# CERTIFICATION TEST REPORT

**Report Number.** : 4790101669-E3V3

| | | |
|---|---|---|
| **Applicant** | : | SAMSUNG ELECTRONICS CO., LTD.<br>129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,<br>GYEONGGI-DO, 16677, KOREA |
| **Model** | : | SM-X900 |
| **FCC ID** | : | A3LSMX900 |
| **IC** | : | 649E-SMX900 |
| **EUT Description** | : | DTS/UNII a/b/g/n/ac/ax Tablet + BT/BLE and WPT |
| **Test Standard(s)** | : | FCC 47 CFR PART 15 SUBPART C<br>INDUSTRY CANADA RSS-247 Issue 2<br>INDUSTRY CANADA RSS-GEN Issue 5 |

**Date Of Issue:**
2021-12-15

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IAS ACCREDITED
TL-637

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V1 | 2021-11-30 | Initial issue | Hyunsik Yun |
| V2 | 2021-12-13 | Updated to address TCB's question | Hyunsik Yun |
| V3 | 2021-12-15 | Updated to address TCB's question | Hyunsik Yun |

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SAMSUNG ELECTRONICS CO., LTD.

**EUT DESCRIPTION:** DTS/UNII a/b/g/n/ac/ax Tablet + BT/BLE and WPT

**MODEL NUMBER:** SM-X900

**SERIAL NUMBER:** R32RA0033JJ (CONDUCTED, ORIGINAL);
R32RA0034NV (RADIATED);
R32RB00B3WH (RADIATED, SPOT-CHECK)

**DATE TESTED:** 2021-11-05 ~ 2021-12-06 (Original);
2021-11-22 ~ 2021-12-06 (Spot-Check);

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| CFR 47 Part 15 Subpart C | Complies |
| INDUSTRY CANADA RSS-247 Issue 2 | Complies |
| INDUSTRY CANADA RSS-GEN Issue 5 | Complies |

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Korea, Ltd. By:

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Suwon Lab Engineer
UL Korea, Ltd.

Tested By:

Dexter(Hyunsik) Yun
Suwon Lab Engineer
UL Korea, Ltd.

## 1.1. INTRODUCTION OF TEST DATA REUSE

This report referenced from the FCC ID: A3LSMX906B DTS(FCC CFR 47 Part 15C).
And the applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID.

## 1.2. DIFFERENCE

The FCC ID: A3LSMX900 (IC : 649E-SMX900, Model number : SM-X900) shares the same enclosure and circuit board as FCC ID: A3LSMX906B (Model number : SM-X906B). The BLE antennas and surrounding circuitry and layout are identical between these two units for re-used bands.

In SM-X900 model, all of the RF parts(5G/LTE/WCDMA/GSM) are removed from the PCB.

After confirming through preliminary radiated emissions that the performance of the FCC ID: A3LSMX906B (Model number : SM-X906B) remains representative of FCC ID: A3LSMX900 (IC : 649E-SMX900, Model number : SM-X900). The test data of FCC ID: A3LSMX906B (Model number : SM-X906B) being submitted for this application to cover BLE features.

Model number, SM-X906B, is not certified for ISED certification.

## 1.3. SPOT CHECK VERIFICATION DATA

| Band | Test Item | Mode | Frequency | Test Limit | Original model | Spot check model | Deviation | Remark |
|---|---|---|---|---|---|---|---|---|
| | | | | | SM-X906B Results | SM-X900 Results | | |
| | | | | | FCC ID : A3LSMX906B | FCC ID : A3LSMX900 | | |
| DTS BLE (2.4GHz) | Band Edge | 1Mbps | 2480 MHz | 54 dBuV/m | 44.34 dBuV/m | 45.30 dBuV/m | 0.96 dB | |
| | RSE | 1Mbps | 2480 MHz | 74 dBuV/m | 38.57 dBuV/m | 33.46 dBuV/m | -5.11 dB | Noise Floor |
| | Band Edge | 2Mbps | 2480 MHz | 54 dBuV/m | 46.83 dBuV/m | 45.58 dBuV/m | -1.25 dB | |
| | RSE | 2Mbps | 2440 MHz | 74 dBuV/m | 44.12 dBuV/m | 39.87 dBuV/m | -4.25 dB | Noise Floor |

Comparison of two models, upper deviation is within 3dB range and all test results are under FCC technical limits.

## 1.4. REFERENCE DETAIL

Reference application that contains the re-used reference data.

| Equipment Class | Reference FCC ID | Type Grant/Permissive Change | Reference Application | Folder Test/RF Exposure | Report Title / Section |
|---|---|---|---|---|---|
| DTS | A3LSMX906B | Grant | 4790101660-E4 | Test | Report DTS [b, g, n ax] WLAN / All sections |
| | | | 4790101660-E5 | Test | Report BLE / All sections |
| DSS | A3LSMX906B | Grant | 4790101660-E6 | Test | Report BT / All sections |
| NII | A3LSMX906B | Grant | 4790101660-E7 | Test | Report UNII [a, n, ac, ax] WLAN / All sections |
| NII (6E) | A3LSMX906B | Grant | 4790101660-E8 | Test | Report UNII 6E [a, ax] WLAN / All sections |
| WPT | A3LSMX906B | Grant | 4790101660-E9 | Test | Report WPT / All sections |

**Note: ISED not supported U-NII 6E.**

# 2. TEST METHODOLOGY

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.
3. KDB 558074 D01 DTS Meas Guidance v05r02.
4. KDB 662911 D01 Multiple Transmitter Output v02r01
5. ANSI C63.10-2013.
6. IC RSS-GEN Issue 5.
7. IC RSS-247 Issue 2.
8. KDB 484596 D01 Referencing Test Data v01

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 218 Maeyeong-ro |
|---|
| ☒ Chamber 1 |
| ☒ Chamber 2 |
| ☒ Chamber 3 |

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

Used ISED Test Site Reg.(company number) : 2324L
CAB Identifier: KR0161

# 4. DECISION RULES AND MEASUREMENT UNCERTAINTY

## 4.1. METROLOGICAL TRACEABILITY

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

## 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

28.9 dBuV/m = 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB

## 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER | UNCERTAINTY |
|---|---|
| Conducted Disturbance, 0.15 to 30 MHz | 3.02 dB |
| Radiated Disturbance, 30 MHz to 1 GHz | 4.05 dB |
| Radiated Disturbance, 1 GHz to 18 GHz | 5.78 dB |
| Radiated Disturbance, 18 GHz to 40 GHz | 5.58 dB |

Uncertainty figures are valid to a confidence level of 95%.

## 4.4. DECISION RULES

Decision rule for statement(s) of conformity is based on Procedure 2, Clause 4.4.3 in IEC Guide 115:2007.

# 5. EQUIPMENT UNDER TEST

## 5.1. EUT DESCRIPTION

The EUT is a DTS/UNII a/b/g/n/ac/ax Tablet + BT/BLE and WPT.
This test report addresses the DTS (BLE) operational mode.

## 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

| Frequency Range [MHz] | Mode | Power Mode | Output Power [dBm] | Output Power [mW] |
|---|---|---|---|---|
| 2 402 ~ 2 480 | 1Mbps | Peak | 16.148 | 41.191 |
| | | Average | 15.756 | 37.636 |
| | 2Mbps | Peak | 16.591 | 45.614 |
| | | Average | 15.904 | 38.940 |

## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

**The internal antenna was Permanently attached.**
**Therefore this E.U.T Complies with the requirement of §15.203.**

The radio utilizes an internal antennas, with ANT 1's maximum gain of -2.4 dBi and
ANT 2's maximum gain of -2.1 dBi.

## 5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1GHz and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Radiated emission above 1GHz was performed with the EUT set to transmit low/mid/high channels.

For Antenna 1, the fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

For Antenna 2, the fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

- Supported Power modes:

| ANT. / Power | ANT1 | ANT2 | BLE-Dual |
|---|---|---|---|
| High(1M, 2M) | O | O | |
| Low(1M, 125k,500k, 2M) | O | O | |

Since the target High power(1M, 2M) is higher than the target power of Low power(1M, 125k,500k, 2M), the test was performed in high power mode.

Note : All radiated and power line conducted tests were performed attached with travel adapter and earphone for the worst case condition mode.

**Power verification**

The Output Power of all data rate are all investigated, the 1 Mbps(37 pkt) and 2 Mbps(37 pkt) power is the worst case for symbol rate. All tests were performed in these two modes.

| Symbol Rate [Ms/s] | ANT. | Mode | Freq. [MHz] | Conducted Burst Avg [dBm] | Symbol Rate [Ms/s] | ANT. | Mode | Freq. [MHz] | Conducted Burst Avg [dBm] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ANT1 | 1Mbps 37pkt (High) | 2402 | 14.398 | 2 | ANT1 | 2Mbps 37pkt (High) | 2402 | 14.495 |
| | | | ***2440*** | **15.756** | | | | ***2440*** | **15.904** |
| | | | 2480 | 13.811 | | | | 2480 | 14.069 |
| | ANT2 | | 2402 | 14.275 | | ANT2 | | 2402 | 14.361 |
| | | | 2440 | 15.703 | | | | 2440 | 15.796 |
| | | | 2480 | 14.897 | | | | 2480 | 15.026 |
| | ANT1 | 1Mbps 255pkt (High) | 2402 | 14.165 | | ANT1 | 2Mbps 255pkt (High) | 2402 | 14.305 |
| | | | 2440 | 15.501 | | | | 2440 | 15.668 |
| | | | 2480 | 13.486 | | | | 2480 | 13.708 |
| | ANT2 | | 2402 | 14.065 | | ANT2 | | 2402 | 14.266 |
| | | | 2440 | 15.505 | | | | 2440 | 15.637 |
| | | | 2480 | 14.658 | | | | 2480 | 14.829 |
| 1 Coded S=8 | ANT1 | 125kbps 37pkt (Low) | 2402 | 8.921 | 1 Coded S=2 | ANT1 | 500kbps 37pkt (Low) | 2402 | 8.973 |
| | | | 2440 | 9.869 | | | | 2440 | 9.914 |
| | | | 2480 | 8.093 | | | | 2480 | 8.124 |
| | ANT2 | | 2402 | 9.991 | | ANT2 | | 2402 | 10.017 |
| | | | 2440 | 10.456 | | | | 2440 | 10.477 |
| | | | 2480 | 9.129 | | | | 2480 | 9.155 |
| | ANT1 | 125kbps 255pkt (Low) | 2402 | 8.950 | | ANT1 | 500kbps 255pkt (Low) | 2402 | 8.965 |
| | | | 2440 | 9.879 | | | | 2440 | 9.895 |
| | | | 2480 | 8.067 | | | | 2480 | 8.075 |
| | ANT2 | | 2402 | 9.981 | | ANT2 | | 2402 | 9.989 |
| | | | 2440 | 10.449 | | | | 2440 | 10.453 |
| | | | 2480 | 9.115 | | | | 2480 | 9.126 |

## 5.5. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Support Equipment List | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| Charger | SAMSUNG | EP-TA800 | R37R8YN0CD1RC3 | N/A |
| Data Cable | SAMSUNG | EP-DW767JWE | N/A | N/A |

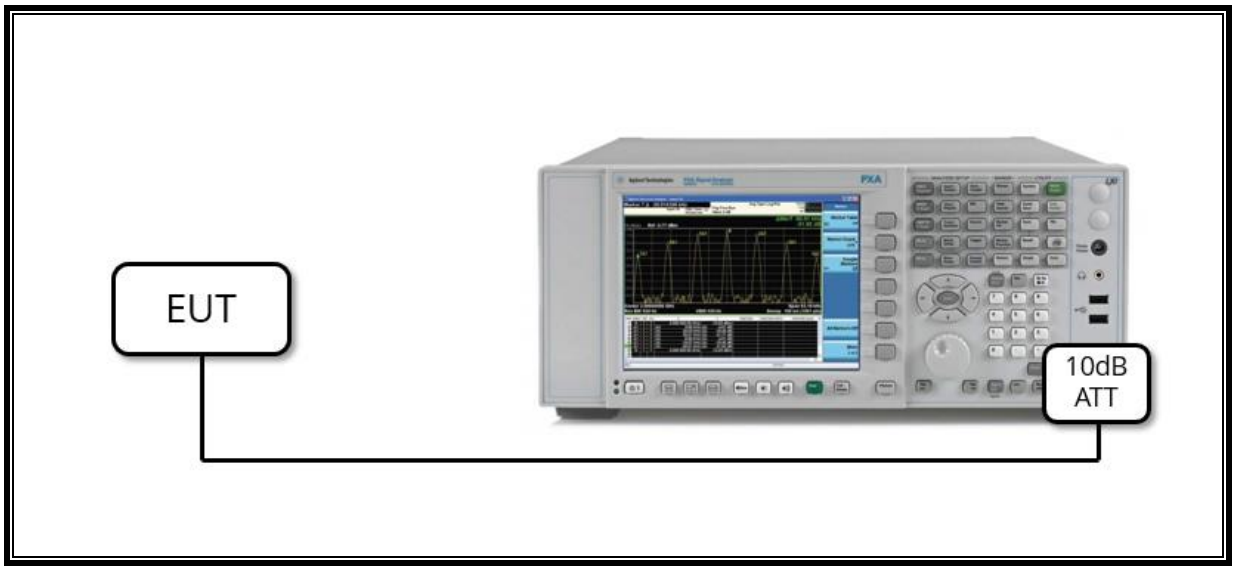
**I/O CABLE**

| I/O Cable List | | | | | | |
|---|---|---|---|---|---|---|
| **Cable No.** | **Port** | **# of identical ports** | **Connector Type** | **Cable Type** | **Cable Length (m)** | **Remarks** |
| 1 | DC Power | 1 | C Type | Shielded | 1.0 m | N/A |

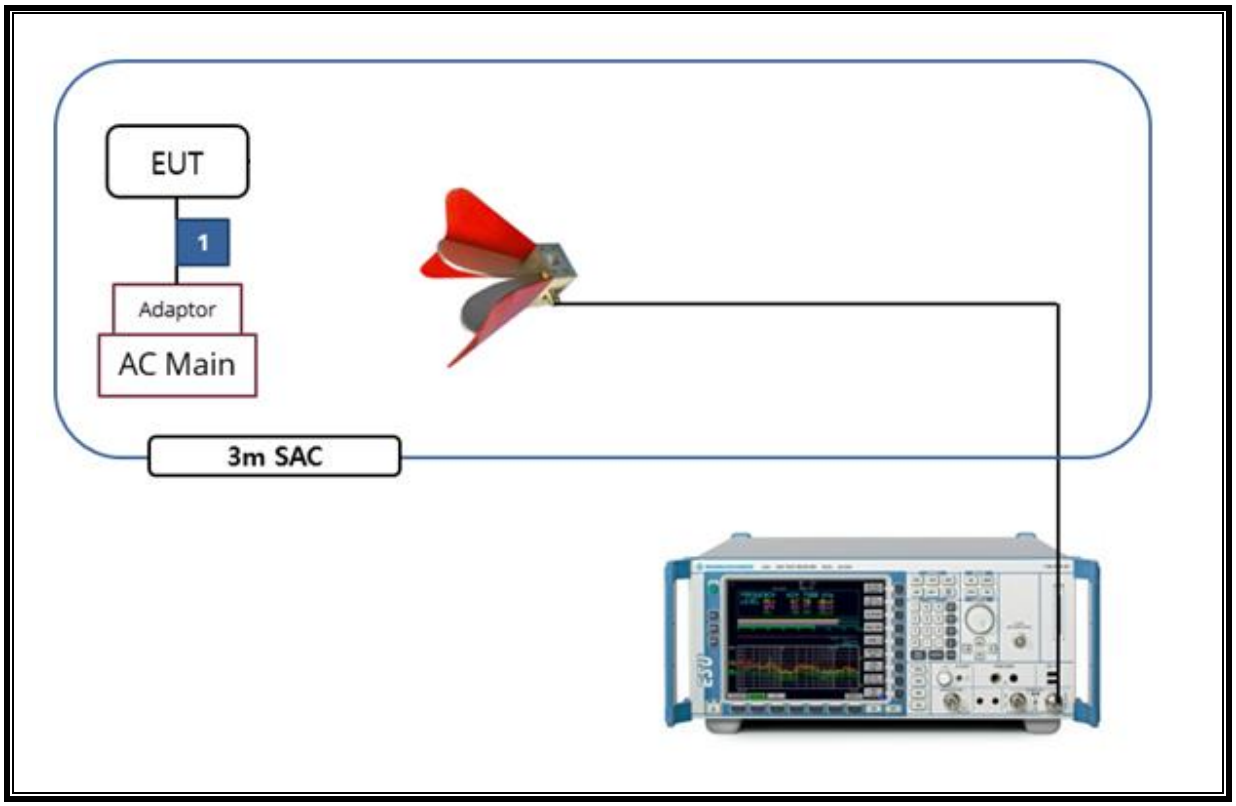
**TEST SETUP**

The EUT is a stand-alone unit during the tests.
Test software in hidden menu exercised the EUT to enable BLE mode.

**SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)**




**SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)**



# 6. MEASUREMENT METHOD

6 dB BW : ANSI C63.10-2013, Section 11.8.2 Option 2

OUTPUT POWER : ANSI C63.10-2013, Section 11.9.1.1 RBW ≥ DTS bandwidth

POWER SPECTRAL DENSITY : ANSI C63.10-2013, Section 11.10.2 Method PKPSD (peak PSD)

Out-of-band Emissions (Conducted) : ANSI C63.10-2013, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Non-restricted Bands: ANSI C63.10-2013, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Restricted Bands : ANSI C63.10-2013, Section 11.12 Emissions in restricted frequency bands

AC Power Line Conducted Emission : ANSI C63.10-2013, Section 6.2

# 7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Test Equipment List | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **S/N** | **Cal Due** |
| Antenna, Bilog, 30MHz-1GHz | SCHWARZBECK | VULB9163 | 750 | 2022-08-19 |
| Antenna, Bilog, 30MHz-1GHz | SCHWARZBECK | VULB9163 | 749 | 2022-08-13 |
| Antenna, Bilog, 30MHz-1GHz | SCHWARZBECK | VULB9163 | 845 | 2022-08-13 |
| Antenna, Horn, 18 GHz | ETS | 3115 | 00167211 | 2022-07-27 |
| Antenna, Horn, 18 GHz | ETS | 3115 | 00161451 | 2022-08-15 |
| Antenna, Horn, 18 GHz | ETS | 3117 | 00168724 | 2022-07-27 |
| Antenna, Horn, 18 GHz | ETS | 3117 | 00168717 | 2022-08-15 |
| Antenna, Horn, 40 GHz | ETS | 3116C | 00166155 | 2022-08-04 |
| Preamplifier | ETS | 3116C-PA | 00168841 | 2022-08-04 |
| Preamplifier, 1000 MHz | Sonoma | 310N | 341282 | 2022-08-02 |
| Preamplifier, 1000 MHz | Sonoma | 310N | 351741 | 2022-08-02 |
| Preamplifier, 1000 MHz | Sonoma | 310N | 370599 | 2022-08-02 |
| Preamplifier, 18 GHz | Miteq | AFS42-00101800-25-S-42 | 1876511 | 2022-08-02 |
| Preamplifier, 18 GHz | Miteq | AFS42-00101800-25-S-42 | 1896138 | 2022-08-02 |
| Preamplifier, 18 GHz | Miteq | AFS42-00101800-25-S-42 | 2029168 | 2022-08-02 |
| Spectrum Analyzer, 44 GHz | Agilent / HP | N9030A | MY54170614 | 2022-08-04 |
| Spectrum Analyzer, 44 GHz | Agilent / HP | N9030A | MY54490312 | 2022-08-04 |
| Spectrum Analyzer, 44 GHz | KEYSIGHT | N9030B | MY60070693 | 2022-01-03 |
| Average Power Sensor | Agilent / HP | U2000 | MY54270007 | 2022-08-04 |
| Average Power Sensor | Agilent / HP | U2000 | MY54260010 | 2022-08-04 |
| Attenuator | PASTERNACK | PE7087-10 | A001 | 2022-08-03 |
| Attenuator | PASTERNACK | PE7087-10 | A008 | 2022-08-03 |
| Attenuator | PASTERNACK | PE7004-10 | 2 | 2022-08-02 |
| Attenuator | PASTERNACK | PE7087-10 | A009 | 2022-08-03 |
| EMI Test Receive, 40 GHz | R&S | ESU40 | 100439 | 2022-08-02 |
| EMI Test Receive, 40 GHz | R&S | ESU40 | 100457 | 2022-08-02 |
| EMI Test Receive, 3 GHz | R&S | ESR3 | 101832 | 2022-08-02 |
| Low Pass Filter 5GHz | Micro-Tronics | LPS17541 | 009 | 2022-08-02 |
| Low Pass Filter 5GHz | Micro-Tronics | LPS17541 | 015 | 2022-08-02 |
| Low Pass Filter 5GHz | Micro-Tronics | LPS17541 | 019 | 2022-08-02 |
| High Pass Filter 3GHz | Micro-Tronics | HPM17543 | 010 | 2022-08-02 |
| High Pass Filter 3GHz | Micro-Tronics | HPM17543 | 015 | 2022-08-02 |
| High Pass Filter 3GHz | Micro-Tronics | HPM17543 | 020 | 2022-08-02 |
| High Pass Filter 6GHz | Micro-Tronics | HPS17542 | 009 | 2022-08-02 |
| High Pass Filter 6GHz | Micro-Tronics | HPS17542 | 016 | 2022-08-02 |
| High Pass Filter 6GHz | Micro-Tronics | HPS17542 | 020 | 2022-08-02 |
| LISN | R&S | ENV-216 | 101837 | 2022-08-05 |
| Antenna, Loop, 9kHz-30MHz | R&S | HFH2-Z2 | 100418 | 2023-10-06 |

| UL Software | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Version** |
| Radiated software | UL | UL EMC | Ver 9.5 |
| AC Line Conducted software | UL | UL EMC | Ver 9.5 |

# 8. TEST RESULTS SUMMARY

| FCC Part Section | IC Section | Test Description | Test Limit | Test Condition | Test Result |
|---|---|---|---|---|---|
| 15.247 (a)(2) | RSS-247 5.2(a) | Occupied Bandwidth(6dB) | > 500kHz | Conducted | PASS |
| 2.1051, 15.247(d) | RSS-247 5.5 | Band Edge / Conducted Spurious Emission | -30 dBc | | PASS |
| 15.247 (b)(3) | RSS-247 5.4(d) | TX conducted output power | < 30 dBm | | PASS |
| 15.247(e) | RSS-247 5.4(b) | PSD | < 8 dBm/3kHz | | PASS |
| 15.207(a) | RSS-GEN Clause 7&8.9 | AC Power Line conducted emissions | Section 11 | Power Line conducted | PASS |
| 15.205, 15.209 | RSS-GEN Clause 8.8 | Radiated Spurious Emission | < 54dBuV/m(Av) | Radiated | PASS |

# 9. ANTENNA PORT TEST RESULTS

## 9.1. ON TIME AND DUTY CYCLE

**LIMITS**

None; for reporting purposes only.

| Mode | On time [msec] | Period [msec] | Duty cycle x [Linear] | Duty Cycle [%] | Duty Cycle Correction Factor [dB] | 1/T Minimum VBW [kHz] |
|---|---|---|---|---|---|---|
| **2 400 ~ 2 483.5 MHz Bands** | | | | | | |
| 1 Mbps [37pkt] | 0.388 | 0.625 | 0.621 | 62.080 | 2.07 | 2.577 |
| 2 Mbps [37pkt] | 0.204 | 0.625 | 0.326 | 32.560 | 4.87 | 4.914 |


