RADIO REPORT

FCC 47 CFR Part 15C
ISED Canada RSS-247

Digital transmission systems operating within the 2400 – 2483.5 MHz band

Report Reference No	G0M-1803-7309-TFC247BL-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	DAkkS - Registration number : D-PL-12092-01-03 (ISED) ISED Testing Laboratory site: 3470A-2 DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	Dräger Safety AG & Co. KGaA
Address	Revalstraße 1 23560 Lübeck GERMANY
Test Specification	According to FCC/ISED rules
Standard	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5, Amendment 1, 2019-03
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Fixed Gas Detector
Model(s)	P6100
Additional Model(s)	None
Brand Name(s)	None
Hardware Version(s)	8327000-00
Software Version(s)	GSTox image 8326059 V0.12.1, SW Murata ISA 100 8328374 R1.01.13, SW Telit BLT V3.12.0002
FCC-ID	X6O-RC001
IC	5895F-RC001
Test Result	**PASSED**

Possible test case verdicts:		
Required by standard but not tested	N/T	
Not required by standard	N/R	
Not applicable to EUT	N/A	
Test object does meet the requirement	P(PASS)	
Test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 - 25 °C	
Test Lab Humidity	32 – 45 %	
Date of receipt of test item	2019-05-21	
Report:		
Compiled by	Florian Voigt	
Tested by (+ signature) (Responsible for Test)	Florian Voigt supervised by Wilfried Treffke	F. Voigt W. Treffke .....
Approved by (+ signature) (Head of Lab)	Christian Weber	C. Weber .....
Date of Issue	2020-01-10	
Total number of pages	75	
General Remarks:		
The test results presented in this report relate only to the object tested. **The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.** This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		
Additional Comments:		
The EUT can operate from different power sources (24 VDC or 14.4 VDC). Test mode selection is based on comparative tests. The 24 VDC power port was selected for compliance tests.		

ADDITIONAL VARIANTS

Additional Variants (not tested and not evaluated variants)		
Not-tested Variant	**Description**	
1	Product Type Description	P6100 Repeater ISA
	Model name	Polytron Repeater ISA
	Brand name	Not specified
	Hardware Version	Not specified
	Software Version	Not specified
	PMN	Polytron Repeater ISA
	HVIN	RC001
	FVIN	N/A
	HMN	N/A
Comment: Those named additional variants above have not been tested. Those additional variants of the series have been declared by the manufacturer. The test report explicitly states that those variants were neither tested nor assessed nor evaluated.		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2020-01-10	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V_{NOM}	Nominal supply voltage

REPORT INDEX

1 Equipment (Test Item) Under Test

Description	Fixed Gas Detector	
Model	P6100	
Additional Model(s)	None	
Brand Name(s)	None	
Serial Number(s)	ARME-0007	
Hardware Version(s)	8327000-00	
Software Version(s)	GSTox image 8326059 V0.12.1, SW Murata ISA 100 8328374 R1.01.13, SW Telit BLT V3.12.0002	
PMN	Polytron 6100 EC WL	
HVIN	RC001	
FVIN	N/A	
HMN	N/A	
FCC-ID	X6O-RC001	
IC	5895F-RC001	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	2400 - 2483.5 MHz	
Radio technology	Bluetooth LE	
Modulation	GFSK	
Number of antenna ports	1	
Radio Module	Type	Bluetooth 4.2 Low Engergy plug-and-play module
	Model	BlueMod+S42 ATEX
	Manufacturer	Telit Communication
	HW Version	BE890D2SY3ATAI1
	SW Version	3.012.0002
	FCC-ID	RFRMS42
	IC	4957A-MS42
Antenna	Type	Module-integrated
	Model	Integrated ceramic Antenna
	Manufacturer	Not specified
	Gain	2 dBi (from module datasheet)
Supply Voltage 1	V_{NOM}	24.0 VDC
Supply Voltage 2	V_{NOM}	14.4 VDC (Battery)
Operating Temperature	T_{NOM}	25 °C
AC/DC-Adaptor	Not specified	
Manufacturer	Dräger Safety AG & Co. KGaA Revalstraße 1 23560 Lübeck GERMANY	

1.1 Photos – Equipment External

EUT Top view


EUT Side view

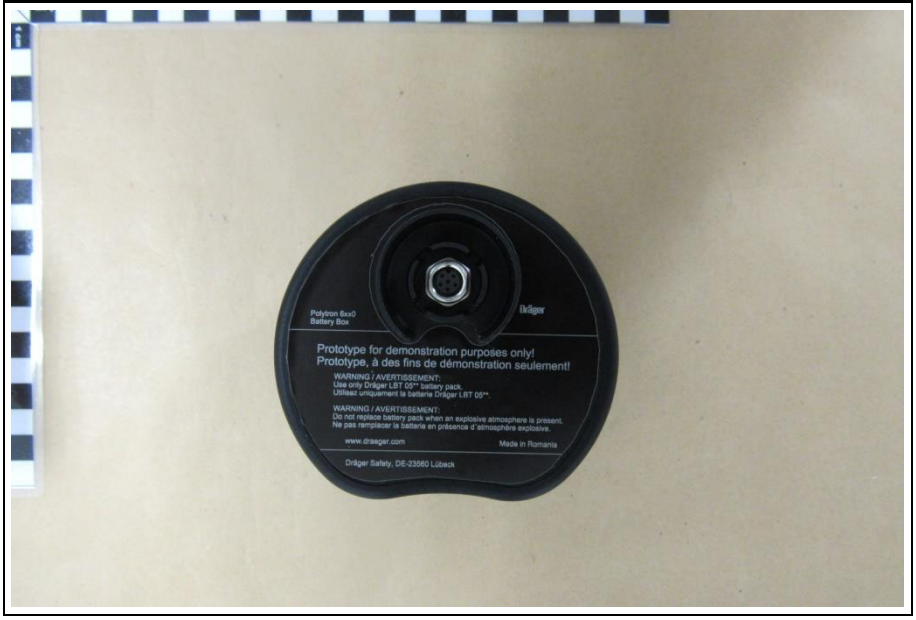

EUT Bottom view


IEEE 802.15.4 Antennas

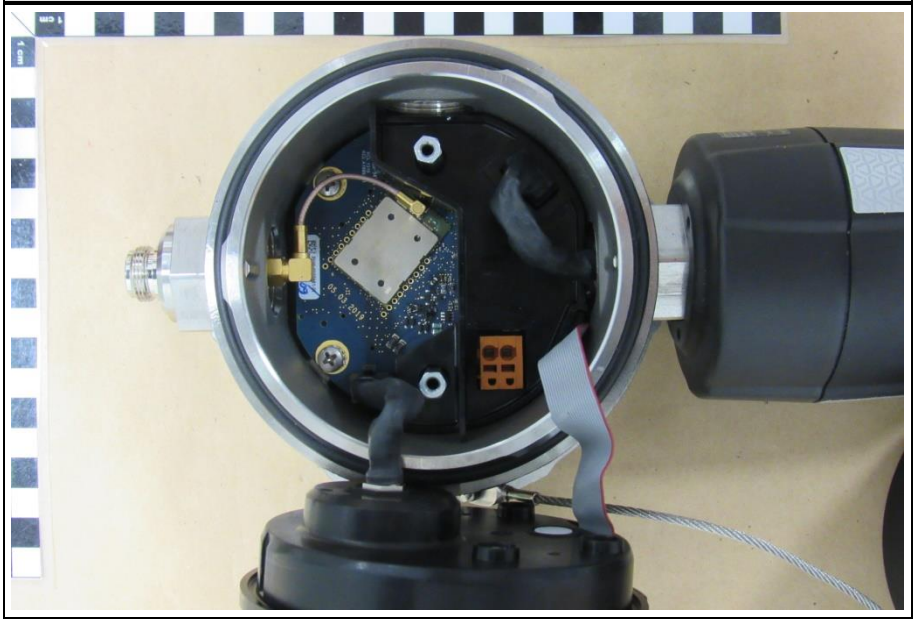

Powersupply used for testing - not part of the EUT


1.2 Photos – Equipment Internal

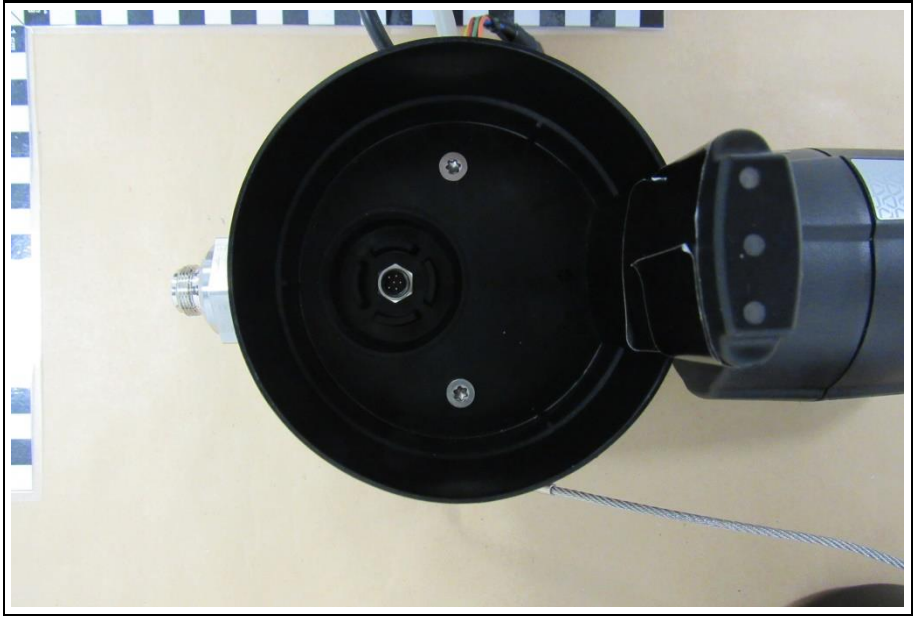
EUT Removed cover

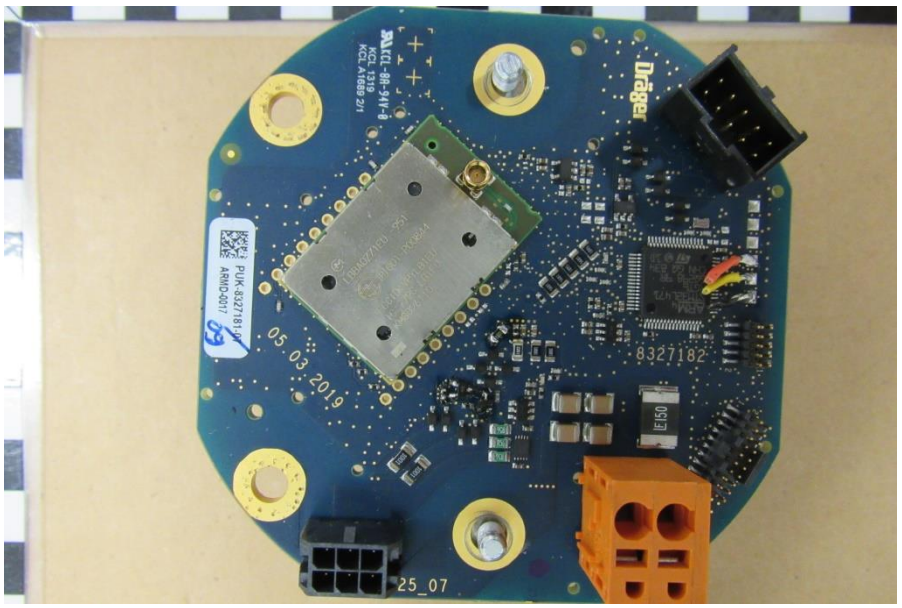

EUT Battery bottom


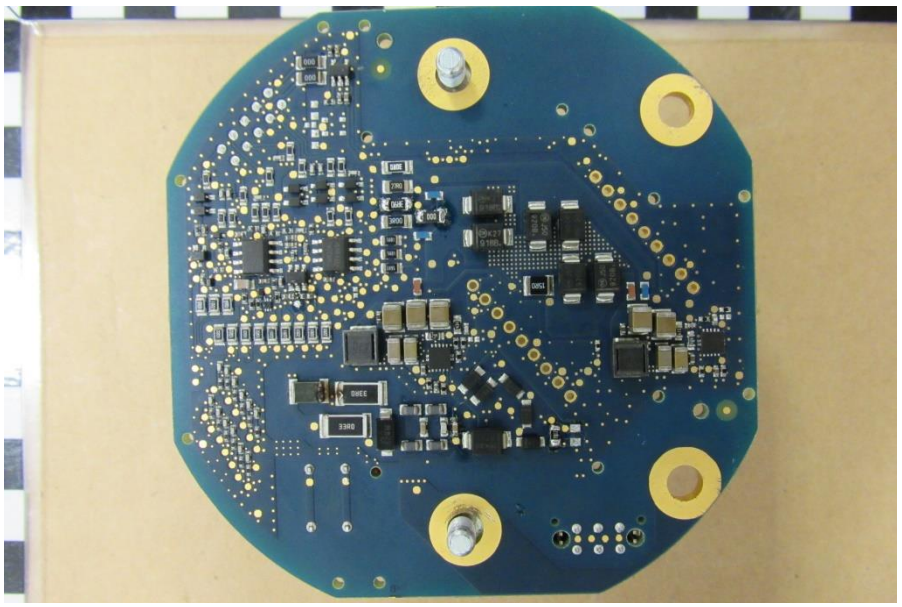
EUT internal view



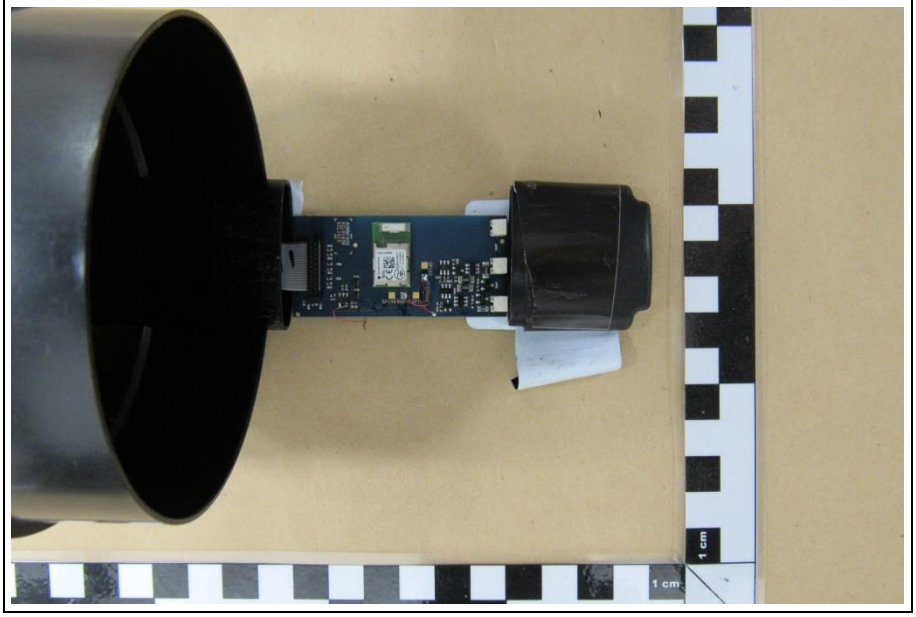
EUT Without battery

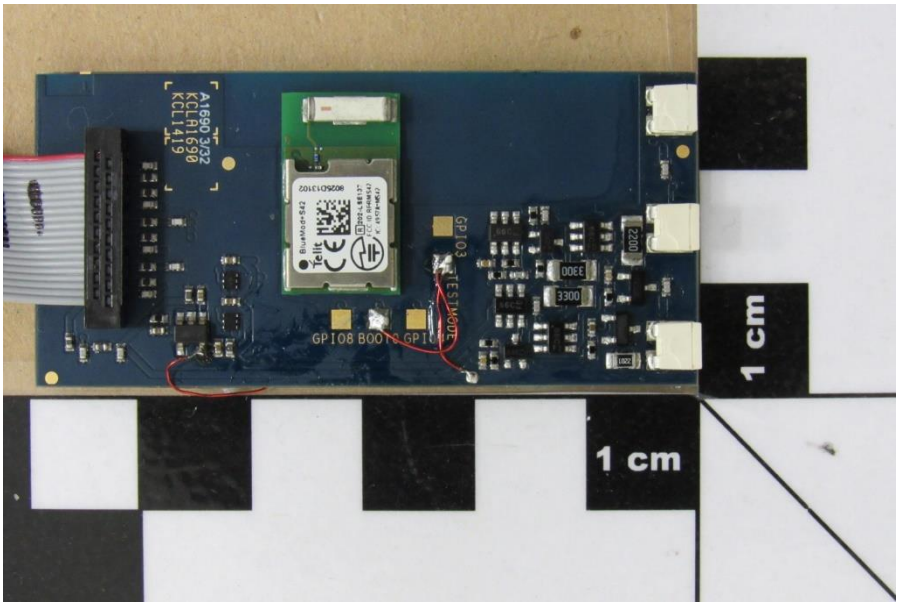


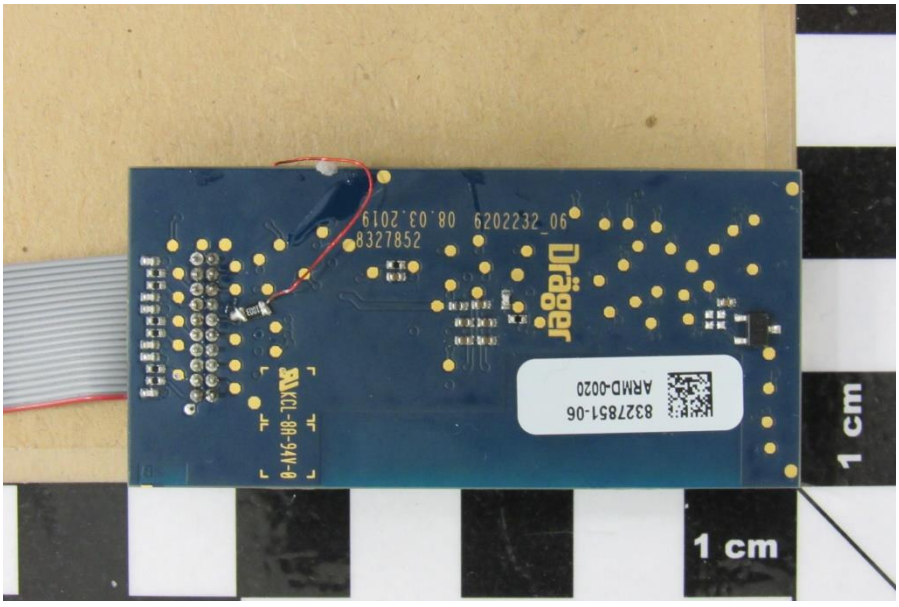
EUT Main PCB top with IEEE 802.15.14 module


