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Report No.: SZEM180100017603
Page: 1 of 35

TEST REPORT

Application No.: SZEM1801000176CR (SHEM1712008629CR)
FCC ID: 2AC8UA1619
Applicant: Anhui Huami Information Technology Co.,Ltd.
Address of Applicant: Building A4, 12th Floor, No.800 Wangjiang Road, Hefei, China (230088)
Manufacturer: Anhui Huami Information Technology Co.,Ltd.
Address of Manufacturer: Building A4, 12th Floor, No.800 Wangjiang Road, Hefei, China (230088)
Factory: Anhui Huami Information Technology Co.,Ltd.
Address of Factory: Building A4, 12th Floor, No.800 Wangjiang Road, Hefei, China (230088)
Equipment Under Test (EUT):
EUT Name: Amazfit Stratos
Model No.: A1619
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2017-12-15
Date of Test: 2017-12-26 to 2018-01-23
Date of Issue: 2018-01-26

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu

EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

Report No.: SZEM180100017603
Page: 2 of 35

Revision Record				
Version	Chapter	Date	Modifier	Remark
01	/	2018-01-26	/	Original

Authorized for issue by:				
		<hr/> Foray Chen /Project Engineer		
		<hr/> Eric Fu /Reviewer		



2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.13	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.12	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.12	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass

3 Contents

	Page
1 COVER PAGE	1
2 TEST SUMMARY	3
3 CONTENTS	4
4 GENERAL INFORMATION	6
4.1 DETAILS OF E.U.T	6
4.2 DESCRIPTION OF SUPPORT UNITS	6
4.3 TEST ENVIRONMENT	6
4.4 MEASUREMENT UNCERTAINTY	7
4.5 TEST LOCATION	7
4.6 TEST FACILITY	8
4.7 DEVIATION FROM STANDARDS	8
4.8 ABNORMALITIES FROM STANDARD CONDITIONS	8
5 EQUIPMENT LIST	8
6 RADIO SPECTRUM TECHNICAL REQUIREMENT	10
6.1 ANTENNA REQUIREMENT	10
6.1.1 <i>Test Requirement:</i>	10
6.1.2 <i>Conclusion</i>	10
7 RADIO SPECTRUM MATTER TEST RESULTS	11
7.1 MINIMUM 6DB BANDWIDTH	11
7.1.1 <i>E.U.T. Operation</i>	11
7.1.2 <i>Test Setup Diagram</i>	11
7.1.3 <i>Measurement Procedure and Data</i>	11
7.2 CONDUCTED PEAK OUTPUT POWER	12
7.2.1 <i>E.U.T. Operation</i>	12
7.2.2 <i>Test Setup Diagram</i>	12
7.2.3 <i>Measurement Procedure and Data</i>	12
7.3 POWER SPECTRUM DENSITY	13
7.3.1 <i>E.U.T. Operation</i>	13
7.3.2 <i>Test Setup Diagram</i>	13
7.3.3 <i>Measurement Procedure and Data</i>	13
7.4 CONDUCTED BAND EDGES MEASUREMENT	14
7.4.1 <i>E.U.T. Operation</i>	14
7.4.2 <i>Test Setup Diagram</i>	14
7.4.3 <i>Measurement Procedure and Data</i>	14
7.5 CONDUCTED SPURIOUS EMISSIONS	15
7.5.1 <i>E.U.T. Operation</i>	15
7.5.2 <i>Test Setup Diagram</i>	15
7.5.3 <i>Measurement Procedure and Data</i>	15
7.6 RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS	16
7.6.1 <i>E.U.T. Operation</i>	17
7.6.2 <i>Test Setup Diagram</i>	17
7.6.3 <i>Measurement Procedure and Data</i>	18
7.7 RADIATED SPURIOUS EMISSIONS	29
7.7.1 <i>E.U.T. Operation</i>	30
7.7.2 <i>Test Setup Diagram</i>	30



7.7.3	Measurement Procedure and Data.....	31
8	TEST SETUP PHOTOGRAPHS	35
9	EUT CONSTRUCTIONAL DETAILS	35



4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3.8V by Built-in lithium-ion polymer battery (290mAH)
Operation Frequency:	802.11 b/g/n(HT20): 2412MHz-2462MHz
Modulation Type:	802.11 b DSSS(CCK, DQPSK, DBPSK) 802.11 g/n(HT20) OFDM(64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	802.11 b/g/n(HT20): 11 802.11b: 1/2/5.5/11Mbps, 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: MCS0-7
Antenna Type	Integral antenna (It is shared by WiFi & BT)
Antenna Gain:	-0.5 dBi

4.2 Description of Support Units

Description	Manufacturer	Model No.
Laptop	LENOVO	R400

4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Value	Temperature(°C)	Voltage(V)
TNVN	21	DC 3.8V

Note:

VN:Normal Voltage VL:Low Extreme Test Voltage VH:High Extreme Test Voltage

TN:Normal Temperature TL:Low Extreme Test Temperature TH:High Extreme Test Temperature

Operation Frequency each of channel (802.11b/g/n (HT20))

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	5	2432MHz	9	2452MHz
2	2417MHz	6	2437MHz	10	2457MHz
3	2422MHz	7	2442MHz	11	2462MHz
4	2427MHz	8	2447MHz		

Using test software was control EUT work in continuous transmitting mode. And select test channel as below:

For 802.11b/g/n (HT20):

Channel	Frequency
The lowest channel (CH1)	2412MHz
The middle channel (CH6)	2437MHz
The highest channel (CH11)	2462MHz



4.4 Measurement Uncertainty

No.	Parameter	Measurement Uncertainty
1	Radio Frequency	< ±1 x 10 ⁻⁵
2	Total RF power, conducted	< ±1.5 dB
3	RF power density, conducted	< ±3 dB
4	Spurious emissions, conducted	< ±3 dB
5	All emissions, radiated	< ±6 dB (Below 1GHz) < ±6 dB (Above 1GHz)
6	Temperature	< ±1°C
7	Humidity	< ±5 %
8	DC and low frequency voltages	< ±3 %

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.



4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Equipment List



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

Report No.: SZEM180100017603
Page: 9 of 35

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Conducted Emission at AC Power Line					
EMI test receiver	R&S	ESR7	SHEM162-1	2017-12-20	2018-12-19
LISN	Schwarzbeck	NSLK8127	SHEM061-1	2017-12-20	2018-12-19
LISN	EMCO	3816/2	SHEM019-1	2017-12-20	2018-12-19
Pulse limiter	R&S	ESH3-Z2	SHEM029-1	2017-12-20	2018-12-19
CE test Cable	/	CE01	/	2017-12-26	2018-12-25
Conducted Test					
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2017-12-20	2018-12-19
Spectrum Analyzer	Agilent	N9020A	SHEM181-1	2017-09-26	2018-09-25
Power meter	R&S	NRP	SHEM057-1	2017-12-26	2018-12-25
Power Sensor	R&S	NRP-Z22	SHEM136-1	2017-07-22	2018-07-21
Power Sensor	R&S	NRP-Z91	SHEM057-2	2017-12-26	2018-12-25
Signal Generator	R&S	SMR40	SHEM058-1	2017-07-03	2018-07-02
Signal Generator	Agilent	N5182A	SHEM182-1	2017-09-26	2018-09-25
Communication Tester	R&S	CMW270	SHEM183-1	2017-10-22	2018-10-21
Switcher	Tonscend	JS0806	SHEM184-1	2017-09-26	2018-09-25
Splitter	Anritsu	MA1612A	SHEM185-1	/	/
Coupler	e-meca	803-S-1	SHEM186-1	/	/
High-low Temp Cabinet	Suzhou Zhihe	TL-40	SHEM087-1	2017-09-26	2018-09-25
AC Power Stabilizer	WOCEN	6100	SHEM045-1	2017-12-26	2018-12-25
DC Power Supply	QJE	QJ30003SII	SHEM046-1	2017-12-26	2018-12-25
Conducted test Cable	/	RF01, RF 02	/	2017-12-26	2018-12-25
Radiated Test					
EMI test receiver	R&S	ESU40	SHEM051-1	2017-12-20	2018-12-19
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2017-12-20	2018-12-19
Loop Antenna (9kHz-30MHz)	Schwarzbeck	FMZB1519	SHEM135-1	2017-04-10	2020-04-09
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM048-1	2017-02-28	2020-02-27
Antenna (25MHz-3GHz)	Schwarzbeck	HL562	SHEM010-1	2017-02-28	2020-02-27
Horn Antenna (1-8GHz)	Schwarzbeck	HF906	SHEM009-1	2017-10-24	2020-10-23
Horn Antenna (1-18GHz)	Schwarzbeck	BBHA9120D	SHEM050-1	2017-01-14	2020-01-13
Horn Antenna (14-40GHz)	Schwarzbeck	BBHA 9170	SHEM049-1	2017-12-03	2020-12-02
Pre-amplifier (9KHz-2GHz)	CLAVIIO	BDLNA-0001-412010	SHEM164-1	2017-08-22	2018-08-21
Pre-amplifier (1-18GHz)	CLAVIIO	BDLNA-0118-352810	SHEM050-2	2017-08-22	2018-08-21
High-amplifier (14-40GHz)	Schwarzbeck	10001	SHEM049-2	2017-12-20	2018-12-19
Band filter	LORCH	9BRX-875/X150-SR	SHEM156-1	/	/
Band filter	LORCH	13BRX-1950/X500-SR	SHEM083-2	/	/
Band filter	LORCH	5BRX-2400/X200-SR	SHEM155-1	/	/
Band filter	LORCH	5BRX-5500/X1000-SR	SHEM157-2	/	/
High pass Filter	Wainwright	WHK3.0/18G-100SS	SHEM157-1	/	/
High pass Filter	Wainwright	WHKS1700-3SS	SHEM157-3	/	/
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2020-07-21
RE test Cable	/	RE01, RE02, RE06	/	2017-12-26	2018-12-25

