

Produkte  
 Products

<b>Prüfbericht - Nr.:</b>		<b>19660361 001</b>		<b>Seite 1 von 56</b>	
<i>Test Report No.:</i>		<i>Page 1 of 56</i>			
<b>Auftraggeber:</b> <i>Client:</i>		American Megatrends India Private Limited Kumaran Nagar, Semmanchery, Off. Old Mahabalipuram Road Chennai-600119, India			
<b>Gegenstand der Prüfung:</b> <i>Test item:</i>		B.O.L.T Spirometer			
<b>Bezeichnung:</b> <i>Identification:</i>		VA08	<b>Serien-Nr.:</b> <i>Serial No.</i>	Engineering Sample	
<b>Wareneingangs-Nr.:</b> <i>Receipt No.:</i>		1803293443	<b>Eingangsdatum:</b> <i>Date of receipt:</i>	05.02.2018	
<b>Prüfart:</b> <i>Testing location:</i>		Refer Page 5 of 56 for Test site details			
<b>Prüfgrundlage:</b> <i>Test specification:</i>		FCC Part 15 Subpart C 15.247 ANSI C63.10-2013			
<b>Prüfresultat:</b> <i>Test Result:</i>		Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test items passed the test specification(s).</i>			
<b>Prüflaboratorium:</b> <i>Testing Laboratory:</i>		TÜV Rheinland (India) Pvt. Ltd. 82/A, 3rd Main, West Wing, Electronic City Phase 1 Hosur Road, Bangalore – 560 100. India FCC Test Site Registration no.: 496599			
<b>geprüft / tested by:</b>		<b>kontrolliert / reviewed by:</b>			
08.02.2018	Girish Kumar G Engineer	16.02.2018	Saibaba Siddapur Assistant Manager		
<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>
<b>Sonstiges / Other Aspects:</b>		FCC ID : 2AFV6-AMI-SPIRO-02			
<b>Abkürzungen:</b>		<b>Abbreviations:</b>			
P(ass) = entspricht Prüfgrundlage		P(ass) = passed			
F(ail) = entspricht nicht Prüfgrundlage		F(ail) = failed			
N/A = nicht anwendbar		N/A = not applicable			
N/T = nicht getestet		N/T = not tested			
<p><b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b></p> <p><i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i></p>					

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 India Tel.: +9180 6723 3500 · Fax: +9180 6723 3542 · Web: <https://www.tuv.com>

**Test Summary**

Section	Test item	Result	Remarks
15.247 (b)	Maximum Peak Conducted Output Power	Pass	-
15.247 (a) (1)	20 dB Bandwidth	Pass	
15.247 (a) (1)(III)	Number of Hopping Channels	Pass	
15.247 (a)(1)	Carrier Frequency Separation	Pass	
15.247 (a)(1)(III)	Time of Occupancy (Dwell Time)	Pass	
15.247(d)	Band Edge Compliance of RF Conducted Emissions	Pass	
15.247 (d) / (15.209 & 15.205)	Restricted bands of Emissions & Restricted Bands of Operation	Pass	
15.207	Conducted Emission Test on A.C. Power Line	Pass	

## Document History:

Version	Remarks
1.0	Issued for FCC Part 15 Subpart C 15.247

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# 1 GENERAL REMARKS

## Complimentary Materials

All attachments are integral part of this test report. This applies especially to the following appendix:

- APPENDIX 1: TEST SETUP PHOTOS
- APPENDIX 2: EUT EXTERNAL PHOTOS
- APPENDIX 3: EUT INTERNAL PHOTOS
- APPENDIX 4: FCC LABEL AND LABEL LOCATION
- APPENDIX 5: BLOCK DIAGRAM
- APPENDIX 6: SPECIFICATION OF EUT
- APPENDIX 7: SCHEMATIC DIAGRAM
- APPENDIX 8: BILL OF MATERIAL
- APPENDIX 9: USER MANUAL
- APPENDIX 10: SAR EXCLUSION CALCULATION

## 2 TEST SITES

### Testing Facilities

TÜV Rheinland (India) Private Limited  
 108 , Beside ISBR Business School,  
 Electronic city Phase I  
 Bangalore - 560 100

### List of Test and Measurement Instruments

**Table 1: List of test and measurement instruments**

Equipment	Manufacturer	Model Name	Serial Number	Calibration Due Date	Periodicity	Used for Test Items
Spectrum Analyser	Agilent Technologies	E4407B	US41192772	13.02.2018	Yearly	Antenna - Port Measurements
EMI Test Receiver	Rohde & Schwarz	ESU 40	100288	24-10-2018	Yearly	Radiated Spurious Emission
Active loop antenna	Frankonia	LAX-10	LAX-10-800	13-04-2018	Yearly	
Biconical Antenna	Schwarzbeck mess-elektronik	VHBB-9124 / BBA-9106	9124-656	09-01-19	Yearly	
Log-Periodic Antenna	Schwarzbeck mess-elektronik	VUSLP-9111B	9111B-111	16-01-19	Yearly	
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	16-03-2018	Yearly	
Emission Horn Antenna	ETS Lindgren	116706	00107323	22-06-2018	Yearly	
Semi Anechoic Chamber	Frankonia	-	-	-	-	
EMI Test Receiver	Rohde & Schwarz	ESR7	101133	13-02-2019	Yearly	Conducted Emission on AC Power Lines
Two Line V-Network (LISN)	Rohde & Schwarz	ENV216	100022	05.09.2018	Yearly	

### 3 GENERAL PRODUCT INFORMATION

#### Product Function and Intended Use

B.O.L.T Spirometer Device is intended to test lung function and perform spirometry testing for the people of all ages, excluding infants and neonates. The device must be used by a physician, respiratory therapist or by a patient under the instructions of a physician. The device is powered by 5V DC through a USB micro connector and also has internal battery for power backup. AMI Spirometer is intended to test lung function and can make spirometry testing to the people of all ages, excluding infants and neonates.

#### Ratings and System Details

Table 2: Ratings and System Details

Operating Frequency Range	2400 MHz – 2483.5 MHz;
Radio Protocol	Bluetooth ( BDR+EDR)
Verified RF Power	7.45 dBm
Channel Spacing	1 MHz
Modulation	BDR (GFSK), EDR ( Pi/4-DQPSK, 8DPSK)
Number of antennas	1
Antenna Type & gain	Chip Antenna & 0.5 dBi
Supply Voltage to Product	5 VDC from Power adaptor
Environmental conditions	Storage Condition: 10°C to 55°C Operational conditions : 16°C to 35°C

Measurement Uncertainty:

Table 3: Measurement Uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB
Temperature	±3 °C
Supply Voltages	±3 %
Time	±5 %

## 4 TEST SET-UP AND OPERATION MODE

### Principle of Configuration Selection

Transmission was enabled with hopping mode / highest possible duty cycle transmission on low, mid and high channel.

### Test Operation and Test Software

Testing software was used to enable the continuous transmission on low/mid/high channels on the EUT for the tests in this report.

### Special Accessories and Auxiliary Equipment

- None

### Countermeasures to achieve EMC Compliance

- None

### Test modes – data rates and modulations

For Radiated spurious emissions, the tests were performed for all data rates and only worst case results are reported in this report.



**List of frequencies**

**Table 4: List of Center Frequencies**

Frequency Band (MHz)	Channel No.	Channel Frequency (MHz)
<b>2400 – 2483.5 BT(BDR+EDR)</b>	0	2402
	1	2403
	2	2404
	3	2405
	:	:
	:	:
	:	:
	37	2439
	38	2440
	39	2441
	40	2442
	:	:
	:	:
	:	:
	74	2476
	75	2477
	76	2478
	77	2479
	78	2480

## 5 TEST METHODOLOGY

### Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2013. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable for below 1 GHz & 1.5 m height for above 1 GHz measurement, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000 MHz was performed by horn antenna, The measurement below 30 MHz was performed by loop antenna, Measurement from 30 MHz to 200 MHz was performed by Balloon and Biconical Antenna, and measurement from 200 MHz to 1 GHz was performed by Log-Periodic Antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.

5.1.1 Test Setup Configuration

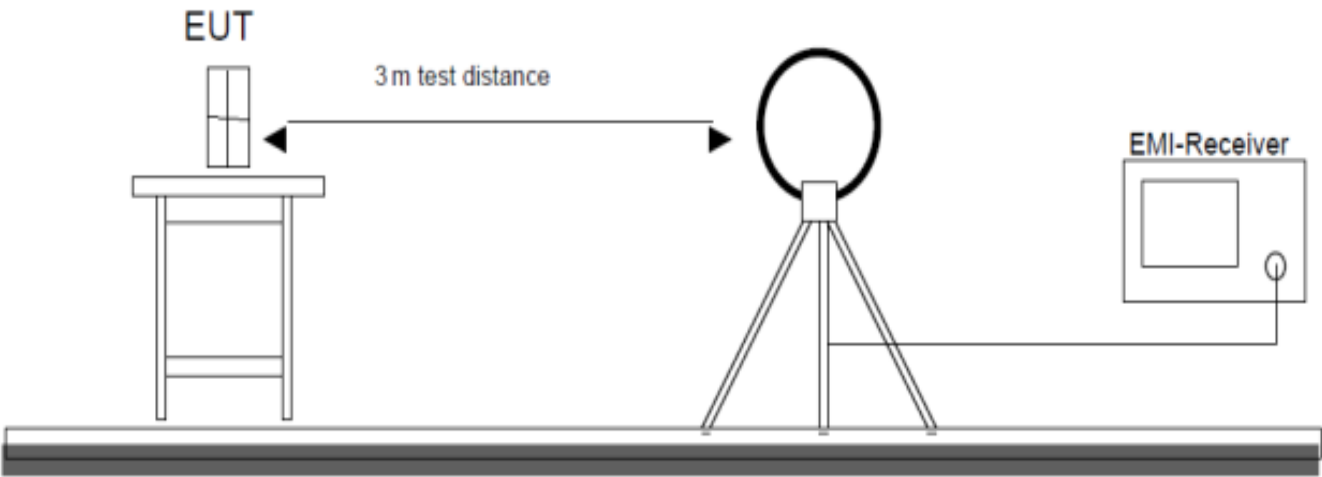


Figure 1: Frequency Range 9 kHz- 30 MHz

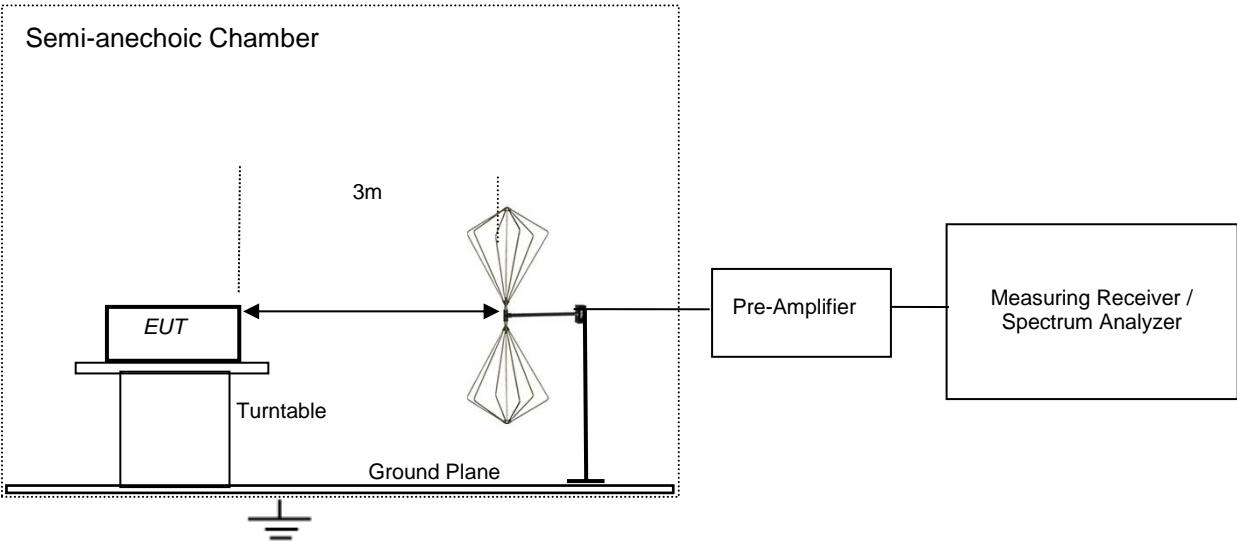


Figure 2: Frequency Range 30 MHz – 200 MHz

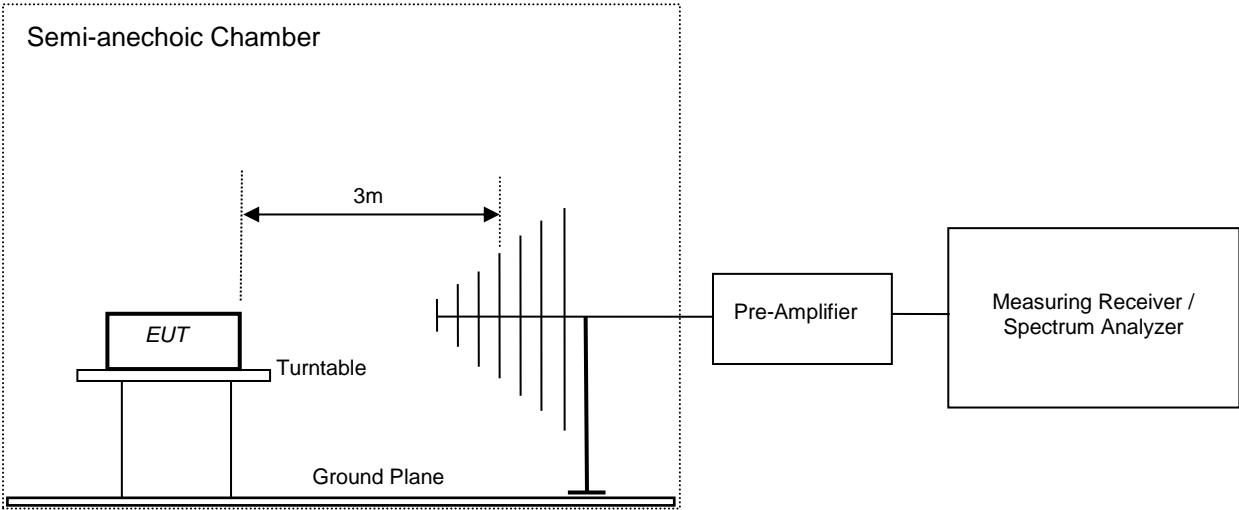


Figure 3: Frequency Range 200 MHz - 1GHz

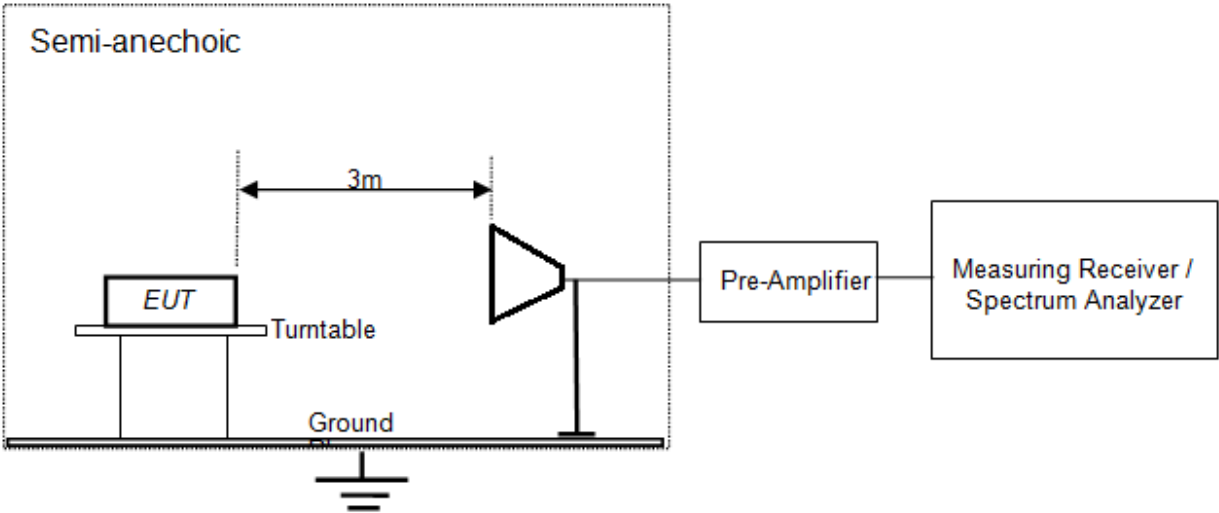


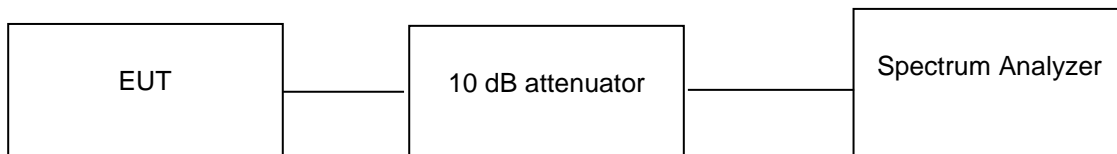
Figure 4: Frequency Range above 1 GHz

## 6 TEST RESULTS

### Maximum Peak Conducted Output Power

**Result**
**Pass**

Test Specification	FCC part 15 Subpart C 15.247 (b)(1)
Measurement Bandwidth	3MHz
Detector	Peak

