FCC Test Report

Product Name	Smart Home DIN Rail box
Model No	PAN27
FCC ID.	RHHPAN27

Applicant	Philio Technology Corporation
Address	8F., No.653-2, Zhongzheng Rd., Xinzhuang Dist., New Taipei City 24257, Taiwan(R.O.C)

Date of Receipt	Apr. 18, 2018
Issue Date	May 23, 2018
Report No.	1840190R-RFUSP26V00
Report Version	V1.0

Testing Laboratory
3023

Test Report

Issue Date: May 23, 2018
Report No.: 1840190R-RFUSP26V00

Product Name	Smart Home DIN Rail box
Applicant	Philio Technology Corporation
Address	8F., No.653-2, Zhongzheng Rd., Xinzhuang Dist., New Taipei City 24257, Taiwan(R.O.C)
Manufacturer	Philio Technology Corporation
Model No.	PAN27
FCC ID.	RHHPAN27
EUT Rated Voltage	100-240VAC 50/60Hz 16A
EUT Test Voltage	120Vac 60Hz
Trade Name	Philio
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2017 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 DTS Meas Guidance v04
Test Result	Complied

Documented By : Anita Chou

(Senior Engineering Adm. Specialist / Anita Chou)

Tested By : Anson Lu

(Engineer / Anson Lu)

Approved By :

(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Smart Home DIN Rail box
Trade Name	
Model No.	PAN27
FCC ID.	RHHPAN27
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 150Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	Print on PCB Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
Dongle	MFR: Philio, M/N: ME001, ME002 Relay Dongle/Curtain Dongle: 5A (model: ME001) Dimmer Dongle: 0.7A (model: ME002)

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1		ANT-021	Print on PCB Antenna	0 dBi for 2.4 GHz

Note:

1. The antenna of EUT conforms to FCC 15.203.

802.11b/g/n-20MHz 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		

802.11n-40MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
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		

Note:

1. The EUT is a Smart Home DIN Rail box with a built-in WLAN transceiver, this report for WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected perform the test.
3. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report.
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、802.11n(20M-BW) is 7.2Mbps and 802.11n(40M-BW) is 15Mbps)
5. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n 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)
	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

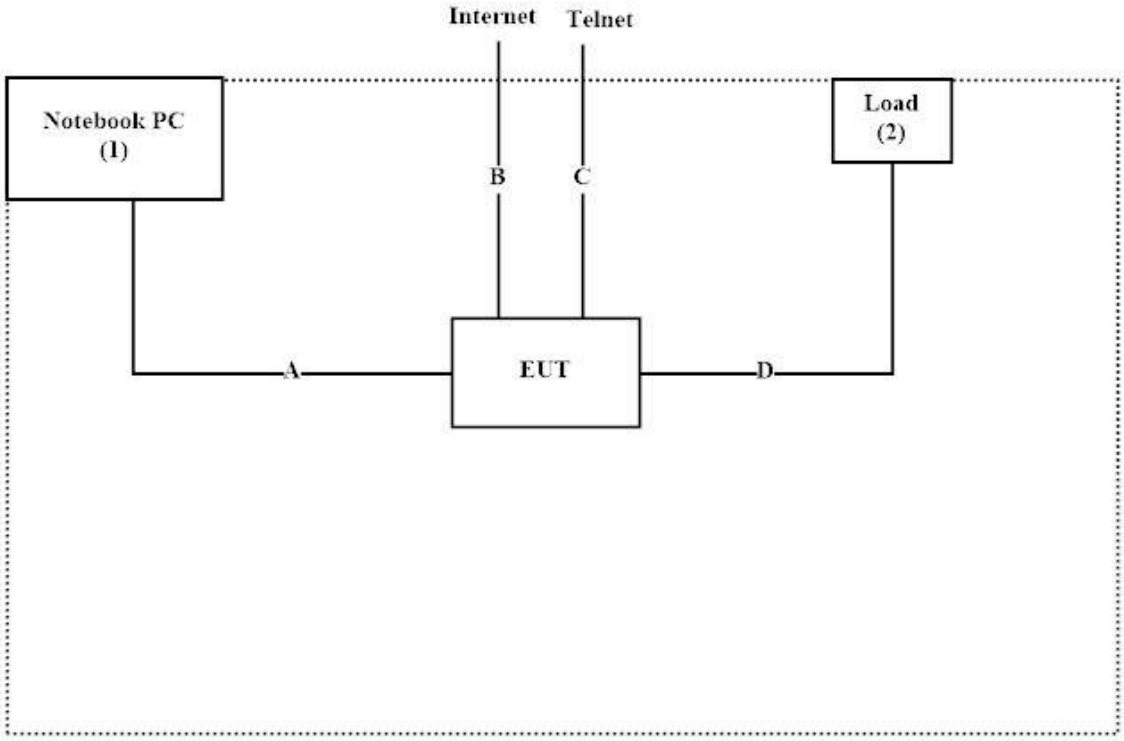
1.3. Tested System Details

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	ASUS	S1300	26NP018680	Non-Shielded, 1.8m
2	Load	N/A	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
A	USB Cable	Non-shielded, 0.95m
B	LAN Cable	Non-shielded, 1.20m
C	Telnet Cable	Non-shielded, 1.20m
D	Signal Cable	Non-shielded, 1.20m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute “TeraTerm Version 4.73” program on the Notebook.
3. Configure the test mode and the test channel
4. 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.aspx

Site Description: Accredited by TAF
Accredited Number: 3023

Site Name: DEKRA Testing and Certification Co., Ltd
Site Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW3023

1.7. List of Test Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2018/2/12	2019/2/11
X	Spectrum Analyzer	Agilent	N9010A	MY48030495	2017/10/13	2018/10/12
X	Peak Power Analyzer	Keysight	8990B	MY51000410	2017/7/19	2018/7/18
X	Wideband Power Sensor	Keysight	N1923A	MY56080003	2017/7/6	2018/7/5
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2017/7/6	2018/7/5
X	EMI Test Receiver	R&S	ESCS 30	100369	2017/11/7	2018/11/6
X	LISN	R&S	ESH3-Z5	836679/017	2018/2/9	2019/2/8
X	LISN	R&S	ENV216	100097	2018/2/9	2019/2/8
X	Coaxial Cable	DEKRA	RG 400	LC018-RG	2017/6/22	2018/6/21

For Radiated measurements /Site3/CB8

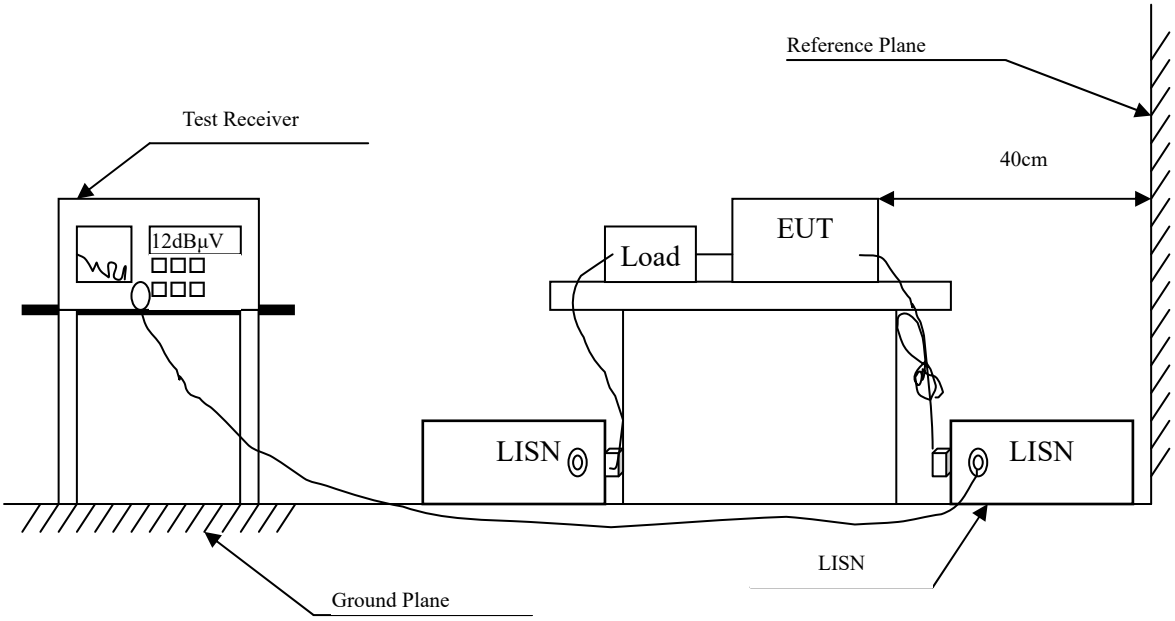
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Spectrum Analyzer	R&S	FSP40	100170	2018/3/12	2019/3/11
X	Loop Antenna	Teseq	HLA6121	37133	2017/10/13	2018/10/12
X	Bilog Antenna	Schaffner Chase	CBL6112B	2707	2017/6/25	2018/6/24
X	Coaxial Cable	DEKRA	RG 214	LC003-RG	2017/6/15	2018/6/14
X	Pre-Amplifier	Jet-Power	JPA-10M1G33	170101000330010	2017/7/19	2018/7/18
X	Horn Antenna	ETS-Lindgren	3117	00135205	2018/5/3	2019/5/2
X	Pre-Amplifier	EMCI	EMC012630SE	980210	2018/4/10	2019/4/9
X	Coaxial Cable	QuieTek	SF-106	LC035/37/41-SF LC038-SF , LC037-SF	2017/6/21	2018/6/20
X	Amplifier + Cable	EMCI	EMC184045SE	980370	2018/3/21	2019/3/20
X	Horn Antenna	Com-Power	AH-840	101043	2018/1/9	2019/1/8
X	Filter	MicroTRON	BRM50701	019	2017/11/21	2018/11/20
X	Filter	Microwave Circuits	N0257881	36681	2018/1/22	2019/1/21

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 (dBµV) 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 invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Uncertainty

± 2.26 dB

2.5. Test Result of Conducted Emission

Product : Smart Home DIN Rail box
Test Item : Conducted Emission Test
Power Line : Line 1
Test Date : 2018/04/28
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBµV	dBµV	dB	dBµV
Line 1					
Quasi-Peak					
0.170	9.676	35.320	44.997	-20.432	65.429
0.201	9.672	32.420	42.092	-22.451	64.543
0.439	9.687	41.680	51.367	-6.376	57.743
0.884	9.726	36.120	45.846	-10.154	56.000
1.326	9.754	29.880	39.634	-16.366	56.000
4.830	9.896	36.340	46.236	-9.764	56.000
Average					
0.170	9.676	22.870	32.547	-22.882	55.429
0.201	9.672	20.130	29.802	-24.741	54.543
0.439	9.687	31.050	40.737	-7.006	47.743
0.884	9.726	26.950	36.676	-9.324	46.000
1.326	9.754	20.870	30.624	-15.376	46.000
4.830	9.896	23.560	33.456	-12.544	46.000

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 : Smart Home DIN Rail box
Test Item : Conducted Emission Test
Power Line : Line 2
Test Date : 2018/04/28
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBµV	dBµV	dB	dBµV
Line 2					
Quasi-Peak					
0.170	9.670	35.760	45.430	-19.999	65.429
0.404	9.675	32.320	41.995	-16.748	58.743
0.443	9.678	43.120	52.798	-4.831	57.629
0.474	9.680	36.880	46.560	-10.183	56.743
0.884	9.716	34.180	43.896	-12.104	56.000
4.830	9.886	35.540	45.426	-10.574	56.000
Average					
0.170	9.670	25.790	35.460	-19.969	55.429
0.404	9.675	26.360	36.035	-12.708	48.743
0.443	9.678	36.910	46.588	-1.041	47.629
0.474	9.680	31.280	40.960	-5.783	46.743
0.884	9.716	27.860	37.576	-8.424	46.000
4.830	9.886	23.410	33.296	-12.704	46.000

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 9.1.3 PKPM1 Peak power meter method.

3.4. Uncertainty

± 1.19 dB

3.5. Test Result of Peak Power Output

Product : Smart Home DIN Rail box
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2018/04/27
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	16.73	--	--	--	18.19	<30dBm	Pass
06	2437	16.79	16.72	16.66	16.61	18.29	<30dBm	Pass
11	2462	16.89	--	--	--	18.38	<30dBm	Pass

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

Product : Smart Home DIN Rail box
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2018/04/27
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

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	14.91	--	--	--	--	--	--	--	20.45	<30dBm	Pass
06	2437	14.71	14.65	14.58	14.51	14.45	14.38	14.32	14.26	20.32	<30dBm	Pass
11	2462	14.91	--	--	--	--	--	--	--	20.78	<30dBm	Pass

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

Product : Smart Home DIN Rail box
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2018/04/27
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2	7.2		
		Measurement Level (dBm)										
01	2412	14.95	--	--	--	--	--	--	--	20.78	<30dBm	Pass
06	2437	14.58	14.51	14.43	14.35	14.28	14.21	14.15	14.07	20.16	<30dBm	Pass
11	2462	14.63	--	--	--	--	--	--	--	20.37	<30dBm	Pass

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

Product : Smart Home DIN Rail box
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2018/04/27
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

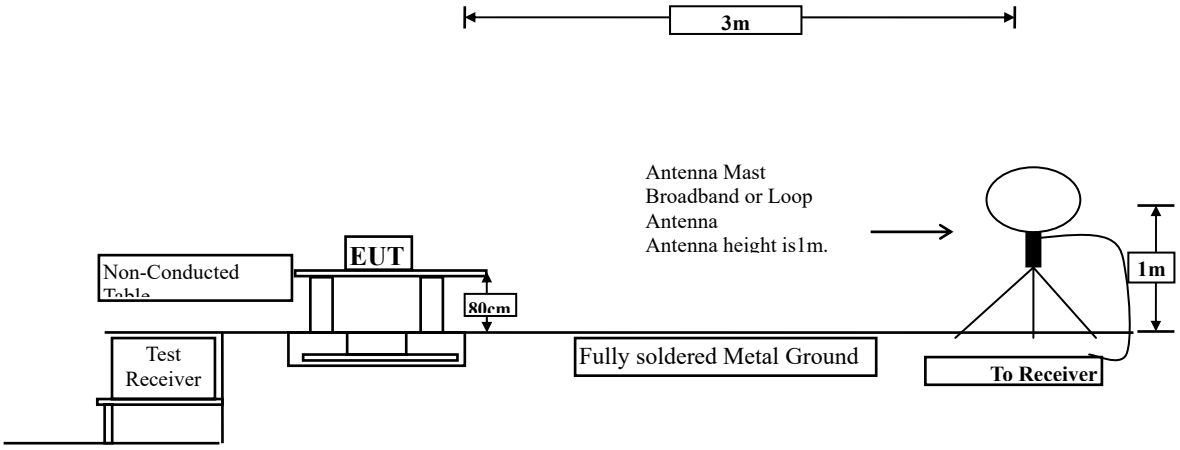
Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		15	30	45	60	90	120	135	150	15		
		Measurement Level (dBm)										
03	2422	9.82	--	--	--	--	--	--	--	19.08	<30dBm	Pass
06	2437	14.77	14.71	14.65	14.59	14.51	14.45	14.39	14.32	20.69	<30dBm	Pass
09	2452	9.46	--	--	--	--	--	--	--	18.78	<30dBm	Pass

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

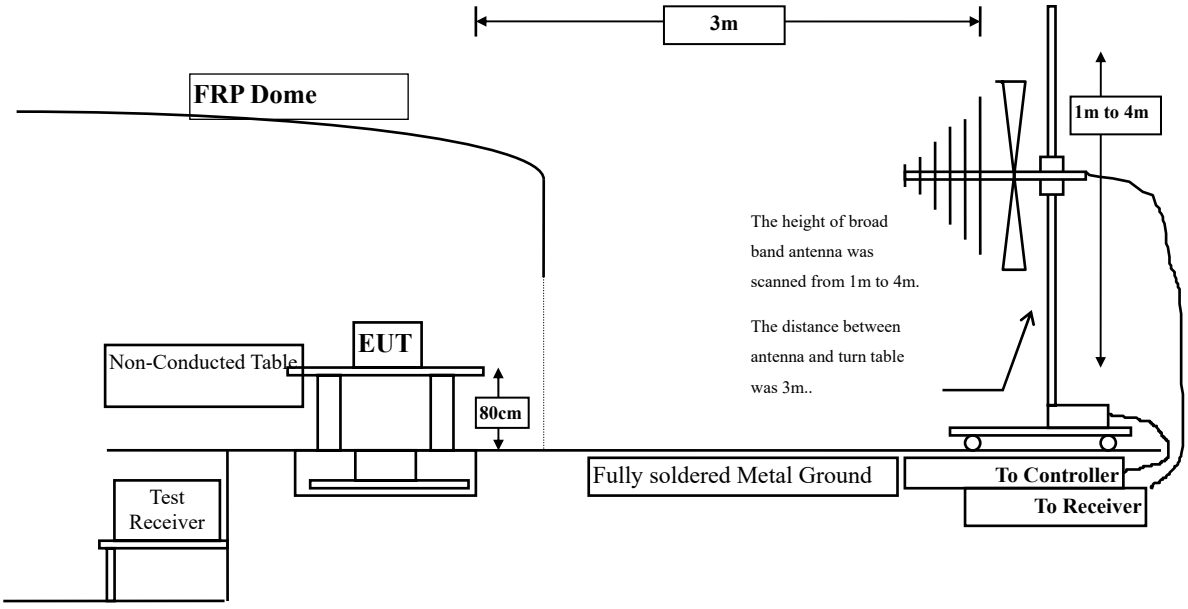
4. Radiated Emission

4.1. Test Setup

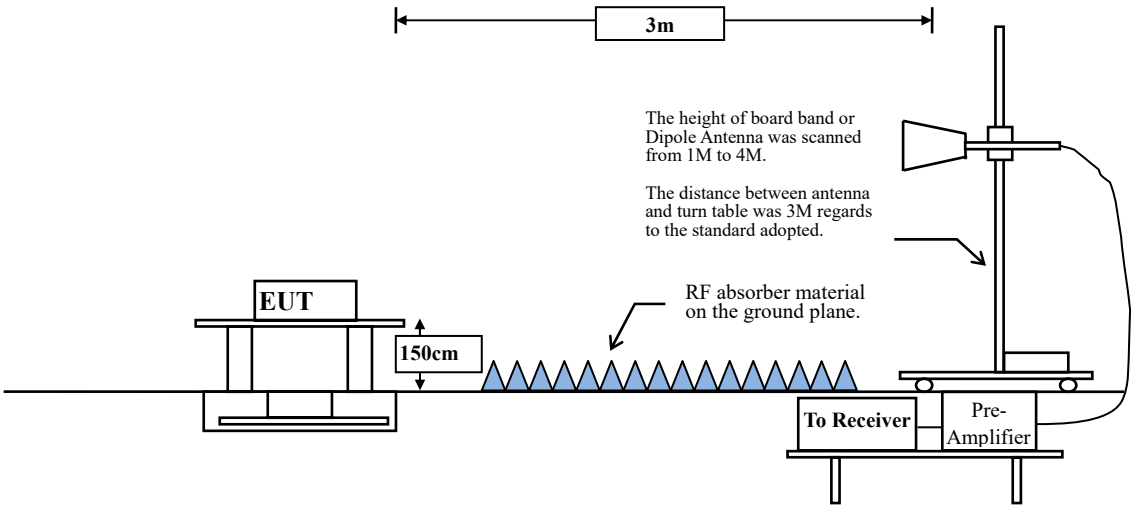
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.2. Limits

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(a) 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: E field strength (dBμV/m) = 20 log E field strength (uV/m)

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 worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

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

RBW and VBW Parameter setting:

According to KDB 558074 section 12.2.4. Peak power measurement procedure

RBW = as specified in Table 1.

VBW ≥ 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 section 12.2.5. Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle ≥ 98 %

VBW ≥ 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	100	--	--	10
802.11g	100	--	--	10
802.11n20	100	--	--	10
802.11n40	100	--	--	10

Note: Duty Cycle Refer to Section 9

4.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

4.5. Test Result of Radiated Emission

Product : Smart Home DIN Rail box
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/04
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	-9.979	62.540	52.561	-21.439	74.000
7236.000	-4.641	48.630	43.990	-30.010	74.000
9648.000	-1.835	47.780	45.944	-28.056	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	-6.819	60.650	53.832	-20.168	74.000
7236.000	-3.796	47.550	43.754	-30.246	74.000
9648.000	-1.365	47.130	45.765	-28.235	74.000
Average Detector:					
--					

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	:	Smart Home DIN Rail box
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2018/05/04
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	-10.271	54.260	43.988	-30.012	74.000
7311.000	-3.853	53.940	50.086	-23.914	74.000
9748.000	-2.526	46.330	43.804	-30.196	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-7.497	59.330	51.832	-22.168	74.000
7311.000	-3.018	53.880	50.861	-23.139	74.000
9748.000	-2.035	45.950	43.915	-30.085	74.000
Average Detector:					
--					

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 : Smart Home DIN Rail box
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/04
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4924.000	-10.519	53.190	42.670	-31.330	74.000
7386.000	-3.876	53.580	49.704	-24.296	74.000
9848.000	-2.581	46.210	43.629	-30.371	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	-7.856	61.820	53.963	-20.037	74.000
7386.000	-2.749	52.580	49.831	-24.169	74.000
9848.000	-2.066	45.990	43.924	-30.076	74.000
Average Detector:					
--					

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 : Smart Home DIN Rail box
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/04
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	-9.979	60.780	50.801	-23.199	74.000
7236.000	-4.641	47.560	42.920	-31.080	74.000
9648.000	-1.835	46.920	45.084	-28.916	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	-6.819	59.330	52.512	-21.488	74.000
7236.000	-3.796	47.020	43.224	-30.776	74.000
9648.000	-1.365	46.830	45.465	-28.535	74.000
Average Detector:					
--					

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	:	Smart Home DIN Rail box
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2018/05/04
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	-10.271	53.530	43.258	-30.742	74.000
7311.000	-3.853	52.770	48.916	-25.084	74.000
9748.000	-2.526	45.760	43.234	-30.766	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-7.497	58.680	51.182	-22.818	74.000
7311.000	-3.018	53.150	50.131	-23.869	74.000
9748.000	-2.035	45.210	43.175	-30.825	74.000
Average Detector:					
--					

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 : Smart Home DIN Rail box
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/04
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4924.000	-10.519	52.670	42.150	-31.850	74.000
7386.000	-3.876	52.810	48.934	-25.066	74.000
9848.000	-2.581	45.580	42.999	-31.001	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	-7.856	61.170	53.313	-20.687	74.000
7386.000	-2.749	51.720	48.971	-25.029	74.000
9848.000	-2.066	45.180	43.114	-30.886	74.000
Average Detector:					
--					

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 : Smart Home DIN Rail box
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/04
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	-9.979	61.470	51.491	-22.509	74.000
7236.000	-4.641	47.790	43.150	-30.850	74.000
9648.000	-1.835	47.050	45.214	-28.786	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	-6.819	59.340	52.522	-21.478	74.000
7236.000	-3.796	46.850	43.054	-30.946	74.000
9648.000	-1.365	46.460	45.095	-28.905	74.000
Average Detector:					
--					

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 : Smart Home DIN Rail box
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/04
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	-10.271	53.620	43.348	-30.652	74.000
7311.000	-3.853	53.280	49.426	-24.574	74.000
9748.000	-2.526	45.640	43.114	-30.886	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-7.497	58.690	51.192	-22.808	74.000
7311.000	-3.018	53.160	50.141	-23.859	74.000
9748.000	-2.035	45.250	43.215	-30.785	74.000
Average Detector:					
--					

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 : Smart Home DIN Rail box
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/04
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4924.000	-10.519	52.430	41.910	-32.090	74.000
7386.000	-3.876	52.590	48.714	-25.286	74.000
9848.000	-2.581	45.370	42.789	-31.211	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	-7.856	60.570	52.713	-21.287	74.000
7386.000	-2.749	51.610	48.861	-25.139	74.000
9848.000	-2.066	45.240	43.174	-30.826	74.000
Average Detector:					
--					

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 : Smart Home DIN Rail box
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/04
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2422MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4844.000	-10.096	60.790	50.694	-23.306	74.000
7266.000	-4.271	48.250	43.979	-30.021	74.000
9688.000	-2.204	47.140	44.937	-29.063	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4844.000	-7.089	59.230	52.140	-21.860	74.000
7266.000	-3.451	46.120	42.669	-31.331	74.000
9688.000	-1.661	46.430	44.770	-29.230	74.000
Average Detector:					
--					

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	:	Smart Home DIN Rail box
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2018/05/04
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	-10.271	53.530	43.258	-30.742	74.000
7311.000	-3.853	53.360	49.506	-24.494	74.000
9748.000	-2.526	45.470	42.944	-31.056	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	-7.497	57.980	50.482	-23.518	74.000
7311.000	-3.018	53.020	50.001	-23.999	74.000
9748.000	-2.035	45.110	43.075	-30.925	74.000
Average Detector:					
--					

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 : Smart Home DIN Rail box
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/04
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2452 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4904.000	-10.435	52.950	42.515	-31.485	74.000
7356.000	-3.867	52.450	48.583	-25.417	74.000
9808.000	-2.726	45.390	42.664	-31.336	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	-7.819	59.870	52.051	-21.949	74.000
7356.000	-2.857	51.240	48.383	-25.617	74.000
9808.000	-2.300	45.060	42.760	-31.240	74.000
Average Detector:					
--					

