# FCC 47 CFR PART 24 SUBPART E

# TEST REPORT

## For

## ActiveHome

## Model No.: AH11-22-11

## Trade Name: Upstreem S.A

Issued to

**UPSTREEM S.A**
**Rue de Gosselies 13/9 Jumet 6040 Belgium**

Issued by

**Compliance Certification Services Inc.**
**Wugu Laboratory**
**No.11, Wugong 6th Rd., Wugu Dist.,**
**New Taipei City, Taiwan. (R.O.C.)**
**Issued Date: July 22, 2021**

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
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# Revision History

| Rev. | | Issue Date | | Revisions | Effect Page | Revised By |
|---|---|---|---|---|---|---|
| 00 | | July 22, 2021 | | Initial Issue | ALL | Doris Chu |

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**APPENDIX 1 - PHOTOGRAPHS OF EUT**

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# 1. TEST RESULT CERTIFICATION

**Applicant:** UPSTREEM S.A
Rue de Gosselies 13/9 Jumet 6040 Belgium

**Manufacturer**: IMEC Taiwan Co.
4F. No.6-2, Dusing Rd., Hsinchu Science Park, Hsinchu, Taiwan

**Equipment Under Test:** ActiveHome

**Trade Name:** Upstreem S.A

**Model No.:** AH11-22-11

**Date of Test:** March 29 ~ April 21, 2021

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULT** |
| FCC 47 CFR PART 24 SUBPART E | No non-compliance noted |
| **Statements of Conformity** | |
| Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty. | |

## We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA -603-E and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rule FCC PART 22 Subpart H, and PART 24 Subpart E.

Approved by:

Kevin Tsai
Deputy Manager
Compliance Certification Services Inc.

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# 2. EUT DESCRIPTION

| | | |
|---|---|---|
| **Product** | ActiveHome | |
| **Model No.** | AH11-22-11 | |
| **Model Discrepancy** | N/A | |
| **Trade** | Upstreem S.A | |
| **Received Date** | March 8, 2021 | |
| **Power Supply** | 1. Power from Adapter.<br>Microsoft Japan Co., Ltd / 1621<br>I/P: 100-240VAC, 50/60Hz, 0.18A<br>O/P: 5.0VDC, 1.2A<br>2. Power from Battery.<br>Rating: 3.7Vdc, 650mAh | |
| **Frequency Range** | Cat-M1 Band 2<br>Channel Bandwidth: 1.4MHz | 1850.7MHz ~1909.2MHz |
| | Cat-M1 Band 2<br>Channel Bandwidth: 3MHz | 1851.5 MHz ~ 1908.4 MHz |
| | Cat-M1 Band 2<br>Channel Bandwidth: 5MHz | 1852.5MHz ~1907.5MHz |
| | Cat-M1 Band 2<br>Channel Bandwidth: 10MHz | 1855MHz ~1905MHz |
| | Cat-M1 Band 2<br>Channel Bandwidth: 15MHz | 1857.5 MHz ~ 1902.5 MHz |
| | Cat-M1 Band 2<br>Channel Bandwidth: 20MHz | 1860MHz ~1900MHz |
| **Modulation Technique** | Cat-M1 Band 2 | QPSK, 16QAM |
| **Antenna Specification** | Antenna type: FPC Antenna / Gain: 4.7 dBi | |

**Remark:**

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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# 3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to C63.26: 2015, FCC CFR 47, Part 2 and Part 24 Subpart E.

## 3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

## 3.2 DESCRIPTION OF TEST MODES

The EUT (Model: AH11-22-11) had been tested under operating condition.
The EUT be set in maximum power transmission via call box during testing.

**LTE Band 2: 1850MHz ~ 1910MHz**
**Three channels had been tested for each channel bandwidth.**

| Channel | 1.4MHz | | 3MHz | | 5MHz | |
|---|---|---|---|---|---|---|
| | Channel | Frequency(MHz) | Channel | Frequency(MHz) | Channel | Frequency(MHz) |
| Lowest | 18607 | 1850.7 | 18615 | 1851.5 | 18625 | 1852.5 |
| Middle | 18900 | 1880.0 | 18900 | 1880.0 | 18900 | 1880.0 |
| Highest | 19193 | 1909.2 | 19184 | 1908.4 | 19175 | 1907.5 |
| **Channel** | **10MHz** | | **15MHz** | | **20MHz** | |
| | **Channel** | **Frequency(MHz)** | **Channel** | **Frequency(MHz)** | **Channel** | **Frequency(MHz)** |
| Lowest | 18650 | 1855.0 | 18675 | 1857.5 | 18700 | 1860.0 |
| Middle | 18900 | 1880.0 | 18900 | 1880.0 | 18900 | 1880.0 |
| Highest | 19150 | 1905.0 | 19125 | 1902.5 | 19100 | 1900.0 |

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### 3.2.1 The worst mode of measurement

| Radiated Emission Measurement Above 1G | |
|---|---|
| **Test Condition** | **Radiated Emission Above 1G** |
| **Power supply Mode** | **Mode 1: EUT power by Adapter**<br>**Mode 2: EUT power by Battery** |
| **Worst Mode** | ☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4** |
| **Worst Position** | ☒ **Placed in fixed position at X-Plane (E2-Plane)** |

| Radiated Emission Measurement Below 1G | |
|---|---|
| **Test Condition** | **Radiated Emission Below 1G** |
| **Power supply Mode** | **Mode 1: EUT power by Adapter**<br>**Mode 2: EUT power by Battery** |
| **Worst Mode** | ☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4** |

*Remark:*
*1. The worst mode was record in this test report.*
*2. EUT pre-scanned in axis X and two polarity, for radiated measurement. The worst case(X-Plane) were recorded in this report*

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# 4. TEST SUMMARY

| FCC Standard Sec. | Report Section | Test Item | Result |
|---|---|---|---|
| - | 2 | Antenna Requirement | Pass |
| 24.232(c) | 8.1 | EIRP Measurement | Pass |
| 2.1055, 24.235 | 8.2 | Frequency Stability v.s. temperature measurement | Pass |
| 2.1049 | 8.3 | Occupied Bandwidth Measurement | Pass |
| 24.232(d) | 8.4 | Peak to Average Ratio | Pass |
| 24.238(a) | 8.5 | Conducted Band Edge | Pass |
| 24.238(a) | 8.6 | Conducted Spurious Emission | Pass |
| 24.238(a) | 8.7 | Spurious Radiation Measurement | Pass |

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# 5. INSTRUMENT CALIBRATION

## 5.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

## 5.2 MEASUREMENT EQUIPMENT USED

**Equipment Used for Emissions Measurement**

**Remark:** Each piece of equipment is scheduled for calibration once a year.

| 3M 966 Chamber Test Site | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model** | **S/N** | **Cal Date** | **Cal Due** |
| Band Reject Filters | MICRO TRONICS | BRM 50702 | 120 | 02/08/2021 | 02/07/2022 |
| Bilog Antenna | Sunol Sciences | JB3 | A030105 | 07/24/2020 | 07/23/2021 |
| Coaxial Cable | HUBER SUHNER | SUCOFLEX 104PEA | 20995 | 02/24/2021 | 02/23/2022 |
| Coaxial Cable | EMCI | EMC105 | 190914+327109/4 | 09/19/2020 | 09/18/2021 |
| Digital Thermo-Hygro Meter | WISEWIND | 1206 | D07 | 01/06/2021 | 01/05/2022 |
| double Ridged Guide Horn Antenna | ETC | MCTD 1209 | DRH13M02003 | 09/30/2020 | 09/29/2021 |
| Loop Ant | COM-POWER | AL-130 | 121051 | 04/07/2021 | 04/06/2022 |
| Pre-Amplifier | EMEC | EM330 | 060609 | 02/24/2021 | 02/23/2022 |
| Pre-Amplifier | HP | 8449B | 3008A00965 | 12/25/2020 | 12/24/2021 |
| PSA Series Spectrum Analyzer | Agilent | E4446A | MY46180323 | 07/24/2020 | 07/23/2021 |
| Antenna Tower | CCS | CC-A-1F | N/A | N.C.R | N.C.R |
| Controller | CCS | CC-C-1F | N/A | N.C.R | N.C.R |
| Turn Table | CCS | CC-T-1F | N/A | N.C.R | N.C.R |
| Software | e3 6.11-20180413 | | | | |

| 3M 966 Chamber Test Site | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model** | **S/N** | **Cal Date** | **Cal Due** |
| Radio Communication Analyzer | Anritsu | MT-8820C | 6201240043 | 07/17/2020 | 07/16/2021 |
| Signal Analyzer | R&S | FSV 40 | 101073 | 09/17/2020 | 09/16/2021 |
| Wideband Radio Communication Tester | R&S | CMW 500 | 116875 | 07/19/2020 | 07/18/2021 |
| Software | e3 6.11-20180413 | | | | |

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| RF Conducted Test Site | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model** | **S/N** | **Cal Date** | **Cal Due** |
| Coaxial Cable | Woken | WC12 | CC001 | 06/29/2020 | 06/28/2021 |
| Coaxial Cable | Woken | WC12 | CC003 | 06/29/2020 | 06/28/2021 |
| Power Divider | Solvang Technology | STI08-0015 | 008 | 08/05/2020 | 08/04/2021 |
| Signal Analyzer | R&S | FSV 40 | 101561 | 08/17/2020 | 08/16/2021 |
| Thermostatic/Humidity Chamber | GWINSTEK | GTC-288MH-CC | TH160402 | 05/07/2020 | 05/06/2021 |
| Radio Communication Analyzer | Anritsu | MT-8821C | 6201300618 | 05/27/2020 | 05/26/2021 |
| Software | N/A | | | | |

**Remark:** Each piece of equipment is scheduled for calibration once a year.

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## 5.3 MEASUREMENT UNCERTAINTY

| PARAMETER | UNCERTAINTY |
|---|---|
| AC Powerline Conducted Emission | +/- 1.2575 |
| Emission bandwidth, 20dB bandwidth | +/- 0.0014 |
| RF output power, conducted | +/- 1.14 |
| Power density, conducted | +/- 1.40 |
| 3M Semi Anechoic Chamber / 30M~200M | +/- 4.12 |
| 3M Semi Anechoic Chamber / 200M~1000M | +/- 4.68 |
| 3M Semi Anechoic Chamber / 1G~8G | +/- 5.18 |
| 3M Semi Anechoic Chamber / 8G~18G | +/- 5.47 |
| 3M Semi Anechoic Chamber / 18G~26G | +/- 3.81 |
| 3M Semi Anechoic Chamber / 26G~40G | +/- 3.87 |

**Remark**: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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# 6. FACILITIES AND ACCREDITATIONS

## 6.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)
Tel: 886-2-2299-9720 / Fax: 886-2-2299-9721

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10: 2013 and CISPR Publication 22.

## 6.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

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# 7. SETUP OF EQUIPMENT UNDER TEST

## 7.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

## 7.2 SUPPORT EQUIPMENT

| No | Equipment | Brand | Model | Series No. | FCC ID |
|---|---|---|---|---|---|
| 1. | DC Power Source | Agilent | E3640A | N/A | N/A |

**Remark:**

*1.* All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

*2.* Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

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# 8. FCC PART 24 REQUIREMENTS

## 8.1 EIRP MEASUREMENT

**LIMIT**

**According to FCC §2.1046**

FCC 24.232(b):

The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

**TEST PROCEDURES**

**CONDUCTED POWER MEASUREMENT:**

1. The transmitter output power was connected to the call box.
2. Set EUT at maximum output power via call box.
3. Set Call box at lowest, middle and highest channels for each band and modulation.

**TEST RESULTS**

No non-compliance noted.

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**Temperature:** 22.4℃ **Humidity:** 52.1% RH
**Tested by:** Dally Hong **Test Date:** April 15, 2021

## LTE Band 2

| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Max. Meas. Avg Pwr (dBm) | | | EIRP Power(dBm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 18607 | 18900 | 19193 | 18607 | 18900 | 19193 |
| | | | | | | 1850.7 MHz | 1880 MHz | 1909.3 MHz | 1850.7 MHz | 1880 MHz | 1909.3 MHz |
| LTE Band 2 | 1.4 | QPSK | 1 | 0 | 0 | 21.94 | 21.74 | 21.62 | **26.64** | 26.44 | 26.32 |
| | | | 1 | 2 | 0 | 21.93 | 21.71 | 21.58 | 26.63 | 26.41 | 26.28 |
| | | | 1 | 5 | 0 | 21.81 | 21.45 | 21.39 | 26.51 | 26.15 | 26.09 |
| | | | 3 | 0 | 0 | 20.73 | 20.67 | 20.68 | 25.43 | 25.37 | 25.38 |
| | | | 3 | 2 | 0 | 20.71 | 20.38 | 20.64 | 25.41 | 25.08 | 25.34 |
| | | | 3 | 3 | 0 | 20.70 | 20.28 | 20.61 | 25.40 | 24.98 | 25.31 |
| | | | 6 | 0 | 0 | 19.77 | 19.45 | 19.76 | 24.47 | 24.15 | 24.46 |
| | | 16QAM | 1 | 0 | 0 | 20.89 | 20.96 | 20.84 | 25.59 | 25.66 | 25.54 |
| | | | 1 | 2 | 0 | 20.82 | 20.76 | 20.68 | 25.52 | 25.46 | 25.38 |
| | | | 1 | 5 | 0 | 20.68 | 20.37 | 20.57 | 25.38 | 25.07 | 25.27 |
| | | | 3 | 0 | 0 | 20.02 | 19.63 | 19.65 | 24.72 | 24.33 | 24.35 |
| | | | 3 | 2 | 0 | 19.86 | 19.32 | 19.43 | 24.56 | 24.02 | 24.13 |
| | | | 3 | 3 | 0 | 19.41 | 19.20 | 19.30 | 24.11 | 23.90 | 24.00 |
| | | | 5 | 0 | 0 | 19.69 | 19.67 | 19.95 | 24.39 | 24.37 | 24.65 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Max. Meas. Avg Pwr (dBm) | | | EIRP Power(dBm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 18615 | 18900 | 19185 | 18615 | 18900 | 19185 |
| | | | | | | 1851.5 MHz | 1880 MHz | 1908.5 MHz | 1851.5 MHz | 1880 MHz | 1908.5 MHz |
| LTE Band 2 | 3 | QPSK | 1 | 0 | 0 | 21.50 | 21.41 | 21.65 | 26.20 | 26.11 | 26.35 |
| | | | 1 | 2 | 0 | 21.57 | 21.42 | 21.67 | 26.27 | 26.12 | **26.37** |
| | | | 1 | 5 | 0 | 21.30 | 21.20 | 21.43 | 26.00 | 25.90 | 26.13 |
| | | | 3 | 0 | 0 | 20.61 | 20.14 | 20.54 | 25.31 | 24.84 | 25.24 |
| | | | 3 | 2 | 0 | 20.59 | 20.12 | 20.51 | 25.29 | 24.82 | 25.21 |
| | | | 3 | 3 | 0 | 20.50 | 20.02 | 20.49 | 25.20 | 24.72 | 25.19 |
| | | | 6 | 0 | 0 | 19.54 | 19.19 | 19.66 | 24.24 | 23.89 | 24.36 |
| | | 16QAM | 1 | 0 | 0 | 20.66 | 20.15 | 20.92 | 25.36 | 24.85 | 25.62 |
| | | | 1 | 2 | 0 | 20.62 | 20.11 | 20.71 | 25.32 | 24.81 | 25.41 |
| | | | 1 | 5 | 0 | 20.41 | 20.10 | 20.68 | 25.11 | 24.80 | 25.38 |
| | | | 3 | 0 | 0 | 19.31 | 19.08 | 19.48 | 24.01 | 23.78 | 24.18 |
| | | | 3 | 2 | 0 | 19.29 | 18.86 | 19.27 | 23.99 | 23.56 | 23.97 |
| | | | 3 | 3 | 0 | 19.52 | 18.84 | 19.15 | 24.22 | 23.54 | 23.85 |
| | | | 5 | 0 | 0 | 19.60 | 19.26 | 19.76 | 24.30 | 23.96 | 24.46 |

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| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Max. Meas. Avg Pwr (dBm) | | | EIRP Power(dBm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 18625 | 18900 | 19175 | 18625 | 18900 | 19175 |
| | | | | | | 1852.5 MHz | 1880 MHz | 1907.5 MHz | 1852.5 MHz | 1880 MHz | 1907.5 MHz |
| LTE Band 2 | 5 | QPSK | 1 | 0 | 0 | 21.46 | 21.54 | 21.50 | 26.16 | 26.24 | 26.20 |
| | | | 1 | 2 | 0 | 21.40 | 21.39 | 21.55 | 26.10 | 26.09 | 26.25 |
| | | | 1 | 5 | 0 | 21.14 | 21.13 | 21.29 | 25.84 | 25.83 | 25.99 |
| | | | 3 | 0 | 0 | 21.40 | 21.35 | 21.73 | 26.10 | 26.05 | 26.43 |
| | | | 3 | 2 | 0 | 21.38 | 21.32 | 21.78 | 26.08 | 26.02 | 26.48 |
| | | | 3 | 3 | 0 | 21.37 | 21.26 | 21.70 | 26.07 | 25.96 | 26.40 |
| | | | 6 | 0 | 0 | 20.55 | 20.15 | 20.76 | 25.25 | 24.85 | 25.46 |
| | | 16QAM | 1 | 0 | 0 | 21.62 | 21.44 | 21.84 | 26.32 | 26.14 | 26.54 |
| | | | 1 | 2 | 0 | 21.56 | 21.38 | 21.90 | 26.26 | 26.08 | **26.60** |
| | | | 1 | 5 | 0 | 21.38 | 21.19 | 21.68 | 26.08 | 25.89 | 26.38 |
| | | | 3 | 0 | 0 | 21.46 | 21.38 | 21.73 | 26.16 | 26.08 | 26.43 |
| | | | 3 | 2 | 0 | 21.39 | 21.33 | 21.84 | 26.09 | 26.03 | 26.54 |
| | | | 3 | 3 | 0 | 21.35 | 21.06 | 21.68 | 26.05 | 25.76 | 26.38 |
| | | | 5 | 0 | 0 | 20.73 | 20.50 | 21.00 | 25.43 | 25.20 | 25.70 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Max. Meas. Avg Pwr (dBm) | | | EIRP Power(dBm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 18650 | 18900 | 18150 | 18650 | 18900 | 18150 |
| | | | | | | 1855 MHz | 1880 MHz | 1905 MHz | 1855 MHz | 1880 MHz | 1905 MHz |
| LTE Band 2 | 10 | QPSK | 1 | 0 | 0 | 21.45 | 21.32 | 21.92 | 26.15 | 26.02 | 26.62 |
| | | | 1 | 2 | 0 | 21.48 | 21.25 | 21.89 | 26.18 | 25.95 | 26.59 |
| | | | 1 | 5 | 0 | 21.30 | 21.14 | 21.85 | 26.00 | 25.84 | 26.55 |
| | | | 3 | 0 | 0 | 21.54 | 21.54 | 21.94 | 26.24 | 26.24 | 26.64 |
| | | | 3 | 2 | 0 | 21.52 | 21.37 | 21.91 | 26.22 | 26.07 | 26.61 |
| | | | 3 | 3 | 0 | 21.46 | 21.22 | 21.84 | 26.16 | 25.92 | 26.54 |
| | | | 6 | 0 | 0 | 20.66 | 20.32 | 20.90 | 25.36 | 25.02 | 25.60 |
| | | 16QAM | 1 | 0 | 0 | 21.54 | 21.43 | 21.98 | 26.24 | 26.13 | **26.68** |
| | | | 1 | 2 | 0 | 21.47 | 21.36 | 21.93 | 26.17 | 26.06 | 26.63 |
| | | | 1 | 5 | 0 | 21.28 | 21.19 | 21.91 | 25.98 | 25.89 | 26.61 |
| | | | 3 | 0 | 0 | 21.53 | 21.47 | 21.79 | 26.23 | 26.17 | 26.49 |
| | | | 3 | 2 | 0 | 21.45 | 21.38 | 21.76 | 26.15 | 26.08 | 26.46 |
| | | | 3 | 3 | 0 | 21.39 | 21.24 | 21.74 | 26.09 | 25.94 | 26.44 |
| | | | 5 | 0 | 0 | 21.57 | 21.45 | 21.87 | 26.27 | 26.15 | 26.57 |

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| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Max. Meas. Avg Pwr (dBm) | | | EIRP Power(dBm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 18675 | 18900 | 19125 | 18675 | 18900 | 19125 |
| | | | | | | 1857.5 MHz | 1880 MHz | 1902.5 MHz | 1857.5 MHz | 1880 MHz | 1902.5 MHz |
| LTE Band 2 | 15 | QPSK | 1 | 0 | 0 | 21.59 | 21.51 | 21.50 | 26.29 | 26.21 | 26.20 |
| | | | 1 | 2 | 0 | 21.48 | 21.37 | 21.43 | 26.18 | 26.07 | 26.13 |
| | | | 1 | 5 | 0 | 21.21 | 21.08 | 21.30 | 25.91 | 25.78 | 26.00 |
| | | | 3 | 0 | 0 | 21.46 | 21.45 | 21.75 | 26.16 | 26.15 | 26.45 |
| | | | 3 | 2 | 0 | 21.51 | 21.46 | 21.77 | 26.21 | 26.16 | **26.47** |
| | | | 3 | 3 | 0 | 21.42 | 21.47 | 21.58 | 26.12 | 26.17 | 26.28 |
| | | | 6 | 0 | 0 | 21.74 | 21.52 | 21.64 | 26.44 | 26.22 | 26.34 |
| | | 16QAM | 1 | 0 | 0 | 21.60 | 21.49 | 21.76 | 26.30 | 26.19 | 26.46 |
| | | | 1 | 2 | 0 | 21.52 | 21.44 | 21.69 | 26.22 | 26.14 | 26.39 |
| | | | 1 | 5 | 0 | 21.32 | 21.16 | 21.49 | 26.02 | 25.86 | 26.19 |
| | | | 3 | 0 | 0 | 21.48 | 21.46 | 21.56 | 26.18 | 26.16 | 26.26 |
| | | | 3 | 2 | 0 | 21.43 | 21.41 | 21.65 | 26.13 | 26.11 | 26.35 |
| | | | 3 | 3 | 0 | 21.34 | 21.31 | 21.55 | 26.04 | 26.01 | 26.25 |
| | | | 5 | 0 | 0 | 21.65 | 21.39 | 21.73 | 26.35 | 26.09 | 26.43 |

| Band | BW (MHz) | Mode | RB Allocation | RB offset | MPR | Max. Meas. Avg Pwr (dBm) | | | EIRP Power(dBm) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 18700 | 18900 | 19100 | 18700 | 18900 | 19100 |
| | | | | | | 1860 MHz | 1880 MHz | 1900 MHz | 1860 MHz | 1880 MHz | 1900 MHz |
| LTE Band 2 | 20 | QPSK | 1 | 0 | 0 | 21.65 | 21.45 | 21.60 | 26.35 | 26.15 | 26.30 |
| | | | 1 | 2 | 0 | 21.57 | 21.31 | 21.43 | 26.27 | 26.01 | 26.13 |
| | | | 1 | 5 | 0 | 21.17 | 21.07 | 21.19 | 25.87 | 25.77 | 25.89 |
| | | | 3 | 0 | 0 | 21.50 | 21.37 | 21.57 | 26.20 | 26.07 | 26.27 |
| | | | 3 | 2 | 0 | 21.50 | 21.34 | 21.54 | 26.20 | 26.04 | 26.24 |
| | | | 3 | 3 | 0 | 21.43 | 21.26 | 21.47 | 26.13 | 25.96 | 26.17 |
| | | | 6 | 0 | 0 | 21.57 | 21.38 | 21.51 | 26.27 | 26.08 | 26.21 |
| | | 16QAM | 1 | 0 | 0 | 21.62 | 21.54 | 21.56 | 26.32 | 26.24 | 26.26 |
| | | | 1 | 2 | 0 | 21.56 | 21.39 | 21.55 | 26.26 | 26.09 | 26.25 |
| | | | 1 | 5 | 0 | 21.40 | 21.27 | 21.39 | 26.10 | 25.97 | 26.09 |
| | | | 3 | 0 | 0 | 21.55 | 21.41 | 21.50 | 26.25 | 26.11 | 26.20 |
| | | | 3 | 2 | 0 | 21.53 | 21.52 | 21.75 | 26.23 | 26.22 | **26.45** |
| | | | 3 | 3 | 0 | 21.48 | 21.43 | 21.73 | 26.18 | 26.13 | 26.43 |
| | | | 5 | 0 | 0 | 21.59 | 21.40 | 21.54 | 26.29 | 26.10 | 26.24 |

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## 8.2 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

### LIMIT

**According to FCC §2.1055, FCC §24.235.**

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### Test Procedure

Use Anritsu 8821 with frequency Error measurement capability.
Temp = -20℃ to +50℃
Voltage= 85% to 115% of the nominal value for AC powered equipment.

**NOTE:** The frequency error was recorded frequency error from the communication simulator.

### TEST RESULTS

No non-compliance noted.

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# TEST RESULTS

**Temperature:** 22.4℃ **Humidity:** 52.1% RH

**Tested by:** Dally Hong **Test Date:** April 15, 2021

## FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

| Band2_10M_QPSK_Full RB | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Channel** | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | |
| **Freq. (MHz)** | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | |
| **Test Time** | **0 Minutes** | | | **2 Minutes** | | | **5 Minutes** | | | **10 Minutes** | | | **0 Minutes** | | | **2 Minutes** | | | **5 Minutes** | | | **10 Minutes** | | | |
| Temp. | Deviation | | | | | | | | | | | | | | | | | | | | | | | | Limit |
| (℃) | (Hz) | | | | | | | | | | | | (ppm) | | | | | | | | | | | | |
| -20 | 3.4 | 2.8 | -5.2 | 7.1 | -1.9 | 4.7 | 3.3 | -2.8 | 6.5 | 3.9 | 7.2 | -6.4 | 0.002 | 0.001 | -0.003 | 0.004 | -0.001 | 0.002 | 0.002 | -0.001 | 0.003 | 0.002 | 0.004 | -0.003 | 0.1 |
| -10 | 9.3 | 5.4 | 6.7 | 11.3 | -4.8 | 3.7 | 5.5 | -3.1 | 7.5 | 2.6 | 4.9 | -12.5 | 0.005 | 0.003 | 0.004 | 0.006 | -0.003 | 0.002 | 0.003 | -0.002 | 0.004 | 0.001 | 0.003 | -0.007 | 0.1 |
| 0 | 6.6 | 3.5 | 7.1 | -2.5 | -3.0 | 2.2 | 5.7 | 3.8 | -6.7 | -2.9 | -3.6 | 4.8 | 0.004 | 0.002 | 0.004 | -0.001 | -0.002 | 0.001 | 0.003 | 0.002 | -0.004 | -0.002 | -0.002 | 0.003 | 0.1 |
| 10 | -7.5 | 4.2 | 6.8 | 4.0 | 5.4 | 0.8 | -3.3 | -4.4 | 6.9 | -7.2 | 3.6 | 5.9 | -0.004 | 0.002 | 0.004 | 0.002 | 0.003 | 0.000 | -0.002 | -0.002 | 0.004 | -0.004 | 0.002 | 0.003 | 0.1 |
| 20 | -1.1 | 6.5 | 7.1 | 9.6 | 4.2 | 4.4 | 9.4 | -3.7 | 1.6 | 7.4 | 8.7 | 3.3 | -0.001 | 0.003 | 0.004 | 0.005 | 0.002 | 0.002 | 0.005 | -0.002 | 0.001 | 0.004 | 0.005 | 0.002 | 0.1 |
| 30 | 3.9 | 6.6 | -3.4 | 2.2 | 2.9 | 1.5 | 8.1 | 4.5 | -3.5 | 7.4 | 6.5 | -1.4 | 0.002 | 0.004 | -0.002 | 0.001 | 0.002 | 0.001 | 0.004 | 0.002 | -0.002 | 0.004 | 0.003 | -0.001 | 0.1 |
| 40 | -0.8 | 5.1 | 3.7 | 9.8 | 7.4 | 2.2 | 3.1 | -4.0 | -2.1 | 1.3 | 8.2 | 6.5 | 0.000 | 0.003 | 0.002 | 0.005 | 0.004 | 0.001 | 0.002 | -0.002 | -0.001 | 0.001 | 0.004 | 0.003 | 0.1 |
| 50 | 6.6 | 8.8 | 13.7 | -3.4 | -2.4 | 8.2 | 4.6 | -3.1 | 1.6 | 0.5 | 0.7 | 1.4 | 0.004 | 0.005 | 0.007 | -0.002 | -0.001 | 0.004 | 0.002 | -0.002 | 0.001 | 0.000 | 0.000 | 0.001 | 0.1 |

## FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

| Band2_10M_QPSK_Full RB | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Channel** | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | 18650 | 18900 | 19150 | |
| **Freq. (MHz)** | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | 1855 | 1880 | 1905 | |
| **Test Time** | **0 Minutes** | | | **2 Minutes** | | | **5 Minutes** | | | **10 Minutes** | | | **0 Minutes** | | | **2 Minutes** | | | **5 Minutes** | | | **10 Minutes** | | | |
| **Voltage** | Deviation | | | | | | | | | | | | | | | | | | | | | | | | Limit |
| **[V]** | (Hz) | | | | | | | | | | | | (ppm) | | | | | | | | | | | | |
| 5.75 | 2.1 | -3.3 | 5.2 | 0.5 | -3.7 | 2.8 | 6.4 | -4.2 | 8.1 | 3.0 | 14.1 | 7.5 | 0.001 | -0.002 | 0.003 | 0.000 | -0.002 | 0.001 | 0.003 | -0.002 | 0.004 | 0.002 | 0.008 | 0.004 | 0.1 |
| 5 | 5.5 | 7.9 | 3.0 | -2.1 | 4.4 | -3.2 | 1.8 | 3.4 | -6.4 | 7.2 | 5.5 | 6.3 | 0.003 | 0.004 | 0.002 | -0.001 | 0.002 | -0.002 | 0.001 | 0.002 | -0.003 | 0.004 | 0.003 | 0.003 | 0.1 |
| 4.25 | 0.4 | 6.2 | 1.1 | -4.2 | 6.5 | 8.9 | 4.7 | -4.4 | 5.2 | 16.2 | 12.1 | 13.7 | 0.000 | 0.003 | 0.001 | -0.002 | 0.003 | 0.005 | 0.003 | -0.002 | 0.003 | 0.009 | 0.006 | 0.007 | 0.1 |

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## 8.3 OCCUPIED BANDWIDTH MEASUREMENT

### Limits

For Reporting purposes only.

### TEST PROCEDURES

KDB 971168 D01

1. The occupied bandwidth was measured with the spectrum analyzer at the lowest, middle and highest channels in each band and different modulation. The 99% and -26dB bandwidth was measured and recorded.
2. RBW = 1-5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max. hold

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## Test Result

| | | | |
|---|---|---|---|
| **Temperature:** | 21.5℃ | **Humidity:** | 56.2% RH |
| **Tested by:** | Dally Hong | **Test Date:** | March 29, 2021 |
| **Temperature:** | 23.7℃ | **Humidity:** | 52.4% RH |
| **Tested by:** | Dally Hong | **Test Date:** | April 13, 2021 |
| **Temperature:** | 23.1℃ | **Humidity:** | 52.5% RH |
| **Tested by:** | Dally Hong | **Test Date:** | April 14, 2021 |

## LTE Band 2

| Frequency (MHz) | Channel | 99%BW(MHz) | | 26dB BW(MHz) | |
|---|---|---|---|---|---|
| | | QPSK | 16QAM | QPSK | 16QAM |
| **Band 2 Channel Bandwidth 1.4MHz** | | | | | |
| 1850.7 | 18607 | 1.1027 | 0.9291 | 1.3329 | 1.1331 |
| 1880 | 18900 | 1.1027 | 0.9334 | 1.3415 | 1.1288 |
| 1909.3 | 19193 | 1.1027 | 0.9334 | 1.3372 | 1.1476 |
| **Band 2 Channel Bandwidth 3MHz** | | | | | |
| 1851.5 | 18615 | 1.1027 | 0.9291 | 1.3198 | 0.8953 |
| 1880 | 18900 | 1.1027 | 0.9291 | 1.3155 | 1.1201 |
| 1908.5 | 19185 | 1.1027 | 0.9291 | 1.3259 | 1.1392 |
| **Band 2 Channel Bandwidth 5MHz** | | | | | |
| 1852.5 | 18625 | 1.0680 | 0.9204 | 1.1679 | 1.0289 |
| 1880 | 18900 | 1.0984 | 0.9334 | 1.3230 | 1.1710 |
| 1907.5 | 19175 | 1.1027 | 0.9501 | 1.3376 | 1.3463 |
| **Band 2 Channel Bandwidth 10MHz** | | | | | |
| 1855 | 18650 | 1.0984 | 0.9378 | 1.3111 | 1.2677 |
| 1880 | 18900 | 1.0941 | 0.9378 | 1.2721 | 1.2721 |
| 1905 | 19150 | 1.0941 | 0.9465 | 1.3155 | 1.2894 |
| **Band 2 Channel Bandwidth 15MHz** | | | | | |
| 1857.5 | 18675 | 1.1071 | 0.9334 | 1.3415 | 1.3068 |
| 1880 | 18900 | 1.1071 | 0.9334 | 1.3415 | 1.3154 |
| 1902.5 | 19125 | 1.1071 | 0.9378 | 1.3502 | 1.3459 |
| **Band 2 Channel Bandwidth 20MHz** | | | | | |
| 1860 | 18700 | 1.0984 | 0.9421 | 1.3329 | 1.3155 |
| 1880 | 18900 | 1.0984 | 0.9421 | 1.3372 | 1.3546 |
| 1900 | 19100 | 1.0984 | 0.9421 | 1.3763 | 1.3546 |

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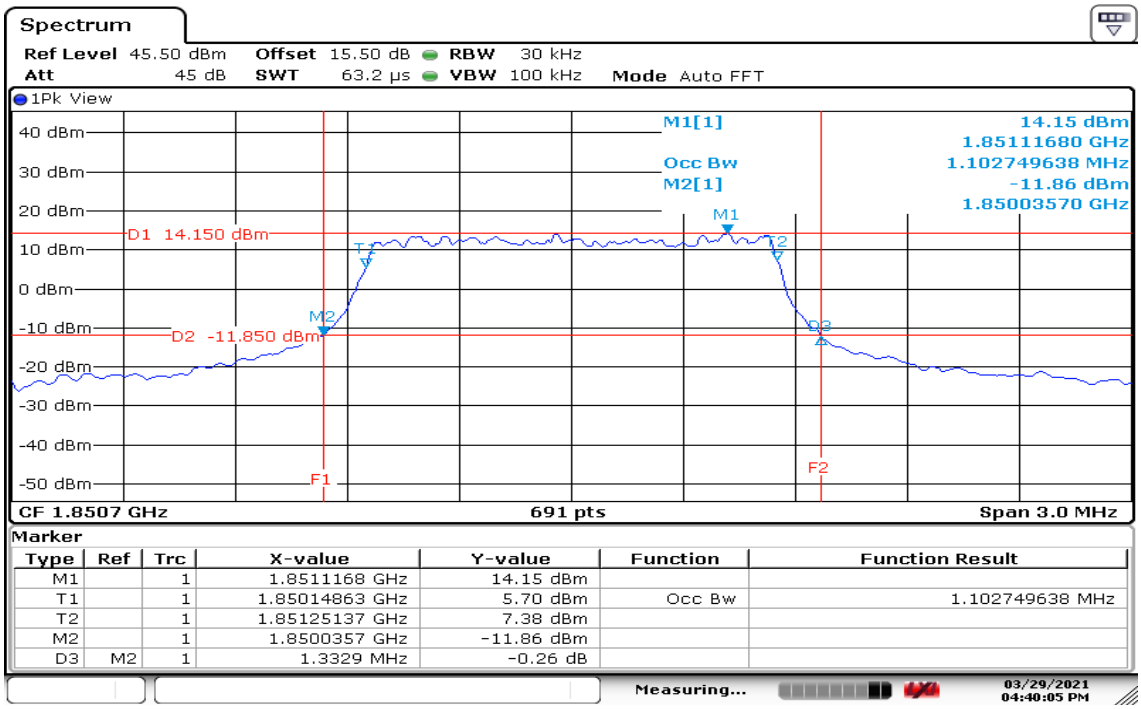
# LTE Band 2

## 26dB & OBW (99%) / QPSK

## BW: 1.4MHz

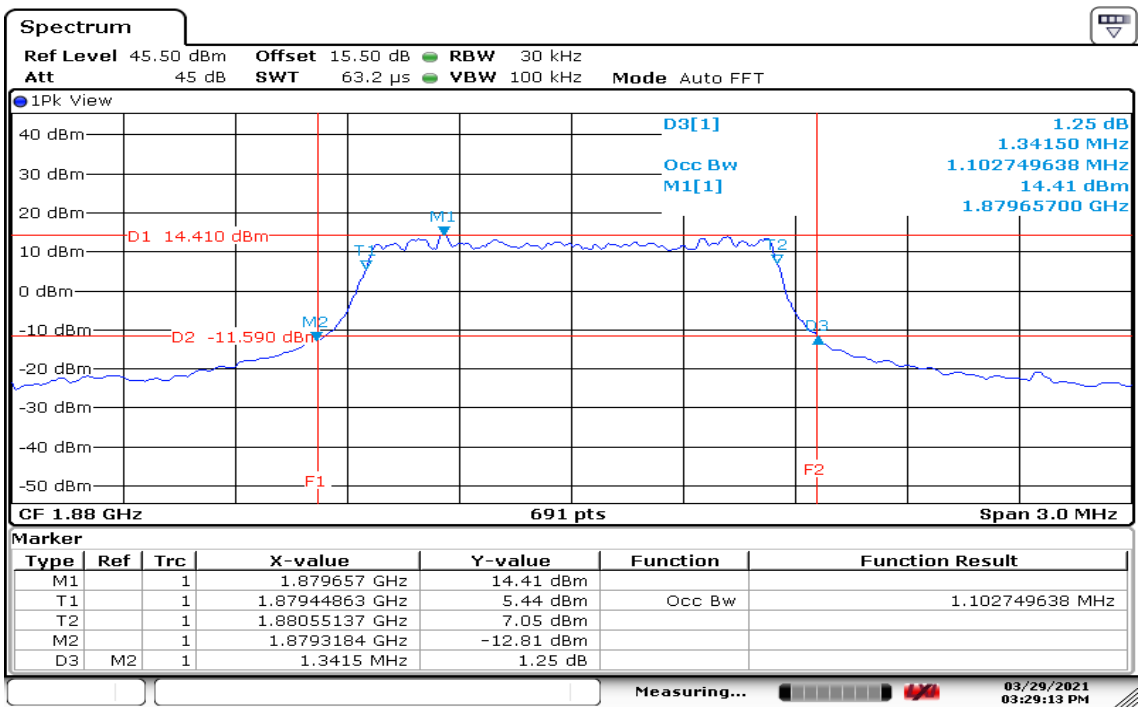
## CH Low




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.8511168 GHz | 14.15 dBm | | |
| T1 | | 1 | 1.85014863 GHz | 5.70 dBm | Occ Bw | 1.102749638 MHz |
| T2 | | 1 | 1.85125137 GHz | 7.38 dBm | | |
| M2 | | 1 | 1.8500357 GHz | -11.86 dBm | | |
| D3 | M2 | 1 | 1.3329 MHz | -0.26 dB | | |

Date: 29 MAR 2021 16:40:06

## CH Mid




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.879657 GHz | 14.41 dBm | | |
| T1 | | 1 | 1.87944863 GHz | 5.44 dBm | Occ Bw | 1.102749638 MHz |
| T2 | | 1 | 1.88055137 GHz | 7.05 dBm | | |
| M2 | | 1 | 1.8793184 GHz | -12.81 dBm | | |
| D3 | M2 | 1 | 1.3415 MHz | 1.25 dB | | |

Date: 29 MAR 2021 15:29:13

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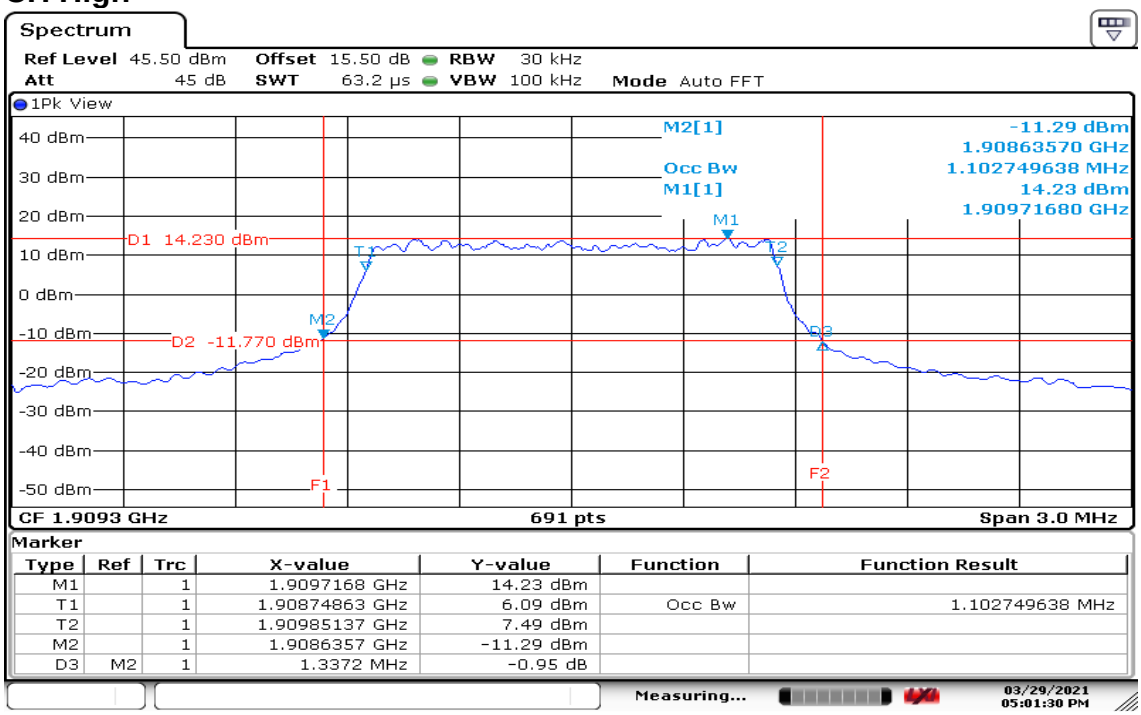
## CH High




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 1.9097168 GHz | 14.23 dBm | | |
| T1 | | 1 | 1.90874863 GHz | 6.09 dBm | Occ Bw | 1.102749638 MHz |
| T2 | | 1 | 1.90985137 GHz | 7.49 dBm | | |
| M2 | | 1 | 1.9086357 GHz | -11.29 dBm | | |
| D3 | M2 | 1 | 1.3372 MHz | -0.95 dB | | |

Date: 29.MAR.2021 17:01:30

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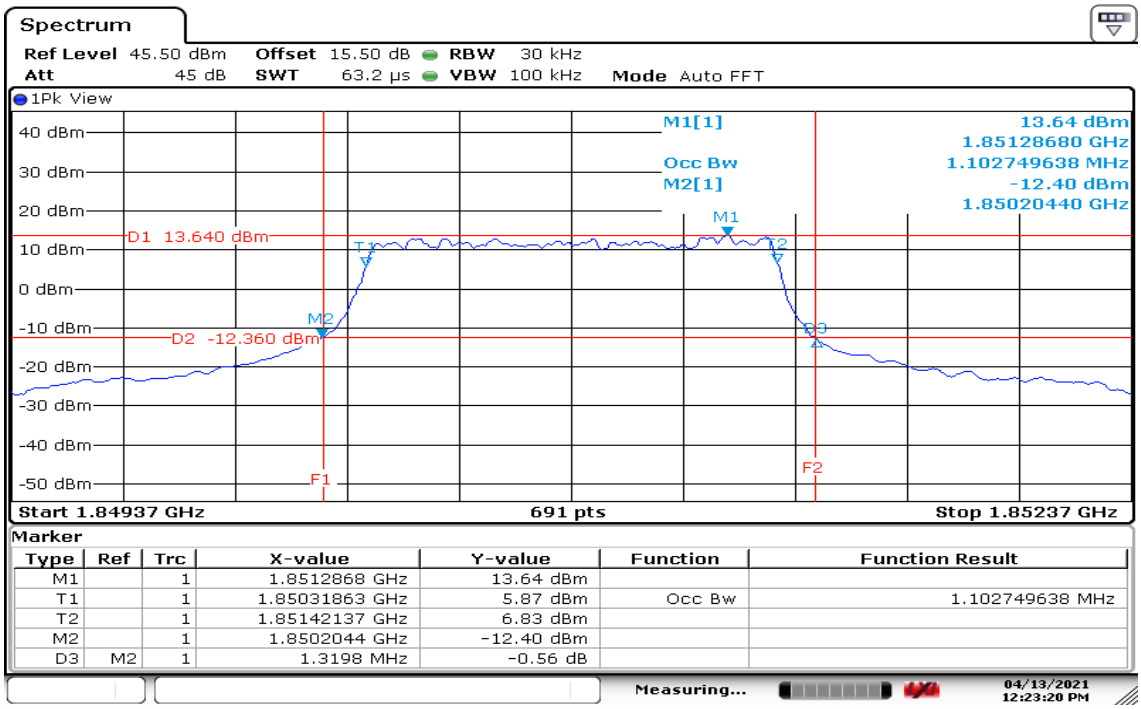
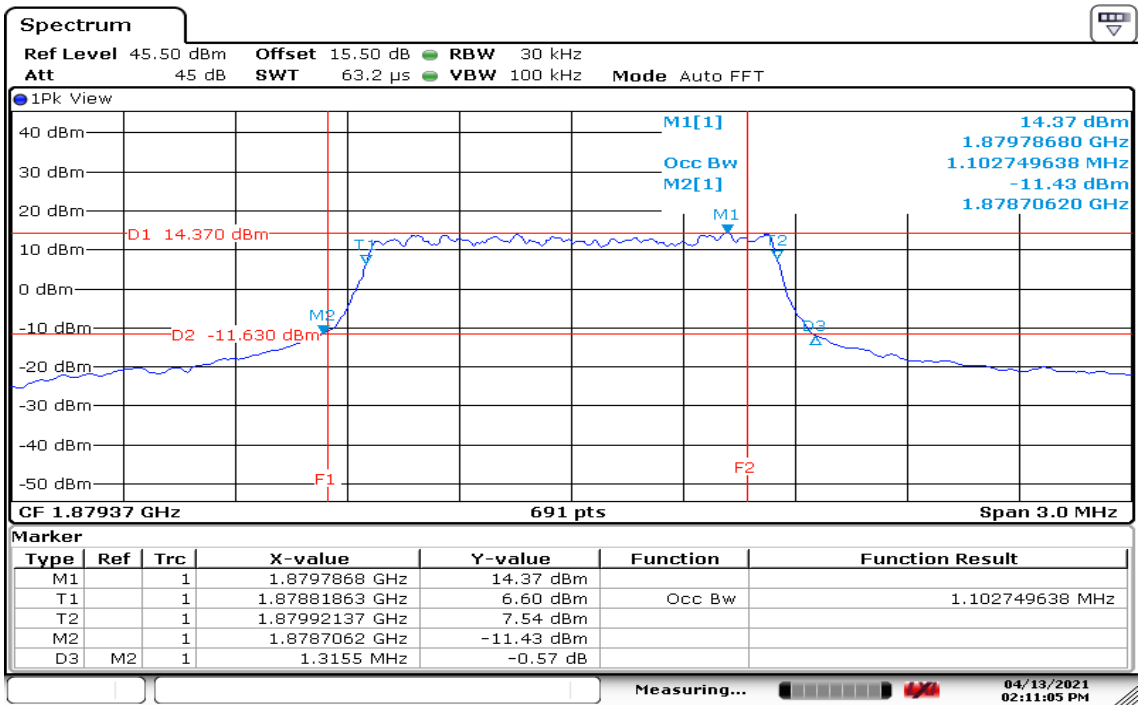
## BW: 3MHz