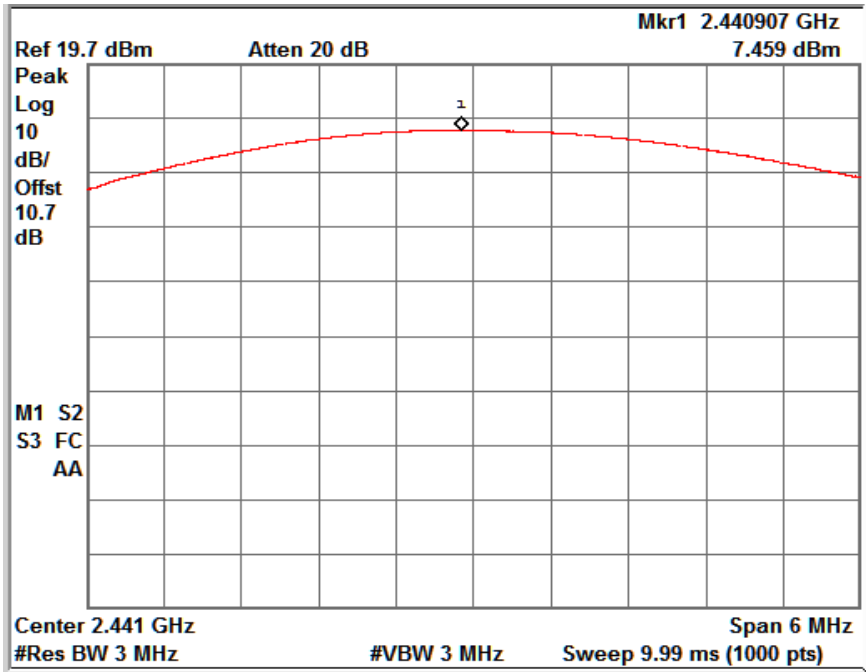
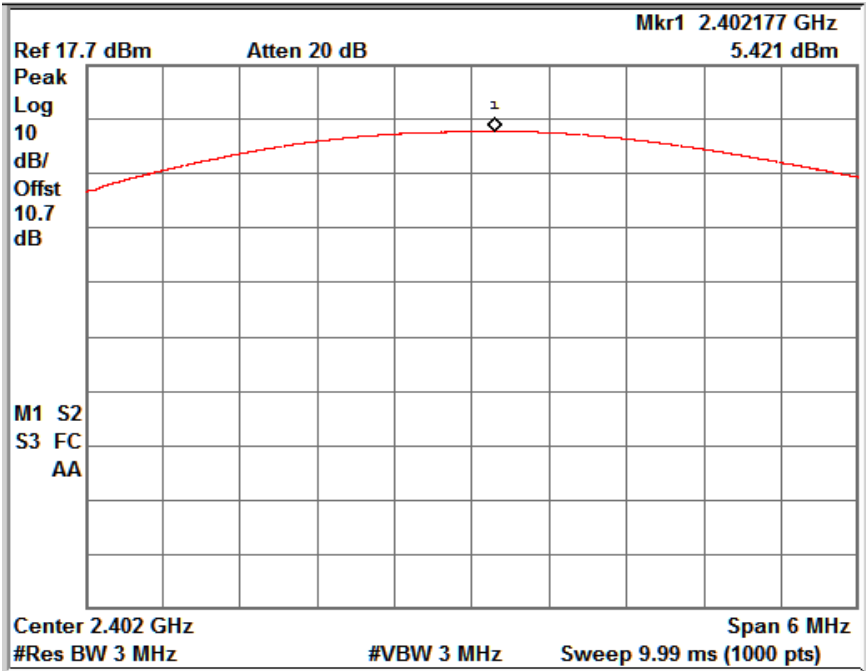

**Test results:**

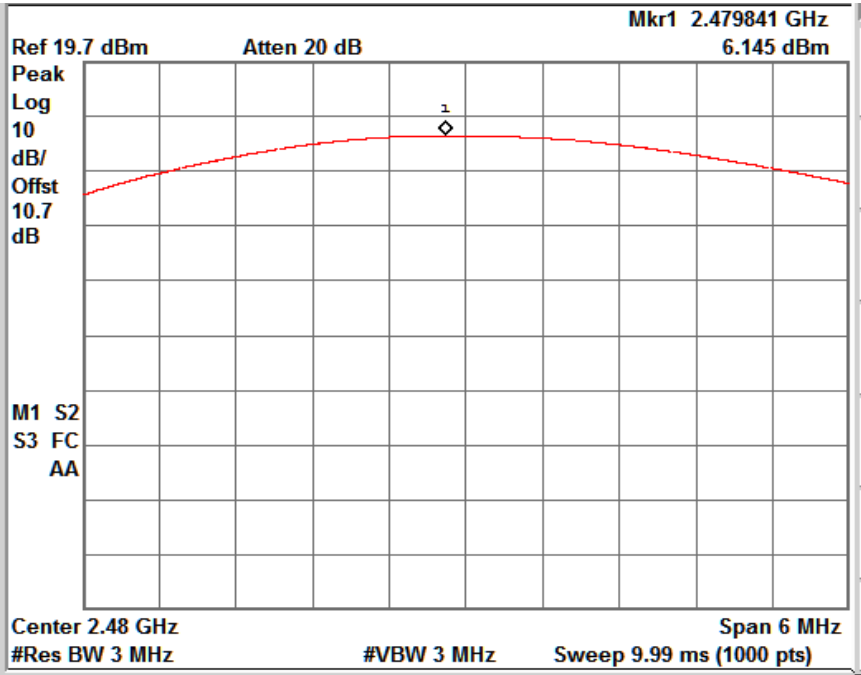
Note: Measurements are done as per FCC / DA-00-705, Filing and Measurement Guidelines for 15.247 Frequency Hopping Spread Spectrum (FHSS) Systems Mar.30, 2000 mentioned in ANSI C63.10-2013.

10 dB attenuator + 0.7 Cable loss = 10.7 dB offset is considered in below result

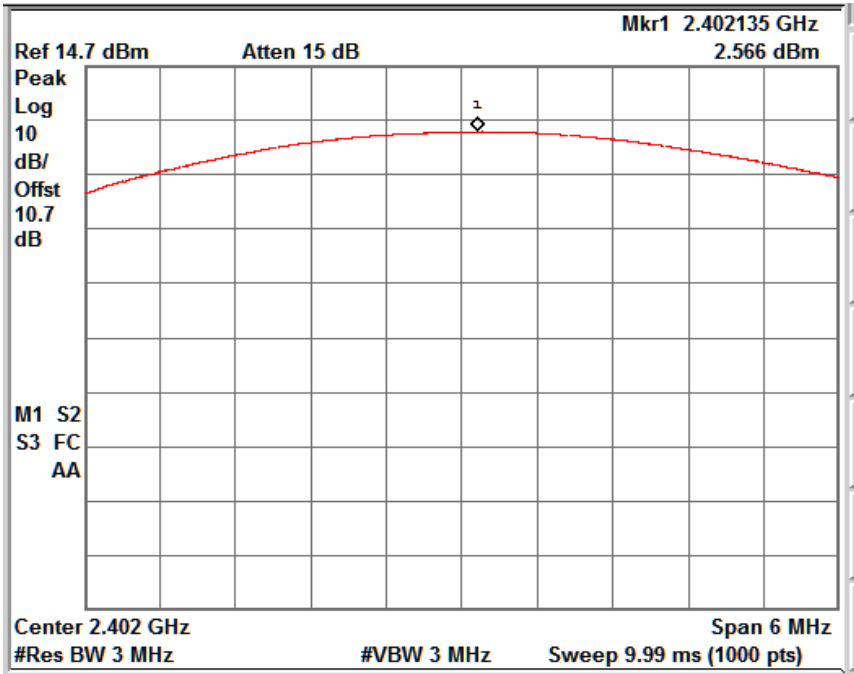
**Table 5: Maximum peak conducted output power verified Test Results**

Modulation Type	Channel Frequency (MHz)	Output power (dBm)	Limit (dBm)
1 Mbps	2402	5.421	30.00
	2441	7.459	30.00
	2480	6.145	30.00
2 Mbps	2402	2.566	20.96
	2441	5.233	20.96
	2480	3.888	20.96
3 Mbps	2402	3.934	20.96
	2441	6.166	20.96
	2480	4.925	20.96

