

TEST REPORT

Applicant: FLYSKY RC MODEL TECHNOLOGY CO., LTD
Address of Applicant: West building3, Huangjianyuan Ind, Park QIAOLI North Gate
Changping Town, Dongguan, China
Manufacturer: ShenZhen FLYSKY Technology Co.,Ltd
Address of Manufacturer: 16F, Huafeng Building, No. 6006 Shennan Road, Futian
District, Shenzhen, Guangdong, China
Factory: Dongguan Flysky RC Model technology Co.,Ltd
Address of Factory: West building 3, Huangjinyuan Ind Park, Qiaoli North Gate,
Changping Town, Dongguan, China

Equipment Under Test (EUT)

Product Name: Digital proportional radio control system
Model No.: HW-709, WP-1625-BRUSHED2IN1-FS-Rx
Trade Mark: FLYSKY
FCC ID: N4ZHW-709
Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt: August 04, 2020
Date of Test: August 05-12, 2020
Date of report issued: August 12, 2020
Test Result : PASS *

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

Authorized Signature:

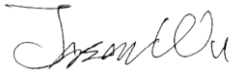


Robinson Lo
Laboratory Manager


This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	August 12, 2020	Original

Prepared By:  **Date:** August 12, 2020

Project Engineer

Check By:  **Date:** August 12, 2020

Reviewer

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4 Test Summary

Test Item	Section	Result
Antenna Requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	N/A
Conducted Peak Output Power	15.247 (b)(1)	Pass
20dB Occupied Bandwidth	15.247 (a)(1)	Pass
Carrier Frequencies Separation	15.247 (a)(1)	Pass
Hopping Channel Number	15.247 (a)(1)	Pass
Dwell Time	15.247 (a)(1)	Pass
Pseudorandom Frequency Hopping Sequence	15.247(b)(4)	Pass
Radiated Emission	15.205/15.209	Pass
Band Edge	15.247(d)	Pass

Pass: The EUT complies with the essential requirements in the standard.

Remark : Test according to ANSI C63.10:2013.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)

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:	Digital proportional radio control system
Model No.:	HW-709, WP-1625-BRUSHED2IN1-FS-Rx
Test Model No:	HW-709
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The only difference is model name for commercial purpose.	
Serial No.:	N/A
Test sample(s) ID:	GTS202008000016-1
Sample(s) Status	Engineer sample
Operation Frequency:	2406MHz~2472MHz
Channel numbers:	23
Modulation technology:	GMSK
Antenna Type:	Integral Antenna
Antenna gain:	2dBi
Power supply:	DC 6V/1A

Operation Frequency each of channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2406	7	2424	13	2442	19	2460
2	2409	8	2427	14	2445	20	2463
3	2412	9	2430	15	2448	21	2466
4	2415	10	2433	16	2451	22	2469
5	2418	11	2436	17	2454	23	2472
6	2421	12	2439	18	2457		

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	2406MHz
The middle channel	2439MHz
The Highest channel	2472MHz

5.2 Test mode

Transmitting mode	Keep the EUT in 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.	

5.3 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> ● FCC —Registration No.: 381383 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. Registration 381383. ● IC —Registration No.: 9079A 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 with Registration No.: 9079A ● NVLAP (LAB CODE:600179-0) Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.4 Test Location

All other tests were performed at:
<p>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</p>

5.5 Description of Support Units

Manufacturer	Description	Model	Serial Number
ShenZhen FLYSKY Technology Co.,Ltd	Remote control	F6S	N/A
MEILI	DC POWER SUPPLY	MCH-305A	011121168

5.6 Deviation from Standards

None.

5.7 Abnormalities from Standard Conditions

None.

5.8 Additional Instructions

Software (Used for test) from client
Built-in by manufacturer, power set default.

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	June. 25 2020	June. 24 2021
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 25 2020	June. 24 2021
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 25 2020	June. 24 2021
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 25 2020	June. 24 2021
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 25 2020	June. 24 2021
9	Coaxial Cable	GTS	N/A	GTS211	June. 25 2020	June. 24 2021
10	Coaxial cable	GTS	N/A	GTS210	June. 25 2020	June. 24 2021
11	Coaxial Cable	GTS	N/A	GTS212	June. 25 2020	June. 24 2021
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 25 2020	June. 24 2021
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 25 2020	June. 24 2021
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 25 2020	June. 24 2021
15	Band filter	Amindeon	82346	GTS219	June. 25 2020	June. 24 2021
16	Power Meter	Anritsu	ML2495A	GTS540	June. 25 2020	June. 24 2021
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 25 2020	June. 24 2021
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 25 2020	June. 24 2021
19	Splitter	Agilent	11636B	GTS237	June. 25 2020	June. 24 2021
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 25 2020	June. 24 2021
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 19 2019	Oct. 18 2020
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 19 2019	Oct. 18 2020
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 19 2019	Oct. 18 2020
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 25 2020	June. 24 2021

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	June. 25 2020	June. 24 2021
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 25 2020	June. 24 2021
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 25 2020	June. 24 2021
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 25 2020	June. 24 2021
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 25 2020	June. 24 2021
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 25 2020	June. 24 2021
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 25 2020	June. 24 2021

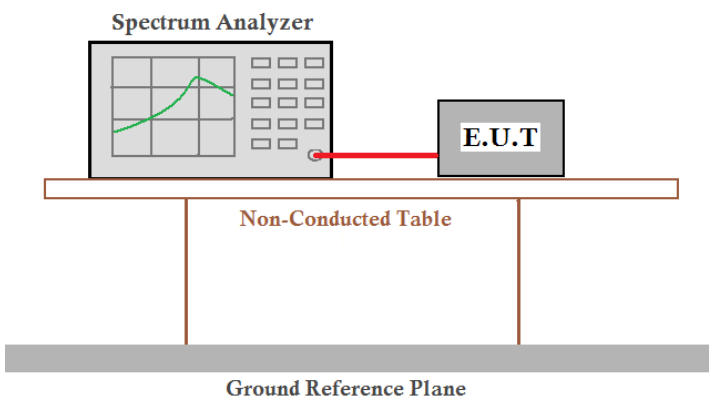
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 25 2020	June. 24 2021
2	Barometer	ChangChun	DYM3	GTS255	June. 25 2020	June. 24 2021

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
<p>15.203 requirement:</p> <p>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.</p> <p>15.247(c) (1)(i) requirement:</p> <p>(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</p>	
EUT Antenna:	
<p><i>The antenna is integral antenna, the best case gain of the antenna is 2dBi, reference to the appendix II for details.</i></p>	

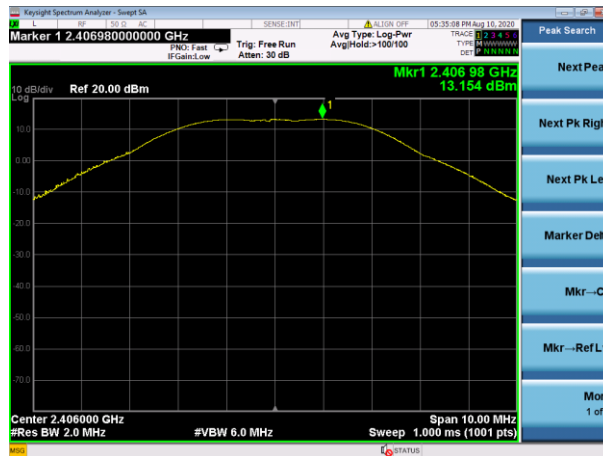
7.2 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(1)
Test Method:	ANSI C63.10:2013
Limit:	20.97dBm
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

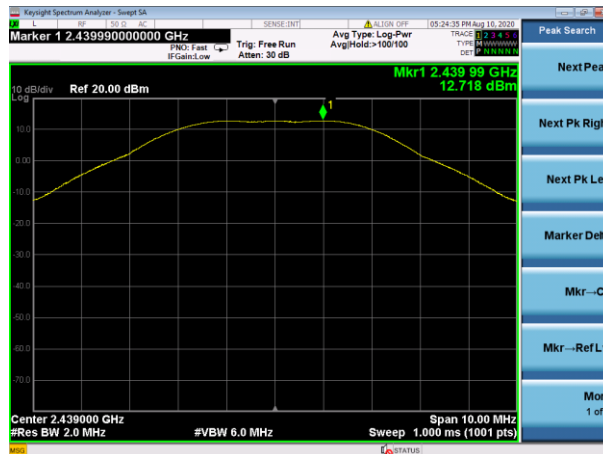
Measurement Data

Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	13.154	20.97	Pass
Middle	12.718		
Highest	12.265		

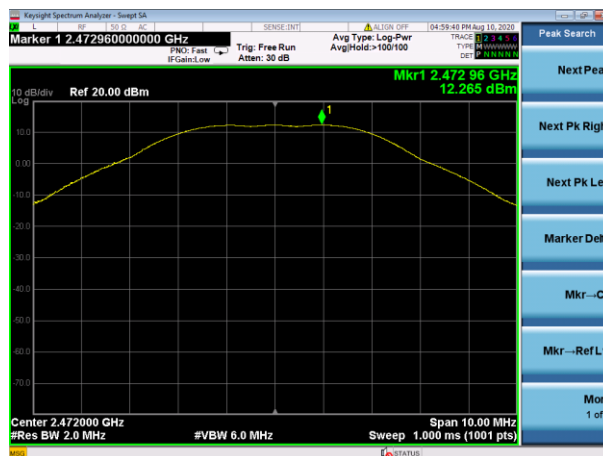
Test plot as follows:



Lowest channel

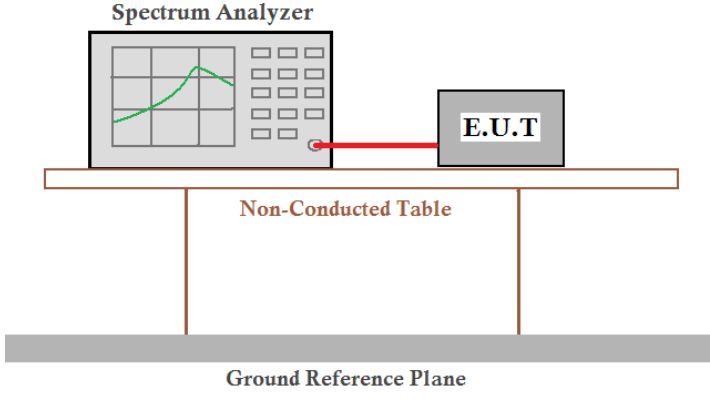


Middle channel



Highest channel

7.3 20dB Emission Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Limit:	N/A
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

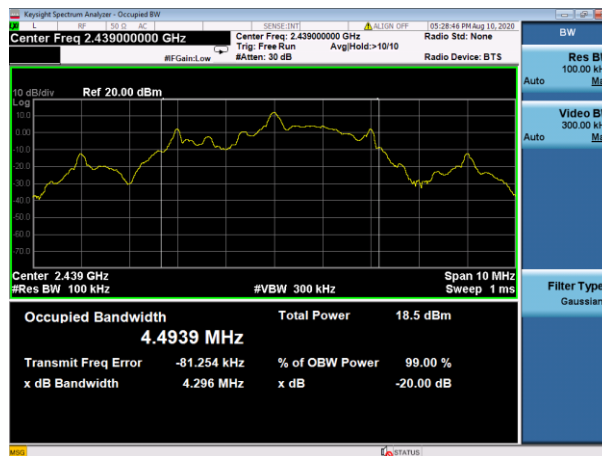
Measurement Data

Test channel	20dB Emission Bandwidth (MHz)	Result
Lowest	4.301	Pass
Middle	4.296	
Highest	4.404	

Test plot as follows:



Lowest channel

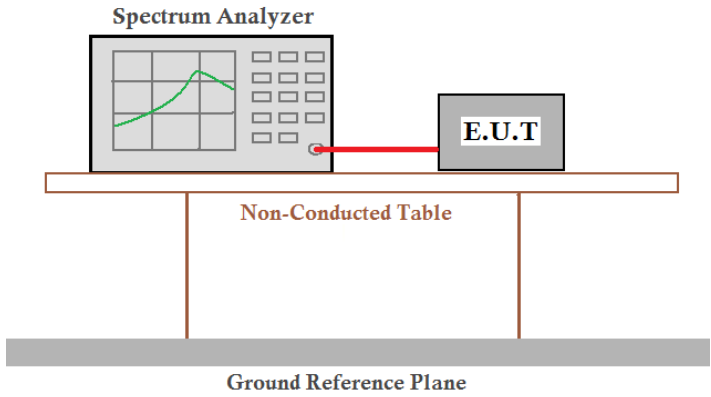


Middle channel



Highest channel

7.4 Carrier Frequencies Separation

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100KHz, VBW=300KHz, detector=Peak
Limit:	0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

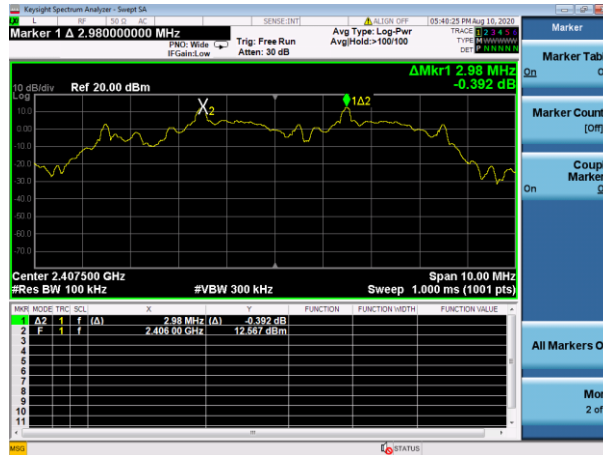
Measurement Data

Test channel	Carrier Frequencies Separation (kHz)	Limit (kHz)	Result
Lowest	2980	2936	Pass
Middle	3010	2936	Pass
Highest	3010	2936	Pass

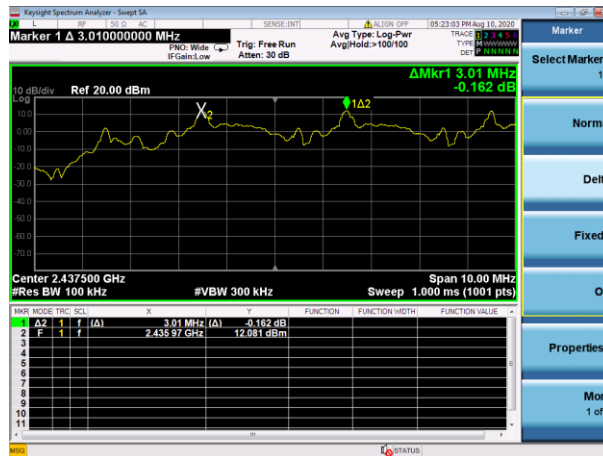
Note: According to section 7.3

Mode	20dB bandwidth (kHz) (worse case)	Limit (kHz) (Carrier Frequencies Separation)
GMSK	4404	2936

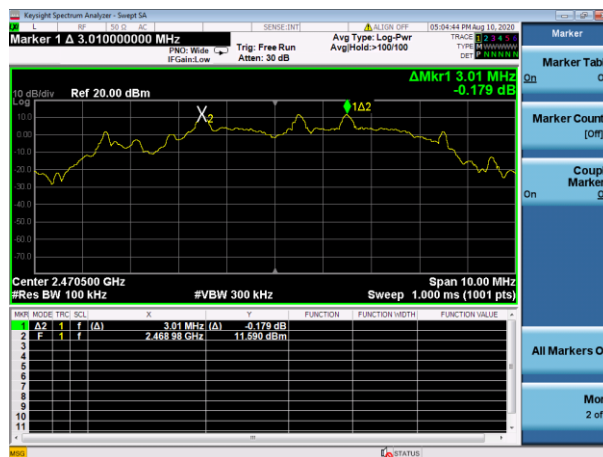
Test plot as follows:



Lowest channel

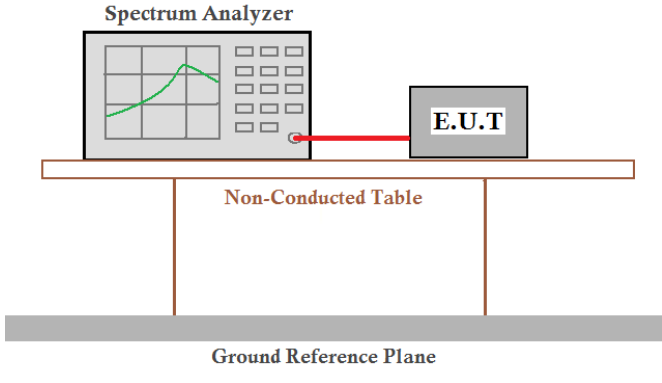


Middle channel



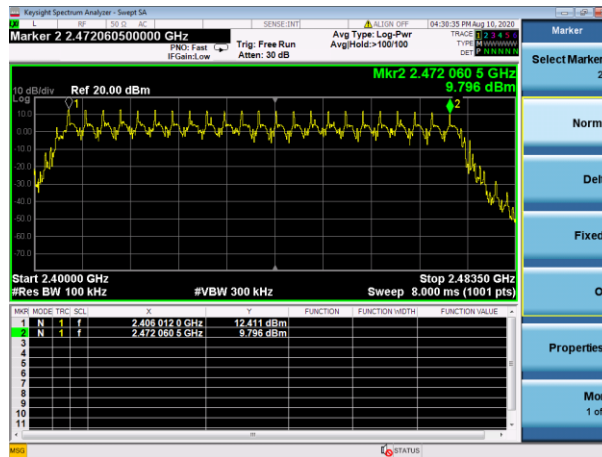
Highest channel

7.5 Hopping Channel Number

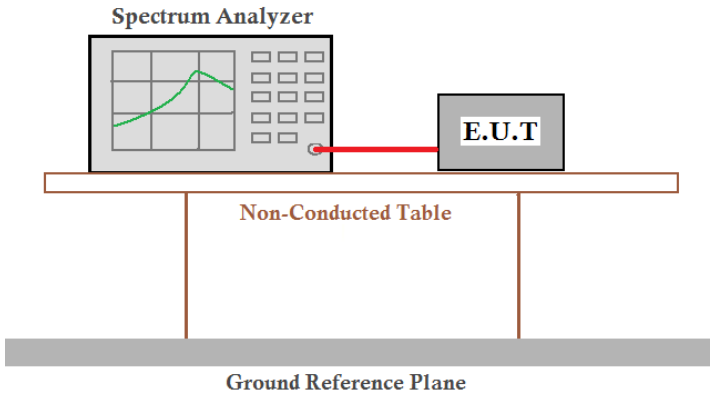
Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100kHz, VBW=300kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak
Limit:	15 channels
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. The table is supported by two legs and sits on a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data:

