

# Test report

## 342339-1TRFWL

Date of issue: March 23, 2018

Applicant: Stemco LP

Product: 830025X

Model: 830025X

Model variant: N/A

FCC ID: SRA-830025X

IC Registration number: 7413A-830025X

Specifications:

◆ **FCC Part 15 Subpart C §15.249**

Operation in the 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz and 24.0–24.25 GHz


◆ **IC RSS-210 Issue 9 August 2016, Annex B**

License-Exempt Radio Apparatus: Category I Equipment, Devices Operating in Frequency Bands for any Application, Bands 902-928 MHz, 2400-2483.5 MHz and 5725-5875 MHz

Test location

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Company name:	Nemko USA, Inc.
Address:	2210 Faraday Ave, Suite 150
City:	Carlsbad
State:	California
Postal code:	92008
Country:	USA
Telephone:	+1 760 444 3500
Website:	www.nemko.com
FCC Site Number	Test Firm Registration Number: 392943 Designation Number: US5058
ISED Test Site	2040B-3

Tested by:	Nikolay Shtin, Sr. Wireless Engineer
Reviewed by:	Juan Manuel Gonzalez, EMC/Wireless Business Development Manager
Date:	March 23, 2018
Signature:	

Limits of responsibility

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Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within the Nemko USA ISO/IEC 17025 accreditation.

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## Section 1 Report summary

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### 1.1 Applicant and manufacturer

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Company name	Stemco LP
Address	300 Industrial Blvd.
City	Longview
Province/State	Texas
Postal/Zip code	75602
Country	USA

### 1.2 Test specifications

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FCC 47 CFR Part 15, Subpart C, Clause 15.249	Operation in the 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz and 24.0–24.25 GHz
RSS-210, Issue 9 Annex B	Licence-Exempt Radio Apparatus: Category I Equipment, Devices Operating in Frequency Bands for any Application, Bands 902-928 MHz, 2400-2483.5 MHz and 5725-5875 MHz

### 1.3 Test methods

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ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
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### 1.4 Statement of compliance

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In the configuration tested, the EUT was found compliant.

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

See “Summary of test results” for full details.

### 1.5 Exclusions

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None

### 1.6 Test report revision history

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Revision #	Details of changes made to test report
TRF	Original report issued
1TRF	Update Emissions designator, added FCC/ISED Site #, added Formulas in section 3.3, added Antenna details 18-26GHZ in equipment list., added test method in section 1.3. and requirements of FCC §15.31. Section 3.3: Update Operational Range to show center frequency of low and high channel. Table 8.2.3.

## Section 2 Summary of test results

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### 2.1 FCC Part 15 Subpart C – general requirements, test results

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Part	Test description	Verdict
§15.207(a)	Conducted limits	Not applicable*
§15.31(e)	Variation of power source	Not applicable1
§15.215(c)	20 dB bandwidth	Pass

Notes: <sup>1</sup> EUT is battery operated equipment, the tests was performed using a fully charged battery.

\*Not applicable. EUT is battery powered.

### 2.2 FCC Part 15 Subpart C – Intentional Radiators, test results

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Part	Test description	Verdict
§15.249(a)	Radiated emissions not in restricted bands	Pass
§15.249(b)	Fixed Point-to-Point operation in the 24.0–24.25 GHz band	Not applicable
§15.249(d)	Spurious emissions (except harmonics)	Pass

Notes: None

### 2.3 IC RSS-GEN, Issue 3, test results

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Part	Test description	Verdict
§6.6	Occupied bandwidth	Pass
§8.8	AC power lines conducted emission limits	Not applicable*
§7.1.2	Receiver radiated emission limits	Not applicable**

\*Not applicable. EUT is battery powered.

\*\*Not applicable. EUT has no Stand-Alone receiver port.

### 2.4 RSS-210, Issue 9, test results

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Part	Test description	Verdict
§B.10a	Radiated emissions (The field strength of fundamental and harmonic emissions)	Pass
§B.10b	Spurious emissions (except harmonics)	Pass

Notes: None

## Section 3 Equipment under test (EUT) details

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### 3.1 Sample information

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Receipt date	January 3, 2018
Nemko sample ID number	EMC10103, EMC20103, EMC30103 and EMC40103

### 3.2 EUT information

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Product name	830025X
Model	830025X
Model variant	N/A
Serial number	N/A

### 3.3 Technical information

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Operating band	2400–2483.5 MHz
Operating frequency	2406-2476 MHz
Modulation type	GFSK
Occupied bandwidth (99 %)	1.350 MHz
EIRP	98.38dBuV/m or 3.15dBm or 2.06mW (@2406MHz Channel) *see notes below for calculation details
Emission designator	F1D
Power requirements	+12VDC (Battery powered)
Antenna information	Peak antenna gain: 3 dBi The EUT uses a unique antenna coupling/ non-detachable antenna to the intentional radiator.
Notes	<p>* <math>eirp = pt \times gt = (E \times d)^2 / 30</math> where:</p> <ul style="list-style-type: none"> <li>• <math>pt</math> = transmitter output power in watts,</li> <li>• <math>gt</math> = numeric gain of the transmitting antenna (unitless),</li> <li>• <math>E</math> = electric field strength in V/m,</li> <li>• <math>d</math> = measurement distance in meters (m).</li> </ul> <p>And</p> $V/m = 10^{((dBuV/m) - 120) / 20}$

### 3.4 Product description and theory of operation

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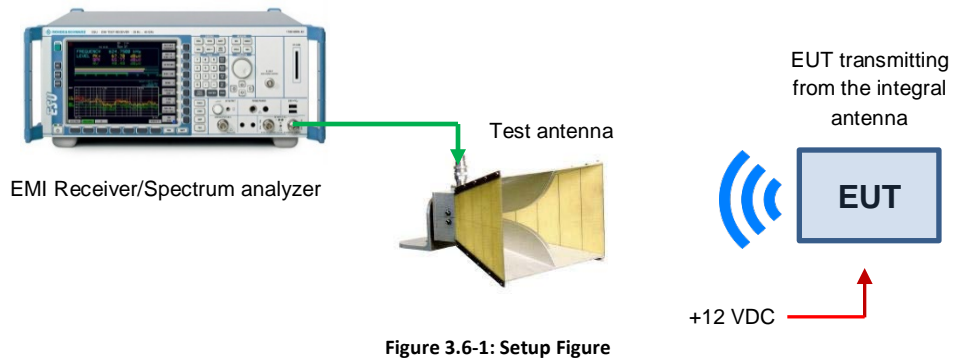
The Equipment Under Test (EUT) was a Stemco LP 830025X Tire Inflation Alert Device. The EUT is used to alert the driver of a tractor trailer combo of an inflation event on their central inflation system. The EUT incorporates a low power radio operating in the 2400-2483.5 MHz ISM band.