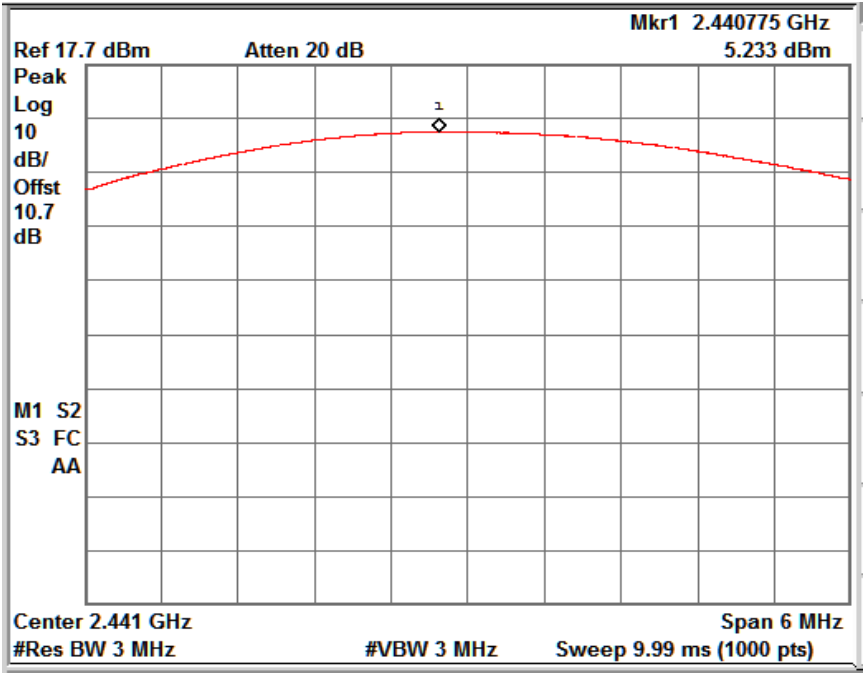




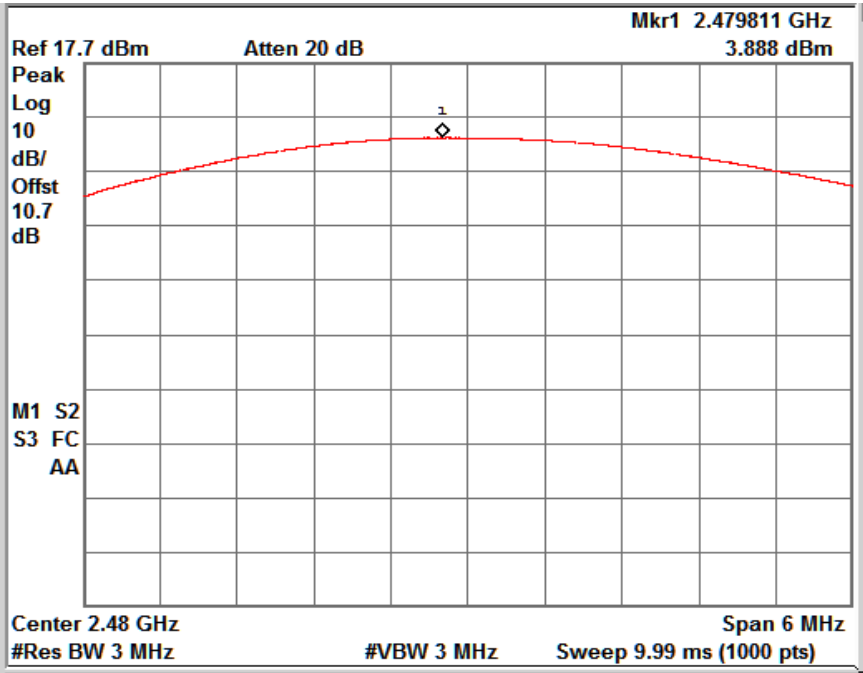
1 Mbps Channel high – 2480 MHz



2 Mbps Channel low – 2402 MHz

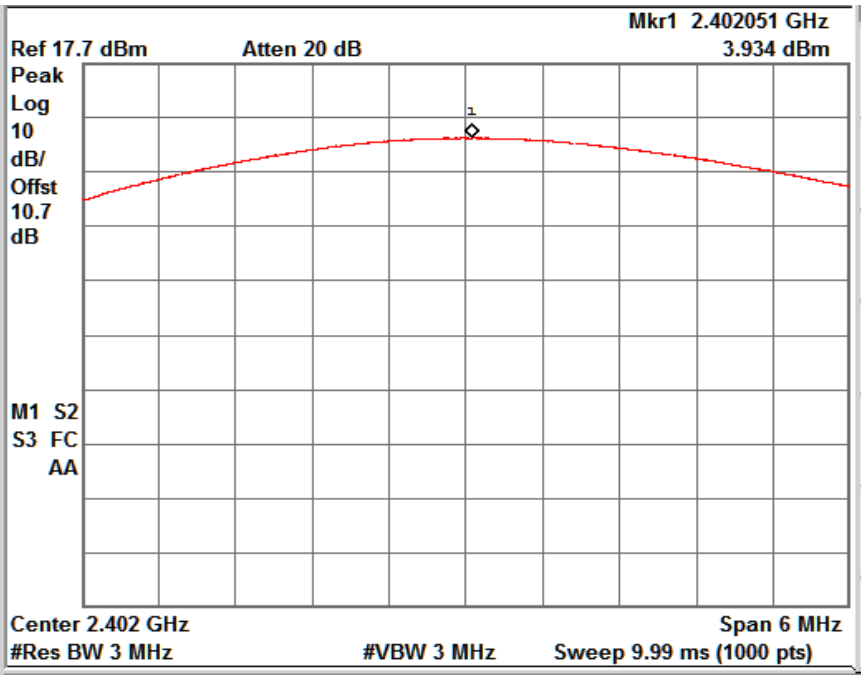


2 Mbps Channel mid – 2441 MHz

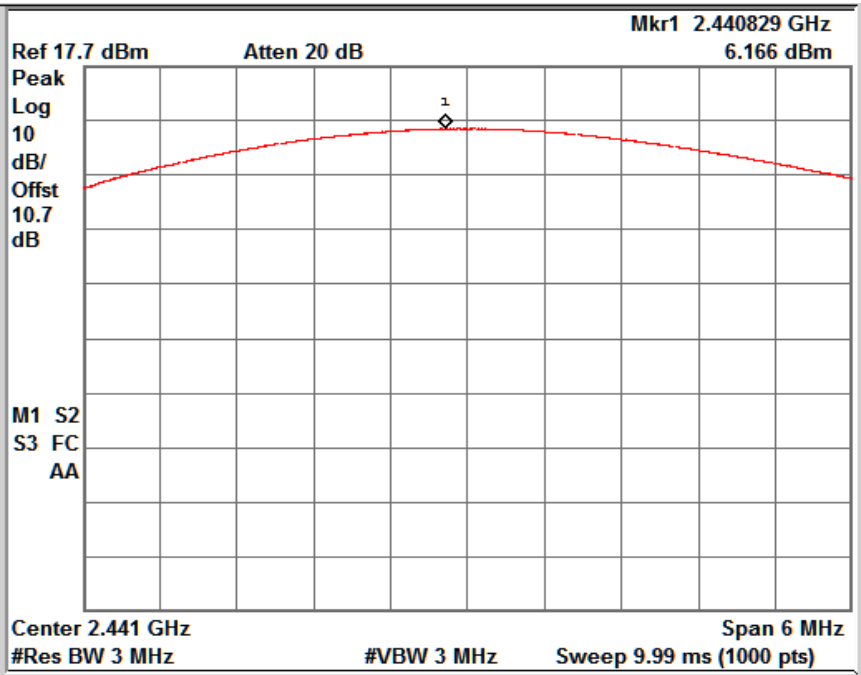


2 Mbps Channel high – 2480 MHz

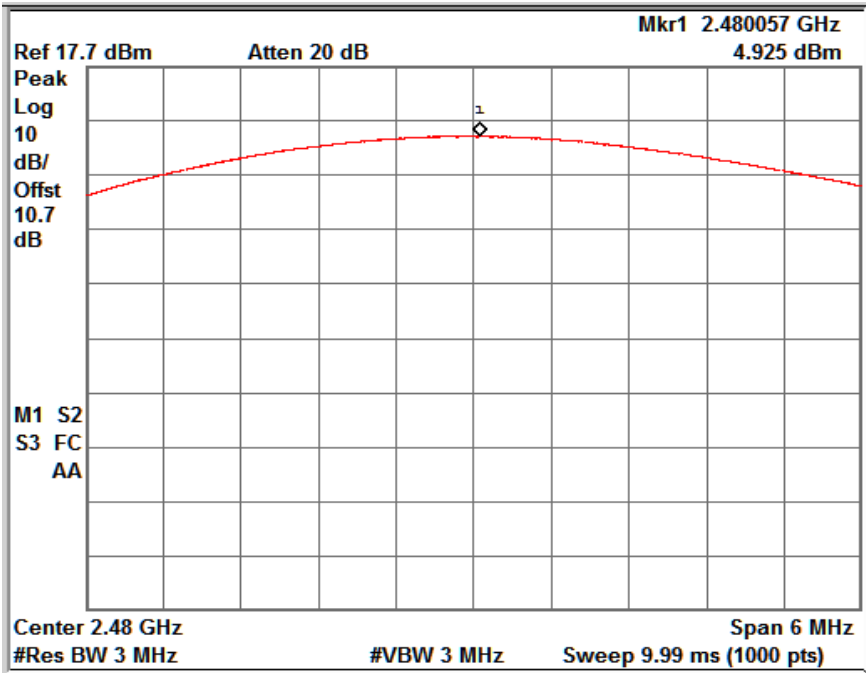




3 Mbps Channel low – 2402 MHz



3 Mbps Channel mid – 2441 MHz



3 Mbps Channel high – 2480 MHz

**20 dB Bandwidth**
**Result**
**Pass**

Test Specification

FCC part 15 Subpart C Section 15.247 (a)(1)

Detector

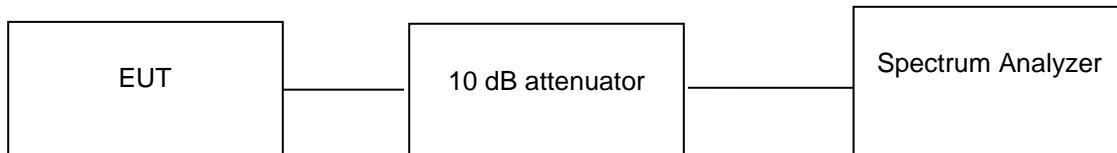
Peak

Port of testing

Antenna Port

Requirement

The bandwidth of frequency hopping channel is the 20 dB emission bandwidth , measured with the hopping stopped. The system RF bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The hopset shall be such that the near-term distribution of frequencies appears random , with sequential hops randomly distributed in both direction and magnitude of change in the hopset while the long-term distribution appears evenly distributed.

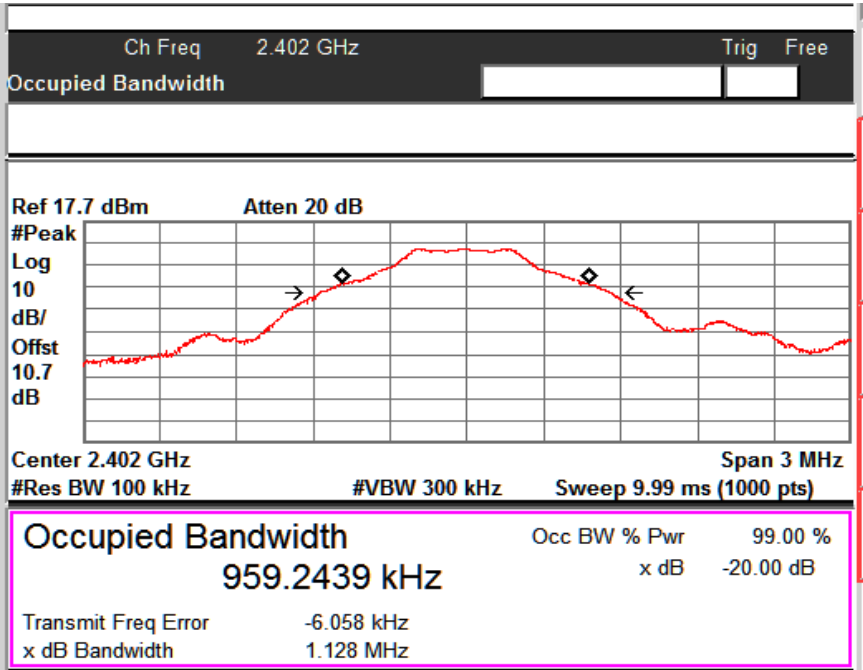

**Test results:**

Note: Measurements are done as per FCC / DA-00-705, Filing and Measurement Guidelines for 15.247 Frequency Hopping Spread Spectrum (FHSS) Systems Mar.30, 2000 mentioned in ANSI C63.10-2013.

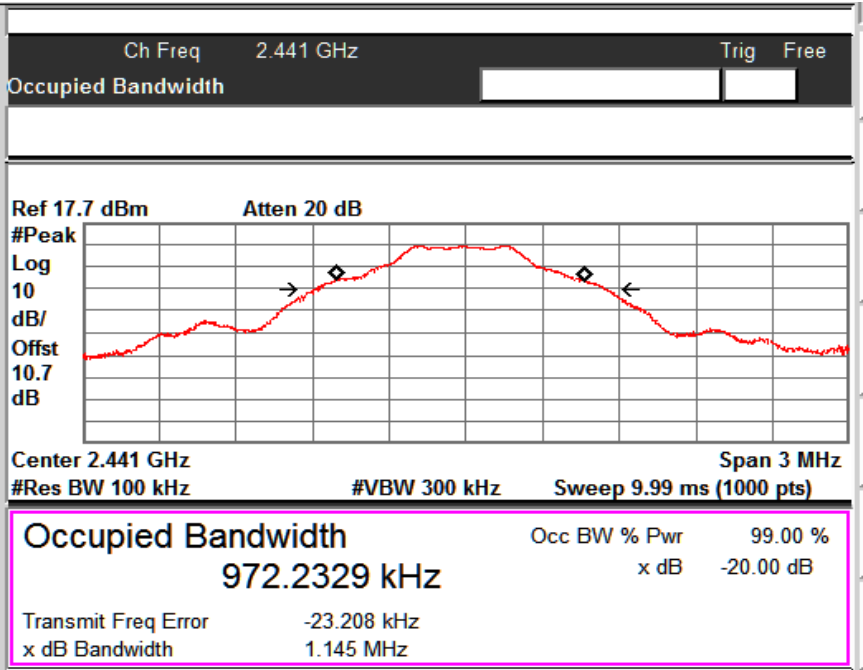
10 dB attenuator + 0.7 Cable loss = 10.7 dB offset is considered in below result

**Table 6: 20dB Bandwidth and Occupied Bandwidth Test Results**

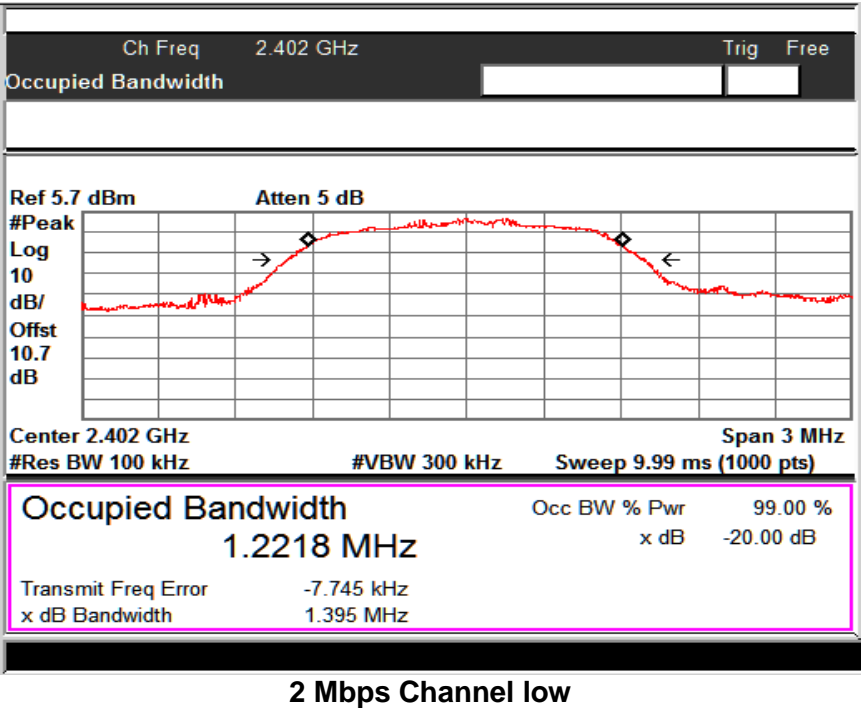
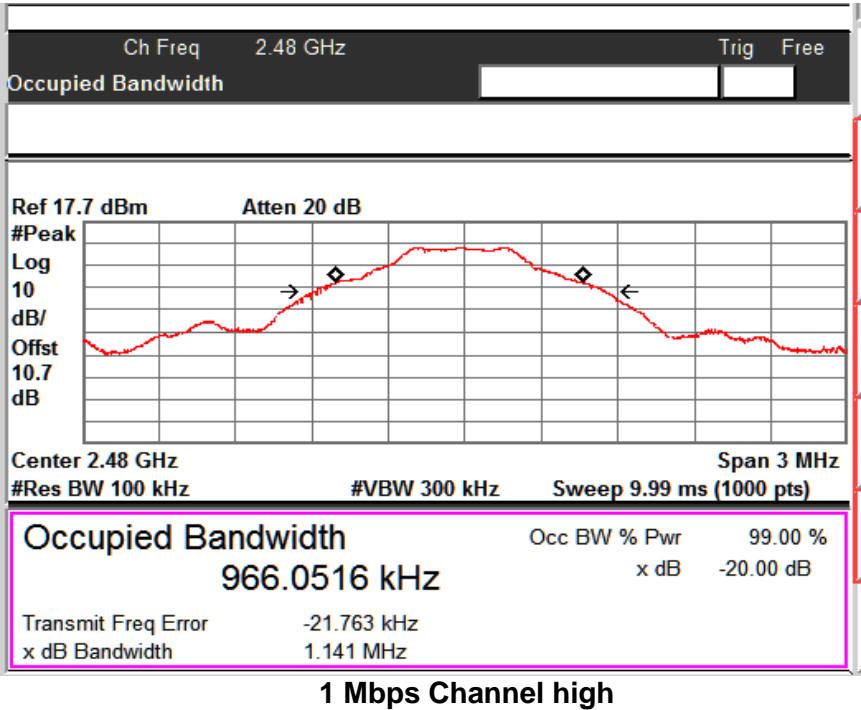
Modulation type	Channel Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
1 Mbps	2402	1.128	0.959
	2441	1.145	0.972
	2480	1.141	0.966
2 Mbps	2402	1.395	1.221
	2441	1.387	1.229
	2480	1.388	1.232
3 Mbps	2402	1.386	1.228
	2441	1.389	1.235
	2480	1.391	1.237

