Dongguan Nore Testing Center Co., Ltd. Report No.: NTC2001089FV00 FCC ID: 2AJTV-W60X212



# FCC RADIO TEST REPORT

The device described below is tested by Dongguan Nore Testing Center Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results, data evaluation, test procedures, and equipment of configurations shown in this report were made in accordance with the procedures in ANSI C63.10(2013).

Applicant	: Dashine Electronics Co., Ltd							
Address	No.53, Guangtian Road, Yanchuan community, Yanluo street, Bao'an District, ShenZhen, China							
Manufacturer /Factory	: Dashine Electronics Co., Ltd							
Address	<ul> <li>No.53, Guangtian Road, Yanchuan community, Yanluo street, Bao'an District, ShenZhen, China</li> </ul>							
E.U.T.	: Audio ChatPad							
Brand Name	: N/A							
Model No.	: W60X212, LBX-932 (For model difference refer to section 1)							
FCC ID	: 2AJTV-W60X212							
Measurement Standard	: FCC PART 15.249							
Date of Receiver	: January 13, 2020							
Date of Test	: January 13, 2020 to March 16, 2020							
Date of Report	: March 16, 2020							
	This Test Report is Issued Under the Authority of : Prepared by Approverse Authorized Sprey							
Survey and a second sec								
Sundiy Jiang / Engineer Iori Fan / Authorized Signatory								
This test report is for the customer shown above and their specific product only. This report applies to above tested sample only and shall not be reproduced in part without written approval of Dongguan Nore Testing Center Co., Ltd.								
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# **Revision History of This Test Report**

Report Number	Description	Issued Date
NTC2001089FV00	Initial Issue	2020-03-16



# **1. GENERAL INFORMATION**

### **1.1 Product Description for Equipment under Test**

Product Name	:	Audio ChatPad
Main model number	:	W60X212
Additional Model number	:	LBX-932
Brand Name	:	N/A
Power Supply	:	DC 3.7V come Gamepad
Test Voltage	:	AC 120V 60Hz
Model Difference Description	:	Both of models have the same circuit schematic, construction, PCB Layout and critical components. The difference is model number only due to trading purpose.
Hardware version	:	V00
Software version	:	V00
Note	:	According to the model difference, all tests were performed on model W60X212.
Remark	:	N/A
Technical Specification	on	(2.4G Function):
Frequency Range	:	2412~2475MHz
Modulation Type	:	GFSK
Number of Channel	:	64
Channel space	:	1MHz
Antenna Type	:	PCB
Antenna Gain	:	-1.0dBi (Declaration by manufacturer)



Channel	List:

Channel	Frequency MHz	Channel	Frequency MHz	Channel	Frequency MHz
1	2412	23	2434	45	2456
2	2413	24	2435	46	2457
3	2414	25	2436	47	2458
4	2415	26	2437	48	2459
5	2416	27	2438	49	2460
6	2417	28	2439	50	2461
7	2418	29	2440	51	2462
8	2419	30	2441	52	2463
9	2420	31	2442	53	2464
10	2421	32	2443	54	2465
11	2422	33	2444	55	2466
12	2423	34	2445	56	2467
13	2424	35	2446	57	2468
14	2425	36	2447	58	2469
15	2426	37	2448	59	2470
16	2427	38	2449	60	2471
17	2428	39	2450	61	2472
18	2429	40	2451	62	2473
19	2430	41	2452	63	2474
20	2431	42	2453	64	2475
21	2432	43	2454		
22	2433	44	2455		

**Note:** The Lowest, middle, and the Highest frequency of channel were selected to perform the test. The frequency selected see below:

The Lowest frequency: 2412MHz The middle frequency: 2440MHz The Highest frequency: 2475MHz



### 1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **2AJTV- W60X212** filing to comply with Section 15.249 of the FCC Part 15 (2017), Subpart C Rule.

#### 1.3 Test Methodology

Both of Conducted emission and Rradiated emission measurements performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters.

