

Report on the Testing of the Cooper Lighting Solutions WaveLinx Wireless Adapter 0028-000021

In accordance with:
FCC 47 CFR part 15.247
ISED RSS-247 Issue 2, February 2017

Prepared for: Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, Georgia 30269 USA



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A handwritten signature in black ink, appearing to read "Divya Adusumilli".

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|------------------|--|----------------------|------------|
| Divya Adusumilli | Senior Wireless Engineer TÜV SÜD America Inc. | Authorized Signatory | 5/31/2022 |

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FCC Accreditation Designation Number US1233
FCC Test Site Registration Number 967699
Innovation, Science, and Economic Development Canada Lab Code 23932

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with the standards listed above.



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TÜV SÜD America
5945 Cabot Parkway, Suite 100
Alpharetta, GA 3005

Phone: 678-341-5900
www.tuv-sud-america.com

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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Table 1.1-1 – Modification Record

| Issue | Description of Change | Date of Issue |
|-------|-----------------------|---------------|
| 0 | First Issue | 5/31/2022 |

1.2 Introduction

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations Section 15.247 and Innovation Science and Economic Development Canada's Radio Standards Specification RSS-247 for the tests documented herein.

| | |
|-------------------------------|---|
| Applicant | Vrajesh Patel |
| Manufacturer | Cooper Lighting Solutions |
| Applicant's Email Address | Vrajesh.Patel@cooperlighting.com |
| Model Name | WaveLinx Wireless Adapter 0028-000021 |
| Model Number | N/A |
| Serial Number | N/A |
| FCC ID | 2AKCY-0028000021 |
| ISED Certification Number | 4706A-0028000021 |
| Hardware Version(s) | EP2' |
| Software Version(s) | Mushroomsensor_fcc_railtest.s37 |
| Number of Samples Tested | 2 |
| Test Specification/Issue/Date | US Code of Federal Regulation (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2021 ISED Canada Radio Standards Specification: RSS-247 – Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices, Issue 2, February 2017. |
| Order Number | 72177304 |
| Date of Receipt of EUT | 4/25/2022 |
| Start of Test | 4/25/2022 |
| Finish of Test | 5/12/2022 |



Related Document(s)

ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Device.

FCC OET KDB 558074 D01 15.247 Meas Guidance v05r02: Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating under Section 15.247 of the FCC Rules, April 2, 2019

US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2021.

ISED Canada Radio Standards Specification: RSS-GEN – General Requirements for Compliance of Radio Apparatus, Issue 5, Amendment 1 (March 2019), Amendment 2 (February 2021)



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC Part 15.247 and ISED Canada's RSS-247 is shown below.

Table 1.3-1: Test Result Summary

| Test Parameter | Test Plan (Yes/No) | Test Result | FCC 47 CFR Rule Part | ISED Canada's RSS | Test Report Page No |
|---|-----------------------|----------------|-------------------------|----------------------|---------------------------|
| Antenna Requirement | Yes | Pass | 15.203, 15.204 | ----- | 10 |
| 6 dB Bandwidth | Yes | Pass | 15.247(a)(2) | RSS-247 5.2(a) | 17 |
| 99% Bandwidth | Yes | Pass | ----- | RSS-GEN 6.7 | 17 |
| Fundamental Emission Output Power | Yes | Pass | 15.247(b)(3) | RSS-247 5.4(d) | 14 |
| Band-Edge Compliance of RF Conducted Emissions | Yes | Pass | 15.247(d) | RSS-247 5.5 | 25 |
| RF Conducted Spurious Emissions | Yes | Pass | 15.247(d) | RSS-247 5.5 | 27 |
| Radiated Spurious Emissions into Restricted Frequency Bands | Yes | Pass | 15.205, 15.209 | RSS-GEN 8.9, 8.10 | 29 |
| Power Spectral Density | Yes | Pass | 15.247(e) | RSS-247 5.2(b) | 22 |
| AC Power Line Conducted Emissions | Yes | Pass | 15.207 | RSS-GEN 8.8 | 11 |



1.4 Product Information

1.4.1 Technical Description

WaveLinx Wireless Adapter 0028-000021 is a wireless control module for integration into light fixtures.

Table 1.4-1 – Wireless Technical Information

| Detail | Description |
|-----------------------|---------------------------------------|
| FCC ID | 2AKCY-0028000021 |
| IC ID | 4706A-0028000021 |
| Transceiver Model # | WaveLinx Wireless Adapter 0028-000021 |
| Frequency Range (MHz) | 2402 – 2480 MHz |
| Modulation Format | GFSK |
| Number of Channels | 40 |
| Channel Spacing | 2 MHz |
| Data Rates | 1 Mbps |
| Operating voltage | 12 ~ 24 VDC |
| Antenna Type / Gain: | Dipole / 2.6dBi Peak |

A full description and detailed product specification details are available from the manufacturer.



Photo 1.4.1-1 – Front view of the EUT



Photo 1.4.1-2 – EUT with programming board



Photo 1.4.1-3 – Conducted EUT



Photo 1.4.1-4 – Conducted EUT with programming board

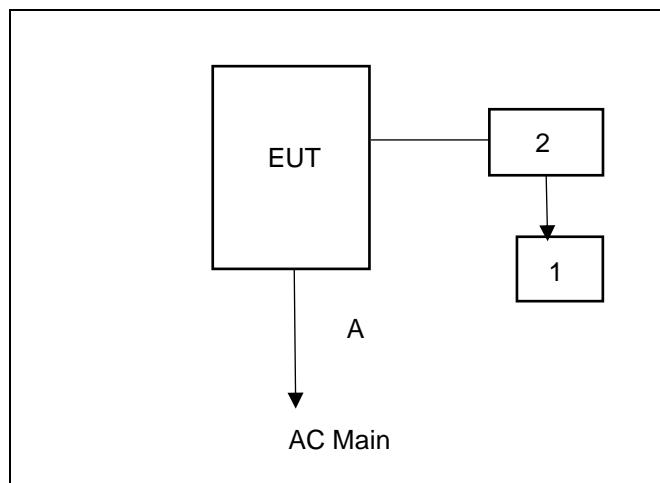


Figure 1.4.1-5 – Test Setup Block Diagram

Table 1.4.1-1 – Cable Descriptions

| Item | Cable/Port | Description |
|------|---------------------|---|
| A | Power Supply Driver | DC – AC adapter with power supply cable |

**Table 1.4.1-2 – Support Equipment Descriptions**

| Item | Make/Model | Description |
|------|--------------|---|
| 1 | Lenovo | Laptop used for configuring wireless module |
| 2 | Silicon Labs | Programming board |

1.4.2 Modes of Operation

WaveLinx Wireless Adapter 0028-000021 provides 1 mode of operation using BLE Mesh classifications as outlined below.

| Mode of Operation | Frequency Range (MHz) | Number of Channels | Stack / Mode | Data Rates Supported | Classification |
|-------------------|-----------------------|--------------------|--------------|----------------------|----------------|
| 1 | 2402 – 2480 | 40 | GFSK | 1 Mbps | BLE |

1.4.3 Monitoring of Performance

For radiated emissions, the EUT was evaluated in worst orientations. See test setup photos for more information. The EUT was programmed to generate a continuously modulated signal on each channel evaluated.

For RF Conducted measurements, the EUT (standalone module) was connected to the test equipment with a temporary antenna port to SMA connector.

Power setting during test: 12 dBm

1.5 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.6 EUT Modification Record

The table below details modifications made to the EUT during the test program. The modifications incorporated during each test are recorded on the appropriate test pages.

| Modification State | Description of Modification still fitted to EUT | Modification Fitted By | Date Modification Fitted |
|--------------------|---|------------------------|--------------------------|
| 0 | Initial State | | |

The equipment was tested as provided without any modifications.



1.7 Test Location

TÜV SÜD conducted the following tests at our Alpharetta, GA test laboratory.

| Test Name | Name of Engineer(s) | Accreditation |
|---|---------------------|---------------|
| Antenna Requirement | Divya Adusumilli | A2LA |
| AC Power Line Conducted Emissions | Divya Adusumilli | A2LA |
| Fundamental Emission Output Power | Divya Adusumilli | A2LA |
| 6dB / 99% Bandwidth | Divya Adusumilli | A2LA |
| Band-Edge Compliance of RF Conducted Emissions | Divya Adusumilli | A2LA |
| RF Conducted Spurious Emissions | Divya Adusumilli | A2LA |
| Radiated Spurious Emissions into Restricted Frequency Bands | Paul Villarreal | A2LA |
| Power Spectral Density | Divya Adusumilli | A2LA |

Office address:

TÜV SÜD America
5945 Cabot Parkway, Suite 100
Alpharetta, GA 30005, USA



2 Test Details

2.1 Antenna Requirement

2.1.1 Specification Reference

FCC Section: 15.203, 15.204

2.1.2 Equipment Under Test and Modification State

As shown in §1.4 with modification state "0", as noted in §1.6.

2.1.3 Date of Test

4/25/2022

2.1.4 Test Method

N/A

2.1.5 Environmental Conditions

The EUT was evaluated within the temperature, humidity and pressure range of the EUT as specified by the standard. The laboratory shall have an ambient temperature range of 15°C to 35°C, relative humidity range of 30% to 60% and atmospheric pressure range of 86 kPa to 106 kPa.

| | |
|----------------------|------------|
| Ambient Temperature | 22.3 °C |
| Relative Humidity | 53.8 % |
| Atmospheric Pressure | 972.2 mbar |

2.1.6 Test Results

The EUT utilizes Isolated Dipole antenna with peak gain of 2.6 dBi which is internal to the enclosure and affixed to the PCB, therefore satisfying the requirements of Section 15.203.



2.2 Power Line Conducted Emissions

2.2.1 Specification Reference

FCC Section: 15.207
ISED Canada: RSS-Gen 8.8

2.2.2 Equipment Under Test and Modification State

As shown in §1.4 with modification state “0”, as noted in §1.6.

2.2.3 Date of Test

4/29/2022

2.2.4 Test Method

ANSI C63.10 section 6 was the guiding documents for this evaluation. Conducted emissions were performed from 150kHz to 30MHz with the spectrum analyzer's resolution bandwidth set to 9kHz and the video bandwidth set to 30kHz. The calculation for the conducted emissions is as follows:

Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss
Margin = Corrected Reading - Applicable Limit

2.2.5 Environmental Conditions

The EUT was evaluated within the temperature, humidity and pressure range of the EUT as specified by the standard. The laboratory shall have an ambient temperature range of 15°C to 35°C, relative humidity range of 30% to 60% and atmospheric pressure range of 86 kPa to 106 kPa.

| | |
|----------------------|------------|
| Ambient Temperature | 22.3 °C |
| Relative Humidity | 53.8 % |
| Atmospheric Pressure | 972.2 mbar |

2.2.6 Test Results

Table 2.2.6-1: Conducted EMI Results-Avg – Line 1

| Frequency (MHz) | Avg Limit | Avg Level Corrected | Avg Level | Correction Fact. | Avg Margin | Result |
|-----------------|-----------|---------------------|-----------|------------------|------------|--------|
| 0.15 | 56 | 32.3 | 22.6 | 9.682 | 23.7 | PASS |
| 0.53 | 46 | 19.7 | 10.1 | 9.652 | 26.3 | PASS |
| 0.93 | 46 | 19.3 | 9.6 | 9.676 | 26.7 | PASS |
| 2.07 | 46 | 18.8 | 9.0 | 9.773 | 27.2 | PASS |
| 2.21 | 46 | 18.0 | 8.3 | 9.778 | 28.0 | PASS |
| 30.00 | 50 | 13.9 | 3.8 | 10.13 | 36.1 | PASS |

**Table 2.2.6-2: Conducted EMI Results-QP – Line 1**

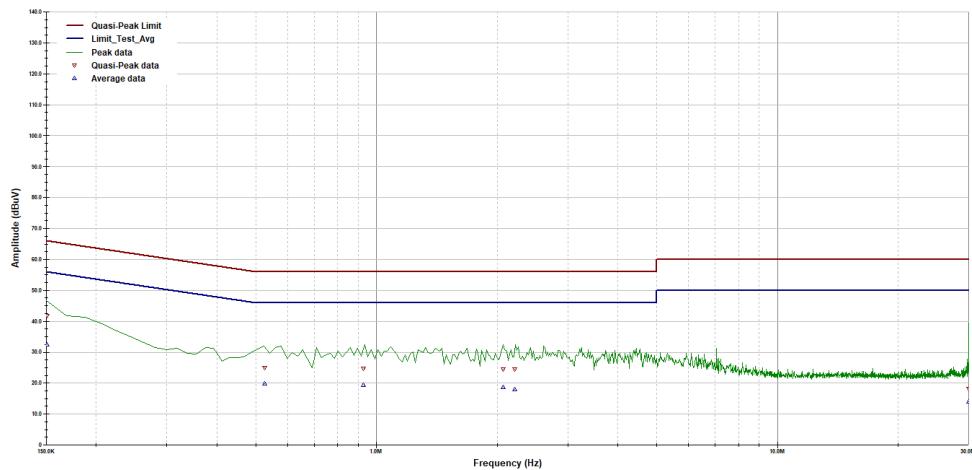
| Frequency (MHz) | QP Limit | QP Level Corrected | QP Level | Correction Fact. | QP Margin | Result |
|-----------------|----------|--------------------|----------|------------------|-----------|--------|
| 0.15 | 66 | 41.8 | 32.1 | 9.682 | 24.2 | PASS |
| 0.53 | 56 | 25.0 | 15.4 | 9.652 | 31.0 | PASS |
| 0.93 | 56 | 24.8 | 15.1 | 9.676 | 31.2 | PASS |
| 2.07 | 56 | 24.5 | 14.7 | 9.773 | 31.5 | PASS |
| 2.21 | 56 | 24.5 | 14.8 | 9.778 | 31.5 | PASS |
| 30.00 | 60 | 18.1 | 8.0 | 10.13 | 41.9 | PASS |

