

# TEST REPORT

**ACCORDING TO:**

**FCC 47CFR part 15 subpart C §15.247 (DTS) and subpart B,  
RSS-247 Issue 2:2017, ICES-003 Issue 6:2016**

**FOR:**

**Visonic Ltd.**

**PIR detector ZigBee**

**Model: MP-843 (2.4GHz) and MP-843 (2.4GHz) XHM2**

**FCC ID: WP3MP843**

**IC: 1467C-MP843**

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## Table of contents

1	Applicant information .....	3
2	Equipment under test attributes .....	3
3	Manufacturer information .....	3
4	Test details .....	3
5	Tests summary .....	4
6	EUT description .....	5
6.1	General information .....	5
6.2	Test configuration .....	5
6.3	Changes made in EUT .....	5
6.4	Transmitter characteristics .....	6
7	Transmitter tests according to 47CFR part 15 subpart C requirements .....	7
7.1	Minimum 6 dB bandwidth .....	7
7.2	Field strength of spurious emissions .....	13
7.3	Peak output power .....	47
7.4	Band edge radiated emissions .....	58
7.5	Peak spectral power density .....	73
7.6	Antenna requirements .....	84
8	Emission tests according to 47CFR part 15 subpart B requirements .....	85
8.1	Radiated emission measurements .....	85
9	APPENDIX A Test equipment and ancillaries used for tests .....	90
10	APPENDIX B Test equipment correction factors .....	91
11	APPENDIX C Test laboratory description .....	96
12	APPENDIX D Measurement uncertainties .....	97
13	APPENDIX E Specification references .....	98
14	APPENDIX F Manufacturer's declaration .....	99
15	APPENDIX F Abbreviations and acronyms .....	100

## 1 Applicant information

**Client name:** Visonic Ltd.  
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**Telephone:** +972 3645 6832  
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**E-mail:** [zuri.rubin@jci.com](mailto:zuri.rubin@jci.com)  
**Contact name:** Mr. Zuri Rubin

## 2 Equipment under test attributes

**Product name:** PIR detector ZigBee  
**Product type:** Transceiver  
**Model(s):** MP-843 (2.4GHz)  
**Serial number:** NA  
**Hardware version:** 90-209582  
**Software release:** JS-703699  
**Receipt date** 21-Jan-20

## 3 Manufacturer information

**Client name:** Visonic Ltd.  
**Address:** 24 Habarzel street, Tel Aviv 69710, Israel  
**Telephone:** +972 3645 6832  
**Fax:** +972 3645 6788  
**E-mail:** [zuri.rubin@jci.com](mailto:zuri.rubin@jci.com)  
**Contact name:** Mr. Zuri Rubin

## 4 Test details

**Project ID:** 35117  
**Location:** Hermon Laboratories Ltd. P.O. Box 23, Binyamina 3055001, Israel  
**Test started:** 04-Feb-20  
**Test completed:** 20-Feb-20  
**Test specification(s):** FCC 47CFR part 15 subpart C §15.247 (DTS) and subpart B, RSS-247 Issue 2:2017, ICES-003 Issue 6:2016




## 5 Tests summary

Test	Status
<b>Transmitter characteristics</b>	
FCC section 15.247(a)2 / RSS-247 section 5.2(1), 6 dB bandwidth	Pass
FCC section 15.247(b)3/ RSS-247 section 5.4(4), Peak output power	Pass
FCC section 15.247(i) / RSS-102 section 2.5.2, RF exposure	Pass, the exhibit to the application of certification is provided
FCC section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions	Pass
FCC section 15.247(d)/ RSS-247 section 5.5, Emissions at band edges	Pass
FCC section 15.247(e) / RSS-247 section 5.2(2), Peak power density	Pass
FCC section 15.207(a) / RSS-Gen section 8.8, Conducted emission	Not required
FCC section 15.203 / RSS-Gen section 6.8 Antenna requirement	Pass
<b>Unintentional emissions</b>	
FCC section 15.107/ ICES-003, Section 6.1, Class B, Conducted emission	Not required
FCC section 15.109/ RSS-Gen section 7.1.2 /ICES-003, Section 6.2, Class B, Radiated emission	Pass

This test report supersedes the previously issued test report identified by Doc ID: VISRAD\_FCC.35662

Testing was completed against all relevant requirements of the test standard. The results obtained indicate that the product under test complies in full with the requirements tested.

The test results relate only to the items tested. Pass/ fail decision was based on nominal values.

	Name and Title	Date	Signature
<b>Tested by:</b>	Mr. A. Morozov test engineer, EMC & Radio	04-Feb-20 – 20-Feb-20	
<b>Reviewed by:</b>	Mrs. S Peysahov Sheynin test engineer, EMC & Radio	20-May-20	
<b>Approved by:</b>	Mr. S. Samokha, technical manager, EMC & Radio	17-June-20	

## 6 EUT description

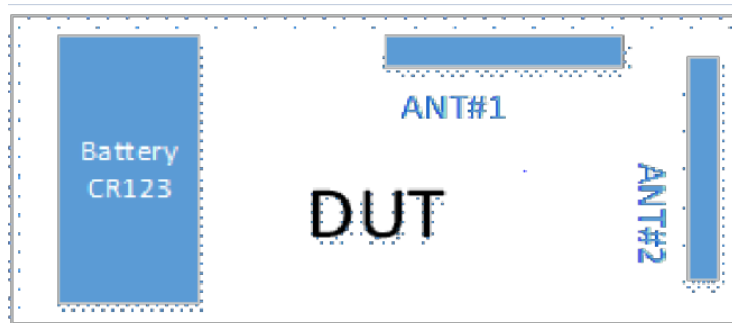
Note: The following data in this clause is provided by the customer and represents his sole responsibility

### 6.1 General information

The EUT MP-843 SMA is a wireless PIR detector with RF on board using @2.4 GHz (OQPSK modulation) ZigBee 3.0 protocol, and provided with diversity antennas for transmit and receive functions.

According to manufacturer's declaration provided in Appendix F of the test report, models MP-843 (2.4GHz) and MP-843 (2.4GHz) XHM2 are electrically/electronically identical and differ only with the labels and the stamp of the mounting bracket.

### 6.2 Test configuration



### 6.3 Changes made in EUT

No changes were implemented in the EUT during the testing.



### 6.4 Transmitter characteristics

<b>Type of equipment</b>						
X	Stand-alone (Equipment with or without its own control provisions)					
	Combined equipment (Equipment where the radio part is fully integrated within another type of equipment)					
	Plug-in card (Equipment intended for a variety of host systems)					
<b>Intended use</b>		<b>Condition of use</b>				
	fixed	Always at a distance more than 2 m from all people				
X	mobile	Always at a distance more than 20 cm from all people				
	portable	May operate at a distance closer than 20 cm to human body				
<b>Assigned frequency range</b>		2400-2483.5 MHz				
<b>Operating frequency range</b>		2405 MHz, 2445 MHz, 2475 MHz, 2480 MHz				
<b>Maximum rated output power</b>		At transmitter 50 Ω RF output connector		NA		
		Peak output power		19.2 dBm		
<b>Is transmitter output power variable?</b>		X	No			
			Yes	continuous variable		
				stepped variable with stepsize		
				minimum RF power		
		maximum RF power				
<b>Antenna connection</b>						
unique coupling		standard connector		X	integral	
				X	with temporary RF connector without temporary RF connector	
<b>Antenna/s technical characteristics</b>						
Type	Manufacturer	Model number		Gain		
2 Printed INVF	Visonic	NA		1 dBi		
<b>Data rate</b>		250Kbps				
<b>Modulating test signal (baseband)</b>		OQPSK				
<b>Transmitter power source</b>						
X	Battery	<b>Nominal rated voltage</b>	3 VDC	Battery type	2*CR123A	
	DC	<b>Nominal rated voltage</b>	VDC			
	AC mains	<b>Nominal rated voltage</b>	VAC	Frequency		



<b>Test specification:</b> Section 15.247(a)2 / RSS-247 section 5.2(1), 6 dB bandwidth			
<b>Test procedure:</b> ANSI C63.10 section 11.8.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 19-Dec-19			
<b>Temperature:</b> 23 °C	<b>Relative Humidity:</b> 38 %	<b>Air Pressure:</b> 1008 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

## 7 Transmitter tests according to 47CFR part 15 subpart C requirements

### 7.1 Minimum 6 dB bandwidth

#### 7.1.1 General

This test was performed to measure 6 dB bandwidth of the EUT carrier frequency. Specification test limits are given in Table 7.1.1.

Table 7.1.1 6 dB bandwidth limits

Assigned frequency, MHz	Modulation envelope reference points*, dBc	Minimum bandwidth, kHz
902.0 – 928.0	6.0	500.0
<b>2400.0 – 2483.5</b>		
5725.0 – 5850.0		

\* - Modulation envelope reference points provided in terms of attenuation below the peak of modulated carrier.

#### 7.1.2 Test procedure

7.1.2.1 The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.

7.1.2.2 The EUT was set to transmit modulated carrier.

7.1.2.3 The transmitter minimum 6 dB bandwidth was measured with spectrum analyzer as frequency delta between reference points on modulation envelope and provided in Table 7.1.2 and associated plot.

