



## **RF Test Report**

Issued Date: May 22, 2019

Certificate #3464.02

Mick Than

Applicant : LEXON

Product Type : OSLO ENERGY

Trade Name : LEXON

Model Number : LA116

FCC ID : 2ARD3-LA116

EUT Rated Voltage : DC 5.0 V, 1.0 A

Test Voltage : 120 Vac / 60 Hz

Receive Date : Feb. 21, 2019

Test Period : Apr. 19 ~ Apr. 21, 2019

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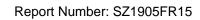
http://www.atl-lab.com.tw/e-index.htm

American Association for Laboratory Accreditation number: 3464.02

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Approved By Reviewed I

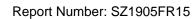
(Manager) (Hai. Wang) (Testing Engineer) (Mick Zhang)





## **Revision History**

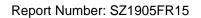
Rev.	Issue Date	Revisions
00	May 22, 2019	Initial Issue





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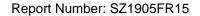
### 1 General Information

## 1.1. Summary of Test Result

FCC Standard	Item	Result	Remark
15.207	AC Power Conducted Emission	PASS	
15.203	Antenna Requirement	PASS	
15.247(b)(1)	Max. Output Power	PASS	
15.247(d)	Transmitter Radiated Emissions	PASS	
15.247(a)(1)	20dB RF Bandwidth	PASS	
15.247(a)(1)	Carrier Frequency Separation	PASS	
15.247(a)(1)(iii)	Number of Hopping	PASS	
15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	PASS	
15.247(d)	Out of Band Conducted Spurious Emission	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		
DA 00-705	Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems		

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.





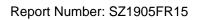
A Test Lab Techno Corp. tested the above equipment under the requirements outlined in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. Based on interpretations and/or observations of test results. Measurement Uncertainties were not taken 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

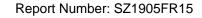
Test Item	Frequency Range	Uncertainty (dB)	
0 1 1 15 1 1	9kHz ~ 150KHz	2.7	
Conducted Emission	150kHz ~ 30MHz	2.7	
	9kHz ~ 30MHz	1.7	
	30MHz ~ 1000MHz	5.7	
Radiated Emission	1000MHz ~ 18000MHz	5.5	
	18000MHz ~ 26500MHz	4.8	
	26500MHz ~ 40000MHz	4.8	
Conducted Output Power	+0.27 dB / -0.28 dB		
RF Bandwidth	4.96%		
Power Spectral Density	+0.71 dB / -0.77 dB		





# 2 EUT Description

Applicant	LEXON 91 avenue Jean-Baptiste Clément - 92100 Boulogne - FRANCE			
Manufacturer	LEXON 91 avenue Jean-Baptiste Clément - 92100 Boulogne - FRANCE			
Product	OSLO ENERGY			
Trade Name	LEXON			
Model Number	LA116			
FCC ID	2ARD3-LA116			
Frequency Range	2402 ~ 2480 MHz			
Modulation Type	GFSK for 1Mbps			
	π/4-DQPSK for 2Mbps			
Operate Temp. Range	-15 ~ +50 °C			
Antenna information	Туре	Max. Gain (dBi)		
Antenna information	Inverted F Antenna	-0.58		
RF Output Power	GFSK for 1Mbps 0.00173 W			
(Conducted)	$\pi/4$ -DQPSK for 2Mbps 0.00195 W			





### 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:

Pre-Test Mode		
Mode 1: Transmit mode		
Mode 2: GFSK Continuous TX mode		
Mode 3: π/4-DQPSK Continuous TX mode		

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, 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.

Final-Test Mode
Mode 1: Transmit mode
Mode 2: GFSK Continuous TX mode
Mode 3: π/4-DQPSK Continuous TX mode

**Description of Test Modes** 

Preliminary tests were performed in different modulation to find the worst case. The modulation has shown the worst-case in section 4.5. Investigation has been done on all the possible configurations for searching the worst cases.

#### 3.2. EUT Exercise Software

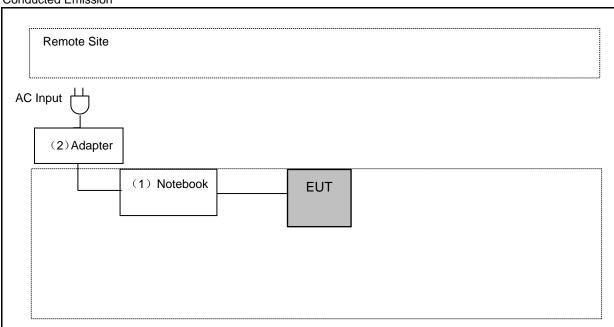
1	Setup the EUT shown on "Configuration of Test System Details."
2	Turn on the power of all equipment.
3	Turn on TX function
4	EUT run test program.

Measurement Software					
NO.	NO. Description Software Version				
1	Conducted Emission	EZ EMC	ATL-ITC-3A1-1		
2	Radiated Emission	EZ EMC	ATL-03A1-1		

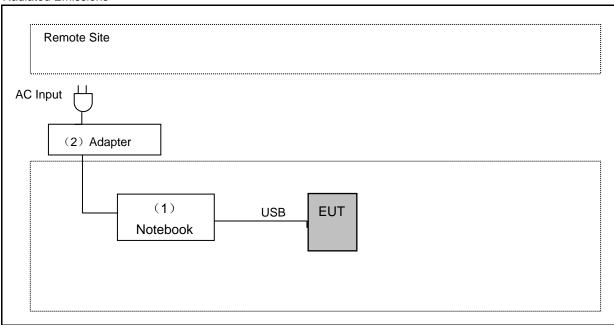


#### **Configuration of Test System Details** 3.3.

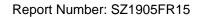
# Conducted Emission



#### Radiated Emissions



	Devices Description					
Product Manufacturer Model Number Serial Number Power Cord				Power Cord		
(1)	Notebook	Lenovo	ThinkPad E560	2015AP4354	Non-Shielded, 0.8 m	
(2)	AC Adapter	Chicony	ADLX65NOC3A		INPUT: AC 100 V to 240 V, 50 Hz / 60 Hz, 0.3 A OUTPUT: DC 20 V, 3.25 A	





### 3.4. Test Instruments

For Conducted Emission Test Period: Apr. 19, 2019

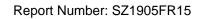
1000.7 \$1.10, 2010					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Test Receiver	R&S	ESR3	101923	09/18/2018	1 year
LISN	R&S	ENV216	101942	09/18/2018	1 year
LISN	R&S	ENV216	101943	09/18/2018	1 year
RF Cable	EMCI	EMCCFD400	433LFC	09/18/2018	1 year
Test Site	ATL	CE	CE		N.C.R.

#### For Radiated Emissions

Test Period: Apr. 21, 2019

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Preamplifier (10 kHz~3 GHz)	EMCI	EMC001330	980300	09/18/2018	1 year
Preamplifier (0.1 GHz~26.5 GHz)	EMCI	EMC012645SE	980318	09/18/2018	1 year
Bilog Antenna (30 MHz~1.4 GHz)	Schwarzbeck	VULB 9168	672	11/21/2018	1 year
Horn Antenna (1 GHz~18 GHz)	ETS	3117	00204949	11/05/2018	1 year
Horn Antenna (18 GHz~26.5 GHz)	ETS	3160-09	00202549	11/05/2018	1 year
Receiver (3 Hz~26.5 GHz)	Keysight	N9038A	MY51210179	09/18/2018	1 year
Spectrum Analyzer (3 Hz~43 GHz)	Keysight	N9030A	MY55410268	09/18/2018	1 year
Cable	EMCI	N/A	1066LFC	09/18/2018	1 year
Cable	EMCI	N/A	160719	09/18/2018	1 year
Cable	EMCI	N/A	160324	09/18/2018	1 year
Cable	EMCI	N/A	160322	09/18/2018	1 year
Loop Antenna	EMCI	LPA600	272	02/21/2019	1 year
Test Site	OuHeng	MFAC3M	RE-026	02/14/2019	1 year

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





For Conducted

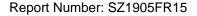
Test Period: Apr. 20, 2019

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Power Sensor	Anritsu	U2021XA	SG54130003	09/18/2018	1 year
Power Sensor	Anritsu	U2021XA	SG54130004	09/18/2018	1 year
Spectrum Analyzer (10 Hz~26.5 GHz)	Agilent	N9020A	MY53420615	09/18/2018	1 year
Programmable temp & humi chamber	ETAI	9712A	647	11/15/2018	1 year
Signal Generator	Agilent	E8257D	MY53400659	09/18/2018	1 year
Signal Generator	Aglent	N5182B	MY53050940	09/18/2018	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





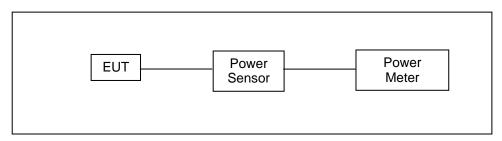
#### 4 Measurement Procedure

### 4.1. Maximum Conducted Output Power Measurement

#### ■ Limit

For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels < 0.125 watt.

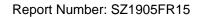
#### ■ Test Setup



#### **■** Test Procedure

Testing must be done according to this procedure, FCC Public Notice DA 00-705 - Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. 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. The maximum peak output power shall not exceed 1 watt.

Use a direct connection between the antenna port of transmitter and the power sensor, for prevent the power sensor input attenuation 40-50 dB. Set the RBW Bandwidth of the emission or use a channel power meter mode. For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6)/3 dBm. The antenna port of the EUT was connected to the input of a power sensor. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.



