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Ademco Inc. TEST REPORT

SCOPE OF WORK

EMC TESTING – SIXCOVA

REPORT NUMBER

105143098LEX-001.3

ISSUE DATE

10/3/2022

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2/22/2024

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DOCUMENT CONTROL NUMBER

Non-Specific EMC Report Shell Rev. December 2017
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EMC TEST REPORT (FULL COMPLIANCE)

Report Number: 105143098LEX-001.3

Project Number: G105143098

Report Issue Date: 10/3/2022

Report Revised Date: 2/22/2024

Model(s) Tested: SIXCOVA

**Variant Model Not Tested but Declared Electrically
Identical by the Manufacturer:**

PROSIXCOV

Standards: Title 47 CFR Part 15 Subpart B
Title 47 CFR Part 15.247
RSS-247 Issue 2
RSS-Gen Issue 5
ICES-003 Issue 7 (Limited to verification of radiated
spurious emissions)

Tested by:
Intertek Testing Services NA, Inc.
731 Enterprise Dr.
Lexington, KY 40510
USA

Client:
Ademco Inc.
2 Corporate Center Dr.
Suite 100
Melville, NY 11747
USA

Report prepared by



Seth Parker, Associate Engineer

Report reviewed by



Brian Lackey, Team Leader

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results, and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
7	EIRP and Output Power (FCC Part 15.247(b)(3), RSS-247 Issue 2 § 5.4)	Pass
8	Receiver Spurious Emissions (ANSI C63.4: 2014)	Pass
9	Transmitter Spurious Emissions (FCC Part 15.247(d), RSS-247 Issue 2 § 5.5)	Pass
10	Revision History	



3 Client Information

This product was tested at the request of the following:

Client Information	
Client Name:	Ademco Inc.
Address:	2 Corporate Center Dr. Suite 100 Melville, NY 11747 USA
Contact:	Christian Fourth
Email:	Christian.fouth@resideo.com
Manufacturer Information	
Manufacturer Name:	Ademco Inc.
Manufacturer Address:	2 Corporate Center Dr. Suite 100 Melville, NY 11747 USA



4 Description of Equipment under Test and Variant Models

Equipment Under Test	
Product Name	Smoke / CO Detector
Model Numbers	SIXCOVA
Receive Date	8/11/2022
Test Start Date	8/11/2022
Test End Date	1/12/2023
Device Received Condition	Good
Test Sample Type	Production
Rated Voltage	3V Battery
Test Channel(s)	Channel 11 – 2405 MHz Channel 19 – 2445 MHz Channel 25 – 2475 MHz
Description of Equipment Under Test (provided by client)	
The Smoke / CO Detector is a battery powered device with wireless (RF6) connectivity to home security panels.	

4.1 Variant Models:

The following variant models were not tested as part of this evaluation but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

- PROSIXCOV – Declared by the manufacturer to be electrically identical as the model tested.



5 System Setup and Method

5.1 Method:

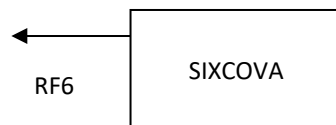
Configuration as required by ANSI C63.4: 2014 and ANSI C63.10:2020

No.	Descriptions of EUT Exercising
1	The SIXCOVA was operated in battery mode and configured to transmit on a low, mid, or high channel on transmit antenna 1 or transmit antenna 2.
2	The SIXCOVA was operated in battery mode and configured so that the radio was idle and not transmitting.

Cables					
Qty	Description	Length (m)	Shielding	Ferrites	Termination
None					

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
None			

5.2 EUT Block Diagram:

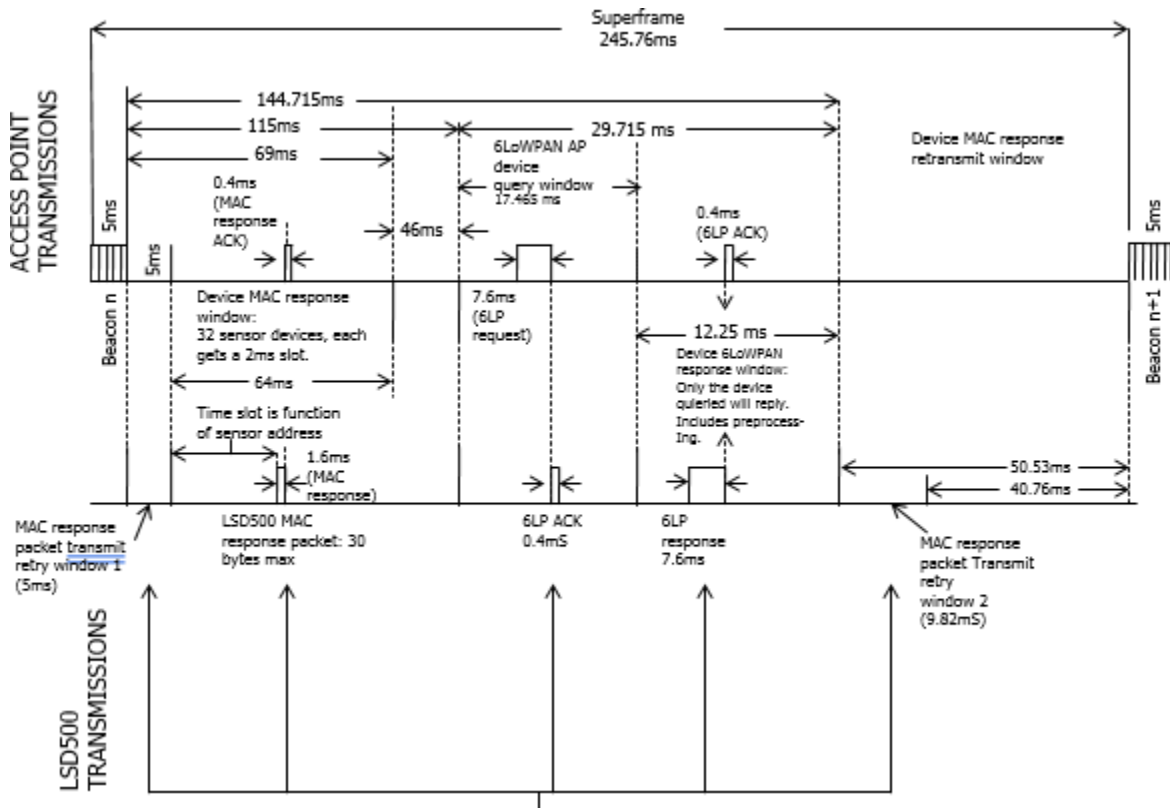




6 Duty Cycle Correction Factor

The following information was provided by the client. Any deviation from these values may affect compliance. Intertek makes no claims of compliance for values not measured.

The Access Point (coordinator) generates a beacon every 245.76ms (superframe). As shown in the figure, the duration of the beacon is 5ms.



In the worst case, these four RF6 transmissions may occur within a 100ms window:

Retry Packet 1: 30 Bytes @ 250 kbps = $(30 * 8) * (1 / [250 * 10^3]) = 960 \mu\text{S}$

Alarm Packet: 30 Bytes @ 250 kbps = $(30 * 8) * (1 / [250 * 10^3]) = 960 \mu\text{S}$

Retry Packet 2: 30 Bytes @ 250 kbps = $(30 * 8) * (1 / [250 * 10^3]) = 960 \mu\text{S}$

6LowPan Packet: 128 Bytes @ 250 kbps = $(128 * 8) * (1 / [250 * 10^3]) = 4096 \mu\text{S}$

The Total Transmit Time is:

Retry Packet 1 (960uS) + Alarm Packet (960uS) + Retry Packet 2 (960uS) + 6LowPan Packet (4096uS)
 = 960 uS + 960 uS + 960 uS + 4096 uS = **6.976 ms**

Duty cycle for purposes of calculating average radiated emissions is thus 6.976ms/100ms = 6.976%.

The Duty Cycle Correction Factor is therefore calculated as $20\log_{10}(6.976/100) = -23.12\text{dB}$ which will be applied to peak measurement results when an average amplitude value is required to demonstrate compliance.



7 EIRP and Output Power

7.1 Test Limits

FCC Part 15.247(b)(3):

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

RSS-247 Issue 2 § 5.4:

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

7.2 Test Method

Test are performed in accordance with ANSI C63.10:2020.

7.3 Test Equipment Used:

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	3900	Rohde & Schwarz	ESU40	10/3/2022	10/3/2023

7.4 Test Results

The sample tested was found to be **compliant**. The maximum conducted output power was less than 1W. The maximum EIRP was less than 4W.



7.5 Test Conditions

Test Personnel:	<u>Seth Parker</u>	Test Date:	<u>1/12/2023</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>		<u>1W (conducted)</u>
	<u>FCC Part 15.247</u>	Limit Applied:	<u>4W (EIRP)</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient		Atmospheric Pressure:	<u>985.4mbar</u>
Signals or BB Source:	<u>Yes</u>		

Deviations, Additions or Exclusions: None

7.6 Test Data

Antenna	Frequency (MHz)	Conducted Output Power (dBm)	Conducted Output Power (W)	Antenna Gain ¹ (dBi)	EIRP (dBm)	EIRP (W)
1	2405	18.99	0.0793	1.49	20.48	0.1117
	2445	19.40	0.0871	1.14	20.54	0.1132
	2475	19.64	0.0920	1.39	21.03	0.1268
2	2405	19.10	0.0813	1.77	20.87	0.1222
	2445	19.38	0.0867	1.59	20.97	0.1250
	2475	19.53	0.0897	1.92	21.45	0.1396

¹ Antenna gain was taken from the resideo Antenna Gain and Pattern Measurement Report, issue Feb 21st, 2024, provided by the client. Any deviations from these values may affect compliance. Intertek does not make any claims of compliance for values other than those shown.



