

TEST REPORT



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Laboratory Accreditations (per ISO/IEC 17025:2017)



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Manufacturer: Tantalus System Corp
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Equipment Tested: TRUConnect Edge communication module
Model Number(s): FM12S & FM2S
FCC ID: OZFSMIM
ISED ID: 3669A-STIM
FVIN: 17.08



REVISION HISTORY

Date	Report Number	Details	Author's Initials
September 2, 2025	QA-2432	Initial Draft	JS
March 25, 2026	QA-2432-1	Final Report	JS

All previous versions of this report have been superseded by the latest dated revision as listed in the above table.
Please dispose of all previous electronic and paper printed revisions accordingly.

REPORT AUTHORIZATION

The data documented in this report is for the test equipment provided by the manufacturer and the results relate only to the item tested. The tests were conducted on the sample equipment as requested by the manufacturer for the purpose of demonstrating compliance with the standards outlined in Section I of this report as agreed upon by the Manufacturer under the quote QAI-1941.

The Manufacturer is responsible for the tested product configurations, continued product compliance, and for the appropriate auditing of subsequent products as required.

This report may comprise a partial list of tests that are required for FCC and ISED. A Declaration of Conformity can only be produced by the manufacturer. This is to certify that the following report is true and correct to the best of our knowledge.

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QAI EMC ACCREDITATION

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1. EXECUTIVE SUMMARY

1.1 Purpose

The purpose of this report is to demonstrate and document the compliance of FM12S & FM2S as per Sections 1.2 and 1.3.

1.2 Scope

The information documented in this report is based on the test methods and levels as per Quote QAI-1941:

CFR Title 47 FCC Part 15 – Radio Frequency Devices, Subpart C – Intentional Radiators

FCC Part 15.247 – Operation within the bands 902-928 MHz, 2400-2483.5 MHz

ISED RSS-247 Issue 4 – Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices

RSS-Gen Issue 5 – General Requirements and Information for the Certification of Radio Apparatus

ICES-003 Issue 7 – Information Technology Equipment (Including Digital Apparatus)

ICES-Gen Issue 5 – General Requirements for Compliance of Interference – Causing Equipment

1.3 Summary of Results

The following testing was performed pursuant to FCC Title 47 Part 15 and Industry Canada ICES-003 to demonstrate the testimony to “FCC, IC, & CE” mark Electromagnetic Compatibility testing for the product.

No.	Test	Applicable Standard	Description	Result
1	Antenna Requirement	FCC 47 CFR Part C 15.203 RSS-Gen Issue 5	No user access to antenna after professional installation.	Complies
2	Peak Output Power (Conducted & Radiated)	FCC 47 CFR Part C 15.247 RSS-247 Issue 4	Maximum peak conducted output power shall not exceed 1 W for systems employing at least 50 hopping channels.	Complies
3	20 dB Bandwidth	FCC 47 CFR Part C 15.247 RSS-247 Issue 4	Maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.	Complies
4	99% Occupied Bandwidth		99% of the signal shall fall completely within the frequency range specified by the standard.	Complies
5	Band Edge	FCC 47 CFR Part C 15.247	In any 100 kHz bandwidth outside the frequency band in which the device is operating, the RF power shall be at least 20dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.	Complies
6	Number of Hopping Channels	FCC 47 CFR Part C 15.247 RSS-247 Issue 4	If the 20 dB bandwidth of the hopping channel is < 250 kHz the system shall use at least 50 hopping channels.	Complies
7	Channel Separation	FCC 47 CFR Part C 15.247 RSS-247 Issue 4	Frequency hopping systems shall have channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.	Complies
8	Dwell Time & Time of Occupancy	FCC 47 CFR Part C 15.247 RSS-247 Issue 4	Average time of occupancy on any frequency shall not be greater than 0.4 s within a 20 s period.	Complies
9	Unintentional Conducted Emissions	FCC 47 CFR Part C 15.207 RSS-Gen Issue 5	Conducted emissions requirements as stated in the standards.	Complies
10	Unintentional Radiated Emissions	FCC 47 CFR Part A 15.33 FCC 47 CFR Part B 15.109 FCC 47 CFR Part C 15.209 ICES-003 RSS-247 Issue 4	Radiated emissions requirements as stated in the standards.	Complies
11	Radio Collocation and Radiated Spurious Emissions	FCC 47 CFR Part A 15.33 FCC 47 CFR Part C 15.205 FCC 47 CFR Part C 15.209 FCC 47 CFR Part C 15.247 RSS-Gen Issue 5 RSS-247 Issue 4	Radiated emissions requirements as stated in the standards.	Complies

Table 1: Applicable Test Standards and Descriptions

2. GENERAL INFORMATION

2.1 Product Description

The information provided in this section is for the Equipment Under Test (EUT) and the corresponding Auxiliary Equipment needed to perform the tests as a complete system.

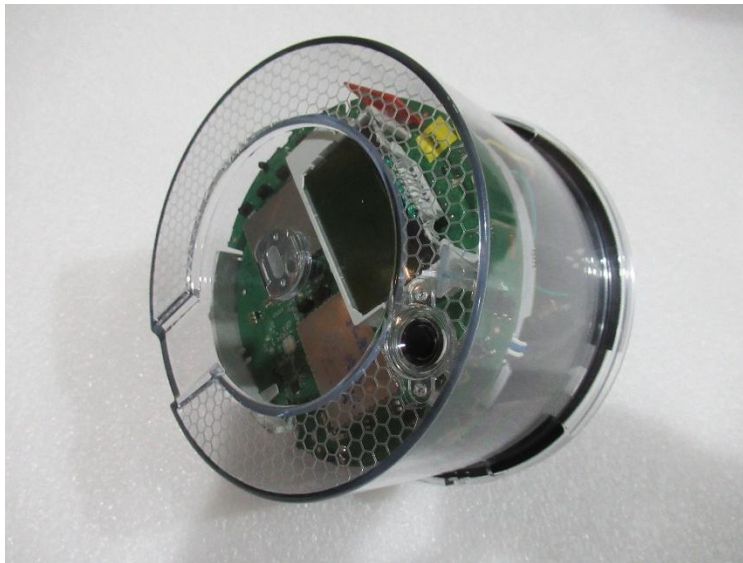


Figure 1: EUT

Equipment Under Test (EUT)

Equipment	TRUConnect Edge communication module
Description	Single Phase AMI meter
Manufacturer	Tantalus Systems Corp.
Model No.	TRUConnect
Serial No.	00593ABEE9 & 00593F28F4

Equipment Under Test (EUT) – General Information

Tested as	Tabletop
Dimensions	10cm x 10cm x 10cm
Declared operating temperature range:	-40°C to 85°C
Input power	120V – 240V, 60Hz
Grounded	No
Device use	Fixed location

Notes: None.

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Equipment Under Test (EUT) – RF Information

RF device type	902-928MHz FHSS & Thread
Model No. (HVIN)	TRUConnect
Operating frequency	902 – 928 MHz
Channel separation	TBD during test
Channel bandwidth	TBD during test
Output Power/Transmitter	~ 29dBm TBD
Modulation type	FSK
Test Channels (L, M, H)	902 MHz, 915 MHz, 928 MHz
Data Rate	Low, High, 3rd Party Interface
Adaptive	No
Geo-location-capable	No
Number of antennas	2
Antenna type	902-928MHz = Slot antenna, 2.4GHz = Patch antenna

Notes: Bandwidth listed is 20 dB bandwidth

Test Modes

Test	Transmitter State	Power
1	900 MHz Radio ON, 2.4 GHz preapproved module ON	120V, 60Hz & 240V, 60Hz

Auxiliary Manufacturer Supplied Equipment

Equipment	Manufacturer	Product Description	Model No.
None	---	---	---

2.2 Environmental Conditions

The equipment under test was operated and tested under the following environmental conditions:

Parameter	Conditions
Location	Indoors
Temperature	24 °C
Relative Humidity	46 %rh

2.3 Measurement Uncertainty

Parameter	Uncertainty
Radiated Emissions, 30MHz-1GHz	± 2.40 dB
Radiated Emissions, 1GHz-40GHz	± 2.48 dB
Radio Frequency	±1.5 x 10 ⁻⁵ MHz
Total RF Power Conducted	±1.36 dB
Spurious Emissions, Conducted	±1.36 dB
RF Power Density, Conducted	±1.36 dB
Temperature	±1°C
Humidity	±5 %
DC and low frequency voltages	±3 %

2.4 Worst Test Case

Worst-case orientation was determined during the preliminary testing. The final radiated emissions were performed in the worst-case orientation.

2.5 Sample Calculations of Emissions Data

Radiated and conducted emissions were performed using EMC32 software developed by Rohde & Schwarz. Transducer factors such as antenna factors, cable losses and amplifier gains were stored in the test templates which are used to perform the emissions measurements. After the test is finished, data is generated from the EMC32 consisting of product details, emission plots and final data tables as shown below.

Frequency (MHz)	Q-Peak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Ant. Ht. (cm)	Pol	Turntable Position (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
42.663900	33.0	1000.000	120.000	100.0	H	70.0	13.2	7.5	40.5

Table 2: Sample Quasi-Peak Correction Data – Radiated

Quasi-Peak reading shown in the table above is already corrected by the software using the correction factor shown in column “Corr.” The correction factor listed under “Corr.” table calculated as:

$$\text{Corr. (dB)} = \text{Antenna factor} + \text{Cable loss}$$

Or

$$\text{Corr. (dB)} = \text{Antenna factor} + \text{Cable Loss} - \text{Amp gain (if pre-amplifier was used)}$$

The final Quasi peak reading shown in the data is calculated by the software using following equation:

$$\text{Corrected Quasi-Peak (dBμV/m)} = \text{Raw Quasi-Peak Reading} + \text{Antenna factor} + \text{Cable loss}$$

To obtain the final Quasi-Peak or Average reading during power line conducted emissions, transducer factors are included in the final measurement as shown below.

Frequency (MHz)	Q-Peak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150	44.3	1000.000	9.000	GND	0.6	21.7	66.0

Table 3: Sample Quasi-Peak Correction Data - Conducted Emissions

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150	27.2	1000.000	9.000	GND	0.6	28.8	56.0

Table 4: Sample Average Correction Data- Conducted Emissions

Quasi Peak or Average reading shown in the preceding table is already corrected by the software using the correction factor shown in column “Corr.” The correction factor listed under “Corr.” table calculated as:

$$\text{Corr. (dB)} = \text{Antenna factor} + \text{Cable loss}$$

The final Quasi-peak or Average reading shown in the data is calculated by the software using following equation:

$$\text{Corr. Quasi-Peak/Average Reading (dB}\mu\text{V)} = \text{Raw Quasi-Peak/Average Reading} + \text{Antenna factor} + \text{Cable loss}$$

The allowable margin from the limits, as per the standards, were calculated for both radiated and conducted emissions:

$$\text{Margin(dB)} = \text{Limit} - \text{Quasi-Peak or Average reading}$$

2.6 Test Equipment List

The tables below contain all the equipment used by QAI Laboratories in conducting all tests on the Equipment Under Test (EUT) as per Section 1.

Emissions Test Equipment

Sl. NO.	Manufacturer	Model	Description	Serial No.	S/W Version	Calibration Due Date
1	Com-Power	LI-220C	LISN	20070025	N/A	2026-Jan-23
2	EMCO	6502	22" Loop antenna	2178	N/A	2025-Dec-5
3	ETS Lindgren	3117	Horn Antenna, 1.0-18 GHz	75944	N/A	2026-Jan-28
4	ETS Lindgren	2165	Turntable	00043677	N/A	N/A
5	ETS Lindgren	2125	Mast	00077487	N/A	N/A
6	ETS Lindgren	S201	5-meter Semi-Anechoic Chamber	1030	N/A	N/A
7	Hewlett Packard	8449B	Preamplifier (1-26 GHz)	2933A00198	N/A	N/A
8	Maturo Gmbh	BAM 4.0-P	Mast	365	3382.01	N/A
10	Rohde & Schwarz	FSU	Spectrum Analyzer	101388	4.71 SP6	N/A
11	Sunol Sciences	SM46C	Turntable	051204-2	N/A	N/A
12	Sunol Sciences	JB1	Biconilog Antenna 30MHz – 2GHz	A070209	N/A	2026-Jan-4

Note: Equipment listed above has 3-year calibration intervals.

Measurement Software

Sl. No.	Manufacturer	Model	Version	Description
1	Rhode & Schwarz	EMC 32	10.35.10	Emissions Test Software

3. DATA & TEST RESULTS

3.1 Antenna Requirements

Date Performed:	August 27, 2025
Test Standard:	FCC CFR 47 Part 15.203
Test Method:	ANSI C63.10:2013
Modifications:	None.
Final Result:	Complies

Applicable Regulation:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of sections 15.211, 15.213, 15.217, 15.219, 15.221, or 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Manufacturers Description:

The EUT must be professionally installed and does not provide user access to the antenna after installation.

3.2 RF Peak Output Power (Conducted & Radiated)

Date Performed: August 28, 2025

Test Standard: FCC CFR 47 Part 15.247 (b)(2)
IC RSS-247 Issue 4 (5.4) (a)

Test Method: ANSI C63.10:2013
Span = 1 MHz, RBW = 1MHz, VBW = 1MHz (All Low-High measurements)
Span = 20 kHz, RBW = 500 kHz, VBW = 2MHz (All 3rd Party measurements)

Modifications: None.

Final Result: Complies

Applicable Regulation:

For frequency hopping systems operating in 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels.

Test Setup:

The EUT was tested outside the SAC via output conducted measurements per ANSI C63.10:2013.

Measurement Data and Plots:

Frequency (MHz)	Data Rate	Raw Peak (dBm)	Correction Factor ¹ (dB)	Corrected Peak Conducted Output Power (dBm)	Limit (dBm)	Margin (dB)	Results
902.232	Low	9.74	19.92	29.66	30	0.34	Complies
903.711	3 rd Party	3.58	19.92	23.5	30	6.5	Complies
915.064	Low	8.41	19.98	28.39	30	1.61	Complies
915.000	3 rd Party	3.26	19.98	23.24	30	6.76	Complies
927.637	Low	8.32	20.04	28.36	30	1.64	Complies
926.810	3 rd Party	3.19	20.04	23.23	30	6.77	Complies

¹ Correction factor consists of cable loss, external attenuator, and adapter(s)

Table 5: RF Peak Output Power (Conducted)

Frequency (MHz)	Data Rate	Raw Peak ² (dBμV/m)	Height (cm)	Pol	Azimuth (°)	Corr. Factor ¹ (dB)	Corrected Peak (dBμV/m)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
902.232	Low	92.99	136.4	H	0	30.47	123.46	28.23	36	7.77
915.065	Mid	92.27	136.4	H	0	30.52	122.79	27.56	36	8.44
927.690	High	91.91	136.4	H	0	30.95	122.86	27.63	36	8.37

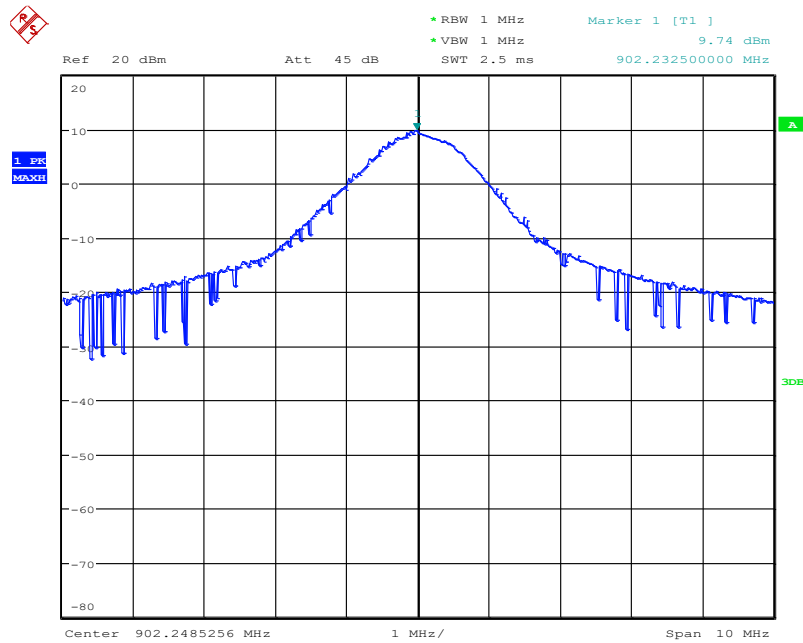
¹ Correction factor consists of cable loss, antenna factor, and adapter(s)

² All measurements are using standard antenna

³ Measured at 3m

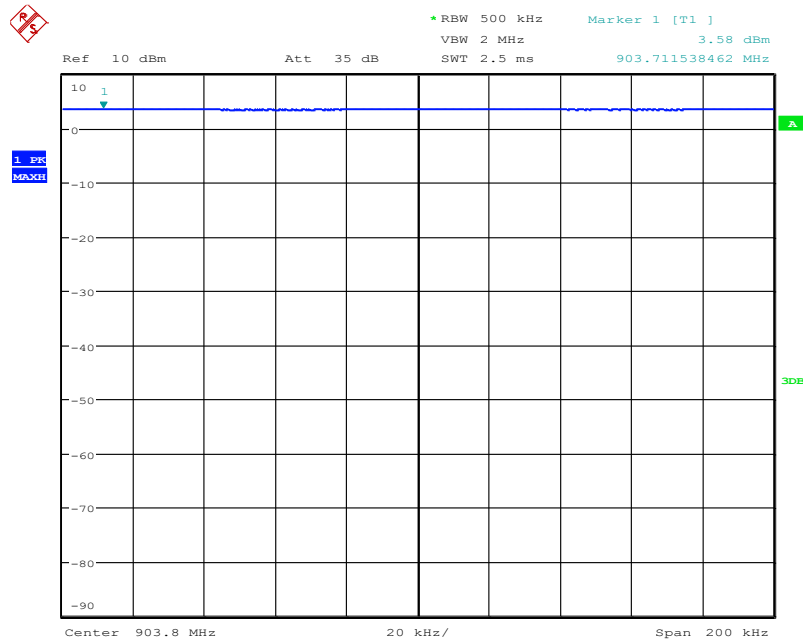
Table 6: EIRP

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Date: 28.AUG.2025 14:02:50

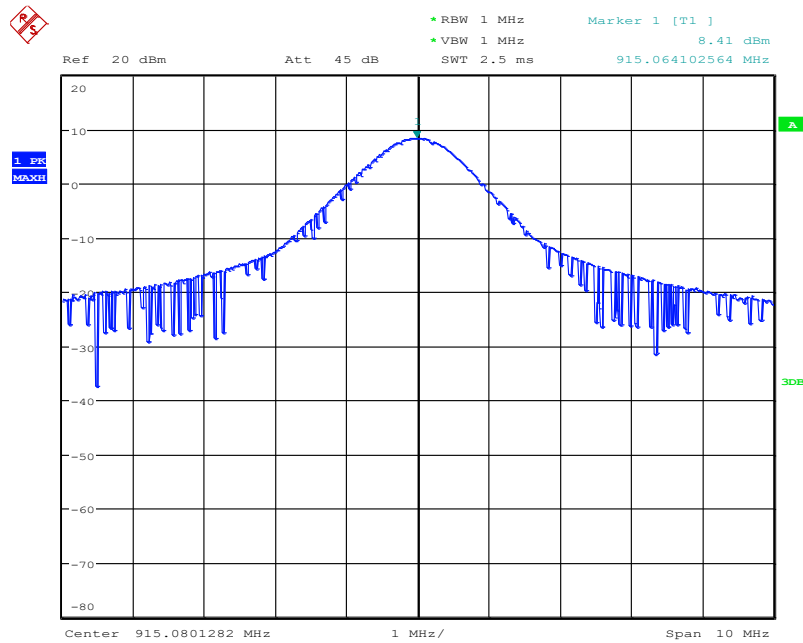
Figure 2: Peak Output Power – Low-High Data Rate, Lowest Frequency



Date: 29.AUG.2025 13:47:45

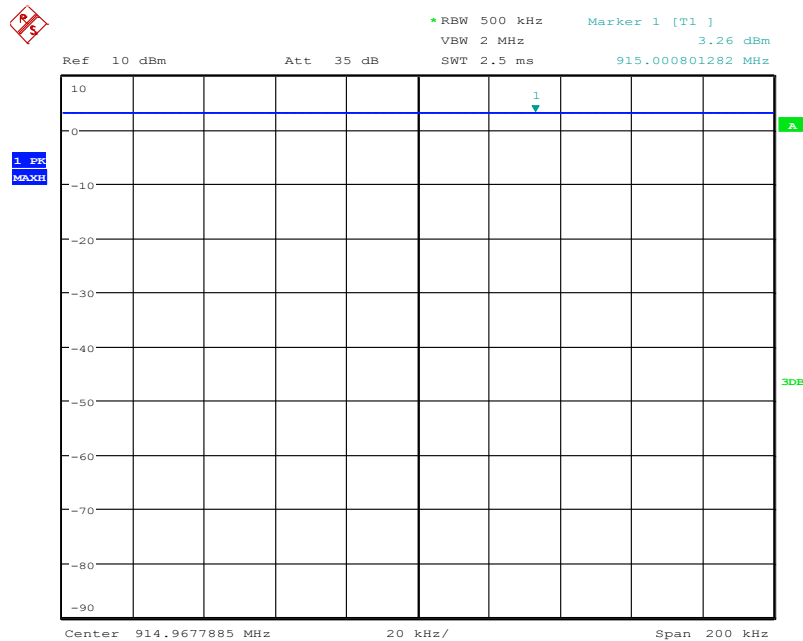
Figure 3: Peak Output Power – 3rd Party Data Rate, Lowest Frequency

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Date: 28.AUG.2025 14:12:38

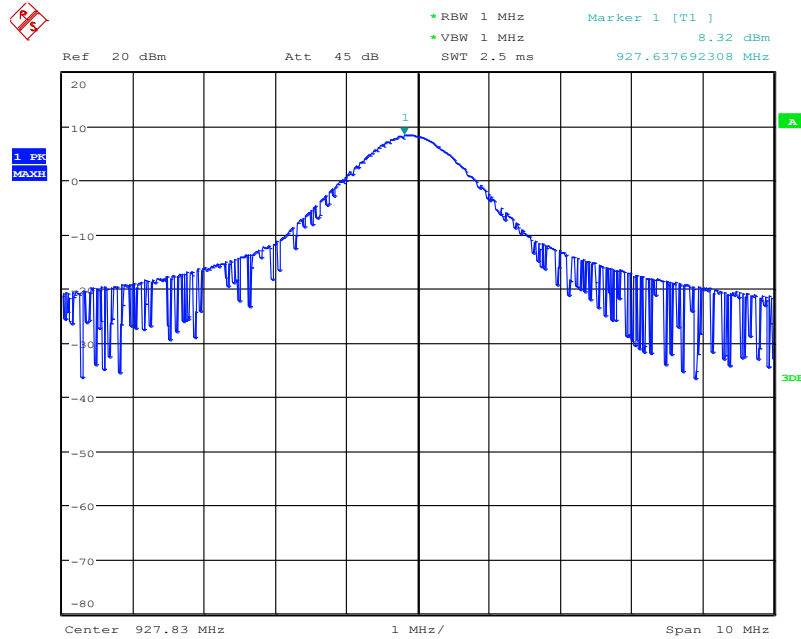
Figure 4: Peak Output Power – Low-High Data Rate, Middle Frequency



Date: 29.AUG.2025 13:43:57

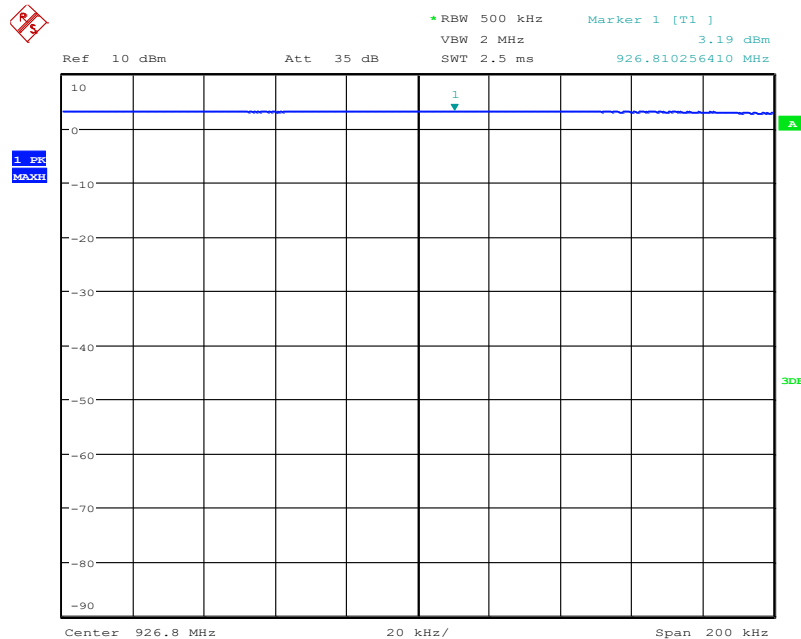
Figure 5: Peak Output Power – 3rd Party Data Rate, Middle Frequency

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Date: 28.AUG.2025 14:17:00

Figure 6: Peak Output Power – Low-High Data Rate, Highest Frequency



Date: 29.AUG.2025 13:51:44

Figure 7: Peak Output Power – 3rd Party Data Rate, Highest Frequency

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3.3 20 dB Bandwidth

Date Performed:	August 28, 2025
Test Standard:	FCC 47 CFR Part 15.247 (a)(1)(i) RSS-247 Issue 4 (5.1) (c)
Test Method:	ANSI C63.10:2013 Span = 2 to 5 x OBW, RBW = 1 to 5% of OBW, VBW = 3 x RBW Ref Level > 10log (OBW/RBW) above signal peak. DA-00-705A1, 2000 Span = Approx. 2 to 3 times 20dB bandwidth, RBW ≥ 1% of 20dB bandwidth VBW ≥ RBW
Modifications:	None
Final Result:	Complies

Applicable Regulations:

For frequency hopping systems operating in the 902-928 MHz band: the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

Test Setup:

The EUT was tested outside the SAC via output conducted measurements per ANSI C63.10: 2013, 7.4 & DA-00-705A1, 2000

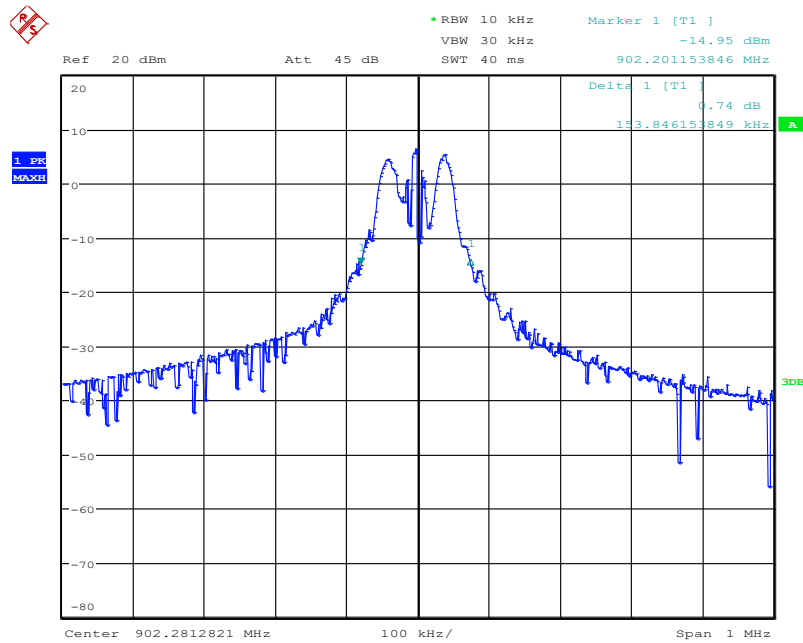
A spectrum analyzer or other instrument providing a spectral display is recommended for these measurements. When using a spectrum analyzer or other instrument providing a spectral display, the video bandwidth shall be set to a value at least three times greater than the IF bandwidth of the measuring instrument to avoid the introduction of unwanted amplitude smoothing. Video filtering is not used during occupied bandwidth tests.