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 : Smart Home DIN Rail box
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
70.740	12.709	15.144	27.853	-12.147	40.000
177.440	8.756	22.889	31.645	-11.855	43.500
369.500	19.664	13.892	33.556	-12.444	46.000
480.080	22.183	17.752	39.935	-6.065	46.000
765.260	26.538	6.778	33.316	-12.684	46.000
961.200	27.425	14.483	41.908	-12.092	54.000
Vertical					
123.120	13.565	20.841	34.406	-9.094	43.500
196.840	20.283	16.090	36.373	-7.127	43.500
280.260	16.285	19.696	35.981	-10.019	46.000
493.660	21.058	16.299	37.357	-8.643	46.000
833.160	26.121	6.392	32.513	-13.487	46.000
961.200	28.175	16.234	44.409	-9.591	54.000

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 : Smart Home DIN Rail box
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
121.180	11.196	17.623	28.819	-14.681	43.500
208.480	11.885	22.736	34.621	-8.879	43.500
352.040	18.518	11.164	29.682	-16.318	46.000
480.080	22.183	17.135	39.318	-6.682	46.000
825.400	27.018	4.737	31.755	-14.245	46.000
961.200	27.425	14.832	42.257	-11.743	54.000
Vertical					
84.320	12.432	15.413	27.845	-12.155	40.000
191.020	19.417	17.870	37.287	-6.213	43.500
355.920	17.778	15.704	33.482	-12.518	46.000
580.960	23.126	9.111	32.237	-13.763	46.000
864.200	26.987	5.863	32.850	-13.150	46.000
961.200	28.175	11.321	39.496	-14.504	54.000

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 : Smart Home DIN Rail box
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
171.620	8.533	20.440	28.973	-14.527	43.500
357.860	18.895	11.583	30.478	-15.522	46.000
480.080	22.183	18.217	40.400	-5.600	46.000
697.360	25.574	2.753	28.327	-17.673	46.000
827.340	27.011	4.297	31.308	-14.692	46.000
961.200	27.425	6.837	34.262	-19.738	54.000
Vertical					
84.320	12.432	16.835	29.267	-10.733	40.000
282.200	16.042	16.457	32.499	-13.501	46.000
493.660	21.058	17.136	38.194	-7.806	46.000
567.380	22.786	4.142	26.928	-19.072	46.000
833.160	26.121	8.811	34.932	-11.068	46.000
961.200	28.175	14.531	42.706	-11.294	54.000

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 : Smart Home DIN Rail box
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437 MHz)

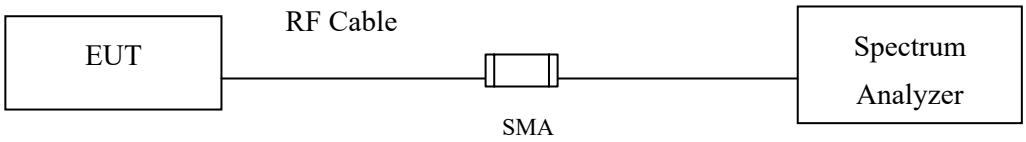
Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBµV	dBµV/m	dB	dBµV/m
Horizontal					
222.060	12.911	19.734	32.645	-13.355	46.000
369.500	19.664	9.980	29.644	-16.356	46.000
480.080	22.183	17.603	39.786	-6.214	46.000
588.720	26.443	2.456	28.899	-17.101	46.000
773.020	26.664	3.929	30.593	-15.407	46.000
961.200	27.425	15.043	42.468	-11.532	54.000
Vertical					
78.500	10.837	19.820	30.657	-9.343	40.000
198.780	20.561	13.580	34.141	-9.359	43.500
282.200	16.042	11.499	27.541	-18.459	46.000
480.080	21.023	19.218	40.241	-5.759	46.000
833.160	26.121	8.235	34.356	-11.644	46.000
961.200	28.175	11.218	39.393	-14.607	54.000

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

The EUT was tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

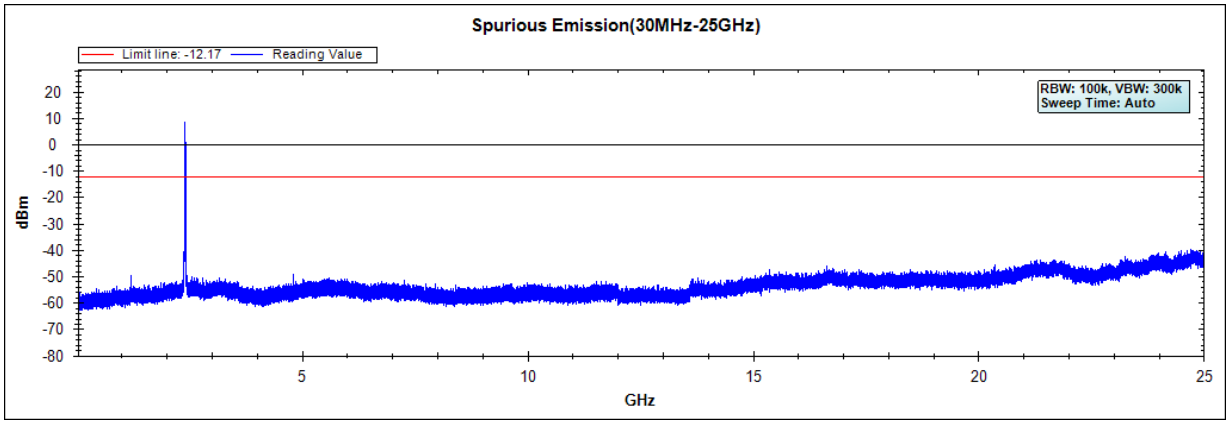
5.4. Uncertainty

The measurement uncertainty
Conducted is defined as ± 1.20dB

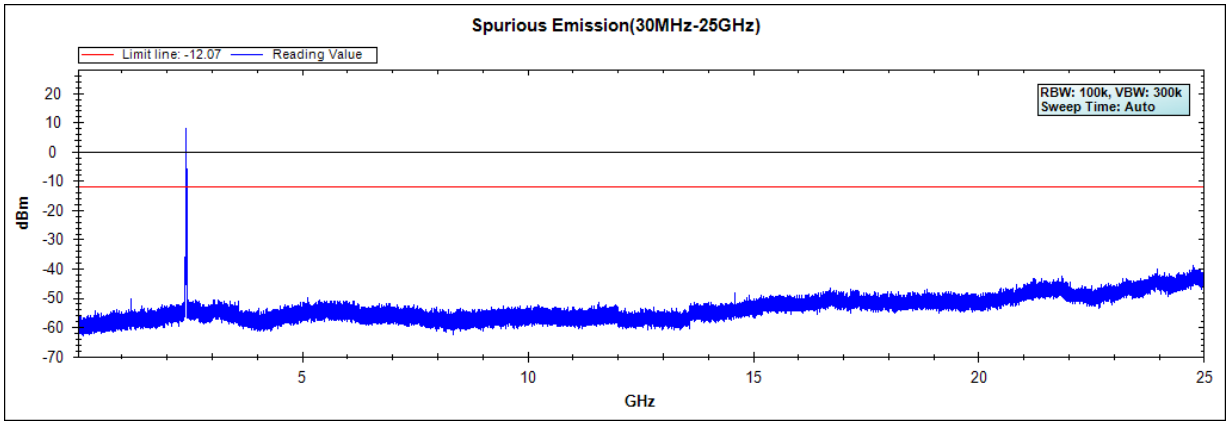
5.5. Test Result of RF antenna conducted test

Product	:	Smart Home DIN Rail box
Test Item	:	RF antenna conducted test
Test Site	:	No.3 OATS
Test Date	:	2018/05/07
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

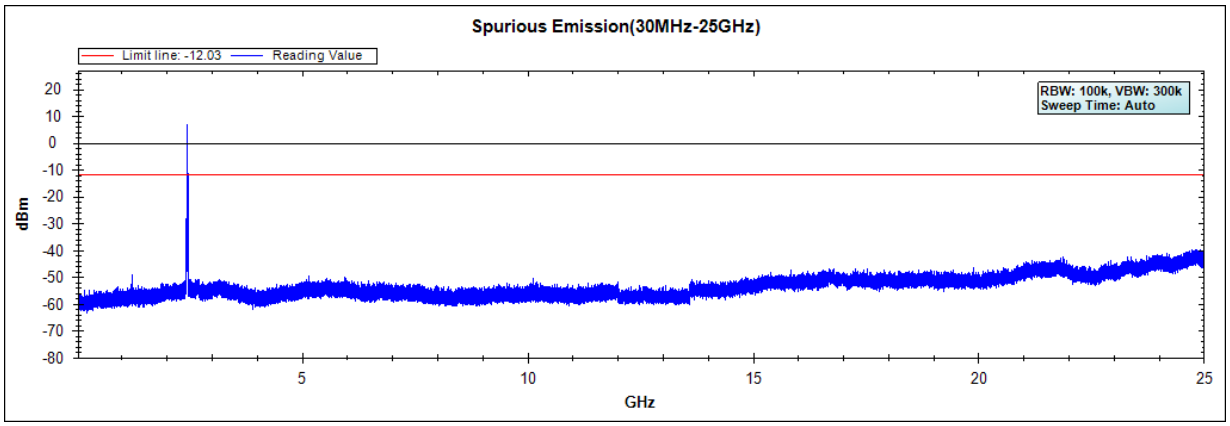
Channel 01 (2412MHz)



Channel 06 (2437MHz)



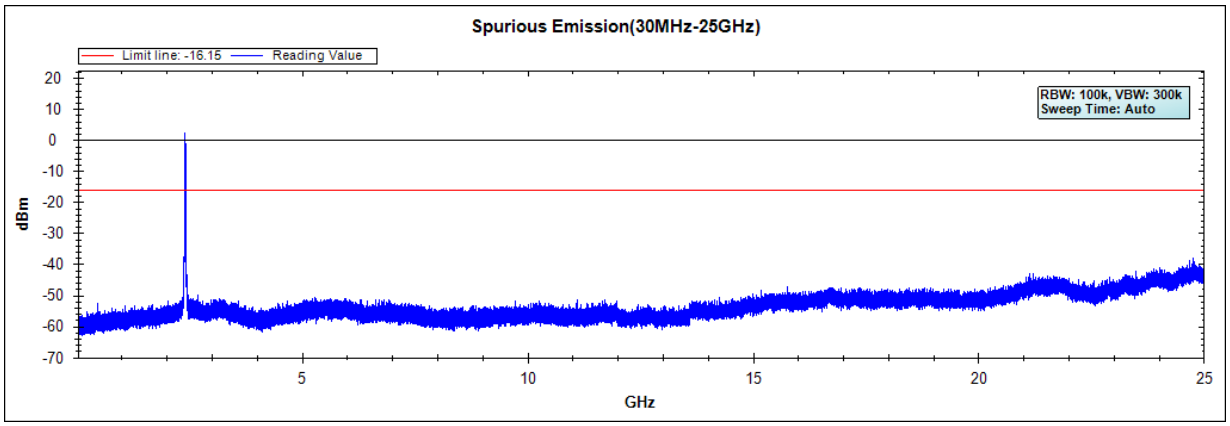
Channel 11 (2462MHz)



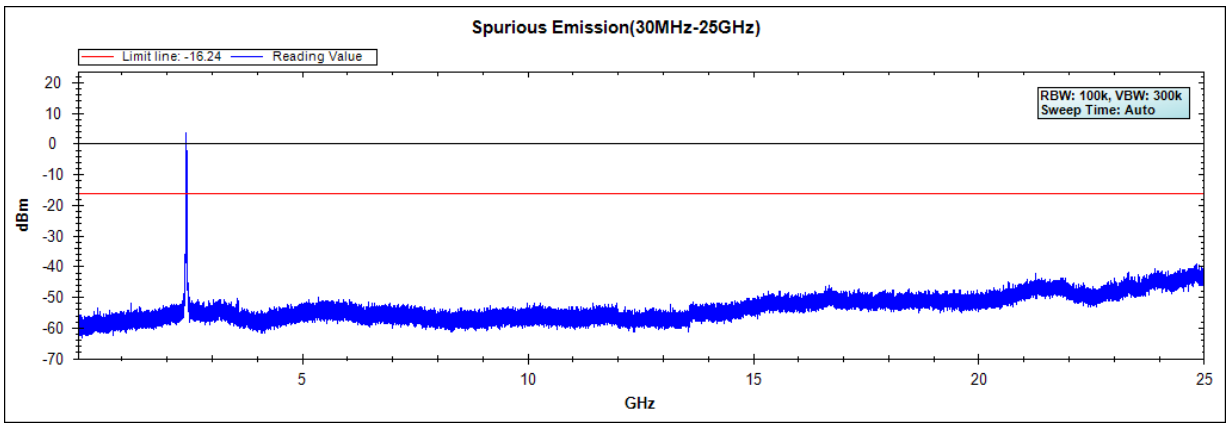
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Smart Home DIN Rail box
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Date	:	2018/05/07
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

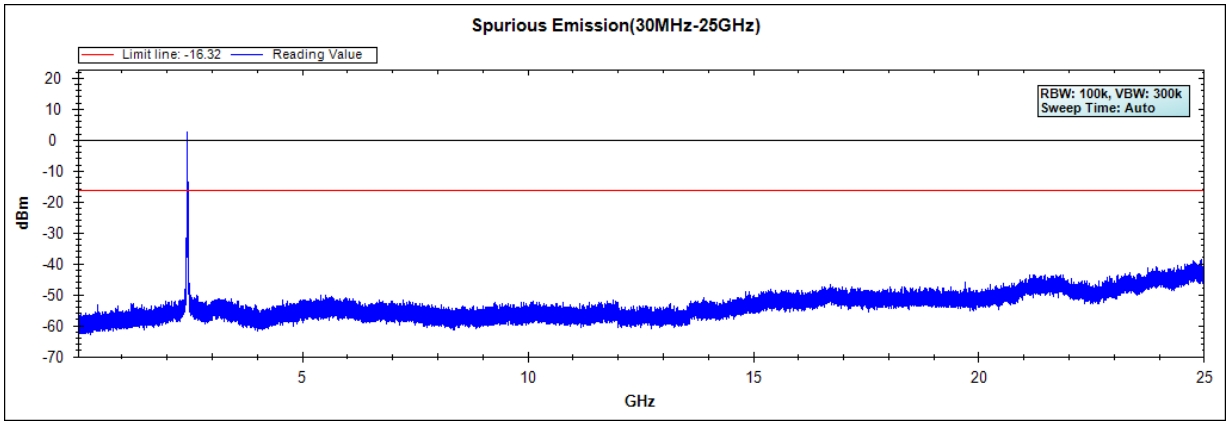
Channel 01 (2412MHz)



Channel 06 (2437MHz)



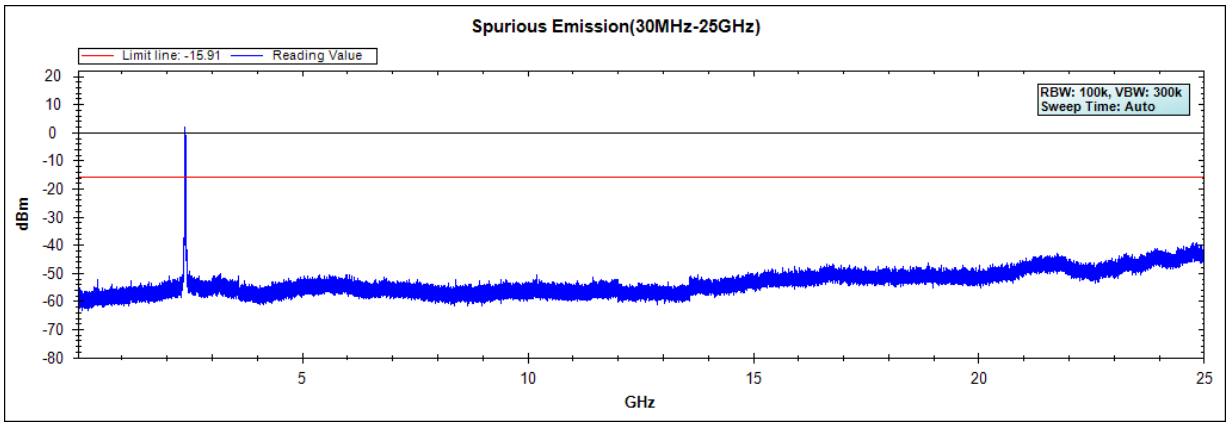
Channel 11 (2462MHz)



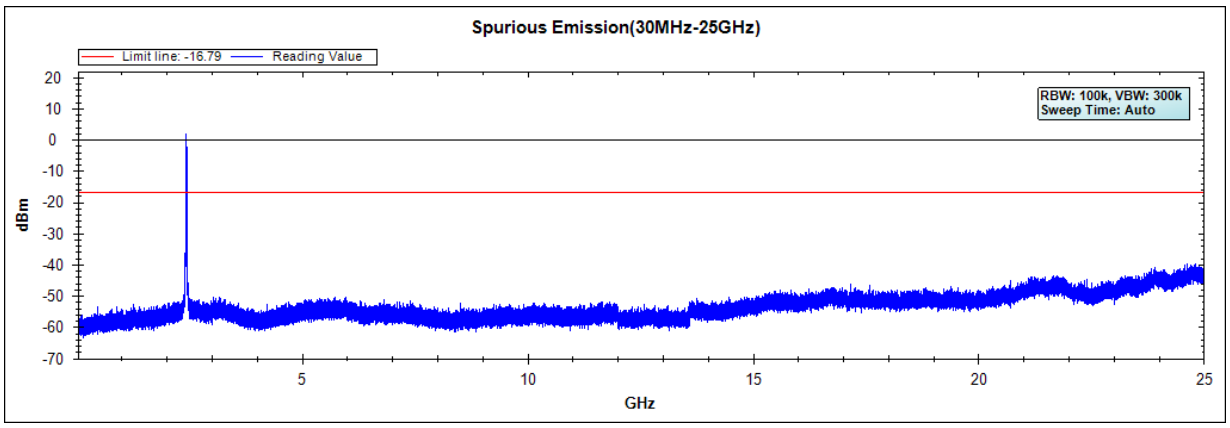
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Smart Home DIN Rail box
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Date	:	2018/05/07
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

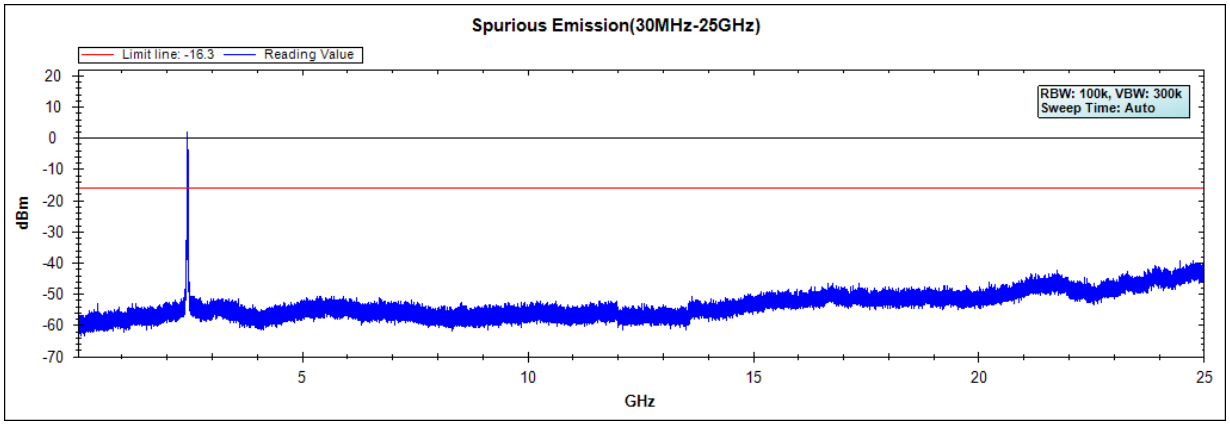
Channel 01 (2412MHz)



Channel 06 (2437MHz)



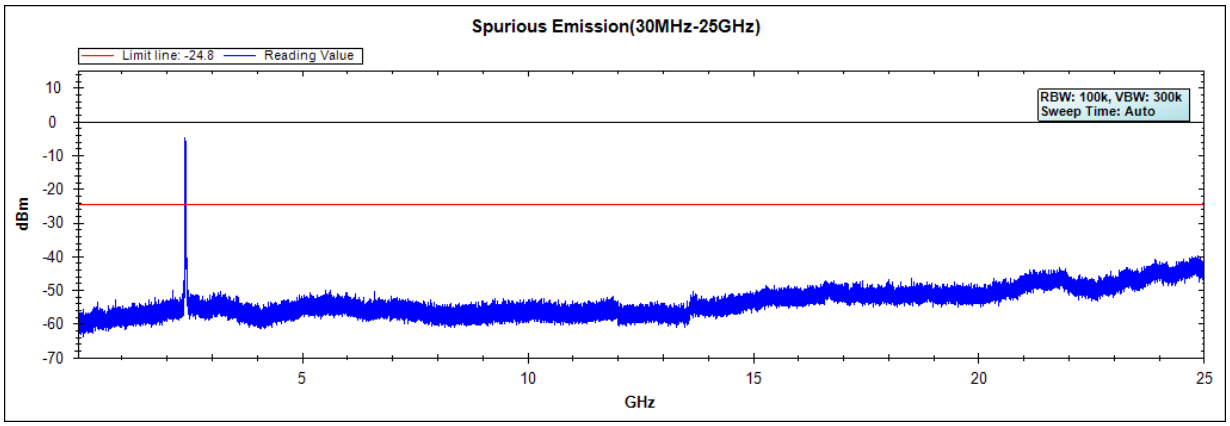
Channel 11 (2462MHz)



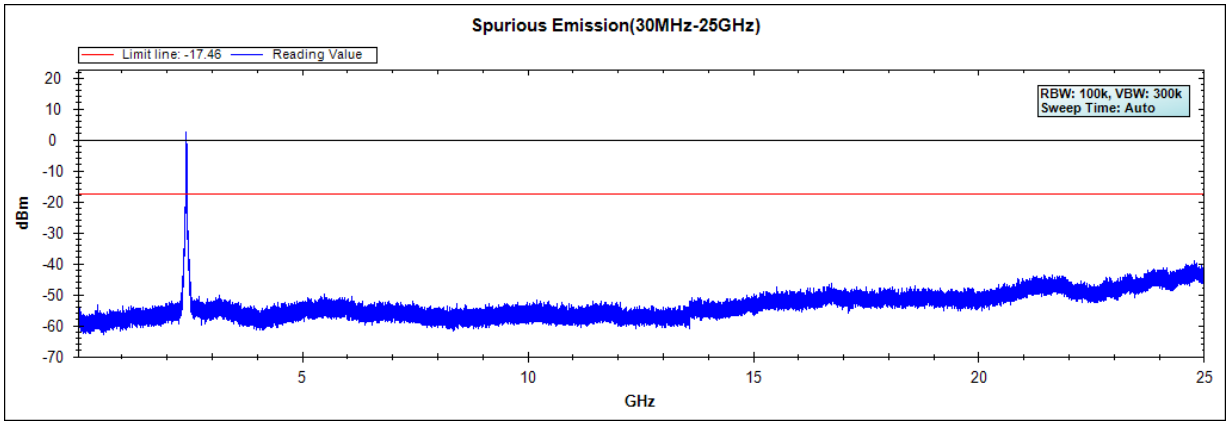
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Smart Home DIN Rail box
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Date	:	2018/05/07
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

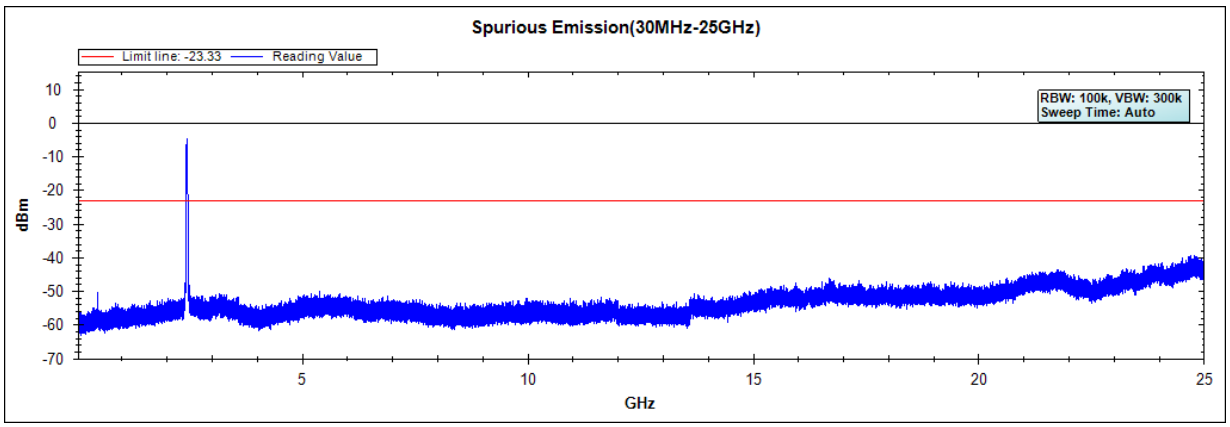
Channel 01 (2422MHz)



Channel 04 (2437MHz)



Channel 07 (2452MHz)

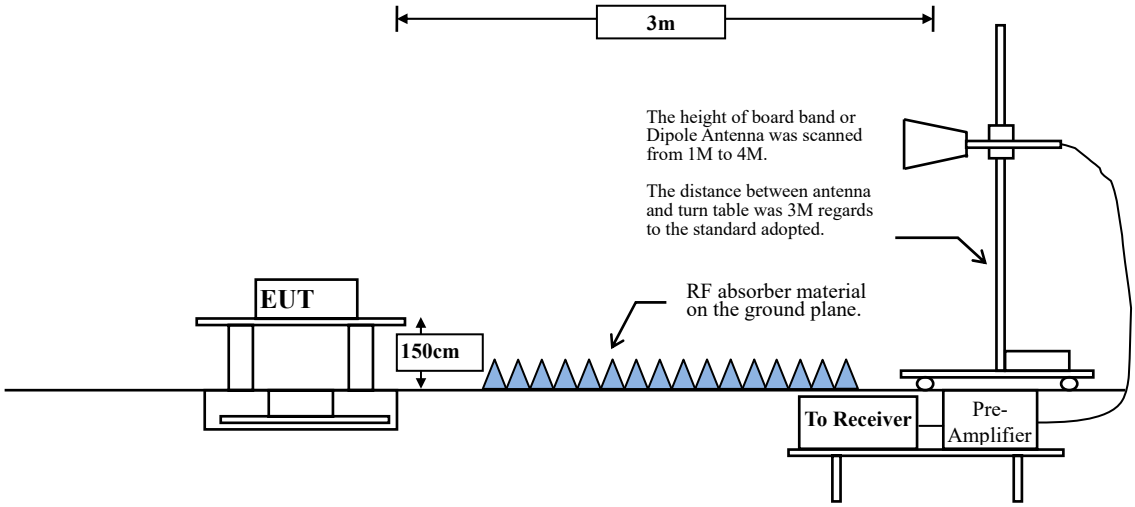


Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

6.1. Test Setup

RF Radiated Measurement:



6.2. 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.