7.7 Conducted Output Power Spectrum Plots

7.7.1 Low, Antenna 1

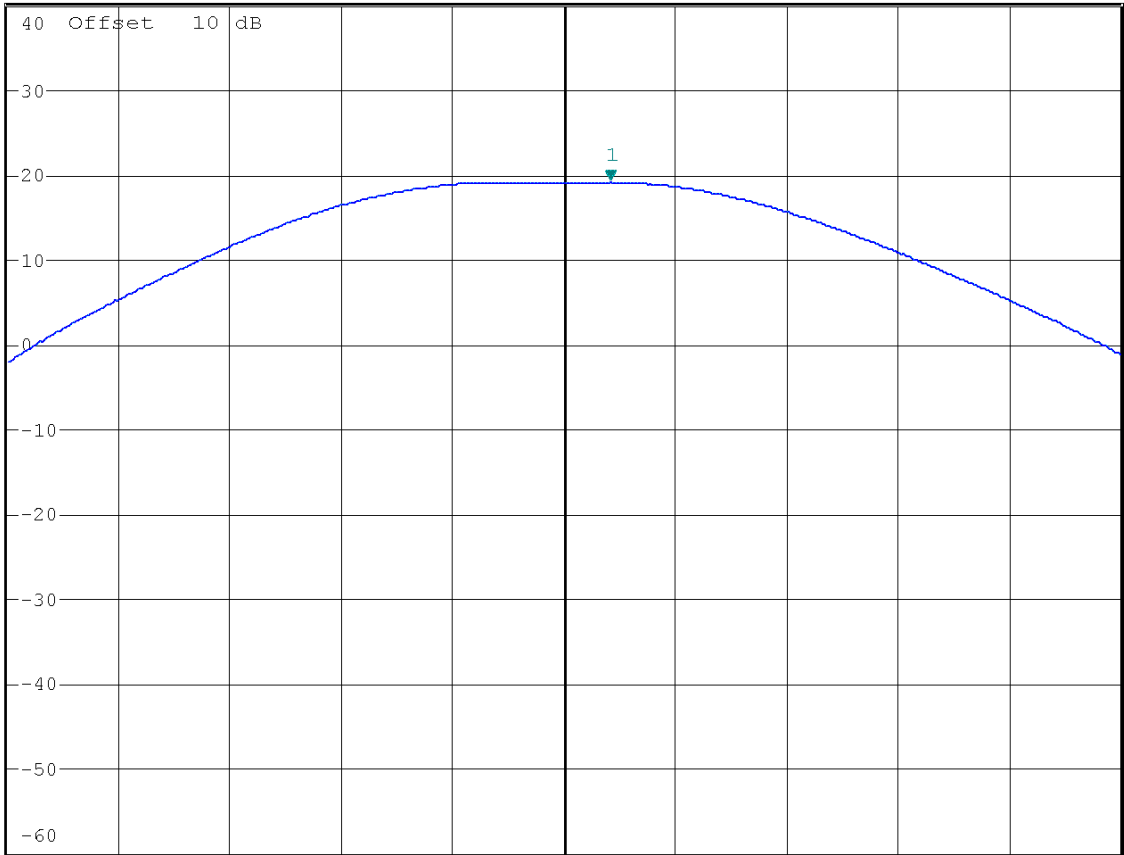


* RBW 3 MHz Marker 1 [T1]
VBW 10 MHz 18.99 dBm
SWT 2.5 ms 2.405416667 GHz

Ref 40 dBm

* Att 35 dB

1 PK
VIEW



Center 2.405 GHz

1 MHz/

Span 10 MHz

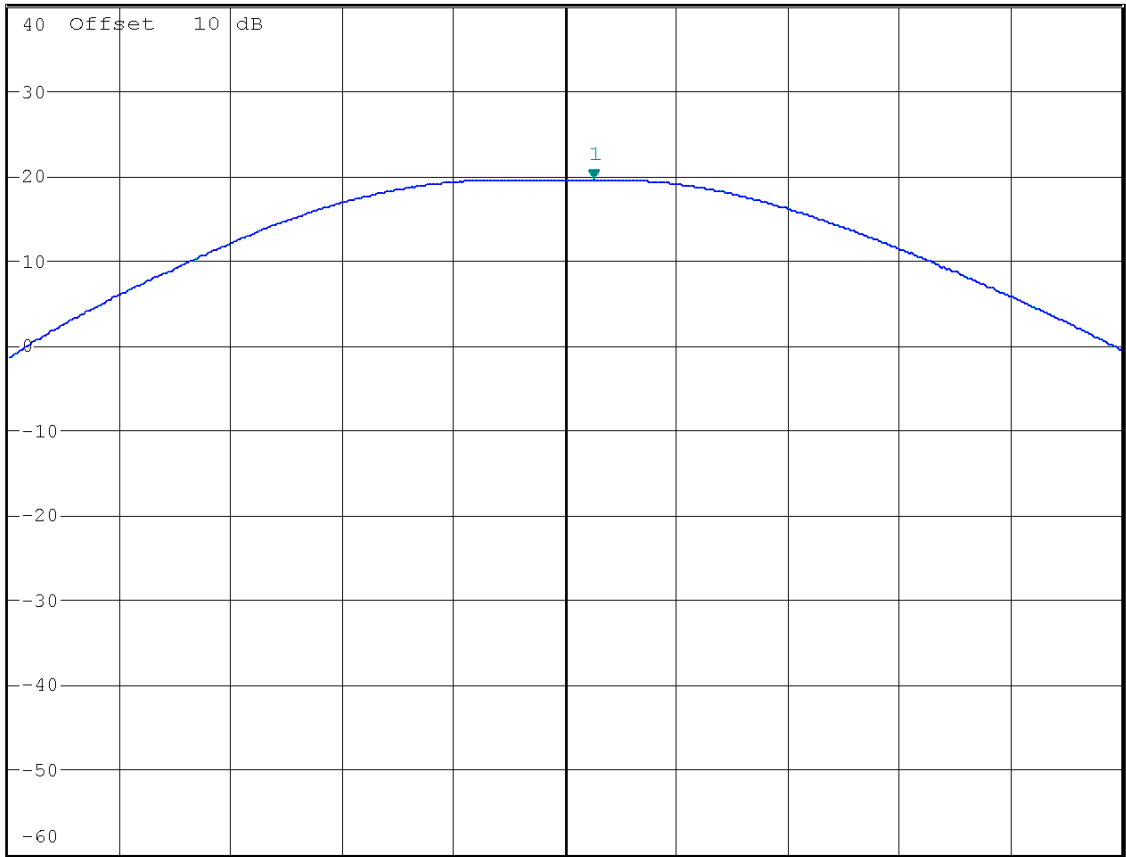


7.7.2 Mid, Antenna 1



Ref 40 dBm *Att 35 dB *RBW 3 MHz Marker 1 [T1]
VBW 10 MHz 19.40 dBm
SWT 2.5 ms 2.445256410 GHz

1 PK
VIEW



Center 2.445 GHz 1 MHz/ Span 10 MHz



7.7.3 High, Antenna 1



* RBW 3 MHz

Marker 1 [T1]

VBW 10 MHz

19.64 dBm

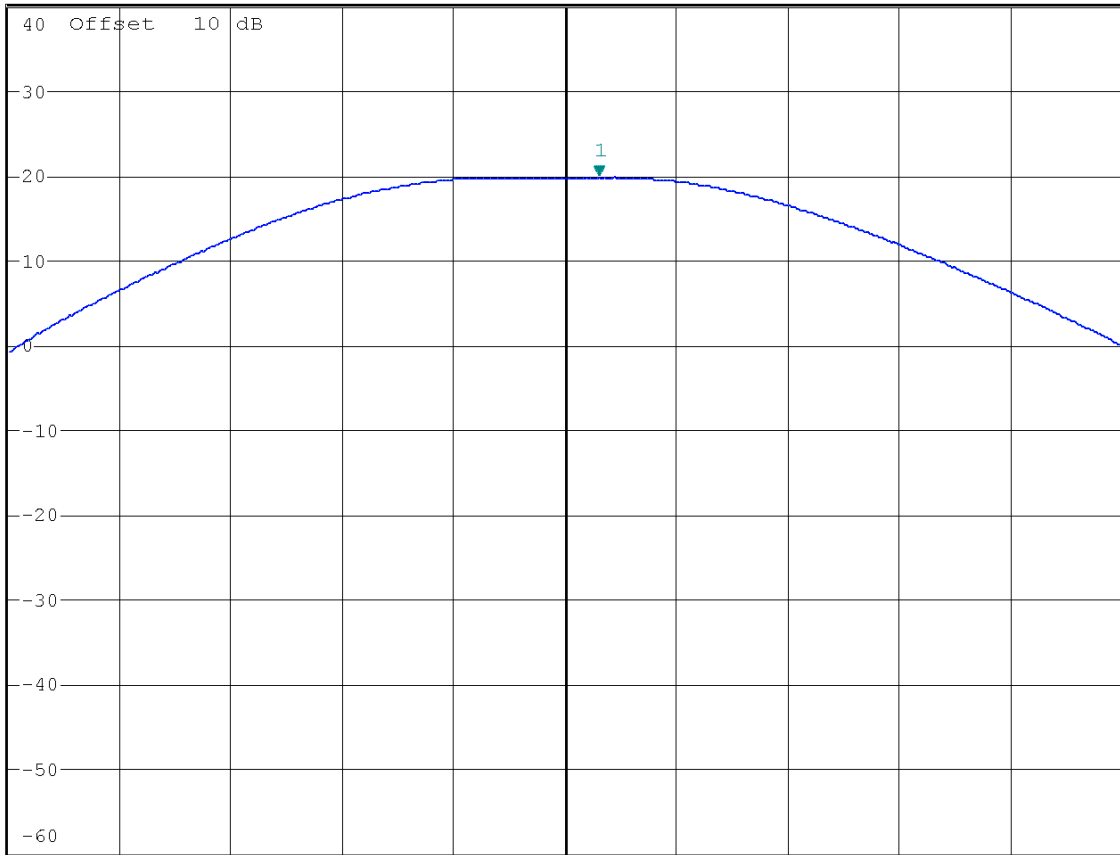
SWT 2.5 ms

2.475304487 GHz

Ref 40 dBm

* Att 35 dB

1 PK
VIEW



Center 2.475 GHz

1 MHz/

Span 10 MHz

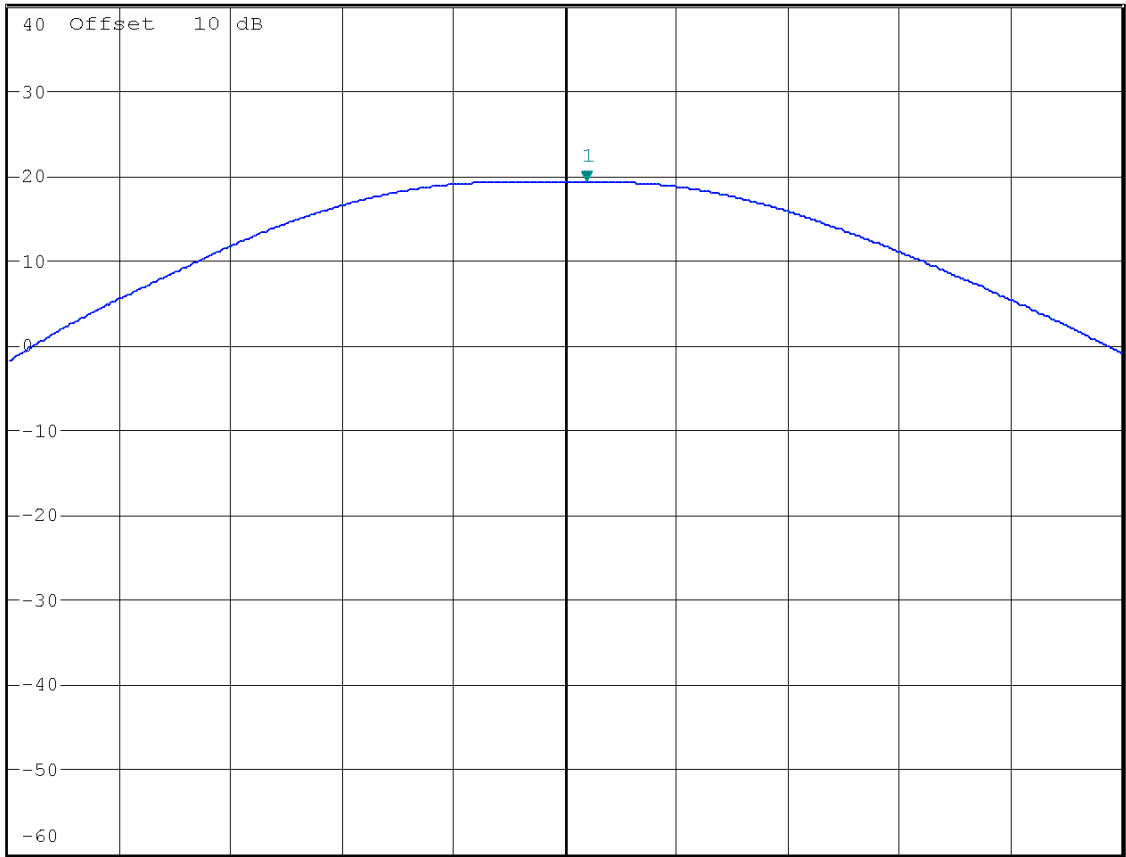


7.7.4 Low, Antenna 2



Ref 40 dBm *Att 35 dB *RBW 3 MHz Marker 1 [T1] 19.10 dBm
VBW 10 MHz SWT 2.5 ms 2.405192308 GHz

1 PK
VIEW



Center 2.405 GHz 1 MHz/ Span 10 MHz



7.7.5 Mid, Antenna 2



* RBW 3 MHz

Marker 1 [T1]

VBW 10 MHz

19.38 dBm

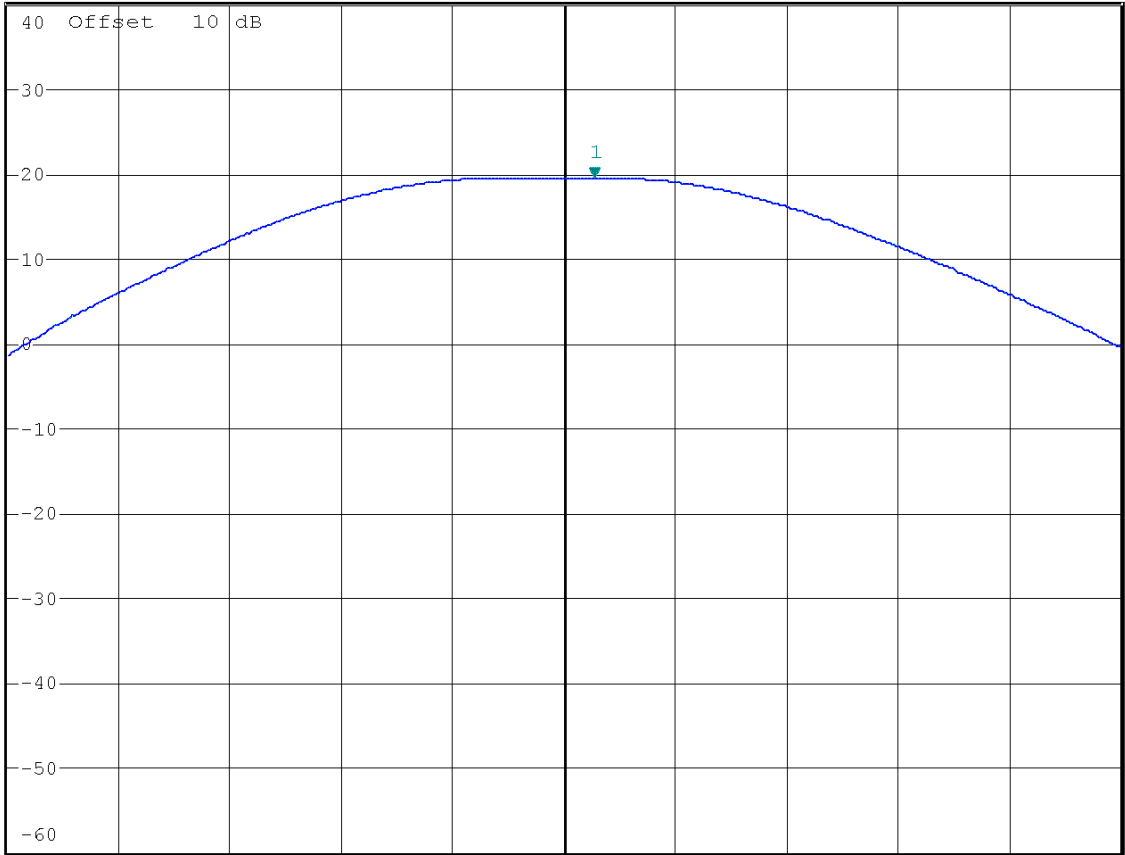
SWT 2.5 ms

2.445272436 GHz

Ref 40 dBm

* Att 35 dB

1 PK
VIEW



Center 2.445 GHz

1 MHz/

Span 10 MHz



7.7.6 High, Antenna 2



* RBW 3 MHz

Marker 1 [T1]