Measurement Data and Plots:

Channels	Frequency (MHz)	Data Rate	20dB Bandwidth (kHz)	Limit (kHz)	Result
Low	902.17	Low	153.8	500	Complies
Middle	915.00	Low	155.4	500	Complies
High	927.83	Low	152.2	500	Complies
Low	902.17	High	291.6	500	Complies
Middle	915.00	High	287.6	500	Complies
High	927.83	High	294.8	500	Complies
Low	902.17	3 rd Party	167.4	500	Complies
Middle	915.00	3 rd Party	165.0	500	Complies
High	927.83	3 rd Party	164.2	500	Complies

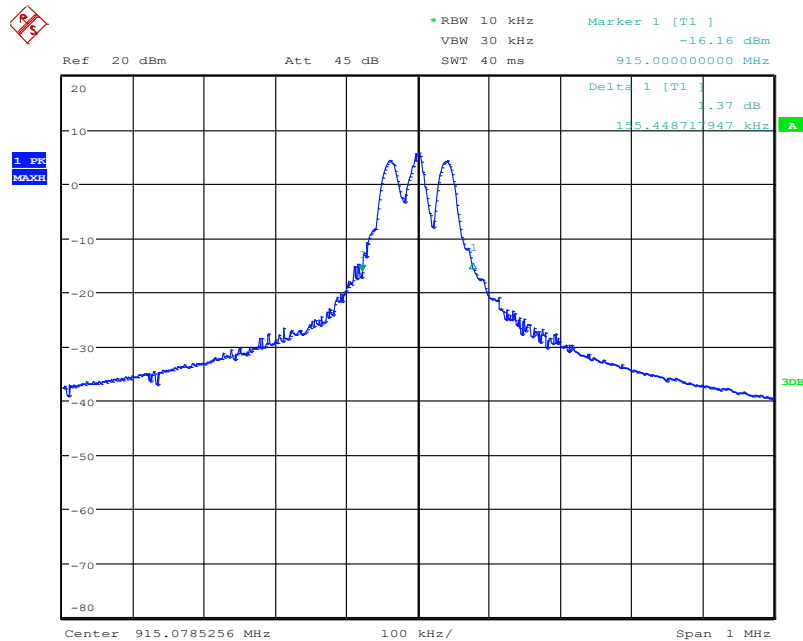
Table 7: 20 dB Bandwidth Results

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Date: 28.AUG.2025 15:55:37

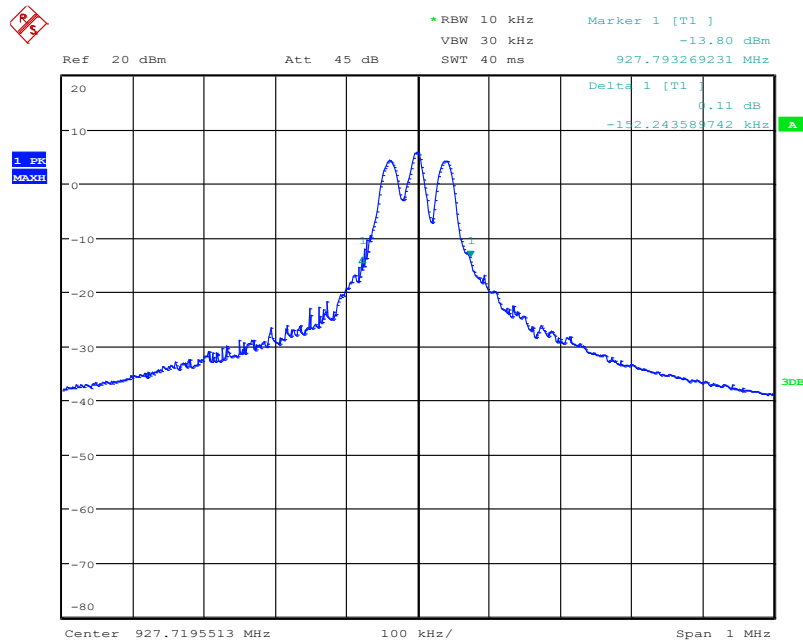
Figure 8: 20 dB Bandwidth – Low Data Rate, Low Channel



Date: 28.AUG.2025 15:53:19

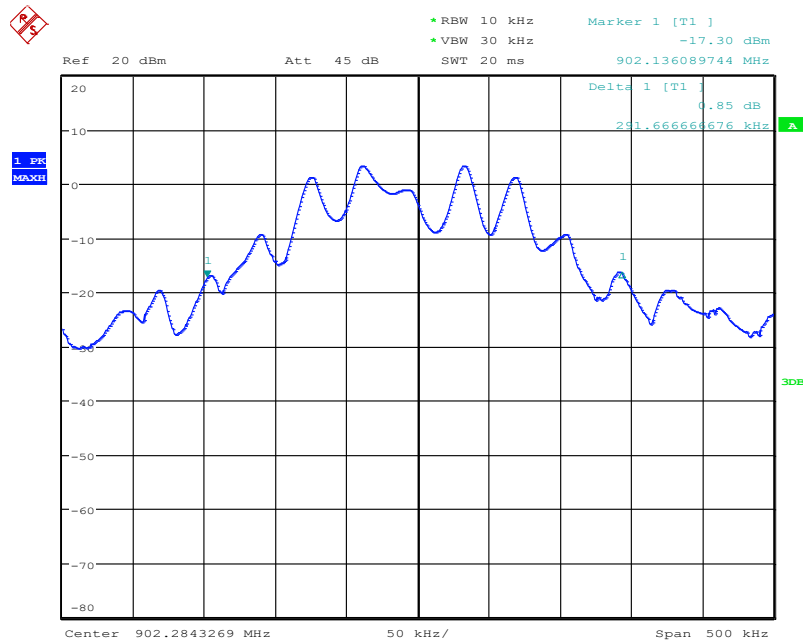
Figure 9: 20 dB Bandwidth - Low Data Rate, Middle Channel

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Date: 28.AUG.2025 15:05:37

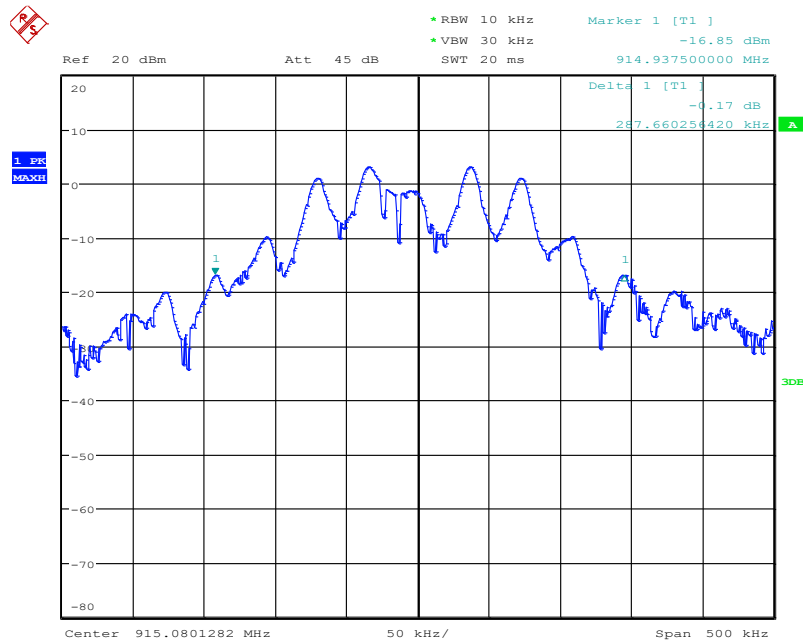
Figure 10: 20 dB Bandwidth - Low Data Rate, High Channel



Date: 29.AUG.2025 10:49:44

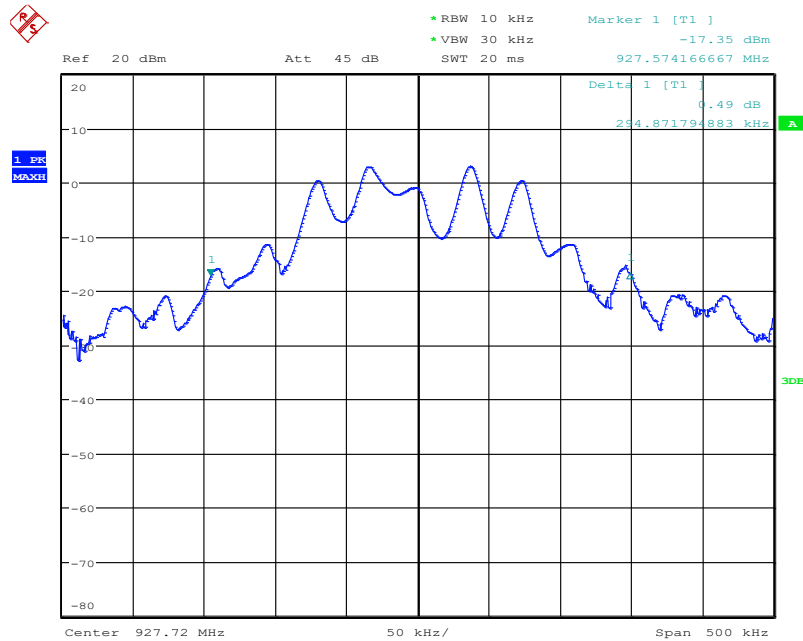
Figure 11: 20 dB Bandwidth – High Data Rate, Low Channel

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Date: 29.AUG.2025 10:39:33

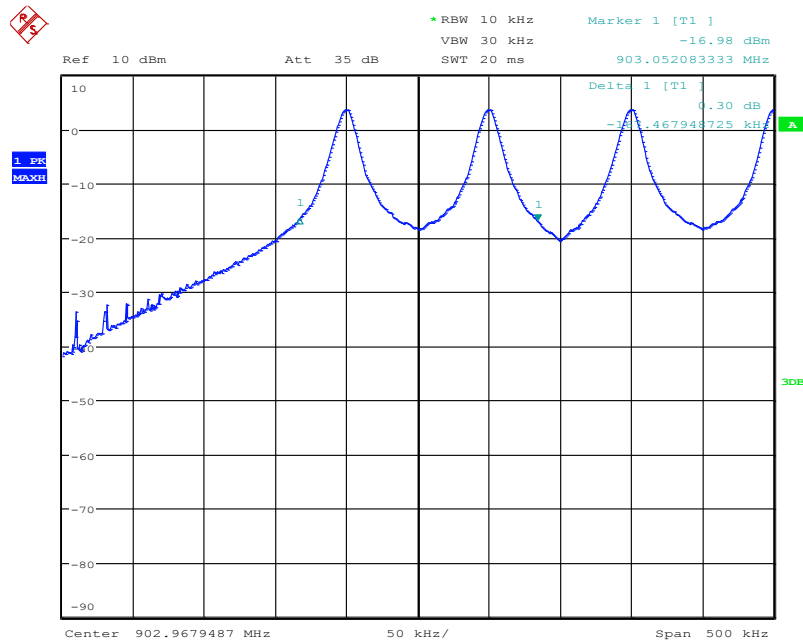
Figure 12: 20 dB Bandwidth - High Data Rate, Middle Channel



Date: 29.AUG.2025 10:51:14

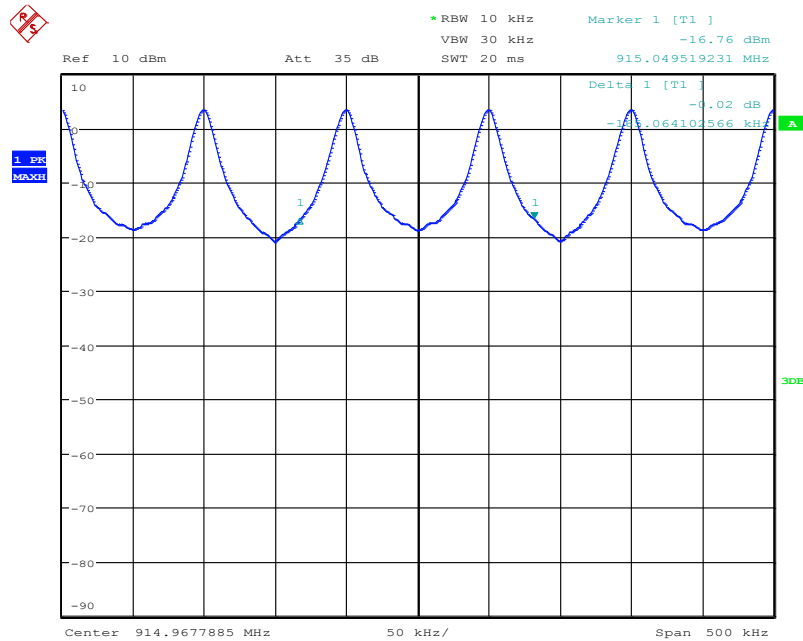
Figure 13: 20 dB Bandwidth - High Data Rate, High Channel

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Date: 29.AUG.2025 13:16:31

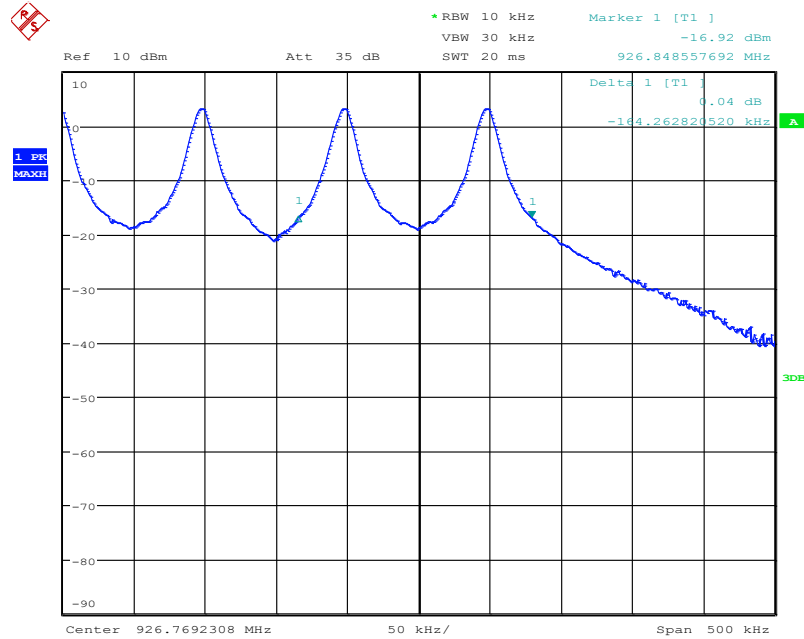
Figure 14: 20 dB Bandwidth – 3rd Party Data Rate, Low Channel



Date: 29.AUG.2025 13:29:27

Figure 15: 20 dB Bandwidth - 3rd Party Data Rate, Middle Channel

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Date: 29.AUG.2025 13:24:59

Figure 16: 20 dB Bandwidth - 3rd Party Data Rate, High Channel

3.4 99% Bandwidth

Date Performed: August 29, 2025

Test Standard: Client Request

Test Method: ANSI C63.10:2013
Span = 2 to 5 x OBW, RBW = 1 to 5% of OBW, VBW = 3 x RBW
Ref Level > 10log (OBW/RBW) above signal peak.

DA-00-705A1, 2000
Span = Approx. 2 to 3 times 20dB bandwidth, RBW ≥ 1% of 20dB bandwidth
VBW ≥ RBW.

Modifications: None

Final Result: Complies

Applicable Regulations:

N/A

Test Setup:

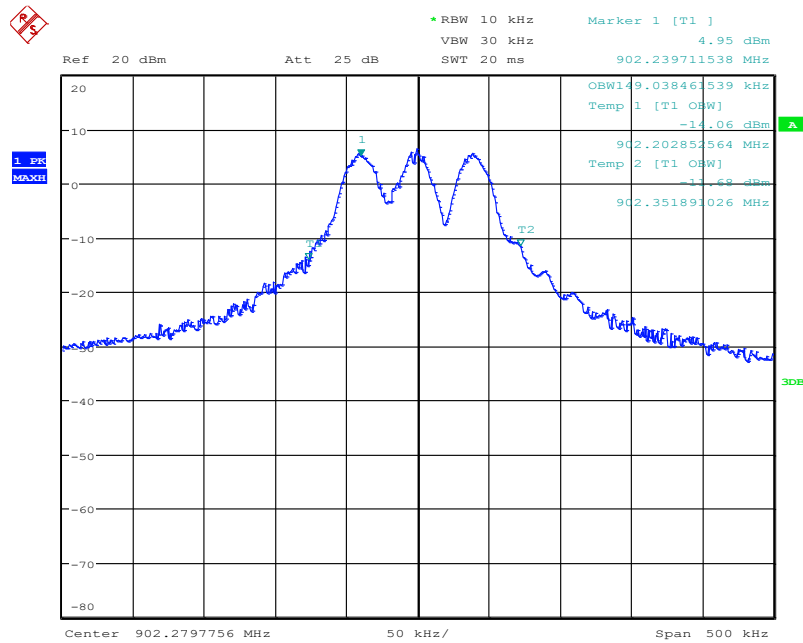
The EUT was tested outside the SAC via output conducted measurements per ANSI C63.10: 2013, 7.4 & DA-00-705A1, 2000.

A spectrum analyzer or other instrument providing a spectral display is recommended for these measurements. When using a spectrum analyzer or other instrument providing a spectral display, the video bandwidth shall be set to a value at least three times greater than the IF bandwidth of the measuring instrument to avoid the introduction of unwanted amplitude smoothing. Video filtering is not used during occupied bandwidth tests.

Measurement Data and Plots:

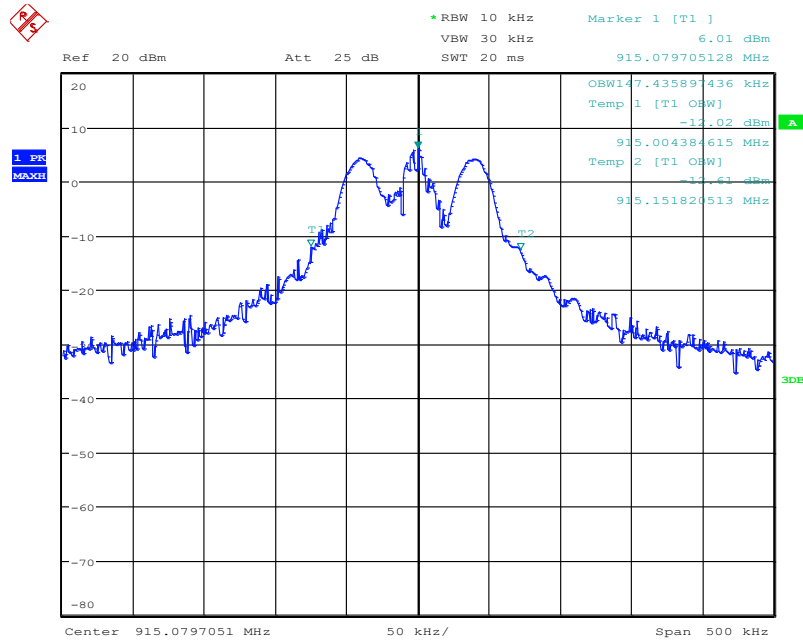
Channels	Frequency (MHz)	Data Rate	Bandwidth (kHz)	Limit (kHz)	Result
Low	902.17	Low	149.0	N/A	Complies
Middle	915.00	Low	147.4	N/A	Complies
High	927.83	Low	145.8	N/A	Complies
Low	902.17	High	274.0	N/A	Complies
Middle	915.00	High	270.8	N/A	Complies
High	927.83	High	287.6	N/A	Complies
Low	902.17	3 rd Party	159.2	N/A	Complies
Middle	915.00	3 rd Party	158.9	N/A	Complies
High	927.83	3 rd Party	157.6	N/A	Complies

Table 8: 99% Bandwidth Results



Date: 28.AUG.2025 16:18:48

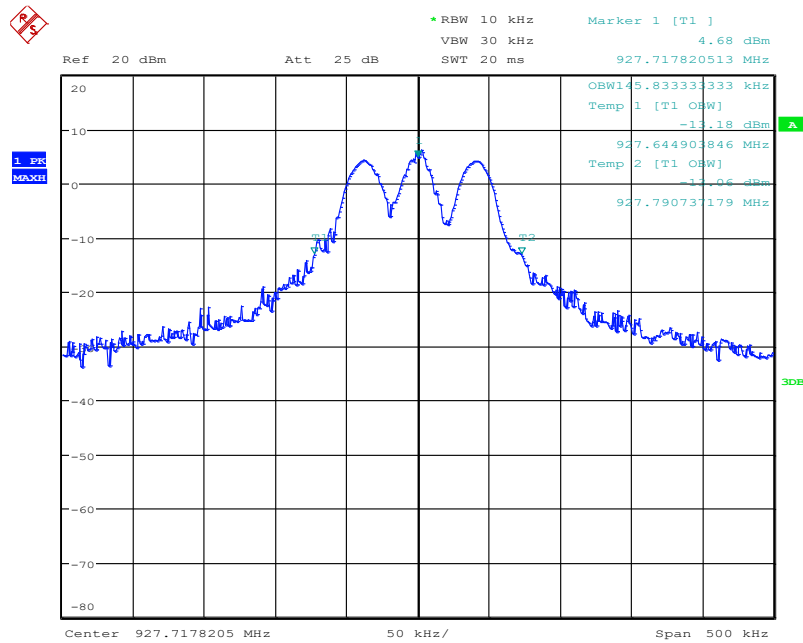
Figure 17: 99% Bandwidth – Low Data Rate, Low Channel



