

FCC Test Report

Product Name	ACTIVE SPEAKER
Model No.	DALI KATCH ONE
FCC ID.	2AFD2KATCHONE

Applicant	DALI A/S
Address	Dali Alle 1, Norager 9610, Denmark

Date of Receipt	Oct. 23, 2018
Issued Date	Jan. 25, 2019
Report No.	18A0305R-RFUSP03V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Test Report

Issued Date: Jan. 25, 2019

Report No.: 18A0305R-RFUSP03V00



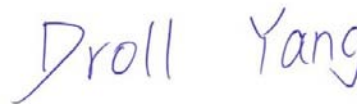
Product Name	ACTIVE SPEAKER
Applicant	DALI A/S
Address	Dali Alle 1, Norager 9610, Denmark
Manufacturer	DALI A/S
Model No.	DALI KATCH ONE
FCC ID.	2AFD2KATCHONE
EUT Rated Voltage	AC 100-240V / 47-63Hz
EUT Test Voltage	AC 120V / 60Hz
Trade Name	DALI
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2017 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 15.247 Meas Guidance v05
Test Result	Complied

Documented By :



(Senior Adm. Specialist / Joanne Lin)

Tested By :



(Assistant Engineer / Droll Yang)

Approved By :



(Director / Vincent Lin)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. EUT Description.....	5
1.2. Operational Description.....	7
1.3. Tested System Details.....	8
1.4. Configuration of Tested System	8
1.5. EUT Exercise Software	9
1.6. Test Facility	10
1.7. List of Test Equipment.....	11
2. CONDUCTED EMISSION	12
2.1. Test Setup	12
2.2. Limits.....	12
2.3. Test Procedure	13
2.4. Uncertainty	13
2.5. Test Result of Conducted Emission.....	14
3. PEAK POWER OUTPUT	18
3.1. Test Setup	18
3.2. Limit	18
3.3. Test Procedure	18
3.4. Uncertainty	18
3.5. Test Result of Peak Power Output.....	19
4. RADIATED EMISSION	22
4.1. Test Setup	22
4.2. Limits.....	23
4.3. Test Procedure	24
4.4. Uncertainty	24
4.5. Test Result of Radiated Emission.....	25
5. RF ANTENNA CONDUCTED TEST.....	49
5.1. Test Setup	49
5.2. Limits.....	49
5.3. Test Procedure	49
5.4. Uncertainty	49
5.5. Test Result of RF Antenna Conducted Test.....	50
6. BAND EDGE	53
6.1. Test Setup	53
6.2. Limit	54
6.3. Test Procedure	54
6.4. Uncertainty	54
6.5. Test Result of Band Edge	55
7. CHANNEL NUMBER.....	73
7.1. Test Setup	73
7.2. Limit	73
7.3. Test Procedure	73
7.4. Uncertainty	73
7.5. Test Result of Channel Number.....	74
8. CHANNEL SEPARATION.....	77
8.1. Test Setup	77

8.2.	Limit	77
8.3.	Test Procedure	77
8.4.	Uncertainty	77
8.5.	Test Result of Channel Separation.....	78
9.	DWELL TIME	84
9.1.	Test Setup	84
9.2.	Limit	84
9.3.	Test Procedure	84
9.4.	Uncertainty	84
9.5.	Test Result of Dwell Time	85
10.	OCCUPIED BANDWIDTH	91
10.1.	Test Setup	91
10.2.	Limits.....	91
10.3.	Test Procedure	91
10.4.	Uncertainty	91
10.5.	Test Result of Occupied Bandwidth	92
11.	EMI REDUCTION METHOD DURING COMPLIANCE TESTING	98

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	ACTIVE SPEAKER
Trade Name	DALI
Model No.	DALI KATCH ONE
FCC ID.	2AFD2KATCHONE
Frequency Range	2402-2480MHz
Channel Number	79
Type of Modulation	FHSS: GFSK(1Mbps) / π /4DQPSK(2Mbps) / 8DPSK(3Mbps)
Antenna Type	PCB Antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”
Power Cord	Non-shielded, 1.95m
Remote Control	1 Set

Antenna List

No.	Manufacturer	Model No.	Antenna Type	Peak Gain
1	Meiloon Acoustic Equipments (Dongguan) Co., Ltd.	RF-TRSPIPAD	PCB Antenna	2.03dBi in 2.4 GHz

Note: The antenna of EUT conforms to FCC 15.203.

Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

Note:

1. The EUT is a ACTIVE SPEAKER with built-in Bluetooth transceiver.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.

Test Mode	Mode 1: Transmit - 1Mbps Mode 2: Transmit - 2Mbps Mode 3: Transmit - 3Mbps
-----------	--

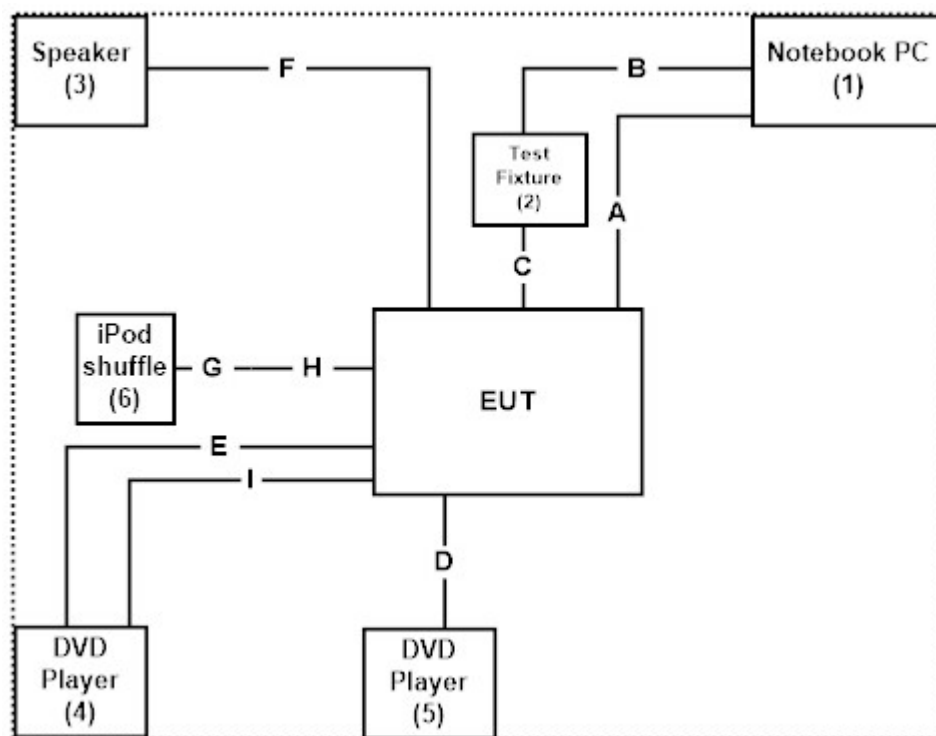
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Notebook PC	DELL	P62G	229FJC2	N/A
2 Test Fixture	CSR	USB-SPI	N/A	N/A
3 Speaker	PHILIPS	N/A	N/A	N/A
4 DVD Player	Dowei	AV-267	ZOO-13011	Non-shielded, 1.45m
5 DVD Player	PIONEER	DV-600AV-S	N/A	Non-shielded, 1.8m
6 iPod shuffle	APPLE	A1373	CC4PG9NGF4RY	N/A

Signal Cable Type	Signal cable Description
A Audio Cable	Non-shielded, 1.7m
B USB Cable	Non-shielded, 0.85m
C Signal Cable	Non-shielded, 0.15m
D Optical Fiber Cable	Non-shielded, 1.95m
E Optical Fiber Cable	Non-shielded, 1.95m
F RCA Cable	Non-shielded, 1.6m
G Audio to USB Cable	Non-shielded, 0.05m
H USB Cable	Shielded, 1.7m
I HDMI Cable	Shielded, 1.9m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute “BlueTest3 v2.6.2” on the Notebook PC.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous Transmit.
5. Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

<http://www.dekra.com.tw/english/about/certificates.aspx?bval=5>

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw/index_en

Site Description: Accredited by TAF
Accredited Number: 3023

Site Name: DEKRA Testing and Certification Co., Ltd.
Site Address: No.159, Sec. 2, Wenhua 1st Rd., Linkou Dist.,
New Taipei City 24457, Taiwan.
TEL: 886-2-2602-7968 / FAX : 866-2-2602-3286
E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW0023

1.7. List of Test Equipment

For Conduction measurements /ASR1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	EMI Test Receiver	R&S	ESR7	101601	2018.02.08	2019.02.07
X	Two-Line V-Network	R&S	ENV216	101306	2018.03.09	2019.03.08
X	Two-Line V-Network	R&S	ENV216	101307	2018.03.20	2019.03.19
X	Coaxial Cable	Quietek	RG400_BNC	RF001	2018.05.24	2019.05.23

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : QuieTek EMI 2.0 V2.1.113

For Conducted measurements /ASR2

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Spectrum Analyzer	R&S	FSV30	103465	2018.02.08	2019.02.07
X	Power Meter	Anritsu	ML2496A	1548003	2018.12.19	2019.12.18
X	Power Sensor	Anritsu	MA2411B	1531024	2018.12.19	2019.12.18
X	Power Sensor	Anritsu	MA2411B	1531025	2018.12.19	2019.12.18

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Conduction Test System V9.0.1

For Radiated measurements /ACB1

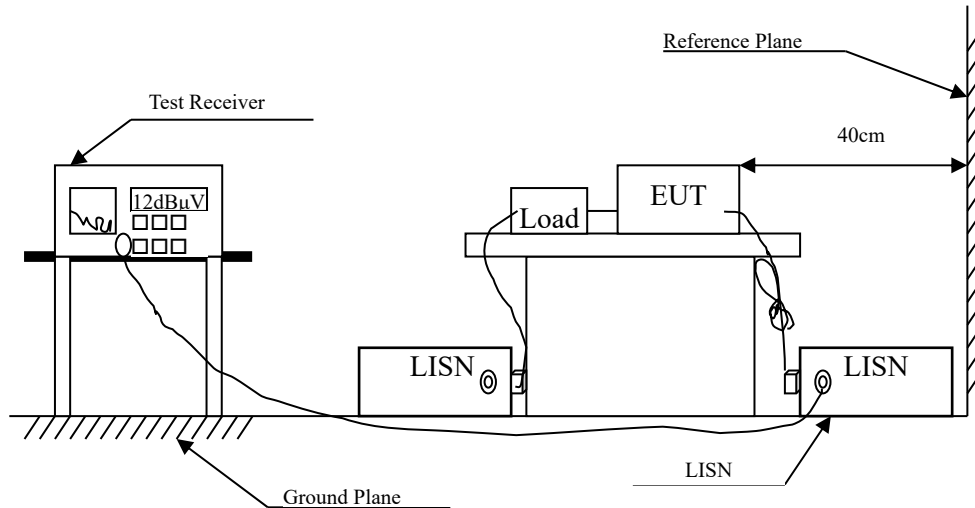
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Loop Antenna	AMETEK	HLA6121	49611	2018.01.26	2019.01.25
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-674	2018.04.02	2019.04.01
X	Horn Antenna	ETS-Lindgren	3117	00203761	2018.11.01	2019.10.30
X	Horn Antenna	Com-Power	AH-840	101087	2018.06.01	2019.05.31
X	Pre-Amplifier	EMCI	EMC001330	980316	2018.06.01	2019.05.31
X	Pre-Amplifier	EMCI	EMC051835SE	980311	2018.06.04	2019.06.03
X	Pre-Amplifier	EMCI	EMC05820SE	980310	2018.06.04	2019.06.03
X	Pre-Amplifier	EMCI	EMC184045SE	980314	2018.05.16	2019.05.15
X	Filter	MICRO TRONICS	BRM50702	G251	2018.09.04	2019.09.03
	Filter	MICRO TRONICS	BRM50716	G188	2018.09.04	2019.09.03
X	EMI Test Receiver	R&S	ESR7	101602	2018.12.17	2019.12.16
X	Spectrum Analyzer	R&S	FSV40	101148	2018.02.08	2019.02.07
X	Coaxial Cable	SUHNER	SUCOFLEX 106	RF002	2018.05.25	2019.05.24
X	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2018.05.16	2019.05.15

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : QuieTek EMI 2.0 V2.1.113

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB μ V) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

The EUT and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

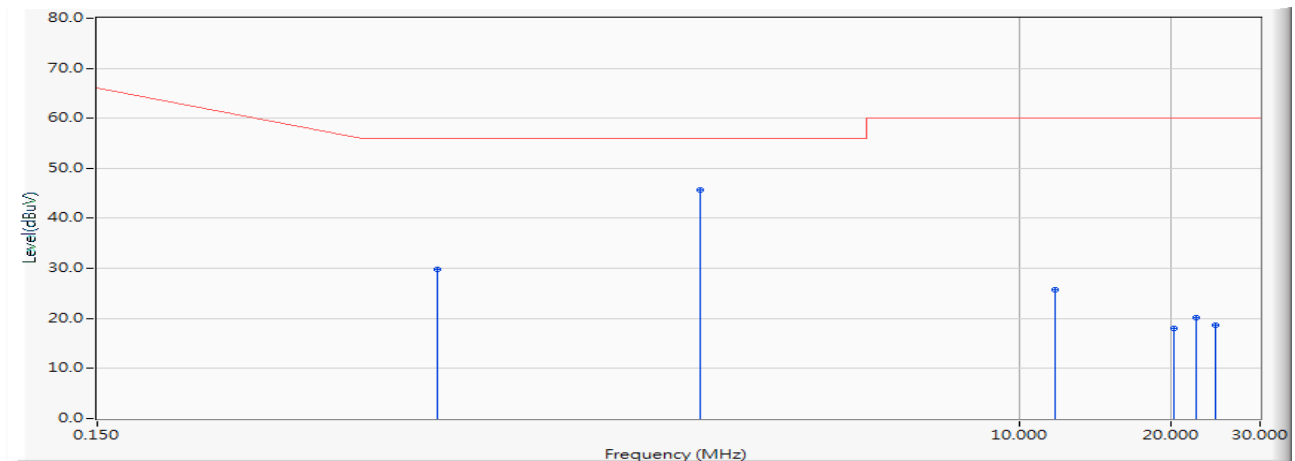
The EUT setup and the test procedure are according to ANSI C63.4, 2014 to comply with the requirements of FCC 47CFR Subpart C.

2.4. Uncertainty

$\pm 2.35\text{dB}$

2.5. Test Result of Conducted Emission

Product : ACTIVE SPEAKER
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 3: Transmit - 3Mbps (2441MHz)
 Test Date : 2018/11/07

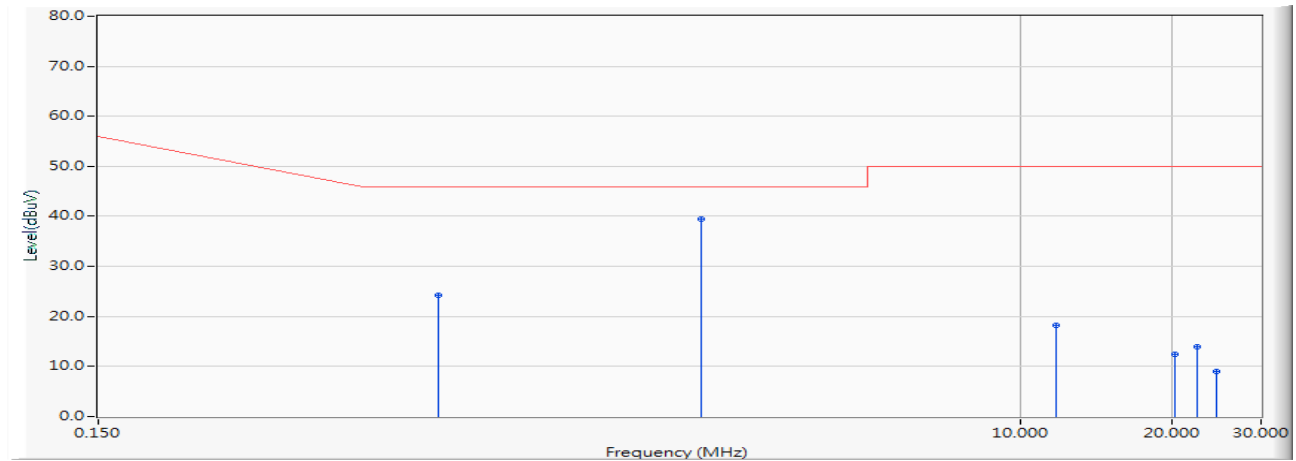


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV)	Margin (dB)	Limit (dBμV)	Detector Type
1		0.708	9.630	20.177	29.807	-26.193	56.000	QUASIPeAK
2	*	2.339	9.673	35.993	45.666	-10.334	56.000	QUASIPeAK
3		11.825	9.869	15.894	25.763	-34.237	60.000	QUASIPeAK
4		20.249	9.970	8.100	18.070	-41.930	60.000	QUASIPeAK
5		22.389	9.990	10.078	20.068	-39.932	60.000	QUASIPeAK
6		24.529	10.010	8.686	18.696	-41.304	60.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : ACTIVE SPEAKER
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 3: Transmit - 3Mbps (2441MHz)
 Test Date : 2018/11/07

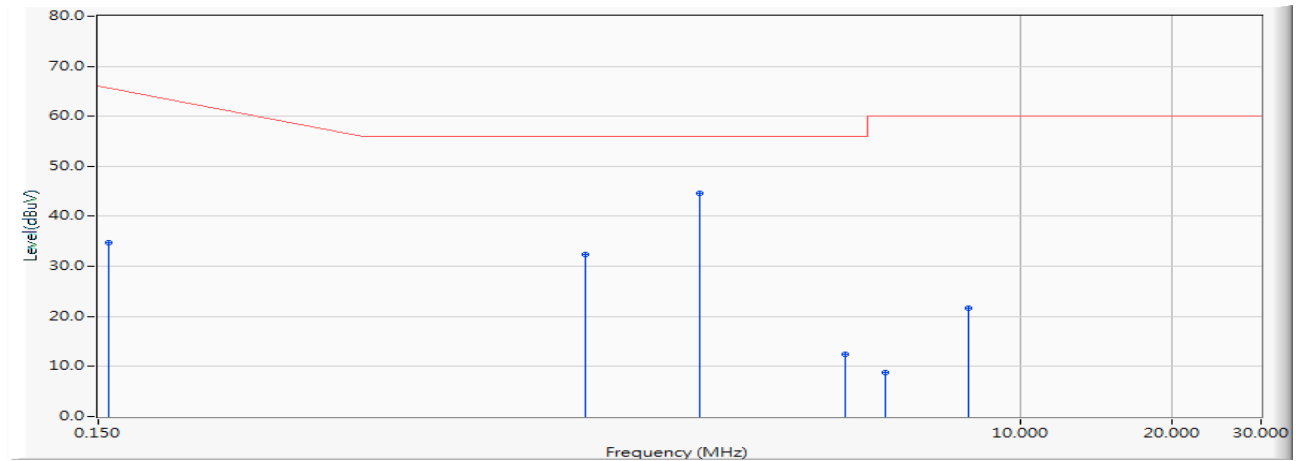


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV)	Margin (dB)	Limit (dBμV)	Detector Type
1		0.708	9.630	14.516	24.146	-21.854	46.000	AVERAGE
2	*	2.339	9.673	29.861	39.534	-6.466	46.000	AVERAGE
3		11.825	9.869	8.402	18.271	-31.729	50.000	AVERAGE
4		20.249	9.970	2.566	12.536	-37.464	50.000	AVERAGE
5		22.389	9.990	4.037	14.027	-35.973	50.000	AVERAGE
6		24.529	10.010	-0.905	9.105	-40.895	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : ACTIVE SPEAKER
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 3: Transmit - 3Mbps (2441MHz)
 Test Date : 2018/11/07

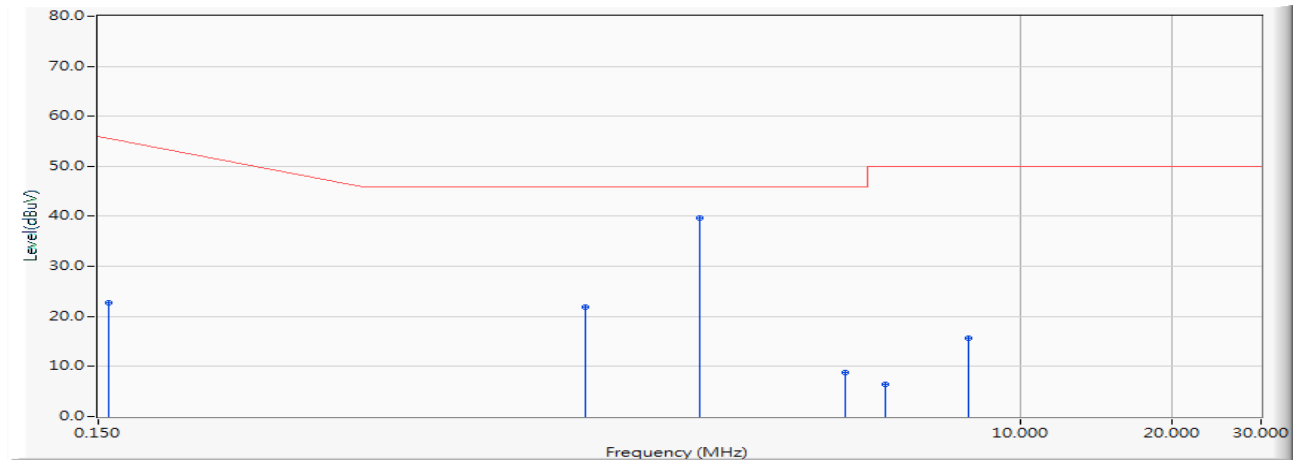


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV)	Margin (dB)	Limit (dBμV)	Detector Type
1		0.157	9.602	25.189	34.791	-31.009	65.800	QUASIPeAK
2		1.379	9.650	22.698	32.348	-23.652	56.000	QUASIPeAK
3	*	2.330	9.673	34.847	44.520	-11.480	56.000	QUASIPeAK
4		4.497	9.725	2.774	12.499	-43.501	56.000	QUASIPeAK
5		5.428	9.752	-0.958	8.795	-51.205	60.000	QUASIPeAK
6		7.917	9.798	11.885	21.683	-38.317	60.000	QUASIPeAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : ACTIVE SPEAKER
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 3: Transmit - 3Mbps (2441MHz)
 Test Date : 2018/11/07



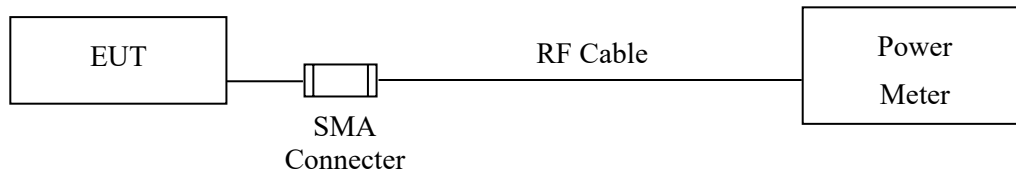
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV)	Margin (dB)	Limit (dBμV)	Detector Type
1		0.157	9.602	13.150	22.752	-33.048	55.800	AVERAGE
2		1.379	9.650	12.136	21.786	-24.214	46.000	AVERAGE
3	*	2.330	9.673	29.997	39.670	-6.330	46.000	AVERAGE
4		4.497	9.725	-0.867	8.858	-37.142	46.000	AVERAGE
5		5.428	9.752	-3.348	6.404	-43.596	50.000	AVERAGE
6		7.917	9.798	5.924	15.722	-34.278	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

3.1. Test Setup



3.2. Limit

The maximum peak power shall be less 1Watt.

3.3. Test Procedure

Tested according to FHSS test procedure of KDB 558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

3.4. Uncertainty

± 0.86 dB

3.5. Test Result of Peak Power Output

Product : ACTIVE SPEAKER
Test Item : Peak Power Output
Test Mode : Mode 1: Transmit - 1Mbps
Test Date : 2018/11/21

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
Channel 00	2402.00	8.92	1 Watt= 30 dBm	Pass
Channel 39	2441.00	9.04	1 Watt= 30 dBm	Pass
Channel 78	2480.00	9.25	1 Watt= 30 dBm	Pass

Product : ACTIVE SPEAKER
Test Item : Peak Power Output
Test Mode : Mode 2: Transmit - 2Mbps
Test Date : 2019/01/18

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
Channel 00	2402.00	8.12	1 Watt= 30 dBm	Pass
Channel 39	2441.00	8.34	1 Watt= 30 dBm	Pass
Channel 78	2480.00	8.46	1 Watt= 30 dBm	Pass

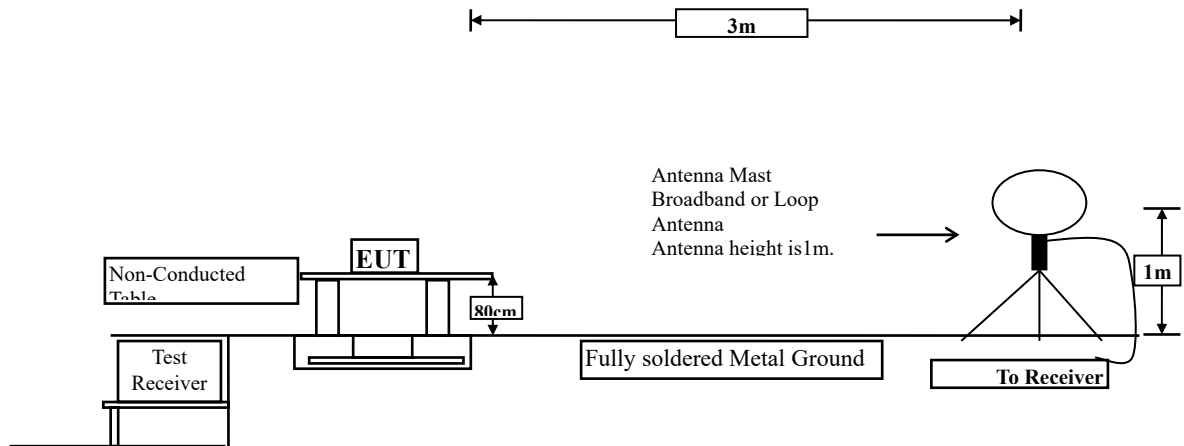
Product : ACTIVE SPEAKER
Test Item : Peak Power Output
Test Mode : Mode 3: Transmit - 3Mbps
Test Date : 2018/11/21

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
Channel 00	2402.00	8.47	1 Watt= 30 dBm	Pass
Channel 39	2441.00	8.72	1 Watt= 30 dBm	Pass
Channel 78	2480.00	8.97	1 Watt= 30 dBm	Pass

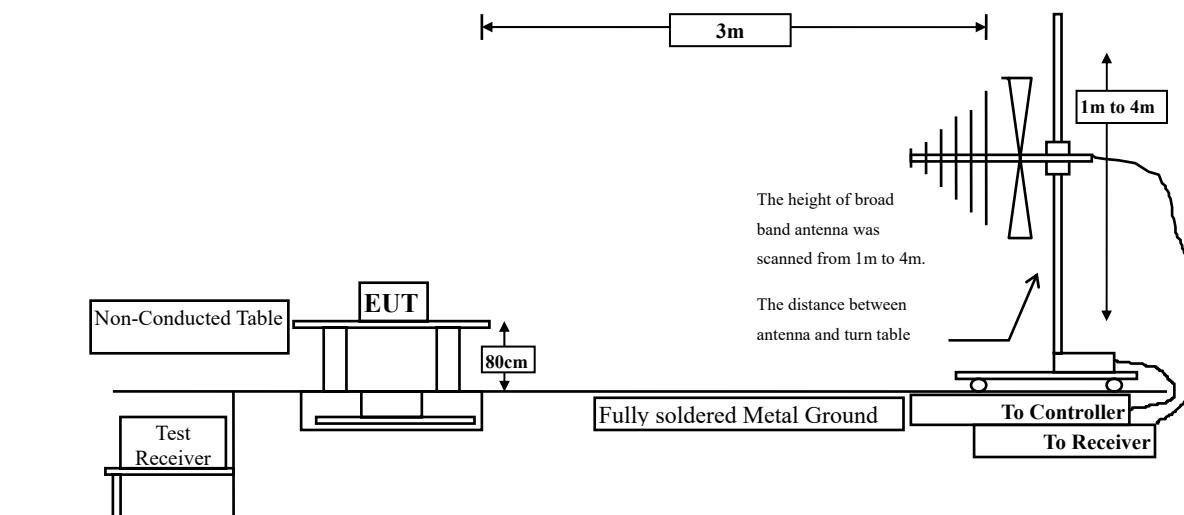
4. Radiated Emission

4.1. Test Setup

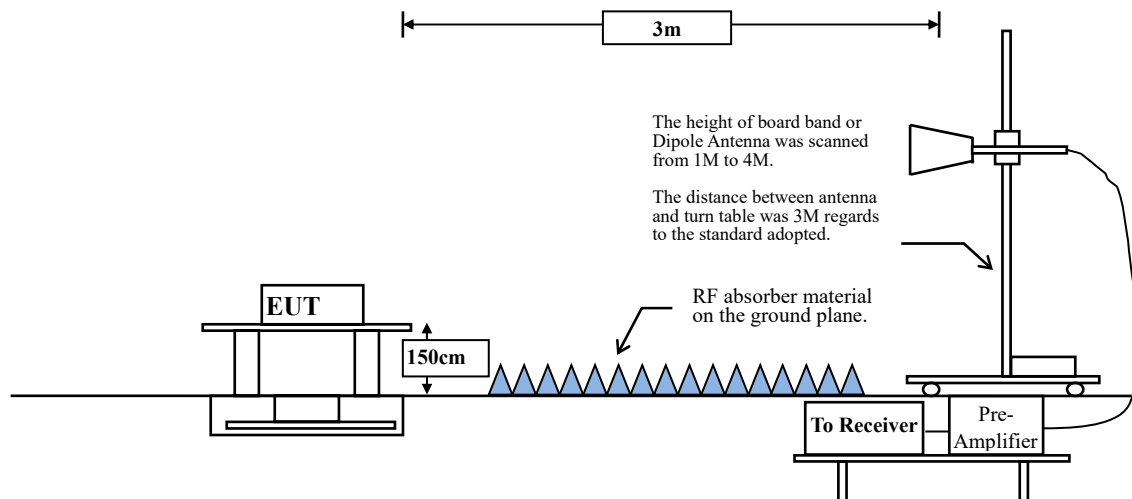
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.2. Limits

➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

- Remarks:
1. RF Voltage (dBμV) = 20 log RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

4.4. Uncertainty

Horizontal polarization :

30-300MHz: $\pm 4.08\text{dB}$; 300M-1GHz: $\pm 3.86\text{dB}$; 1-18GHz: $\pm 3.77\text{dB}$; 18-40GHz: $\pm 3.98\text{dB}$

