

TEST REPORT**Report Number: 106183429MPK-001****Project Number: G106183429****Report Issue Date: August 28, 2025****Revised Date: February 05, 2026****Testing performed on the****Transmitter Board****Model Number: AD1012****FCC ID: U4A5800ADAEZ2****IC: 6982A-5800ADAEZ2****to****FCC Part 15 Subpart C (15.231)****Industry Canada RSS-210 Issue 11****For****ASSA ABLOY Inc****Test Performed by:**

Intertek
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Menlo Park, CA 94025 USA

Test Authorized by:

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Prepared by: _____



Kenneth Tutor

Date: AUGUST 28, 2025

Reviewed by: _____



Minh Ly

Date: AUGUST 28, 2025

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Report No. 106183429MPK-001	
Equipment Under Test:	Transmitter Board
Model Number:	ADA1012
Applicant:	ASSA ABLOY, Inc
Contact:	Tommy McNally
Address:	110 Sargent Dr New Haven, CT 06511
Country:	USA
Tel. Number:	+1 (704) 233-1516
Email:	tommy.mcnally@assaabloy.com
Applicable Regulation:	FCC Part 15 Subpart C (15.231) Industry Canada RSS-210 Issue 11
Date of Test:	April 18, 2025 to February 4, 2026

We attest to the accuracy of this report:



Kenneth Tutor
EMC Engineer



Minh Ly
EMC Team Leader

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1.0 Summary of Tests

TEST	FCC REFERENCE	ISED REFERENCE	RESULTS
Field Strength of Fundamental and Spurious Emissions	§15.231 (b), §15.205	RSS-210, Issue 11 §A.1.3	Complies
Occupied Bandwidth	§15.231 (c)	RSS-210, Issue 11 §A.1.4	Complies
Deactivation Testing	§15.231(a)	RSS-210, Issue 11 §A.1.2	Complies
Antenna requirement	§15.203	RSS-Gen Issue 5 §6.8	Complies ¹
Line Conducted Emissions	§15.207	RSS-Gen Issue 5 §7.2	Not Applicable ²

¹ EUT utilizes an internal Antenna.

² EUT is battery operated.

2.0 General Description

2.1 Product Description

ASSA ABLOY Inc supplied the following description of the EUT:

Transmitter Board

Overview of the EUT

Applicant name & address	ASSA ABLOY Inc 110 Sargent Dr New Haven, CT 06511
Contact info / Email	Tommy McNally / tommy.mcnally@assaabloy.com
Model	ADA1012
FCC Identifier	U48A00ADAEZ2
IC Identifier	6982A-5800ADAEZ2
Operating Frequency	315 MHz
Number of Channels	1
Type of Modulation	ASK Modulation
Antenna Type	Internal Antenna

EUT receive date: April 18, 2025

EUT receive condition: The pre-production version of the EUT was received in good condition with no apparent damage. As declared by the Applicant, it is identical to the production units.

Test start date: April 18, 2025

Test completion date: February 4, 2026

2.2 Related Submittal(s) Grants

None

2.3 Test Methodology

Radiated emissions measurements were performed according to the procedures in ANSI C63.10-2020, and RSS-210 Issue 11, RSS-GEN Issue 5.

Radiated tests were performed at an antenna to EUT distance of 10 meters, unless stated otherwise in this test report.

2.4 Test Facility

The radiated emission test site and conducted measurement facility used to collect the data is 10m semi-anechoic chamber located in Menlo Park, California. This test facility and site measurement data have been fully placed on file with the FCC, IC and A2LA accredited.

2.5 Measurement Uncertainty

Compliance with the limits was based on the results of the measurements and doesn't take into account the measurement uncertainty.

Estimated Measurement Uncertainty

Measurement	Expanded Uncertainty (k=2)		
	0.15 MHz – 1 GHz	1 GHz – 2.5 GHz	> 2.5 GHz
RF Power and Power Density – antenna conducted	-	0.7 dB	-
Unwanted emissions - antenna conducted	1.1 dB	1.3 dB	1.9 dB
Bandwidth – antenna conducted	-	30 Hz	-

Measurement	Expanded Uncertainty (k=2)		
	0.15 MHz – 30MHz	30 MHz – 1 GHz	1 GHz – 18 GHz
Radiated emissions	-	4.7	5.1 dB
AC mains conducted emissions	2.1 dB	-	-

3.0 System Test Configuration

3.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.10-2020.

For maximizing emissions below 30 MHz, the EUT was rotated through 360°, the bottom of the loop antenna was placed 1 meter above the ground, and the antenna polarization was changed. For maximizing emission at and above 30 MHz, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step-by-step procedure for maximizing emissions led to the data report in Exhibit 4.0.

The unit was operated standalone and placed in the center of the turntable.

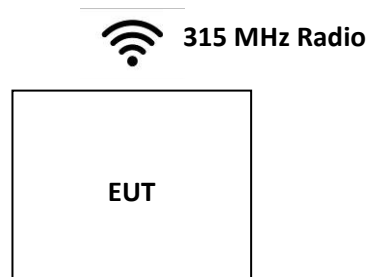
The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a plastic stand if necessary and placed on the styrene turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

Equipment Under Test			
Description	Manufacturer	Model	Serial Number
Transmitter Board	ASSA ABLOY Inc	ADA1012	MPK2504231145-003

