

RF Test Report

Project Number: 5053017**Offer Number:** SUW-202209003458**Report Number:** 5053017EMC01**Revision Level:** 1**Client:** Arccos Golf, LLC**Equipment Under Test:** Arccos Link Wearable**Product Name:** Arccos Link Pro**Model:** L3P**FCC ID:** 2ACQZ-L3P**IC:** 12164A-L3P**Applicable Standards:** FCC Part 15 Subpart C, § 15.247

RSS-247, Issue 2, February 2017

RSS-GEN, Issue 5, February 2021, Amendment 2

ANSI C63.10:2013

Report revised on: 07 September 2023**Test Result:** Compliant

FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER: 3212.01

This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the Federal Government.

Prepared by:
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Martin Taylor, Reviewer

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1 Summary of Test Results

Test Description	Test Specification		Test Result
Bandwidth	15.247(a)(2)	RSS-247 S5.2 (a) RSS-GEN S6.7	Compliant
Output Power	15.247(b)(3)	RSS-247 S5.4 (d)	Compliant
Power Spectral Density	15.247(e)	RSS-247 S5.2 (b)	Compliant
Conducted Spurious Emissions / Band Edge	15.247(d)	RSS-247 S5.5	Compliant
Emissions in Restricted Frequency Bands	15.247(d) 15.205, 15.209	RSS-247 S5.5 RSS-GEN S8.9, S8.10	Compliant
Band Edge Emissions in Restricted Frequency Bands	15.205, 15.209	RSS-GEN S8.9, S8.10	Compliant
AC Powerline Conducted Emissions	15.207	RSS-GEN S8.8	N/A ⁽²⁾
Antenna Requirement	15.203	RSS-GEN S6.8	Compliant ⁽¹⁾

(1) The device uses an internal PCB trace antenna which cannot be replaced by the end user.

(2) The device under test is battery powered. Conducted Emissions is not applicable.

1.1 Modifications Required for Compliance

None.

2 General Information

2.1 Client Information

Company Name: Arccos Golf, LLC
Address: 700 CANAL ST.
City, State, Zip, Country: Stamford, Connecticut 06902, USA

2.2 Test Laboratory

Name: SGS North America, Inc.
Address: 620 Old Peachtree Road NW, Suite 100
City, State, Zip, Country: Suwanee, GA 30024, USA

Accrediting Body: A2LA
Type of lab: Testing Laboratory
Certificate Number: 3212.01
CAB ID: US0186

2.3 General Information of EUT

Equipment Under Test: Arccos Link Wearable
Product Name: Arccos Link Pro
Model: L3P
Serial Numbers: SGS ID#: SUW_SP_20230501689 (Conducted Sample)
SGS ID#: SUW_SP_20230501620 (Radiated Sample)
FCC ID: 2ACQZ-L3P
IC: 12164A-L3P

Frequency Range: 2402 – 2480 MHz
Data Modes: Bluetooth Low Energy (BLE1M) – GFSK
Antenna: Internal PCB Trace (2.4dBi gain)

Rated Voltage: 3.7VDC
Test Voltage: 3.7VDC

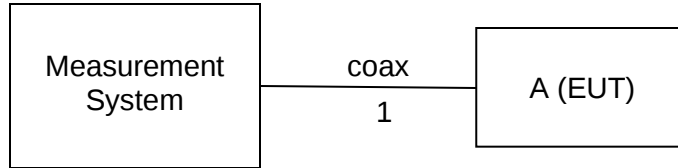
Sample Received Date: 25 May 2023
Dates of testing: 25 May to 27 June 2023

2.4 Operating Modes and Conditions

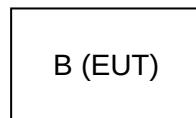
The EUT was running test mode firmware which allowed the following:

- 1) selecting low, middle, and high BLE channels.
- 2) selecting the modulation scheme as used in normal operation, but with 100% duty cycle.
- 3) Per client statement, the power level was set at 0dBm for testing.

2.5 EUT Connection Block Diagram – Conducted Measurements



2.6 EUT Connection Block Diagram – Radiated Measurements



Inside Chamber

2.7 System Configurations

Device Reference	Manufacturer	Description	Model Number	Serial Number
A	Arccos Golf, LLC	Arccos Link Pro (Conducted Sample)	L3P	SGS ID#: SUW_SP_20230501689
B	Arccos Golf, LLC	Arccos Link Pro (Radiated Sample)	L3P	SGS ID#: SUW_SP_20230501620

2.8 Cable List

Cable reference	Port Name	Start	End	Cable Length	Ferrite installed?	Shielded?
1	Conducted RF coax	Antenna Connector	Measuring Equipment	<5cm	N	N

3 Bandwidth

3.1 Test Result

Test Description	Test Specification		Test Result
DTS Bandwidth (6dB)	15.247(a)(2)	RSS-247 S5.2 (a)	Compliant
Occupied Bandwidth (99%)	2.1049	RSS-GEN S6.7	Reported

3.2 Test Methods

The DTS 6dB bandwidth measurements were performed using the procedure from ANSI C63.10 clause 11.8.1, and the 99% occupied bandwidth measurements were performed using the procedure from ANSI C63.10 clause 6.9.3. These procedures are referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

The BLE 1Mbps data mode was used for these tests.

Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

3.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.42 °C

Relative Humidity: 48.3 %

Atmospheric Pressure: 98.1 kPa

3.4 Test Equipment

Test End Date: 23-Jun-2023

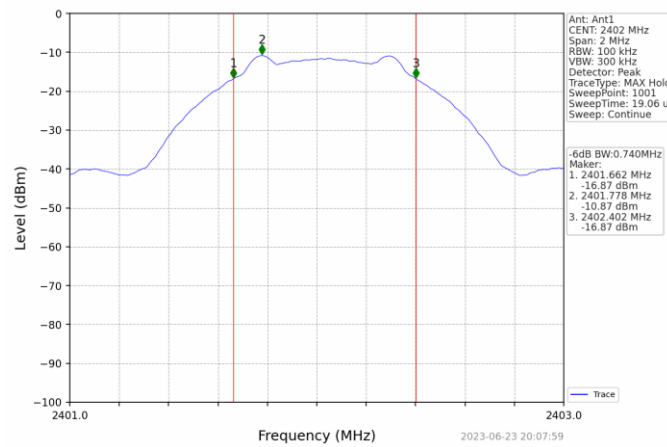
Tester: SGM

Equipment	Model	Manufacturer	Asset	Cal Date	Cal Due Date
SIGNAL ANALYZER (TS8997)	FSV30	ROHDE & SCHWARZ	B085749	7-Dec-2022	7-Dec-2023
RF CABLE SMA TO SMA, 0.01-40GHZ	084-0505-059	TELEDYNE STORM MICROWAVE	20108	13-Mar-2023	13-Mar-2024
TSTPASS SWITCHBOX	SB2	TSTPASS	23009	CNR	CNR

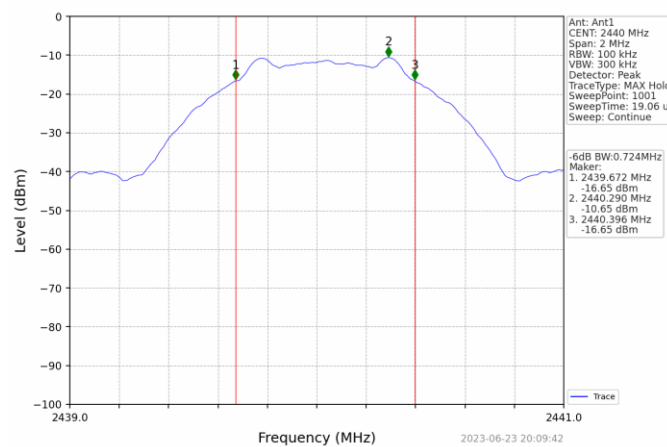
3.5 Test Data – DTS Bandwidth (6dB)

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)	Verdict Limit
				Result	
1M	SISO	2402	1	0.740	>=0.5
		2440	1	0.724	>=0.5
		2480	1	0.732	>=0.5

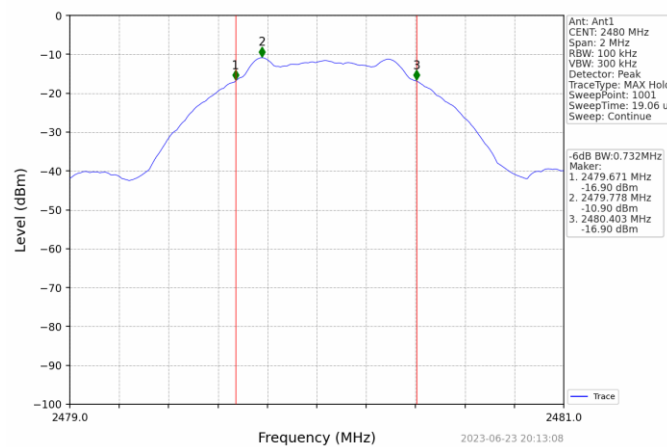
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



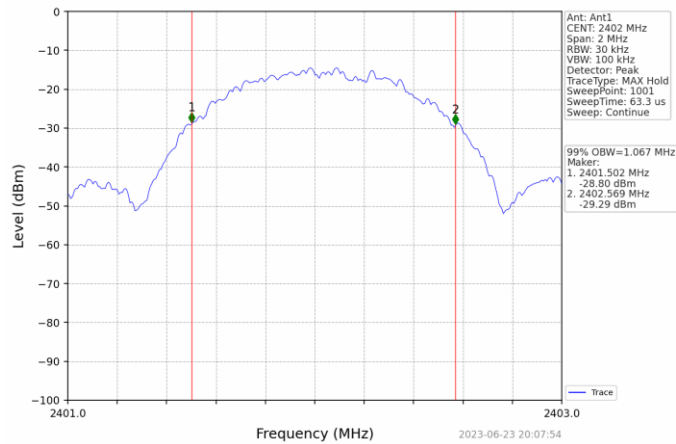
1M_HCH_2480MHz_Ant1_NTNV



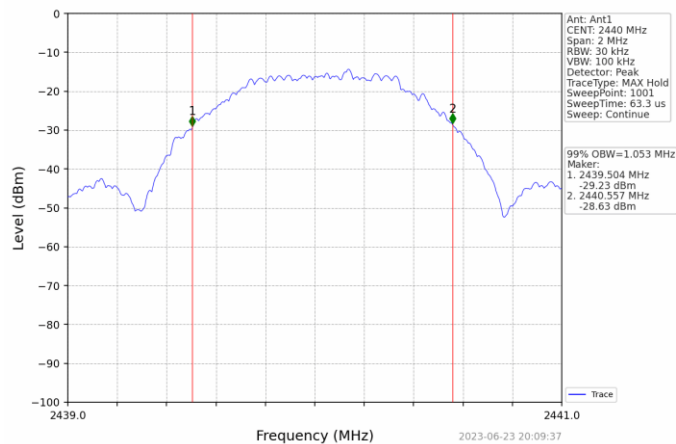
3.6 Test Data – 99% Occupied Bandwidth

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)	
				Result	
1M	SISO	2402	1	1.067	For Report Use
		2440	1	1.053	For Report Use
		2480	1	1.063	For Report Use

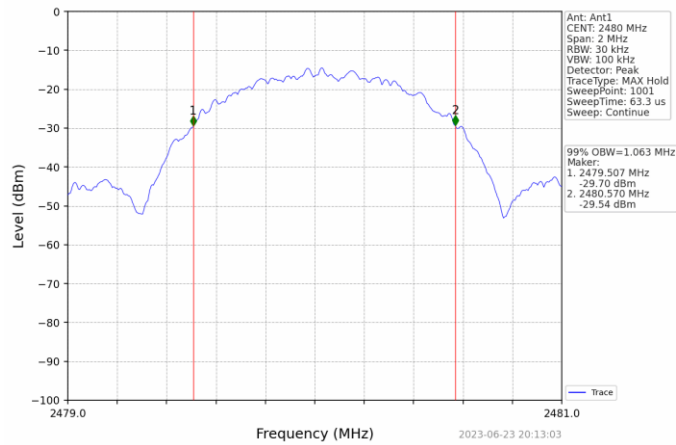
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



1M_HCH_2480MHz_Ant1_NTNV



4 Output Power

4.1 Test Result

Test Description	Test Specification		Test Result
Fundamental Emission Output Power	15.247(b)(3)	RSS-247 S5.4 (d)	Compliant

4.2 Test Method

Fundamental maximum peak conducted output power measurements were performed using the method described in ANSI C63.10:2013 clause 11.9.1.1. This procedure is referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

The BLE 1Mbps data mode was used for this test.