Figure 7.1.1 6 dB bandwidth test setup





<b>Test specification:</b> Section 15.247(a)2 / RSS-247 section 5.2(1), 6 dB bandwidth			
<b>Test procedure:</b> ANSI C63.10 section 11.8.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 19-Dec-19			
<b>Temperature:</b> 23 °C	<b>Relative Humidity:</b> 38 %	<b>Air Pressure:</b> 1008 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

Table 7.1.2 6 dB bandwidth test results

ASSIGNED FREQUENCY BAND: 2400 -2483.5 MHz  
DETECTOR USED: Peak  
SWEEP MODE: Single  
SWEEP TIME: Auto  
RESOLUTION BANDWIDTH: 100 kHz  
VIDEO BANDWIDTH: 1000 kHz  
MODULATION ENVELOPE REFERENCE POINTS: 6.0 dBc  
MODULATION: OQPSK  
BIT RATE: 250 Kbps

Carrier frequency, MHz	6 dB bandwidth, kHz	Minimum limit, kHz	Margin, kHz	Verdict
Low frequency ch 11 Antenna 1				
2405 MHz	1693	500	1193	Pass
Mid frequency ch 19 Antenna 1				
2445 MHz	1695	500	1195	Pass
Mid frequency ch 25 Antenna 1				
2475 MHz	1672	500	1172	Pass
High frequency ch 26 Antenna 1				
2480 MHz	1671	500	1171	Pass
Low frequency ch 11 Antenna 2				
2405 MHz	1659	500	1159	Pass
Mid frequency ch 19 Antenna 2				
2445 MHz	1686	500	1186	Pass
Mid frequency ch 25 Antenna 2				
2475 MHz	1658	500	1158	Pass
High frequency ch 26 Antenna 2				
2480 MHz	1660	500	1160	Pass

Reference numbers of test equipment used

HL 5376	HL 4360	HL 4011	HL 5311	HL 5309	HL 5665			
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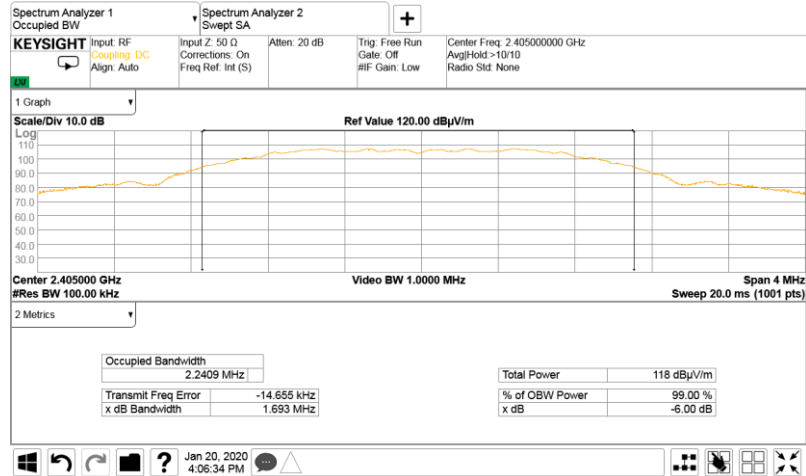
Full description is given in Appendix A.



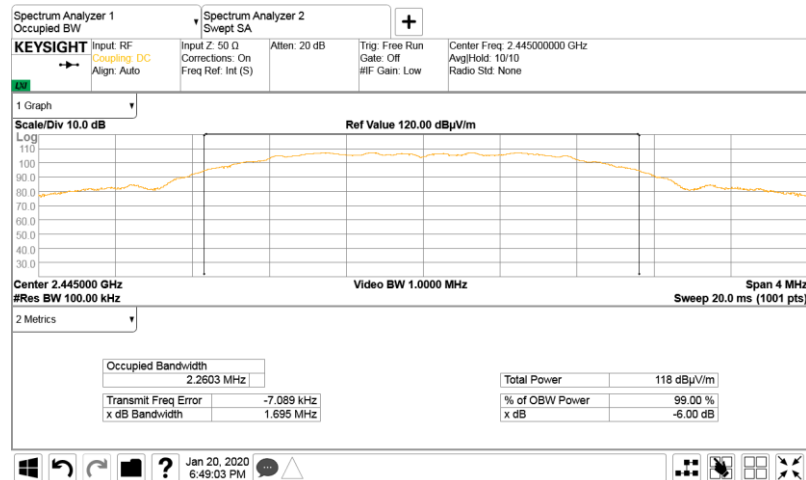


<b>Test specification:</b> Section 15.247(a)2 / RSS-247 section 5.2(1), 6 dB bandwidth			
<b>Test procedure:</b> ANSI C63.10 section 11.8.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 19-Dec-19			
<b>Temperature:</b> 23 °C	<b>Relative Humidity:</b> 38 %	<b>Air Pressure:</b> 1008 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

Plot 7.1.1 6 dB bandwidth test result at low frequency ch.11, Antenna 1



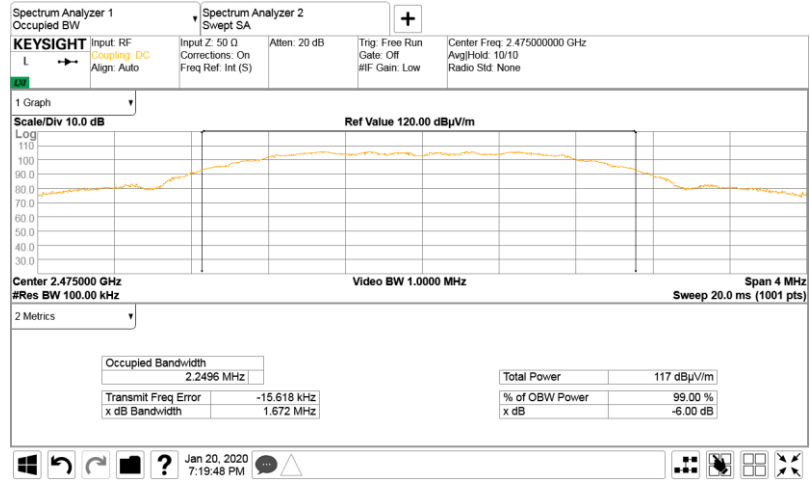
Plot 7.1.2 6 dB bandwidth test result at mid frequency ch.19, Antenna 1



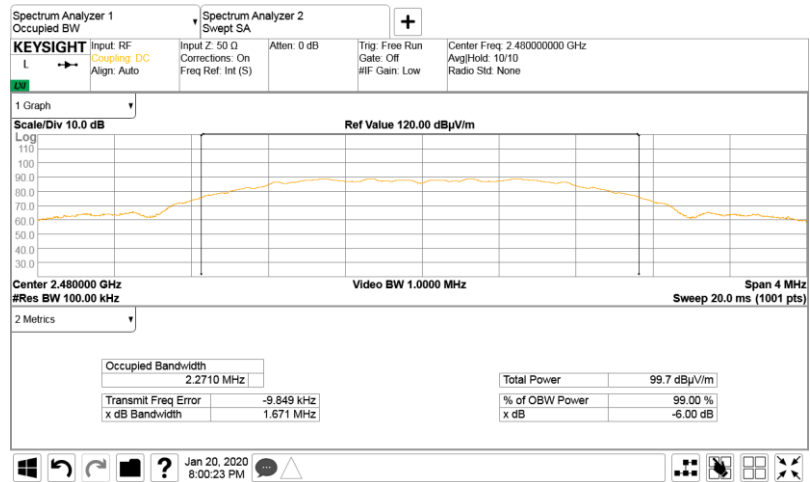


<b>Test specification:</b> Section 15.247(a)2 / RSS-247 section 5.2(1), 6 dB bandwidth			
<b>Test procedure:</b> ANSI C63.10 section 11.8.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 19-Dec-19			
<b>Temperature:</b> 23 °C	<b>Relative Humidity:</b> 38 %	<b>Air Pressure:</b> 1008 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

