna Construction and Directional Gain

Antenna	Manufacturer	Part Number	Peak Gain
PIFA Antenna(Main)	Speed	DC33001F300	2400- 2500MHz: 1.46dBi, 5150- 5850MHz: 1.95dBi
PIFA Antenna(Aux)	Speed	DC33001F310	2400- 2500MHz: 0.26dBi, 5150- 5850MHz: 2.82dBi
PIFA Antenna(Main)	HongLin	DC33001F000	2400- 2500MHz: 0.87dBi, 5150- 5850MHz: 0.58dBi
PIFA Antenna(Aux)	HongLin	DC33001F010	2400- 2500MHz: 0.64dBi, 5150- 5850MHz: 0.38dBi

Note: This EUT will collocation two kinds of antenna, we choose one of the high peak gain antenna for all RF testing.

4. Test of Radiated Emission

4.1 Test Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

FREQUENCIES(MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE(meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.2 Test Procedures

KDB 558074 D01v03r05 - Section 12.0 & Section 12.1

4.3 Test Setting

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = 120 kHz
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz

7.8.3. Average Field Strength Measurements

1.Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2.RBW = 1MHz

3.VBW ≥ 1/T

4.De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode

5.Detector = Peak

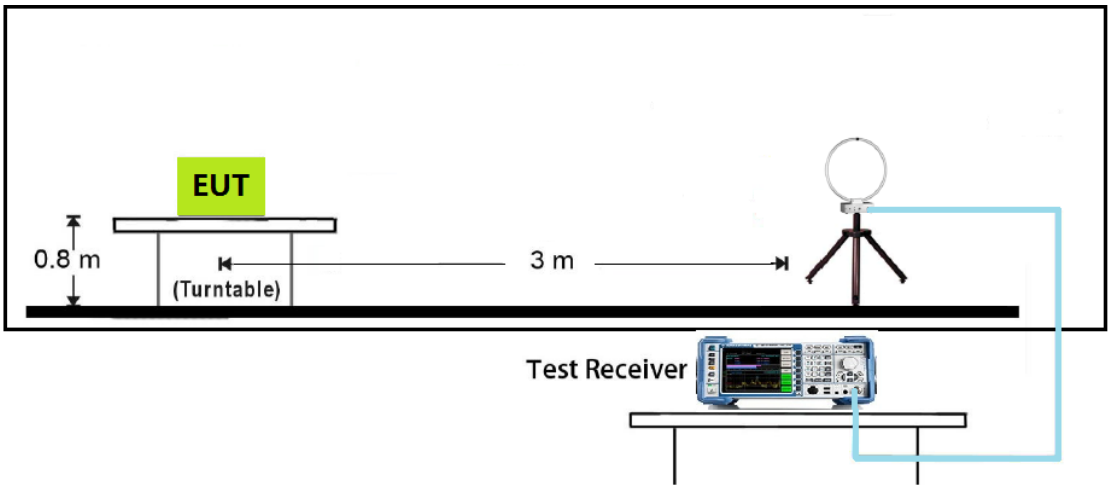
6.Sweep time = auto

7.Trace mode = max hold

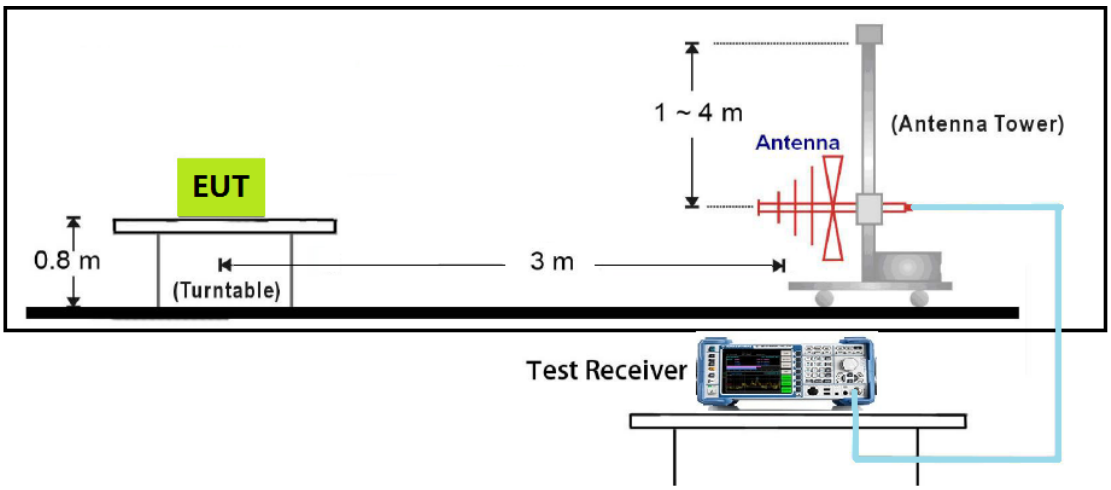
8.Allow max hold to run for at least 50 times (1/duty cycle) traces