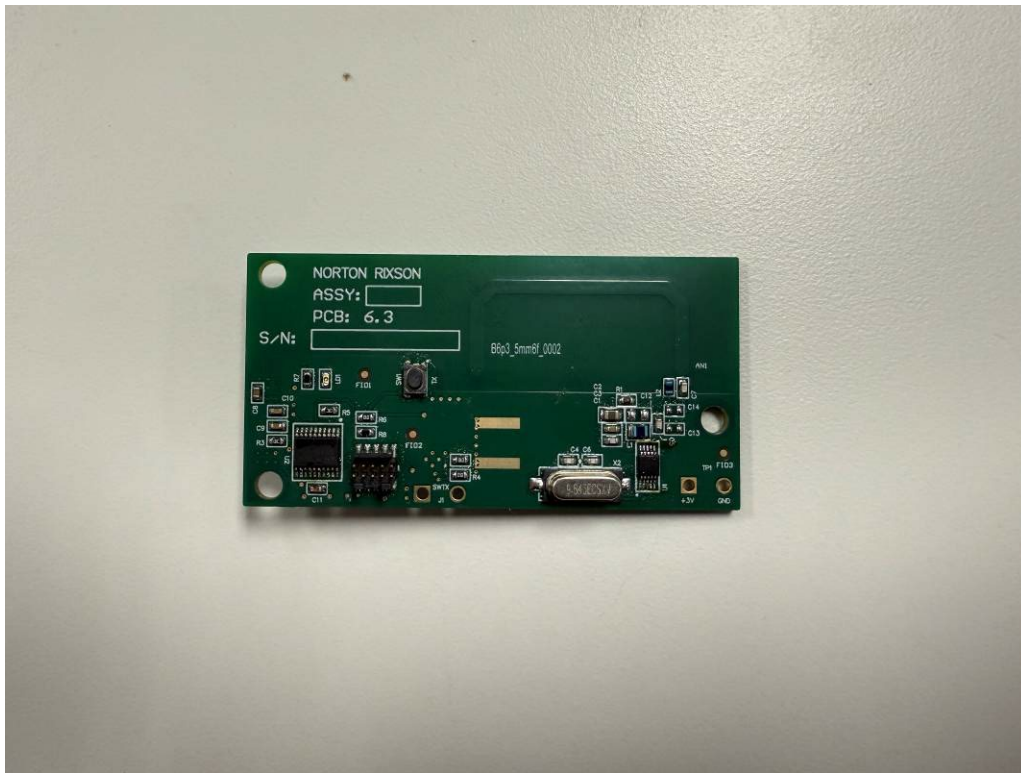
The EUT is powered by one (1) CR3032 3V battery.

3.2 Block Diagram of Test Setup

The diagram shown below details of the EUT. For specific layout, refer to the test configuration photograph in the relevant section of this report.



EUT Photo



3.3 Justification

For radiated emission measurements the EUT is placed on a non-conductive table. The EUT was configured to transmit.

3.4 Software Exercise Program

None

3.5 Mode of Operation during test

The Transmitter board was set up to transmit at 315MHz.

3.6 Modifications required for Compliance.

No modifications were made by the manufacturer to bring the EUT into compliance.

3.7 Additions, deviations, and exclusions from standards

No additions, deviations or exclusion have been made from standard.

4.0 Measurement Results

4.1 Field Strength of Fundamental and Spurious Radiated Emission

4.1.1 Requirements

47 CFR § 15.231(b) In addition to the provisions of 47 CFR §15.205 and RSS-210 Issue 11 §A1.3, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70 ¹	2,250	225
70-130	1,250	125
130-174	² 1,250 to 3,750	² 125 to 375
174-260	3,750	375
260-470	² 3,750 to 12,500	² 375 to 1,250
Above 470	12,500	1,250

¹Applicable for FCC § 15.231(b) only.

² Linear interpolations.

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

(2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in §15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

(3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

4.1.2 Procedure

Radiated Measurements Below 30 MHz

During the test the EUT is rotated and the measuring antenna angles are varied during the search for maximum signal level.

Radiated emissions are taken at ten meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Measurements for below 30 MHz were made at 10 meters. Data results below are corrected for distance back to 300 meters for 9kHz to 490kHz and 30 meters for 490kHz – 30MHz.

Radiated Measurements Above 30 MHz

During the test the EUT is rotated and the measuring antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at ten meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Measurements from 30 MHz – 1GHz were made at 10 meters, 1GHz – 4GHz were made at 3 meters.

Radiated emission measurements were performed from 9kHz to 4GHz.
Analyzer resolution is:

200Hz or greater for 9kHz to 150kHz
9 kHz or greater for 150kHz to 30 MHz
120 kHz or greater for 30MHz to 1000 MHz
1MHz or greater for 1000MHz to 4000MHz

Data includes the worst-case configuration (the configuration which resulted in the highest emission levels). A sample calculation and data tables of the emissions are included.

Field Strength Calculation

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

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

Where FS = Field Strength in dB (μ V/m)

RA = Receiver Amplitude (including preamplifier) in dB (μ V)

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB (1/m)

