



Canada

RF Test Report

As per

RSS-210 Issue 10:2019 & FCC Part 15 Subpart 15.209

Low Power Licence Exempt Radio Communication
Devices
Intentional Radiators
on the

Smart Holster Sensor
Model: HS01

Issued by:

TÜV SÜD Canada Inc.
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Testing produced for

Prepared by:

Min Xie,
Sr. Project Engineer



See Appendix A for full client &
EUT details.

Reviewed by:

Amir Emami,
Project Engineer



Registration #
6844A-3



Testing Laboratory
Certificate #2955.02



R-14023, G-20072
C-14498, T-20060



Registration #
CA6844



Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

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Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

Report Scope

This report addresses the EMC verification testing and test results of the **Smart Holster Sensor, Model: HS01**, and is herein referred to as EUT (Equipment Under Test). The EUT was tested for compliance against the following standards:


RSS-210 Issue 10:2019, Clause 7.2

FCC Part 15 Subpart C 15.209

Test procedures, results, justifications, and engineering considerations, if any, follow later in this report.

This report does not imply product endorsement by any government, accreditation agency, or TÜV SÜD Canada Inc.

Opinions or interpretations expressed in this report, if any, are outside the scope of TÜV SÜD Canada Inc accreditations. Any opinions expressed do not necessarily reflect the opinions of TÜV SÜD Canada Inc, unless otherwise stated.


Client	Utility Associates, Inc.	
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Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

Summary

The results contained in this report relate only to the item(s) tested.

EUT FCC Certification #, FCC ID:	2AJYJHS01
EUT Industry Canada Certification #, IC:	27067-HS01
EUT passed all tests performed	Yes
Tests conducted by	Min Xie
Report reviewed by	Amir Emami


For testing dates, see "Testing Environmental Conditions and Dates".

Client	Utility Associates, Inc.	
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Test Results Summary

Standard/Method	Description	Class/Limit	Result
FCC 15.203	Antenna Requirement	Unique	Pass See Justification
FCC 15.209 RSS-GEN – Clause 8.9	Transmitter Spurious Radiated Emissions	Quasi-Peak Average	Pass
FCC 15.207 RSS-GEN – Clause 8.8	Power Line Conducted Emissions	Quasi-Peak Average	Pass
RSS-GEN Section 6.7	Occupied Bandwidth	99% OBW	Pass
Overall Result			Pass

If the product as tested or otherwise complies with the specification, the EUT is deemed to comply with the requirement and is deemed a 'PASS' grade. If not 'FAIL' grade will be issued. Note that 'PASS' / 'FAIL' grade is independent of any measurement uncertainties. A 'PASS' / 'FAIL' grade within measurement uncertainty is marked with a '*'.

Client	Utility Associates, Inc.	
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Notes, Justifications, or Deviations

The following notes, justifications for tests not performed or deviations from the above listed specifications apply:

For the Antenna requirement specified in FCC 15.203, the unit uses a permanently connected loop antenna.

For the Restricted Bands of operation, the EUT is designed to only operate between 1.36 MHz.

For the scope of this test report, the EUT was mounted in three orthogonal axis to maximize emissions. Worst case results are presented.

For RF exposure, this device is designed to operate less than 20 cm from personnel during normal operation. No testing is required, however worst case calculation is given in the RF Exposure Exhibit.


Sample Calculation(s)

Radiated Emission Test

Margin = Limit – (Received Signal + Antenna Factor + Cable Loss – Pre-Amp Gain)


Margin = 50.5dB μ V/m – (50dB μ V + 10dB + 2.5dB – 20dB)

Margin = 8.0 dB (pass)

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Applicable Standards, Specifications and Methods

ANSI C63.4:2014	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10:2013	American National Standard For Testing Unlicensed Wireless Devices
CFR 47 FCC 15 Subpart C	Code of Federal Regulations – Radio Frequency Devices, Intentional Radiators
ICES-003 Issue 7 2020	Digital Apparatus - Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard
RSS-GEN Issue 5 2021	General Requirements and Information for the Certification of Radio Apparatus
RSS-210 Issue 10:2019	Licence-Exempt Radio Apparatus: Category I Equipment
ISO 17025:2017	General Requirements for the Competence of Testing and Calibration Laboratories

Client	Utility Associates, Inc.	 Canada
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Document Revision Status

Revision	Date	Description	Initials
000	April 26, 2021	Initial Release	MX
001	May 17, 2021	Added field strength section to report	MX

Client	Utility Associates, Inc.	
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Definitions and Acronyms

The following definitions and acronyms are applicable in this report.
See also ANSI C63.14.

AE – Auxiliary Equipment. A digital accessory that feeds data into or receives data from another device (host) that in turn, controls its operation.

BW – Bandwidth. Unless otherwise stated, this refers to the 6 dB bandwidth.

EMC – Electro-Magnetic Compatibility. The ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

EMI – Electro-Magnetic Immunity. The ability to maintain a specified performance when the equipment is subjected to disturbance (unwanted) signals of specified levels.

EUT – Equipment Under Test. A device or system being evaluated for compliance that is representative of a product to be marketed.

ITE – Information Technology Equipment with a primary function(s) of entry, storage, display, retrieval, transmission, processing, switching, or control, of data.

LISN – Line Impedance Stabilization Network

NCR – No Calibration Required

RF – Radio Frequency


Client	Utility Associates, Inc.	
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Testing Facility

Testing for EMC on the EUT was carried out at TÜV SÜD Canada testing lab near Toronto, Ontario. The testing lab has calibrated 3m semi-anechoic chambers which allow measurements on a EUT that has a maximum width or length of up to 2m and a height of up to 3m. The testing lab also has a calibrated 10m Open Area Test Site (OATS). The chambers are equipped with a turntable that is capable of testing devices up to 5000lb in weight and are equipped with a mast that controls the polarization and height of the antenna. Control of the mast occurs in the control room adjoining the shielded chamber. This facility is capable of testing products that are rated for single phase or 3-phase AC input and DC capability is also available. Radiated emission measurements are performed using a BiLog antenna and a Horn antenna where applicable. Conducted emissions, unless otherwise stated, are performed using a LISN and using the vertical ground plane if applicable.

Calibrations and Accreditations


The 3m semi-anechoic chamber is registered with Federal Communications Commission (FCC, CA6844), Innovation, Science and Economic Development Canada (ISED, 6844A-3) and Voluntary Control Council for Interference (VCCI, R-14023, G-20072, C-14498, and T-20060). This chamber was calibrated for Normalized Site Attenuation (NSA) using test procedures outlined in ANSI C63.4 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The chamber is lined with ferrite tiles and absorption cones to minimize any undesired reflections. The NSA data is kept on file at TÜV SÜD Canada. For radiated susceptibility testing, a 16 point field calibration has been performed on the chamber. The field uniformity data is kept on file at TÜV SÜD Canada. TÜV SÜD Canada Inc. is accredited to ISO 17025 by A2LA with Testing Certificate #2955.02. The laboratory's current scope of accreditation listing can be found as listed on the A2LA website. All measuring equipment is calibrated on an annual or biennial basis as listed for each respective test.

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Testing Environmental Conditions and Dates

Following environmental conditions were recorded in the facility during time of testing

Date	Test	Initials	Temperature (°C)	Humidity (%)	Pressure (kPa)
3/27/2021	Radiated Emissions	MX	22.5	38.6	101.4
3/25/2021	Power Line Conducted Emissions	MX	22.5	38.6	101.4

Client	Utility Associates, Inc.	 Canada
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Detailed Test Results Section

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

Radiated Emission Field Strength

Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT does not exceed the limits listed below as defined in the applicable test standard, as measured from a receiving antenna. This helps protect other devices which may be using the same spectrum allocations for similar or other purposes and also ensures the transmit range of the device is within the pre-determined suitable range. This also ensures public safety by not exceeding a level which has been deemed safe for human exposure.

Limits and Method

The limits are defined in FCC Part 15.209 and RSS-210/RSS-Gen.


The field strength of any emissions within the bands given in the table below shall not exceed the limits specified. Method is using a loop antenna and converting to voltage based on the impedance of free space.

Frequency Range (MHz)	Limit (uV/m) ¹ at 30m	Limit (dBuV/m) ¹ at 3m
1.36232	17.6	24.9

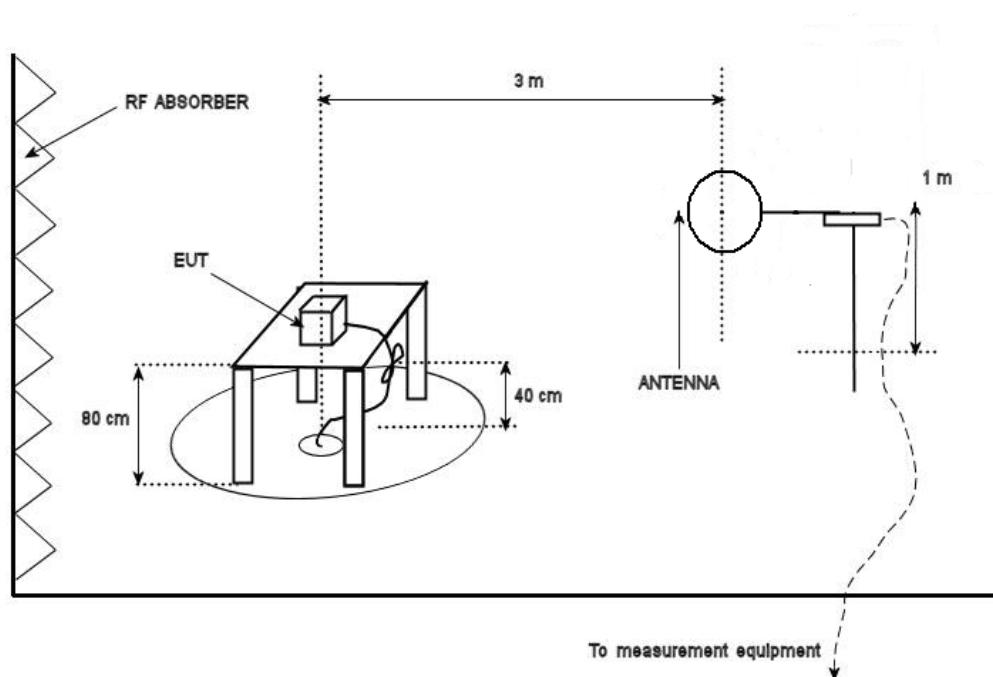
¹Limit is with a Quasi-Peak detector with bandwidths as defined in CISPR-16-1-1

Based on ANSI C63.4 Section 4.2, if the Peak detector measurements do not exceed the Quasi-Peak limits, where defined, then the EUT is deemed to have passed the requirements.