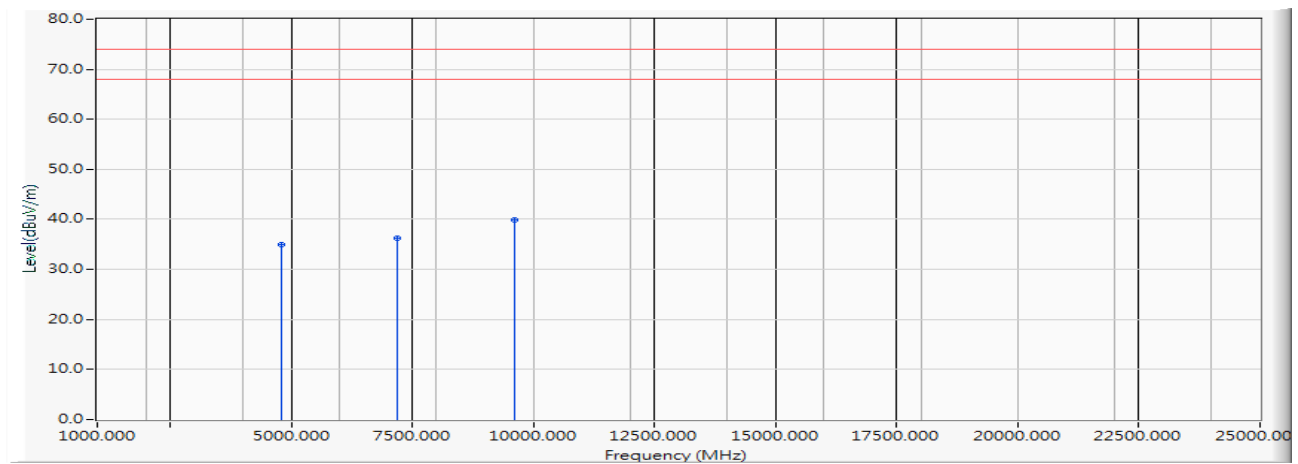
Vertical polarization :

30-300MHz: $\pm 4.81\text{dB}$; 300M-1GHz: $\pm 3.87\text{dB}$; 1-18GHz : $\pm 3.83\text{dB}$; 18-40GHz: $\pm 3.98\text{dB}$

4.5. Test Result of Radiated Emission

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 1: Transmit - 1Mbps (2402MHz)
 Test Date : 2018/11/12

Horizontal



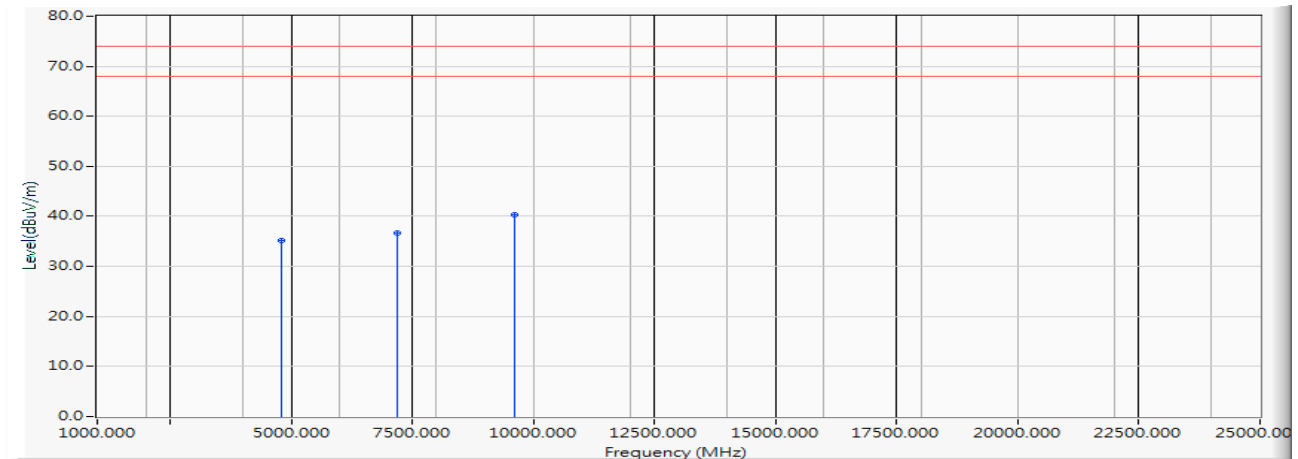
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4804.000	-6.081	41.000	34.919	-39.081	74.000	PEAK
2		7206.000	-3.033	39.370	36.337	-37.663	74.000	PEAK
3	*	9608.000	-0.774	40.640	39.867	-34.133	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 1: Transmit - 1Mbps (2402MHz)
 Test Date : 2018/11/12

Vertical



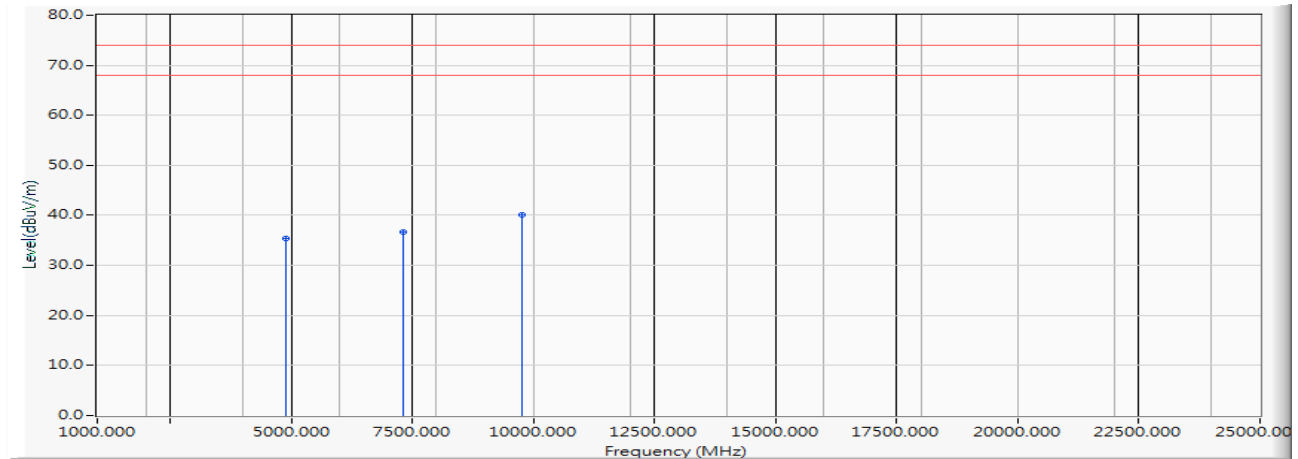
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4804.000	-6.081	41.340	35.259	-38.741	74.000	PEAK
2		7206.000	-3.033	39.750	36.717	-37.283	74.000	PEAK
3	*	9608.000	-0.774	41.010	40.237	-33.763	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 1: Transmit - 1Mbps (2441MHz)
 Test Date : 2018/11/12

Horizontal



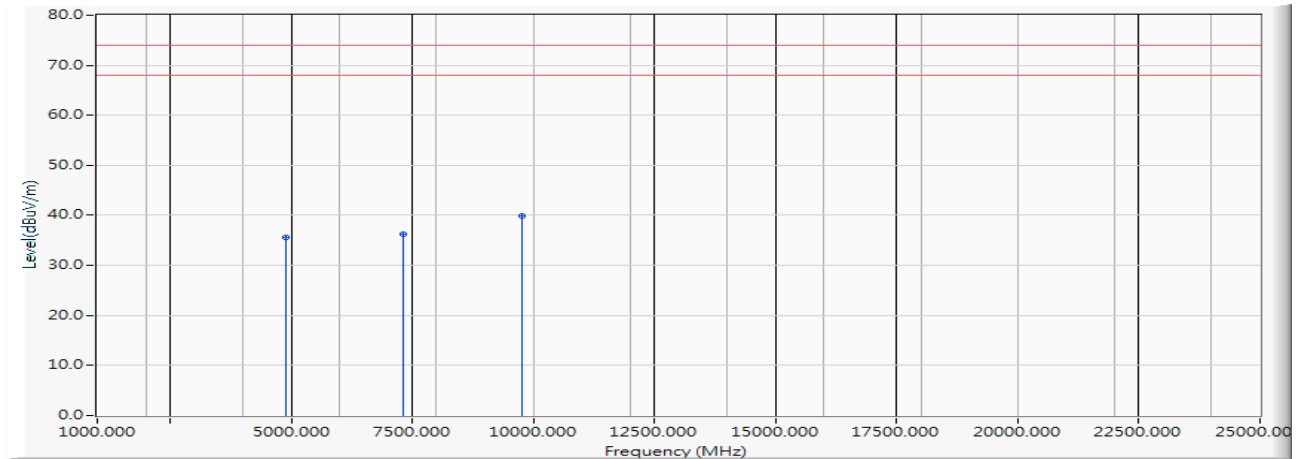
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4882.000	-6.042	41.350	35.308	-38.692	74.000	PEAK
2		7323.000	-2.954	39.640	36.686	-37.314	74.000	PEAK
3	*	9764.000	-0.487	40.580	40.093	-33.907	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 1: Transmit - 1Mbps (2441MHz)
 Test Date : 2018/11/12

Vertical



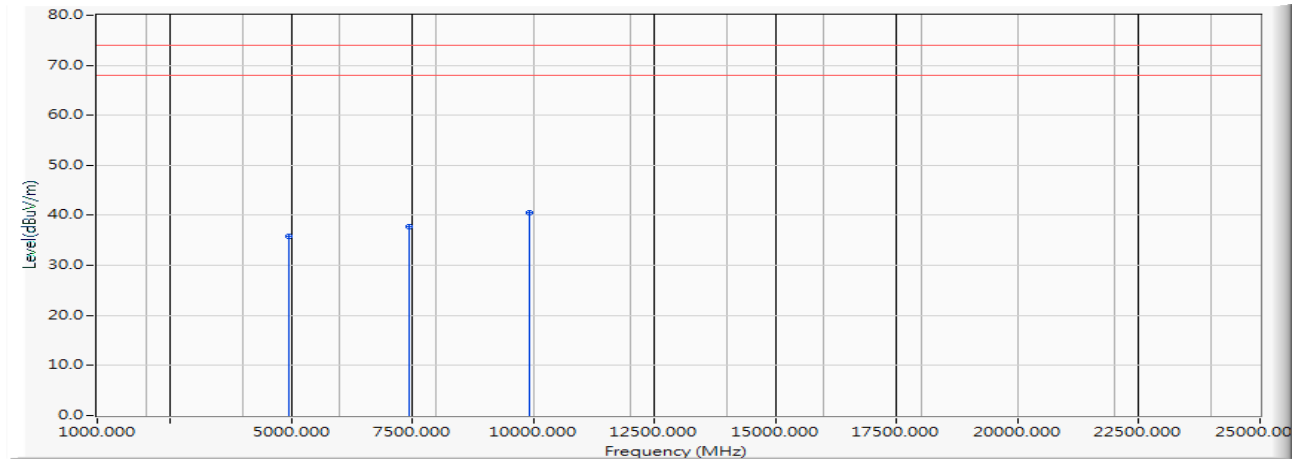
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4882.000	-6.042	41.630	35.588	-38.412	74.000	PEAK
2		7323.000	-2.954	39.270	36.316	-37.684	74.000	PEAK
3	*	9764.000	-0.487	40.300	39.813	-34.187	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 1: Transmit - 1Mbps (2480MHz)
 Test Date : 2018/11/12

Horizontal



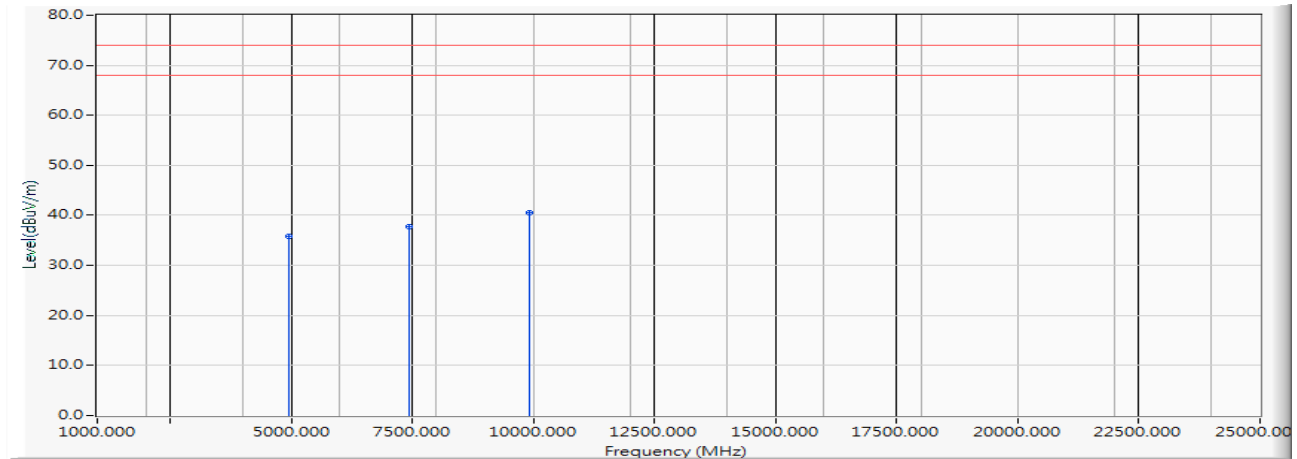
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4960.000	-6.041	41.780	35.739	-38.261	74.000	PEAK
2		7440.000	-2.805	40.560	37.755	-36.245	74.000	PEAK
3	*	9920.000	-0.260	40.710	40.450	-33.550	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 1: Transmit - 1Mbps (2480MHz)
 Test Date : 2018/11/12

Vertical



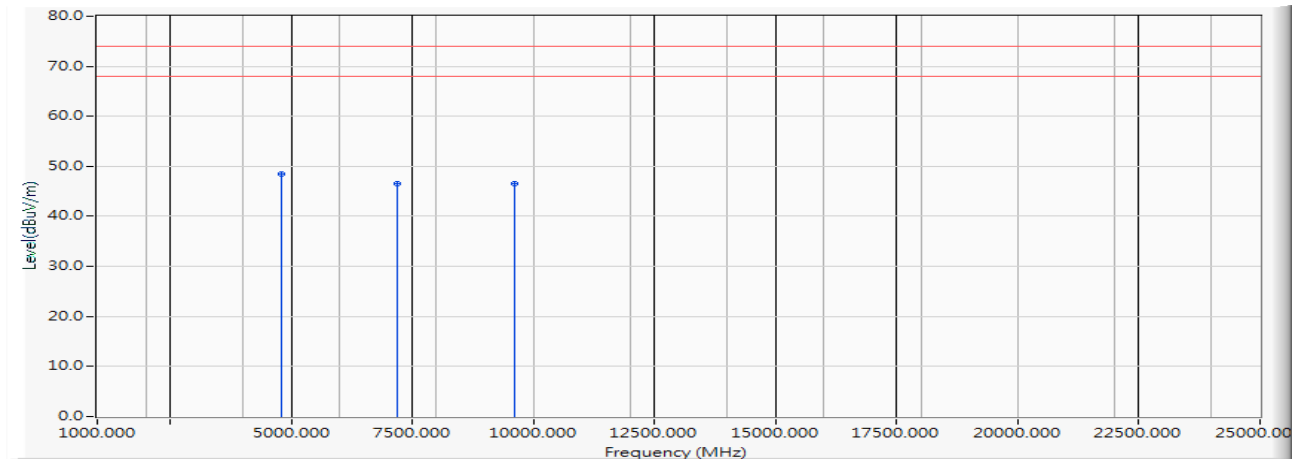
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4960.000	-6.041	41.870	35.829	-38.171	74.000	PEAK
2		7440.000	-2.805	40.570	37.765	-36.235	74.000	PEAK
3	*	9920.000	-0.260	40.850	40.590	-33.410	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 2: Transmit - 2Mbps (2402MHz)
 Test Date : 2019/01/24

Horizontal



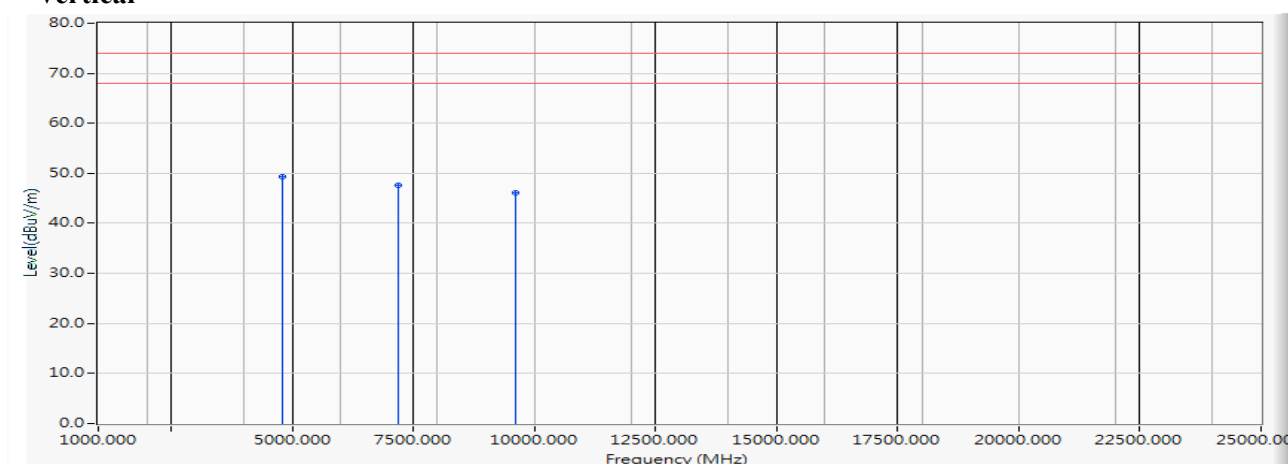
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4804.000	-6.081	54.570	48.489	-25.511	74.000	PEAK
2		7206.000	-3.033	49.470	46.437	-27.563	74.000	PEAK
3	*	9608.000	-0.774	47.280	46.507	-27.493	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 2: Transmit - 2Mbps (2402MHz)
 Test Date : 2019/01/24

Vertical



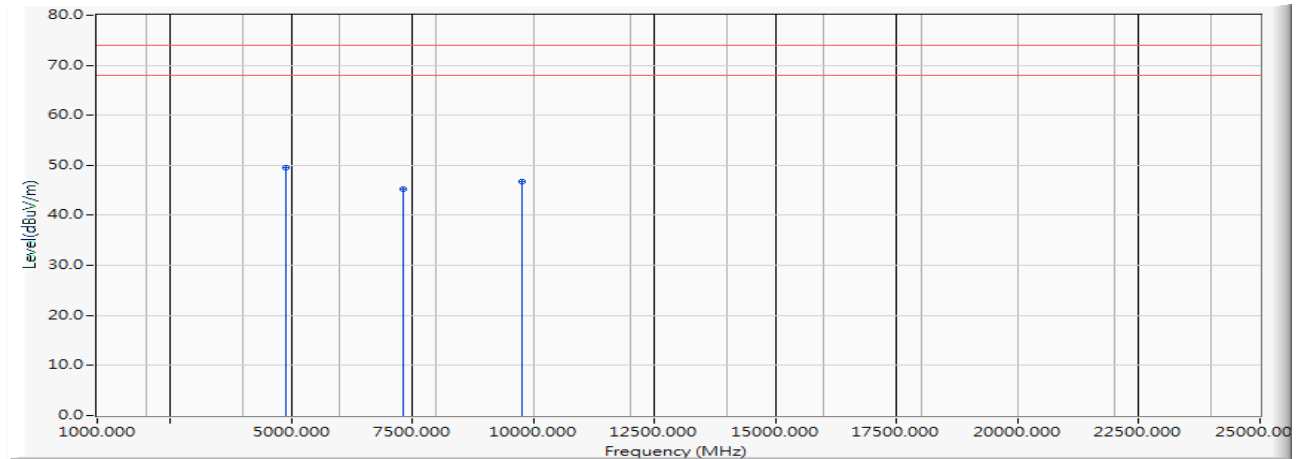
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4804.000	-6.081	55.450	49.369	-24.631	74.000	PEAK
2		7206.000	-3.033	50.620	47.587	-26.413	74.000	PEAK
3	*	9608.000	-0.774	46.950	46.177	-27.823	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 2: Transmit - 2Mbps (2441MHz)
 Test Date : 2019/01/24

Horizontal



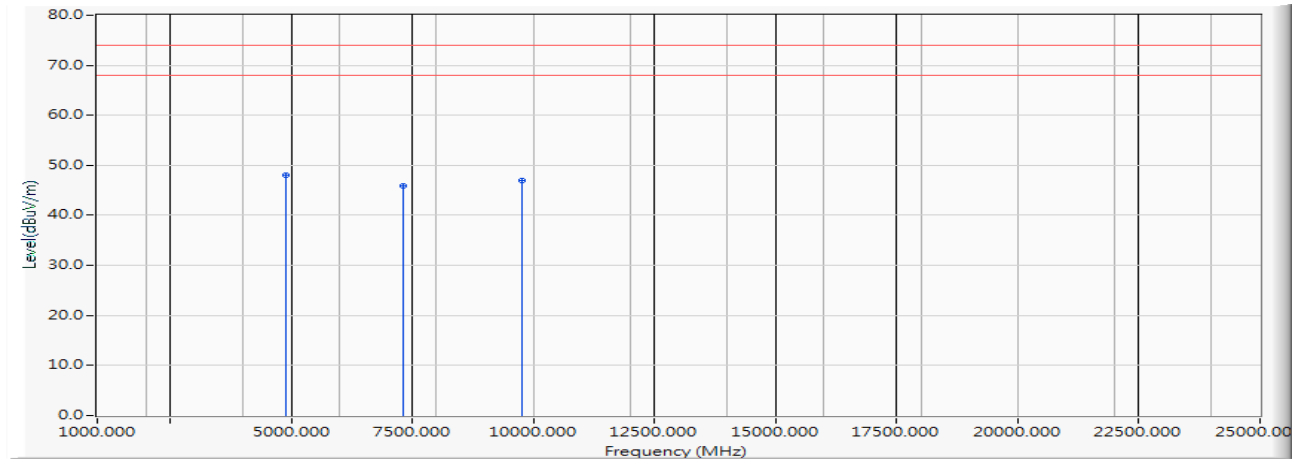
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4882.000	-6.042	55.640	49.598	-24.402	74.000	PEAK
2		7323.000	-2.954	48.200	45.246	-28.754	74.000	PEAK
3	*	9764.000	-0.487	47.310	46.823	-27.177	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 2: Transmit - 2Mbps (2441MHz)
 Test Date : 2019/01/24

Vertical



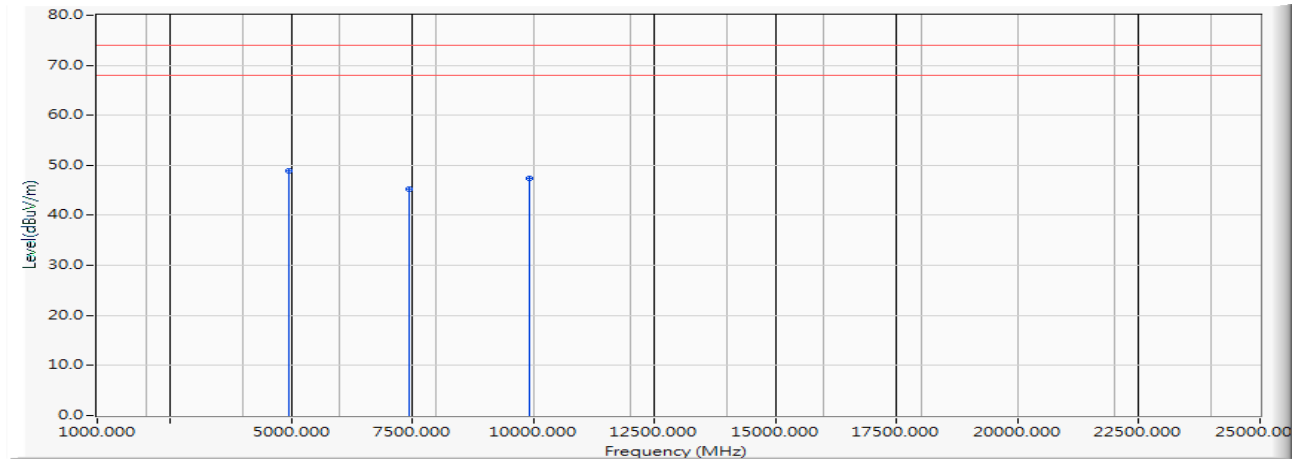
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4882.000	-6.042	54.050	48.008	-25.992	74.000	PEAK
2		7323.000	-2.954	48.910	45.956	-28.044	74.000	PEAK
3	*	9764.000	-0.487	47.430	46.943	-27.057	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 2: Transmit - 2Mbps (2480MHz)
 Test Date : 2019/01/24

Horizontal



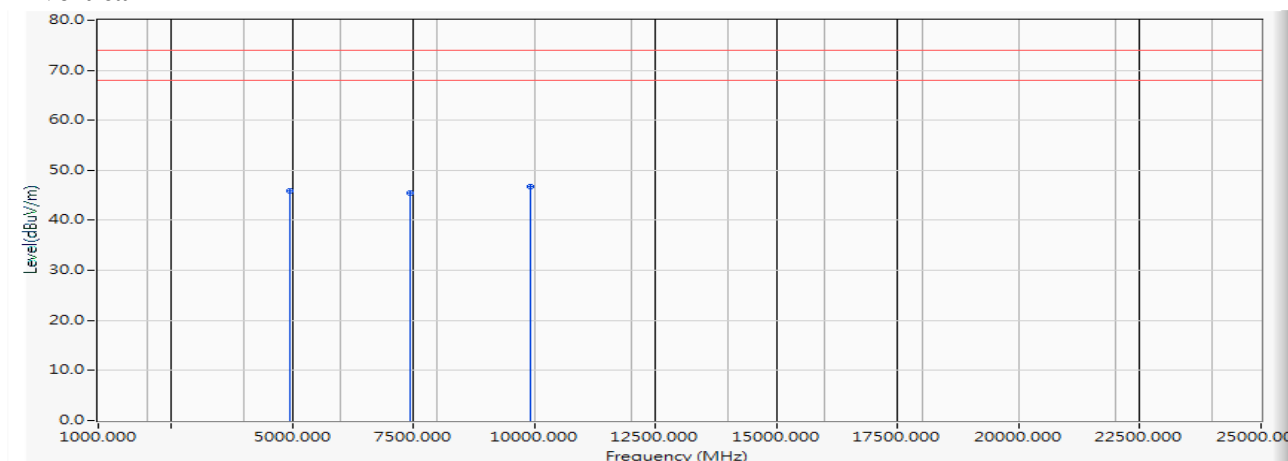
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4960.000	-6.041	54.840	48.799	-25.201	74.000	PEAK
2		7440.000	-2.805	48.160	45.355	-28.645	74.000	PEAK
3	*	9920.000	-0.260	47.750	47.490	-26.510	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 2: Transmit - 2Mbps (2480MHz)
 Test Date : 2018/11/12

Vertical



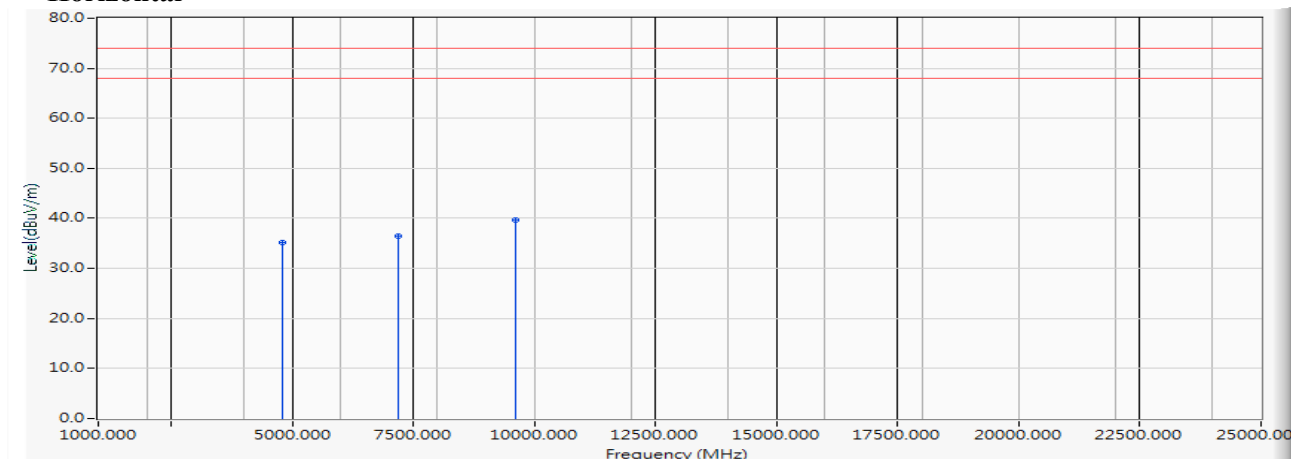
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4960.000	-6.041	51.900	45.859	-28.141	74.000	PEAK
2		7440.000	-2.805	48.350	45.545	-28.455	74.000	PEAK
3	*	9920.000	-0.260	46.940	46.680	-27.320	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 3: Transmit - 3Mbps (2402MHz)
 Test Date : 2018/11/12

Horizontal

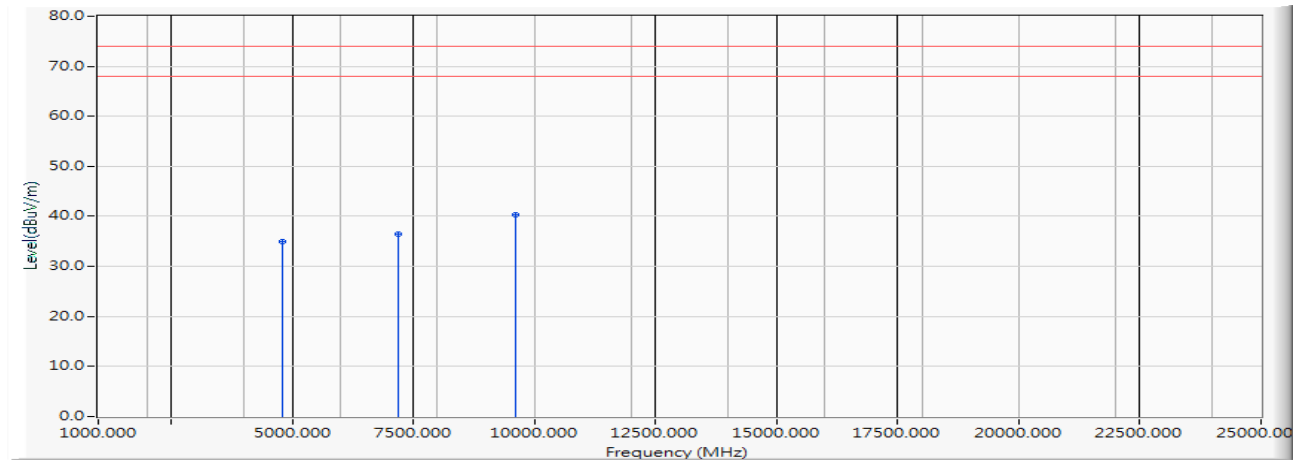


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4804.000	-6.081	41.330	35.249	-38.751	74.000	PEAK
2		7206.000	-3.033	39.510	36.477	-37.523	74.000	PEAK
3	*	9608.000	-0.774	40.440	39.667	-34.333	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 3: Transmit - 3Mbps (2402MHz)
 Test Date : 2018/11/12