Date: 28.AUG.2025 16:20:30

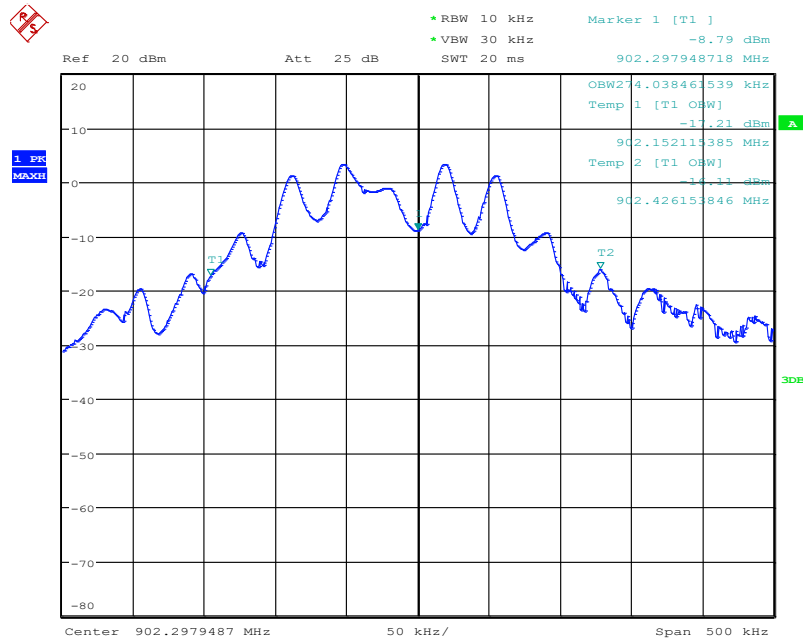
Figure 18: 99% Bandwidth - Low Data Rate, Middle Channel

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Date: 28.AUG.2025 16:24:08

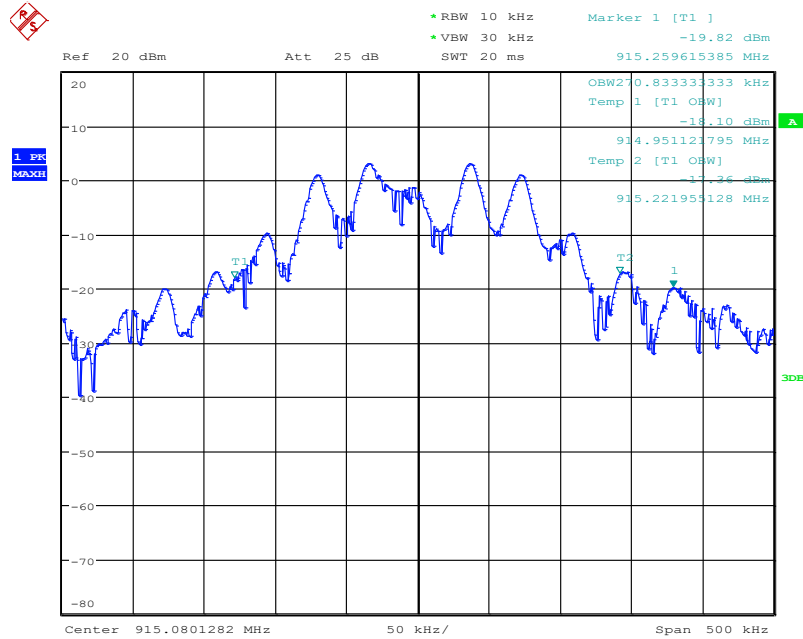
Figure 19: 99% Bandwidth - Low Data Rate, High Channel



Date: 29.AUG.2025 10:45:30

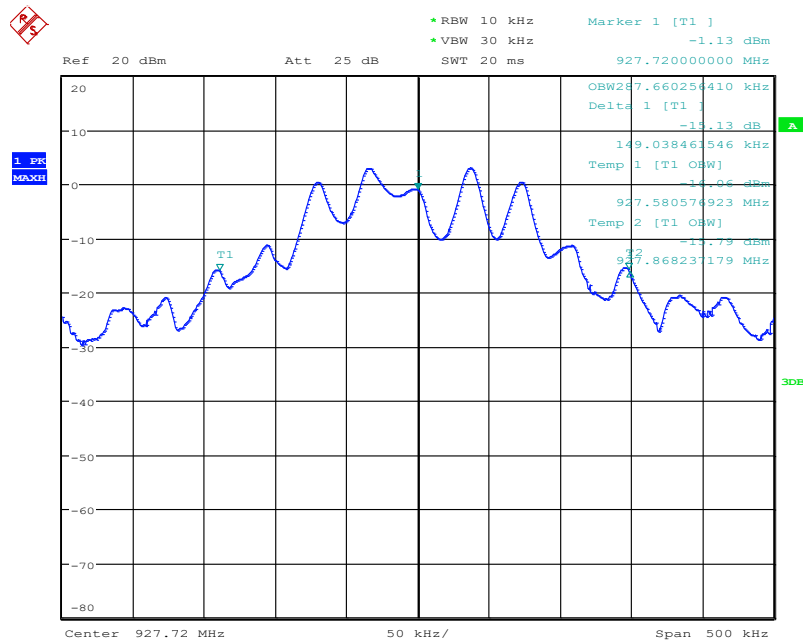
Figure 20: 99% Bandwidth - High Data Rate, Low Channel

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Date: 29.AUG.2025 10:43:15

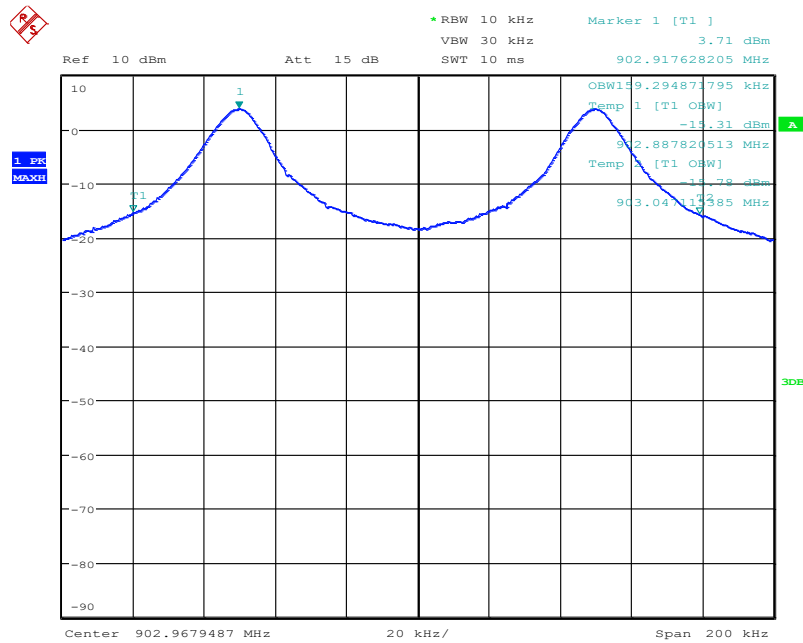
Figure 21: 99% Bandwidth - High Data Rate, Middle Channel



Date: 29.AUG.2025 10:54:48

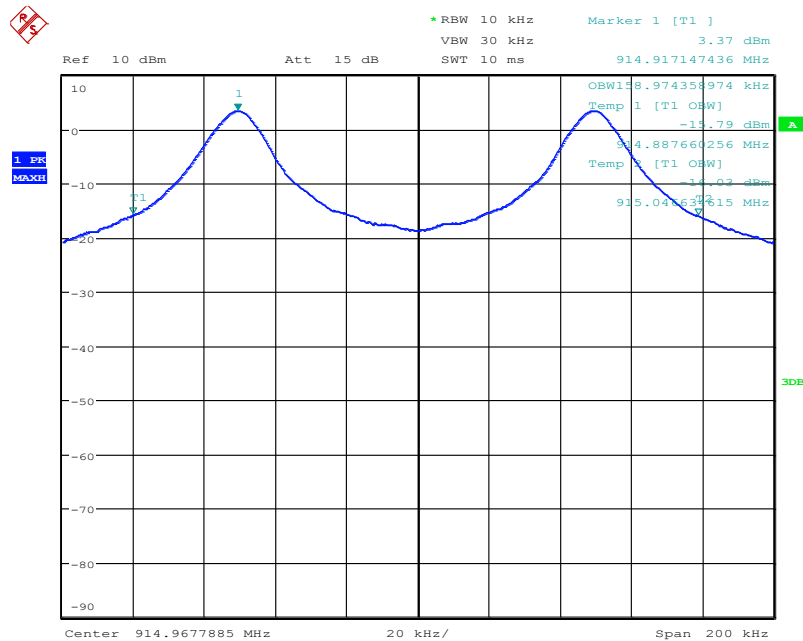
Figure 22: 99% Bandwidth - High Data Rate, High Channel

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Date: 29.AUG.2025 13:20:01

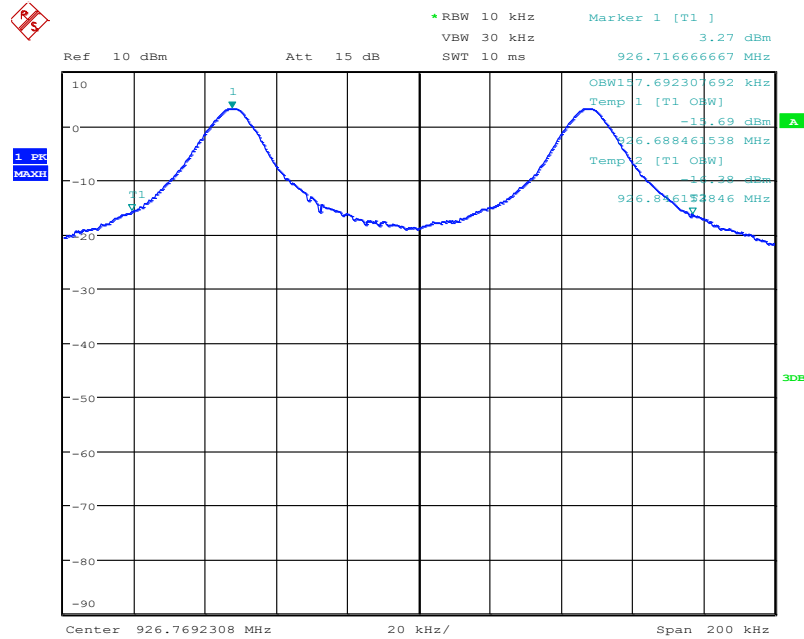
Figure 23: 99% Bandwidth – 3rd Party Data Rate, Low Channel



Date: 29.AUG.2025 13:31:51

Figure 24: 99% Bandwidth - 3rd Party Data Rate, Middle Channel

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Date: 29.AUG.2025 13:26:33

Figure 25: 99% Bandwidth - 3rd Party Data Rate, High Channel

3.5 Out-Of-Band Emissions (Band Edge)

Date Performed:	August 29, 2025
Test Standard:	FCC CFR 47 Part 15.247 (d) RSS-247 Issue 4 (5.5)
Test Method:	DA-00-705A1, 2000 Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation RBW > 1% of the span Trace Detector: Peak, Trace: Max Hold
Modifications:	None
Final Result:	Complies

Applicable Regulation:

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, shall be at least 20 dB below that in the 100kHz 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 RMS averaging over a time interval the attenuation shall be 30 dB instead of 20 dB.

Test Setup:

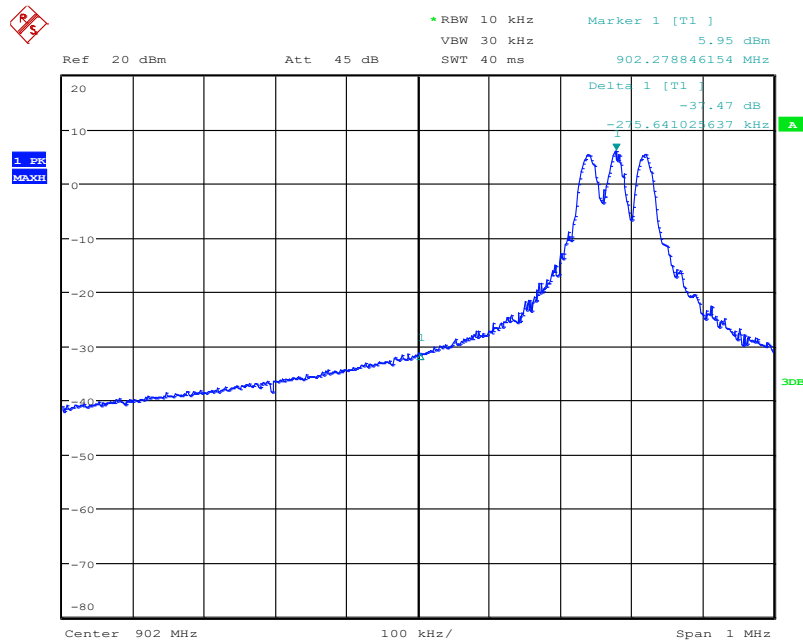
The EUT was tested outside the SAC via output conducted measurements per DA-00-705A1, 2000

The purpose of the test with the hopping function turned on is to confirm that the RF power remains OFF while the device is changing frequencies, and that the oscillator stabilizes at the new frequency before RF power is turned back ON. Overshoot of any oscillator, including phase-lock-loop stabilized oscillators, can cause the device to be temporarily tuned to frequencies outside the authorized band, and it is important that no transmissions occur during such temporary periods.

Measurement Data and Plots:

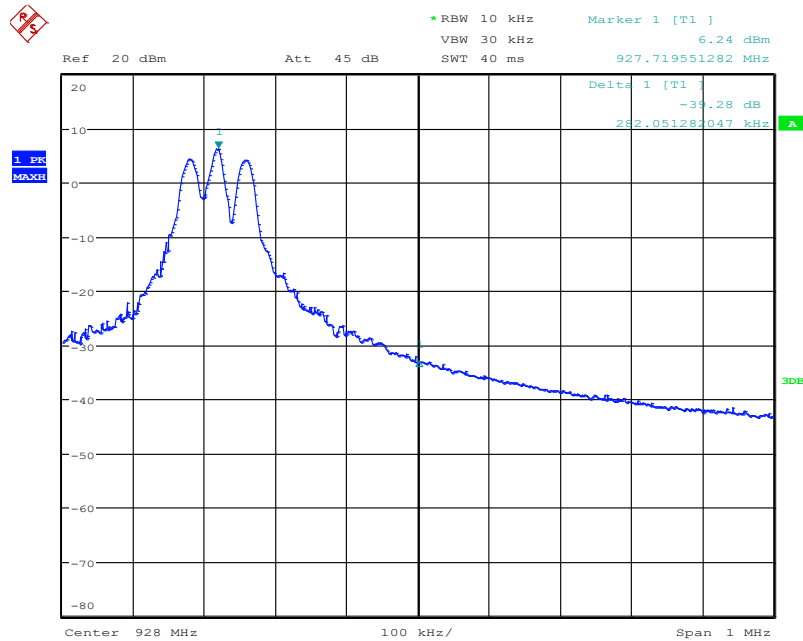
Band Edge	Data Rate	Limit	Result
Low	Low	-20 dB	Complies
High	Low	-20 dB	Complies
Low	High	-20 dB	Complies
High	High	-20 dB	Complies
Low	3 rd Party	-20 dB	Complies
High	3 rd Party	-20 dB	Complies

Table 9: Band Edge Results



Date: 28.AUG.2025 17:25:56

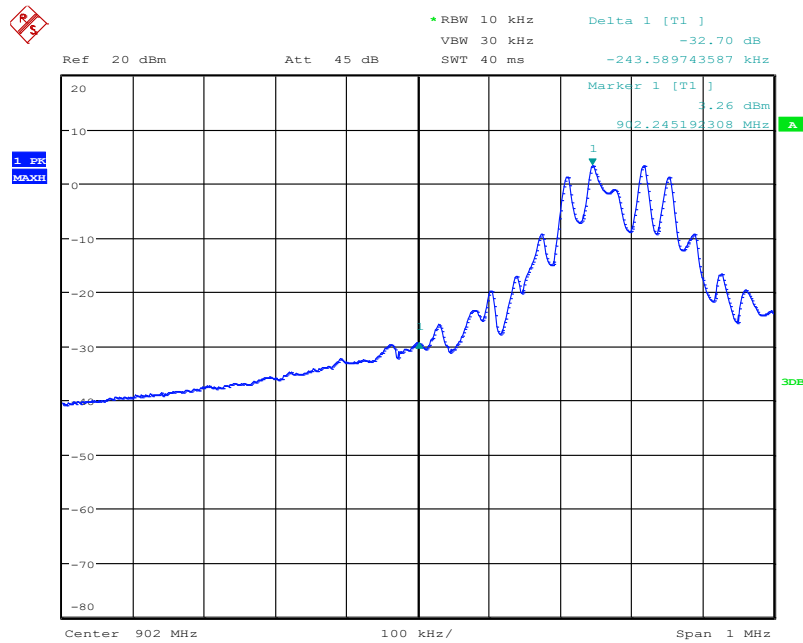
Figure 26: Band Edge – Low Data Rate, Low Channel



Date: 28.AUG.2025 17:21:04

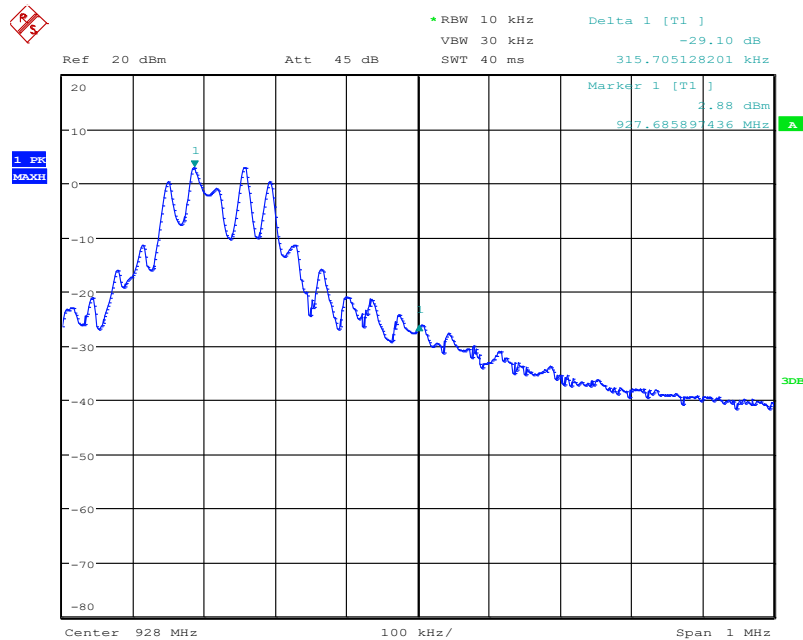
Figure 27: Band Edge – Low Data Rate, High Channel

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Date: 28.AUG.2025 17:09:31

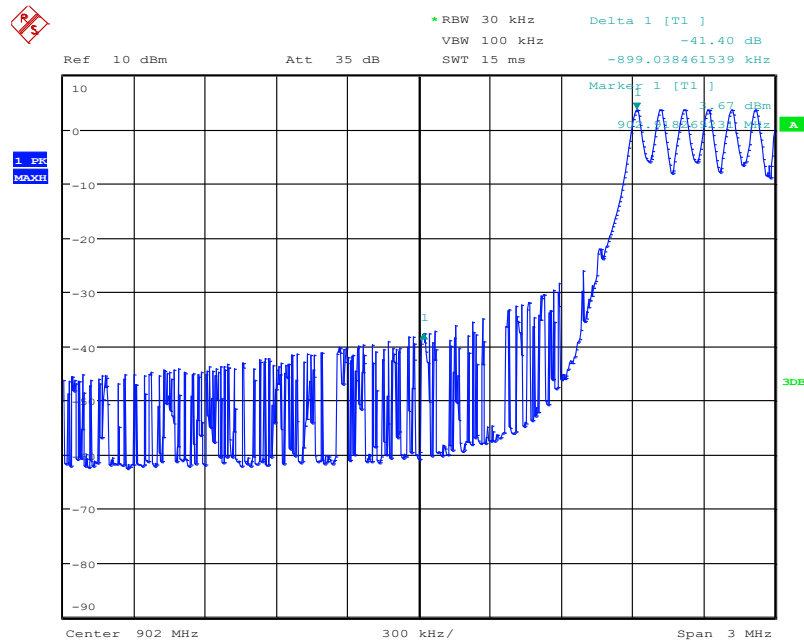
Figure 28: Band Edge – High Data Rate, Low Channel



Date: 28.AUG.2025 17:11:32

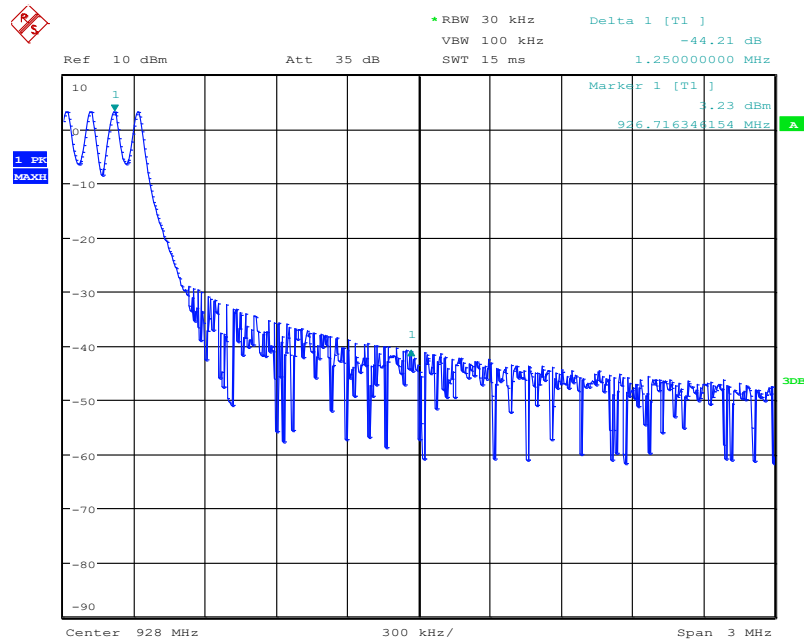
Figure 29: Band Edge – High Data Rate, High Channel

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Date: 29.AUG.2025 13:13:09

Figure 30: Band Edge – 3rd Party Data Rate, Low Channel



Date: 29.AUG.2025 13:09:41

Figure 31: Band Edge – 3rd Party Data Rate, High Channel

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3.6 Number of Hopping Channels

Date Performed: August 29, 2025

Test Standard: FCC CFR 47 Part 15.247 (a)(1)
IC RSS-247 Issue 4 (5.1)(c)

Test Method: ANSI C63.10:2013
Span = The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
RBW = 30% of the channel spacing or the 20 dB BW, whichever is smaller.
VBW $\geq$ RBW, Detector: Peak, Trace: Max Hold

DA-00-705A1, 2000

The EUT must have its hopping function enabled. Spectrum analyzer settings:

Span = the frequency band of operation RBW $\geq$ 1% of the span VBW $\geq$ RBW

Sweep = auto, Detector function = peak, Trace = max hold.

Allow the trace to stabilize. It may prove necessary to break the span up to sections, to clearly show all the hopping frequencies. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s)

Modifications: None

Final Result: Complies

Applicable Standard:

For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period.

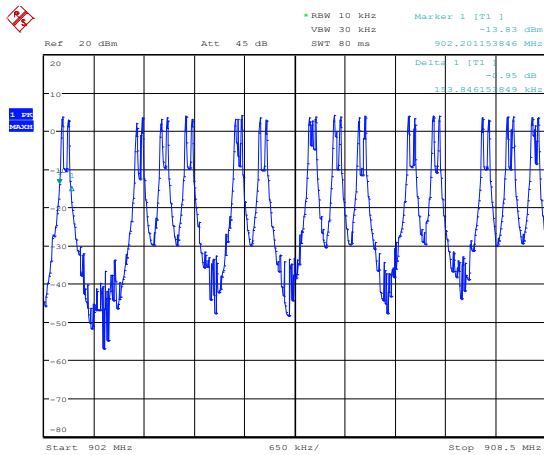
Test Setup:

The EUT was tested outside the SAC via output conducted measurements per ANSI C63.10:2013 & DA-00-705A1, 2000
The channel separation measurement was made by connecting the spectrum analyzer to the active antenna port using a 20 dB attenuator. Testing was done using the maximum power output with the system configured for normal operation using a pseudorandom hopping pattern.