Limit

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. For using antennas with greater than 6dBi of gain, the limit is reduced in dB by the amount the gain exceeds 6dBi (e.g. for a 7.4dBi antenna, the limit is reduced from 30dBm to 28.6dBm). Also, the e.i.r.p. shall not exceed 4 Watts (36 dBm) based on RSS-247 S5.4 (d).

4.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.42 °C
Relative Humidity: 48.3 %
Atmospheric Pressure: 98.1 kPa

4.4 Test Equipment

Test End Date: 23-Jun-2023

Tester: SGM

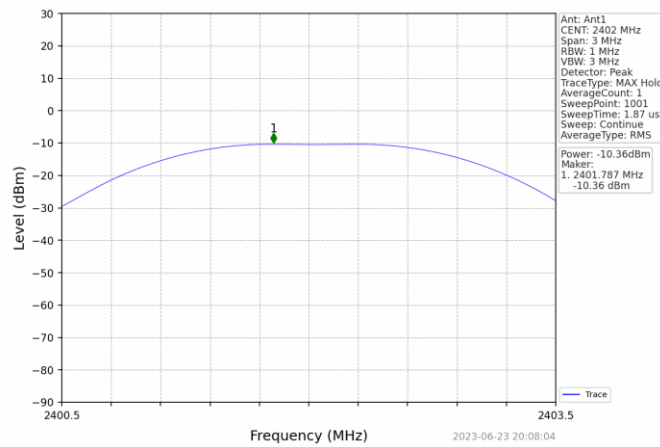
Equipment	Model	Manufacturer	Asset	Cal Date	Cal Due Date
SIGNAL ANALYZER (TS8997)	FSV30	ROHDE & SCHWARZ	B085749	7-Dec-2022	7-Dec-2023
RF CABLE SMA TO SMA, 0.01-40GHZ	084-0505-059	TELEDYNE STORM MICROWAVE	20108	13-Mar-2023	13-Mar-2024
TSTPASS SWITCHBOX	SB2	TSTPASS	23009	CNR	CNR

4.5 Test Data

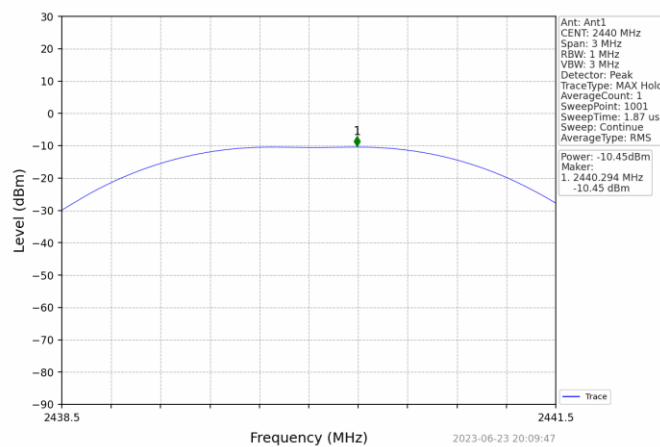
Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	-10.36	<=30	Pass
		2440	-10.45	<=30	Pass
		2480	-10.54	<=30	Pass

Note1: Antenna Gain: Ant1: 2.20dBi;

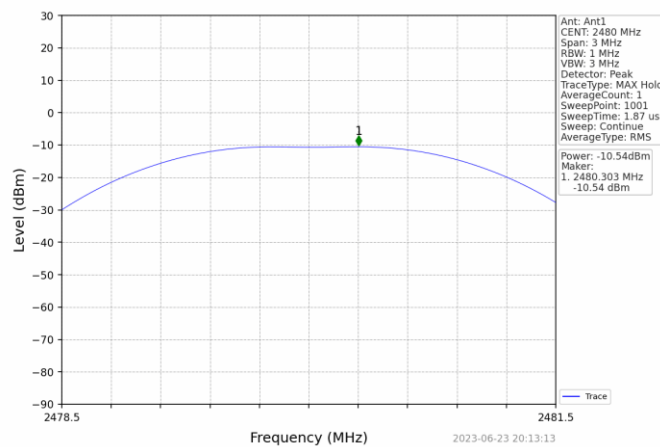
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



1M_HCH_2480MHz_Ant1_NTNV



5 Power Spectral Density

5.1 Test Result

Test Description	Test Specification		Test Result
Power Spectral Density	15.247(e)	RSS-247 S5.2 (b)	Compliant

5.2 Test Method

Peak power spectral density measurements were performed using the procedures from ANSI C63.10: 2013 clause 11.10.2. These procedures are referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

The BLE 1Mbps data mode was used for this test.

Limit

The maximum limit is 8 dBm / 3 kHz.

5.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.42 °C

Relative Humidity: 48.3 %

Atmospheric Pressure: 98.1 kPa

5.4 Test Equipment

Test End Date: 23-Jun-2023

Tester: SGM

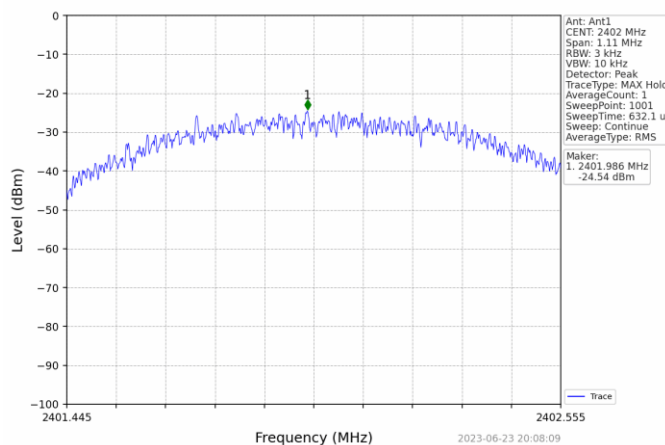
Equipment	Model	Manufacturer	Asset	Cal Date	Cal Due Date
SIGNAL ANALYZER (TS8997)	FSV30	ROHDE & SCHWARZ	B085749	7-Dec-2022	7-Dec-2023
RF CABLE SMA TO SMA, 0.01-40GHZ	084-0505-059	TELEDYNE STORM MICROWAVE	20108	13-Mar-2023	13-Mar-2024
TSTPASS SWITCHBOX	SB2	TSTPASS	23009	CNR	CNR

5.5 Test Data

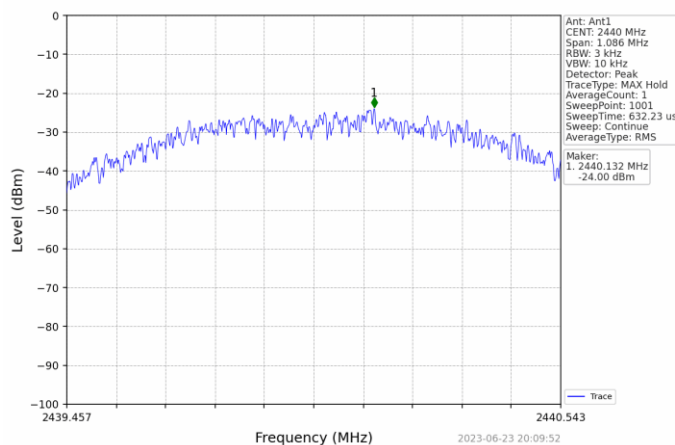
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
1M	SISO	2402	-24.54	<=8	Pass
		2440	-24.00	<=8	Pass
		2480	-24.38	<=8	Pass

Note1: Antenna Gain: Ant1: 2.20dBi;

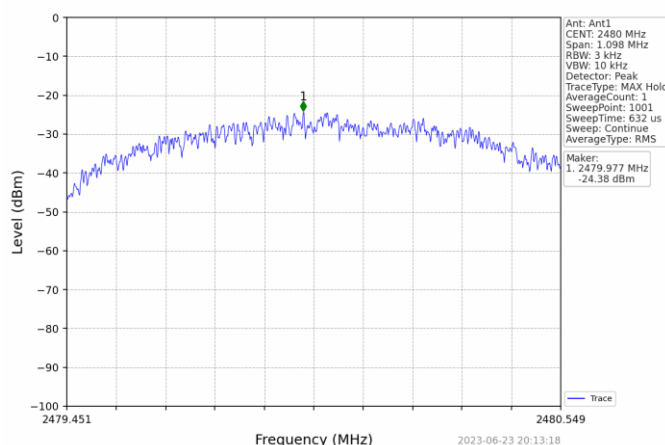
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



1M_HCH_2480MHz_Ant1_NTNV



6 Conducted Spurious Emissions / Band Edge

6.1 Test Result

Test Description	Test Specification		Test Result
Conducted Spurious and Band Edge Emissions	15.247(d)	RSS-247 S5.5	Compliant

6.2 Test Method

Conducted band edge and spurious band emissions in non-restricted frequency bands were measured using the method defined in ANSI C63.10 clause 11.11. This procedure is referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

The device does not utilize BLE 2Mbps data mode, so only BLE 1Mbps mode was tested.

Limit

Because the maximum peak conducted output power was used to determine compliance with the output power limits, the limit in any 100 kHz band outside of the authorized band is 20 dB below the maximum in-band peak level.