EUT Main PCB bottom


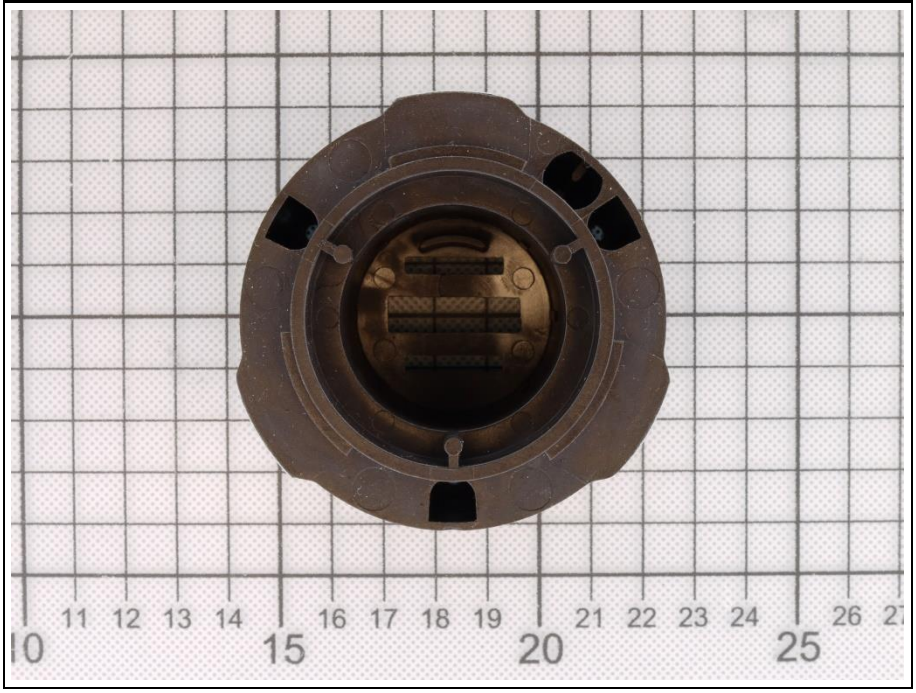
EUT without PCB


EUT BTLE PCB


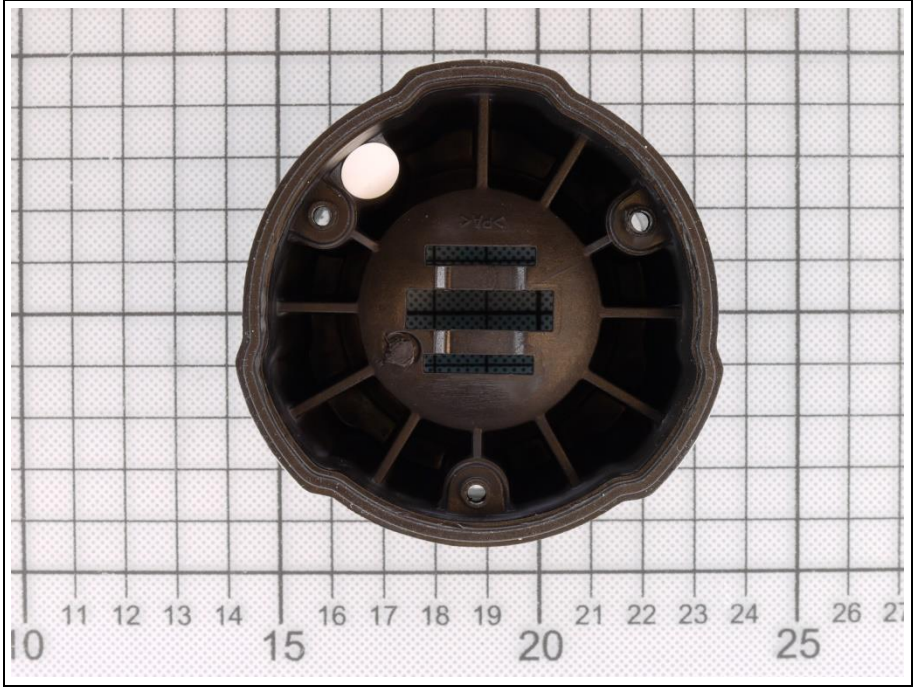
EUT BTLE PCB Top side


EUT BTLE PCB Bottom side


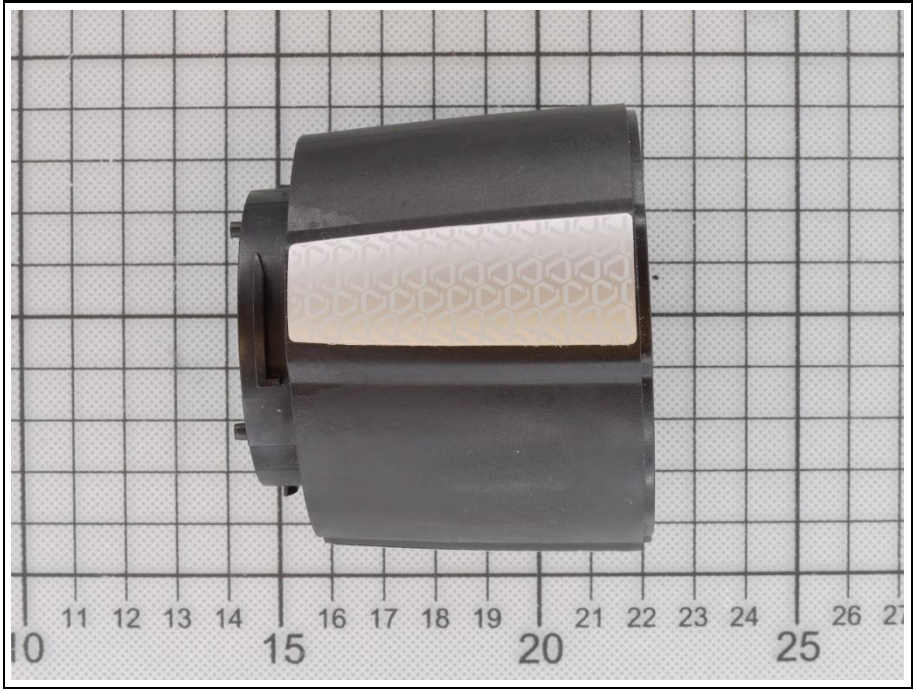
EUT Sensor view A



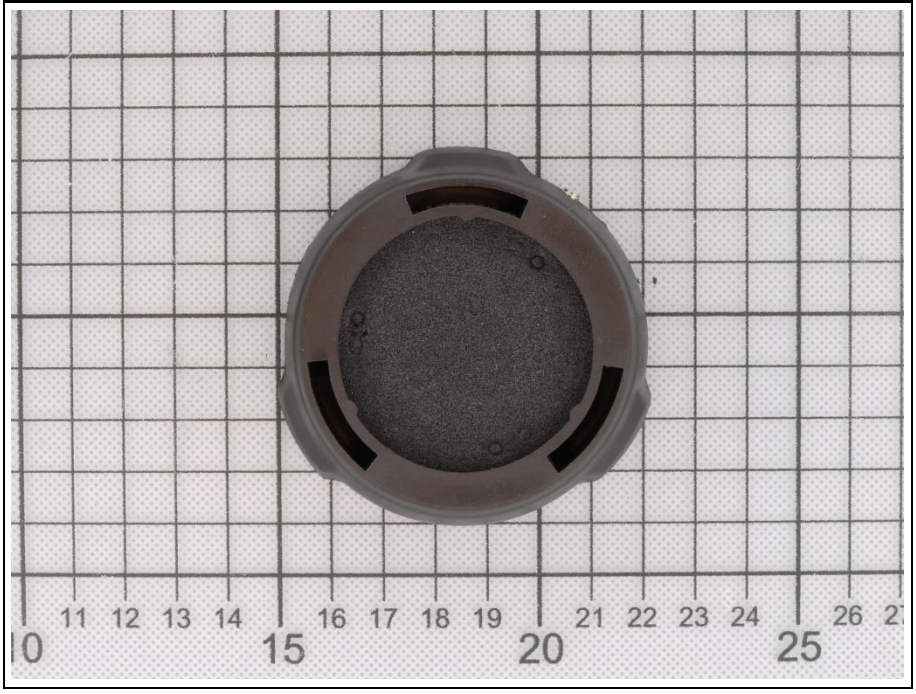
EUT Sensor view B



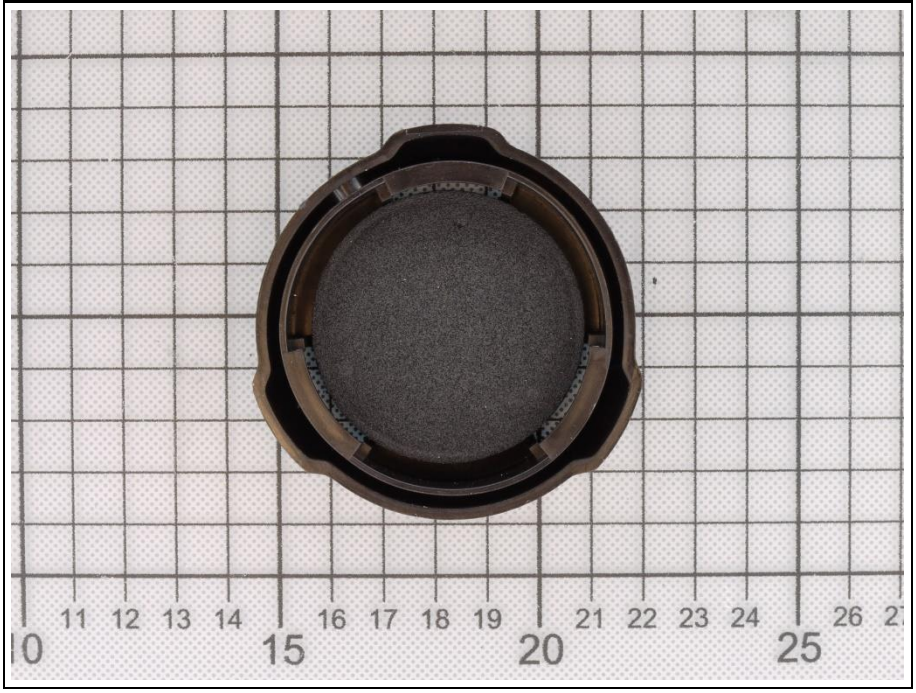
EUT Sensor view C



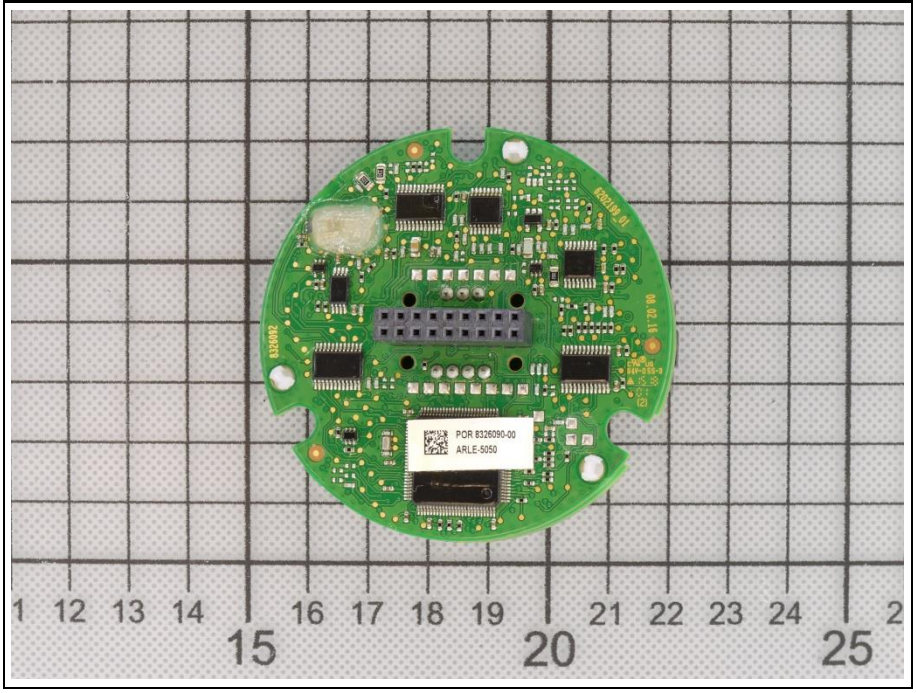
EUT Sensor view D



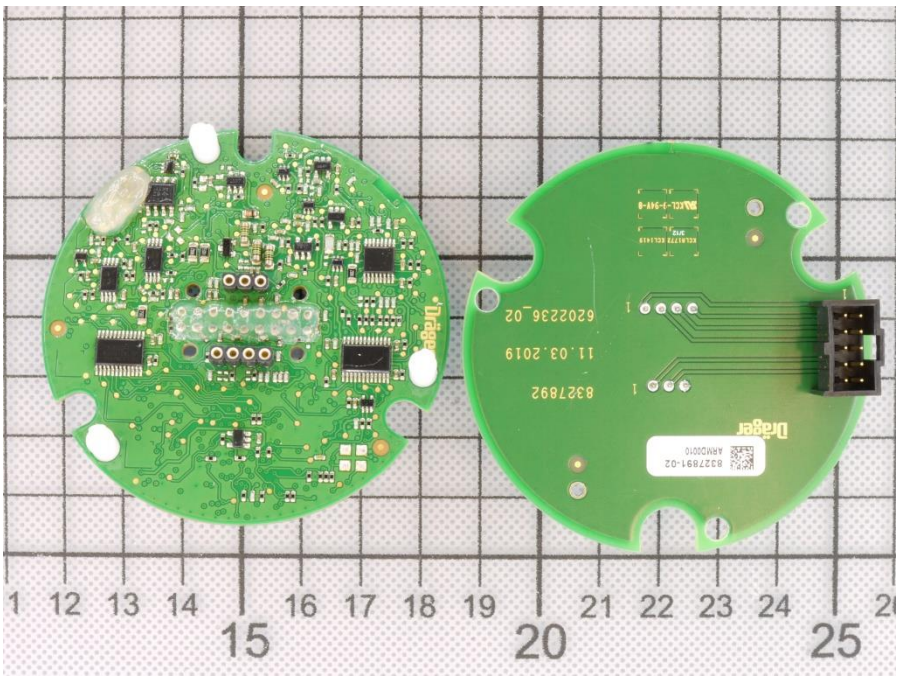
EUT Sensor view E



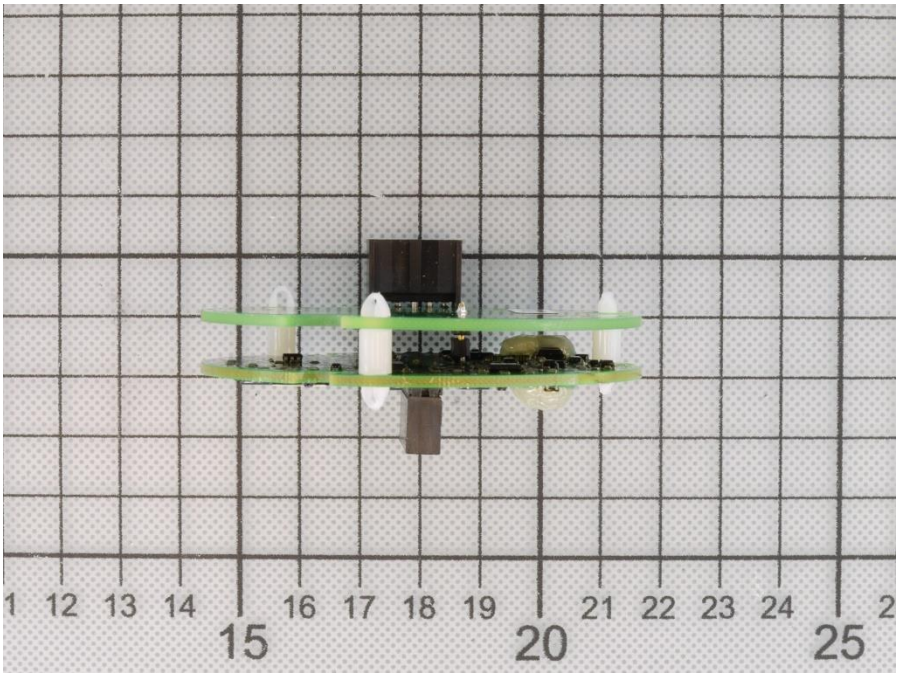
EUT Sensor PCBs A



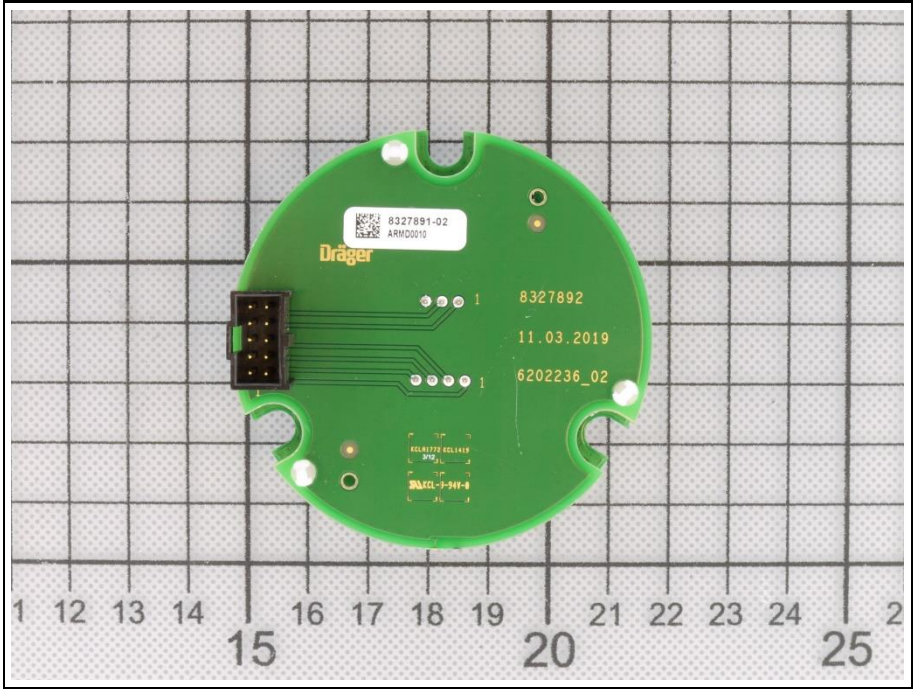
EUT Sensor PCBs B



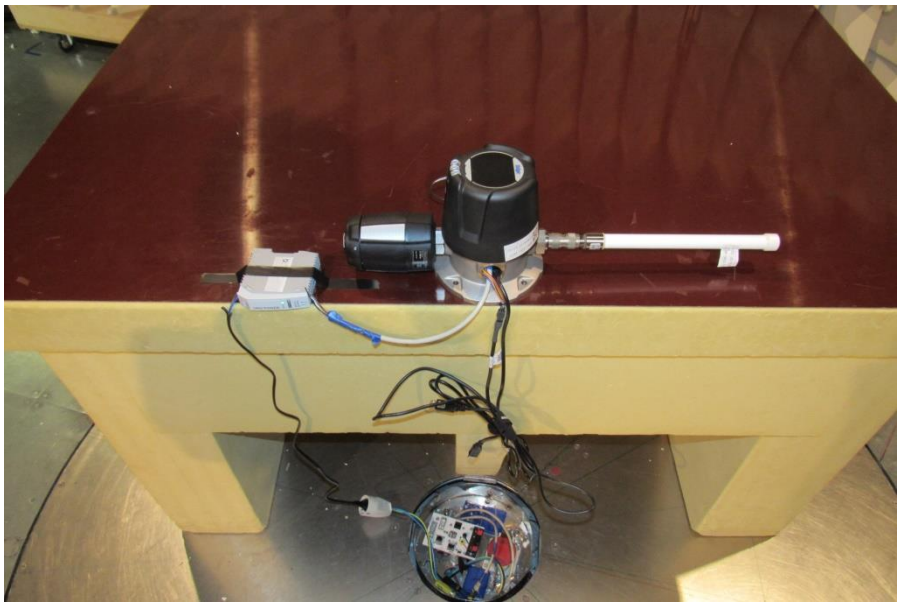
EUT Sensor PCBs side view

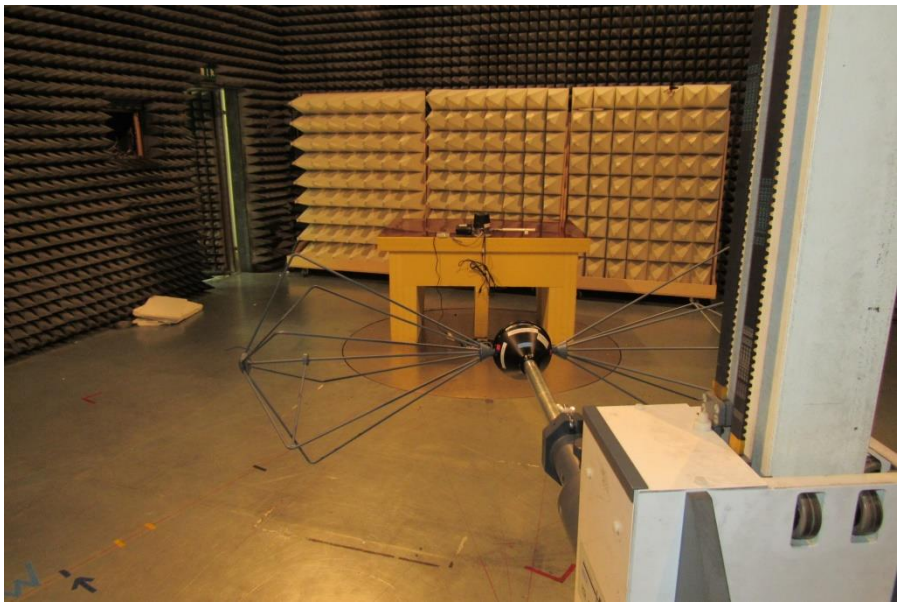


EUT Sensor PCBs

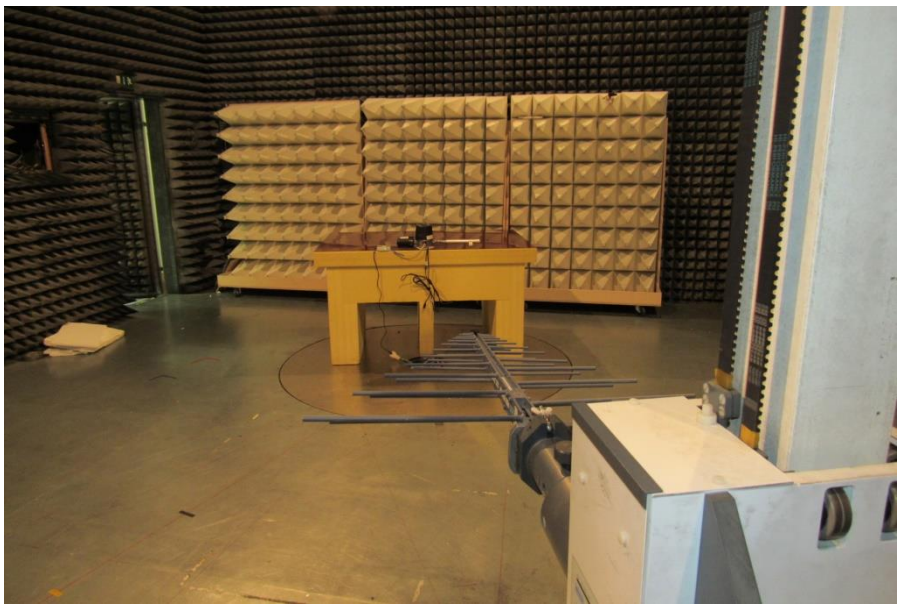


1.3 Photos – Test Setup

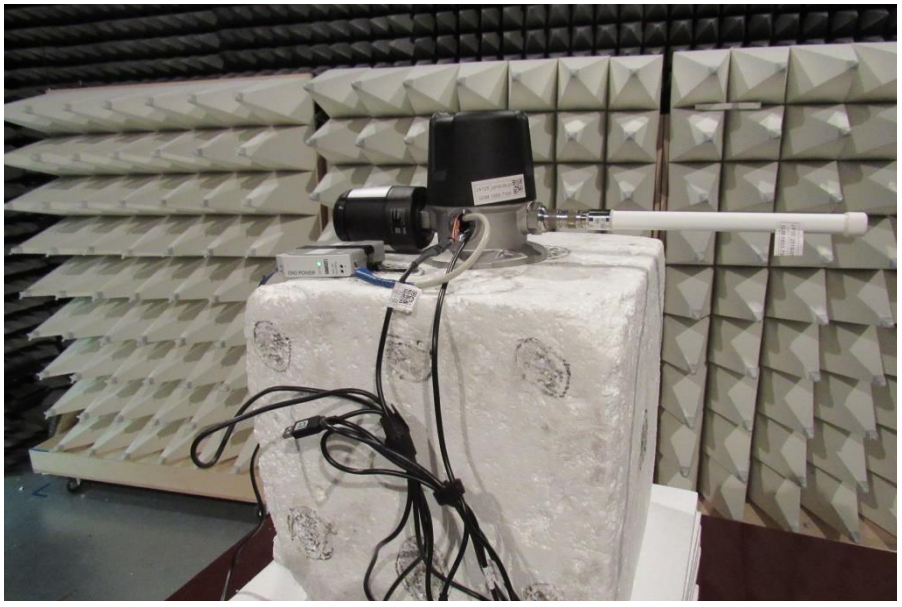
Testsetup below 1GHz EUT view


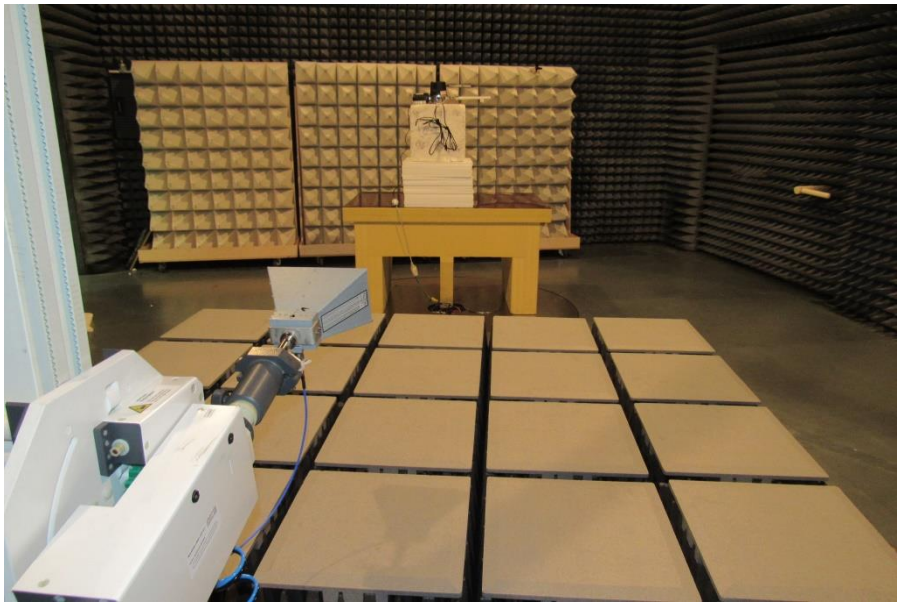
Testsetup above 30MHz


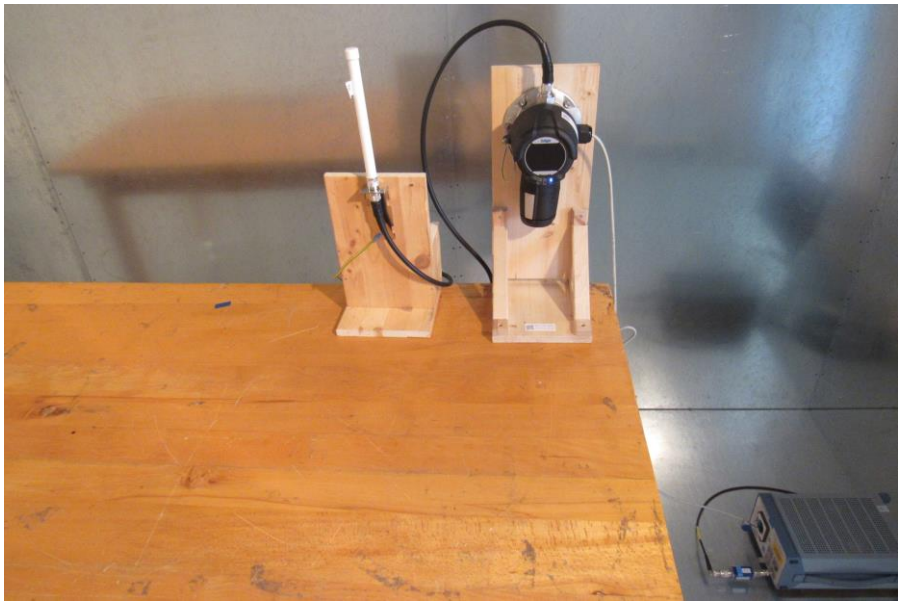
Testsetup above 200MHz



Testsetup above 1GHz EUT view



Testsetup above 1GHz


AC-Powerline conducted front view


1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
AE	Laptop	Dell	Latitude 5490	Setting test modes, not connected during tests
AE	Power supply	Phoenix Contact	UNO-PS/1AC/24DC/30W (Input: 120VAC, Output: 24VDC)	Used to power EUT with 24VDC
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.5 Test Modes

Mode	Description
GFSK	Mode = Transmit Modulation = GFSK Spreading = None Duty cycle = 100% Power = 0 = 4dBm (Software setting)
Receive	Mode = Receive
Comment:	

1.6 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx	0	2402
F2	Rx	19	2440
F3	Tx	39	2480

1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBµV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

Reading on Analyzer (dBµV) + A.F. (dB/m) = Net field strength (dBµV/m)

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

Limit (dBµV/m) = 20*log (µV/m)

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

Reading + AF	= Net Reading	:	Net reading - FCC limit	= Margin
+21.5 dBµV + 26 dB/m	= 47.5 dBµV/m	:	47.5 dBµV/m - 57.0 dBµV/m	= -9.5 dB

2 Result Summary

FCC 47 CFR Part 15C, ISED RSS-247				
Product Standard Reference	**Requirement**	**Reference Method**	**Result**	**Remarks**
ISED RSS-Gen, Issue 5 (section 6.6)	Occupied Bandwidth	ANSI C63.10-2013	N/R	Informational only
FCC § 15.247(a)(2) ISED RSS-247, Issue 2 (section 5.2)	6 dB Bandwidth	ANSI C63.10-2013	N/T	
FCC § 15.247(b)(1) ISED RSS-247, Issue 2 (section 5.4)	Maximum peak conducted power	ANSI C63.10-2013	N/T	
FCC § 15.247(e) ISED RSS-247, Issue 2 (section 5.2)	Power spectral density	ANSI C63.10-2013	N/T	
FCC § 15.207 ISED RSS-247, Issue 2 (section 3.1)	AC power line conducted emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Band edge compliance	ANSI C63.10-2013	N/T	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Conducted spurious emissions	ANSI C63.10-2013	N/T	
FCC § 15.247(d) FCC § 15.209 ISED RSS-Gen, Issue 5 (section 6.13)	Transmitter radiated spurious emissions	ANSI C63.10-2013	PASS	
ISED RSS-247, Issue 2 (section 3.1)	Receiver radiated spurious emissions	ANSI C63.10-2013	PASS	
Comment:				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results - AC powerline conducted emissions

3.1.1 Information

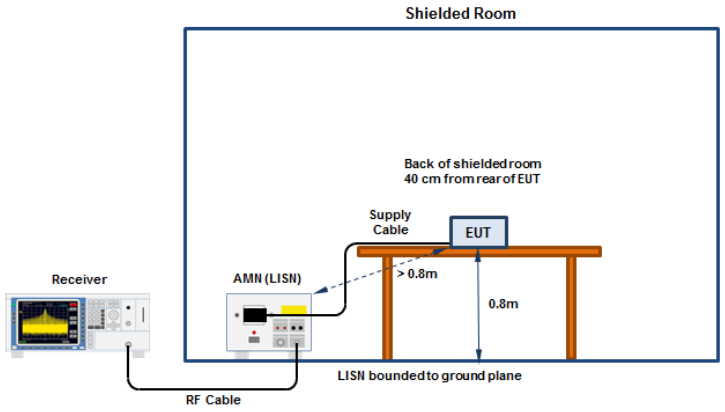
Test Information	
Reference	FCC § 15.207; ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.2
Operator	Florian Voigt
Date	2019-11-22
Comment: IEEE 802.15.4 and BTLE was enabled	

3.1.2 Limits

Limits		
Frequency [MHz]	Quasi-Peak [dBµV]	Average [dBµV]
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50
* Limit decreases linearly with the logarithm of the frequency		

3.1.3 Setup

Test Setup



3.1.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2016.1.10

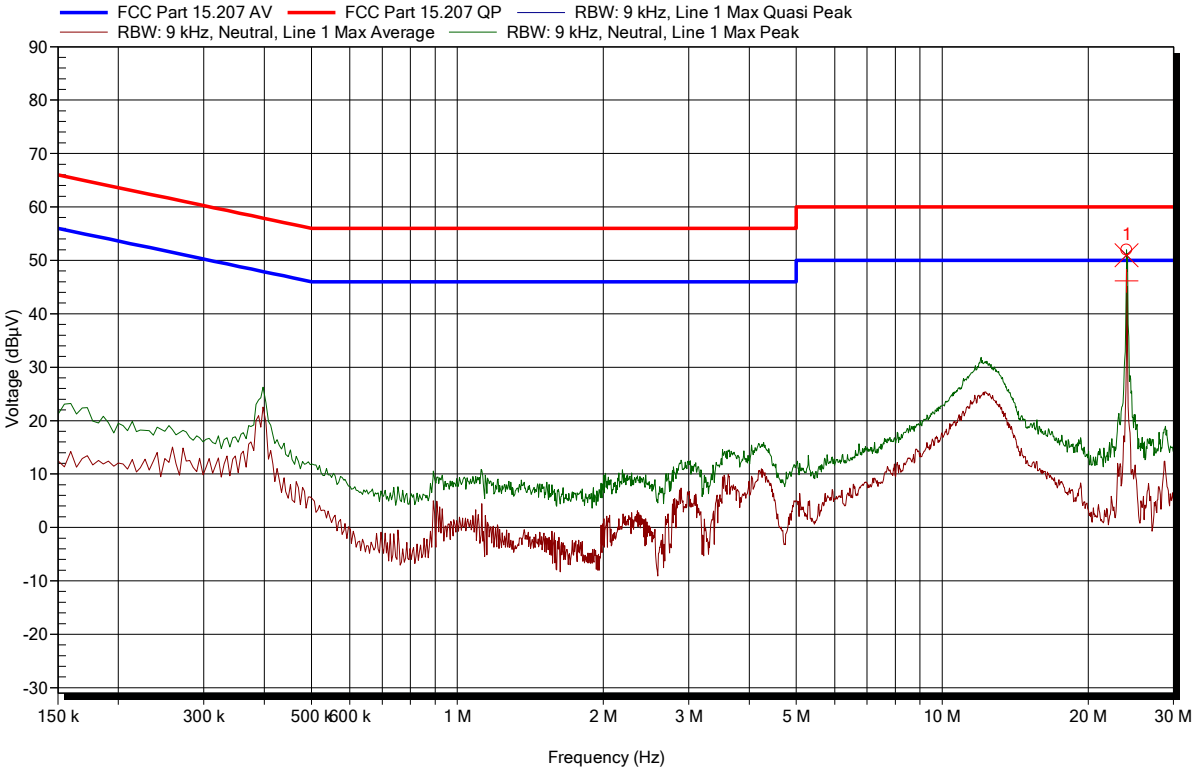
Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
LISN	R&S	ESH3-Z5	EF00036	2019-07	2021-07
EMI Test Receiver	R&S	ESR7	EF00943	2019-10	2020-10

EMI voltage test in the ac-mains according to FCC 47 e-CFR §15.207

Project number: G0M-1803-7309

Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P610
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Conditions:	Tnom: 22.9°C, Unom: 120 VAC
LISN:	Rohde & Schwarz ESH3-Z5
Mode:	BTLE: 2402MHz, ZB: 2405MHz
