Aibo Standard Technology (Shenzhen) Co., Ltd.
101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China
Tel.: +(86) 0755 85250797 E-mail: Aibonorm@aibonorm.com Website: www.Aibonorm.com

FCC&IC TEST REPORT

Report No.:	AB25060089FW03
FCC ID.:	**2AC59-OE927**
IC ID.:	**32474-OE927**
Applicant.:	SHENZHEN LOFREE CULTURE CO., LTD
Address.:	201-F4,F518 Idea Land,1065 Bao Yuan Road, Shenzhen
Manufacturer.:	SHENZHEN LOFREE CULTURE CO., LTD
Address.:	201-F4,F518 Idea Land,1065 Bao Yuan Road, Shenzhen
Product Name.:	FLOW 2-84 Triple Mode Low-Profile Mechanical Keyboard
Trade Mark.:	lofree
Test Model.:	OE927
Additional Model(s).:	/
Standard.:	FCC 47 CFR Part 15 Subpart C (Part 15.249);Canada RSS-Gen Issue 5 (2018-04);Canada RSS-Gen Amendment 1 (2019-03);Canada RSS-Gen Amendment 2 (2021-02);Canada RSS-210 Issue 11 (2024-06)
Date of Receipt.:	2025.07.03
Date of Test Date.:	2025.07.03-2025.08.12
Date of Issue.:	2025.08.13
Test Result.:	Pass

Compiled by: (Printed Name + Signature)	Huaijie Li	Huaijie Li
Supervised by: (Printed Name + Signature)	Jay Liu	Jay Liu
Approved by: (Printed Name + Signature)	Mic Cheng	Mic Cheng

Testing Laboratory Name.:	Aibo Standard Technology (Shenzhen) Co., Ltd.
Address.:	101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China

FCC&IC TEST REPORT

Test Report No.: AB25060089FW03	2025.08.13 Date of issue

EUT.....	:	FLOW 2-84 Triple Mode Low-Profile Mechanical Keyboard
Test Model.....	:	OE927
Applicant.....	:	SHENZHEN LOFREE CULTURE CO., LTD
Address.....	:	201-F4,F518 Idea Land,1065 Bao Yuan Road, Shenzhen
Manufacturer.....	:	SHENZHEN LOFREE CULTURE CO., LTD
Address.....	:	201-F4,F518 Idea Land,1065 Bao Yuan Road, Shenzhen
Factory.....	:	SHENZHEN LOFREE CULTURE CO., LTD
Address.....	:	201-F4,F518 Idea Land,1065 Bao Yuan Road, Shenzhen

Test Result	Positive

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

REPORT VERSION

Version No.	Issue Date	Description
01	2025.08.13	Initial Issue

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1. GENERAL DESCRIPTION OF EUT

Product Name:	FLOW 2-84 Triple Mode Low-Profile Mechanical Keyboard
Trade Mark:	Lofree
Test Model:	OE927
Additional Model(s):	/
Model Difference:	/
Hardware Version:	OE927-VIA-V1
Software Version:	1
Power Supply:	DC 3.7V by battery(3000mAh) or DC from USB Port
Test Sample(s) Number:	AB25060089-01 (Engineer Sample)
Radio Specification Subject to this Report	
Frequency Range:	2404-2476MHz
Modulation Type:	GFSK
Channel Spacing:	≧6MHz
Channel Number(s):	16
Antenna Type:	PCB Antenna
Antenna Gain:	-0.58dBi(Max.)

1.2. DESCRIPTION OF SUPPORT EQUIPMENT

Description	Manufacturer	Model	Serial Number	Supplied by
Lenovo	Notebook	B470	WB05067151	Applicant

1.3. DESCRIPTION OF EXTERNAL I/O

I/O Port Description	Quantity	Cable
N/A	N/A	N/A

1.4. GENERAL DESCRIPTION OF APPLIED STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.249 - Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz and 24.0-24.25 GHz.

ANSI C63.10-2013 - American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

Canada RSS-210 Issue 11 (2024-06)-Licence-Exempt Radio Apparatus:Categoryl Equipment

Canada RSS-Gen Issue 5 (2018-04)-General Requirements forCompliance of Radio Apparatus

Canada RSS-Gen Amendment 1 (March 2019)- A minor amendment has been made to section 3.6 Related documents toadd a reference to Radio Standards Specification (RSS-HAC), Hearing AidCompatibility and Volume Control, which shall be used in conjunction withapplicable RsS(s).

Canada RSS-Gen Amendment 2 (February 2021)-Radio Standards Procedure RSP-102, Special Authorization Procedure forTerminal, Radio, Broadcasting and Interference-Causing Equipment to beCertified, Registered or Deemed in Compliance With Technical EquipmentStandards,replaces section 2.9 of this document.

1.5. DESCRIPTION OF TEST FACILITY

Test Lab: Aibo Standard Technology (Shenzhen) Co., Ltd.

Address: 101, Building B, Tuori New Energy Industrial Park, High-tech Park, Tianliao Community, Yutang Street, Guangming District, Shenzhen City, Guangdong Province, China

Tel.: +(86) 0755 85250797

E-mail: Aibonorm@aibonorm.com

Website: www.Aibonorm.com

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

A2LA-Lab Certificate No.: 7514.01

Aibo Standard Technology (Shenzhen) Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab.

Designation Number: CN1411

Test Firm Registration Number: 567066

ISED Wireless Device Testing Laboratories

Company Number: 33924

CAB identifier: CN0185

1.6. MEASUREMENT UNCERTAINTY

The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Items	Measurement Uncertainty
Power Line Conducted Emission (9kHz~150kHz)	±3.62dB
Power Line Conducted Emission (150kHz~30MHz)	±3.38dB
Radiated Emission (9kHz~30MHz)	±3.10dB
Radiated Emission (30MHz~1GHz)	±4.90dB
Radiated Emission (1GHz~18GHz)	±3.88dB
Radiated Emission (8GHz~40GHz)	±5.32dB
RF Conducted Power	±0.57dB
Conducted Spurious Emissions	±1.60dB
RF Frequency	$\pm 6.0 \times 10^{-7}$
Occupied Channel Bandwidth	±28.87KHz

Note: All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

1.7. ENVIRONMENTAL CONDITIONS

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	+15°C ~ +35°C
Lative Humidity	20 % ~ 75 %
Air Pressure	98KPa ~ 101KPa

1.8. DESCRIPTION OF TEST MODES

The EUT was tested under the following mode.

