

# FCC Test Report

Product Name	Heat Finder
Model No	AD-HF048WP, AD-HF048WPSR
FCC ID.	2AQTD-HF048WP

Applicant	ADE Technology Inc.
Address	15F., No.69, Sec.2, Guangfu Rd., Sanchong Dist., New Taipei City 24158, Taiwan

Date of Receipt	Sep. 18, 2018
Issue Date	Jan. 22, 2019
Report No.	1890214R-RFUSP02V00
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.

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Applicant	ADE Technology Inc.
Address	15F., No.69, Sec.2, Guangfu Rd., Sanchong Dist., New Taipei City 24158, Taiwan
Manufacturer	ADE Technology Inc.
Model No.	AD-HF048WP, AD-HF048WPSR
FCC ID.	2AQTD-HF048WP
EUT Rated Voltage	DC 12V by Adapter or DC 56V by POE
EUT Test Voltage	DC 12V by Adapter
Trade Name	<b>HEAT FINDER</b>
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

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Tested By : Droll Yang  
( Assistant Engineer / Droll Yang )

Approved By :   
( Director / Vincent Lin )

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Attachment 2: EUT Detailed Photographs		

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	Heat Finder
Trade Name	<b>HEAT FINDER</b>
Model No.	AD-HF048WP, AD-HF048WPSR
FCC ID.	2AQTD-HF048WP
Frequency Range	2412-2462MHz for 802.11b/g
Number of Channels	802.11b/g: 11CH
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps
Channel separation	802.11b/g: 5 MHz
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	Chip Antenna
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto
Signal Cable	Non-shielded, 0.4m

#### Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	AEL	A2450M000000S007	Chip Antenna	2.3496dBi for 2.4GHz


Note: The antenna of EUT is conforming to FCC 15.203.

802.11b/g Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

Note:

1. The EUT is a Heat Finder with a built-in 2.4GHz WLAN transceiver .
2. The EUT is including series models for different is listed as below:

<b>HEAT FINDER</b>	Type	Difference	Extended Model Number	Functional Description
	Outdoor Type	This model is designed to be waterproof and dustproof and to enhance heat dissipation.	AD-HF048WP	Thermal image perception
			AD-HF048WPSR	Thermal image perception People Counting Security Monitor

3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps 、 802.11g is 6Mbps)
5. These tests are conducted on a sample for the purpose of demonstrating compliance of transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.
6. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)

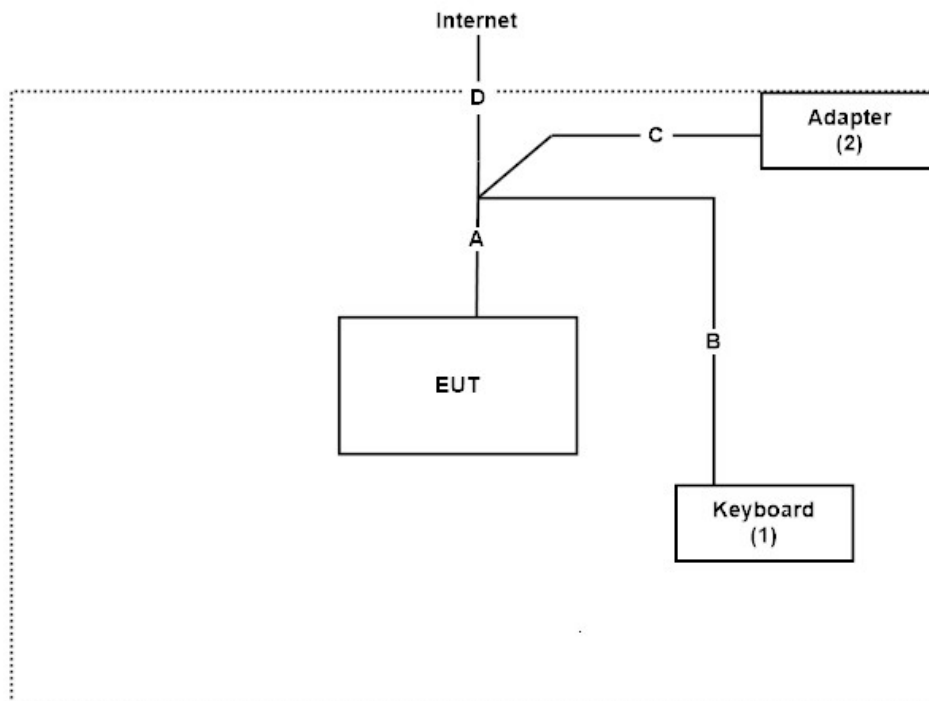
### 1.3. Tested System Details

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	Keyboard	Logitech	K120	N/A
2	Adapter	DR-AV	AC-126	YC41-CDFGIJ0300

Signal Cable Type	Signal cable Description
A	Signal Cable
B	Keyboard Cable
C	Power Cable
D	LAN Cable

### 1.4. Configuration of Tested System



### 1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “pi@raspberrypi 4.14.50-V7” on the EUT.
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](http://www.dekra.com.tw/index_en)

Site Description: Accredited by TAF  
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FCC Accreditation Number: TW0023



## 1.7. List of Test Item and 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

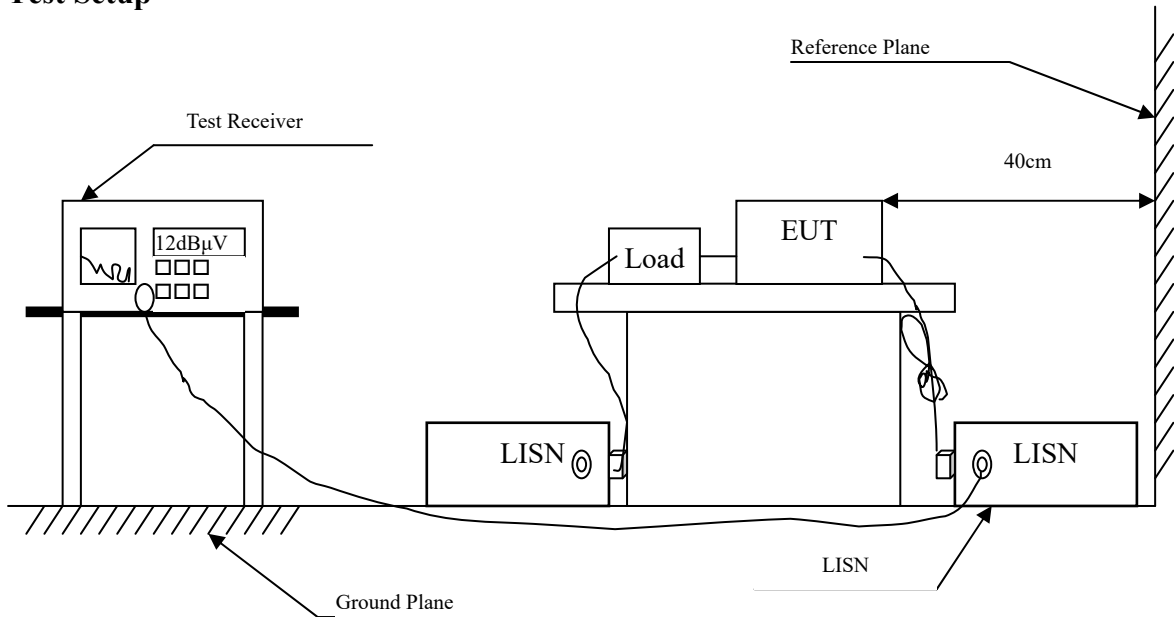
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Loop Antenna	AMETEK	HLA6121	49611	2018.01.26	2019.01.25
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-674	2018.04.02	2019.04.01
X	Horn Antenna	ETS-Lindgren	3117	00203800	2018.12.11	2019.12.10
X	Horn Antenna	Com-Power	AH-840	101087	2018.06.01	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 $\mu$ V) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

### 2.3. Test Procedure

The EUT and simulators 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 refers 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 of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

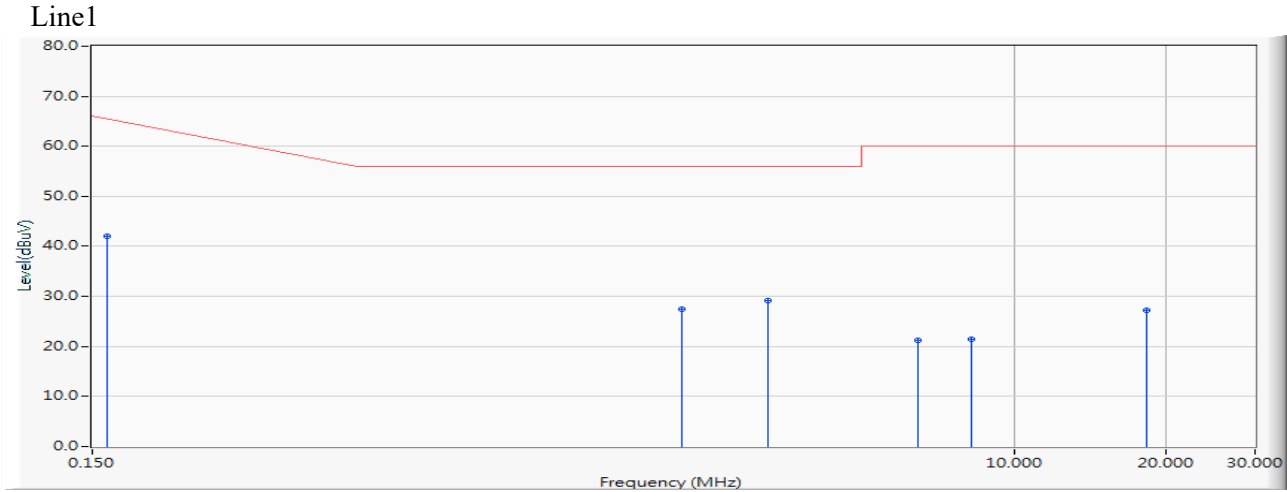
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

### 2.4. Uncertainty

$\pm 2.35$  dB

### 2.5. Test Result of Conducted Emission

Product : Heat Finder  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437MHz)  
 Test Date : 2019/01/17

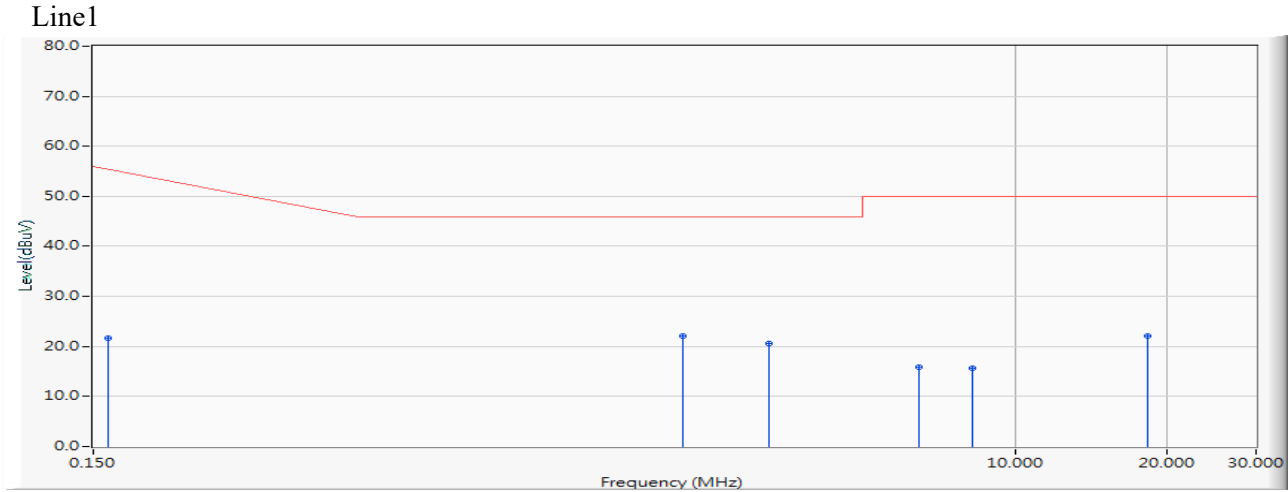


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.161	9.610	32.364	41.974	-23.712	65.686	QUASIPeAK
2		2.209	9.662	17.860	27.522	-28.478	56.000	QUASIPeAK
3		3.257	9.692	19.566	29.259	-26.741	56.000	QUASIPeAK
4		6.461	9.775	11.381	21.156	-38.844	60.000	QUASIPeAK
5		8.257	9.808	11.549	21.357	-38.643	60.000	QUASIPeAK
6		18.249	9.966	17.214	27.180	-32.820	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 : Heat Finder  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437MHz)  
 Test Date : 2019/01/17

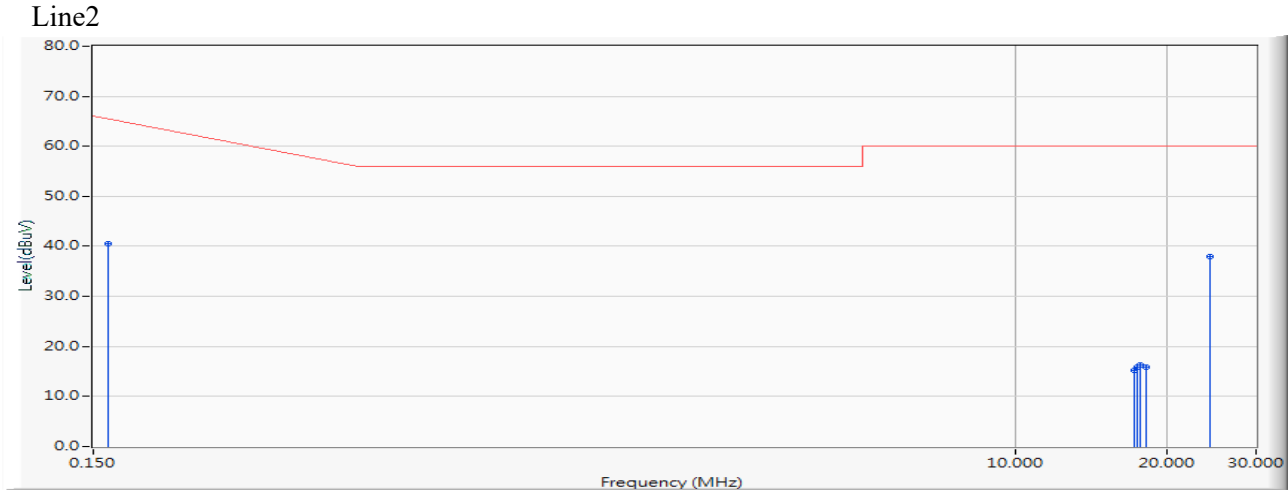


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.161	9.610	12.115	21.725	-33.961	55.686	AVERAGE
2	*	2.209	9.662	12.323	21.985	-24.015	46.000	AVERAGE
3		3.257	9.692	10.937	20.629	-25.371	46.000	AVERAGE
4		6.461	9.775	6.041	15.816	-34.184	50.000	AVERAGE
5		8.257	9.808	5.910	15.718	-34.282	50.000	AVERAGE
6		18.249	9.966	12.174	22.140	-27.860	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 : Heat Finder  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437MHz)  
 Test Date : 2019/01/17

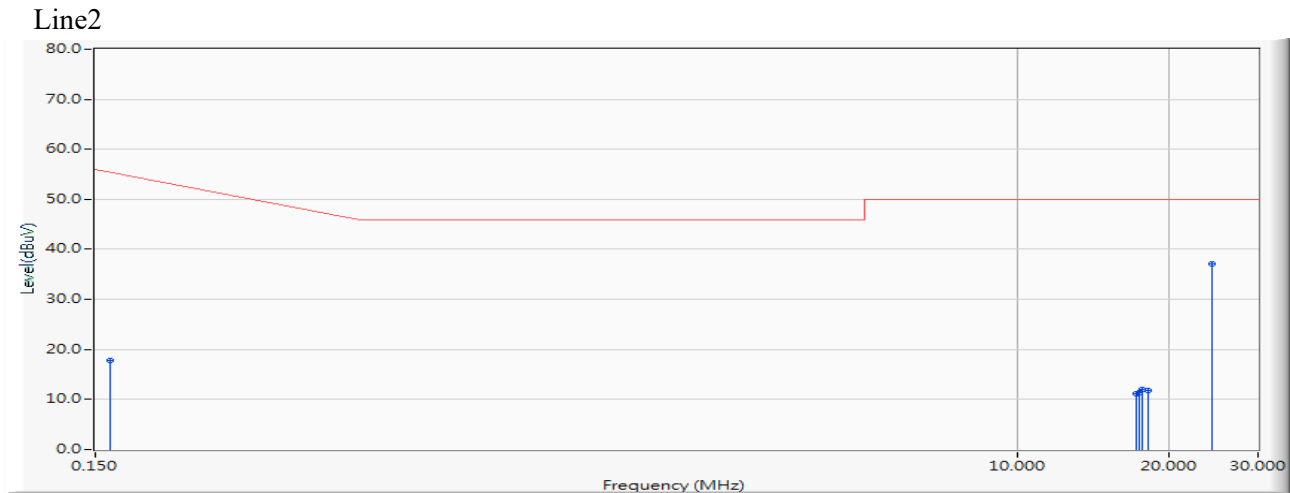


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.161	9.602	31.034	40.637	-25.049	65.686	QUASIPeAK
2		17.178	9.970	5.281	15.251	-44.749	60.000	QUASIPeAK
3		17.437	9.970	5.989	15.959	-44.041	60.000	QUASIPeAK
4		17.695	9.970	6.390	16.360	-43.640	60.000	QUASIPeAK
5		18.218	9.980	5.981	15.961	-44.039	60.000	QUASIPeAK
6	*	24.335	10.040	28.029	38.069	-21.931	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 : Heat Finder  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437MHz)  
 Test Date : 2019/01/17



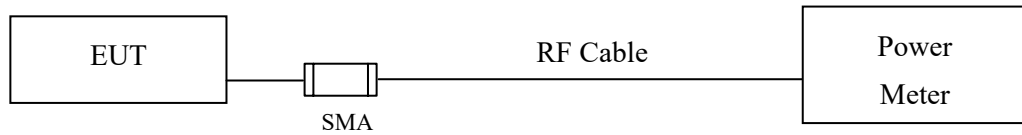
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.161	9.602	8.250	17.852	-37.834	55.686	AVERAGE
2		17.178	9.970	1.217	11.187	-38.813	50.000	AVERAGE
3		17.437	9.970	1.499	11.469	-38.531	50.000	AVERAGE
4		17.695	9.970	1.958	11.928	-38.072	50.000	AVERAGE
5		18.218	9.980	1.734	11.714	-38.286	50.000	AVERAGE
6	*	24.335	10.040	27.146	37.186	-12.814	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. Limits

The maximum peak power shall be less 1 Watt.