## CH Low




Date:13.APR.2021 12:23:21

## CH Mid




Date:13.APR.2021 14:11:05

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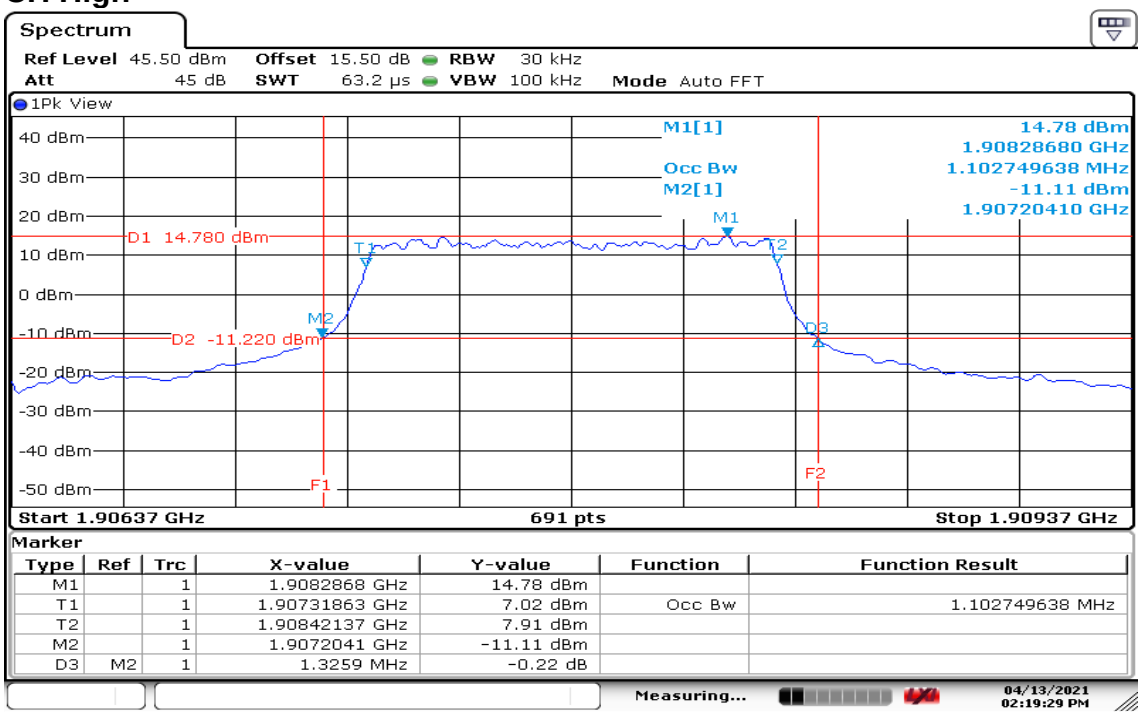
## CH High




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 1.9082868 GHz | 14.78 dBm | | |
| T1 | | 1 | 1.90731863 GHz | 7.02 dBm | Occ Bw | 1.102749638 MHz |
| T2 | | 1 | 1.90842137 GHz | 7.91 dBm | | |
| M2 | | 1 | 1.9072041 GHz | -11.11 dBm | | |
| D3 | M2 | 1 | 1.3259 MHz | -0.22 dB | | |

Date: 13.APR.2021 14:19:29

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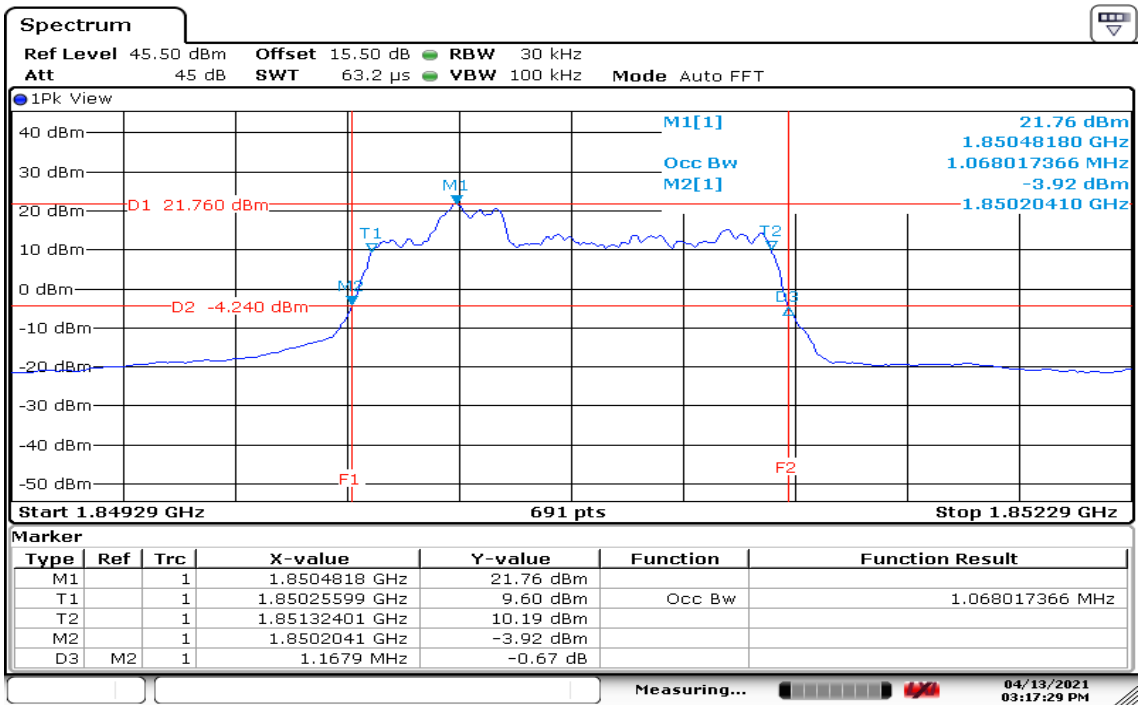
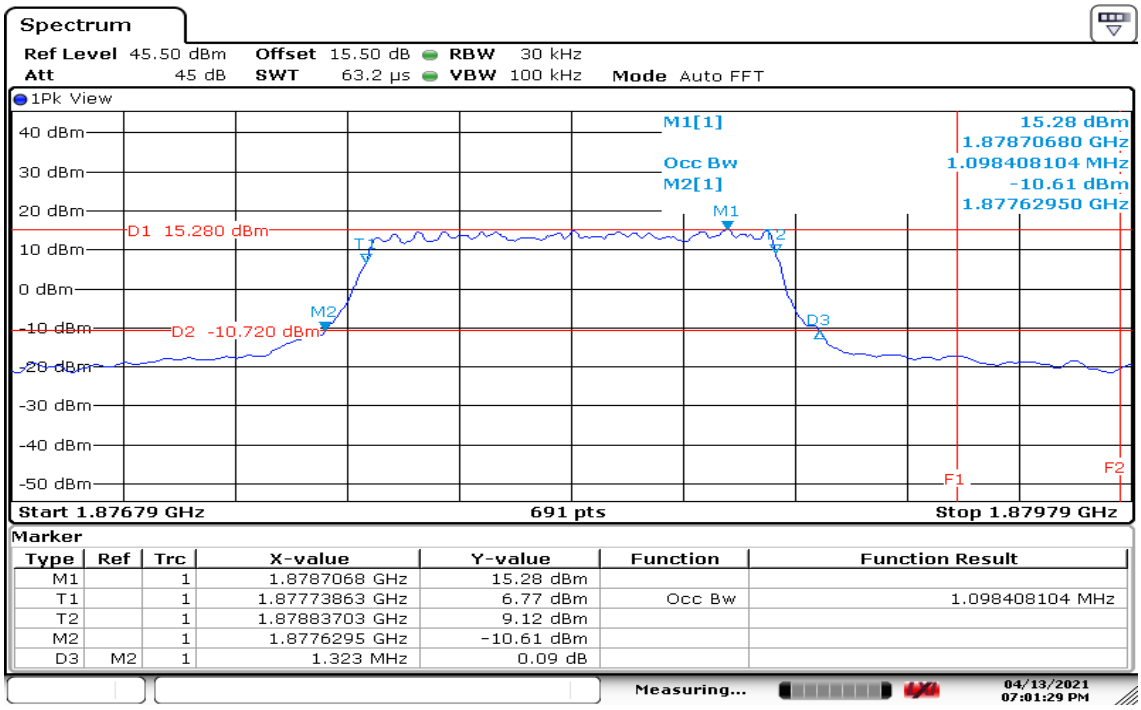
## BW: 5MHz
## CH Low




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.8504818 GHz | 21.76 dBm | | |
| T1 | | 1 | 1.85025599 GHz | 9.60 dBm | Occ Bw | 1.068017366 MHz |
| T2 | | 1 | 1.85132401 GHz | 10.19 dBm | | |
| M2 | | 1 | 1.8502041 GHz | -3.92 dBm | | |
| D3 | M2 | 1 | 1.1679 MHz | -0.67 dB | | |

Date:13.APR.2021 15:17:29

## CH Mid




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.8787068 GHz | 15.28 dBm | | |
| T1 | | 1 | 1.87773863 GHz | 6.77 dBm | Occ Bw | 1.098408104 MHz |
| T2 | | 1 | 1.87883703 GHz | 9.12 dBm | | |
| M2 | | 1 | 1.8776295 GHz | -10.61 dBm | | |
| D3 | M2 | 1 | 1.323 MHz | 0.09 dB | | |

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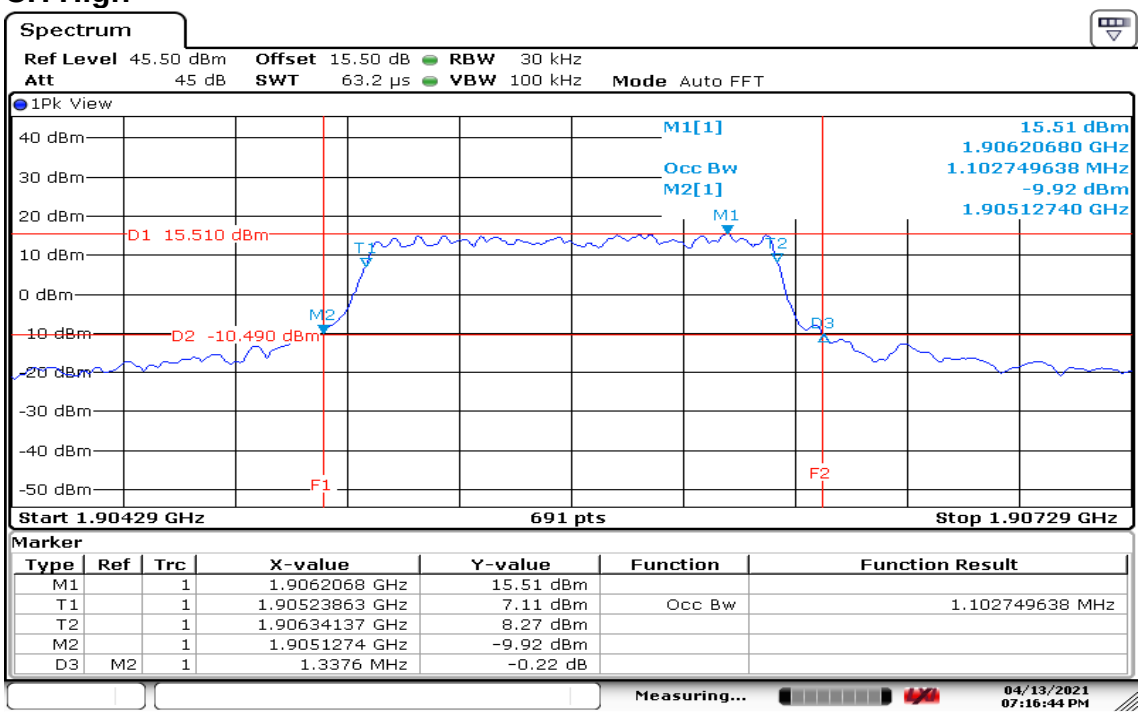
## CH High




Date: 13.APR.2021 19:16:45

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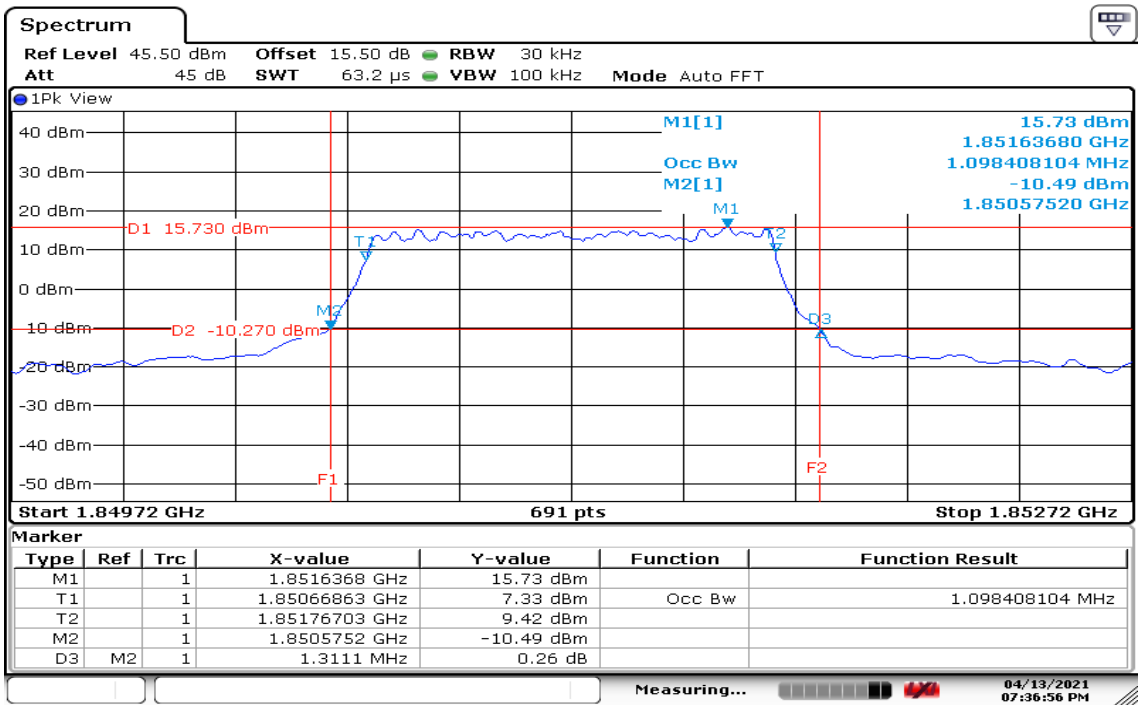
## BW: 10MHz

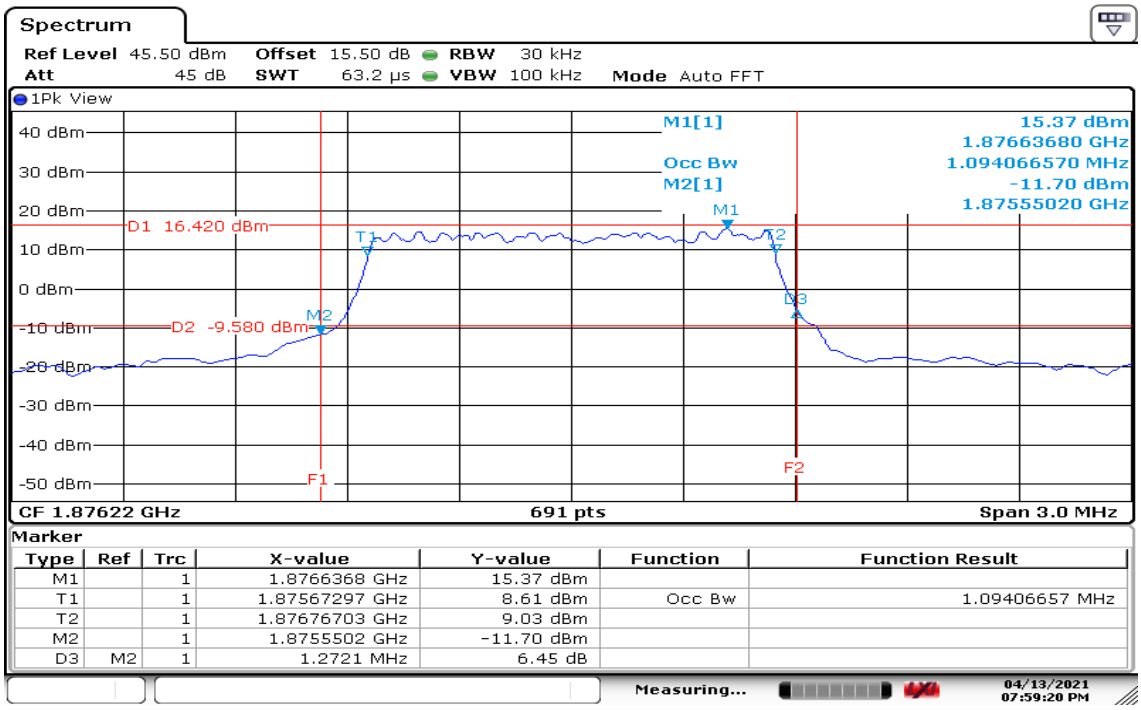
## CH Low




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.8516368 GHz | 15.73 dBm | | |
| T1 | | 1 | 1.85066863 GHz | 7.33 dBm | Occ Bw | 1.098408104 MHz |
| T2 | | 1 | 1.85176703 GHz | 9.42 dBm | | |
| M2 | | 1 | 1.8505752 GHz | -10.49 dBm | | |
| D3 | M2 | 1 | 1.3111 MHz | 0.26 dB | | |

Date:13.APR.2021 19:36:56

## CH Mid




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.8766368 GHz | 15.37 dBm | | |
| T1 | | 1 | 1.87567297 GHz | 8.61 dBm | Occ Bw | 1.09406657 MHz |
| T2 | | 1 | 1.87676703 GHz | 9.03 dBm | | |
| M2 | | 1 | 1.8755502 GHz | -11.70 dBm | | |
| D3 | M2 | 1 | 1.2721 MHz | 6.45 dB | | |

Date:13.APR.2021 19:59:21

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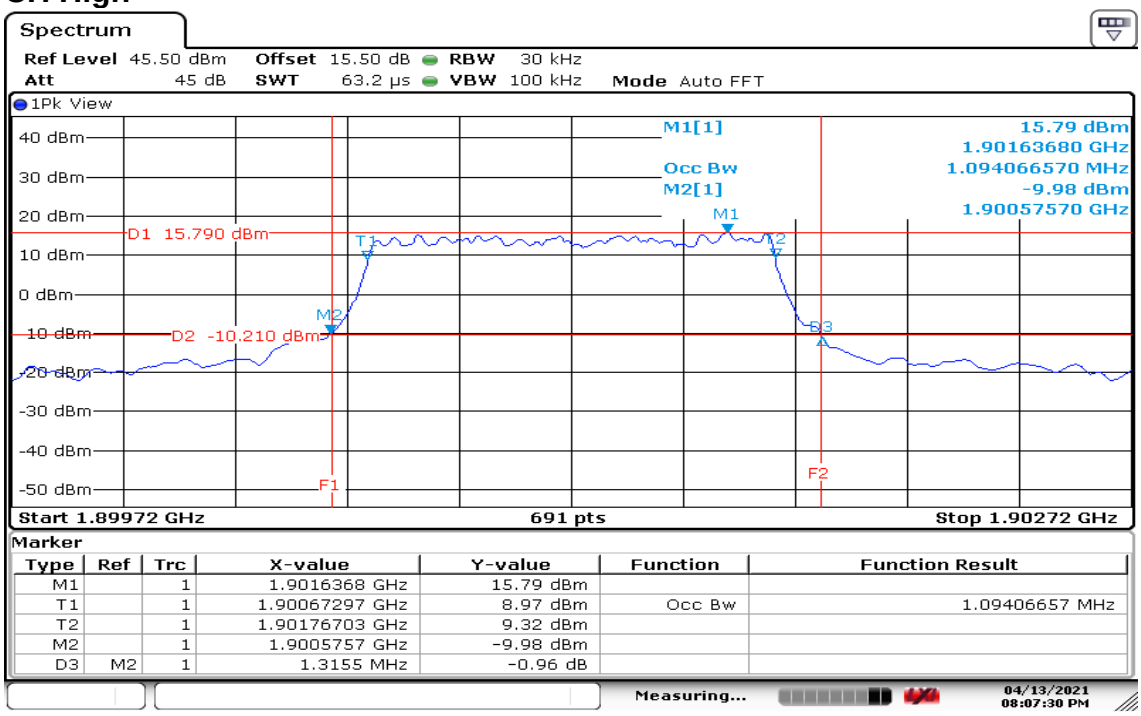
## CH High




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 1.9016368 GHz | 15.79 dBm | | |
| T1 | | 1 | 1.90067297 GHz | 8.97 dBm | Occ Bw | 1.09406657 MHz |
| T2 | | 1 | 1.90176703 GHz | 9.32 dBm | | |
| M2 | | 1 | 1.9005757 GHz | -9.98 dBm | | |
| D3 | M2 | 1 | 1.3155 MHz | -0.96 dB | | |

Measuring... 04/13/2021 08:07:30 PM

Date: 13.APR.2021 20:07:30

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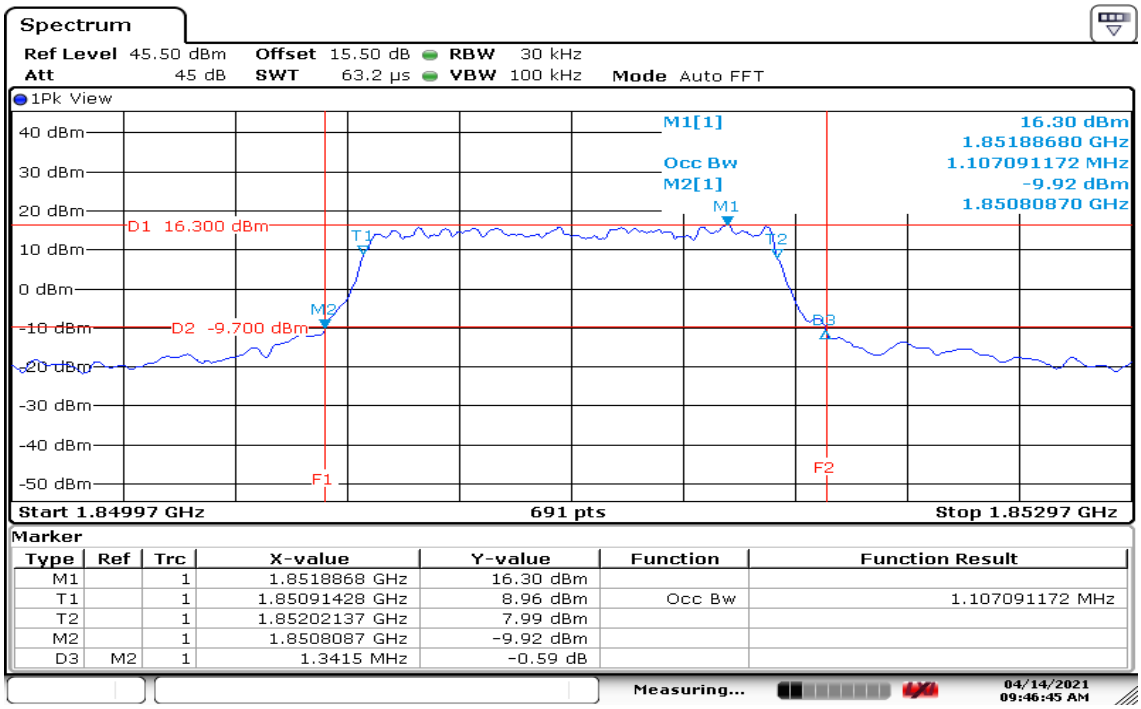
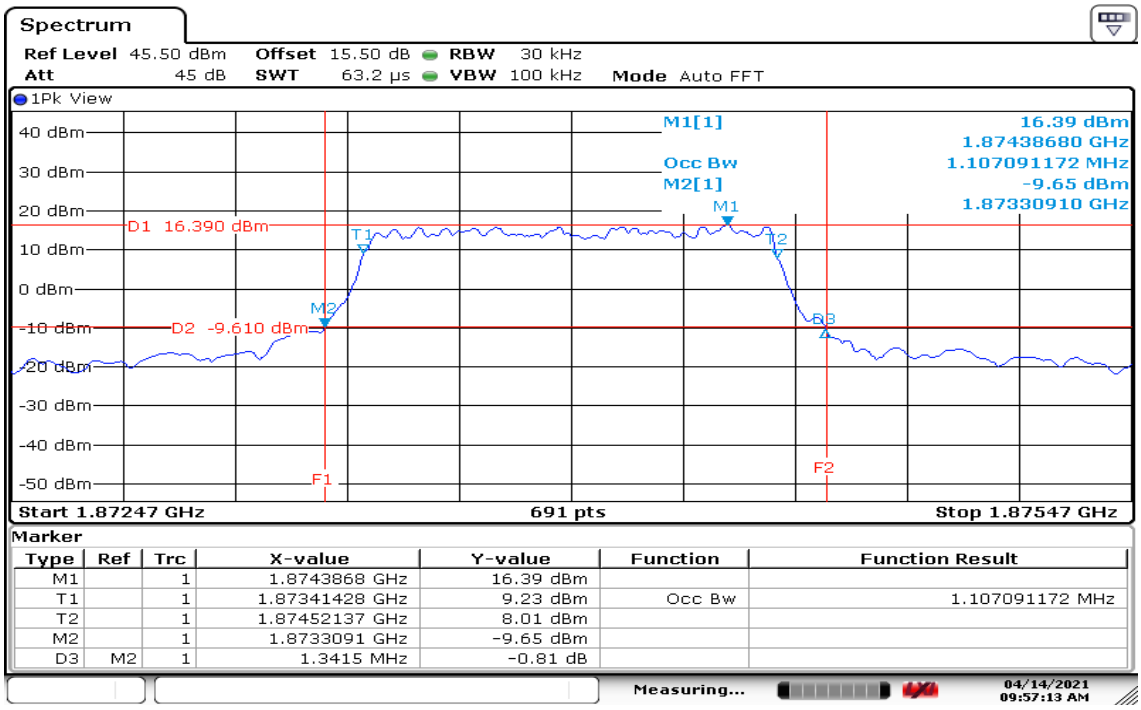
## BW: 15MHz

## CH Low




Date: 14.APR.2021 09:46:45

## CH Mid




Date: 14.APR.2021 09:57:14

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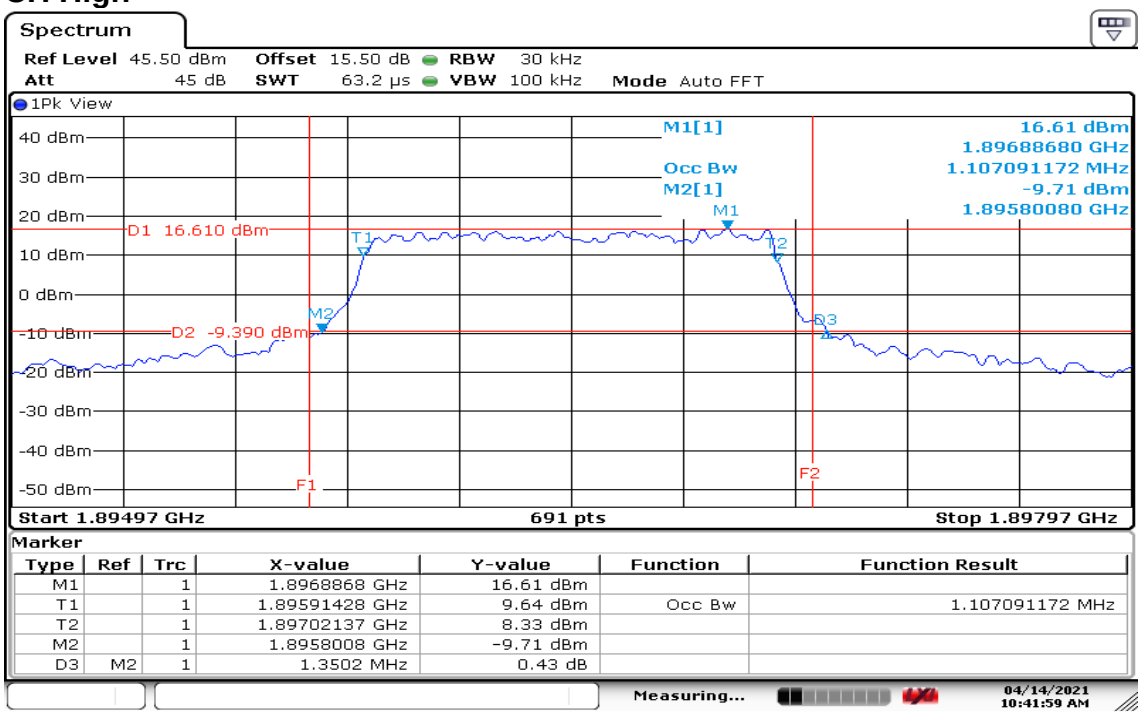
## CH High




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 1.8968868 GHz | 16.61 dBm | | |
| T1 | | 1 | 1.89591428 GHz | 9.64 dBm | Occ Bw | 1.107091172 MHz |
| T2 | | 1 | 1.89702137 GHz | 8.33 dBm | | |
| M2 | | 1 | 1.8958008 GHz | -9.71 dBm | | |
| D3 | M2 | 1 | 1.3502 MHz | 0.43 dB | | |

Date: 14.APR.2021 10:42:00

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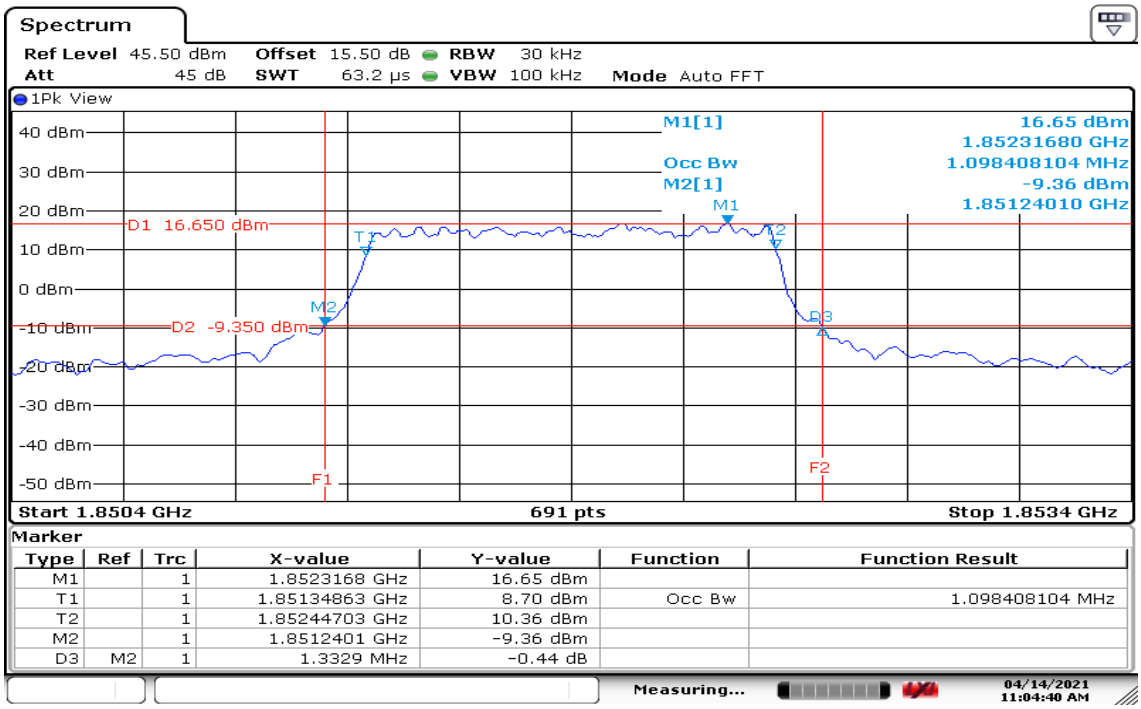
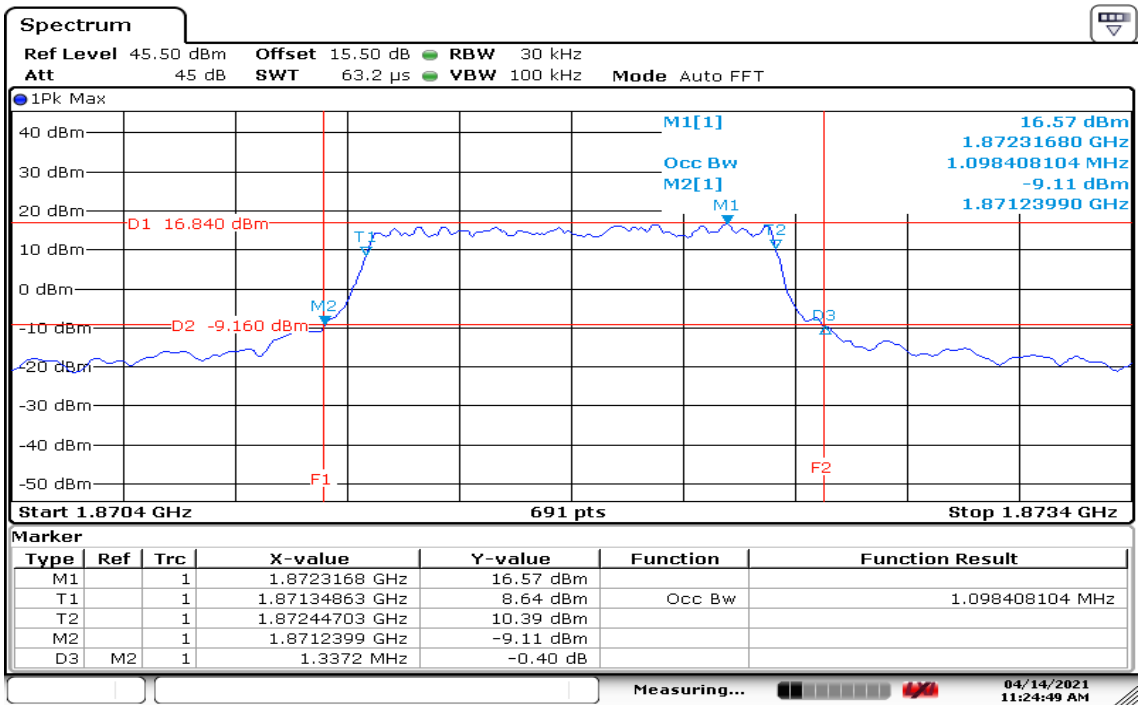
## BW: 20MHz

## CH Low




Date: 14.APR.2021 11:04:40

## CH Mid




Date: 14.APR.2021 11:24:49

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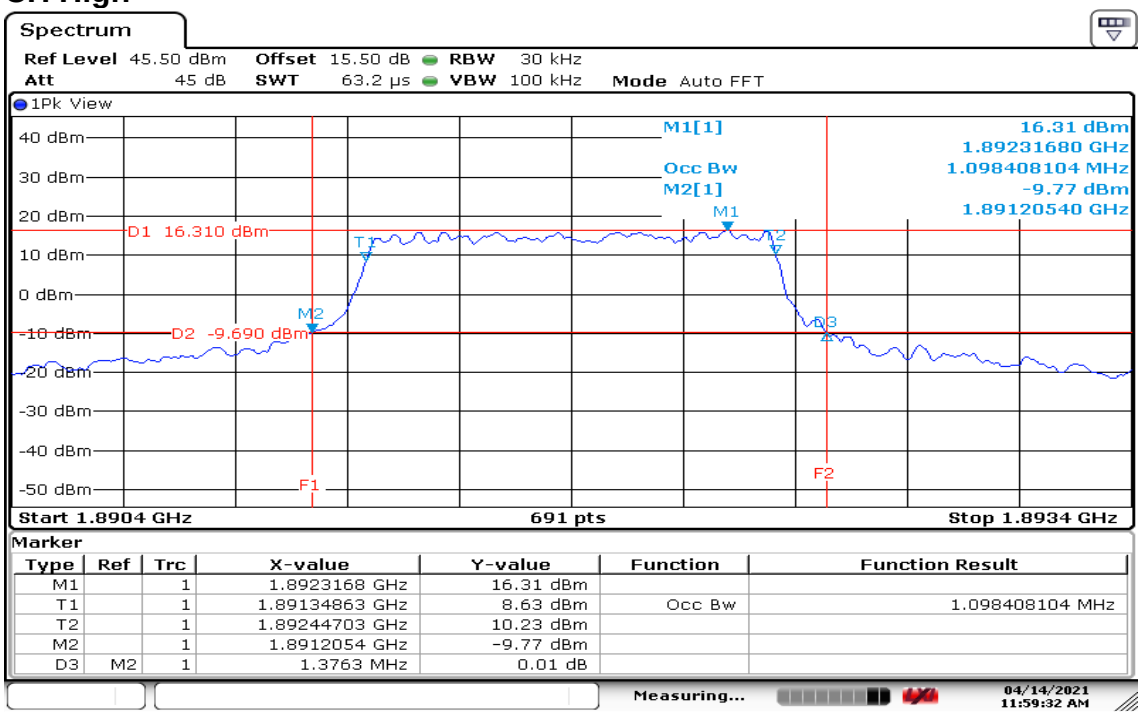
## CH High




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 1.8923168 GHz | 16.31 dBm | | |
| T1 | | 1 | 1.89134863 GHz | 8.63 dBm | Occ Bw | 1.098408104 MHz |
| T2 | | 1 | 1.89244703 GHz | 10.23 dBm | | |
| M2 | | 1 | 1.8912054 GHz | -9.77 dBm | | |
| D3 | M2 | 1 | 1.3763 MHz | 0.01 dB | | |

Measuring... 04/14/2021 11:59:32 AM

Date: 14.APR.2021 11:59:32

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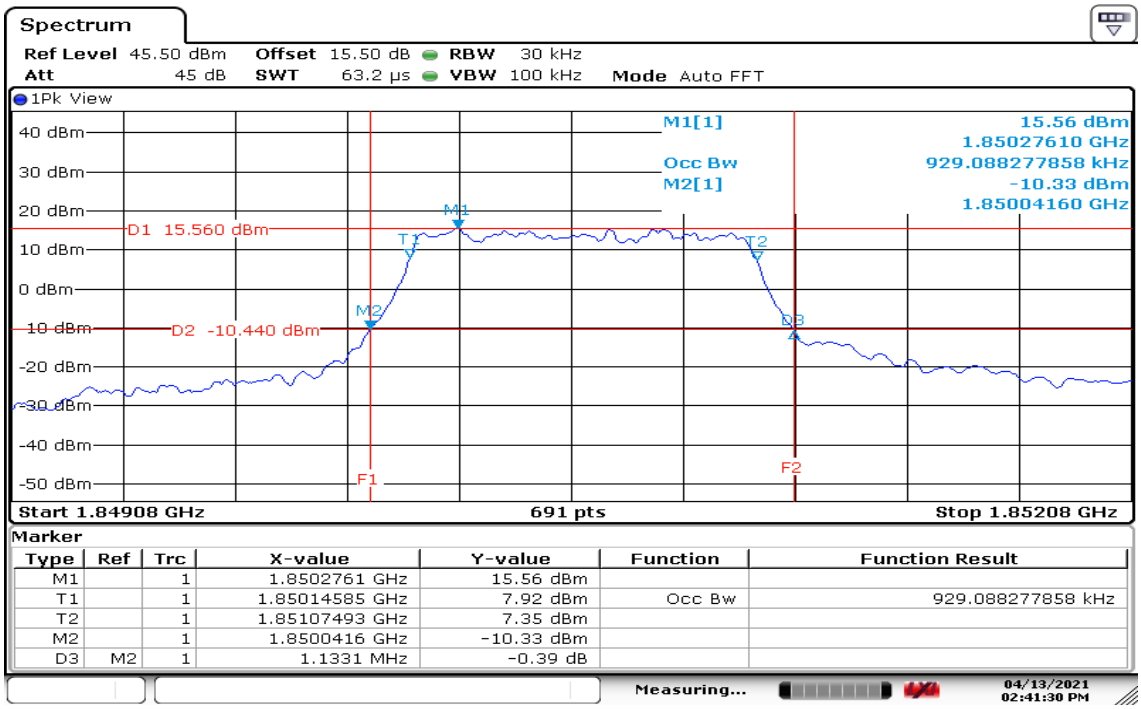
## 26dB & OBW (99%) / 16QAM

### BW: 1.4MHz

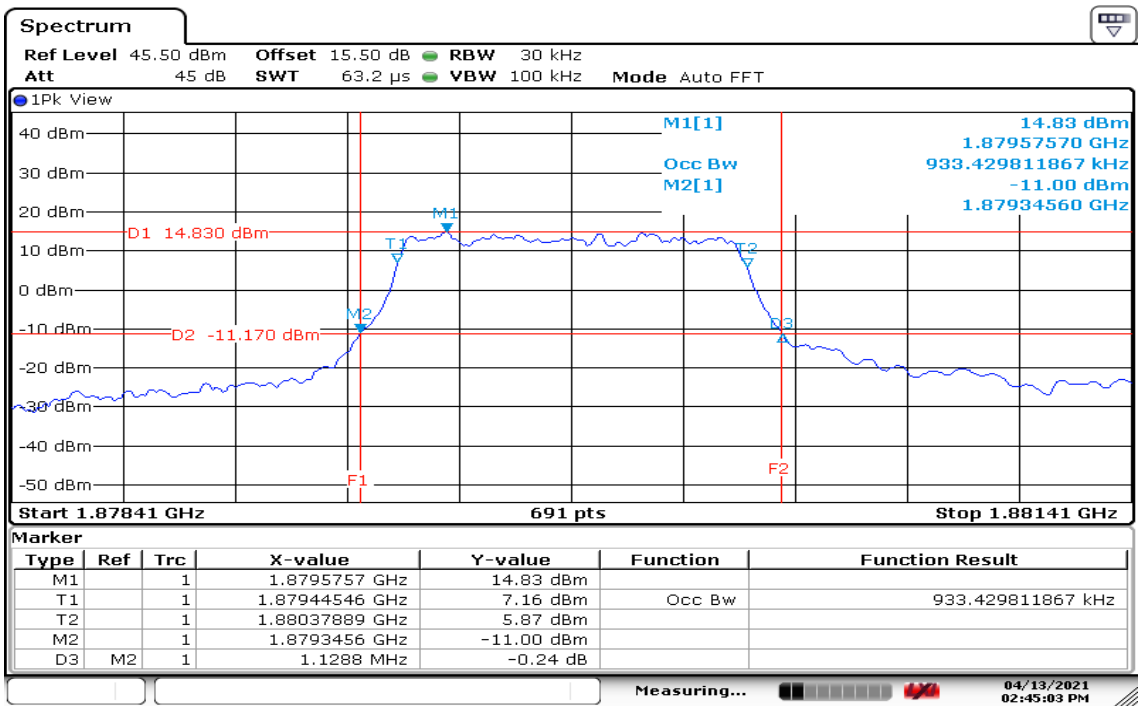
### CH Low




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.8502761 GHz | 15.56 dBm | | |
| T1 | | 1 | 1.85014585 GHz | 7.92 dBm | Occ Bw | 929.088277858 kHz |
| T2 | | 1 | 1.85107493 GHz | 7.35 dBm | | |
| M2 | | 1 | 1.8500416 GHz | -10.33 dBm | | |
| D3 | M2 | 1 | 1.1331 MHz | -0.39 dB | | |

Date: 13.APR.2021 14:41:31

### CH Mid




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.8795757 GHz | 14.83 dBm | | |
| T1 | | 1 | 1.87944546 GHz | 7.16 dBm | Occ Bw | 933.429811867 kHz |
| T2 | | 1 | 1.88037889 GHz | 5.87 dBm | | |
| M2 | | 1 | 1.8793456 GHz | -11.00 dBm | | |
| D3 | M2 | 1 | 1.1288 MHz | -0.24 dB | | |