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	BW	
A	√	√	-	√	DC 3.7V from Battery or USB Port

Where **RE<1G:** Radiated Emission below 1GHz **RE≥1G:** Radiated Emission above 1GHz
PLC: Power Line Conducted Emission **BW:** 20db bandwidth

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery or USB port

Following channel(s) was (were) selected for the test as listed below.

TESTED CHANNEL	TESTED FREQUENCY
Low	2404 MHz
Middle	2438 MHz
High	2476 MHz

Channel List

Channel	Freq. (MHz)
1	**2404**
2	2408
3	2414
4	2418
5	2422
6	2426
7	2436
8	2438
9	2440
10	2444
11	2452
12	2458
13	2462
14	2466
15	2470
16	2476

Note: The more detailed channel, please refer to the product specifications

2. SUMMARY OF TEST RESULT

FCC 47 CFR Part 15 Subpart C (SECTION 15.249) &RSS-210 Test Cases			
FCC&IC Rule	**Description of Test Item(s)**	**Result**	**REMARK**
Part 15.203	Antenna Requirement	Pass	No antenna connector is used
Part 15.207(a) RSS-Gen 8.8	Conducted Emission	Pass	Compliant
Part 15.205 RSS-Gen 8.10 Table 7	Restricted Band of Operation	Pass	Compliant
Part 15.209,Part 15.249(a) **RSS-210**B10 (a),B10 (b)	Radiated Emission	Pass	Compliant
Part 15.215(c) RSS-Gen 6.7	20dB Bandwidth Test&Occupied Bandwidth Measuremen	Pass	Compliant

3. MEASUREMENT INSTRUMENTS LIST

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
1	Loop Antenna	Schwarzbeck	FMZB 1519	1519-025	02/19/2025	02/18/2026
2	Power Amplifier	HZEMC	HPA-9K0133	HYPA23029	02/19/2025	02/18/2026
3	Broadband Antenna	Schwarzbeck	VULB 9168	01763	02/19/2025	02/18/2026
4	Attenuator	PRM	ATT50-6-3	ATT50-6-3	01/20/2025	01/19/2026
5	Spectrum Analyzer	R&S	FSV40-N	101365	01/20/2025	01/19/2026
6	Horn Antenna	Schwarzbeck	BBHA 9120 D	02786	02/19/2025	02/18/2026
7	Horn Antenna	Schwarzbeck	ZLB7-18-40G-77	072410839	02/19/2025	02/18/2026
8	Power Amplifier	HZEMC	PA0118-43	HYPA23030	02/19/2025	02/18/2026
9	Power Amplifier	HZEMC	PA01840-45	HYPA23031	02/19/2025	02/18/2026
10	EMI Test Receiver	R&S	ESCI	101196	01/20/2025	01/19/2026
11	LISN	R&S	ENV216	102374	01/20/2025	01/19/2026
12	Pulse Limiter	Schwarzbeck	ESH3-Z2	0357.8810.54	01/20/2025	01/19/2026
13	MXA Signal Analyzer	Keysight	N9020A	MY52091389	01/20/2025	01/19/2026
14	Power Sensor	Agilent	U2021XA	MY54110007	01/31/2025	01/30/2026
15	Power Sensor	Agilent	U2021XA	MY54110009	01/31/2025	01/30/2026
16	MXG Vector Signal Generator	Agilent	N5182A	MY47070153	01/20/2025	01/19/2026
17	Analog Signal Source	Keysight	N5173B	MY60403029	01/20/2025	01/19/2026
18	Vector Signal Generator	R&S	SMCV100B	106103	01/20/2025	01/19/2026
19	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	118780	01/20/2025	01/19/2026
20	DC POWER SUPPLY	MAISHENG	MT-305DS	2021040016	02/28/2025	02/27/2026
21	Const Temp. & Humidity Chamber	GRT	GR-HWX-150L	GR25010601	01/20/2025	01/19/2026

Test Software		
Software name	Model	Version
Conducted Emission Measurement Software	FASLAB	V4.1
Radiated Emission Measurement Software	FASLAB	V4.1
Bluetooth and WIFI Test System	MTS 8310	V3.0.0.0

4. RADIATED EMISSIONS MEASUREMENT

4.1. LIMIT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in FCC 15.209 and IC RSS-210 as following:

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

According to §15.249(a) and IC RSS-210, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of harmonics (micro-volts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

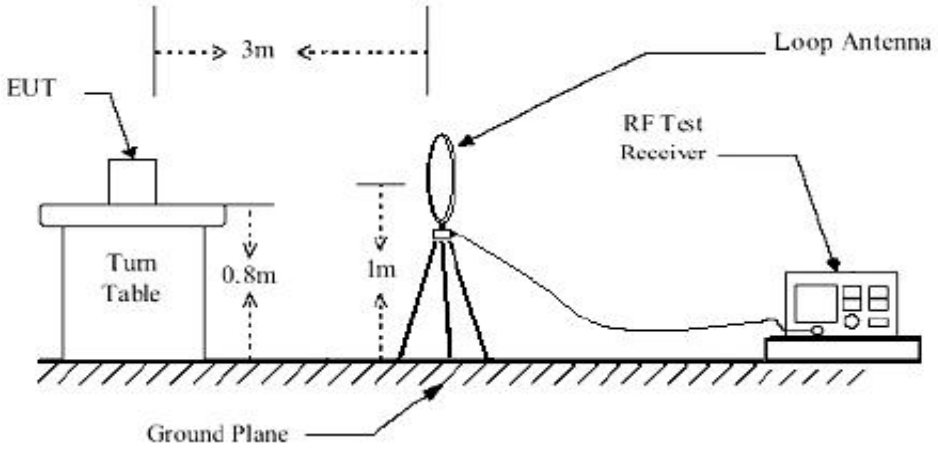
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

NOTE:

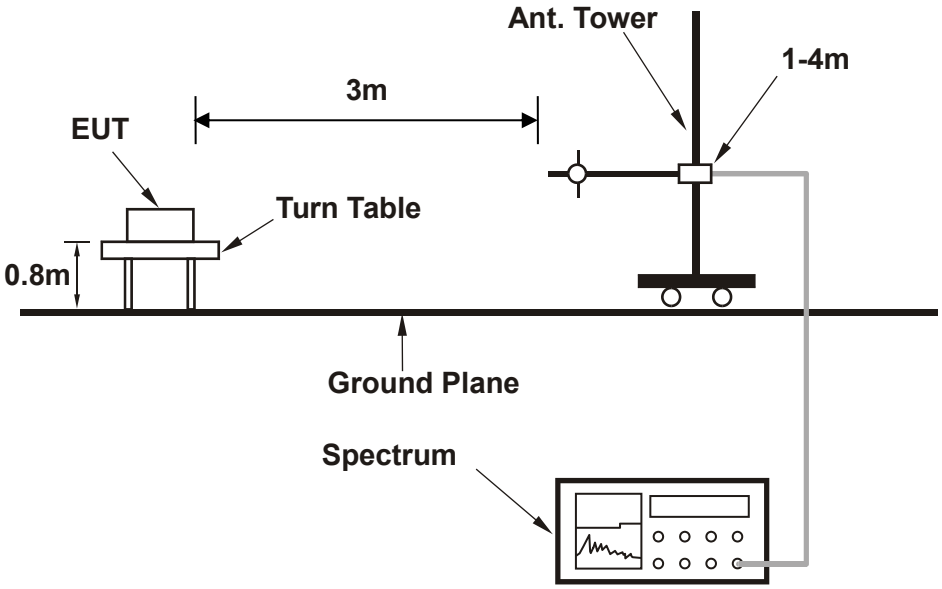
1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.2. TEST SETUP

