



# **TEST REPORT**

**Report Number:** 13911916-E1V2

**Applicant :** APPLE, INC.  
1 APPLE PARK WAY  
CUPERTINO, CA 95014, U.S.A

**Model :** A2595 (Parent Model, Full Test)  
A2782, A2783, A2784, A2785 (Variant Models)

**FCC ID :** BCG-E4082A (Parent Model)  
BCG-E8064A, BCG-E4083A, BCG-8076A (Variant Models)

**IC :** 579C-E4082A (Parent Model)  
579C-E8064A, 579C-E4083A, 579C-8076A  
(Variant Models)

**EUT Description :** SMARTPHONE

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C  
ISED RSS-247 ISSUE 2  
ISED RSS-GEN ISSUE 5 + A1 + A2

**Date Of Issue:**  
February 07, 2022

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**REPORT REVISION HISTORY**

| Rev. | Issue<br>Date | Revisions                                                                       | Revised By |
|------|---------------|---------------------------------------------------------------------------------|------------|
| V1   | 1/21/2022     | Initial Issue                                                                   | Chin Pang  |
| V2   | 2/7/2022      | Address TCB's questions on cover page and page 9. Add Loop antenna in section 7 | Chin Pang  |

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** APPLE INC.  
1 APPLE PARK WAY  
CUPERTINO, CA 95014, U.S.A

**EUT DESCRIPTION:** Smart Phone

**MODEL:** A2595 (Parent Model)  
A2782, A2783, A2784, A2785 (Variant Models)

**BRAND:** APPLE

**FCC ID:** BCG-E4082A (Parent Model)  
BCG-E8064A, BCG-E4083A, BCG-E8076A (Variant Models)

**IC :** 579C-E4082A (Parent Model)  
579C-E8064A, 579C-E4083A, 579C-E8076A (Variant Models)

**SERIAL NUMBER:** DT23CMFDH2

**SAMPLE RECEIPT DATE:** SEPTEMBER 02, 2021

**DATE TESTED:** SEPTEMBER 02 2021 – JANUARY 24, 2022

| APPLICABLE STANDARDS           |              |
|--------------------------------|--------------|
| STANDARD                       | TEST RESULTS |
| CFR 47 Part 15 Subpart C       | Complies     |
| ISED RSS-247 Issue 2           | Complies     |
| ISED RSS-GEN Issue 5 + A1 + A2 | Complies     |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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 A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

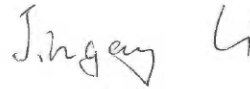
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Prepared By:



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Jingang Li  
Test Engineer  
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## 2. TEST SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

| FCC Clause         | ISED Clause       | Requirement                  | Result                  | Comment                              |
|--------------------|-------------------|------------------------------|-------------------------|--------------------------------------|
| See Comment        |                   | Duty Cycle                   | Reporting purposes only | Per ANSI C63.10, Section 11.6.       |
| See Comment        | RSS-GEN 6.7       | 20dB BW/99% OBW              | Reporting purposes only | ANSI C63.10 Sections 6.9.2 and 6.9.3 |
| 15.247 (a)(1)      | RSS-247 (5.1) (b) | Hopping Frequency Separation | Complies                | None.                                |
| 15.247 (a)(1)(iii) | RSS-247 (5.1) (d) | Number of Hopping Channels   | Complies                | None.                                |
| 15.247 (a)(1)(iii) | RSS-247 (5.1) (d) | Average Time of Occupancy    | Complies                | None.                                |
| 15.247 (b)(1)      | RSS-247 (5.4) (b) | Output Power                 | Complies                | None.                                |
| See Comment        |                   | Average Power                | Reporting purposes only | Per ANSI C63.10, Section 11.9.2.3.2. |
| 15.247 (d)         | RSS-247 (5.5)     | Conducted Spurious Emissions | Complies                | None.                                |
| 15.209, 15.205     | RSS-GEN 8.9, 8.10 | Radiated Emissions           | Complies                | None.                                |
| 15.207             | RSS-Gen 8.8       | AC Mains Conducted Emissions | Complies                | None.                                |

## 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, KDB 662911, RSS-GEN Issue 5 + A1 + A2, and RSS-247 Issue 2.

## 4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

| Location | Address                                                  | ISED CABID | ISED Company Number | FCC Registration |
|----------|----------------------------------------------------------|------------|---------------------|------------------|
| ☒        | Building 1: 47173 Benicia Street, Fremont, CA 94538, USA | US0104     | 2324A               | 550739           |
| ☒        | Building 2: 47266 Benicia Street, Fremont, CA 94538, USA | US0104     | 22541               | 550739           |
| ☒        | Building 4: 47658 Kato Rd, Fremont, CA 94538, USA        | US0104     | 2324B               | 550739           |

## 5. DECISION RULES AND MEASUREMENT UNCERTAINTY

### 5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

### 5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

### 5.3. MEASUREMENT UNCERTAINTY

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

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

| PARAMETER                                           | U <sub>Lab</sub> |
|-----------------------------------------------------|------------------|
| Worst Case Conducted Disturbance, 9KHz to 0.15 MHz  | 3.78 dB          |
| Worst Case Conducted Disturbance, 0.15 to 30 MHz    | 3.40 dB          |
| Worst Case Radiated Disturbance, 9KHz to 30 MHz     | 2.87 dB          |
| Worst Case Radiated Disturbance, 30 to 1000 MHz     | 6.01 dB          |
| Worst Case Radiated Disturbance, 1000 to 18000 MHz  | 4.73 dB          |
| Worst Case Radiated Disturbance, 18000 to 26000 MHz | 4.51 dB          |
| Worst Case Radiated Disturbance, 26000 to 40000 MHz | 5.29 dB          |

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



## 6. EQUIPMENT UNDER TEST

### 6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G FR1, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, GPS and NFC. All models support at least one UICC based SIM. The second SIM is an UICC based e-SIM (electronic SIM) in some models. China model has 1 p-SIM only. The device supports a built-in inductive charging receiver. The rechargeable battery is not user accessible.

Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

The Model and FCC IDs / ISED covered by this report includes:

Parent Model: A2595, FCC ID: BCG-E4082A, IC: 579C-E4082A

Variant Models: A2782, FCC ID: BCG-E8064A, IC: 579C-E8064A  
 A2783; FCC ID: BCG-E4083A, IC: 579C-E4083A  
 A2784 & A2785, FCC ID: BCG-E8076A, IC: 579C-8076A

### 6.2. MAXIMUM OUTPUT POWER

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

| Antenna           | Config     | Frequency Range (MHz) | Mode               | Output Power (dBm) | Output Power (mW) |
|-------------------|------------|-----------------------|--------------------|--------------------|-------------------|
| ANT 2             | High Power | 2402 - 2480           | Basic GFSK         | 17.92              | 61.94             |
|                   |            | 2402 - 2480           | DQPSK              | 16.49              | 44.57             |
|                   |            | 2402 - 2480           | Enhanced 8PSK      | 16.89              | 48.87             |
|                   | Low Power  | 2402 - 2480           | Basic GFSK         | 12.04              | 16.00             |
|                   |            | 2402 - 2480           | DQPSK              | 11.60              | 14.45             |
|                   |            | 2402 - 2480           | Enhanced 8PSK      | 11.74              | 14.93             |
| ANT 3             | High Power | 2402 - 2480           | Basic GFSK         | 20.40              | 109.65            |
|                   |            | 2402 - 2480           | DQPSK              | 16.42              | 43.85             |
|                   |            | 2402 - 2480           | Enhanced 8PSK      | 16.76              | 47.42             |
|                   | Low Power  | 2402 - 2480           | Basic GFSK         | 11.47              | 14.03             |
|                   |            | 2402 - 2480           | DQPSK              | 11.16              | 13.06             |
|                   |            | 2402 - 2480           | Enhanced 8PSK      | 11.20              | 13.18             |
| BF, ANT 2 + ANT 3 | High Power | 2402 - 2480           | Basic GFSK TxBF    | 20.38              | 109.14            |
|                   |            | 2402 - 2480           | DQPSK TxBF         | 18.93              | 78.16             |
|                   |            | 2402 - 2480           | Enhanced 8PSK TxBF | 19.26              | 84.33             |
|                   | Low Power  | 2402 - 2480           | Basic GFSK TxBF    | 14.73              | 29.72             |
|                   |            | 2402 - 2480           | DQPSK TxBF         | 14.49              | 28.12             |
|                   |            | 2402 - 2480           | Enhanced 8PSK TxBF | 14.54              | 28.44             |

Note: GFSK, DQPSK, 8PSK average Power are all investigated, The GFSK & 8PSK Power are the worst case. Testing is based on these modes to showing compliance. For average power data please refer to section 9.7.

### 6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:

| Frequency Range (GHz) | ANT 2 (dBi) | ANT 3 (dBi) |
|-----------------------|-------------|-------------|
| 2.4                   | 2.6         | -0.3        |

### 6.4. SOFTWARE AND FIRMWARE

The EUT firmware version is 19.5.418.4462

### 6.5. WORST-CASE CONFIGURATION AND MODE

The EUT was investigated in three orthogonal orientations X, Y and Z on ANT 2, ANT 3 and 2TX beamforming. It was determined that X (Flatbed) was the worst-case orientation for ANT 2, ANT 3 and 2TX Beamforming.

Radiated band edge, harmonic, and spurious emissions from 1GHz to 18GHz were performed with the EUT was set to transmit at highest power on Low/Middle/High channels.

Radiated emissions below 30MHz, below 1GHz, 18-26GHz and power line conducted emissions were performed with the EUT transmits at the channel with the highest output power as worst-case scenario. There were no emissions found below 30MHz within 20dB of the limit

For below 1GHz tests EUT was connected to AC power adapter as the worst case; and for above 1GHz, the worst-case configuration reported was tested with EUT only. For AC line conducted emission, test was investigated with AC power adapter and with laptop.

For simultaneous transmission of multiple channels in the 2.4GHz BT and 5GHz bands, No noticeable emission was found.

GFSK, DQPSK, 8PSK average power are all investigated, The GFSK & 8PSK power are the worst case. For average power data please refer to section 9.7.

Worst-case data rates as provided by the client were:

GFSK mode: DH5

8PSK mode: 3-DH5

Beamforming : GFSK, DH5, 8PSK, 3-DH5

There are two vendors of the WiFi/Bluetooth radio modules: variant 1 and variant 2. The Wi-Fi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

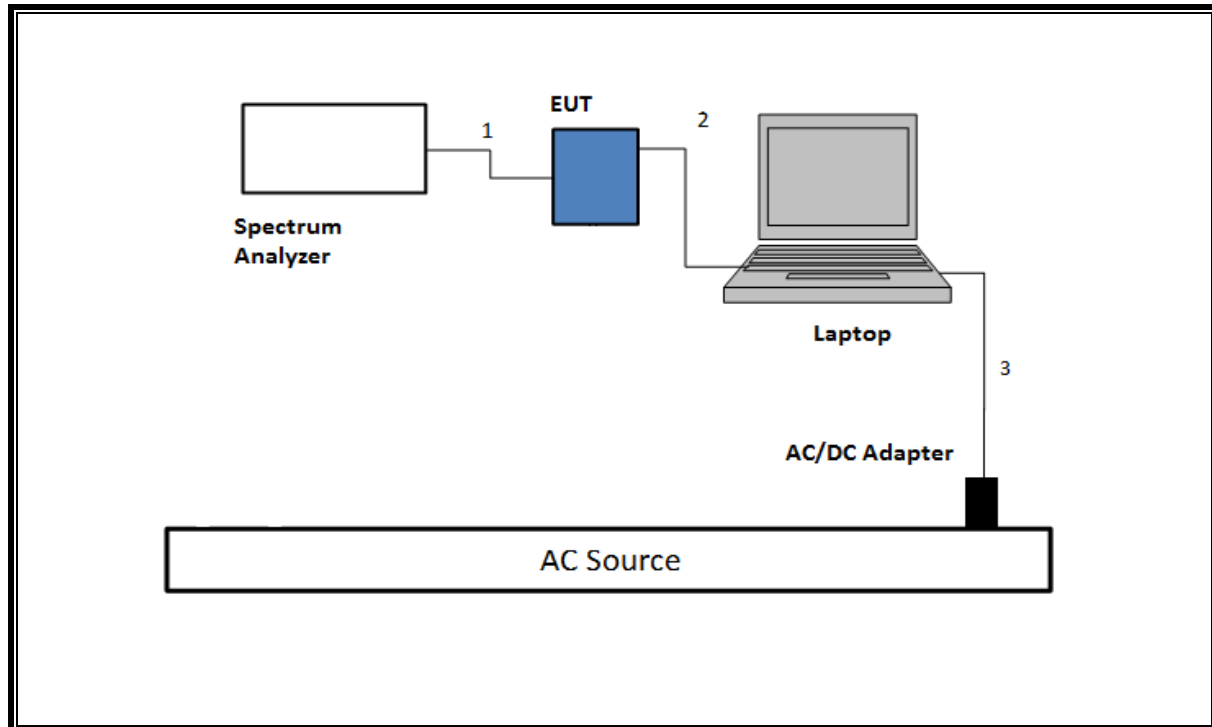
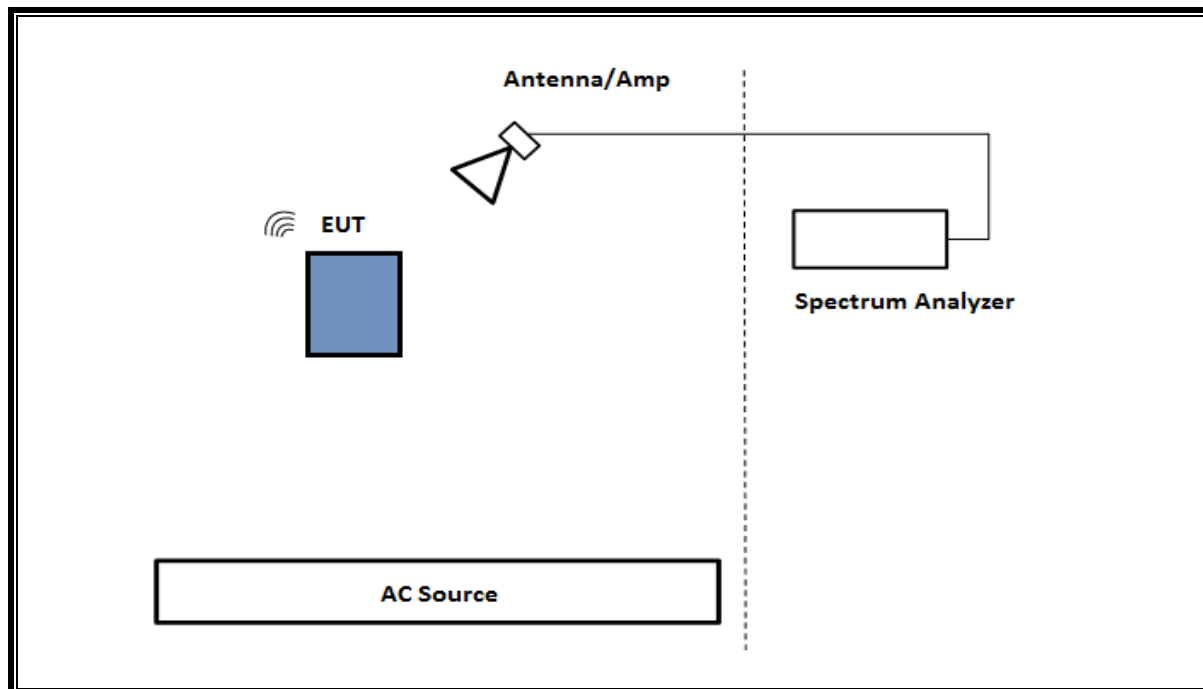
Baseline testing was performed on the two variants to determine the worst case on all conducted power and radiated emissions.

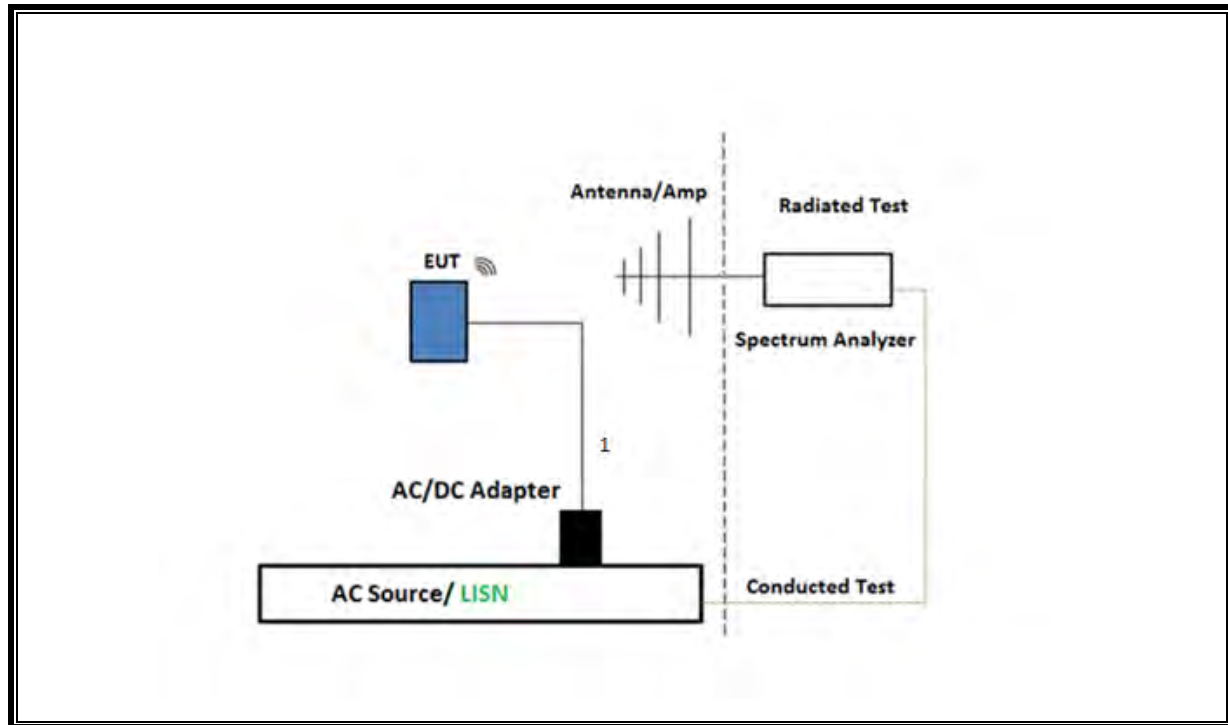
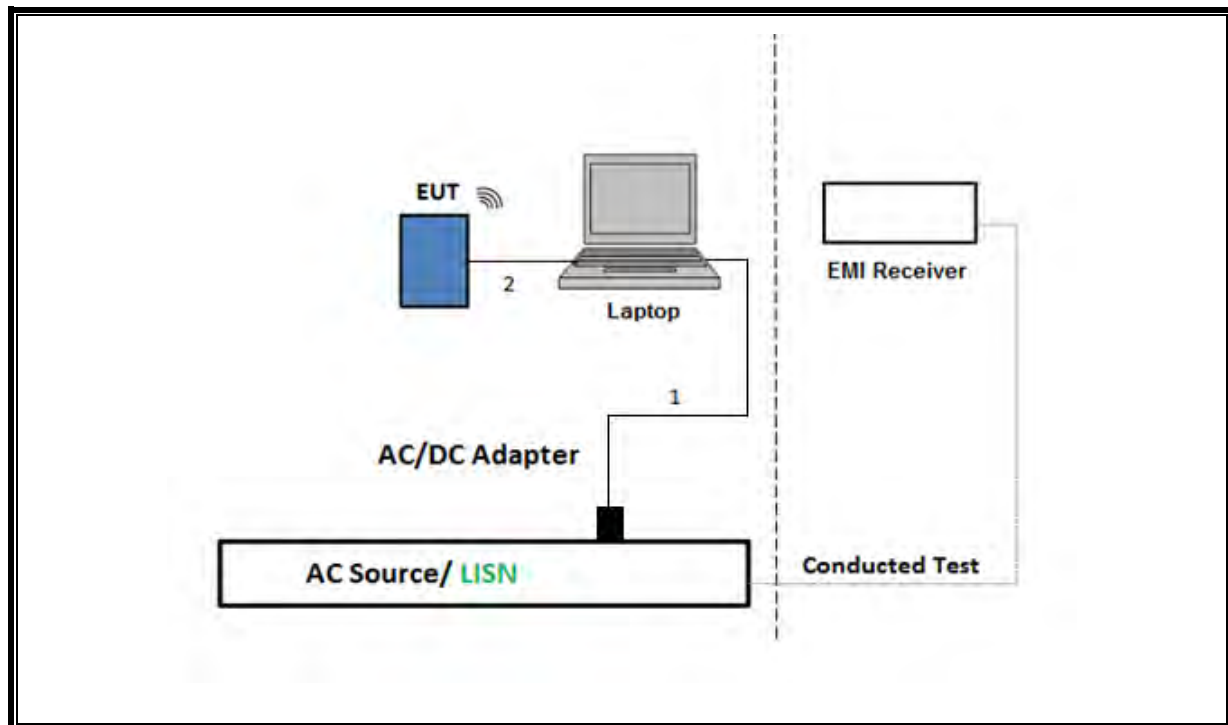
## 6.6. DESCRIPTION OF TEST SETUP

| SUPPORT TEST EQUIPMENT                       |         |                      |                |                   |                  |                      |
|----------------------------------------------|---------|----------------------|----------------|-------------------|------------------|----------------------|
| Description                                  |         | Manufacturer         | Model          | Serial Number     |                  | FCC ID/ DoC          |
| Laptop                                       |         | Apple                | Macbook Pro    | C02VD7SAHV22      |                  | BCGA1708             |
| Laptop AC/DC adapter                         |         | Liteon Technology    | A1424          | NSW25679          |                  | DoC                  |
| EUT AC/DC adapter                            |         | Apple                | A1720          | C3D8417A7R93KVPA8 |                  | DoC                  |
| I/O CABLES (RF CONDUCTED TEST)               |         |                      |                |                   |                  |                      |
| Cable No.                                    | Port    | # of Identical Ports | Connector Type | Cable Type        | Cable Length (m) | Remarks              |
| 1                                            | Antenna | 1                    | SMA            | Un-shielded       | 0.2              | To spectrum Analyzer |
| 2                                            | USB     | 1                    | USB            | Shielded          | 1.0              | N/A                  |
| 3                                            | AC      | 1                    | AC             | Un-shielded       | 2                | N/A                  |
| I/O CABLES (RF RADIATED AND AC LINE AC TEST) |         |                      |                |                   |                  |                      |
| Cable No.                                    | Port    | # of Identical Ports | Connector Type | Cable Type        | Cable Length (m) | Remarks              |
| 1                                            | AC      | 1                    | AC             | Un-shielded       | 2                | N/A                  |
| 2                                            | USB     | 1                    | USB            | Un-shielded       | 1                | N/A                  |

### TEST SETUP

The EUT setup is shown as below. Test software exercised the radio card.

**SETUP DIAGRAM FOR CONDUCTED TESTS****SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz**

**SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST****TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION**

## 7. TEST AND MEASUREMENT EQUIPMENT

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

| Description                                 | Manufacturer                    | Model                  | ID Num     | Cal Due    | Last Cal   |
|---------------------------------------------|---------------------------------|------------------------|------------|------------|------------|
| Spectrum Analyzer, PXA 3Hz to 44GHz         | Keysight                        | N9030A                 | T907       | 01/27/2022 | 01/27/2021 |
| Antenna, Horn 1-18GHz                       | ETS Lindgren                    | 3117                   | PRE0078107 | 03/01/2022 | 03/01/2021 |
| Amplifier, 1 to 18GHz                       | AMPLICAL                        | AMP1G18-35             | 138301     | 03/30/2022 | 03/30/2021 |
| Amplifier 10KHz to 1GHz 32dB                | Sonoma                          | 310N                   | 79145      | 07/21/2022 | 07/21/2021 |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz | Sunol Sciences                  | JB3                    | 204045     | 03/03/2022 | 03/03/2021 |
| Spectrum Analyzer, PXA, 3Hz to 44GHz        | Agilent (Keysight) Technologies | N9030A                 | T1454      | 01/27/2022 | 01/27/2021 |
| Antenna Horn 18 to 26.5GHz                  | ARA                             | MWH-1826/B             | 81140      | 04/22/2022 | 04/22/2021 |
| Pre-Amp 18-26GHz                            | Agilent Technology              | 8449B                  | T404       | 04/19/2022 | 04/19/2021 |
| Power Meter, P-series single channel        | Keysight                        | N1911A                 | T1268      | 01/27/2022 | 01/27/2021 |
| Power Sensor                                | Keysight                        | N1921A                 | T1225      | 01/28/2022 | 01/28/2021 |
| Antenna, Horn 1-18GHz                       | ETS Lindgren                    | 3117                   | T712       | 03/22/2022 | 03/22/2021 |
| *Spectrum Analyzer, PXA 3Hz to 44GHz        | Keysight                        | N9030A                 | T1466      | 01/25/2022 | 01/25/2021 |
| Amplifier, 1 to 8GHz 35dB                   | Amplical                        | AMF-4D-01000800-30-29P | T1169      | 03/30/2022 | 03/30/2021 |
| Antenna, Horn 1-18GHz                       | ETS-Lindgren                    | 3117                   | T345       | 05/26/2022 | 05/26/2021 |
| Amplifier, 1 to 18GHz                       | Miteq                           | AFS42-00101800-25-S-42 | T931       | 02/01/2022 | 02/01/2021 |
| Antenna, Active Loop 9KHz to 30MHz          | ETS-Lindgren                    | 6502                   | T757       | 11/12/2021 | 11/12/2020 |
| Spectrum Analyzer, PXA 3Hz to 44GHz         | Keysight                        | N9030A                 | T340       | 01/28/2022 | 01/28/2021 |
| Antenna                                     | ETS-Lindgren                    | 3117                   | 206806     | 02/03/2022 | 02/03/2021 |
| Amplifier, 1 to 18GHz, 35dB                 | AMPLICAL                        | AMP1G18-35             | T1571      | 08/19/2022 | 08/19/2021 |

| AC Line Conducted                      |                               |                         |                            |            |            |
|----------------------------------------|-------------------------------|-------------------------|----------------------------|------------|------------|
| Description                            | Manufacturer                  | Model                   | ID Num                     | Cal Due    | Last Cal   |
| EMI Test Receiver 9kHz-7GHz            | Rohde & Schwarz               | ESR                     | T1436                      | 02/19/2022 | 02/19/2021 |
| *Power Cable, Line Conducted Emissions | UL                            | PR1                     | T861                       | 10/27/2021 | 10/27/2020 |
| *LISN for Conducted Emissions CISPR-16 | FISCHER CUSTOM COMMUNICATIONS | FCC-LISN-50/250-25-2-01 | PRE0186446                 | 01/20/2022 | 01/20/2021 |
| UL AUTOMATION SOFTWARE                 |                               |                         |                            |            |            |
| Radiated Software                      | UL                            | UL EMC                  | Ver 9.5, Mar 6, 2020       |            |            |
| Conducted Software                     | UL                            | UL EMC                  | 2020.2.26                  |            |            |
| AC Line Conducted Software             | UL                            | UL EMC                  | Ver 9.5, February 21, 2020 |            |            |

\*Testing is completed before equipment expiration date.

## 8. MEASUREMENT METHODS

On Time and Duty Cycle: ANSI C63.10-2013 Section 11.6

Occupied BW (20dB): ANSI C63.10-2013 Section 6.9.2

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

Carrier Frequency Separation: ANSI C63.10-2013 Section 7.8.2

Number of Hopping Frequencies: ANSI C63.10-2013 Section 7.8.3

Time of Occupancy (Dwell Time): ANSI C63.10-2013 Section 7.8.4

Peak Output Power: ANSI C63.10-2013 Section 7.8.5

Conducted Spurious Emissions: ANSI C63.10-2013 Section 7.8.8

Conducted Band-Edge: ANSI C63.10-2013 Section 6.10.4

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4 & 13

Radiated Spurious Emissions 30-1000MHz: ANSI C63.10-2013 Section 6.3, 6.5 & 13

Radiated Spurious Emissions above 1GHz: ANSI C63.10-2013 Section 6.3, 6.6 & 13

Radiated Band-edge: ANSI C63.10-2013 Section 6.10.5 & 13

AC Power-line conducted emissions: ANSI C63.10-2013, Section 6.2.

## 9. ANTENNA PORT TEST RESULTS

### 9.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

#### PROCEDURE

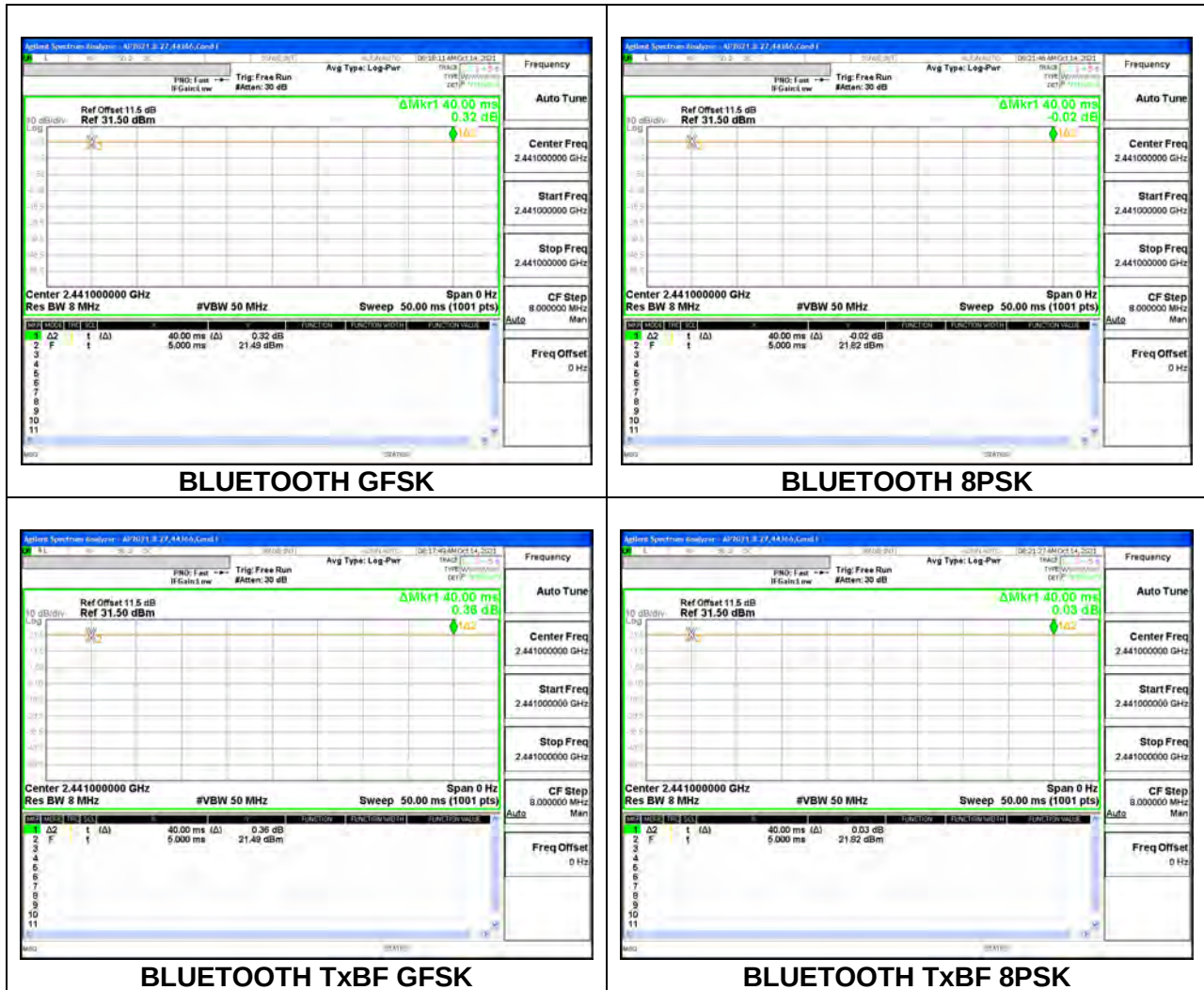
ANSI C63.10, Section 11.6 : Zero-Span Spectrum Analyzer Method.

#### ON TIME AND DUTY CYCLE RESULTS

| Mode                | ON Time<br>B<br>(msec) | Period<br>(msec) | Duty Cycle<br>x<br>(linear) | Duty<br>Cycle<br>(%) | Duty Cycle<br>Correction Factor<br>(dB) | 1/T<br>Minimum VBW<br>(kHz) |
|---------------------|------------------------|------------------|-----------------------------|----------------------|-----------------------------------------|-----------------------------|
| Bluetooth GFSK      | 40.00                  | 40.00            | 1.000                       | 100.0%               | 0.00                                    | 0.010                       |
| Bluetooth 8PSK      | 40.00                  | 40.00            | 1.000                       | 100.0%               | 0.00                                    | 0.010                       |
| Bluetooth GFSK TxBF | 40.00                  | 40.00            | 1.000                       | 100.0%               | 0.00                                    | 0.010                       |
| Bluetooth 8PSK TxBF | 40.00                  | 40.00            | 1.000                       | 100.0%               | 0.00                                    | 0.010                       |



## DUTY CYCLE PLOTS



## 9.2. 20 dB AND 99% BANDWIDTH

### LIMITS

None; for reporting purposes only.

### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to  $\geq 1\%$  of the 20 dB bandwidth. The VBW is set to  $\geq 3 \times \text{RBW}$ . The sweep time is coupled.

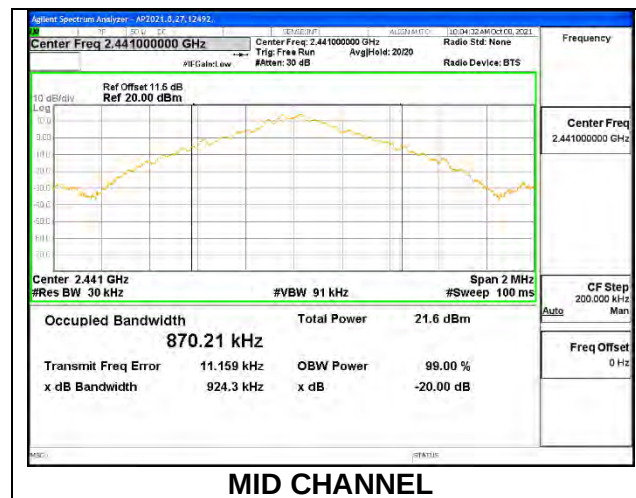
### RESULTS

Only High Power modes result is reported, it covers all Low Power modes. Only Mid channel plot is reported to show setting parameter complies with testing method/procedure.