**1 Mbps(37 pkt)**


**2 Mbps(37 pkt)**

## 9.2. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

RSS-247 5.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

**RESULTS**

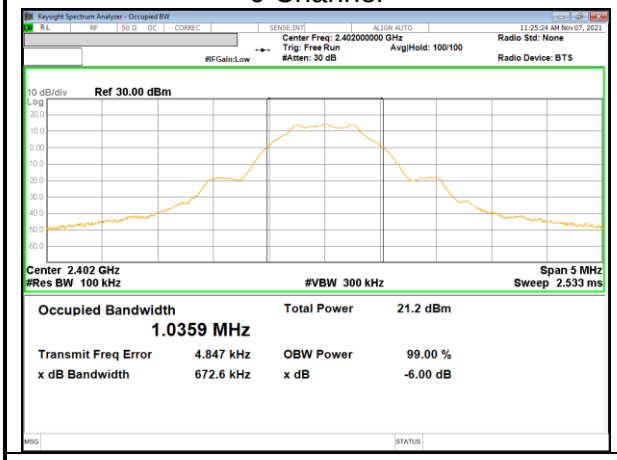
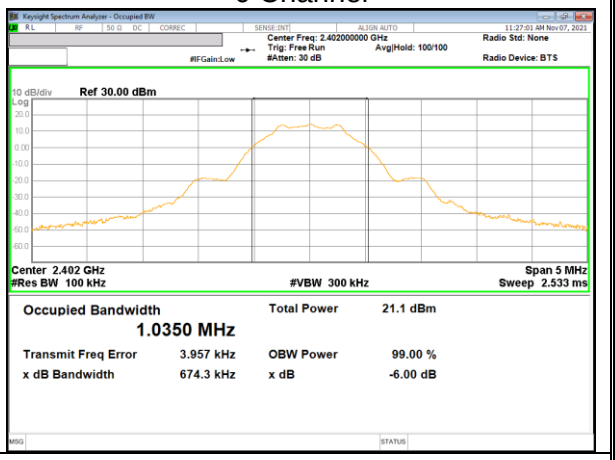
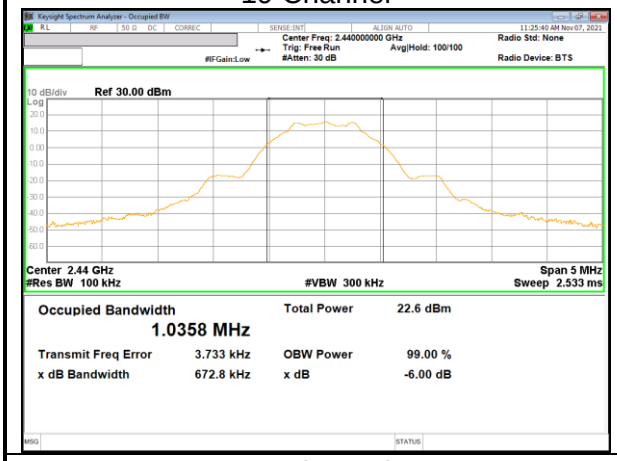
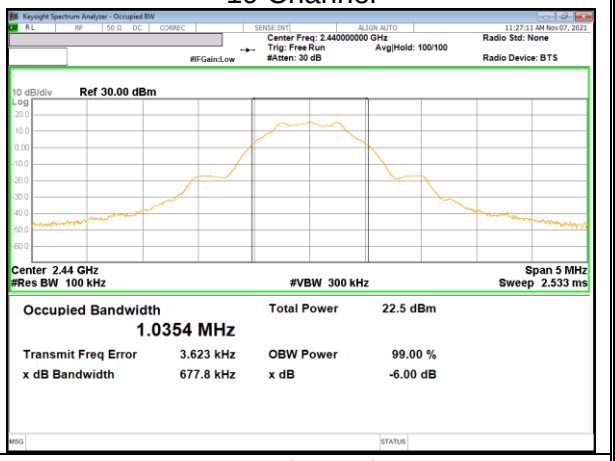
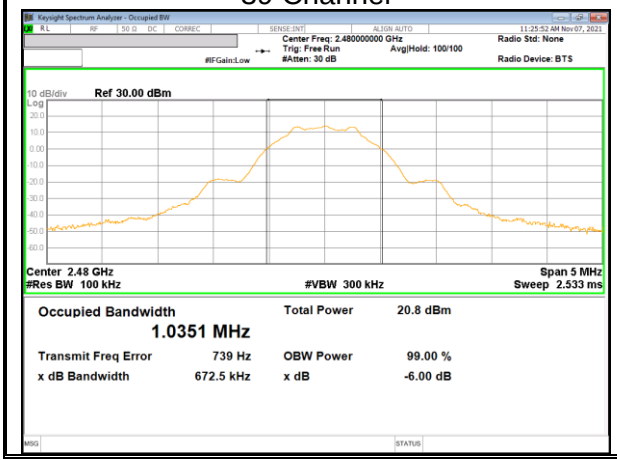
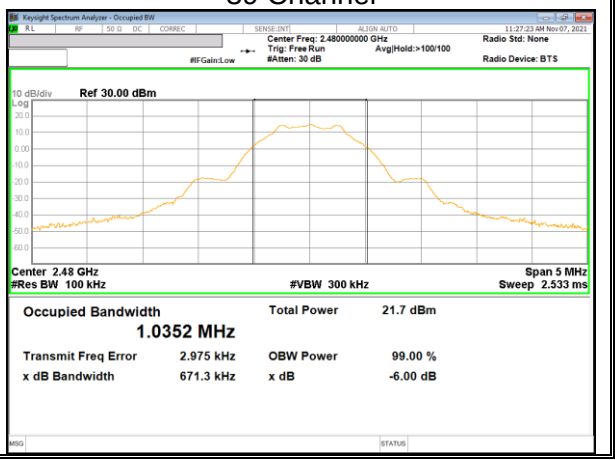
### 9.2.1. 1 Mbps

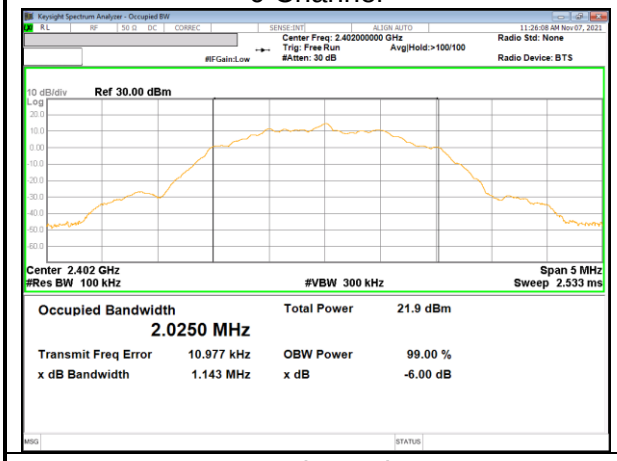
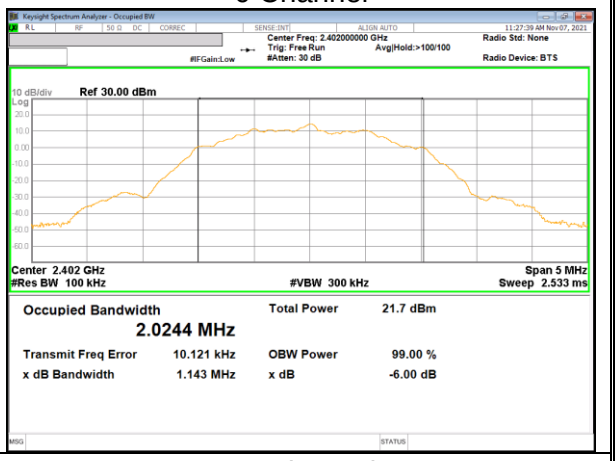
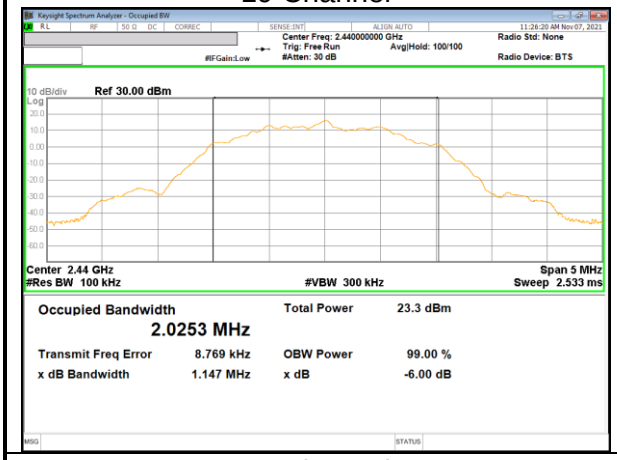
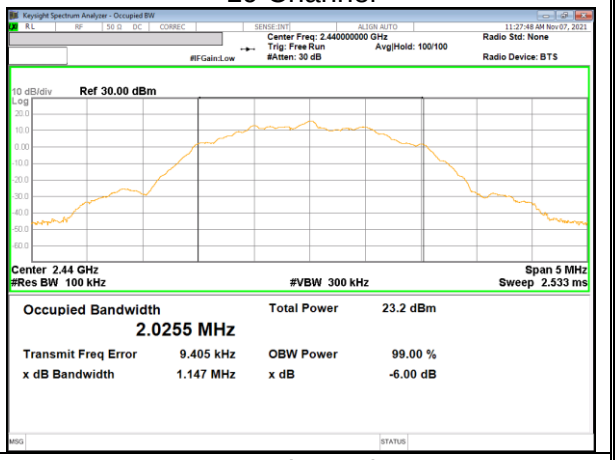
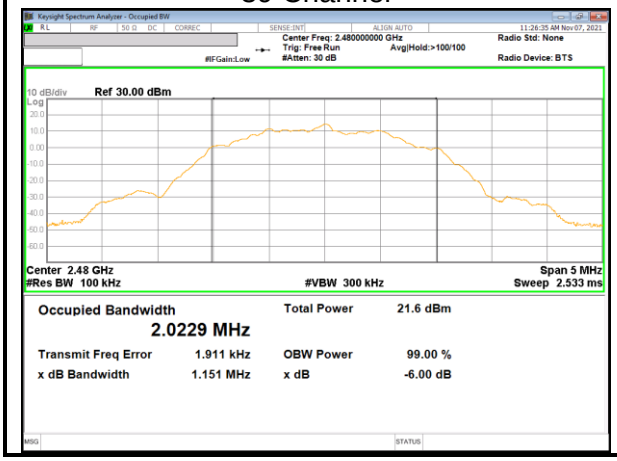
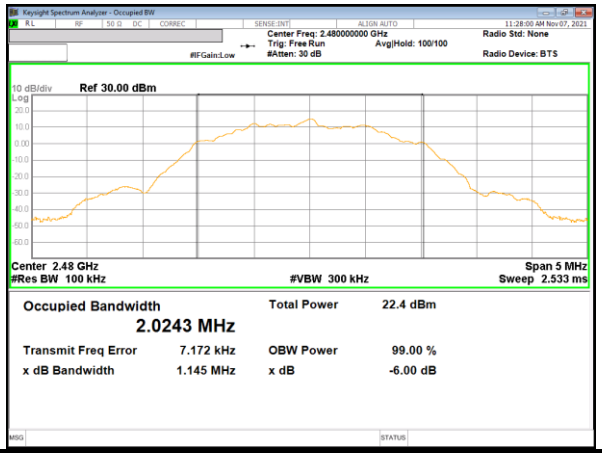
| Ant. | Channel | Frequency [MHz] | 6 dB Bandwidth [kHz] | Minimum Limit [kHz] |
|---|---|---|---|---|
| ANT1 | 0 | 2 402 | 672.6 | 500.0 |
| | 19 | 2 440 | 672.8 | 500.0 |
| | 39 | 2 480 | 672.5 | 500.0 |
| ANT2 | 0 | 2 402 | 674.3 | 500.0 |
| | 19 | 2 440 | 677.8 | 500.0 |
| | 39 | 2 480 | **671.3** | 500.0 |
| **Worst** | | | **671.3** | 500.0 |

### 9.2.2. 2 Mbps

| Ant. | Channel | Frequency [MHz] | 6 dB Bandwidth [kHz] | Minimum Limit [kHz] |
|---|---|---|---|---|
| ANT1 | 0 | 2 402 | 1143.0 | 500.0 |
| | 19 | 2 440 | 1147.0 | 500.0 |
| | 39 | 2 480 | 1151.0 | 500.0 |
| ANT2 | 0 | 2 402 | **1143.0** | 500.0 |
| | 19 | 2 440 | 1147.0 | 500.0 |
| | 39 | 2 480 | 1145.0 | 500.0 |
| **Worst** | | | **1143.0** | 500.0 |

## 9.2.3. 6 dB BANDWIDTH PLOTS

| 1 Mbps / 6 dB Bandwidth / ANT1 | 1 Mbps / 6 dB Bandwidth / ANT2 |
|---|---|
| 0 Channel | 0 Channel |
|  |  |
| 19 Channel | 19 Channel |
|  |  |
| 39 Channel | 39 Channel |
|  |  |

| 2 Mbps / 6 dB Bandwidth / ANT1 | 2 Mbps / 6 dB Bandwidth / ANT2 |
|---|---|
| 0 Channel | 0 Channel |
|  |  |
| 19 Channel | 19 Channel |
|  |  |
| 39 Channel | 39 Channel |
|  |  |

## 9.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b) (3)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

**TEST PROCEDURE**

Peak power is measured using ANSI C63.10(2013) under section 11.9.1.1 utilizing spectrum analyzer(RBW ≧ DTS bandwidth).

**RESULTS**

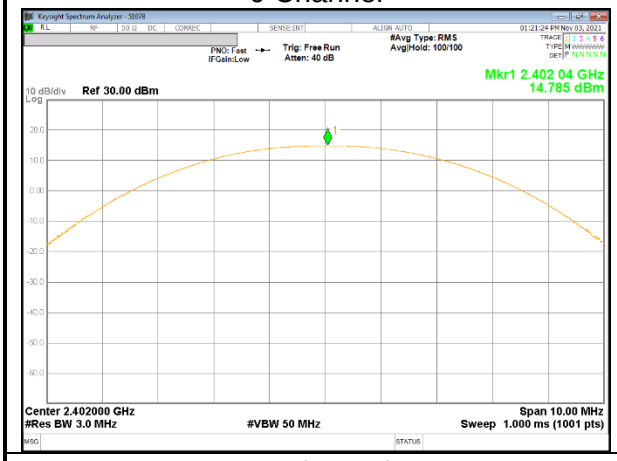
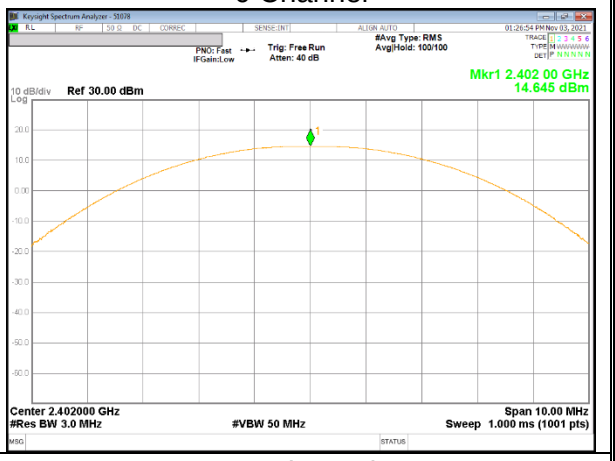
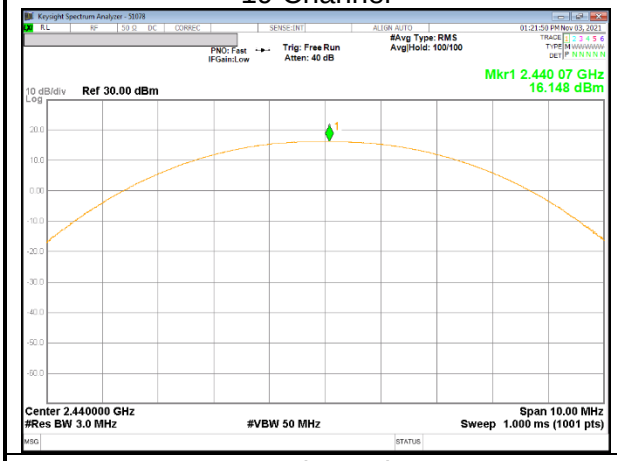
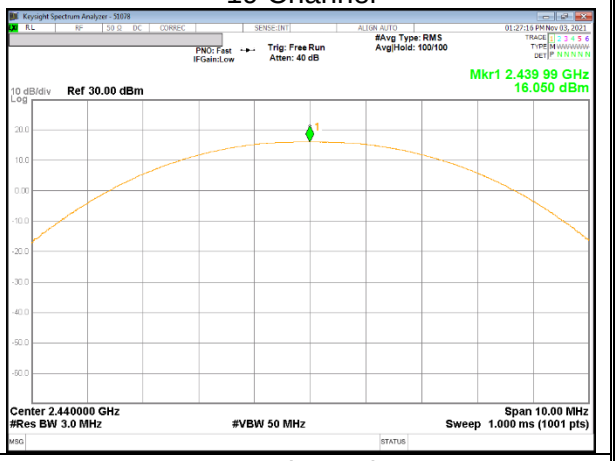
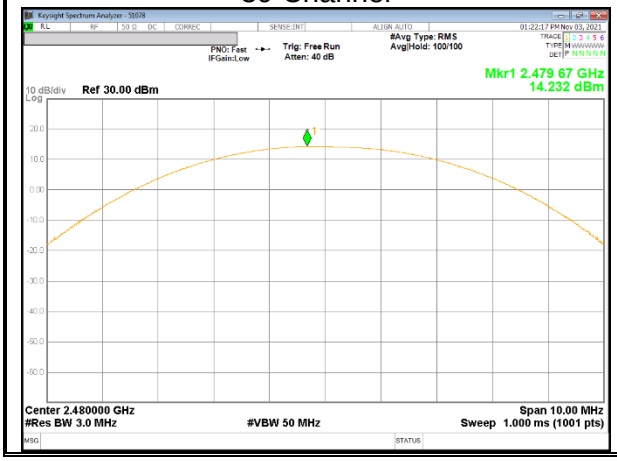
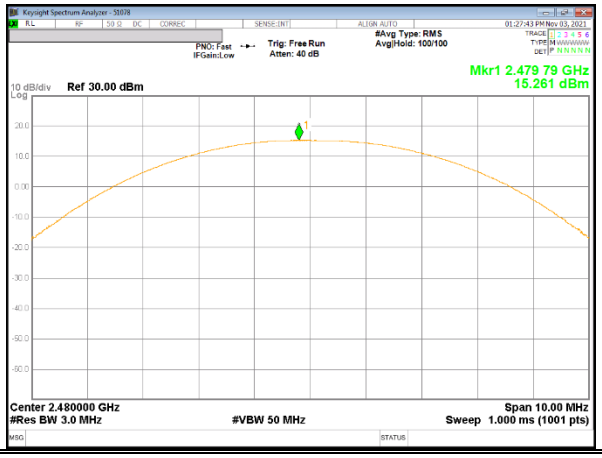
### 9.3.1. 1 Mbps

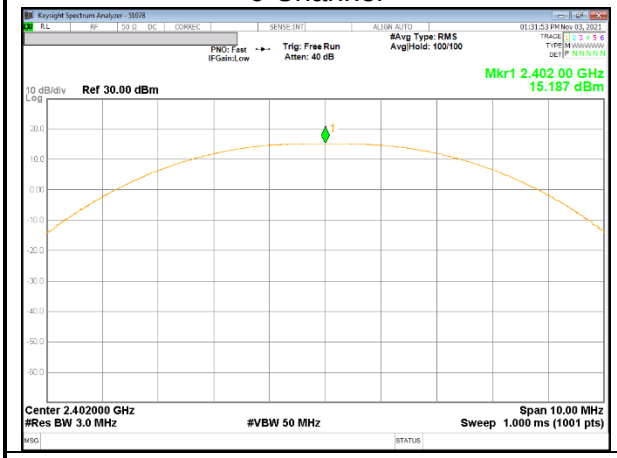
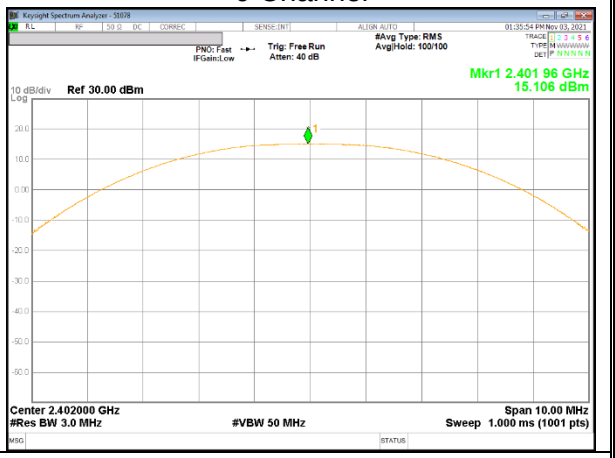
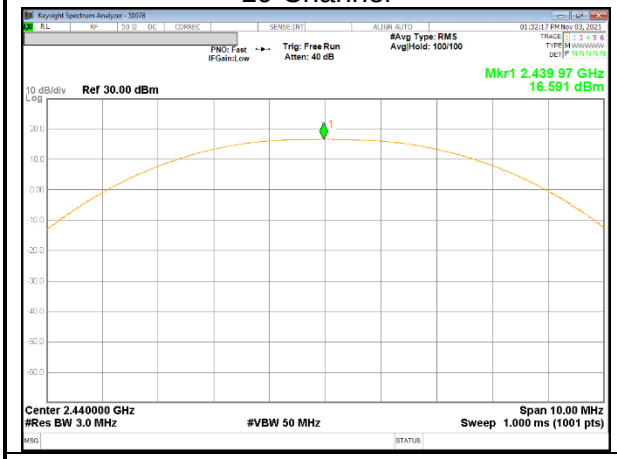
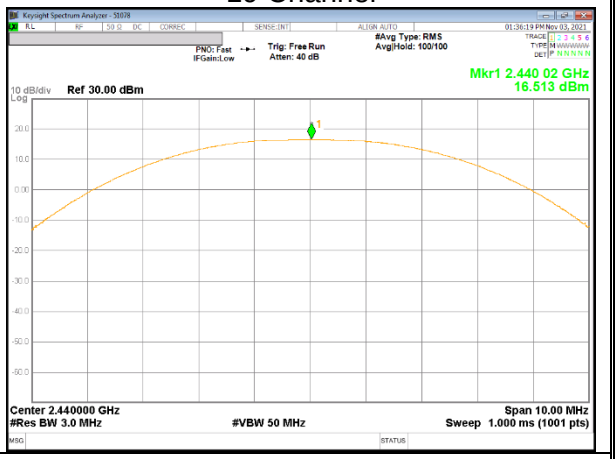
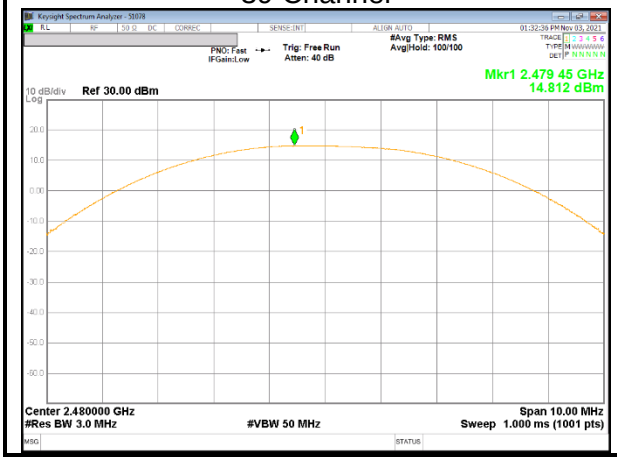
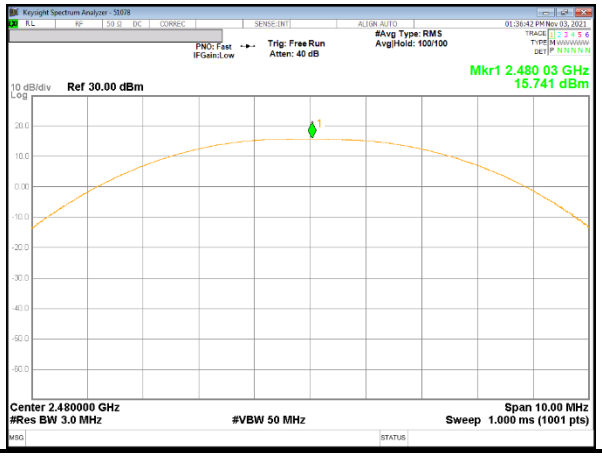
| Antenna | Power Mode | Channel | Frequency [MHz] | Peak Output Power [dBm] | Limit [dBm] | Margin [dB] |
|---|---|---|---|---|---|---|
| ANT1 | High | 0 | 2 402 | 14.785 | 30.000 | -15.215 |
| | | 19 | 2 440 | **16.148** | | **-13.852** |
| | | 39 | 2 480 | 14.232 | | -15.768 |
| ANT2 | | 0 | 2 402 | 14.645 | | -15.355 |
| | | 19 | 2 440 | 16.050 | | -13.950 |
| | | 39 | 2 480 | 15.261 | | -14.739 |
| Worst | | | | **16.148** | | **-13.852** |

### 9.3.2. 2 Mbps

| Antenna | PA. | Channel | Frequency [MHz] | Peak Output Power [dBm] | Limit [dBm] | Margin [dB] |
|---|---|---|---|---|---|---|
| ANT1 | High | 0 | 2 402 | 15.187 | 30.000 | -14.813 |
| | | 19 | 2 440 | **16.591** | | **-13.409** |
| | | 39 | 2 480 | 14.812 | | -15.188 |
| ANT2 | | 0 | 2 402 | 15.106 | | -14.894 |
| | | 19 | 2 440 | 16.513 | | -13.487 |
| | | 39 | 2 480 | 15.741 | | -14.259 |
| Worst | | | | **16.591** | | **-13.409** |

## 9.3.3. PEAK POWER PLOTS

| 1 Mbps / ANT1 | 1 Mbps / ANT2 |
|---|---|
| 0 Channel | 0 Channel |
|  |  |
| 19 Channel | 19 Channel |
|  |  |
| 39 Channel | 39 Channel |
|  |  |

| 2 Mbps / ANT1 | 2 Mbps / ANT2 |
|---|---|
| 0 Channel | 0 Channel |
|  |  |
| 19 Channel | 19 Channel |
|  |  |
| 39 Channel | 39 Channel |
|  |  |

## 9.4. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

Measurements perform using a wideband RF frame average power sensor.
The cable assembly insertion loss and duty cycle correction factor were entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

### 9.4.1. 1 Mbps

| Antenna | Power Mode | Channel | Frequency [MHz] | Average Output Power [dBm] | Average Output Power [mW] |
|---|---|---|---|---|---|
| ANT1 | High | 0 | 2 402 | 14.398 | 27.530 |
| | | 19 | 2 440 | 15.756 | 37.636 |
| | | 39 | 2 480 | 13.811 | 24.049 |
| ANT2 | | 0 | 2 402 | 14.275 | 26.761 |
| | | 19 | 2 440 | 15.703 | 37.179 |
| | | 39 | 2 480 | 14.897 | 30.882 |

### 9.4.2. 2 Mbps

| Antenna | Power Mode | Channel | Frequency [MHz] | Average Output Power [dBm] | Average Output Power [mW] |
|---|---|---|---|---|---|
| ANT1 | High | 0 | 2 402 | 14.495 | 28.151 |
| | | 19 | 2 440 | 15.904 | 38.940 |
| | | 39 | 2 480 | 14.069 | 25.521 |
| ANT2 | | 0 | 2 402 | 14.361 | 27.296 |
| | | 19 | 2 440 | 15.796 | 37.984 |
| | | 39 | 2 480 | 15.026 | 31.813 |

## 9.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

**TEST PROCEDURE**

ANSI C63.10-2013, Section 11.10.2 Method PKPSD (peak PSD)