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(c)

6.1.2 Conclusion

Standard Requirement:

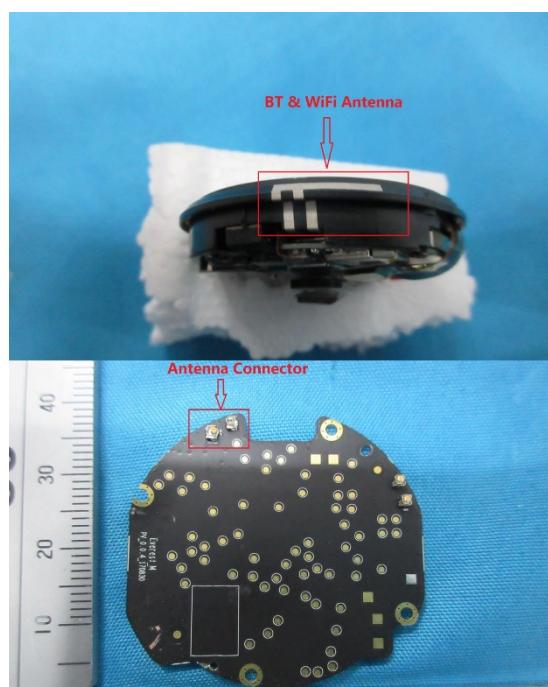
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -0.5dBi.



7 Radio Spectrum Matter Test Results

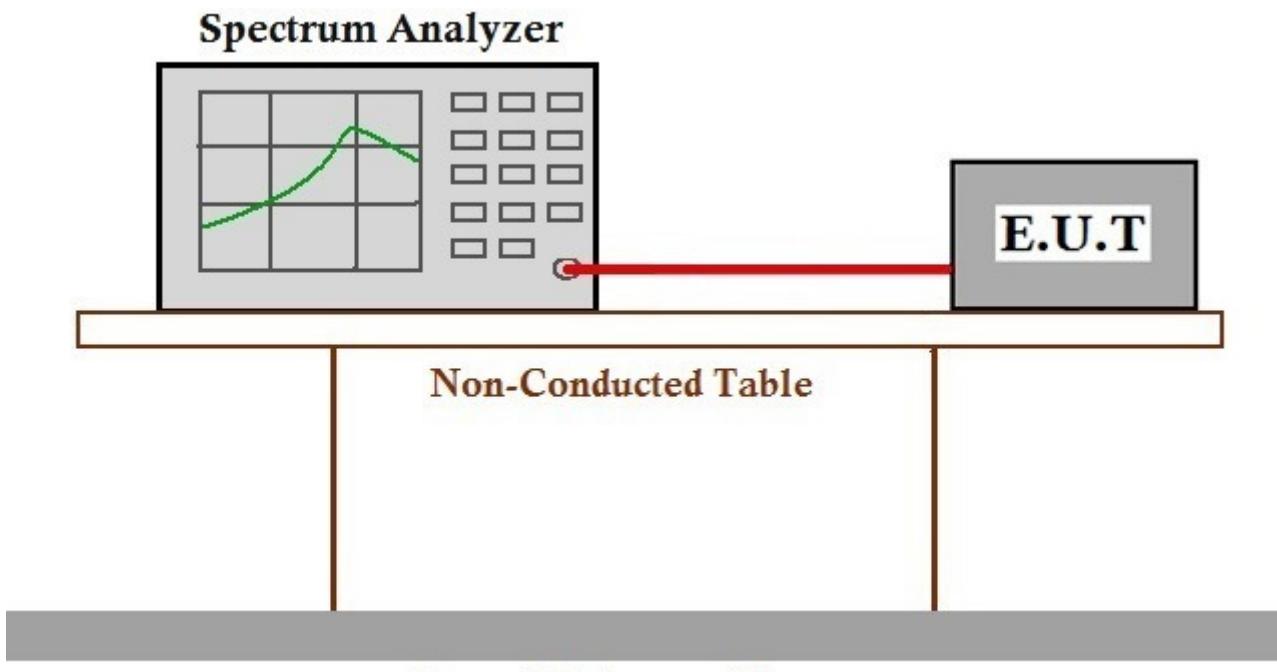
7.1 Minimum 6dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)
Test Method: ANSI C63.10 (2013) Section 11.8.1
Limit: ≥ 500 kHz

7.1.1 E.U.T. Operation

Operating Environment:
Temperature: 21 °C Humidity: 45 % RH Atmospheric Pressure: 1010 mbar
Test mode c: Engineering mode: Using test software to control EUT working in continuous transmitting and receiving, and select channel and modulation type

7.1.2 Test Setup Diagram



7.1.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247 SZEM180100017603 (WIFI)

7.2 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)

Test Method: ANSI C63.10 (2013) Section 7.8.5

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ hopping channels < 50
	1 for digital modulation
2400-2483.5	1 for ≥ 75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

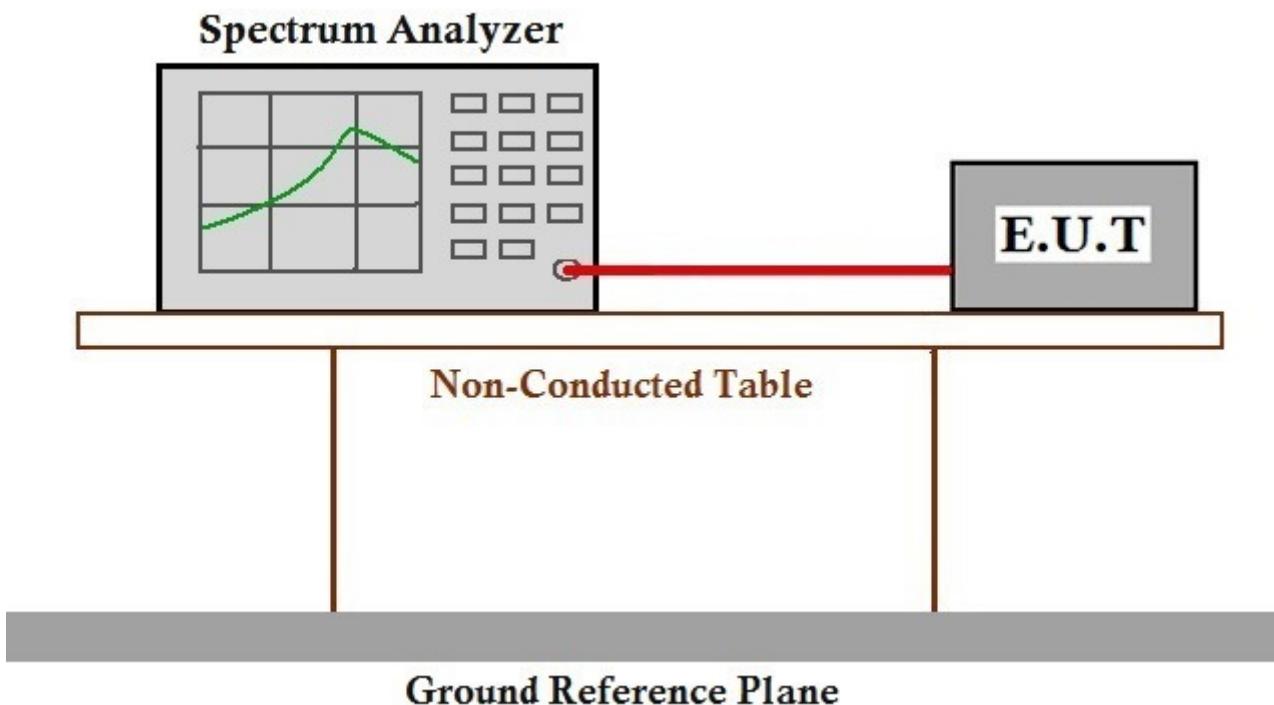
7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 45 % RH Atmospheric Pressure: 1010 mbar