AG = Amplifier Gain in dB

DCF = Distance Correction Factor

Note: FS was measured with loop antenna below 30MHz

4.1.3 Test Results

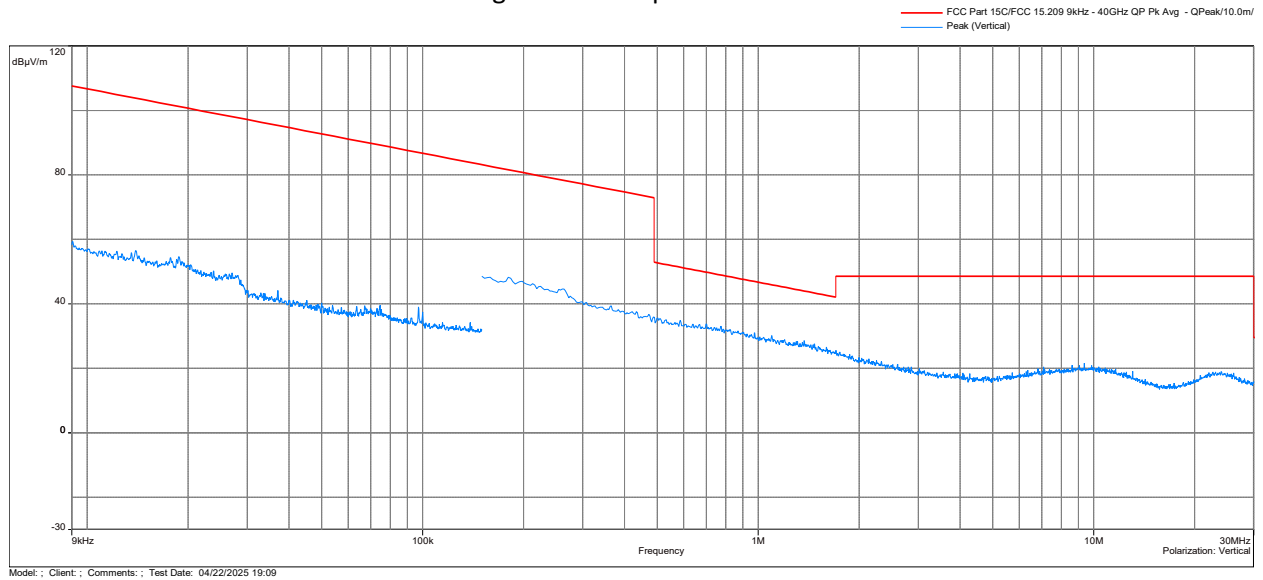
Field strength of fundamental frequency

Frequency (MHz)	FS Peak @3m dB(μV/m)	Lim Peak dB(μV/m)	Margin (dB)	FS Ave* @3m dB(μV/m)	Lim Ave dB(μV/m)	Margin (dB)	Polarity
315.00	75.92	95.62	-19.7	69.91	75.62	-5.71	Horizontal
315.00	75.76	95.62	-19.86	69.75	75.62	-5.87	Vertical

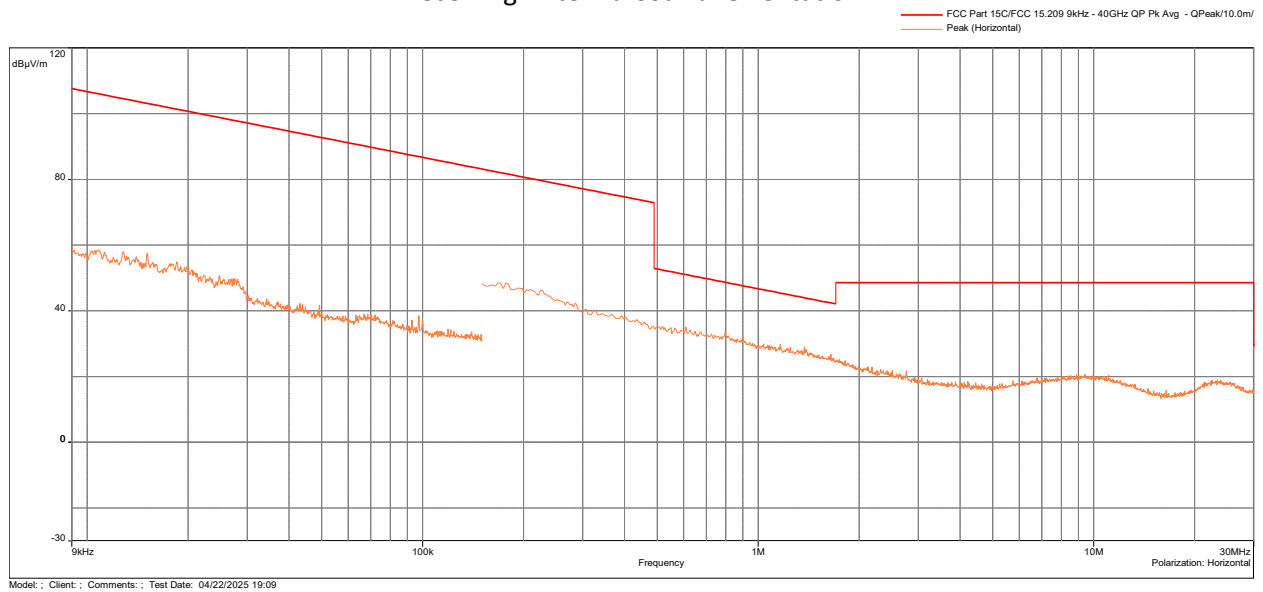
* A duty cycle correction factor of -6.01dB was used (see Appendix A).

