

3.8 Frequency Stability

The Quad-Band RU37 Remote Unit under test is synchronized to the reference clock of the Master Unit (DMU) over the optical link. Therefore there is no frequency error regardless of clock accuracy or temperature change. In addition, the RU37 Remote Unit is designed and verified to operate within $\pm 15\%$ of the rated 48V DC power input.

3.9 Radiated Spurious Emissions – Enclosure 9 kHz – 30 MHz

Standard	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90 FCC Part 2.1053											
Test method	ANSI C63.26-2015, Section 5.5 KDB 935210 D05, v01r04, Clause 3.8, 4.9 KDB Publication 971168											
Tested by	Zara Vali											
Test date	June 17, 2025											
Test location	Richmond lab, stand #2											
Applied limit	<table border="1"> <thead> <tr> <th colspan="2">Radiated Emission FCC/ISED</th> </tr> <tr> <th>Frequency</th><th>Field strength (microvolts/meter)</th></tr> </thead> <tbody> <tr> <td>9 - 490 kHz</td><td>2400/F(kHz) at 300 m</td></tr> <tr> <td>490 - 1705 kHz</td><td>24000/F(kHz) at 30 m</td></tr> <tr> <td>1.705 - 30 MHz</td><td>30 at 30 m</td></tr> </tbody> </table> <p>Note 1. The lower limit shall apply at the transition frequency Note 2. Additional provisions may be required for cases where interference occurs Note 3: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.</p> <p>RSS – Gen, Clause 8.10 Restricted frequency bands</p> <ol style="list-style-type: none"> The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands listed in table 7. Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in the above table. Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in the above table. 		Radiated Emission FCC/ISED		Frequency	Field strength (microvolts/meter)	9 - 490 kHz	2400/F(kHz) at 300 m	490 - 1705 kHz	24000/F(kHz) at 30 m	1.705 - 30 MHz	30 at 30 m
Radiated Emission FCC/ISED												
Frequency	Field strength (microvolts/meter)											
9 - 490 kHz	2400/F(kHz) at 300 m											
490 - 1705 kHz	24000/F(kHz) at 30 m											
1.705 - 30 MHz	30 at 30 m											
Test set-up description	<input checked="" type="checkbox"/> Equipment on a table of 80 cm height <input type="checkbox"/> Equipment on the floor (insulated from ground plane) <input type="checkbox"/> Other:											
Test method applied	<input checked="" type="checkbox"/> SAC with measurement distance [m]: <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 10 <input type="checkbox"/> FAR CISPR 16-2-3 with measurement distance [m]: 3 <input type="checkbox"/> FAR IEC 61000-4-22 with measurement distance [m]: 3 <input type="checkbox"/> TEM Waveguide according to IEC 61000-4-20											
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>												

Test Method

This test measures the radiating levels from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (EUT) was configured based upon the requirements of the applicable test standard. Initially, the primary emission frequencies are identified by positioning a broadband receive antenna three meter from the EUT.

A scan was made with an EMC Analyzer, controlled by EMC Test Software, Tile7! with the receiver in the peak mode. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters with both horizontal and vertical polarities while the turntable is rotated to determine the worst emitting configuration. Measurements were then made using CISPR quasi peak when the peak readings were within 20dB of the limit line. The numerical results are included herein to demonstrate compliance.