4.4 Typical Test Setup

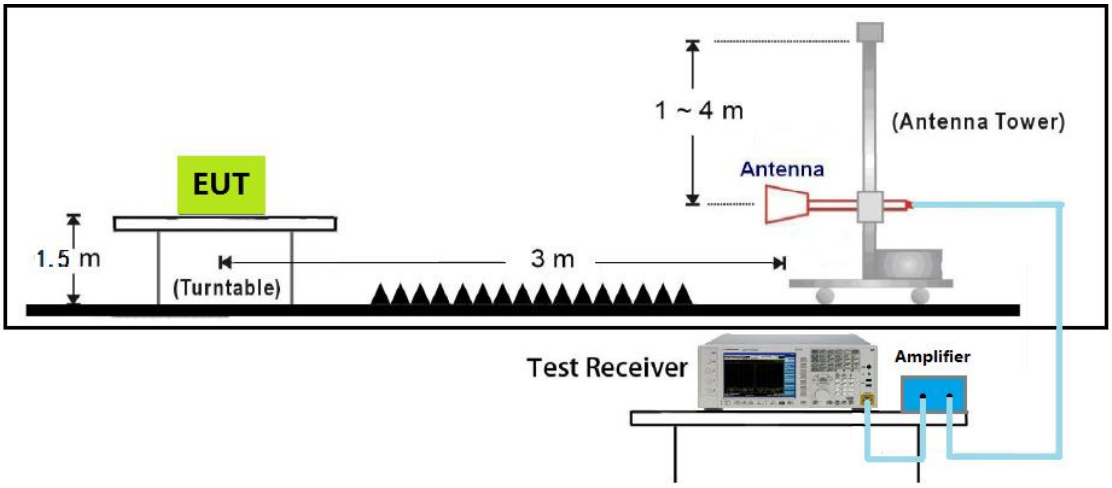
9kHZ~30MHz Test Setup



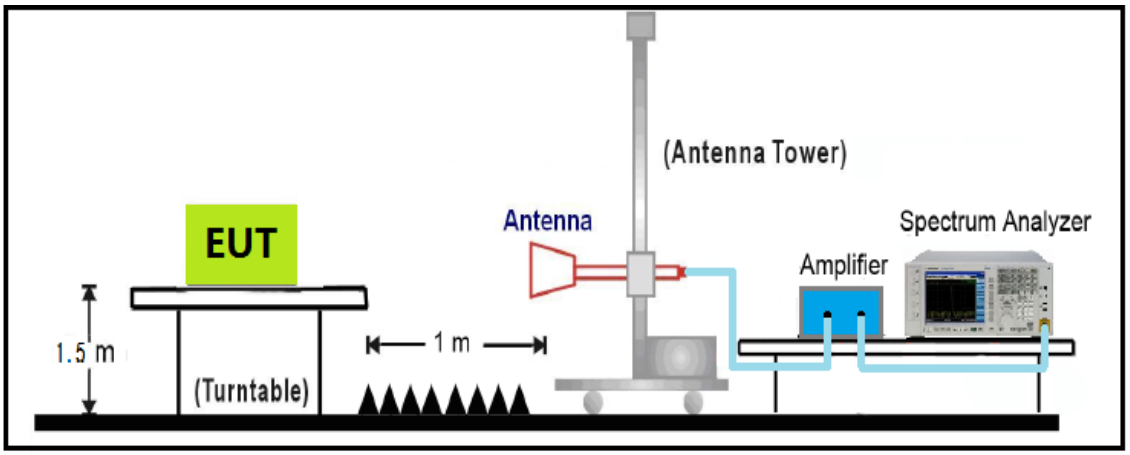
Below 1GHz Test Setup



1GHz~18GHz Test Setup



18GHz~40GHz Test Setup



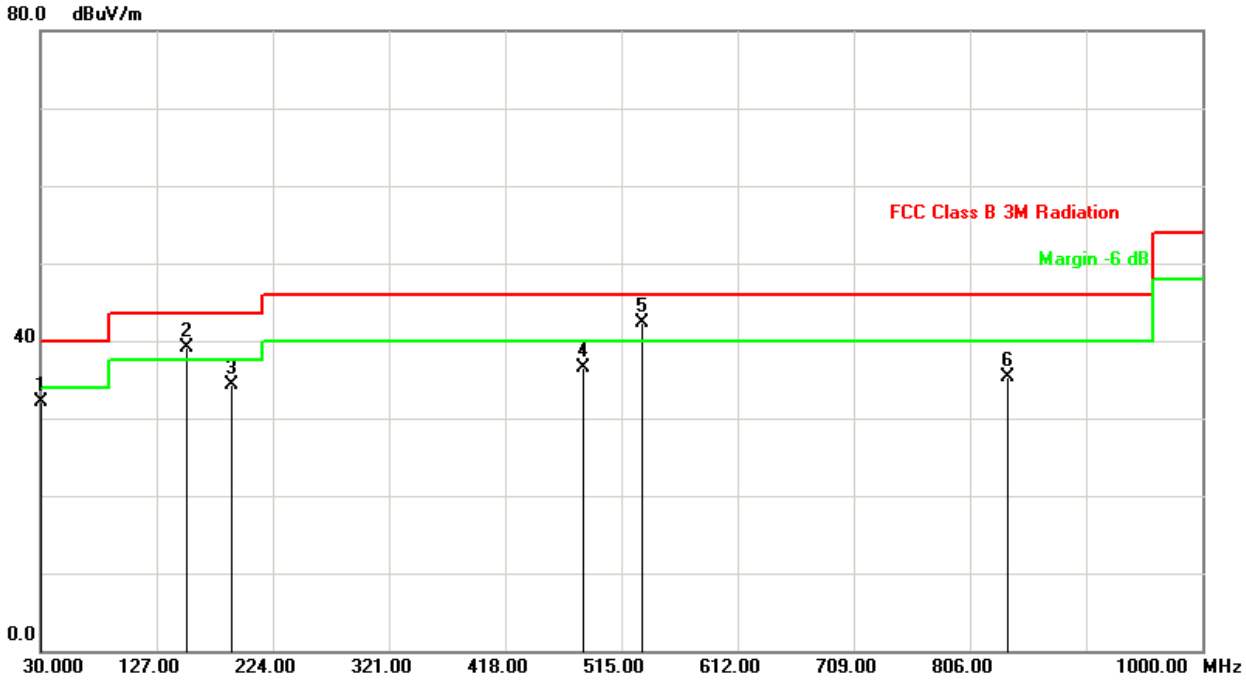
4.5 Measurement Equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	101183	2016.03.28	2017.03.29
Spectrum Analyzer	N9010A	Agilent	MY53400169	2015.11.11	2016.11.10
Spectrum Analyzer	R&S	FSP40	100324	2016.03.23	2017.03.24
H64 Preamplifier	HP	8447F	3113A05582	2016.03.24	2017.03.23
Preamplifier	songyi	EM330	60618	2016.03.29	2017.03.28
Preamplifier	Agilent	8449B	3008A02342	2016.03.29	2017.03.28
Preamplifier	COM-POWER	PA-840	711885	2016.03.29	2017.03.28
Bilog Antenna	Sunol Science	JB1	A072414-1	2016.04.22	2017.04.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2016.04.20	2017.04.19
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	9170-347	2016.04.20	2017.04.19
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2016.03.31	2017.03.30
EZ-EMC	Fala	Ver CT3A1	N/A	N/A	N/A