Vertical

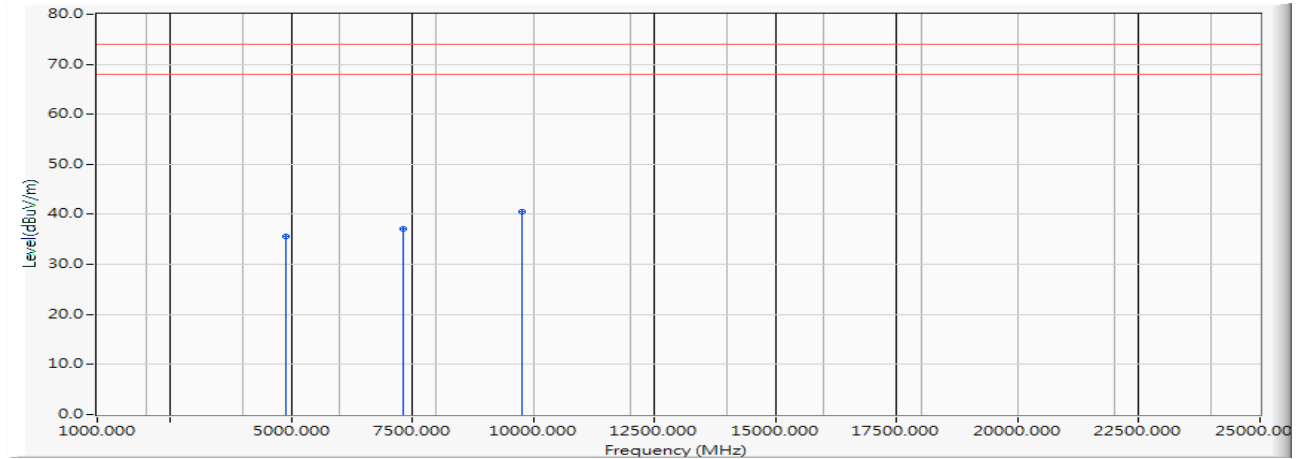
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4804.000	-6.081	41.000	34.919	-39.081	74.000	PEAK
2		7206.000	-3.033	39.430	36.397	-37.603	74.000	PEAK
3	*	9608.000	-0.774	41.010	40.237	-33.763	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 3: Transmit - 3Mbps (2441MHz)
 Test Date : 2018/11/12

Horizontal



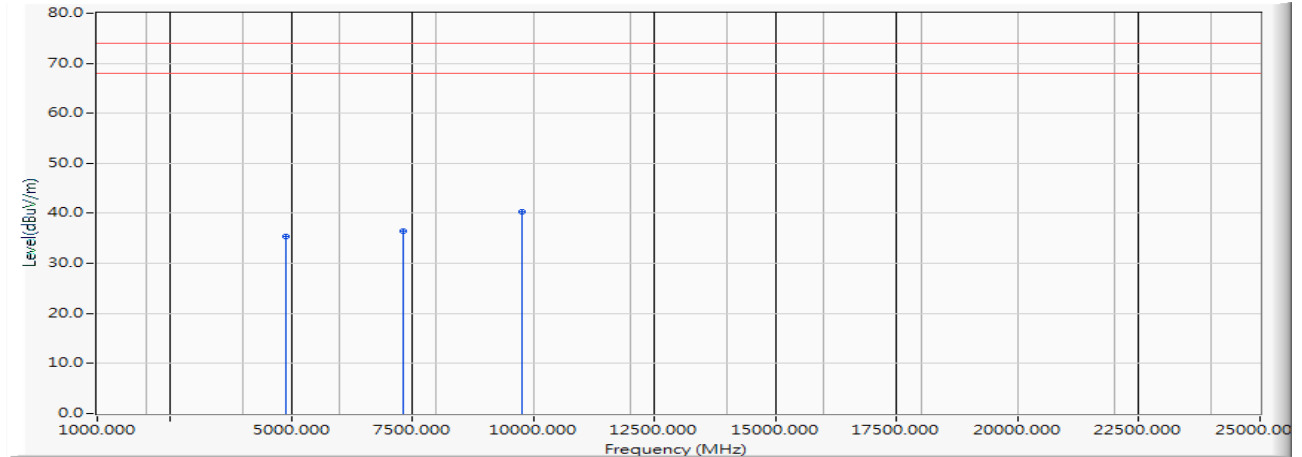
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4882.000	-6.042	41.630	35.588	-38.412	74.000	PEAK
2		7323.000	-2.954	40.120	37.166	-36.834	74.000	PEAK
3	*	9764.000	-0.487	41.110	40.623	-33.377	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 3: Transmit - 3Mbps (2441MHz)
 Test Date : 2018/11/12

Vertical



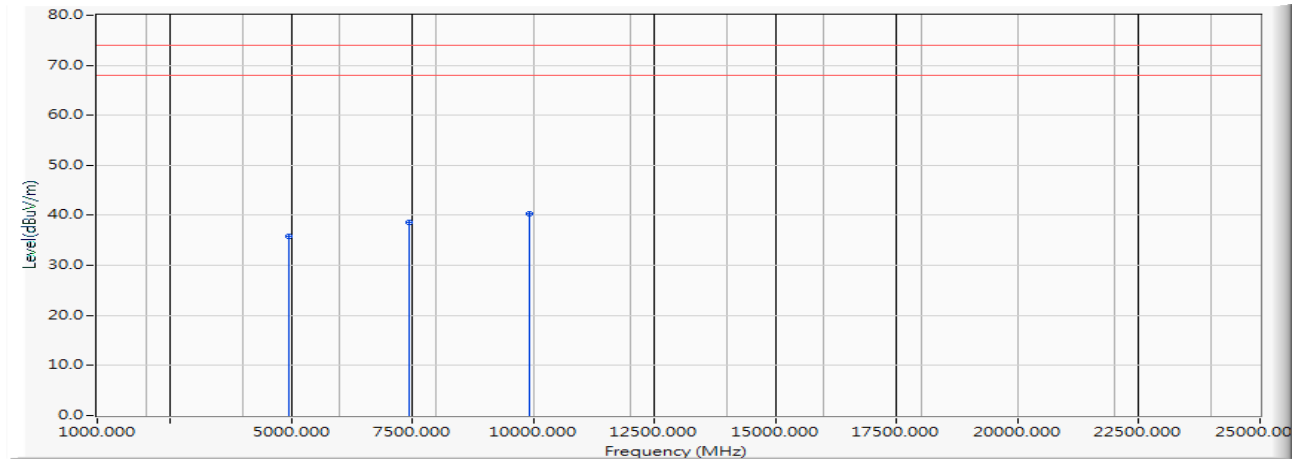
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4882.000	-6.042	41.410	35.368	-38.632	74.000	PEAK
2		7323.000	-2.954	39.410	36.456	-37.544	74.000	PEAK
3	*	9764.000	-0.487	40.720	40.233	-33.767	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 3: Transmit - 3Mbps (2480MHz)
 Test Date : 2018/11/12

Horizontal



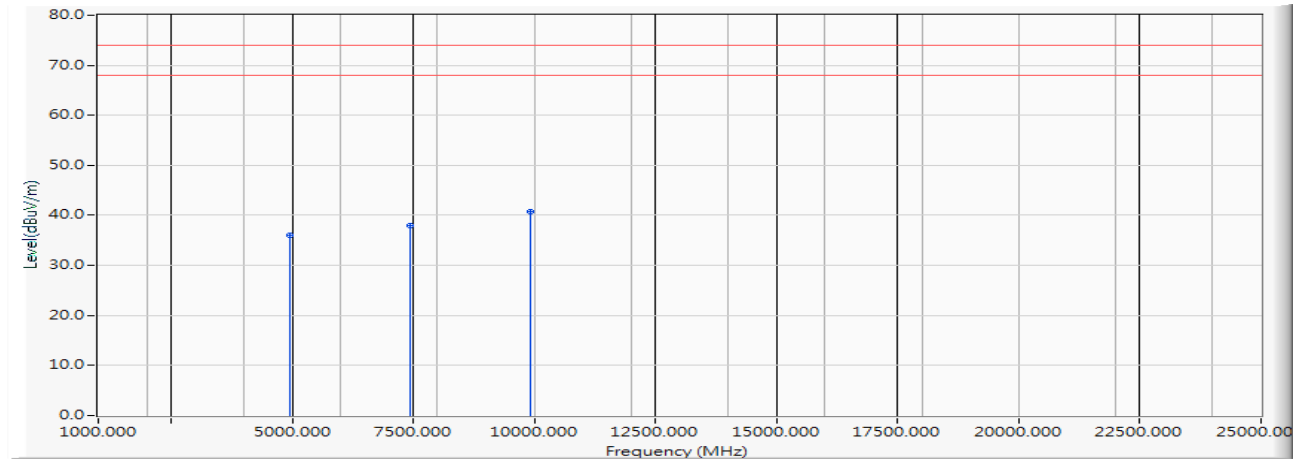
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4960.000	-6.041	41.760	35.719	-38.281	74.000	PEAK
2		7440.000	-2.805	41.400	38.595	-35.405	74.000	PEAK
3	*	9920.000	-0.260	40.660	40.400	-33.600	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : Harmonic Radiated Emission
 Test Mode : Mode 3: Transmit - 3Mbps (2480MHz)
 Test Date : 2018/11/12

Vertical



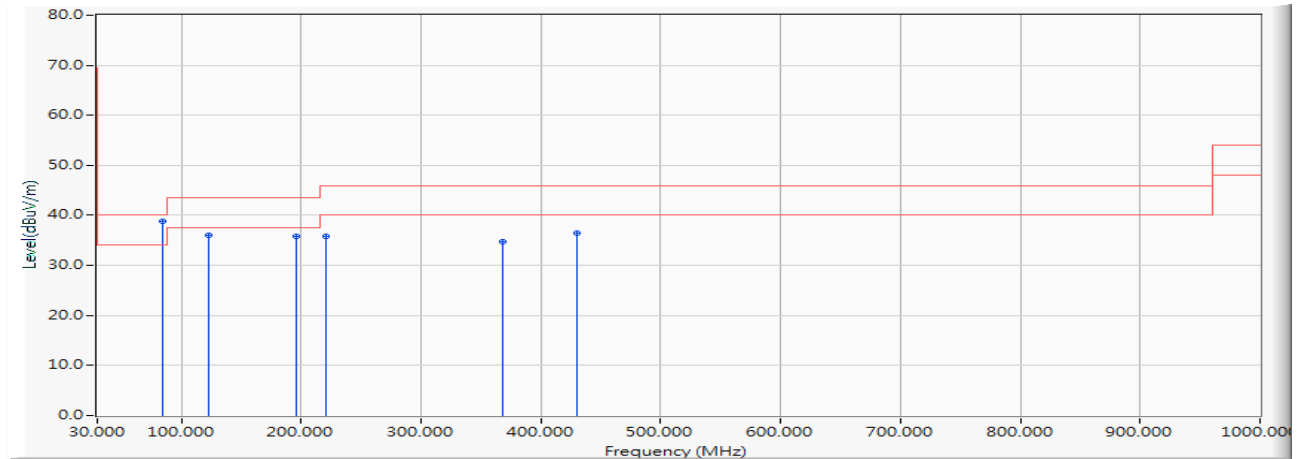
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		4960.000	-6.041	42.140	36.099	-37.901	74.000	PEAK
2		7440.000	-2.805	40.760	37.955	-36.045	74.000	PEAK
3	*	9920.000	-0.260	40.920	40.660	-33.340	74.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : ACTIVE SPEAKER
 Test Item : General Radiated Emission
 Test Mode : Mode 1: Transmit - 1Mbps (2441MHz)
 Test Date : 2018/11/09

Horizontal



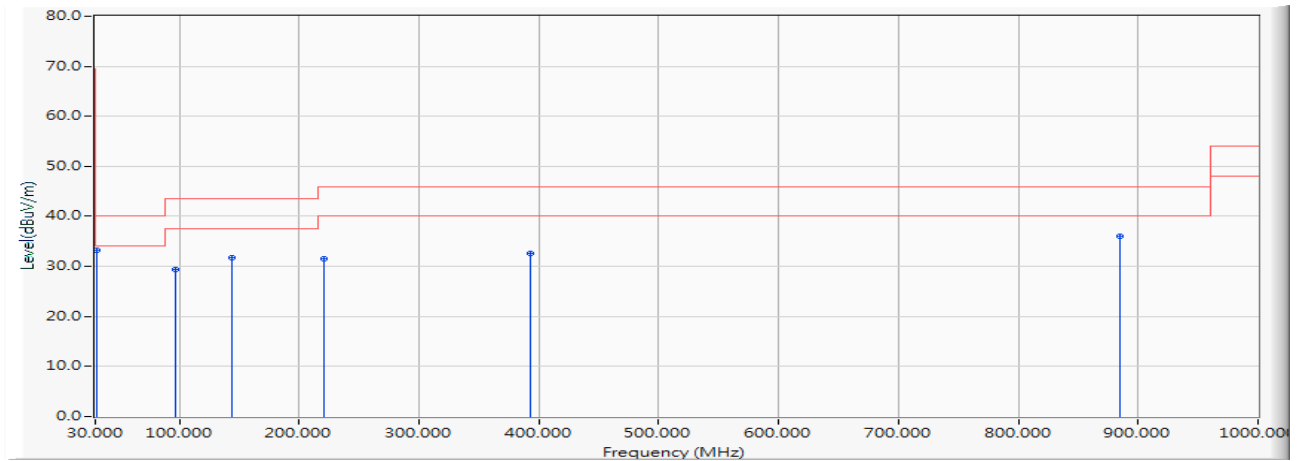
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	84.826	-16.586	55.420	38.834	-1.166	40.000	QUASIPeAK
2		122.783	-13.139	49.163	36.024	-7.476	43.500	QUASIPeAK
3		195.884	-13.667	49.437	35.770	-7.730	43.500	QUASIPeAK
4		221.188	-13.231	49.009	35.779	-10.221	46.000	QUASIPeAK
5		368.797	-8.751	43.412	34.661	-11.339	46.000	QUASIPeAK
6		430.652	-7.275	43.767	36.492	-9.508	46.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : ACTIVE SPEAKER
 Test Item : General Radiated Emission
 Test Mode : Mode 1: Transmit - 1Mbps (2441MHz)
 Test Date : 2018/11/09

Vertical



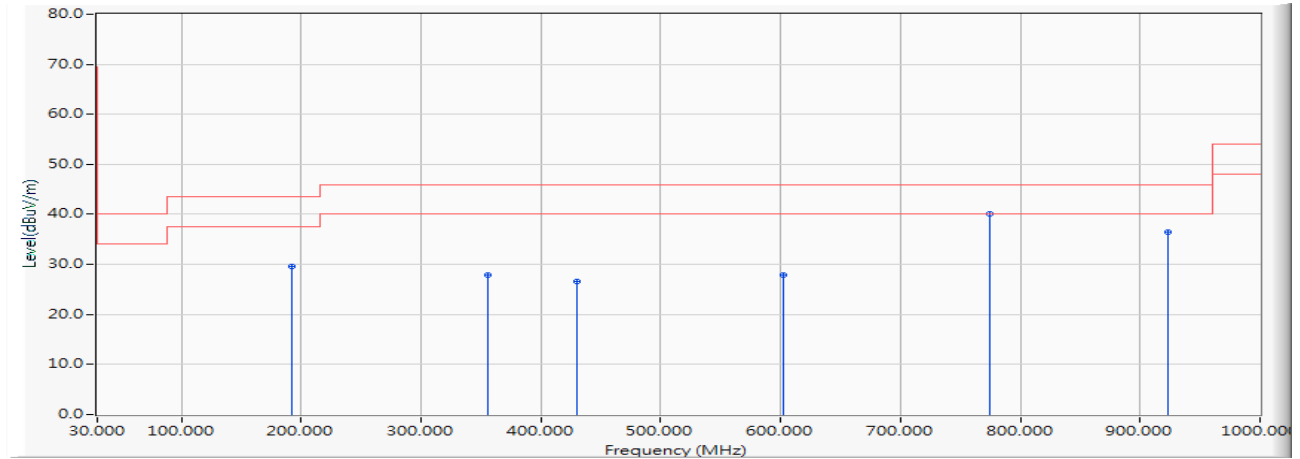
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	31.406	-12.125	45.414	33.289	-6.711	40.000	QUASIPeAK
2		97.478	-16.515	45.939	29.424	-14.076	43.500	QUASIPeAK
3		143.870	-11.295	43.084	31.790	-11.710	43.500	QUASIPeAK
4		221.188	-13.231	44.743	31.513	-14.487	46.000	QUASIPeAK
5		392.696	-8.202	40.818	32.616	-13.384	46.000	QUASIPeAK
6		884.725	-0.407	36.513	36.106	-9.894	46.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : ACTIVE SPEAKER
 Test Item : General Radiated Emission
 Test Mode : Mode 2: Transmit - 2Mbps (2441MHz)
 Test Date : 2019/01/24

Horizontal



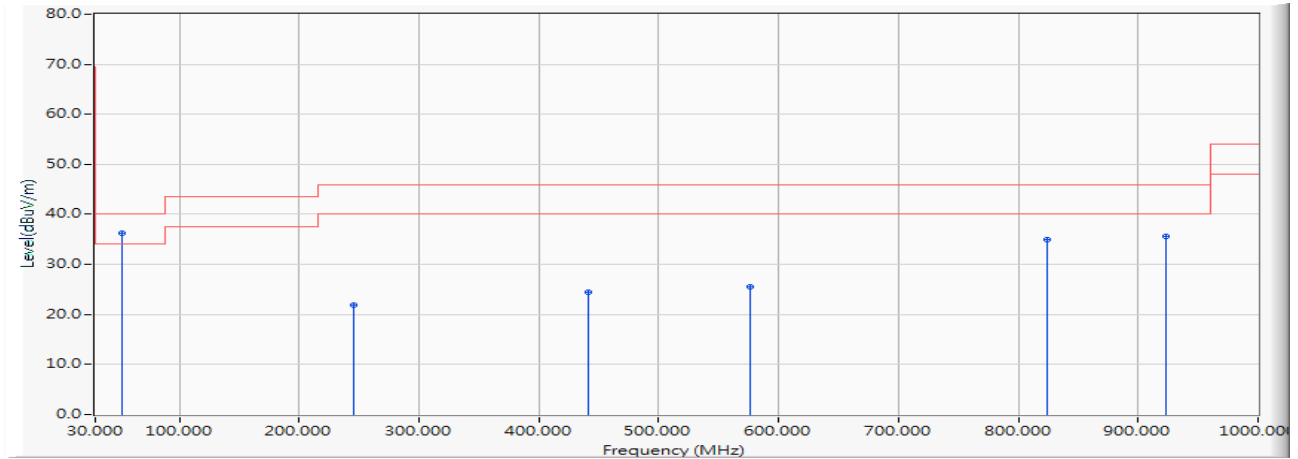
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1		191.667	-13.602	43.121	29.518	-13.982	40.000	QUASIPeAK
2		356.145	-9.039	36.933	27.895	-18.105	46.000	QUASIPeAK
3		430.652	-7.275	33.952	26.677	-19.323	46.000	QUASIPeAK
4		602.159	-3.991	31.841	27.850	-18.150	46.000	QUASIPeAK
5	*	775.072	-1.844	42.044	40.200	-5.800	46.000	QUASIPeAK
6		922.681	0.050	36.380	36.430	-9.570	46.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : ACTIVE SPEAKER
 Test Item : General Radiated Emission
 Test Mode : Mode 2: Transmit - 2Mbps (2441MHz)
 Test Date : 2019/01/24

Vertical



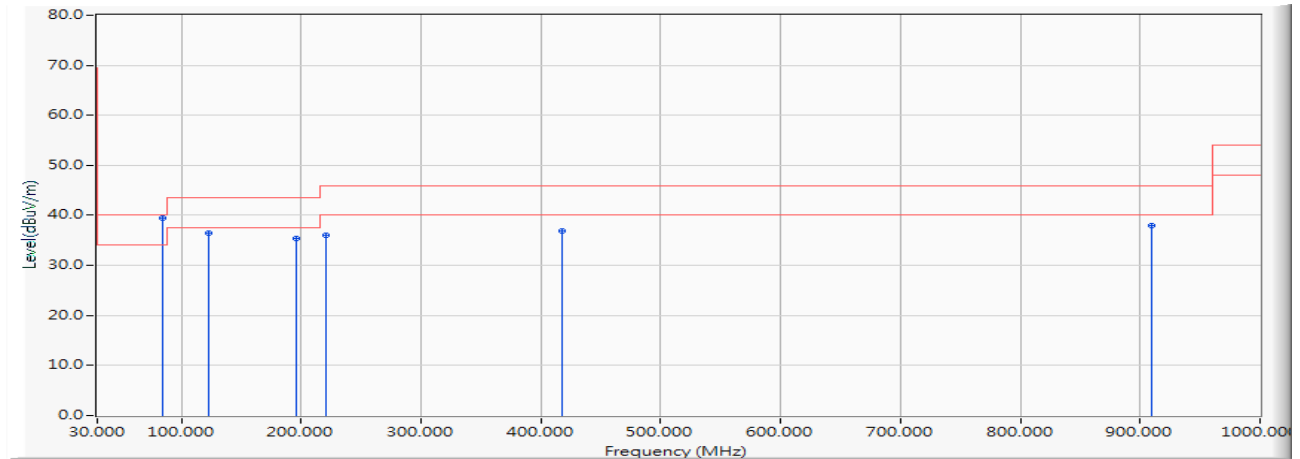
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	52.493	-11.223	47.569	36.346	-3.654	40.000	QUASIPeAK
2		245.087	-12.146	33.979	21.833	-24.167	46.000	QUASIPeAK
3		441.899	-6.997	31.445	24.447	-21.553	46.000	QUASIPeAK
4		576.855	-4.548	29.974	25.426	-20.574	46.000	QUASIPeAK
5		824.275	-1.278	36.213	34.935	-11.065	46.000	QUASIPeAK
6		922.681	0.050	35.640	35.690	-10.310	46.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : ACTIVE SPEAKER
 Test Item : General Radiated Emission
 Test Mode : Mode 3: Transmit - 3Mbps (2441MHz)
 Test Date : 2018/11/09

Horizontal



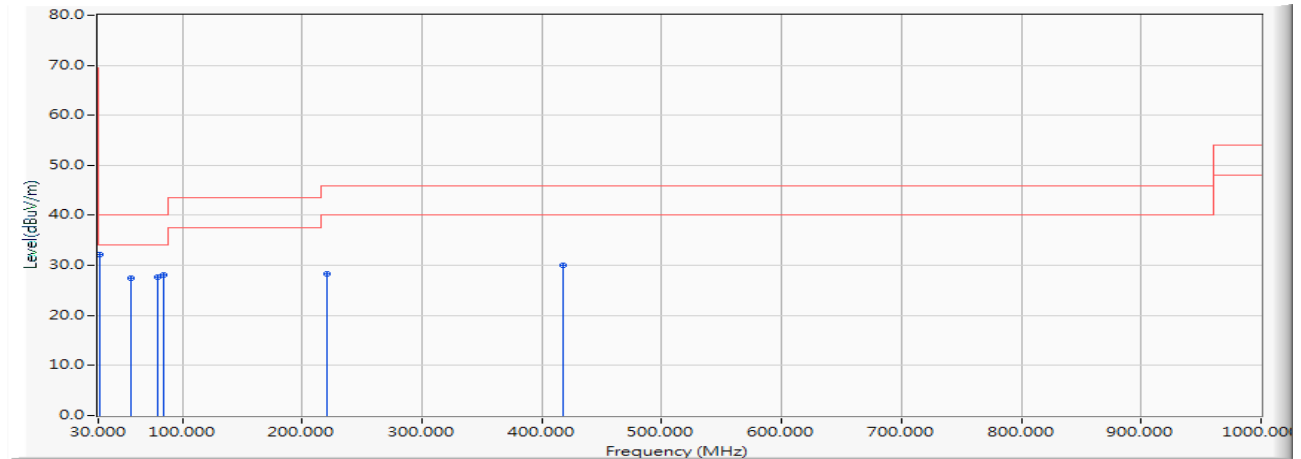
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Measure Level (dBμV/m)	Margin (dB)	Limit (dBμV/m)	Detector Type
1	*	84.826	-16.586	55.990	39.404	-0.596	40.000	QUASIPeAK
2		122.783	-13.139	49.630	36.491	-7.009	43.500	QUASIPeAK
3		195.884	-13.667	49.069	35.402	-8.098	43.500	QUASIPeAK
4		221.188	-13.231	49.242	36.012	-9.988	46.000	QUASIPeAK
5		418.000	-7.588	44.472	36.884	-9.116	46.000	QUASIPeAK
6		910.029	-0.091	38.007	37.917	-8.083	46.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : ACTIVE SPEAKER
 Test Item : General Radiated Emission
 Test Mode : Mode 3: Transmit - 3Mbps (2441MHz)
 Test Date : 2018/11/09

Vertical



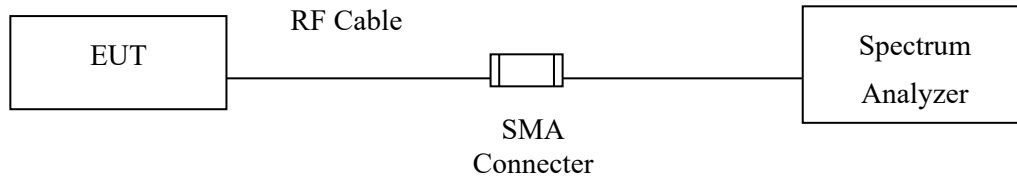
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Measure Level (dBµV/m)	Margin (dB)	Limit (dBµV/m)	Detector Type
1	*	31.406	-12.125	44.347	32.222	-7.778	40.000	QUASIPeAK
2		56.710	-11.747	39.289	27.542	-12.458	40.000	QUASIPeAK
3		79.203	-15.483	43.243	27.760	-12.240	40.000	QUASIPeAK
4		84.826	-16.586	44.696	28.110	-11.890	40.000	QUASIPeAK
5		221.188	-13.231	41.503	28.273	-17.727	46.000	QUASIPeAK
6		418.000	-7.588	37.641	30.053	-15.947	46.000	QUASIPeAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

5. RF Antenna Conducted Test

5.1. Test Setup



5.2. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 b) for compliance to FCC 47CFR 15.247 requirements.

