TEST REPORT

Applicant:	**FS.COM Inc.**
Address of Applicant:	**380 Centerpoint Blvd, New Castle,DE 19720, United States**
Manufacturer/Factory:	**FS.COM LIMITED**
Address of Manufacturer/Factory:	**24F, Infore Center, No.19, Haitian 2nd Rd, Binhai Community, Yuehai Street, Nanshan District, Shenzhen City**
Equipment Under Test (EUT)	
Product Name:	**FIRMWARE UPGRADE TOOL KIT**
Model No.:	**FS-BOX-V4**
Trade Mark:	
FCC ID:	**2A2PW156801**
IC:	**29598-156801**
HVIN:	**FS-BOX-V4**
Applicable standards:	**FCC CFR Title 47 Part 15 Subpart C Section 15.247** **ANSI C63.10:2013** **RSS-Gen Issue 5** **RSS-247 Issue 2**
Date of sample receipt:	**August 22, 2022**
Date of Test:	**October 27~28, 2022**
Date of report issued:	**October 31, 2022**
Test Result:	**PASS ***

*** In the configuration tested, the EUT complied with the standards specified above.**

Authorized Signature:

Robinson Luo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*2022-10-31*	*Original*

Prepared By: ***Date:*** *2022-10-31*

Project Engineer

Check By: ***Date:*** *2022-10-31*

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (b)(4) RSS-Gen Section 6.8	Pass
AC Power Line Conducted Emission	15.207 RSS-Gen Section 8.8	Not Applicable
Conducted Peak Output Power	15.247 (b)(3) RSS-247 Section 5.4(d)	Pass
Channel Bandwidth	15.247 (a)(2) RSS-247 Section 5.2(a)	Pass
99% Occupy Bandwidth	RSS-Gen Section 6.7	Pass
Power Spectral Density	15.247 (e) RSS-247 Section 5.2(b)	Pass
Band Edge	15.247(d) RSS-247 Section 5.5	Pass
Spurious Emission	15.205/15.209 RSS-247 Section 5.5	Pass
Frequency stability	RSS-Gen Section 6.11& Section 8.11	Pass

Remarks:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *Test according to ANSI C63.10:2013 and RSS-Gen.*

Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	1×10^{-7}
2	Duty cycle	0.37%
3	Occupied Bandwidth	3%
4	RF conducted power	0.75dB
5	RF power density	3dB
6	Conducted Spurious emissions	2.58dB
7	AC Power Line Conducted Emission	3.44dB (0.15MHz ~ 30MHz)
8	Radiated Spurious emission test	3.1dB (9kHz-30MHz)
		3.8039dB (30MHz-200MHz)
		3.9679dB (200MHz-1GHz)
		4.29dB (1GHz-18GHz)
		3.30dB (18GHz-40GHz)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.		

5 General Information

5.1 General Description of EUT

Product Name:	FIRMWARE UPGRADE TOOL KIT
Model No.:	FS-BOX-V4
Test sample(s) ID:	GTSL202211000047-1
Sample(s) Status:	Engineer sample
Serial No.:	B0422090151
Hardware Version:	4.0
Software Version:	4.0.0.0
Operation Frequency:	2402MHz~2480MHz
Channel Numbers:	40
Channel Separation:	2MHz
Modulation Type:	GFSK
Antenna Type:	PCB Antenna
Antenna Gain:	0.3dBi
Power Supply:	DC 5V (Powered by Type-C Port) DC 3.7V (Powered by Battery)

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402 MHz	11	2422 MHz	21	2442 MHz	31	2462 MHz
2	2404 MHz	12	2424 MHz	22	2444 MHz	32	2464 MHz
3	2406 MHz	13	2426 MHz	23	2446 MHz	33	2466 MHz
4	2408 MHz	14	2428 MHz	24	2448 MHz	34	2468 MHz
5	2410 MHz	15	2430 MHz	25	2450 MHz	35	2470 MHz
6	2412 MHz	16	2432 MHz	26	2452 MHz	36	2472 MHz
7	2414 MHz	17	2434 MHz	27	2454 MHz	37	2474 MHz
8	2416 MHz	18	2436 MHz	28	2456 MHz	38	2476 MHz
9	2418 MHz	19	2438 MHz	29	2458 MHz	39	2478 MHz
10	2420 MHz	20	2440 MHz	30	2460 MHz	40	2480 MHz

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2440MHz
The Highest channel	2480MHz

Test Item	Software	Description
Conducted RF Testing and Radiated testing	SmartRF Studio 7	Set the EUT to different modulation and channel

Output power setting table:

Test Mode	Set Tx Output Power	Data Rate
BLE	5	1Mbps

Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode

Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

5.2 Description of Support Units

None.

5.3 Deviation from Standards

None.

5.4 Abnormalities from Standard Conditions

None.

5.5 Test Facility

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

● **FCC—Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files.