4.6 Test Result and Data

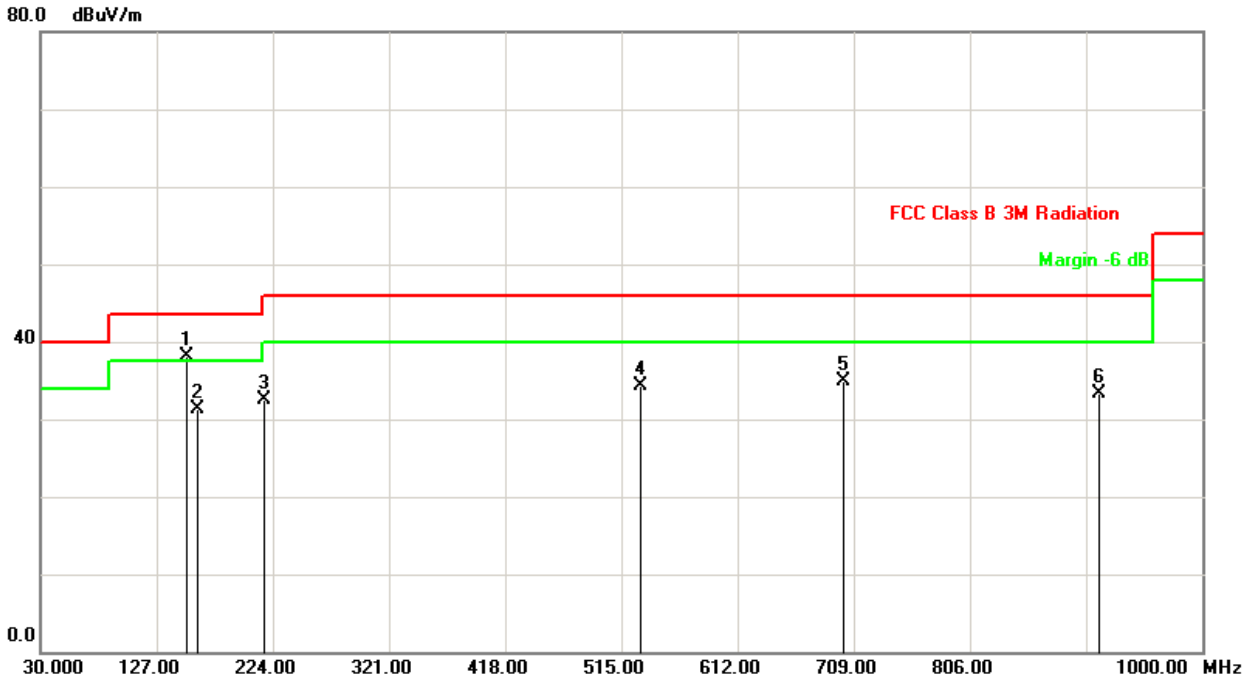
The worst case of Radiated Emission below 1GHz:

Limit: FCC_Part15.209_RE(3m)	Polarity: Horizontal
EUT: QCNFA344A	Power: 120V/60HZ
Note: Mode1: Transmit at channel 2402MHz by BLE	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	30.9600	-5.58	37.73	32.15	40.00	-7.85	QP
2	152.2100	-15.46	54.66	39.20	43.50	-4.30	QP
3	189.0800	-15.40	49.66	34.26	43.50	-9.24	QP
4	482.9900	-5.28	41.82	36.54	46.00	-9.46	QP
5	532.4600	-4.12	46.42	42.30	46.00	-3.70	QP
6	838.0300	1.82	33.42	35.24	46.00	-10.76	QP

Limit: FCC_Part15.209_RE(3m)	Polarity: Vertical
EUT: QCNFA344A	Power: 120V/60HZ
Note: Mode1: Transmit at channel 2402MHz by BLE	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	152.2199	-15.46	53.66	38.20	43.50	-12.77	QP
2	160.9400	-15.50	46.75	31.25	43.50	-14.79	QP
3	217.2100	-14.34	46.88	32.54	46.00	-7.66	QP
4	531.4900	-4.14	38.35	34.21	46.00	-7.20	QP
5	700.2600	-0.53	35.38	34.85	46.00	-6.41	QP
6	913.6600	3.22	30.02	33.24	46.00	-5.21	QP

Above 1G:

Engineer : Ternence	**Site : EMC Lab AC 102**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : QCNFA344A	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit BLE at 2402MHz**

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	AntPol. H/V
1	4804.000	-3.89	47.20	43.31	54(Note 2)	-10.69	peak	H
2	7206.000	0.54	45.25	45.79	54(Note 2)	-8.21	peak	H
3	4804.000	-3.89	47.34	43.45	54(Note 2)	-10.55	peak	V
4	7206.000	0.54	45.71	46.25	54(Note 2)	-7.75	peak	V

Note 1: The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~40GHz), therefore no data appear in the report.

2: This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

3: Measurement Level = Reading Level + Correct Factor

Engineer : Ternence	**Site : EMC Lab AC 102**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : QCNFA344A	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit BLE at 2440MHz**

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	AntPol. H/V
1	4880.000	-3.84	47.02	43.18	54(Note 2)	-10.82	peak	H
2	7320.000	0.81	44.64	45.45	54(Note 2)	-8.55	peak	H
3	4880.000	-3.84	46.92	43.08	54(Note 2)	-10.92	peak	V
4	7320.000	0.81	44.76	45.57	54(Note 2)	-8.43	peak	V

Note 1: The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~40GHz), therefore no data appear in the report.

