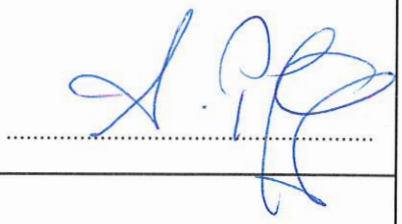
EMC TEST REPORT

FCC Title 47 CFR Part 15B, ISED ICES-003 Issue 7

Report Reference No	G0M-2205-1483-EF0115B-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	A2LA - Registration number: 1983.01 (ISED) ISED wireless device testing laboratory: CN 3470A DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	Kistler Instrumente AG
Address	Eulachstrasse 22 8408 Winterthur SWITZERLAND
Test Specification Standard(s)	FCC Title 47 CFR Part 15 Subpart B ISED ICES-Gen Issue 1 ; Amendment 1 (February 2021) ISED ICES-003 Issue 7 ANSI C63.4:2014+A1:2017
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Handheld
Model(s)	5811A
Additional Model(s)	None
Brand Name(s)	None
Hardware Version(s)	A
Software Version(s)	1.0
FCC-ID	2AWIT-5811A
IC	28487-5811A
Test Result	**PASSED**

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
required by standard but not appl. to test object	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Date of receipt of test item	2022-06-23	
Report:		
Compiled by	Jens Degenhardt	
Supervised by (+ signature) (Responsible for Test)	Matthias Handrik	
Approved by (+ signature) (Test Lab Engineer)	Andreas Pflug	
Date of Issue	2023-11-23	
Total number of pages	52	
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:		

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
T_{NOM}	Nominal operating temperature
V_{NOM}	Nominal supply voltage

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2023-11-23	Initial Release	-

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1 Equipment (Test Item) Under Test

Description	Handheld		
Intended Use	Measurement platform for different type of sensors.		
Model	5811A		
Brand Name(s)	None		
Hardware Version(s)	A		
Software Version(s)	1.0		
Number of tested samples	1		
Sample Identification	EUT #	Sample-ID	Serial Number
	EUT 1	40273	Prototype
EUT Dimensions [cm]	25 x 10 x 4.4		
FCC-ID	2AWIT-5811A		
IC	28487-5811A		
Class	Class B		
Equipment type	Table top		
Highest internal frequency [MHz]	2480		
Protective Earth	No		
Radio Module	Type	BT/BTLE/WLAN Tranceiver	
	Model	Jody-W263	
	Manufacturer	u-Blox	
	FCC-ID	XPYJODYW263	
	IC	8595A-JODYW263	
Supply Voltage	V_{NOM}	7.2 V DC (rechargeable Li-Ion battery pack, RRC2057)	
	V_{NOM}	5.0 VDC (AC/DC-Adapter, charging)	
AC/DC-Adaptor	Model	BI18L-050300-I	
	Vendor	EGSTON	
	Input	100-240 VAC	
	Output	5 V DC, 3 A	
Manufacturer	Kistler Instrumente AG Eulachstrasse 22 8408 Winterthur SWITZERLAND		

1.1 Equipment Ports

Name	Type	Attributes		Comment
USB-C	DC / IO	Count: Direction: Max. cable length [m]: Shielded: Service only:	1 IO 1m Yes No	The USB port for charging and as data exchange to a host PC. USB 2.0 port Charging via dedicated AC/DC-adapter
BNC A	I/O	Count: Direction: Max. cable length [m]: Shielded: Service only:	1 I <29m Yes No	Port A: Charge input & Insulation test input (BNC neg.)
BNC B	IO	Count: Direction: Max. cable length [m]: Shielded: Service only:	1 IO <29m Yes No	Port B: Analog output & ±10 V Trigger input (BNC neg.)

Description:	
AC	AC mains power input/output port
DC	DC power input/output port
BAT	DC power input port connected to external battery
IO	Input/Output port
TP	Telecommunication port
NE	Non-electrical port

1.2 Equipment Photos – Internal

Internal photo 1
ST Confidential

Internal photo 2
ST Confidential

Internal photo 3
ST Confidential

Internal photo 4
ST Confidential

Internal photo 5
ST Confidential

Internal photo 6
ST Confidential

Internal photo 7
ST Confidential

Internal photo 8
ST Confidential

Internal photo 9
ST Confidential

Internal photo 10
ST Confidential

1.3 Equipment Photos - External

EUT - Front side
ST Confidential

EUT - Rear side
ST Confidential

EUT - Left side
ST Confidential

EUT - Right side
ST Confidential

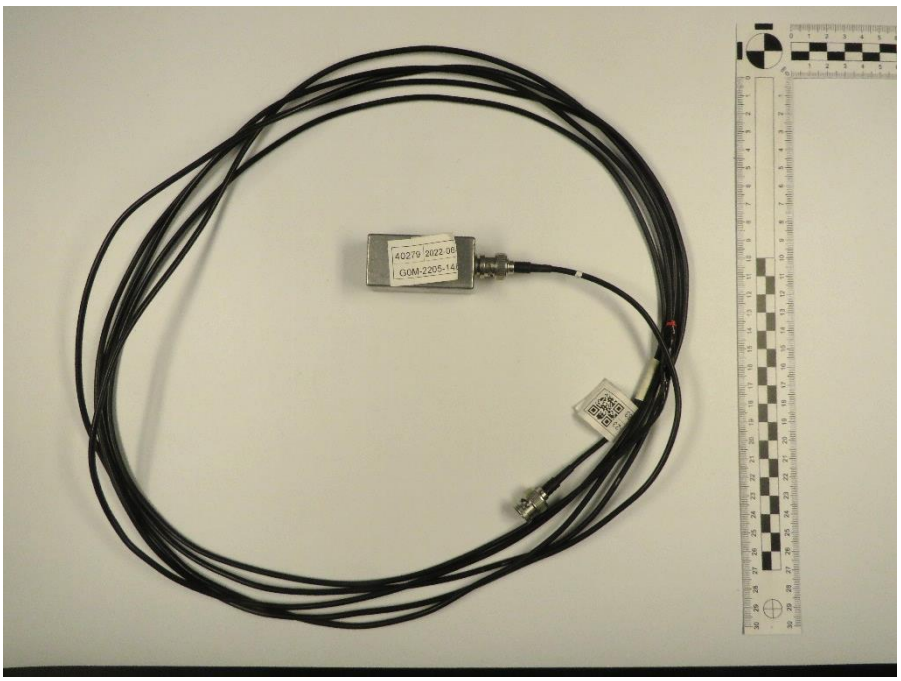
EUT - Top side
ST Confidential

EUT - Top side - BNC covers removed
ST Confidential

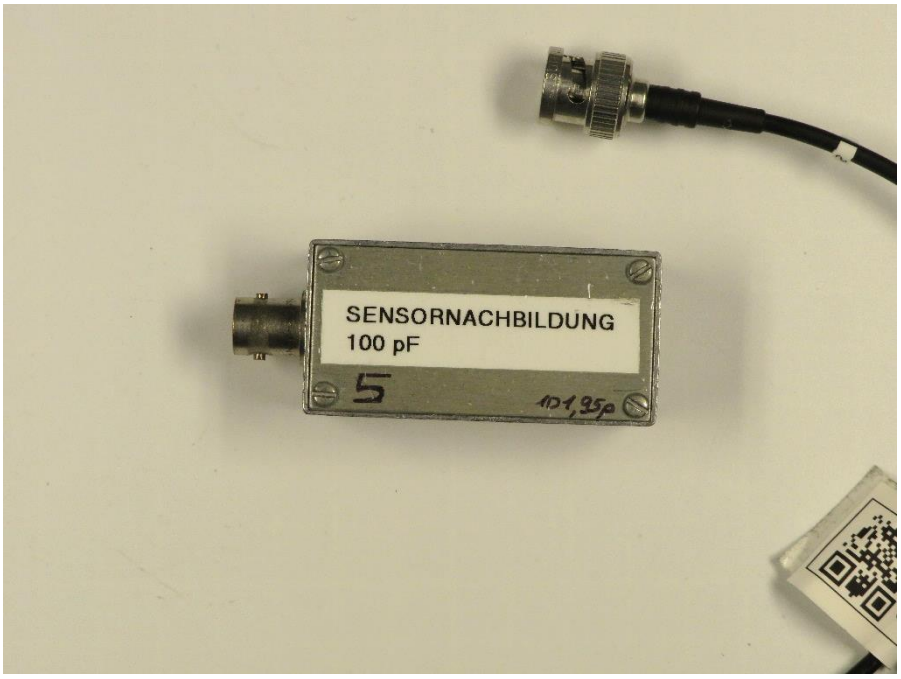
EUT - Bottom side
ST Confidential

ACDC adapter output USB-C

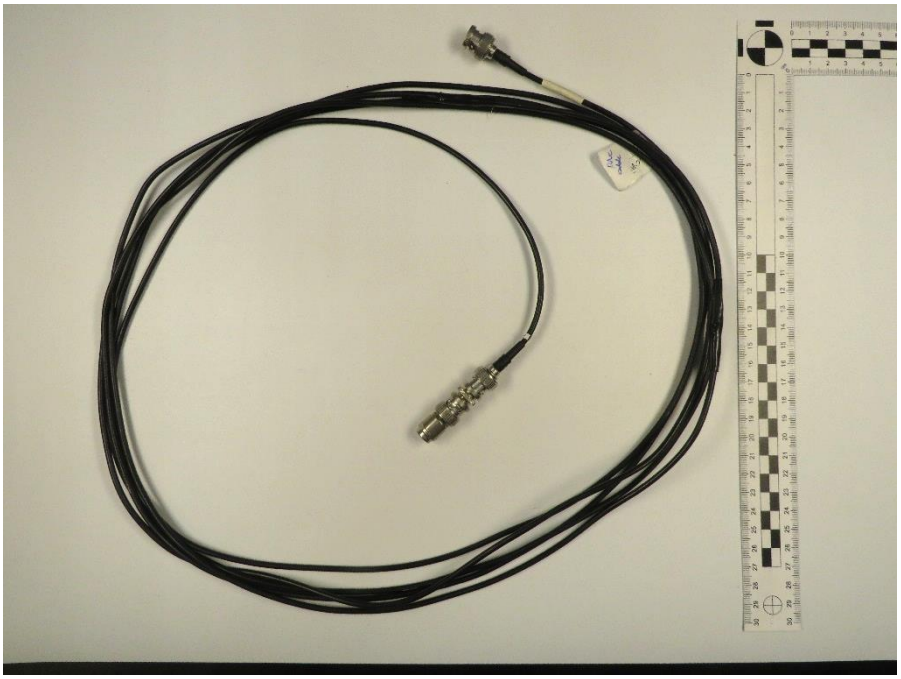

ACDC adapter - Label


BNC cable plus sensor emulation 100 pF for BNC port A


Sensor emulation 100pF



BNC cable plus 50 Ohm-termination for BNC port B



Battery photo 1
ST Confidential

Battery photo 2
ST Confidential

1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
AE	WLAN access point	Netgear	RAX43	--
AE	Laptop	Lenovo	T450	PC06KRWZ
AE	Bluetooth adapter	diverse	(BT 4.0)	--
SW	Python script for data readout	Kistler	DAQ	--
AE	Sensor	Kistler	-	100 pF
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
MON	Monitoring Equipment			
CBL	Connecting Cable			
Comment:				

1.5 Operational Modes

Mode #	Description
1	Operating in Measure and connected to a W-LAN and Bluetooth Device Charging
2	Operating in Measure and connected to a W-LAN and Bluetooth Device
3	Only charging
Comment: --	

1.6 EUT Configuration

Configuration #	Description
1	EUT connected to AC/DC adapter via USB
2	EUT not connected via USB
Comment: Both BNC-in- and outputs are always terminated. BNC A : Sensor input terminated with a BNC-cable of 5m length and a 100pF capacitor in a small metal enclosure. BNC B : Trigger-In- and output terminated with a BNC-cable of 5m length and a BNC-termination of 50Ohms.	