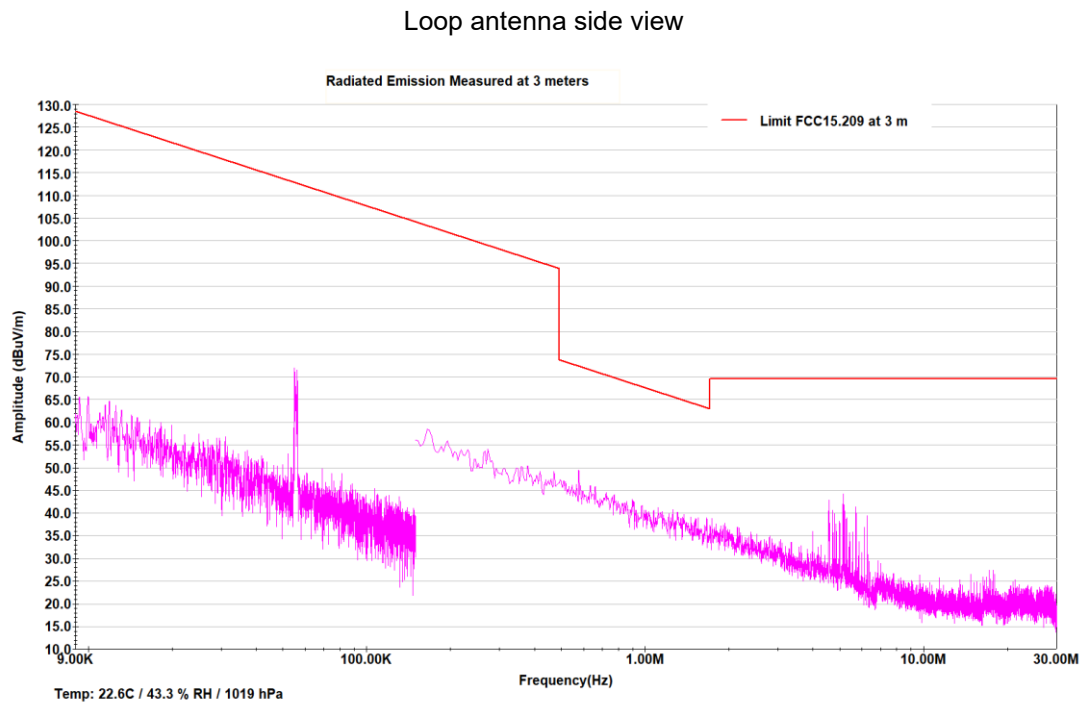
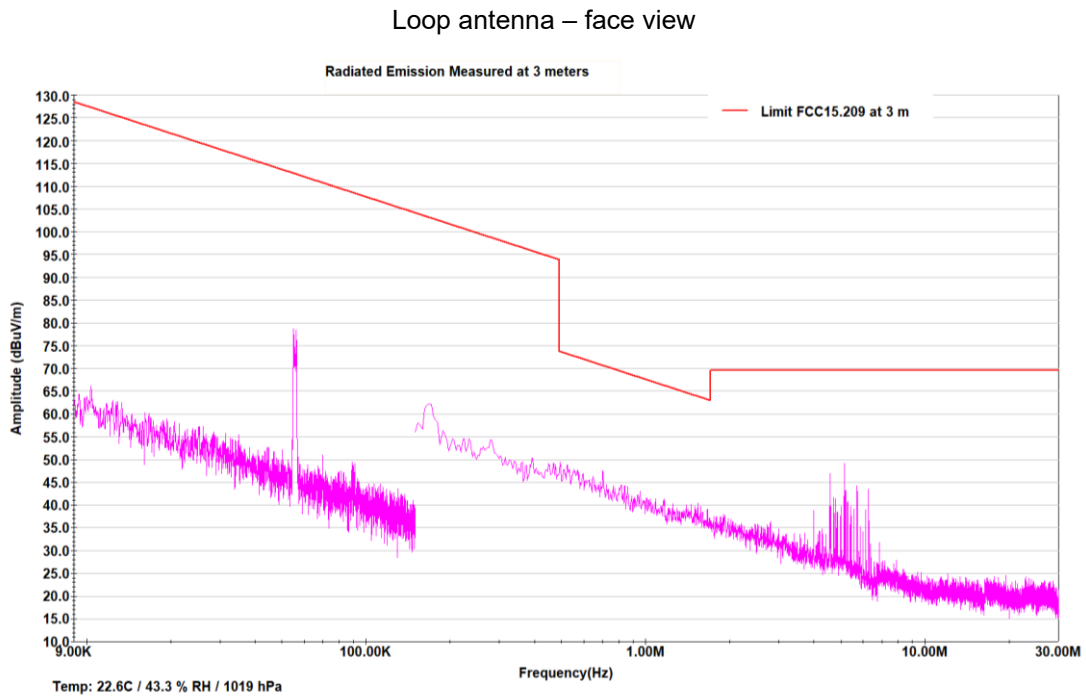
Test Setup

The EUT was placed on a 0.8 m non-conducting table above a Turn table in SAC.

The EUT was set to **Operation Mode #1 with configuration Mode #1**.



Test Result



Note (1) No Qpeak measurements were conducted when the emission was identified as either ambient noise or 20 dB, or more, below the limit line.

3.10 Radiated Spurious Emissions – Enclosure 30 MHz – 1 GHz

Standard	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90 FCC Part 2.1053													
Test method	ANSI C63.26-2015, Section 5.5 KDB 935210 D05, v01r04, Clause 3.8, 4.9 KDB Publication 971168													
Tested by	Zara Vali													
Test date	June 16, 2025													
Test location	Richmond lab, stand #2													
Applied limit	<table border="1"> <thead> <tr> <th colspan="2">Radiated Emission FCC/ISED Class B Limit at 3 Meters</th> </tr> <tr> <th>Frequency (MHz)</th><th>Quasi-peak (dB μV/m)</th></tr> </thead> <tbody> <tr> <td>30 – 88</td><td>40</td></tr> <tr> <td>88 – 216</td><td>43.52</td></tr> <tr> <td>216 - 960</td><td>46.02</td></tr> <tr> <td>Above 960</td><td>53.98</td></tr> </tbody> </table> <p>Note 1. The lower limit shall apply at the transition frequency Note 2. Additional provisions may be required for cases where interference occurs Note 3. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.</p> <p>RSS – Gen, Clause 8.10 Restricted frequency bands</p> <ol style="list-style-type: none"> The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands listed in table 7. Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in the above table. Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in the above table. 		Radiated Emission FCC/ISED Class B Limit at 3 Meters		Frequency (MHz)	Quasi-peak (dB μ V/m)	30 – 88	40	88 – 216	43.52	216 - 960	46.02	Above 960	53.98
Radiated Emission FCC/ISED Class B Limit at 3 Meters														
Frequency (MHz)	Quasi-peak (dB μ V/m)													
30 – 88	40													
88 – 216	43.52													
216 - 960	46.02													
Above 960	53.98													
Test set-up description	<input checked="" type="checkbox"/> Equipment on a table of 80 cm height <input type="checkbox"/> Equipment on the floor (insulated from ground plane) <input type="checkbox"/> Other:													
Test method applied	<input checked="" type="checkbox"/> SAC with measurement distance [m]: <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 10 <input type="checkbox"/> FAR CISPR 16-2-3 with measurement distance [m]: 3 <input type="checkbox"/> FAR IEC 61000-4-22 with measurement distance [m]: 3 <input type="checkbox"/> TEM Waveguide according to IEC 61000-4-20													
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>														

