RADIO REPORT

FCC 47 CFR Part 15C
ISED Canada RSS-247

Digital transmission systems operating within the 2400.0 MHz - 2483.5 MHz band

Report Reference No	G0M-2111-1145-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 DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	Adolf Würth GmbH
Address	Reinhold-Würth-Str. 12-17 74653 Künzelsau-Gaisbach Germany
Test Specification	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5, Amendment 2, 2021-02
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Laser Distance Meter
Model(s)	WDM 6-22
Additional Model(s)	None
Brand Name(s)	Würth
Hardware Version(s)	V09
Software Version(s)	V05
FCC ID	RFF-LD3BT
IC	3177A-LD3BT
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 °C - 30 °C	
Test Lab Humidity	25 % - 55 %	
Date of receipt of test item	2021-12-17	
Report:		
Compiled by	Jens Degenhardt	
Tested by (+ signature) (Responsible for Test)	Jens Degenhardt	Jens Degenhardt
Supervised by (+ signature) (Responsible for Test)	Florian Voigt	F. Voigt
Approved by (+ signature) (Test Lab Engineer)	Wilfried Treffke	W. Treffke
Date of Issue	2022-01-31	
Total number of pages	45	
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:		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2022-01-31	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

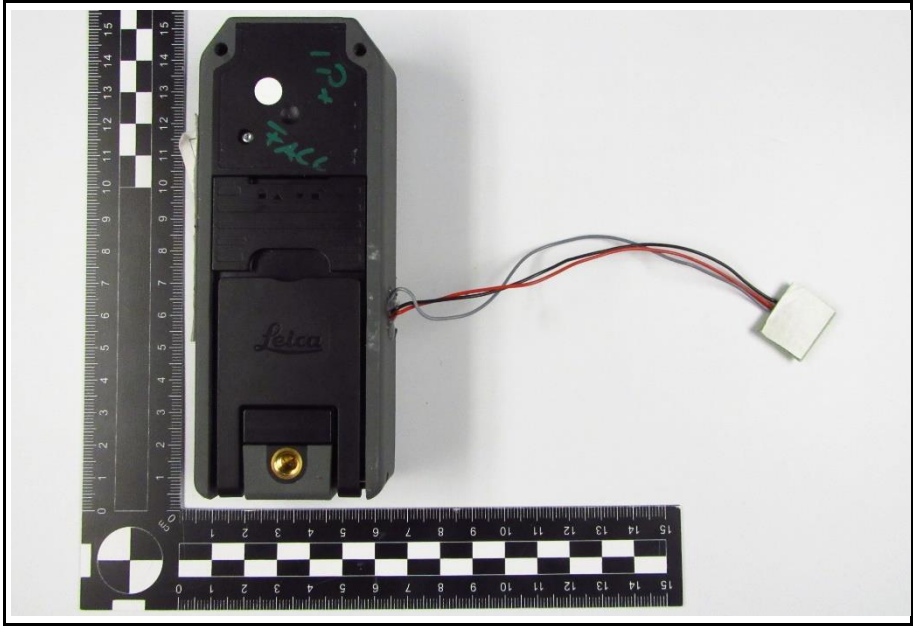
REPORT INDEX

1 Equipment (Test Item) Under Test

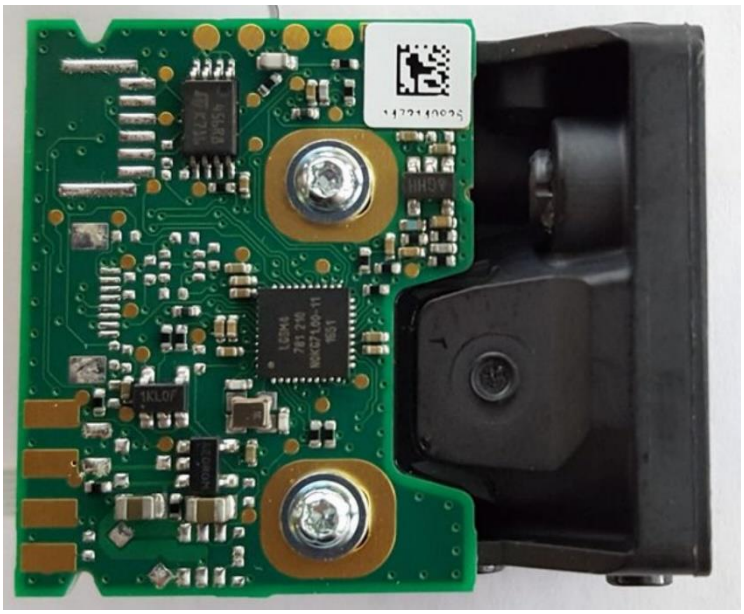
Description	Laser Distance Meter	
Model	WDM 6-22	
Additional Model(s)	None	
Brand Name(s)	Würth	
Serial Number(s)	Prototype Radiated Test Sample ID 37319	
Hardware Version(s)	V09	
Software Version(s)	V05	
PMN	Würth WDM 6-22	
HVIN	Würth WDM 6-22	
FVIN	N/A	
HMN	N/A	
FCC ID	RFF-LD3BT	
IC	3177A-LD3BT	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	2400.0 MHz - 2483.5 MHz	
Radio technology	Bluetooth LE 4.2	
Bluetooth Specification	LE 1M PHY	Yes
	LE 2M PHY	No
	LE Coded PHY S=8 (125 kbit)	No
	LE Coded PHY S=2 (500 kbit)	No
	Stable Modulation Index - Transmitter	No
	Stable Modulation Index - Receiver	No
Modulation	GFSK	
Number of antenna ports	1	
Antenna	Type	Integrated
	Model	2450AT42E0100
	Manufacturer	Johanson Technology
	Gain	-2 dBi
Supply Voltage	V_{NOM}	3 VDC
Operating Temperature	T_{NOM}	25 °C
Manufacturer	Leica Geosystems AG Heinrich-Wild-Strasse 9435 Heerbrugg SWITZERLAND	

1.1 Photos – Equipment External

EUT top side


EUT bottom side


1.2 Photos – Equipment Internal

EDM


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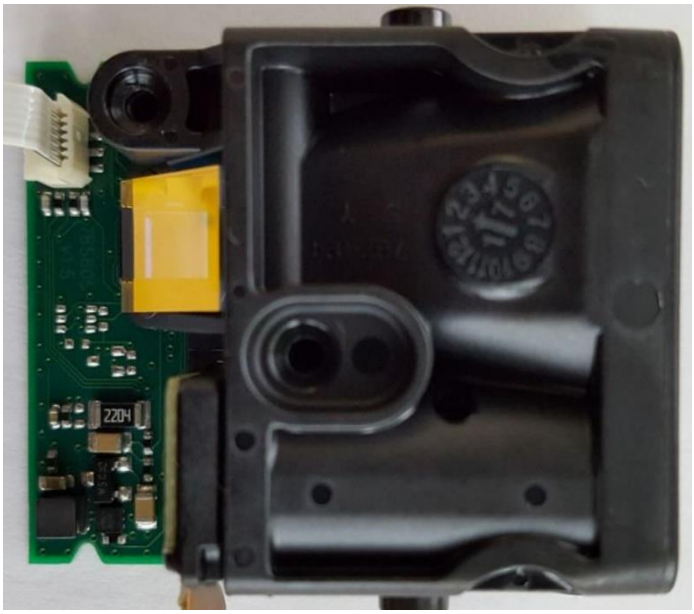
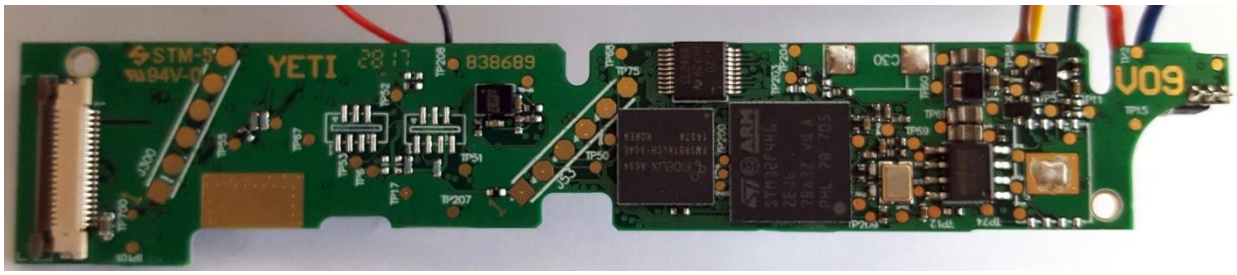
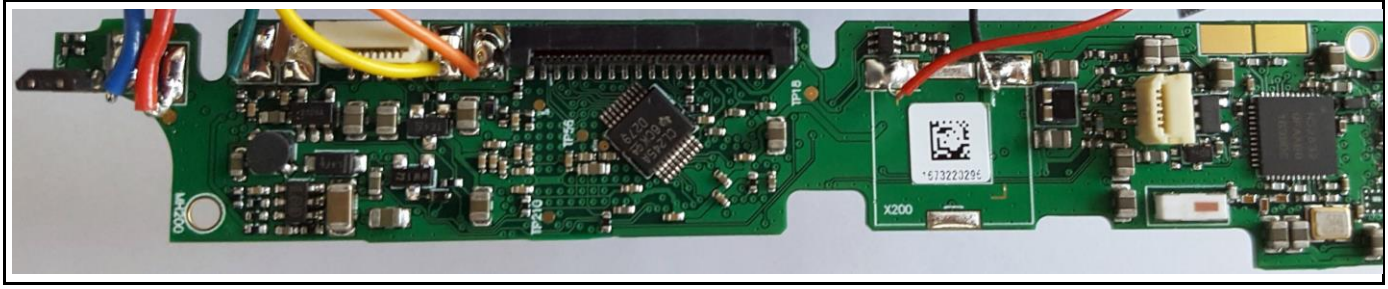


Main PCB


Main PCB


1.3 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
AE	Control-Board	Leica Geosystems AG	Distobox Velaro	Sample-ID: 34034
AE	Laptop	Lenovo	T440	-
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.4 Test Modes

Mode	Description
BTLE	Mode = DTM (Direct test Mode) - Transmit Modulation = GFSK Spreading = None Duty Cycle = 64% Packet data = 37 Byte Datarate = 1Mbps
Receive	Mode = DTM (Direct test Mode) - Receive
Comment:	

1.5 Test Frequencies

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

1.6 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 A2 (section 6.7)	Occupied Bandwidth	ANSI C63.10-2013	N/R	
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) 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	N/R	
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 A2 (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 C63.4-2014	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 - Transmitter radiated emissions

3.1.1 Information

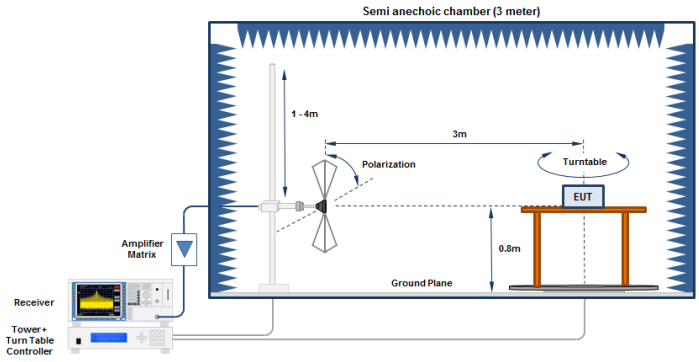
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISED RSS-Gen, Issue 5 A2 (section 6.13)
Measurement Uncertainty	± 5.95 dB
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Jens Degenhardt
Date	2022-01-04

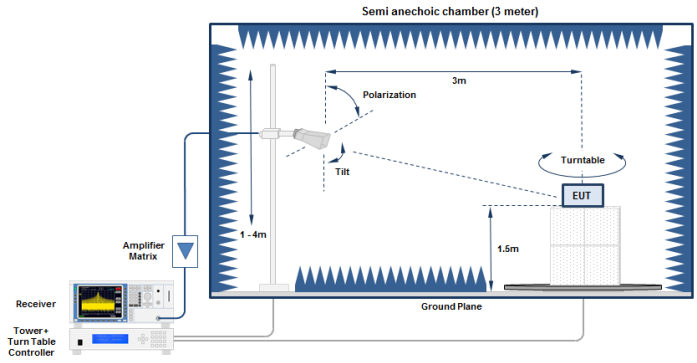
3.1.2 Limits

Limits			
Frequency range [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

3.1.3 Setup

Test Setup 30 MHz - 1000 MHz



Test Setup > 1 GHz


3.1.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2021-02	2024-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2021-07	2022-07
Antenna	R&S	HK 116	EF00030	2021-05	2024-05
Antenna	R&S	HL 223	EF00212	2019-05	2022-05

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic chamber	Frankonia	AC 2	EF01616	2021-09	2022-09
Spectrum analyzer	R&S	FSU43	EF01631	2021-07	2022-07
Horn antenna	Schwarzbeck	BBHA 9120B	EF01678	2021-03	2022-03
Horn Antenna	Schwarzbeck	HWRD 650	EF01679	2021-03	2022-03
Antenna	Amplifier Research	AT4560	EF00302	2021-06	2023-06

