



# **RF Test Report**

Issued Date: Sep. 20, 2018

Applicant : Wuunet Technology Co., Ltd

Product Type : Kalay Home Smart Light Camera 1080P

Model Number : WB102U

FCC ID : 2AF8P-WB102U

EUT Rated Voltage : AC100-240 V, 50-60 Hz, 0.12 A

Test Voltage : 120 Vac / 60 Hz

Receive Date : Jul. 19, 2018

Test Period : Jul. 25 ~ Jul. 30, 2018

Applicable Standard : FCC 47 CFR PART 15 SUBPART C

ANSI C63.10:2013

Test Result : Complied

# **Testing Laboratory**

# A Test Lab Techno Corp.

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http://www.atl-lab.com.tw/e-index.htm



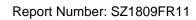
: Mick . Thank

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Approved By

Warrel Reviewed B

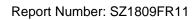
(Manager) (Hai Wang) (Testing Engineer) (Mick Zhang)





# **Revision History**

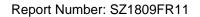
Rev.	Issue Date	Revisions
00	Sep. 20, 2018	Initial Issue





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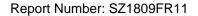
# 1 General Information

# 1.1 Summary of Test Result

Standard 15.247	Item	Result	Remark
15.207	AC Power Conducted Emission	PASS	
Standard 15.247	Item	Result	Remark
15.247(d)	Transmitter Radiated Emissions	PASS	
15.247(b)(3)	Max. Output Power	PASS	
15.247(a)(2)	6 dB RF Bandwidth	PASS	
15.247(e)	Maximum Power Spectral Density	PASS	
15.247(d)	Out of Band Conducted Spurious Emission	PASS	
15.203	Antenna Requirement	PASS	

Standard	Description
CFR47, Part 15, Subpart C §15.247	Intentional Radiators
ANSI C63. 10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
ANSI C63. 4: 2014	American National Standard for methods of measurement of radio – noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
KDB558074 D01 v04	GUIDANCE FOR PERFORMING COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSON SYSTEMS (DTS) OPERATING UNDER SECTION 15.247

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.





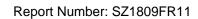
A Test Lab Techno Corp. tested the above equipment under the requirements outlined in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. Based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

A Test Lab Techno Corp. will not be liable for any loss or damage resulting from false, inaccurate, inappropriate or incomplete product information provided by the customer.

This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

# 1.2 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)	
Conducted Emission	9 kHz ~ 150 kHz	2.7	
Conducted Emission	150 kHz ~ 30 MHz	2.7	
	9 kHz ~ 30 MHz	1.7	
	30 MHz ~ 1000 MHz	5.7	
Radiated Emission	1000 MHz ~ 18000 MHz	5.5	
	18000 MHz ~ 26500 MHz	4.8	
	26500 MHz ~ 40000 MHz	4.8	
Conducted Output Power	+0.27 dB / -0.28 dB		
RF Bandwidth	4.96%		
Power Spectral Density	+0.71 dB / -0.77 dB		

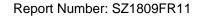




# 2 EUT Description

Applicant	Wuunet Technology Co., Ltd 9F, No. 364, Sec. 1, Nangang Rd., Nangang Dist., Taipei City 11579, Taiwan				
Manufacturer	Yongguan Electronic Technology (D.G.) Ltd.  Mowu Village, Wanjiang District, Dongguan City, Guangdong Province, P.R. China				
Product Type	Kalay Home Smart L	ight Camera 1080P			
Model Number	WB102U				
FCC ID	2AF8P-WB102U				
Operate Freq. Band	Frequency Range Modulation		Channel Bandwidth	Data Rate 400 / 800 GI (ns)	
IEEE 802.11b	2412 ~ 2462 DSSS		20 MHz	Up to 11 Mbps	
IEEE 802.11g	2412 ~ 2462	OFDM	20 MHz	Up to 54 Mbps	
IEEE 802.11n 2.4 GHz 20 MHz	2412 ~ 2462 OFDM		20 MHz	Up to 72.2 Mbps	
IEEE 802.11n 2.4 GHz 40 MHz	z 2422 ~ 2452 OFDM 40 MHz Up to			Up to 150 Mbps	
Antenna information	Type Max. Gain (dBi)			ax. Gain (dBi)	
Antenna information	FPC Antenna 2.546				
Antenna Delivery	See section 3.1				
Operate Temp. Range	0 ~ +40 °C				

Frequency Band	Max. RF Output Power (W)
IEEE 802.11b	0.027
IEEE 802.11g	0.026
IEEE 802.11n 2.4 GHz 20 MHz	0.026
IEEE 802.11n 2.4 GHz 40 MHz	0.023





# 3 Test Methodology

# 3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

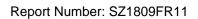
Test Mode	
Mode 1: Transmit mode	
Mode 2: IEEE 802.11b Continuous TX mode	
Mode 3: IEEE 802.11g Continuous TX mode	
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode	
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode	

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1 GHz and power line conducted emissions below 30 MHz, which worst case was in TX mode only. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "X axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

Test Mode	ANT-0
Mode 2	V
Mode 3	V
Mode 4	V
Mode 5	V

Test Mode	Antenna Delivery	Data Rate	Test Channel
Mode 2	1TX	1 M	1, 6, 11
Mode 3	1TX	6 M	1, 6, 11
Mode 4	1TX	6.5 M	1, 6, 11
Mode 5	1TX	13.5 M	3, 6, 9



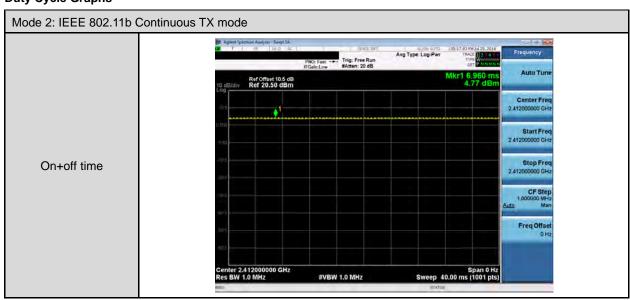


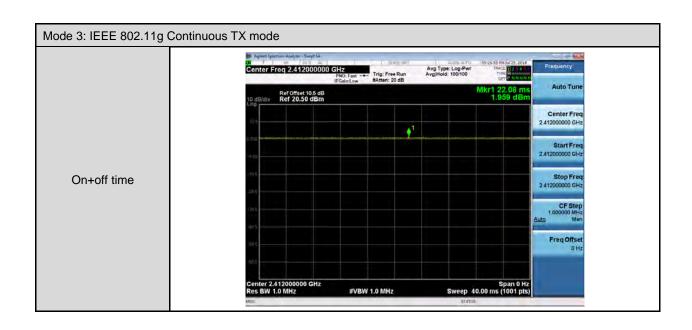
**Duty cycle** 

Duty Cyclo						
Test Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle	Duty Factor (dB)	1/T Minimum VBW (kHz)
Mode 2	2412	6.960	6.960	1.000	0.000	0.010
Mode 3	2412	22.080	22.080	1.000	0.000	0.010
Mode 4	2412	28.360	28.360	1.000	0.000	0.010
Mode 5	2422	9.160	9.160	1.000	0.000	0.010

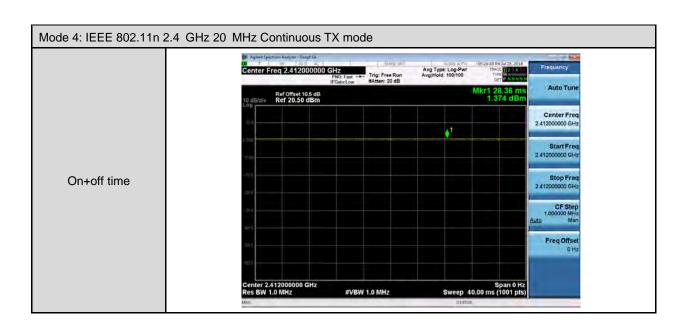


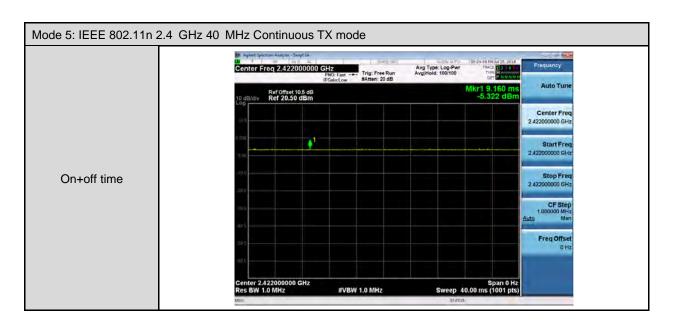
# **Duty Cycle Graphs**

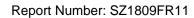














# 3.2. EUT Exercise Software

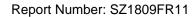
4. EUT run test program.

1.	Setup the EUT shown on "Configuration of Test System Details".
2.	Turn on the power of all equipment.
3.	Turn on TX function

Measurement Software	

2 EZ-EMC Ver ATL-ITC-3A1-1

EZ-EMC Ver. ATL-03A1-1

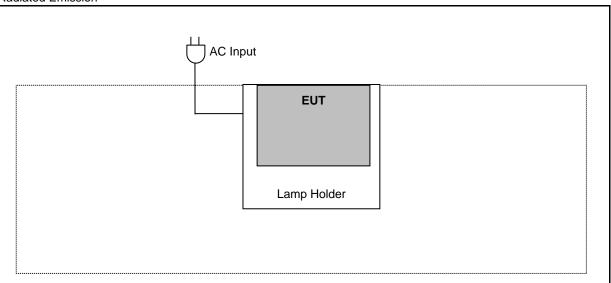


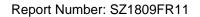


# 3.3. Configuration of Test System Details

# AC Input EUT Lamp Holder

# Radiated Emission







# 3.4. Test Instruments

For Conducted Emission Test Period: Jul. 26, 2018

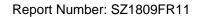
10011 01104: 0411 20, 2011					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Test Receiver	R&S	ESR3	101923	09/19/2017	1 year
LISN	R&S	ENV216	101942	09/09/2017	1 year
LISN	R&S	ENV216	101943	09/19/2017	1 year
RF Cable	EMCI	EMCCFD400	433LFC	05/19/2018	1 year
Test Site	ATL	CE	CE	N.C.R.	

# For Radiated Emissions

Test Period: Jul. 26, 2018

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Preamplifier (10 kHz~3 GHz)	EMCI	EMC001330	980300	09/19/2017	1 year
Preamplifier (0.1 GHz~26.5 GHz)	EMCI	EMC012645SE	980318	09/19/2017	1 year
Bilog Antenna (30 MHz~1.4 GHz)	Schwarzbeck	VULB 9168	672	11/15/2017	1 year
Horn Antenna (1 GHz~18 GHz)	ETS	3117	00204949	11/16/2017	1 year
Horn Antenna (18 GHz~26.5 GHz)	ETS	3160-09	00202549	11/16/2017	1 year
Receiver (3 Hz~26.5 GHz)	Keysight	N9038A	MY51210179	09/19/2017	1 year
Spectrum Analyzer (3 Hz~43 GHz)	Keysight	N9030A	MY55410268	09/19/2017	1 year
Cable (30 MHz~1 GHz)	EMCI	N/A	1066LFC	09/19/2017	1 year
Cable (1 GHz~26.5 GHz)	EMCI	N/A	160719	09/19/2017	1 year
Cable (1 GHz~26.5 GHz)	EMCI	N/A	160324	09/19/2017	1 year
Cable (1 GHz~26.5 GHz)	EMCI	N/A	160322	09/19/2017	1 year
Loop Antenna	EMCI	LPA600	272	02/07/2018	1 year
Test Site	OuHeng	MFAC3M	RE-026	03/15/2018	1 year

Note: N.C.R. = No Calibration Request.





# For Conducted

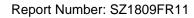
Test Period: Jul. 25 ~ Sep. 13, 2018

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Power Sensor	Anritsu	U2021XA	SG54130003	09/19/2017	1 year
Power Sensor	Anritsu	U2021XA	SG54130004	09/19/2017	1 year
Spectrum Analyzer (10 Hz~26.5 GHz)	Agilent	N9020A	MY53420615	09/19/2017	1 year
Programmable temp &humi chamber	ETAI	9712A	647	09/19/2017	1 year
Test Site	ATL	RF	RF	N.C.R.	

Note: N.C.R. = No Calibration Request.

# 3.5. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	26
Humidity (%RH)	25-75	60
Barometric pressure (mbar)	860-1060	950





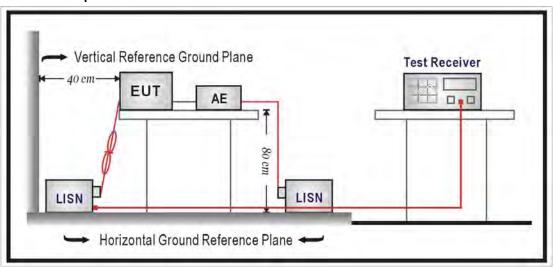
# 4 Measurement Procedure

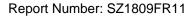
# 4.1. AC Power Line Conducted Emission Measurement

# ■ Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

# ■ Test Setup







#### ■ Test Procedure

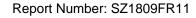
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50  $\Omega$ // 50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50  $\Omega$ // 50 uH coupling impedance with 50ohm termination.

Tabletop device shall be placed on a non-conducting platform, of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The wall of screened room shall be located 40 cm to the rear of the EUT. Other surfaces of tabletop or floor standing EUT shall be at least 80 cm from any other ground conducting surface including one or more LISNs. For floor-standing device shall be placed under the EUT with a 12 mm insulating material.

Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a resolution bandwidth of 9 kHz. The equipment under test (EUT) shall be meet the limits in section 4.1, as applicable, including the average limit and the quasi-peak limit when using respectively, an average detector and quasi-peak detector measured in accordance with the methods described of related standard. When all of peak value were complied with quasi-peak and average limit from 150 kHz to 30 MHz then quasi-peak and average measurement was unnecessary.

The AMN shall be placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for AMNs mounted on top of the ground reference plane. This distance is between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8 m from the AMN. If the mains power cable is longer than 1 m then the cable shall be folded back and forth at the centre of the lead to form a bundle no longer than 0.4 m. All of interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long. All of EUT and AE shall be separate place more than 0.1 m. All 50  $\Omega$  ports of the LISN shall be resistively terminated into 50  $\Omega$  loads when not connected to the measuring instrument.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored.





# 4.2. Radiated Emission Measurement

#### ■ Limit

According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

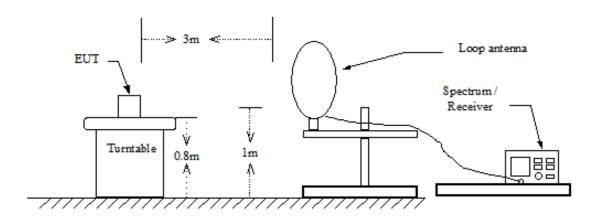
Frequency	Field Strength	Measurement Distance
(MHz)	(µV/m at meter)	(meters)
0.009 - 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 - 88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

<sup>\*\*</sup> Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

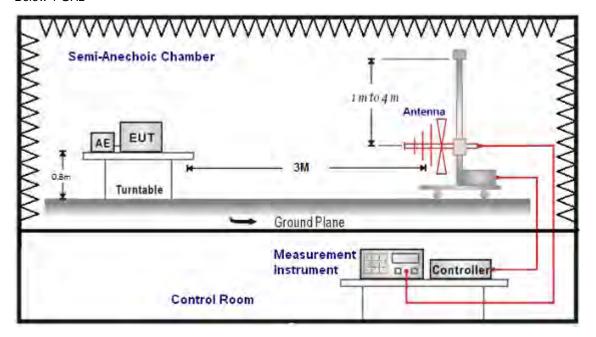


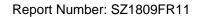
# ■ Setup

9 kHz ~ 30 MHz



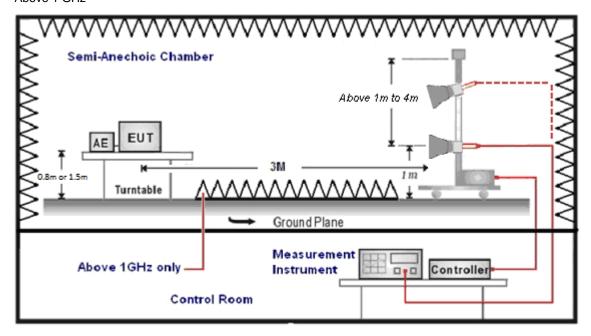
Below 1 GHz

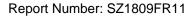






# Above 1 GHz







#### **■** Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 or 1.5 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements when Duty cycle >0.98 / 1/T for average measurements when Duty cycle <0.98. A nonconductive material surrounded the EUT to supporting the EUT for standing on tree orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna was used in frequencies 1 –26.5 GHz at a distance of 3 meter. The antenna at an angle toward the source of the emission. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20 dB/decade).

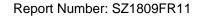
For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro colts per meter (dBuV/m).

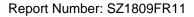




The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

- (1) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)
  - FI= Reading of the field intensity.
  - AF= Antenna factor.
  - CL= Cable loss.
  - P.S Amplitude is auto calculate in spectrum analyzer.
- (2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)
  - The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:
  - (a) For fundamental frequency: Transmitter Output < +30 dBm
  - (b) For spurious frequency: Spurious emission limits = fundamental emission limit /10

Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.





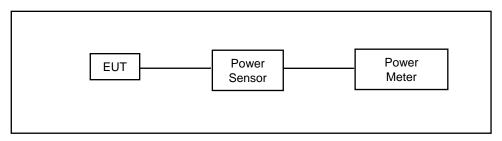
# 4.3. Maximum Conducted Output Power Measurement

#### ■ Limit

For systems using digital modulation in the 2400-2483.5 MHz, the limit for maximum output power is 30 dBm.

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

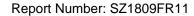
#### ■ Test Setup



#### ■ Test Procedure

The testing follows the Measurement Procedure of ANSI C63.10-2013 section 11.9.2.3 Method AVGPM.

The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor.



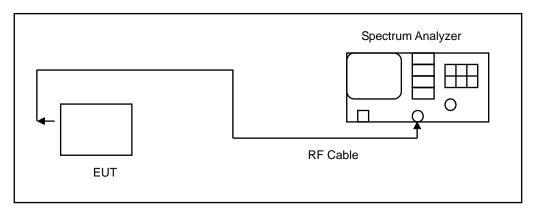


#### 4.4. 6 dB RF Bandwidth Measurement

#### ■ Limit

6 dB RF Bandwidth: Systems using digital modulation techniques may operate in the 2400–2483.5 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

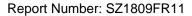
#### ■ Test Setup



#### **■** Test Procedure

The EUT tested to DTS test procedure of KDB 558074 D01 for compliance to FCC 47CFR 15.247 requirements. 6 dB RF Bandwidth: The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

The test was performed at 3 channels (Channel low, middle, high)



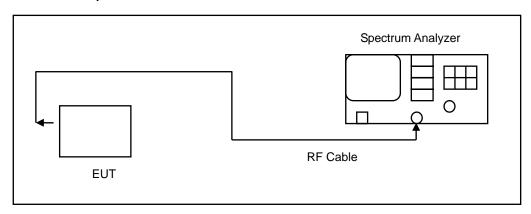


# 4.5. Maximum Power Spectral Density Measurement

#### ■ Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

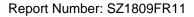
#### ■ Test Setup



#### **■** Test Procedure

The EUT tested to DTS test procedure of KDB 558074 D01 section 10.2 Method PKPSD for compliance to FCC 47CFR 15.247 requirements.

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. Set the span to 1.5 times the DTS bandwidth.
- 3. Set the RBW to:  $3 \text{ kHz} \le \text{RBW} \le 100 \text{ kHz}$ .
- 4. Set the VBW  $\geq$  3  $\times$  RBW.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level within the RBW.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



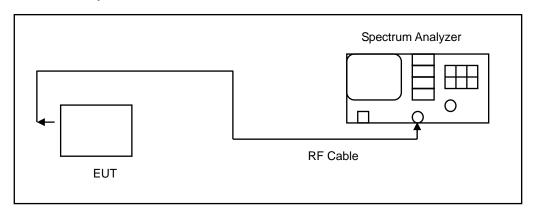


# 4.6. Out of Band Conducted Emissions Measurement

#### ■ Limit

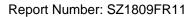
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

#### ■ Test Setup



#### **■** Test Procedure

In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function. All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band. The test was performed at 3 channels.





# 4.7. Antenna Measurement

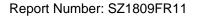
#### Limit

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

# ■ Antenna Description

See section 2 – antenna information.





# 5 Test Results

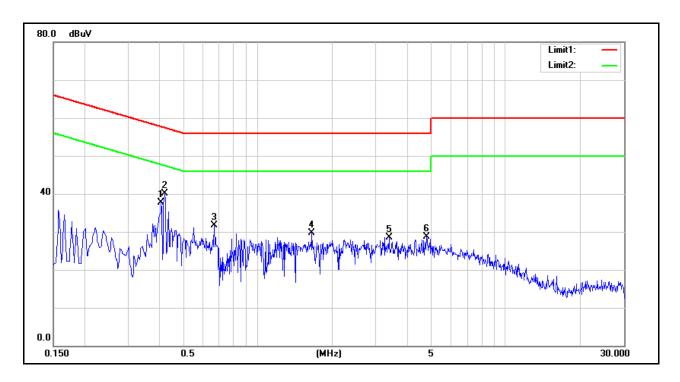
# **Annex A. Conducted Emission**

Standard: FCC Part 15.247 Line: L1

Test Mode: Mode 1 Power: AC 120 V/60 Hz

Temp.(°ℂ)/Hum.(%RH): 26(°ℂ)/60% RH

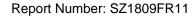
Description:



No.	Frequency	QP	AVG	Correction	QP	AVG	QP	AVG	QP	AVG	Remark
		reading	reading	factor	result	result	limit	limit	margin	margin	
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.4100	25.53	20.30	9.68	35.21	29.98	57.65	47.65	-22.44	-17.67	Pass
2	0.4220	29.29	20.56	9.68	38.97	30.24	57.41	47.41	-18.44	-17.17	Pass
3	0.6700	14.85	7.47	9.69	24.54	17.16	56.00	46.00	-31.46	-28.84	Pass
4	1.6580	15.30	7.86	9.73	25.03	17.59	56.00	46.00	-30.97	-28.41	Pass
5	3.3900	12.83	7.68	9.80	22.63	17.48	56.00	46.00	-33.37	-28.52	Pass
6	4.8060	12.60	6.26	9.86	22.46	16.12	56.00	46.00	-33.54	-29.88	Pass

Note: 1. Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).



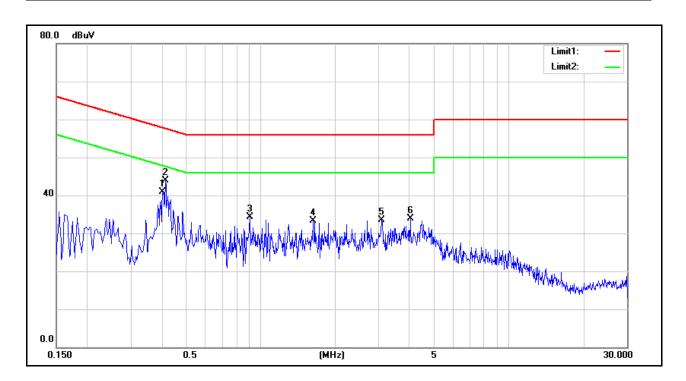


Standard: FCC Part 15.247 Line: N

Test Mode: Mode 1 Power: AC 120 V/60 Hz

Temp.(°ℂ)/Hum.(%RH): 26(°ℂ)/60% RH

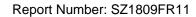
Description:



No.	Frequency	QP	AVG	Correction	QP	AVG	QP	AVG	QP	AVG	Remark
		reading	reading	factor	result	result	limit	limit	margin	margin	
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.4020	25.45	18.36	9.70	35.15	28.06	57.81	47.81	-22.66	-19.75	Pass
2	0.4140	29.83	25.42	9.70	39.53	35.12	57.57	47.57	-18.04	-12.45	Pass
3	0.9060	15.86	10.25	9.73	25.59	19.98	56.00	46.00	-30.41	-26.02	Pass
4	1.6340	17.62	11.44	9.75	27.37	21.19	56.00	46.00	-28.63	-24.81	Pass
5	3.0900	16.16	10.29	9.81	25.97	20.10	56.00	46.00	-30.03	-25.90	Pass
6	4.0220	15.26	9.72	9.85	25.11	19.57	56.00	46.00	-30.89	-26.43	Pass

Note: 1. Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).



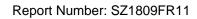


# **Annex B. Conducted Test Results**

# **Maximum Conducted Output Power Measurement**

			Average O	utput Power	Pe	ak Output Po	wer
Test Mode	Data Rate (Mbps)	Frequency (MHz)	Measurem	ent Results	Measurement Results		Limit
	(Mispo)	(1411 12)	dBm	W	dBm	W	dBm
		2412	11.25	0.013	13.95	0.025	< 30
	1	2437	12.00	0.016	14.37	0.027	< 30
Mode 2		2462	11.49	0.014	13.92	0.025	< 30
Mode 2	2	2437	11.94	0.016	14.26	0.027	< 30
	5.5	2437	11.90	0.015	14.21	0.026	< 30
	11	2437	11.87	0.015	14.17	0.026	< 30
	6	2412	7.63	0.006	14.22	0.026	< 30
		2437	7.57	0.006	14.09	0.026	< 30
		2462	7.46	0.006	14.06	0.025	< 30
	9	2437	7.55	0.006	14.06	0.025	< 30
Mode 3	12	2437	7.45	0.006	13.98	0.025	< 30
Mode 3	18	2437	7.37	0.005	13.88	0.024	< 30
	24	2437	7.36	0.005	13.87	0.024	< 30
	36	2437	7.35	0.005	13.86	0.024	< 30
	48	2437	7.26	0.005	13.78	0.024	< 30
	54	2437	7.25	0.005	13.77	0.024	< 30

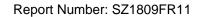
Note: The relevant measured result has the offset with cable loss already.





			Average O	utput Power	Pe	ak Output Po	wer
Test Mode	Data Rate (Mbps)	Frequency (MHz)	Measurem	ent Results	Measurem	Measurement Results Lim	
	(Wibp3)	(1711 12)	dBm	W	dBm	W	dBm
		2412	7.10	0.005	13.88	0.024	< 30
	6.5	2437	7.23	0.005	14.09	0.026	< 30
		2462	7.41	0.006	14.18	0.026	< 30
	14.4	2437	7.18	0.005	13.99	0.025	< 30
Mode 4	21.7	2437	7.13	0.005	13.98	0.025	< 30
Wiode 4	28.9	2437	7.11	0.005	13.89	0.024	< 30
	43.3	2437	7.03	0.005	13.86	0.024	< 30
	57.8	2437	7.02	0.005	13.84	0.024	< 30
	65	2437	7.01	0.005	13.78	0.024	< 30
	72.2	2437	6.94	0.005	13.77	0.024	< 30
		2422	6.09	0.004	13.08	0.020	< 30
	13.5	2437	6.62	0.005	13.55	0.023	< 30
		2452	4.78	0.003	11.80	0.015	< 30
	30	2437	6.58	0.005	13.48	0.022	< 30
Mode 5	45	2437	6.52	0.004	13.44	0.022	< 30
Wiode 5	60	2437	6.50	0.004	13.41	0.022	< 30
	90	2437	6.42	0.004	13.39	0.022	< 30
	120	2437	6.40	0.004	13.34	0.022	< 30
	135	2437	6.37	0.004	13.33	0.022	< 30
	150	2437	6.34	0.004	13.31	0.021	< 30

Note: The relevant measured result has the offset with cable loss already.