Test mode c: Engineering mode: Using test software to control EUT working in continuous transmitting and receiving, and select channel and modulation type

7.2.2 Test Setup Diagram



7.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247 SZEM180100017603 (WIFI)

7.3 Power Spectrum Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e)

Test Method: ANSI C63.10 (2013) Section 11.10.2

Limit: $\leq 8\text{dBm}$ in any 3 kHz band during any time interval of continuous transmission

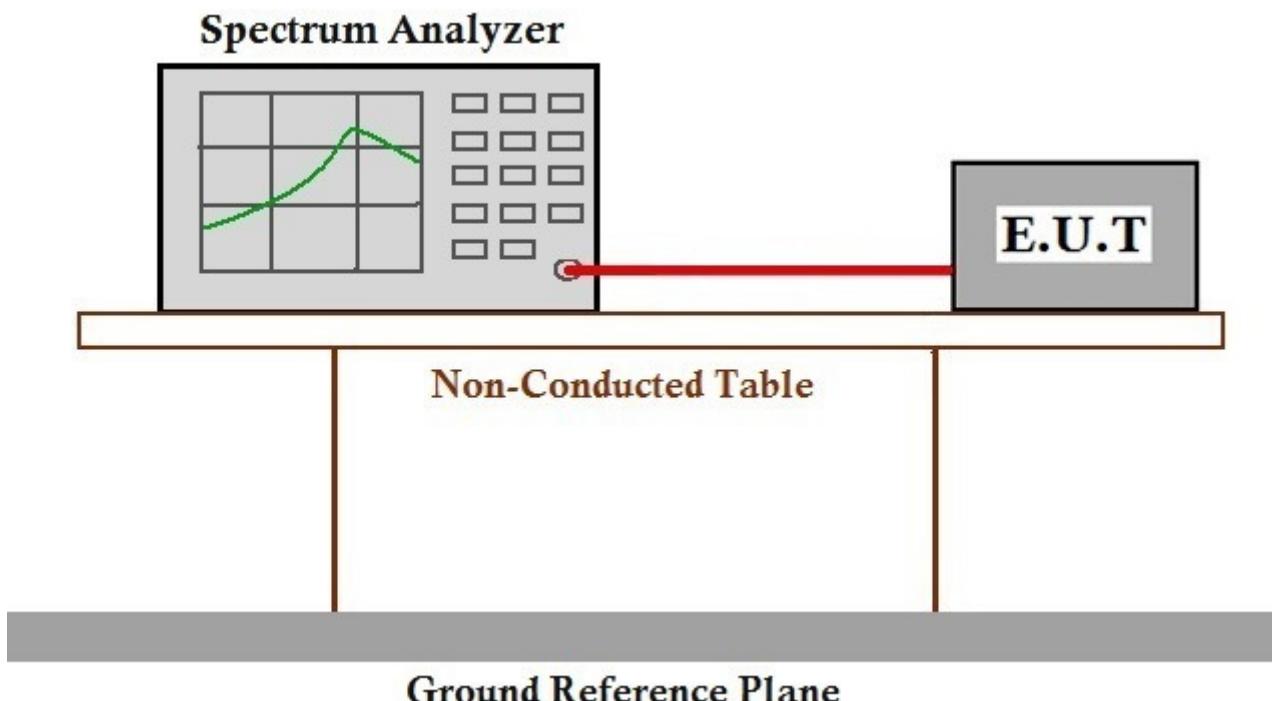
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 45 % RH Atmospheric Pressure: 1010 mbar

Test mode c: Engineering mode: Using test software to control EUT working in continuous transmitting and receiving, and select channel and modulation type

7.3.2 Test Setup Diagram



7.3.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247 SZEM180100017603 (WIFI)

7.4 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)
Test Method: ANSI C63.10 (2013) Section 7.8.6
Limit: In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

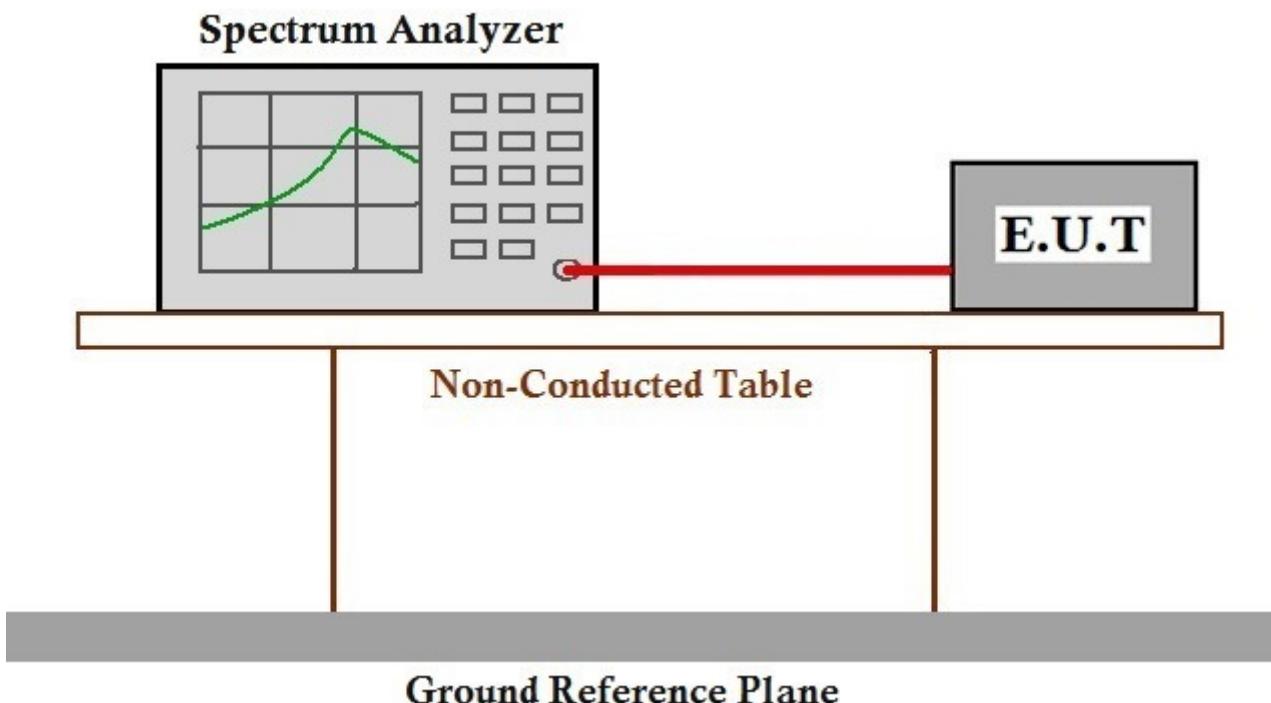
7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 45 % RH Atmospheric Pressure: 1010 mbar

Test mode c: Engineering mode: Using test software to control EUT working in continuous transmitting and receiving, and select channel and modulation type

7.4.2 Test Setup Diagram



7.4.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247 SZEM180100017603 (WIFI)

7.5 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)
Test Method: ANSI C63.10 (2013) Section 7.8.8
Limit: In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

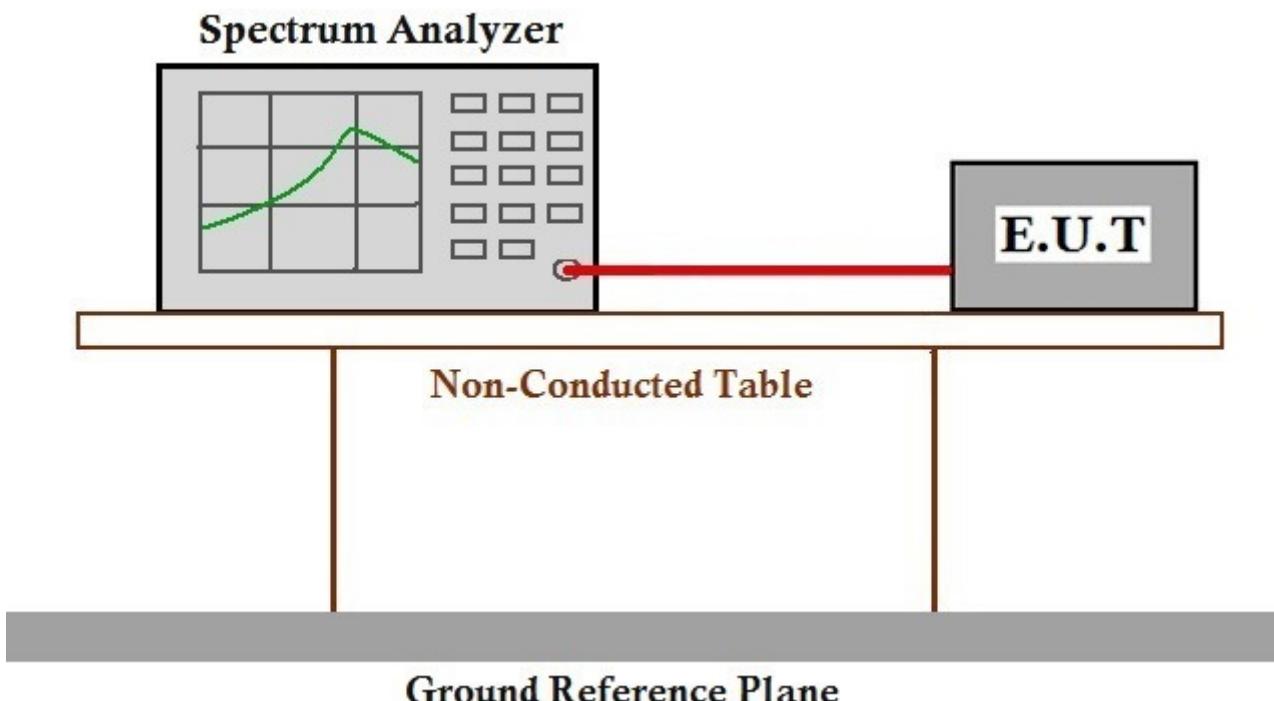
7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 45 % RH Atmospheric Pressure: 1010 mbar