5.4. Uncertainty

$\pm 1.23\text{dB}$

5.5. Test Result of RF Antenna Conducted Test

Product : ACTIVE SPEAKER
Test Item : RF Antenna Conducted Test
Test Mode : Mode 1: Transmit - 1Mbps
Test Date : 2018/11/20

Figure Channel 00:

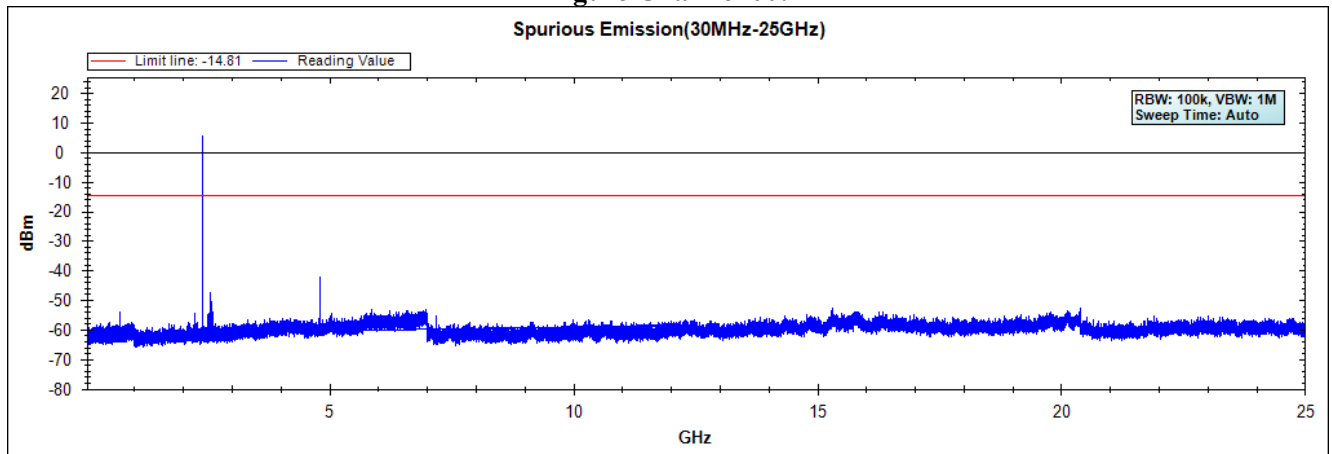


Figure Channel 39:

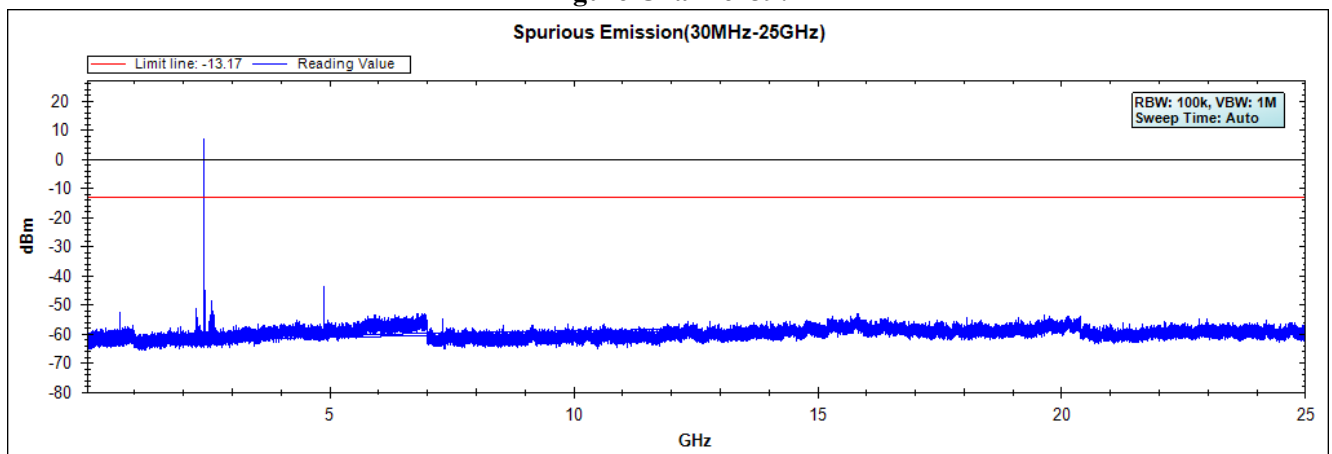
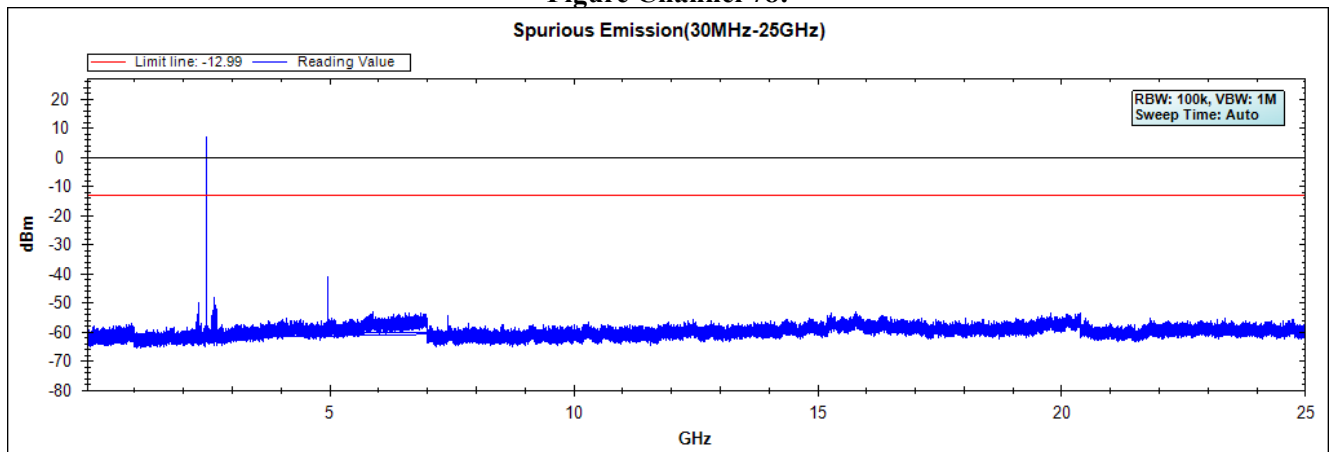
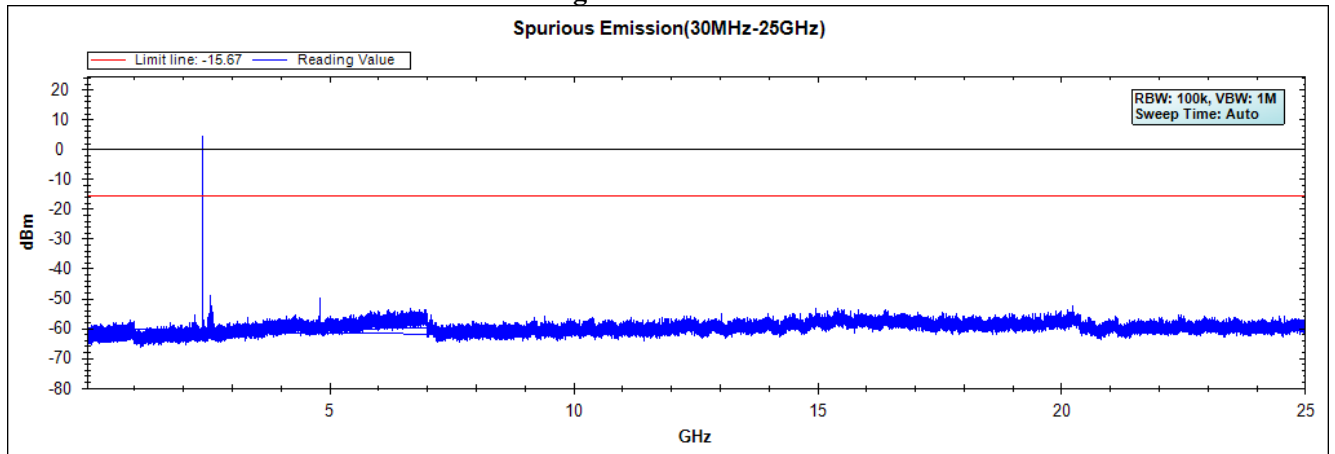
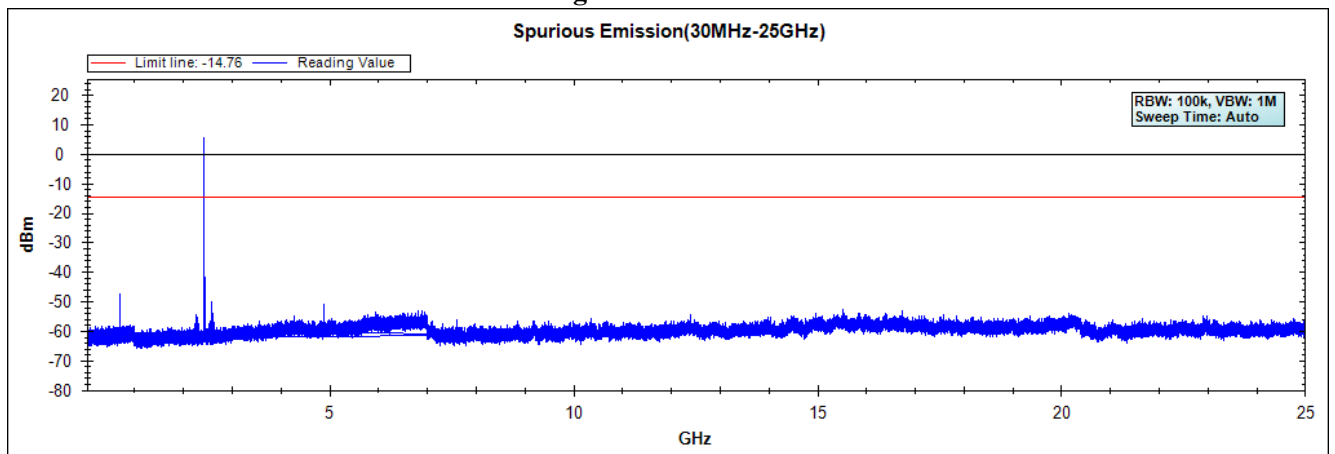
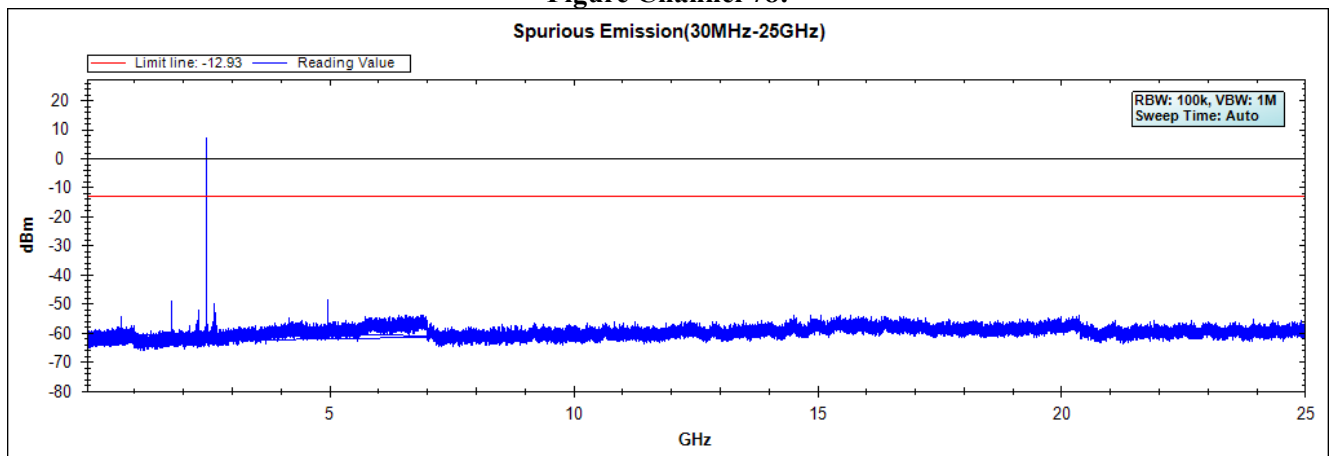


Figure Channel 78:



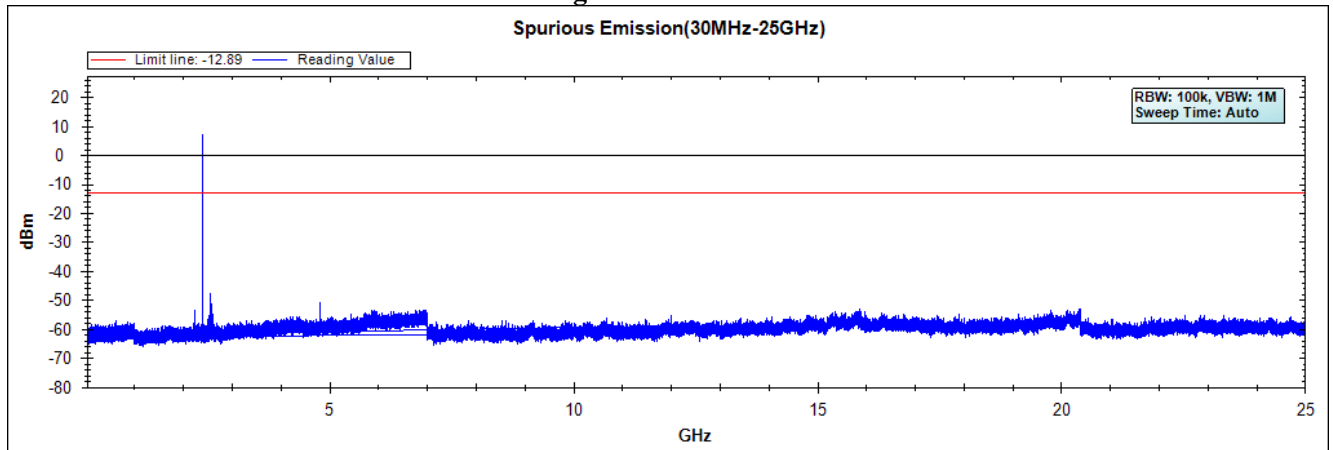
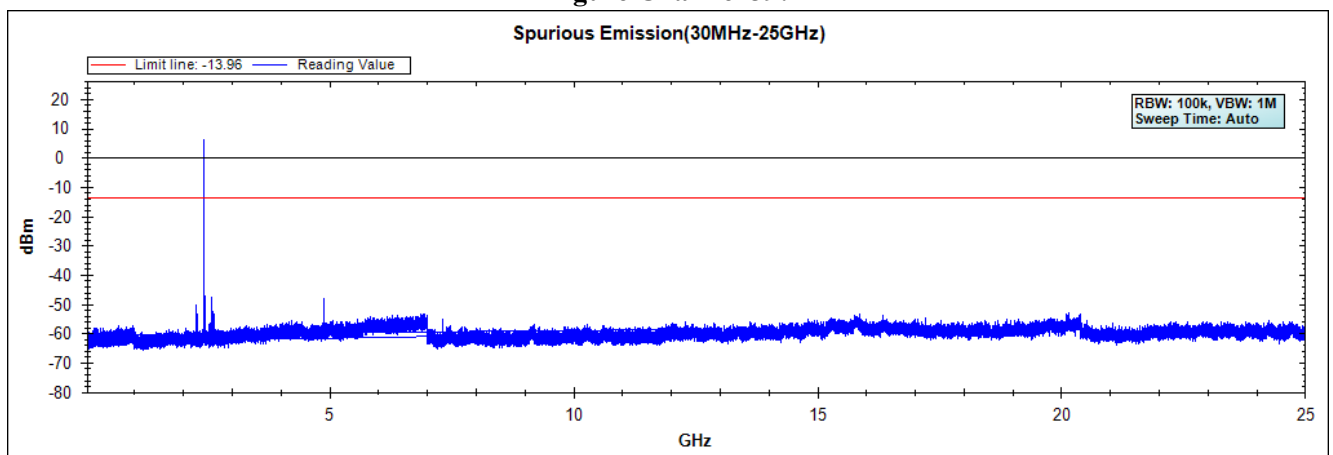
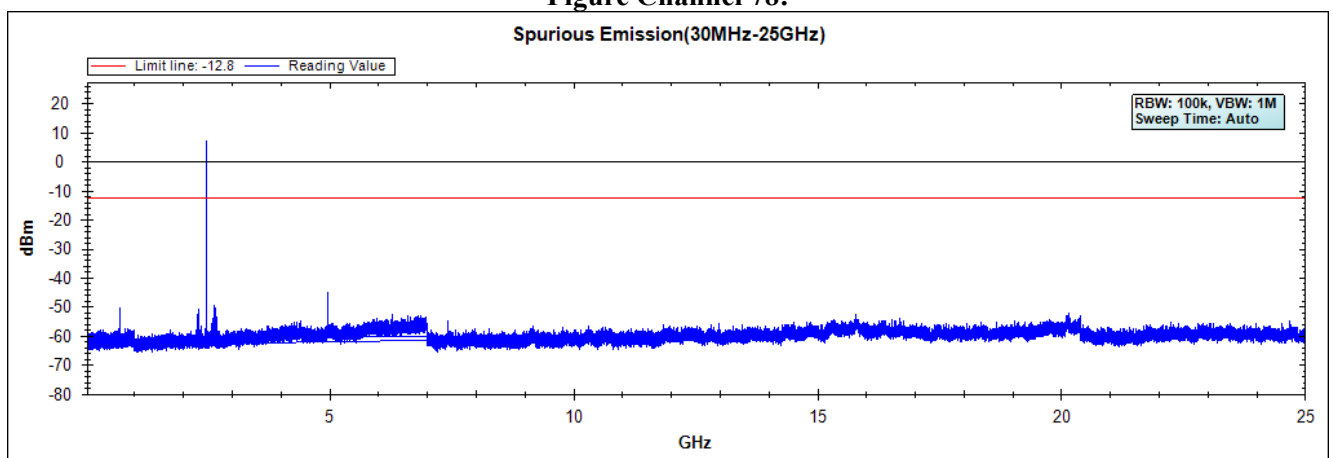
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : ACTIVE SPEAKER
Test Item : RF Antenna Conducted Test
Test Mode : Mode 2: Transmit - 2Mbps
Test Date : 2019/01/24

Figure Channel 00:**Figure Channel 39:****Figure Channel 78:**

Note: The above test pattern is synthesized by multiple of the frequency range.

Product : ACTIVE SPEAKER
Test Item : RF Antenna Conducted Test
Test Mode : Mode 3: Transmit - 3Mbps
Test Date : 2018/11/20

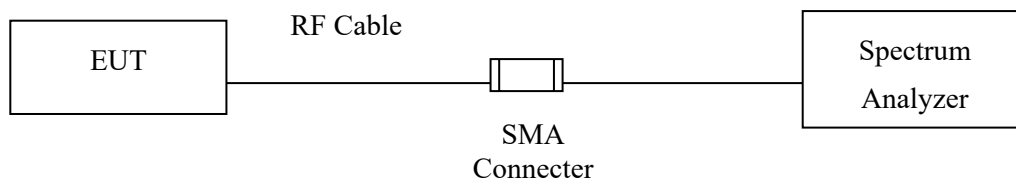
Figure Channel 00:**Figure Channel 39:****Figure Channel 78:**

Note: The above test pattern is synthesized by multiple of the frequency range.

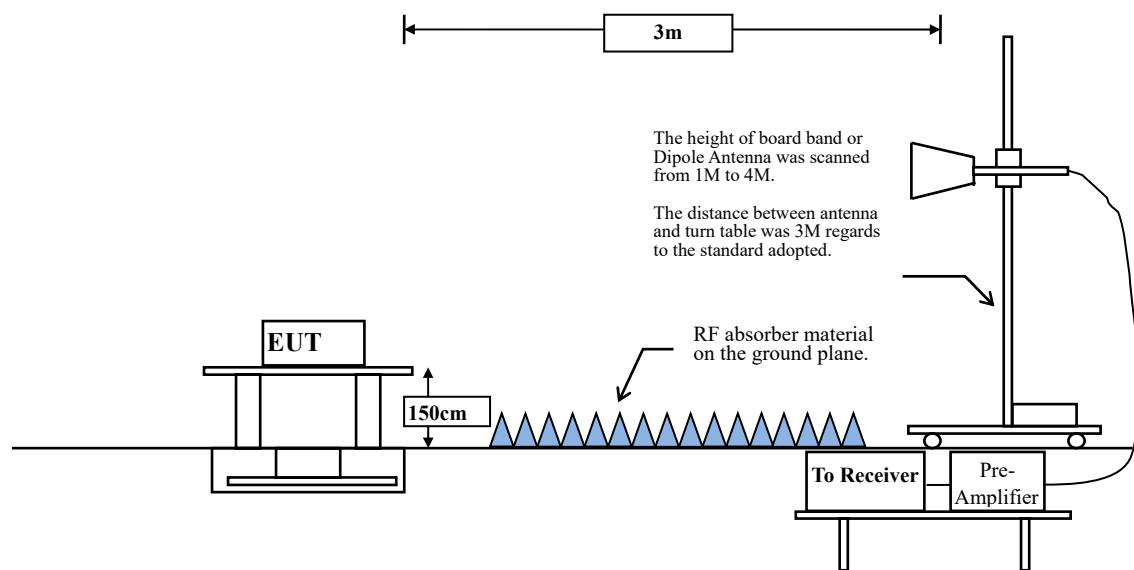
6. Band Edge

6.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement:



6.2. Limit

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

6.4. Uncertainty

Conducted: $\pm 1.23\text{dB}$

Radiated:

Horizontal polarization : 1-18GHz: $\pm 3.77\text{dB}$

Vertical polarization : 1-18GHz : $\pm 3.83\text{dB}$

6.5. Test Result of Band Edge

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 1: Transmit - 1Mbps (2402MHz)
 Test Date : 2018/11/06

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
00 (Peak)	2360.145	10.140	38.858	48.998	74.00	54.00	Pass
00 (Peak)	2390.000	10.262	37.329	47.591	74.00	54.00	Pass
00 (Peak)	2400.000	10.304	44.372	54.675	--	--	Pass
00 (Peak)	2402.174	10.312	75.260	85.572	--	--	--
00 (Average)	2390.000	10.262	24.448	34.710	74.00	54.00	Pass
00 (Average)	2400.000	10.304	31.117	41.420	--	--	Pass
00 (Average)	2402.029	10.312	64.333	74.645	--	--	--

Figure Channel 00: Horizontal (Peak)

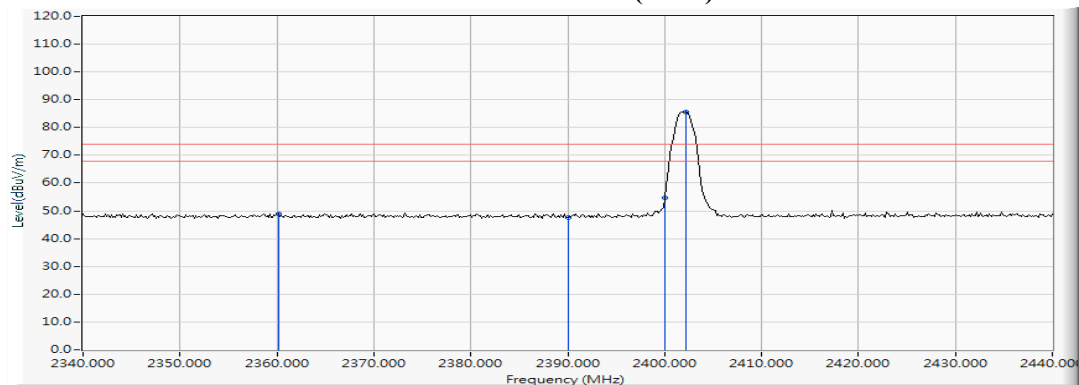
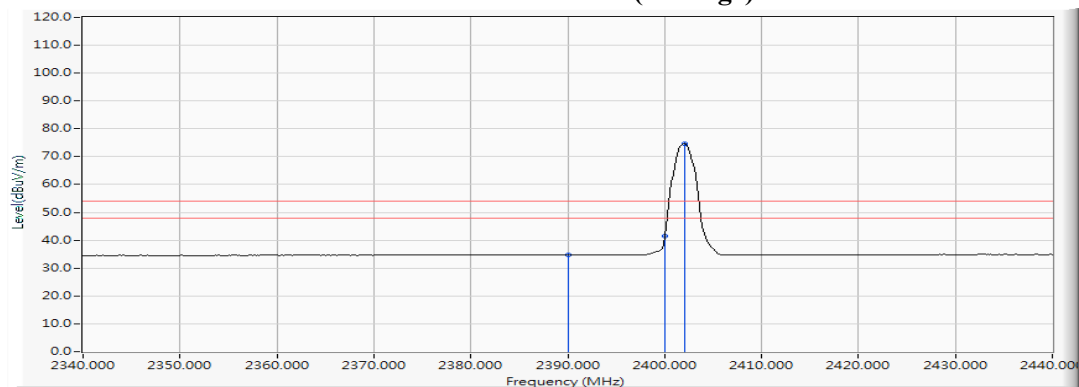


Figure Channel 00: Horizontal (Average)



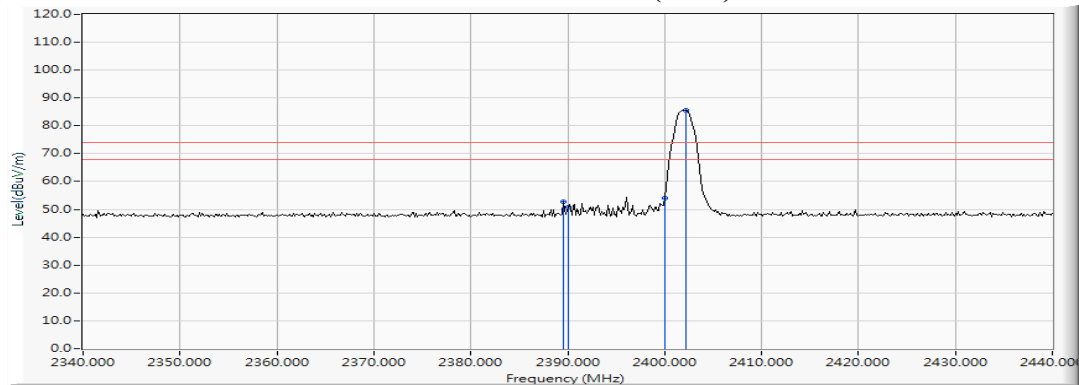
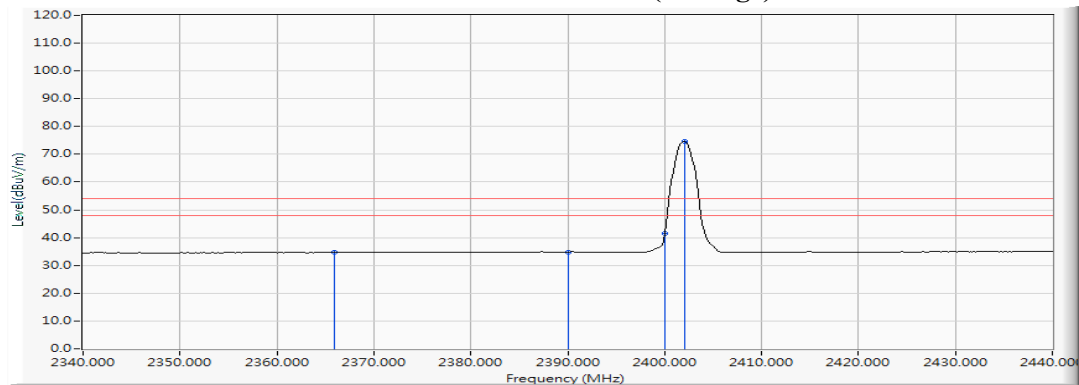
Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 1: Transmit - 1Mbps (2402MHz)
 Test Date : 2018/11/06

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
00 (Peak)	2389.565	10.261	42.512	52.772	74.00	54.00	Pass
00 (Peak)	2390.000	10.262	40.705	50.967	74.00	54.00	Pass
00 (Peak)	2400.000	10.304	43.709	54.012	--	--	Pass
00 (Peak)	2402.174	10.312	75.188	85.500	--	--	--
00 (Average)	2365.942	10.167	24.684	34.850	74.00	54.00	Pass
00 (Average)	2390.000	10.262	24.559	34.821	74.00	54.00	Pass
00 (Average)	2400.000	10.304	31.192	41.495	--	--	Pass
00 (Average)	2402.029	10.312	64.261	74.573	--	--	--

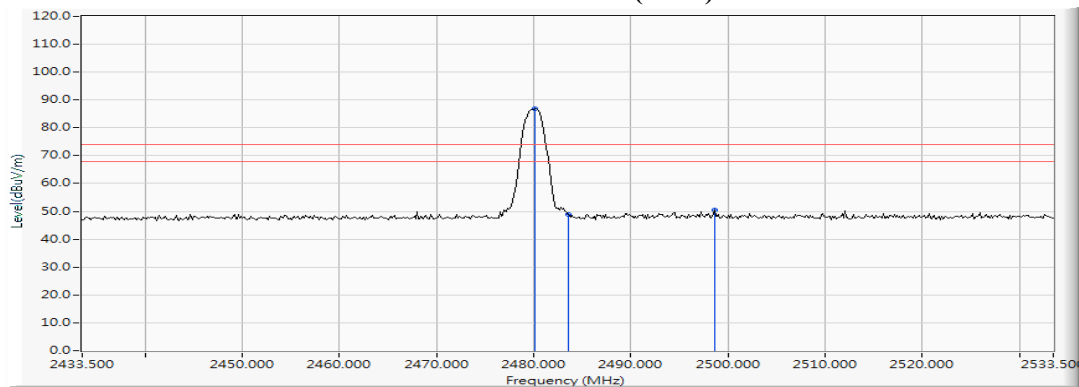
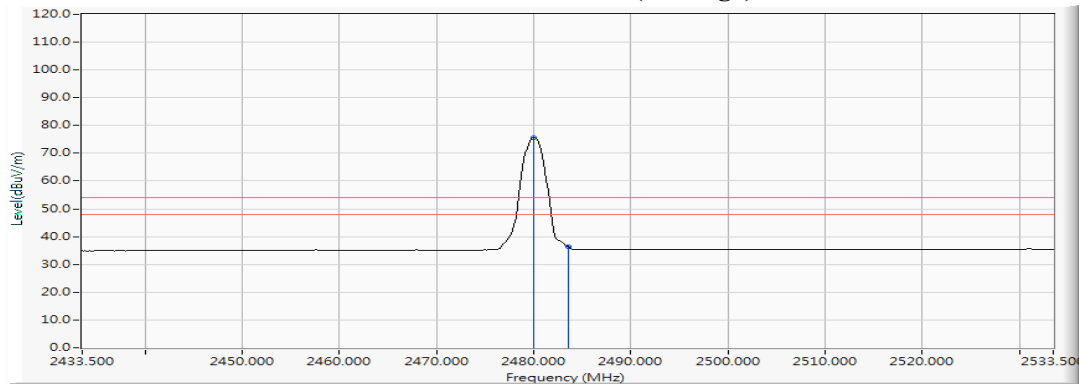
Figure Channel 00:
VERTICAL (Peak)

Figure Channel 00:
VERTICAL (Average)

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 1: Transmit - 1Mbps (2480MHz)
 Test Date : 2018/11/06

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
78 (Peak)	2480.167	10.629	76.082	86.711	--	--	--
78 (Peak)	2483.500	10.640	38.404	49.045	74.00	54.00	Pass
78 (Peak)	2498.572	10.694	39.674	50.369	74.00	54.00	Pass
78 (Average)	2480.022	10.628	65.087	75.715	--	--	--
78 (Average)	2483.500	10.640	25.717	36.358	74.00	54.00	Pass

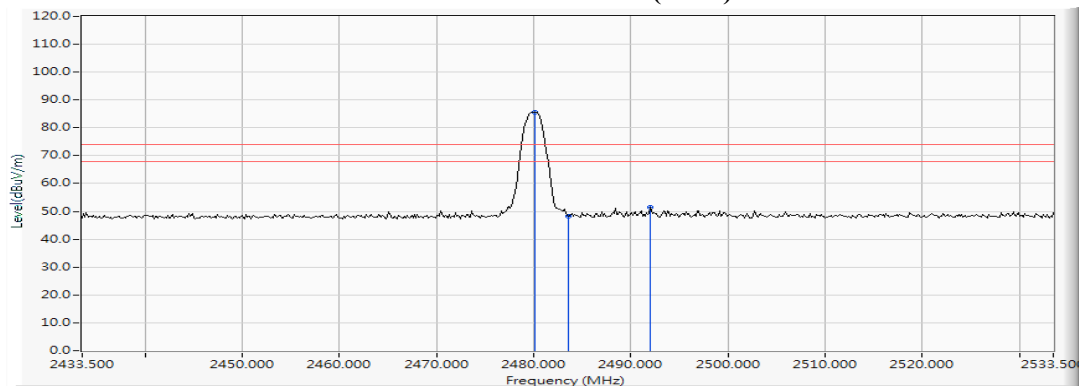
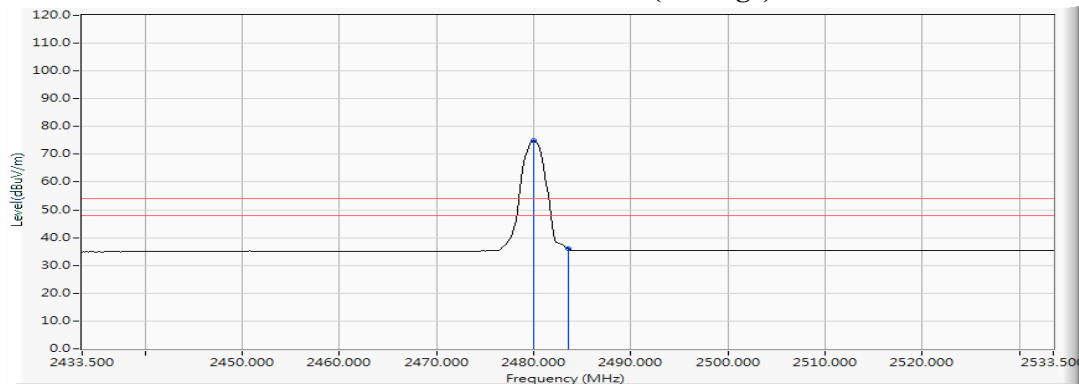
Figure Channel 78: Horizontal (Peak)**Figure Channel 78: Horizontal (Average)****Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 1: Transmit - 1Mbps (2480MHz)
 Test Date : 2018/11/06

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
78 (Peak)	2480.167	10.629	74.994	85.623	--	--	--
78 (Peak)	2483.500	10.640	37.715	48.356	74.00	54.00	Pass
78 (Peak)	2492.051	10.674	40.758	51.432	74.00	54.00	Pass
78 (Average)	2480.022	10.628	64.173	74.801	--	--	--
78 (Average)	2483.500	10.640	25.479	36.120	74.00	54.00	Pass