Test Method

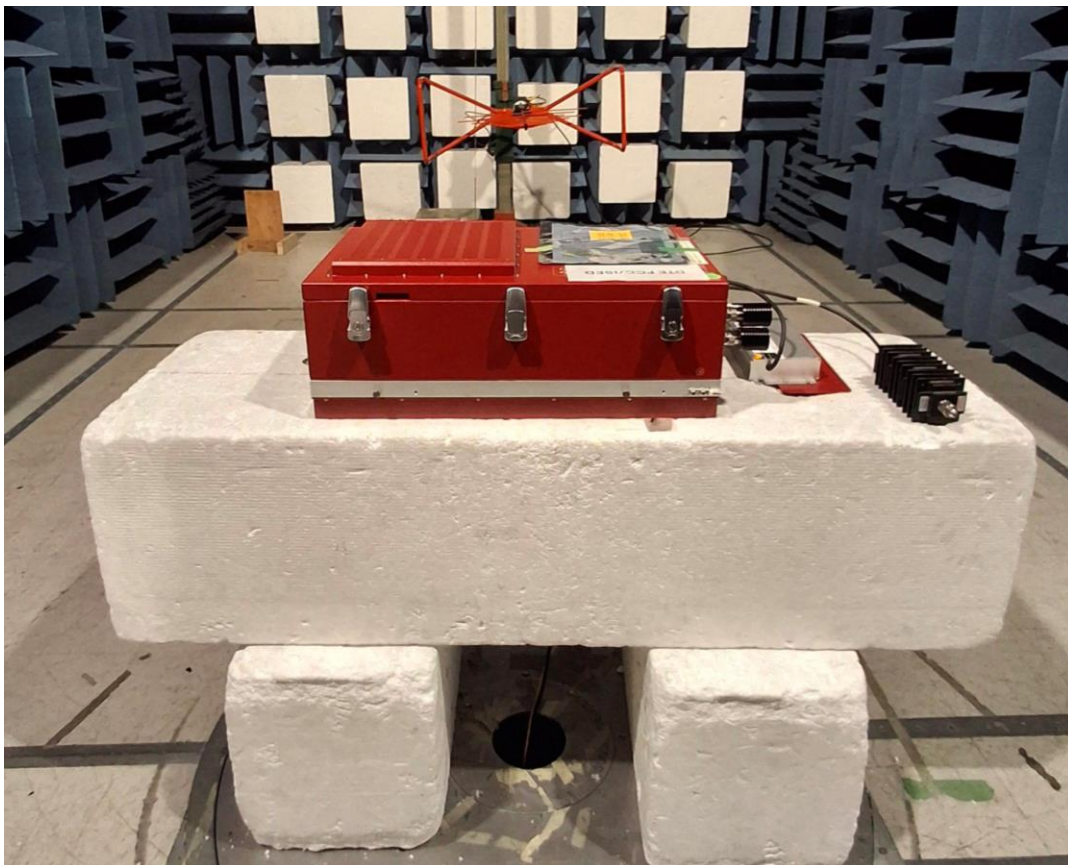
This test measures the radiating levels from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (EUT) was configured based upon the requirements of the applicable test standard. Initially, the primary emission frequencies are identified by positioning a broadband receive antenna three meter from the EUT.

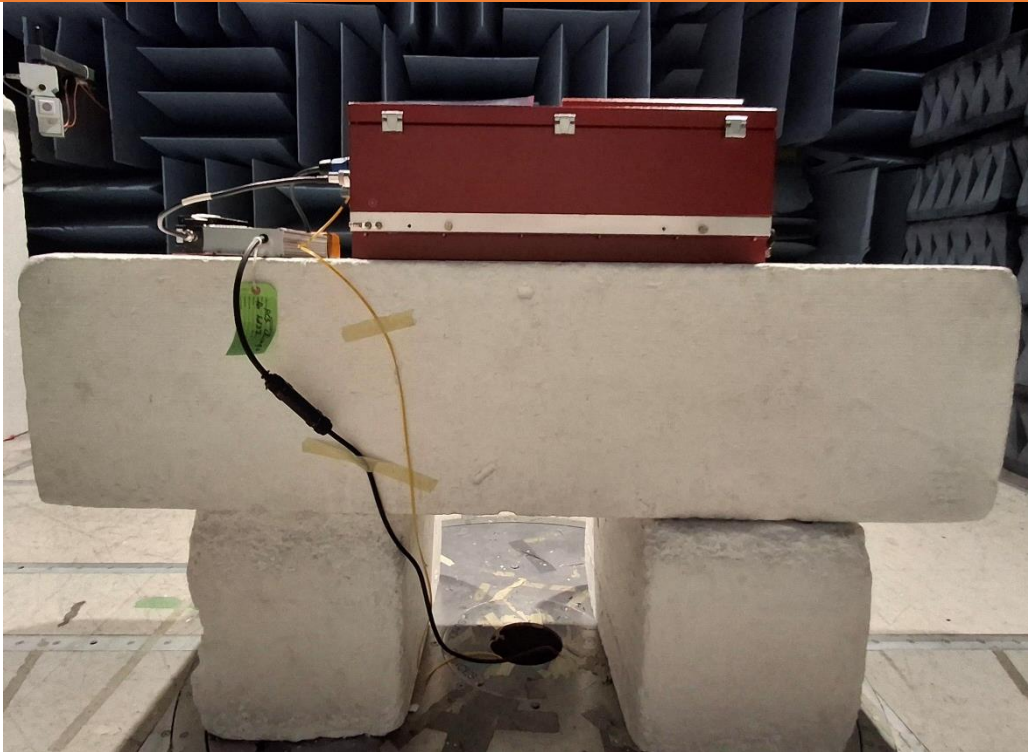
A scan was made with an EMC Analyzer, controlled by EMC Test Software, Tile7! with the receiver in the peak mode. The receiver IF bandwidth was 120 kHz and scan step was less than 30kHz. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters with both horizontal and vertical polarities while the turntable is rotated to determine the worst emitting configuration. Measurements were then made using CISPR quasi peak when the peak readings were within 20dB of the limit line. The numerical results are included herein to demonstrate compliance.