Measurement Data and Plots:

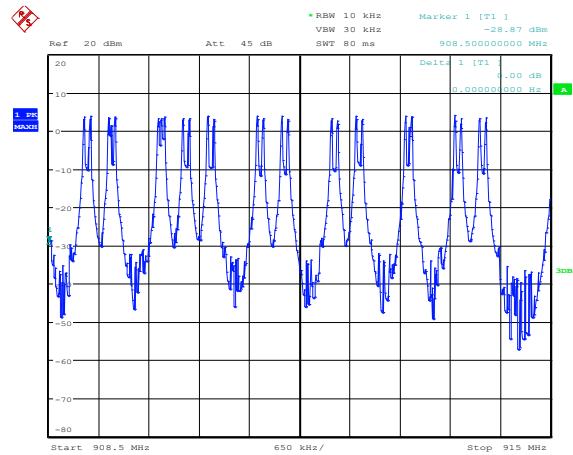
Data Rate	Modulation	Number of Hopping Channels	Minimum Number of Channels	Result
Low	FSK	50	50	Complies
High	FSK	50	50	Complies
3 rd Party	FSK	120	50	Complies

Table 10: Number of Hopping Channels Results



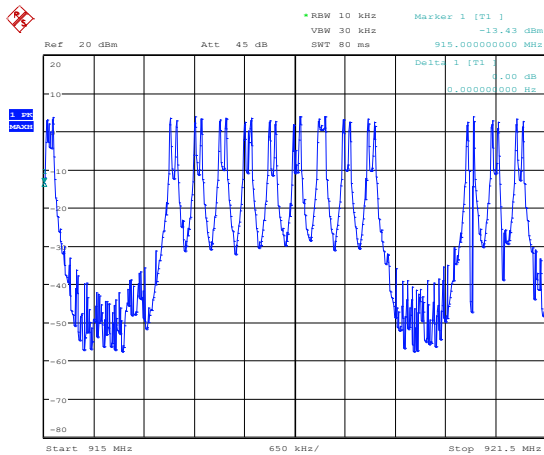
Date: 28.AUG.2025 15:59:47

Figure 32: Number of Hopping Channels Low Data Rate
(902-908.5 MHz)



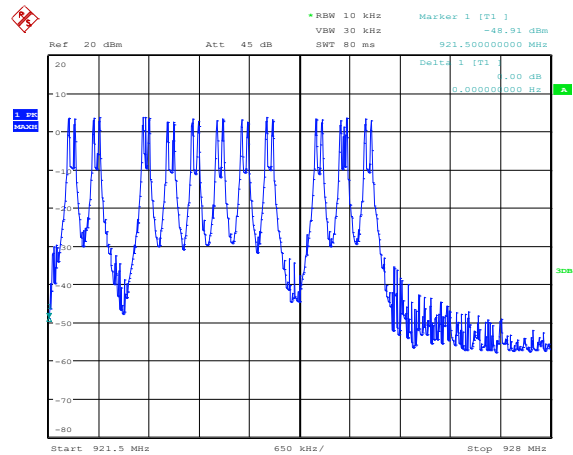
Date: 28.AUG.2025 16:02:24

Figure 33: Number of Hopping Channels Low Data Rate
(908.5-915 MHz)



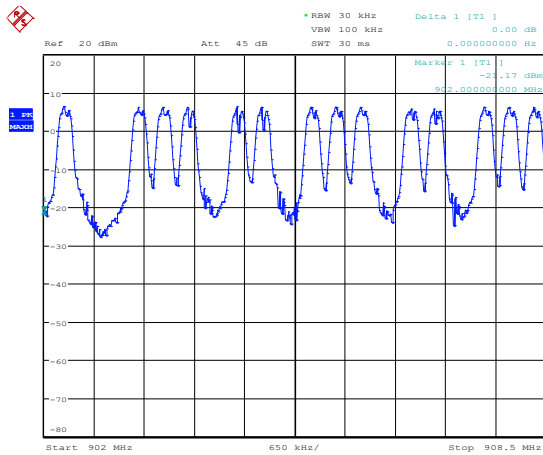
Date: 28.AUG.2025 16:04:16

Figure 34: Number of Hopping Channels Low Data Rate
(915-921.5 MHz)



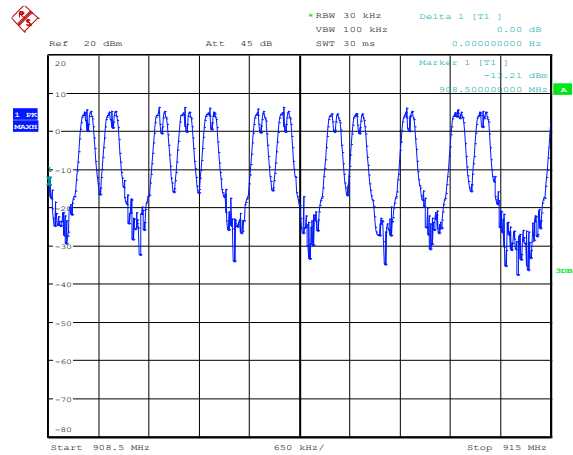
Date: 28.AUG.2025 16:06:53

Figure 35: Number of Hopping Channels Low Data Rate
(921.5-928 MHz)



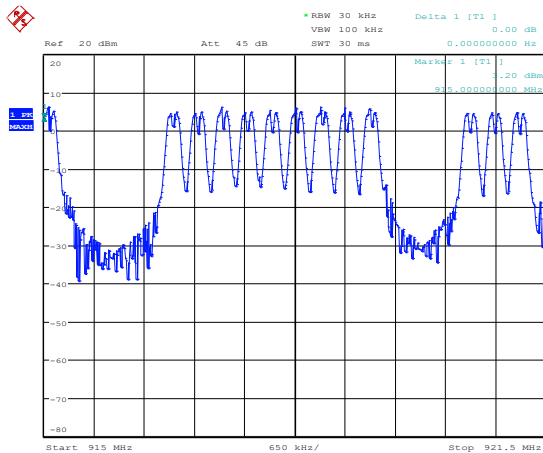
Date: 28.AUG.2025 17:51:37

Figure 36: Number of Hopping Channels High Data Rate
(902-908.5 MHz)



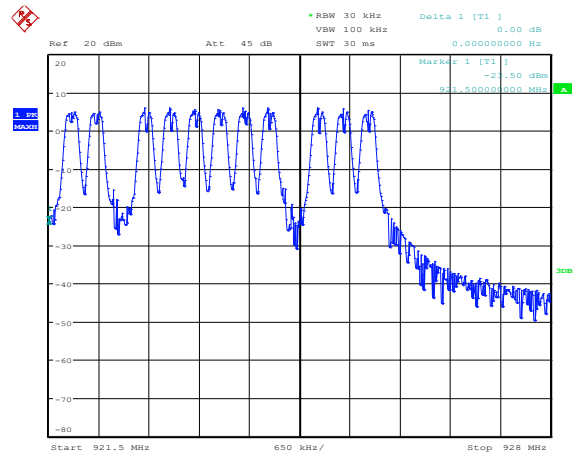
Date: 28.AUG.2025 17:56:39

Figure 37: Number of Hopping Channels High Data Rate
(908.5-915 MHz)



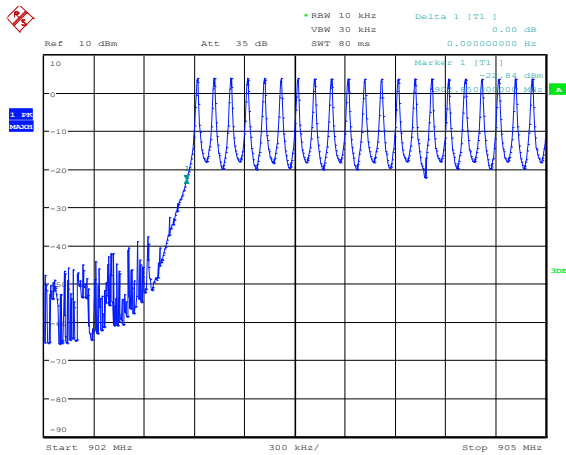
Date: 28.AUG.2025 17:58:41

Figure 38: Number of Hopping Channels High Data Rate
(915-921.5 MHz)



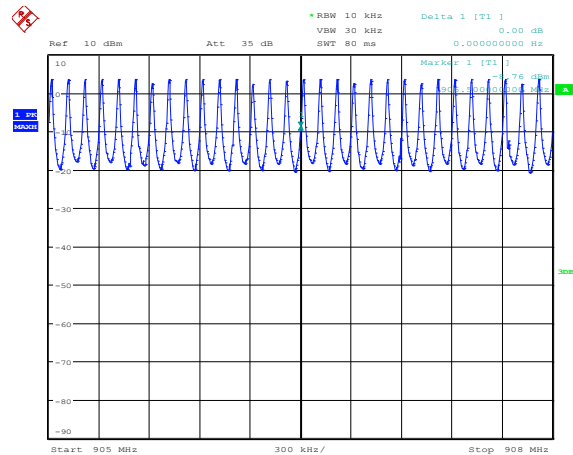
Date: 28.AUG.2025 18:01:38

Figure 39: Number of Hopping Channels High Data Rate
(921.5-928 MHz)



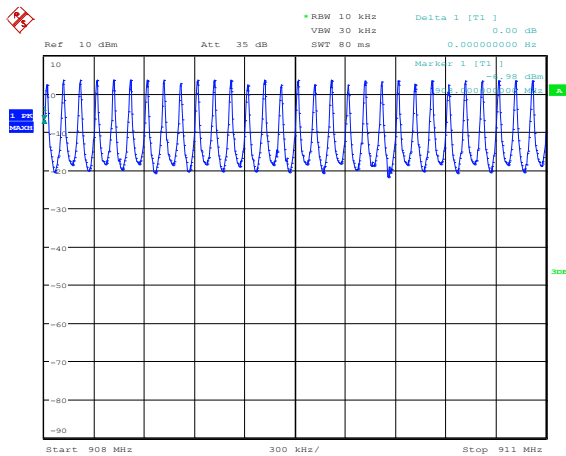
Date: 29.AUG.2025 12:39:52

Figure 40: Number of Hopping Channels 3rd Party Data Rate (902-905 MHz)



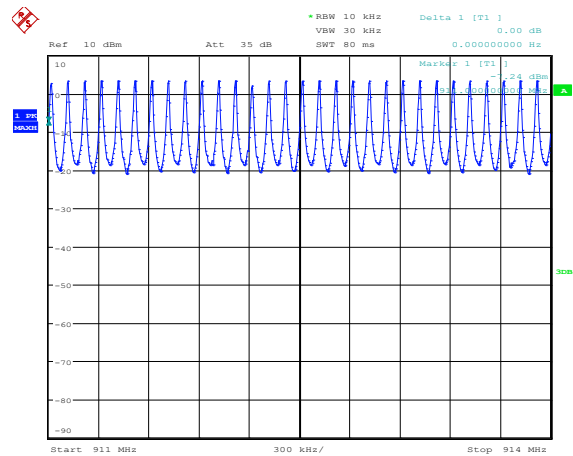
Date: 29.AUG.2025 12:43:33

Figure 41: Number of Hopping Channels 3rd Party Data Rate (905-908 MHz)



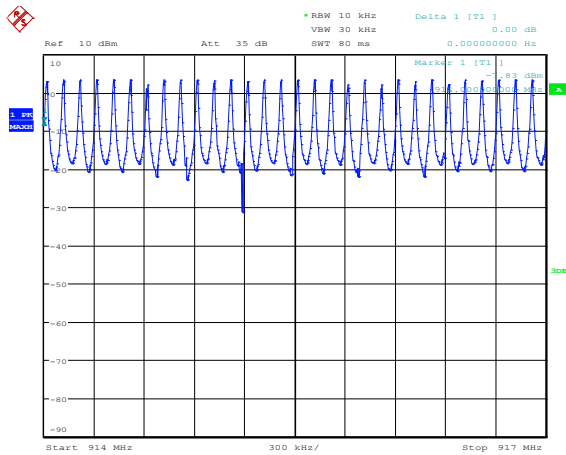
Date: 29.AUG.2025 12:46:37

Figure 42: Number of Hopping Channels 3rd Party Data Rate (908-911 MHz)



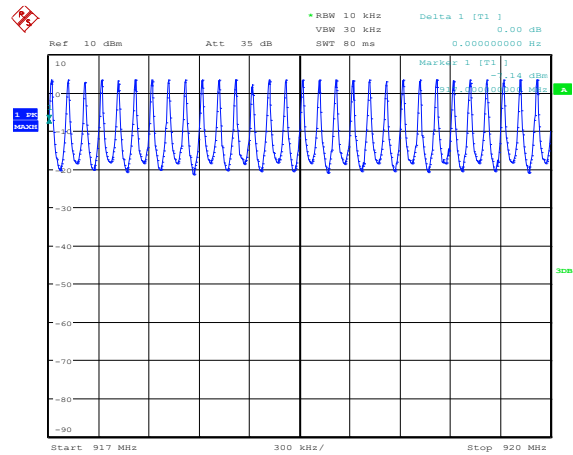
Date: 29.AUG.2025 12:49:00

Figure 43: Number of Hopping Channels 3rd Party Data Rate (911-914 MHz)



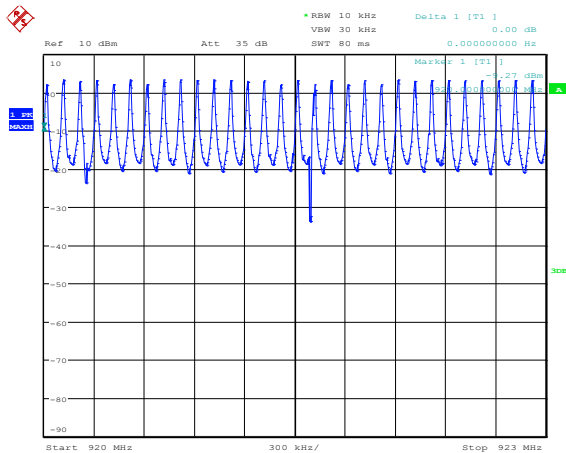
Date: 29.AUG.2025 12:51:06

Figure 44: Number of Hopping Channels 3rd Party Data Rate (914-917 MHz)



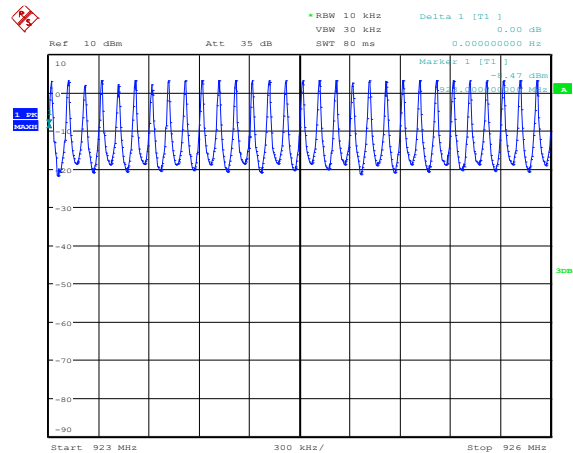
Date: 29.AUG.2025 12:53:45

Figure 45: Number of Hopping Channels 3rd Party Data Rate (917-920 MHz)



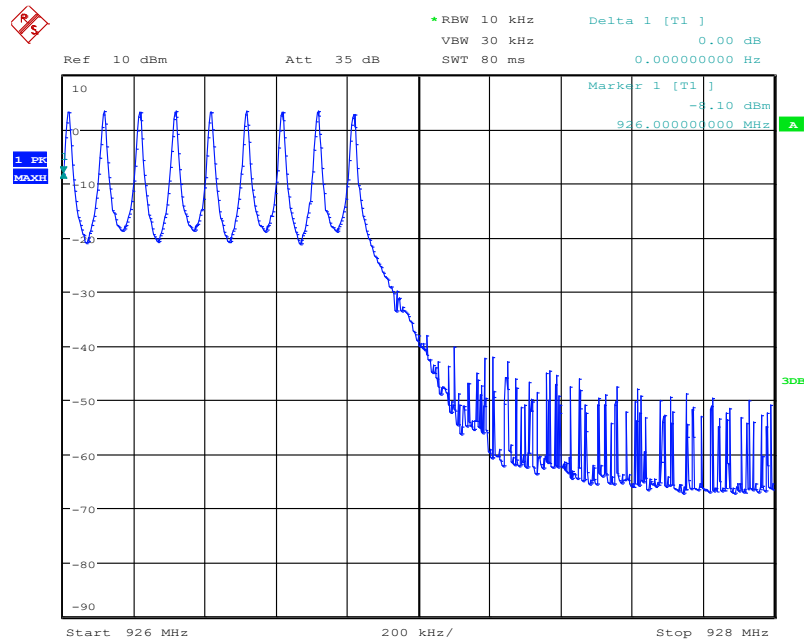
Date: 29.AUG.2025 12:55:39

Figure 46: Number of Hopping Channels 3rd Party Data Rate (920-923 MHz)



Date: 29.AUG.2025 12:58:04

Figure 47: Number of Hopping Channels 3rd Party Data Rate (923-926 MHz)



Date: 29.AUG.2025 12:59:39

Figure 48: Number of Hopping Channels – 3rd Party Data Rate (926-929 MHz)

3.7 Channel Separation

Date Performed: June 20, 2023 - June 22, 2023

Test Standard: FCC CFR 47 Part 15.247 (a)(1)(i)
RSS-247 Issue 4 (5.1) (a)

Test Method: ANSI C63.10:2013
Span = Wide enough to capture the peak of two adjacent channels.
Ref Level = High enough to keep the signal from overdriving the input mixer
RBW = Approximately 30% of the channel spacing; adjusted as necessary to identify the center of each individual channel.
VBW $\geq$ RBW, Trace Detector: Peak, Trace: Max Hold

DA-00-705A1, 2000
Span = wide enough to capture the peaks of two adjacent channels
Resolution (or IF) Bandwidth (RBW) $\geq$ 1% of the span
Video (or Average) Bandwidth (VBW) $\geq$ RBW
Sweep = auto, Detector function = peak, Trace = max hold Allow the trace to stabilize.

Modifications: None.

Final Result: Complies

Applicable Standard:

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

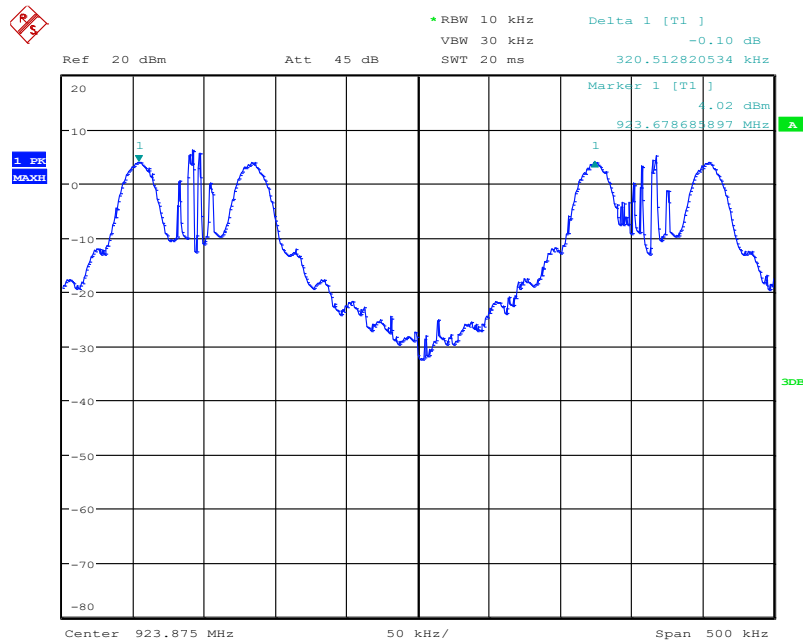
Test Setup:

The EUT was tested outside the SAC via output conducted measurements per ANSI C63.10:2013 & DA-00-705A1, 2000
The channel separation measurement was made by connecting the spectrum analyzer to the active antenna port using a 20dB attenuator. Testing was done using the maximum power output with the system configured for normal operation using a pseudorandom hopping pattern.

Measurement Data and Plots:

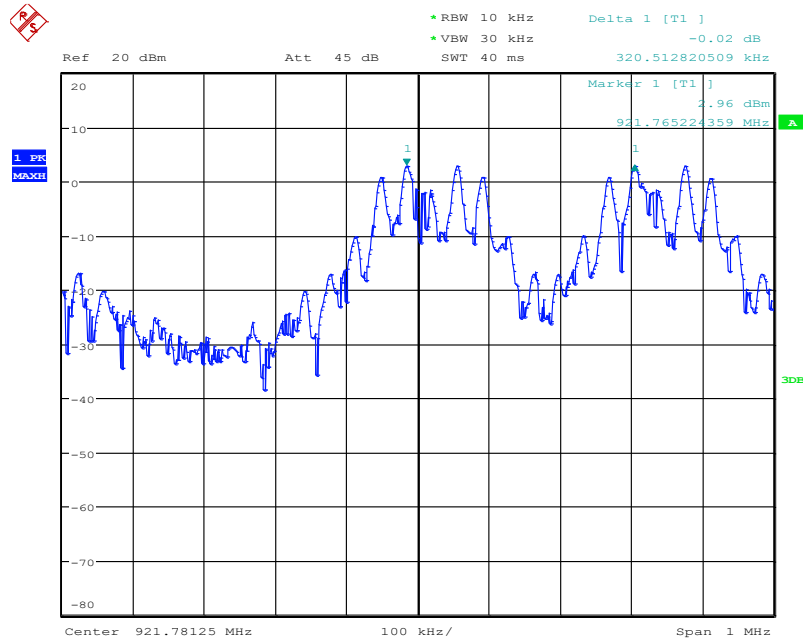
Data Rate	Modulation	Channel Separation (kHz)	Minimum Limit (kHz)	Result
Low	FSK	320.5	155.4	Complies
High	FSK	320.5	294.8	Complies
3 rd Party	FSK	200.3	167.4	Complies

Table 11: Channel Separation Results



Date: 28.AUG.2025 16:10:57

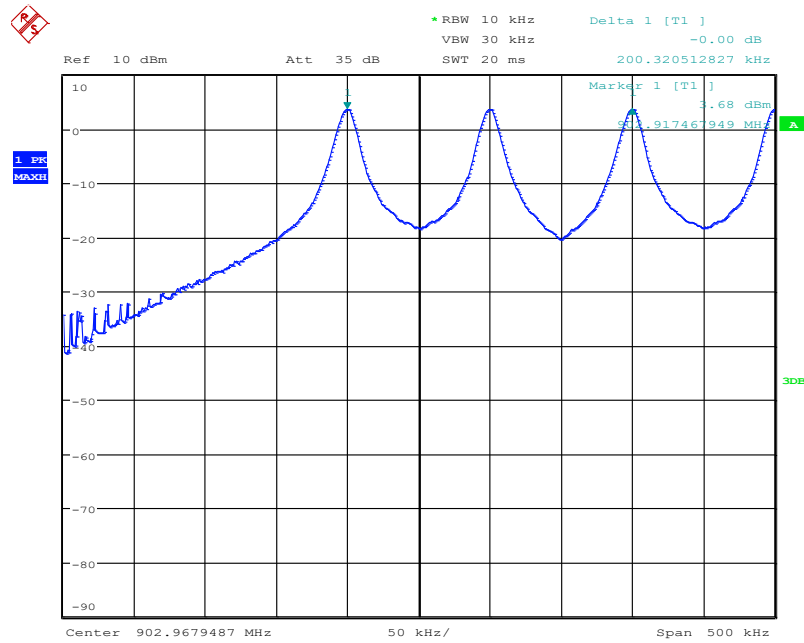
Figure 49: Channel Separation – Low Data Rate



Date: 29.AUG.2025 10:34:11

Figure 50: Channel Separation – High Data Rate

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Date: 29.AUG.2025 13:18:01

Figure 51: Channel Separation – 3rd Party Data Rate

3.8 Time of Occupancy & Dwell Time

Date Performed:	August 29, 2025
Test Standard:	FCC CFR 47 Part 15.247 (a)(1)(i) IC RSS-247 Issue 4 (5.1) (a)
Test Method:	ANSI C63.10:2013 Span = Zero span on a hopping channel. RBW = $\leq$ Channel spacing and where possible RBW $\gg 1/T$ where T is the expected dwell time. Detector: Peak, Trace: Max Hold DA-00-705A1, 2000 Span = zero span, centered on a hopping channel. RBW = 1 MHz VBW $\geq$ RBW Sweep = as necessary to capture the entire dwell time per hopping channel Detector function = peak, Trace = max hold
Modifications:	None
Final Result:	Complies

Applicable Standard:

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

Test Setup:

Bandwidth and band-edge measurements for frequency-hopping spread spectrum systems are typically made by connecting the spectrum analyzer to the active antenna port using a suitable RF attenuator. These measurements require verification that the antenna port selected is the active one if the system has more than one antenna. Testing shall be done using the maximum power output. The system shall be configured for normal operation using a pseudorandom hopping pattern.