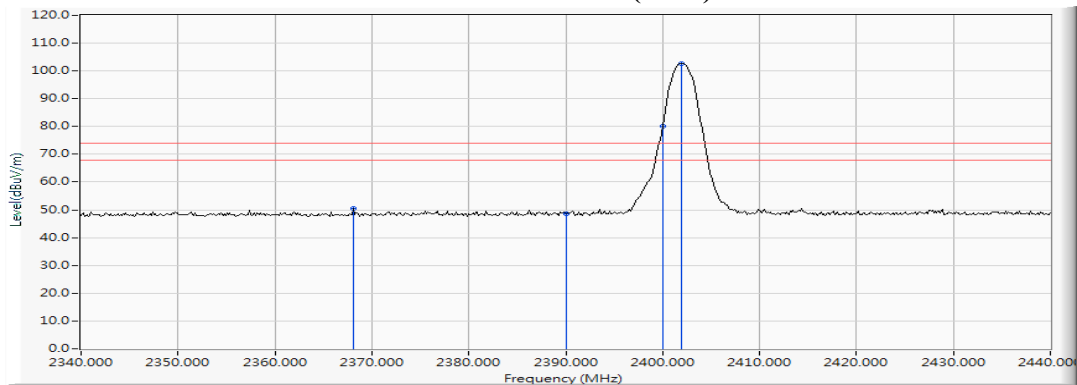
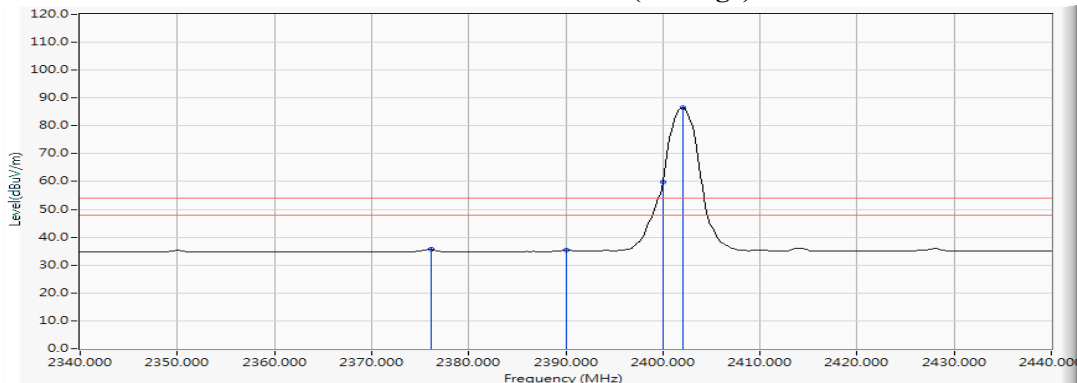
Figure Channel 78: VERTICAL (Peak)

Figure Channel 78: VERTICAL (Average)

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 2: Transmit - 2Mbps (2402MHz)
 Test Date : 2019/01/25

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
00 (Peak)	2368.116	10.175	40.227	50.402	74.00	54.00	Pass
00 (Peak)	2390.000	10.262	38.170	48.432	74.00	54.00	Pass
00 (Peak)	2400.000	10.304	69.853	80.156	--	--	Pass
00 (Peak)	2401.884	10.311	92.286	102.597	--	--	--
00 (Average)	2376.087	10.205	25.409	35.614	74.00	54.00	Pass
00 (Average)	2390.000	10.262	25.097	35.359	74.00	54.00	Pass
00 (Average)	2400.000	10.304	49.501	59.804	--	--	Pass
00 (Average)	2402.029	10.312	76.120	86.432	--	--	--

Figure Channel 00: Horizontal (Peak)

Figure Channel 00: Horizontal (Average)


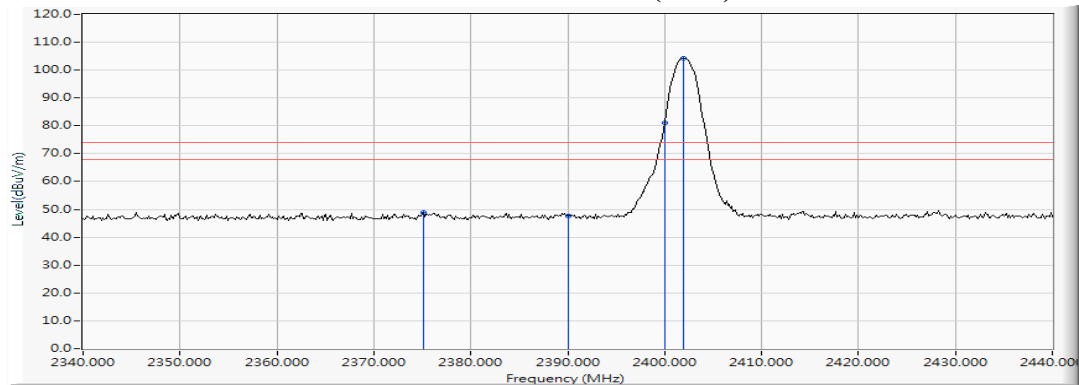
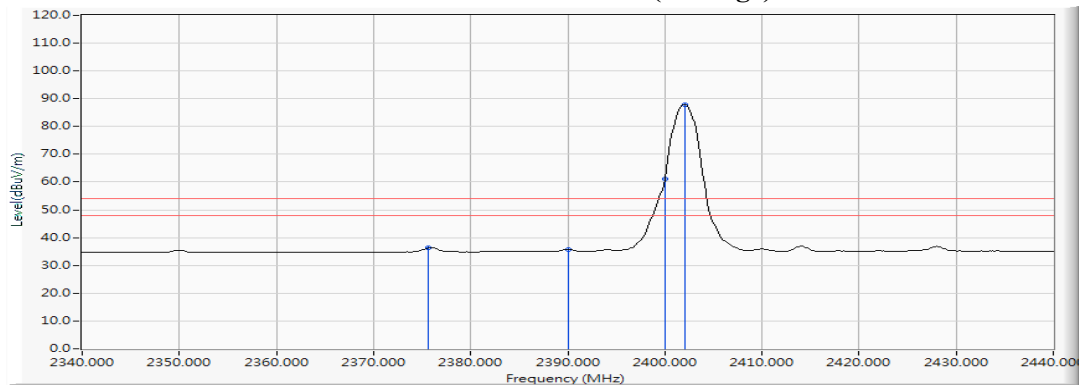
Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 2: Transmit - 2Mbps (2402MHz)
 Test Date : 2019/01/25

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
00 (Peak)	2375.072	10.201	38.713	48.914	74.00	54.00	Pass
00 (Peak)	2390.000	10.262	37.418	47.680	74.00	54.00	Pass
00 (Peak)	2400.000	10.304	70.844	81.147	--	--	Pass
00 (Peak)	2401.884	10.311	93.928	104.239	--	--	--
00 (Average)	2375.652	10.204	26.089	36.293	74.00	54.00	Pass
00 (Average)	2390.000	10.262	25.502	35.764	74.00	54.00	Pass
00 (Average)	2400.000	10.304	50.945	61.248	--	--	Pass
00 (Average)	2402.029	10.312	77.586	87.898	--	--	--

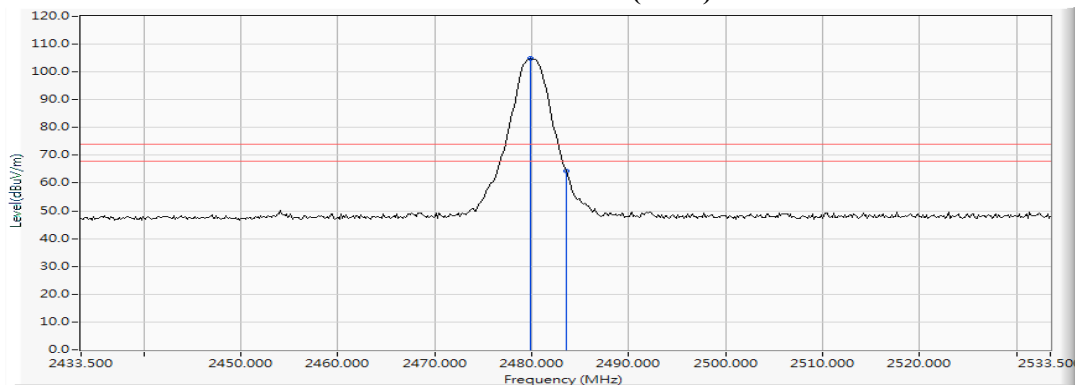
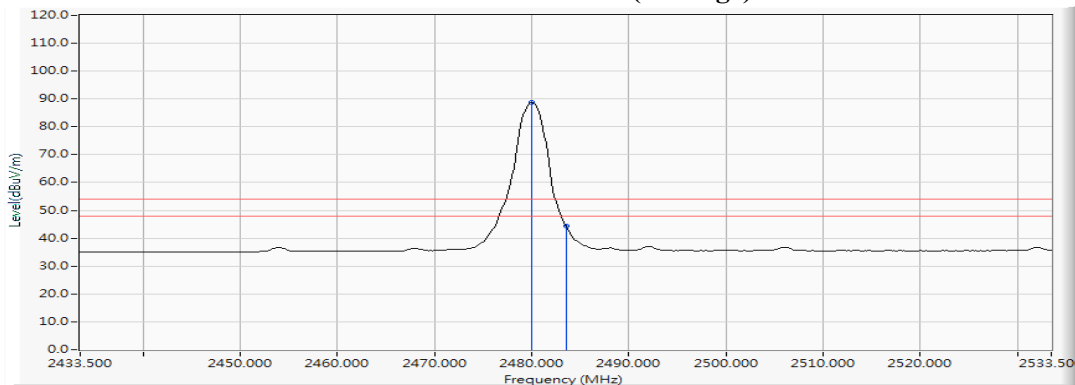
Figure Channel 00:**VERTICAL (Peak)****Figure Channel 00:****VERTICAL (Average)****Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 2: Transmit - 2Mbps (2480MHz)
 Test Date : 2019/01/25

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
78 (Peak)	2479.877	10.628	94.119	104.746	--	--	--
78 (Peak)	2483.500	10.640	53.568	64.209	74.00	54.00	Pass
78 (Average)	2480.022	10.628	78.088	88.716	--	--	--
78 (Average)	2483.500	10.640	33.870	44.511	74.00	54.00	Pass

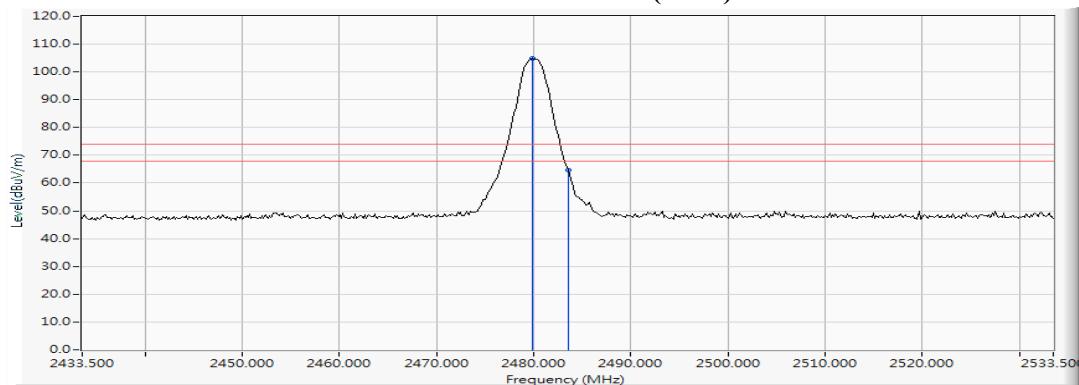
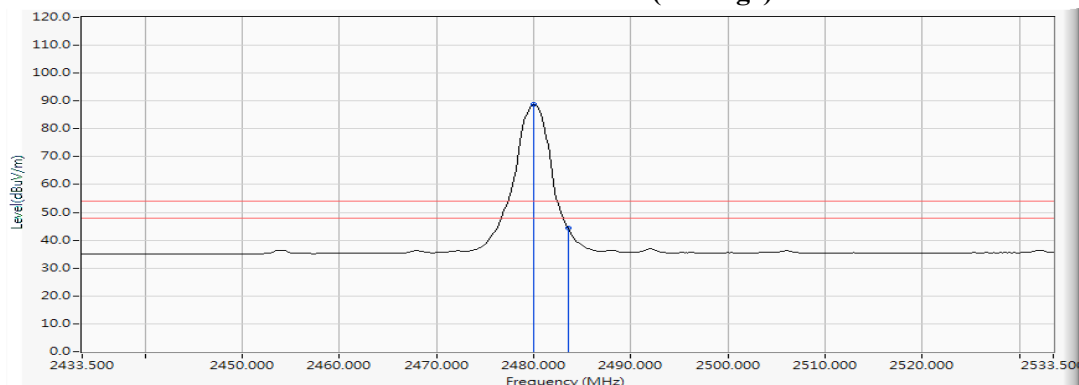
Figure Channel 78: Horizontal (Peak)**Figure Channel 78: Horizontal (Average)****Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 2: Transmit - 2Mbps (2480MHz)
 Test Date : 2019/01/25

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
78 (Peak)	2479.877	10.628	94.112	104.739	--	--	--
78 (Peak)	2483.500	10.640	54.052	64.693	74.00	54.00	Pass
78 (Average)	2480.022	10.628	78.072	88.700	--	--	--
78 (Average)	2483.500	10.640	33.811	44.452	74.00	54.00	Pass

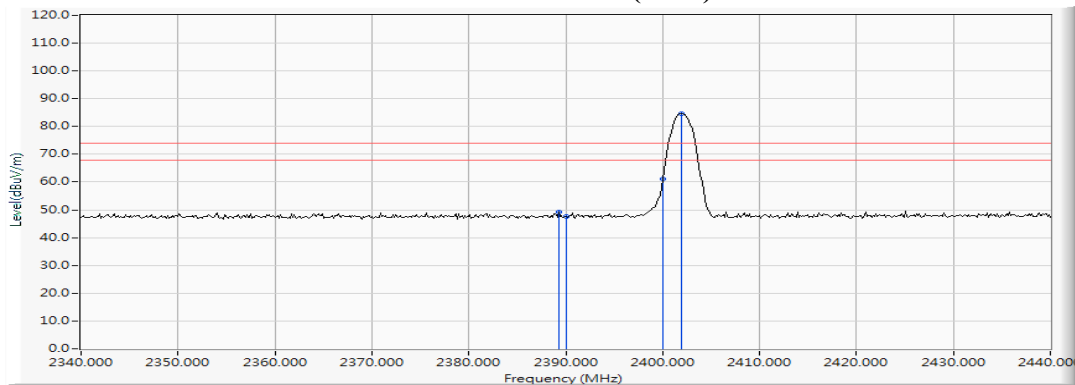
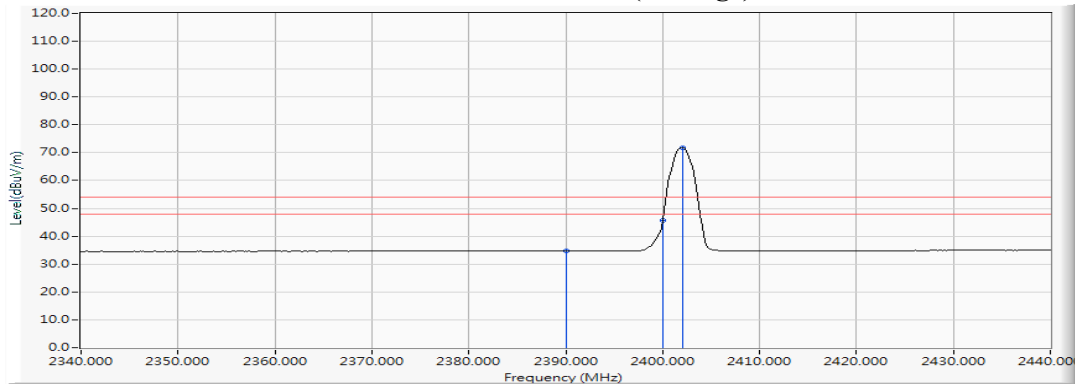
Figure Channel 78: VERTICAL (Peak)**Figure Channel 78: VERTICAL (Average)****Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 3: Transmit - 3Mbps (2402MHz)
 Test Date : 2018/11/06

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
00 (Peak)	2389.275	10.260	38.828	49.087	74.00	54.00	Pass
00 (Peak)	2390.000	10.262	37.262	47.524	74.00	54.00	Pass
00 (Peak)	2400.000	10.304	50.697	61.000	--	--	Pass
00 (Peak)	2401.884	10.311	74.282	84.593	--	--	--
00 (Average)	2390.000	10.262	24.413	34.675	74.00	54.00	Pass
00 (Average)	2400.000	10.304	35.535	45.838	--	--	Pass
00 (Average)	2402.029	10.312	61.447	71.759	--	--	--

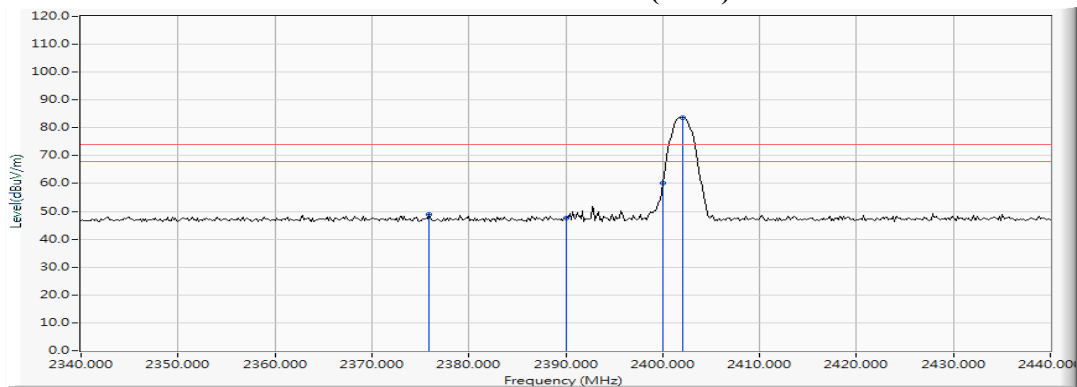
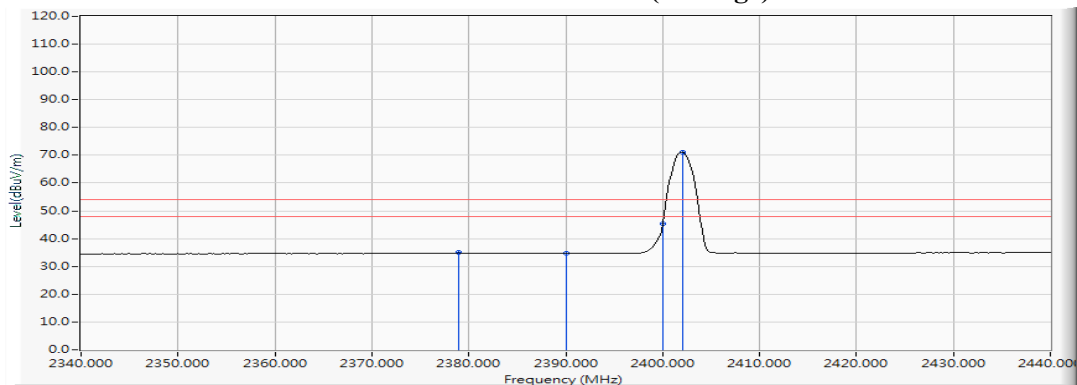
Figure Channel 00: Horizontal (Peak)**Figure Channel 00: Horizontal (Average)****Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 3: Transmit - 3Mbps (2402MHz)
 Test Date : 2018/11/06

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
00 (Peak)	2375.942	10.205	38.609	48.814	74.00	54.00	Pass
00 (Peak)	2390.000	10.262	37.381	47.643	74.00	54.00	Pass
00 (Peak)	2400.000	10.304	49.714	60.017	--	--	Pass
00 (Peak)	2402.029	10.312	73.371	83.683	--	--	--
00 (Average)	2378.986	10.216	24.702	34.919	74.00	54.00	Pass
00 (Average)	2390.000	10.262	24.415	34.677	74.00	54.00	Pass
00 (Average)	2400.000	10.304	35.107	45.410	--	--	Pass
00 (Average)	2402.029	10.312	60.756	71.068	--	--	--

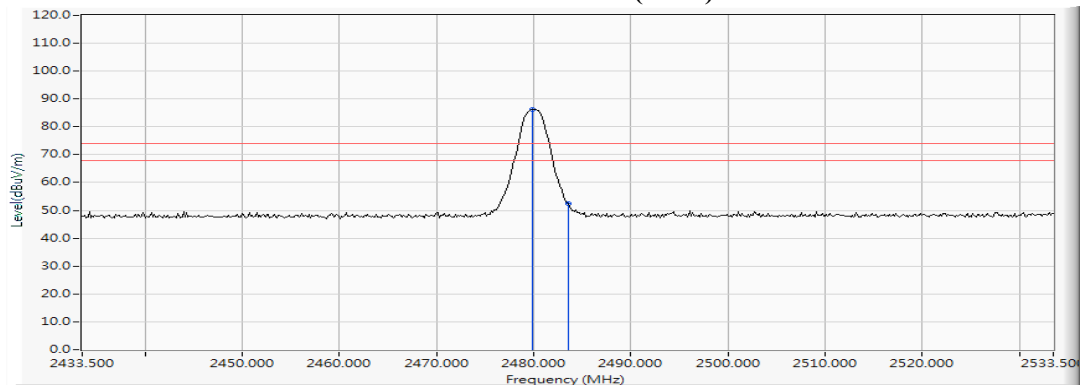
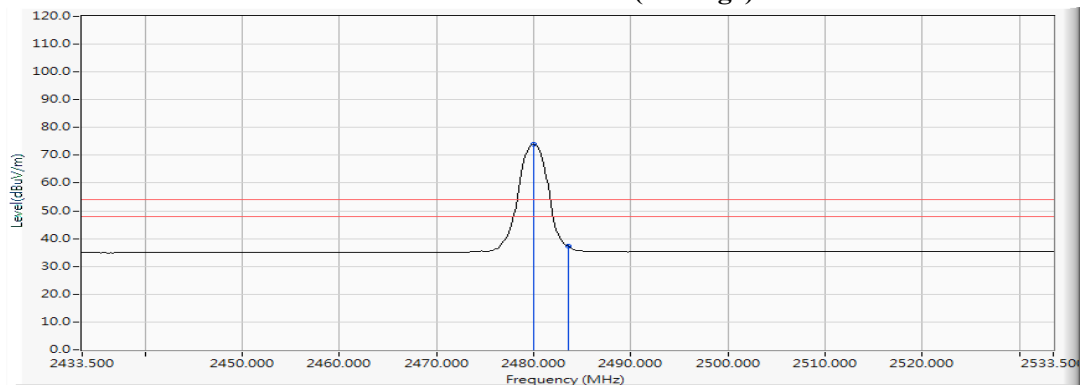
Figure Channel 00: VERTICAL (Peak)**Figure Channel 00: VERTICAL (Average)****Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 3: Transmit - 3Mbps (2480MHz)
 Test Date : 2018/11/06

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
78 (Peak)	2479.877	10.628	75.574	86.201	--	--	--
78 (Peak)	2483.500	10.640	41.755	52.396	74.00	54.00	Pass
78 (Average)	2480.022	10.628	63.248	73.876	--	--	--
78 (Average)	2483.500	10.640	26.606	37.247	74.00	54.00	Pass

Figure Channel 78: Horizontal (Peak)

Figure Channel 78: Horizontal (Average)


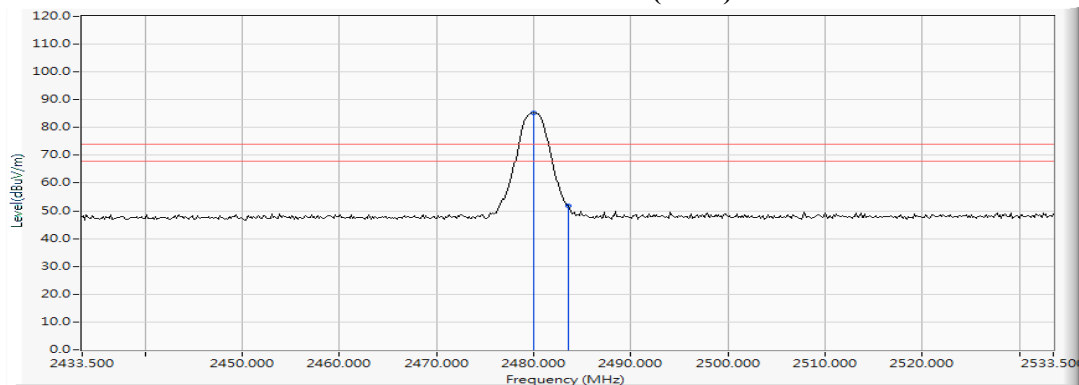
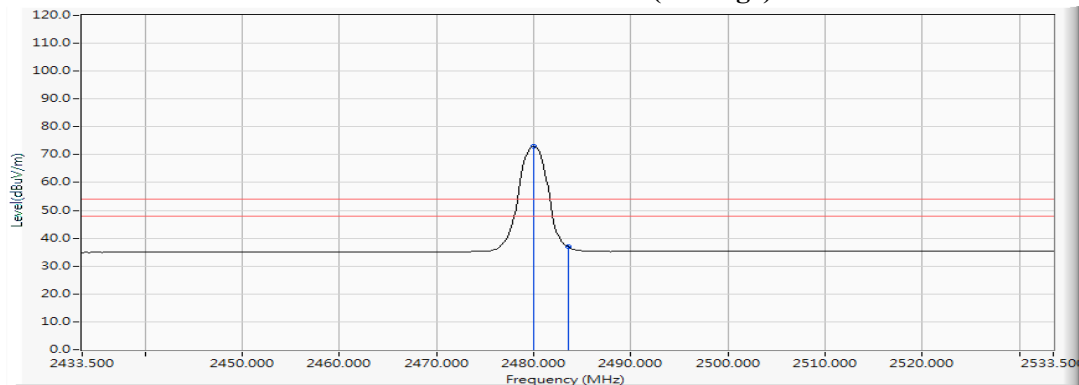
Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 3: Transmit - 3Mbps (2480MHz)
 Test Date : 2018/11/06

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
78 (Peak)	2480.022	10.628	74.530	85.158	--	--	--
78 (Peak)	2483.500	10.640	41.279	51.920	74.00	54.00	Pass
78 (Average)	2480.022	10.628	62.400	73.028	--	--	--
78 (Average)	2483.500	10.640	26.335	36.976	74.00	54.00	Pass

Figure Channel 78: VERTICAL (Peak)**Figure Channel 78: VERTICAL (Average)****Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correction Factor.
6. The average measurement was not performed when the peak measured data is under the limit of average detection.