3.1.5 Procedure

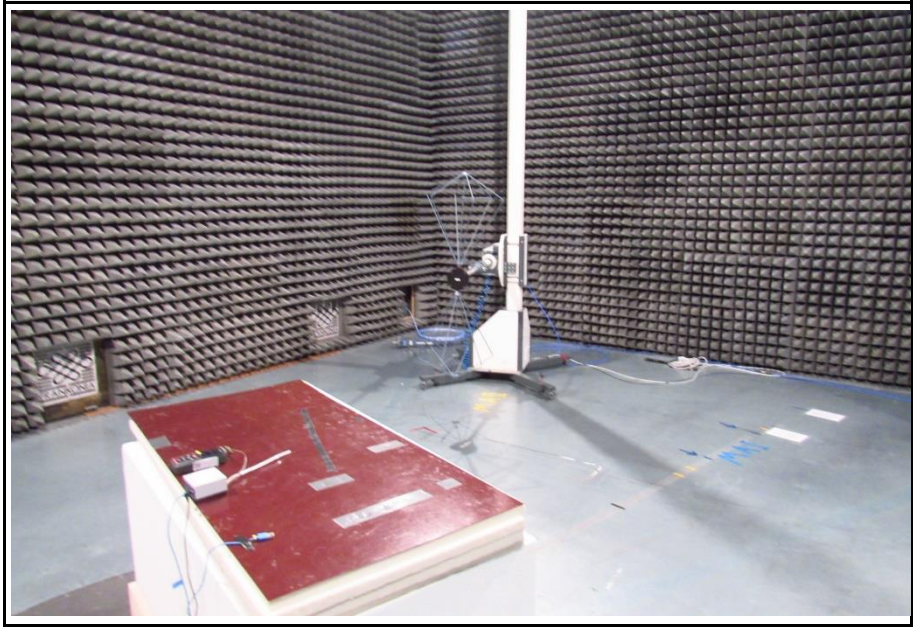
Test Procedure 30 MHz - 1000 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m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

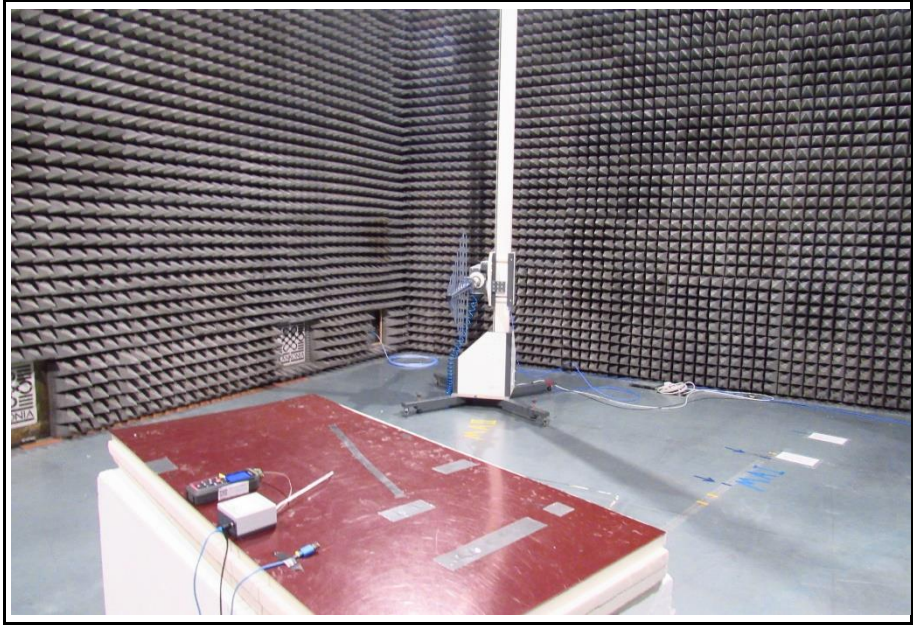
Test Procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant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

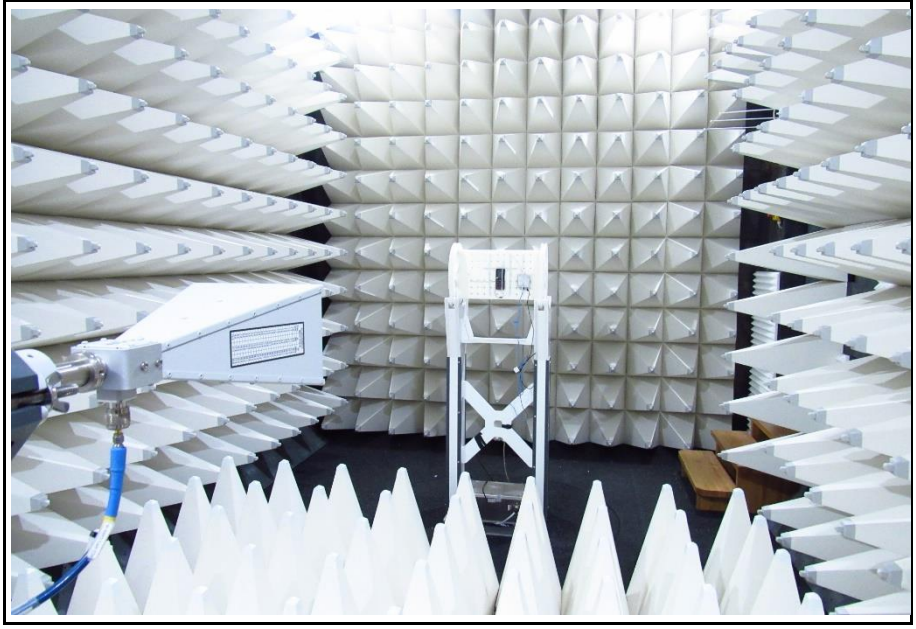
3.1.6 Results

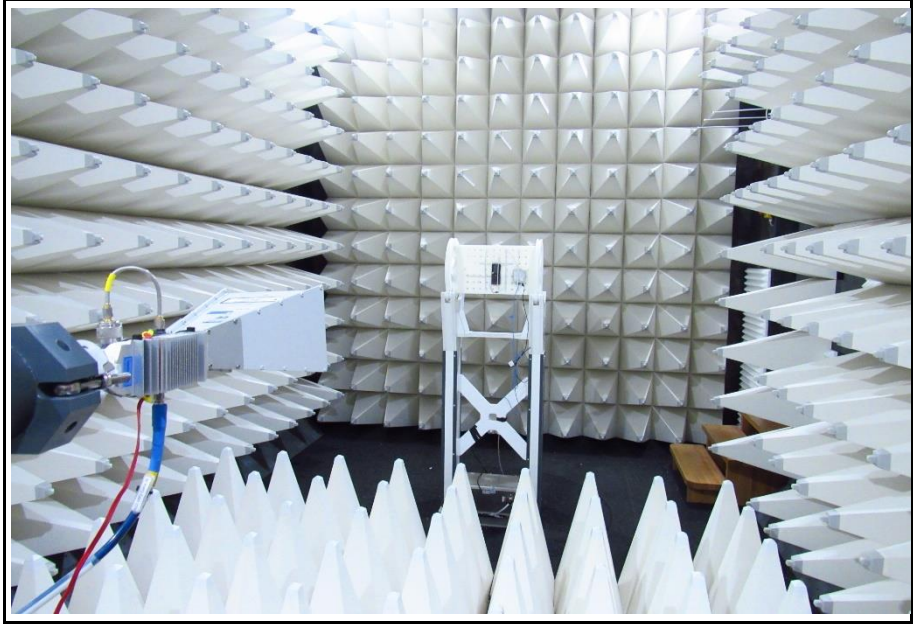
Test Results						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2402	63.91	33.20	pk	ver	95.00	-61.84
2402	257.22	22.60	qpk	hor	46.00	-23.45
2402	327.42	25.40	qpk	hor	46.00	-20.63
2402	609.40	31.20	qpk	ver	46.00	-14.78
2402	961.80	36.00	qpk	hor	54.00	-17.98
2402	4803.90	38.14	pk	ver	74.00	-35.86
2402	4803.90	29.51	avg	ver	54.00	-24.49
2440	257.42	16.70	qpk	hor	46.00	-29.32
2440	619.00	26.00	qpk	ver	95.00	-69.03
2440	4880.00	43.32	pk	hor	74.00	-30.68
2440	4880.00	38.56	avg	hor	54.00	-15.44
2480	96.12	30.20	pk	ver	95.00	-64.83
2480	258.50	12.90	qpk	ver	46.00	-33.05
2480	268.45	11.90	qpk	hor	46.00	-34.09
2480	318.26	21.10	qpk	ver	95.00	-73.87
2480	322.18	26.90	qpk	hor	46.00	-19.10
2480	327.57	22.10	qpk	hor	46.00	-23.95
2480	595.40	23.20	qpk	ver	95.00	-71.81
2480	609.90	29.70	qpk	ver	46.00	-16.33
2480	612.91	30.40	qpk	ver	46.00	-15.63
2480	617.51	30.20	qpk	ver	95.00	-64.81
2480	959.73	25.00	qpk	hor	95.00	-69.98
2480	4960.00	43.33	pk	hor	74.00	-30.67
2480	4960.00	39.90	avg	hor	54.00	-14.10

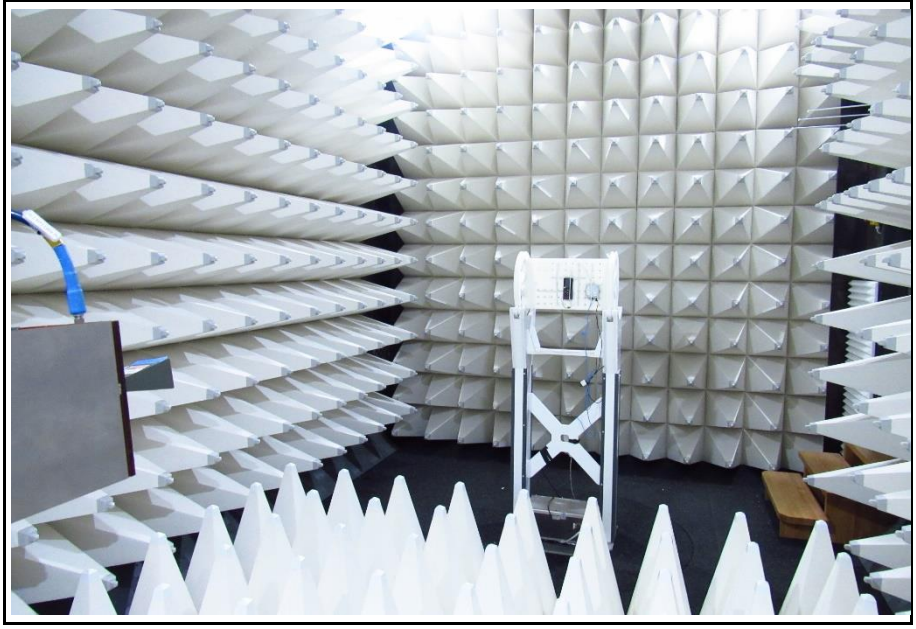
3.1.7 Setup Photos

Setup 30-200MHz


Setup 0.2-1GHz


Setup 1-8GHz


Setup 8-18GHz


Setup 18-26.5GHz


3.2 Test Conditions and Results - Receiver radiated emissions

3.2.1 Information

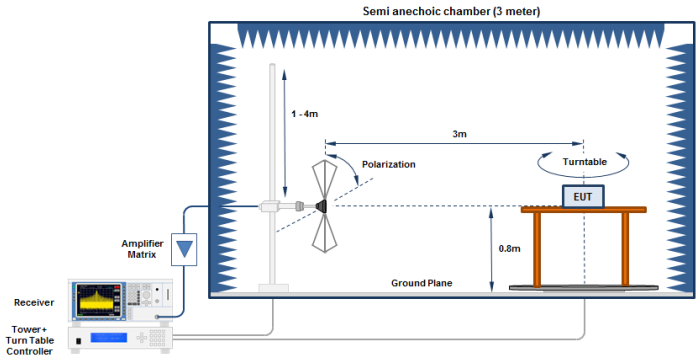
Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Uncertainty	± 5.95 dB
Measurement Method	ANSI C63.4-2014 8.1-8.3
Operator	Jens Degenhardt
Date	2022-01-04

3.2.2 Limits

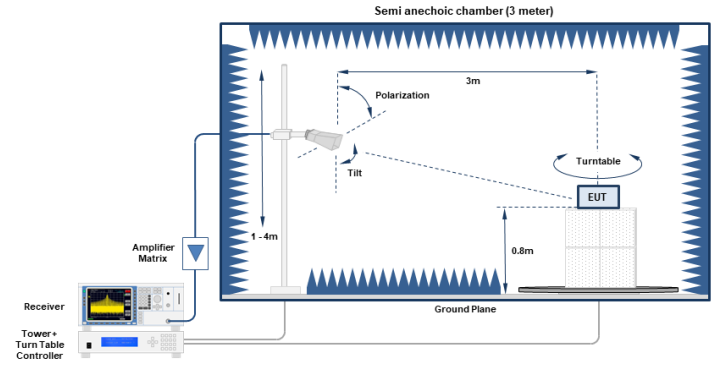
Limits			
Frequency range [MHz]	Detector	Field strength [µV/m]	Measurement distance [m]
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.2.3 Setup

Test Setup 30 MHz - 1000 MHz



Test Setup > 1 GHz



3.2.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2021-02	2024-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2021-07	2022-07
Antenna	R&S	HK 116	EF00030	2021-05	2024-05
Antenna	R&S	HL 223	EF00212	2019-05	2022-05

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2021-02	2024-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2021-07	2022-07
Horn antenna	Schwarzbeck	BBHA 9120D	EF00018	2019-10	2022-10
Horn Antenna	Schwarzbeck	HWRD 650	EF01679	2021-03	2022-03
Antenna	Amplifier Research	AT4560	EF00302	2021-06	2023-06