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 analyser in dBµV. Any external preamplifiers used are taken into account through internal analyser 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 analyser. 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 Analyser (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

Title 47 CFR Part 15B, ISED ICES-003 Issue 7				
Reference	**Requirement**	**Reference Method**	**Result**	**Remarks**
Emission				
FCC 15.109 ICES-003, 3.2.2	Radiated emissions	ANSI C63.4:2014 +A1:2017	PASS	-
FCC 15.107 ICES-003, 3.2.1	AC power line conducted emissions	ANSI C63.4:2014 +A1:2017	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

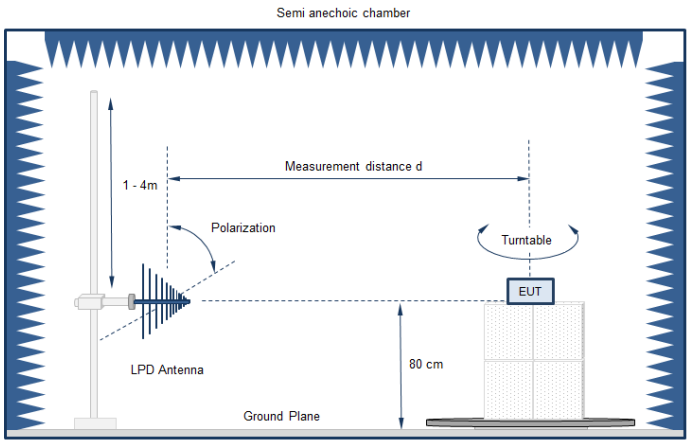
2.1 Test Conditions and Results - Radiated emissions acc. to ANSI C63.4

2.1.1 Information

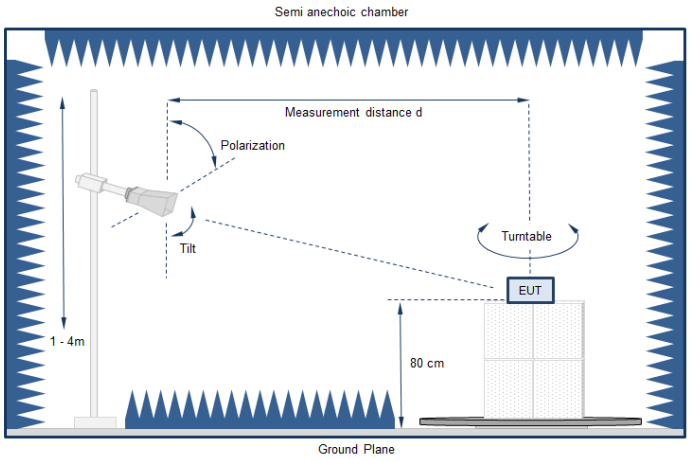
Test Information	
Reference	FCC 15.109, ICES-003, 3.2.2
Reference method	ANSI C63.4:2014+A1:2017 Section 8
Equipment class	Class B
Equipment type	Table top
Highest internal frequency [MHz]	2470
Measurement range	30 MHz to 13 GHz
Temperature [°C]	23 ± 3
Humidity [%]	42 ± 3
Operator	Florian Voigt
Date	2022-06-28

2.1.2 Setup

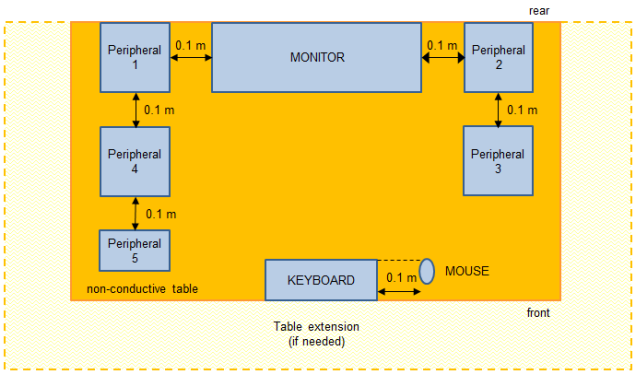
Measurement up to 1 GHz



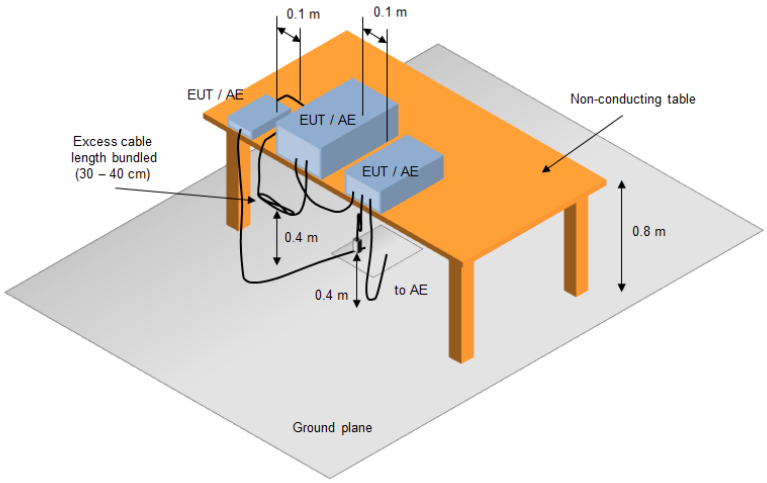
Measurement above 1 GHz



Equipment placement - Table top



Test Setup



2.1.3 Equipment

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

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic chamber (NSA)	Frankonia	AC1	EF00062	2021-02	2024-02
Anechoic chamber (SVSWR)	Frankonia	AC 1	EF01011	2022-06	2025-06
Programmable AC Source	Chroma ATE Inc.	61604	EF01068	2021-07	2022-07
EMI Test Receiver	Keysight	N9038A-526/WXP	EF01070	2021-07	2022-07
Biconical Antenna	R&S	HK 116	EF00030	2021-05	2024-05
LPD Antenna	R&S	HL 223	EF00187	2022-06	2025-06
Horn Antenna	Schwarzbeck	BBHA9120D	EF00018	2019-10	2022-10
Climatic Sensor	Embedded Data Systems, LLC.	2800100000254 17E	EF01054	2022-04	2023-04

2.1.4 Procedure

Exploratory measurement
1. The EUT was placed on a non-conductive table at a height of 0.8m. 2. The EUT and support equipment, if needed, were set up to simulate typical usage. 3. Cables, of type and length specified by the manufacturer, were connected to at least one port of each type and were terminated by a device or simulating load of actual usage. 4. The antenna was placed at a distance of 3 or 10 m. 5. The received signal was monitored at the measurement receiver. 6. This procedure has to be performed in both antenna polarizations, horizontal and vertical. 7. The arrangement of the equipment with the maximum emission level is shown on the setup picture at item 2.1.2

Final measurement
1. The EUT was placed on a 0.8 m non-conductive table at a 3 m distance from the receive antenna. The antenna output was connected to the measurement receiver. 2. A biconical antenna was used for the frequency range 30 – 200 MHz, a logarithmic periodical antenna was used for the frequency range from 200 – 1000 MHz. Above one 1 GHz a Double Ridged Broadband Horn antenna was used. The antenna was placed on an adjustable height antenna mast. 3. The EUT and cable arrangement were based on the exploratory measurement results. 4. Emissions were maximized at each frequency by rotating the EUT and adjusting the receive antenna height and polarization. The maximum values were recorded. 5. The test data of the worst-case conditions were recorded and shown on the next pages.

2.1.5 Limits

Class B @ 3 m		
Frequency [MHz]	Detector	Limit [dBµV/m]
30 - 88	Quasi-peak	40
88 - 216	Quasi-peak	43.5
216 - 960	Quasi-peak	46
960 - 1000	Quasi-peak	54
> 1000	Peak Average	74 54

Class A @ 10 m		
Frequency [MHz]	Detector	Limit [dBµV/m]
30 - 88	Quasi-peak	39
88 - 216	Quasi-peak	43.5
216 - 960	Quasi-peak	46.5
960 - 1000	Quasi-peak	49.5
> 1000	Peak Average	69.5 49.5

2.1.6 Results

Test Results			
Operational mode	EUT Configuration	Verdict	Remark
1	1	PASS	-
2	2	PASS	-
3	1	PASS	-
Comment: -			

2.1.7 Setup Photos

TEST SETUP - Radiated emission - 30-200MHz - Mode 1 Configuration 1
ST Confidential

TEST SETUP - Radiated emission - 200MHz-1GHz - Mode 1 Configuration 1 - Table setup
ST Confidential

TEST SETUP - Radiated emissions - 1-13GHz - Mode 2 Configuration 2
ST Confidential

TEST SETUP - Radiated emissions - 1-13GHz - Mode 2 Configuration 2 - table setup
ST Confidential

2.1.8 Records

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Date:	2022-06-28
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement Distance:	3 m
Operational Mode:	1
EUT Configuration:	1

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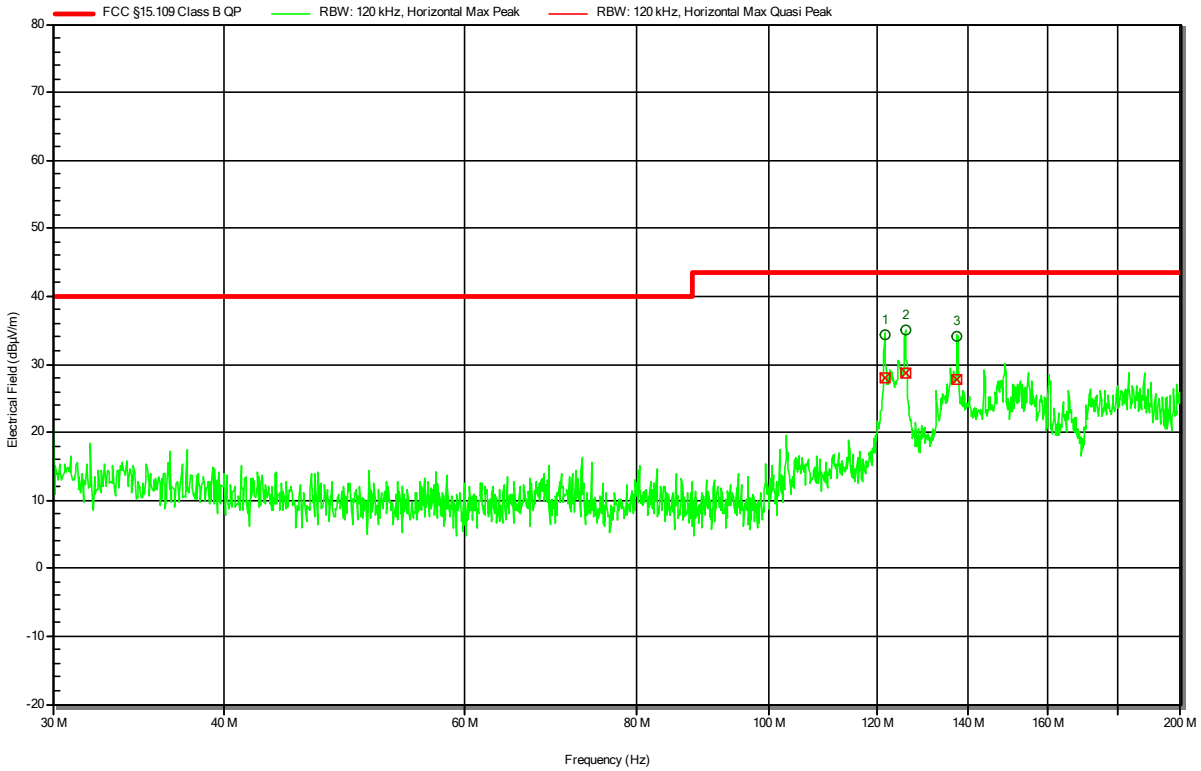
RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	121.571 MHz	28.05 dBµV/m	43.52 dBµV/m	-15.47 dB	Pass	-87 degrees	1 m
2	125.897 MHz	28.73 dBµV/m	43.52 dBµV/m	-14.79 dB	Pass	-87 degrees	1 m
3	137.353 MHz	27.73 dBµV/m	43.52 dBµV/m	-15.79 dB	Pass	-87 degrees	1 m