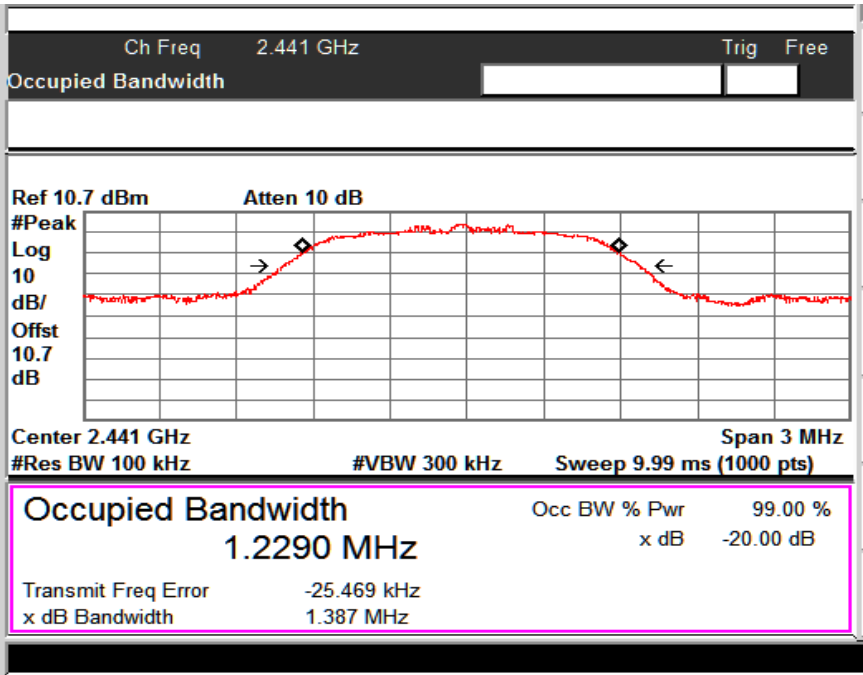


1 Mbps Channel low

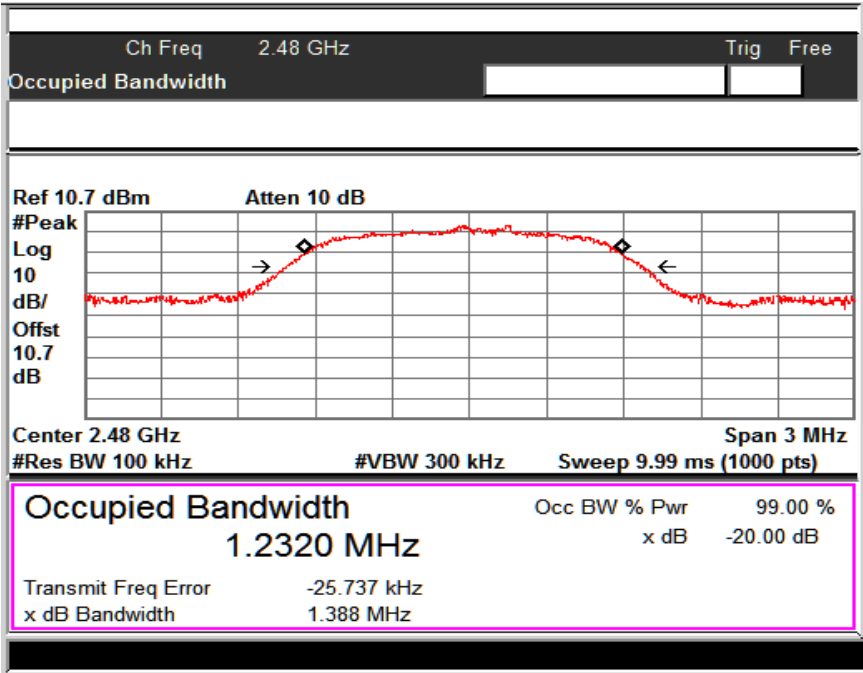


1 Mbps Channel mid

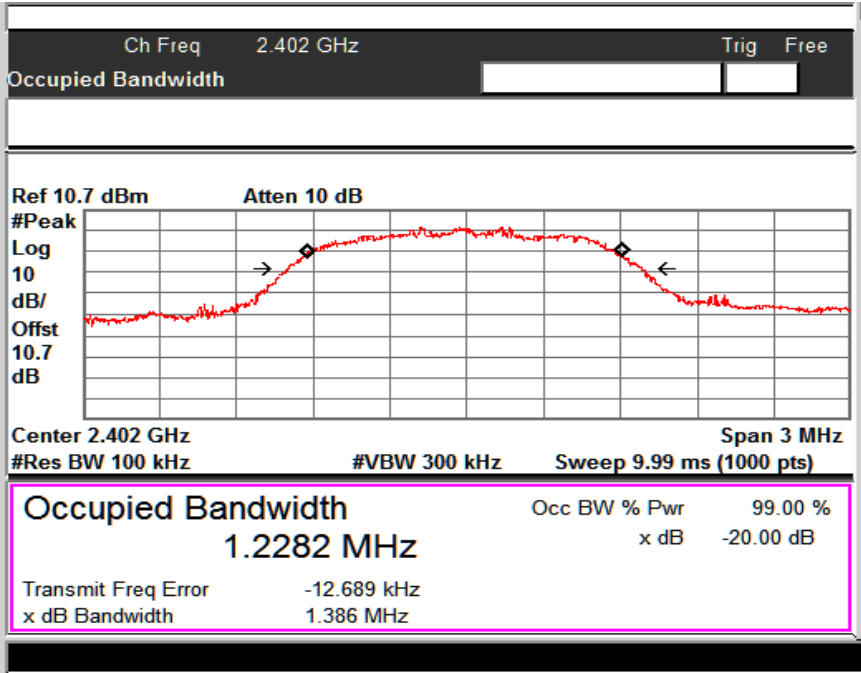




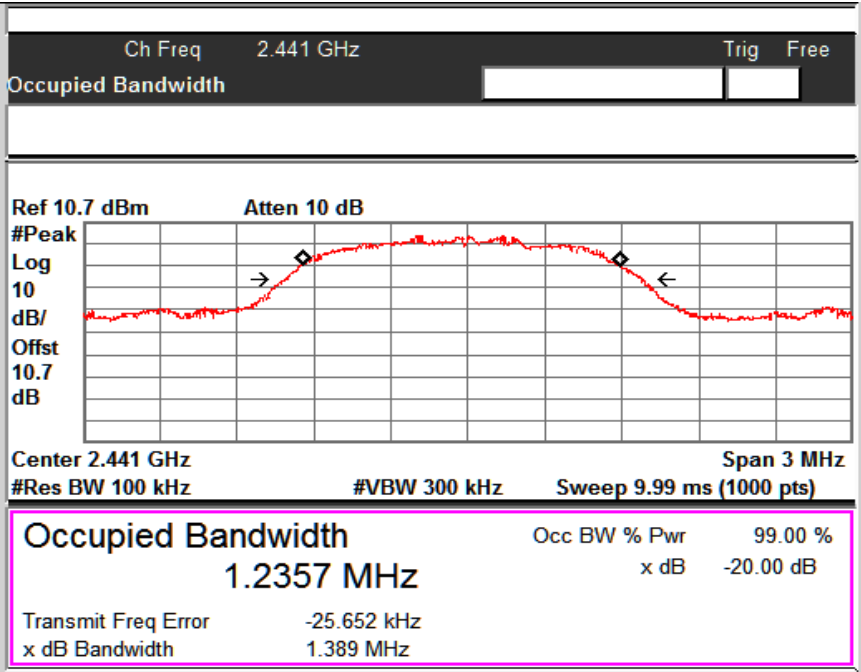
2 Mbps Channel mid



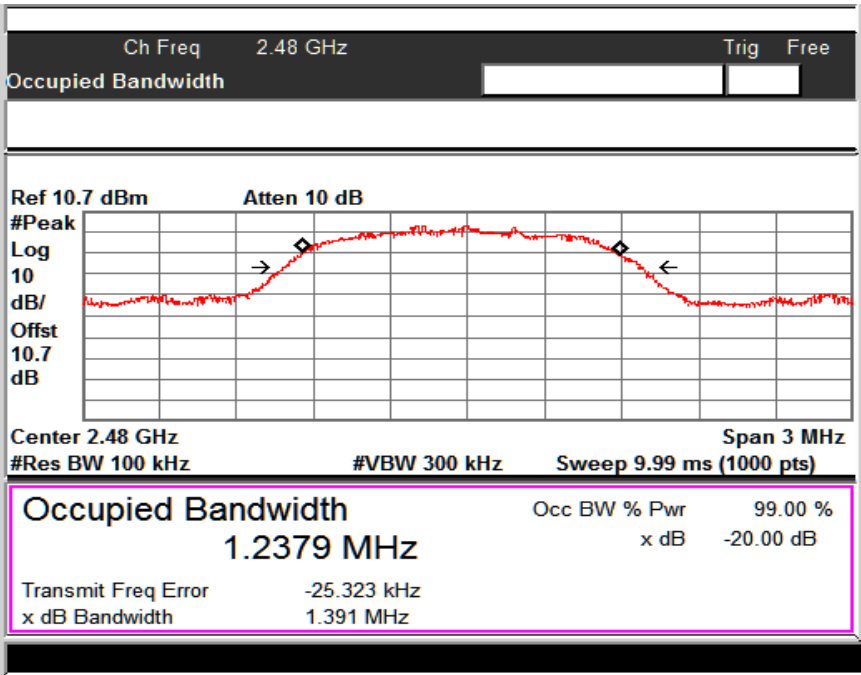
2 Mbps Channel high



3 Mbps Channel low



3 Mbps Channel mid



3 Mbps Channel high



Number of Hopping Channels

Result

Pass

Test Specification

FCC Part 15 Subpart C Section 15.247 (a) (1)

Detector Function

Peak

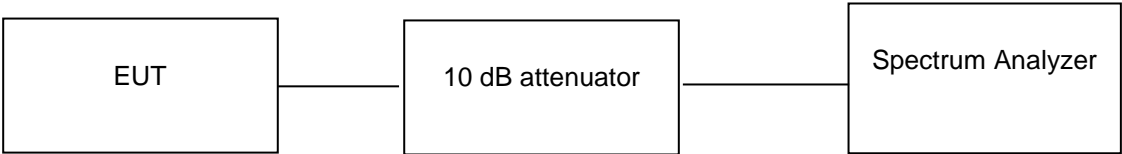
Port of testing

Antenna port

Requirement

Frequency hopping systems operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels

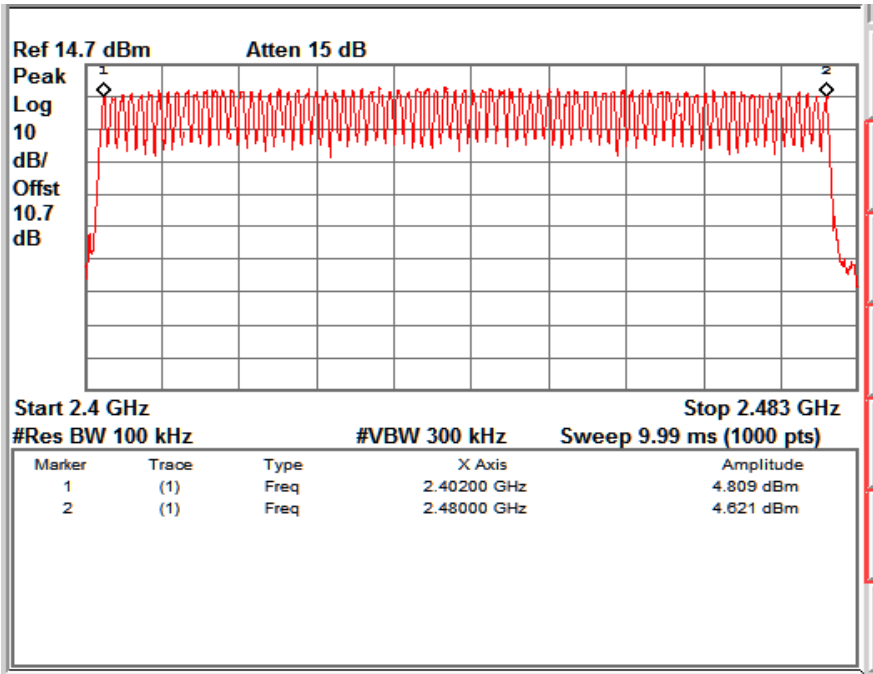
Test Method:



Note: Measurements are done as per FCC / DA-00-705, Filing and Measurement Guidelines for 15.247 Frequency Hopping Spread Spectrum (FHSS) Systems Mar.30, 2000 mentioned in ANSI C63.10-2013.

10 dB attenuator + 0.7 Cable loss = 10.7 dB offset is considered in below result

Test results:



Total Number of hopping channels = 79

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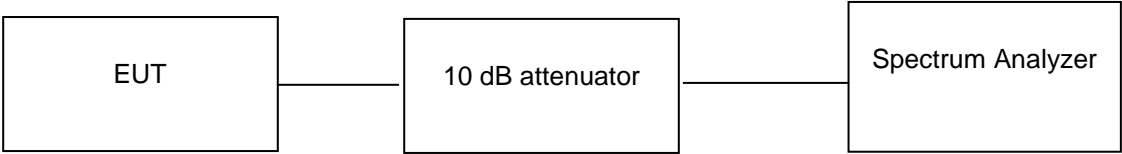
Carrier Frequency Separation

Result

Pass

Test Specification	FCC Part 15 Subpart C Section 15.247 (a) (1)
Detector Function	Peak
Port of testing	Antenna port
Requirement	Frequency hopping systems shall have hopping channel carrier frequency separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater

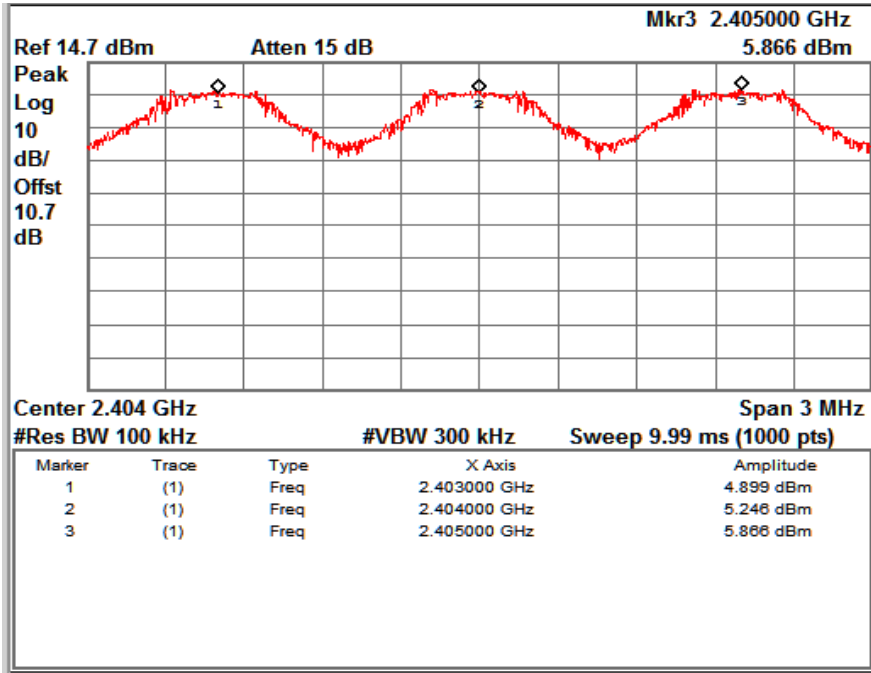
Test Method:



Note: Measurements are done as per FCC / DA-00-705, Filing and Measurement Guidelines for 15.247 Frequency Hopping Spread Spectrum (FHSS) Systems Mar.30, 2000 mentioned in ANSI C63.10-2013.

10 dB attenuator + 0.7 Cable loss = 10.7 dB offset is considered in below result

Test results:



Channel Separation

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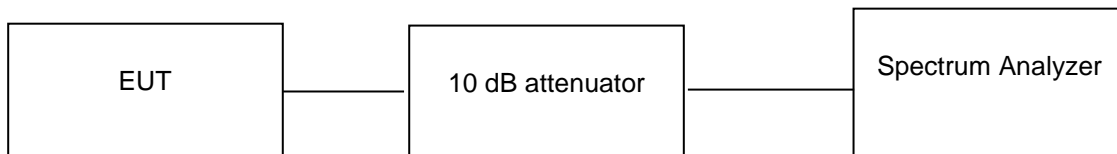
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**Time of Occupancy (Dwell Time)****Result****Pass**

Test Specification	FCC Part 15 Subpart C Section 15.247 (a) (1)
Detector Function	Peak
Port of testing	Antenna port
Requirement	The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that a minimum of 15 hopping channels are used.

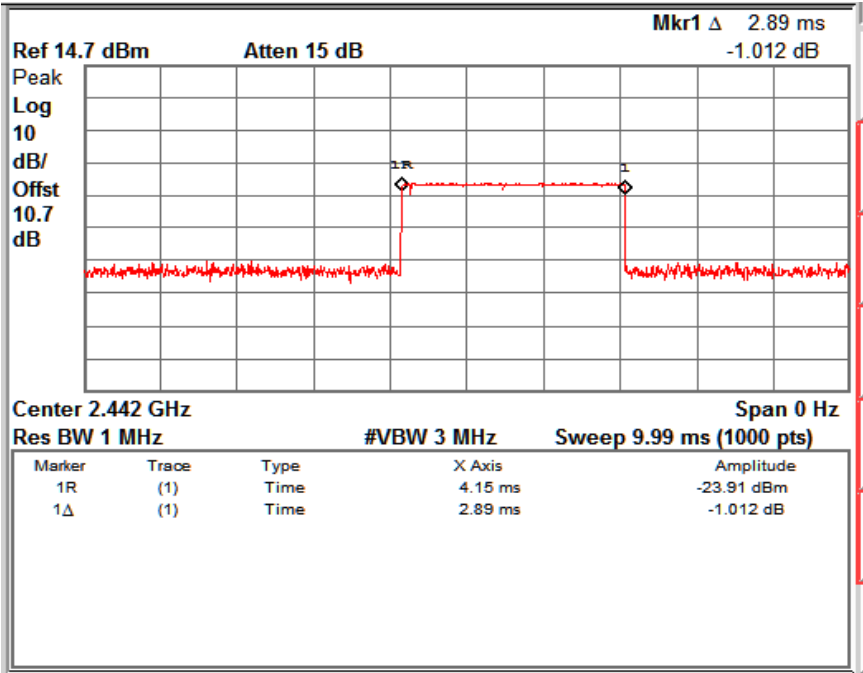
**Test Method:****Test Result:**

Time slot		Time Slot (s)
DH	Measurement Value (sec)	
DH5	0.00289	0.308
2DH5	0.00285	0.303
3DH5	0.00286	0.305

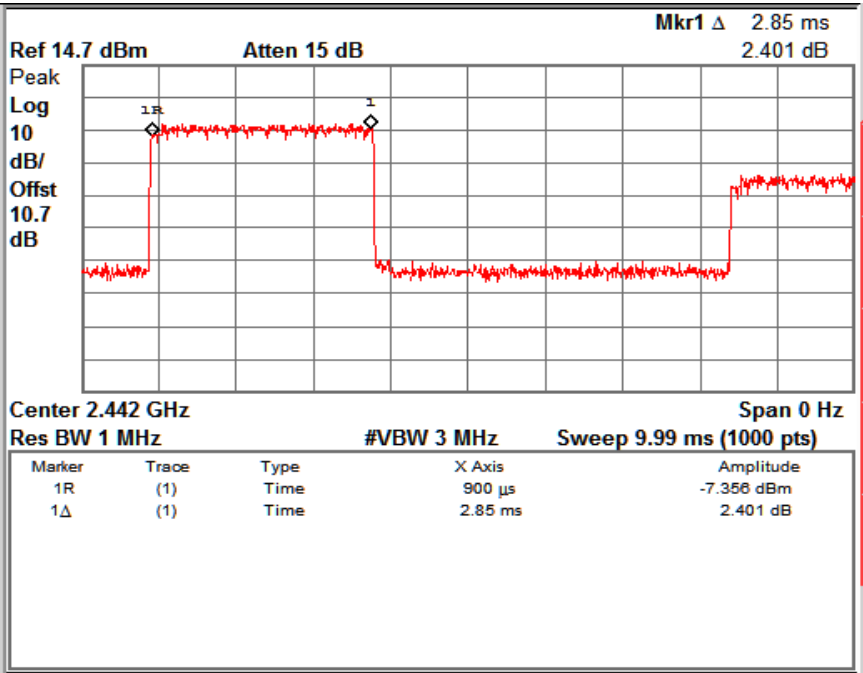
**Measurement Method**

Period Time = 0.4(sec)\*79 (hopping channel) = 31.6 s

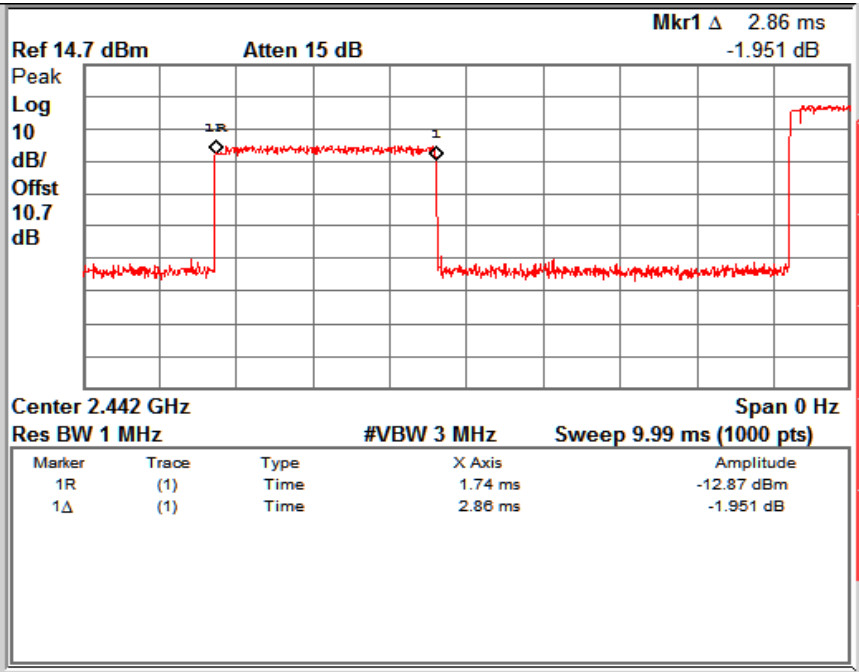
DH Time slot = Measurement value (Sec)\*(1600/ (6\*79))\*Period time