Date: 13.APR.2021 14:45:03

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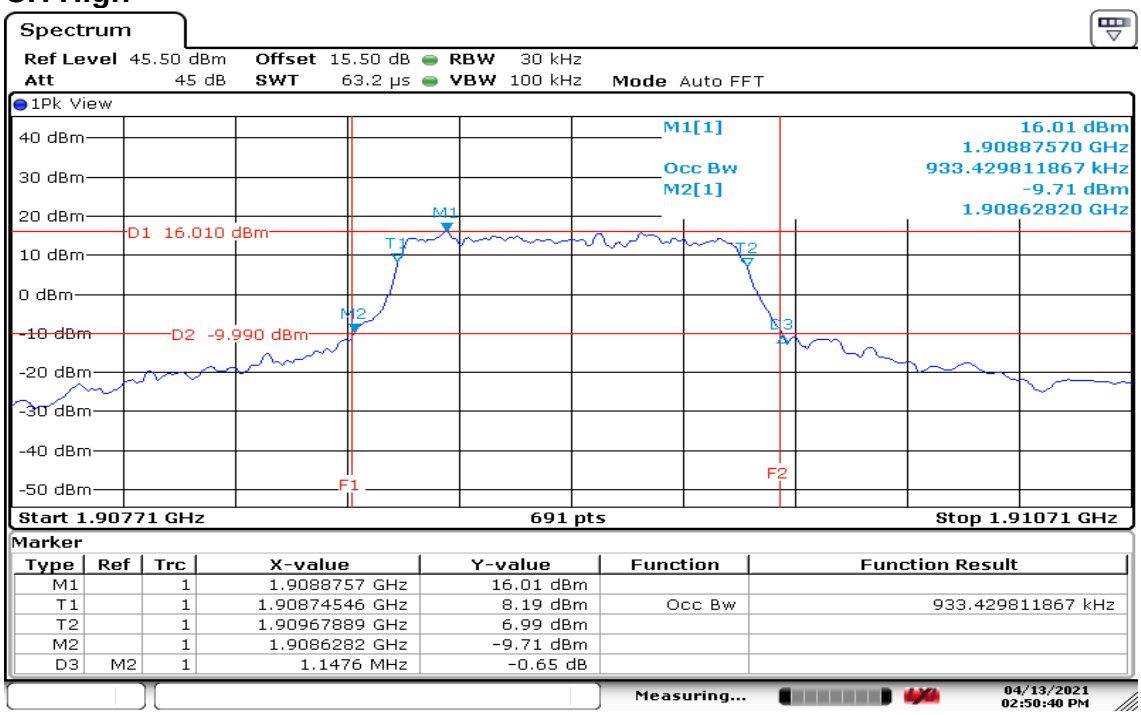
## CH High




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 1.9088757 GHz | 16.01 dBm | | |
| T1 | | 1 | 1.90874546 GHz | 8.19 dBm | Occ Bw | 933.429811867 kHz |
| T2 | | 1 | 1.90967889 GHz | 6.99 dBm | | |
| M2 | | 1 | 1.9086282 GHz | -9.71 dBm | | |
| D3 | M2 | 1 | 1.1476 MHz | -0.65 dB | | |

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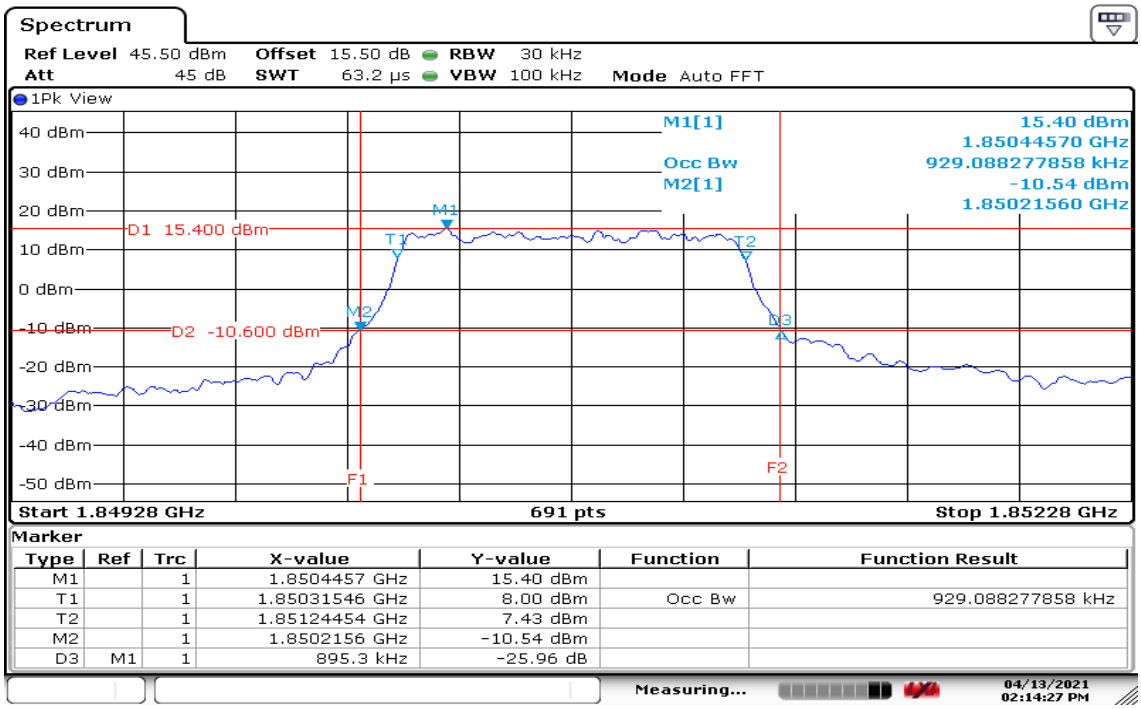
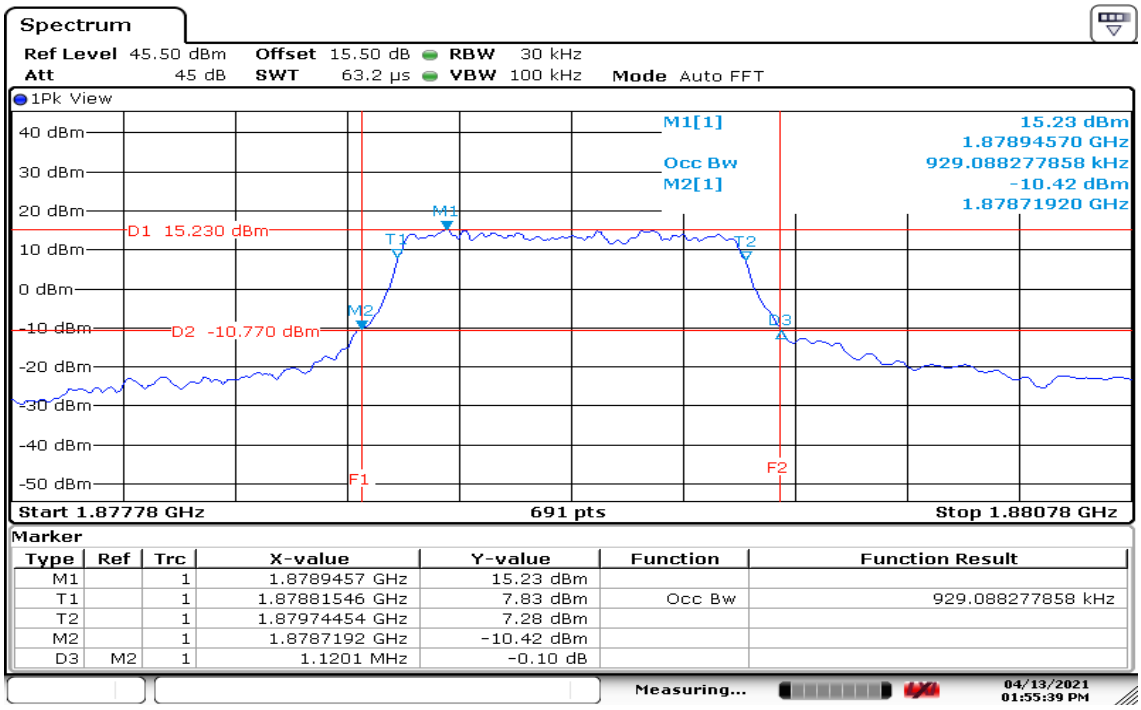
## BW: 3MHz
## CH Low




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.8504457 GHz | 15.40 dBm | | |
| T1 | | 1 | 1.85031546 GHz | 8.00 dBm | Occ Bw | 929.088277858 kHz |
| T2 | | 1 | 1.85124454 GHz | 7.43 dBm | | |
| M2 | | 1 | 1.8502156 GHz | -10.54 dBm | | |
| D3 | M1 | 1 | 895.3 kHz | -25.96 dB | | |

Date:13.APR.2021 14:14:26

## CH Mid




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.8789457 GHz | 15.23 dBm | | |
| T1 | | 1 | 1.87881546 GHz | 7.83 dBm | Occ Bw | 929.088277858 kHz |
| T2 | | 1 | 1.87974454 GHz | 7.28 dBm | | |
| M2 | | 1 | 1.8787192 GHz | -10.42 dBm | | |
| D3 | M2 | 1 | 1.1201 MHz | -0.10 dB | | |

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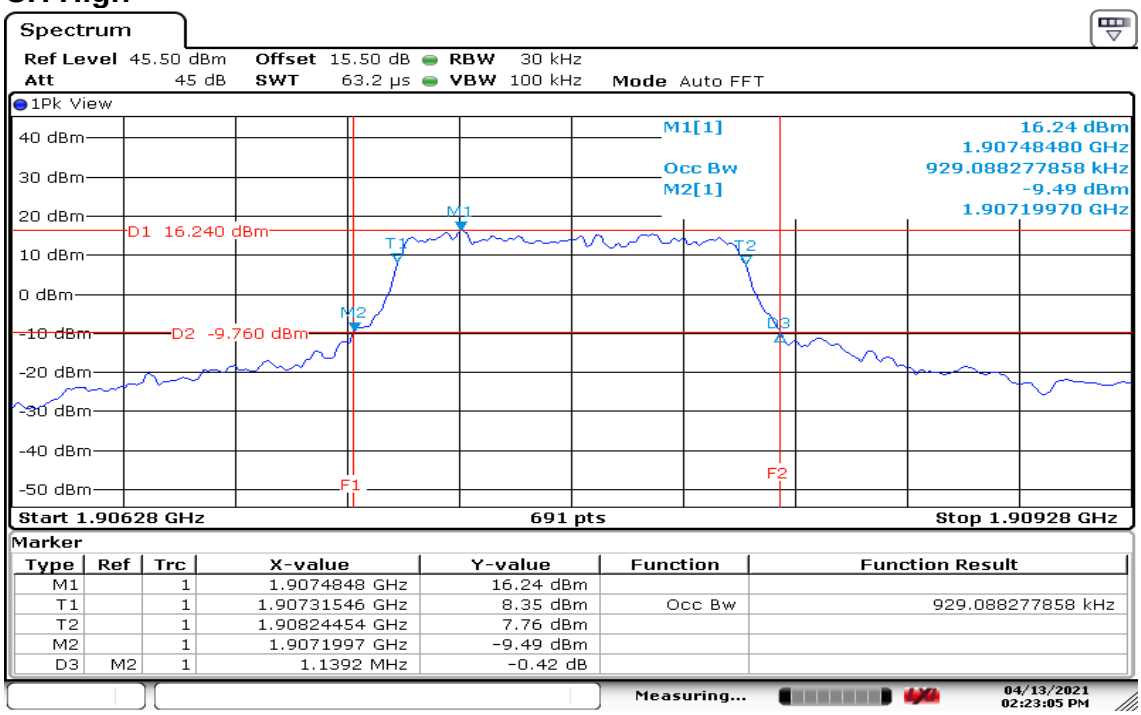
## CH High




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 1.9074848 GHz | 16.24 dBm | | |
| T1 | | 1 | 1.90731546 GHz | 8.35 dBm | Occ Bw | 929.088277858 kHz |
| T2 | | 1 | 1.90824454 GHz | 7.76 dBm | | |
| M2 | | 1 | 1.9071997 GHz | -9.49 dBm | | |
| D3 | M2 | 1 | 1.1392 MHz | -0.42 dB | | |

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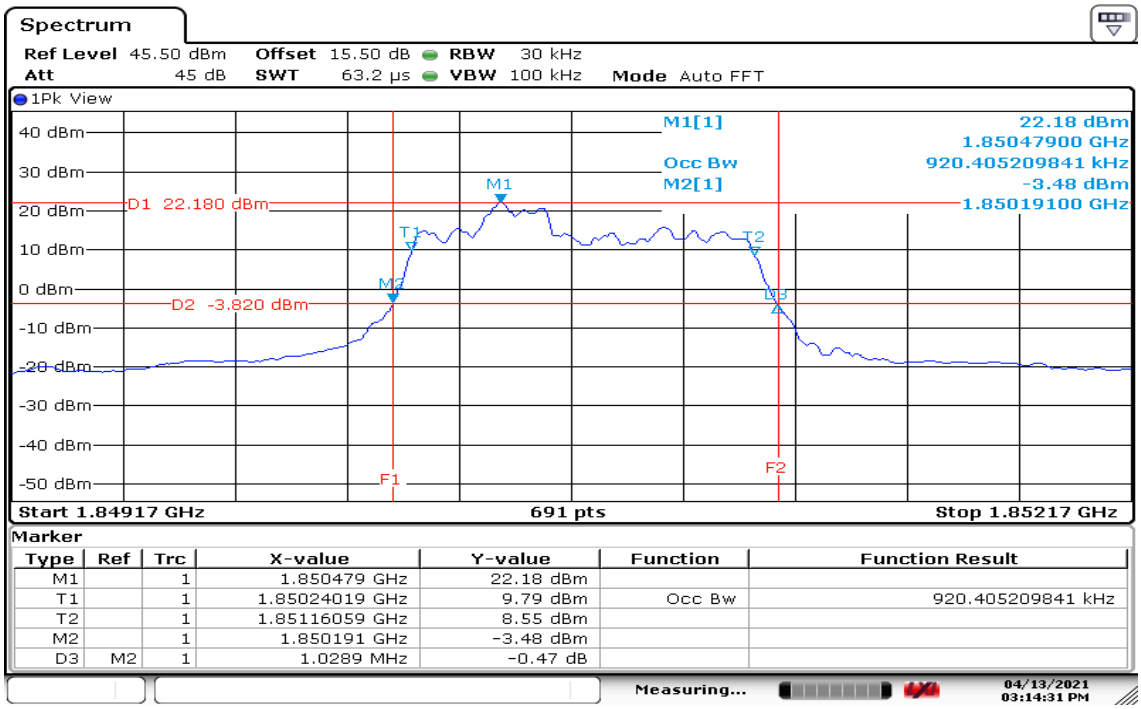
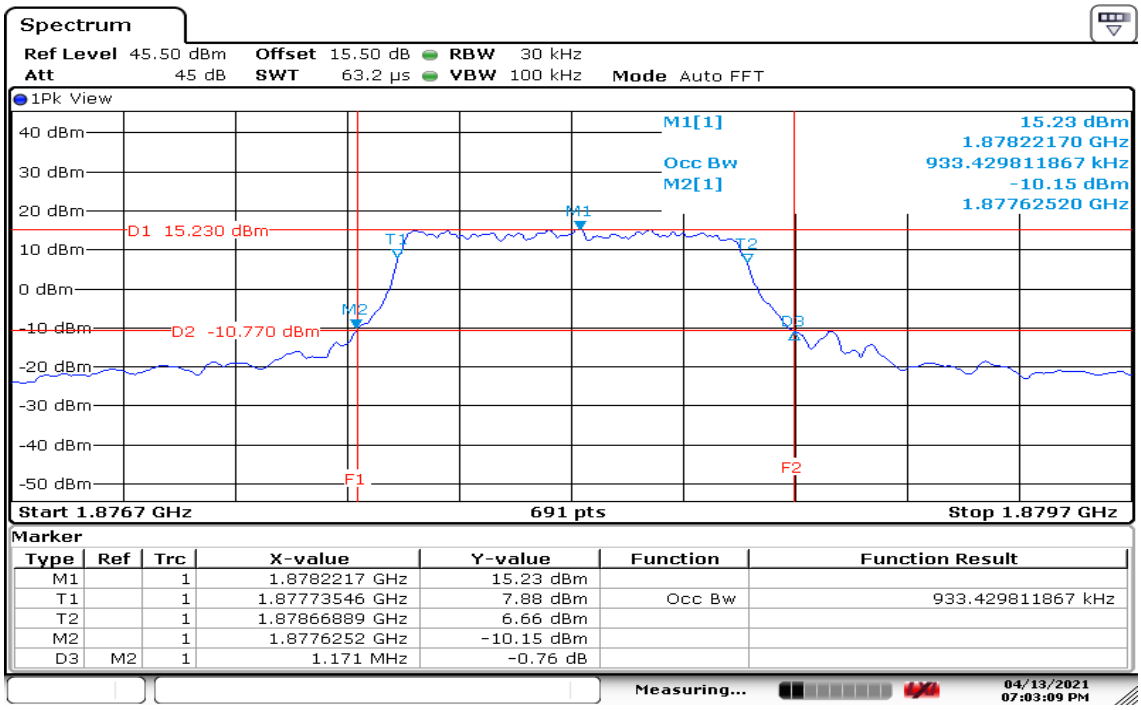
## BW: 5MHz
## CH Low




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.850479 GHz | 22.18 dBm | | |
| T1 | | 1 | 1.85024019 GHz | 9.79 dBm | Occ Bw | 920.405209841 kHz |
| T2 | | 1 | 1.85116059 GHz | 8.55 dBm | | |
| M2 | | 1 | 1.850191 GHz | -3.48 dBm | | |
| D3 | M2 | 1 | 1.0289 MHz | -0.47 dB | | |

Date: 13.APR.2021 15:14:32

## CH Mid




| Marker | | | | | | |
|---|---|---|---|---|---|---|
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
| M1 | | 1 | 1.8782217 GHz | 15.23 dBm | | |
| T1 | | 1 | 1.87773546 GHz | 7.88 dBm | Occ Bw | 933.429811867 kHz |
| T2 | | 1 | 1.87866889 GHz | 6.66 dBm | | |
| M2 | | 1 | 1.8776252 GHz | -10.15 dBm | | |
| D3 | M2 | 1 | 1.171 MHz | -0.76 dB | | |

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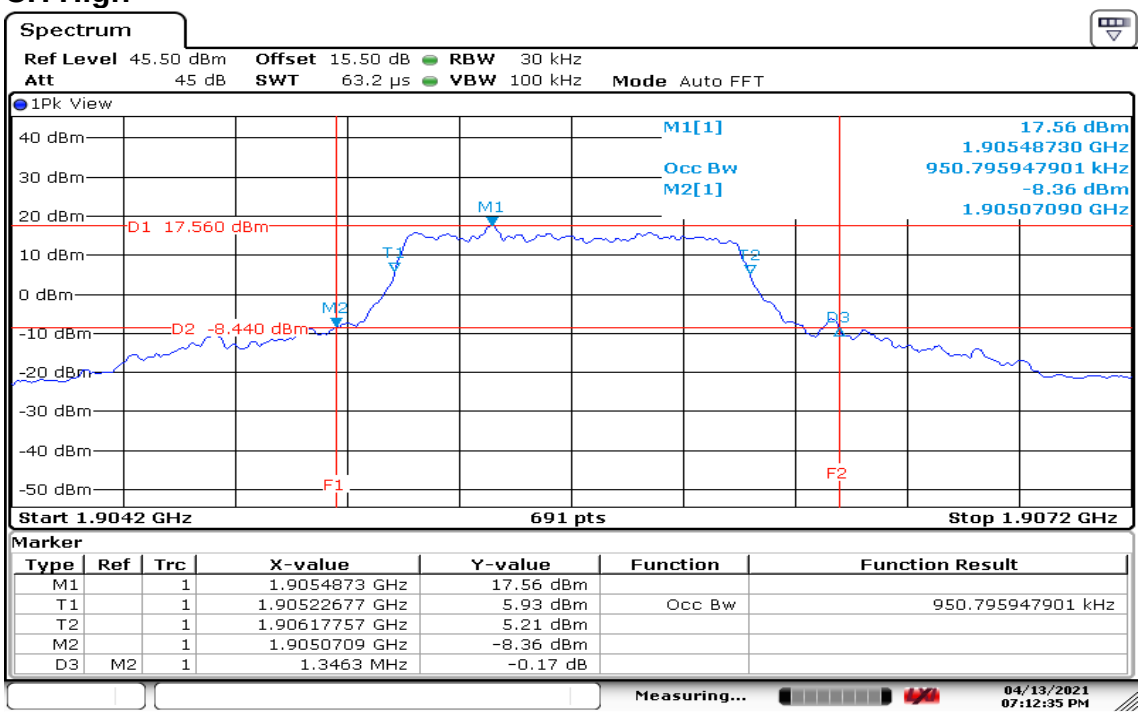
## CH High




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 1.9054873 GHz | 17.56 dBm | | |
| T1 | | 1 | 1.90522677 GHz | 5.93 dBm | Occ Bw | 950.795947901 kHz |
| T2 | | 1 | 1.90617757 GHz | 5.21 dBm | | |
| M2 | | 1 | 1.9050709 GHz | -8.36 dBm | | |
| D3 | M2 | 1 | 1.3463 MHz | -0.17 dB | | |

Date:13.APR.2021 19:12:36

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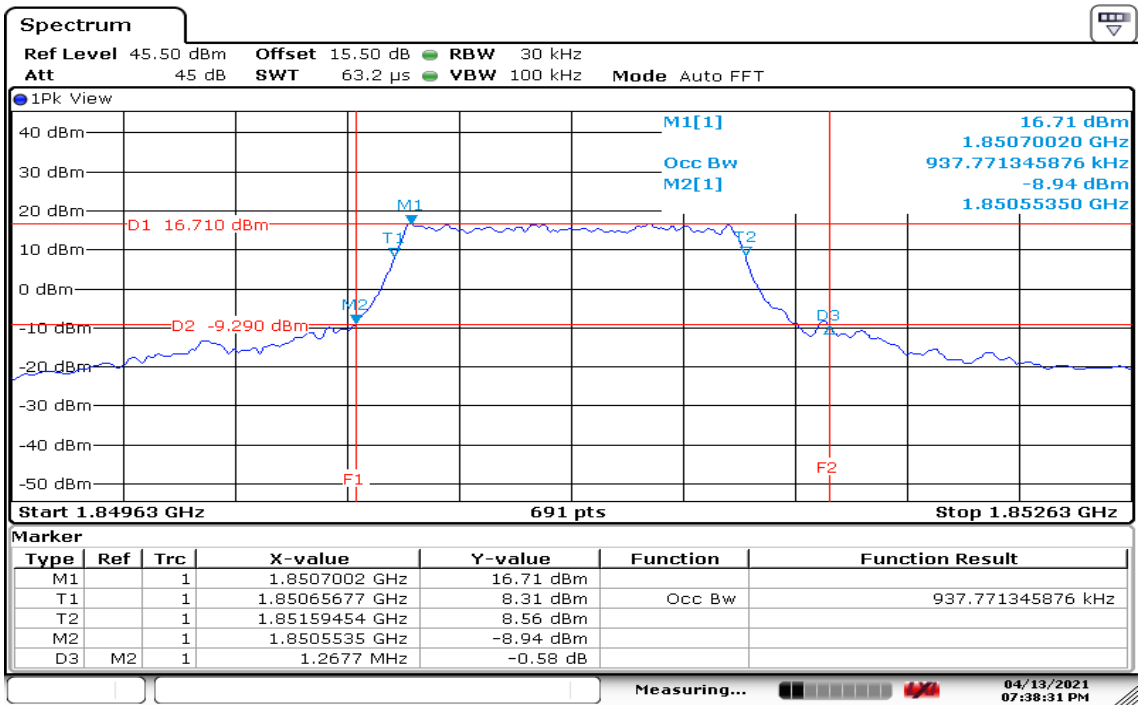
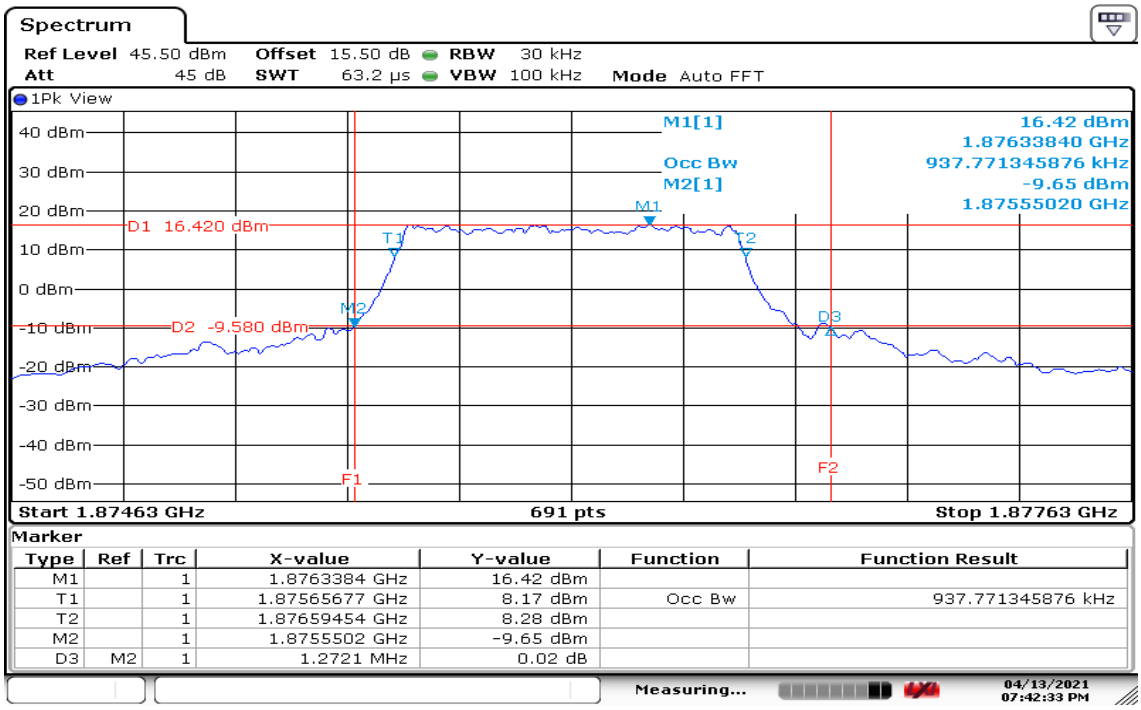
## BW: 10MHz
## CH Low




Date:13.APR.2021 19:38:31

## CH Mid

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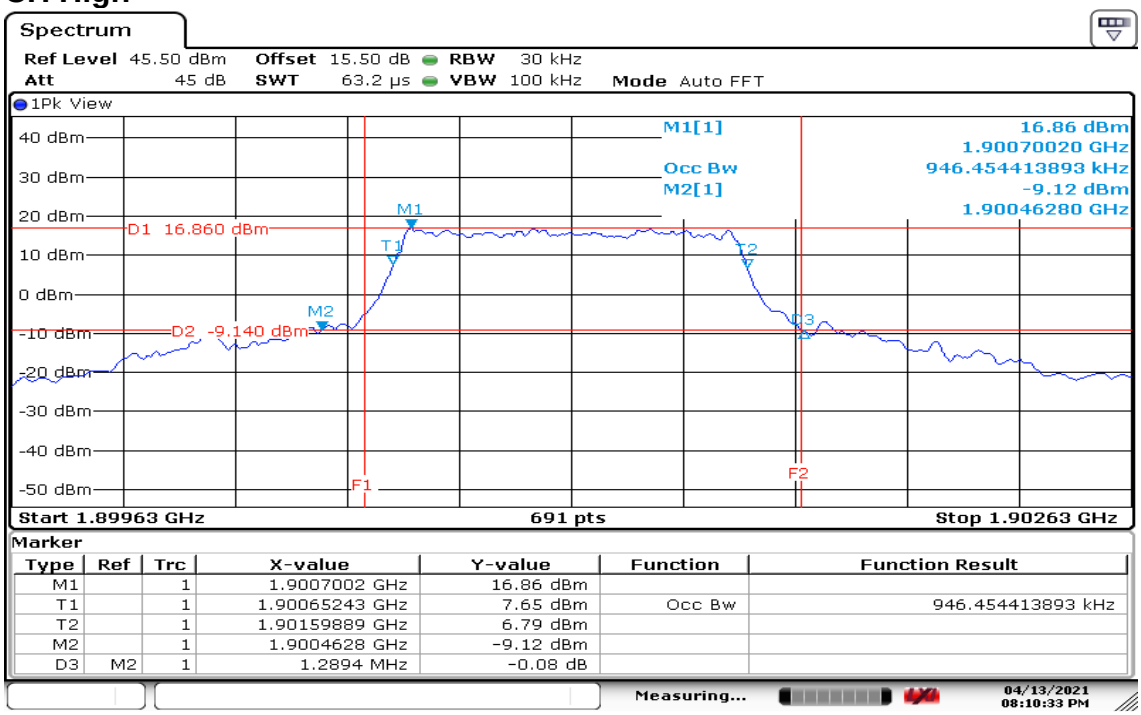
## CH High




Date: 13.APR.2021 20:10:32

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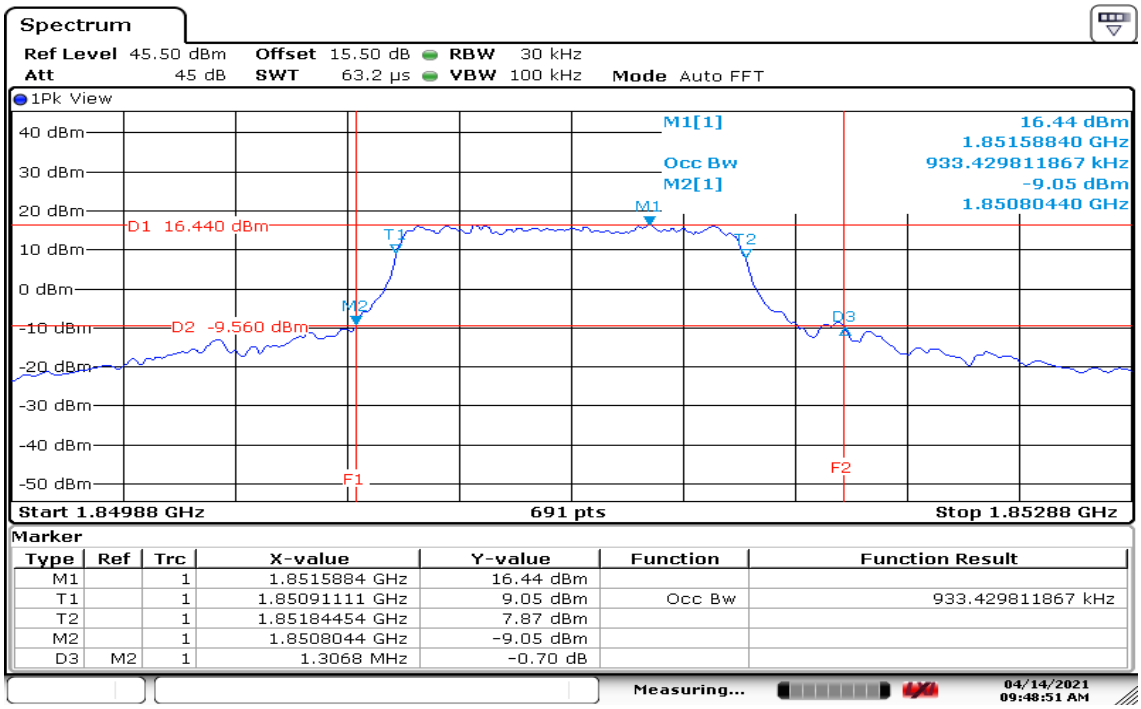
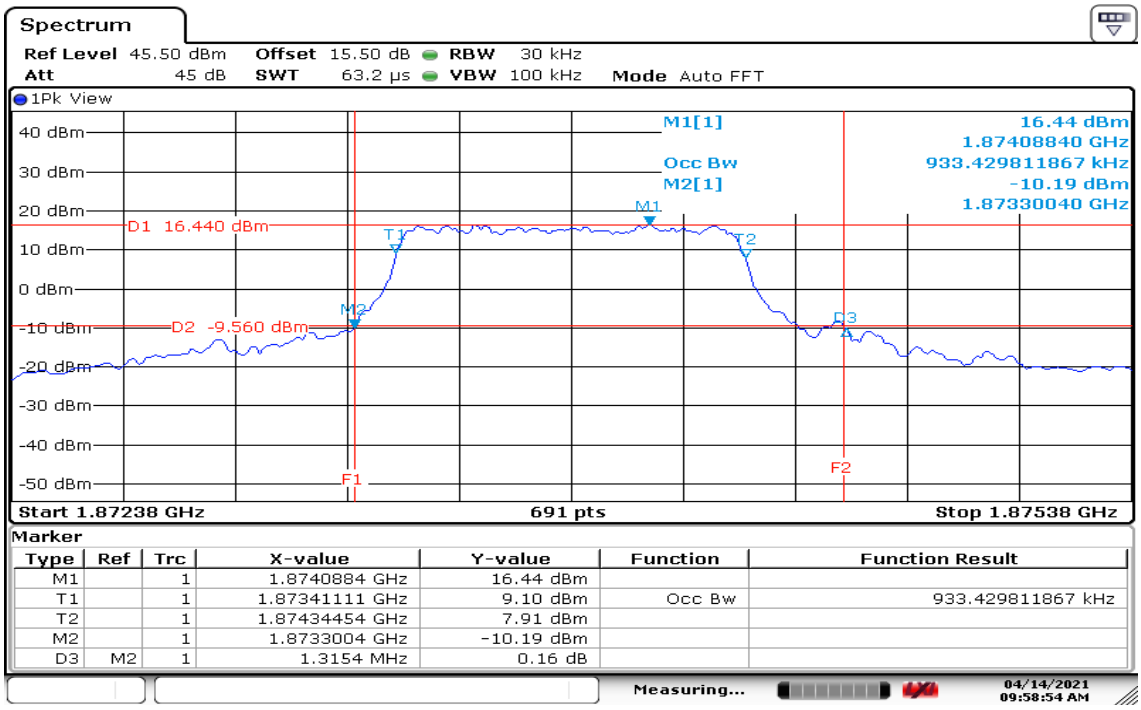
## BW: 15MHz

## CH Low




Date: 14.APR.2021 09:48:51

## CH Mid




Date: 14.APR.2021 09:58:54

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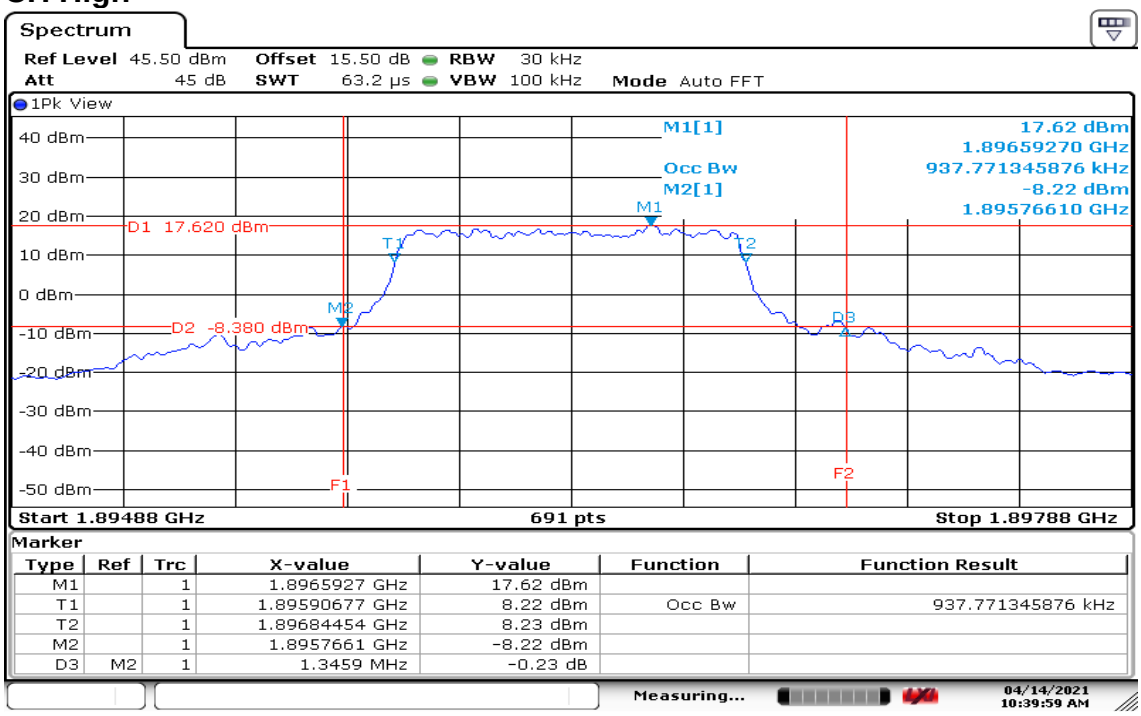
## CH High




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 1.8965927 GHz | 17.62 dBm | | |
| T1 | | 1 | 1.89590677 GHz | 8.22 dBm | Occ Bw | 937.771345876 kHz |
| T2 | | 1 | 1.89684454 GHz | 8.23 dBm | | |
| M2 | | 1 | 1.8957661 GHz | -8.22 dBm | | |
| D3 | M2 | 1 | 1.3459 MHz | -0.23 dB | | |

Date: 14.APR.2021 10:39:59

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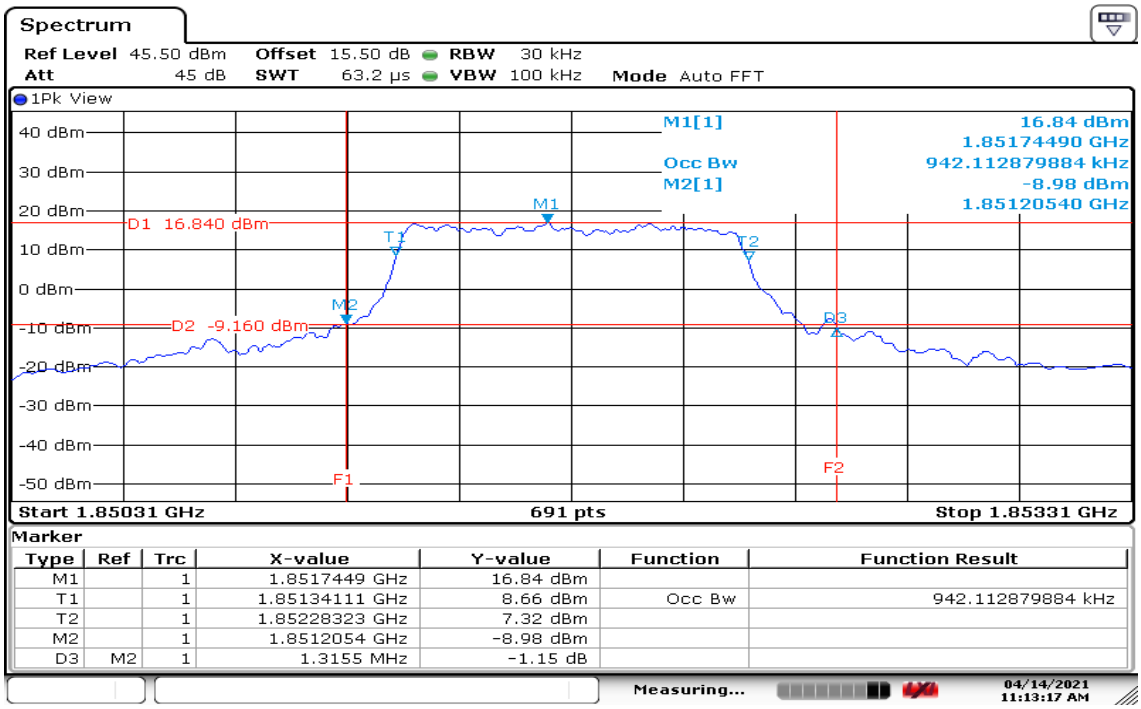
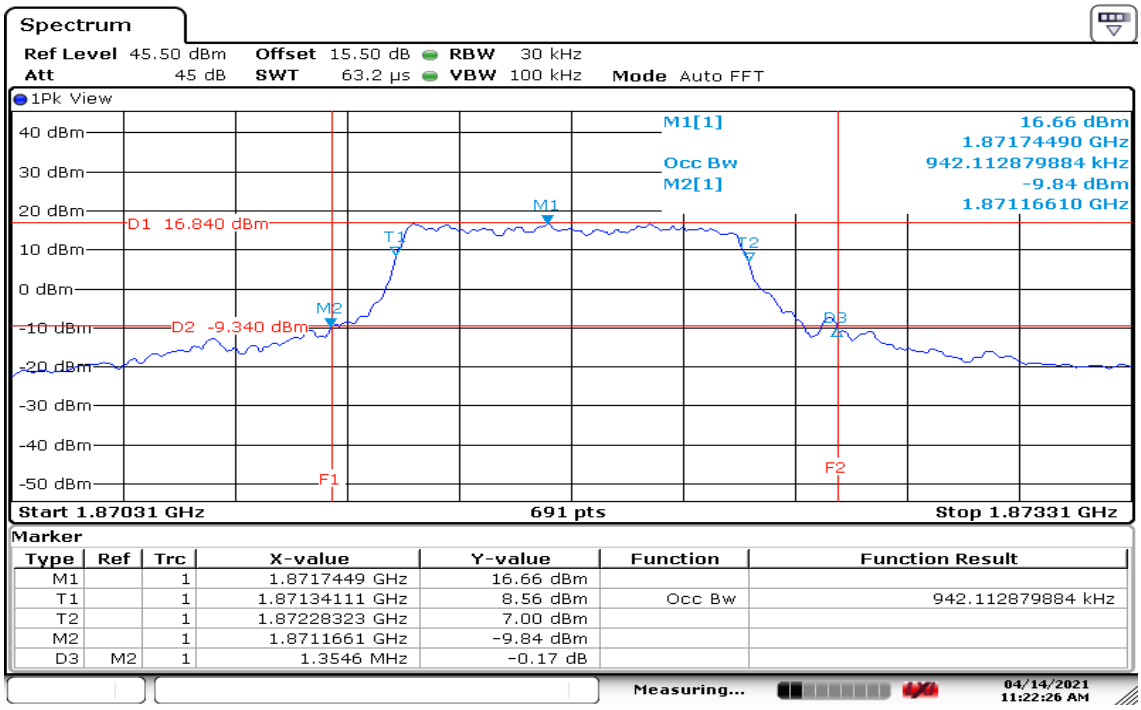
## BW: 20MHz

## CH Low




Date: 14.APR.2021 11:13:18

## CH Mid




Date: 14.APR.2021 11:22:26

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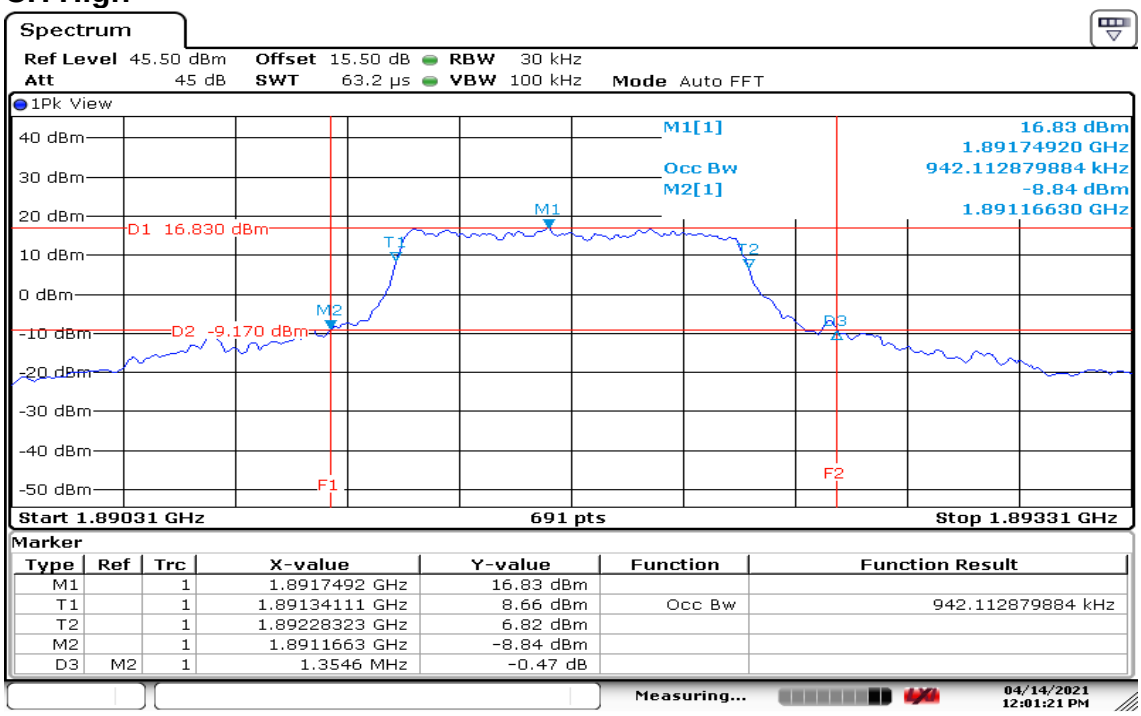
## CH High




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 1.8917492 GHz | 16.83 dBm | | |
| T1 | | 1 | 1.89134111 GHz | 8.66 dBm | Occ Bw | 942.112879884 kHz |
| T2 | | 1 | 1.89228323 GHz | 6.82 dBm | | |
| M2 | | 1 | 1.8911663 GHz | -8.84 dBm | | |
| D3 | M2 | 1 | 1.3546 MHz | -0.47 dB | | |

Date: 14.APR.2021 12:01:21

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## 8.4 PEAK TO AVERAGE POWER RATIO

### Limit

In measuring transmissions in this band using an average power technique, the peak to average power ratio (PAPR) of the transmission may not exceed 13 dB.

### Test Procedures

1. According to KDB 971168 D01,
2. The EUT was connect to spectrum analyzer and call box.
3. Set the CCDF function in spectrum analyzer.
4. The highest RF output power were measured and recorded the maximum PAPR level associated with a probability of 0.1%.
5. Record the Peak to Average Power Ratio.