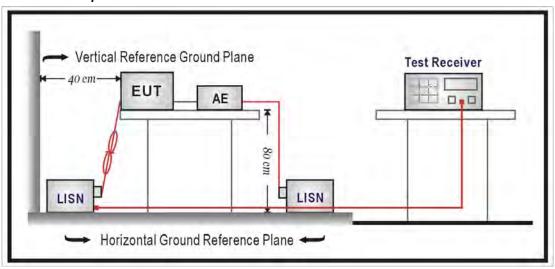


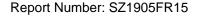
### 4.2. AC Power Line Conducted Emission Measurement

#### ■ 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

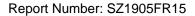
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a  $50\Omega$ // 50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a  $50\Omega$ // 50uH 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 40cm to the rear of the EUT. Other surfaces of tabletop or floor standing EUT shall be at least 80cm from any other ground conducting surface including one or more LISNs. For floor-standing device shall be placed under the EUT with a 12mm 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 150kHz to 30MHz 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 1m then the cable shall be folded back and forth at the centre of the lead to form a bundle no longer than 0.4m. All of interconnecting cables that hang closer than 40cm 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 0.1m. 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.





#### 4.3. Radiated Emission Measurement

#### ■ Limit

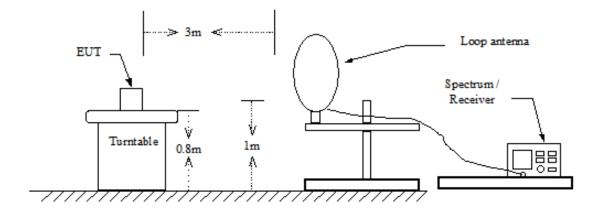
According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (µV/m at 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

<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.

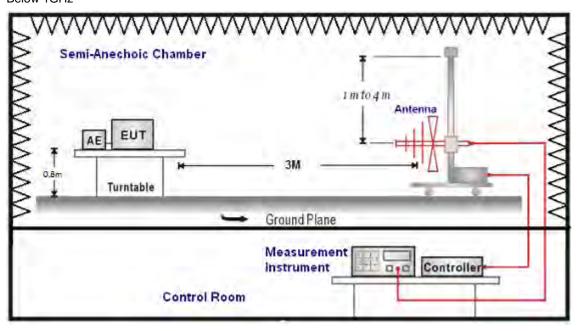
#### ■ Setup

 $9kHz \sim 30MHz$ 

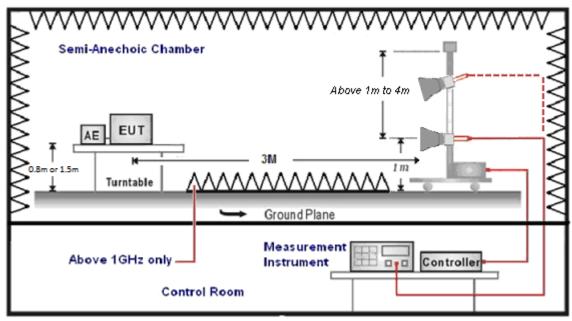


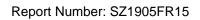


#### Below 1GHz



#### Above 1GHz







#### ■ 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.

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 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB 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).

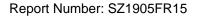
The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

- (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 < +30dBm
- (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 20dB below the permissible limits or the field strength is too small to be measured.



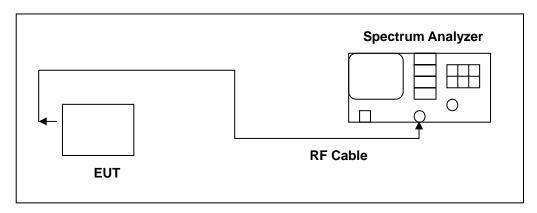


#### 4.4. 20dB RF Bandwidth Measurement

#### **■** Limit

N/A

#### ■ Test Setup

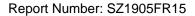


#### ■ Test Procedure

Testing must be done according to this procedure, FCC Public Notice DA 00-705 - Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

- 1. Span = approx. 2 to 3 times the 20dB bandwidth, centered on a hopping frequency
- 2. RBW ≥ 1% of the 20dB span
- 3. VBW ≥ RBW
- 4. Sweep = auto
- 5. Detector function = peak
- 6. Trace = max hold

The trace was allowed to stabilize. The EUT was transmitting at its maximum data rate. The marker-to-peak function was used to set the marker to the peak of the emission. The marker-delta function was used to measure 20dB down one side of the emission. The marker-delta function and marker was moved to the other side of the emission until it was even with the reference marker. The marker-delta reading at this point was the 20dB bandwidth of the emission.



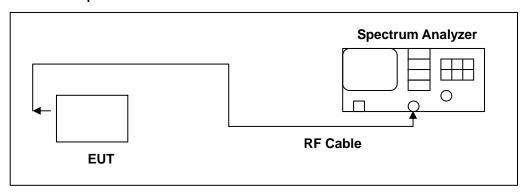


### 4.5. Carrier Frequency Separation Measurement

#### ■ Limit

Title 47 of the CFR, Part 15 Subpart (c) 15.247(a)(1) requires the measurement of the bandwidth of the transmission between the -20 dB points on the transmitted spectrum. The results of this test determine the limits for channel spacing. The channel spacing shall be a minimum of 25 kHz or the 20 dB bandwidth, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel.

#### ■ Test Setup

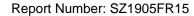


#### ■ Test Procedure

Testing must be done according to this procedure, FCC Public Notice DA 00-705 - Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth frequency hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

- 1. Span = wide enough to capture the peaks of two adjacent channels
- 2. Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span
- 3. Video (or Average) Bandwidth (VBW)  $\geq$  RBW
- 4. Sweep = auto
- 5. Detector function = peak
- 6. Trace = max hold

The trace was allowed to stabilize. The marker-delta function was used to determine the separation between the peaks of the adjacent channels.



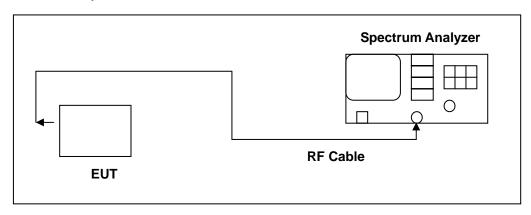


### 4.6. Number of Hopping Measurement

#### ■ Limit

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

#### ■ Test Setup

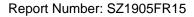


#### ■ Test Procedure

Testing must be done according to this procedure, FCC Public Notice DA 00-705 - Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

- 1. Span = the frequency band of operation
- 2. RBW ≥ 1% of the span
- 3. VBW ≥ RBW
- 4. Sweep = auto
- 5. Detector function = peak
- 6. Trace = max hold

The trace was allowed to stabilize.



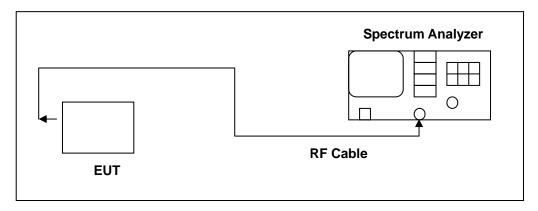


### 4.7. Time of Occupancy (Dwell Time) Measurement

#### ■ Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

#### ■ Test Setup

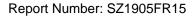


#### ■ Test Procedure

Testing must be done according to this procedure, FCC Public Notice DA 00-705 - Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. The RF output port of the Equipment-Under-Test is directly coupled to the input of the spectrum through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

- 1. Span = zero span, centered on a hopping channel
- 2. RBW = 1 MHz
- 3. VBW  $\geq$  RBW
- 4. Sweep = as necessary to capture the entire dwell time per hopping channel
- 5. Detector function = peak
- 6. Trace = max hold

The marker-delta function was used to determine the dwell time.



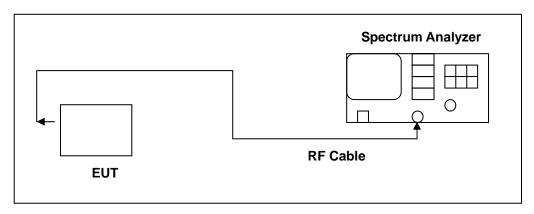


#### 4.8. Out of Band Conducted Emissions Measurement

#### **■** 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

Testing must be done according to this procedure, FCC Public Notice DA 00-705 - Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems. This is the only method recognized by the FCC. 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 (Channel 0, 39, 78)

### 4.9. Antenna Measurement

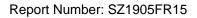
#### ■ Limit

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)(4), 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 6dBi.

#### ■ Antenna Connector Construction

See section 2 – antenna information.





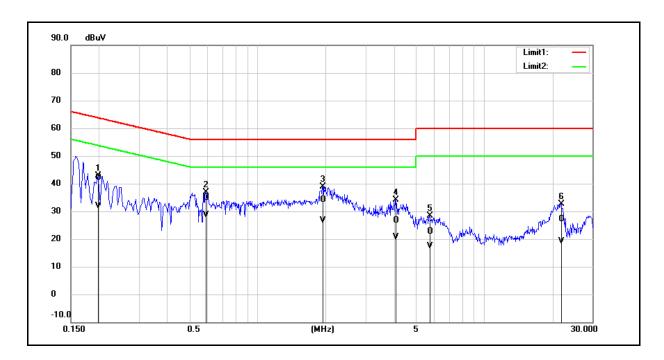
### 5 Test Results

### **Annex A. Conducted Emission**

Standard: FCC Part 15.247 Line: L1

Test item: Conducted Emission Power: AC 120 V/60 Hz Test Mode: Mode 1 Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

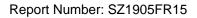
Description:



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	0.1980	32.36	22.29	9.66	42.02	31.95	63.69	53.69	-21.67	-21.74	Pass
2	0.5900	25.28	18.99	9.68	34.96	28.67	56.00	46.00	-21.04	-17.33	Pass
3	1.9300	24.27	16.83	9.75	34.02	26.58	56.00	46.00	-21.98	-19.42	Pass
4	4.0620	16.84	10.88	9.83	26.67	20.71	56.00	46.00	-29.33	-25.29	Pass
5	5.7180	12.66	7.39	9.90	22.56	17.29	60.00	50.00	-37.44	-32.71	Pass
6	21.8140	16.72	8.71	10.42	27.14	19.13	60.00	50.00	-32.86	-30.87	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).