Hopping channel numbers	Limit	Result
23	15	Pass



7.6 Dwell Time

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=1MHz, VBW=1MHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Frequency(MHz)	Ton (ms)	Dwell time(ms)	Limit(ms)	Result
2406	3.920	108.192	400	Pass
2439	3.920	108.192	400	Pass
2472	3.920	108.192	400	Pass

The formula as below:

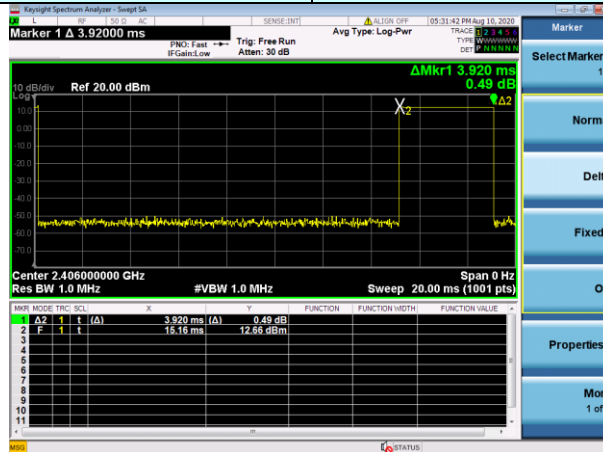
2402.15MHz: Dwell time = Ton * Ton times in 1s * 0.4s * channel numbers=3.920ms*3*0.4*23=108.192ms

2440.40MHz: Dwell time = Ton * Ton times in 1s * 0.4s * channel numbers=3.920ms*3*0.4*23=108.192ms

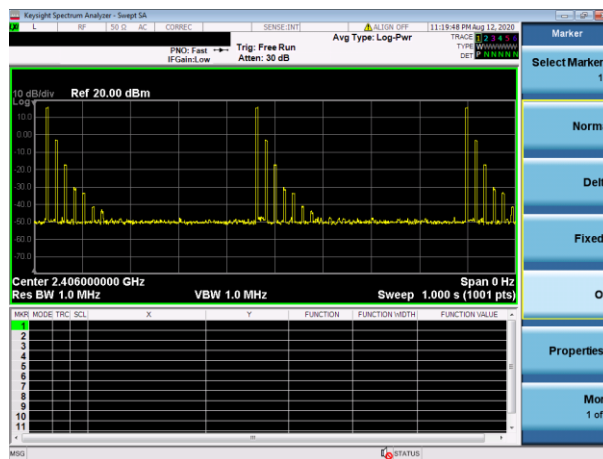
2479.85MHz: Dwell time = Ton * Ton times in 1s * 0.4s * channel numbers=3.920ms*3*0.4*23=108.192ms

Test plot as follows:

Frequency:	2406MHz
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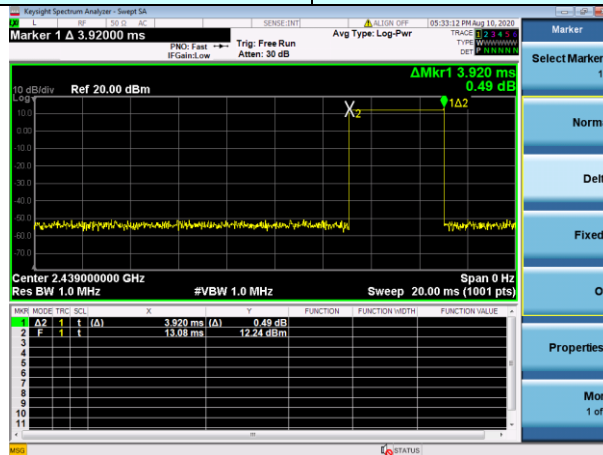


Ton

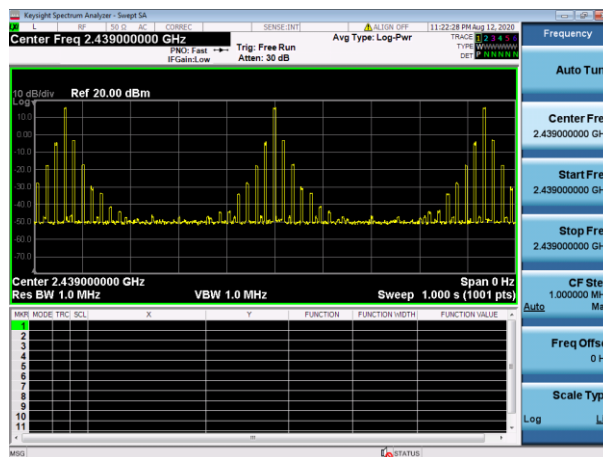


Ton times in 1s

Frequency: 2439MHz

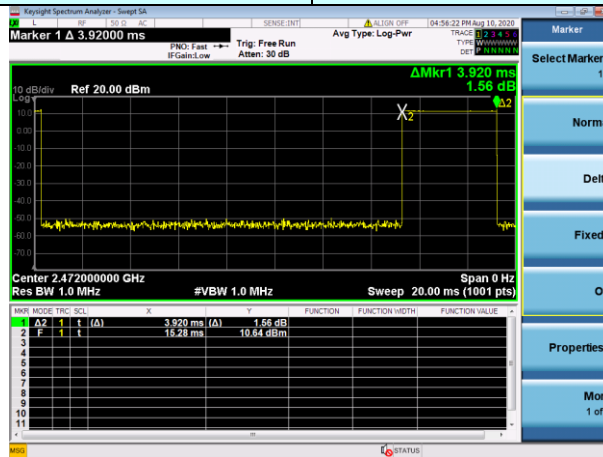


Ton

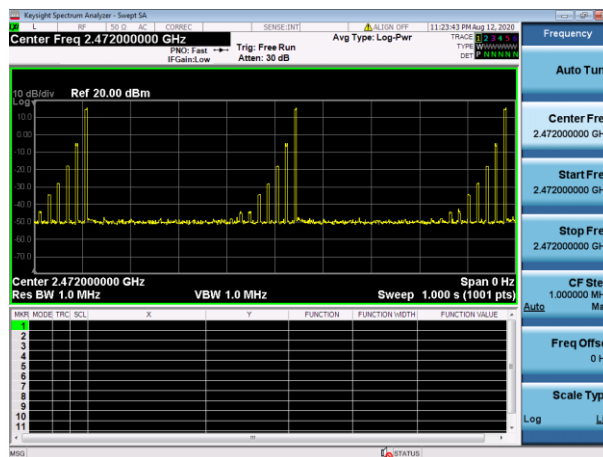


Ton times in 1s

Frequency: 2472MHz



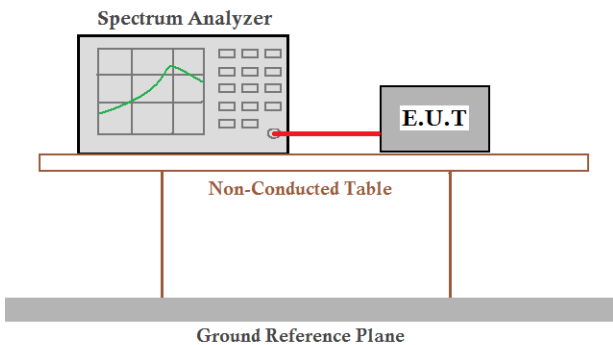
Ton



Ton times in 1s

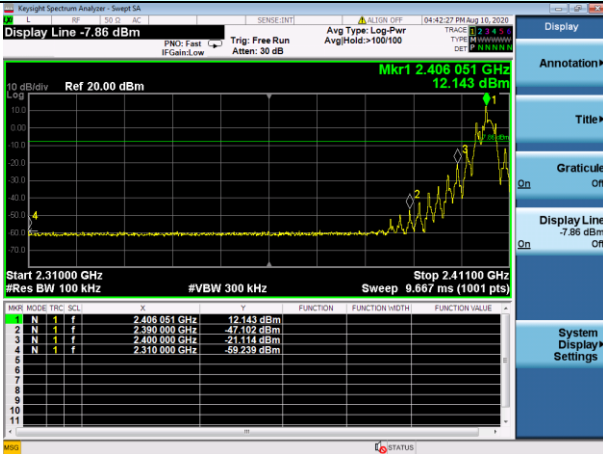
7.7 Band Edge

7.7.1 Conducted Emission Method

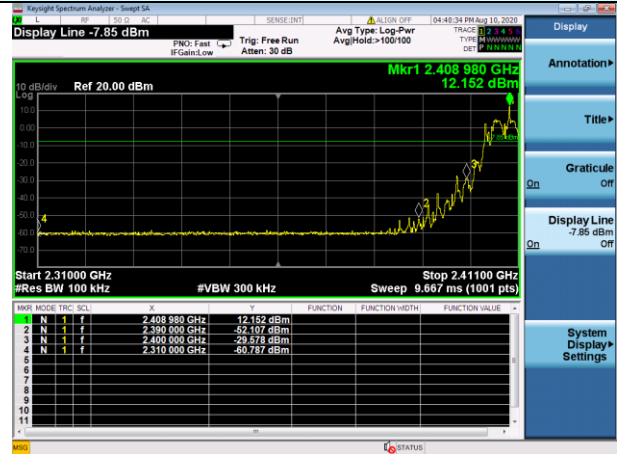
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100kHz, VBW=300kHz, Detector=Peak
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by 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:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