● **IC —Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

● **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.6 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
Tel: 0755-27798480
Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 02, 2020	July 01, 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 22, 2022	April 21, 2023
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 21, 2022	March 20, 2023
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June 12, 2022	June 11, 2023
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 23, 2022	June 22, 2023
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	April 22, 2022	April 21, 2023
9	Coaxial Cable	GTS	N/A	GTS211	April 22, 2022	April 21, 2023
10	Coaxial cable	GTS	N/A	GTS210	April 22, 2022	April 21, 2023
11	Coaxial Cable	GTS	N/A	GTS212	April 22, 2022	April 21, 2023
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	April 22, 2022	April 21, 2023
13	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 23, 2022	June 22, 2023
14	Band filter	Amindeon	82346	GTS219	June 23, 2022	June 22, 2023
15	Power Meter	Anritsu	ML2495A	GTS540	June 23, 2022	June 22, 2023
16	Power Sensor	Anritsu	MA2411B	GTS541	June 23, 2022	June 22, 2023
17	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 22, 2022	April 21, 2023
18	Splitter	Agilent	11636B	GTS237	June 23, 2022	June 22, 2023
19	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 30, 2021	Nov. 29, 2022
20	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 22, 2022	April 21, 2023
21	Breitband hornantenna	SCHWARZBECK	BBHA 9170	GTS579	Oct. 16, 2022	Oct. 15, 2023
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 16, 2022	Oct. 15, 2023
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 16, 2022	Oct. 15, 2023
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June 23, 2022	June 22, 2023
25	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 22, 2022	April 21, 2023

RF Conducted Test:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 22, 2022	April 21, 2023
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 22, 2022	April 21, 2023
3	Spectrum Analyzer	Agilent	E4440A	GTS536	April 22, 2022	April 21, 2023
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 22, 2022	April 21, 2023
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 22, 2022	April 21, 2023
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 22, 2022	April 21, 2023
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 22, 2022	April 21, 2023
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 22, 2022	April 21, 2023

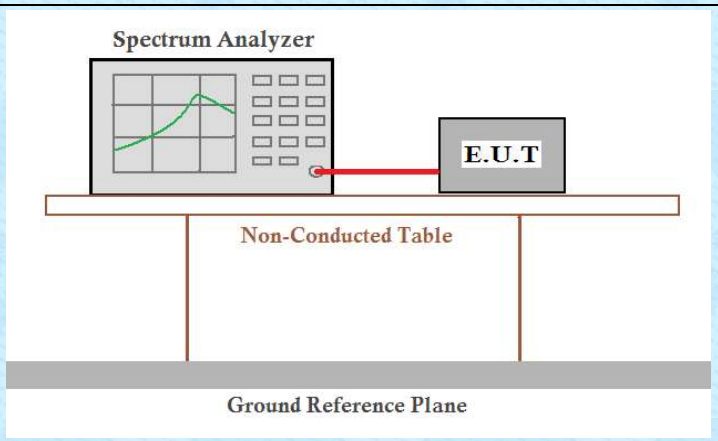
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	April 25, 2022	April 24, 2023
2	Barometer	KUMAO	SF132	GTS647	July 26, 2022	July 25, 2023

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(b)(4)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. **15.247(b)(4) requirement:** (4) The conducted output power limit specified in paragraph (b) of this sec-tion is based on the use of antennas with directional gains that do not ex-ceed 6 dBi. Except as shown in para-graph (c) of this section, if transmit-ting antennas of directional gain great-er than 6 dBi are used, the conducted output power from the intentional ra-diator shall be reduced below the stat-ed values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appro-priate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
Standard requirement:	RSS-Gen Section 6.8
A transmitter can only be sold or operated with antennas with which it was approved. When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. For transmitters of RF output power of 10 milliwatts or less, only the portion of the antenna gain that is in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power to demonstrate compliance with the radiated power limits specified in the applicable standard. For transmitters of output power greater than 10 milliwatts, the total antenna gain shall be added to the measured RF output power to demonstrate compliance to the specified radiated power	
E.U.T Antenna:	
The antenna is PCB Antenna, the best case gain of the is 0.3dBi, reference to the appendix II for details	

7.2 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3) RSS-247 Section 5.4(d)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 15.247 Meas Guidance v05r02 and RSS-Gen
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Test channel	Peak Output Power (dBm)	EIRP (dBm)	Output Power Limit(dBm)	EIRP Limit(dBm)	Result
Lowest	-3.97	-3.67	30.00	36.00	Pass
Middle	-5.766	-5.466	30.00	36.00	Pass
Highest	-5.995	-5.695	30.00	36.00	Pass

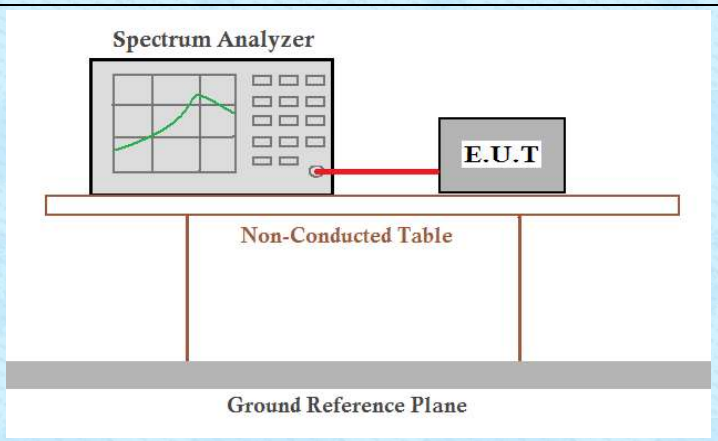
Test plot as follows:

Lowest channel

Middle channel

Highest channel

7.3 Channel Bandwidth & 99% Occupy Bandwidth

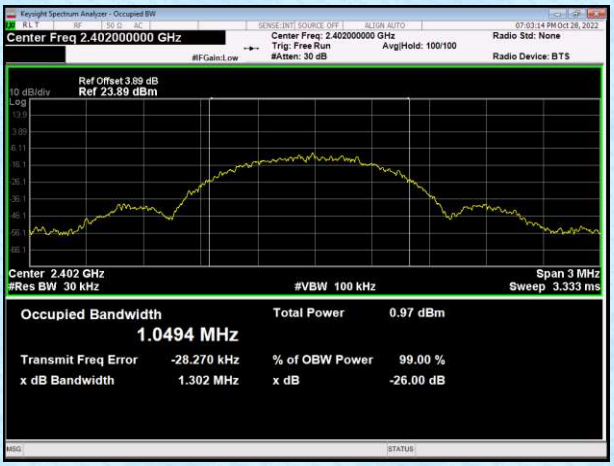
Test Requirement:	FCC Part15 C Section 15.247 (a)(2) RSS-Gen Section 6.7 & RSS-247 Section 5.2(a)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 15.247 Meas Guidance v05r02 and RSS-Gen
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

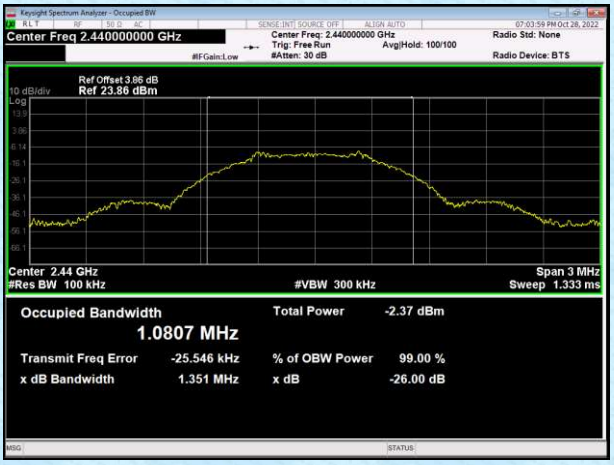
Test channel	Channel Bandwidth (MHz)	Limit(KHz)	Result
Lowest	0.695	>500	Pass
Middle	0.703		
Highest	0.721		

Test channel	99% Bandwidth (MHz)	Result
Lowest	1.049	Pass
Middle	1.081	
Highest	1.078	

Test plot as follows:

Channel Bandwidth	99% Bandwidth
	

Lowest channel

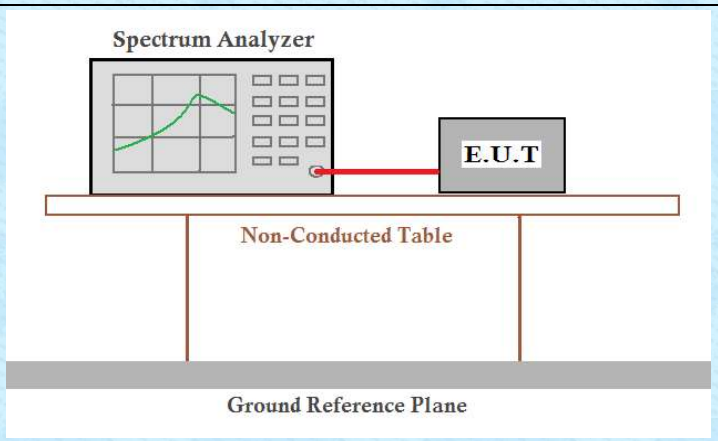
	

Middle channel

Highest channel

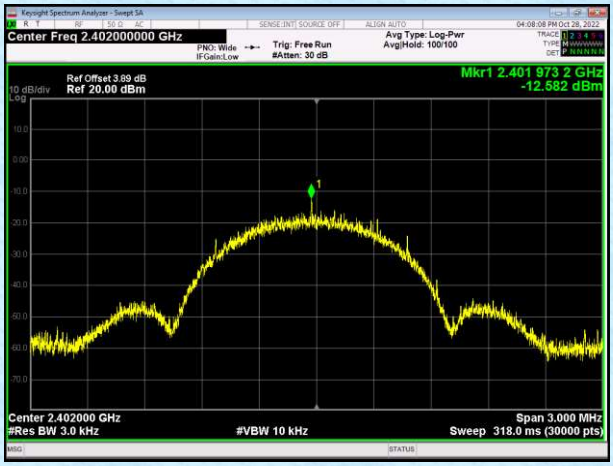
7.4 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e) RSS-247 Section 5.2(b)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 15.247 Meas Guidance v05r02 and RSS-Gen
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

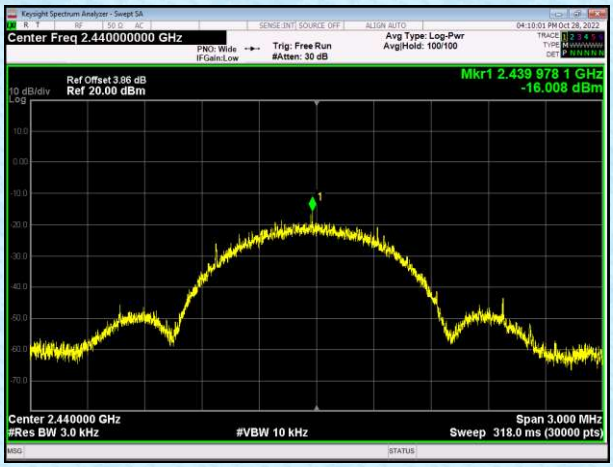
Measurement Data

Test channel	Power Spectral Density (dBm/3kHz)	Limit(dBm/3kHz)	Result
Lowest	-12.582	8.00	Pass
Middle	-16.008		
Highest	-15.182		