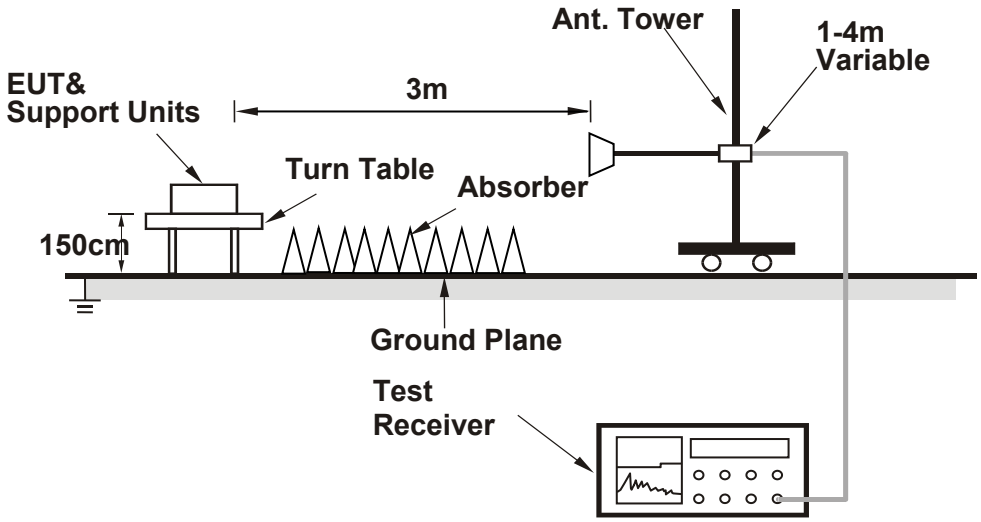
Below 30MHz test setup



Below 1GHz test setup



Above 1GHz test setup



Note: For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.3. TEST PROCEDURE

a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its 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.

d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

g. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

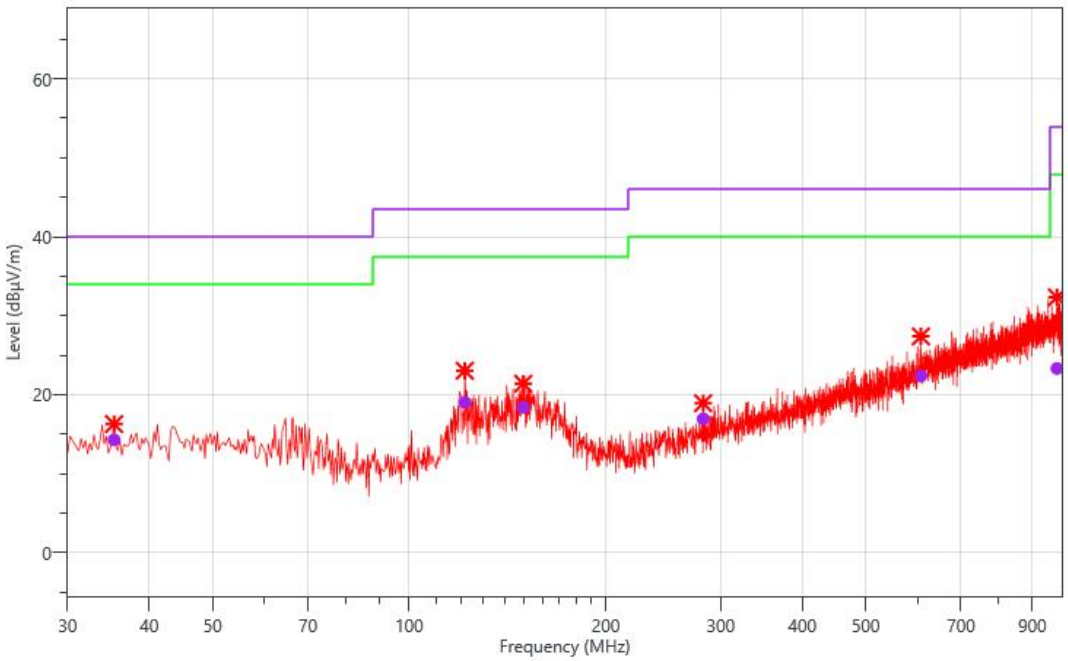
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

4.4. TEST RESULT

BELOW 1GHz WORST-CASE DATA

Radiated Emission Test Data (30MHz to 1GHz)			
Environmental Conditions	24.6℃, 53.4% RH	Test Engineer	Jacey Fu
Worst Test Mode:	TX Low Channel	Polarity:	Horizontal



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	35.335	27.85	-13.56	14.29	40.00	25.71	QPK	H
2	121.665	32.34	-13.3	19.04	43.50	24.46	QPK	H
3	149.553	29.97	-11.57	18.40	43.50	25.10	QPK	H
4	281.958	29.05	-12.12	16.93	46.00	29.07	QPK	H
5	607.635	26.51	-4.12	22.39	46.00	23.61	QPK	H
6	981.570	21.58	1.75	23.33	53.90	30.57	QPK	H

Remark:

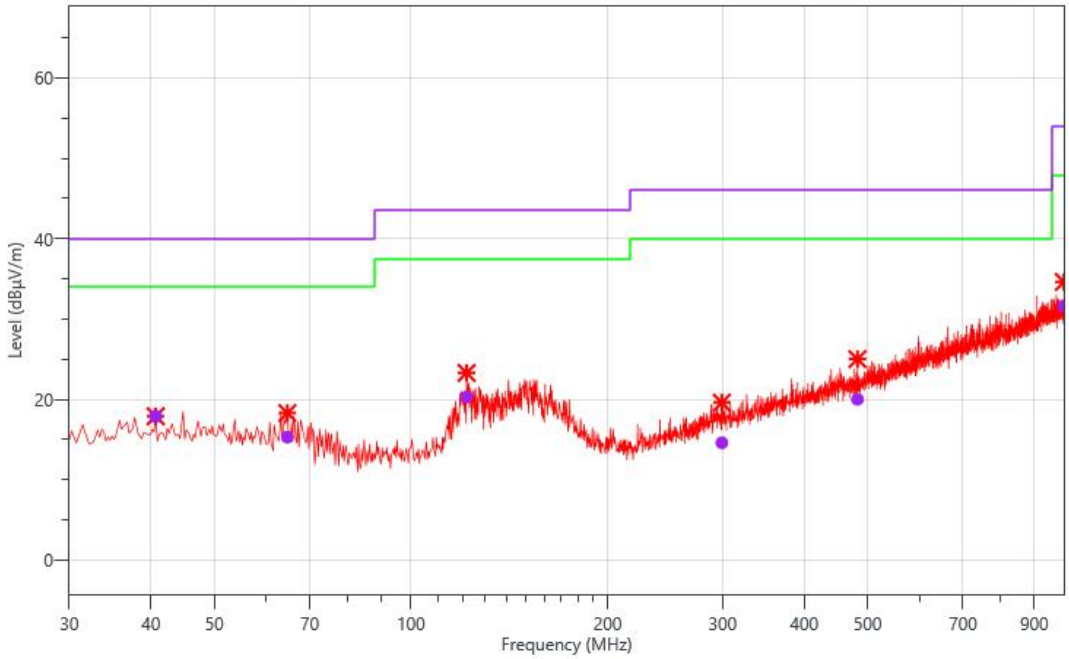
Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Limit - Emission Level.

9KHz~30MHz have been test and test data more than 20dB margin.

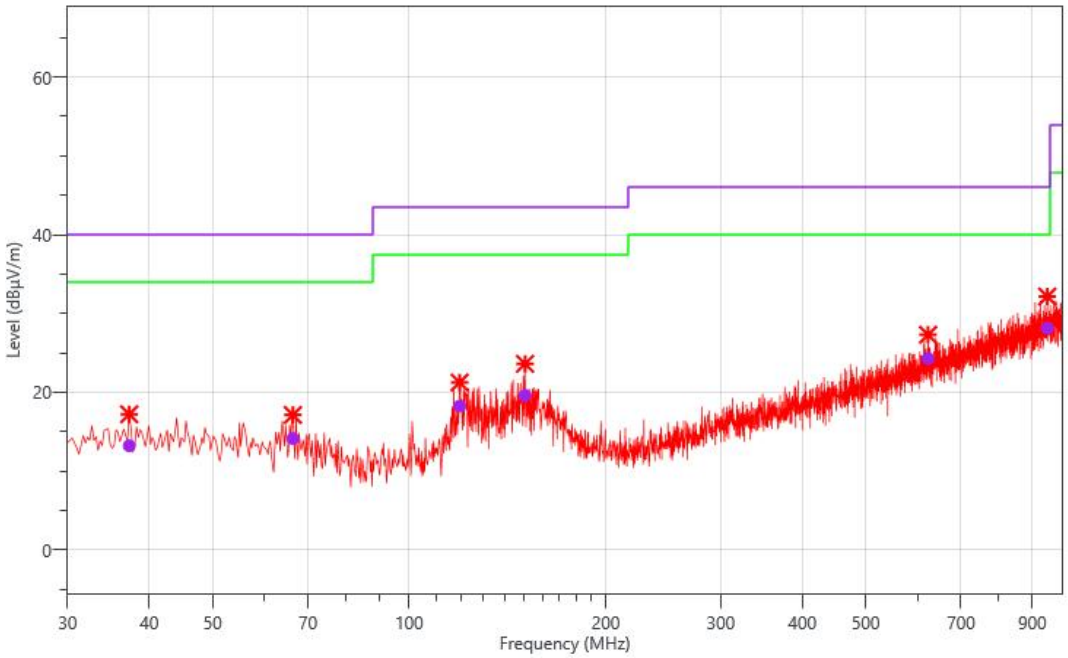
Radiated Emission Test Data (30MHz to 1GHz)			
Environmental Conditions	24.6℃, 53.4% RH	Test Engineer	Jacey Fu
Worst Test Mode:	TX Low Channel	Polarity:	Vertical



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	40.670	30.76	-12.85	17.91	40.00	22.09	QPK	V
2	64.678	29.95	-14.64	15.31	40.00	24.69	QPK	V
3	121.665	33.60	-13.3	20.30	43.50	23.20	QPK	V
4	299.175	26.33	-11.72	14.61	46.00	31.39	QPK	V
5	482.505	26.87	-6.85	20.02	46.00	25.98	QPK	V
6	999.273	29.53	2.09	31.62	53.90	22.28	QPK	V

Remark:
Emission Level = Reading + Factor;
Factor = Antenna Factor + Cable Loss – Pre-amplifier;
Margin= Limit - Emission Level.
9KHz~30MHz have been test and test data more than 20dB margin.

Radiated Emission Test Data (30MHz to 1GHz)			
Environmental Conditions	24.6℃, 53.4% RH	Test Engineer	Jacey Fu
Worst Test Mode:	TX Middle Channel	Polarity:	Horizontal



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	37.275	26.45	-13.23	13.22	40.00	26.78	QPK	H
2	66.375	29.17	-15.04	14.13	40.00	25.87	QPK	H
3	119.483	31.88	-13.63	18.25	43.50	25.25	QPK	H
4	150.523	31.16	-11.55	19.61	43.50	23.89	QPK	H
5	623.155	27.93	-3.63	24.30	46.00	21.70	QPK	H
6	948.833	26.73	1.42	28.15	46.00	17.85	QPK	H

Remark:

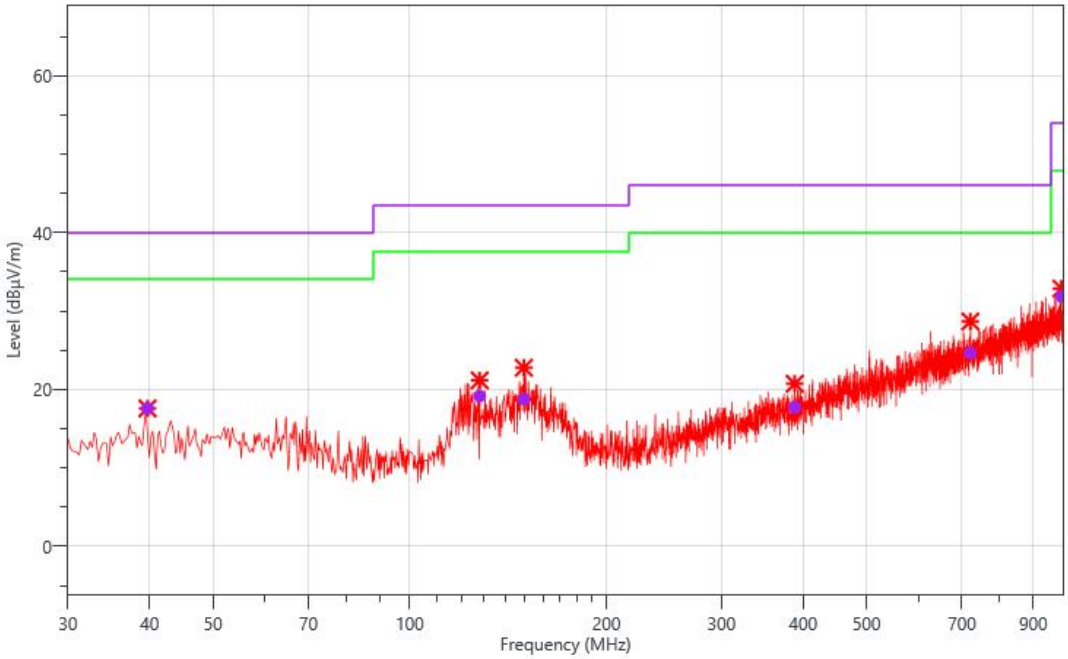
Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Limit - Emission Level.

9KHz~30MHz have been test and test data more than 20dB margin.

Radiated Emission Test Data (30MHz to 1GHz)			
Environmental Conditions	24.6℃, 53.4% RH	Test Engineer	Jacey Fu
Worst Test Mode:	TX Middle Channel	Polarity:	Vertical



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	39.700	30.41	-12.83	17.58	40.00	22.42	QPK	V
2	127.970	32.11	-12.95	19.16	43.50	24.34	QPK	V
3	149.553	30.34	-11.57	18.77	43.50	24.73	QPK	V
4	388.415	26.93	-9.2	17.73	46.00	28.27	QPK	V
5	721.125	26.67	-2	24.67	46.00	21.33	QPK	V
6	993.938	29.83	2.03	31.86	53.90	22.04	QPK	V

Remark:

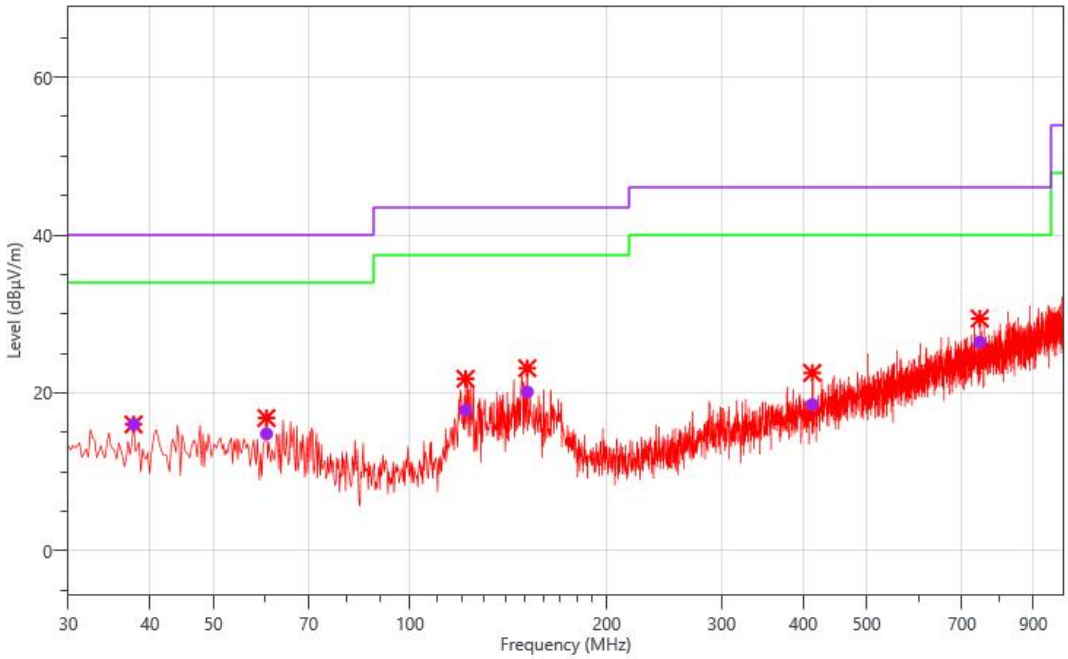
Emission Level = Reading + Factor;

Factor = Antenna Factor + Cable Loss – Pre-amplifier;

Margin= Limit - Emission Level.

9KHz~30MHz have been test and test data more than 20dB margin.

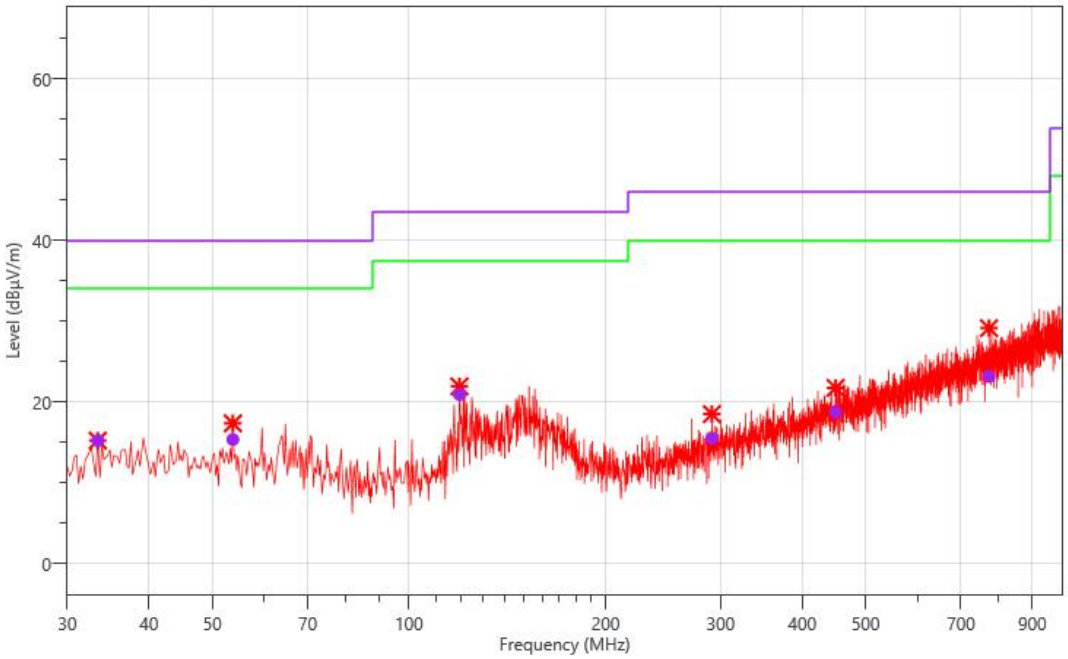
Radiated Emission Test Data (30MHz to 1GHz)			
Environmental Conditions	24.6℃, 53.4% RH	Test Engineer	Jacey Fu
Worst Test Mode:	TX High Channel	Polarity:	Horizontal