## 9.2.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

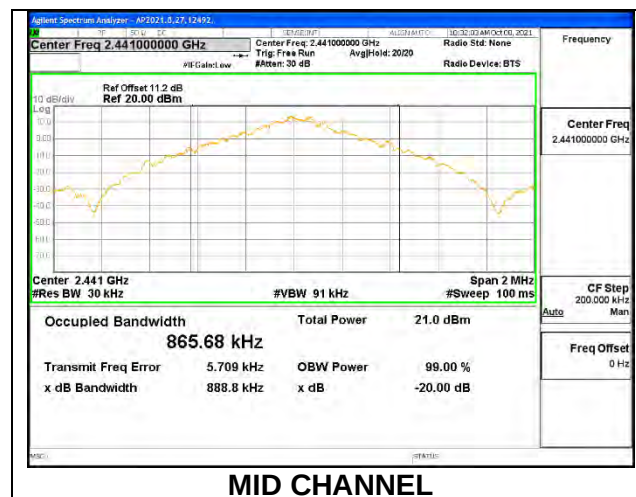
### ANT 2

| Channel | Frequency (MHz) | 20dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|---------|-----------------|----------------------|---------------------|
| Low     | 2402            | 0.922                | 0.867               |
| Mid     | 2441            | 0.924                | 0.870               |
| High    | 2480            | 0.929                | 0.871               |



### ANT 3

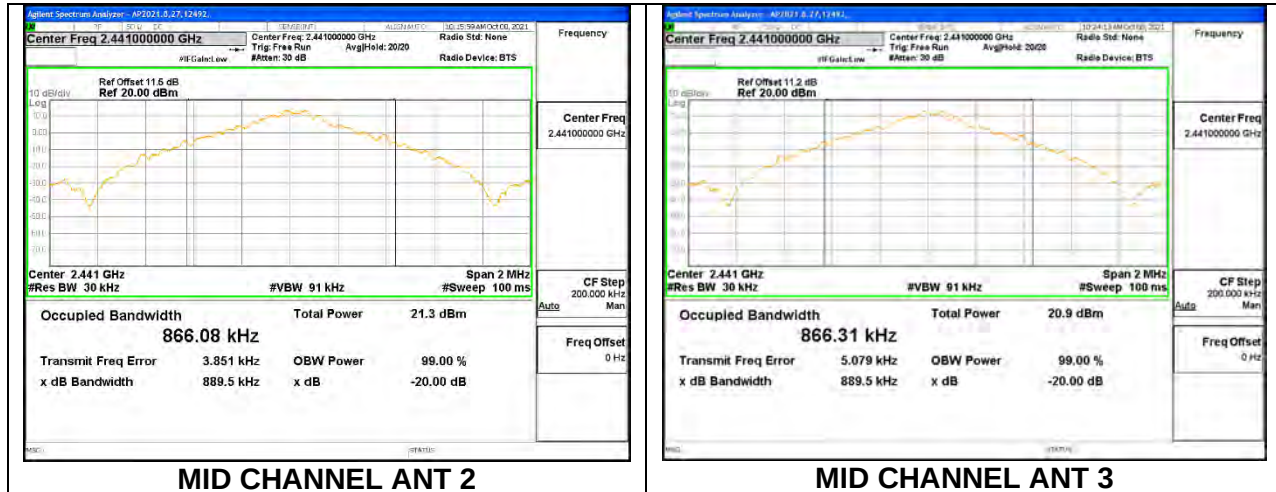
| Channel | Frequency (MHz) | 20dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|---------|-----------------|----------------------|---------------------|
| Low     | 2402            | 0.888                | 0.867               |
| Mid     | 2441            | 0.888                | 0.866               |
| High    | 2480            | 0.888                | 0.866               |



## 9.2.2. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

Note: Test procedure on beamforming mode is same as BT basic and EDR mode

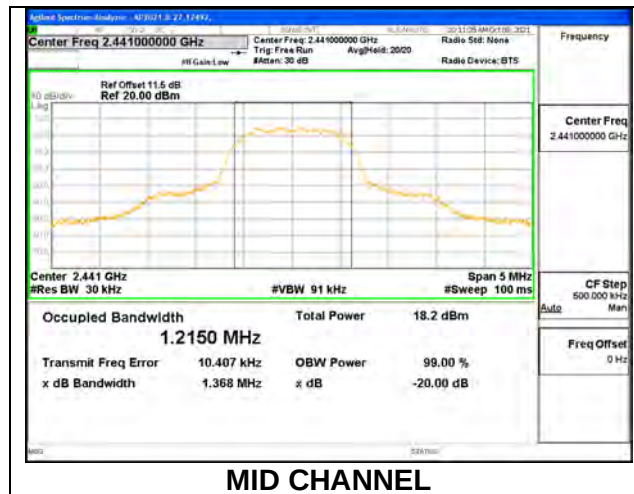
| Channel | Frequency<br>(MHz) | 20dB Bandwidth<br>ANT 2<br>(MHz) | 20dB Bandwidth<br>ANT 3<br>(MHz) | 99% Bandwidth<br>ANT 2<br>(MHz) | 99% Bandwidth<br>ANT 3<br>(MHz) |
|---------|--------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|
| Low     | 2402               | 0.887                            | 0.888                            | 0.870                           | 0.864                           |
| Mid     | 2441               | 0.889                            | 0.889                            | 0.866                           | 0.866                           |
| High    | 2480               | 0.889                            | 0.889                            | 0.865                           | 0.865                           |



### 9.2.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

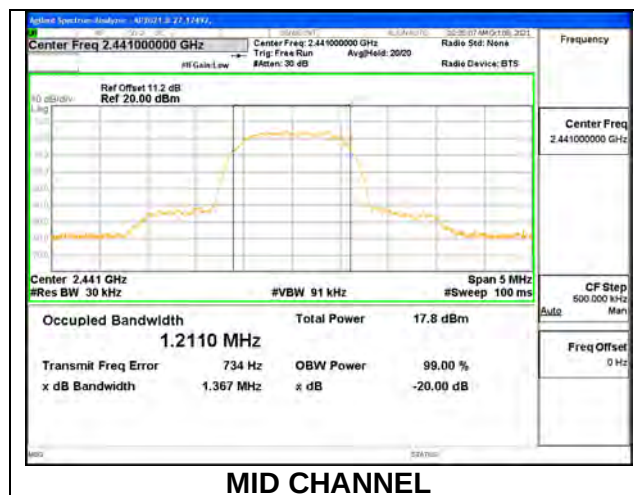
#### ANT 2

| Channel | Frequency (MHz) | 20dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|---------|-----------------|----------------------|---------------------|
| Low     | 2402            | 1.367                | 1.211               |
| Mid     | 2441            | 1.368                | 1.215               |
| High    | 2480            | 1.370                | 1.216               |



#### ANT 3

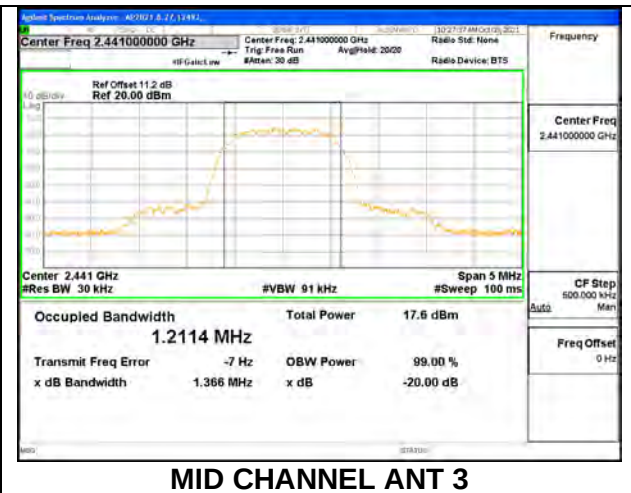
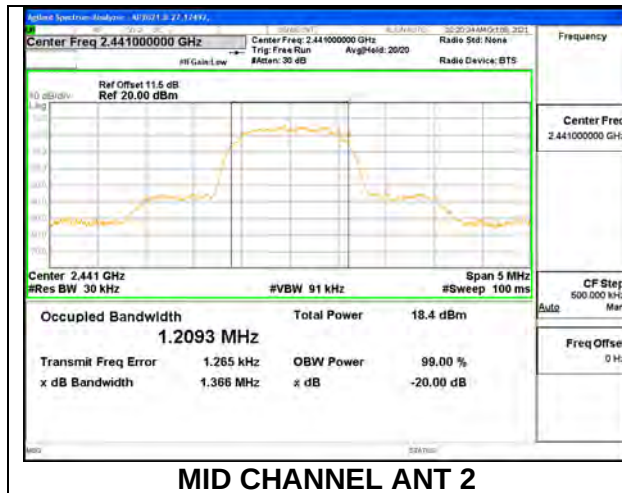
| Channel | Frequency (MHz) | 20dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|---------|-----------------|----------------------|---------------------|
| Low     | 2402            | 1.375                | 1.210               |
| Mid     | 2441            | 1.367                | 1.211               |
| High    | 2480            | 1.372                | 1.210               |



## 9.2.4. HIGH POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

Note: Test procedure on beamforming mode is same as BT basic and EDR mode

| Channel | Frequency<br>(MHz) | 20dB Bandwidth<br>ANT 2<br>(MHz) | 20dB Bandwidth<br>ANT 3<br>(MHz) | 99% Bandwidth<br>ANT 2<br>(MHz) | 99% Bandwidth<br>ANT 3<br>(MHz) |
|---------|--------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|
| Low     | 2402               | 1.365                            | 1.370                            | 1.208                           | 1.210                           |
| Mid     | 2441               | 1.366                            | 1.366                            | 1.209                           | 1.211                           |
| High    | 2480               | 1.366                            | 1.375                            | 1.208                           | 1.210                           |



### 9.3. HOPPING FREQUENCY SEPARATION

#### LIMITS

FCC §15.247 (a) (1)

RSS-247 (5.1) (b)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

#### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 300 kHz and the VBW is set to  $VBW \geq 3 \times RBW$ . The sweep time is coupled.

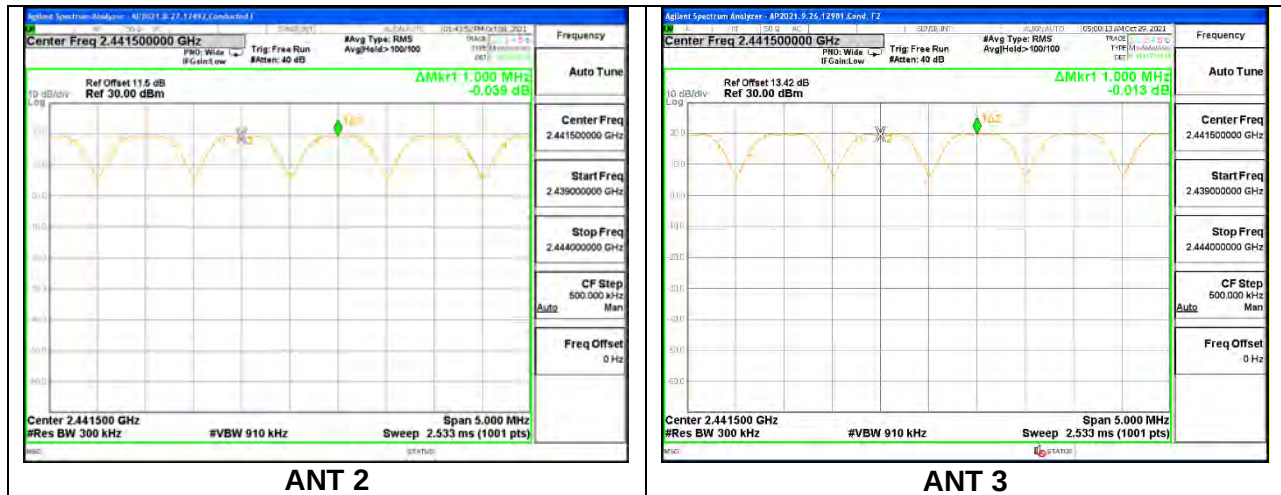
#### RESULTS

Only High Power GFSK mode result is reported since EDR (QPSK/8PSK) has exact same channel plan.



### 9.3.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

#### HOPPING FREQUENCY SEPARATION





## 9.4. NUMBER OF HOPPING CHANNELS

### LIMITS

FCC §15.247 (a) (1) (iii)

RSS-247 (5.1) (d)

Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

### TEST PROCEDURE

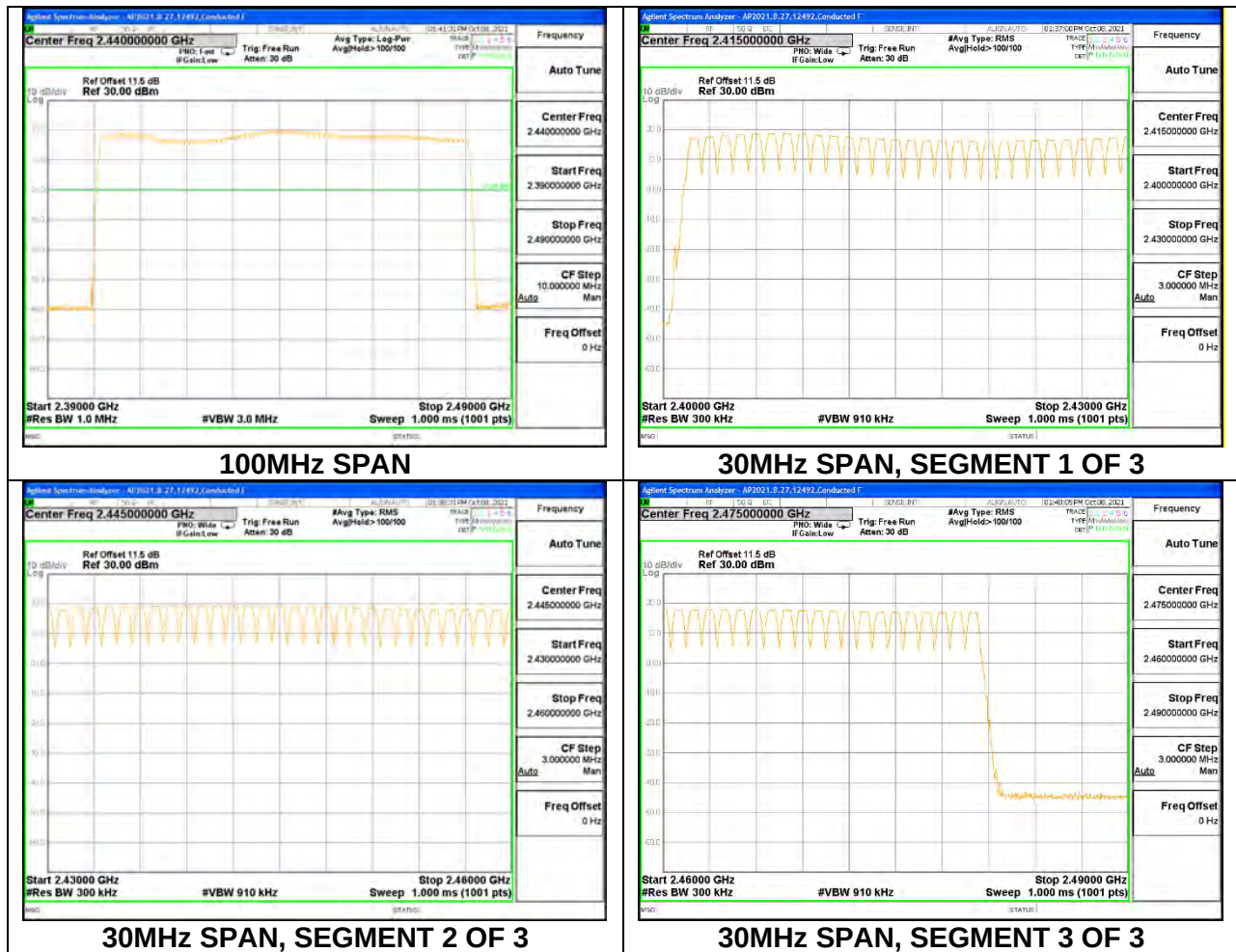
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

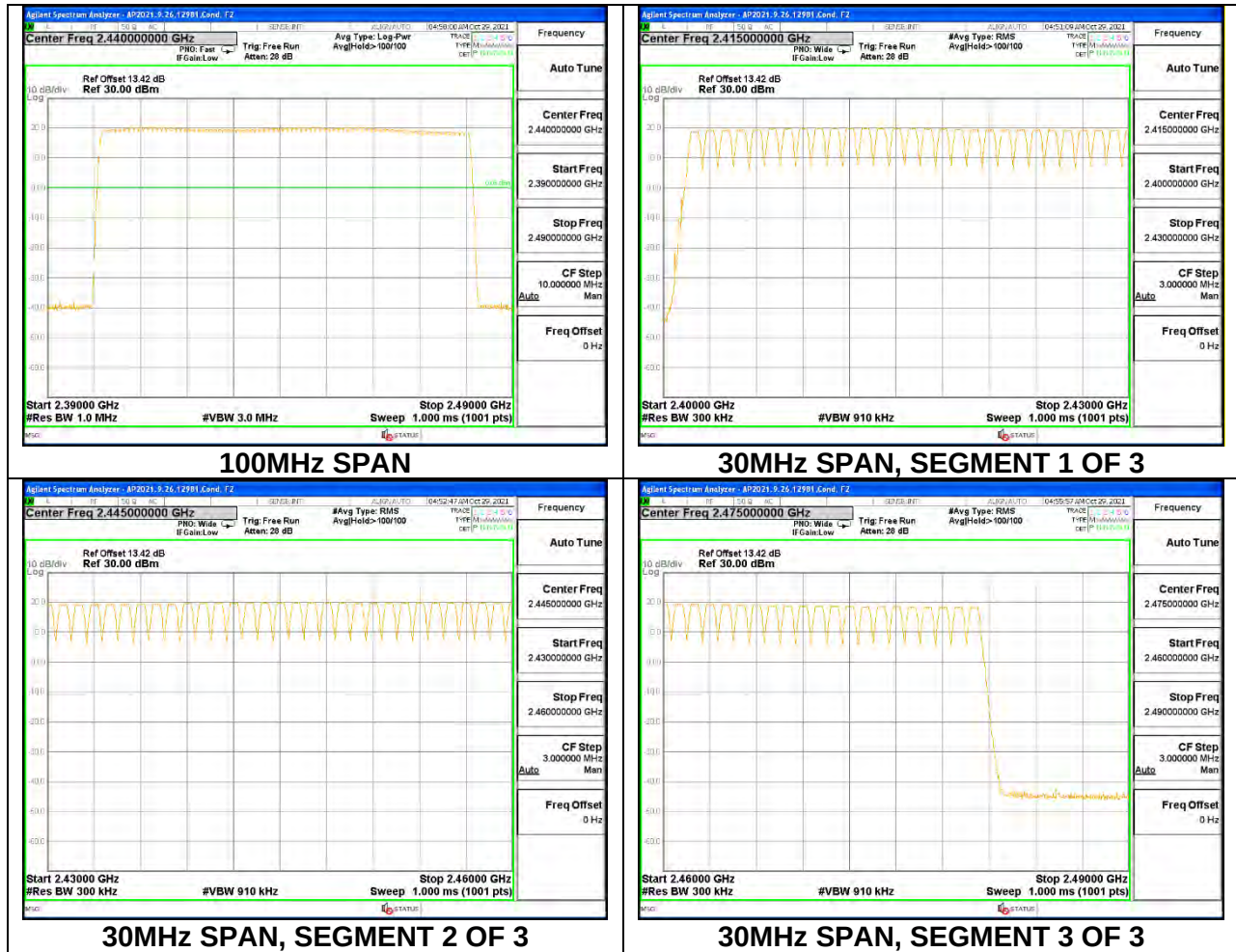
### RESULTS

Normal Mode: 79 Channels Observed. Only High Power GFSK mode result is reported since EDR (QPSK/8PSK) has exact same channel plan.

## 9.4.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

### ANT 2



**ANT 3**

## 9.5. AVERAGE TIME OF OCCUPANCY

### LIMITS

FCC §15.247 (a) (1) (iii)

RSS-247 (5.1) (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 3.16 second period (79 channels \* 0.4 s) is equal to  $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$ .

For AFH mode, the average time of occupancy in the specified 8 second period (20 channels \* 0.4 seconds) is equal to  $10 * (\# \text{ of pulses in } 0.8 \text{ s}) * \text{pulse width}$ .

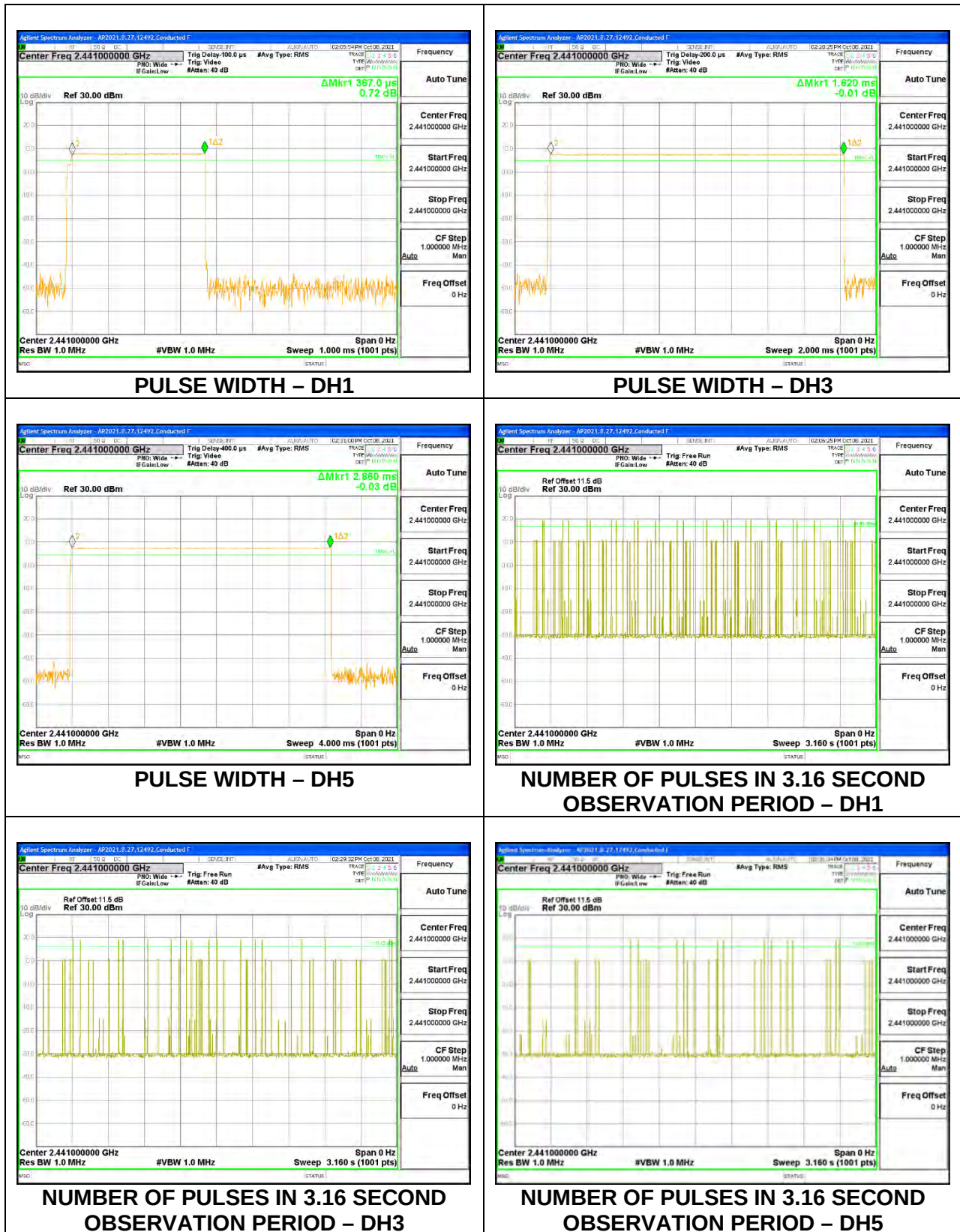
### RESULTS

Only High Power GFSK mode result is reported since EDR (QPSK/8PSK) has exact same timing.

**9.5.1. HIGH POWER BASIC DATA RATE GFSK MODULATION****ANT 2**

| DH Packet        | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|------------------|--------------------|----------------------------------|---------------------------------|-------------|--------------|
| GFSK Normal Mode |                    |                                  |                                 |             |              |
| DH1              | 0.367              | 31                               | 0.114                           | 0.4         | -0.286       |
| DH3              | 1.620              | 17                               | 0.275                           | 0.4         | -0.125       |
| DH5              | 2.860              | 12                               | 0.343                           | 0.4         | -0.057       |
|                  |                    |                                  |                                 |             |              |
| DH Packet        | Pulse Width (sec)  | Number of Pulses in 0.8 seconds  | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
| GFSK AFH Mode    |                    |                                  |                                 |             |              |
| DH1              | 0.367              | 7.75                             | 0.028                           | 0.4         | -0.372       |
| DH3              | 1.62               | 4.25                             | 0.069                           | 0.4         | -0.331       |
| DH5              | 2.86               | 3                                | 0.086                           | 0.4         | -0.314       |





**ANT 3**

| DH Packet        | Pulse Width (msec) | Number of Pulses in 3.16 seconds | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
|------------------|--------------------|----------------------------------|---------------------------------|-------------|--------------|
| GFSK Normal Mode |                    |                                  |                                 |             |              |
| DH1              | 0.367              | 31                               | 0.114                           | 0.4         | -0.286       |
| DH3              | 1.624              | 16                               | 0.260                           | 0.4         | -0.140       |
| DH5              | 2.860              | 10                               | 0.286                           | 0.4         | -0.114       |
|                  |                    |                                  |                                 |             |              |
| DH Packet        | Pulse Width (sec)  | Number of Pulses in 0.8 seconds  | Average Time of Occupancy (sec) | Limit (sec) | Margin (sec) |
| GFSK AFH Mode    |                    |                                  |                                 |             |              |
| DH1              | 0.367              | 7.75                             | 0.028                           | 0.4         | -0.372       |
| DH3              | 1.624              | 4.00                             | 0.065                           | 0.4         | -0.335       |
| DH5              | 2.860              | 2.50                             | 0.072                           | 0.4         | -0.329       |





## 9.6. OUTPUT POWER

### LIMITS

§15.247 (b) (1)

RSS-247 (5.4) (b)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts

### TEST PROCEDURE

Measurements was perform using a power meter with wideband peak power sensor.

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband peak power sensor. Peak output power was read directly from the power meter.

### DIRECTIONAL ANTENNA GAIN

For 1 TX:

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

For 2 TX:

Tx chains are correlated for power due to the device supporting Beamforming. The directional gains are as follows:

|               | ANT 2         | ANT 3         | Correlated Chains            |
|---------------|---------------|---------------|------------------------------|
| Band<br>(GHz) | Gain<br>(dBi) | Gain<br>(dBi) | Directional<br>Gain<br>(dBi) |
| 2.4           | 2.60          | -0.30         | 4.28                         |

### RESULTS

**9.6.1. HIGH POWER BASIC DATA RATE GFSK MODULATION****ANT 2**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 17.28                 | 21             | -3.72          |
| Middle  | 2441               | 17.92                 | 21             | -3.08          |
| High    | 2480               | 17.31                 | 21             | -3.69          |

**ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 20.37                 | 21             | -0.63          |
| Middle  | 2441               | 20.40                 | 21             | -0.6           |
| High    | 2480               | 20.35                 | 21             | -0.65          |

**9.6.2. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION****ANT 2 + ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>ANT 2<br>(dBm) | Output Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|--------------------------------|--------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 17.33                          | 17.34                          | 20.35                | 21             | -0.65          |
| Middle  | 2441               | 17.35                          | 17.38                          | 20.38                | 21             | -0.62          |
| High    | 2480               | 17.31                          | 17.32                          | 20.33                | 21             | -0.67          |

**9.6.3. HIGH POWER ENHANCED DATA RATE QPSK MODULATION****ANT 2**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 16.47                 | 21             | -4.53          |
| Middle  | 2441               | 16.49                 | 21             | -4.51          |
| High    | 2480               | 16.42                 | 21             | -4.58          |

**ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 16.40                 | 21             | -4.6           |
| Middle  | 2441               | 16.42                 | 21             | -4.58          |
| High    | 2480               | 16.35                 | 21             | -4.65          |

**9.6.4. HIGH POWER ENHANCED DATA RATE TXBF QPSK MODULATION****ANT 2 + ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>ANT 2<br>(dBm) | Output Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|--------------------------------|--------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 15.94                          | 15.85                          | 18.91                | 21             | -2.09          |
| Middle  | 2441               | 15.96                          | 15.87                          | 18.93                | 21             | -2.07          |
| High    | 2480               | 15.89                          | 15.81                          | 18.86                | 21             | -2.14          |

**9.6.5. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION****ANT 2**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 16.86                 | 21             | -4.14          |
| Middle  | 2441               | 16.89                 | 21             | -4.11          |
| High    | 2480               | 16.83                 | 21             | -4.17          |

**ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 16.73                 | 21             | -4.27          |
| Middle  | 2441               | 16.76                 | 21             | -4.24          |
| High    | 2480               | 16.72                 | 21             | -4.28          |

**9.6.6. HIGH POWER ENHANCED DATA RATE TXBF 8PSK MODULATION****ANT 2 + ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>ANT 2<br>(dBm) | Output Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|--------------------------------|--------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 16.23                          | 16.22                          | 19.24                | 21             | -1.76          |
| Middle  | 2441               | 16.26                          | 16.24                          | 19.26                | 21             | -1.74          |
| High    | 2480               | 16.19                          | 16.20                          | 19.21                | 21             | -1.79          |

**9.6.7. LOW POWER BASIC DATA RATE GFSK MODULATION****ANT 2**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 11.98                 | 21             | -9.02          |
| Middle  | 2441               | 12.04                 | 21             | -8.96          |
| High    | 2480               | 11.96                 | 21             | -9.04          |

**ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 11.45                 | 21             | -9.55          |
| Middle  | 2441               | 11.47                 | 21             | -9.53          |
| High    | 2480               | 11.40                 | 21             | -9.6           |

**9.6.8. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION****ANT 2 + ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>ANT 2<br>(dBm) | Output Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|--------------------------------|--------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 11.86                          | 11.43                          | 14.66                | 21             | -6.34          |
| Middle  | 2441               | 11.88                          | 11.56                          | 14.73                | 21             | -6.27          |
| High    | 2480               | 11.80                          | 11.41                          | 14.62                | 21             | -6.38          |

**9.6.9. LOW POWER ENHANCED DATA RATE QPSK MODULATION****ANT 2**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 11.46                 | 21             | -9.54          |
| Middle  | 2441               | 11.60                 | 21             | -9.4           |
| High    | 2480               | 11.41                 | 21             | -9.59          |

**ANT 3**

|            |            |
|------------|------------|
| Tested By: | 44366      |
| Date:      | 11/2/2/021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 10.90                 | 21             | -10.1          |
| Middle  | 2441               | 11.16                 | 21             | -9.84          |
| High    | 2480               | 10.89                 | 21             | -10.11         |

**9.6.10. LOW POWER ENHANCED DATA RATE TXBF QPSK MODULATION****ANT 2 + ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>ANT 2<br>(dBm) | Output Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|--------------------------------|--------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 10.5                           | 11.10                          | 13.82                | 21             | -7.18          |
| Middle  | 2441               | 11.75                          | 11.19                          | 14.49                | 21             | -6.51          |
| High    | 2480               | 11.24                          | 11.10                          | 14.18                | 21             | -6.82          |

### 9.6.11. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

#### ANT 2

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 10.52                 | 21             | -10.48         |
| Middle  | 2441               | 11.74                 | 21             | -9.26          |
| High    | 2480               | 11.27                 | 21             | -9.73          |

#### ANT 3

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|-----------------------|----------------|----------------|
| Low     | 2402               | 11.05                 | 21             | -9.95          |
| Middle  | 2441               | 11.20                 | 21             | -9.8           |
| High    | 2480               | 11.03                 | 21             | -9.97          |

### 9.6.12. LOW POWER ENHANCED DATA RATE TXBF 8PSK MODULATION

#### ANT 2 + ANT 3

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Output Power<br>ANT 2<br>(dBm) | Output Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|--------------------------------|--------------------------------|----------------------|----------------|----------------|
| Low     | 2402               | 10.63                          | 11.20                          | 13.93                | 21             | -7.07          |
| Middle  | 2441               | 11.82                          | 11.22                          | 14.54                | 21             | -6.46          |
| High    | 2480               | 11.33                          | 11.16                          | 14.26                | 21             | -6.74          |

## **9.7. AVERAGE POWER**

### **LIMITS**

None; for reporting purposes only

### **TEST PROCEDURE**

Measurements was performed using a power meter with wideband average power sensor.

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband average power sensor. Gated average output power was read directly from power meter.

### **RESULTS**



**9.7.1. HIGH POWER BASIC DATA RATE GFSK MODULATION****ANT 2**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 1/24/2022 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 16.80                  |
| Middle  | 2441               | 16.90                  |
| High    | 2480               | 16.84                  |

**ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 19.89                  |
| Middle  | 2441               | 19.92                  |
| High    | 2480               | 19.87                  |

**9.7.2. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION****ANT 2 + ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Average Power<br>ANT 2<br>(dBm) | Average Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) |
|---------|--------------------|---------------------------------|---------------------------------|----------------------|
| Low     | 2402               | 16.89                           | 16.90                           | 19.91                |
| Middle  | 2441               | 16.92                           | 16.94                           | 19.94                |
| High    | 2480               | 16.87                           | 16.88                           | 19.89                |

**9.7.3. HIGH POWER ENHANCED DATA RATE QPSK MODULATION****ANT 2**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 13.81                  |
| Middle  | 2441               | 13.82                  |
| High    | 2480               | 13.77                  |

**ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 13.74                  |
| Middle  | 2441               | 13.76                  |
| High    | 2480               | 13.71                  |

**9.7.4. HIGH POWER BASIC DATA RATE TXBF QPSK MODULATION****ANT 2 + ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Average Power<br>ANT 2<br>(dBm) | Average Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) |
|---------|--------------------|---------------------------------|---------------------------------|----------------------|
| Low     | 2402               | 13.35                           | 13.30                           | 16.34                |
| Middle  | 2441               | 13.37                           | 13.33                           | 16.36                |
| High    | 2480               | 13.32                           | 13.27                           | 16.31                |

**9.7.5. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION****ANT 2**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 13.93                  |
| Middle  | 2441               | 13.95                  |
| High    | 2480               | 13.90                  |

**ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 13.81                  |
| Middle  | 2441               | 13.84                  |
| High    | 2480               | 13.80                  |

**9.7.6. HIGH POWER BASIC DATA RATE TXBF 8PSK MODULATION****ANT 2 + ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Average Power<br>ANT 2<br>(dBm) | Average Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) |
|---------|--------------------|---------------------------------|---------------------------------|----------------------|
| Low     | 2402               | 13.44                           | 13.41                           | 16.44                |
| Middle  | 2441               | 13.46                           | 13.42                           | 16.45                |
| High    | 2480               | 13.40                           | 13.38                           | 16.40                |

**9.7.7. LOW POWER BASIC DATA RATE GFSK MODULATION****ANT 2**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 11/2/2021 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 11.44                  |
| Middle  | 2441               | 11.47                  |
| High    | 2480               | 11.41                  |

**ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 1/24/2022 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 10.93                  |
| Middle  | 2441               | 10.95                  |
| High    | 2480               | 10.89                  |

**9.7.8. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION****ANT 2 + ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 1/24/2022 |

| Channel | Frequency<br>(MHz) | Average Power<br>ANT 2<br>(dBm) | Average Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) |
|---------|--------------------|---------------------------------|---------------------------------|----------------------|
| Low     | 2402               | 11.42                           | 10.89                           | 14.17                |
| Middle  | 2441               | 11.44                           | 10.92                           | 14.20                |
| High    | 2480               | 11.37                           | 10.86                           | 14.13                |

**9.7.9. LOW POWER ENHANCED DATA RATE QPSK MODULATION****ANT 2**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 1/24/2022 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 8.81                   |
| Middle  | 2441               | 8.89                   |
| High    | 2480               | 8.75                   |

**ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 1/24/2022 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 8.32                   |
| Middle  | 2441               | 8.46                   |
| High    | 2480               | 8.22                   |

**9.7.10. LOW POWER BASIC DATA RATE TXBF QPSK MODULATION****ANT 2 + ANT 3**

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 1/24/2022 |

| Channel | Frequency<br>(MHz) | Average Power<br>ANT 2<br>(dBm) | Average Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) |
|---------|--------------------|---------------------------------|---------------------------------|----------------------|
| Low     | 2402               | 7.51                            | 8.28                            | 10.92                |
| Middle  | 2441               | 8.75                            | 8.38                            | 11.58                |
| High    | 2480               | 8.22                            | 8.29                            | 11.27                |

### 9.7.11. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

#### ANT 2

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 1/24/2022 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 7.73                   |
| Middle  | 2441               | 8.94                   |
| High    | 2480               | 8.47                   |

#### ANT 3

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date       | 1/24/2022 |

| Channel | Frequency<br>(MHz) | Average Power<br>(dBm) |
|---------|--------------------|------------------------|
| Low     | 2402               | 8.36                   |
| Middle  | 2441               | 8.48                   |
| High    | 2480               | 8.34                   |

### 9.7.12. LOW POWER BASIC DATA RATE TXBF 8PSK MODULATION

#### ANT 2 + ANT 3

|            |           |
|------------|-----------|
| Tested By: | 44366     |
| Date:      | 1/24/2022 |

| Channel | Frequency<br>(MHz) | Average Power<br>ANT 2<br>(dBm) | Average Power<br>ANT 3<br>(dBm) | Total Power<br>(dBm) |
|---------|--------------------|---------------------------------|---------------------------------|----------------------|
| Low     | 2402               | 7.64                            | 8.38                            | 11.04                |
| Middle  | 2441               | 8.82                            | 8.41                            | 11.63                |
| High    | 2480               | 8.31                            | 8.35                            | 11.34                |

## 9.8. CONDUCTED SPURIOUS EMISSIONS

### LIMITS

FCC §15.247 (d)

RSS-247 5.5

Limit = -20 dBc

### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

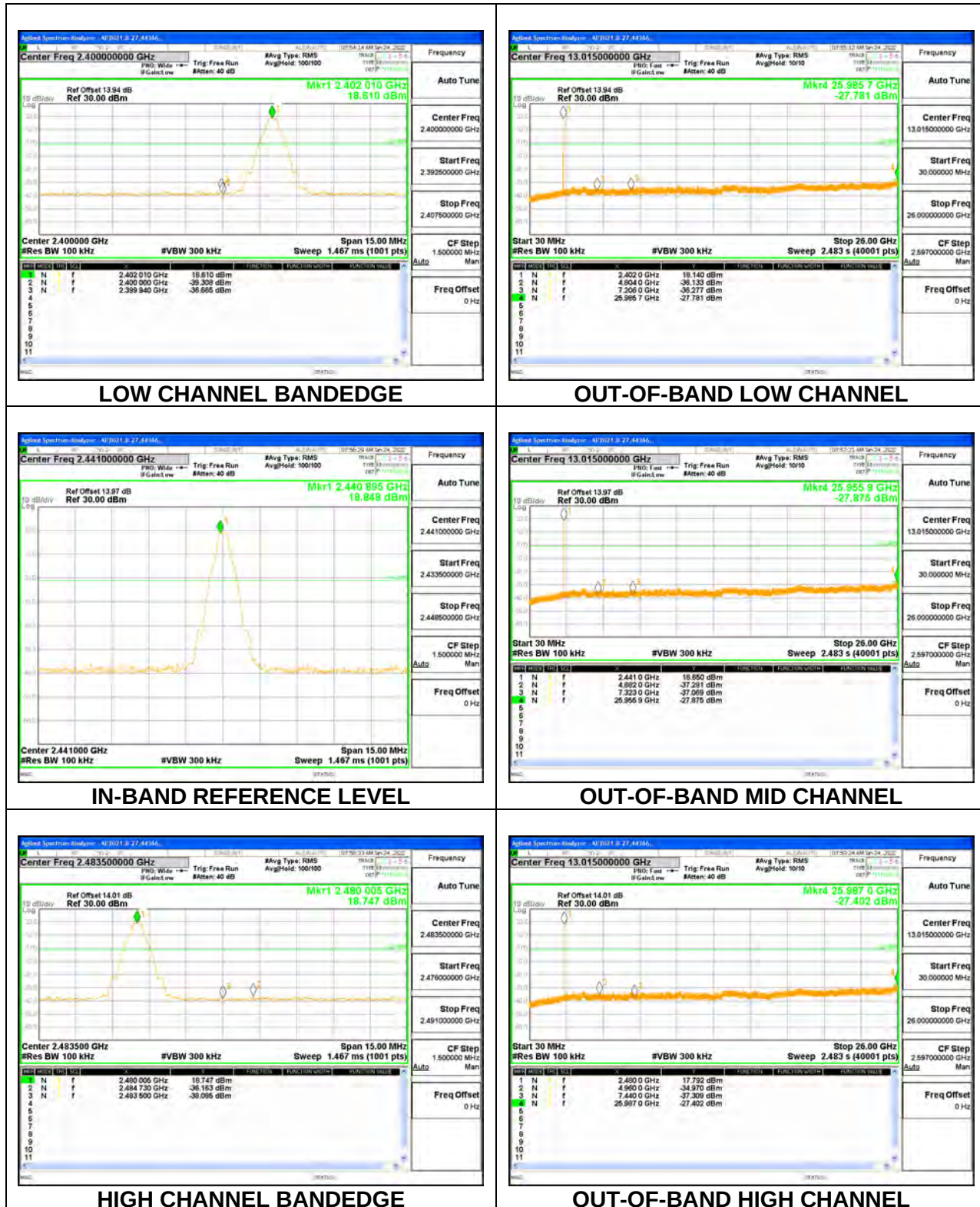
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The band edges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