#### 3.3. Test Procedure

Tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 section 8.3.1.3 PKPM1 Peak power meter method. The maximum average conducted output power using KDB 558074 section 8.3.2.3 Method (Measurement using a gated RF average-reading power meter)

#### 3.4. Uncertainty

$\pm 0.86$  dB

### 3.5. Test Result of Peak Power Output

Product : Heat Finder  
 Test Item : Peak Power Output Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)  
 Test Date : 2019/01/15

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11			
		Measurement Level (dBm)						
01	2412	9.83	--	--	--	12.12	<30dBm	Pass
06	2437	11.20	11.18	11.15	11.11	13.67	<30dBm	Pass
11	2462	11.12	--	--	--	13.51	<30dBm	Pass

Note: Peak Power Output Value = Reading value on power meter + cable loss



Product : Heat Finder  
 Test Item : Peak Power Output Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)  
 Test Date : 2019/01/15

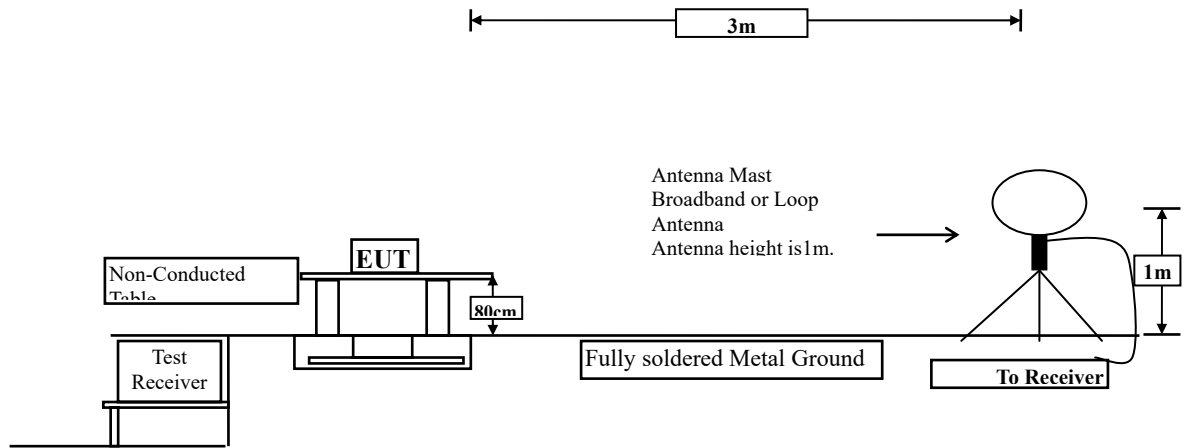
Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	9.52	--	--	--	--	--	--	--	12.23	<30dBm	Pass
06	2437	11.05	11.01	10.99	10.97	10.94	10.92	10.80	10.78	18.91	<30dBm	Pass
11	2462	11.32	--	--	--	--	--	--	--	18.31	<30dBm	Pass

Note: Peak Power Output Value = Reading value on power meter + cable loss

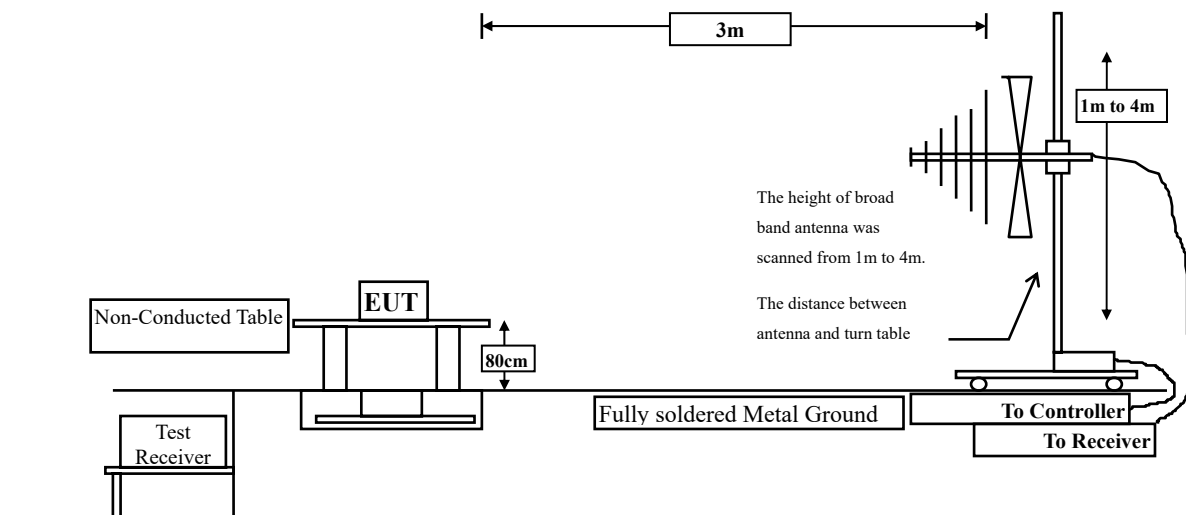
## 4. Radiated Emission

### 4.1. Test Setup

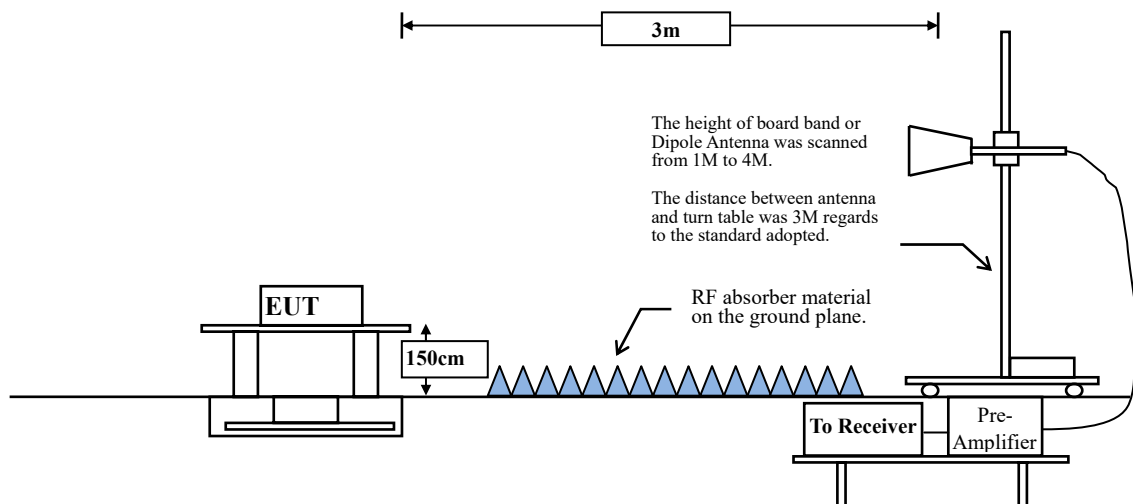
Radiated Emission Under 30MHz



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.

<b>FCC Part 15 Subpart C Paragraph 15.209 Limits</b>		
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 (dBuV) = 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 according to DTS test procedure of KDB558074 for 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.

### RBW and VBW Parameter setting:

According to KDB 558074 Peak power measurement procedure

RBW = as specified in Table 1.

VBW  $\geq$  3 x RBW.

**Table 1 —RBW as a function of frequency**

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to KDB 558074 Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle  $\geq$  98 %

VBW  $\geq$  1/T, when duty cycle < 98 %

( T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	99.31	--	--	10
802.11g	96.02	1.3985	715	1k

Note: Duty Cycle Refer to Section 9

## 4.4. Uncertainty

Horizontal polarization :

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

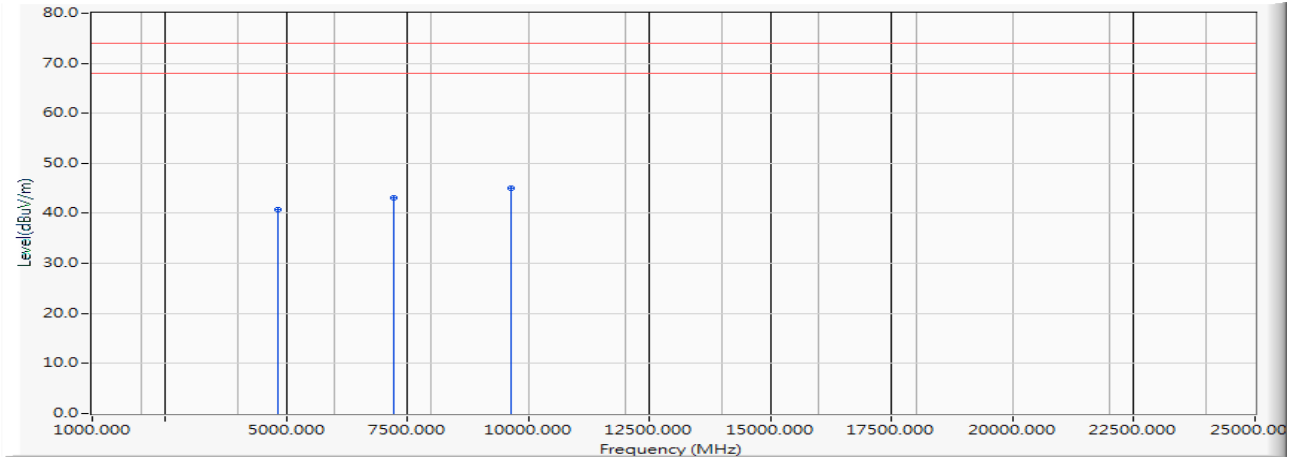
Vertical polarization :

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

#### 4.5. Test Result of Radiated Emission

Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)  
 Test Date : 2019/01/14

Horizontal



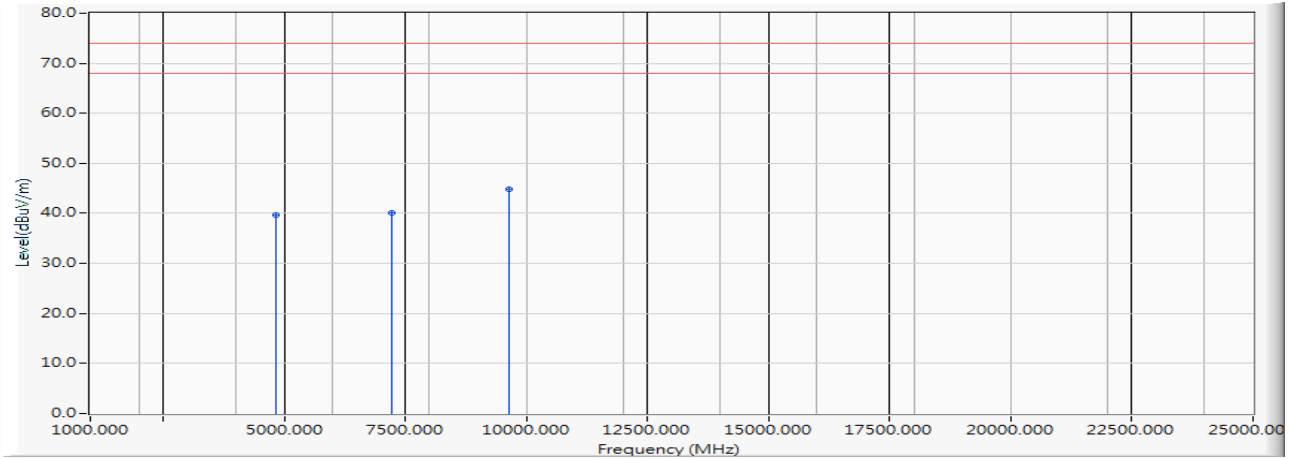
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4824.000	-6.086	46.760	40.675	-33.325	74.000	PEAK
2	7236.000	-3.033	46.050	43.017	-30.983	74.000	PEAK
3	* 9648.000	-0.680	45.760	45.080	-28.920	74.000	PEAK

Note:

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

Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)  
 Test Date : 2019/01/14

Vertical



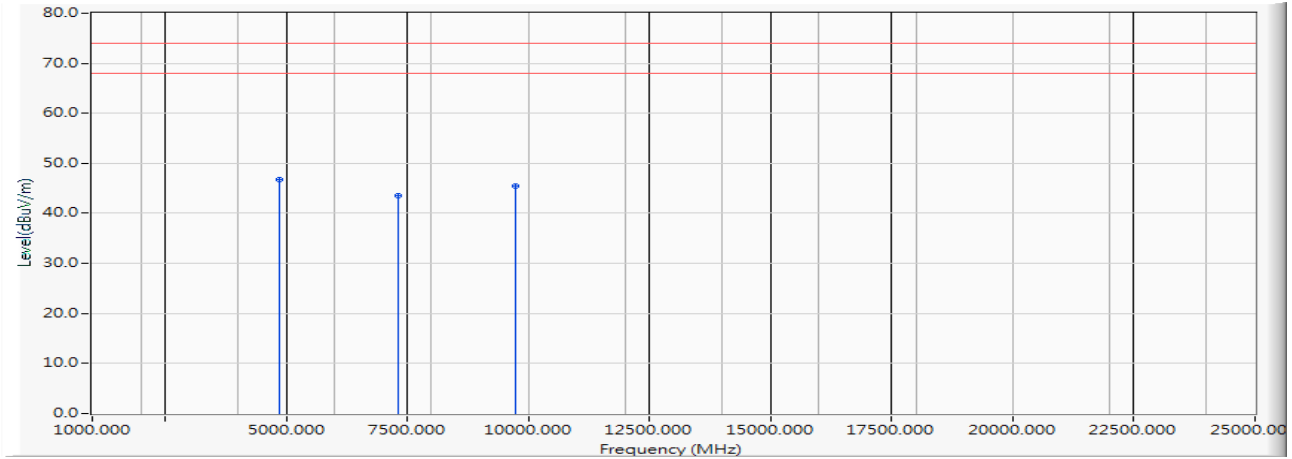
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4824.000	-6.086	45.710	39.625	-34.375	74.000	PEAK
2	7236.000	-3.033	43.130	40.097	-33.903	74.000	PEAK
3	* 9648.000	-0.680	45.440	44.760	-29.240	74.000	PEAK

Note:

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

Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)  
 Test Date : 2019/01/14

Horizontal



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4874.000	-6.055	52.780	46.725	-27.275	74.000	PEAK
2		7311.000	-2.976	46.580	43.605	-30.395	74.000	PEAK
3		9748.000	-0.502	46.050	45.548	-28.452	74.000	PEAK

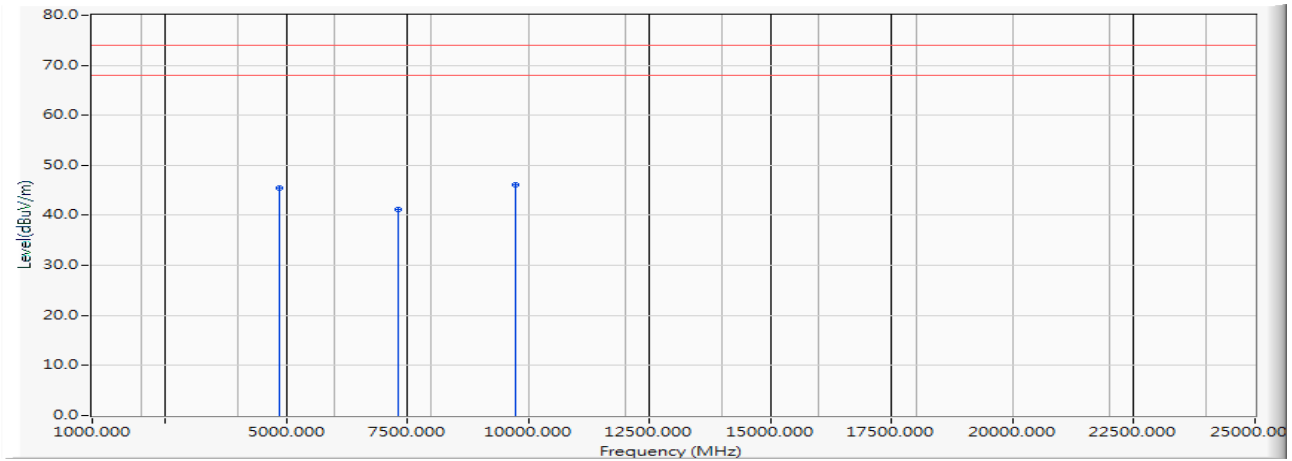
Note:

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



Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)  
 Test Date : 2019/01/14

Vertical



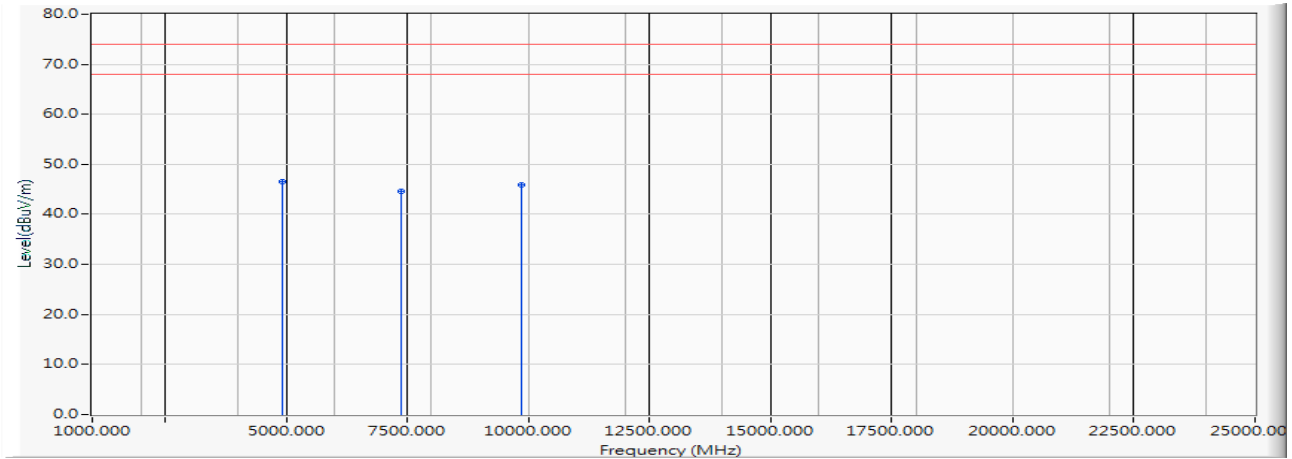
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	4874.000	-6.055	51.590	45.535	-28.465	74.000	PEAK
2	7311.000	-2.976	44.080	41.105	-32.895	74.000	PEAK
3	* 9748.000	-0.502	46.570	46.068	-27.932	74.000	PEAK

Note:

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

Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)  
 Test Date : 2019/01/14

Horizontal



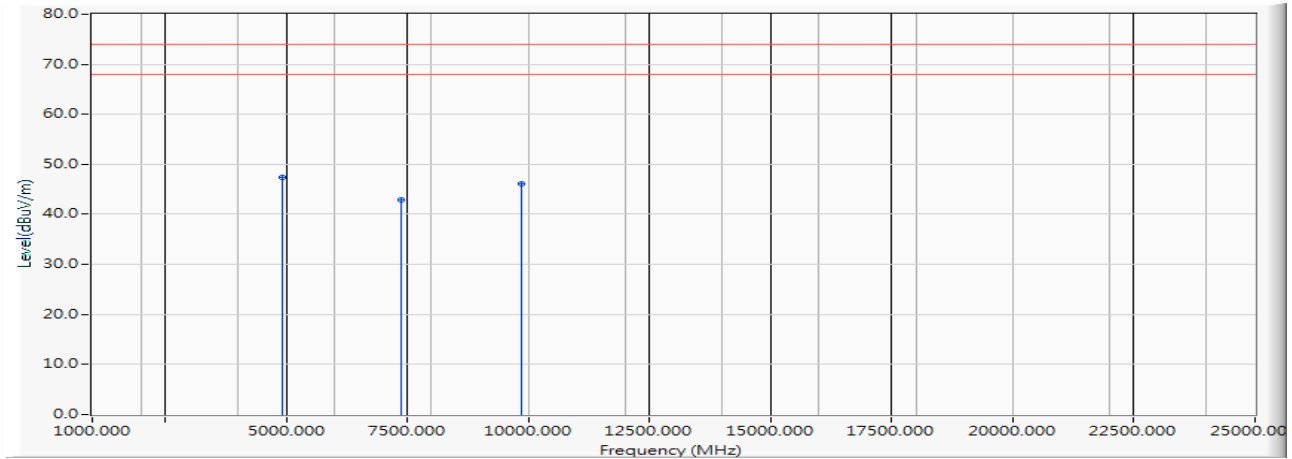
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-6.041	52.650	46.610	-27.390	74.000	PEAK
2		7386.000	-2.861	47.450	44.588	-29.412	74.000	PEAK
3		9848.000	-0.399	46.390	45.991	-28.009	74.000	PEAK

Note:

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

Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)  
 Test Date : 2019/01/14

Vertical



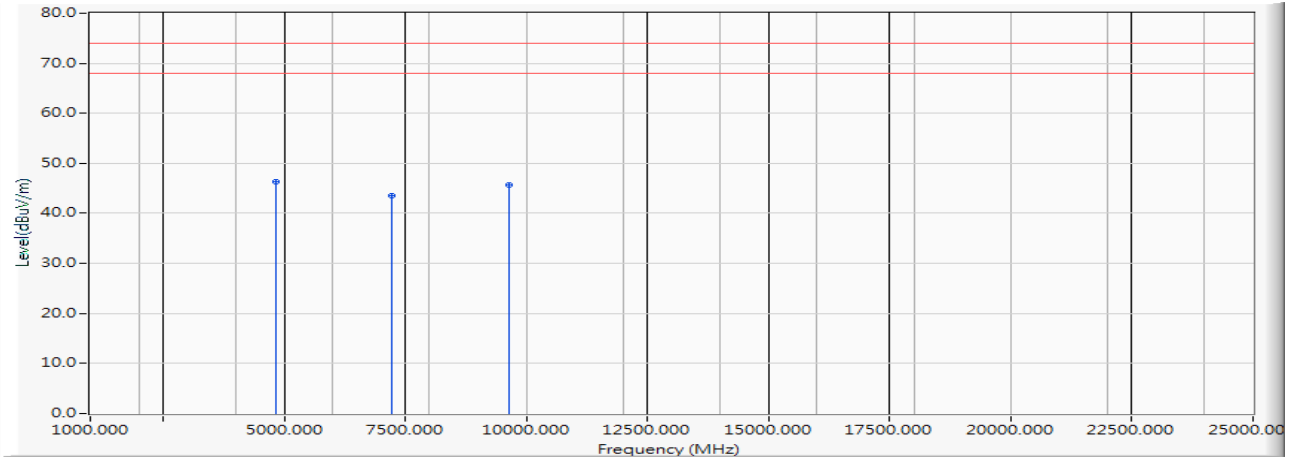
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-6.041	53.350	47.310	-26.690	74.000	PEAK
2		7386.000	-2.861	45.840	42.978	-31.022	74.000	PEAK
3		9848.000	-0.399	46.600	46.201	-27.799	74.000	PEAK

Note:

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

Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)  
 Test Date : 2019/01/14

Horizontal



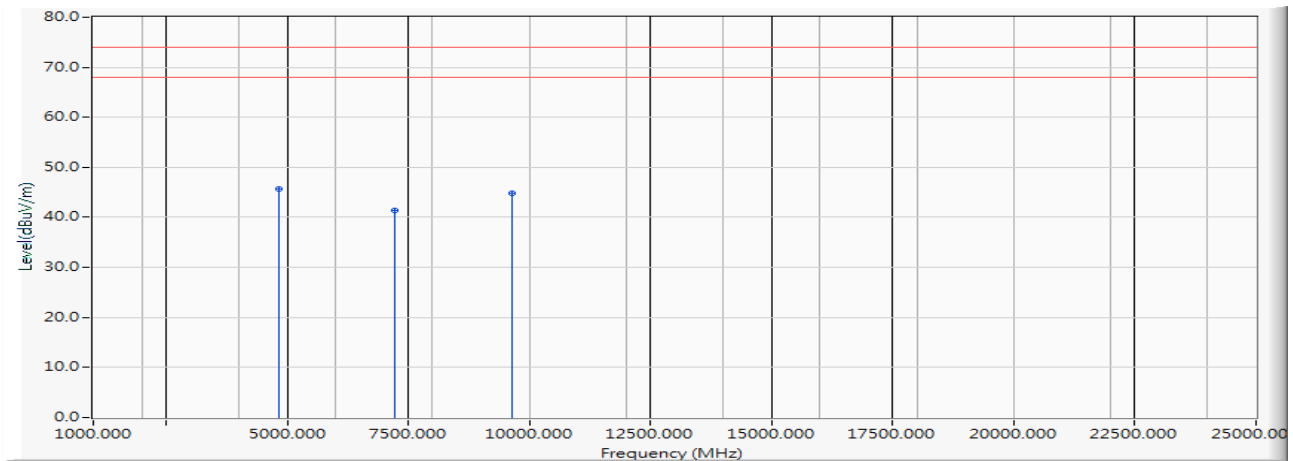
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-6.086	52.480	46.395	-27.605	74.000	PEAK
2		7236.000	-3.033	46.470	43.437	-30.563	74.000	PEAK
3		9648.000	-0.680	46.350	45.670	-28.330	74.000	PEAK

Note:

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

Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)  
 Test Date : 2019/01/14

Vertical



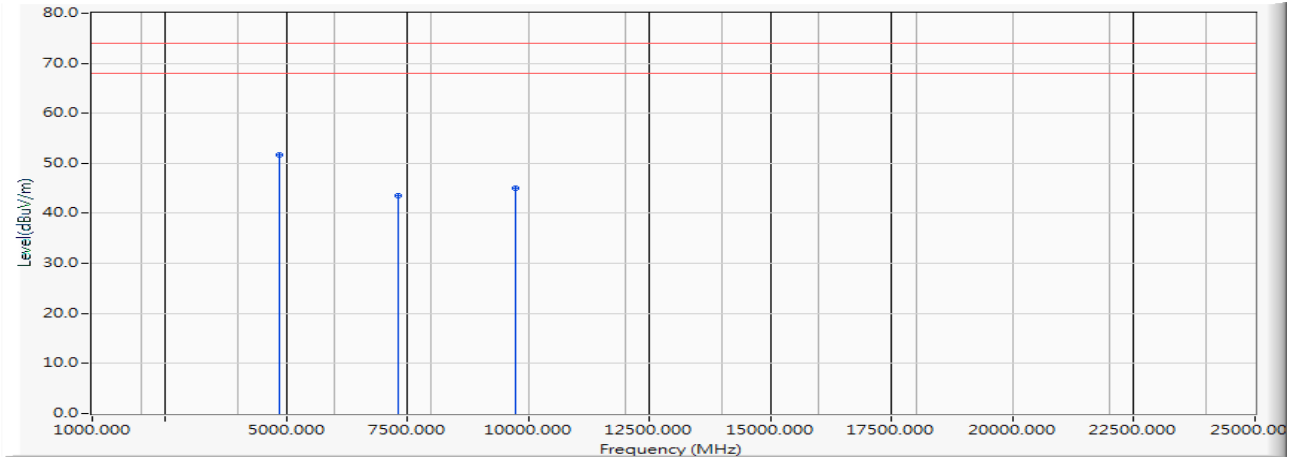
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4824.000	-6.086	51.760	45.675	-28.325	74.000	PEAK
2		7236.000	-3.033	44.500	41.467	-32.533	74.000	PEAK
3		9648.000	-0.680	45.480	44.800	-29.200	74.000	PEAK

Note:

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

Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)  
 Test Date : 2019/01/14

Horizontal



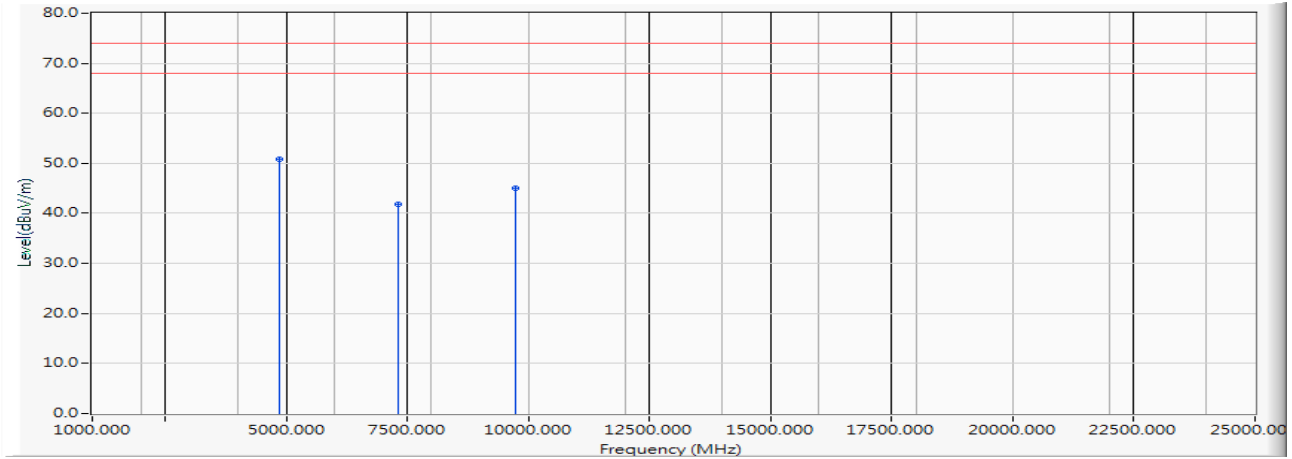
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4874.000	-6.055	57.760	51.705	-22.295	74.000	PEAK
2		7311.000	-2.976	46.450	43.475	-30.525	74.000	PEAK
3		9748.000	-0.502	45.550	45.048	-28.952	74.000	PEAK

Note:

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

Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)  
 Test Date : 2019/01/14

Vertical



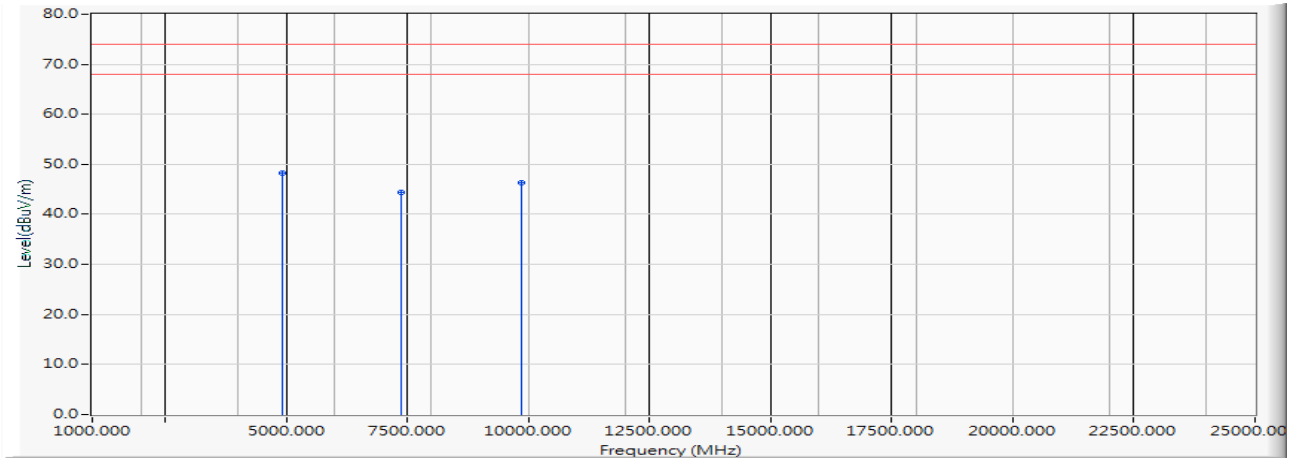
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4874.000	-6.055	56.990	50.935	-23.065	74.000	PEAK
2		7311.000	-2.976	44.700	41.725	-32.275	74.000	PEAK
3		9748.000	-0.502	45.480	44.978	-29.022	74.000	PEAK

Note:

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

Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)  
 Test Date : 2019/01/14

Horizontal



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-6.041	54.370	48.330	-25.670	74.000	PEAK
2		7386.000	-2.861	47.180	44.318	-29.682	74.000	PEAK
3		9848.000	-0.399	46.650	46.251	-27.749	74.000	PEAK

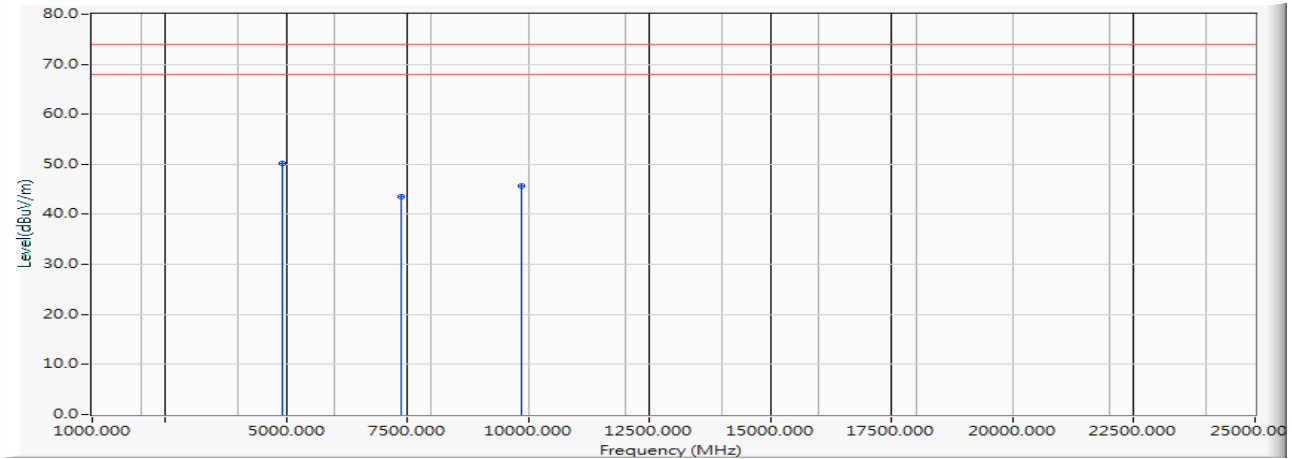
Note:

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



Product : Heat Finder  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)  
 Test Date : 2019/01/14

Vertical



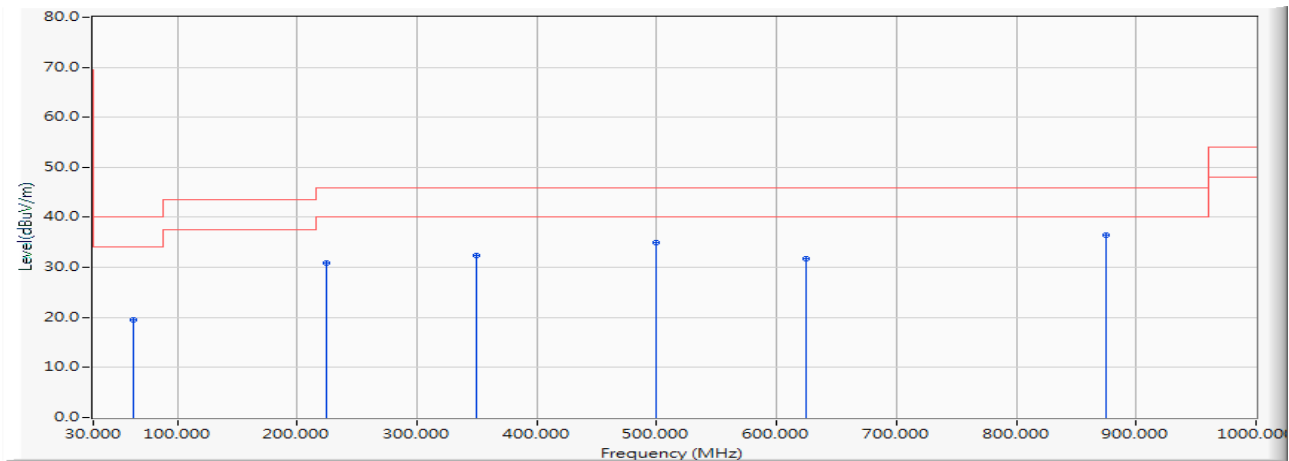
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	4924.000	-6.041	56.230	50.190	-23.810	74.000	PEAK
2		7386.000	-2.861	46.380	43.518	-30.482	74.000	PEAK
3		9848.000	-0.399	46.070	45.671	-28.329	74.000	PEAK

Note:

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

Product : Heat Finder  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)  
 Test Date : 2019/01/16