Table 2.2.6-3: Conducted EMI Results-Avg – Line 2

| Frequency (MHz) | Avg Limit | Avg Level Corrected | Avg Level | Correction Fact. | Avg Margin | Result |
|-----------------|-----------|---------------------|-----------|------------------|------------|--------|
| 0.15 | 56 | 33.5 | 23.8 | 9.675 | 22.5 | PASS |
| 0.21 | 54.4 | 28.0 | 18.3 | 9.669 | 26.4 | PASS |
| 0.50 | 46 | 16.0 | 6.4 | 9.630 | 30.0 | PASS |
| 1.01 | 46 | 15.7 | 6.1 | 9.661 | 30.3 | PASS |
| 2.55 | 46 | 14.6 | 4.8 | 9.772 | 31.4 | PASS |
| 0.15 | 56 | 33.5 | 23.8 | 9.675 | 22.5 | PASS |

Table 2.2.6-4: Conducted EMI Results-QP – Line 2

| Frequency (MHz) | QP Limit | QP Level Corrected | QP Level | Correction Fact. | QP Margin | Result |
|-----------------|----------|--------------------|----------|------------------|-----------|--------|
| 0.15 | 66 | 41.8 | 32.2 | 9.675 | 24.2 | PASS |
| 0.21 | 64.4 | 34.8 | 25.1 | 9.669 | 29.6 | PASS |
| 0.50 | 56 | 20.2 | 10.6 | 9.630 | 35.8 | PASS |
| 1.01 | 56 | 20.0 | 10.4 | 9.661 | 36.0 | PASS |
| 2.55 | 56 | 19.0 | 9.3 | 9.772 | 37.0 | PASS |
| 0.15 | 66 | 41.8 | 32.2 | 9.675 | 24.2 | PASS |



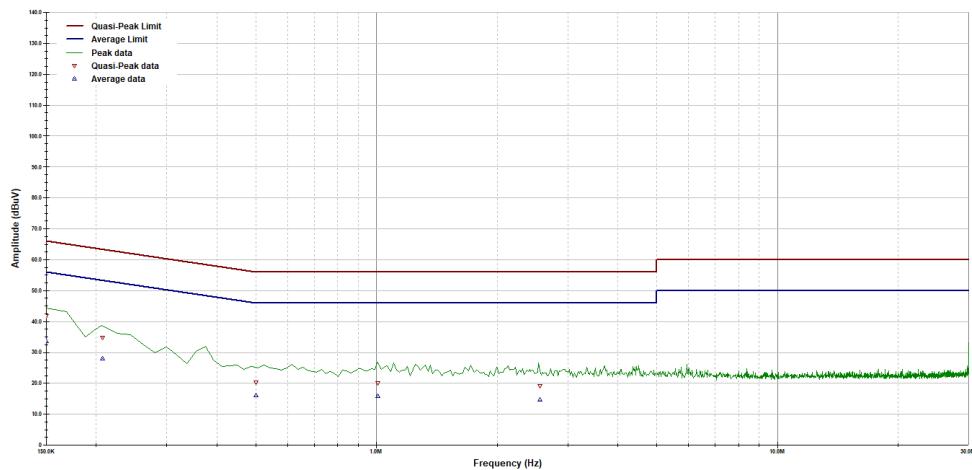
Operator: Divya A

Temperature = 24C
Relative Humidity = 46%

CE-120V-Module-Zigbee-LCH.til

RF Bandwidth: 9kHz
VBW If Analyzer: 30kHz

Last Data Update 09:54:40 AM, Thursday, May 05, 2022

Figure 2.2.6-1: Conducted Emission Plot – Line 1

Operator: Divya A

Temperature = 24C
Relative Humidity = 46%

CE-120V-Module-Zigbee-LCH.til

RF Bandwidth: 9kHz
VBW If Analyzer: 30kHz

Last Data Update 10:02:14 AM, Thursday, May 05, 2022

Figure 2.2.6-2: Conducted Emission Plot – Neutral



2.3 Fundamental Emission Output Power

2.3.1 Specification Reference

FCC Sections: 15.247(b)(3)
ISED Canada: RSS-247 5.4(d)

2.3.2 Equipment Under Test and Modification State

As shown in §1.4 with modification state "0", as noted in §1.6.

2.3.3 Date of Test

5/12/2022

2.3.4 Test Method

The maximum peak conducted output power was measured in accordance with ANSI C63.10 Subclause 11.9.1.1 utilizing the $RBW \geq DTS$ Bandwidth method. The RF output of the equipment under test was directly connected to the input of the analyzer applying suitable attenuation.

2.3.5 Environmental Conditions

The EUT was evaluated within the temperature, humidity and pressure range of the EUT as specified by the standard. The laboratory shall have an ambient temperature range of 15°C to 35°C, relative humidity range of 30% to 60% and atmospheric pressure range of 86 kPa to 106 kPa.

| | |
|----------------------|------------|
| Ambient Temperature | 22.3 °C |
| Relative Humidity | 53.8 % |
| Atmospheric Pressure | 972.2 mbar |

2.3.6 Test Results

Test Summary: EUT was set to transmit mode.

Test Results: Pass

See data below for detailed results.



Table 2.3.6-1: RF Output Power

| Frequency [MHz] | Peak Output Power (dBm) | Data Rate |
|-----------------|-------------------------|-----------|
| 2402 | 12.3 | 1 Mbps |
| 2440 | 11.9 | 1 Mbps |
| 2480 | 11.5 | 1 Mbps |

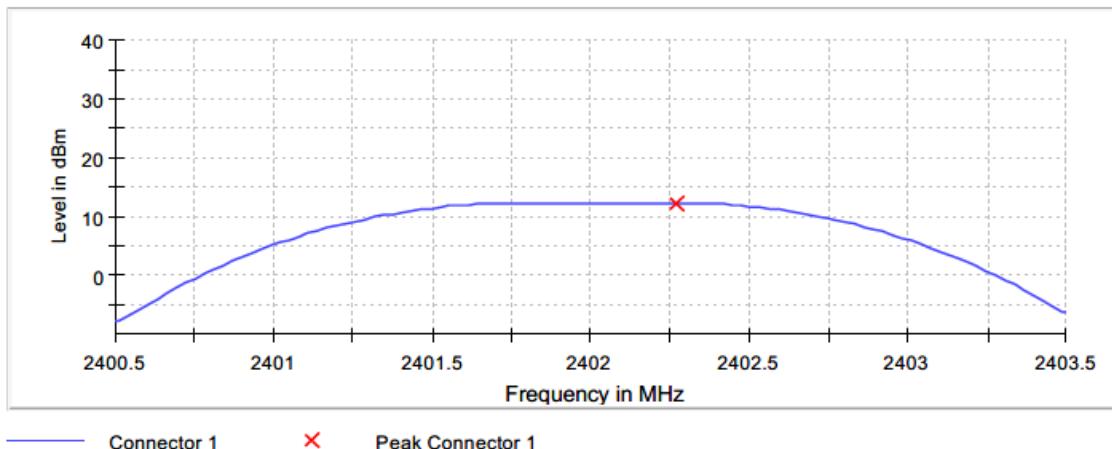


Figure 2.3.6-1: Output Power - LCH

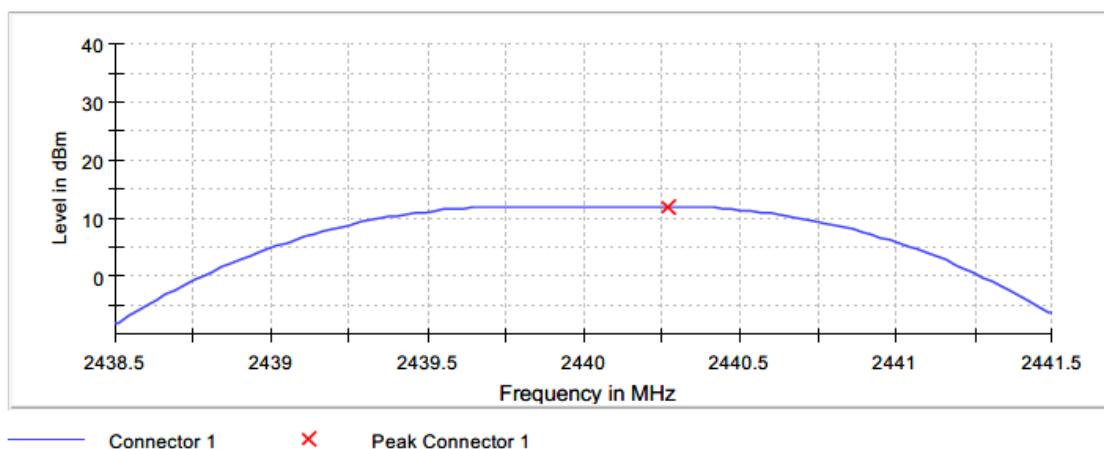


Figure 2.3.6-2: Output Power - MCH

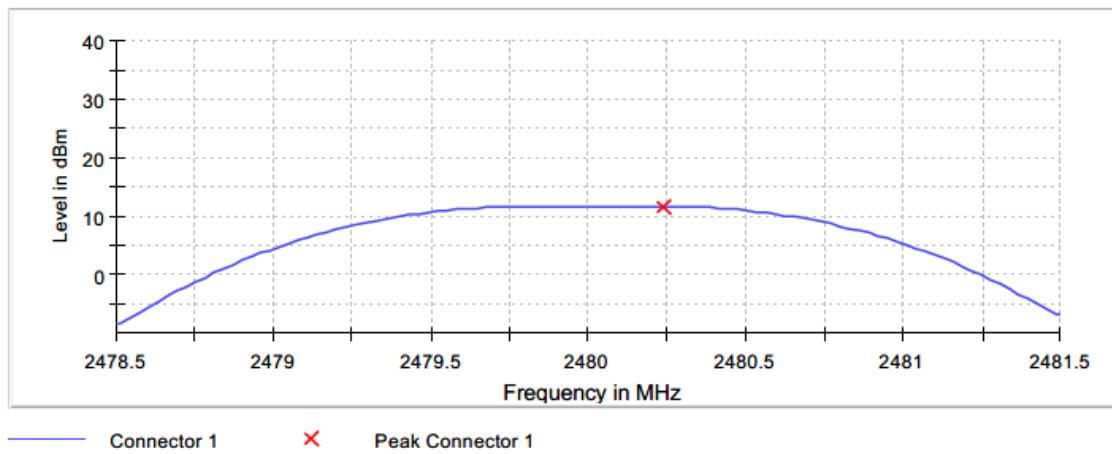


Figure 2.3.6-3: Output Power - HCH

Table 2.3.6.1-1: Sample Measurement Settings

| Setting | Instrument Value | Target Value |
|-----------------------|------------------|----------------|
| Start Frequency | 2.40050 GHz | 2.40050 GHz |
| Stop Frequency | 2.40350 GHz | 2.40350 GHz |
| Span | 3.000 MHz | 3.000 MHz |
| RBW | 1.000 MHz | >= 752.477 kHz |
| VBW | 3.000 MHz | >= 3.000 MHz |
| Sweep Points | 101 | ~ 101 |
| Sweep time | 1.907 us | AUTO |
| Reference Level | 20.000 dBm | 20.000 dBm |
| Attenuation | 40.000 dB | AUTO |
| Detector | Max Peak | Max Peak |
| Sweep Count | 100 | 100 |
| Filter | 3 dB | 3 dB |
| Trace Mode | Max Hold | Max Hold |
| Sweep type | FFT | AUTO |
| Preamp | off | off |
| Stable mode | Trace | Trace |
| Stable value | 0.50 dB | 0.50 dB |
| Run | 4 / max. 150 | max. 150 |
| Stable | 3 / 3 | 3 |
| Max Stable Difference | 0.02 dB | 0.50 dB |



2.4 6dB / 99% Bandwidth

2.4.1 Specification Reference

FCC Sections: 15.247(a)(2)
ISED Canada: RSS-247 5.2(a), RSS-GEN 6.7

2.4.2 Equipment Under Test and Modification State

As shown in §1.4 with modification state "0", as noted in §1.6.

2.4.3 Date of Test

5/12/2022

2.4.4 Test Method

The 6dB bandwidth was measured in accordance with the ANSI C63.10 Section 11.8. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 100 kHz. The Video Bandwidth (VBW) was set to ≥ 3 times the RBW. The trace was set to max hold with a peak detector active. The marker-delta function of the spectrum analyzer was utilized to determine the 6 dB bandwidth of the emission.

The occupied bandwidth measurement function of the spectrum analyzer was used to measure the 99% bandwidth. The span of the analyzer was set to capture all products of the modulation process, including the emission sidebands. The resolution bandwidth was set to 1% to 5% of the occupied bandwidth. The video bandwidth was set to 3 times the resolution bandwidth. A peak detector was used.