### RESULTS

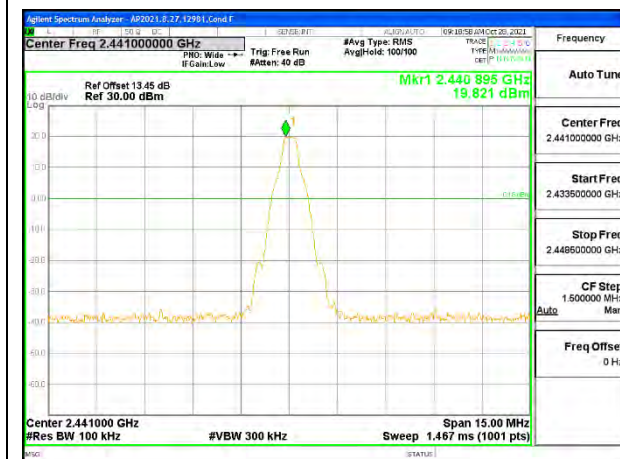
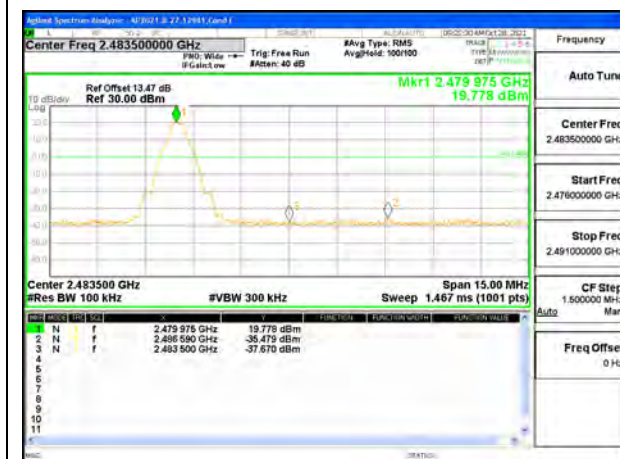
## 9.8.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

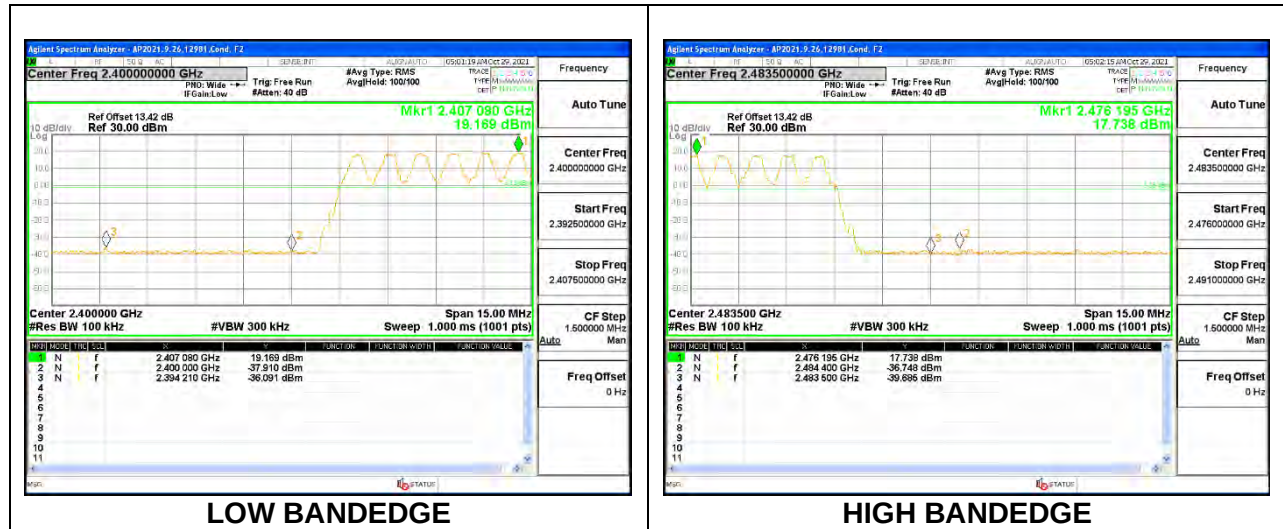
### ANT 2 SPURIOUS EMISSIONS, NON-HOPPING





**ANT 2 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

**ANT 3 SPURIOUS EMISSIONS, NON-HOPPING****LOW CHANNEL BANDEDGE****OUT-OF-BAND LOW CHANNEL****IN-BAND REFERENCE LEVEL****OUT-OF-BAND MID CHANNEL****HIGH CHANNEL BANDEDGE****OUT-OF-BAND HIGH CHANNEL**

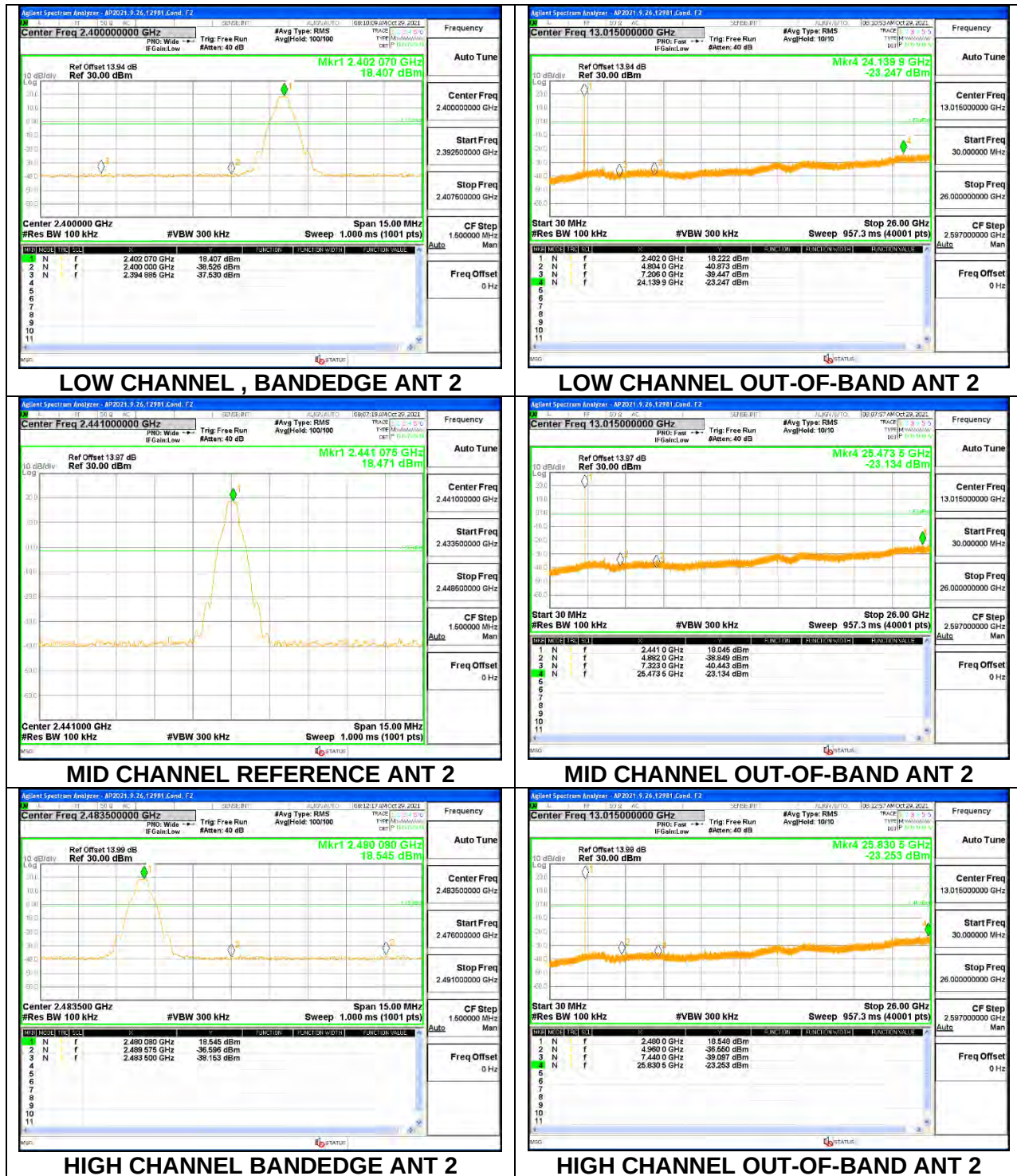
**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

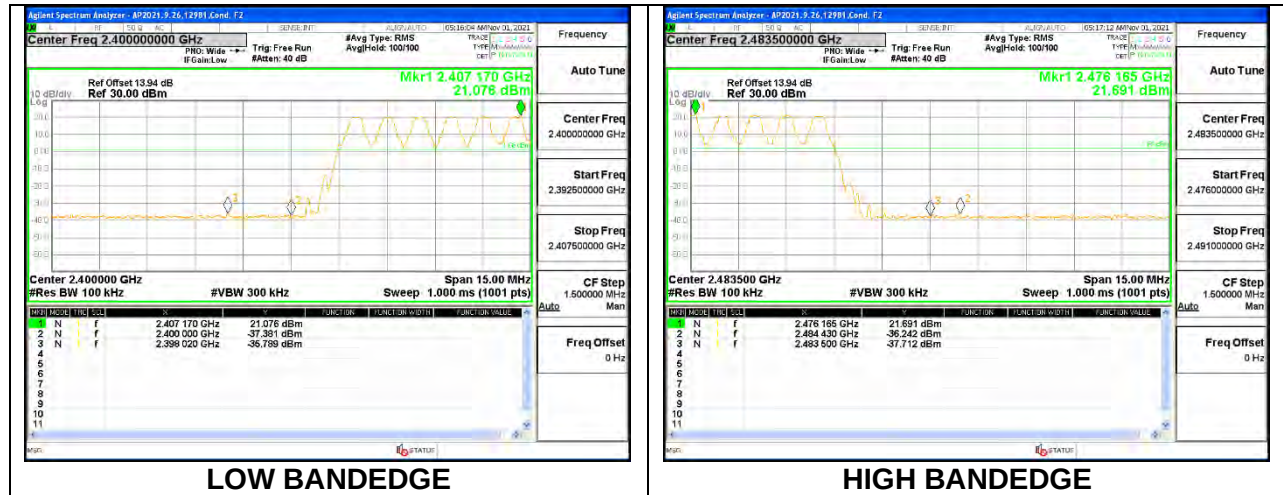


## 9.8.2. HIGH POWER BASIC DATA RATE TXBF GFSK MODULATION

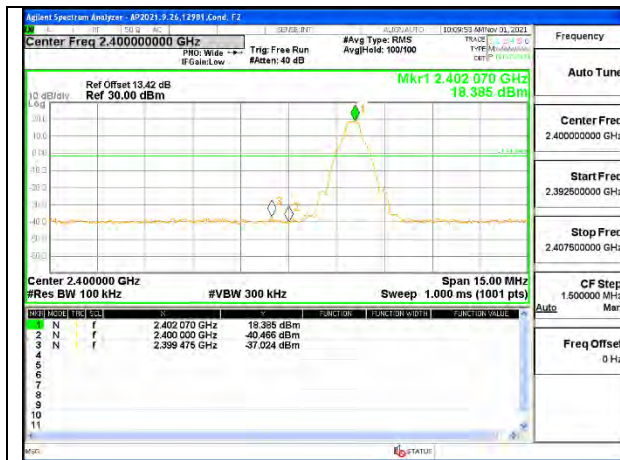
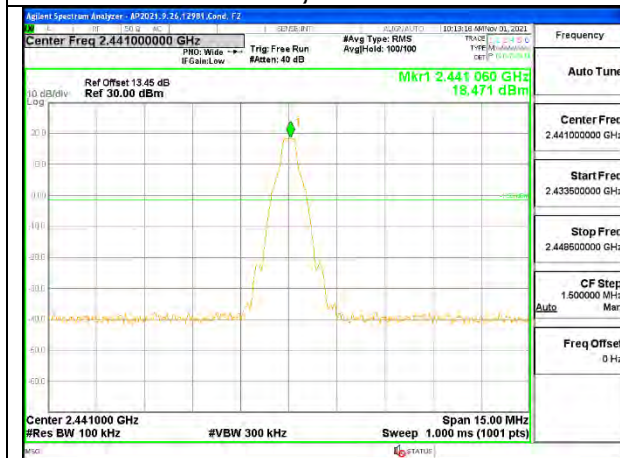
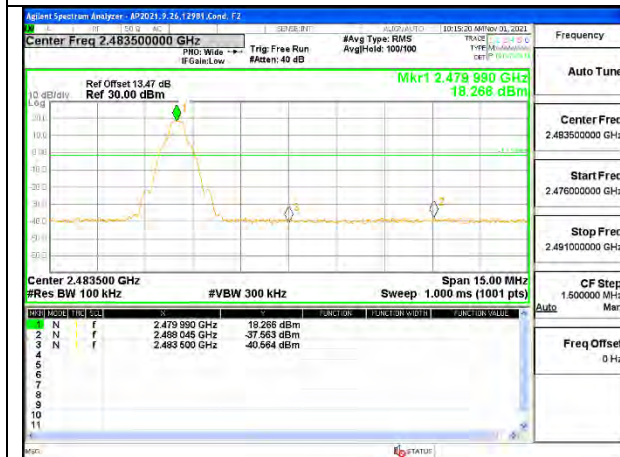
Note: Test procedure on beamforming mode is same as BT basic and EDR mode

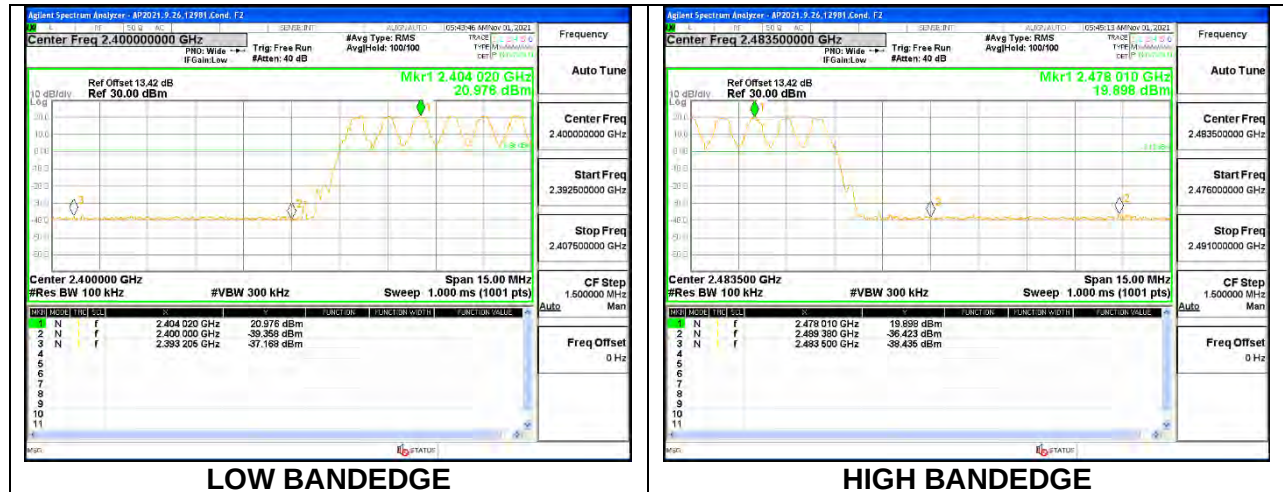
### ANT 2 SPURIOUS EMISSIONS, NON-HOPPING



**ANT 2 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



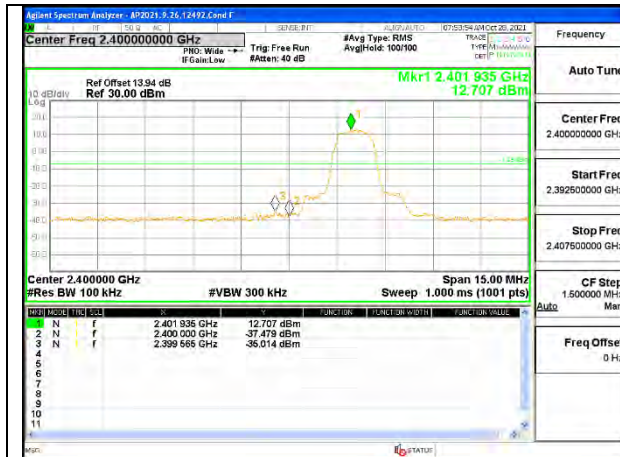
**ANT 3 SPURIOUS EMISSIONS, NON-HOPPING****LOW CHANNEL , BANDEDGE ANT 3****LOW CHANNEL OUT-OF-BAND ANT 3****MID CHANNEL REFERENCE ANT 3****MID CHANNEL OUT-OF-BAND ANT 3****HIGH CHANNEL BANDEDGE ANT 3****HIGH CHANNEL OUT-OF-BAND ANT 3**

**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

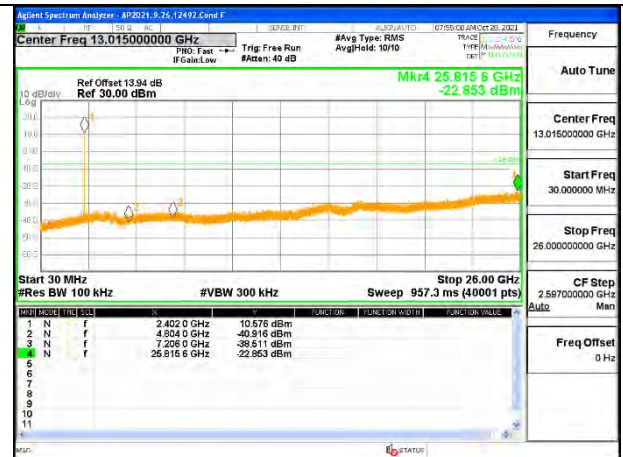


## 9.8.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

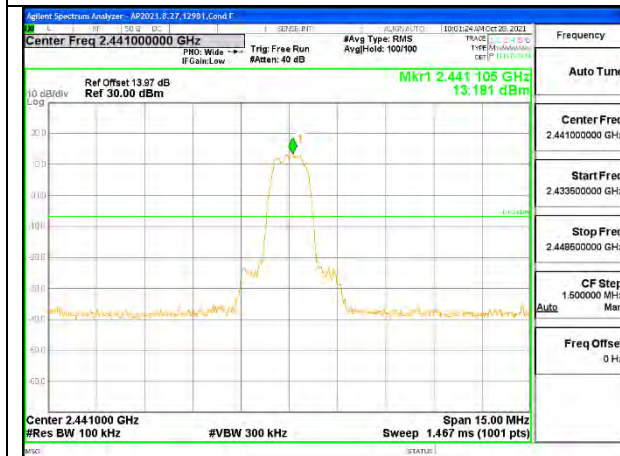
### ANT 2 SPURIOUS EMISSIONS, NON-HOPPING



**LOW CHANNEL BANDEDGE**



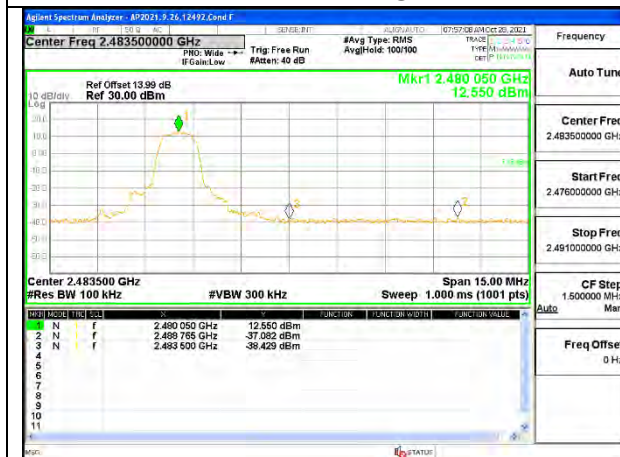
**OUT-OF-BAND LOW CHANNEL**



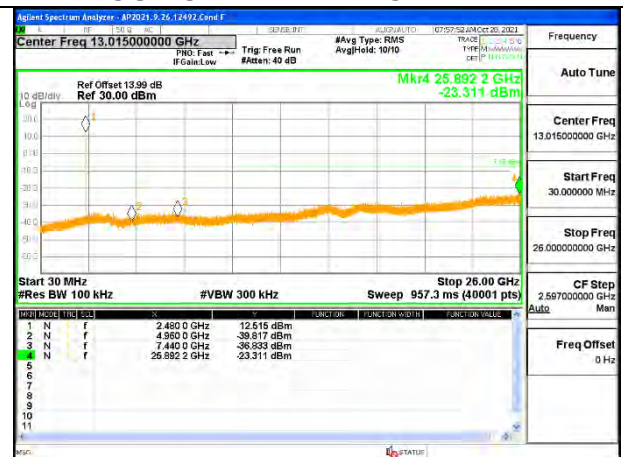
**IN-BAND REFERENCE LEVEL**



**OUT-OF-BAND MID CHANNEL**

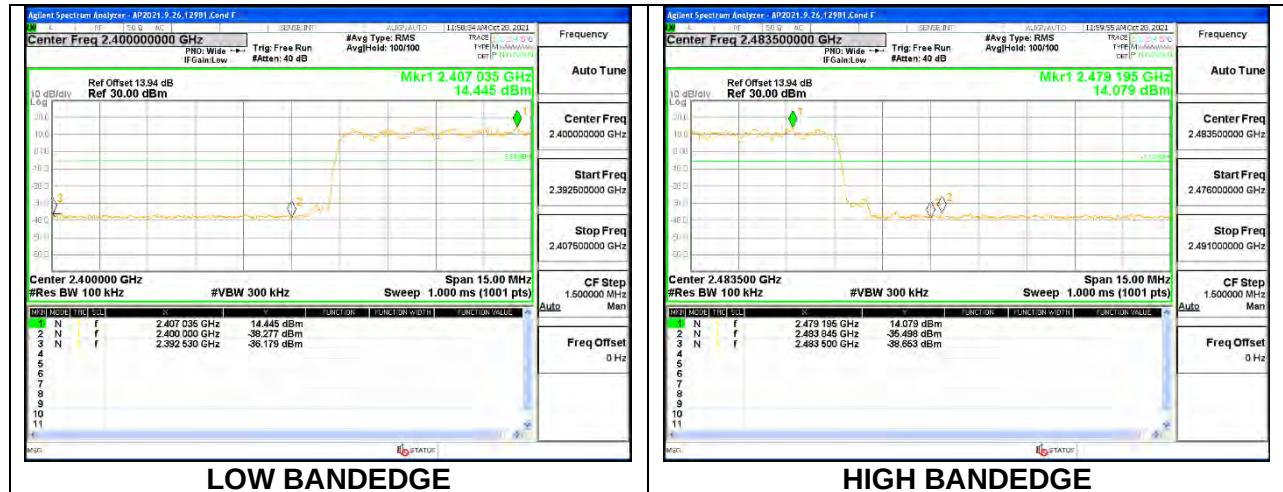


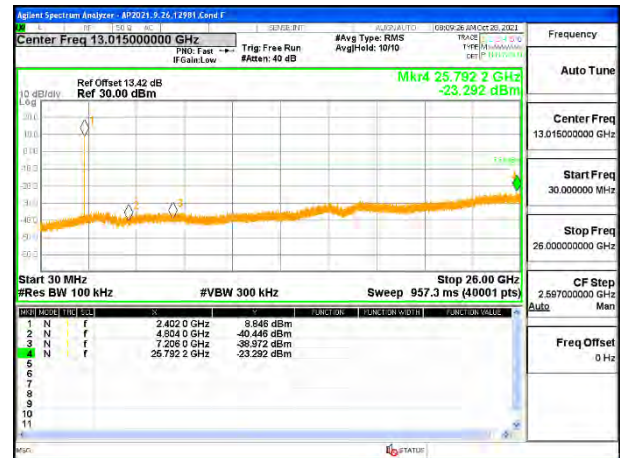
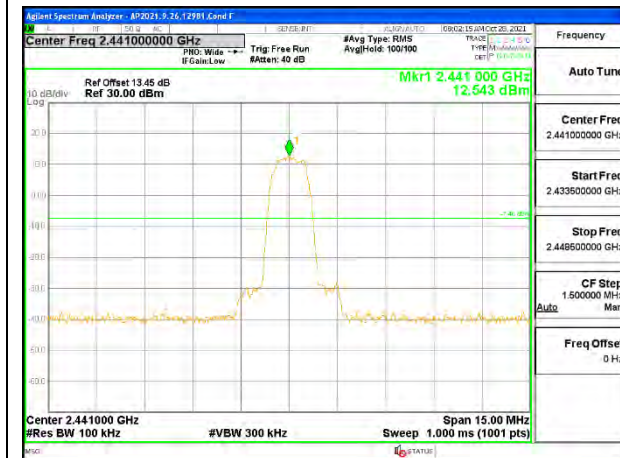
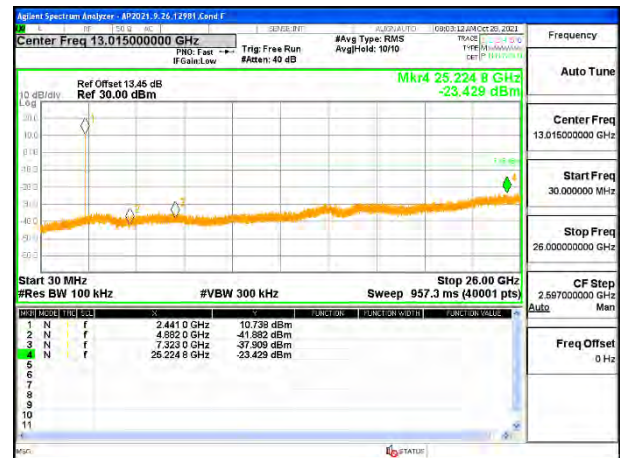
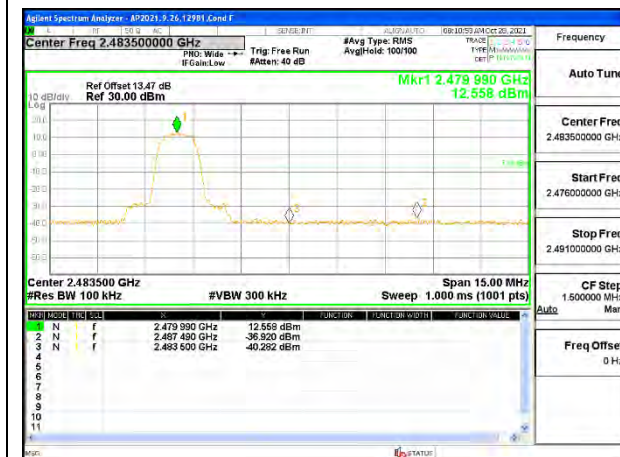
**HIGH CHANNEL BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL**



**ANT 2 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

**ANT 3 SPURIOUS EMISSIONS, NON-HOPPING****LOW CHANNEL BANDEDGE****OUT-OF-BAND LOW CHANNEL****IN-BAND REFERENCE LEVEL****OUT-OF-BAND MID CHANNEL****HIGH CHANNEL BANDEDGE****OUT-OF-BAND HIGH CHANNEL**

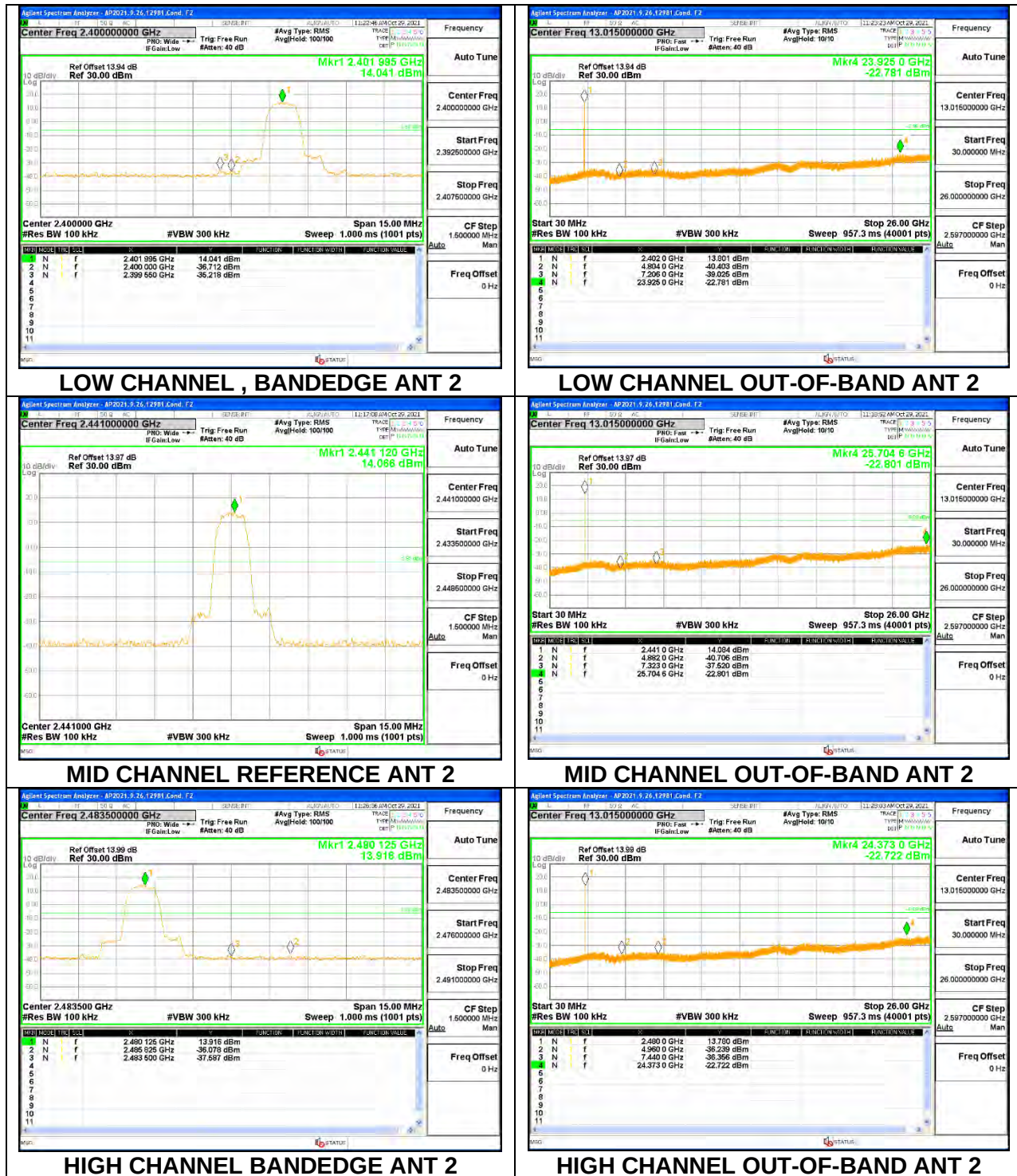
**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

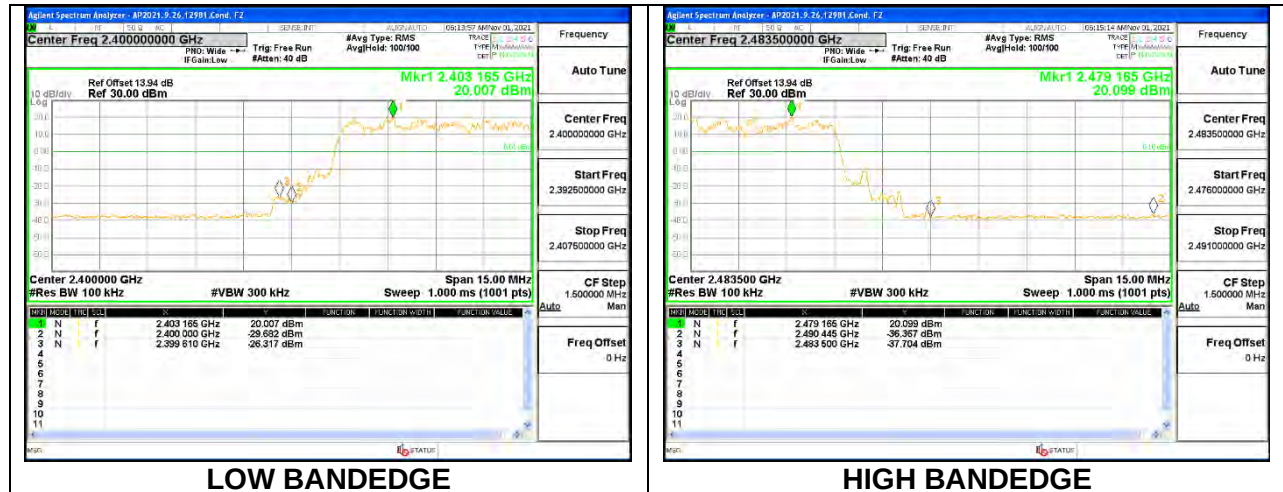


## 9.8.4. HIGH POWER BASIC DATA RATE TXBF 8PSK MODULATION

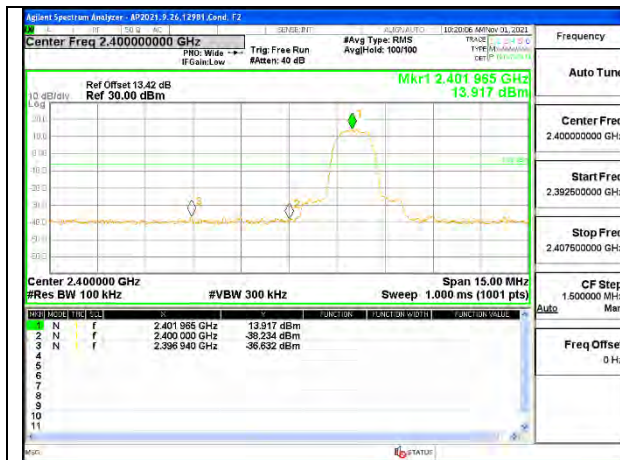
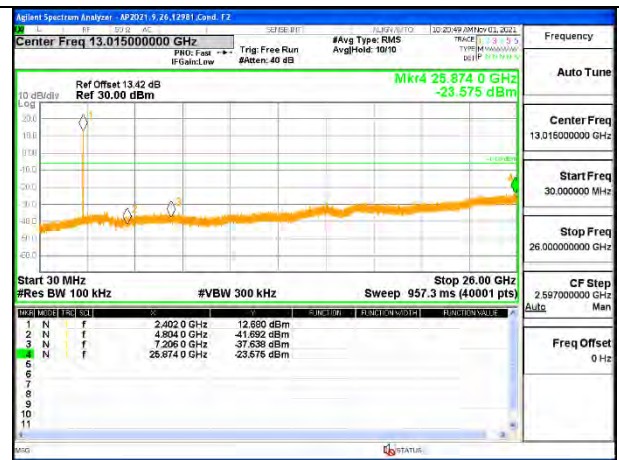
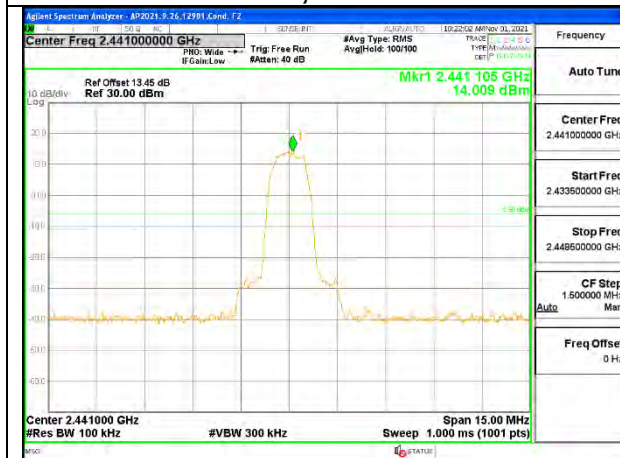
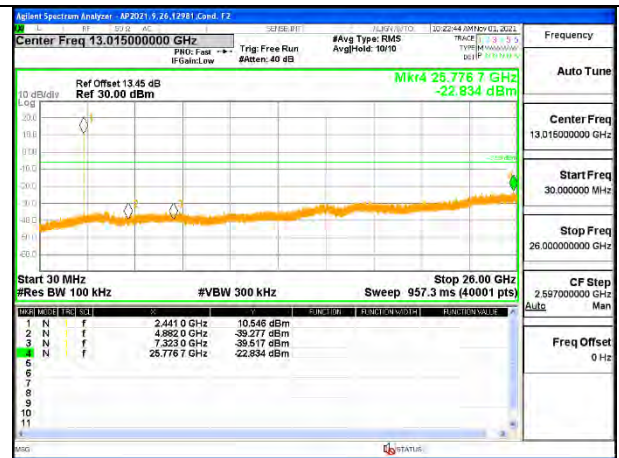
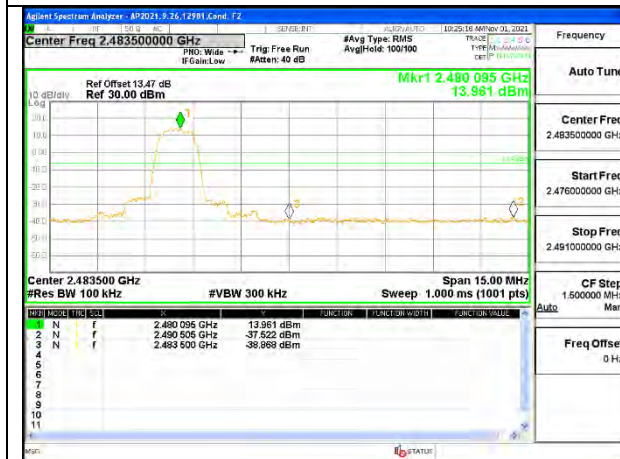
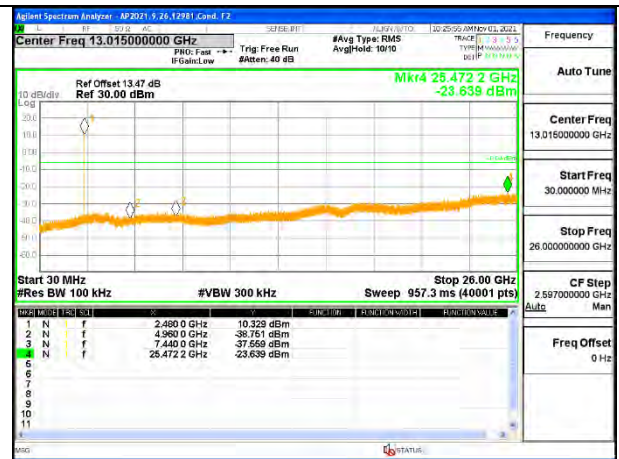
Note: Test procedure on beamforming mode is same as BT basic and EDR mode