VBW 10 MHz

19.53 dBm

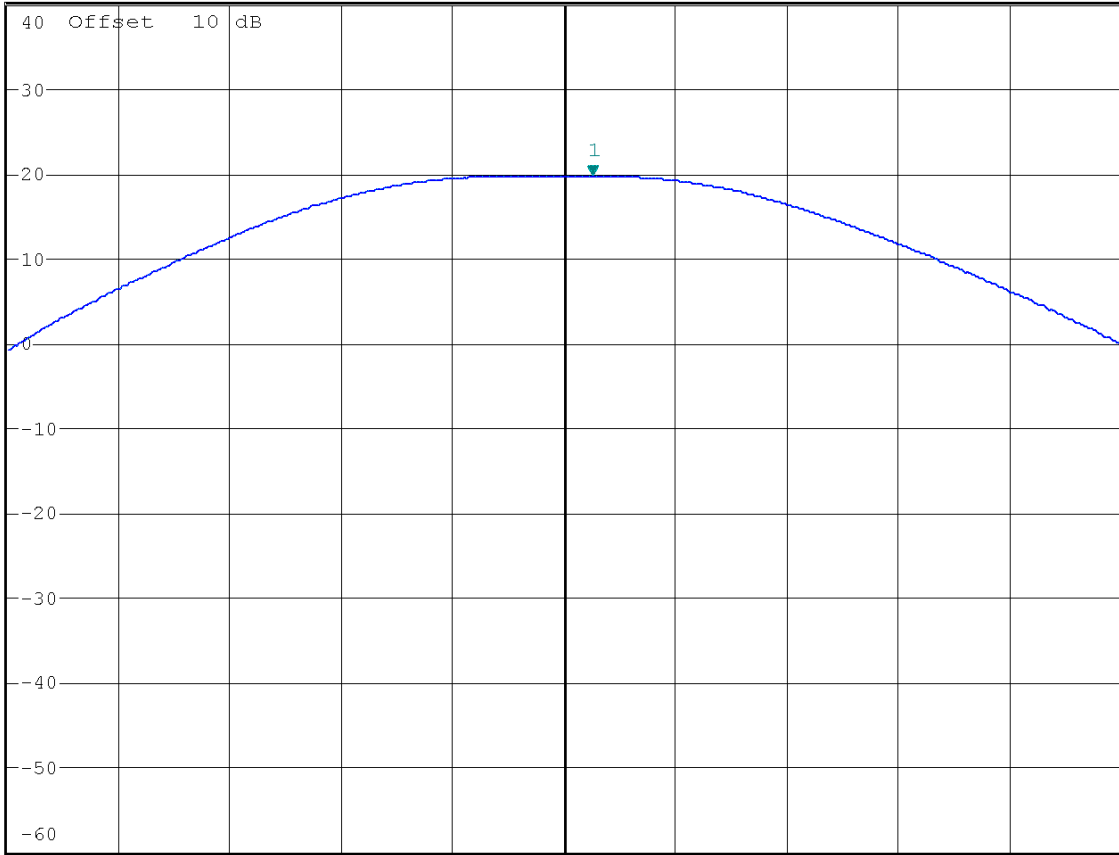
SWT 2.5 ms

2.475256410 GHz

Ref 40 dBm

* Att 35 dB

1 PK
VIEW



Center 2.475 GHz

1 MHz/

Span 10 MHz



8 Receiver Spurious Emissions

8.1 Test Method

Tests are performed in accordance with ANSI C63.4:2014.

TEST SITE: 10m ALSE

Site Designation: 10m Chamber

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	3.9dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	4.0dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.7dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	4.7dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required.



8.2 Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$
$$NF = \text{Net Reading in dB}\mu\text{V}$$

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$
$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$



8.3 Test Equipment Used

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	8181	Rohde & Schwarz	ESW44	11/16/2021	11/16/2022
Bilog Antenna	7085	ETS	3142C	10/5/2021	10/5/2022
Horn Antenna	4001	ETS	3117	2/23/2022	2/23/2023
System Controller	4096	ETS Lindgren	2090	Verify at Time of Use	Verify at Time of Use
System Controller	3957	Sunol Sciences	SC99V	Verify at Time of Use	Verify at Time of Use
Preamplifier	3918	Rohde & Schwarz	TS-PR18	1/13/2022	1/13/2023
Coaxial Cable	3074			1/13/2022	1/13/2023
Coaxial Cable	2588			1/13/2022	1/13/2023
Coaxial Cable	2593			1/13/2022	1/13/2023
Coaxial Cable	8185			1/13/2022	1/13/2023
Coaxial Cable	8188			1/13/2022	1/13/2023
Coaxial Cable	3339			1/13/2022	1/13/2023
Preamplifier	3919	Rohde & Schwarz	TS-PR3	1/13/2022	1/13/2023
Coaxial Cable	3172			1/13/2022	1/13/2023
Coaxial Cable	2590			1/13/2022	1/13/2023
Coaxial Cable	8186			1/13/2022	1/13/2023
Coaxial Cable	8187			1/13/2022	1/13/2023

8.4 Software Utilized

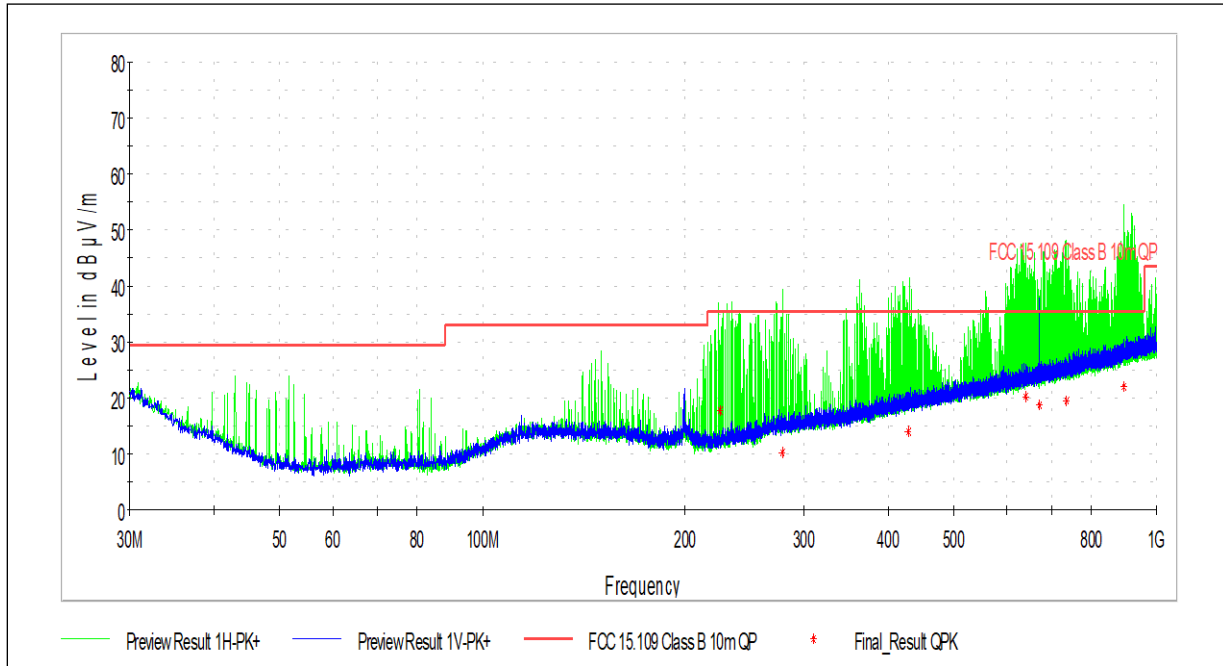
Name	Manufacturer	Version
EMC32	Rohde & Schwarz	Version 10.60.20

8.5 Test Results

The sample tested was found to be **compliant**.



8.6 Plots/Data: Radiated Emissions, 30MHz – 1GHz (Transmitters Idle)



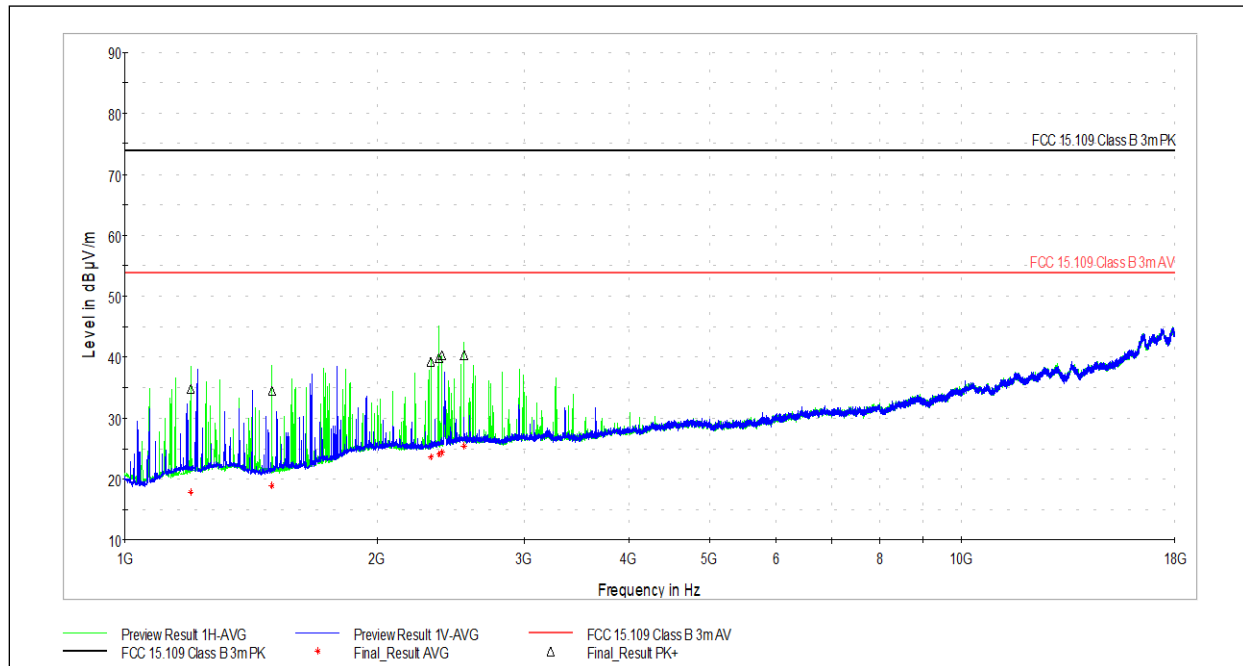
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
225.013889	17.75	35.550	17.80	120.000	311.0	H	207.0	-9.31
278.894444	10.20	35.550	25.35	120.000	376.0	H	340.0	-6.58
429.017778	14.08	35.550	21.47	120.000	203.0	H	0.0	-2.75
638.851111	20.13	35.550	15.42	120.000	354.0	H	1.0	2.18
671.125000	18.63	35.550	16.92	120.000	296.0	V	239.0	3.05
734.733333	19.47	35.550	16.08	120.000	233.0	H	74.0	3.94
894.376111	21.96	35.550	13.59	120.000	377.0	H	257.0	7.53

Test Personnel:	<u>Jeremiah Andrade</u>	Test Date:	<u>8/10/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>Class B</u>
Product Standard:	<u>FCC Part 15B ICES-003 Issue 7</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: Note, the FCC limits are shown above since they are more restrictive than the ICES-007 limits.



8.7 Plots/Data: Radiated Emissions, 1GHz – 18GHz (Transmitters Idle)



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1198.000000	34.76	73.979	39.22	1000.000	410.0	H	313.0	-1.60
1498.000000	34.49	73.979	39.49	1000.000	376.0	H	288.0	-1.29
2321.500000	39.32	73.979	34.66	1000.000	357.0	H	59.0	3.41
2371.500000	39.96	73.979	34.02	1000.000	360.0	H	234.0	3.85
2392.000000	40.31	73.979	33.67	1000.000	222.0	H	248.0	3.95
2542.000000	40.40	73.979	33.58	1000.000	119.0	H	182.0	4.79

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1198.000000	17.88	53.979	36.10	1000.000	410.0	H	313.0	-1.60
1498.000000	18.84	53.979	35.14	1000.000	376.0	H	288.0	-1.29
2321.500000	23.63	53.979	30.35	1000.000	357.0	H	59.0	3.41
2371.500000	24.09	53.979	29.89	1000.000	360.0	H	234.0	3.85
2392.000000	24.35	53.979	29.63	1000.000	222.0	H	248.0	3.95
2542.000000	25.45	53.979	28.53	1000.000	119.0	H	182.0	4.79

Test Personnel:	<u>Jordan Coughenour</u>	Test Date:	<u>8/10/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>Class B</u>
Product Standard:	<u>FCC Part 15B ICES-003 Issue 7</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: None



9 Transmitter Spurious Emissions

9.1 Test Limits

FCC Part 15.247(d):

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

RSS-247 Issue 2 § 5.5:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

9.2 Test Method

Tests are performed in accordance with ANSI C63.10:2020 § 11.12.1 Radiated emission measurements.