**RESULTS**

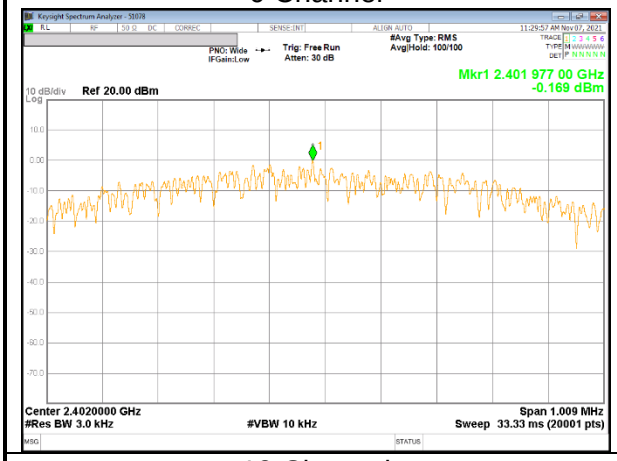
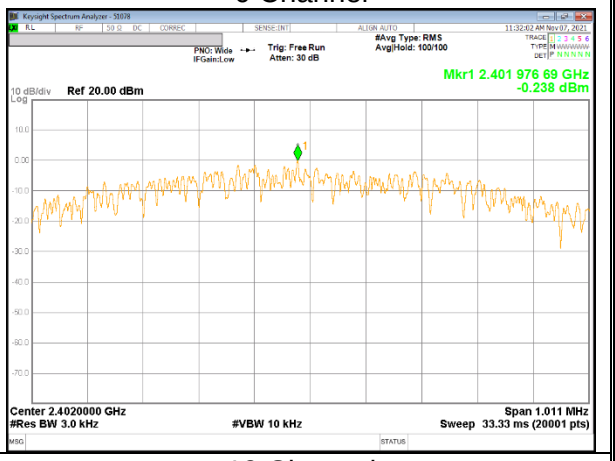
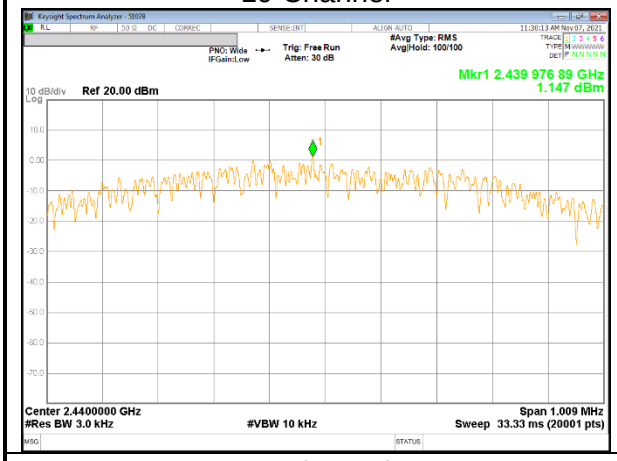
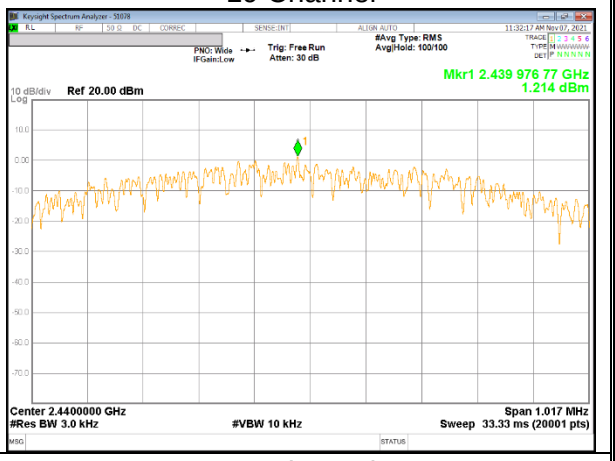
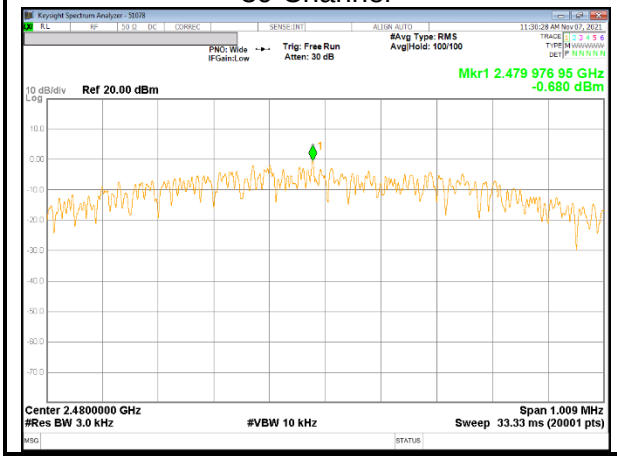
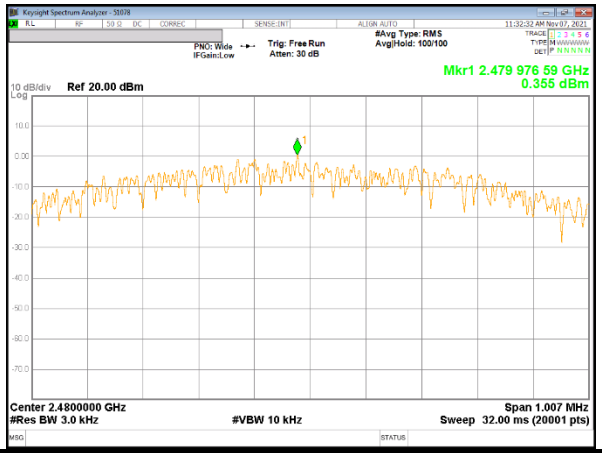
### 9.5.1. 1 Mbps

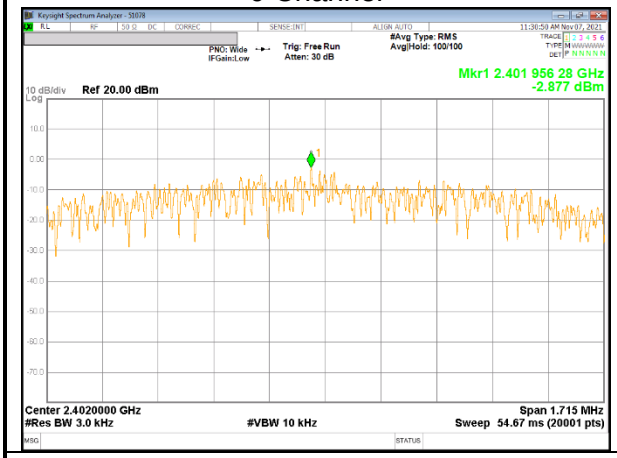
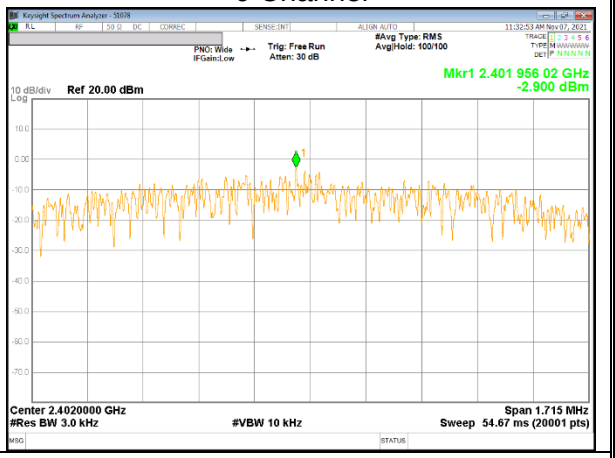
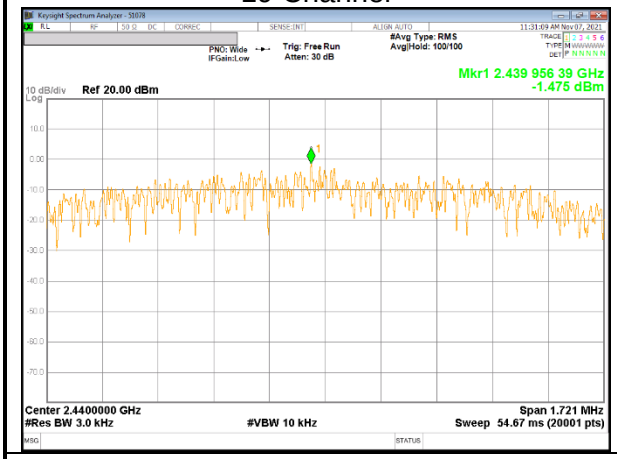
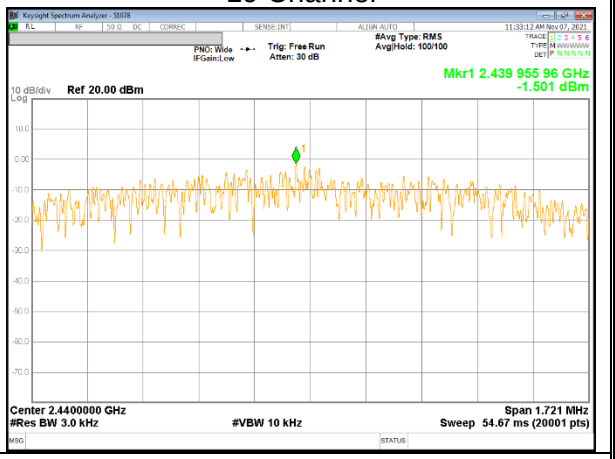
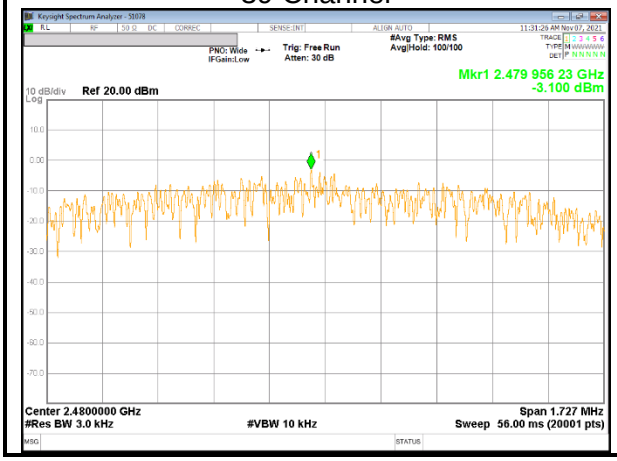
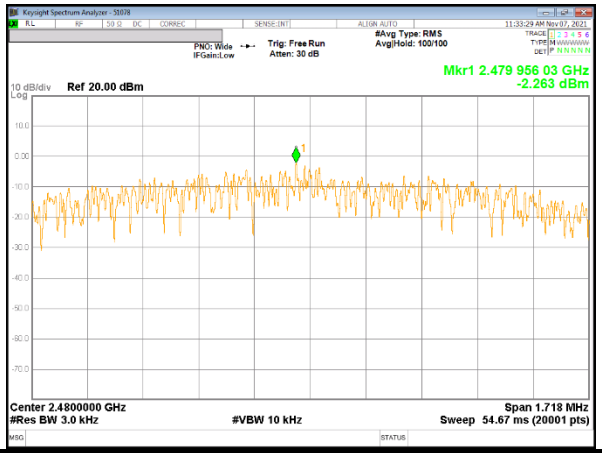
| Antenna | Power Mode | Channel | Frequency [MHz] | PSD [dBm/3kHz] | Limit [dBm/3kHz] | Margin [dB] |
|---|---|---|---|---|---|---|
| ANT1 | High | 0 | 2 402 | -0.169 | 8.00 | -8.169 |
| | | 19 | 2 440 | **1.147** | | **-6.853** |
| | | 39 | 2 480 | -0.680 | | -8.680 |
| ANT2 | | 0 | 2 402 | -0.238 | | -8.238 |
| | | 19 | 2 440 | 1.214 | | -6.786 |
| | | 39 | 2 480 | 0.355 | | -7.645 |
| Worst | | | | **1.147** | | **-6.853** |

### 9.5.2. 2 Mbps

| Antenna | Power Mode | Channel | Frequency [MHz] | PSD [dBm/3kHz] | Limit [dBm/3kHz] | Margin [dB] |
|---|---|---|---|---|---|---|
| ANT1 | High | 0 | 2 402 | -2.877 | 8.00 | -10.877 |
| | | 19 | 2 440 | **-1.475** | | **-9.475** |
| | | 39 | 2 480 | -3.100 | | -11.100 |
| ANT2 | | 0 | 2 402 | -2.900 | | -10.900 |
| | | 19 | 2 440 | -1.501 | | -9.501 |
| | | 39 | 2 480 | -2.263 | | -10.263 |
| Worst | | | | **-1.475** | | **-9.475** |

## 9.5.3. PSD TEST PLOTS

| 1 Mbps / ANT1 | 1 Mbps / ANT2 |
|---|---|
| 0 Channel | 0 Channel |
|  |  |
| 19 Channel | 19 Channel |
|  |  |
| 39 Channel | 39 Channel |
|  |  |

| 2 Mbps / ANT1 | 2 Mbps / ANT2 |
|---|---|
| 0 Channel | 0 Channel |
|  |  |
| 19 Channel | 19 Channel |
|  |  |
| 39 Channel | 39 Channel |
|  |  |

## 9.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

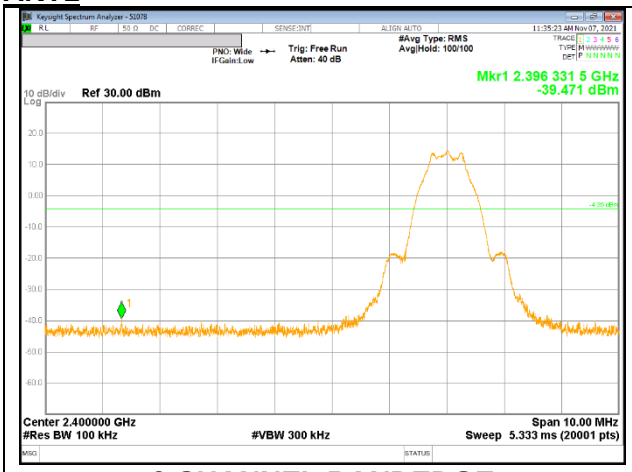
RSS-247 5.5

Output power was measured based on the use of a peak measurement.
Therefore, spurious emissions are required to be 20 dBc.