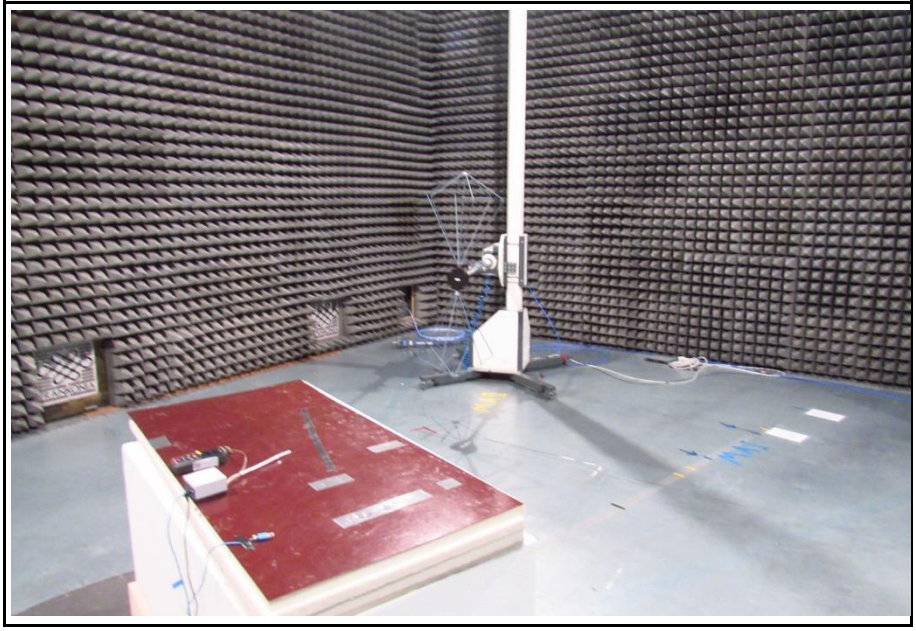
3.2.5 Procedure

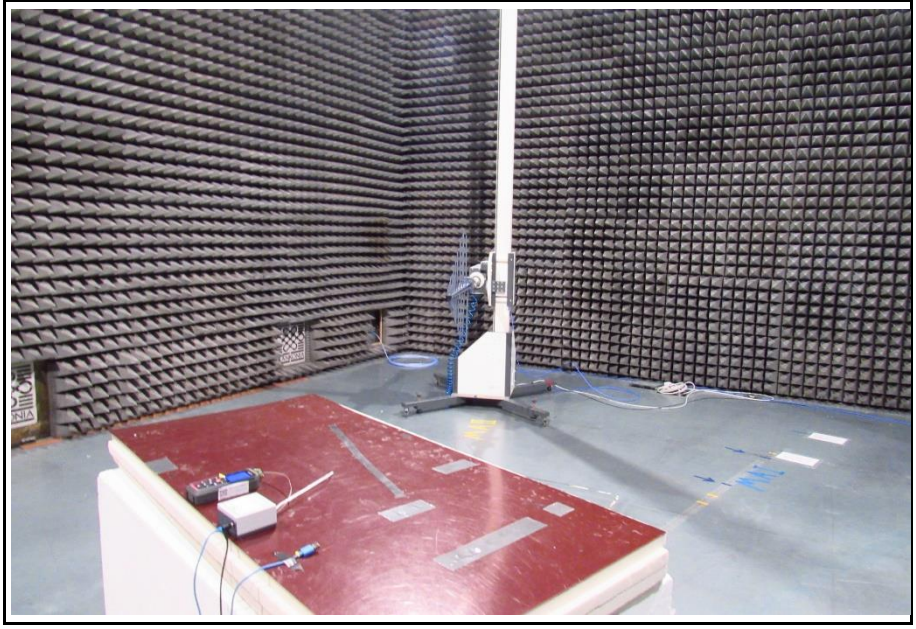
Test Procedure
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground
2. EUT is set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5. All significant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

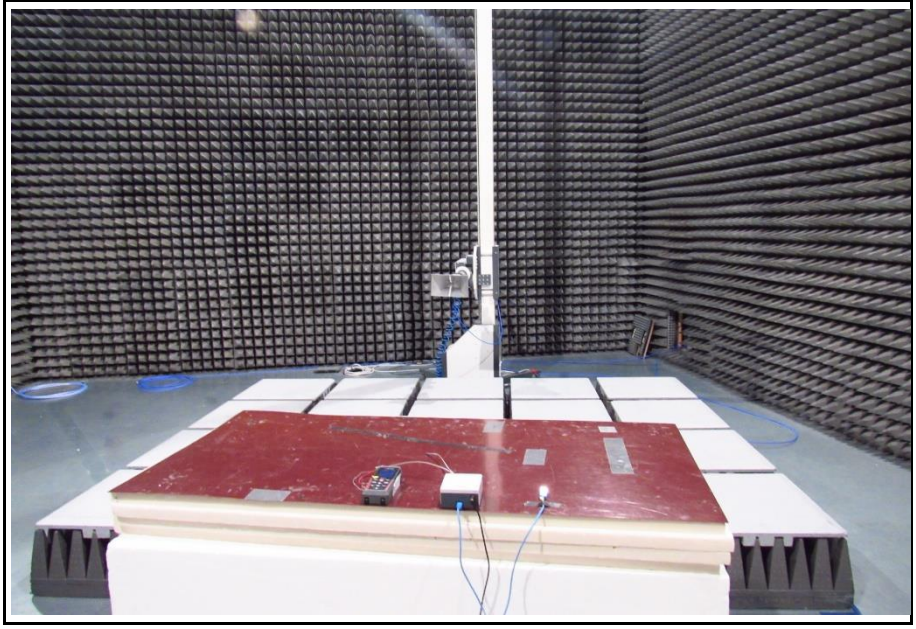
3.2.6 Results

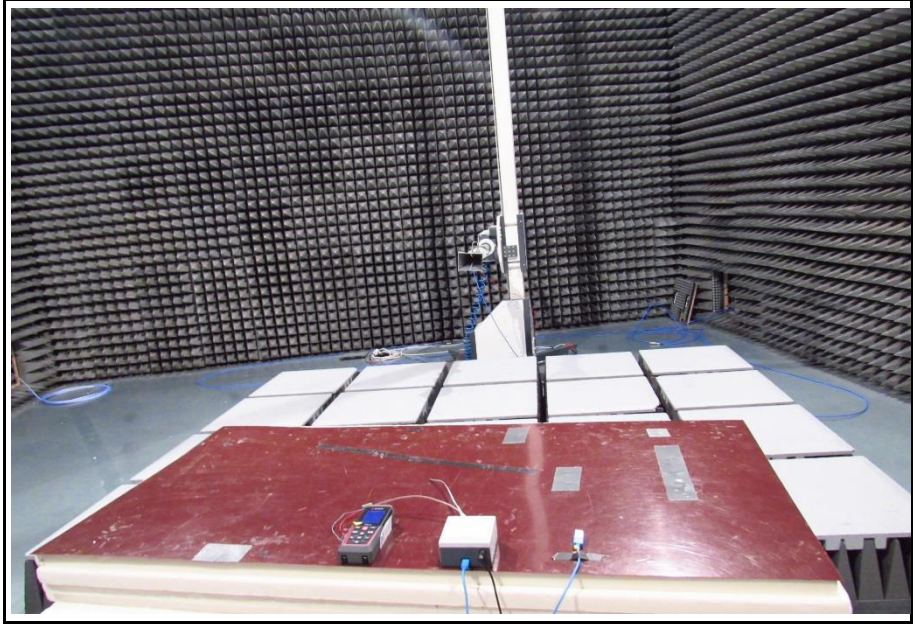
Test Results						
Mode	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
Receive	63.91	33.20	pk	ver	95.00	-61.84
Receive	95.90	27.70	qpk	ver	43.50	-15.76
Receive	143.86	26.50	qpk	ver	43.50	-16.97
Receive	237.00	34.80	qpk	hor	46.00	-11.24
Receive	6440.00	50.83	pk	hor	74.00	-23.17
Receive	6440.00	38.24	avg	hor	53.98	-15.74
Receive	17840.00	50.22	pk	ver	74.00	-23.78
Receive	17840.00	34.99	avg	ver	53.98	-18.99

3.2.7 Setup Photos

Setup 30-200MHz


Setup 0.2-1GHz


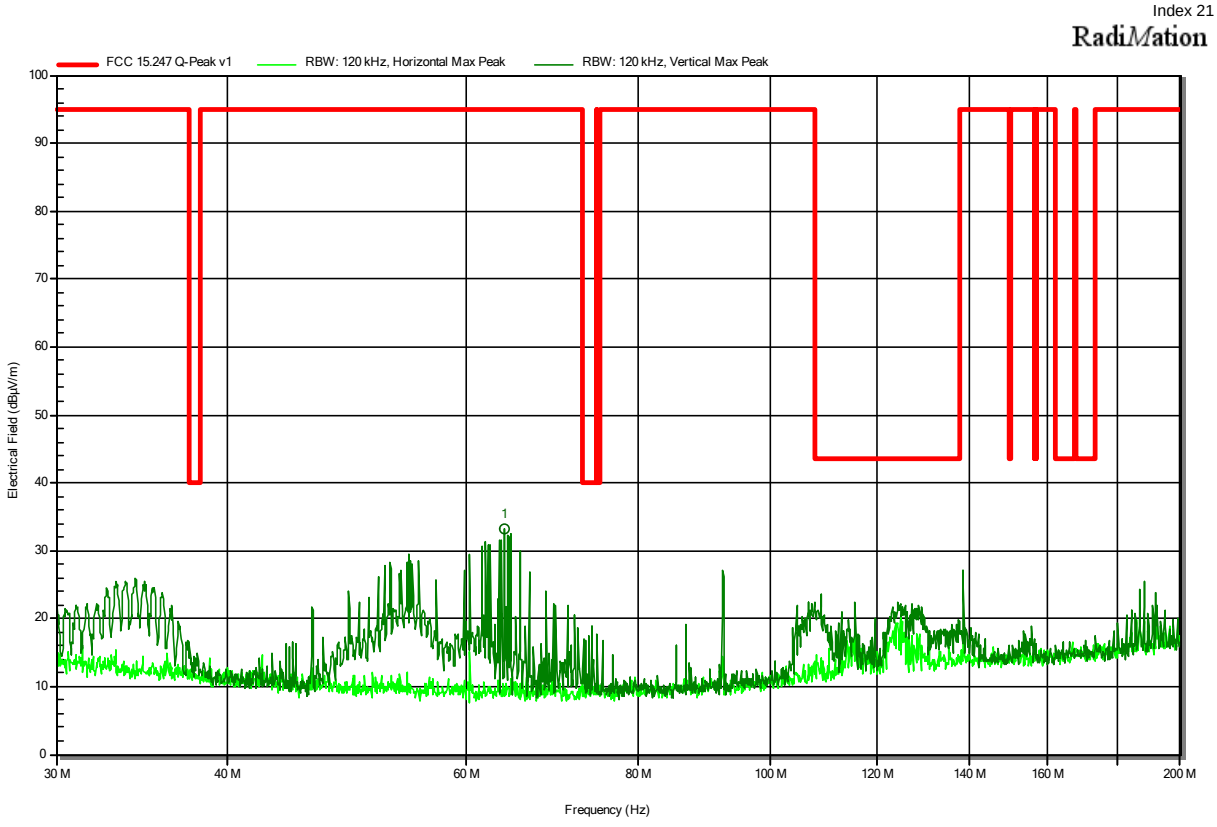
Setup 1-6.5GHz


Setup 6.5-18GHz


ANNEX A Transmitter spurious emissions

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

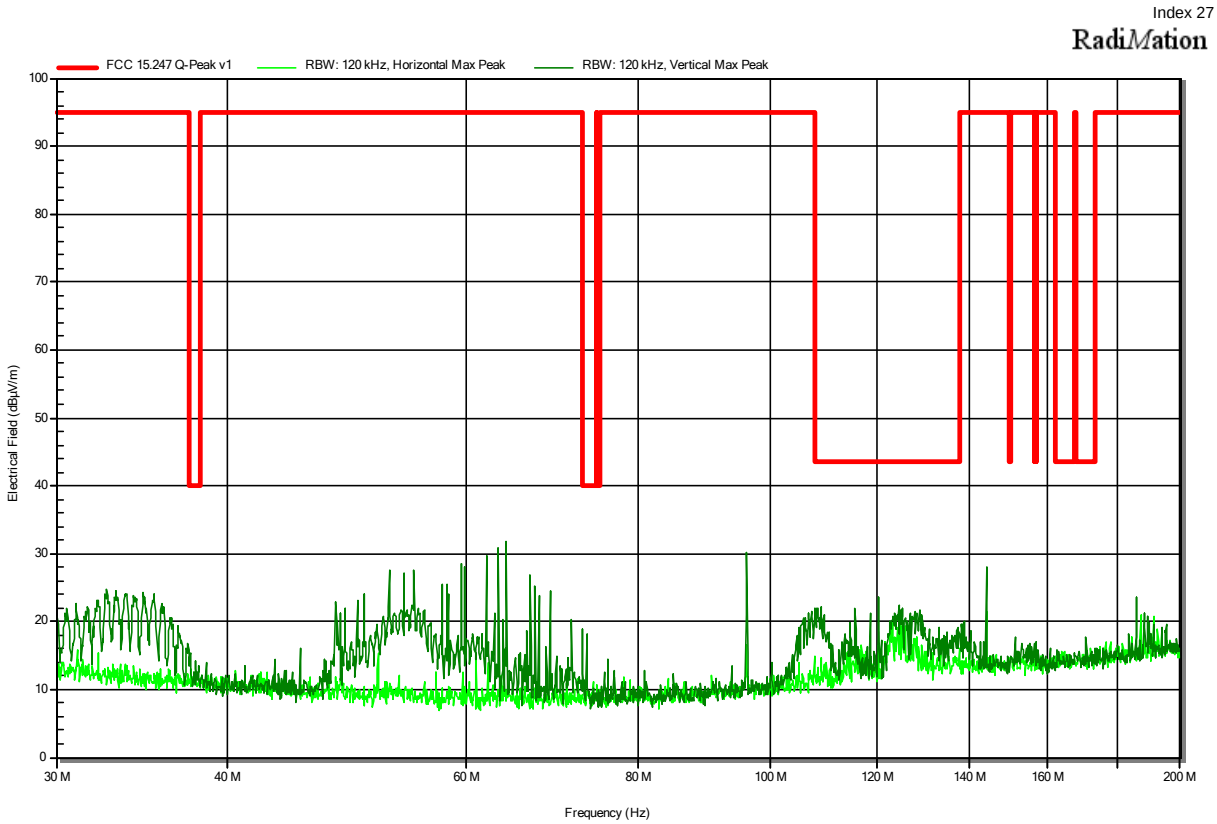
Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Rohde & Schwarz HK 116
Measurement distance:	3 m
Mode:	Tx; BTLE, CH0, DTM
Test Date:	2022-01-04
Note:	EUT horizontal