Test mode c: Engineering mode: Using test software to control EUT working in continuous transmitting and receiving, and select channel and modulation type

7.5.2 Test Setup Diagram



7.5.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247 SZEM180100017603 (WIFI)



7.6 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.247(d)

Test Method: ANSI C63.10 (2013) Section 6.10.5

Measurement Distance: 3m

Limit:

Frequency(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

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

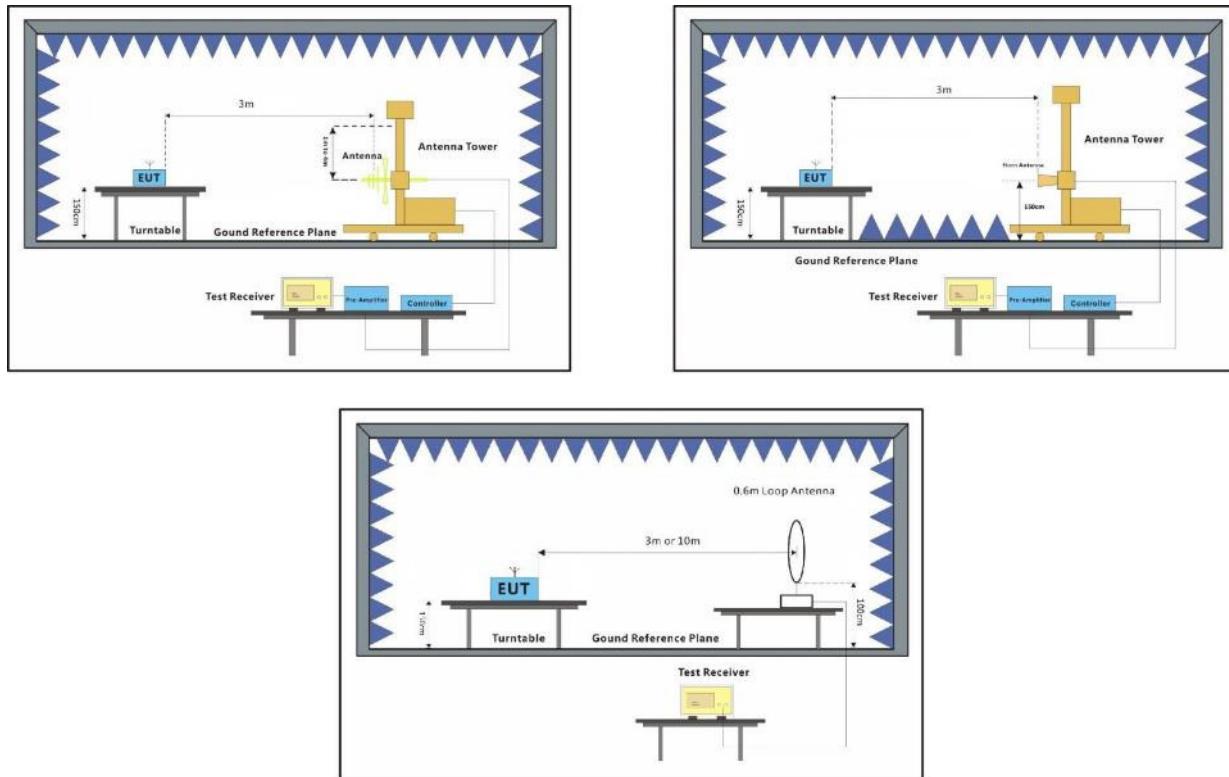
7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 45 % RH Atmospheric Pressure: 1010 mbar

Test mode c: Engineering mode: Using test software to control EUT working in continuous transmitting and receiving, and select channel and modulation type

7.6.2 Test Setup Diagram



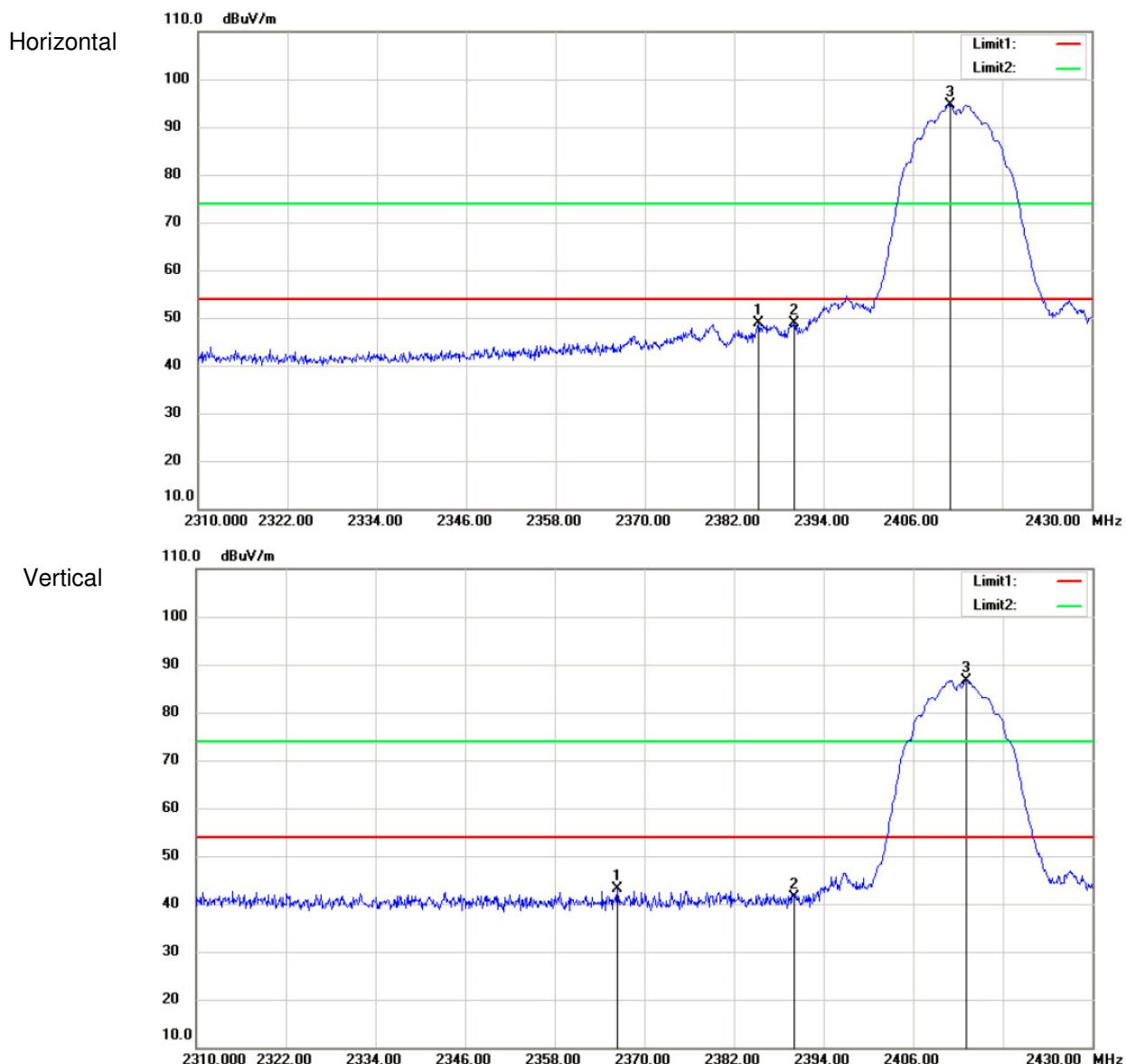
7.6.3 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