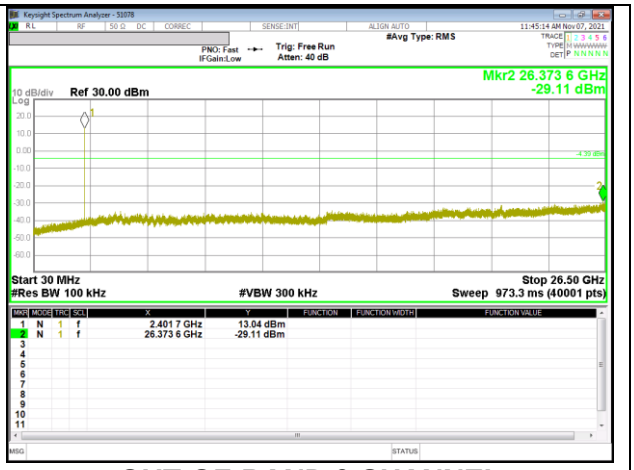
**RESULTS**

### 9.6.1. 1 Mbps

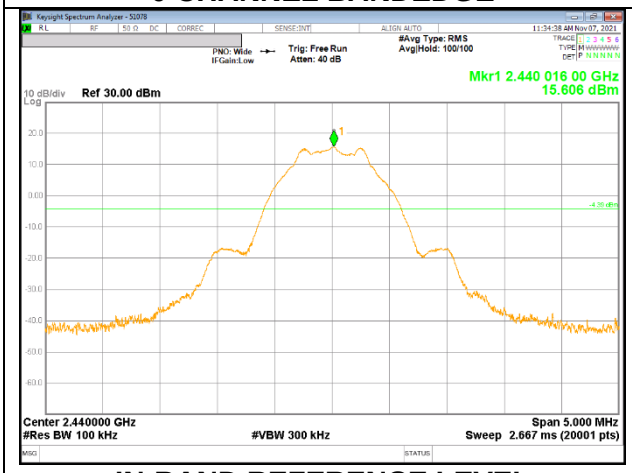
**ANT1**



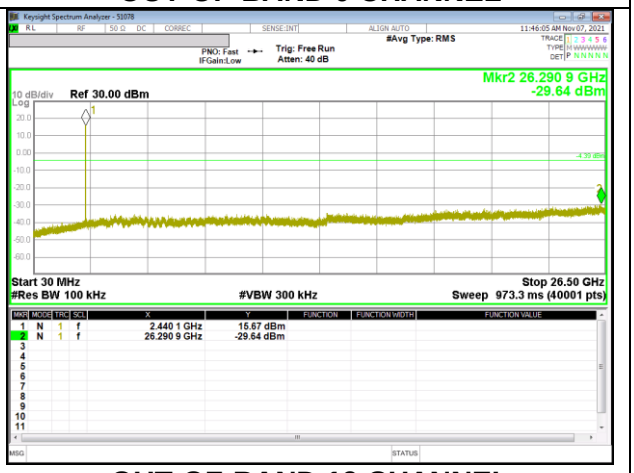

**0 CHANNEL BANDEDGE**



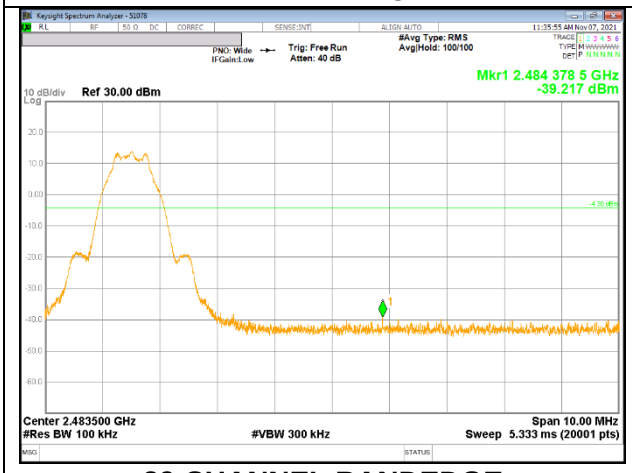

**OUT-OF-BAND 0 CHANNEL**



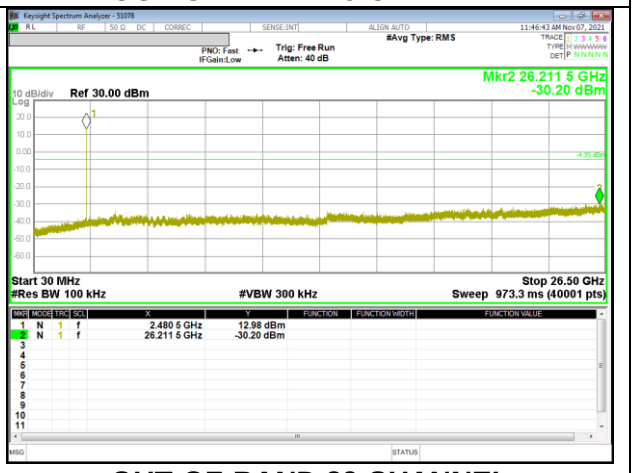

**IN-BAND REFERENCE LEVEL**




**OUT-OF-BAND 19 CHANNEL**

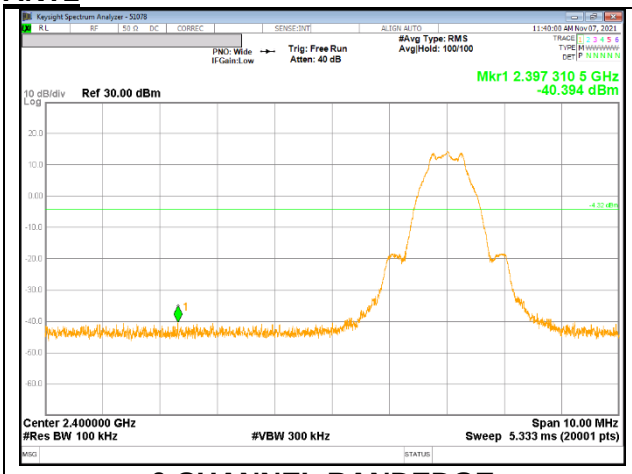



**39 CHANNEL BANDEDGE**

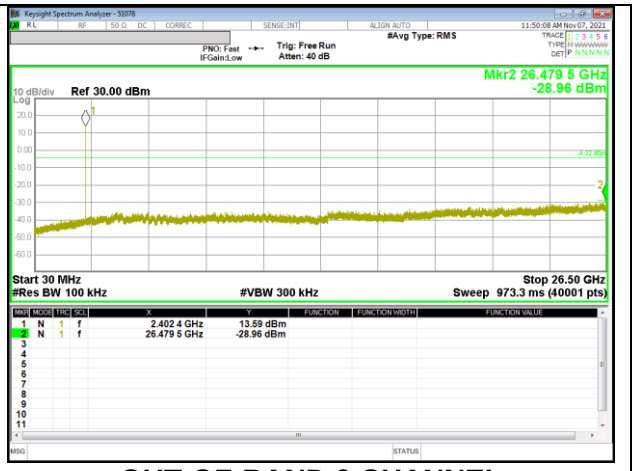



**OUT-OF-BAND 39 CHANNEL**

## ANT2

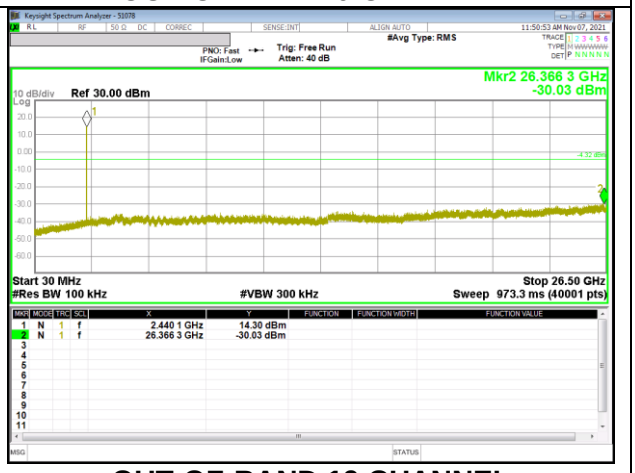



0 CHANNEL BANDEDGE

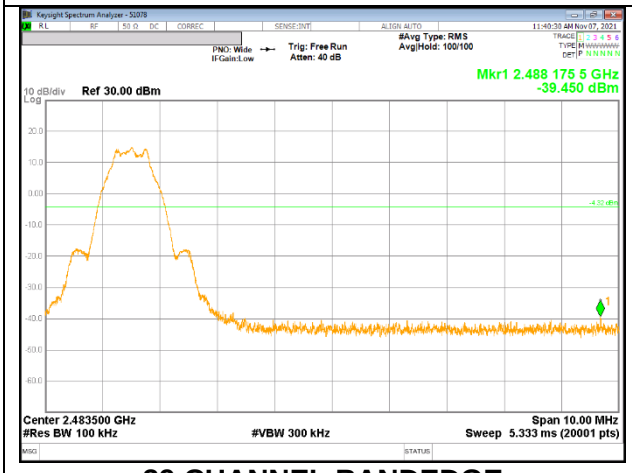



OUT-OF-BAND 0 CHANNEL

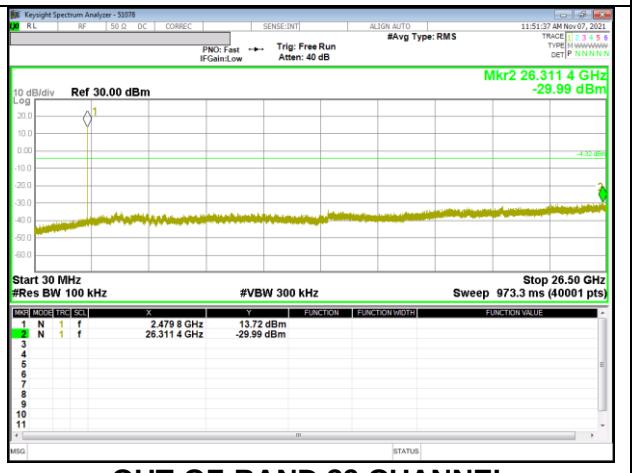

IN-BAND REFERENCE LEVEL




OUT-OF-BAND 19 CHANNEL



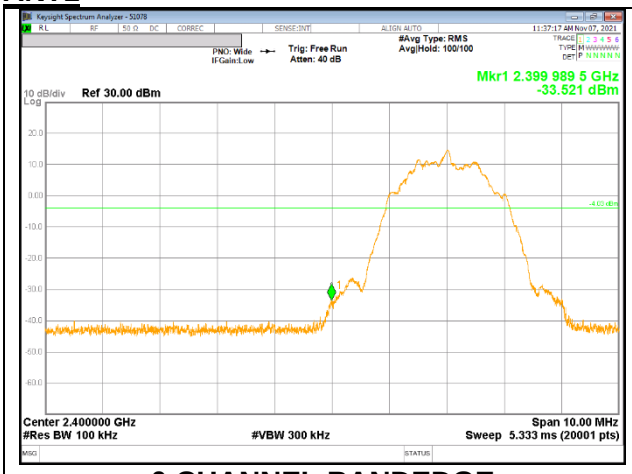

39 CHANNEL BANDEDGE



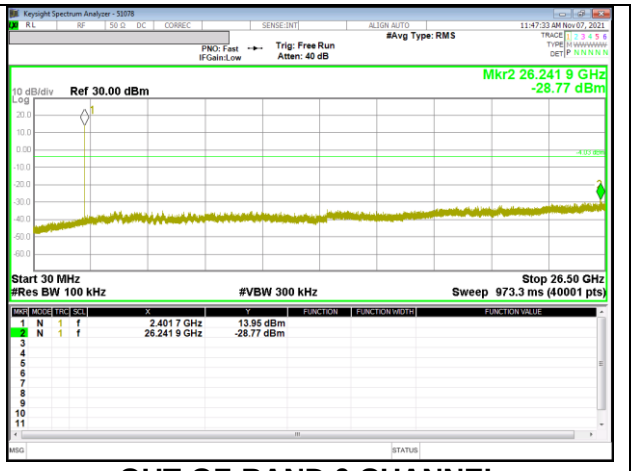

OUT-OF-BAND 39 CHANNEL

### 9.6.2. 2Mbps

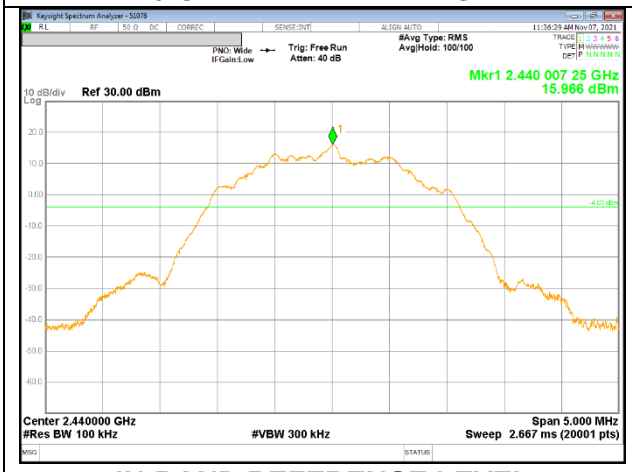
**ANT1**



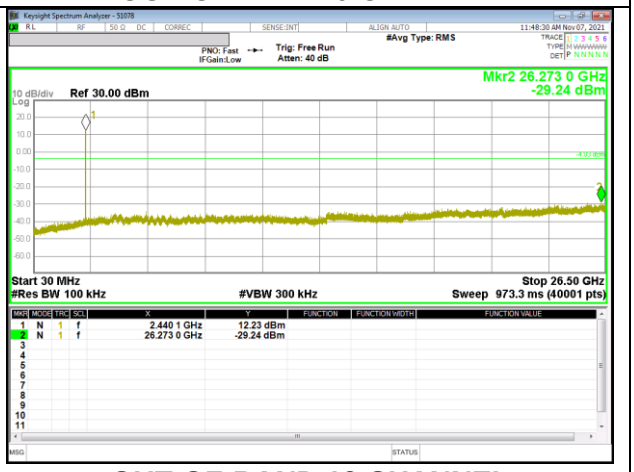

**0 CHANNEL BANDEDGE**



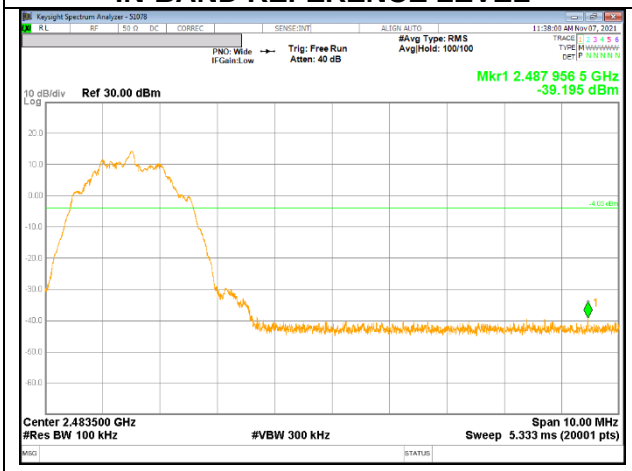

**OUT-OF-BAND 0 CHANNEL**



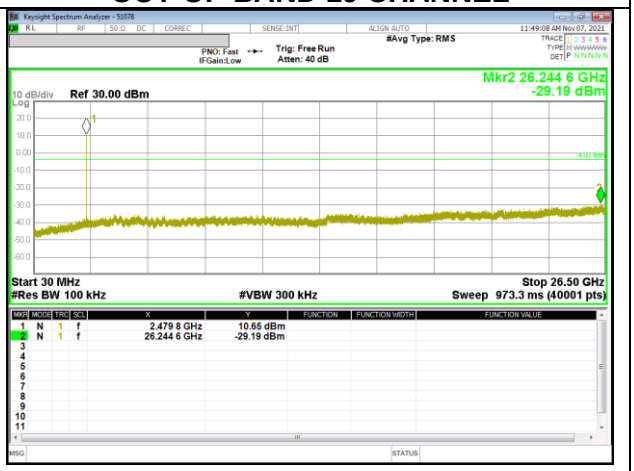

**IN-BAND REFERENCE LEVEL**




**OUT-OF-BAND 19 CHANNEL**



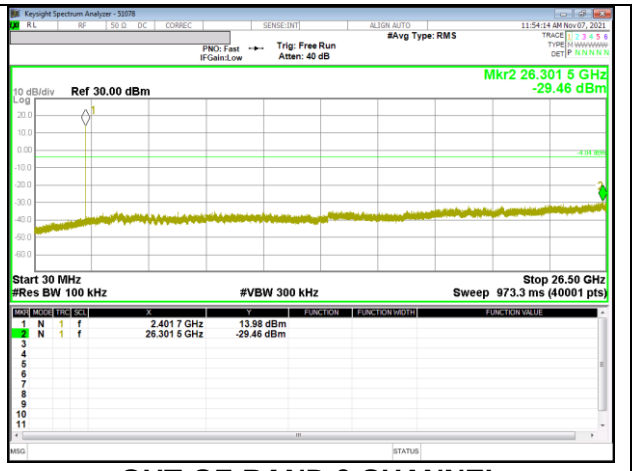

**39 CHANNEL BANDEDGE**




**OUT-OF-BAND 39 CHANNEL**

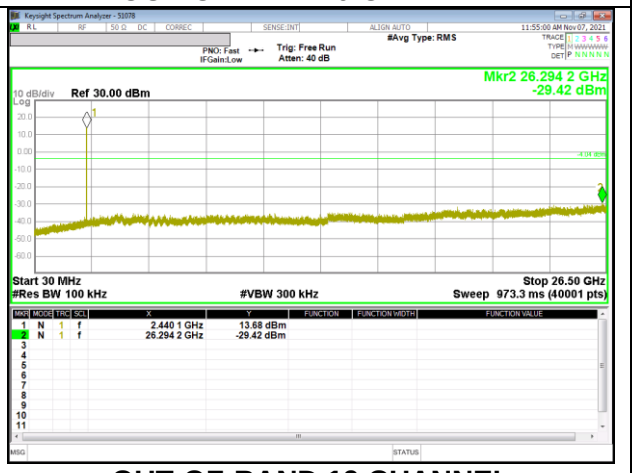
## ANT2


0 CHANNEL BANDEDGE



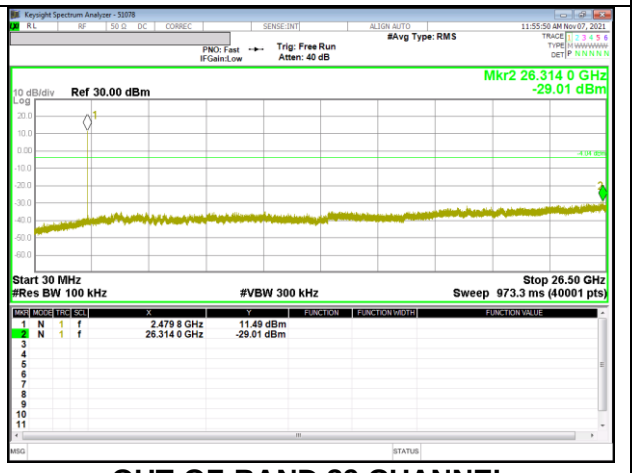

OUT-OF-BAND 0 CHANNEL


IN-BAND REFERENCE LEVEL




OUT-OF-BAND 19 CHANNEL


39 CHANNEL BANDEDGE




OUT-OF-BAND 39 CHANNEL

# 10. RADIATED TEST RESULTS

## 10.1. LIMITS AND PROCEDURE

**LIMITS**

FCC §15.205 and §15.209

| Limits for radiated disturbance of an intentional radiator | | |
|---|---|---|
| Frequency range (MHz) | Limits (μV/m) | Measurement Distance (m) |
| 0.009 – 0.490 | 2400 / F (kHz) | 300 |
| 0.490 – 1.705 | 24000 / F (kHz) | 30 |
| 1.705 – 30.0 | 30 | 30 |
| 30 – 88 | 100** | 3 |
| 88 - 216 | 150** | 3 |
| 216 – 960 | 200** | 3 |
| Above 960 | 500 | 3 |

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. (Restricted band-edge, Final detection of spurious harmonic emissions)
Duty cycle factor = 10 log (1/x). For this sample: For 1 Mbps, DCF = 10log(1/0.6208)=2.070 dB (Spectrum Analyzer round it up to 2.07 dB) and for 2 Mbps, DCF = 10log(1/0.3256)=4.873 dB (Spectrum Analyzer round it up to 4.87 dB).

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.

The spectrum from 1 GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Note : Emission was pre-scanned from 9kHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

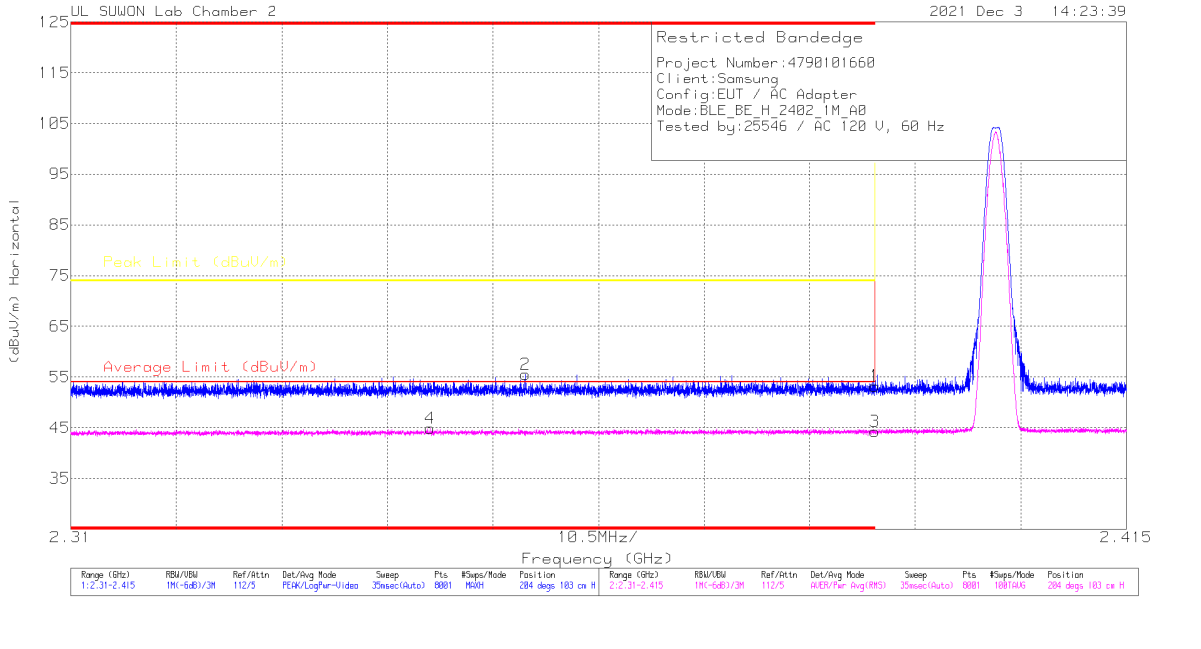
Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

# 10.2. TRANSMITTER ABOVE 1 GHz

## 10.2.1. 1 Mbps

**ANT1**
**BANDEDGE (0 CHANNEL)**

### HORIZONTAL RESULT

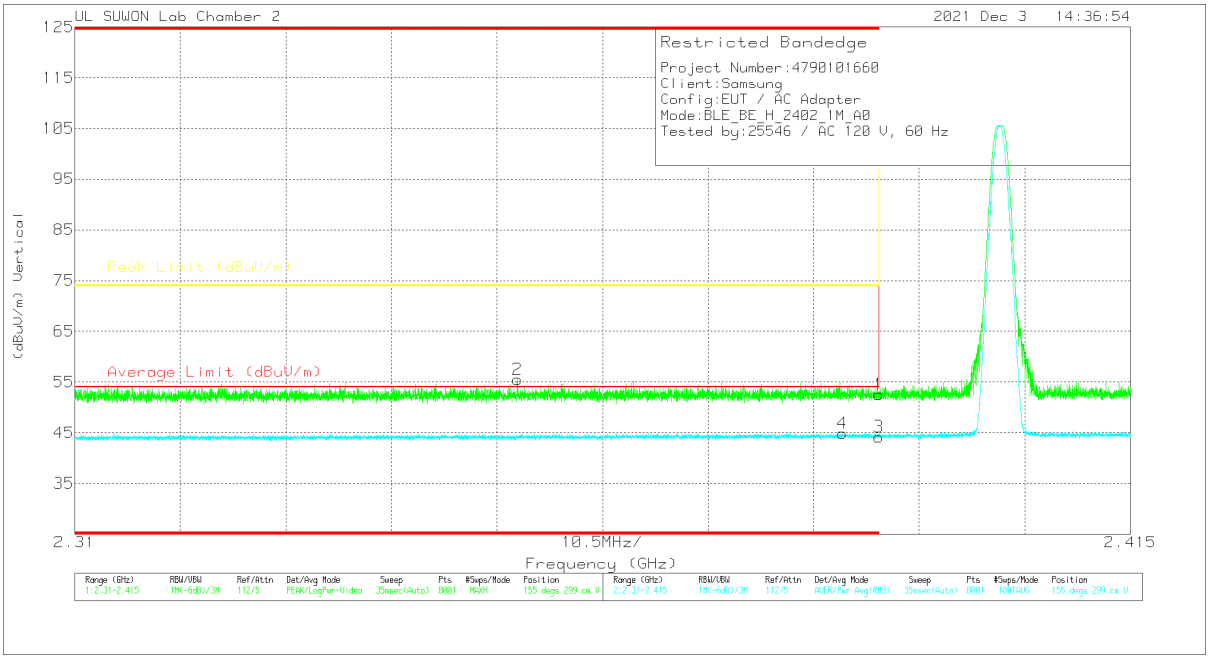



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168724 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 41.93 | Pk | 31.9 | -20.6 | 0 | 53.23 | - | - | 74 | -20.77 | 204 | 103 | H |
| 2 | * 2.35526 | 44.36 | Pk | 31.8 | -20.6 | 0 | 55.56 | - | - | 74 | -18.44 | 204 | 103 | H |
| 3 | * 2.39 | 30.95 | RMS | 31.9 | -20.6 | 2.07 | 44.32 | 54 | -9.68 | - | - | 204 | 103 | H |
| 4 | * 2.34574 | 31.59 | RMS | 31.8 | -20.6 | 2.07 | 44.86 | 54 | -9.14 | - | - | 204 | 103 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# VERTICAL RESULT



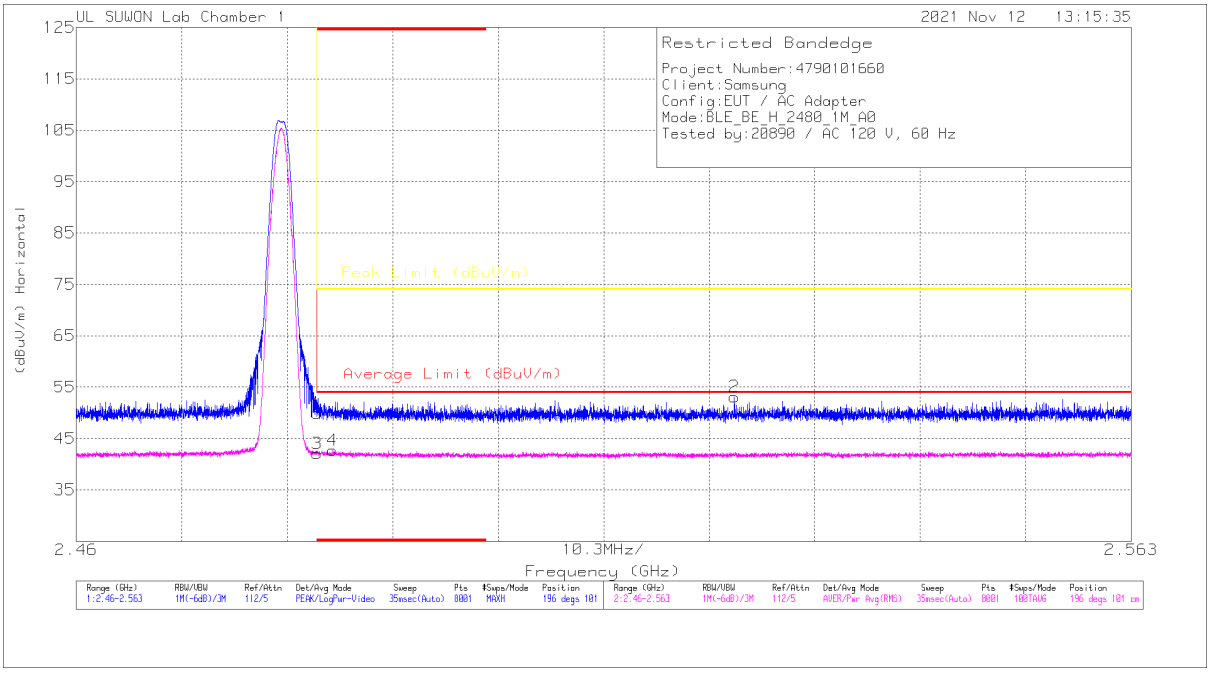

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168724 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 41.28 | Pk | 31.9 | -20.6 | 0 | 52.58 | - | - | 74 | -21.42 | 155 | 299 | V |
| 2 | * 2.35402 | 44.31 | Pk | 31.8 | -20.6 | 0 | 55.51 | - | - | 74 | -18.49 | 155 | 299 | V |
| 3 | * 2.39 | 30.83 | RMS | 31.9 | -20.6 | 2.07 | 44.2 | 54 | -9.8 | - | - | 155 | 299 | V |
| 4 | * 2.38635 | 31.53 | RMS | 31.9 | -20.6 | 2.07 | 44.9 | 54 | -9.1 | - | - | 155 | 299 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# BANDEDGE (39 CHANNEL)

## HORIZONTAL RESULT

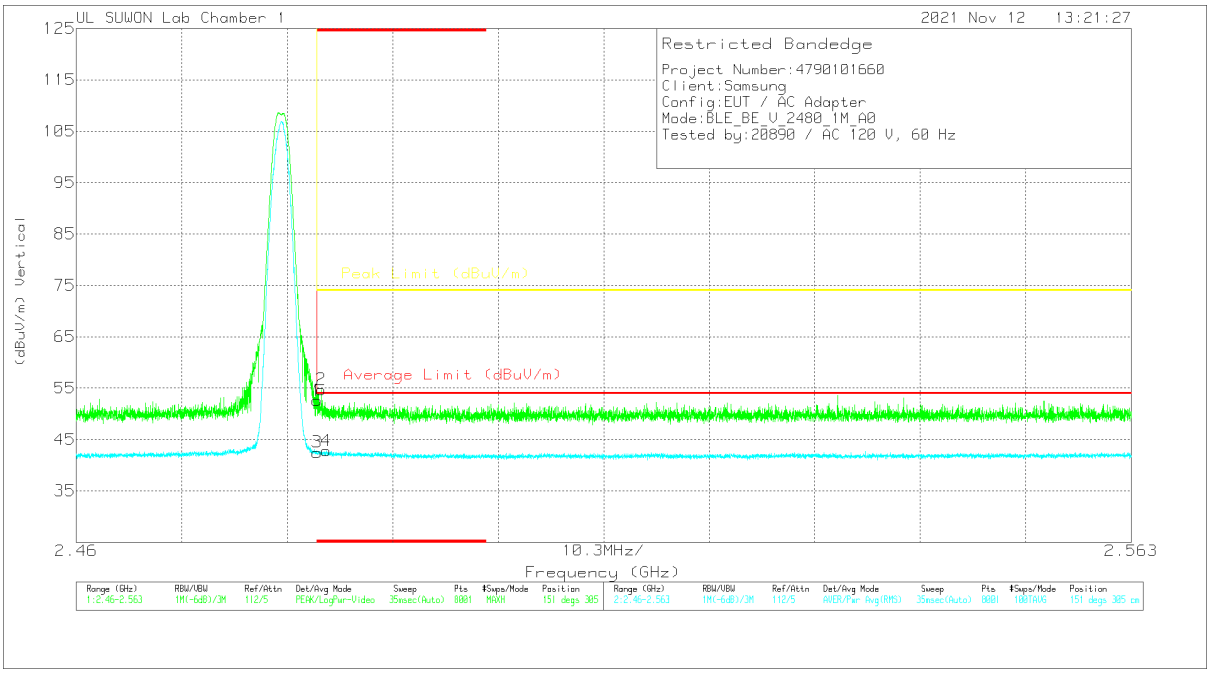



## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.48351 | 43.09 | Pk | 32 | -25.1 | 0 | 49.99 | - | - | 74 | -24.01 | 196 | 101 | H |
| 2 | 2.52425 | 46.1 | Pk | 32 | -25 | 0 | 53.1 | - | - | 74 | -20.9 | 196 | 101 | H |
| 3 | * 2.48351 | 33.1 | RMS | 32 | -25.1 | 2.07 | 42.07 | 54 | -11.93 | - | - | 196 | 101 | H |
| 4 | * 2.48502 | 33.63 | RMS | 32 | -25 | 2.07 | 42.7 | 54 | -11.3 | - | - | 196 | 101 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

## VERTICAL RESULT



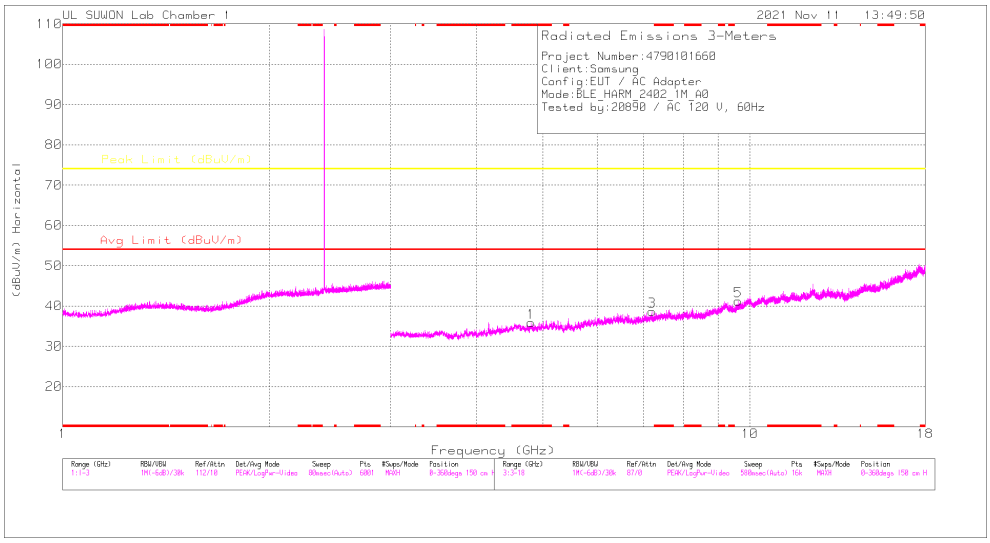

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.48351 | 45.71 | Pk | 32 | -25.1 | 0 | 52.61 | - | - | 74 | -21.39 | 151 | 305 | V |
| 2 | * 2.48392 | 47.82 | Pk | 32 | -25.1 | 0 | 54.72 | - | - | 74 | -19.28 | 151 | 305 | V |
| 3 | * 2.48351 | 33.55 | RMS | 32 | -25.1 | 2.07 | 42.52 | 54 | -11.48 | - | - | 151 | 305 | V |
| 4 | * 2.48439 | 33.85 | RMS | 32 | -25.1 | 2.07 | 42.82 | 54 | -11.18 | - | - | 151 | 305 | V |

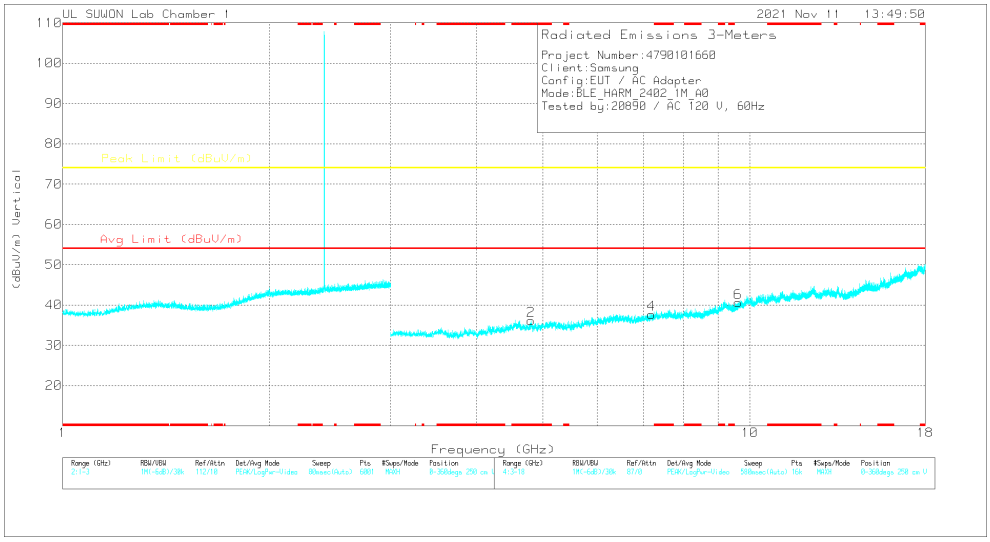
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# HARMONICS AND SPURIOUS EMISSIONS

## 0 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

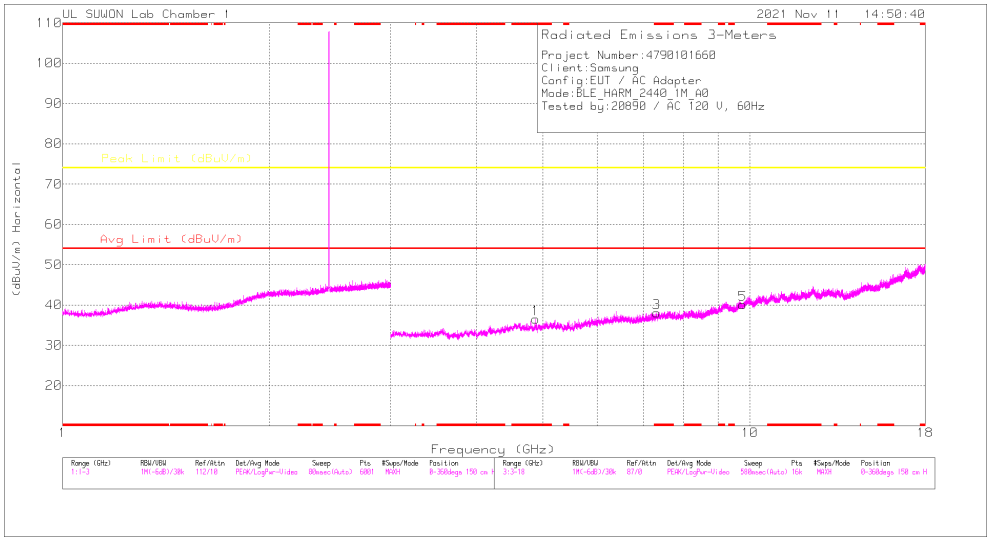
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