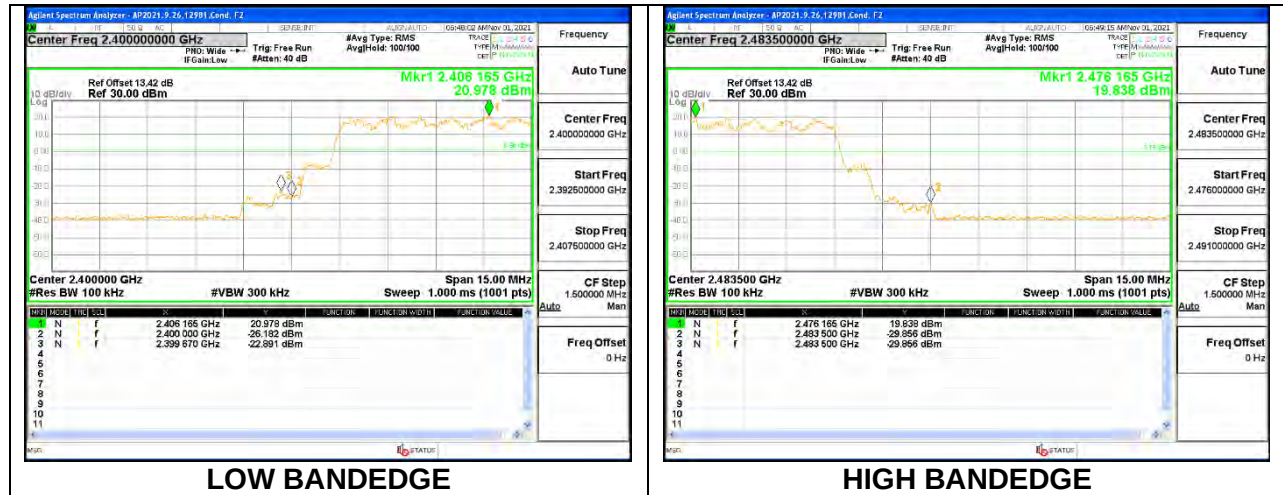
### ANT 2 SPURIOUS EMISSIONS, NON-HOPPING



**ANT 2 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



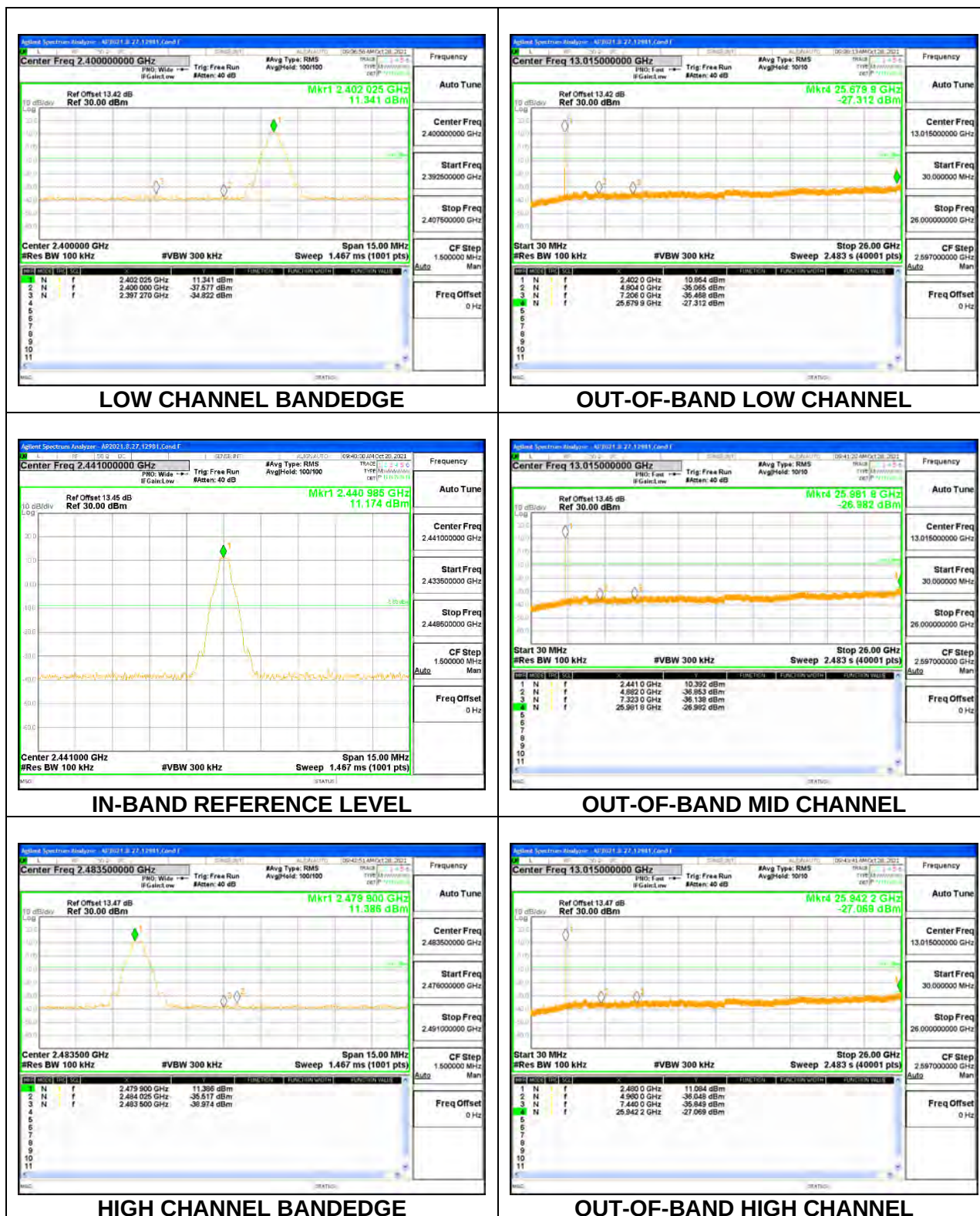
**ANT 3 SPURIOUS EMISSIONS, NON-HOPPING****LOW CHANNEL , BANDEDGE ANT 3****LOW CHANNEL OUT-OF-BAND ANT 3****MID CHANNEL REFERENCE ANT 3****MID CHANNEL OUT-OF-BAND ANT 3****HIGH CHANNEL BANDEDGE ANT 3****HIGH CHANNEL OUT-OF-BAND ANT 3**

**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



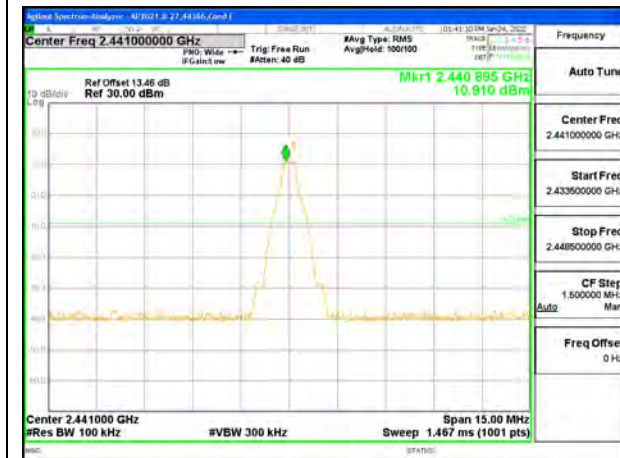
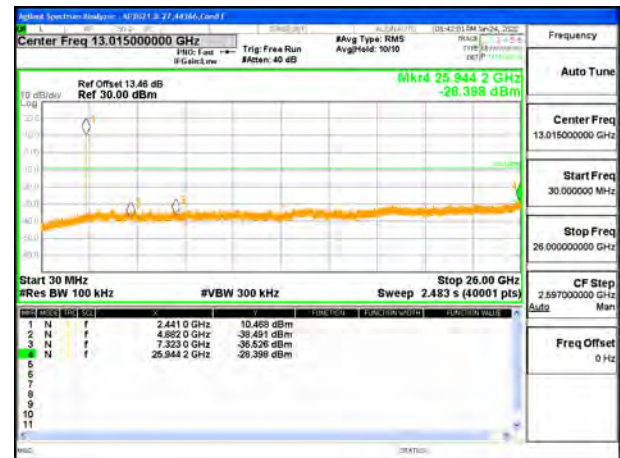
## 9.8.5. LOW POWER BASIC DATA RATE GFSK MODULATION

### ANT 2 SPURIOUS EMISSIONS, NON-HOPPING





**ANT 2 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

**ANT 3 SPURIOUS EMISSIONS, NON-HOPPING****LOW CHANNEL BANDEDGE****OUT-OF-BAND LOW CHANNEL****IN-BAND REFERENCE LEVEL****OUT-OF-BAND MID CHANNEL****HIGH CHANNEL BANDEDGE****OUT-OF-BAND HIGH CHANNEL**

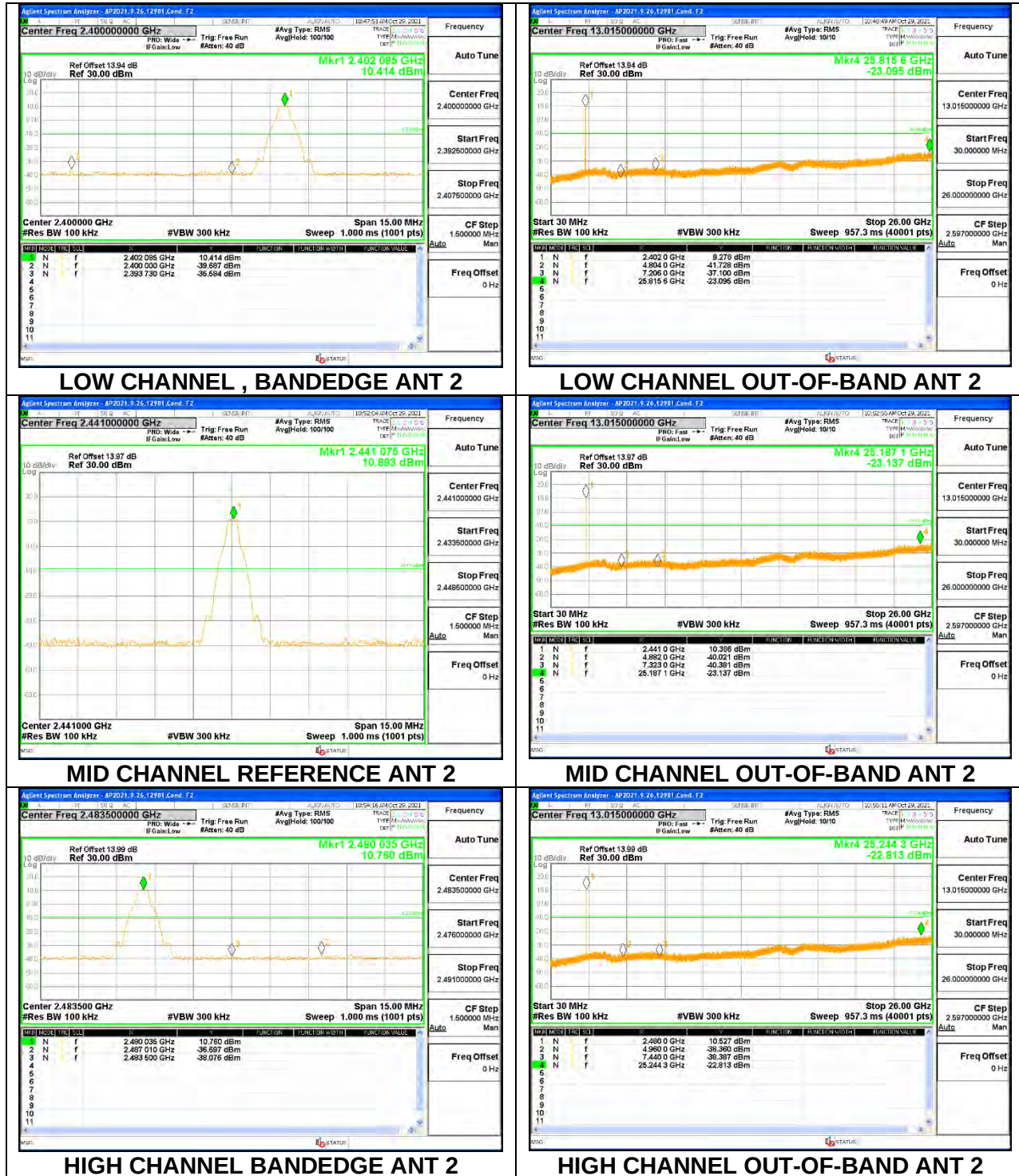
**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



## 9.8.6. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION

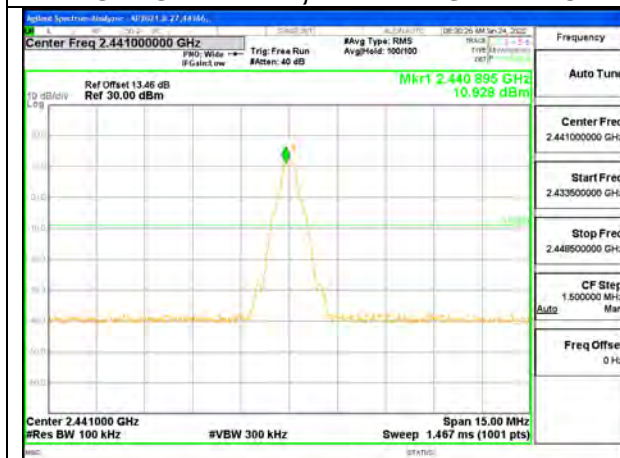
Note: Test procedure on beamforming mode is same as BT basic and EDR mode

### ANT 2 SPURIOUS EMISSIONS, NON-HOPPING



**ANT 2 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



**ANT 3 SPURIOUS EMISSIONS, NON-HOPPING**



**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

## 9.8.7. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

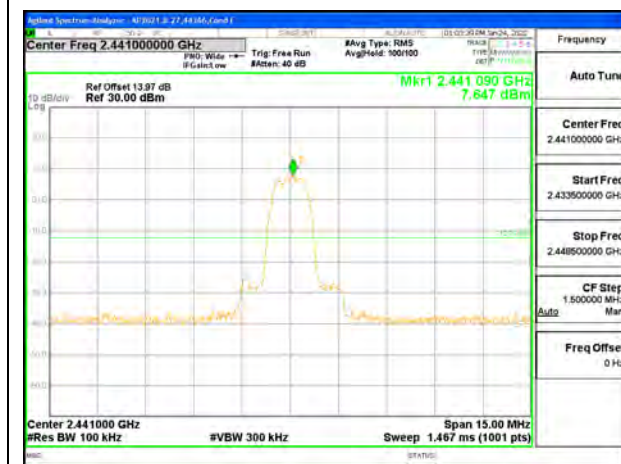
### ANT 2 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



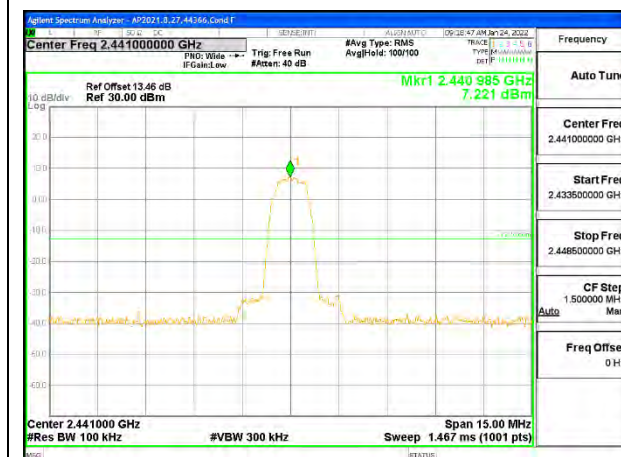
HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

**ANT 2 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



**ANT 3 SPURIOUS EMISSIONS, NON-HOPPING****LOW CHANNEL BANDEDGE****OUT-OF-BAND LOW CHANNEL****IN-BAND REFERENCE LEVEL****OUT-OF-BAND MID CHANNEL****HIGH CHANNEL BANDEDGE****OUT-OF-BAND HIGH CHANNEL**

**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**



## 9.8.8. LOW POWER BASIC DATA RATE TXBF 8PSK MODULATION

Note: Test procedure on beamforming mode is same as BT basic and EDR mode

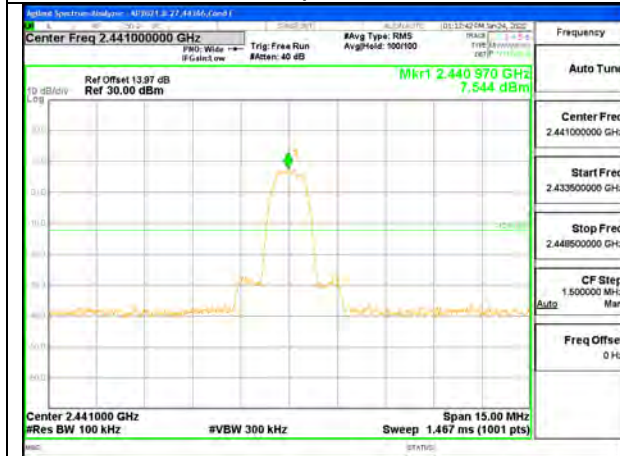
### ANT 2 SPURIOUS EMISSIONS, NON-HOPPING



LOW CHANNEL , BANDEDGE ANT 2



LOW CHANNEL OUT-OF-BAND ANT 2



MID CHANNEL REFERENCE ANT 2



MID CHANNEL OUT-OF-BAND ANT 2

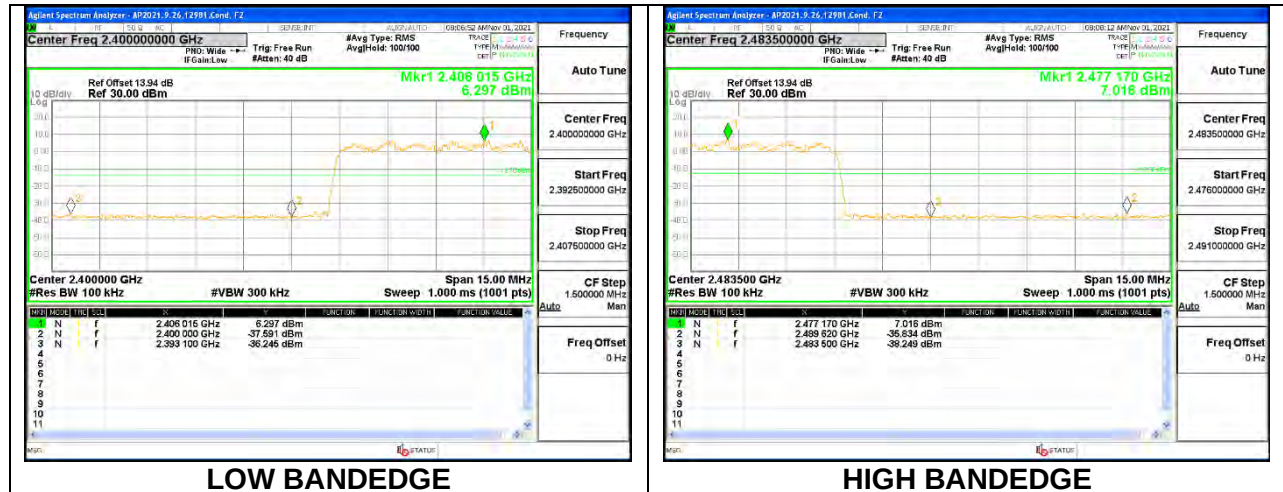


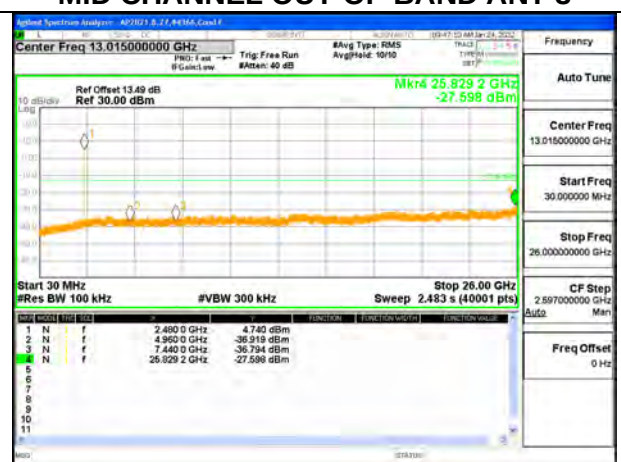
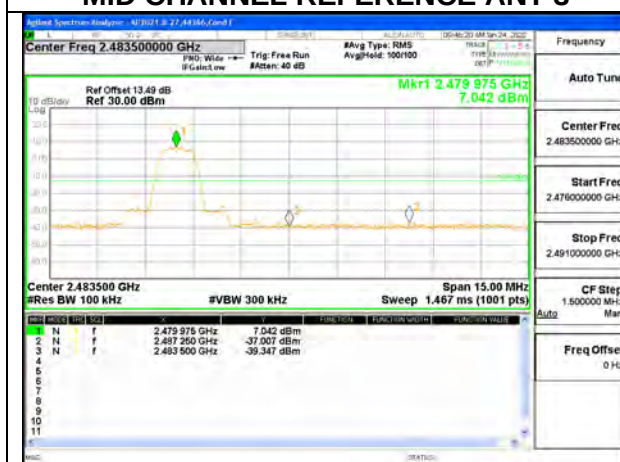
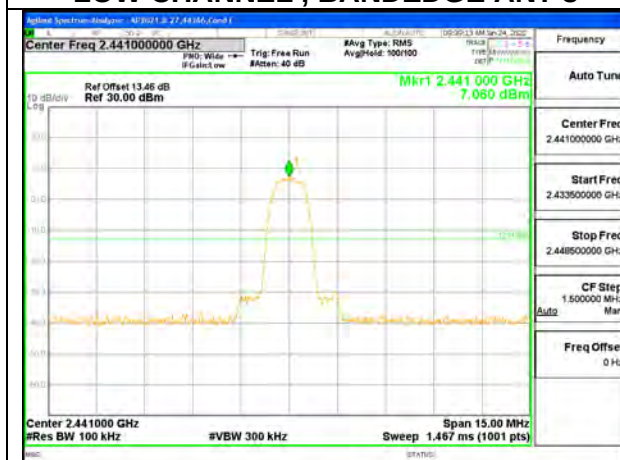
HIGH CHANNEL BANDEDGE ANT 2

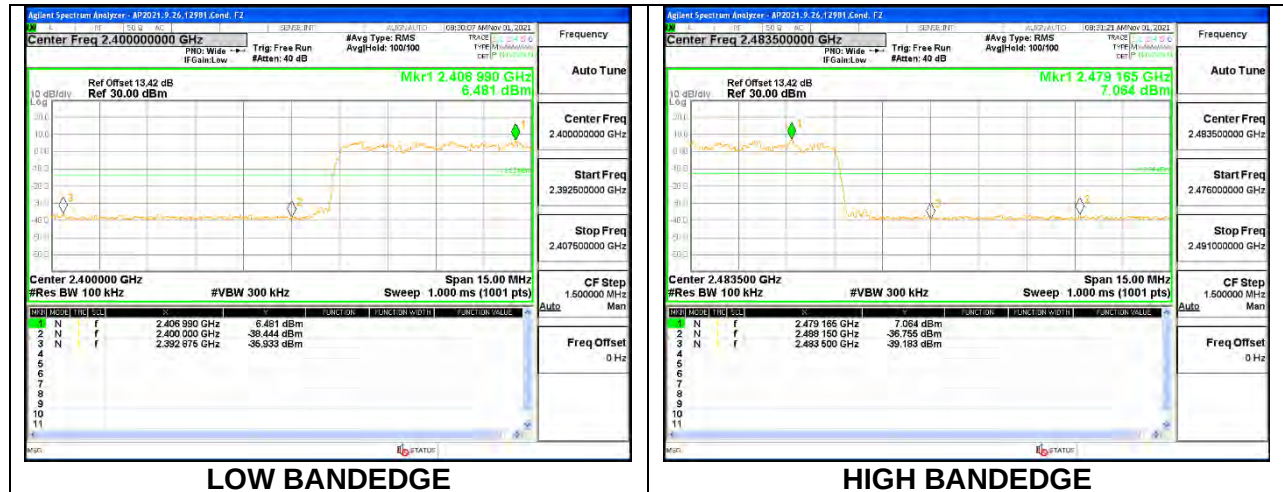


HIGH CHANNEL OUT-OF-BAND ANT 2



**ANT 2 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

**ANT 3 SPURIOUS EMISSIONS, NON-HOPPING**

**ANT 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**

## 10. RADIATED TEST RESULTS

### LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10.

| Frequency Range (MHz) | Field Strength Limit (uV/m) at 3 m | Field Strength Limit (dBuV/m) at 3 m |
|-----------------------|------------------------------------|--------------------------------------|
| 0.009-0.490           | 2400/F(kHz) @ 300 m                | -                                    |
| 0.490-1.705           | 24000/F(kHz) @ 30 m                | -                                    |
| 1.705 - 30            | 30 @ 30m                           | -                                    |
| 30 - 88               | 100                                | 40                                   |
| 88 - 216              | 150                                | 43.5                                 |
| 216 - 960             | 200                                | 46                                   |
| Above 960             | 500                                | 54                                   |

### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement 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 pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final scans above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T (10 Hz) video bandwidth with peak detector for average measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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.

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

**KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification**

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

**KDB 558074 D01 15.247 Meas Guidance v05r02**

Use of a duty cycle correction factor (DCCF) is permitted for calculating average radiated field strength emission levels for an FHSS device in 15.247. This DCCF can be applied when the field strength limit (e.g., within a Government Restricted band) and the conditions specified in Section 15.35(c) can be satisfied. The average radiated field strength is calculated by subtracting the DCCF from the maximum radiated field strength level as determined through measurement. The maximum radiated field strength level represents the worst-case (maximum amplitude) RMS measurement of the emission(s) during continuous transmission (i.e., not including any time intervals during which the transmitter is off or is transmitting at a reduced power level). It is also acceptable to apply the DCCF to a measurement performed with a peak detector instead of the specified RMS power averaging detector. Note that Section 15.35(c) specifies that the DCCF shall represent the worst-case (greatest duty cycle) over any 100 msec transmission period.



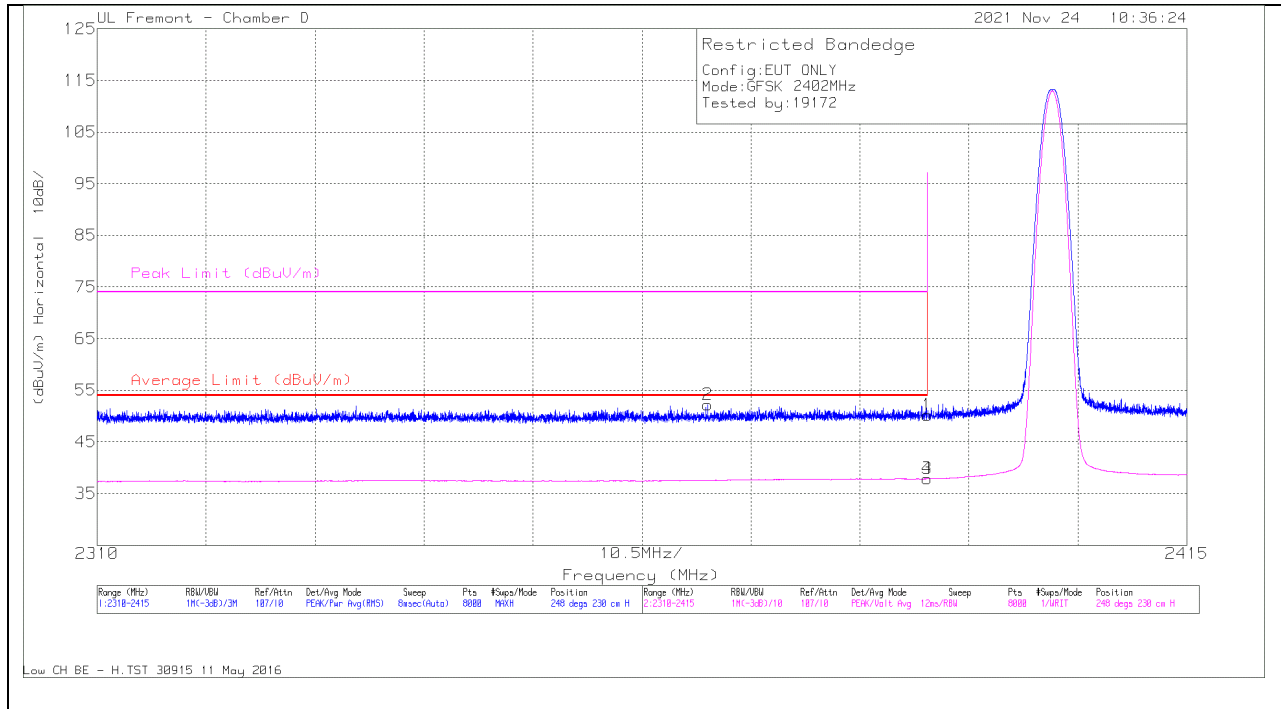
## 10.1. TRANSMITTER ABOVE 1 GHz

### 10.1.1. HIGH POWER BASIC DATA RATE GFSK MODULATION

#### ANT 2

#### BANDEDGE (LOW CHANNEL)

#### HORIZONTAL RESULT



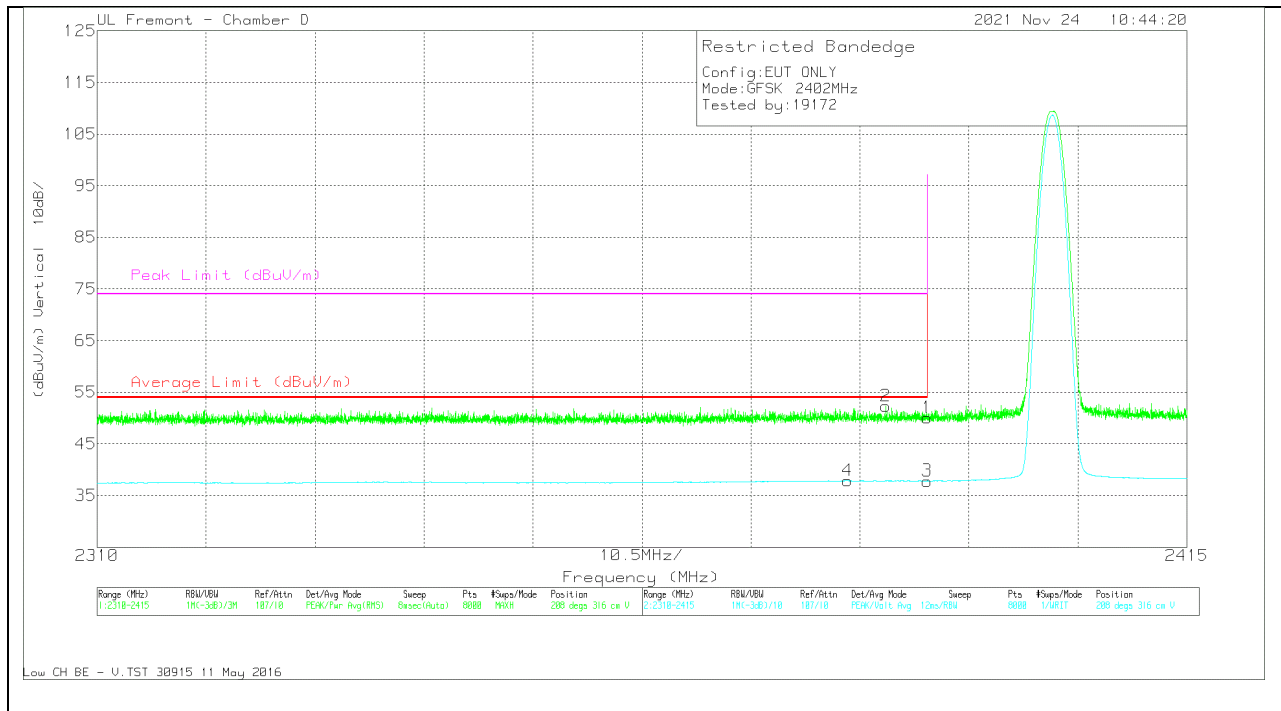
| Marker | Frequenc<br>y<br>(MHz) | Meter<br>Readin<br>g<br>(dBuV) | Det  | AF<br>T712<br>(dB/m) | Amp/C<br>bl/Filtr/<br>Pad<br>(dB) | Correct<br>ed<br>Readin<br>g<br>(dBuV/<br>m) | Averag<br>e Limit<br>(dBuV/<br>m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/<br>m) | PK<br>Margin<br>(dB) | Azimet<br>h<br>(Degs) | Height<br>(cm) | Polarit<br>y |
|--------|------------------------|--------------------------------|------|----------------------|-----------------------------------|----------------------------------------------|-----------------------------------|----------------|-------------------------------|----------------------|-----------------------|----------------|--------------|
| 1      | * 2390                 | 38.78                          | Pk   | 32.1                 | -20.7                             | 50.18                                        | -                                 | -              | 74                            | -23.82               | 248                   | 230            | H            |
| 2      | * 2368.84              | 41.04                          | Pk   | 31.9                 | -20.8                             | 52.14                                        | -                                 | -              | 74                            | -21.86               | 248                   | 230            | H            |
| 3      | * 2390                 | 26.45                          | VA1T | 32.1                 | -20.7                             | 37.85                                        | 54                                | -16.15         | -                             | -                    | 248                   | 230            | H            |
| 4      | * 2389.97              | 26.46                          | VA1T | 32.1                 | -20.7                             | 37.86                                        | 54                                | -16.14         | -                             | -                    | 248                   | 230            | H            |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT

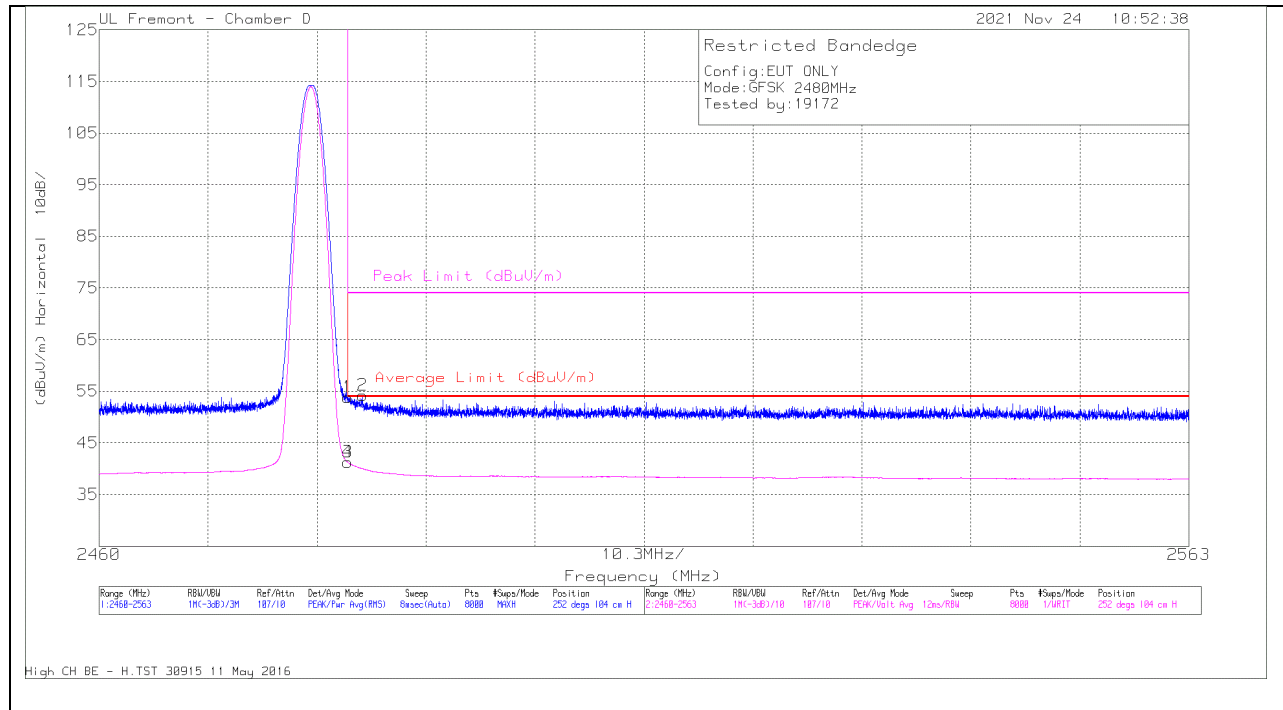


| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 38.66                | Pk   | 32.1           | -20.7                 | 50.06                      | -                      | -           | 74                  | -23.94         | 208            | 316         | V        |
| 2      | * 2385.98       | 40.99                | Pk   | 32.1           | -20.8                 | 52.29                      | -                      | -           | 74                  | -21.71         | 208            | 316         | V        |
| 3      | * 2390          | 26.41                | VA1T | 32.1           | -20.7                 | 37.81                      | 54                     | -16.19      | -                   | -              | 208            | 316         | V        |
| 4      | * 2382.28       | 26.56                | VA1T | 32.1           | -20.8                 | 37.86                      | 54                     | -16.14      | -                   | -              | 208            | 316         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