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
63.9065 MHz	33.2 dBµV/m	95 dBµV/m	-61.84 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Rohde & Schwarz HK 116
Measurement distance:	3 m
Mode:	Tx; BTLE, CH19, DTM
Test Date:	2022-01-04
Note:	EUT horizontal



Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Rohde & Schwarz HK 116
Measurement distance:	3 m
Mode:	Tx; BTLE, CH39, DTM
Test Date:	2022-01-04
Note:	EUT horizontal

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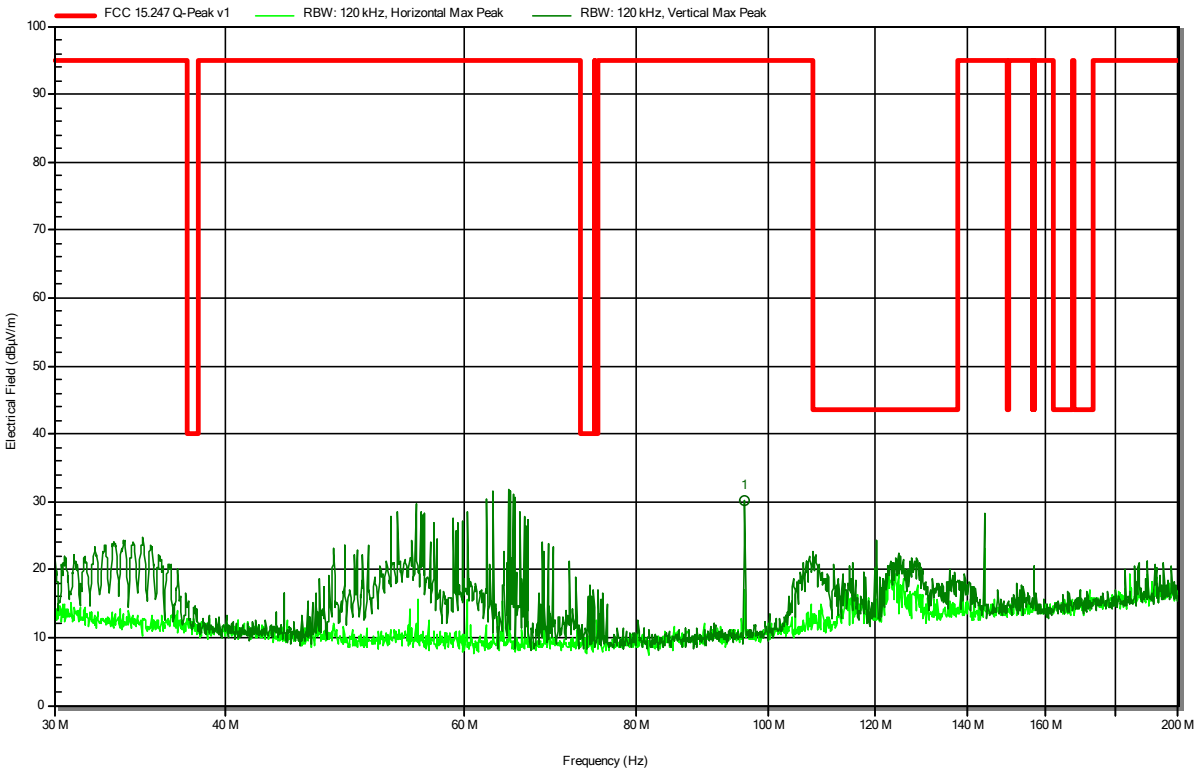
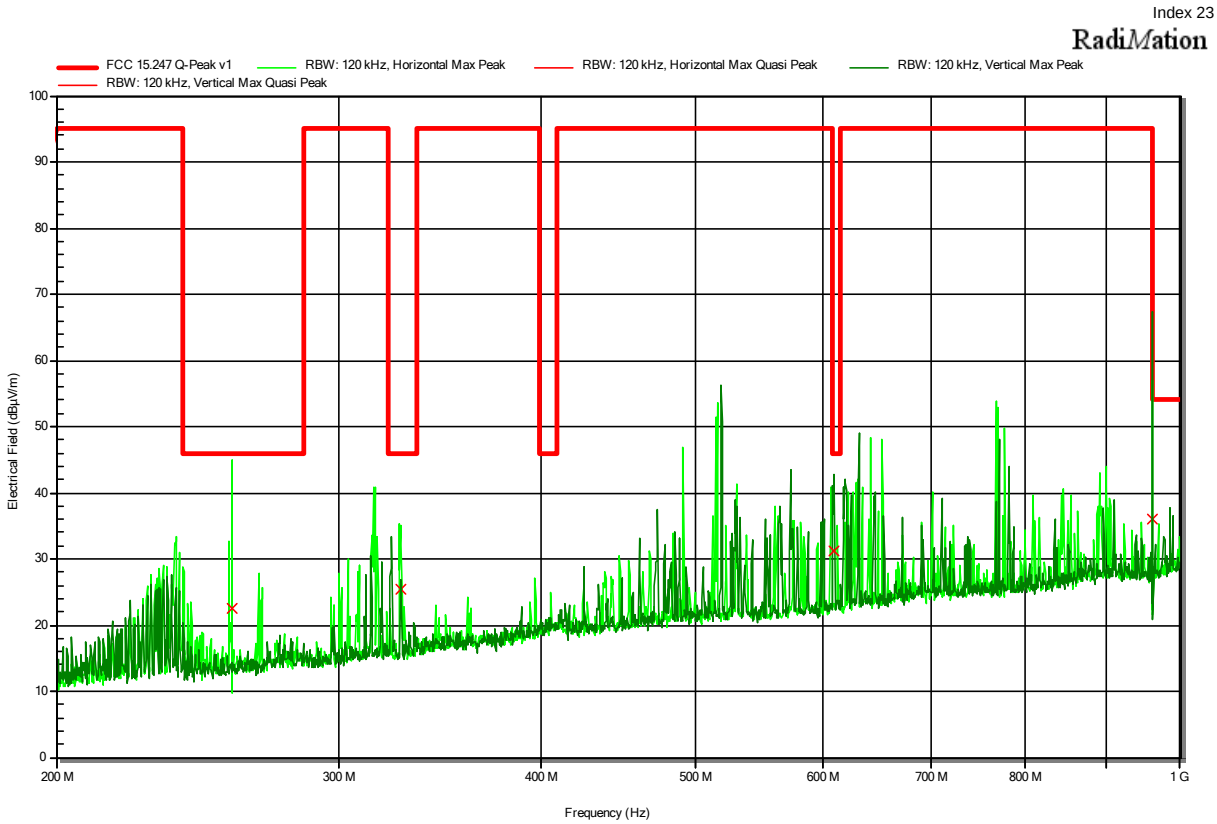
RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
96.1215 MHz	30.2 dBµV/m	95 dBµV/m	-64.83 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

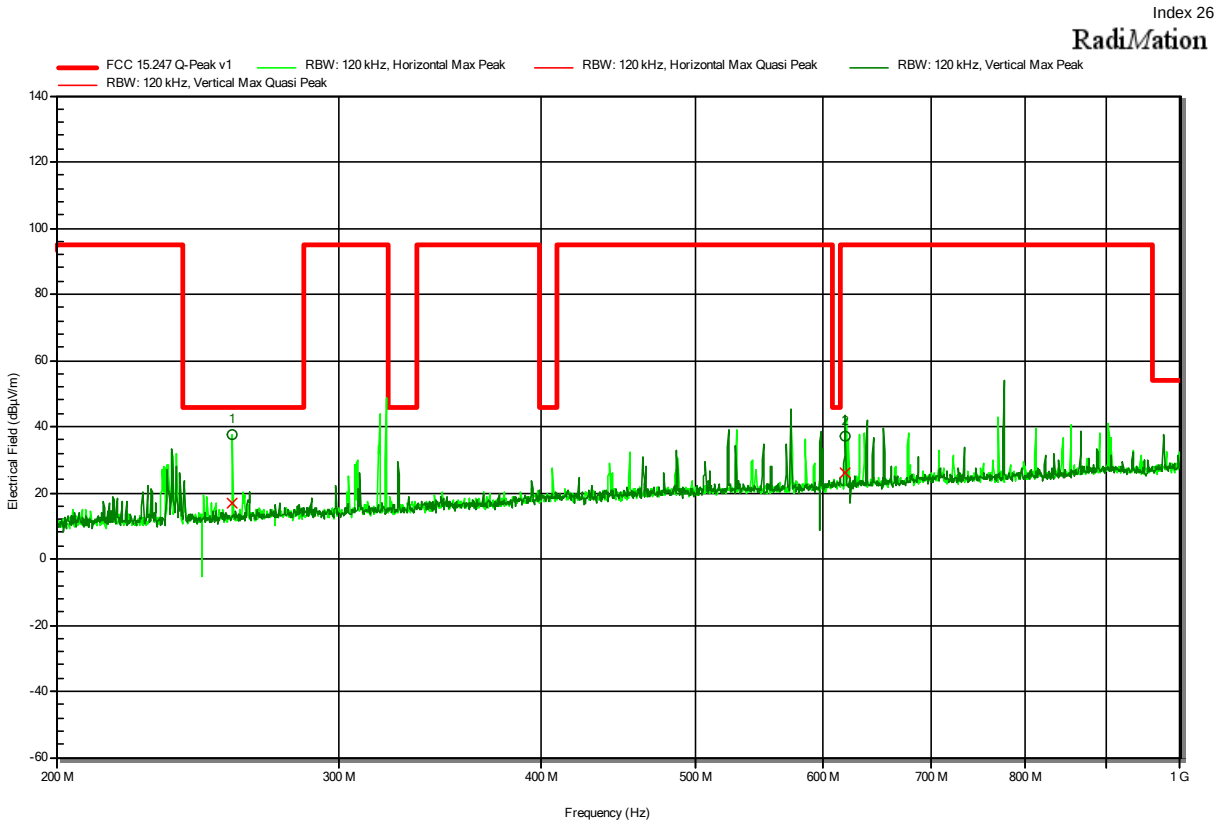
Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Rohde & Schwarz HL 223
Measurement distance:	3 m
Mode:	Tx; BTLE, CH0, DTM
Test Date:	2022-01-04
Note:	EUT horizontal



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
257.22 MHz	22.6 dBµV/m	46 dBµV/m	-23.45 dB	Pass	Horizontal
327.42 MHz	25.4 dBµV/m	46 dBµV/m	-20.63 dB	Pass	Horizontal
609.4 MHz	31.2 dBµV/m	46 dBµV/m	-14.78 dB	Pass	Vertical
961.8 MHz	36 dBµV/m	54 dBµV/m	-17.98 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