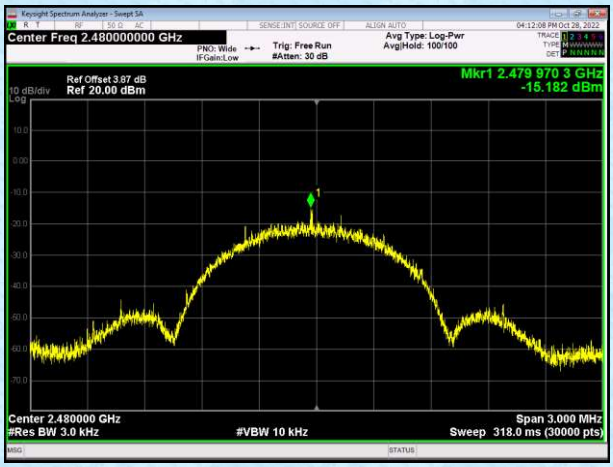
Test plot as follows:



Lowest channel



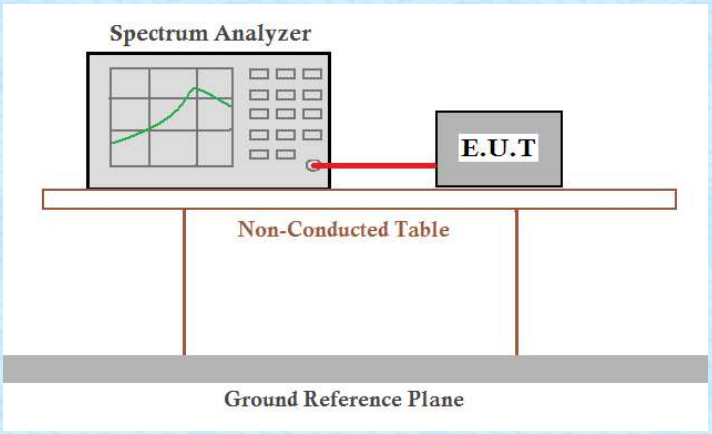
Middle channel



Highest channel

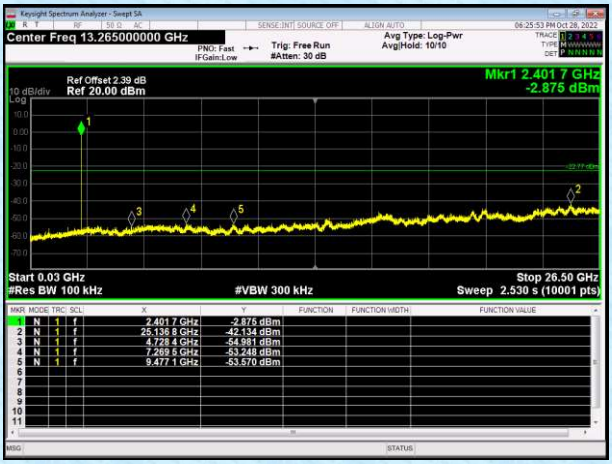
7.5 Spurious Emission in Non-restricted & restricted Bands

7.5.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d) RSS-247 Section 5.5
Test Method:	ANSI C63.10:2013 and KDB558074 D01 15.247 Meas Guidance v05r02 & RSS-Gen
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

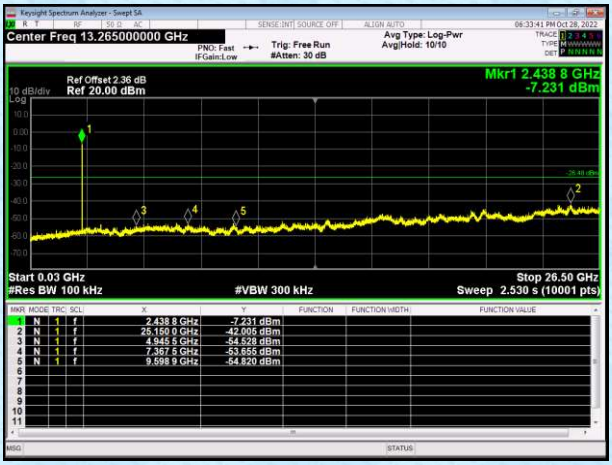
Test plot as follows:

Lowest channel



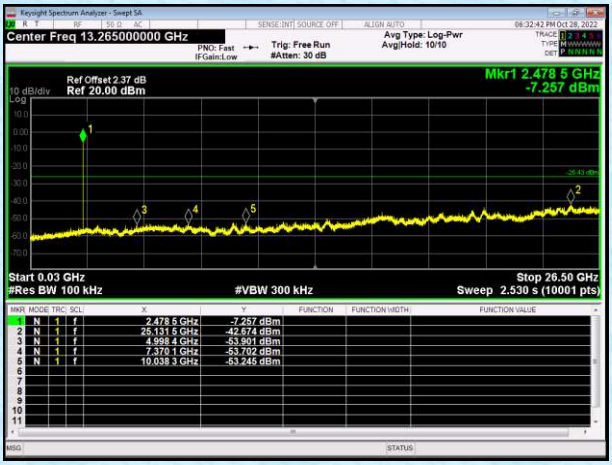
30MHz~26.5GHz

Middle channel



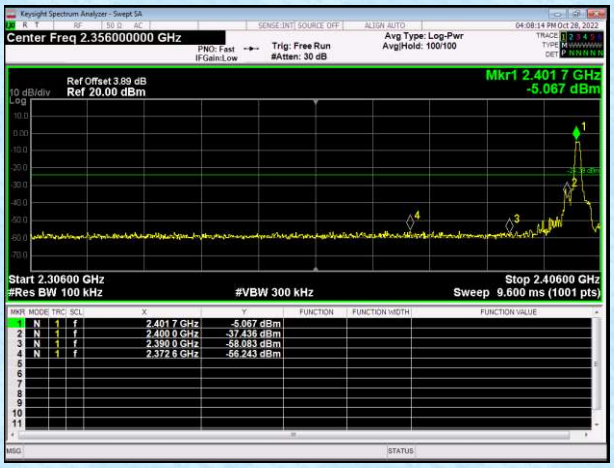
30MHz~26.5GHz

Highest channel

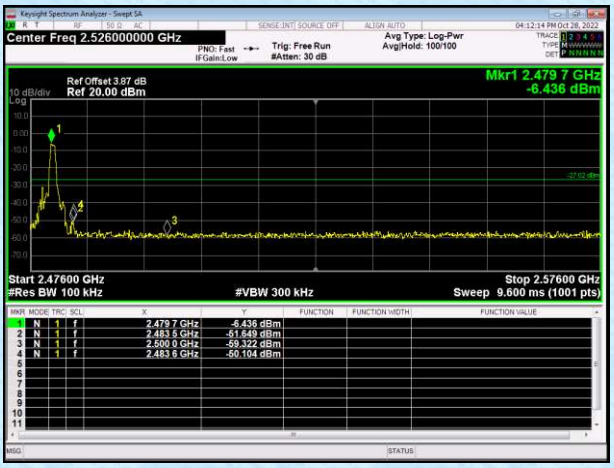


30MHz~26.5GHz

Test plot as follows:



Lowest channel



Highest channel

7.5.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205 RSS-247 Section 3.3 & RSS-Gen Section 8.9
Test Method:	ANSI C63.10:2013 & RSS-Gen
Test Frequency Range:	9kHz to 26.5GHz
Test site:	Measurement Distance: 3m

Receiver setup:

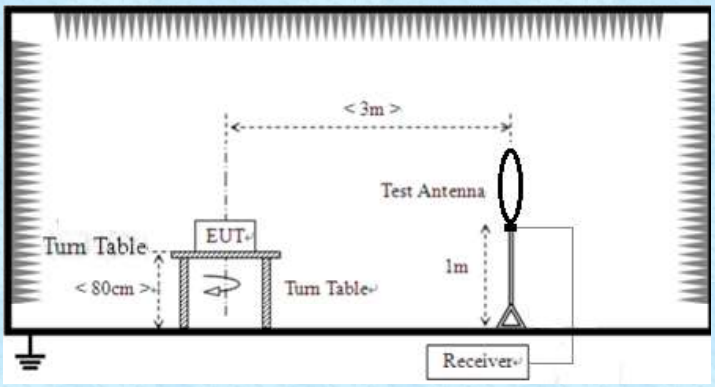
Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

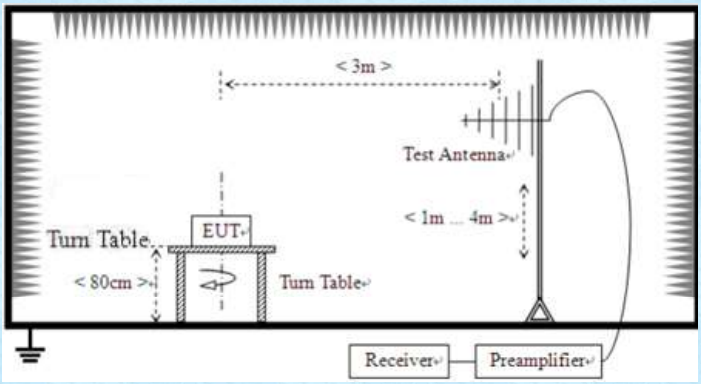
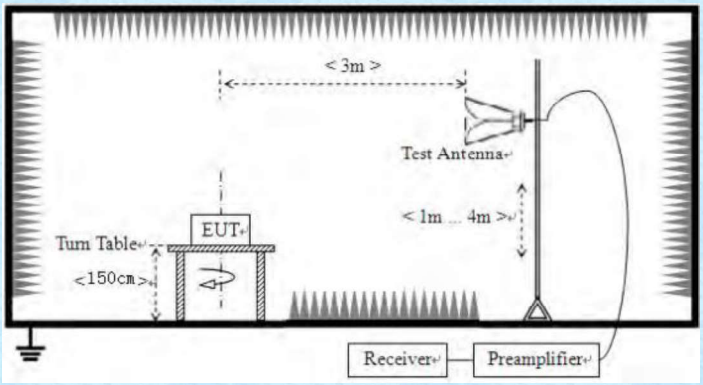
Limit:

Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-0.490MHz	2400/F(KHz)	QP	300m
0.490MHz-1.705MHz	24000/F(KHz)	QP	30m
1.705MHz-30MHz	30	QP	30m
30MHz-88MHz	100	QP	3m
88MHz-216MHz	150	QP	
216MHz-960MHz	200	QP	
960MHz-1GHz	500	QP	
Above 1GHz	500	Average	
	5000	Peak	

Test setup:

For radiated emissions from 9kHz to 30MHz



	For radiated emissions from 30MHz to1GHz  For radiated emissions above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 6.0 for details

Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	26 °C	Humid.:	54%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

Measurement data:

Remark:

1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

2. Both high and low voltages have been tested to show only the worst low voltage test data.

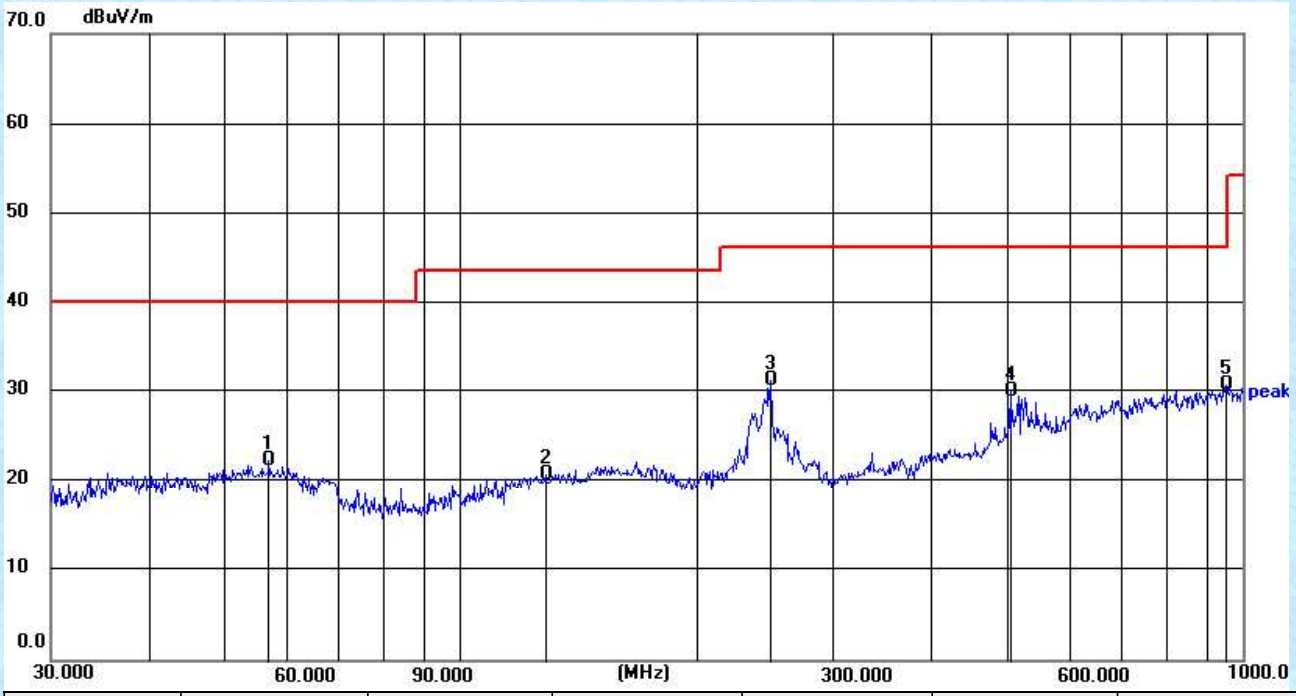
■ **9kHz~30MHz**

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Below 1GHz

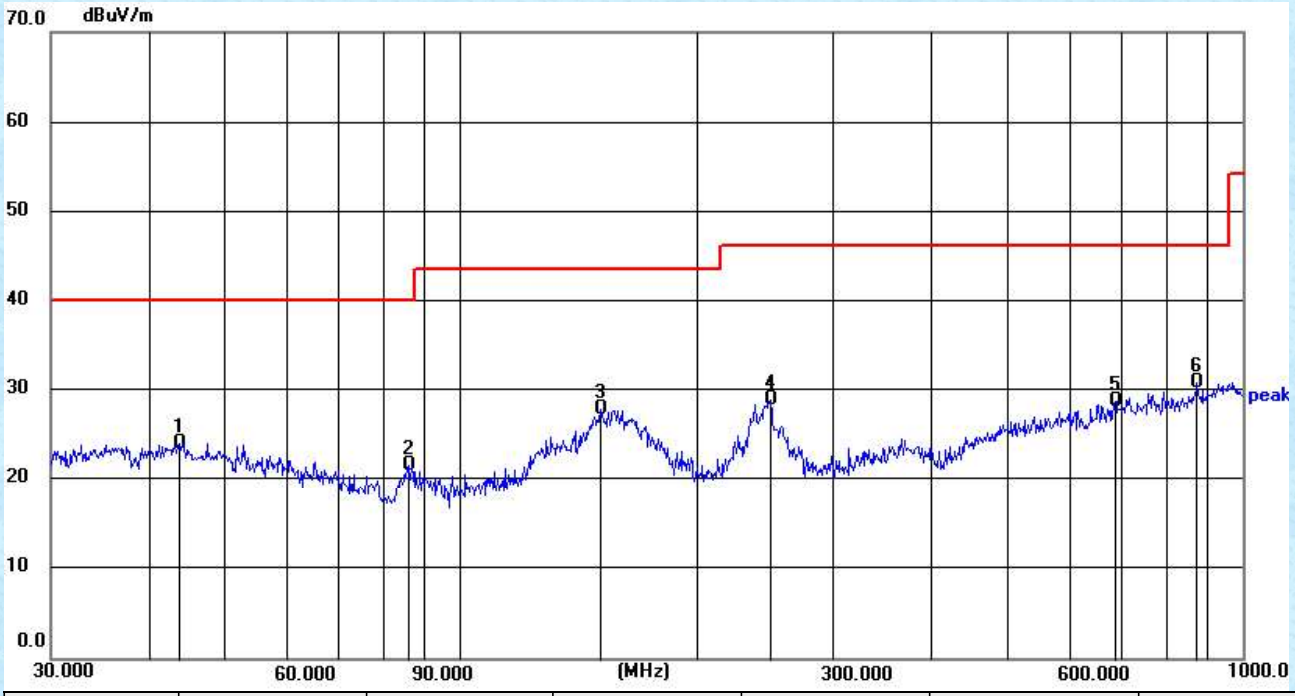
Pre-scan all test modes, found worst case at 2402MHz, and so only show the test result of 2402MHz