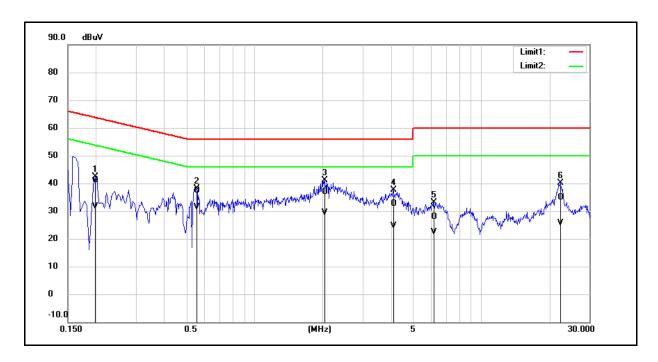


Standard: FCC Part 15.247 Line: N

Test item: Conducted Emission Power: AC 120 V/60 Hz

Test Mode: Mode 1 Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

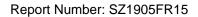
Description:



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	0.1980	31.54	21.83	9.69	41.23	31.52	63.69	53.69	-22.46	-22.17	Pass
2	0.5540	27.73	21.60	9.74	37.47	31.34	56.00	46.00	-18.53	-14.66	Pass
3	2.0380	27.06	19.61	9.84	36.90	29.45	56.00	46.00	-19.10	-16.55	Pass
4	4.0740	22.62	14.69	9.91	32.53	24.60	56.00	46.00	-23.47	-21.40	Pass
5	6.1860	18.00	12.27	9.99	27.99	22.26	60.00	50.00	-32.01	-27.74	Pass
6	22.3780	24.29	14.99	10.55	34.84	25.54	60.00	50.00	-25.16	-24.46	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**

To ak Manda	Frequency	Frequency Packet Type		e Power	Peak	Power	Limit
Test Mode	(MHz)	Packet Type	(dBm)	(W)	(dBm)	(W)	(W)
		DH1	1.06	0.00128	2.35	0.00172	< 0.125
	2402	DH3	1.08	0.00128	2.36	0.00172	< 0.125
		DH5	1.09	0.00129	2.38	0.00173	< 0.125
		DH1	0.81	0.00121	2.11	0.00163	< 0.125
Mode 2	2441	DH3	0.82	0.00121	2.12	0.00163	< 0.125
		DH5	0.84	0.00121	2.14	0.00164	< 0.125
		DH1	0.48	0.00112	1.76	0.00150	< 0.125
	2480	DH3	0.49	0.00112	1.78	0.00151	< 0.125
		DH5	0.51	0.00112	1.79	0.00151	< 0.125
		2DH1	-0.02	0.00100	2.87	0.00194	< 0.125
	2402	2DH3	-0.01	0.00100	2.88	0.00194	< 0.125
		2DH5	0.00	0.00100	2.91	0.00195	< 0.125
		2DH1	-0.42	0.00091	2.62	0.00183	< 0.125
Mode 3	2441	2DH3	-0.40	0.00091	2.65	0.00184	< 0.125
		2DH5	-0.39	0.00091	2.67	0.00185	< 0.125
		2DH1	-0.76	0.00084	2.30	0.00170	< 0.125
	2480	2DH3	-0.75	0.00084	2.32	0.00171	< 0.125
		2DH5	-0.73	0.00085	2.34	0.00171	< 0.125

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

20dB RF Bandwidth Measurement

Test Mode	Frequency (MHz)	Measurement Results
	2402	(MHz) 0.945
Mode 2	2441	0.948
	2480	0.952
	2402	1.309
Mode 3	2441	1.309
	2480	1.312

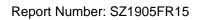


### **Test Graphs**









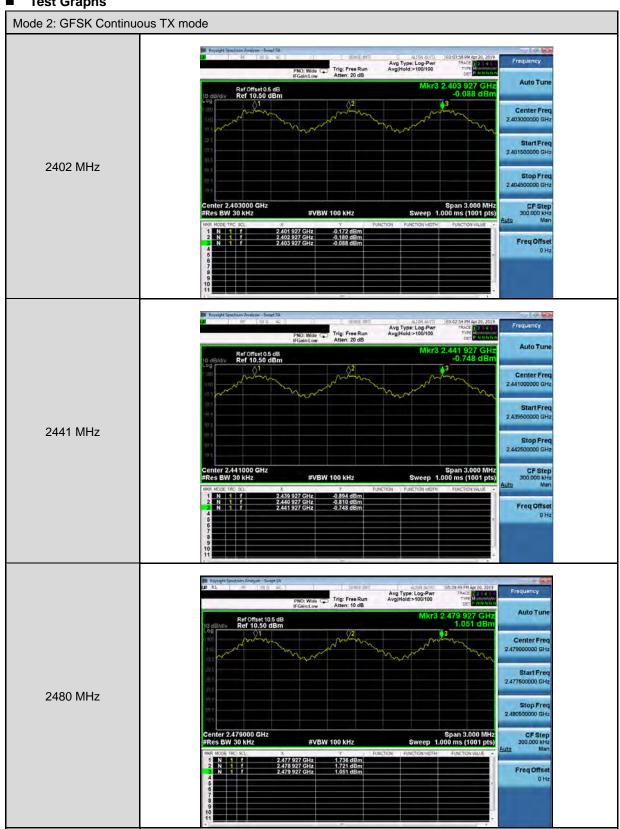


### **Carrier Frequency Separation Measurement**

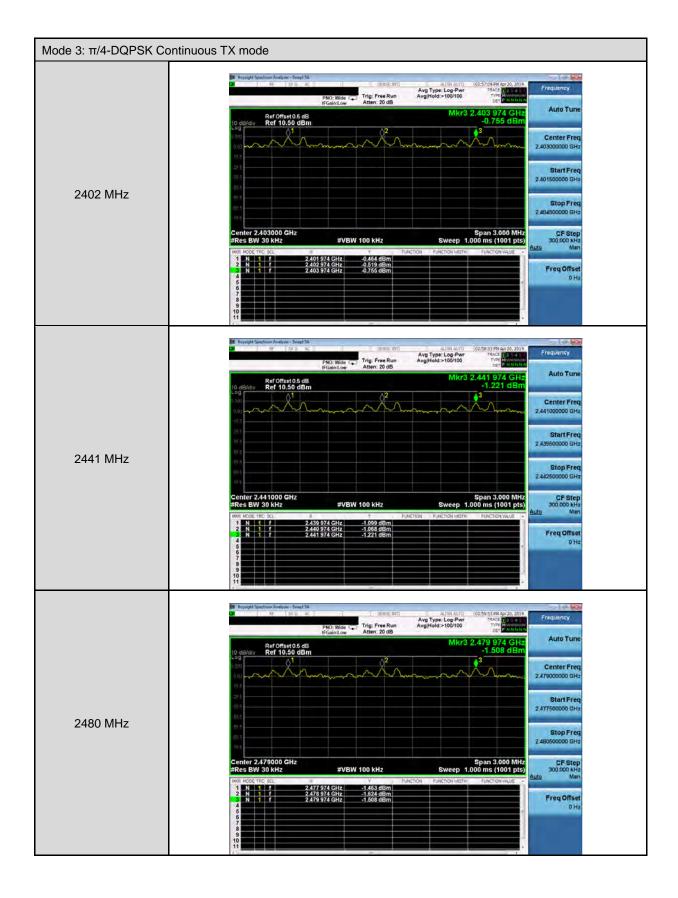
Test Mode	Frequency (MHz)	Measurement Results (MHz)	Limit (MHz)
	2402	1.000	> 0.630
Mode 2	2441	1.000	> 0.632
	2480	1.000	> 0.635
	2402	1.000	> 0.873
Mode 3	2441	1.000	> 0.873
	2480	1.000	> 0.875