## RADIATED EMISSIONS

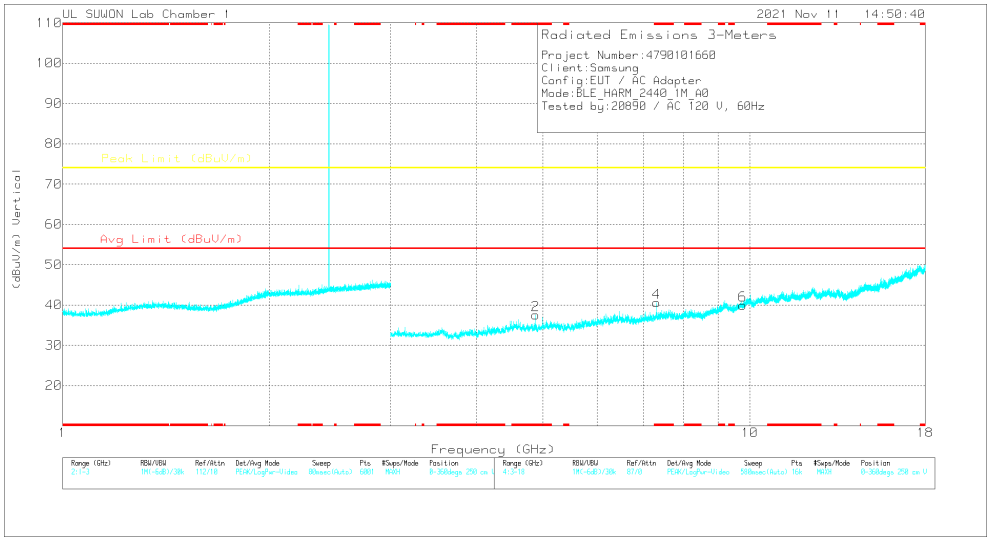
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.80347 | 41.28 | PK2 | 34.1 | -31.2 | 0 | 44.18 | - | - | 74 | -29.82 | 360 | 100 | H |
| * 4.81121 | 41.59 | PK2 | 34.1 | -31.2 | 0 | 44.49 | - | - | 74 | -29.51 | 360 | 100 | V |
| 7.21337 | 37.95 | PK2 | 35.9 | -27.5 | 0 | 46.35 | - | - | 74 | -27.65 | 360 | 100 | H |
| 7.20658 | 38.37 | PK2 | 35.9 | -27.5 | 0 | 46.77 | - | - | 74 | -27.23 | 360 | 100 | V |
| 9.60947 | 34.65 | PK2 | 37.1 | -22.9 | 0 | 48.85 | - | - | 74 | -25.15 | 360 | 100 | H |
| 9.62026 | 35.02 | PK2 | 37.2 | -22.9 | 0 | 49.32 | - | - | 74 | -24.68 | 360 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

## 19 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

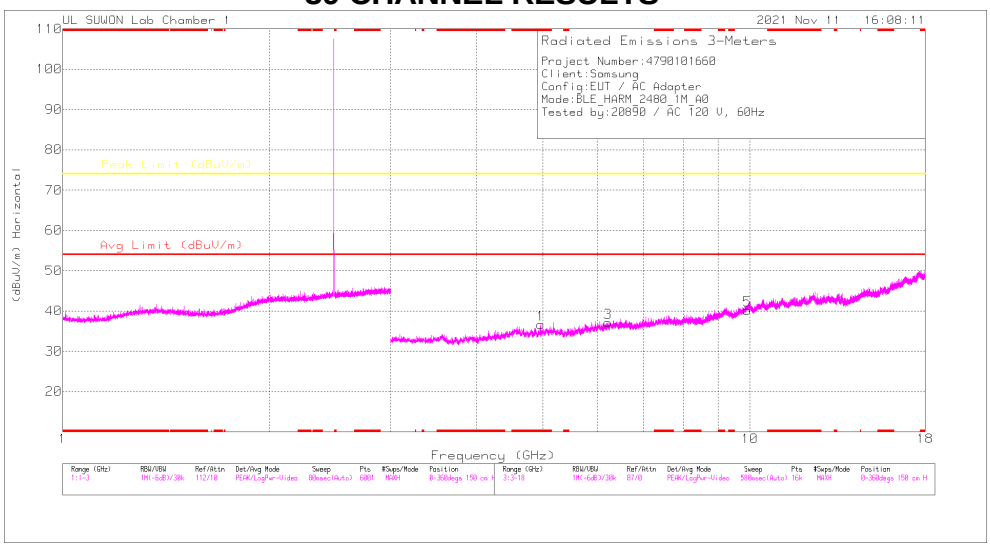
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

## RADIATED EMISSIONS

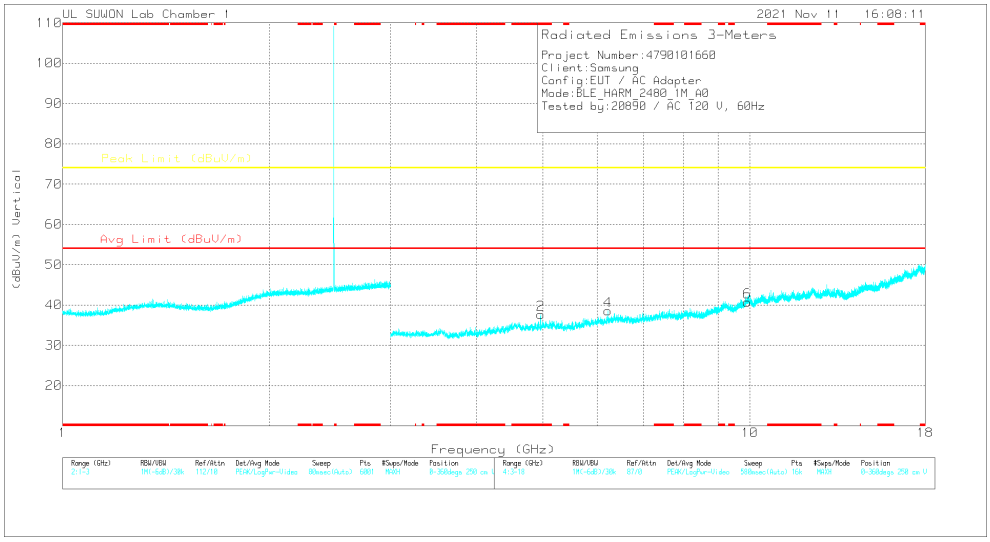
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_0016871 7 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.88025 | 42.49 | PK2 | 34.1 | -31.3 | 0 | 45.29 | - | - | 74 | -28.71 | 176 | 104 | H |
| * 4.87991 | 31.65 | MAv1 | 34.1 | -31.3 | 2.07 | 36.52 | 54 | -17.48 | - | - | 176 | 104 | H |
| * 4.88049 | 43.1 | PK2 | 34.1 | -31.3 | 0 | 45.9 | - | - | 74 | -28.1 | 166 | 241 | V |
| * 4.87979 | 31.79 | MAv1 | 34.1 | -31.3 | 2.07 | 36.66 | 54 | -17.34 | - | - | 166 | 241 | V |
| * 7.31031 | 38.81 | PK2 | 35.8 | -27.3 | 0 | 47.31 | - | - | 74 | -26.69 | 72 | 148 | H |
| * 7.31163 | 25.99 | MAv1 | 35.8 | -27.2 | 2.07 | 36.66 | 54 | -17.34 | - | - | 72 | 148 | H |
| * 7.32073 | 39.41 | PK2 | 35.8 | -27.1 | 0 | 48.11 | - | - | 74 | -25.89 | 145 | 338 | V |
| * 7.31685 | 26 | MAv1 | 35.8 | -27.2 | 2.07 | 36.67 | 54 | -17.33 | - | - | 145 | 338 | V |
| 9.75381 | 35.73 | PK2 | 37.4 | -23.6 | 0 | 49.53 | - | - | 74 | -24.47 | 0 | 100 | H |
| 9.77023 | 34.7 | PK2 | 37.5 | -23.6 | 0 | 48.6 | - | - | 74 | -25.4 | 0 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

## 39 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

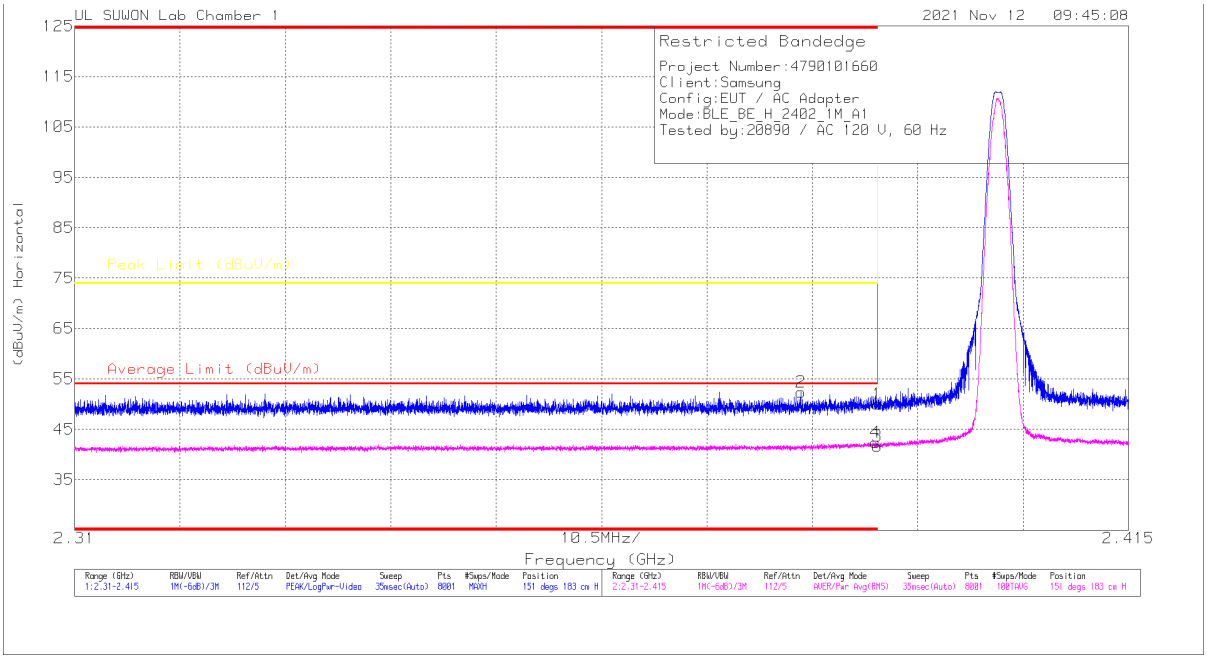
## RADIATED EMISSIONS

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_0016871 7 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.96007 | 43.11 | PK2 | 34.1 | -31.4 | 0 | 45.81 | - | - | 74 | -28.19 | 173 | 100 | H |
| * 4.95983 | 32.72 | MAv1 | 34.1 | -31.4 | 2.07 | 37.49 | 54 | -16.51 | - | - | 173 | 100 | H |
| * 4.95983 | 43.46 | PK2 | 34.1 | -31.4 | 0 | 46.16 | - | - | 74 | -27.84 | 181 | 263 | V |
| * 4.95983 | 33.8 | MAv1 | 34.1 | -31.4 | 2.07 | 38.57 | 54 | -15.43 | - | - | 181 | 263 | V |
| 6.21662 | 39.62 | PK2 | 35.5 | -29 | 0 | 46.12 | - | - | 74 | -27.88 | 264 | 256 | H |
| 6.20654 | 27.06 | MAv1 | 35.5 | -29.1 | 2.07 | 35.53 | - | - | - | - | 264 | 256 | H |
| 6.20788 | 38.89 | PK2 | 35.5 | -29.1 | 0 | 45.29 | - | - | 74 | -28.71 | 147 | 287 | V |
| 6.2081 | 27.02 | MAv1 | 35.5 | -29.1 | 2.07 | 35.49 | - | - | - | - | 147 | 287 | V |
| 9.9182 | 33.99 | PK2 | 37.7 | -21.5 | 0 | 50.19 | - | - | 74 | -23.81 | 0 | 100 | H |
| 9.92303 | 34.02 | PK2 | 37.7 | -21.4 | 0 | 50.32 | - | - | 74 | -23.68 | 0 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

# ANT2
# BANDEDGE (0 CHANNEL)

## HORIZONTAL RESULT

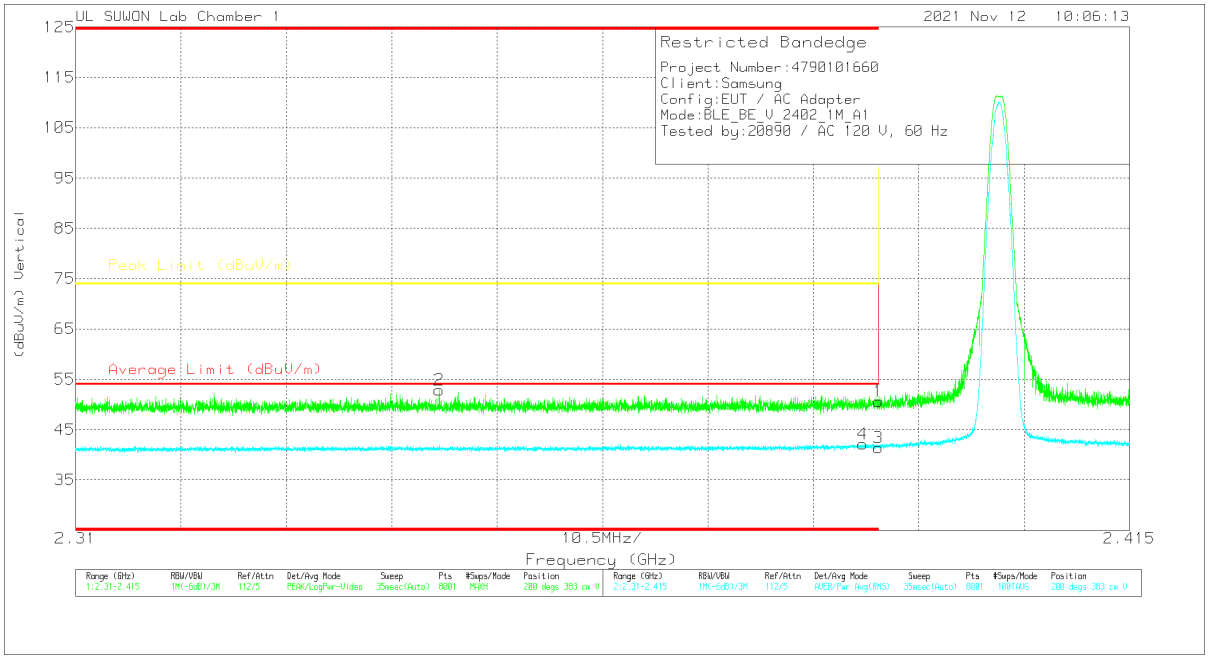



## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 49.5 | Pk | 31.8 | -25.3 | 0 | 50 | - | - | 74 | -24 | 151 | 183 | H |
| 2 | * 2.38238 | 45.93 | Pk | 31.8 | -25.3 | 0 | 52.43 | - | - | 74 | -21.57 | 151 | 183 | H |
| 3 | * 2.39 | 33.13 | RMS | 31.8 | -25.3 | 2.07 | 41.7 | 54 | -12.3 | - | - | 151 | 183 | H |
| 4 | * 2.38977 | 33.8 | RMS | 31.8 | -25.3 | 2.07 | 42.37 | 54 | -11.63 | - | - | 151 | 183 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# VERTICAL RESULT



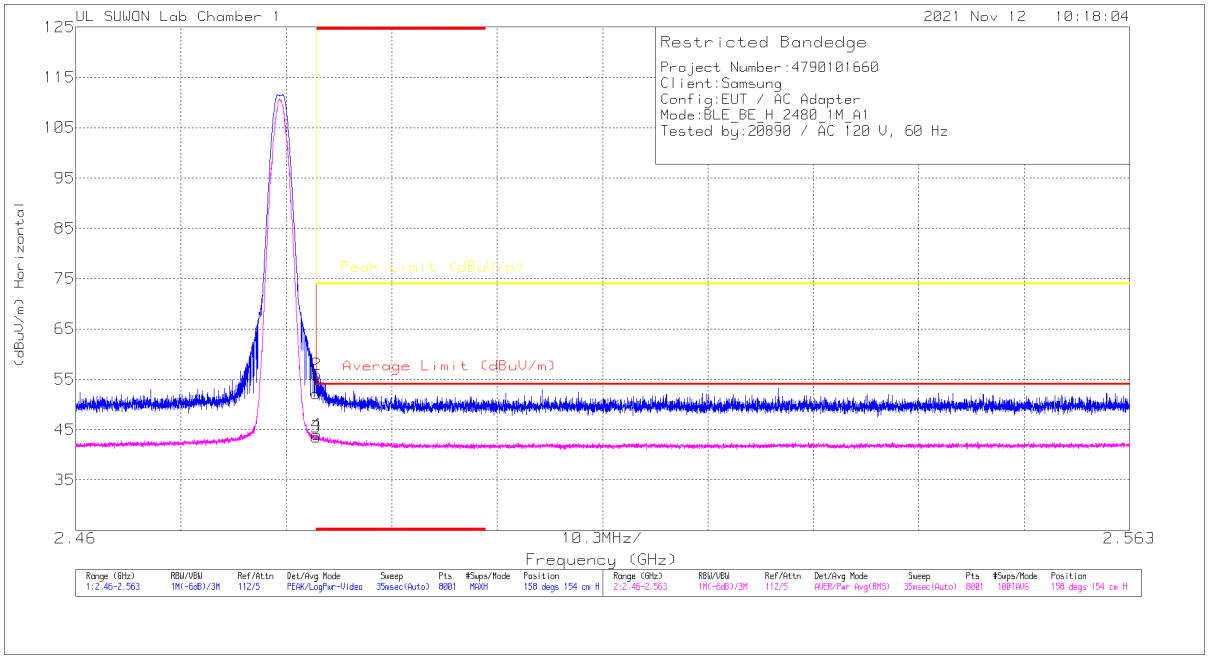

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 44.11 | Pk | 31.8 | -25.3 | 0 | 50.61 | - | - | 74 | -23.39 | 200 | 383 | V |
| 2 | * 2.34621 | 46.66 | Pk | 31.7 | -25.5 | 0 | 52.86 | - | - | 74 | -21.14 | 200 | 383 | V |
| 3 | * 2.39 | 32.83 | RMS | 31.8 | -25.3 | 2.07 | 41.4 | 54 | -12.6 | - | - | 200 | 383 | V |
| 4 | * 2.3884 | 33.64 | RMS | 31.8 | -25.3 | 2.07 | 42.21 | 54 | -11.79 | - | - | 200 | 383 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# BANDEDGE (39 CHANNEL)

## HORIZONTAL RESULT

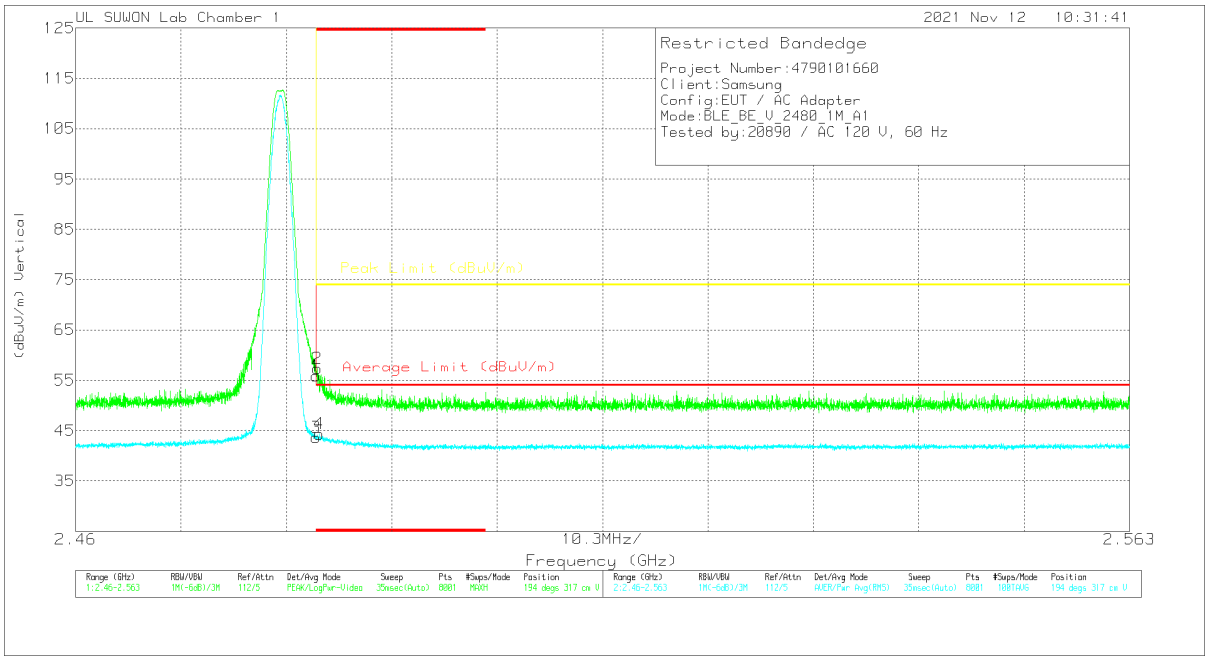



## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.48351 | 45.28 | Pk | 32 | -25.1 | 0 | 52.18 | - | - | 74 | -21.82 | 158 | 154 | H |
| 2 | * 2.48355 | 49.03 | Pk | 32 | -25.1 | 0 | 55.93 | - | - | 74 | -18.07 | 158 | 154 | H |
| 3 | * 2.48351 | 34.52 | RMS | 32 | -25.1 | 2.07 | 43.49 | 54 | -10.51 | - | - | 158 | 154 | H |
| 4 | * 2.48357 | 35.06 | RMS | 32 | -25.1 | 2.07 | 44.03 | 54 | -9.97 | - | - | 158 | 154 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

## VERTICAL RESULT



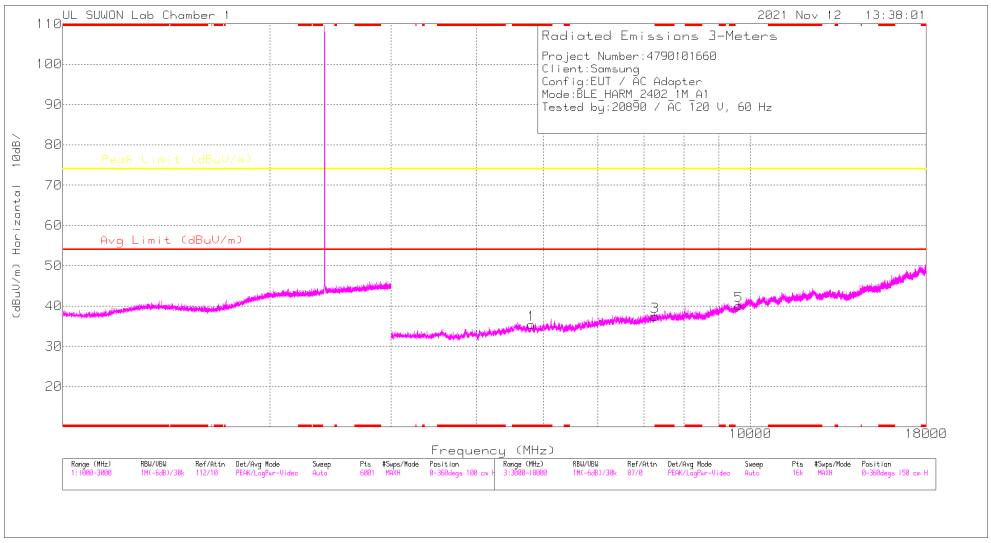

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.48351 | 48.97 | Pk | 32 | -25.1 | 0 | 55.87 | - | - | 74 | -18.13 | 194 | 317 | V |
| 2 | * 2.48363 | 50.47 | Pk | 32 | -25.1 | 0 | 57.37 | - | - | 74 | -16.63 | 194 | 317 | V |
| 3 | * 2.48351 | 34.73 | RMS | 32 | -25.1 | 2.07 | 43.7 | 54 | -10.3 | - | - | 194 | 317 | V |
| 4 | * 2.48382 | 35.37 | RMS | 32 | -25.1 | 2.07 | 44.34 | 54 | -9.66 | - | - | 194 | 317 | V |

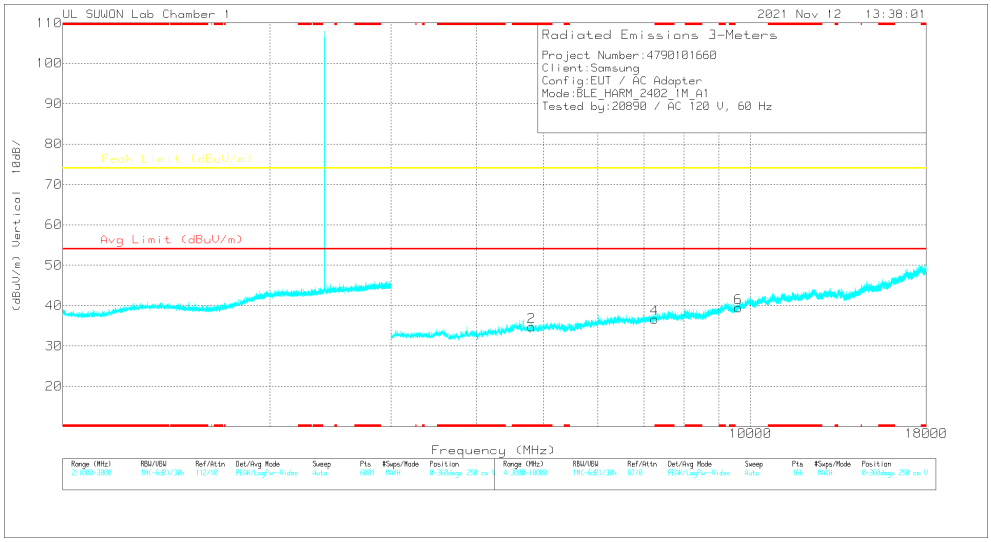
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# HARMONICS AND SPURIOUS EMISSIONS