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 section 12.2.4. Peak power measurement procedure

RBW = as specified in Table 1.

VBW ≥ 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 section 12.2.5. Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle ≥ 98 %

VBW ≥ 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	100	--	--	10
802.11g	100	--	--	10
802.11n20	100	--	--	10
802.11n40	100	--	--	10

Note: Duty Cycle Refer to Section 9

6.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

6.5. Test Result of Band Edge

Product : Smart Home DIN Rail box
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

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
01 (Peak)	2385.942	6.457	46.445	52.902	74.00	54.00	Pass
01 (Peak)	2390.000	6.474	41.590	48.065	74.00	54.00	Pass
01 (Peak)	2396.957	6.510	65.280	71.790	74.00	54.00	Pass
01 (Peak)	2400.000	6.528	60.144	66.672	74.00	54.00	Pass
01 (Peak)	2413.043	6.610	98.089	104.699	--	--	--
01 (Average)	2385.797	6.457	35.951	42.407	74.00	54.00	Pass
01 (Average)	2390.000	6.474	27.632	34.107	74.00	54.00	Pass
01 (Average)	2398.406	6.519	61.567	68.086	--	--	--
01 (Average)	2400.000	6.528	56.351	62.879	--	--	--
01 (Average)	2412.754	6.608	95.001	101.609	--	--	--

Figure Channel 01: Horizontal (Peak)

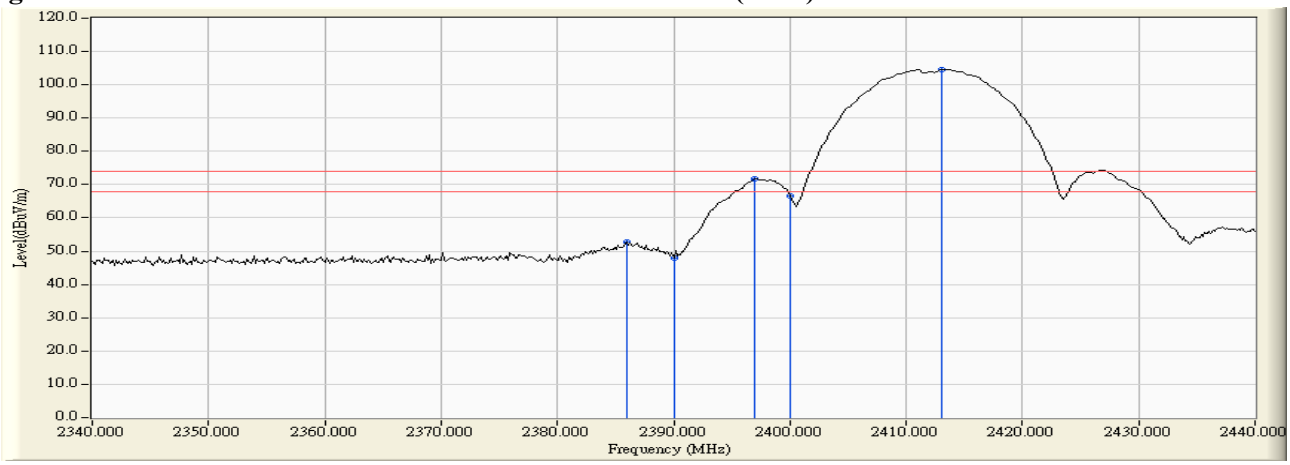
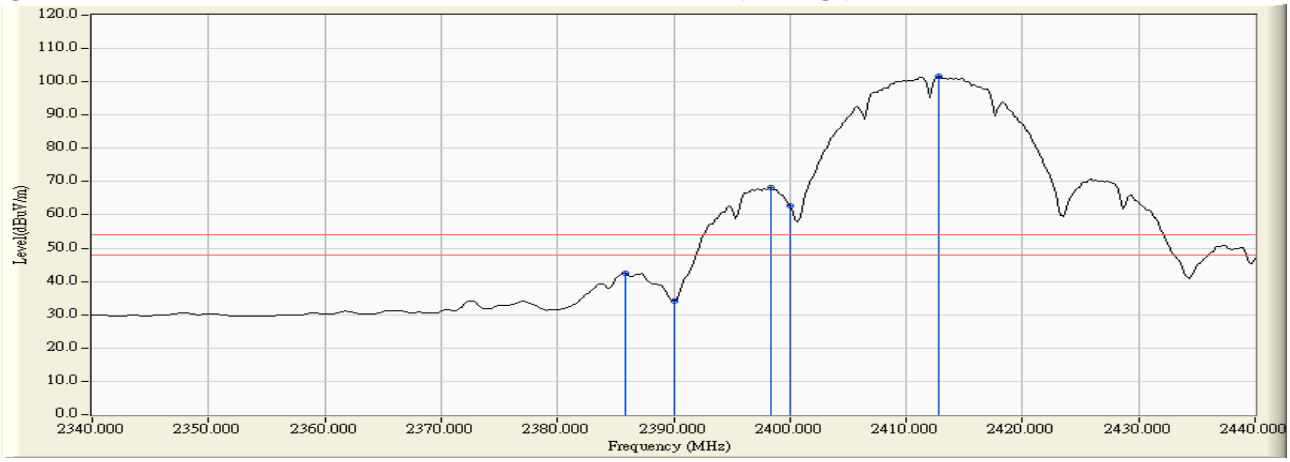


Figure Channel 01: Horizontal (Average)



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 : Smart Home DIN Rail box
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

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
01 (Peak)	2387.101	5.893	45.866	51.759	74.00	54.00	Pass
01 (Peak)	2390.000	5.880	42.651	48.532	74.00	54.00	Pass
01 (Peak)	2397.246	5.872	63.559	69.431	74.00	54.00	Pass
01 (Peak)	2400.000	5.879	58.274	64.153	74.00	54.00	Pass
01 (Peak)	2413.188	5.921	95.375	101.296	--	--	--
01 (Average)	2385.652	5.899	34.779	40.678	74.00	54.00	Pass
01 (Average)	2390.000	5.880	26.690	32.571	74.00	54.00	Pass
01 (Average)	2398.261	5.876	59.664	65.539	--	--	--
01 (Average)	2400.000	5.879	54.244	60.123	--	--	--
01 (Average)	2412.754	5.919	92.249	98.167	--	--	--

Figure Channel 01: VERTICAL (Peak)

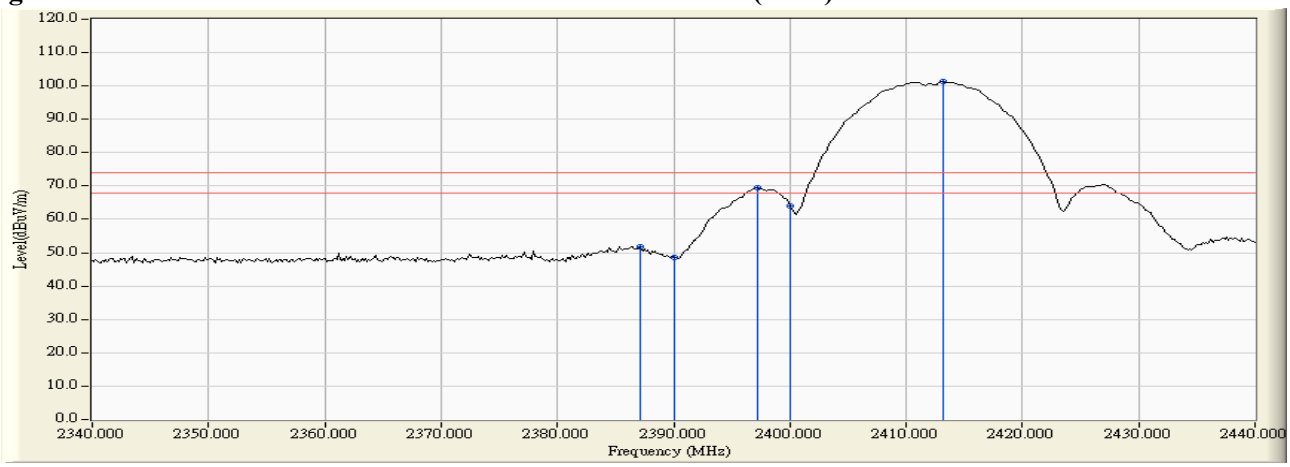
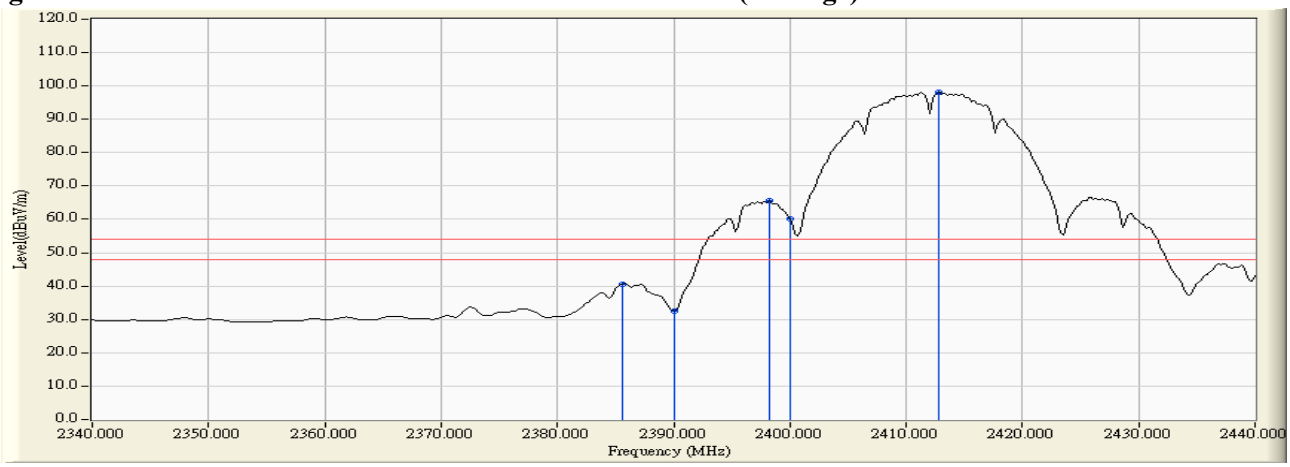


Figure Channel 01: VERTICAL (Average)



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 : Smart Home DIN Rail box
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

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
11 (Peak)	2463.065	6.966	100.587	107.553	--	--	--
11 (Peak)	2483.500	7.110	46.052	53.162	74.00	54.00	Pass
11 (Peak)	2485.964	7.127	49.655	56.782	74.00	54.00	Pass
11 (Average)	2462.775	6.964	97.515	104.479	--	--	--
11 (Average)	2483.500	7.110	34.577	41.687	74.00	54.00	Pass
11 (Average)	2486.833	7.134	41.733	48.867	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

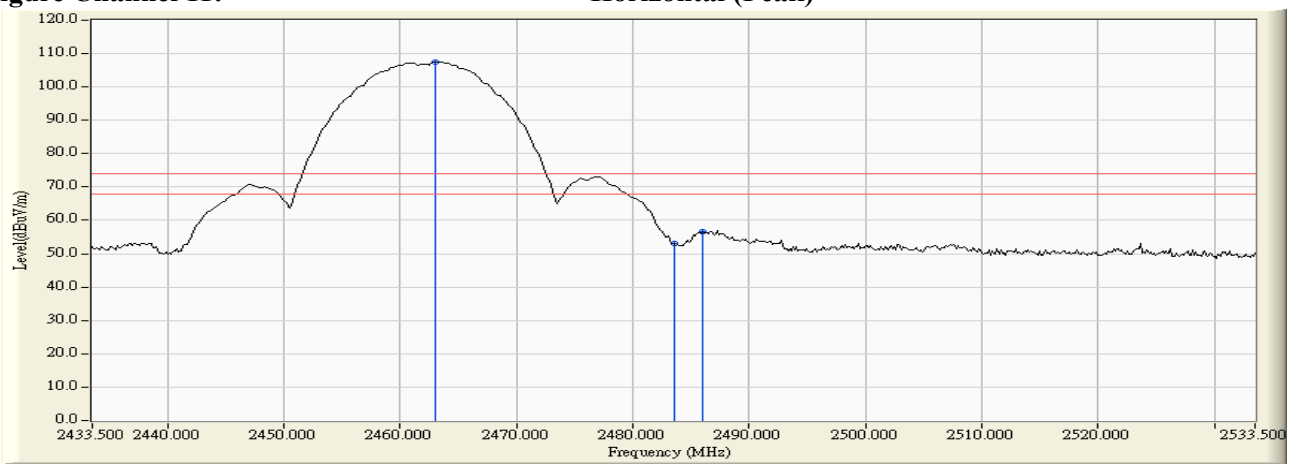
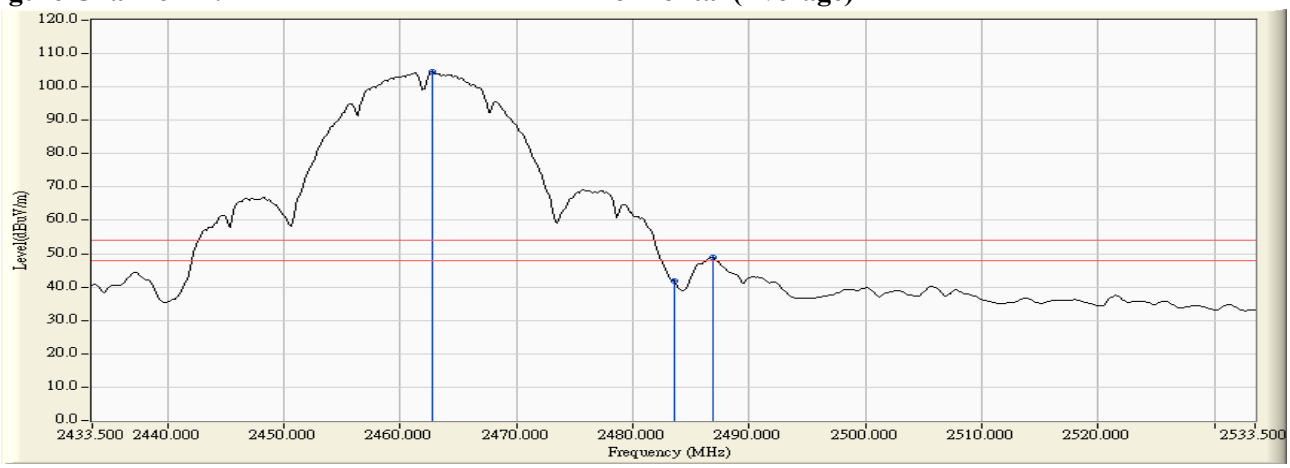


Figure Channel 11: Horizontal (Average)



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	:	Smart Home DIN Rail box
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2018/05/03
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

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
11 (Peak)	2463.065	6.236	96.336	102.572	--	--	--
11 (Peak)	2483.500	6.363	43.110	49.473	74.00	54.00	Pass
11 (Peak)	2486.254	6.381	47.376	53.757	74.00	54.00	Pass
11 (Average)	2462.775	6.234	93.272	99.506	--	--	--
11 (Average)	2483.500	6.363	30.617	36.980	74.00	54.00	Pass
11 (Average)	2486.833	6.384	37.503	43.887	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

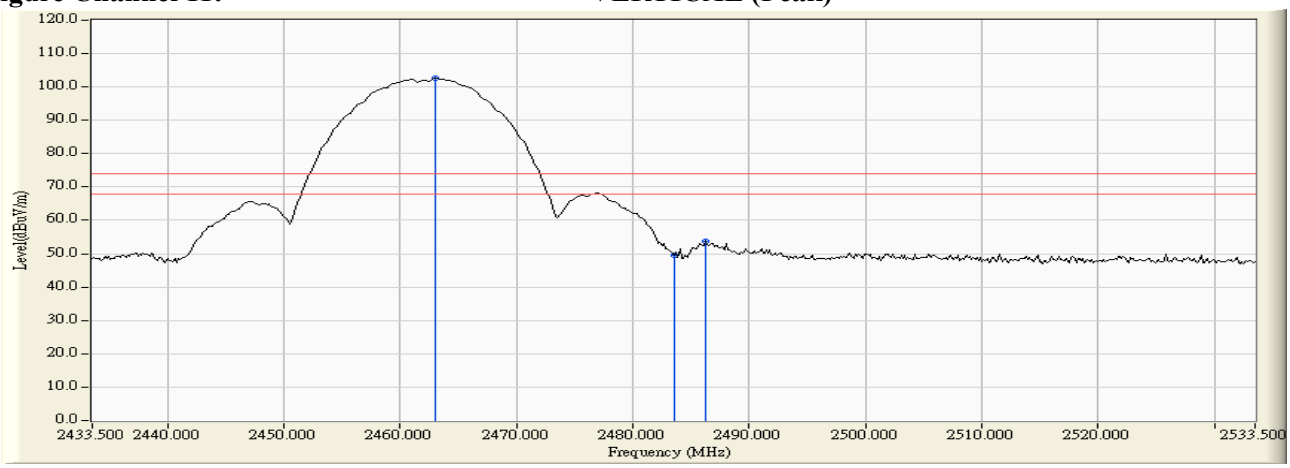
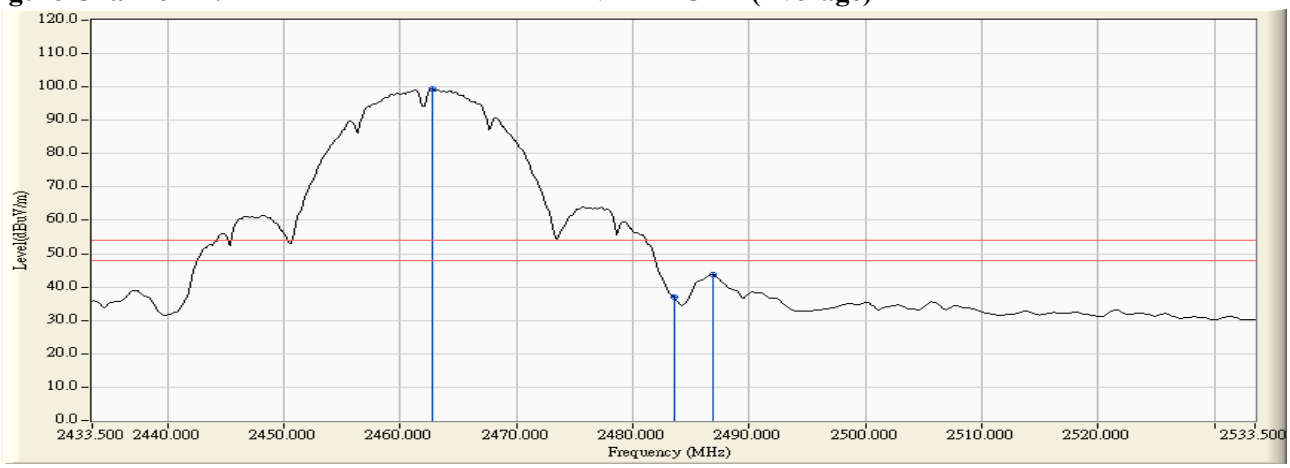


Figure Channel 11: VERTICAL (Average)



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 : Smart Home DIN Rail box
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

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
01 (Peak)	2390.000	6.474	60.929	67.404	74.00	54.00	Pass
01 (Peak)	2400.000	6.528	73.860	80.388	--	--	--
01 (Peak)	2414.348	6.620	100.496	107.115	--	--	--
01 (Average)	2390.000	6.474	38.464	44.939	74.00	54.00	Pass
01 (Average)	2400.000	6.528	47.174	53.702	74.00	54.00	Pass
01 (Average)	2413.188	6.611	89.055	95.666	--	--	--

Figure Channel 01: Horizontal (Peak)

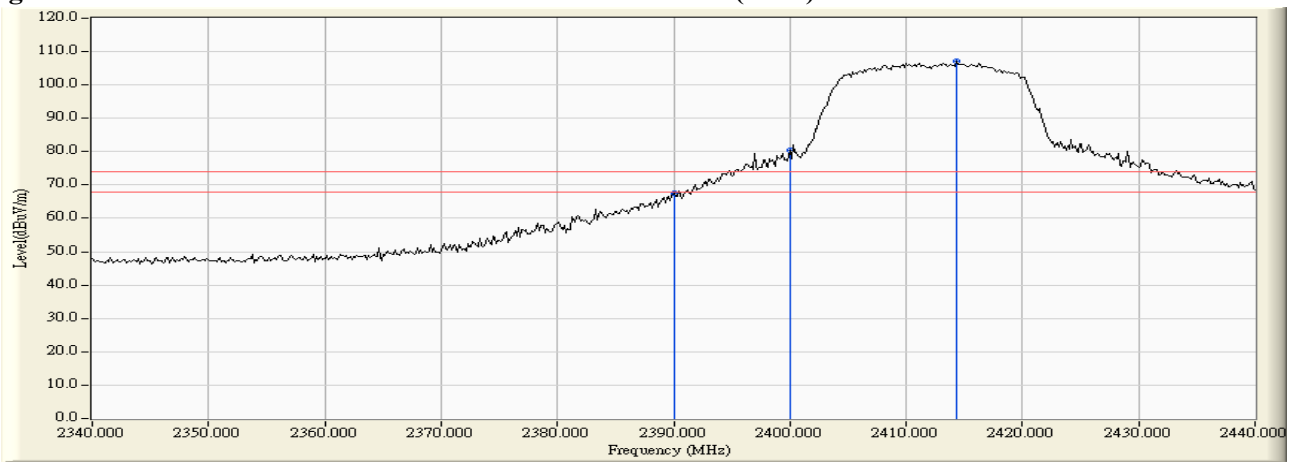
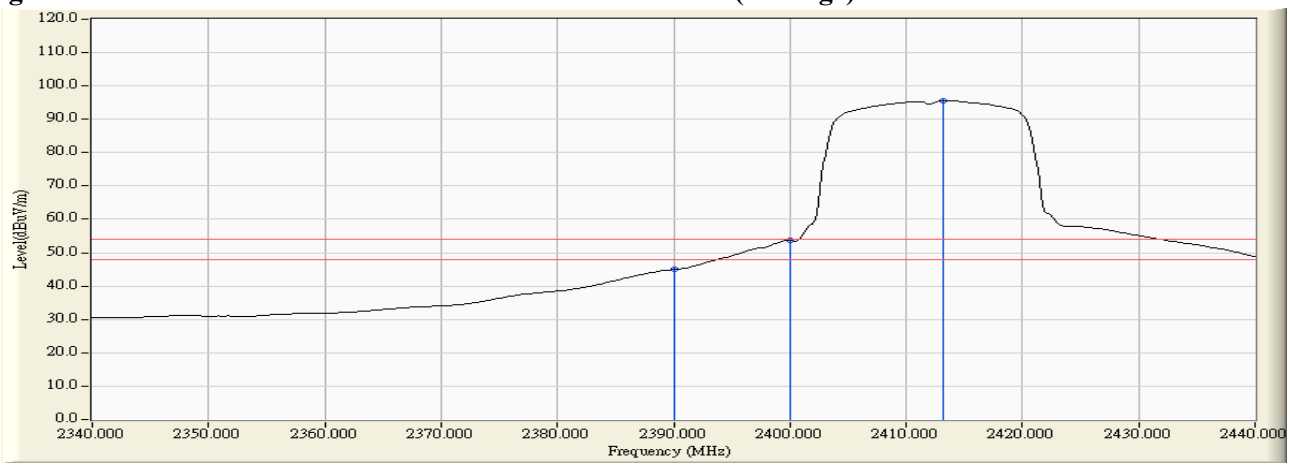


Figure Channel 01: Horizontal (Average)



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	:	Smart Home DIN Rail box
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2018/05/03
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