DH5



2DH5



3DH5

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**Band- edge Compliance of RF Conducted Emissions****Result****Pass**

Test Specification

FCC Part 15 Subpart C Section 15.247 (a) (1)

Detector Function

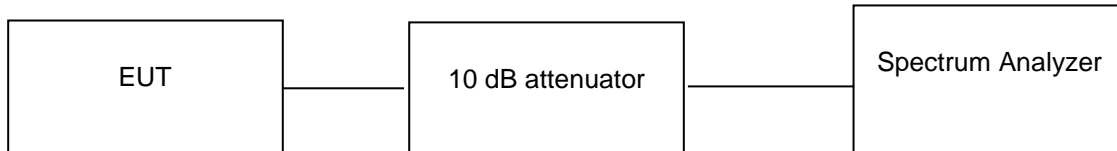
Peak

Port of testing

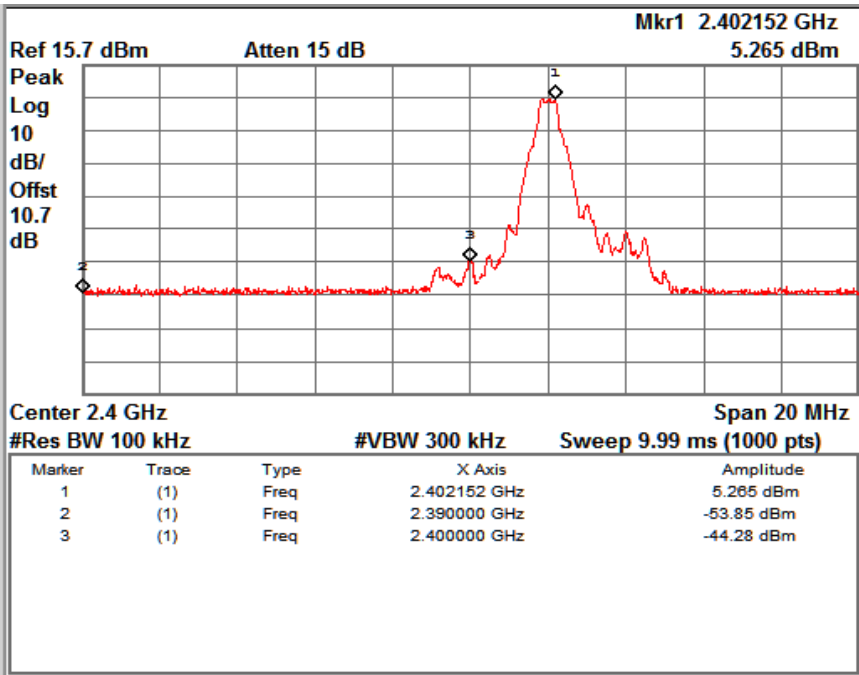
Antenna port

Requirement

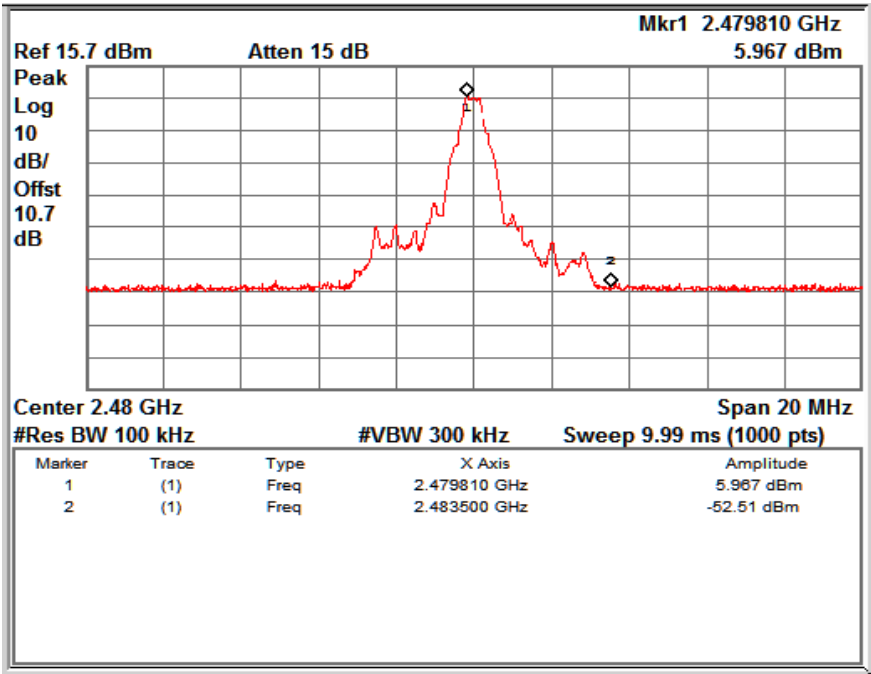
In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the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

**Test Method:****Test Result:**

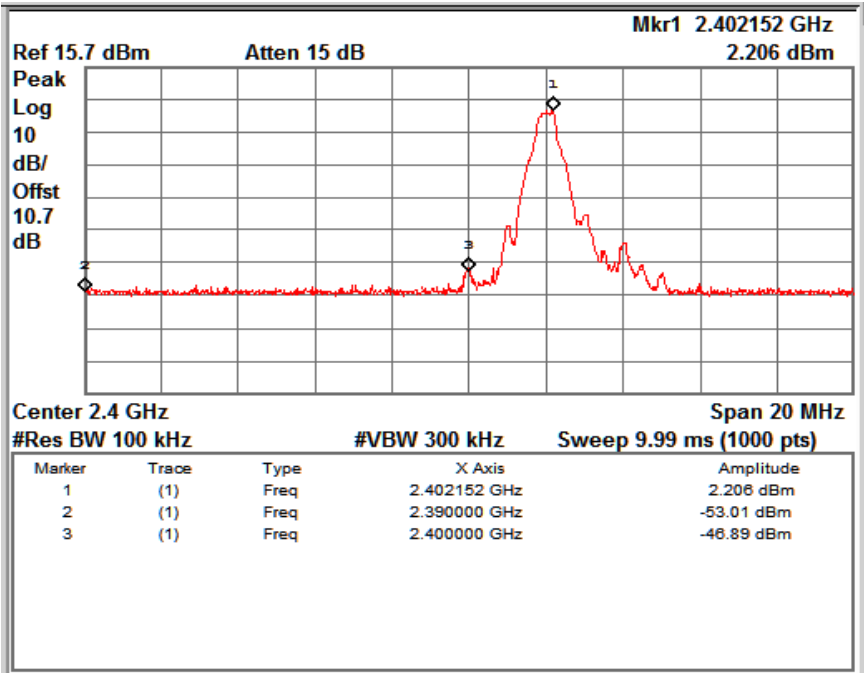
Modulation type	Channel	Fundamental Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A~B (dB)	Limit (dB)
			Frequency (MHz)	Value A (dB)			
1 Mbps	Low	2402	2400	-44.28	5.265	-50.065	-20
	High	2480	2483.5	-52.51	5.967	-58.477	-20
2 Mbps	Low	2402	2400	-46.89	2.206	-49.096	-20
	High	2480	2483.5	-53.08	3.501	-56.581	-20
3 Mbps	Low	2402	2400	-47.17	2.014	-49.184	-20
	High	2480	2483.5	-52.51	3.195	-55.705	-20