**Note:** We selected worst case to performed test in middle channel, the results can be meet other channel.

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## TEST RESULTS

| | | | |
|---|---|---|---|
| **Temperature:** | 21.5℃ | **Humidity:** | 56.2% RH |
| **Tested by:** | Dally Hong | **Test Date:** | March 29, 2021 |
| **Temperature:** | 23.7℃ | **Humidity:** | 52.4% RH |
| **Tested by:** | Dally Hong | **Test Date:** | April 13, 2021 |
| **Temperature:** | 23.1℃ | **Humidity:** | 52.5% RH |
| **Tested by:** | Dally Hong | **Test Date:** | April 14, 2021 |

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## LTE Band 2

### CHANNEL BANDWIDTH: 1.4MHz / QPSK / Full RB

| Frequency (MHz) | Channel | PEAK TO AVERAGE RATIO (dB) |
|---|---|---|
| 1850.7 | 18607 | 8.46 |
| 1880 | 18900 | 8.41 |
| 1909.3 | 19193 | 8.38 |

### CHANNEL BANDWIDTH: 3MHz / QPSK / Full RB

| Frequency (MHz) | Channel | PEAK TO AVERAGE RATIO (dB) |
|---|---|---|
| 1851.5 | 18615 | 4.90 |
| 1880 | 18900 | 6.26 |
| 1908.5 | 19185 | 8.64 |

### CHANNEL BANDWIDTH: 5MHz / QPSK / Full RB

| Frequency (MHz) | Channel | PEAK TO AVERAGE RATIO (dB) |
|---|---|---|
| 1852.5 | 18625 | 5.77 |
| 1880 | 18900 | 6.38 |
| 1907.5 | 19175 | 5.86 |

### CHANNEL BANDWIDTH: 10MHz / QPSK / Full RB

| Frequency (MHz) | Channel | PEAK TO AVERAGE RATIO (dB) |
|---|---|---|
| 1855 | 18650 | 8.61 |
| 1880 | 18900 | 5.22 |
| 1905 | 19150 | 5.54 |

### CHANNEL BANDWIDTH: 15MHz / QPSK / Full RB

| Frequency (MHz) | Channel | PEAK TO AVERAGE RATIO (dB) |
|---|---|---|
| 1857.5 | 18675 | 8.17 |
| 1880 | 18900 | 8.43 |
| 1902.5 | 19125 | 8.61 |

### CHANNEL BANDWIDTH: 20MHz / QPSK / Full RB

| Frequency (MHz) | Channel | PEAK TO AVERAGE RATIO (dB) |
|---|---|---|
| 1860 | 18700 | 8.29 |
| 1880 | 18900 | 8.38 |
| 1900 | 19100 | 8.32 |

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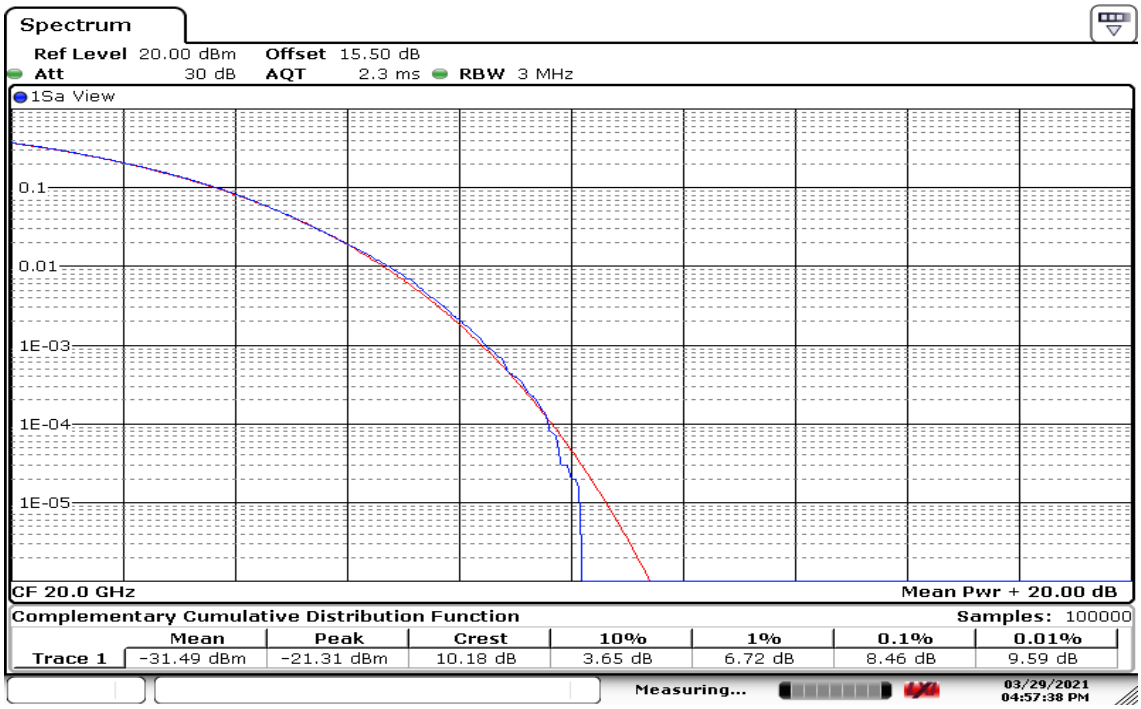
# LTE Band 2

## QPSK / RB =6, RB Offset = 0

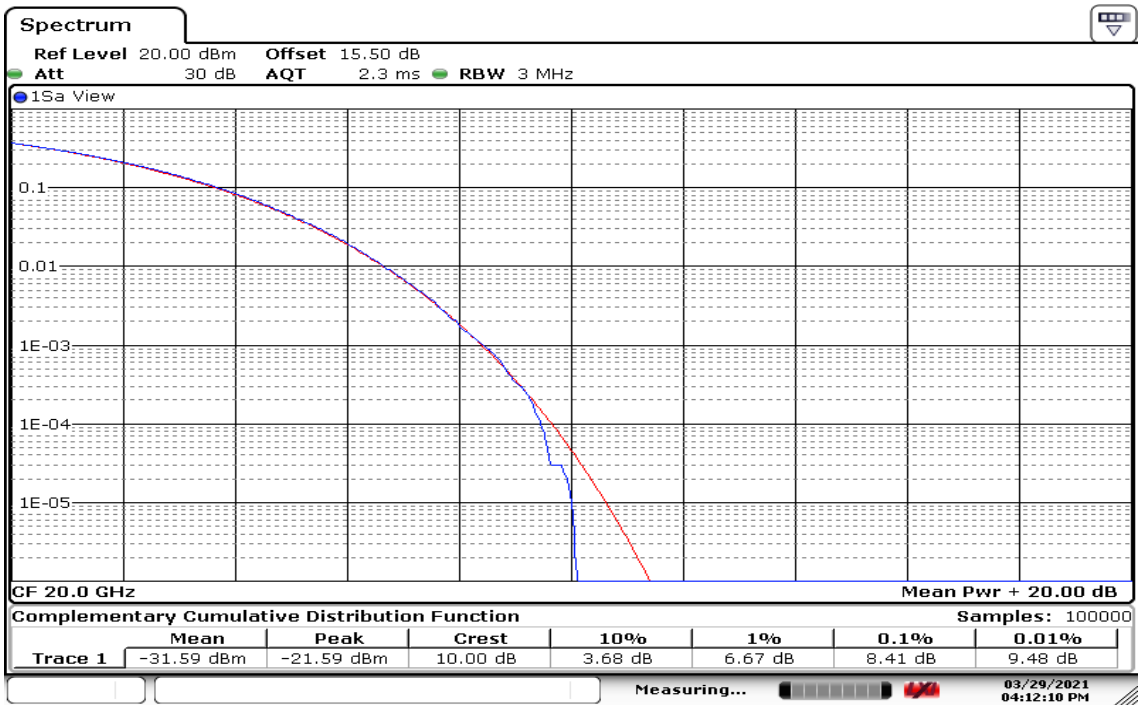
## BW: 1.4MHz

## CH Low




Date: 29.MAR.2021 16:57:38

## CH Mid




Date: 29.MAR.2021 16:12:10

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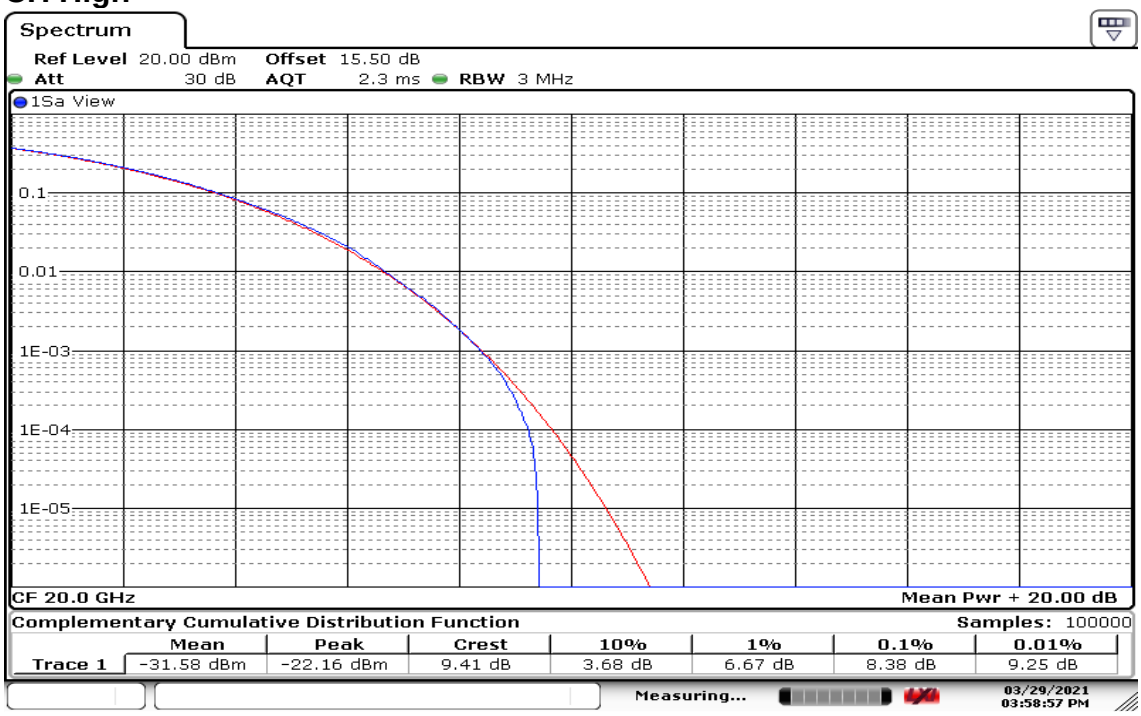
## CH High




Date: 29.MAR.2021 15:58:58

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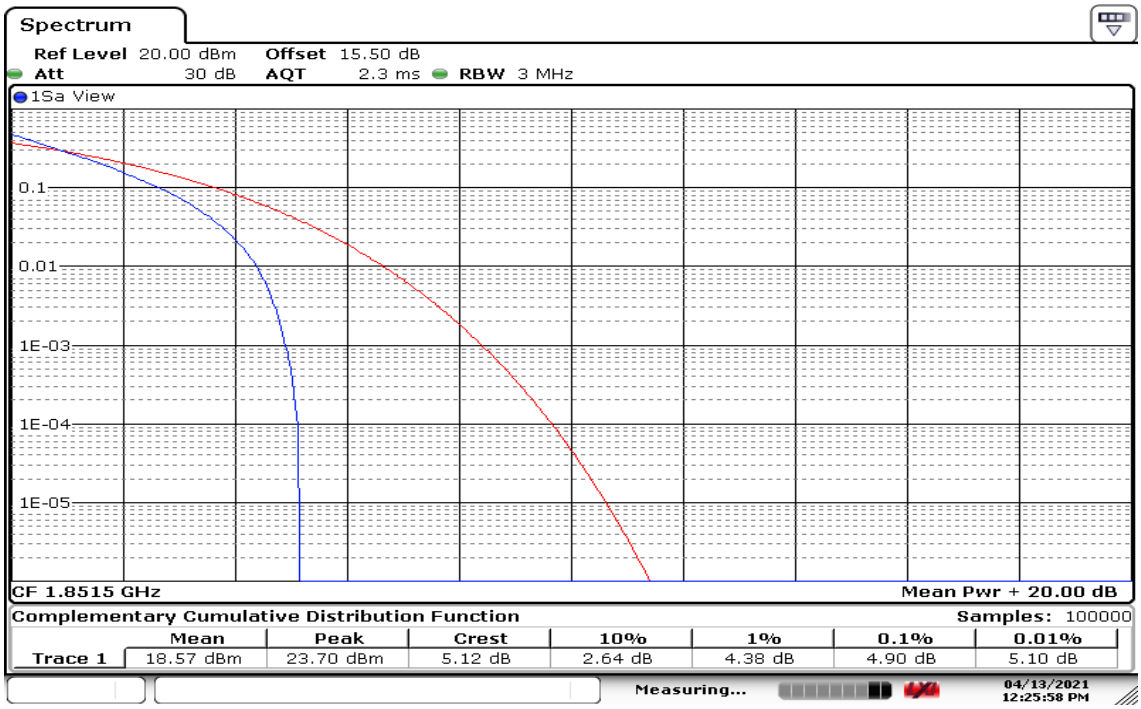
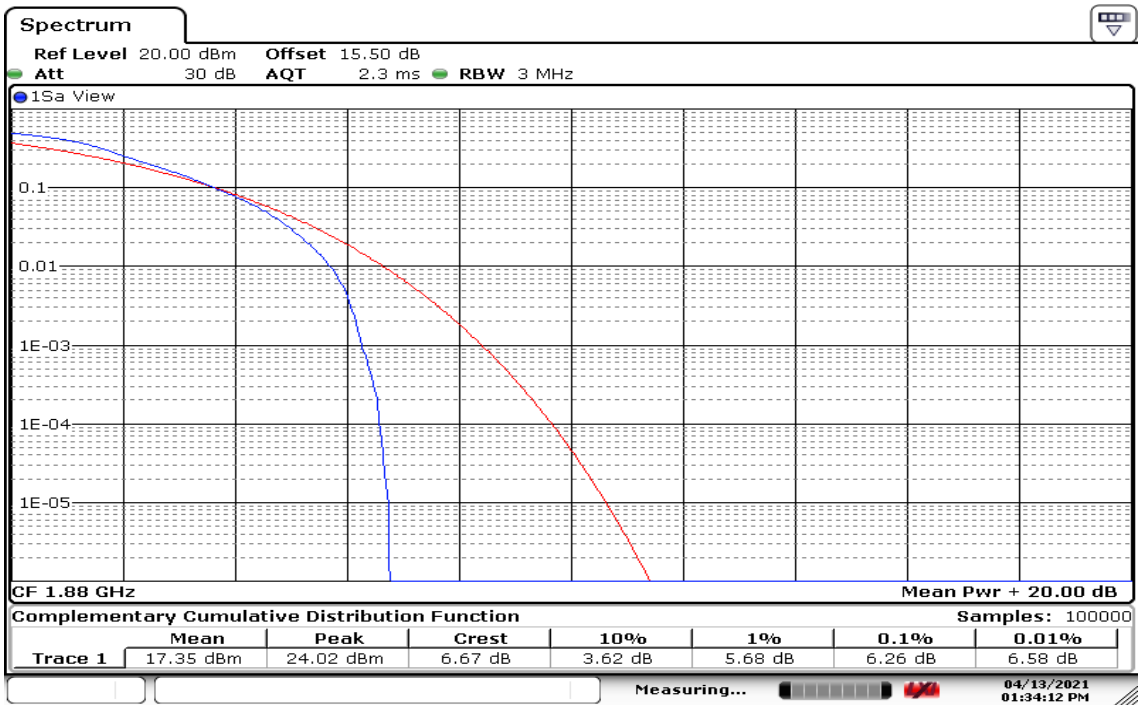
## BW: 3MHz
## CH Low




Date: 13.APR.2021 12:25:58

## CH Mid




Date: 13.APR.2021 13:34:13

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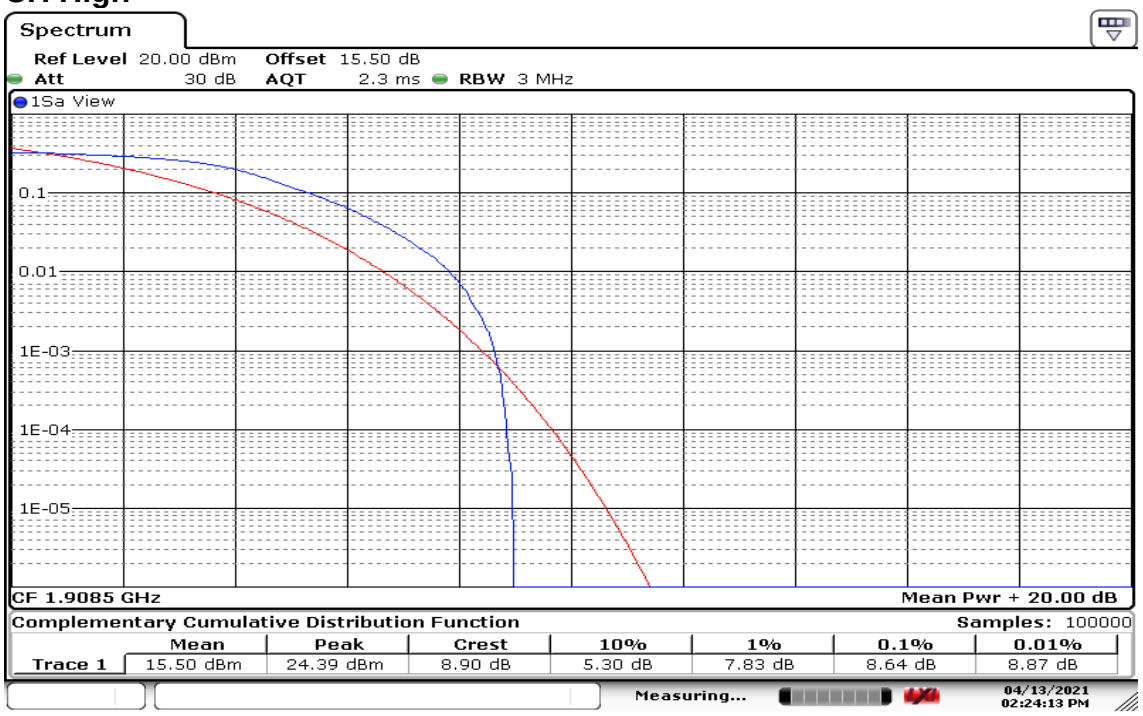
## CH High




Date: 13.APR.2021 14:24:13

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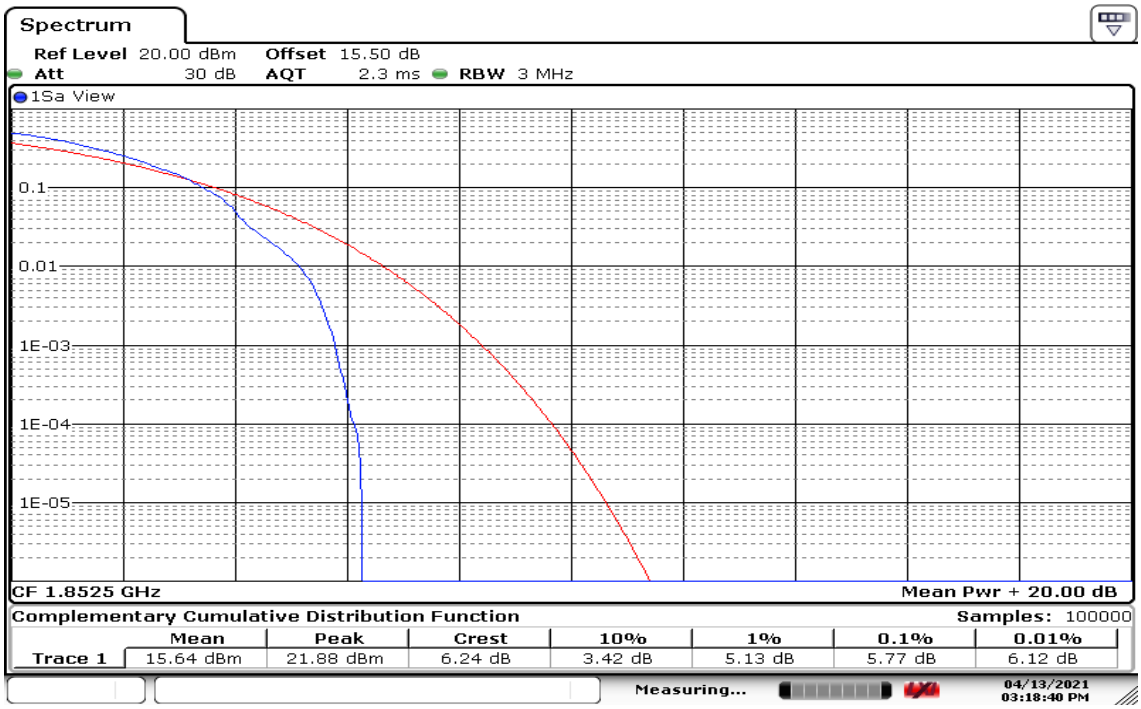
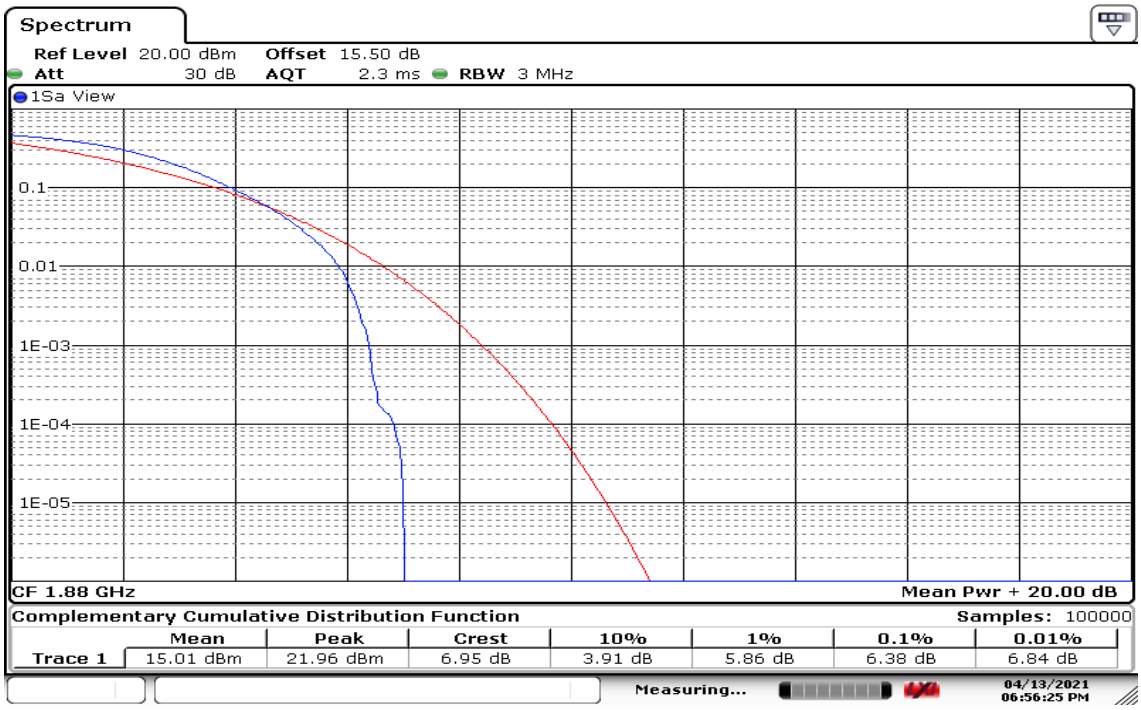
## BW: 5MHz
## CH Low




Date: 13.APR.2021 15:18:40

## CH Mid




Date: 13.APR.2021 18:56:26

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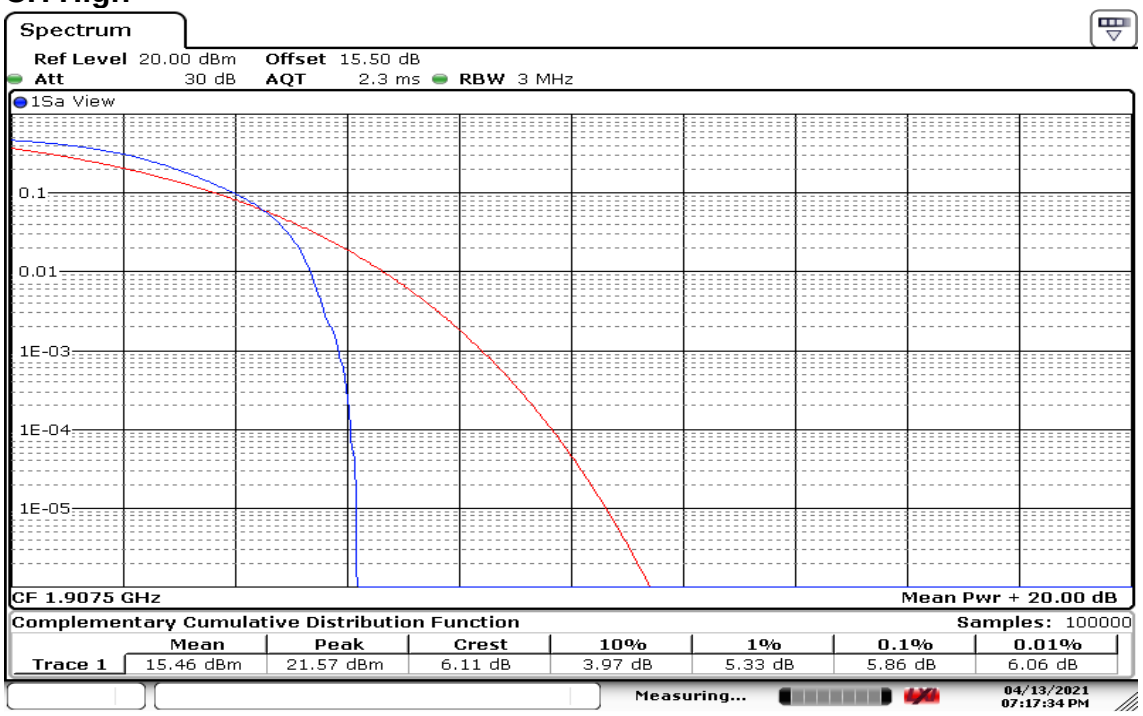
## CH High




Date:13.APR.2021 19:17:34

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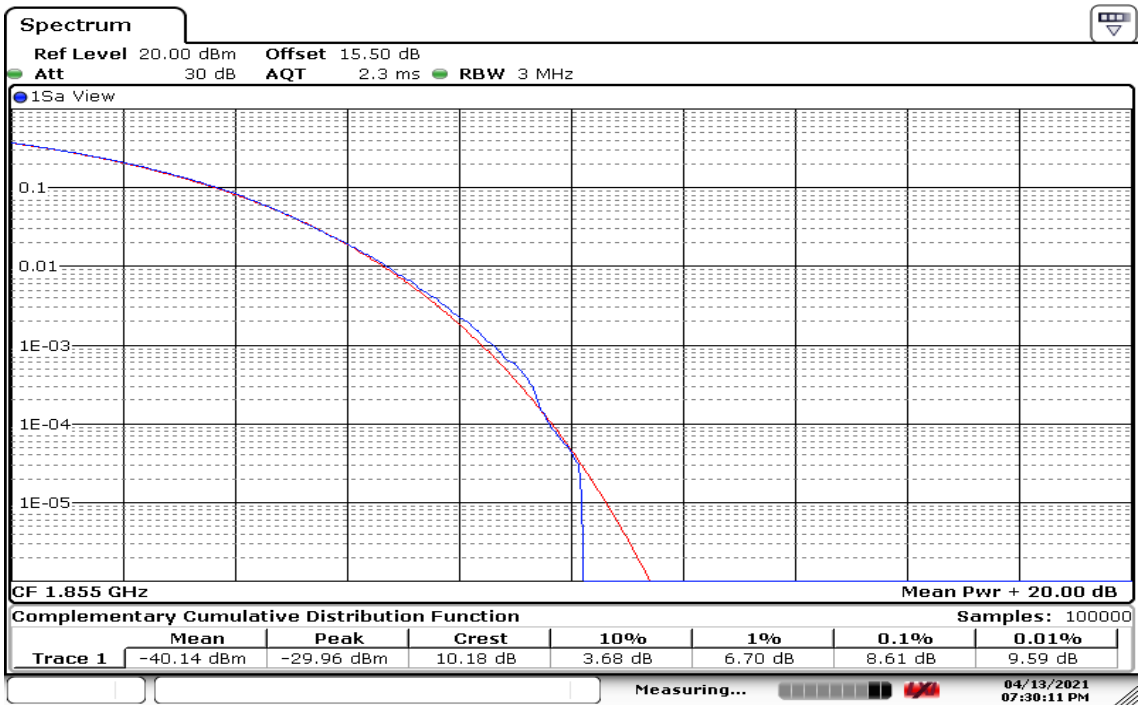
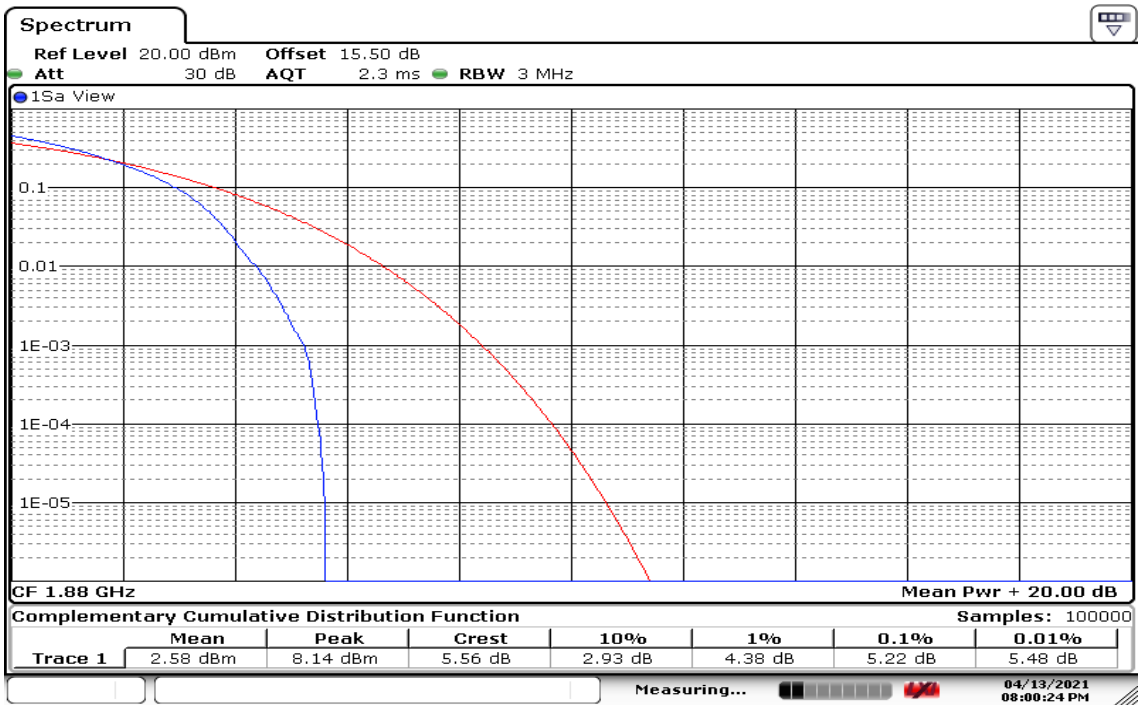
## BW: 10MHz
## CH Low




Date: 13.APR.2021 19:30:11

## CH Mid




Date: 13.APR.2021 20:00:24

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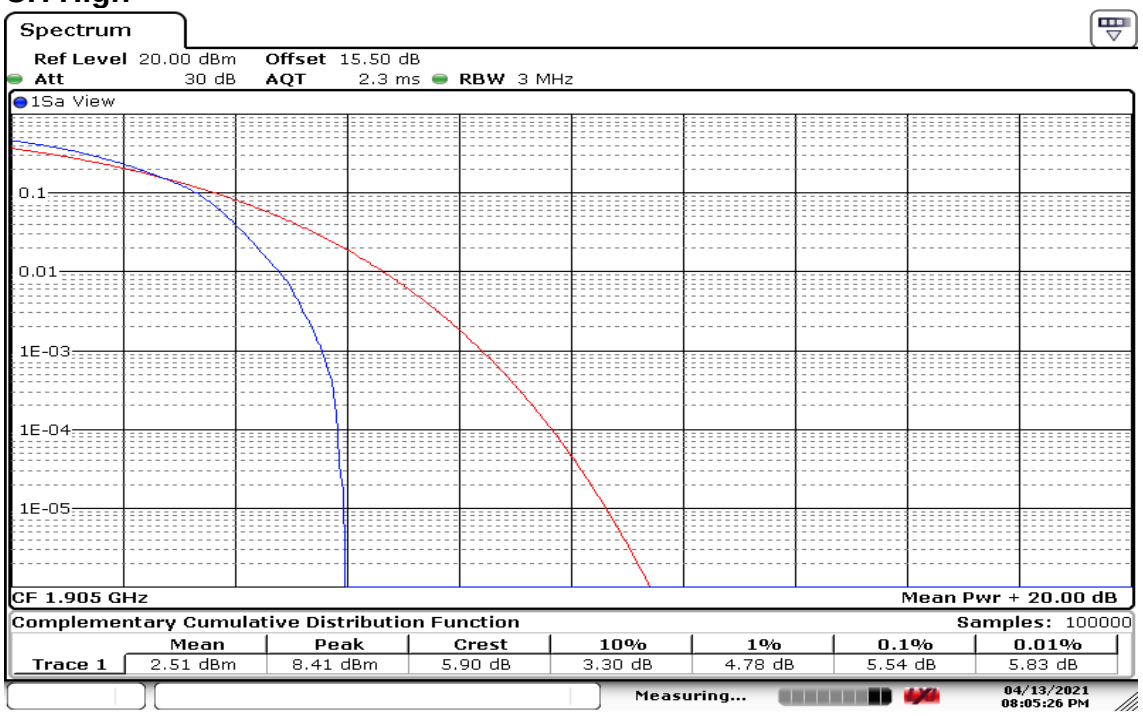
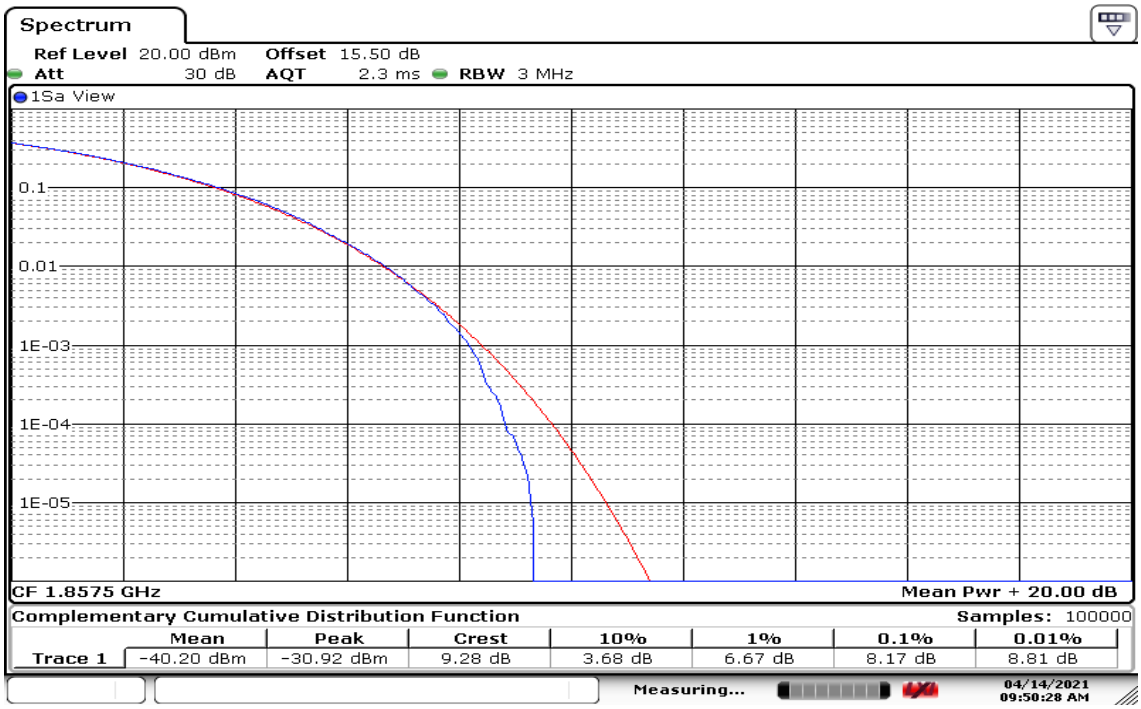
## CH High



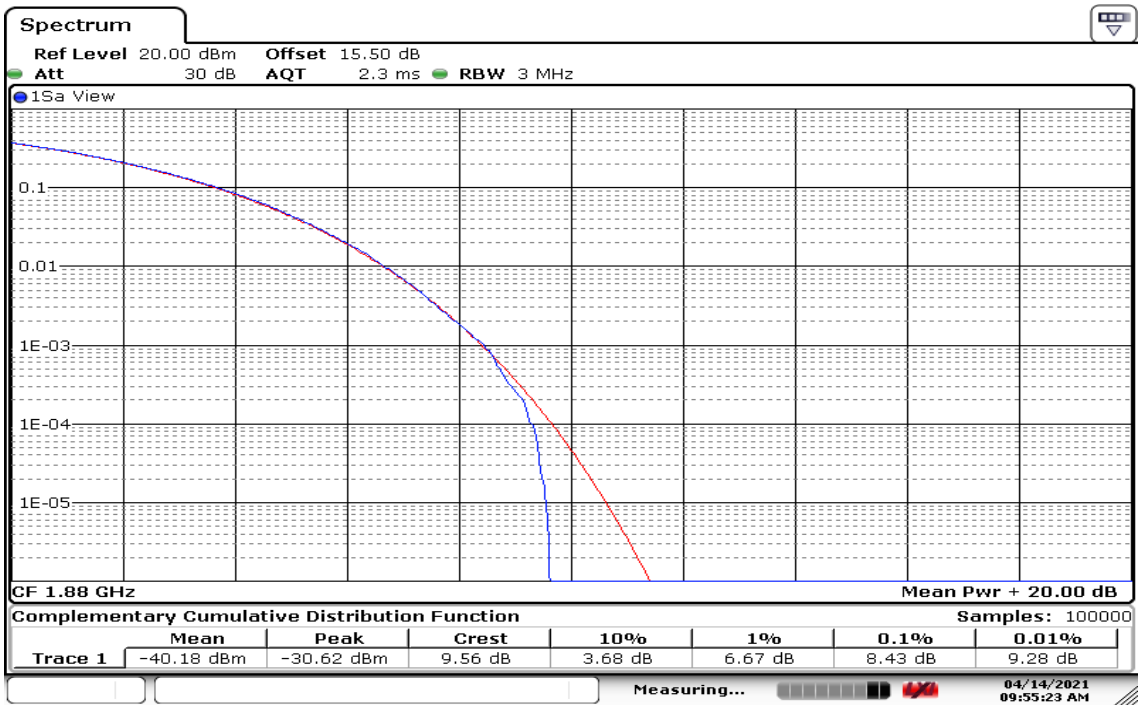

Date: 13.APR.2021 20:05:26

## BW: 15MHz
## CH Low




Date: 14.APR.2021 09:50:28

## CH Mid




Date: 14.APR.2021 09:55:24

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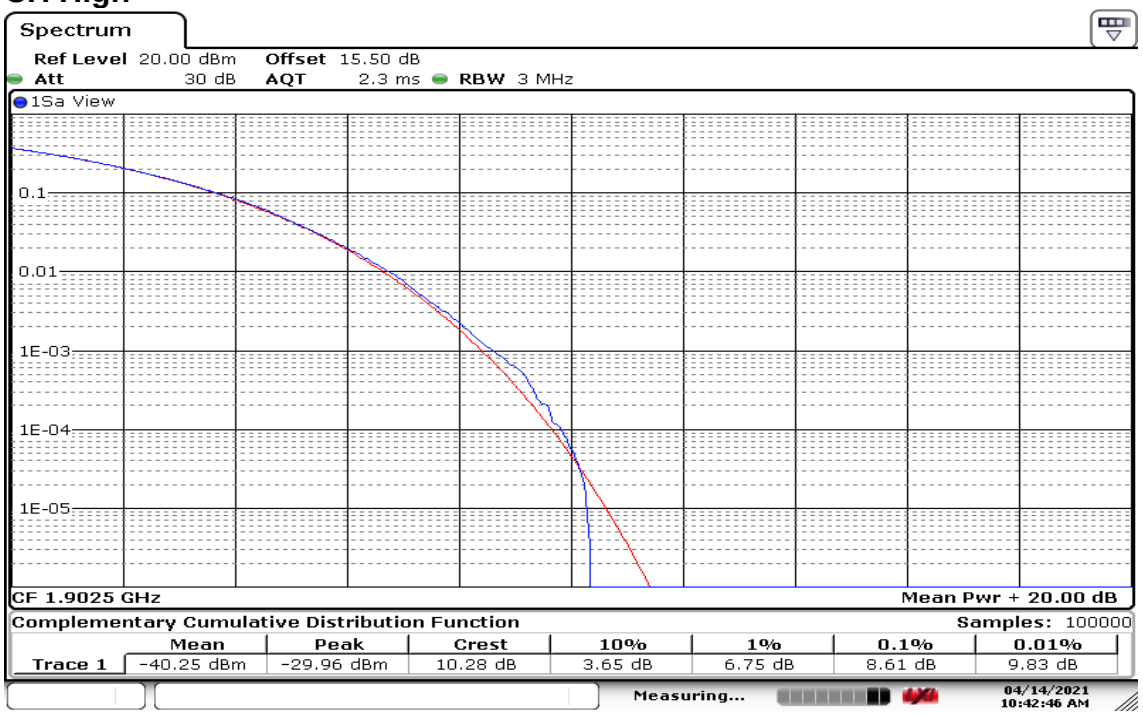
## CH High




Date: 14.APR.2021 10:42:47

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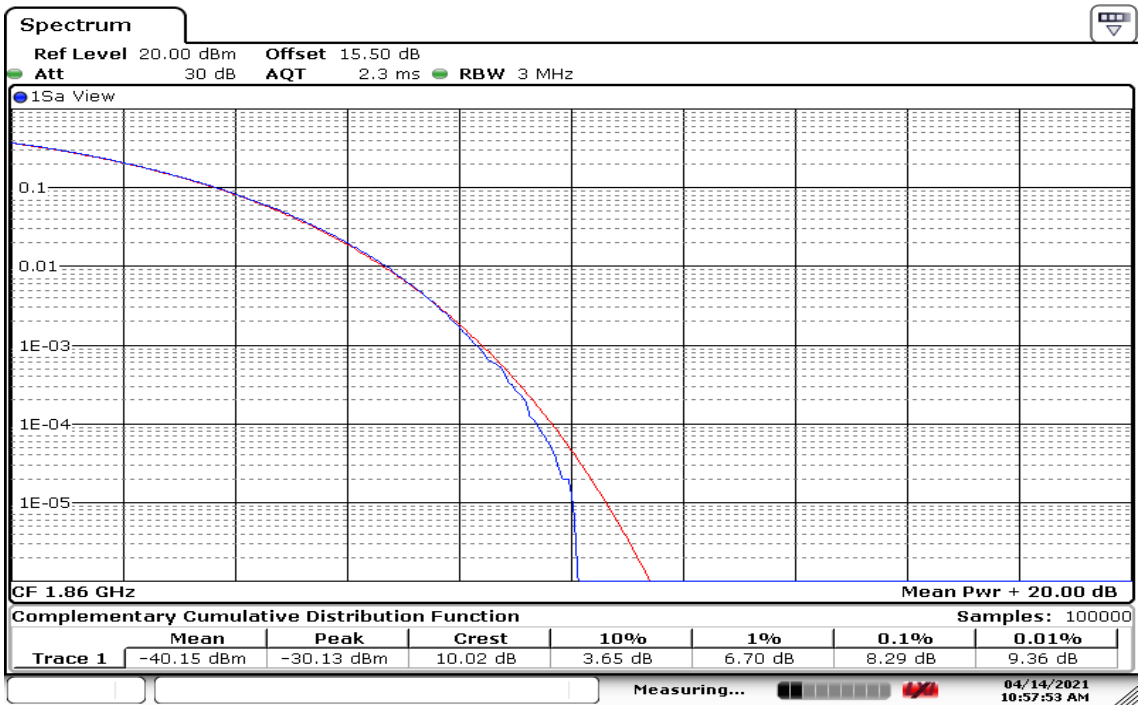
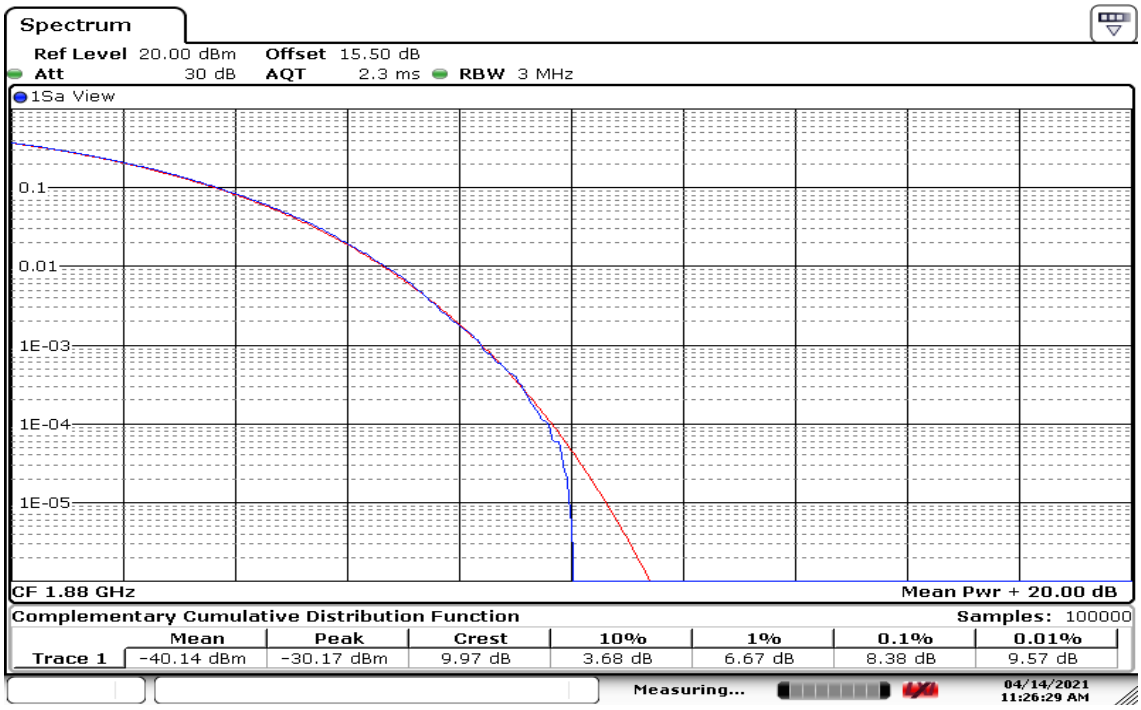
## BW: 20MHz
## CH Low




Date: 14.APR.2021 10:57:53

## CH Mid




Date: 14.APR.2021 11:26:30

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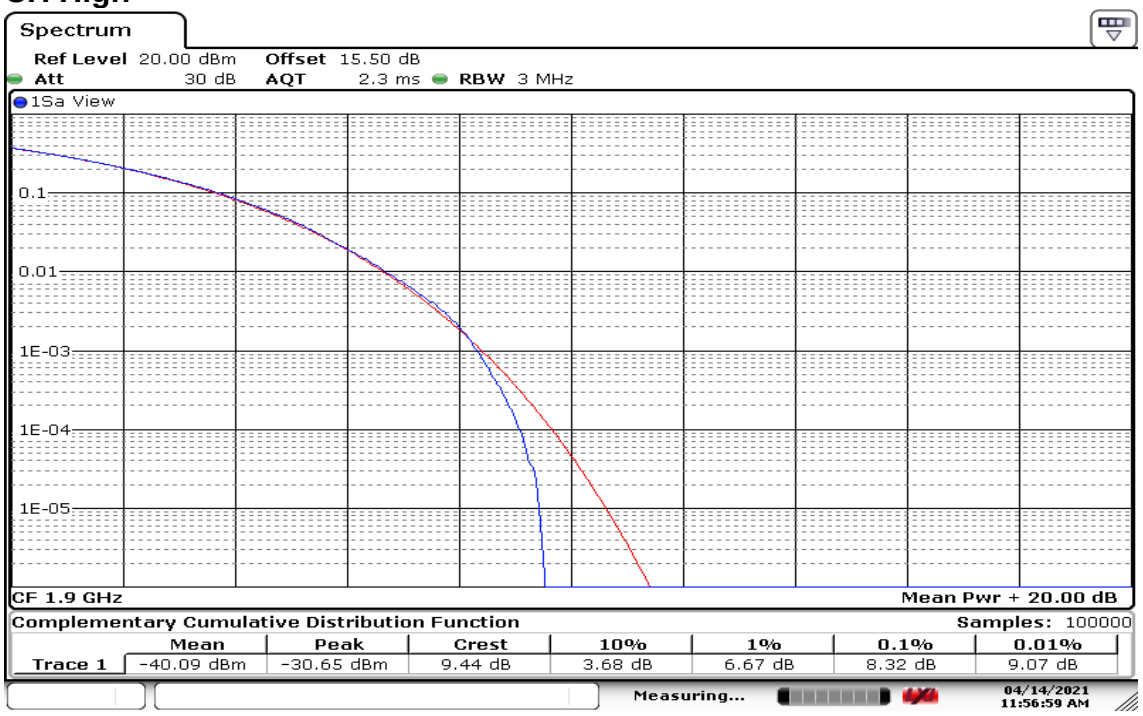
## CH High




Date: 14.APR.2021 11:56:59

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## 8.5 CONDUCTED BAND EDGE MEASUREMENT

### Limit

**FCC §24.238(a), Band 2**

For operations in the 1850-1910 and 1930-1950 MHz band , Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

### Test Procedures

KDB 971168 D01,
1. RBW ≥ 1% of the emission bandwidth
2. VBW ≥ 3 x RBW
3. Span was set large enough so as to capture all out of emissions near the band edge.

