

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	Acrox Technologies Co., Ltd.
Address	: 4F., No.89, Minshan St., Neihu Dist., Taipei City 114, Taiwan
Manufacturer /Factory	: Acrox Technologies Co., Ltd.
Address	: Hsinmin Industrial, Changan Town, Dongguan City, Guangdong, China
E.U.T.	Compact Ergonomic Wireless Mouse with Fast Scrolling
Brand Name	: Acrox,AmazonBasics
Model No.	GP7, GP7-BK ,GP7-RD ,GP7-BL, GP7-SL ,GP7-PU (For model difference refer to section 1)
FCC ID	: PRDMU61
Measurement Standard	: FCC PART 15.249: 2017
Date of Receiver	: January 12, 2018
Date of Test	: January 12, 2018 to January 22, 2018
Date of Report	: January 22, 2018
This Test Report is Issu	ed Under the Authority of :
Prepa	Approverse Authorized Signer
Sno	hu

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
NTC1801088FV00	Initial Issue	2018-01-22



1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test

Product Name	:	Compact Ergonomic Wireless Mouse with Fast Scrolling
Main model number	:	GP7
Additional Model number	:	GP7-BK ,GP7-RD ,GP7-BL, GP7-SL ,GP7-PU
Description of model difference	:	These models have the same circuit schematic, construction, PCB Layout and critical components. Their difference in model number and brand name due to trading purpose.
Brand Name	:	Acrox, Amazon Basics
Power Supply	:	DC 1.5V From AA battery
Test voltage	:	DC 1.5V From AA battery
Hardware version	:	A0
Software version	:	A0
Note	:	All the tests performed on model GP7.

Technical Specification:

2.4G Function:

Frequency Range	: 2408~2474MHz	
Modulation Type	: GFSK	
Number of Channel	: 34	
Channel Space	: 2MHz	
Antenna Type	: PCB	
Antenna Gain	: -1 dBi (Declaration by manufacturer)	



	Channel List:									
Channel	Frequency MHz	Channel	Frequency MHz	Channel	Frequency MHz					
1	2408	13	2432	25	2456					
2	2410	14	2434	26	2458					
3	2412	15	2436	27	2460					
4	2414	16	2438	28	2462					
5	2416	17	2440	29	2464					
6	2418	18	2442	30	2466					
7	2420	19	2444	31	2468					
8	2422	20	2446	32	2470					
9	2424	21	2448	33	2472					
10	2426	22	2450	34	2474					
11	2428	23	2452							
12	2430	24	2454							

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

The Lowest frequency: 2408MHz The middle frequency: 2440MHz The Highest frequency: 2474MHz



1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **PRDMU61** filing to comply with Section 15.249 of the FCC Part 15 (2017), Subpart C Rule.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were 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 Support Device

N/A



1.6 Test Facility and Location

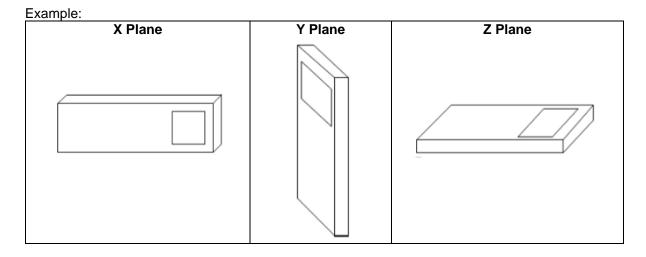
Site Des	cription		
EMC	Lab	:	Listed by CNAS, August 14, 2015 The certificate is valid until August 13, 2018 The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 The Certificate Registration Number is L5795.
			Listed by A2LA, November 01, 2017 The certificate is valid until December 31, 2019 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
Name of	Firm	:	Listed by Industry Canada, June 08, 2017 The Certificate Registration Number. Is 46405-9743 Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Site Loc	ation	:	Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan City, Guangdong Province, China



1.7 Summary of Test Results

FCC Rules	Description Of Test	Uncertainty	Result
§15.207(a)	AC Power Conducted Emission	±1.06dB	Not Applicable
§15.249(a)/ 15.209	Radiated Emissions	±3.70dB	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		Compliant

- Note: 1. The EUT has been tested as an independent unit. And Continual transmitting in maximum power (The new battery be used during test)
 - 2. Due to this EUT is powered by battery only, the AC Power Conducted Emission is not applicable.
 - 3. The EUT powered by battery and operating multiple positions, so the EUT shall be performed two or three orthogonal planes. The worst plane is Z.





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.