Horizontal



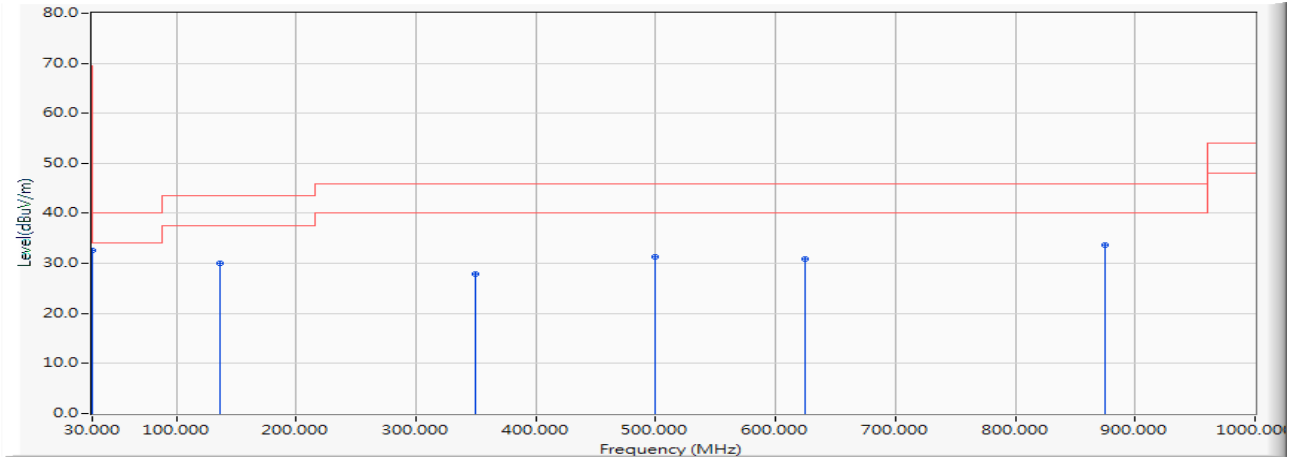
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	63.739	-12.695	32.216	19.521	-20.479	40.000	QUASIPeAK
2	224.000	-13.137	43.936	30.799	-15.201	46.000	QUASIPeAK
3	349.116	-9.199	41.567	32.367	-13.633	46.000	QUASIPeAK
4	499.536	-5.960	40.906	34.946	-11.054	46.000	QUASIPeAK
5	624.652	-3.854	35.510	31.656	-14.344	46.000	QUASIPeAK
6	* 874.884	-0.541	36.965	36.424	-9.576	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. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Heat Finder  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)  
 Test Date : 2019/01/16

Vertical



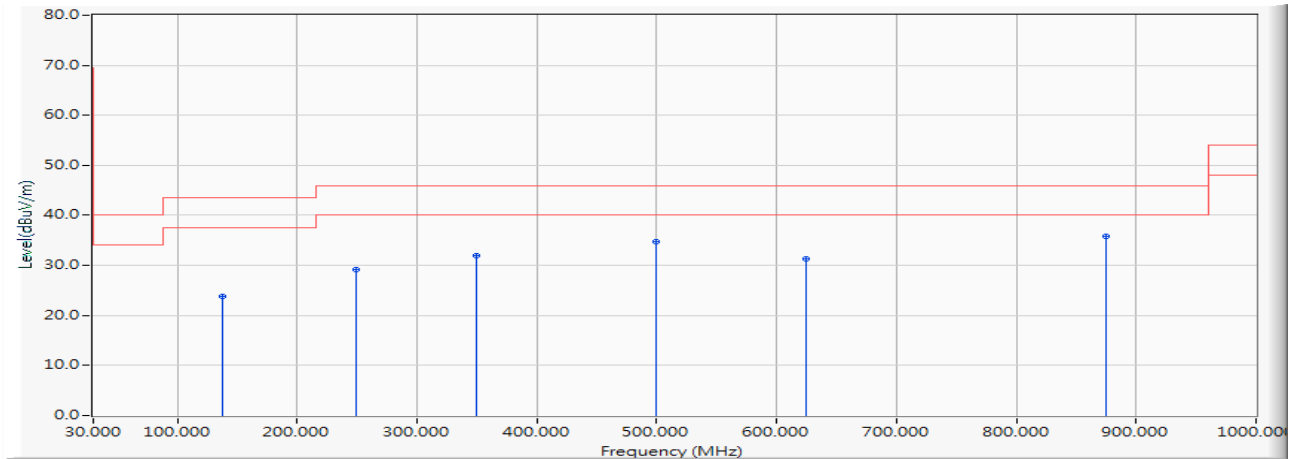
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	30.000	-12.240	44.942	32.702	-7.298	40.000	QUASIPeAK
2		136.841	-11.730	41.691	29.960	-13.540	43.500	QUASIPeAK
3		349.116	-9.199	37.055	27.855	-18.145	46.000	QUASIPeAK
4		499.536	-5.960	37.199	31.239	-14.761	46.000	QUASIPeAK
5		624.652	-3.854	34.823	30.969	-15.031	46.000	QUASIPeAK
6		874.884	-0.541	34.230	33.689	-12.311	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. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Heat Finder  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)  
 Test Date : 2019/01/16

Horizontal



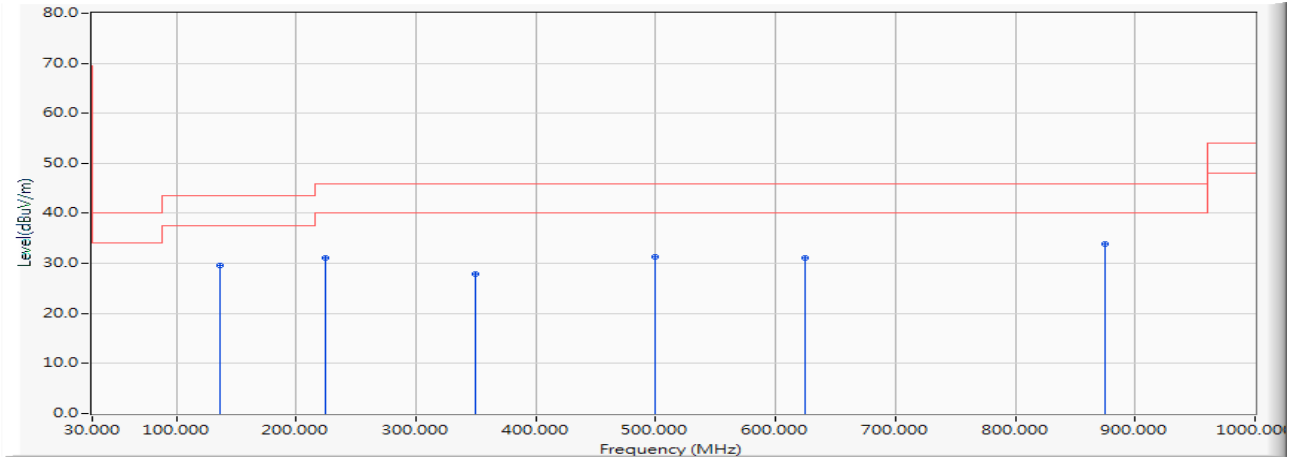
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		138.246	-11.597	35.432	23.835	-19.665	43.500	QUASIPeAK
2		249.304	-12.090	41.304	29.213	-16.787	46.000	QUASIPeAK
3		349.116	-9.199	41.234	32.034	-13.966	46.000	QUASIPeAK
4		499.536	-5.960	40.629	34.669	-11.331	46.000	QUASIPeAK
5		624.652	-3.854	35.126	31.272	-14.728	46.000	QUASIPeAK
6	*	874.884	-0.541	36.283	35.742	-10.258	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. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Heat Finder  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)  
 Test Date : 2019/01/16

Vertical



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		136.841	-11.730	41.417	29.686	-13.814	43.500	QUASIPeAK
2		224.000	-13.137	44.342	31.205	-14.795	46.000	QUASIPeAK
3		349.116	-9.199	37.074	27.874	-18.126	46.000	QUASIPeAK
4		499.536	-5.960	37.199	31.239	-14.761	46.000	QUASIPeAK
5		624.652	-3.854	34.912	31.058	-14.942	46.000	QUASIPeAK
6	*	874.884	-0.541	34.396	33.855	-12.145	46.000	QUASIPeAK

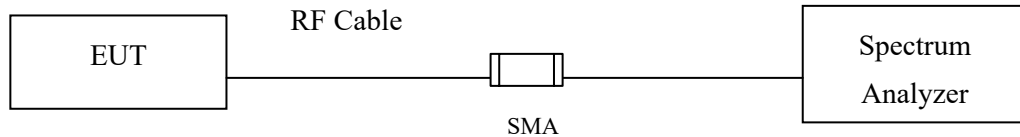
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

## 5. RF antenna conducted test

### 5.1. Test Setup

#### RF antenna Conducted Measurement:



### 5.2. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. 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)).

### 5.3. Test Procedure

Tested according to DTS test procedure of KDB558074 section 8.5 DTS emissions in non-restricted frequency bands for compliance to FCC 47CFR 15.247 requirements.  
Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

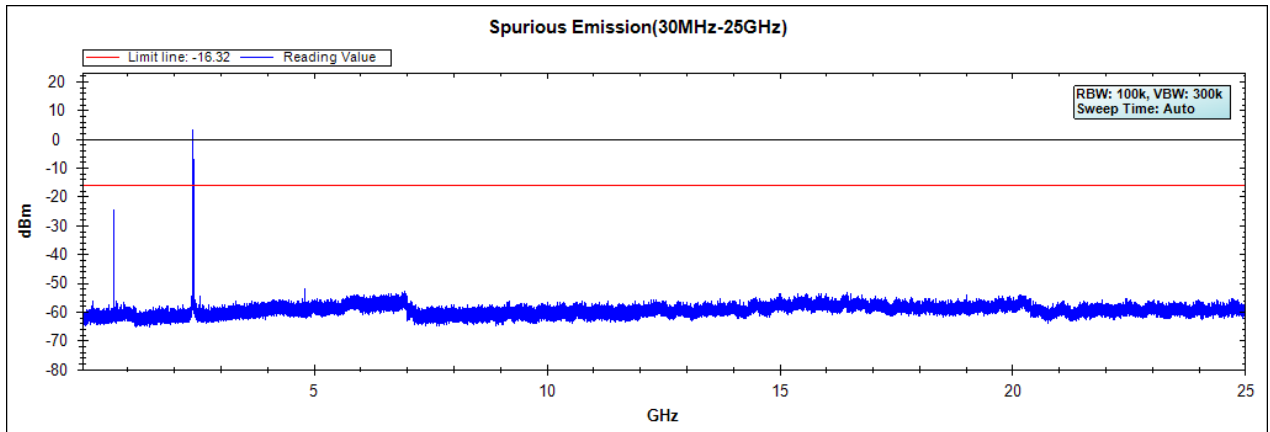
### 5.4. Uncertainty

$\pm 1.23\text{dB}$

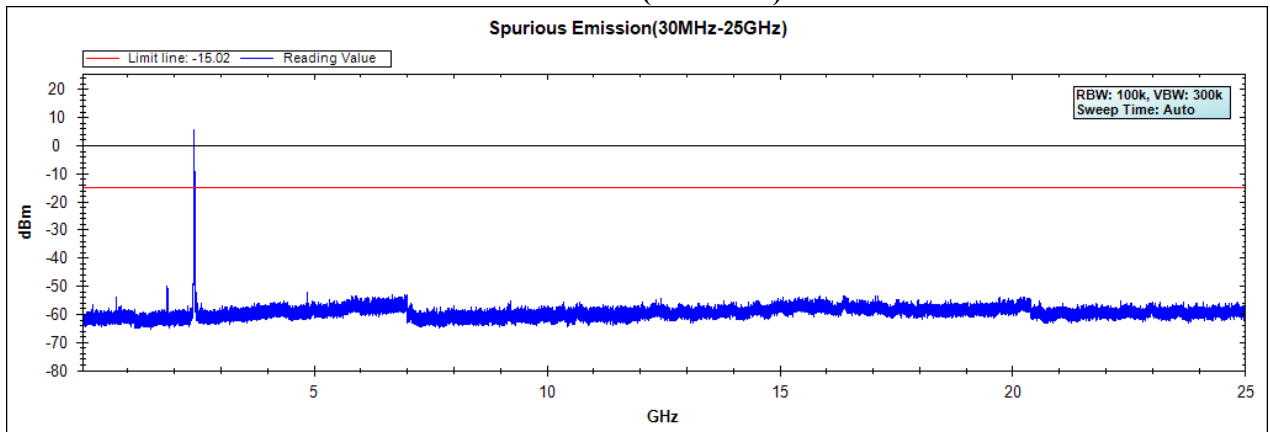
### 5.5. Test Result of RF antenna conducted test

Product : Heat Finder  
Test Item : RF antenna conducted test  
Test Mode : Mode 1: Transmit (802.11b 1Mbps)  
Test Date : 2019/01/14

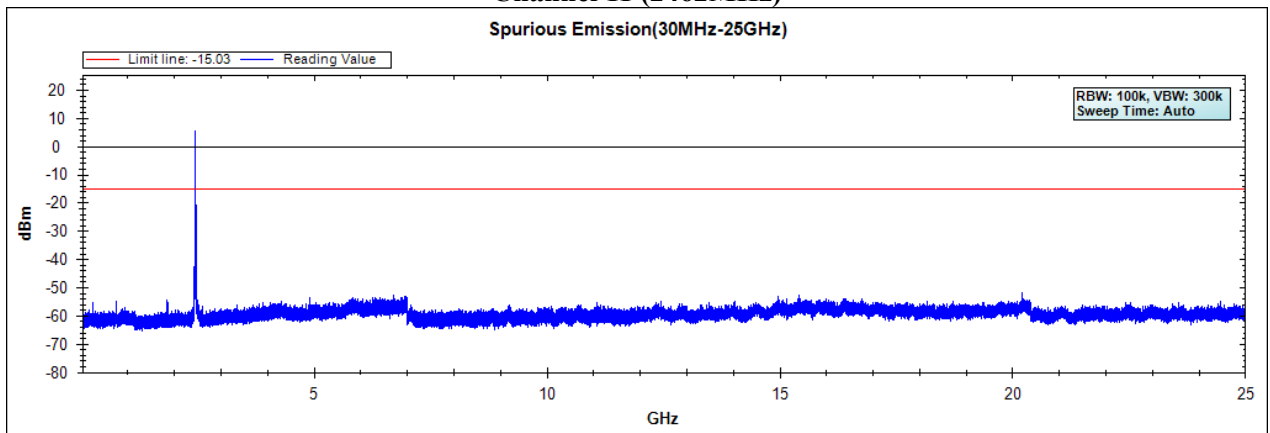
**Channel 01 (2412MHz)**



**Channel 06 (2437MHz)**



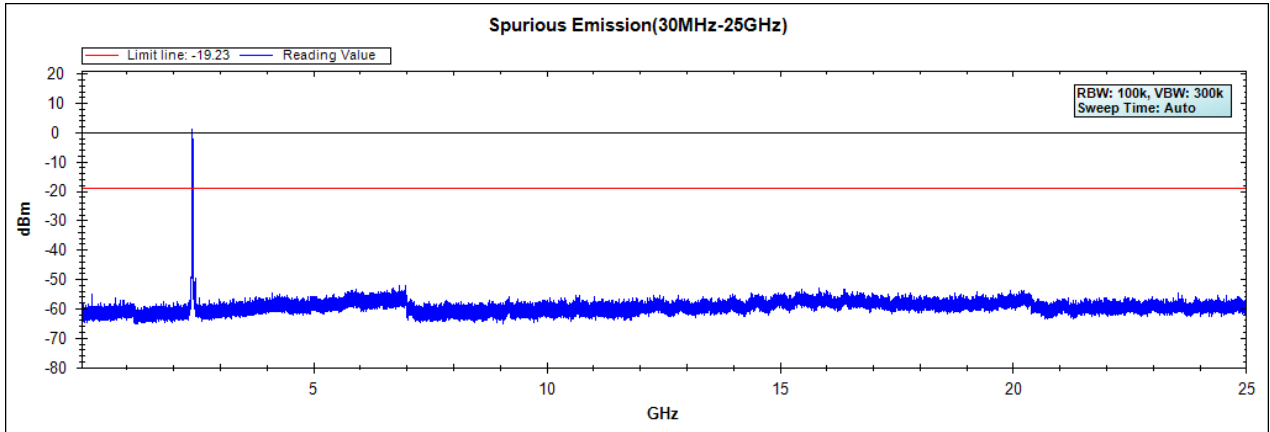
**Channel 11 (2462MHz)**



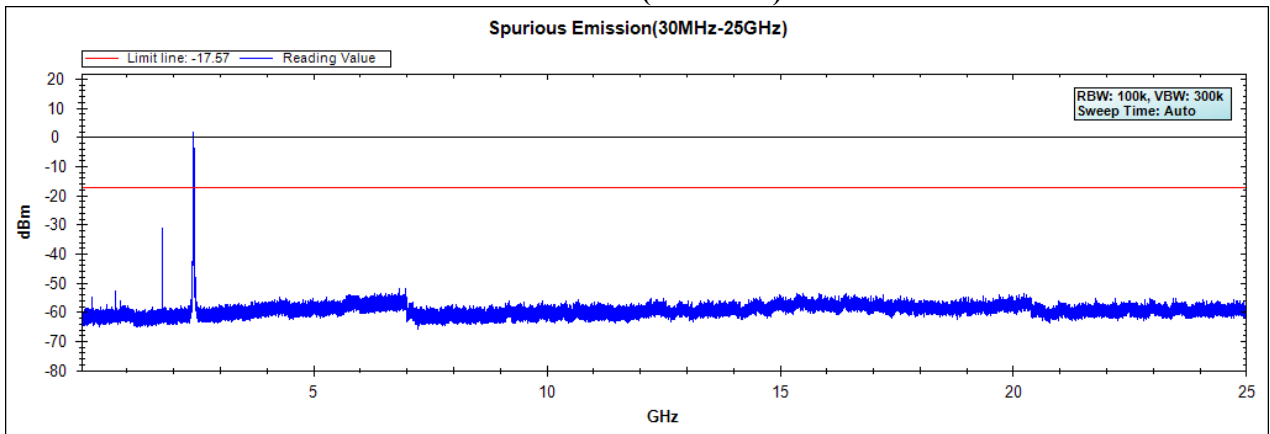
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Heat Finder  
Test Item : RF Antenna Conducted Spurious  
Test Mode : Mode 2: Transmit (802.11g 6Mbps)  
Test Date : 2019/01/14

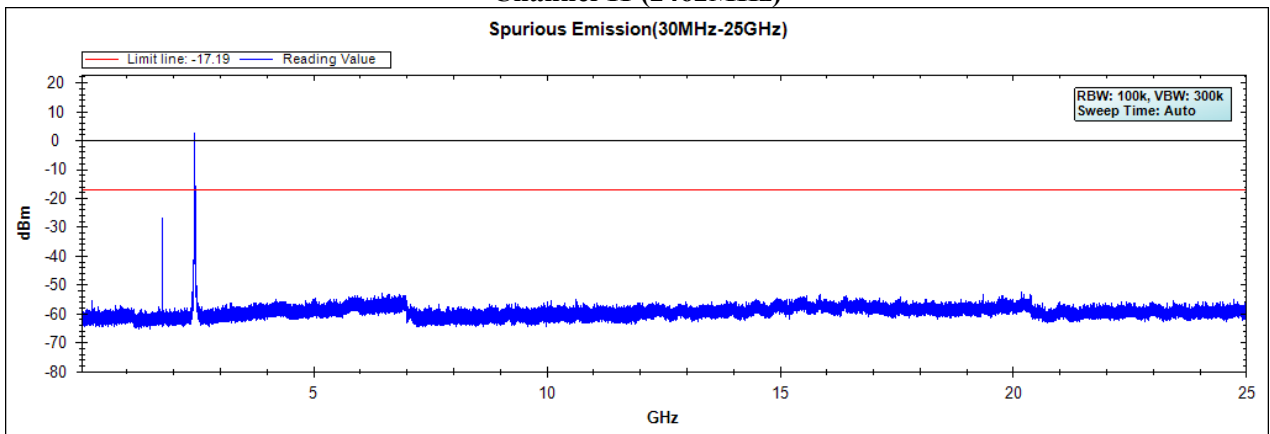
**Channel 01 (2412MHz)**



**Channel 06 (2437MHz)**



**Channel 11 (2462MHz)**



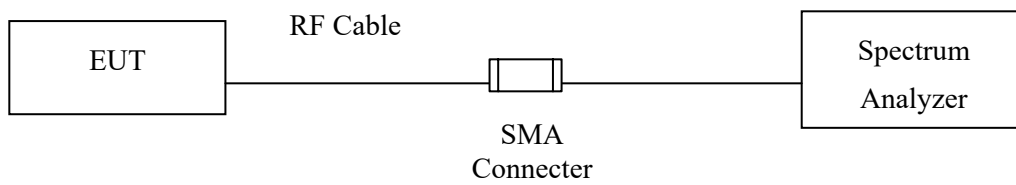
Note: The above test pattern is synthesized by multiple of the frequency range.