2: This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

3: Measurement Level = Reading Level + Correct Factor

Engineer : Ternence	**Site : EMC Lab AC 102**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : QCNFA344A	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit BLE at 2480MHz**

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	AntPol. H/V
1	4960.000	-3.79	46.50	42.71	54(Note 2)	-11.29	peak	H
2	7440.000	1.10	43.96	45.06	54(Note 2)	-8.94	peak	H
3	4960.000	-3.79	46.75	42.96	54(Note 2)	-11.04	peak	V
4	7440.000	1.10	44.18	45.28	54(Note 2)	-8.72	peak	V

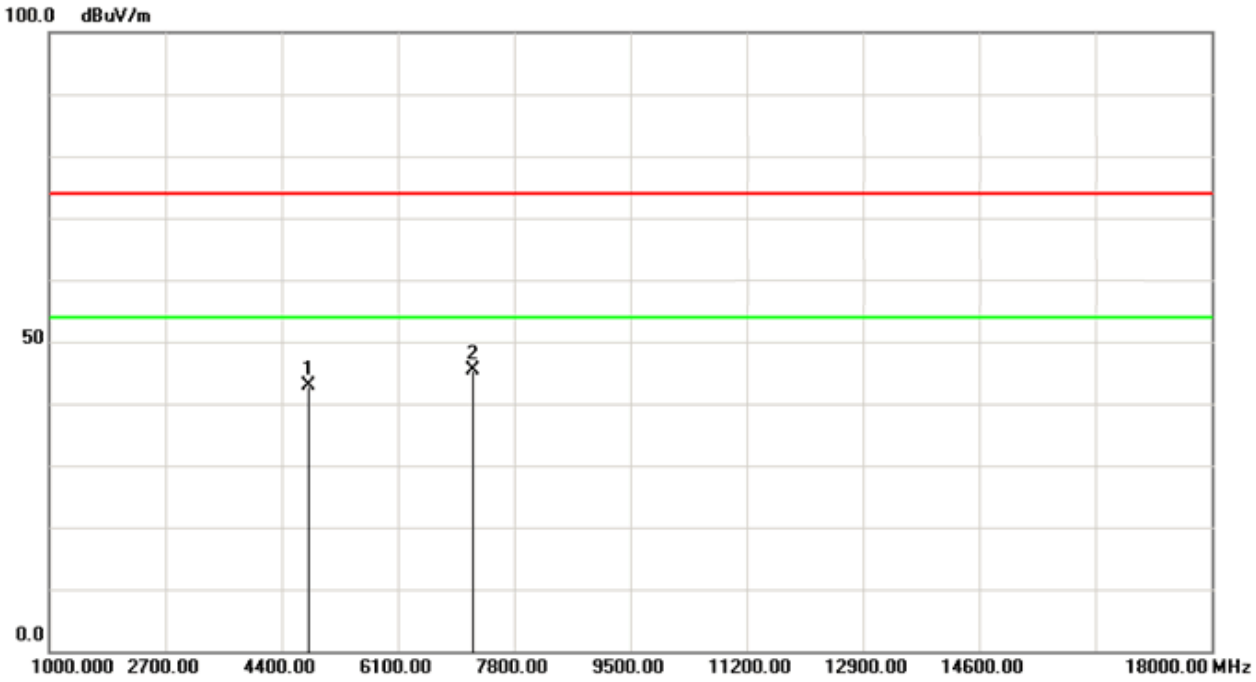
Note 1: The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~40GHz), therefore no data appear in the report.

2: This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

3: Measurement Level = Reading Level + Correct Factor

The worst case of Radiated Emission 1~18GHz:

Site: AC102	Time: 2016/07/12
Limit: FCC_15_03M_PK	Margin: 0
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: QCNFA344A	Power: AC 120V/60Hz
Note: Mode：Transmits at 2402Hz by BLE	



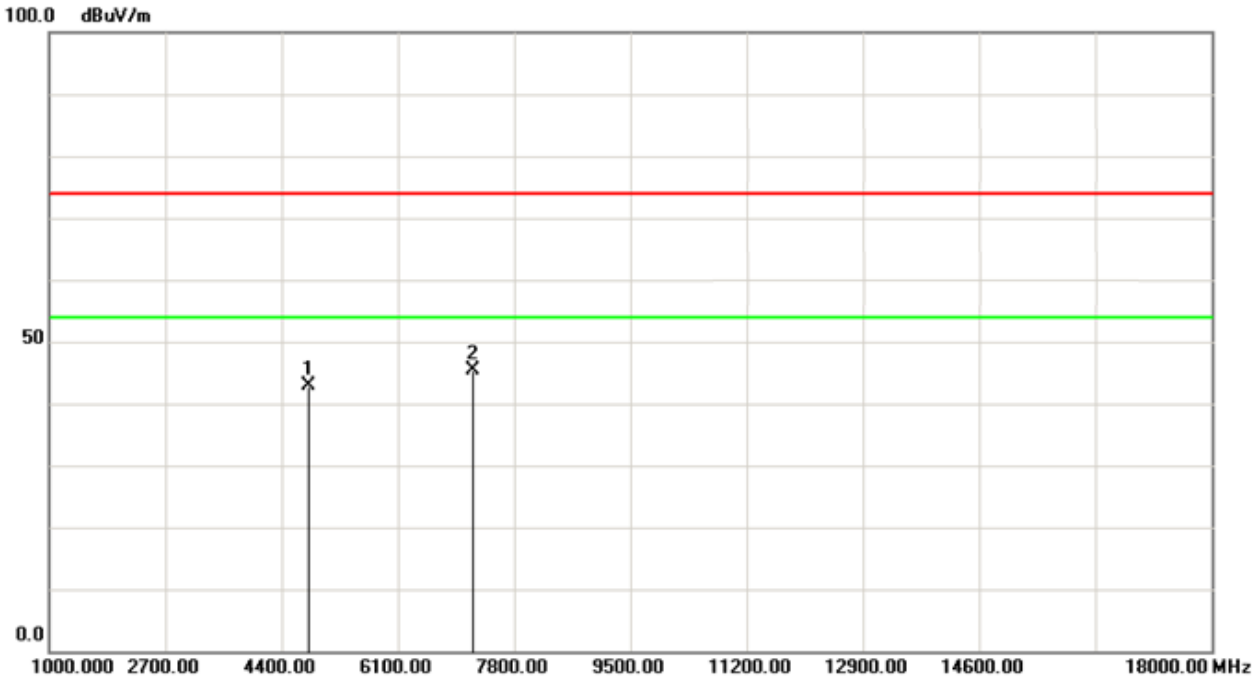
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	AntPol. H/V
1	4804.000	-3.89	47.20	43.31	54(Note 2)	-10.69	peak	H
2	7206.000	0.54	45.25	45.79	54(Note 2)	-8.21	peak	H