TEST SITE: 10m ALSE

Site Designation: 10m Chamber

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	U _{CISPR}
Radiated Emissions, 10m	30-1000 MHz	3.9dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	4.0dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.7dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	4.7dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	4.7dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required.



9.3 Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$
$$NF = \text{Net Reading in dB}\mu\text{V}$$

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$
$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$



9.4 Test Equipment Used

Description	Asset	Manufacturer	Model	Cal Date	Cal Due
EMI Test Receiver	8181	Rohde & Schwarz	ESW44	11/16/2021	11/16/2022
Bilog Antenna	7085	ETS	3142C	10/5/2021	10/5/2022
Horn Antenna	4001	ETS	3117	2/23/2022	2/23/2023
System Controller	4096	ETS Lindgren	2090	Verify at Time of Use	Verify at Time of Use
System Controller	3957	Sunol Sciences	SC99V	Verify at Time of Use	Verify at Time of Use
Preamplifier	3918	Rohde & Schwarz	TS-PR18	1/13/2022	1/13/2023
Coaxial Cable	3074			1/13/2022	1/13/2023
Coaxial Cable	2588			1/13/2022	1/13/2023
Coaxial Cable	2593			1/13/2022	1/13/2023
Coaxial Cable	8185			1/13/2022	1/13/2023
Coaxial Cable	8188			1/13/2022	1/13/2023
Coaxial Cable	3339			1/13/2022	1/13/2023
Preamplifier	3919	Rohde & Schwarz	TS-PR3	1/13/2022	1/13/2023
Coaxial Cable	3172			1/13/2022	1/13/2023
Coaxial Cable	2590			1/13/2022	1/13/2023
Coaxial Cable	8186			1/13/2022	1/13/2023
Coaxial Cable	8187			1/13/2022	1/13/2023
Preamplifier (18-40GHz)	3921	Rohde & Schwarz	TS-PR40	1/13/2022	1/13/2023
Horn Antenna (18-40GHz)	3779	ETS	3116c	7/30/2021	9/28/2022 ⁽²⁾

9.5 Software Utilized

Name	Manufacturer	Version
EMC32	Rohde & Schwarz	Version 10.60.20

9.6 Test Results

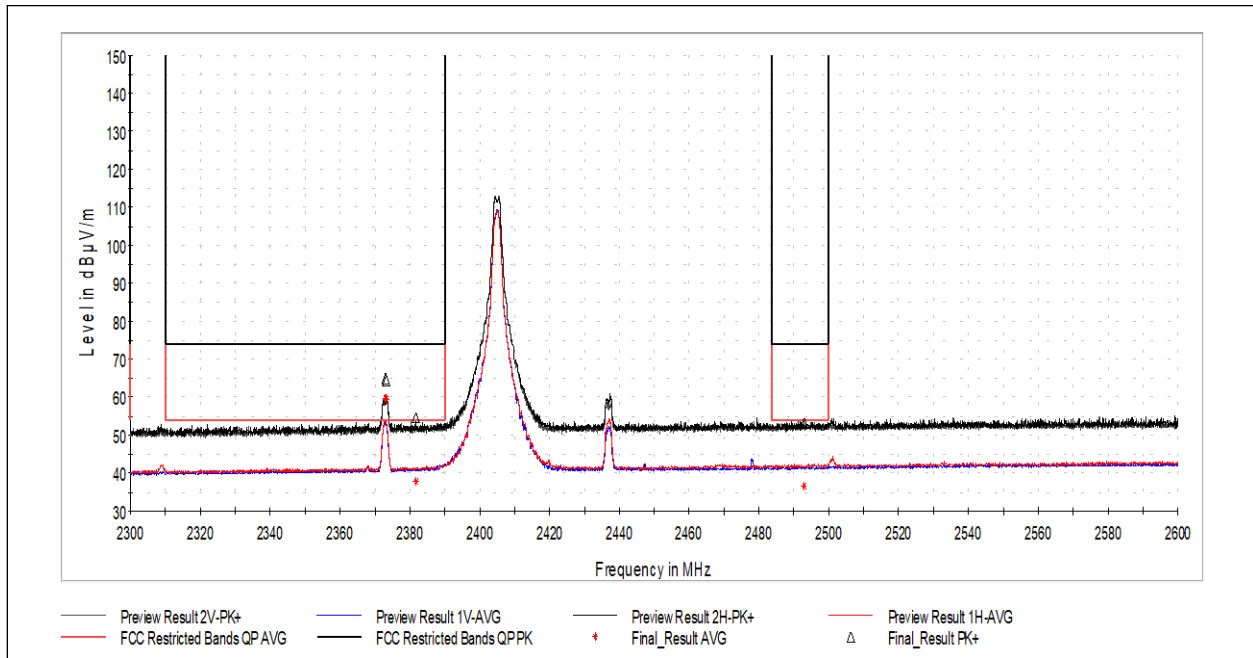
The sample tested was found to be **compliant**. The data presented represents the worst-case emissions with the device positioned in three orthogonal positions. All observed emissions outside of the band of operation were attenuated by at least 20dB.

² The equipment was operating under a calibration extension at the time of testing. The equipment has since been returned from calibration and verified to be in tolerance.



9.7 Test Data: Radiated Band Edge

9.7.1 Low Band Edge, Antenna 1



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2372.980769	64.72	73.979	9.26	1000.000	385.0	V	158.0	38.04
2373.153846	64.25	73.979	9.73	1000.000	385.0	V	155.0	38.05
2381.692308	54.50	73.979	19.48	1000.000	214.0	H	250.0	38.13
2492.865385	53.20	73.979	20.78	1000.000	232.0	H	60.0	38.56

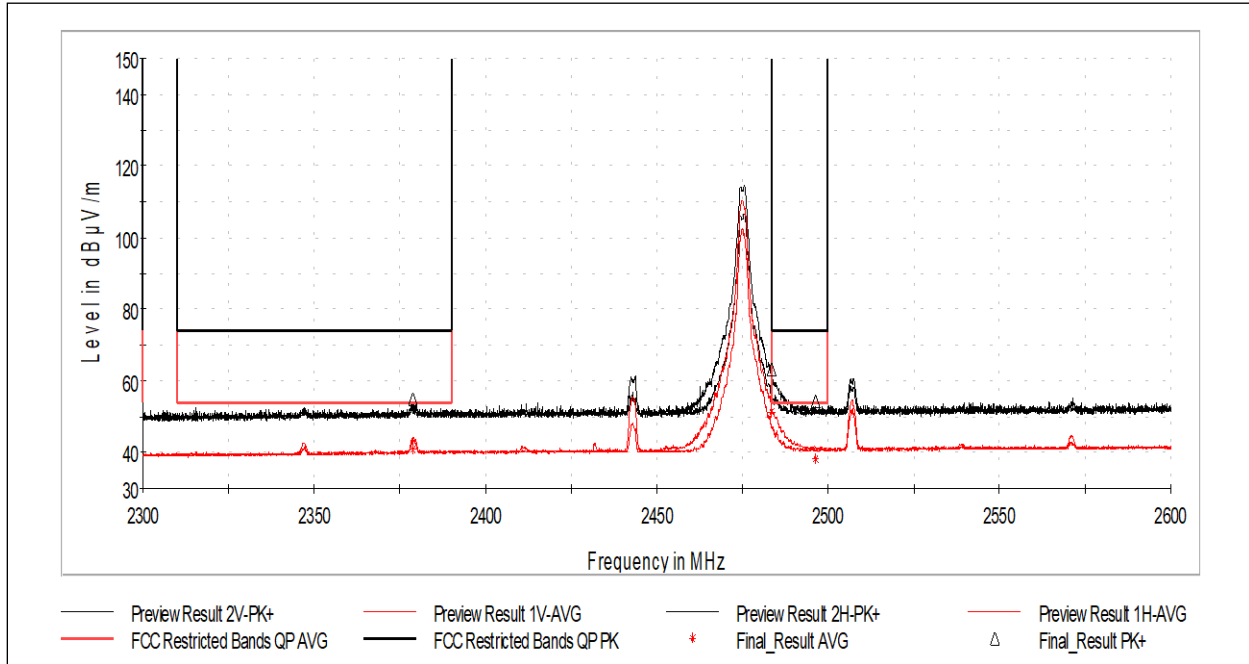
Frequency (MHz)	Calculated Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2372.980769	41.60	53.979	12.38	1000.000	385.0	V	158.0	38.04
2373.153846	41.13	53.979	12.85	1000.000	385.0	V	155.0	38.05
2381.692308	31.38	53.979	22.60	1000.000	214.0	H	250.0	38.13
2492.865385	30.08	53.979	23.90	1000.000	232.0	H	60.0	38.56

Test Personnel:	Seth Parker	Test Date:	8/11/2022 – 9/2/2022
Supervising/Reviewing Engineer:	Brian Lackey	Limit Applied:	FCC Part 15.209 in restricted bands from FCC Part 15.205
Product Standard:	RSS-247 Issue 2	Ambient Temperature:	25.6C
Input Voltage:	Battery	Relative Humidity:	52.2%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	985.4mbar

Deviations, Additions, or Exclusions: Measurements had an additional duty cycle correction factor applied (20log[duty cycle]) in order to arrive at the true average value due to the pulsed nature of the signal. See KDB558074 D01 v05r02.



9.7.2 High Band Edge, Antenna 1



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2378.692308	54.87	73.979	19.11	1000.000	339.0	H	0.0	38.11
2483.519231	63.44	73.979	10.54	1000.000	244.0	H	336.0	38.51
2496.211539	54.39	73.979	19.59	1000.000	213.0	H	323.0	38.58

Frequency (MHz)	Calculated Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2378.692308	31.75	53.979	22.23	1000.000	339.0	H	0.0	38.11
2483.519231	40.32	53.979	13.66	1000.000	244.0	H	336.0	38.51
2496.211539	31.27	53.979	22.71	1000.000	213.0	H	323.0	38.58

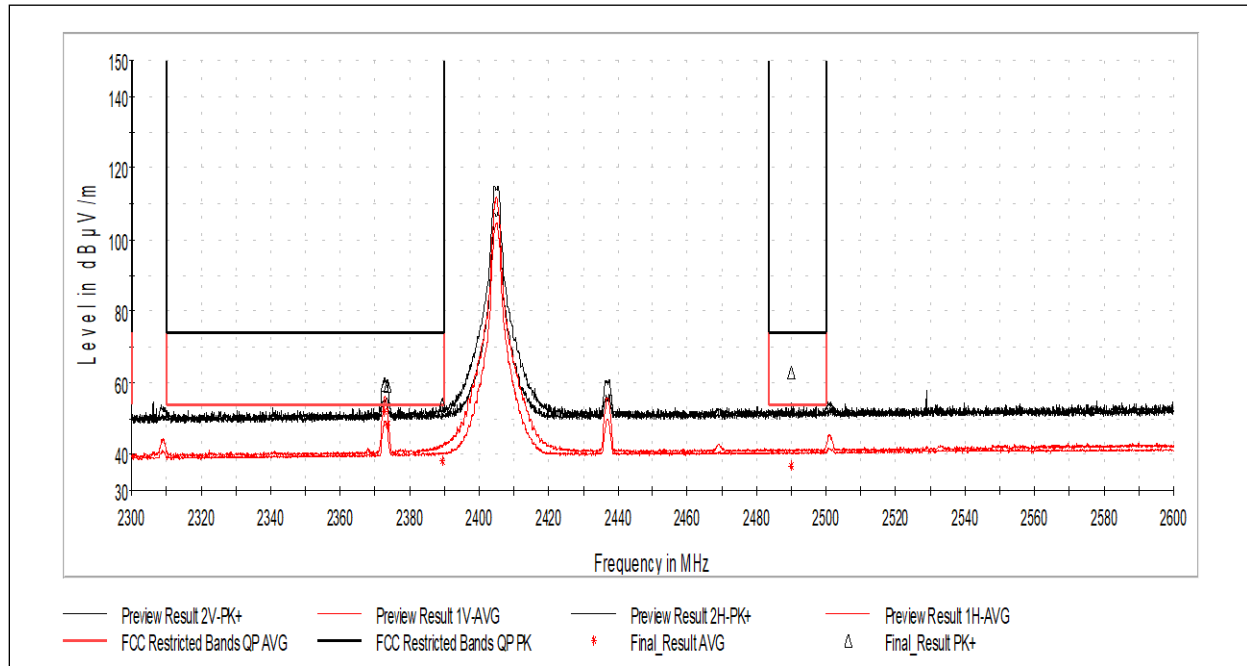
Test Personnel:	<u>Seth Parker</u>	Test Date:	<u>8/11/2022 – 9/2/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: Measurements had an additional duty cycle correction factor applied (20log[duty cycle]) in order to arrive at the true average value due to the pulsed nature of the signal. See KDB558074 D01 v05r02.