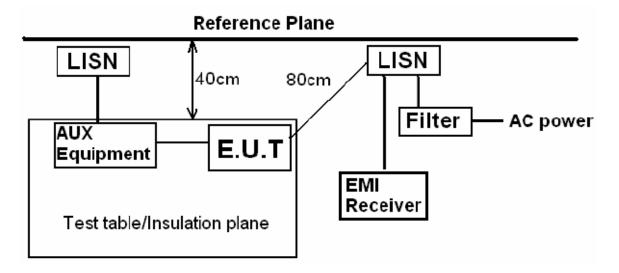
2.4 EUT Exercise

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

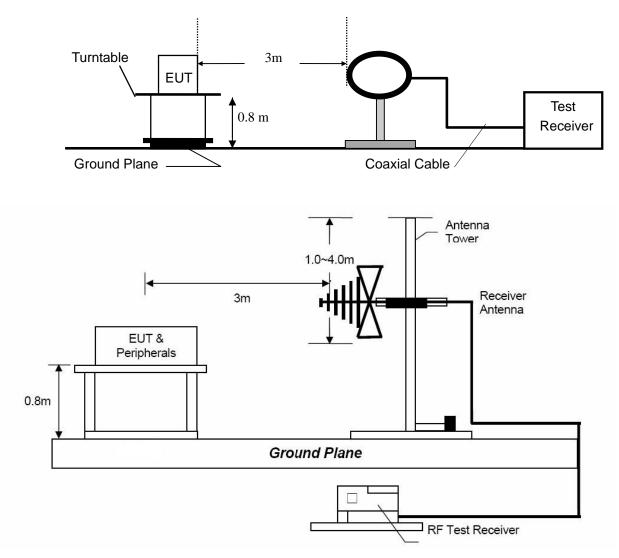
Not Applicable.



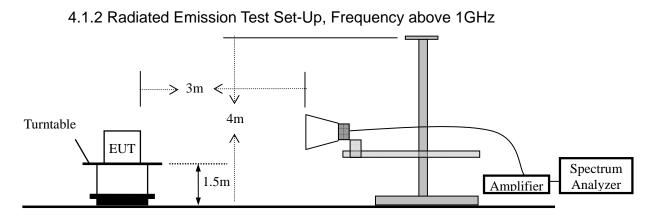
4. Radiated Emission Test

4.1 Test SET-UP (Block Diagram of Configuration)

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







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 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		
	Average	1 MHz	10 Hz		

4.3 Limit

Frequency range	requency range Distance Meters Field Strengths Limit (15.20					
MHz		μV/m				
0.009 ~ 0.490	300	2400/F	(kHz)			
0.490 ~ 1.705	30	24000/	F(kHz)			
1.705 ~ 30	30	30)			
30 ~ 88	3	10	0			
88 ~ 216	3	150				
216 ~ 960	3	200				
Above 960	3	500				
Frequency range	Distance Meters	Field Strengths	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) μ V = 20 log Emission level μ 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.

(5) \$15.247(d) specifies that emissions which fall in the restricted bands, as defined

in §15.205 comply with radiated emission limits specified in §15.209.

(6) Sample of data calculate:

- Level=Reading + Factor; Margin= Level-Limit
 - Factor=CF+AF+AG

Where CF=Cable attenuation factor in dB AF= Antenna factor in dB

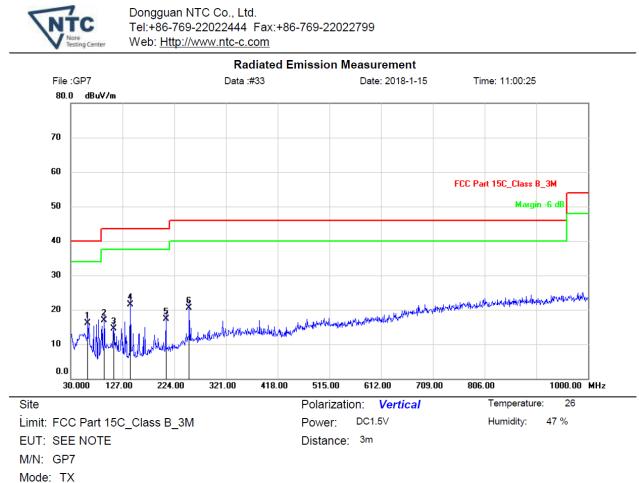
AG=Amplifier Gain in dB



4.4 Measurement Results

Please refer to following the test plots of the worst case: High channel.