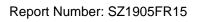


### **Test Graphs**









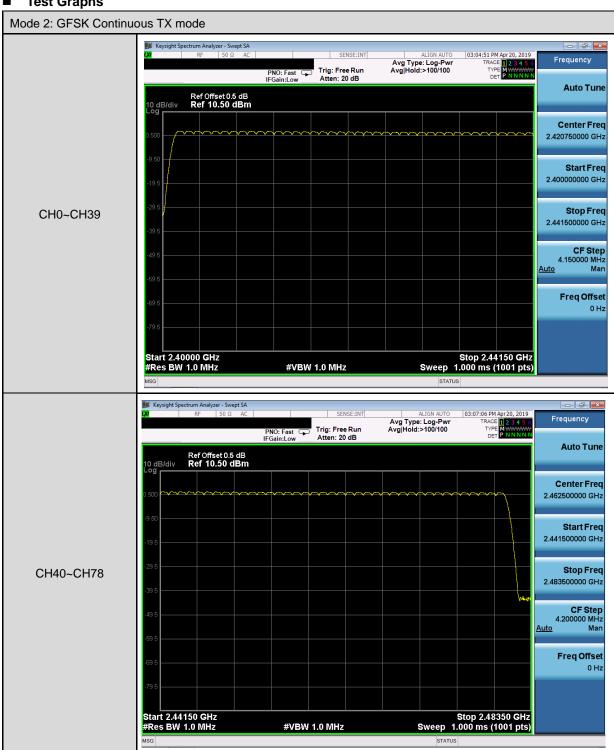


### **Number of Hopping Measurement**

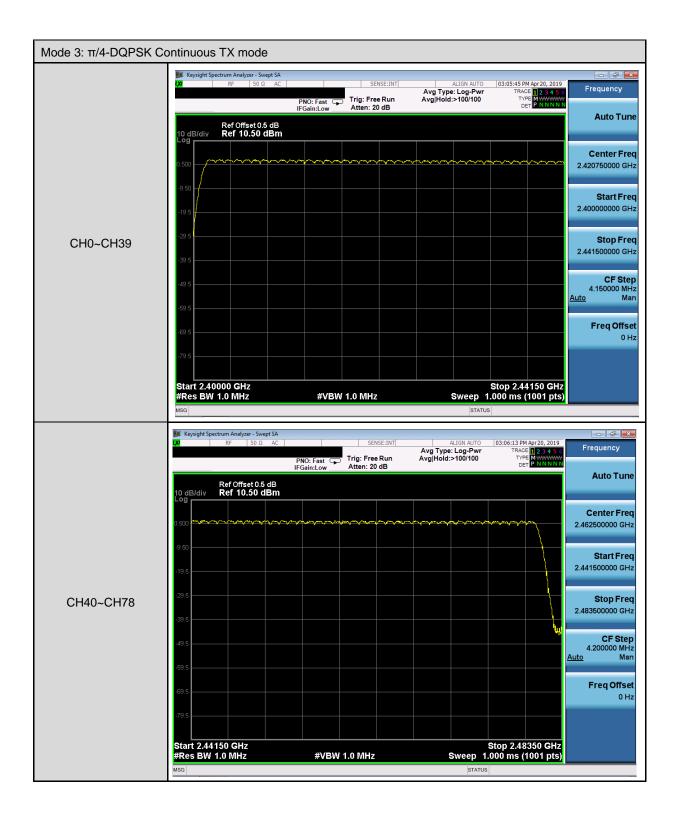
Test Mode	Frequency Range (MHz)	Measurement Results (Ch)	Limit (ch)
Mode 2	2402 - 2480	79	> 15
Mode 3	2402 - 2480	79	> 15

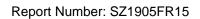


### **Test Graphs**





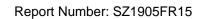






#### Time of Occupancy (Dwell Time) Measurement

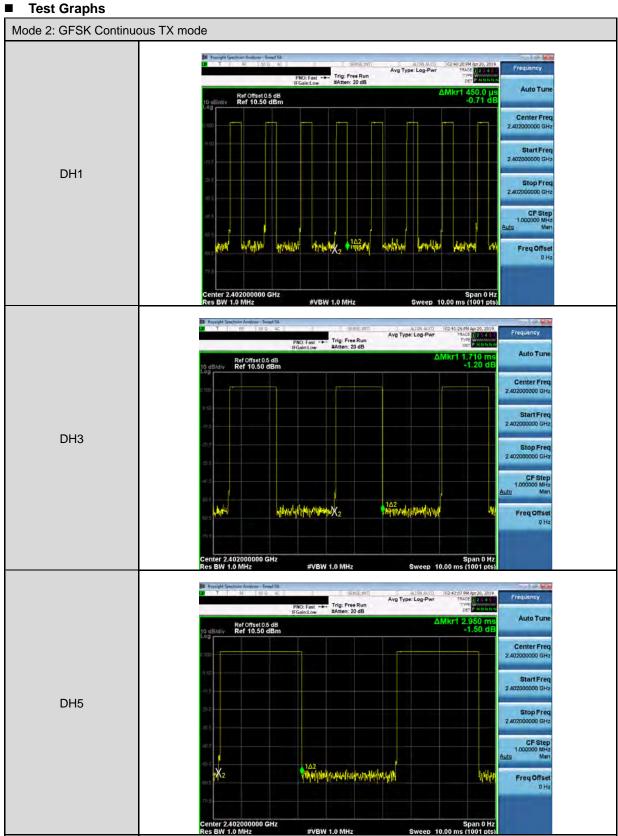
Mode 2: GFSK Continuous TX mode					
	DH1				
Cycle Calculate	79CH * 0.4 = 31.6 (sec)				
The EUT Hopping Number per Sec	1600 times/sec				
Each Channel Dwell Times per Sec	800/79CH = 10.13(times/sec)				
Each Channel Dwell Times on Cycle(1)	31.6 * 10.13 = 320.108(times)				
Each Channel Dwell Times (2)	0.45 ms (sec)				
Dwell Times on Cycle (1) * (2)	144.049 ms (sec)				
LIMIT(msec)	< = 400				
DH3					
Cycle Calculate	79CH * 0.4 = 31.6 (sec)				
The EUT Hopping Number per Sec	1600 times/sec				
Each Channel Dwell Times per Sec	400/79CH = 5.1(times/sec)				
Each Channel Dwell Times on Cycle(1)	31.6 * 5.1 = 161.16(times)				
Each Channel Dwell Times (2)	1.710 ms (sec)				
Dwell Times on Cycle (1) * (2)	273.422 ms (sec)				
LIMIT(msec)	< = 400				
	DH5				
Cycle Calculate	79CH * 0.4 = 31.6 (sec)				
The EUT Hopping Number per Sec	1600 times/sec				
Each Channel Dwell Times per Sec	266.7/79CH = 3.37(times/sec)				
Each Channel Dwell Times on Cycle(1)	31.6 * 3.37 = 106.492(times)				
Each Channel Dwell Times (2)	2.95 ms (sec)				
Dwell Times on Cycle (1) * (2)	315.084 ms (sec)				
LIMIT(msec)	< = 400				
` '/					



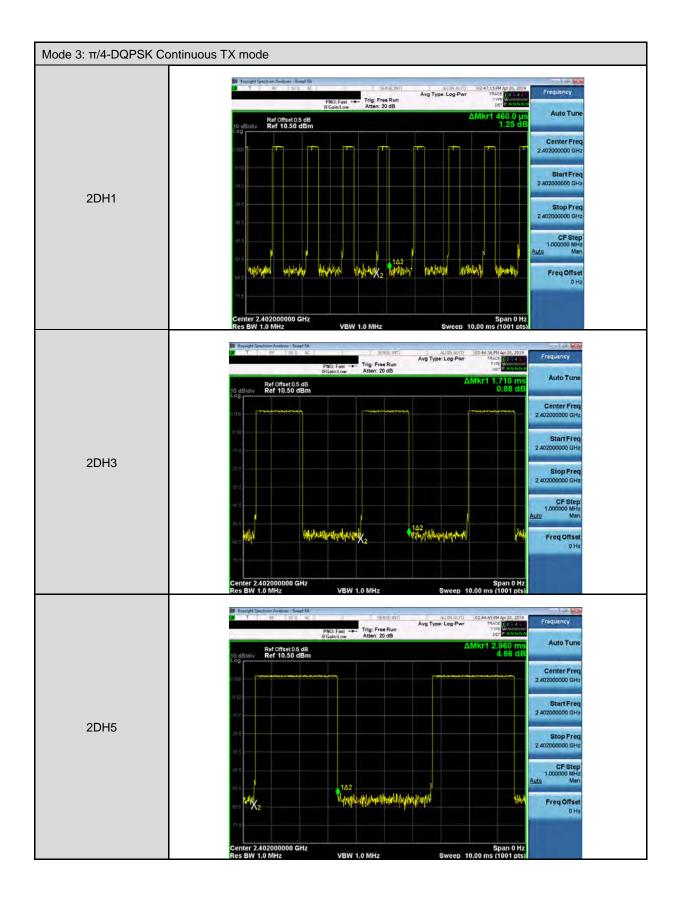


Mode 3: π/4-DQPSK Continuous TX mode	
2DH1	
Cycle Calculate	79CH * 0.4 = 31.6 (sec)
The EUT Hopping Number per Sec	1600 times/sec
Each Channel Dwell Times per Sec	800/79CH = 10.13(times/sec)
Each Channel Dwell Times on Cycle(1)	31.6 * 10.13 = 320.108(times)
Each Channel Dwell Times (2)	0.45 ms (sec)
Dwell Times on Cycle (1) * (2)	144.049 ms (sec)
LIMIT(msec)	< = 400
2DH3	
Cycle Calculate	79CH * 0.4 = 31.6 (sec)
The EUT Hopping Number per Sec	1600 times/sec
Each Channel Dwell Times per Sec	400/79CH = 5.1(times/sec)
Each Channel Dwell Times on Cycle(1)	31.6 * 5.1 = 161.16(times)
Each Channel Dwell Times (2)	1.710 ms (sec)
Dwell Times on Cycle (1) * (2)	271.422 ms (sec)
LIMIT(msec)	< = 400
2DH5	
Cycle Calculate	79CH * 0.4 = 31.6 (sec)
The EUT Hopping Number per Sec	1600 times/sec
Each Channel Dwell Times per Sec	266.7/79CH = 3.37(times/sec)
Each Channel Dwell Times on Cycle(1)	31.6 * 3.37 = 106.492(times)
Each Channel Dwell Times (2)	2.95 ms (sec)
Dwell Times on Cycle (1) * (2)	315.084 ms (sec)
LIMIT(msec)	< = 400