EMC Test Report

9.7.3 Low Band Edge, Antenna 2



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2372.923077	59.41	73.979	14.57	1000.000	245.0	H	0.0	38.04
2373.615385	59.34	73.979	14.64	1000.000	273.0	H	0.0	38.04
2389.423077	54.00	73.979	19.98	1000.000	301.0	H	64.0	38.13
2489.923077	63.03	73.979	10.95	1000.000	170.0	H	284.0	38.53

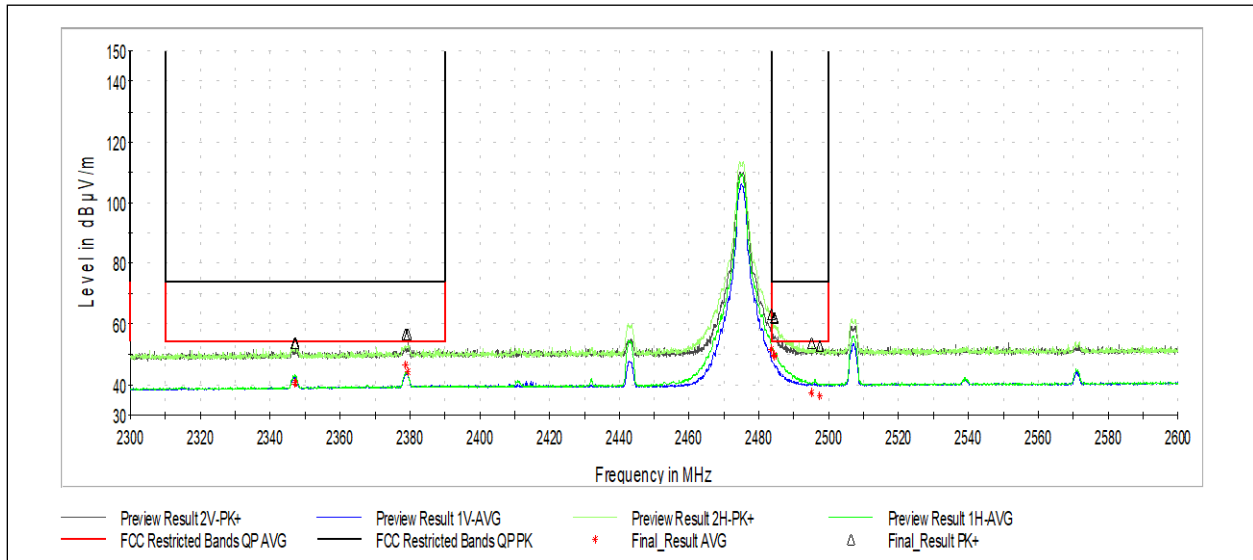
Frequency (MHz)	Calculated Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2372.923077	36.29	53.979	17.69	1000.000	245.0	H	0.0	38.04
2373.615385	36.22	53.979	17.76	1000.000	273.0	H	0.0	38.04
2389.423077	30.88	53.979	23.10	1000.000	301.0	H	64.0	38.13
2489.923077	39.91	53.979	14.07	1000.000	170.0	H	284.0	38.53

Test Personnel:	<u>Seth Parker</u>	Test Date:	<u>8/11/2022 – 9/2/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: Measurements had an additional duty cycle correction factor applied (20log[duty cycle]) in order to arrive at the true average value due to the pulsed nature of the signal. See KDB558074 D01 v05r02.



9.7.4 High Band Edge, Antenna 2



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2346.961539	53.73	73.979	20.25	1000.000	223.0	H	293.0	37.81
2347.307692	53.92	73.979	20.06	1000.000	346.0	H	299.0	37.81
2378.750000	56.74	73.979	17.24	1000.000	337.0	V	47.0	38.15
2379.442308	56.57	73.979	17.41	1000.000	334.0	V	36.0	38.17
2483.519231	63.44	73.979	10.54	1000.000	158.0	H	292.0	38.51
2484.384615	61.81	73.979	12.17	1000.000	157.0	H	301.0	38.51
2484.442308	62.35	73.979	11.63	1000.000	158.0	H	300.0	38.51

Frequency (MHz)	Calculated Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2346.961539	30.61	53.979	23.37	1000.000	223.0	H	293.0	37.81
2347.307692	30.80	53.979	23.18	1000.000	346.0	H	299.0	37.81
2378.750000	33.62	53.979	20.36	1000.000	337.0	V	47.0	38.15
2379.442308	33.45	53.979	20.53	1000.000	334.0	V	36.0	38.17
2483.519231	40.32	53.979	13.66	1000.000	158.0	H	292.0	38.51
2484.384615	38.69	53.979	15.29	1000.000	157.0	H	301.0	38.51
2484.442308	39.23	53.979	14.75	1000.000	158.0	H	300.0	38.51

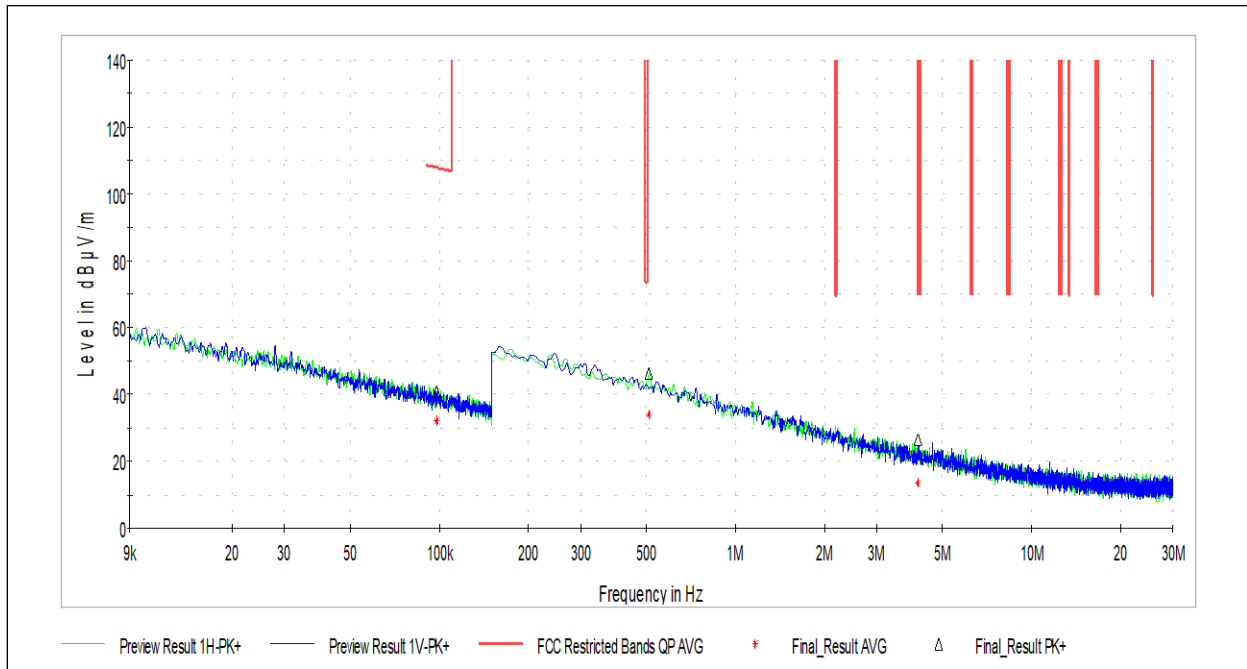
Test Personnel:	David Perry	Test Date:	8/19/2022
Supervising/Reviewing Engineer:	Brian Lackey	Limit Applied:	FCC Part 15.209 in restricted bands from FCC Part 15.205
Product Standard:	RSS-247 Issue 2	Ambient Temperature:	25.6C
Input Voltage:	Battery	Relative Humidity:	52.2%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	985.4mbar

Deviations, Additions, or Exclusions: Measurements had an additional duty cycle correction factor applied (20log[duty cycle]) in order to arrive at the true average value due to the pulsed nature of the signal. See KDB558074 D01 v05r02.



9.8 Test Data: 9kHz – 30MHz

9.8.1 Antenna 1, Mid Channel



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Azimuth (deg)	Corr. (dB/m)
0.097729	40.95	127.846	86.896	0.200	0.0	12.11
0.509956	46.32	-	-	9.000	120.0	11.72
4.135853	26.60	-	-	9.000	16.0	11.56

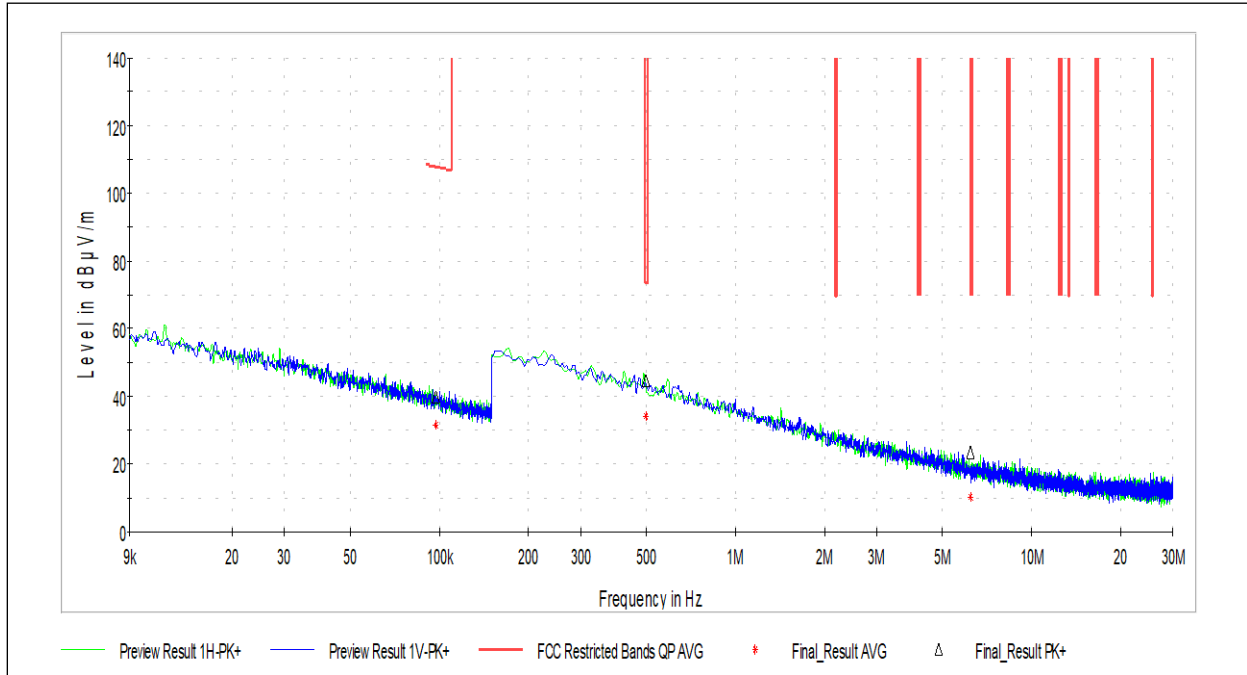
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Azimuth (deg)	Corr. (dB/m)
0.097729	32.01	107.846	75.83	0.200	0.0	12.11
0.509956	33.93	-	-	9.000	120.0	11.72
4.135853	13.66	-	-	9.000	16.0	11.56

Test Personnel:	<u>Seth Parker</u>	Test Date:	<u>10/24/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: Testing represents the worst case of low, middle, and high channels.