In accordance with FCC Part 15, section 15.31(f)(2), testing was performed at a 3 meter test distance and an extrapolation factor of 40 dB/decade was applied. For example, an extrapolation of 30m to 3m is $20\text{Log}(uV/m) + 40\text{Log}(30m/3m)$.

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Typical Radiated Emissions Setup




Measurement Uncertainty

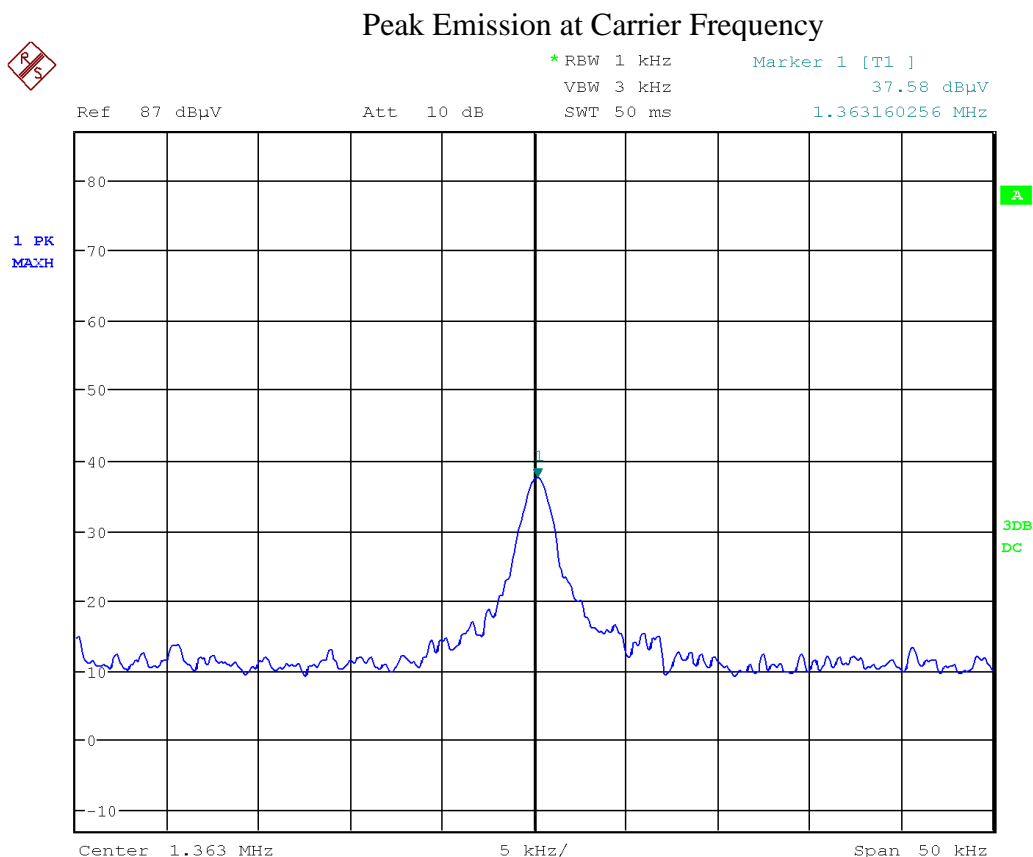
The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is $\pm 5.67\text{dB}$ for 30MHz – 1GHz and $\pm 4.58\text{dB}$ for 1GHz – 18GHz with a 'k=2' coverage factor and a 95% confidence level.

Preliminary Graphs

The graphs shown below are maximized peak measurement graphs over a full 0-360°. The loop was orientated at 0 degrees and 90 degrees and a maximized reading is shown. The marker shows the raw value. See the Final Measurements section below for corrected values.


Devices scanned may be scanned at alternate test distances, and in accordance with FCC Part 15, Subpart A, Section 15.31(f), an extrapolation factor of 20 dB/decade was used above 30 MHz and 40 dB/decade below 30 MHz. For example, an extrapolation of 30m to 1m for frequencies below 30MHz is $20\text{Log}(uV/m) + 40\text{Log}(30m/1m)$.

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Note: The emissions level is identical between 9 kHz and 1 kHz. Emissions was taken with a RBW of 1 kHz achieve better noise floor. The field was measured at 1 m with a loop antenna; the fundamental frequency falls to the noise floor when measured with a larger distance.

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Final Measurements

Frequency	Raw Reading (dBuV)	Cable RE Factor (dB)	Current to Voltage Factor (dB)	Loop Ant Factor (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	FCC Part 15.209 Generic Limits (@ 1 m) (dBuV/m)	FCC Part 15.209 Generic Margin (dB)
1.3632	37.58	0.12	51.5	-6.65	-33.74	48.81	84.0	35.2


Emissions Table

Note:

Peak = Peak measurement


QP = Quasi-Peak measurement

See 'Appendix B – EUT and Test Setup Photos' for photos showing the test set-up.

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESU 40	Rohde & Schwarz	Jan. 15, 2020	Jan. 15, 2022	GEMC 233
Pre-Amp 9 kHz – 1 GHz	CPA9230	Chase	May 22, 2020	May 22, 2022	GEMC 301
Loop Antenna	EM 6872	Electro-Metrics	Feb 26, 2021	Feb 26, 2023	GEMC 71
RF Cable 10m	LMR-400- 10M-50Ω-MN- MN	LexTec	NCR	NCR	GEMC 27
RF Cable 3m	HP305S	Semflex	NCR	NCR	GEMC 310

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Transmitter Spurious Radiated Emissions

Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT does not exceed the limits listed below as defined in the applicable test standard, as measured from a receiving antenna. This helps protect broadcast radio services such as television, FM radio, pagers, cellular telephones, emergency services, and so on, from unwanted interference.

Limits and Method

The limits are as defined in FCC Part 15, Section 15.209(a) and RSS-GEN Clause 8.9. The method is as defined in ANSI C63.10.

The limits apply for those emissions that fall in the restricted bands, as defined in Section 15.205(a)/RSS-GEN Clause 8.10. These emissions must comply with the radiated emission limits specified in Section 15.209(a) and RSS-GEN Clause 8.9.

Frequency	Limit
0.009 MHz – 0.490 MHz	2400/F(kHz) uV/m at 300m ¹
0.490 MHz – 1.705 MHz	24000/F(kHz) uV/m at 30m ¹
1.705 MHz – 30 MHz	30 uV/m at 30m ¹
30 MHz – 88 MHz	100 uV/m (40.0 dBuV/m ¹) at 3m
88 MHz – 216 MHz	150 uV/m (43.5 dBuV/m ¹) at 3m
216 MHz – 960 MHz	200 uV/m (46.0 dBuV/m ¹) at 3m
Above 960 MHz	500 uV/m (54.0 dBuV/m ¹) at 3m
Above 1000 MHz	500 uV/m (54 dBuV/m ²) at 3m
Above 1000 MHz	500 uV/m (74 dBuV/m ³) at 3m

¹Limit is with Quasi Peak detector with bandwidths as defined in CISPR-16-1-1

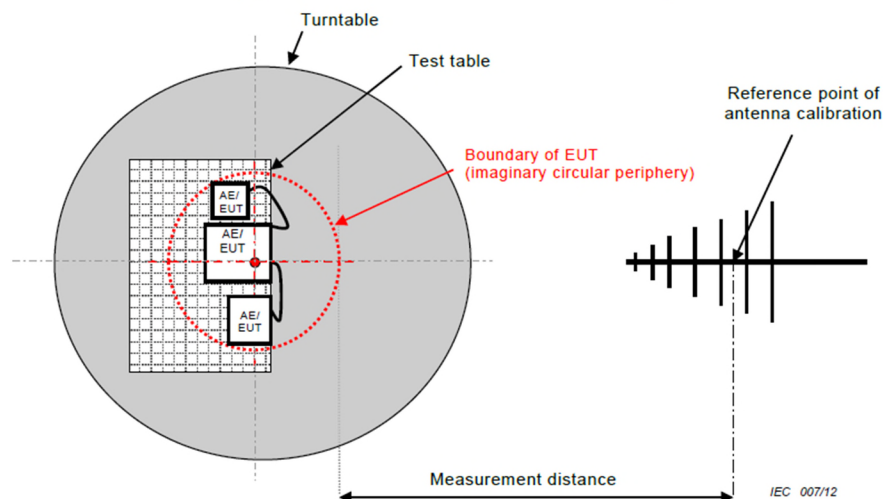
²Limit is with 1 MHz measurement bandwidth and using an Average detector

³Limit is with 1 MHz measurement bandwidth and using a Peak detector

Based on ANSI C63.4 Section 4.2, if the Peak detector measurements do not exceed the Quasi-Peak limits, where defined, then the EUT is deemed to have passed the requirements

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
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Typical Radiated Emissions Setup



Measurement Uncertainty

The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is $\pm 5.67\text{dB}$ for 30MHz – 1GHz and $\pm 4.58\text{dB}$ for 1GHz – 18GHz with a 'k=2' coverage factor and a 95% confidence level.


Preliminary Graphs

The graphs shown below are maximized peak measurement graphs measured with a resolution bandwidth greater than or equal to the final required detector over a full 0-360°. This peaking process is done as a worst case measurement and enables the detection of frequencies of concern for final measurement. For final measurements with the appropriate detector, where applicable, please refer to the tables under Final Measurements.