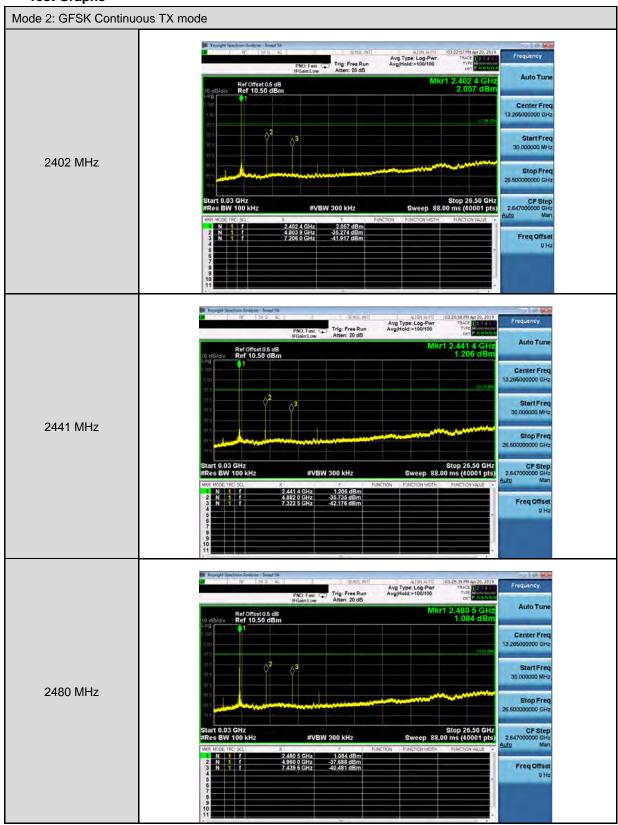




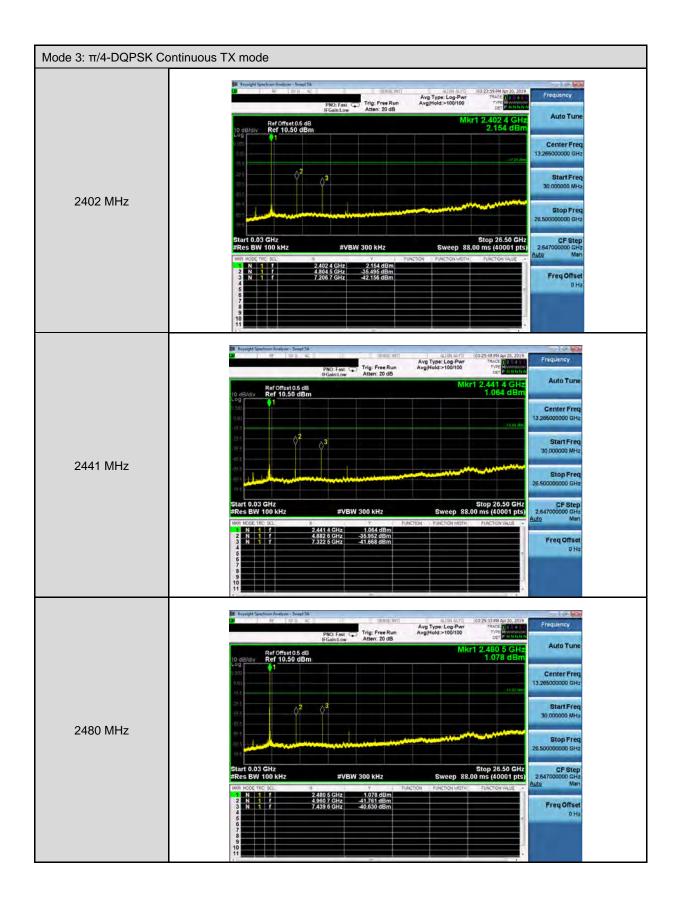


# **Out of Band Conducted Emissions Measurement**

# Test Graphs

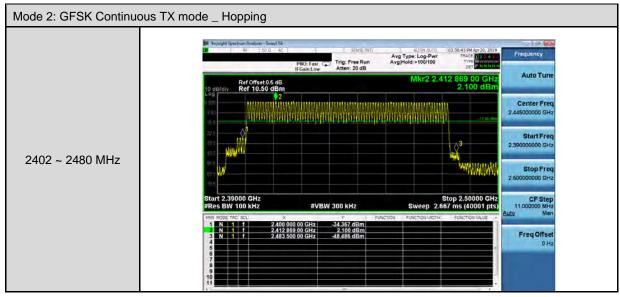




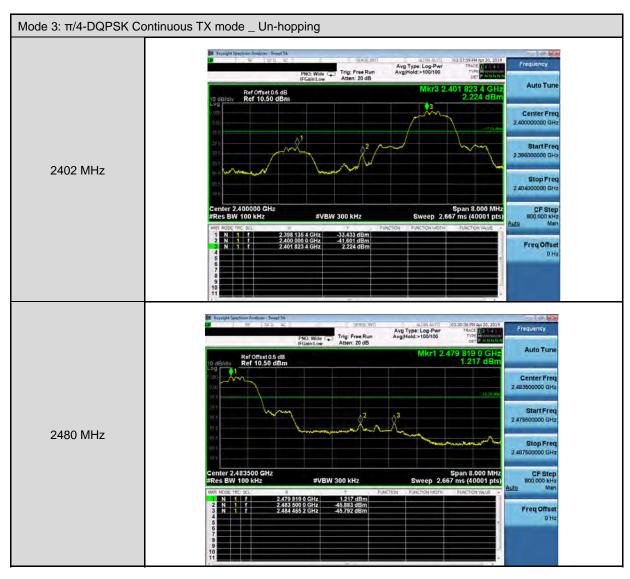


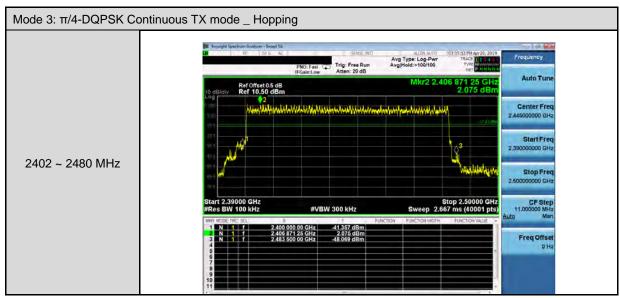


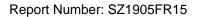














# **Annex C. Radiated Emission Measurement**

# Harmonic

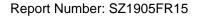
### Below 1GHz

Delow TGT12								
Standard:	FCC	Part 15.247		Test Distar	nce:	3 m		
Test item:	Harn	nonic		Power:		AC 120 V	AC 120 V/60 Hz	
Test Mode:	Mode 1			Temp.(°C)/	Hum.(%RH):	26(℃)/60	%RH	
Frequency (MHz)	Reading (dBuV)	·		Limit (dBuV/m)	Margin (dB)	Remark	Ant.Polar. H / V	
75.5900	48.75	-15.20	33.55	40.00	-6.45	QP	Н	
200.7200	51.01	-14.29	36.72	43.50	-6.78	QP	Н	
268.6200	51.62	-12.10	39.52	46.00	-6.48	QP	Н	
336.5200	49.33	-10.33	39.00	46.00	-7.00	QP	Н	
376.2900	44.42	-9.01	35.41	46.00	-10.59	QP	Н	
799.2100	30.82	-0.86	29.96	46.00	-16.04	QP	Н	
77.5300	49.39	-15.67	33.72	40.00	-6.28	QP	V	
180.3500	50.42	-13.25	37.17	43.50	-6.33	QP	V	
199.7500	51.41	-14.23	37.18	43.50	-6.32	QP	V	
267.6500	50.53	-12.15	38.38	46.00	-7.62	QP	V	
340.4000	44.21	-10.28	33.93	46.00	-12.07	QP	V	
402.4800	41.38	-8.62	32.76	46.00	-13.24	QP	V	

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

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

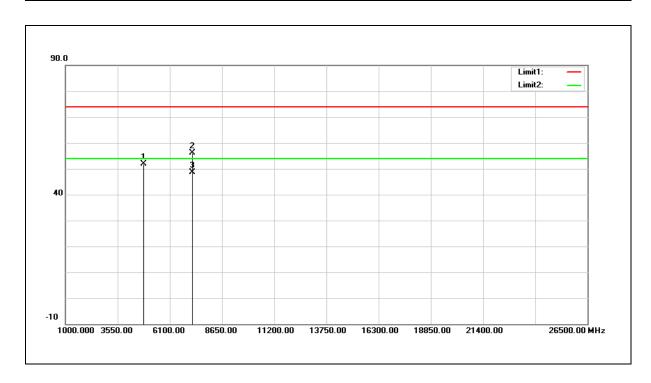
<sup>3.</sup> When the peak results are less than average limit, so not need to evaluate the average.





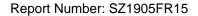
### Above 1GHz

Standard: FCC Part 15.247 Test Distance: 3 m AC 120 V/60 Power: Test item: Harmonic Hz Temp.(°C)/Hum.(%RH): 26(°C)/60 %RH Frequency: 2402 MHz Mode 2 Mode: Ant.Polar.: Horizontal



No.	Frequency	Reading	Correct Factor	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4808.000	56.86	-5.04	51.82	74.00	-22.18	peak
2	7206.000	57.14	-0.97	56.17	74.00	-17.83	peak
3	7206.000	49.62	-0.97	48.65	54.00	-5.35	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.