Note 1: The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~40GHz), therefore no data appear in the report.

2: This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

3: Measurement Level = Reading Level + Correct Factor

Site: AC102	Time: 2016/07/12
Limit: FCC_15_03M_PK	Margin: 0
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: QCNFA344A	Power: AC 120V/60Hz
Note: Mode：Transmits at 2402Hz by BLE	



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	AntPol. H/V
1	4804.000	-3.89	47.34	43.45	54(Note 2)	-10.55	peak	V
2	7206.000	0.54	45.71	46.25	54(Note 2)	-7.75	peak	V

Note 1: The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~40GHz), therefore no data appear in the report.

2: This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

3: Measurement Level = Reading Level + Correct Factor

5. Maximum Output Power

5.1 Test Limit

The maximum power shall be less 1Watt (30dBm).

The conducted output power limits specified in §15.247(b) are based on the use of transmit antennae with directional gains that do not exceed 6 dBi. If transmit antennae with an effective directional gain greater than 6 dBi are used, then the conducted output power from the EUT shall be reduced as specified in §15.247(b) and (c).

Per RSS247 Issue 1 Section 5.4(4), for DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum conducted output power shall not exceed 1W.

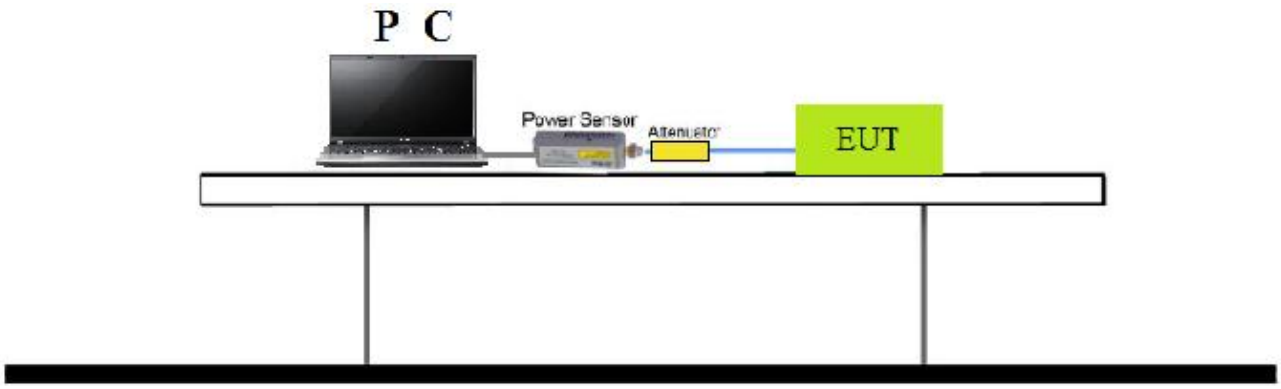
5.2 Test Procedure

The EUT was tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

The maximum conducted AVG output power using KDB 558074 D01v03r05 - Section 9.2.3.2 AVGPM-G Average Power Method.

The Maximum peak conducted output power using KDB 558074 D01v03r05 - Section 9.1.1 RBW ≥ DTS bandwidth Method.

5.3 Test Setup Layout



5.4 Measurement Equipment

Instrument	Manufacturer	Type No.	Serial No.	Calibration Date	Valid Date.
PC	Lenovo	E40-70	MP078UQV	N/A	N/A
POWER SENSOR	Agilent	U2021XA	MY53260020	2016/03/27	2017/03/26
Series Power Meter	ANRITSU	ML2495A	1224005	2016/03/27	2017/03/26
Temperature/Humidity Meter	Zhicheng	ZC1-11	CEP-TH-003	2016/03/31	2017/03/30

5.5 Test Result and Data

Test Item	Maximum Output Power
Test Mode	Transmit by BLE
Test Date	2016-07-14

For Peak Power

Channel No.	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Required Limit (dBm)	Result
00	2402	2.5	3.9	30	Pass
19	2440	2.6	4.2	30	Pass
39	2480	2.7	4.3	30	Pass

For Average Power

Channel No.	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Required Limit (dBm)	Result
00	2402	2.4	3.8	30	Pass
19	2440	2.6	4.1	30	Pass
39	2480	2.6	4.1	30	Pass

6. Band Edges Measurement

6.1 Test Limit

Below –20dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

6.2 Test Procedure

KDB 558074 D01v03r05 – Section 12.2.4 (peak power measurements)
KDB 558074 D01v03r05 – Section 12.2.5 (average power measurements)