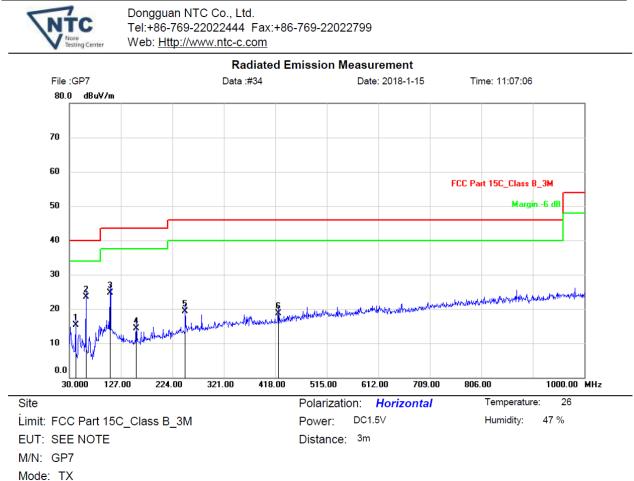


Note: Compact Ergonomic Wireless Mouse with Fast Scrolling

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		62.0100	30.94	-14.84	16.10	40.00	-23.90	QP			
2		93.0500	33.12	-16.22	16.90	43.50	-26.60	QP			
3		110.5100	30.66	-16.16	14.50	43.50	-29.00	QP			
4	*	141.5500	40.19	-18.59	21.60	43.50	-21.90	QP			
5		208.4800	33.68	-16.28	17.40	43.50	-26.10	QP			
6		252.1300	34.23	-13.63	20.60	46.00	-25.40	QP			

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





Note: Compact Ergonomic Wireless Mouse with Fast Scrolling

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		41.6400	34.96	-19.66	15.30	40.00	-24.70	QP			
2	*	61.0400	42.11	-18.61	23.50	40.00	-16.50	QP			
3		106.6300	36.97	-12.17	24.80	43.50	-18.70	QP			
4		156.1000	29.62	-15.32	14.30	43.50	-29.20	QP			
5		248.2500	31.16	-11.76	19.40	46.00	-26.60	QP			
6		423.8200	27.25	-8.55	18.70	46.00	-27.30	QP			

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



								V	Testing Cente	er	
Frequency Range:			1-25GH	1-25GHz Test Date :			January 17, 2018				
Test Result:			PASS	ASS Temperature :		21 ℃					
Mea	Measured Distance:		3m		Humi	dity :	55	%			
Test By:			Sance								
Frag	Ant Do	Rea	ding	Fastar	Emissio	Emission Level		Limit 3m		Margin	
Freq.	Ant.Po	· Level((dBuV)	Factor	(dBuV)		(dBuV/m)		(dB)		
(MHz)	(H/V)	PK	AV	(dB/m)	PK	AV	PK	AV	PK	AV	
			Ope	ration M	ode: TX N	Node (Lo	w)				
2408	V	85.31	59.20	0.15	85.46	*	114.00	94.00	-28.54	*	
4816	V	51.05	36.41	6.36	57.41	42.77	74.00	54.00	-16.59	-11.23	
7224	V	47.03	32.22	10.46	57.49	42.68	74.00	54.00	-16.51	-11.32	
2408	Н	92.92	63.30	0.15	93.07	*	114.00	94.00	-20.93	*	
4816	Н	55.52	39.37	6.36	61.88	45.73	74.00	54.00	-12.12	-8.27	
7224	Н	46.36	32.07	10.46	56.82	42.53	74.00	54.00	-17.18	-11.47	
			Ope	ration M	ode: TX I	Mode (M	id)		1		
2440	V	86.44	59.15	0.23	86.67	*	114.00	94.00	-27.33	*	
4880	V	49.64	35.26	6.60	56.24	41.86	74.00	54.00	-17.76	-12.14	
7320	V	47.18	32.09	10.55	57.73	42.64	74.00	54.00	-16.27	-11.36	
2440	Н	91.45	61.12	0.23	91.68	*	114.00	94.00	-22.32	*	
4880	Н	54.52	39.16	6.60	61.12	45.76	74.00	54.00	-12.88	-8.24	
7320	Н	46.90	31.78	10.55	57.45	42.33	74.00	54.00	-16.55	-11.67	
			Ope	ration Mo	ode: TX N	lode (Hi	gh)		1		
2474	V	85.31	59.20	0.15	85.46	*	114.00	94.00	-28.54	*	
4948	V	51.05	36.41	6.36	57.41	42.77	74.00	54.00	-16.59	-11.26	
7422	V	47.03	32.22	10.46	57.49	42.68	74.00	54.00	-16.51	-11.32	
2474	Н	93.20	64.29	0.33	93.53	*	114.00	94.00	-20.47	*	
4948	Н	54.67	38.68	6.85	61.52	45.53	74.00	54.00	-12.48	-8.47	
7422	H	45.78	32.37	10.59	56.37	42.96	74.00	54.00	-17.63	-11.04	
		Deedinger	Deals)	/aluca anal				l		ا	

Note: (1) All Readings are Peak Value and AV.