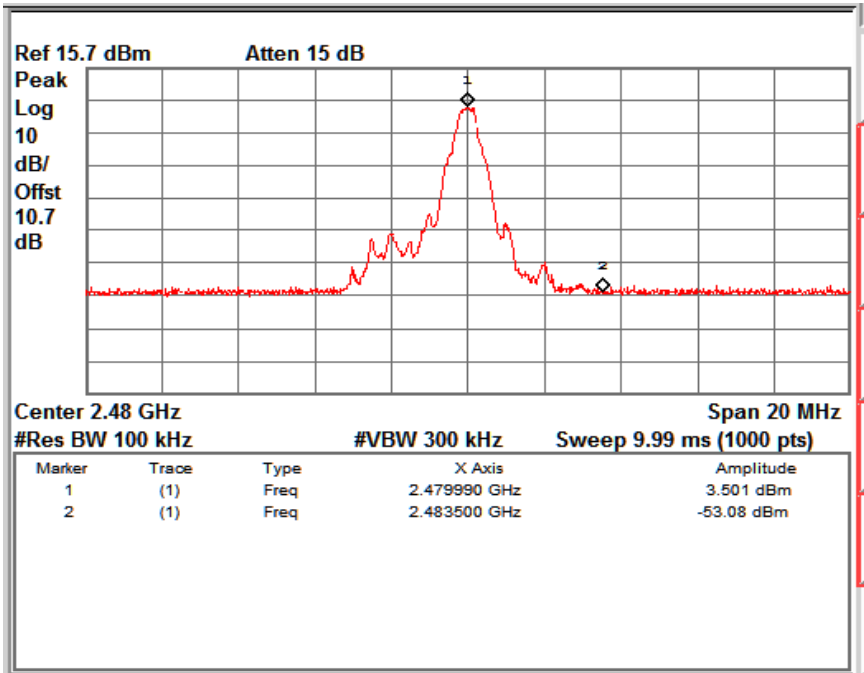
1 Mbps Channel low



1 Mbps Channel high

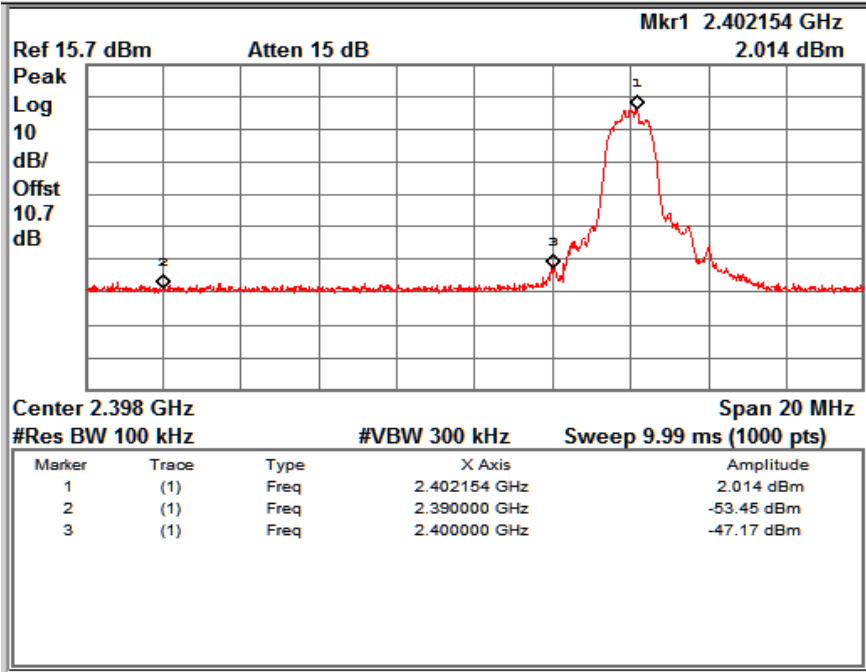


2 Mbps Channel low

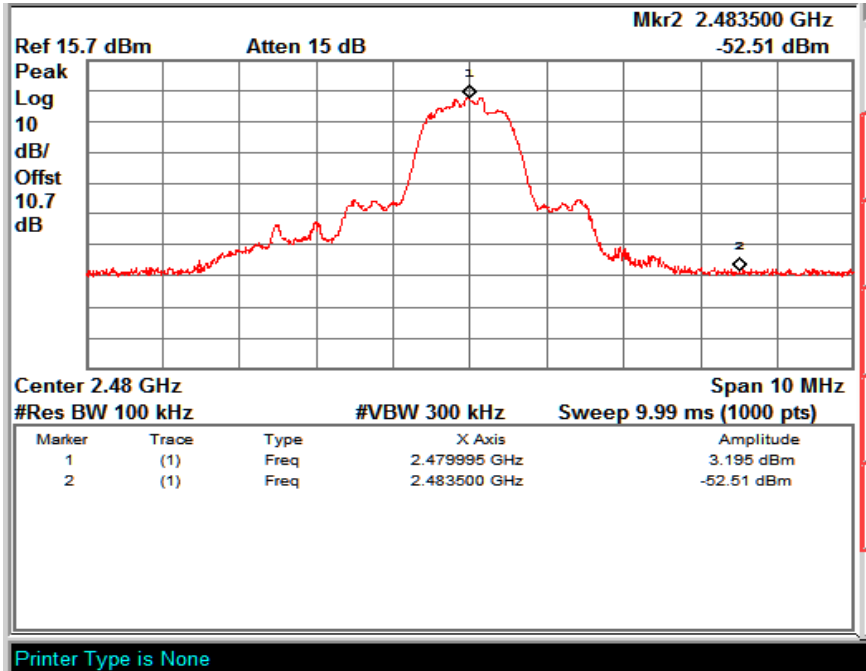


2 Mbps Channel high





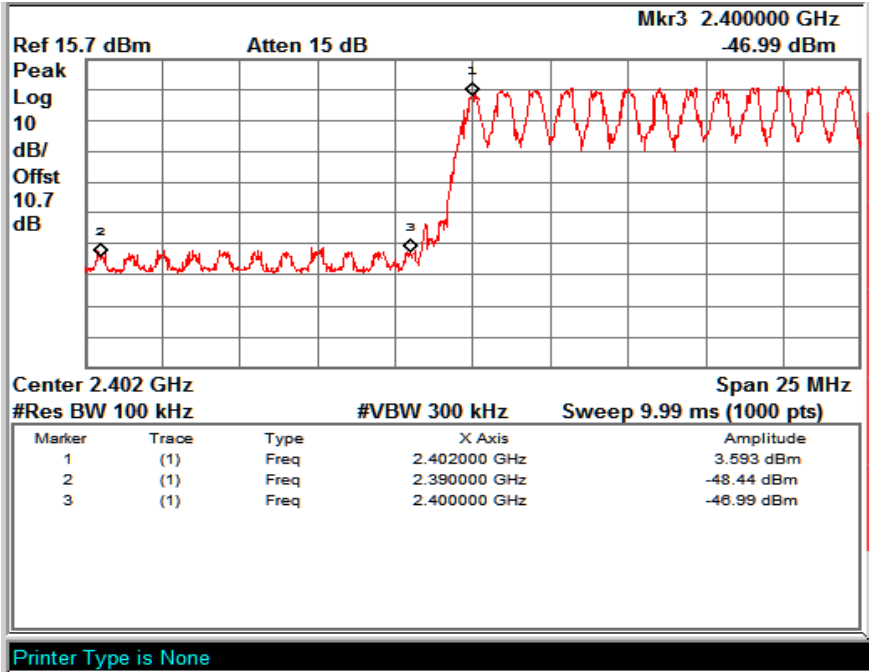
3 Mbps Channel low



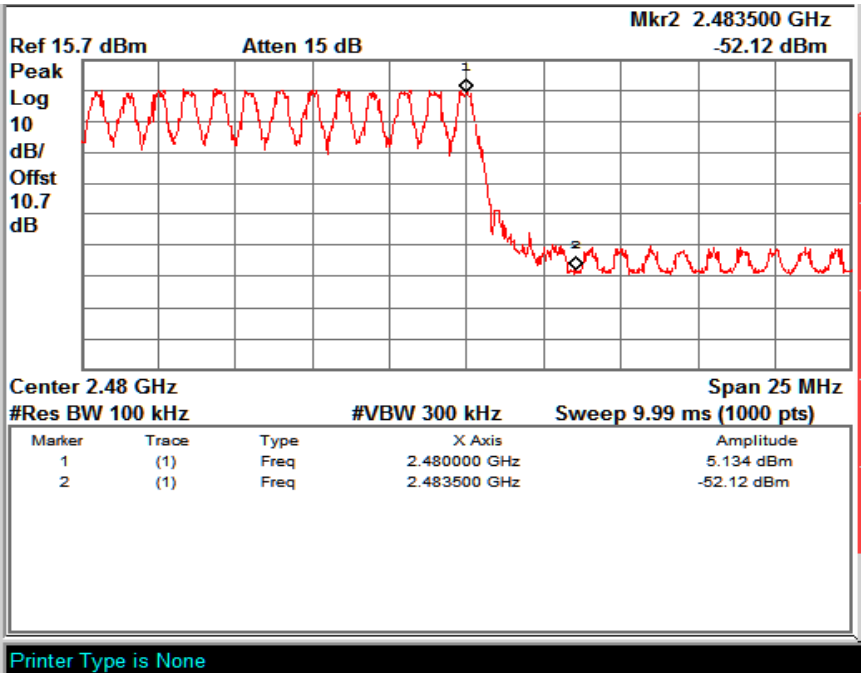
3 Mbps Channel high

Test Result: Hopping Mode

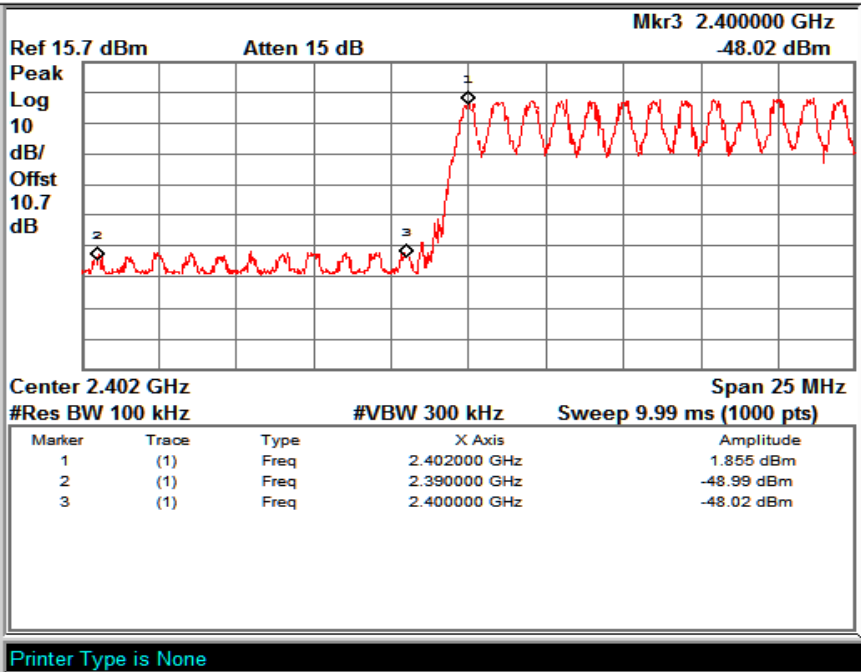
Modulation type	Channel	Fundamental Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A~B (dB)	Limit (dB)
			Frequency (MHz)	Value A (dB)			
1 Mbps	Low	2402	2400	-46.99	3.593	-50.583	-20
	High	2480	2483.5	-52.12	5.134	-57.254	-20
2 Mbps	Low	2402	2400	-48.02	1.855	-49.875	-20
	High	2480	2483.5	-52.86	2.628	-55.488	-20
3 Mbps	Low	2402	2400	-45.47	-4.016	-41.454	-20
	High	2480	2483.5	-47.85	1.422	-49.272	-20