### 3.5 EUT exercise details

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EUT was set to fixed channel test mode transmitting modulated signal with maximum power.

### 3.6 EUT setup Figure



### 3.7 EUT sub assemblies

**Table 3.7-1: EUT sub assemblies**

Description	Brand name	Model/Part number	Serial number
N/A	N/A	N/A	N/A

## Section 4 Engineering considerations

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### 4.1 Modifications incorporated in the EUT

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There were no modifications performed to the EUT during this assessment.

### 4.2 Technical judgment

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None

### 4.3 Deviations from laboratory tests procedures

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No deviations were made from laboratory procedures.



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## Section 5 Test conditions

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### 5.1 Atmospheric conditions

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Temperature	15–30 °C
Relative humidity	20–75 %
Air pressure	860–1060 mbar

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

### 5.2 Power supply range

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The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages  $\pm 5\%$ , for which the equipment was designed.



## Section 6 Measurement uncertainty

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### 6.1 Uncertainty of measurement

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Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of  $K = 2$  with 95% certainty.

Test name	Measurement uncertainty, dB
All antenna port measurements	0.55
Conducted spurious emissions	1.13
Radiated spurious emissions	3.78
AC power line conducted emissions	3.55

## Section 7 Test equipment

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### 7.1 Test equipment list

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Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
EMC Test Receiver	Rohde & Schwarz	ESU 40	E1121	1 yr.	7/28/2018
Antenna, Bilog	Schaffner-Chase	CBL6111C	1480	1 yr.	7/21/2018
Antenna, Horn	EMCO	3115	1033	1 yr.	7/27/2018
Antenna, Horn	EMCO	3116	E1013	2yr	02-18-2018
Spectrum Analyzer	Rohde & Schwarz	FSV40	E1120	1 yr.	7-27-2018
Signal Generator	Rohde & Schwarz	SMB 100A	E1128	1 yr.	9-13-2018
High-pass filter	Wainwright Instruments GMBH	WHKX12-2493-2770-18000- 60SS	N/A	N/A	Verified with FSV40
Band reject filter	Wainwright Instruments GMBH	WRCGV10-2363.5-2400- 2483.5-2520-60SS	N/A	N/A	Verified with FSV40

Note: None

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## Section 8      Testing data

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### 8.1    Clause 15.215(c) Emission bandwidth RSS Gen 6.6 Occupied bandwidth

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#### 8.1.1    Definitions and limits

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Part 15.215(c)

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80 % of the permitted band in order to minimize the possibility of out-of-band operation.

RSS-Gen Clause 6.6 Occupied bandwidth

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99 percent emission bandwidth, as calculated or measured.

The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

The span between the two recorded frequencies is the occupied bandwidth.

#### 8.1.2    Test summary

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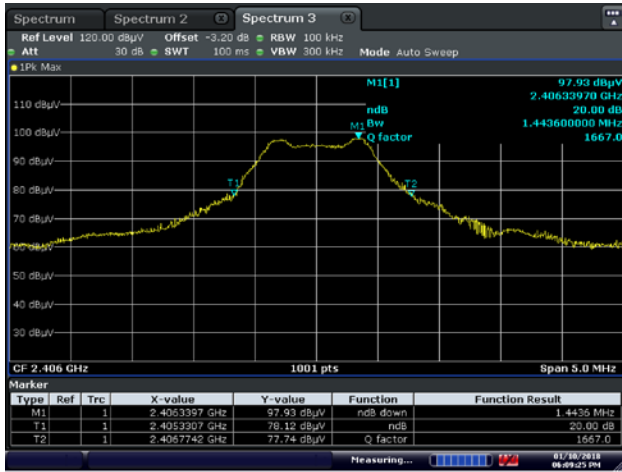
Test date:	January 10 and 12, 2018	Temperature:	20-21 °C
Test engineer:	Nikolay Shtin	Air pressure:	1006 mbar
Verdict:	Pass	Relative humidity:	53-55 %

#### 8.1.3    Observations/special notes

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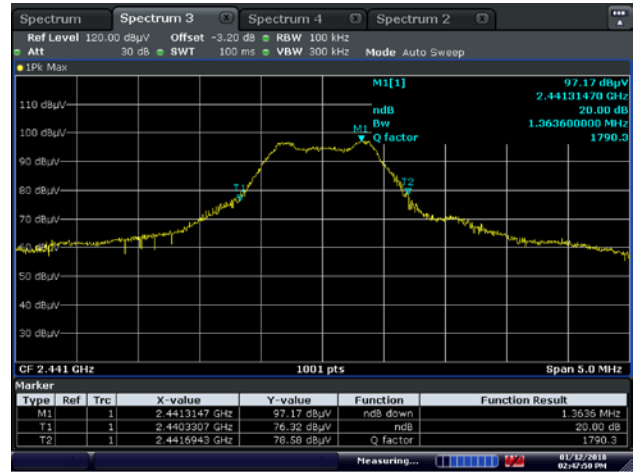
None