2.4.5 Environmental Conditions

The EUT was evaluated within the temperature, humidity and pressure range of the EUT as specified by the standard. The laboratory shall have an ambient temperature range of 15°C to 35°C, relative humidity range of 30% to 60% and atmospheric pressure range of 86 kPa to 106 kPa.

| | |
|----------------------|------------|
| Ambient Temperature | 22.3 °C |
| Relative Humidity | 53.8 % |
| Atmospheric Pressure | 972.2 mbar |

2.4.6 Test Results

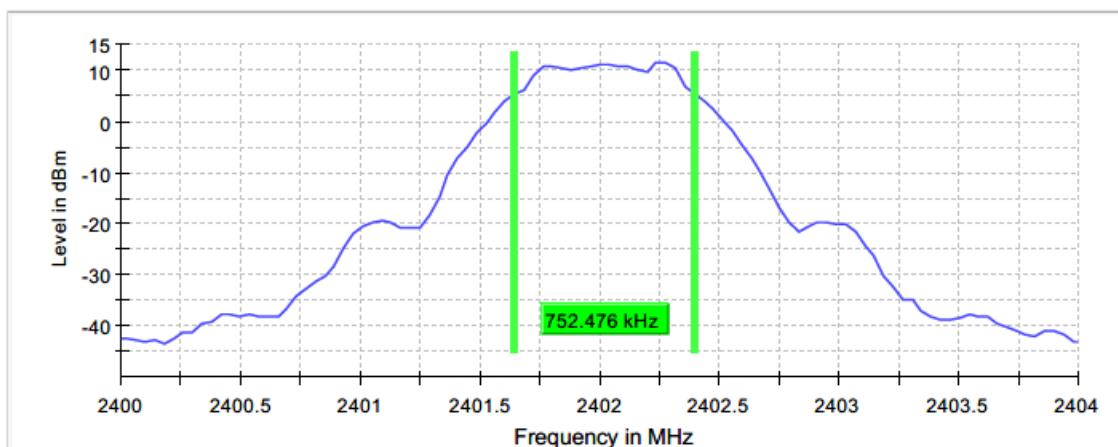
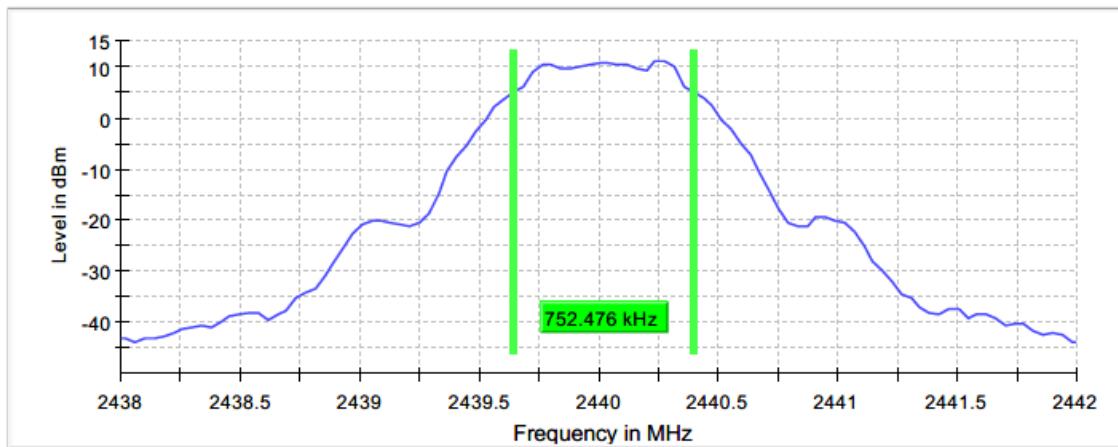
Test Summary: EUT was set to transmit mode.

Test Results: Pass

See data below for detailed results.

Table 2.4.6-1: 6dB / 99% Bandwidth

| Frequency [MHz] | 6dB Bandwidth (kHz) | 99% Bandwidth (MHz) | Data Rate |
|-----------------|---------------------|---------------------|-----------|
| 2402 | 752.476 | 1.050 | 1 Mbps |
| 2440 | 752.476 | 1.050 | 1 Mbps |
| 2480 | 752.476 | 1.040 | 1 Mbps |

**Figure 2.4.6-1: 6 dB BW - LCH****Figure 2.4.6-2: 6 dB BW - MCH**

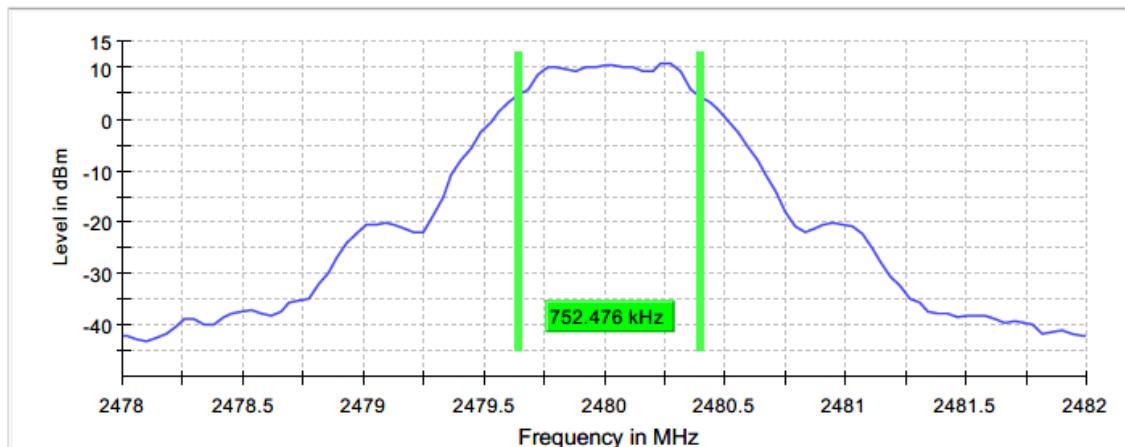


Figure 2.4.6-3: 6 dB BW - HCH

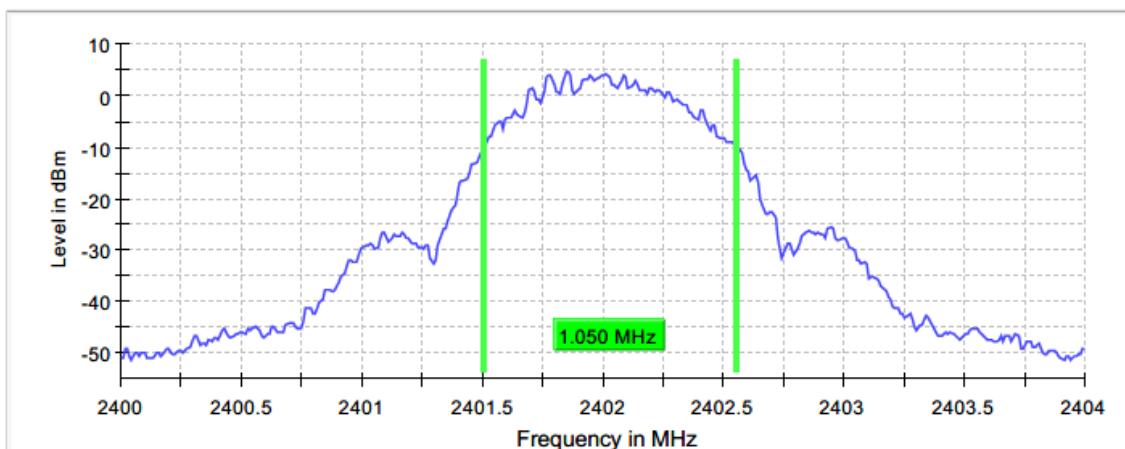
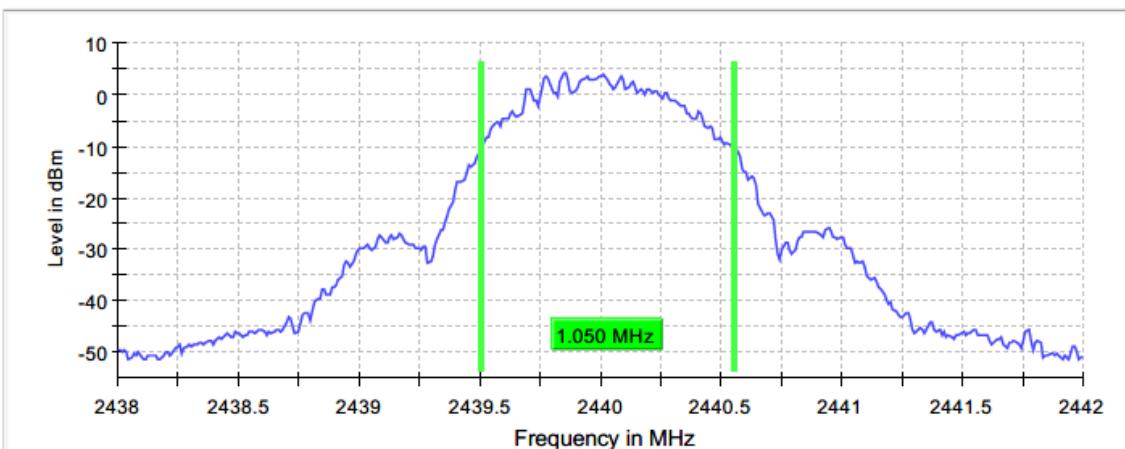


Figure 2.4.6-4: 99% BW - LCH



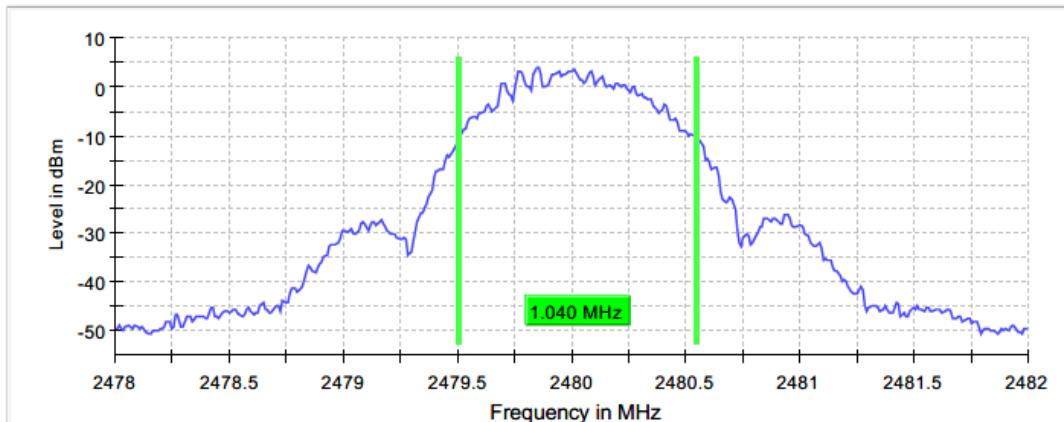


Figure 2.4.6-6: 99% BW - HCH

Table 2.4.6.1-1: Sample Measurement Setting (6dB BW)

| Setting | Instrument Value | Target Value |
|-----------------------|------------------|---------------|
| Start Frequency | 2.40000 GHz | 2.40000 GHz |
| Stop Frequency | 2.40400 GHz | 2.40400 GHz |
| Span | 4.000 MHz | 4.000 MHz |
| RBW | 100.000 kHz | ~ 100.000 kHz |
| VBW | 300.000 kHz | ~ 300.000 kHz |
| Sweep Points | 101 | ~ 80 |
| Sweep time | 18.938 µs | AUTO |
| Reference Level | 10.000 dBm | 10.000 dBm |
| Attenuation | 30.000 dB | AUTO |
| Detector | Max Peak | Max Peak |
| Sweep Count | 100 | 100 |
| Filter | 3 dB | 3 dB |
| Trace Mode | Max Hold | Max Hold |
| Sweep type | FFT | AUTO |
| Preamplifier | off | off |
| Stable mode | Trace | Trace |
| Stable value | 0.50 dB | 0.50 dB |
| Run | 7 / max. 150 | max. 150 |
| Stable | 5 / 5 | 5 |
| Max Stable Difference | 0.20 dB | 0.50 dB |

**Table 2.4.6.1-2: Sample Measurement Setting (99% BW)**

| Setting | Instrument Value | Target Value |
|-----------------------|------------------|---------------|
| Start Frequency | 2.40000 GHz | 2.40000 GHz |
| Stop Frequency | 2.40400 GHz | 2.40400 GHz |
| Span | 4.000 MHz | 4.000 MHz |
| RBW | 20.000 kHz | >= 20.000 kHz |
| VBW | 100.000 kHz | >= 60.000 kHz |
| Sweep Points | 400 | ~ 400 |
| Sweep time | 94.824 µs | AUTO |
| Reference Level | 10.000 dBm | 10.000 dBm |
| Attenuation | 30.000 dB | AUTO |
| Detector | Max Peak | Max Peak |
| Sweep Count | 100 | 100 |
| Filter | 3 dB | 3 dB |
| Trace Mode | Max Hold | Max Hold |
| Sweep type | FFT | AUTO |
| Preamp | off | off |
| Stable mode | Trace | Trace |
| Stable value | 0.30 dB | 0.30 dB |
| Run | 5 / max. 150 | max. 150 |
| Stable | 3 / 3 | 3 |
| Max Stable Difference | 0.10 dB | 0.30 dB |



2.5 Maximum Power Spectral Density in the Fundamental Emission

2.5.1 Specification Reference

FCC Sections: 15.247(e)
ISED Canada: RSS-247 5.2(b)

2.5.2 Equipment Under Test and Modification State

As shown in §1.4 with modification state "0", as noted in §1.6.