Radiated Spurious Emissions from 9 kHz to 30MHz

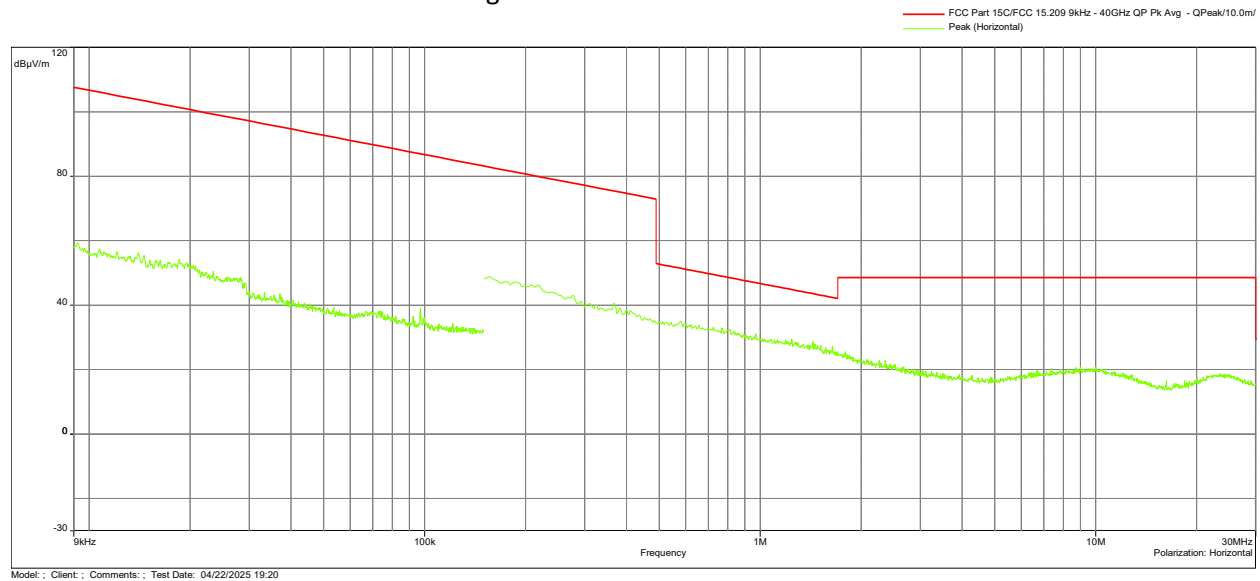
Receiving Antenna Coplanar Orientation



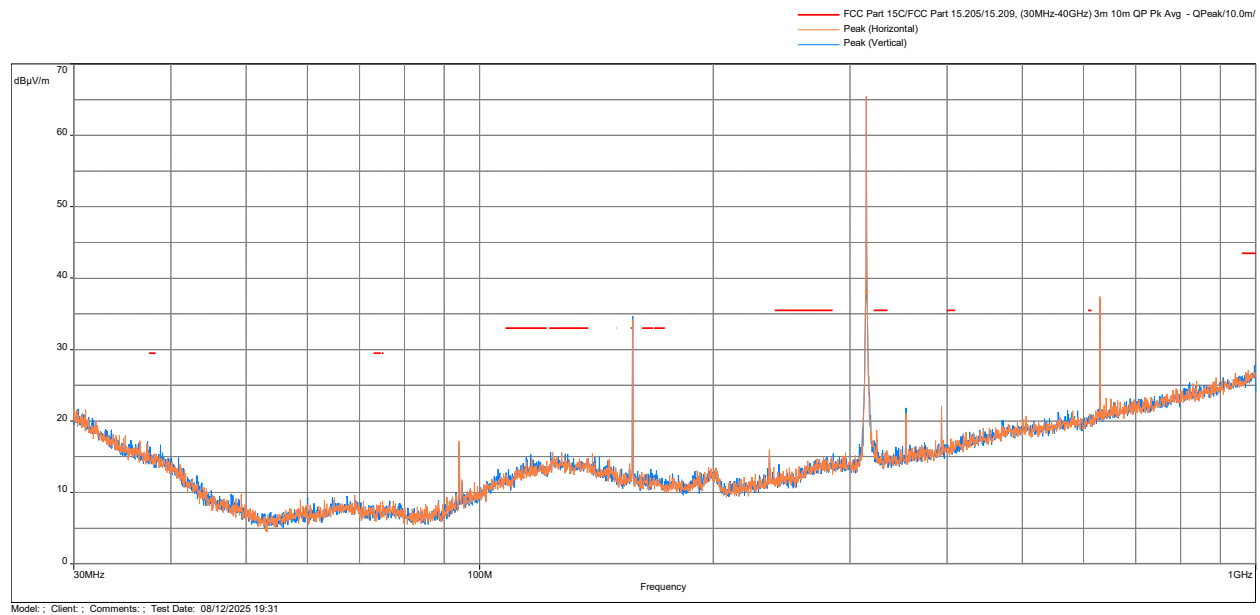
Receiving Antenna Coaxial Orientation



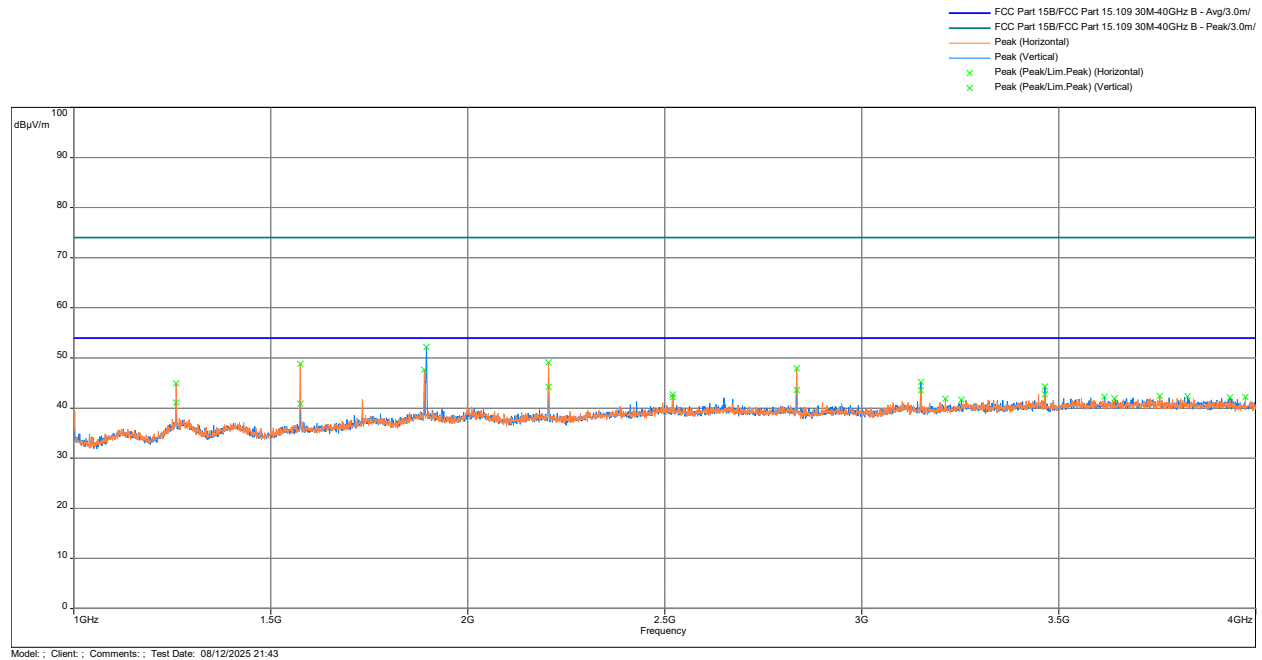
Receiving Antenna Horizontal Orientation