### Test Results:

| | | | |
|---|---|---|---|
| **Temperature:** | 21.5℃ | **Humidity:** | 56.2% RH |
| **Tested by:** | Dally Hong | **Test Date:** | March 29, 2021 |
| **Temperature:** | 23.7℃ | **Humidity:** | 52.4% RH |
| **Tested by:** | Dally Hong | **Test Date:** | April 13, 2021 |
| **Temperature:** | 23.1℃ | **Humidity:** | 52.5% RH |
| **Tested by:** | Dally Hong | **Test Date:** | April 14, 2021 |

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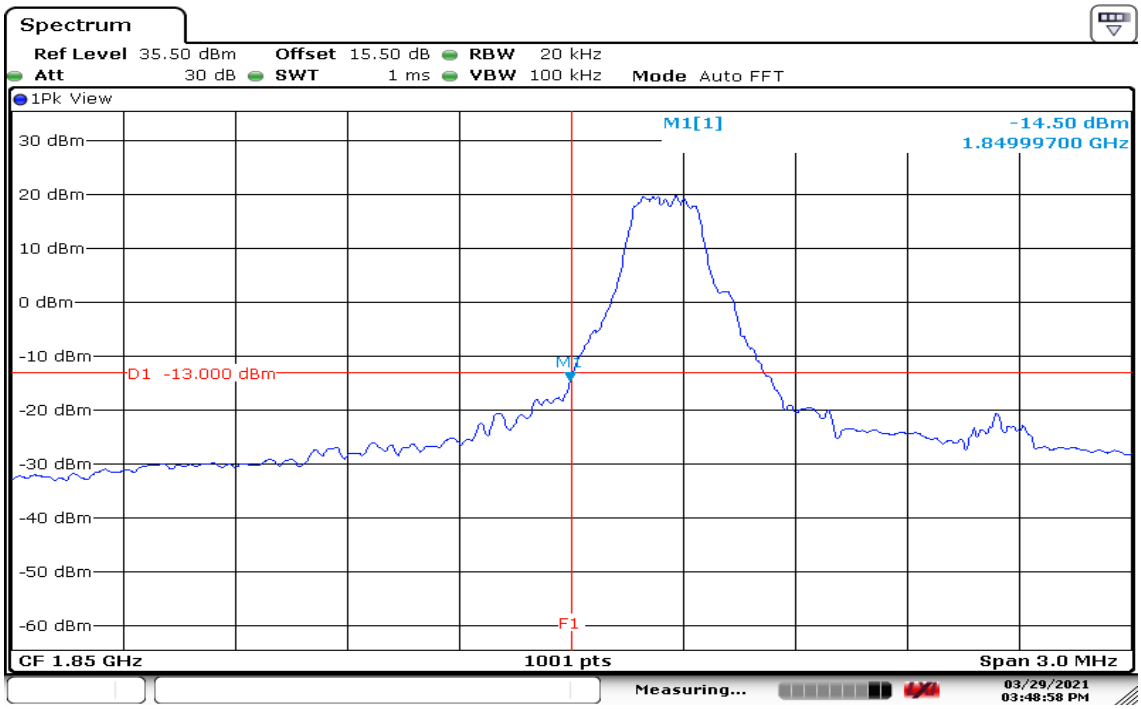
# LTE Band 2

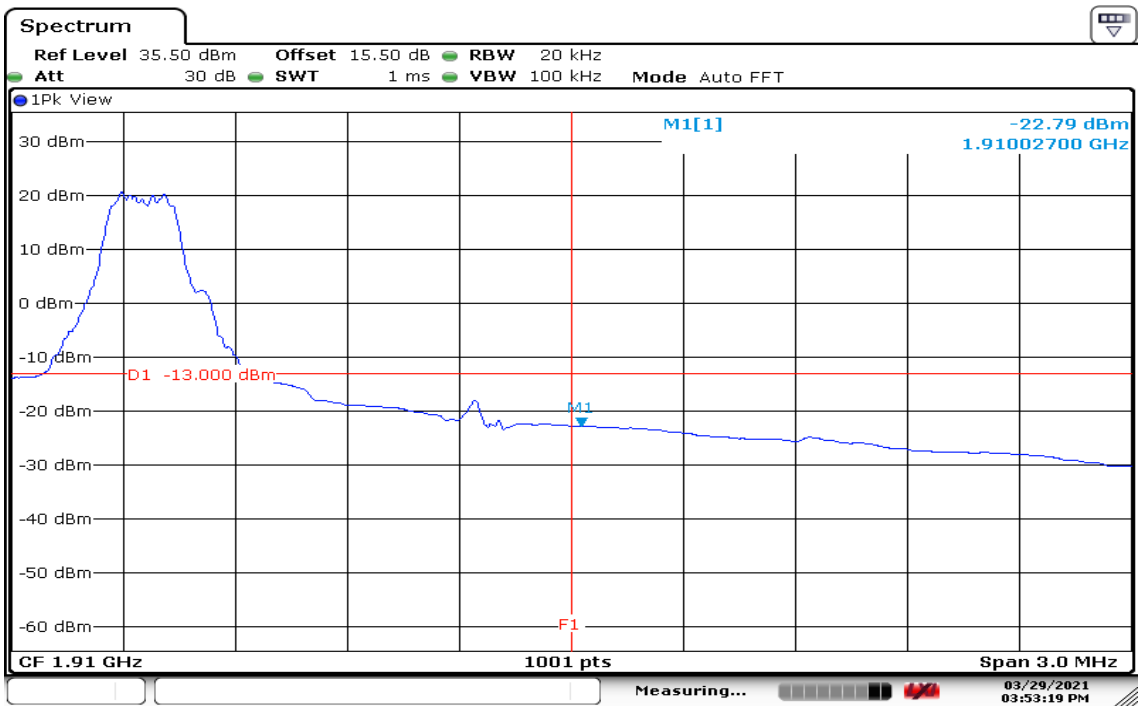
## CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB ALLOCATED

## LOWER BAND EDGE




Date: 29.MAR.2021 15:48:59

## HIGHER BAND EDGE




Date: 29.MAR.2021 15:53:19

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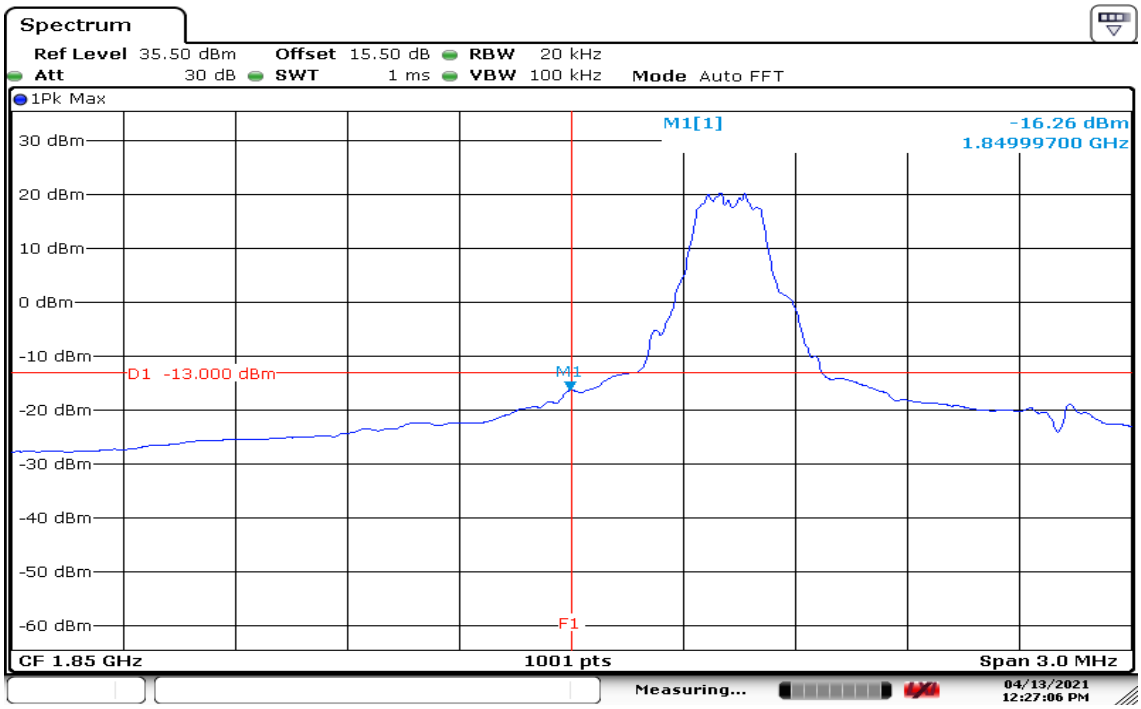
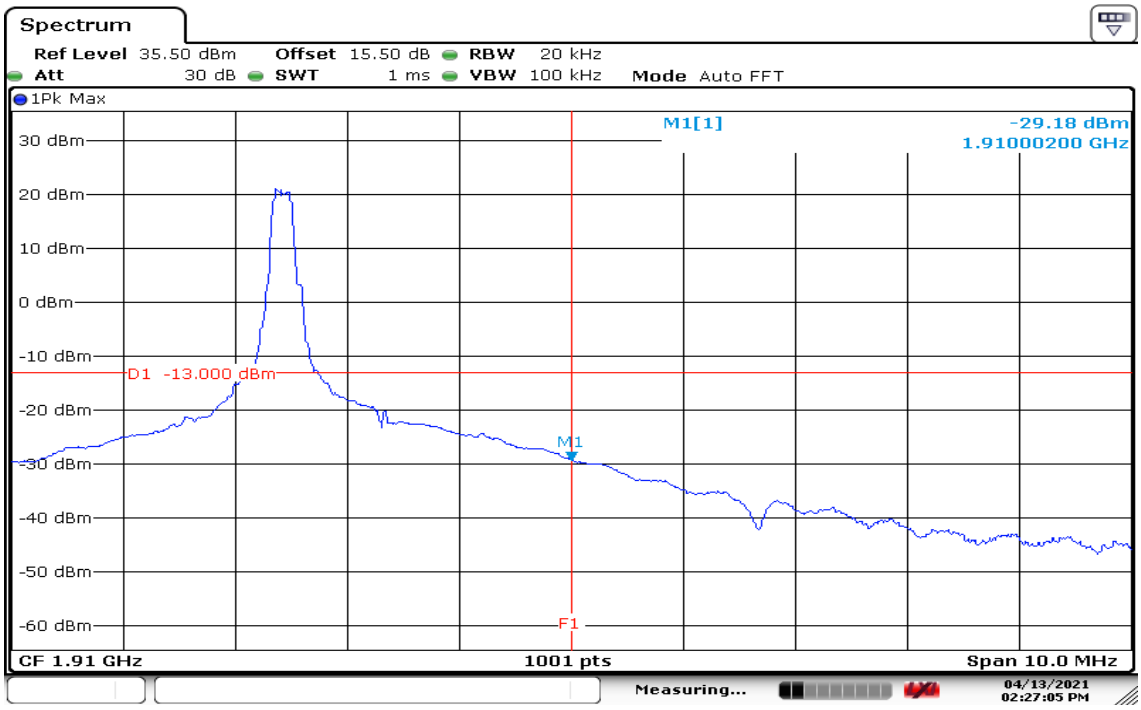
## CHANNEL BANDWIDTH: 3MHz / QPSK / 1RB ALLOCATED
## LOWER BAND EDGE




Date: 13.APR.2021 12:27:06

## HIGHER BAND EDGE




Date: 13.APR.2021 14:27:05

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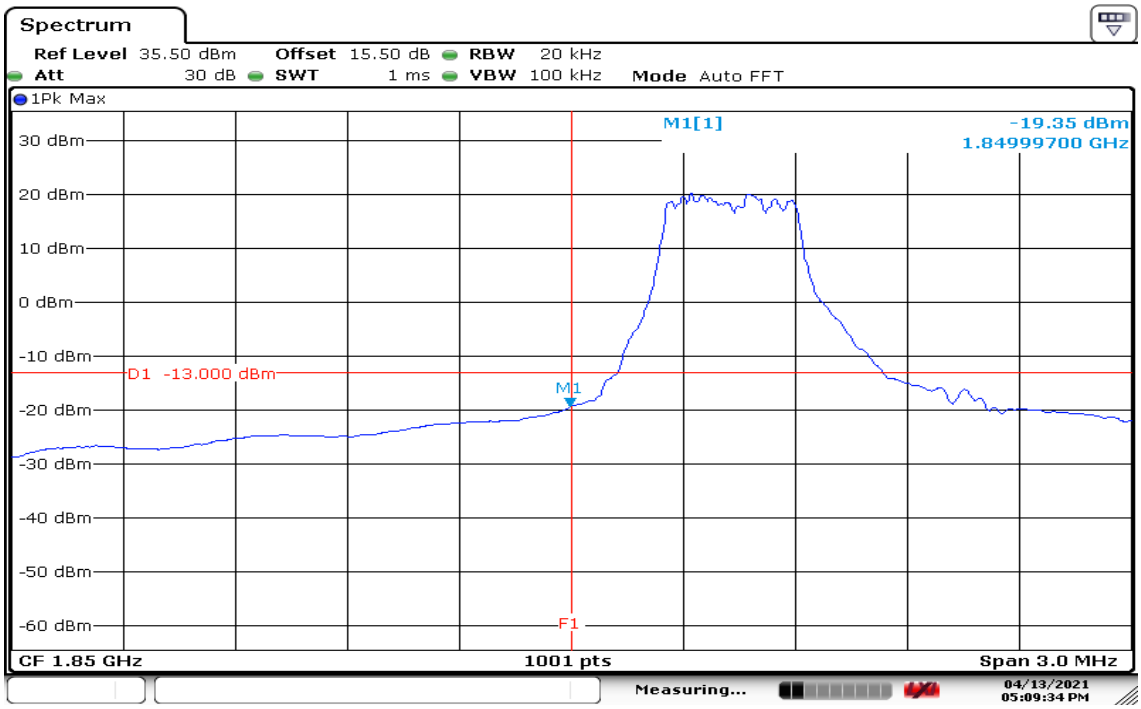
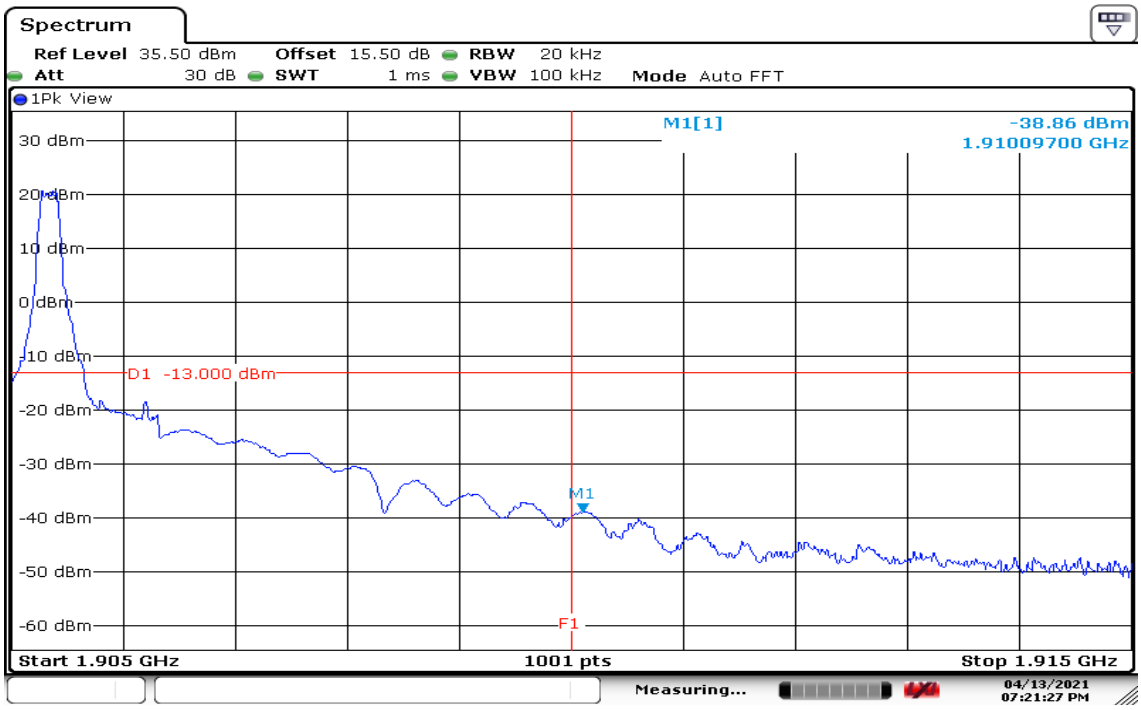
## CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB ALLOCATED
## LOWER BAND EDGE




Date:13.APR.2021 17:09:34

## HIGHER BAND EDGE




Date:13.APR.2021 19:21:27

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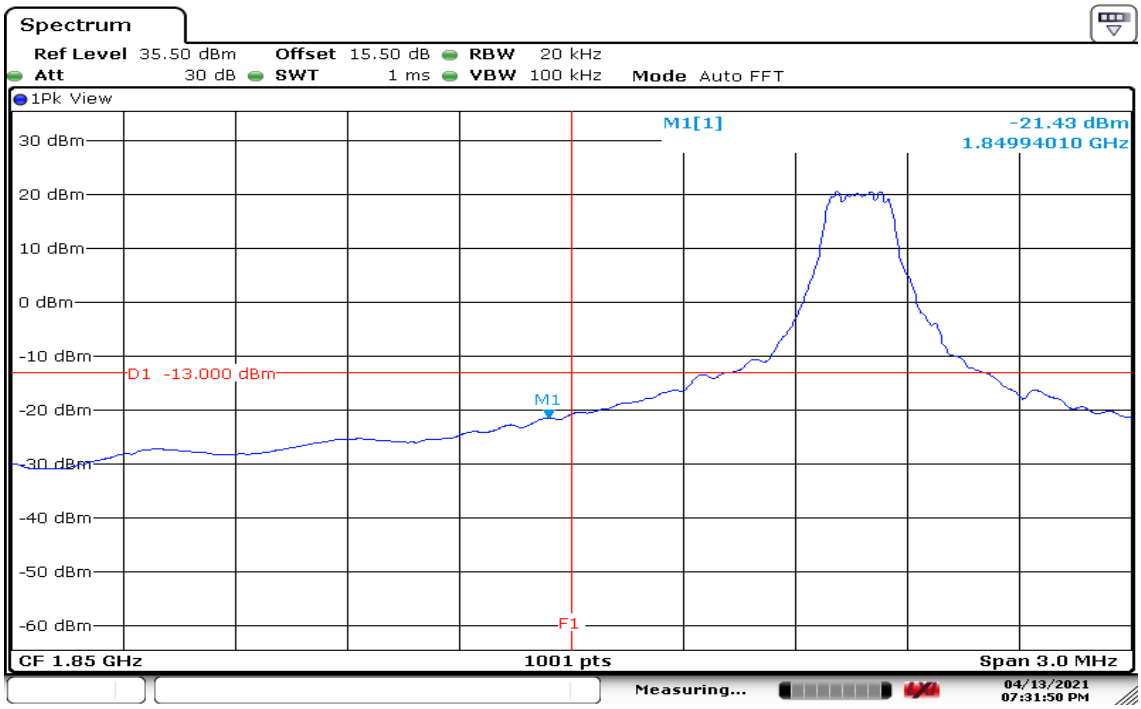
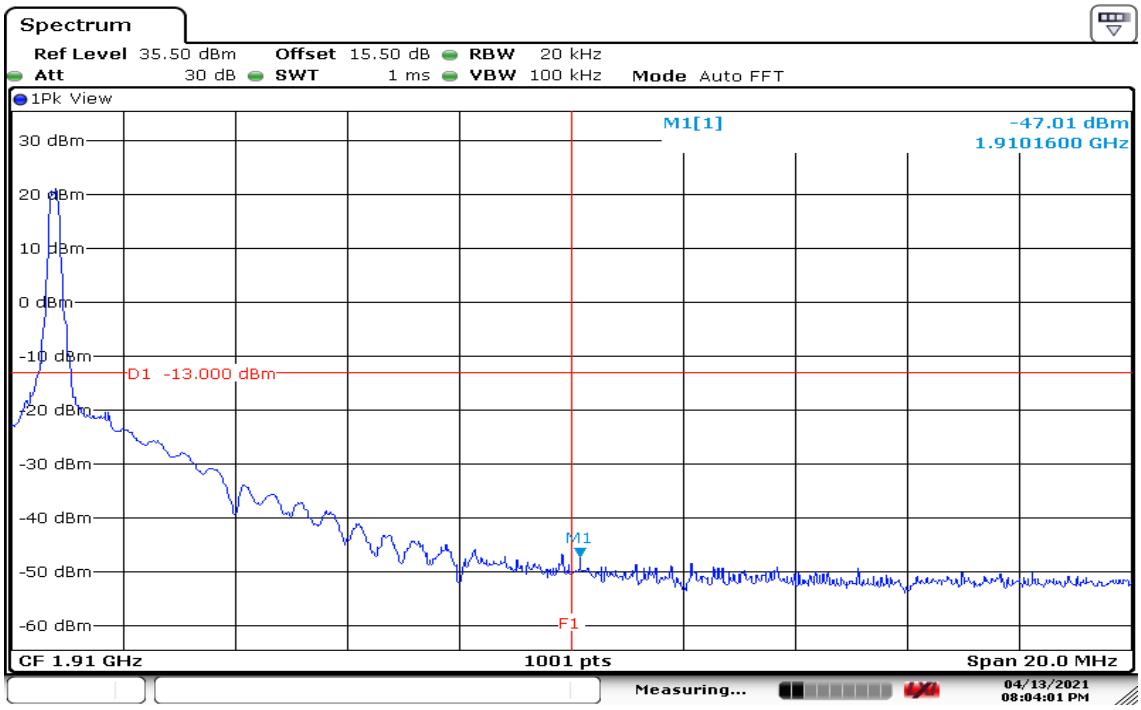
## CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB ALLOCATED
## LOWER BAND EDGE




Date: 13.APR.2021 19:31:51

## HIGHER BAND EDGE




Date: 13.APR.2021 20:04:01

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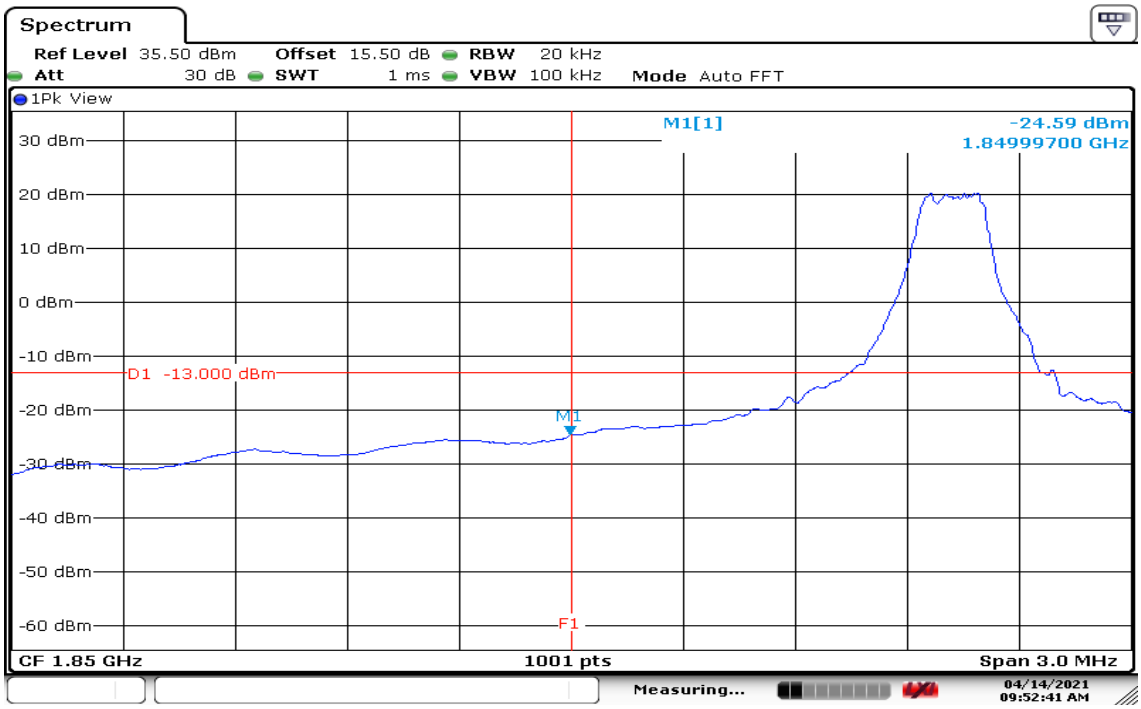
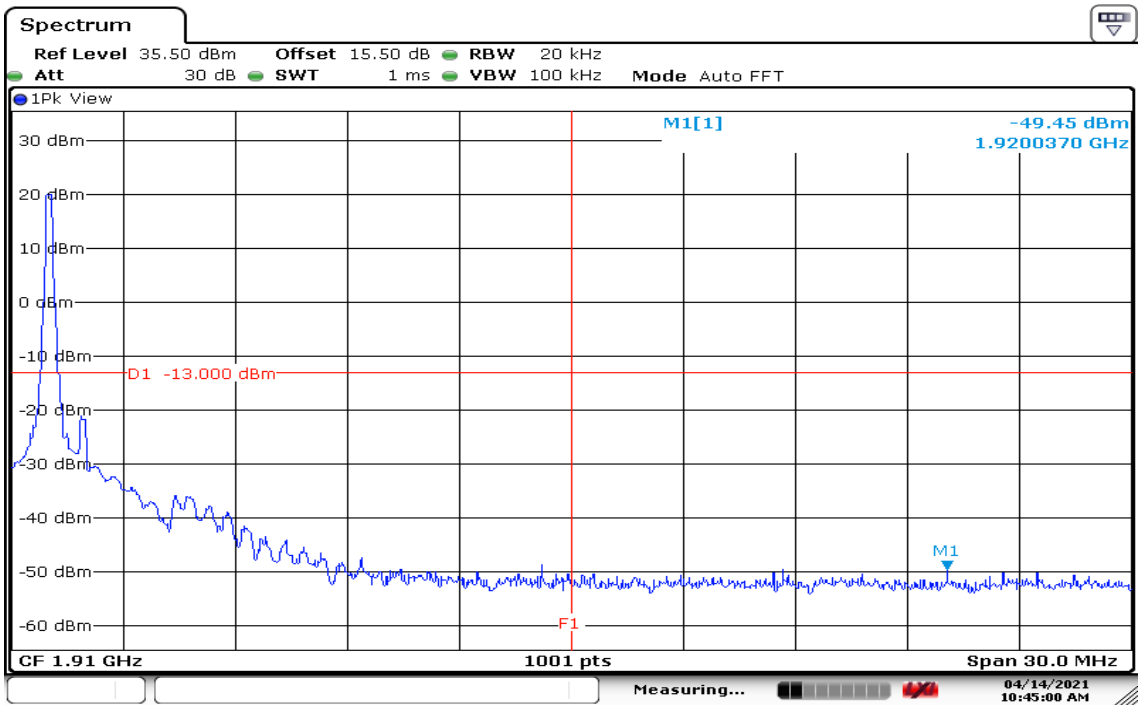
## CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB ALLOCATED
## LOWER BAND EDGE




Date: 14.APR.2021 09:52:41

## HIGHER BAND EDGE




Date: 14.APR.2021 10:45:00

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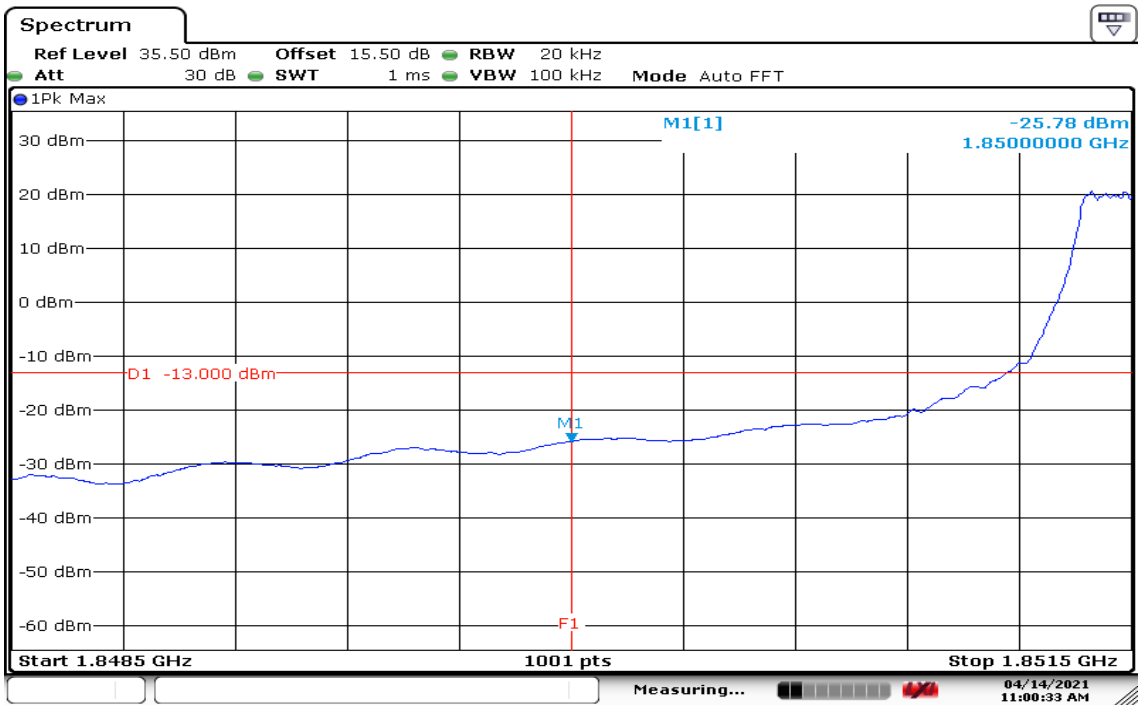
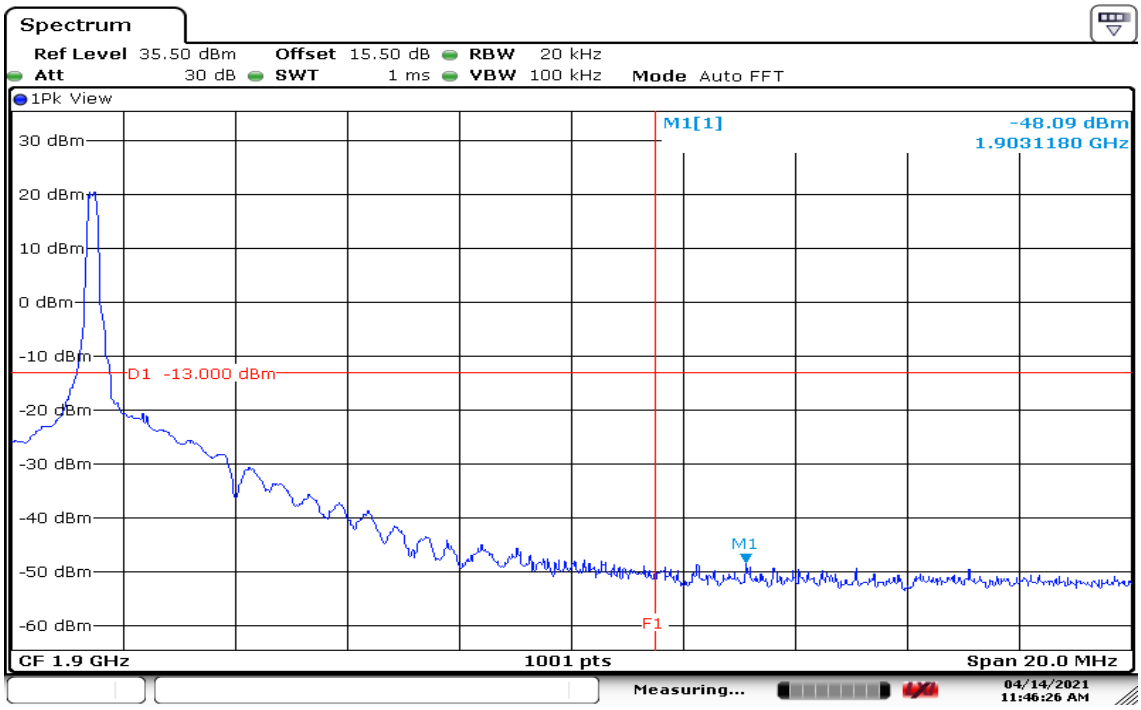
## CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB ALLOCATED
## LOWER BAND EDGE




Date: 14.APR.2021 11:00:33

## HIGHER BAND EDGE




Date: 14.APR.2021 11:46:27

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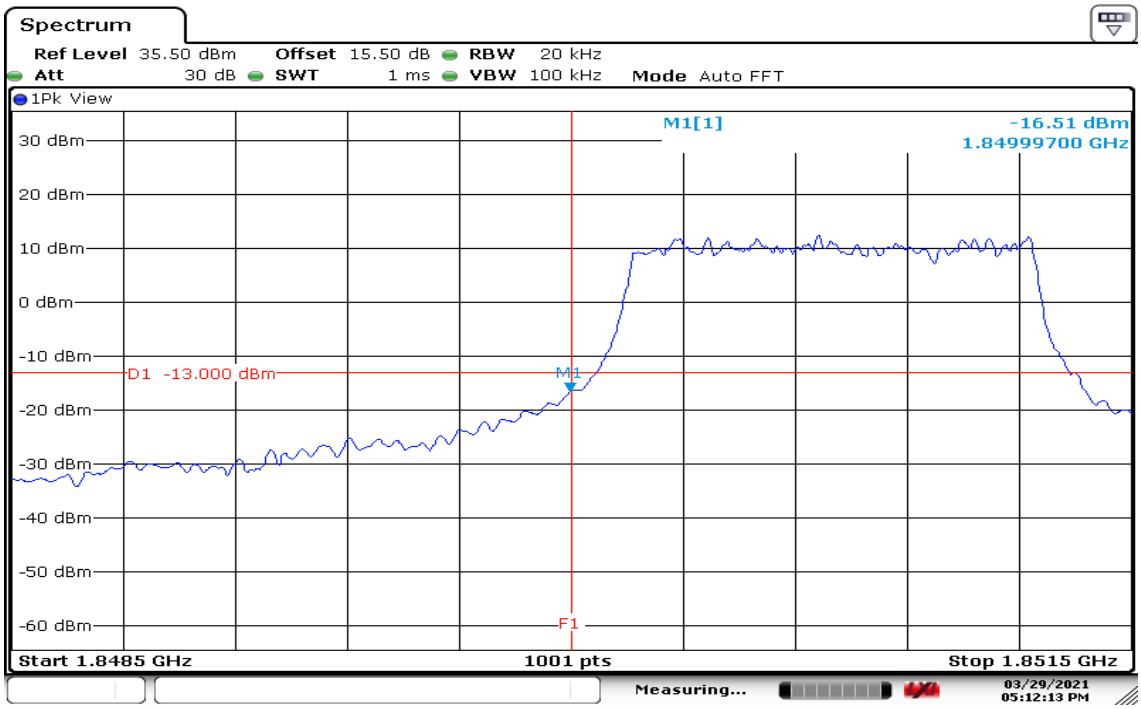
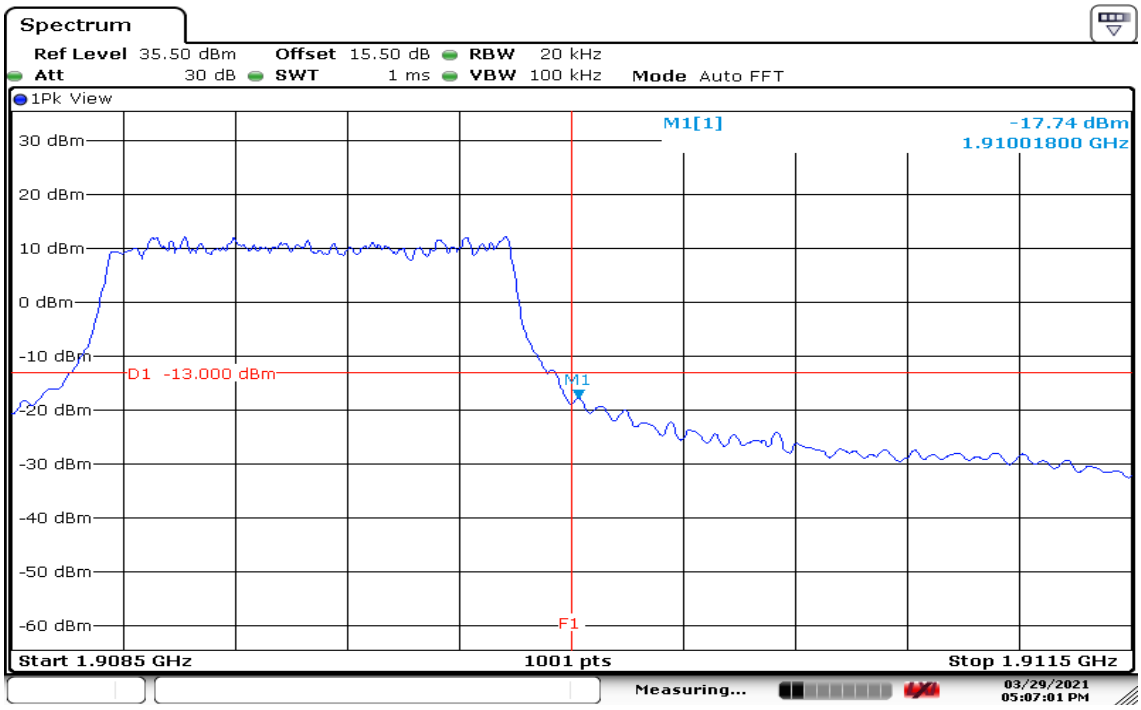
## CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100%RB ALLOCATED
## LOWER BAND EDGE




Date: 29.MAR.2021 17:12:13

## HIGHER BAND EDGE




Date: 29.MAR.2021 17:07:02

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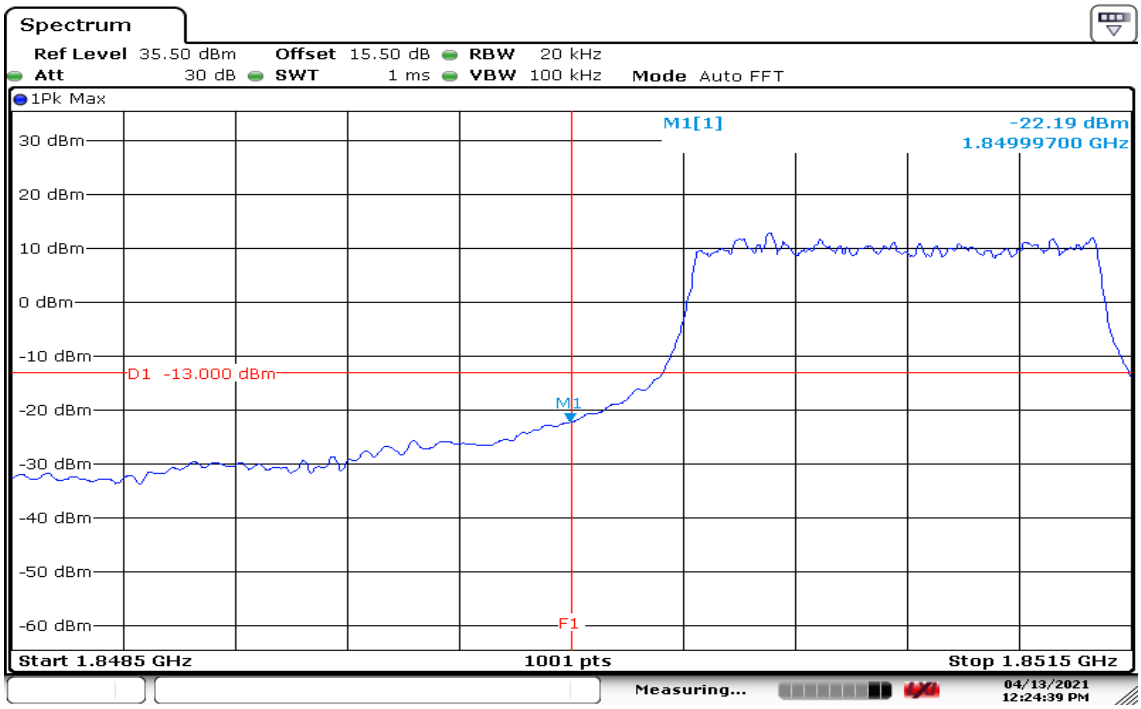
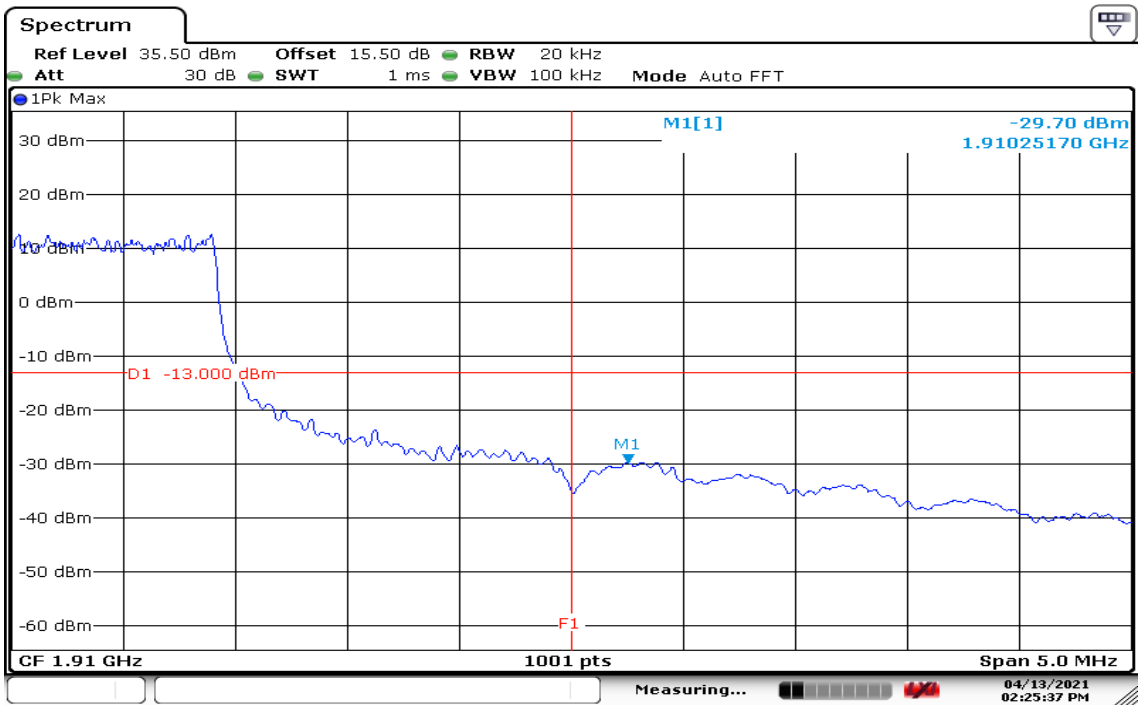
## CHANNEL BANDWIDTH: 3MHz / QPSK / 100%RB ALLOCATED
## LOWER BAND EDGE