2.5.3 Date of Test

5/12/2022

2.5.4 Test Method

The power spectral density was measured in accordance with the ANSI C63.10 Section 11.10.2. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer applying suitable attenuation. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 10 kHz. The Video Bandwidth (VBW) was set to 30 kHz. Span was set to 1.5 times the channel bandwidth. The trace was set to max hold with the peak detector active.

2.5.5 Environmental Conditions

The EUT was evaluated within the temperature, humidity and pressure range of the EUT as specified by the standard. The laboratory shall have an ambient temperature range of 15°C to 35°C, relative humidity range of 30% to 60% and atmospheric pressure range of 86 kPa to 106 kPa.

| | |
|----------------------|------------|
| Ambient Temperature | 22.3 °C |
| Relative Humidity | 53.8 % |
| Atmospheric Pressure | 972.2 mbar |

2.5.6 Test Results

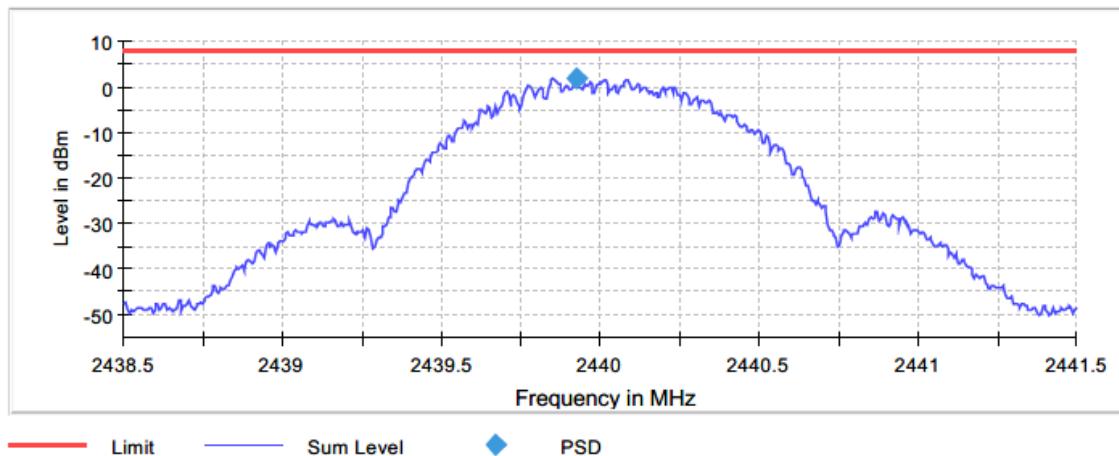
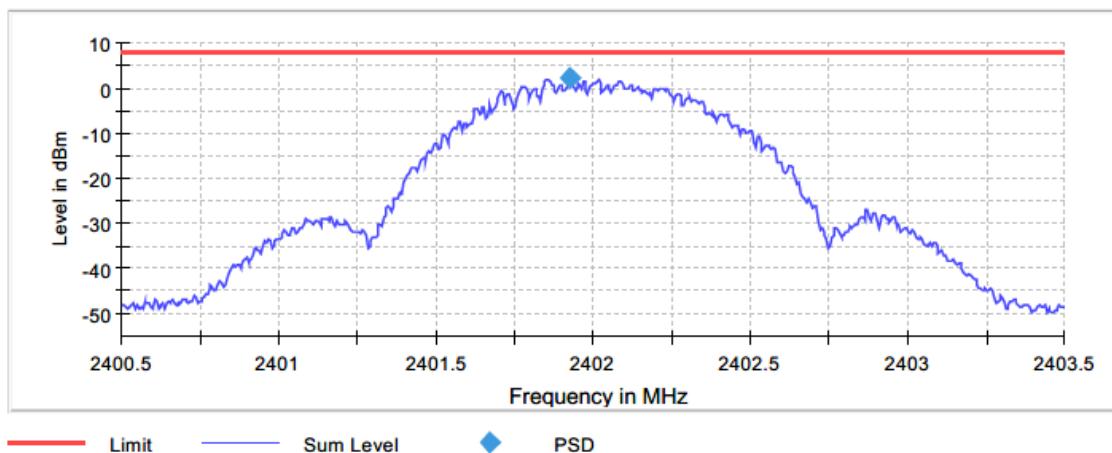
Test Summary: EUT was set to transmit mode.

Test Results: Pass

See data below for detailed results.

Table 2.5.6-1: RF Power Spectral Density

| Frequency [MHz] | PSD (dBm) | Data Rate |
|--------------------|-----------|-----------|
| 2402 | 2.083 | 1 Mbps |
| 2440 | 1.813 | 1 Mbps |
| 2480 | 1.509 | 1 Mbps |



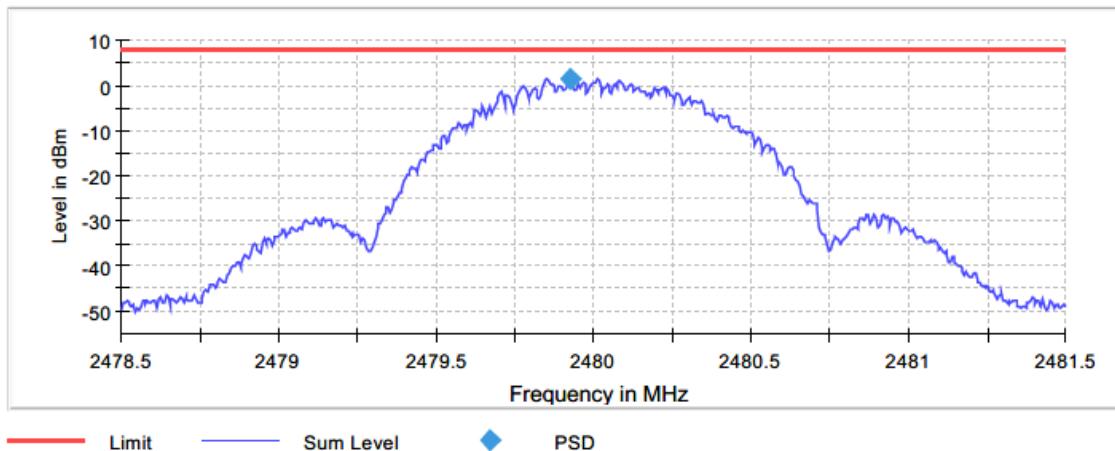


Table 2.5.6-1: Sample Measurement Settings (PSD)

| Setting | Instrument Value | Target Value |
|-----------------------|------------------|---------------|
| Start Frequency | 2.40050 GHz | 2.40050 GHz |
| Stop Frequency | 2.40350 GHz | 2.40350 GHz |
| Span | 3.000 MHz | 3.000 MHz |
| RBW | 10.000 kHz | <= 10.000 kHz |
| VBW | 30.000 kHz | >= 30.000 kHz |
| Sweep Points | 600 | ~ 600 |
| Sweep time | 3.000 ms | AUTO |
| Reference Level | 10.000 dBm | 10.000 dBm |
| Attenuation | 30.000 dB | AUTO |
| Detector | MaxPeak | MaxPeak |
| Sweep Count | 100 | 100 |
| Filter | 3 dB | 3 dB |
| Trace Mode | Max Hold | Max Hold |
| Sweep type | Sweep | Sweep |
| Preamp | off | off |
| Stable mode | Trace | Trace |
| Stable value | 0.50 dB | 0.50 dB |
| Run | 4 / max. 150 | max. 150 |
| Stable | 2 / 2 | 2 |
| Max Stable Difference | 0.09 dB | 0.50 dB |



2.6 Band-Edge Compliance of RF Conducted Emissions

2.6.1 Specification Reference

FCC Sections: 15.247(d)
ISED Canada: RSS-247 5.5

2.6.2 Equipment Under Test and Modification State

As shown in §1.4 with modification state “0”, as noted in §1.6.

2.6.3 Date of Test

5/12/2022

2.6.4 Test Method

The unwanted emissions into non-restricted bands were measured conducted in accordance with ANSI C63.10 Section 11.11. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer applying suitable attenuation. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 100 kHz. The Video Bandwidth (VBW) was set to \geq 300 kHz. The resulting spectrum analyzer peak level was used to determine the reference level with respect to the 20 dBc limit at the band edges.

2.6.5 Environmental Conditions

The EUT was evaluated within the temperature, humidity and pressure range of the EUT as specified by the standard. The laboratory shall have an ambient temperature range of 15°C to 35°C, relative humidity range of 30% to 60% and atmospheric pressure range of 86 kPa to 106 kPa.

| | |
|----------------------|------------|
| Ambient Temperature | 22.3 °C |
| Relative Humidity | 53.8 % |
| Atmospheric Pressure | 972.2 mbar |

2.6.6 Test Results

Test Summary: EUT was set to transmit mode.

Test Results: Pass

See data below for detailed results.

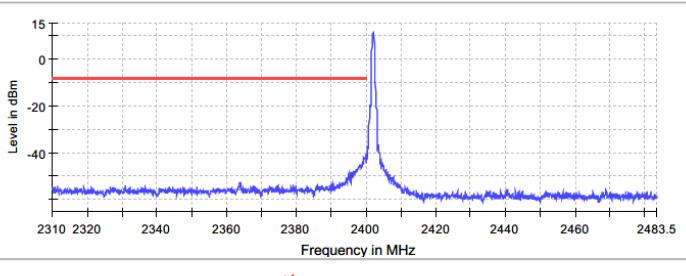


Figure 2.6.6-1: Lower Band-edge

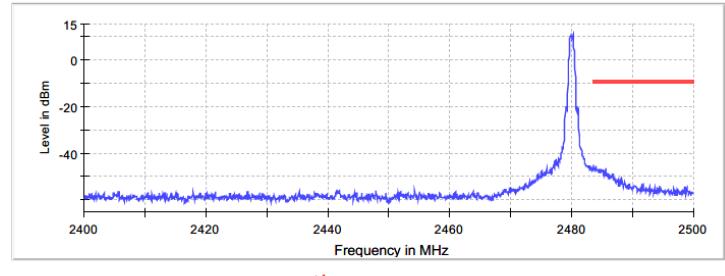


Figure 2.6.6-2: Upper Band-edge

Table 2.6.6-1: Lower Band-edge- Low Channel

| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) | Result |
|-----------------|-------------|-------------|-------------|--------|
| 2399.975000 | -40.4 | 31.9 | -8.5 | PASS |
| 2399.925000 | -41.7 | 33.2 | -8.5 | PASS |
| 2399.425000 | -42.0 | 33.5 | -8.5 | PASS |
| 2399.725000 | -42.0 | 33.5 | -8.5 | PASS |
| 2399.625000 | -42.1 | 33.5 | -8.5 | PASS |
| 2399.675000 | -42.1 | 33.6 | -8.5 | PASS |
| 2399.775000 | -42.3 | 33.8 | -8.5 | PASS |
| 2399.575000 | -42.3 | 33.8 | -8.5 | PASS |
| 2399.525000 | -42.3 | 33.8 | -8.5 | PASS |
| 2399.475000 | -42.4 | 33.9 | -8.5 | PASS |
| 2399.875000 | -42.4 | 33.9 | -8.5 | PASS |
| 2399.375000 | -43.0 | 34.5 | -8.5 | PASS |
| 2399.825000 | -43.0 | 34.5 | -8.5 | PASS |
| 2399.325000 | -43.7 | 35.2 | -8.5 | PASS |
| 2399.125000 | -43.7 | 35.2 | -8.5 | PASS |

Table 2.6.6-2: Upper Band-edge – High Channel

| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) | Result |
|-----------------|-------------|-------------|-------------|--------|
| 2483.525000 | -44.9 | 35.6 | -9.3 | PASS |
| 2483.975000 | -45.3 | 35.9 | -9.3 | PASS |
| 2483.575000 | -45.3 | 35.9 | -9.3 | PASS |
| 2483.625000 | -45.6 | 36.2 | -9.3 | PASS |
| 2483.925000 | -46.0 | 36.6 | -9.3 | PASS |
| 2483.725000 | -46.4 | 37.1 | -9.3 | PASS |
| 2485.575000 | -46.5 | 37.1 | -9.3 | PASS |
| 2484.025000 | -46.5 | 37.2 | -9.3 | PASS |
| 2483.775000 | -46.6 | 37.2 | -9.3 | PASS |
| 2484.225000 | -46.8 | 37.4 | -9.3 | PASS |
| 2483.675000 | -46.9 | 37.5 | -9.3 | PASS |
| 2483.825000 | -46.9 | 37.6 | -9.3 | PASS |
| 2485.525000 | -46.9 | 37.6 | -9.3 | PASS |
| 2484.275000 | -47.0 | 37.6 | -9.3 | PASS |
| 2484.325000 | -47.0 | 37.6 | -9.3 | PASS |



2.7 RF Conducted Spurious Emissions

2.7.1 Specification Reference

FCC Sections: 15.247(d)
ISED Canada: RSS-247 5.5

2.7.2 Equipment Under Test and Modification State

As shown in §1.4 with modification state "0", as noted in §1.6.