Plot 7.1.3 6 dB bandwidth test result at mid frequency ch.25, Antenna 1



Plot 7.1.4 6 dB bandwidth test result at high frequency ch.26, Antenna 1

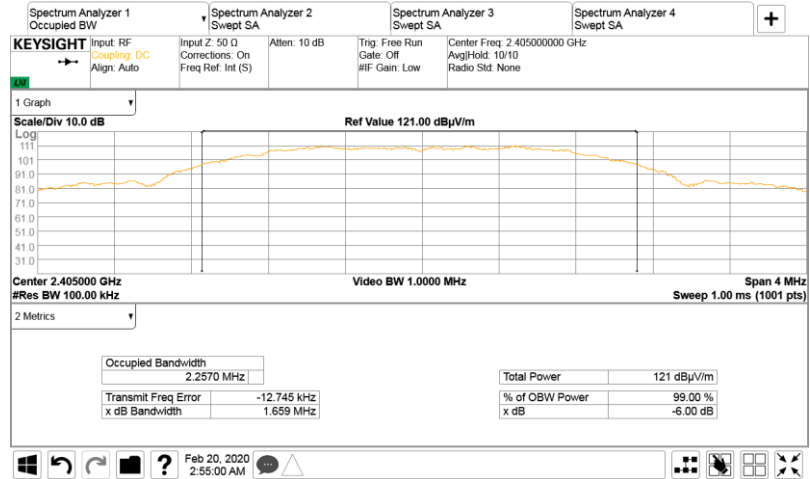




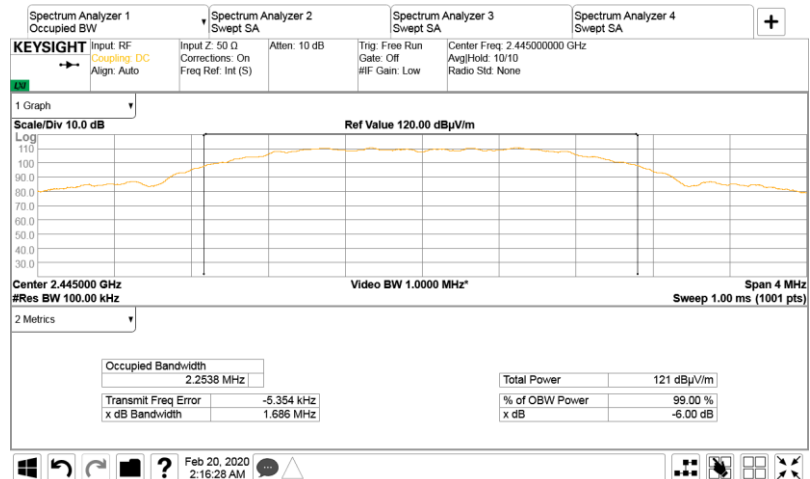
HERMON LABORATORIES

<b>Test specification:</b> Section 15.247(a)2 / RSS-247 section 5.2(1), 6 dB bandwidth			
<b>Test procedure:</b> ANSI C63.10 section 11.8.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 19-Dec-19			
<b>Temperature:</b> 23 °C	<b>Relative Humidity:</b> 38 %	<b>Air Pressure:</b> 1008 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

Plot 7.1.5 6 dB bandwidth test result at low frequency ch.11, Antenna 2



Plot 7.1.6 6 dB bandwidth test result at mid frequency ch.19, Antenna 2

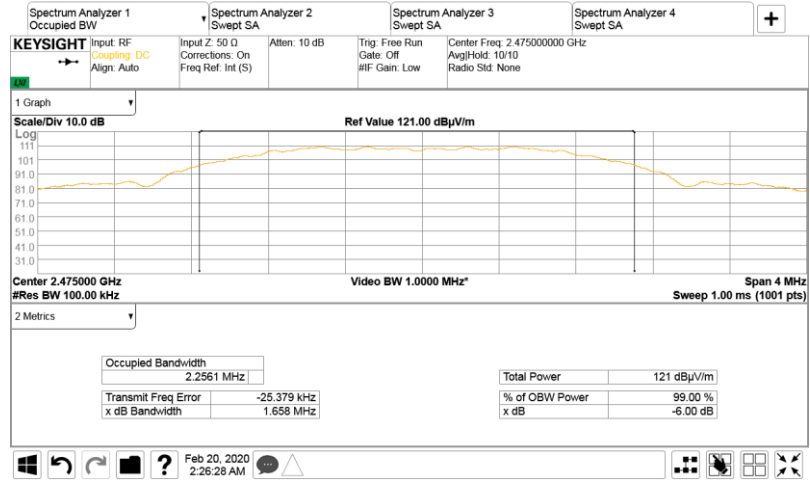




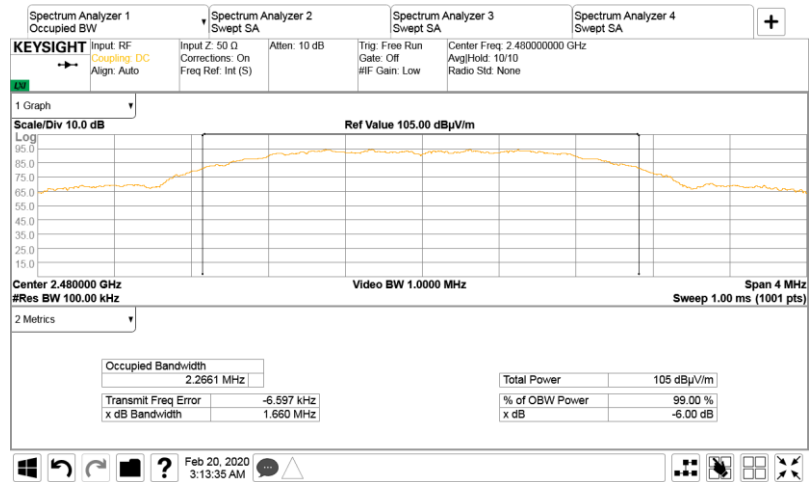
HERMON LABORATORIES

<b>Test specification:</b> Section 15.247(a)2 / RSS-247 section 5.2(1), 6 dB bandwidth			
<b>Test procedure:</b> ANSI C63.10 section 11.8.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 19-Dec-19			
<b>Temperature:</b> 23 °C	<b>Relative Humidity:</b> 38 %	<b>Air Pressure:</b> 1008 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

Plot 7.1.7 6 dB bandwidth test result at mid frequency ch.25, Antenna 2



Plot 7.1.8 6 dB bandwidth test result at high frequency ch.26, Antenna 2





<b>Test specification:</b> Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

## 7.2 Field strength of spurious emissions

### 7.2.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.2.1.

Table 7.2.1 Radiated spurious emissions limits

Frequency, MHz	Field strength at 3 m within restricted bands, dB(μV/m)*			Attenuation of field strength of spurious versus carrier outside restricted bands, dBc***
	Peak	Quasi Peak	Average	
0.009 – 0.090	148.5 – 128.5	NA	128.5 – 108.5**	20.0
0.090 – 0.110	NA	108.5 – 106.8**	NA	
0.110 – 0.490	126.8 – 113.8	NA	106.8 – 93.8**	
0.490 – 1.705	NA	73.8 – 63.0**	NA	
1.705 – 30.0*		69.5		
30 – 88		40.0		
88 – 216		43.5		
216 – 960		46.0		
960 - 1000		54.0		
1000 – 10 <sup>th</sup> harmonic	74.0	NA	54.0	

\*- The limit for 3 m test distance was calculated using the inverse square distance extrapolation factor as follows:

$$\text{Lims}_2 = \text{Lims}_1 + 40 \log (S_1/S_2),$$

where  $S_1$  and  $S_2$  – standard defined and test distance respectively in meters.

\*\* - The limit decreases linearly with the logarithm of frequency.

\*\*\* - The field strength limits applied from the lowest radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.

### 7.2.2 Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

7.2.2.1 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360° and the measuring antenna was rotated around its vertical axis.

7.2.2.2 The worst test results (the lowest margins) were recorded and shown in the associated plots.

### 7.2.3 Test procedure for spurious emission field strength measurements above 30 MHz

7.2.3.1 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360°, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.

7.2.3.2 The worst test results (the lowest margins) were recorded and shown in the associated plots.



<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

Figure 7.2.1 Setup for spurious emission field strength measurements below 30 MHz

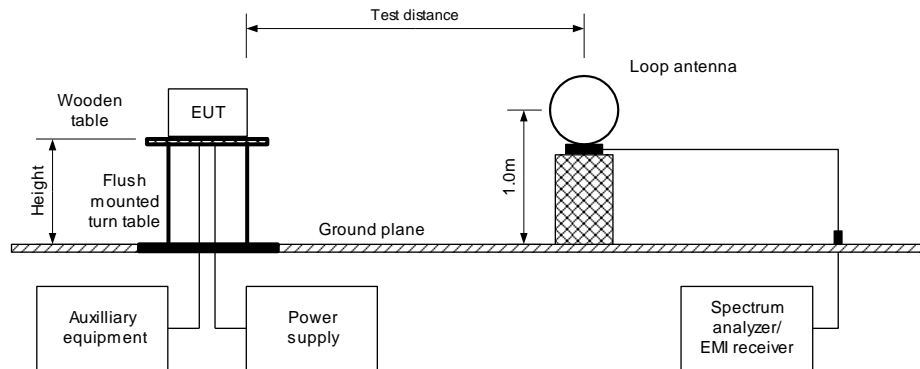
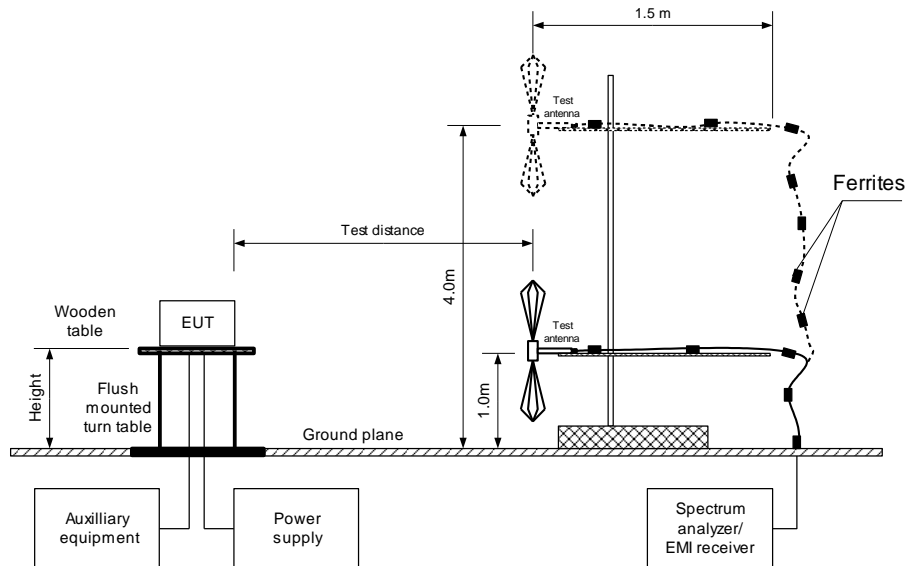