Test Setup

The EUT was placed on a 0.8 m non-conducting table above a Turn table in SAC.

The EUT was set to **Operation Mode #1 with configuration Mode #1**.





Test Result



Frequency	Antenna Polarization	Raw QPeak	Antenna Factor	Correction Factor	QPeak	Margin	Limit
MHz	V/H	dBuV	dB/m	dB	dBuV/m	dB	dBuV/m
72.7255	H	20.2	12.4	0.9	33.4	6.6	40
74.96122	H	18.6	12.5	0.9	32	8	40

Frequency	Antenna Polarization	Raw QPeak	Antenna Factor	Correction Factor	QPeak	Margin	Limit
MHz	V/H	dBuV	dB/m	dB	dBuV/m	dB	dBuV/m
53.28012	V	25.4	11.2	0.8	37.3	2.7	40
93.6821	V	13.6	12.4	1	27	16.52	43.52

Note (1)

Quasi-peak (dBuV/m) = Raw Quasi-peak (dBuV) + Antenna Factor (dB/m) + Correction Factor (dB)
Correction Factor (dB) = Cable loss(dB)

Note (2)

Only the worst-case frequencies were chosen for the final measurement.

3.11 Radiated Spurious Emissions – Enclosure above 1 GHz

Standard	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90 FCC Part 2.1053										
Test Method	ANSI C63.26-2015, Section 5.5 KDB 935210 D05, v01r04, Clause 3.8, 4.9 KDB Publication 971168										
Tested by	Zara Vali										
Test date	June 16, 2025										
Test location	Richmond, Stand #3										
Applied limit	<table border="1" style="width: 100%;"> <tr> <th colspan="3">Radiated Emission FCC/ISED Class B Limit at 3 Meters</th> </tr> <tr> <th>Frequency (GHz)</th><th>Average (dBμV/m)</th><th>Peak (dBμV/m)</th> </tr> <tr> <td>> 1</td><td>54</td><td>74</td> </tr> </table> <p>RSS – Gen, Clause 8.10 Restricted frequency bands</p> <ol style="list-style-type: none"> The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands listed in table 7. Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in the above table. Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in the above table. 		Radiated Emission FCC/ISED Class B Limit at 3 Meters			Frequency (GHz)	Average (dBμV/m)	Peak (dBμV/m)	> 1	54	74
Radiated Emission FCC/ISED Class B Limit at 3 Meters											
Frequency (GHz)	Average (dBμV/m)	Peak (dBμV/m)									
> 1	54	74									
Test set-up description	<input checked="" type="checkbox"/> Equipment on a table of 80 cm height <input type="checkbox"/> Equipment on the floor (insulated from ground plane) <input type="checkbox"/> Other:										
Test method applied	<input type="checkbox"/> OATS or SAC with measurement distance [m]: <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 10 <input checked="" type="checkbox"/> FAR CISPR 16-2-3 with measurement distance [m]: 3 <input type="checkbox"/> FAR IEC 61000-4-22 with measurement distance [m]: 3 <input type="checkbox"/> TEM Waveguide according to IEC 61000-4-20										
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>											