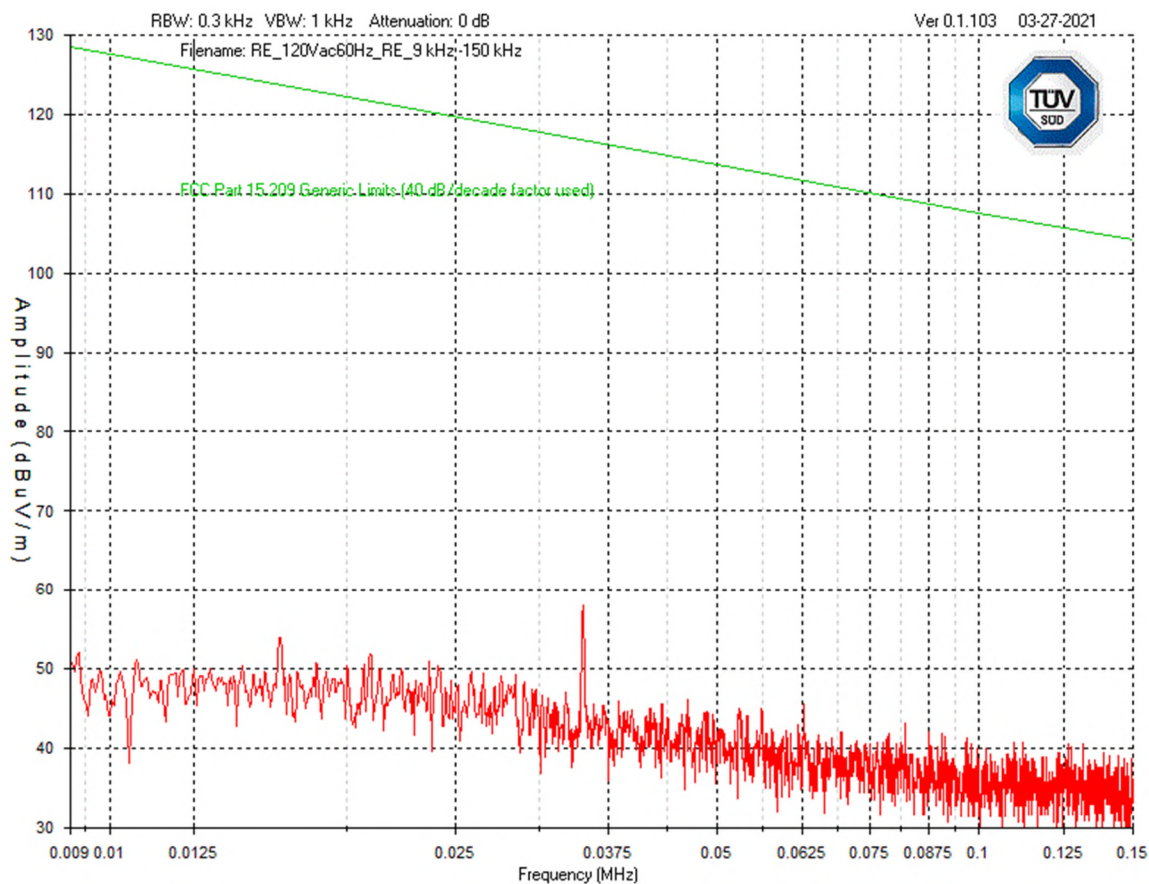
In accordance with FCC Part 15, Subpart A, Section 15.33, the device is scanned to at least the 10th harmonic. The transmitter is operation at 1.36 MHz but the EUT also contains a modularly certified 2.4 GHz transmitter. The device is therefore scanned to 25 GHz.


Devices scanned may be scanned at alternate test distances, and in accordance with FCC Part 15, Subpart A, Section 15.31(f), an extrapolation factor of 20 dB/decade was used above 30 MHz and 40 dB/decade below 30 MHz. For example, an extrapolation of 30m to 3m for frequencies below 30MHz is $20\text{Log}(uV/m) + 40\text{Log}(30m/3m)$.

The EUT was checked in three orthogonal axes. However, the worst case graphs are presented from the Y Axis.

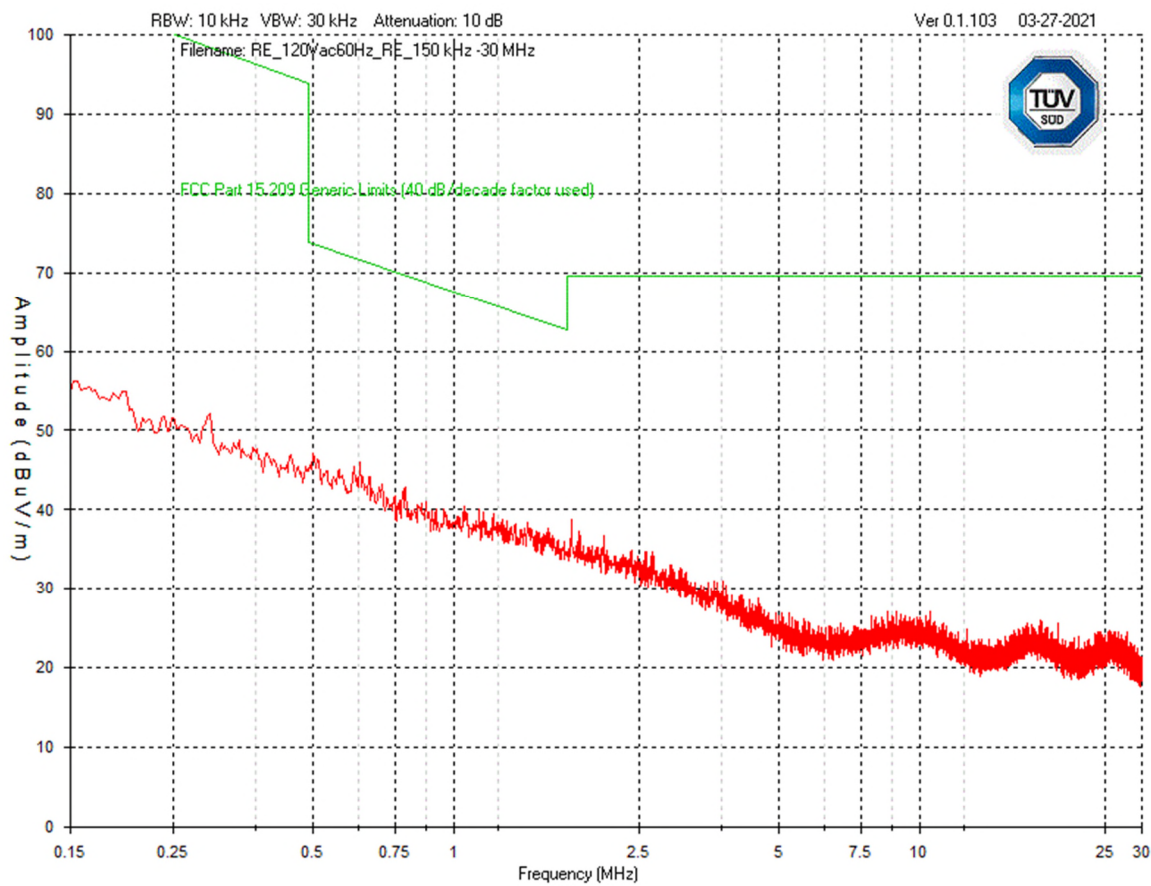
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9 kHz – 150 kHz
Peak Emission



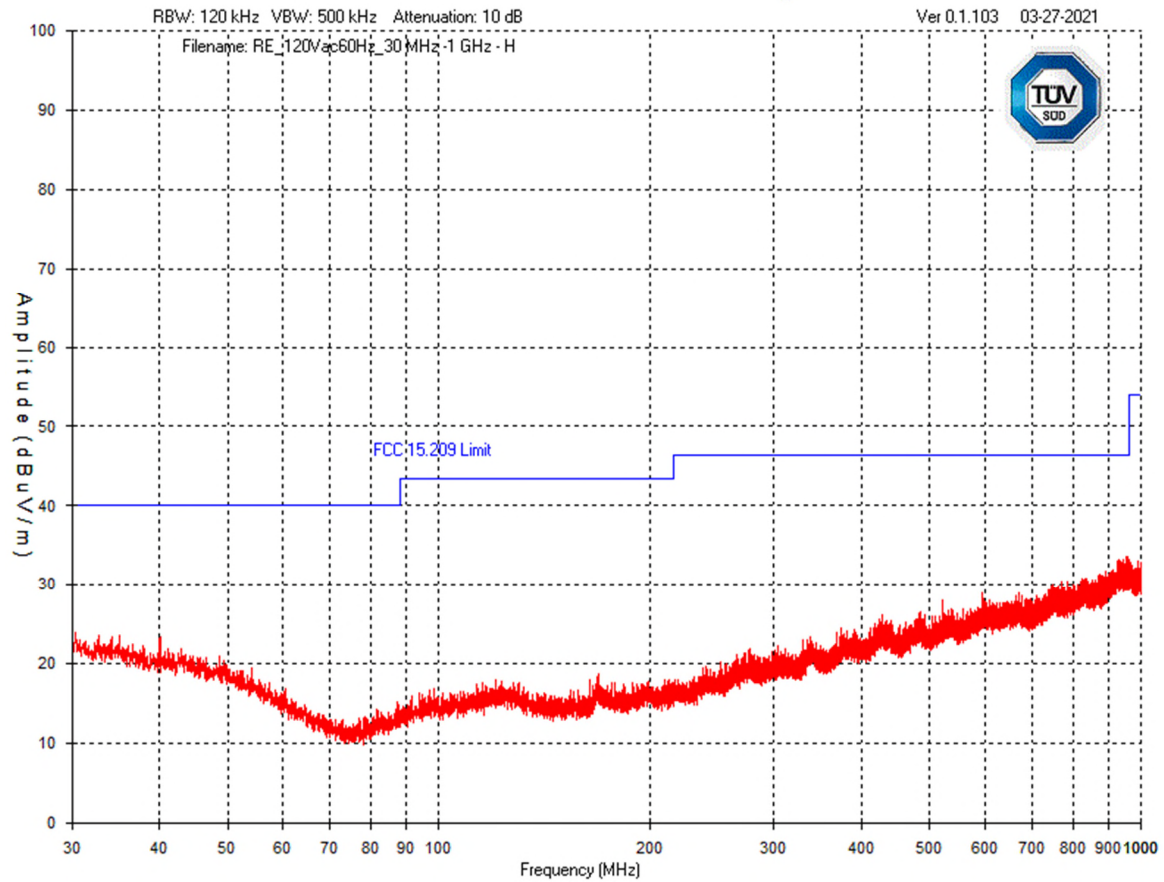
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150 kHz – 30 MHz
Peak Emission