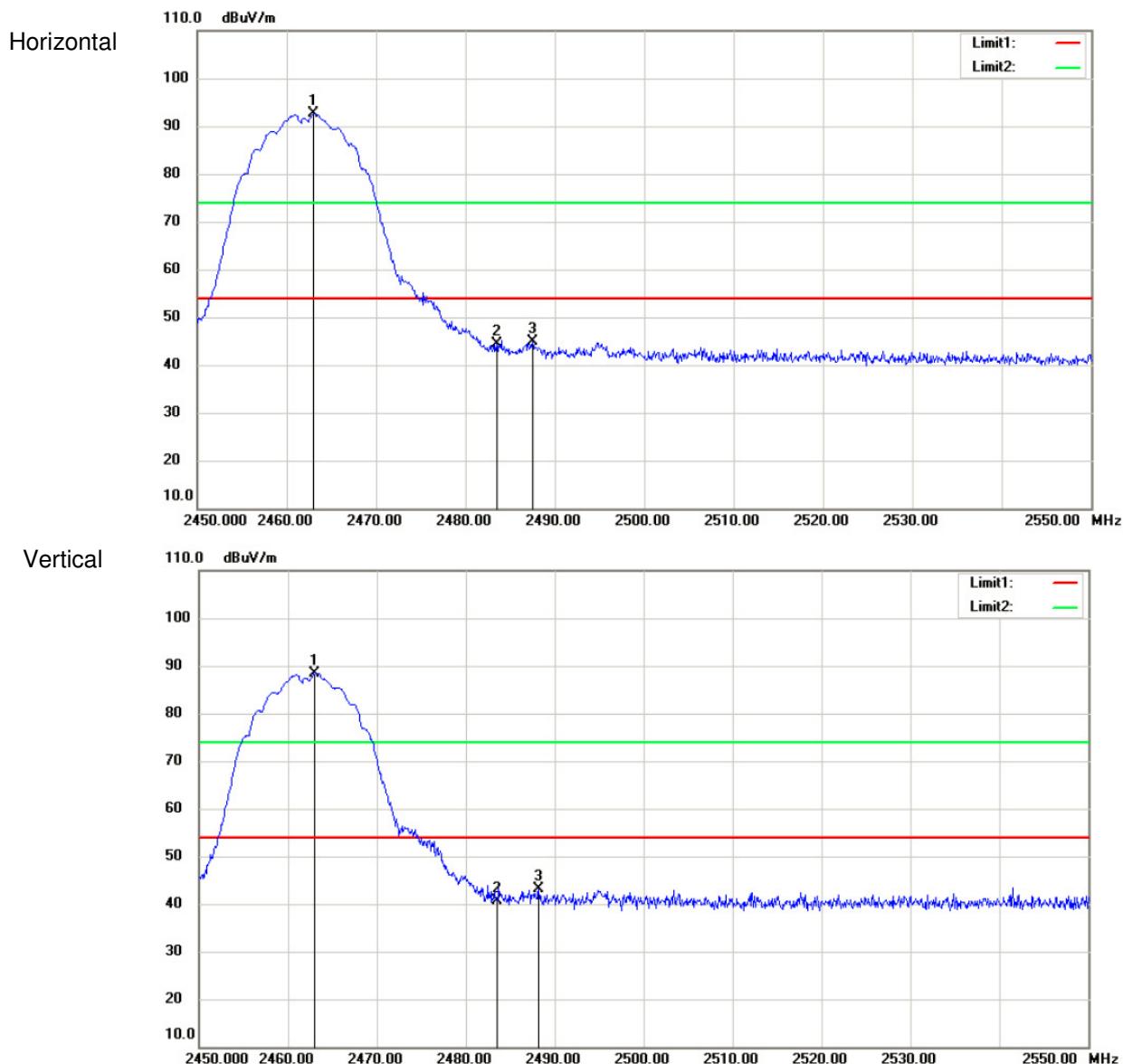
Test Mode: 802.11b
Channel: 2412

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2385.24	52.81	-3.87	48.94	54	-5.06	Peak	Horizontal
2	2390	52.74	-3.89	48.85	54	-5.15	Peak	Horizontal
3	2411.04	98.61	-3.93	94.68	54	40.68	Peak	Horizontal
1	2366.4	46.89	-3.82	43.07	54	-10.93	Peak	Vertical
2	2390	45.16	-3.89	41.27	54	-12.73	Peak	Vertical
3	2413.08	90.59	-3.93	86.66	54	32.66	Peak	Vertical



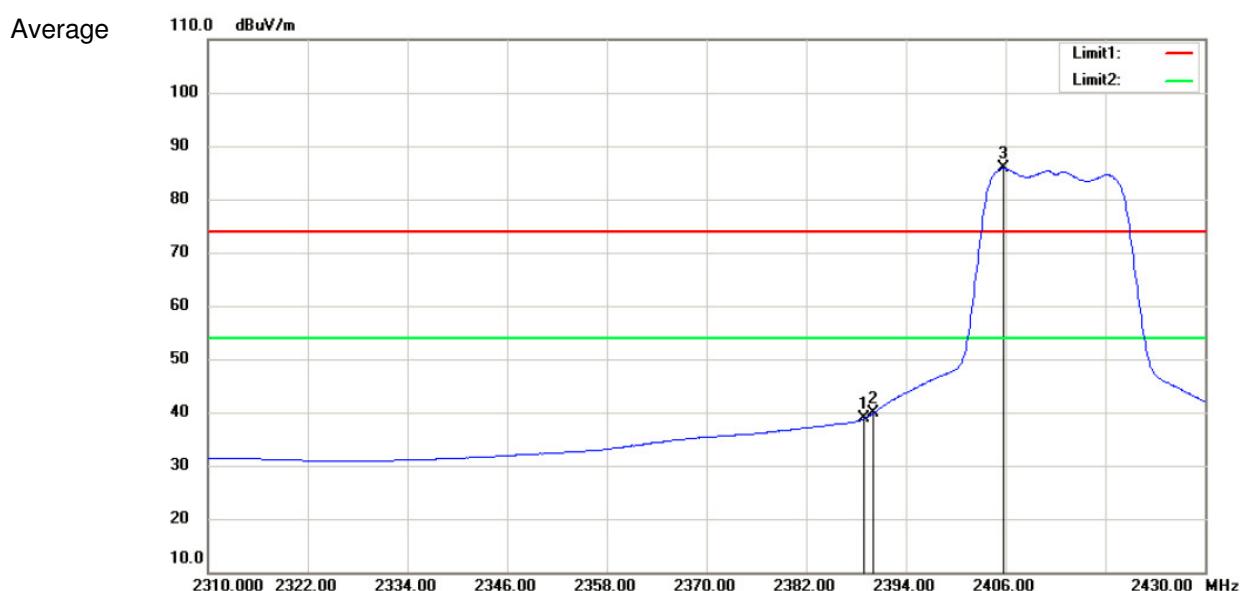
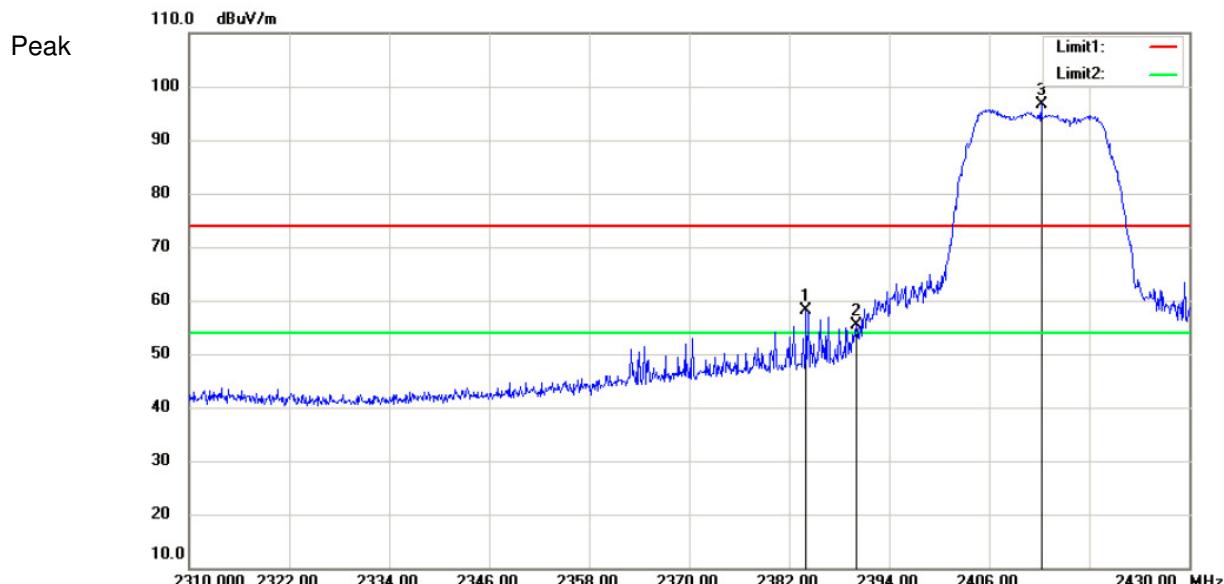
Test Mode: 802.11b
Channel: 2462