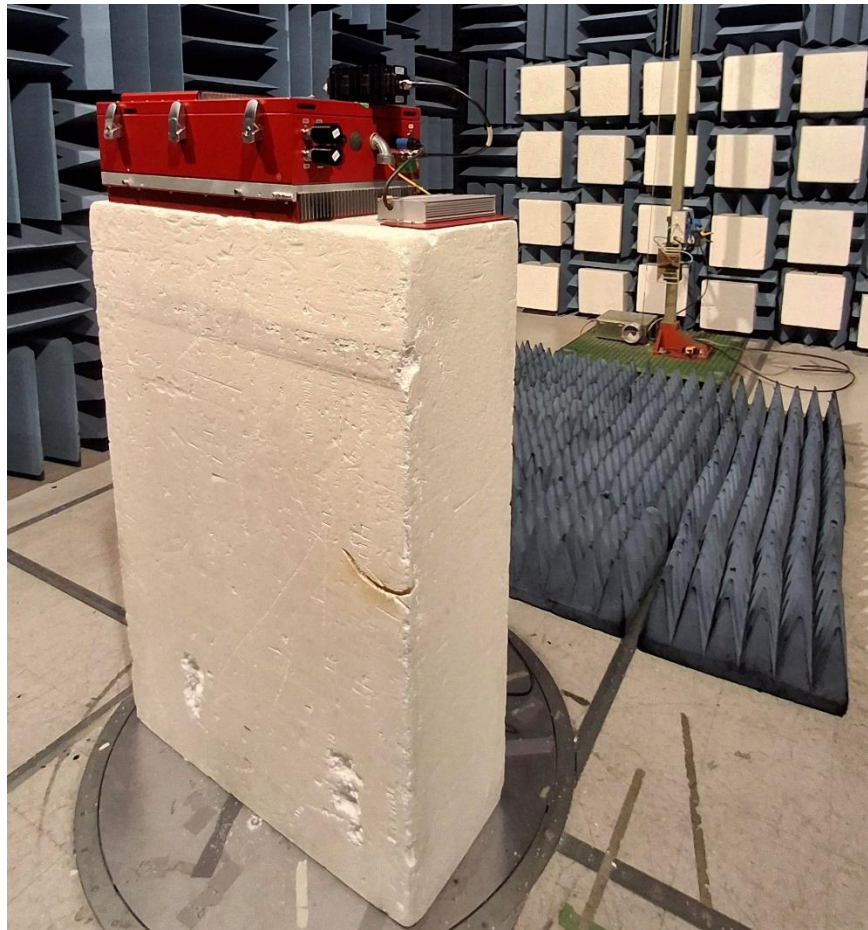
Test Method

This test measures the radiating levels from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standards referenced in the test summary section of this report. The EUT was configured based upon the requirements of the applicable test standard. Initially, the primary emission frequencies are identified by positioning a broadband receive antenna three meter from the EUT. A scan was made with an EMC Analyzer, controlled by EMC Test Software, Tile7 with the receiver in the peak mode. The receiver IF bandwidth was 1MHz and scan step was about 0.5 MHz. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters with both horizontal and vertical polarities while the turntable is rotated to determine the worst emitting configuration. Measurements were then made using CISPR averaging when the peak readings were within 20 dB of the peak limit line. The numerical results are included herein to demonstrate compliance.

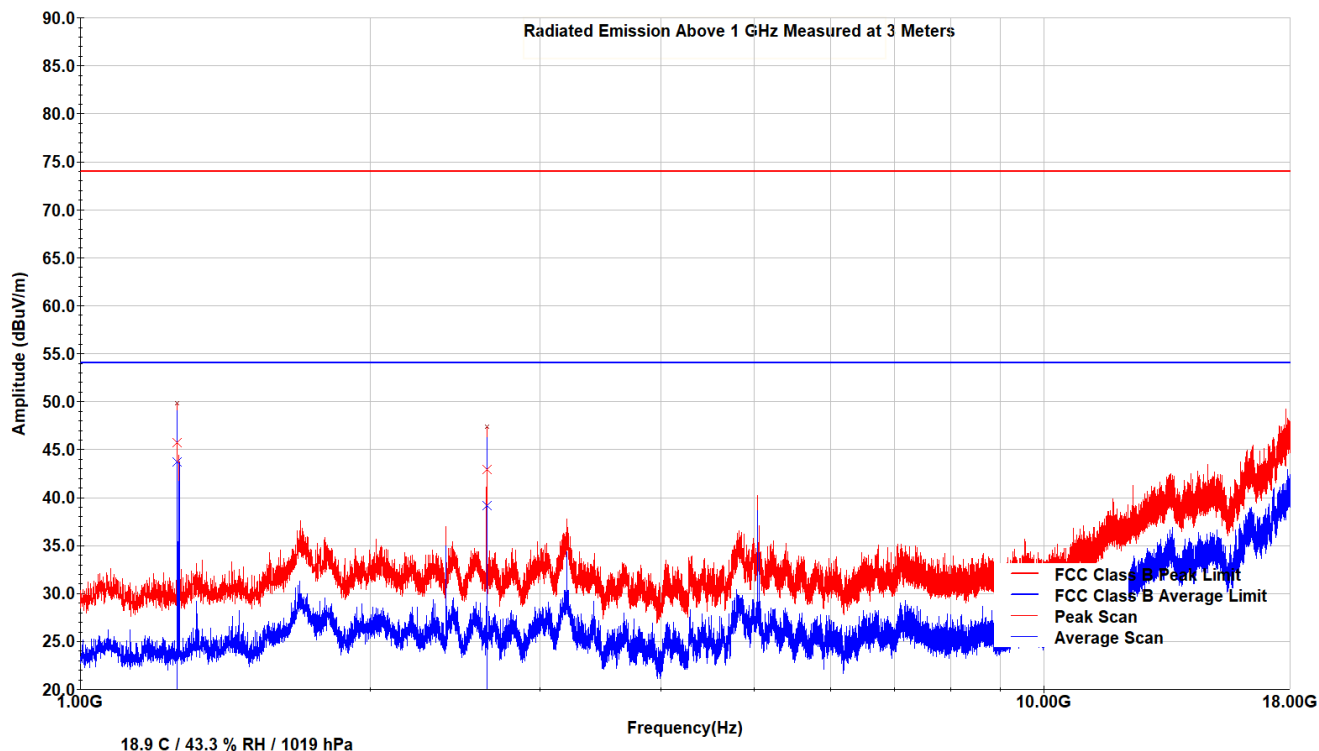
Test Setup

Description of test set-up:

The EUT was placed on a 1.5 m non-conducting table above a Turn table in SAC.
The EUT was set to **Operation Mode #1 with configuration Mode #1**.



Test Result



Frequency	Pol	Antenna Factor	Correction Factor	RAW Peak	Peak	Peak Margin	Peak Limit
MHz	V/H	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m
1260.2	H	24.6	-29.7	50.874	45.771	28.229	74
2639.875	H	30	-26.4	39.309	42.914	31.086	74

Frequency	Pol	Antenna Factor	Correction Factor	Raw AVG	AVG	AVG Margin	AVG Limit
MHz	V/H	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m
1260.2	H	24.6	-29.7	48.9	43.8	10.2	54
2639.875	H	30	-26.4	35.6	39.2	14.8	54

Note (1)

Peak/AVG (dBuV/m) = Raw Peak/AVG (dBuV) + Antenna Factor (dB/m) + Correction Factor (dB)

Correction Factor (dB) = Cable loss(dB) + Preamp Gain(dB)

Note (2)

Only the worst-case frequencies were chosen for the final measurement.