Test channel: Lowest channel

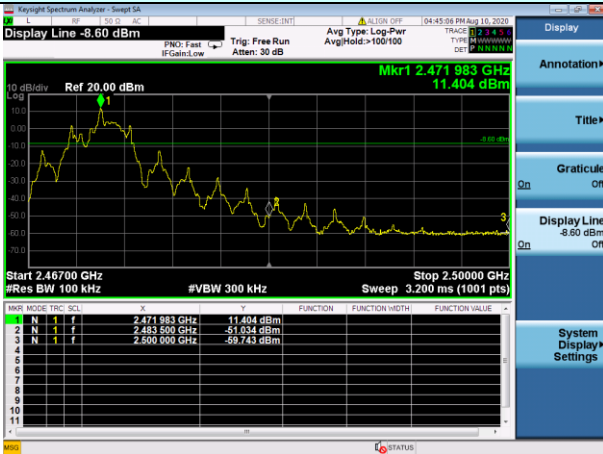


No-hopping mode

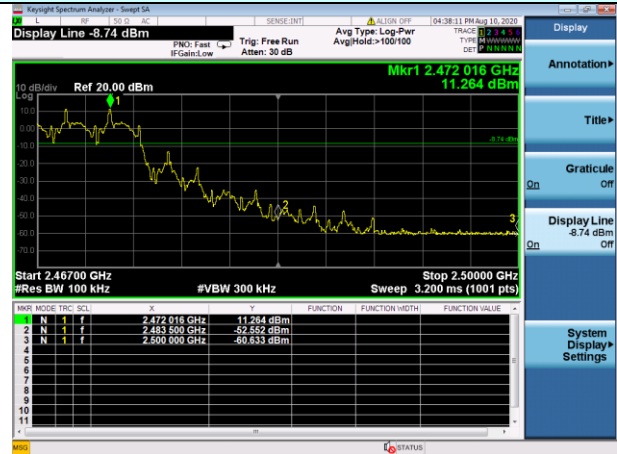


Hopping mode

Test channel: Highest channel

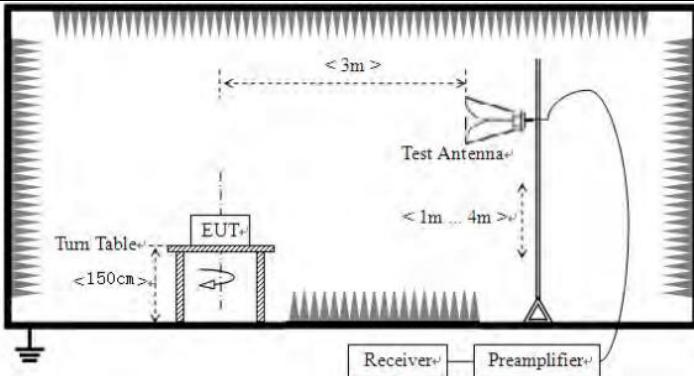


No-hopping mode



Hopping mode

7.7.2 Radiated Emission Method

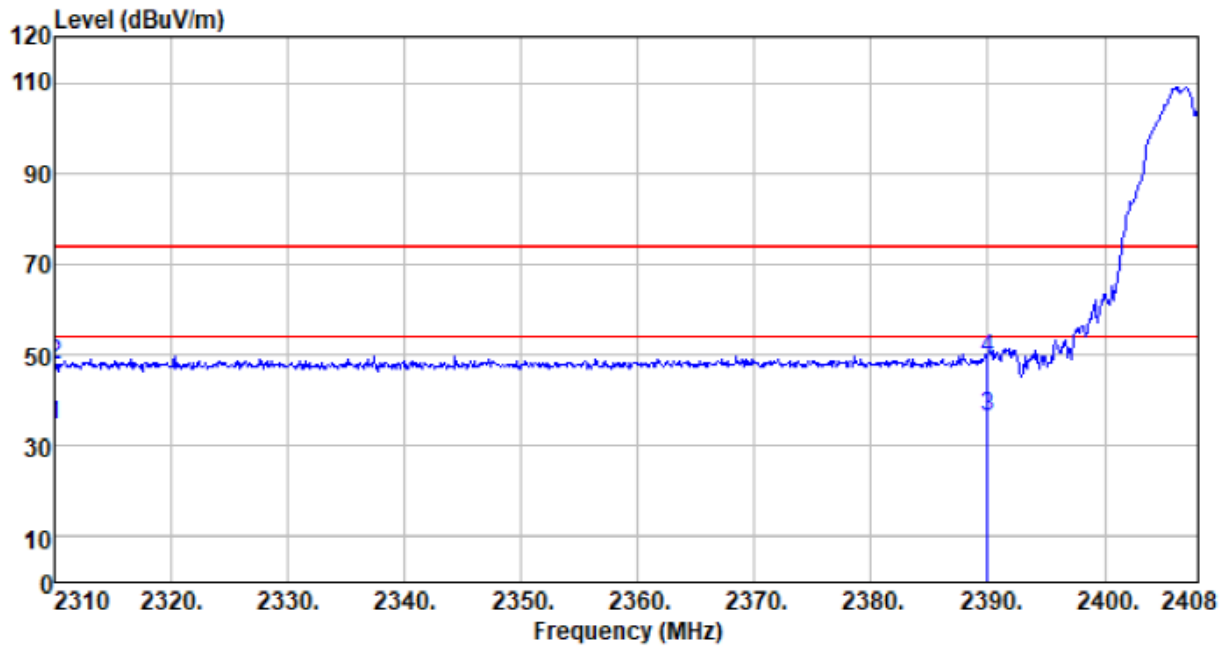
Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	Above 1GHz		54.00		Average Value
			74.00		Peak Value
Test setup:					
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 1.5 meters 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				
Temp. / Hum.	Temp.:	25 °C	Humid.:	52%	Press.: 1 012mbar
Test results:	Pass				

Measurement Data

Remark:

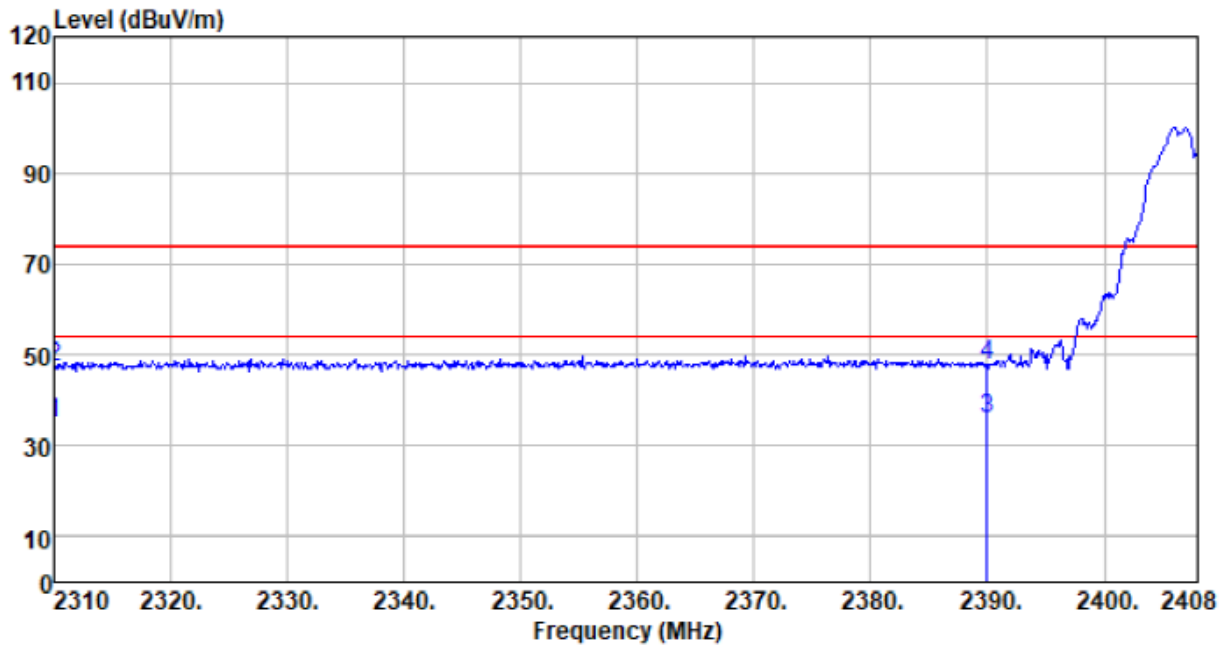
1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

Test channel:	Lowest	Polarization:	Vertical
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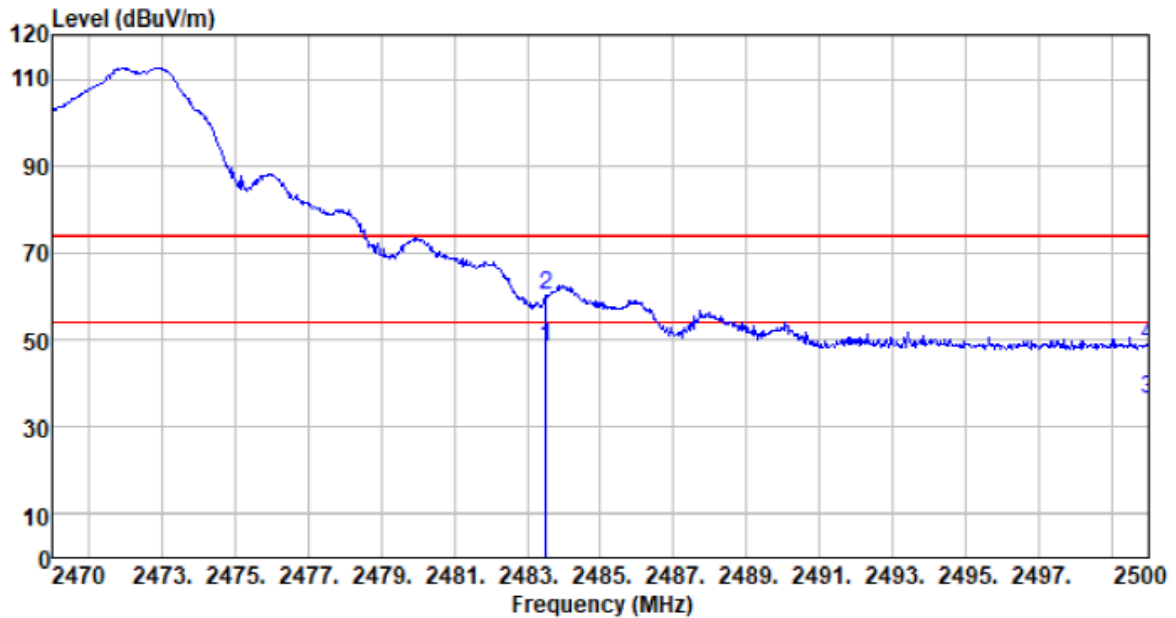
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	35.03	27.14	2.81	30.43	34.55	54.00	-19.45	Average
2310.000	48.35	27.14	2.81	30.43	47.87	74.00	-26.13	Peak
2390.000	36.21	27.37	2.91	30.24	36.25	54.00	-17.75	Average
2390.000	49.24	27.37	2.91	30.24	49.28	74.00	-24.72	Peak