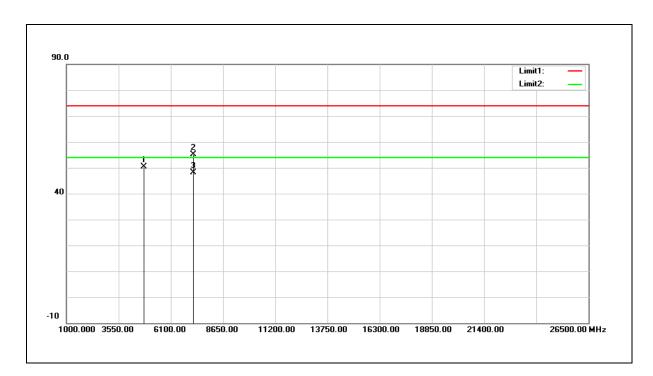


Test item: Harmonic Power: AC 120 V/60

Hz

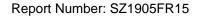
Frequency: 2402 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4804.000	55.49	-5.03	50.46	74.00	-23.54	peak
3	7206.000	55.98	-0.97	55.01	74.00	-18.99	peak
4	7206.000	49.06	-0.97	48.09	54.00	-5.91	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.



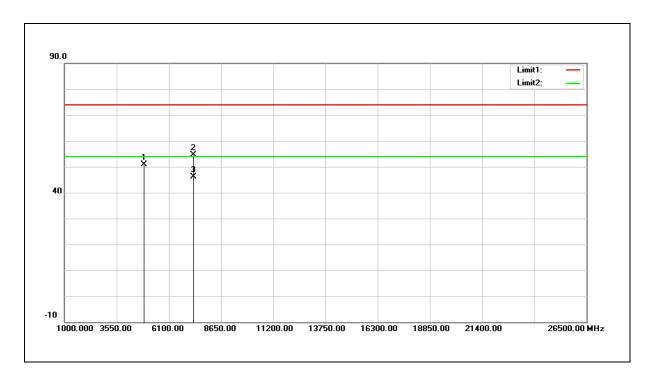


Test item: Power: AC 120 V/60

Hz

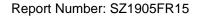
Frequency: 2441MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4882.000	55.88	-5.10	50.78	74.00	-23.22	peak
2	7323.000	55.17	-0.63	54.54	74.00	-19.46	peak
3	7323.000	46.65	-0.63	46.02	54.00	-7.98	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.



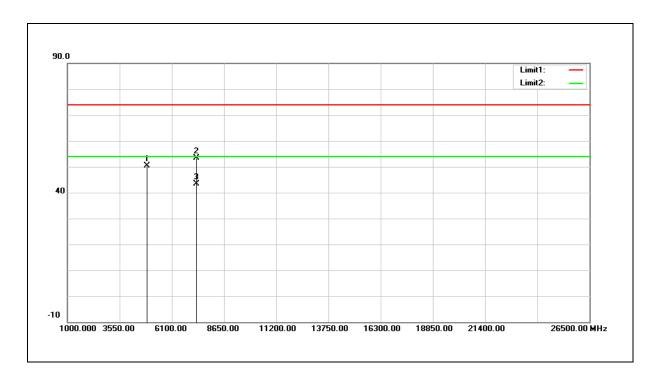


Test item: Harmonic Power: AC 120 V/60

Hz

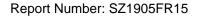
Frequency: 2441MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4882.000	55.41	-5.10	50.31	74.00	-23.69	peak
2	7323.000	53.89	-0.63	53.26	74.00	-20.74	peak
3	7323.000	44.01	-0.63	43.38	54.00	-10.62	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.



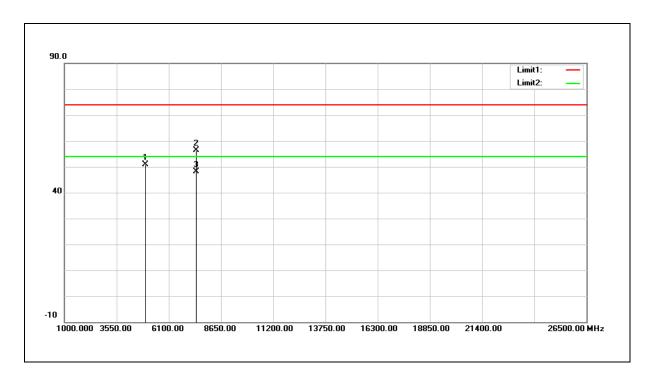


Test item: Harmonic Power: AC 120 V/60

Hz

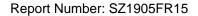
Frequency: 2480 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4960.000	56.08	-5.17	50.91	74.00	-23.09	peak
2	7440.000	56.73	-0.35	56.38	74.00	-17.62	peak
3	7440.000	48.47	-0.35	48.12	54.00	-5.88	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.



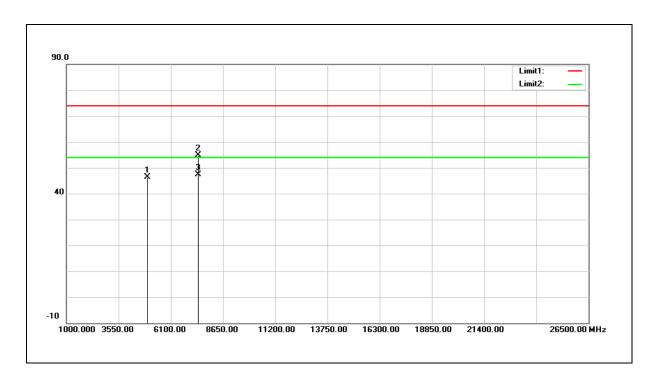


Test item: Harmonic Power: AC 120 V/60

Hz

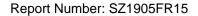
Frequency: 2480 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4960.000	51.64	-5.17	46.47	74.00	-27.53	peak
2	7440.000	55.20	-0.35	54.85	74.00	-19.15	peak
3	7440.000	47.69	-0.35	47.34	54.00	-6.66	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.



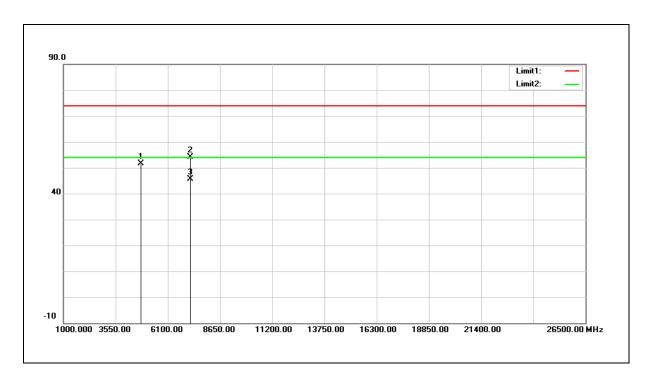


Test item: Power: AC 120 V/60

Hz

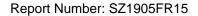
Frequency: 2402 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4804.000	56.54	-5.03	51.51	74.00	-22.49	peak
2	7206.000	55.08	-0.97	54.11	74.00	-19.89	peak
3	7206.000	46.72	-0.97	45.75	54.00	-8.25	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.



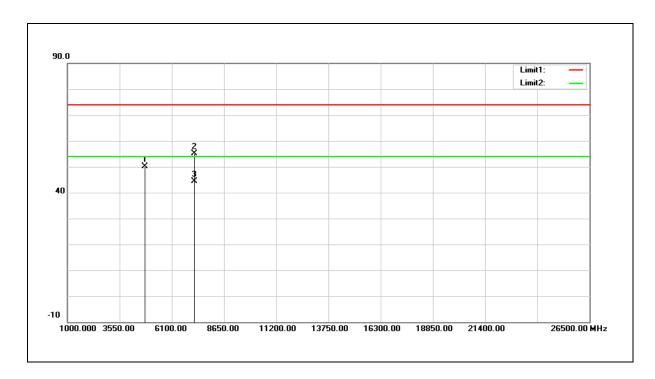


Test item: Harmonic Power: AC 120 V/60

Hz

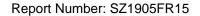
Frequency: 2402 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4804.000	55.18	-5.03	50.15	74.00	-23.85	peak
2	7206.000	56.12	-0.97	55.15	74.00	-18.85	peak
3	7206.000	45.34	-0.97	44.37	54.00	-9.63	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.



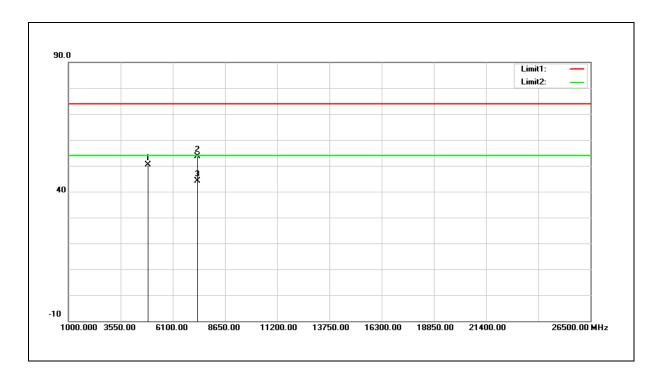


Test item: Harmonic Power: AC 120 V/60

Hz

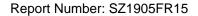
Frequency: 2441MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4882.000	55.44	-5.10	50.34	74.00	-23.66	peak
2	7323.000	54.38	-0.63	53.75	74.00	-20.25	peak
3	7323.000	44.86	-0.63	44.23	54.00	-9.77	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.