6.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.42 °C
Relative Humidity: 48.3 %
Atmospheric Pressure: 98.1 kPa

6.4 Test Equipment

Test End Date: 23-Jun-2023

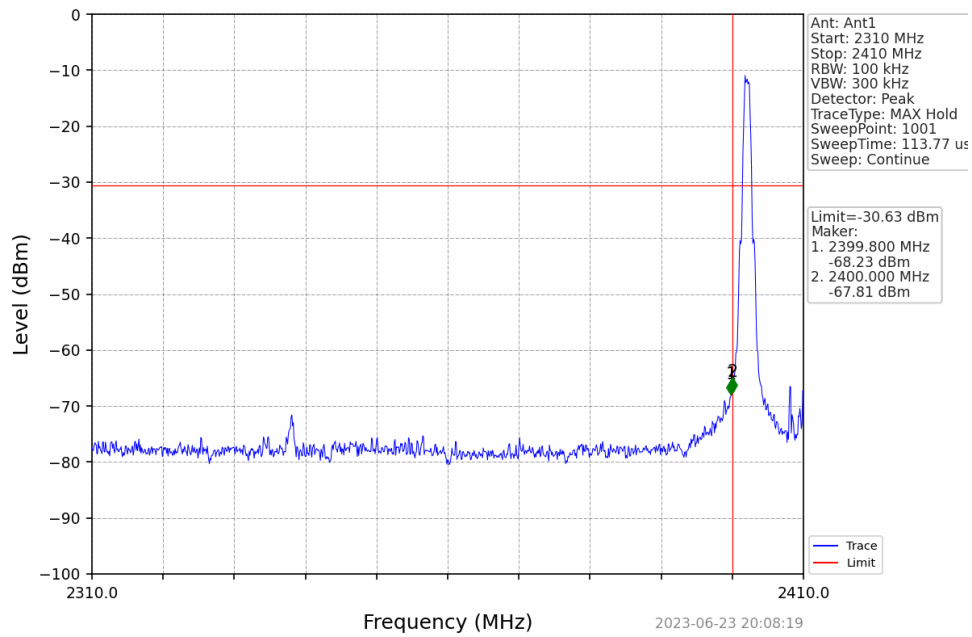
Tester: SGM

Equipment	Model	Manufacturer	Asset	Cal Date	Cal Due Date
SIGNAL ANALYZER (TS8997)	FSV30	ROHDE & SCHWARZ	B085749	7-Dec-2022	7-Dec-2023
RF CABLE SMA TO SMA, 0.01-40GHZ	084-0505-059	TELEDYNE STORM MICROWAVE	20108	13-Mar-2023	13-Mar-2024
TSTPASS SWITCHBOX	SB2	TSTPASS	23009	CNR	CNR

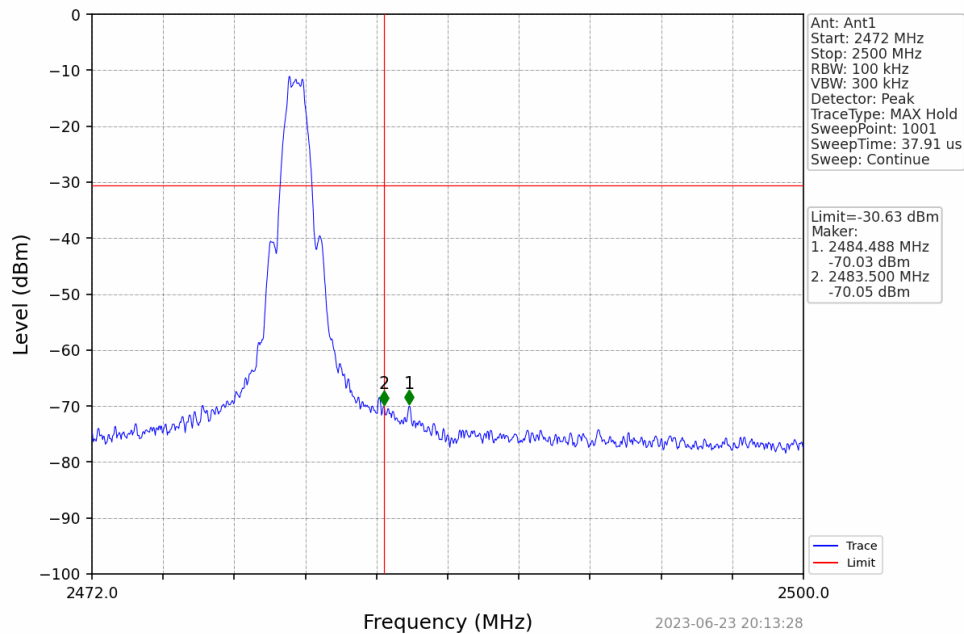
6.5 Test Data – DTS Band Edge

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	-10.63	-30.63	Pass
		2440	1	-10.63	-30.63	Pass
		2480	1	-10.63	-30.63	Pass
Note1: Refer to RSS-247 Issue 2 section 5.5 and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.						

1M_LCH_2402MHz_Ant1_NTNV

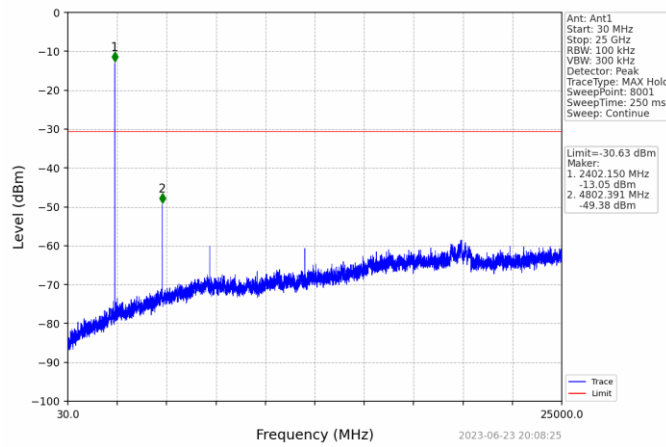


1M_HCH_2480MHz_Ant1_NTNV

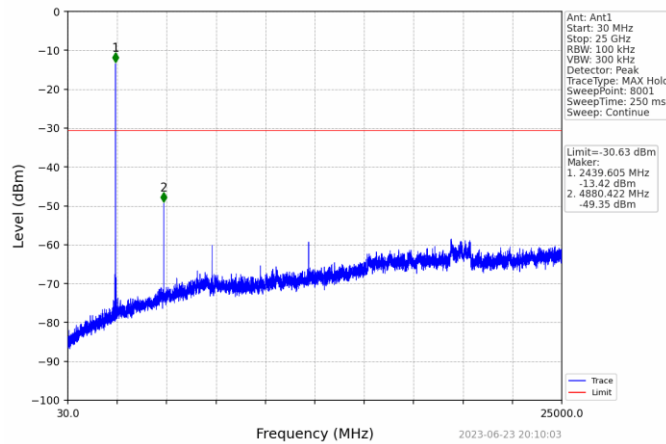


6.6 Test Data – DTS Conducted Spurious Emissions

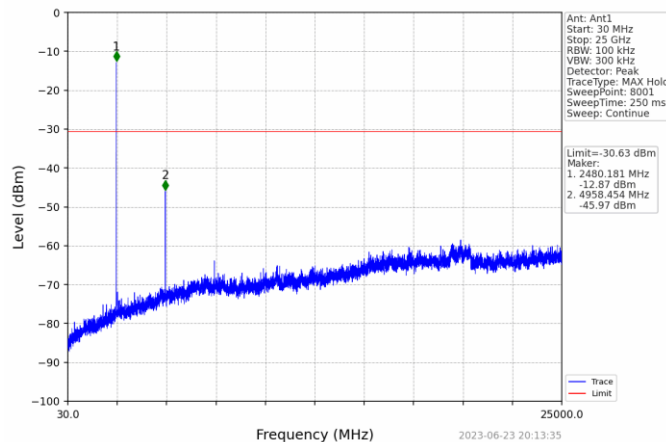
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



1M_HCH_2480MHz_Ant1_NTNV



7 Emissions in Restricted Frequency Bands

7.1 Test Result

Test Description	Test Specification		Test Result
Emissions in Restricted Frequency Bands	15.247(d) 15.205, 15.209	RSS-247 S5.5 RSS-GEN S8.9, S8.10	Compliant

7.2 Test Method

Radiated emissions in restricted frequency bands were measured using methods defined in ANSI C63.10 clause 11.12. These procedures are referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

Low, middle, and high channels were investigated – the device was commanded to continuously transmit on channels 0, 19 and 39.

Test distances for radiated tests:

- 9k to 30 MHz – Near field prescan to determine if there were any emissions
- 30 to 1000 MHz - The EUT to measurement antenna distance was 3 meters
- 1 to 18 GHz - The EUT to measurement antenna distance was 3 meters
- 18 to 26 GHz - The EUT to measurement antenna distance was 3 meters

Limits within restricted bands of operation:

Frequency	Limits ⁽¹⁾		Peak Limits dBuV/m
	Microvolts/m	dBuV/m	
30 - 88 MHz	100	40 ⁽²⁾	--
88 - 216 MHz	150	43.5 ⁽²⁾	--
216 - 960 MHz	200	46 ⁽²⁾	--
960 - 1000 MHz	500	54 ⁽²⁾	--
1 - 40 GHz	500	54 ⁽³⁾	74

(1) These limits are applicable to emissions outside of the intentional transmit frequency band.

(2) Quasi-peak limit

(3) Average limit

7.3 Test Site

3m Absorber Lined Shielded Enclosure (ALSE), Suwanee, GA

Environmental Conditions	30-1000MHz	1-26GHz
Temperature:	23.7 °C	23.3 °C
Relative Humidity:	41.4 %	42.9 %
Atmospheric Pressure:	97.6 kPa	98.0 kPa

7.4 Test Equipment

30-1000MHz

Test End Date: 30-May-2023

Tester: ZH

Equipment	Model	Manufacturer	Asset	Cal Date	Cal Due Date
ANTENNA, BILOG	JB6	SUNOL	B079689	26-May-2022	26-May-2024
N to N RF Cable	EM-B810NM-276	ECHELON	23007	31-Mar-2023	31-Mar-2024
N-FEMALE TO N-MALE RF CABLE	EM-B810NMNF-118	ECHELON	23010	1-May-2023	1-May-2024
RF CABLE NM TO NM, 0.01-18GHZ	90-088-079	TELEDYNE STORM MICROWAVE	20134	14-Mar-2023	14-Mar-2024
RF CABLE RIGHT ANGLE NM TO NM, 0.01-18GHZ	90-076-020	TELEDYNE STORM MICROWAVE	20132	13-Mar-2023	13-Mar-2024
LOW NOISE AMPLIFIER	ZKL-2+	MINI-CIRCUITS	B079800	14-Sep-2022	14-Sep-2023
EMI TEST RECEIVER	ESW44	ROHDE & SCHWARZ	22032	24-Nov-2022	24-Nov-2023

Software: TILE 7 software profile "RE 30-1000MHz 3m Tile7 221014" dated 14 Oct 2022