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 1: Transmit - 1Mbps (Hopping off)
 Test Date : 2018/11/20

Measurement Level	Result
Δ (dB)	
> 20	PASS

Figure Channel 00:

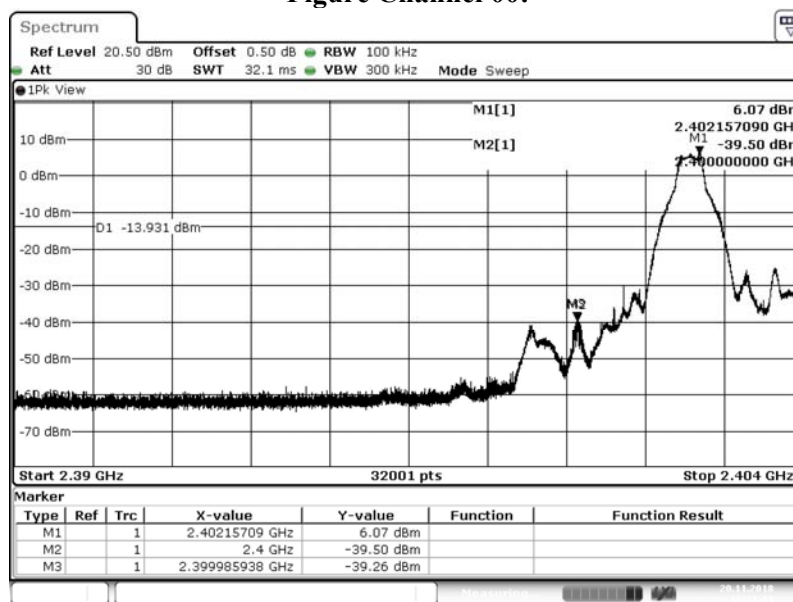
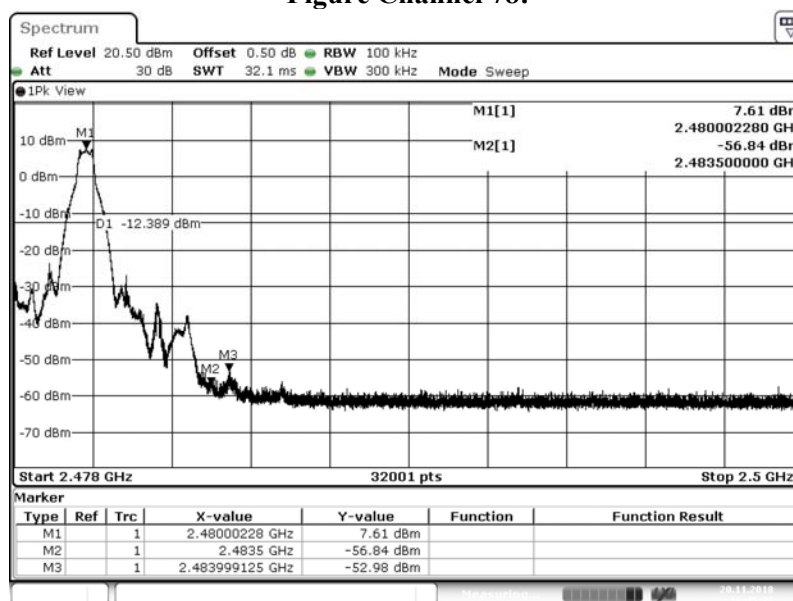


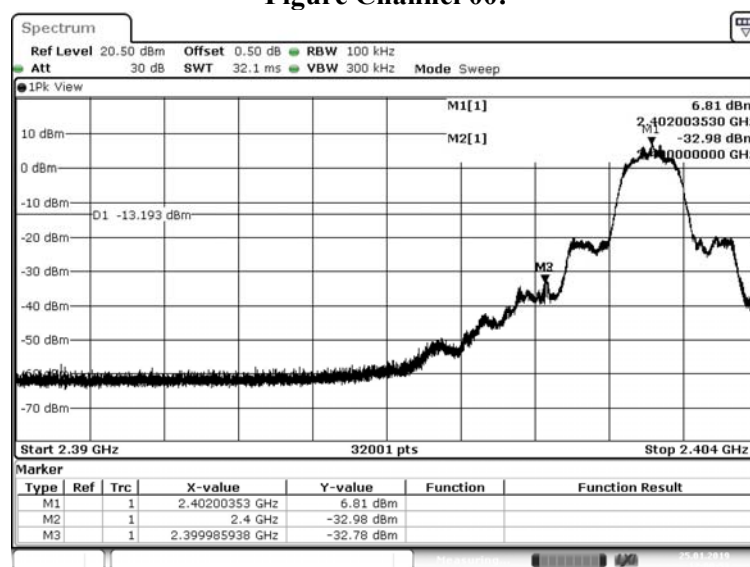
Figure Channel 78:



Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 2: Transmit - 2Mbps (Hopping off)
 Test Date : 2019/01/25

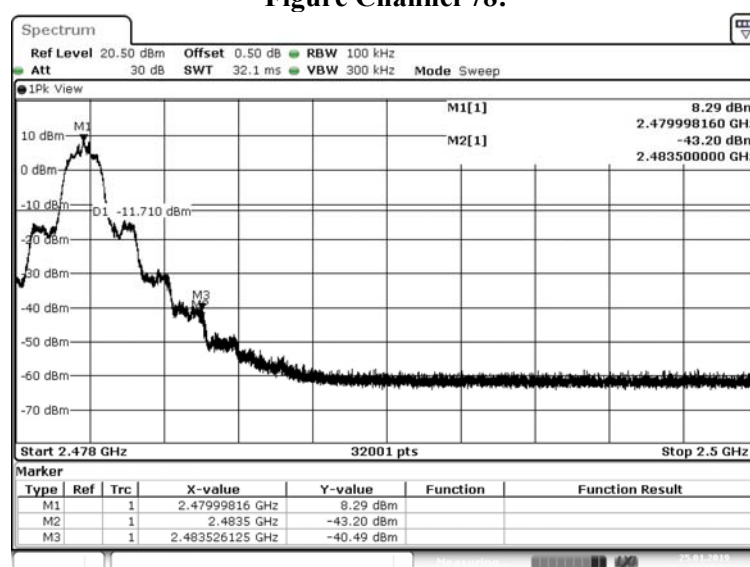
Measurement Level	Result
Δ (dB)	
> 20	PASS

Figure Channel 00:



Date: 25 JAN 2019 12:00:53

Figure Channel 78:

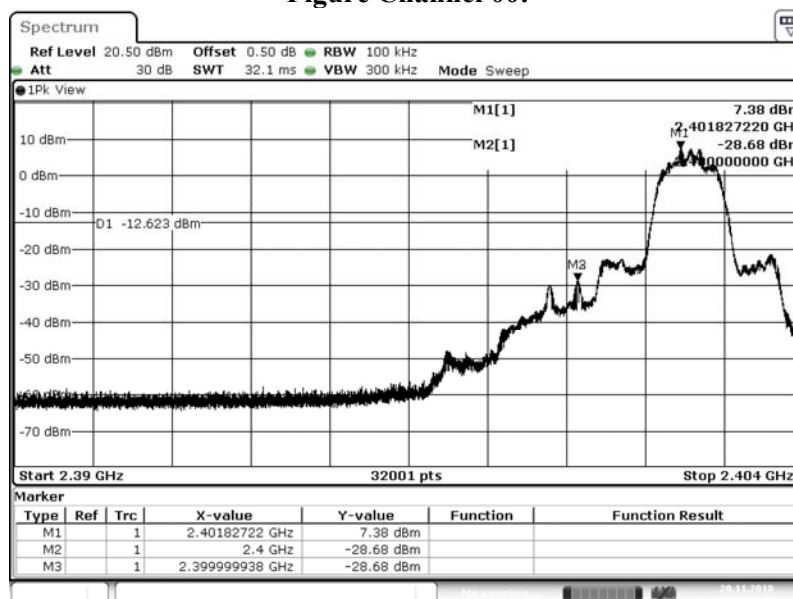


Date: 25 JAN 2019 12:18:33

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 3: Transmit - 3Mbps (Hopping off)
 Test Date : 2018/11/20

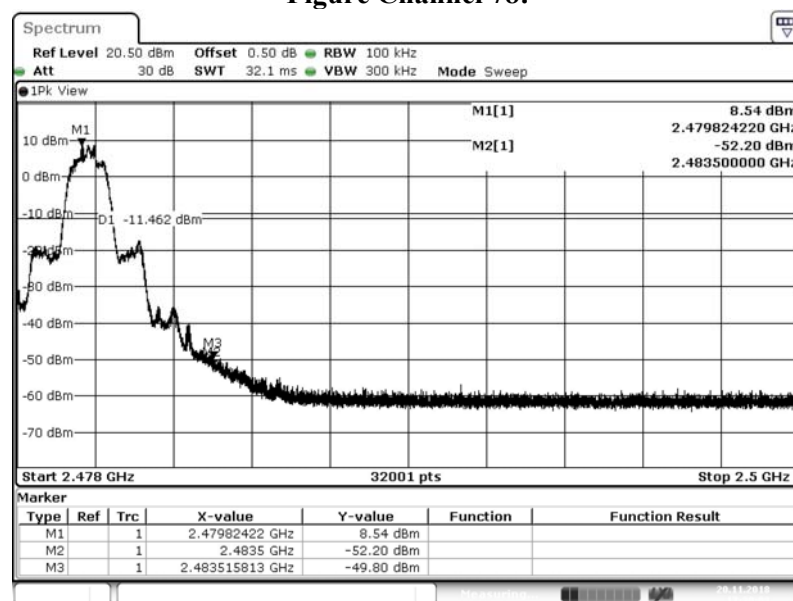
Measurement Level	Result
Δ (dB)	
> 20	PASS

Figure Channel 00:



Date: 20.NOV.2018 17:03:23

Figure Channel 78:

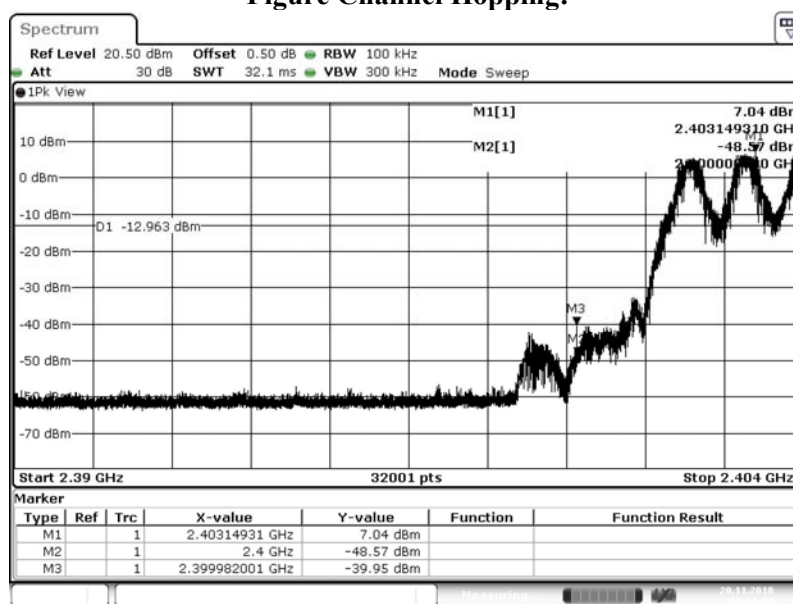


Date: 20.NOV.2018 17:30:03

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 1: Transmit - 1Mbps (Hopping on)
 Test Date : 2018/11/20

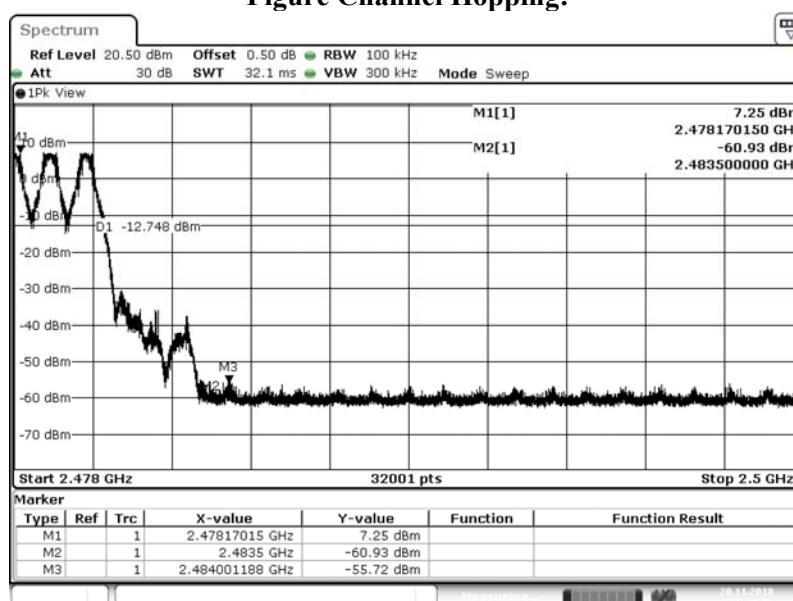
Measurement Level	Result
Δ (dB)	
> 20	PASS

Figure Channel Hopping:



Date: 20.NOV.2018 16:23:58

Figure Channel Hopping:

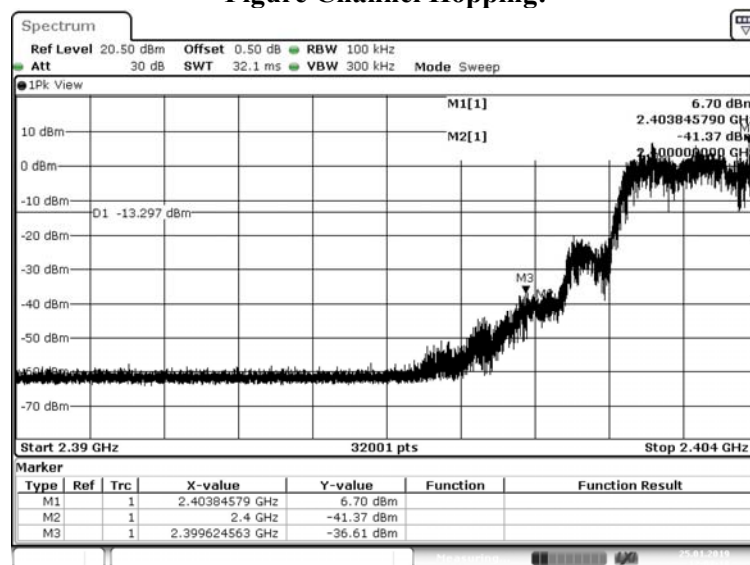


Date: 20.NOV.2018 16:49:40

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 2: Transmit - 2Mbps (Hopping on)
 Test Date : 2019/01/25

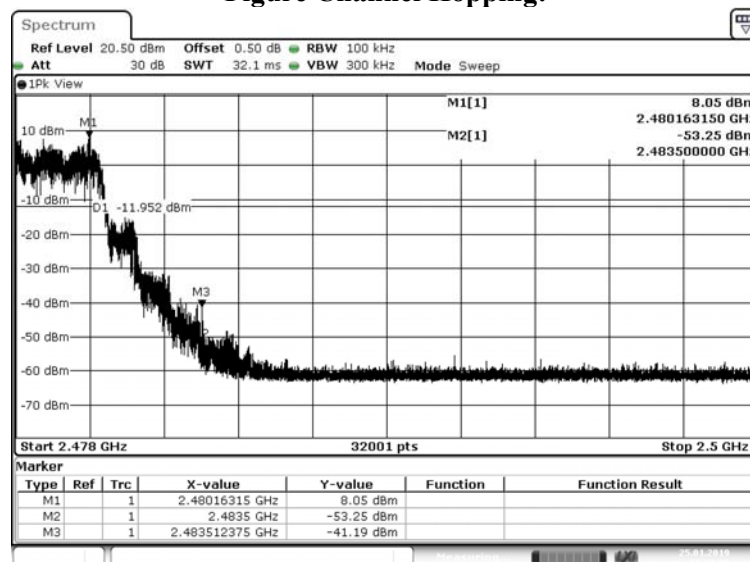
Measurement Level Δ (dB)	Result
> 20	PASS

Figure Channel Hopping:



Date: 25 JAN 2019 12:03:18

Figure Channel Hopping:

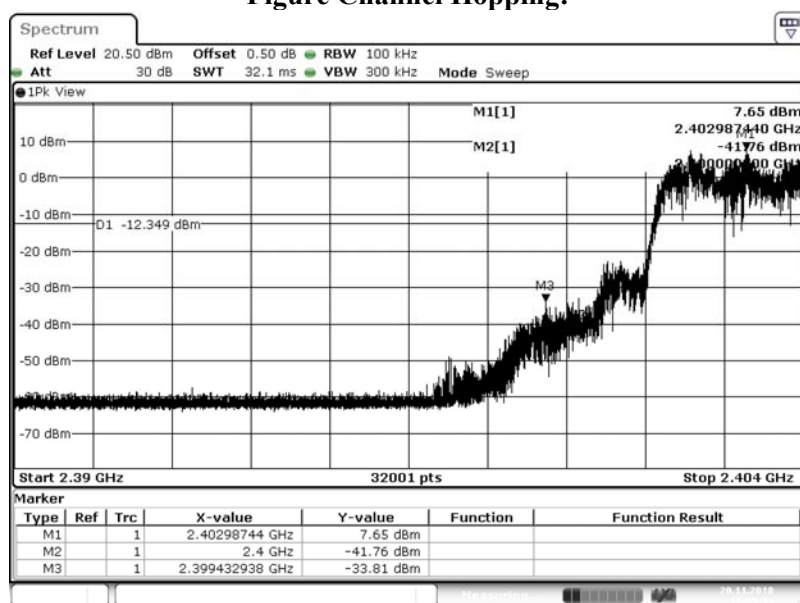


Date: 25 JAN 2019 12:20:29

Product : ACTIVE SPEAKER
 Test Item : Band Edge
 Test Mode : Mode 3: Transmit - 3Mbps (Hopping on)
 Test Date : 2018/11/20

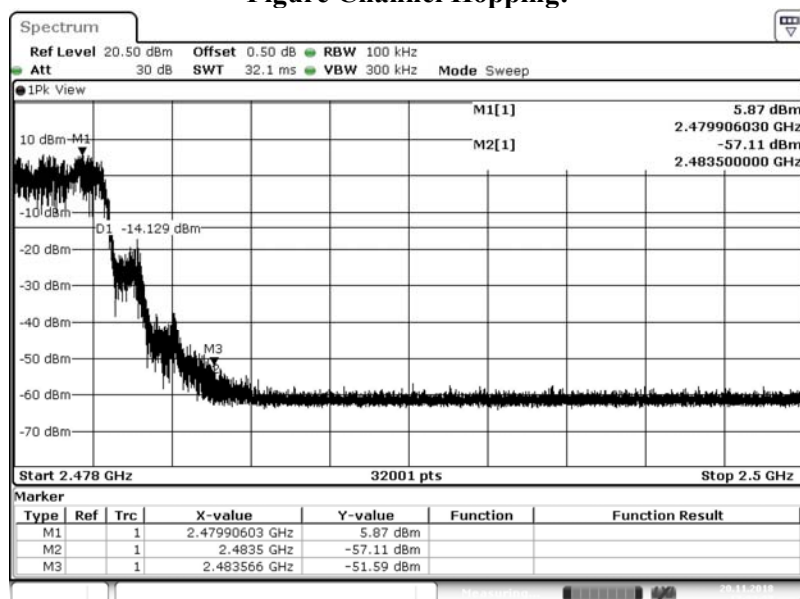
Measurement Level Δ (dB)	Result
> 20	PASS

Figure Channel Hopping:



Date: 20.NOV.2018 17:05:33

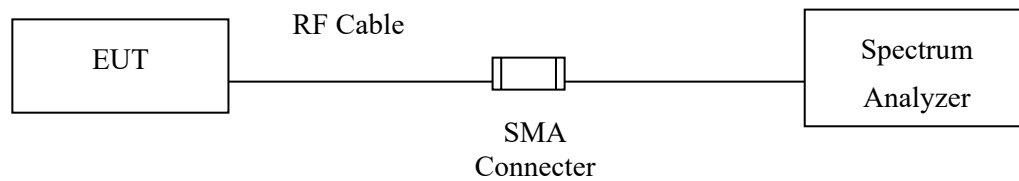
Figure Channel Hopping:



Date: 20.NOV.2018 17:32:27

7. Channel Number

7.1. Test Setup



7.2. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

7.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

7.4. Uncertainty

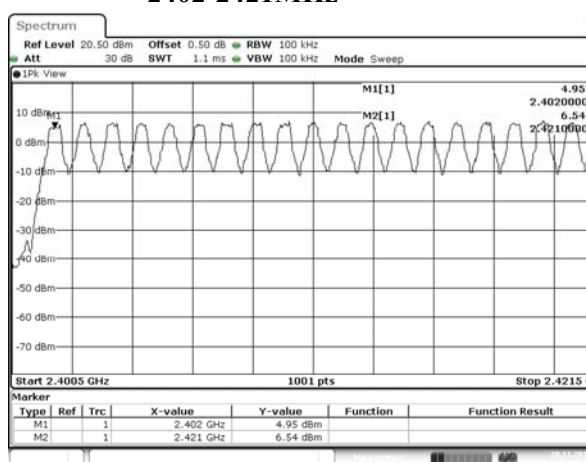
N/A

7.5. Test Result of Channel Number

Product : ACTIVE SPEAKER
 Test Item : Channel Number
 Test Mode : Mode 1: Transmit - 1Mbps
 Test Date : 2018/11/20

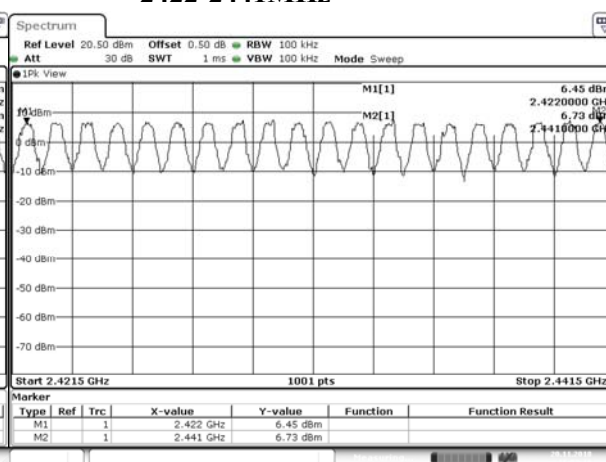
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2421MHz



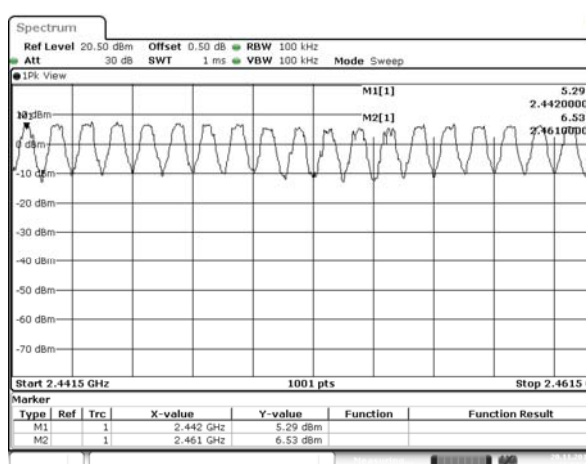
Date: 20 NOV 2018 16:52:42

2422-2441MHz



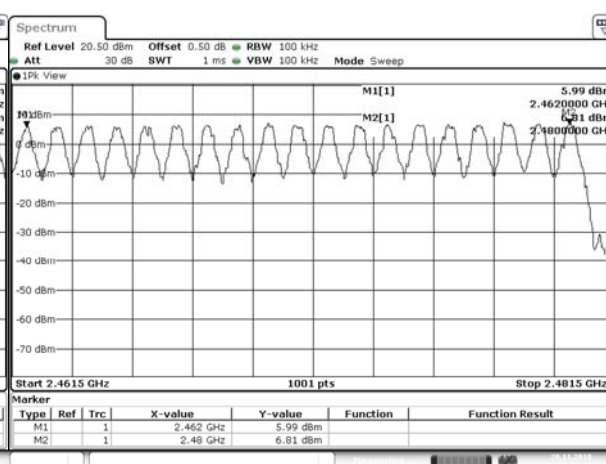
Date: 20 NOV 2018 16:53:18

2442-2461MHz



Date: 20 NOV 2018 16:53:50

2462-2480MHz

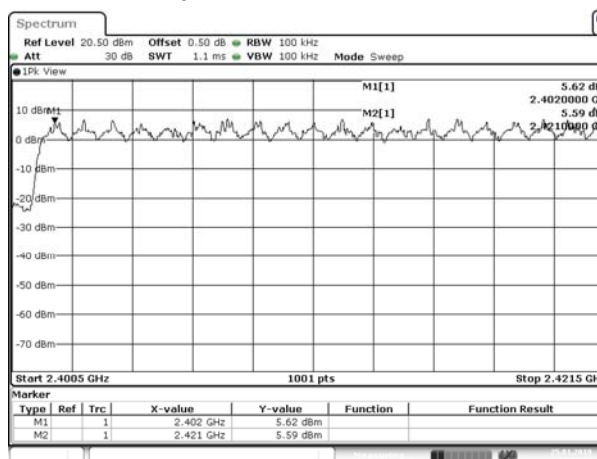


Date: 20 NOV 2018 16:54:18

Product : ACTIVE SPEAKER
 Test Item : Channel Number
 Test Mode : Mode 2: Transmit - 2Mbps
 Test Date : 2019/01/25

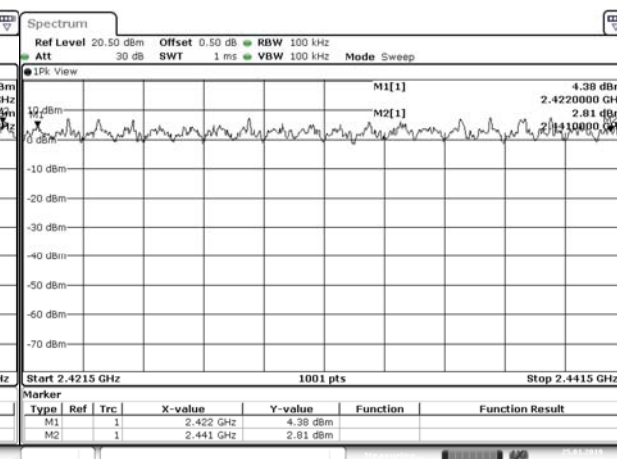
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2421MHz



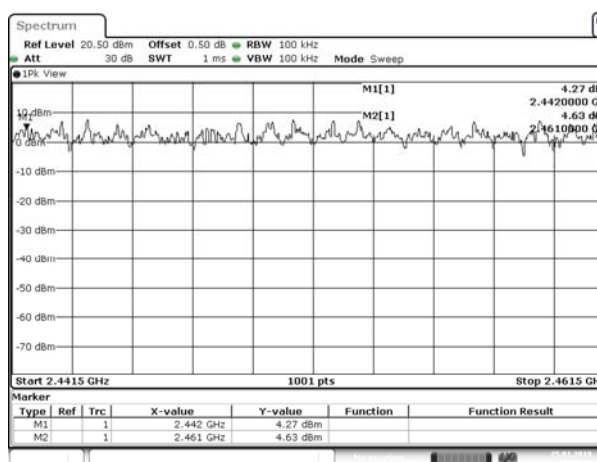
Date: 25 JAN 2019 12:23:24

2422-2441MHz



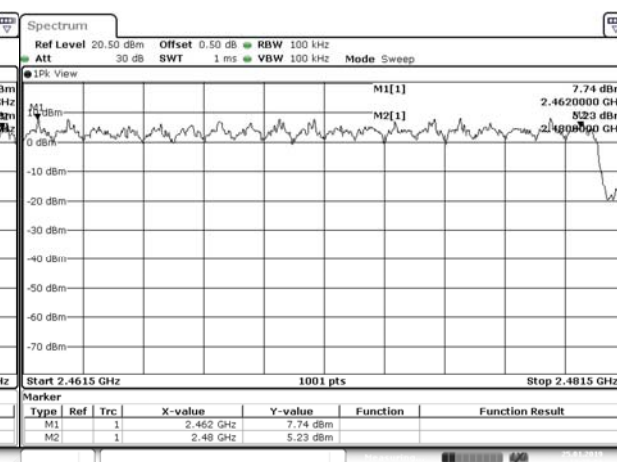
Date: 25 JAN 2019 12:24:07

2442-2461MHz



Date: 25 JAN 2019 12:24:41

2462-2480MHz

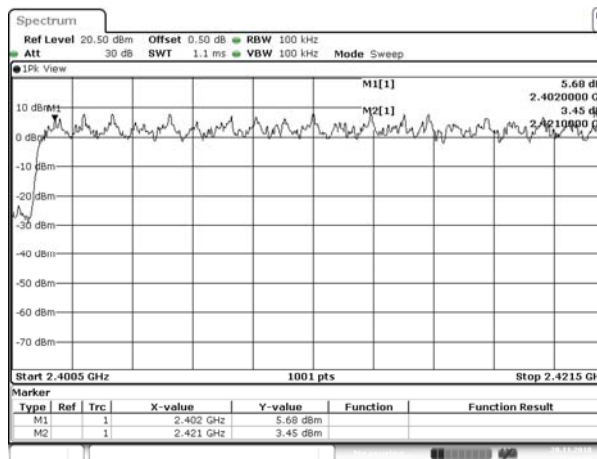


Date: 25 JAN 2019 12:25:59

Product : ACTIVE SPEAKER
 Test Item : Channel Number
 Test Mode : Mode 3: Transmit - 3Mbps
 Test Date : 2018/11/20

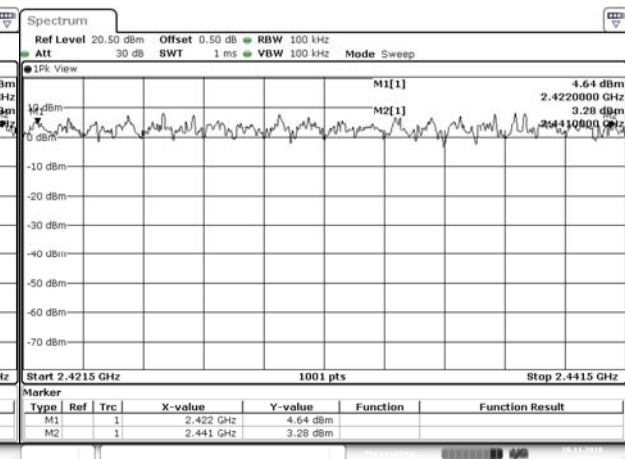
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2421MHz



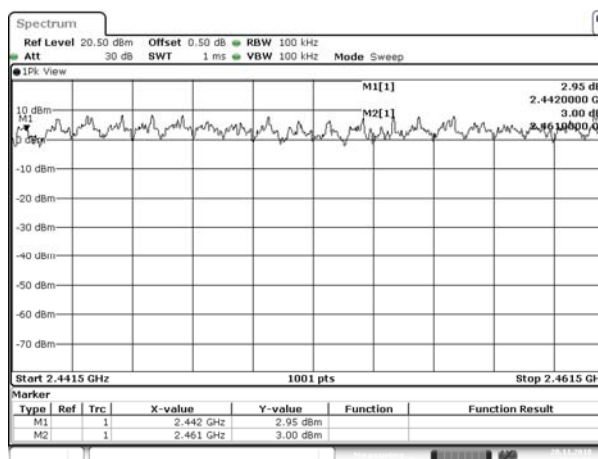
Date: 20.NOV.2018 17:34:49

2422-2441MHz



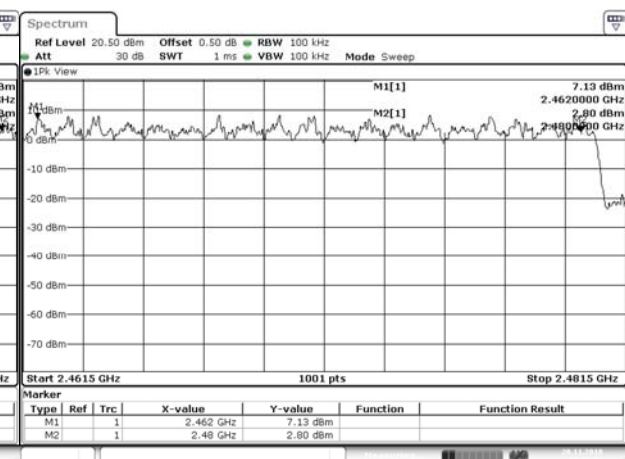
Date: 20.NOV.2018 17:35:21

2442-2461MHz



Date: 20.NOV.2018 17:36:01

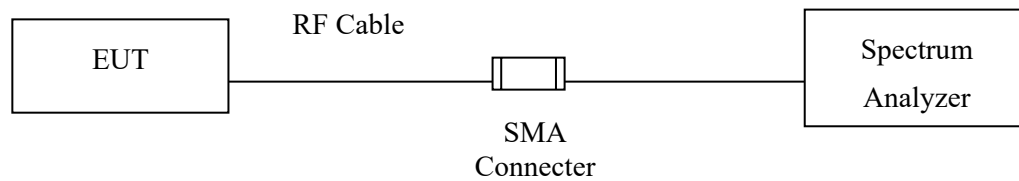
2462-2480MHz



Date: 20.NOV.2018 17:36:54

8. Channel Separation

8.1. Test Setup



8.2. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

8.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

8.4. Uncertainty

$\pm 279.2\text{Hz}$

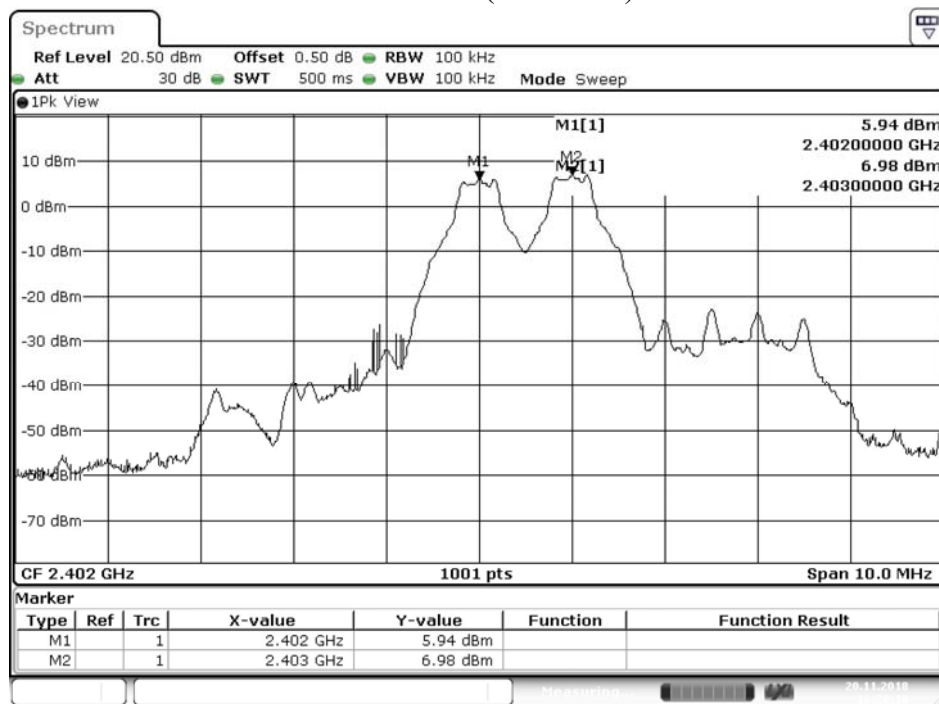
8.5. Test Result of Channel Separation

Product : ACTIVE SPEAKER
 Test Item : Channel Separation
 Test Mode : Mode 1: Transmit - 1Mbps
 Test Date : 2018/11/20

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit (kHz)	Limit of (2/3)*20dB Bandwidth (kHz)	Result
00	2402	1000	>25 kHz	632.0	Pass
39	2441	1000	>25 kHz	630.0	Pass
78	2480	1000	>25 kHz	630.0	Pass

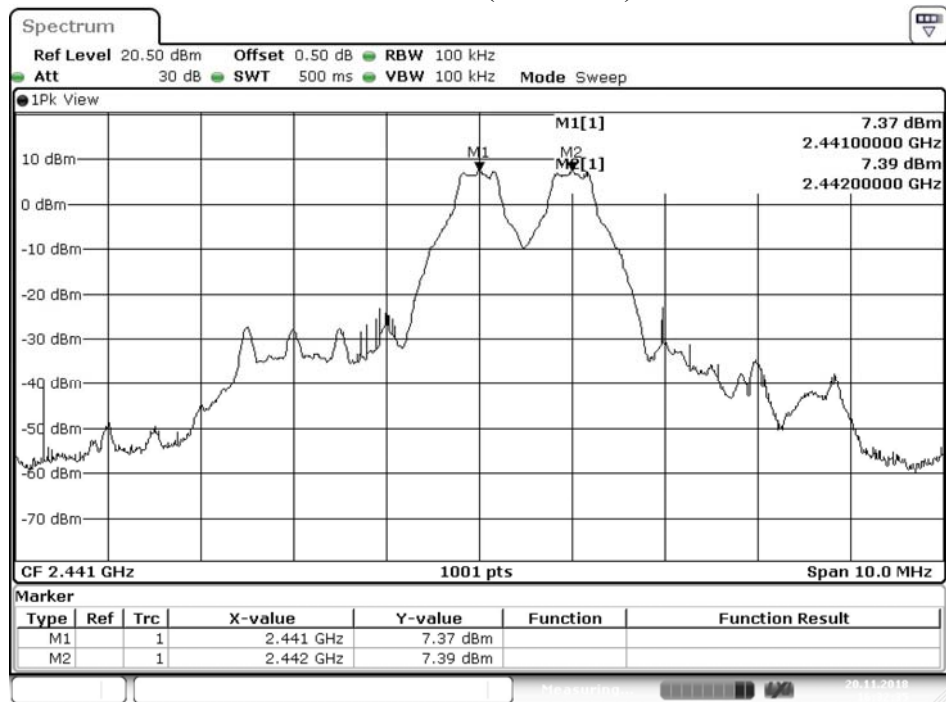
NOTE: The 20dB Bandwidth is refer to section 10.