## 0 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

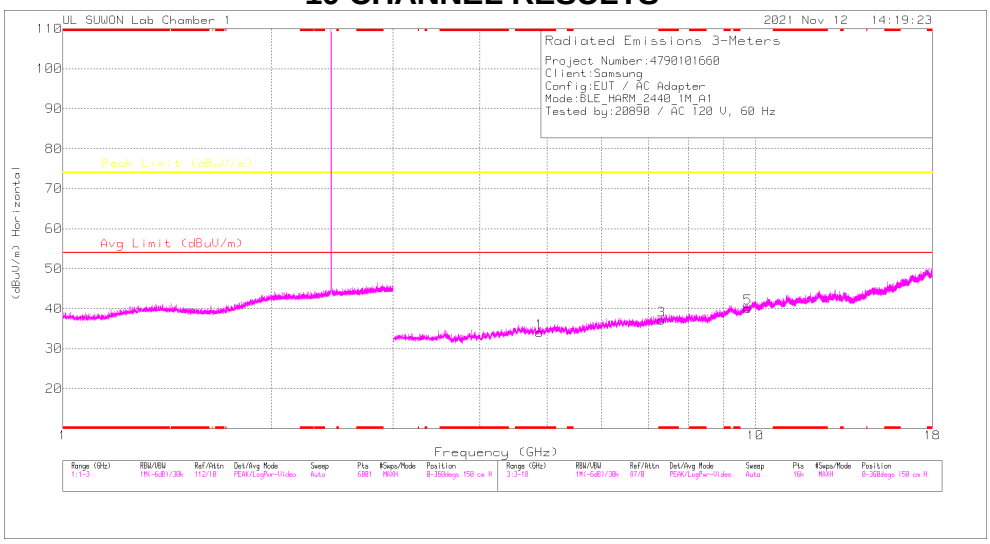
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

## RADIATED EMISSIONS

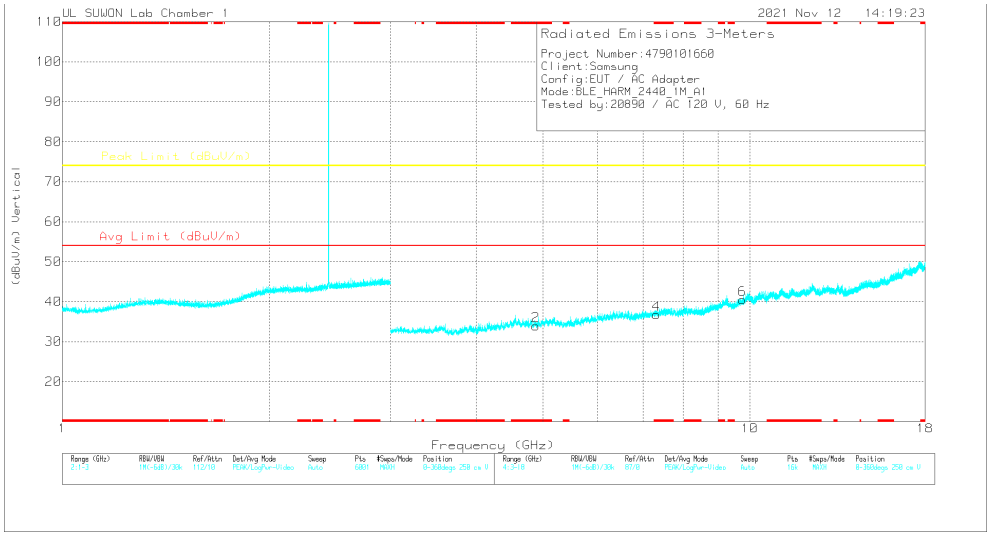
| Frequency (MHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4802.2865 | 41.48 | PK2 | 34.1 | -31.2 | 0 | 44.38 | - | - | 74 | -29.62 | 0 | 100 | H |
| * 4809.329 | 41.35 | PK2 | 34.1 | -31.2 | 0 | 44.25 | - | - | 74 | -29.75 | 0 | 100 | V |
| * 7263.2793 | 37.94 | PK2 | 35.8 | -27.4 | 0 | 46.34 | - | - | 74 | -27.66 | 0 | 100 | H |
| * 7253.8333 | 37.78 | PK2 | 35.8 | -27.4 | 0 | 46.18 | - | - | 74 | -27.82 | 0 | 100 | V |
| 9600.6341 | 34.72 | PK2 | 37.1 | -22.8 | 0 | 49.02 | - | - | 74 | -24.98 | 0 | 100 | H |
| 9610.4767 | 34.59 | PK2 | 37.1 | -22.9 | 0 | 48.79 | - | - | 74 | -25.21 | 0 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

## 19 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

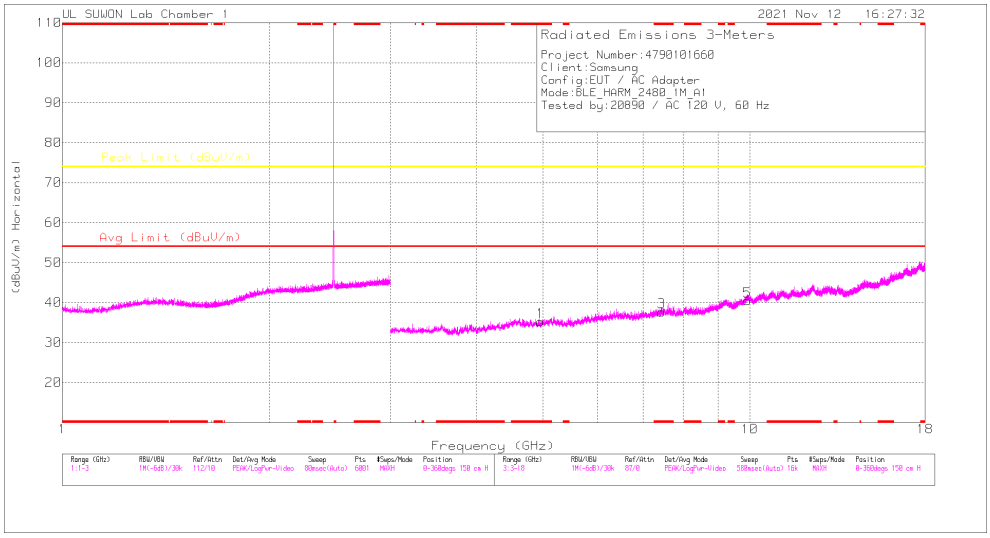
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

## RADIATED EMISSIONS

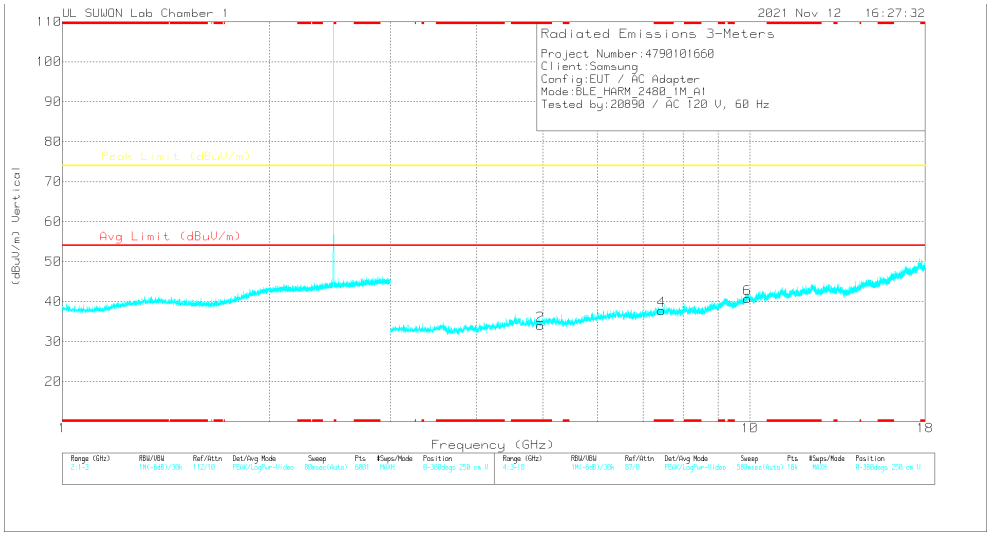
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.87823 | 41.92 | PK2 | 34.1 | -31.3 | 0 | 44.72 | - | - | 74 | -29.28 | 0 | 100 | H |
| * 4.87369 | 41.28 | PK2 | 34.1 | -31.3 | 0 | 44.08 | - | - | 74 | -29.92 | 0 | 100 | V |
| * 7.32378 | 38.02 | PK2 | 35.8 | -27.1 | 0 | 46.72 | - | - | 74 | -27.28 | 0 | 100 | H |
| * 7.31805 | 38.02 | PK2 | 35.8 | -27.2 | 0 | 46.62 | - | - | 74 | -27.38 | 0 | 100 | V |
| 9.75091 | 34.93 | PK2 | 37.4 | -23.5 | 0 | 48.83 | - | - | 74 | -25.17 | 0 | 100 | H |
| 9.75551 | 35.12 | PK2 | 37.4 | -23.5 | 0 | 49.02 | - | - | 74 | -24.98 | 0 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

## 39 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

## RADIATED EMISSIONS

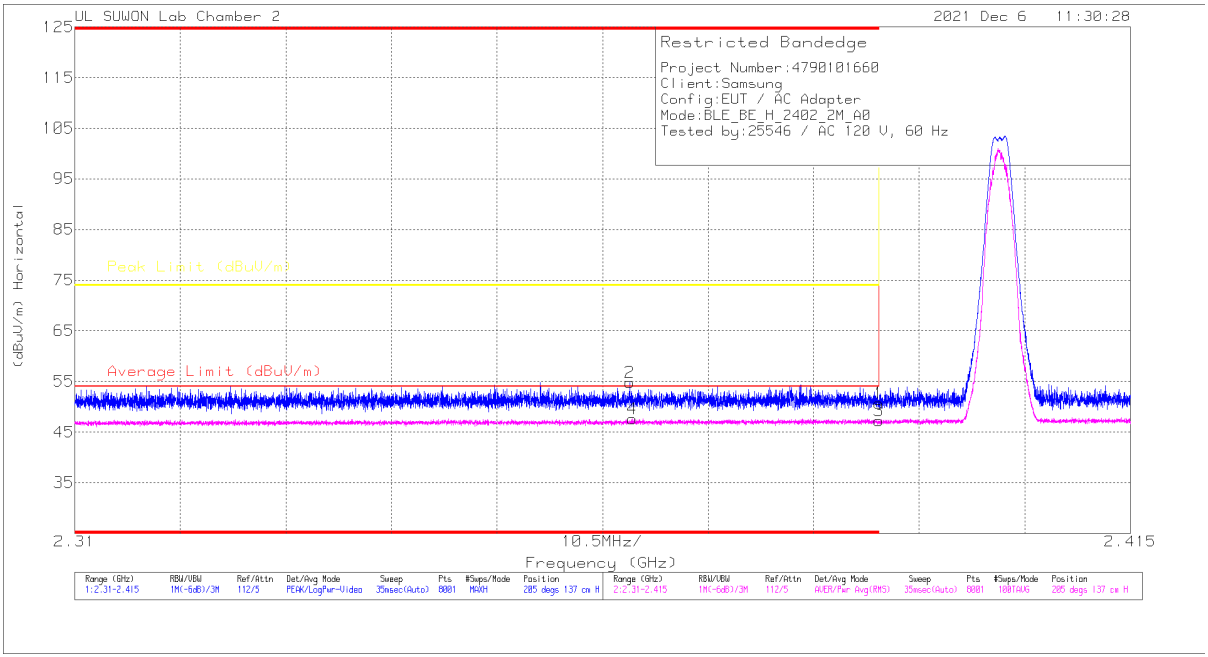
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.96255 | 41.07 | PK2 | 34.1 | -31.4 | 0 | 43.77 | - | - | 74 | -30.23 | 0 | 100 | H |
| * 4.95373 | 41.4 | PK2 | 34.1 | -31.4 | 0 | 44.1 | - | - | 74 | -29.9 | 0 | 100 | V |
| * 7.44884 | 38.54 | PK2 | 35.8 | -26.7 | 0 | 47.64 | - | - | 74 | -26.36 | 0 | 100 | H |
| * 7.44191 | 37.68 | PK2 | 35.8 | -26.7 | 0 | 46.78 | - | - | 74 | -27.22 | 0 | 100 | V |
| 9.92007 | 33.86 | PK2 | 37.7 | -21.5 | 0 | 50.06 | - | - | 74 | -23.94 | 0 | 100 | H |
| 9.92061 | 33.57 | PK2 | 37.7 | -21.5 | 0 | 49.77 | - | - | 74 | -24.23 | 0 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

### 10.2.2. 2 Mbps

## ANT1
## BANDEDGE (0 CHANNEL)

### HORIZONTAL RESULT

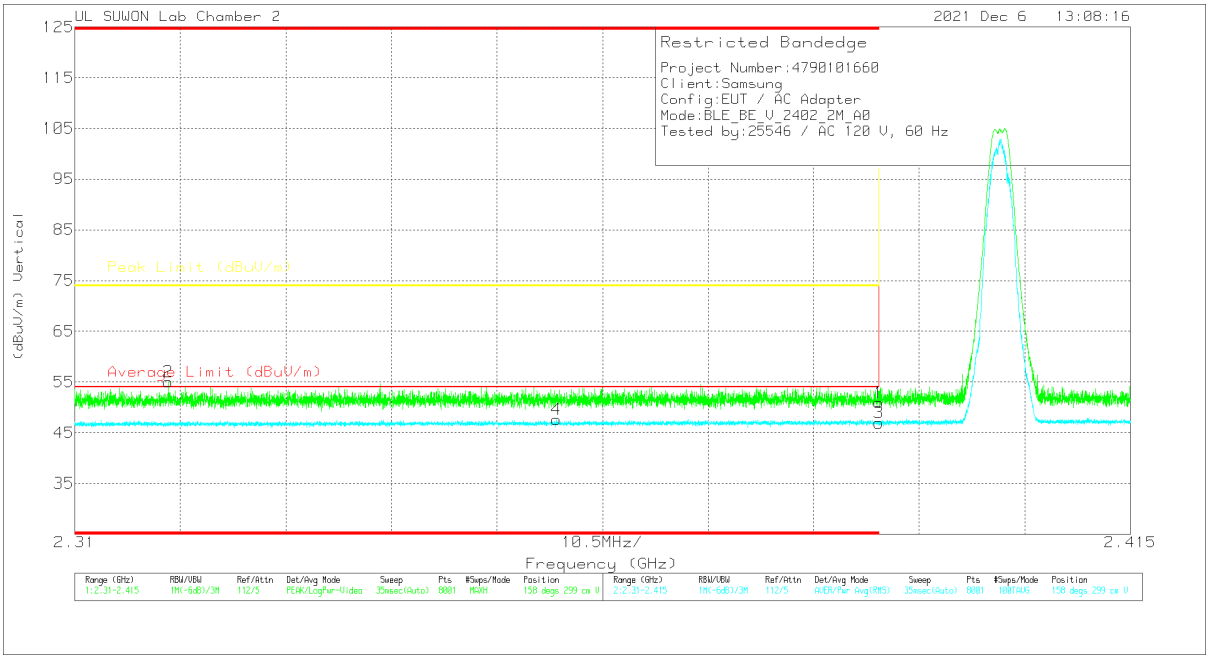



## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168724 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 39.35 | Pk | 31.9 | -20.6 | 0 | 50.65 | - | - | 74 | -23.35 | 205 | 137 | H |
| 2 | * 2.36519 | 43.58 | Pk | 31.8 | -20.6 | 0 | 54.78 | - | - | 74 | -19.22 | 205 | 137 | H |
| 3 | * 2.39 | 31.01 | RMS | 31.9 | -20.6 | 4.87 | 47.18 | 54 | -6.82 | - | - | 205 | 137 | H |
| 4 | * 2.36547 | 31.59 | RMS | 31.8 | -20.6 | 4.87 | 47.66 | 54 | -6.34 | - | - | 205 | 137 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# VERTICAL RESULT



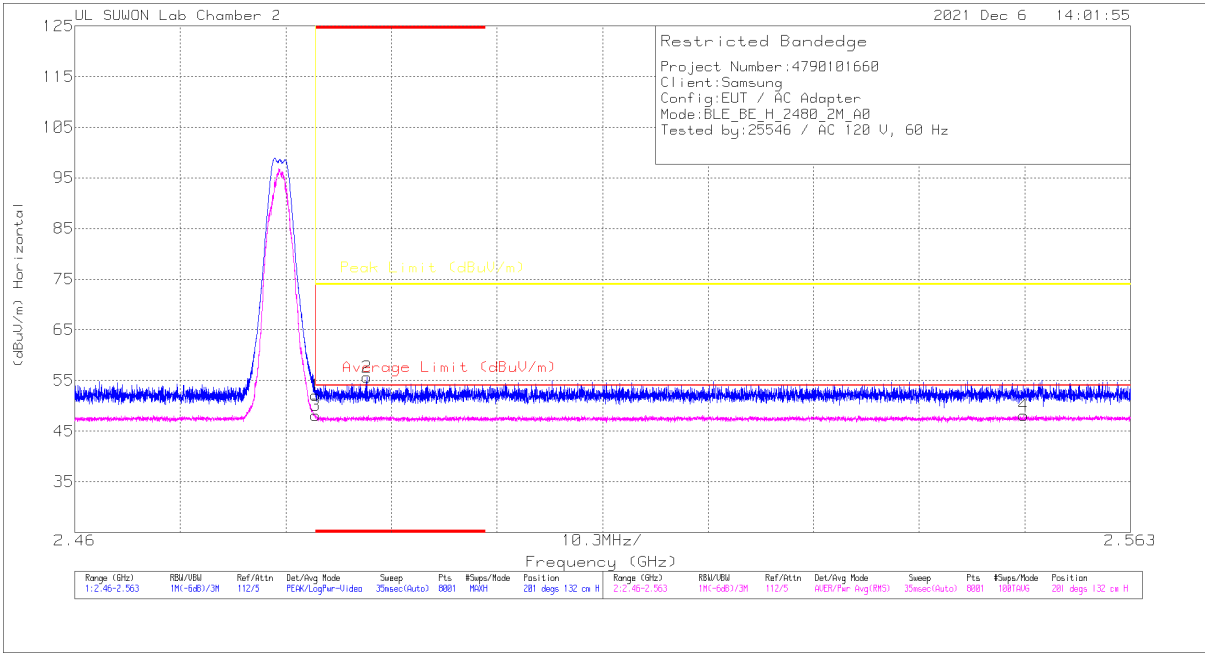

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168724 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 39.6 | Pk | 31.9 | -20.6 | 0 | 50.9 | - | - | 74 | -23.1 | 158 | 299 | V |
| 2 | * 2.31928 | 44.03 | Pk | 31.7 | -20.7 | 0 | 55.03 | - | - | 74 | -18.97 | 158 | 299 | V |
| 3 | * 2.39 | 30.76 | RMS | 31.9 | -20.6 | 4.87 | 46.93 | 54 | -7.07 | - | - | 158 | 299 | V |
| 4 | * 2.35789 | 31.55 | RMS | 31.8 | -20.6 | 4.87 | 47.62 | 54 | -6.38 | - | - | 158 | 299 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# BANDEDGE (39 CHANNEL)

## HORIZONTAL RESULT

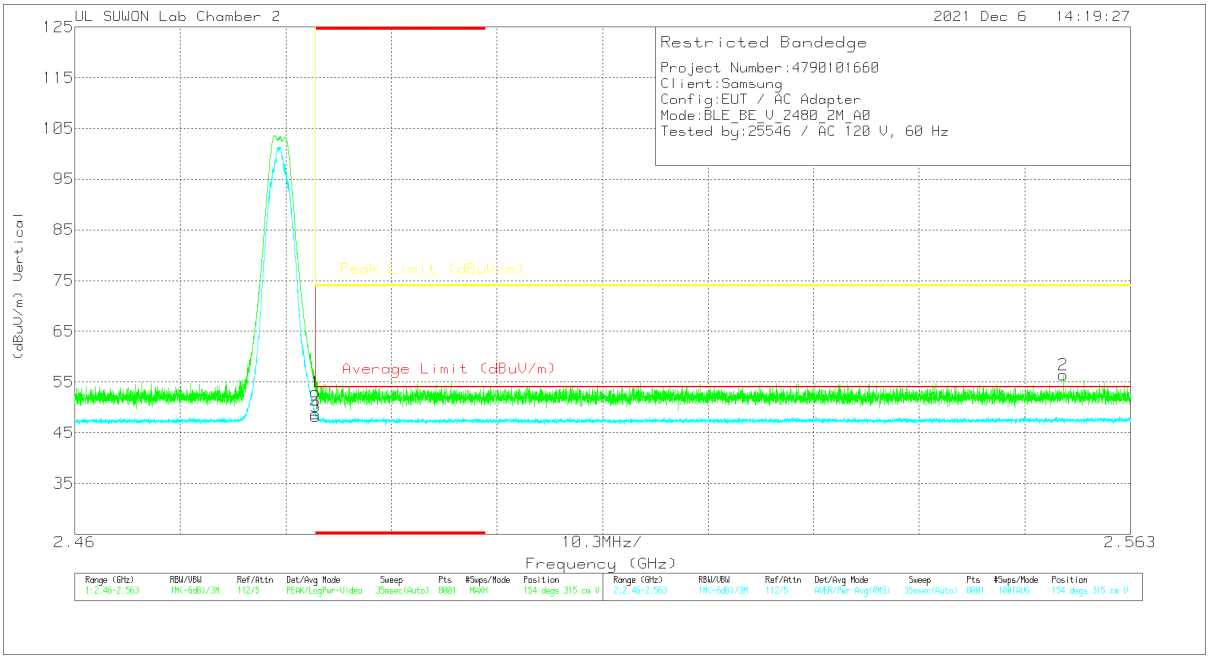



## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168724 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.48351 | 40.43 | Pk | 32 | -20.4 | 0 | 52.03 | - | - | 74 | -21.97 | 201 | 132 | H |
| 2 | * 2.48849 | 44 | Pk | 32.1 | -20.4 | 0 | 55.7 | - | - | 74 | -18.3 | 201 | 132 | H |
| 3 | * 2.48351 | 31.59 | RMS | 32 | -20.4 | 4.87 | 48.06 | 54 | -5.94 | - | - | 201 | 132 | H |
| 4 | 2.5526 | 31.36 | RMS | 32.2 | -20.3 | 4.87 | 48.13 | 54 | -5.87 | - | - | 201 | 132 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# VERTICAL RESULT



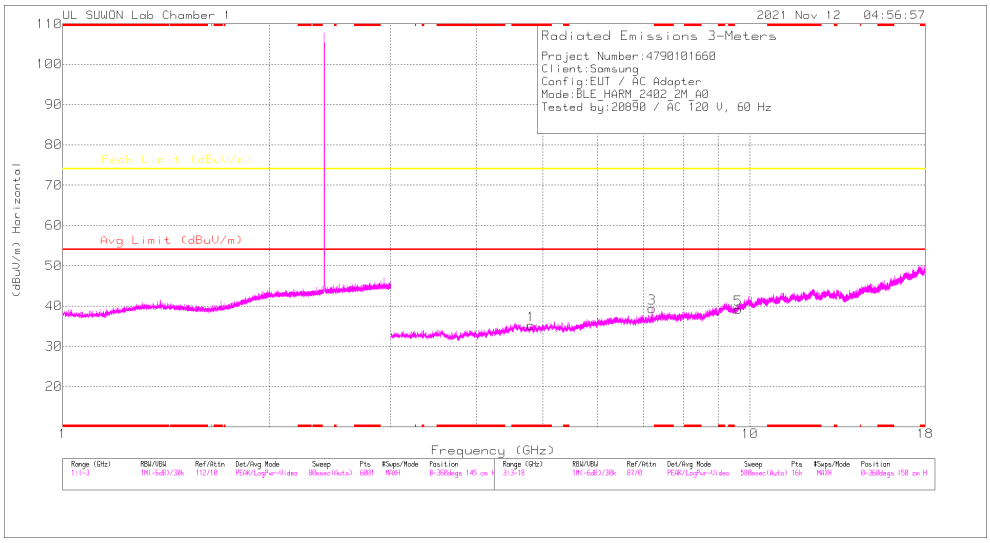

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168724 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.48351 | 41.45 | Pk | 32 | -20.4 | 0 | 53.05 | - | - | 74 | -20.95 | 154 | 315 | V |
| 2 | 2.55646 | 44.5 | Pk | 32.2 | -20.3 | 0 | 56.4 | - | - | 74 | -17.6 | 154 | 315 | V |
| 3 | * 2.48351 | 31.71 | RMS | 32 | -20.4 | 4.87 | 48.18 | 54 | -5.82 | - | - | 154 | 315 | V |
| 4 | * 2.48352 | 32.2 | RMS | 32 | -20.4 | 4.87 | 48.67 | 54 | -5.33 | - | - | 154 | 315 | V |

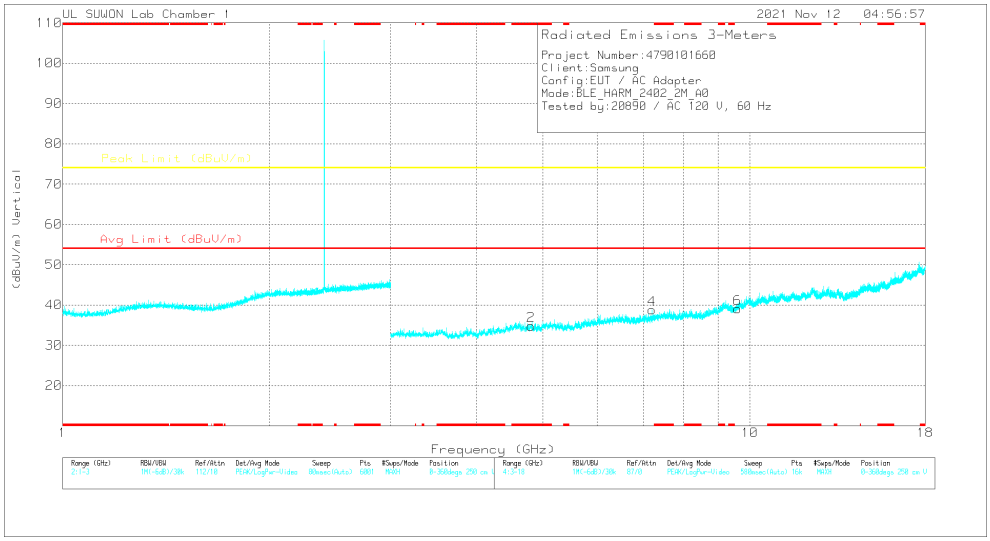
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# HARMONICS AND SPURIOUS EMISSIONS