1-18GHz

Test End Date: 31-May-2023

Tester: LM

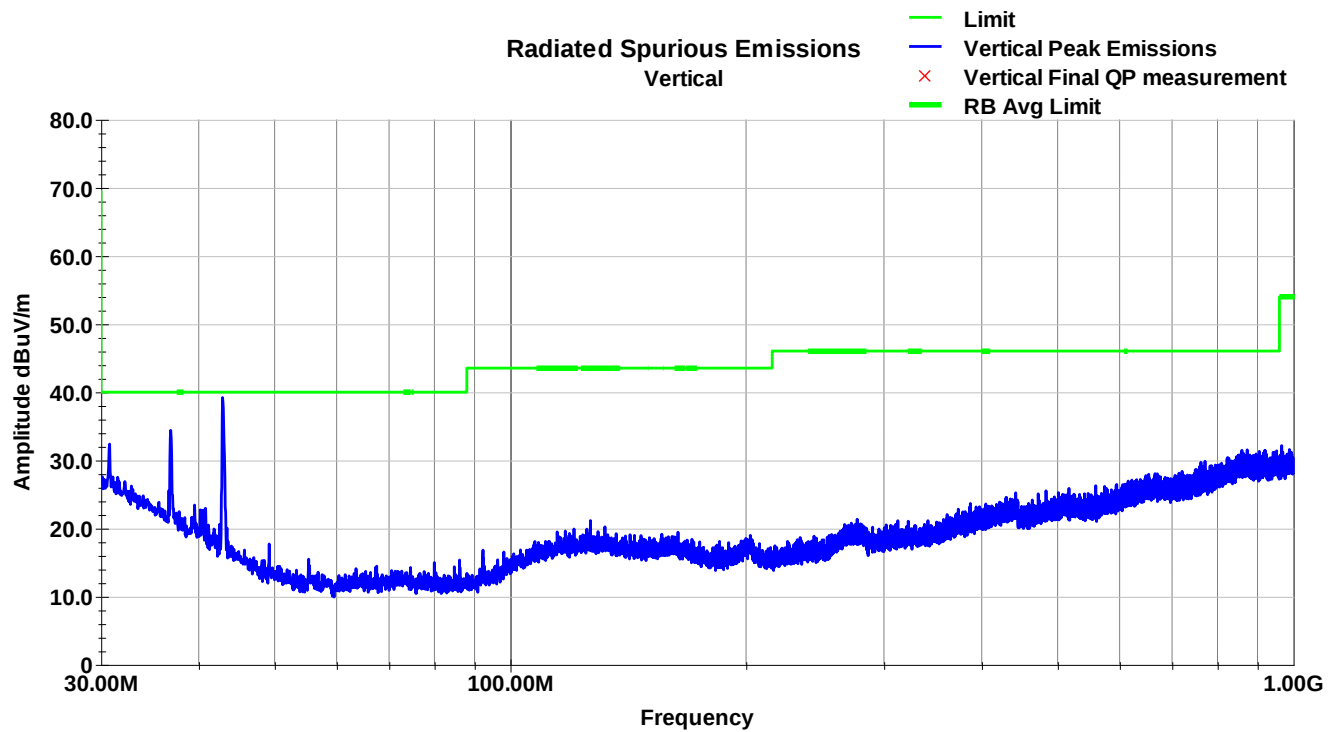
Equipment	Model	Manufacturer	Asset	Cal Date	Cal Due Date
ANTENNA, DRG HORN (MEDIUM)	3117	ETS LINDGREN	B079691	15-Aug-2022	15-Aug-2024
N to N RF Cable	EM-B810NM-276	ECHELON	23007	31-Mar-2023	31-Mar-2024
RF CABLE RIGHT ANGLE NM TO NM, 0.01-18GHZ	90-076-020	TELEDYNE STORM MICROWAVE	20132	13-Mar-2023	13-Mar-2024
LOW NOISE AMPLIFIER	TS-PR18	ROHDE & SCHWARZ	15003	3-Oct-2022	3-Oct-2023
EMI TEST RECEIVER	ESW44	ROHDE & SCHWARZ	22032	24-Nov-2022	24-Nov-2023

Software: TILE 7 software profile "RE 1-18GHz 3m Tile7 220307" dated 07 March 2022

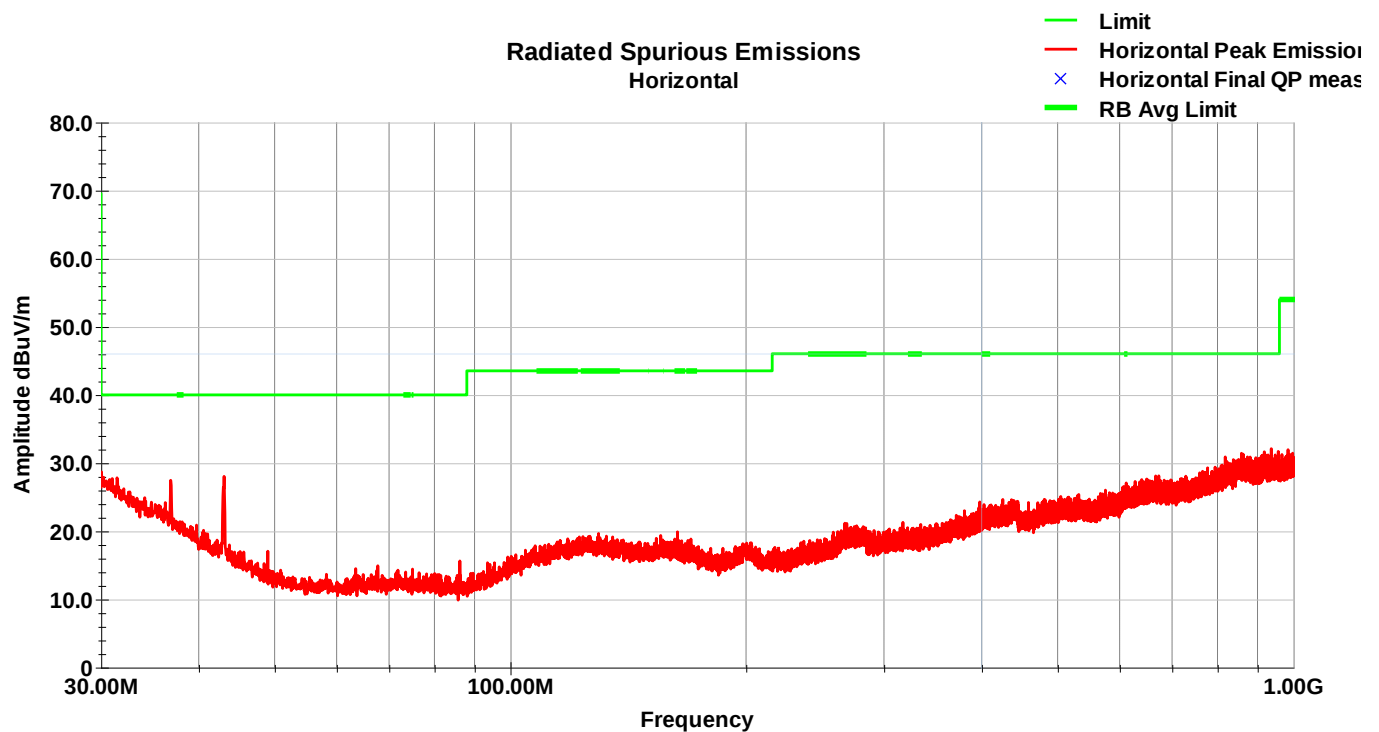
7.5 Test Data

Between 30-1000MHz, there was no significant deviation with respect to axis or channel.

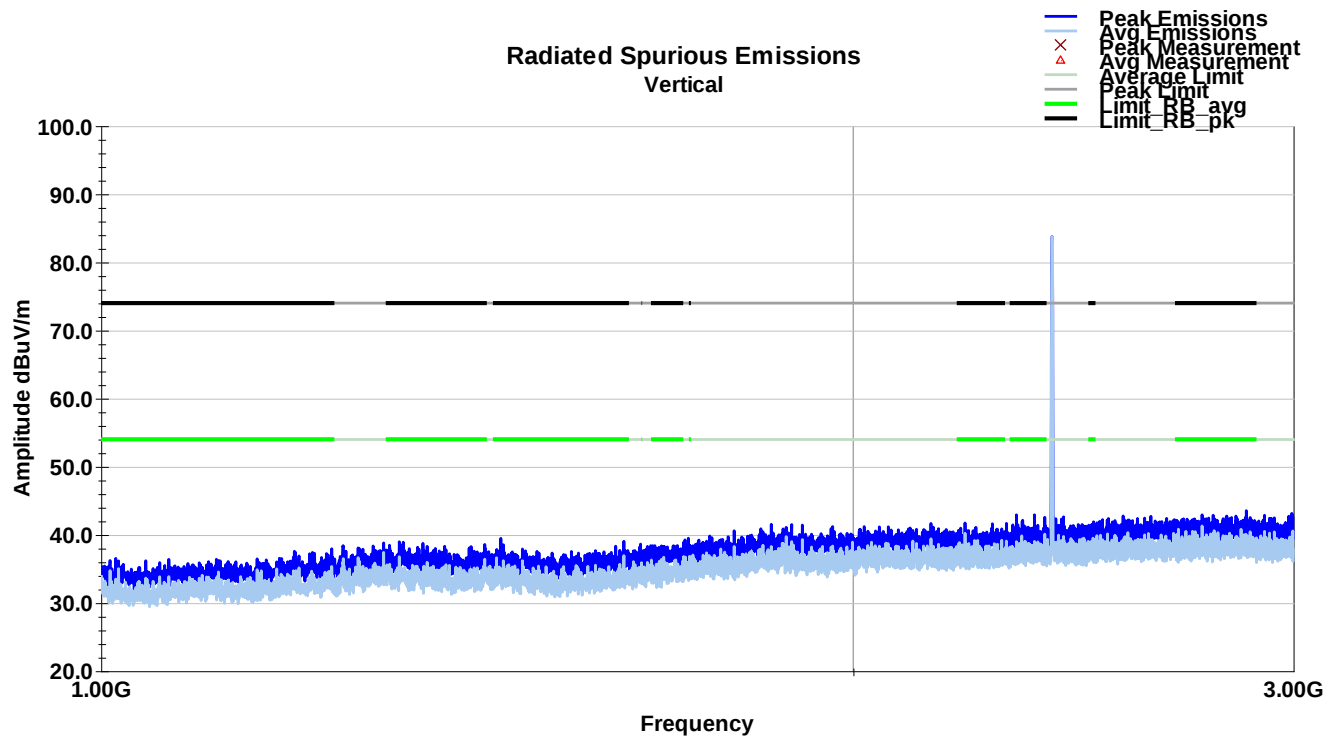
Vertical Radiated Spurious Emissions – 30-1000MHz (Mid Channel)