#### **1.4 Equipment Modifications**

Not available for this EUT intended for grant.

#### **1.5 Deviations and Abnormalities from Standard Conditions**

No additions, deviations and exclusions from the standard.



### 1.6 Support Device

Gamepad

: Provided by manufacturer



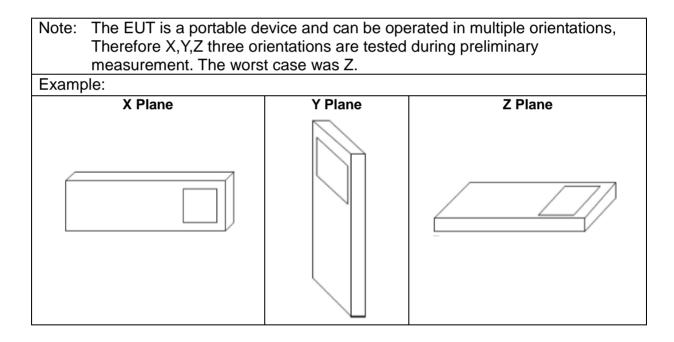
### 1.7 Test Facility and Location

Site Description EMC Lab	:	Listed by CNAS, August 13, 2018 The certificate is valid until August 13, 2024 The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 The Certificate Registration Number is L5795.
		Listed by A2LA, November 01, 2017 The certificate is valid until December 31, 2021 The Laboratory has been assessed and proved to be in compliance with ISO17025 The Certificate Registration Number is 4429.01
		Listed by FCC, November 06, 2017 The Designation Number is CN1214 Test Firm Registration Number: 907417
		Listed by Industry Canada, June 08, 2017 The Certificate Registration Number is 46405-9743A
Name of Firm	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Site Location	:	Building D, Gaosheng Science and Technology park, Hongtu road, Nancheng district, Dongguan city, Guangdong province, China



#### **1.8 Summary of Test Results**

FCC Rules	Description Of Test	Uncertainty	Result
§15.207(a)	AC Power Conducted Emission	±2.52dB	Compliant
§15.249(a)/ 15.209	Radiated Emissions	Below 1GHz: ±4.60 dB Above 1GHz: ±5.02 dB	Compliant
§15.249(d)/ 15.205	Band Edge	±1.70dB	Compliant
§15.215(c)	20dB Bandwidth	±1.42 x10-4%	Compliant
§15.203	Antenna Requirement	±0.60dB	Compliant





## 2. System Test Configuration

#### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

#### 2.2 Special Accessories

Not available for this EUT intended for grant.

#### 2.3 Description of test modes

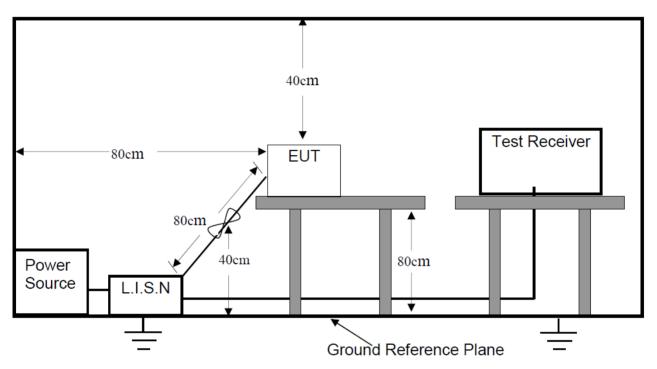
The EUT has been tested under operating condition. The Lowest, middle and highest frequencies were chosen for testing.

#### 2.4 EUT Exercise

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.