## 6. Band Edge

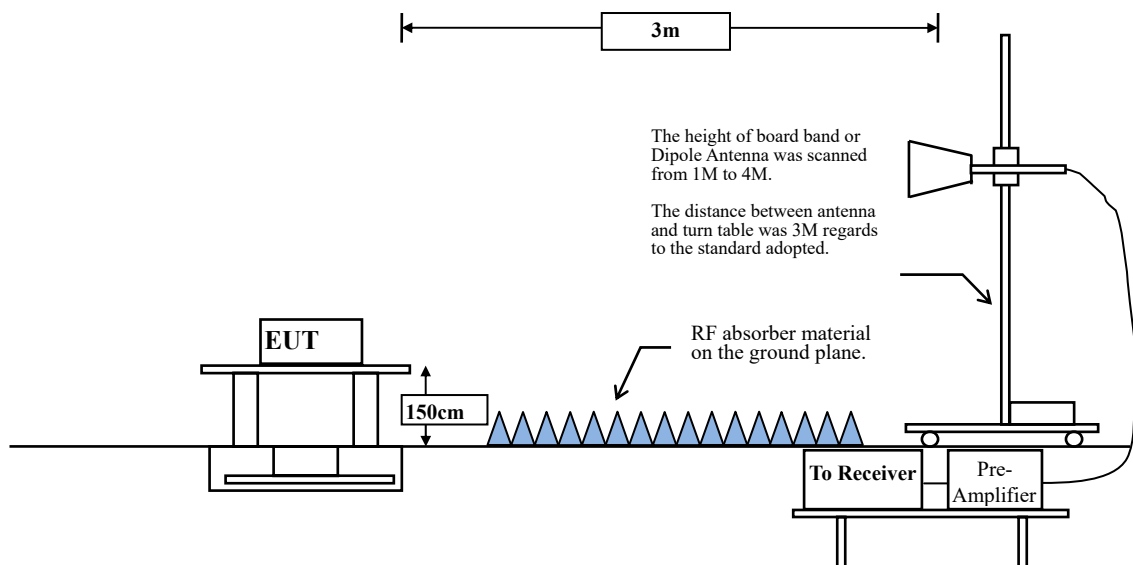
### 6.1. Test Setup

#### RF Conducted Measurement



#### RF Radiated Measurement:

Above 1GHz



## 6.2. 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. 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 was setup according to ANSI C63.10, 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

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 from 1 meter to 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.

### RBW and VBW Parameter setting:

According to KDB 558074 Peak power measurement procedure

RBW = as specified in Table 1.

VBW  $\geq$  3 x RBW.

**Table 1 —RBW as a function of frequency**

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to KDB 558074 Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle  $\geq$  98 %

VBW  $\geq$  1/T, when duty cycle < 98 %

( T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	99.31	--	--	10
802.11g	96.02	1.3985	715	1k

Note: Duty Cycle Refer to Section 9

## 6.4. Uncertainty

Conducted:  $\pm$ 1.23dB

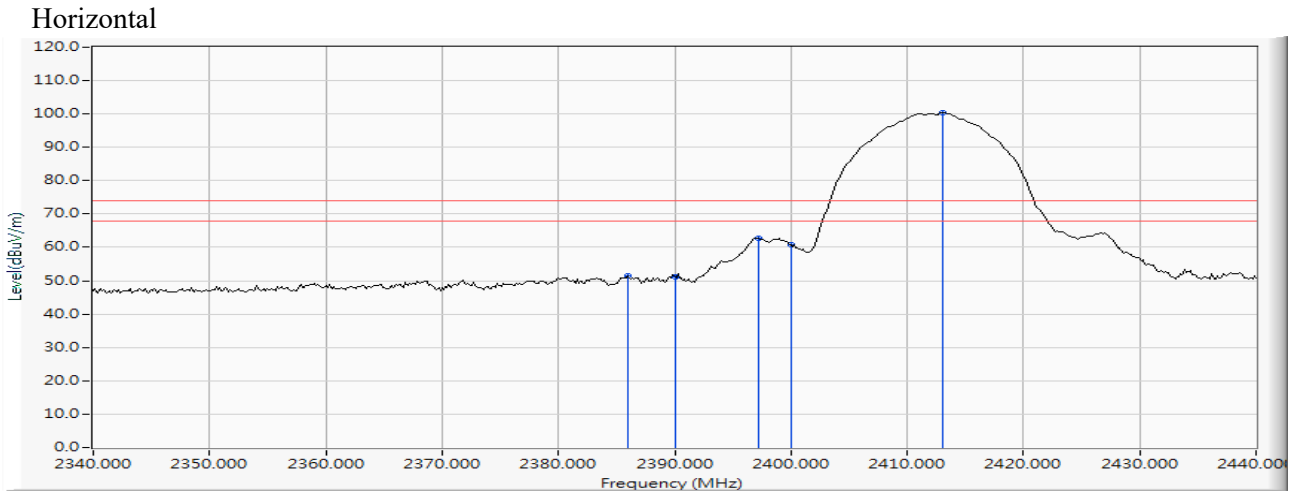
Radiated:

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

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

### 6.5. Test Result of Band Edge

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)  
 Test Date : 2019/01/14



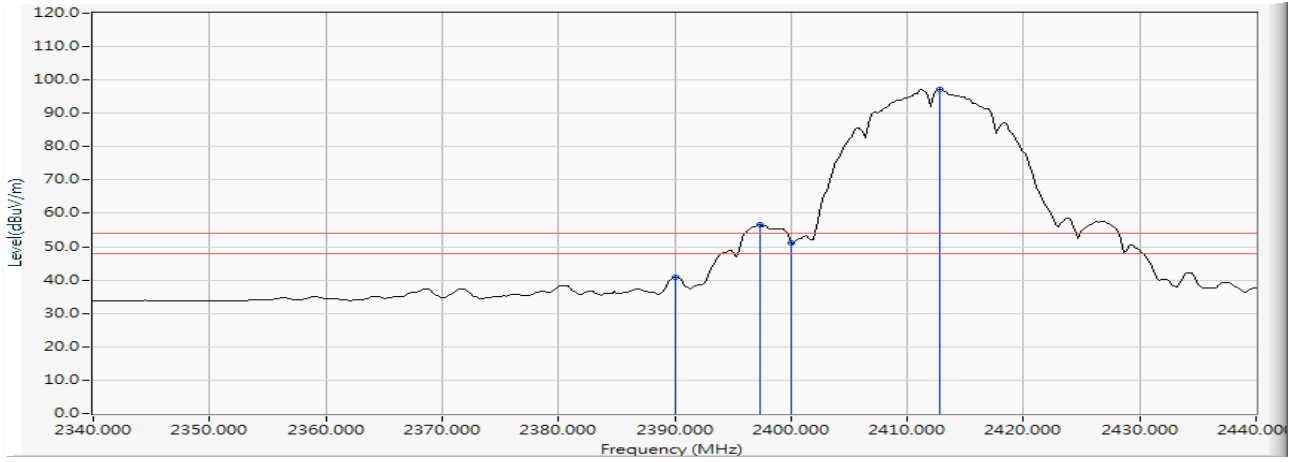
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2385.942	10.245	41.287	51.532	-22.468	74.000	PEAK
2		2390.000	10.262	40.897	51.159	-22.841	74.000	PEAK
3		2397.246	10.292	52.551	62.843	--	--	PEAK
4		2400.000	10.304	50.493	60.796	--	--	PEAK
5	*	2413.043	10.357	90.178	100.534	--	--	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)  
 Test Date : 2019/01/14

Horizontal



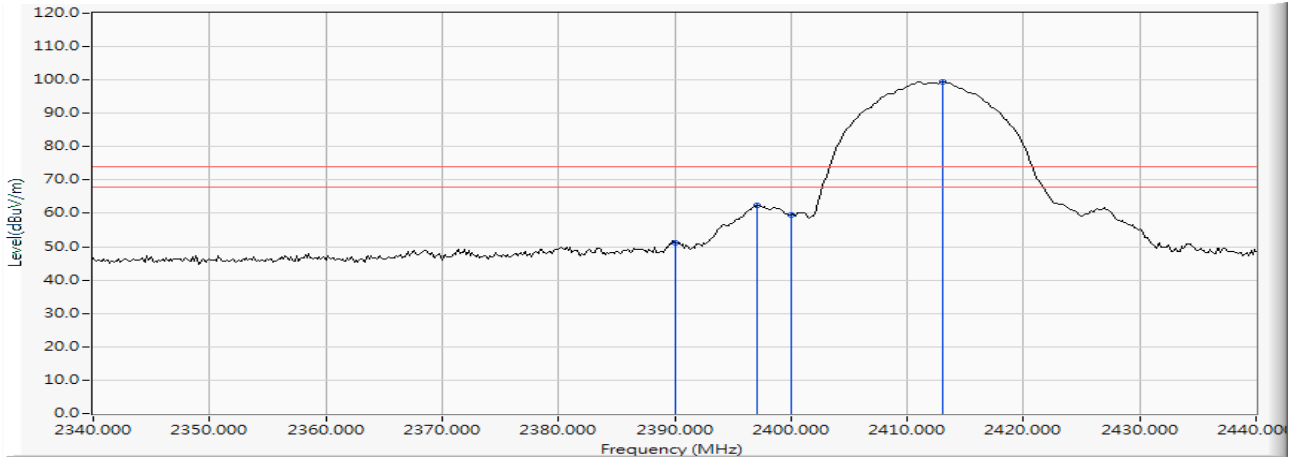
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	10.262	30.559	40.821	-13.179	54.000	AVERAGE
2		2397.391	10.293	46.193	56.485	--	--	AVERAGE
3		2400.000	10.304	40.825	51.128	--	--	AVERAGE
4	*	2412.754	10.355	86.921	97.276	--	--	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection..

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)  
 Test Date : 2019/01/14

Vertical



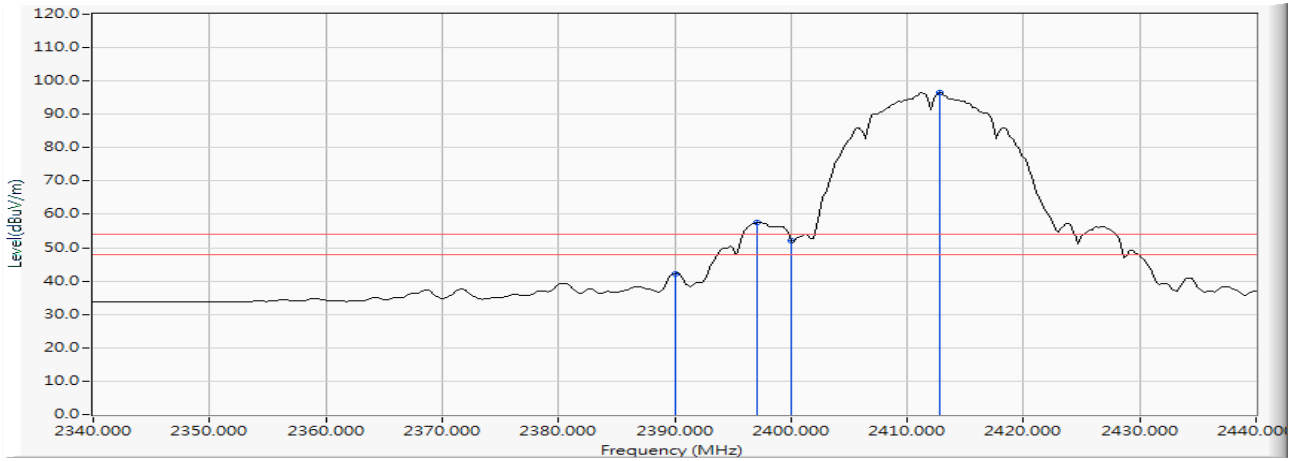
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	10.262	40.902	51.164	-22.836	74.000	PEAK
2		2397.102	10.291	52.029	62.320	--	--	PEAK
3		2400.000	10.304	49.157	59.460	--	--	PEAK
4	*	2413.043	10.357	89.148	99.504	--	--	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)  
 Test Date : 2019/01/14

Vertical



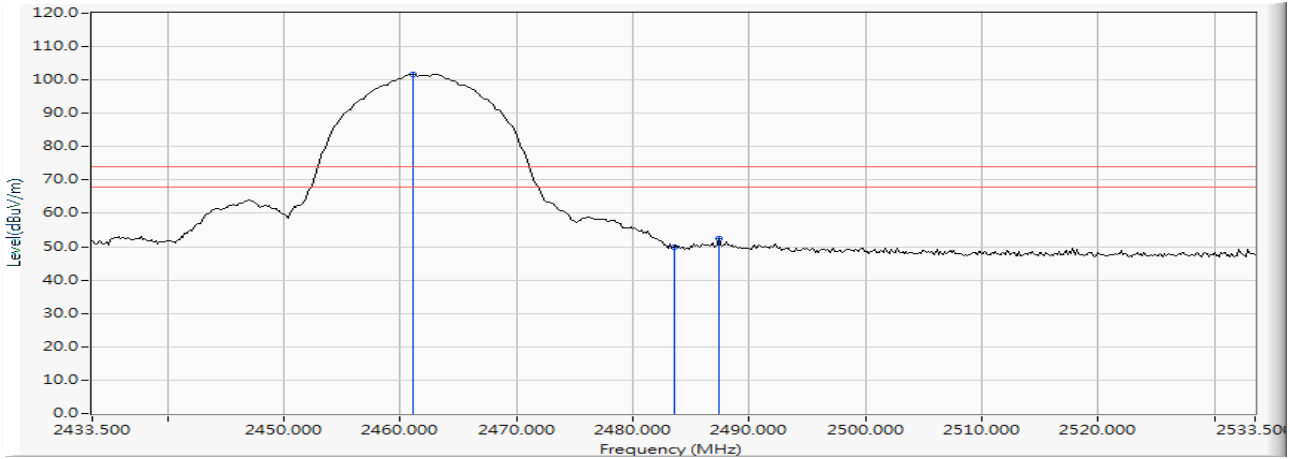
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	10.262	32.017	42.279	-11.721	54.000	AVERAGE
2		2397.102	10.291	47.240	57.531	--	--	AVERAGE
3		2400.000	10.304	41.719	52.022	--	--	AVERAGE
4	*	2412.754	10.355	86.140	96.495	--	--	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)  
 Test Date : 2019/01/14

Horizontal



		<b>Frequency (MHz)</b>	<b>Correct Factor (dB)</b>	<b>Reading Level (dBuV)</b>	<b>Measure Level (dBuV/m)</b>	<b>Margin (dB)</b>	<b>Limit (dBuV/m)</b>	<b>Detector Type</b>
1	*	2461.036	10.545	91.205	101.750	--	--	PEAK
2		2483.500	10.640	39.110	49.751	-24.249	74.000	PEAK
3		2487.413	10.656	41.698	52.354	-21.646	74.000	PEAK

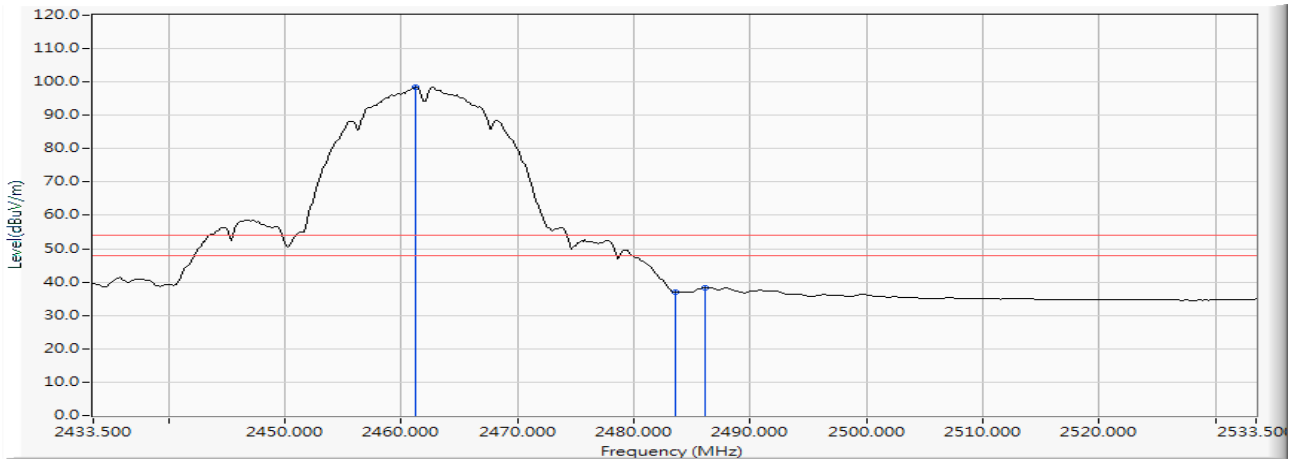
Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)  
 Test Date : 2019/01/14