## 0 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

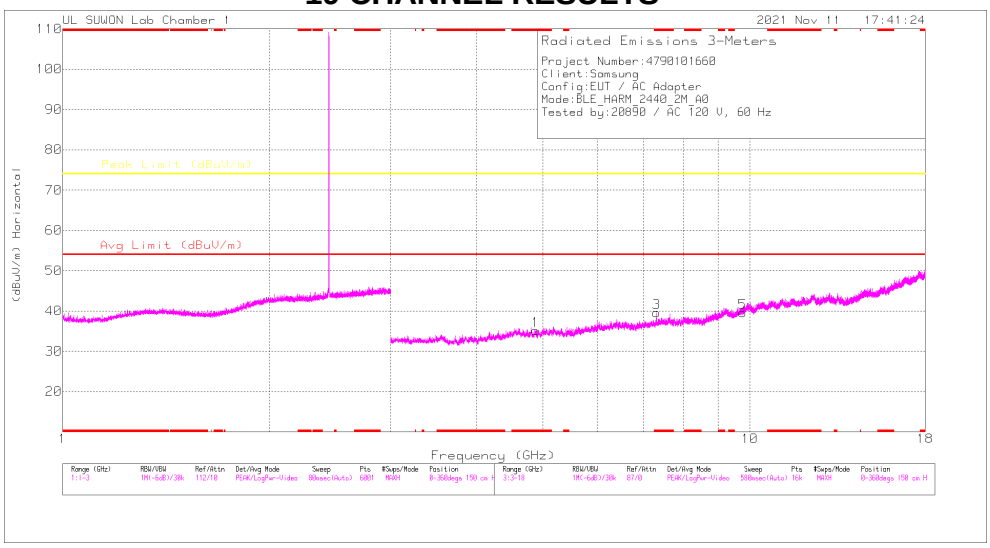
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

## RADIATED EMISSIONS

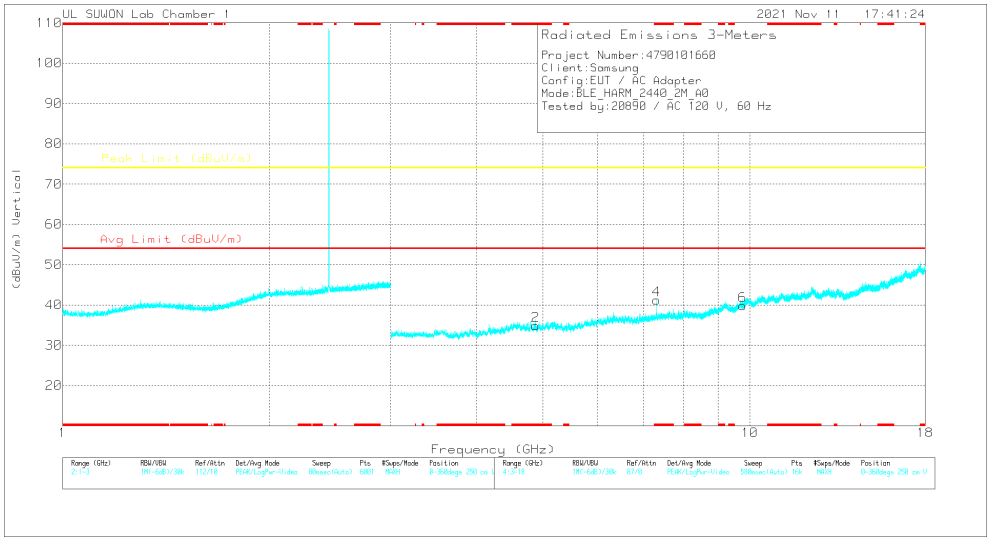
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.80289 | 42.15 | PK2 | 34.1 | -31.2 | 0 | 45.05 | - | - | 74 | -28.95 | 360 | 100 | H |
| * 4.80184 | 41.18 | PK2 | 34.1 | -31.2 | 0 | 44.08 | - | - | 74 | -29.92 | 0 | 100 | V |
| 7.21067 | 37.66 | PK2 | 35.9 | -27.5 | 0 | 46.06 | - | - | 74 | -27.94 | 62 | 232 | H |
| 7.20745 | 38.92 | PK2 | 35.9 | -27.5 | 0 | 47.32 | - | - | 74 | -26.68 | 331 | 100 | V |
| 9.60334 | 34.33 | PK2 | 37.1 | -22.9 | 0 | 48.53 | - | - | 74 | -25.47 | 360 | 100 | H |
| 9.61472 | 34.42 | PK2 | 37.2 | -22.9 | 0 | 48.72 | - | - | 74 | -25.28 | 0 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

# 19 CHANNEL RESULTS




# HORIZONTAL




# VERTICAL

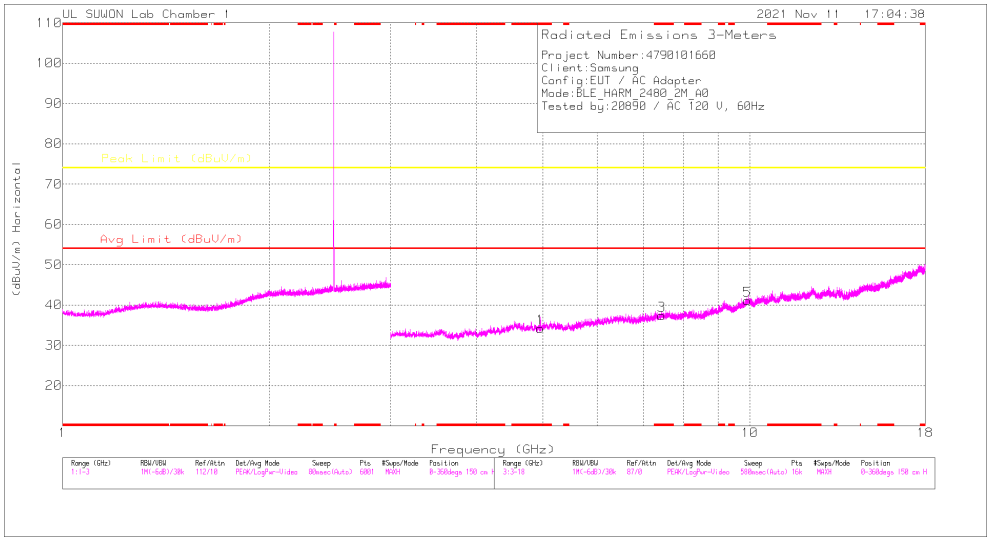
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

## RADIATED EMISSIONS

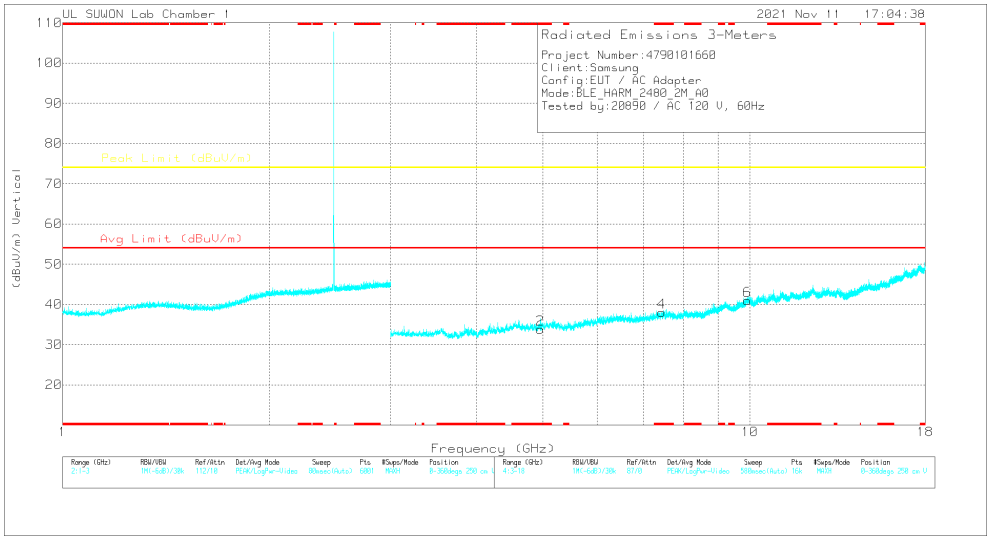
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_0016871 7 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.88153 | 41.77 | PK2 | 34.1 | -31.3 | 0 | 44.57 | - | - | 74 | -29.43 | 0 | 100 | H |
| * 4.87655 | 41.14 | PK2 | 34.1 | -31.3 | 0 | 43.94 | - | - | 74 | -30.06 | 0 | 100 | V |
| * 7.31853 | 38.41 | PK2 | 35.8 | -27.2 | 0 | 47.01 | - | - | 74 | -26.99 | 353 | 145 | H |
| * 7.31853 | 26.96 | MAv1 | 35.8 | -27.2 | 4.87 | 40.43 | 54 | -13.57 | - | - | 353 | 145 | H |
| * 7.32163 | 42.14 | PK2 | 35.8 | -27.1 | 0 | 50.84 | - | - | 74 | -23.16 | 154 | 100 | V |
| * 7.31853 | 30.65 | MAv1 | 35.8 | -27.2 | 4.87 | 44.12 | 54 | -9.88 | - | - | 154 | 100 | V |
| 9.75802 | 34.63 | PK2 | 37.4 | -23.6 | 0 | 48.43 | - | - | 74 | -25.57 | 0 | 100 | H |
| 9.76945 | 34.52 | PK2 | 37.5 | -23.6 | 0 | 48.42 | - | - | 74 | -25.58 | 0 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

## 39 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

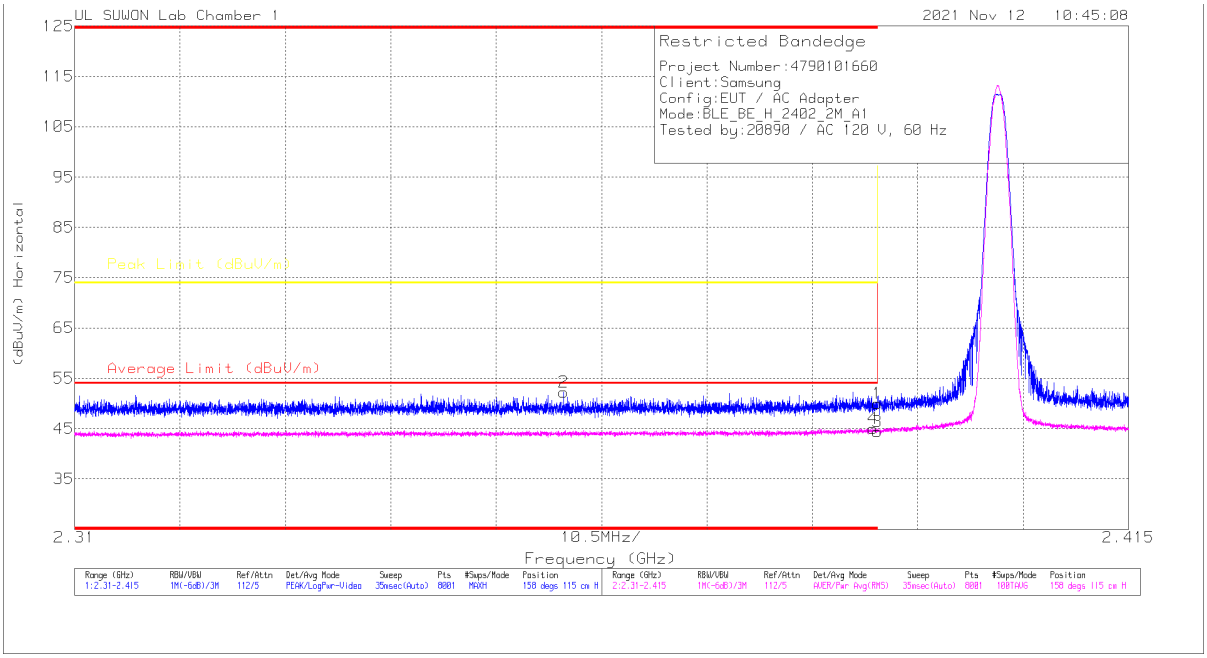
## RADIATED EMISSIONS

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.94944 | 41.03 | PK2 | 34.1 | -31.4 | 0 | 43.73 | - | - | 74 | -30.27 | 0 | 100 | H |
| * 4.95264 | 40.96 | PK2 | 34.1 | -31.4 | 0 | 43.66 | - | - | 74 | -30.34 | 0 | 100 | V |
| * 7.44689 | 37.78 | PK2 | 35.8 | -26.7 | 0 | 46.88 | - | - | 74 | -27.12 | 0 | 100 | H |
| * 7.43982 | 37.67 | PK2 | 35.8 | -26.7 | 0 | 46.77 | - | - | 74 | -27.23 | 0 | 100 | V |
| 9.912 | 34.23 | PK2 | 37.7 | -21.6 | 0 | 50.33 | - | - | 74 | -23.67 | 0 | 100 | H |
| 9.92911 | 33.93 | PK2 | 37.7 | -21.4 | 0 | 50.23 | - | - | 74 | -23.77 | 0 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

# ANT2
# BANDEDGE (0 CHANNEL)

## HORIZONTAL RESULT

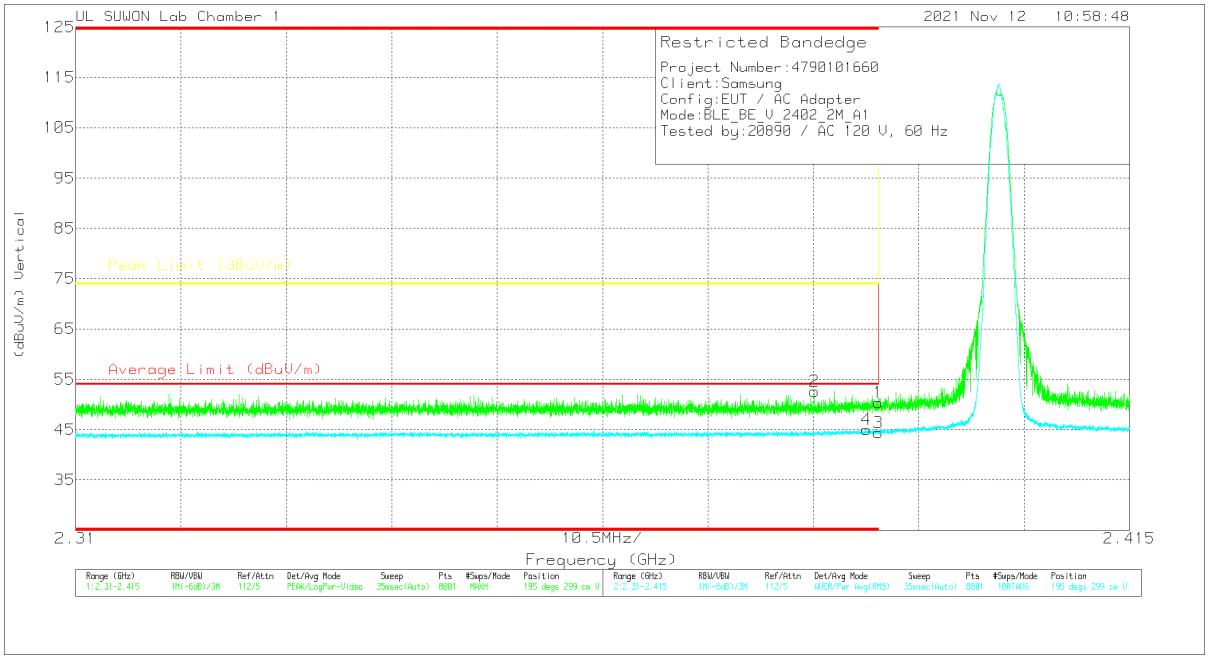



## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 43.48 | Pk | 31.8 | -25.3 | 0 | 49.98 | - | - | 74 | -24.02 | 158 | 115 | H |
| 2 | * 2.35873 | 46.08 | Pk | 31.7 | -25.5 | 0 | 52.28 | - | - | 74 | -21.72 | 158 | 115 | H |
| 3 | * 2.39 | 33 | RMS | 31.8 | -25.3 | 4.87 | 44.37 | 54 | -9.63 | - | - | 158 | 115 | H |
| 4 | * 2.38955 | 33.67 | RMS | 31.8 | -25.3 | 4.87 | 45.04 | 54 | -8.96 | - | - | 158 | 115 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# VERTICAL RESULT



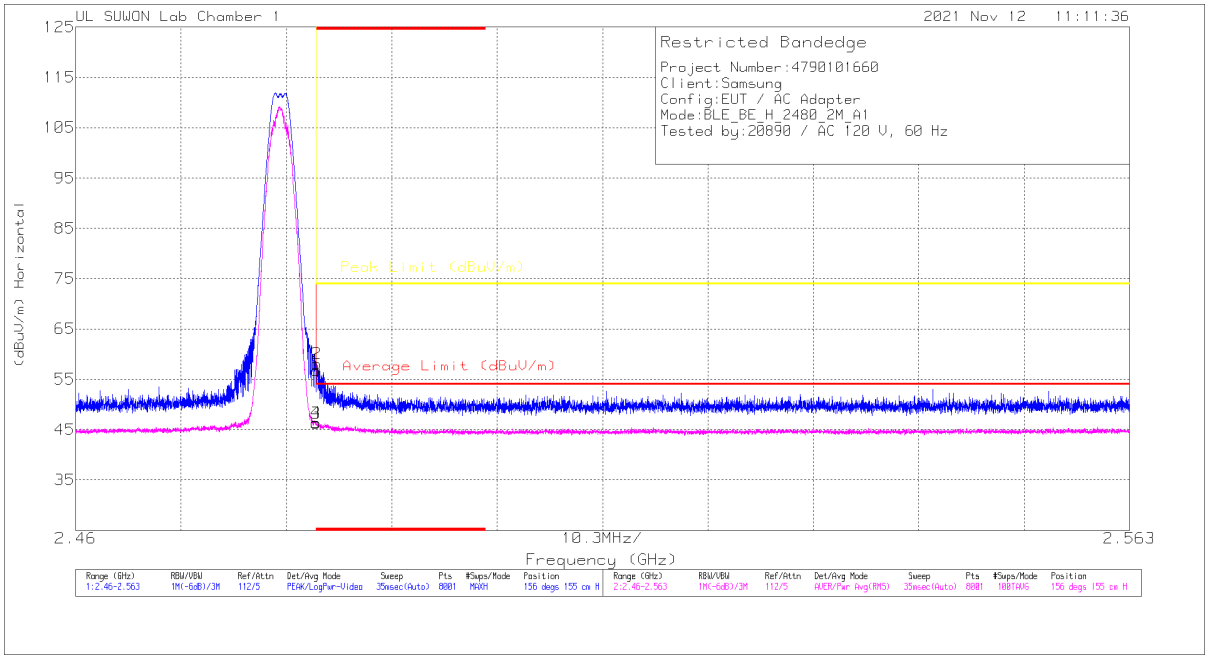

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.39 | 43.85 | Pk | 31.8 | -25.3 | 0 | 50.35 | - | - | 74 | -23.65 | 195 | 299 | V |
| 2 | * 2.38361 | 46.17 | Pk | 31.8 | -25.3 | 0 | 52.67 | - | - | 74 | -21.33 | 195 | 299 | V |
| 3 | * 2.39 | 33.08 | RMS | 31.8 | -25.3 | 4.87 | 44.45 | 54 | -9.55 | - | - | 195 | 299 | V |
| 4 | * 2.38882 | 33.69 | RMS | 31.8 | -25.3 | 4.87 | 45.06 | 54 | -8.94 | - | - | 195 | 299 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# BANDEDGE (39 CHANNEL)

## HORIZONTAL RESULT

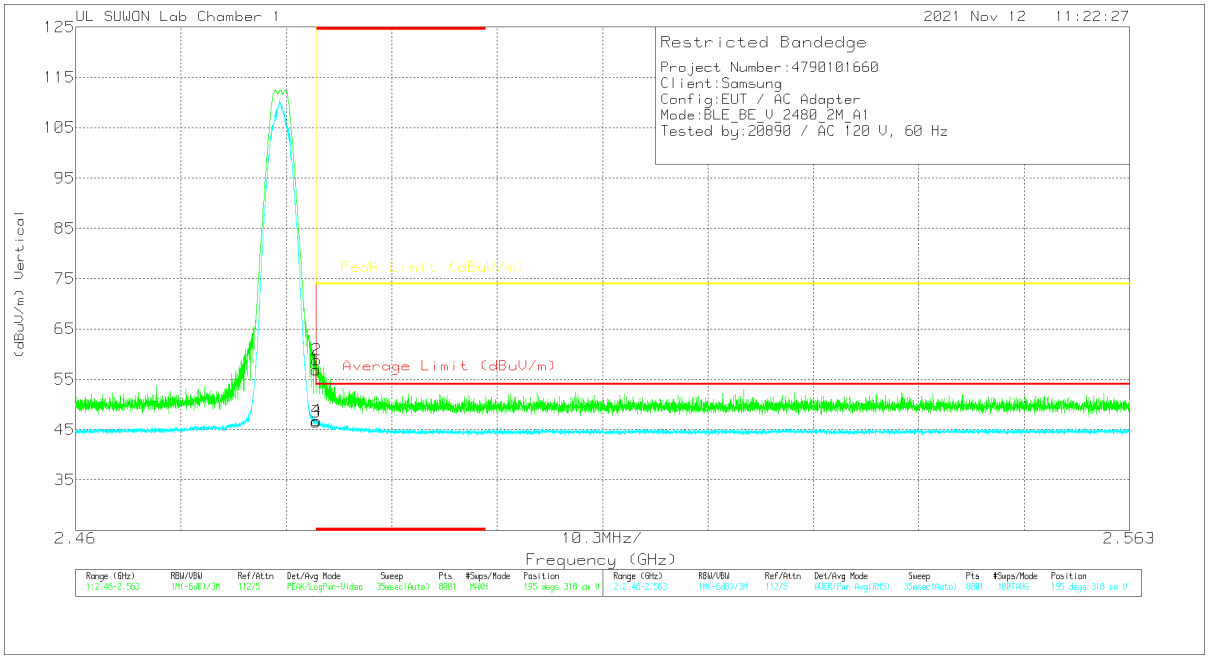



## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.48351 | 49.81 | Pk | 32 | -25.1 | 0 | 56.71 | - | - | 74 | -17.29 | 156 | 155 | H |
| 2 | * 2.48355 | 51.22 | Pk | 32 | -25.1 | 0 | 58.12 | - | - | 74 | -15.88 | 156 | 155 | H |
| 3 | * 2.48351 | 34.47 | RMS | 32 | -25.1 | 4.87 | 46.24 | 54 | -7.76 | - | - | 156 | 155 | H |
| 4 | * 2.48352 | 34.66 | RMS | 32 | -25.1 | 4.87 | 46.43 | 54 | -7.57 | - | - | 156 | 155 | H |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# VERTICAL RESULT



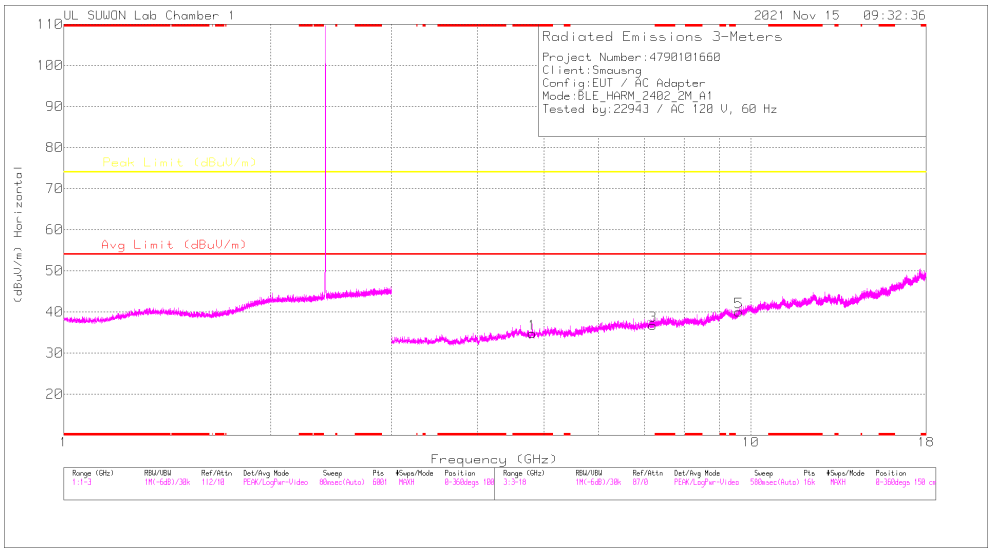

## Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 10dB_ATT[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 2.48351 | 49.97 | Pk | 32 | -25.1 | 0 | 56.87 | - | - | 74 | -17.13 | 195 | 318 | V |
| 2 | * 2.48355 | 51.99 | Pk | 32 | -25.1 | 0 | 58.89 | - | - | 74 | -15.11 | 195 | 318 | V |
| 3 | * 2.48351 | 34.78 | RMS | 32 | -25.1 | 4.87 | 46.55 | 54 | -7.45 | - | - | 195 | 318 | V |
| 4 | * 2.48355 | 35.06 | RMS | 32 | -25.1 | 4.87 | 46.83 | 54 | -7.17 | - | - | 195 | 318 | V |