## **3. Conducted Emissions Test**



3.1 Test SET-UP (Block Diagram of Configuration)

**3.2 Test Condition** 

Test Requirement: FCC Part 15.207

Frequency Range: 150KHz ~ 30MHz

Detector: RBW 9KHz, VBW 30KHz

**Operation Mode: TX** 

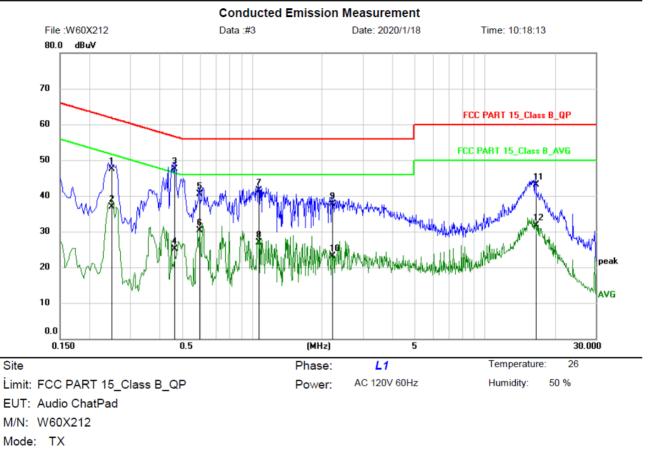
#### 3.3 Measurement Results

Please refer to following the test plots of the worst case: GFSK(Middle channel).

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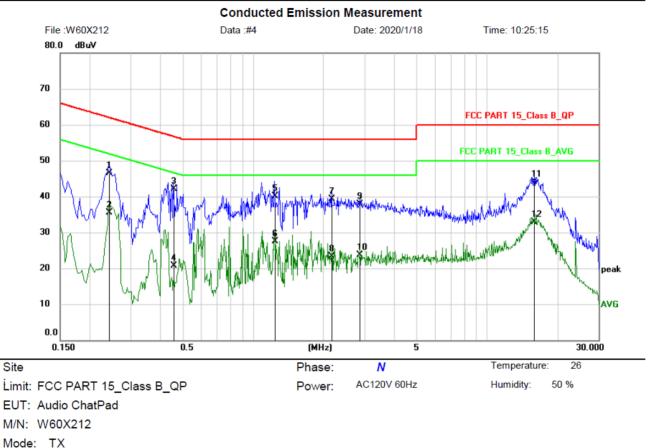
Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.2500	36.90	10.60	47.50	61.76	-14.26	QP	
2	0.2500	26.40	10.60	37.00	51.76	-14.76	AVG	
3 *	0.4660	36.88	10.62	47.50	56.58	-9.08	QP	
4	0.4660	14.58	10.62	25.20	46.58	-21.38	AVG	
5	0.5939	29.86	10.64	40.50	56.00	-15.50	QP	
6	0.5939	19.66	10.64	30.30	46.00	-15.70	AVG	
7	1.0660	30.80	10.70	41.50	56.00	-14.50	QP	
8	1.0660	16.20	10.70	26.90	46.00	-19.10	AVG	
9	2.2058	27.10	10.70	37.80	56.00	-18.20	QP	
10	2.2058	12.40	10.70	23.10	46.00	-22.90	AVG	
11	16.4859	32.45	10.75	43.20	60.00	-16.80	QP	
12	16.4859	21.05	10.75	31.80	50.00	-18.20	AVG	





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Note:

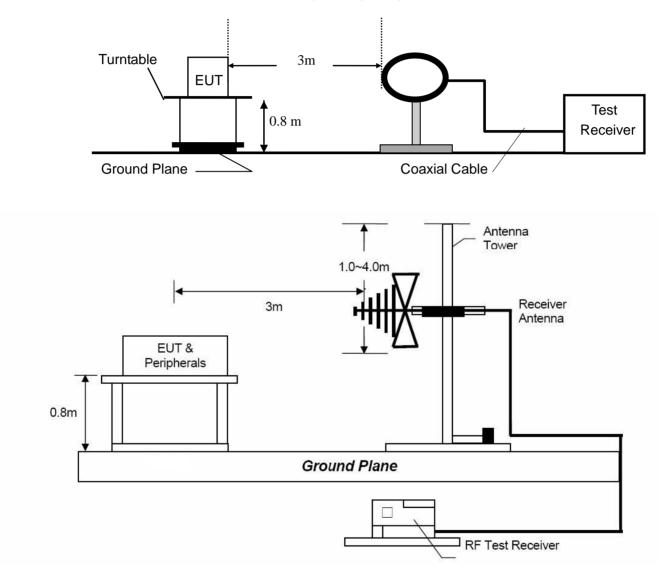
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.2419	36.00	10.60	46.60	62.03	-15.43	QP	
2	0.2419	25.00	10.60	35.60	52.03	-16.43	AVG	
3 *	0.4580	31.48	10.62	42.10	56.73	-14.63	QP	
4	0.4580	10.08	10.62	20.70	46.73	-26.03	AVG	
5	1.2419	29.50	10.70	40.20	56.00	-15.80	QP	
6	1.2419	16.90	10.70	27.60	46.00	-18.40	AVG	
7	2.1779	28.70	10.70	39.40	56.00	-16.60	QP	
8	2.1779	12.70	10.70	23.40	46.00	-22.60	AVG	
9	2.8660	27.19	10.71	37.90	56.00	-18.10	QP	
10	2.8660	13.09	10.71	23.80	46.00	-22.20	AVG	
11	15.9579	33.45	10.75	44.20	60.00	-15.80	QP	
12	15.9579	22.25	10.75	33.00	50.00	-17.00	AVG	



# 4. Radiated Emission Test

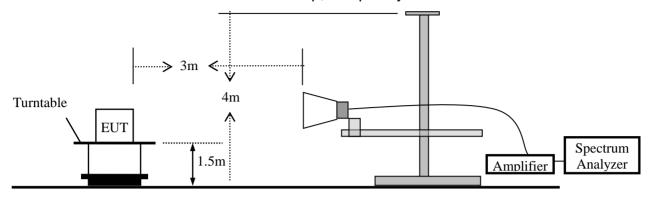
### 4.1 Test SET-UP (Block Diagram of Configuration)

4.1.1 Radiated Emission Test Set-Up, Frequency Below 30MHz and 30-1000MHz.





4.1.2 Radiated Emission Test Set-Up, Frequency above 1GHz



#### 4.2 Measurement Procedure

- a. Blow 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.
- b. For the radiated emission test above 1GHz:
- The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
- f. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.



During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Band (MHz)	Level	Resolution Bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
Above 1000	Average	1 MHz	10 Hz

#### 4.3 Limit

Frequency range	<b>Distance</b> Meters	Field Strengt	hs Limit (15.209)			
MHz		μV/m				
0.009 ~ 0.490	300	240	0/F(kHz)			
0.490 ~ 1.705	30	2400	0/F(kHz)			
1.705 ~ 30	30		30			
30 ~ 88	3		100			
88 ~ 216	3		150			
216 ~ 960	3	200				
Above 960	3	500				
Frequency range	<b>Distance Meters</b>	Field Strengt	hs Limit (15.249)			
MHz		mV/m	μV/m			
		(Field strength of	(Field strength of			
		fundamental)	Harmonics)			
902 ~ 928	3	50	500			
2400 ~ 2483.5	3	50 500				
5725 ~ 5875	3	50 500				
24000 ~ 2425000	3	250 2500				
Remark: (1) Emission level (dB) $\mu$ V = 20 log Emission level $\mu$ V/m						

(2) The smaller limit shall apply at the cross point between two frequency bands.

(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) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.



#### 4.4 Measurement Results

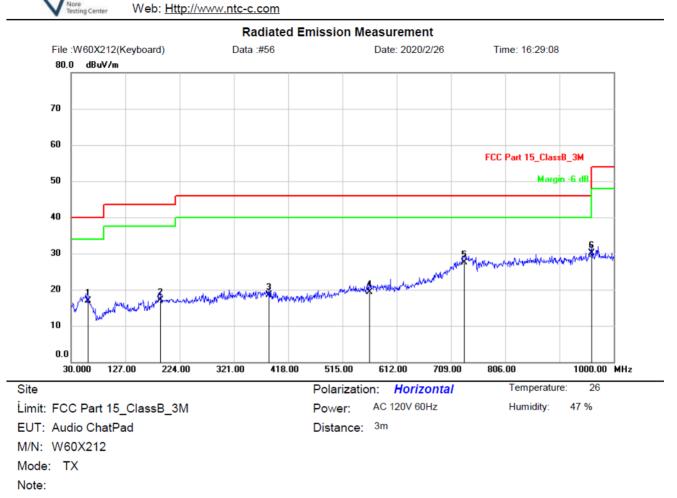
Please refer to following the test plots of the worst case: GFSK(Middle channel).