Test channel:	Lowest	Polarization:	Horizontal
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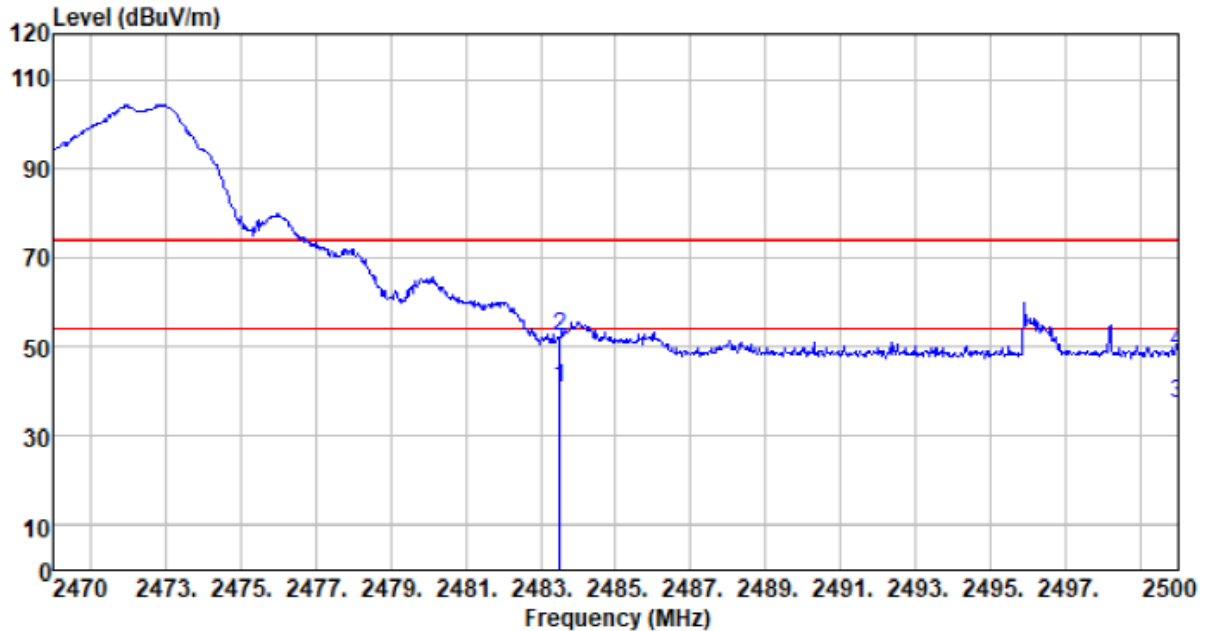
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	35.62	27.14	2.81	30.43	35.14	54.00	-18.86	Average
2310.000	47.74	27.14	2.81	30.43	47.26	74.00	-26.74	Peak
2390.000	35.61	27.37	2.91	30.24	35.65	54.00	-18.35	Average
2390.000	47.73	27.37	2.91	30.24	47.77	74.00	-26.23	Peak

Test channel:	Highest	Polarization:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2483.500	47.65	27.66	2.99	30.12	48.18	54.00	-5.82	Average
2483.500	59.85	27.66	2.99	30.12	60.38	74.00	-13.62	Peak
2500.000	35.69	27.70	3.01	30.13	36.27	54.00	-17.73	Average
2500.000	48.00	27.70	3.01	30.13	48.58	74.00	-25.42	Peak

Test channel:	Highest	Polarization:	Horizontal
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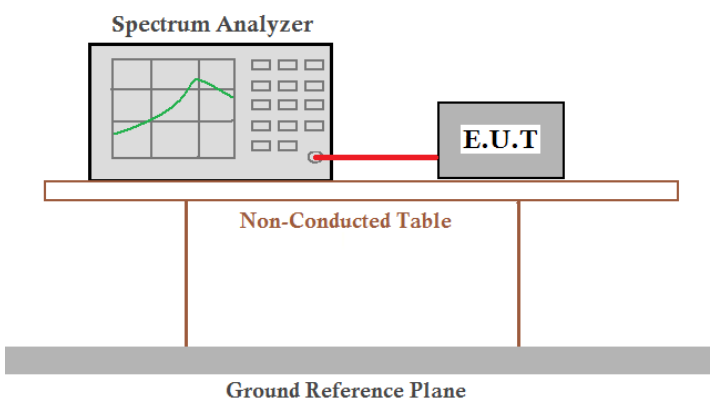
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2483.500	40.22	27.66	2.99	30.12	40.75	54.00	-13.25	Average
2483.500	51.86	27.66	2.99	30.12	52.39	74.00	-21.61	Peak
2500.000	36.65	27.70	3.01	30.13	37.23	54.00	-16.77	Average
2500.000	48.32	27.70	3.01	30.13	48.90	74.00	-25.10	Peak

Remark:

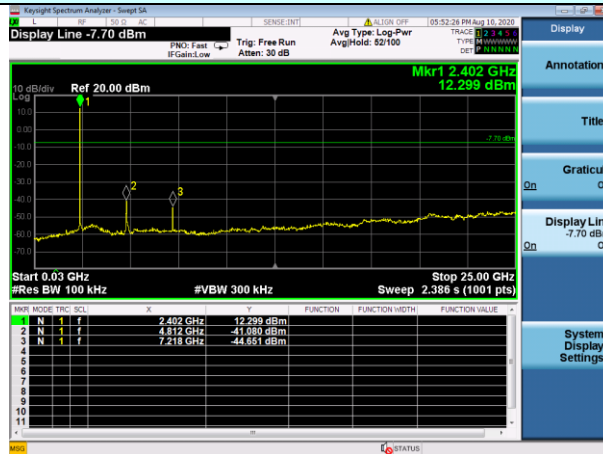
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

7.8 Spurious Emission

7.8.1 Conducted Emission Method

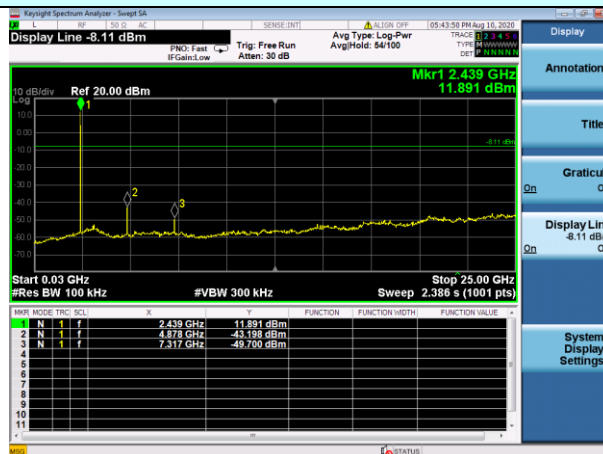
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below 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:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two legs. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Lowest channel