(2) Emission Level= Reading Level + Factor

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

(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.

(5) Measurement uncertainty : ±3.7dB.

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

(7)*Due to the highest Peak emission level below AVG limit, therefore, the AVG emission level is deemed to meet the requirements, no AVG result record.



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			
201	opeen ann Analyzei			

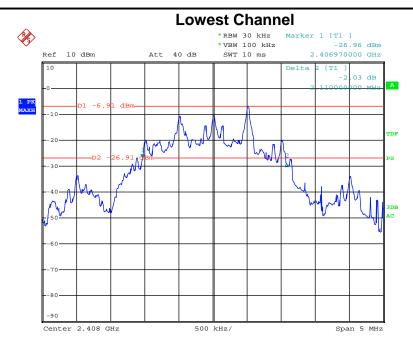
5.3 Measurement Results

Refer to attached data chart.

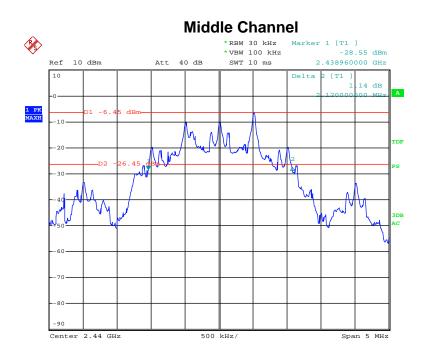
RBW:	30KHz	VBW:	100KHz
Spectrum Detector:	PK	Temperature :	22 °C
Test By:	Sance	Humidity :	54 %
Test Result:	PASS	Test Date :	January 17, 2018

Channel frequency (MHz)	20dB Down BW(kHz)			
2408	2110			
2440	2120			
2474	2120			



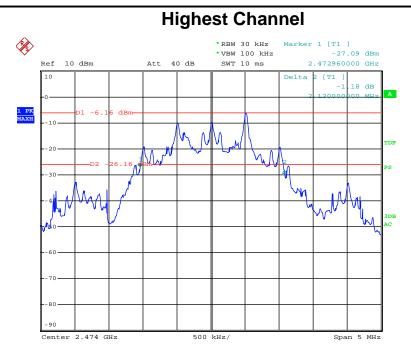


Date: 17.JAN.2018 15:46:30



Date: 17.JAN.2018 15:30:11





Date: 17.JAN.2018 15:34:37



6. Band Edge

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 :	January 17, 2018
Temperature :	21 ℃	Humidity :	55 %
Test Result:	PASS	Test By:	Sance
Measured Distance:	3m		

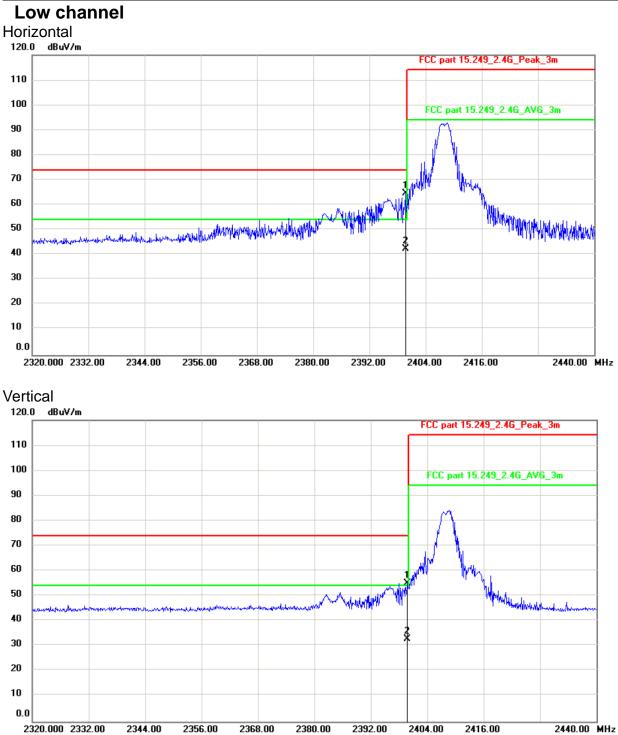
Freq.	Ant.Pol. (H/V)	Reading Level(dBuV)		Factor	Emission Level (dBuV)		Limit 3m (dBuV/m)		Margin (dB)	
(MHz)		PK	AV	(dB/m)	PK	AV	PK	AV	PK	AV
2399.680	Н	64.39	42.26	0.13	64.52	42.39	74.00	54.00	-9.48	-11.61
2399.800	V	54.87	32.60	0.13	55.00	32.73	74.00	54.00	-19.00	-21.27
2484.160	H	62.22	38.20	0.36	62.58	39.16	74.00	54.00	-11.42	-14.84
2483.680	V	54.25	33.48	0.35	54.60	33.83	74.00	54.00	-19.40	-20.17