8.1.4 Test data



Date: 10 JAN 2018 18:09:26

Figure 8.1-1: 20 dB Bandwidth, Low CH



Date: 12 JAN 2018 14:47:50

Figure 8.1-2: 20 dB Bandwidth, Mid CH

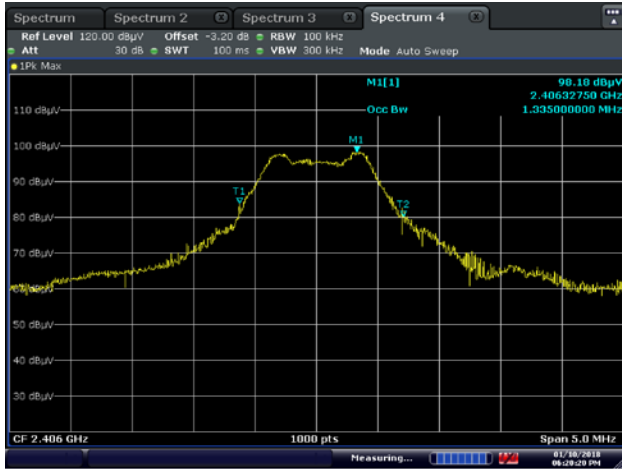


Date: 10 JAN 2018 19:20:29

Figure 8.1-3: 20 dB Bandwidth, High CH

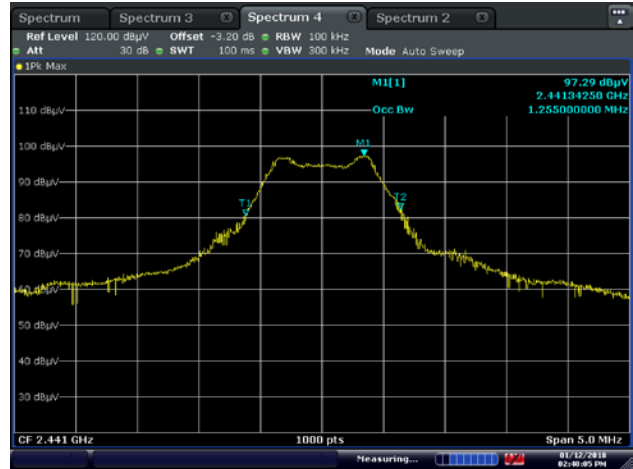
Table 8.1-1: 20 dB bandwidth results

Frequency (MHz)	20dB bandwidth (MHz)
2406	1.4436
2441	1.3636
2476	1.3786



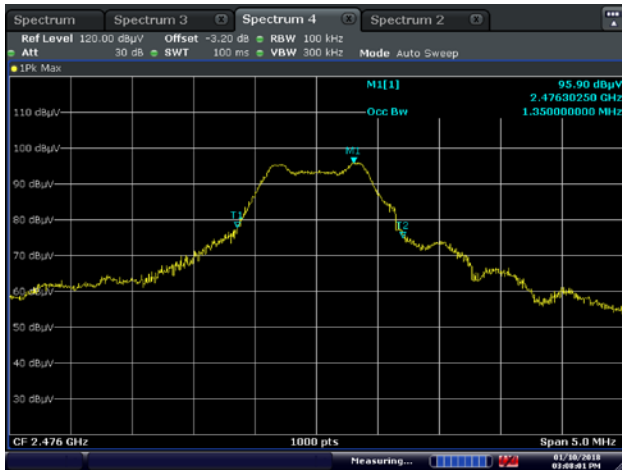
Date: 10.JAN.2018 18:20:20

Figure 8.1-4: 99% OBW, Low CH



Date: 12.JAN.2018 14:40:05

Figure 8.1-5: 99% OBW, Mid CH



Date: 10.JAN.2018 15:08:01

Figure 8.1-6: 99% OBW, High CH

Table 8.1-2: 99% bandwidth results

Frequency (MHz)	99 % bandwidth (MHz)
2406	1.335
2441	1.255
2476	1.350

## 8.2 Clause 15.249(a) RSS 210 B.10(a) Field strength of emissions not in restricted bands

### 8.2.1 Definitions and limits

In addition to the provisions of §15.205 and RSS-Gen the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

**Table 8.2-1: Field strength limits**

Fundamental frequency (MHz)	Field strength of fundamental		Field strength of spurious emissions	
	(mV/m)	(dBµV/m)	(µV/m)	(dBµV/m)
902–928	50	94	500	54
2400–2483.5	50	94	500	54
5725–5875	50	94	500	54
24.0–24.25	250	108	2500	68

(e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter (128 dBµV/m) at 3 meters along the antenna azimuth.

### 8.2.2 Test summary

Test date:	January 10, 2012	Temperature:	22 °C
Test engineer:	Nikolay Shtin	Air pressure:	1001 mbar
Verdict:	Pass	Relative humidity:	55 %

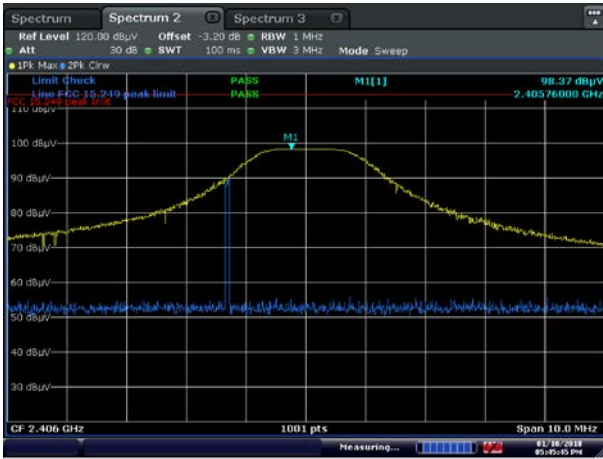
### 8.2.3 Observations/special notes

**Table 8.2-2: §15.209 RSS Gen 8.9 – Radiated emission limits**

Frequency (MHz)	Field strength		Measurement distance (m)
	(µV/m)	(dBµV/m)	
0.009–0.490	2400/F	67.6–20×log <sub>10</sub> (F)	300
0.490–1.705	24000/F	87.6–20×log <sub>10</sub> (F)	30
1.705–30.0	30	29.5	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

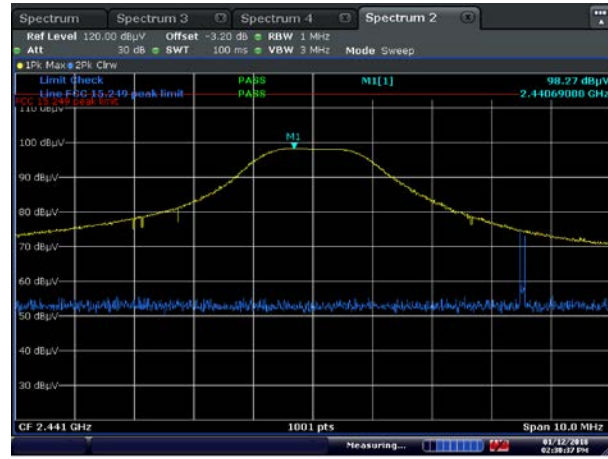
- The spectrum was searched from 30 MHz to the 10<sup>th</sup> harmonic.
- The EUT was measured on three orthogonal axes.
- All measurements were performed at a distance of 3 m.
- All measurements were performed:
  - within 30–1000 MHz range: using a quasi-peak detector with 120 kHz/300 kHz RBW/VBW,
  - above 1 GHz: using peak detector with 1 MHz/3 MHz RBW/VBW for peak results
  - and using a duty cycle/average factor for average results calculations.