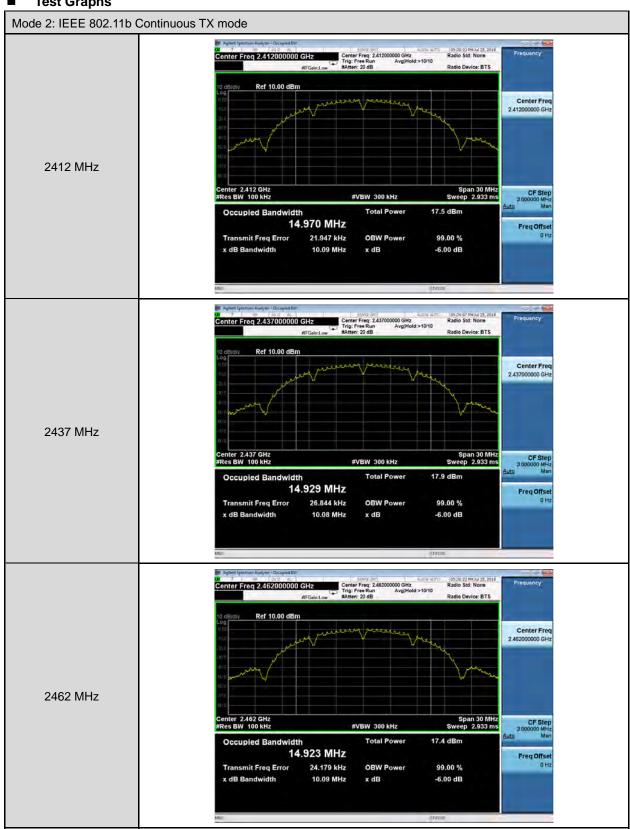


# 6 dB RF Bandwidth Measurement

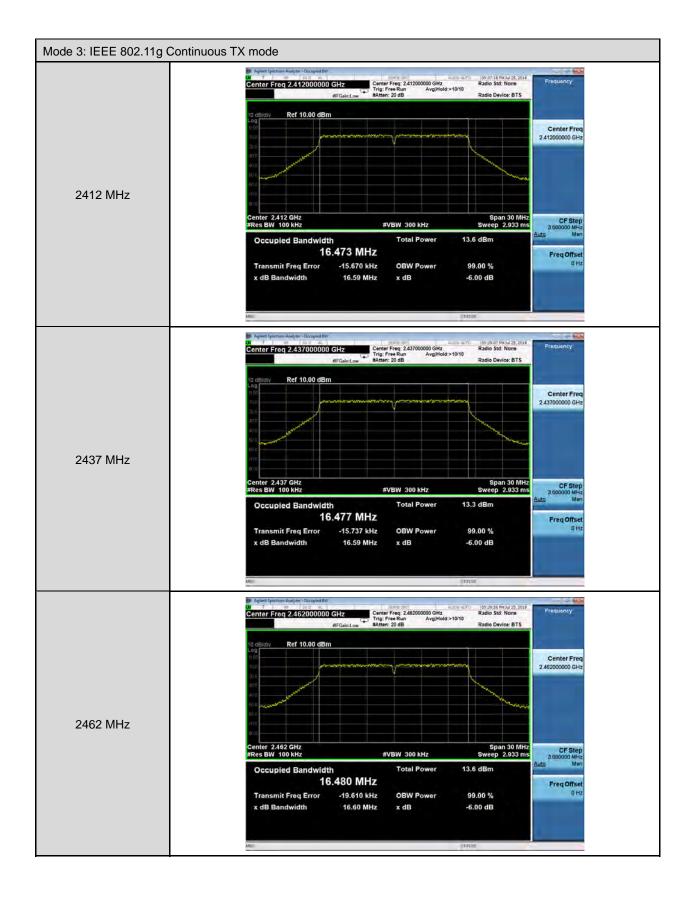
Test Mode	Frequency (MHz)	Measurement (kHz)	Limit (kHz)
	2412	10090	> 500
Mode 2	2437	10080	> 500
	2462	10090	> 500
	2412	16590	> 500
Mode 3	2437	16590	> 500
	2462	16600	> 500
	2412	17810	> 500
Mode 4	2437	17800	> 500
	2462	17800	> 500
	2422	36430	> 500
Mode 5	2437	36410	> 500
	2452	36420	> 500



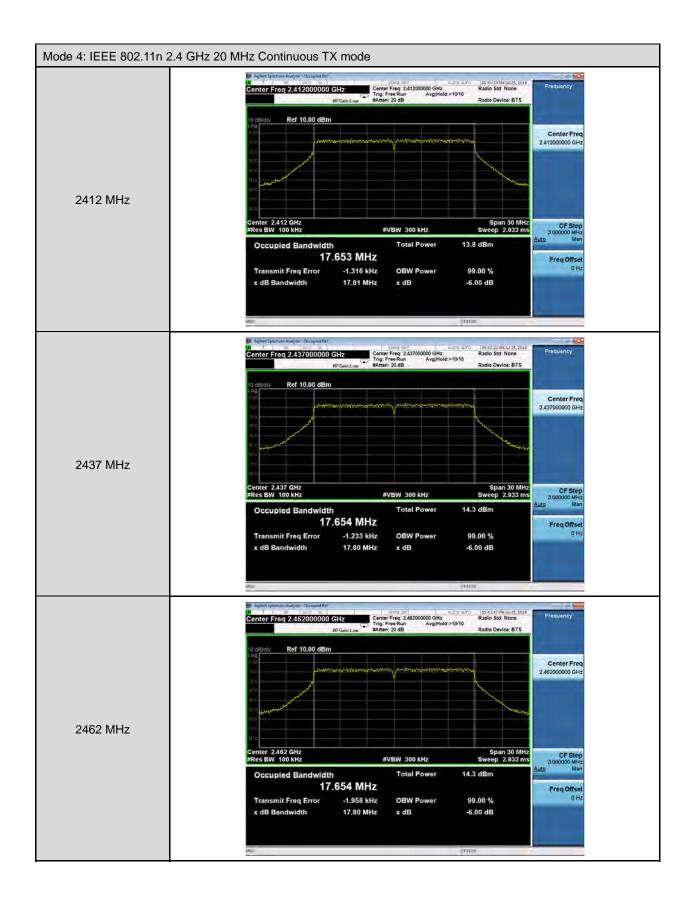
# **Test Graphs**



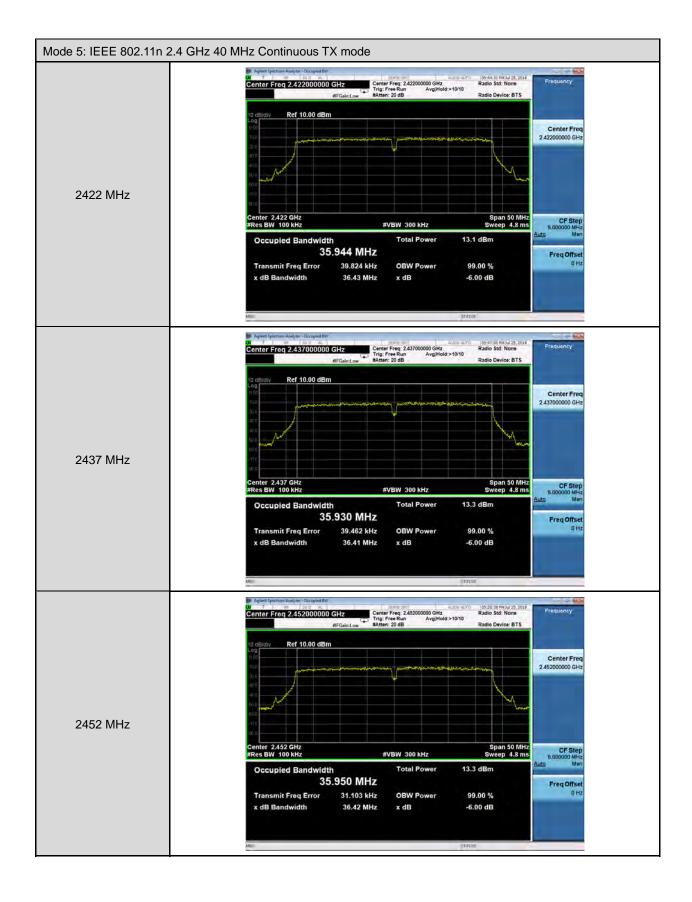


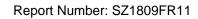












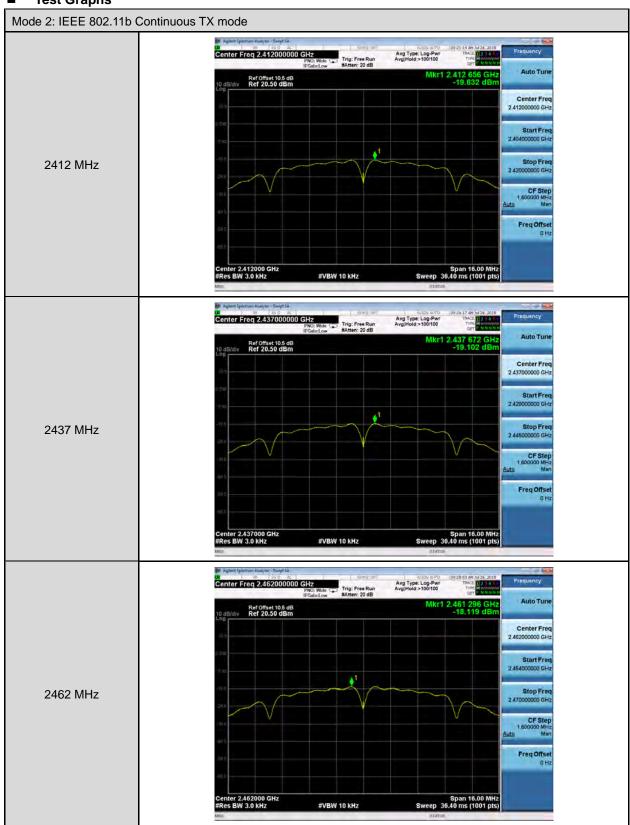


# **Maximum Power Spectral Density Measurement**

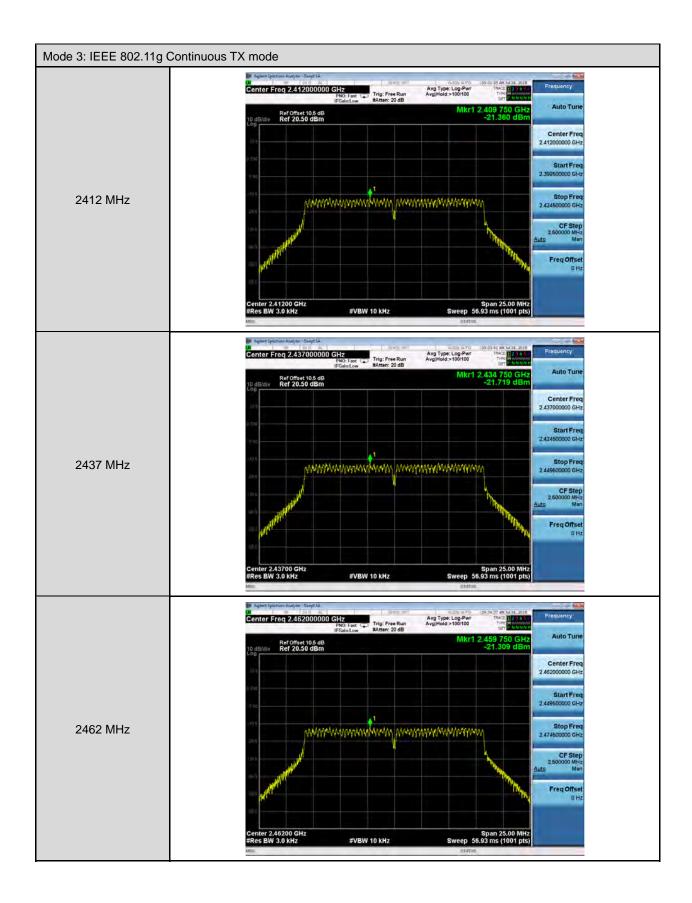
Test Mode	Frequency (MHz)	Measurement (dBm/3 kHz)	Limit (dBm/3 kHz)
Mode 2	2412	-19.832	< 8
	2437	-19.102	< 8
	2462	-18.119	< 8
Mode 3	2412	-21.360	< 8
	2437	-21.719	< 8
	2462	-21.309	< 8
Mode 4	2412	-20.393	< 8
	2437	-19.971	< 8
	2462	-19.230	< 8
Mode 5	2422	-22.036	< 8
	2437	-21.554	< 8
	2452	-23.435	< 8