Test Date:	2019-11-22
Note:	

Index 1



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	24.001 MHz	50.95 dBµV	60 dBµV	-9.05 dB	Pass

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	24.001 MHz	46.19 dBµV	50 dBµV	-3.81 dB	Pass

3.2 Test Conditions and Results - Transmitter radiated emissions

3.2.1 Information

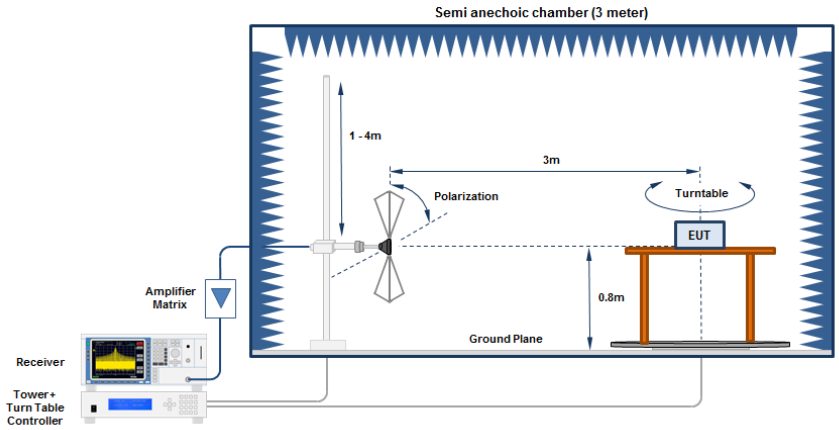
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISED RSS-Gen, Issue 5 (section 6.13)
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Florian Voigt
Date	2019-11-18

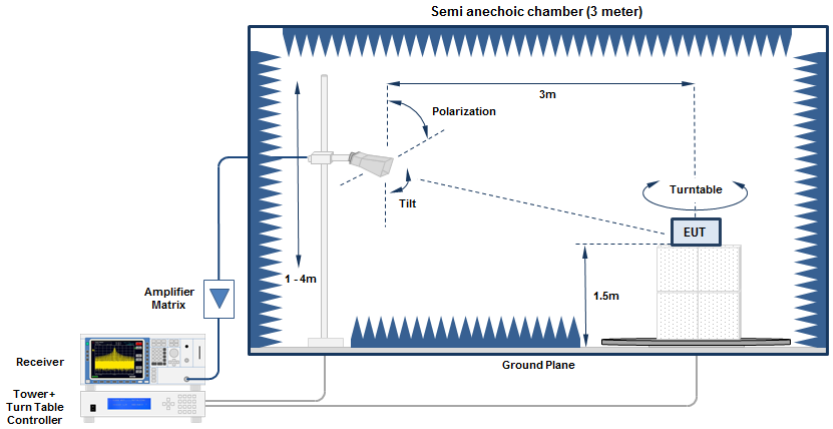
3.2.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [µV/m]	Measurement distance [m]
0.009 - 0.09	Average	2400/F[kHz]	300
0.09 - 0.110	Quasi-Peak	2400/F[kHz]	300
0.110 - 0.490	Average	2400/F[kHz]	300
0.490 - 1.705	Quasi-Peak	24000/F[kHz]	30
1.705 - 30.0	Quasi-Peak	30	30
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.2.3 Setup

Test Setup 30 - 1000 MHz



Test Setup > 1 GHz


3.2.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2016.1.10

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Spectrum analyzer	R&S	FSU 26	EF01003	2019-07	2020-07
Antenna	R&S	HK 116	EF00030	2019-04	2022-04
Antenna	R&S	HL 223	EF00187	2019-05	2022-05

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Spectrum analyzer	R&S	FSU 26	EF01003	2019-07	2020-07
Antenna	Schwarzbeck	BBHA 9120D	EF01153	2019-10	2020-10
Antenna	Amplifier Research	AT4560	EF00302	2019-05	2020-05

3.2.5 Procedure

Test Procedure 30 - 1000 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector

3.2.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2402	1300.1	40.60	pk	ver	74.00	-33.40
2402	1300.1	13.51	RMS	ver	54.00	-40.49
2402	1300.3	46.52	pk	hor	74.00	-27.48
2402	1300.3	15.69	RMS	hor	54.00	-38.31
2402	2285	40.65	pk	ver	74.00	-33.35
2402	2285	36.96	RMS	ver	54.00	-17.04
2402	2285.4	40.04	pk	hor	74.00	-33.96
2402	2310.3	50.17	pk	ver	74.00	-23.83
2402	2310.3	39.30	RMS	ver	54.00	-14.70
2402	2323.1	50.28	pk	hor	74.00	-23.72
2402	2323.1	38.81	RMS	hor	54.00	-15.19
2480	1300	39.59	pk	ver	74.00	-34.41
2480	1300	15.43	RMS	ver	54.00	-38.57
2480	2365	40.55	pk	hor	74.00	-33.45
2480	2365	36.78	RMS	hor	54.00	-17.22
2480	2488.1	50.31	pk	ver	74.00	-23.69
2480	2488.1	39.70	RMS	ver	54.00	-14.30
2480	2494.9	50.27	pk	hor	74.00	-23.73
2480	2494.9	39.48	RMS	hor	54.00	-14.52
2480	4959	40.01	pk	hor	74.00	-33.99
2480	4959	31.91	RMS	hor	54.00	-22.09
2480	7441	44.05	pk	hor	74.00	-29.95
2480	7441	35.33	RMS	hor	54.00	-18.67

3.3 Test Conditions and Results - Receiver radiated emissions

3.3.1 Information

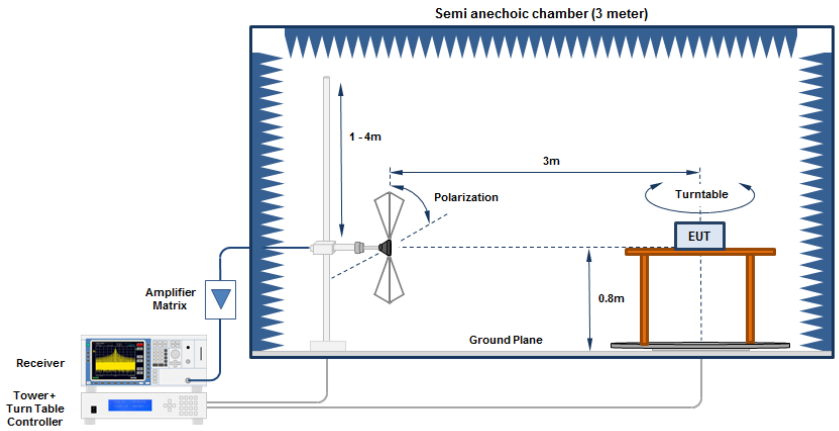
Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.5, 6.6, 11.12
Operator	Florian Voigt
Date	2019-11-18 + 2019-11-20

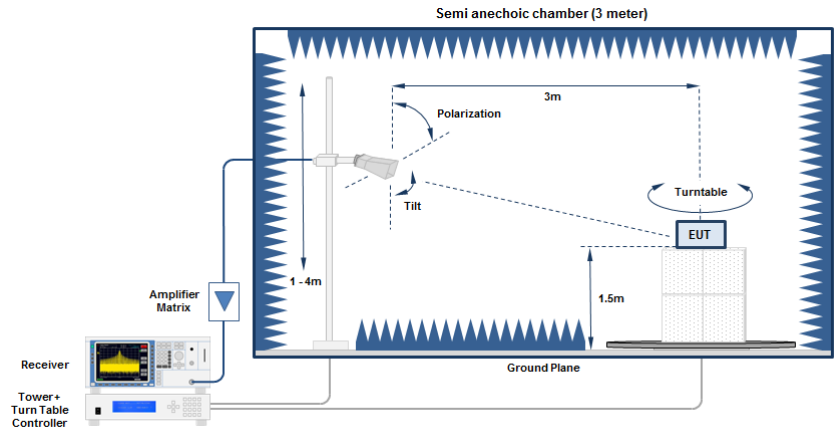
3.3.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [dBµV/m]	Measurement distance [m]
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.3.3 Setup

Test Setup 30 - 1000 MHz



Test Setup > 1 GHz


3.3.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2016.1.10

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Spectrum analyzer	R&S	FSU 26	EF01003	2019-07	2020-07
Antenna	R&S	HK 116	EF00030	2019-04	2022-04
Antenna	R&S	HL 223	EF00187	2019-05	2022-05

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Spectrum analyzer	R&S	FSU 26	EF01003	2019-07	2020-07
Antenna	Schwarzbeck	BBHA 9120D	EF01153	2019-10	2020-10
Antenna	Amplifier Research	AT4560	EF00302	2019-05	2020-05

3.3.5 Procedure

Test Procedure 30 - 1000 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground
2. EUT set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5. All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground
2. EUT set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5. All significant emissions are measured again using the corresponding final detector

3.3.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2440	642.63	23.58	qpk	hor	46.00	-22.42
2440	643.114	14.65	qpk	ver	46.00	-31.35
2440	1260	39.49	pk	ver	53.98	-14.49
2440	1267	17.25	avg	hor	53.98	-36.73
2440	1902	16.62	avg	hor	53.98	-37.36
2440	2471	39.89	pk	ver	53.98	-14.09
2440	4878	37.08	pk	ver	53.98	-16.90

ANNEX A Transmitter spurious emissions

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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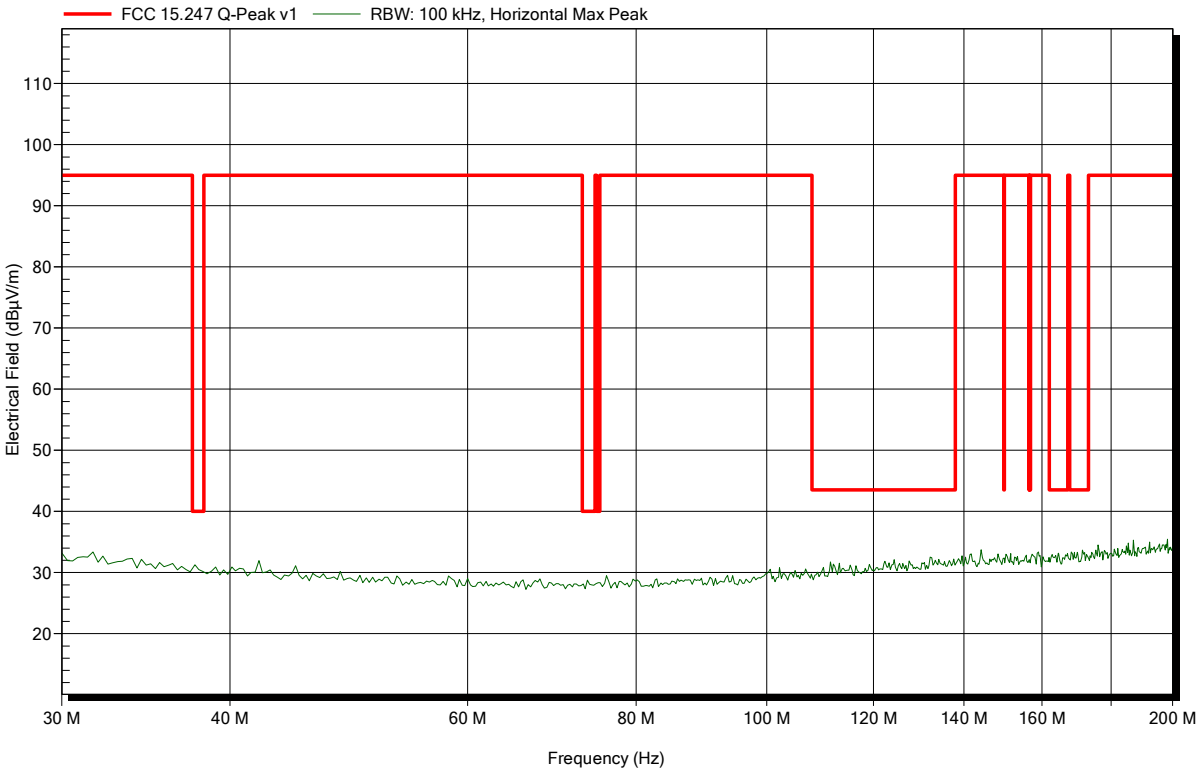