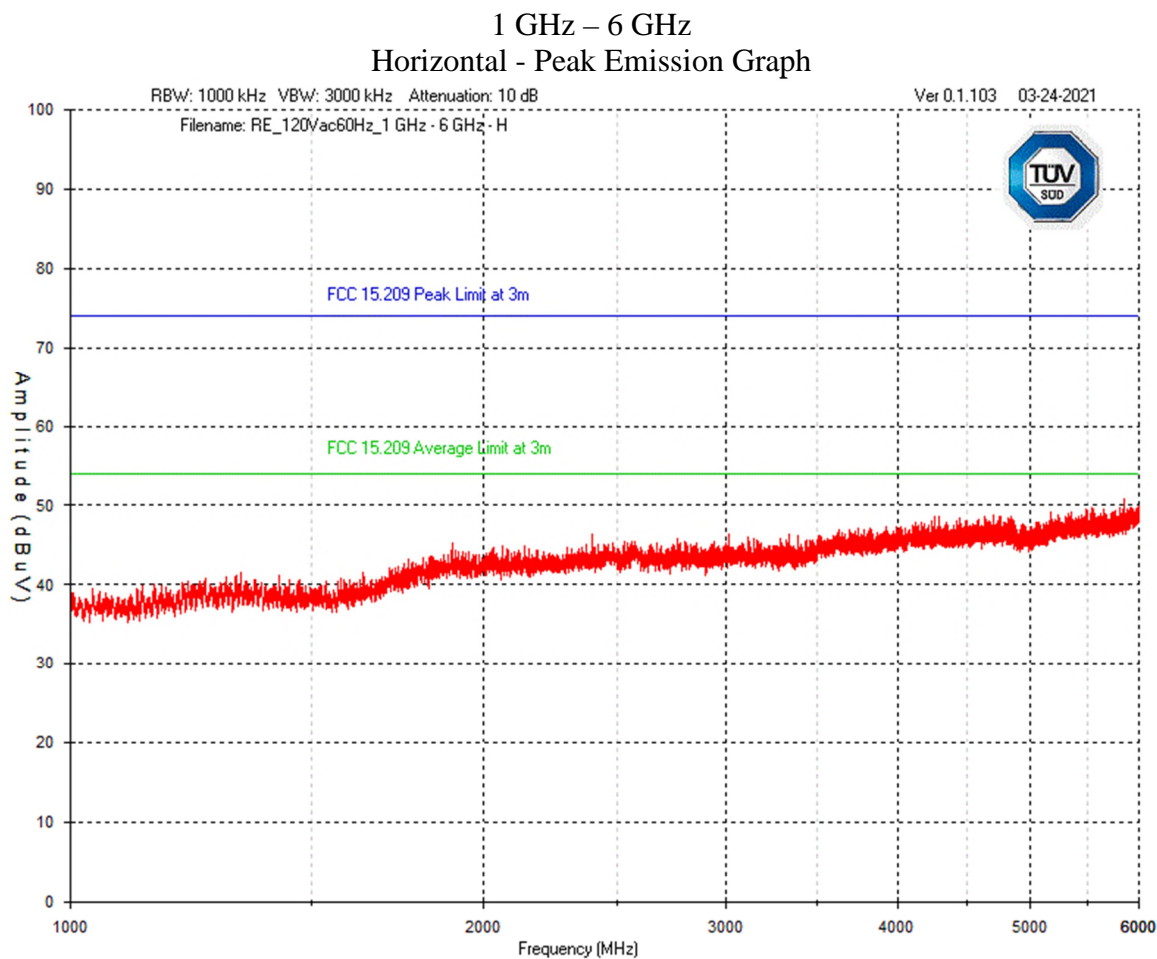



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30 MHz – 1 GHz
Horizontal - Peak Emission Graph

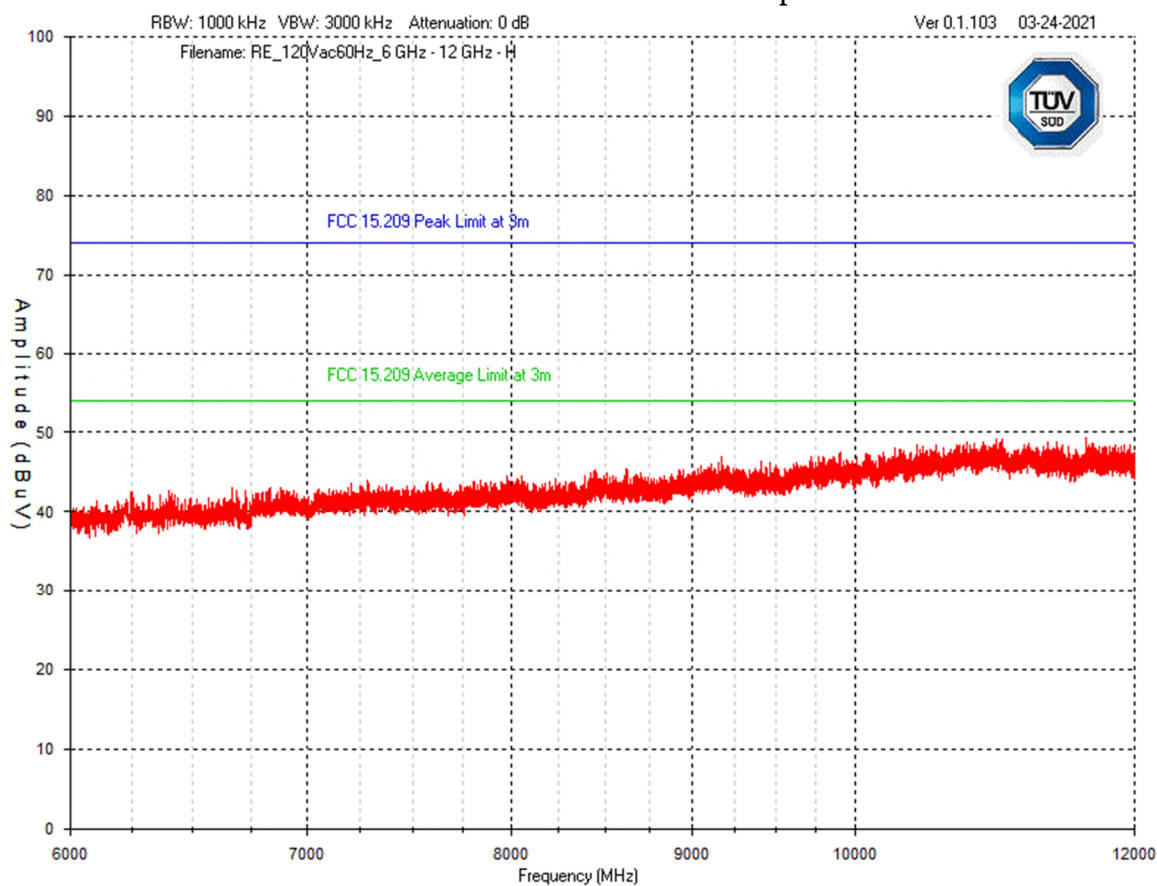



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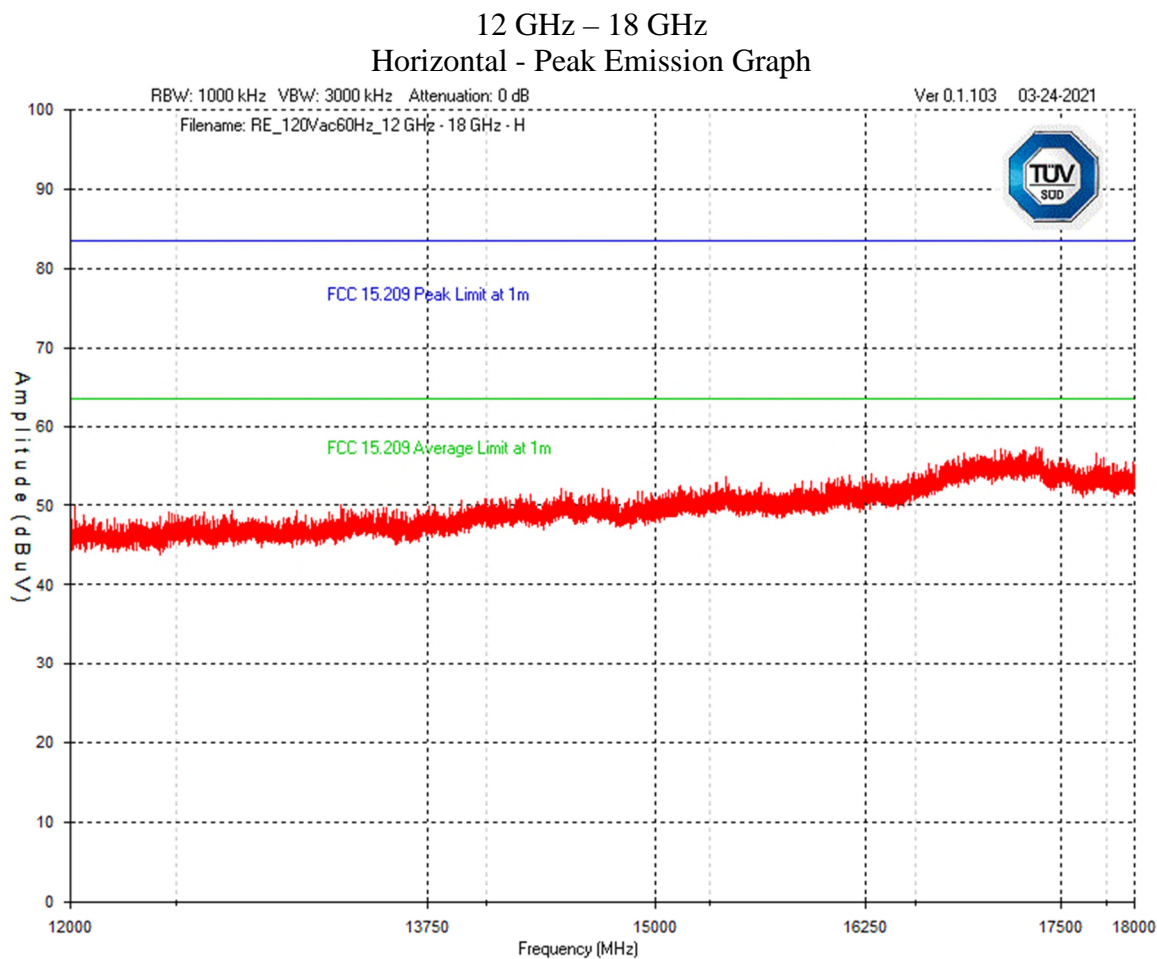


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6 GHz – 12 GHz Horizontal - Peak Emission Graph