Horizontal



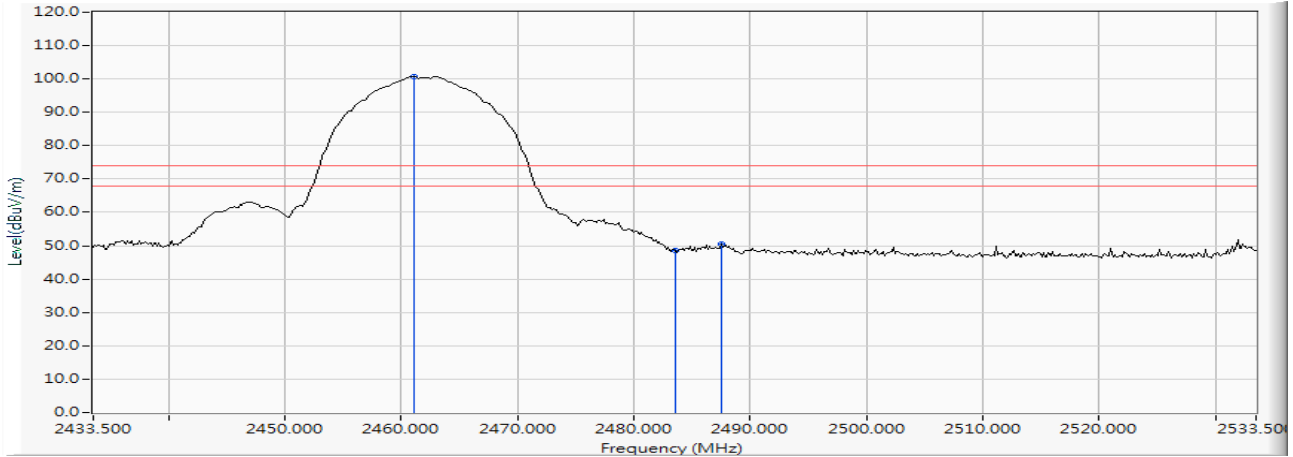
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.181	10.545	87.922	98.468	--	--	AVERAGE
2		2483.500	10.640	26.264	36.905	-17.095	54.000	AVERAGE
3		2486.109	10.652	27.726	38.377	-15.623	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)  
 Test Date : 2019/01/14

Vertical



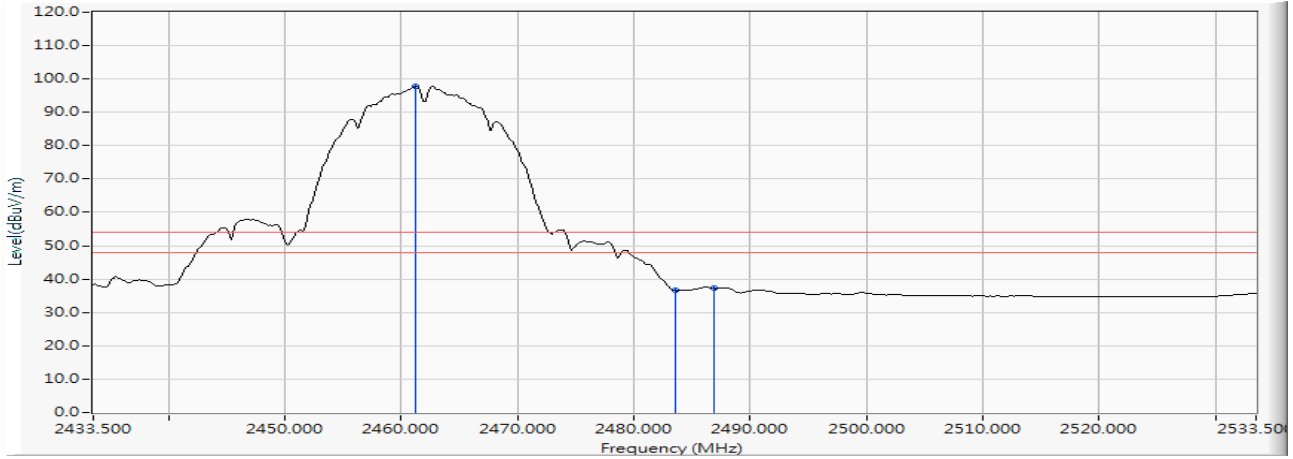
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.036	10.545	90.220	100.765	--	--	PEAK
2		2483.500	10.640	37.949	48.590	-25.410	74.000	PEAK
3		2487.558	10.657	39.779	50.436	-23.564	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)  
 Test Date : 2019/01/14

Vertical



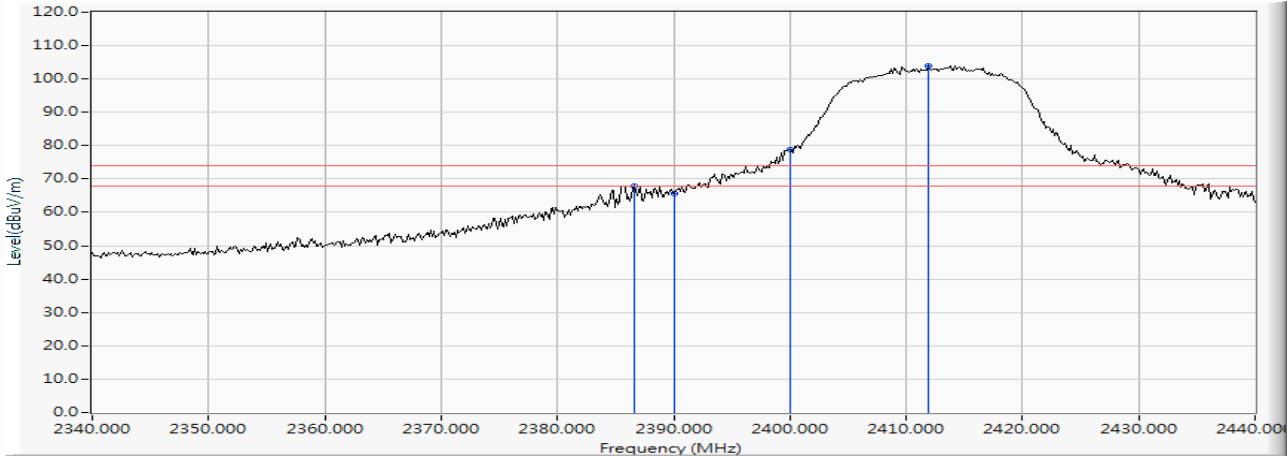
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.181	10.545	87.245	97.791	--	--	AVERAGE
2		2483.500	10.640	25.886	36.527	-17.473	54.000	AVERAGE
3		2486.833	10.654	26.656	37.310	-16.690	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)  
 Test Date : 2019/01/14

Horizontal



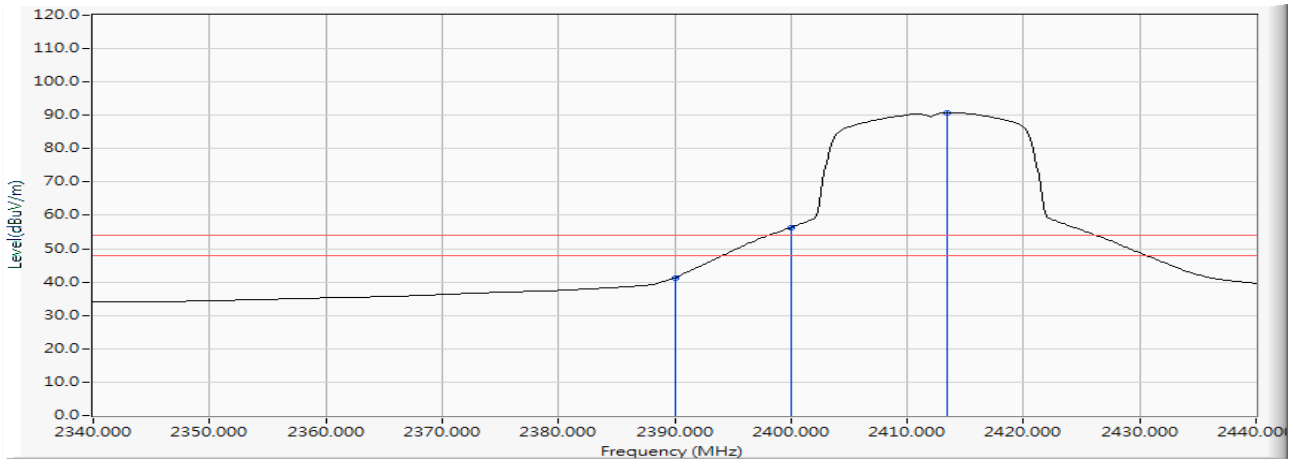
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2386.667	10.248	57.774	68.022	-5.978	74.000	PEAK
2		2390.000	10.262	55.483	65.745	-8.255	74.000	PEAK
3		2400.000	10.304	68.635	78.938	--	--	PEAK
4	*	2411.884	10.352	93.677	104.029	--	--	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)  
 Test Date : 2019/01/14

Horizontal



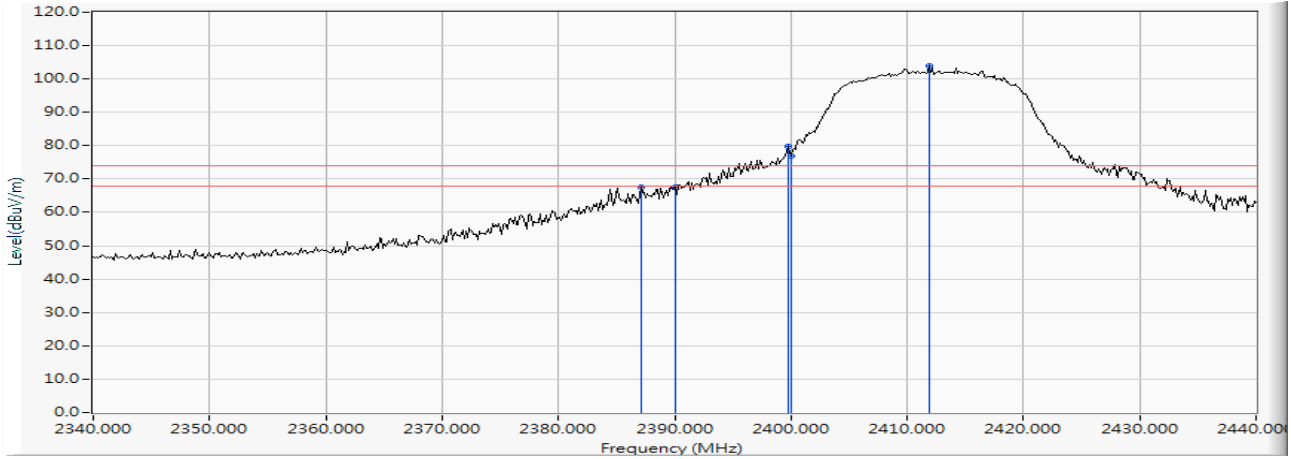
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	10.262	31.071	41.333	-32.667	74.000	AVERAGE
2		2400.000	10.304	46.020	56.323	--	--	AVERAGE
3	*	2413.478	10.358	80.456	90.814	--	--	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)  
 Test Date : 2019/01/14

Vertical



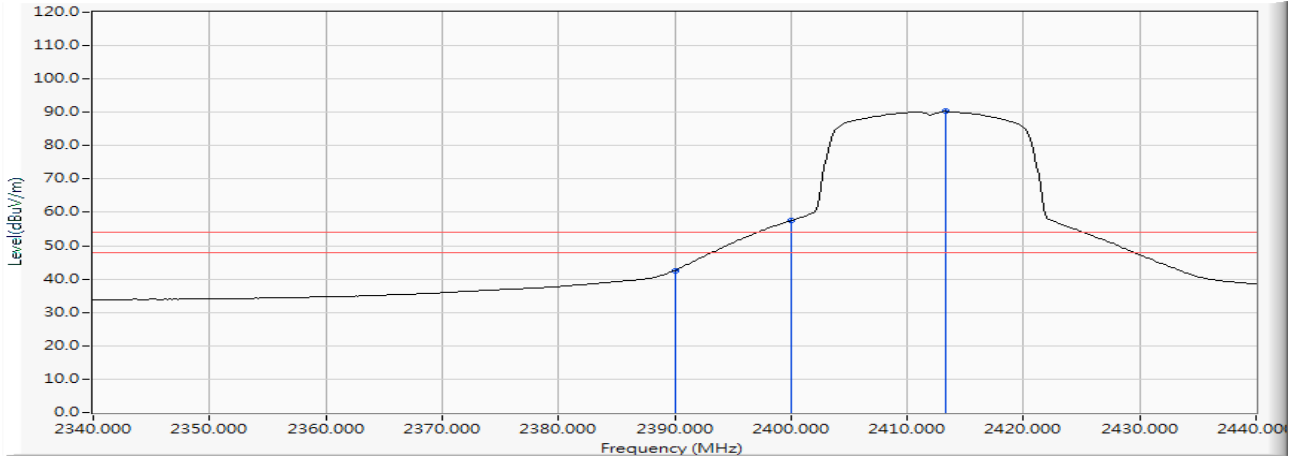
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2387.101	10.250	57.238	67.488	-6.512	74.000	PEAK
2		2390.000	10.262	57.149	67.411	-6.589	74.000	PEAK
3		2399.710	10.302	69.607	79.909	--	--	PEAK
4		2400.000	10.304	66.569	76.872	--	--	PEAK
5	*	2411.884	10.352	93.653	104.005	--	--	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)  
 Test Date : 2019/01/14

Vertical



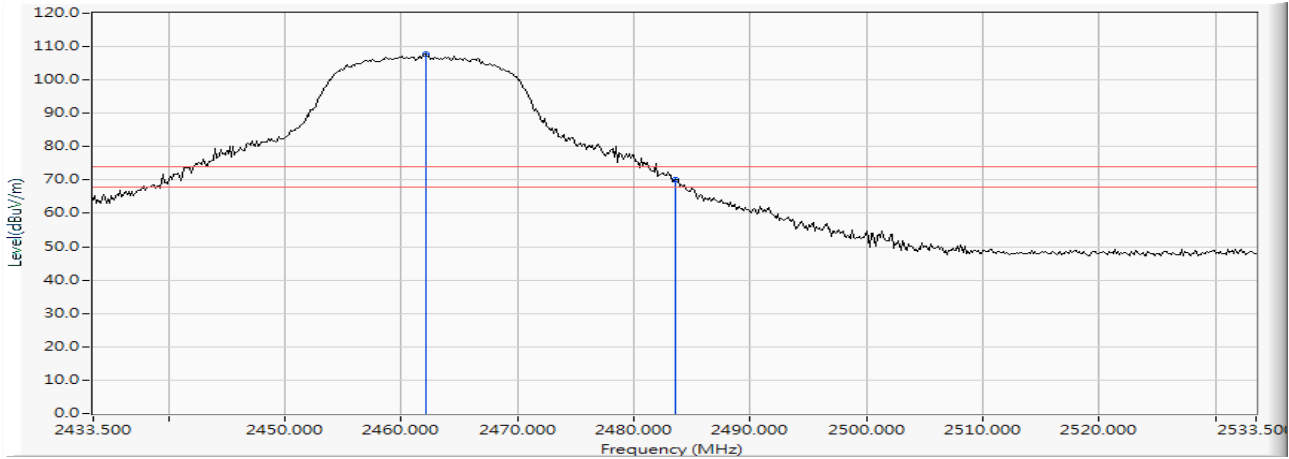
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	10.262	32.355	42.617	-11.383	54.000	AVERAGE
2		2400.000	10.304	47.231	57.534	--	--	AVERAGE
3	*	2413.333	10.358	79.906	90.263	--	--	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)  
 Test Date : 2019/01/14

Horizontal



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2462.051	10.550	97.140	107.690	--	--	PEAK
2		2483.500	10.640	59.367	70.008	-3.992	74.000	PEAK

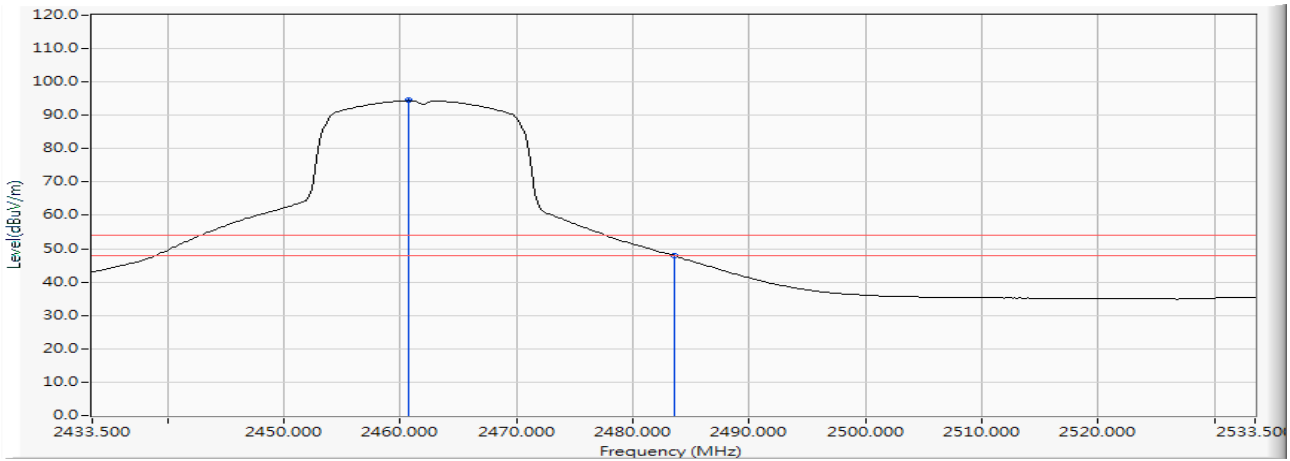
Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)  
 Test Date : 2019/01/14

Horizontal



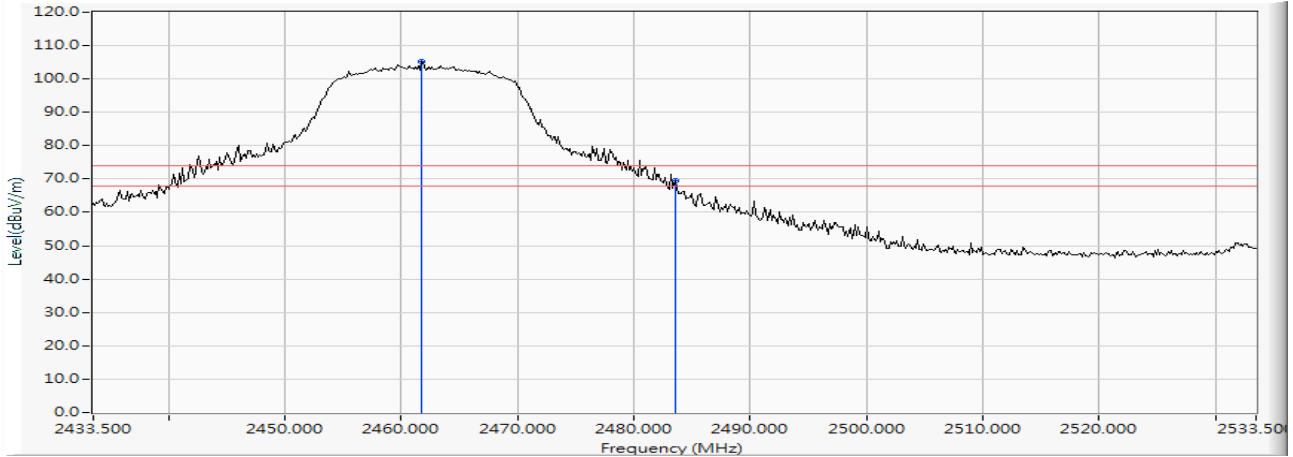
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2460.746	10.544	83.893	94.437	--	--	AVERAGE
2		2483.500	10.640	37.279	47.920	-6.080	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)  
 Test Date : 2019/01/14