8.2.4 Test data, continued



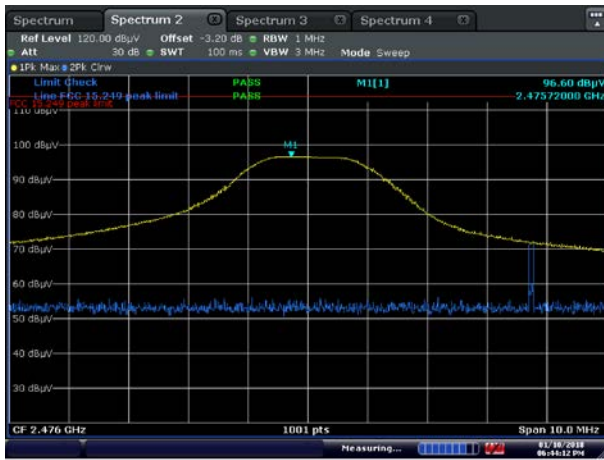
Date: 10.JAN.2018 17:45:45

Figure 8.2-1: Fundamental emissions, Low CH



Date: 12.JAN.2018 14:30:37

Figure 8.2-2: Fundamental emissions, Mid CH



Date: 10.JAN.2018 16:44:12

Figure 8.2-3: Fundamental emissions, High CH

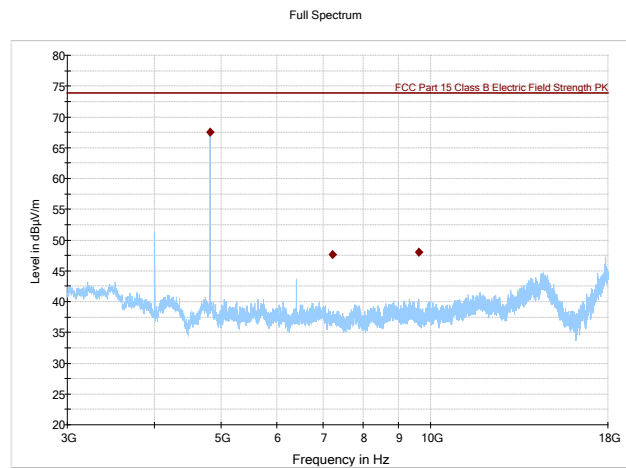
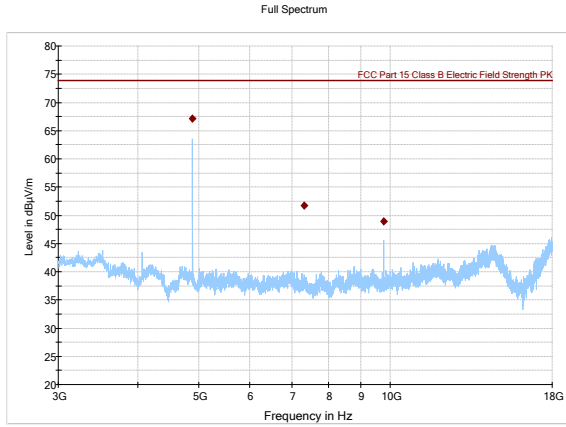
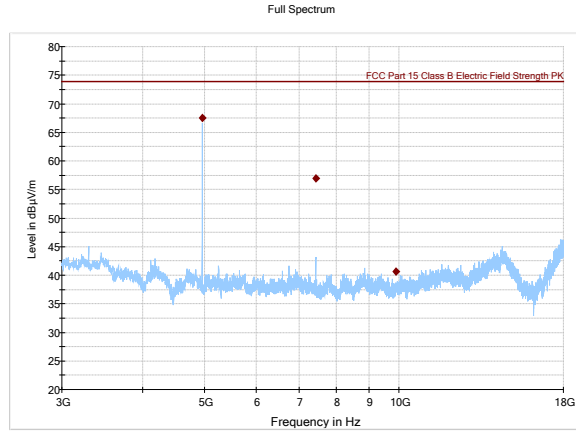


Figure 8.2-4: Harmonic emissions, Low CH





**Figure 8.2-5: Harmonic emissions, Mid CH**



**Figure 8.2-6: Harmonic emissions, High CH**

The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators) for determination of compliance. Limits have been adjusted to reflect 3 m requirements.

A preview measurement was generated with receiver in continuous scan or sweep mode while the EUT was rotated and antenna adjusted to maximize radiated emission. Emissions detected within 6 dB or above limit were re-measured with the appropriate detector against the correlating limit and recorded as the final measurement.

**Table 8.2-3: Field strength measurement results**

Frequency, (MHz)	Polarization, V/H	Peak Field strength, (dBµV/m)	Peak limit, (dBµV/m)	Margin, (dB)	Duty cycle factor	Avg. Field strength (dBµV/m)	Avg. limit (dBµV/m)	Margin (dB)
<i>Fundamental</i>								
2.406	H	98.38	114.0	15.62	42.2	56.18	94.0	37.82
2.441	H	98.27	114.0	15.73	42.2	56.07	94.0	37.93
2.476	H	96.60	114.0	17.40	42.2	54.40	94.0	39.60
<i>Harmonics</i>								
4812	H	67.46	73.9	6.44	42.2	25.26	53.9	28.64
4882	H	67.11	73.9	6.79	42.2	24.91	53.9	28.99
4952	H	67.51	73.9	6.39	42.2	25.31	53.9	28.59
7218	H	47.70	73.9	26.20	42.2	5.50	53.9	48.40
7323	H	51.78	73.9	22.12	42.2	9.58	53.9	44.32
7428	H	56.95	73.9	16.95	42.2	14.75	53.9	39.15
9624	H	48.01	73.9	25.89	42.2	5.81	53.9	48.09
9764	H	48.90	73.9	25.00	42.2	6.70	53.9	47.20
9904	H	40.67	73.9	33.23	42.2	-1.53	53.9	55.43

Note: Field strength includes correction factor of antenna, cable loss, amplifier, and attenuators where applicable.

Duty Cycle Correction Factor Calculation

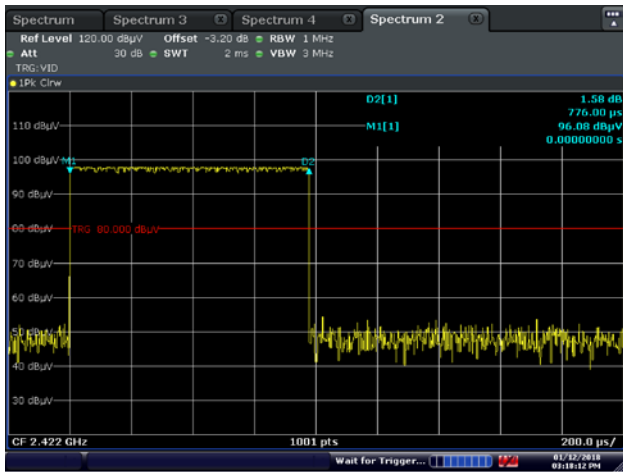


Figure 8.2-7: 2ms sweep (representative channel)