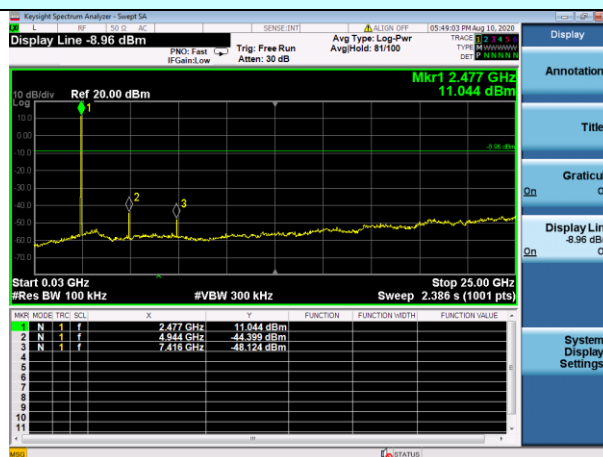
30MHz~25GHz

Middle channel



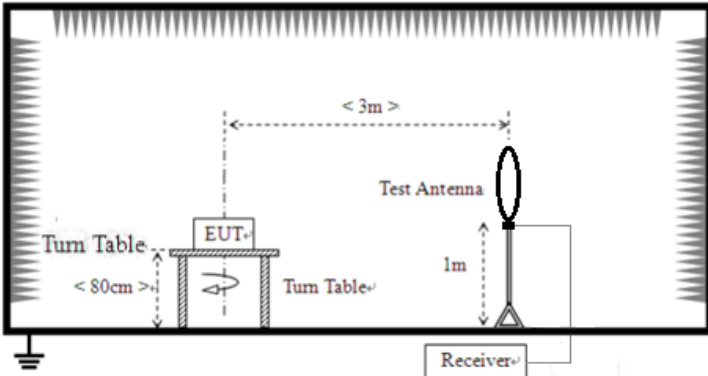
30MHz~25GHz

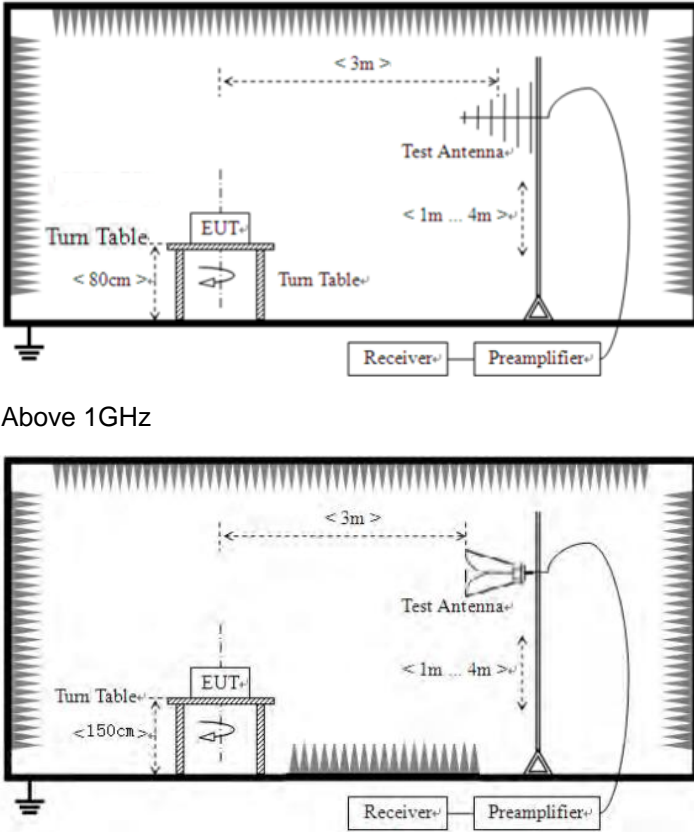
Highest channel



30MHz~25GHz

7.8.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
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: (Spurious Emissions)	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:	Below 30MHz				
	 <p>Below 1GHz</p>				

	 <p>Above 1GHz</p>						
<p>Test Procedure:</p>	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table (0.8 meters for below 1GHz and 1.5meters for above 1GHz) 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. 						
<p>Test Instruments:</p>	<p>Refer to section 5.8 for details</p>						
<p>Test mode:</p>	<p>Refer to section 5.2 for details</p>						
<p>Temp. / Hum.</p>	<table border="1"> <tr> <td>Temp.:</td> <td>25 °C</td> <td>Humid.:</td> <td>52%</td> <td>Press.:</td> <td>1 012mbar</td> </tr> </table>	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar
Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar		

Test results:	Pass
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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.

Measurement data:

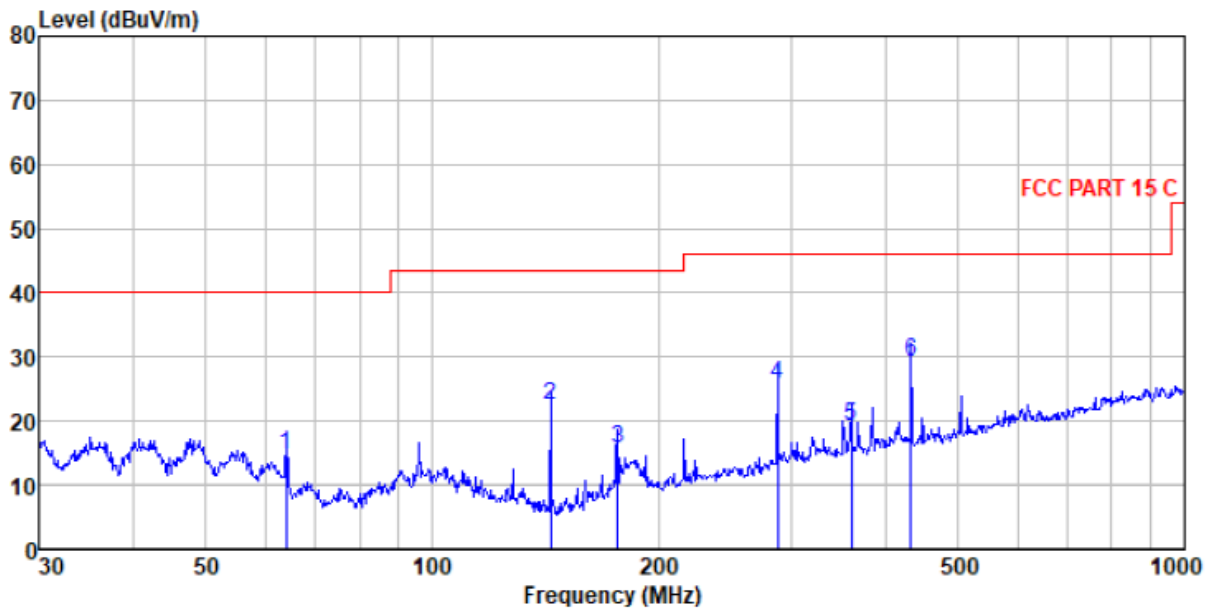
■ **Below 30MHz**

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.

■ 30MHz ~ 1GHz

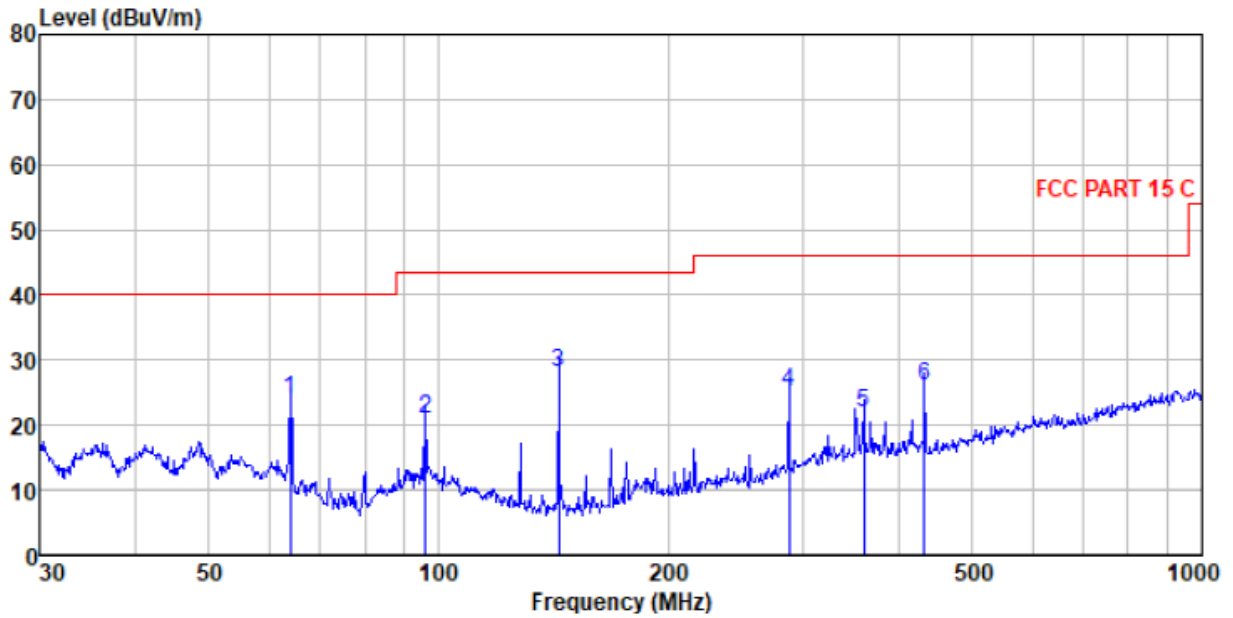
Pre-scan all test modes, found worst case at 2406MHz, and so only show the test result of 2406MHz

Horizontal



	ReadAntenna	Preamp	Cable	Limit	Over			
Freq	Level	Factor	Loss	Line	Limit	Remark		
MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB		
1	63.983	40.55	9.80	36.37	0.89	14.87	40.00	-25.13 QP
2	143.830	50.44	7.47	37.04	1.53	22.40	43.50	-21.10 QP
3	176.269	42.41	8.77	37.22	1.72	15.68	43.50	-27.82 QP
4	287.990	47.56	13.27	37.41	2.31	25.73	46.00	-20.27 QP
5	360.448	39.44	14.70	37.48	2.67	19.33	46.00	-26.67 QP
6	432.546	47.75	15.99	37.52	3.01	29.23	46.00	-16.77 QP