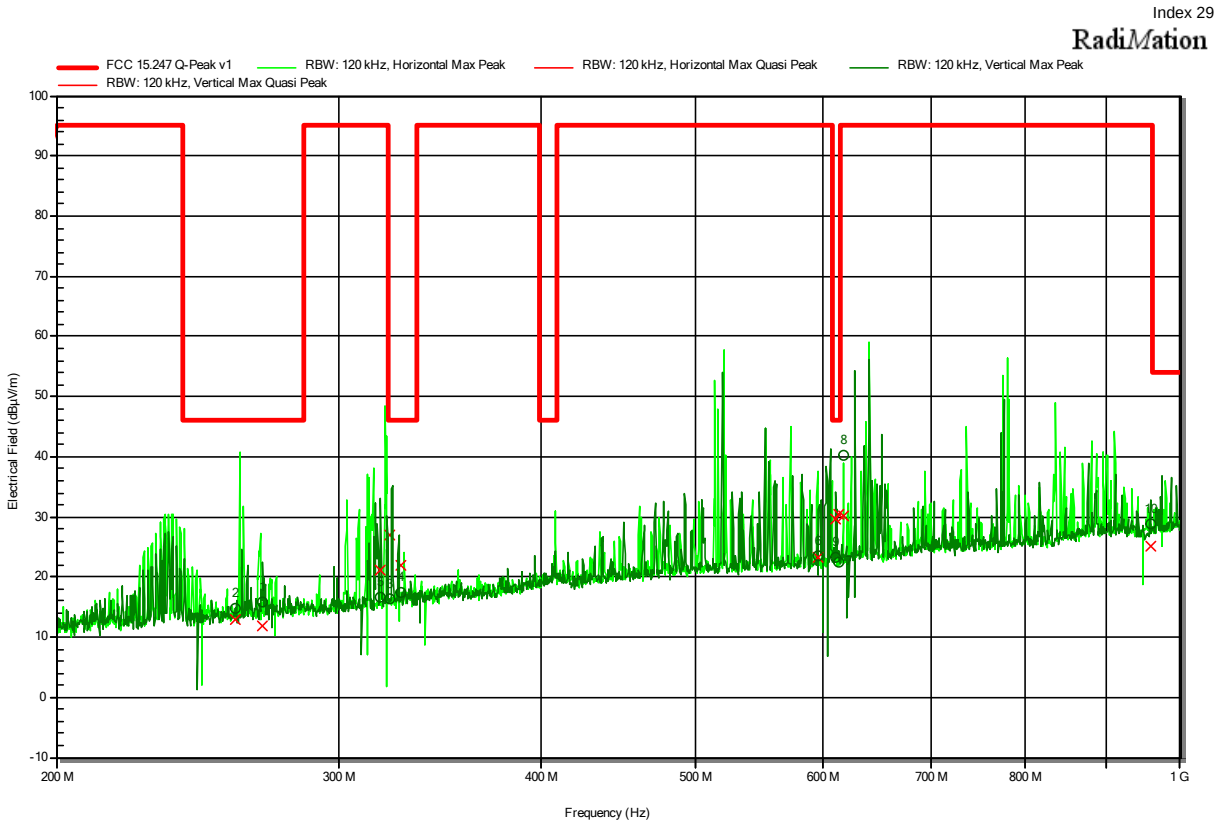
Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Rohde & Schwarz HL 223
Measurement distance:	3 m
Mode:	Tx; BTLE, CH19, DTM
Test Date:	2022-01-04
Note:	EUT horizontal



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
257.4238 MHz	16.7 dBµV/m	46 dBµV/m	-29.32 dB	Pass	Horizontal
619.004 MHz	26 dBµV/m	95 dBµV/m	-69.03 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

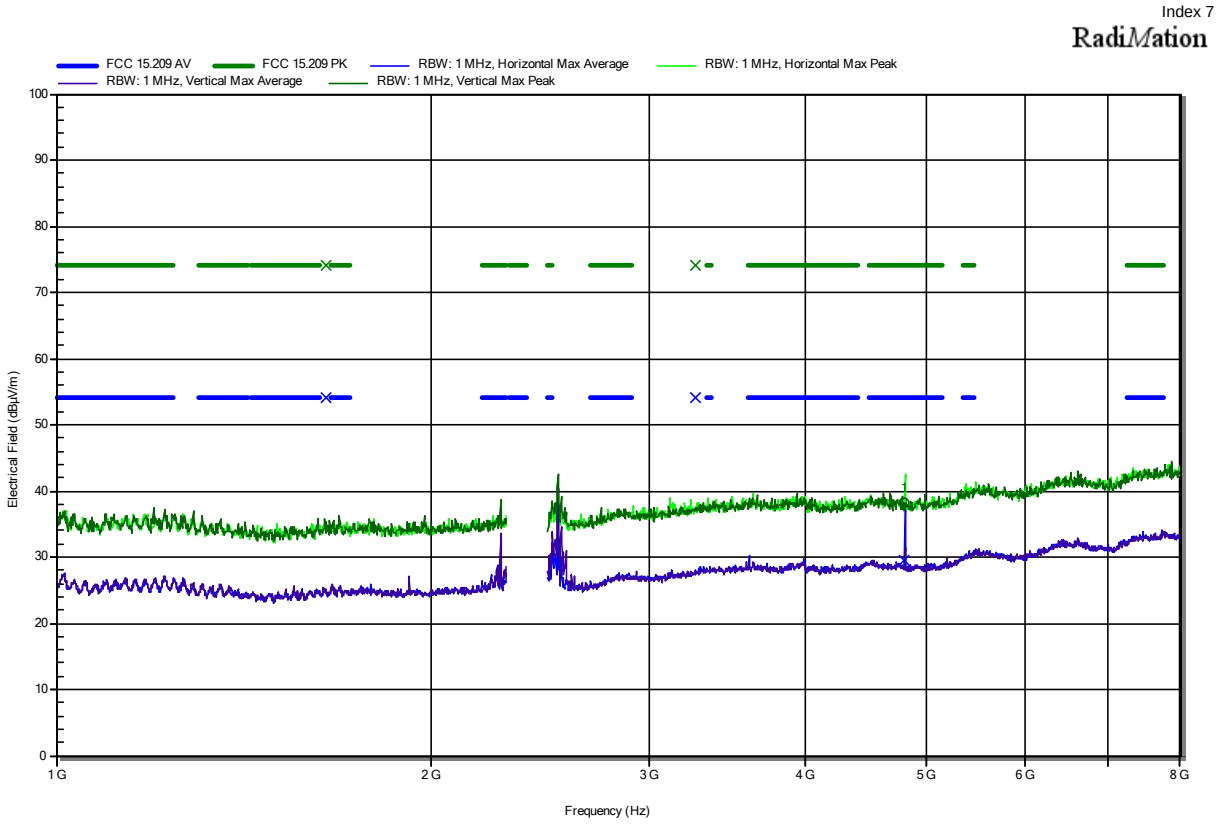
Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Rohde & Schwarz HL 223
Measurement distance:	3 m
Mode:	Tx; BTLE, CH39, DTM
Test Date:	2022-01-04
Note:	EUT horizontal



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
258.4998 MHz	12.9 dBµV/m	46 dBµV/m	-33.05 dB	Pass	Vertical
268.4495 MHz	11.9 dBµV/m	46 dBµV/m	-34.09 dB	Pass	Horizontal
318.2584 MHz	21.1 dBµV/m	95 dBµV/m	-73.87 dB	Pass	Vertical
322.1807 MHz	26.9 dBµV/m	46 dBµV/m	-19.1 dB	Pass	Horizontal
327.5735 MHz	22.1 dBµV/m	46 dBµV/m	-23.95 dB	Pass	Horizontal
595.4007 MHz	23.2 dBµV/m	95 dBµV/m	-71.81 dB	Pass	Vertical
609.9006 MHz	29.7 dBµV/m	46 dBµV/m	-16.33 dB	Pass	Vertical
612.9144 MHz	30.4 dBµV/m	46 dBµV/m	-15.63 dB	Pass	Vertical
617.5119 MHz	30.2 dBµV/m	95 dBµV/m	-64.81 dB	Pass	Vertical
959.7329 MHz	25 dBµV/m	95 dBµV/m	-69.98 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

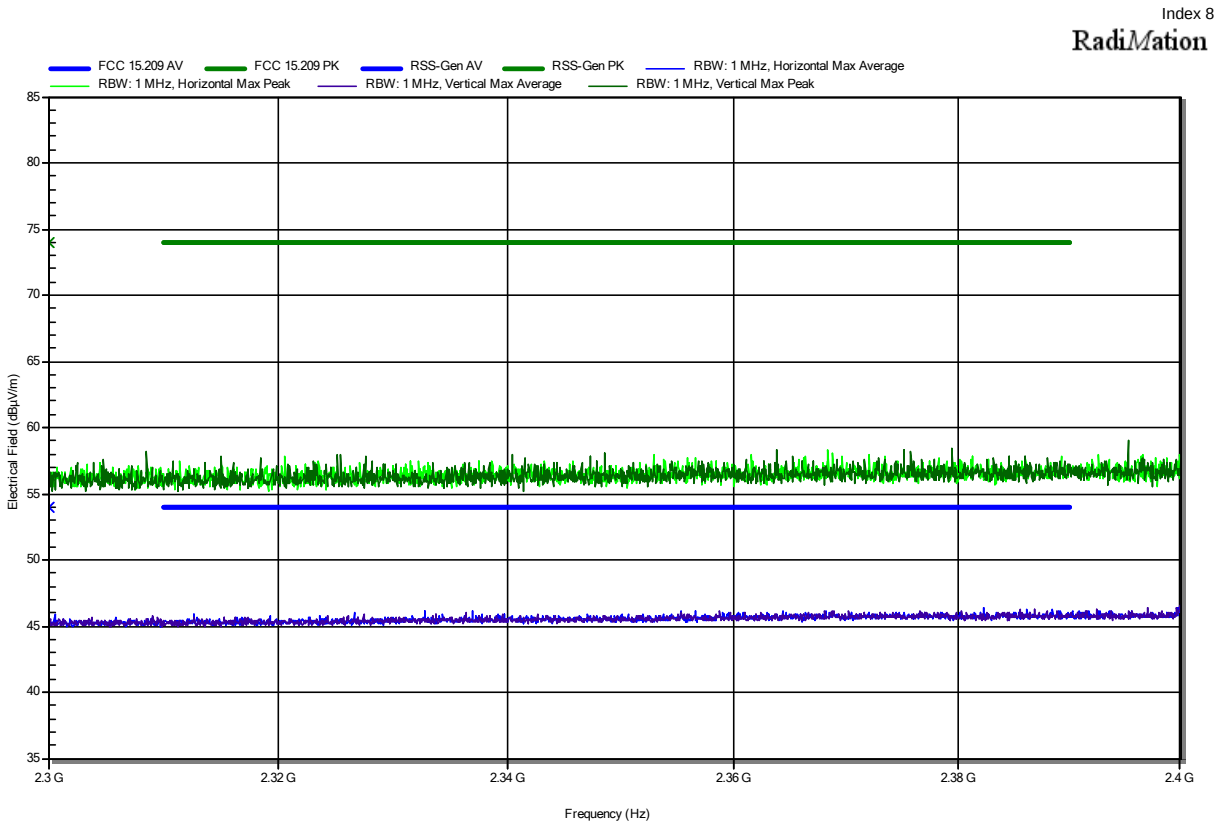
Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BTLE, CH0, DTM
Test Date:	2022-01-04
Note:	EUT vertical



Frequency 4.8039 GHz	Peak 38.14 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -35.86 dB	Peak Status Pass
Frequency 4.8039 GHz	Average 29.51 dBµV/m	Average Limit 54 dBµV/m	Average Difference -24.49 dB	Average Status Pass

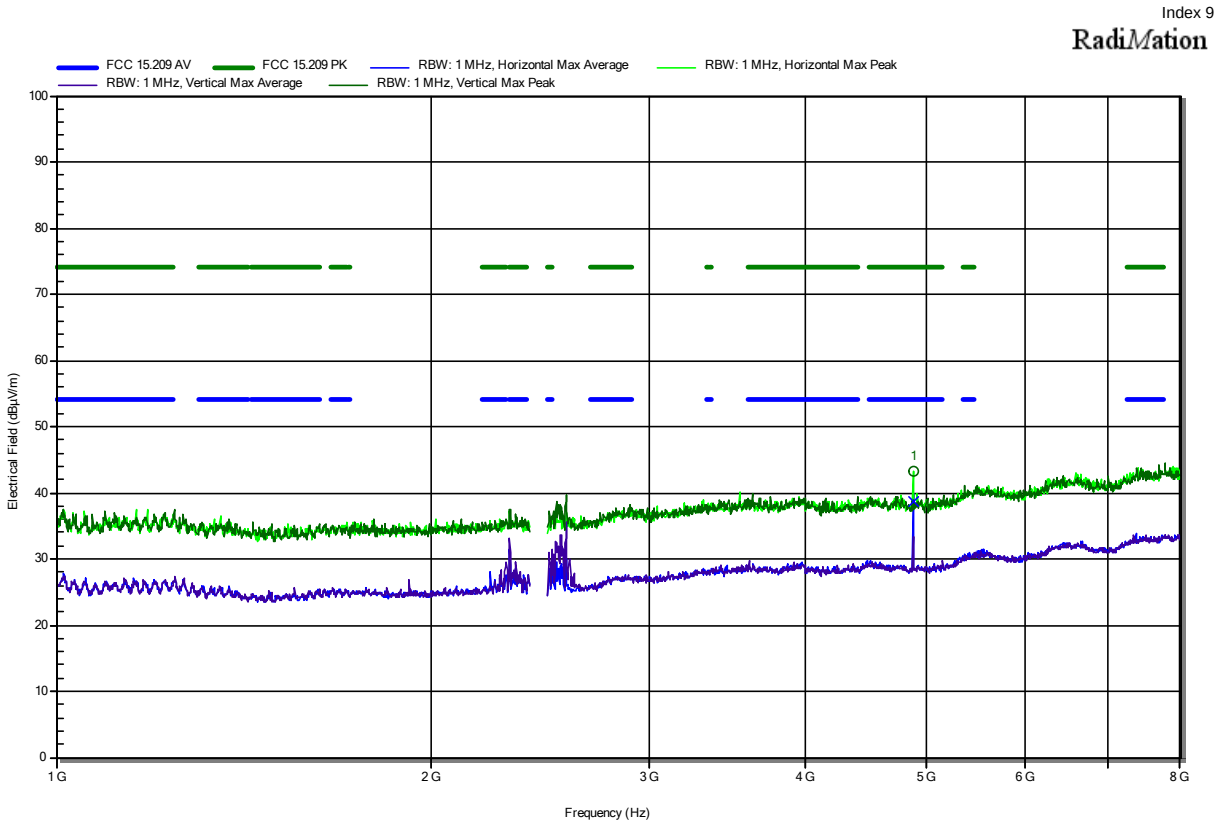
Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BTLE, CH0, DTM
Test Date:	2022-01-04
Note:	lower bandedge, EUT vertical



Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BTLE, CH19, DTM
Test Date:	2022-01-04
Note:	EUT vertical

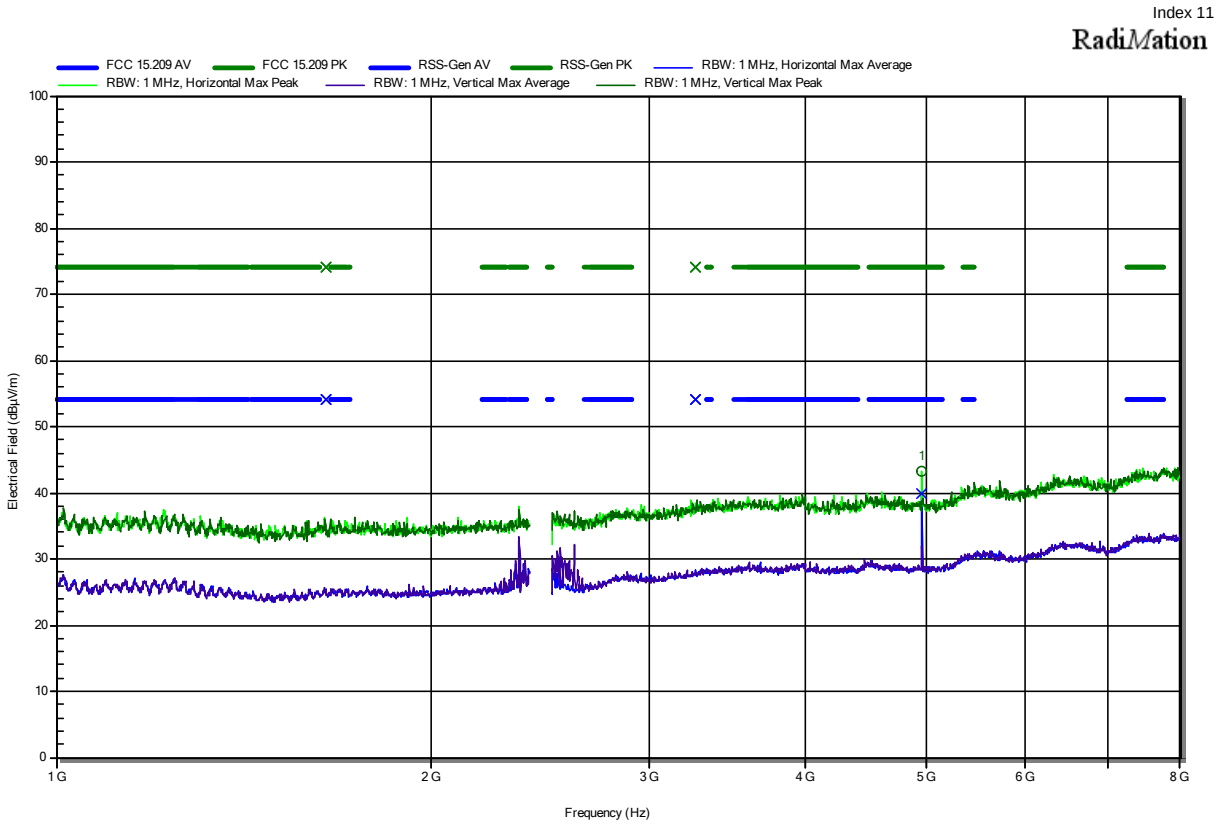


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.88 GHz	43.32 dBµV/m	74 dBµV/m	-30.68 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
4.88 GHz	38.56 dBµV/m	54 dBµV/m	-15.44 dB	Pass

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BTLE, CH39, DTM
Test Date:	2022-01-04
Note:	EUT vertical



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.96 GHz	43.33 dBµV/m	74 dBµV/m	-30.67 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
4.96 GHz	39.9 dBµV/m	54 dBµV/m	-14.1 dB	Pass

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Schwarzbeck BBHA 9120B
Measurement distance:	3 m
Mode:	Tx; BTLE, CH39, DTM
Test Date:	2022-01-04
Note:	upper bandedge, EUT vertical

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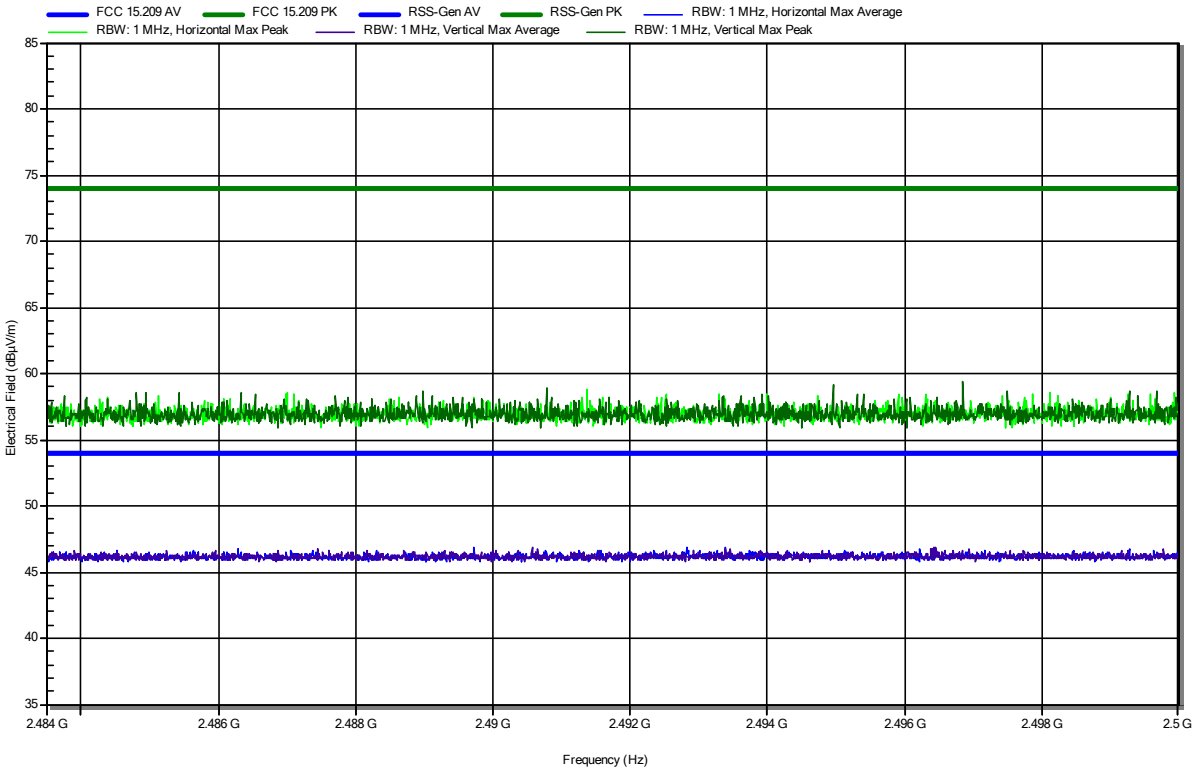
RadiMation



Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	Tx; BTLE, CH0, DTM
Test Date:	2022-01-04
Note:	EUT vertical

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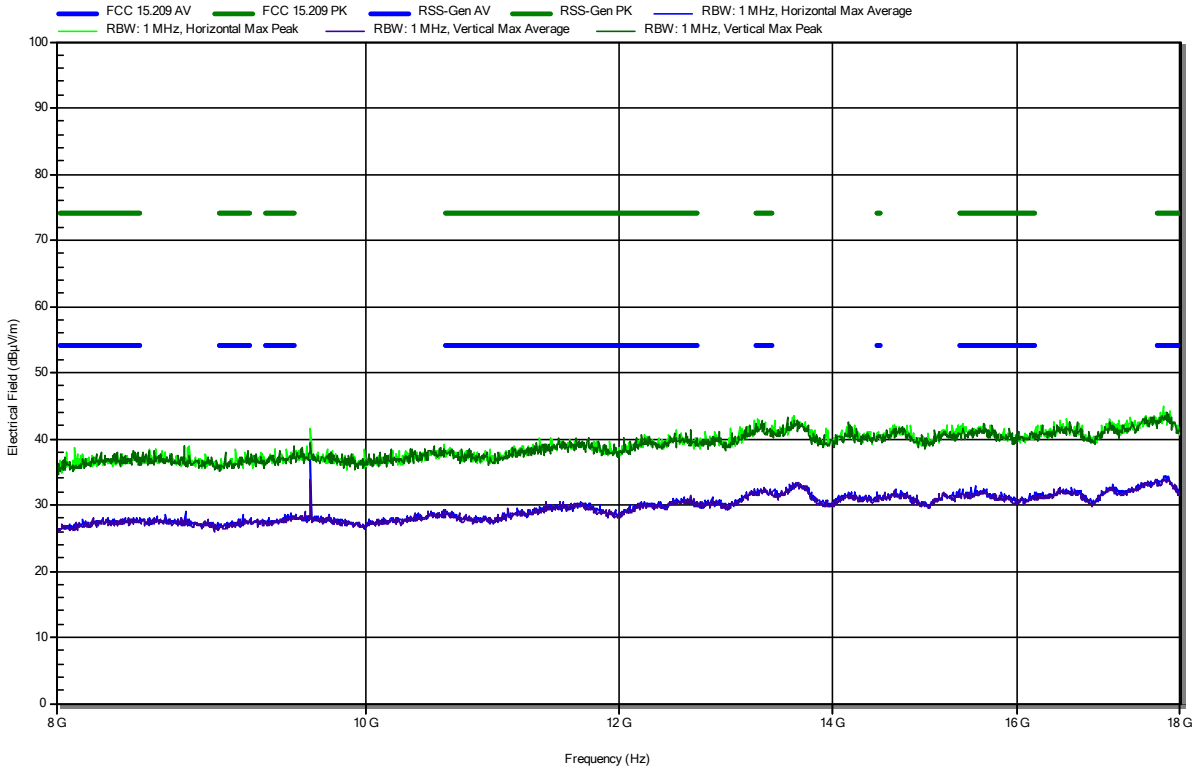
RadiMation



Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	Tx; BTLE, CH19, DTM
Test Date:	2022-01-04
Note:	EUT vertical

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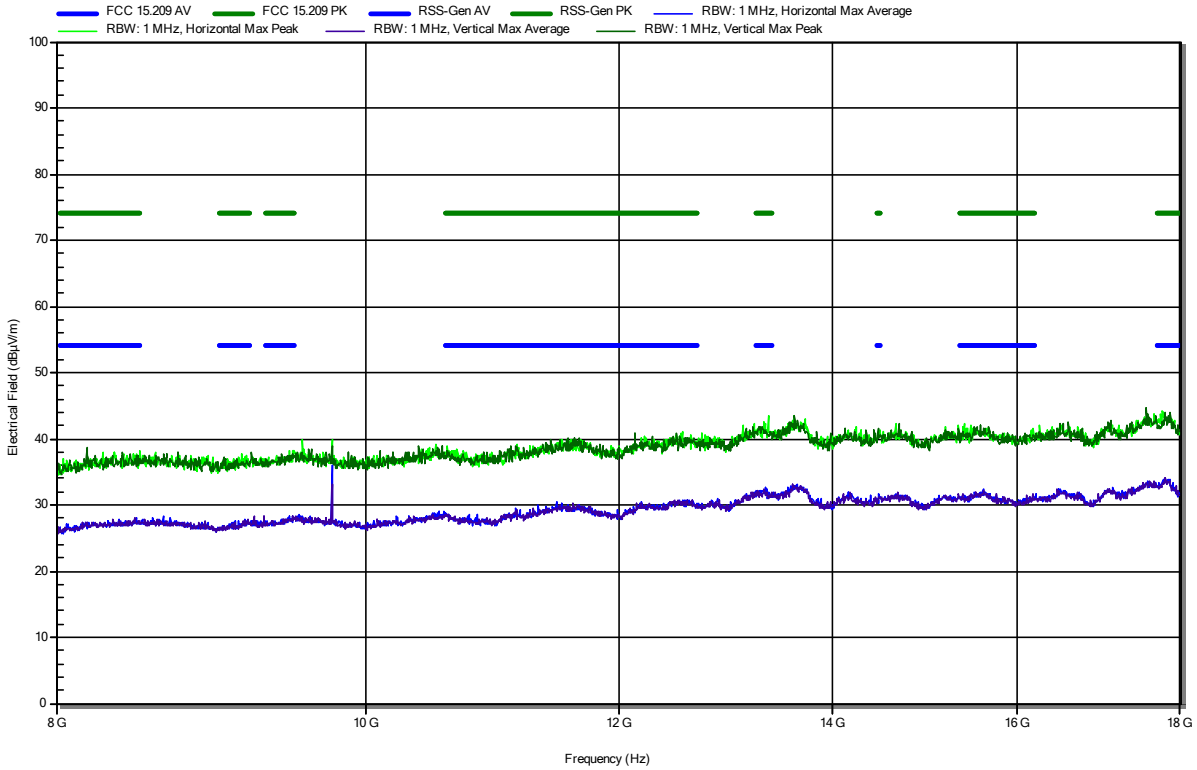
RadiMation



Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	Tx; BTLE, CH39, DTM
Test Date:	2022-01-04
Note:	EUT vertical