Radiated emissions
according to FCC part 15B

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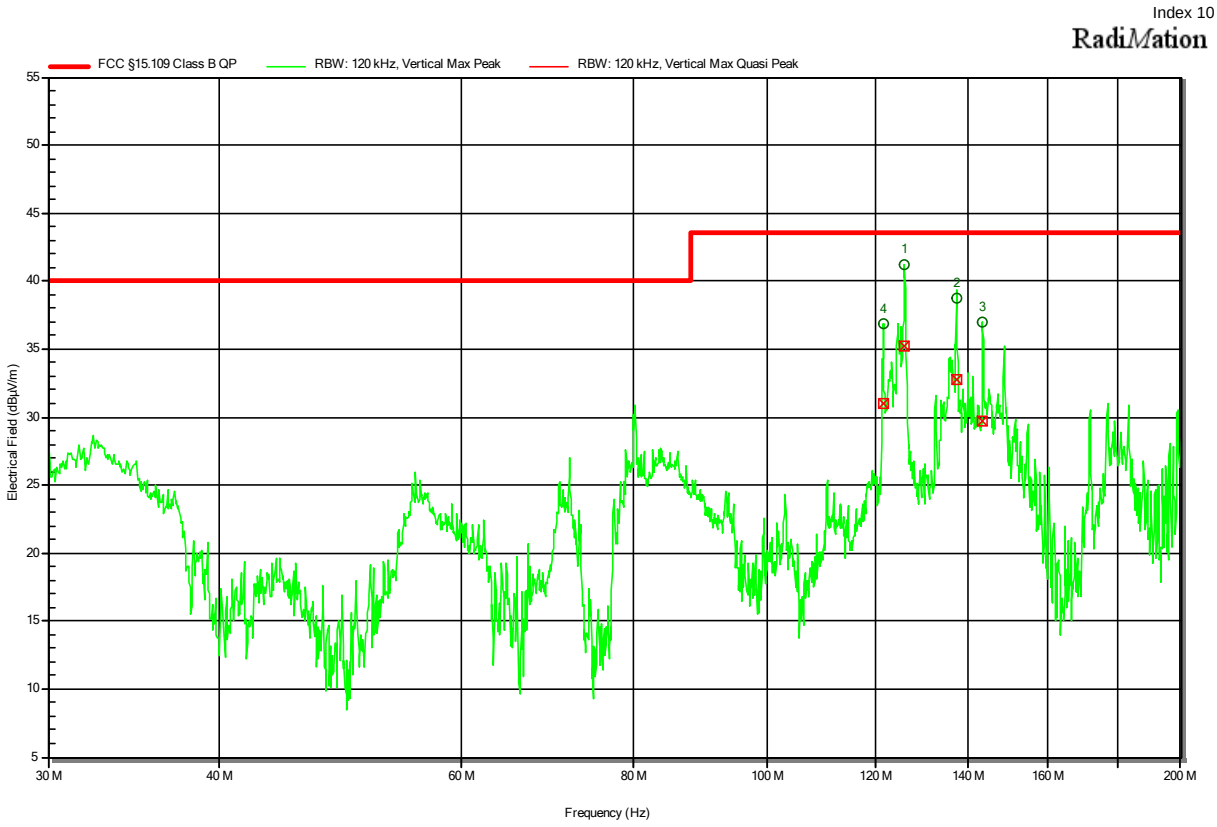
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Date:	2022-06-28
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement Distance:	3 m
Operational Mode:	1
EUT Configuration:	1



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	125.939 MHz	35.18 dBµV/m	43.52 dBµV/m	-8.34 dB	Pass	170 degrees	1 m
2	137.389 MHz	32.79 dBµV/m	43.52 dBµV/m	-10.74 dB	Pass	170 degrees	1 m
3	143.653 MHz	29.75 dBµV/m	43.52 dBµV/m	-13.77 dB	Pass	170 degrees	1 m
4	121.565 MHz	31 dBµV/m	43.52 dBµV/m	-12.52 dB	Pass	170 degrees	1 m

Radiated emissions
according to FCC part 15B

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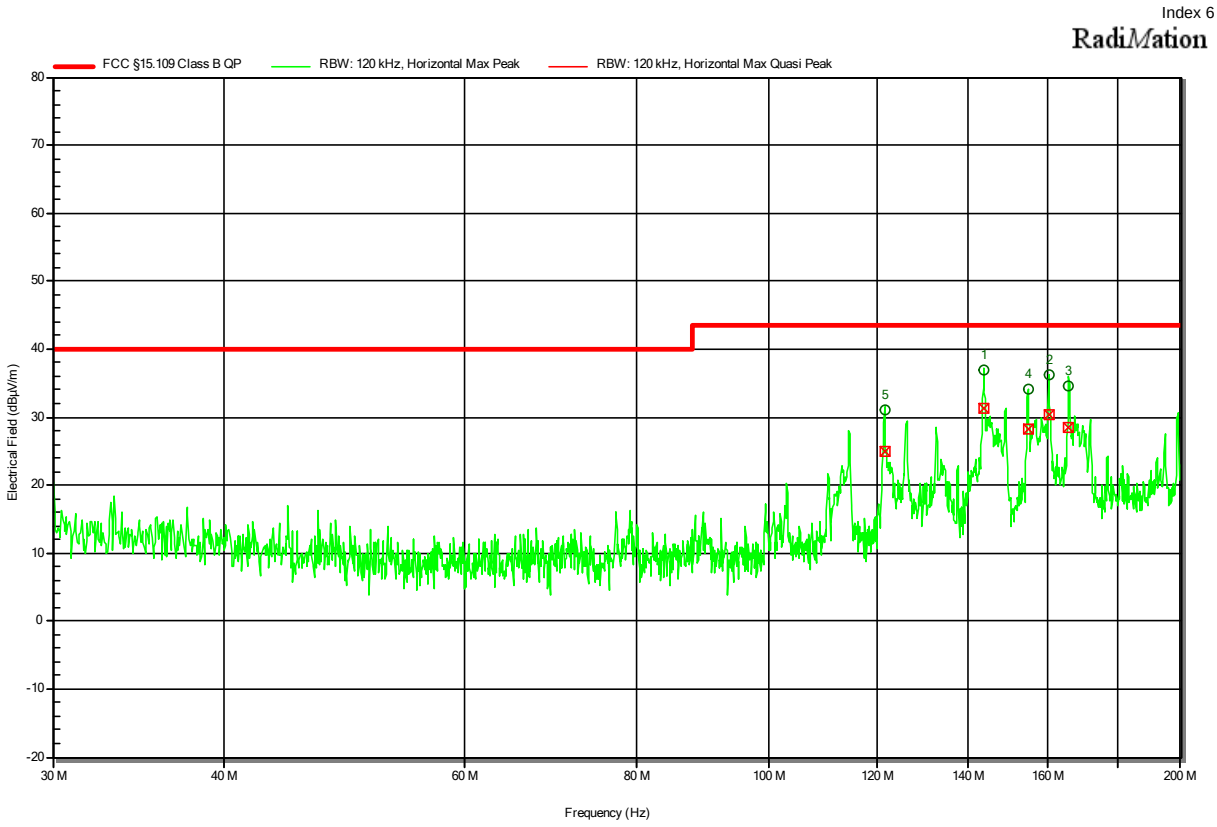
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Date:	2022-06-28
Operating Conditions:	ambient temperature: 23 °Celsius power input: 7.2 VDC battery
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement Distance:	3 m
Operational Mode:	2
EUT Configuration:	2



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	143.605 MHz	31.37 dBµV/m	43.52 dBµV/m	-12.15 dB	Pass	-54 degrees	2 m
2	160.329 MHz	30.29 dBµV/m	43.52 dBµV/m	-13.23 dB	Pass	-54 degrees	2 m
3	165.736 MHz	28.4 dBµV/m	43.52 dBµV/m	-15.12 dB	Pass	-54 degrees	2 m
4	154.653 MHz	28.15 dBµV/m	43.52 dBµV/m	-15.37 dB	Pass	-54 degrees	2 m
5	121.523 MHz	24.93 dBµV/m	43.52 dBµV/m	-18.59 dB	Pass	-54 degrees	2 m