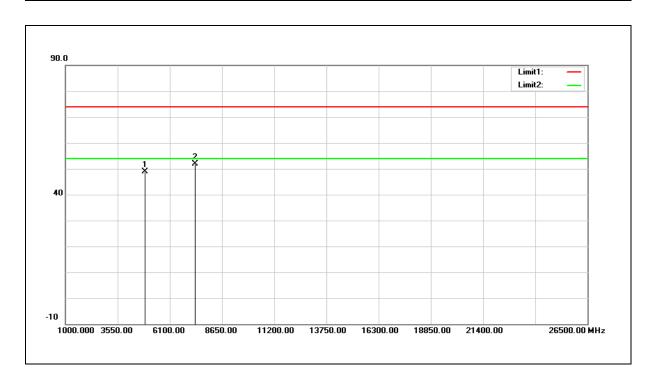


Test item: Harmonic Power: AC 120 V/60

Hz

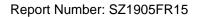
Frequency: 2441MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4876.000	53.88	-5.09	48.79	74.00	-25.21	peak
2	7324.000	52.58	-0.63	51.95	74.00	-22.05	peak
3	4876.000	53.88	-5.09	48.79	74.00	-25.21	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.





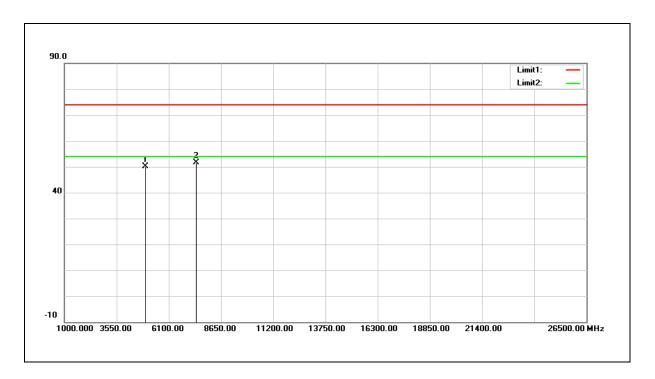
Standard: FCC Part 15.247 Test Distance: 3 m

Test item: Power: AC 120 V/60

Hz

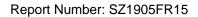
Frequency: 2480 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4960.000	55.21	-5.17	50.04	74.00	-23.96	peak
2	7440.000	52.04	-0.35	51.69	74.00	-22.31	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.



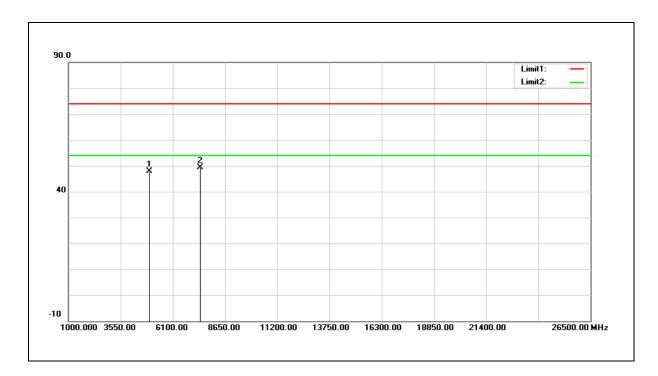


Test item: Harmonic Power: AC 120 V/60

Hz

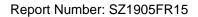
Frequency: 2480 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	4960.000	53.12	-5.17	47.95	74.00	-26.05	peak
2	7440.000	49.63	-0.35	49.28	74.00	-24.72	peak

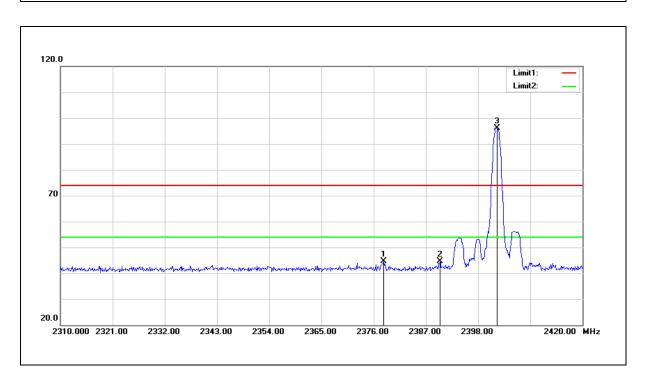
- 2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) Pre-Amplifier gain (dB).
- 3. When the peak results are less than average limit, so not need to evaluate the average.





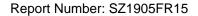
**Band Edge** 

Standard:	FCC Part 15.247	Test Distance:	3 m
Test item:	Band edge	Power:	AC 120 V/60
			Hz
Frequency:	2402 MHz	Temp.(°C)/Hum.(%RH):	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	2378.090	54.35	-9.82	44.53	74.00	-29.47	peak
2	2390.000	54.35	-9.78	44.57	74.00	-29.43	peak
3	2402.000	105.77	-9.75	96.02			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.



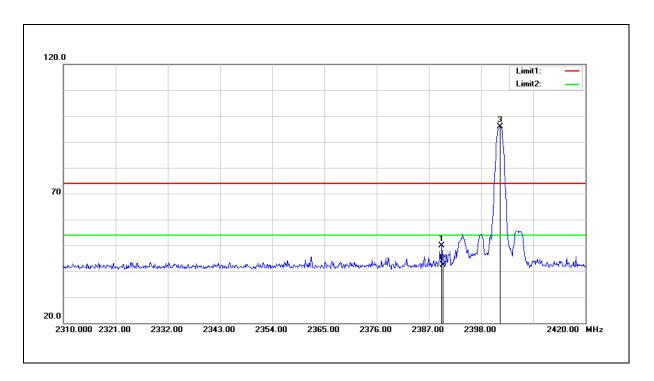


Test item: Band edge Power: AC 120 V/60

Hz

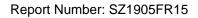
Frequency: 2402 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	2389.750	59.58	-9.78	49.80	74.00	-24.20	peak
2	2390.000	52.28	-9.78	42.50	74.00	-31.50	peak
3	2402.000	105.61	-9.75	95.86			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.



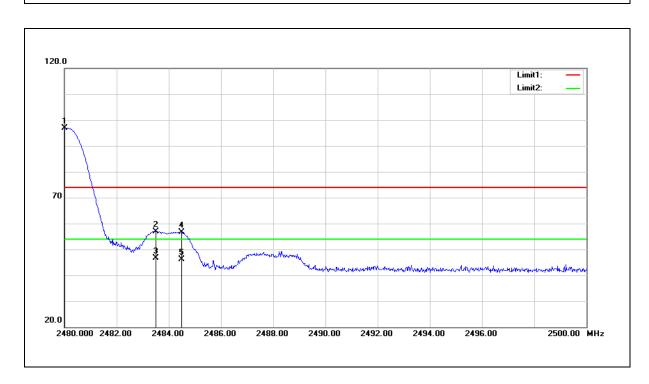


Test item: Band edge Power: AC 120 V/60

Hz

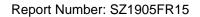
Frequency: 2480 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	2480.000	106.47	-9.58	96.89			peak
2	2483.500	66.46	-9.56	56.90	74.00	-17.10	peak
3	2483.500	56.08	-9.56	46.52	54.00	-7.48	AVG
4	2484.480	66.29	-9.56	56.73	74.00	-17.27	peak
5	2484.480	55.59	-9.56	46.03	54.00	-7.97	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.



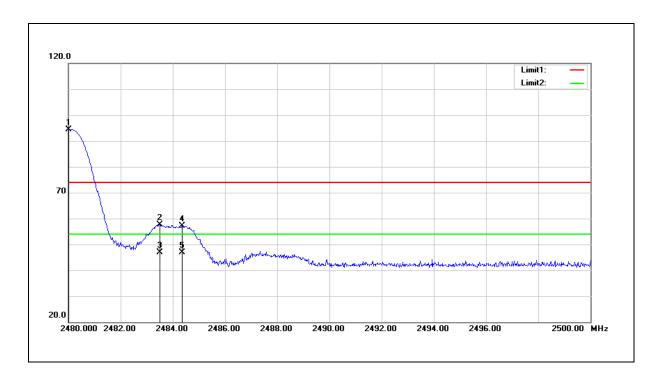


Test item: Band edge Power: AC 120 V/60

Hz

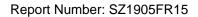
Frequency: 2480 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	2480.000	103.92	-9.58	94.34			peak
2	2483.500	67.09	-9.56	57.53	74.00	-16.47	peak
3	2483.500	56.34	-9.56	46.78	54.00	-7.22	AVG
4	2484.360	66.57	-9.56	57.01	74.00	-16.99	peak
5	2484.360	56.39	-9.56	46.83	54.00	-7.17	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.



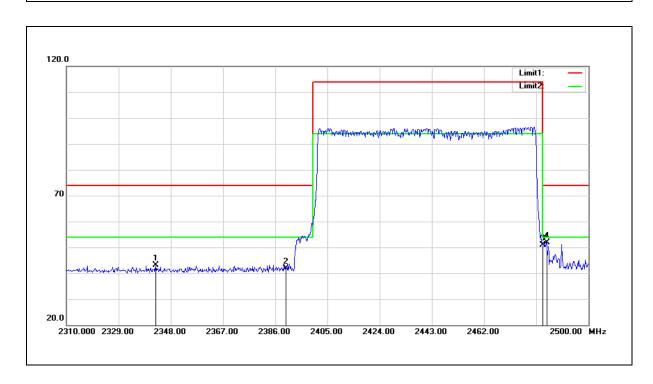


Test item: Band edge Power: AC 120 V/60

Hz

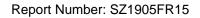
Frequency: hopping Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60  $^{\circ}$ RH

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	2342.490	53.16	-9.94	43.22	74.00	-30.78	peak
2	2390.000	51.78	-9.78	42.00	74.00	-32.00	peak
3	2483.500	60.35	-9.56	50.79	74.00	-23.21	peak
4	2484.800	61.46	-9.56	51.90	74.00	-22.10	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.