**BANDEDGE (HIGH CHANNEL)****HORIZONTAL RESULT**

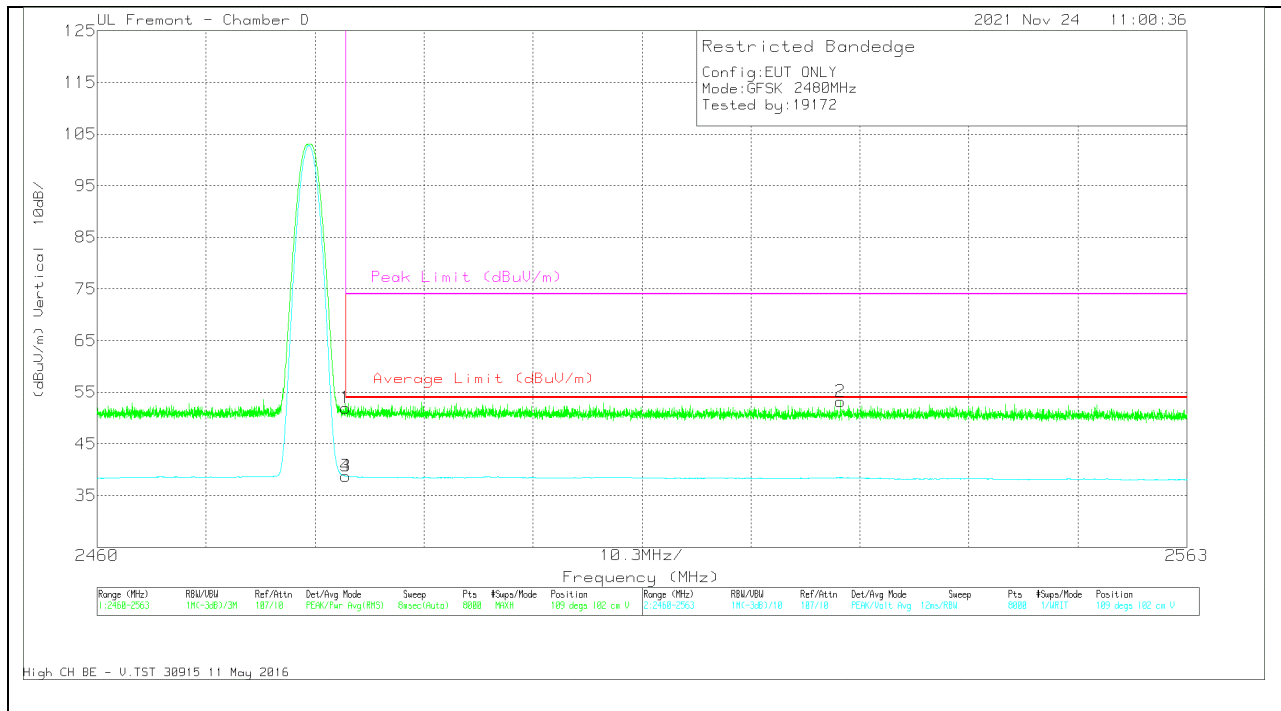
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2483.5        | 41.83                | Pk   | 32.7           | -20.7                 | 53.83                      | -                      | -           | 74                  | -20.17         | 252            | 104         | H        |
| 2      | * 2484.90       | 42.22                | Pk   | 32.7           | -20.7                 | 54.22                      | -                      | -           | 74                  | -19.78         | 252            | 104         | H        |
| 3      | * 2483.5        | 29.23                | VA1T | 32.7           | -20.7                 | 41.23                      | 54                     | -12.77      | -                   | -              | 252            | 104         | H        |
| 4      | * 2483.501      | 29.23                | VA1T | 32.7           | -20.7                 | 41.23                      | 54                     | -12.77      | -                   | -              | 252            | 104         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

## VERTICAL RESULT

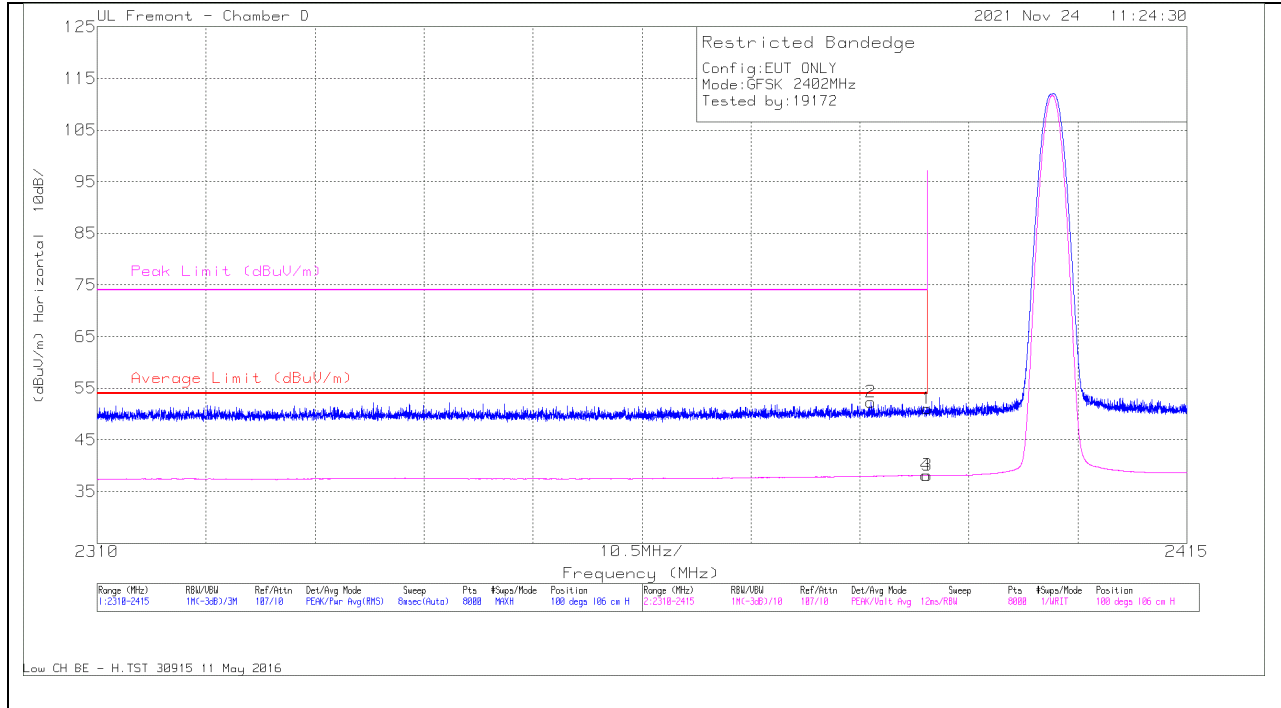


| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2483.5        | 39.99                | Pk   | 32.7           | -20.7                 | 51.99                      | -                      | -           | 74                  | -22.01         | 109            | 102         | V        |
| 3      | * 2483.5        | 26.71                | VA1T | 32.7           | -20.7                 | 38.71                      | 54                     | -15.29      | -                   | -              | 109            | 102         | V        |
| 4      | * 2483.50       | 26.71                | VA1T | 32.7           | -20.7                 | 38.71                      | 54                     | -15.29      | -                   | -              | 109            | 102         | V        |
| 2      | 2530.283        | 41.23                | Pk   | 32.6           | -20.6                 | 53.23                      | -                      | -           | 74                  | -20.77         | 109            | 102         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

**ANT 3****BANDEDGE (LOW CHANNEL)****HORIZONTAL RESULT**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Ftr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 39.65                | Pk   | 32.1           | -20.7                 | 51.05                      | -                      | -           | 74                  | -22.95         | 100            | 106         | H        |
| 2      | * 2384.57       | 41.02                | Pk   | 32.1           | -20.8                 | 52.32                      | -                      | -           | 74                  | -21.68         | 100            | 106         | H        |
| 3      | * 2390          | 26.71                | VA1T | 32.1           | -20.7                 | 38.11                      | 54                     | -15.89      | -                   | -              | 100            | 106         | H        |
| 4      | * 2389.83       | 26.74                | VA1T | 32.1           | -20.7                 | 38.14                      | 54                     | -15.86      | -                   | -              | 100            | 106         | H        |

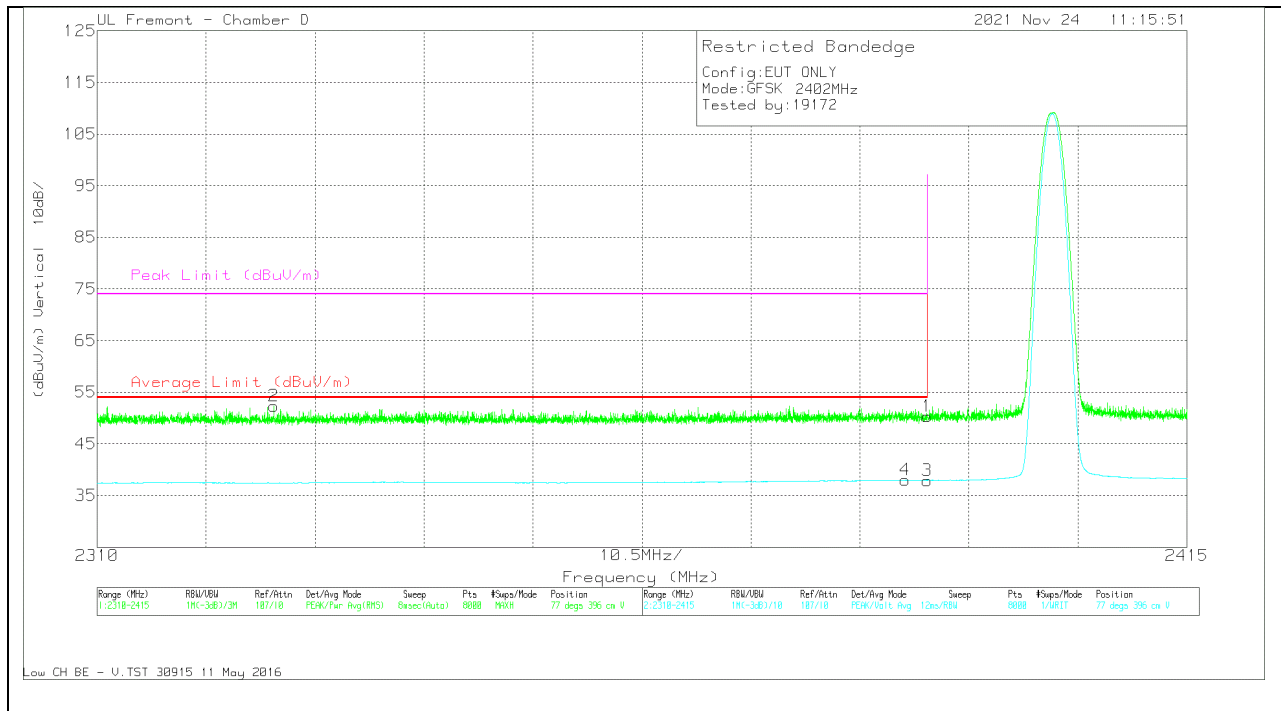
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration



## VERTICAL RESULT

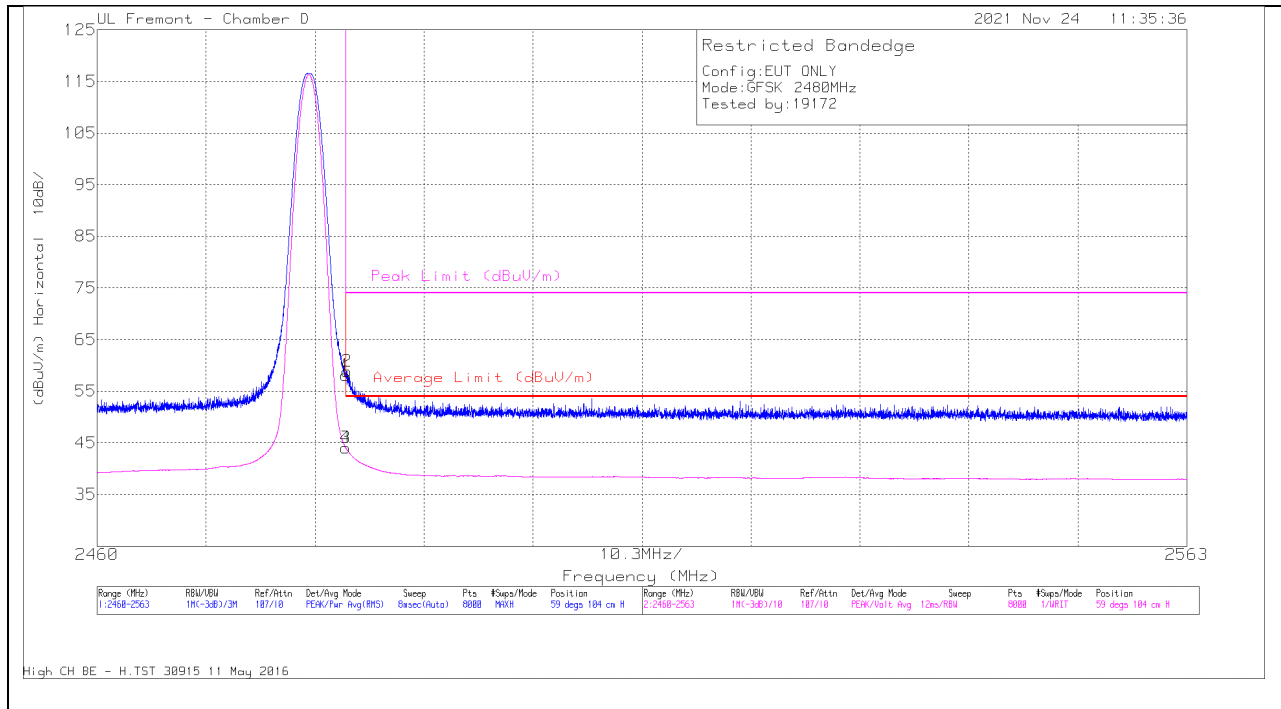


| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 38.89                | Pk   | 32.1           | -20.7                 | 50.29                      | -                      | -           | 74                  | -23.71         | 77             | 396         | V        |
| 2      | * 2327.04       | 41.42                | Pk   | 31.8           | -20.9                 | 52.32                      | -                      | -           | 74                  | -21.68         | 77             | 396         | V        |
| 3      | * 2390          | 26.53                | VA1T | 32.1           | -20.7                 | 37.93                      | 54                     | -16.07      | -                   | -              | 77             | 396         | V        |
| 4      | * 2387.83       | 26.56                | VA1T | 32.1           | -20.7                 | 37.96                      | 54                     | -16.04      | -                   | -              | 77             | 396         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

**BANDEDGE (HIGH CHANNEL)****HORIZONTAL RESULT**

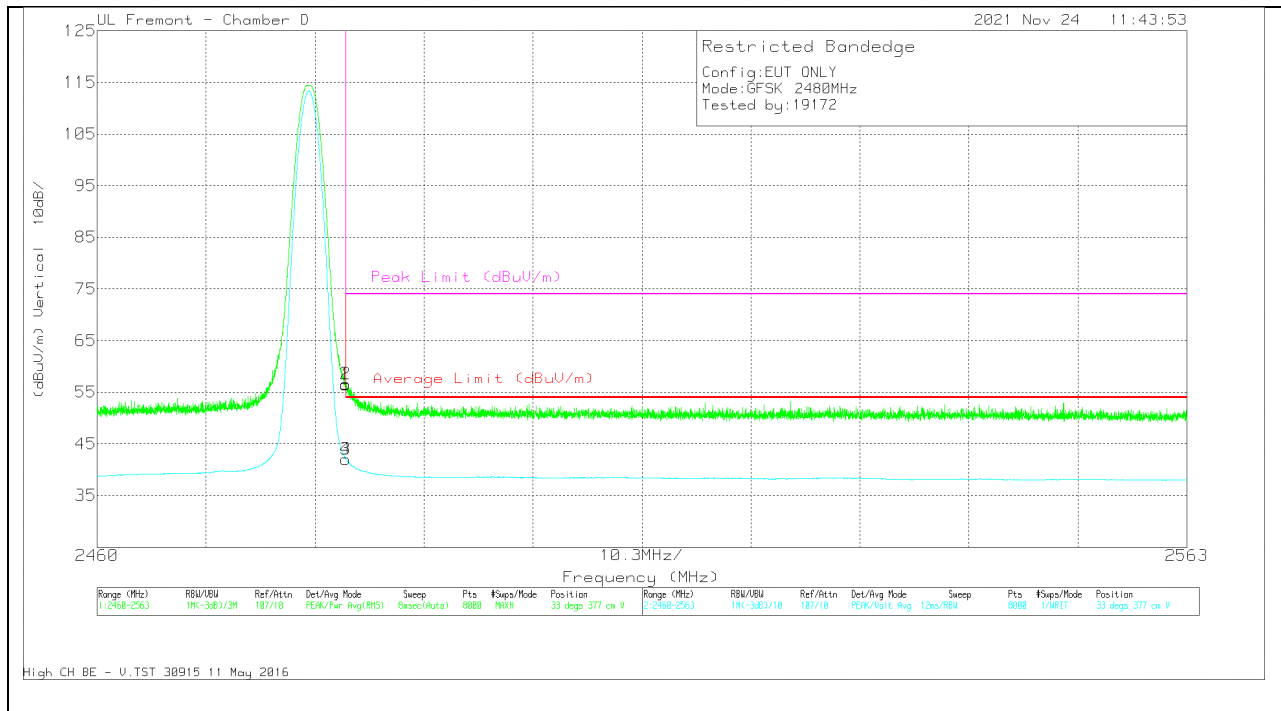
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Ftr/Pa d (dB) | Correct ed Reading (dBuV/m) | Averag e Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|------------------------|-----------------------------|-------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2483.5        | 46.07                | Pk   | 32.7           | -20.7                  | 58.07                       | -                       | -           | 74                  | -15.93         | 59             | 104         | H        |
| 2      | * 2483.59       | 46.83                | Pk   | 32.7           | -20.7                  | 58.83                       | -                       | -           | 74                  | -15.17         | 59             | 104         | H        |
| 3      | * 2483.5        | 31.99                | VA1T | 32.7           | -20.7                  | 43.99                       | 54                      | -10.01      | -                   | -              | 59             | 104         | H        |
| 4      | * 2483.50       | 31.99                | VA1T | 32.7           | -20.7                  | 43.99                       | 54                      | -10.01      | -                   | -              | 59             | 104         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

## VERTICAL RESULT



| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2483.5        | 44.49                | Pk   | 32.7           | -20.7                 | 56.49                      | -                      | -           | 74                  | -17.51         | 33             | 377         | V        |
| 2      | * 2483.51       | 44.58                | Pk   | 32.7           | -20.7                 | 56.58                      | -                      | -           | 74                  | -17.42         | 33             | 377         | V        |
| 3      | * 2483.5        | 30.04                | VA1T | 32.7           | -20.7                 | 42.04                      | 54                     | -11.96      | -                   | -              | 33             | 377         | V        |
| 4      | * 2483.50       | 30.04                | VA1T | 32.7           | -20.7                 | 42.04                      | 54                     | -11.96      | -                   | -              | 33             | 377         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

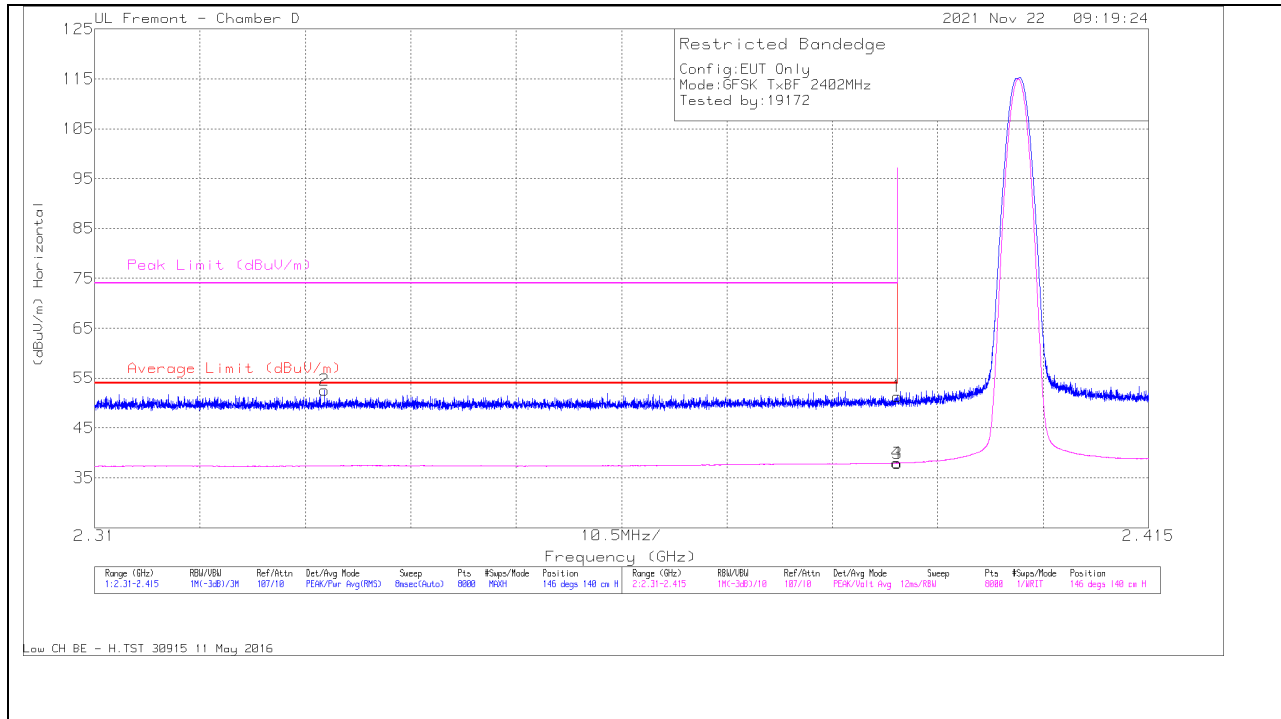
Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

## 10.1.2. HIGH POWER BASIC DATA RATE TX BF GFSK MODULATION

### BANDEDGE (LOW CHANNEL)

#### HORIZONTAL RESULT



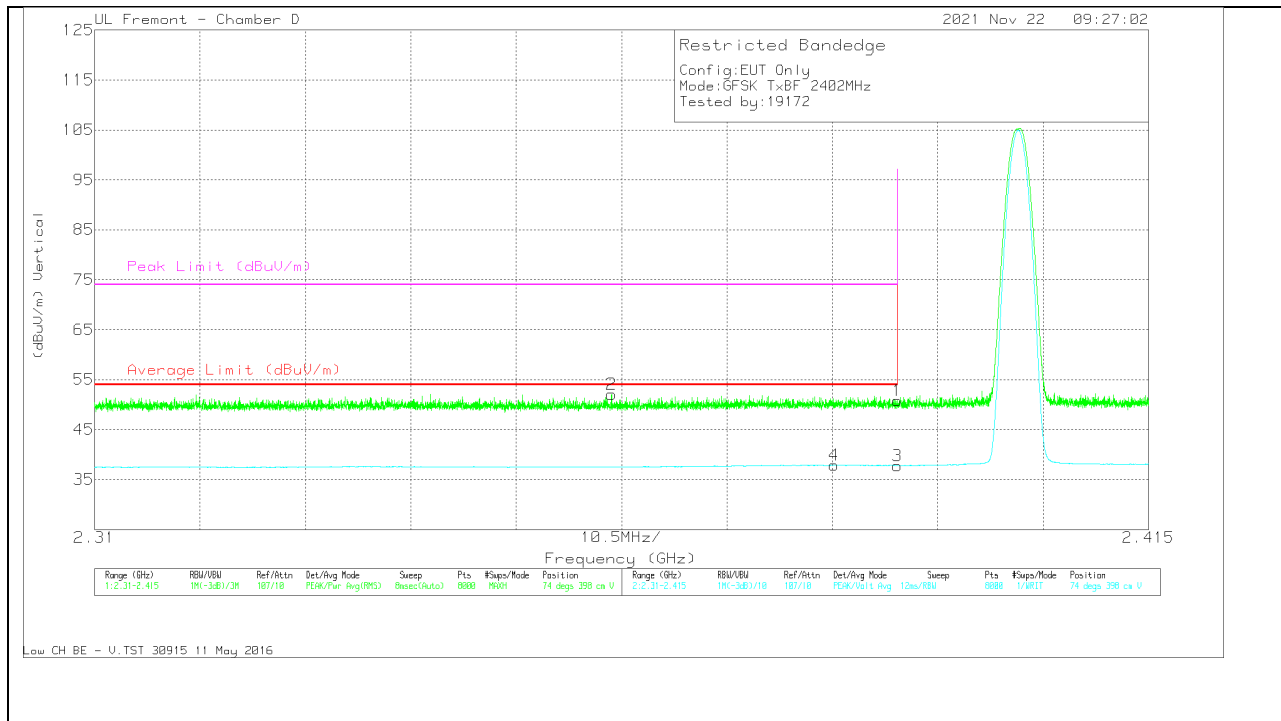
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cbl/FI tr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.39          | 39.97                | Pk   | 32.1           | -20.7                  | 51.37                      | -                      | -           | 74                  | -22.63         | 146            | 140         | H        |
| 2      | * 2.33289       | 41.59                | Pk   | 31.9           | -20.9                  | 52.59                      | -                      | -           | 74                  | -21.41         | 146            | 140         | H        |
| 3      | * 2.39          | 26.53                | VA1T | 32.1           | -20.7                  | 37.93                      | 54                     | -16.07      | -                   | -              | 146            | 140         | H        |
| 4      | * 2.38993       | 26.55                | VA1T | 32.1           | -20.7                  | 37.95                      | 54                     | -16.05      | -                   | -              | 146            | 140         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT

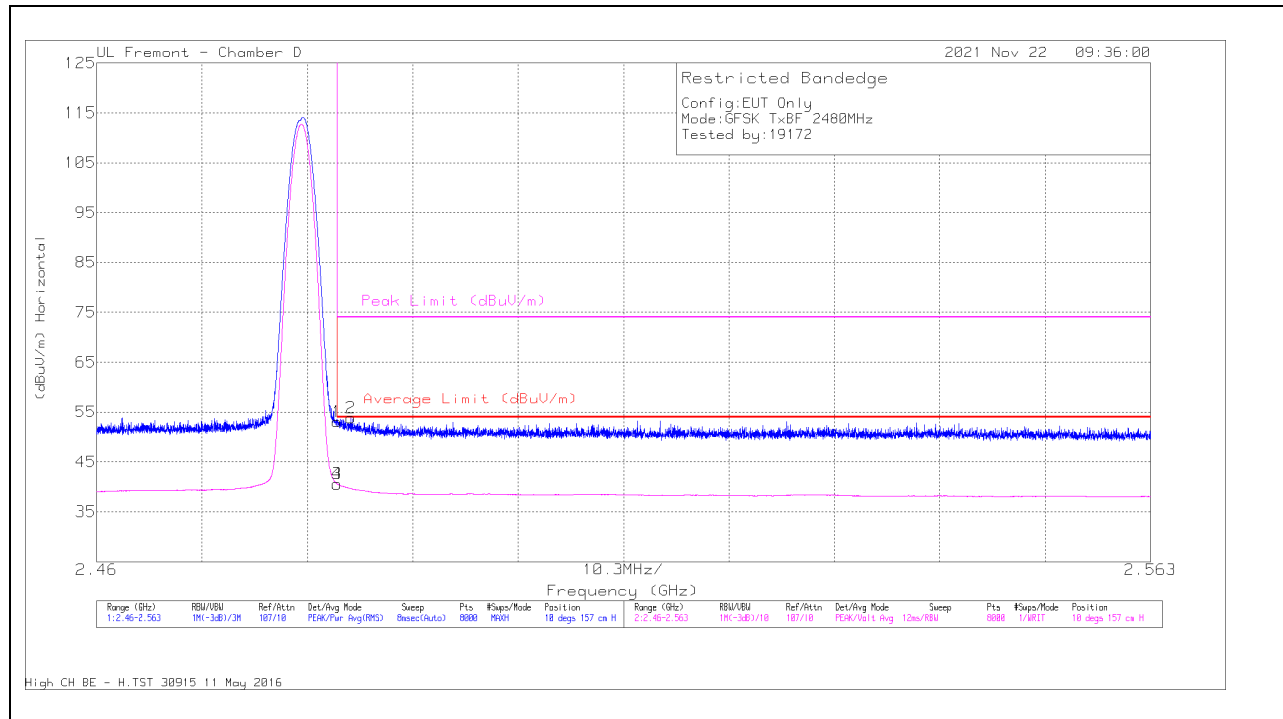


| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.39          | 39.4                 | Pk   | 32.1           | -20.7                 | 50.8                       | -                      | -           | 74                  | -23.2          | 74             | 398         | V        |
| 2      | * 2.3615        | 40.99                | Pk   | 31.9           | -20.8                 | 52.09                      | -                      | -           | 74                  | -21.91         | 74             | 398         | V        |
| 3      | * 2.39          | 26.4                 | VA1T | 32.1           | -20.7                 | 37.8                       | 54                     | -16.2       | -                   | -              | 74             | 398         | V        |
| 4      | * 2.38368       | 26.58                | VA1T | 32.1           | -20.8                 | 37.88                      | 54                     | -16.12      | -                   | -              | 74             | 398         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

**BANDEDGE (HIGH CHANNEL)****HORIZONTAL RESULT**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb/Fitr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.4835        | 41.05                | Pk   | 32.7           | -20.7                | 53.05                      | -                      | -           | 74                  | -20.95         | 10             | 157         | H        |
| 2      | * 2.48484       | 41.8                 | Pk   | 32.7           | -20.7                | 53.8                       | -                      | -           | 74                  | -20.2          | 10             | 157         | H        |
| 3      | * 2.4835        | 28.58                | VA1T | 32.7           | -20.7                | 40.58                      | 54                     | -13.42      | -                   | -              | 10             | 157         | H        |
| 4      | * 2.4835        | 28.58                | VA1T | 32.7           | -20.7                | 40.58                      | 54                     | -13.42      | -                   | -              | 10             | 157         | H        |

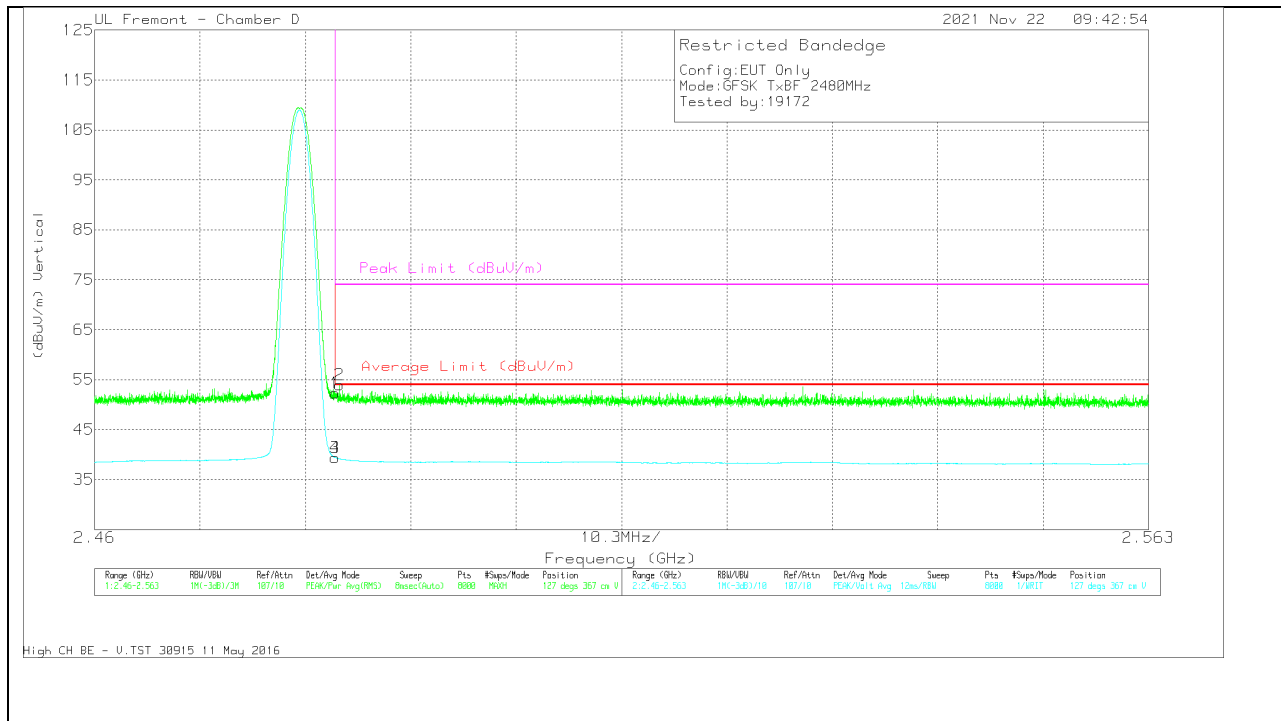
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration



## VERTICAL RESULT



| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.4835        | 40.28                | Pk   | 32.7           | -20.7                   | 52.28                      | -                      | -           | 74                  | -21.72         | 127            | 367         | V        |
| 2      | * 2.48394       | 41.98                | Pk   | 32.7           | -20.7                   | 53.98                      | -                      | -           | 74                  | -20.02         | 127            | 367         | V        |
| 3      | * 2.4835        | 27.4                 | VA1T | 32.7           | -20.7                   | 39.4                       | 54                     | -14.6       | -                   | -              | 127            | 367         | V        |
| 4      | * 2.4835        | 27.4                 | VA1T | 32.7           | -20.7                   | 39.4                       | 54                     | -14.6       | -                   | -              | 127            | 367         | V        |

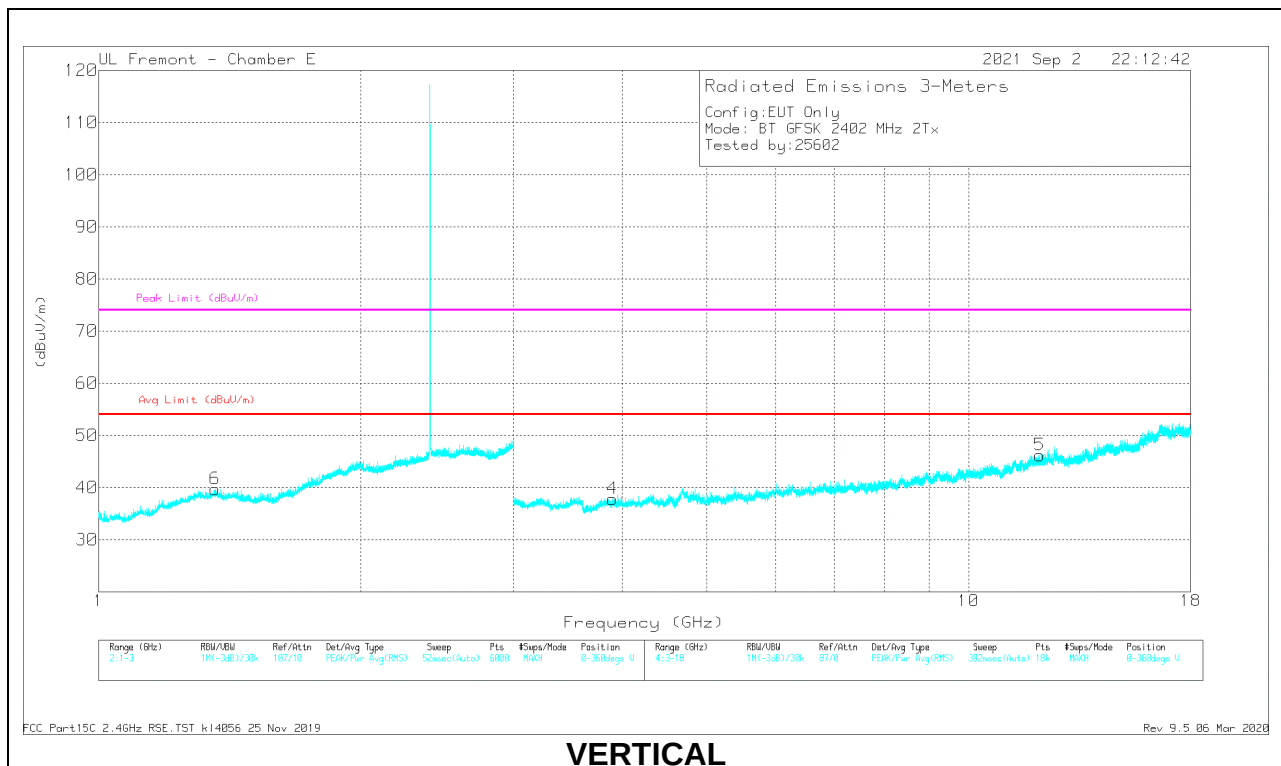
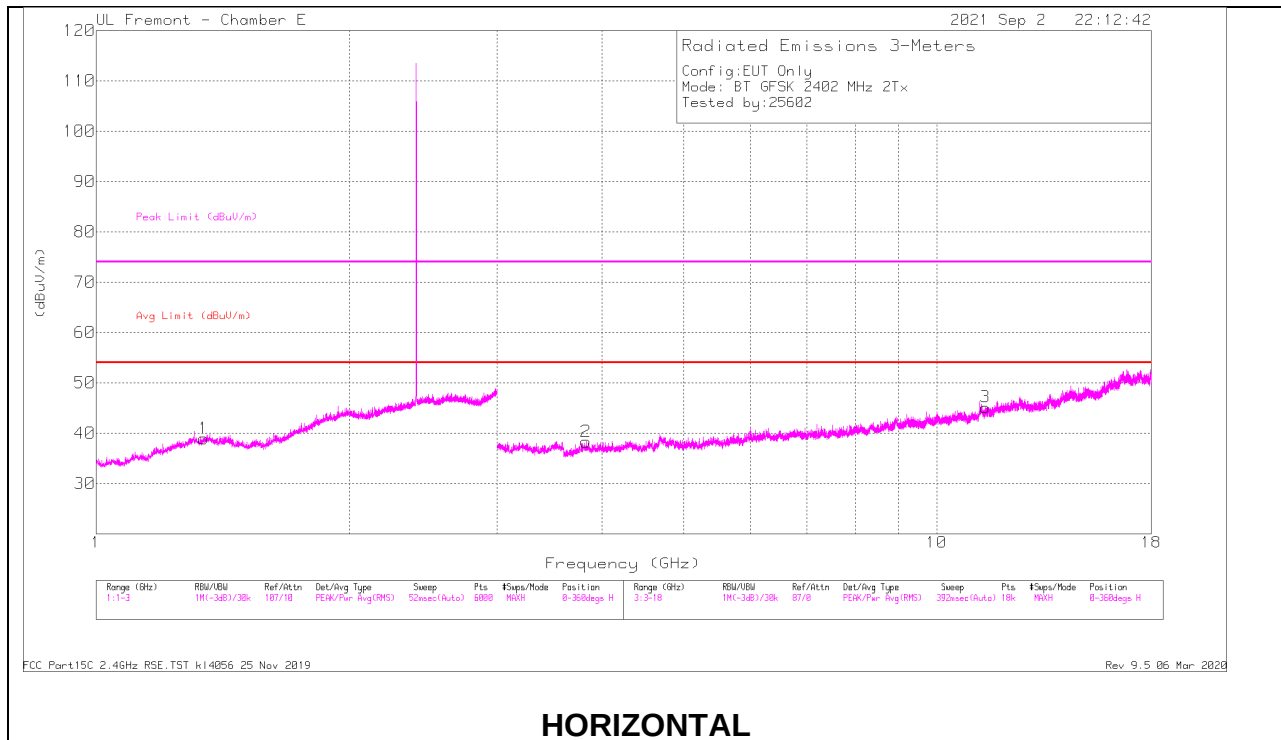
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $VB=1/T_{on}$  where:  $T_{on}$  is transmit duration