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

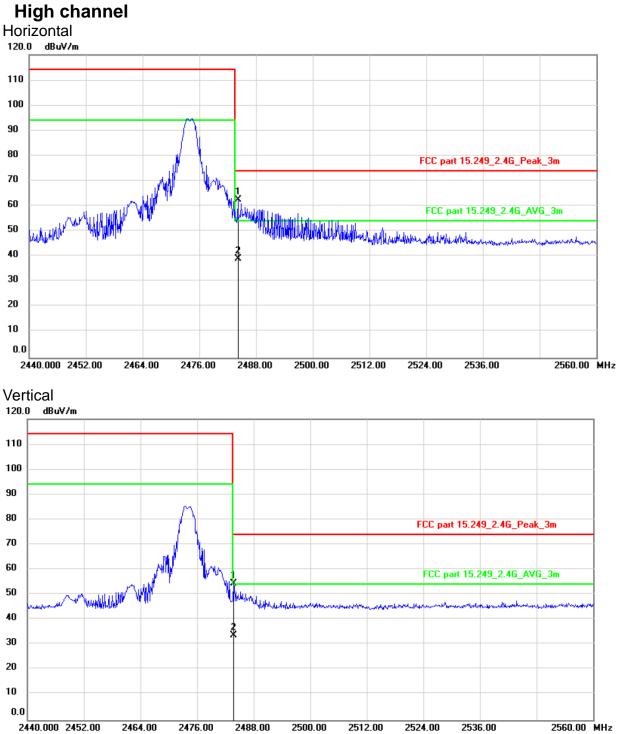
(2) Factor= Antenna Gain + Cable Loss – Amplifier Gain

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











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 -1dBi. 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. 14, 2017	Mar. 13, 2018
Antenna	Schwarzbeck	VULB9162	9162-010	30MHz~7GHz	Mar. 15, 2017	Mar. 14, 2018
Cable	Huber+Suhner	CBL2-NN-1M	22390001	9KHz~7GHz	Mar. 14, 2017	Mar. 13, 2018
Cable	Huber+Suhner	CIL02	N/A	9KHz~7GHz	Mar. 14, 2017	Mar. 13, 2018
RF Cable	Huber+Suhner	SF-104	MY16559/4	9KHz~25GHz	Apr. 25, 2017	Apr. 25, 2018
Power Amplifier	HP	HP 8447D	1145A00203	100KHz~1.3GHz	Mar. 14, 2017	Mar. 13, 2018
Horn Antenna	Schwarzbeck	BBHA9170	9170-242	15GHz~40GHz	Mar. 14, 2017	Mar. 13, 2018
Horn Antenna	Com-Power	AH-118	071078	1GHz~18GHz	Mar. 15, 2017	Mar. 14, 2018
RF Cable	Huber+Suhner	SF-104	N/A	9KHz~40GHz	Apr. 25, 2017	Apr. 24, 2018
Loop antenna	Daze	ZA30900A	0708	9KHz~30MHz	Apr. 25, 2017	Apr. 24, 2018
Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	20Hz~26.5GHz	Apr. 25, 2017	Apr. 24, 2018
Spectrum Analyzer	Rohde & Schwarz	FSV40	101003	10Hz~40GHz	April. 06, 2017	April. 05, 2018
Pre-Amplifier	EMCI	EMC 184045	980102	18GHz~40GHz	Nov. 04, 2017	Nov. 03, 2018
Pre-Amplifier	Agilent	8449B	3008A02964	1GHz~26.5GHz	Apr. 25, 2017	Apr. 24, 2018
L.I.S.N.	Rohde & Schwarz	ENV 216	101317	9KHz~30MHz	Mar. 14, 2017	Mar. 13, 2018
Temporary antenna connector	TESCOM	SS402	N/A	9KHz-25GHz	N/A	N/A
Power Meter	Anritsu	ML2495A	1139001	100k-65GHz	Nov. 04, 2017	Nov. 03, 2018
Power Sensor	Anritsu	MA2411B	100345	300M-40GHz	Nov. 04, 2017	Nov. 03, 2018
				1	1	

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.