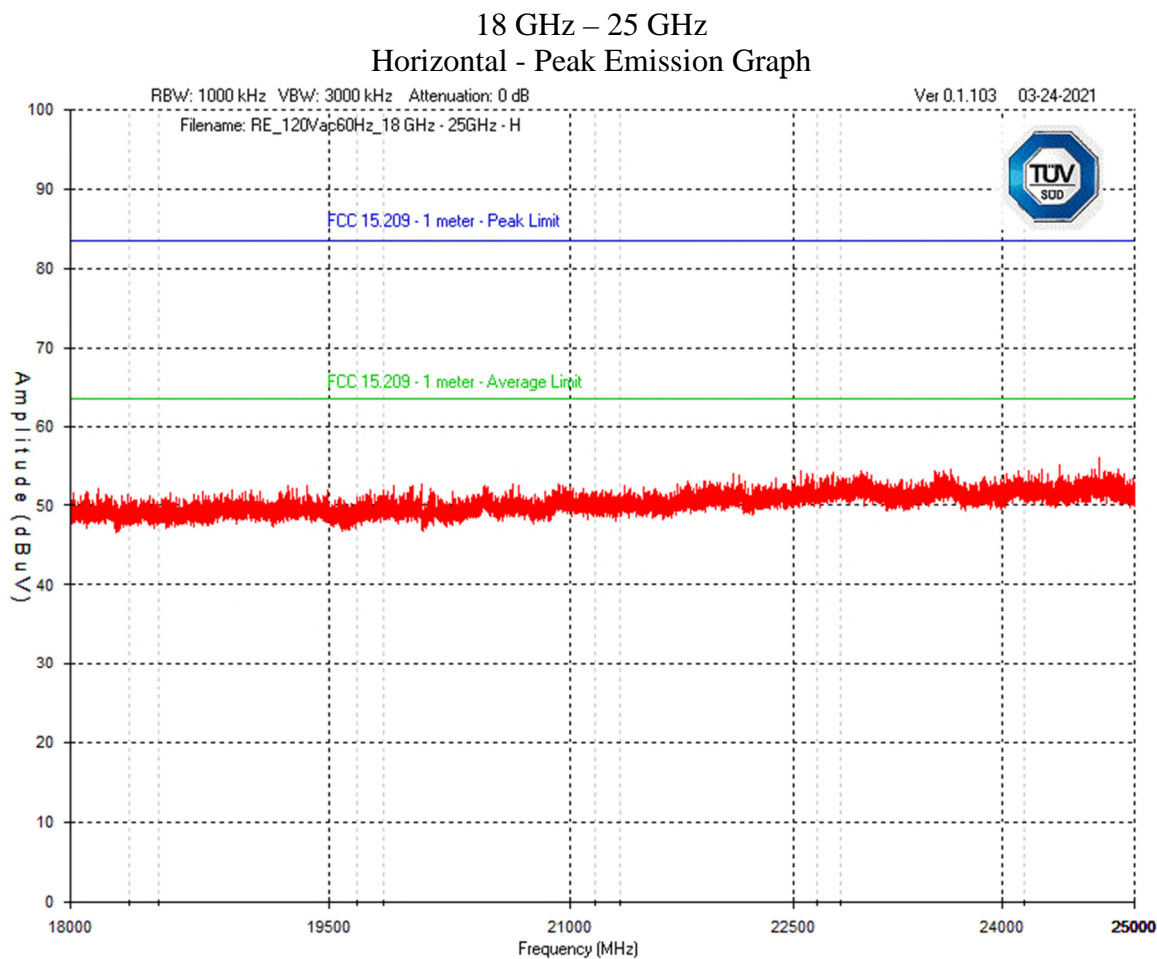


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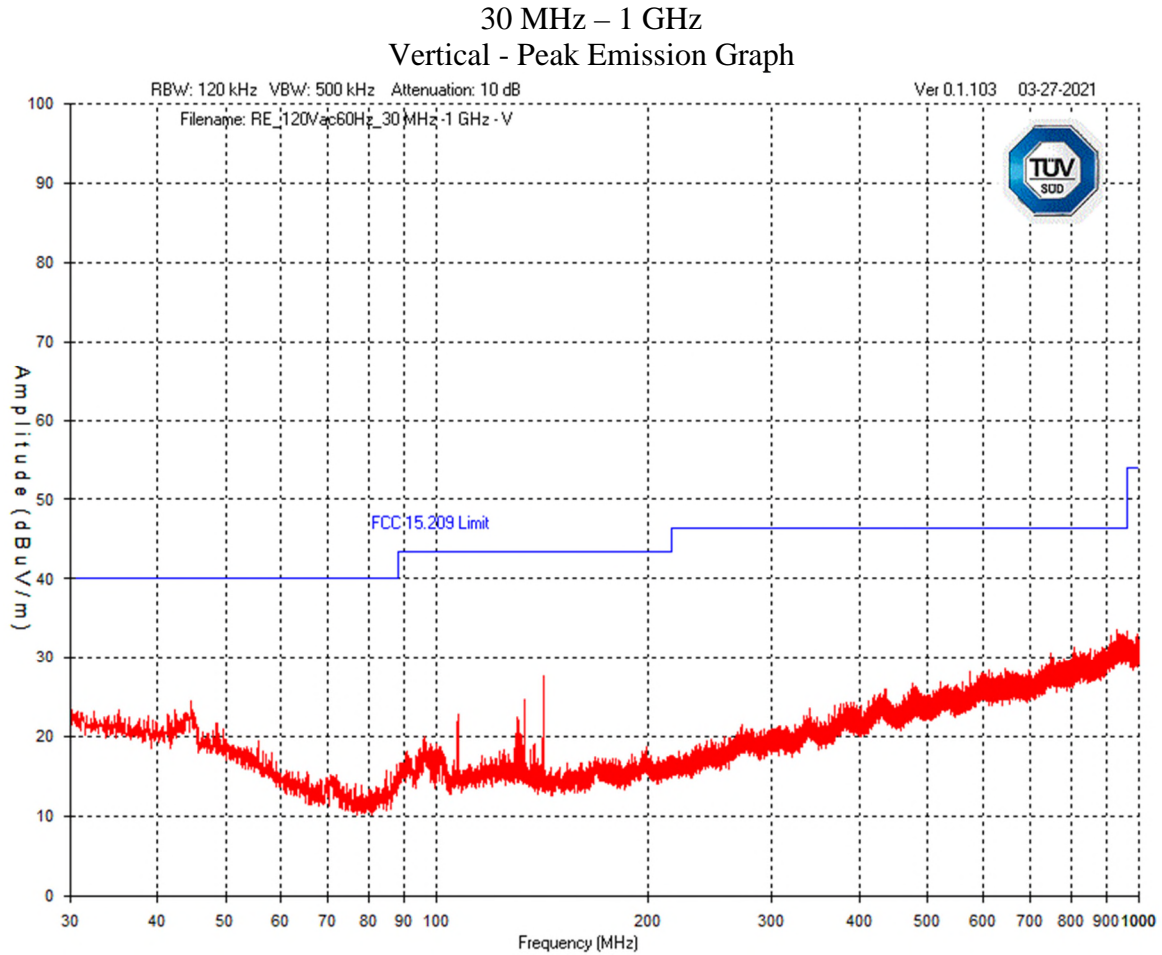
Plot was taken at a 1 meter distance. All emissions were noise floor of measurement instrument. No emissions were found in this frequency range.


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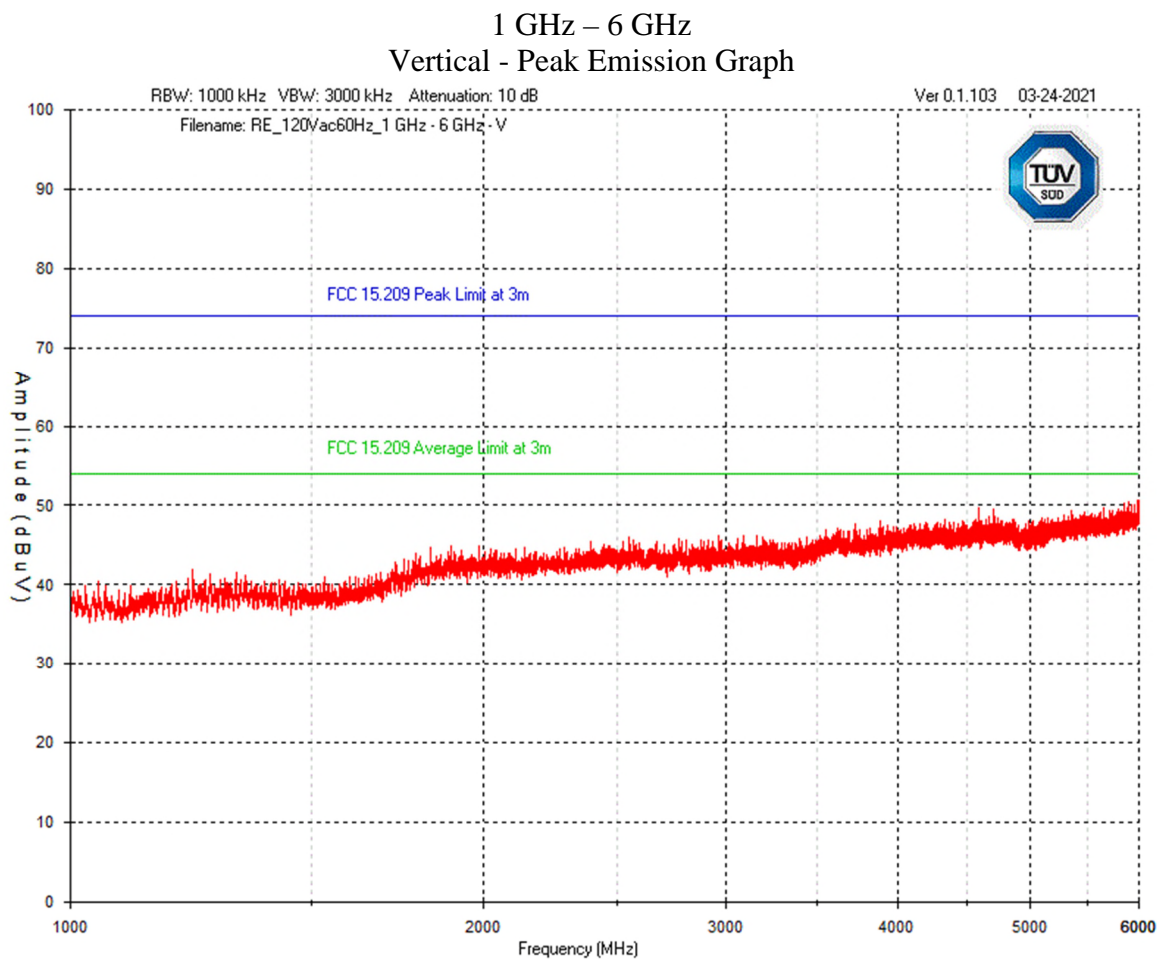



Plot was taken at a 1 meter distance. All emissions were noise floor of measurement instrument. No emissions were found in this frequency range.