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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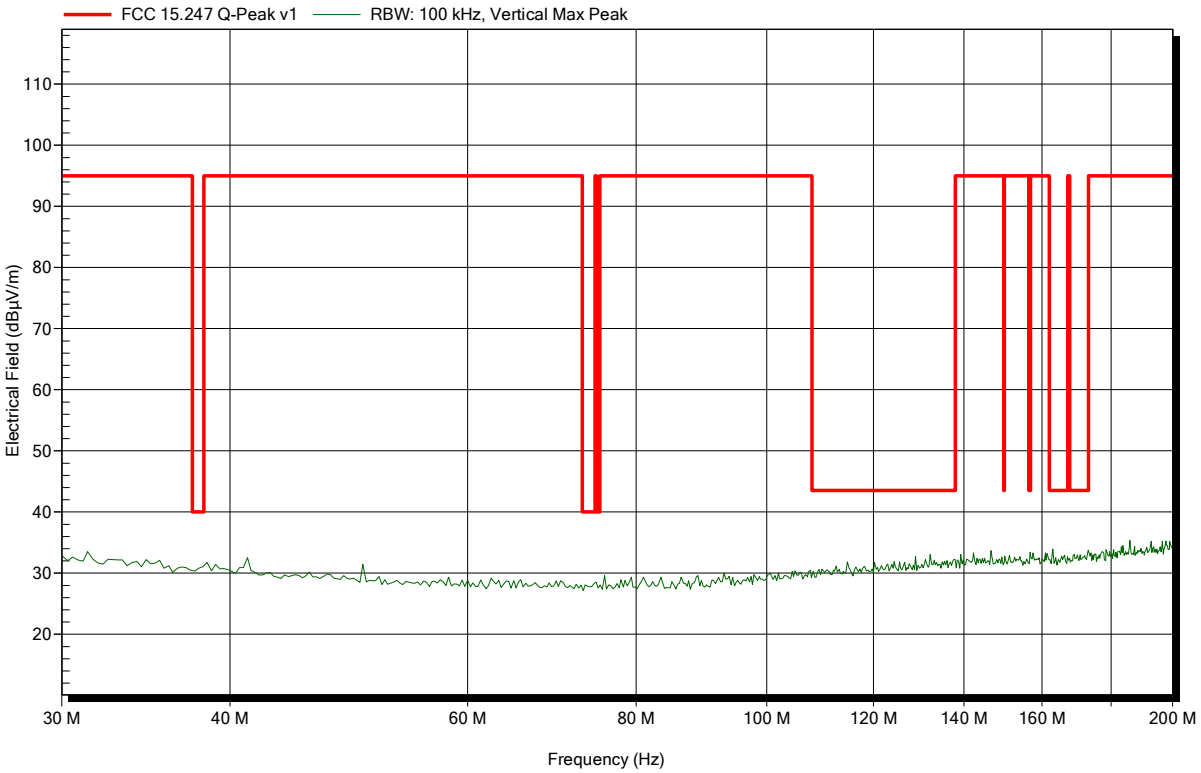

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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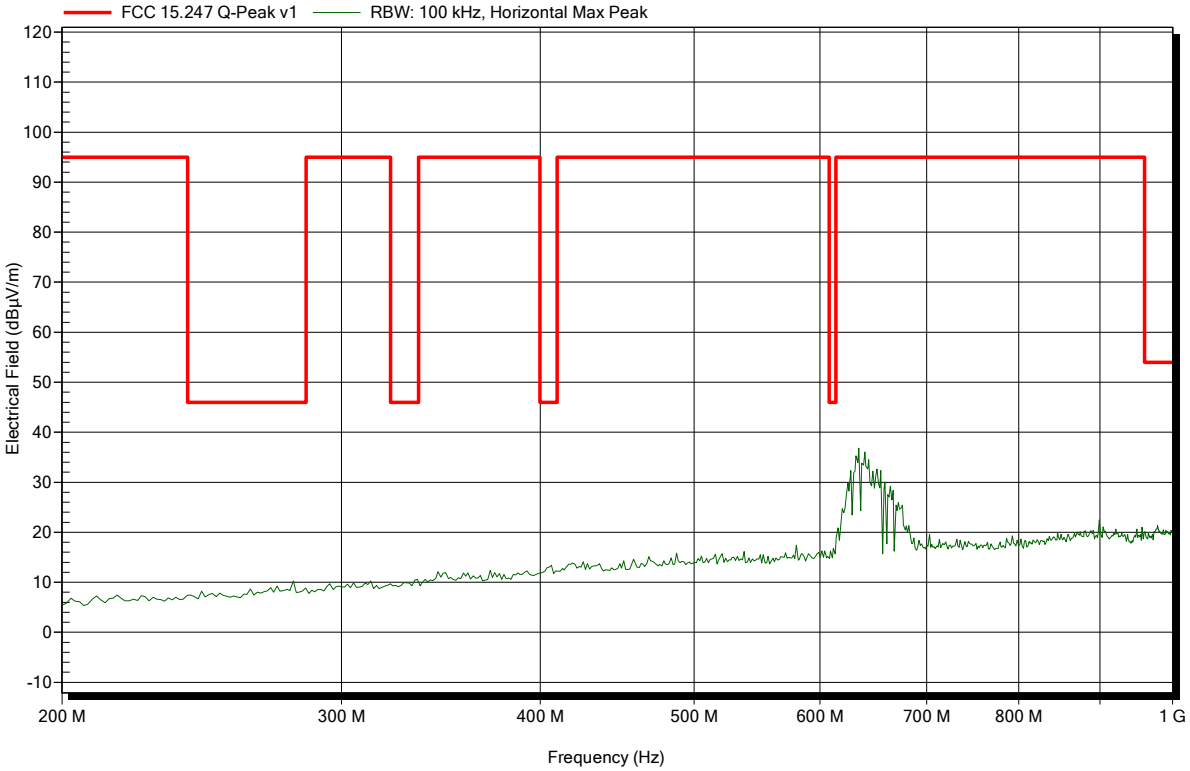

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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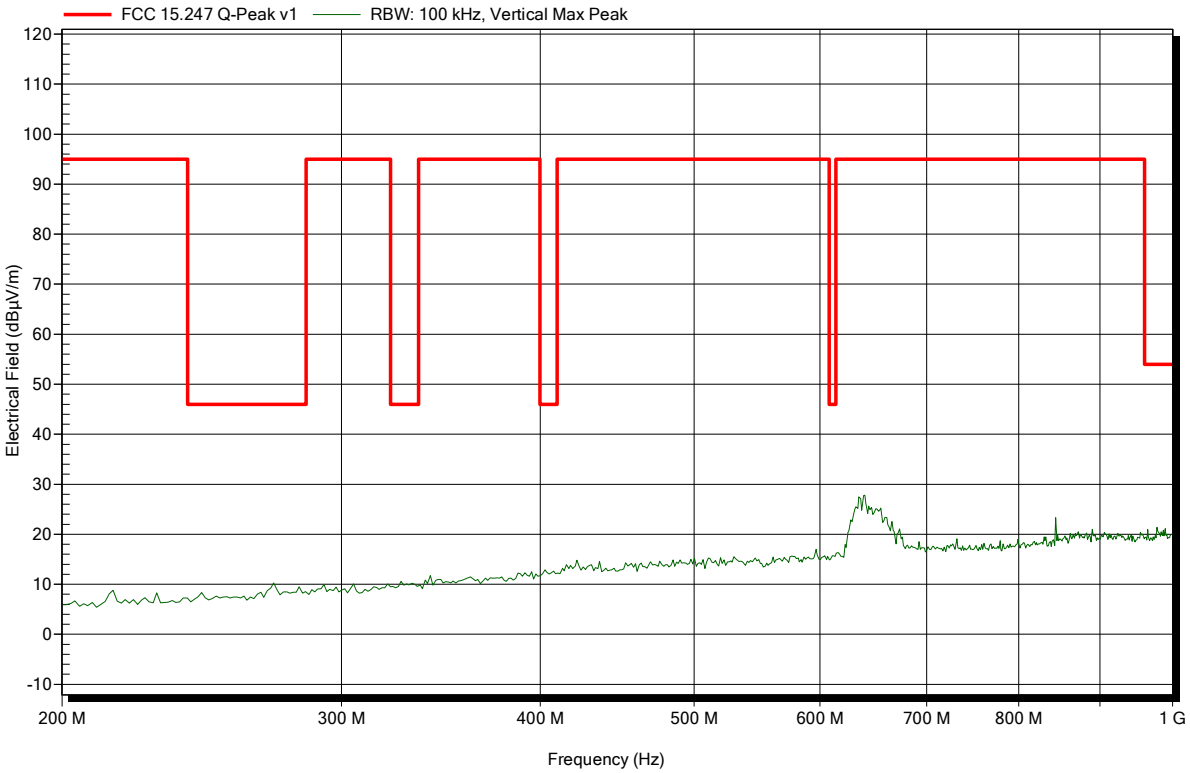

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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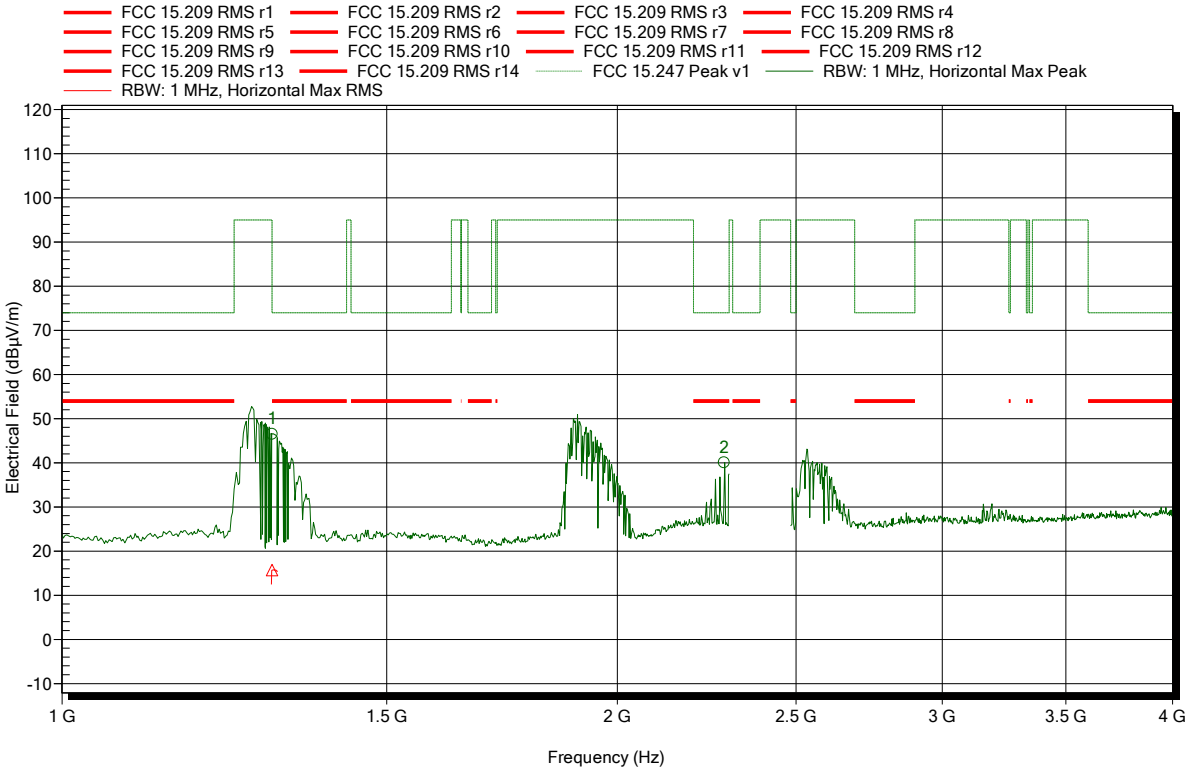

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.3003 GHz	46.52 dBµV/m	74 dBµV/m	-27.48 dB	Pass
2.2854 GHz	40.04 dBµV/m	74 dBµV/m	-33.96 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
1.3003 GHz	15.69 dBµV/m	54 dBµV/m	-38.31 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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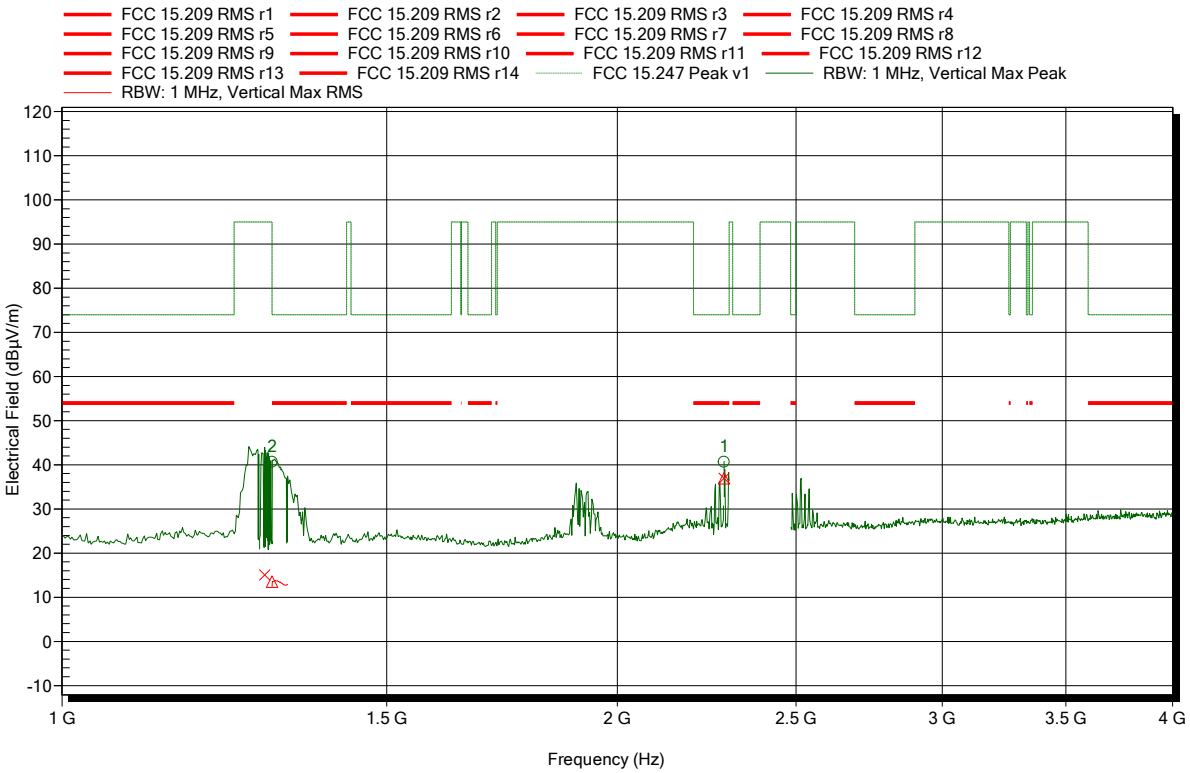

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.3001 GHz	40.6 dBµV/m	74 dBµV/m	-33.4 dB	Pass
2.285 GHz	40.65 dBµV/m	74 dBµV/m	-33.35 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
1.3001 GHz	13.51 dBµV/m	54 dBµV/m	-40.49 dB	Pass
2.285 GHz	36.96 dBµV/m	54 dBµV/m	-17.04 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	lower bandedge

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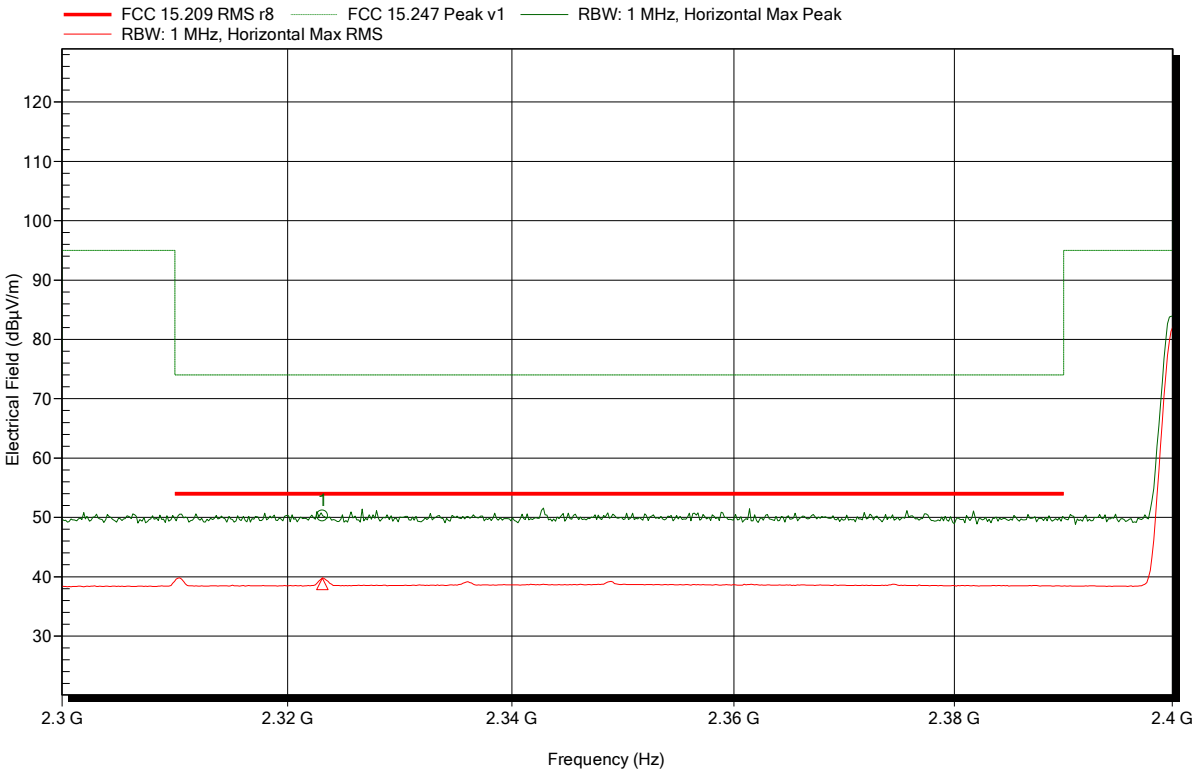

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3231 GHz	50.28 dBµV/m	74 dBµV/m	-23.72 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.3231 GHz	38.81 dBµV/m	54 dBµV/m	-15.19 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	lower bandedge

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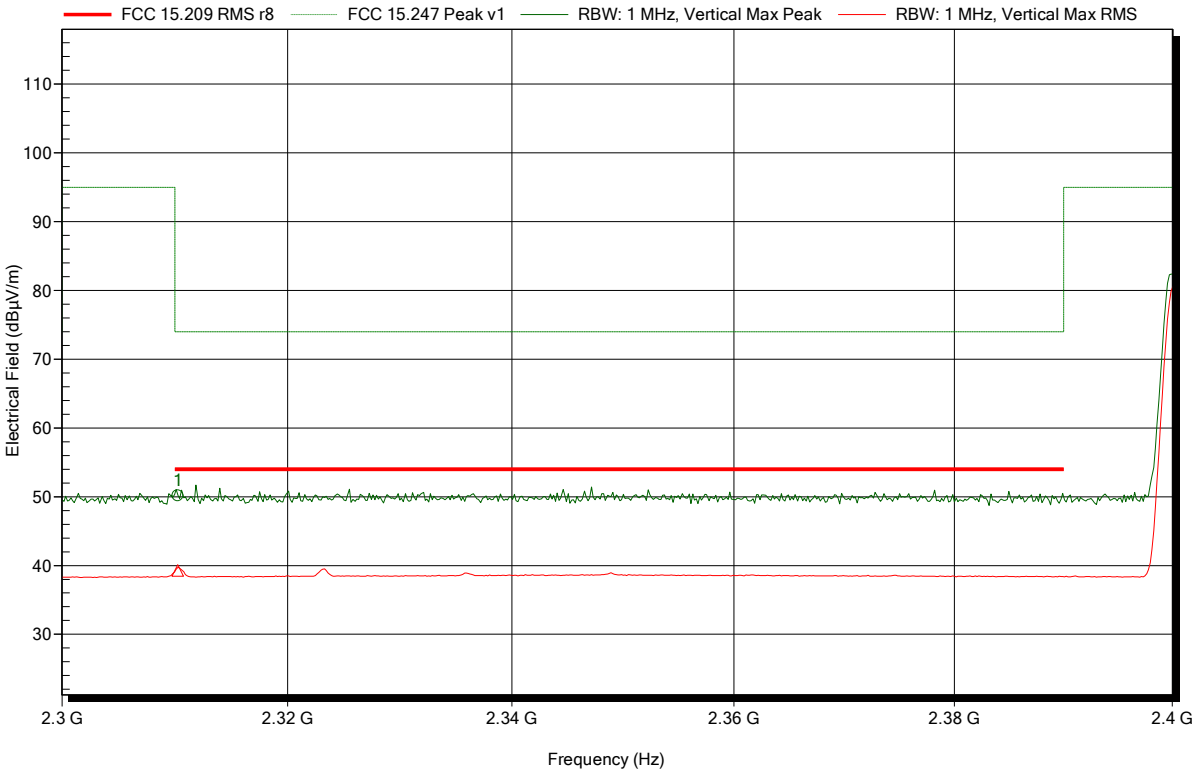