6.3 Test Setting

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz

7.8.3. Average Field Strength Measurements

1.Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2.RBW = 1MHz

3.VBW = 1/T

4.De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode

5.Detector = Peak

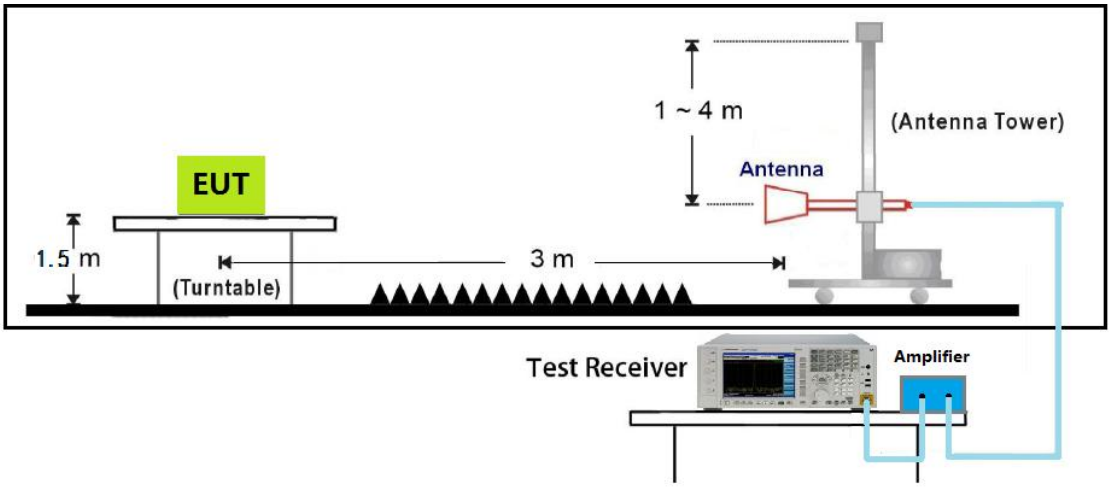
6.Sweep time = auto

7.Trace mode = max hold

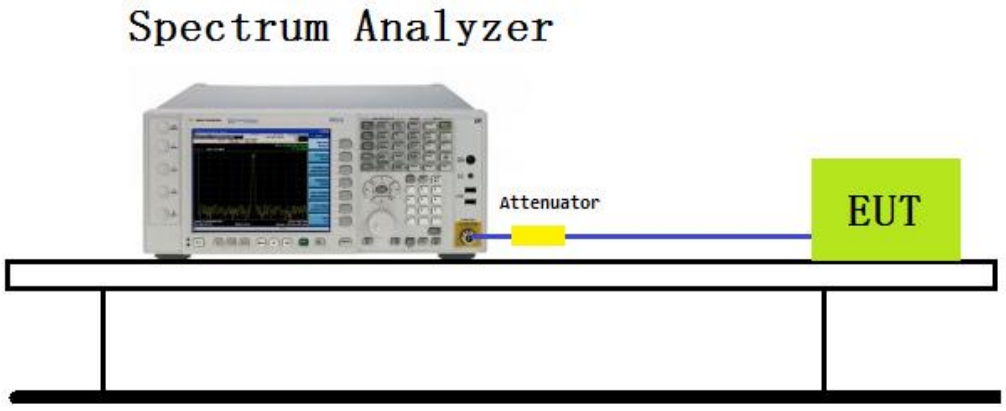
8.Allow max hold to run for at least 50 times (1/duty cycle) traces

6.4 Test Setup Layout

Radiated



Conducted



6.5 Measurement Equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	101183	2016.03.28	2017.03.29
Spectrum Analyzer	N9010A	Agilent	MY53400169	2015.11.11	2016.11.10
Spectrum Analyzer	R&S	FSP40	100324	2016.03.23	2017.03.24
H64 Preamplifier	HP	8447F	3113A05582	2016.03.24	2017.03.23
Preamplifier	songyi	EM330	60618	2016.03.29	2017.03.28
Preamplifier	Agilent	8449B	3008A02342	2016.03.29	2017.03.28
Preamplifier	COM-POWER	PA-840	711885	2016.03.29	2017.03.28
Bilog Antenna	Sunol Science	JB1	A072414-1	2016.04.22	2017.04.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2016.04.20	2017.04.19
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	9170-347	2016.04.20	2017.04.19
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2016.03.31	2017.03.30

6.6 Test Result and Data

Test Date	:	Jul. 12, 2016
Temperature	:	25℃
Humidity	:	55%
Atmospheric Pressure	:	1020 hPa

Modulation Standard: BLE

Channel 0 Fundamental Frequency: 2402 MHz

No.	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type	Antenna Pole (V/H)
1	2390.00	59.38	26.27	-14.62	74.00	33.11	PK	H
2	2390.00	48.70	15.59	-5.30	54.00	33.11	AV	H
3	2390.00	57.10	23.99	-16.90	74.00	33.11	PK	V
4	2390.00	48.36	15.25	-5.64	54.00	33.11	AV	V

Notes:

1. Result = Meter Reading + Factor

2. Factor = Antenna Factor + Cable Loss – Amplifier

Channel 78 Fundamental Frequency: 2480 MHz

No.	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type	Antenna Pole (V/H)
1	2483.50	59.70	26.20	-14.30	74.00	33.49	PK	H
2	2483.50	48.85	15.36	-5.15	54.00	33.49	AV	H
3	2483.50	59.09	25.59	-14.91	74.00	33.49	PK	V
4	2483.50	47.55	14.06	-6.45	54.00	33.49	AV	V