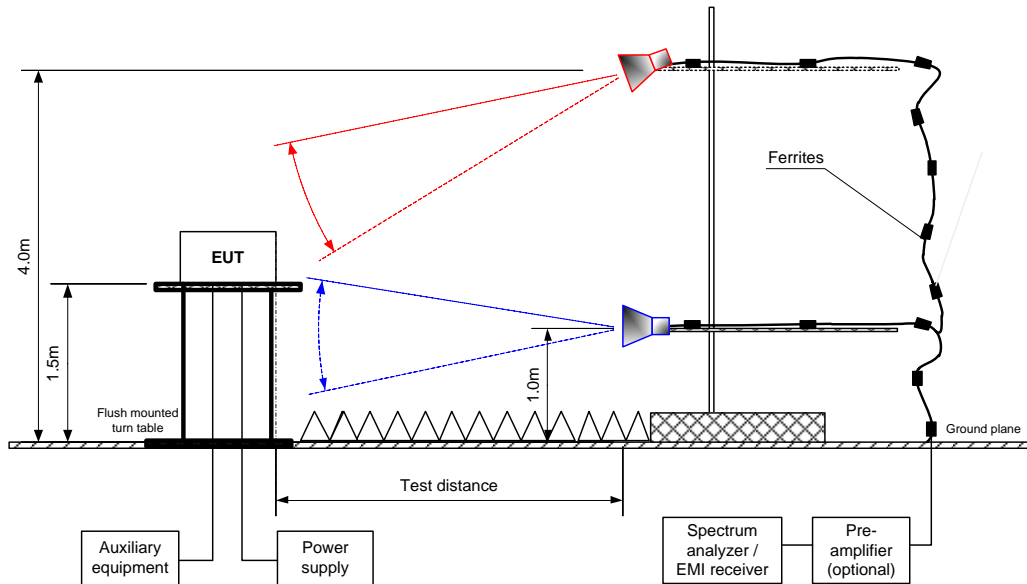
Figure 7.2.2 Setup for spurious emission field strength measurements in 30 – 1000 MHz





<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

Figure 7.2.3 Setup for spurious emission field strength measurements above 1000 MHz





<b>Test specification:</b> Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

**Table 7.2.2 Field strength of emissions outside restricted bands**

ASSIGNED FREQUENCY: 2400.0 – 2483.5 MHz  
 INVESTIGATED FREQUENCY RANGE: 0.009 – 25000 MHz  
 TEST DISTANCE: 3 m  
 MODULATION: OQPSK  
 BIT RATE: 250 kbps  
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum  
 DETECTOR USED: Peak  
 RESOLUTION BANDWIDTH: 100 kHz  
 VIDEO BANDWIDTH: 300 kHz  
 TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)  
 Biconilog (30 MHz – 1000 MHz)  
 Double ridged guide (above 1000 MHz)

Frequency, MHz	Field strength of spurious, dB(µV/m)	Antenna polarization	Antenna height, m	Azimuth, degrees*	Field strength of carrier, dB(µV/m)	Attenuation below carrier, dBc	Limit, dBc	Margin, dB**	Verdict
<b>Carrier frequency 2405.0 MHz</b>									
2399.600	65.52	Horizontal	1.27	186	111.96	46.44	20.0	26.44	Pass
7216.500	51.17	Horizontal	2.32	16		60.79		40.79	
<b>Carrier frequency 2445.0 MHz</b>									
All emissions are more than 20 dB below the limit									Pass
<b>Carrier frequency 2475.0 MHz</b>									
9902.195	53.49	Vertical	1.27	0	110.31	56.82	20.0	36.82	Pass
<b>Carrier frequency 2480.0 MHz</b>									
All emissions are more than 20 dB below the limit									Pass

\*- EUT front panel refers to 0 degrees position of turntable.  
 \*\*- Margin = Attenuation below carrier – specification limit.





<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

**Table 7.2.3 Field strength of spurious emissions above 1 GHz within restricted bands**

ASSIGNED FREQUENCY: 2400.0 – 2483.5 MHz  
 INVESTIGATED FREQUENCY RANGE: 1000 – 25000 MHz  
 TEST DISTANCE: 3 m  
 MODULATION: OQPSK  
 BIT RATE: 250 kbps  
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum  
 DETECTOR USED: Peak  
 RESOLUTION BANDWIDTH: 1000 kHz  
 TEST ANTENNA TYPE: Double ridged guide

Frequency, MHz	Antenna			Peak field strength(VBW=3 MHz)			Average field strength(VBW=10 Hz)				Verdict
	Polarization	Height, m	Azimuth, degrees*	Measured, dB(µV/m)	Limit, dB(µV/m)	Margin, dB**	Measured, dB(µV/m)	Calculated, dB(µV/m)	Limit, dB(µV/m)	Margin, dB***	
<b>Carrier frequency 2405.0 MHz</b>											
4809.000	Vertical	1.53	360	48.63	74.0	-25.37	37.92	NA	54.0	-16.08	Pass
<b>Carrier frequency 2445.0 MHz</b>											
2484.172	Vertical	2.06	230	46.94	74.0	-27.06	34.79	NA	54.0	-19.21	Pass
4891.152	Vertical	2.05	295	49.36	74.0	-24.64	39.16	NA	54.0	-14.84	
<b>Carrier frequency 2475.0 MHz</b>											
2483.672	Horizontal	1.28	173	58.38	74.0	-15.62	44.41	NA	54.0	-9.59	Pass
4951.220	Horizontal	1.87	348	52.77	74.0	-21.23	43.96	NA	54.0	-10.04	
7423.199	Vertical	1.02	90	54.24	74.0	-19.76	44.36	NA	54.0	-9.64	
<b>Carrier frequency 2480.0 MHz</b>											
2483.472	Horizontal	1.53	178	58.78	74.0	-15.22	49.20	NA	54.0	-4.80	Pass
4961.048	Horizontal	1.53	193	49.29	74.0	-24.71	38.78	NA	54.0	-15.22	
7441.716	Horizontal	1.65	177	49.54	74.0	-24.46	36.33	NA	54.0	-17.67	

\*- EUT front panel refers to 0 degrees position of turntable.  
 \*\*- Margin = Measured field strength - specification limit.  
 \*\*\*- Margin = Calculated field strength - specification limit,  
 where Calculated field strength = Measured field strength + average factor.

**Table 7.2.4 Average factor calculation**

Transmission pulse		Transmission burst		Transmission train duration, ms	Average factor, dB
Duration, ms	Period, ms	Duration, ms	Period, ms		
NA	NA	NA	NA	NA	NA

\*- Average factor was calculated as follows  
 for pulse train shorter than 100 ms:  $Average\ factor = 20 \times \log_{10} \left( \frac{Pulse\ duration}{Pulse\ period} \times \frac{Burst\ duration}{Train\ duration} \times Number\ of\ bursts\ within\ pulse\ train \right)$   
 for pulse train longer than 100 ms:  $Average\ factor = 20 \times \log_{10} \left( \frac{Pulse\ duration}{Pulse\ period} \times \frac{Burst\ duration}{100\ ms} \times Number\ of\ bursts\ within\ 100\ ms \right)$



<b>Test specification:</b> Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

Table 7.2.5 Field strength of spurious emissions below 1 GHz within restricted bands

ASSIGNED FREQUENCY: 2400.0 – 2483.5 MHz  
 INVESTIGATED FREQUENCY RANGE: 0.009 – 1000 MHz  
 TEST DISTANCE: 3 m  
 MODULATION: OQPSK  
 BIT RATE: 250 kbps  
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum  
 RESOLUTION BANDWIDTH: 0.2 kHz (9 kHz – 150 kHz)  
 9.0 kHz (150 kHz – 30 MHz)  
 120 kHz (30 MHz – 1000 MHz)  
 VIDEO BANDWIDTH: > Resolution bandwidth  
 TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)  
 Biconilog (30 MHz – 1000 MHz)

Frequency, MHz	Peak emission, dB(µV/m)	Quasi-peak			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(µV/m)	Limit, dB(µV/m)	Margin, dB*				
<b>Carrier frequency 2405.0 MHz</b>								
No emissions were found								Pass
<b>Carrier frequency 2445.0 MHz</b>								
No emissions were found								Pass
<b>Carrier frequency 2475.0 MHz</b>								
No emissions were found								Pass
<b>Carrier frequency 2480.0 MHz</b>								
No emissions were found								Pass

\*- Margin = Measured emission - specification limit.  
 \*\*- EUT front panel refer to 0 degrees position of turntable.