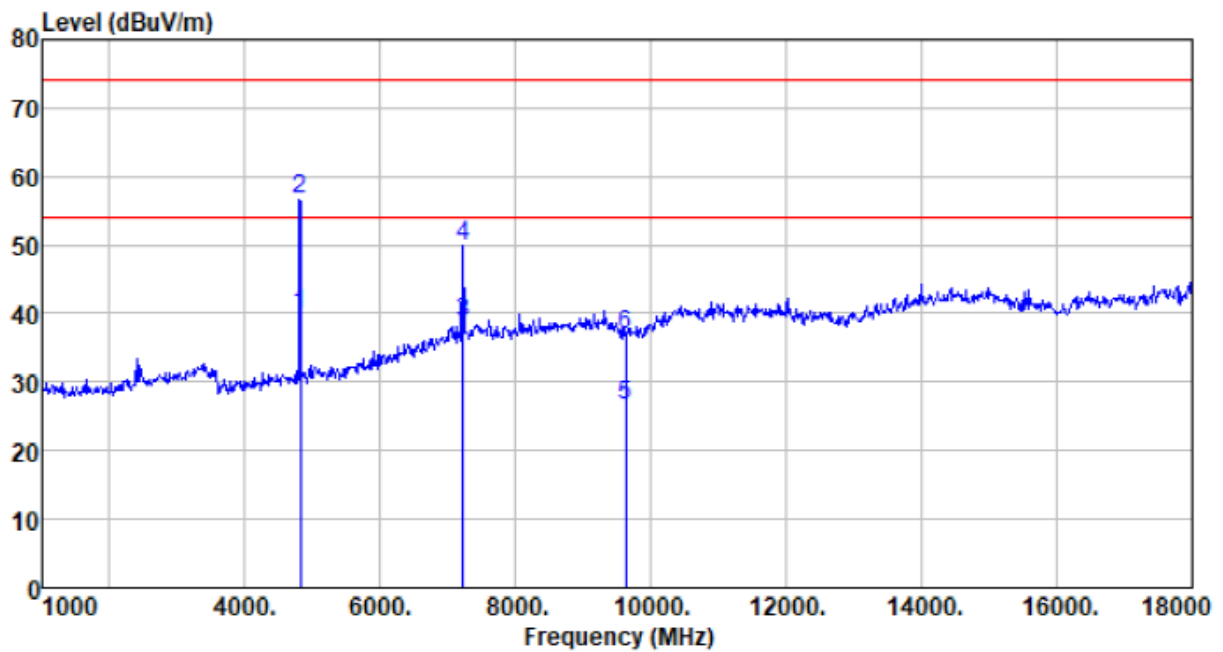
Vertical



	Read	Antenna	Preamp	Cable	Limit	Over			
Freq	Level	Factor	Factor	Loss	Line	Limit	Remark		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	63.983	49.46	9.80	36.37	0.89	23.78	40.00	-16.22	QP
2	96.099	44.84	11.65	36.69	1.16	20.96	43.50	-22.54	QP
3	143.830	56.04	7.47	37.04	1.53	28.00	43.50	-15.50	QP
4	287.990	47.04	13.27	37.41	2.31	25.21	46.00	-20.79	QP
5	360.448	41.94	14.70	37.48	2.67	21.83	46.00	-24.17	QP
6	432.546	44.54	15.99	37.52	3.01	26.02	46.00	-19.98	QP

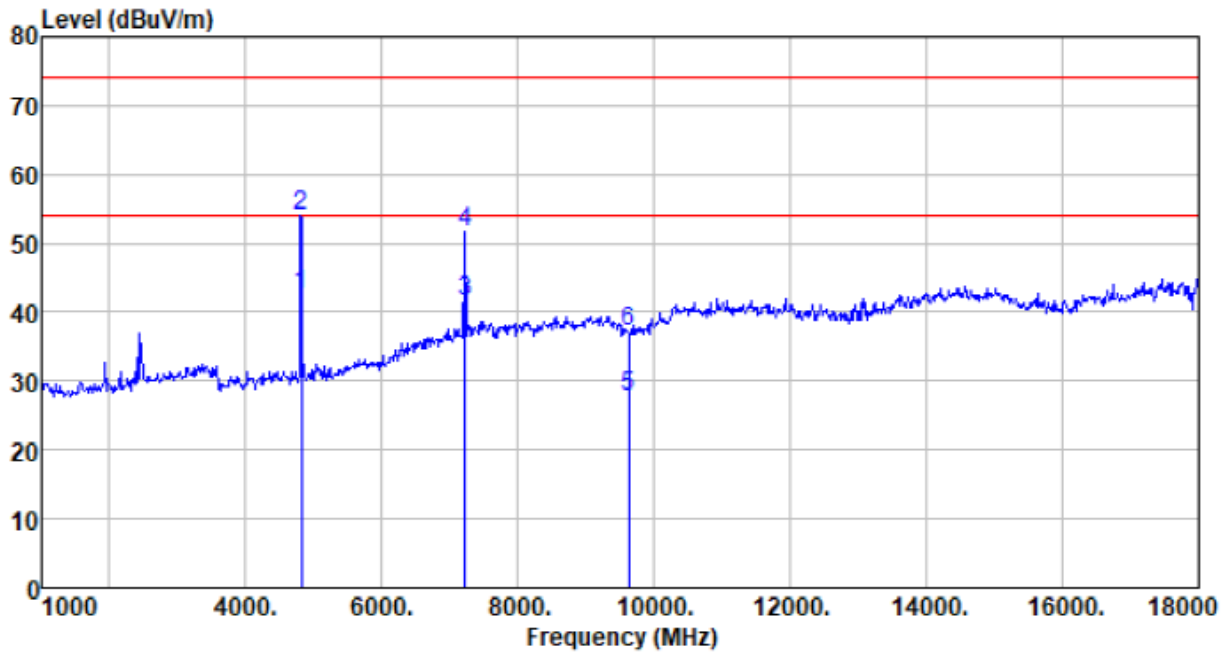
■ Above 1GHz

Test channel:	Lowest	Polarization:	Horizontal
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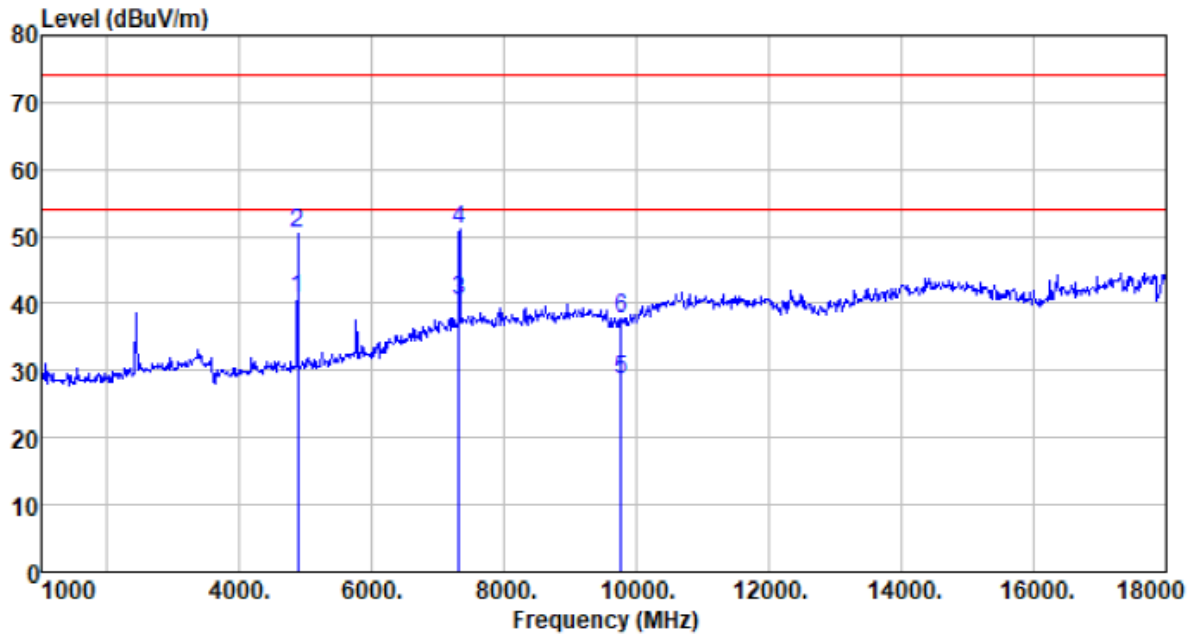
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4812.000	41.88	31.22	4.61	37.73	39.98	54.00	-14.02	Average
4812.000	58.52	31.22	4.61	37.73	56.62	74.00	-17.38	Peak
7218.000	31.63	36.20	6.50	35.63	38.70	54.00	-15.30	Average
7218.000	42.69	36.20	6.50	35.63	49.76	74.00	-24.24	Peak
9624.000	15.62	37.93	7.98	34.94	26.59	54.00	-27.41	Average
9624.000	25.83	37.93	7.98	34.94	36.80	74.00	-37.20	Peak