Date:13.APR.2021 12:24:39

## HIGHER BAND EDGE




Date:13.APR.2021 14:25:37

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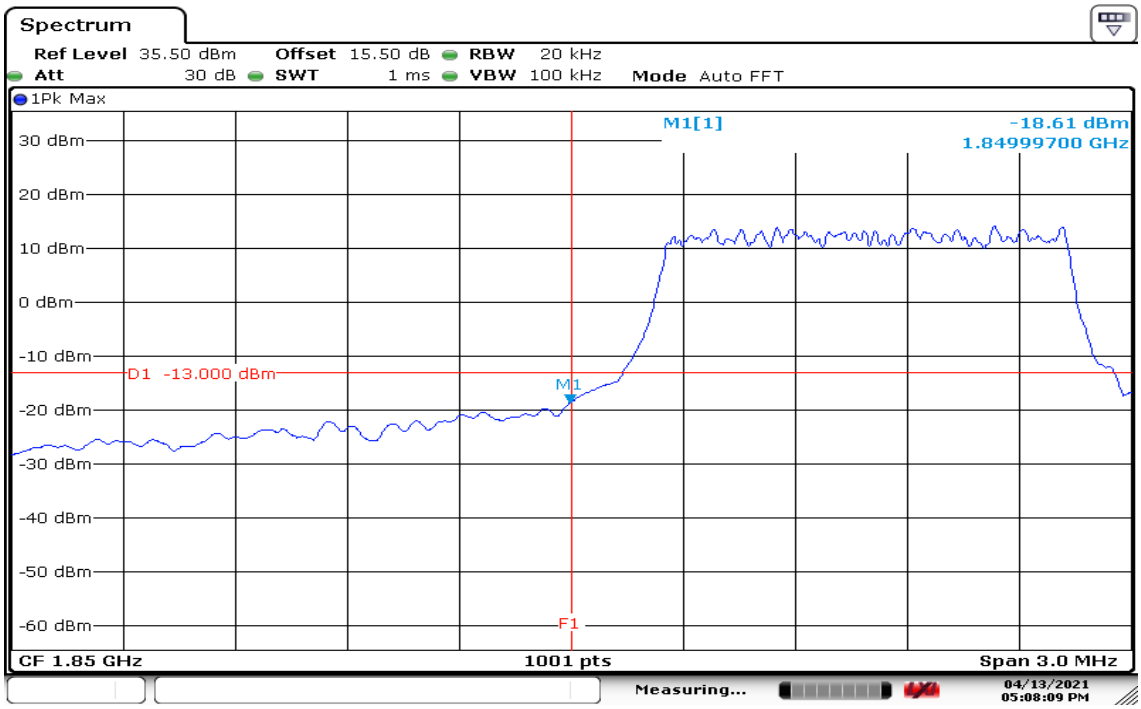
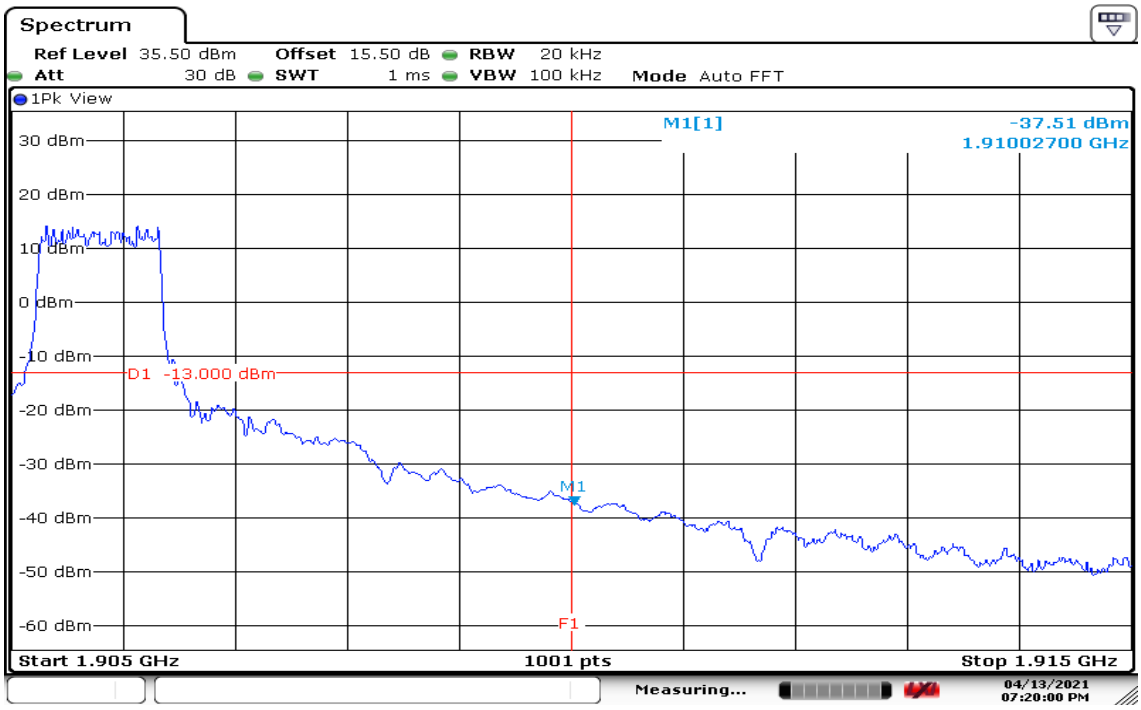
## CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB ALLOCATED
## LOWER BAND EDGE




Date:13.APR.2021 17:08:10

## HIGHER BAND EDGE




Date:13.APR.2021 19:20:00

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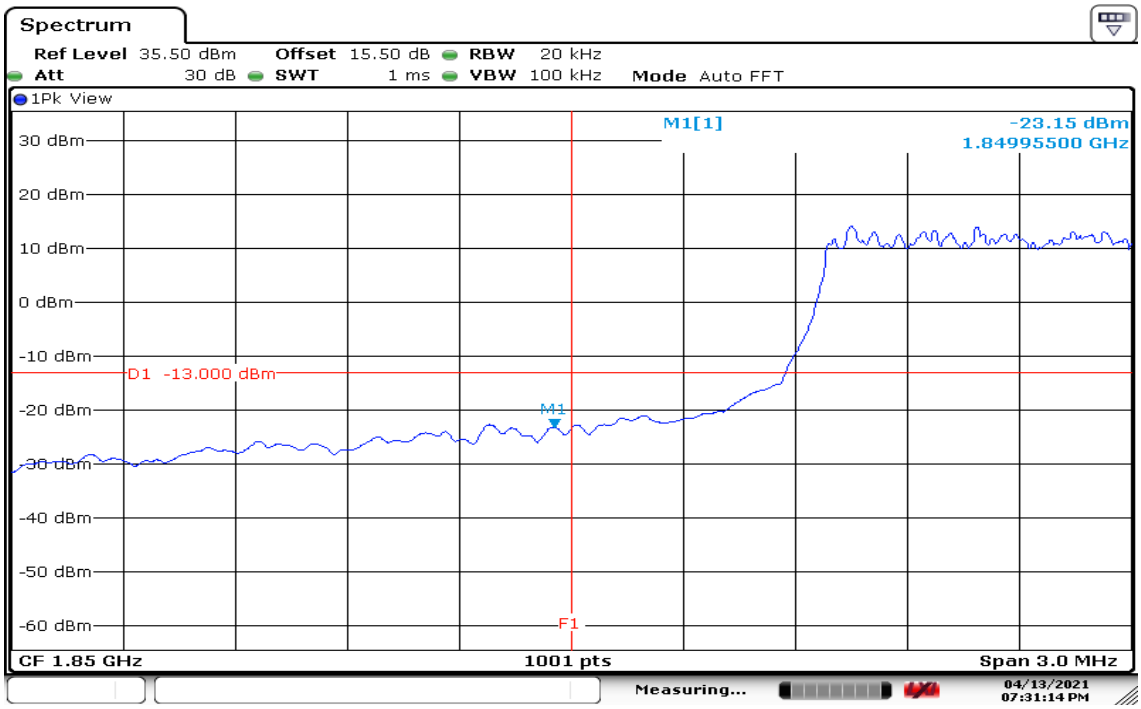
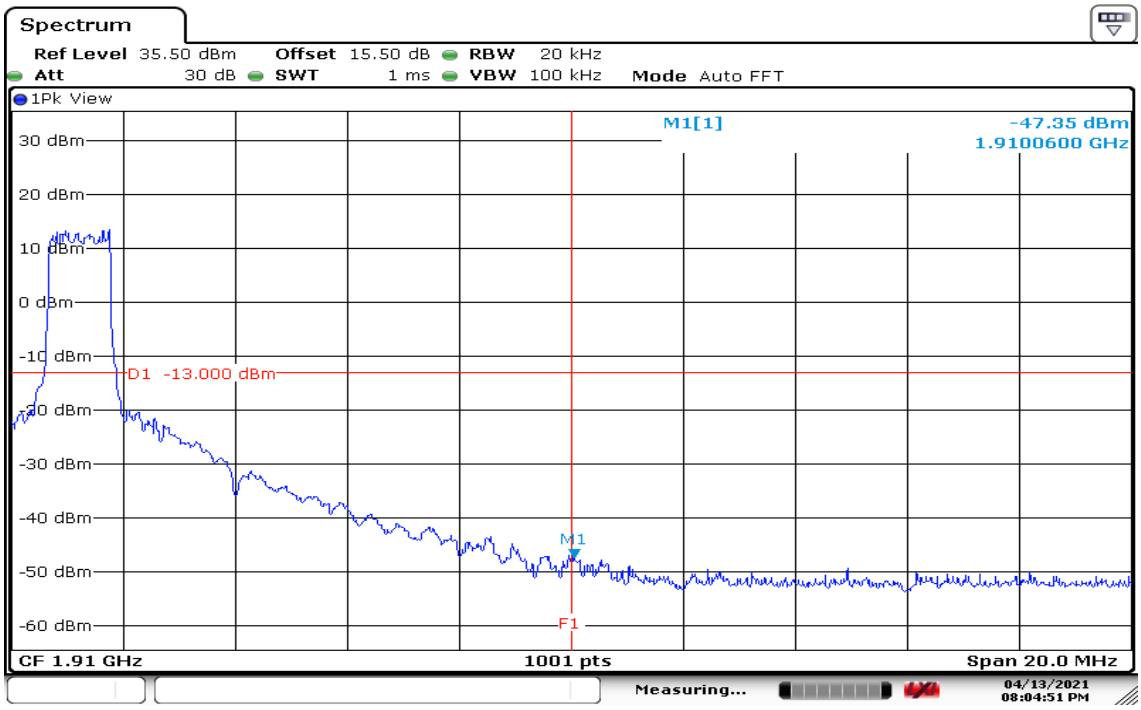
## CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB ALLOCATED
## LOWER BAND EDGE




Date: 13.APR.2021 19:31:14

## HIGHER BAND EDGE




Date: 13.APR.2021 20:04:52

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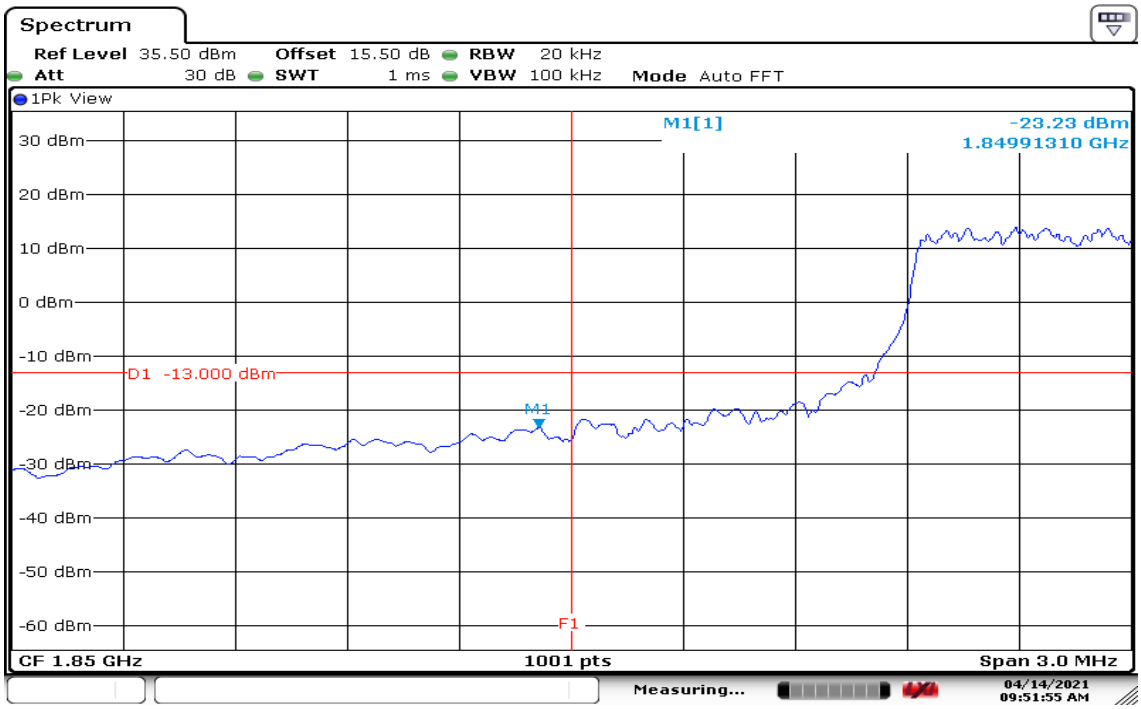
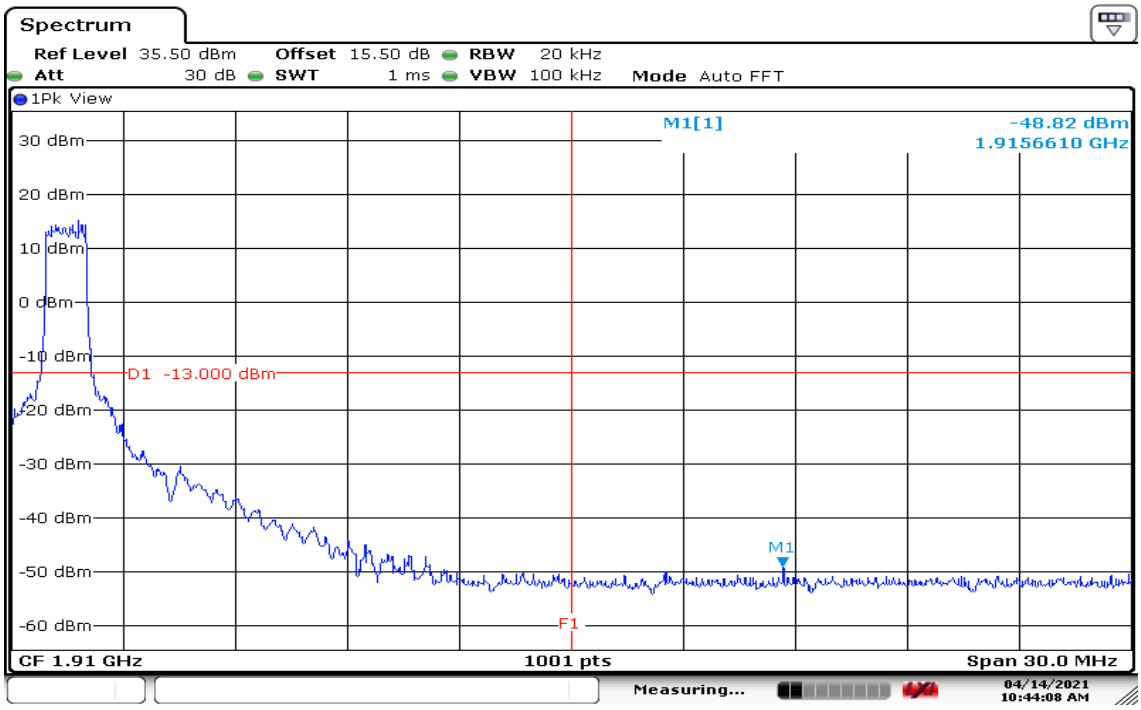
## CHANNEL BANDWIDTH: 15MHz / QPSK / 100%RB ALLOCATED
## LOWER BAND EDGE




Date: 14.APR.2021 09:51:55

## HIGHER BAND EDGE




Date: 14.APR.2021 10:44:09

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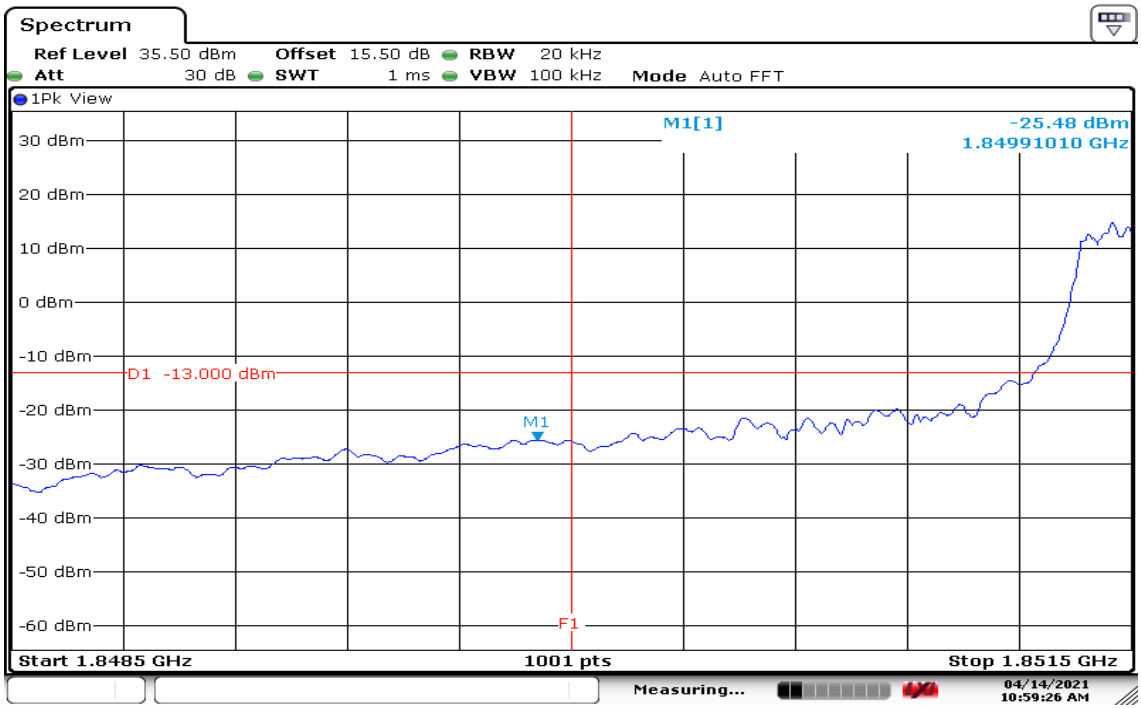
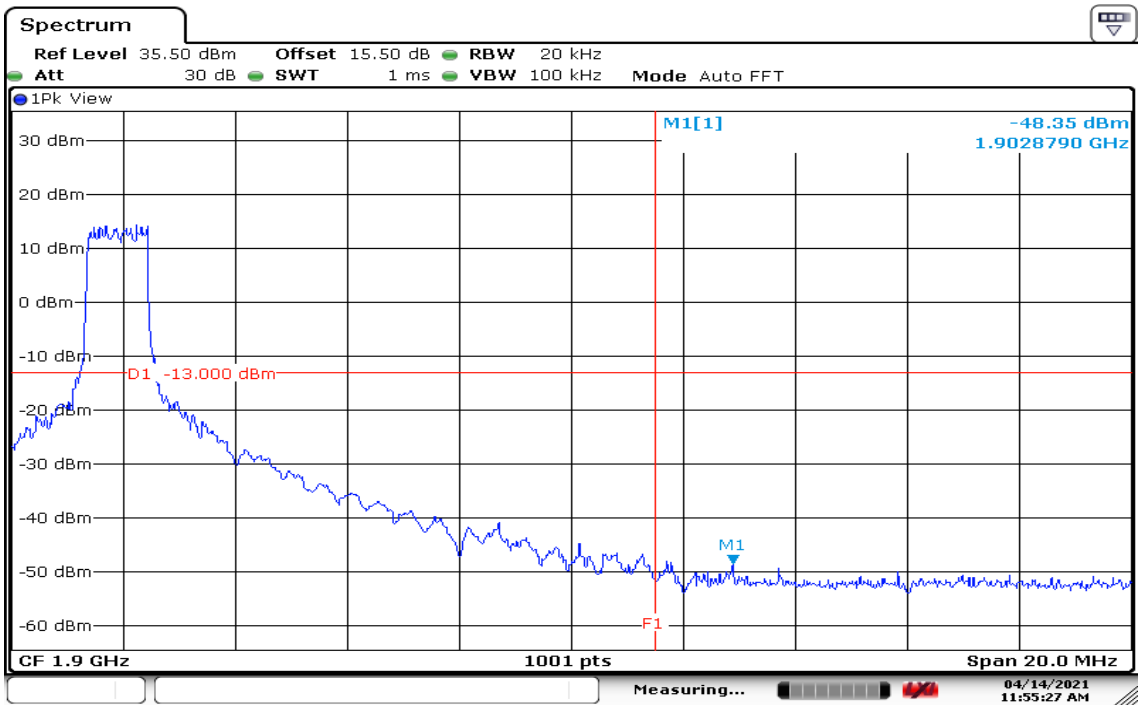
## CHANNEL BANDWIDTH: 20MHz / QPSK / 100%RB ALLOCATED
## LOWER BAND EDGE




Date: 14.APR.2021 10:59:26

## HIGHER BAND EDGE




Date: 14.APR.2021 11:55:28

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## 8.6 CONDUCTED SPURIOUS EMISSIONS

### Limits

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission equal to –13dBm

### Test Procedures

1. According to KDB 971168 D01,
2. The EUT was connect to spectrum analyzer and call box.
3. The RF output of EUT was connected to the spectrum analyzer.
4. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
5. Record the maximum spurious emission.
6. The fundamental frequency should be excluded against the limit in operating band.

### Test Results

| | | | |
|---|---|---|---|
| **Temperature:** | 21.5℃ | **Humidity:** | 56.2% RH |
| **Tested by:** | Dally Hong | **Test Date:** | March 29, 2021 |
| **Temperature:** | 22.7℃ | **Humidity:** | 54.3% RH |
| **Tested by:** | Dally Hong | **Test Date:** | March 30, 2021 |
| **Temperature:** | 23.7℃ | **Humidity:** | 52.4% RH |
| **Tested by:** | Dally Hong | **Test Date:** | April 13, 2021 |
| **Temperature:** | 23.1℃ | **Humidity:** | 52.5% RH |
| **Tested by:** | Dally Hong | **Test Date:** | April 14, 2021 |

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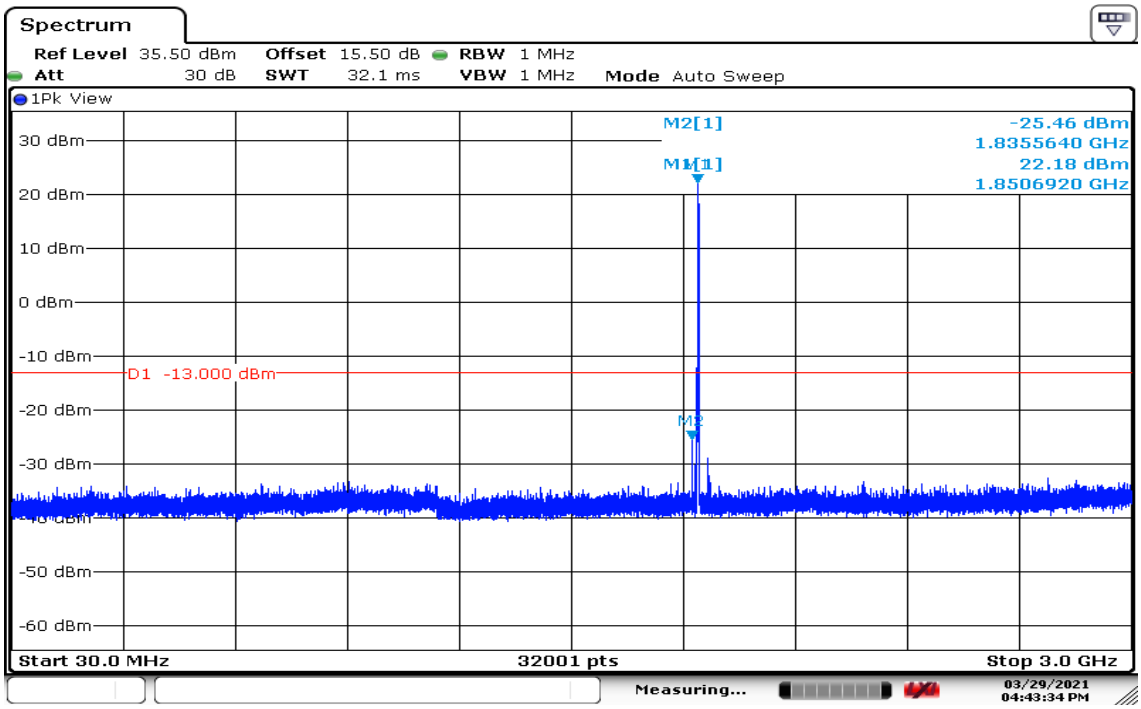
# LTE Band 2

## QPSK / 1RB

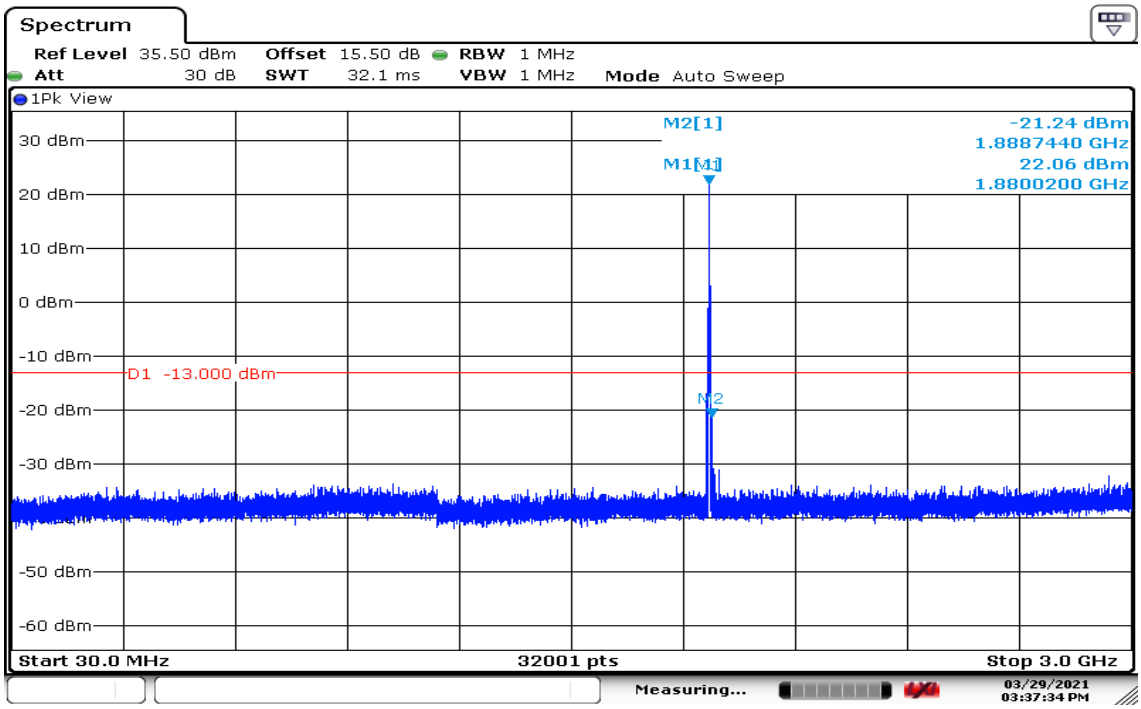
## CHANNEL BANDWIDTH: 1.4MHz / 30MHz-3GHz

## CH Low




Date: 29 MAR 2021 16:43:35

## CH Mid




Date: 29 MAR 2021 15:37:34

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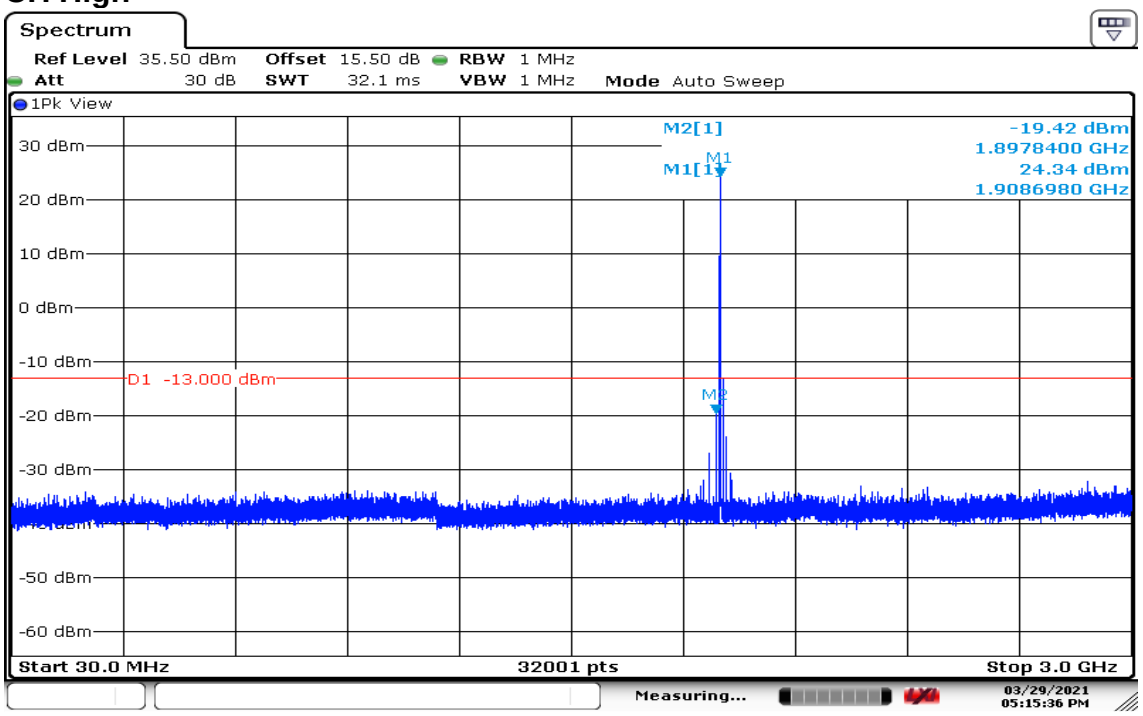
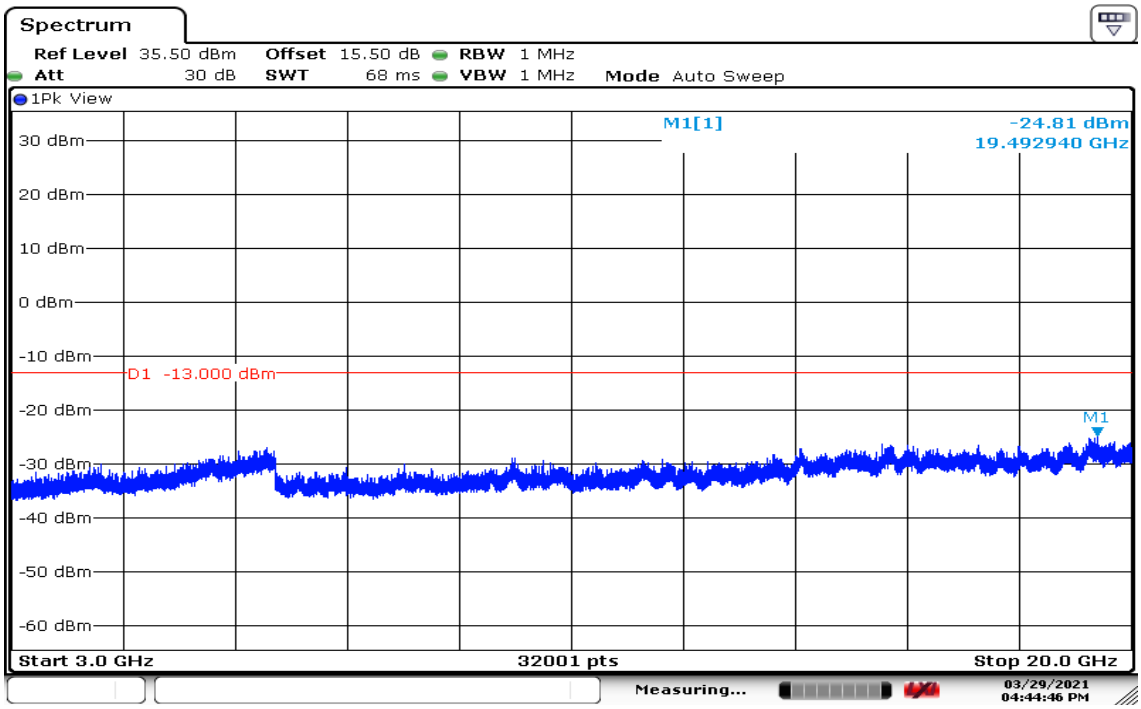
## CH High




Date: 29.MAR.2021 17:15:36

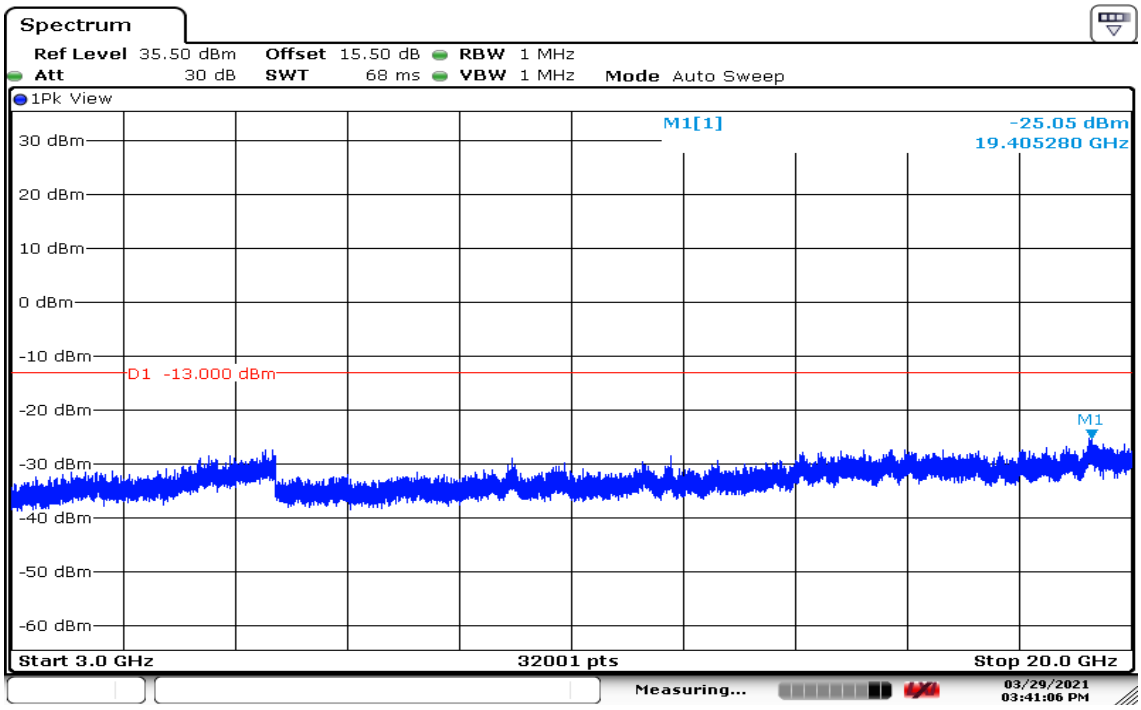
## CHANNEL BANDWIDTH: 1.4MHz / 3GHz-20GHz

### CH Low




Date: 29.MAR.2021 16:44:47

### CH Mid




Date: 29.MAR.2021 15:41:07

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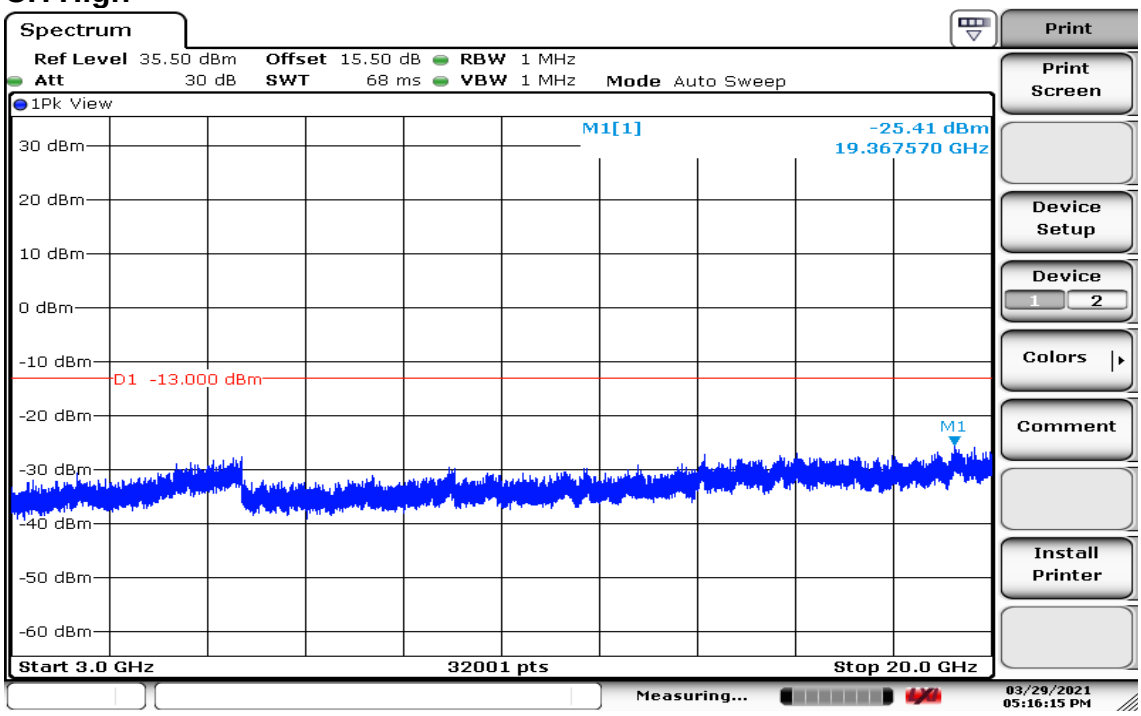
## CH High




Date:29.MAR.2021 17:16:16

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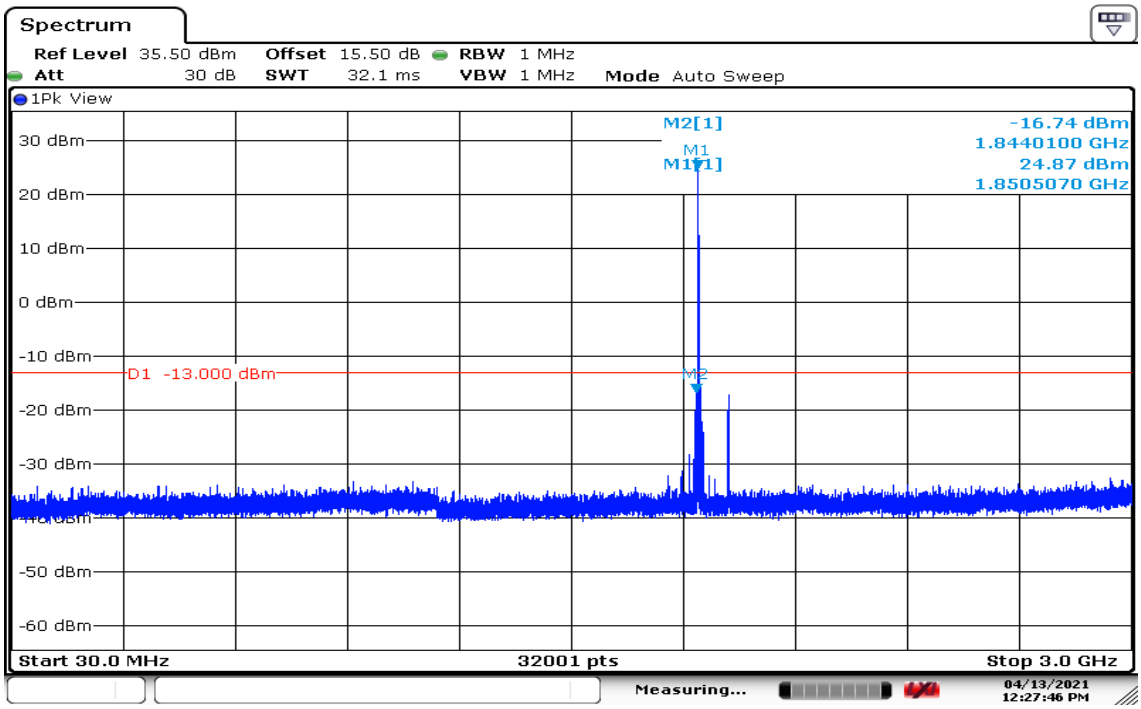
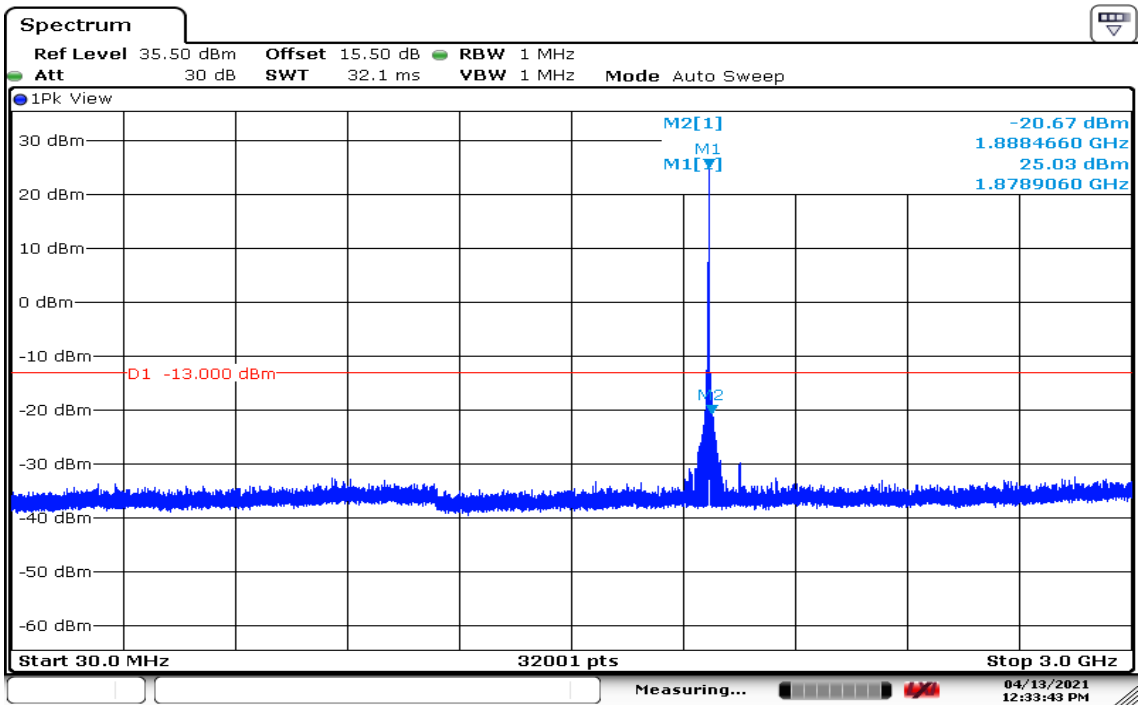
## CHANNEL BANDWIDTH: 3MHz / 30MHz-3GHz