2.7.3 Date of Test

4/25/2022

2.7.4 Test Method

The unwanted emissions into non-restricted bands were measured conducted in accordance with ANSI C63.10 Section 11.11. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer applying suitable attenuation. The Resolution Bandwidth (RBW) of the spectrum analyzer was set to 100 kHz. The Video Bandwidth (VBW) was set to \geq 300 kHz. The resulting spectrum analyzer peak level was used to determine the reference level with respect to the 20 dBc limit at the band edges. The spectrum span was then adjusted for the measurement of spurious emissions from 30MHz to 26GHz, 10 times the highest fundamental frequency.

2.7.5 Environmental Conditions

The EUT was evaluated within the temperature, humidity and pressure range of the EUT as specified by the standard. The laboratory shall have an ambient temperature range of 15°C to 35°C, relative humidity range of 30% to 60% and atmospheric pressure range of 86 kPa to 106 kPa.

| | |
|----------------------|------------|
| Ambient Temperature | 22.3 °C |
| Relative Humidity | 53.8 % |
| Atmospheric Pressure | 972.2 mbar |

2.7.6 Test Results

Test Summary: EUT was set to transmit mode.

Test Results: Pass

See data below for detailed results.

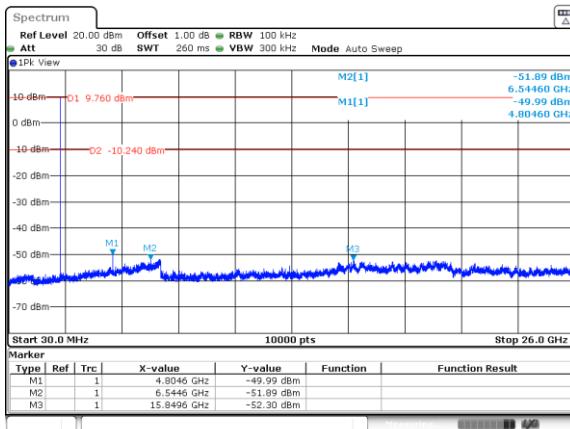


Figure 2.7.6-1: 30MHz – 26GHz – LCH

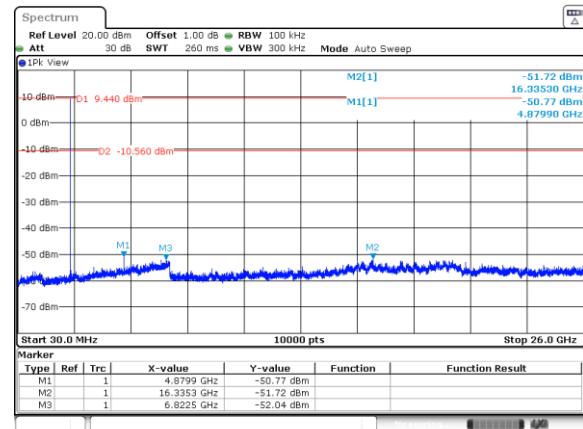


Figure 2.7.6-2: 30MHz – 26GHz – MCH

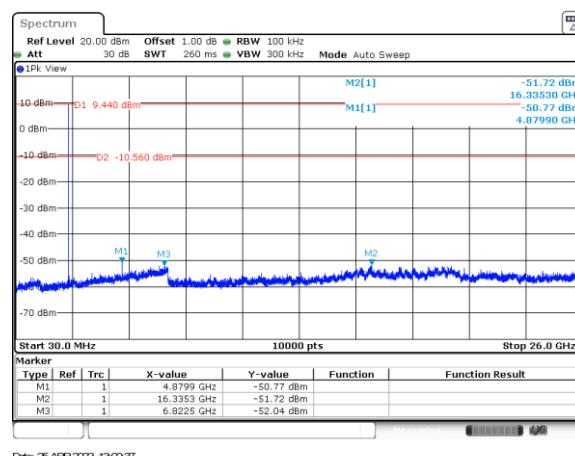


Figure 2.7.6-3: 30MHz – 26GHz – HCH



2.8 Radiated Spurious Emissions into Restricted Frequency Bands

2.8.1 Specification Reference

FCC Sections: 15.205, 15.209.
ISED Canada RSS – Gen 8.9/8.10

2.8.2 Equipment Under Test and Modification State

As shown in §1.4 with modification state “0”, as noted in §1.6.

2.8.3 Date of Test

4/25/2022 to 5/11/2022

2.8.4 Test Method

Radiated emissions tests were made over the frequency range of 9 kHz to 26 GHz, 10 times the highest fundamental frequency of 2.4 GHz. Each emission found to be in a restricted band as defined by section 15.205, including any emission at the operational band-edge, was compared to the radiated emission limits as defined in Section 15.209.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 150 kHz, quasi-peak measurements were made using a resolution bandwidth RBW of 300 Hz and a video bandwidth VBW of 1 kHz and frequencies between 150 kHz and 30MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 10 kHz and a video bandwidth VBW of 30 kHz. For frequencies between 30 MHz and 1000 MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 100 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000 MHz, peak and average measurements were made with RBW of 1 MHz and VBW of 3 MHz

2.8.5 Environmental Conditions

The EUT was evaluated within the temperature, humidity and pressure range of the EUT as specified by the standard. The laboratory shall have an ambient temperature range of 15°C to 35°C, relative humidity range of 30% to 60% and atmospheric pressure range of 86 kPa to 106 kPa.

| | |
|----------------------|------------|
| Ambient Temperature | 22.3 °C |
| Relative Humidity | 53.8 % |
| Atmospheric Pressure | 972.2 mbar |

2.8.6 Test Results

Test Summary: EUT was set to transmit mode.

Test Results: Pass

See data below for detailed results.



Table 2.8.6-1: Radiated Spurious Emissions Tabulated Data

| Frequency (MHz) | Level (dBuV) | | Antenna | Duty Cycle Correction Factor | Corrected Level (dBuV) | | Limit | | Margin | |
|-----------------|--------------|---------|---------|------------------------------|------------------------|---------|----------|---------|--------|---------|
| | | | | | | | (dBuV/m) | (dB) | pk | Qpk/Avg |
| | pk | Qpk/Avg | (H/V) | | pk | Qpk/Avg | pk | Qpk/Avg | pk | Qpk/Avg |
| LCH | | | | | | | | | | |
| 32.594 | ---- | 19.696 | H | 9.31 | ---- | 19.696 | ---- | 40 | ---- | 20.3 |
| 838.905 | ---- | 18.075 | H | 9.31 | ---- | 18.075 | ---- | 46 | ---- | 27.92 |
| 1856.725 | 45.822 | 31.494 | H | 9.31 | 45.822 | 22.184 | 74 | 54 | 28.18 | 31.816 |
| 5224.775 | 53.089 | 36.588 | H | 9.31 | 53.089 | 27.278 | 74 | 54 | 20.91 | 26.722 |
| 9943.95 | 58.587 | 44.791 | H | 9.31 | 58.587 | 35.481 | 74 | 54 | 15.41 | 18.519 |
| 16726.3 | 61.267 | 47.29 | H | 9.31 | 61.267 | 37.98 | 74 | 54 | 12.73 | 16.02 |
| 33.201 | ---- | 19.828 | V | 9.31 | ---- | 19.828 | ---- | 40 | ---- | 20.17 |
| 59.73 | ---- | 20.964 | V | 9.31 | ---- | 20.964 | ---- | 40 | ---- | 19.04 |
| 112.256 | ---- | 15.515 | V | 9.31 | ---- | 15.515 | ---- | 43.5 | ---- | 27.99 |
| 844.703 | ---- | 17.895 | V | 9.31 | ---- | 17.895 | ---- | 46 | ---- | 28.11 |
| 1857.825 | 45.585 | 31.25 | V | 9.31 | 45.585 | 21.94 | 74 | 54 | 28.41 | 32.06 |
| 9765.3 | 60.303 | 45.318 | V | 9.31 | 60.303 | 36.008 | 74 | 54 | 13.7 | 17.992 |
| 17743.38 | 60.852 | 47.35 | V | 9.31 | 60.852 | 38.04 | 74 | 54 | 13.15 | 15.96 |
| MCH | | | | | | | | | | |
| 32.813 | ---- | 19.875 | H | 9.31 | ---- | 19.875 | ---- | 40 | ---- | 20.12 |
| 852.12 | ---- | 18.065 | H | 9.31 | ---- | 18.065 | ---- | 46 | ---- | 27.93 |
| 5224.975 | 57.065 | 36.882 | H | 9.31 | 57.065 | 27.572 | 74 | 54 | 16.93 | 26.428 |
| 9670.65 | 58.494 | 44.735 | H | 9.31 | 58.494 | 35.425 | 74 | 54 | 15.51 | 18.575 |
| 16737.83 | 61.378 | 47.308 | H | 9.31 | 61.378 | 37.998 | 74 | 54 | 12.62 | 16.002 |
| 33.734 | ---- | 19.359 | V | 9.31 | ---- | 19.359 | ---- | 40 | ---- | 20.64 |
| 57.694 | ---- | 22.052 | V | 9.31 | ---- | 22.052 | ---- | 40 | ---- | 17.95 |
| 103.671 | ---- | 15.165 | V | 9.31 | ---- | 15.165 | ---- | 43.5 | ---- | 28.33 |
| 951.985 | ---- | 18.714 | V | 9.31 | ---- | 18.714 | ---- | 46 | ---- | 27.29 |
| 5273.575 | 51.195 | 36.942 | V | 9.31 | 51.195 | 27.632 | 74 | 54 | 22.81 | 26.368 |
| 9771.3 | 59.192 | 45.355 | V | 9.31 | 59.192 | 36.045 | 74 | 54 | 14.81 | 17.955 |
| 16800.53 | 61.089 | 46.96 | V | 9.31 | 61.089 | 37.65 | 74 | 54 | 12.91 | 16.35 |
| HCH | | | | | | | | | | |
| 32.739 | ---- | 19.892 | H | 9.31 | ---- | 19.892 | ---- | 40 | ---- | 20.11 |
| 957.686 | ---- | 19.151 | H | 9.31 | ---- | 19.151 | ---- | 46 | ---- | 26.85 |
| 1397.15 | 43.318 | 29.093 | H | 9.31 | 43.318 | 19.783 | 74 | 54 | 30.68 | 34.217 |
| 5219.175 | 51.891 | 36.681 | H | 9.31 | 51.891 | 27.371 | 74 | 54 | 22.11 | 26.629 |
| 9753.175 | 59.493 | 45.509 | H | 9.31 | 59.493 | 36.199 | 74 | 54 | 14.51 | 17.801 |
| 16732.53 | 60.737 | 47.305 | H | 9.31 | 60.737 | 37.995 | 74 | 54 | 13.26 | 16.005 |
| 30.534 | ---- | 17.967 | V | 9.31 | ---- | 17.967 | ---- | 40 | ---- | 22.03 |
| 59 | ---- | 16.922 | V | 9.31 | ---- | 16.922 | ---- | 40 | ---- | 23.08 |
| 105.369 | ---- | 14.61 | V | 9.31 | ---- | 14.61 | ---- | 43.5 | ---- | 28.89 |
| 922.448 | ---- | 18.611 | V | 9.31 | ---- | 18.611 | ---- | 46 | ---- | 27.39 |
| 4560.725 | 51.476 | 36.988 | V | 9.31 | 51.476 | 27.678 | 74 | 54 | 22.52 | 26.322 |
| 5218.5 | 56.134 | 36.815 | V | 9.31 | 56.134 | 27.505 | 74 | 54 | 17.87 | 26.495 |
| 9979.8 | 59.258 | 45.189 | V | 9.31 | 59.258 | 35.879 | 74 | 54 | 14.74 | 18.121 |
| 16907.85 | 61.52 | 47.188 | V | 9.31 | 61.52 | 37.878 | 74 | 54 | 12.48 | 16.122 |

**Table 2.8.6-2: Radiated Band-Edge Tabulated Data**

| Frequency (MHz) | Level (dBuV) | | Antenna Polarity (H/V) | Correction Factors (dB) | Corrected Level (dBuV/m) | | Limit (dBuV/m) | | Margin (dB) | |
|--------------------|-----------------|---------|------------------------------|-------------------------------|-----------------------------|---------|-------------------|---------|----------------|---------|
| | pk | Qpk/Avg | | | pk | Qpk/Avg | pk | Qpk/Avg | pk | Qpk/Avg |
| LCH | | | | | | | | | | |
| 2390 | 50.40 | 36.40 | H | 0.08 | 50.48 | 27.16 | 74.0 | 54.0 | 23.5 | 26.8 |
| HCH | | | | | | | | | | |
| 2483.5 | 67.10 | 52.50 | H | 0.36 | 67.46 | 43.55 | 74.0 | 54.0 | 6.5 | 10.5 |

Note:

When operating with Wireless protocol with 1Mbps physical layer, the total worse cast transmission time is 1.232ms (154 byte) with at 3.6ms period:

$$\text{Duty Cycle} = 1.232/3.6 = 34.22\%$$

$$20 * \log(1.232/3.6) = -9.31 \text{ dB}$$

Hence, Duty cycle correction factor is considered to the average reading for above 1GHz measurements.

Sample Calculation:

$$R_C = R_U + CF_T$$

Where:

CF_T = Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)

R_U = Uncorrected Reading

R_C = Corrected Level

AF = Antenna Factor

CA = Cable Attenuation

AG = Amplifier Gain

DC = Duty Cycle Correction Factor

Example Calculation: Peak

$$\text{Corrected Level: } 50.40 + 0.08 = 50.48 \text{ dB}\mu\text{V/m}$$

$$\text{Margin: } 74 \text{ dB}\mu\text{V/m} - 50.48 \text{ dB}\mu\text{V/m} = 23.5 \text{ dB}$$

Example Calculation: Average

$$\text{Corrected Level: } 36.40 + 0.08 = 27.16 \text{ dB}\mu\text{V}$$

$$\text{Margin: } 54 \text{ dB}\mu\text{V} - 27.16 \text{ dB}\mu\text{V} = 26.8 \text{ dB}$$

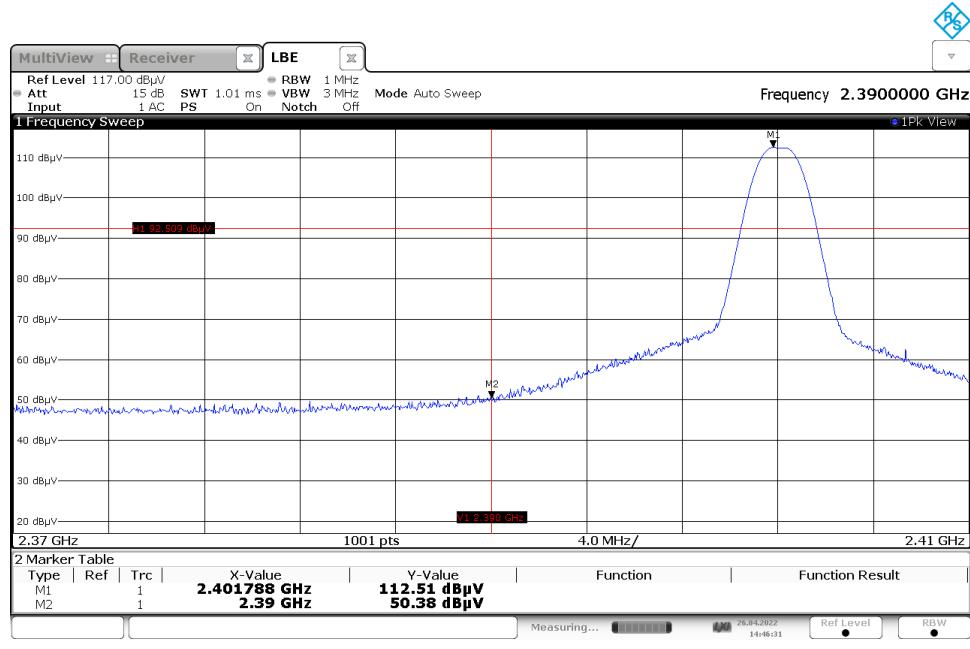


Figure 2.8.6-1: Reference plot Radiated Lower Band-edge – LCH

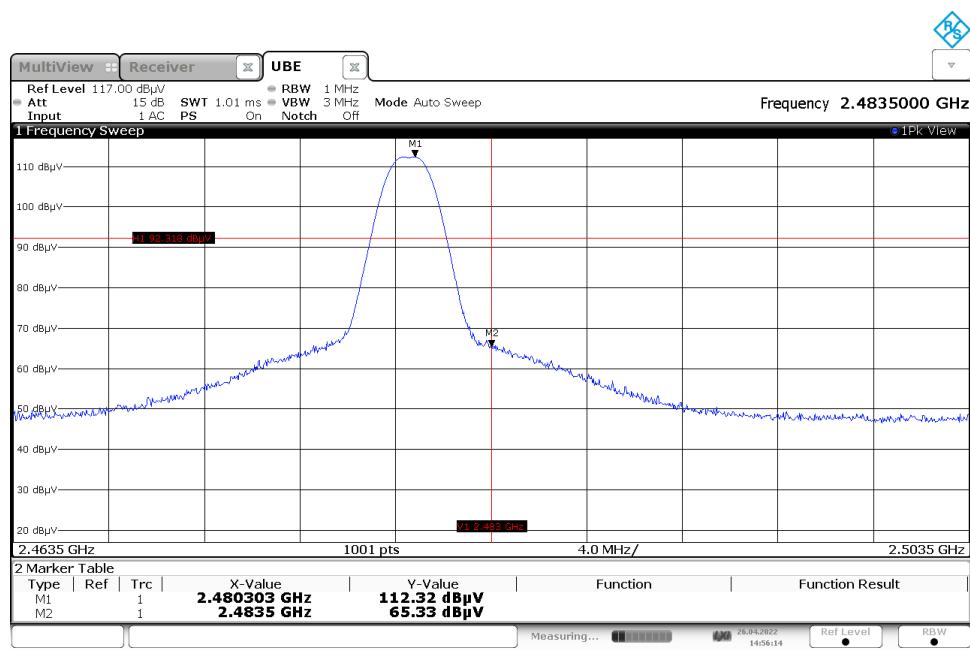


Figure 2.8.6-2: Reference plot Radiated Upper Band-edge – HCH

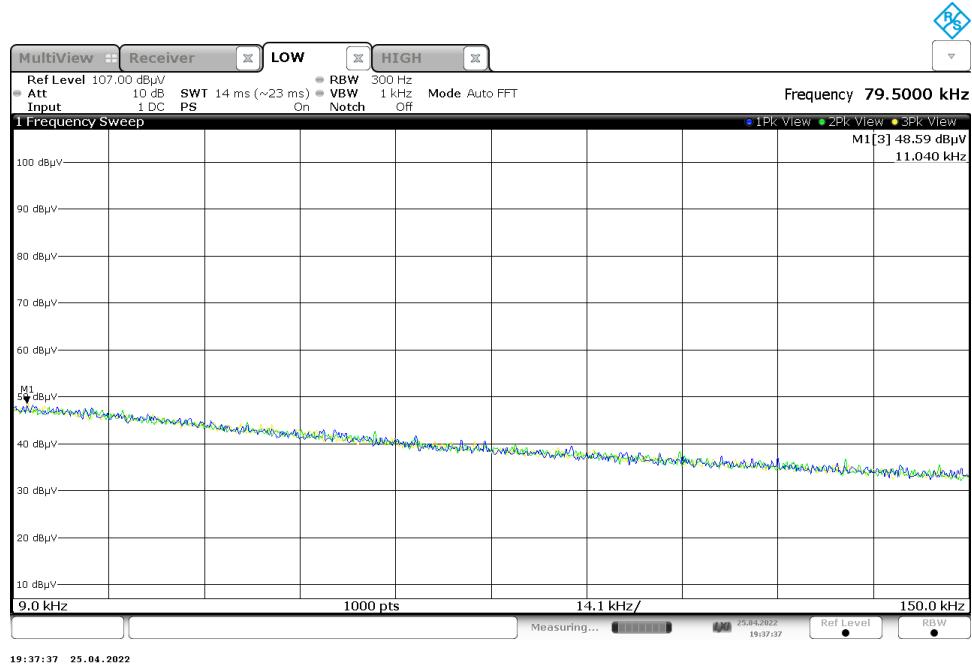


Figure 2.8.6-3: Reference plot for Radiated Spurious Emissions – 9 kHz – 150 kHz

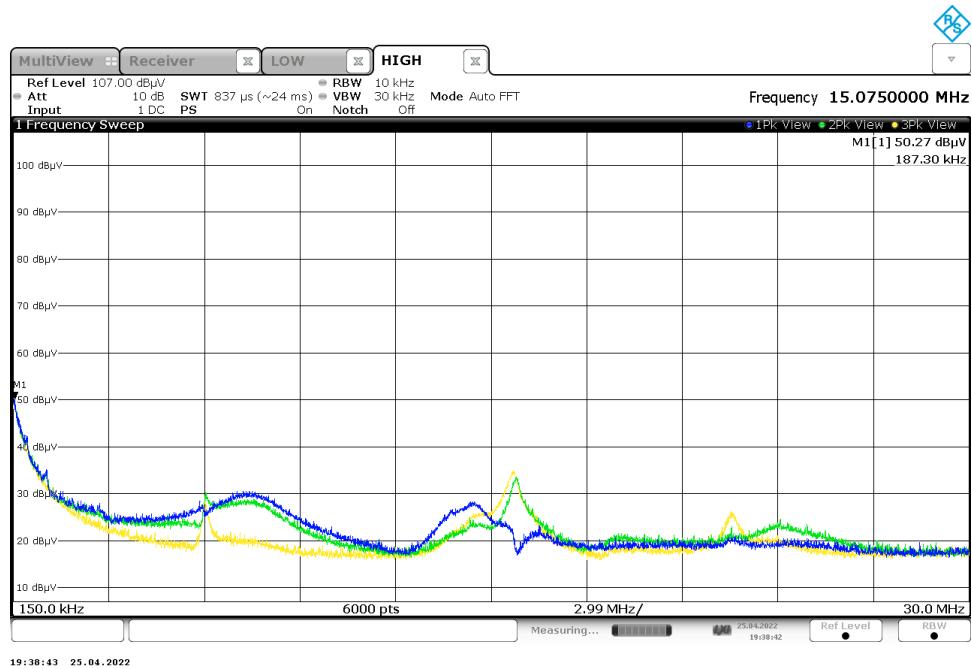


Figure 2.8.6-4: Reference plot for Radiated Spurious Emissions– 150 kHz – 30MHz

Note: Emissions above the noise floor are ambient not associated with the EUT.



TUV EMC Lab

Radiated Emissions, Under 1GHz

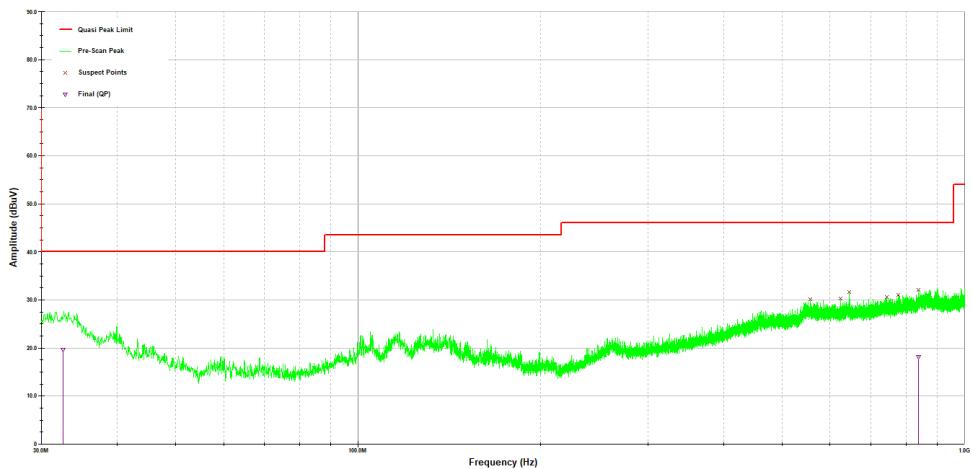
Horizontal Graph

Company - Cooper Lighting

Model - Not Listed

Config - BLE Ch0 Xpos

Operator - PV



BLE Ch0 XPOS RSE 30-1000MHz BSAC.til

Last Data Update 12:21:16 PM, Monday, April 25, 2022

Figure 2.8.6-5: Reference plot for Radiated Spurious Emissions – 30 MHz – 1 GHz – H Polarity

TUV EMC Lab

Radiated Emissions, Under 1GHz

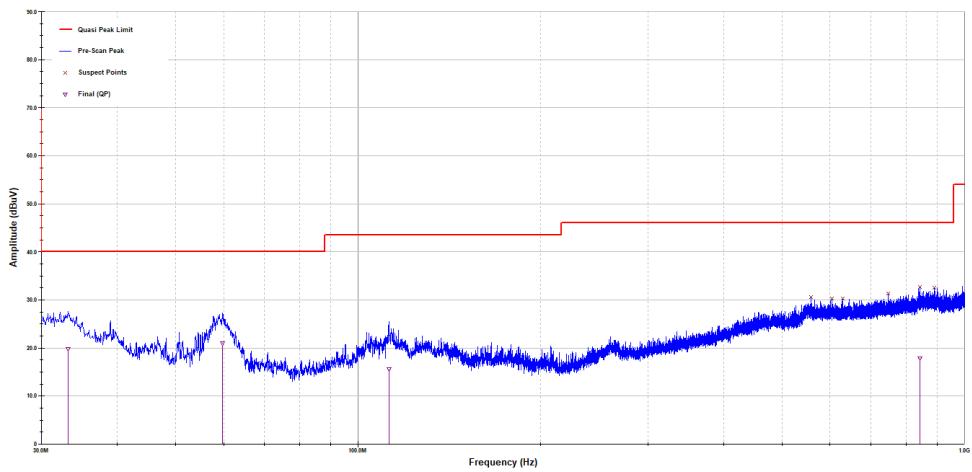
Vertical Graph

Company - Cooper Lighting

Model - Not Listed

Config - BLE Ch0 Xpos

Operator - PV



BLE Ch0 XPOS RSE 30-1000MHz BSAC.til

Last Data Update 12:18:25 PM, Monday, April 25, 2022

Figure 2.8.6-6: Reference plot for Radiated Spurious Emissions – 30 MHz – 1 GHz – V Polarity



TUV EMC Lab

Radiated Emissions, Above 1GHz

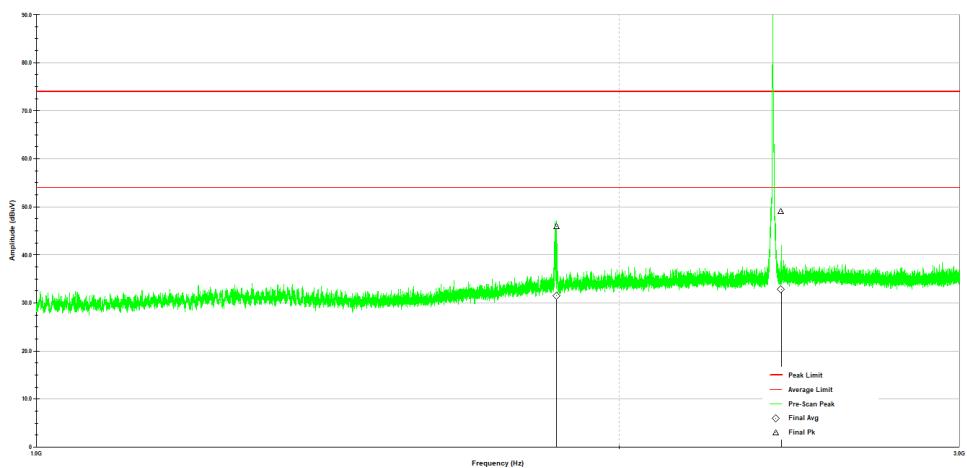
Horizontal Graph

Company - Cooper Lighting

Model - Not Listed

Config - BLE Ch0

Operator - PV



BLE Ch0 RSE 1-3GHz BSAC.6I

Last Data Update 12:55:11 PM, Monday, May 09, 2022

Figure 2.8.6-7: Reference plot for Radiated Spurious Emissions – 1 GHz – 3 GHz – H Polarity

TUV EMC Lab

Radiated Emissions, Above 1GHz

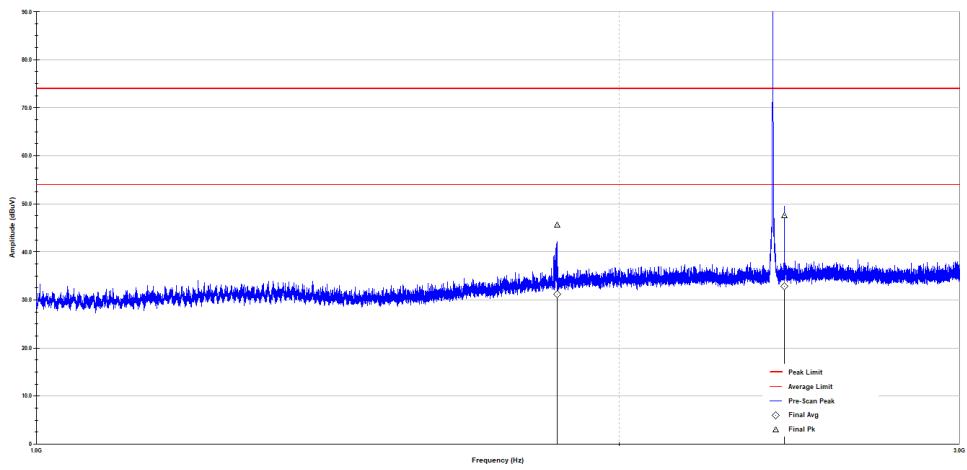
Vertical Graph

Company - Cooper Lighting

Model - Not Listed

Config - BLE Ch0

Operator - PV



BLE Ch0 RSE 1-3GHz BSAC.6I

Last Data Update 12:56:12 PM, Monday, May 09, 2022

Figure 2.8.6-8: Reference plot for Radiated Spurious Emissions – 1 GHz – 3 GHz – V Polarity



TUV EMC Lab

Radiated Emissions, Above 1GHz

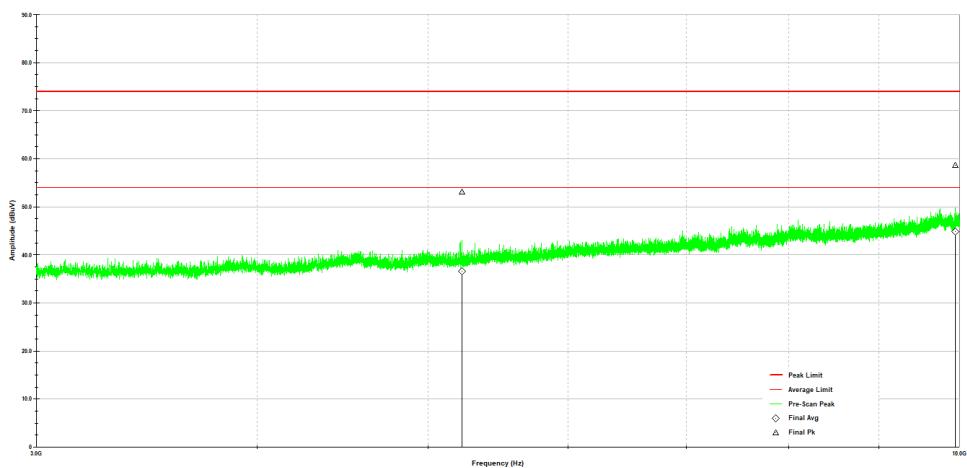
Horizontal Graph

Company - Cooper Lighting

Model - Not Listed

Config - BLE CHO

Operator - PV



BLE CHO RSE 3-10GHz BSAC III

Last Data Update 01:14:42 PM, Monday, May 09, 2022

Figure 2.8.6-9: Reference plot for Radiated Spurious Emissions – 3 GHz – 10 GHz – H Polarity

TUV EMC Lab

Radiated Emissions, Above 1GHz

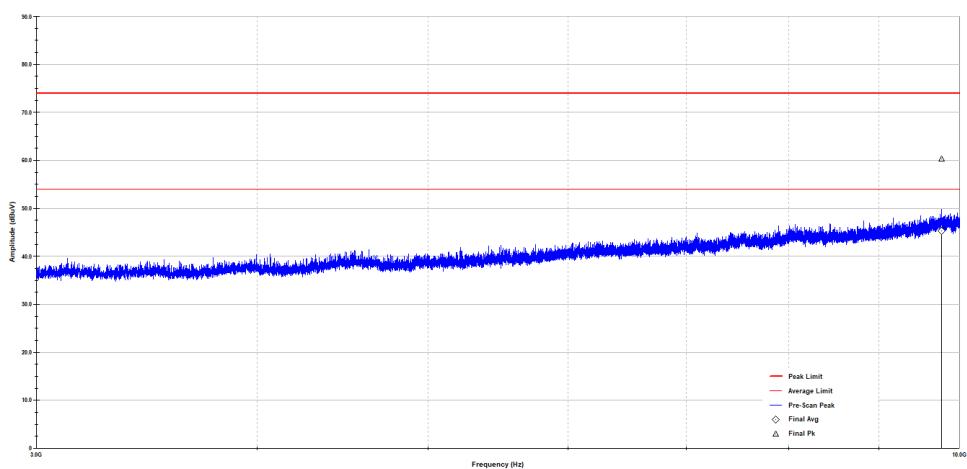
Vertical Graph

Company - Cooper Lighting

Model - Not Listed

Config - BLE CHO

Operator - PV



BLE CHO RSE 3-10GHz BSAC III

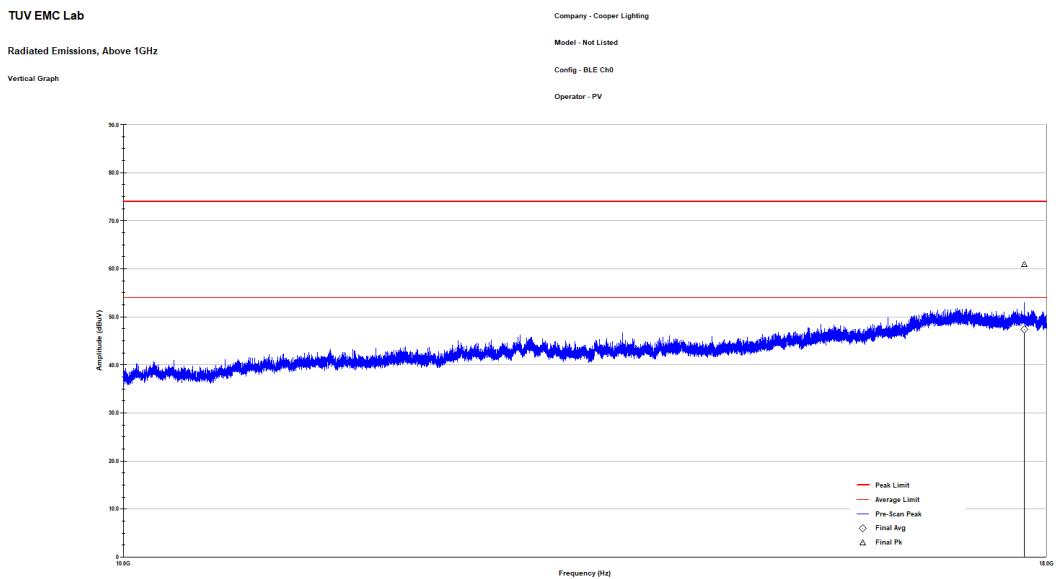
Last Data Update 01:11:41 PM, Monday, May 09, 2022

Figure 2.8.6-10: Reference plot for Radiated Spurious Emissions – 3 GHz – 10 GHz – V Polarity



BLE Ch0 RSE 10-18GHz BSAC.61

Last Data Update 08:45:07 AM, Tuesday, May 10, 2022

Figure 2.8.6-11: Reference plot for Radiated Spurious Emissions – 10 GHz – 18 GHz – H Polarity

BLE Ch0 RSE 10-18GHz BSAC.61

Last Data Update 08:43:07 AM, Tuesday, May 10, 2022

Figure 2.8.6-12: Reference plot for Radiated Spurious Emissions – 10 GHz – 18 GHz – V polarity

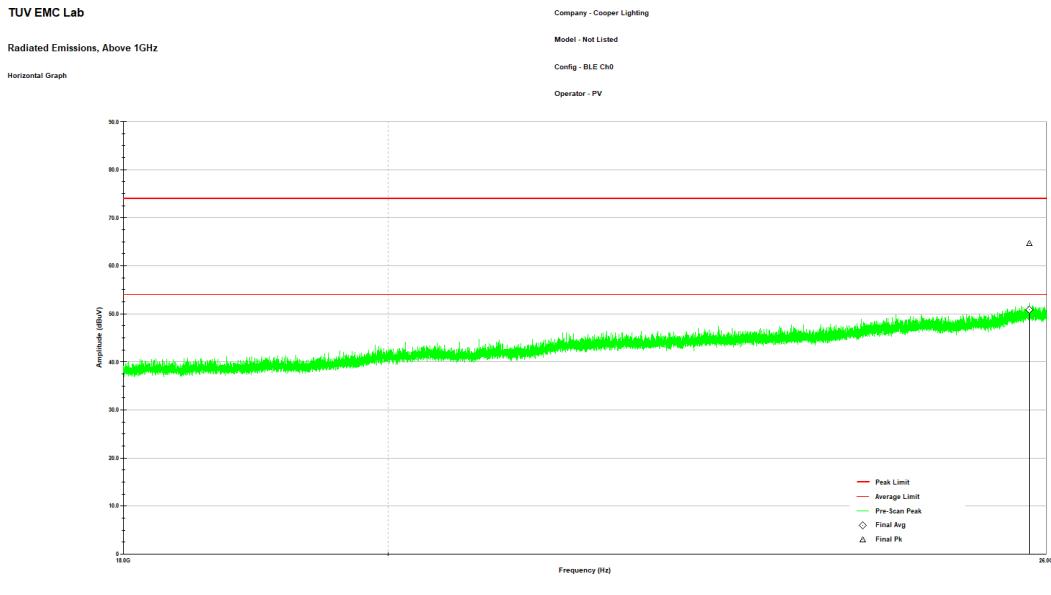


Figure 2.8.6-13: Reference plot for Radiated Spurious Emissions – 18 GHz – 26 GHz – H Polarity

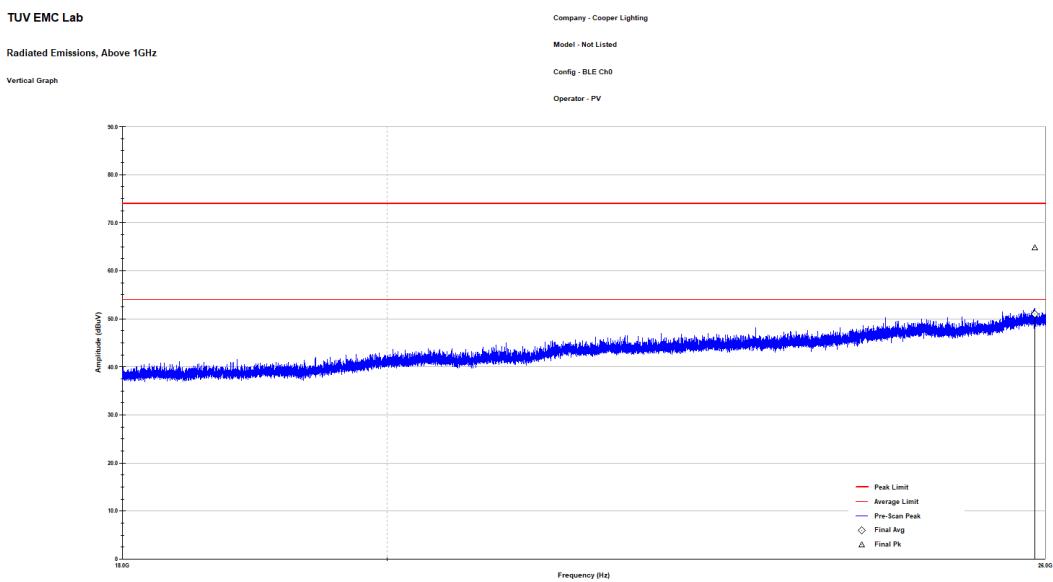


Figure 2.8.6-14: Reference plot for Radiated Spurious Emissions – 18 GHz – 26 GHz – V Polarity



2.9 Test Equipment Used

Table 2.9-1 –Equipment List

| Asset ID | Manufacturer | Model | Equipment Type | Serial Number | Last Calibration Date | Calibration Due Date |
|----------|-------------------------|---------------|--------------------------------------|---------------|-----------------------|----------------------|
| 628 | EMCO | 6502 | Active Loop Antenna 10kHz-30MHz | 9407-2877 | 6/8/2021 | 6/8/2023 |
| AEMC0884 | ETS Lindgren | 3117 | Double ridged horn antenna | 240106 | 5/6/2021 | 5/6/2023 |
| DEMC3161 | Ametek CTS Germany GmbH | CBL 6112D | Bilog Antenna; Attenuator | 51323 | 3/19/2021 | 3/19/2023 |
| 213 | TEC | PA 102 | Amplifier | 44927 | 7/30/2021 | 7/30/2022 |
| 338 | Hewlett Packard | 8449B | High Frequency Pre-Amp | 3008A01111 | 6/22/2021 | 6/22/2023 |
| 882 | Rohde & Schwarz | ESW44 | Test Receiver | 111961 | 6/24/2021 | 6/24/2022 |
| 836 | ETS Lindgren | SAC Cable Set | SAC Cable Set includes 620, 837, 838 | N/A | 5/11/2021 | 7/11/2022 |
| 432 | Microwave Circuits | H3G020G4 | High pass Filter | 264066 | 6/9/2021 | 6/9/2022 |
| 827 | Rohde & Schwarz | RF Cable set | TS8997 Rack cable set | N/A | 12/20/2021 | 12/20/2022 |
| 622 | Rohde & Schwarz | FSV40 (v3.40) | FSV Signal Analyzer 10Hz to 40GHz | 101338 | 9/22/2021 | 9/22/2022 |
| 267 | Hewlett Packard | N1911A | Power Meter | MY45100129 | 7/27/2021 | 7/27/2023 |
| 3010 | Rohde & Schwarz | ENV216 | Two-Line V-Network | 3010 | 6/23/2021 | 6/23/2022 |
| 872 | Agilent | E7402A | EMC Spectrum Analyzer | US40240258 | 6/22/2021 | 6/22/2022 |
| 871 | Belden | RF Cable | RF Cable (CE Cable) | 871 | 4/1/2022 | 4/1/2023 |
| 144 | Omega | RH411 | Temp / Humidity Meter | H0103373 | 12/16/2020 | 12/16/2022 |

N/A – Not Applicable

3 Diagram of Test Set-ups

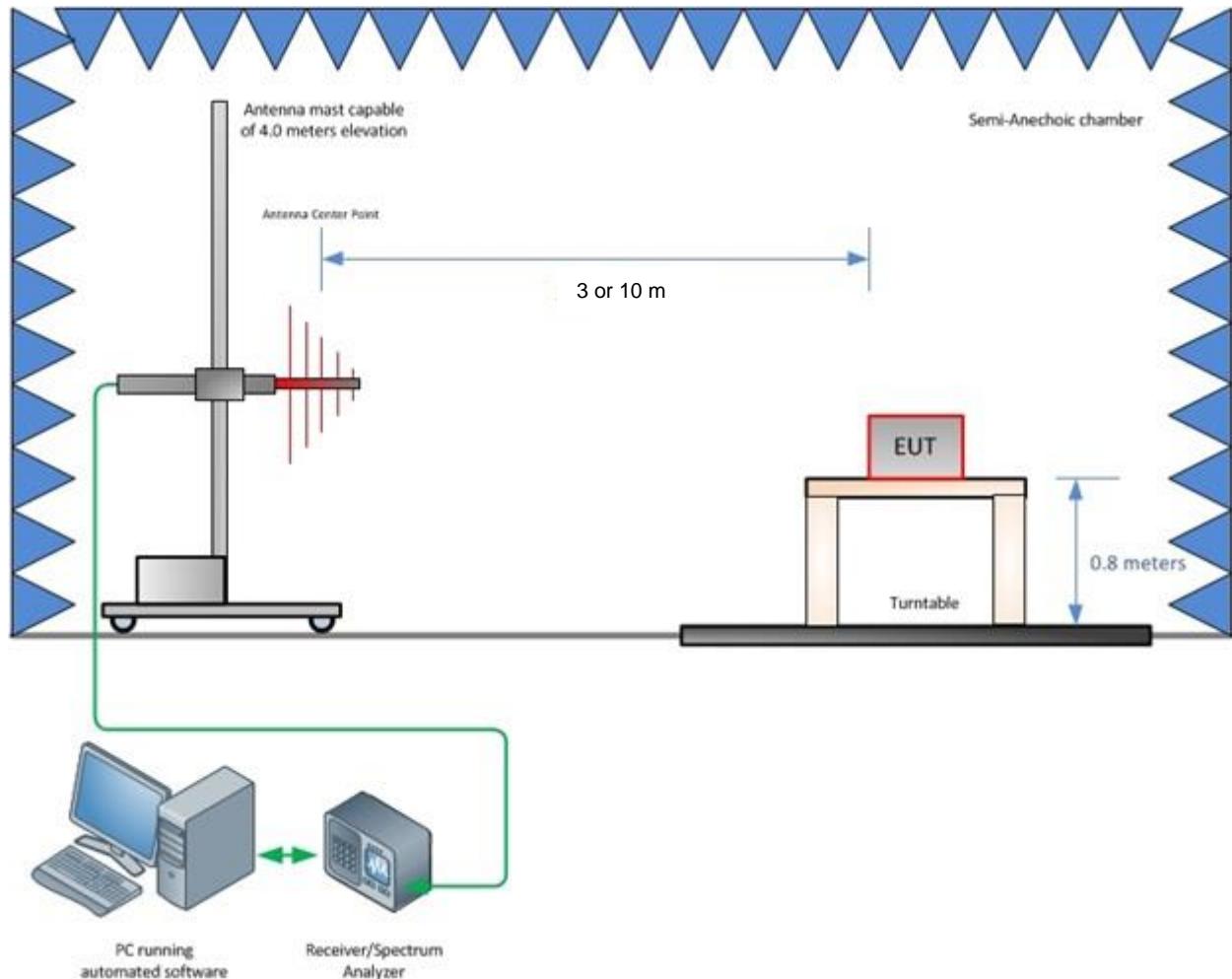


Figure 3-1 – Radiated Emissions Test Setup up to 1 GHz

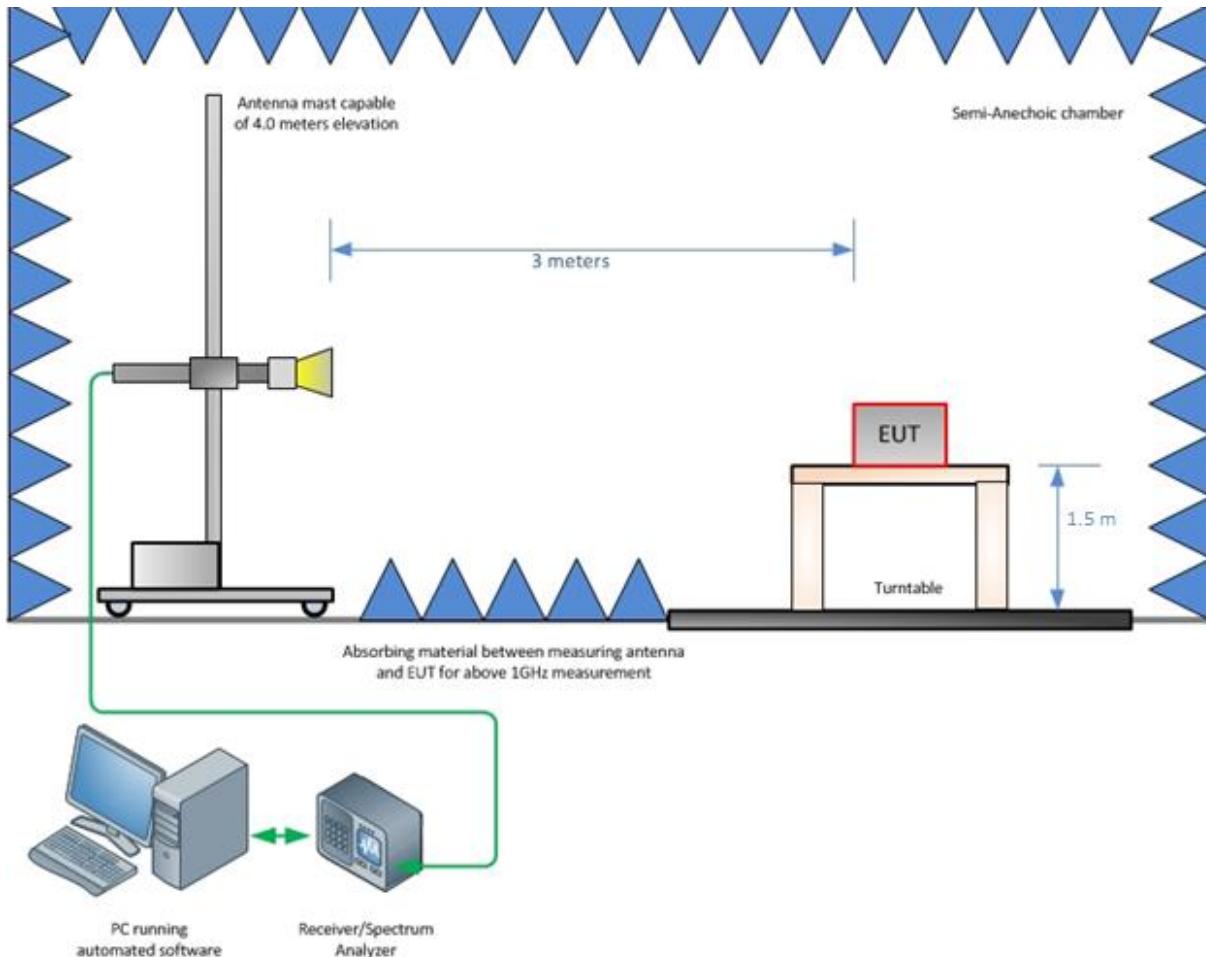


Figure 3-2 – Radiated Emissions Test Setup above 1 GHz

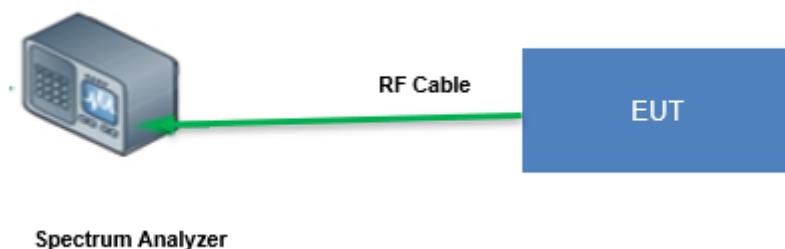


Figure 3-3 – Conducted Test Setup: Antenna Port measurement



4 Accreditation, Disclaimers and Copyright

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STATEMENT OF MEASUREMENT UNCERTAINTY – Emissions

The expanded laboratory measurement uncertainty figures (U_{Lab}) provided below correspond to an expansion factor (coverage factor) $k = 1.96$ which provide confidence levels of 95%.

Table 4-1: Estimation of Measurement Uncertainty

| Parameter | U_{lab} |
|---|--------------------------------------|
| Occupied Channel Bandwidth | $\pm 0.009 \%$ |
| RF Conducted Output Power | $\pm 0.349 \text{ dB}$ |
| Power Spectral Density | $\pm 0.372 \text{ dB}$ |
| Antenna Port Conducted Emissions | $\pm 1.264 \text{ dB}$ |
| Radiated Emissions $\leq 1 \text{ GHz}$ | $\pm 5.814 \text{ dB}$ |
| Radiated Emissions $> 1 \text{ GHz}$ | $\pm 4.318 \text{ dB}$ |
| Temperature | $\pm 0.860 \text{ }^{\circ}\text{C}$ |
| Radio Frequency | $\pm 2.832 \times 10^{-8}$ |
| AC Power Line Conducted Emissions | $\pm 3.360 \text{ dB}$ |

TEST EQUIPMENT

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated to meet test method standard requirements and/or manufacturer's specifications