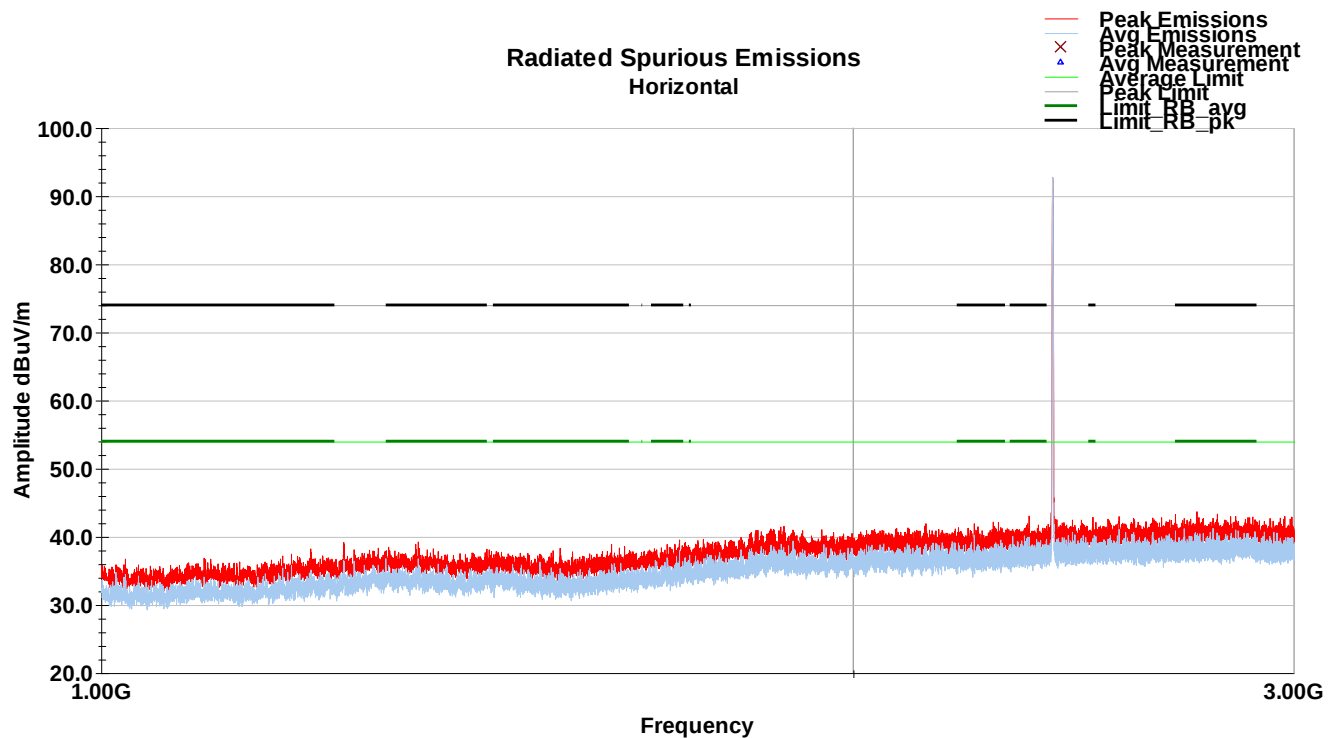
Horizontal Radiated Spurious Emissions – 30-1000MHz (Mid Channel)



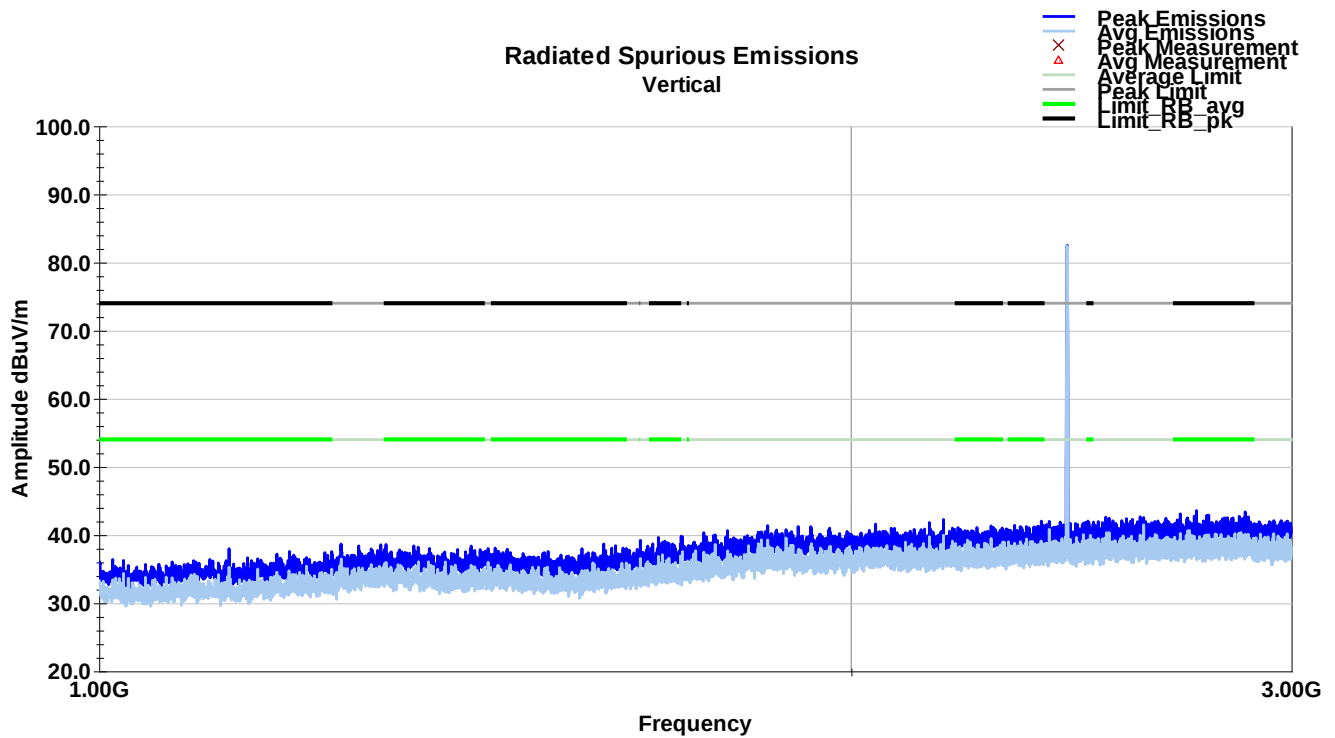
Vertical Radiated Spurious Emissions – 1-3GHz (Low Channel) – X-Axis



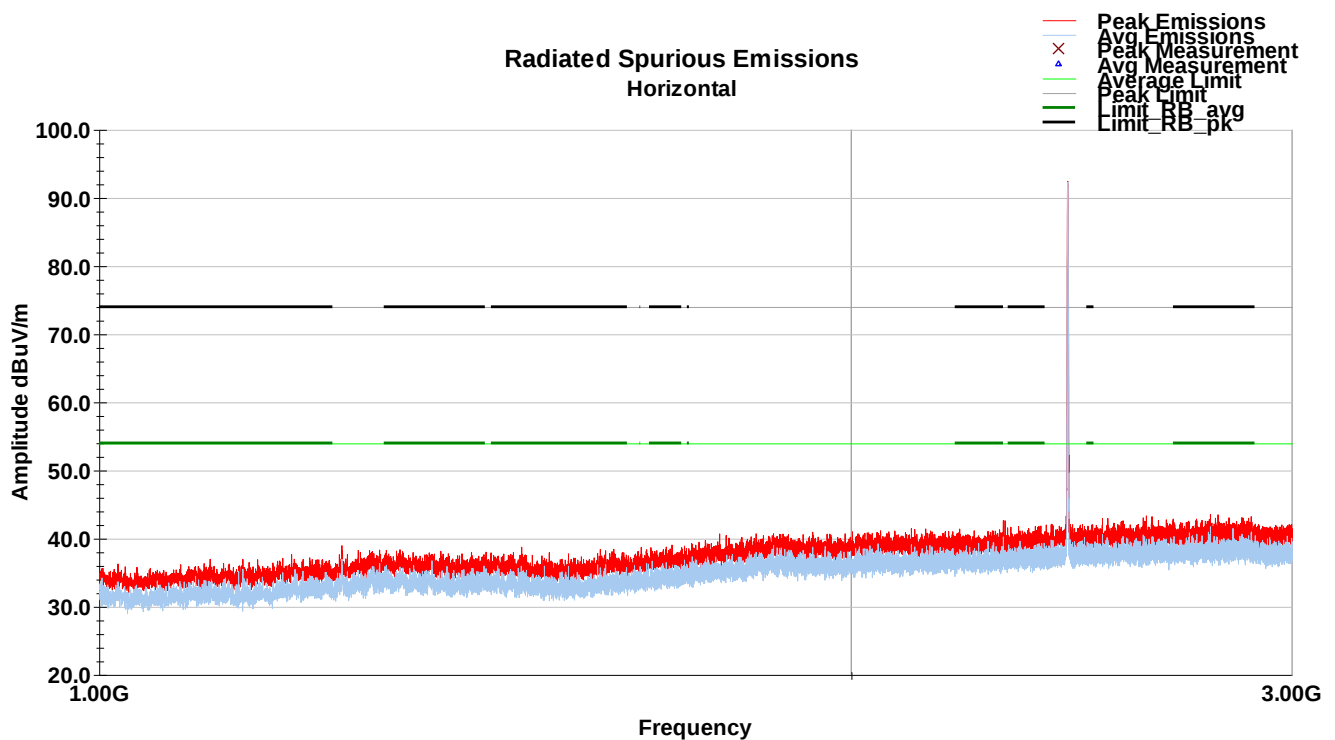
Horizontal Radiated Spurious Emissions – 1-3GHz (Low Channel) – X-Axis



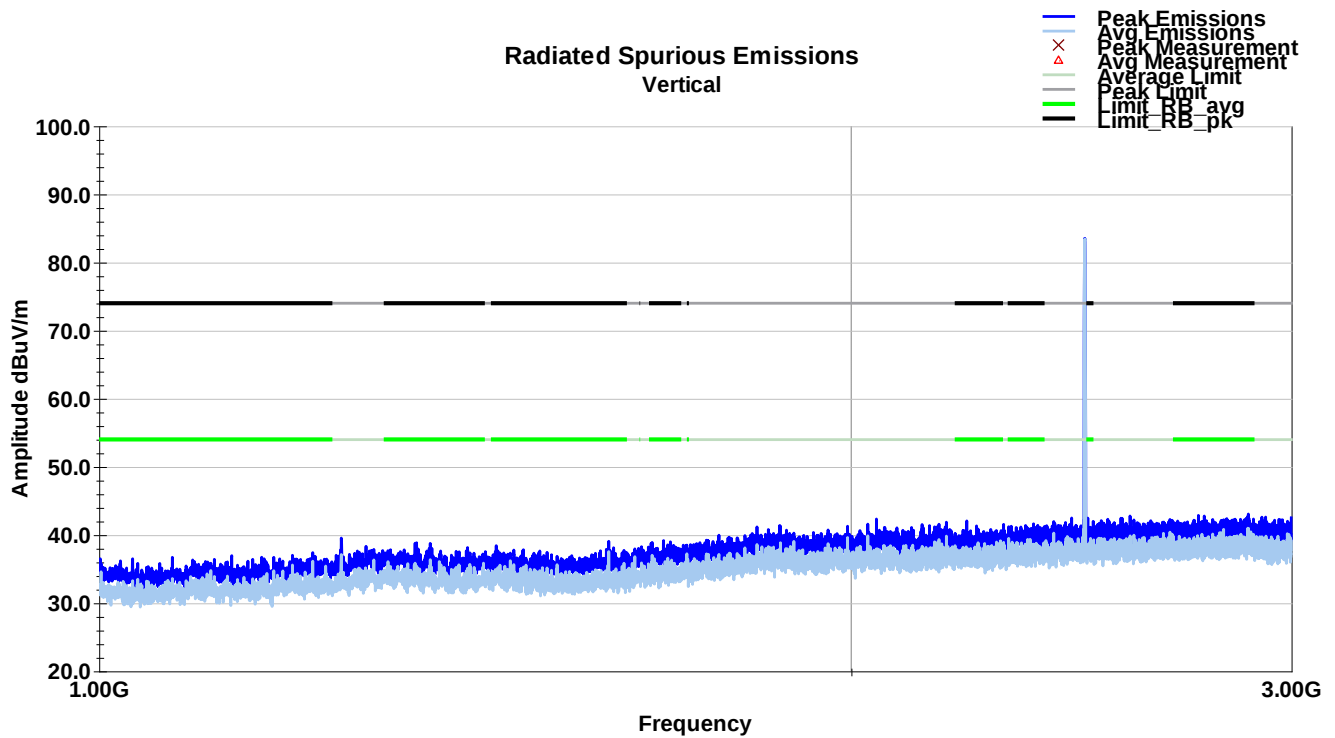
Vertical Radiated Spurious Emissions – 1-3GHz (Mid Channel) – X-Axis