### CH Low




Date:13.APR.2021 12:27:46

### CH Mid




Date:13.APR.2021 12:33:43

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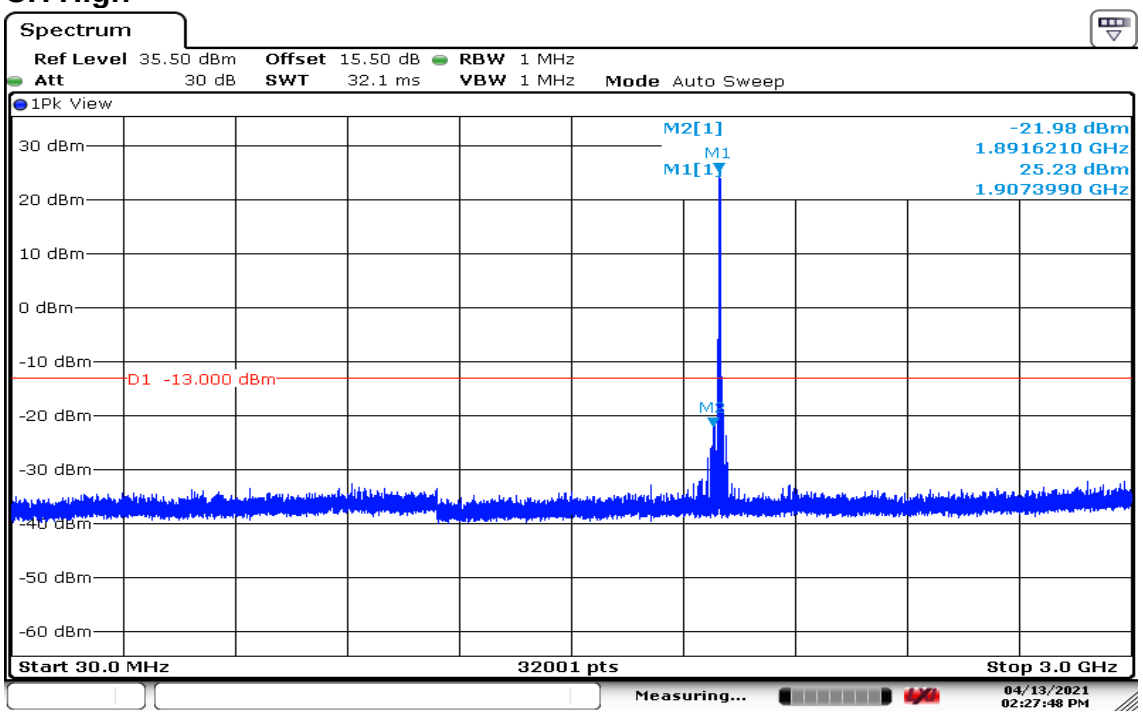
## CH High




Date:13.APR.2021 14:27:48

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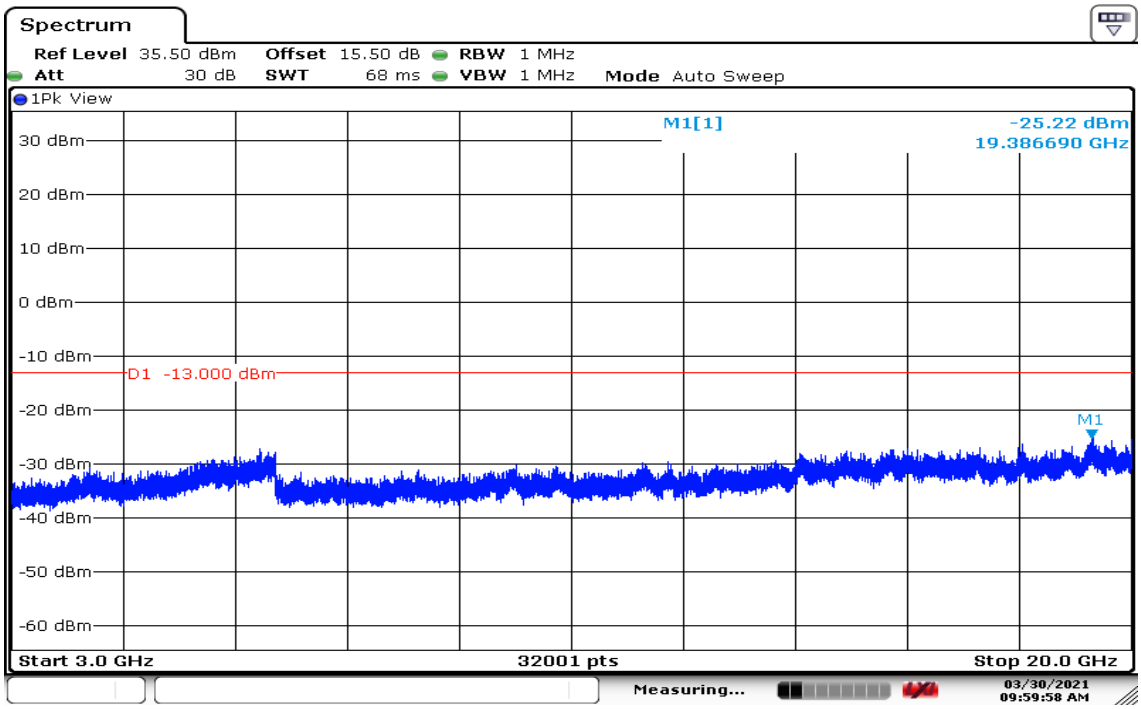
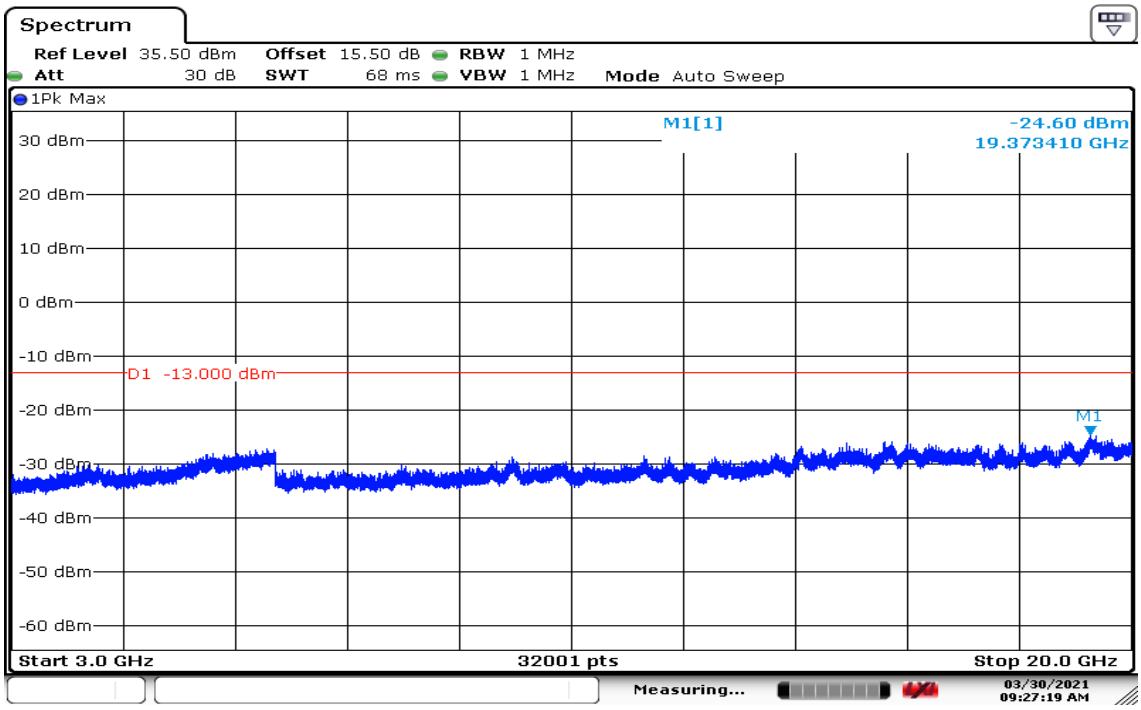
## CHANNEL BANDWIDTH: 3MHz / 3GHz-20GHz

### CH Low




Date: 30.MAR.2021 09:59:58

### CH Mid




Date: 30.MAR.2021 09:27:19

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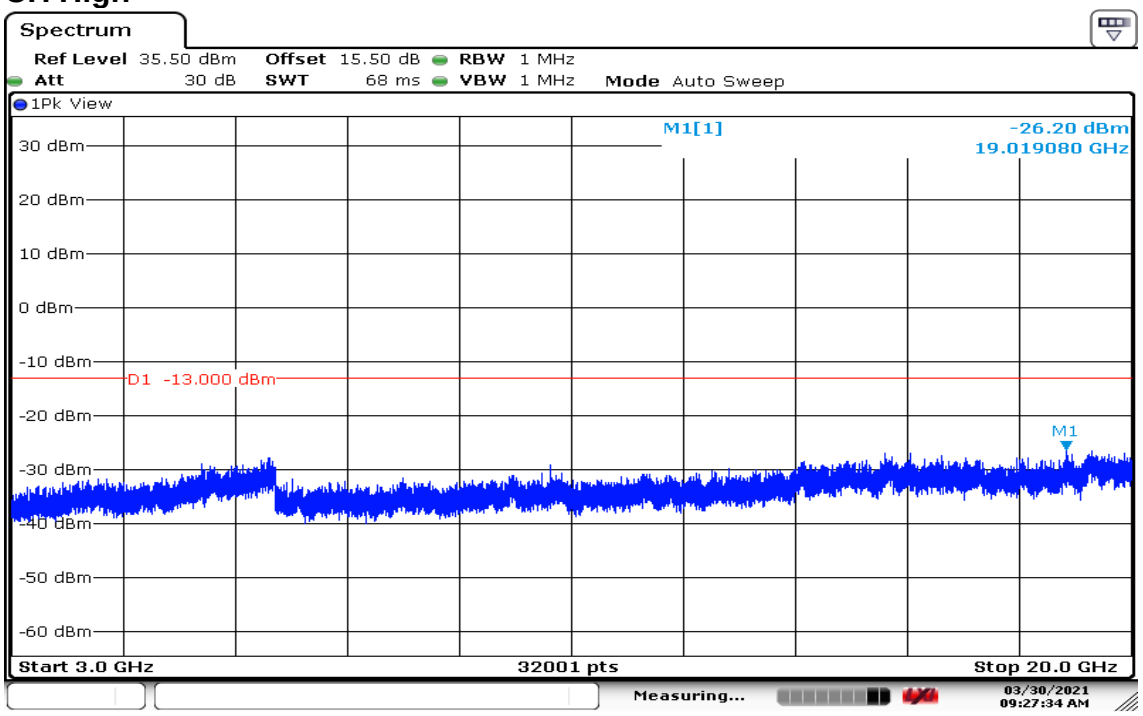
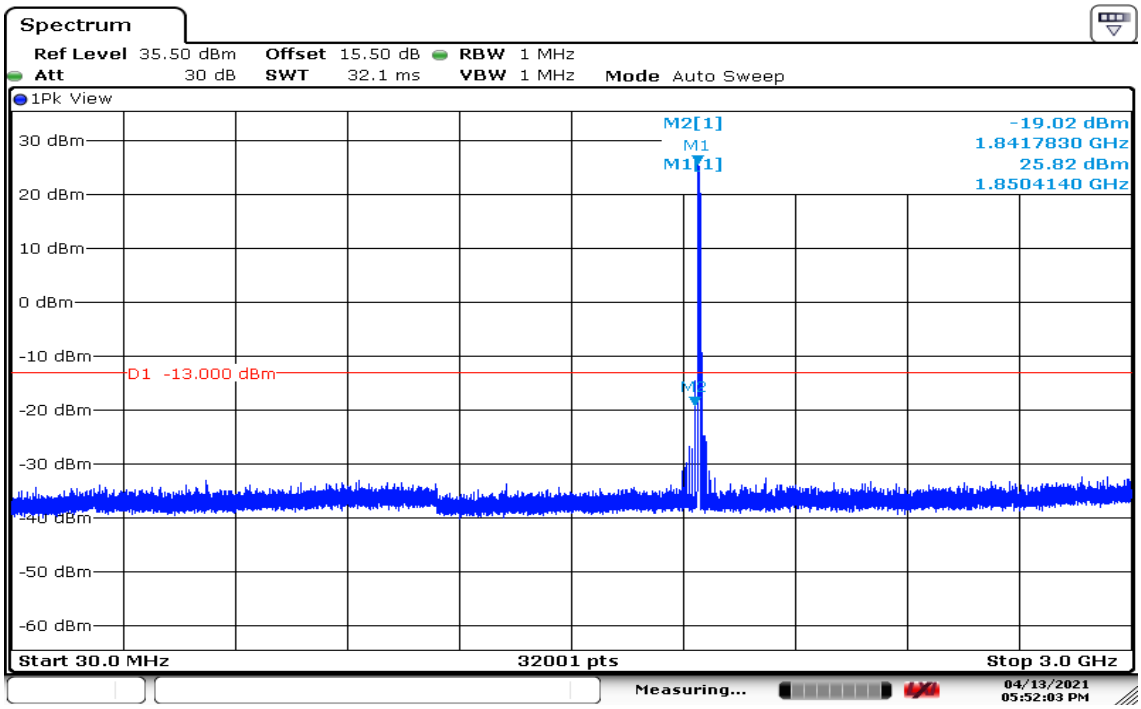
## CH High




Date: 30.MAR.2021 09:27:34

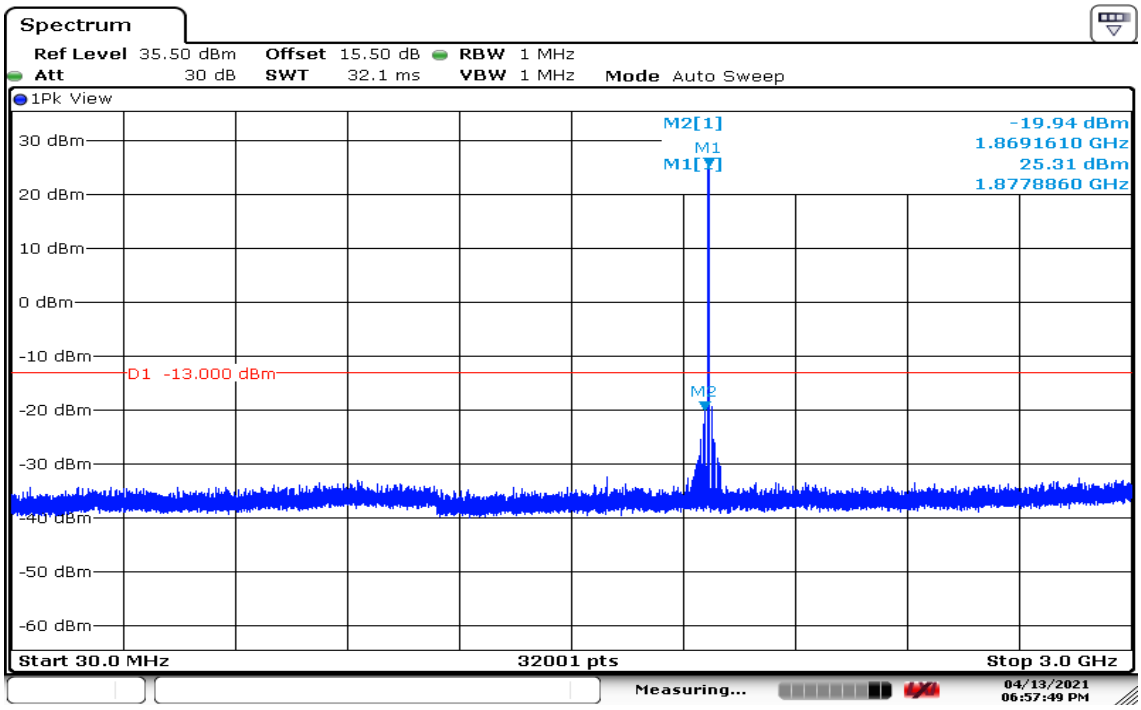
## CHANNEL BANDWIDTH: 5MHz / 30MHz-3GHz

### CH Low




Date: 13.APR.2021 17:52:04

### CH Mid




Date: 13.APR.2021 18:57:49

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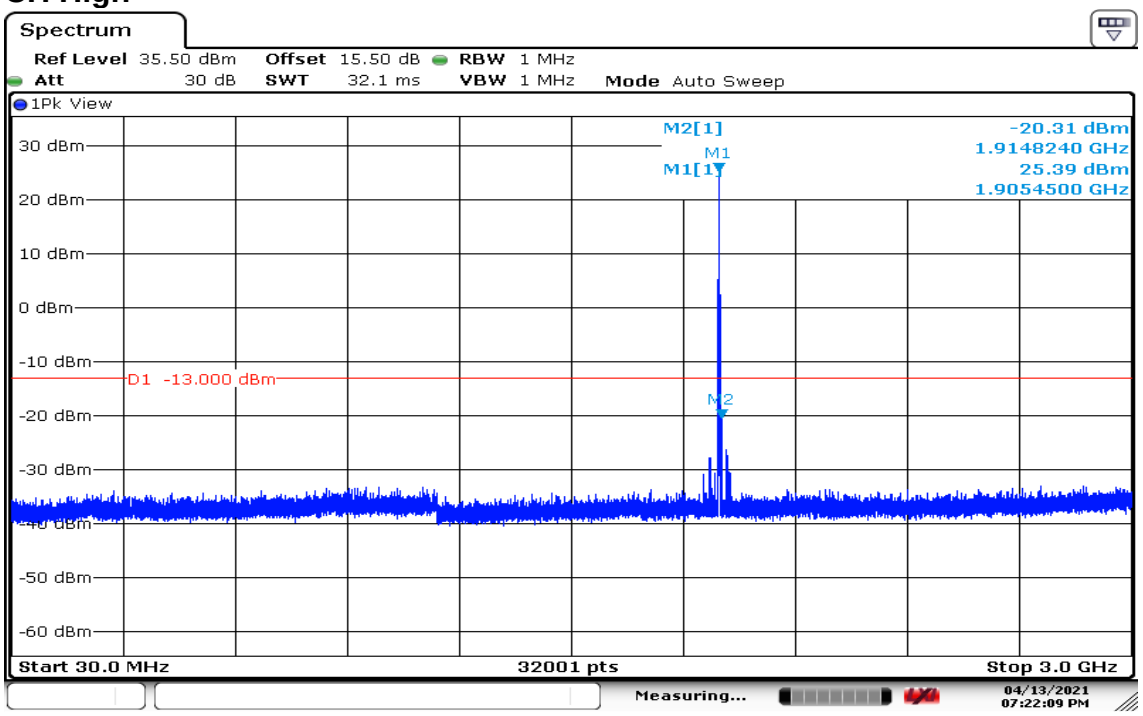
## CH High




Date:13.APR.2021 19:22:09

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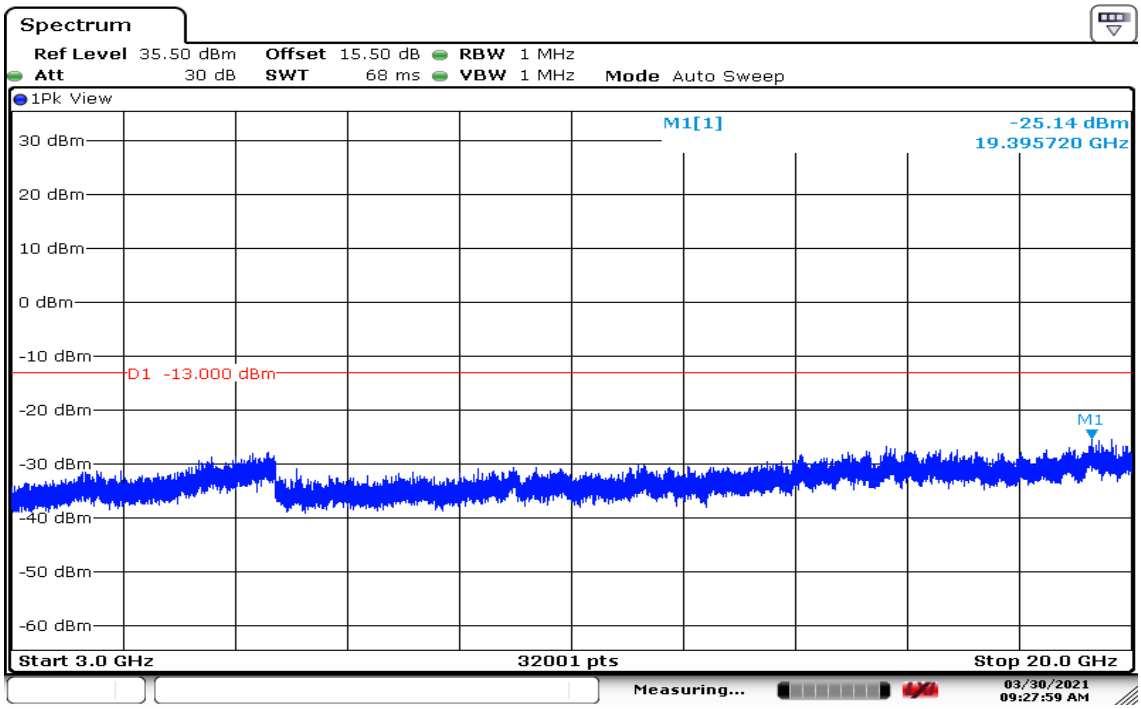
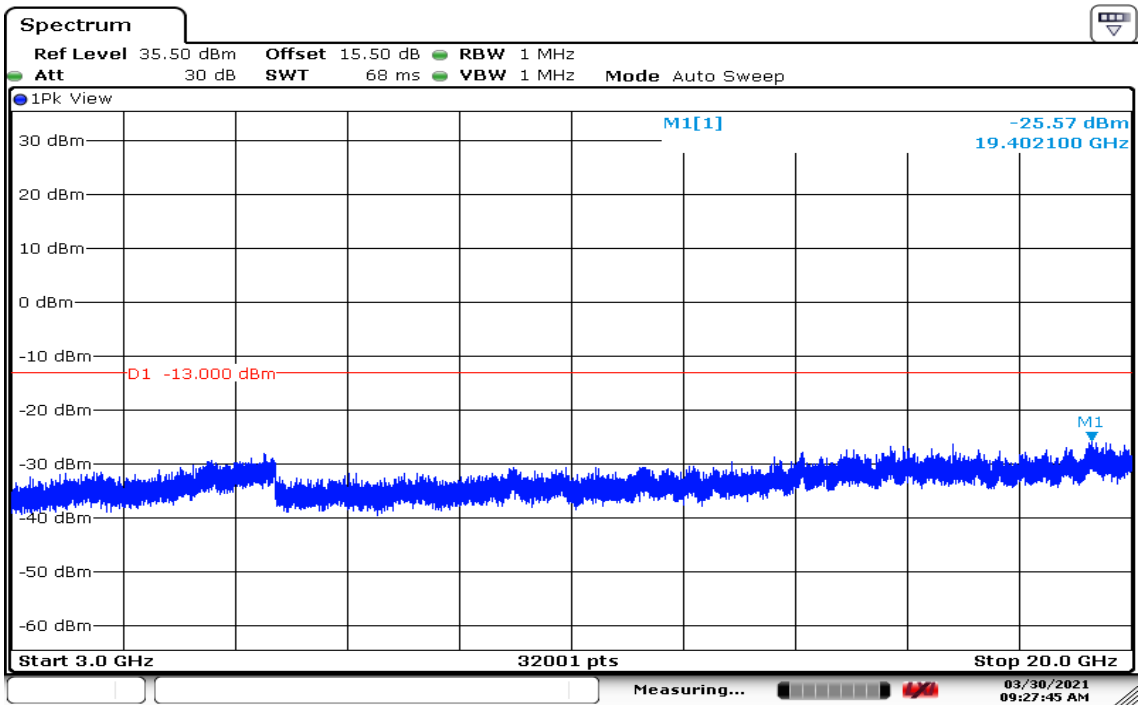
## CHANNEL BANDWIDTH: 5MHz / 3GHz-20GHz

### CH Low




Date: 30.MAR.2021 09:27:59

### CH Mid




Date: 30.MAR.2021 09:27:45

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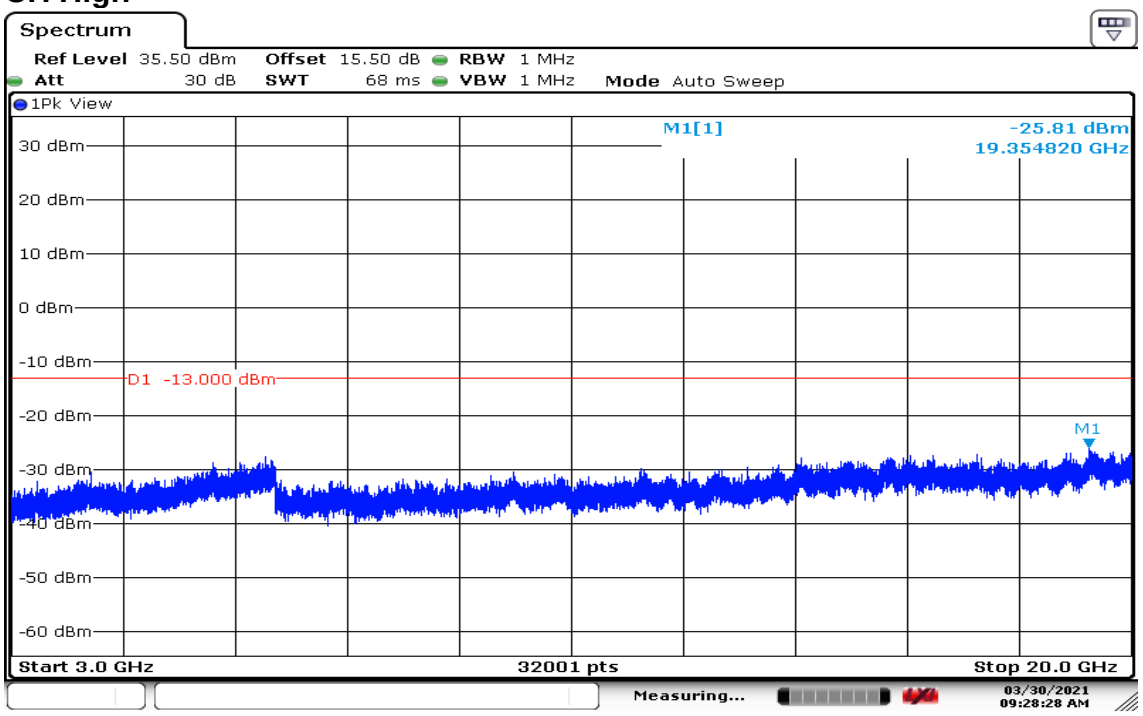
## CH High




Date: 30.MAR.2021 09:28:29

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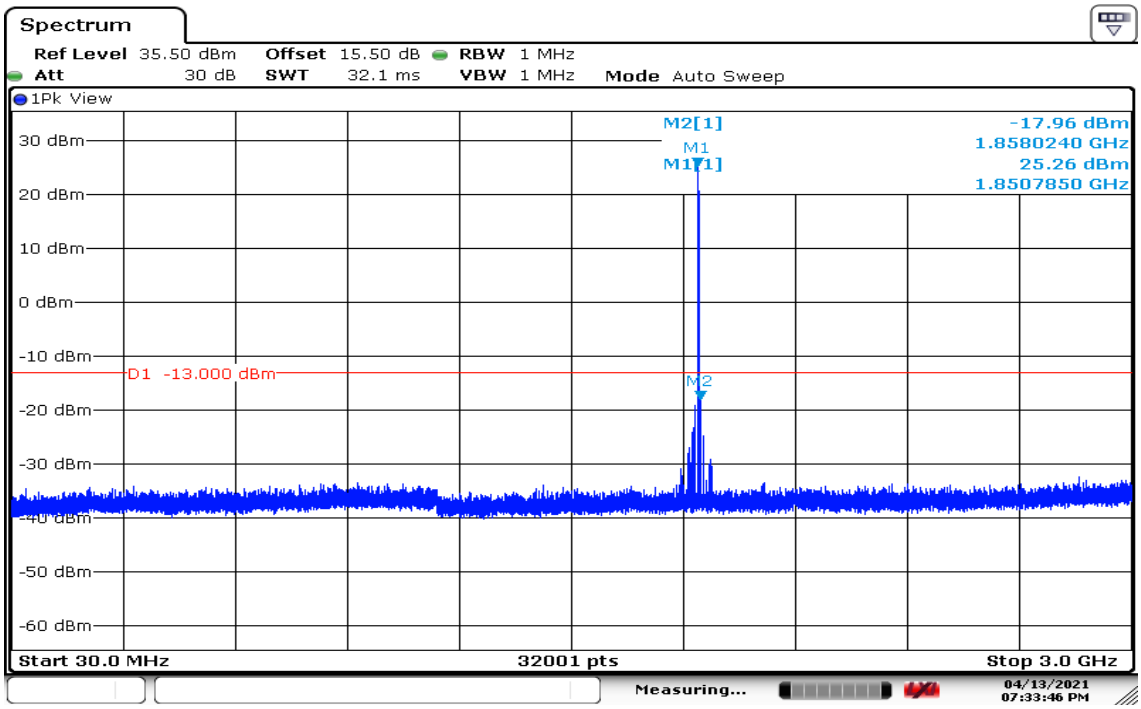
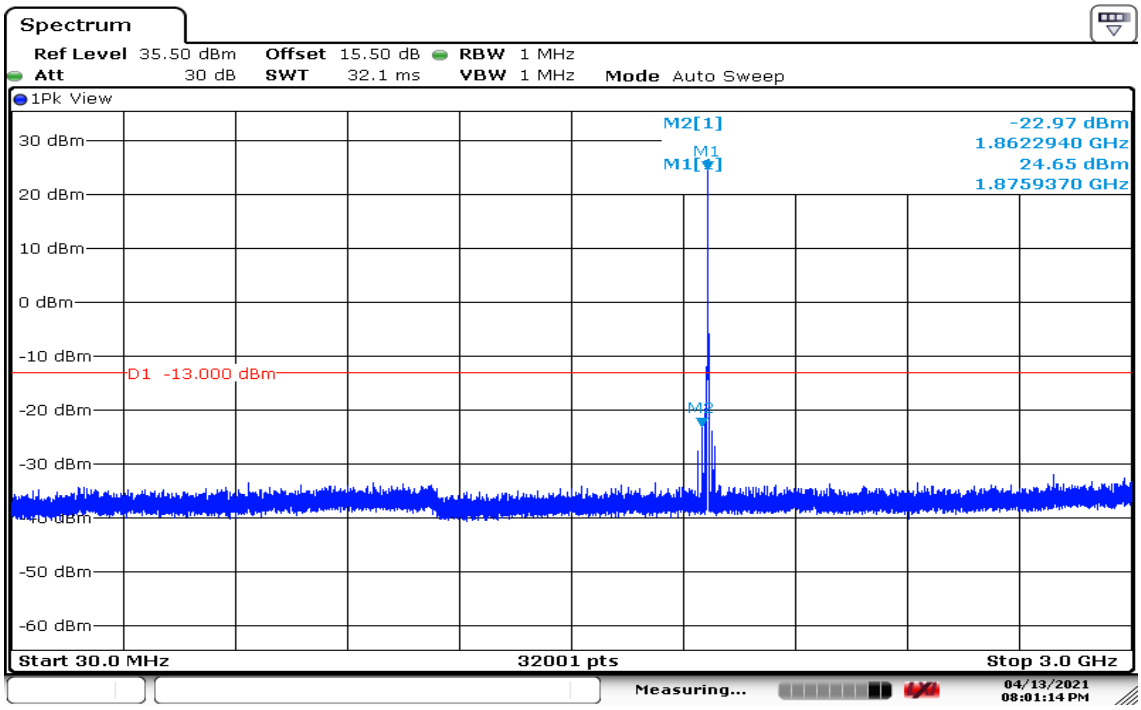
## CHANNEL BANDWIDTH: 10MHz / 30MHz-3GHz

### CH Low




Date: 13.APR.2021 19:33:47

### CH Mid




Date: 13.APR.2021 20:01:14

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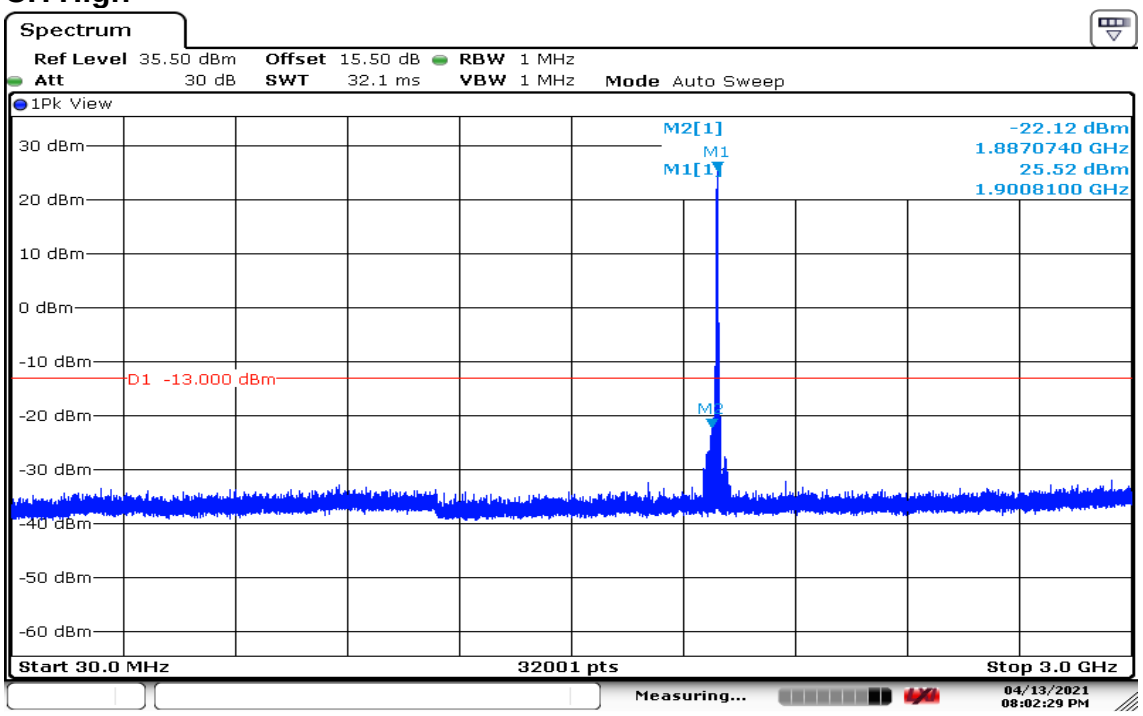
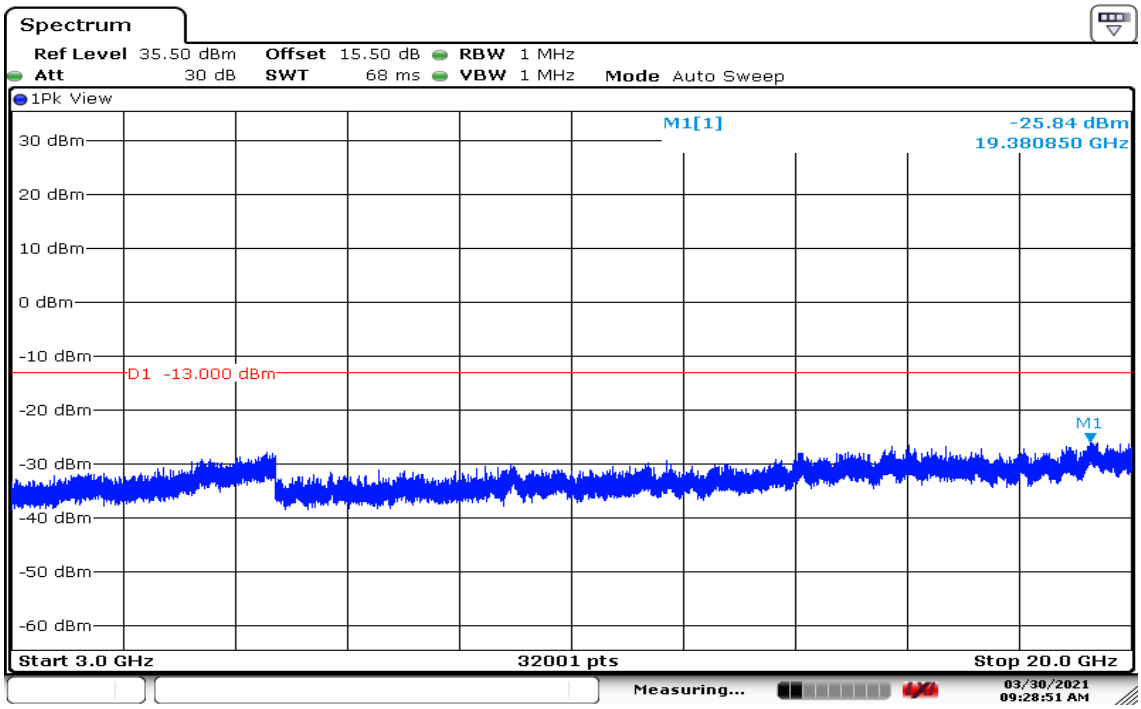
## CH High




Date: 13.APR.2021 20:02:29

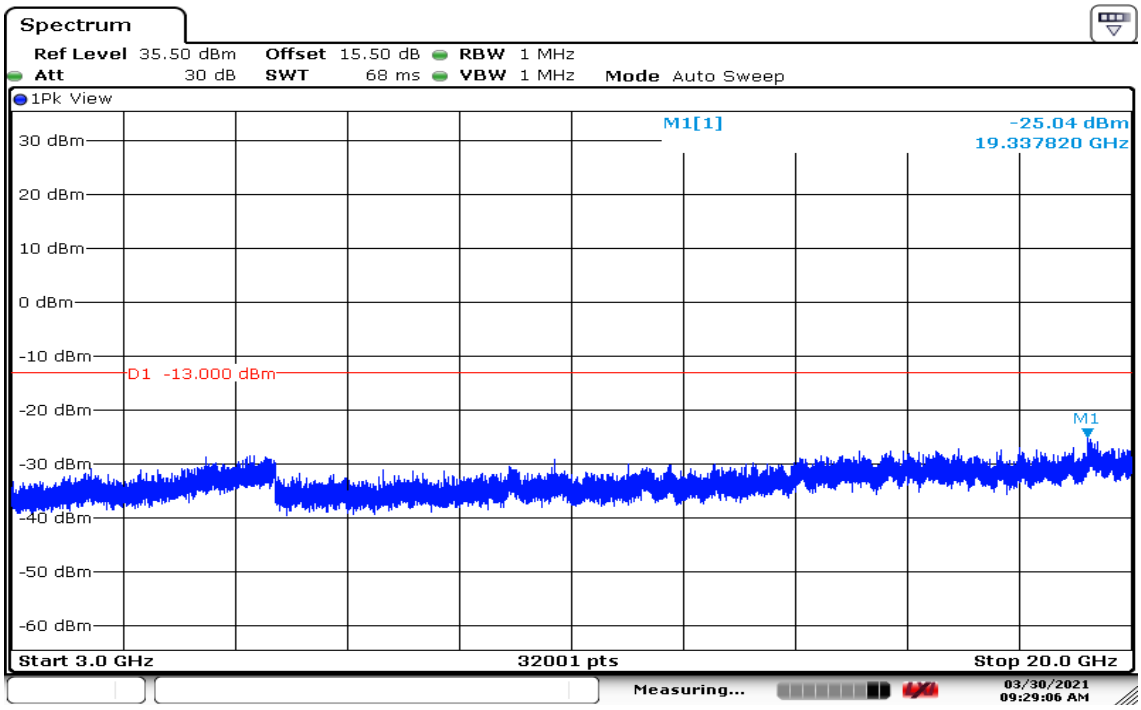
## CHANNEL BANDWIDTH: 10MHz / 3GHz-20GHz

### CH Low




Date: 30.MAR.2021 09:28:51

### CH Mid




Date: 30.MAR.2021 09:29:06

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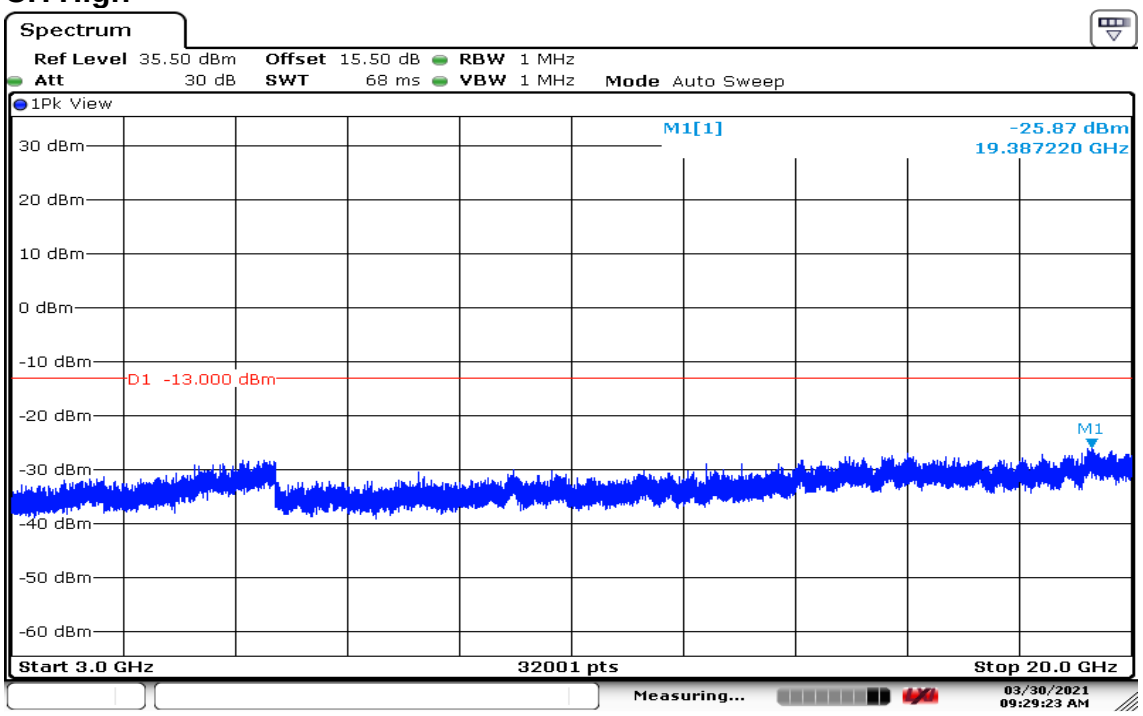
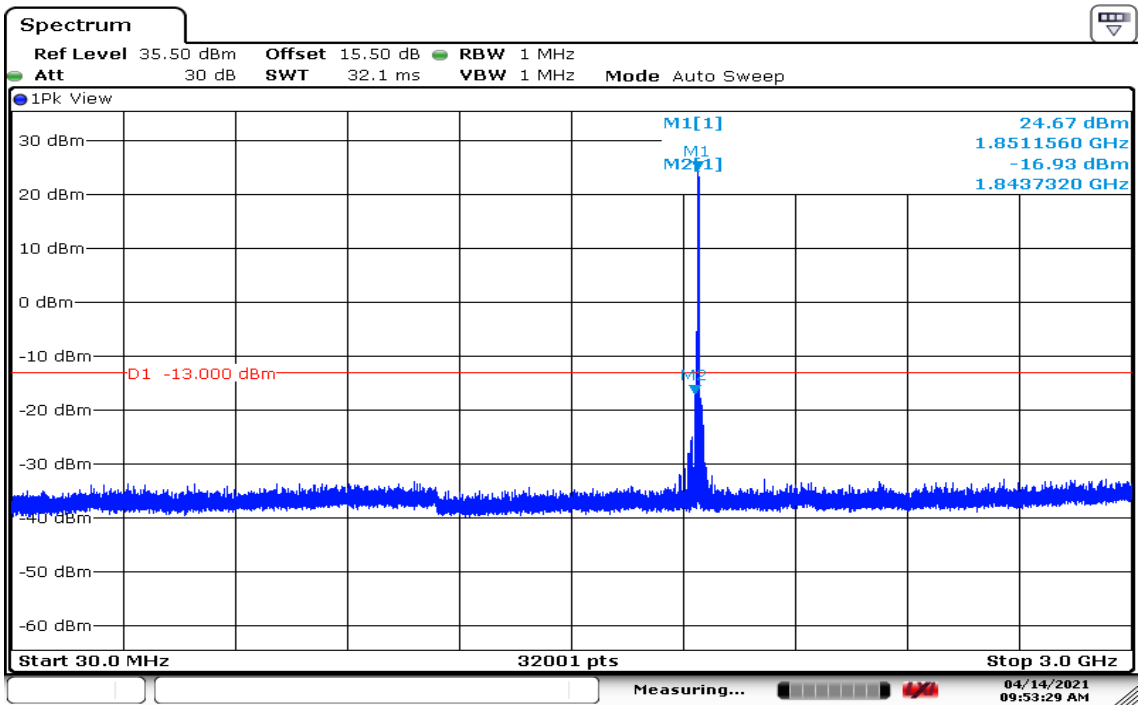
## CH High




Date: 30.MAR.2021 09:29:23

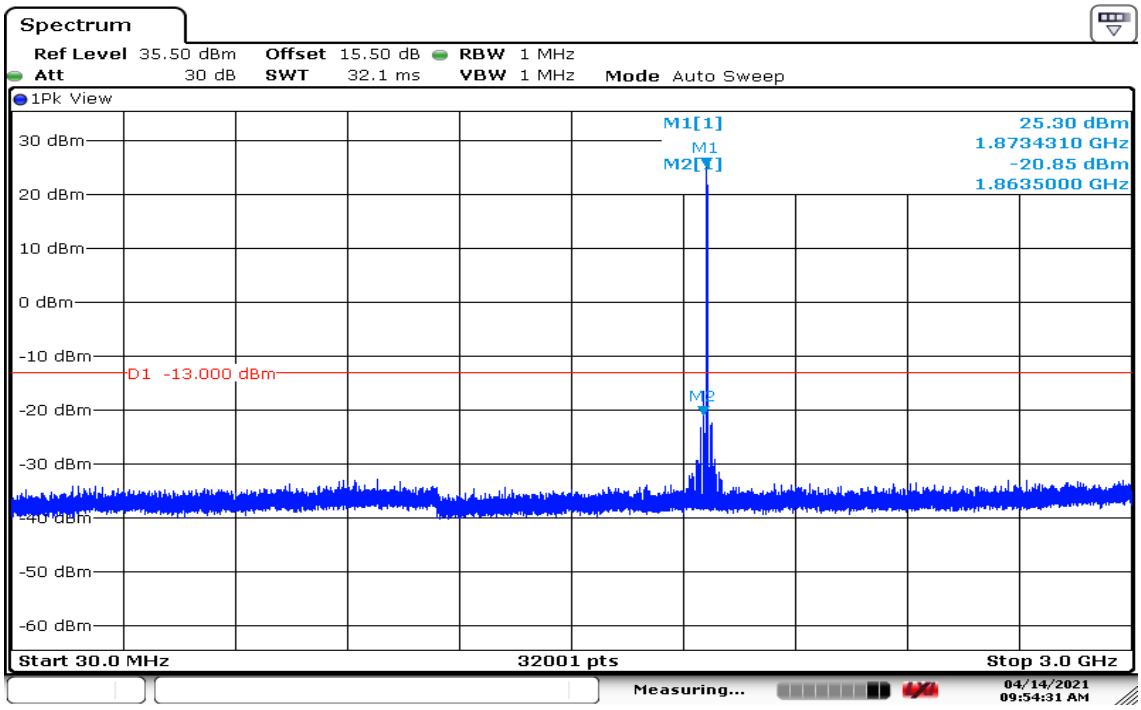
## CHANNEL BANDWIDTH: 15MHz / 30MHz-3GHz