9.8.2 Antenna 2, Mid Channel



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Azimuth (deg)	Corr. (dB/m)
0.097427	39.83	127.872	88.042	0.200	94.0	12.12
0.496787	44.72	93.681	48.961	9.000	283.0	11.71
6.216574	23.63	89.542	65.912	9.000	162.0	11.36

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Azimuth (deg)	Corr. (dB/m)
0.097427	31.38	107.872	76.49	0.200	94.0	12.12
0.496787	34.03	73.681	39.65	9.000	283.0	11.71
6.216574	10.28	69.542	59.27	9.000	162.0	11.36

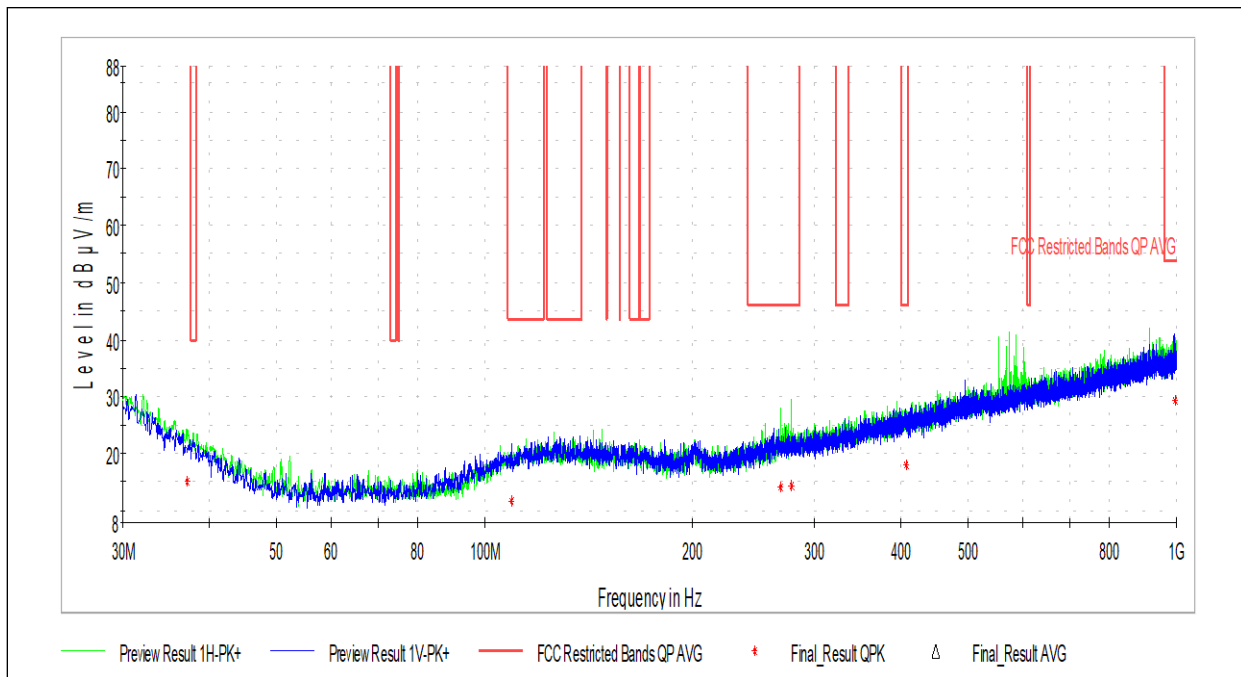
Test Personnel:	<u>Seth Parker</u>	Test Date:	<u>10/24/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: Testing represents the worst case of low, middle, and high channels.



9.9 Test Data: 30 MHz – 1 GHz

9.9.1 Antenna 1, Mid Channel



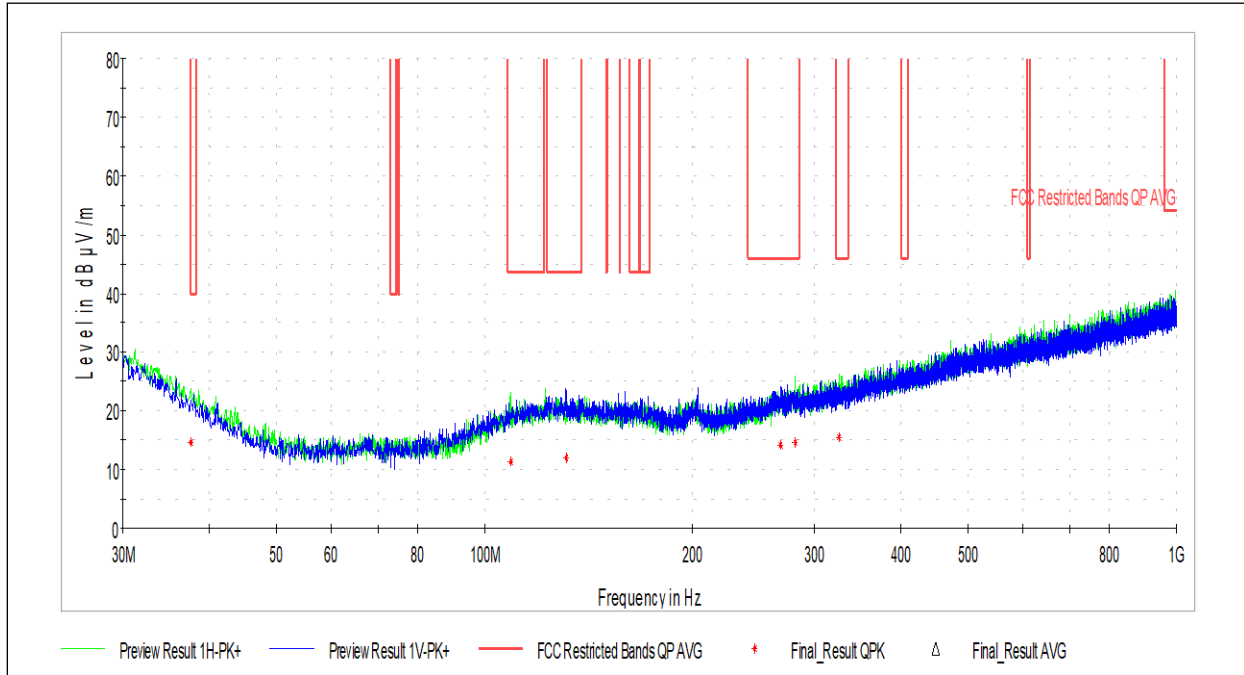
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
109.378333	11.57	43.522	31.95	120.000	100.0	V	0.0	20.97
267.757778	14.17	46.021	31.85	120.000	100.0	H	38.0	23.29
277.457778	14.35	46.021	31.67	120.000	361.0	H	294.0	23.47
406.144444	18.17	46.021	27.85	120.000	339.0	H	200.0	26.95
996.066111	29.27	53.979	24.71	120.000	267.0	H	144.0	37.39

Test Personnel:	<u>David Perry</u>	Test Date:	<u>8/11/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: Testing represents the worst case of low, middle, and high channels.



9.9.2 Antenna 2, Mid Channel



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.652222	14.60	40.000	25.40	120.000	155.0	H	244.0	23.30
109.001111	11.34	43.522	32.18	120.000	386.0	H	177.0	20.73
131.041667	12.08	43.522	31.44	120.000	151.0	V	58.0	22.27
267.596111	14.14	46.021	31.88	120.000	345.0	V	165.0	23.15
281.122222	14.55	46.021	31.47	120.000	297.0	H	155.0	23.60
324.880000	15.37	46.021	30.65	120.000	325.0	H	0.0	24.71

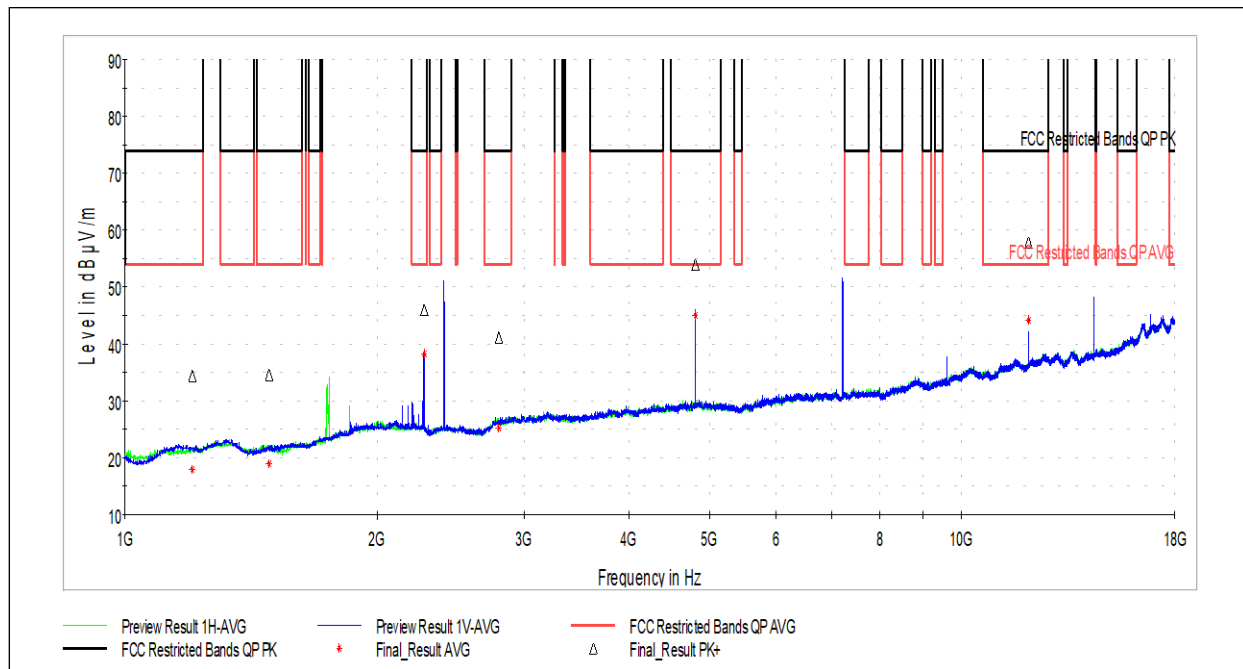
Test Personnel:	<u>David Perry</u>	Test Date:	<u>8/11/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: Testing represents the worst case of low, middle, and high channels.



9.10 Test Data: 1 GHz – 18 GHz

9.10.1 Low Channel, Antenna 1



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1204.000000	34.40	73.979	39.58	1000.000	410.0	V	0.0	-1.27
1486.500000	34.55	73.979	39.43	1000.000	100.0	H	104.0	-1.27
2277.000000	46.07	73.979	27.91	1000.000	397.0	V	58.0	3.18
2798.500000	41.10	73.979	32.88	1000.000	100.0	H	121.0	4.77
4809.000000	54.00	73.979	19.98	1000.000	374.0	V	306.0	9.31
12022.500000	57.76	73.979	16.22	1000.000	279.0	V	47.0	19.80

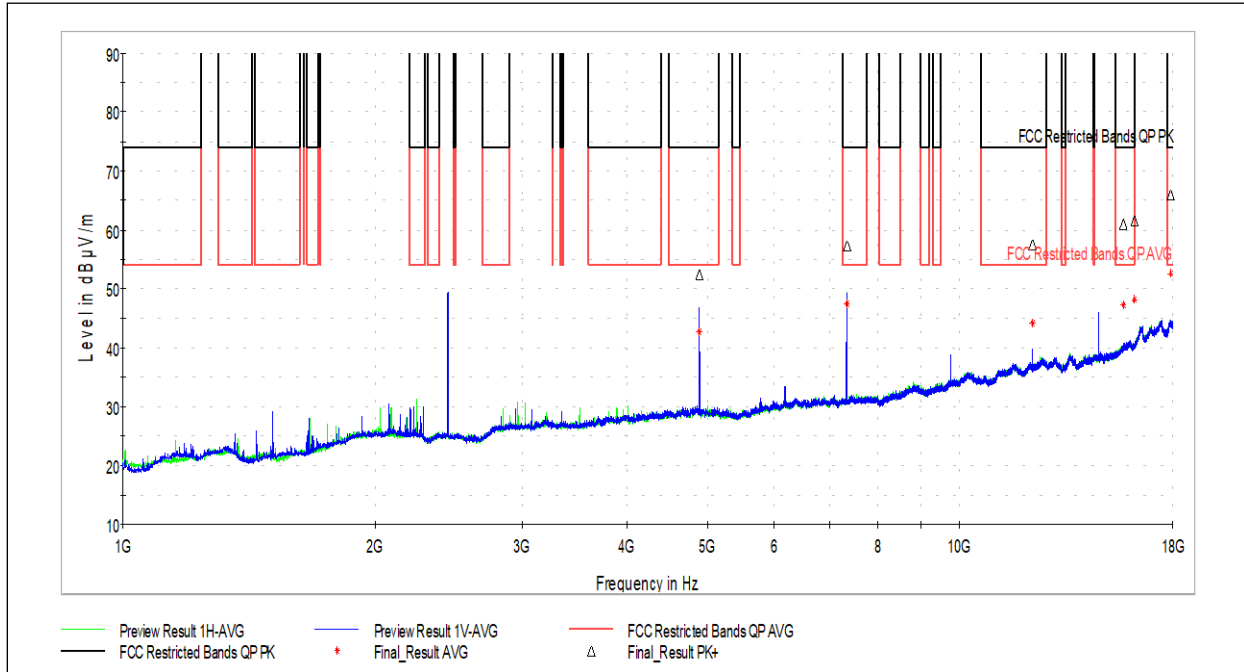
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1204.000000	17.94	53.979	36.04	1000.000	410.0	V	0.0	-1.27
1486.500000	18.89	53.979	35.09	1000.000	100.0	H	104.0	-1.27
2277.000000	38.31	53.979	15.67	1000.000	397.0	V	58.0	3.18
2798.500000	25.20	53.979	28.78	1000.000	100.0	H	121.0	4.77
4809.000000	45.01	53.979	8.97	1000.000	374.0	V	306.0	9.31
12022.500000	44.16	53.979	9.82	1000.000	279.0	V	47.0	19.80

Test Personnel:	<u>David Perry</u>	Test Date:	<u>8/11/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>FCC Part 15.247</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: None