Measurement Data and Plots:

Data Rate	Number of Hopping Channels	Time Between Bursts (s)	Dwell Time (ms)	Time of Occupancy (ms)	Limit (ms)	Result
Low	50	1.083	4.29	79.2	400	Complies
High	50	0.220	0.92	83.6	400	Complies
3 rd Party	120	9.038	46.07	101.94	400	Complies

Table 12: Time of Occupancy (Dwell Time) Results

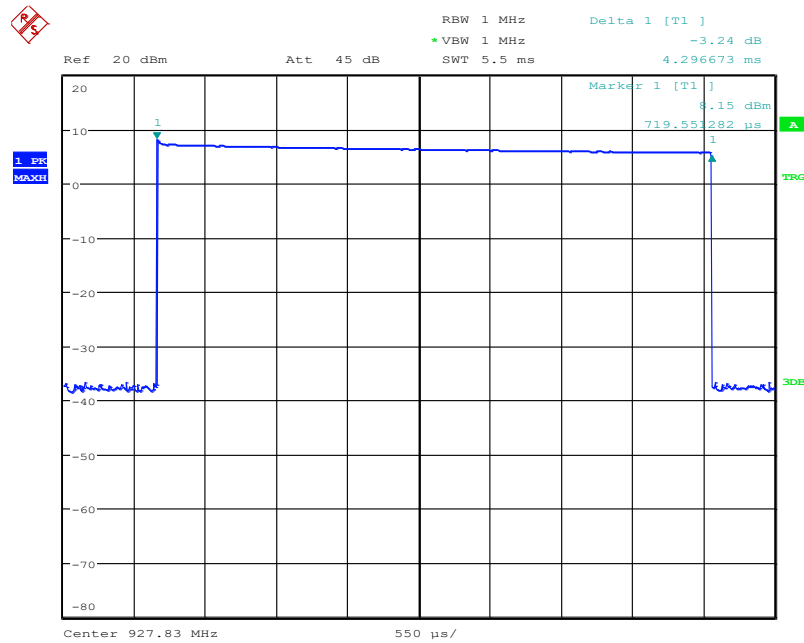
Note: The time of occupancy was calculated by:

$$\text{Time Of Occupancy} = \text{Dwell Time} * 20 \text{ seconds} * \frac{1}{T_{burst}}$$

Where:

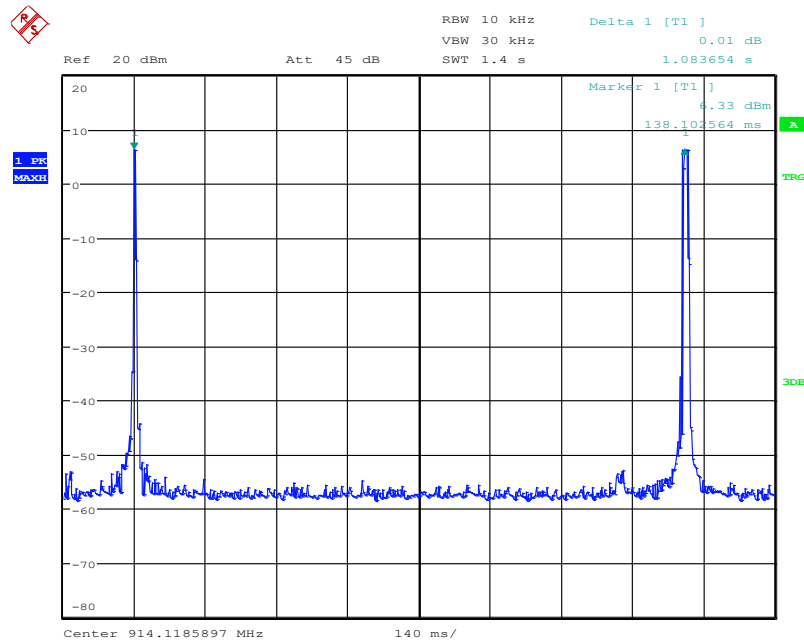
T_{burst} is the time between bursts

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Date: 28.AUG.2025 14:25:56

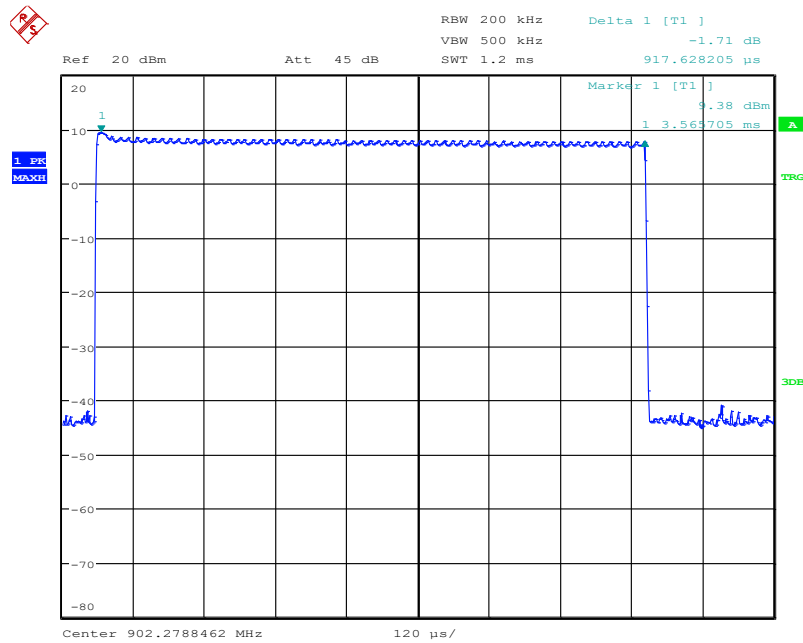
Figure 52: Dwell Time – Low Data Rate



Date: 28.AUG.2025 16:31:15

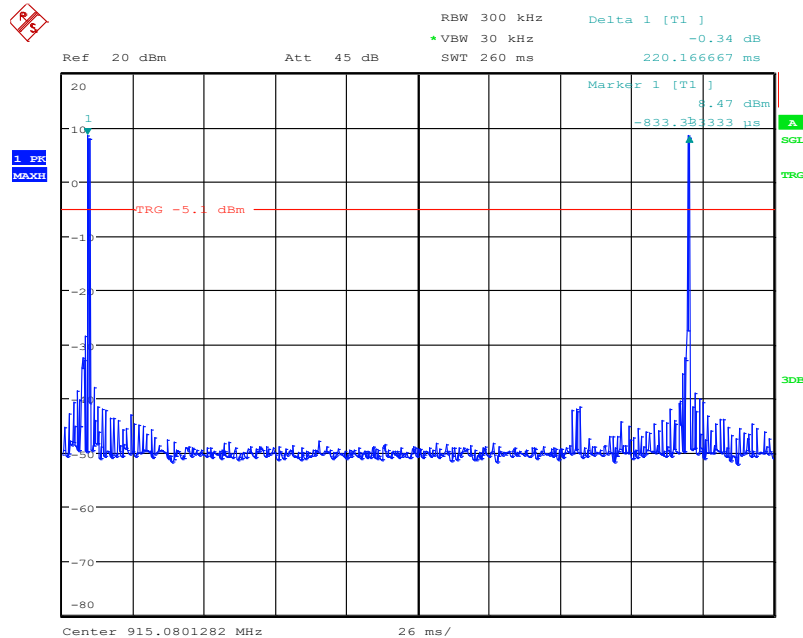
Figure 53: Hopping Period – Low Data Rate

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Date: 28.AUG.2025 17:41:00

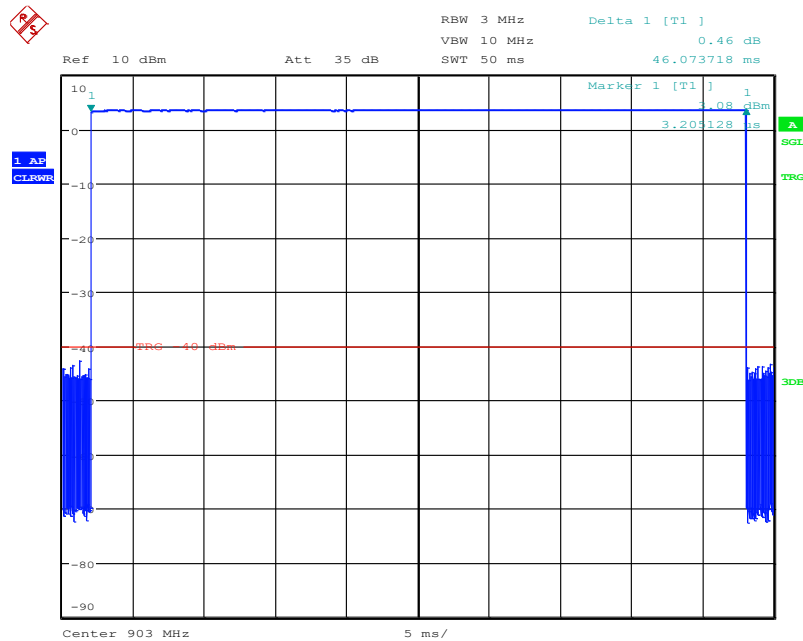
Figure 54: Dwell Time – High Data Rate



Date: 29.AUG.2025 11:04:37

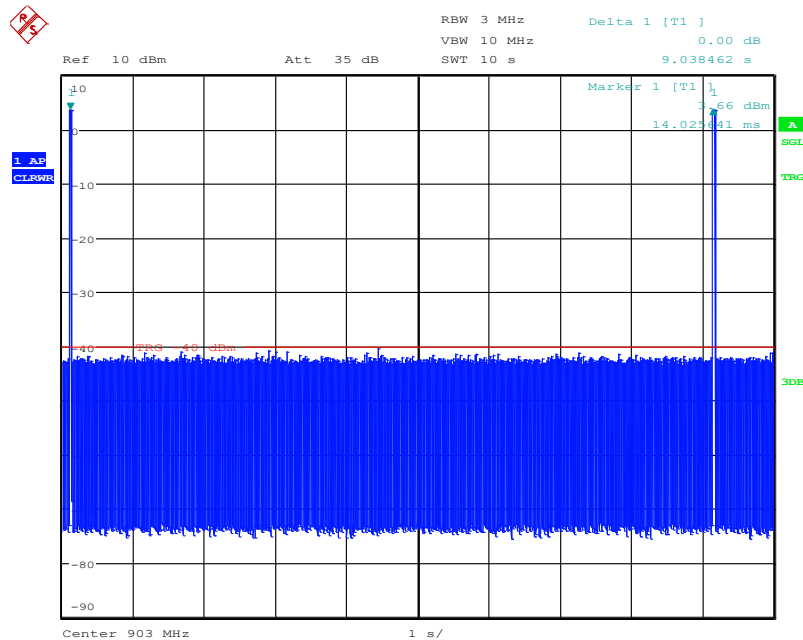
Figure 55: Hopping Period – High Data Rate

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Date: 29.AUG.2025 12:25:45

Figure 56: Dwell Time – 3rd Party Data Rate



Date: 29.AUG.2025 12:35:13

Figure 57: Hopping Period – 3rd Party Data Rate

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3.9 Unintentional Conducted Emissions

Date Performed: August 27, 2025

Test Standard: FCC CFR 47 Part 15.207
IC RSS-Gen Issue 5 (8.8)

Test Method: ANSI C63.10:2013

Modifications: None

Final Result: Complies

Applicable Standard:

FCC 47 CFR Part 15.207: Conducted limits

- a) For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H / 50 Ω line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

*Decreases with the logarithm of the frequency.

RSS-Gen (8.8) AC power-line conducted emissions limits

Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H / 50 Ω line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56 ^{Note 1}	56 to 46 ^{Note 1}
0.5 – 5	56	46
5 – 30	60	50

^{Note 1} The level decreases linearly with the logarithm of the frequency.

Test Setup:

The EUT was tested inside the SAC using a 50 μ H / 50 Ω lisn per ANSI C63.10:2013.

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Measurement Data and Plots:

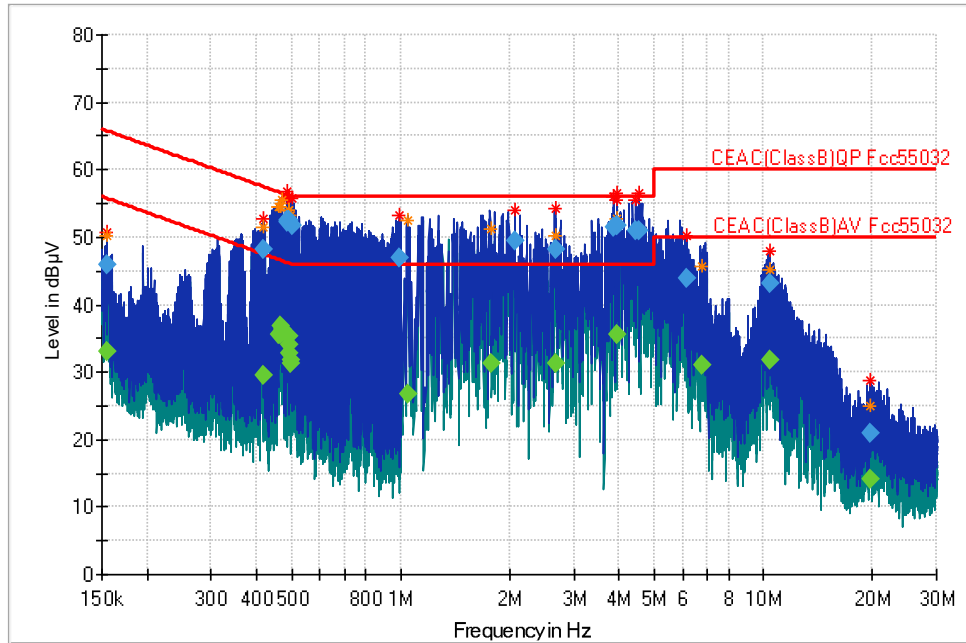


Figure 58: AC Conducted Emissions, Semtech STIM 240V 60Hz Line 1

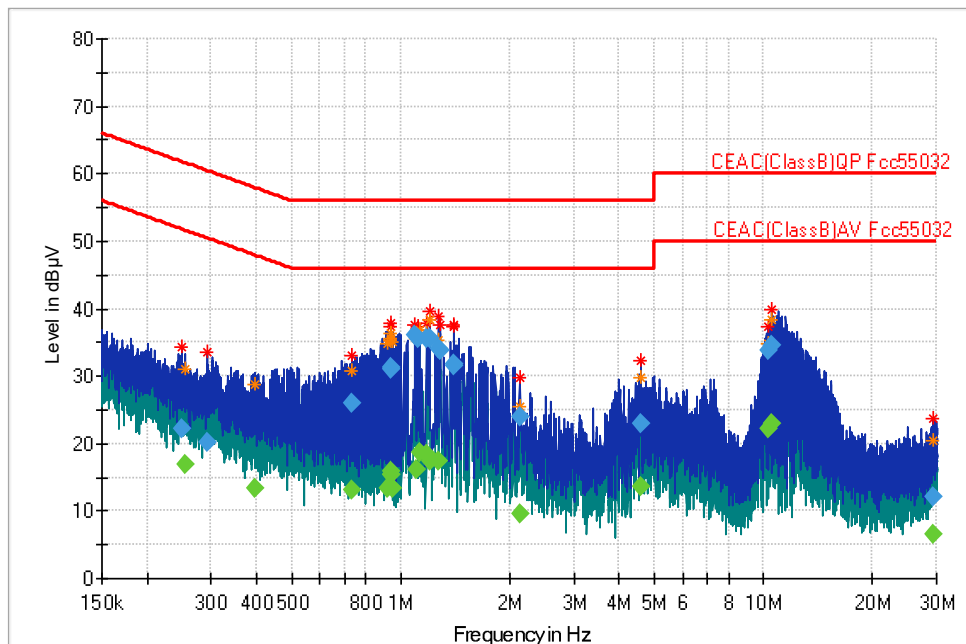


Figure 59: AC Conducted Emissions, Semtech STIM 240V 60Hz Line 2

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Frequency MHz	QuasiPeak (dBuV/m)	Average (dBuV/m)	Line	PE	Corr. (dB/m)	Limit (dBuV/m)	Margin (dB)	Result
0.1550	45.94	---	L1	GND	10.0	65.73	19.79	Complies
0.1551	---	32.97	L1	GND	10.0	55.72	22.75	Complies
0.4185	---	29.42	L1	GND	10.0	47.48	18.06	Complies
0.4189	48.16	---	L1	GND	10.0	57.47	9.31	Complies
0.4593	---	35.63	L1	GND	10.0	46.71	11.07	Complies
0.4638	---	35.63	L1	GND	10.0	46.62	10.99	Complies
0.4658	---	36.79	L1	GND	10.0	46.59	9.79	Complies
0.4687	---	36.24	L1	GND	10.0	46.54	10.30	Complies
0.4868	52.21	---	L1	GND	10.0	56.22	4.01	Complies
0.4882	52.37	---	L1	GND	10.0	56.20	3.82	Complies
0.4903	52.58	---	L1	GND	10.0	56.16	3.58	Complies
0.4903	---	34.07	L1	GND	10.0	46.16	12.10	Complies
0.4915	52.48	---	L1	GND	10.0	56.14	3.66	Complies
0.4916	---	32.83	L1	GND	10.0	46.14	13.31	Complies
0.4941	---	35.37	L1	GND	10.0	46.10	10.73	Complies
0.4951	---	31.23	L1	GND	10.0	46.08	14.85	Complies
0.4974	---	31.72	L1	GND	10.0	46.04	14.32	Complies
0.4996	51.64	---	L1	GND	10.0	56.01	4.37	Complies
0.9872	46.92	---	L1	GND	10.0	56.00	9.08	Complies
1.0464	---	26.76	L1	GND	10.0	46.00	19.24	Complies
1.7685	---	31.34	L1	GND	10.1	46.00	14.66	Complies
2.0701	49.57	---	L1	GND	10.1	56.00	6.43	Complies
2.6617	---	31.39	L1	GND	10.1	46.00	14.61	Complies
2.6617	48.18	---	L1	GND	10.1	56.00	7.82	Complies
3.8681	51.48	---	L1	GND	10.2	56.00	4.52	Complies
3.9290	51.67	---	L1	GND	10.2	56.00	4.33	Complies
3.9522	51.79	---	L1	GND	10.2	56.00	4.21	Complies
3.9522	---	35.58	L1	GND	10.2	46.00	10.42	Complies
4.4220	50.86	---	L1	GND	10.2	56.00	5.14	Complies
4.5206	51.10	---	L1	GND	10.2	56.00	4.90	Complies
6.1533	43.94	---	L1	GND	10.3	60.00	16.06	Complies
6.7420	---	31.16	L1	GND	10.3	50.00	18.84	Complies
10.4453	43.23	---	L1	GND	10.4	60.00	16.77	Complies
10.4482	---	31.70	L1	GND	10.4	50.00	18.30	Complies
19.6644	---	14.17	L1	GND	10.8	50.00	35.83	Complies
19.7427	20.92	---	L1	GND	10.8	60.00	39.08	Complies

Table 13: AC Conducted Emissions, Semtech STIM 240V 60Hz Line 1

Frequency MHz	QuasiPeak (dBuV/m)	Average (dBuV/m)	Line	PE	Corr. (dB/m)	Limit (dBuV/m)	Margin (dB)	Result
0.2500	22.16	---	L2	GND	10.0	61.76	39.60	Complies
0.2534	---	16.94	L2	GND	10.0	51.65	34.71	Complies
0.2931	20.18	---	L2	GND	10.0	60.44	40.25	Complies
0.3962	---	13.42	L2	GND	10.0	47.93	34.52	Complies
0.7317	---	13.16	L2	GND	10.0	46.00	32.84	Complies
0.7317	26.01	---	L2	GND	10.0	56.00	29.99	Complies
0.9211	---	13.38	L2	GND	10.0	46.00	32.62	Complies
0.9362	31.01	---	L2	GND	10.0	56.00	24.99	Complies
0.9363	---	15.48	L2	GND	10.0	46.00	30.52	Complies
0.9374	---	15.51	L2	GND	10.0	46.00	30.49	Complies
0.9392	31.24	---	L2	GND	10.0	56.00	24.76	Complies
0.9393	---	15.83	L2	GND	10.0	46.00	30.17	Complies
0.9504	---	13.34	L2	GND	10.0	46.00	32.66	Complies
1.0957	35.96	---	L2	GND	10.0	56.00	20.04	Complies
1.0986	---	16.27	L2	GND	10.0	46.00	29.73	Complies
1.1218	35.67	---	L2	GND	10.0	56.00	20.33	Complies
1.1247	---	18.58	L2	GND	10.0	46.00	27.42	Complies
1.1798	35.55	---	L2	GND	10.0	56.00	20.45	Complies
1.1827	---	18.39	L2	GND	10.0	46.00	27.61	Complies
1.2001	35.65	---	L2	GND	10.0	56.00	20.35	Complies
1.2030	---	17.32	L2	GND	10.0	46.00	28.68	Complies
1.2668	34.16	---	L2	GND	10.0	56.00	21.84	Complies
1.2697	---	17.34	L2	GND	10.0	46.00	28.66	Complies
1.2871	33.80	---	L2	GND	10.0	56.00	22.20	Complies
1.3973	31.55	---	L2	GND	10.1	56.00	24.45	Complies
1.4031	31.82	---	L2	GND	10.1	56.00	24.18	Complies
2.1223	23.99	---	L2	GND	10.1	56.00	32.01	Complies
2.1252	---	9.52	L2	GND	10.1	46.00	36.48	Complies
4.5960	23.00	---	L2	GND	10.2	56.00	33.00	Complies
4.5960	---	13.57	L2	GND	10.2	46.00	32.43	Complies
10.3003	33.80	---	L2	GND	10.4	60.00	26.20	Complies
10.3032	---	22.24	L2	GND	10.4	50.00	27.76	Complies
10.5468	34.56	---	L2	GND	10.4	60.00	25.44	Complies
10.5497	---	22.99	L2	GND	10.4	50.00	27.01	Complies
29.4258	---	6.47	L2	GND	11.3	50.00	43.53	Complies
29.4954	11.99	---	L2	GND	11.3	60.00	48.01	Complies

Table 14: AC Conducted Emissions, Semtech STIM 240V 60Hz Line 2

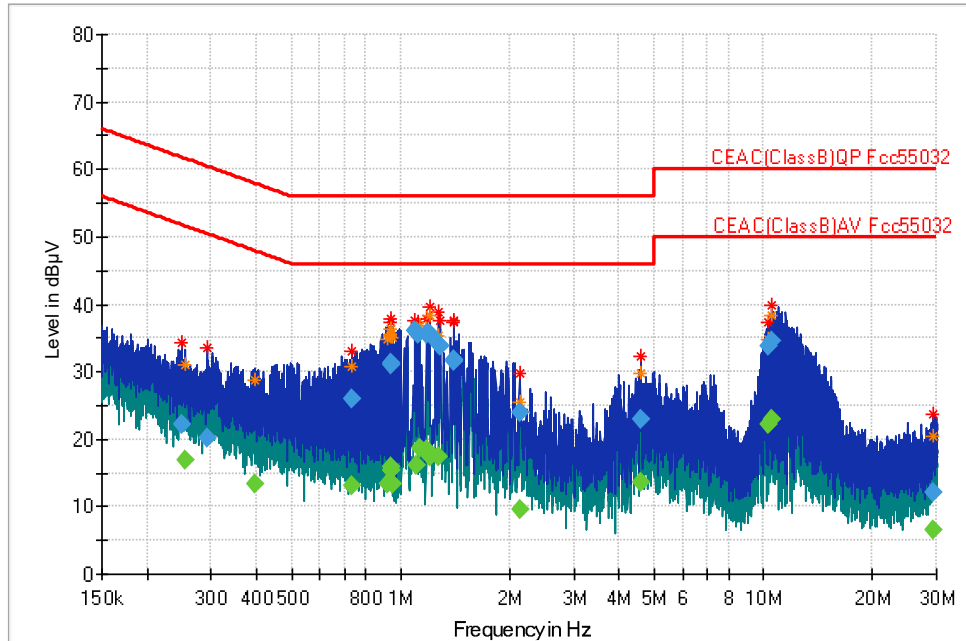


Figure 60: AC Conducted Emissions, ADI STIM 240V 60Hz Line 1

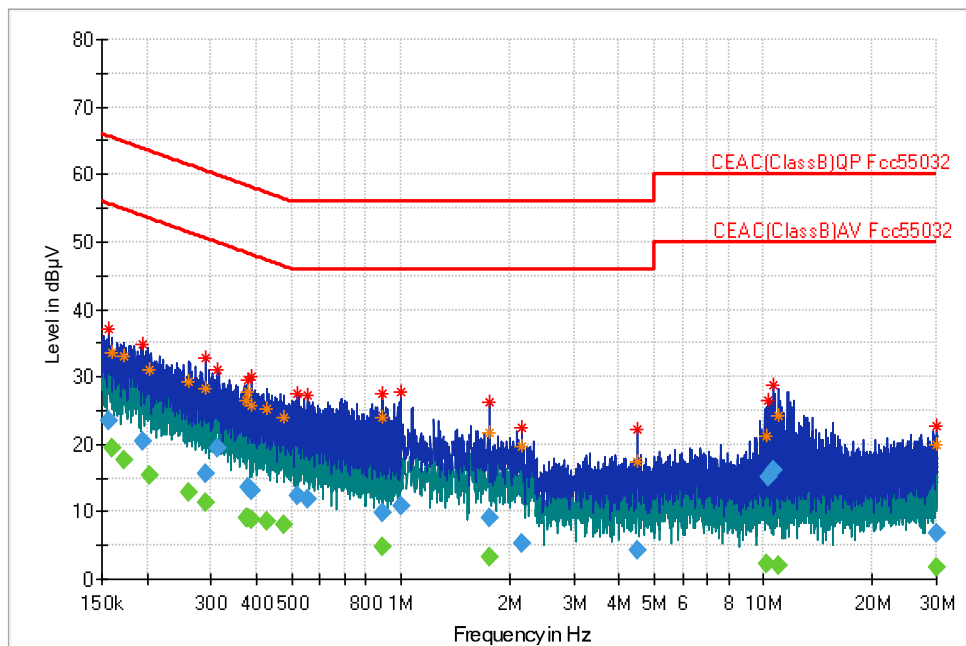


Figure 61: AC Conducted Emissions, ADI STIM 240V 60Hz Line 2

Frequency MHz	QuasiPeak (dBuV/m)	Average (dBuV/m)	Line	PE	Corr. (dB/m)	Limit (dBuV/m)	Margin (dB)	Result
0.2500	22.16	---	L1	GND	10.0	61.76	39.60	Complies
0.2534	---	16.94	L1	GND	10.0	51.65	34.71	Complies
0.2931	20.18	---	L1	GND	10.0	60.44	40.25	Complies
0.3962	---	13.42	L1	GND	10.0	47.93	34.52	Complies
0.7317	---	13.16	L1	GND	10.0	46.00	32.84	Complies
0.7317	26.01	---	L1	GND	10.0	56.00	29.99	Complies
0.9211	---	13.38	L1	GND	10.0	46.00	32.62	Complies
0.9362	31.01	---	L1	GND	10.0	56.00	24.99	Complies
0.9363	---	15.48	L1	GND	10.0	46.00	30.52	Complies
0.9374	---	15.51	L1	GND	10.0	46.00	30.49	Complies
0.9392	31.24	---	L1	GND	10.0	56.00	24.76	Complies
0.9393	---	15.83	L1	GND	10.0	46.00	30.17	Complies
0.9504	---	13.34	L1	GND	10.0	46.00	32.66	Complies
1.0957	35.96	---	L1	GND	10.0	56.00	20.04	Complies
1.0986	---	16.27	L1	GND	10.0	46.00	29.73	Complies
1.1218	35.67	---	L1	GND	10.0	56.00	20.33	Complies
1.1247	---	18.58	L1	GND	10.0	46.00	27.42	Complies
1.1798	35.55	---	L1	GND	10.0	56.00	20.45	Complies
1.1827	---	18.39	L1	GND	10.0	46.00	27.61	Complies
1.2001	35.65	---	L1	GND	10.0	56.00	20.35	Complies
1.2030	---	17.32	L1	GND	10.0	46.00	28.68	Complies
1.2668	34.16	---	L1	GND	10.0	56.00	21.84	Complies
1.2697	---	17.34	L1	GND	10.0	46.00	28.66	Complies
1.2871	33.80	---	L1	GND	10.0	56.00	22.20	Complies
1.3973	31.55	---	L1	GND	10.1	56.00	24.45	Complies
1.4031	31.82	---	L1	GND	10.1	56.00	24.18	Complies
2.1223	23.99	---	L1	GND	10.1	56.00	32.01	Complies
2.1252	---	9.52	L1	GND	10.1	46.00	36.48	Complies
4.5960	23.00	---	L1	GND	10.2	56.00	33.00	Complies
4.5960	---	13.57	L1	GND	10.2	46.00	32.43	Complies
10.3003	33.80	---	L1	GND	10.4	60.00	26.20	Complies
10.3032	---	22.24	L1	GND	10.4	50.00	27.76	Complies
10.5468	34.56	---	L1	GND	10.4	60.00	25.44	Complies
10.5497	---	22.99	L1	GND	10.4	50.00	27.01	Complies
29.4258	---	6.47	L1	GND	11.3	50.00	43.53	Complies
29.4954	11.99	---	L1	GND	11.3	60.00	48.01	Complies