Channel 00 (2402MHz)



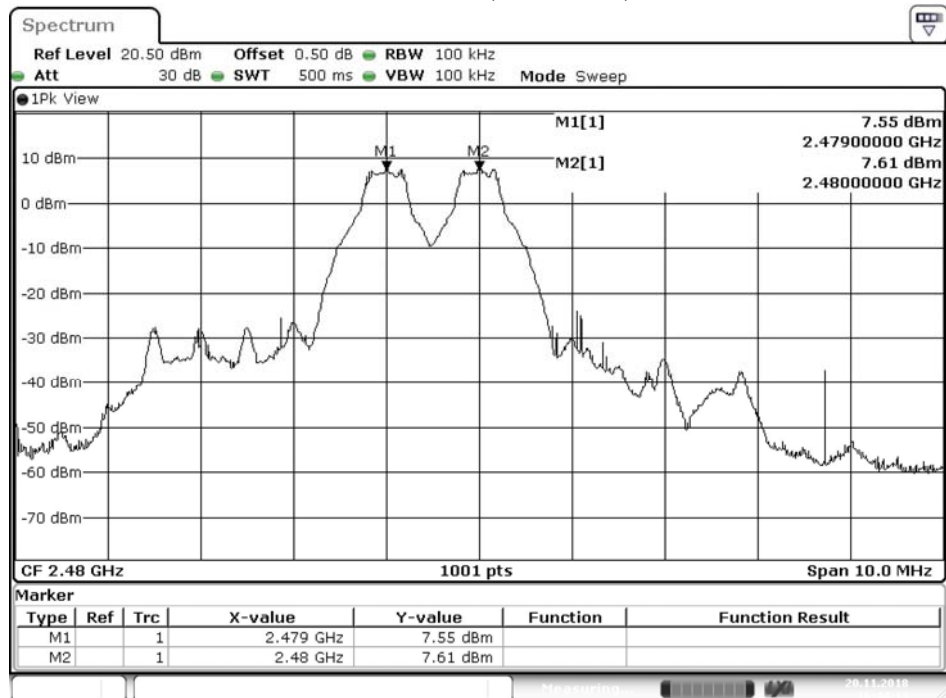
Date: 20.NOV.2018 16:20:18

Channel 39 (2441MHz)



Date: 20.NOV.2018 16:32:36

Channel 78 (2480MHz)



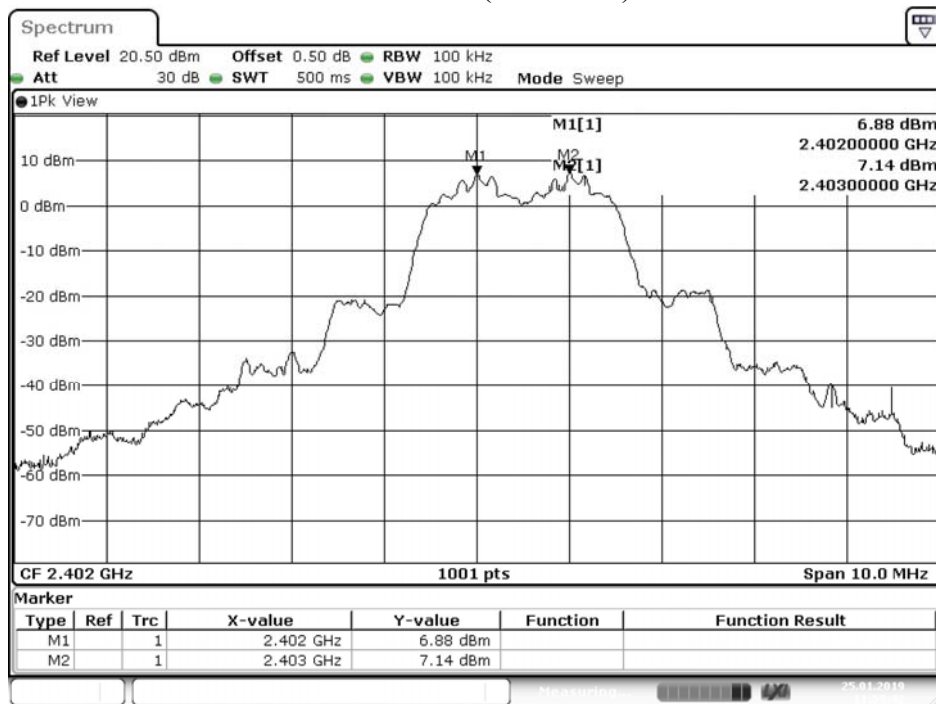
Date: 20.NOV.2018 16:44:13

Product : ACTIVE SPEAKER
 Test Item : Channel Separation
 Test Mode : Mode 2: Transmit - 2Mbps
 Test Date : 2019/01/25

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit (kHz)	Limit of (2/3)*20dB Bandwidth (kHz)	Result
00	2402	1000	>25 kHz	632.0	Pass
39	2441	1000	>25 kHz	630.0	Pass
78	2480	1000	>25 kHz	630.0	Pass

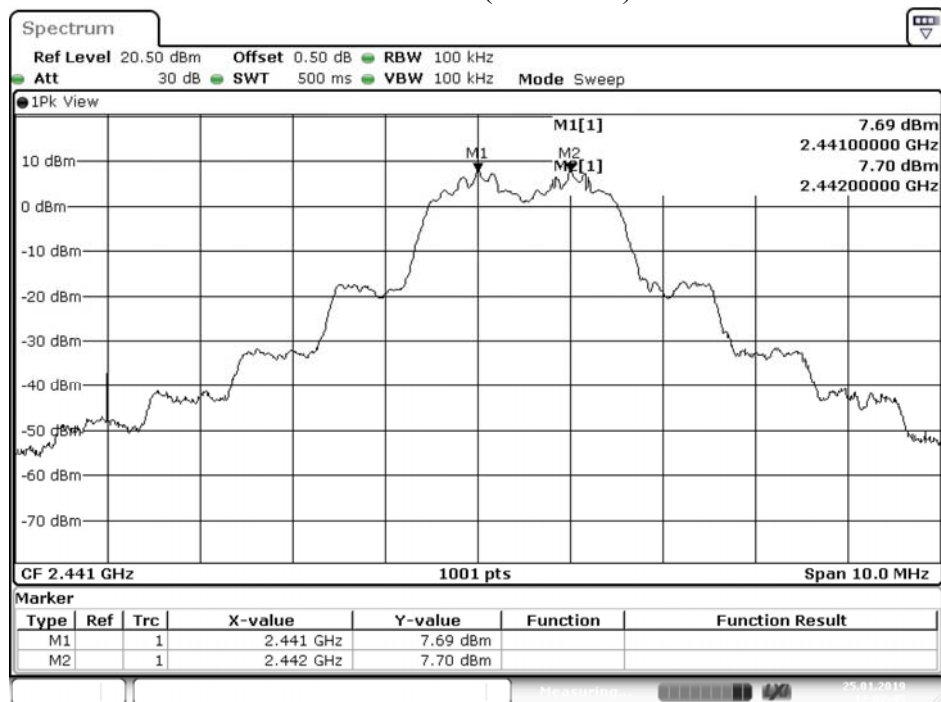
NOTE: The 20dB Bandwidth is refer to section 10.

Channel 00 (2402MHz)



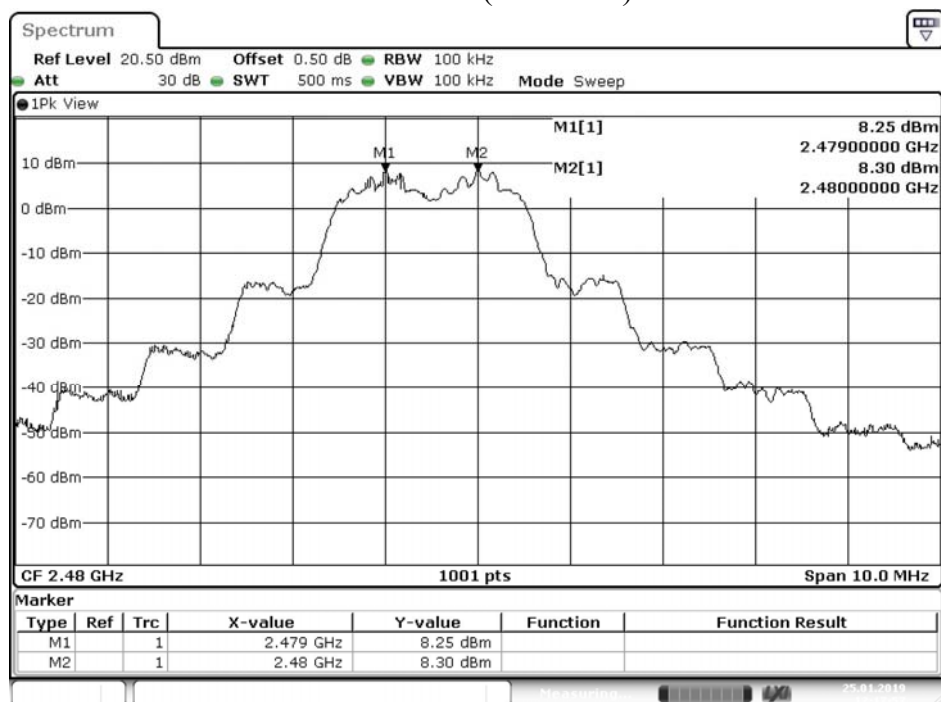
Date: 25.JAN.2019 11:59:42

Channel 39 (2441MHz)



Date: 25.JAN.2019 12:07:45

Channel 78 (2480MHz)



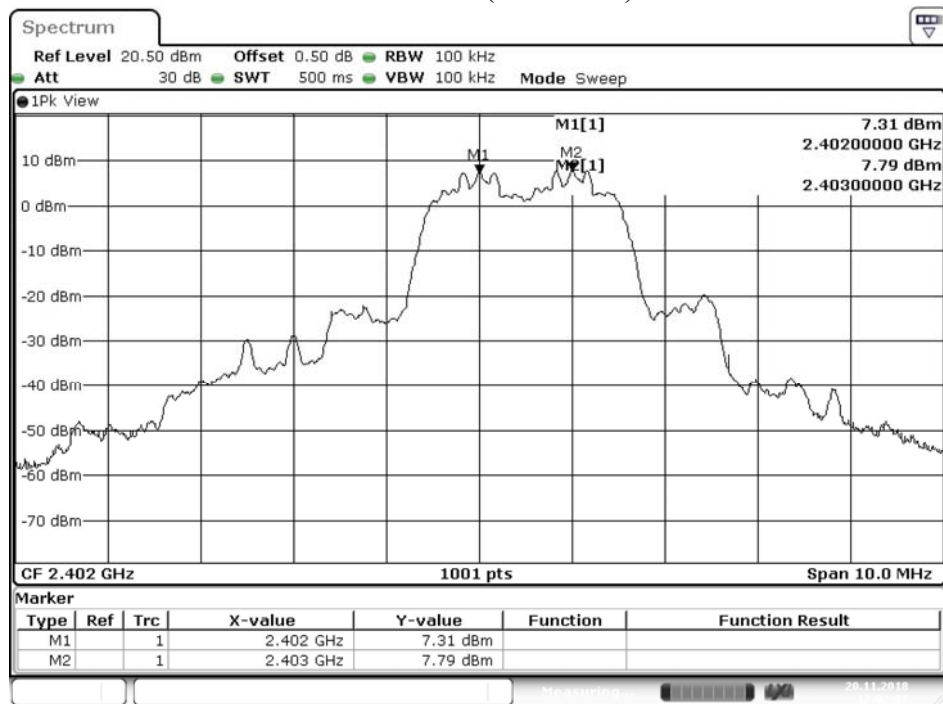
Date: 25.JAN.2019 12:17:57

Product : ACTIVE SPEAKER
 Test Item : Channel Separation
 Test Mode : Mode 3: Transmit - 3Mbps
 Test Date : 2018/11/20

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit (kHz)	Limit of (2/3)*20dB Bandwidth (kHz)	Result
00	2402	1000	>25 kHz	844.0	Pass
39	2441	1000	>25 kHz	846.0	Pass
78	2480	1000	>25 kHz	846.0	Pass

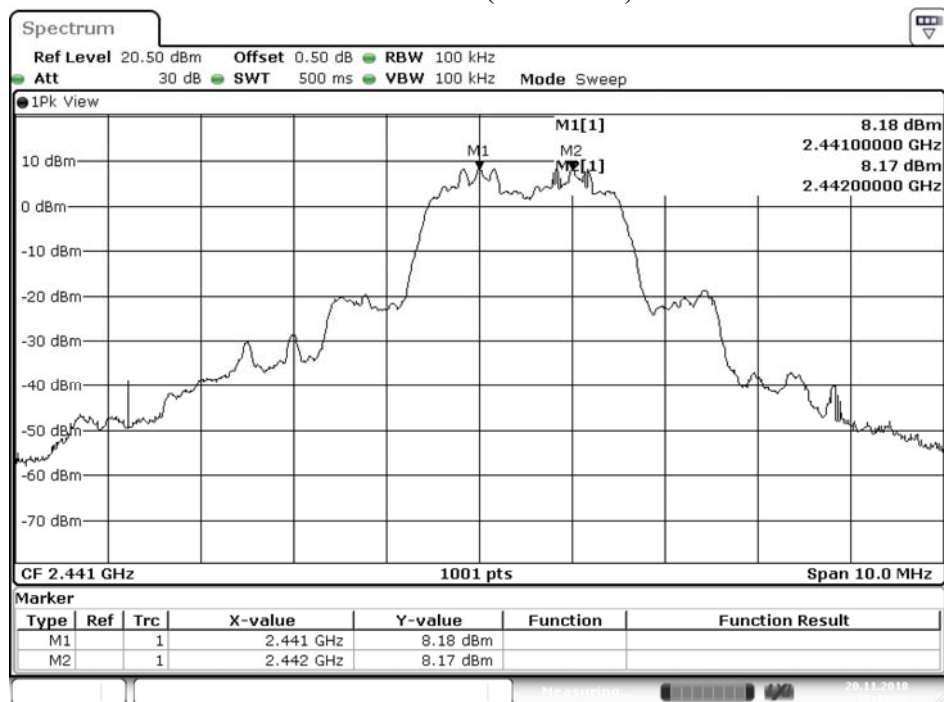
NOTE: The 20dB Bandwidth is refer to section 10.

Channel 00 (2402MHz)



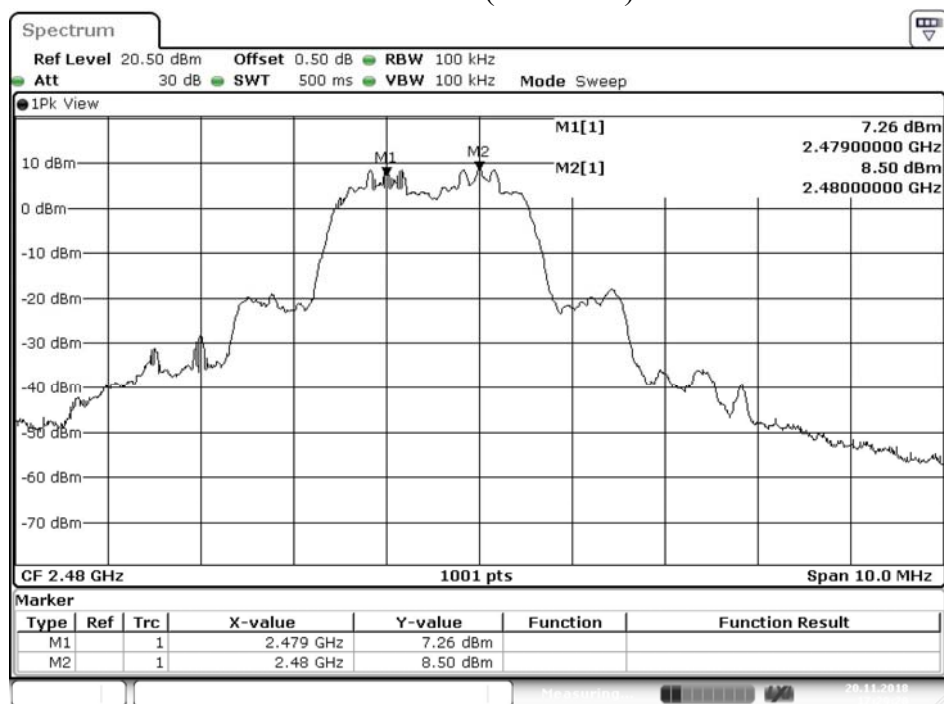
Date: 20.NOV.2018 17:02:38

Channel 39 (2441MHz)



Date: 20.NOV.2018 17:13:50

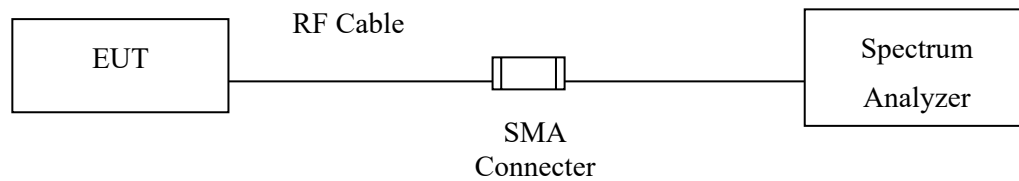
Channel 78 (2480MHz)



Date: 20.NOV.2018 17:29:20

9. Dwell Time

9.1. Test Setup



9.2. Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

9.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

9.4. Uncertainty

$\pm 2.31\text{msec}$

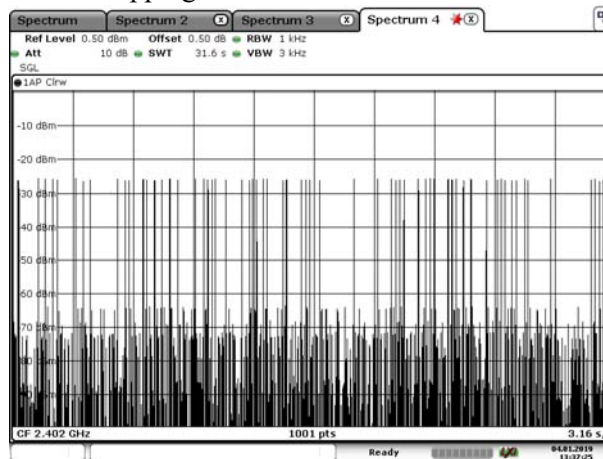
9.5. Test Result of Dwell Time

Product : ACTIVE SPEAKER
 Test Item : Dwell Time
 Test Mode : Mode 1: Transmit - 1Mbps (Channel 00,39,78)
 Test Date : 2019/01/04

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Dwell Time (ms)	Limit (ms)	Result
2402	2.890	76	31600	219.640	400	Pass
2441	2.900	82	31600	237.800	400	Pass
2480	2.890	68	31600	196.520	400	Pass

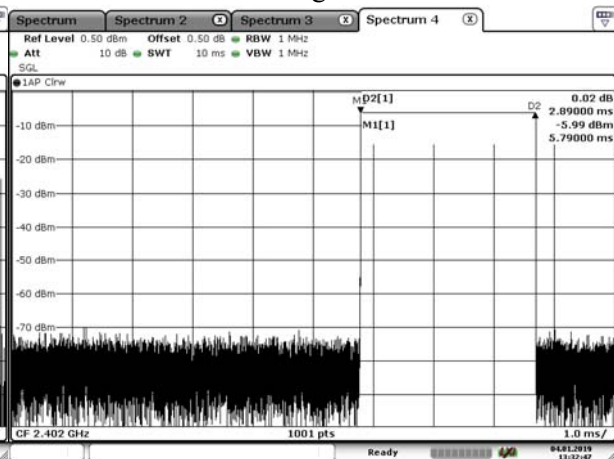
Dwell time = Time slot length(ms)*Hopping of Number

CH 00 Hopping of Number



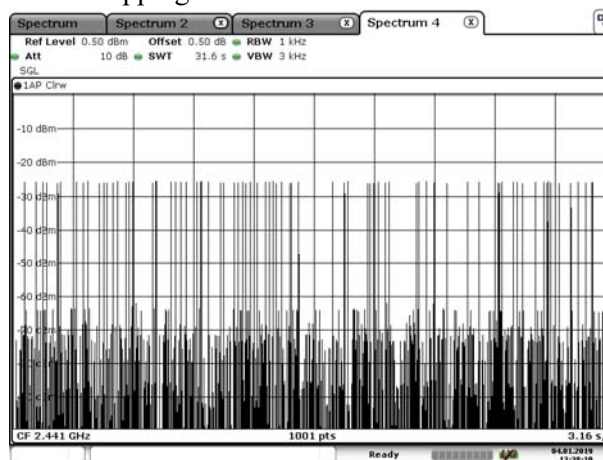
Date: 4 JAN 2019 13:37:26

CH 00 Time slot length



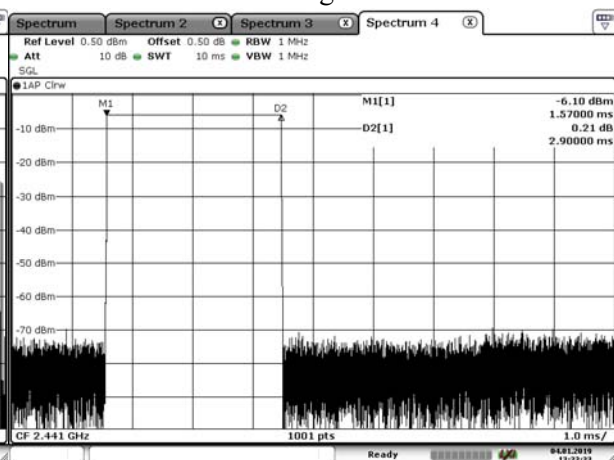
Date: 4 JAN 2019 13:32:47

CH39 Hopping of Number



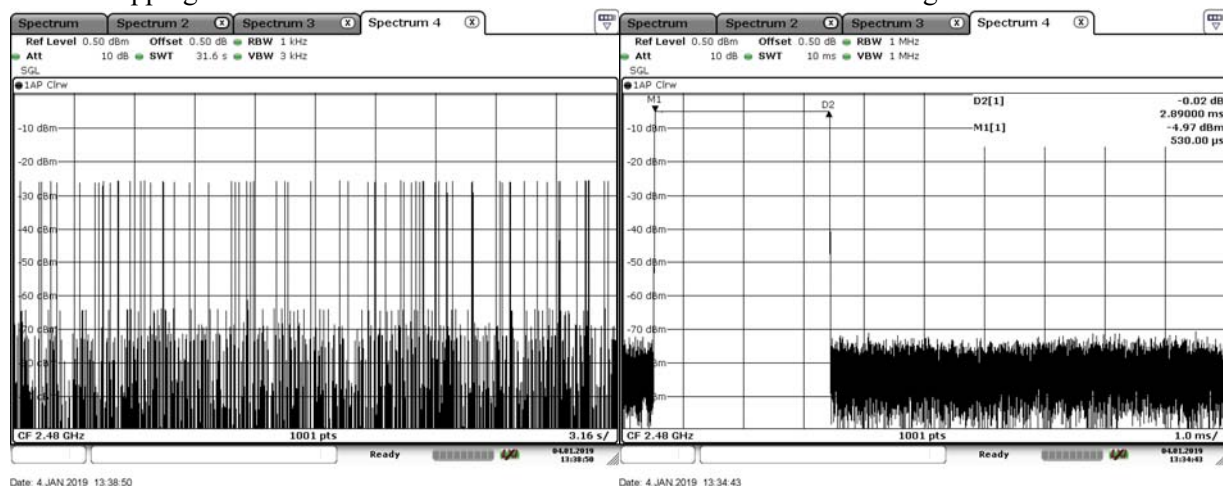
Date: 4 JAN 2019 13:38:10

CH 39 Time slot length

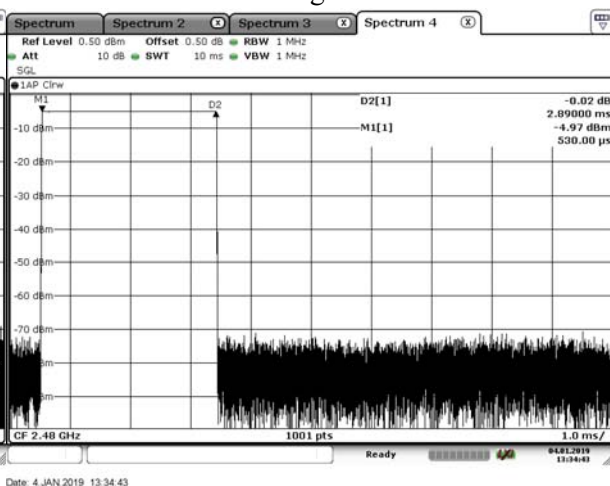


Date: 4 JAN 2019 13:33:33

CH 78 Hopping of Number



CH 78 Time slot length



Note:

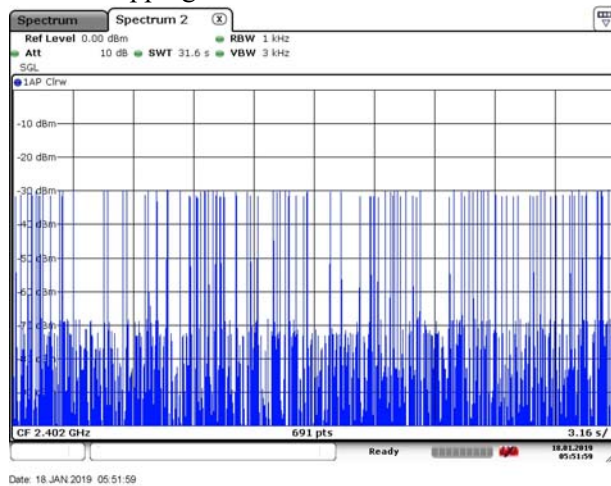
The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

Product : ACTIVE SPEAKER
 Test Item : Dwell Time
 Test Mode : Mode 2: Transmit - 2Mbps (Channel 00,39,78)
 Test Date : 2019/01/18

Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Dwell Time (ms)	Limit (ms)	Result
2402	2.985	117	31600	349.245	400	Pass
2441	2.960	115	31600	340.400	400	Pass
2480	2.971	107	31600	317.897	400	Pass

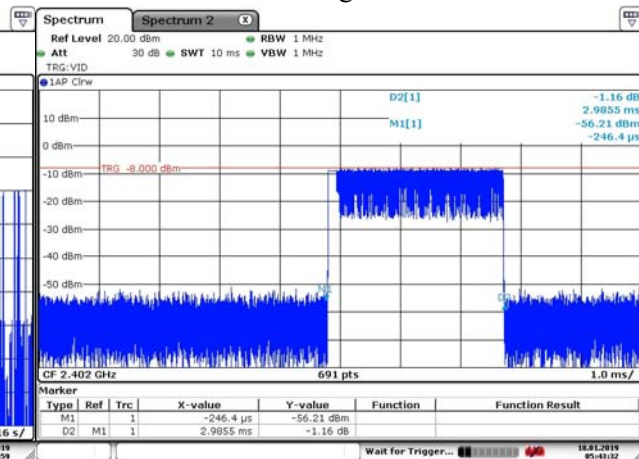
Dwell time = Time slot length(ms)*Hopping of Number