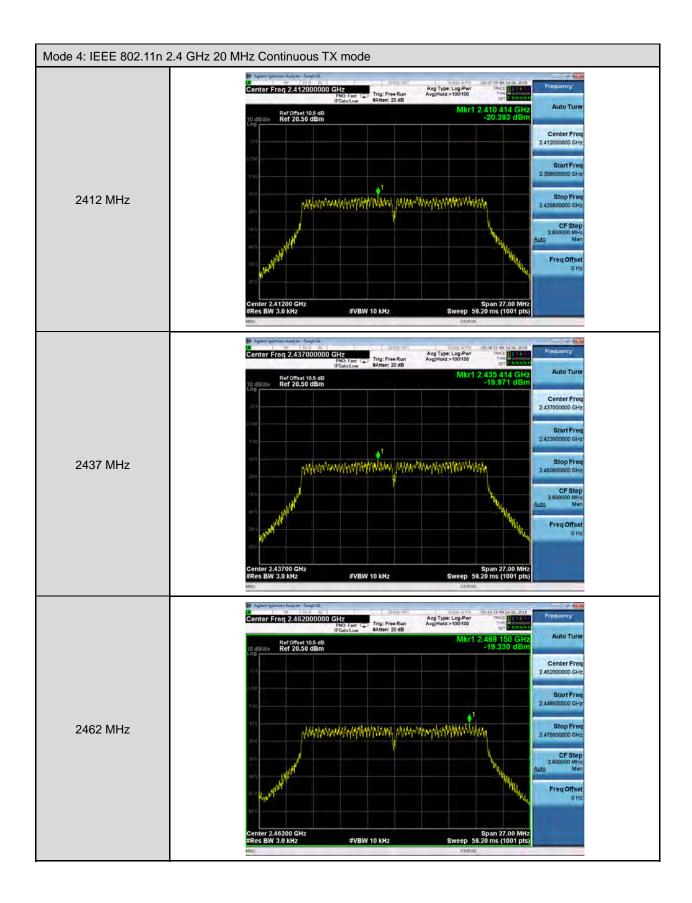
# ■ Test Graphs



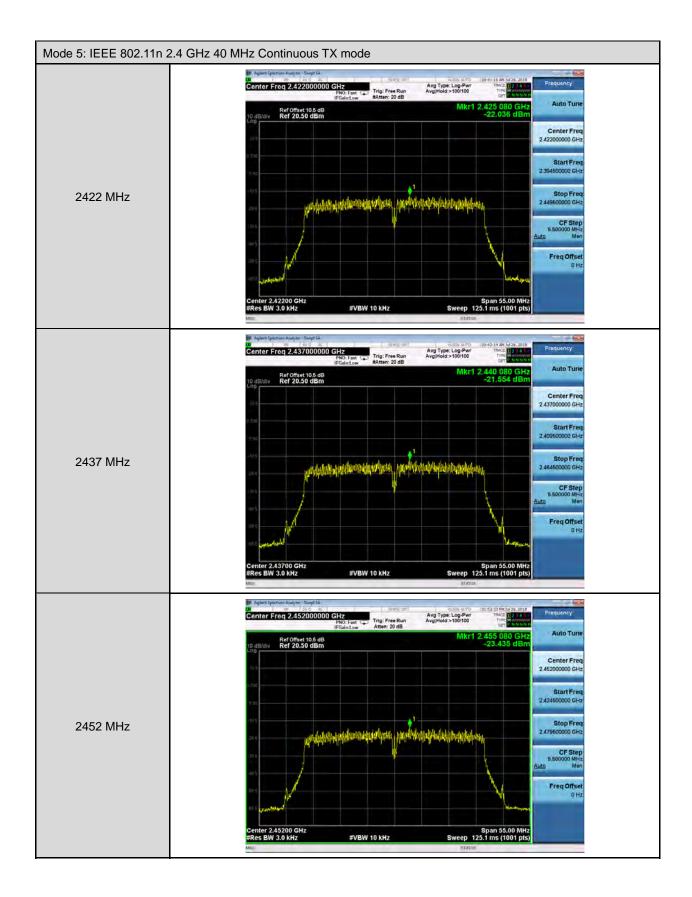










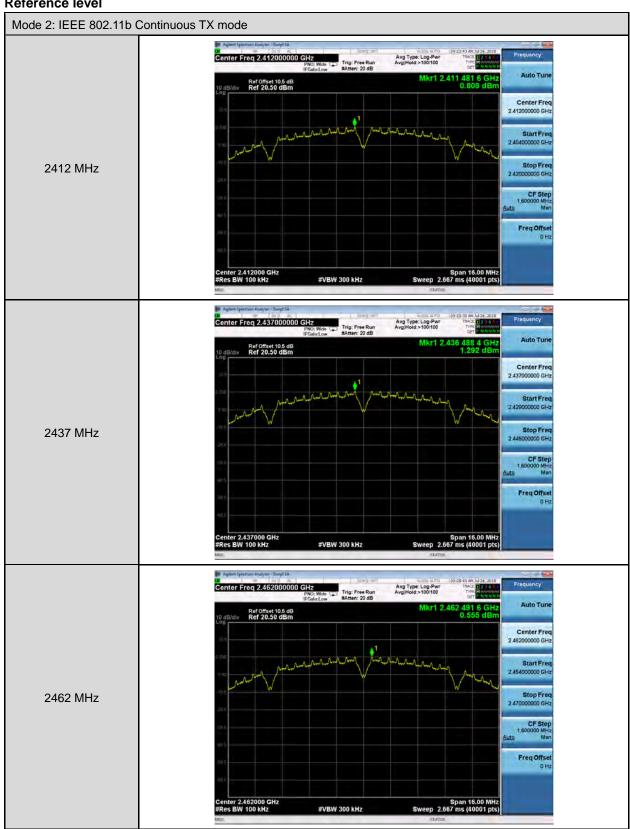




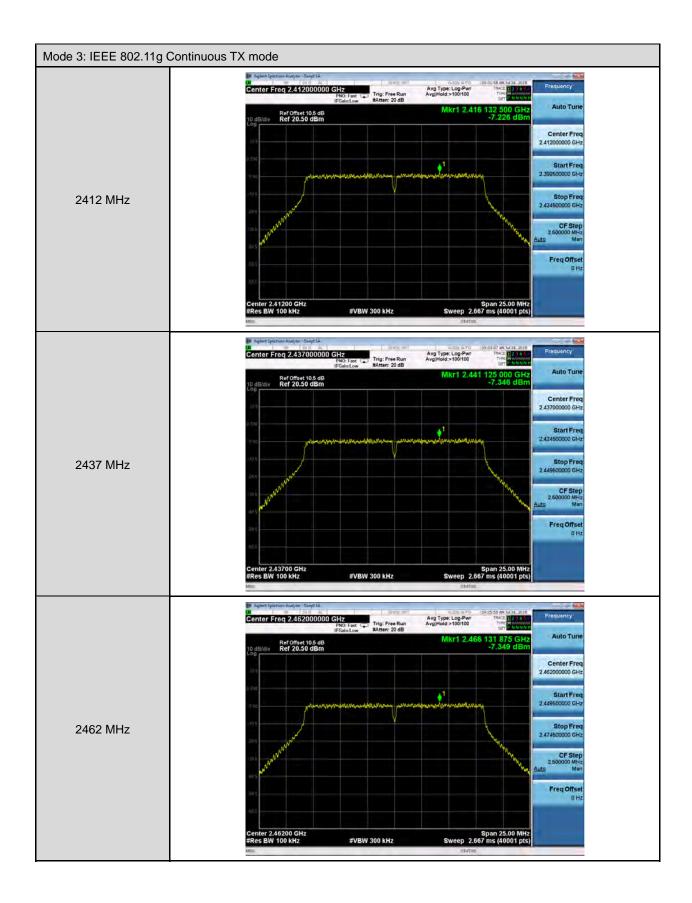
# **Out of Band Conducted Emissions Measurement**