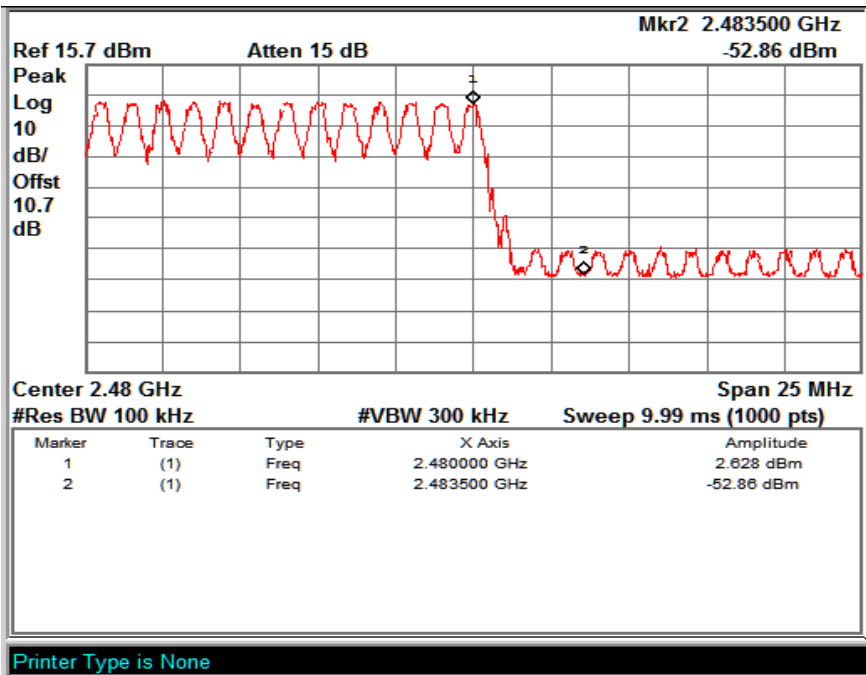
1 Mbps Channel low



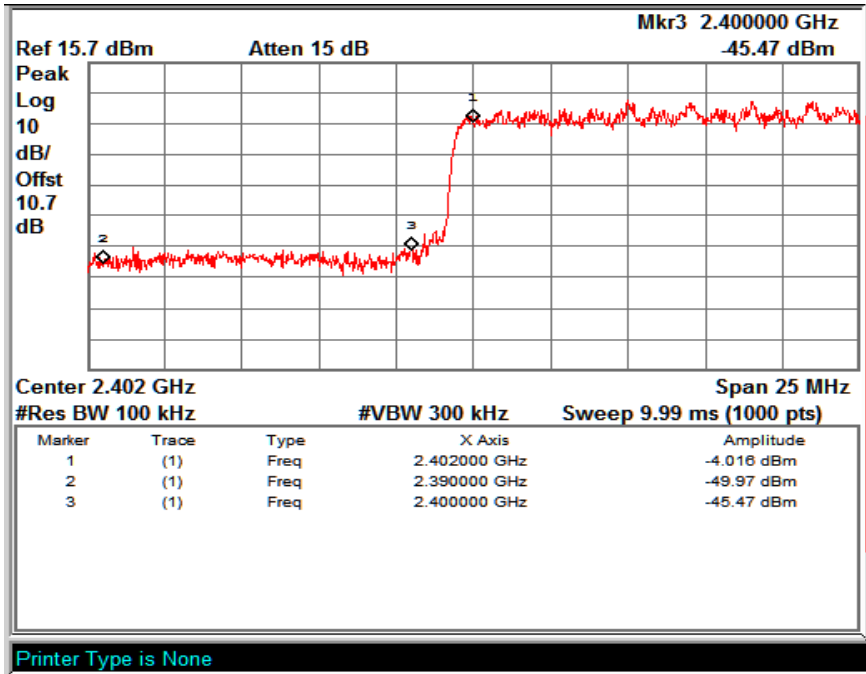
1 Mbps Channel High



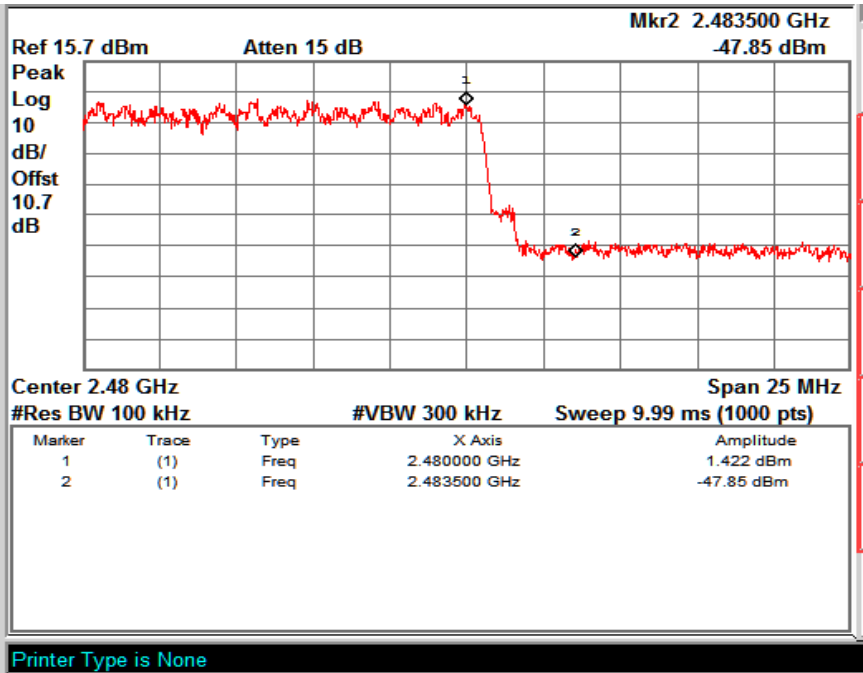
2 Mbps Channel low



2 Mbps Channel High

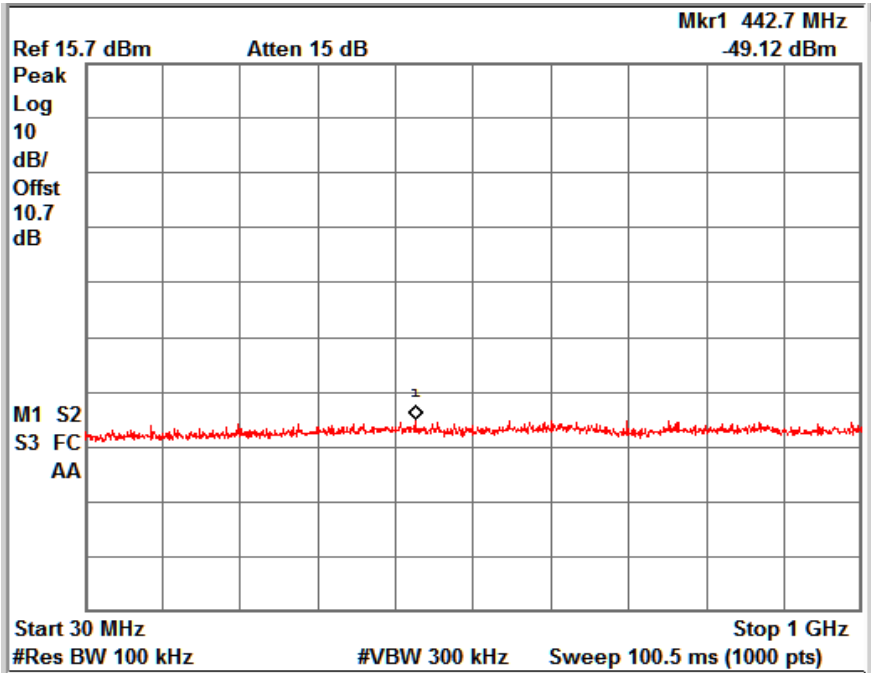


3 Mbps Channel Low



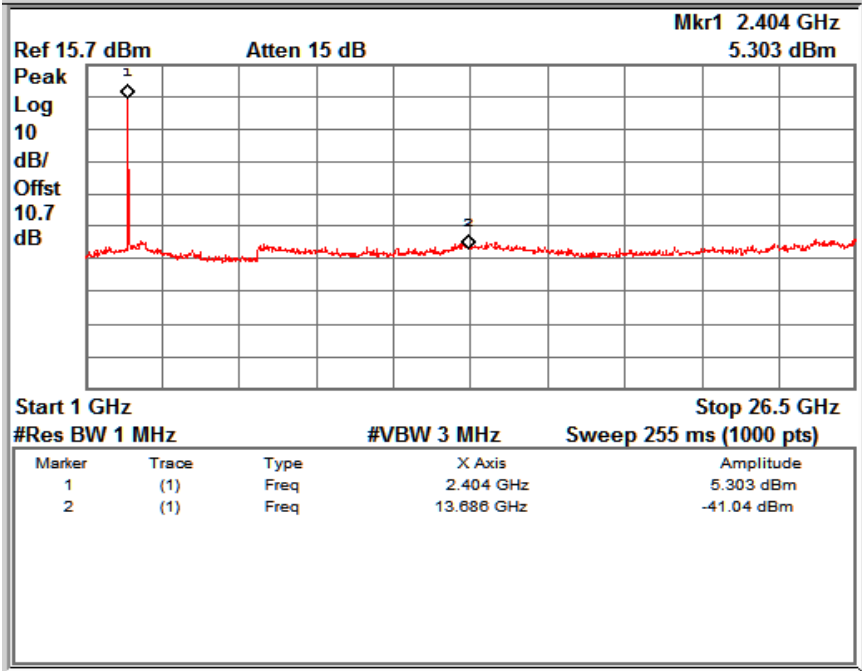
3 Mbps Channel High

Conducted Spurious Emissions

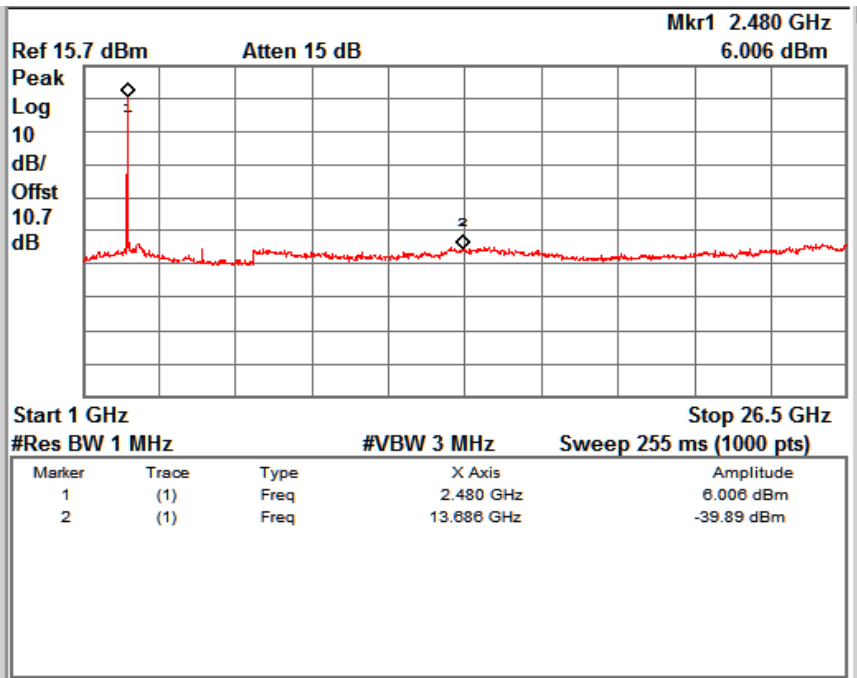


30MHz to 1GHz Spurious Emissions

1 Mbps

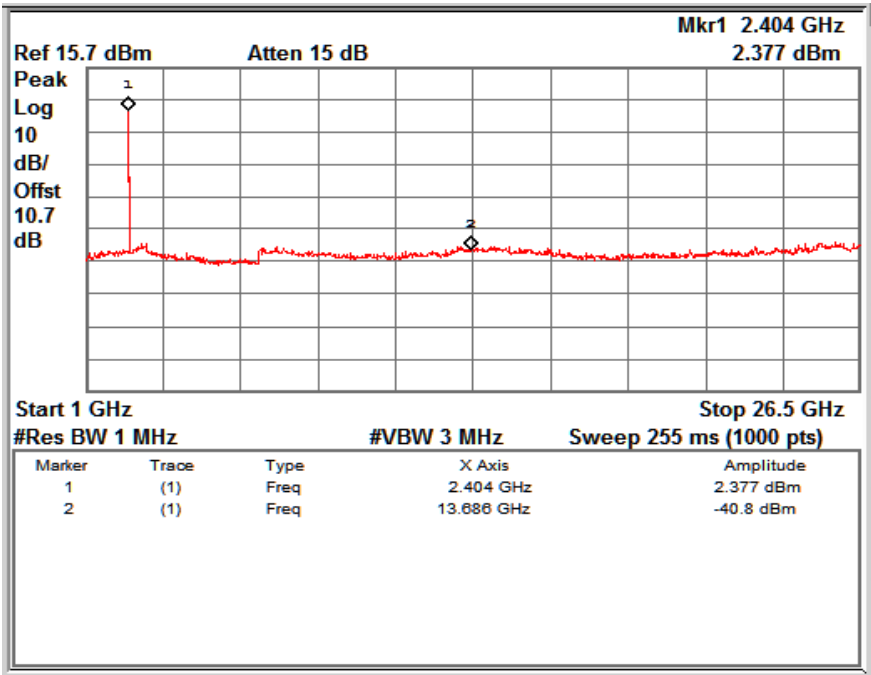


Channel Frequency 2402 MHz

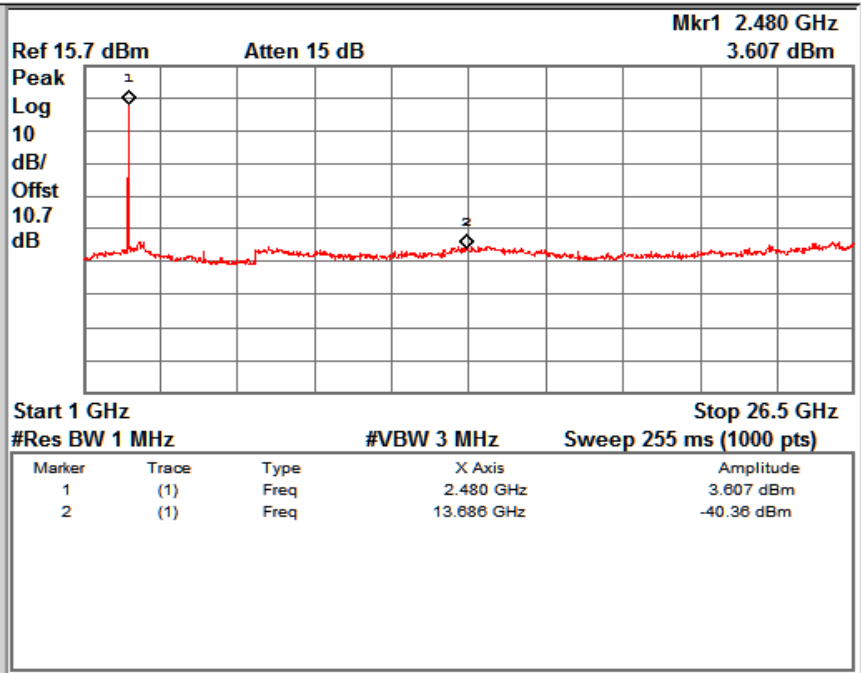


Channel Frequency 2480 MHz

2 Mbps

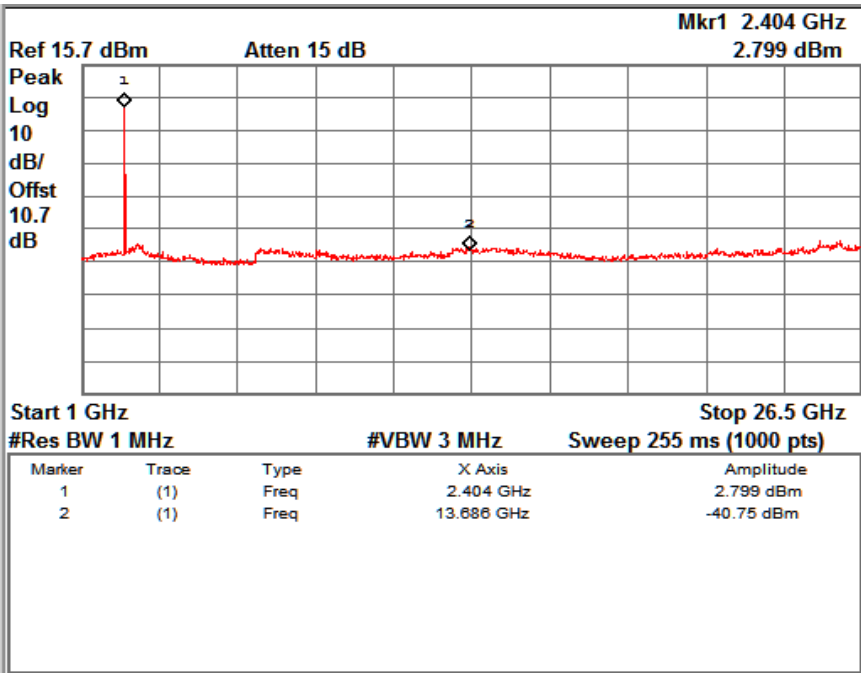


Channel Frequency 2402 MHz



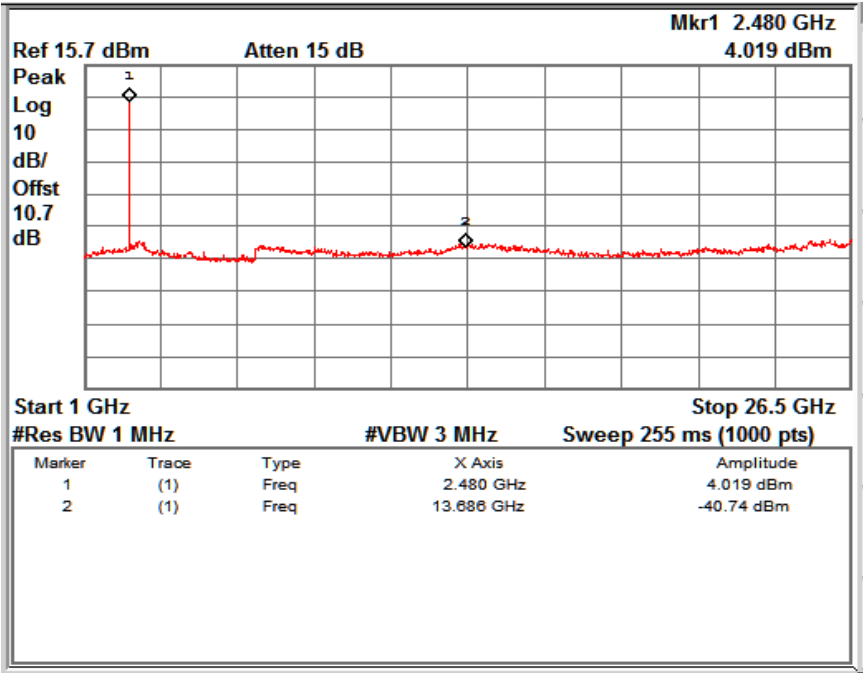
Channel Frequency 2480 MHz

3Mbps



Channel Frequency 2402 MHz





Channel Frequency 2480 MHz

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**Restricted bands of Emissions & Restricted Bands of Operation****Result****Pass**

Test Specification	FCC part 15 Subpart C Section 15.247 (d) / (15.209 & 15.205)
Test Method	ANSI C 63.10 - 2013
Measurement Location	Semi Anechoic Chamber
Measuring Distance	3 m
Detector	QP for frequency below 1 GHz, average for frequency above 1 GHz
Requirement	As per the limits mentioned in the below table

**Table 7: Transmitter limits for Radiated emission of Section 15.209**

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: \* The limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 128.51 – 93.80, 73.80 – 62.96 and 69.54 dBμV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

**Test Conditions:**

Supply Voltage: 5VDC from Power adaptor

**Environmental conditions:**

Temperature: +24.5 °C RH: 61.9 %

**Test results:**

No emissions found in frequency 9 kHz to 30 MHz

**Test results for frequencies in the range 30 MHz – 1GHz****Adapter 1 with Battery 1 combination**

Polarization	Frequency (MHz)	Measured value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
V	148.825	25.00	43.5	-18.5
H	923.467	29.00	46	-17

**Adapter 1 with Battery 2 combination**

Polarization	Frequency (MHz)	Measured value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
V	149.019	23.57	43.5	-19.93
	536.922	27.70	46	-18.3
	591.63	27.70	46	-18.3
H	590.854	26.57	46	-19.43
	898.635	31.34	46	-14.66

**Adapter 2 with Battery 1 combination**

Polarization	Frequency (MHz)	Measured value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
V	149.601	27.60	43.5	-15.9
	536.825	27.05	46	-18.95
H	205.958	31.68	43.5	-11.82
	590.563	26.27	46	-19.73

**Adapter 2 with Battery 2 combination**

Polarization	Frequency (MHz)	Measured value (dBμV/m)	Limit (dBμV/m)	Margin (dB)
V	85.581	27.18	40	-12.82
	148.34	27.99	43.5	-15.51
H	206.443	32.47	43.5	-11.03
	591.242	26.06	46	-19.94

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**Test results for the frequencies in the range 1 GHz to 26.5 GHz.****Data Rate: 1 Mbps**

Channel Frequency (MHz)	Polarization	Measured Frequency (MHz)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2402	Vertical	2390(Pk)	37.06	74	-36.94
		2390(Av)	26.2	54	-27.8
		2402(Pk)	87.87	-	
		2402(Av)	78.06	-	
		4804(Pk)	60.59	74	-13.41
		4804(Av)	48.52	54	-5.48
	Horizontal	2390(Pk)	38.1	74	-35.9
		2390(Av)	26.26	54	-27.74
		2402(Pk)	78.71	-	
		2402(Av)	69.97	-	
		4804(Pk)	58.68	74	-15.32
		4804(Av)	46.66	54	-7.34
2441	Vertical	2441(Pk)	88.2	-	
		2441(Av)	79.69	-	
		4882(Pk)	62.78	74	-11.22
		4882(Av)	50.95	54	-3.05
	Horizontal	2441(Pk)	85.19	-	
		2441(Av)	76.23	-	
		4882(Pk)	60.76	74	-13.24
		4882(Av)	49.02	54	-4.98
2480	Vertical	2480(Pk)	87.77	-	
		2480(Av)	77.16	-	
		4960(Pk)	61.71	74	-12.29
		4960(Av)	50.03	54	-3.97
		2483.5(Pk)	38.9	74	-35.1
		2483.5(Av)	26.87	54	-27.13
	Horizontal	2480(Pk)	87.06	-	
		2480(Av)	78.39	-	
		4960(Pk)	60.9	74	-13.1
		4960(Av)	48.6	54	-5.4
		2483.5(Pk)	38.24	74	-35.76
		2483.5(Av)	26.84	54	-27.16

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**Data Rate: 2 Mbps**

Channel Frequency (MHz)	Polarization	Measured Frequency (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	Vertical	2390(Pk)	38.78	74	-35.22
		2390(Av)	26.39	54	-27.61
		2402(Pk)	84.09	-	
		2402(Av)	75.14	-	
		4804(Pk)	56.74	74	-17.26
		4804(Av)	44.5	54	-9.5
	Horizontal	2390(Pk)	38.63	74	-35.37
		2390(Av)	26.43	54	-27.57
		2402(Pk)	82.34	-	
		2402(Av)	73.6	-	
		4804(Pk)	56.79	74	-17.21
		4804(Av)	45.21	54	-8.79
2441	Vertical	2441(Pk)	85.32	-	
		2441(Av)	76.5	-	
		4882(Pk)	59.05	74	-14.95
		4882(Av)	46.97	54	-7.03
	Horizontal	2441(Pk)	82.23	-	
		2441(Av)	72.45	-	
		4882(Pk)	56.86	74	-17.14
		4882(Av)	45.28	54	-8.72
2480	Vertical	2480(Pk)	88.32	-	
		2480(Av)	78.78	-	
		4960(Pk)	57.92	74	-16.08
		4960(Av)	45.98	54	-8.02
		2483.5(Pk)	38.6	74	-35.4
		2483.5(Av)	26.39	54	-27.61
	Horizontal	2480(Pk)	84.21	-	
		2480(Av)	73.92	-	
		4960(Pk)	56.58	74	-17.42
		4960(Av)	44.25	54	-9.75
		2483.5(Pk)	35.83	74	-38.17
		2483.5(Av)	26.18	54	-27.82

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**Data Rate: 3 Mbps**

Channel Frequency (MHz)	Polarization	Measured Frequency (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	Vertical	2390(Pk)	39.03	74	-34.97
		2390(Av)	26.43	54	-27.57
		2402(Pk)	86.35	-	
		2402(Av)	81.97	-	
		4804(Pk)	62.03	74	-11.97
		4804(Av)	52.45	54	-1.55
	Horizontal	2390(Pk)	38.14	74	-35.86
		2390(Av)	26.38	54	-27.62
		2402(Pk)	83.38	-	
		2402(Av)	79.87	-	
		4804(Pk)	60.23	74	-13.77
		4804(Av)	50.57	54	-3.43
2441	Vertical	2441(Pk)	85.5	-	
		2441(Av)	80.94	-	
		4882(Pk)	63.97	74	-10.03
		4882(Av)	53.83	54	-0.17
	Horizontal	2441(Pk)	82.32	-	
		2441(Av)	78.43	-	
		4882(Pk)	62.81	74	-11.19
		4882(Av)	53.26	54	-0.74
2480	Vertical	2480(Pk)	88.03	-	
		2480(Av)	84.05	-	
		4960(Pk)	62.19	74	-11.81
		4960(Av)	52.49	54	-1.51
		2483.5(Pk)	38.68	74	-35.32
		2483.5(Av)	27.26	54	-26.74
	Horizontal	2480(Pk)	85.29	-	
		2480(Av)	81.87	-	
		4960(Pk)	62.72	74	-11.28
		4960(Av)	52.57	54	-1.43
		2483.5(Pk)	38.2	74	-35.8
		2483.5(Av)	26.77	54	-27.23

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**Conducted Emission Test on A.C. Power Line****Result****Pass**

Test Specification : FCC Part 15 Section 15.207  
 Test Method : ANSI C63.10-2013  
 Testing Location : Screened room  
 Measurement Bandwidth : 9kHz  
 Frequency Range : 150kHz – 30MHz  
 Supply Voltage : 120VAC,60Hz

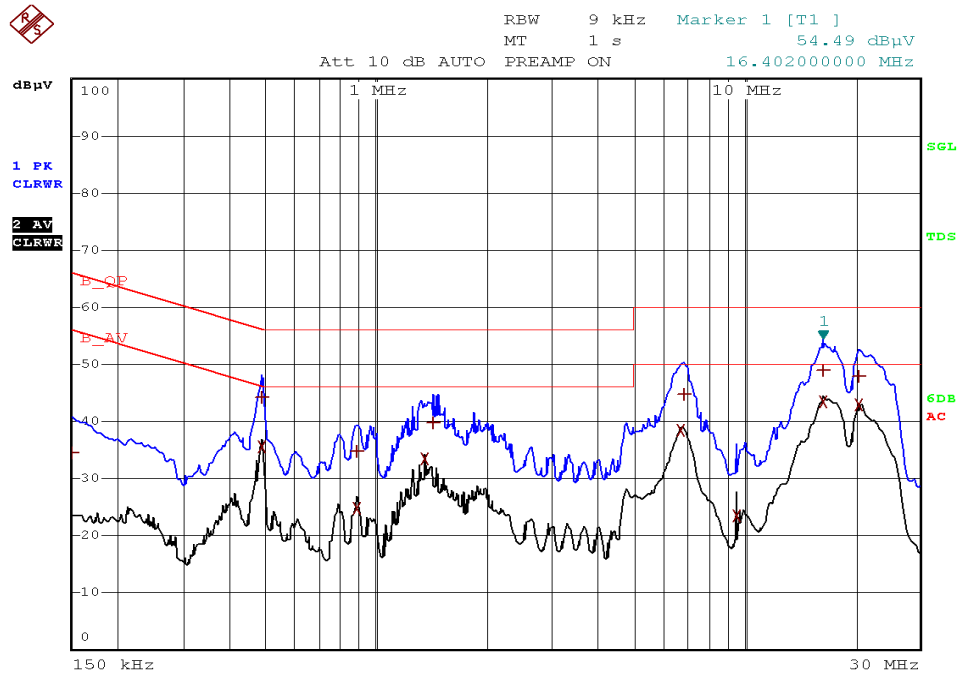
**Limit of section 15.207**

Frequency of emission	QP Limit	AV Limit
(MHz)	(dB $\mu$ V)	(dB $\mu$ V/m)
0.15 – 0.5	66 – 56*	56 – 46*
0.5 – 5	56	46
5 – 30	60	50