CH 00 Hopping of Number



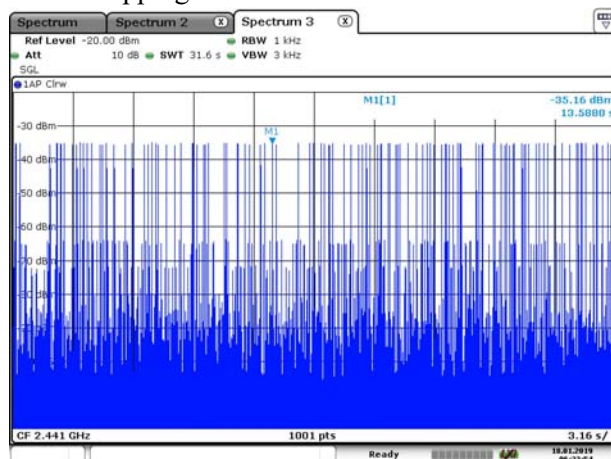
Date: 18 JAN 2019 05:51:59

CH 00 Time slot length



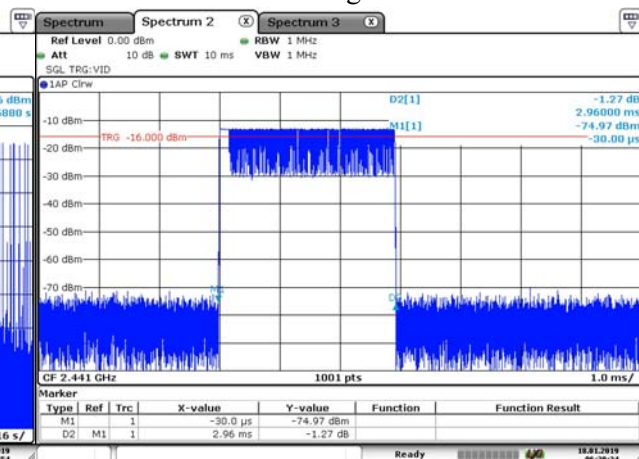
Date: 18 JAN 2019 05:43:32

CH39 Hopping of Number



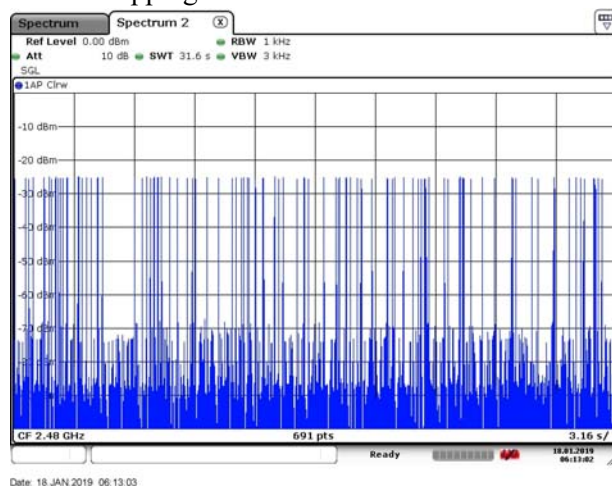
Date: 18 JAN 2019 06:23:54

CH 39 Time slot length

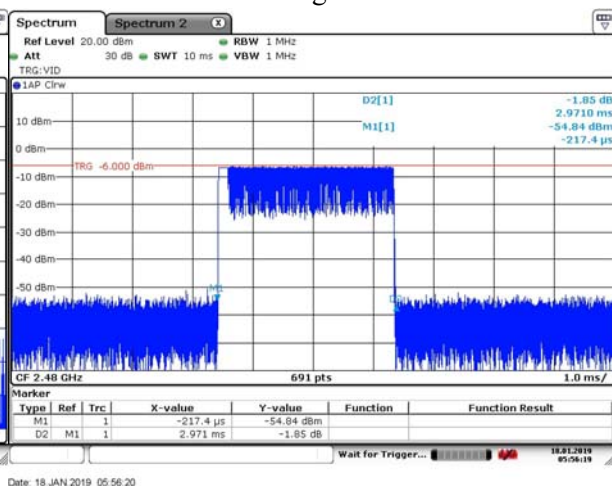


Date: 18 JAN 2019 06:20:34

CH 78 Hopping of Number



CH 78 Time slot length



Note:

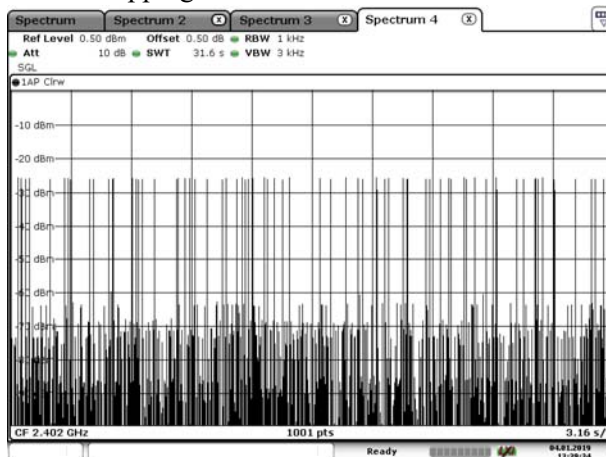
The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

Product : ACTIVE SPEAKER
 Test Item : Dwell Time
 Test Mode : Mode 3: Transmit - 3Mbps (Channel 00,39,78)
 Test Date : 2019/01/04

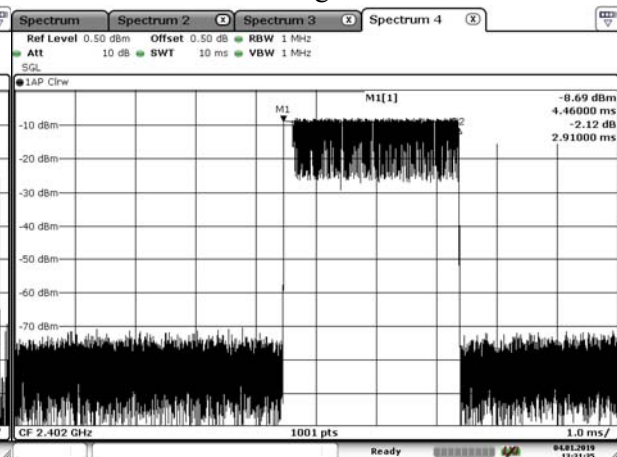
Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Dwell Time (ms)	Limit (ms)	Result
2402	2.910	71	31600	206.610	400	Pass
2441	2.900	69	31600	200.100	400	Pass
2480	2.880	63	31600	181.440	400	Pass

Dwell time = Time slot length(ms)*Hopping of Number

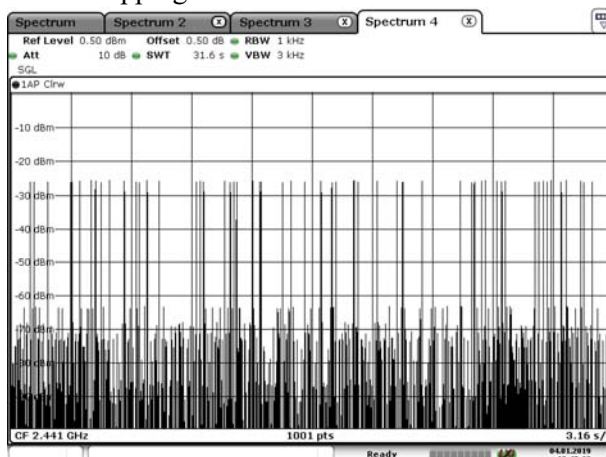
CH 00 Hopping of Number



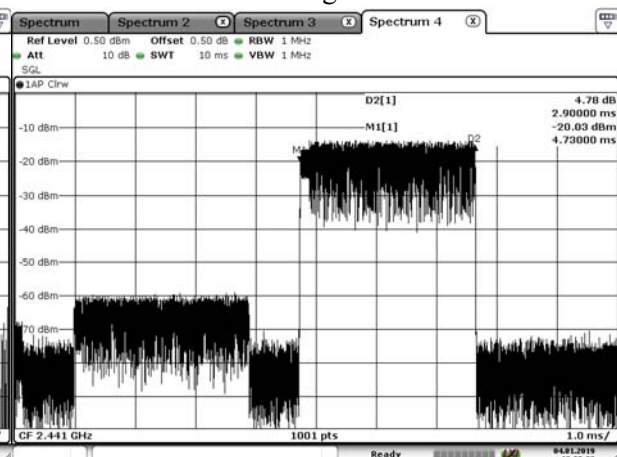
CH 00 Time slot length



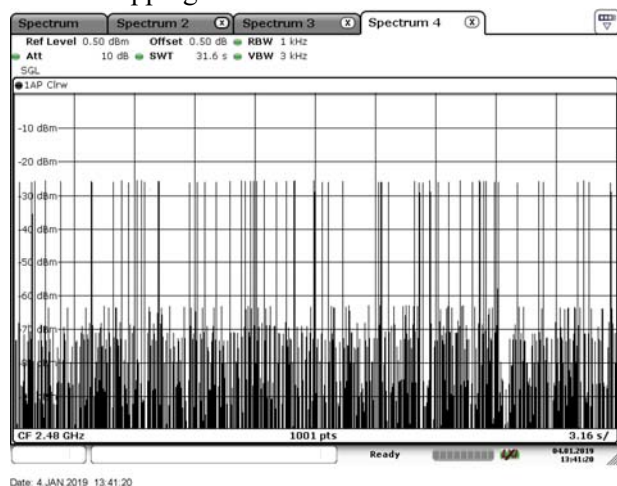
CH39 Hopping of Number



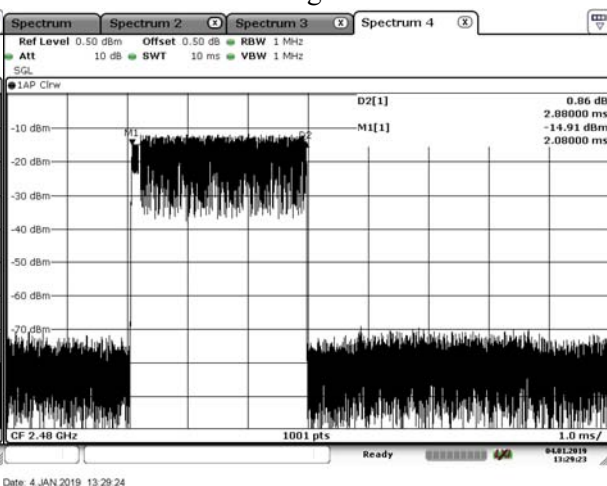
CH 39 Time slot length



CH 78 Hopping of Number



CH 78 Time slot length

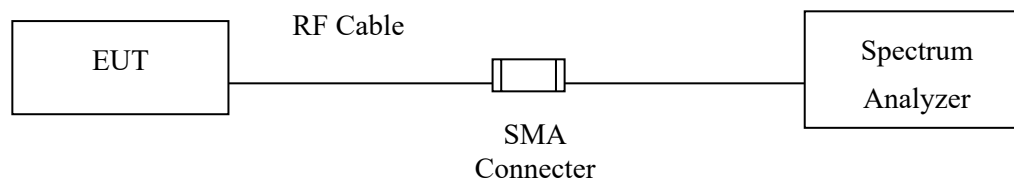


Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

10. Occupied Bandwidth

10.1. Test Setup



10.2. Limits

N/A

10.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

10.4. Uncertainty

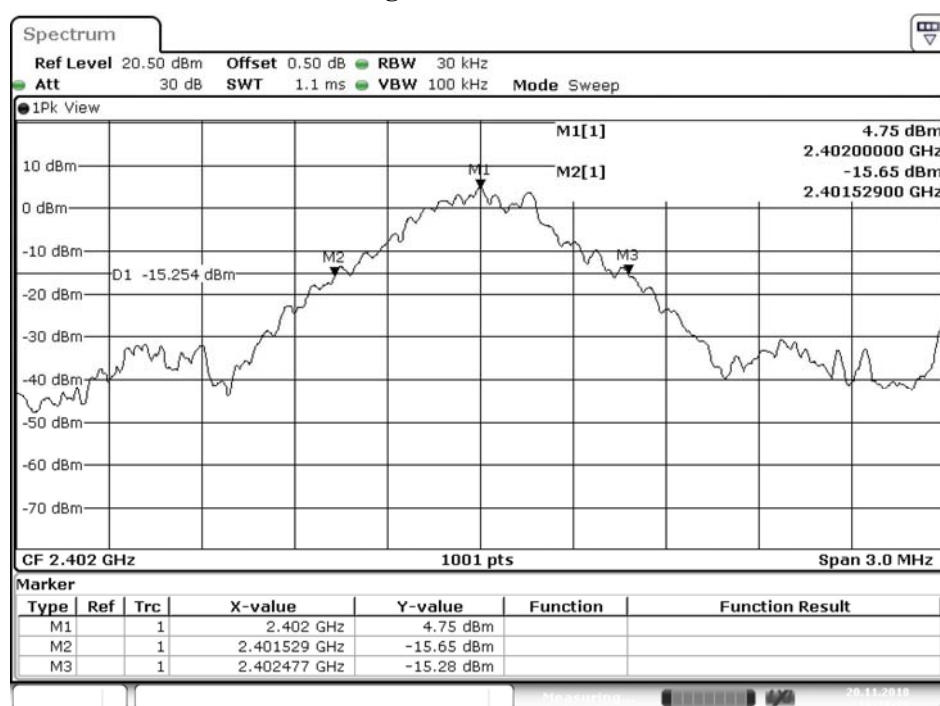
$\pm 279.2\text{Hz}$

10.5. Test Result of Occupied Bandwidth

Product : ACTIVE SPEAKER
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 1: Transmit - 1Mbps
 Test Date : 2018/11/20

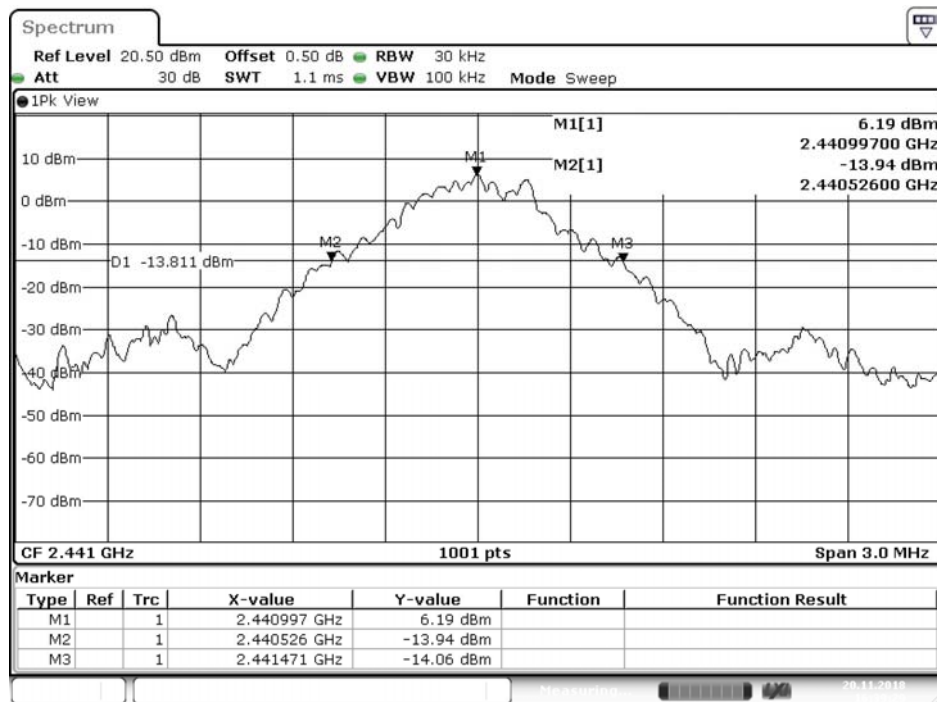
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	948	--	NA
39	2441	945	--	NA
78	2480	945	--	NA

Figure Channel 00:



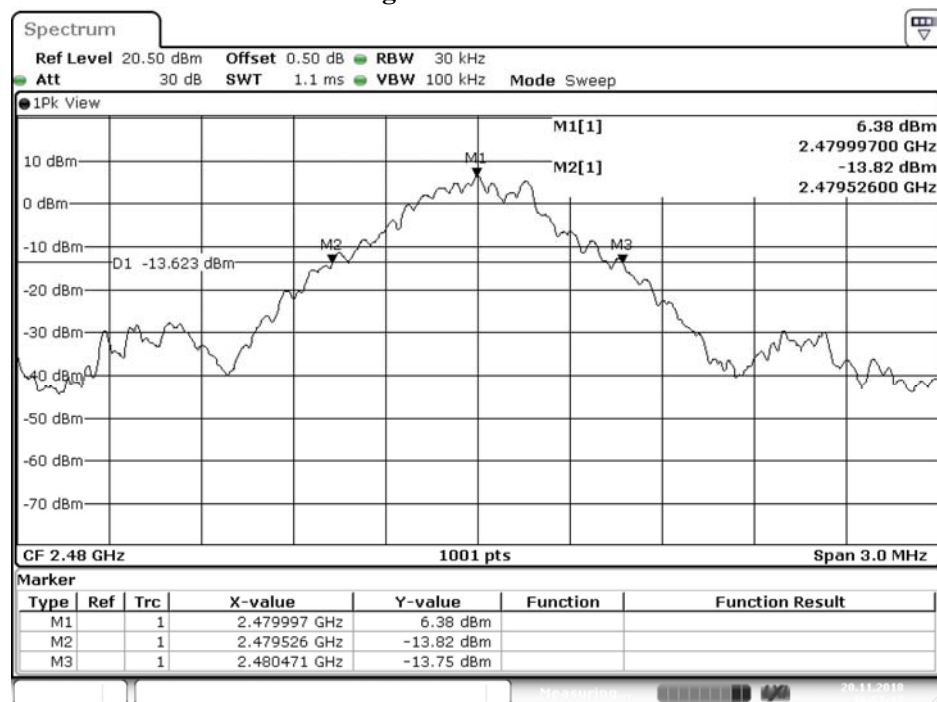
Date: 20.NOV.2018 16:28:29

Figure Channel 39:



Date: 20.NOV.2018 16:39:30

Figure Channel 78:

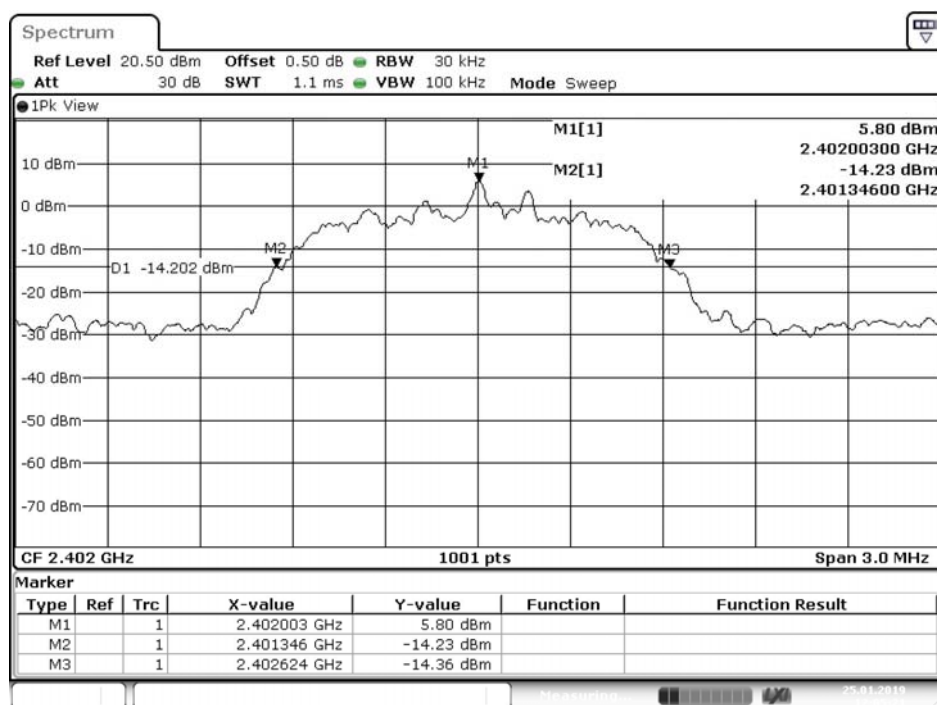


Date: 20.NOV.2018 16:57:17

Product : ACTIVE SPEAKER
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 2: Transmit - 2Mbps
 Test Date : 2019/01/25

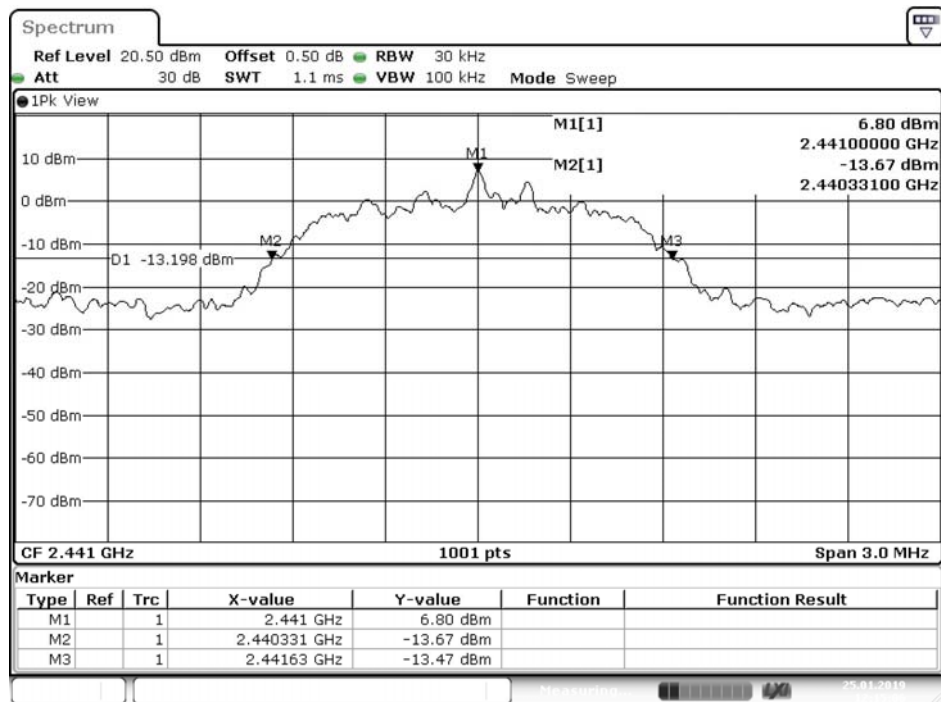
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1278	--	NA
39	2441	1299	--	NA
78	2480	1296	--	NA

Figure Channel 00:



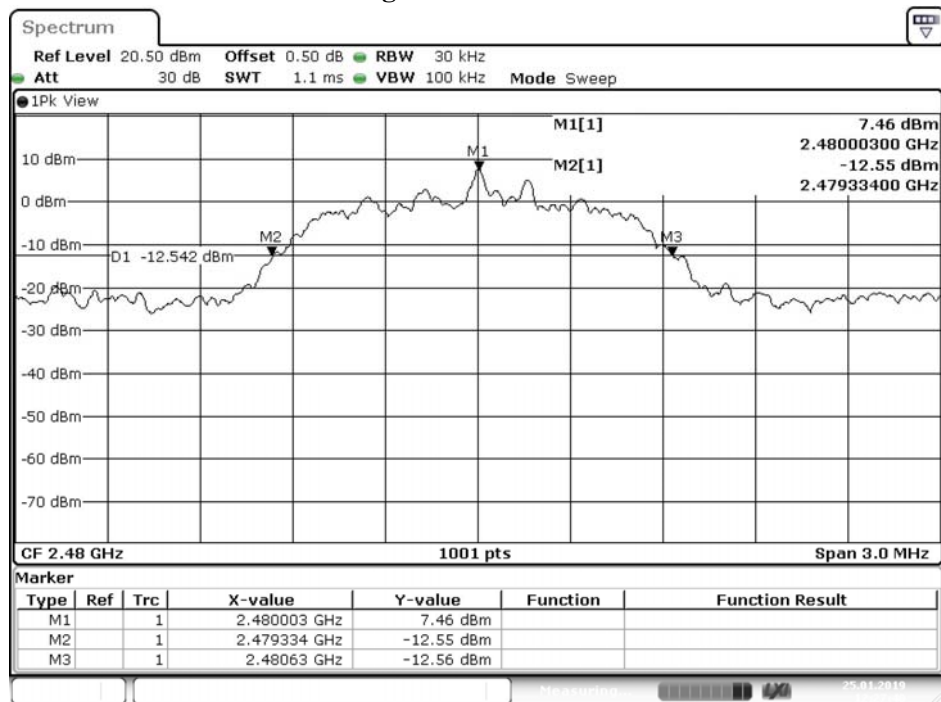
Date: 25.JAN.2019 12:05:21

Figure Channel 39:



Date: 25.JAN.2019 12:15:07

Figure Channel 78:

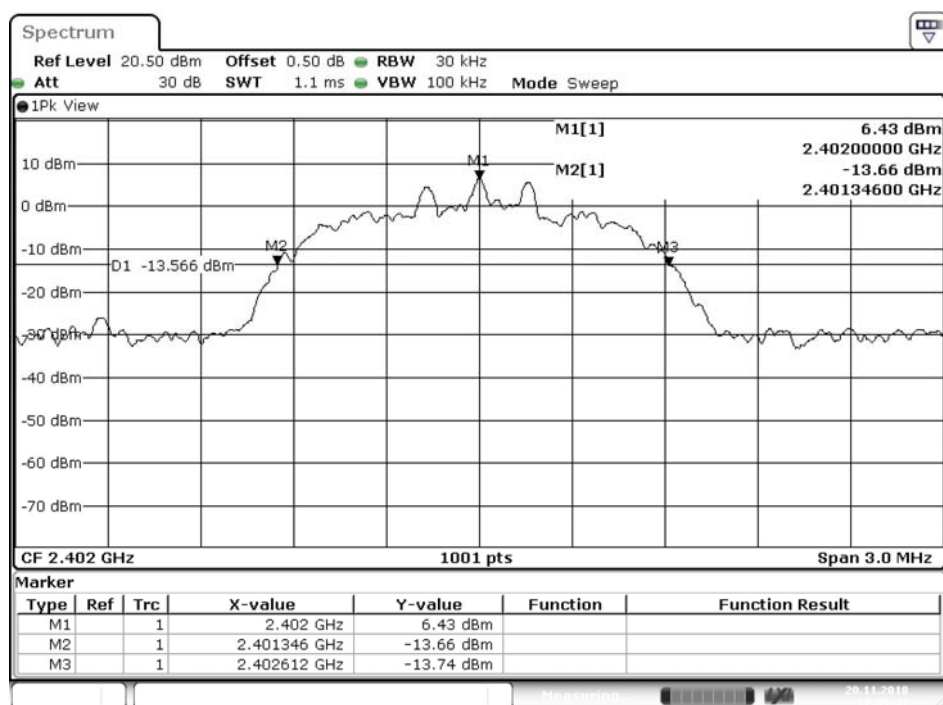


Date: 25.JAN.2019 12:27:41

Product : ACTIVE SPEAKER
 Test Item : Occupied Bandwidth Data
 Test Mode : Mode 3: Transmit - 3Mbps (2402MHz)
 Test Date : 2018/11/20

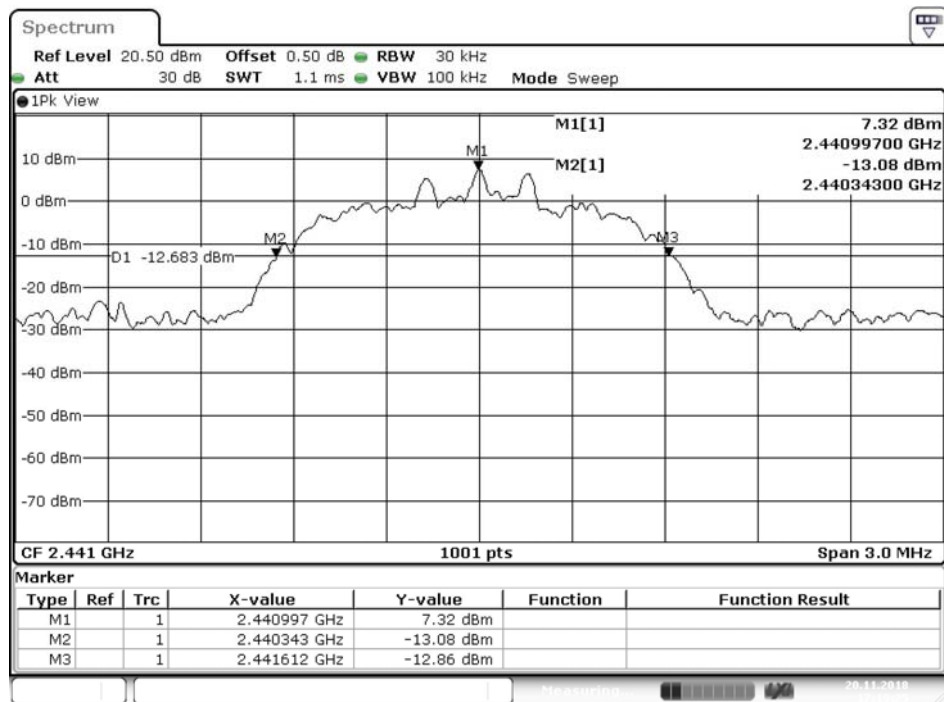
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1266	--	NA
39	2441	1269	--	NA
78	2480	1269	--	NA

Figure Channel 00:



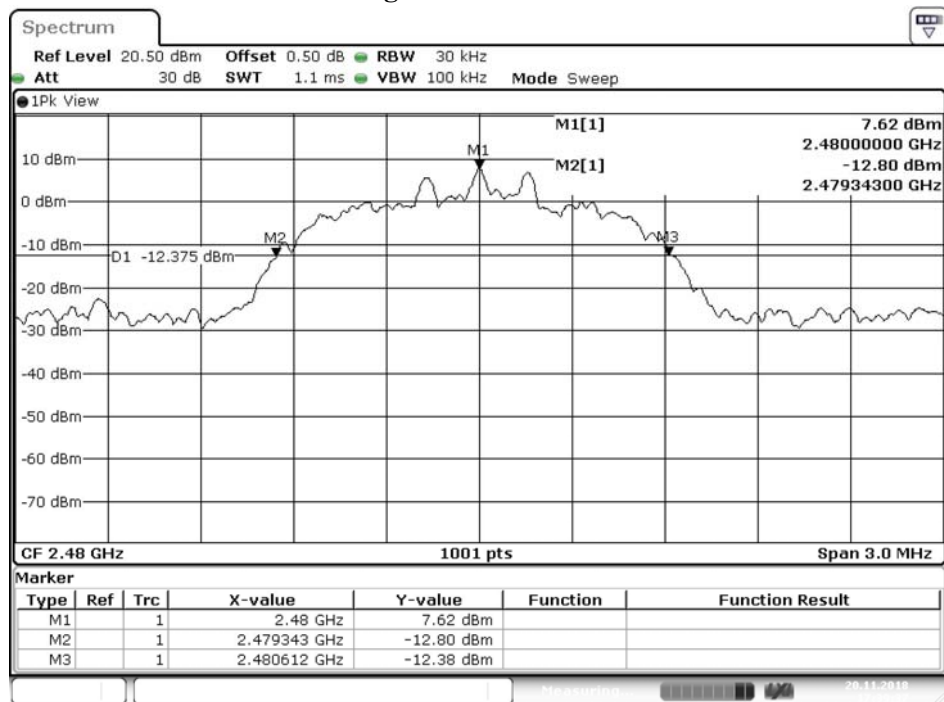
Date: 20.NOV.2018 17:09:42

Figure Channel 39:



Date: 20.NOV.2018 17:19:25

Figure Channel 78:



Date: 20.NOV.2018 17:39:38

11. EMI Reduction Method During Compliance Testing

No modification was made during testing.