Vertical



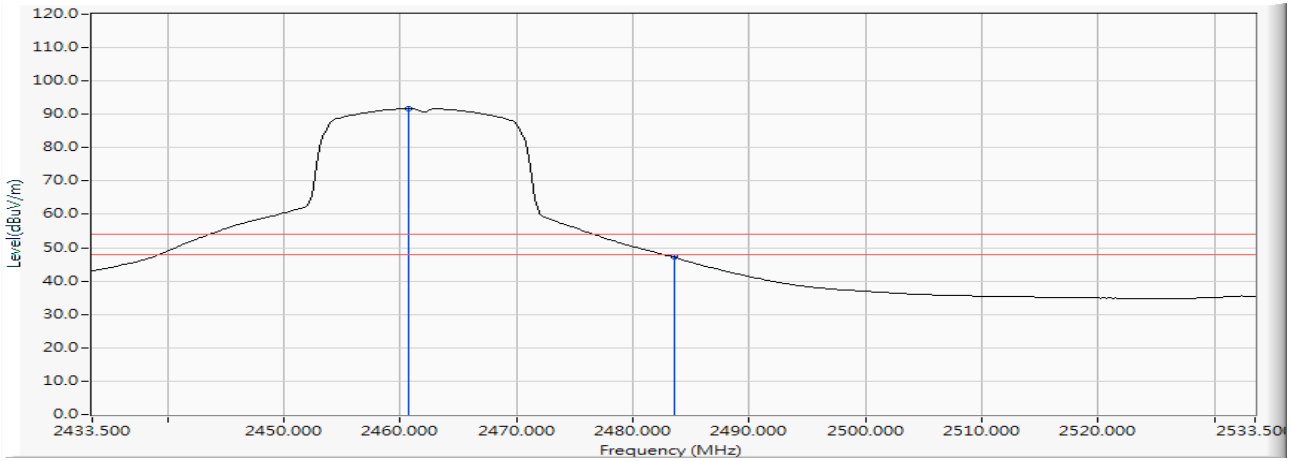
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2461.761	10.549	94.757	105.306	--	--	PEAK
2		2483.500	10.640	58.993	69.634	-4.366	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Heat Finder  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)  
 Test Date : 2019/01/14

Vertical



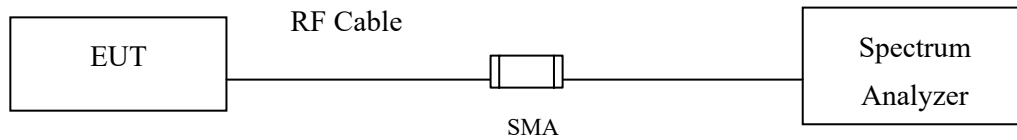
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2460.746	10.544	81.168	91.712	--	--	AVERAGE
2		2483.500	10.640	36.508	47.149	-6.851	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

## 7. 6dB Bandwidth

### 7.1. Test Setup



### 7.2. Limits

The minimum bandwidth shall be at least 500 kHz.

### 7.3. Test Procedure

Tested according to DTS test procedure of KDB558074 section 8.2 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 1-5% of the emission bandwidth,  $VBW \geq 3 * RBW$

### 7.4. Uncertainty

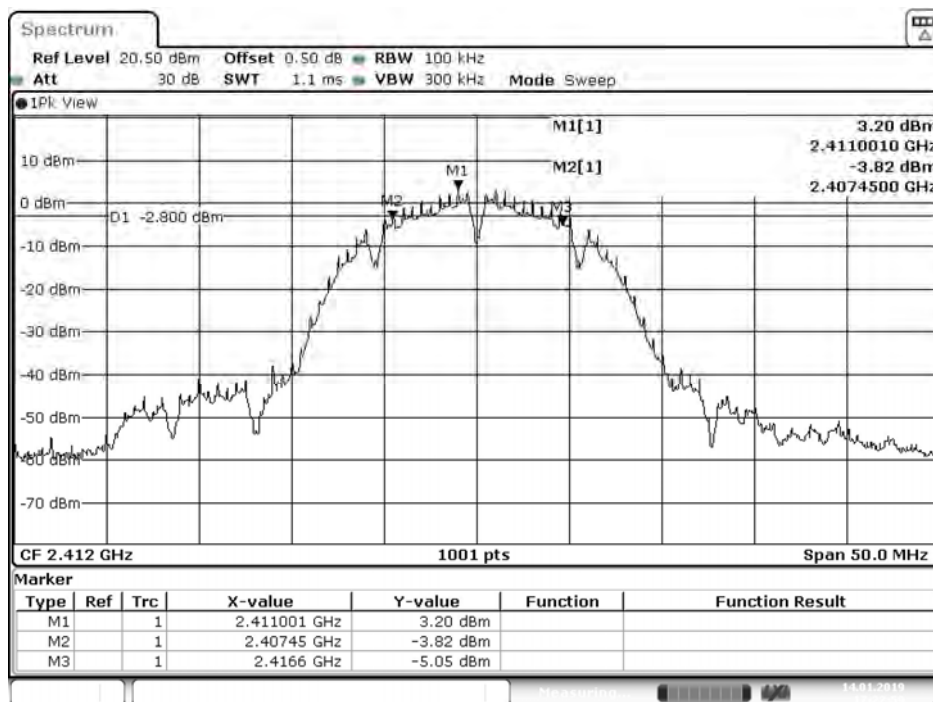
$\pm 279.2\text{Hz}$

### 7.5. Test Result of 6dB Bandwidth

Product : Heat Finder  
 Test Item : 6dB Bandwidth Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

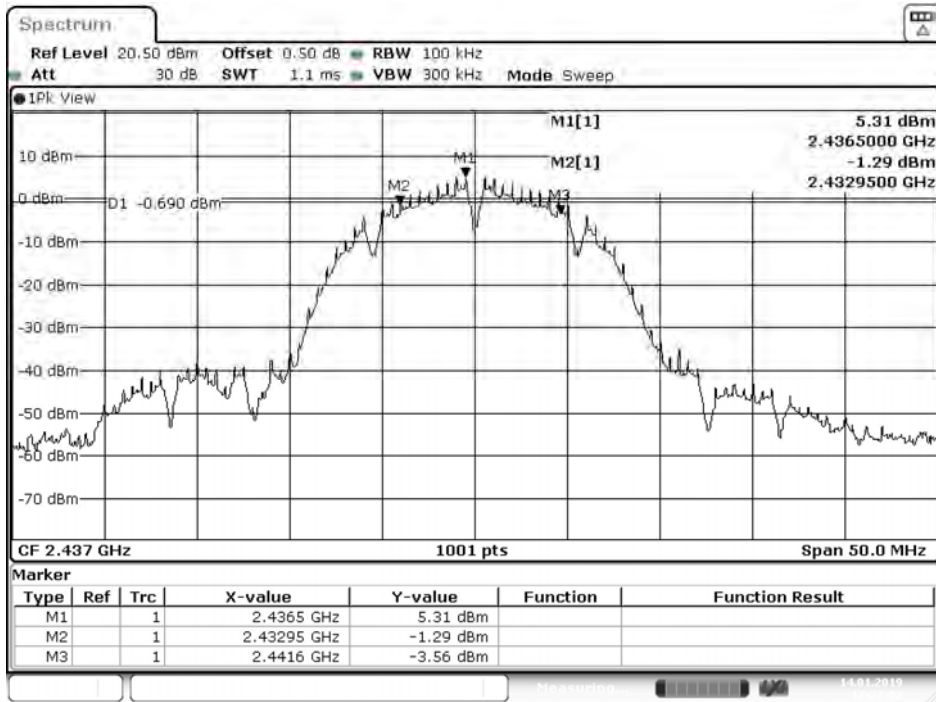
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	9150	>500	Pass
06	2437	8650	>500	Pass
11	2462	8650	>500	Pass

Figure Channel 01:



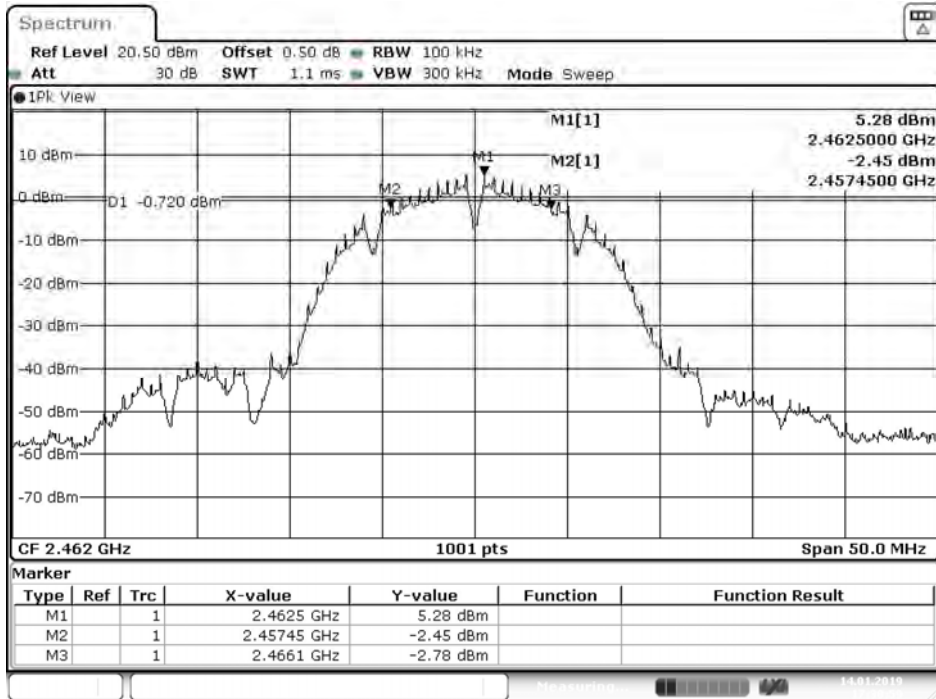
Date: 14. JAN. 2019 17:23:00

Figure Channel 06:



Date: 14. JAN. 2019 17:27:02

Figure Channel 11:

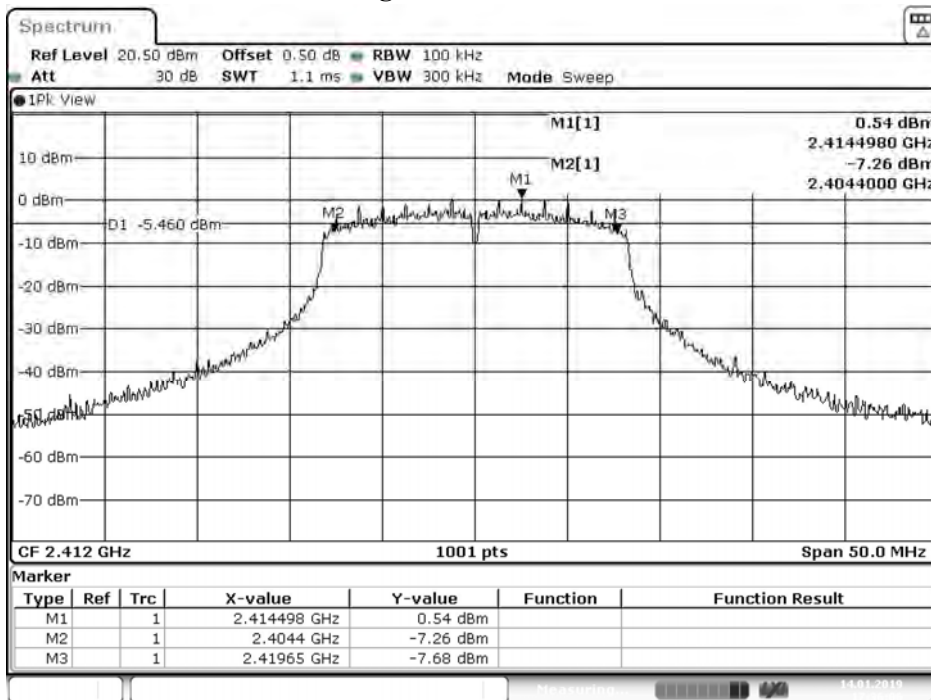


Date: 14. JAN. 2019 17:31:00

Product : Heat Finder  
 Test Item : 6dB Bandwidth Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

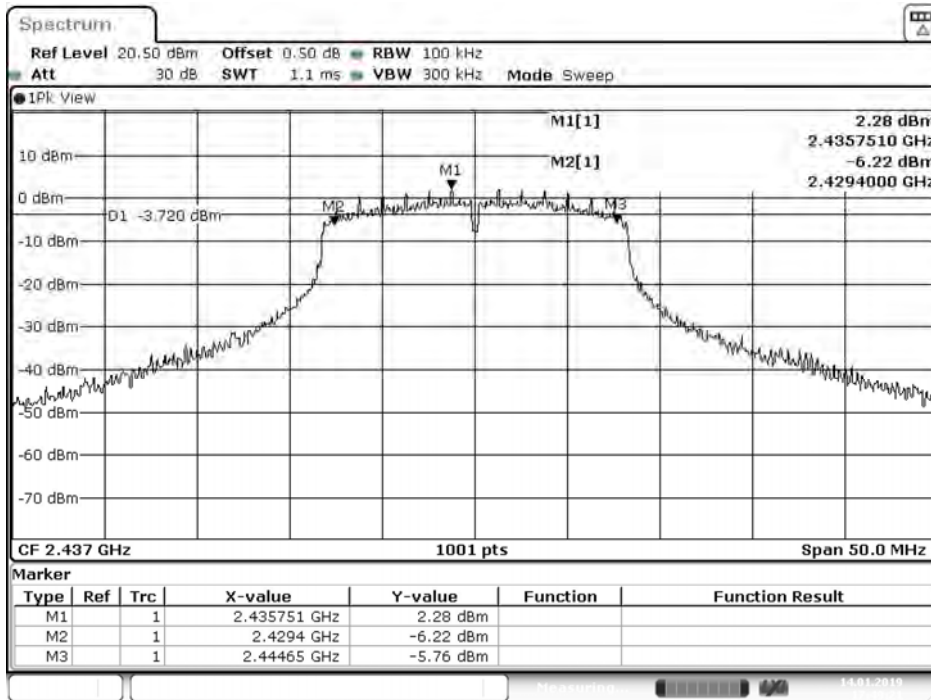
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15250	>500	Pass
06	2437	15250	>500	Pass
11	2462	15250	>500	Pass

Figure Channel 01:



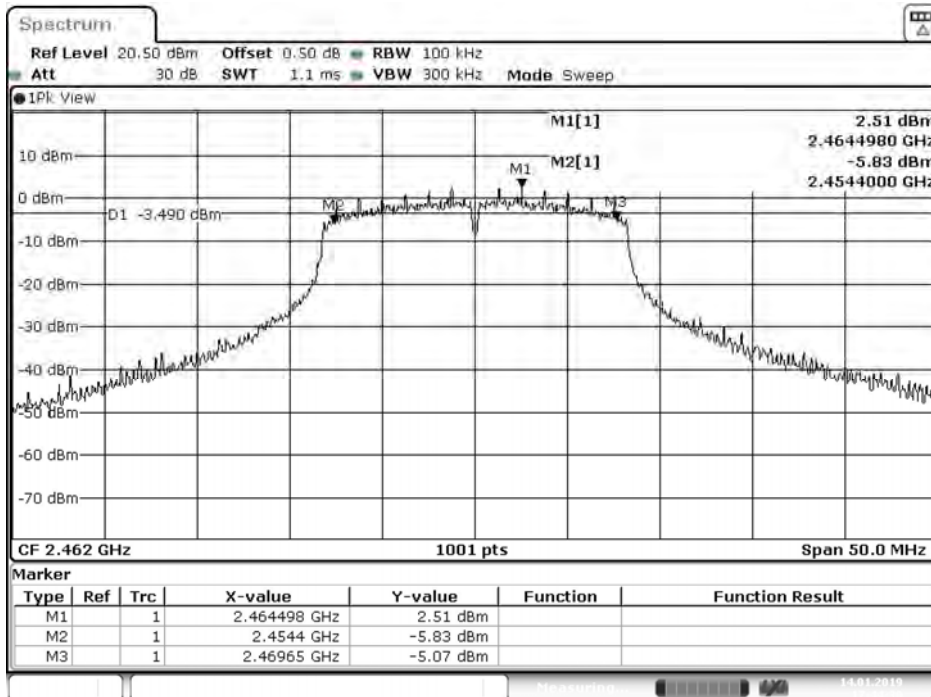
Date: 14.JAN.2019 17:36:06

Figure Channel 06:



Date: 14. JAN 2019 17:49:21

Figure Channel 11:

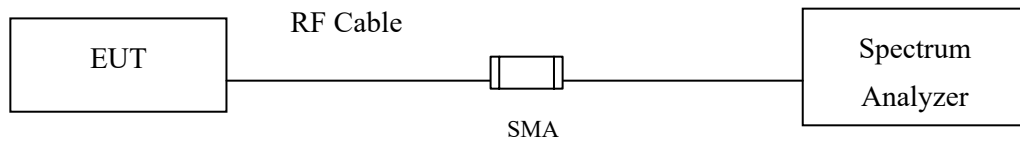


Date: 14. JAN 2019 17:44:31



## 8. Power Density

### 8.1. Test Setup



### 8.2. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

### 8.3. Test Procedure

Tested according to DTS test procedure of KDB558074 section 8.4 for compliance to FCC 47CFR 15.247 requirements.