Radiated emissions
according to FCC part 15B

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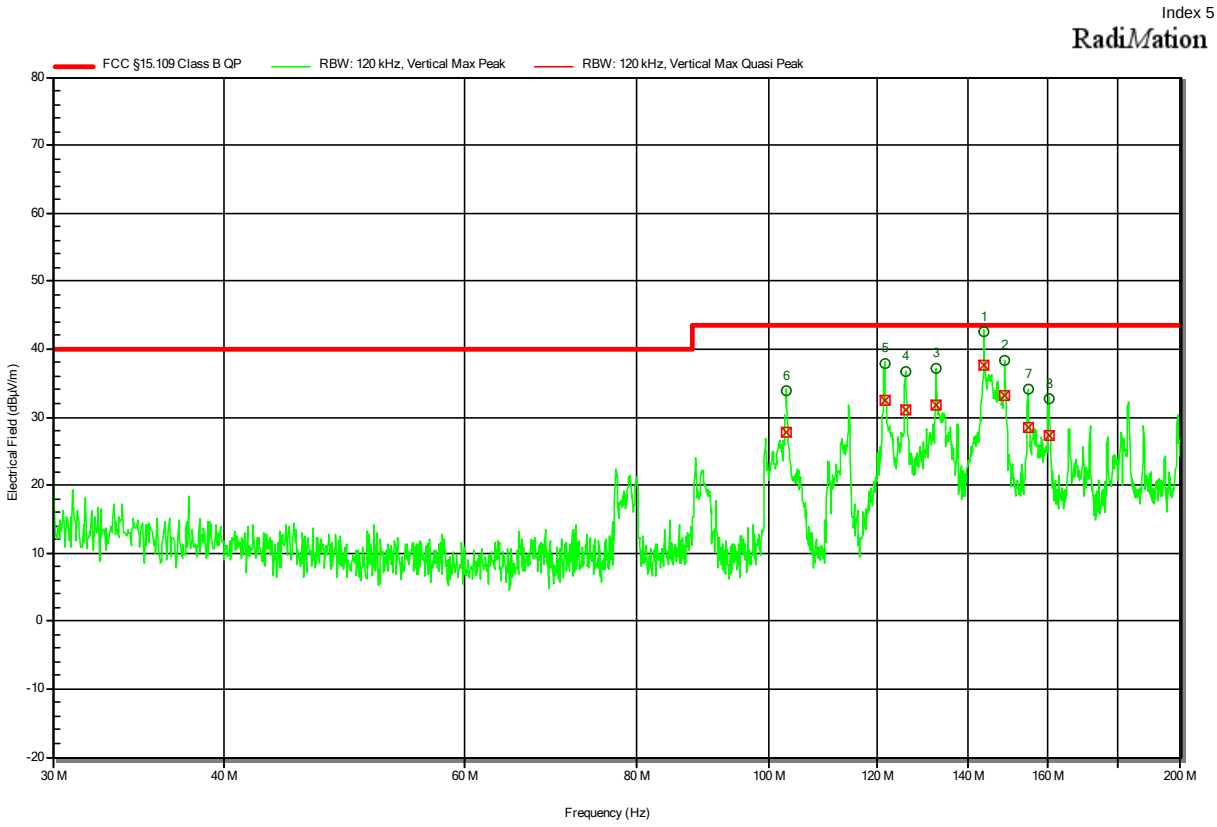
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Date:	2022-06-28
Operating Conditions:	ambient temperature: 23 °Celsius power input: 7.2 VDC battery
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement Distance:	3 m
Operational Mode:	2
EUT Configuration:	2



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	143.653 MHz	37.69 dBµV/m	43.52 dBµV/m	-5.83 dB	Pass	-170 degrees	1 m
2	148.79 MHz	33.11 dBµV/m	43.52 dBµV/m	-10.41 dB	Pass	-170 degrees	1 m
3	132.588 MHz	31.7 dBµV/m	43.52 dBµV/m	-11.82 dB	Pass	-170 degrees	1 m
4	125.921 MHz	31.04 dBµV/m	43.52 dBµV/m	-12.49 dB	Pass	-170 degrees	1 m
5	121.547 MHz	32.52 dBµV/m	43.52 dBµV/m	-11.01 dB	Pass	-170 degrees	1 m
6	102.987 MHz	27.67 dBµV/m	43.52 dBµV/m	-15.85 dB	Pass	-170 degrees	1 m
7	154.683 MHz	28.37 dBµV/m	43.52 dBµV/m	-15.15 dB	Pass	-170 degrees	1 m
8	160.287 MHz	27.33 dBµV/m	43.52 dBµV/m	-16.19 dB	Pass	-170 degrees	1 m

Radiated emissions
according to FCC part 15B

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Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Date:	2022-06-28
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement Distance:	3 m
Operational Mode:	3
EUT Configuration:	1

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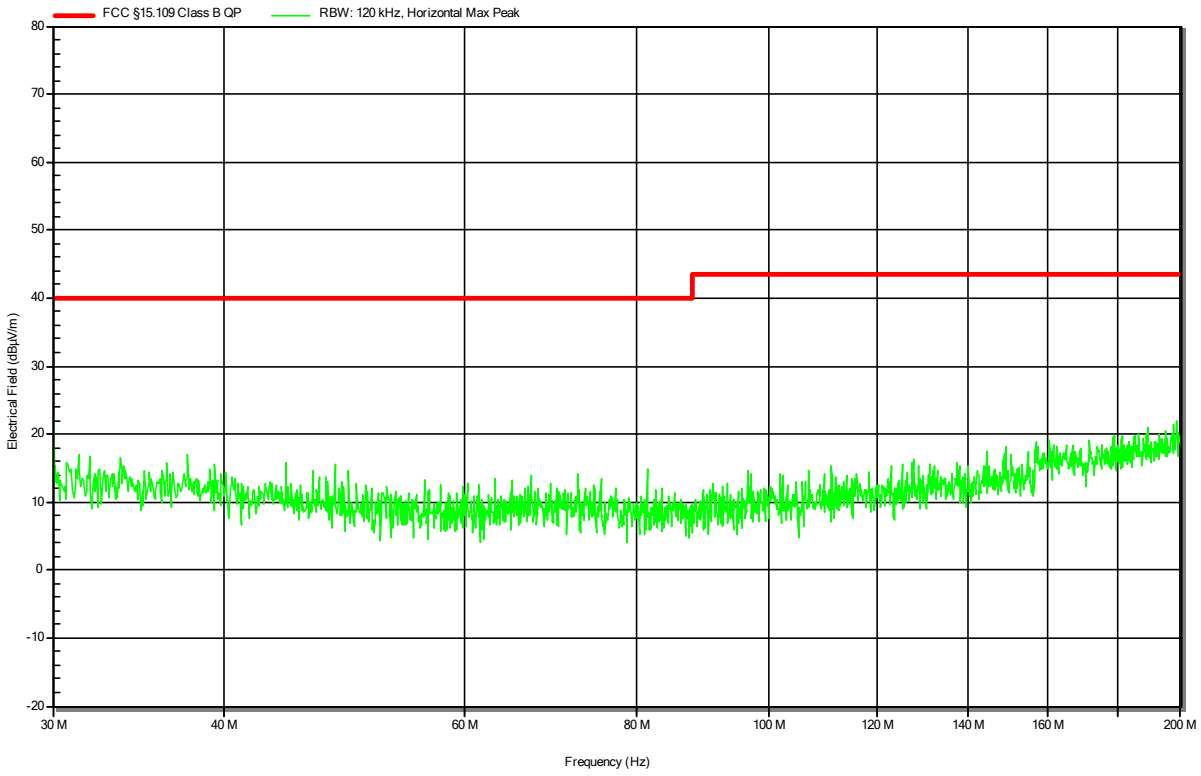

Radiated emissions
according to FCC part 15B

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Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement Distance:	3 m
Operational Mode:	3
EUT Configuration:	1

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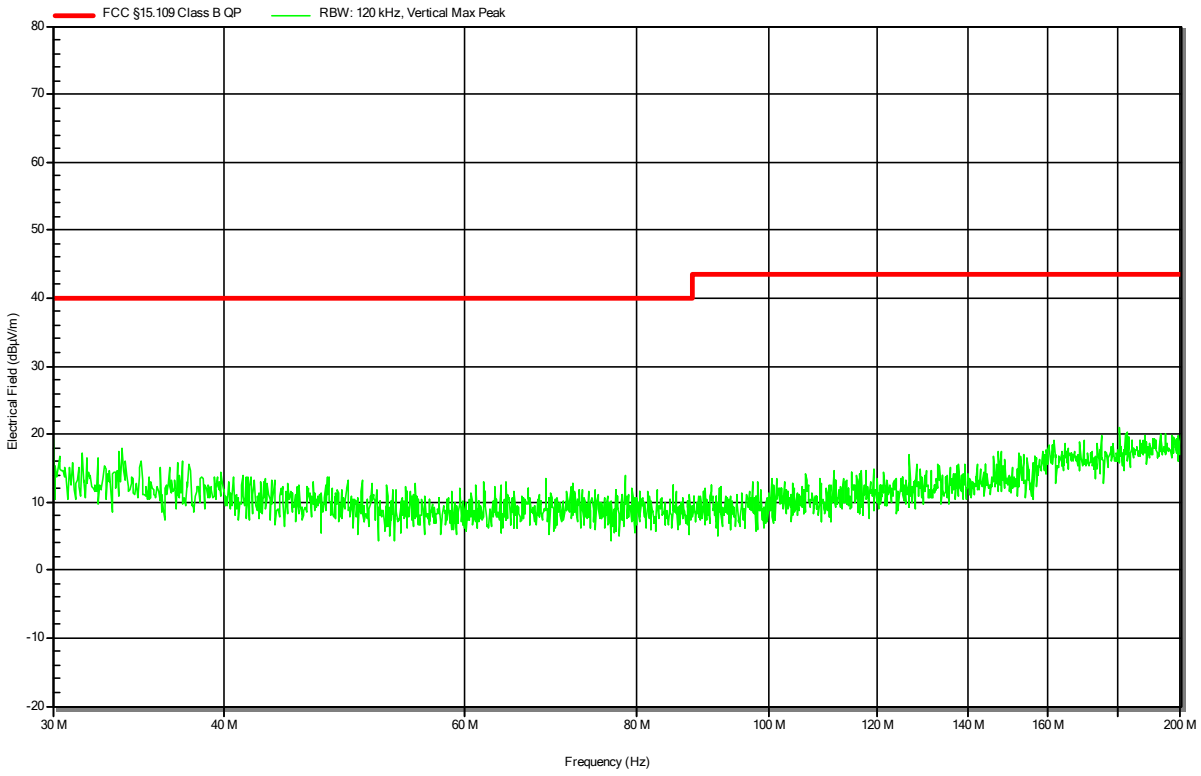
RadiMation



Radiated emissions
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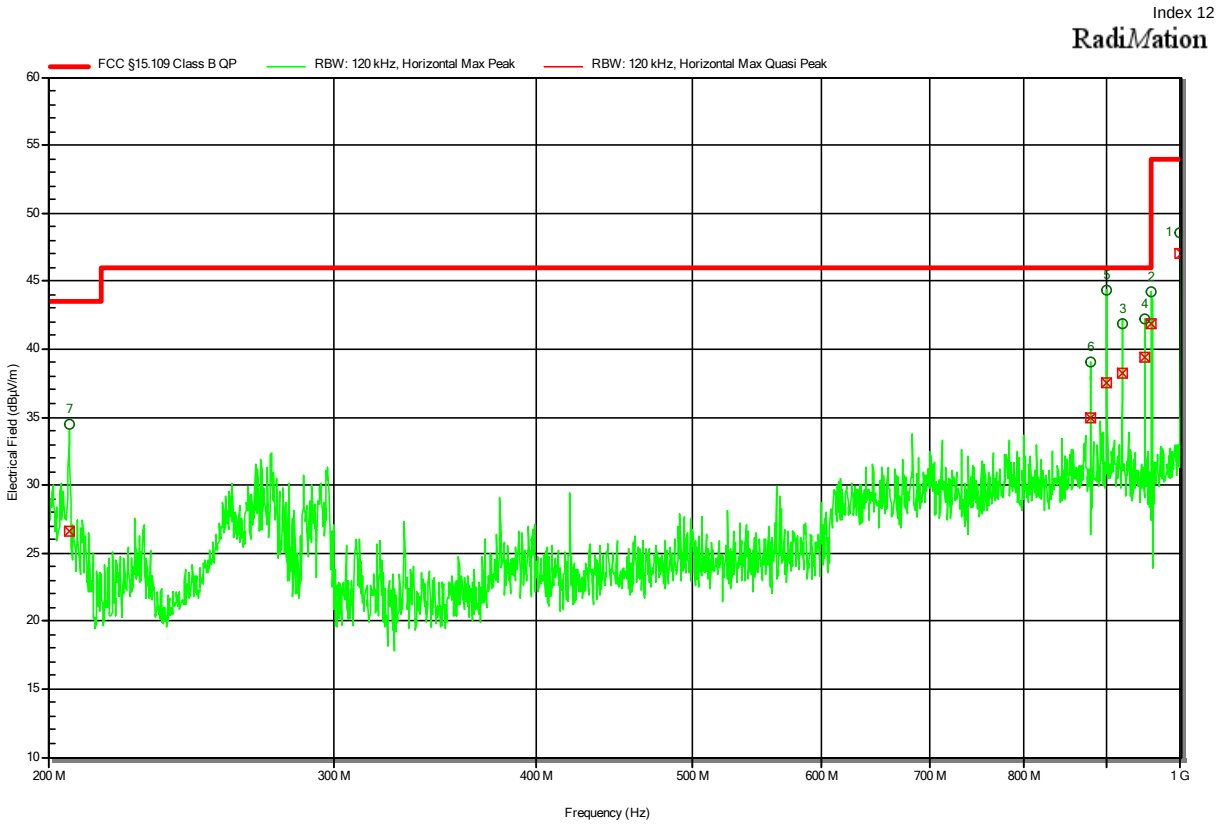
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement Distance:	3 m
Operational Mode:	1
EUT Configuration:	1