Table 15: AC Conducted Emissions, ADI STIM 240V 60Hz Line 1

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Frequency MHz	QuasiPeak (dBuV/m)	Average (dBuV/m)	Line	PE	Corr. (dB/m)	Limit (dBuV/m)	Margin (dB)	Result
0.1571	23.41	---	L2	GND	10.0	65.61	42.21	Complies
0.1599	---	19.35	L2	GND	10.0	55.47	36.12	Complies
0.1728	---	17.63	L2	GND	10.0	54.83	37.20	Complies
0.1944	20.54	---	L2	GND	10.0	63.85	43.31	Complies
0.2032	---	15.50	L2	GND	10.0	53.48	37.98	Complies
0.2595	---	12.82	L2	GND	10.0	51.45	38.62	Complies
0.2896	15.75	---	L2	GND	10.0	60.54	44.79	Complies
0.2897	---	11.34	L2	GND	10.0	50.53	39.20	Complies
0.3133	19.31	---	L2	GND	10.0	59.88	40.57	Complies
0.3774	---	9.12	L2	GND	10.0	48.34	39.21	Complies
0.3802	13.60	---	L2	GND	10.0	58.28	44.68	Complies
0.3803	---	8.97	L2	GND	10.0	48.27	39.30	Complies
0.3871	13.19	---	L2	GND	10.0	58.13	44.94	Complies
0.3872	---	8.92	L2	GND	10.0	48.13	39.21	Complies
0.4276	---	8.47	L2	GND	10.0	47.30	38.83	Complies
0.4781	---	8.00	L2	GND	10.0	46.37	38.37	Complies
0.5192	12.29	---	L2	GND	10.0	56.00	43.71	Complies
0.5514	11.94	---	L2	GND	10.0	56.00	44.06	Complies
0.8878	9.84	---	L2	GND	10.0	56.00	46.16	Complies
0.8879	---	4.73	L2	GND	10.0	46.00	41.27	Complies
0.9997	10.95	---	L2	GND	10.0	56.00	45.05	Complies
1.7627	9.08	---	L2	GND	10.1	56.00	46.92	Complies
1.7656	---	3.29	L2	GND	10.1	46.00	42.71	Complies
2.1542	5.19	---	L2	GND	10.1	56.00	50.81	Complies
2.1571	---	-0.89	L2	GND	10.1	46.00	46.89	Complies
4.4858	4.38	---	L2	GND	10.2	56.00	51.62	Complies
4.4887	---	-1.09	L2	GND	10.2	46.00	47.09	Complies
10.1727	---	2.36	L2	GND	10.4	50.00	47.64	Complies
10.2771	15.24	---	L2	GND	10.4	60.00	44.76	Complies
10.6541	16.03	---	L2	GND	10.4	60.00	43.97	Complies
11.0485	---	2.00	L2	GND	10.4	50.00	48.00	Complies
29.9246	6.84	---	L2	GND	11.3	60.00	53.16	Complies
29.9275	---	1.89	L2	GND	11.3	50.00	48.11	Complies

Table 16: AC Conducted Emissions, ADI STIM 240V 60Hz Line 2

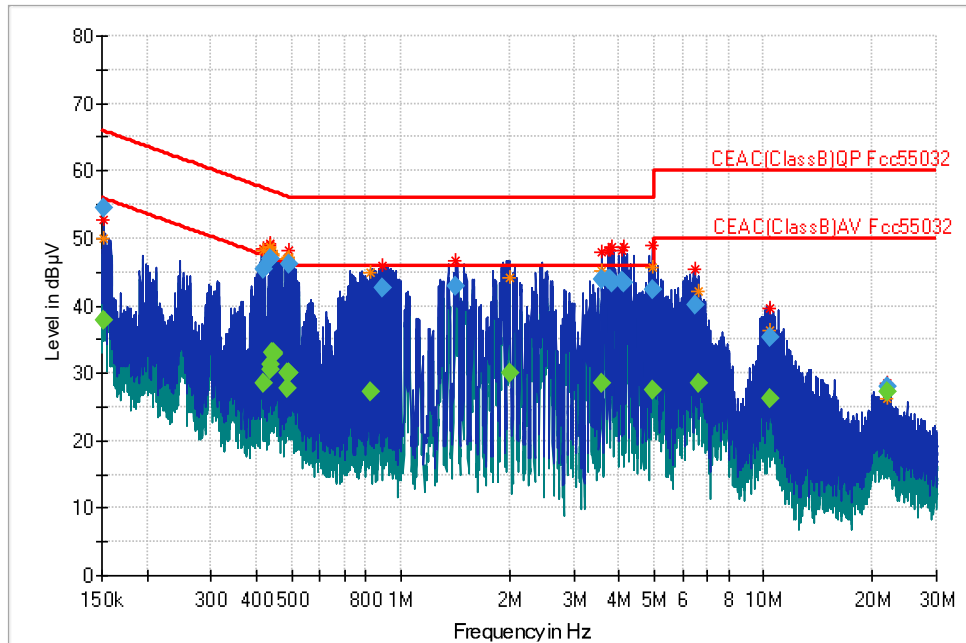


Figure 62: AC Conducted Emissions, Semtech STIM 120V 60Hz Line 1

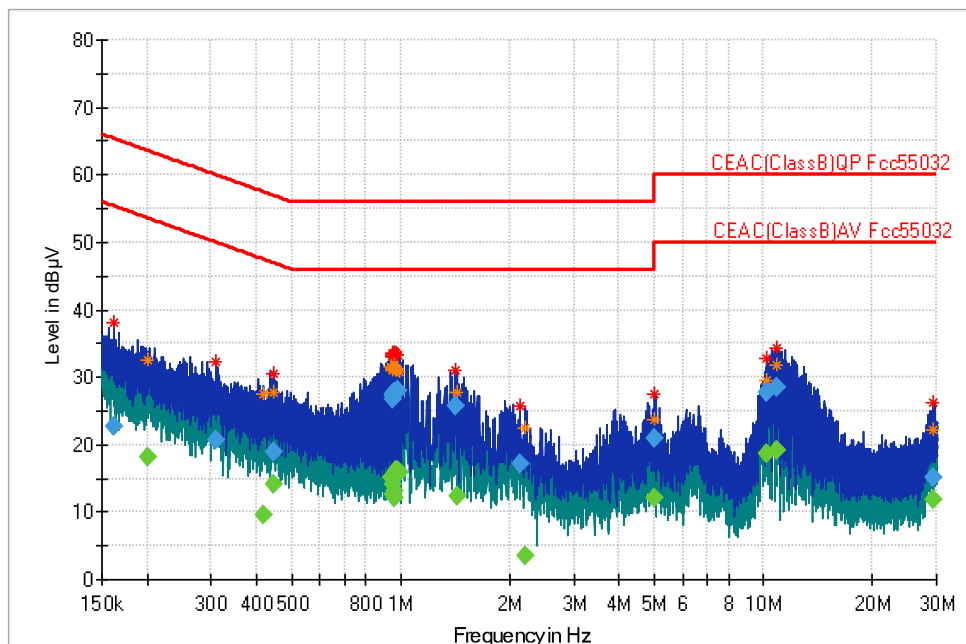


Figure 63: AC Conducted Emissions, Semtech STIM 120V 60Hz Line 2

Frequency MHz	QuasiPeak (dBuV/m)	Average (dBuV/m)	Line	PE	Corr. (dB/m)	Limit (dBuV/m)	Margin (dB)	Result
0.1520	54.57	---	L1	GND	10.0	65.89	11.32	Complies
0.1520	---	37.94	L1	GND	10.0	55.89	17.94	Complies
0.4192	45.54	---	L1	GND	10.0	57.46	11.93	Complies
0.4193	---	28.50	L1	GND	10.0	47.46	18.96	Complies
0.4359	---	30.45	L1	GND	10.0	47.14	16.69	Complies
0.4365	46.87	---	L1	GND	10.0	57.13	10.26	Complies
0.4366	---	31.27	L1	GND	10.0	47.13	15.86	Complies
0.4386	46.85	---	L1	GND	10.0	57.09	10.24	Complies
0.4403	---	33.12	L1	GND	10.0	47.06	13.94	Complies
0.4476	---	32.98	L1	GND	10.0	46.92	13.94	Complies
0.4484	---	32.92	L1	GND	10.0	46.91	13.98	Complies
0.4841	---	27.72	L1	GND	10.0	46.27	18.55	Complies
0.4885	---	30.11	L1	GND	10.0	46.19	16.09	Complies
0.4910	46.21	---	L1	GND	10.0	56.15	9.94	Complies
0.4911	---	30.11	L1	GND	10.0	46.15	16.04	Complies
0.4921	---	30.04	L1	GND	10.0	46.13	16.09	Complies
0.8237	---	27.15	L1	GND	10.0	46.00	18.85	Complies
0.8908	42.63	---	L1	GND	10.0	56.00	13.37	Complies
1.4205	42.88	---	L1	GND	10.1	56.00	13.12	Complies
1.9889	---	29.95	L1	GND	10.1	46.00	16.05	Complies
3.5839	43.81	---	L1	GND	10.2	56.00	12.19	Complies
3.5868	---	28.41	L1	GND	10.2	46.00	17.59	Complies
3.7376	44.00	---	L1	GND	10.2	56.00	12.00	Complies
3.7927	43.91	---	L1	GND	10.2	56.00	12.09	Complies
3.8188	43.47	---	L1	GND	10.2	56.00	12.53	Complies
4.0682	43.67	---	L1	GND	10.2	56.00	12.33	Complies
4.1291	43.33	---	L1	GND	10.2	56.00	12.67	Complies
4.9237	42.44	---	L1	GND	10.2	56.00	13.56	Complies
4.9266	---	27.43	L1	GND	10.2	46.00	18.57	Complies
6.4607	40.04	---	L1	GND	10.3	60.00	19.96	Complies
6.6347	---	28.42	L1	GND	10.3	50.00	21.58	Complies
10.4018	35.36	---	L1	GND	10.4	60.00	24.64	Complies
10.4656	---	26.16	L1	GND	10.4	50.00	23.84	Complies
21.8684	---	27.31	L1	GND	10.9	50.00	22.69	Complies
21.8684	28.04	---	L1	GND	10.9	60.00	31.96	Complies

Table 17: AC Conducted Emissions, Semtech STIM 120V 60Hz Line 1

Frequency MHz	QuasiPeak (dBuV/m)	Average (dBuV/m)	Line	PE	Corr. (dB/m)	Limit (dBuV/m)	Margin (dB)	Result
0.1624	22.76	---	L2	GND	10.0	65.34	42.58	Complies
0.2016	---	18.16	L2	GND	10.0	53.55	35.38	Complies
0.3094	20.82	---	L2	GND	10.0	59.99	39.17	Complies
0.4202	---	9.69	L2	GND	10.0	47.44	37.75	Complies
0.4438	---	14.11	L2	GND	10.0	46.99	32.88	Complies
0.4458	18.82	---	L2	GND	10.0	56.95	38.13	Complies
0.9430	---	15.09	L2	GND	10.0	46.00	30.91	Complies
0.9453	---	14.16	L2	GND	10.0	46.00	31.84	Complies
0.9516	27.42	---	L2	GND	10.0	56.00	28.58	Complies
0.9516	---	12.63	L2	GND	10.0	46.00	33.37	Complies
0.9523	27.18	---	L2	GND	10.0	56.00	28.82	Complies
0.9533	26.87	---	L2	GND	10.0	56.00	29.13	Complies
0.9562	---	12.18	L2	GND	10.0	46.00	33.82	Complies
0.9595	27.62	---	L2	GND	10.0	56.00	28.38	Complies
0.9599	27.66	---	L2	GND	10.0	56.00	28.34	Complies
0.9619	27.56	---	L2	GND	10.0	56.00	28.44	Complies
0.9620	---	13.00	L2	GND	10.0	46.00	33.00	Complies
0.9638	27.55	---	L2	GND	10.0	56.00	28.45	Complies
0.9690	27.83	---	L2	GND	10.0	56.00	28.17	Complies
0.9691	---	15.38	L2	GND	10.0	46.00	30.62	Complies
0.9722	---	16.05	L2	GND	10.0	46.00	29.95	Complies
0.9726	---	16.13	L2	GND	10.0	46.00	29.87	Complies
0.9794	28.04	---	L2	GND	10.0	56.00	27.96	Complies
0.9824	---	16.16	L2	GND	10.0	46.00	29.84	Complies
0.9840	28.06	---	L2	GND	10.0	56.00	27.94	Complies
0.9934	---	15.86	L2	GND	10.0	46.00	30.14	Complies
1.4118	25.75	---	L2	GND	10.1	56.00	30.25	Complies
1.4292	---	12.48	L2	GND	10.1	46.00	33.52	Complies
2.1223	17.15	---	L2	GND	10.1	56.00	38.85	Complies
2.2064	---	3.55	L2	GND	10.1	46.00	42.45	Complies
4.9875	20.86	---	L2	GND	10.2	56.00	35.14	Complies
4.9904	---	12.16	L2	GND	10.2	46.00	33.84	Complies
10.1698	27.83	---	L2	GND	10.4	60.00	32.17	Complies
10.2046	---	18.59	L2	GND	10.4	50.00	31.41	Complies
10.8281	28.50	---	L2	GND	10.4	60.00	31.50	Complies
10.8310	---	19.09	L2	GND	10.4	50.00	30.91	Complies
29.4693	---	11.84	L2	GND	11.3	50.00	38.16	Complies
29.4693	15.03	---	L2	GND	11.3	60.00	44.97	Complies

Table 18: AC Conducted Emissions, Semtech STIM 120V 60Hz Line 2

3.10 Unintentional Radiated Emissions

Date Performed: August 27, 2025 & August 29, 2025

Test Standard: FCC 47 CFR Part 15.33 (a)(1), (5)
FCC 47 CFR Part 15.109
FCC 47 CFR Part 15.209
ICES-003 Issue 7
RSS-247

Test Method: ANSI C63.4:2014

Modifications: None

Final Result: Complies

Applicable Standard:

FCC 47 CFR Part 15.33 (b)(1): Frequency range of radiated measurements

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.075	30
1.075 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower.

FCC 47 CFR Part 15.109: Radiated emission limits

- a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of emission (MHz)	Field strength (microvolts/meter)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

- e) Carrier current systems used as unintentional radiator or other unintentional radiators that are designed to conduct their radio frequency emissions via connecting wires or cables and that operate in the frequency range of 9 kHz to 30 MHz, including devices that deliver the radio frequency energy to transducers, such as ultrasonic devices not covered under Part 18, shall comply with the radiated emission limits for intentional radiators provided in 15.209 for the frequency range of 9 kHz to 30 MHz

FCC 47 CFR Part 15.209 (a): Radiated emission limits; general requirements

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency, f (MHz)	Maximum Field strength Quasi-peak (dB μ V/m at 3 m)
0.009 – 0.490	$20 \cdot \log(2400/F(\text{kHz})) + 40 \text{ dB}$
0.490 – 1.705	$20 \cdot \log(24000/F(\text{kHz})) + 20 \text{ dB}$
1.705 – 30.0	49.5
30 – 88	40.0
88 – 216	43.5
216 – 960	46.0
above 960	54.0

Note 1: The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

Note 2: The emissions limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz., 110-490 kHz. and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector

ICES-003 3.2.2 Radiated emission limits

The quasi-peak limits for the electric component of the radiated field strength emitted from ITE or digital apparatus, within 30 MHz to 1 GHz, for a measurement distance of 3 m or 10 m, are:

Frequency Range (MHz)	Class A (3 m) Quasi-peak (dB μ V/m)	Class A (10 m) Quasi-peak (dB μ V/m)	Class B (3 m) Quasi-peak (dB μ V/m)	Class B (10 m) Quasi-peak (dB μ V/m)
30 – 88	50.0	40.0	40.0	30.0
88 – 216	54.0	43.5	43.5	33.1
216 – 230	56.9	46.4	46.0	35.6
230 – 960	57.0	47.0	47.0	37.0
960 - 1000	60.0	49.5	54.0	43.5

At & above 1 GHz, except for outdoor units of home satellite receiving systems, the ITE or digital apparatus shall comply:

Frequency Range (MHz)	Class A Average (dB μ V/m)	Class A Peak (dB μ V/m)	Class B Average (dB μ V/m)	Class B Peak (dB μ V/m)
1 - F_M	60	80	54	74

F_M is determined by:

Highest internal frequency (F_X)	Highest measurement frequency (F_M)
$F_X \leq 108 \text{ MHz}$	1 GHz
$108 \text{ MHz} \leq F_X \leq 500 \text{ MHz}$	2 GHz
$500 \text{ MHz} \leq F_X \leq 1 \text{ GHz}$	5 GHz
$F_X > 1 \text{ GHz}$	$5 \times F_X$ up to a maximum of 40 GHz

Test Setup:

The EUT was tested in a 3 m SAC and was positioned on the front of the turntable and the radiated output of the device was measured for all emissions up to 18 GHz.

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Measurement Data and Plots:

Full Spectrum

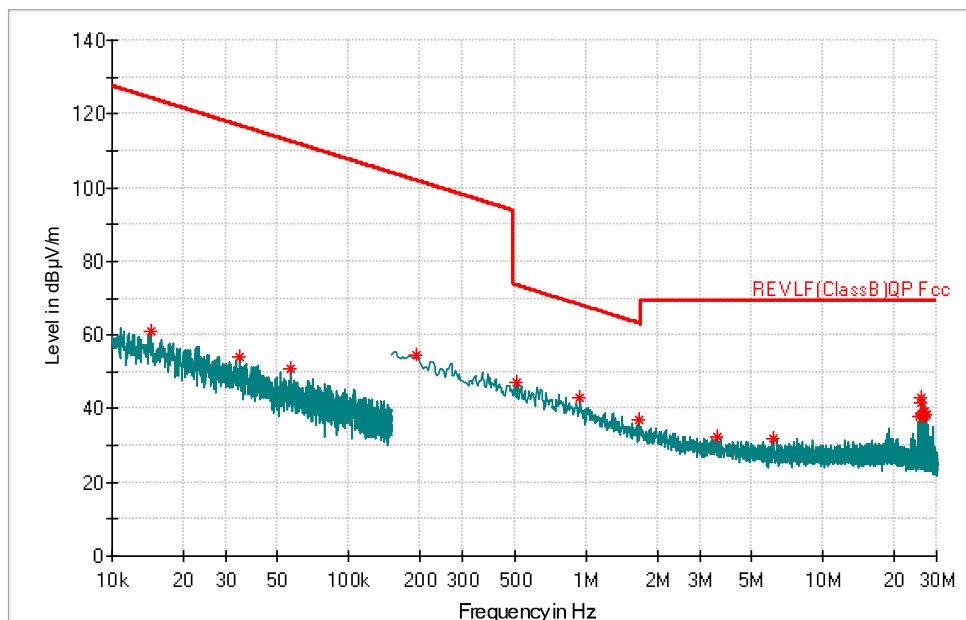


Figure 64: Unintentional Radiated Emissions: Semtech-STIM 10 kHz - 30 MHz, Vertical

Frequency MHz	QuasiPeak (dBµV/m)	Height (cm)	Pol	Azimuth (°)	Corr. (dB/m)	Limit (dBµV/m)	Margin (dB)	Result
0.0146	60.80	100.0	V	0	26.9	124.33	63.53	Complies
0.0344	53.83	100.0	V	166	22.8	116.85	63.02	Complies
0.0563	50.73	100.0	V	257	21.1	112.58	61.84	Complies
0.1910	54.75	100.0	V	313	20.1	101.98	47.23	Complies
0.5119	47.20	100.0	V	296	20.4	73.42	26.22	Complies
0.9410	42.91	100.0	V	66	20.5	68.15	25.24	Complies
1.6612	36.83	100.0	V	32	20.6	63.23	26.40	Complies
3.5753	32.54	100.0	V	83	20.7	69.50	36.96	Complies
6.1872	32.08	100.0	V	149	20.8	69.50	37.42	Complies
25.5822	38.02	100.0	V	49	19.6	69.50	31.48	Complies
25.8620	41.64	100.0	V	313	19.5	69.50	27.86	Complies
26.0225	42.86	100.0	V	149	19.4	69.50	26.64	Complies
26.0859	38.97	100.0	V	358	19.4	69.50	30.53	Complies
26.3359	38.24	100.0	V	49	19.3	69.50	31.26	Complies
26.3807	38.09	100.0	V	231	19.3	69.50	31.41	Complies
26.7426	37.96	100.0	V	132	19.2	69.50	31.54	Complies
26.8844	39.32	100.0	V	296	19.2	69.50	30.18	Complies
27.3695	38.55	100.0	V	313	19.0	69.50	30.95	Complies

Table 19: Unintentional Radiated Emissions: Semtech-STIM 10 kHz - 30 MHz, Vertical

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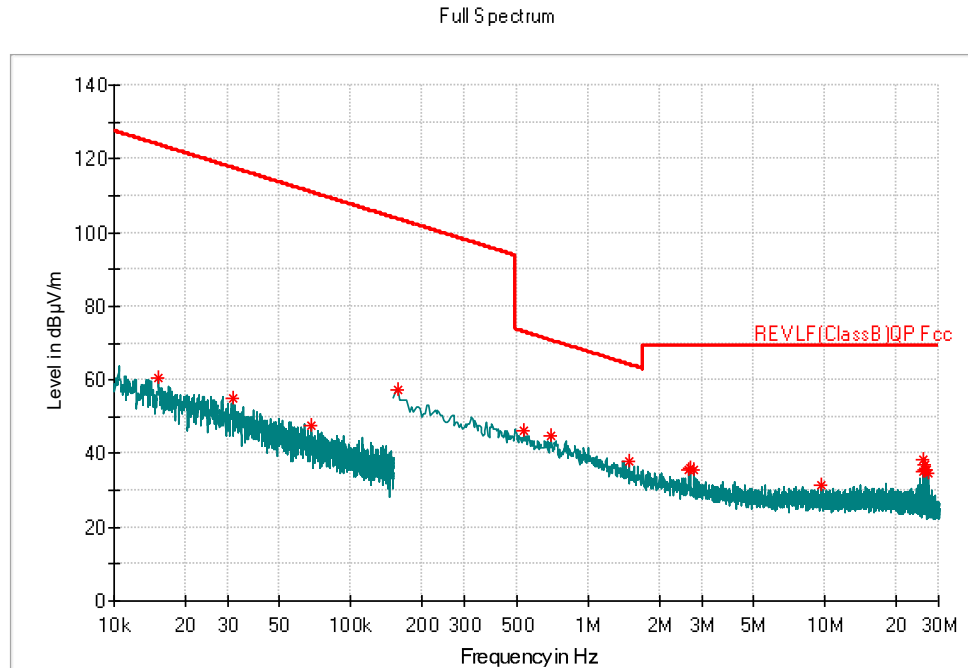