Field strength of Fundamental Frequency and Radiated Spurious Emissions from 30MHz to 1GHz at 10m

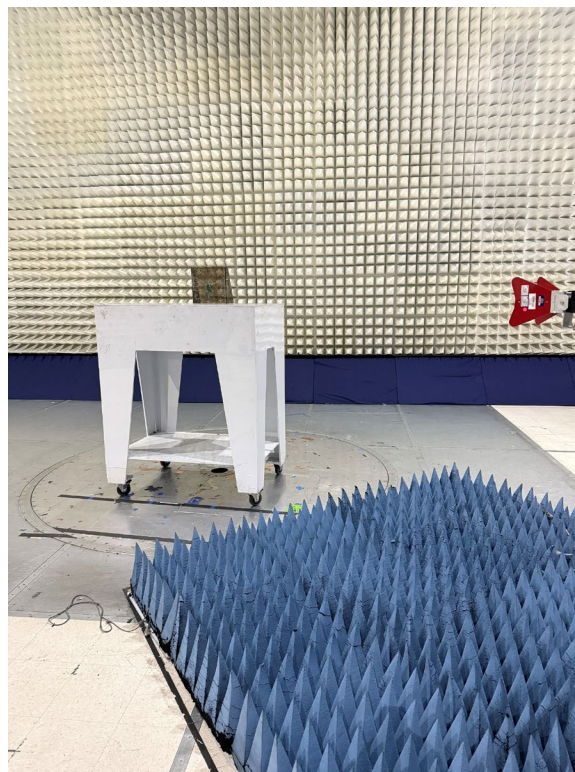
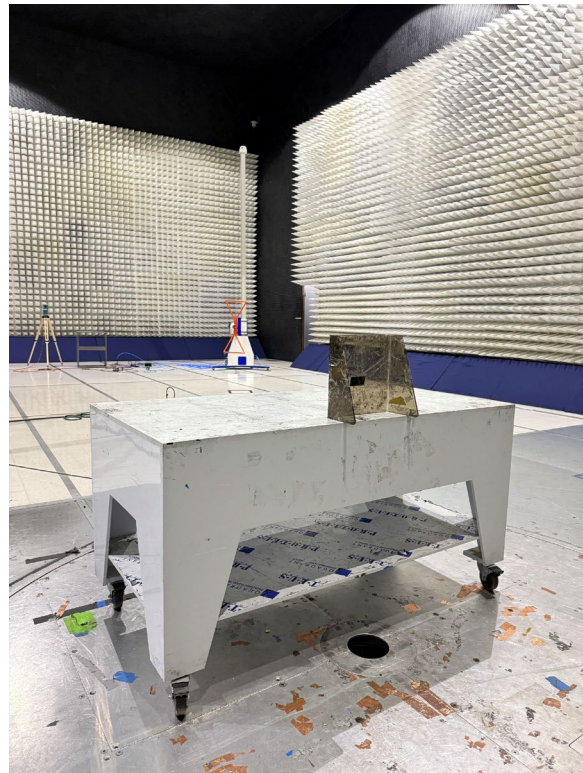


Radiated Spurious Emissions from 30 MHz to 3150 MHz



Frequency (MHz)	FS Peak dB(μV/m)	Lim Peak dB(μV/m)	Margin (dB)	FS Ave dB(μV/m)	Lim Ave dB(μV/m)	Margin (dB)	Polarity
629.977	47.91	75.62	-27.71	41.90	55.62	-13.72	Horizontal
630.010	47.43	75.62	-28.19	41.42	55.62	-14.20	Vertical
945.001	36.66	75.62	-38.96	30.65	55.62	-24.97	Horizontal
1259.900	41.06	75.62	-34.56	35.05	55.62	-20.57	Vertical
1260.000	44.93	75.62	-30.69	38.92	55.62	-16.70	Horizontal
1574.800	48.80	74.0	-25.20	42.79	54.0	-11.21	Horizontal
1575.200	40.90	74.0	-33.10	34.89	54.0	-19.11	Vertical
1890.000	47.62	75.62	-28.00	41.61	55.62	-14.01	Horizontal
1895.300	52.19	75.62	-23.43	46.18	55.62	-9.44	Vertical
2205.000	44.21	74.0	-29.79	38.20	54.0	-15.80	Vertical
2205.100	49.08	74.0	-24.92	43.07	54.0	-10.93	Horizontal
2520.000	42.73	75.62	-32.89	36.72	55.62	-18.90	Horizontal
2520.100	42.12	75.62	-33.50	36.11	55.62	-19.51	Vertical
2834.900	47.91	74.0	-26.09	41.90	54.0	-12.10	Horizontal
2834.900	43.57	74.0	-30.43	37.56	54.0	-16.44	Vertical
3149.800	45.21	75.62	-30.41	39.20	55.62	-16.42	Vertical
3150.000	43.54	75.62	-32.08	37.53	55.62	-18.09	Horizontal

4.1.4 Test Configuration Photographs



4.2 Occupied Bandwidth

4.2.1 Requirements

Per CFR47 §15.231(c), The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Per RSS-210 Issue 11 §A.1.4, The occupied bandwidth of momentarily operated devices shall be less than or equal to 0.25% of the centre frequency for devices operating between 70 MHz and 900 MHz

4.2.2 Procedure

The EUT was setup to transmit in normal operating condition.