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3103 GHz	50.17 dBµV/m	74 dBµV/m	-23.83 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.3103 GHz	39.3 dBµV/m	54 dBµV/m	-14.7 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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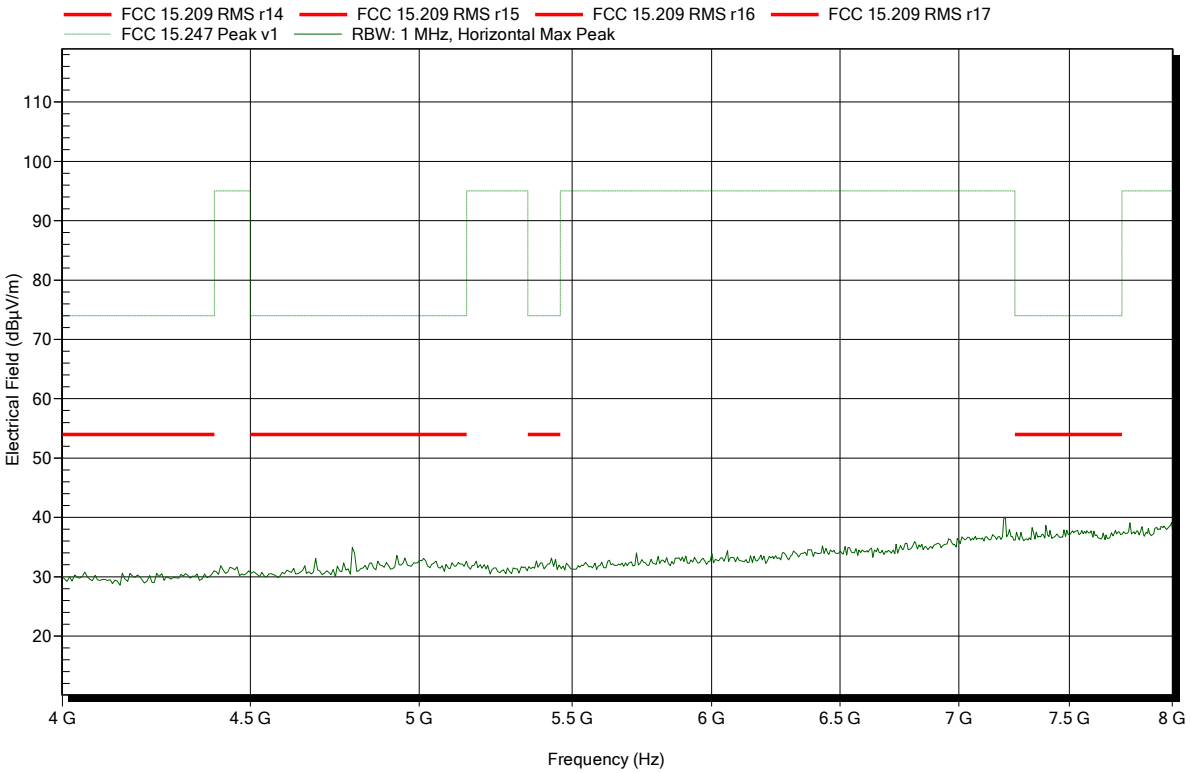

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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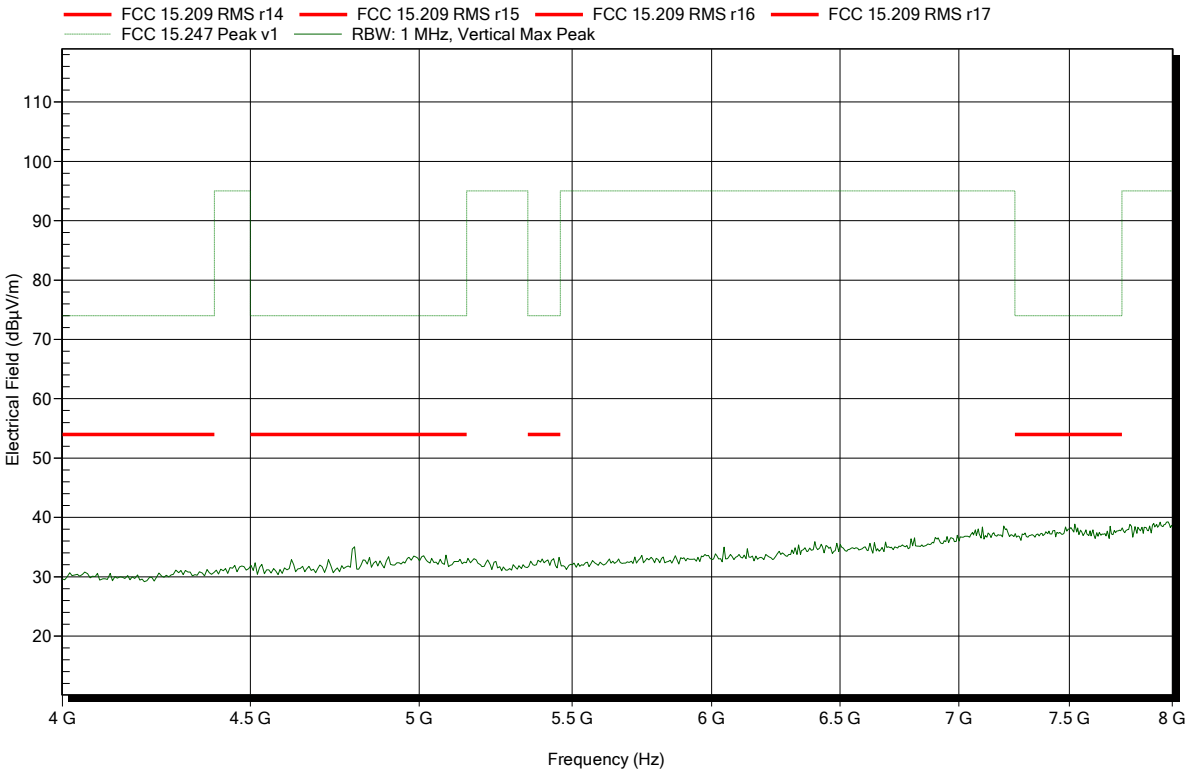

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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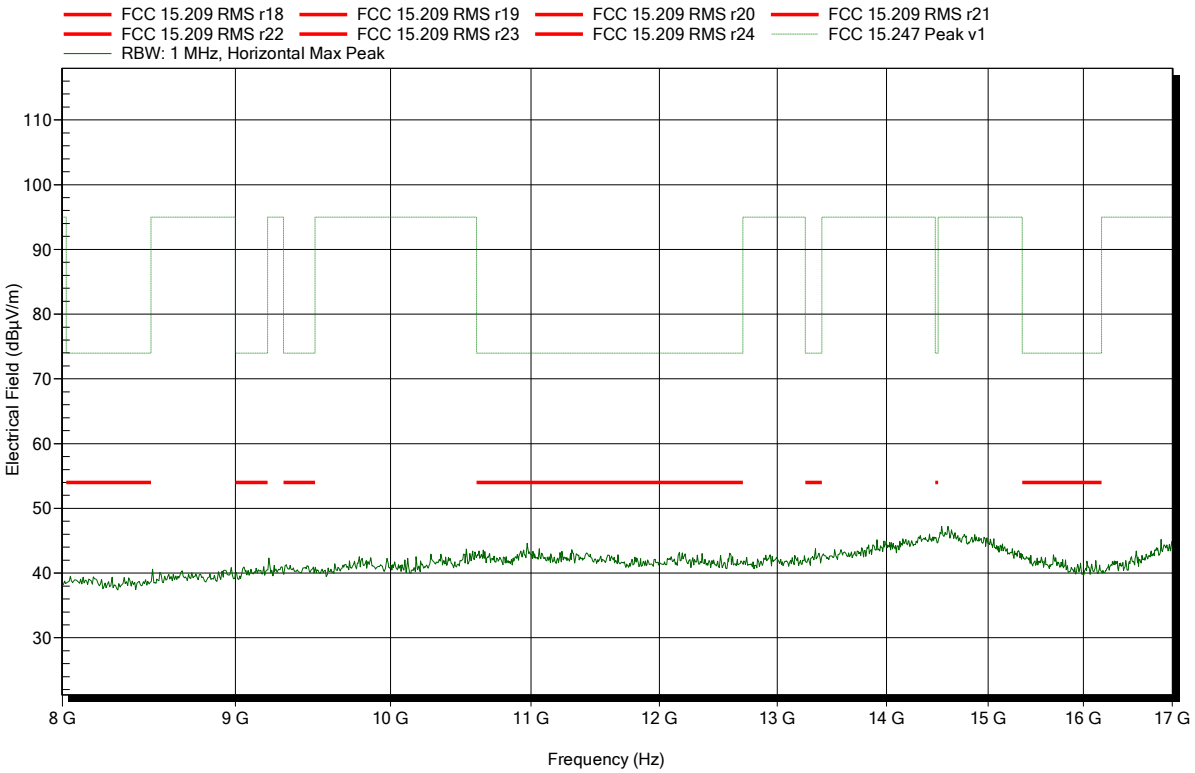

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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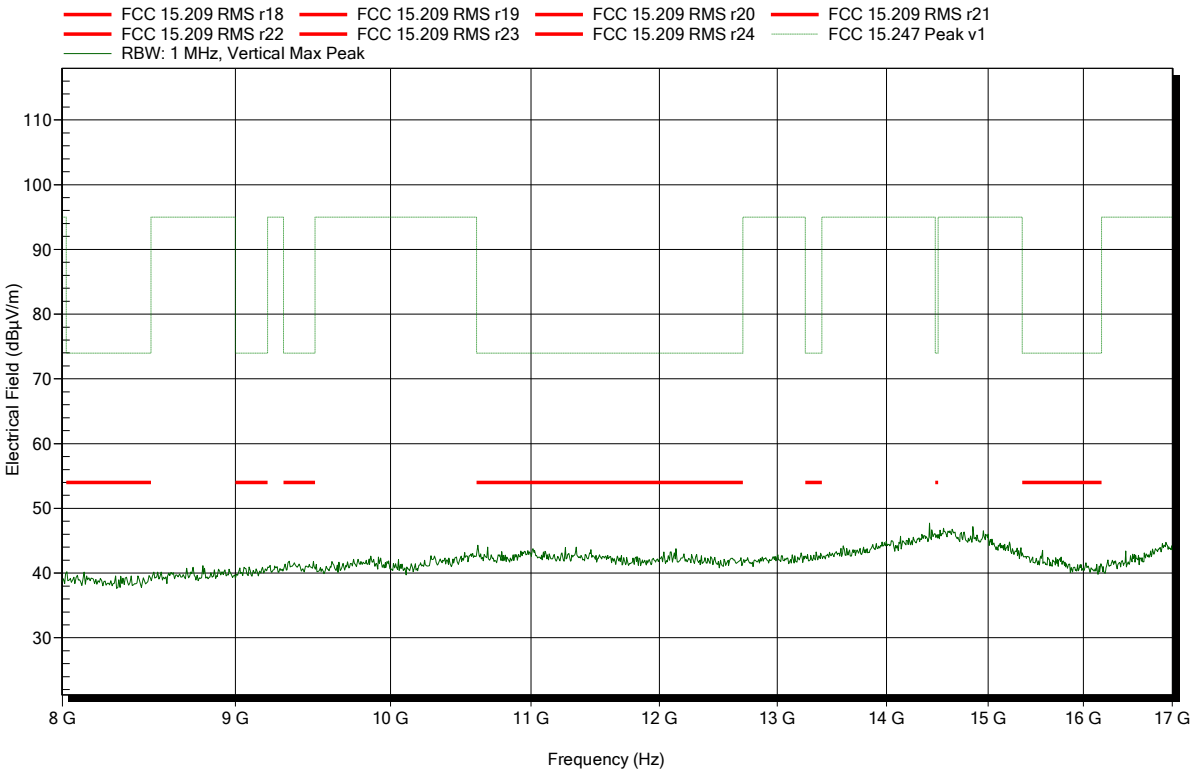

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Amplifier Research AT4560, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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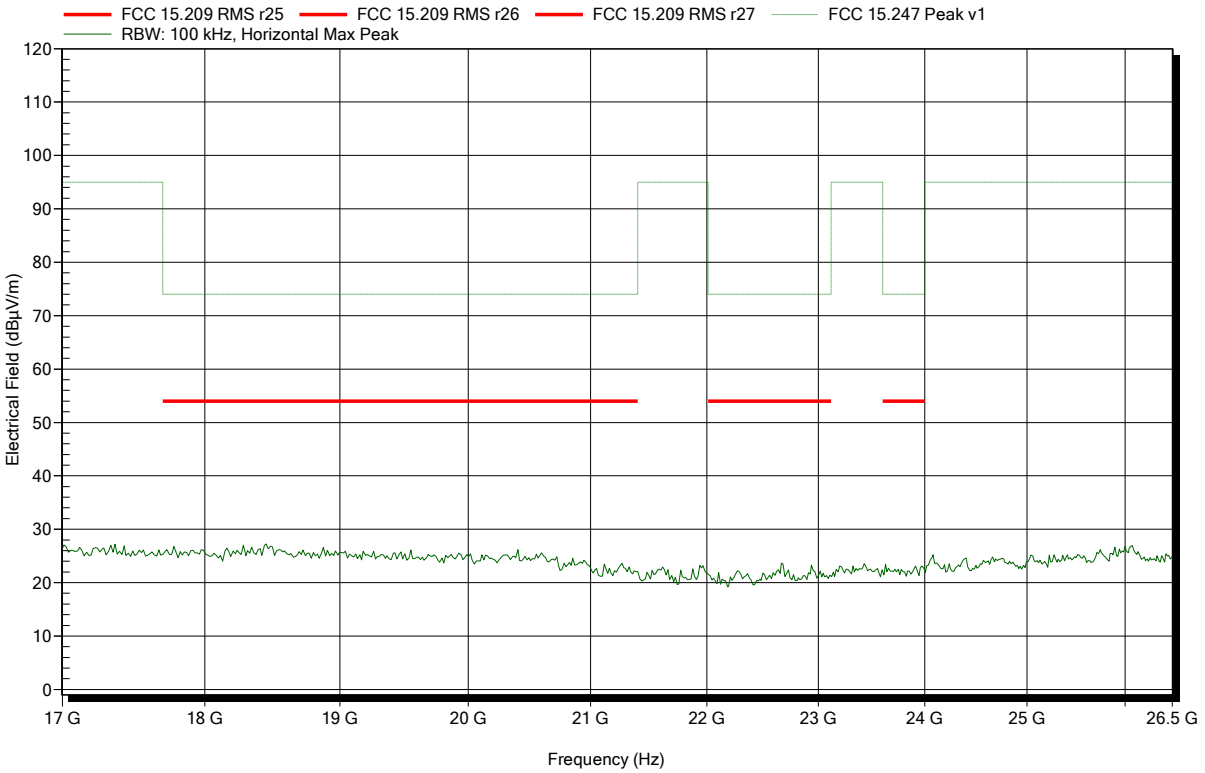

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Amplifier Research AT4560, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 2402MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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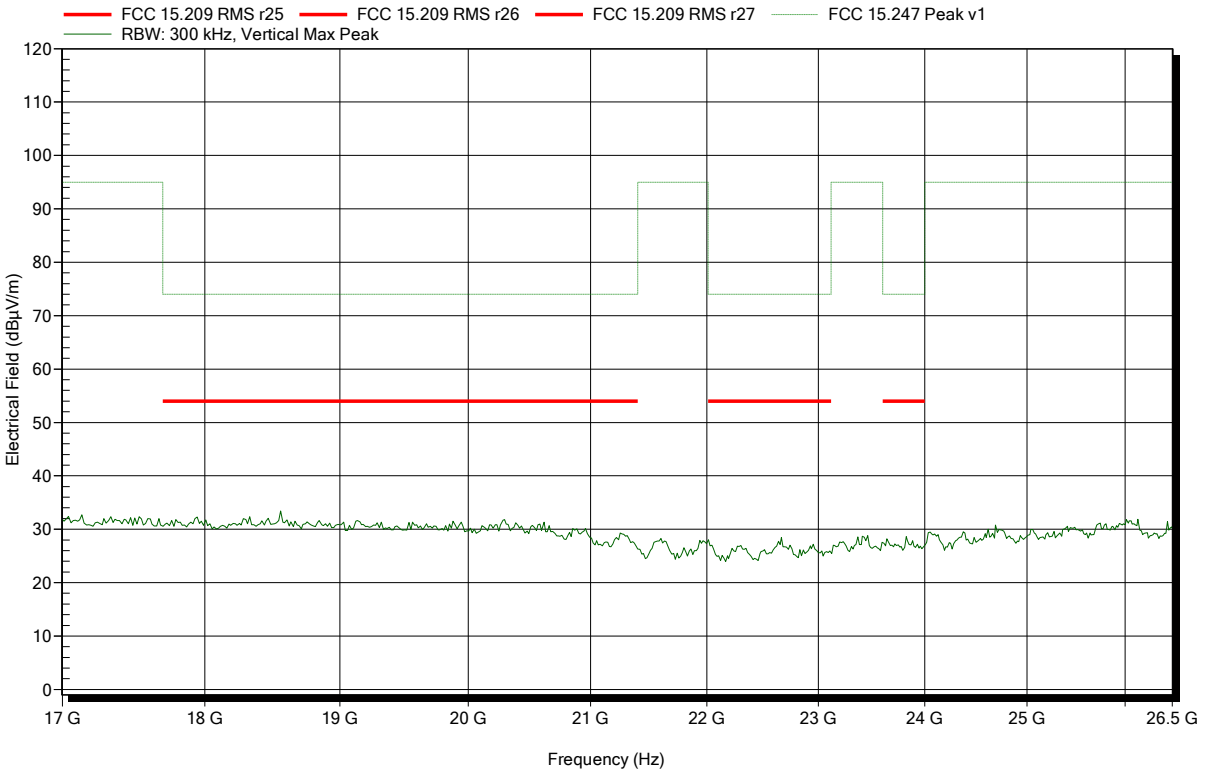

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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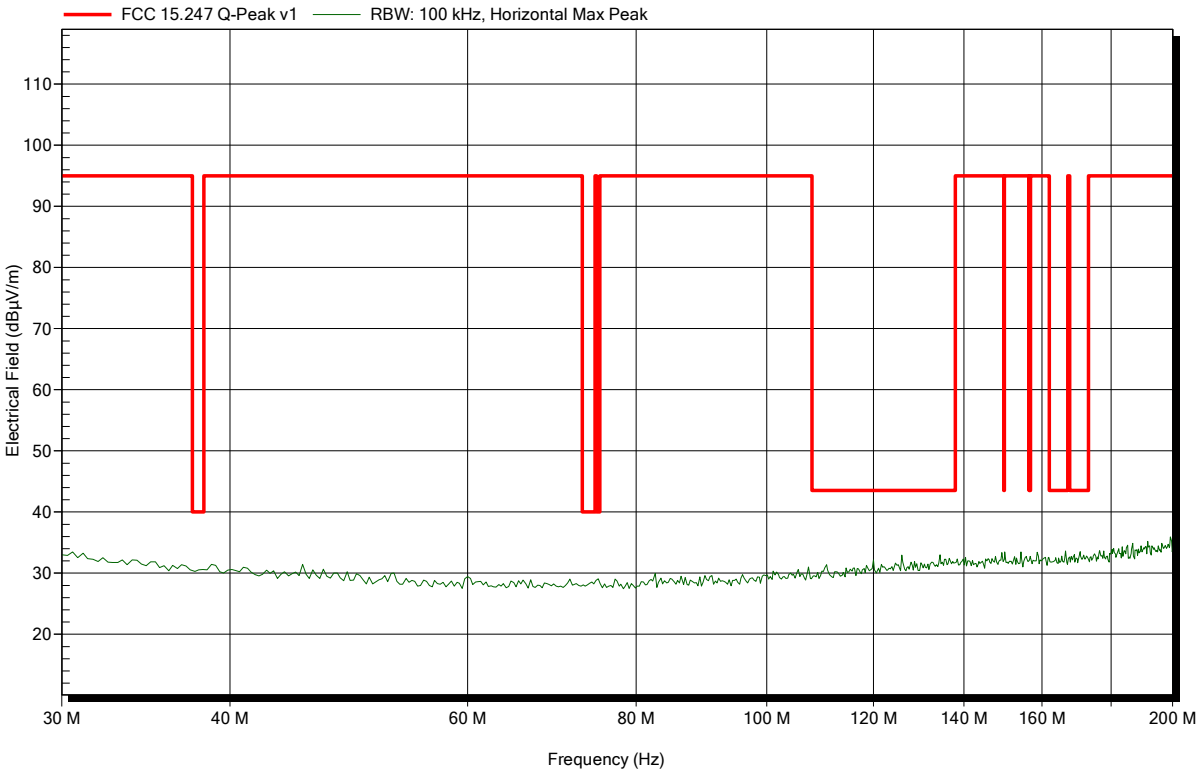

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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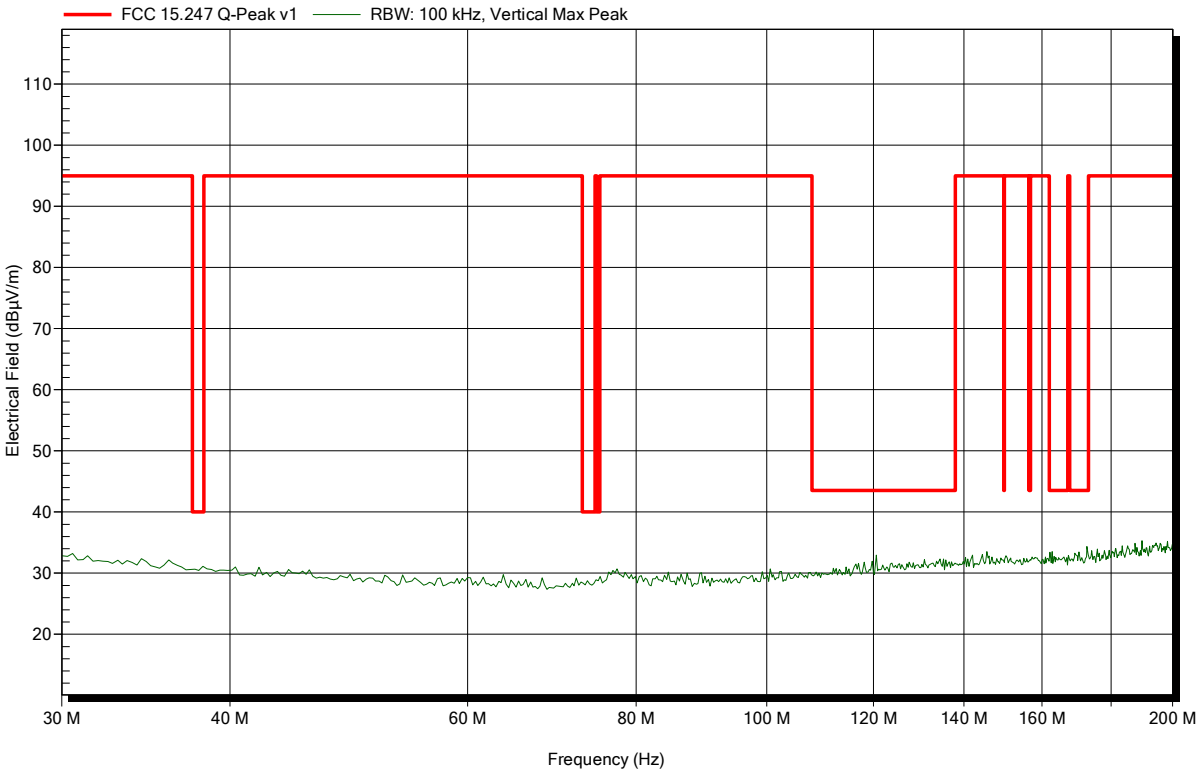