Horizontal:



Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
56.9911	8.28	14.10	22.38	40.00	17.62	QP
128.5629	6.28	14.53	20.81	43.50	22.69	QP
249.4250	17.71	13.52	31.23	46.00	14.77	QP
504.7062	11.28	18.70	29.98	46.00	16.02	QP
952.0937	6.16	24.60	30.76	46.00	15.24	QP

Vertical:



Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
43.8119	9.73	14.40	24.13	40.00	15.87	QP
85.8983	10.77	10.95	21.72	40.00	18.28	QP
151.0663	11.93	16.00	27.93	43.50	15.57	QP
249.4250	15.49	13.52	29.01	46.00	16.99	QP
687.1506	7.00	21.84	28.84	46.00	17.16	QP
875.2468	7.18	23.74	30.92	46.00	15.08	QP

Remark:

1. *An initial pre-scan was performed on the Horizontal and Vertical with peak detector.*
2. *Quasi-Peak measurement were performed at the frequencies with maximized peak emission.*
3. *Level =Reading + Factor*
1. *Factor= Antenna Gain + Cable Loss – Amplifier Gain*

■

Unwanted Emissions in non-restricted Frequency Bands

Above 1GHz

Test mode:	BLE	Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4804	46.85	31.62	8.58	32.11	54.94	74	-19.06	Vertical
7206	53.36	35.89	11.63	31.92	68.96	74	-5.04	Vertical
4804	51.38	31.62	8.58	32.11	59.47	74	-14.53	Horizontal
7206	51.48	35.89	11.63	31.92	67.08	74	-6.92	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4804	43.6	31.62	8.58	32.11	51.69	54	-2.31	Vertical
7206	33.16	35.89	11.63	31.92	48.76	54	-5.24	Vertical
4804	42.54	31.62	8.58	32.11	50.63	54	-3.37	Horizontal
7206	32.82	35.89	11.63	31.92	48.42	54	-5.58	Horizontal

Test mode:	BLE	Test channel:	Middle

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880	46.22	31.92	8.71	32.11	54.74	74	-19.26	4880
7320	52.09	36.42	11.8	31.93	68.38	74	-5.62	7320
4880	50.45	31.92	8.71	32.11	58.97	74	-15.03	4880
7320	50.57	36.42	11.8	31.93	66.86	74	-7.14	7320

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4880	42.28	31.92	8.71	32.11	50.8	54	-3.2	Vertical
7320	32.05	36.42	11.8	31.93	48.34	54	-5.66	Vertical
4880	41.65	31.92	8.71	32.11	50.17	54	-3.83	Horizontal
7320	31.2	36.42	11.8	31.93	47.49	54	-6.51	Horizontal

Test mode:	BLE	Test channel:	Highest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960	46.09	31.96	8.75	32.3	54.5	74	-19.5	Vertical
7440	52.37	36.54	11.83	31.92	68.82	74	-5.18	Vertical
4960	51.03	31.96	8.75	32.3	59.44	74	-14.56	Horizontal
7440	49.82	36.54	11.83	31.92	66.27	74	-7.73	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960	42.31	31.96	8.75	32.3	50.72	54	-3.28	Vertical
7440	31.54	36.54	11.83	31.92	47.99	54	-6.01	Vertical
4960	41.81	31.96	8.75	32.3	50.22	54	-3.78	Horizontal
7440	31.24	36.54	11.83	31.92	47.69	54	-6.31	Horizontal

Test mode:	BLE	Test channel:	Lowest

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2310	48.32	27.14	6.19	42.04	39.61	74	-34.39	Vertical
2390	53.08	27.37	6.31	42.11	44.65	74	-29.35	Vertical
2310	47.18	27.14	6.19	42.04	38.47	74	-35.53	Horizontal
2390	54.52	27.37	6.31	42.11	46.09	74	-27.91	Horizontal

Test mode:	BLE	Test channel:	Highest

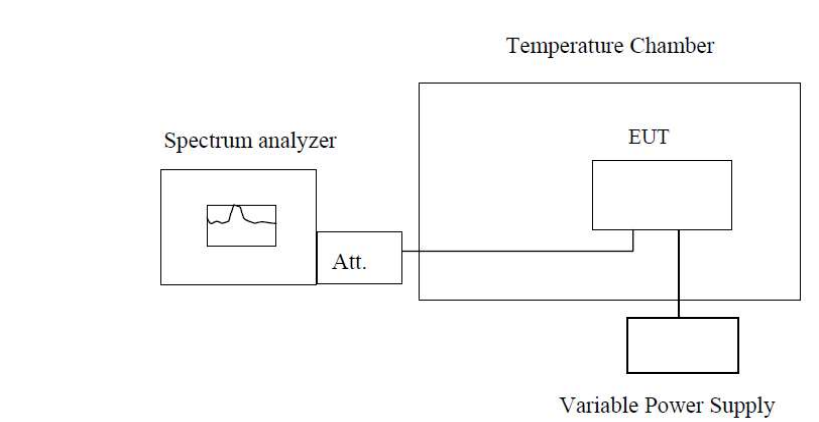
Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.5	54.28	27.66	6.45	42.01	46.38	74	-27.62	Vertical
2500	48.8	27.7	6.47	42	40.97	74	-33.03	Vertical
2483.5	52.01	27.66	6.45	42.01	44.11	74	-29.89	Horizontal
2500	47.46	27.7	6.47	42	39.63	74	-34.37	Horizontal

Remark.