NTC



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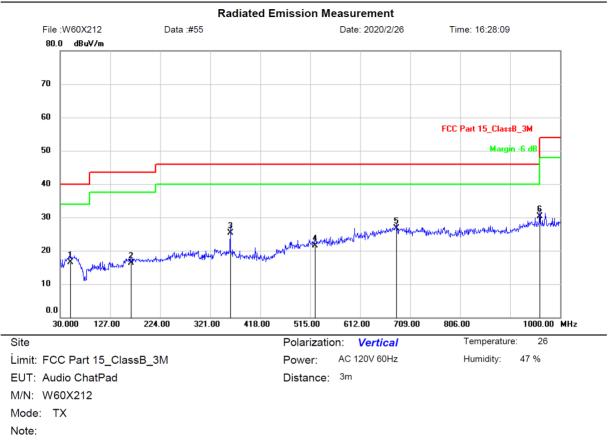


No. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	60.0700	35.38	-18.38	17.00	40.00	-23.00	QP			
2	189.0800	30.83	-13.63	17.20	43.50	-26.30	QP			
3	384.0500	27.69	-9.19	18.50	46.00	-27.50	QP			
4	563.5000	25.41	-6.11	19.30	46.00	-26.70	QP			
5 *	732.2798	30.51	-3.01	27.50	46.00	-18.50	QP			
6	960.2300	30.43	-0.23	30.20	54.00	-23.80	QP			

Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.



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No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		50.3700	34.01	-17.41	16.60	40.00	-23.40	QP			
2		167.7400	31.19	-14.89	16.30	43.50	-27.20	QP			
3		359.8000	34.53	-9.13	25.40	46.00	-20.60	QP			
4		524.7000	28.21	-6.71	21.50	46.00	-24.50	QP			
5	*	681.8400	31.00	-4.30	26.70	46.00	-19.30	QP			
6		960.2300	30.63	-0.23	30.40	54.00	-23.60	QP			

Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.