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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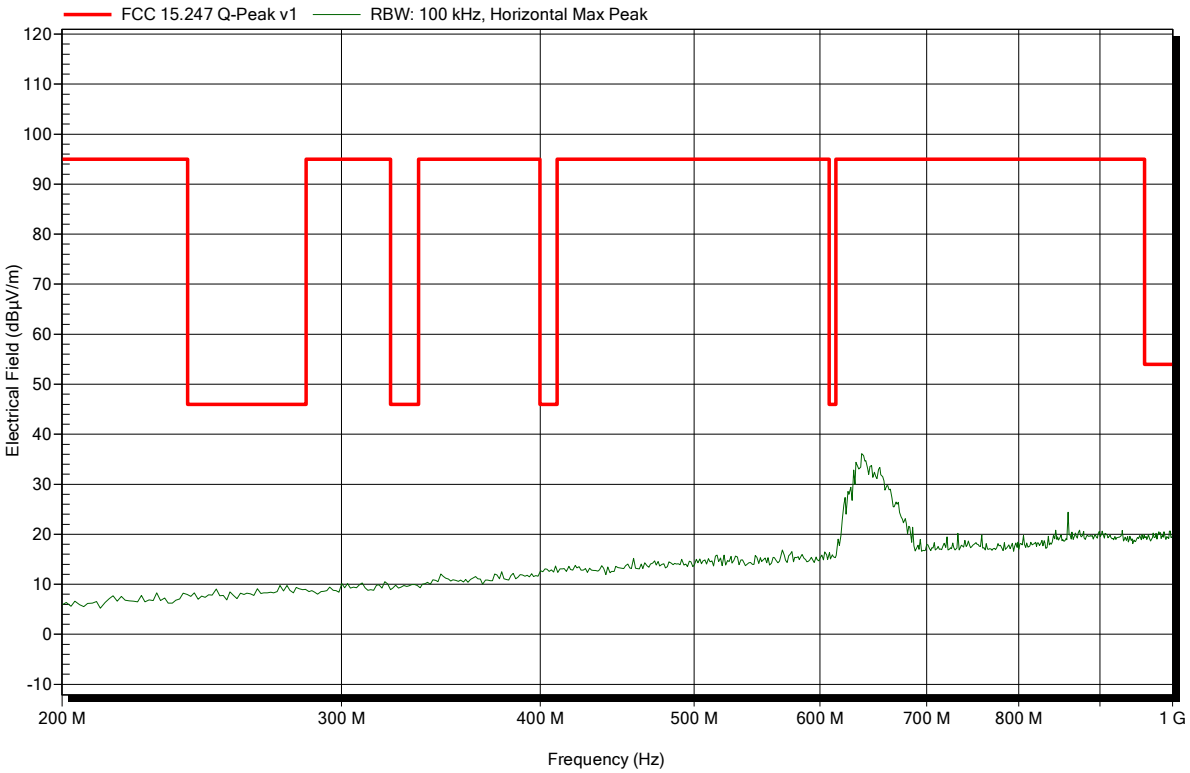

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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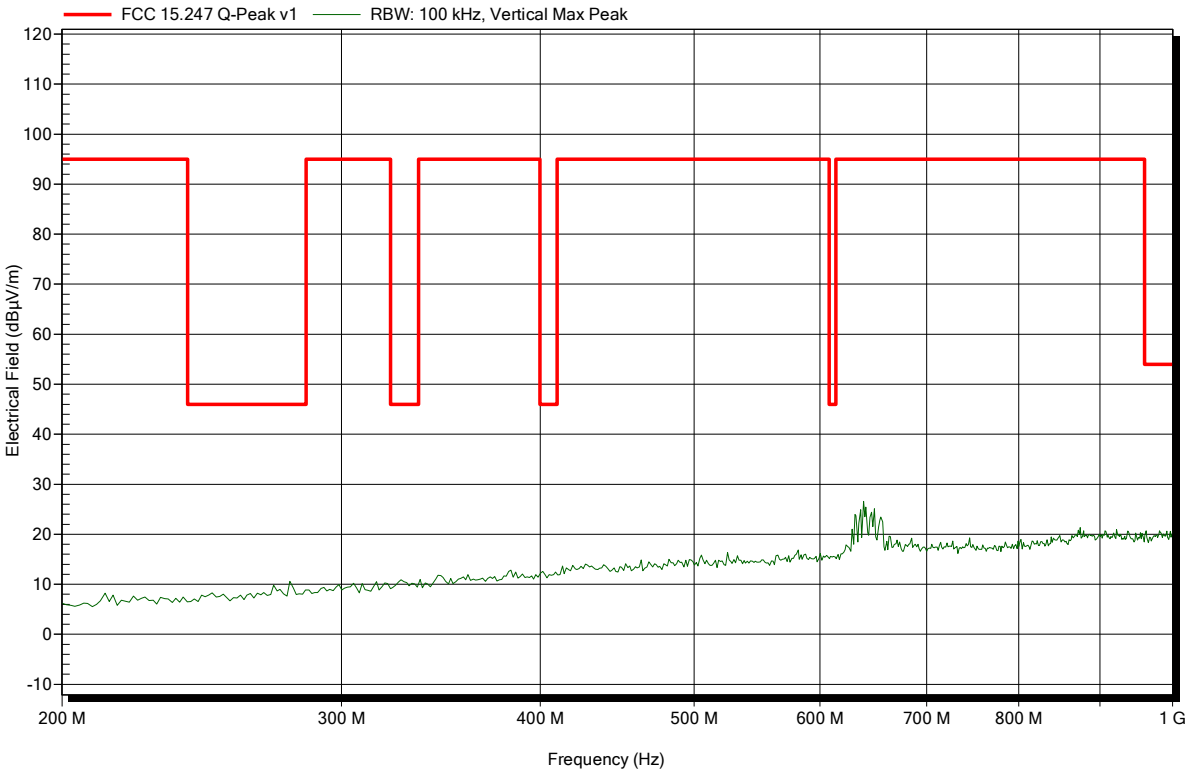

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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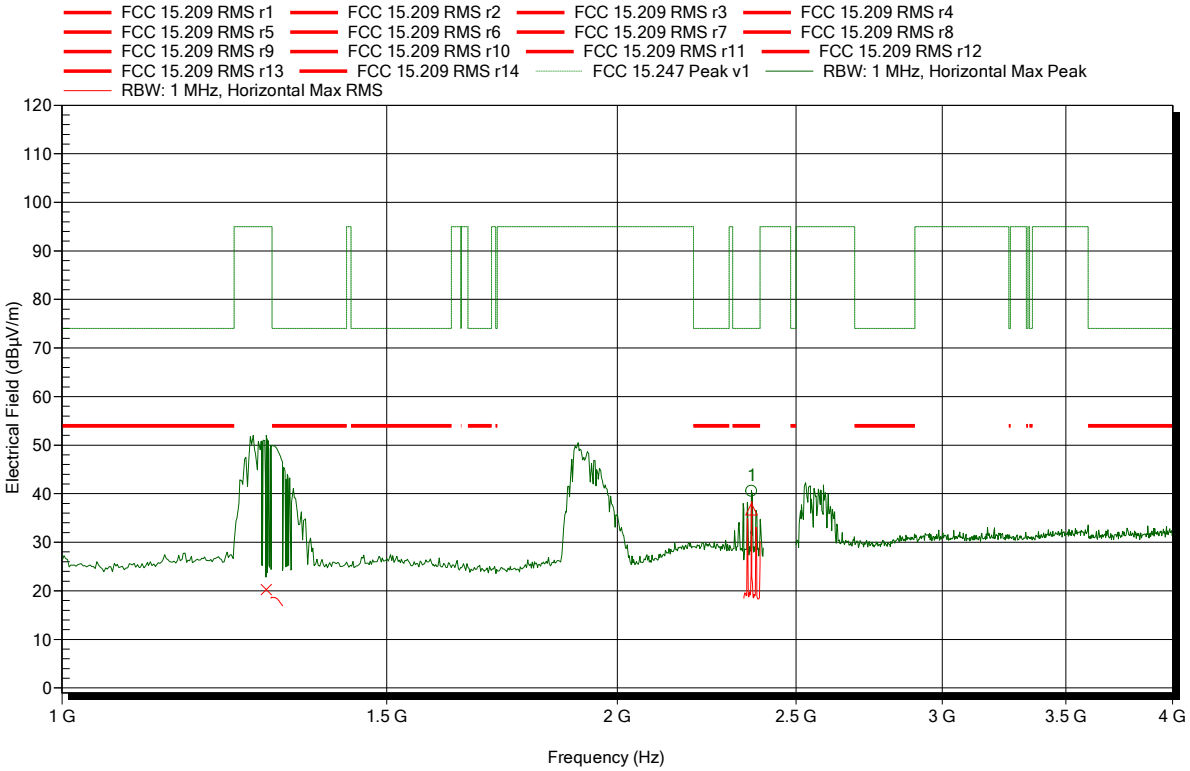

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.365 GHz	40.55 dBµV/m	74 dBµV/m	-33.45 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.365 GHz	36.78 dBµV/m	54 dBµV/m	-17.22 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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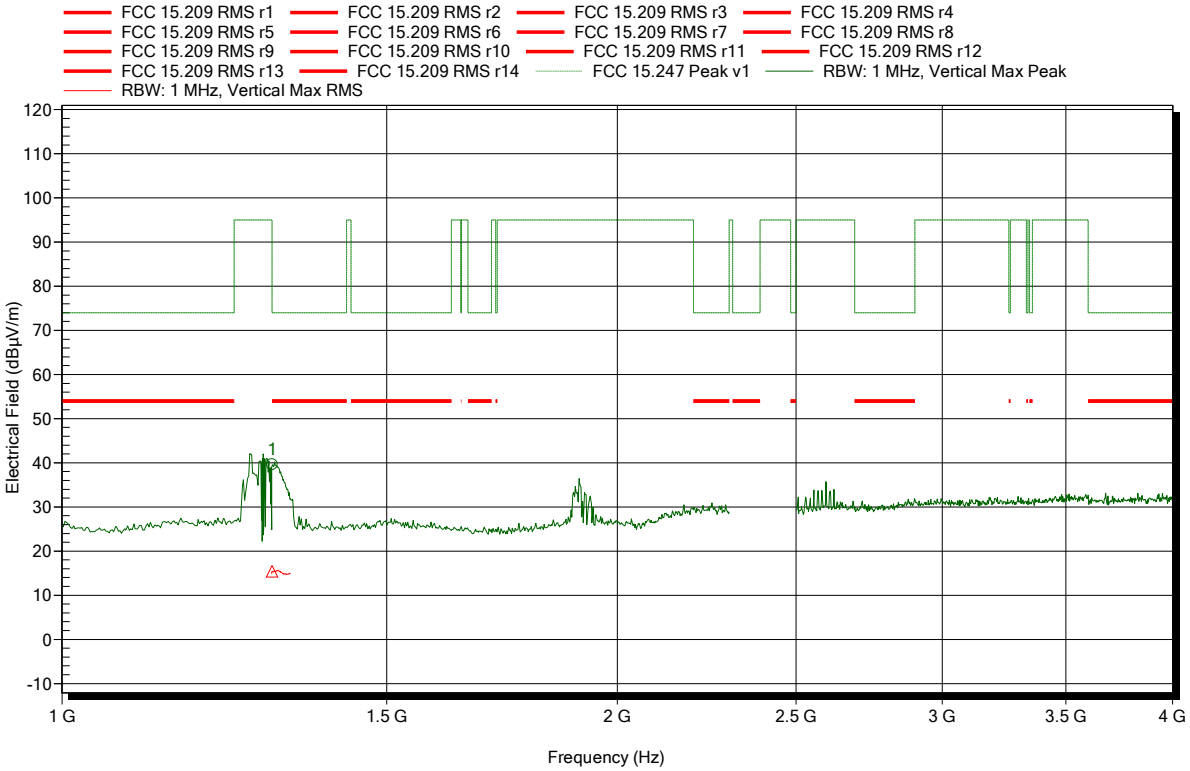

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.3 GHz	39.59 dBµV/m	74 dBµV/m	-34.41 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
1.3 GHz	15.43 dBµV/m	54 dBµV/m	-38.57 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	upper bandedge

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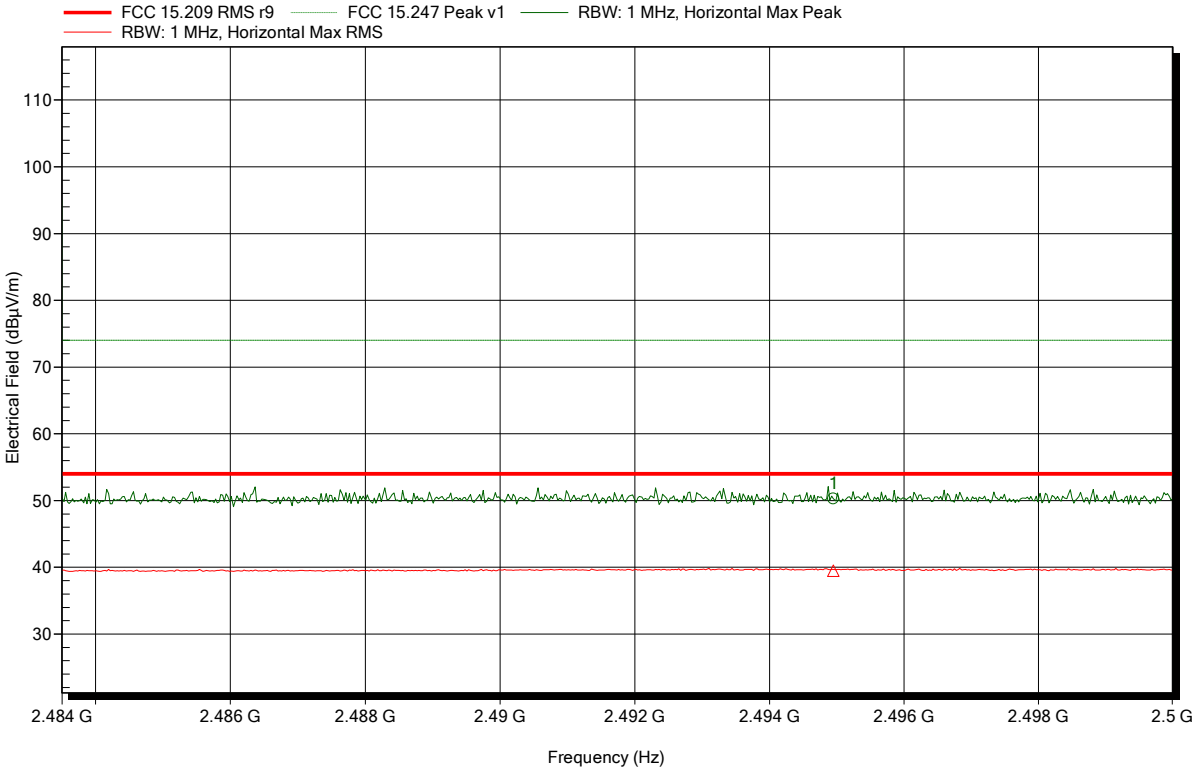

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4949 GHz	50.27 dBµV/m	74 dBµV/m	-23.73 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.4949 GHz	39.48 dBµV/m	54 dBµV/m	-14.52 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	upper bandedge

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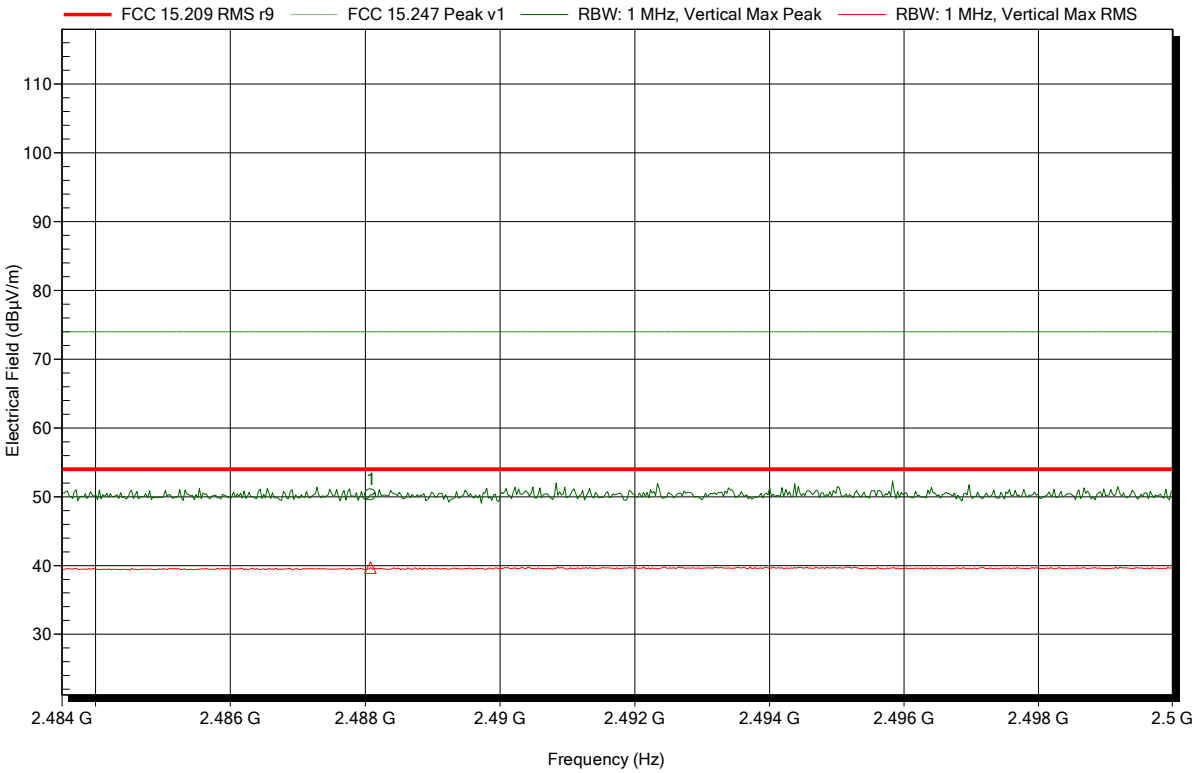

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4881 GHz	50.31 dBµV/m	74 dBµV/m	-23.69 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.4881 GHz	39.7 dBµV/m	54 dBµV/m	-14.3 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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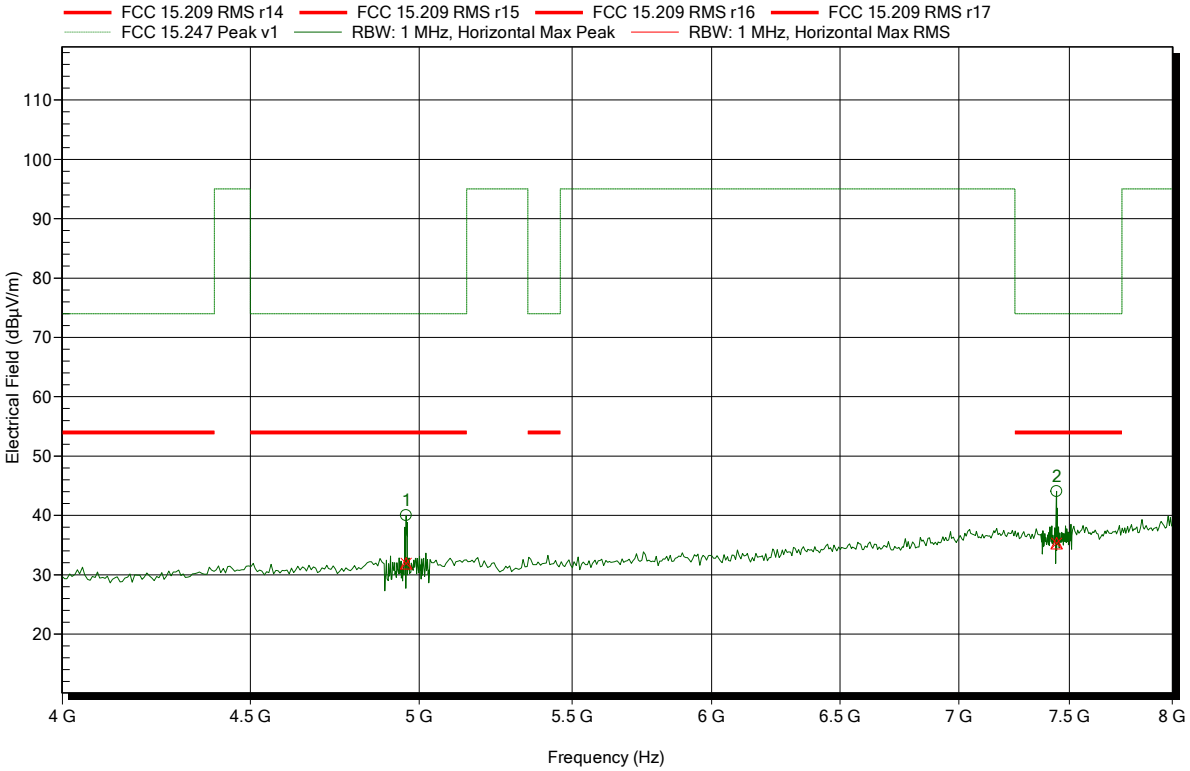