9.10.2 Mid Channel, Antenna 1



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4889.000000	52.34	73.979	21.64	1000.000	324.0	V	318.0	9.19
7336.500000	57.25	73.979	16.73	1000.000	410.0	H	257.0	12.49
12227.500000	57.59	73.979	16.39	1000.000	223.0	V	84.0	20.21
15702.000000	60.97	73.979	13.01	1000.000	186.0	V	-1.0	23.98
16187.000000	61.61	73.979	12.37	1000.000	178.0	H	183.0	25.20
17902.500000	66.05	73.979	7.93	1000.000	281.0	V	196.0	27.99

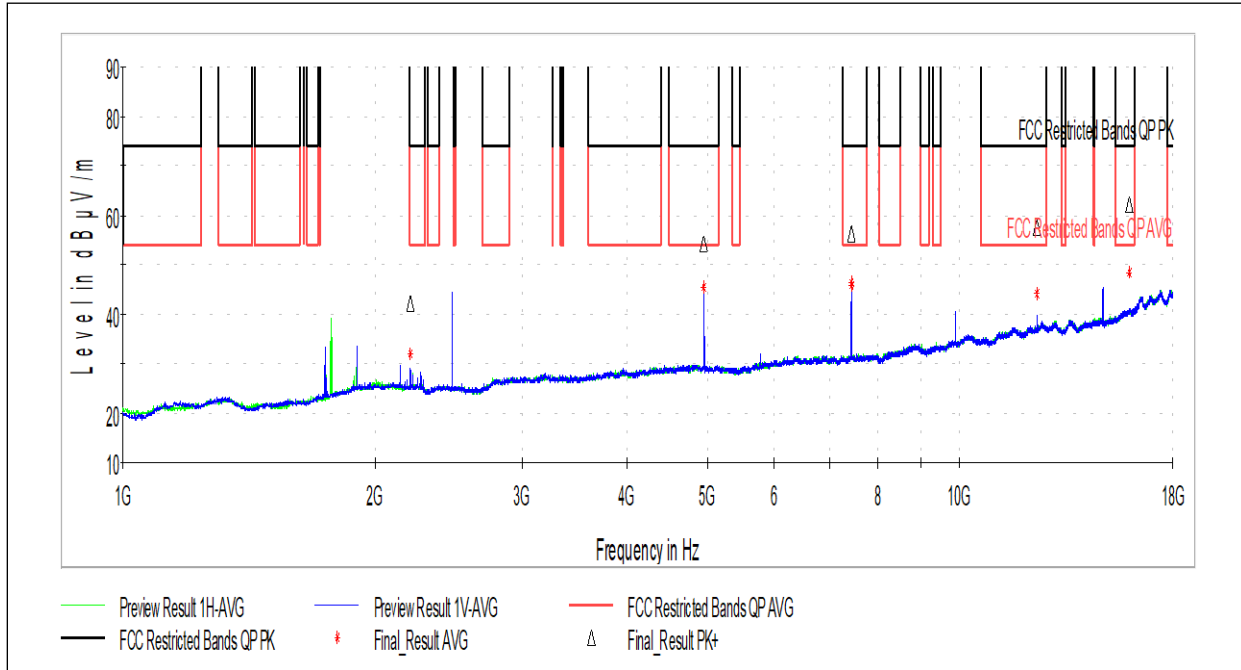
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4889.000000	42.74	53.979	11.24	1000.000	324.0	V	318.0	9.19
7336.500000	47.36	53.979	6.62	1000.000	410.0	H	257.0	12.49
12227.500000	44.21	53.979	9.77	1000.000	223.0	V	84.0	20.21
15702.000000	47.18	53.979	6.80	1000.000	186.0	V	-1.0	23.98
16187.000000	48.16	53.979	5.82	1000.000	178.0	H	183.0	25.20
17902.500000	52.64	53.979	1.34	1000.000	281.0	V	196.0	27.99

Test Personnel:	David Perry	Test Date:	8/11/2022
Supervising/Reviewing Engineer:	Brian Lackey	Limit Applied:	FCC Part 15.209 in restricted bands from FCC Part 15.205
Product Standard:	FCC Part 15.247	Ambient Temperature:	25.6C
Input Voltage:	RSS-247 Issue 2	Relative Humidity:	52.2%
Pretest Verification w / Ambient Signals or BB Source:	Battery	Atmospheric Pressure:	985.4mbar
	Yes		

Deviations, Additions, or Exclusions: None



9.10.3 High Channel, Antenna 1



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2208.000000	41.97	73.979	32.01	1000.000	371.0	V	163.0	3.11
4949.000000	54.31	73.979	19.67	1000.000	372.0	V	120.0	9.12
7423.500000	56.35	73.979	17.63	1000.000	397.0	V	25.0	12.55
7426.500000	56.17	73.979	17.81	1000.000	368.0	H	344.0	12.61
12377.500000	57.62	73.979	16.36	1000.000	289.0	V	337.0	20.25
15974.000000	61.97	73.979	12.01	1000.000	164.0	V	87.0	24.79

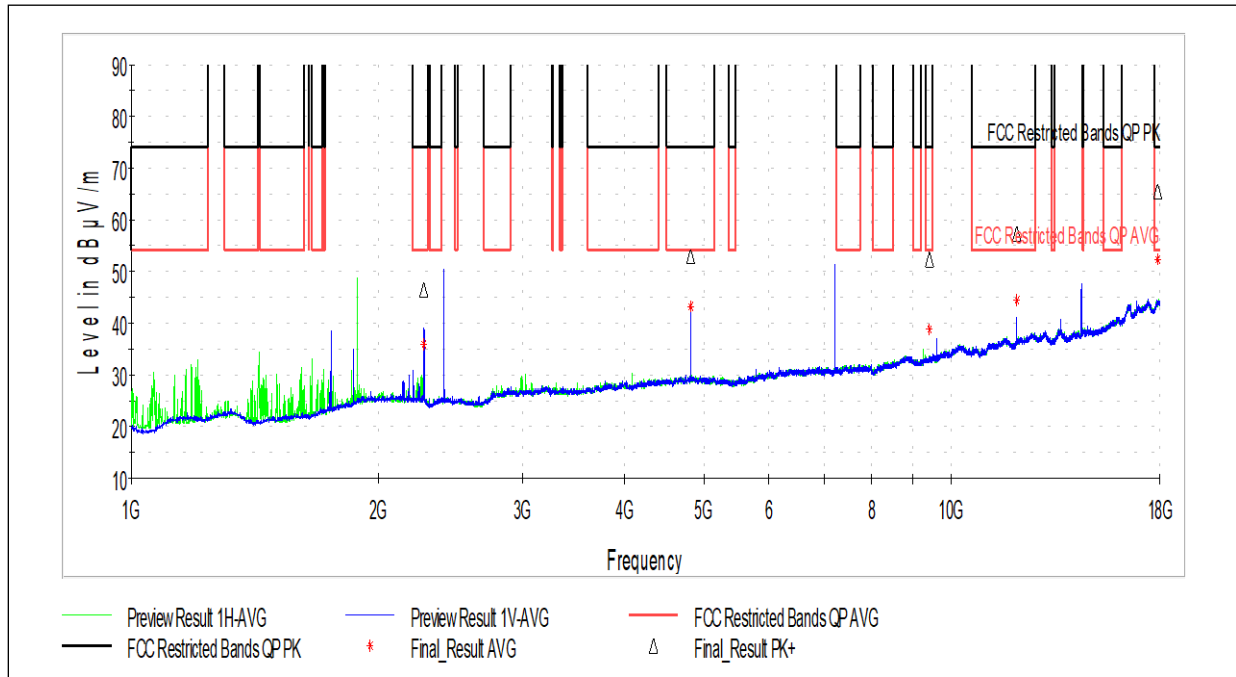
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2208.000000	31.86	53.979	22.12	1000.000	371.0	V	163.0	3.11
4949.000000	45.55	53.979	8.43	1000.000	372.0	V	120.0	9.12
7423.500000	46.55	53.979	7.43	1000.000	397.0	V	25.0	12.55
7426.500000	45.88	53.979	8.10	1000.000	368.0	H	344.0	12.61
12377.500000	44.09	53.979	9.89	1000.000	289.0	V	337.0	20.25
15974.000000	48.24	53.979	5.74	1000.000	164.0	V	87.0	24.79

Test Personnel:	<u>David Perry</u>	Test Date:	<u>8/11/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: None



9.10.4 Low Channel, Antenna 2



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2276.500000	46.37	73.979	27.61	1000.000	389.0	V	299.0	3.18
4809.000000	53.03	73.979	20.95	1000.000	279.0	V	322.0	9.31
9413.000000	52.31	73.979	21.67	1000.000	109.0	H	23.0	16.06
12022.500000	57.42	73.979	16.56	1000.000	342.0	V	0.0	19.80
17857.000000	65.64	73.979	8.34	1000.000	410.0	V	260.0	27.79

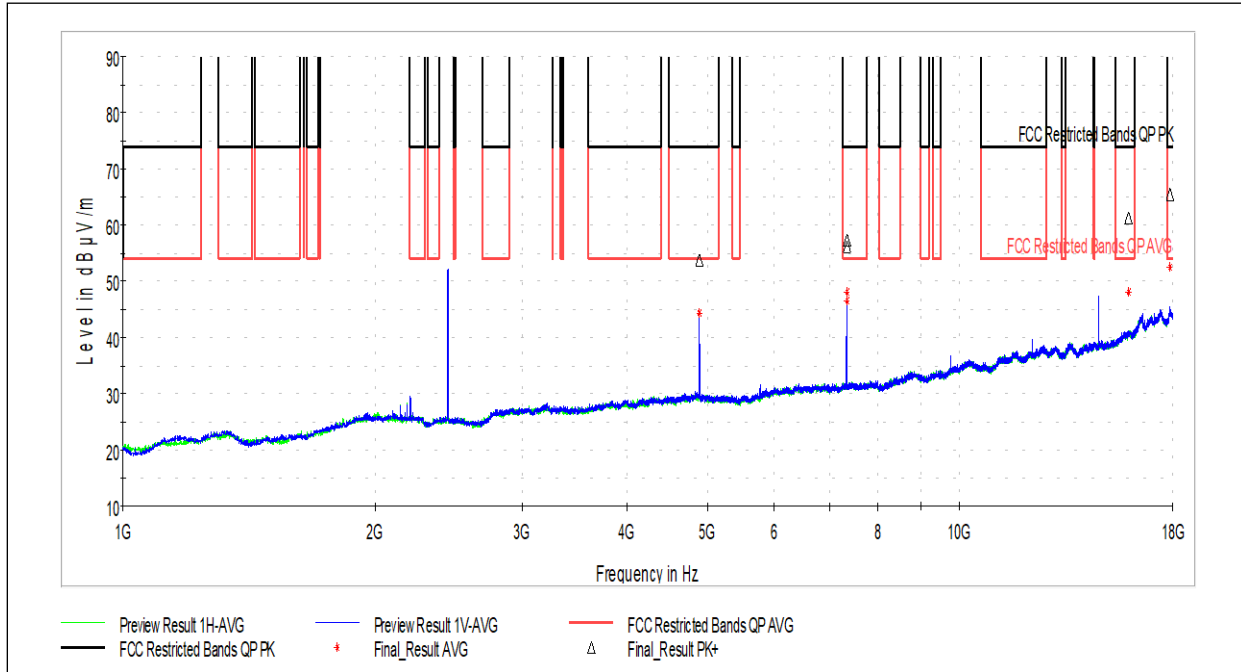
Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2276.500000	35.96	53.979	18.02	1000.000	389.0	V	299.0	3.18
4809.000000	43.37	53.979	10.61	1000.000	279.0	V	322.0	9.31
9413.000000	38.84	53.979	15.14	1000.000	109.0	H	23.0	16.06
12022.500000	44.52	53.979	9.46	1000.000	342.0	V	0.0	19.80
17857.000000	52.29	53.979	1.69	1000.000	410.0	V	260.0	27.79

Test Personnel:	<u>Seth Parker</u>	Test Date:	<u>8/11/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: None



9.10.5 Mid Channel, Antenna 2



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4891.000000	53.76	73.979	20.22	1000.000	173.0	V	171.0	9.19
7333.500000	56.29	73.979	17.69	1000.000	164.0	V	96.0	12.51
7336.500000	57.44	73.979	16.54	1000.000	155.0	V	183.0	12.51
15935.000000	61.41	73.979	12.57	1000.000	266.0	H	226.0	24.66
17871.000000	65.63	73.979	8.35	1000.000	205.0	V	109.0	27.85