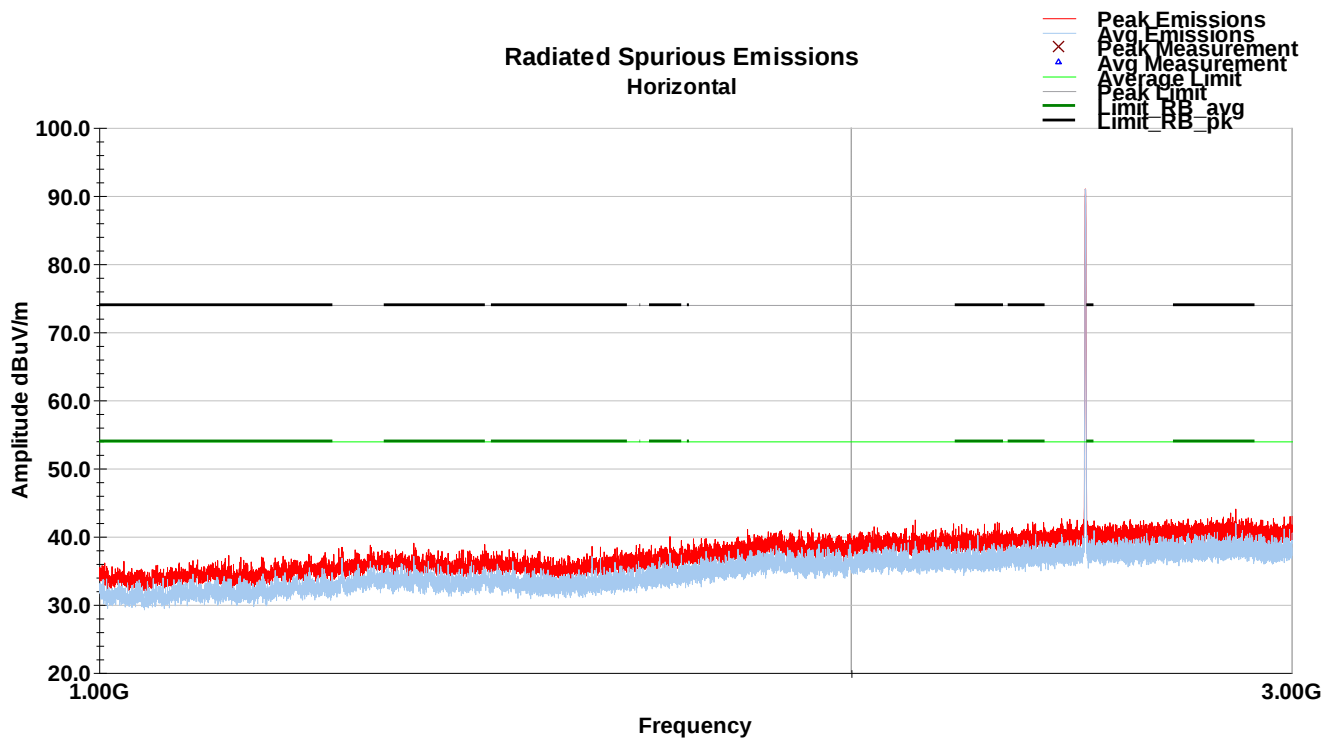
Horizontal Radiated Spurious Emissions – 1-3GHz (Mid Channel) – X-Axis



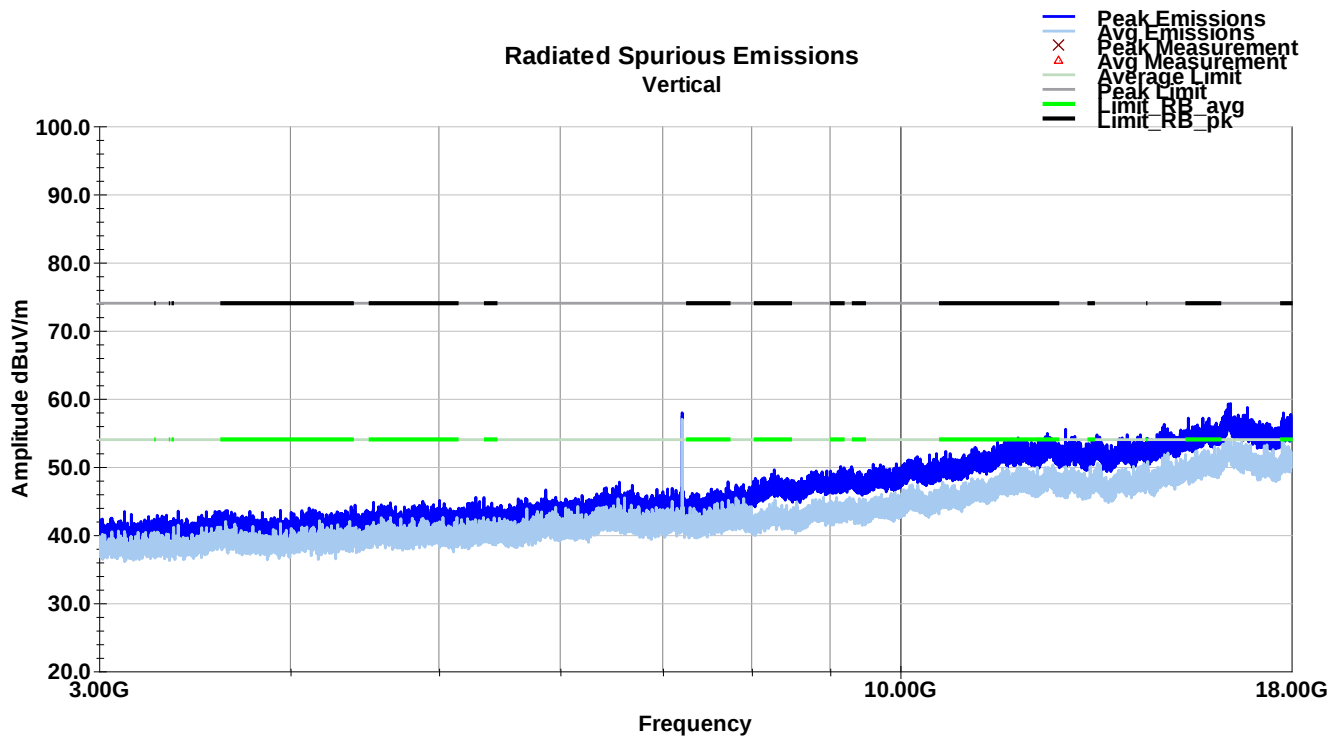
Vertical Radiated Spurious Emissions – 1-3GHz (High Channel) – X-Axis



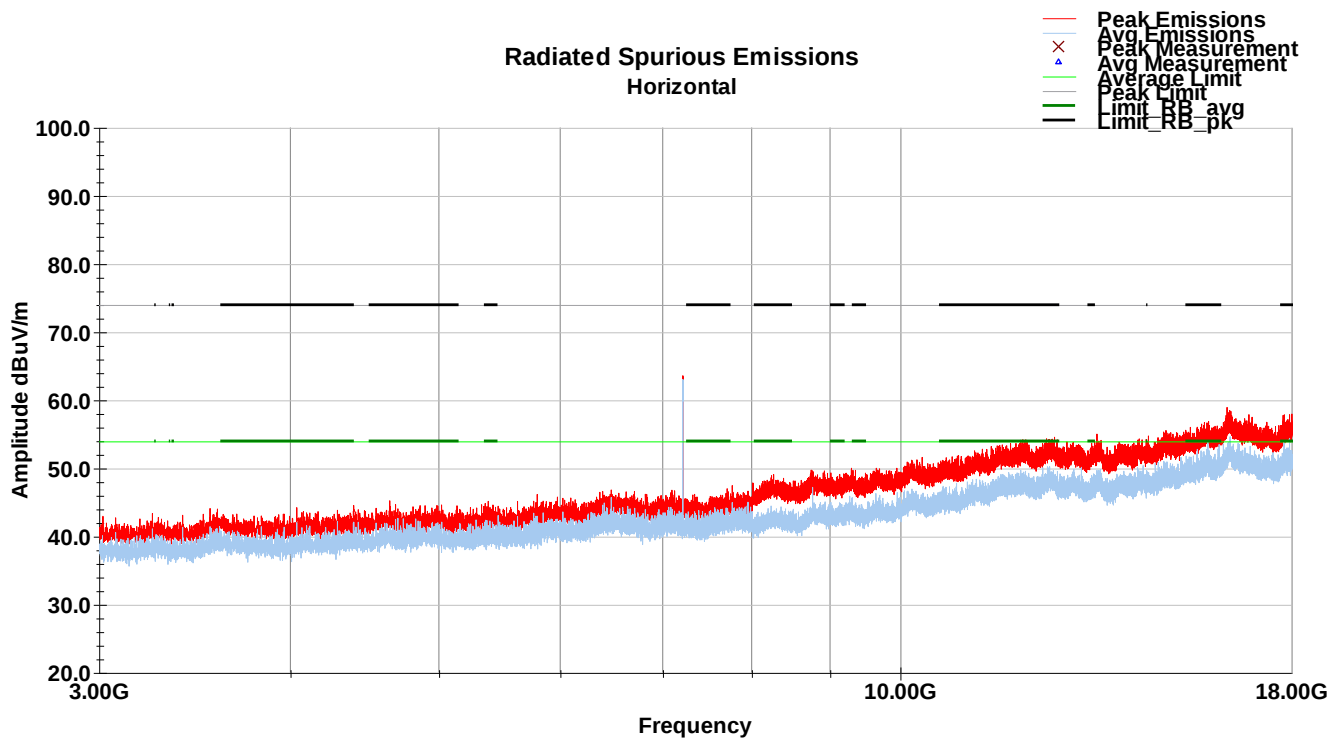
Horizontal Radiated Spurious Emissions – 1-3GHz (High Channel) – X-Axis