Test Res	cy Range: ult: d Distance	:	1-25GH PASS 3m Sance	Ηz		Date : erature : dity :			5, 2020	
Freq.	Ant.Pol.		ading (dBuV) Factor		Emission Level (dBuV)		Limit 3m (dBuV/m)		Margin (dB)	
(MHz)	(H/V)	PK	AV	(dB/m)	PK	AV	PK	AV	PK	AV
			Оре	ration M	ode: TX M	lode (Lo	ow)		•	-
2412	V	81.43	80.83	0.13	81.56	80.96	114.00	94.00	-32.44	-13.04
4824	V	48.34	41.23	6.38	54.72	47.61	74.00	54.00	-19.28	-6.39
7236	V	46.29	31.55	10.48	56.77	42.03	74.00	54.00	-17.23	-11.97
2412	Н	86.44	85.47	0.13	86.57	85.60	114.00	94.00	-27.43	-8.40
4824	Н	50.39	44.48	6.38	56.77	50.86	74.00	54.00	-17.23	-3.14
7236	Н	46.14	31.42	10.48	56.62	41.90	74.00	54.00	-17.38	-12.10
			Оре	eration M	ode: TX I	Mode (M	id)			
2440	V	81.37	80.89	0.23	81.60	81.12	114.00	94.00	-32.40	-12.88
4880	V	48.76	41.96	6.60	55.36	48.56	74.00	54.00	-18.64	-5.44
7320	V	46.24	31.52	10.55	56.79	42.07	74.00	54.00	-17.21	-11.93
2440	Н	85.59	85.44	0.23	85.82	85.67	114.00	94.00	-28.18	-8.33
4880	Н	49.82	43.42	6.60	56.42	50.02	74.00	54.00	-17.58	-3.98
7320	Н	46.71	31.70	10.55	57.26	42.25	74.00	54.00	-16.74	-11.75
			Оре	ration Mo	ode: TX N	lode (Hi	gh)		•	•
2475	V	77.17	77.03	0.33	77.50	77.36	114.00	94.00	-36.50	-16.64
4950	V	48.93	43.89	6.86	55.79	50.75	74.00	54.00	-18.21	-3.25
7425	V	43.76	29.67	10.59	54.35	40.26	74.00	54.00	-19.65	-13.74
2475	Н	81.05	79.48	0.33	81.38	79.81	114.00	94.00	-32.62	-14.19
4950	Н	49.22	43.35	6.86	56.08	50.21	74.00	54.00	-17.92	-3.79
7425	Н	43.42	29.03	10.59	54.01	39.62	74.00	54.00	-19.99	-14.38
<ul> <li></li> <li>Note: (1) All Readings are Peak Value and AV.</li> <li>(2) Emission Level= Reading Level + Factor</li> <li>(3) Factor= Antenna Gain + Cable Loss – Amplifier Gain</li> <li>(4) Data of measurement within this frequency range shown "" in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits.</li> <li>(5) Horn antenna used for the emission over 1000MHz.</li> </ul>										



### 5. 20dB Bandwidth

#### 5.1 Measurement Procedure

The 20dB bandwidth of the emission was contained within the frequency band designated which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered, FCC Rule 15.215(c):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was chosen so that the display was a result of the hopping channel modulation. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. Use the spectrum 20dB down delta function to measure the bandwidth.

#### 5.2 Test SET-UP (Block Diagram of Configuration)

FUT	Spectrum Analyzer
	opeoti uni Analyzei

#### 5.3 Measurement Results

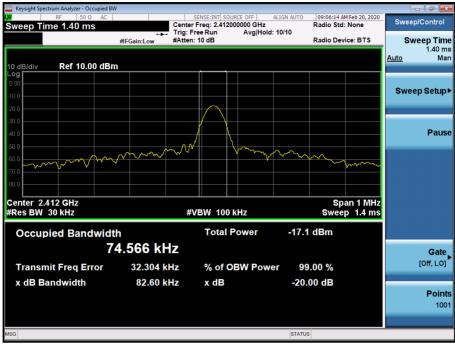
Refer to attached data chart.

RBW:	100KHz	VBW:	300KHz
Spectrum Detector:	PK	Temperature :	<b>22</b> °C
Test By:	Sance	Humidity :	54 %
Test Result:	PASS	Test Date :	February 20, 2020

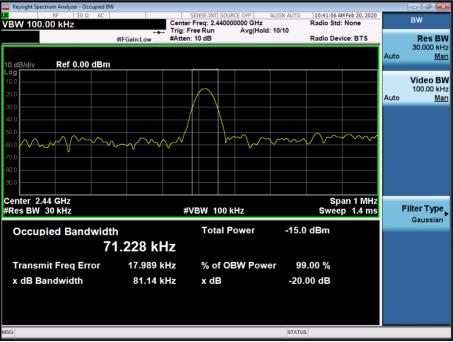
Channel frequency (MHz)	20dB Down BW(kHz)
2412	82.60
2440	81.14
2475	82.50



#### Lowest Channel

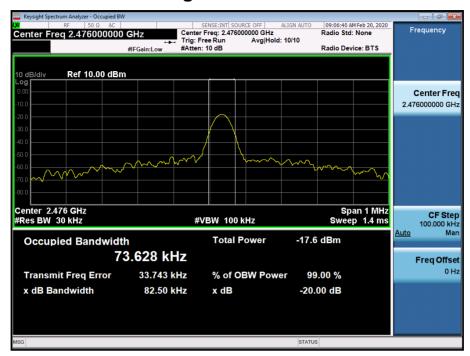


#### **Middle Channel**





# **Highest Channel**







#### 6.1 Measurement Procedure

Same as Radiated Emission Test.