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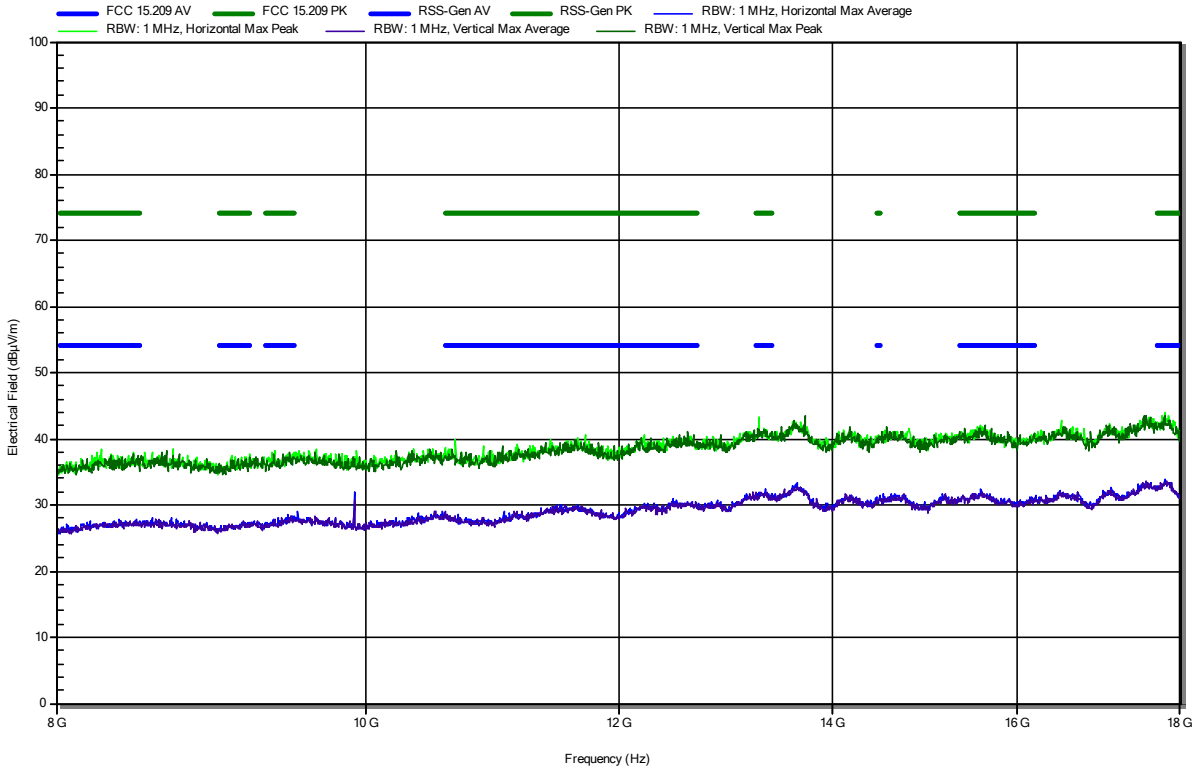
RadiMation



Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Amplifier Research AT4560
Measurement distance:	3 m
Mode:	Tx; BTLE, CH0, DTM
Test Date:	2022-01-04
Note:	EUT vertical

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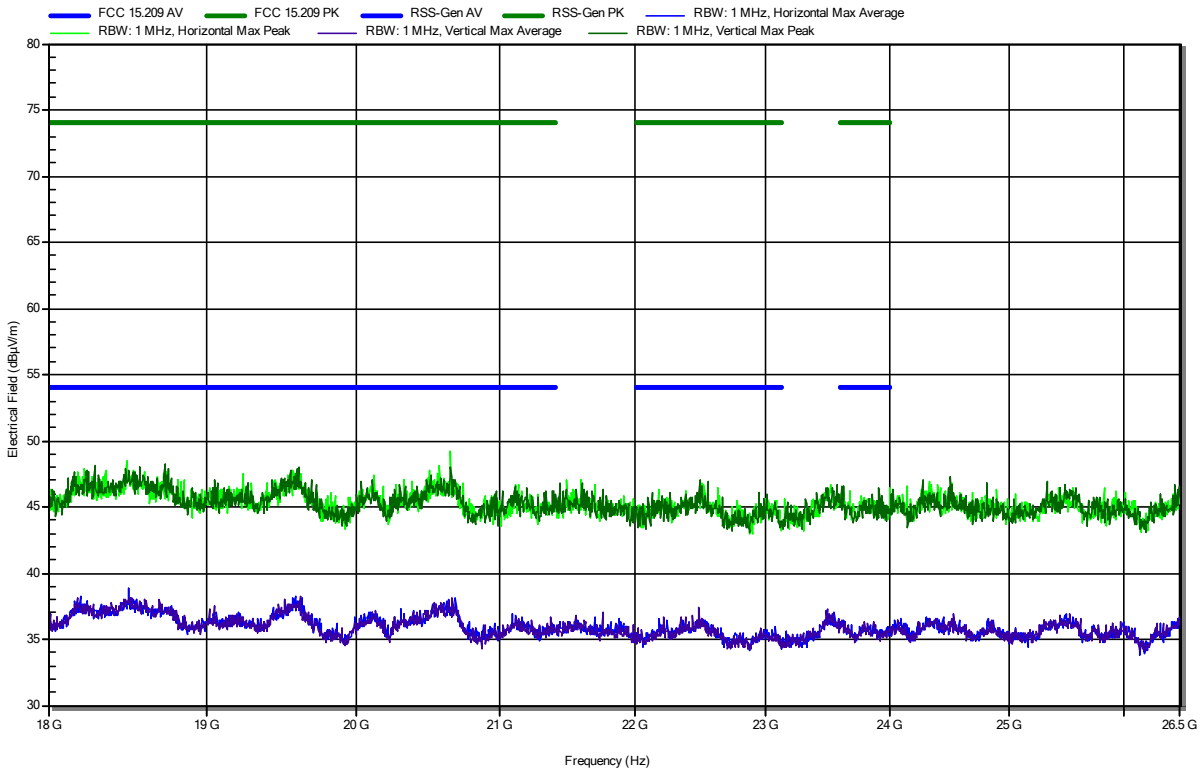
RadiMation



Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Amplifier Research AT4560
Measurement distance:	3 m
Mode:	Tx; BTLE, CH19, DTM
Test Date:	2022-01-04
Note:	EUT vertical

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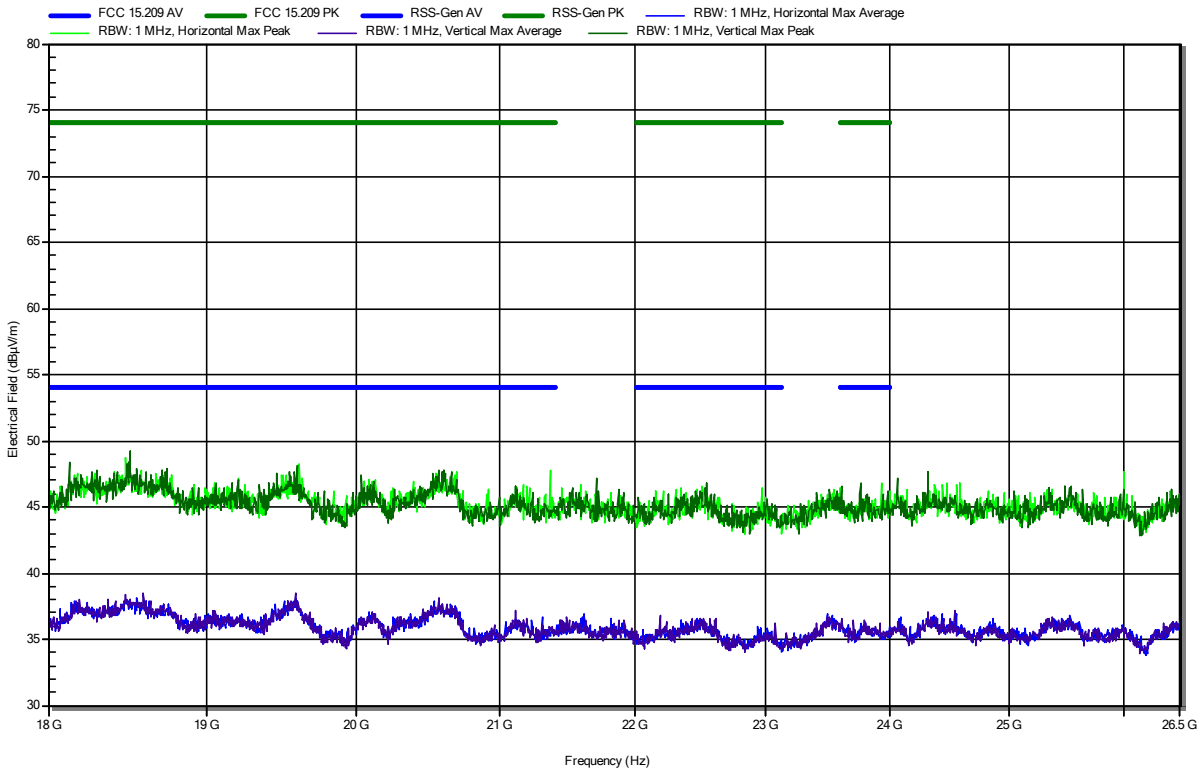
RadiMation



Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Amplifier Research AT4560
Measurement distance:	3 m
Mode:	Tx; BTLE, CH39, DTM
Test Date:	2022-01-04
Note:	EUT vertical

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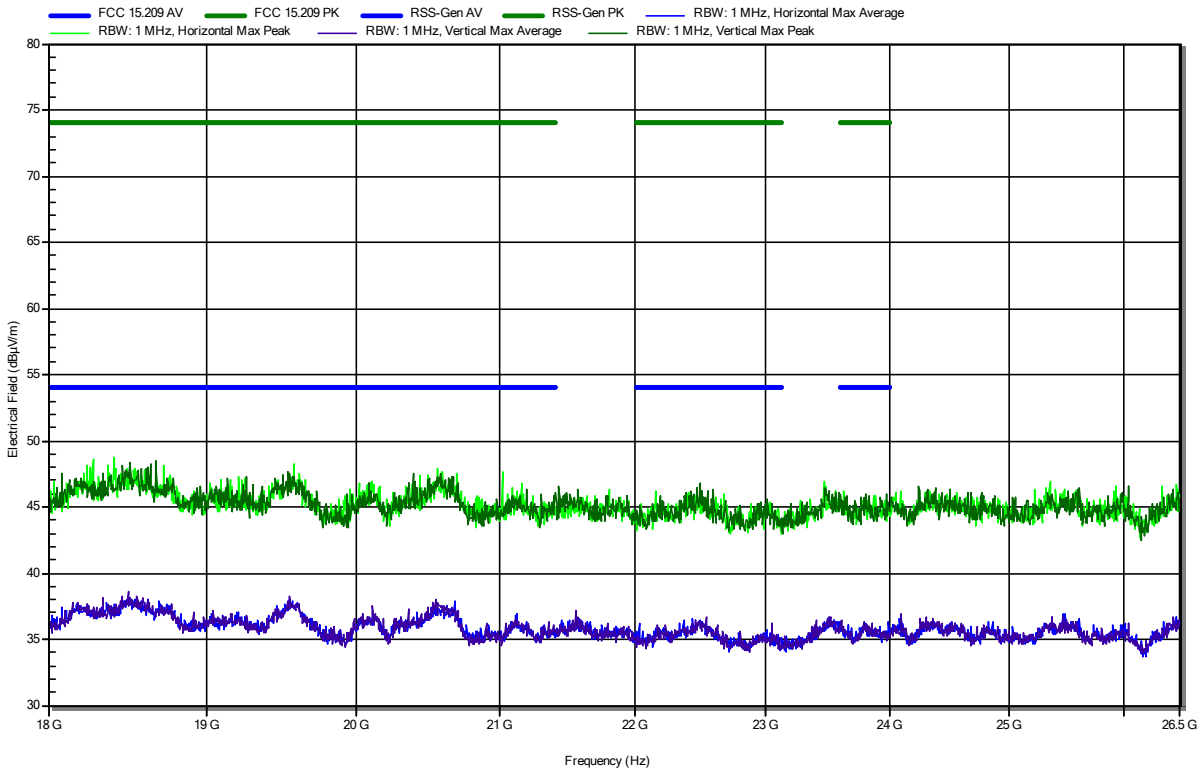
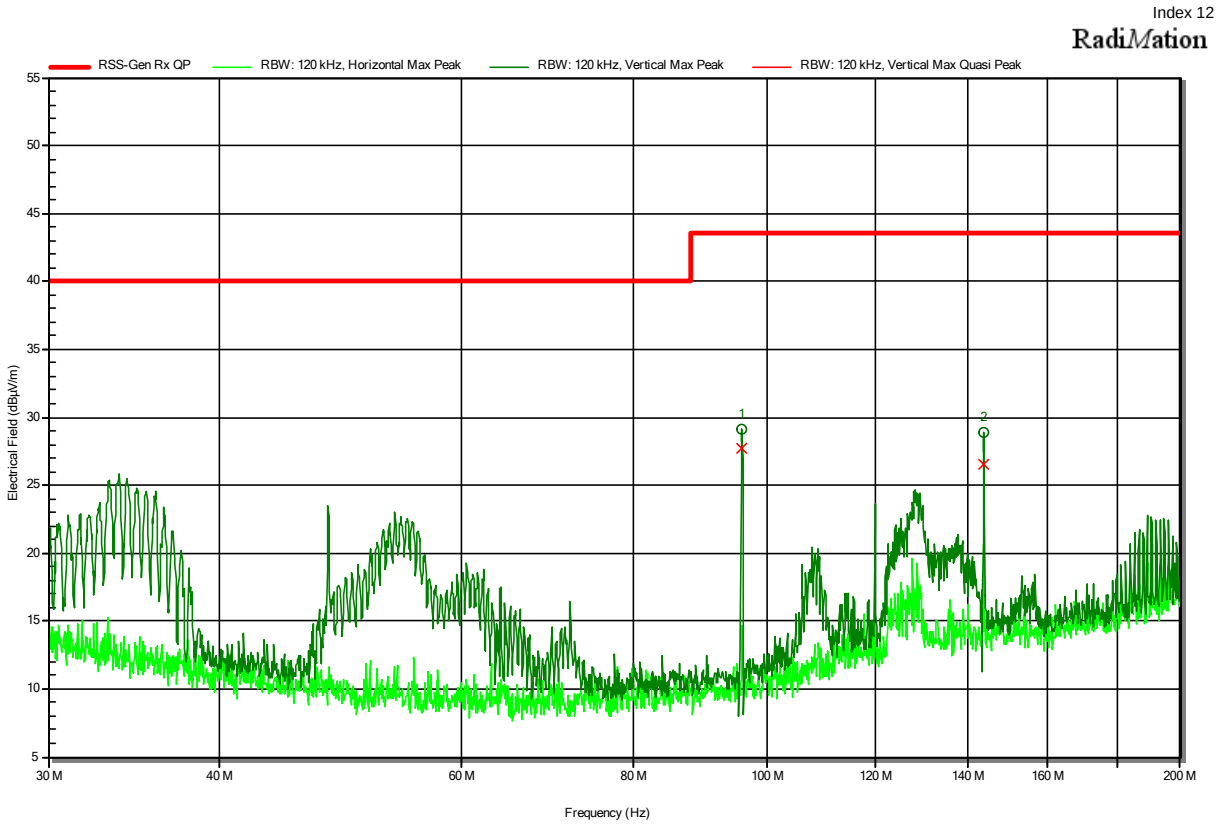
RadiMation