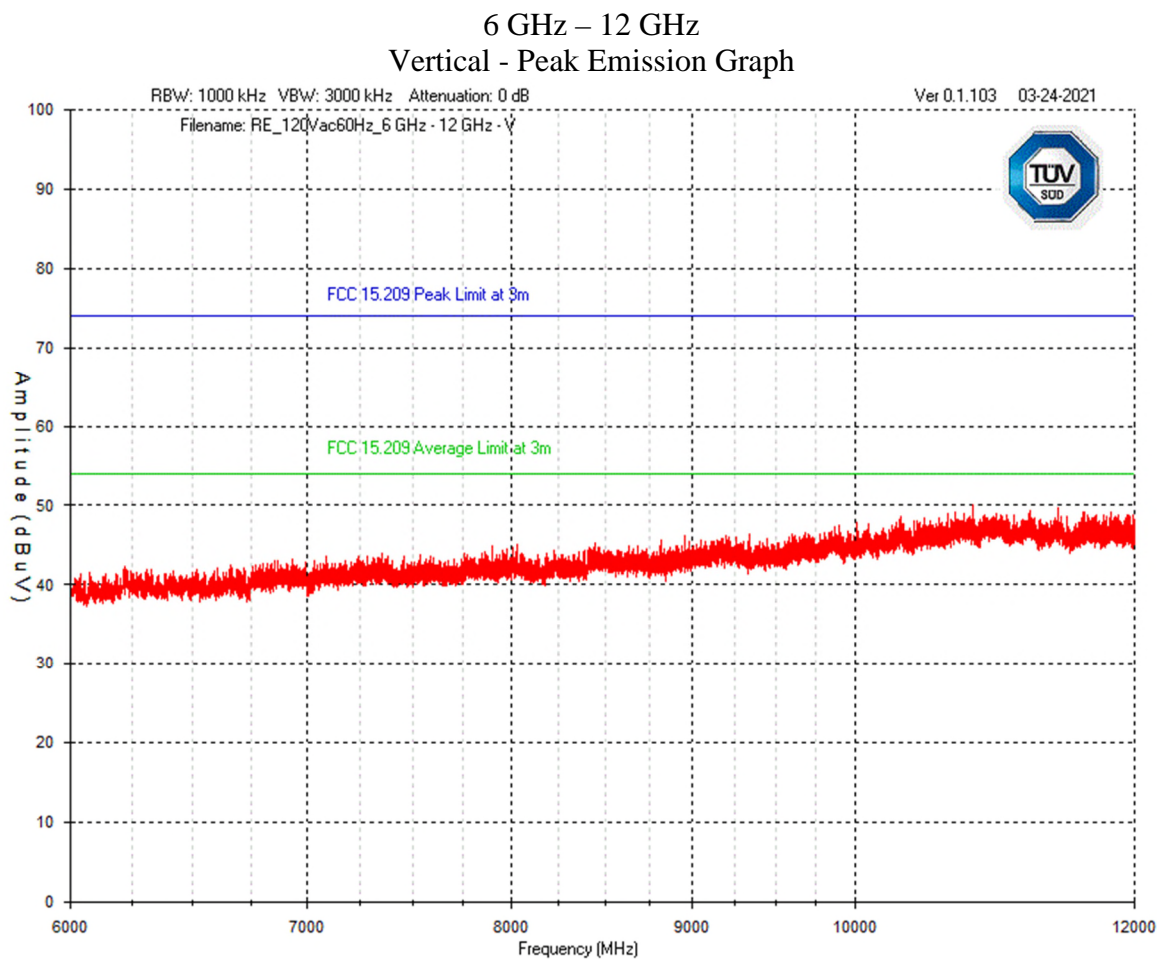
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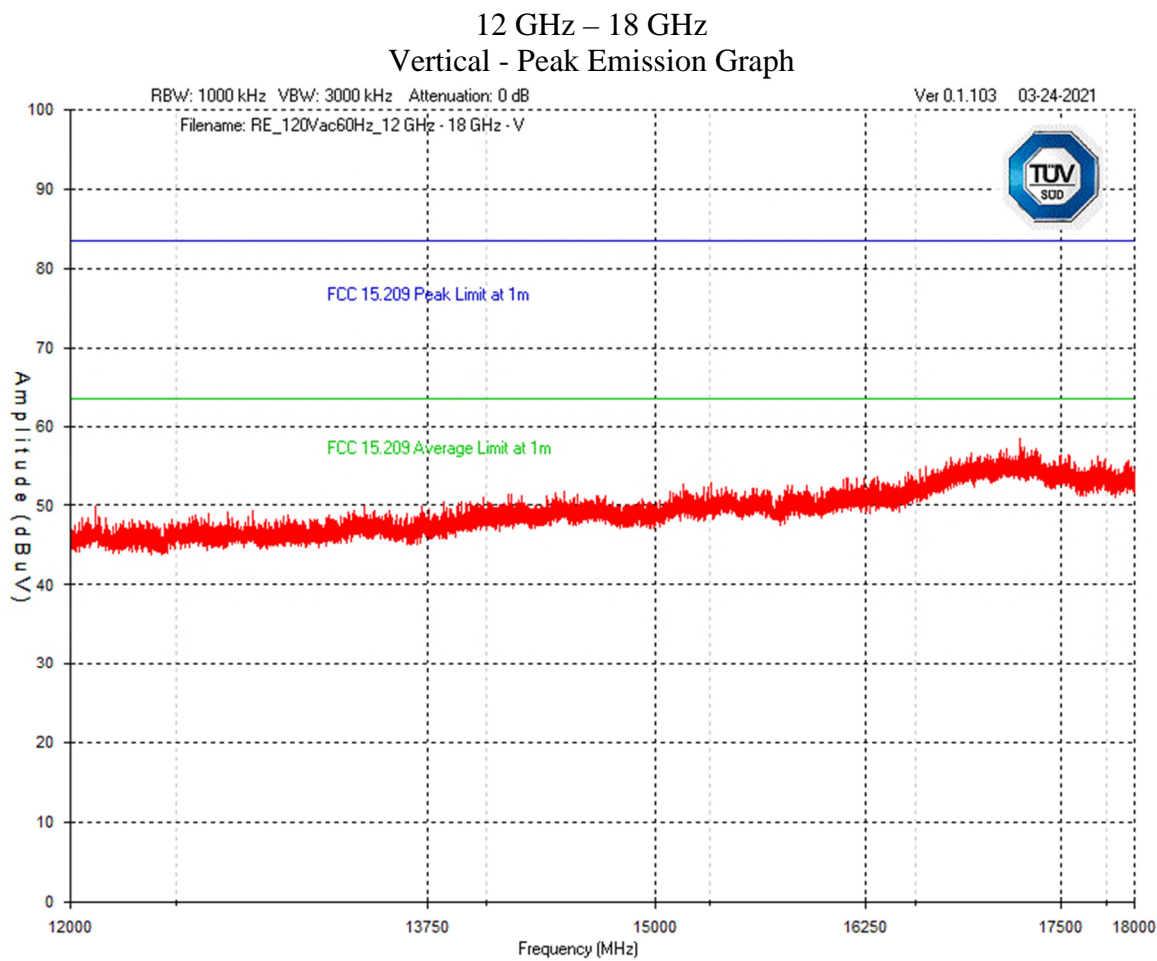
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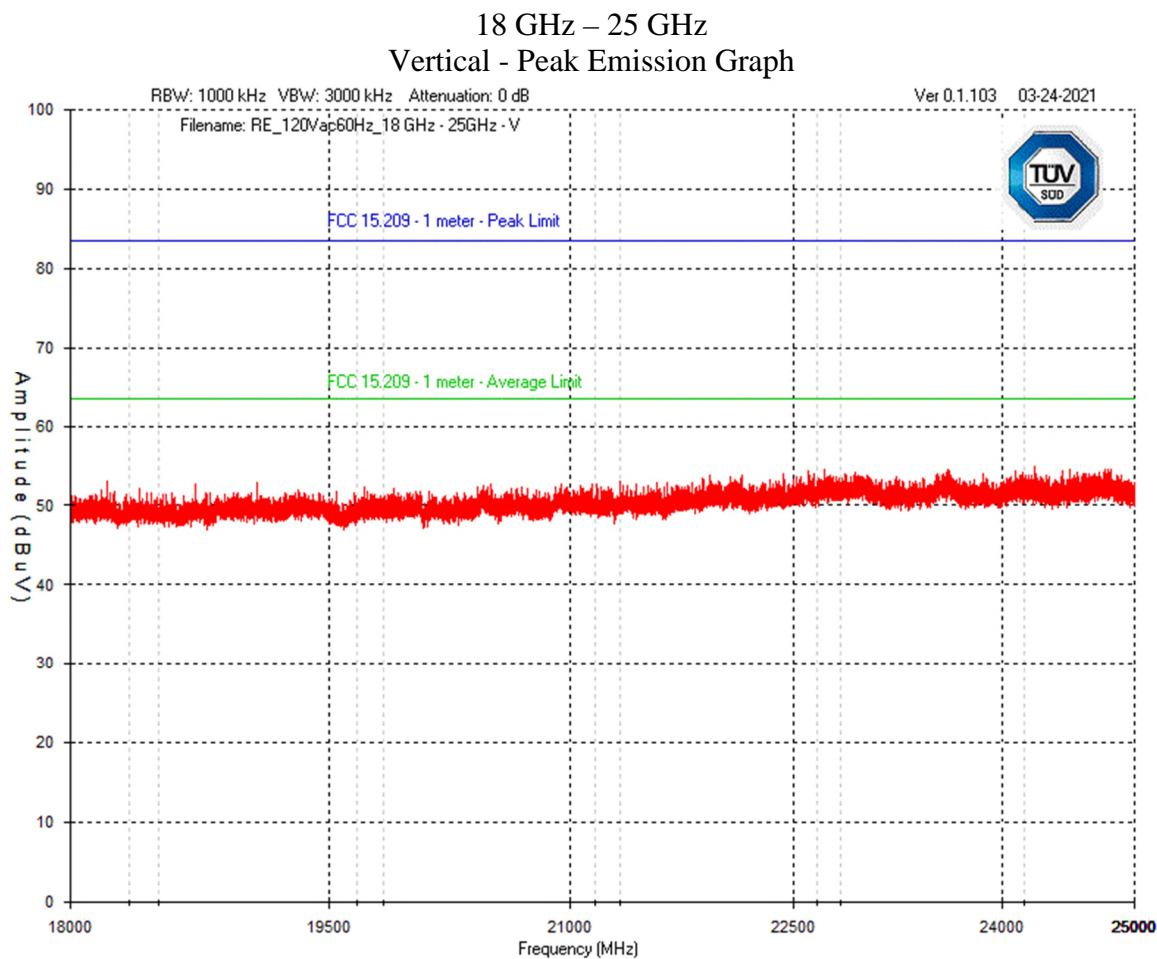


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Final Measurements

The EUT passed. All peak measurements are less than Quasi-Peak and Average limits.

See 'Appendix B – EUT and Test Setup Photos' for photos showing the test set-up for the highest radiated emission.