# 10.1.3. HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL RESULTS



## RADIATED EMISSIONS

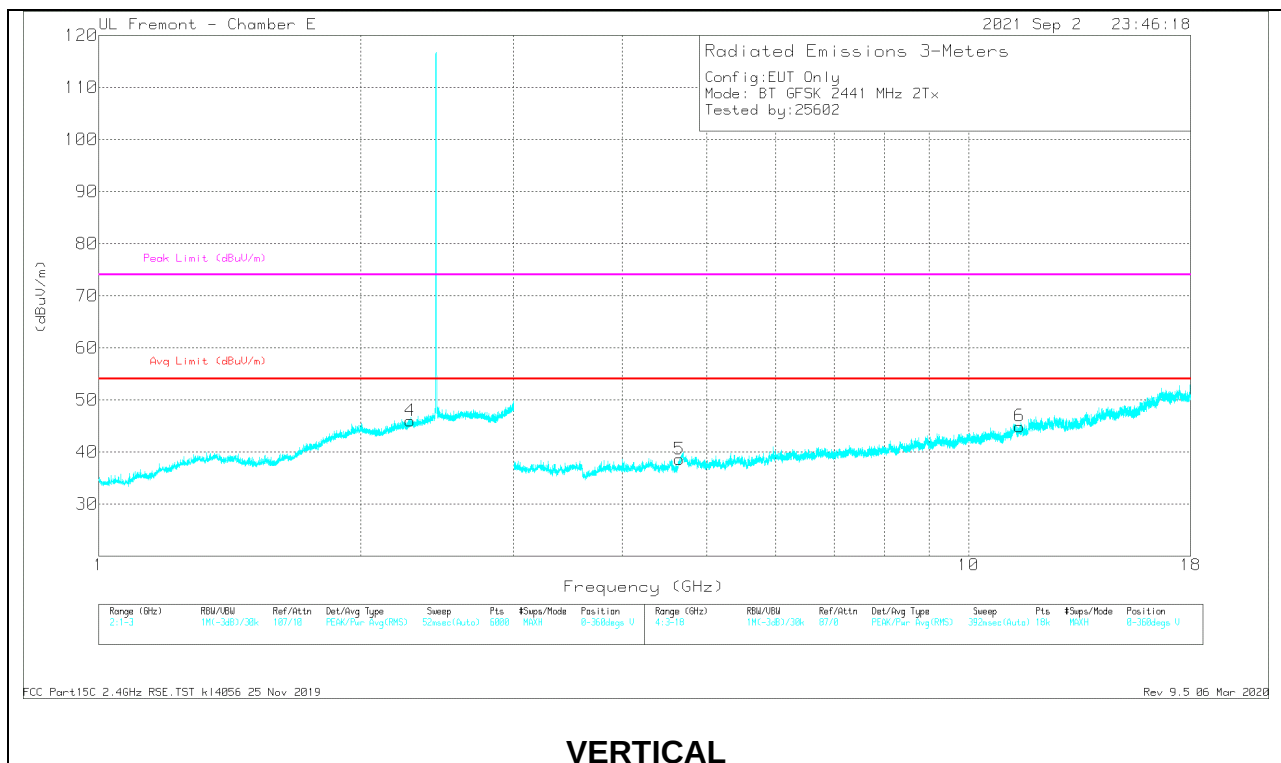
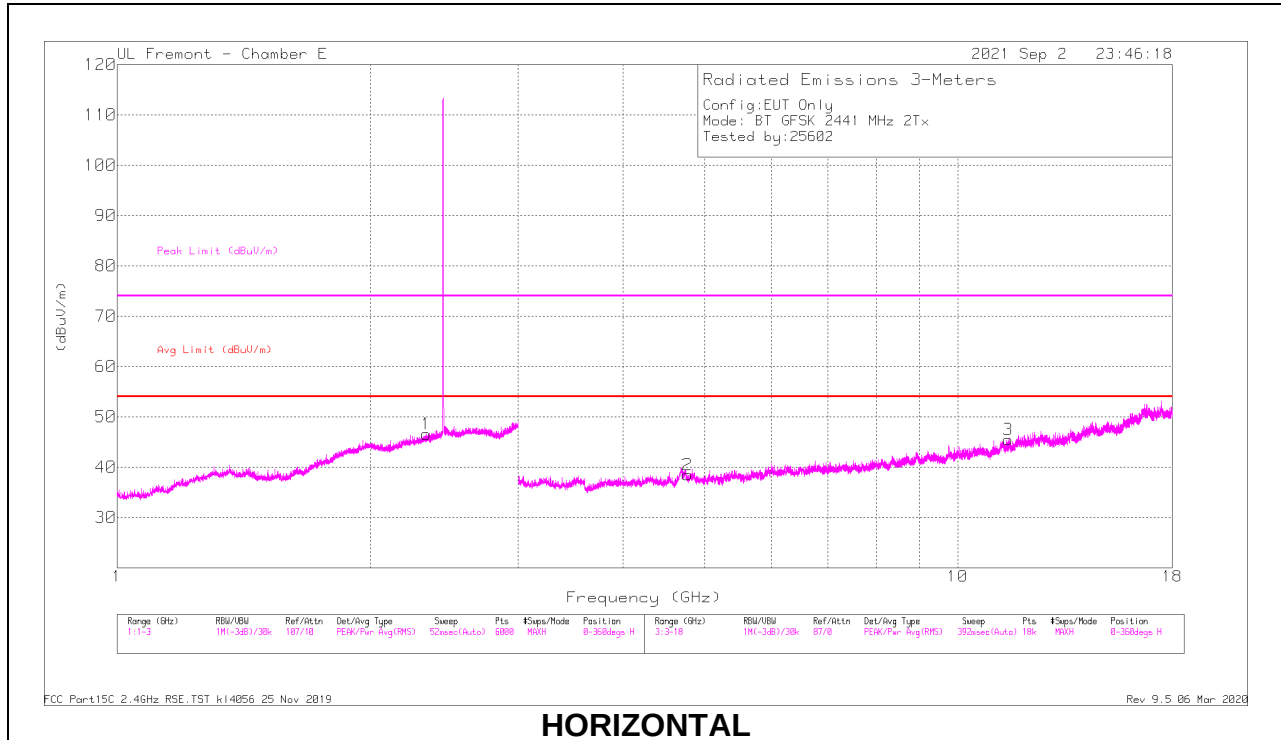
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF PRE0078107 (dBm) | Amp/Cbl/Filtr/P ad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|---------------------|-------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 1.34248       | 35.31                | PKFH | 29.7                | -20                     | 45.01                      | -                  | -           | 74                  | -28.99         | 342            | 394         | H        |
|        | * 1.34371       | 23.42                | VA1T | 29.7                | -20                     | 33.12                      | 54                 | -20.88      | -                   | -              | 342            | 394         | H        |
| 6      | * 1.35888       | 35.28                | PKFH | 29.5                | -19.8                   | 44.98                      | -                  | -           | 74                  | -29.02         | 159            | 210         | V        |
|        | * 1.36234       | 23.74                | VA1T | 29.6                | -19.8                   | 33.54                      | 54                 | -20.46      | -                   | -              | 159            | 210         | V        |
| 2      | * 3.82451       | 41.6                 | PKFH | 33.4                | -31.3                   | 43.7                       | -                  | -           | 74                  | -30.3          | 205            | 194         | H        |
|        | * 3.82388       | 29.18                | VA1T | 33.4                | -31.3                   | 31.28                      | 54                 | -22.72      | -                   | -              | 205            | 194         | H        |
| 3      | * 11.42551      | 34.9                 | PKFH | 38.1                | -22.3                   | 50.7                       | -                  | -           | 74                  | -23.3          | 238            | 310         | H        |
|        | * 11.42455      | 23.12                | VA1T | 38.1                | -22.3                   | 38.92                      | 54                 | -15.08      | -                   | -              | 238            | 310         | H        |
| 4      | * 3.89146       | 40.18                | PKFH | 33.5                | -31                     | 42.68                      | -                  | -           | 74                  | -31.32         | 16             | 334         | V        |
|        | * 3.89151       | 28.49                | VA1T | 33.5                | -31                     | 30.99                      | 54                 | -23.01      | -                   | -              | 16             | 334         | V        |
| 5      | * 12.06537      | 33.91                | PKFH | 38.9                | -21.3                   | 51.51                      | -                  | -           | 74                  | -22.49         | 112            | 210         | V        |
|        | * 12.0636       | 22.33                | VA1T | 38.9                | -21.3                   | 39.93                      | 54                 | -14.07      | -                   | -              | 112            | 210         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## MID CHANNEL RESULTS



**RADIATED EMISSIONS**

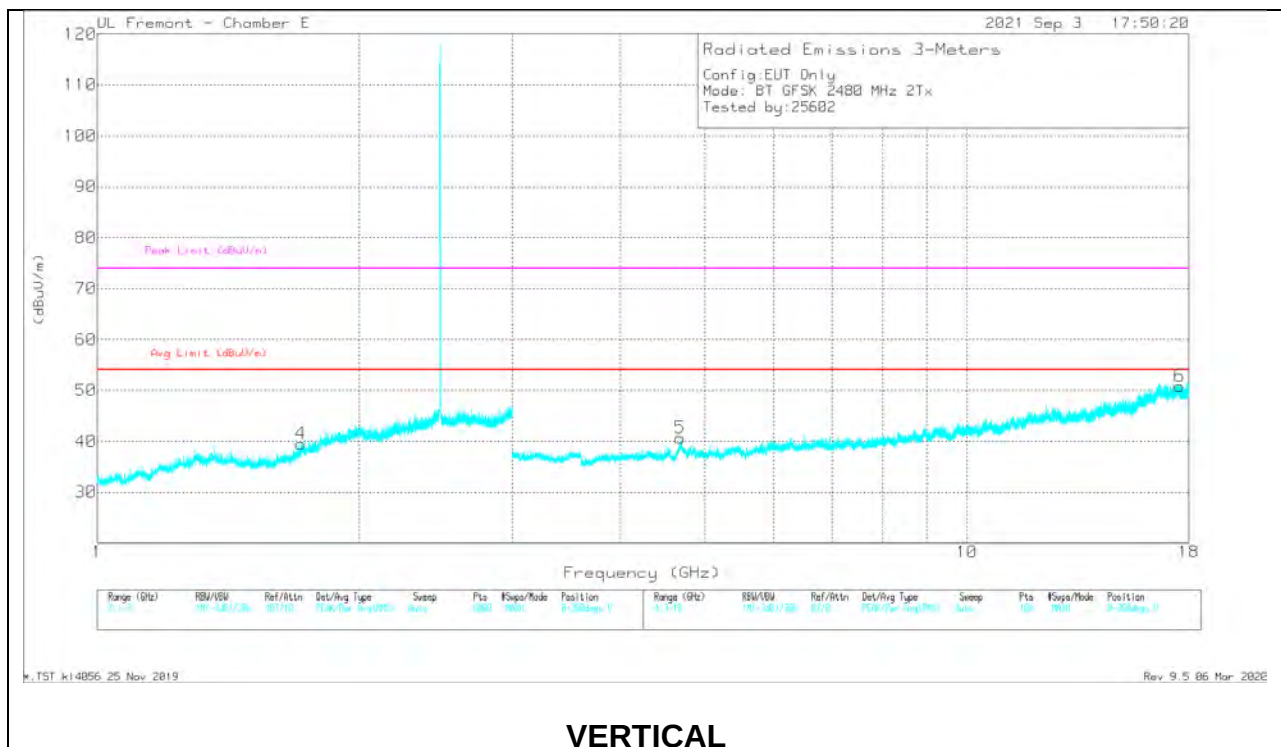
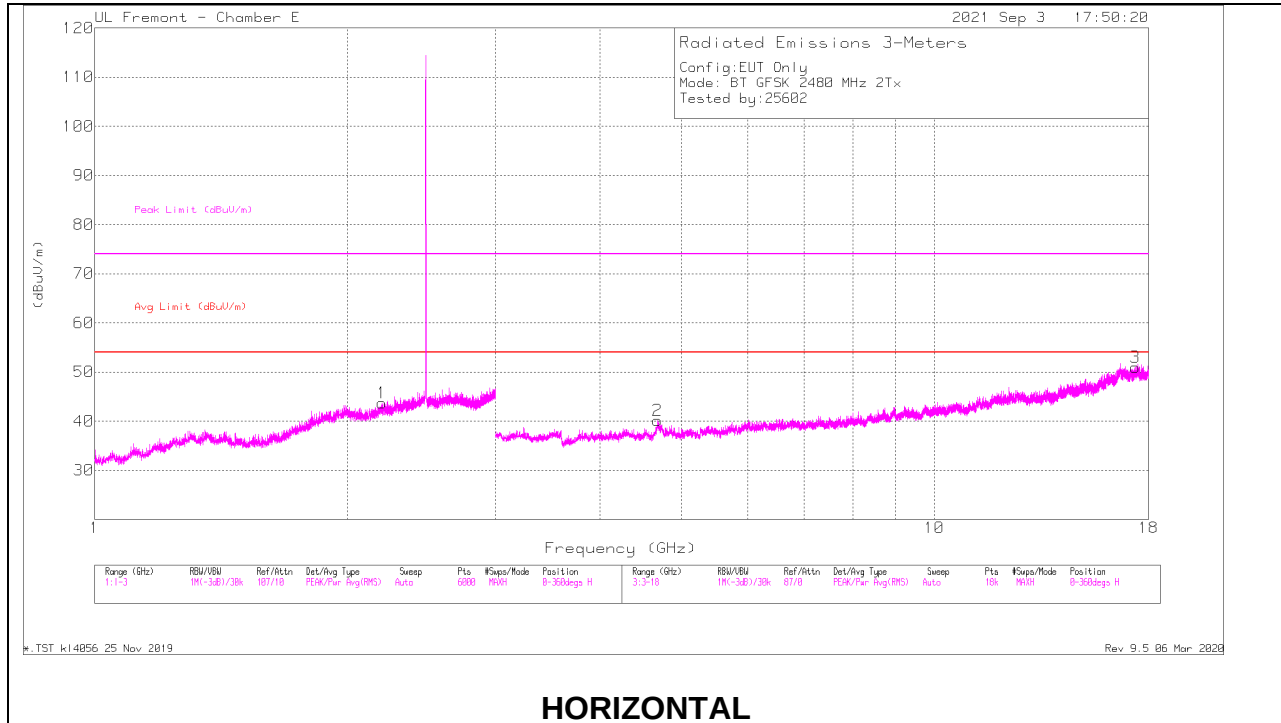
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF PRE0078107 (dB/m) | Amp/Cbl/Fitr/P ad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------------|------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.3326        | 37.72                | PKFH | 32.1                 | -17.7                  | 52.12                      | -                  | -           | 74                  | -21.88         | 255            | 175         | H        |
|        | * 2.33387       | 24.75                | VA1T | 32.1                 | -17.7                  | 39.15                      | 54                 | -14.85      | -                   | -              | 255            | 175         | H        |
| 4      | * 2.2813        | 35.94                | PKFH | 31.8                 | -17.6                  | 50.14                      | -                  | -           | 74                  | -23.86         | 183            | 141         | V        |
|        | * 2.27904       | 24.77                | VA1T | 31.8                 | -17.6                  | 38.97                      | 54                 | -15.03      | -                   | -              | 183            | 141         | V        |
| 2      | * 4.76954       | 40.05                | PKFH | 34.5                 | -30.5                  | 44.05                      | -                  | -           | 74                  | -29.95         | 218            | 241         | H        |
|        | * 4.76733       | 28.58                | VA1T | 34.6                 | -30.6                  | 32.58                      | 54                 | -21.42      | -                   | -              | 218            | 241         | H        |
| 3      | * 11.48556      | 35.44                | PKFH | 38.1                 | -22.4                  | 51.14                      | -                  | -           | 74                  | -22.86         | 71             | 246         | H        |
|        | * 11.48226      | 23.01                | VA1T | 38.2                 | -22.4                  | 38.81                      | 54                 | -15.19      | -                   | -              | 71             | 246         | H        |
| 5      | * 4.64689       | 39.44                | PKFH | 34.4                 | -29.8                  | 44.04                      | -                  | -           | 74                  | -29.96         | 36             | 129         | V        |
|        | * 4.65042       | 27.58                | VA1T | 34.4                 | -29.8                  | 32.18                      | 54                 | -21.82      | -                   | -              | 36             | 129         | V        |
| 6      | * 11.44269      | 36                   | PKFH | 38.1                 | -22.2                  | 51.9                       | -                  | -           | 74                  | -22.1          | 47             | 110         | V        |
|        | * 11.44319      | 23.19                | VA1T | 38.1                 | -22.2                  | 39.09                      | 54                 | -14.91      | -                   | -              | 47             | 110         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## HIGH CHANNEL RESULTS





**RADIATED EMISSIONS**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF PRE0078107 (dB/m) | Amp/Cbl/Filtr/P ad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------------|-------------------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 2      | * 4.68266       | 39.47                | PKFH | 34.4                 | -30.3                   | 43.57                      | -                  | -           | 74                  | -30.43         | 272            | 200         | H        |
|        | * 4.68435       | 26.84                | VA1T | 34.4                 | -30.4                   | 30.84                      | 54                 | -23.16      | -                   | -              | 272            | 200         | H        |
| 5      | * 4.67896       | 39.53                | PKFH | 34.4                 | -30.4                   | 43.53                      | -                  | -           | 74                  | -30.47         | 272            | 101         | V        |
|        | * 4.6807        | 26.84                | VA1T | 34.4                 | -30.4                   | 30.84                      | 54                 | -23.16      | -                   | -              | 272            | 101         | V        |
| 4      | 1.71217         | 14.56                | VA1T | 29.1                 | -18.7                   | 24.96                      | -                  | -           | -                   | -              | 272            | 101         | V        |
|        | 1.71328         | 35.46                | PKFH | 29.2                 | -18.7                   | 45.96                      | -                  | -           | -                   | -              | 272            | 101         | V        |
| 1      | 2.19953         | 36.34                | PKFH | 31.7                 | -17.8                   | 50.24                      | -                  | -           | -                   | -              | 272            | 199         | H        |
|        | 2.19953         | 14.48                | VA1T | 31.7                 | -17.8                   | 28.38                      | -                  | -           | -                   | -              | 272            | 199         | H        |
| 3      | 17.36467        | 18.9                 | VA1T | 41.7                 | -18.1                   | 42.5                       | -                  | -           | -                   | -              | 272            | 200         | H        |
|        | 17.36531        | 33.8                 | PKFH | 41.7                 | -18.1                   | 57.4                       | -                  | -           | -                   | -              | 272            | 200         | H        |
| 6      | 17.55912        | 34.33                | PKFH | 41.5                 | -18                     | 57.83                      | -                  | -           | -                   | -              | 272            | 200         | V        |
|        | 17.55938        | 18.67                | VA1T | 41.5                 | -18                     | 42.17                      | -                  | -           | -                   | -              | 272            | 200         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak

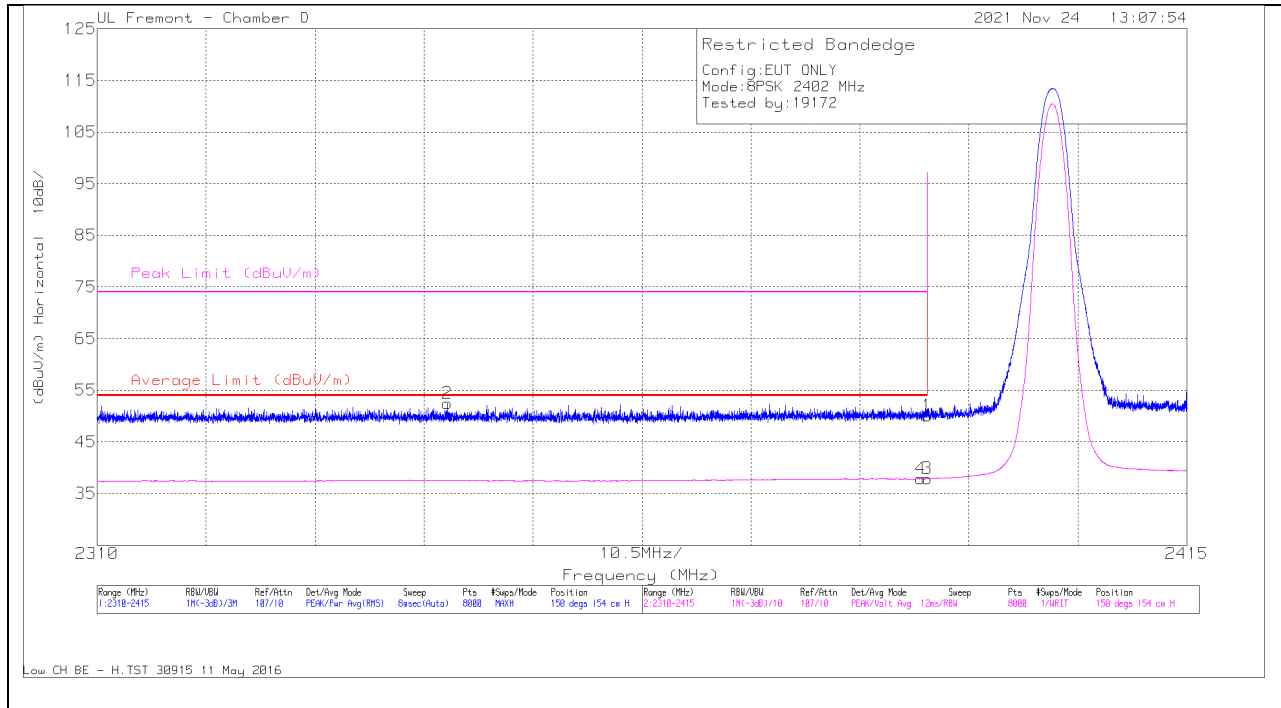
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## 10.1.4. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

### ANT 2

### BANDEDGE (LOW CHANNEL)

### HORIZONTAL RESULT



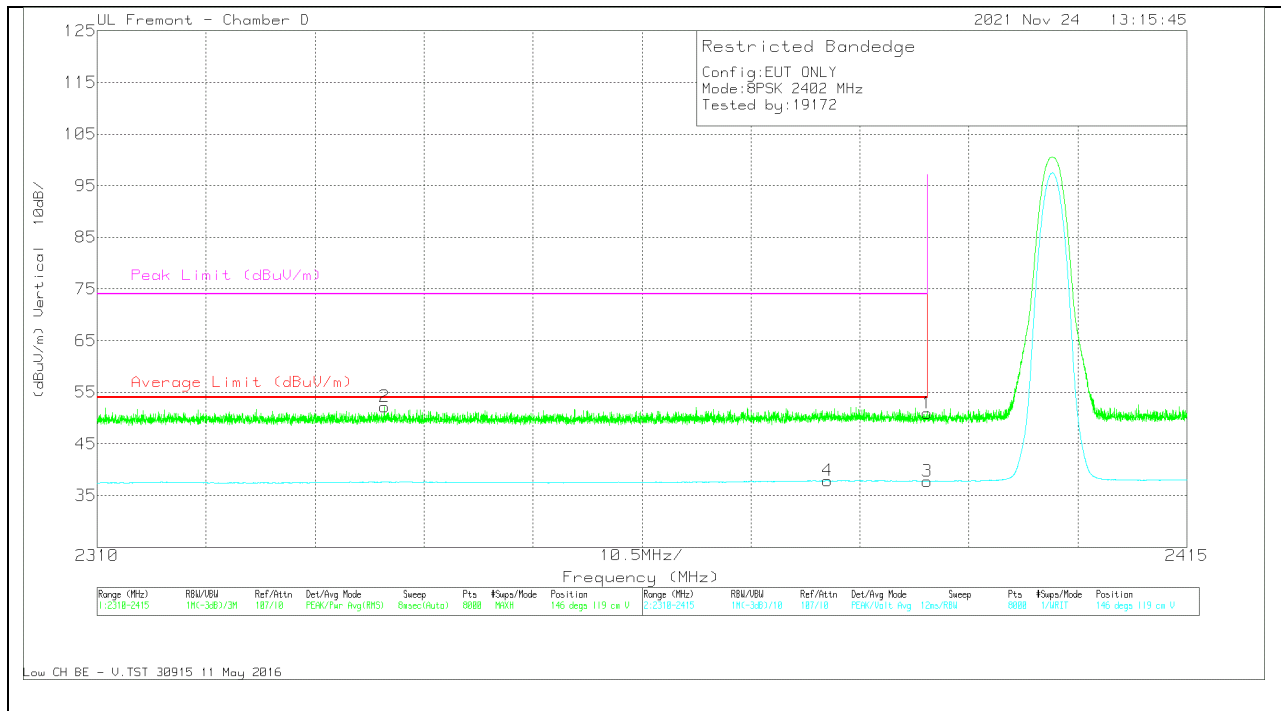
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 38.71                | Pk   | 32.1           | -20.7                 | 50.11                      | -                      | -           | 74                  | -23.89         | 150            | 154         | H        |
| 2      | * 2343.72       | 41.29                | Pk   | 31.9           | -20.8                 | 52.39                      | -                      | -           | 74                  | -21.61         | 150            | 154         | H        |
| 3      | * 2390          | 26.44                | VA1T | 32.1           | -20.7                 | 37.84                      | 54                     | -16.16      | -                   | -              | 150            | 154         | H        |
| 4      | * 2389.38       | 26.49                | VA1T | 32.1           | -20.7                 | 37.89                      | 54                     | -16.11      | -                   | -              | 150            | 154         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT

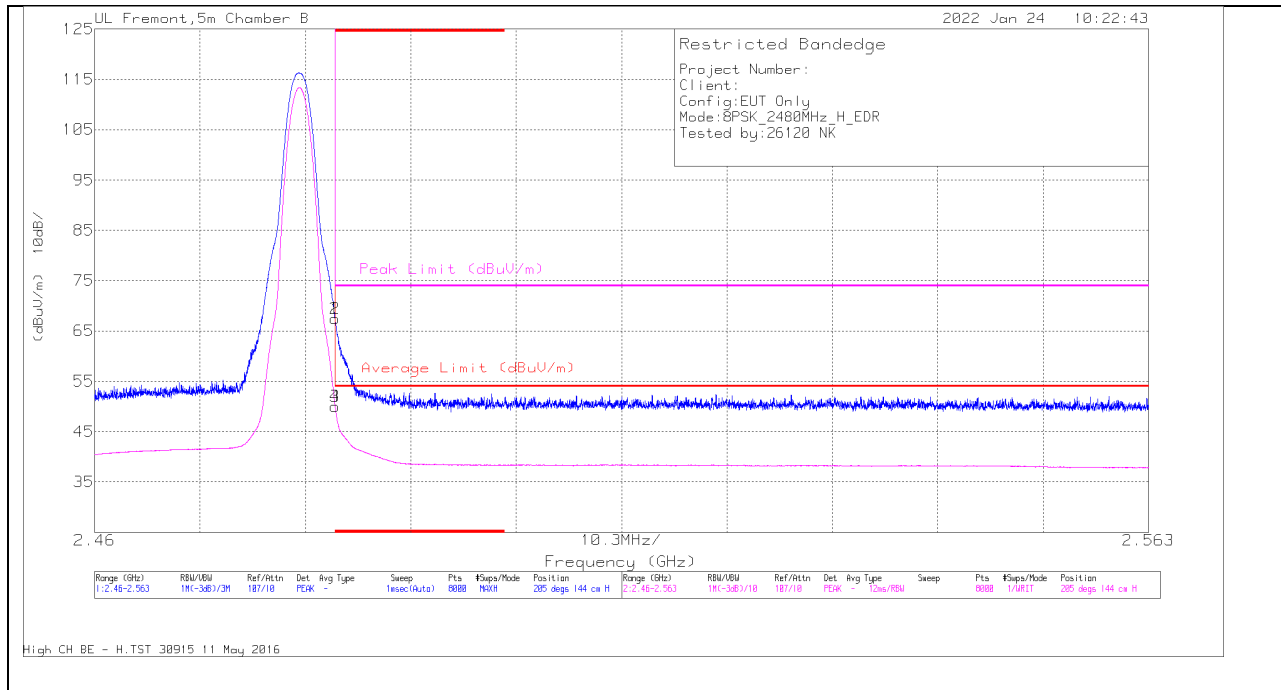


| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 39.51                | Pk   | 32.1           | -20.7                 | 50.91                      | -                      | -           | 74                  | -23.09         | 146            | 119         | V        |
| 2      | * 2337.67       | 41.2                 | Pk   | 31.9           | -20.9                 | 52.2                       | -                      | -           | 74                  | -21.8          | 146            | 119         | V        |
| 3      | * 2390          | 26.38                | VA1T | 32.1           | -20.7                 | 37.78                      | 54                     | -16.22      | -                   | -              | 146            | 119         | V        |
| 4      | * 2380.35       | 26.59                | VA1T | 32.1           | -20.8                 | 37.89                      | 54                     | -16.11      | -                   | -              | 146            | 119         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

**BANDEDGE (HIGH CHANNEL)****HORIZONTAL RESULT**

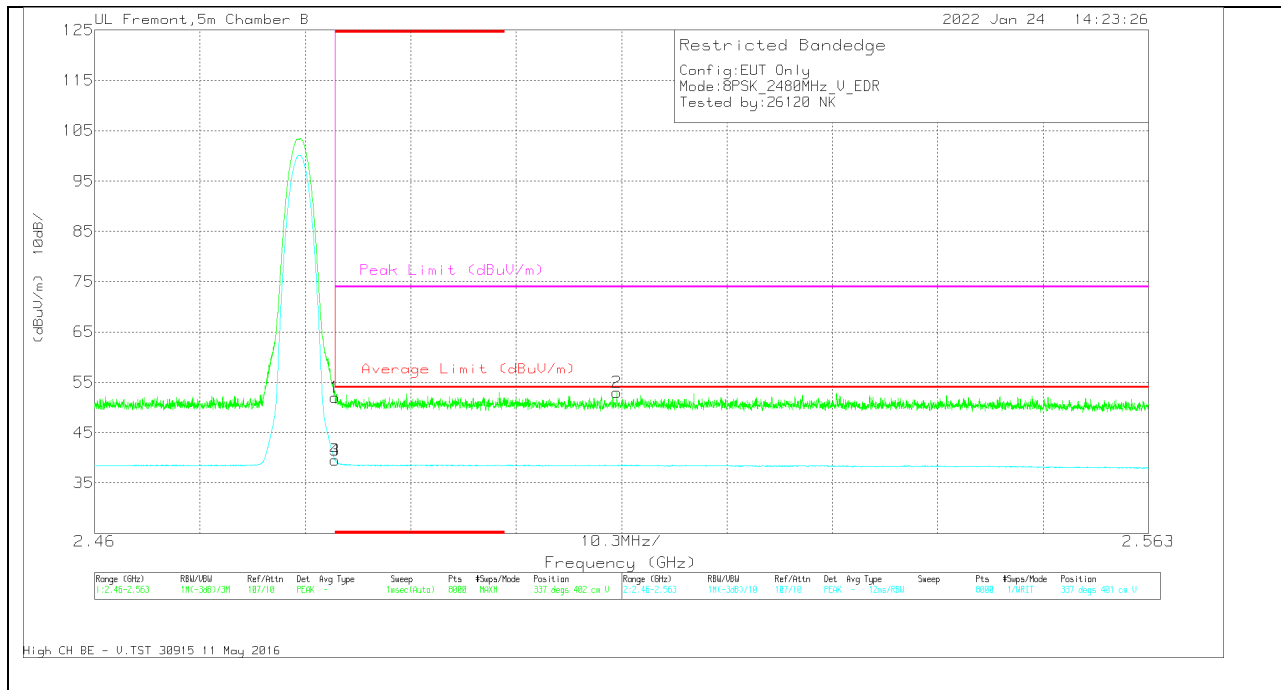
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T345 (dB/m) | Amp/Cb I/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.4835        | 59.63                | Pk   | 32.6           | -24.8                   | 67.43                      | -                      | -           | 74                  | -6.57          | 205            | 144         | H        |
| 2      | * 2.483501      | 59.65                | Pk   | 32.6           | -24.8                   | 67.45                      | -                      | -           | 74                  | -6.55          | 205            | 144         | H        |
| 3      | * 2.4835        | 42.2                 | VA1T | 32.6           | -24.8                   | 50                         | 54                     | -4          | -                   | -              | 205            | 144         | H        |
| 4      | * 2.483501      | 42.19                | VA1T | 32.6           | -24.8                   | 49.99                      | 54                     | -4.01       | -                   | -              | 205            | 144         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT

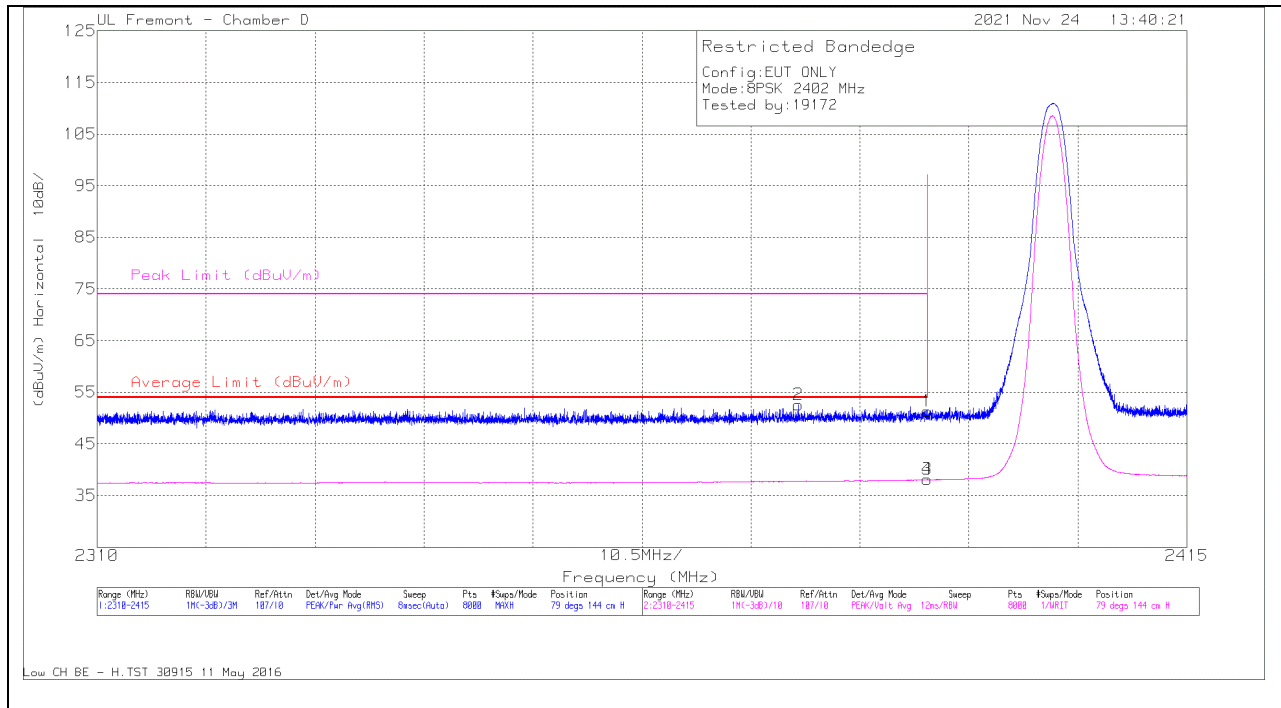


| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T345 (dB/m) | Amp/Cb I/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.4835        | 44.15                | Pk   | 32.6           | -24.8                   | 51.95                      | -                      | -           | 74                  | -22.05         | 337            | 402         | V        |
| 3      | * 2.4835        | 31.71                | VA1T | 32.6           | -24.8                   | 39.51                      | 54                     | -14.49      | -                   | -              | 337            | 401         | V        |
| 4      | * 2.483501      | 31.71                | VA1T | 32.6           | -24.8                   | 39.51                      | 54                     | -14.49      | -                   | -              | 337            | 401         | V        |
| 2      | 2.511032        | 44.97                | Pk   | 32.7           | -24.7                   | 52.97                      | -                      | -           | 74                  | -21.03         | 337            | 402         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

**ANT 3****BANDEDGE (LOW CHANNEL)****HORIZONTAL RESULT**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 39.86                | Pk   | 32.1           | -20.7                 | 51.26                      | -                      | -           | 74                  | -22.74         | 79             | 144         | H        |
| 2      | * 2377.54       | 41.19                | Pk   | 32.1           | -20.7                 | 52.59                      | -                      | -           | 74                  | -21.41         | 79             | 144         | H        |
| 3      | * 2390          | 26.67                | VA1T | 32.1           | -20.7                 | 38.07                      | 54                     | -15.93      | -                   | -              | 79             | 144         | H        |
| 4      | * 2389.99       | 26.67                | VA1T | 32.1           | -20.7                 | 38.07                      | 54                     | -15.93      | -                   | -              | 79             | 144         | H        |