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	1 GHz	46.99 dBµV/m	54 dBµV/m	-7.01 dB	Pass	-44 degrees	1 m
2	959.985 MHz	41.91 dBµV/m	46.02 dBµV/m	-4.11 dB	Pass	-44 degrees	1 m
3	919.958 MHz	38.27 dBµV/m	46.02 dBµV/m	-7.75 dB	Pass	-44 degrees	1 m
4	950.019 MHz	39.42 dBµV/m	46.02 dBµV/m	-6.6 dB	Pass	-44 degrees	1 m
5	899.977 MHz	37.5 dBµV/m	46.02 dBµV/m	-8.52 dB	Pass	-44 degrees	1 m
6	879.991 MHz	34.94 dBµV/m	46.02 dBµV/m	-11.08 dB	Pass	-44 degrees	1 m
7	206.06 MHz	26.6 dBµV/m	43.52 dBµV/m	-16.92 dB	Pass	-44 degrees	1 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Date:	2022-06-28
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement Distance:	3 m
Operational Mode:	1
EUT Configuration:	1

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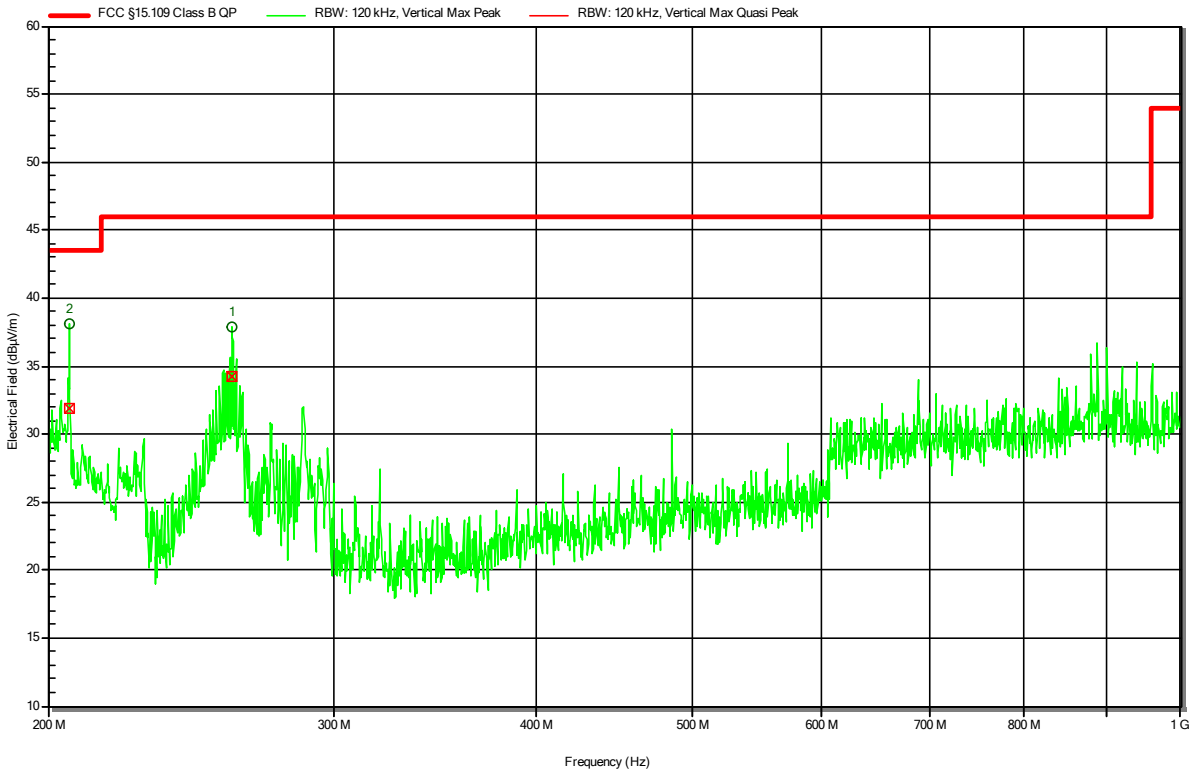
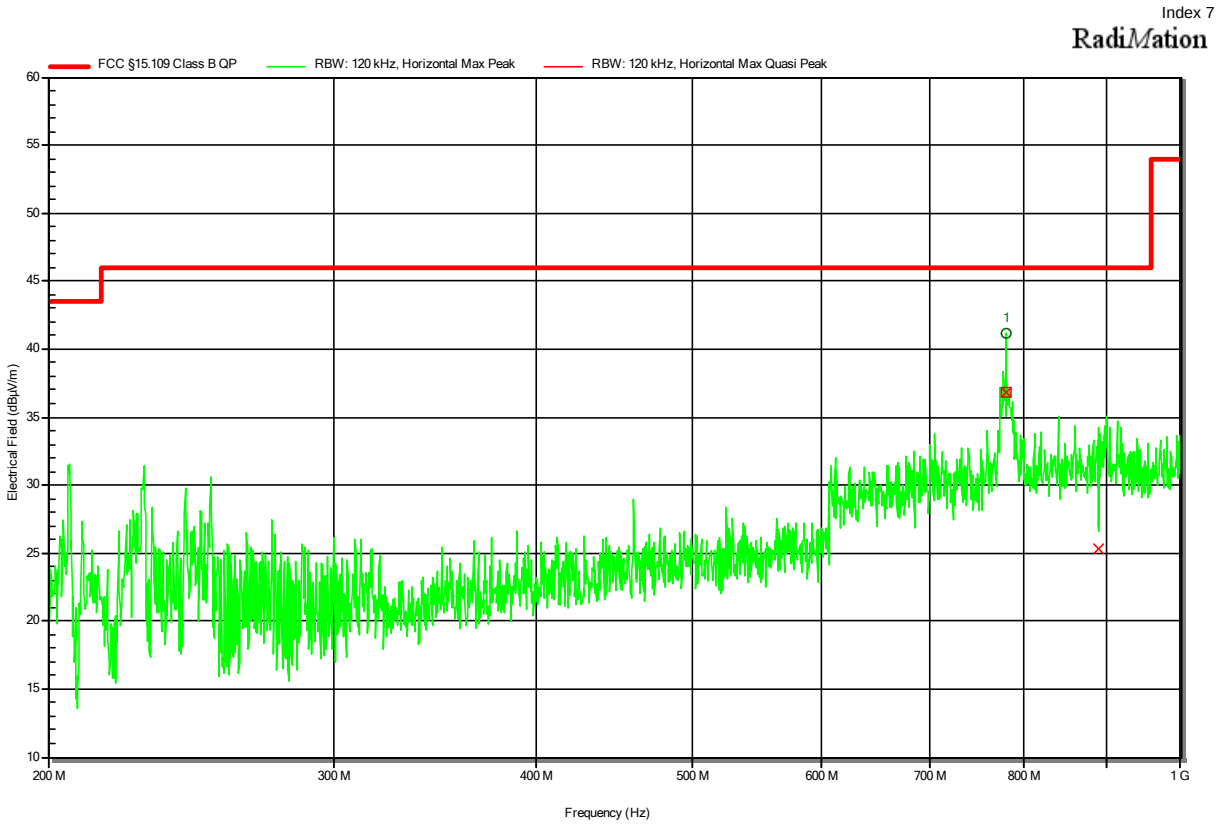
RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	260.019 MHz	34.19 dBµV/m	46.02 dBµV/m	-11.83 dB	Pass	120 degrees	1 m
2	206.06 MHz	31.86 dBµV/m	43.52 dBµV/m	-11.67 dB	Pass	120 degrees	1 m

Radiated emissions
according to FCC part 15B

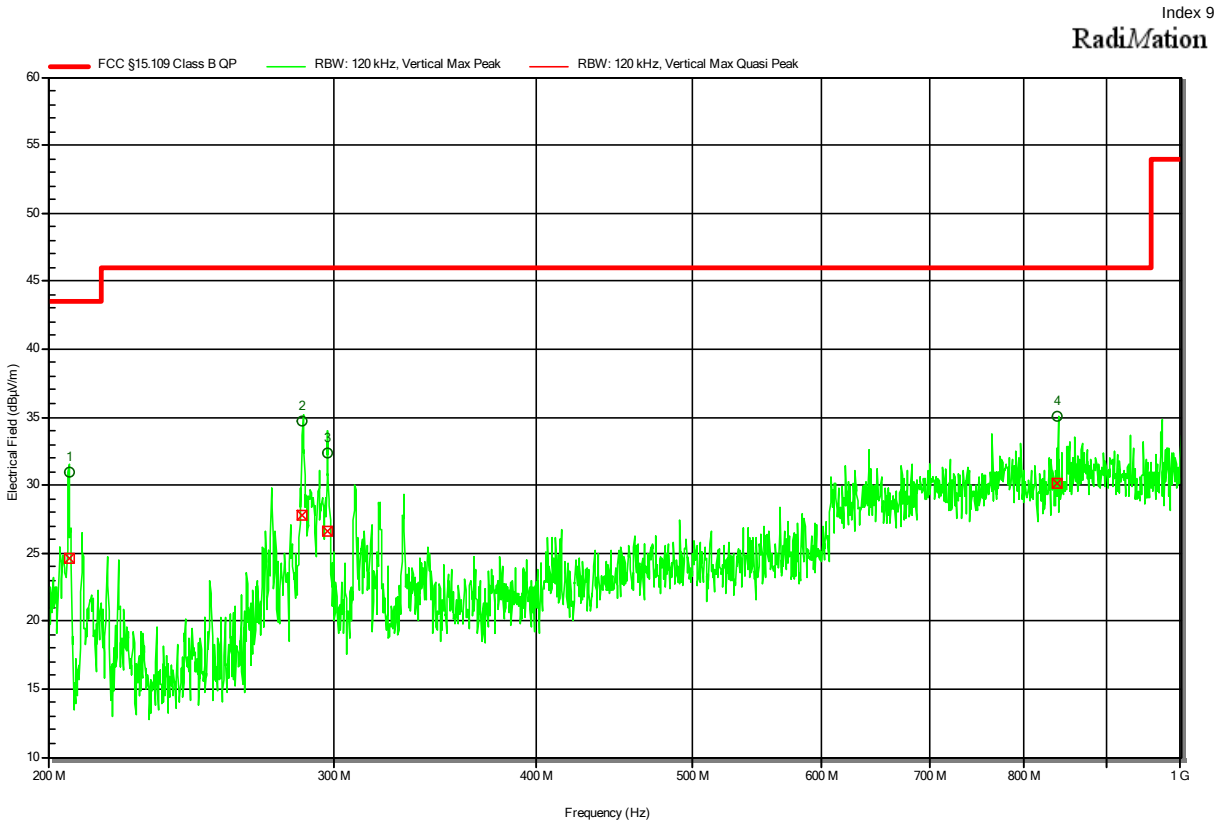
Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Date:	2022-06-28
Operating Conditions:	ambient temperature: 23 °Celsius power input: 7.2 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement Distance:	3 m
Operational Mode:	2
EUT Configuration:	2