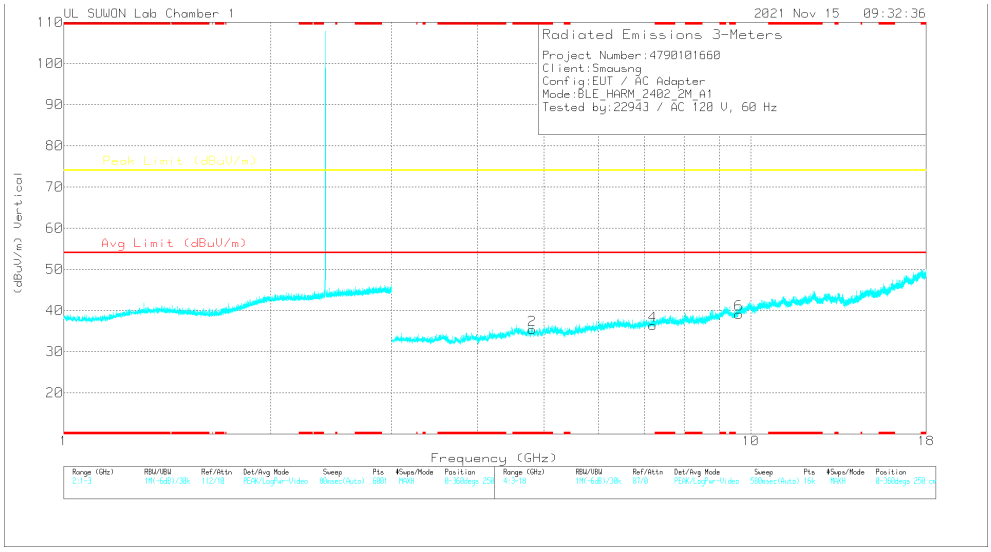
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

# HARMONICS AND SPURIOUS EMISSIONS

## 0 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

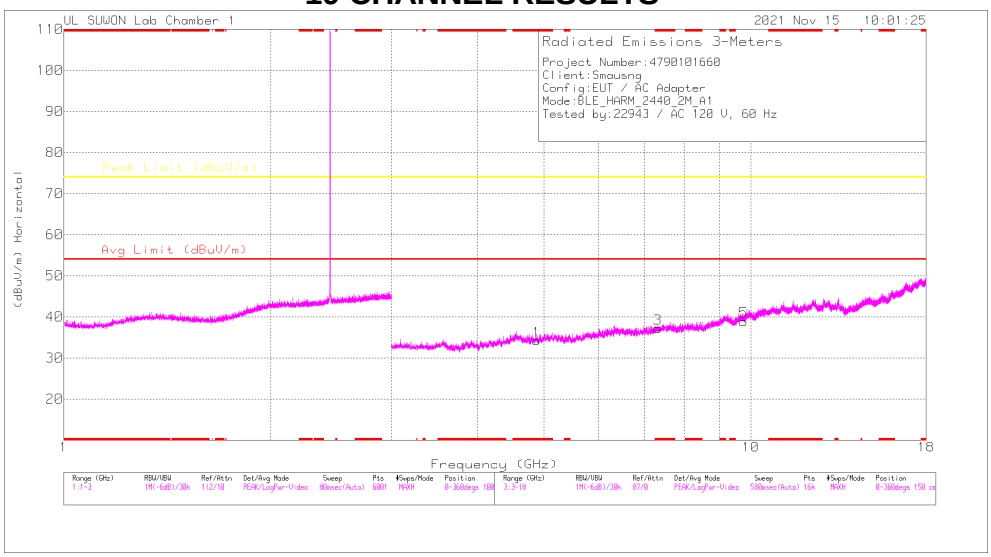
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

## RADIATED EMISSIONS

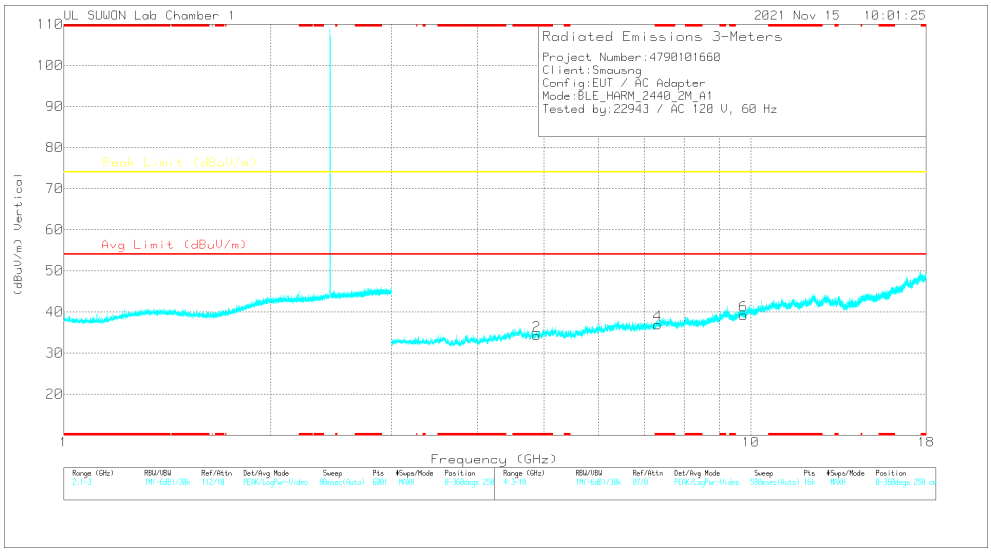
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.80431 | 41.56 | PK2 | 34.1 | -31.2 | 0 | 44.46 | - | - | 74 | -29.54 | 0 | 100 | H |
| * 4.7995 | 41.56 | PK2 | 34.1 | -31.2 | 0 | 44.46 | - | - | 74 | -29.54 | 0 | 100 | V |
| 7.20004 | 37.48 | PK2 | 35.9 | -27.5 | 0 | 45.88 | - | - | 74 | -28.12 | 0 | 100 | H |
| 7.2012 | 38.59 | PK2 | 35.9 | -27.5 | 0 | 46.99 | - | - | 74 | -27.01 | 0 | 100 | V |
| 9.61143 | 34.51 | PK2 | 37.1 | -22.8 | 0 | 48.81 | - | - | 74 | -25.19 | 0 | 100 | H |
| 9.60707 | 34.45 | PK2 | 37.1 | -22.8 | 0 | 48.75 | - | - | 74 | -25.25 | 0 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

## 19 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

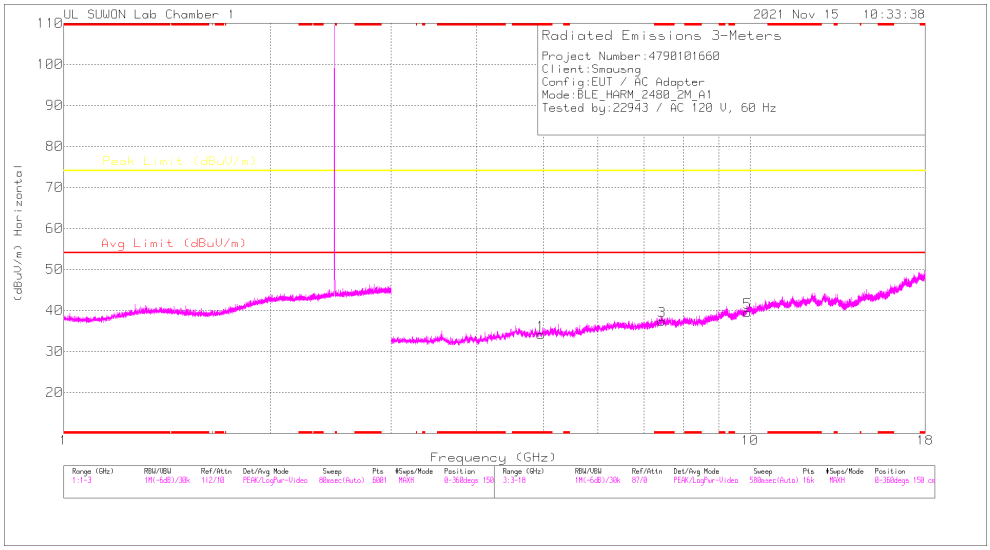
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

## RADIATED EMISSIONS

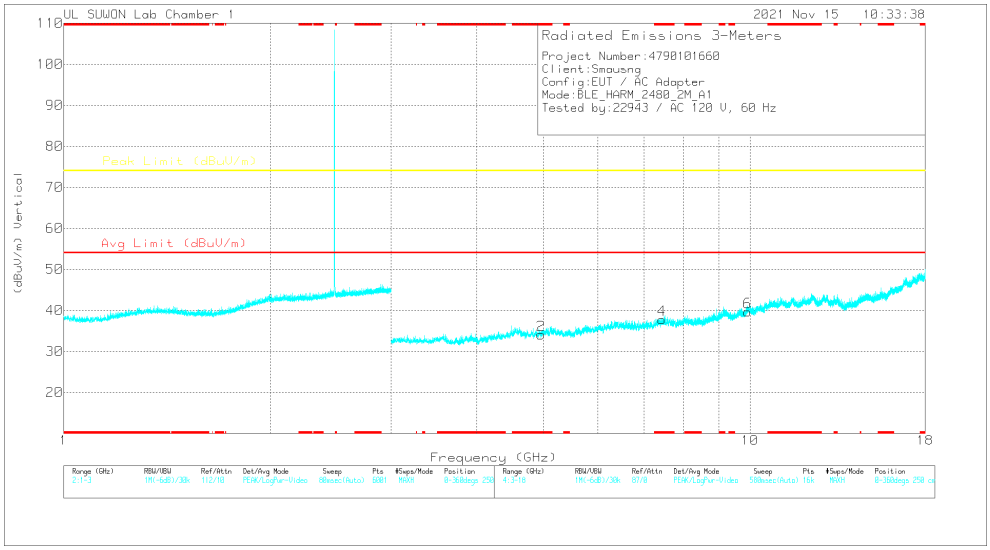
| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.87294 | 41.12 | PK2 | 34.1 | -31.3 | 0 | 43.92 | - | - | 74 | -30.08 | 0 | 100 | H |
| * 4.87552 | 42.39 | PK2 | 34.1 | -31.3 | 0 | 45.19 | - | - | 74 | -28.81 | 0 | 100 | V |
| * 7.31476 | 37.74 | PK2 | 35.8 | -27.2 | 0 | 46.34 | - | - | 74 | -27.66 | 0 | 100 | H |
| * 7.31653 | 38.26 | PK2 | 35.8 | -27.2 | 0 | 46.86 | - | - | 74 | -27.14 | 0 | 100 | V |
| 9.76307 | 35.36 | PK2 | 37.4 | -23.6 | 0 | 49.16 | - | - | 74 | -24.84 | 0 | 100 | H |
| 9.75343 | 34.56 | PK2 | 37.4 | -23.6 | 0 | 48.36 | - | - | 74 | -25.64 | 0 | 100 | V |

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

## 39 CHANNEL RESULTS




## HORIZONTAL




## VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

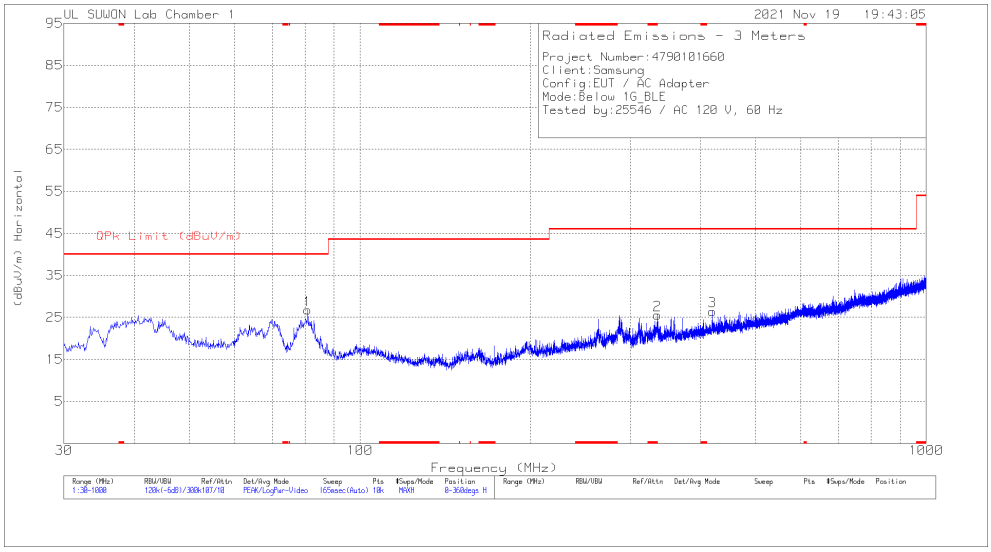
## RADIATED EMISSIONS

| Frequency (GHz) | Meter Reading (dBuV) | Det | 3117_00168717 | 3GHz_HP[dB] | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.95574 | 40.62 | PK2 | 34.1 | -31.4 | 0 | 43.32 | - | - | 74 | -30.68 | 0 | 100 | H |
| * 4.9556 | 40.65 | PK2 | 34.1 | -31.4 | 0 | 43.35 | - | - | 74 | -30.65 | 0 | 100 | V |
| * 7.44115 | 37.26 | PK2 | 35.8 | -26.7 | 0 | 46.36 | - | - | 74 | -27.64 | 0 | 100 | H |
| * 7.43796 | 37.61 | PK2 | 35.8 | -26.6 | 0 | 46.81 | - | - | 74 | -27.19 | 0 | 100 | V |
| 9.92988 | 33.67 | PK2 | 37.7 | -21.4 | 0 | 49.97 | - | - | 74 | -24.03 | 0 | 100 | H |
| 9.91289 | 34.23 | PK2 | 37.7 | -21.6 | 0 | 50.33 | - | - | 74 | -23.67 | 0 | 100 | V |

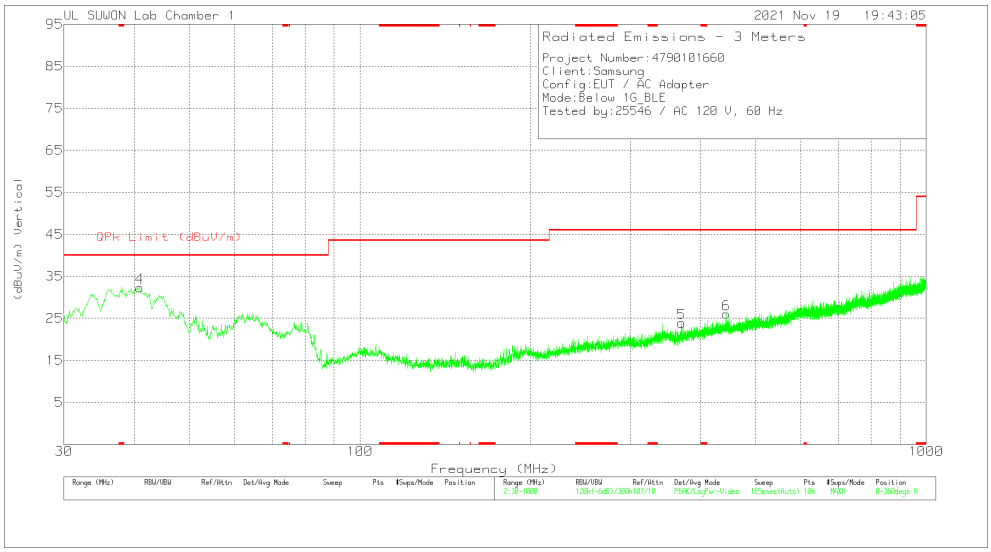
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

## 10.3. WORST CASE BELOW 1 GHZ

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)**




**HORIZONTAL**




**VERTICAL**

## Below 1GHz Data

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | VULB9163_750 | Below_1G[dB] | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 80.925 | 44.34 | Pk | 12.8 | -30.4 | 26.74 | 40 | -13.26 | 0-360 | 300 | H |
| 2 | 335.55 | 33.69 | Pk | 20.3 | -28.4 | 25.59 | 46.02 | -20.43 | 0-360 | 200 | H |
| 3 | 419.455 | 32.36 | Pk | 21.9 | -27.8 | 26.46 | 46.02 | -19.56 | 0-360 | 200 | H |
| 4 | 40.864 | 44.41 | Pk | 18.9 | -31 | 32.31 | 40 | -7.69 | 0-360 | 100 | V |
| 5 | 369.985 | 31.4 | Pk | 20.7 | -28.2 | 23.9 | 46.02 | -22.12 | 0-360 | 100 | V |
| 6 | 443.511 | 31.72 | Pk | 22.1 | -27.8 | 26.02 | 46.02 | -20 | 0-360 | 100 | V |

Pk - Peak detector

# 11. AC POWER LINE CONDUCTED EMISSIONS

**LIMITS**

FCC §15.207 (a)

RSS-Gen 8.8

| Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56 * | 56 to 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

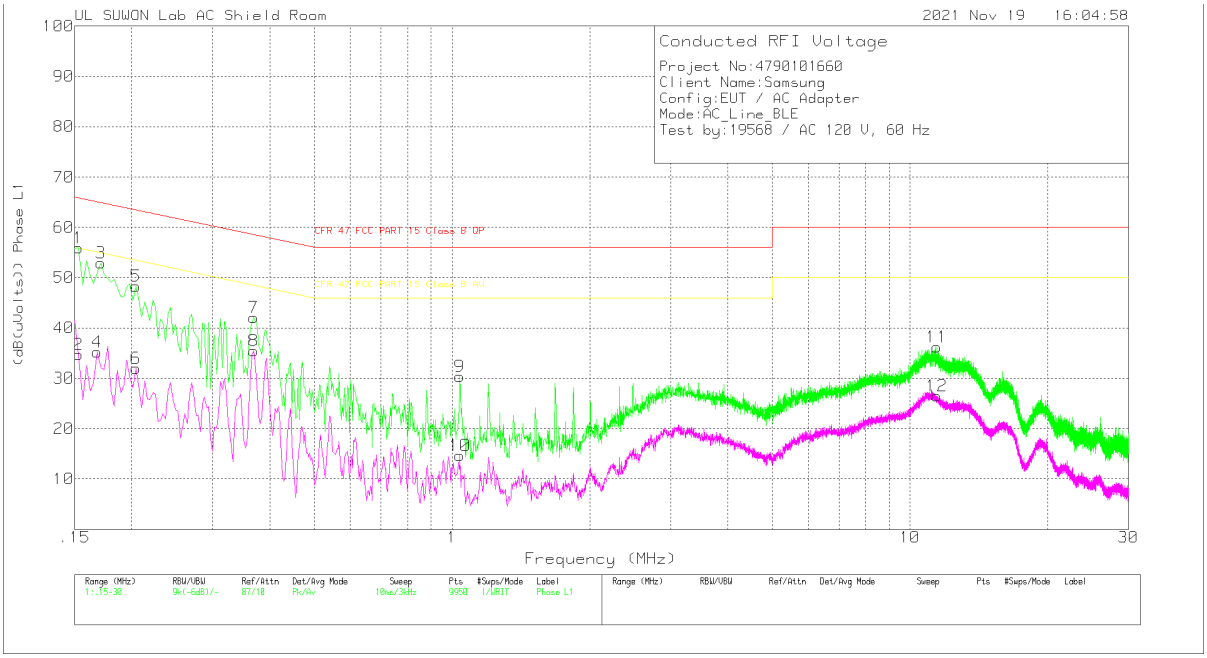
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

**RESULTS**

### 11.1.1. AC Power Line

## LINE 1 RESULTS




## Trace Markers

Range 1: Phase L1 .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | 101836_With EX_L1[dB] | CABLELOSS(dB) | Corrected Reading (dB(uVolts)) | CFR 47 FCC PART 15 Class B QP | Margin (dB) | CFR 47 FCC PART 15 Class B AV | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | .153 | 45.96 | Pk | 9.8 | .1 | 55.86 | 65.84 | -9.98 | - | - |
| 2 | .153 | 24.83 | Av | 9.8 | .1 | 34.73 | - | - | 55.84 | -21.11 |
| 3 | .171 | 42.74 | Pk | 10 | .2 | 52.94 | 64.91 | -11.97 | - | - |
| 4 | .168 | 25.14 | Av | 10 | .1 | 35.24 | - | - | 55.06 | -19.82 |
| 5 | .204 | 38.29 | Pk | 9.8 | .2 | 48.29 | 63.45 | -15.16 | - | - |
| 6 | .204 | 21.97 | Av | 9.8 | .2 | 31.97 | - | - | 53.45 | -21.48 |
| 7 | .369 | 32.1 | Pk | 9.8 | .2 | 42.1 | 58.52 | -16.42 | - | - |
| 8 | .369 | 25.51 | Av | 9.8 | .2 | 35.51 | - | - | 48.52 | -13.01 |
| 9 | 1.041 | 20.39 | Pk | 9.7 | .3 | 30.39 | 56 | -25.61 | - | - |
| 10 | 1.041 | 4.63 | Av | 9.7 | .3 | 14.63 | - | - | 46 | -31.37 |
| 11 | 11.457 | 25.99 | Pk | 9.9 | .3 | 36.19 | 60 | -23.81 | - | - |
| 12 | 11.454 | 16.34 | Av | 9.9 | .3 | 26.54 | - | - | 50 | -23.46 |

Pk - Peak detector
Av - Average detection

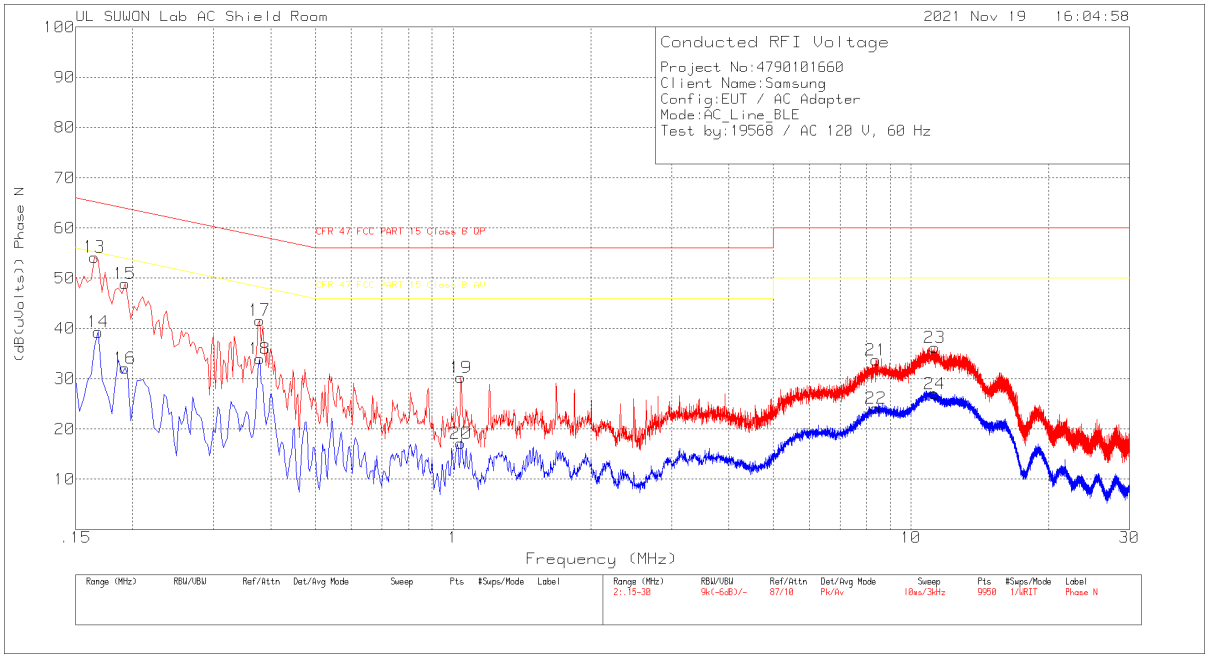
## Quasi-Peak Emissions

Range 1: Phase L1 .15 - 30MHz

| Frequency (MHz) | Meter Reading (dBuV) | Det | 101836_With EX_L1[dB] | CABLELOSS(dB) | Corrected Reading (dB(uVolts)) | CFR 47 FCC PART 15 Class B QP | Margin (dB) | CFR 47 FCC PART 15 Class B AV | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| .15 | 37.24 | Qp | 9.7 | .1 | 47.04 | 66 | -18.96 | - | - |

Qp - Quasi-Peak detector

## LINE 2 RESULTS




## Trace Markers

Range 2: Phase N .15 - 30MHz

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | 101836_With EX_N[dB] | CABLELOSS(dB) | Corrected Reading (dB(uVolts)) | CFR 47 FCC PART 15 Class B QP | Margin (dB) | CFR 47 FCC PART 15 Class B AV | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 | .165 | 44.23 | Pk | 9.9 | .1 | 54.23 | 65.21 | -10.98 | - | - |
| 14 | .168 | 29.18 | Av | 10 | .1 | 39.28 | - | - | 55.06 | -15.78 |
| 15 | .192 | 38.87 | Pk | 9.9 | .2 | 48.97 | 63.95 | -14.98 | - | - |
| 16 | .192 | 22.03 | Av | 9.9 | .2 | 32.13 | - | - | 53.95 | -21.82 |
| 17 | .378 | 31.64 | Pk | 9.8 | .2 | 41.64 | 58.32 | -16.68 | - | - |
| 18 | .378 | 23.95 | Av | 9.8 | .2 | 33.95 | - | - | 48.32 | -14.37 |
| 19 | 1.041 | 20.27 | Pk | 9.7 | .3 | 30.27 | 56 | -25.73 | - | - |
| 20 | 1.041 | 7.13 | Av | 9.7 | .3 | 17.13 | - | - | 46 | -28.87 |
| 21 | 8.388 | 23.63 | Pk | 9.8 | .3 | 33.73 | 60 | -26.27 | - | - |
| 22 | 8.379 | 14.05 | Av | 9.8 | .3 | 24.15 | - | - | 50 | -25.85 |
| 23 | 11.256 | 26.08 | Pk | 9.9 | .3 | 36.28 | 60 | -23.72 | - | - |
| 24 | 11.256 | 16.76 | Av | 9.9 | .3 | 26.96 | - | - | 50 | -23.04 |

Pk - Peak detector
Av - Average detection

## Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

| Frequency (MHz) | Meter Reading (dBuV) | Det | 101836_With EX_N[dB] | CABLELOSS(dB) | Corrected Reading (dB(uVolts)) | CFR 47 FCC PART 15 Class B QP | Margin (dB) | CFR 47 FCC PART 15 Class B AV | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| .15 | 37.8 | Qp | 9.7 | .1 | 47.6 | 66 | -18.4 | - | - |

Qp - Quasi-Peak detector

# END OF TEST REPORT