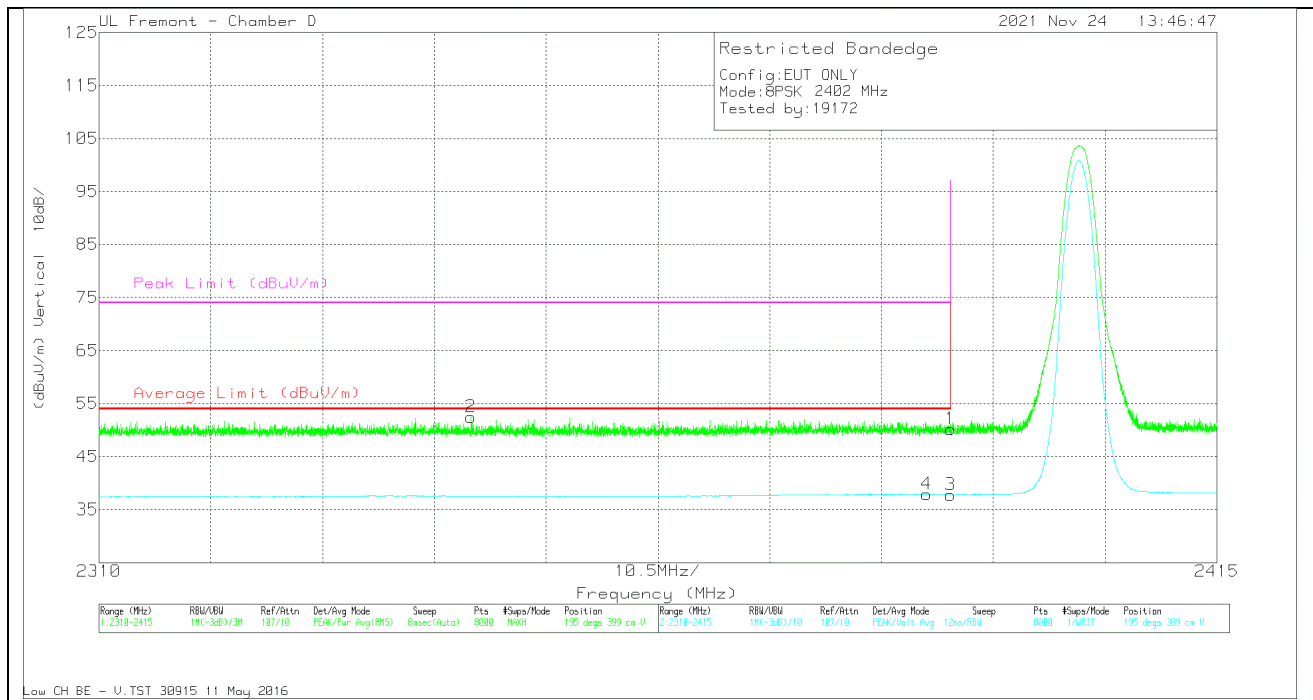
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration



## VERTICAL RESULT

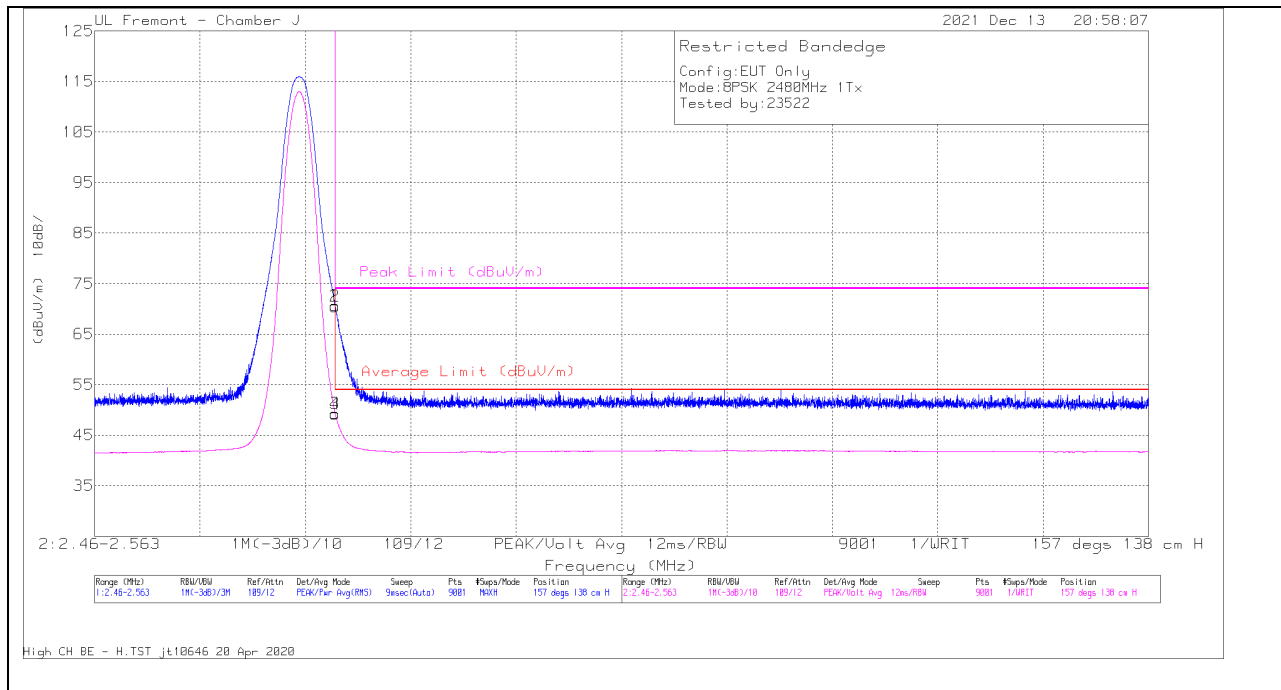


| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarization |
|--------|-----------------|----------------------|------|----------------|------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|--------------|
| 1      | * 2390          | 38.84                | Pk   | 32.1           | -20.7                  | 50.24                      | -                      | -           | 74                  | -23.76         | 195            | 399         | V            |
| 2      | * 2344.92       | 41.34                | Pk   | 31.9           | -20.8                  | 52.44                      | -                      | -           | 74                  | -21.56         | 195            | 399         | V            |
| 3      | * 2390          | 26.38                | VA1T | 32.1           | -20.7                  | 37.78                      | 54                     | -16.22      | -                   | -              | 195            | 399         | V            |
| 4      | * 2387.74       | 26.5                 | VA1T | 32.1           | -20.7                  | 37.9                       | 54                     | -16.1       | -                   | -              | 195            | 399         | V            |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

**BANDEDGE (HIGH CHANNEL)****HORIZONTAL RESULT**

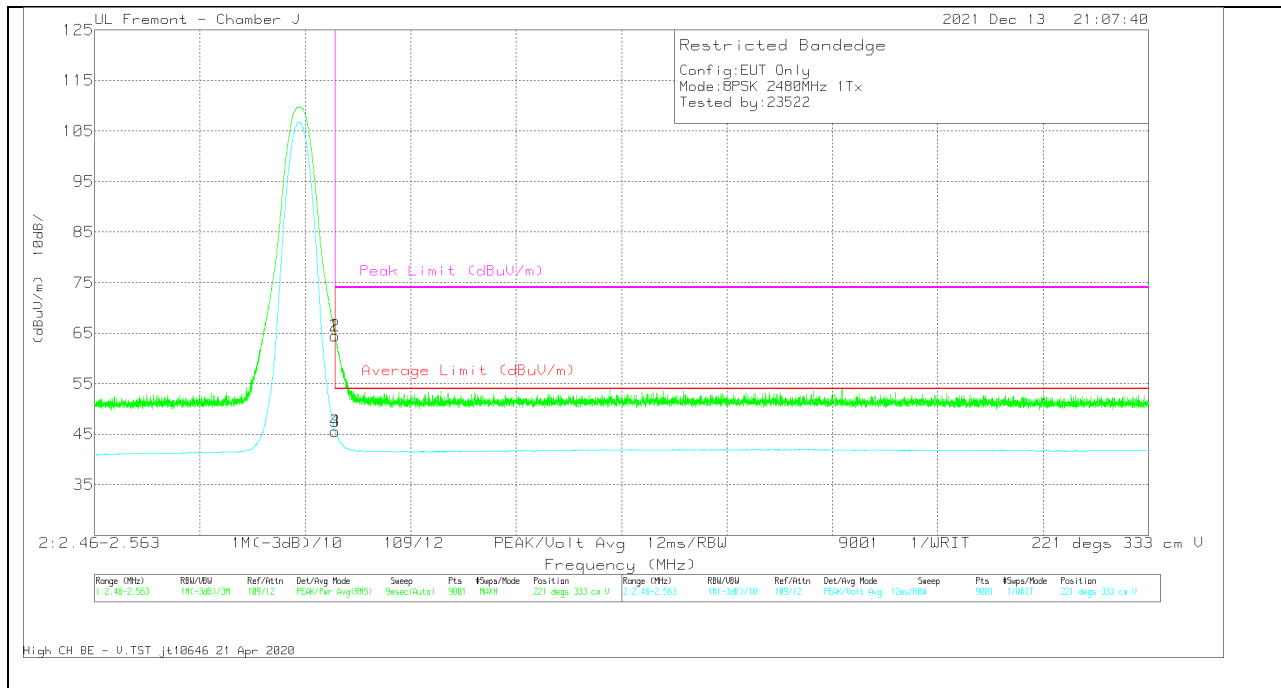
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF 206806 (dB/m) | Amp/C bl/Filtr/ Pad (dB) | Correct ed Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarit y |
|--------|-----------------|----------------------|------|------------------|--------------------------|-----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|-----------|
| 1      | * 2483.5        | 54.23                | Pk   | 32.4             | -16                      | 70.63                       | -                      | -           | 74                  | -3.37          | 157            | 138         | H         |
| 2      | * 2483.506      | 54.07                | Pk   | 32.4             | -16                      | 70.47                       | -                      | -           | 74                  | -3.53          | 157            | 138         | H         |
| 3      | * 2483.5        | 32.9                 | VA1T | 32.4             | -16                      | 49.3                        | 54                     | -4.7        | -                   | -              | 157            | 138         | H         |
| 4      | * 2483.506      | 32.82                | VA1T | 32.4             | -16                      | 49.22                       | 54                     | -4.78       | -                   | -              | 157            | 138         | H         |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT



| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF 206806 (dB/m) | Amp/Cb/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|------------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2483.5        | 48.1                 | Pk   | 32.4             | -16                   | 64.5                       | -                      | -           | 74                  | -9.5           | 221            | 333         | V        |
| 2      | * 2483.506      | 48.02                | Pk   | 32.4             | -16                   | 64.42                      | -                      | -           | 74                  | -9.58          | 221            | 333         | V        |
| 3      | * 2483.5        | 29.22                | VA1T | 32.4             | -16                   | 45.62                      | 54                     | -8.38       | -                   | -              | 221            | 333         | V        |
| 4      | * 2483.506      | 29.16                | VA1T | 32.4             | -16                   | 45.56                      | 54                     | -8.44       | -                   | -              | 221            | 333         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

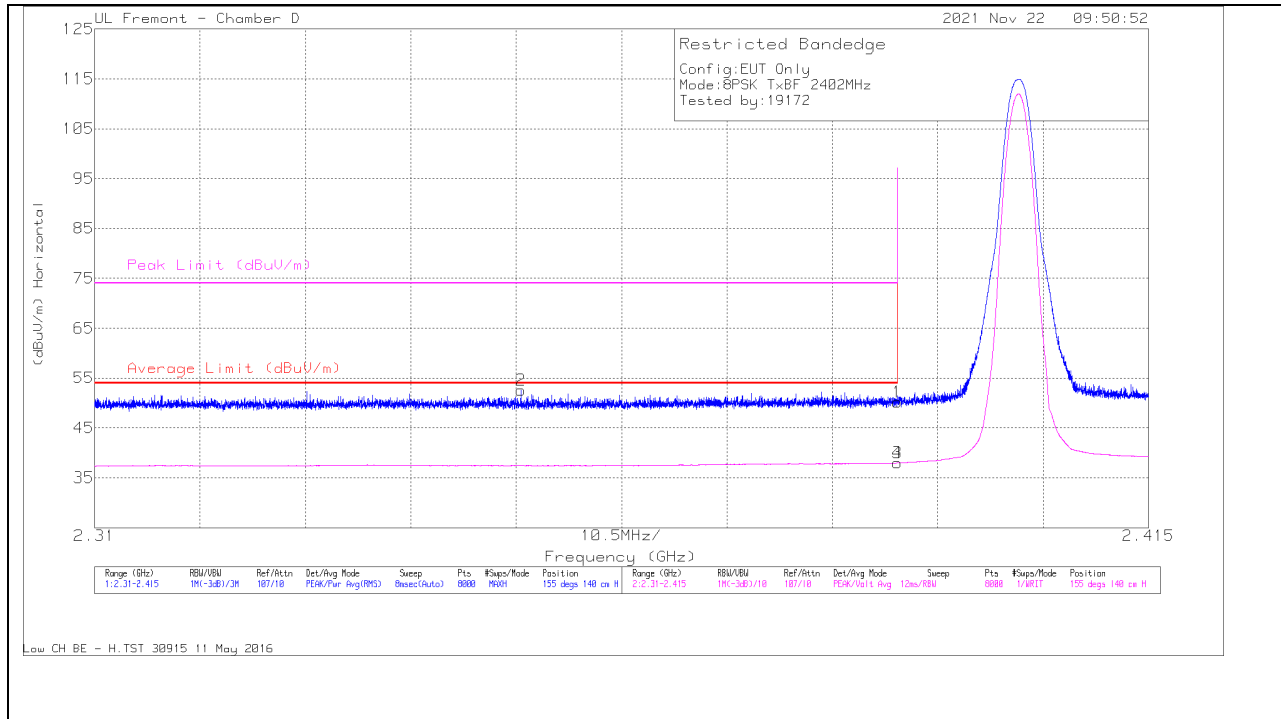
Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## 10.1.5. HIGH POWER BASIC DATA RATE TXBF 8PSK MODULATION

### BANDEDGE (LOW CHANNEL)

#### HORIZONTAL RESULT



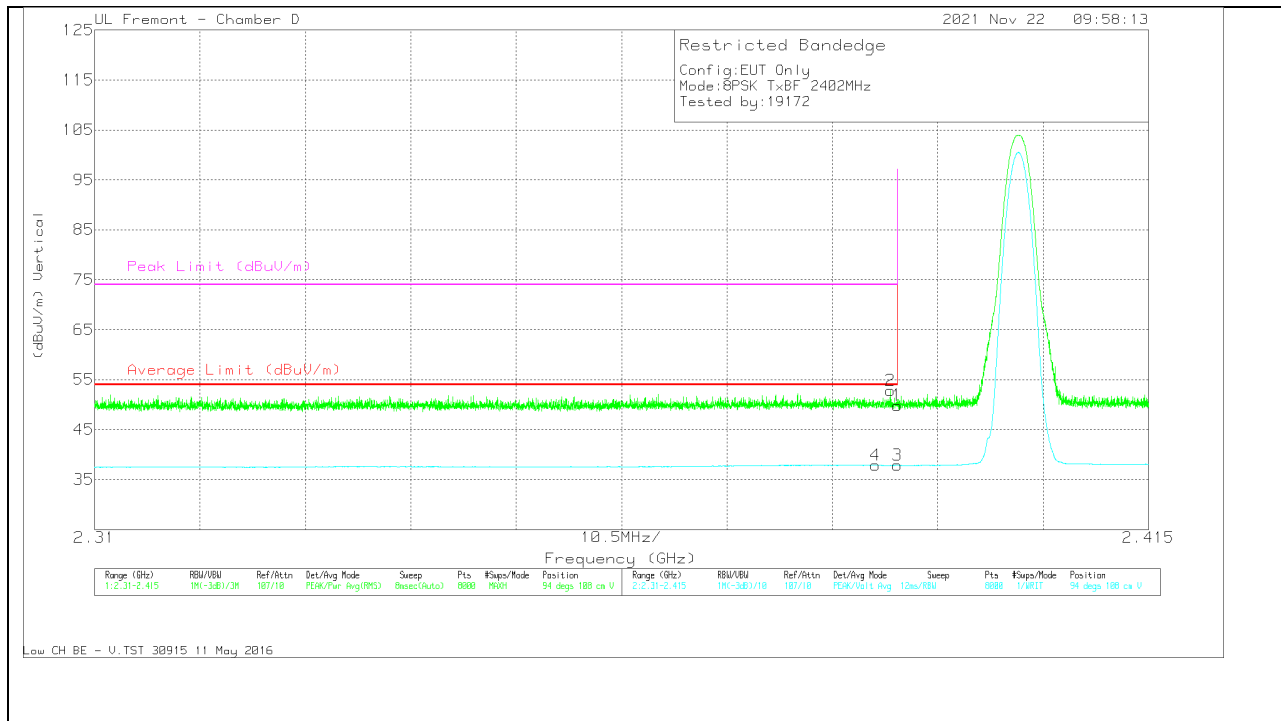
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Ftr/Pa d (dB) | Correct ed Reading (dBuV/m) | Averag e Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|------------------------|-----------------------------|-------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.39          | 38.83                | Pk   | 32.1           | -20.7                  | 50.23                       | -                       | -           | 74                  | -23.77         | 155            | 140         | H        |
| 2      | * 2.35245       | 41.7                 | Pk   | 31.8           | -20.9                  | 52.6                        | -                       | -           | 74                  | -21.4          | 155            | 140         | H        |
| 3      | * 2.39          | 26.59                | VA1T | 32.1           | -20.7                  | 37.99                       | 54                      | -16.01      | -                   | -              | 155            | 140         | H        |
| 4      | * 2.38997       | 26.6                 | VA1T | 32.1           | -20.7                  | 38                          | 54                      | -16.00      | -                   | -              | 155            | 140         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT

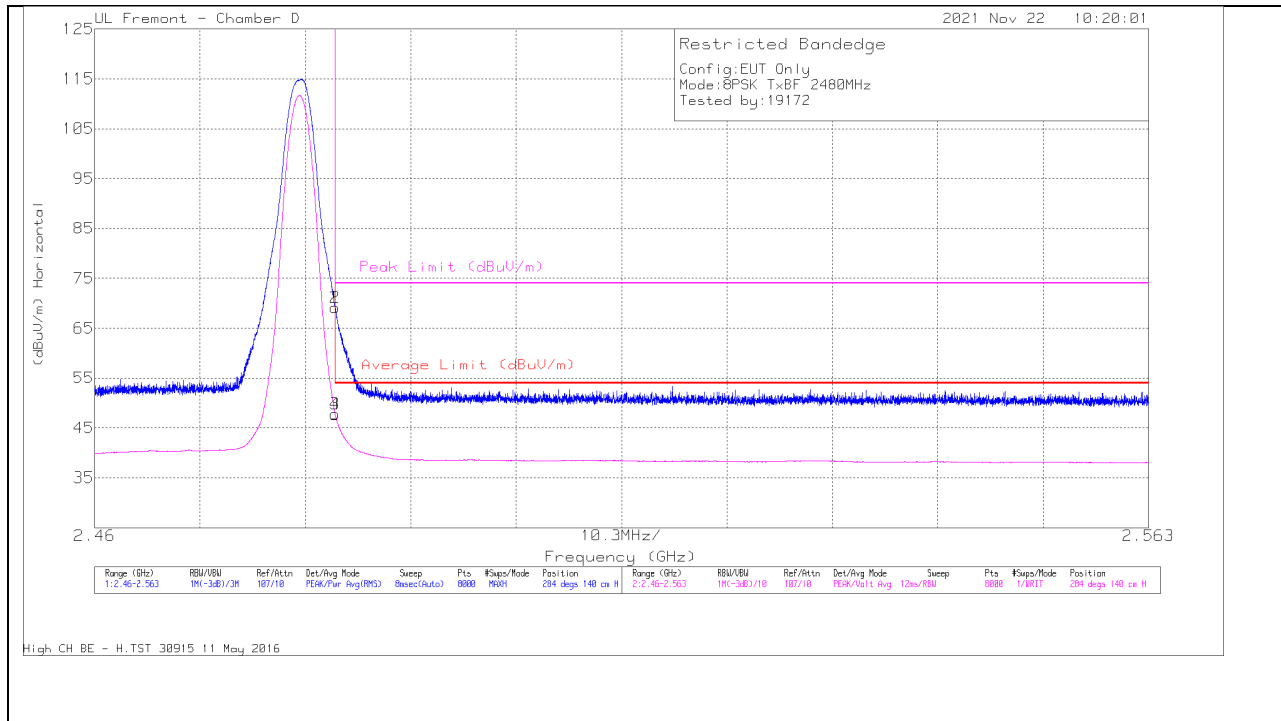


| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Filtr/Pa d (dB) | Correct ed Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|--------------------------|-----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.39          | 38.47                | Pk   | 32.1           | -20.7                    | 49.87                       | -                      | -           | 74                  | -24.13         | 94             | 108         | V        |
| 2      | * 2.38927       | 41.43                | Pk   | 32.1           | -20.7                    | 52.83                       | -                      | -           | 74                  | -21.17         | 94             | 108         | V        |
| 3      | * 2.39          | 26.42                | VA1T | 32.1           | -20.7                    | 37.82                       | 54                     | -16.18      | -                   | -              | 94             | 108         | V        |
| 4      | * 2.3878        | 26.5                 | VA1T | 32.1           | -20.7                    | 37.9                        | 54                     | -16.1       | -                   | -              | 94             | 108         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

**BANDEDGE (HIGH CHANNEL)****HORIZONTAL RESULT**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.4835        | 57.12                | Pk   | 32.7           | -20.7                   | 69.12                      | -                      | -           | 74                  | -4.88          | 284            | 140         | H        |
| 2      | * 2.4835        | 57.11                | Pk   | 32.7           | -20.7                   | 69.11                      | -                      | -           | 74                  | -4.89          | 284            | 140         | H        |
| 3      | * 2.4835        | 35.75                | VA1T | 32.7           | -20.7                   | 47.75                      | 54                     | -6.25       | -                   | -              | 284            | 140         | H        |
| 4      | * 2.4835        | 35.74                | VA1T | 32.7           | -20.7                   | 47.74                      | 54                     | -6.26       | -                   | -              | 284            | 140         | H        |

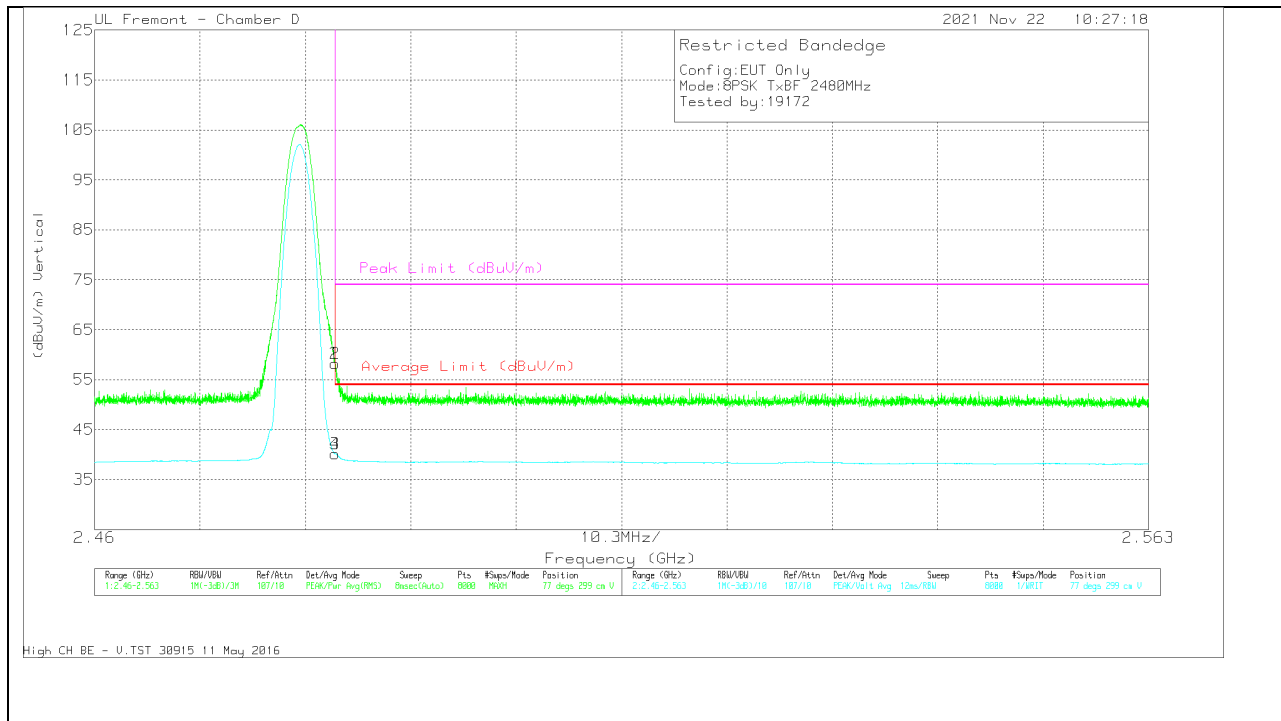
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration



## VERTICAL RESULT

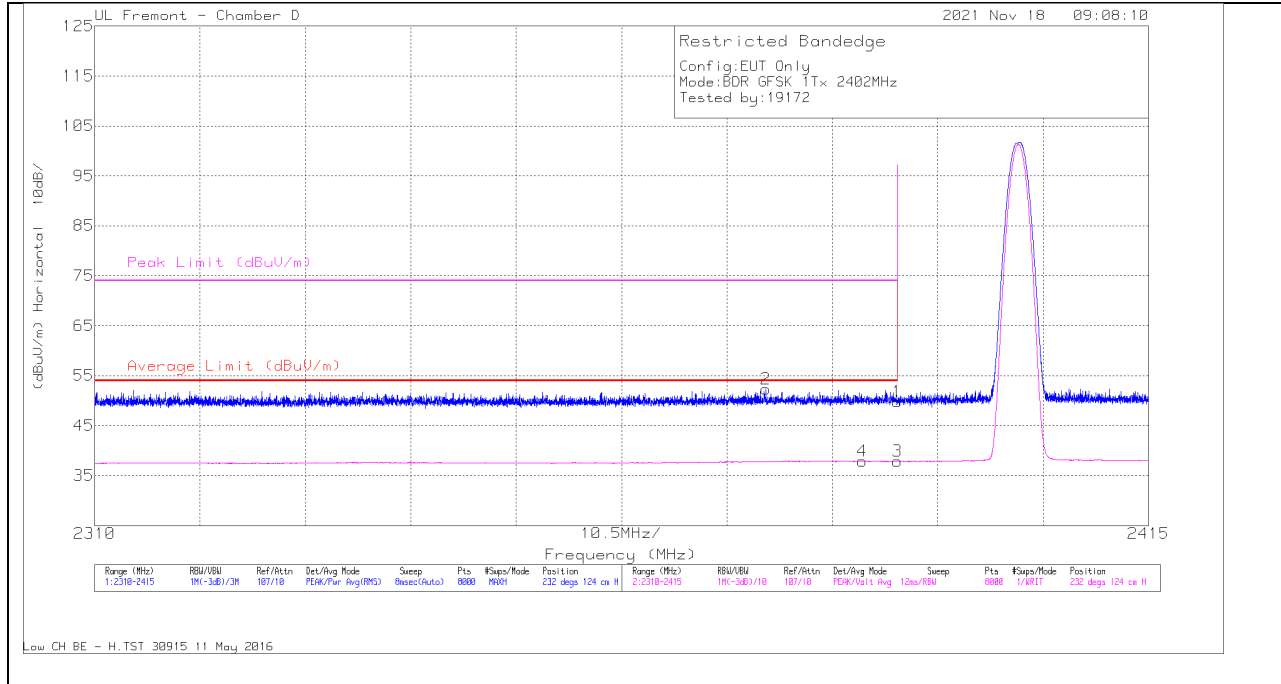


| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2.4835        | 46.22                | Pk   | 32.7           | -20.7                  | 58.22                      | -                      | -           | 74                  | -15.78         | 77             | 299         | V        |
| 2      | * 2.4835        | 46.22                | Pk   | 32.7           | -20.7                  | 58.22                      | -                      | -           | 74                  | -15.78         | 77             | 299         | V        |
| 3      | * 2.4835        | 28.16                | VA1T | 32.7           | -20.7                  | 40.16                      | 54                     | -13.84      | -                   | -              | 77             | 299         | V        |
| 4      | * 2.4835        | 28.16                | VA1T | 32.7           | -20.7                  | 40.16                      | 54                     | -13.84      | -                   | -              | 77             | 299         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

**10.1.6. LOW POWER BASIC DATA RATE GFSK MODULATION****ANT 2****BANDEDGE (LOW CHANNEL)****HORIZONTAL RESULT**

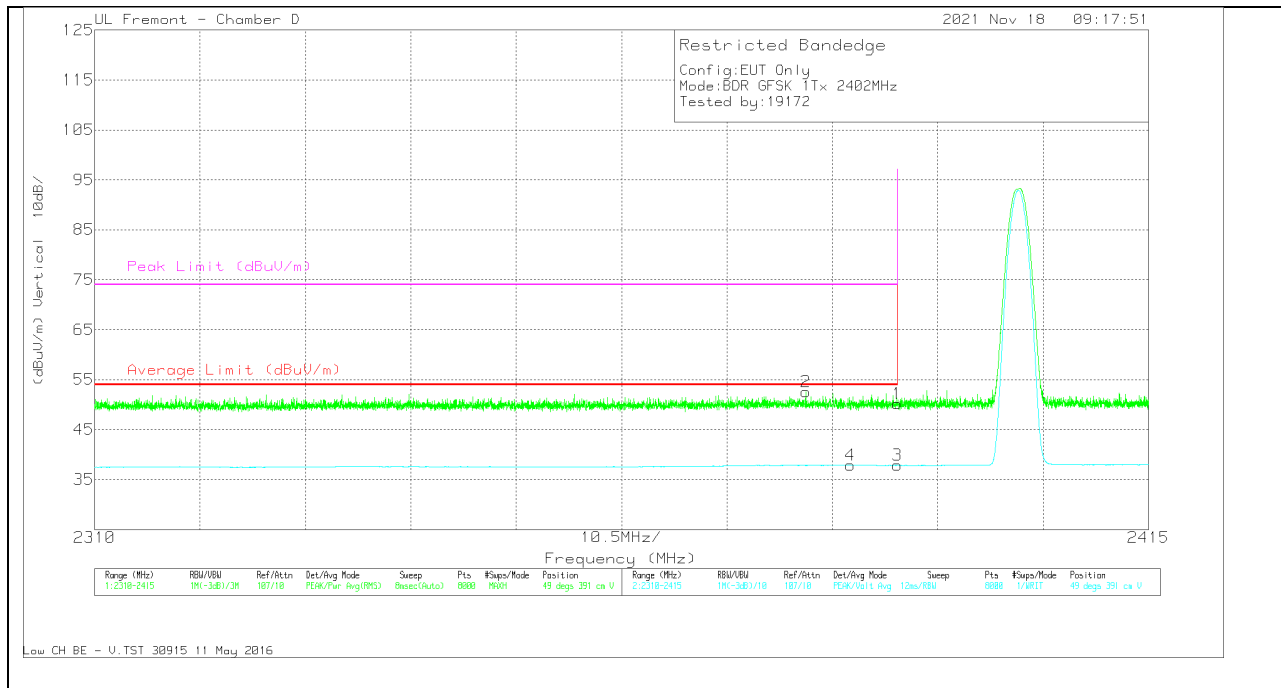
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Filtr/Pa d (dB) | Correct ed Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|--------------------------|-----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 38.38                | Pk   | 32.1           | -20.7                    | 49.78                       | -                      | -           | 74                  | -24.22         | 232            | 124         | H        |
| 2      | * 2377          | 40.95                | Pk   | 32.1           | -20.7                    | 52.35                       | -                      | -           | 74                  | -21.65         | 232            | 124         | H        |
| 3      | * 2390          | 26.44                | VA1T | 32.1           | -20.7                    | 37.84                       | 54                     | -16.16      | -                   | -              | 232            | 124         | H        |
| 4      | * 2386.5        | 26.59                | VA1T | 32.1           | -20.8                    | 37.89                       | 54                     | -16.11      | -                   | -              | 232            | 124         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT

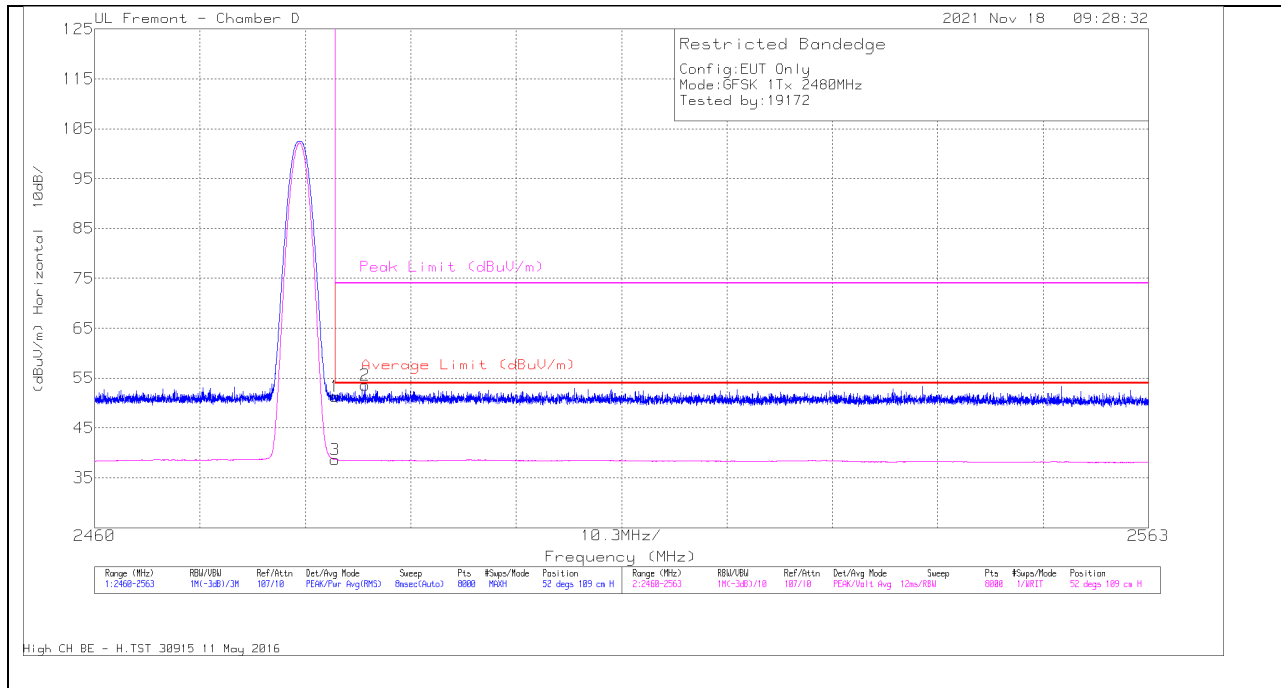


| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Filtr/Pa d (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|--------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 38.73                | Pk   | 32.1           | -20.7                    | 50.13                      | -                      | -           | 74                  | -23.87         | 49             | 391         | V        |
| 2      | * 2381          | 41.25                | Pk   | 32.1           | -20.8                    | 52.55                      | -                      | -           | 74                  | -21.45         | 49             | 391         | V        |
| 3      | * 2390          | 26.42                | VA1T | 32.1           | -20.7                    | 37.82                      | 54                     | -16.18      | -                   | -              | 49             | 391         | V        |
| 4      | * 2385          | 26.62                | VA1T | 32.1           | -20.8                    | 37.92                      | 54                     | -16.08      | -                   | -              | 49             | 391         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

**BANDEDGE (HIGH CHANNEL)****HORIZONTAL RESULT**

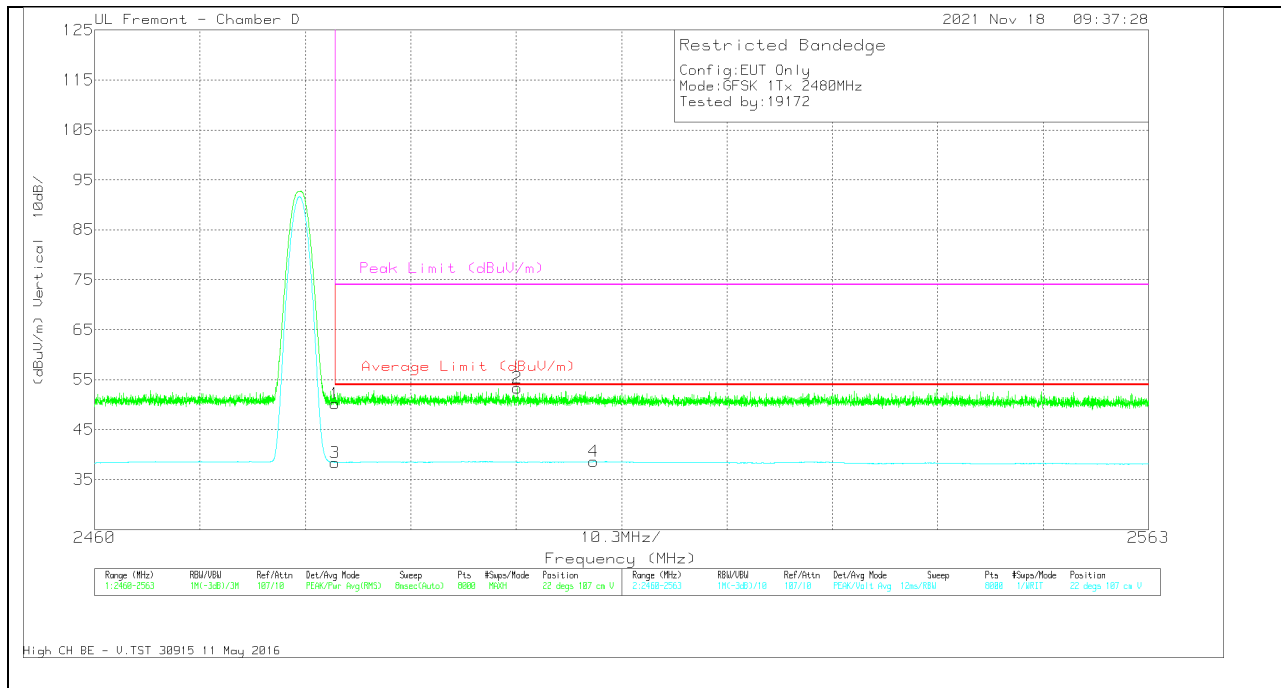
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Ftr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2483.5        | 39.36                | Pk   | 32.7           | -20.7                 | 51.36                      | -                      | -           | 74                  | -22.64         | 52             | 109         | H        |
| 2      | * 2486.42       | 41.54                | Pk   | 32.7           | -20.7                 | 53.54                      | -                      | -           | 74                  | -20.46         | 52             | 109         | H        |
| 3      | * 2483.5        | 26.67                | VA1T | 32.7           | -20.7                 | 38.67                      | 54                     | -15.33      | -                   | -              | 52             | 109         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