Test channel:	Lowest	Polarization:	Vertical
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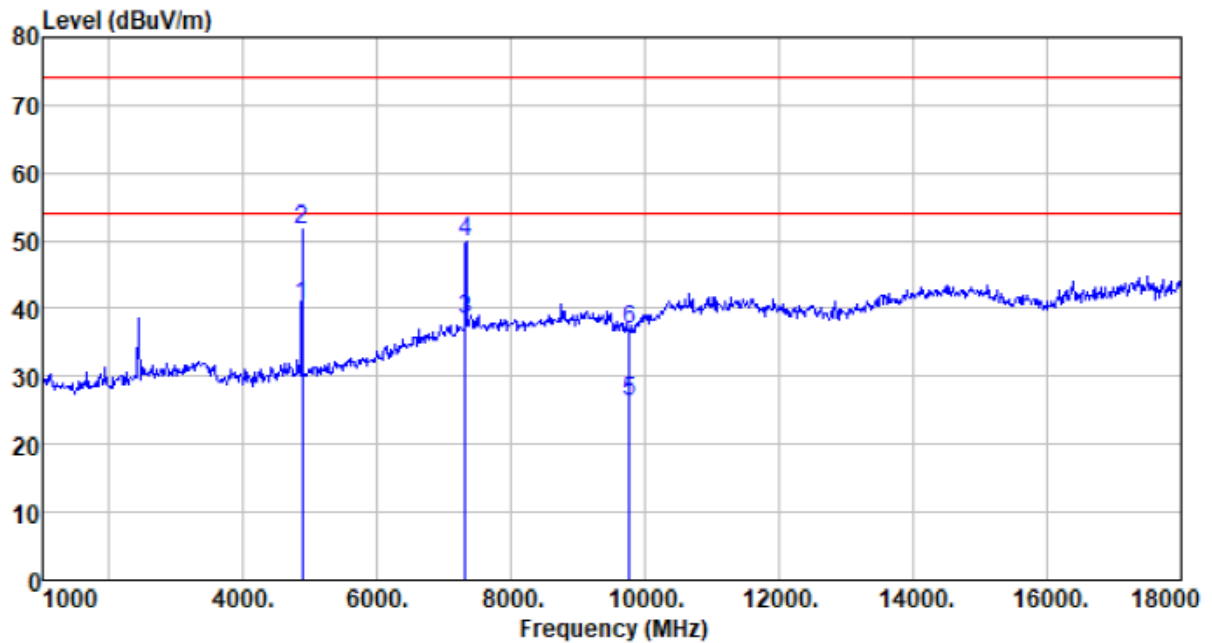
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4812.000	44.48	31.22	4.61	37.73	42.58	54.00	-11.42	Average
4812.000	56.06	31.22	4.61	37.73	54.16	74.00	-19.84	Peak
7218.000	34.46	36.20	6.50	35.63	41.53	54.00	-12.47	Average
7218.000	44.55	36.20	6.50	35.63	51.62	74.00	-22.38	Peak
9624.000	16.70	37.93	7.98	34.94	27.67	54.00	-26.33	Average
9624.000	26.12	37.93	7.98	34.94	37.09	74.00	-36.91	Peak

Test channel:	Middle	Polarization:	Horizontal
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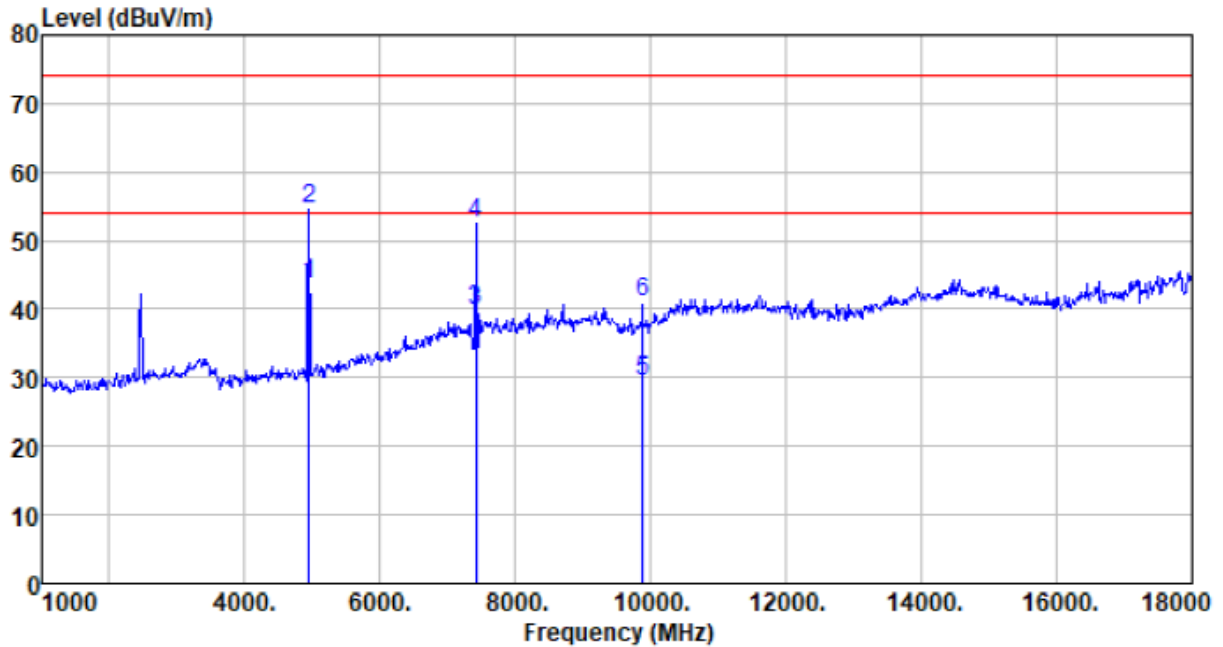
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4878.000	42.62	31.31	4.69	37.75	40.87	54.00	-13.13	Average
4878.000	52.28	31.31	4.69	37.75	50.53	74.00	-23.47	Peak
7317.000	33.02	36.43	6.63	35.60	40.48	54.00	-13.52	Average
7317.000	43.50	36.43	6.63	35.60	50.96	74.00	-23.04	Peak
9756.000	17.62	38.10	8.03	35.03	28.72	54.00	-25.28	Average
9756.000	26.60	38.10	8.03	35.03	37.70	74.00	-36.30	Peak

Test channel:	Middle	Polarization:	Vertical
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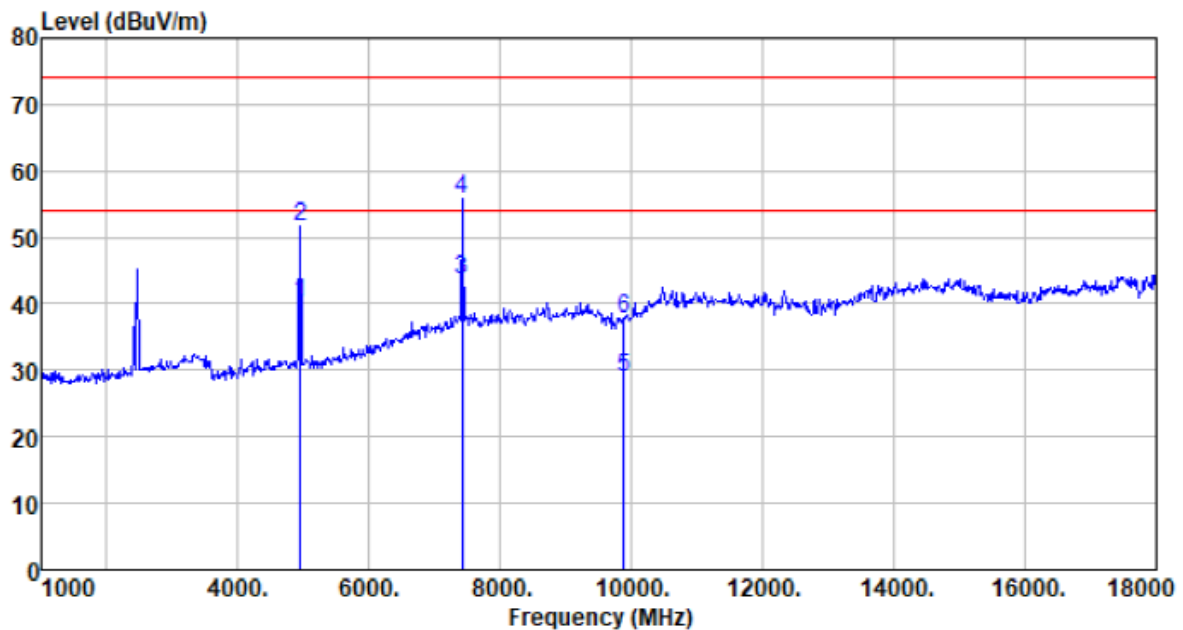
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4878.000	42.29	31.31	4.69	37.75	40.54	54.00	-13.46	Average
4878.000	53.31	31.31	4.69	37.75	51.56	74.00	-22.44	Peak
7317.000	31.05	36.43	6.63	35.60	38.51	54.00	-15.49	Average
7317.000	42.40	36.43	6.63	35.60	49.86	74.00	-24.14	Peak
9755.000	15.30	38.10	8.03	35.03	26.40	54.00	-27.60	Average
9755.000	25.92	38.10	8.03	35.03	37.02	74.00	-36.98	Peak

Test channel:	Highest	Polarization:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4944.000	45.30	31.41	4.77	37.78	43.70	54.00	-10.30	Average
4944.000	56.18	31.41	4.77	37.78	54.58	74.00	-19.42	Peak
7416.000	32.05	36.62	6.73	35.57	39.83	54.00	-14.17	Average
7416.000	44.87	36.62	6.73	35.57	52.65	74.00	-21.35	Peak
9888.000	18.32	38.27	8.08	35.12	29.55	54.00	-24.45	Average
9888.000	29.78	38.27	8.08	35.12	41.01	74.00	-32.99	Peak

Test channel:	Highest	Polarization:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4944.000	41.62	31.41	4.77	37.78	40.02	54.00	-13.98	Average
4944.000	53.15	31.41	4.77	37.78	51.55	74.00	-22.45	Peak
7416.000	36.00	36.62	6.73	35.57	43.78	54.00	-10.22	Average
7416.000	48.09	36.62	6.73	35.57	55.87	74.00	-18.13	Peak
9888.000	17.82	38.27	8.08	35.12	29.05	54.00	-24.95	Average
9888.000	26.58	38.27	8.08	35.12	37.81	74.00	-36.19	Peak

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor*
2. *No emission found in frequency above 18GHz.*

8 Test Setup Photo

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

9 EUT Constructional Details

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

---End---