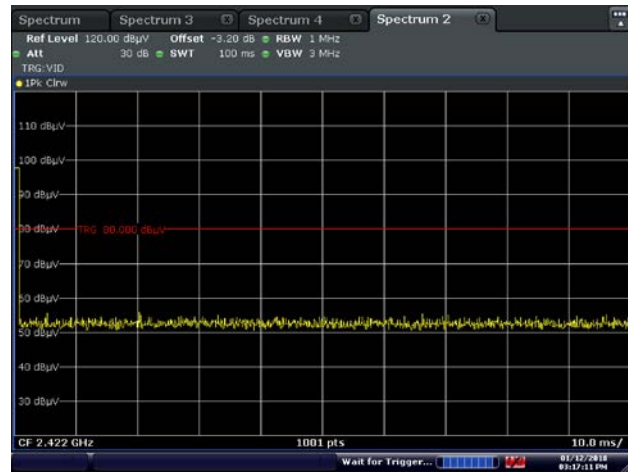


Figure 8.2-8: 100ms sweep (representative channel)

**Duty Cycle Calculation:** = 0.776 ms "On" time per 100 ms sweep  
 = 0.776 ms x 1 / 100

**Duty Cycle Correction Factor** = 20 log (0.00776)  
 = **-42.2 dB**

### 8.3 Clause 15.249(d) RSS 210 B.10(b) Spurious emissions (except for harmonics)

#### 8.3.1 Definitions and limits

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

**Table 8.3-1:** Field strength limits

Frequency (MHz)	Field strength		Measurement distance (m)
	( $\mu\text{V/m}$ )	( $\text{dB}\mu\text{V/m}$ )	
0.009–0.490	2400/F	$67.6-20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6-20 \times \log_{10}(F)$	30
1.705–30.0	30	29.5	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

Notes:

- F = fundamental frequency in kHz
- In the emission table above, the tighter limit applies at the band edges.
- For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

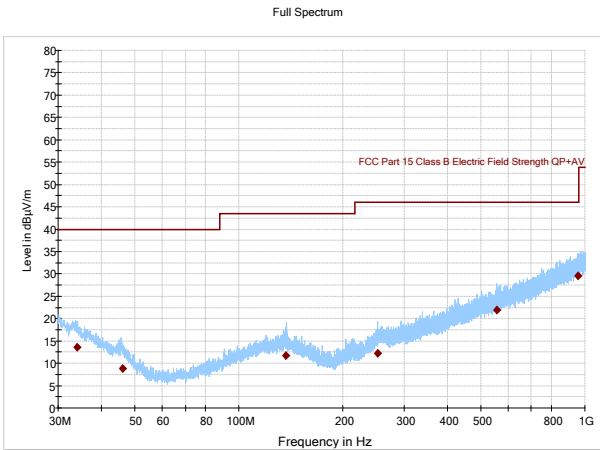
#### 8.3.2 Test summary

Test date:	January 10 and 16, 2018	Temperature:	20-22 °C
Test engineer:	Nikolay Shtin	Air pressure:	1005-1007 mbar
Verdict:	Pass	Relative humidity:	52-55 %

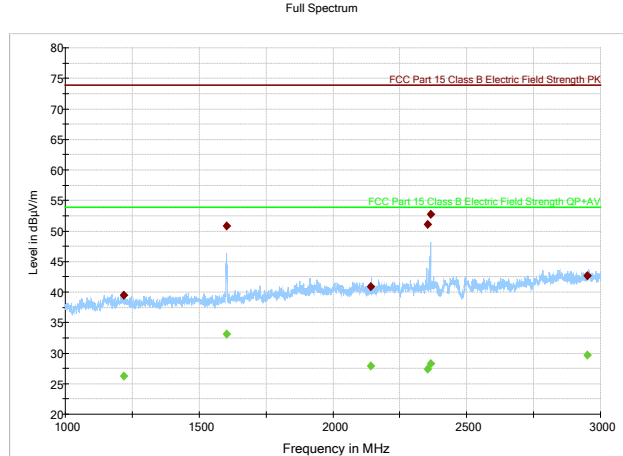
#### 8.3.3 Observations/special notes

- The spectrum was searched from 30 MHz to the 10<sup>th</sup> harmonic.
- The EUT was measured on three orthogonal axes.
- All measurements were performed at a distance of 3 m.
- All measurements were performed:
  - within 30–1000 MHz range: using a quasi-peak detector with 120 kHz/300 kHz RBW/VBW,
  - above 1 GHz: using peak detector with 1 MHz/3 MHz RBW/VBW for peak results
  - and using average detector with 1 MHz/3 MHz RBW/VBW for average results.

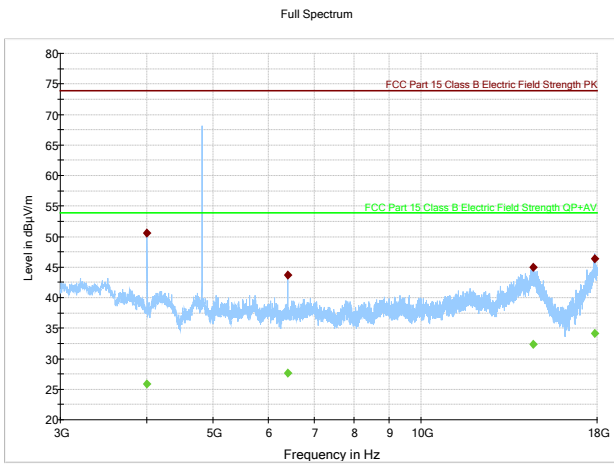
#### 8.3.4 Test data



**Figure 8.3-1:** Radiated spurious emissions, low channel, 30-1000MHz



**Figure 8.3-2:** Radiated spurious emissions, low channel, 1-3GHz



**Figure 8.3-3:** Radiated spurious emissions, low channel, 3-18GHz



Table 8.3-2: Radiated field strength measurement results for low channel 2406 MHz

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
33.974500	13.53	40.00	26.47	5000.0	120.000	196.4	V	16.0
46.040000	8.84	40.00	31.16	5000.0	120.000	173.1	V	55.0
136.528000	11.68	43.50	31.82	5000.0	120.000	143.9	V	192.0
251.771000	12.31	46.00	33.69	5000.0	120.000	404.8	V	0.0
556.746500	21.94	46.00	24.06	5000.0	120.000	227.3	H	341.0
956.030000	29.56	46.00	16.44	5000.0	120.000	358.1	V	206.0