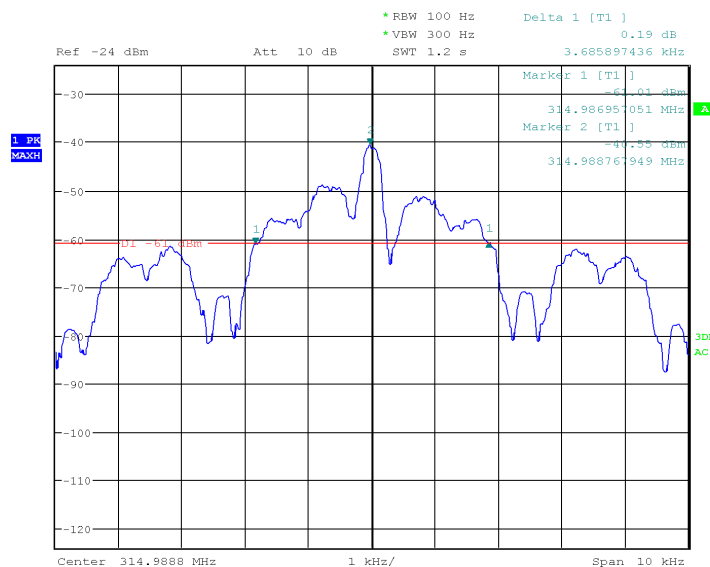
Following the procedures of Section 6.9.2 and 6.9.3 of ANSI 63.10-2020 and Section 6.7 of RSS-GEN issue 5, the 20dB bandwidth and 99% occupied bandwidth measurements were taken. The following plots show 20dB bandwidth and 99% occupied bandwidth.

4.2.3 Test Results

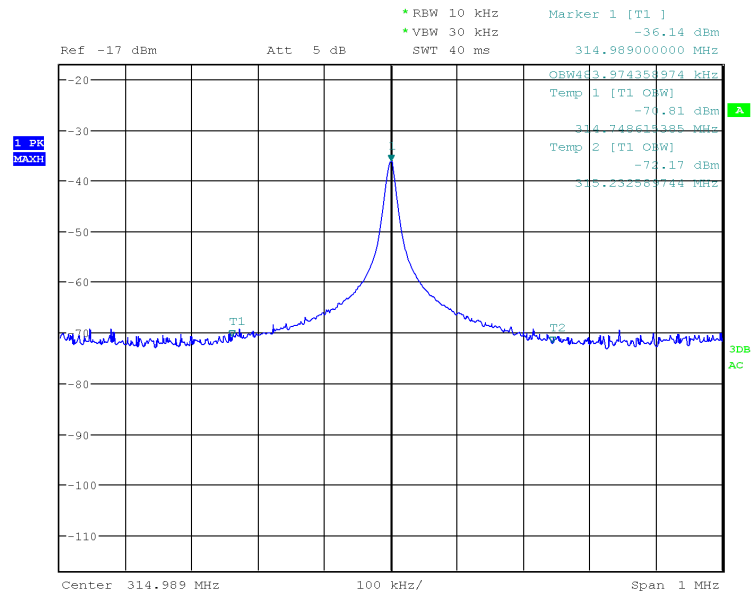
Test Mode: Transmitting

Channel Frequency (MHz)	20 dB Bandwidth (kHz)	99% Bandwidth (kHz)	Limit* (kHz)	Result
315	3.68	483.97	787.5	Pass

***Note:** Limit = 0.25% * Center Frequency = 0.25%*315 = 787.5 kHz



20dB Bandwidth



99% Bandwidth

4.3 Deactivation Testing

4.3.1 Requirements

Per §15.231(a) (1), a manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

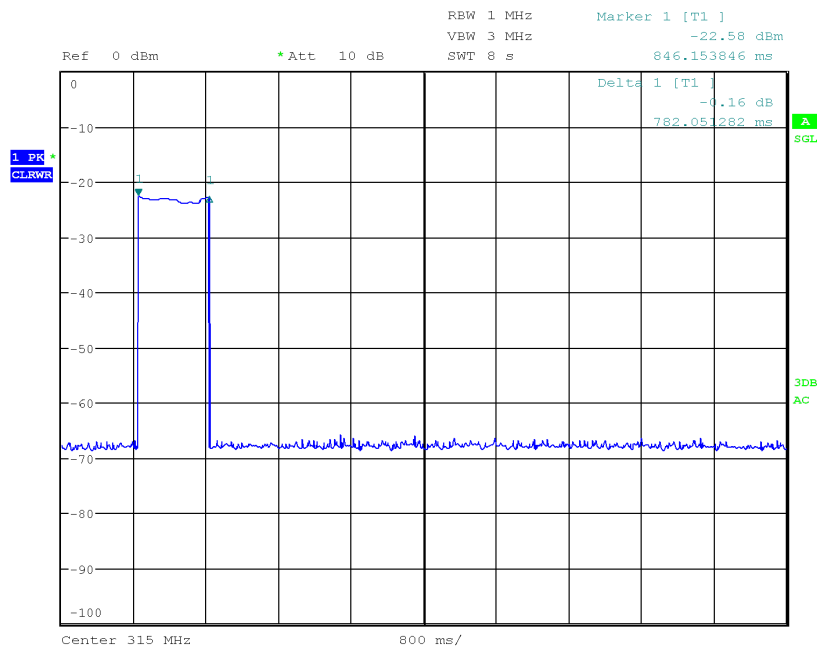
Per RSS-210 Issue 11 §A.1.2(a), A manually operated transmitter shall be equipped with a push-to-operate switch and be under manual control at all times during transmission. When released, the transmitter shall cease transmission within no more than 5 seconds of being released.