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2463	96.58	-3.99	92.59	54	38.59	Peak	Horizontal
2	2483.5	48.37	-4.01	44.36	54	-9.64	Peak	Horizontal
3	2487.5	48.88	-4.01	44.87	54	-9.13	Peak	Horizontal
1	2463	92.49	-3.99	88.5	54	34.5	Peak	Vertical
2	2483.5	44.54	-4.01	40.53	54	-13.47	Peak	Vertical
3	2488.2	47.25	-4.01	43.24	54	-10.76	Peak	Vertical



Test Mode: 802.11g
Channel: 2412

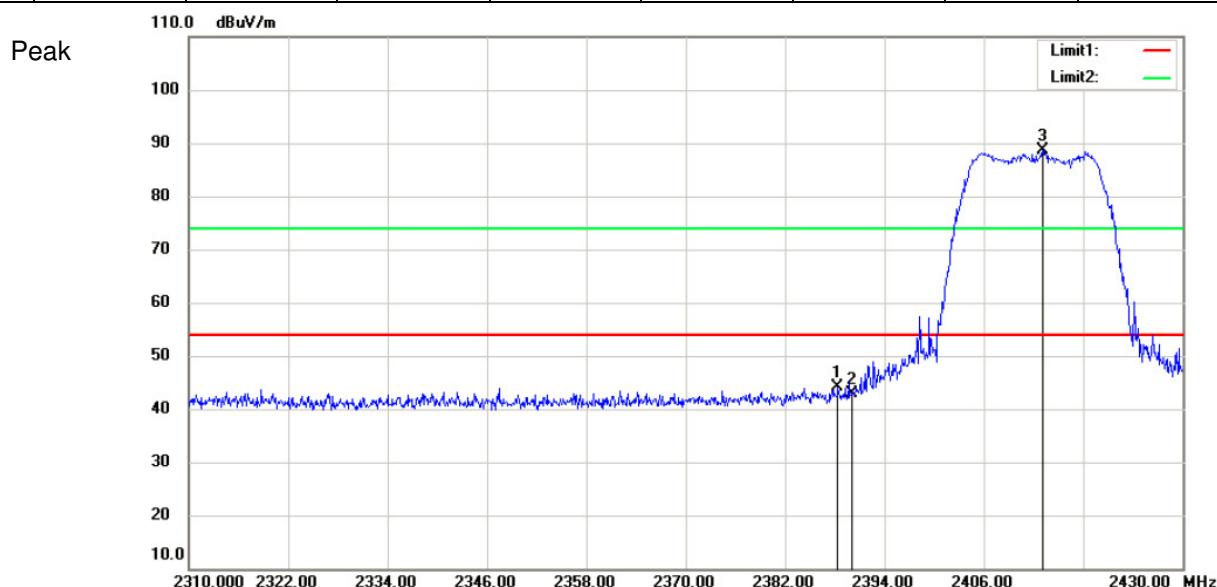
MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2384.04	62	-3.87	58.13	74	-15.87	Peak	Horizontal
2	2390	59.27	-3.89	55.38	74	-18.62	Peak	Horizontal
3	2412.24	100.61	-3.94	96.67	74	22.67	Peak	Horizontal
1	2388.96	42.71	-3.89	38.82	54	-15.18	Average	Horizontal
2	2390	43.71	-3.89	39.82	54	-14.18	Average	Horizontal
3	2405.76	89.75	-3.93	85.82	54	31.82	Average	Horizontal



Test Mode: 802.11g

Channel: 2412

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2388.36	48.09	-3.88	44.21	54	-9.79	Peak	Vertical
2	2390	46.8	-3.89	42.91	54	-11.09	Peak	Vertical
3	2413.08	92.66	-3.93	88.73	54	34.73	Peak	Vertical



Test Mode: 802.11g
Channel: 2462

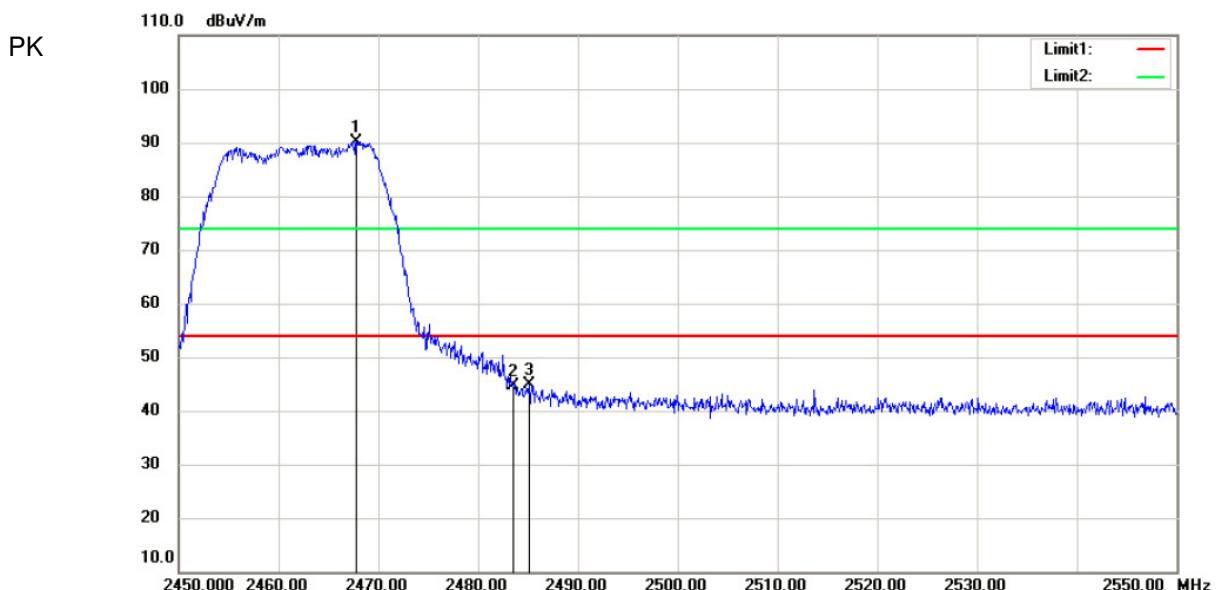
MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2468.5	98.22	-3.99	94.23	74	20.23	Peak	Horizontal
2	2483.5	51.51	-4.01	47.5	74	-26.5	Peak	Horizontal
3	2484.1	55.47	-4.02	51.45	74	-22.55	Peak	Horizontal
1	2468.3	88.72	-3.99	84.73	54	30.73	Average	Horizontal
2	2483.5	40.91	-4.01	36.9	54	-17.1	Average	Horizontal
3	2485.9	43.91	-4.01	39.9	54	-14.1	Average	Horizontal