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.959 GHz	40.01 dBµV/m	74 dBµV/m	-33.99 dB	Pass
7.441 GHz	44.05 dBµV/m	74 dBµV/m	-29.95 dB	Pass

Frequency	RMS	RMS Limit	RMS Difference	RMS Status
4.959 GHz	31.91 dBµV/m	54 dBµV/m	-22.09 dB	Pass
7.441 GHz	35.33 dBµV/m	54 dBµV/m	-18.67 dB	Pass

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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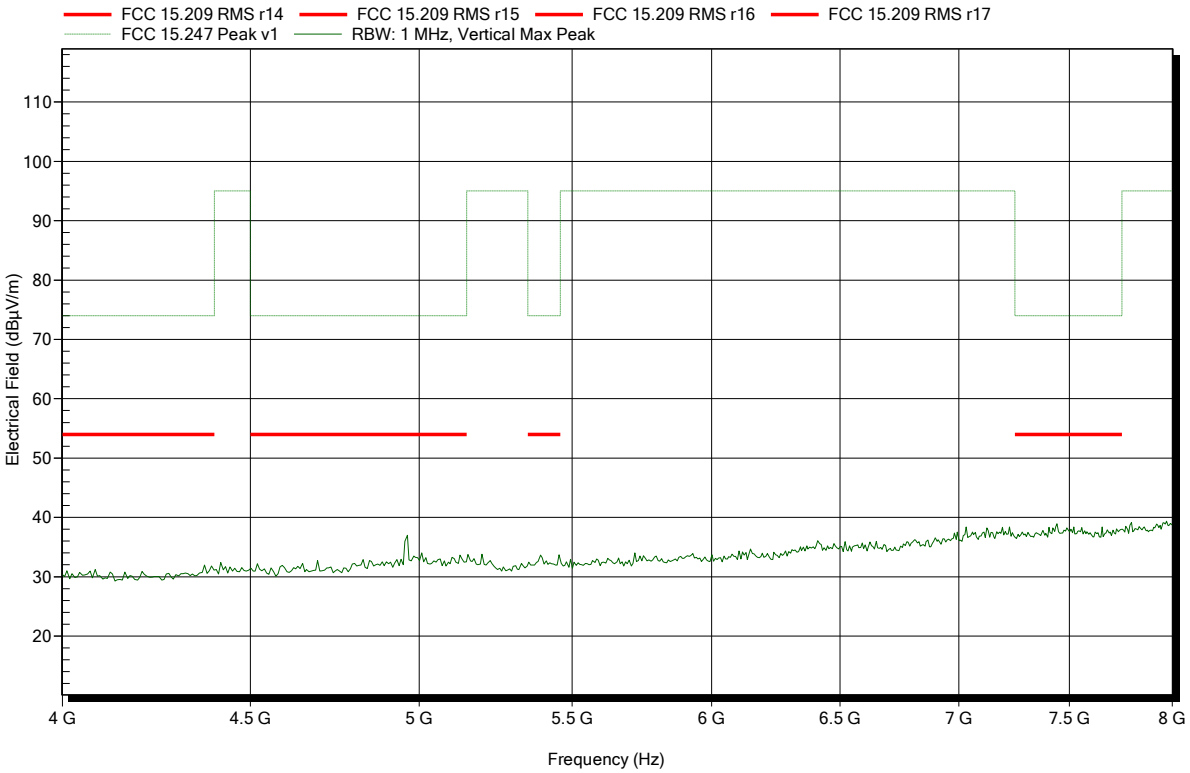

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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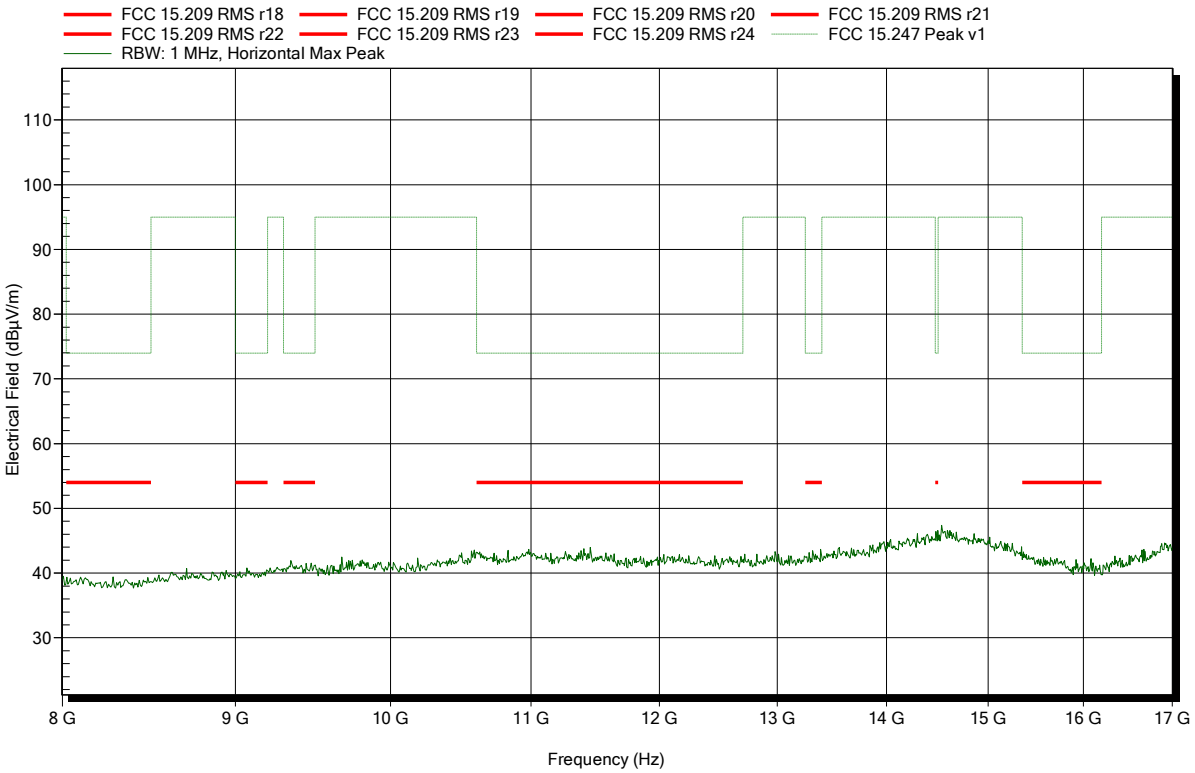

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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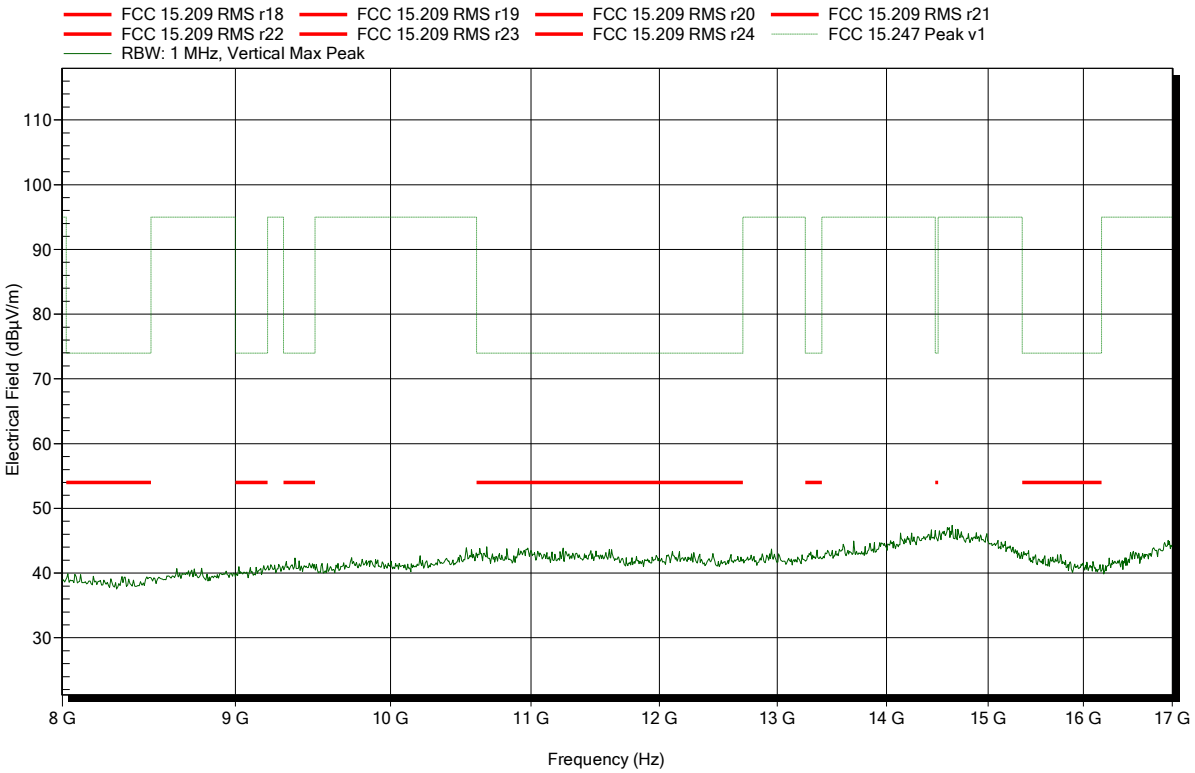

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Amplifier Research AT4560, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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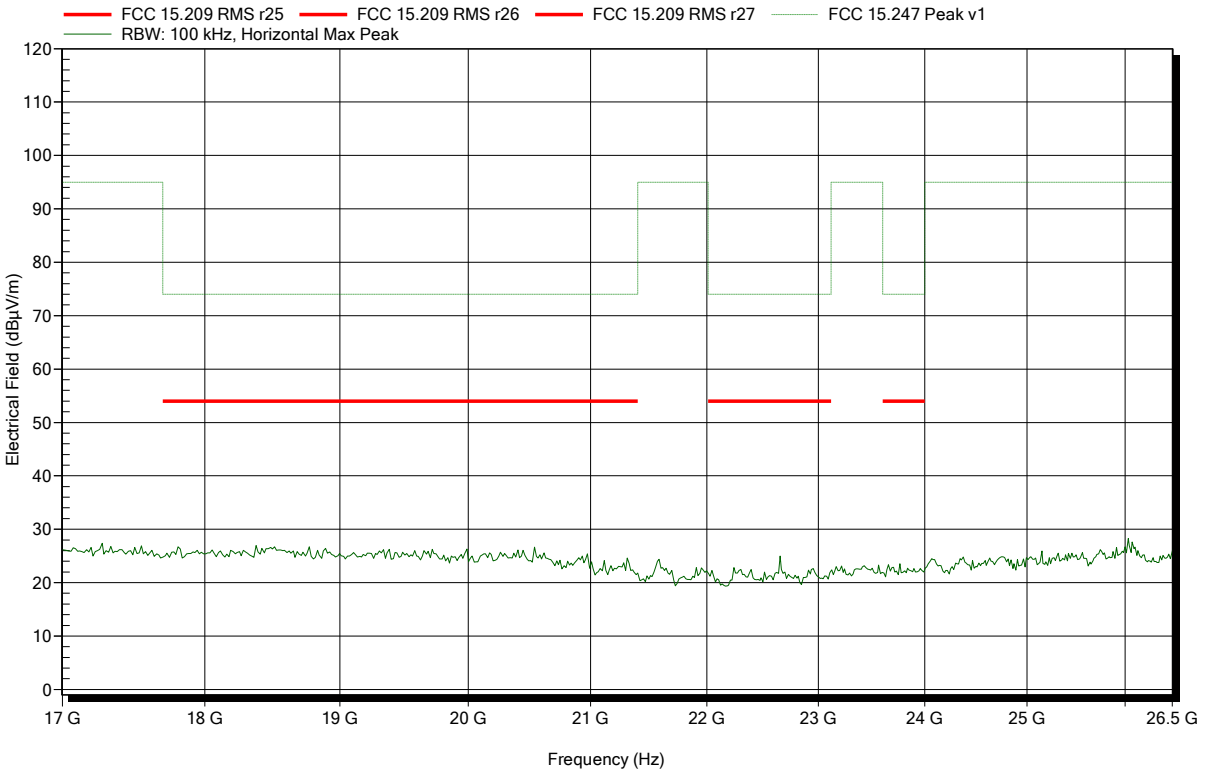

Spurious emissions according to FCC 47 e-CFR §15.247

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 22.5°C, Vnom: 14.4 VDC
Antenna:	Amplifier Research AT4560, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 2480MHz, EUT ver.
Test Date:	2019-11-18
Note:	

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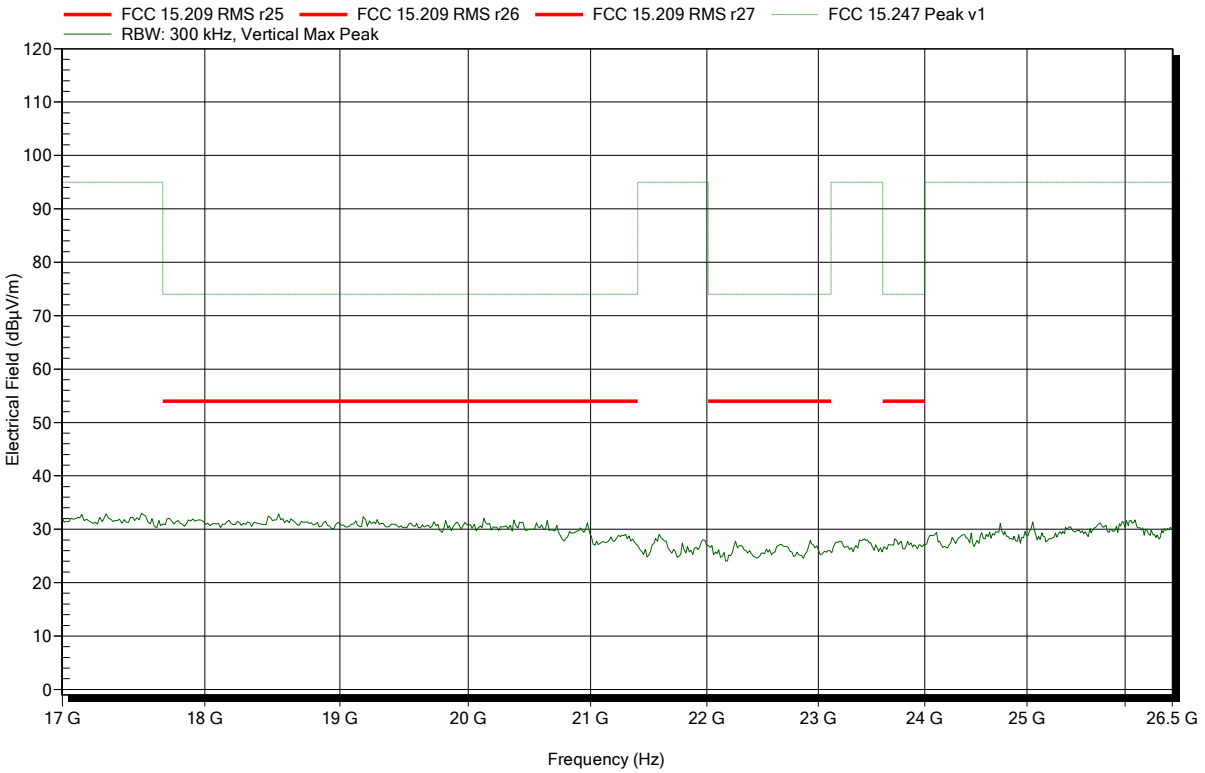

ANNEX B Receiver spurious emissions

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 24.4°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	RX; 2440MHz
Test Date:	2019-11-20
Note:	

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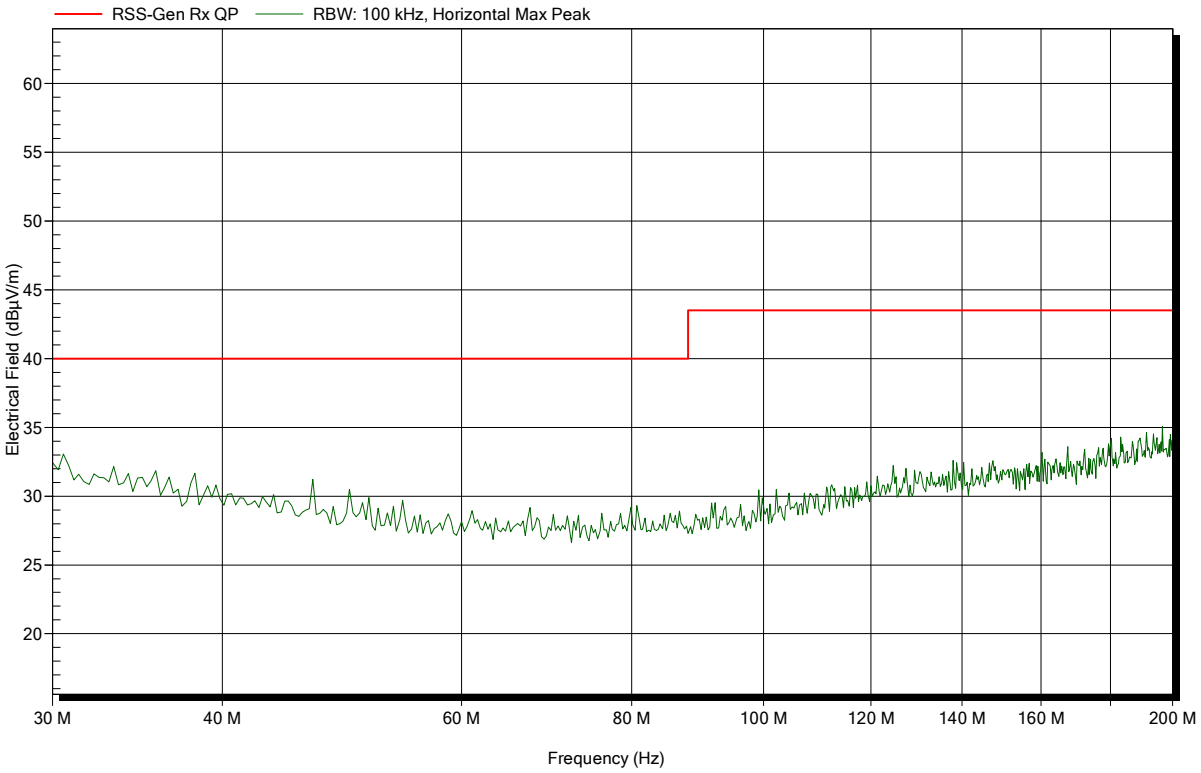

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 24.4°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	RX; 2440MHz
Test Date:	2019-11-20
Note:	

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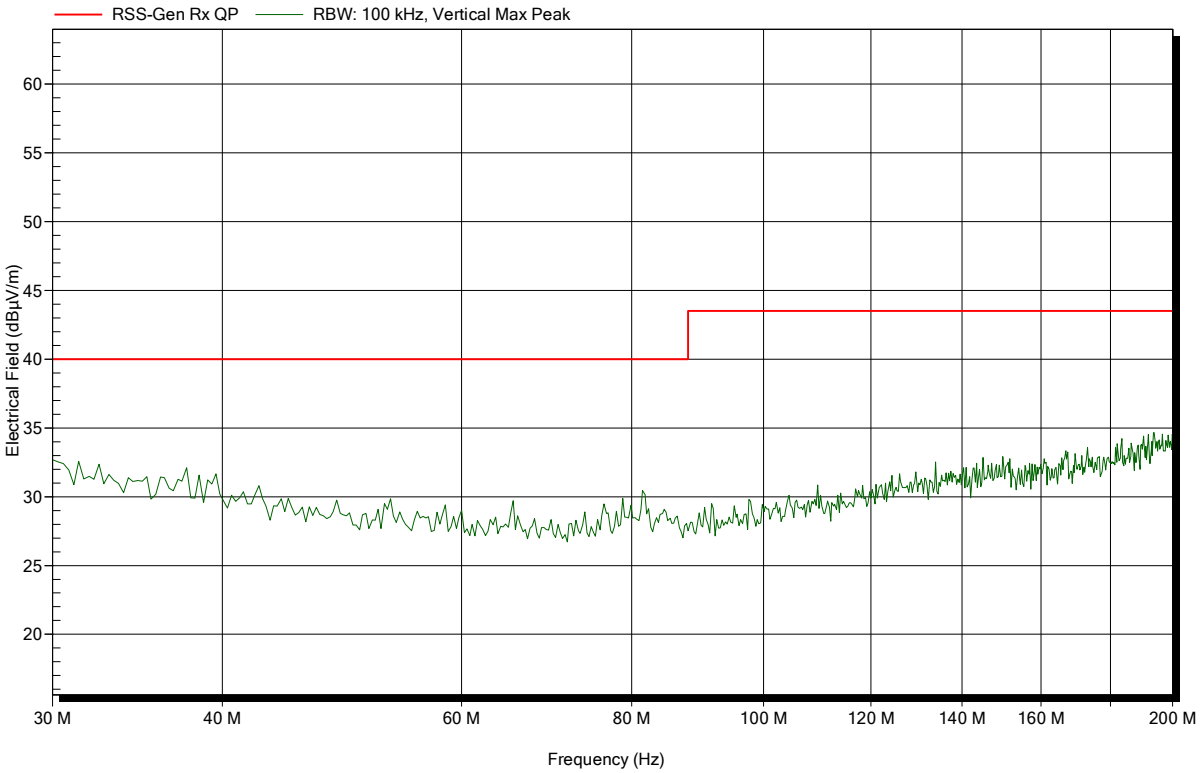

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 24.4°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	RX; 2440MHz
Test Date:	2019-11-20
Note:	