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	779.998 MHz	36.84 dBµV/m	46.02 dBµV/m	-9.18 dB	Pass	143 degrees	1 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Date:	2022-06-28
Operating Conditions:	ambient temperature: 23 °Celsius power input: 7.2 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement Distance:	3 m
Operational Mode:	2
EUT Configuration:	2



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	206.06 MHz	24.6 dBµV/m	43.52 dBµV/m	-18.92 dB	Pass	0 degrees	1.6 m
2	287.242 MHz	27.84 dBµV/m	46.02 dBµV/m	-18.18 dB	Pass	0 degrees	1.6 m
3	297.622 MHz	26.65 dBµV/m	46.02 dBµV/m	-19.37 dB	Pass	0 degrees	1.6 m
4	839.982 MHz	30.13 dBµV/m	46.02 dBµV/m	-15.89 dB	Pass	0 degrees	1.6 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Date:	2022-06-28
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement Distance:	3 m
Operational Mode:	3
EUT Configuration:	1

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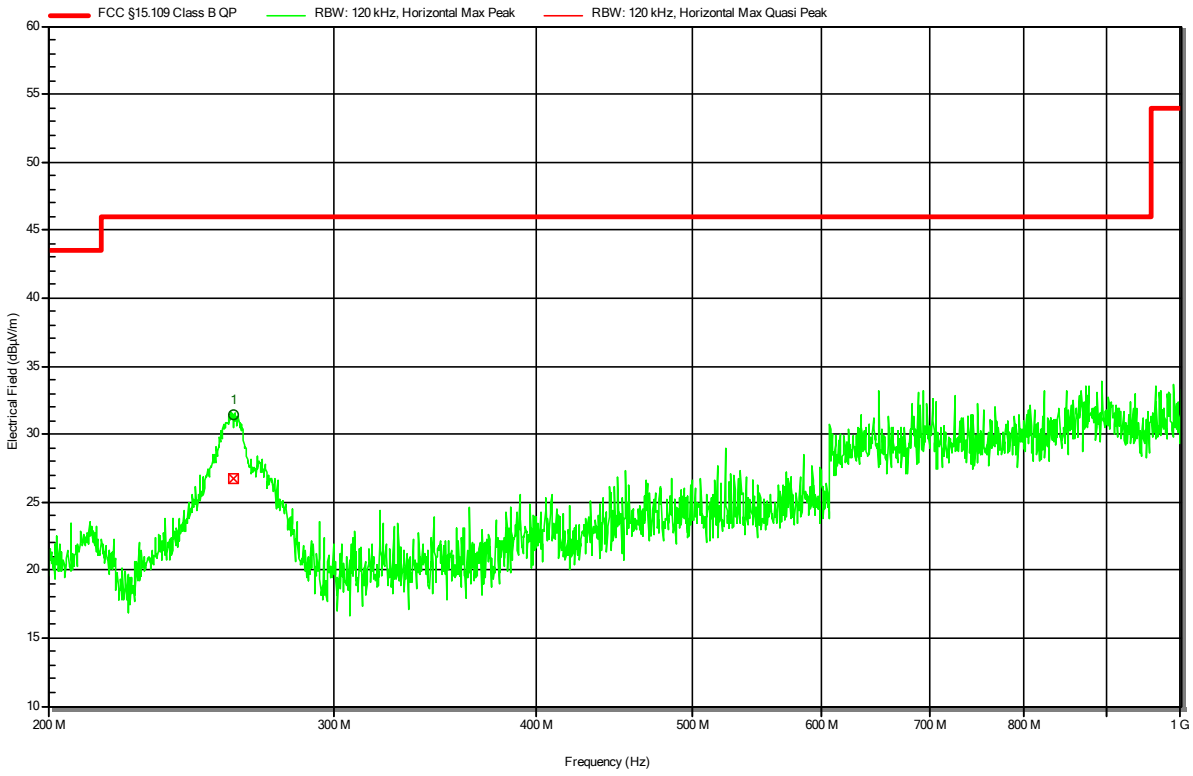
RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	260.595 MHz	26.68 dBµV/m	46.02 dBµV/m	-19.34 dB	Pass	0 degrees	1.3 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Test Date:	2022-06-28
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement Distance:	3 m
Operational Mode:	3
EUT Configuration:	1

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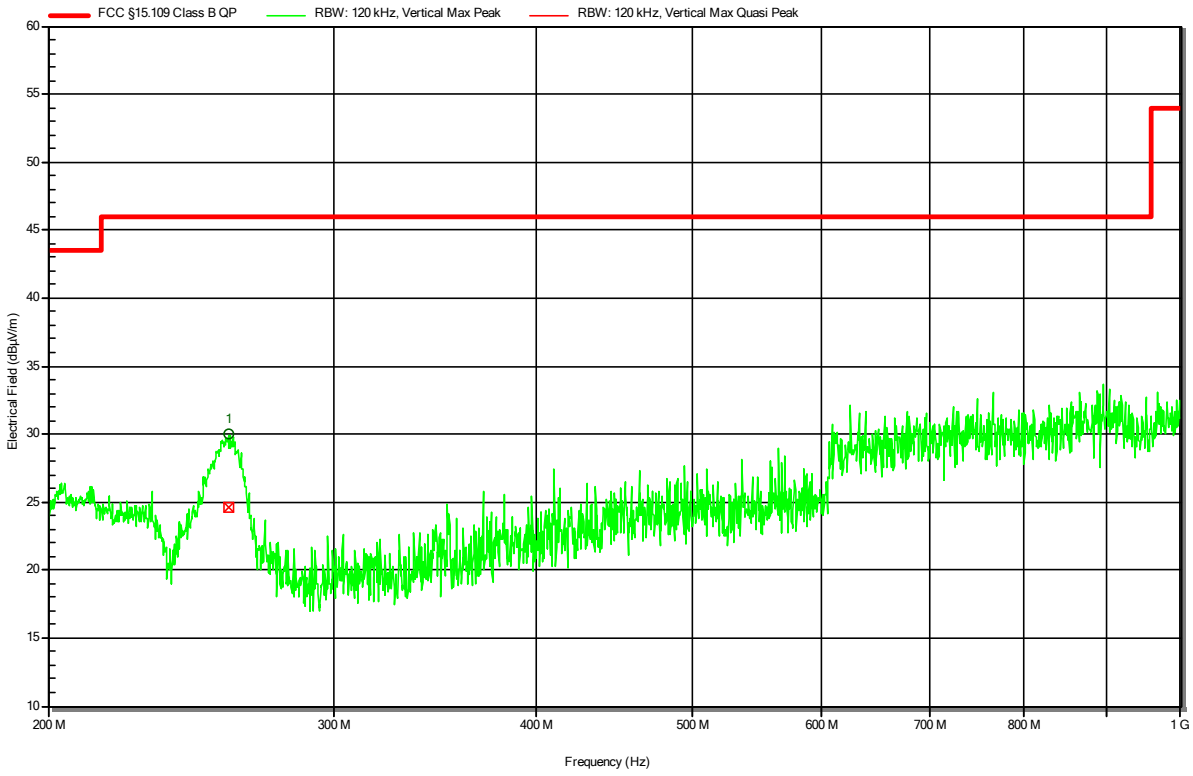
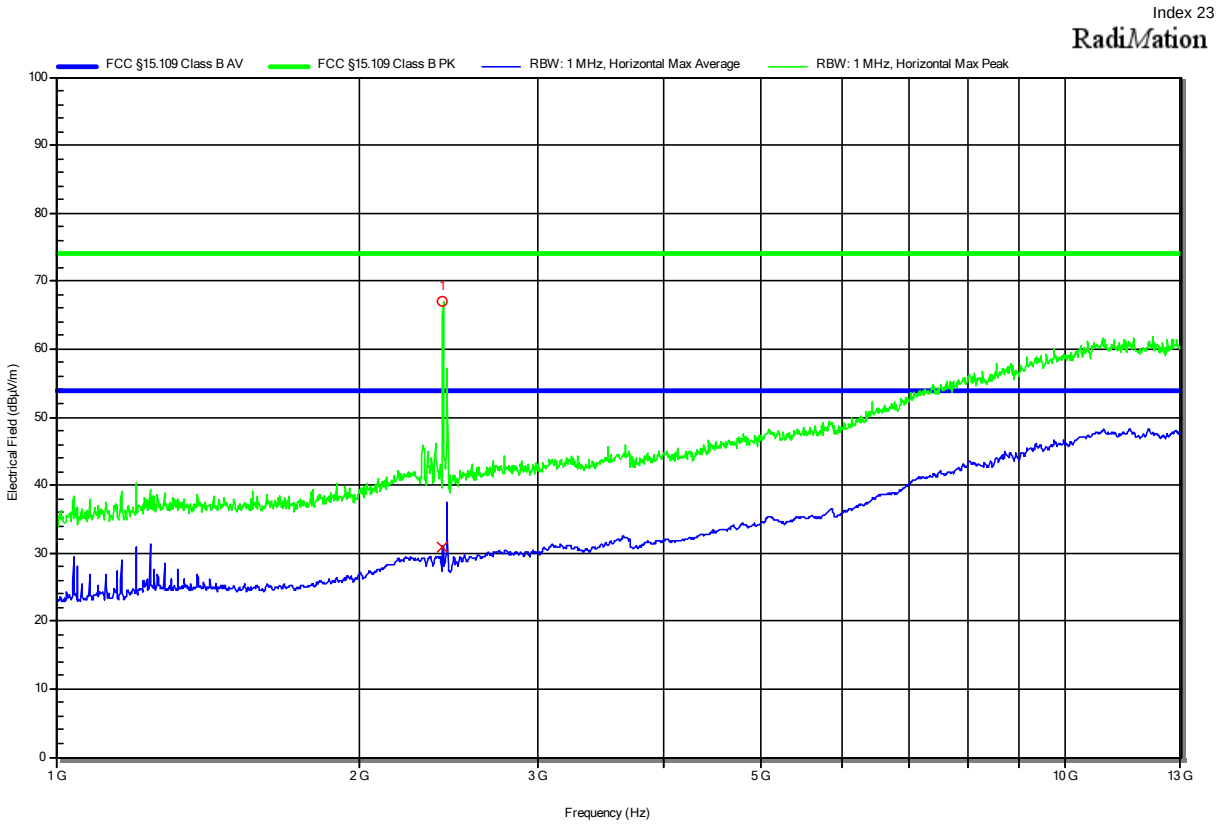
RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	258.741 MHz	24.65 dBµV/m	46.02 dBµV/m	-21.37 dB	Pass	0 degrees	1 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Test Date:	2022-06-29
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement Distance:	3 m
Operational Mode:	1
EUT Configuration:	1