Test Mode: 802.11 g

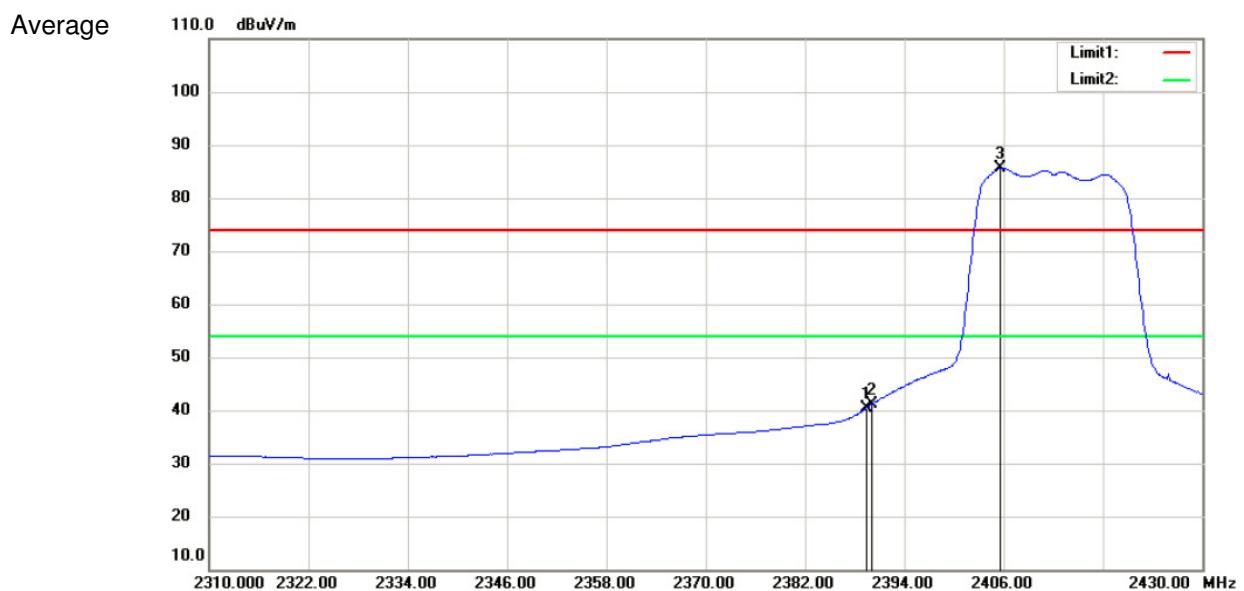
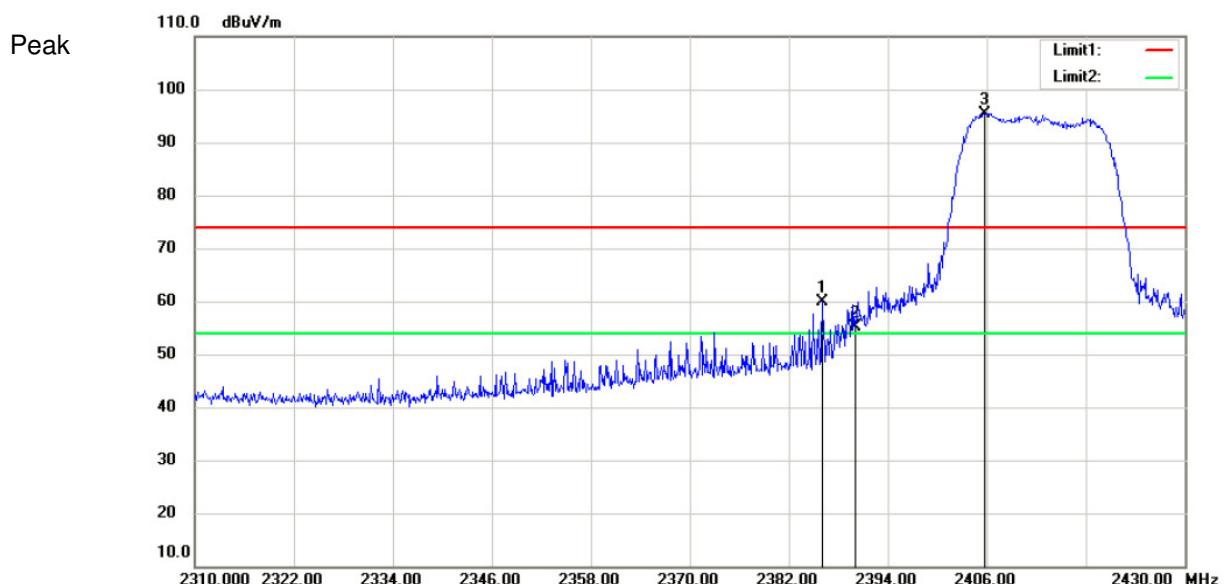
Channel: 2462

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2467.8	94.25	-4	90.25	54	36.25	Peak	Vertical
2	2483.5	48.76	-4.01	44.75	54	-9.25	Peak	Vertical
3	2485.1	48.8	-4.01	44.79	54	-9.21	Peak	Vertical



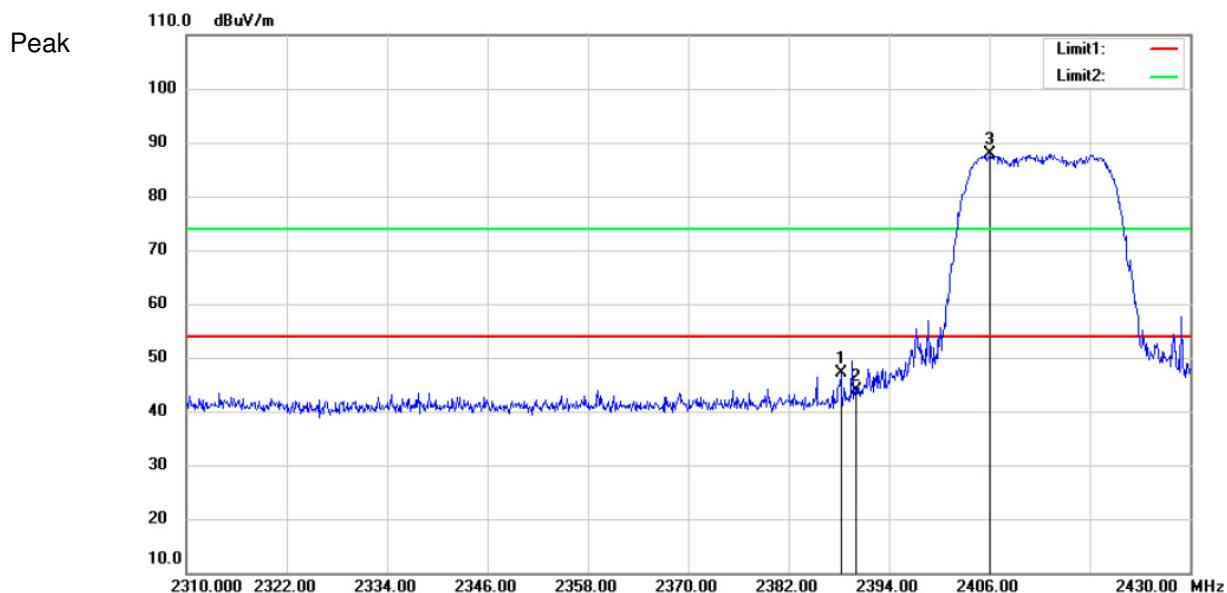
Test Mode: 802.11 n(HT20)
Channel: 2412

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2386.08	63.7	-3.88	59.82	74	-14.18	Peak	Horizontal
2	2390	59	-3.89	55.11	74	-18.89	Peak	Horizontal
3	2405.76	99.43	-3.93	95.5	74	21.5	Peak	Horizontal
1	2389.44	44.38	-3.88	40.5	54	-13.5	Average	Horizontal
2	2390	44.96	-3.89	41.07	54	-12.93	Average	Horizontal
3	2405.64	89.65	-3.93	85.72	54	31.72	Average	Horizontal



Test Mode: 802.11 n(HT20)
Channel: 2412

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2388.24	51.1	-3.88	47.22	54	-6.78	Peak	Vertical
2	2390	47.85	-3.89	43.96	54	-10.04	Peak	Vertical
3	2406.12	91.74	-3.92	87.82	54	33.82	Peak	Vertical



Test Mode: 802.11 n(HT20)
Channel: 2462

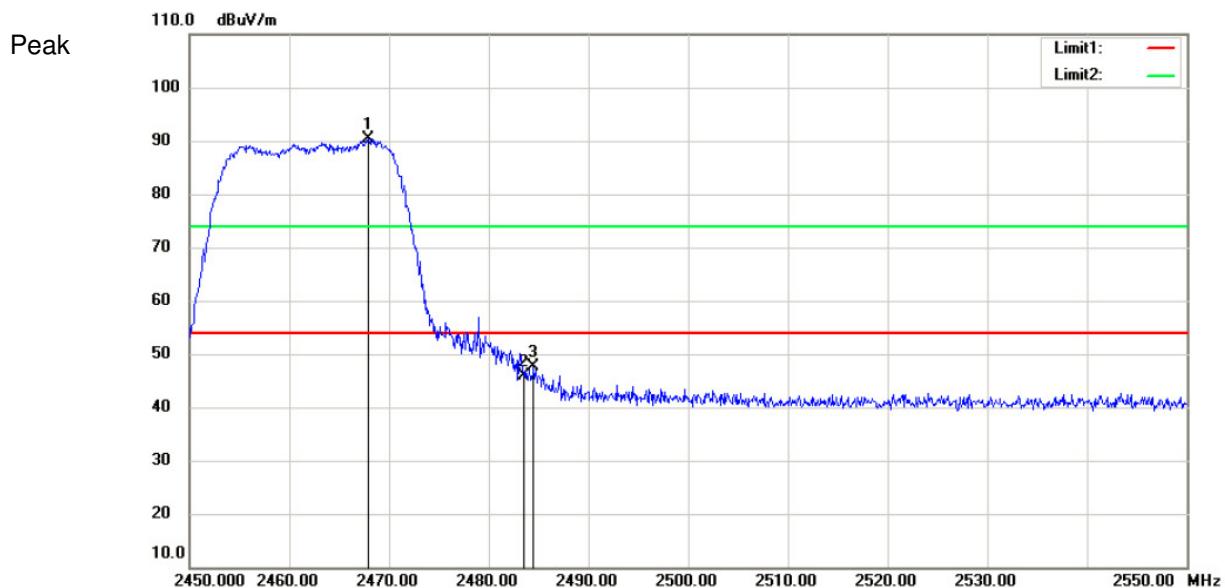
MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2468.4	98.66	-3.99	94.67	74	20.67	Peak	Horizontal
2	2483.5	55.97	-4.01	51.96	74	-22.04	Peak	Horizontal
3	2483.8	60.08	-4.02	56.06	74	-17.94	Peak	Horizontal
1	2468.2	88.67	-3.99	84.68	54	30.68	Average	Horizontal
2	2483.5	43.63	-4.01	39.62	54	-14.38	Average	Horizontal
3	2483.6	51.33	-4.01	47.32	54	-6.68	Average	Horizontal

Peak

Average


Test Mode: 802.11 n(HT20)
Channel: 2462

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2467.9	94.36	-3.99	90.37	54	36.37	Peak	Vertical
2	2483.5	49.9	-4.01	45.89	54	-8.11	Peak	Vertical
3	2484.5	51.74	-4.02	47.72	54	-6.28	Peak	Vertical



Remark: 1). Test Level = Receiver Reading + Antenna Factor + Cable Loss- Preamplifier Factor

2). If the Peak value below the AV Limit, the AV test doesn't perform for this submission.