## VERTICAL RESULT

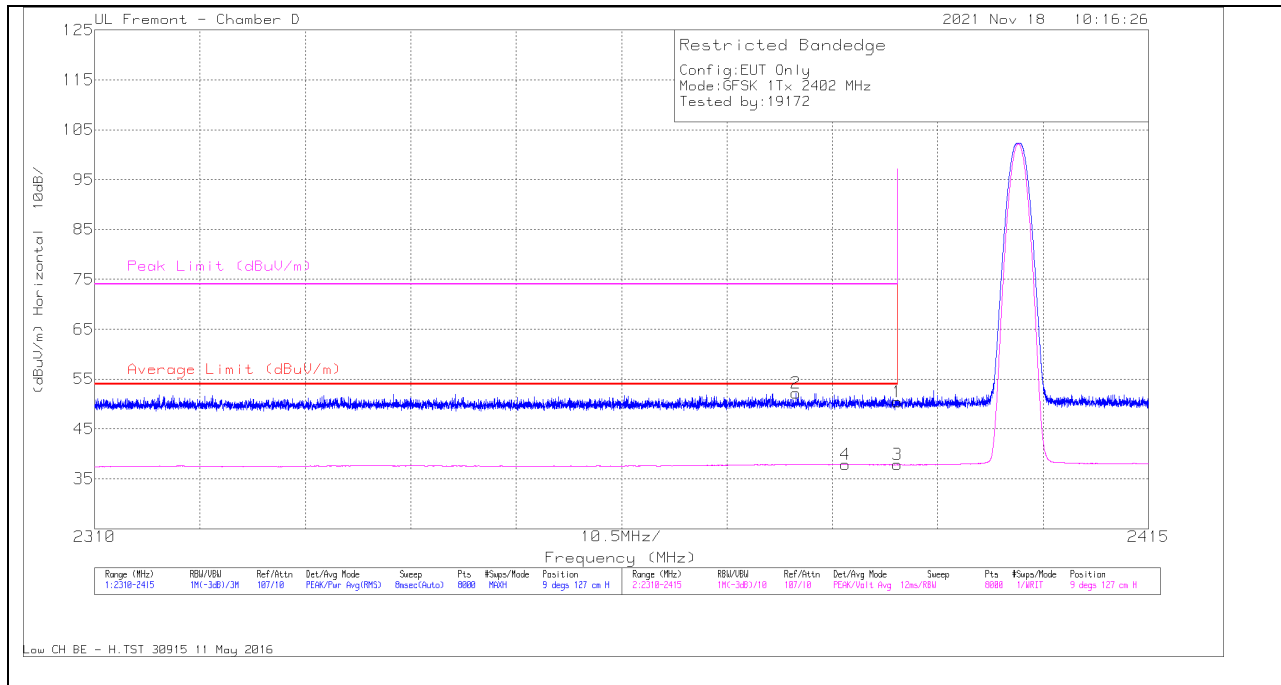


| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Filtr/PA d (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|--------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2483.5        | 38.23                | Pk   | 32.7           | -20.7                    | 50.23                      | -                      | -           | 74                  | -23.77         | 22             | 107         | V        |
| 3      | * 2483.5        | 26.43                | VA1T | 32.7           | -20.7                    | 38.43                      | 54                     | -15.57      | -                   | -              | 22             | 107         | V        |
| 2      | 2501.3          | 41.34                | Pk   | 32.7           | -20.7                    | 53.34                      | -                      | -           | 74                  | -20.66         | 22             | 107         | V        |
| 4      | 2508.76         | 26.39                | VA1T | 32.7           | -20.5                    | 38.59                      | 54                     | -15.41      | -                   | -              | 22             | 107         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

**ANT 3****BANDEGE (LOW CHANNEL)****HORIZONTAL RESULT**

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Ftr/Pa d (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 39.04                | Pk   | 32.1           | -20.7                  | 50.44                      | -                      | -           | 74                  | -23.56         | 9              | 127         | H        |
| 2      | * 2380          | 40.94                | Pk   | 32.1           | -20.8                  | 52.24                      | -                      | -           | 74                  | -21.76         | 9              | 127         | H        |
| 3      | * 2390          | 26.42                | VA1T | 32.1           | -20.7                  | 37.82                      | 54                     | -16.18      | -                   | -              | 9              | 127         | H        |
| 4      | * 2384.8        | 26.61                | VA1T | 32.1           | -20.8                  | 37.91                      | 54                     | -16.09      | -                   | -              | 9              | 127         | H        |

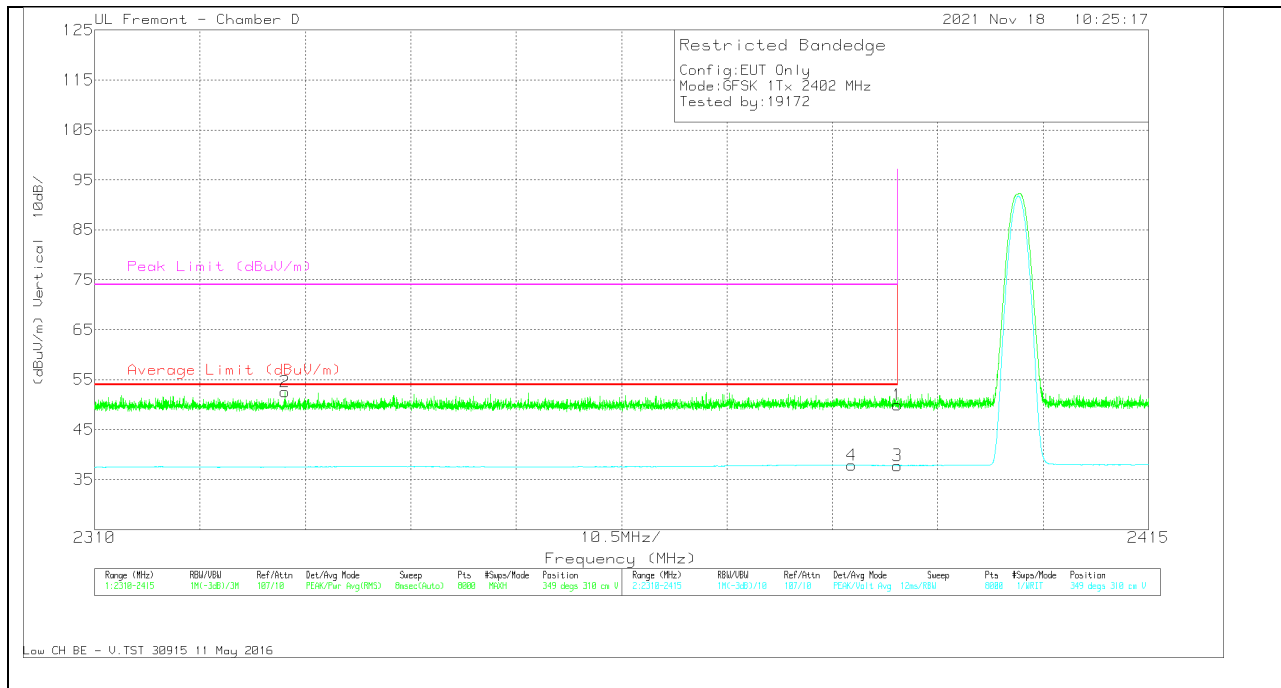
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration



## VERTICAL RESULT

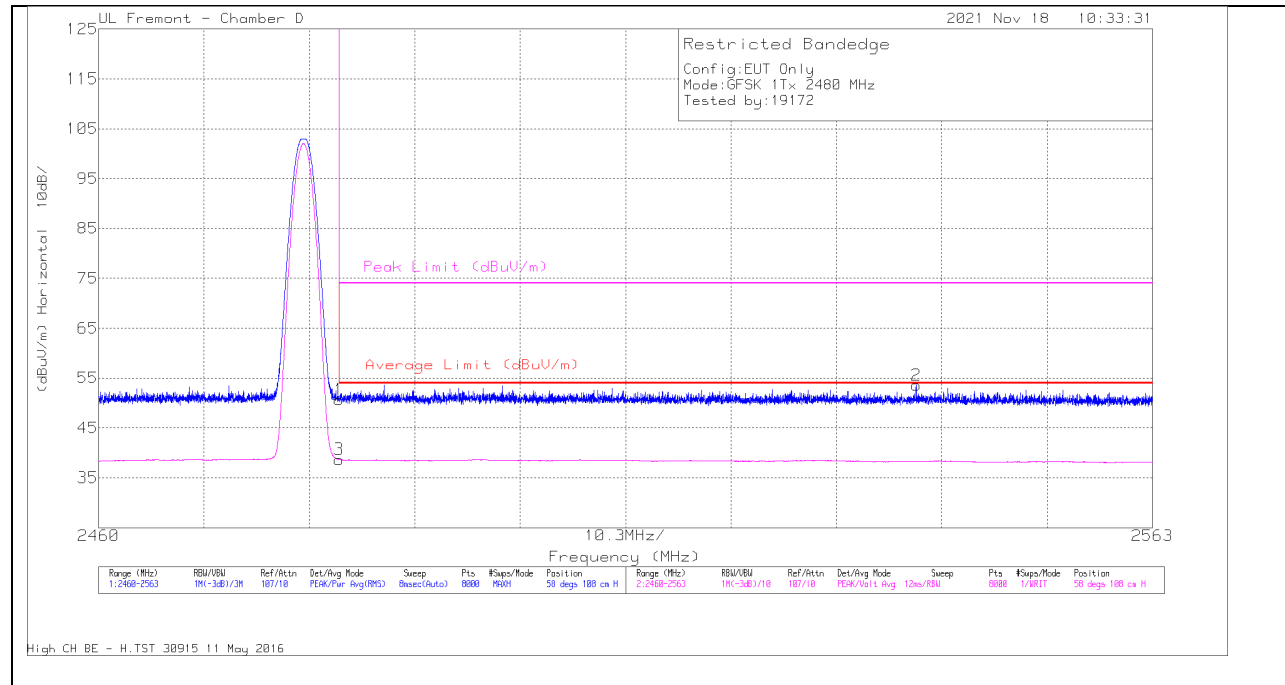


| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Ftr/Pa d (dB) | Correct ed Reading (dBuV/m) | Averag e Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|------------------------|-----------------------------|-------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 38.59                | Pk   | 32.1           | -20.7                  | 49.99                       | -                       | -           | 74                  | -24.01         | 349            | 310         | V        |
| 2      | * 2328.9        | 41.67                | Pk   | 31.8           | -20.9                  | 52.57                       | -                       | -           | 74                  | -21.43         | 349            | 310         | V        |
| 3      | * 2390          | 26.41                | VA1T | 32.1           | -20.7                  | 37.81                       | 54                      | -16.19      | -                   | -              | 349            | 310         | V        |
| 4      | * 2385.5        | 26.62                | VA1T | 32.1           | -20.8                  | 37.92                       | 54                      | -16.08      | -                   | -              | 349            | 310         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B=1/T_{on}$  where:  $T_{on}$  is transmit duration

**BANDEDGE (HIGH CHANNEL)****HORIZONTAL RESULT**

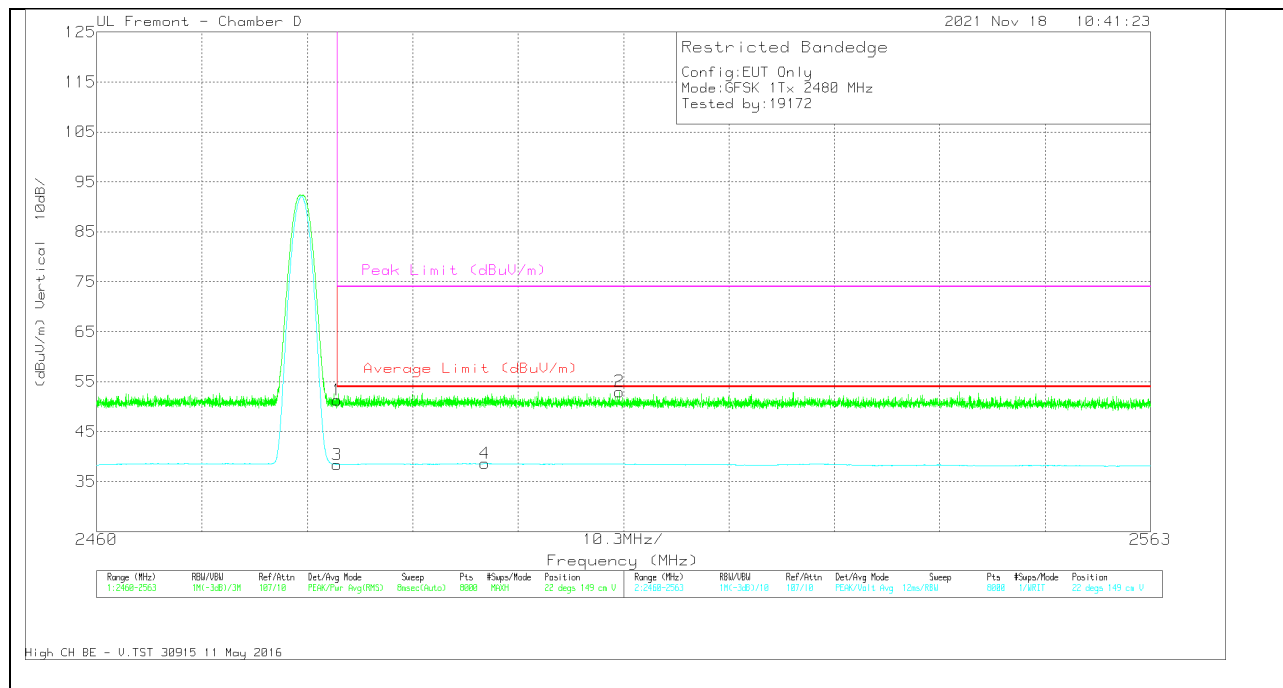
| Marker | Frequ<br>ncy<br>(MHz) | Meter<br>Readin<br>g<br>(dBuV) | Det  | AF<br>T712<br>(dB/m) | Amp/C<br>bl/Filtr/P<br>ad (dB) | Correct<br>ed<br>Readin<br>g<br>(dBuV/<br>m) | Averag<br>e Limit<br>(dBuV/<br>m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/<br>m) | PK<br>Margin<br>(dB) | Azimet<br>h<br>(Degs) | Height<br>(cm) | Polarity |
|--------|-----------------------|--------------------------------|------|----------------------|--------------------------------|----------------------------------------------|-----------------------------------|----------------|-------------------------------|----------------------|-----------------------|----------------|----------|
| 1      | * 2483.5              | 38.72                          | Pk   | 32.7                 | -20.7                          | 50.72                                        | -                                 | -              | 74                            | -23.28               | 58                    | 108            | H        |
| 3      | * 2483.5              | 26.69                          | VA1T | 32.7                 | -20.7                          | 38.69                                        | 54                                | -15.31         | -                             | -                    | 58                    | 108            | H        |
| 2      | 2539.90               | 41.61                          | Pk   | 32.4                 | -20.4                          | 53.61                                        | -                                 | -              | 74                            | -20.39               | 58                    | 108            | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT



| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Filtr/Pa d (dB) | Correct ed Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|--------------------------|-----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2483.5        | 39.28                | Pk   | 32.7           | -20.7                    | 51.28                       | -                      | -           | 74                  | -22.72         | 22             | 149         | V        |
| 3      | * 2483.5        | 26.43                | VA1T | 32.7           | -20.7                    | 38.43                       | 54                     | -15.57      | -                   | -              | 22             | 149         | V        |
| 4      | * 2497.91       | 26.4                 | VA1T | 32.8           | -20.6                    | 38.6                        | 54                     | -15.4       | -                   | -              | 22             | 149         | V        |
| 2      | 2511.09         | 40.91                | Pk   | 32.7           | -20.6                    | 53.01                       | -                      | -           | 74                  | -20.99         | 22             | 149         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

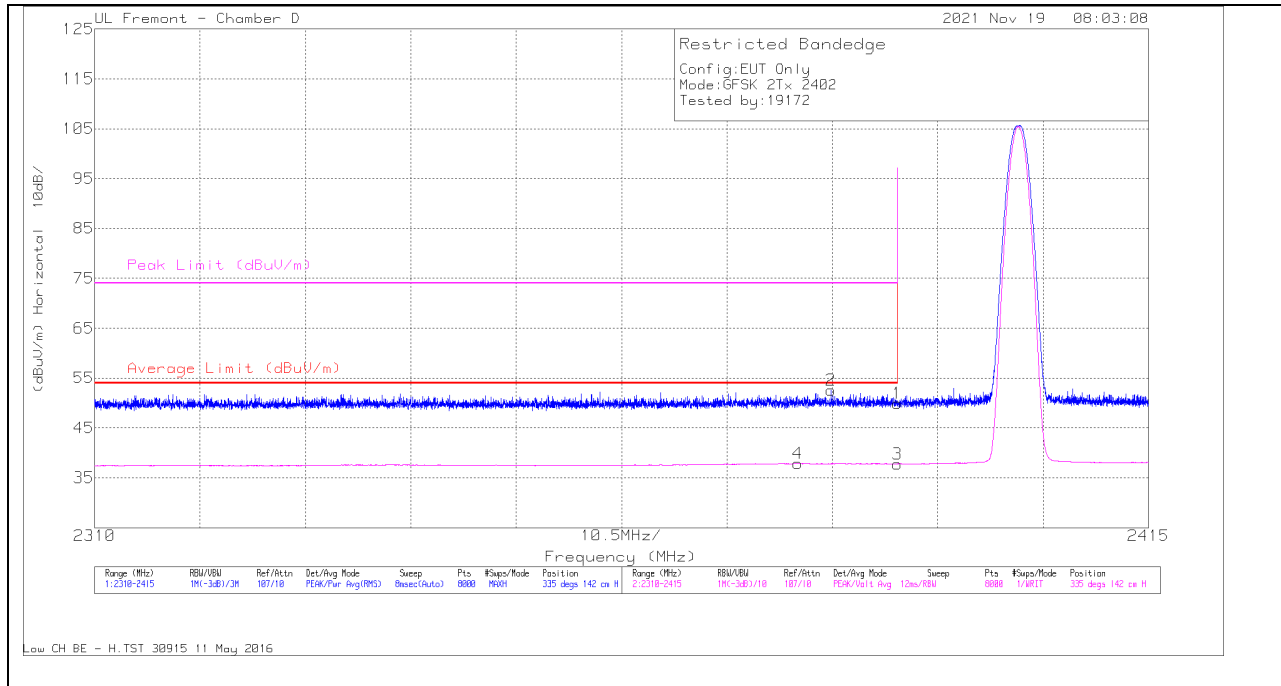
Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

## 10.1.7. LOW POWER BASIC DATA RATE TXBF GFSK MODULATION

### BANDEDGE (LOW CHANNEL)

#### HORIZONTAL RESULT



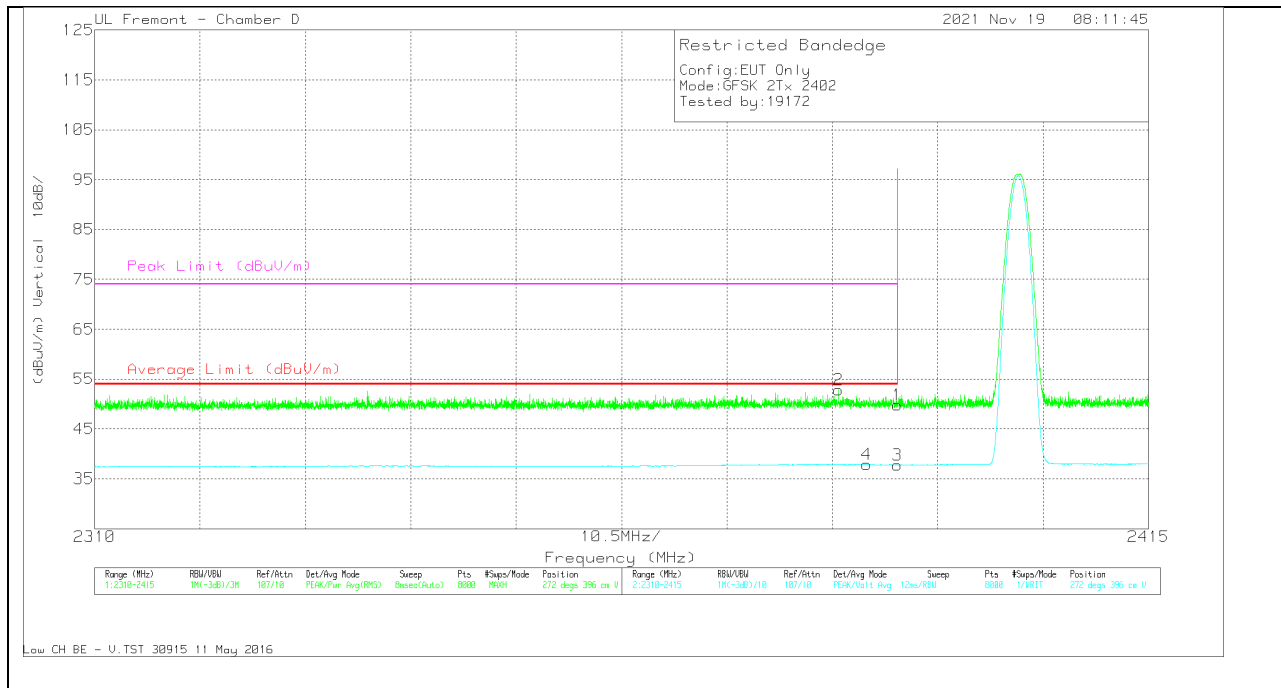
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/C b/Fitr/P ad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 38.59                | PK   | 32.1           | -20.7                  | 49.99                      | -                      | -           | 74                  | -24.01         | 335            | 142         | H        |
| 2      | * 2383.4        | 41.22                | PK   | 32.1           | -20.8                  | 52.52                      | -                      | -           | 74                  | -21.48         | 335            | 142         | H        |
| 3      | * 2390          | 26.4                 | VA1T | 32.1           | -20.7                  | 37.8                       | 54                     | -16.2       | -                   | -              | 335            | 142         | H        |
| 4      | * 2380.0        | 26.59                | VA1T | 32.1           | -20.8                  | 37.89                      | 54                     | -16.11      | -                   | -              | 335            | 142         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT

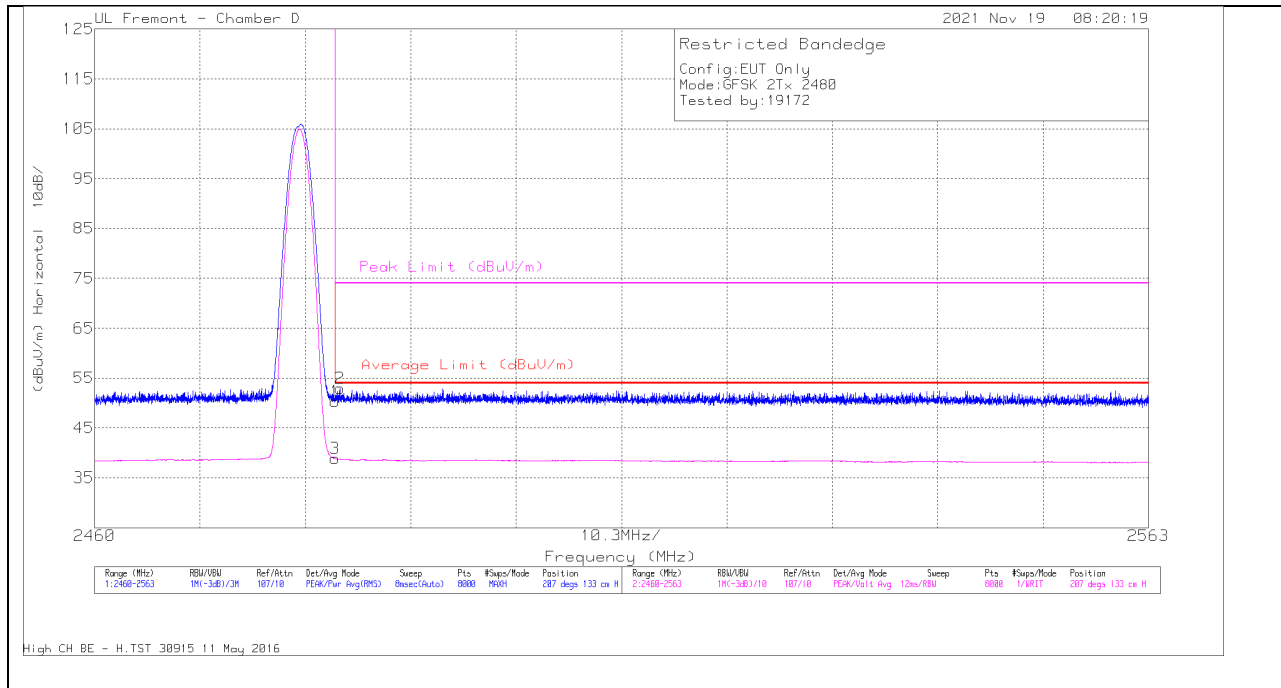


| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cbl/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 38.35                | Pk   | 32.1           | -20.7                  | 49.75                      | -                      | -           | 74                  | -24.25         | 272            | 396         | V        |
| 2      | * 2384.1        | 41.47                | Pk   | 32.1           | -20.8                  | 52.77                      | -                      | -           | 74                  | -21.23         | 272            | 396         | V        |
| 3      | * 2390          | 26.38                | VA1T | 32.1           | -20.7                  | 37.78                      | 54                     | -16.22      | -                   | -              | 272            | 396         | V        |
| 4      | * 2386.9        | 26.59                | VA1T | 32.1           | -20.8                  | 37.89                      | 54                     | -16.11      | -                   | -              | 272            | 396         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

**BANDEDGE (HIGH CHANNEL)****HORIZONTAL RESULT**

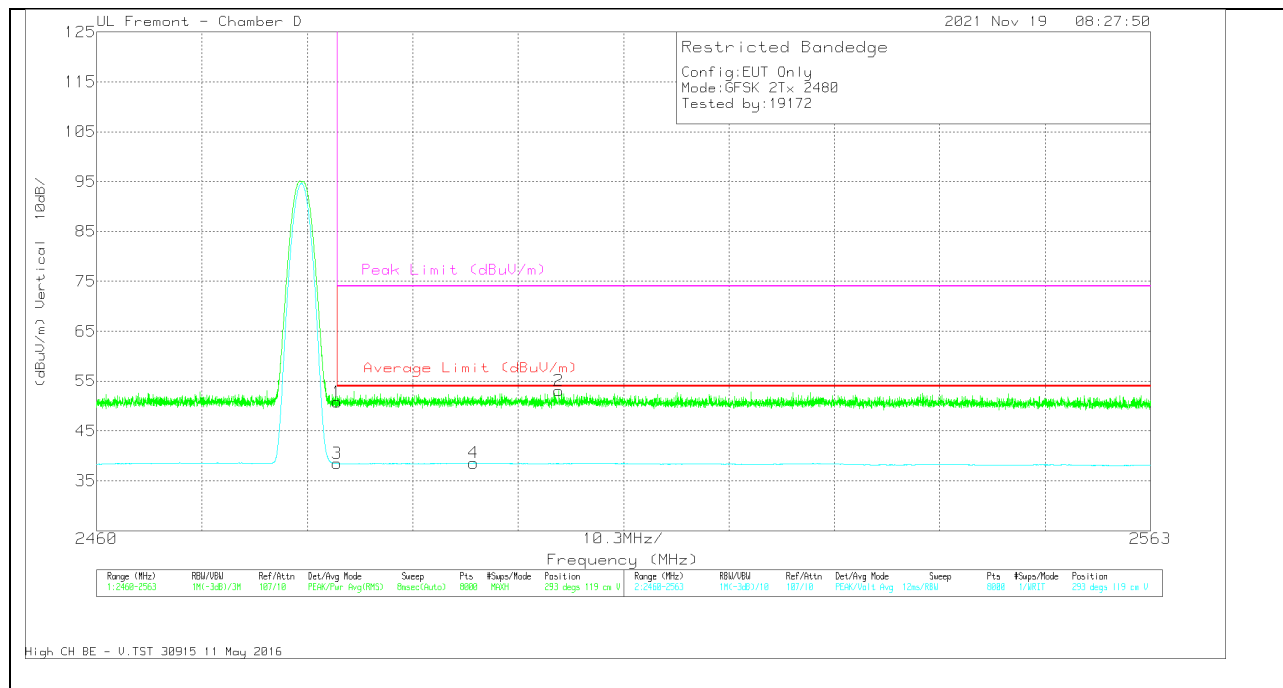
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Filtr/Pa d (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|--------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2483.5        | 38.33                | Pk   | 32.7           | -20.7                    | 50.33                      | -                      | -           | 74                  | -23.67         | 207            | 133         | H        |
| 2      | * 2483.96       | 40.97                | Pk   | 32.7           | -20.7                    | 52.97                      | -                      | -           | 74                  | -21.03         | 207            | 133         | H        |
| 3      | * 2483.5        | 26.85                | VA1T | 32.7           | -20.7                    | 38.85                      | 54                     | -15.15      | -                   | -              | 207            | 133         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT



| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Filtr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-------------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2483.5        | 38.76                | Pk   | 32.7           | -20.7                   | 50.76                      | -                      | -           | 74                  | -23.24         | 293            | 119         | V        |
| 3      | * 2483.5        | 26.46                | VA1T | 32.7           | -20.7                   | 38.46                      | 54                     | -15.54      | -                   | -              | 293            | 119         | V        |
| 4      | * 2496.82       | 26.37                | VA1T | 32.8           | -20.6                   | 38.57                      | 54                     | -15.43      | -                   | -              | 293            | 119         | V        |
| 2      | 2505.14         | 41.08                | Pk   | 32.7           | -20.7                   | 53.08                      | -                      | -           | 74                  | -20.92         | 293            | 119         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average  $V_B = 1/T_{on}$  where:  $T_{on}$  is transmit duration

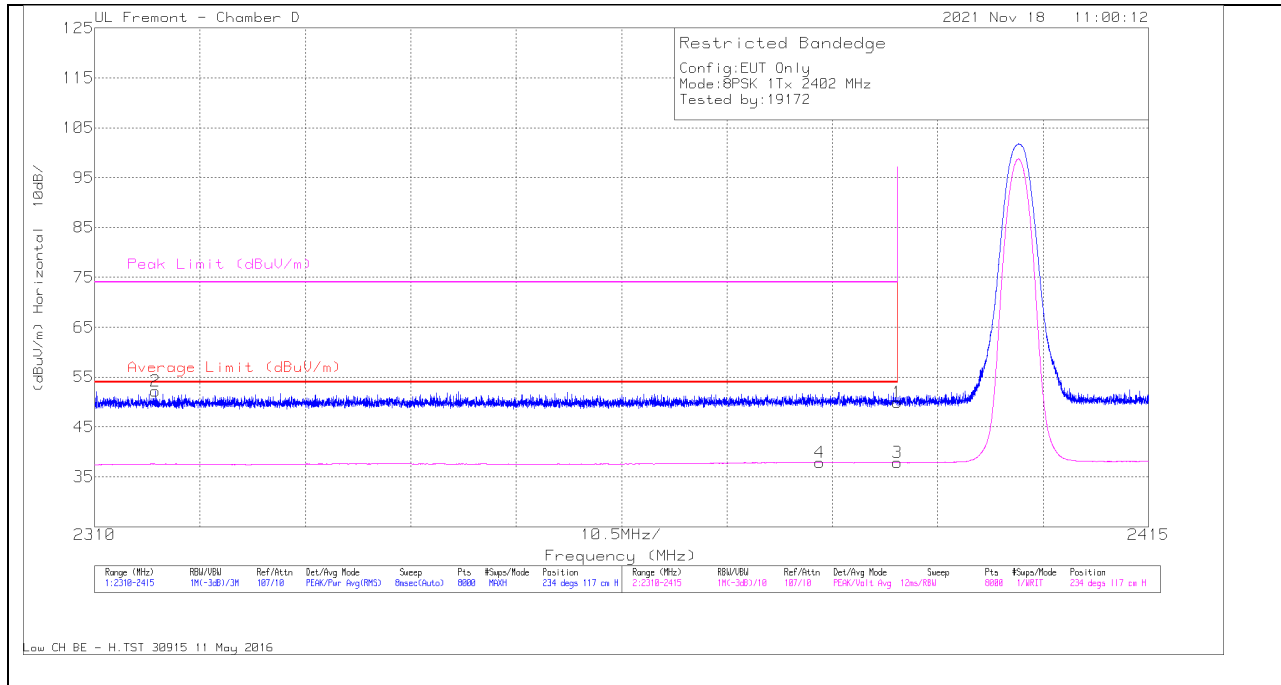


## 10.1.8. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

### ANT 2

### BANDEDGE (LOW CHANNEL)

### HORIZONTAL RESULT



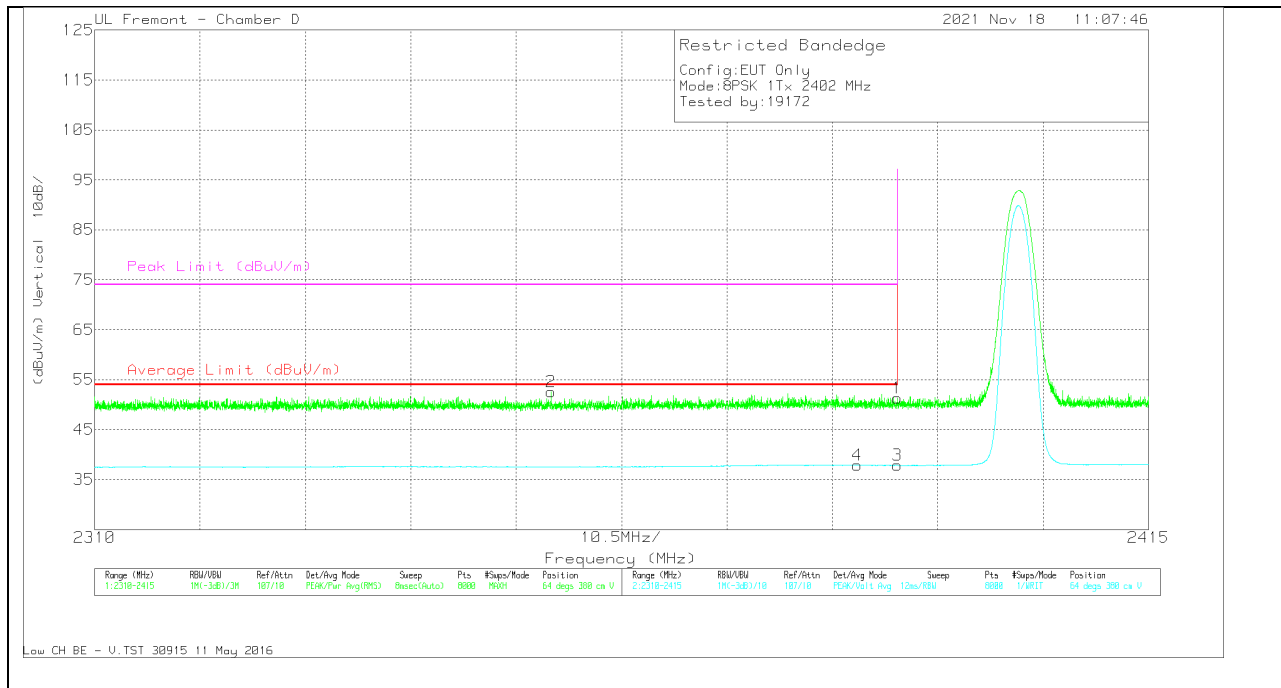
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Ftr/Pad (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-----------------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 38.52                | PK   | 32.1           | -20.7                 | 49.92                      | -                      | -           | 74                  | -24.08         | 234            | 117         | H        |
| 2      | * 2316.05       | 41.35                | PK   | 31.8           | -20.9                 | 52.25                      | -                      | -           | 74                  | -21.75         | 234            | 117         | H        |
| 3      | * 2390          | 26.43                | VA1T | 32.1           | -20.7                 | 37.83                      | 54                     | -16.17      | -                   | -              | 234            | 117         | H        |
| 4      | * 2382.25       | 26.63                | VA1T | 32.1           | -20.8                 | 37.93                      | 54                     | -16.07      | -                   | -              | 234            | 117         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

## VERTICAL RESULT



| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det  | AF T712 (dB/m) | Amp/Cb I/Filt/Pa d (dB) | Correct ed Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|------|----------------|-------------------------|-----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * 2390          | 39.96                | Pk   | 32.1           | -20.7                   | 51.36                       | -                      | -           | 74                  | -22.64         | 64             | 380         | V        |
| 2      | * 2355.47       | 41.54                | Pk   | 31.8           | -20.8                   | 52.54                       | -                      | -           | 74                  | -21.46         | 64             | 380         | V        |
| 3      | * 2390          | 26.43                | VA1T | 32.1           | -20.7                   | 37.83                       | 54                     | -16.17      | -                   | -              | 64             | 380         | V        |
| 4      | * 2386.00       | 26.62                | VA1T | 32.1           | -20.8                   | 37.92                       | 54                     | -16.08      | -                   | -              | 64             | 380         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration