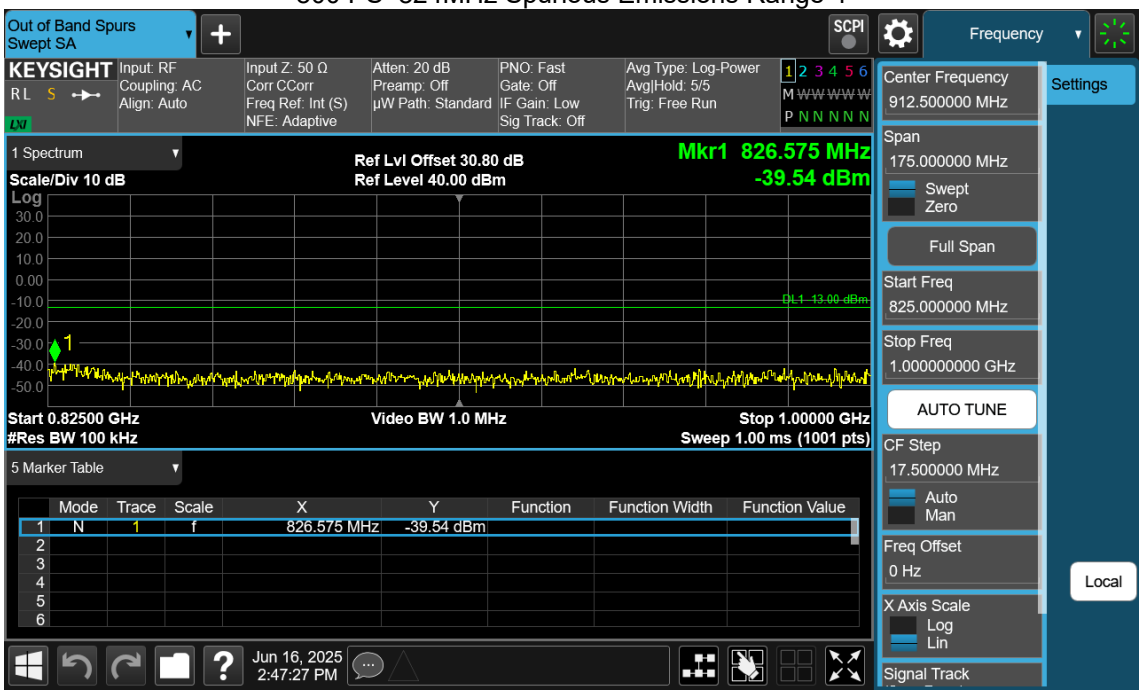
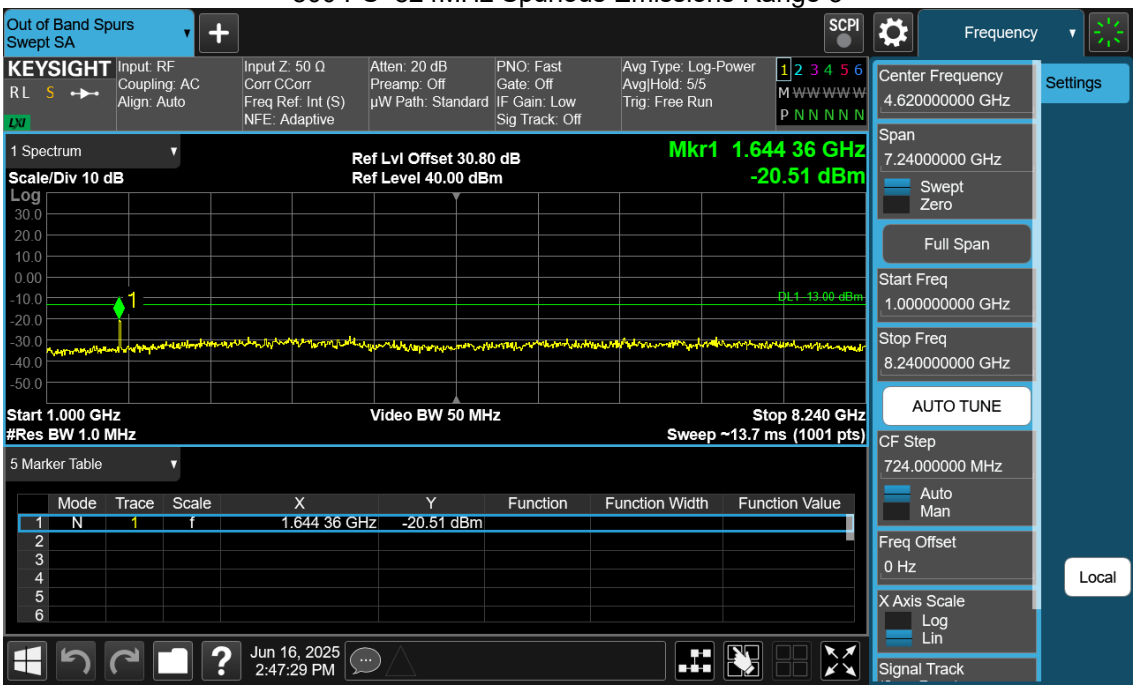
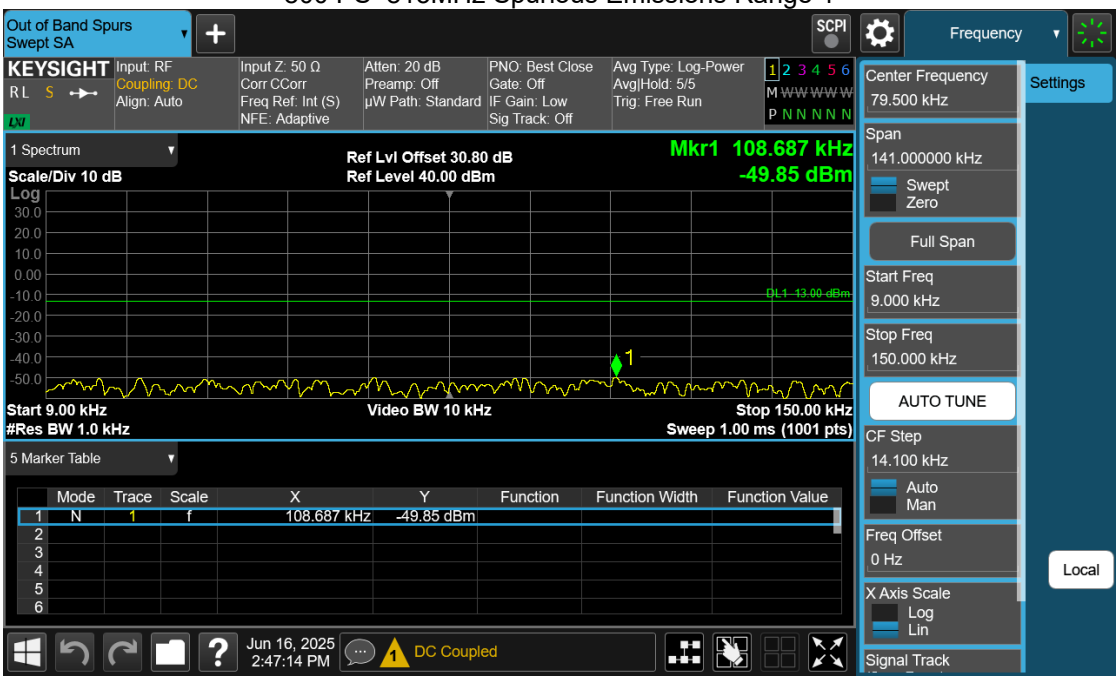
800 PS 824MHz Spurious Emissions Range 4



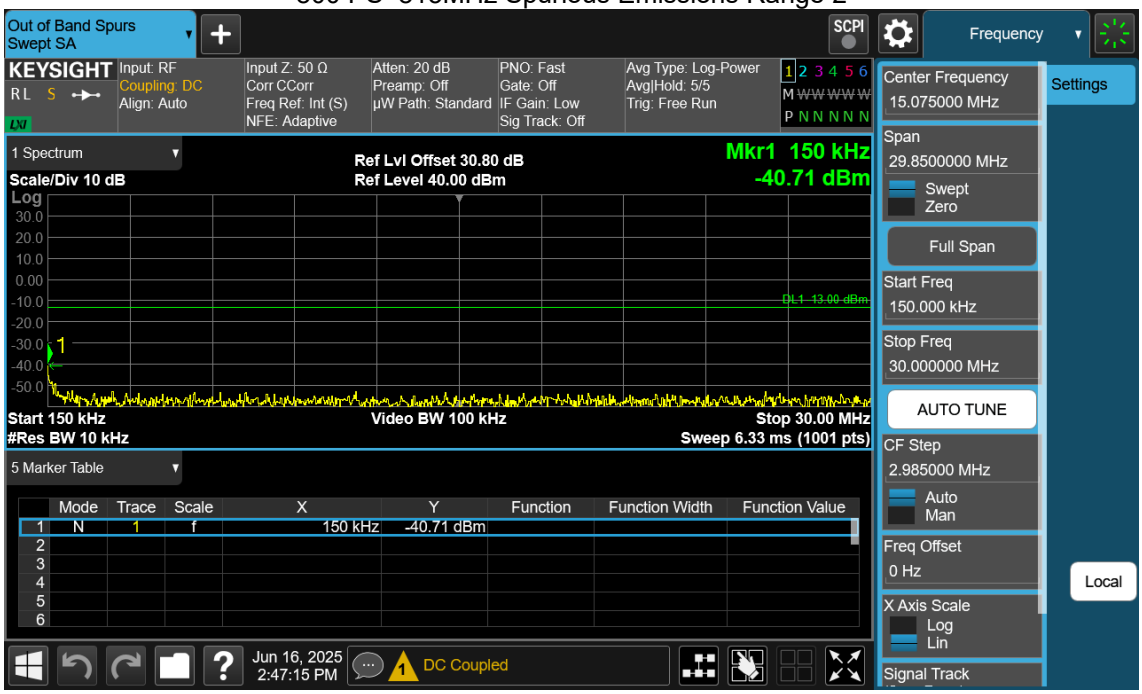
800 PS 824MHz Spurious Emissions Range 5



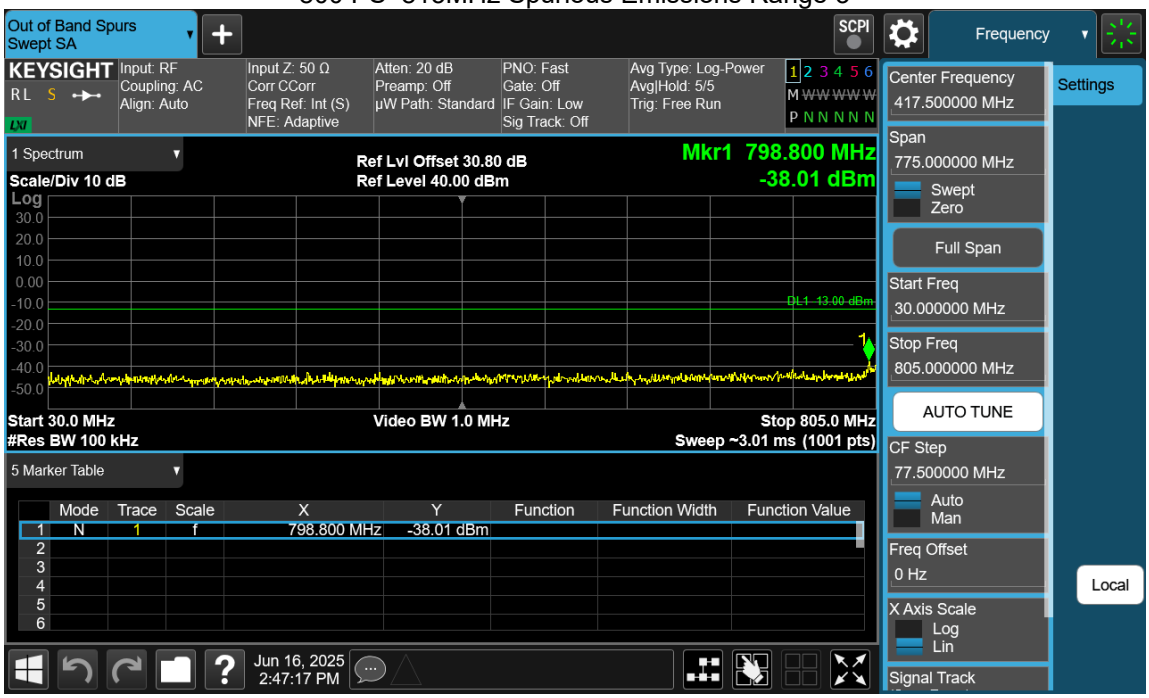
800 PS 815MHz Spurious Emissions Range 1



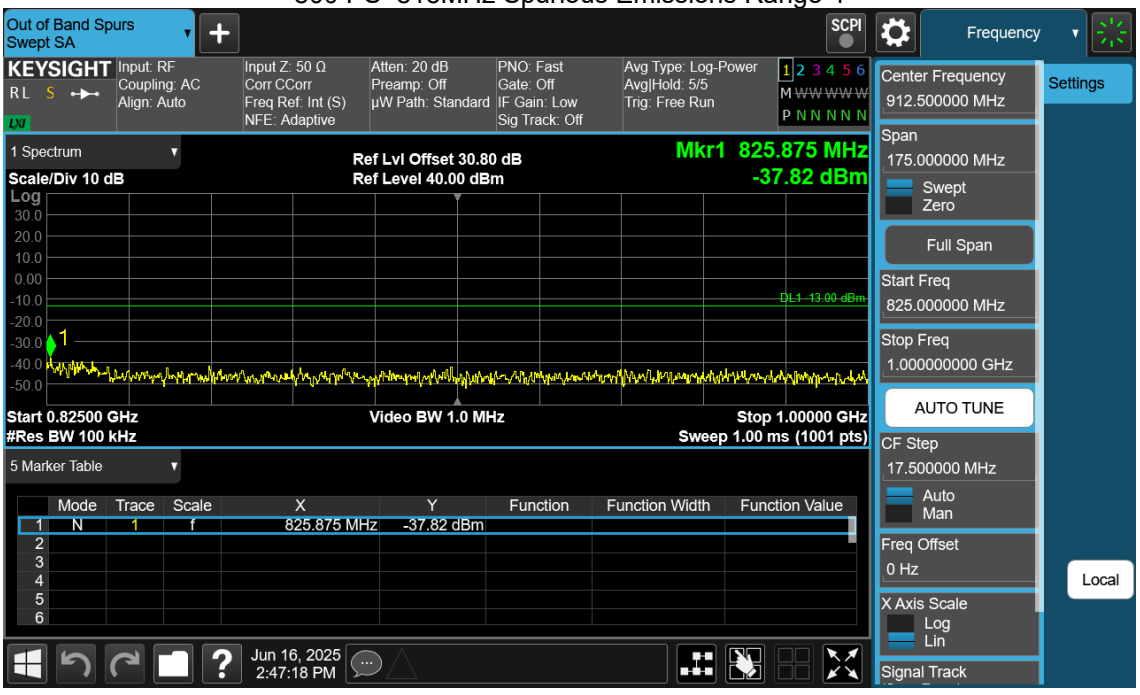
800 PS 815MHz Spurious Emissions Range 2



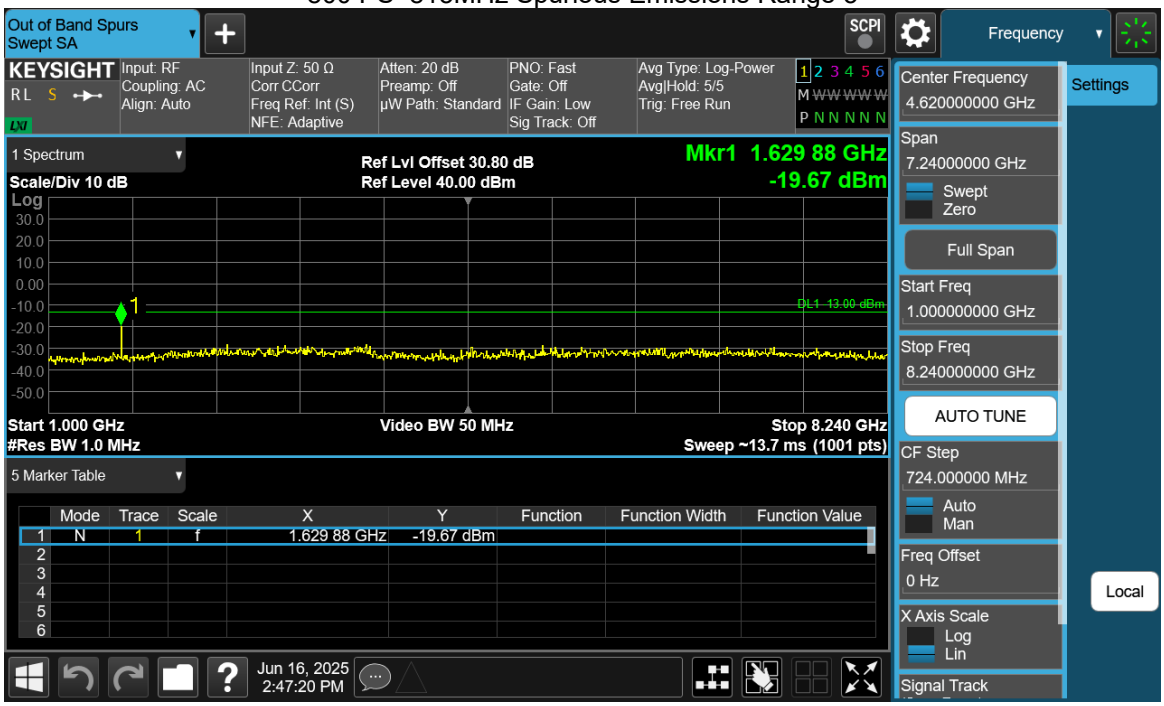
800 PS 815MHz Spurious Emissions Range 3



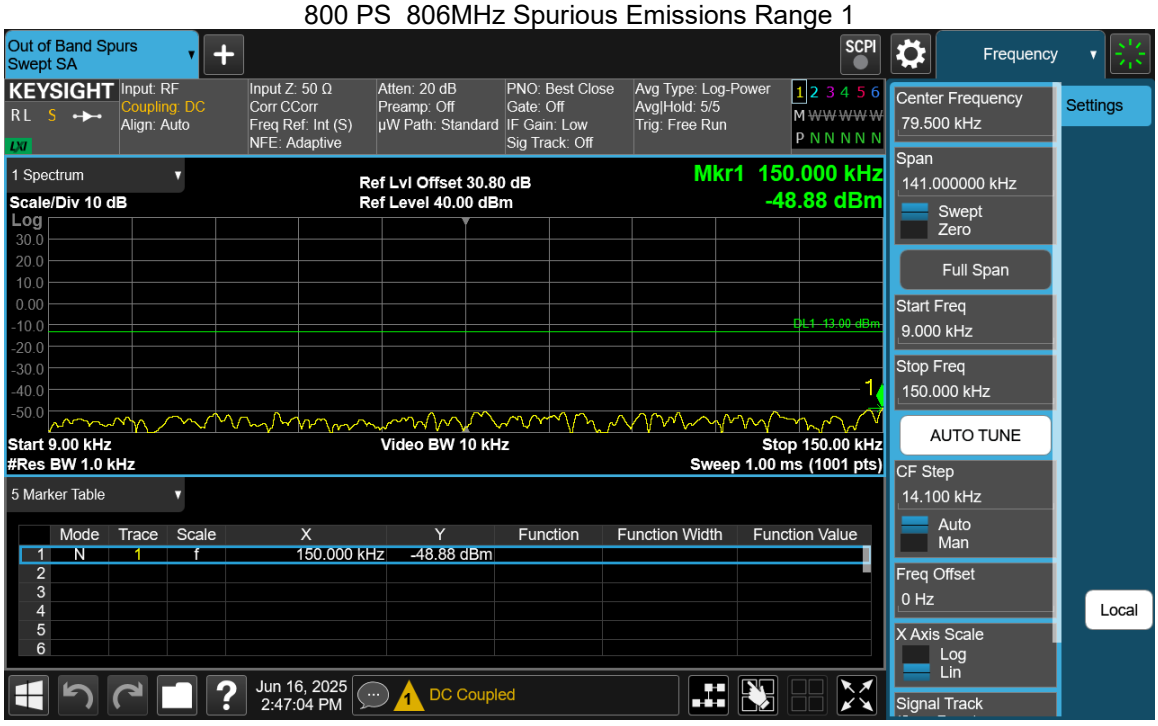
800 PS 815MHz Spurious Emissions Range 4



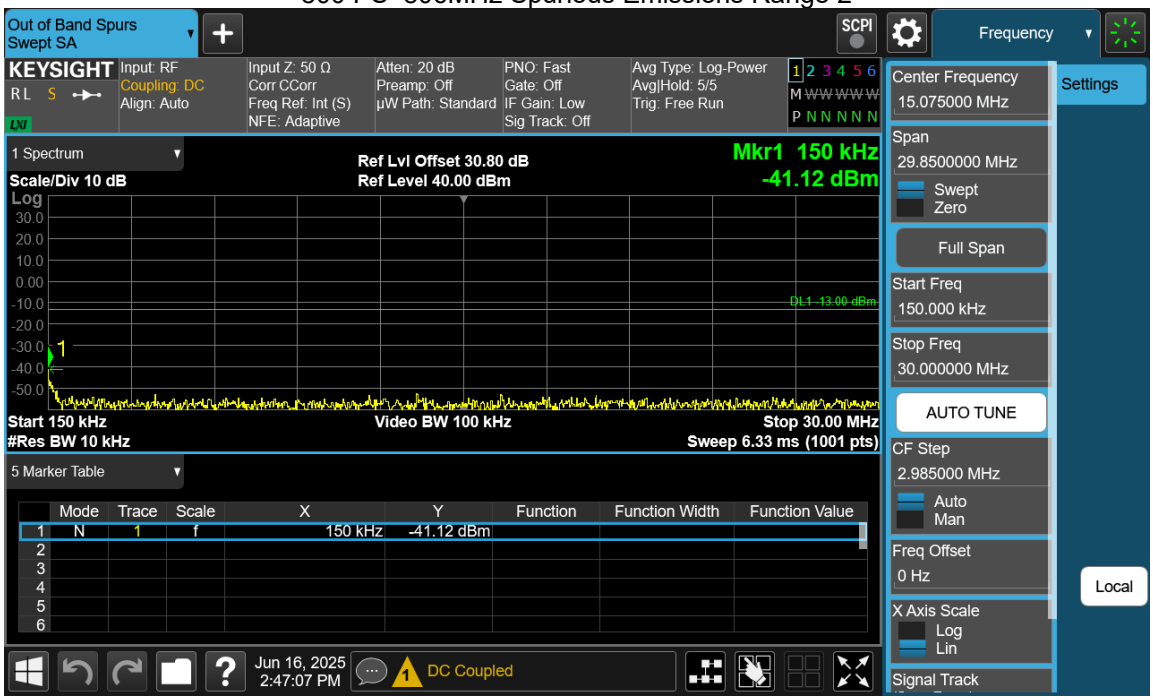
800 PS 815MHz Spurious Emissions Range 5



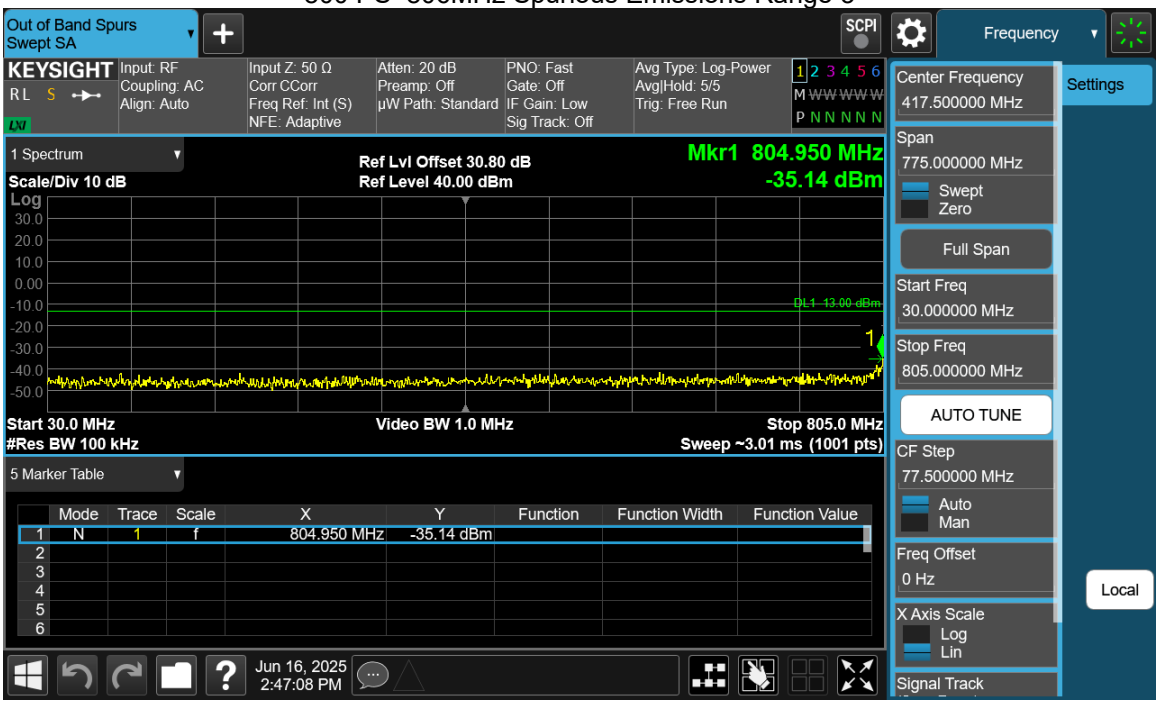
800 PS 806MHz Spurious Emissions Range 1



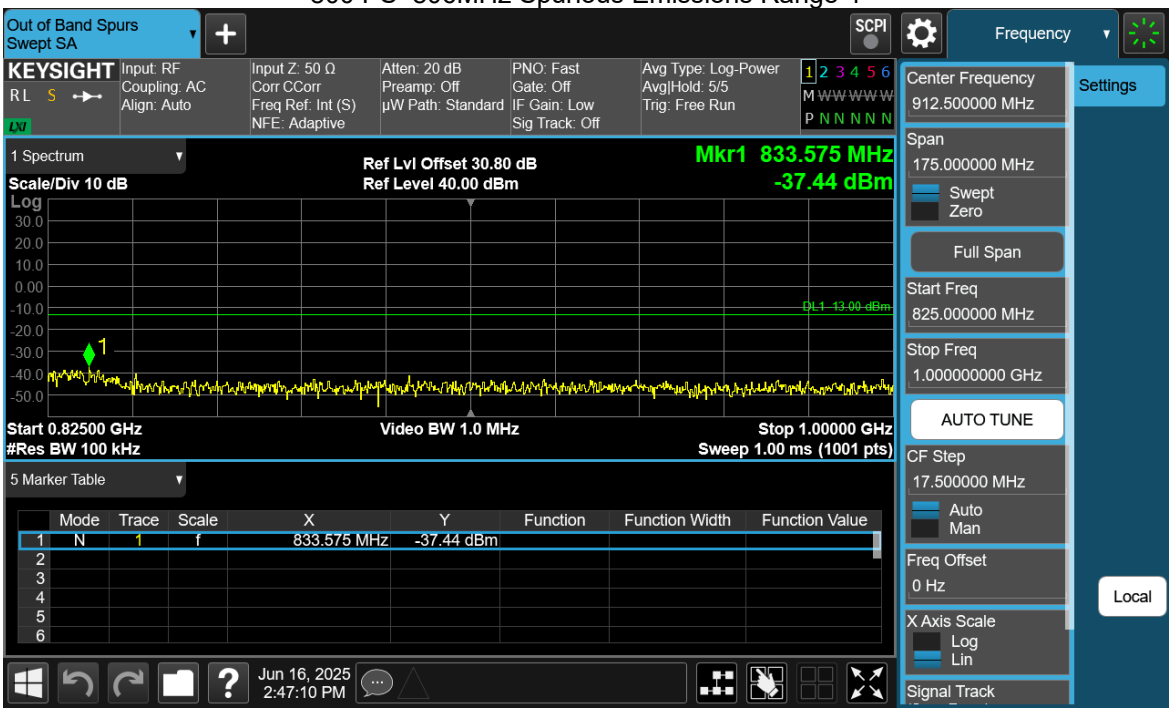
800 PS 806MHz Spurious Emissions Range 2



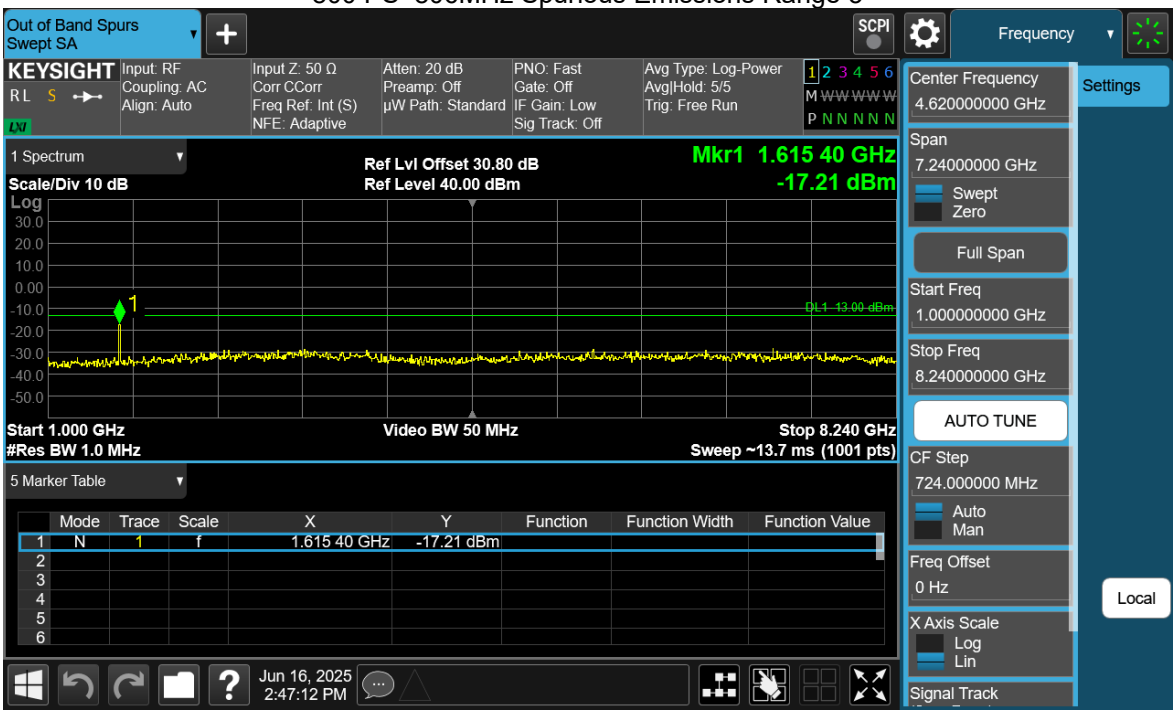
800 PS 806MHz Spurious Emissions Range 3



800 PS 806MHz Spurious Emissions Range 4



800 PS 806MHz Spurious Emissions Range 5



3.7 Noise Figure

Governing Doc	RSS-119, Issue 12 2015, Amendment (April 1, 2022) RSS-Gen, Issue 5 2018 FCC Part 90	Room Temperature (°C)	20.5
Test Procedure	ANSI C63.26-2015, Section 7.2.3.5 KDB 935210 D05, v01r04, Clause 4.6	Relative Humidity (%)	38.6
Test Location	Bench top, Richmond Lab	Barometric Pressure (kPa)	101.8
Test Engineer	Zara Vali	Date	June 16, 2025
EUT Voltage	☒ +48VDC	☐ 120VAC @ 60Hz	

Test Equipment Used	Manufacturer	Model	Serial Number	Calibration date	Calibration due
Signal Generator	Keysight	N5172B-506	MY53050270	Dec 12, 2023	Dec 12, 2026
Spectrum Analyzer	Keysight	N9020B-526	MY62153079	Aug 1, 2023	Aug 1, 2025

Frequency Range:	☒ 2 times of the passband on each band
Detector:	☒ Average
RBW:	☒910 kHz
Type of Facility:	☒ Tabletop
Distance:	☒ Direct

Noise Figure on each band is less than the 9 dB required.

Compliant ☒ Non-Compliant ☐ Not Applicable ☐

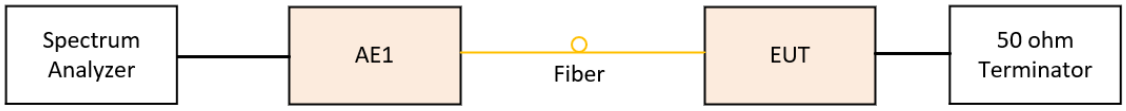
Test setup

Based on ANSI C63.26: 2015, the system maximum gain and the noise density is measured.Measurements were performed within the EUT's passband.

The noise figure is then calculated by NF = NP – Gain + KTB Noise; where NP is in band noise power per Herz,

Gain is measured at the maximum noise frequence with -55 dBm input signal in UL. KTB Noise is 174dB/Hz.

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



Results

Test Band	Gain (dB)	kTB (dBm/Hz)	Measured Value (dBm/Hz)	Noise Figure (dB)
800 PS	89.9	174	-78.7	5.43

3.8 Frequency Stability

The AMU37 and RU37 are sychronized to the same reference clock. Therefore there is no frequency error after down and up frequency conversion are performed.

The frequency stability check is not applicable to the EUT.

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

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
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.	

RSS – Gen, Clause 8.10 Restricted frequency bands

a. 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.
b. Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in the above table.
c. 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.

Test set-up description	☒	Equipment on a table of 80 cm height
	☐	Equipment on the floor (insulated from ground plane)
	☐	Other:
Test method applied	☒	SAC with measurement distance [m]: ☒3 ☐10
	☐	FAR CISPR 16-2-3 with measurement distance [m]: 3
	☐	FAR IEC 61000-4-22 with measurement distance [m]: 3
	☐	TEM Waveguide according to IEC 61000-4-20

Compliant ☒ Non-Compliant ☐ Not Applicable ☐

Test Method

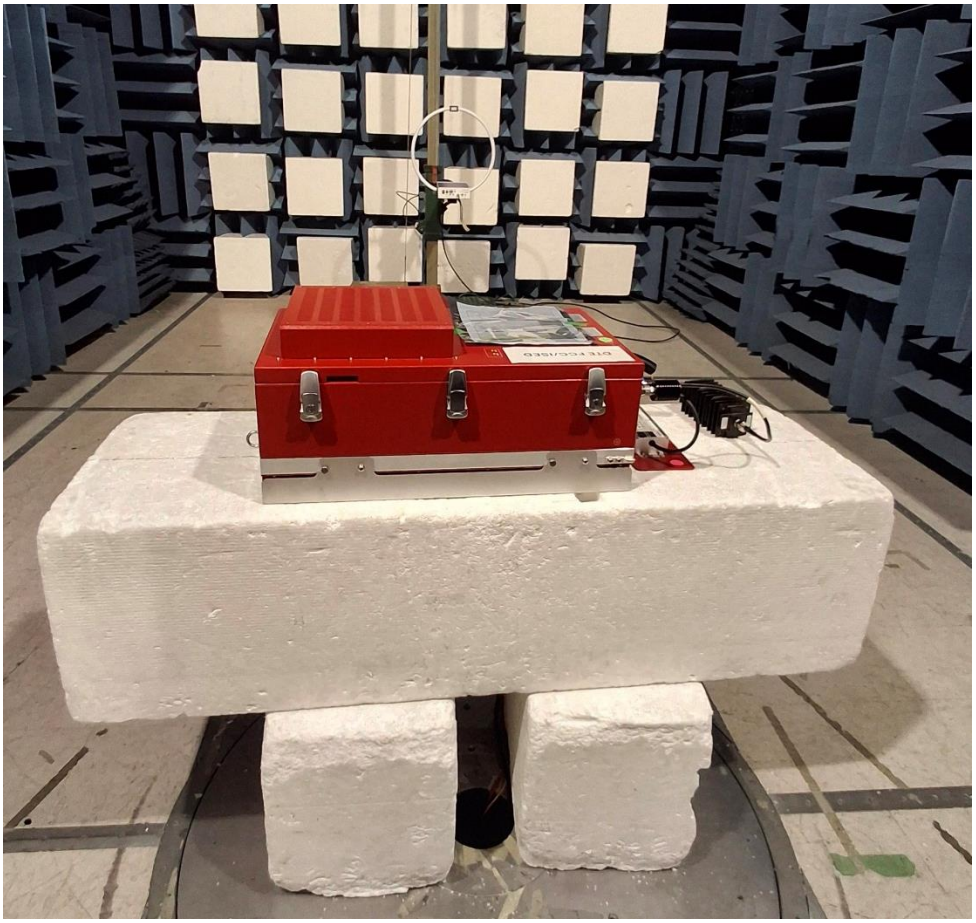
This test measures the radiating levels from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (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.

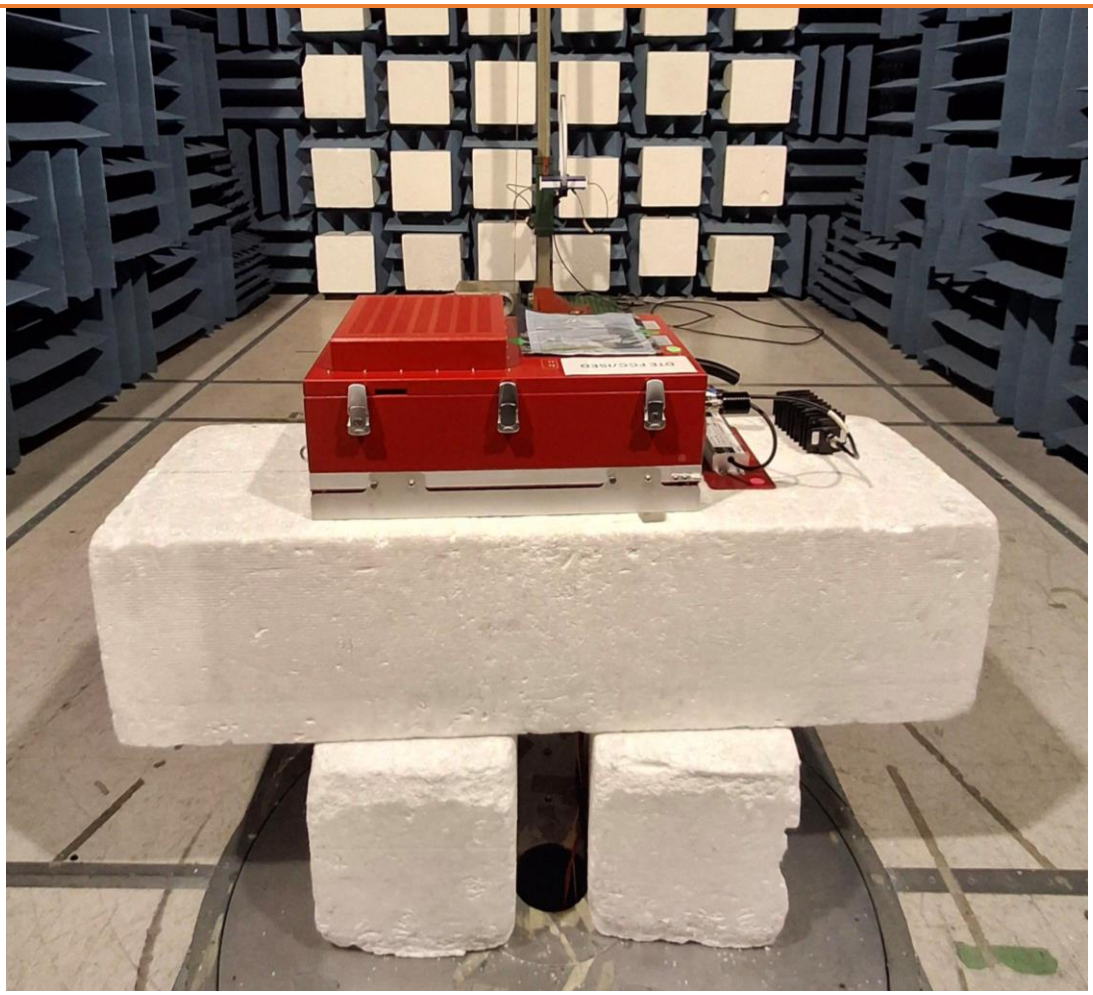
A scan was made with an EMC Analyzer, controlled by EMC Test Software, Tile7! with the receiver in the peak mode. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters with both horizontal and vertical polarities 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.

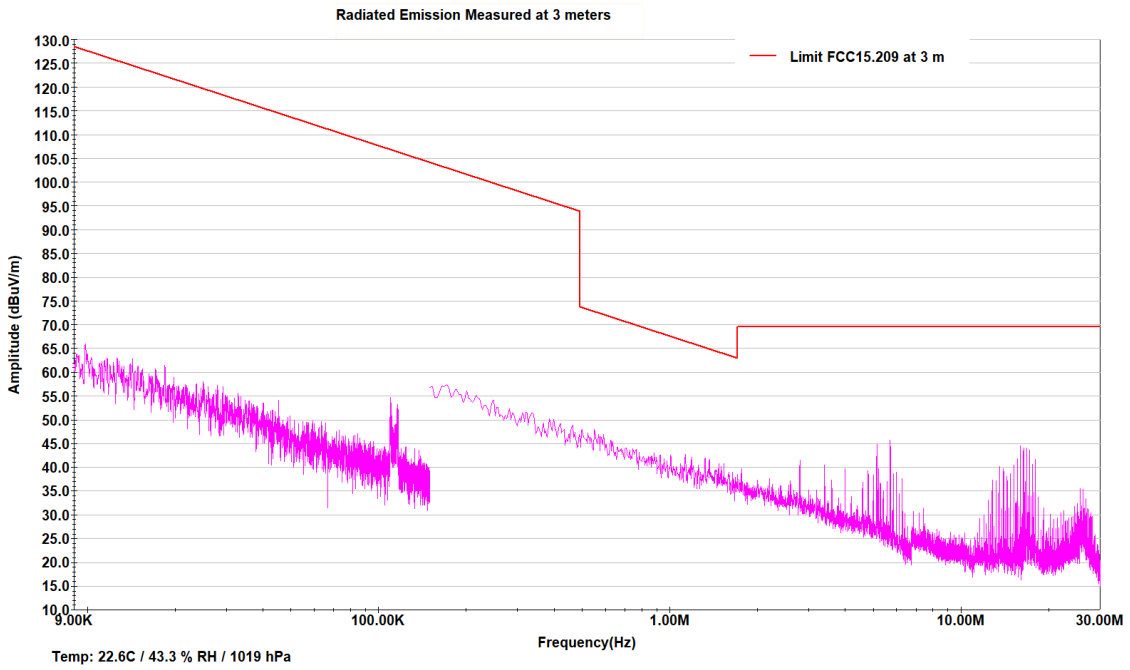
The EUT was set to **Operation Mode #1 with configuration Mode #1.**



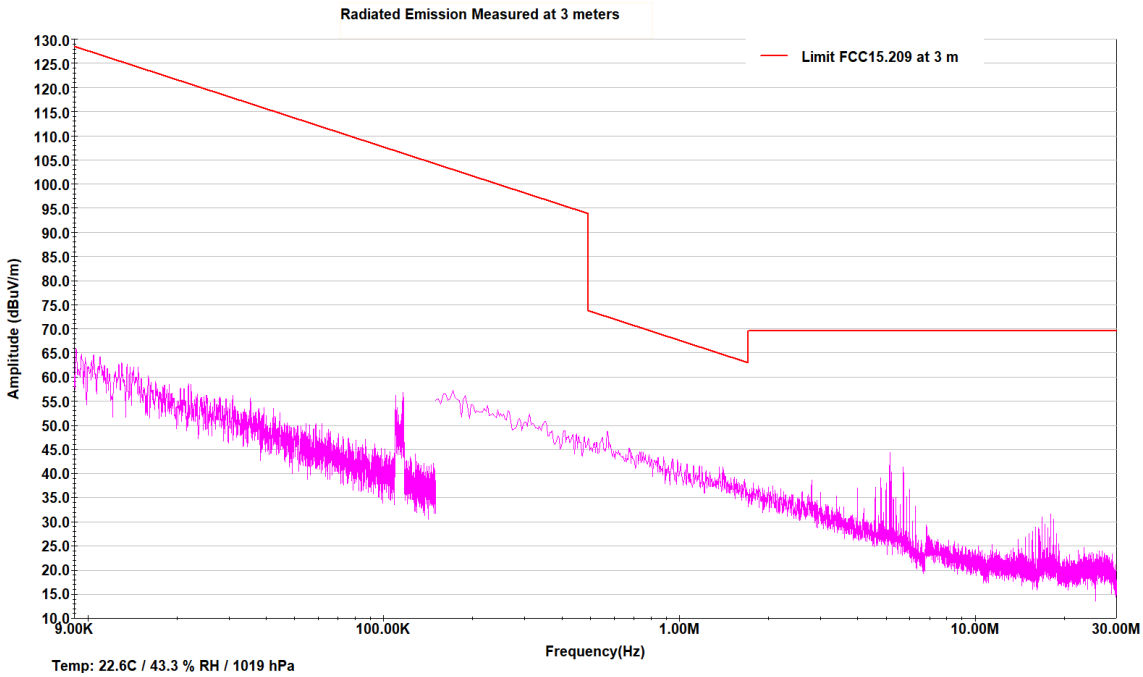


Test Result

Loop antenna, face view



Loop antenna, side view



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 17, 2025
Test location	Richmond lab, stand #2

Applied limit

Radiated Emission FCC/ISED Class B Limit at 3 Meters	
Frequency (MHz)	**Quasi-peak (dB µV/m)**
30 – 88	40
88 – 216	43.52
216 - 960	46.02
Above 960	53.98
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.	

RSS – Gen, Clause 8.10 Restricted frequency bands

a. 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.

b. Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in the above table.

c. 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.

Test set-up description	☒	Equipment on a table of 80 cm height
	☐	Equipment on the floor (insulated from ground plane)
	☐	Other:
Test method applied	☒	SAC with measurement distance [m]: ☒3 ☐10
	☐	FAR CISPR 16-2-3 with measurement distance [m]: 3
	☐	FAR IEC 61000-4-22 with measurement distance [m]: 3
	☐	TEM Waveguide according to IEC 61000-4-20

Compliant ☒ Non-Compliant ☐ Not Applicable ☐

Test Method

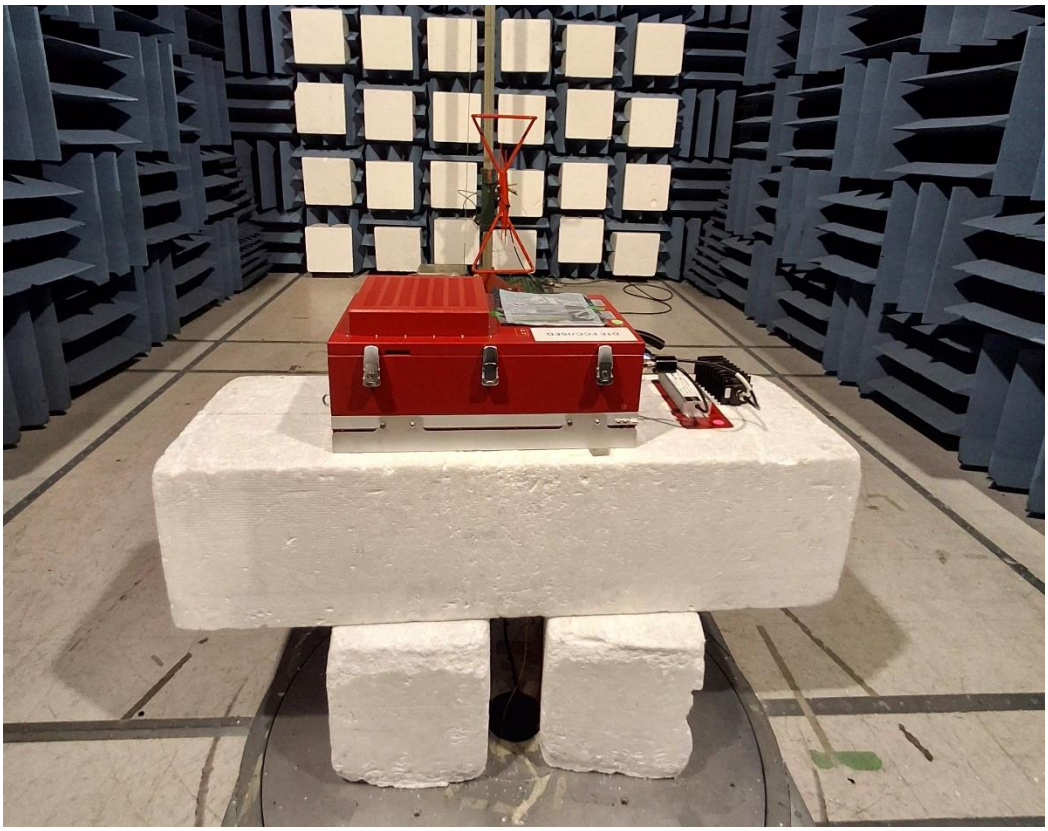
This test measures the radiating levels from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standard(s) referenced in the test summary section of this report. The Equipment Under Test (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.

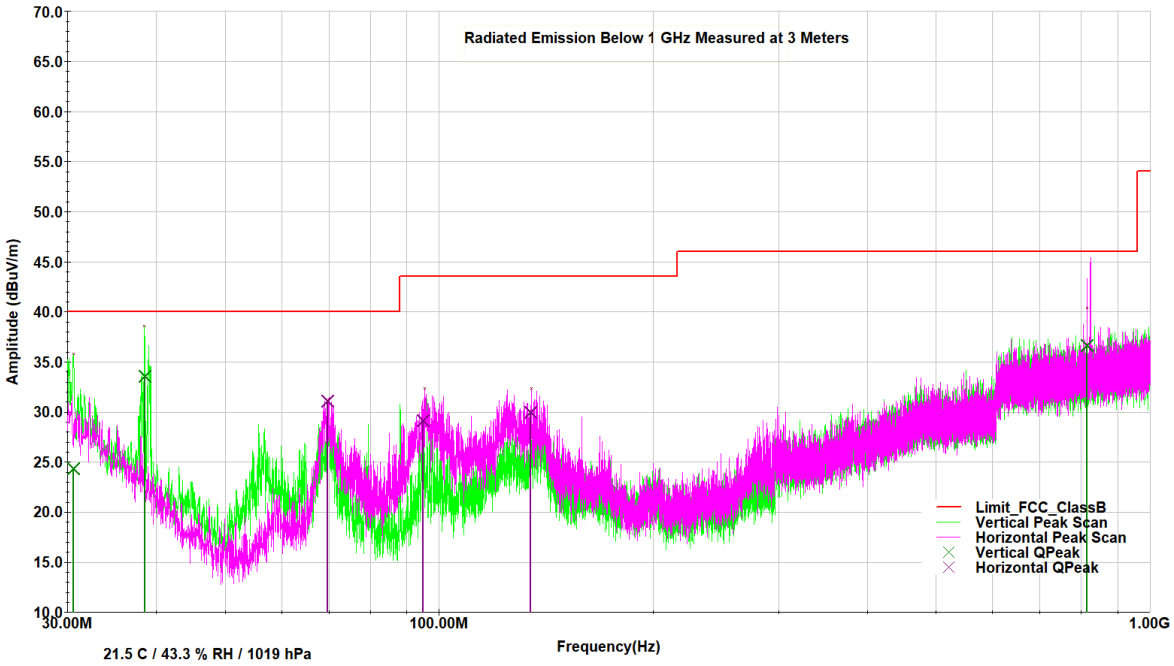
Test Setup

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
69.69592	H	17.8	12.4	0.9	31.1	8.9	40
94.94285	H	15.4	12.7	1	29.1	14.42	43.52
134.5679	H	11.3	17.5	1.1	30	13.52	43.52

Frequency	Antenna Polarization	Raw QPeak	Antenna Factor	Correction Factor	QPeak	Margin	Limit
MHz	V/H	dBuV	dB/m	dB	dBuV/m	dB	dBuV/m
30.58496	V	-1.3	24.9	0.7	24.3	15.7	40
38.56506	V	13.7	19.1	0.7	33.5	6.5	40
814.9759	V	9	24.8	2.8	36.6	9.42	46.02

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)
All other frequencies were not measured because they are either identified as ambient noise or 20dB, or greater, below the limit line or are transmit frequenices.

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 17, 2025	
Test location	Richmond, Stand #3	
Applied limit	Radiated Emission FCC/ISED Class B Limit at 3 Meters Frequency (GHz) / Average (dBµV/m) / Peak (dBµV/m) > 1 / 54 / 74 **RSS – Gen, Clause 8.10 Restricted frequency bands** a. 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. b. Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in the above table. c. 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.	
Test set-up description	☒	Equipment on a table of 80 cm height
	☐	Equipment on the floor (insulated from ground plane)
	☐	Other:
Test method applied	☐	OATS or SAC with measurement distance [m]: ☒3 ☐10
	☒	FAR CISPR 16-2-3 with measurement distance [m]: 3
	☐	FAR IEC 61000-4-22 with measurement distance [m]: 3
	☐	TEM Waveguide according to IEC 61000-4-20
Compliant ☒	Non-Compliant ☐	Not Applicable ☐

Test Method

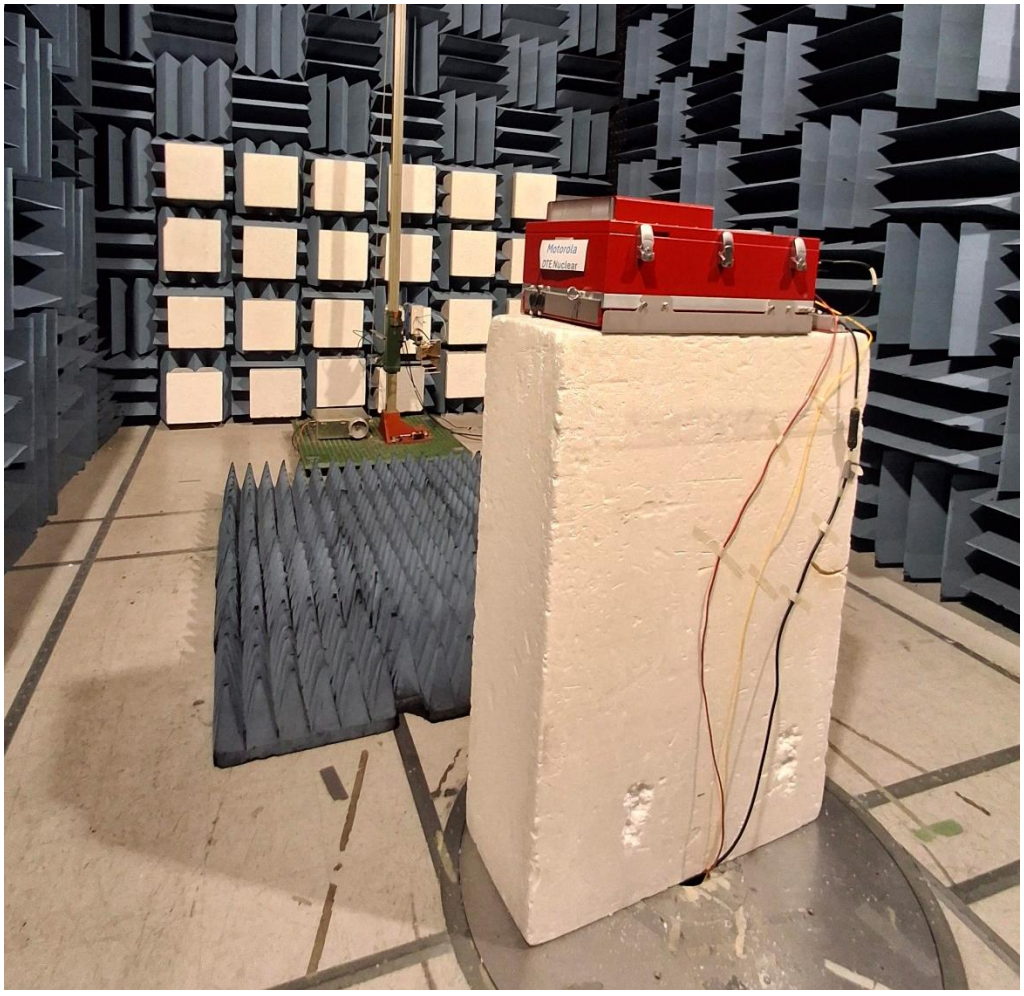
This test measures the radiating levels from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices. Testing was performed in accordance with the test standards referenced in the test summary section of this report. The EUT was configured 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

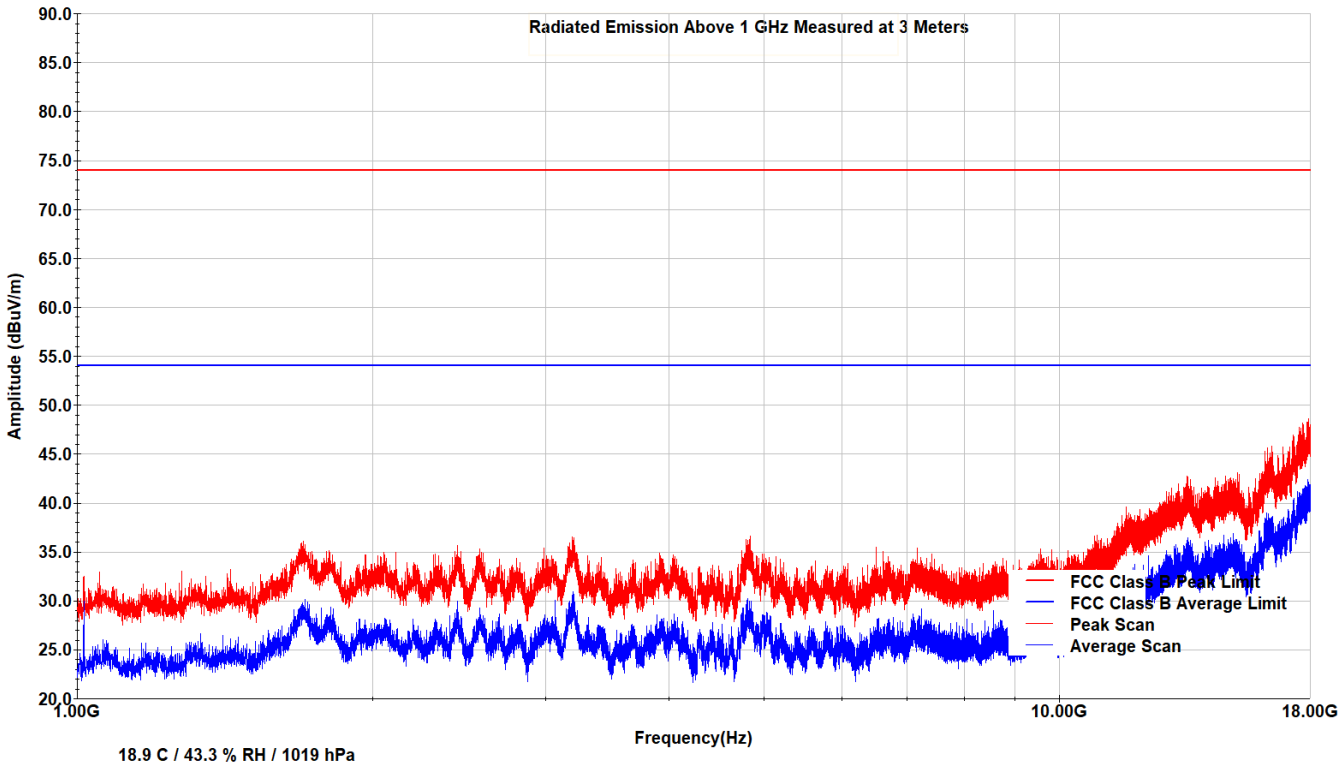
Description of test set-up:

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



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

AC Port Conducted Emission Class B Limit

Frequency (MHz)	Quasi-Peak (dBμV)	Average (dBμV)
0.15 - 0.50	66 to 56	56 to 46
0.50 – 5	56	46
5-30	60	50

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

Test set-up description	☒	Set-up Type B (80 cm distance to horizontal ground plane inside chamber)
	☐	Floor standing equipment set-up (10 cm over ground plane)
	☐	Other:
Voltage/Frequency	120V/60Hz	
Test method applied	☒	Artificial mains network (AMN)
	☐	Voltage Probe

Compliant ☒ Non-Compliant ☐ Not Applicable ☐

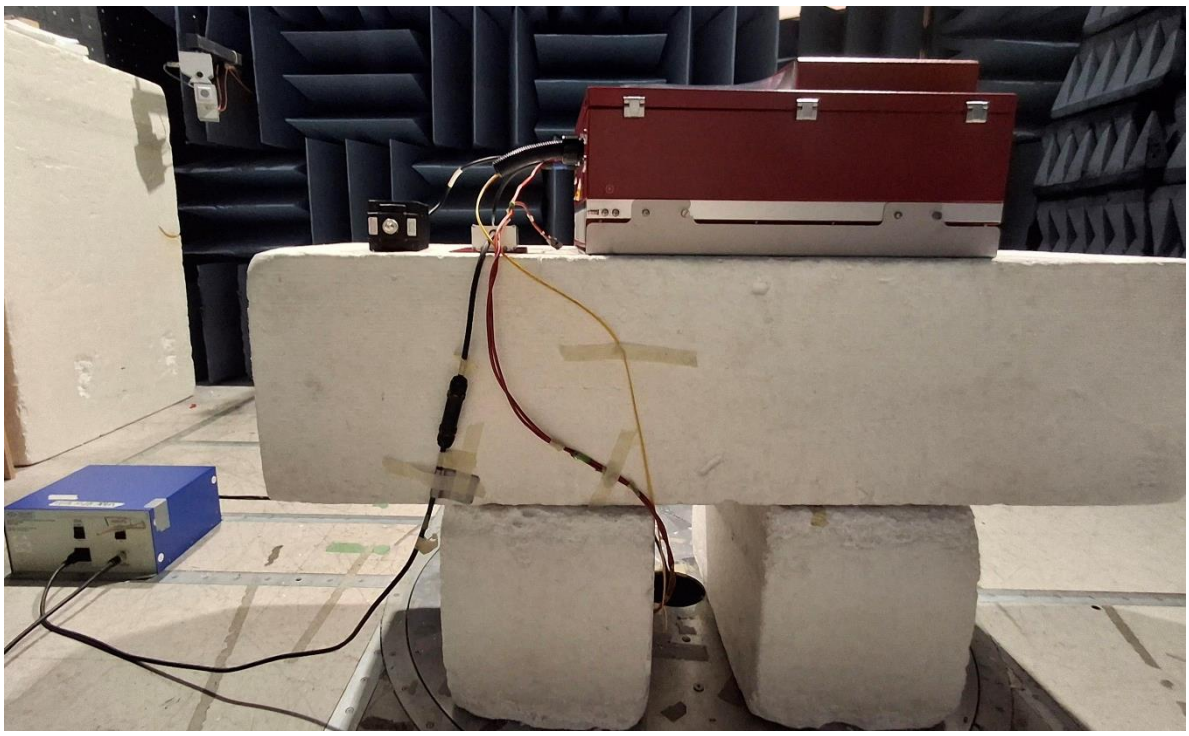
Test Method

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 10dB of the Quasi-peak limit line.

Test Setup

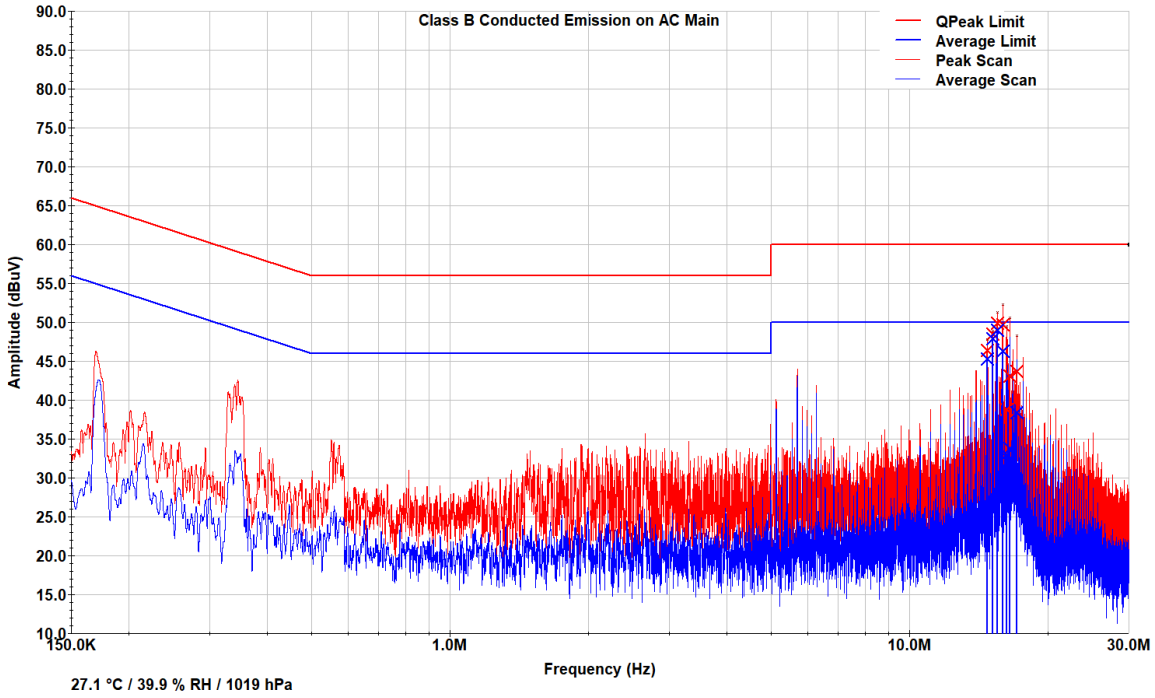
The EUT was placed on a 0.8 m non-conducting table above GRP.

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



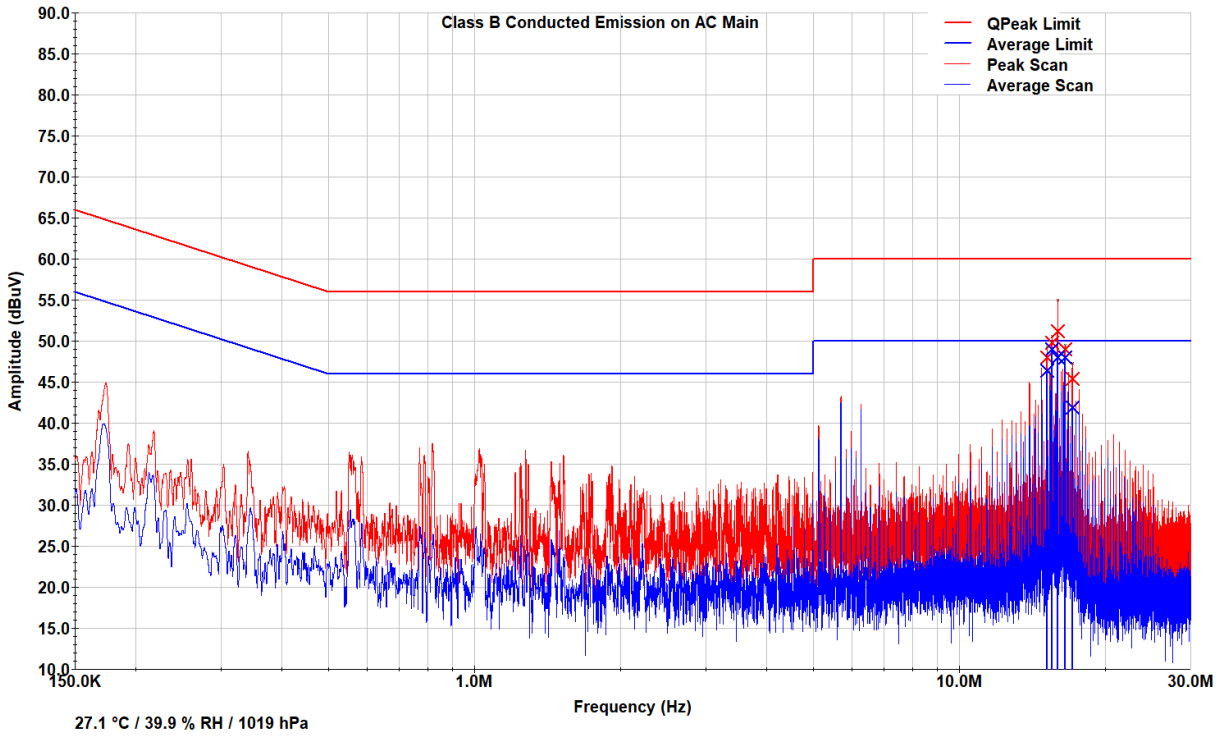
Test Results

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
14.752	20.926	46.39	13.61	60	45.275	4.72	50
15.155	20.934	48.54	11.46	60	47.848	2.15	50
15.548	20.939	49.85	10.15	60	48.974	1.03	50
15.944	20.961	49.69	10.31	60	46.26	3.74	50
16.251	20.971	38.78	21.22	60	33.041	16.96	50
16.532	20.983	43.09	16.91	60	33.835	16.16	50
17.099	20.986	43.65	16.35	60	38.449	11.55	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
15.149	20.935	47.98	12.02	60	46.359	3.64	50
15.546	20.938	49.84	10.16	60	49.024	0.98	50
15.951	20.961	51.18	8.82	60	48.035	1.96	50
16.523	20.983	49	11	60	47.949	2.05	50
17.09	20.987	45.35	14.65	60	41.889	8.11	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 IECEE OD-5011:2015 clause 8.3)

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

Annex 2 - Critical Components Table

Object	Manufacturer	Type/Model	Remark
Ferrite	Laird-Signal Integrity Products	28A5776-0A2	Ferrite added on the Ethernet 1 Port during conducted emission.

END OF REPORT