### 8.4. Uncertainty

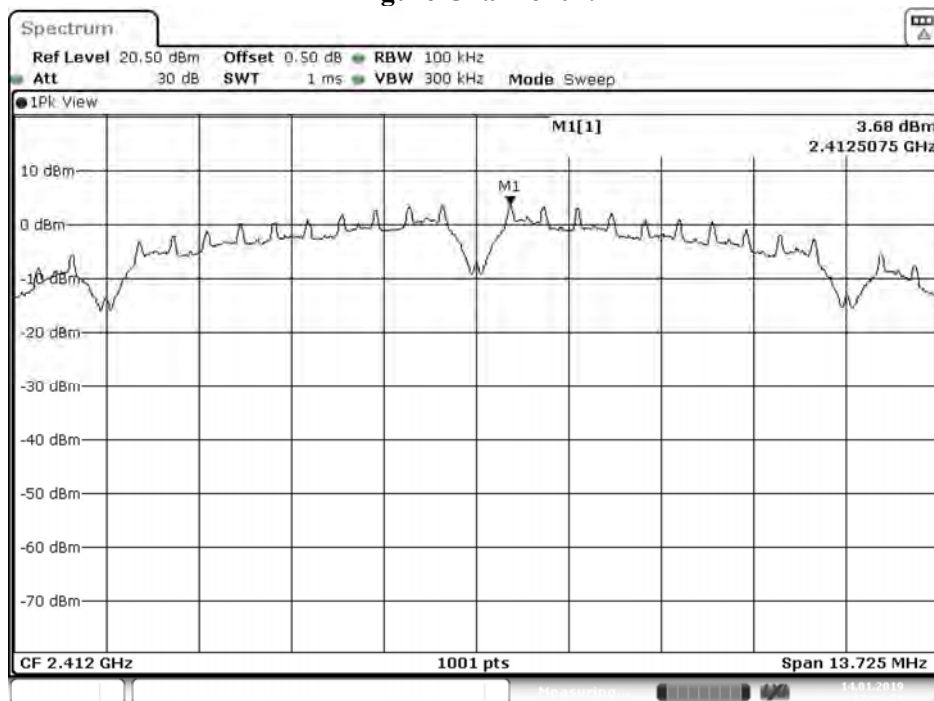
$\pm 1.23$  dB

### 8.5. Test Result of Power Density

Product : Heat Finder  
 Test Item : Power Density Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

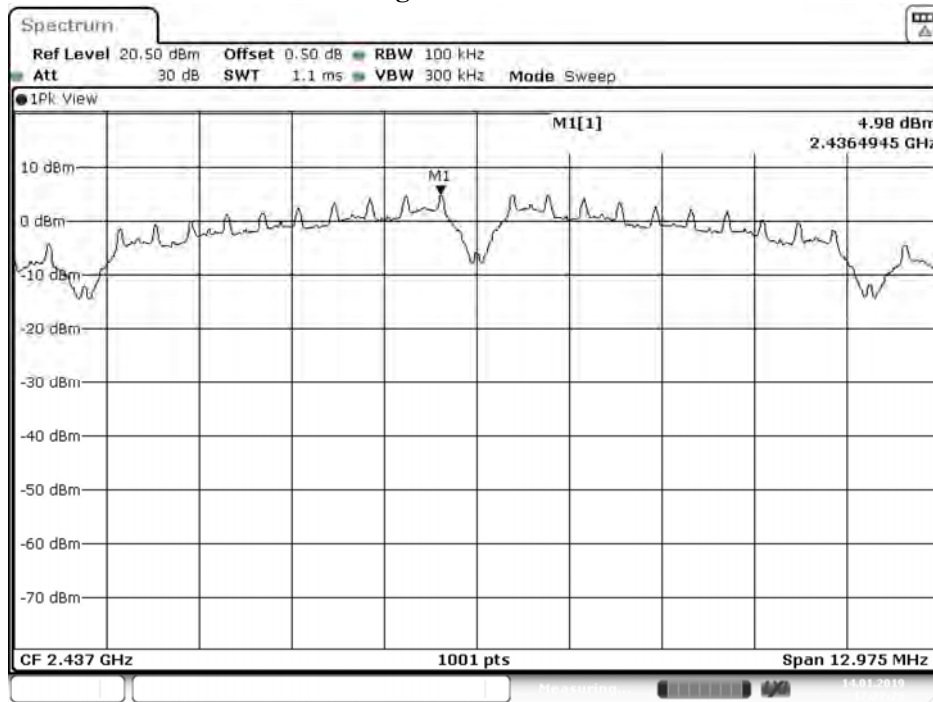
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	3.68	≤ 8dBm	Pass
06	2437	4.98	≤ 8dBm	Pass
11	2462	4.97	≤ 8dBm	Pass

Figure Channel 01:



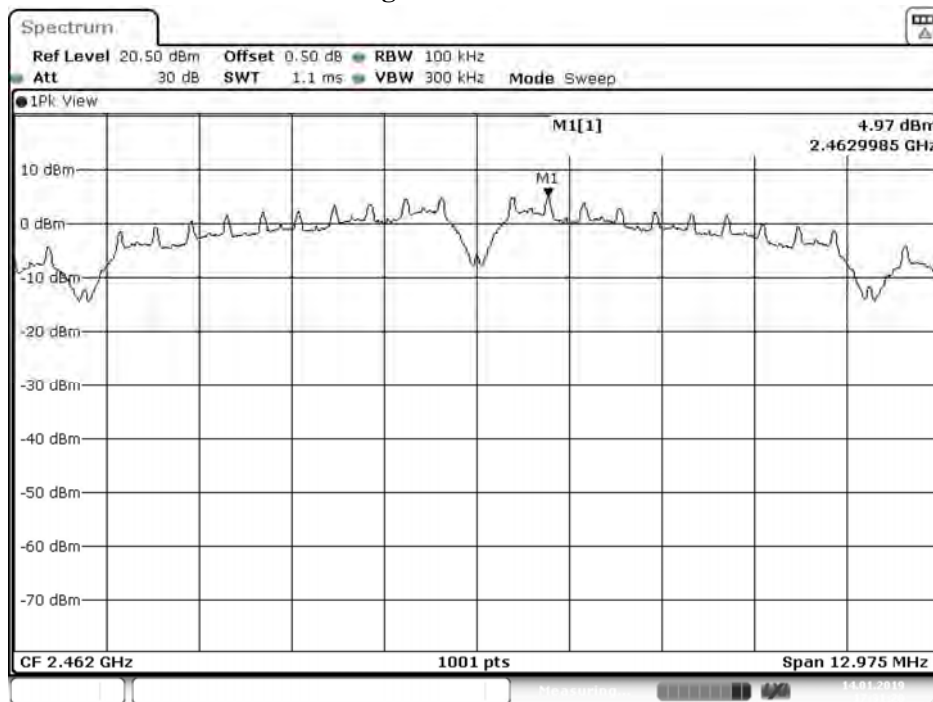
Date: 14. JAN 2019 17:23:22

Figure Channel 06:



Date: 14. JAN. 2019 17:27:24

Figure Channel 11:

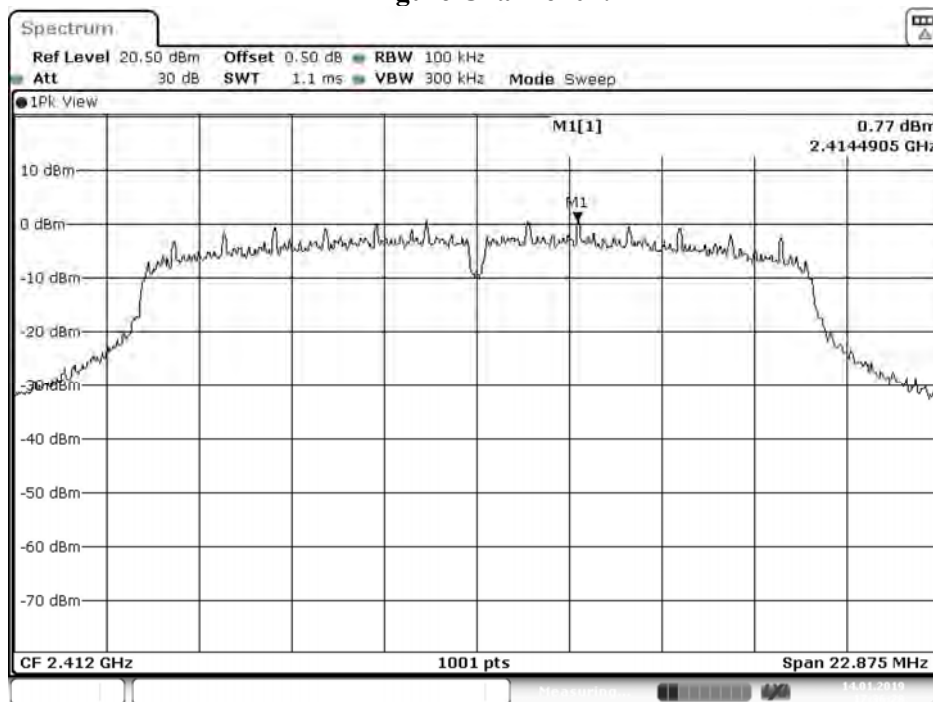


Date: 14. JAN. 2019 17:31:21

Product : Heat Finder  
 Test Item : Power Density Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

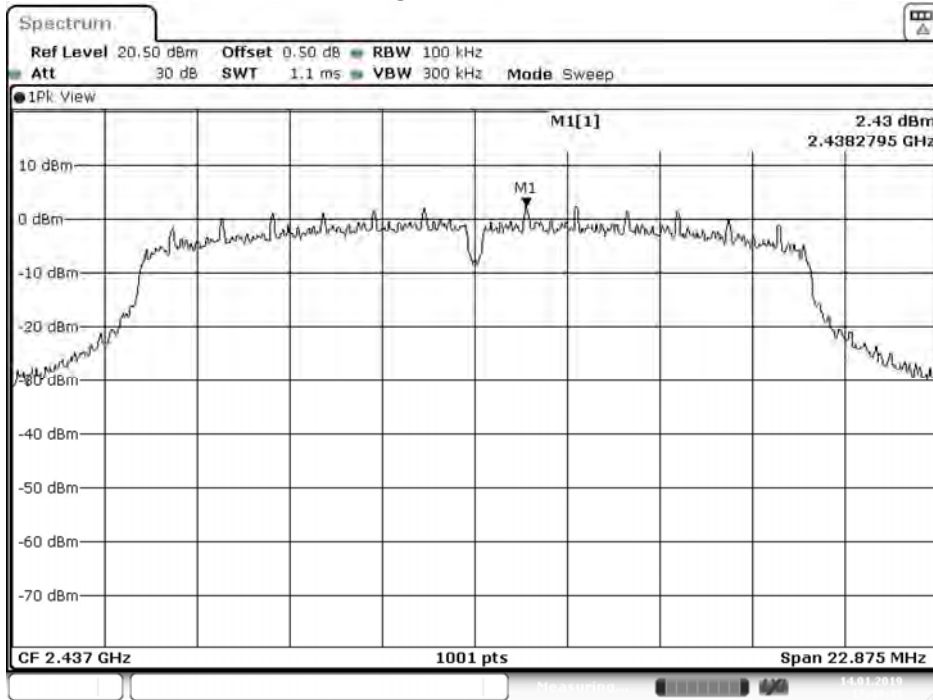
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	0.77	≤ 8dBm	Pass
06	2437	2.43	≤ 8dBm	Pass
11	2462	2.81	≤ 8dBm	Pass

Figure Channel 01:



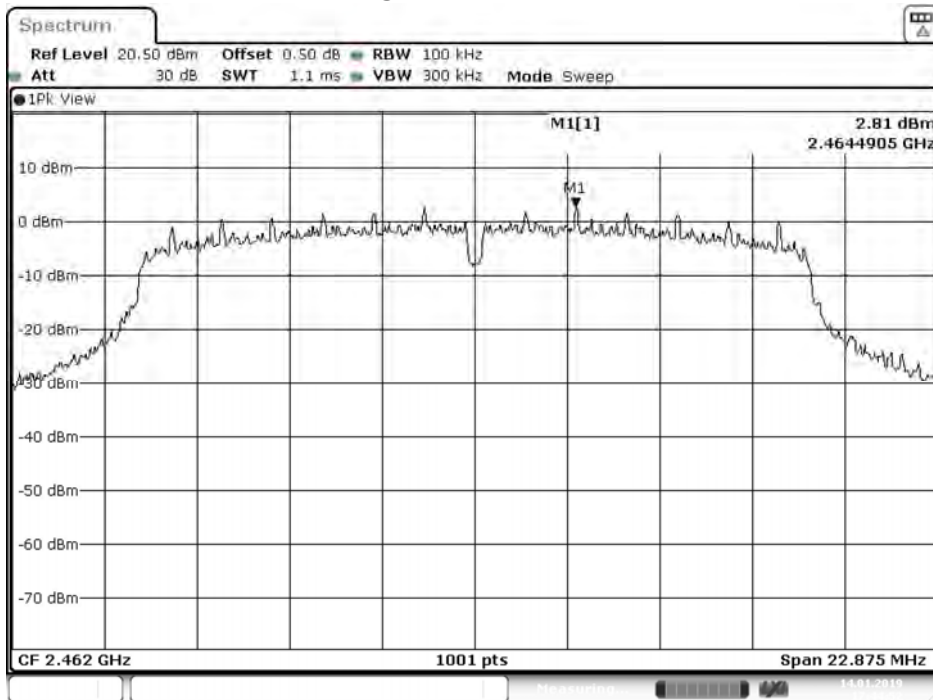
Date: 14. JAN 2019 17:36:28

Figure Channel 06:



Date: 14. JAN. 2019 17:49:43

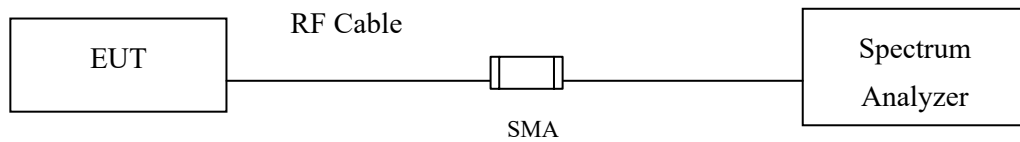
Figure Channel 11:



Date: 14. JAN. 2019 17:44:52

## 9. Duty Cycle

### 9.1. Test Setup



### 9.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

### 9.3. Uncertainty

$\pm 2.31\text{msec}$

### 9.4. Test Result of Duty Cycle

Product : Heat Finder  
 Test Item : Duty Cycle  
 Test Mode : Transmit

Duty Cycle Formula:

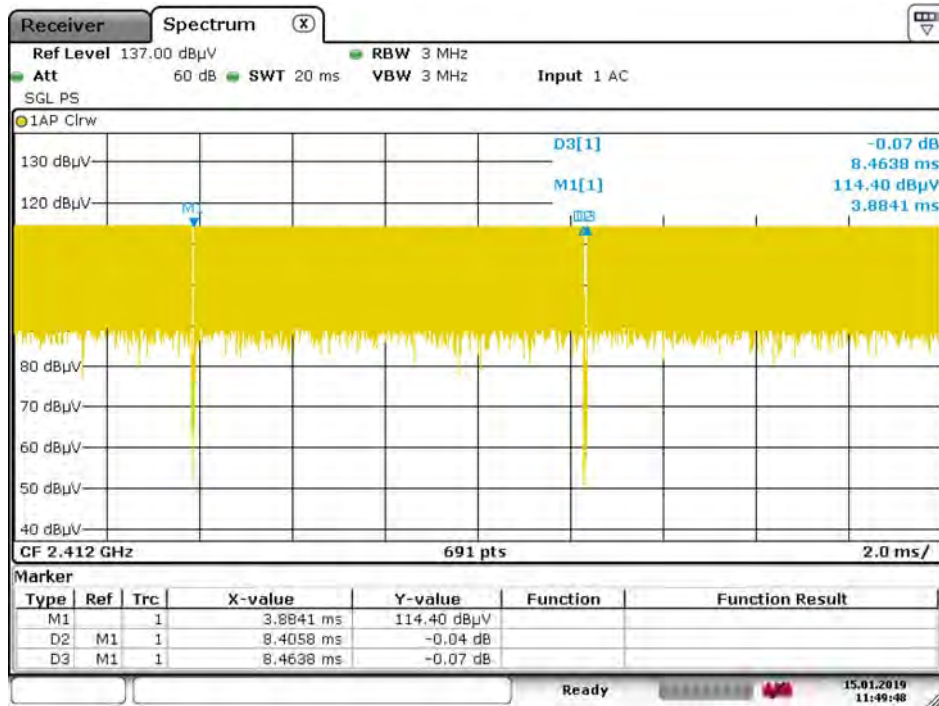
$$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff})$$

$$\text{Duty Factor} = 10 \text{ Log} (1/\text{Duty Cycle})$$

Results:

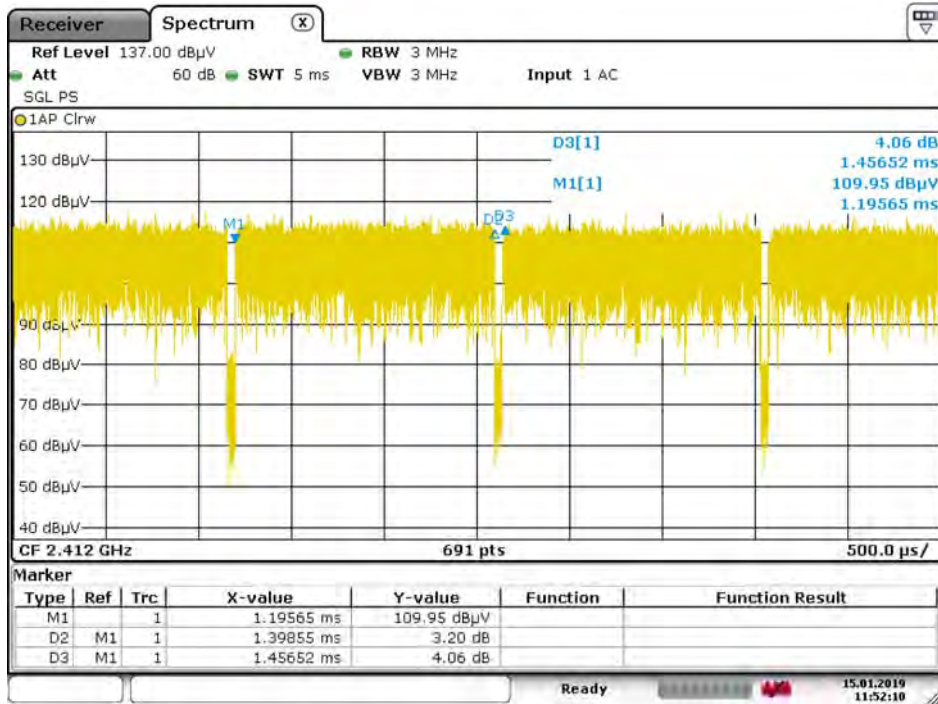
2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	8.4058	8.4638	99.31	0.03
802.11g	1.3985	1.4565	96.02	0.18

802.11b



Date: 15 JAN 2019 11:49:48

802.11g



Date: 15.JAN.2019 11:52:10



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**10. EMI Reduction Method During Compliance Testing**

No modification was made during testing.