#### 6.2 Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

#### 6.3 Measurement Results

Operation Mode:	TX Mode	Test Date :	February 25, 2020
Temperature :	<b>21</b> °C	Humidity :	55 %
Test Result:	PASS	Test By:	Sance
Measured Distance:	3m	-	

Freq.	Ant.Pol. (H/V)	Rea Level(	0	Factor	Emission Level (dBuV)		Limit 3m (dBuV/m)		Margin (dB)	
(MHz)		PK	AV	(dB/m)	PK	AV	PK	AV	PK	AV
2390.000	Н	58.09	36.90	0.09	58.18	36.99	74.00	54.00	-15.82	-17.01
2390.000	V	52.82	36.70	0.09	52.91	36.79	74.00	54.00	-21.09	-17.21
2483.500	Н	49.57	36.56	0.35	49.92	36.91	74.00	54.00	-24.08	-17.09
2483.500	V	49.68	36.65	0.35	50.03	37.00	74.00	54.00	-23.97	-17.00

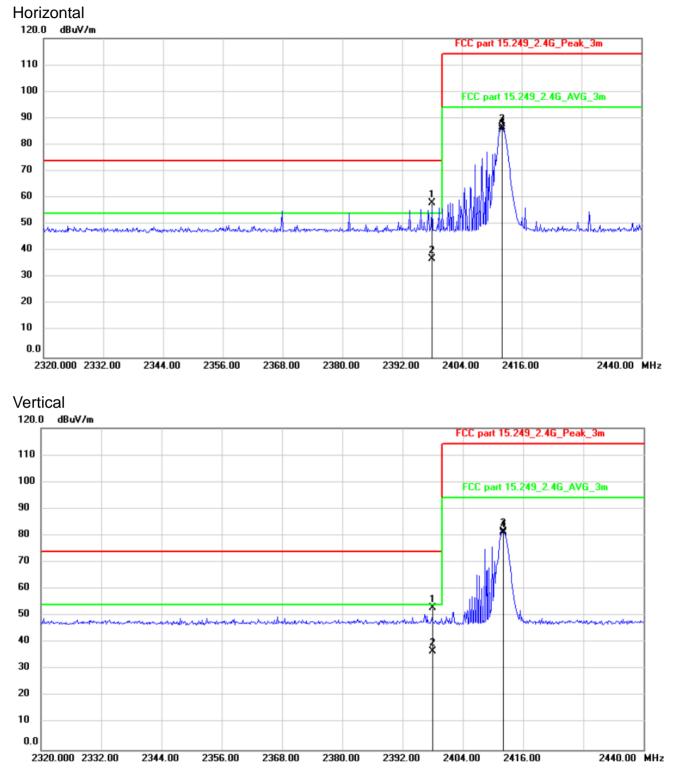
**Note:** (1) Emission Level= Reading Level + Factor

(2) Factor= Antenna Gain + Cable Loss – Amplifier Gain

(3) Horn antenna used for the emission over 1000MHz.