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
01 (Peak)	2388.261	5.888	59.210	65.098	74.00	54.00	Pass
01 (Peak)	2390.000	5.880	58.344	64.225	74.00	54.00	Pass
01 (Peak)	2400.000	5.879	71.377	77.256	--	--	--
01 (Peak)	2414.928	5.932	98.044	103.976	--	--	--
01 (Average)	2390.000	5.880	37.107	42.988	74.00	54.00	Pass
01 (Average)	2400.000	5.879	44.867	50.746	74.00	54.00	Pass
01 (Average)	2413.188	5.921	86.366	92.287	--	--	--

Figure Channel 01: VERTICAL (Peak)

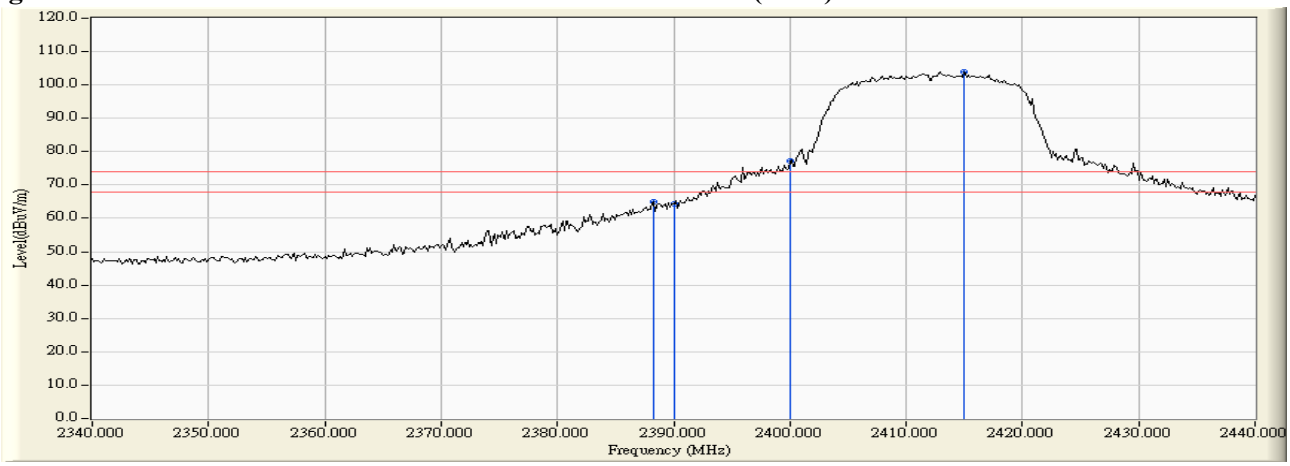
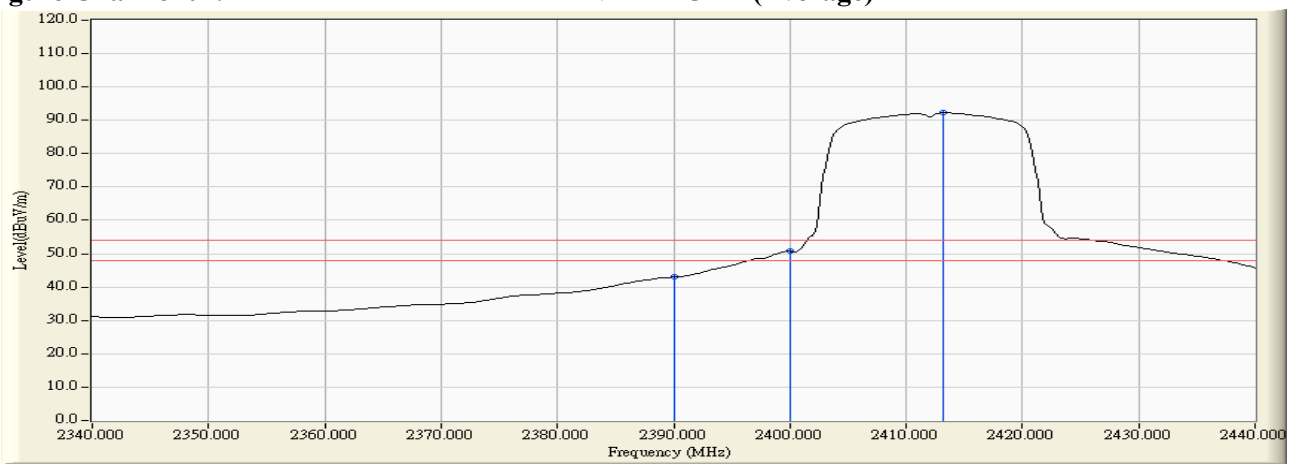


Figure Channel 01: VERTICAL (Average)



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 : Smart Home DIN Rail box
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

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
11 (Peak)	2464.804	6.978	102.166	109.144	--	--	--
11 (Peak)	2483.500	7.110	65.192	72.302	74.00	54.00	Pass
11 (Average)	2463.210	6.967	90.577	97.544	--	--	--
11 (Average)	2483.500	7.110	45.212	52.322	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

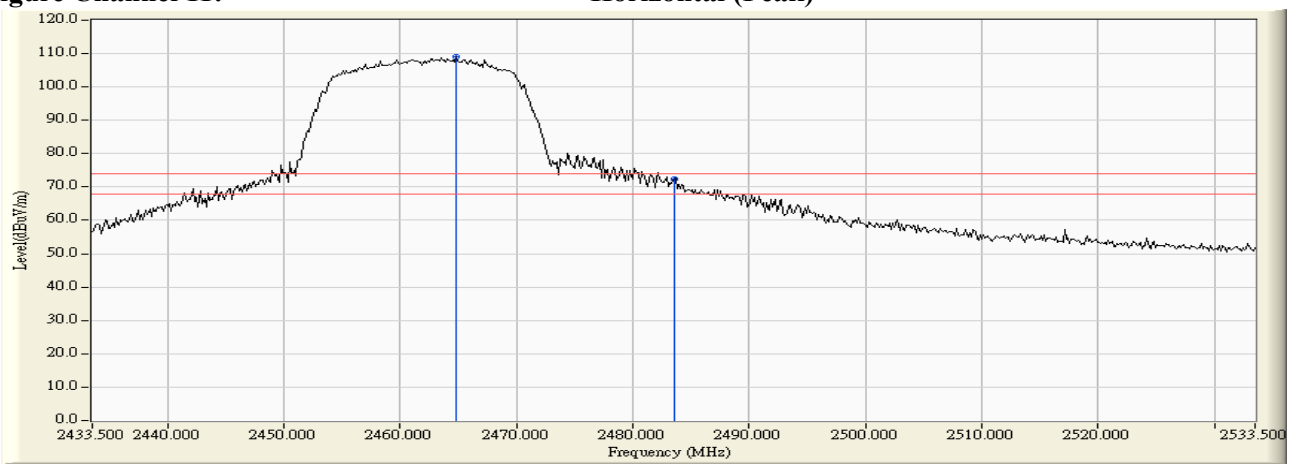


Figure Channel 11: Horizontal (Average)

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	:	Smart Home DIN Rail box
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2018/05/03
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

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
11 (Peak)	2465.094	6.248	97.744	103.993	--	--	--
11 (Peak)	2483.500	6.363	59.921	66.284	74.00	54.00	Pass
11 (Peak)	2483.790	6.365	61.832	68.197	74.00	54.00	Pass
11 (Average)	2463.210	6.237	86.741	92.978	--	--	--
11 (Average)	2483.500	6.363	40.950	47.313	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

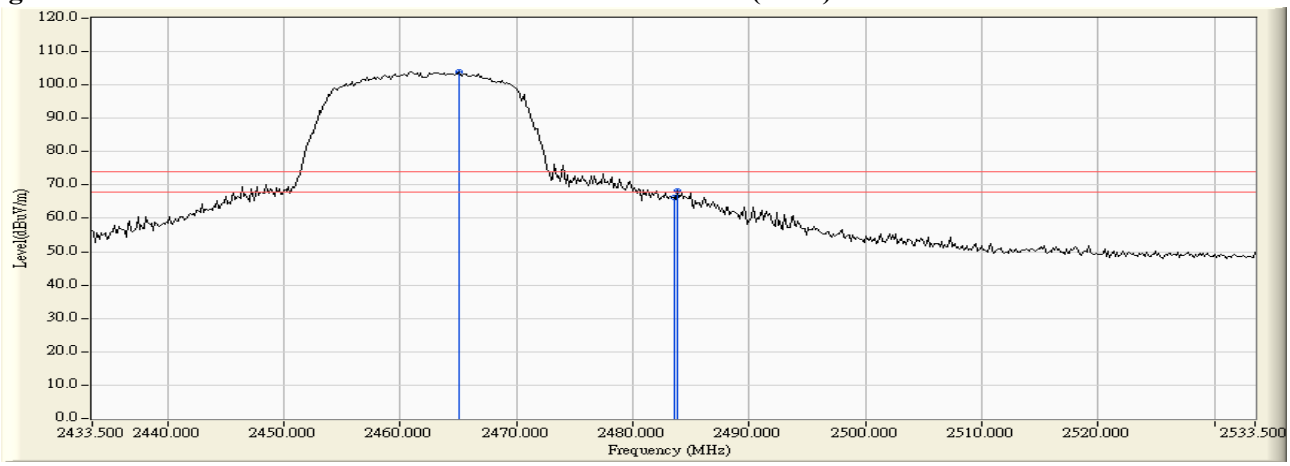
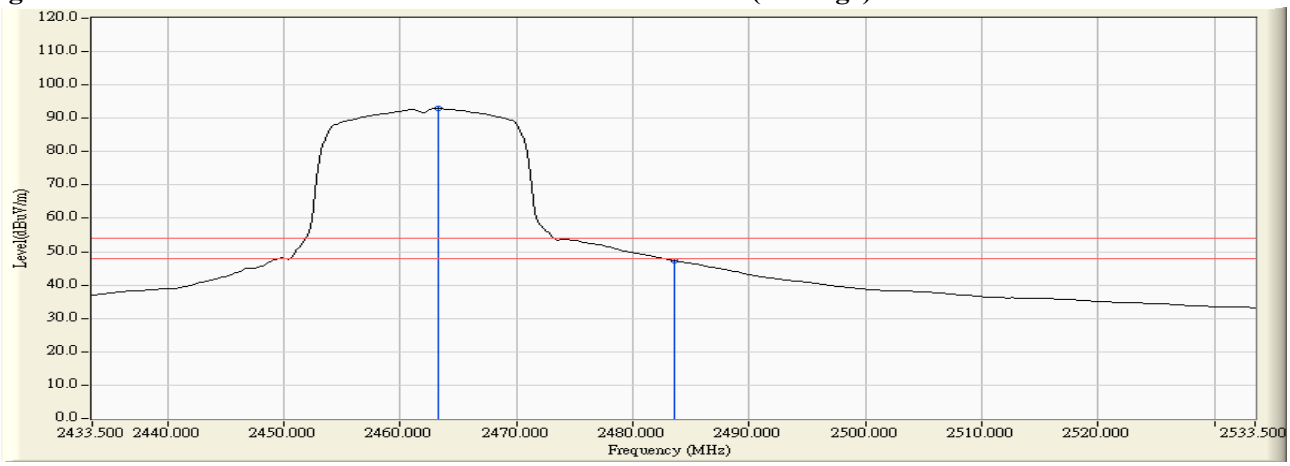


Figure Channel 11: VERTICAL (Average)



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 : Smart Home DIN Rail box
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)

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
01 (Peak)	2388.696	6.469	59.386	65.855	74.00	54.00	Pass
01 (Peak)	2390.000	6.474	59.069	65.544	74.00	54.00	Pass
01 (Peak)	2400.000	6.528	73.898	80.426	--	--	--
01 (Peak)	2414.638	6.622	99.508	106.129	--	--	--
01 (Average)	2390.000	6.474	37.818	44.293	74.00	54.00	Pass
01 (Average)	2400.000	6.528	46.221	52.749	74.00	54.00	Pass
01 (Average)	2413.188	6.611	87.325	93.936	--	--	--

Figure Channel 01: Horizontal (Peak)

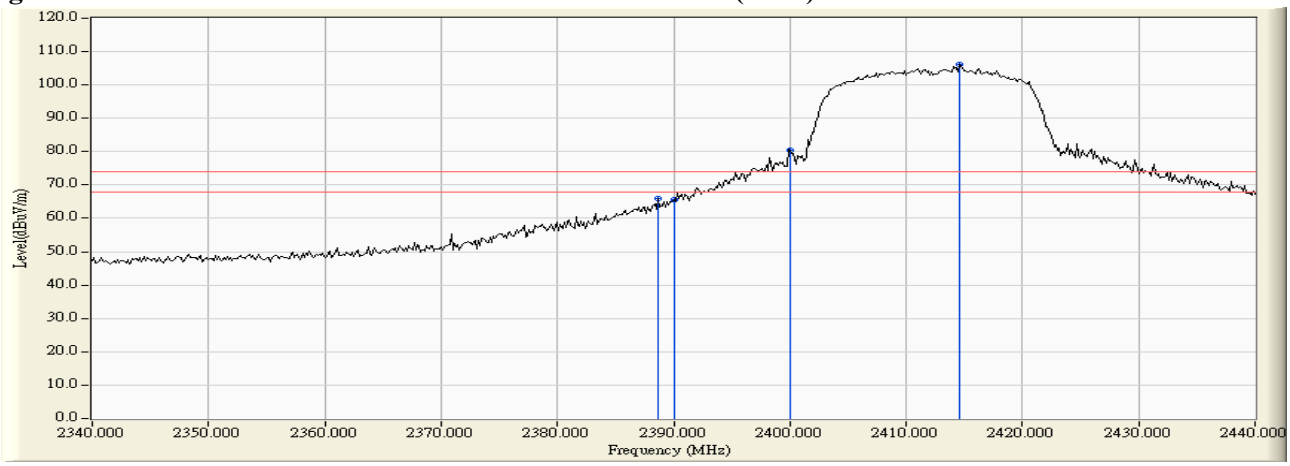
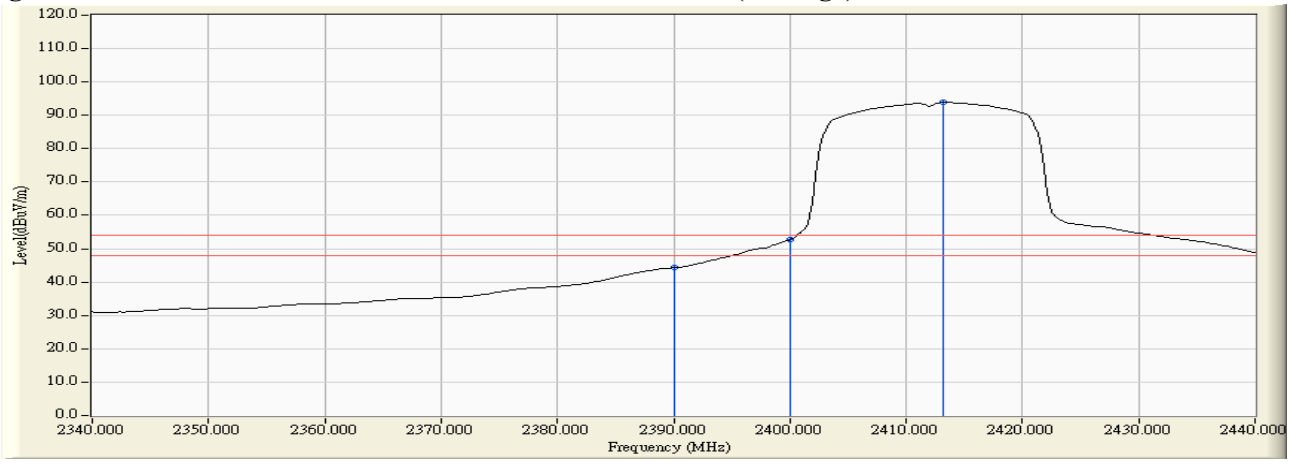


Figure Channel 01: Horizontal (Average)



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	:	Smart Home DIN Rail box
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2018/05/03
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)

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
01 (Peak)	2388.986	5.885	58.579	64.464	74.00	54.00	Pass
01 (Peak)	2390.000	5.880	57.444	63.325	74.00	54.00	Pass
01 (Peak)	2400.000	5.879	72.462	78.341	--	--	--
01 (Peak)	2414.783	5.931	98.010	103.941	--	--	--
01 (Average)	2390.000	5.880	36.803	42.684	74.00	54.00	Pass
01 (Average)	2400.000	5.879	44.715	50.594	74.00	54.00	Pass
01 (Average)	2413.188	5.921	85.613	91.534	--	--	--

Figure Channel 01: VERTICAL (Peak)

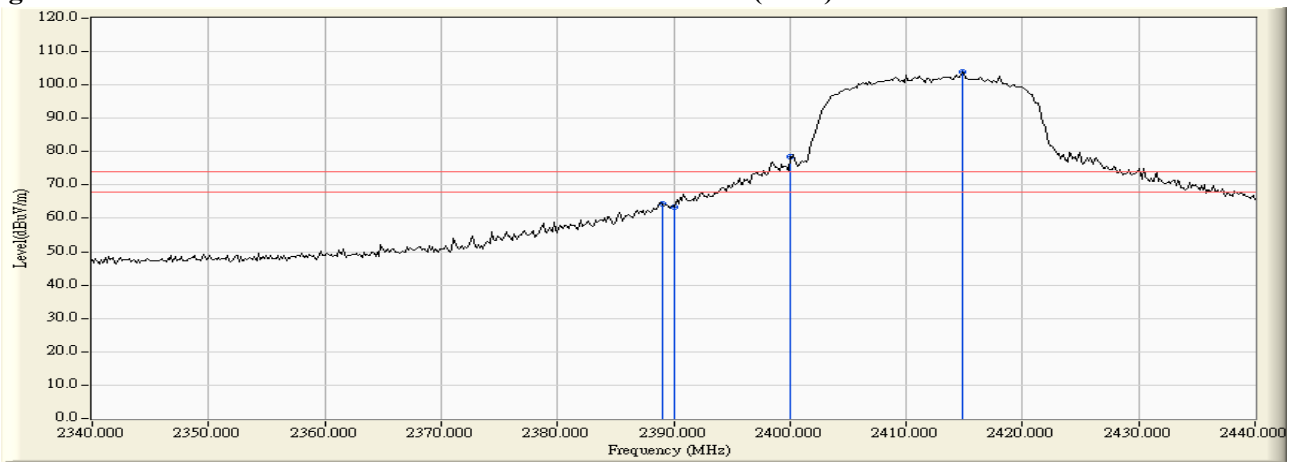
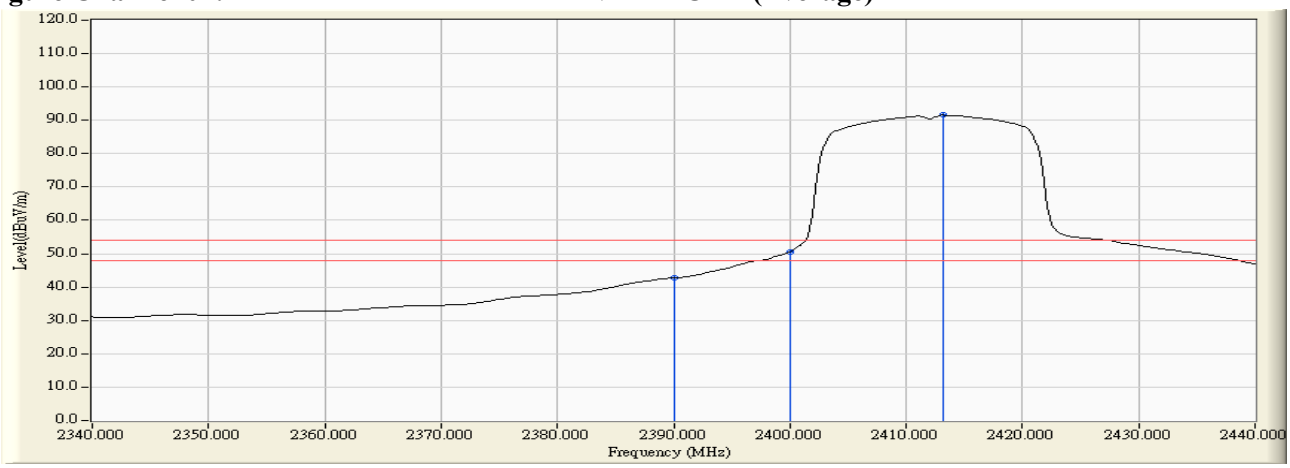


Figure Channel 01: VERTICAL (Average)



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	:	Smart Home DIN Rail box
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2018/05/03
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)

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
11 (Peak)	2464.659	6.977	101.869	108.846	--	--	--
11 (Peak)	2483.500	7.110	65.571	72.681	74.00	54.00	Pass
11 (Peak)	2484.514	7.117	65.717	72.834	74.00	54.00	Pass
11 (Average)	2463.065	6.966	90.006	96.972	--	--	--
11 (Average)	2483.500	7.110	44.229	51.339	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

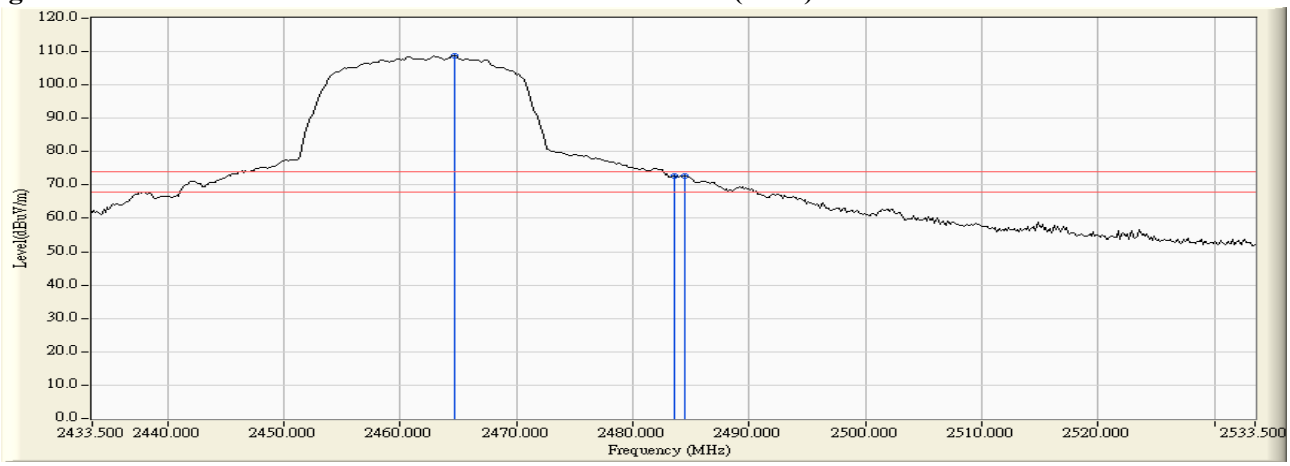
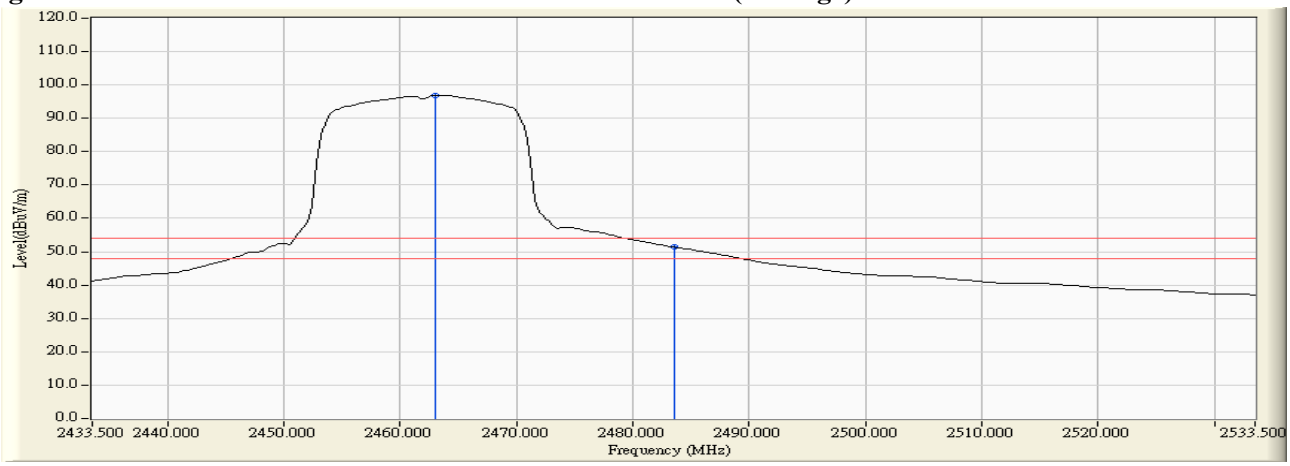


Figure Channel 11: Horizontal (Average)



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	:	Smart Home DIN Rail box
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2018/05/03
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)

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
11 (Peak)	2464.514	6.245	97.732	103.977	--	--	--
11 (Peak)	2483.500	6.363	61.461	67.824	74.00	54.00	Pass
11 (Average)	2463.210	6.237	85.791	92.028	--	--	--
11 (Average)	2483.500	6.363	40.102	46.465	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