1. *Level =Reading Level+ Antenna factor + Cable Loss – Amplifier factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

7.6 Frequency Stability

Test Requirement:	RSS-Gen Section 6.11& Section 8.11
Test Method:	ANSI C63.10: 2013 & RSS-Gen
Limit:	Manufactures of devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified
Test Procedure:	The EUT was setup to ANSI C63.10, 2013; tested to 2.1055 for compliance to RSS-Gen requirements.
Test setup:	 **Note :** Measurement setup for testing on Antenna connector
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Remark: Set the EUT transmits at un-modulation mode to test frequency stability.

Measurement data:

Frequency stability versus Temp.										
Power Supply: AC 120V										
Temp. (°C)	Operating Frequency (MHz)	0 minute		2 minute		5 minute		10 minute		Pass /Fail
		Measured Frequency (MHz)	Frequency Error (ppm)	Measured Frequency (MHz)	Frequency Error (ppm)	Measured Frequency (MHz)	Frequency Error (ppm)	Measured Frequency (MHz)	Frequency Error (ppm)	
-30	2402	2402.0166	6.91	2402.0158	6.58	2402.0131	5.45	2402.0147	6.12	Pass
	2440	2439.9972	-1.15	2439.9938	-2.54	2439.9936	-2.62	2439.9943	-2.34	Pass
	2480	2479.9887	-4.56	2479.9923	-3.1	2479.9925	-3.02	2479.991	-3.63	Pass
-20	2402	2402.0106	4.41	2402.0107	4.45	2402.0104	4.33	2402.0107	4.45	Pass
	2440	2439.9828	-7.05	2439.9801	-8.16	2439.9781	-8.98	2439.9798	-8.28	Pass
	2480	2479.9761	-9.64	2479.9775	-9.07	2479.9753	-9.96	2479.9764	-9.52	Pass
-10	2402	2402.0082	3.41	2402.0089	3.71	2402.0116	4.83	2402.0104	4.33	Pass
	2440	2439.9986	-0.57	2440.0021	0.86	2440.0007	0.29	2440.0038	1.56	Pass
	2480	2479.991	-3.63	2479.992	-3.23	2479.9925	-3.02	2479.9894	-4.27	Pass
0	2402	2402.0151	6.29	2402.0144	6	2402.0125	5.2	2402.0163	6.79	Pass
	2440	2439.995	-2.05	2439.9931	-2.83	2439.9938	-2.54	2439.9938	-2.54	Pass
	2480	2479.9907	-3.75	2479.9922	-3.15	2479.9895	-4.23	2479.9923	-3.1	Pass
10	2402	2402.0115	4.79	2402.012	5	2402.0115	4.79	2402.0087	3.62	Pass
	2440	2439.9822	-7.3	2439.9813	-7.66	2439.982	-7.38	2439.9807	-7.91	Pass
	2480	2479.9762	-9.6	2479.9776	-9.03	2479.9763	-9.56	2479.9768	-9.35	Pass
20	2402	2402.01	4.16	2402.0104	4.33	2402.0099	4.12	2402.0078	3.25	Pass
	2440	2439.9977	-0.94	2439.9977	-0.94	2439.999	-0.41	2440.0016	0.66	Pass
	2480	2479.992	-3.23	2479.9878	-4.92	2479.9901	-3.99	2479.9922	-3.15	Pass
30	2402	2402.0153	6.37	2402.0128	5.33	2402.0129	5.37	2402.0122	5.08	Pass
	2440	2439.9963	-1.52	2439.9943	-2.34	2439.9957	-1.76	2439.9967	-1.35	Pass
	2480	2479.9925	-3.02	2479.9901	-3.99	2479.9884	-4.68	2479.9898	-4.11	Pass
40	2402	2402.0096	4	2402.012	5	2402.0084	3.5	2402.0099	4.12	Pass
	2440	2439.98	-8.2	2439.9782	-8.93	2439.9818	-7.46	2439.9819	-7.42	Pass
	2480	2479.9769	-9.31	2479.9776	-9.03	2479.9759	-9.72	2479.9753	-9.96	Pass
50	2402	2402.0097	4.04	2402.0097	4.04	2402.011	4.58	2402.0082	3.41	Pass
	2440	2439.9985	-0.61	2439.9996	-0.16	2440.0033	1.35	2439.9986	-0.57	Pass
	2480	2479.9917	-3.35	2479.9908	-3.71	2479.9905	-3.83	2479.992	-3.23	Pass
Frequency stability versus Voltage										
Temperature: 25°C										
Power Supply (VAC)	Operating Frequency (MHz)	0 minute		2 minute		5 minute		10 minute		Pass/Fail
		Measured Frequency (MHz)	Frequency Error (ppm)	Measured Frequency (MHz)	Frequency Error (ppm)	Measured Frequency (MHz)	Frequency Error (ppm)	Measured Frequency (MHz)	Frequency Error (ppm)	
120	2402	2402.0112	4.66	2402.0076	3.16	2402.0074	3.08	2402.0085	3.54	Pass
	2440	2440.0031	1.27	2439.9986	-0.57	2439.9983	-0.7	2440	0	Pass
	2480	2479.9909	-3.67	2479.992	-3.23	2479.9887	-4.56	2479.9908	-3.71	Pass

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

------End------