3.12 Conducted Emissions at AC Power Port

Standard	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90																
Test Methods	ANSI C63.4: 2014																
Tested by	Zara Vali																
Test date	June 17, 2025																
Test location	Richmond Lab, Stand #1																
Applied limit	<table border="1"> <thead> <tr> <th colspan="3">AC Port Conducted Emission Class B Limit</th> </tr> <tr> <th>Frequency (MHz)</th> <th>Quasi-Peak (dBμV)</th> <th>Average (dBμV)</th> </tr> </thead> <tbody> <tr> <td>0.15 - 0.50</td> <td>66 to 56</td> <td>56 to 46</td> </tr> <tr> <td>0.50 – 5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table> <p>Note 1. The lower limit shall apply at the transition frequencies. Note 2. The limit decreases linearly with the logarithm of the frequency in the 0.15 to 0.50 MHz</p>		AC Port Conducted Emission Class B Limit			Frequency (MHz)	Quasi-Peak (dB μ V)	Average (dB μ V)	0.15 - 0.50	66 to 56	56 to 46	0.50 – 5	56	46	5-30	60	50
AC Port Conducted Emission Class B Limit																	
Frequency (MHz)	Quasi-Peak (dB μ V)	Average (dB μ V)															
0.15 - 0.50	66 to 56	56 to 46															
0.50 – 5	56	46															
5-30	60	50															
Test set-up description	<input checked="" type="checkbox"/> Set-up Type B (80 cm distance to horizontal ground plane inside chamber) <input type="checkbox"/> Floor standing equipment set-up (10 cm over ground plane) <input type="checkbox"/> Other:																
Voltage/Frequency	120V/60Hz																
Test method applied	<input checked="" type="checkbox"/> Artificial mains network (AMN) <input type="checkbox"/> Voltage Probe																
Compliant <input checked="" type="checkbox"/> Non-Compliant <input type="checkbox"/> Not Applicable <input type="checkbox"/>																	

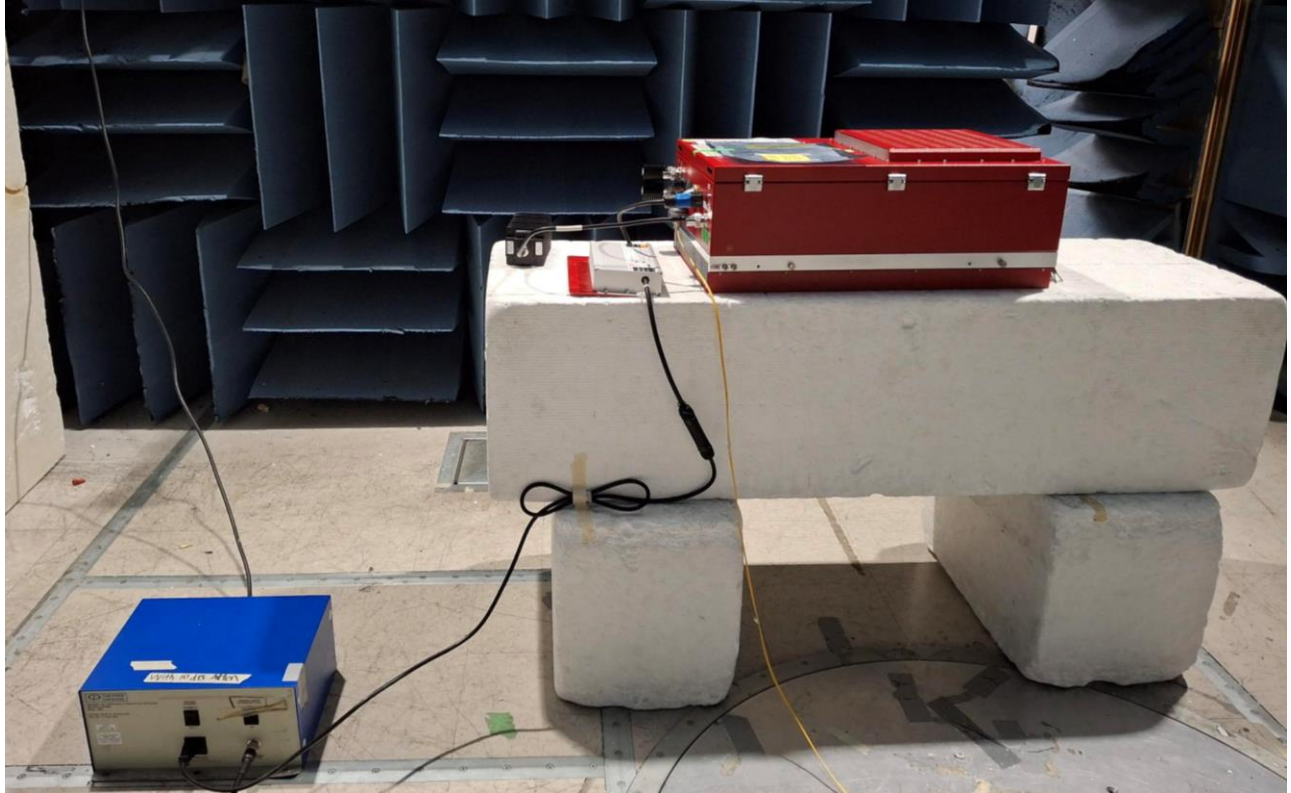
Test Method

This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (EUT) was configured based upon the requirements of the applicable test standard. Initially a scan was made with an EMC Analyzer, controlled by EMC Test Software, Tile7!, from 150 kHz to 30 MHz on each phase with the receiver in the peak mode. The measuring bandwidth was set up to 9 kHz. Measurements were then made using CISPR16-1 quasi peak and averaging detectors when the peak readings were within 20dB of the Quasi-peak limit line.