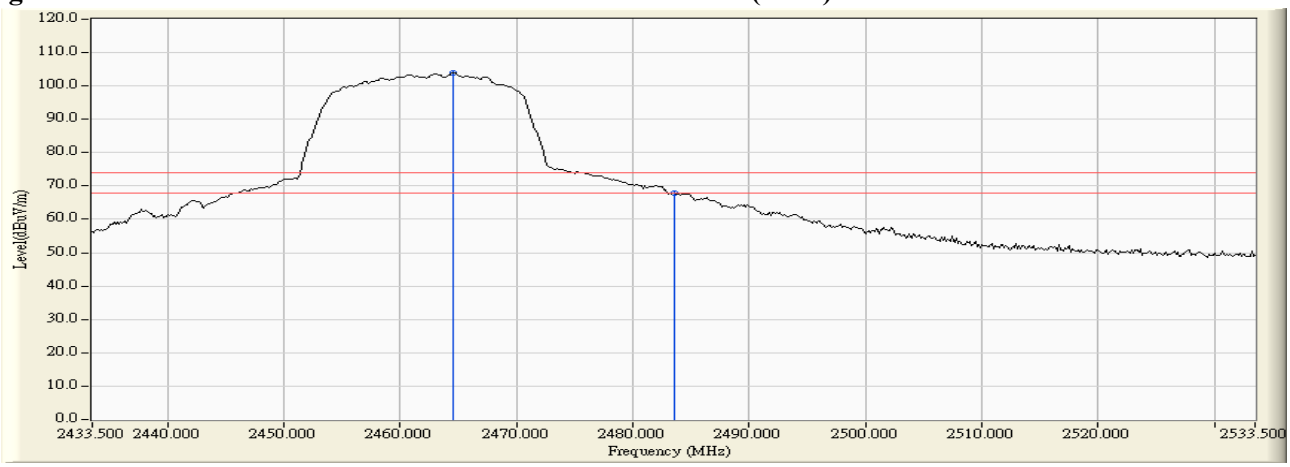
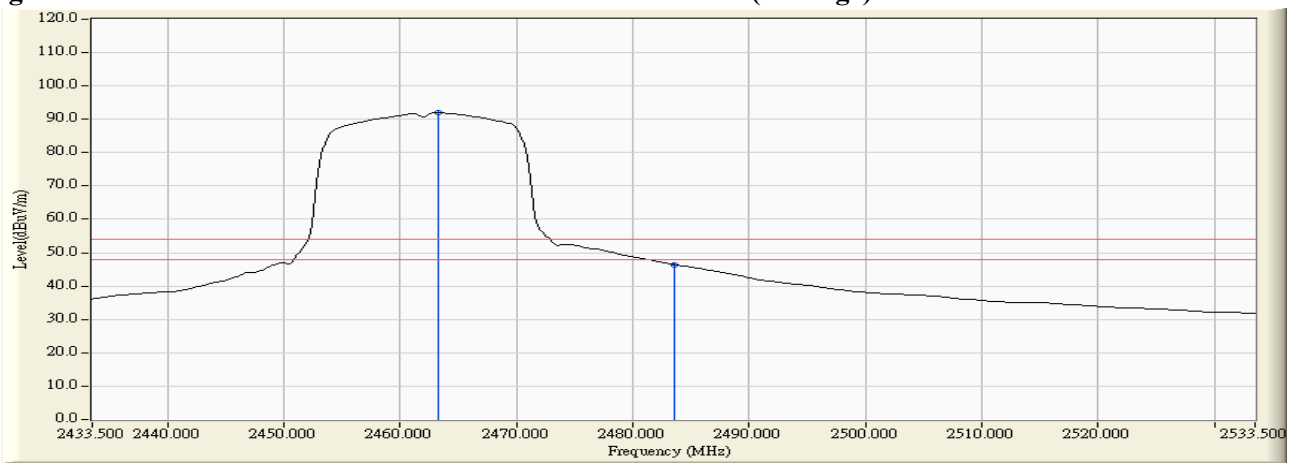


Figure Channel 11: VERTICAL (Average)



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 : Smart Home DIN Rail box
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)

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
03 (Peak)	2390.000	6.474	49.852	56.327	74.00	54.00	Pass
03 (Peak)	2399.710	6.527	56.782	63.309	74.00	54.00	Pass
03 (Peak)	2400.000	6.528	53.585	60.113	74.00	54.00	Pass
03 (Peak)	2426.232	6.704	92.280	98.984	--	--	--
03 (Average)	2390.000	6.474	34.532	41.007	74.00	54.00	Pass
03 (Average)	2400.000	6.528	40.507	47.035	74.00	54.00	Pass
03 (Average)	2424.058	6.688	81.902	88.591	--	--	--

Figure Channel 03: Horizontal (Peak)

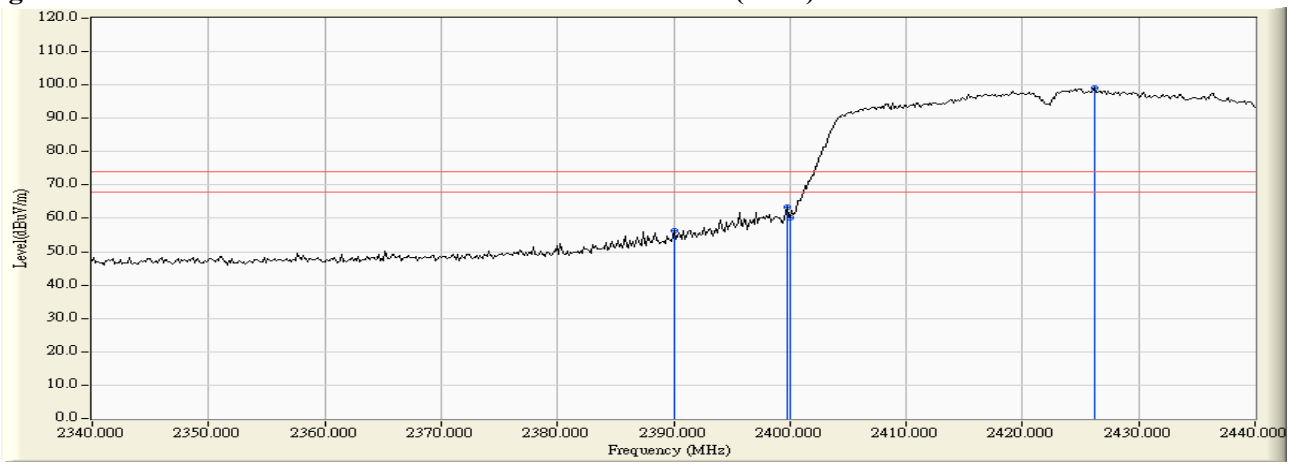
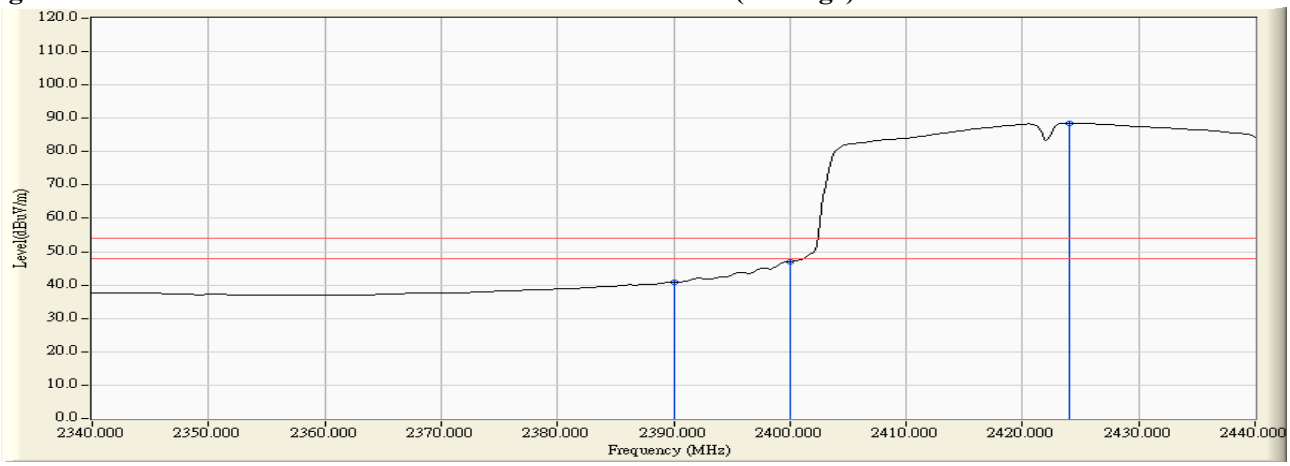


Figure Channel 03: Horizontal (Average)



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 : Smart Home DIN Rail box
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)

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
03 (Peak)	2387.826	5.889	44.863	50.753	74.00	54.00	Pass
03 (Peak)	2390.000	5.880	42.875	48.756	74.00	54.00	Pass
03 (Peak)	2396.522	5.871	50.627	56.497	74.00	54.00	Pass
03 (Peak)	2400.000	5.879	49.097	54.976	74.00	54.00	Pass
03 (Peak)	2424.638	5.993	86.977	92.970	--	--	--
03 (Average)	2390.000	5.880	31.633	37.514	74.00	54.00	Pass
03 (Average)	2400.000	5.879	35.618	41.497	74.00	54.00	Pass
03 (Average)	2424.058	5.989	76.408	82.397	--	--	--

Figure Channel 03: VERTICAL (Peak)

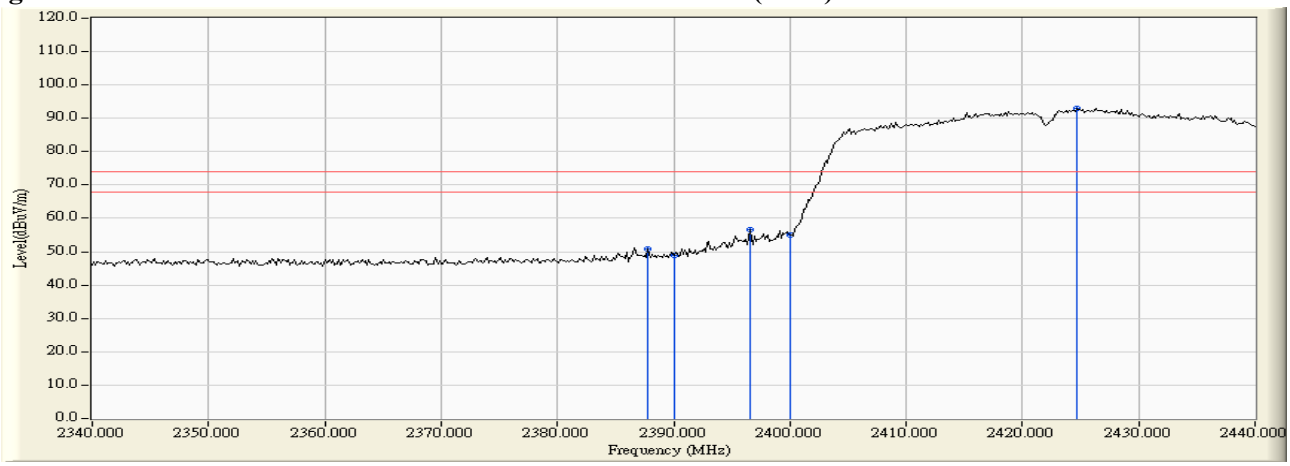
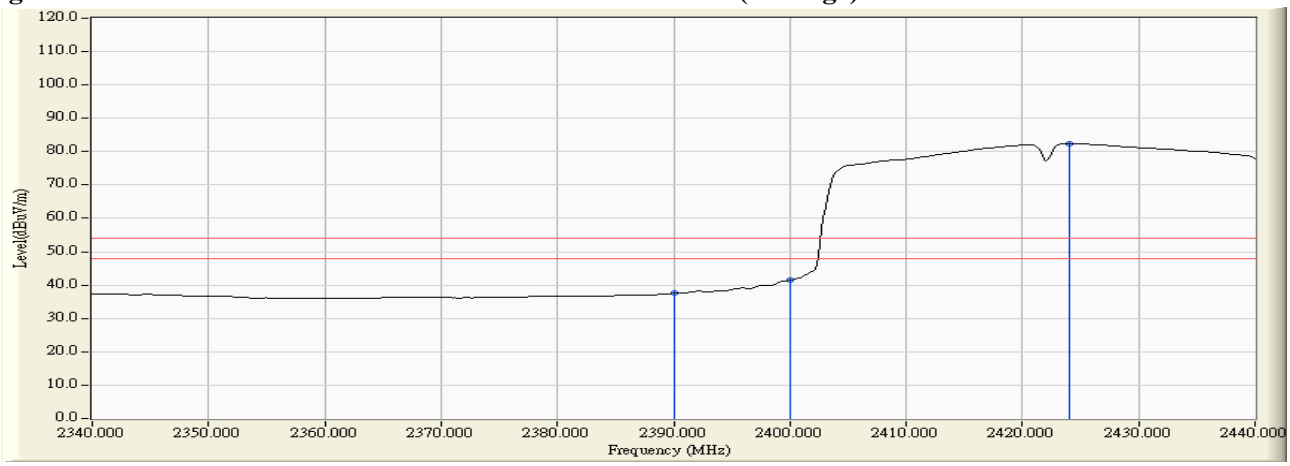


Figure Channel 03: VERTICAL (Average)



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 : Smart Home DIN Rail box
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2018/05/03
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)

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
09 (Peak)	2454.514	6.905	92.245	99.150	--	--	--
09 (Peak)	2483.500	7.110	53.380	60.490	74.00	54.00	Pass
09 (Peak)	2484.949	7.120	54.467	61.587	74.00	54.00	Pass
09 (Average)	2453.500	6.899	81.919	88.817	--	--	--
09 (Average)	2483.500	7.110	40.792	47.902	74.00	54.00	Pass

Figure Channel 09: Horizontal (Peak)

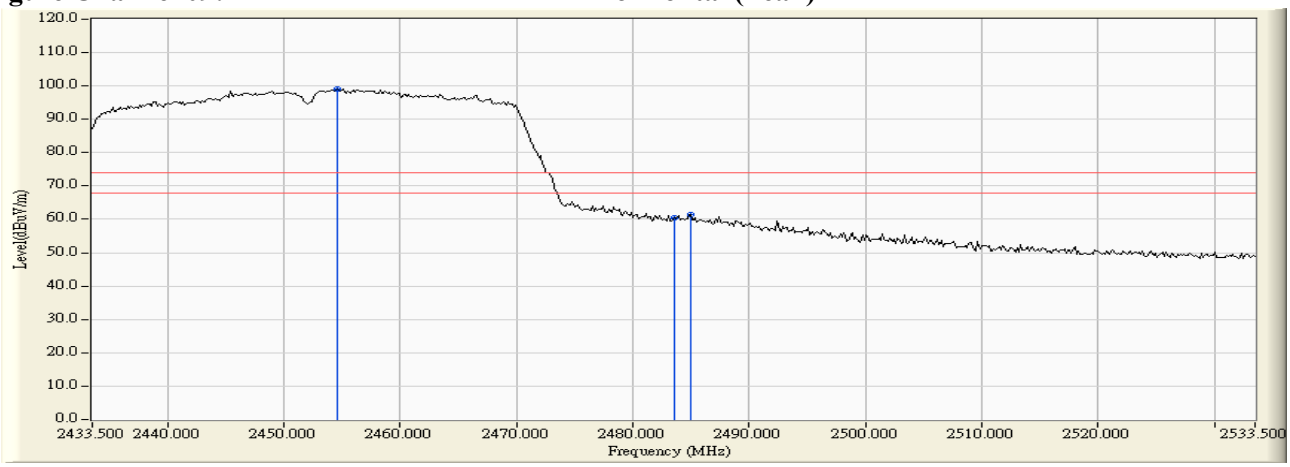
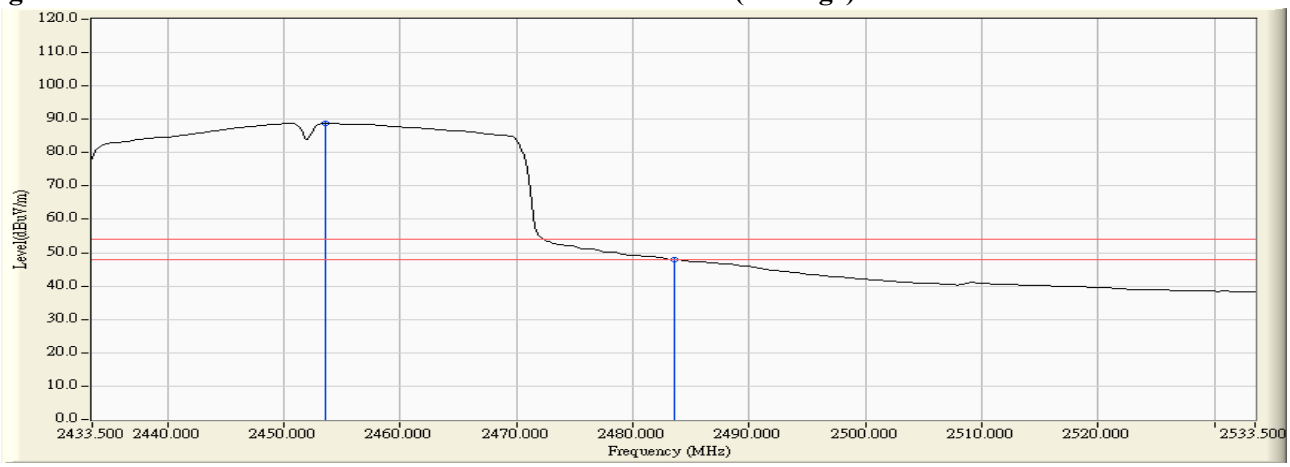


Figure Channel 09: Horizontal (Average)



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	:	Smart Home DIN Rail box
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2018/05/03
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)

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
09 (Peak)	2454.949	6.184	87.120	93.304	--	--	--
09 (Peak)	2483.500	6.363	48.276	54.639	74.00	54.00	Pass
09 (Peak)	2484.949	6.373	49.750	56.122	74.00	54.00	Pass
09 (Average)	2453.500	6.175	76.843	83.018	--	--	--
09 (Average)	2483.500	6.363	36.997	43.360	74.00	54.00	Pass

Figure Channel 09: VERTICAL (Peak)

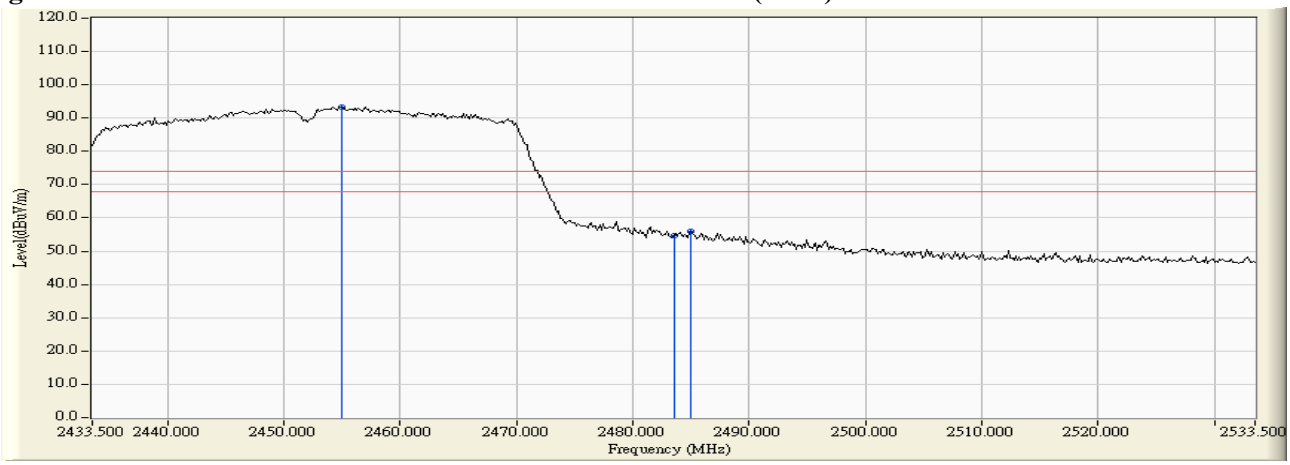
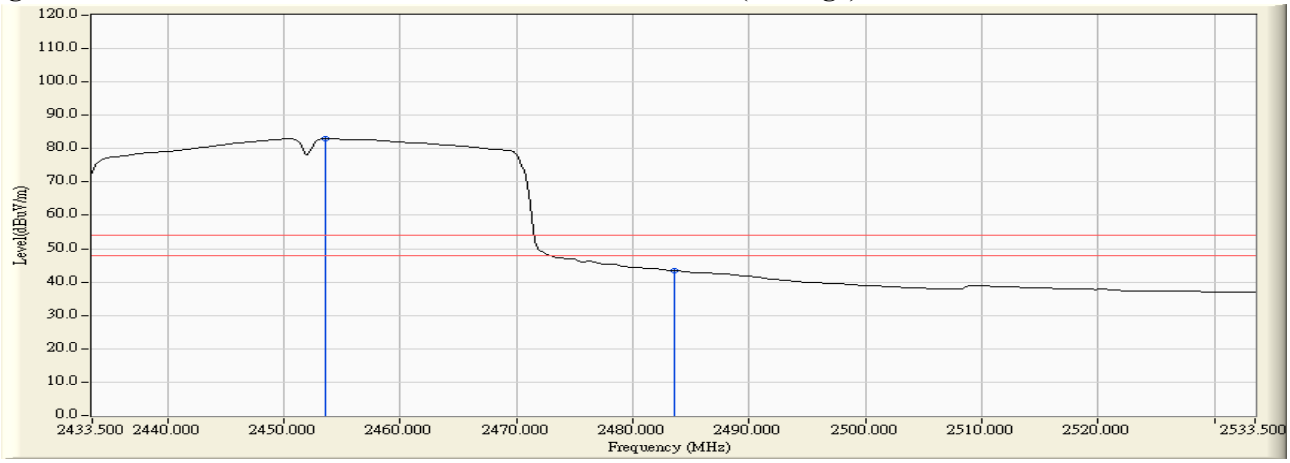


Figure Channel 09: VERTICAL (Average)

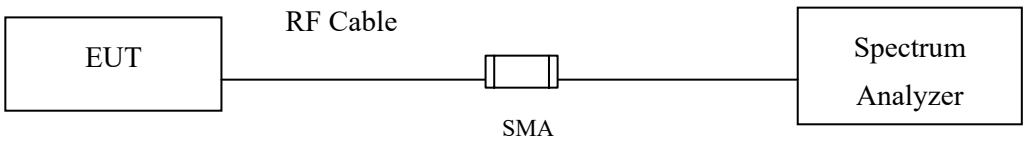


Note:

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

The EUT was setup according to ANSI C63.4: 2014; tested according to DTS test procedure of Jan KDB558074 for compliance to FCC 47CFR 15.247 requirements.