<b>Test specification:</b> Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

Table 7.2.6 Restricted bands according to FCC section 15.205

MHz	MHz	MHz	MHz	MHz	GHz
0.09 - 0.11	8.37625 - 8.38675	73 - 74.6	399.9 - 410	2690 - 2900	10.6 - 12.7
0.495 - 0.505	8.41425 - 8.41475	74.8 - 75.2	608 - 614	3260 - 3267	13.25 - 13.4
2.1735 - 2.1905	12.29 - 12.293	108 - 121.94	960 - 1240	3332 - 3339	14.47 - 14.5
4.125 - 4.128	12.51975 - 12.52025	123 - 138	1300 - 1427	3345.8 - 3358	15.35 - 16.2
4.17725 - 4.17775	12.57675 - 12.57725	149.9 - 150.05	1435 - 1626.5	3600 - 4400	17.7 - 21.4
4.20725 - 4.20775	13.36 - 13.41	156.52475 - 156.52525	1645.5 - 1646.5	4500 - 5150	22.01 - 23.12
6.215 - 6.218	16.42 - 16.423	156.7 - 156.9	1660 - 1710	5350 - 5460	23.6 - 24
6.26775 - 6.26825	16.69475 - 16.69525	162.0125 - 167.17	1718.8 - 1722.2	7250 - 7750	31.2 - 31.8
6.31175 - 6.31225	16.80425 - 16.80475	167.72 - 173.2	2200 - 2300	8025 - 8500	36.43 - 36.5
8.291 - 8.294	25.5 - 25.67	240 - 285	2310 - 2390	9000 - 9200	Above 38.6
8.362 - 8.366	37.5 - 38.25	322 - 335.4	2483.5 - 2500	9300 - 9500	

Table 7.2.7 Restricted bands according to RSS-Gen

MHz	MHz	MHz	MHz	MHz	GHz
0.09 - 0.11	8.291 - 8.294	16.80425 - 16.80475	399.9 - 410	3260 - 3267	10.6 - 12.7
2.1735 - 2.1905	8.362 - 8.366	25.5 - 25.67	608 - 614	3332 - 3339	13.25 - 13.4
3.020 - 3.026	8.37625 - 8.38675	37.5 - 38.25	960 - 1427	3345.8 - 3358	14.47 - 14.5
4.125 - 4.128	8.41425 - 8.41475	73 - 74.6	1435 - 1626.5	3500 - 4400	15.35 - 16.2
4.17725 - 4.17775	12.29 - 12.293	74.8 - 75.2	1645.5 - 1646.5	4500 - 5150	17.7 - 21.4
4.20725 - 4.20775	12.51975 - 12.52025	108 - 138	1660 - 1710	5350 - 5460	22.01 - 23.12
5.677 - 5.683	12.57675 - 12.57725	156.52475 - 156.52525	1718.8 - 1722.2	7250 - 7750	23.6 - 24
6.215 - 6.218	13.36 - 13.41	156.7 - 156.9	2200 - 2300	8025 - 8500	31.2 - 31.8
6.26775 - 6.26825	16.42 - 16.423	240 - 285	2310 - 2390	9000 - 9200	36.43 - 36.5
6.31175 - 6.31225	16.69475 - 16.69525	322 - 335.4	2655 - 2900	9300 - 9500	Above 38.6

Reference numbers of test equipment used

HL 0446	HL 3903	HL 4360	HL 4933	HL 4956	HL 5112	HL 5665	
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Full description is given in Appendix A.

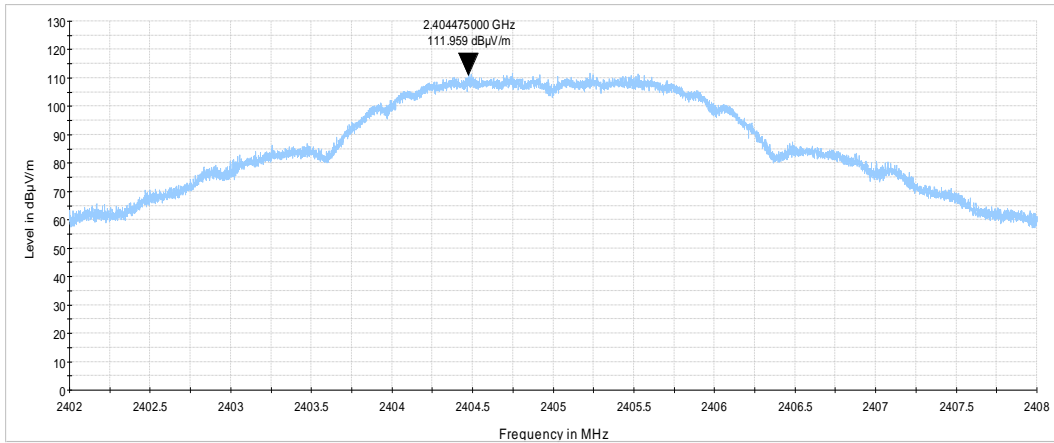


HERMON LABORATORIES

<b>Test specification:</b> Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

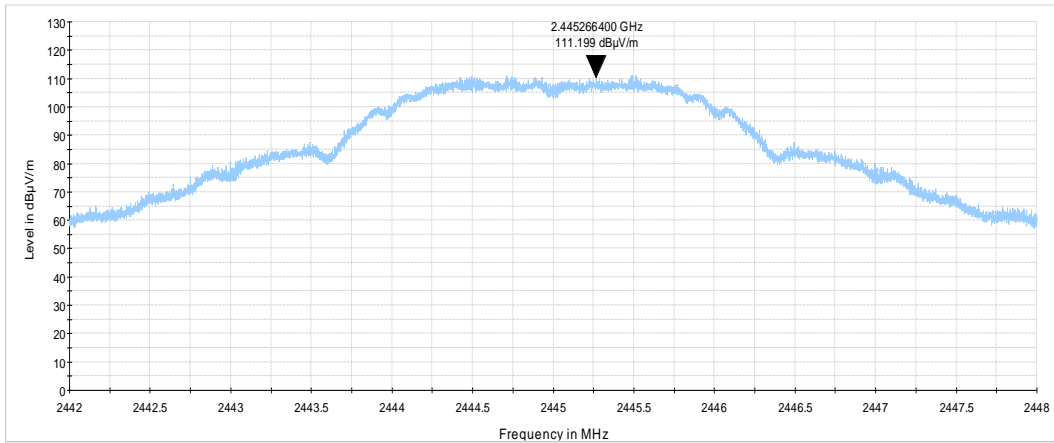
**Plot 7.2.1 Radiated emission measurements at the low carrier frequency**

TEST SITE: Semi anechoic chamber  
TEST DISTANCE: 3 m  
CARRIER FREQUENCY 2405.0 MHz



**Plot 7.2.2 Radiated emission measurements at the mid carrier frequency**

TEST SITE: Semi anechoic chamber  
TEST DISTANCE: 3 m  
CARRIER FREQUENCY 2445.0 MHz

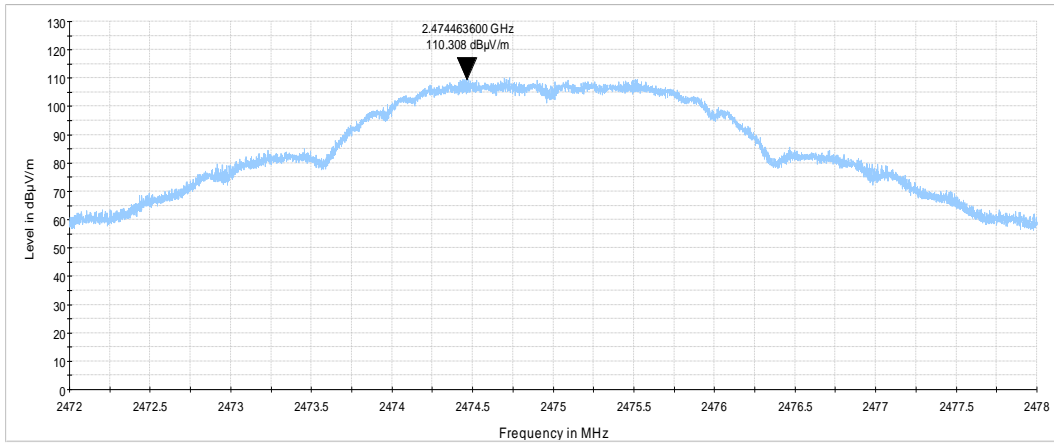




<b>Test specification:</b> Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

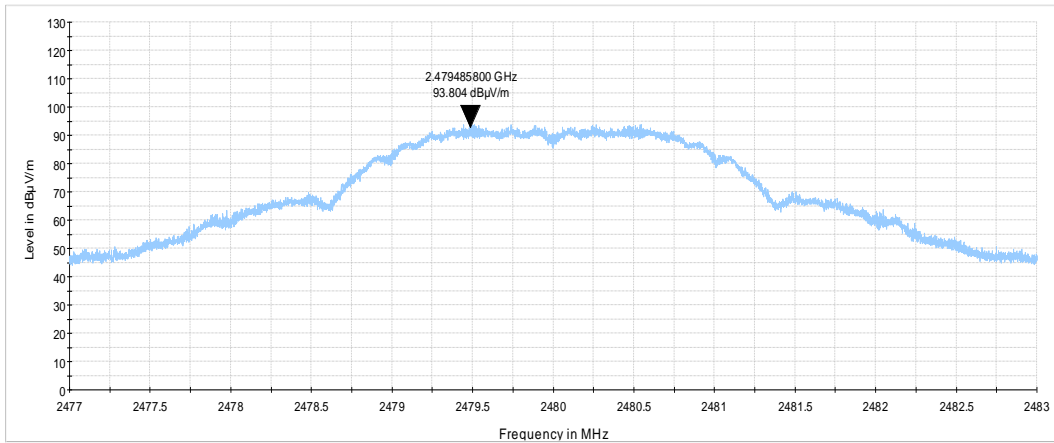
**Plot 7.2.3 Radiated emission measurements at the mid carrier frequency**