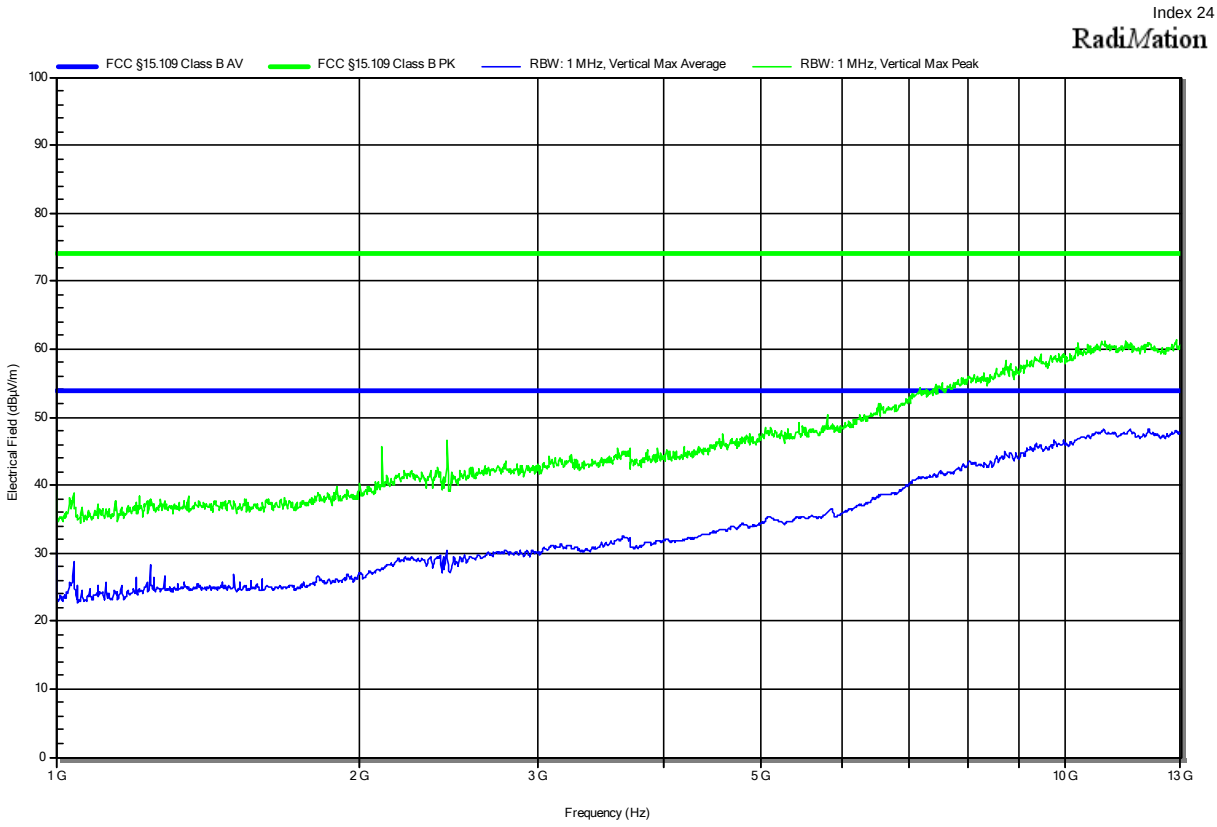


Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	2.418 GHz	67.11 dBµV/m	73.98 dBµV/m	-6.86 dB	Pass	0 degrees	1 m

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	2.418 GHz	30.97 dBµV/m	53.98 dBµV/m	-23 dB	Pass	0 degrees	1 m

Radiated emissions
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Test Date:	2022-06-29
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement Distance:	3 m
Operational Mode:	1
EUT Configuration:	1



Radiated emissions
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Test Date:	2022-06-29
Operating Conditions:	ambient temperature: 23 °Celsius power input: 7.2 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement Distance:	3 m
Operational Mode:	2
EUT Configuration:	2

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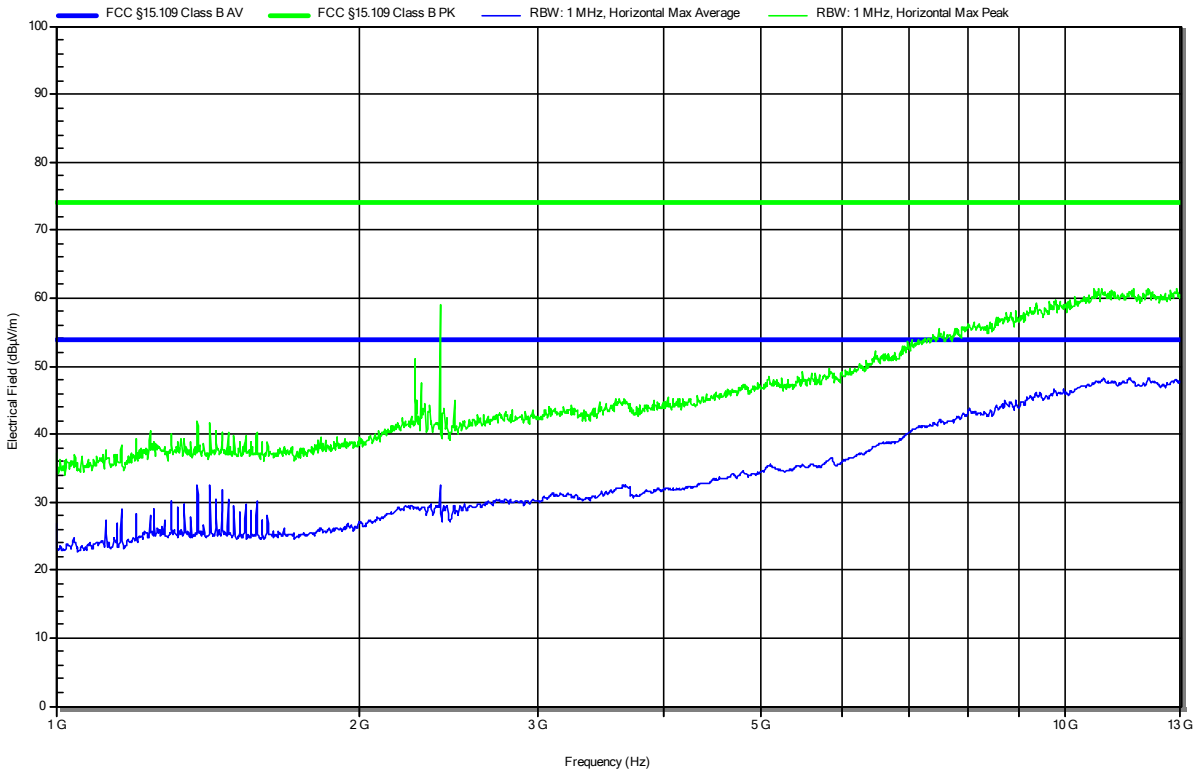
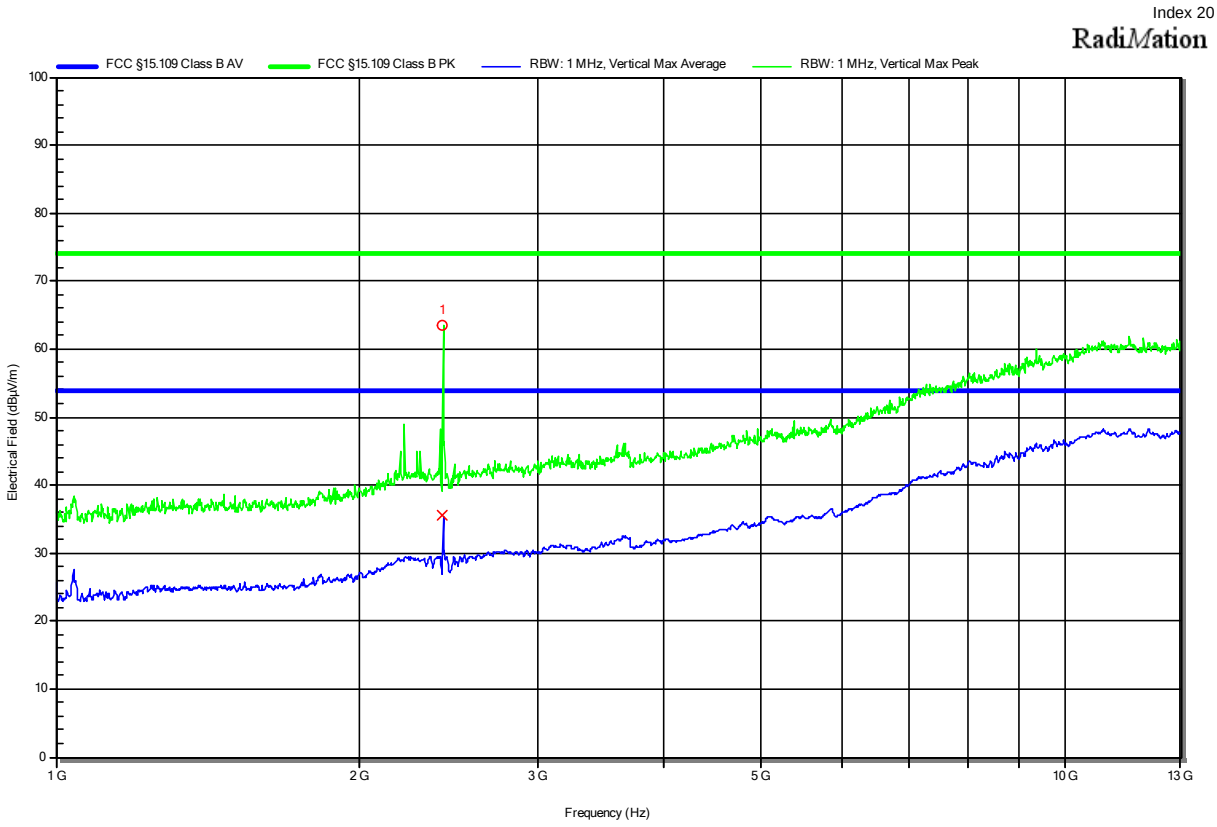
RadiMation



Radiated emissions
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Test Date:	2022-06-29
Operating Conditions:	ambient temperature: 23 °Celsius power input: 7.2 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement Distance:	3 m
Operational Mode:	2
EUT Configuration:	2



Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	2.417 GHz	63.53 dBµV/m	73.98 dBµV/m	-10.45 dB	WLAN-/BT-carrier	0 degrees	1 m

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	2.417 GHz	35.45 dBµV/m	53.98 dBµV/m	-18.53 dB	WLAN-/BT-carrier	0 degrees	1 m