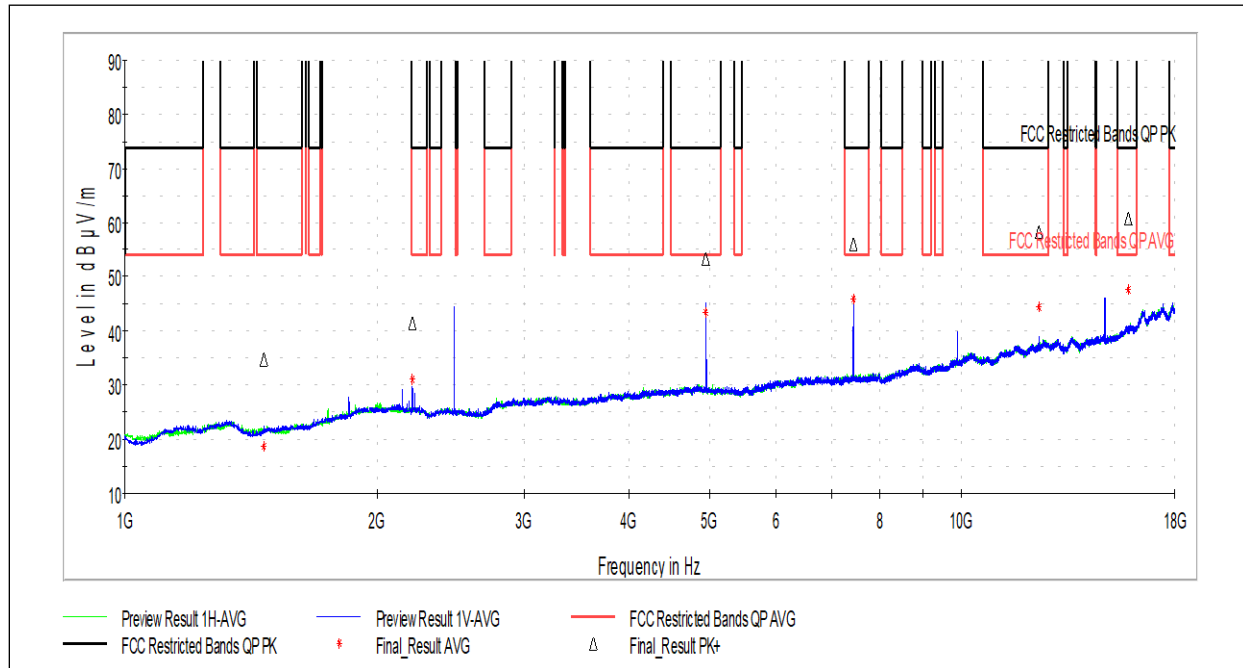
Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4891.000000	44.34	53.979	9.64	1000.000	173.0	V	171.0	9.19
7333.500000	46.53	53.979	7.45	1000.000	164.0	V	96.0	12.51
7336.500000	48.11	53.979	5.87	1000.000	155.0	V	183.0	12.51
15935.000000	48.07	53.979	5.91	1000.000	266.0	H	226.0	24.66
17871.000000	52.49	53.979	1.49	1000.000	205.0	V	109.0	27.85

Test Personnel:	<u>David Perry</u>	Test Date:	<u>8/12/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>FCC Part 15.247</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: None



9.10.6 High Channel, Antenna 2



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1465.000000	34.73	73.979	39.25	1000.000	302.0	V	136.0	-1.61
2208.000000	41.50	73.979	32.48	1000.000	230.0	V	233.0	3.11
4951.000000	53.35	73.979	20.63	1000.000	155.0	V	146.0	9.12
7426.500000	55.99	73.979	17.99	1000.000	174.0	V	87.0	12.55
12377.500000	58.29	73.979	15.69	1000.000	126.0	V	0.0	20.25
15831.500000	60.74	73.979	13.24	1000.000	119.0	V	0.0	24.34

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1465.000000	18.61	53.979	35.37	1000.000	302.0	V	136.0	-1.61
2208.000000	31.06	53.979	22.92	1000.000	230.0	V	233.0	3.11
4951.000000	43.50	53.979	10.48	1000.000	155.0	V	146.0	9.12
7426.500000	45.90	53.979	8.08	1000.000	174.0	V	87.0	12.55
12377.500000	44.34	53.979	9.64	1000.000	126.0	V	0.0	20.25
15831.500000	47.58	53.979	6.40	1000.000	119.0	V	0.0	24.34

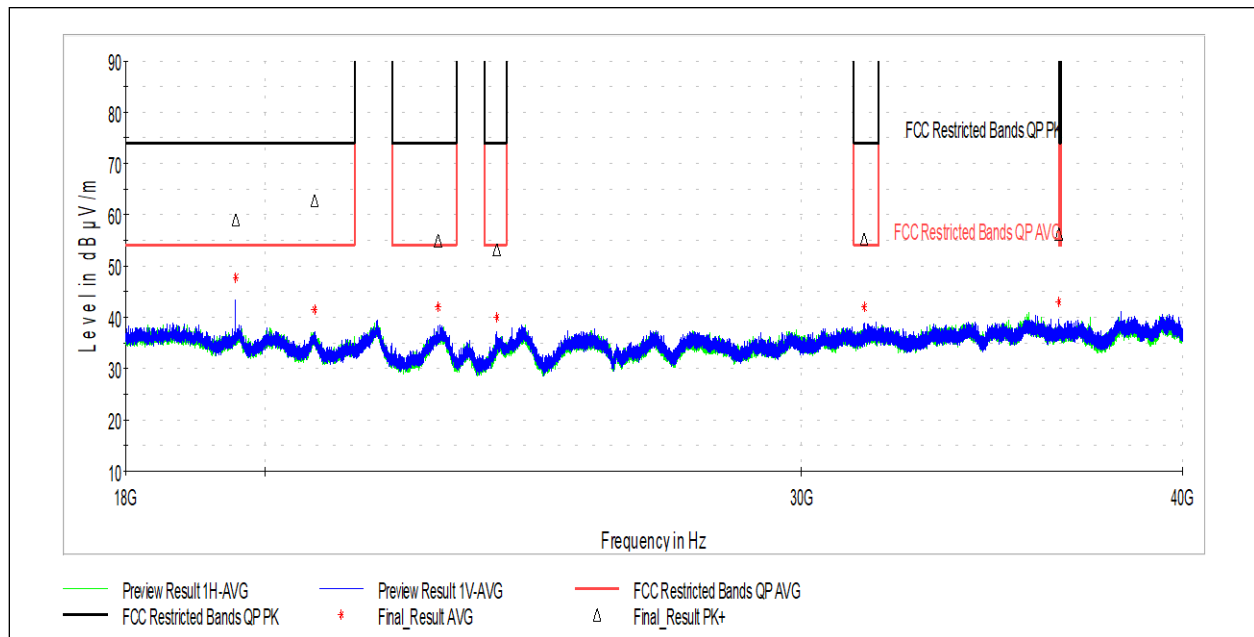
Test Personnel:	<u>David Perry</u>	Test Date:	<u>8/12/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: None



9.11 Test Data: 18 GHz – 40 GHz

9.11.1 Antenna 1, Mid Channel



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
19563.500000	59.07	73.979	14.91	1000.000	261.0	V	224.0	15.35
20757.500000	62.66	73.979	11.32	1000.000	100.0	V	-1.0	11.37
22788.000000	54.98	73.979	19.00	1000.000	327.0	V	0.0	6.57
23831.500000	53.22	73.979	20.76	1000.000	100.0	V	344.0	5.81
31446.000000	55.32	73.979	18.66	1000.000	100.0	V	72.0	11.32
36436.500000	56.37	73.979	17.61	1000.000	307.0	V	0.0	11.52

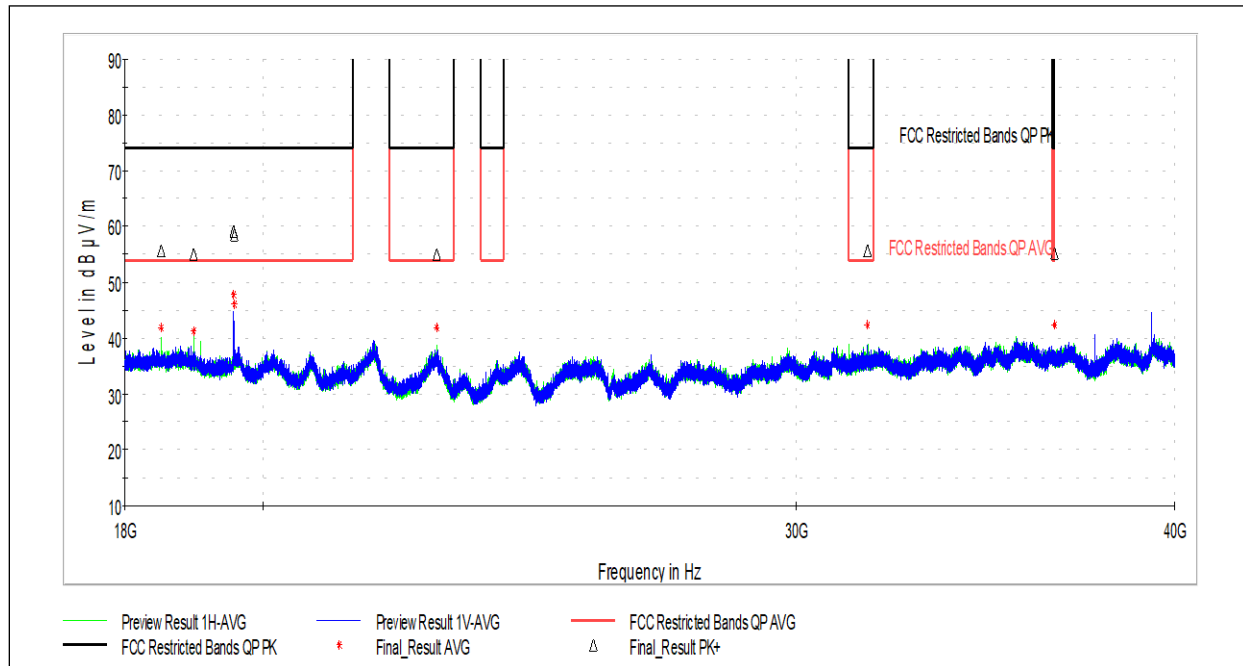
Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
19563.500000	47.87	53.979	6.11	1000.000	261.0	V	224.0	15.35
20757.500000	41.43	53.979	12.55	1000.000	100.0	V	-1.0	11.37
22788.000000	41.94	53.979	12.04	1000.000	327.0	V	0.0	6.57
23831.500000	39.91	53.979	14.07	1000.000	100.0	V	344.0	5.81
31446.000000	41.90	53.979	12.08	1000.000	100.0	V	72.0	11.32
36436.500000	42.92	53.979	11.06	1000.000	307.0	V	0.0	11.52

Test Personnel:	David Perry	Test Date:	8/12/2022
Supervising/Reviewing Engineer:	Brian Lackey	Limit Applied:	FCC Part 15.209 in restricted bands from FCC Part 15.205
Product Standard:	RSS-247 Issue 2	Ambient Temperature:	25.6C
Input Voltage:	Battery	Relative Humidity:	52.2%
Pretest Verification w / Ambient Signals or BB Source:	Yes	Atmospheric Pressure:	985.4mbar

Deviations, Additions, or Exclusions: Testing represents the worst case of all modes and of low, middle, and high channels.



9.11.2 Antenna 2, Mid Channel



Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18499.000000	55.64	73.979	18.34	1000.000	310.0	H	74.0	18.99
18963.500000	54.92	73.979	19.06	1000.000	100.0	H	0.0	18.13
19555.500000	59.11	73.979	14.87	1000.000	347.0	V	205.0	15.35
19564.000000	58.59	73.979	15.39	1000.000	336.0	V	236.0	15.35
22816.500000	55.05	73.979	18.93	1000.000	294.0	H	340.0	6.47
31666.000000	55.73	73.979	18.25	1000.000	410.0	V	79.0	11.13

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18499.000000	41.87	53.979	12.11	1000.000	310.0	H	74.0	18.99
18963.500000	41.36	53.979	12.62	1000.000	100.0	H	0.0	18.13
19555.500000	47.71	53.979	6.27	1000.000	347.0	V	205.0	15.35
19564.000000	46.14	53.979	7.84	1000.000	336.0	V	236.0	15.35
22816.500000	41.98	53.979	12.00	1000.000	294.0	H	340.0	6.47
31666.000000	42.27	53.979	11.71	1000.000	410.0	V	79.0	11.13
36492.500000	42.28	53.979	11.70	1000.000	100.0	V	250.0	11.44

Test Personnel:	<u>David Perry</u>	Test Date:	<u>8/12/2022</u>
Supervising/Reviewing Engineer:	<u>Brian Lackey</u>	Limit Applied:	<u>FCC Part 15.209 in restricted bands from FCC Part 15.205</u>
Product Standard:	<u>RSS-247 Issue 2</u>	Ambient Temperature:	<u>25.6C</u>
Input Voltage:	<u>Battery</u>	Relative Humidity:	<u>52.2%</u>
Pretest Verification w / Ambient Signals or BB Source:	<u>Yes</u>	Atmospheric Pressure:	<u>985.4mbar</u>

Deviations, Additions, or Exclusions: Testing represents the worst case of all modes and of low, middle, and high channels.



10 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	10/3/2022	105143098LEX-001	<i>GP</i>	<i>BZ</i>	Original Issue
1	10/26/2022	105143098LEX-001.1	<i>GP</i>	<i>BZ</i>	Updated per TCB feedback.
2	3/9/2023	105143098LEX-001.2	<i>GP</i>	<i>BZ</i>	Updated per TCB feedback.
3	2/22/2024	105143098LEX-001.3	<i>GP</i>	<i>BZ</i>	Removed antenna gain calculation. Removed combined power calculation.