Figure 65: Unintentional Radiated Emissions: Semtech-STIM 10 kHz - 30 MHz, Horizontal

Frequency MHz	QuasiPeak (dBuV/m)	Height (cm)	Pol	Azimuth (°)	Corr. (dB/m)	Limit (dBuV/m)	Margin (dB)	Result
0.0154	60.67	100.0	V	76	26.5	123.82	63.15	Complies
0.0316	54.88	100.0	V	349	23.2	117.59	62.71	Complies
0.0676	47.71	100.0	V	0	20.9	111.00	63.29	Complies
0.1575	57.32	100.0	V	180	20.2	103.66	46.34	Complies
0.5343	46.05	100.0	V	294	20.4	73.05	27.00	Complies
0.6948	44.79	100.0	V	33	20.5	70.78	25.99	Complies
1.4895	37.74	100.0	V	342	20.6	64.17	26.43	Complies
2.6574	35.72	100.0	V	247	20.6	69.50	33.78	Complies
2.6984	36.11	100.0	V	99	20.6	69.50	33.39	Complies
2.7917	35.78	100.0	V	33	20.6	69.50	33.72	Complies
9.5863	31.19	100.0	V	0	20.9	69.50	38.31	Complies
25.7016	38.46	100.0	V	342	19.5	69.50	31.04	Complies
25.9628	35.12	100.0	V	180	19.5	69.50	34.38	Complies
26.1979	35.45	100.0	V	263	19.4	69.50	34.05	Complies
26.3396	37.10	100.0	V	0	19.3	69.50	32.40	Complies
26.5374	35.40	100.0	V	310	19.3	69.50	34.10	Complies
27.0971	34.66	100.0	V	0	19.1	69.50	34.84	Complies

Table 20: Unintentional Radiated Emissions: Semtech-STIM 10 kHz - 30 MHz, Horizontal

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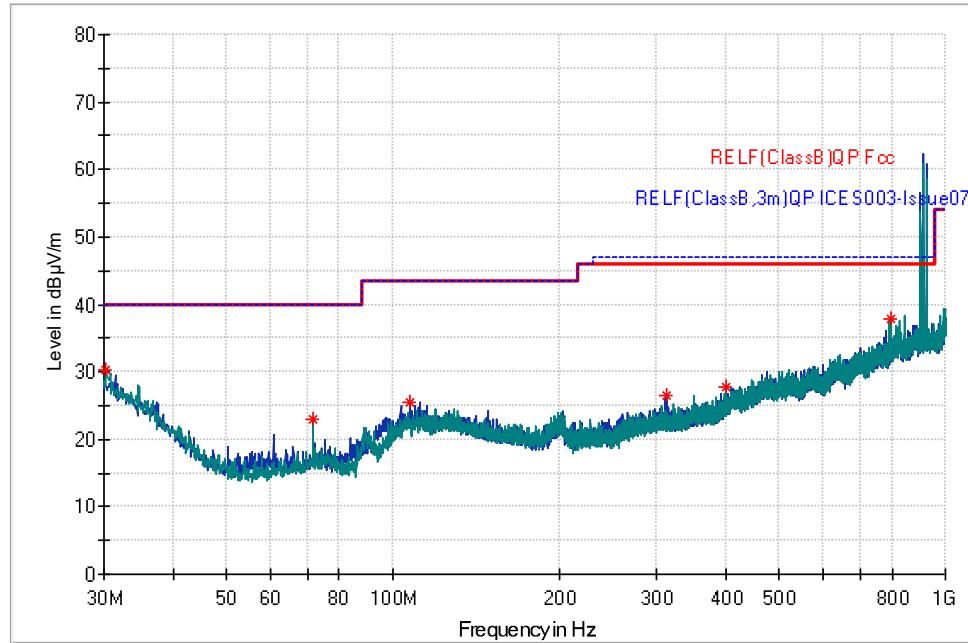


Figure 66: Unintentional Radiated Emissions: Semtech-STIM 30 MHz - 1 GHz

Note: This test was performed with the transmitter operational and a notch filter was used to remove the fundamental frequency.
The spurs that are present are governed by band-edge compliance.

Frequency MHz	QuasiPeak (dBuV/m)	Height (cm)	Pol	Azimuth (°)	Corr. (dB/m)	Limit (dBuV/m)	Margin (dB)	Result
30.2910	30.27	150.0	V	16	-0.9	40.00	9.73	Complies
71.6130	22.84	300.0	V	270	-13.1	40.00	17.16	Complies
107.2120	25.57	300.0	H	129	-8.9	43.50	17.93	Complies
401.2190	27.72	100.0	V	0	-5.0	46.00	18.28	Complies
795.7180	37.73	200.0	V	0	2.3	46.00	8.27	Complies
902.2240	56.64	150.0	H	23	3.7	46.00	-10.64	Complies
915.0280	62.25	150.0	H	37	3.8	46.00	-16.25	Complies
927.6380	60.75	150.0	H	50	4.0	46.00	-14.75	Complies

Table 21: Unintentional Radiated Emissions: Semtech-STIM 30 MHz - 1 GHz

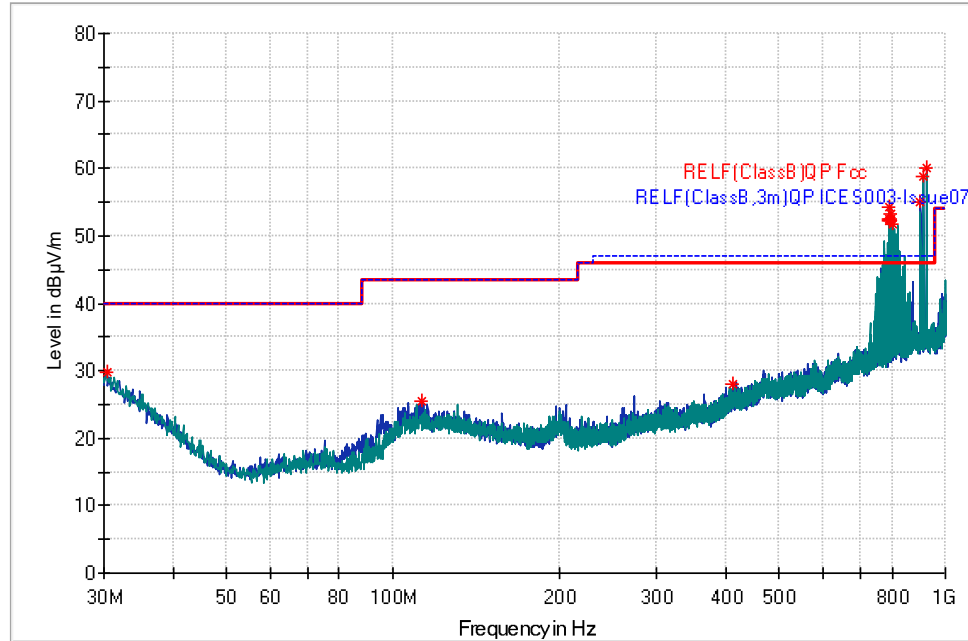


Figure 67: Unintentional Radiated Emissions: ADI-STIM 30 MHz - 1 GHz

Frequency MHz	QuasiPeak (dBuV/m)	Height (cm)	Pol	Azimuth (°)	Corr. (dB/m)	Limit (dBuV/m)	Margin (dB)	Result
30.3880	29.87	100.0	V	320	-1.0	40.00	10.13	Complies
112.9350	25.47	100.0	H	220	-8.0	43.50	18.03	Complies
412.0830	28.11	100.0	H	108	-4.1	46.00	17.89	Complies
789.9950	52.16	150.0	V	285	2.0	46.00	-6.16	Complies
792.9050	54.17	150.0	V	300	2.2	46.00	-8.17	Complies
793.7780	52.43	200.0	V	334	2.3	46.00	-6.43	Complies
797.1730	53.29	100.0	V	213	2.4	46.00	-7.29	Complies
798.2400	52.23	150.0	V	348	2.4	46.00	-6.23	Complies
799.0160	52.43	150.0	V	172	2.4	46.00	-6.43	Complies
801.3440	51.65	150.0	V	358	2.5	46.00	-5.65	Complies
902.3210	55.01	100.0	H	80	3.7	46.00	-9.01	Complies
915.1250	58.77	150.0	H	52	3.8	46.00	-12.77	Complies
927.7350	60.04	150.0	H	0	4.0	46.00	-14.04	Complies

Table 22: Unintentional Radiated Emissions: ADI-STIM 30 MHz - 1 GHz

Note: This test was performed with the transmitter operational, and a notch filter was used to remove the fundamental frequency.

The spuria that are present are governed by band-edge compliance.

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3.11 Intentional Radiator Emissions and Radio Collocation

Date Performed: June 16, 2023 - June 30, 2023

Test Standard: FCC 47 CFR Part 15.33 (a)(1), (5)
FCC 47 CFR Part 15.205 (a), (b)
FCC 47 CFR Part 15.209 (a)
FCC 47 CFR Part 15.247 (b)
RSS-247 Issue 4
RSS-Gen Issue 5

Test Method: ANSI C63.10:2013

Modifications: None

Final Result: Complies

Applicable Standard:

FCC 47 CFR Part 15.33 (a)(1), (5): Frequency range of radiated measurements

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

FCC 47 CFR Part 15.205 (a), (b): Restricted bands of operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	
13.36-13.41			

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The field strength of emissions appearing within these frequency bands shall not exceed the limits show in § 15.209

FCC 47 CFR Part 15.209 (a): Radiated emission limits; general requirements

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency, <i>f</i> (MHz)	Maximum Field strength Quasi-peak (dBμV/m at 3 m)
0.009 – 0.490	$20 \cdot \log(2400/F(\text{kHz})) + 40 \text{ dB}$
0.490 – 1.705	$20 \cdot \log(24000/F(\text{kHz})) + 20 \text{ dB}$
1.705 – 30.0	49.5
30 – 88	40.0
88 – 216	43.5
216 – 960	46.0
above 960	54.0
Note 1: The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges. Note 2: The emissions limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz., 110-490 kHz. and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector	

FCC 47 CFR Part 15.247 (d): Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

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)).

Calculation of Duty Cycle Correction Factor for Frequency Hopping Emissions:

Per KDB 558074 D01 15.247 Meas Guidance v05r02: the use of a duty cycle correction factor (DCCF) is permitted for calculating average radiated field strength emission levels for an FHSS device in 15.247. This DCCF can be applied when the unwanted emission limit is subject to an average field strength limit (e.g. within a Government Restricted Band) and the conditions specified in Section 15.35(c) can be satisfied. The average radiated field strength is calculated by subtracting the DCCF from the maximum radiated field strength level as determined through measurement. The maximum radiated field strength level represents the worst-case (maximum amplitude) RMS measurement of the emission(s) during continuous transmission (ie, not including any time intervals during which the transmitter is off or is transmitting at a reduced power level). It is also acceptable to apply the DCCF to a measurement performed with a peak detector instead of the specified RMS power averaging detector. Note that Section 15.35(c) specifies that the DCCF shall represent the worst-case (greatest duty cycle) over any 100 msec transmission period. The test report provided with the certification application must provide clear and complete documentation of the justification for use of the procedure as well as the calculations and assumptions that are used. Subclause 7.5 of ANSI C63.10 provides additional measurement guidance applicable to determination of the DCCF.

Per ANSI C63.10:2013: Unless otherwise specified, when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 s (100 ms). In cases where the pulse train exceeds 0.1 s, the measured field strength shall be determined during a 0.1 s interval. The DCCF is calculated as:

$$\delta(dB) = 20\log(\Delta)$$

Where

δ is the duty cycle correction factor in dB

Δ is the duty cycle (dimensionless)

Data Rate	Dwell Time (ms)	Averaging Time (ms)	Duty Cycle	DCCF (dB)
Low	4.29	100	0.0429	27.35
High	0.917	100	0.0091	40.81
3 rd Party	46.07	100	0.4607	6.73

Table 23: Duty Cycle Correction Factors

Test Setup:

The EUT was tested in a 3 m SAC and was positioned on the front of the turntable. The transmitter was set for continuous transmission. The radiated output of the device was measured for all emissions up to the 10th harmonic of the 900 MHz transmitter under test.

Radiated Emissions Data:

The following plots were obtained when operating in low data rate.

At this data rate a duty cycle correction factor of 27.35dB is permitted. However, to determine compliance for the emissions using an average detector, the lowest duty cycle correction factor of 6.73dB was applied.

It was observed then when testing the device that was using the ADI radio, the average emissions would require a duty cycle correction factor of greater than 6.73dB to meet compliance from 1-6GHz. For this reason, the emissions were tested again at 1-6GHz when the device was configured for third party data rate. This was not required for the device that was using the Semtech radio.

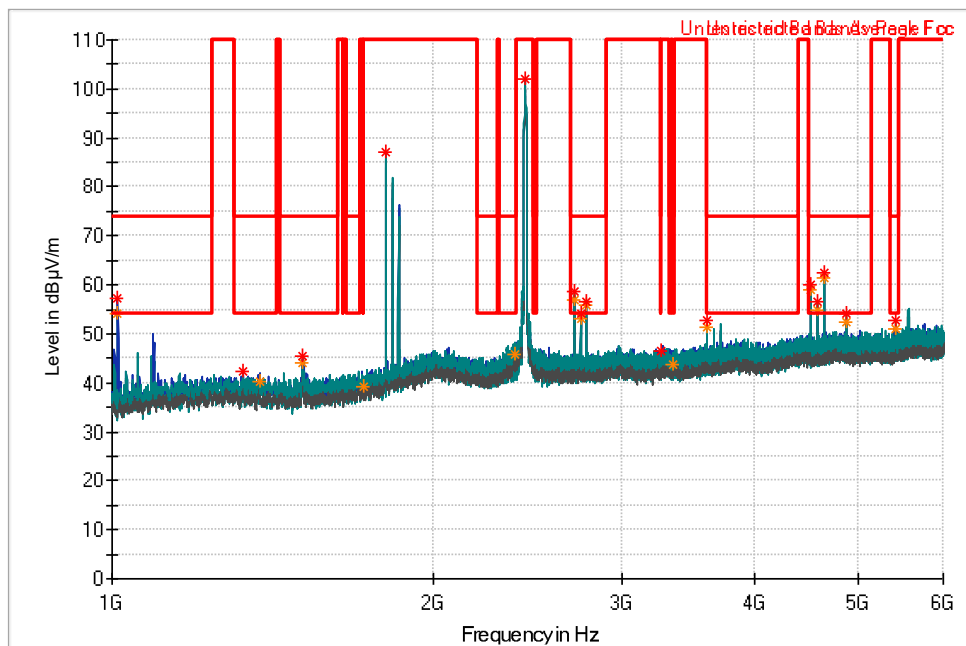


Figure 68: Unintentional Radiated Emissions: ADI-STIM 1 GHz – 6GHz

Frequency MHz	Corr. (dB/m)	QuasiPeak (dBuV/m)	Avg (dBuV/m)	Height (cm)	Pol	Azimuth (°)	DCCF (dB)	Limit (dBuV/m)	Margin (dB)	Result
1012.5000	-7.7	---	54.10	100.0	H	338	6.73	54.00	6.63	Complies
1012.5000	-7.7	57.16	---	100.0	H	338	-	74.00	16.84	Complies
1328.0000	-5.3	42.36	---	400.0	H	190	-	74.00	31.64	Complies
1375.0000	-5.4	---	40.41	350.0	H	267	6.73	54.00	20.32	Complies
1507.5000	-5.5	---	44.01	150.0	H	320	6.73	54.00	16.72	Complies
1510.0000	-5.5	45.33	---	200.0	H	0	-	74.00	28.67	Complies
1721.0000	-3.2	---	39.18	300.0	H	209	6.73	54.00	21.55	Complies
1804.5000	-2.0	87.15	---	150.0	V	36	-	110.00	22.85	Complies
2383.0000	0.1	---	45.73	250.0	V	14	6.73	54.00	15	Complies
2436.5000	0.2	101.99	---	200.0	V	0	-	110.00	8.01	Complies
2706.5000	1.0	---	56.98	200.0	H	0	6.73	54.00	3.75	Complies
2707.0000	1.0	58.81	---	150.0	V	36	-	74.00	15.19	Complies
2745.0000	1.1	---	53.17	100.0	H	26	6.73	54.00	7.56	Complies
2745.0000	1.1	54.07	---	100.0	H	26	-	74.00	19.93	Complies
2783.0000	1.2	56.62	---	150.0	H	27	-	74.00	17.38	Complies
2783.0000	1.2	---	55.71	150.0	H	27	6.73	54.00	5.02	Complies
3262.5000	2.3	46.38	---	350.0	H	186	-	74.00	27.62	Complies
3352.0000	2.5	---	43.75	250.0	H	289	6.73	54.00	16.98	Complies
3608.5000	3.5	---	51.43	200.0	V	0	6.73	54.00	9.3	Complies
3609.0000	3.5	52.61	---	200.0	V	357	-	74.00	21.39	Complies
4511.0000	6.2	60.06	---	150.0	V	338	-	74.00	13.94	Complies
4511.0000	6.2	---	59.04	150.0	V	338	6.73	54.00	1.69	Complies
4575.5000	6.4	56.61	---	200.0	V	310	-	74.00	17.39	Complies
4575.5000	6.4	---	54.89	200.0	V	310	6.73	54.00	5.84	Complies
4638.0000	6.7	---	61.46	150.0	V	36	6.73	54.00	-0.73	Complies*
4638.0000	6.7	62.61	---	150.0	V	36	-	74.00	11.39	Complies
4873.5000	7.0	---	52.25	250.0	V	4	6.73	54.00	8.48	Complies
4874.0000	7.0	53.97	---	150.0	V	0	-	74.00	20.03	Complies
5413.0000	7.4	---	50.85	200.0	V	15	6.73	54.00	9.88	Complies
5413.5000	7.4	52.62	---	200.0	V	27	-	74.00	21.38	Complies

Table 24: Intentional Radiated Emissions: ADI-STIM radio 1GHz – 6GHz

* The DCCF (Duty Cycle Correction Factor) for the low and high data rate is 27.35 and 40.81 respectively. Therefore, for the low and high data rates, the device complies.

The device does not comply if the third party data rate DCCF is applied, for this reason, the emissions were tested again at 1-6GHz when the device was configured for third party data rate. This was not required for the device that was using the Semtech radio since this met compliance applying the third party DCCF.

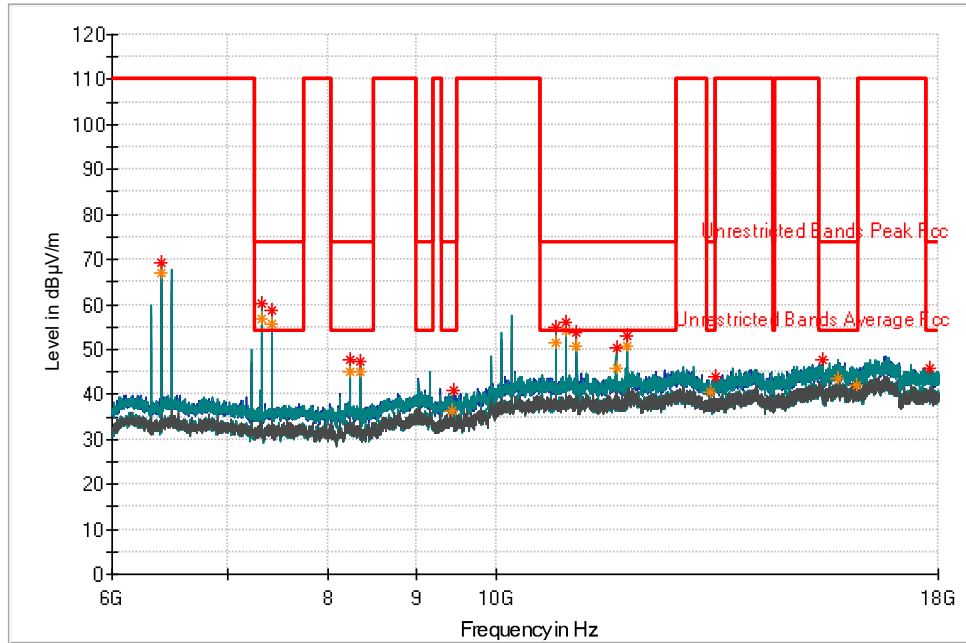


Figure 69: Intentional Radiated Emissions: ADI-STIM radio 6GHz – 18GHz (Low Data Rate)

Frequency MHz	Corr. (dB/m)	QuasiPeak (dBUV/m)	Avg (dBUV/m)	Height (cm)	Pol	Azimuth (°)	DCCF (dB)	Limit (dBUV/m)	Margin (dB)	Result
6404.4000	-6.8	69.31	---	150.0	V	0	-	103.46	34.15	Complies
6405.6000	-6.8	---	67.07	150.0	V	0	6.73	103.46	43.12	Complies
7320.0000	-4.8	60.22	---	150.0	V	349	-	74.00	13.78	Complies
7321.2000	-4.8	---	56.81	150.0	V	0	6.73	54.00	3.92	Complies
7420.8000	-4.7	58.76	---	150.0	V	336	-	74.00	15.24	Complies
7422.0000	-4.7	---	55.82	150.0	V	2	6.73	54.00	4.91	Complies
8235.6000	-3.0	47.56	---	250.0	V	336	-	74.00	26.44	Complies
8235.6000	-3.0	---	44.94	250.0	V	336	6.73	54.00	15.79	Complies
8348.4000	-2.8	47.20	---	150.0	V	336	-	74.00	26.8	Complies
8349.6000	-2.8	---	45.21	150.0	V	336	6.73	54.00	15.52	Complies
9426.0000	0.2	---	36.25	400.0	V	338	6.73	54.00	24.48	Complies
9441.6000	0.3	40.98	---	200.0	H	0	-	74.00	33.02	Complies
10826.4000	4.5	54.87	---	150.0	V	0	-	74.00	19.13	Complies
10827.6000	4.5	---	51.34	150.0	V	0	6.73	54.00	9.39	Complies
10980.0000	4.5	56.07	---	150.0	V	11	-	74.00	17.93	Complies
10981.2000	4.5	---	53.99	150.0	V	0	6.73	54.00	6.74	Complies
11132.4000	4.9	53.58	---	150.0	V	2	-	74.00	20.42	Complies
11133.6000	4.9	---	50.71	200.0	V	352	6.73	54.00	10.02	Complies
11728.8000	6.5	---	45.72	150.0	V	0	6.73	54.00	15.01	Complies
11728.8000	6.5	50.39	---	150.0	V	0	-	74.00	23.61	Complies
11895.6000	7.6	---	50.69	100.0	V	0	6.73	54.00	10.04	Complies
11895.6000	7.6	53.16	---	100.0	V	0	-	74.00	20.84	Complies
13282.8000	6.6	---	40.51	250.0	V	0	6.73	54.00	20.22	Complies
13396.8000	6.9	44.00	---	100.0	V	354	-	74.00	30	Complies
15429.6000	10.9	47.79	---	150.0	H	105	-	74.00	26.21	Complies
15740.4000	12.6	---	43.57	150.0	V	2	6.73	54.00	17.16	Complies
16131.6000	11.8	---	42.14	150.0	V	166	6.73	54.00	18.59	Complies
17787.6000	14.9	45.92	---	200.0	V	189	-	74.00	28.08	Complies

Table 25: Intentional Radiated Emissions: ADI-STIM radio 6GHz – 18GHz

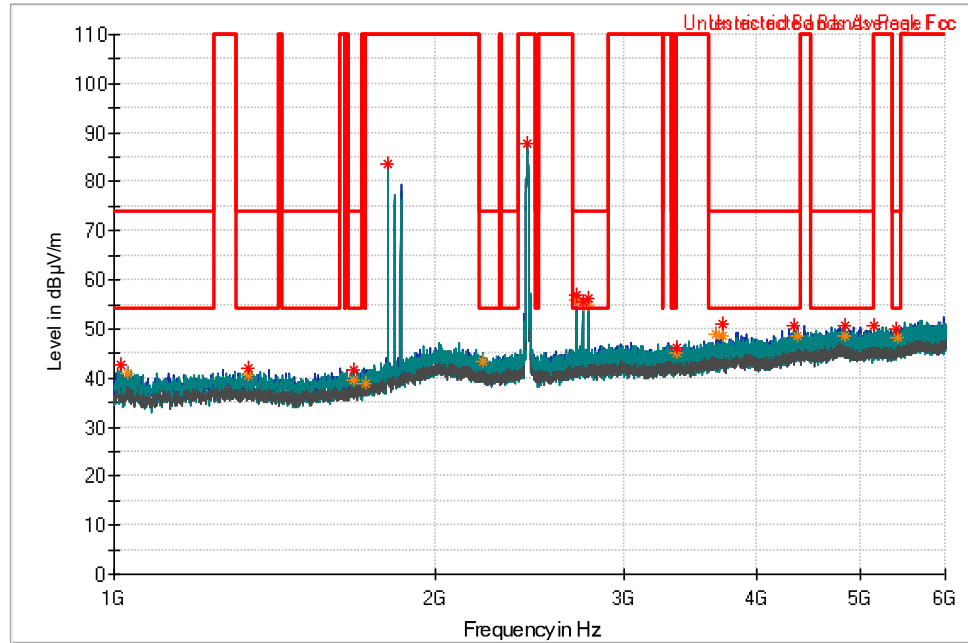


Figure 70: Intentional Radiated Emissions: Semtech radio 1 GHz – 6GHz (Low Data Rate)