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	37.760	29.18	-13.17	16.01	40.00	23.99	QPK	H
2	60.313	28.80	-13.98	14.82	40.00	25.18	QPK	H
3	121.665	31.09	-13.3	17.79	43.50	25.71	QPK	H
4	151.250	31.66	-11.53	20.13	43.50	23.37	QPK	H
5	412.908	27.12	-8.59	18.53	46.00	27.47	QPK	H
6	745.375	28.12	-1.7	26.42	46.00	19.58	QPK	H

Remark:
Emission Level = Reading + Factor;
Factor = Antenna Factor + Cable Loss – Pre-amplifier;
Margin= Limit - Emission Level.
9KHz~30MHz have been test and test data more than 20dB margin.

Radiated Emission Test Data (30MHz to 1GHz)			
Environmental Conditions	24.6℃, 53.4% RH	Test Engineer	Jacey Fu
Worst Test Mode:	TX High Channel	Polarity:	Vertical



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	33.395	28.93	-13.73	15.20	40.00	24.80	QPK	V
2	53.765	28.85	-13.51	15.34	40.00	24.66	QPK	V
3	119.483	34.54	-13.63	20.91	43.50	22.59	QPK	V
4	290.930	27.32	-11.84	15.48	46.00	30.52	QPK	V
5	450.010	26.03	-7.3	18.73	46.00	27.27	QPK	V
6	772.778	24.41	-1.28	23.13	46.00	22.87	QPK	V

Remark:
Emission Level = Reading + Factor;
Factor = Antenna Factor + Cable Loss – Pre-amplifier;
Margin= Limit - Emission Level.
9KHz~30MHz have been test and test data more than 20dB margin.

ABOVE 1GHz WORST-CASE DATA:

Field strength of fundamental&Radiated Emission Test Data (Above 1GHz)							
Environmental Conditions	24.6℃, 53.4% RH		Test Engineer	Jacey Fu			
Lowest Channel (Worst Case: 2.4G_2404MHz)							
Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (PEAK/AVG)	Polar (H/V)
*2404	70.7	-8.86	79.56	114	34.44	PEAK	H
*2404	69.56	-9.51	79.07	94	14.93	AVG	H
4808	51	-14.06	36.94	74	37.06	PEAK	H
4808	39.72	-14.06	25.66	54	28.34	AVG	H
7212	47.75	-6.65	41.1	74	32.9	PEAK	H
7212	36.03	-6.65	29.38	54	24.62	AVG	H
*2404	76.46	-9.06	85.52	114	28.54	PEAK	V
*2404	77.29	-8.17	85.46	94	8.48	AVG	V
4808	48.33	-14.06	34.27	74	39.73	PEAK	V
4808	38.73	-14.06	24.67	54	29.33	AVG	V
7212	45.47	-6.65	38.82	74	35.18	PEAK	V
7212	35.78	-6.65	29.13	54	24.87	AVG	V
Middle Channel (Worst Case: 2.4G_2438MHz)							
Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (PEAK/AVG)	Polar (H/V)
*2438	71.96	-8.48	80.44	114	33.56	PEAK	H
*2438	69.89	-9.25	79.14	94	14.86	AVG	H
4876	53.02	-13.48	39.54	74	34.46	PEAK	H
4876	42.44	-13.48	28.96	54	25.04	AVG	H
7314	44.72	-6.53	38.19	74	35.81	PEAK	H
7314	35.41	-6.53	28.88	54	25.12	AVG	H
*2438	77.09	-9.29	86.38	114	27.62	PEAK	V
*2438	77.7	-8.1	85.8	94	8.2	AVG	V
4876	48.44	-13.48	34.96	74	39.04	PEAK	V
4876	38.37	-13.48	24.89	54	29.11	AVG	V
7314	44.79	-6.53	38.26	74	35.74	PEAK	V
7314	35.27	-6.53	28.74	54	25.26	AVG	V
Highest Channel (Worst Case: 2.4G_2476MHz)							
Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (PEAK/AVG)	Polar (H/V)
*2476	74.64	-9.3	83.94	114	30.06	PEAK	H
*2476	74.65	-7.94	82.59	94	11.41	AVG	H
4952	51.58	-13	38.58	74	35.42	PEAK	H
4952	39.5	-13	26.5	54	27.5	AVG	H
7428	49.15	-6.08	43.07	74	30.93	PEAK	H
7428	37.35	-6.08	31.27	54	22.73	AVG	H
*2476	68.96	-9.13	78.09	114	35.91	PEAK	V
*2476	69.56	-7.74	77.3	94	16.7	AVG	V

4952	55.54	-13	42.54	74	31.46	PEAK	V
4952	42.66	-13	29.66	54	24.34	AVG	V
7428	51.07	-6.08	44.99	74	29.01	PEAK	V
7428	38.21	-6.08	32.13	54	21.87	AVG	V

Remark:
Emission Level = Reading + Factor;
Factor = Antenna Factor + Cable Loss – Pre-amplifier;
Margin= Limit - Emission Level.
" * ": Fundamental frequency.
The emission levels of other frequencies were greater than 20dB margin.

Testing is carried out with frequency rang 9kHz to the tenth harmonics. The measurements greater than 20dB below the limit from 18GHz to 25GHz.