\* Decreases with the logarithm of the frequency

Test Result: LINE Graphs and Tables

110v AC , 60Hz - Adapter 1 with Battery 1 combination



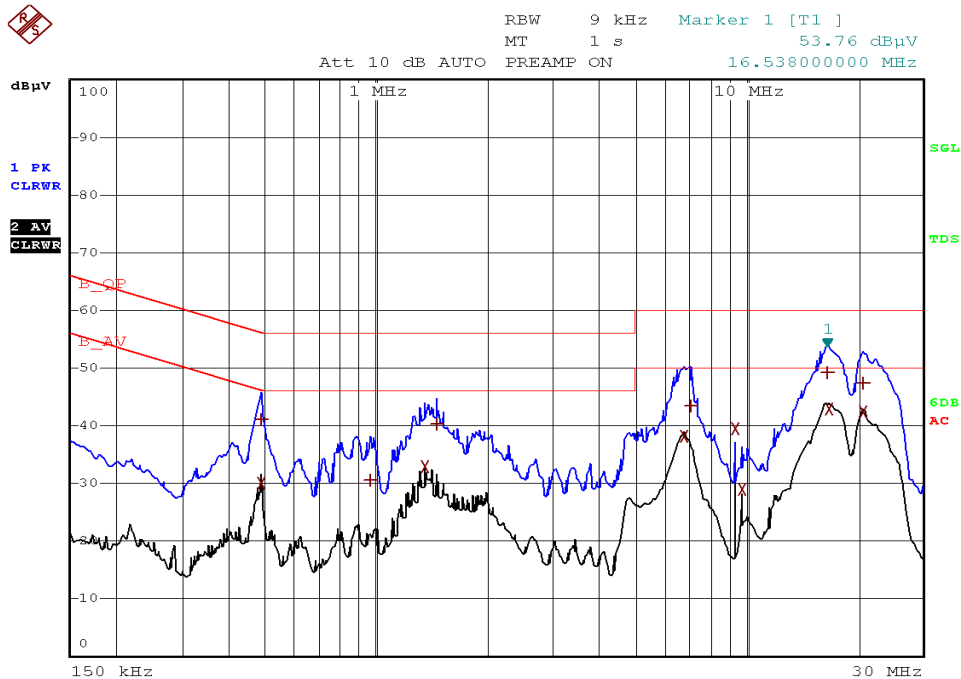
Line Graph

Detector	Frequency	Level	Limit	Margin
		(dBµV)	(dBµV)	(dB)
Quasi Peak	150 kHz	34.61	66	31.39
Quasi Peak	490 kHz	44.22	55.92	11.7
Quasi Peak	886 kHz	34.78	56	21.22
Quasi Peak	1.422 MHz	39.76	56	16.24
Quasi Peak	6.91 MHz	44.82	60	15.18
Quasi Peak	16.402 MHz	48.96	60	11.04
Quasi Peak	20.574 MHz	47.81	60	12.19
Average	490 kHz	35.64	45.92	10.28
Average	882 kHz	24.72	46	21.28
Average	1.362 MHz	33.41	46	12.59
Average	6.726 MHz	38.49	50	11.51
Average	9.574 MHz	23.46	50	26.54
Average	16.33 MHz	43.56	50	6.44
Average	20.558 MHz	42.93	50	7.07

Line Table



110v AC , 60Hz - Adapter 1 with Battery 2 combination



Line Graph

Detector	Frequency	Level	Limit	Margin
		(dBµV)	(dBµV)	(dB)
Quasi Peak	486 kHz	40.99	55.99	15
Quasi Peak	966 kHz	30.66	56	25.34
Quasi Peak	1.462 MHz	40.3	56	15.7
Quasi Peak	7.062 MHz	43.49	60	16.51
Quasi Peak	16.538 MHz	49.13	60	10.87
Quasi Peak	20.806 MHz	47.24	60	12.76
Average	486 kHz	30.01	45.99	15.98
Average	1.362 MHz	32.95	46	13.05
Average	6.79 MHz	38.25	50	11.75
Average	9.382 MHz	39.62	50	10.38
Average	9.722 MHz	28.9	50	21.1
Average	16.742 MHz	42.98	50	7.02
Average	20.694 MHz	42.49	50	7.51

Line Table

110v AC , 60Hz - Adapter 2 with Battery 1 combination



Line Graph

Detector	Frequency	Level	Limit	Margin
		(dBµV)	(dBµV)	(dB)
Quasi Peak	150 kHz	41.97	66	24.03
Quasi Peak	582 kHz	30.47	56	25.53
Quasi Peak	1.362 MHz	40.57	56	15.43
Quasi Peak	6.898 MHz	44.86	60	15.14
Quasi Peak	16.406 MHz	47.8	60	12.2
Quasi Peak	20.526 MHz	46.39	60	13.61
Average	154 kHz	27.66	55.77	28.11
Average	1.362 MHz	33.2	46	12.8
Average	6.75 MHz	38.26	50	11.74
Average	9.742 MHz	28.61	50	21.39
Average	16.538 MHz	43.07	50	6.93
Average	20.902 MHz	41.92	50	8.08

Line Table

110v AC , 60Hz - Adapter 2 with Battery 2 combination



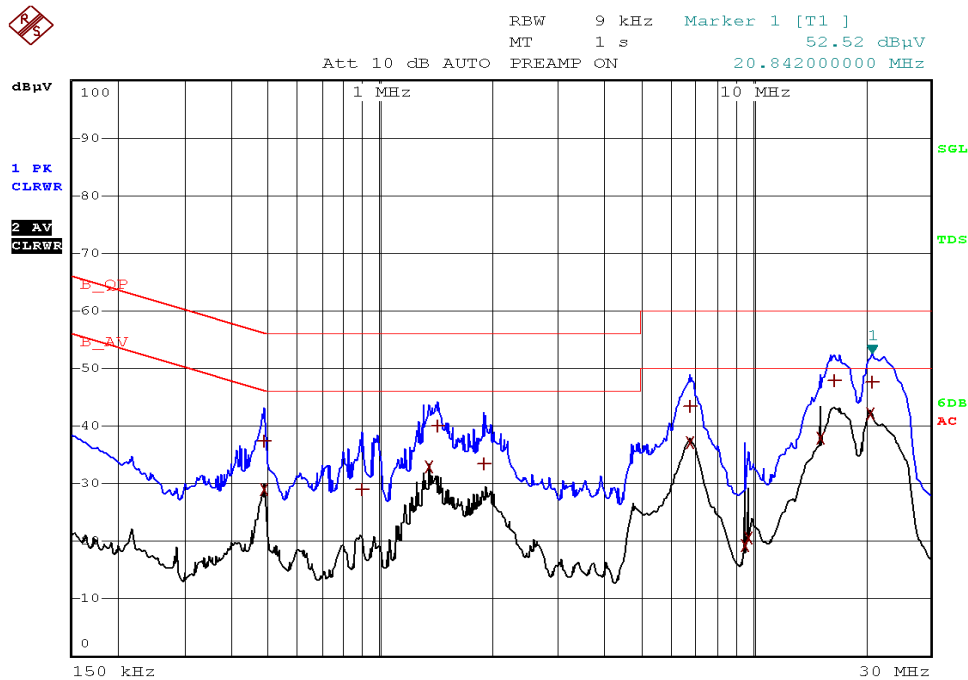
Line Graph

Detector	Frequency	Level	Limit	Margin
		(dBµV)	(dBµV)	(dB)
Quasi Peak	178 kHz	38.1	64.54	26.44
Quasi Peak	606 kHz	30.16	56	25.84
Quasi Peak	1.462 MHz	40.33	56	15.67
Quasi Peak	6.754 MHz	44.14	60	15.86
Quasi Peak	6.762 MHz	38.16	60	21.84
Quasi Peak	9.722 MHz	37.2	60	22.8
Quasi Peak	16.538 MHz	48.49	60	11.51
Quasi Peak	20.906 MHz	47.04	60	12.96
Average	150 kHz	26.04	56	29.96
Average	1.362 MHz	33.03	46	12.97
Average	9.382 MHz	14.94	50	35.06
Average	9.722 MHz	33.64	50	16.36
Average	16.402 MHz	42.31	50	7.69
Average	20.554 MHz	41.07	50	8.93

Line Table

NEUTRAL Graphs and Tables

110v AC , 60Hz - Adapter 1 with Battery 1 combination

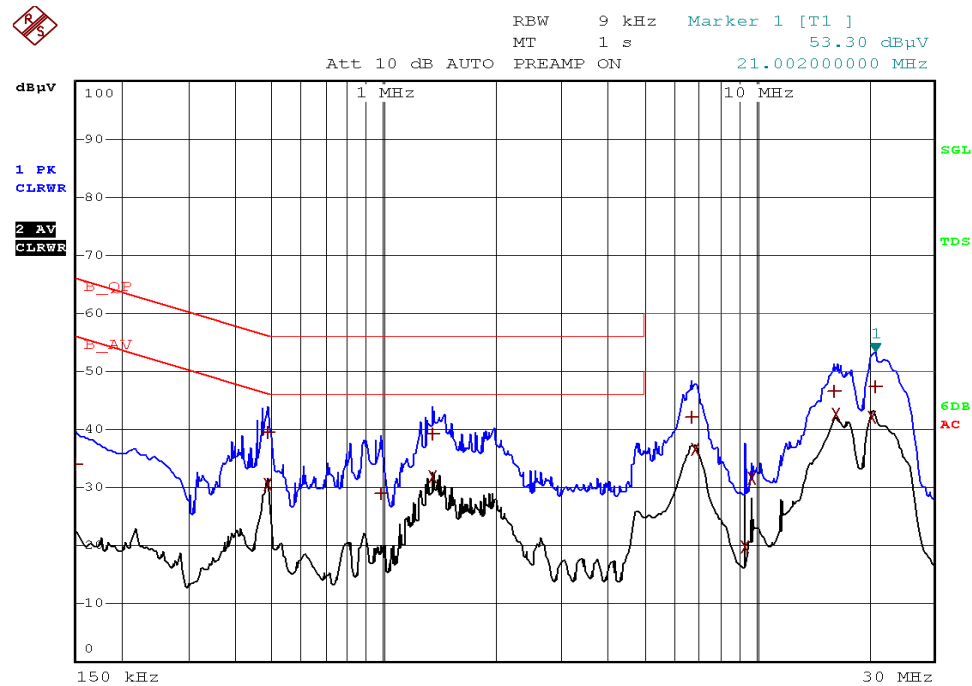


Neutral Graph

Detector	Frequency	Level	Limit	Margin
		(dBµV)	(dBµV)	(dB)
Quasi Peak	490 kHz	37.38	55.92	18.54
Quasi Peak	898 kHz	29.02	56	26.98
Quasi Peak	1.422 MHz	40	56	16
Quasi Peak	1.894 MHz	33.5	56	22.5
Quasi Peak	6.798 MHz	43.45	60	16.55
Quasi Peak	16.534 MHz	47.8	60	12.2
Quasi Peak	20.842 MHz	47.53	60	12.47
Average	490 kHz	28.88	45.92	17.04
Average	1.362 MHz	32.97	46	13.03
Average	6.782 MHz	37.14	50	12.86
Average	9.542 MHz	19.33	50	30.67
Average	9.742 MHz	20.65	50	29.35
Average	15.182 MHz	37.8	50	12.2
Average	20.71 MHz	42.11	50	7.89

Neutral Table

110v AC , 60Hz - Adapter 1 with Battery 2 combination



Neutral Graph

Detector	Frequency	Level	Limit	Margin
		(dBµV)	(dBµV)	(dB)
Quasi Peak	150 kHz	33.88	66	32.12
Quasi Peak	490 kHz	39.51	55.92	16.41
Quasi Peak	982 MHz	28.94	56	27.06
Quasi Peak	1.358 MHz	39.26	56	16.74
Quasi Peak	6.734 MHz	42.2	60	17.8
Quasi Peak	16.194 MHz	46.68	60	13.32
Quasi Peak	21.002 MHz	47.32	60	12.68
Average	490 kHz	30.57	45.92	15.35
Average	1.358 MHz	31.87	46	14.13
Average	6.898 MHz	36.5	50	13.5
Average	9.382 MHz	19.86	50	30.14
Average	9.722 MHz	31.7	50	18.3
Average	16.466 MHz	42.6	50	7.4
Average	20.486 MHz	42.23	50	7.77

Neutral Table

110v AC , 60Hz - Adapter 2 with Battery 1 combination

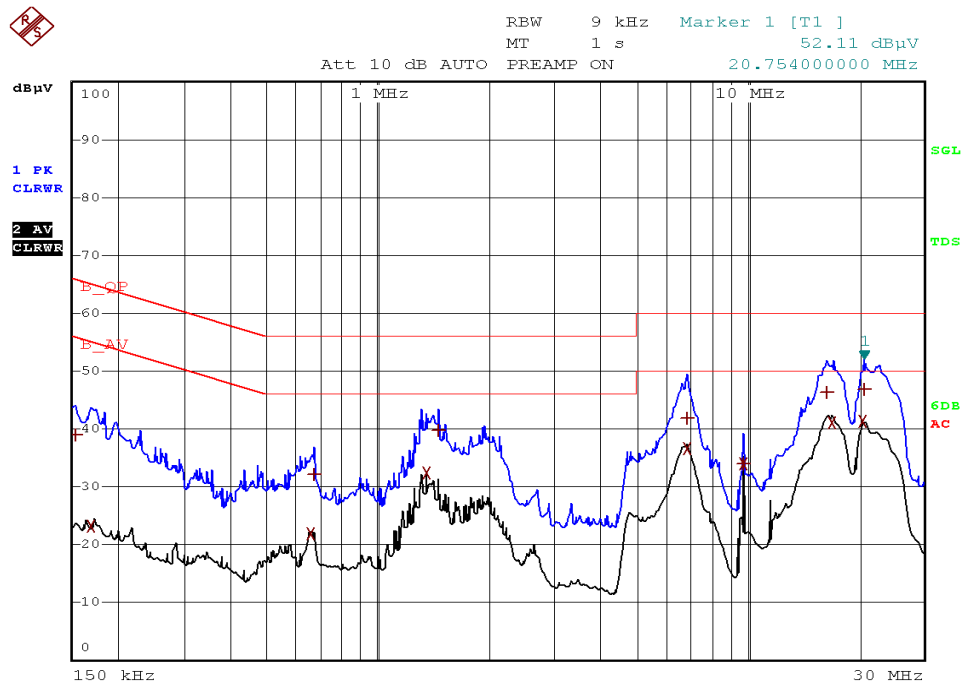


Neutral Graph

Detector	Frequency	Level	Limit	Margin
		(dBµV)	(dBµV)	(dB)
Quasi Peak	150 kHz	42.85	66	23.15
Quasi Peak	654 kHz	33.9	56	22.1
Quasi Peak	1.374 MHz	38.76	56	17.24
Quasi Peak	6.862 MHz	43.14	60	16.86
Quasi Peak	9.574 MHz	35.17	60	24.83
Quasi Peak	20.782 MHz	46.27	60	13.73
Average	170 kHz	25.7	54.93	29.23
Average	1.418 MHz	32.04	46	13.96
Average	6.806 MHz	37.28	50	12.72
Average	9.574 MHz	30.68	50	19.32
Average	16.674 MHz	41.59	50	8.41
Average	20.758 MHz	41.16	50	8.84

Neutral Table

110v AC , 60Hz - Adapter 2 with Battery 2 combination



Neutral Graph

Detector	Frequency	Level	Limit	Margin
		(dBµV)	(dBµV)	(dB)
Quasi Peak	154 kHz	38.96	65.77	26.81
Quasi Peak	670 kHz	32.05	56	23.95
Quasi Peak	1.462 MHz	39.76	56	16.24
Quasi Peak	6.902 MHz	41.89	60	18.11
Quasi Peak	9.718 MHz	34.02	60	25.98
Quasi Peak	20.754 MHz	46.91	60	13.09
Average	170 kHz	23.11	54.93	31.82
Average	658 kHz	21.79	46	24.21
Average	1.362 MHz	32.47	46	13.53
Average	6.878 MHz	36.55	50	13.45
Average	9.722 MHz	34.04	50	15.96
Average	16.882 MHz	41.1	50	8.9
Average	20.482 MHz	41.27	50	8.73

Neutral Table

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