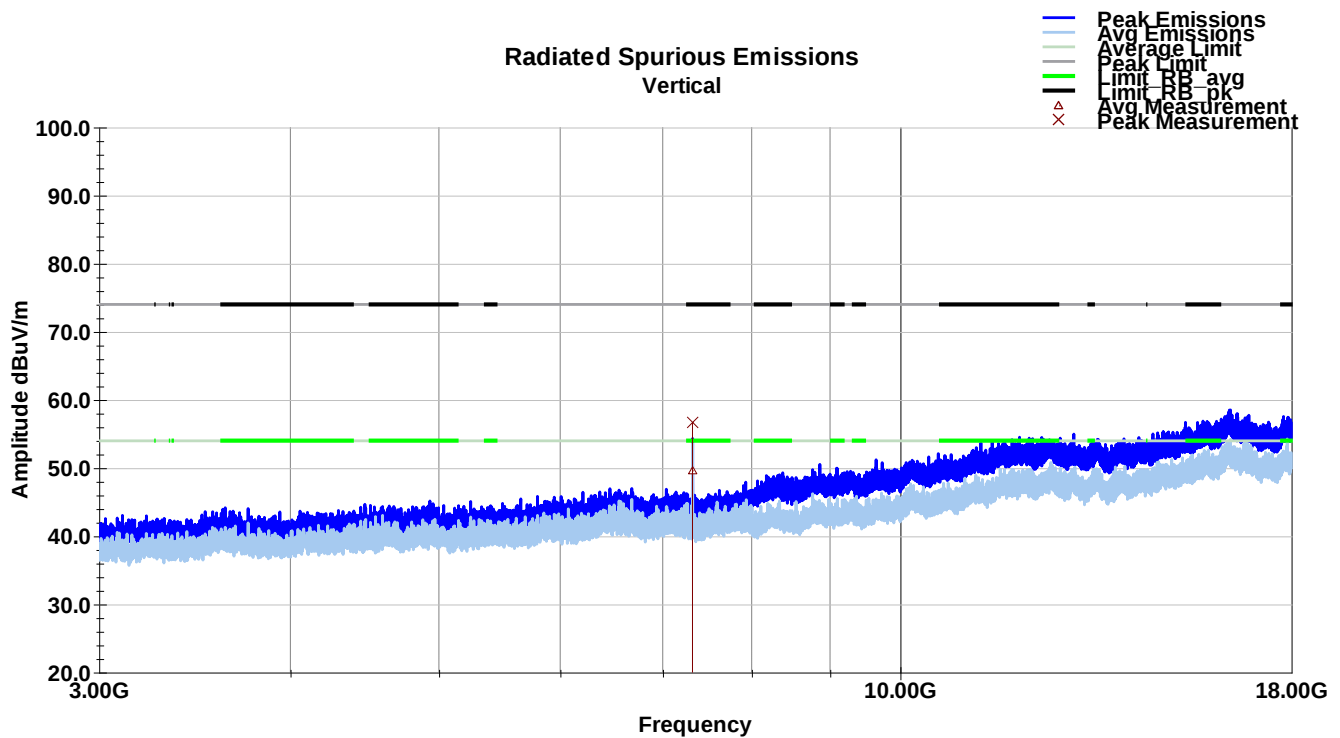
Vertical Radiated Spurious Emissions – 3-18GHz (Low Channel) – X-Axis



Horizontal Radiated Spurious Emissions – 3-18GHz (Low Channel) – X-Axis



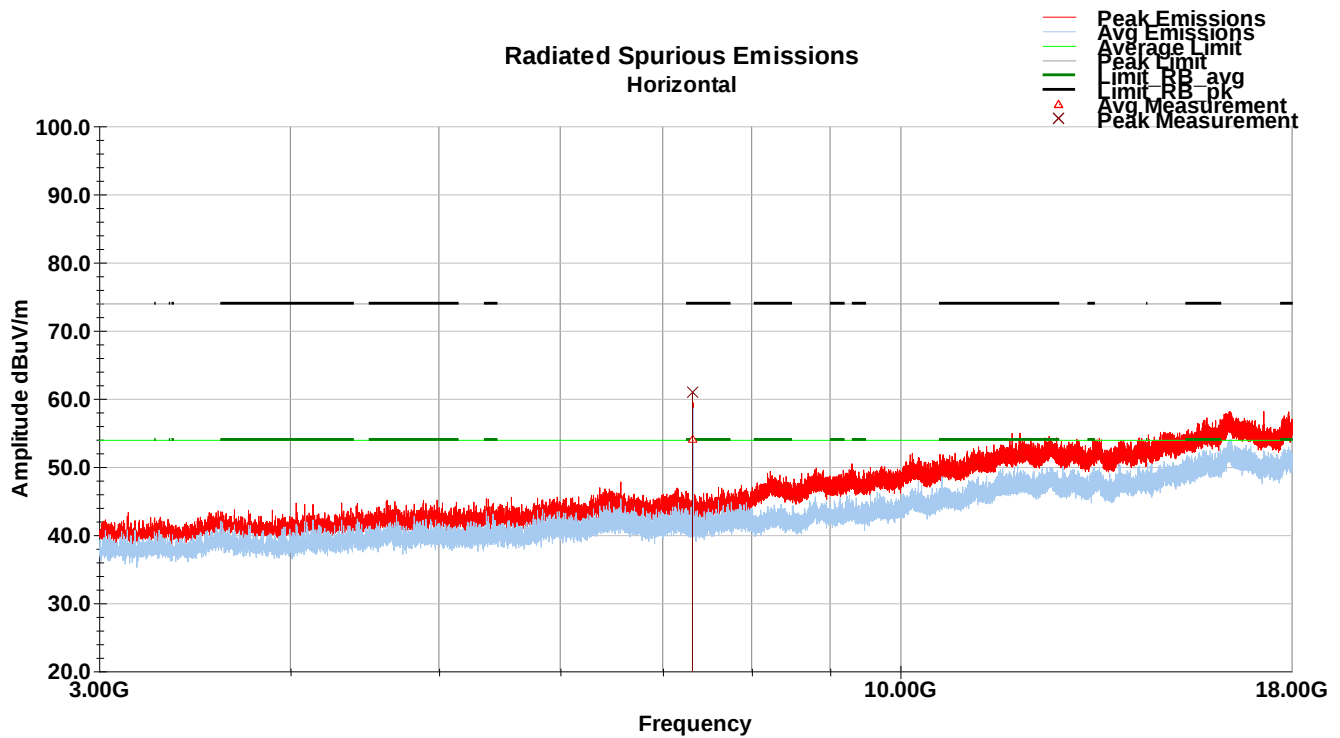
Vertical Radiated Spurious Emissions – 3-18GHz (Mid Channel) – X-Axis



Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
7319.44	59.8	V	353.0	218.0	35.5	3.4	42.0	56.7	74.0	-17.3
Final Pk = Raw Pk + AF + Loss - Amp										
Margin = Final Pk - Limit										

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Avg dBuV/m	Limit (dBuV/m)	Margin (dB)
7319.44	52.8	V	353.0	218.0	35.5	3.4	42.0	49.7	54.0	-4.3
Final Avg = Raw Avg + AF + Loss - Amp										
Margin = Final Avg - Limit										

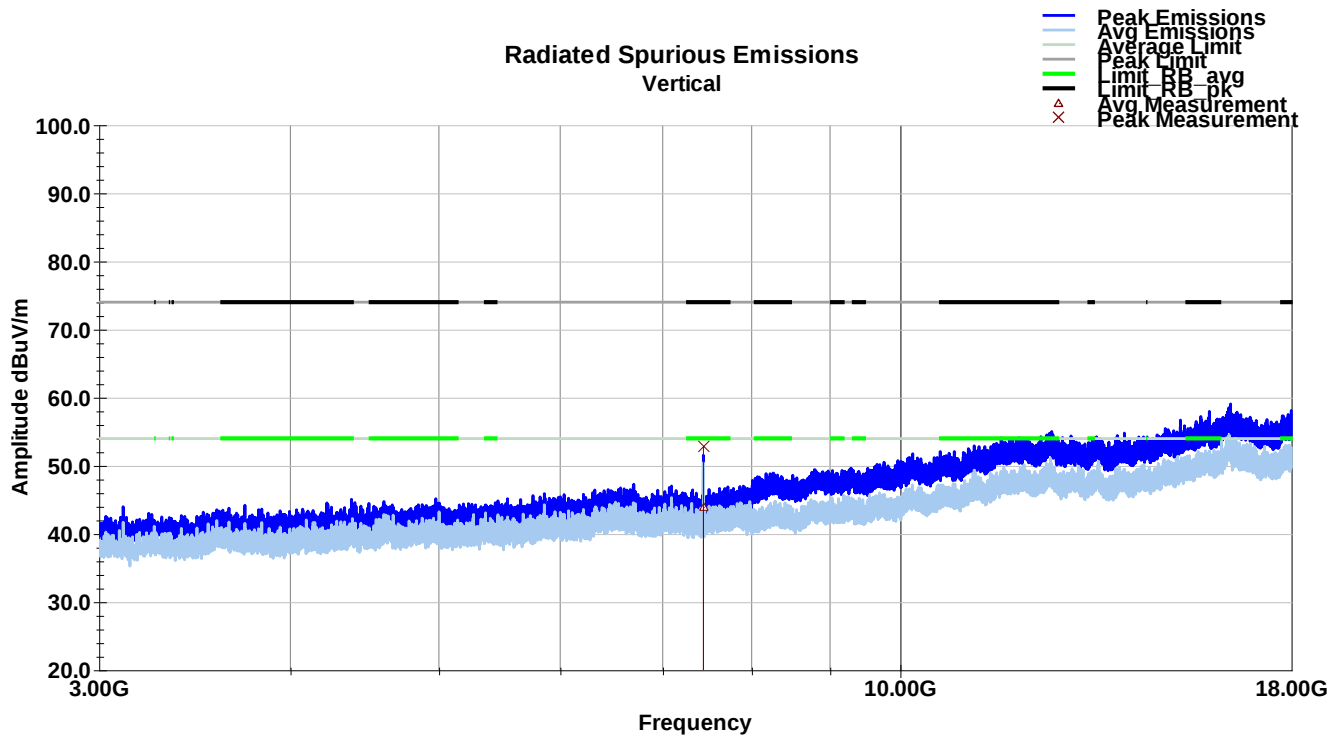
Horizontal Radiated Spurious Emissions – 3-18GHz (Mid Channel) – X-Axis



Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
7319.32	63.9	H	329.0	100.0	35.5	3.4	42.0	60.9	74.0	-13.1
Final Pk = Raw Pk + AF + Loss - Amp										
Margin = Final Pk - Limit										