Radiated Band Edges Test Data			
Environmental Conditions	24.6℃, 53.4% RH	Test Engineer	Jacey Fu

Lowest Channel (Worst Case: 2.4G_2404MHz)

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (PEAK/AVG)	Polar (H/V)
2310	57.52	-13.61	44.44	74	29.56	PEAK	H
2310	43.4	-13.61	25.25	54	28.75	AVG	H
2390	59.63	-13.48	44.44	74	29.56	PEAK	H
2390	42.65	-13.48	32.15	54	21.85	AVG	H
2400	27.49	-8.58	36.07	74	37.93	PEAK	H
2400	15.89	-8.69	24.58	54	29.42	AVG	H
2310	57.1	-13.61	47.69	74	26.31	PEAK	V
2310	45.76	-13.61	35.39	54	18.61	AVG	V
2390	63.44	-13.48	47.91	74	26.09	PEAK	V
2390	38.44	-13.48	27.85	54	26.15	AVG	V
2400	29.41	-9.83	39.24	74	34.76	PEAK	V
2400	20.46	-9.48	29.94	54	24.06	AVG	V

Highest Channel Worst Case: 2.4G_2476MHz)

Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (PEAK/AVG)	Polar (H/V)
2483.5	26.5	-9.05	35.55	74	38.45	PEAK	H
2483.5	16.36	-7.56	23.92	54	30.08	AVG	H
2500	59.31	-12.45	51.67	74	22.33	PEAK	H
2500	42.82	-12.45	35.23	54	18.77	AVG	H
2483.5	24.88	-8.47	33.35	74	40.65	PEAK	V
2483.5	12.41	-8.3	20.71	54	33.29	AVG	V
2500	59.18	-12.45	50.61	74	23.39	PEAK	V
2500	41.31	-12.45	29.41	54	24.59	AVG	V

Remark:
Emission Level = Reading + Factor;
Factor = Antenna Factor + Cable Loss – Pre-amplifier;
Margin= Limit - Emission Level.

The emission levels of other frequencies were greater than 20dB margin.

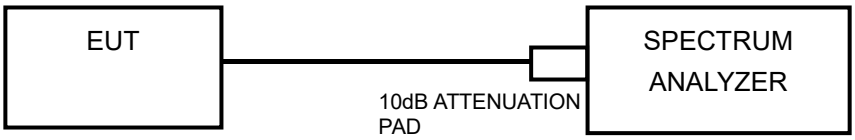
5. 20DB BANDWIDTH AND OCCUPIED BANDWIDTH

5.1. LIMIT

According to FCC 15.215(c) and RSS-Gen, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

According to RSS-Gen 6.7, The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSS.

5.2. TEST SETUP



5.3. TEST PROCEDURE

For 20dB Bandwidth Measurement:

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.

d. Repeat above procedures until all frequencies measured were complete.

e. The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30 KHz RBW and 100 KHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB. Measured the 20dB bandwidth by related function of the spectrum analyzer.

For 99% Occupied Bandwidth Measurement:

a. Span = approximately 1.5 to 5 times the OBW, centered on the test channel.

b. RBW = 1% to 5% of the OBW.

c. VBW ≥ 3 x RBW

d. Sweep = auto;

e. Detector function = peak

f. Trace = max hold

g. Use the 99% power bandwidth function of the instrument to measure the Occupied Bandwidth and recoded.

5.4. TEST RESULT

CHANNEL	CHANNEL FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	20dB BANDWIDTH (MHz)
Low	2404	2.0939	2.309
Middle	2438	2.1149	2.370
High	2476	2.0969	2.362

Test Data: Low channel

Test Data: Middle channel

Test Data: High channel

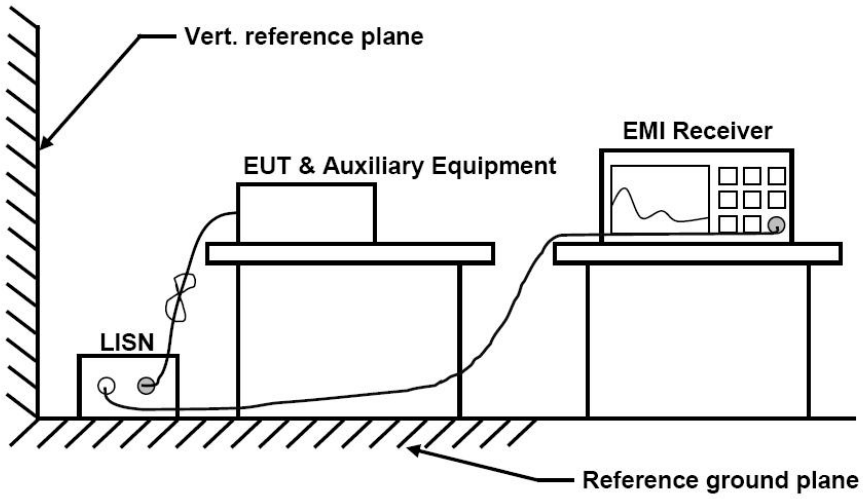
6. POWER LINE CONDUCTED EMISSIONS

6.1. LIMIT

According to the rule FCC Part 15.207 and IC RSS-Gen 8.8, Conducted emissions limit, the limit for a wireless device as below:

Frequency Range (MHz)	Conducted emissions (dBuV)	
	Quasi-peak	Average
0.15~0.5	66 to 56	56 to 46
0.5~5	56	46
5~30	60	50
Remark: a) The lower limit shall apply at the transition frequencies. b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50MHz.		

6.2. TEST SETUP



6.3. TEST PROCEDURE

Test frequency range :150KHz-30MHz

a) The mains terminal disturbance voltage test was conducted in a shielded room.

b) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

c) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

d) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and

associated equipment was at least 0.8 m from the LISN 2.

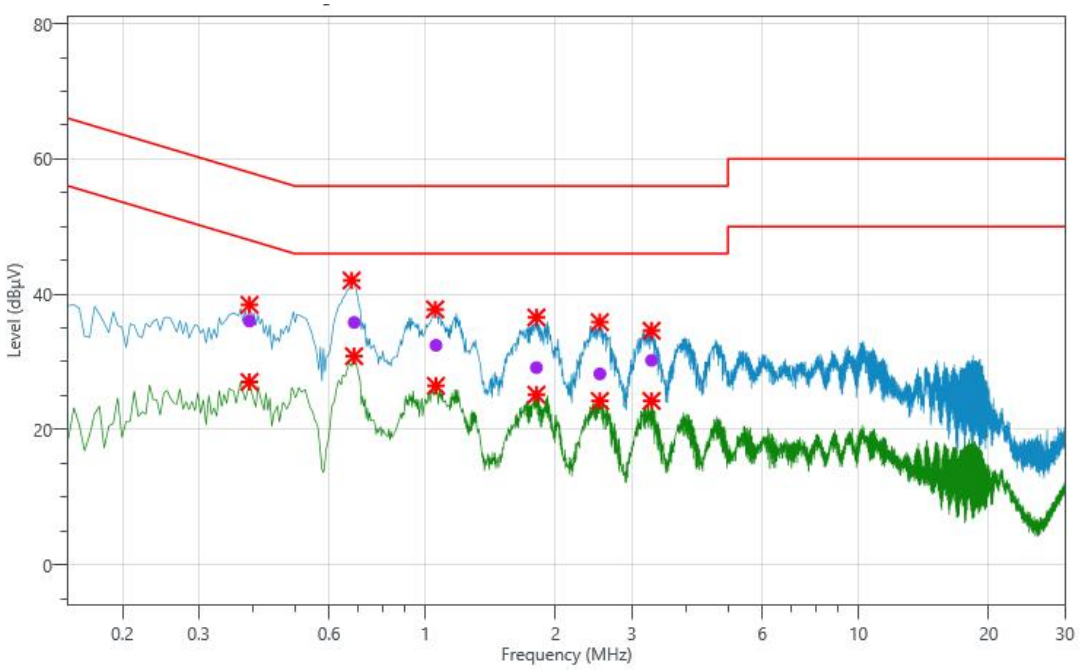
e) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