Test Setup

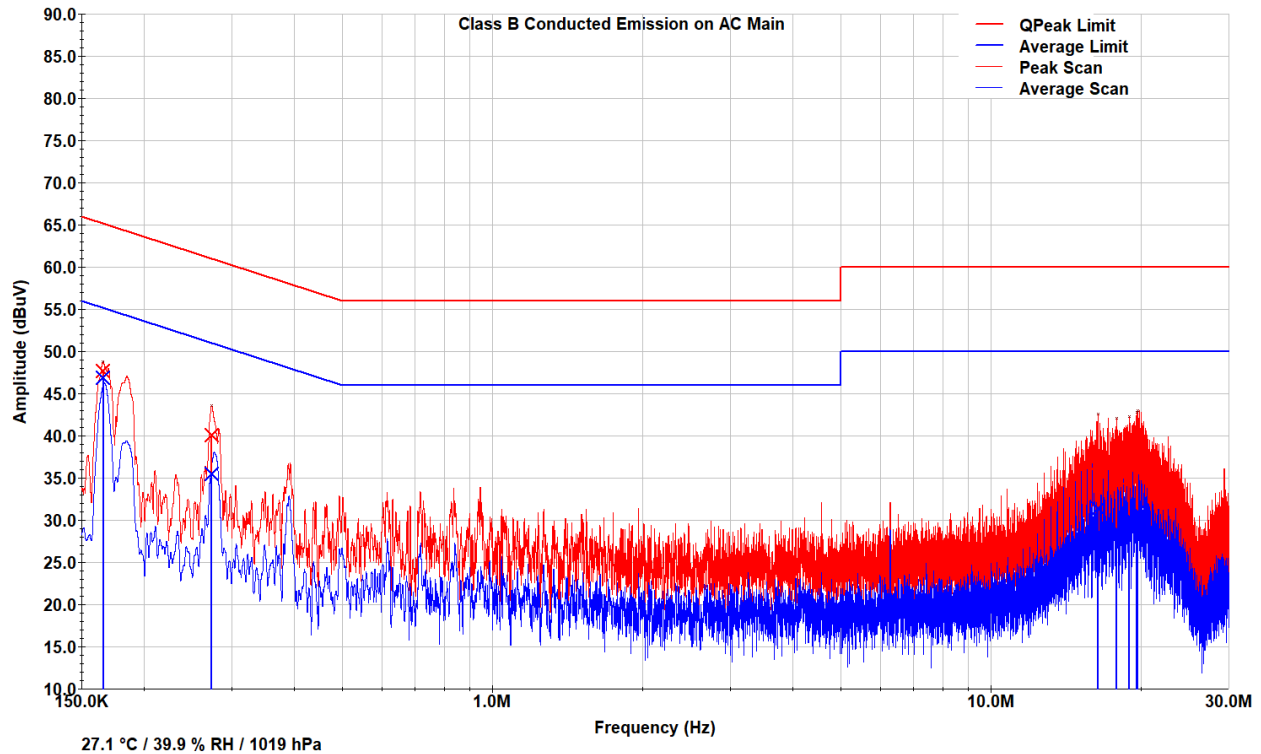
The EUT was placed on a 0.8 m non-conducting table above GRP.

The EUT was set to **Operation Mode #1 with configuration Mode #1**.