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1217.500000	39.44	---	73.90	34.46	5000.0	1000.000	260.5	H	299.0
1217.500000	---	26.24	53.90	27.66	5000.0	1000.000	260.5	H	299.0
1603.333333	---	33.17	53.90	20.73	5000.0	1000.000	139.1	H	104.0
1603.333333	50.88	---	73.90	23.02	5000.0	1000.000	139.1	H	104.0
2141.750000	---	27.85	53.90	26.05	5000.0	1000.000	363.6	V	0.0
2141.750000	40.91	---	73.90	32.99	5000.0	1000.000	363.6	V	0.0
2354.916667	51.09	---	73.90	22.81	5000.0	1000.000	141.9	H	200.0
2354.916667	---	27.42	53.90	26.48	5000.0	1000.000	141.9	H	200.0
2365.666667	52.77	---	73.90	21.13	5000.0	1000.000	111.3	H	200.0
2365.666667	---	28.24	53.90	25.66	5000.0	1000.000	111.3	H	200.0
2950.416667	42.74	---	73.90	31.16	5000.0	1000.000	296.6	H	238.0
2950.416667	---	29.70	53.90	24.20	5000.0	1000.000	296.6	H	238.0

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
4007.333333	---	25.84	53.90	28.06	100.0	1000.000	99.9	H	0.0
4007.333333	50.60	---	73.90	23.30	100.0	1000.000	99.9	H	0.0
6413.300000	---	27.67	53.90	26.23	100.0	1000.000	374.7	H	102.0
6413.300000	43.67	---	73.90	30.23	100.0	1000.000	374.7	H	102.0
14525.800000	---	32.31	53.90	21.59	100.0	1000.000	390.0	V	151.0
14525.800000	44.93	---	73.90	28.97	100.0	1000.000	390.0	V	151.0
17840.800000	46.38	---	73.90	27.52	100.0	1000.000	176.5	V	182.0
17840.800000	---	34.16	53.90	19.74	100.0	1000.000	176.5	V	182.0

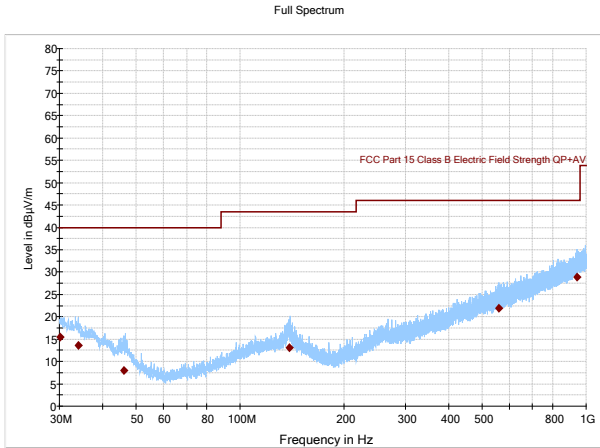


Figure 8.3-4: Radiated spurious emissions, Mid channel, 30-1000MHz

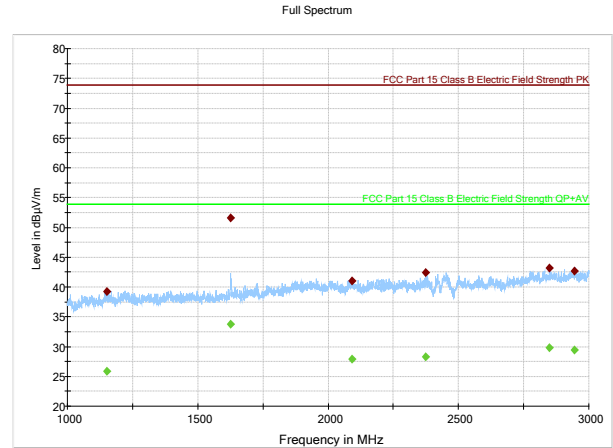


Figure 8.3-5: Radiated spurious emissions, Mid channel, 1-3GHz

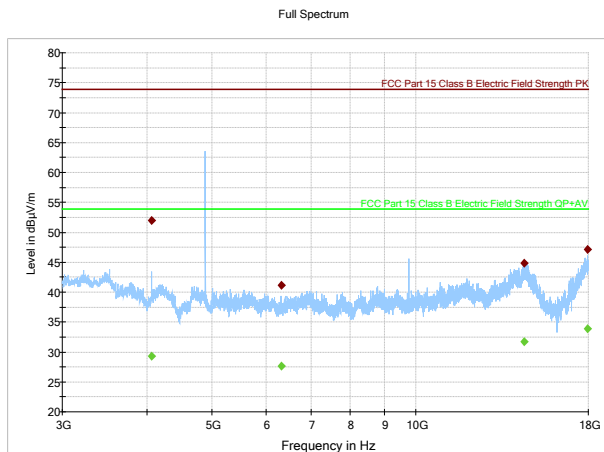


Figure 8.3-6: Radiated spurious emissions, Mid channel, 3-18GHz

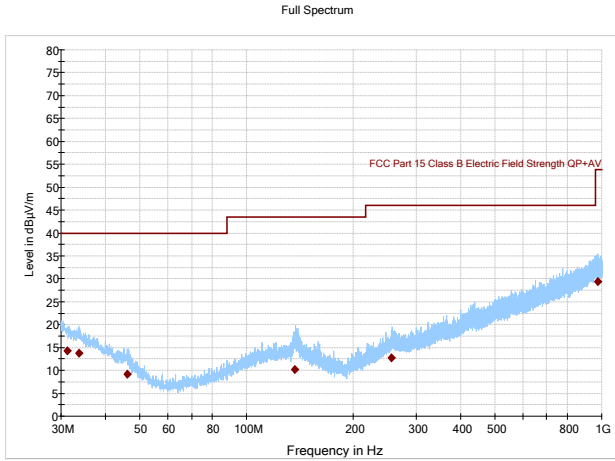


Table 8.3-3: Radiated field strength measurement results for Mid channel 2441 MHz

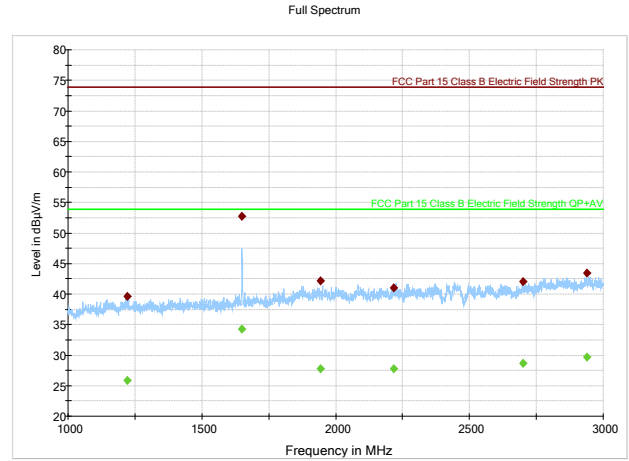
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.160000	15.52	40.00	24.48	5000.0	120.000	158.9	V	102.0
34.057000	13.51	40.00	26.49	5000.0	120.000	301.5	V	349.0
46.138500	8.00	40.00	32.00	5000.0	120.000	292.7	V	145.0
138.959000	13.01	43.50	30.49	5000.0	120.000	162.7	V	33.0
559.478000	21.99	46.00	24.01	5000.0	120.000	227.4	H	154.0
939.563000	28.86	46.00	17.14	5000.0	120.000	277.9	V	153.0