6.4. TEST RESULT

Pass.

Remark:
a) AC Power line conducted emissions pre-test both at AC 120V/60Hz and AC 240V/50Hz modes, recorded worst case.
b) Worst-case mode and channel used for 150KHz~30MHz power line conducted emissions was determined to be 2.4G_2404MHz.

Test Plots and Data of Conducted Emissions (Worst Case: 2.4G_2404MHz)			
Environmental Conditions	24.6℃, 53.4% RH	Test Engineer	Jacey Fu
Test Voltage:	AC 120V/60Hz	Test Power Line:	Live



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE
1	0.393	26.03	9.99	36.02	58.00	21.98	QPK	L1	GND
2	0.393	17.03	9.99	27.02	48.00	20.98	AVG	L1	GND
3	0.686	25.82	10	35.82	56.00	20.18	QPK	L1	GND
4	0.686	20.82	10	30.82	46.00	15.18	AVG	L1	GND
5	1.059	22.43	10.01	32.44	56.00	23.56	QPK	L1	GND
6	1.059	16.43	10.01	26.44	46.00	19.56	AVG	L1	GND
7	1.806	19.12	10.02	29.14	56.00	26.86	QPK	L1	GND
8	1.806	15.12	10.02	25.14	46.00	20.86	AVG	L1	GND
9	2.531	18.18	10.03	28.21	56.00	27.79	QPK	L1	GND
10	2.531	14.18	10.03	24.21	46.00	21.79	AVG	L1	GND
11	3.332	20.17	10.04	30.21	56.00	25.79	QPK	L1	GND
12	3.332	14.17	10.04	24.21	46.00	21.79	AVG	L1	GND

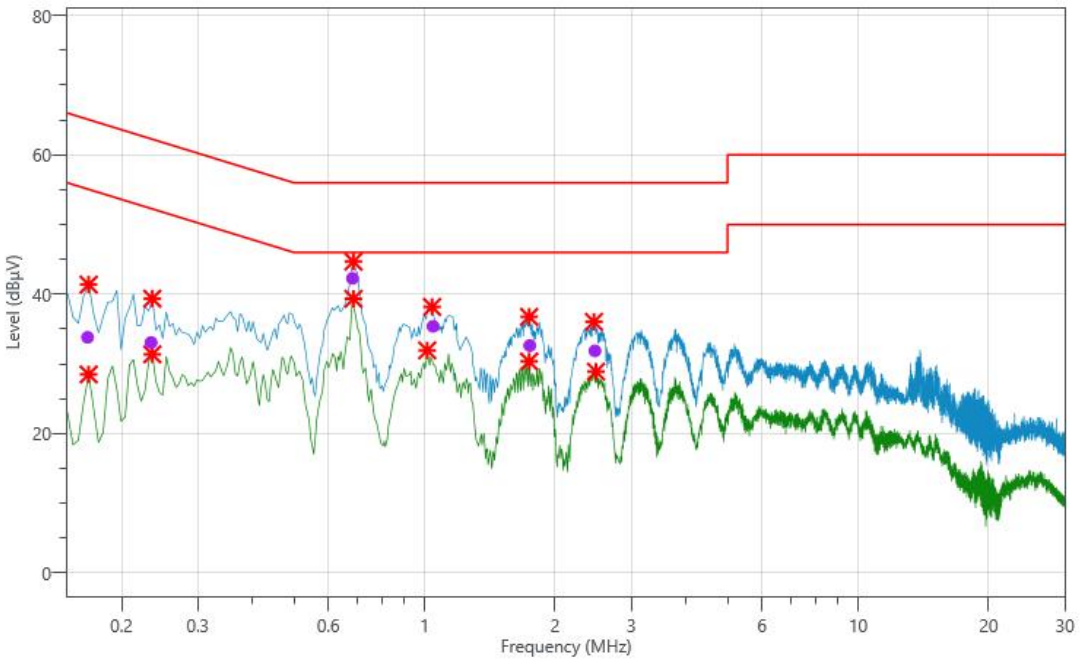
Remark:

Emission Level = Reading + Correct Factor;

Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Attenuation Factor

Margin= Emission Level - Limit.

Test Plots and Data of Conducted Emissions (Worst Case: 2.4G_2404MHz)			
Environmental Conditions	24.6℃, 53.4% RH	Test Engineer	Jacey Fu
Test Voltage:	AC 120V/60Hz	Test Power Line:	Neutral



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE
1	0.167	23.83	9.99	33.82	65.11	31.29	QPK	N	GND
2	0.168	18.51	9.99	28.50	55.06	26.56	AVG	N	GND
3	0.234	23.08	9.99	33.07	62.31	29.24	QPK	N	GND
4	0.236	21.39	9.99	31.38	52.25	20.87	AVG	N	GND
5	0.682	32.28	10	42.28	56.00	13.72	QPK	N	GND
6	0.686	29.35	10	39.35	46.00	6.65	AVG	N	GND
7	1.014	21.94	10.01	31.95	46.00	14.05	AVG	N	GND
8	1.046	25.39	10.01	35.40	56.00	20.60	QPK	N	GND
9	1.748	22.62	10.02	32.64	56.00	23.36	QPK	N	GND
10	1.743	20.33	10.02	30.35	46.00	15.65	AVG	N	GND
11	2.471	21.85	10.03	31.88	56.00	24.12	QPK	N	GND
12	2.486	18.86	10.03	28.89	46.00	17.11	AVG	N	GND

Remark:

Emission Level = Reading + Correct Factor;

Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Attenuation Factor

Margin= Emission Level - Limit.

7. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files for Test Setup Photos of the EUT.

8. EXTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

9. INTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

**********THE END**********