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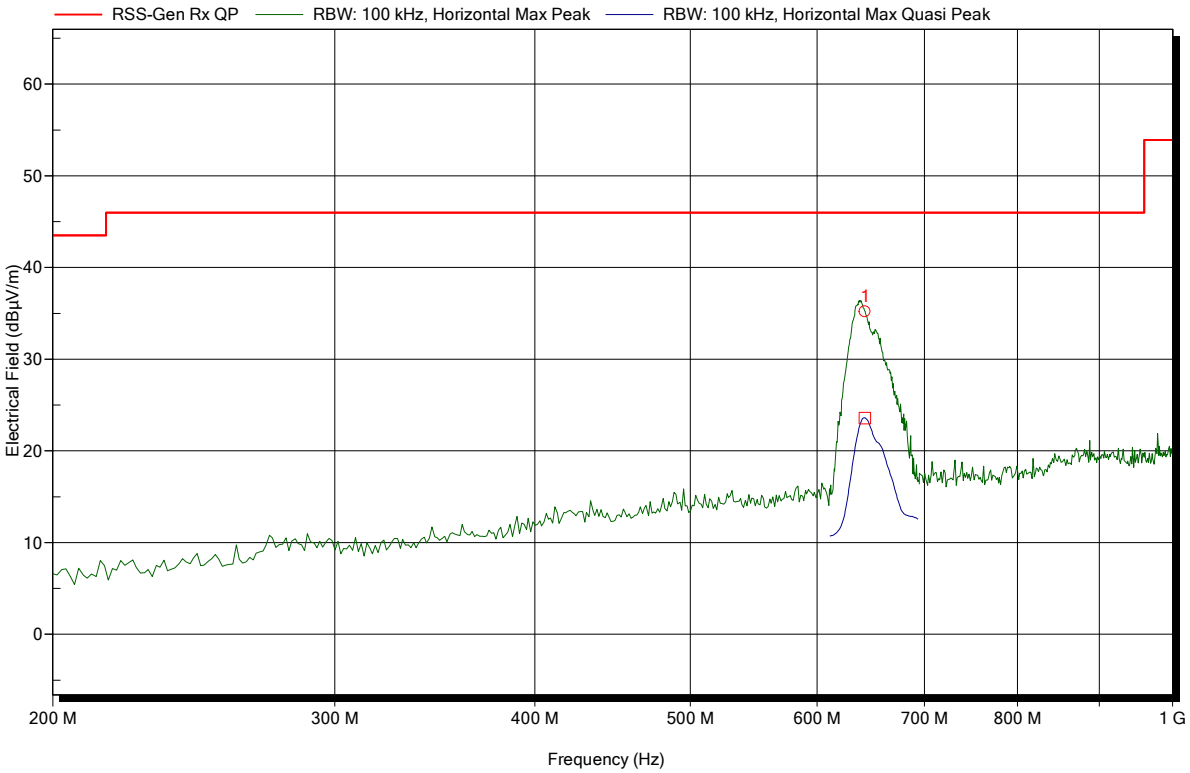

Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
642.63 MHz	35.2 dBµV/m	---	---	---	135 Degree	1.2 m

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
642.63 MHz	23.58 dBµV/m	46 dBµV/m	-22.42 dB	Pass	135 Degree	1.2 m

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 24.4°C, Vnom: 14.4 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	RX; 2440MHz
Test Date:	2019-11-20
Note:	

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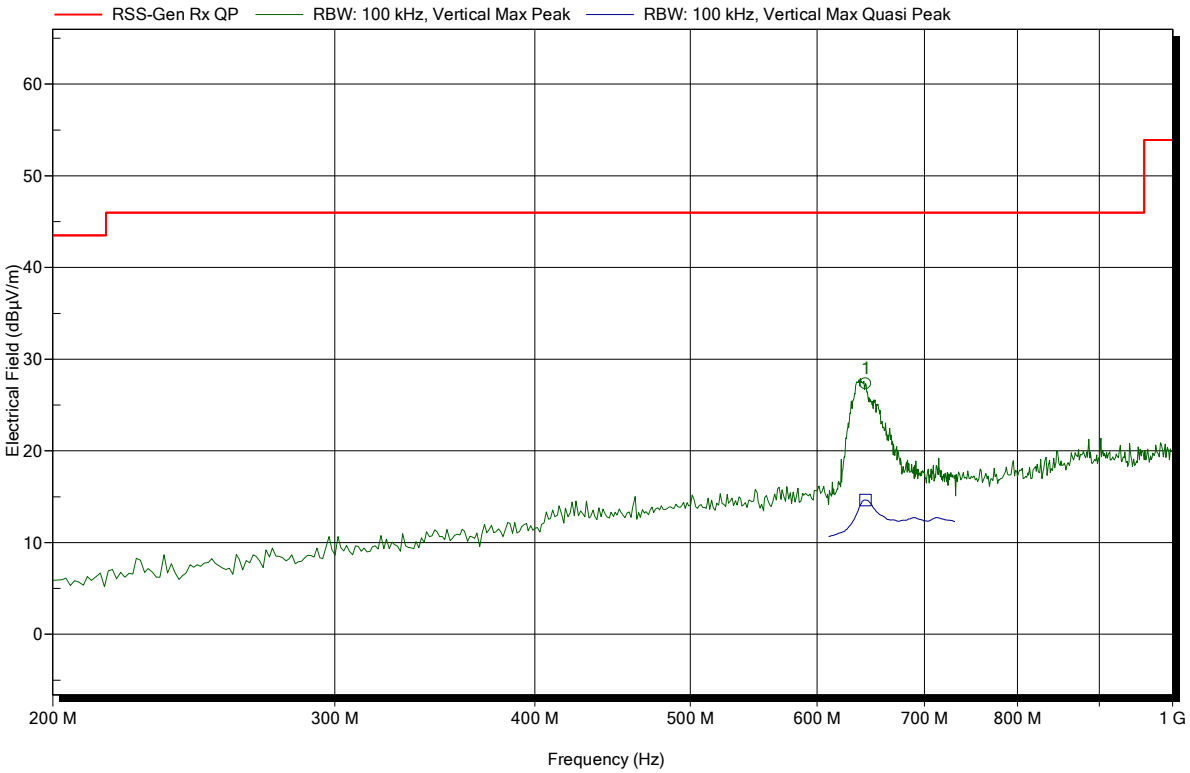

Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
643.114 MHz	27.33 dBµV/m	---	---	---	112 Degree	1.2 m

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
643.114 MHz	14.65 dBµV/m	46 dBµV/m	-31.35 dB	Pass	112 Degree	1.2 m

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 24.4°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	RX; 2440MHz
Test Date:	2019-11-18
Note:	

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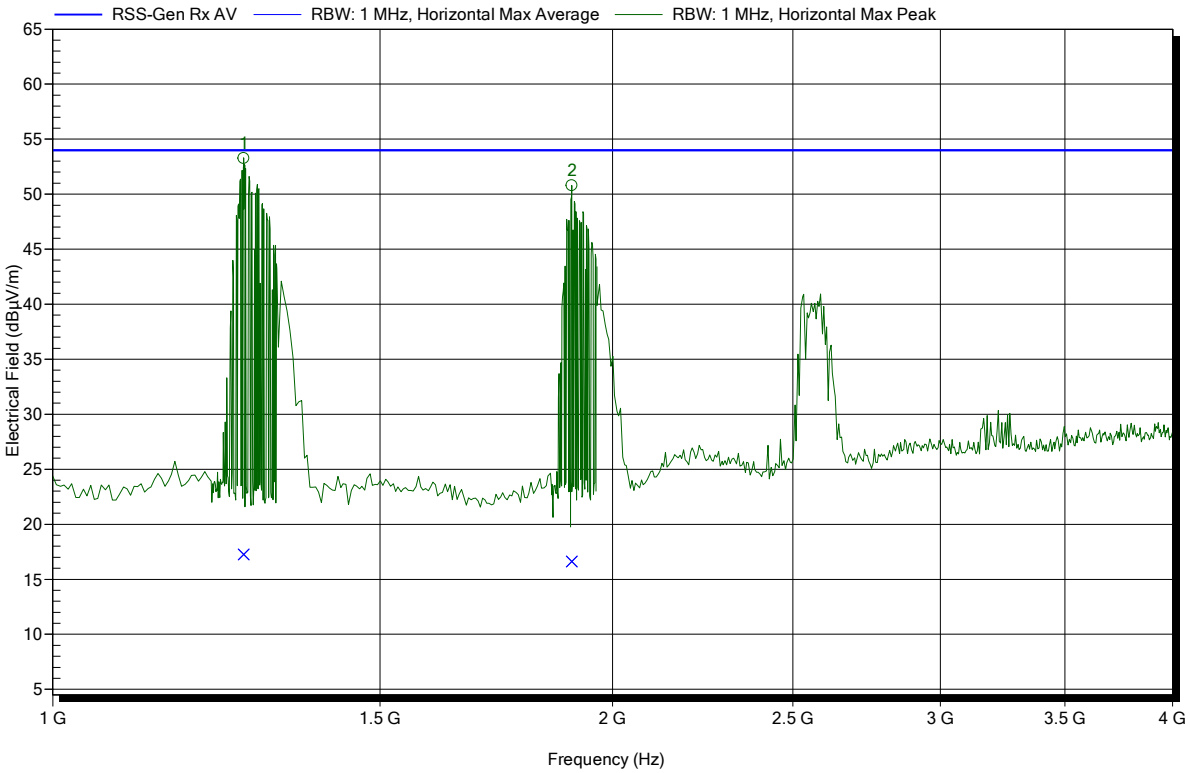

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.267 GHz	53.27 dBµV/m	---	---	---
1.902 GHz	50.79 dBµV/m	---	---	---

Frequency	Average	Average Limit	Average Difference	Average Status
1.267 GHz	17.25 dBµV/m	53.98 dBµV/m	-36.73 dB	Pass
1.902 GHz	16.62 dBµV/m	53.98 dBµV/m	-37.36 dB	Pass

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 24.4°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	RX; 2440MHz
Test Date:	2019-11-18
Note:	

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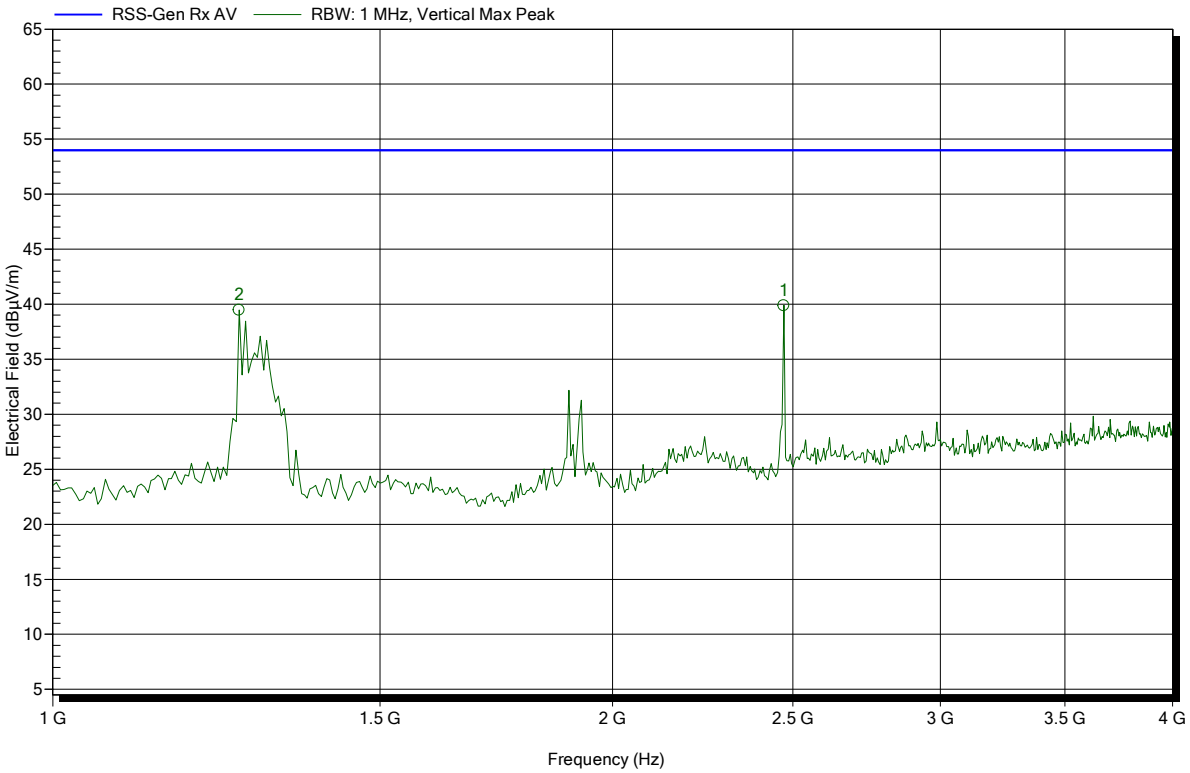

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.26 GHz	39.49 dBµV/m	53.98 dBµV/m	-14.49 dB	Pass
2.471 GHz	39.89 dBµV/m	53.98 dBµV/m	-14.09 dB	Pass

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 24.4°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	RX; 2440MHz
Test Date:	2019-11-18
Note:	

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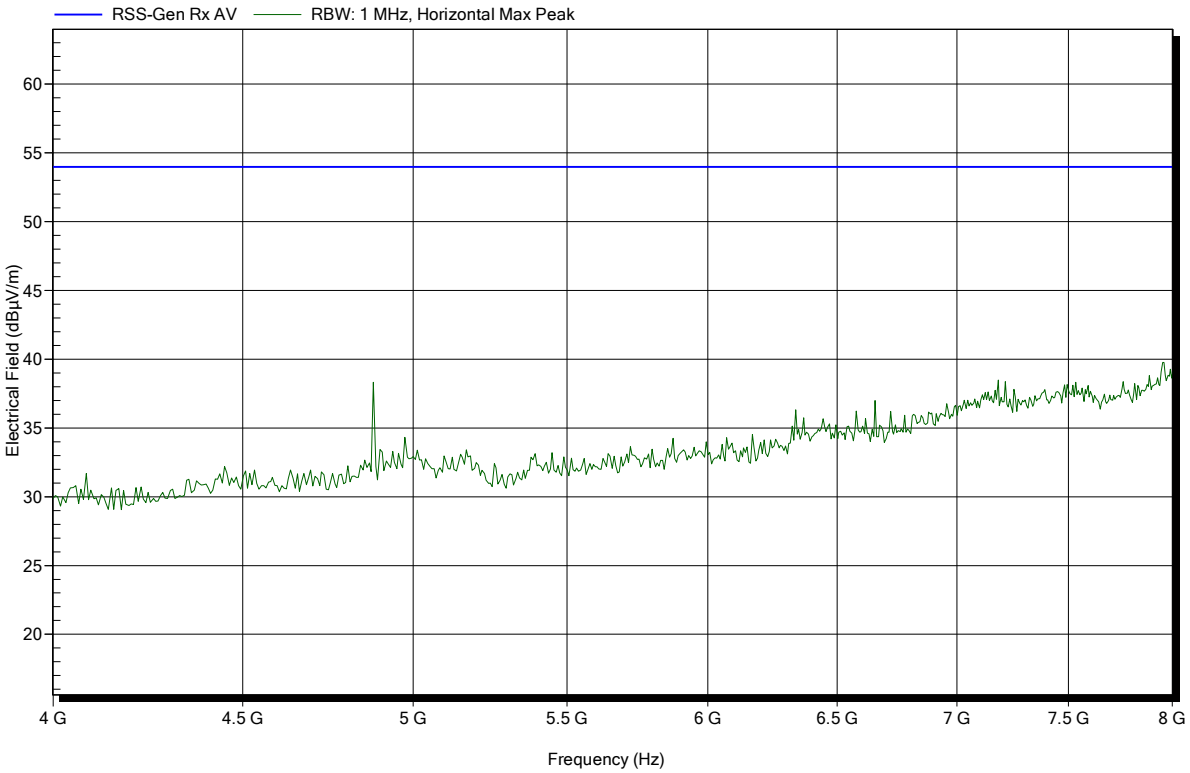
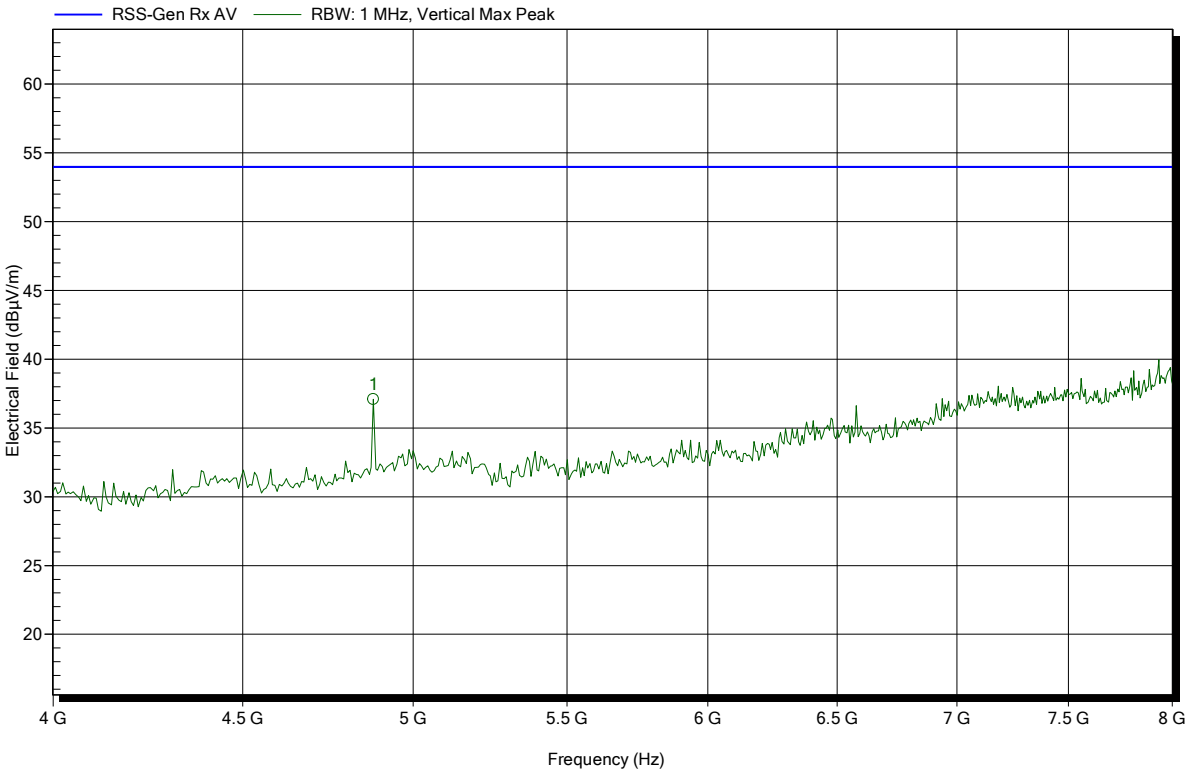


Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 24.4°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	RX; 2440MHz
Test Date:	2019-11-18
Note:	

Index 2



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.878 GHz	37.08 dBµV/m	53.98 dBµV/m	-16.9 dB	Pass

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 24.4°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	RX; 2440MHz
Test Date:	2019-11-18
Note:	

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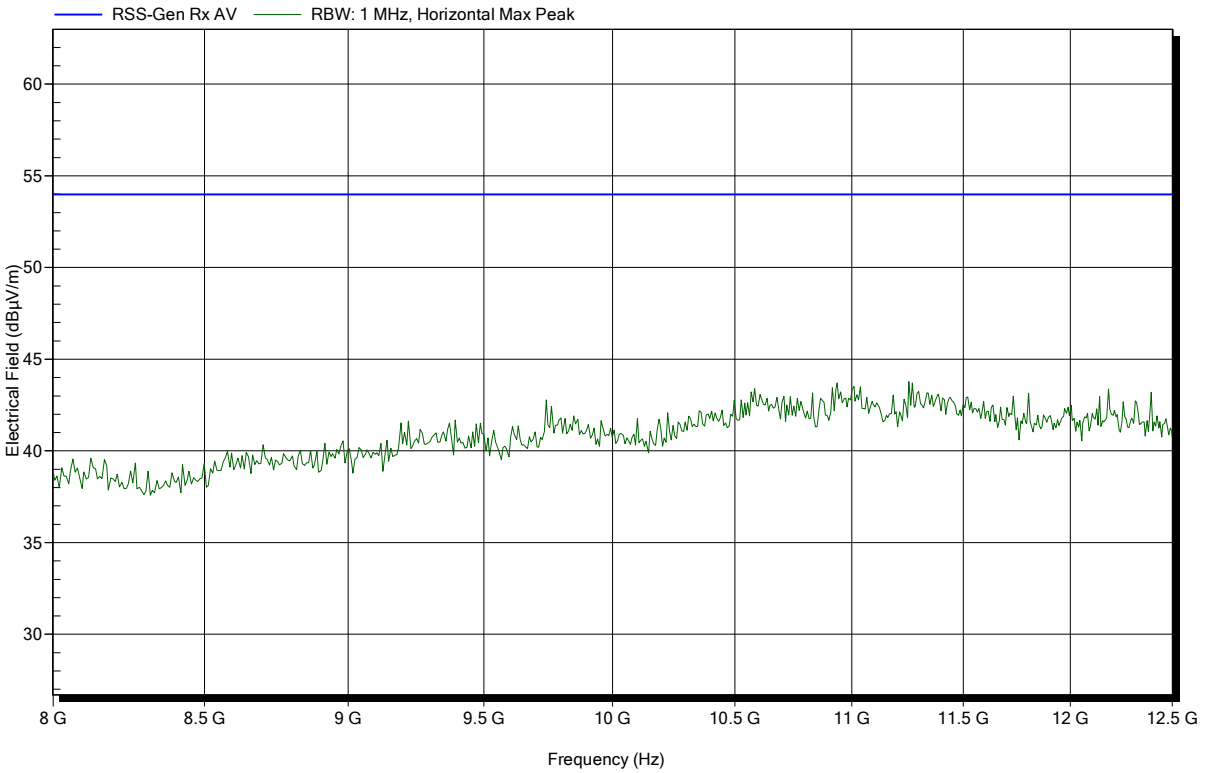

Spurious emissions according to RSS-247 Issue 2

Project number:	G0M-1803-7309
Applicant:	Dräger Safety AG & Co. KGaA
EUT Name:	Fixed Gas Detector
Model:	P6100
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt
Test Conditions:	Tnom: 24.4°C, Vnom: 14.4 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	RX; 2440MHz
Test Date:	2019-11-18
Note:	

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