ANNEX B Receiver spurious emissions

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

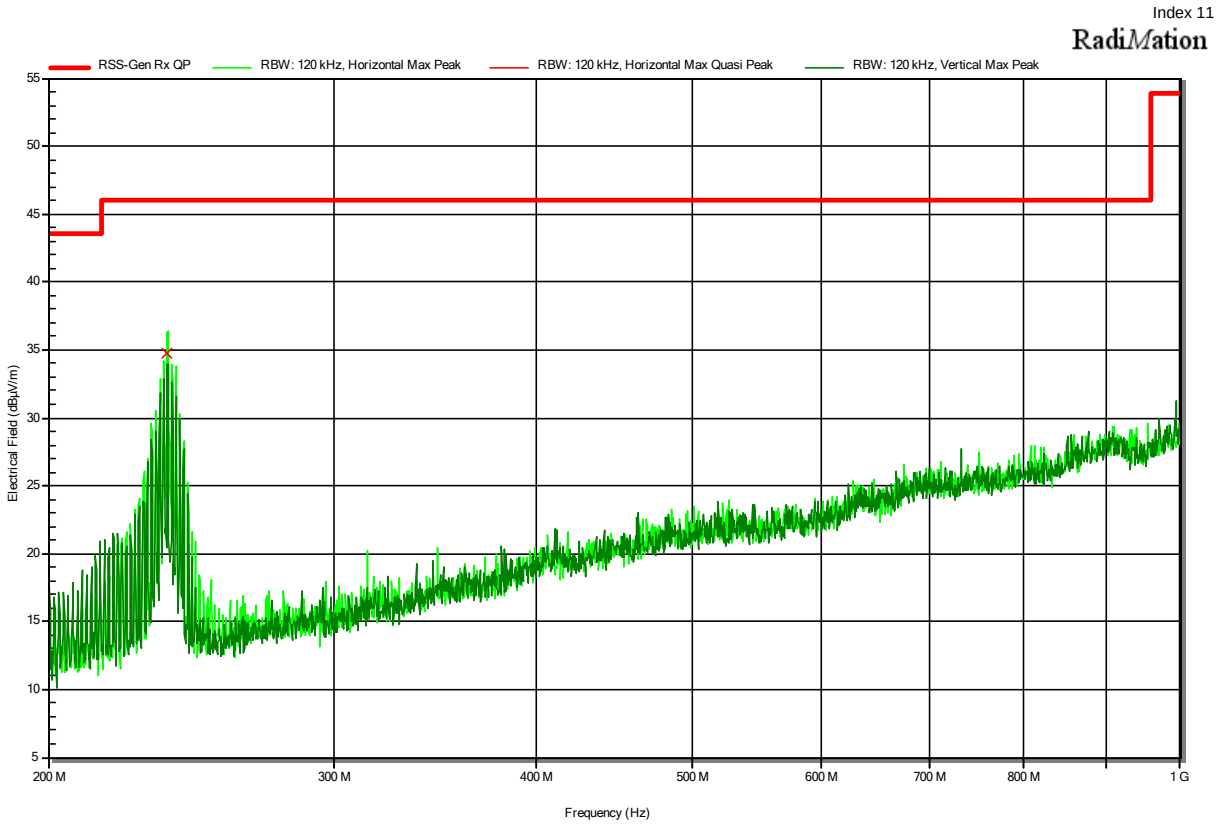
Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Rohde & Schwarz HK 116
Measurement distance:	3 m
Mode:	Rx; BTLE, CH19, Receive
Test Date:	2022-01-04
Note:	EUT horizontal



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
95.9005 MHz	27.7 dBµV/m	43.5 dBµV/m	-15.76 dB	Pass	Vertical
143.8553 MHz	26.5 dBµV/m	43.5 dBµV/m	-16.97 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

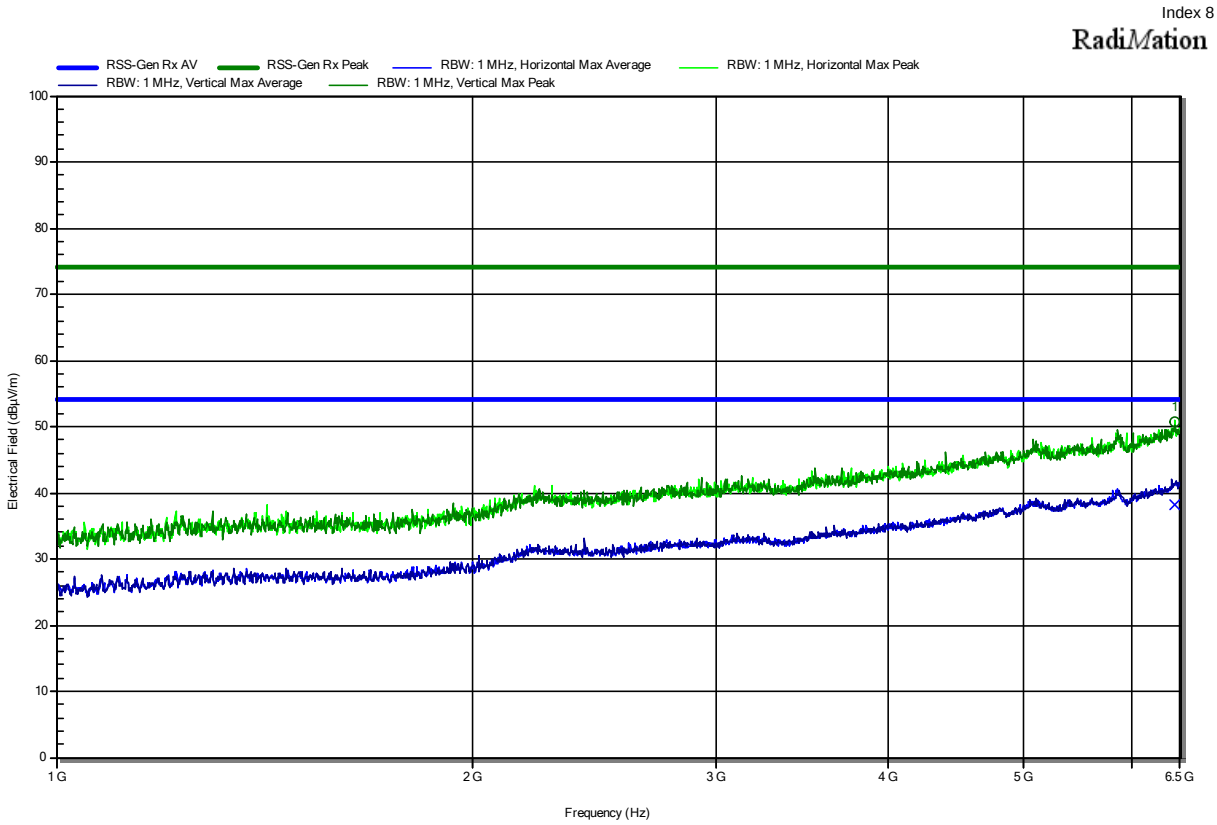
Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Rohde & Schwarz HL 223
Measurement distance:	3 m
Mode:	Rx; BTLE, CH19, Receive
Test Date:	2022-01-04
Note:	EUT horizontal



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
237 MHz	34.8 dBµV/m	46 dBµV/m	-11.24 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Schwarzbeck BBHA 9120D
Measurement distance:	3 m
Mode:	Rx; BTLE, CH19, Receive
Test Date:	2022-01-04
Note:	EUT horizontal

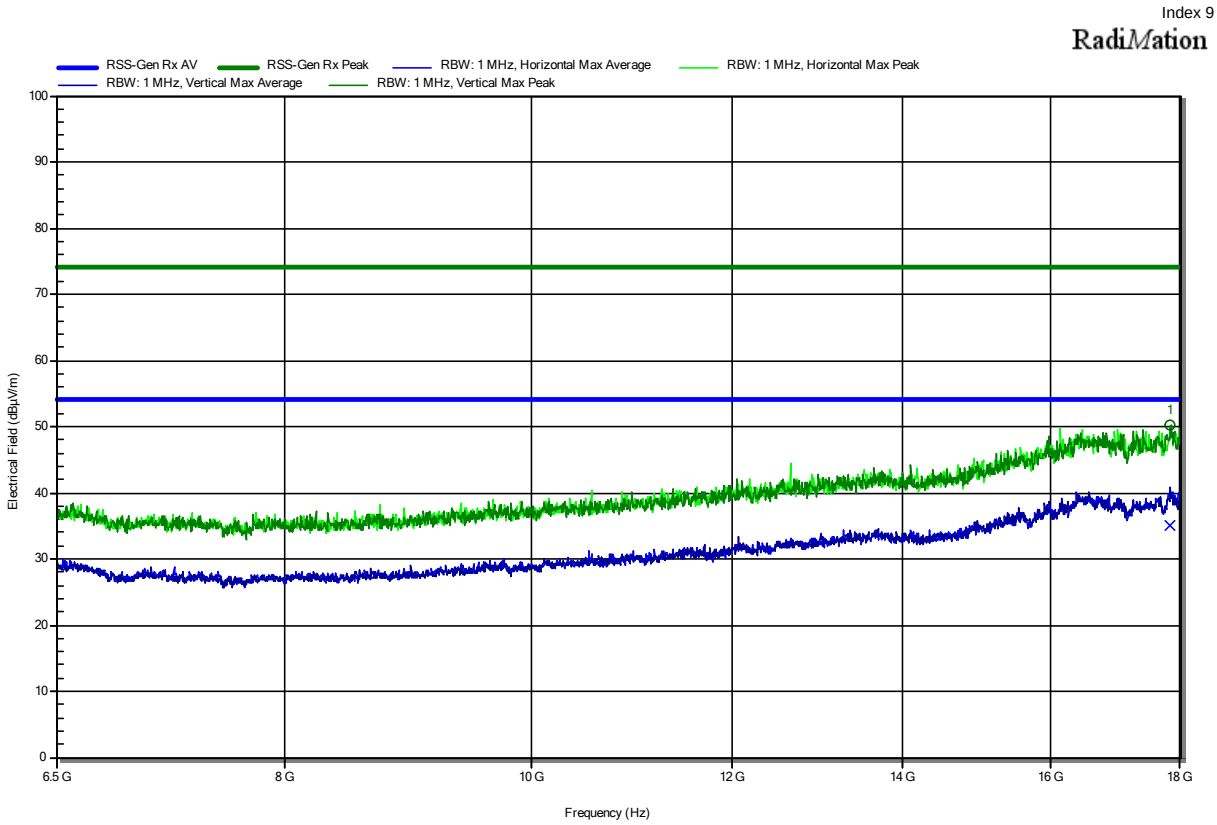


Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
6.44 GHz	50.83 dBµV/m	74 dBµV/m	-23.17 dB	Pass	Horizontal

Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
6.44 GHz	38.24 dBµV/m	53.98 dBµV/m	-15.74 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-Gen Issue 5

Project Number:	G0M-2111-1145
Applicant:	Adolf Würth GmbH
Model Description:	Laser Distance Meter
Model:	WDM 6-22
Test Sample ID:	37319
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 23 °Celsius, Vnom: 3 V DC
Antenna:	Schwarzbeck HWRD 650
Measurement distance:	3 m
Mode:	Rx; BTLE, CH19, Receive
Test Date:	2022-01-04
Note:	EUT horizontal



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
17.84 GHz	50.22 dBµV/m	74 dBµV/m	-23.78 dB	Pass	Vertical

Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
17.84 GHz	34.99 dBµV/m	53.98 dBµV/m	-18.99 dB	Pass	Vertical

= = = END OF TEST REPORT = = =