7.4. Uncertainty

± 283Hz

7.5. Test Result of 6dB Bandwidth

Product : Smart Home DIN Rail box
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	10150	>500	Pass
06	2437	10150	>500	Pass
11	2462	10150	>500	Pass

Figure Channel 01:

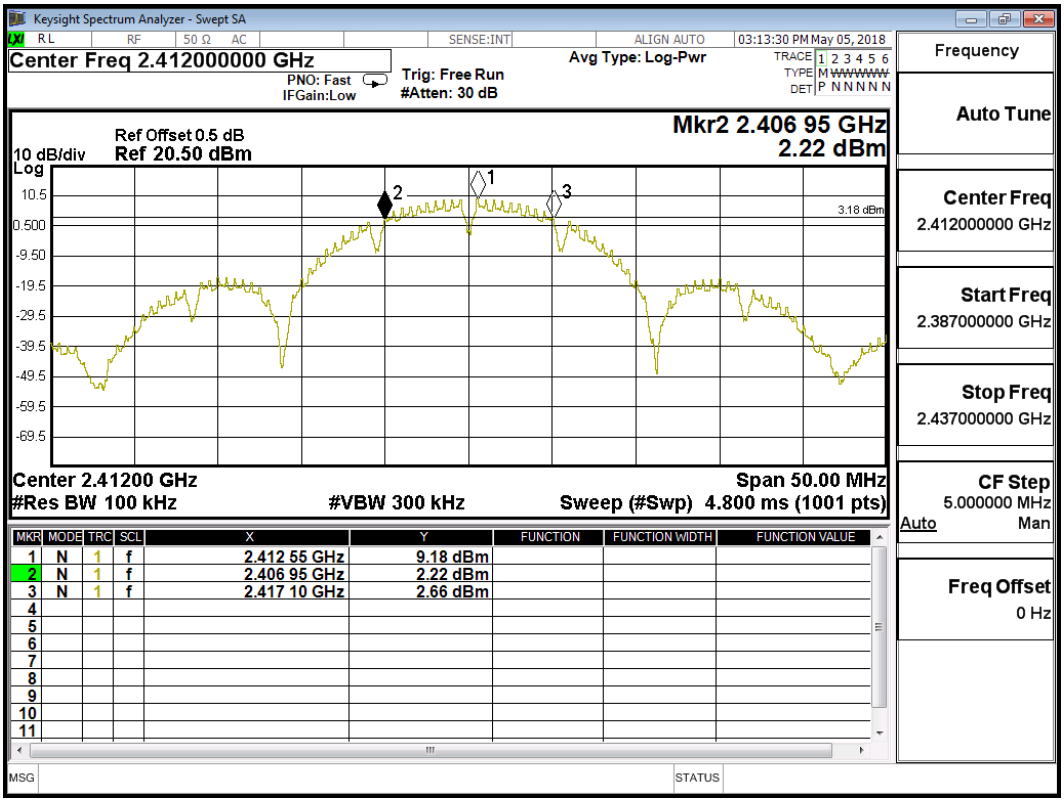


Figure Channel 06:

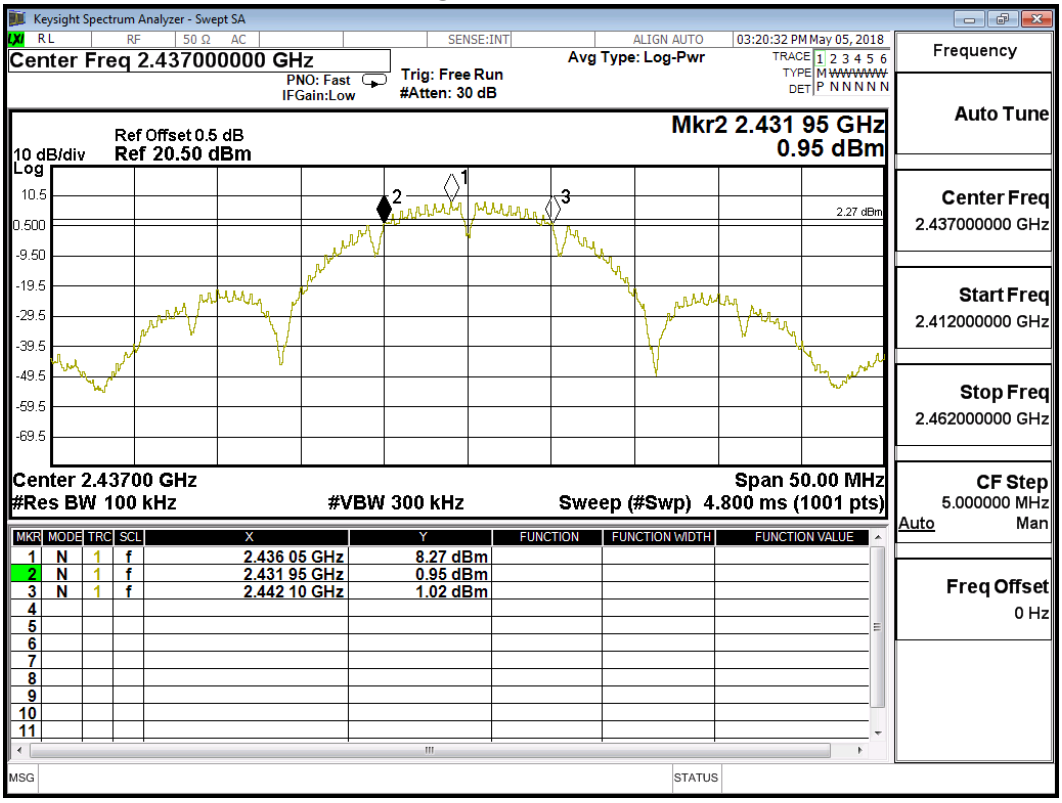
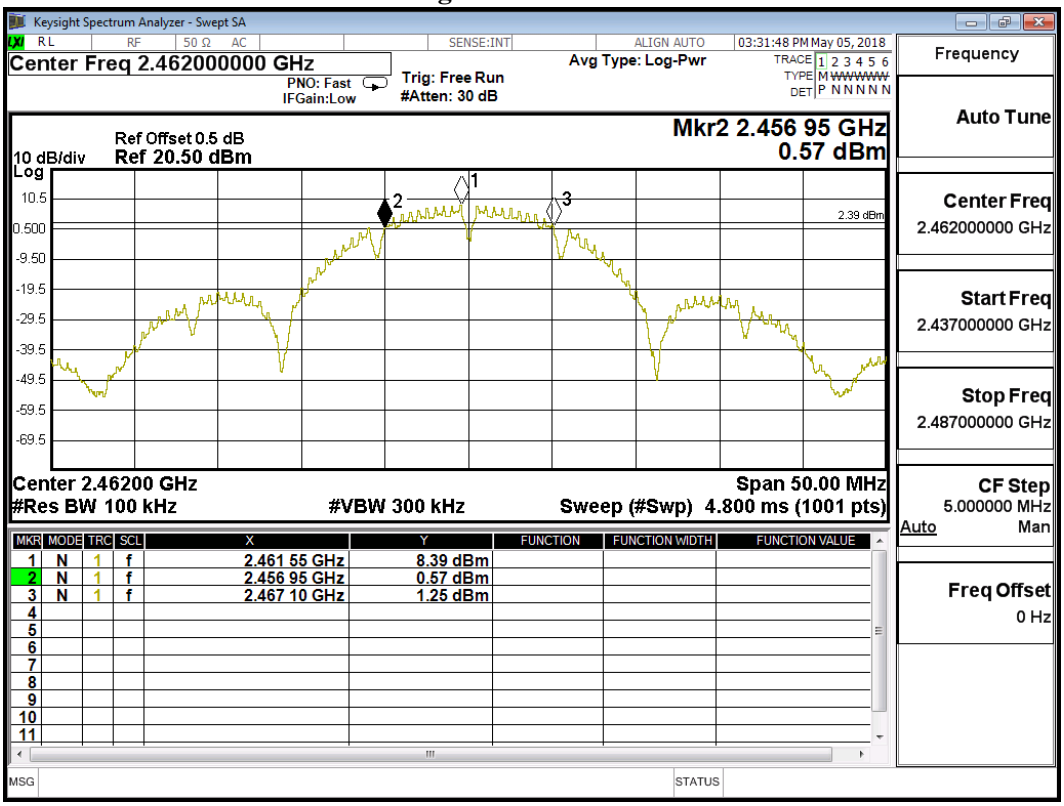


Figure Channel 11:



Product : Smart Home DIN Rail box
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	16450	>500	Pass
06	2437	16450	>500	Pass
11	2462	16450	>500	Pass

Figure Channel 01:

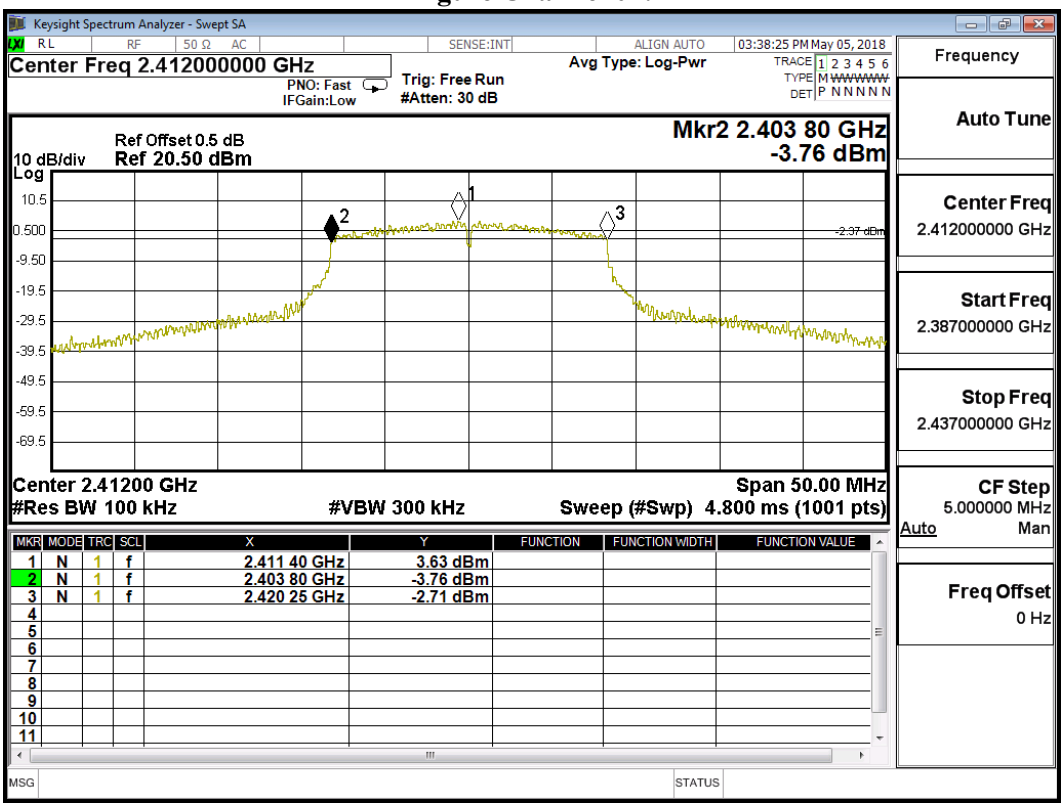


Figure Channel 06:

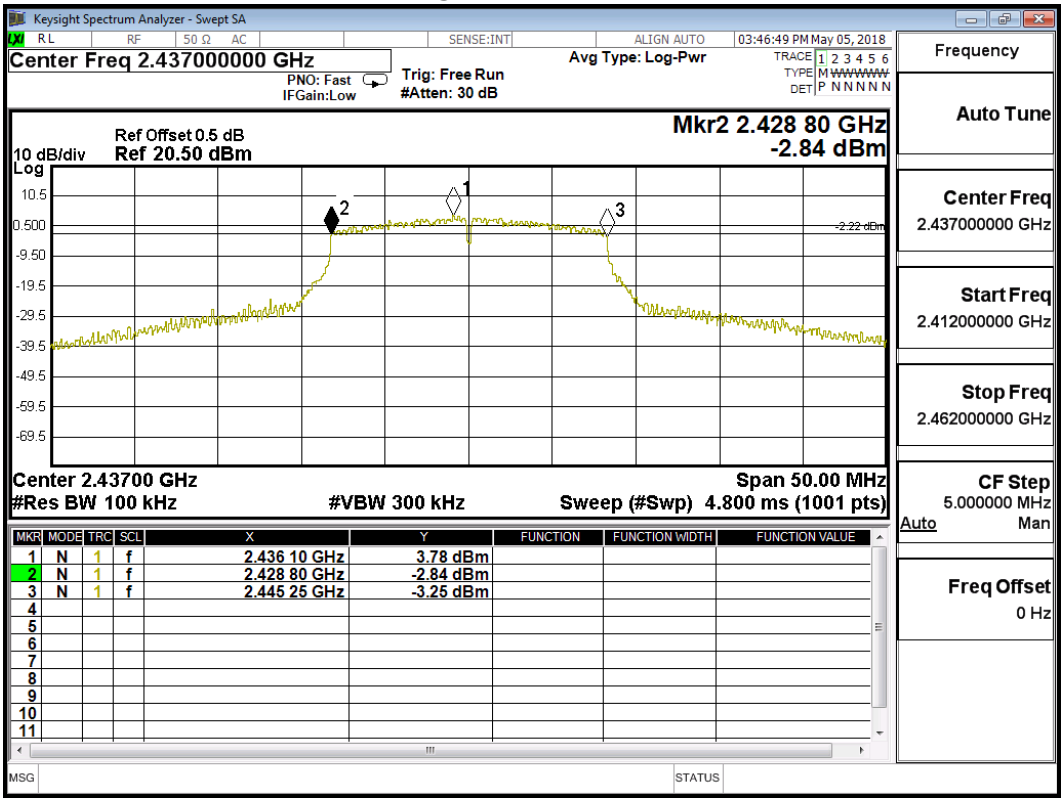
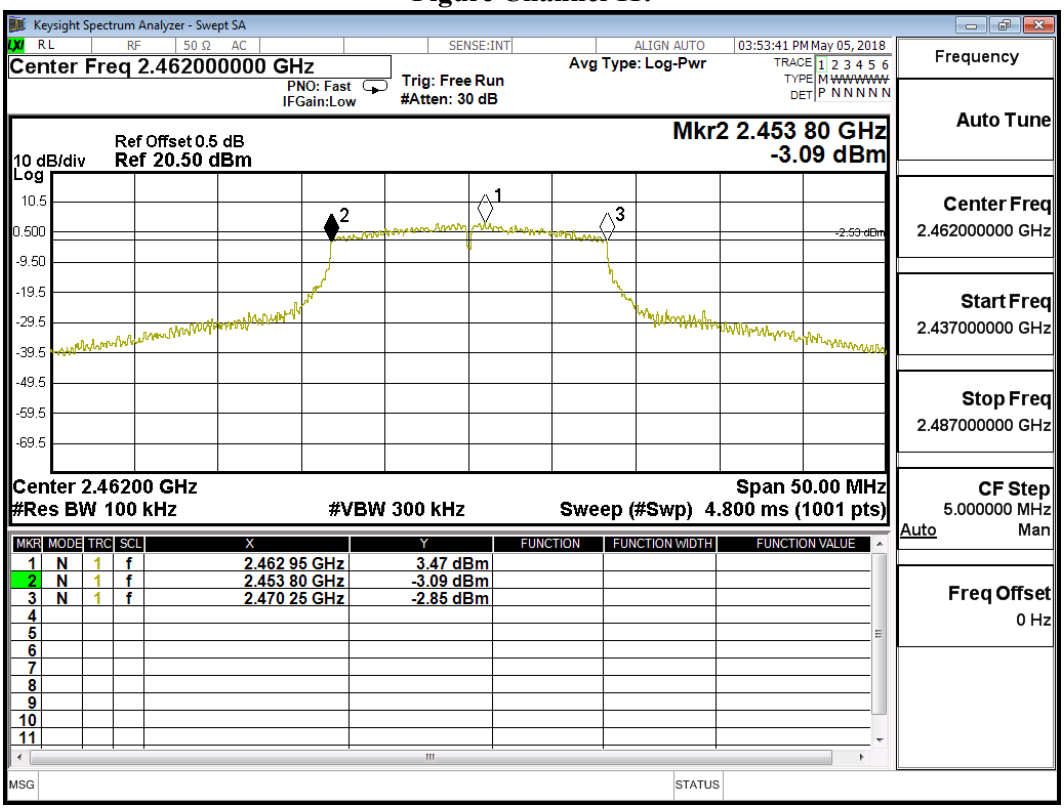


Figure Channel 11:



Product : Smart Home DIN Rail box
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	17600	>500	Pass
06	2437	17000	>500	Pass
11	2462	17350	>500	Pass

Figure Channel 01:

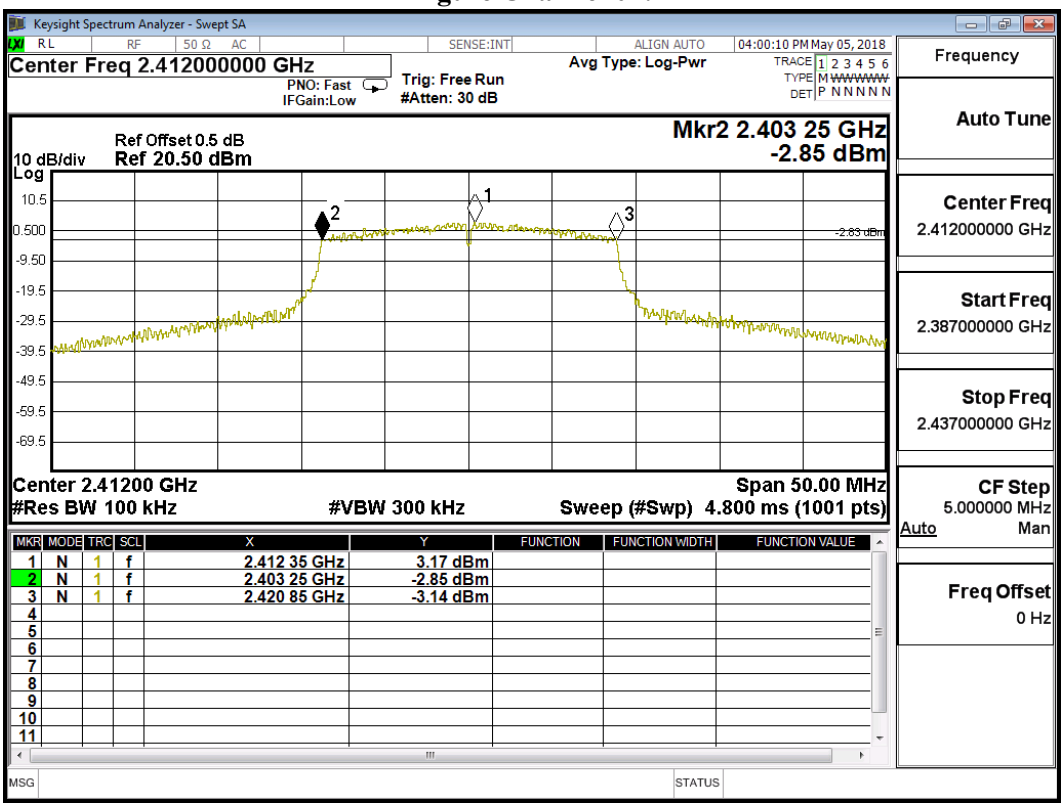


Figure Channel 06:

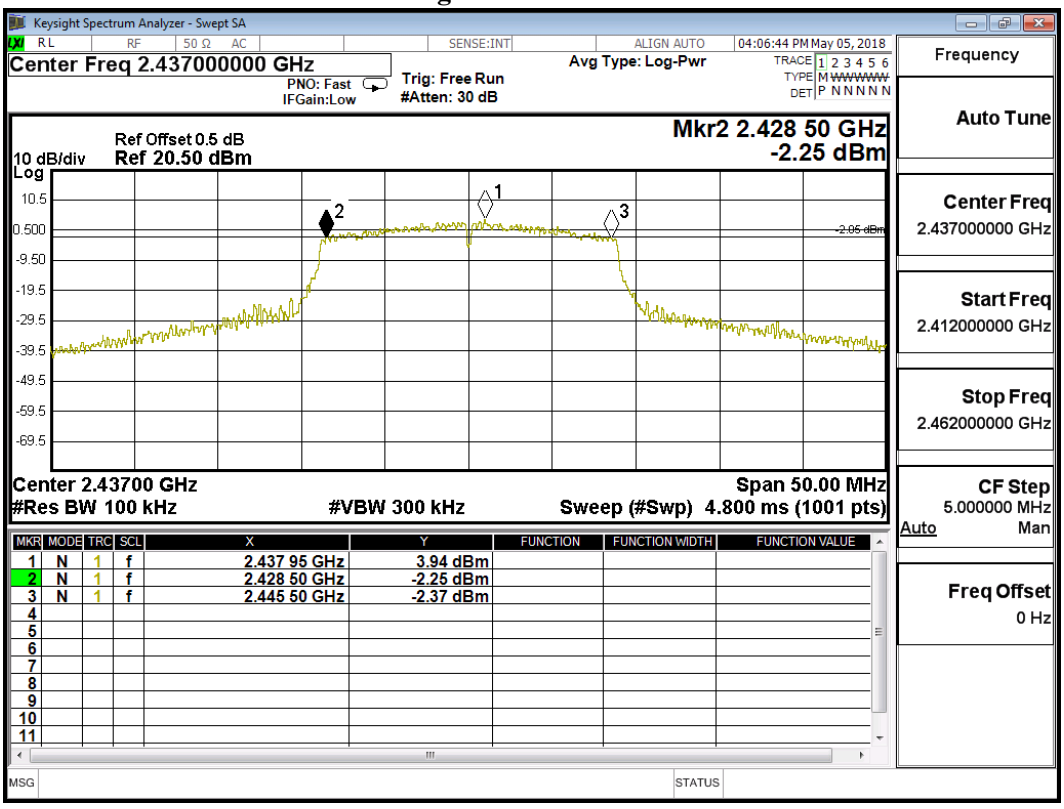
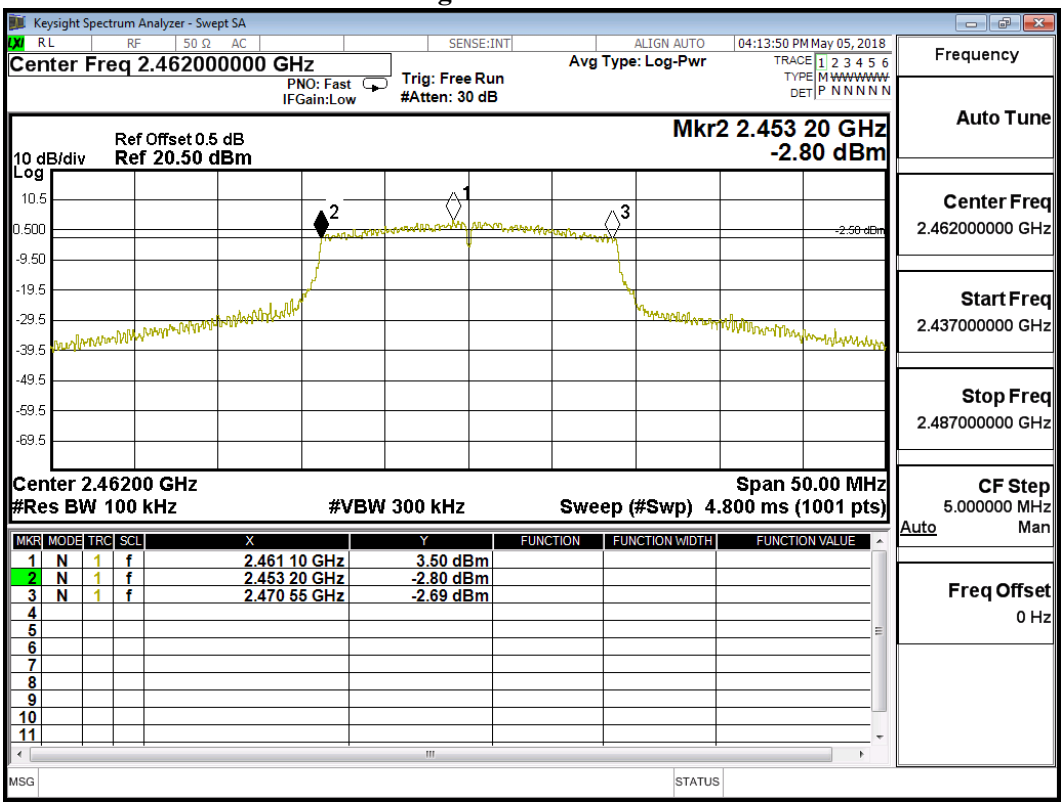


Figure Channel 11:



Product : Smart Home DIN Rail box
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	36100	>500	Pass
06	2437	34800	>500	Pass
09	2452	34900	>500	Pass

Figure Channel 03:

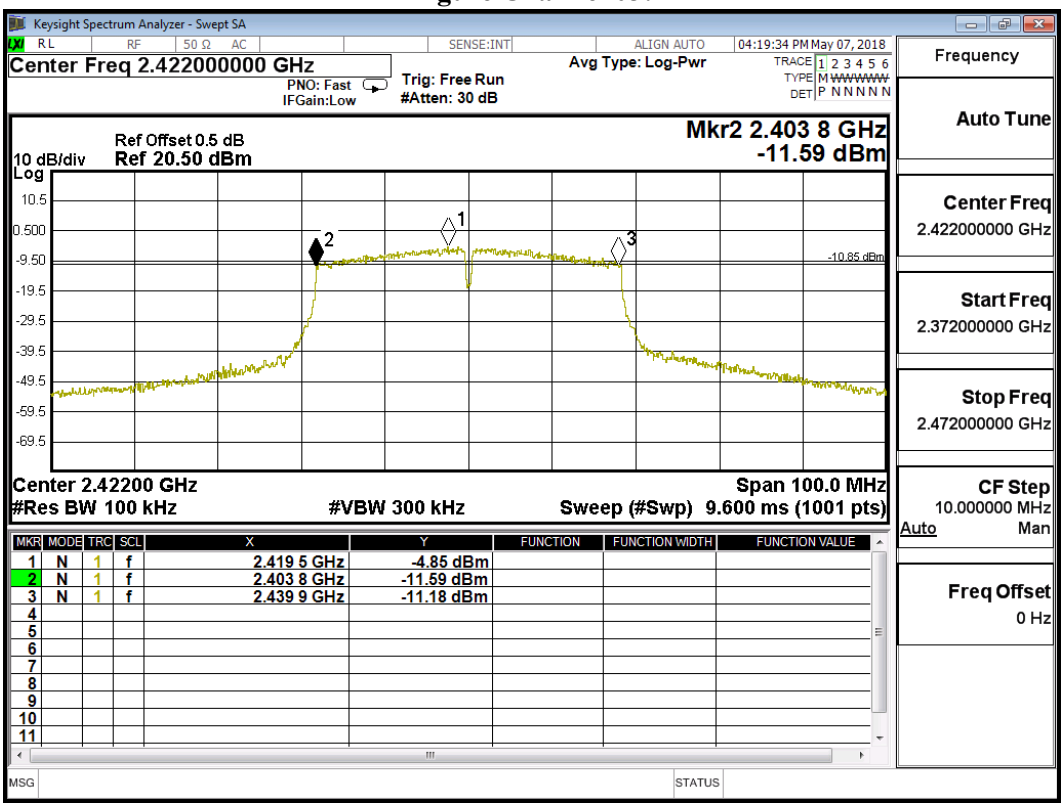


Figure Channel 06:

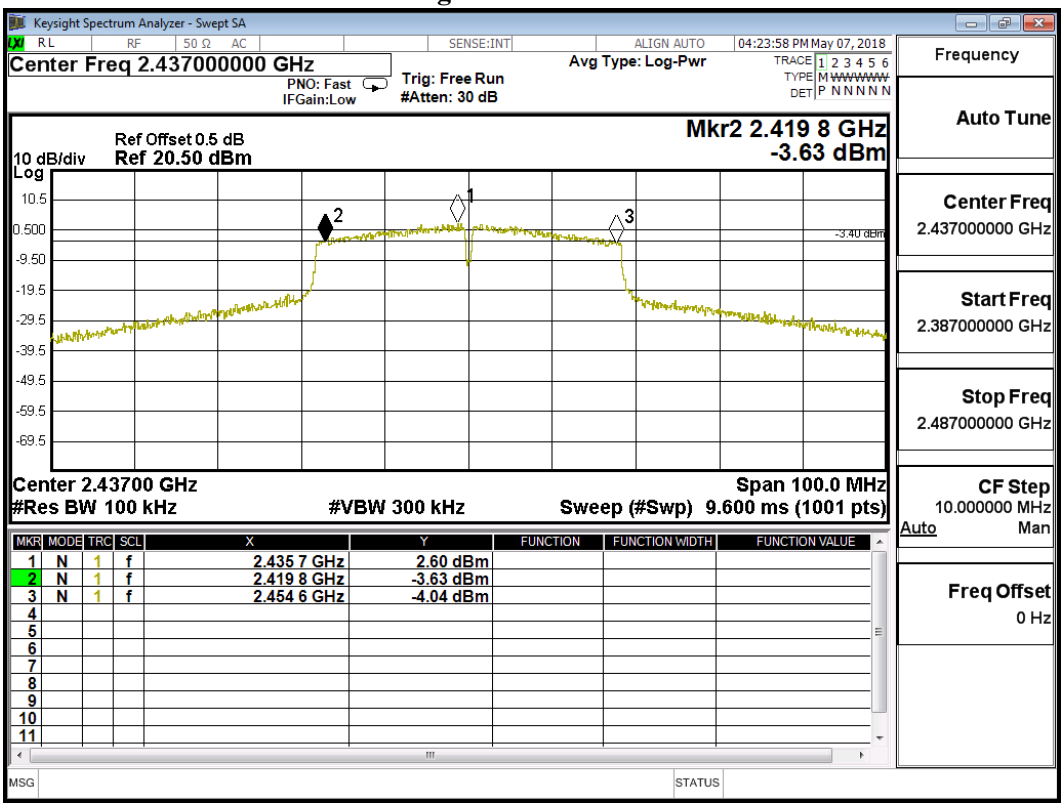
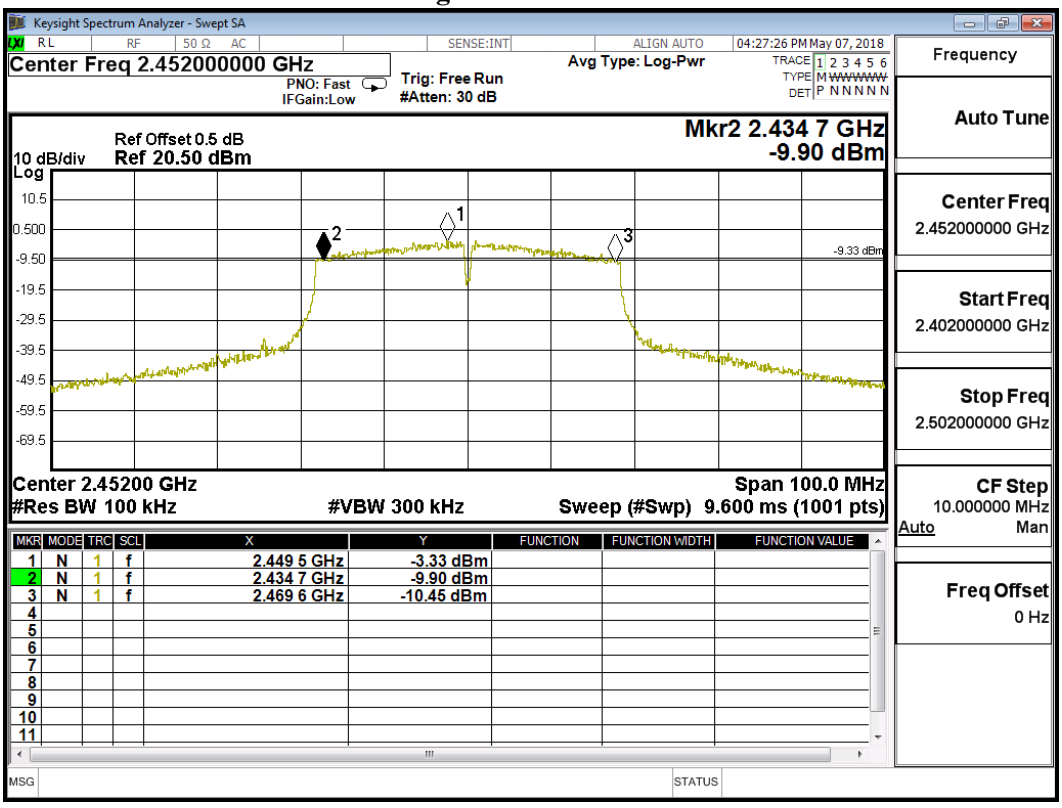
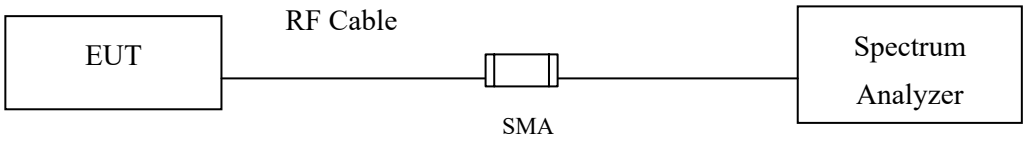


Figure Channel 09:



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

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.
The maximum power spectral density using KDB 558074 section 10.2 PKPSD (peak PSD) method.

8.4. Uncertainty

± 1.20 dB

8.5. Test Result of Power Density

Product : Smart Home DIN Rail box
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	7.830	≦8dBm	Pass
06	2437	7.930	≦8dBm	Pass
11	2462	7.970	≦8dBm	Pass

Figure Channel 01:

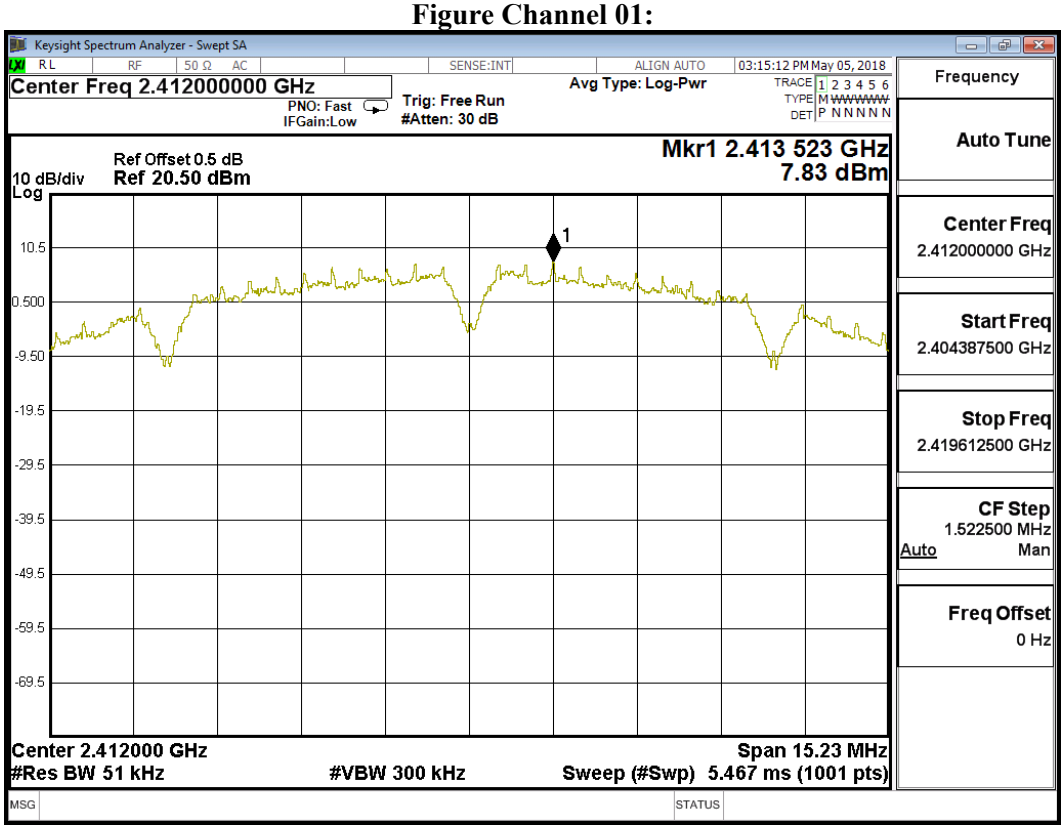


Figure Channel 06:

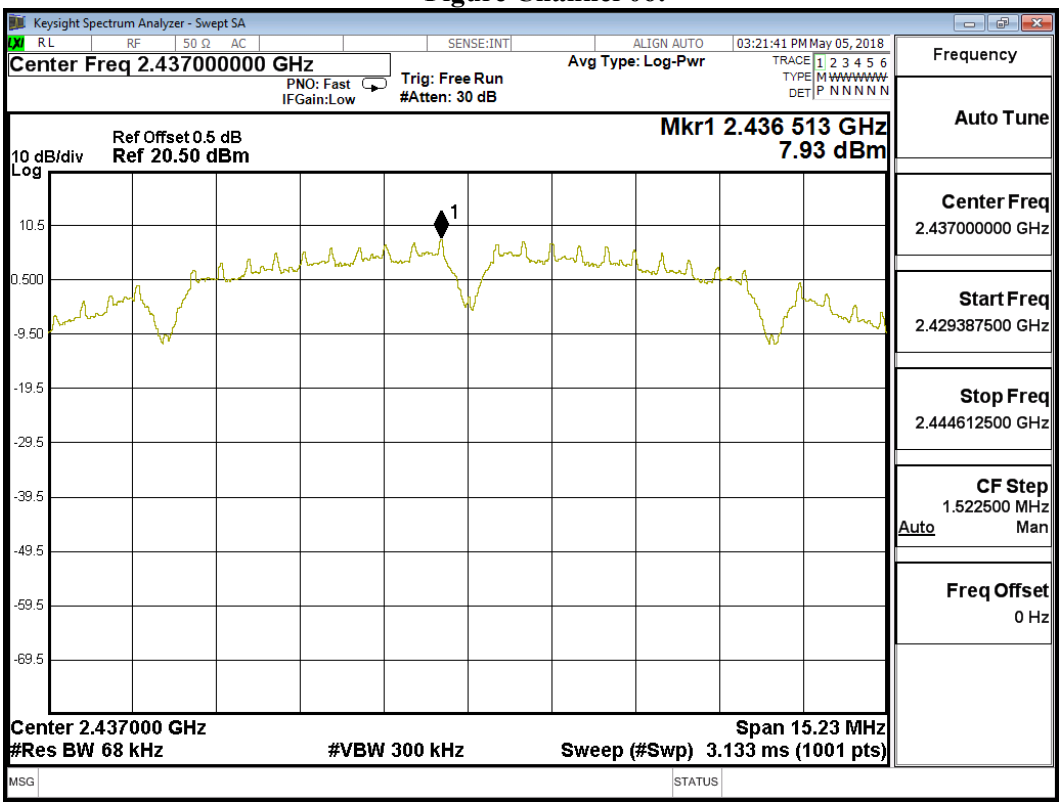
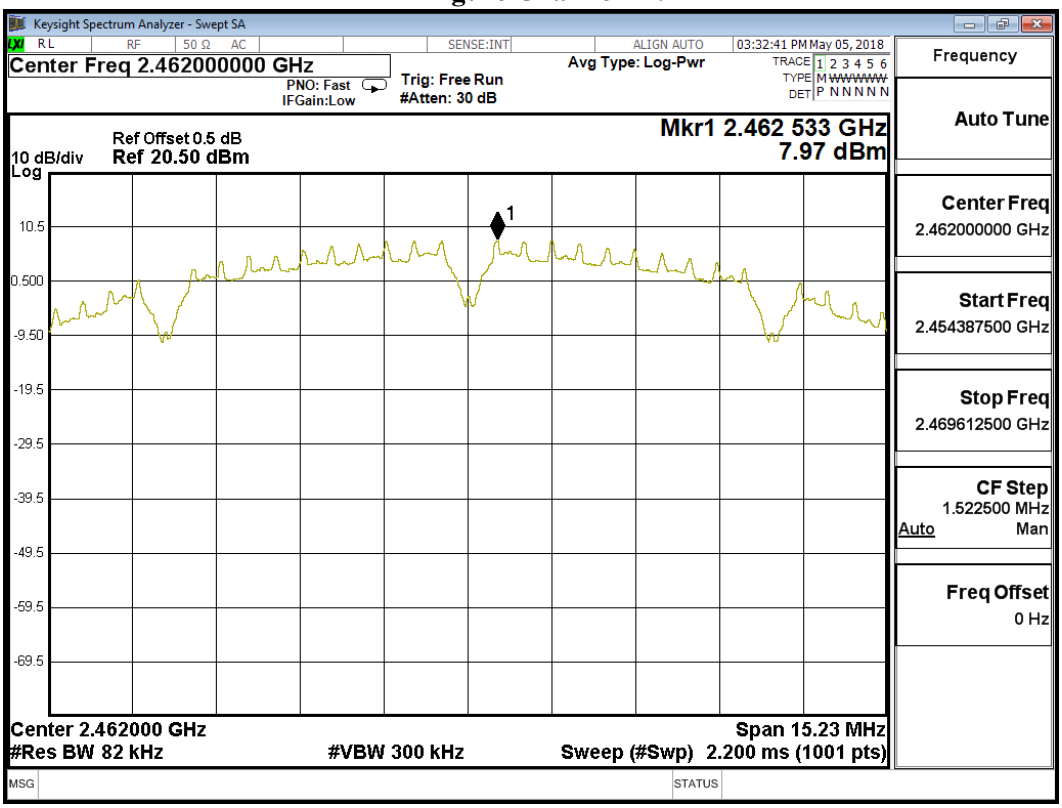


Figure Channel 11:



Product : Smart Home DIN Rail box
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	3.850	≦8dBm	Pass
06	2437	3.760	≦8dBm	Pass
11	2462	3.680	≦8dBm	Pass

Figure Channel 01:

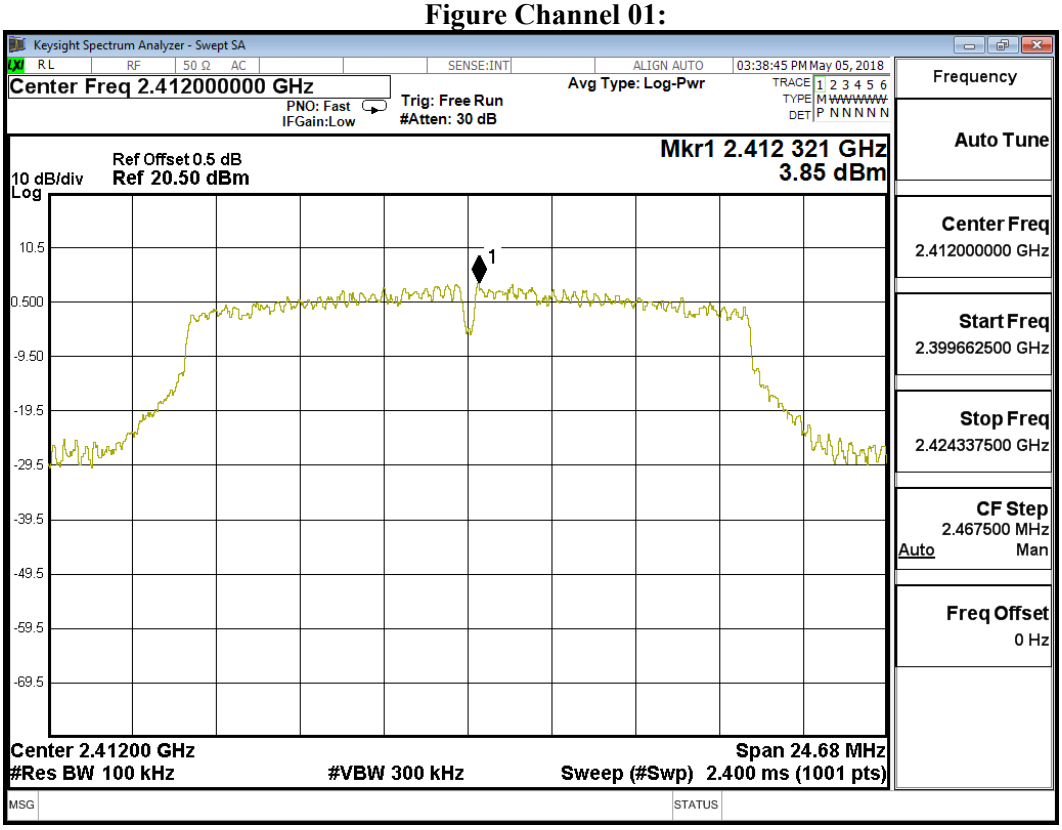


Figure Channel 06:

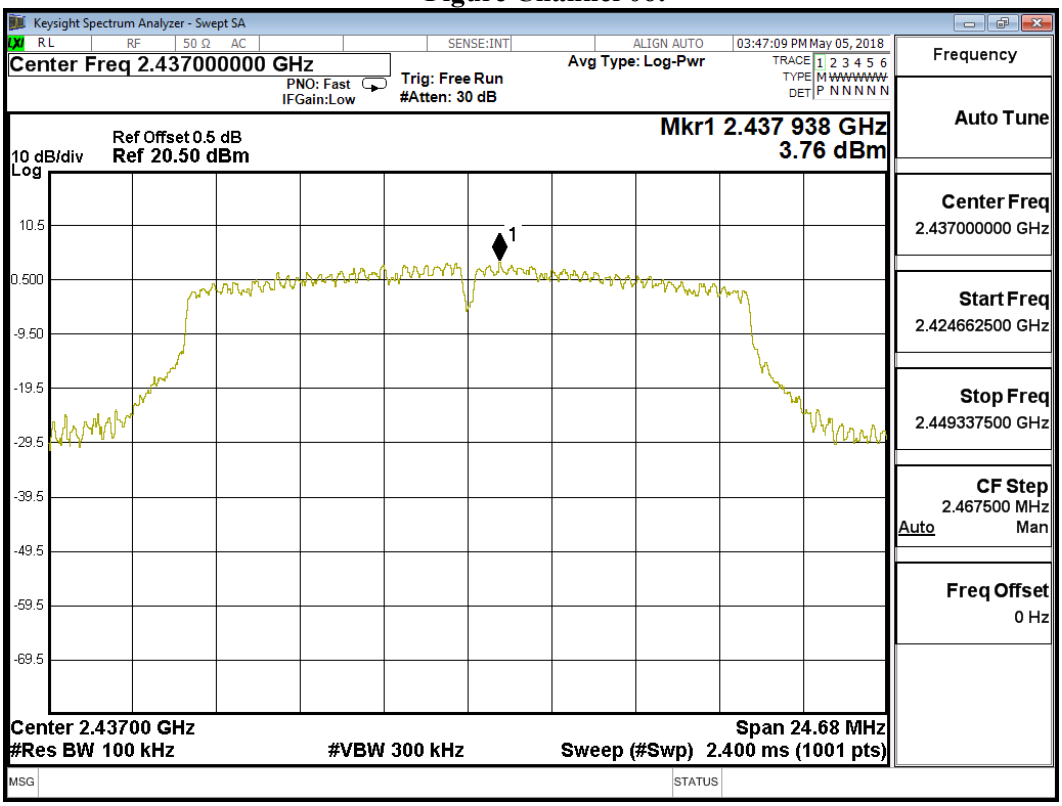
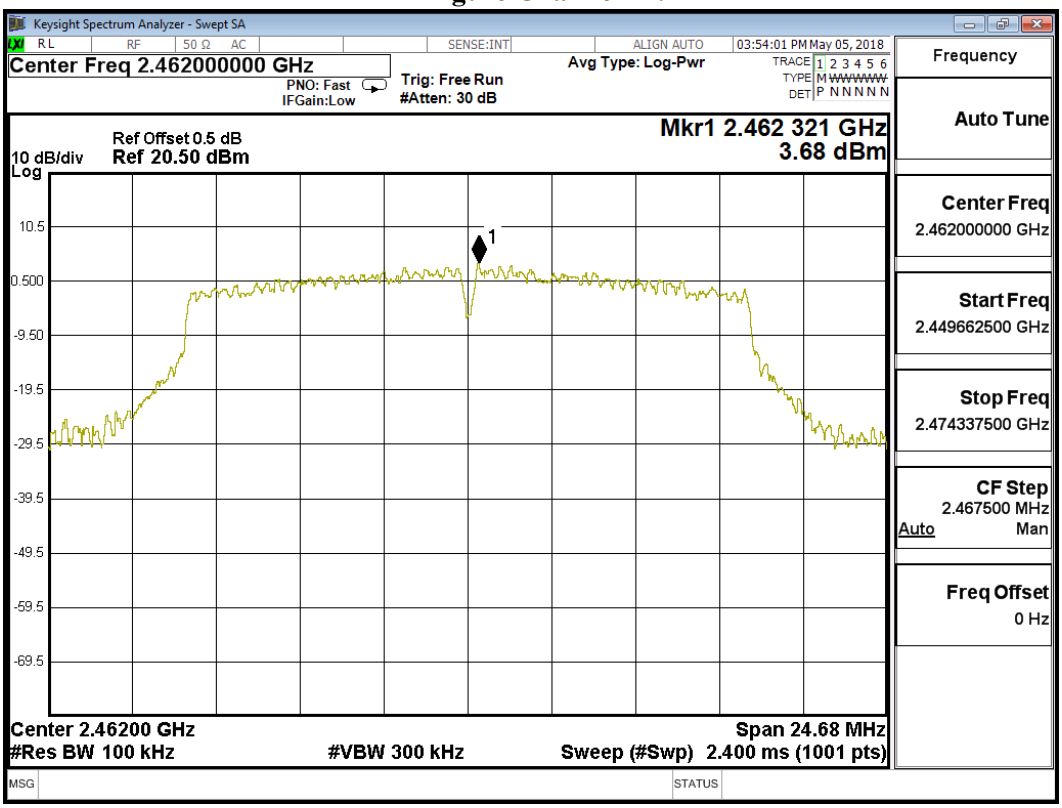


Figure Channel 11:



Product : Smart Home DIN Rail box
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	4.080	≦8dBm	Pass
06	2437	3.210	≦8dBm	Pass
11	2462	3.700	≦8dBm	Pass

Figure Channel 01:

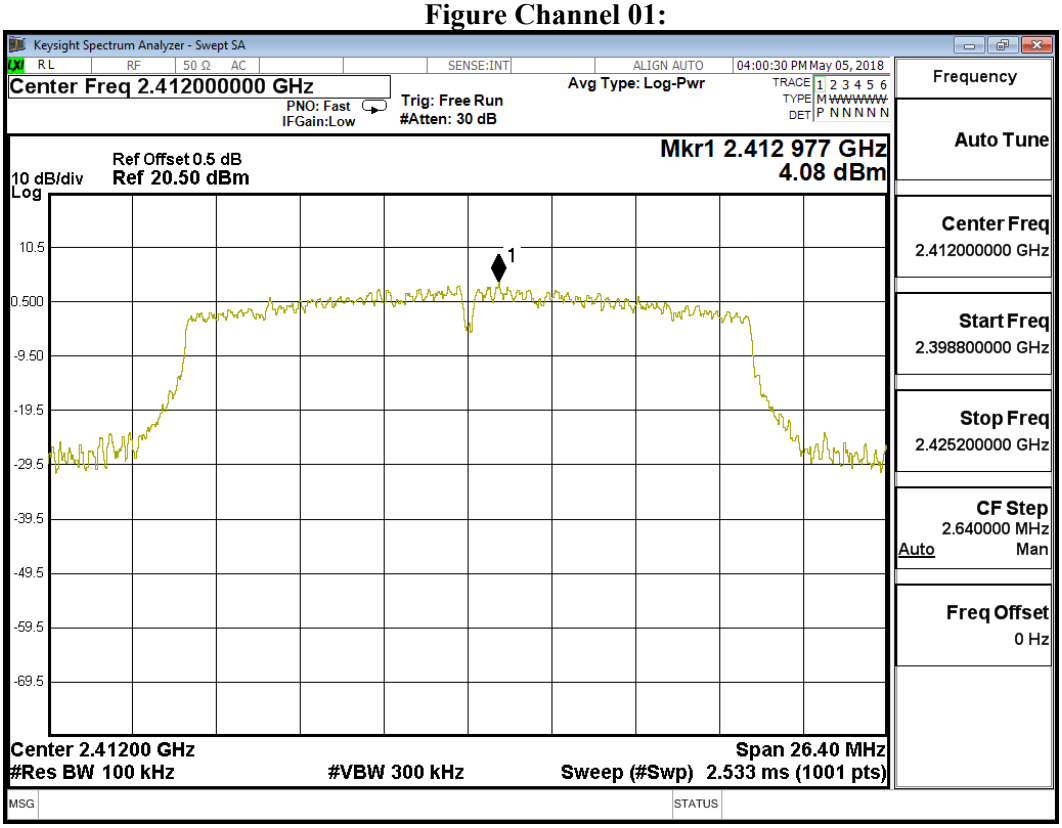


Figure Channel 06:

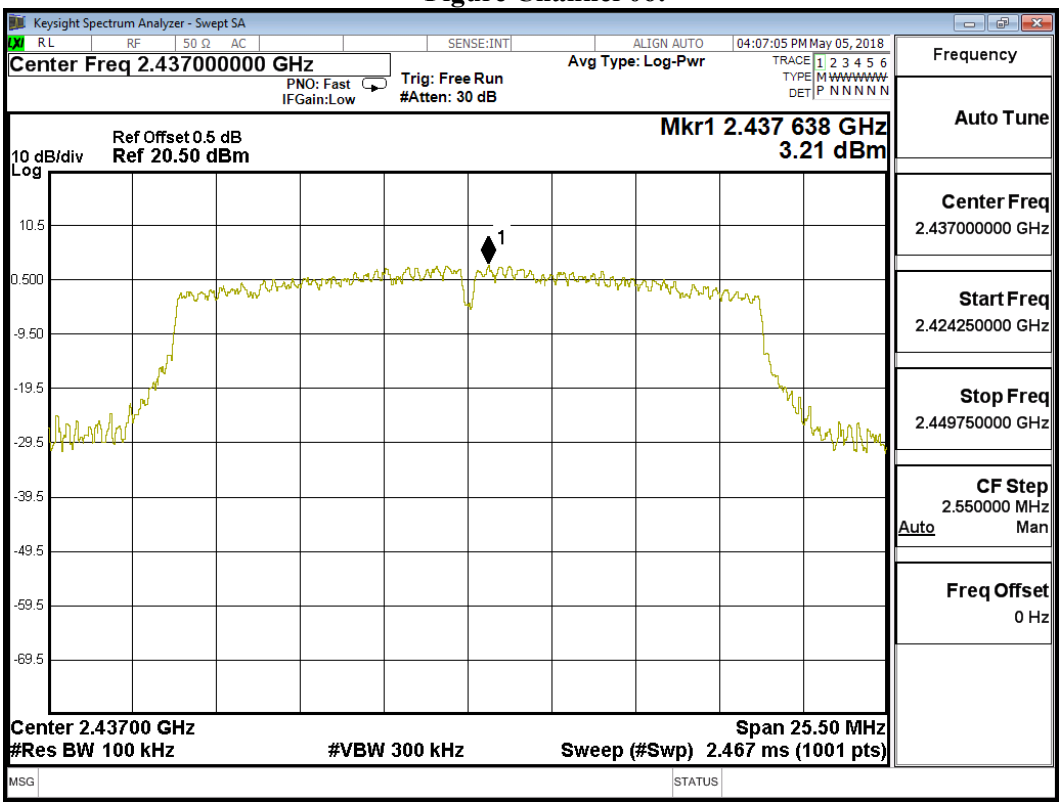
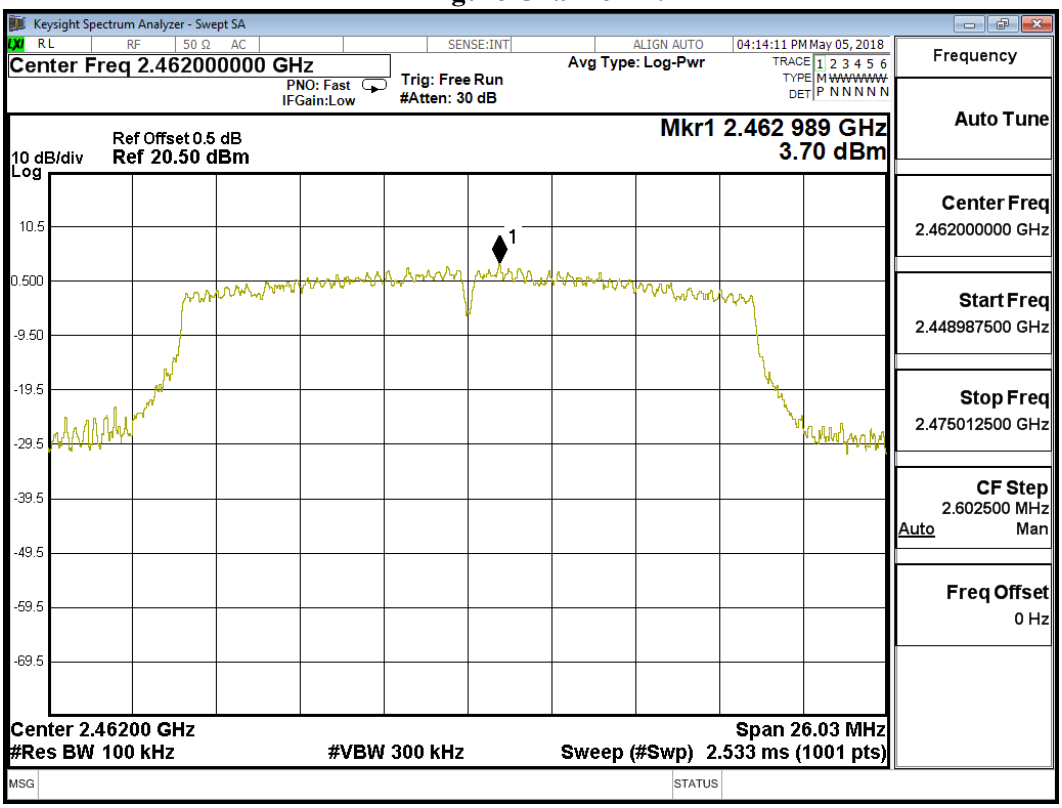


Figure Channel 11:



Product : Smart Home DIN Rail box
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	-4.800	≦8dBm	Pass
06	2437	2.540	≦8dBm	Pass
09	2452	-3.330	≦8dBm	Pass

Figure Channel 03:

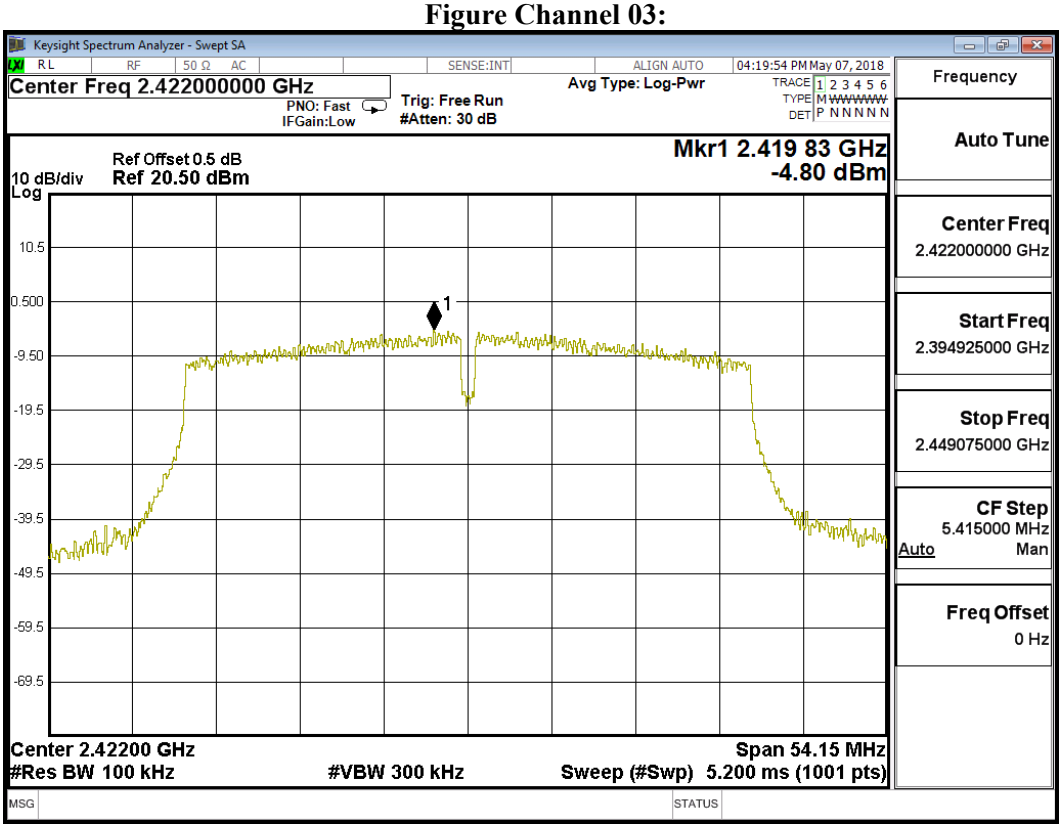


Figure Channel 06:

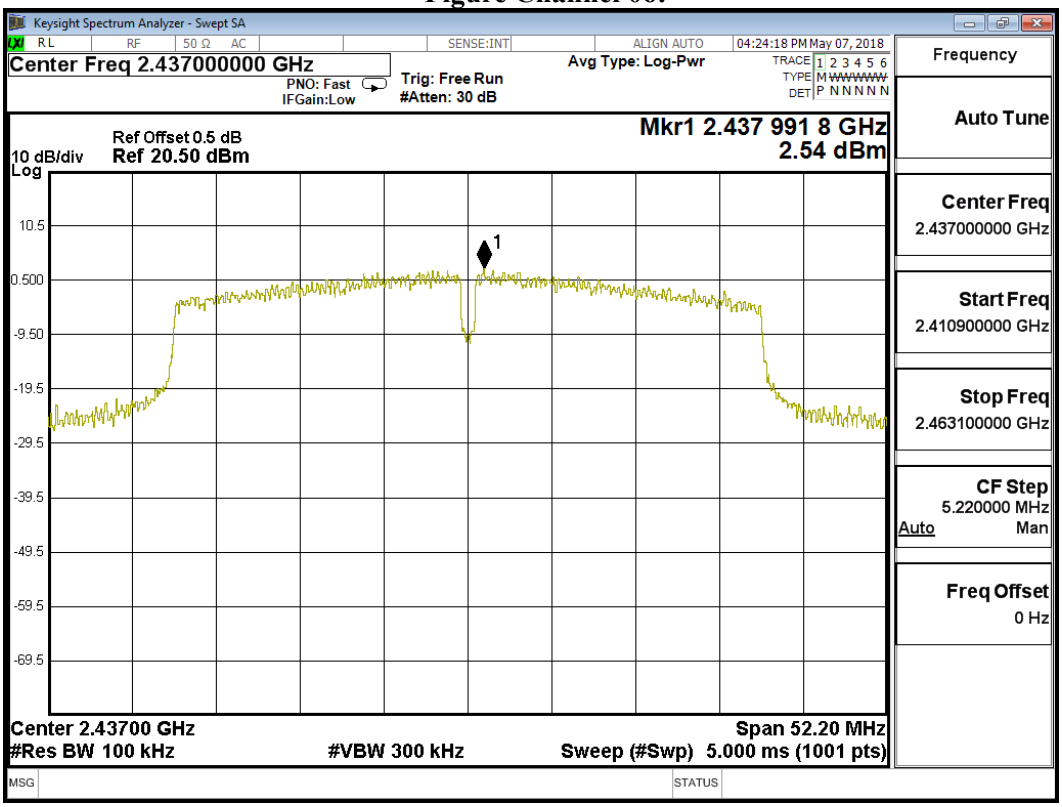
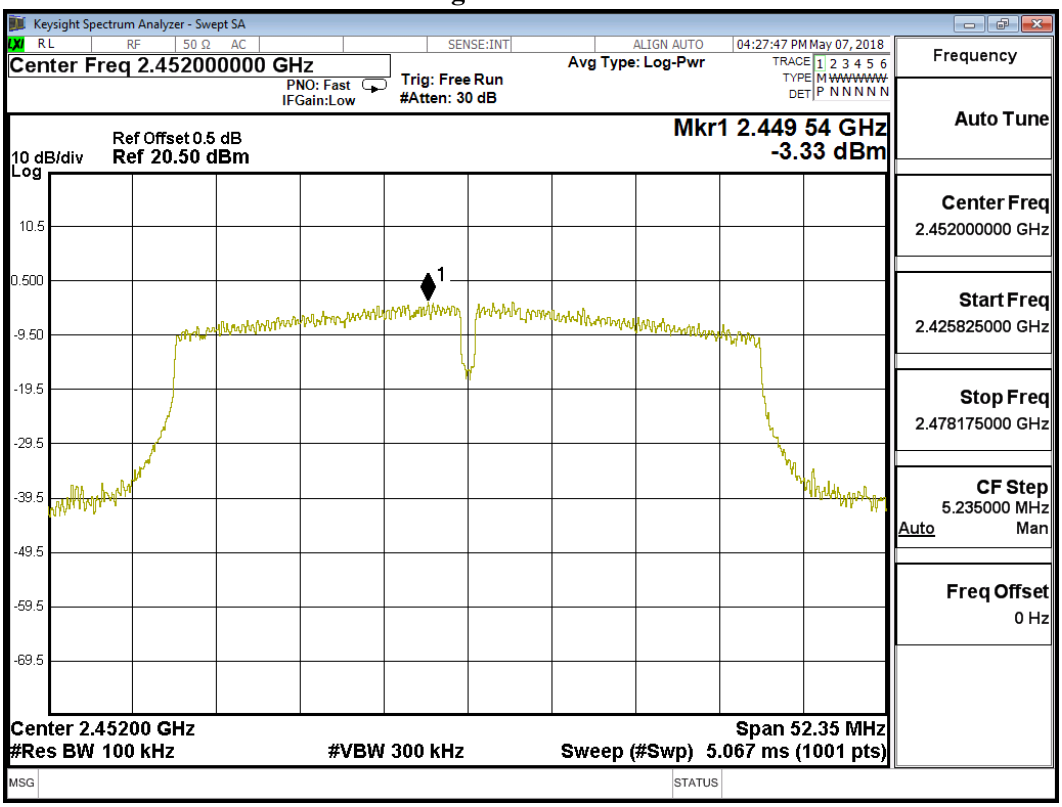
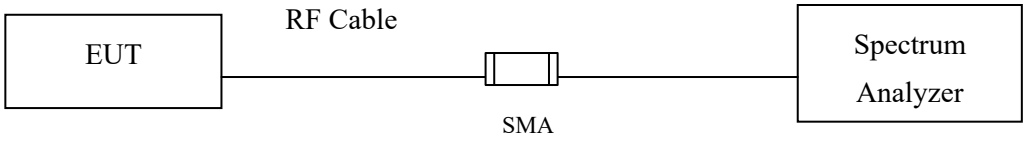


Figure Channel 09:



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

± 2.31msec

9.4. Test Result of Duty Cycle

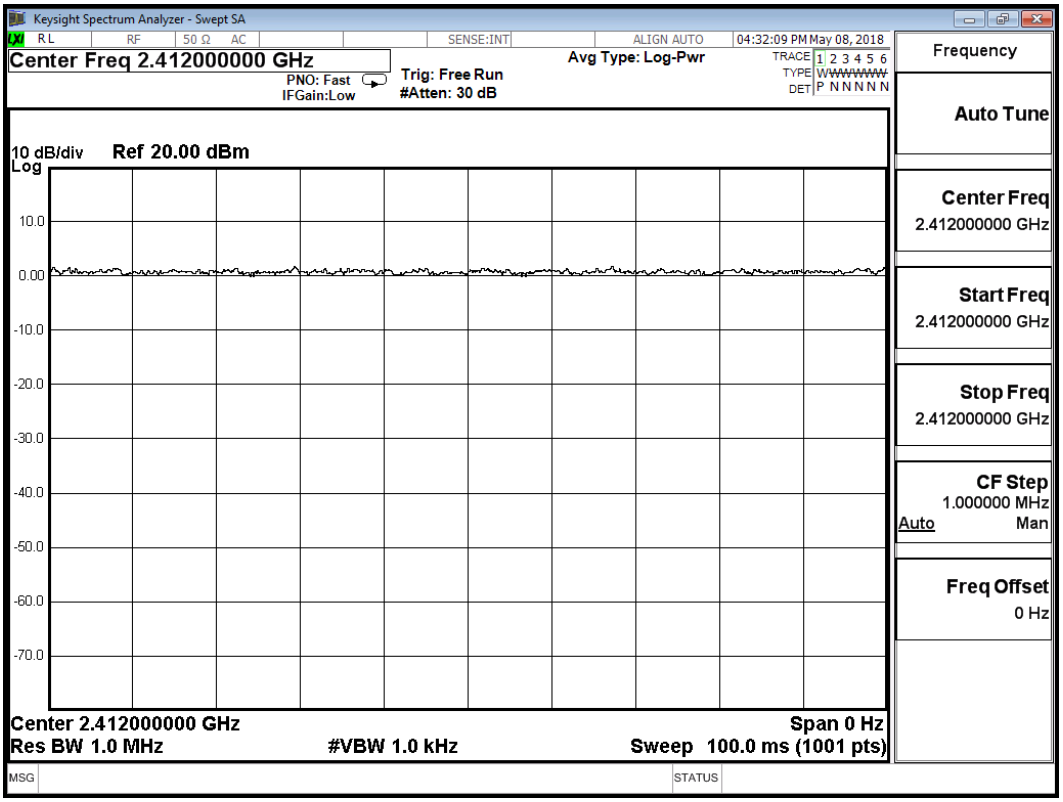
Product : Smart Home DIN Rail box
Test Item : Duty Cycle
Test Mode : Transmit

Duty Cycle Formula:
Duty Cycle = Ton / (Ton + Toff)
Duty Factor = 10 Log (1/Duty Cycle)

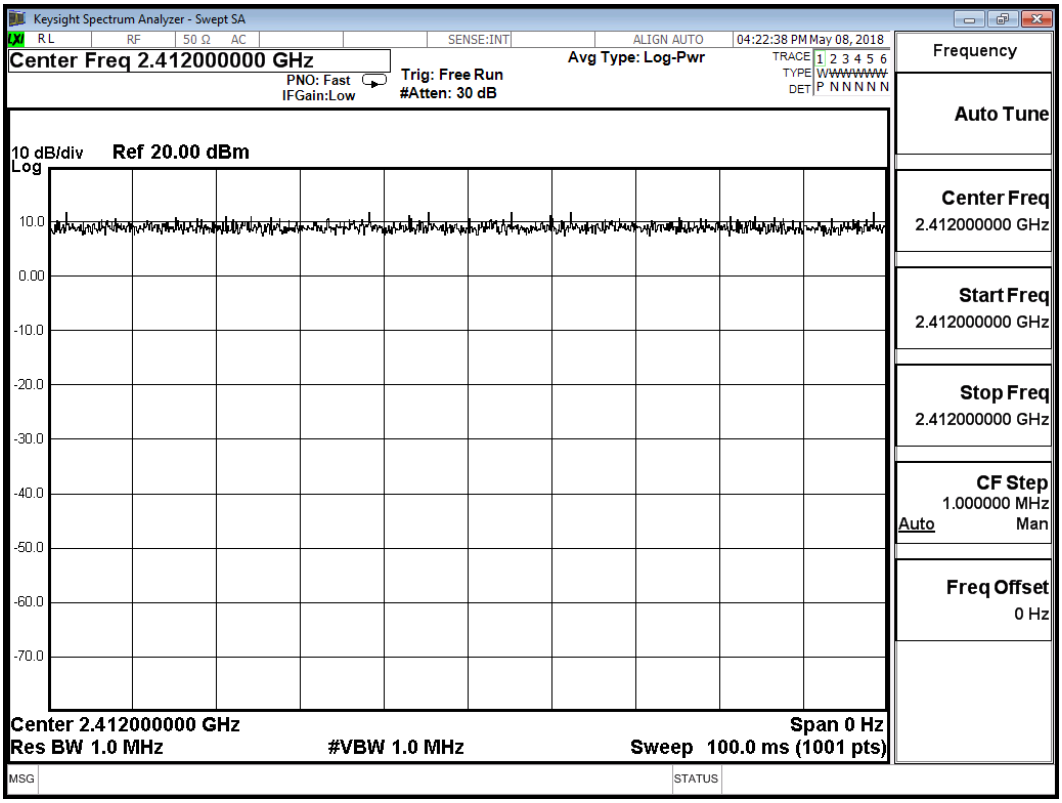
Results:

2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	--	--	100.00	0.00
802.11g	--	--	100.00	0.00
802.11n20	--	--	100.00	0.00
802.11n40	--	--	100.00	0.00

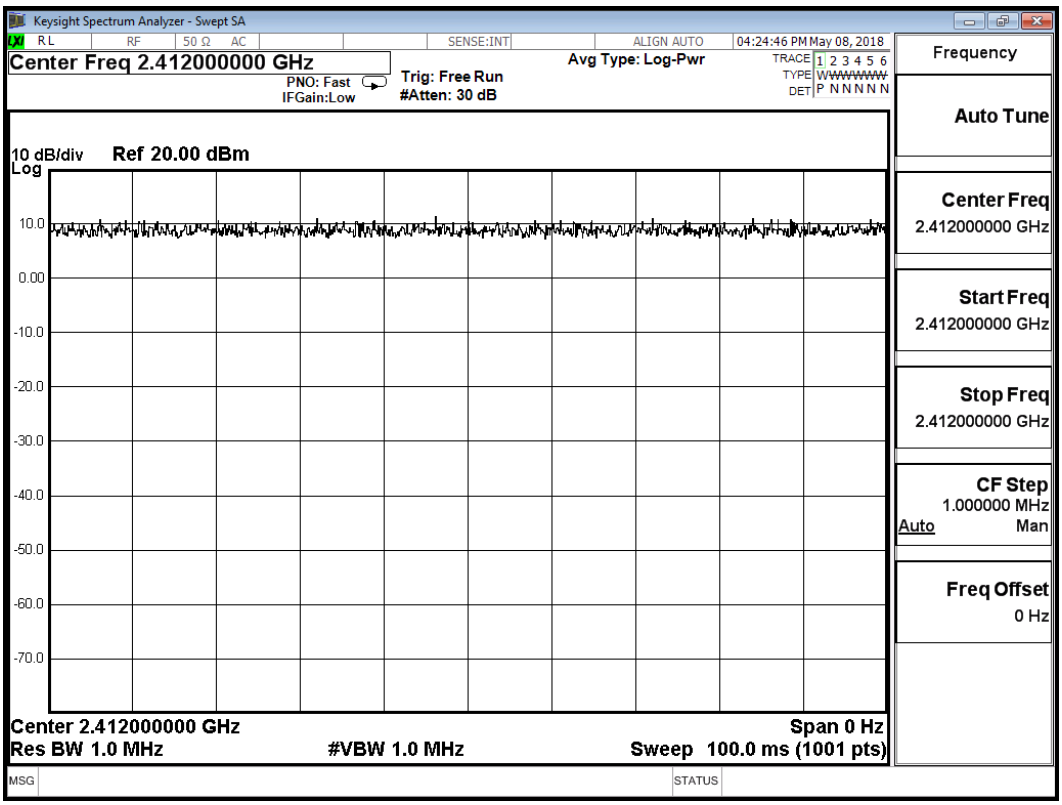
802.11b



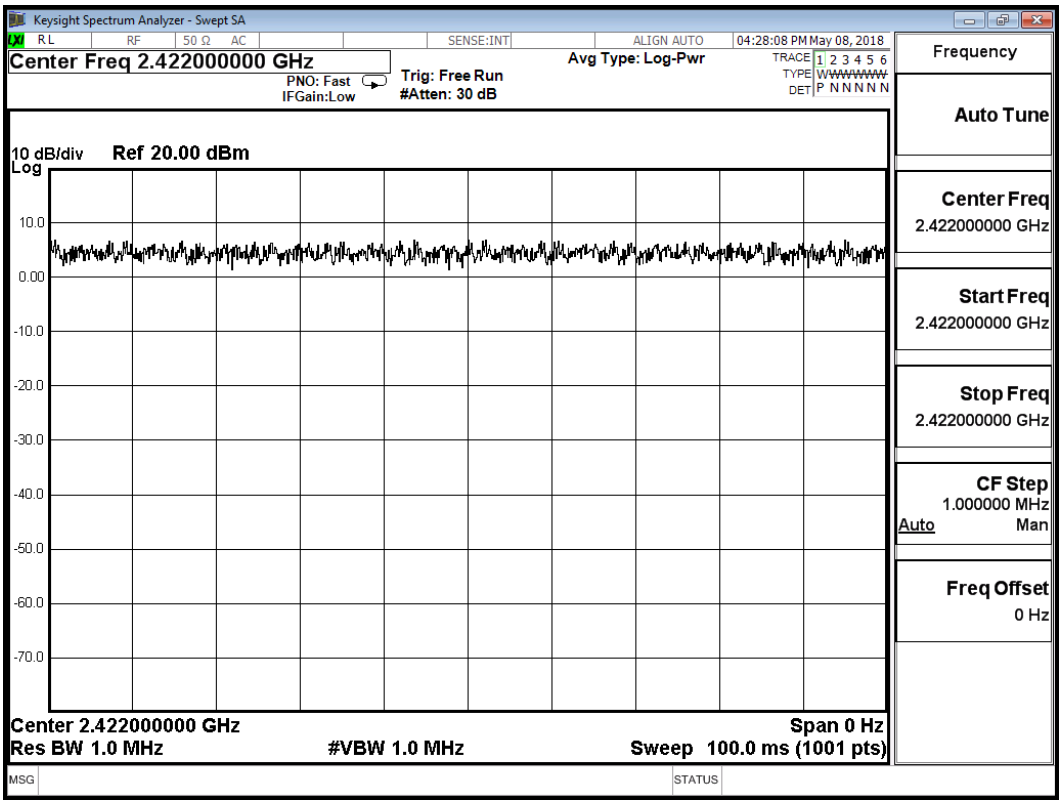
802.11g



802.11n20



802.11n40


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:28:08 PM May 08, 2018
Center Freq 2.422000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE WWWWW
DET P N N N N N
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.422000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 100.0 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.422000000 GHz
Start Freq
2.422000000 GHz
Stop Freq
2.422000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

10. EMI Reduction Method During Compliance Testing

No modification was made during testing.