### **Test Graphs**

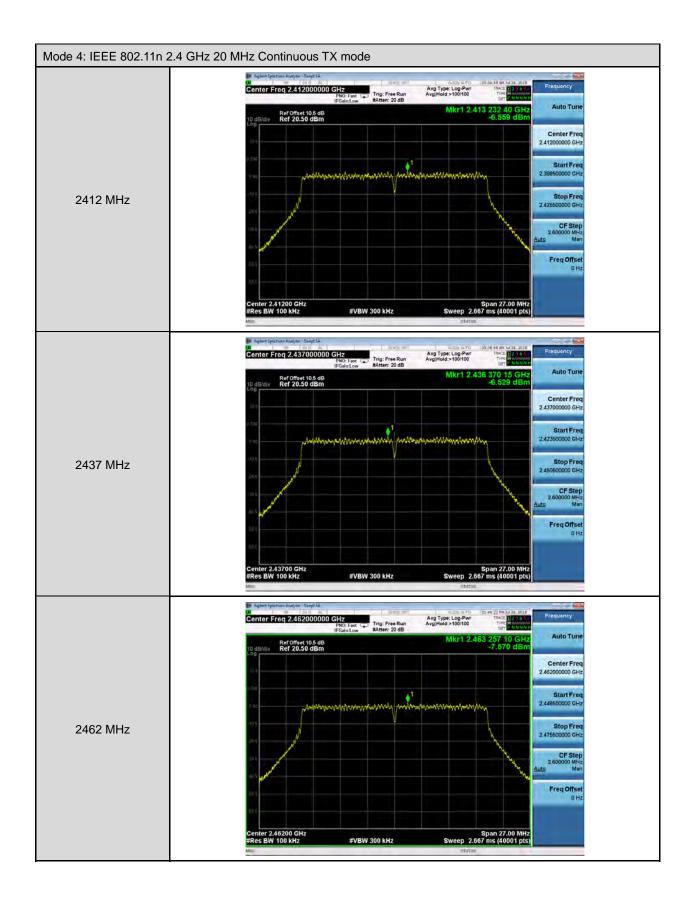
### Reference level



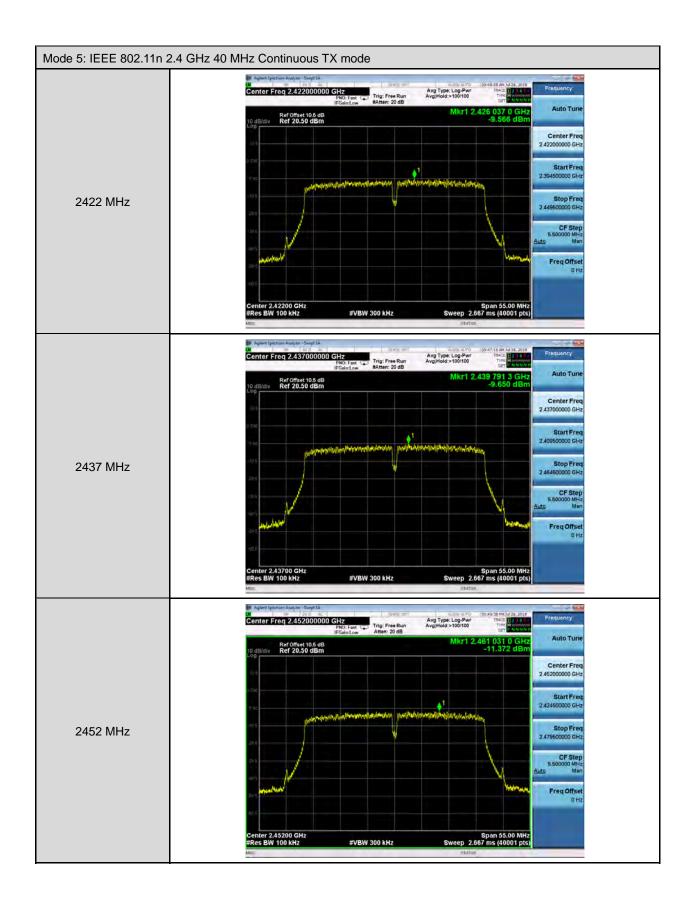






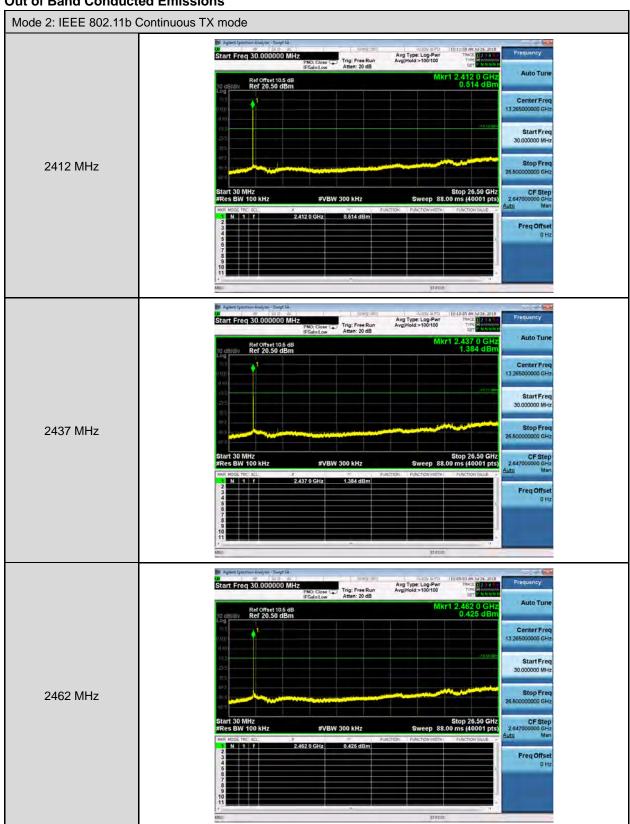




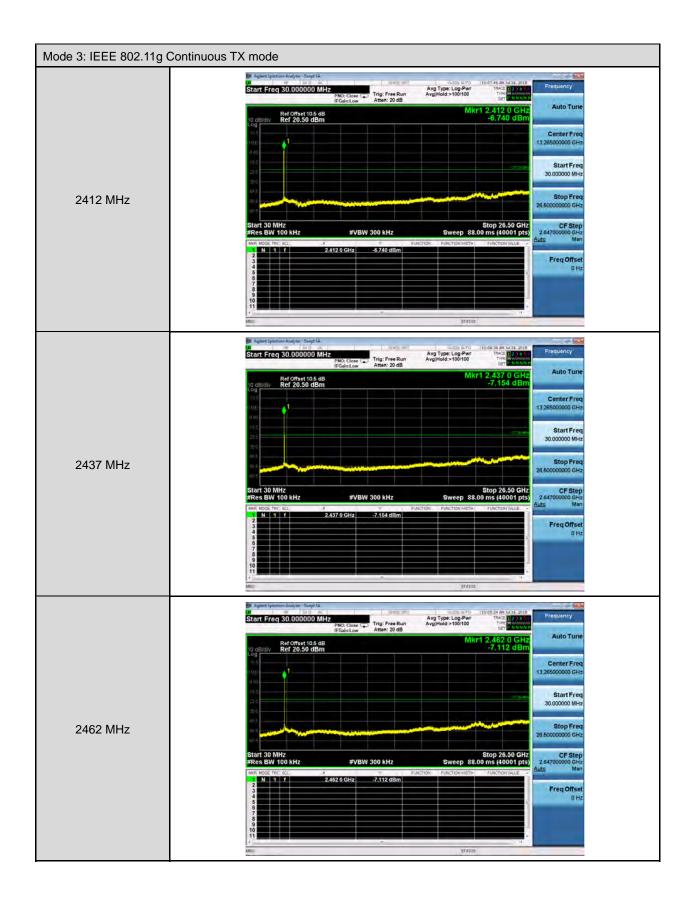




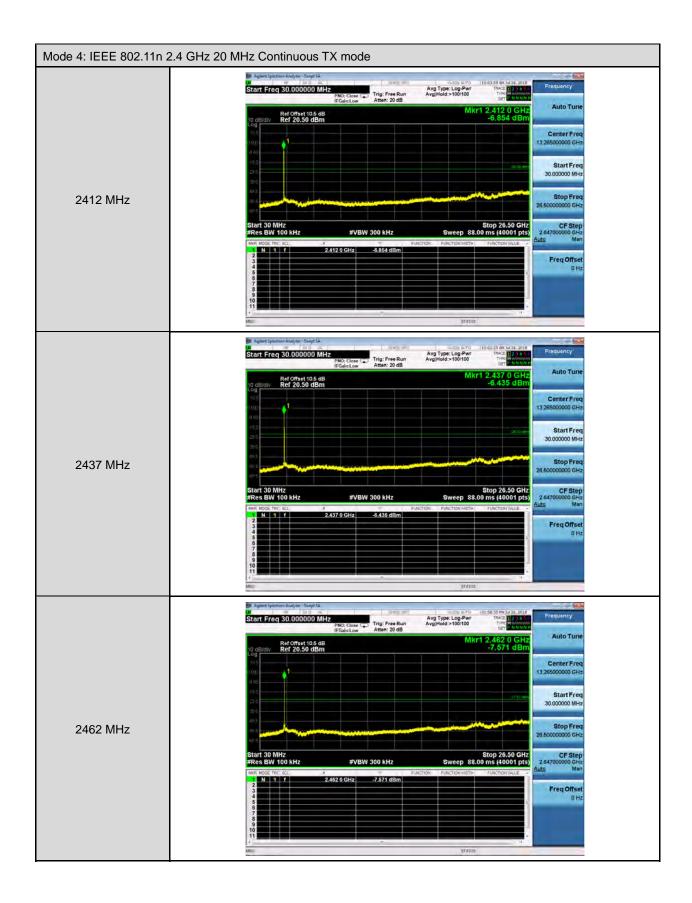
### **Out of Band Conducted Emissions**



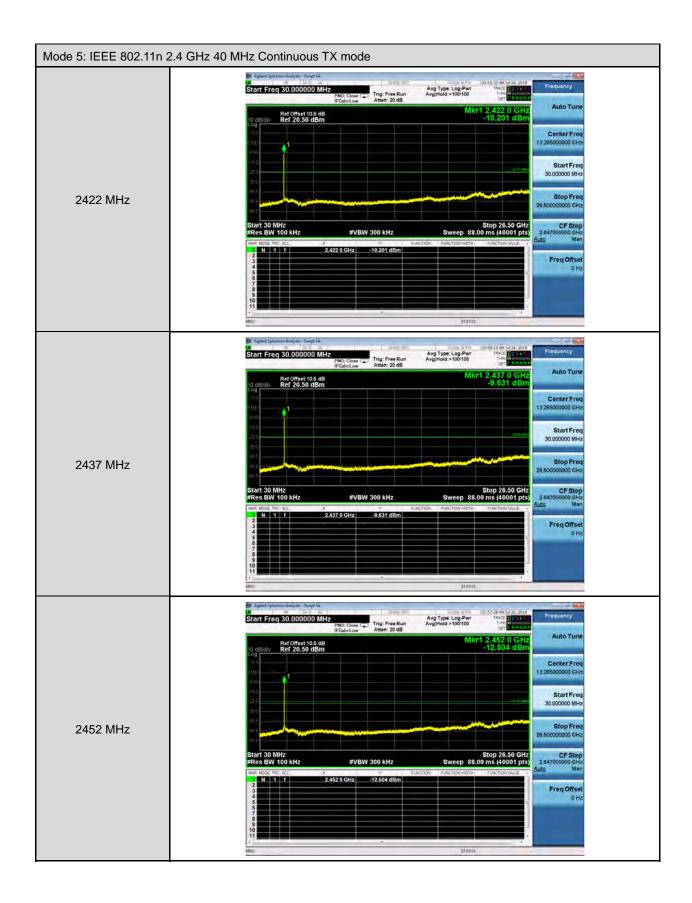






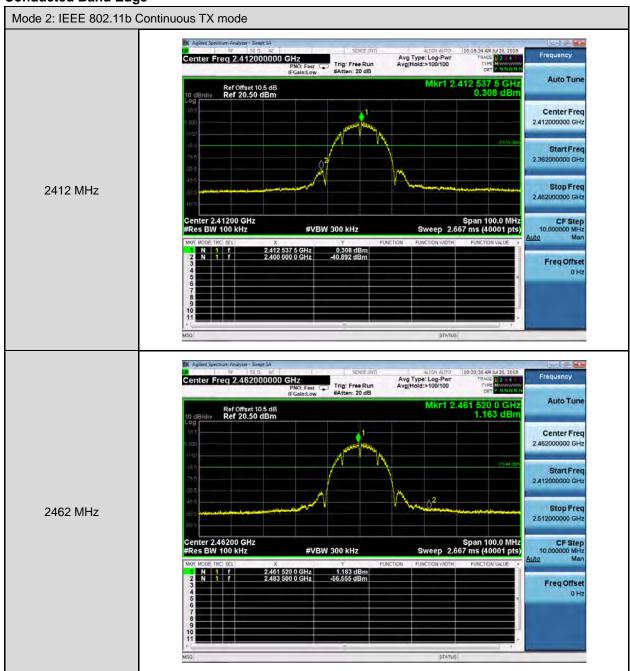




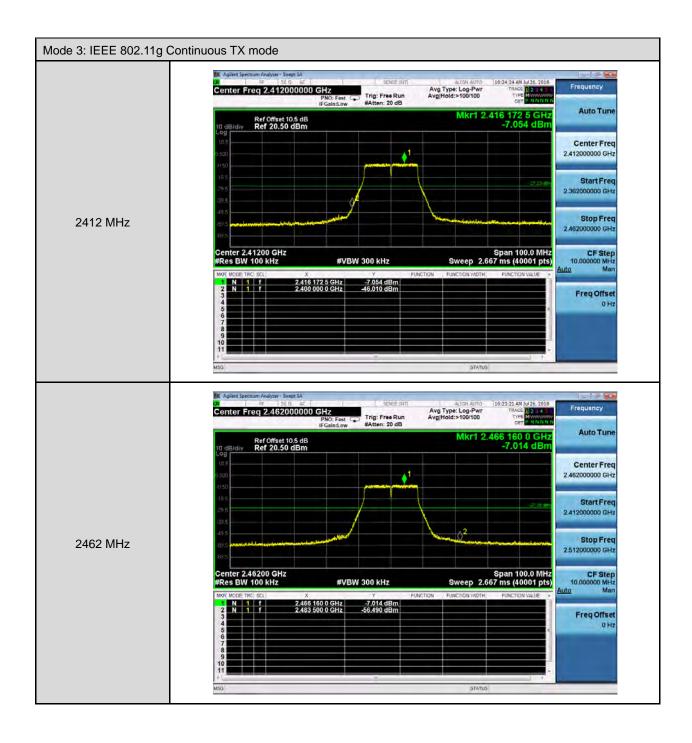




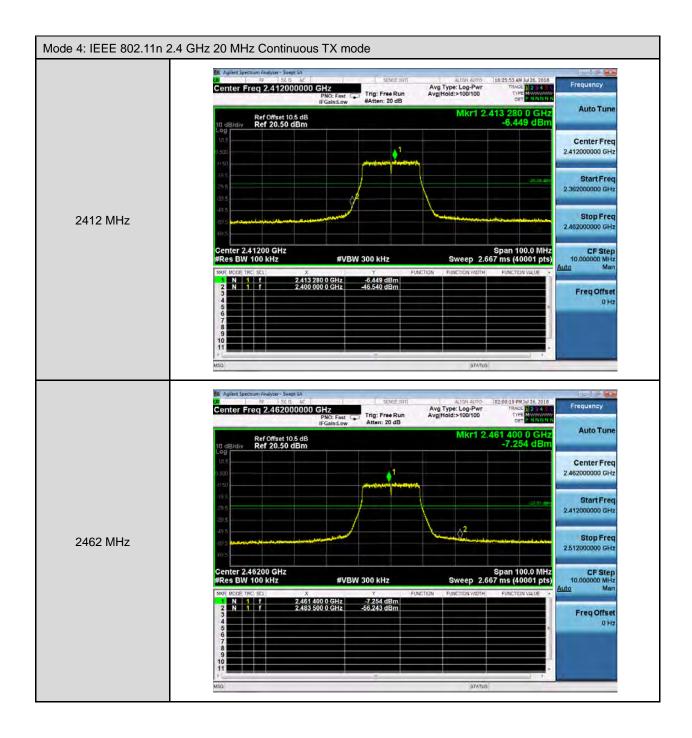
# **Conducted Band Edge**



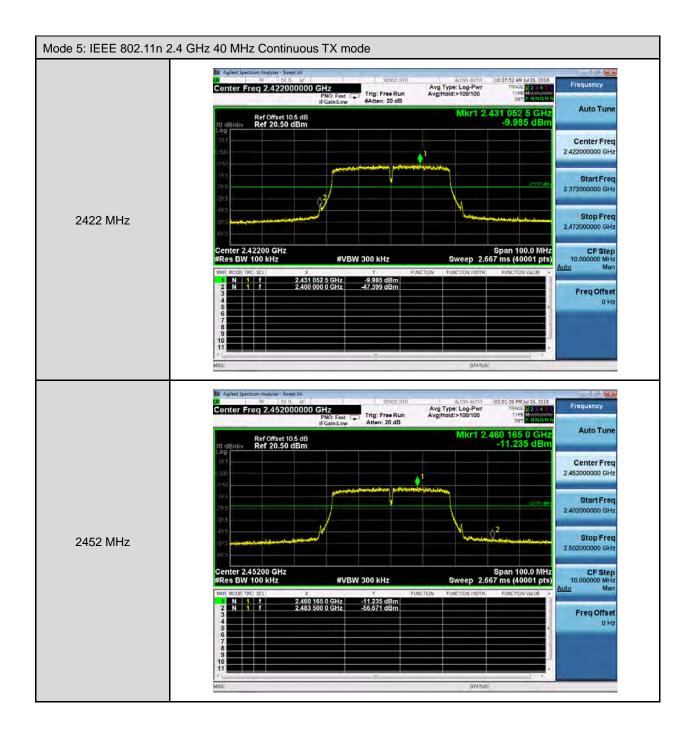


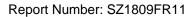














# **Annex C. Radiated Emission Test Results**

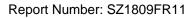
# Harmonic

Below 1GHz

Standard:	FCC	Part 15.247		Test Distar	nce:	3 m	
Test item:	Harn	nonic		Power:		AC 120 V	/60 Hz
Test Mode:	Mode	e 1		Temp.(°C)/	Hum.(%RH):	26(℃)/60	% RH
Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark	Ant.Polar.
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		H/V
145.4300	42.00	-10.26	31.74	43.50	-11.76	QP	Н
184.2300	45.65	-11.92	33.73	43.50	-9.77	QP	Н
200.7200	51.15	-13.08	38.07	43.50	-5.43	QP	Н
255.0400	47.31	-12.08	35.23	46.00	-10.77	QP	Н
768.1700	28.40	0.10	28.50	46.00	-17.50	QP	Н
839.9500	29.57	0.67	30.24	46.00	-15.76	QP	Н
63.9500	44.65	-11.79	32.86	40.00	-7.14	QP	V
133.7900	46.29	-11.63	34.66	43.50	-8.84	QP	V
146.4000	44.36	-10.18	34.18	43.50	-9.32	QP	V
201.6900	51.95	-13.24	38.71	43.50	-4.79	QP	V
531.4900	31.63	-4.85	26.78	46.00	-19.22	QP	V
868.0800	28.80	1.14	29.94	46.00	-16.06	QP	V

<sup>2.</sup> Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

<sup>3.</sup> When the peak results are less than average limit, so not need to evaluate the average.