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESR 26	Rohde & Schwarz	Mar. 6, 2020	Mar. 6, 2022	GEMC 341
Spectrum Analyzer	ESU 40	Rohde & Schwarz	Jan. 15, 2020	Jan. 15, 2022	GEMC 233
BiLog Antenna	AC-220	Com-Power Corporation	Mar. 3, 2021	Mar. 3, 2023	GEMC 360
Loop Antenna	EM 6871	Electro-Metrics	Feb 26, 2021	Feb 26, 2023	GEMC 70
Loop Antenna	EM 6872	Electro-Metrics	Feb 26, 2021	Feb 26, 2023	GEMC 71
Horn Antenna 2 – 18 GHz	WBH218HN	Q-par	Apr. 1, 2020	Apr. 1, 2022	GEMC 6375
Horn Antenna 1 – 18 GHz	3117	ETS-Lindgren	Feb. 17, 2020	Feb. 17, 2022	GEMC 340
Attenuator 6 dB	6N5W-06	Inmet	NCR	NCR	GEMC 345
Pre-Amp 9 kHz – 1 GHz	LNA 6901	Teseq	Feb. 12, 2021	Feb. 12, 2023	GEMC 168
Pre-Amp 1 – 26.5 GHz	HP 8449B	HP	Aug. 4, 2020	Aug. 4, 2022	GEMC 312
RF Cable 10m	LMR-400-10M- 50Ω-MN-MN	LexTec	NCR	NCR	GEMC 27
RF Cable 3m	HP305S	Semflex	NCR	NCR	GEMC 310
Emissions Software	0.1.103	TUV SUD Canada, Inc.	NCR	NCR	GEMC 58

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Power Line Conducted Emissions

Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT's power line does not exceed the limits listed below as defined in the applicable test standard, as measured from a LISN. This helps protect lower frequency radio services such as AM radio, shortwave radio, amateur radio operators, maritime radio, CB radio, and so on, from unwanted interference.

Limits and Method


The limits are as defined in 47 CFR FCC Part 15 Section 15.207 and RSS-GEN Clause 8.8 Method is as defined in ANSI C63.10:2013

Average Limits		Quasi-Peak Limits	
150 kHz – 500 kHz	56 to 46* dB μ V	150 kHz – 500 kHz	66 to 56* dB μ V
500 kHz – 5 MHz	46 dB μ V	500 kHz – 5 MHz	56 dB μ V
5 MHz – 30 MHz	50 dB μ V	5 MHz – 30 MHz	60 dB μ V

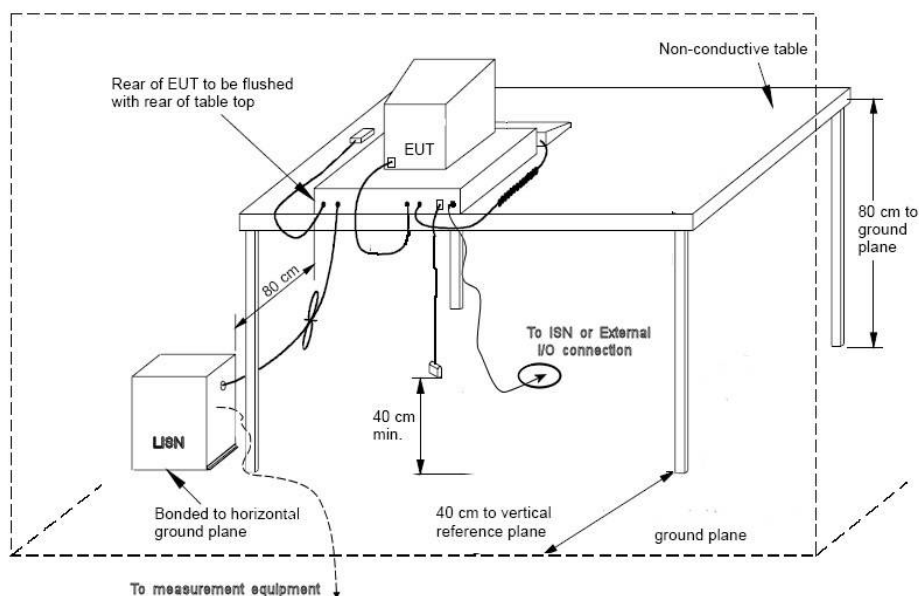
* Decreases linearly with the logarithm of the frequency

Both Quasi-Peak and Average limits are applicable and each is specified as being measured with a resolution bandwidth of 9 kHz. For Quasi-Peak, a video bandwidth at least three times greater than the resolution bandwidth is used.

Based on ANSI C63.4 Section 4.2, if the Peak or Quasi-Peak detector measurements do not exceed the Average limits, then the EUT is deemed to have passed the requirements.

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

Typical Setup Diagram




Measurement Uncertainty

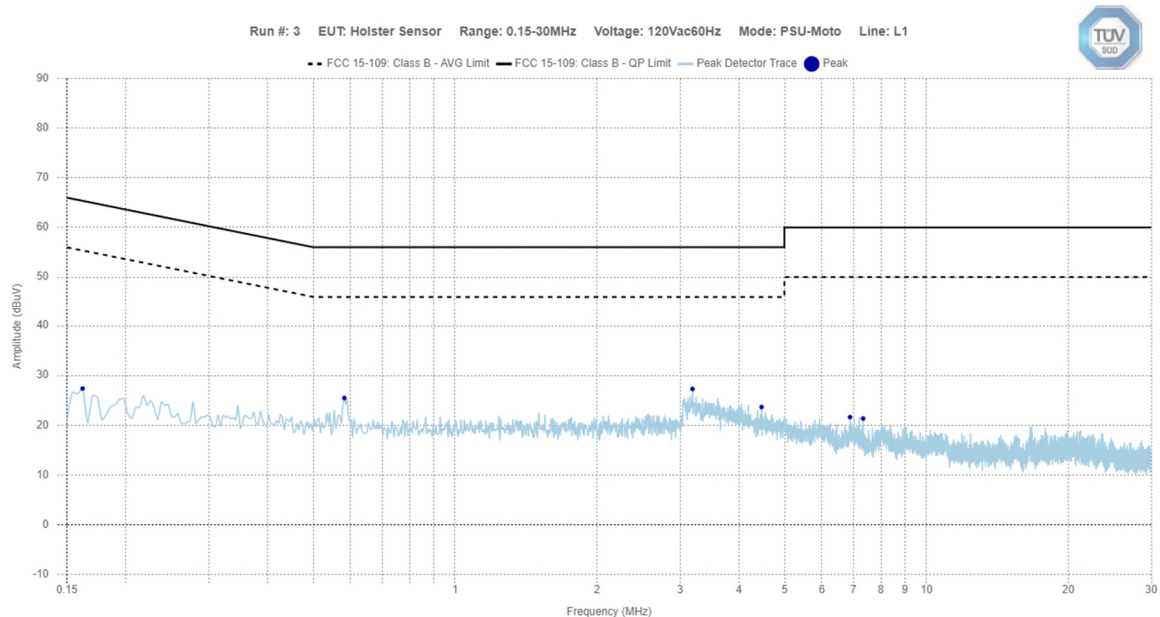
The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is $\pm 2.27\text{dB}$ with a 'k=2' coverage factor and a 95% confidence level.

Preliminary Graphs

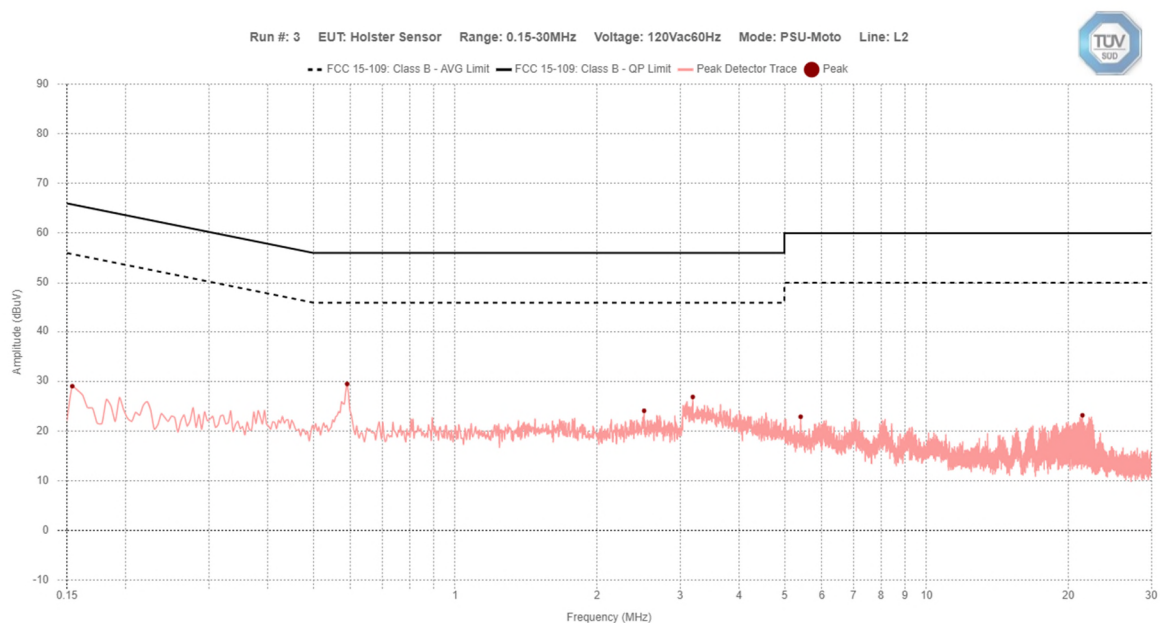
The graphs shown below are maximized peak measurement graphs measured with a resolution bandwidth greater than or equal to the final required detector. This peaking process is done as a worst case measurement and enables the detection of frequencies of concern for final measurement. For final measurements with the appropriate detector, where applicable, please refer to the tables under Final Measurements.

Client	Utility Associates, Inc.	 Canada
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	


Wall Wart Powered Mode



Line (L) – 120Vac 60Hz



Neutral (N) – 120Vac 60Hz

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

Final Measurements

Supply		120Vac60Hz						
Frequency (MHz)	Detector	Correction Factor (dB)	Level (dBμV)	FCC 15.107: Class B - AVG Limit (dBuV)	FCC 15.107: Class B - QP Limit (dBuV)	FCC 15.107: Class B - AVG Margin (dBuV)	FCC 15.107: Class B - QP Margin (dBuV)	Test Result
Line								
3.190	PEAK	10.2	27.3	46.0	56.0	18.7	28.7	Pass
0.582	PEAK	10.1	25.5	46.0	56.0	20.5	30.5	Pass
4.470	PEAK	10.2	23.7	46.0	56.0	22.4	32.4	Pass
0.162	PEAK	10.2	27.4	55.4	65.4	28.0	38.0	Pass
6.886	PEAK	10.2	21.6	50.0	60.0	28.4	38.4	Pass
7.342	PEAK	10.2	21.3	50.0	60.0	28.7	38.7	Pass
Neutral								
0.590	PEAK	10.1	29.4	46.0	56.0	16.6	26.6	Pass
3.194	PEAK	10.2	26.8	46.0	56.0	19.2	29.2	Pass
2.518	PEAK	10.2	24.0	46.0	56.0	22.0	32.0	Pass
0.154	PEAK	10.2	29.0	55.8	65.8	26.8	36.8	Pass
21.438	PEAK	10.7	23.1	50.0	60.0	26.9	36.9	Pass
5.410	PEAK	10.2	22.8	50.0	60.0	27.2	37.2	Pass

Average and Quasi-Peak Emissions Table


Note:

Peak = Peak measurement

AVG = Average measurement


QP = Quasi-Peak measurement

See 'Appendix B – EUT and Test Setup Photos' for photos showing the test set-up for the highest line conducted emission

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESL 6	Rohde & Schwarz	Feb. 12, 2021	Feb. 12, 2023	GEMC 160
LISN	FCC-LISN-50/250-16-2-01	FCC	Feb. 10, 2021	Feb. 10, 2023	GEMC 303
RF Cable 3m	LMR-400-3M-50Ω-MN-MN	LexTec	NCR	NCR	GEMC 276
Attenuator 10 dB	6N10W-10	Inmet	NCR	NCR	GEMC 350
Emissions Software	NOBLE EMC (V2.0.4)	TUV SUD Canada, Inc.	NCR	NCR	GEMC 361

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

20dB and 99% Occupied Bandwidth

Purpose

The purpose of this test is to verify that intentional radiators operating under the alternative provisions to the general emission limits are designed to ensure the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. This helps ensure the utilization of the frequency allocation and prevent corruption of data by ensuring adequate data separation to distinguish the reception of the intended information.