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1151.916667	---	25.86	53.90	28.04	5000.0	1000.000	228.8	H	181.0
1151.916667	39.26	---	73.90	34.64	5000.0	1000.000	228.8	H	181.0
1626.666667	51.64	---	73.90	22.26	5000.0	1000.000	158.2	H	96.0
1626.666667	---	33.74	53.90	20.16	5000.0	1000.000	158.2	H	96.0
2091.583333	---	27.93	53.90	25.97	5000.0	1000.000	284.3	H	192.0
2091.583333	40.96	---	73.90	32.94	5000.0	1000.000	284.3	H	192.0
2373.416667	---	28.26	53.90	25.64	5000.0	1000.000	295.3	H	290.0
2373.416667	42.39	---	73.90	31.51	5000.0	1000.000	295.3	H	290.0
2848.000000	43.16	---	73.90	30.74	5000.0	1000.000	402.3	V	291.0
2848.000000	---	29.76	53.90	24.14	5000.0	1000.000	402.3	V	291.0
2944.916667	---	29.37	53.90	24.53	5000.0	1000.000	267.0	H	244.0
2944.916667	42.72	---	73.90	31.18	5000.0	1000.000	267.0	H	244.0

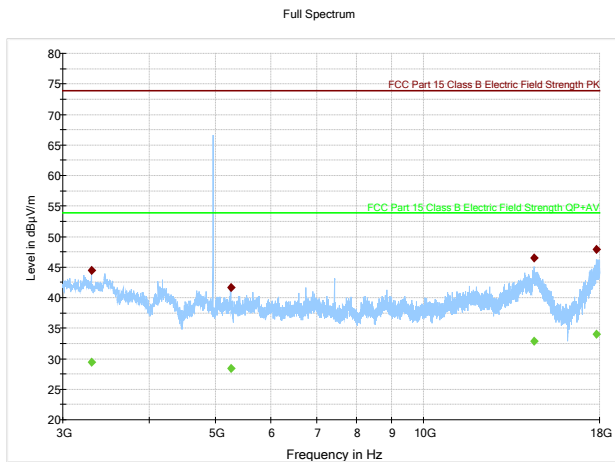
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
4065.333333	51.97	---	73.90	21.93	5000.0	1000.000	357.0	H	336.0
4065.333333	---	29.26	53.90	24.64	5000.0	1000.000	357.0	H	336.0
6321.050000	---	27.61	53.90	26.29	5000.0	1000.000	399.6	V	0.0
6321.050000	41.12	---	73.90	32.78	5000.0	1000.000	399.6	V	0.0
14452.250000	---	31.69	53.90	22.21	5000.0	1000.000	347.2	H	202.0
14452.250000	44.90	---	73.90	29.00	5000.0	1000.000	347.2	H	202.0
17968.350000	---	33.83	53.90	20.07	5000.0	1000.000	130.8	H	353.0
17968.350000	47.10	---	73.90	26.80	5000.0	1000.000	130.8	H	353.0



**Figure 8.3-7:** Radiated spurious emissions, High channel, 30-1000MHz



**Figure 8.3-8:** Radiated spurious emissions, High channel, 1-3GHz



**Figure 8.3-9:** Radiated spurious emissions, High channel, 3-18GHz

**Table 8.3-4:** Radiated field strength measurement results for High channel 2476 MHz



**Section 8**  
**Test name**  
**Specification**

Testing data  
 Clause 15.249(d) RSS-210 B.10(b) Spurious emissions (except for harmonics)  
 FCC Part 15 Subpart C RSS-210 B.10(b)



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
31.200500	14.30	40.00	25.70	5000.0	120.000	355.8	H	124.0
33.677500	13.77	40.00	26.23	5000.0	120.000	410.0	H	64.0
45.993000	9.26	40.00	30.74	5000.0	120.000	140.3	V	244.0
136.722000	10.15	43.50	33.35	5000.0	120.000	384.7	V	93.0
256.169000	12.79	46.00	33.21	5000.0	120.000	404.9	V	33.0
977.422000	29.40	53.90	24.50	5000.0	120.000	356.1	V	26.0

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1222.250000	39.59	---	73.90	34.31	5000.0	1000.000	347.0	V	0.0
1222.250000	---	25.88	53.90	28.02	5000.0	1000.000	347.0	V	0.0
1650.000000	52.73	---	73.90	21.17	5000.0	1000.000	154.7	H	104.0
1650.000000	---	34.24	53.90	19.66	5000.0	1000.000	154.7	H	104.0
1944.416667	---	27.83	53.90	26.07	5000.0	1000.000	288.8	H	162.0
1944.416667	42.19	---	73.90	31.71	5000.0	1000.000	288.8	H	162.0
2217.833333	---	27.83	53.90	26.07	5000.0	1000.000	385.3	V	173.0
2217.833333	40.96	---	73.90	32.94	5000.0	1000.000	385.3	V	173.0
2698.916667	---	28.66	53.90	25.24	5000.0	1000.000	359.3	H	134.0
2698.916667	42.05	---	73.90	31.85	5000.0	1000.000	359.3	H	134.0
2939.583333	---	29.70	53.90	24.20	5000.0	1000.000	341.8	H	320.0
2939.583333	43.48	---	73.90	30.42	5000.0	1000.000	341.8	H	320.0

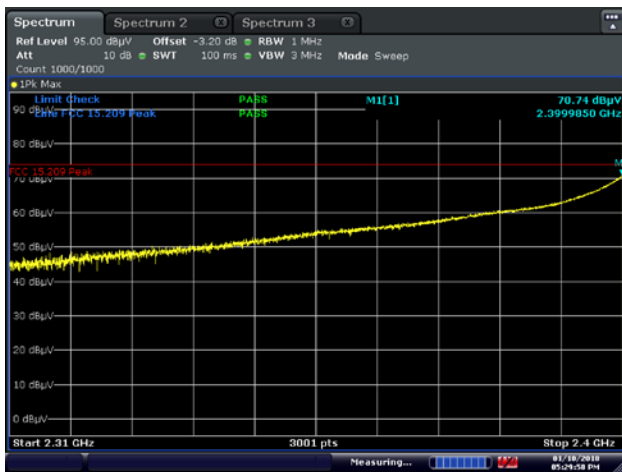
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
3301.416667	44.44	---	73.90	29.46	5000.0	1000.000	302.5	H	0.0
3301.416667	---	29.46	53.90	24.44	5000.0	1000.000	302.5	H	0.0
5255.250000	41.62	---	73.90	32.28	5000.0	1000.000	366.2	V	357.0
5255.250000	---	28.47	53.90	25.43	5000.0	1000.000	366.2	V	357.0
14469.950000	46.46	---	73.90	27.44	5000.0	1000.000	410.0	H	114.0
14469.950000	---	32.92	53.90	20.98	5000.0	1000.000	410.0	H	114.0
17809.900000	47.88	---	73.90	26.02	5000.0	1000.000	234.1	H	83.0
17809.900000	---	33.98	53.90	19.92	5000.0	1000.000	234.1	H	83.0