TEST SITE: Semi anechoic chamber  
TEST DISTANCE: 3 m  
CARRIER FREQUENCY 2475.0 MHz



**Plot 7.2.4 Radiated emission measurements at the high carrier frequency**

TEST SITE: Semi anechoic chamber  
TEST DISTANCE: 3 m  
CARRIER FREQUENCY 2480.0 MHz

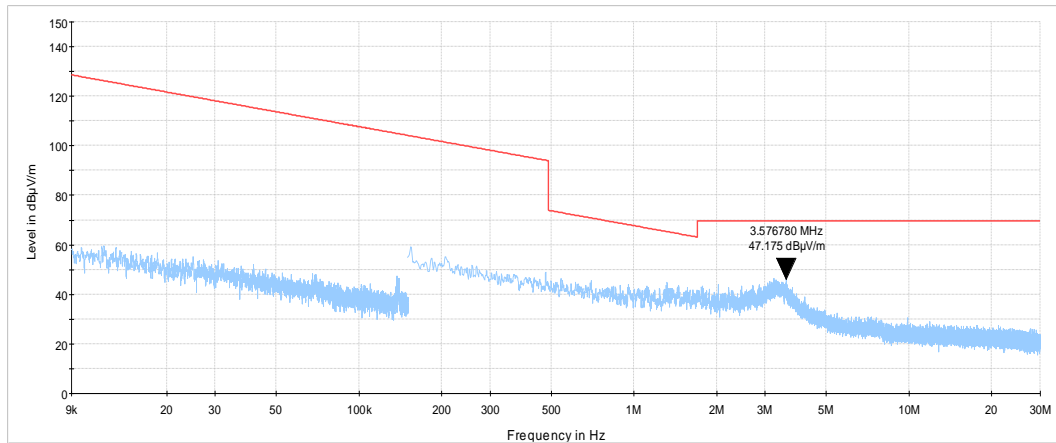




<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

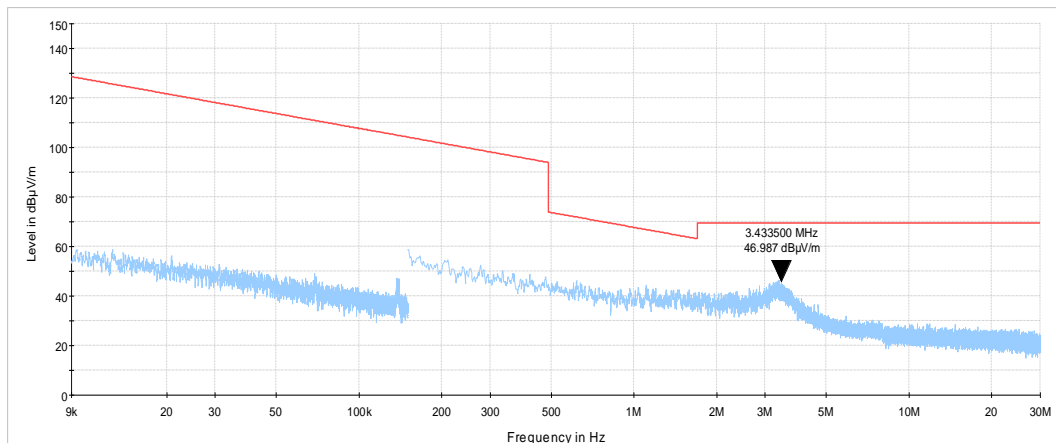
**Plot 7.2.5 Radiated emission measurements from 9 kHz to 30 MHz at the low carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical  
 CARRIER FREQUENCY: 2405.0 MHz  
 EUT TX ANTENNA: #1



**Plot 7.2.6 Radiated emission measurements from 9 kHz to 30 MHz at the low carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical  
 CARRIER FREQUENCY: 2405.0 MHz  
 EUT TX ANTENNA: #2

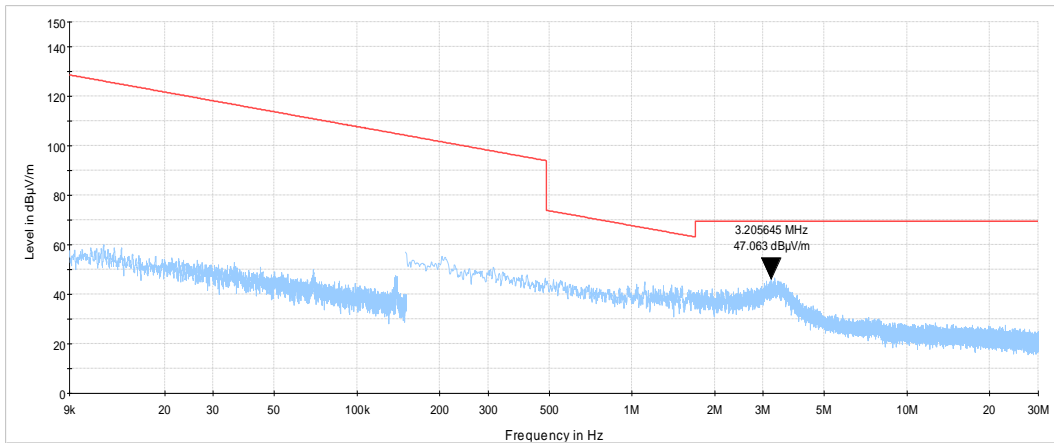




<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

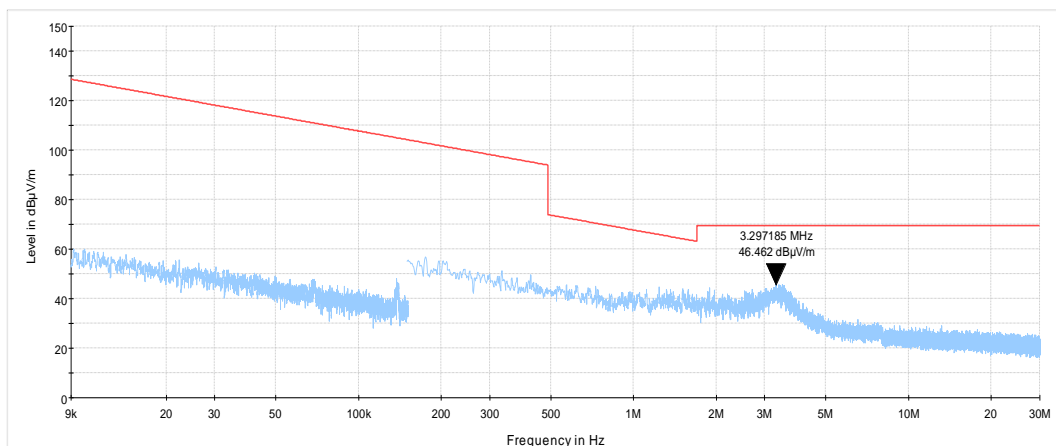
**Plot 7.2.7 Radiated emission measurements from 9 kHz to 30 MHz at the mid carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical  
 CARRIER FREQUENCY: 2445.0 MHz  
 EUT TX ANTENNA: #1



**Plot 7.2.8 Radiated emission measurements from 9 kHz to 30 MHz at the mid carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical  
 CARRIER FREQUENCY: 2445.0 MHz  
 EUT TX ANTENNA: #2