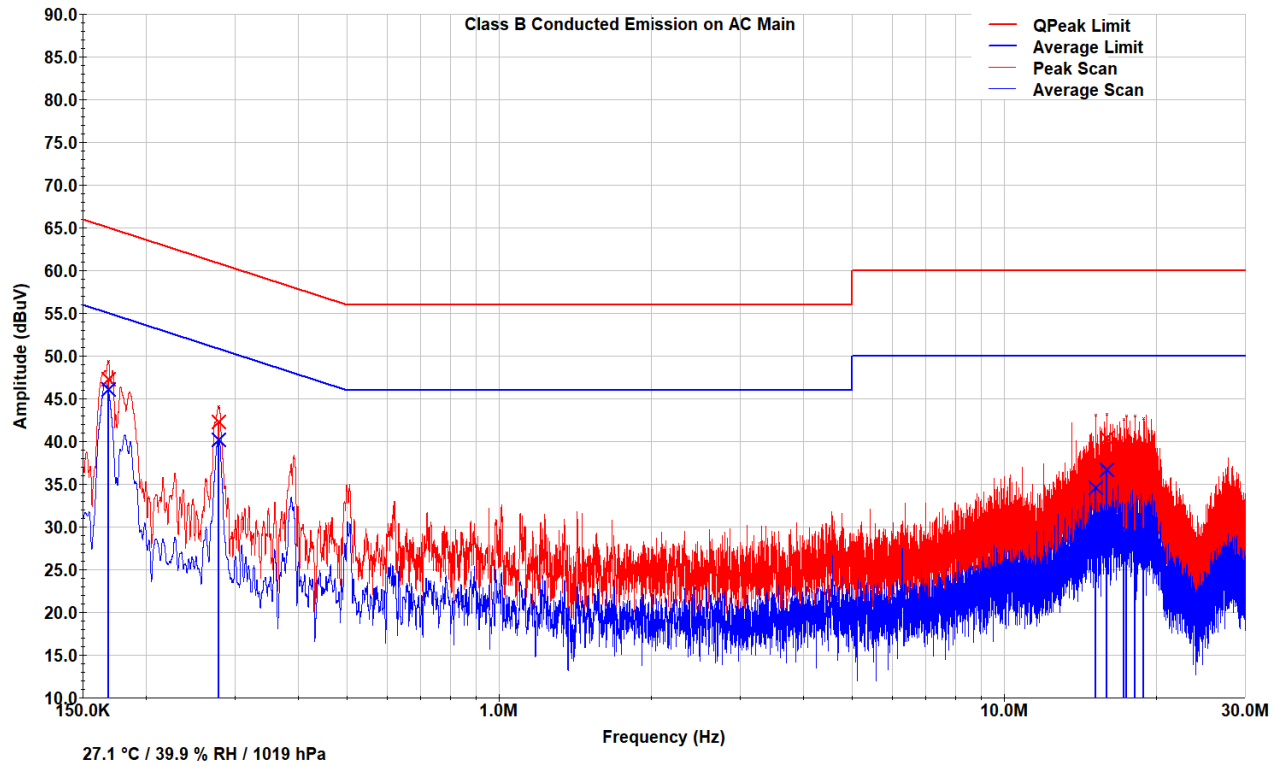
Test Results

Conducted Emission – Line 1



Frequency	Correction Factor	QPeak	QPeak Margin	QPeak Limit	Average	Average Margin	Average Limit
MHz	dB	dBuV	dB	dBuV	dBuV	dB	dBuV
0.166	20.627	47.71	17.46	65.17	46.933	8.24	55.17
0.273	20.615	40.12	20.9	61.02	35.476	15.54	51.02
16.383	20.978	36.8	23.2	60	31.447	18.55	50
17.868	21.019	35.09	24.91	60	28.901	21.1	50
18.978	21.05	36.93	23.07	60	30.383	19.62	50
19.616	21.063	37.53	22.47	60	30.9	19.1	50
19.728	21.063	37.51	22.49	60	31.006	18.99	50

Conducted Emission – Line 2



Frequency	Correction Factor	QPeak	QPeak Margin	QPeak Limit	Average	Average Margin	Average Limit
MHz	dB	dBuV	dB	dBuV	dBuV	dB	dBuV
0.168	20.627	47.35	17.69	65.04	46.132	8.91	55.04
0.278	20.613	42.26	18.61	60.87	40.204	10.67	50.87
15.181	20.933	36.64	23.36	60	34.568	15.43	50
15.981	20.962	40.44	19.56	60	36.744	13.26	50
17.227	20.985	36	24	60	29.444	20.56	50
17.466	20.995	36.18	23.82	60	29.467	20.53	50
18.165	21.033	36.15	23.85	60	29.418	20.58	50
18.905	21.05	36.4	23.6	60	29.735	20.27	50

Note (1): Emission level is presented according to the below formula:

Conducted Emission (dBUV) = Measured Emission (dBUV) + Correction Factor (dB)

Correction Factor (dB) = LISN Transduce Factor (dB) + Cable loss(dB) + 20 dB limiter(dB)

Note (2): Only the worst-case frequencies were chosen for the final measurement.

List of test equipment

Test Stand #1					
Equipment	Manufacturer	Model	Labtest ID	Last calibration	Calibration due*
EMC Analyzer	Agilent Technologies	E7405A	272	2025-02-21	2026-02-21
LISN	Com-Power	LIN-120C	920	23 July, 2023	23 July, 2025
RF Cable	MRO	n/a	n/a	IHC ²	IHC ¹
Used Software	Tile! 7 v7.3.0.6				
Test Stand #2					
EMC Analyzer	Agilent Technologies	E7405A	272	2025-02-21	2026-02-21
Broadband Antenna	Sunol	JB1	371	2025-01-13	2027-01-13
Motion Controller	Sunol	SC104V	235A	IHC ¹	IHC ¹
Antenna Tower	Sunol	TWR95-4	235B	IHC ¹	IHC ¹
Turn Table	Sunol	SM46C	235C	IHC ¹	IHC ¹
EMC Shielded Enclosure	USC	USC-26	374	IHC ¹	IHC ¹
RF Cable	MRO	n/a	n/a	IHC ²	IHC ¹
Used Software	Tile! 7 v7.3.0.6				
Test Stand #3					
Horn Antenna	A.H Systems	SAS-571	227C	2025-02-04	2027-02-04
EMC Analyzer	Agilent Technologies	E7405A	272	2025-02-21	2026-02-21
Motion Controller	Sunol	SC104V	235A	IHC ¹	IHC ¹
Antenna Tower	Sunol	TWR95-4	235B	IHC ¹	IHC ¹
Turn Table	Sunol	SM46C	235C	IHC ¹	IHC ¹
EMC Shielded Enclosure	USC	USC-26	374	IHC ¹	IHC ¹
RF Cable	A.H. Systems	SAC-26G-3	227D	IHC ²	IHC ¹
RF Preamplifier	Agilent	8449B	273	IHC ²	IHC ¹
Used Software	Tile! 7 v7.3.0.6				
Note 1) IHC: In House Calibration					
Calibration interval extended based on enough calibration data and experience of use (see IEC 6011:2015 clause 8.3)					

Prepared by: LabTest Certification Inc.
Date Issued: July 3, 2025
Project No.: 25-1205

Client: Avari Wireless Inc.
Report No.: 20.01.25-1205-1
Revision No.: Rev 0

Annex

Annex 1 - ISO 17025 ACCREDITATION CERTIFICATE

For complete scope of certification use

https://labtestcert.com/wp-content/uploads/2024/04/LabTest-Certification-Inc-Cert-and-Scope-File-03-12-2024_1710259791.pdf

END OF REPORT