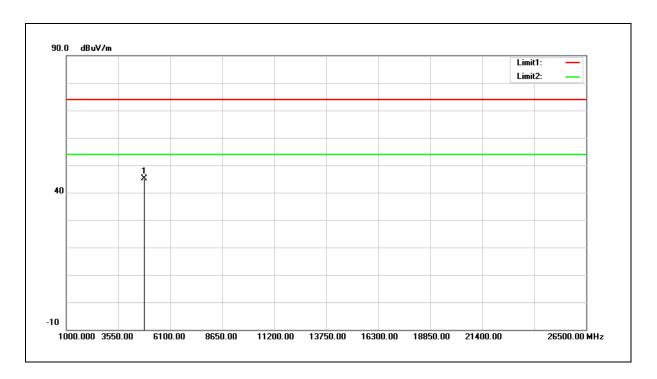
### Above 1GHz

Standard: FCC Part 15.247 Test Distance: 3 m

Test item: Power: AC 120 V/60 Hz

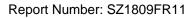
Frequency: 2412 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 2
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	49.46	-4.36	45.10	74.00	-28.90	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

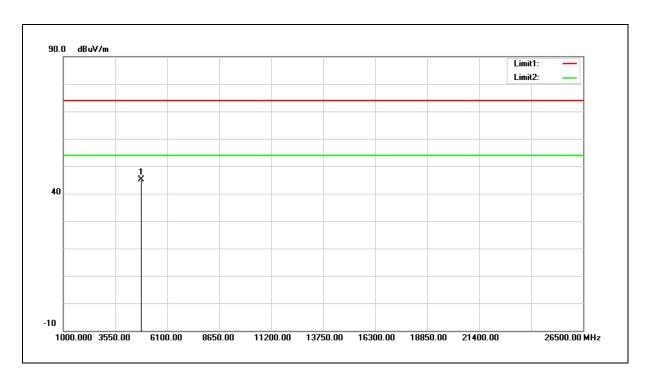




Test item: Power: AC 120 V/60 Hz

Frequency: 2412 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 2
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	49.59	-4.36	45.23	74.00	-28.77	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

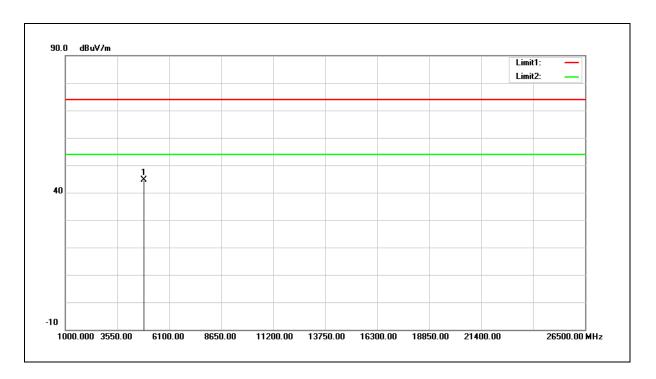




Test item: Power: AC 120 V/60 Hz

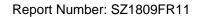
Frequency: 2437 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 2
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	48.92	-4.37	44.55	74.00	-29.45	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

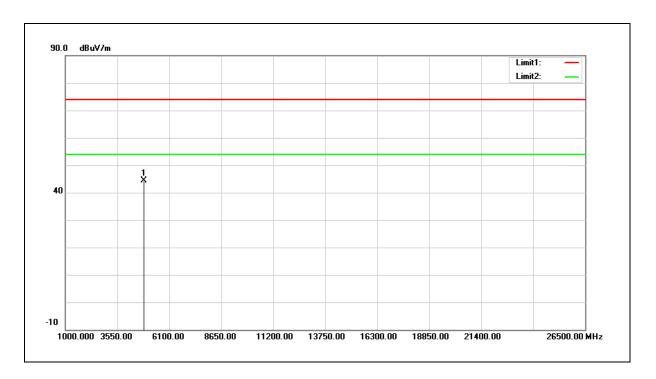




Test item: Power: AC 120 V/60 Hz

Frequency: 2437 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 2
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	48.87	-4.37	44.50	74.00	-29.50	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

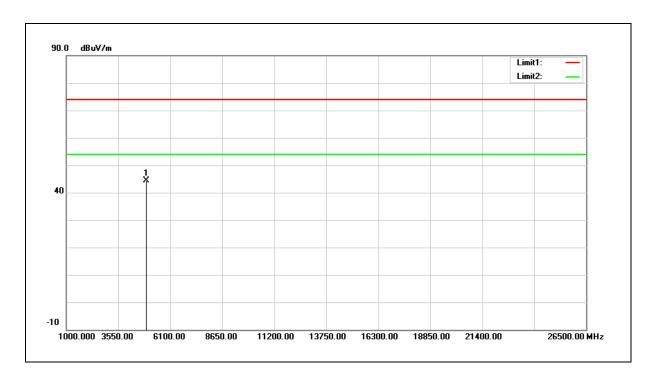




Test item: Power: AC 120 V/60 Hz

Frequency: 2462 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 2
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	48.70	-4.39	44.31	74.00	-29.69	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

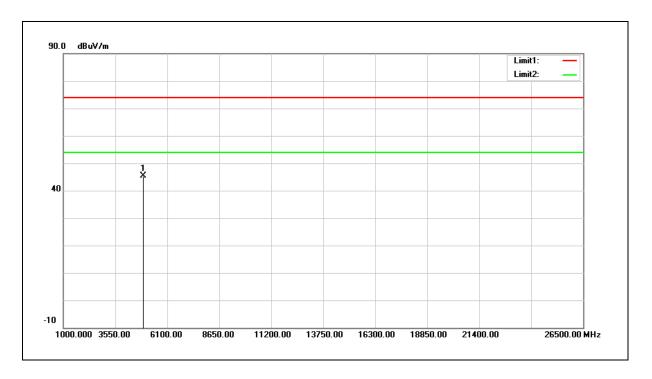




Test item: Power: AC 120 V/60 Hz

Frequency: 2462 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 2
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	49.80	-4.39	45.41	74.00	-28.59	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

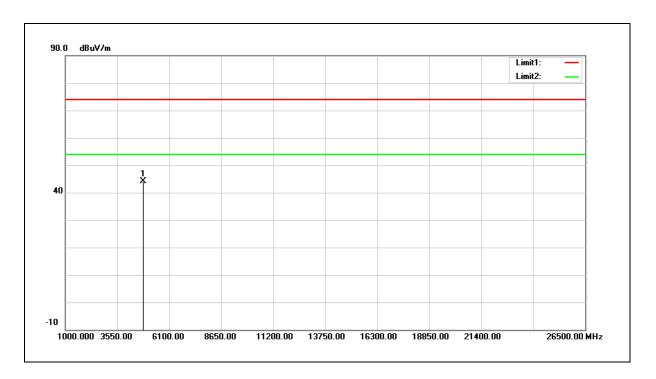




Test item: Power: AC 120 V/60 Hz

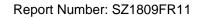
Frequency: 2412 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 3
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	48.47	-4.36	44.11	74.00	-29.89	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

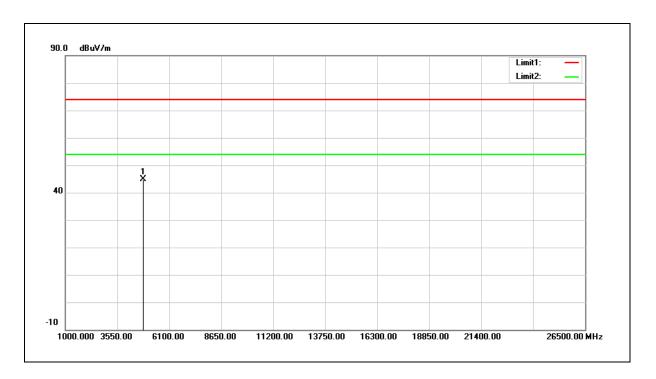




Test item: Power: AC 120 V/60 Hz

Frequency: 2412 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 3
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	49.29	-4.36	44.93	74.00	-29.07	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

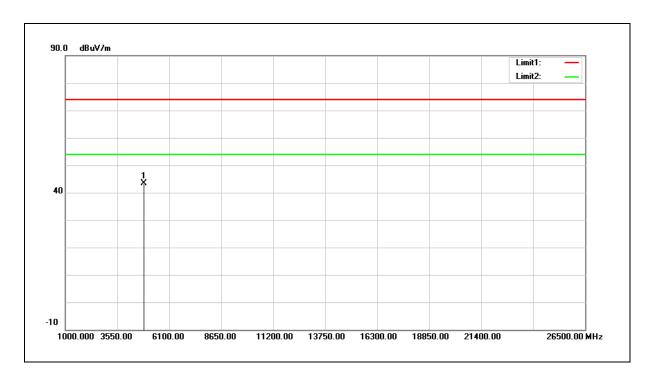




Test item: Power: AC 120 V/60 Hz

Frequency: 2437 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 3
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	47.69	-4.37	43.32	74.00	-30.68	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

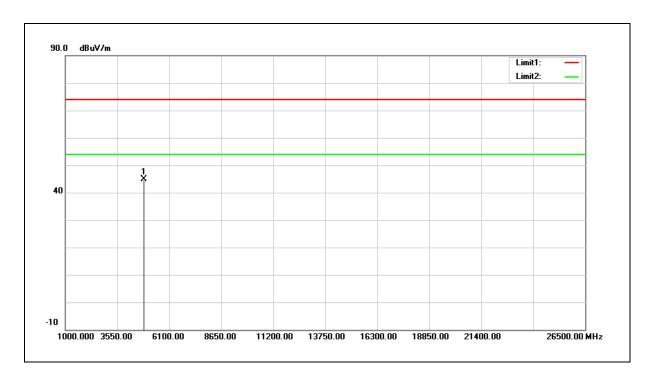




Test item: Power: AC 120 V/60 Hz

Frequency: 2437 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 3
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	49.13	-4.37	44.76	74.00	-29.24	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

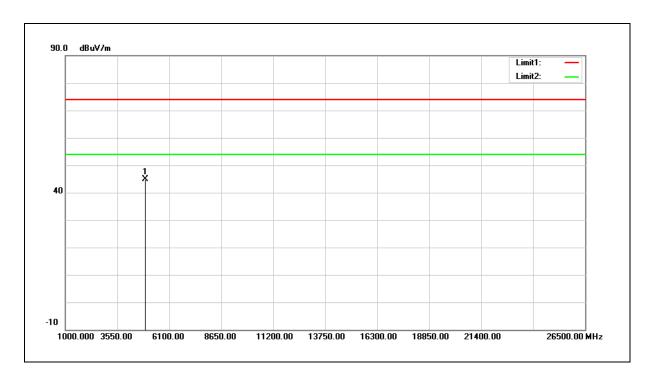




Test item: Power: AC 120 V/60 Hz

Frequency: 2462 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 3
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	49.18	-4.39	44.79	74.00	-29.21	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

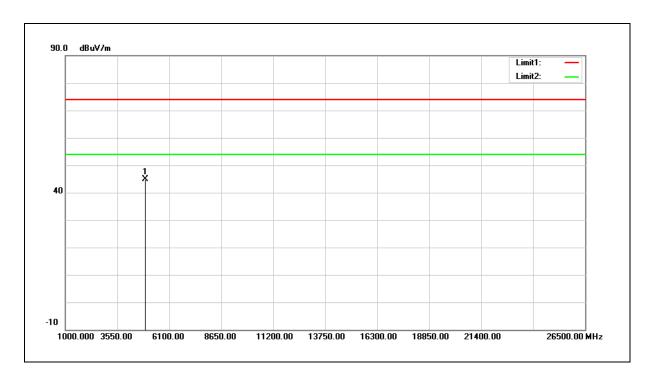




Test item: Power: AC 120 V/60 Hz

Frequency: 2462 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 3
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	49.33	-4.39	44.94	74.00	-29.06	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

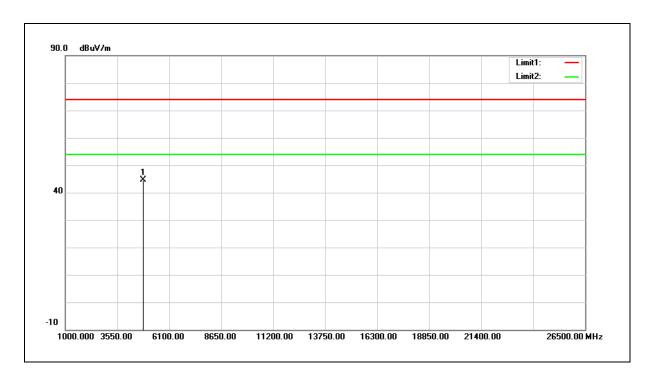




Test item: Power: AC 120 V/60 Hz

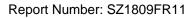
Frequency: 2412 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 4
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	48.91	-4.36	44.55	74.00	-29.45	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

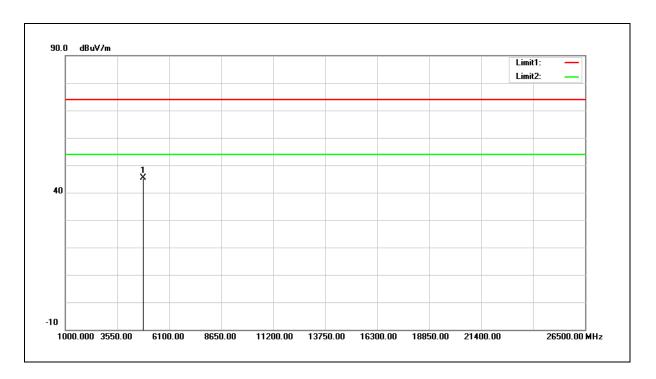




Test item: Power: AC 120 V/60 Hz

Frequency: 2412 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 4
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	49.68	-4.36	45.32	74.00	-28.68	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

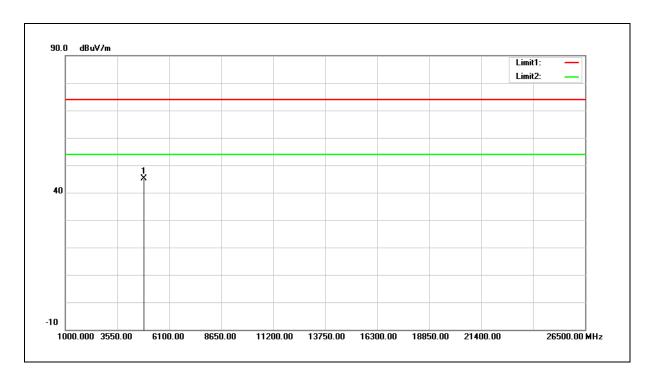




Test item: Power: AC 120 V/60 Hz

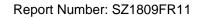
Frequency: 2437 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 4
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	49.46	-4.37	45.09	74.00	-28.91	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.