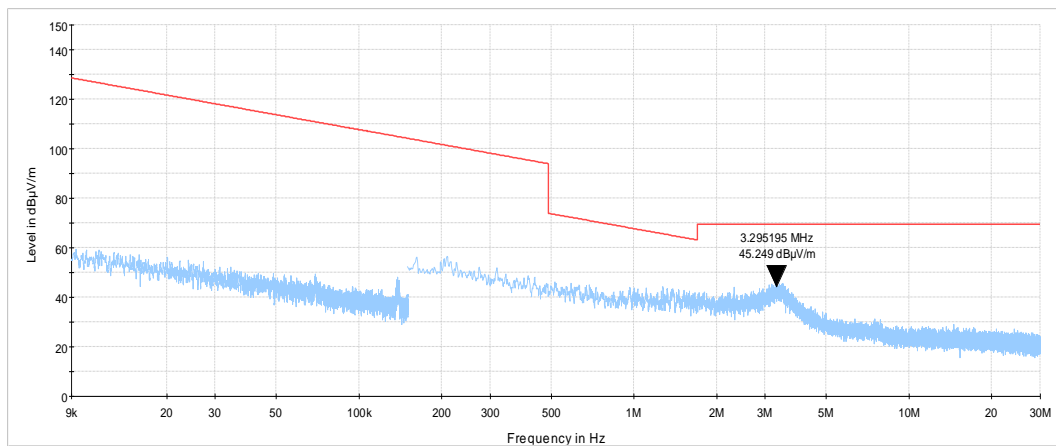




<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

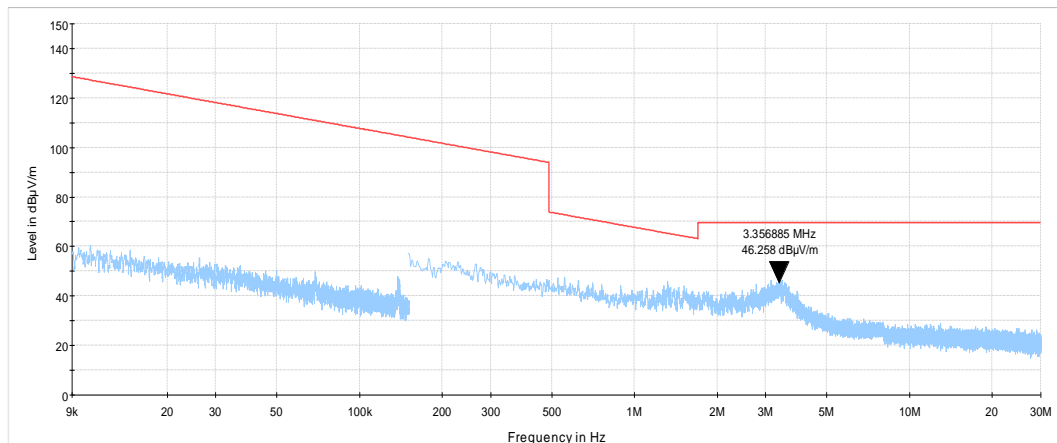
**Plot 7.2.9 Radiated emission measurements from 9 kHz to 30 MHz at the mid carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical  
 CARRIER FREQUENCY: 2475.0 MHz  
 EUT TX ANTENNA: #1



**Plot 7.2.10 Radiated emission measurements from 9 kHz to 30 MHz at the mid carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical  
 CARRIER FREQUENCY: 2475.0 MHz  
 EUT TX ANTENNA: #2



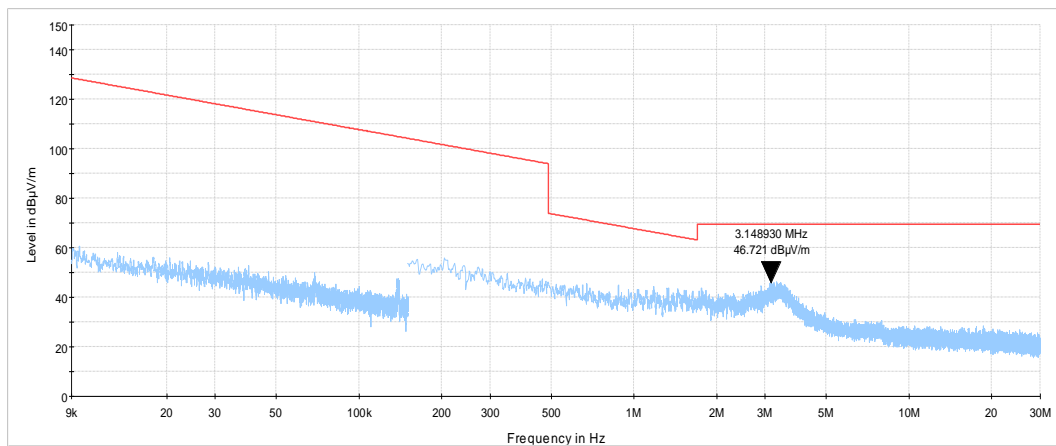




<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

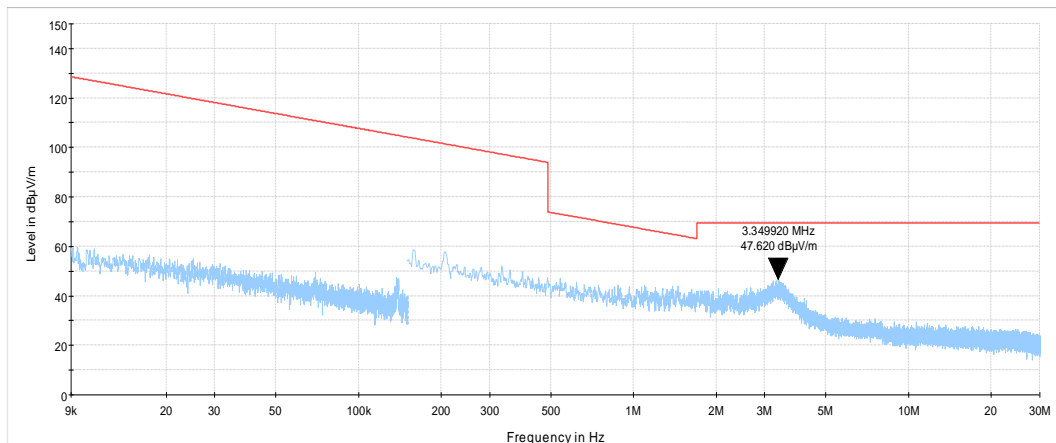
**Plot 7.2.11 Radiated emission measurements from 9 kHz to 30 MHz at the high carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical  
 CARRIER FREQUENCY: 2480.0 MHz  
 EUT TX ANTENNA: #1



**Plot 7.2.12 Radiated emission measurements from 9 kHz to 30 MHz at the high carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical  
 CARRIER FREQUENCY: 2480.0 MHz  
 EUT TX ANTENNA: #2

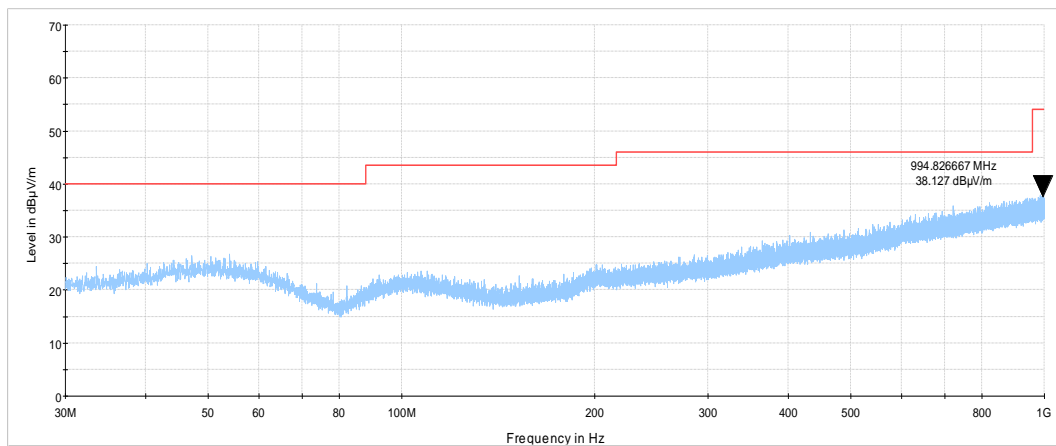




<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

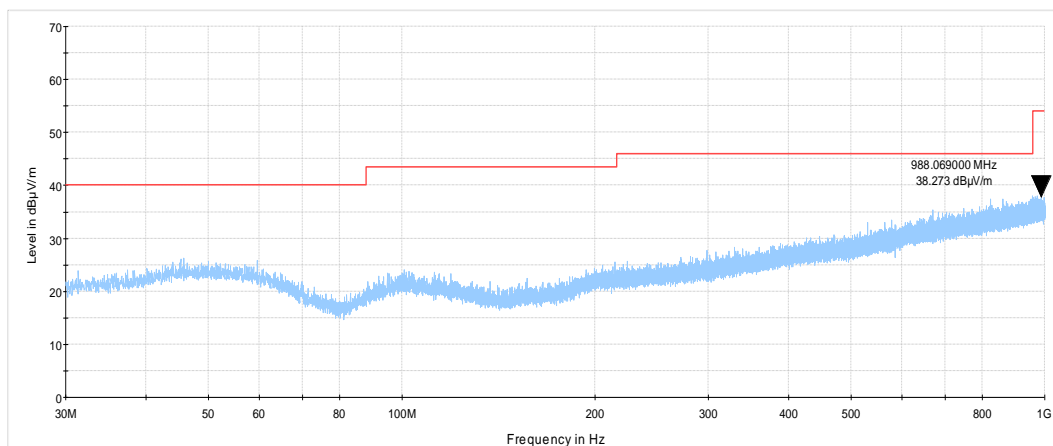
**Plot 7.2.13 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical and Horizontal  
 CARRIER FREQUENCY: 2405.0 MHz  
 EUT TX ANTENNA: #1



**Plot 7.2.14 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical and Horizontal  
 CARRIER FREQUENCY: 2405.0 MHz  
 EUT TX ANTENNA: #2