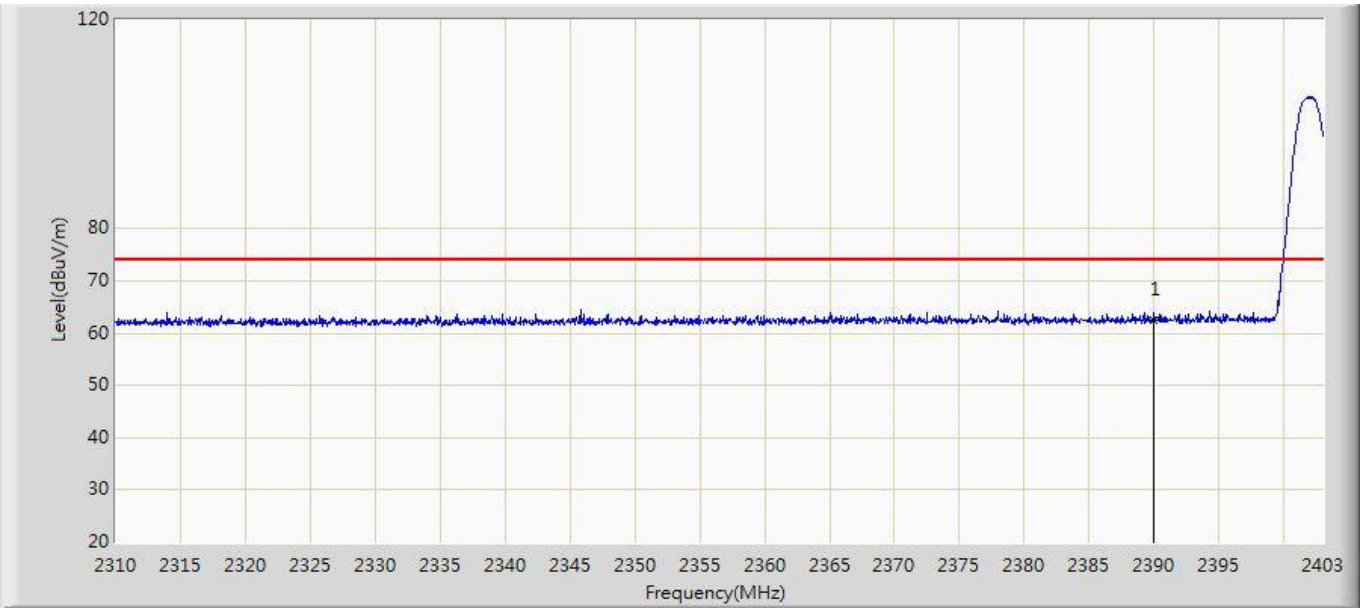
Notes:

1. Result = Meter Reading + Factor

2. Factor = Antenna Factor + Cable Loss – Amplifier

The worst-case plots of bandedge for each mode in each operating band:

Site: AC102	Time: 2016/07/12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: QCNFA344A	Power: AC 120V/60Hz
Note: Mode：Transmit BLE at 2402MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	59.70	26.20	-14.30	74.000	33.111	PK

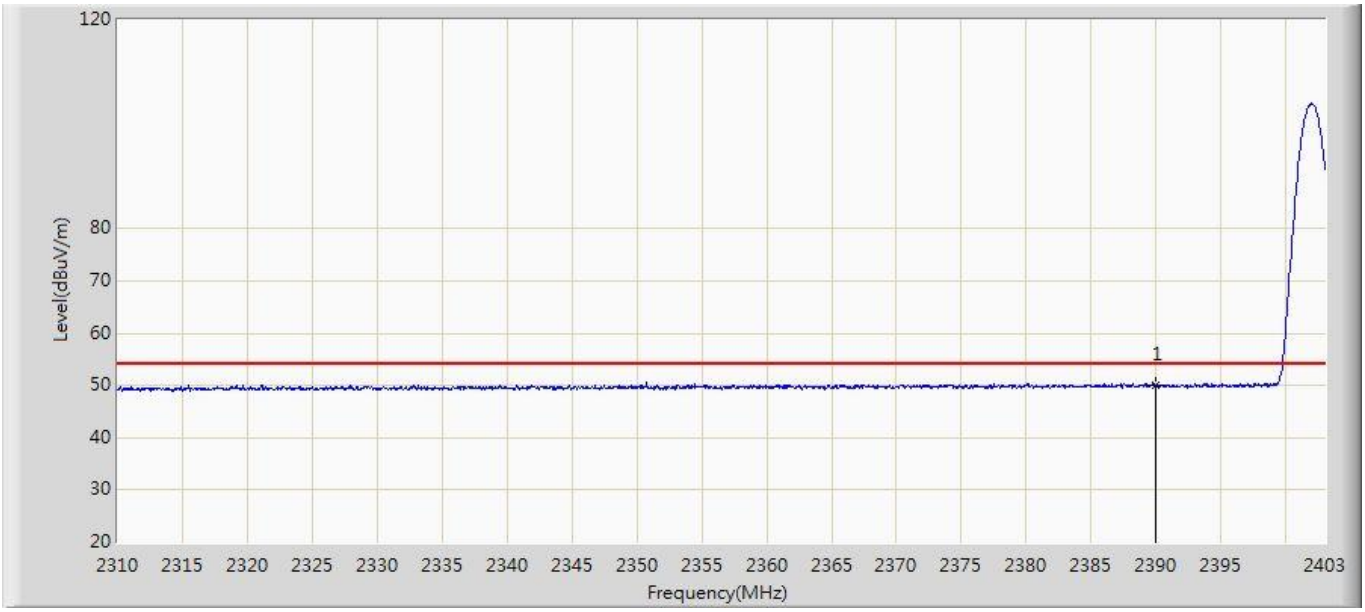
Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.

2. Measurement Level = Reading Level + Correct Factor (Correct Factor= Antenna Factor + Cable Loss – Amplifier)

3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~40GHz), therefore no data appear in the report.