Limits and Method

The limit is as specified in RSS-GEN Section 6.6 and the method is given in ANSI C63.10.

Results

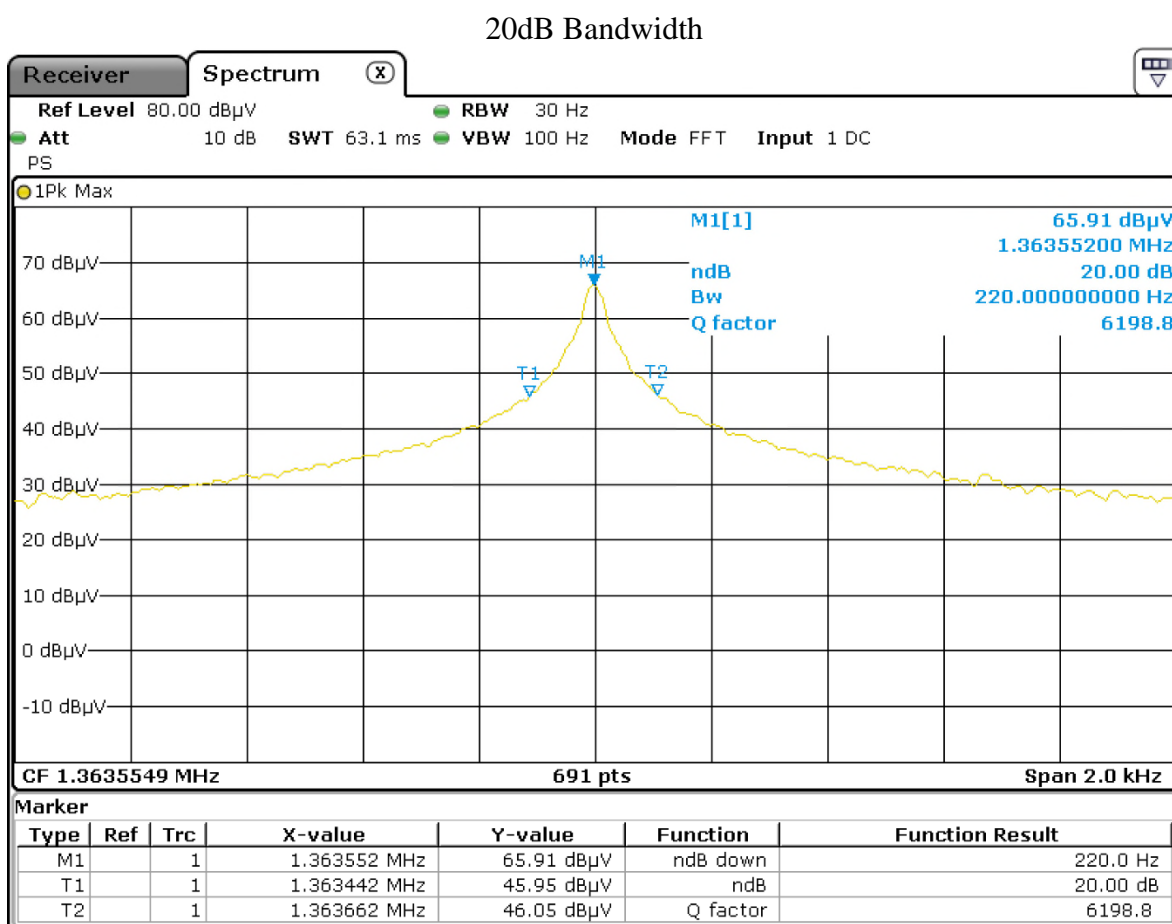
The EUT passed.

Carrier Frequency (MHz)	20dB Bandwidth (Hz)	99% Bandwidth (Hz)
1.363	220.0	527.2


Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
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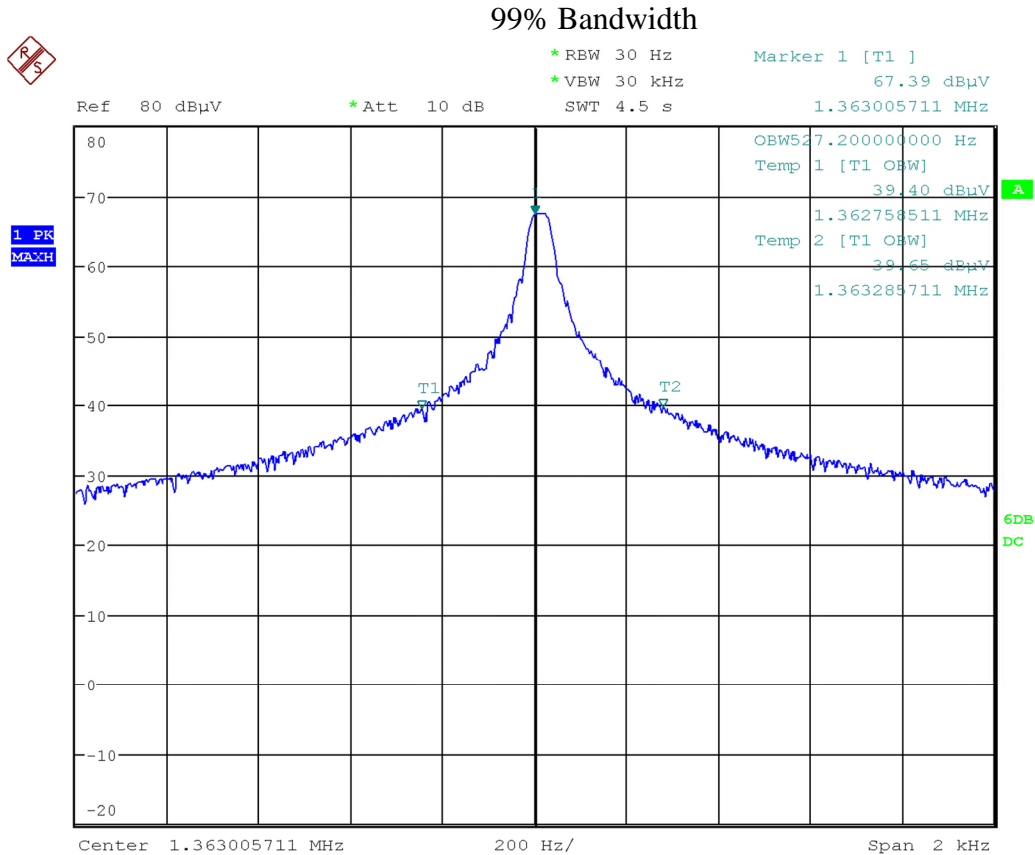
Graphs

The graphs showed below shows the OBW during the operation of the device. This is measured by a max hold on the spectrum analyzer and the highest resolution bandwidth that is sufficiently low to exhibit the bandwidth of a channel during operation of the EUT. Max hold is performed for a duration of not less than 1 minute.




Date: 26.APR.2021 17:25:19

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	




Date: 27.MAR.2021 14:47:25

Note: See 'Appendix B – EUT & Test Setup Photos' for photos showing the test set-up.


Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESR 26	Rohde & Schwarz	Mar. 6, 2020	Mar. 6, 2022	GEMC 341
Spectrum Analyzer	ESU 40	Rohde & Schwarz	Jan. 15, 2020	Jan. 15, 2022	GEMC 233
Loop Antenna	EM 6872	Electro-Metrics	Feb 26, 2021	Feb 26, 2023	GEMC 71
Pre-Amp 9 kHz – 1 GHz	LNA 6901	Teseq	Feb. 12, 2021	Feb. 12, 2023	GEMC 168
RF Cable 10m	LMR-400-10M- 50Ω-MN-MN	LexTec	NCR	NCR	GEMC 27
RF Cable 3m	HP305S	Semflex	NCR	NCR	GEMC 310

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	


Appendix A – EUT Summary

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	


For further details for filing purposes, refer to filing package.

General EUT Description

Client Details	
Organization / Address	Utility Associates, INC 250 E. Ponce de Leon Ave Suite 700 Decatur, GA 30030
Contact	Jon McChristian
Phone	919.308.5242
Email	jmcchristian@utility.com
EUT (Equipment Under Test) Details	
EUT Name (for report title)	Smart Holster Sensor
EUT Model / SN (if known)	HS01
Software version	V1
EUT is powered using	Battery USB-C charging port
Input voltage range(s) (V)	4.5 to 5.5 Vdc
Frequency range(s) (Hz)	32MHz XTAL, 1.4MHz coil sensor, 2.4G Bluetooth
Rated input current (A)	50mA
Nominal power consumption (W)	Less then 10mQ
Frequency of all clocks present in EUT	32MHz, 1.4Mhz
I/O cable description Specify length and type	1 charging cable
Peripherals required to exercise EUT Ex. Signal generator	Yes. Phone with nRF connect to establish BT connection for System CE and RE
Dimensions of product	L 49mm W 23mm H 9mm
Intentional Radiator Frequency	1.36 MHz
EUT Configuration	Wireless configured to transmit continuously at 100% duty cycle

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

Note the EUT is considered to have been received the date of the commencement of the first test, unless otherwise stated. For a close-up picture of the EUT, see ‘Appendix B – EUT and Test Setup Photos’.

Client	Utility Associates, Inc.	
Product	Smart Holster Sensor (Model: HS01)	
Standard(s)	RSS 210 Issue 10:2019 FCC Part 15 Subpart 15.209	

Appendix B – EUT and Test Setup Photos

See Test Setup Exhibit