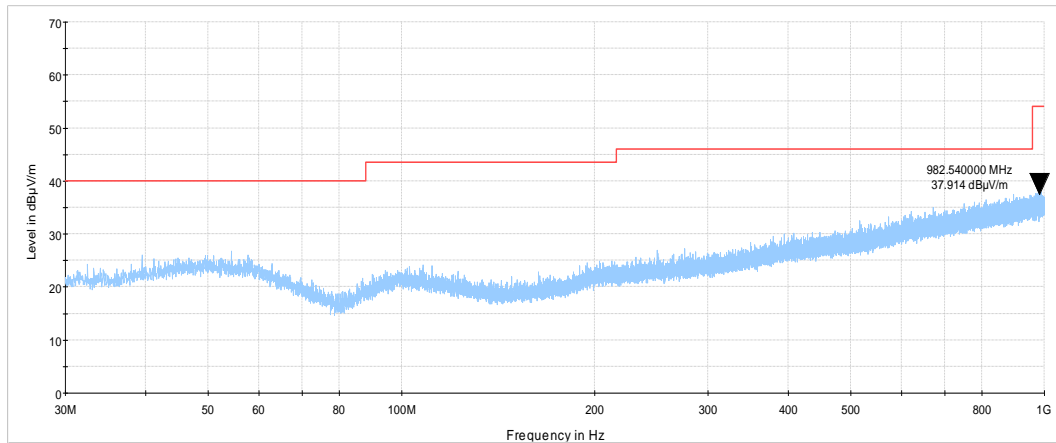




<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

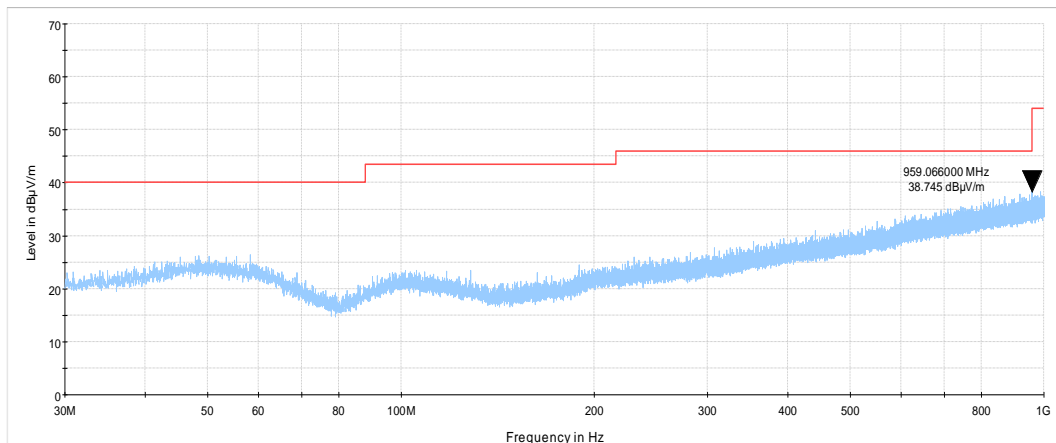
**Plot 7.2.15 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical and Horizontal  
 CARRIER FREQUENCY: 2445.0 MHz  
 EUT TX ANTENNA: #1



**Plot 7.2.16 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical and Horizontal  
 CARRIER FREQUENCY: 2445.0 MHz  
 EUT TX ANTENNA: #2

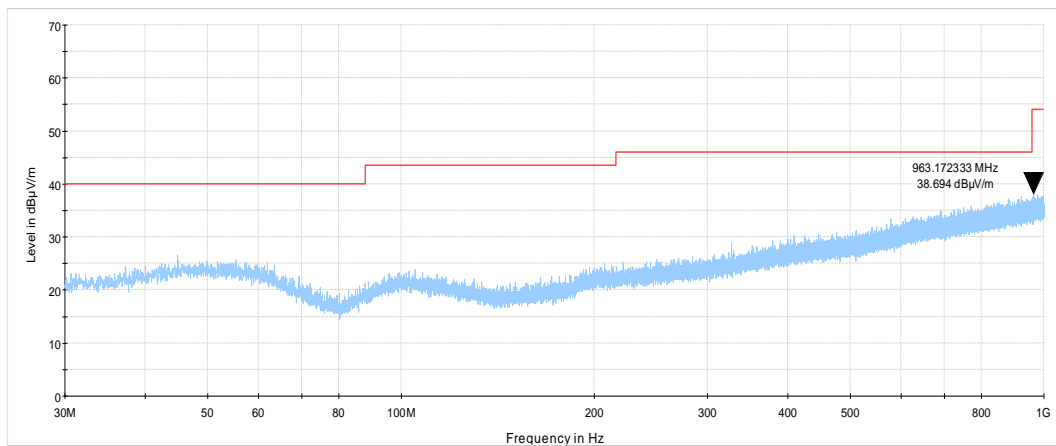




<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

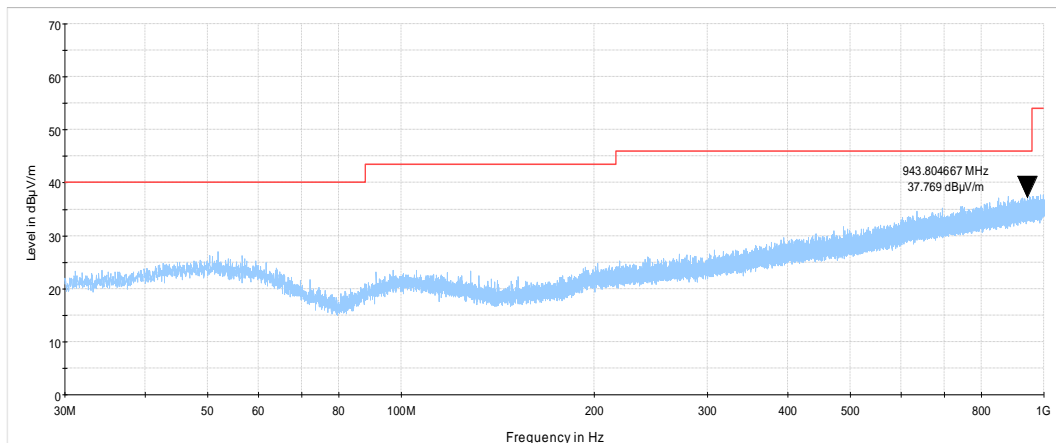
**Plot 7.2.17 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical and Horizontal  
 CARRIER FREQUENCY: 2475.0 MHz  
 EUT TX ANTENNA: #1



**Plot 7.2.18 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical and Horizontal  
 CARRIER FREQUENCY: 2475.0 MHz  
 EUT TX ANTENNA: #2

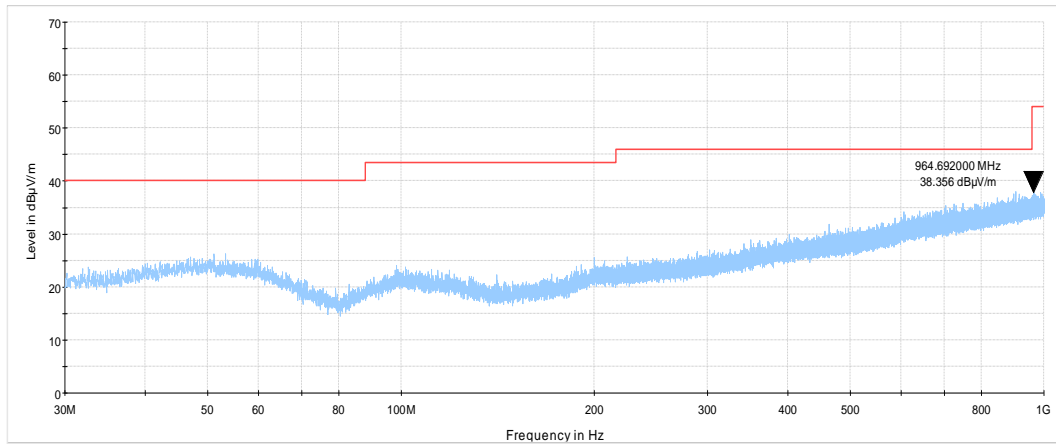




<b>Test specification: Section 15.247(d) / RSS-247 section 5.5, Radiated spurious emissions</b>			
<b>Test procedure:</b> ANSI C63.10 section 11.12.1			
<b>Test mode:</b> Compliance		<b>Verdict: PASS</b>	
<b>Date(s):</b> 16-Dec-19			
<b>Temperature:</b> 22 °C	<b>Relative Humidity:</b> 47 %	<b>Air Pressure:</b> 1020 hPa	<b>Power:</b> 3 VDC
<b>Remarks:</b>			

**Plot 7.2.19 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical and Horizontal  
 CARRIER FREQUENCY: 2480.0 MHz  
 EUT TX ANTENNA: #1



**Plot 7.2.20 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency**

TEST SITE: Semi anechoic chamber  
 TEST DISTANCE: 3 m  
 ANTENNA POLARIZATION: Vertical and Horizontal  
 CARRIER FREQUENCY: 2480.0 MHz  
 EUT TX ANTENNA: #2