Frequency MHz	Corr. (dB/m)	QuasiPeak (dBuV/m)	Avg (dBuV/m)	Height (cm)	Pol	Azimuth (°)	DCCF (dB)	Limit (dBuV/m)	Margin (dB)	Result
1016.5000	-7.6	42.81	---	200.0	V	0	-	74.00	31.19	Complies
1029.0000	-7.5	---	40.82	200.0	H	2	6.73	54.00	19.91	Complies
1334.5000	-5.3	---	40.43	200.0	H	93	6.73	54.00	20.3	Complies
1334.5000	-5.3	41.98	---	200.0	H	93	-	74.00	32.02	Complies
1676.5000	-3.6	---	39.72	400.0	H	6	6.73	54.00	21.01	Complies
1676.5000	-3.6	41.54	---	400.0	H	6	-	74.00	32.46	Complies
1721.5000	-3.2	---	38.78	250.0	V	178	6.73	54.00	21.95	Complies
1804.0000	-2.0	83.66	---	200.0	V	307	-	103.46	19.8	Complies
2213.0000	0.0	---	43.33	150.0	H	50	6.73	54.00	17.4	Complies
2436.0000	0.2	87.91	---	100.0	V	39	-	103.46	15.55	Complies
2706.5000	1.0	56.80	---	250.0	H	343	-	74.00	17.2	Complies
2706.5000	1.0	---	55.94	250.0	H	343	6.73	54.00	4.79	Complies
2745.0000	1.1	---	54.81	200.0	V	0	6.73	54.00	5.92	Complies
2745.0000	1.1	55.60	---	200.0	V	0	-	74.00	18.4	Complies
2783.0000	1.2	56.22	---	250.0	V	16	-	74.00	17.78	Complies
2783.0000	1.2	---	54.78	250.0	V	16	6.73	54.00	5.95	Complies
3357.0000	2.5	46.19	---	250.0	H	352	-	74.00	27.81	Complies
3357.0000	2.5	---	45.04	250.0	H	352	6.73	54.00	15.69	Complies
3660.0000	3.7	---	48.84	200.0	H	293	6.73	54.00	11.89	Complies
3710.5000	3.8	---	48.47	150.0	H	50	6.73	54.00	12.26	Complies
3710.5000	3.8	50.92	---	150.0	H	50	-	74.00	23.08	Complies
4335.0000	5.7	50.63	---	250.0	H	0	-	74.00	23.37	Complies
4359.0000	5.7	---	48.55	200.0	H	0	27.35	54.00	12.18	Complies
4836.5000	7.0	---	48.57	150.0	H	116	27.35	54.00	12.16	Complies
4836.5000	7.0	50.81	---	150.0	H	116	-	74.00	23.19	Complies
5146.5000	7.1	50.50	---	250.0	V	47	-	74.00	23.5	Complies
5404.5000	7.4	50.00	---	100.0	V	256	-	74.00	24	Complies
5412.0000	7.4	---	48.15	300.0	H	256	27.35	54.00	12.58	Complies

Table 26: Intentional Radiated Emissions: Semtech radio 1GHz – 6GHz (Low Data Rate)

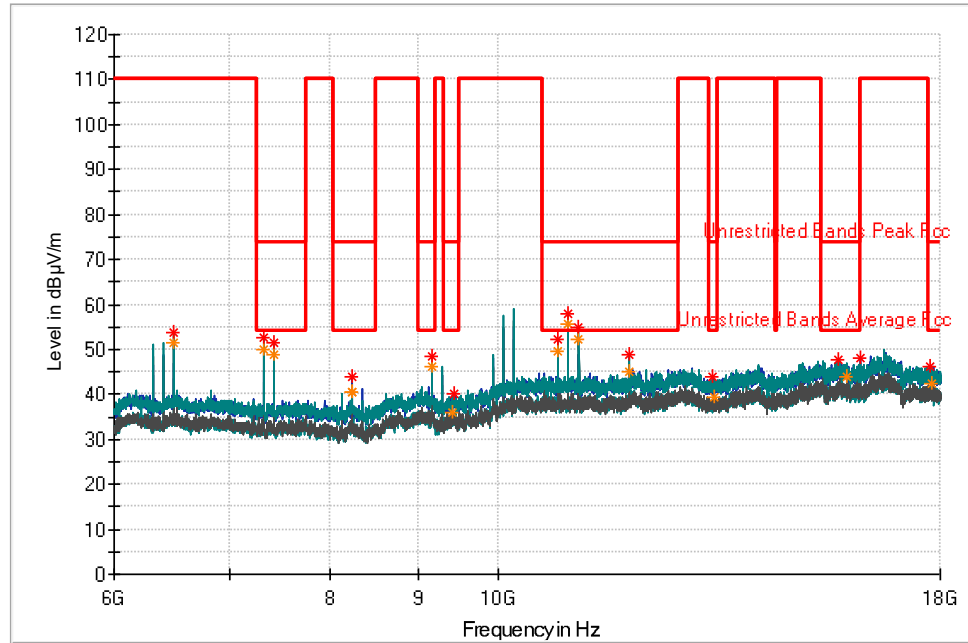


Figure 71: Intentional Radiated Emissions: Semtech radio 6GHz – 18GHz (Low Data Rate)

Frequency MHz	Corr. (dB/m)	Quasi Peak (dBuV/ m)	Avg (dBuV/ m)	Height (cm)	Pol	Azim uth (°)	DCCF (dB)	Limit (dBuV/ m)	Margi n (dB)	Result
8235.6000	-3.0	44.00	---	100.0	H	52	-	74.00	30	Complies
15734.4000	12.6	47.51	---	100.0	H	111	-	74.00	26.49	Complies
8236.8000	-3.0	---	40.46	150.0	H	349	6.73	54.00	20.27	Complies
8236.8000	-3.0	---	40.46	150.0	H	349	6.73	54.00	20.27	Complies
17776.8000	14.9	46.23	---	200.0	H	182	-	74.00	27.77	Complies
17778.0000	14.9	---	42.55	200.0	H	231	6.73	54.00	18.18	Complies
16200.0000	11.7	48.10	---	250.0	H	161	-	74.00	25.9	Complies
13290.0000	6.6	43.74	---	300.0	H	292	-	74.00	30.26	Complies
9409.2000	0.2	---	35.80	400.0	H	56	6.73	54.00	24.93	Complies
9150.0000	-0.6	48.31	---	100.0	V	334	-	74.00	25.69	Complies
6493.2000	-6.6	53.76	---	150.0	V	0	-	103.46	50.24	Complies
6494.4000	-6.6	---	51.33	150.0	V	0	6.73	103.46	60.02	Complies
11133.6000	4.9	---	52.40	150.0	V	0	6.73	54.00	8.33	Complies
11133.6000	4.9	54.95	---	150.0	V	0	-	74.00	19.05	Complies
15892.8000	12.2	---	44.06	150.0	V	0	6.73	54.00	16.67	Complies
10826.4000	4.5	52.10	---	150.0	V	1	-	74.00	21.9	Complies
10827.6000	4.5	---	49.70	150.0	V	1	6.73	54.00	11.03	Complies
10980.0000	4.5	57.93	---	150.0	V	11	-	74.00	16.07	Complies
10981.2000	4.5	---	55.69	150.0	V	11	6.73	54.00	10.66	Complies
7320.0000	-4.8	52.47	---	150.0	V	349	-	74.00	21.53	Complies
7321.2000	-4.8	---	50.07	150.0	V	349	6.73	54.00	15.54	Complies
9151.2000	-0.6	---	46.11	200.0	V	0	6.73	54.00	14.7	Complies
11896.8000	7.6	---	45.19	200.0	V	0	6.73	54.00	5.01	Complies
13336.8000	6.7	---	39.30	200.0	V	179	6.73	54.00	14.70	Complies
7420.8000	-4.7	51.60	---	200.0	V	335	-	74.00	22.40	Complies
7422.0000	-4.7	---	48.99	200.0	V	335	6.73	54.00	11.74	Complies
11895.6000	7.6	48.97	---	200.0	V	356	-	74.00	25.03	Complies
9422.4000	0.2	40.28	---	300.0	V	270	-	74.00	33.72	Complies

Table 27: Intentional Radiated Emissions: Semtech -STIM 6GHz – 18GHz (Low Data Rate)

The following plots were obtained when operating using the third-party low data rate.

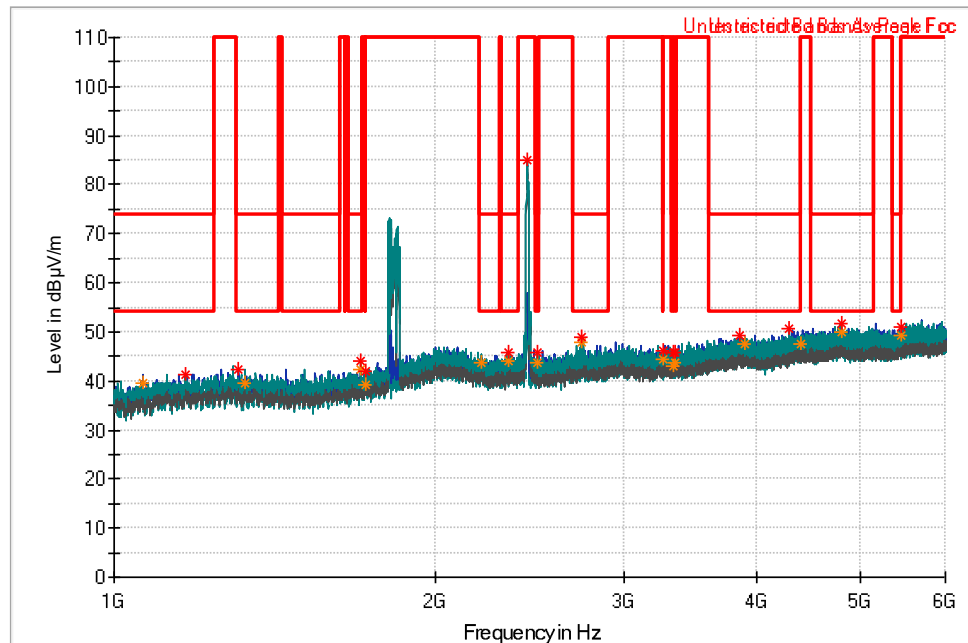


Figure 72: Intentional Radiated Emissions: ADI-STIM 1 GHz – 6GHz Third Party Data Rate

Frequency MHz	Corr. (dB/m)	Quasi Peak (dBuV/m)	Avg (dBuV/m)	Height (cm)	Pol	Azimuth (°)	DCCF (dB)	Limit (dBuV/m)	Margin (dB)	Result
1065.0000	-7.1	---	39.51	300.0	H	183	6.73	54.00	21.22	Complies
1168.5000	-6.0	41.34	---	400.0	H	243	-	74.00	32.66	Complies
1309.0000	-5.3	42.18	---	400.0	H	273	-	74.00	31.82	Complies
1327.0000	-5.3	---	39.56	400.0	V	272	6.73	54.00	21.17	Complies
1703.0000	-3.4	---	42.19	300.0	V	69	6.73	54.00	18.54	Complies
1703.0000	-3.4	43.99	---	300.0	V	69	-	74.00	30.01	Complies
1720.5000	-3.2	---	39.2	150.0	V	358	6.73	54.00	21.53	Complies
1721.5000	-3.2	41.84	---	200.0	V	160	-	74.00	32.16	Complies
2206.5000	0.0	---	43.83	300.0	V	315	6.73	54.00	16.9	Complies
2340.5000	-0.1	45.84	---	100.0	V	110	-	74.00	28.16	Complies
2340.5000	-0.1	---	44.03	100.0	V	110	6.73	54.00	16.7	Complies
2436.5000	0.2	84.85	---	250.0	V	317	-	110.00	15.15	Complies
2489.5000	0.4	---	43.56	350.0	V	72	6.73	54.00	17.17	Complies
2489.5000	0.4	45.67	---	350.0	V	72	-	74.00	28.33	Complies
2742.0000	1.1	48.97	---	150.0	V	0	-	74.00	25.03	Complies
2742.0000	1.1	---	47.91	150.0	V	0	6.73	54.00	12.82	Complies
3261.5000	2.3	46.32	---	200.0	H	327	-	74.00	27.68	Complies
3263.0000	2.3	---	44.38	400.0	V	338	6.73	54.00	16.35	Complies
3339.0000	2.5	45.97	---	350.0	H	180	-	74.00	28.03	Complies
3339.0000	2.5	---	42.98	350.0	H	180	6.73	54.00	17.75	Complies
3350.5000	2.5	---	43.74	200.0	H	278	6.73	54.00	16.99	Complies
3352.0000	2.5	45.80	---	100.0	V	242	-	74.00	28.2	Complies
3848.0000	4.3	49.44	---	400.0	V	0	-	74.00	24.56	Complies
3900.0000	4.4	---	47.41	350.0	H	21	6.73	54.00	13.32	Complies
4290.5000	5.5	50.65	---	200.0	V	272	-	74.00	23.35	Complies
4398.5000	5.8	---	47.71	150.0	V	333	6.73	54.00	13.02	Complies
4803.5000	7.0	---	49.82	400.0	V	251	6.73	54.00	10.91	Complies
4803.5000	7.0	51.60	---	400.0	V	251	-	74.00	22.4	Complies
5453.0000	7.5	51.00	---	400.0	H	293	-	74.00	23.0	Complies
5454.0000	7.5	---	49.19	400.0	V	231	6.73	54.00	11.54	Complies

Table 28: Intentional Radiated Emissions: ADI radio 1GHz – 6GHz Third Party Data Rate

APPENDIX A: Test Setup Photos

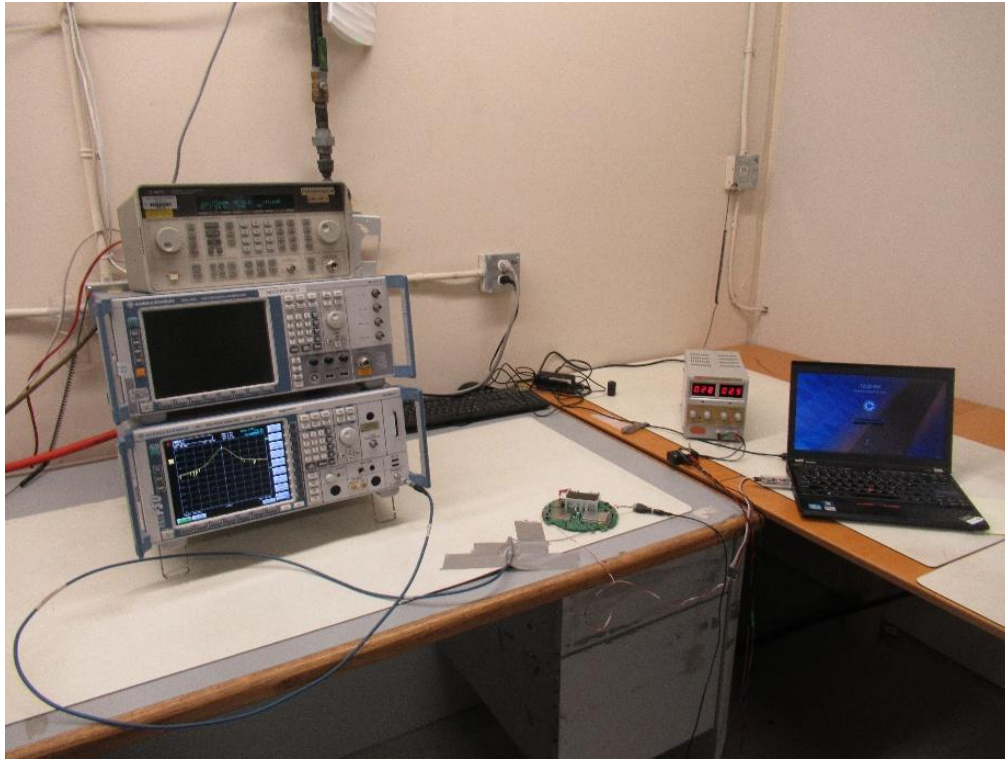


Figure 73: Conducted RF Measurement Setup

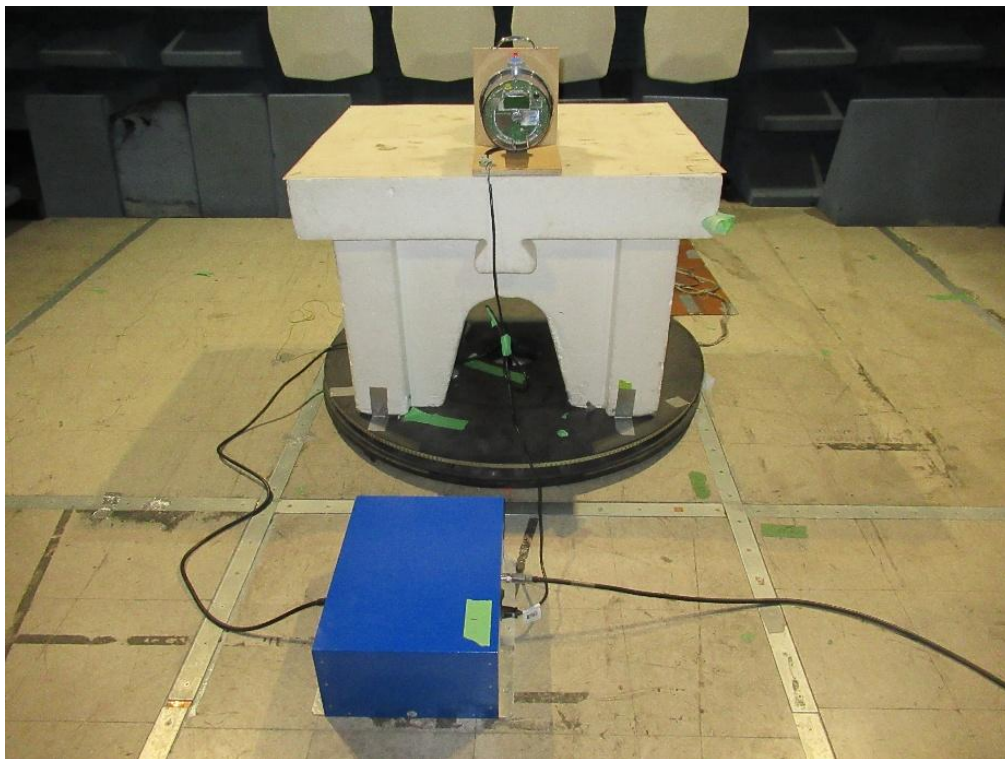


Figure 74: AC Conducted Measurement Setup

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Figure 75: Radiated Measurement Setup, < 30 MHz

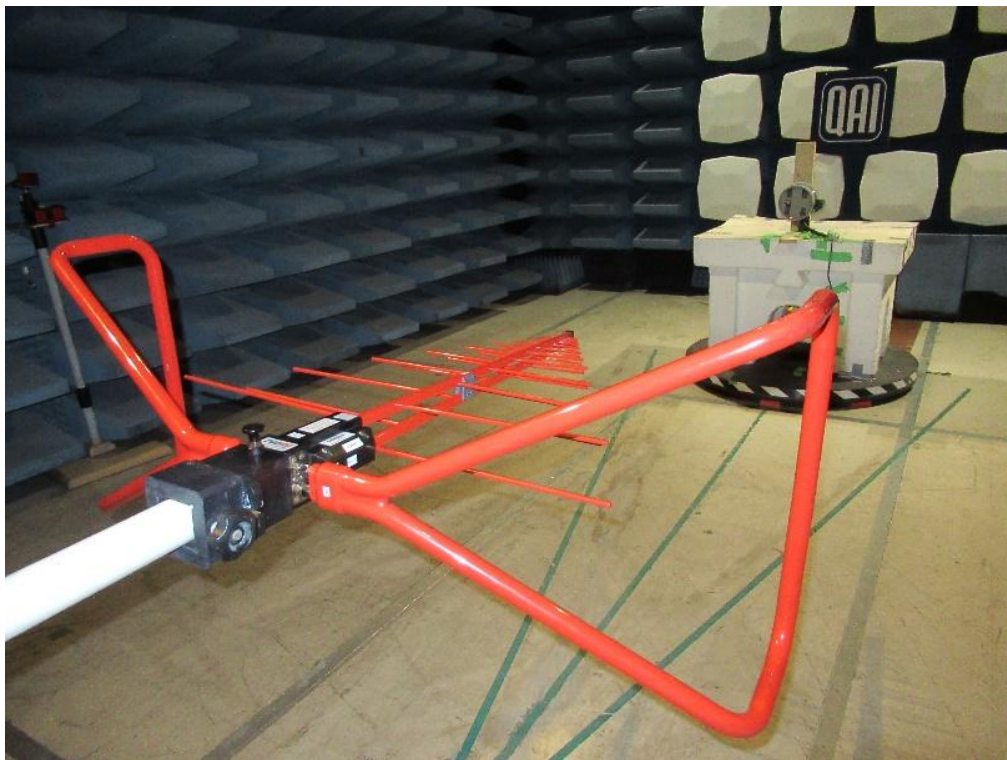


Figure 76: Radiated Measurement Setup, 30 MHz to 1 GHz

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Figure 77: Radiated Measurement Setup, > 1 GHz

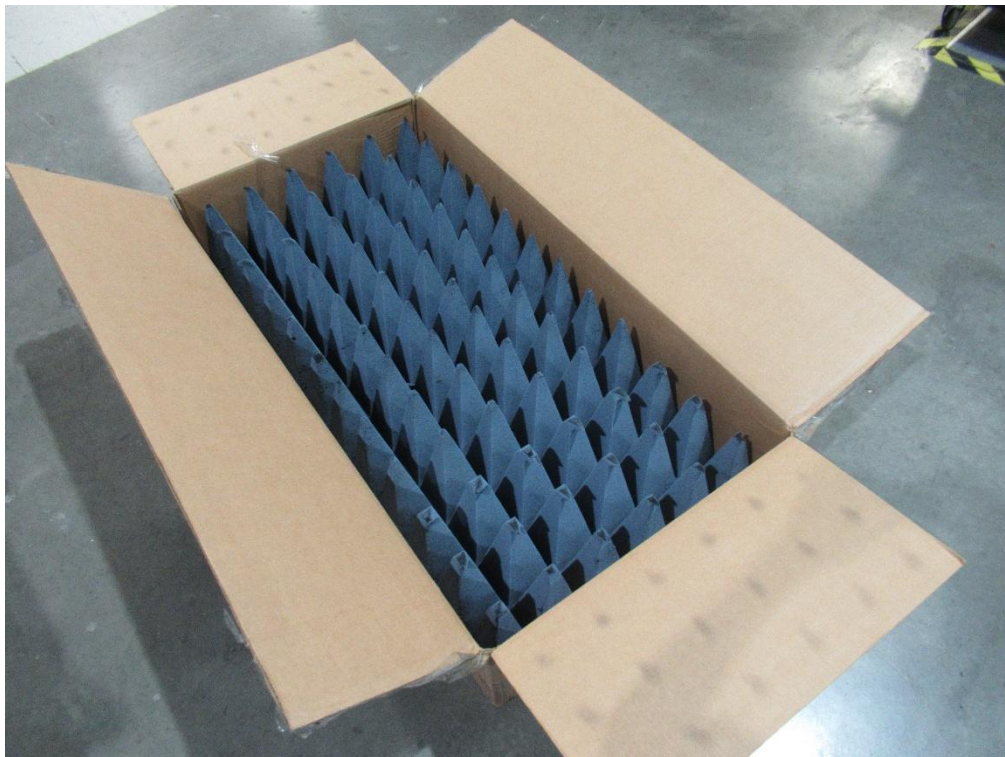


Figure 78: Absorbers used in Radiated Measurement Setup, > 1 GHz

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APPENDIX B : Abbreviations

Abbreviation	Definition
AC	Alternating Current
AM	Amplitude Modulation
CE	European Conformity
CISPR	Comité International Spécial des Perturbations Radioélectriques (International Special Committee on Radio Interference)
DC	Direct Current
EFT	Electrical Fast Transient
EMC	Electro Magnetic Compatibility
EMI	Electro Magnetic Interference
ESD	Electrostatic Discharge
EUT	Equipment Under Test
FCC	Federal Communications Commission
FVIN	Firmware Version Identification Number FVIN
IC	Industry Canada
ICES	Interference Causing Equipment Standard
IEC	International Electrotechnical Commission
LISN	Line Impedance Stabilizing Network
OATS	Open Area Test Site
RF	Radio Frequency
RMS	Root-Mean-Square
SAC	Semi-Anechoic Chamber

END OF REPORT