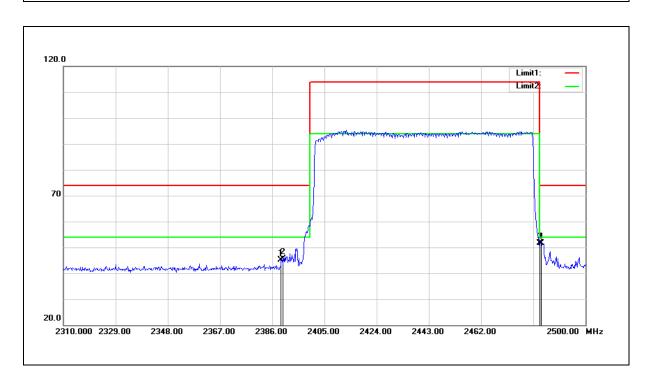


Test item: Band edge Power: AC 120 V/60

Hz

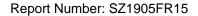
Frequency: hopping Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	2389.230	54.97	-9.79	45.18	74.00	-28.82	peak
2	2390.000	55.31	-9.78	45.53	74.00	-28.47	peak
3	2483.500	61.11	-9.56	51.55	74.00	-22.45	peak
4	2483.850	61.26	-9.56	51.70	74.00	-22.30	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.



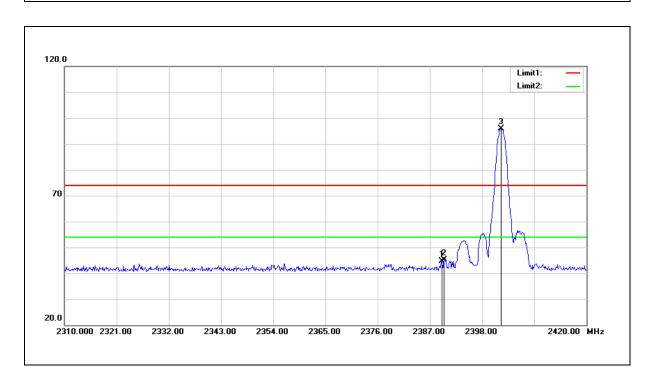


Test item: Band edge Power: AC 120 V/60

Hz

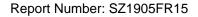
Frequency: 2402 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	2389.530	54.34	-9.79	44.55	74.00	-29.45	peak
2	2390.000	54.99	-9.78	45.21	74.00	-28.79	peak
3	2402.000	105.69	-9.75	95.94			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.



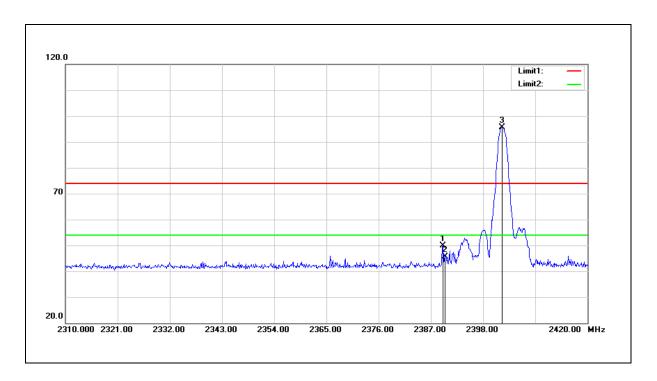


Test item: Band edge Power: AC 120 V/60

Hz

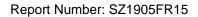
Frequency: 2402 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	2389.530	59.67	-9.79	49.88	74.00	-24.12	peak
2	2390.000	55.45	-9.78	45.67	74.00	-28.33	peak
3	2402.000	105.39	-9.75	95.64			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.



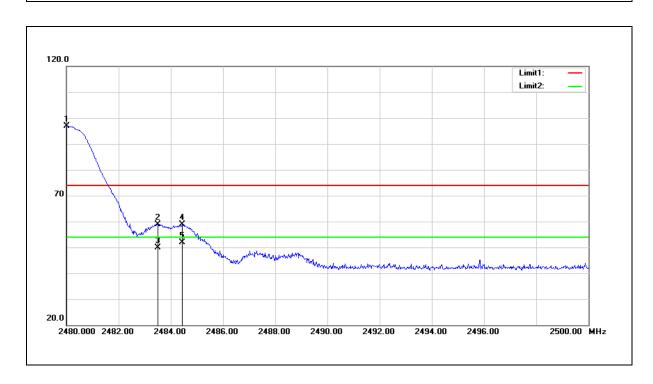


Test item: Band edge Power: AC 120 V/60

Hz

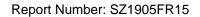
Frequency: 2480 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	2480.000	106.47	-9.58	96.89			peak
2	2483.500	68.42	-9.56	58.86	74.00	-15.14	peak
3	2483.500	59.54	-9.56	49.98	54.00	-4.02	AVG
4	2484.440	68.51	-9.56	58.95	74.00	-15.05	peak
5	2484.440	61.48	-9.56	51.92	54.00	-2.08	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.



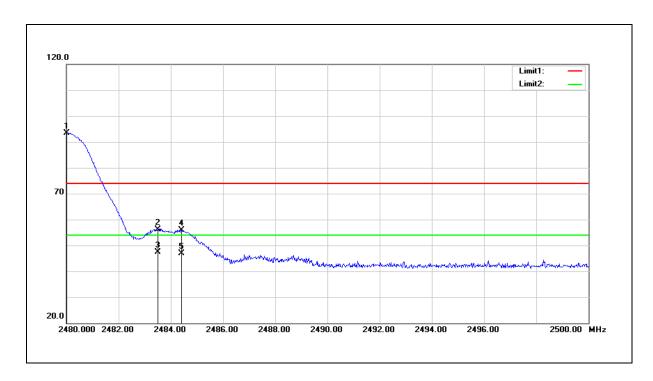


Test item: Band edge Power: AC 120 V/60

Hz

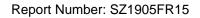
Frequency: 2480 MHz Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60 %RH

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	2480.000	102.93	-9.58	93.35			peak
2	2483.500	65.59	-9.56	56.03	74.00	-17.97	peak
3	2483.500	56.96	-9.56	47.40	54.00	-6.60	AVG
4	2484.400	65.56	-9.56	56.00	74.00	-18.00	peak
5	2484.400	56.54	-9.56	46.98	54.00	-7.02	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.



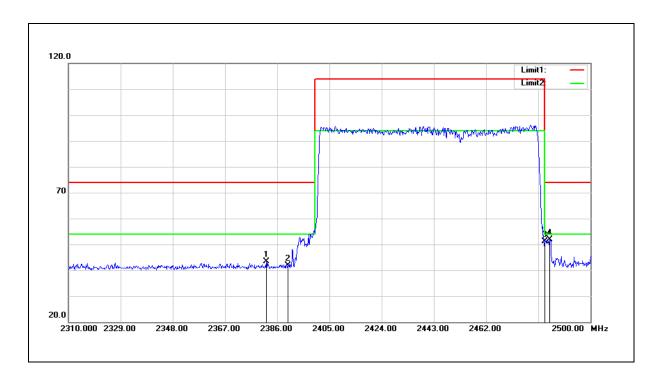


Test item: Band edge Power: AC 120 V/60

Hz

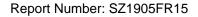
Frequency: hopping Temp.( $^{\circ}$ C)/Hum.( $^{\circ}$ RH): 26( $^{\circ}$ C)/60  $^{\circ}$ RH

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	2382.010	53.12	-9.80	43.32	74.00	-30.68	peak
2	2390.000	51.72	-9.78	41.94	74.00	-32.06	peak
3	2483.500	60.67	-9.56	51.11	74.00	-22.89	peak
4	2485.180	61.46	-9.56	51.90	74.00	-22.10	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.



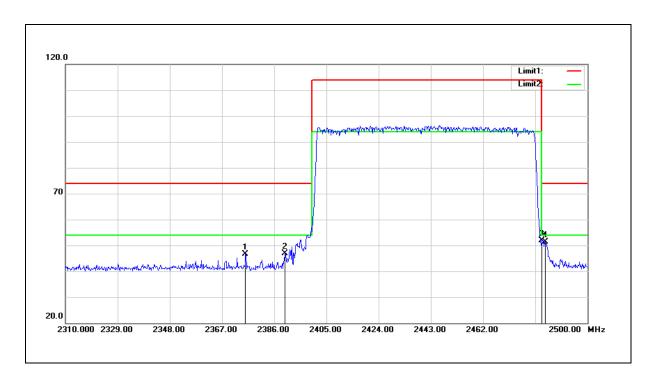


Test item: Power: AC 120 V/60

Hz

Frequency: hopping 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	2375.550	56.55	-9.83	46.72	74.00	-27.28	peak
2	2390.000	56.73	-9.78	46.95	74.00	-27.05	peak
3	2483.500	61.41	-9.56	51.85	74.00	-22.15	peak
4	2484.610	60.97	-9.56	51.41	74.00	-22.59	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.