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Avg Value dBuV/m	Limit (dBuV/m)	Margin (dB)
7319.32	57.0	H	329.0	100.0	35.5	3.4	42.0	53.9	54.0	-0.1
Final Avg = Raw Avg + AF + Loss - Amp										
Margin = Final Avg - Limit										

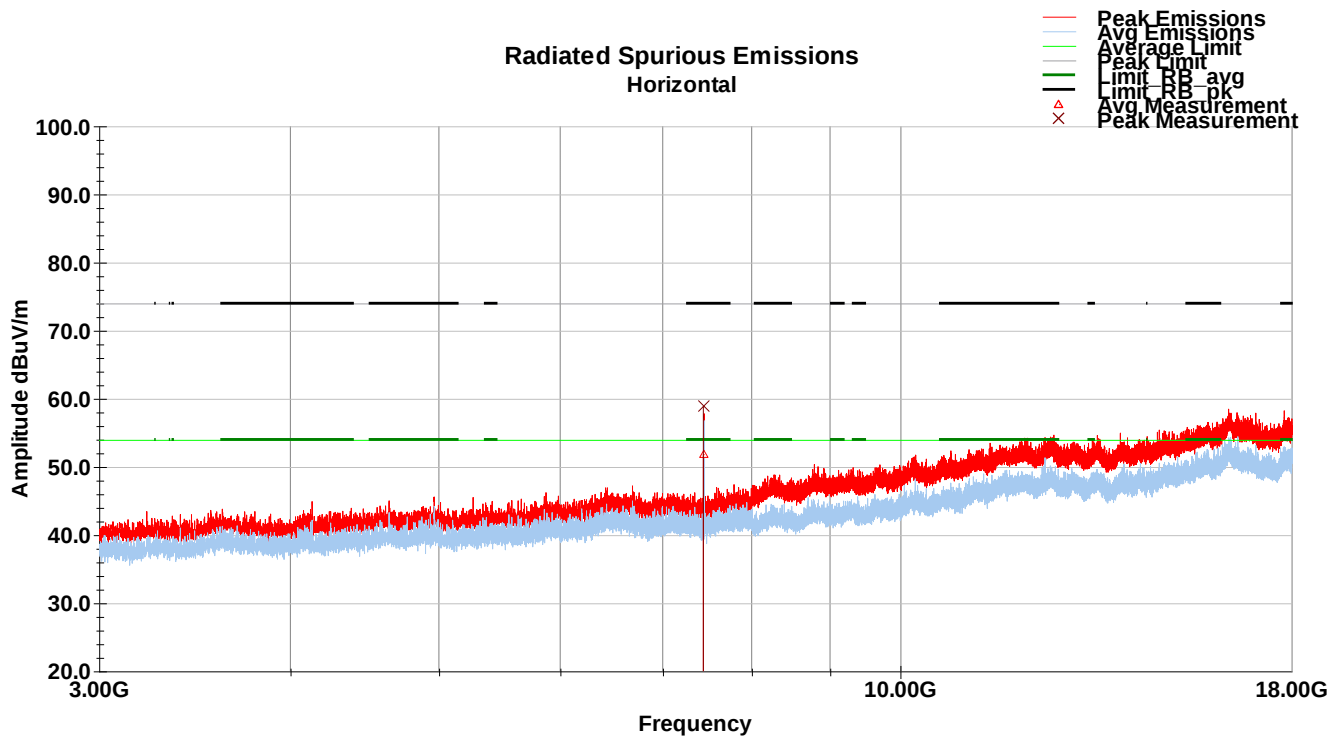
Vertical Radiated Spurious Emissions – 3-18GHz (High Channel) – X-Axis



Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
7441.00	56.1	V	267.0	137.0	35.5	3.3	42.1	52.8	74.0	-21.2
Final Pk = Raw Pk + AF + Loss - Amp										
Margin = Final Pk - Limit										

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Avg dBuV/m	Limit (dBuV/m)	Margin (dB)
7441.00	47.3	V	267.0	137.0	35.5	3.3	42.1	44.0	54.0	-10.0
Final Avg = Raw Avg + AF + Loss - Amp										
Margin = Final Avg - Limit										

Horizontal Radiated Spurious Emissions (High Channel) – X-Axis



Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
7439.32	62.2	H	331.0	100.0	35.5	3.3	42.1	58.9	74.0	-15.1
Final Pk = Raw Pk + AF + Loss - Amp										
Margin = Final Pk - Limit										

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Avg Value dBuV/m	Limit (dBuV/m)	Margin (dB)
7439.32	55.1	H	331.0	100.0	35.5	3.3	42.1	51.9	54.0	-2.1
Final Avg = Raw Avg + AF + Loss - Amp										
Margin = Final Avg - Limit										

Note: No discernable emissions detected to 26 GHz

8 Band Edge Emissions in Restricted Frequency Bands

8.1 Test Result

Test Description	Test Specification		Test Result
Band Edge Emissions in Restricted Frequency Bands	15.205, 15.209	RSS-GEN S8.9, 8.10	Compliant

8.2 Test Method

Field strength measurements were performed at the restricted band edges of 2390MHz and 2483.5MHz. Measurements were made using the conducted methods defined in ANSI C63.10: 2013 clause 11.12.2. The measurements were converted to a radiated field strength equivalent using the equations defined in that section. Both peak and average measurements were performed at the antenna port. These procedures are referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

The device does not utilize BLE 2Mbps data mode, so only BLE 1Mbps mode was tested.

8.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.42 °C
Relative Humidity: 48.3 %
Atmospheric Pressure: 98.1 kPa

8.4 Test Equipment

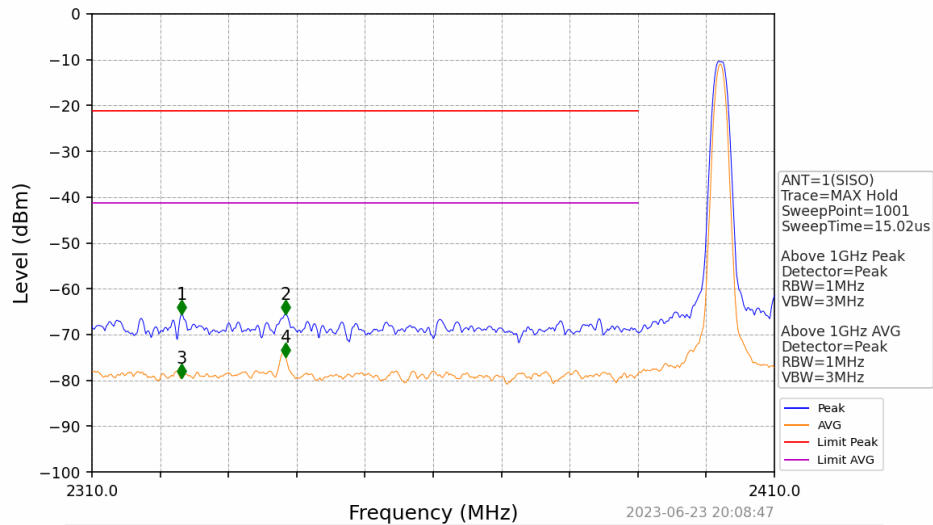
Test End Date: 23-Jun-2023

Tester: SGM

Equipment	Model	Manufacturer	Asset	Cal Date	Cal Due Date
SIGNAL ANALYZER (TS8997)	FSV30	ROHDE & SCHWARZ	B085749	7-Dec-2022	7-Dec-2023
RF CABLE SMA TO SMA, 0.01-40GHZ	084-0505-059	TELEDYNE STORM MICROWAVE	20108	13-Mar-2023	13-Mar-2024
TSTPASS SWITCHBOX	SB2	TSTPASS	23009	CNR	CNR

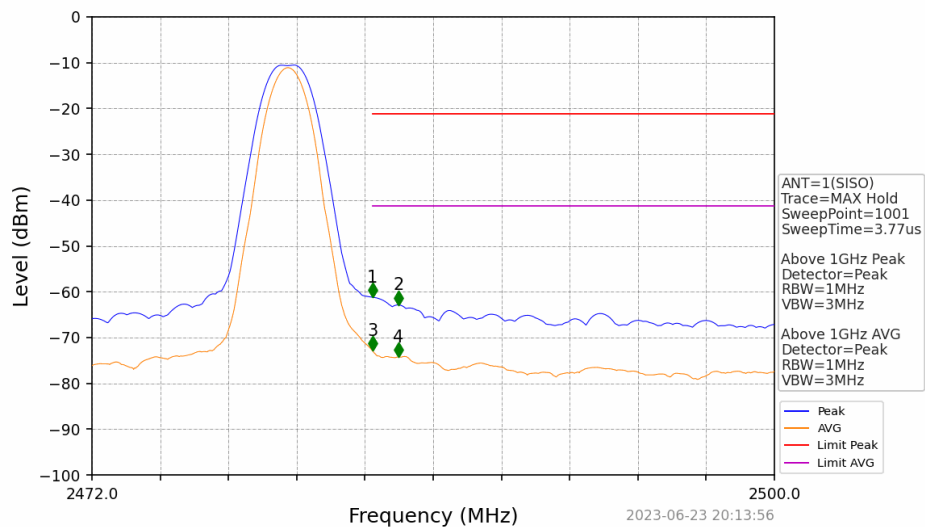
8.5 Test Data

1M_LCH_2402MHz_Ant1_NTNV



No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	2323.100	-65.58	-21.20	42.18	Pass	Peak	3	2323.100	/	-21.20	/	/	AVG
2	2338.400	-65.60	-21.20	42.20	Pass	Peak	4	2338.400	/	-21.20	/	/	AVG

1M_HCH_2480MHz_Ant1_NTNV



No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	2483.508	-61.18	-21.20	37.78	Pass	Peak	3	2483.508	/	-21.20	/	/	AVG
2	2484.572	-62.89	-21.20	39.49	Pass	Peak	4	2484.572	/	-21.20	/	/	AVG

9 Measurement Uncertainty

The measurement uncertainty figures are calculated in accordance with TR 100 028-1 [2] and correspond to an expansion factor (coverage factor) $k = 2$ (which provides confidence levels of 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Parameter	Expanded Uncertainty for Normal k factor equal to 2	
	Required	Laboratory Actual
Radio Frequency	$\pm 1 \times 10^{-5}$	$\pm 9.8 \times 10^{-8}$
total RF power, conducted	± 1.5 dB	± 1.2 dB
RF power density, conducted	± 3 dB	± 0.7 dB
spurious emissions, conducted	± 3 dB	± 2.1 dB
all emissions, radiated	± 6 dB	± 4.8 dB
temperature	$\pm 1^{\circ}\text{C}$	$\pm 0.5^{\circ}\text{C}$
humidity	± 5 %	$\pm 3.5\%$
DC and low frequency voltages	± 3 %	$\pm 0.4\%$
Conducted disturbance at mains port using AMN	± 3.4 dB	± 2.5 dB

10 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	12 July 2023
1	Updated Antenna Gain from 2.2 dBi to 2.4 dBi per antenna sheet.	07 September 2023