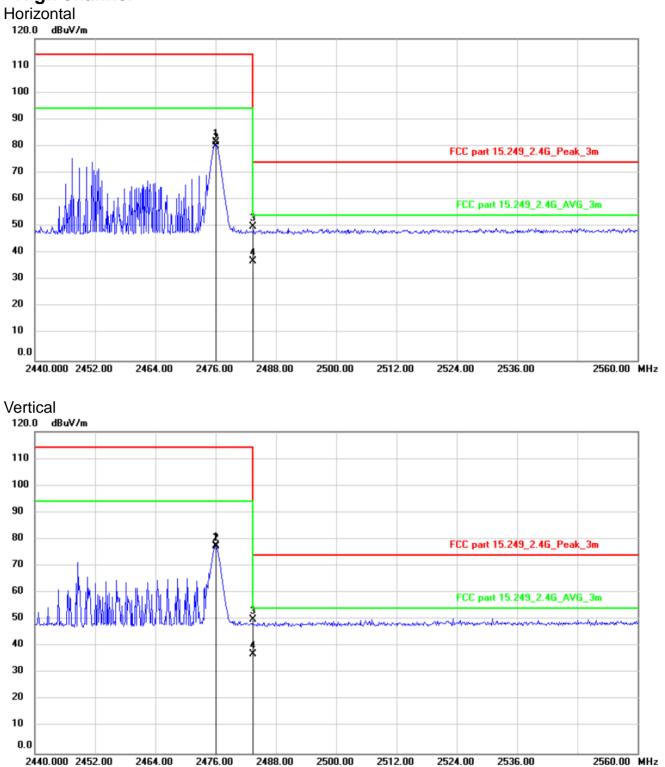


#### Low channel





High channel





### 7. Antenna requirement

#### 7.1 Measurement Procedure

According to of FCC part 15C section 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. 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.

Systems operating in the 2400-2483.5MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

#### 7.2 Measurement Results

The antenna is PCB antenna and no consideration of replacement, and the best case gain of the antenna is -1.0dBi. So, the antenna is consider meet the requirement.



# 8. Test Equipment List

Description	Manufacturer	Model Number	Serial Number	Characteristics	Calibration Date	Calibration Due Date
Test Receiver	Rohde & Schwarz	ESCI7	100837	9KHz~7GHz	Mar. 13, 2020	1 Year
Antenna	Schwarzbeck	VULB9162	9162-010	30MHz~7GHz	Mar. 23, 2019	1 Year
Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	20Hz~26.5GHz	Mar. 13, 2020	1 Year
Spectrum Analyzer	Keysight	N9020A	MY54200831	20Hz~26.5GHz	Apr. 24, 2019	1 Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	101003	10Hz~40GHz	Apr. 24, 2019	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-372	15GHz~40GHz	Mar. 23, 2019	1 Year
Pre-Amplifier	EMCI	EMC 184045	980102	18GHz~40GHz	Apr. 24, 2019	1 Year
Power Sensor	DARE	RPR3006W	15I00041SN 064	100MHz~6GHz	Mar. 13, 2020	1 Year
Communication Tester	Rohde & Schwarz	CMW500	149004	70MHz~6GHz	Mar. 13, 2020	1 Year
Horn Antenna	COM-Power	AH-118	071078	500MHz~18GHz	Mar. 23, 2019	1 Year
Pre-Amplifier	HP	HP 8449B	3008A00964	1GHz~26.5GHz	Mar. 13, 2020	1 Year
Pre-Amplifier	HP	HP 8447D	1145A00203	100KHz~1.3GHz	Mar. 13, 2020	1 Year
Loop Antenna	Schwarzbeck	FMZB 1513	1513-272	9KHz~30MHz	Apr. 24, 2019	1 Year
Temperature & Humidity Chamber	REMAFEE	SYHR225L	N/A	<b>-40~150°</b> ℃	Apr. 24, 2019	1 Year
DC Source	MY	MY8811	N/A	0~30V	N/A	N/A
Temporary antenna connector	TESCOM	SS402	N/A	9KHz~25GHz	N/A	N/A
Power Meter	Anritsu	ML2495A	1139001	100k-65GHz	Apr. 24, 2019	1 Year
Power Sensor	Anritsu	MA2411B	100345	300M-40GHz	Apr. 24, 2019	1 Year
Test Receiver	Rohde & Schwarz	ESCI	101152	9KHz-3GHz	Mar. 14, 2020	1 Year
L.I.S.N	Rohde & Schwarz	ENV 216	101317	9KHz-30MHz	Mar. 14, 2020	1 Year
RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	9KHz-3GHz	Mar.14, 2020	1 Year
Test Software	EZ	EZ_EMC	N/A	N/A	N/A	N/A

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.