Test item: Power: AC 120 V/60 Hz

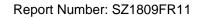
Frequency: 2437 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 4
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	50.92	-4.37	46.55	74.00	-27.45	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

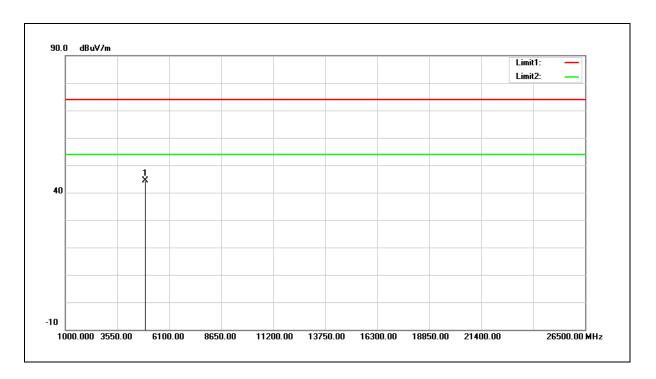




Test item: Power: AC 120 V/60 Hz

Frequency: 2462 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 4
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	48.76	-4.39	44.37	74.00	-29.63	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

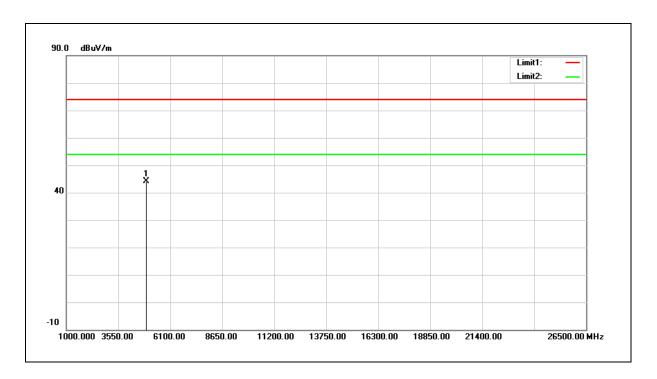




Test item: Power: AC 120 V/60 Hz

Frequency: 2462 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 4
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	48.54	-4.39	44.15	74.00	-29.85	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.





Test item: Power: AC 120 V/60 Hz

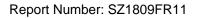
Frequency: 2422 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 5
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4844.000	49.69	-4.36	45.33	74.00	-28.67	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

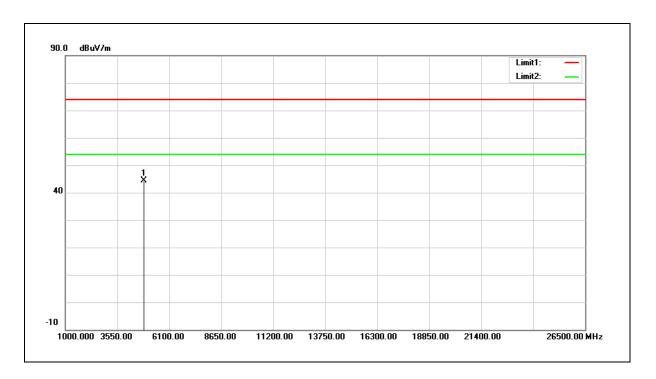




Test item: Power: AC 120 V/60 Hz

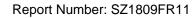
Frequency: 2422 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 5
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4844.000	48.79	-4.36	44.43	74.00	-29.57	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

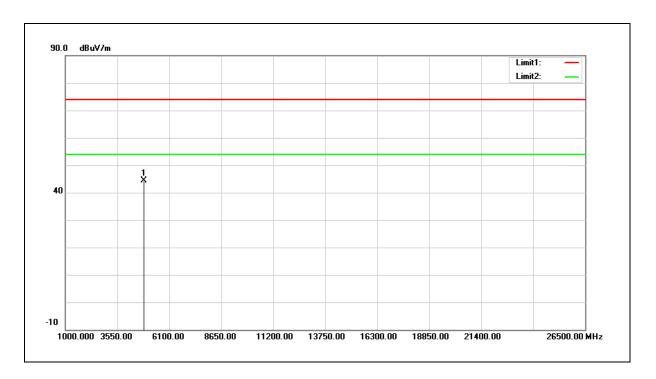




Test item: Power: AC 120 V/60 Hz

Frequency: 2437 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 5
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	48.81	-4.37	44.44	74.00	-29.56	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

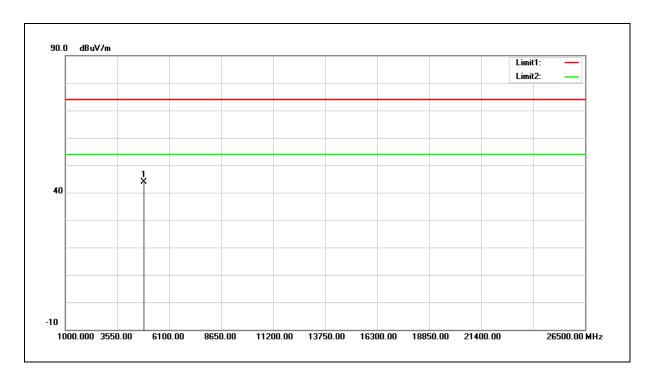




Test item: Power: AC 120 V/60 Hz

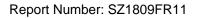
Frequency: 2437 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 5
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	48.14	-4.37	43.77	74.00	-30.23	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

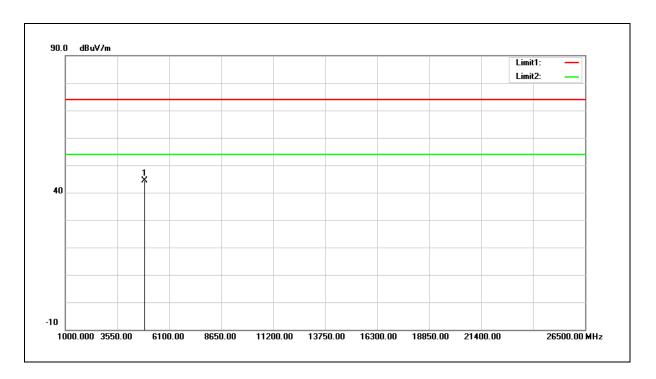




Test item: Power: AC 120 V/60 Hz

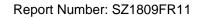
Frequency: 2452 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 5
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4904.000	48.83	-4.38	44.45	74.00	-29.55	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

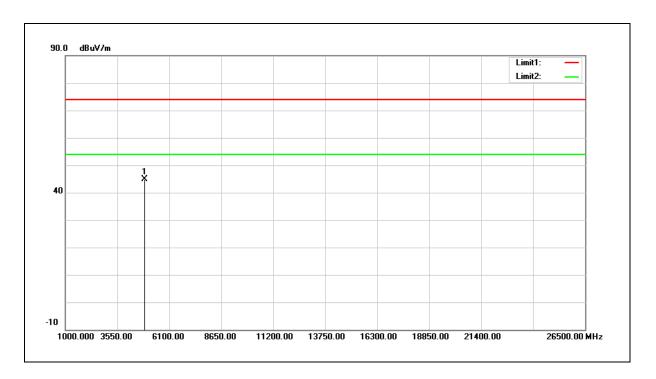




Test item: Power: AC 120 V/60 Hz

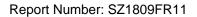
Frequency: 2452 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60% RH

Mode: Mode 5
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4904.000	49.38	-4.38	45.00	74.00	-29.00	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.





## **Band Edge**

Ant.Polar.:

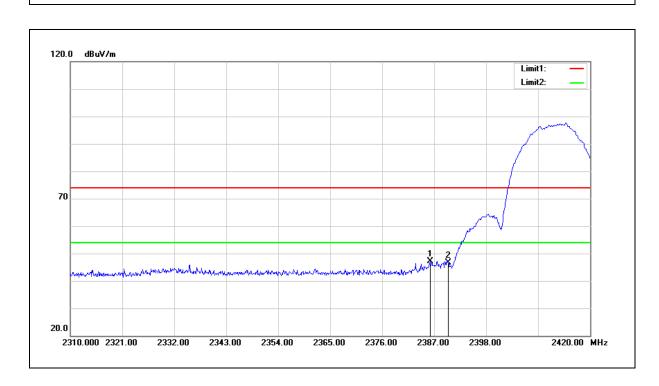
Horizontal

 Standard:
 FCC Part 15.247
 Test Distance:
 3 m

 Test item:
 Band edge
 Power:
 AC 120 V/60 Hz

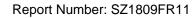
 Frequency:
 2412 MHz
 AC 120 V/60 Hz
 26(℃)/60% RH

 Mode:
 Mode 2



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2386.120	56.87	-9.64	47.23	74.00	-26.77	peak
2	2390.000	56.33	-9.62	46.71	74.00	-27.29	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

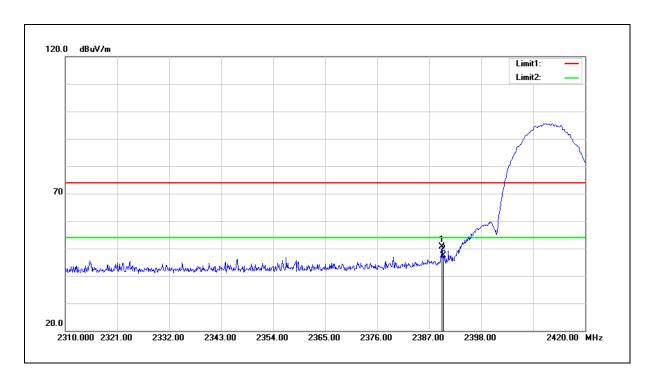




Test item: Band edge Power: AC 120 V/60 Hz

Frequency: 2412 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 2
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.750	60.24	-9.62	50.62	74.00	-23.38	peak
2	2390.000	56.96	-9.62	47.34	74.00	-26.66	peak

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.

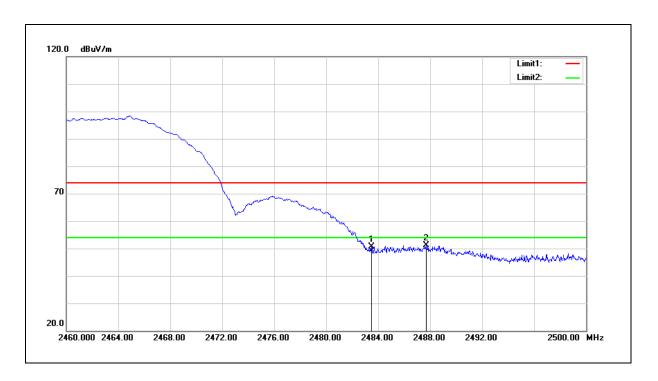




Test item: Band edge Power: AC 120 V/60 Hz

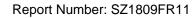
Frequency: 2462 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 2
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	59.82	-9.20	50.62	74.00	-23.38	peak
2	2487.680	60.27	-9.19	51.08	74.00	-22.92	peak

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.

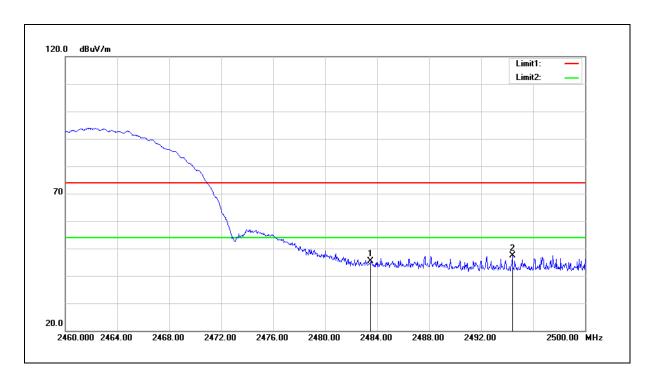




Test item: Band edge Power: AC 120 V/60 Hz

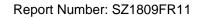
Frequency: 2462 MHz AC 120 V/60 Hz 26(°C)/60% RH

Mode: Mode 2
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	54.56	-9.20	45.36	74.00	-28.64	peak
2	2494.400	56.59	-9.16	47.43	74.00	-26.57	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

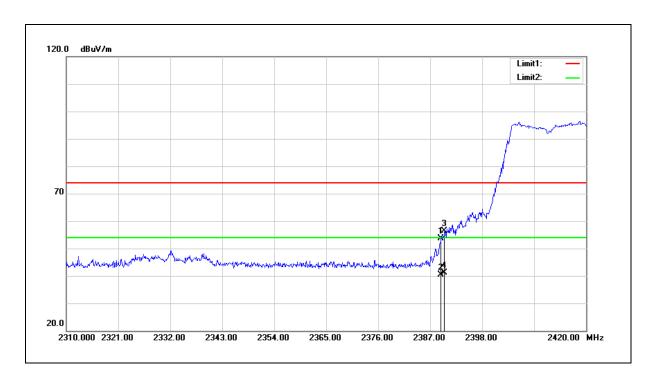




Test item: Band edge Power: AC 120 V/60 Hz

Frequency: 2412 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 3
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.310	63.24	-9.63	53.61	74.00	-20.39	peak
2	2389.310	50.01	-9.63	40.38	54.00	-13.62	AVG
3	2390.000	66.04	-9.62	56.42	74.00	-17.58	peak
4	2390.000	50.80	-9.62	41.18	54.00	-12.82	AVG

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.

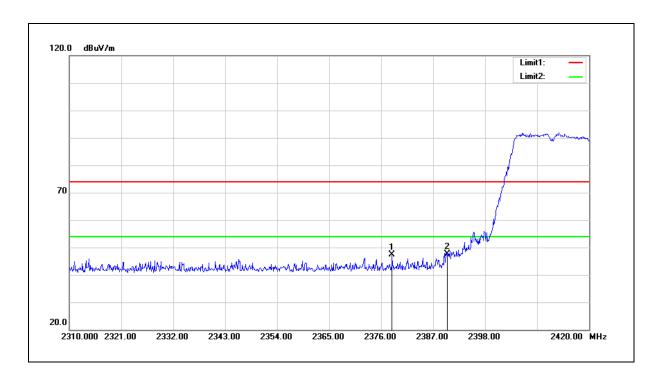




Test item: Band edge Power: AC 120 V/60 Hz

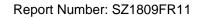
Frequency: 2412 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 3
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2378.310	57.12	-9.69	47.43	74.00	-26.57	peak
2	2390.000	57.14	-9.62	47.52	74.00	-26.48	peak

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.

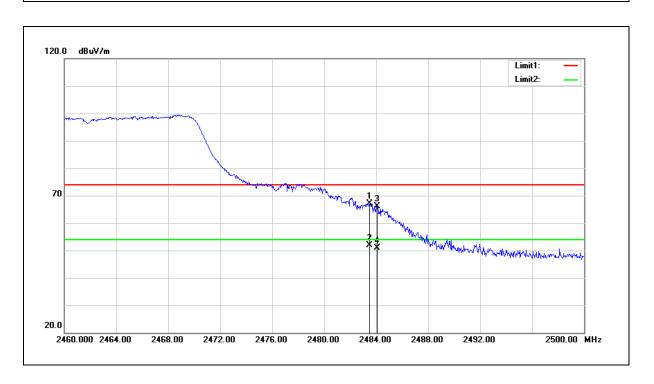




Test item: Band edge Power: AC 120 V/60 Hz

Frequency: 2462 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 3
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	76.41	-9.20	67.21	74.00	-6.79	peak
2	2483.500	61.20	-9.20	52.00	54.00	-2.00	AVG
3	2484.080	75.34	-9.20	66.14	74.00	-7.86	peak
4	2484.080	60.06	-9.20	50.86	54.00	-3.14	AVG

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.

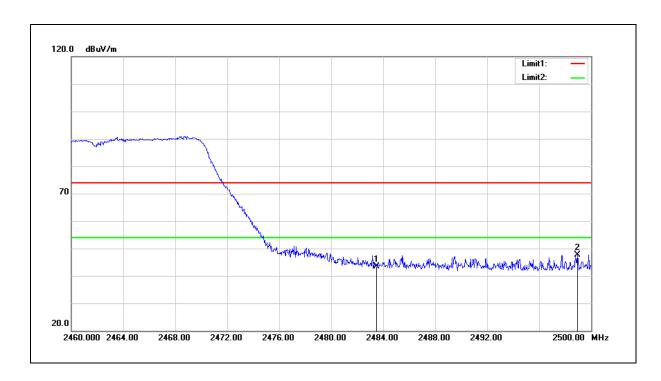




Test item: Band edge Power: AC 120 V/60 Hz

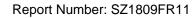
Frequency: 2462 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 3
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	52.57	-9.20	43.37	74.00	-30.63	peak
2	2498.960	56.87	-9.13	47.74	74.00	-26.26	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

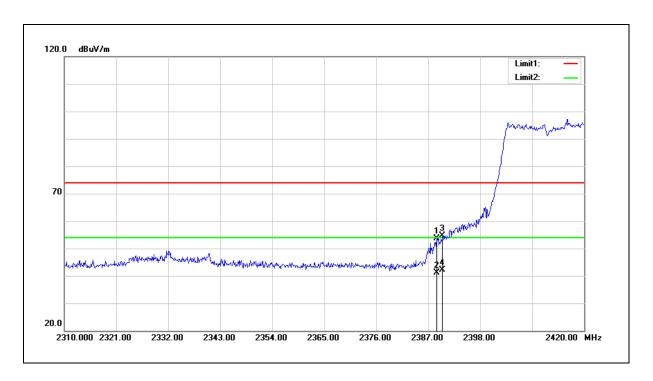




Test item: Band edge Power: AC 120 V/60 Hz

Frequency: 2412 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 4
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2388.760	63.21	-9.63	53.58	74.00	-20.42	peak
2	2388.760	50.70	-9.63	41.07	54.00	-12.93	AVG
3	2390.000	64.21	-9.62	54.59	74.00	-19.41	peak
4	2390.000	51.78	-9.62	42.16	54.00	-11.84	AVG

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

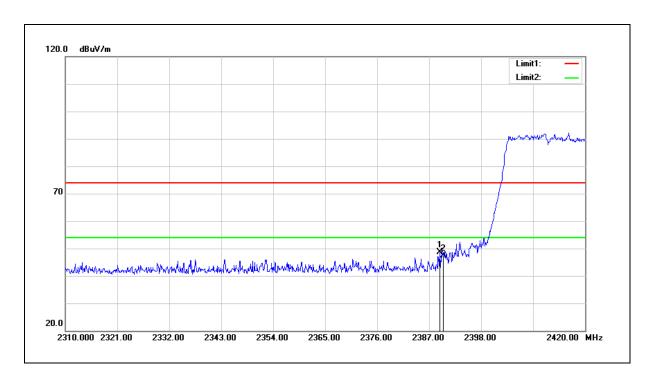




Test item: Band edge Power: AC 120 V/60 Hz

Frequency: 2412 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 4
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2389.310	58.24	-9.63	48.61	74.00	-25.39	peak
2	2390.000	56.90	-9.62	47.28	74.00	-26.72	peak

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.

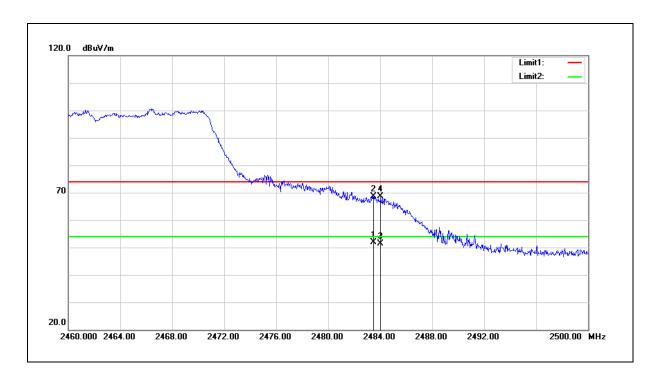




Test item: Band edge Power: AC 120 V/60 Hz

Frequency: 2462 MHz AC 120 V/60 Hz 26(°C)/60% RH

Mode: Mode 4
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	61.16	-9.20	51.96	54.00	-2.04	AVG
2	2483.500	77.90	-9.20	68.70	74.00	-5.30	peak
3	2484.040	60.50	-9.20	51.30	54.00	-2.70	AVG
4	2484.040	77.92	-9.20	68.72	74.00	-5.28	peak

- $2. Correction \ factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ loss \ (dB) Pre-Amplifier \ gain \ (dB).$
- 3. When the peak results are less than average limit, so not need to evaluate the average.

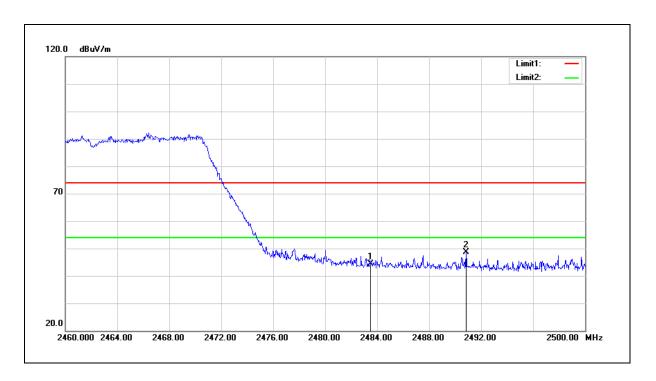




Test item: Band edge Power: AC 120 V/60 Hz

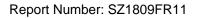
Frequency: 2462 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 4
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	53.48	-9.20	44.28	74.00	-29.72	peak
2	2490.840	57.82	-9.17	48.65	74.00	-25.35	peak

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.

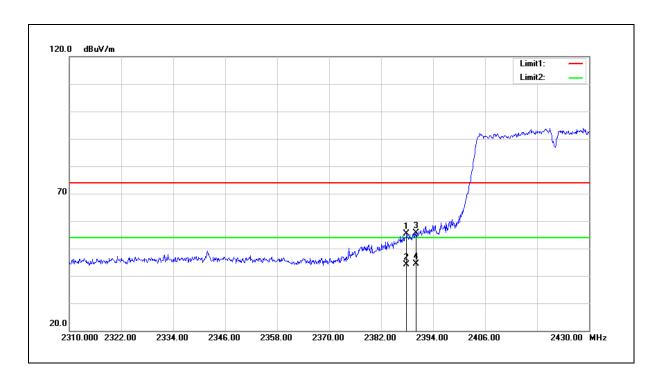




Test item: Band edge Power: AC 120 V/60 Hz

Frequency: 2422 MHz AC 120 V/60 Hz 26(°C)/60% RH

Mode: Mode 5
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2387.880	64.94	-9.64	55.30	74.00	-18.70	peak
2	2387.880	53.77	-9.64	44.13	54.00	-9.87	AVG
3	2390.000	65.15	-9.62	55.53	74.00	-18.47	peak
4	2390.000	53.90	-9.62	44.28	54.00	-9.72	AVG

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.

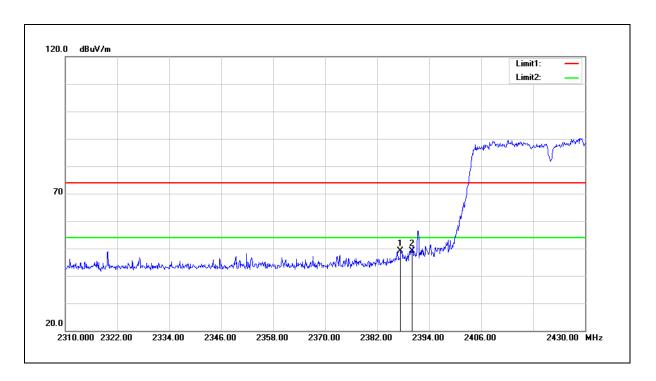




Test item: Band edge Power: AC 120 V/60 Hz

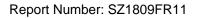
Frequency: 2422 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 5
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2387.400	58.79	-9.64	49.15	74.00	-24.85	peak
2	2390.000	58.81	-9.62	49.19	74.00	-24.81	peak

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.

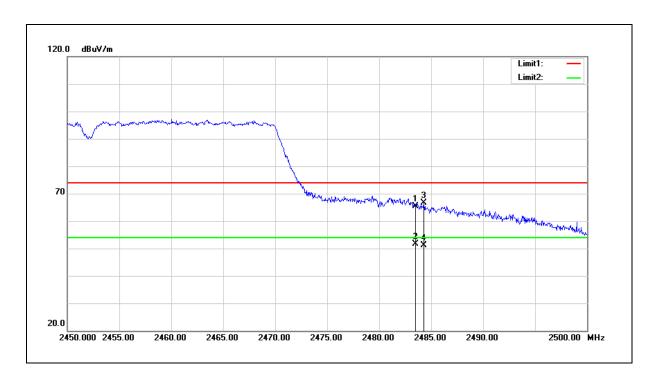




Test item: Band edge Power: AC 120 V/60 Hz

Frequency: 2452 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 5
Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	74.58	-9.20	65.38	74.00	-8.62	peak
2	2483.500	60.87	-9.20	51.67	54.00	-2.33	AVG
3	2484.300	75.81	-9.20	66.61	74.00	-7.39	peak
4	2484.300	60.38	-9.20	51.18	54.00	-2.82	AVG

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.

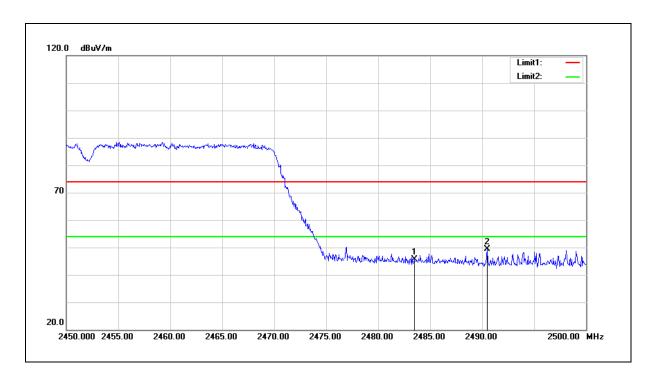




Test item: Band edge Power: AC 120 V/60 Hz

Frequency: 2452 MHz AC 120 V/60 Hz 26(℃)/60% RH

Mode: Mode 5
Ant.Polar.: Vertical



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	54.77	-9.20	45.57	74.00	-28.43	peak
2	2490.500	58.50	-9.17	49.33	74.00	-24.67	peak

- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.