7.7 Radiated Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.247(d)

Test Method: ANSI C63.10 (2013) Section 6.10.4

Measurement Distance: 3m

Limit:

Frequency(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

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

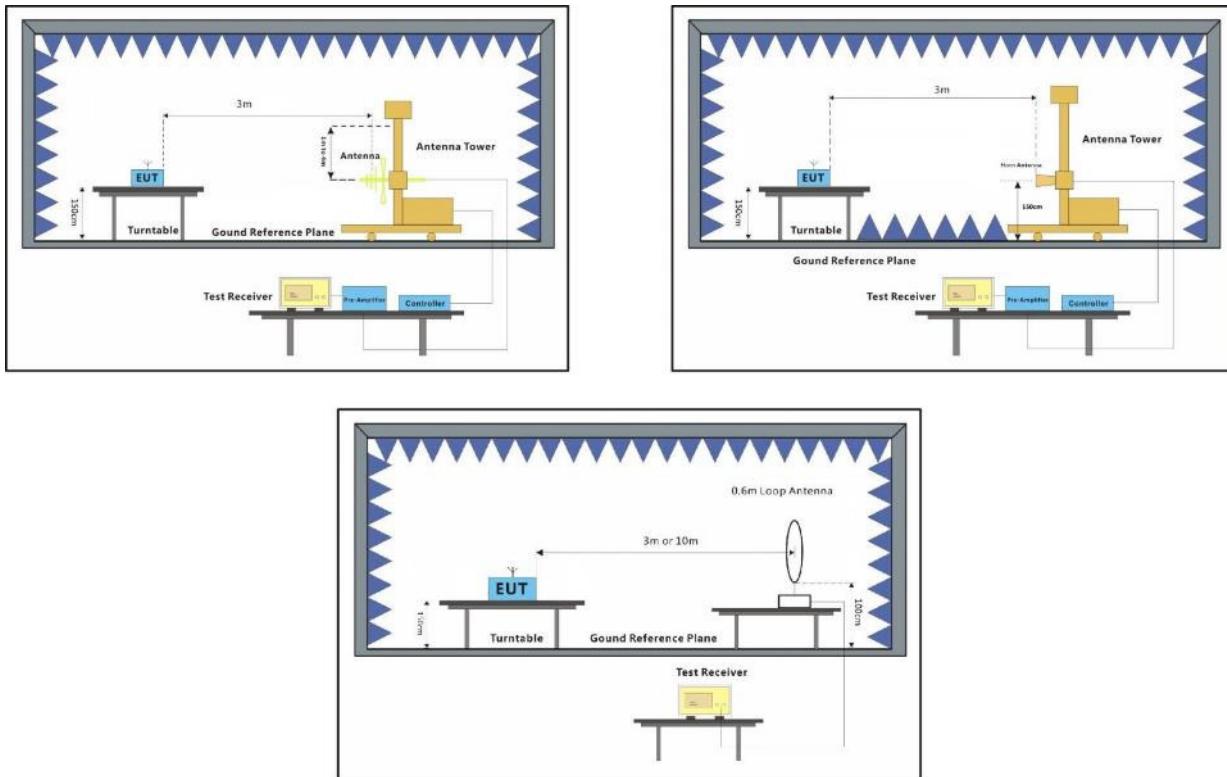
7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 45 % RH Atmospheric Pressure: 1010 mbar

Test mode c: Engineering mode: Using test software to control EUT working in continuous transmitting and receiving, and select channel and modulation type

7.7.2 Test Setup Diagram



7.7.3 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Mode:c; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:Low

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos	Table	Pos	Detector
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm		deg.	
*	4824	41.45	6.40	47.85	54	-6.15				peak
*	7236	39.77	10.76	50.53	54	-3.47				peak
*	9648	37.45	14.37	51.82	54	-2.18				peak

Mode:c; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:Low

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos			
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm			
*	4824	43.41	6.40	49.81	54	-4.19				peak
*	7236	39.23	10.76	49.99	54	-4.01				peak
*	9648	34.15	14.37	48.52	54	-5.48				peak

Mode:c; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:middle

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos			
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm			
*	4874	38.30	6.92	45.22	54	-8.78				peak
*	7311	34.42	11.08	45.50	54	-8.50				peak
*	9748	33.48	14.36	47.84	54	-6.16				peak

Mode:c; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:middle

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos			
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm			
*	4874	43.41	6.92	50.33	54	-3.67				peak
*	7311	38.46	11.08	49.54	54	-4.46				peak
*	9748	32.74	14.36	47.10	54	-6.90				peak

Mode:c; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:High

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos			
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm			
*	4924	42.18	7.31	49.49	54	-4.51				peak
*	7386	37.52	11.41	48.93	54	-5.07				peak
*	9848	36.89	14.38	51.27	54	-2.73				peak

Mode:c; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:High

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos			
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm			
*	4924	41.32	7.31	48.63	54	-5.37				peak
*	7386	36.92	11.41	48.33	54	-5.67				peak
*	9848	35.34	14.38	49.72	54	-4.28				peak

Mode:c; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:Low

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4824	40.15	6.40	46.55	54	-7.45	peak
*	7236	36.41	10.76	47.17	54	-6.83	peak
	9648	33.40	14.37	47.77	54	-6.23	peak

Mode:c; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:Low

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4824	41.75	6.40	48.15	54	-5.85	peak
*	7236	37.66	10.76	48.42	54	-5.58	peak
	9648	37.15	14.37	51.52	54	-2.48	peak

Mode:c; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:middle

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4874	41.37	6.92	48.29	54	-5.71	peak
*	7311	37.17	11.08	48.25	54	-5.75	peak
	9748	34.66	14.36	49.02	54	-4.98	peak

Mode:c; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:middle

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4874	41.41	6.92	48.33	54	-5.67	peak
*	7311	37.00	11.08	48.08	54	-5.92	peak
	9748	35.61	14.36	49.97	54	-4.03	peak

Mode:c; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:High

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4924	42.74	7.31	50.05	54	-3.95	peak
*	7386	37.59	11.41	49.00	54	-5.00	peak
	9848	35.57	14.38	49.95	54	-4.05	peak

Mode:c; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:High

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4924	38.31	7.31	45.62	54	-8.38	peak
*	7386	39.19	11.41	50.60	54	-3.40	peak
	9848	33.85	14.38	48.23	54	-5.77	peak

Mode:c; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:Low

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4824	41.03	6.40	47.43	54	-6.57	peak
*	7236	37.84	10.76	48.60	54	-5.40	peak
	9648	33.70	14.37	48.07	54	-5.93	peak

Mode:c; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:Low

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4824	41.10	6.40	47.50	54	-6.50	peak
*	7236	34.10	10.76	44.86	54	-9.14	peak
	9648	36.11	14.37	50.48	54	-3.52	peak

Mode:c; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:middle

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4874	43.03	6.92	49.95	54	-4.05	peak
*	7311	37.44	11.08	48.52	54	-5.48	peak
	9748	33.50	14.36	47.86	54	-6.14	peak

Mode:c; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:middle

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4874	41.11	6.92	48.03	54	-5.97	peak
*	7311	37.61	11.08	48.69	54	-5.31	peak
	9748	34.61	14.36	48.97	54	-5.03	peak

Mode:c; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:High

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4924	40.51	7.31	47.82	54	-6.18	peak
*	7386	39.81	11.41	51.22	54	-2.78	peak
	9848	36.36	14.38	50.74	54	-3.26	peak

Mode:c; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:High

Mark	Frequency	RX_R	Factor	Emission	Limit	Margin	Ant.Pos
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm
	4924	39.10	7.31	46.41	54	-7.59	peak
*	7386	36.48	11.41	47.89	54	-6.11	peak
	9848	34.58	14.38	48.96	54	-5.04	peak



8 Test Setup Photographs

Refer to the < Test Setup Photos-FCC >

9 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

- End of the Report -