Site: AC102	Time: 2016/07/12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Horizontal
EUT: QCNFA344A	Power: AC 120V/60Hz
Note: Mode：Transmit BLE at 2402MHz	

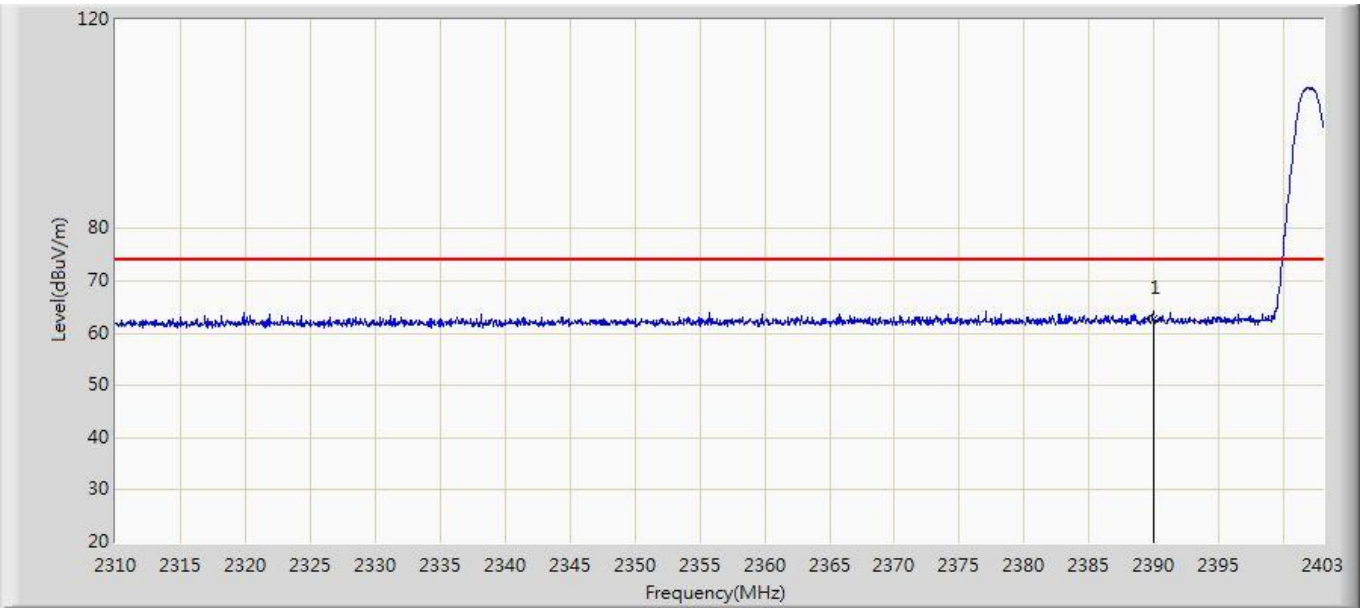


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	48.85	15.36	-5.15	54.000	33.111	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor (Correct Factor= Antenna Factor + Cable Loss – Amplifier)
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~40GHz), therefore no data appear in the report.

Site: AC102	Time: 2016/07/12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: QCNFA344A	Power: AC 120V/60Hz
Note: Mode：Transmit BLE at 2402MHz	

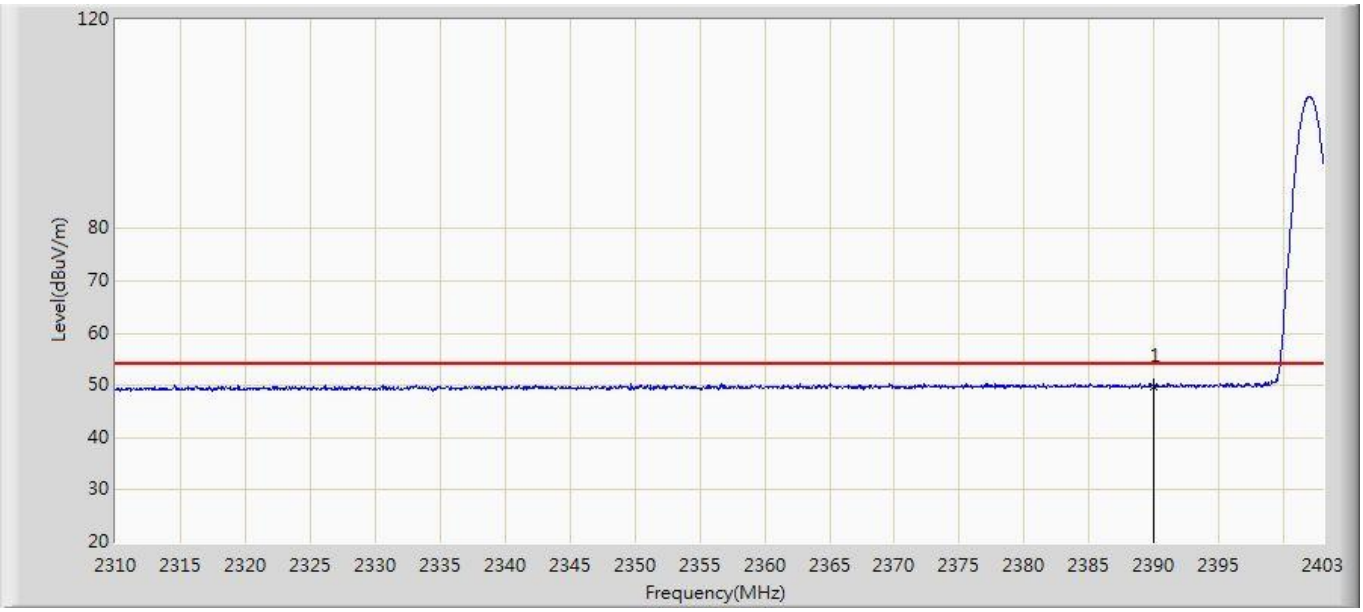


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	59.09	25.59	-14.91	74.000	33.111	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor (Correct Factor= Antenna Factor + Cable Loss – Amplifier)
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~40GHz), therefore no data appear in the report.

Site: AC102	Time: 2016/07/12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: N/A	Polarity: Vertical
EUT: QCNFA344A	Power: AC 120V/60Hz
Note: Mode：Transmit BLE at 2402MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	47.55	14.06	-6.45	54.000	33.111	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or AVG measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor (Correct Factor= Antenna Factor + Cable Loss – Amplifier)
3. The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~40GHz), therefore no data appear in the report.

7. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

7.1 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following twoconditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.