4.3.2 Test Result

Test Mode: Transmitting

Note: The analyzer was set to the desired RF frequency and configured for single-sweep operation. The EUT was manually activated, and the analyzer was monitored to verify that the signal ceased transmission within the specified deactivation time.

Maximum Deactivate Time (s)	Limit (s)	Result
0.78	<5	Pass



5.0 List of Test Equipment

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

Equipment	Manufacturer	Model/Type	Serial #	Cal Int (months)	Cal Due
EMI Test Receiver	Rohde & Schwarz	ESU40	00961	12	04/08/2026
9kHz-1GHzPre-Amplifier	Sonoma Instruments	310N	02025	12	01/20/2026
Radio Frequency Shielded System	Panashield	10 Meter Chamber	00984	#	#
9kHz-30MHz Loop Antenna (Passive)	ETS Lindgren	6512	01573	12	12/02/2025
30MHz-2GHz Bi-Log Antenna	SunAR RF Motion	JB1	01577	12	02/21/2026
1-18GHz Small Horn Antenna with Preamp	ETS Lindgren	3117-PA	01365	12	05/20/2026
10kHz - 1GHz 2-meter RF Cable	TRU Corp.	TRU Core 300	01467	12	09/10/2026
1-18GHz 8-meter RF Cable SMA to N-Type RF Cable	TRU Corp.	TRU Core 300	01344	12	09/15/2026
10kHz to 1GHz 2-meter RF cable	TRU Corp.	TRU Core 300	01616	12	05/21/2026
1-40GHz 6-meter RF Cable (SMA Type)	Huber+Suhner	SF550S/11SK/11SK	02010	12	06/23/2026

"#" = Calibration not required.

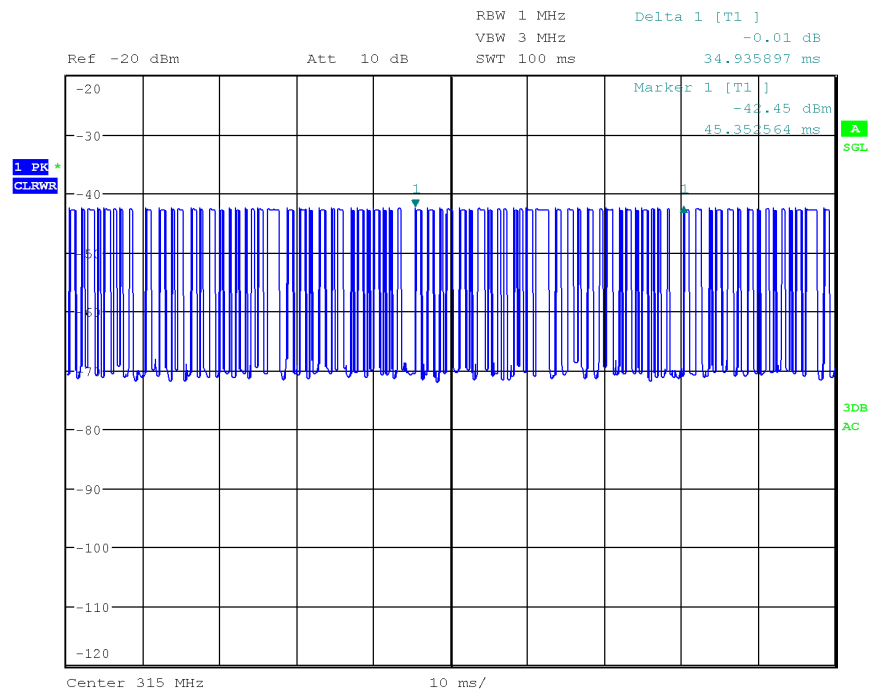
Software used for emission compliance testing utilized the following:

Name	Manufacturer	Version	Template/Profile
BAT-EMC	Nexio	3.20.0.23	Assa Abloy 04.21.25 10m.bpp
RS Commander	Rohde Schwarz	1.6.4	Not Applicable (Screen grabber)