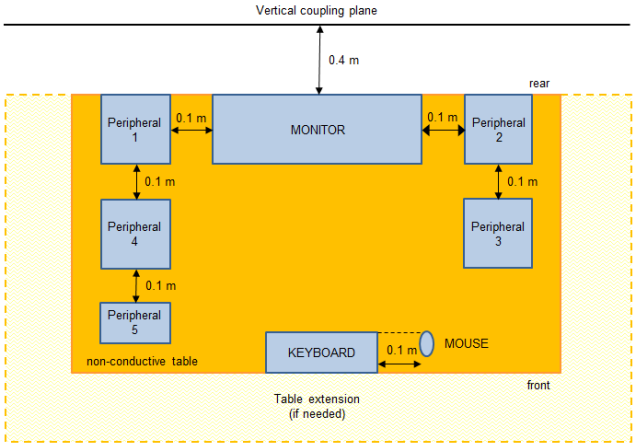
2.2 Test Conditions and Results - Conducted emissions acc. to ANSI C63.4

2.2.1 Information

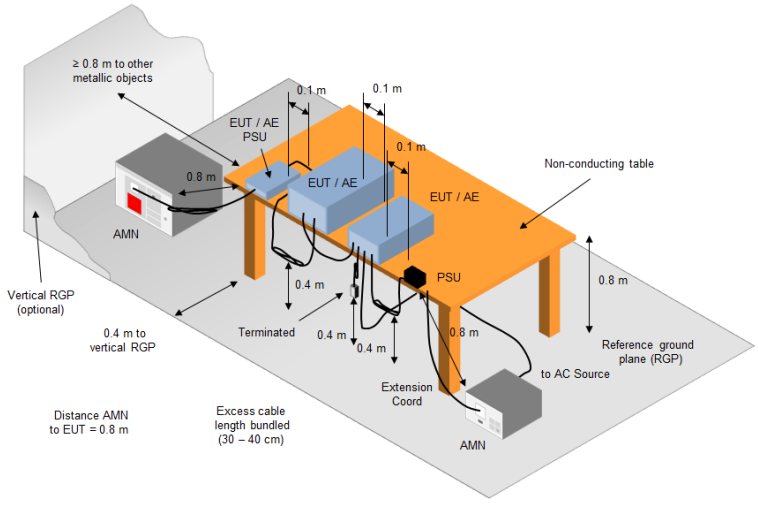
Test Information	
Reference	FCC 15.107, ICES-003, 3.2.1
Reference method	ANSI C63.4:2014+A1:2017 Section 12
Measurement range	150 kHz to 30 MHz
Equipment class	Class B
Equipment type	Table top
Temperature [°C]	23 ± 3
Humidity [%]	41 ± 3
Operator	Jens Degenhardt
Date	2022-06-29

2.2.2 Setup

Equipment placement



Test Setup



2.2.3 Equipment

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

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	Schwarzbeck	NSLK 8127	EF01592	2021-07	2022-07
Pulse Limiter	R&S	ESH3-Z2	EF01063	2021-07	2022-07
EMI Test Receiver	R&S	ESR 7	EF00943	2021-08	2022-08
Climatic Sensor	Embedded Data Systems, LLC.	2800100000254 17E	EF01054	2022-04	2023-04

2.2.4 Procedure

Exploratory measurement
1. The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
2. The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
3. The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
4. The LISN measurement port was connected to a measurement receiver
5. I/O cables were bundled not longer than 0.4 m
6. Measurement was performed in the frequency range 0.15 – 30MHz on each current-carrying conductor
7. To maximize the emissions the cable positions were manipulated
8. The worst configuration of EUT and cables is shown on a test setup picture at item 2.2.2

Final measurement
1. The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
2. The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
3. The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
4. The LISN measurement port was connected to a measurement receiver
5. The EUT and cable arrangement were based on the exploratory measurement results
6. The test data of the worst-case conditions were recorded and shown on the next pages

2.2.5 Limits

Class B		
Frequency [MHz]	Quasi-peak Limit [dBµV]	Average Limit [dBµV]
0.15 - 0.5	66 - 56 *	56 - 46 *
0.5 - 5	56	46
5 - 30	60	50
* Decreases with the logarithm of the frequency		

2.2.6 Results

AC power line conducted emissions					
Port	Coupling	Operational mode	EUT Configuration	Verdict	Remark
AC Mains	AMN	1	1	PASS	-

2.2.7 Setup Photos

TEST SETUP - Conducted emission
ST Confidential

TEST SETUP - Conducted emission - 2
ST Confidential

2.2.8 Records

Conducted emissions at the mains power port
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Test Date:	2022-06-29
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
LISN:	Schwarzbeck NSLK 8127 RC L1
Operational Mode:	1
EUT Configuration:	1 Charge state 80%
Applied to Port:	AC Mains

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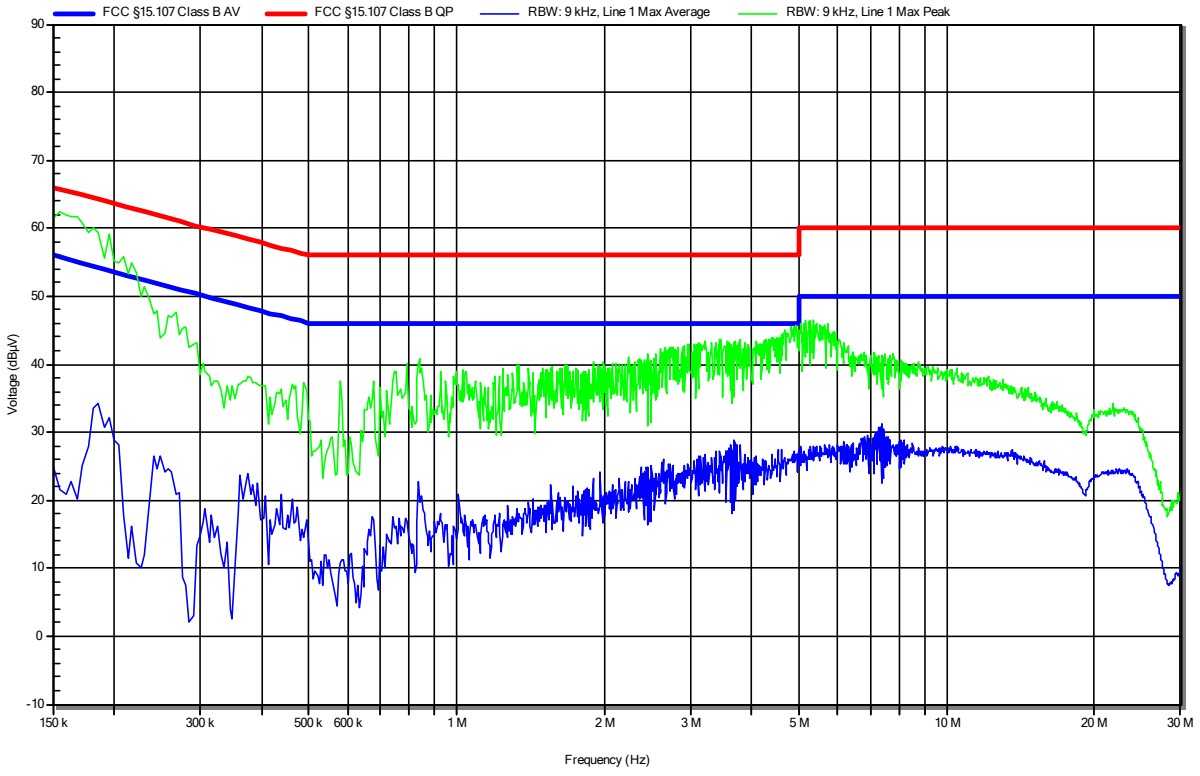
RadiMation



Conducted emissions at the mains power port
according to FCC part 15B

Project Number:	G0M-2205-1483
Applicant:	Kistler Instrumente AG
Model Description:	Handheld
Model:	5811A
Test Sample ID:	40273
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Degenhardt
Test Date:	2022-06-29
Operating Conditions:	ambient temperature: 23 °Celsius power input: 120 V / 60 Hz (AC/DC-adapter)
LISN:	Schwarzbeck NSLK 8127 RC N
Operational Mode:	1
EUT Configuration:	1 Charge state 80%
Applied to Port:	AC Mains

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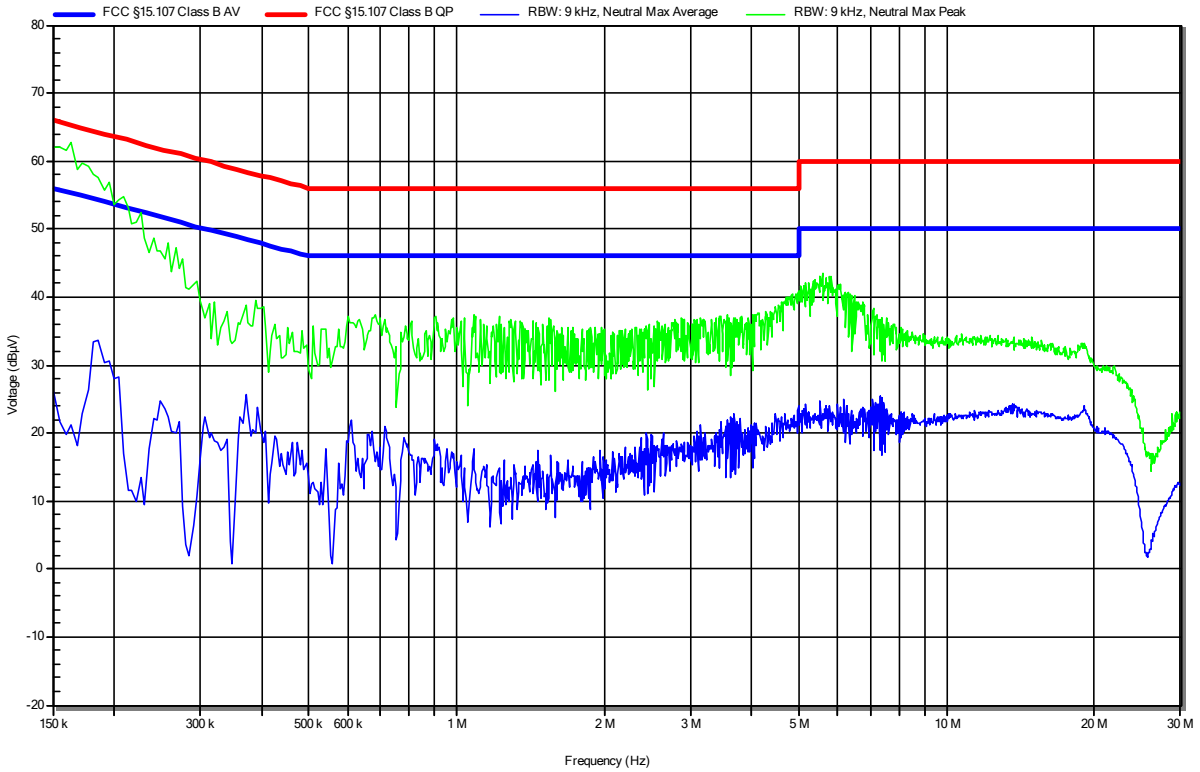
RadiMation



3 Measurement Uncertainty

All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2.

Test Name	Measurement Uncertainty
Conducted emissions at the mains power port	150kHz to 30MHz, 3.35dB
Radiated Emission	30MHz to 200MHz @ 3m, 5.1dB 200MHz to 1GHz @ 3m, 5.3dB >1GHz to 6GHz @3m, 5.95dB