Test data, contuned

Table 8.3-5: Field strength measurement results for band edges

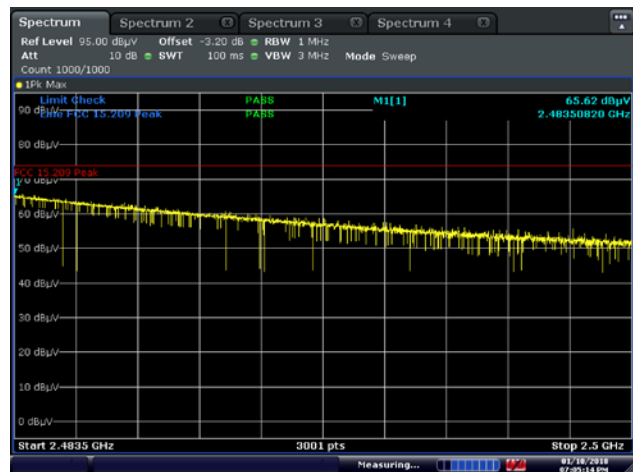
Frequency, (MHz)	Polarization, V/H	Peak Field strength, (dBμV/m)	Peak limit, (dBμV/m)	Margin, (dB)	Duty cycle factor	Avg. Field strength (dBμV/m)	Avg. limit (dBμV/m)	Margin (dB)
<i>Low channel</i>								
2400	H	70.74	73.9	3.16	42.2	28.54	53.9	25.36
<i>High channel</i>								
2483.5	H	65.62	73.9	8.28	42.2	23.42	53.9	30.48

Notes: Field strength includes correction factor of antenna, cable loss, amplifier, and attenuators where applicable.  
 Average results were calculated using Peak measurements and Duty cycle correction factor.



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Figure 8.3-10: Lower band-edge and immediate restricted band (low channel 2406MHZ)

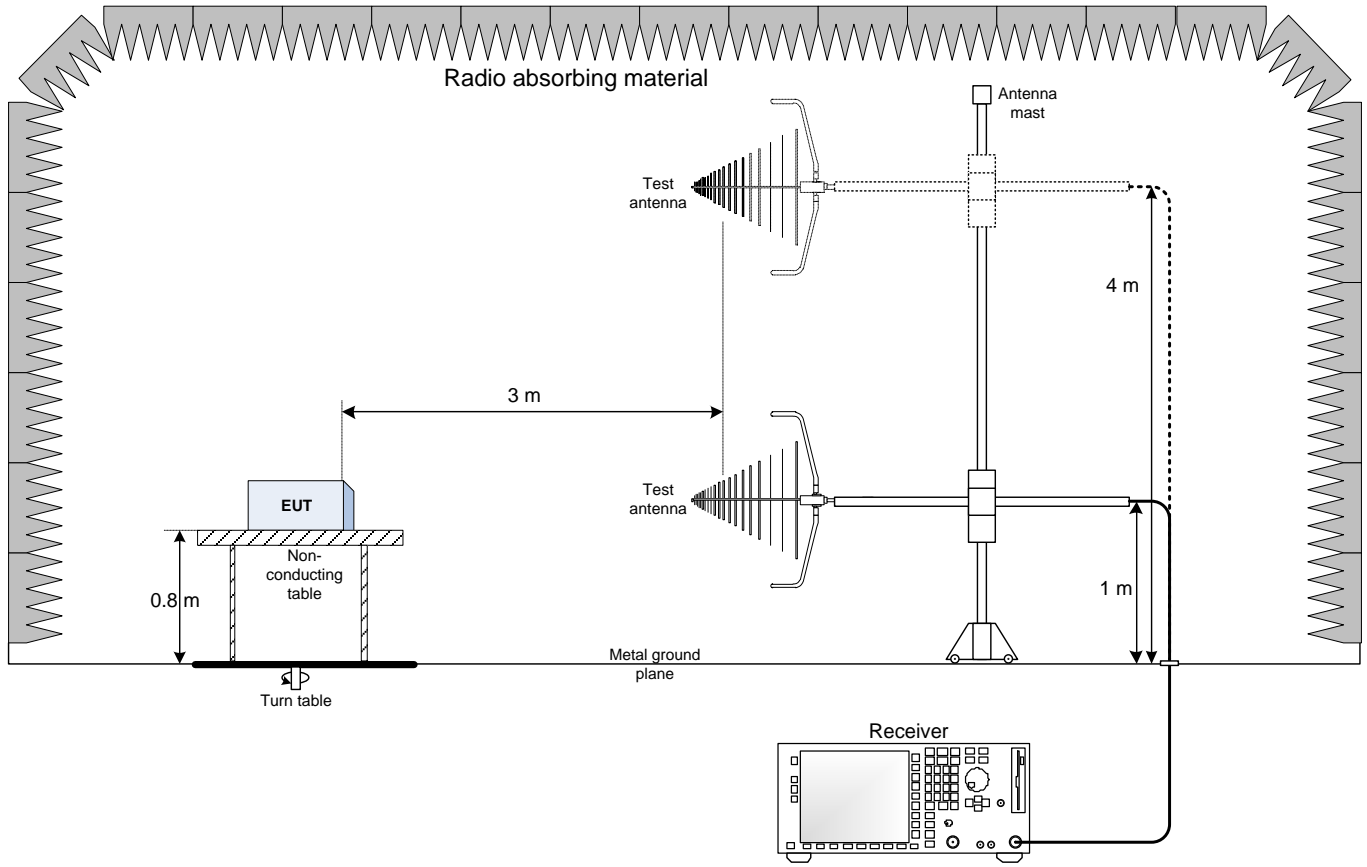


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Figure 8.3-11: Upper band-edge and immediate restricted band (high channel 2476MHZ)

**Section 9 Block Figures of test set-ups**

**9.1 Radiated emissions set-up – Below 1GHz**



9.2 Radiated emissions set-up – Above 1GHz