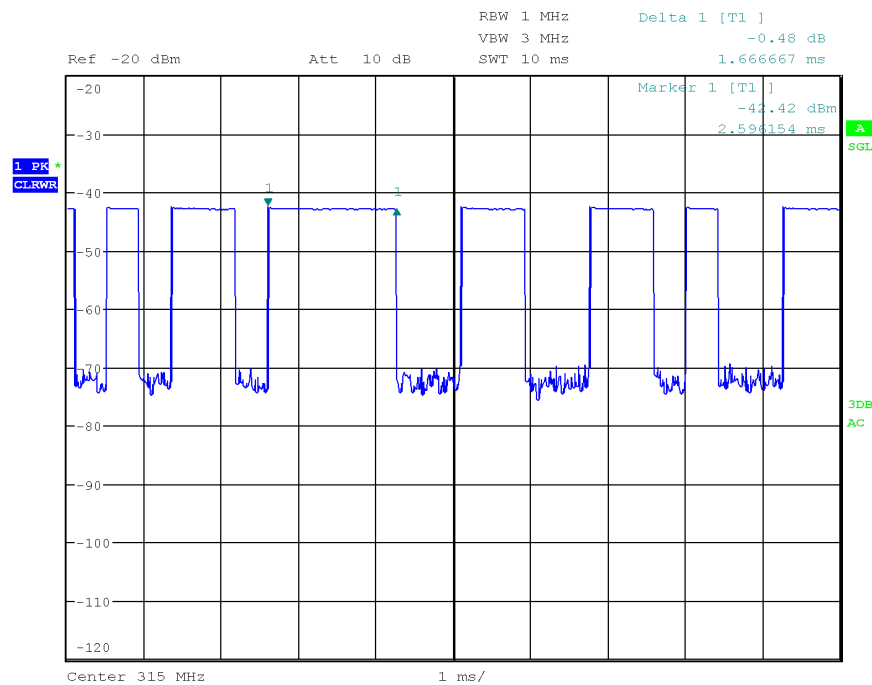
6.0 Document History

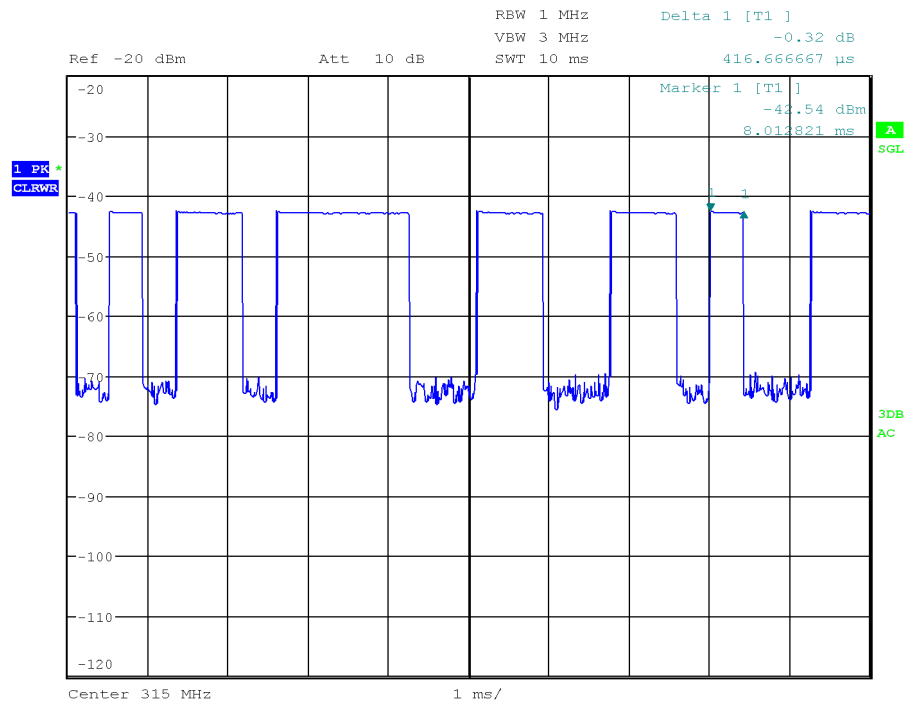
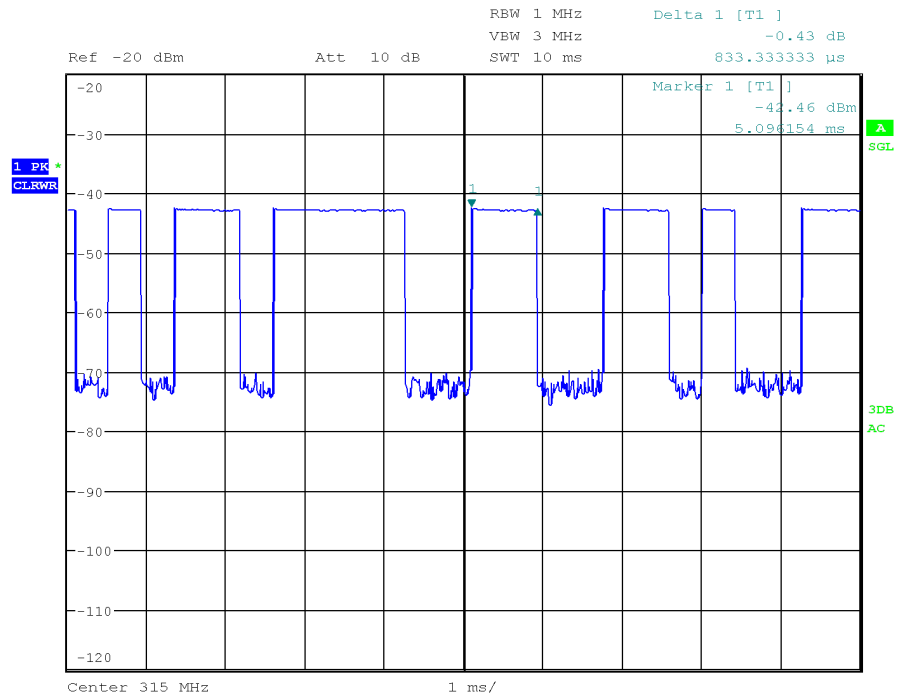
Revision/ Job Number	Writer Initials	Reviewer Initials	Date	Change
1.0 / G106183429	KT	ML	August 28, 2025	Original document
2.0 / G106183429	KT	ML	February 05, 2026	Updated occupied bandwidth plots, added RE plots and Appendix A.

Appendix A. Duty Cycle Correction Factor Calculation



Duty Cycle Plot (T_{period})





$$T_{on} = (1.667\text{ms} \times 1) + (833.33\mu\text{s} \times 12) + (416.67 \mu\text{s} \times 14) = \mathbf{17.50\text{ms.}}$$

$$T_{period} = 34.94\text{ms}$$

$$\text{Duty Cycle Correction Factor (DCCF)} = 20 \cdot \log_{10}(T_{on} / T_{period}) = 20 \cdot \log_{10}(17.50 / 34.94) = -6.01\text{dB.}$$

END OF REPORT