### CH Low




Date: 14.APR.2021 09:53:29

### CH Mid




Date: 14.APR.2021 09:54:32

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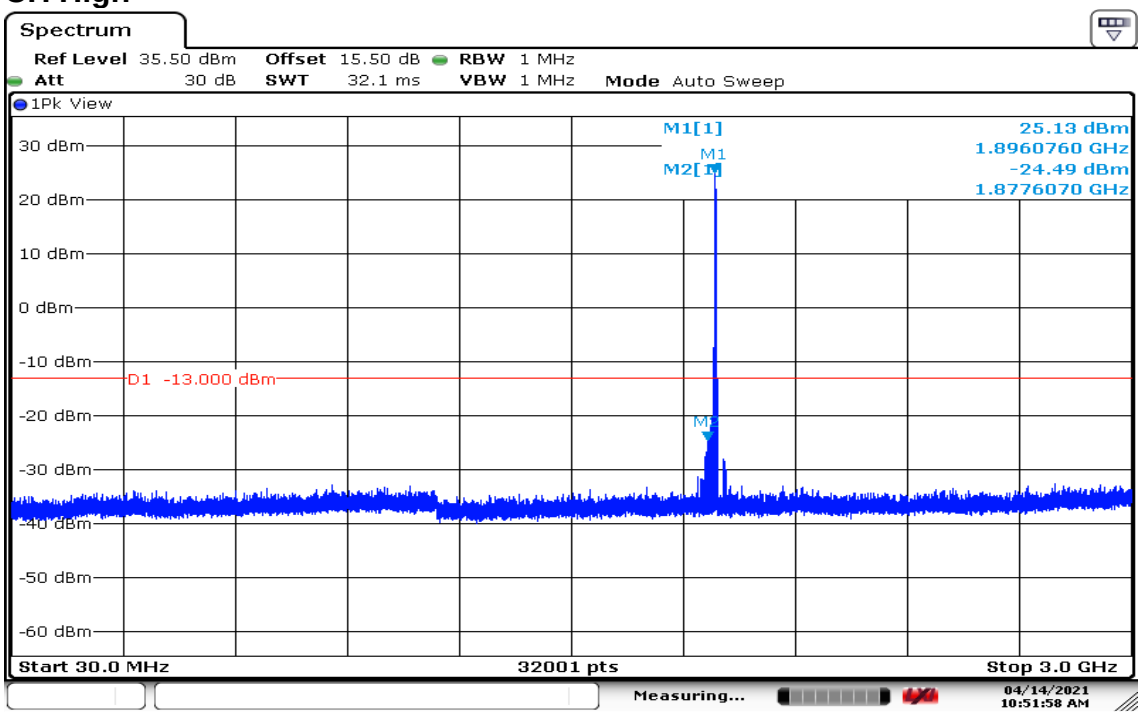
## CH High




Date: 14.APR.2021 10:51:59

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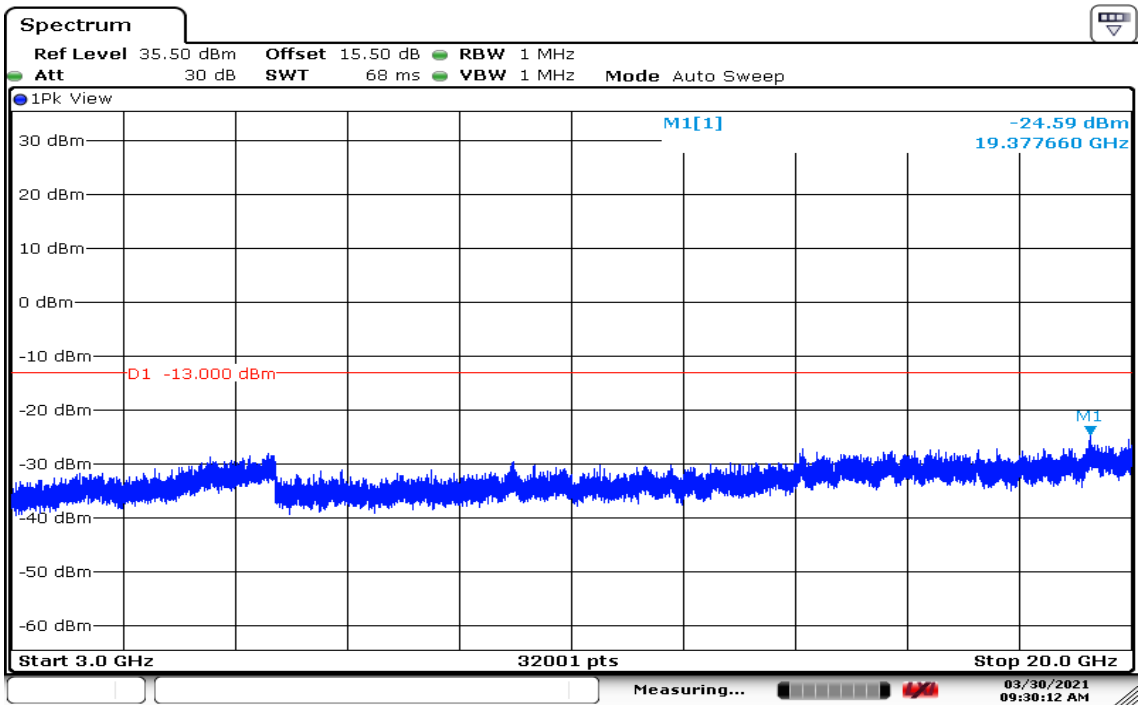
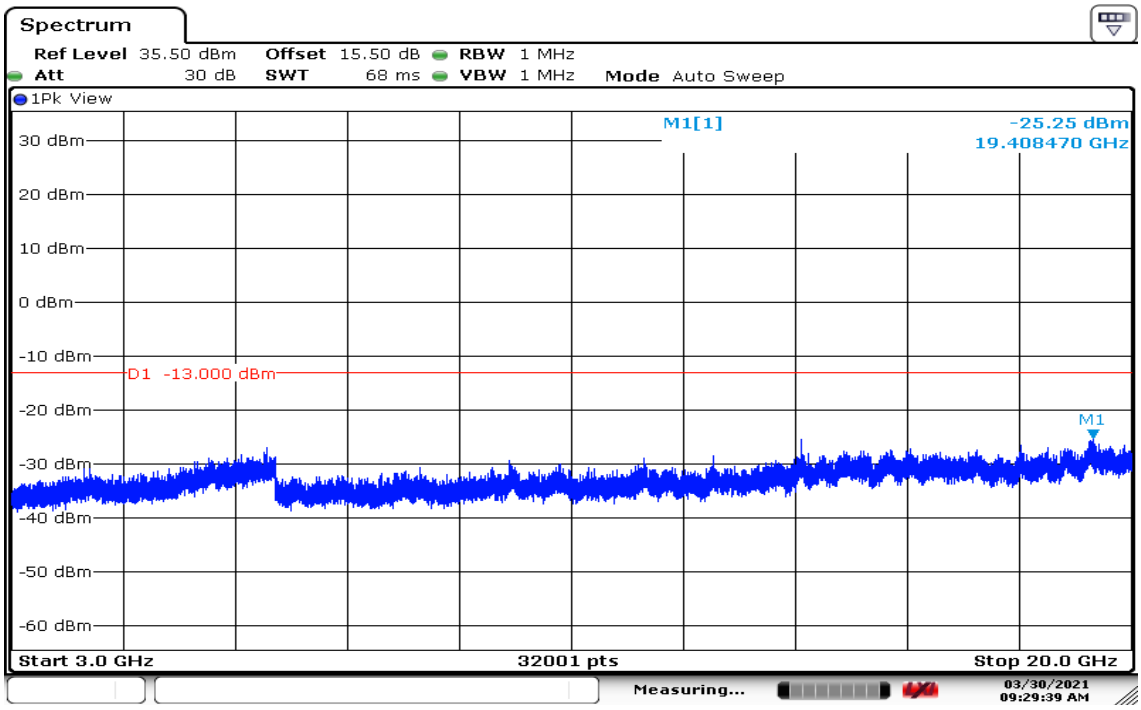
## CHANNEL BANDWIDTH: 15MHz / 3GHz-20GHz

### CH Low




Date: 30.MAR.2021 09:30:12

### CH Mid




Date: 30.MAR.2021 09:29:39

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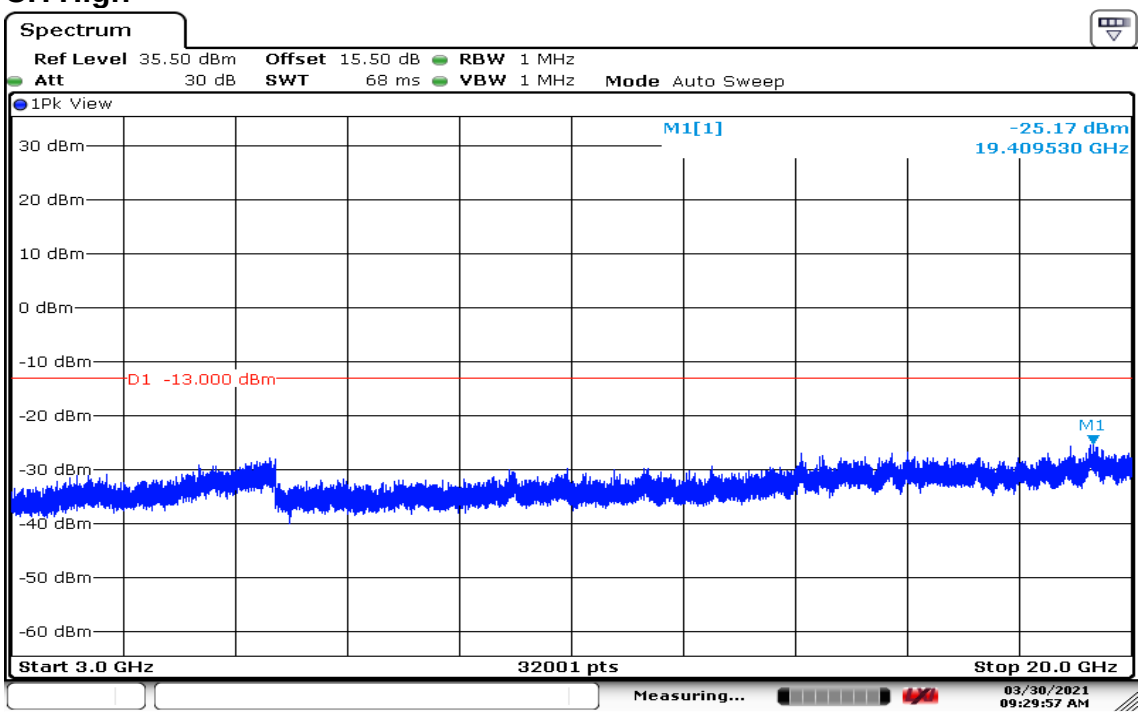
## CH High




Date: 30.MAR.2021 09:29:57

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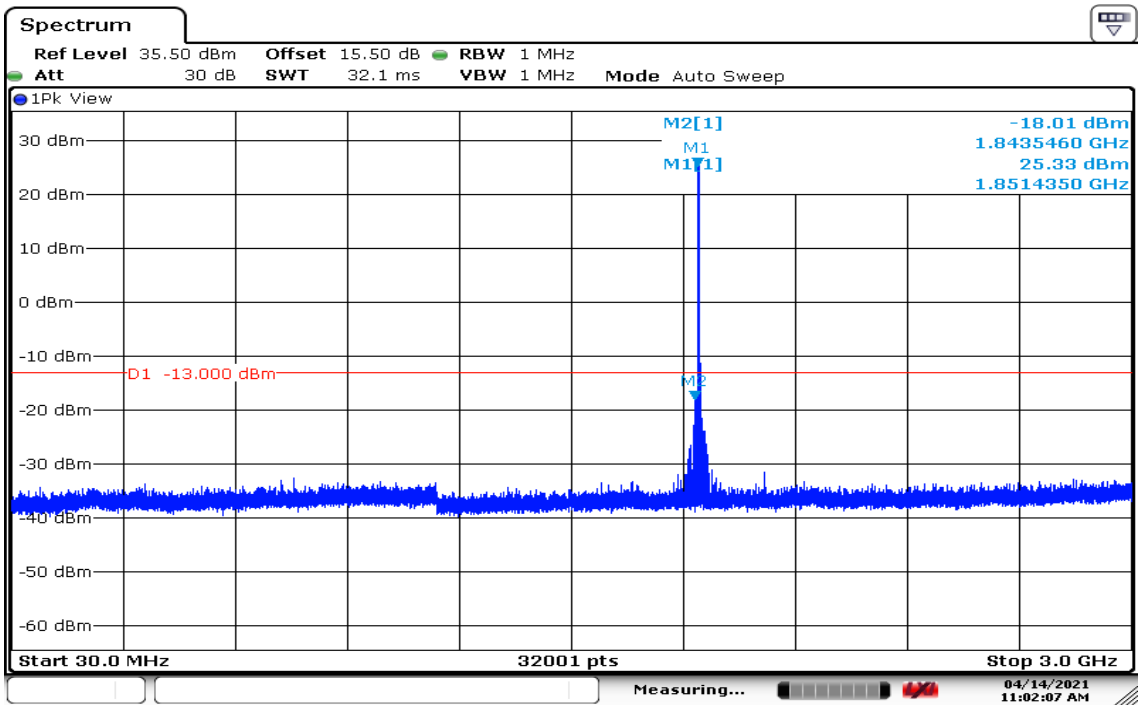
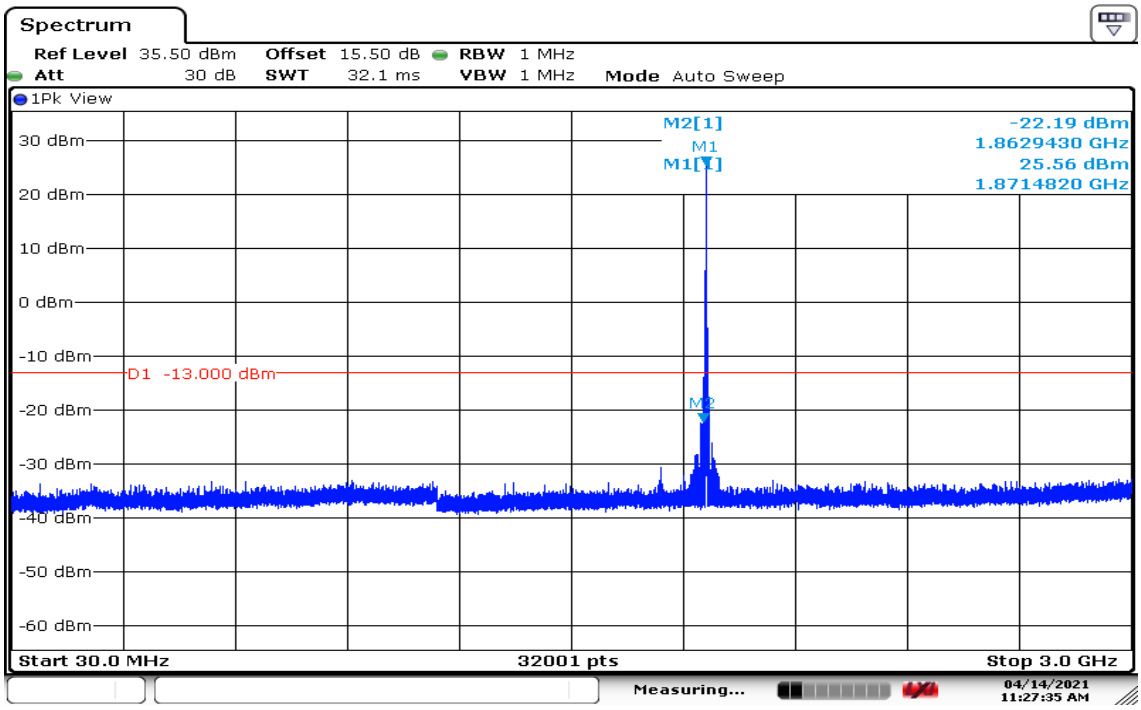
## CHANNEL BANDWIDTH: 20MHz / 30MHz-3GHz

### CH Low




Date: 14.APR.2021 11:02:08

### CH Mid




Date: 14.APR.2021 11:27:35

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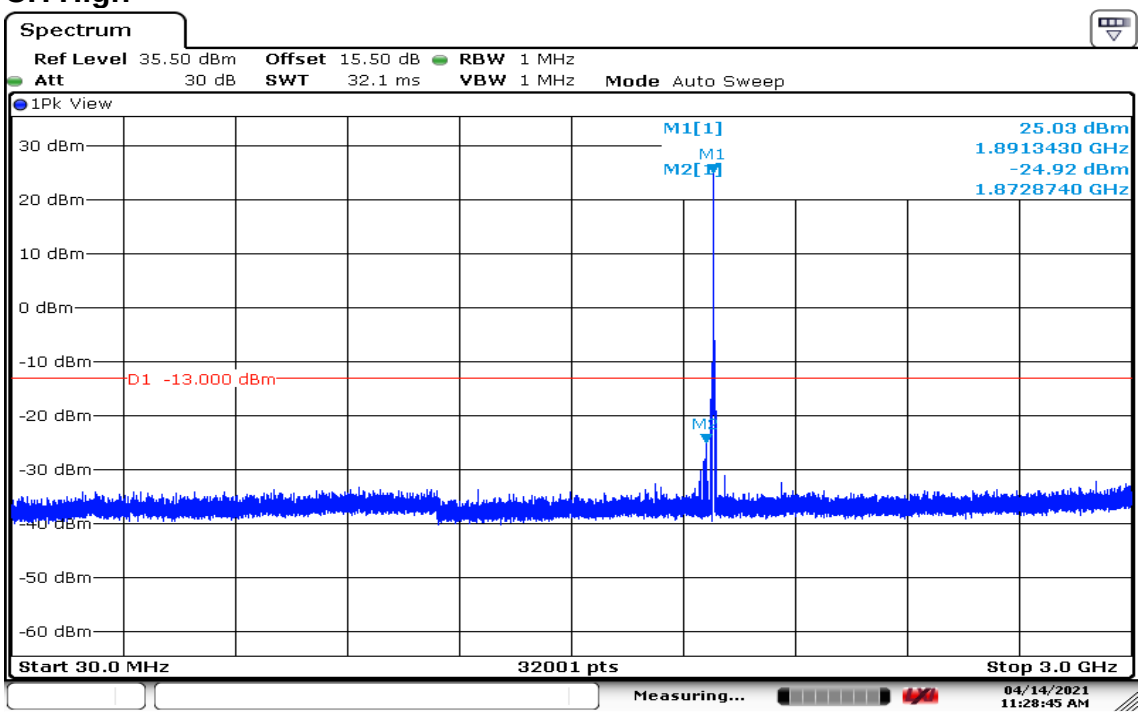
## CH High




Date: 14.APR.2021 11:28:46

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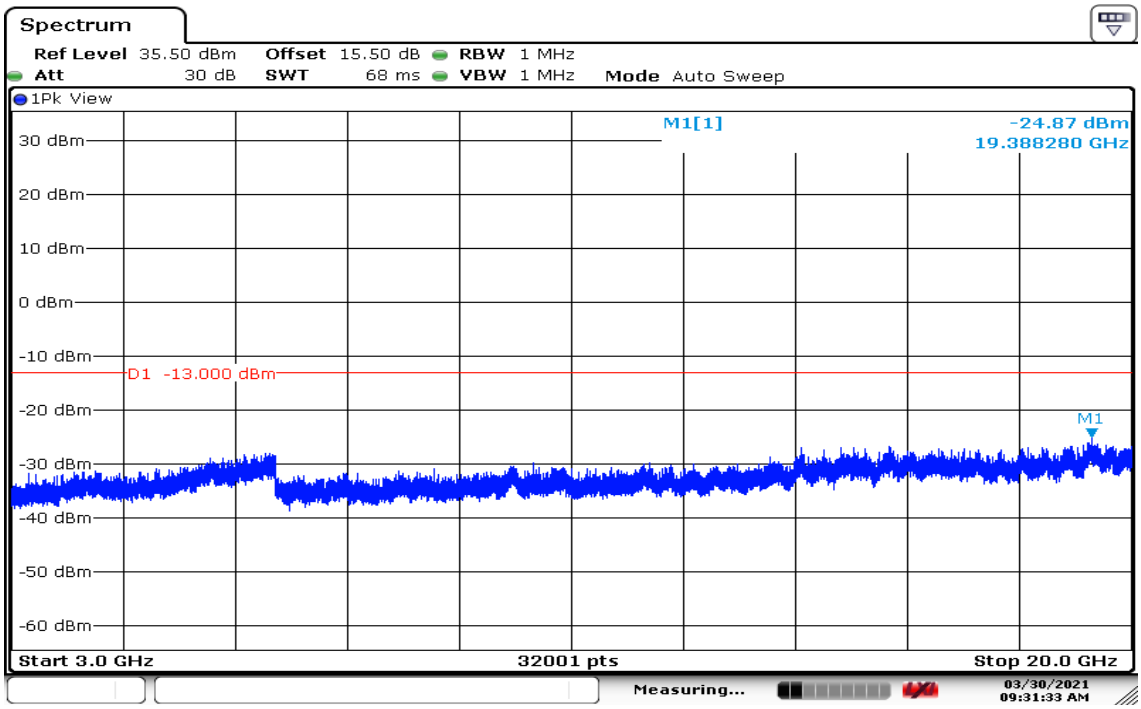
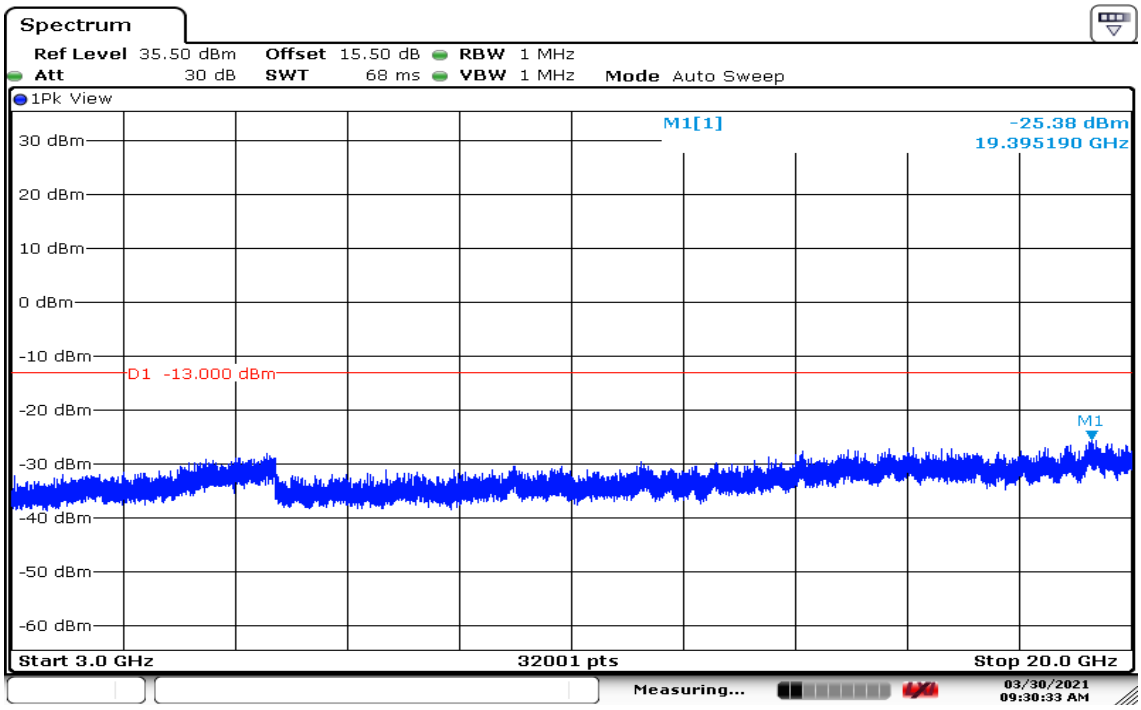
## CHANNEL BANDWIDTH: 20MHz / 3GHz-20GHz

### CH Low




Date: 30.MAR.2021 09:31:33

### CH Mid




Date: 30.MAR.2021 09:30:33

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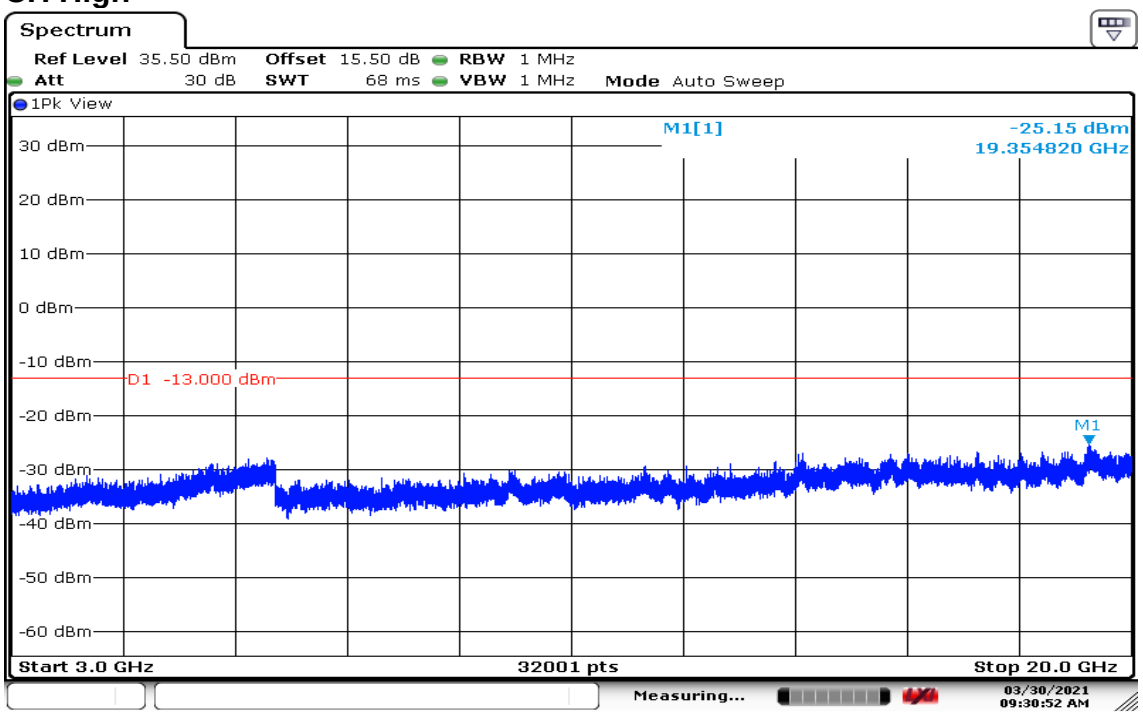
## CH High




Date: 30.MAR.2021 09:30:52

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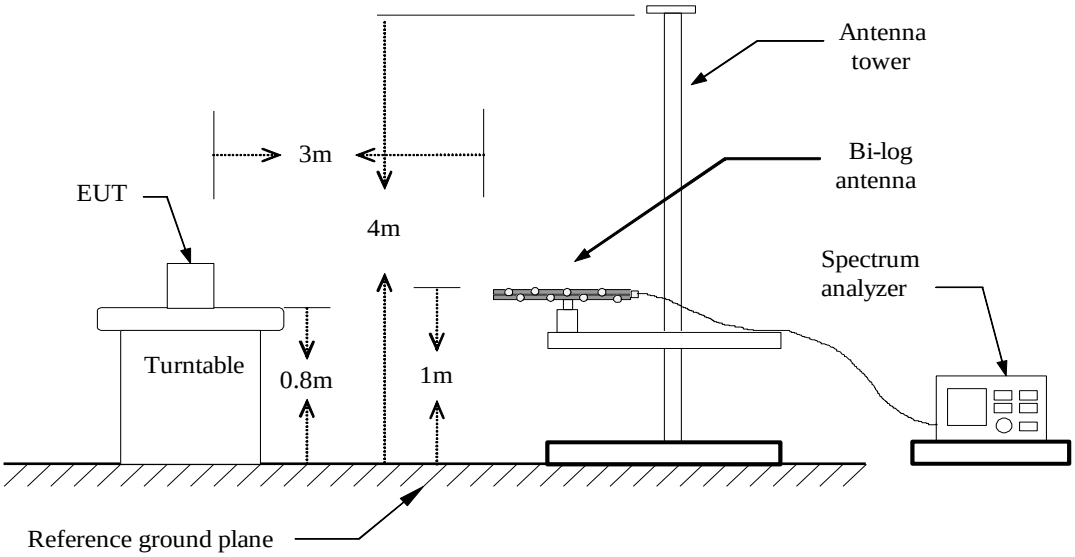
## 8.7 SPURIOUS RADIATION MEASUREMENT

### LIMIT

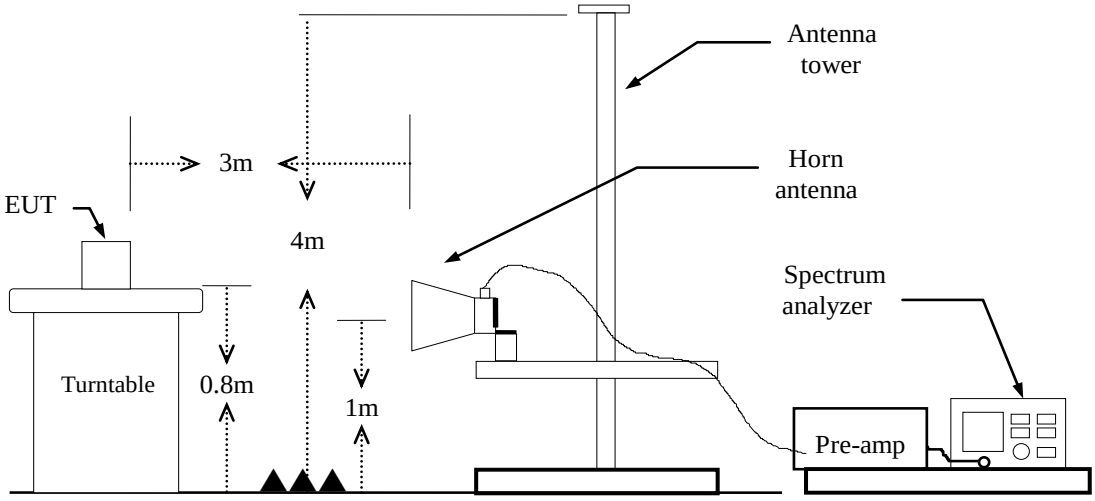
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission equal to –13dBm

### Test Configuration

**Below 1 GHz**




**Above 1 GHz**

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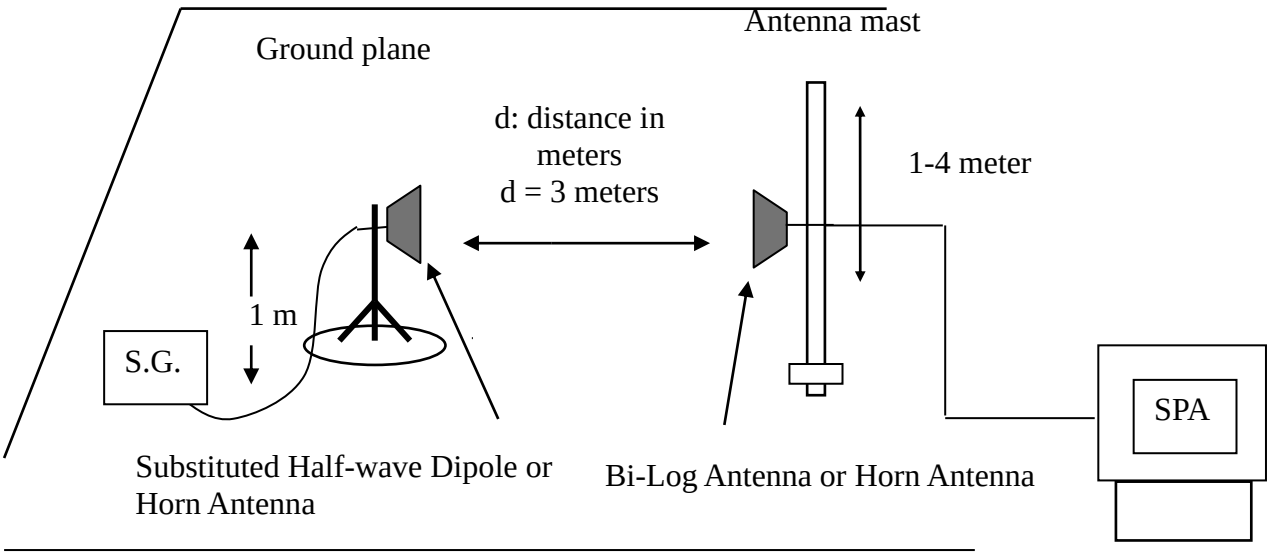
**Substituted Method Test Set-up**




## TEST PROCEDURE

1. According to KDB 971168 D01 Power Meas License Digital Systems and TIA-603-E Section 2.2.12.
2. The EUT was placed on a turntable
   (1) Below 1G : 0.8m
   (2) Above 1G : 0.8m
   (3) EUT set 3m from the receiving antenna
   (4) The table was rotated 360 degrees of the highest spurious emission to determine the position.
3. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
4. A horn antenna was driven by a signal generator.
5. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission

ERP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)-2.15

EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

## TEST RESULTS

Refer to the attached tabular data sheets.
**Remark: Above 1GHz**
Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

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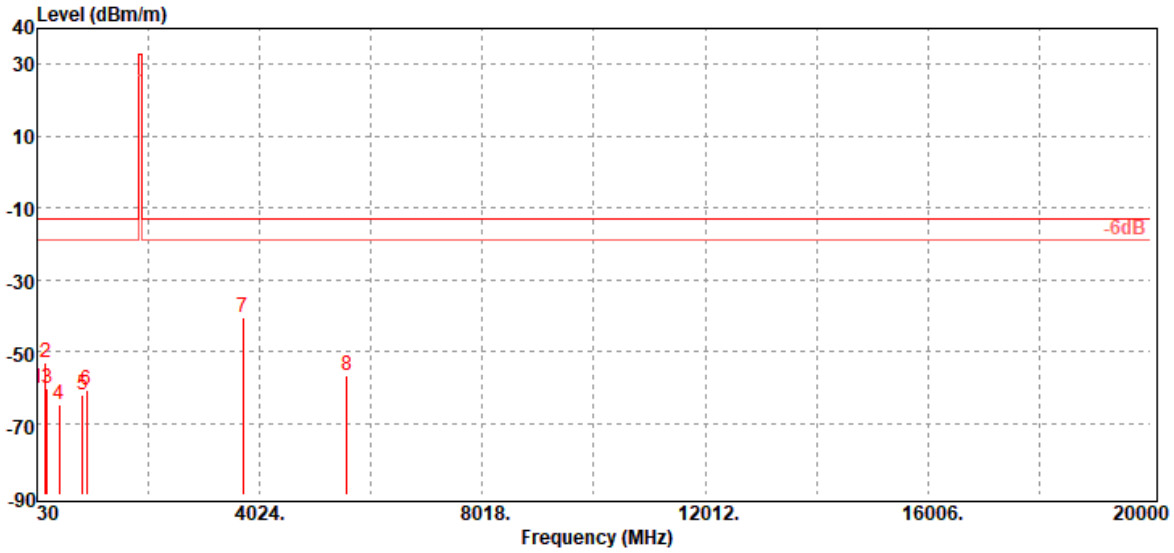
## Test Results

**LTE Band 2 / BW: 20MHz / 16QAM / RB =1, RB Offset = 0**

| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Low CH | **Test Date:** | April 21, 2021 |
| **Temperature:** | 22.4℃ | **Tested by:** | Ray Li |
| **Humidity:** | 53% RH | **Polarity:** | Ver. |




| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 34.85 | -60.20 | -34.40 | -25.32 | -0.48 | -13.00 | -47.20 | V |
| 187.14 | -53.26 | -48.14 | -3.99 | -1.13 | -13.00 | -40.26 | V |
| 212.36 | -60.38 | -57.08 | -2.10 | -1.20 | -13.00 | -47.38 | V |
| 427.70 | -64.84 | -61.23 | -1.90 | -1.71 | -13.00 | -51.84 | V |
| 841.89 | -62.09 | -58.25 | -1.40 | -2.44 | -13.00 | -49.09 | V |
| 919.49 | -60.71 | -56.84 | -1.30 | -2.57 | -13.00 | -47.71 | V |
| 3720.00 | -40.56 | -47.29 | 12.46 | -5.73 | -13.00 | -27.56 | V |
| 5580.00 | -56.93 | -62.96 | 13.14 | -7.11 | -13.00 | -43.93 | V |

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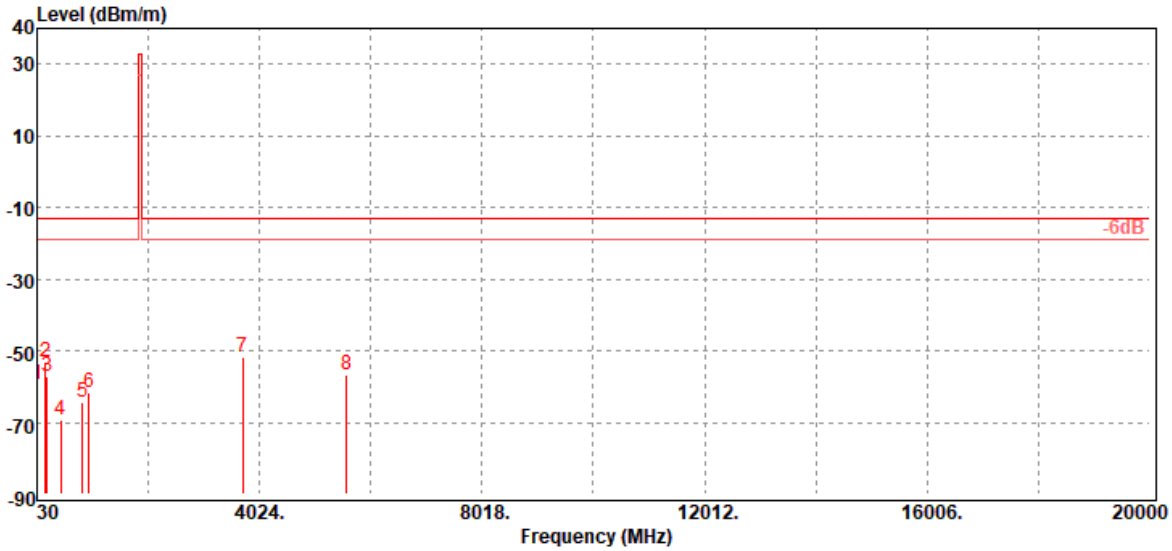
| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Low CH | **Test Date:** | April 21, 2021 |
| **Temperature:** | 22.4℃ | **Tested by:** | Ray Li |
| **Humidity:** | 53% RH | **Polarity:** | Hor. |




| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 31.94 | -59.63 | -31.00 | -28.16 | -0.47 | -13.00 | -46.63 | H |
| 187.14 | -53.12 | -48.00 | -3.99 | -1.13 | -13.00 | -40.12 | H |
| 209.45 | -57.27 | -53.90 | -2.18 | -1.19 | -13.00 | -44.27 | H |
| 451.95 | -69.39 | -65.53 | -2.10 | -1.76 | -13.00 | -56.39 | H |
| 847.71 | -64.58 | -60.78 | -1.35 | -2.45 | -13.00 | -51.58 | H |
| 967.99 | -61.68 | -57.74 | -1.30 | -2.64 | -13.00 | -48.68 | H |
| 3720.00 | -51.85 | -58.58 | 12.46 | -5.73 | -13.00 | -38.85 | H |
| 5580.00 | -56.92 | -62.95 | 13.14 | -7.11 | -13.00 | -43.92 | H |

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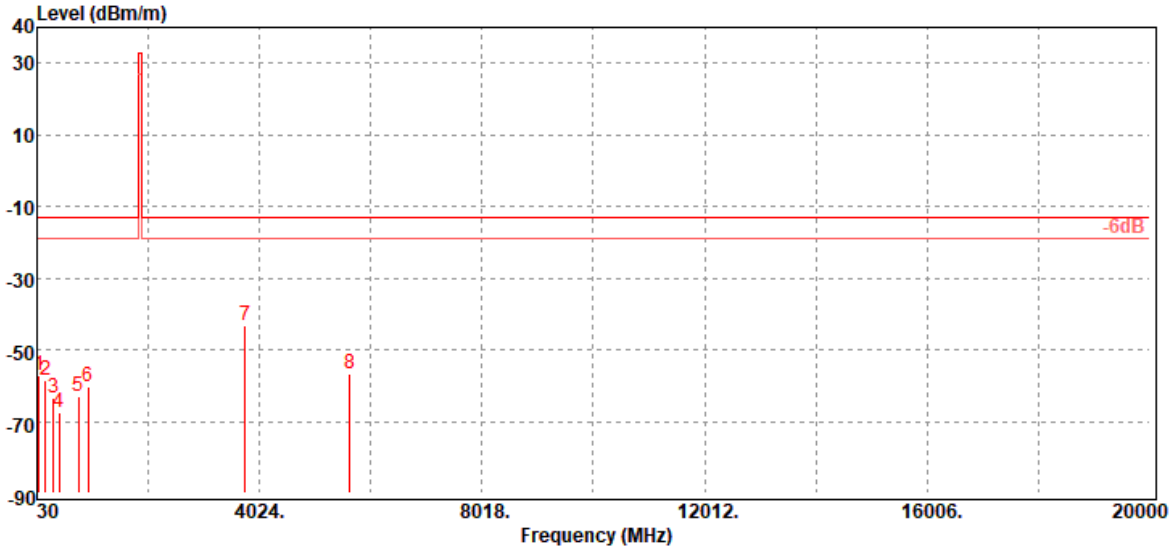
| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | April 21, 2021 |
| **Temperature:** | 22.4℃ | **Tested by:** | Ray Li |
| **Humidity:** | 53% RH | **Polarity:** | Ver. |




| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 66.86 | -57.14 | -46.50 | -9.97 | -0.67 | -13.00 | -44.14 | V |
| 187.14 | -58.70 | -53.58 | -3.99 | -1.13 | -13.00 | -45.70 | V |
| 321.00 | -63.51 | -60.23 | -1.80 | -1.48 | -13.00 | -50.51 | V |
| 427.70 | -67.51 | -63.90 | -1.90 | -1.71 | -13.00 | -54.51 | V |
| 779.81 | -63.18 | -59.34 | -1.50 | -2.34 | -13.00 | -50.18 | V |
| 941.80 | -60.45 | -56.59 | -1.26 | -2.60 | -13.00 | -47.45 | V |
| 3760.00 | -43.37 | -50.03 | 12.42 | -5.76 | -13.00 | -30.37 | V |
| 5640.00 | -56.92 | -63.04 | 13.26 | -7.14 | -13.00 | -43.92 | V |

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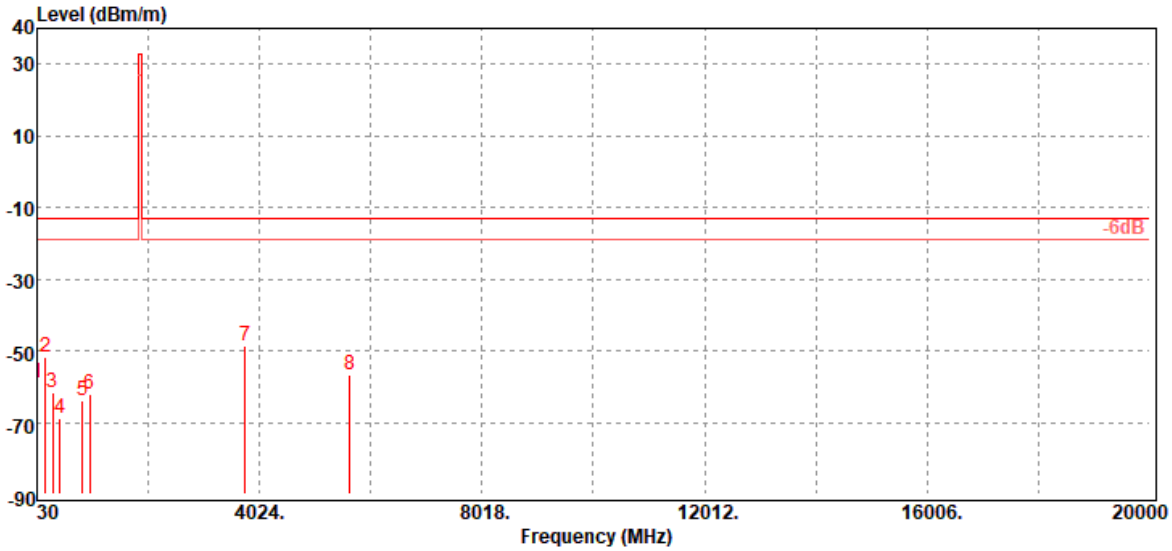
| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / Mid CH | **Test Date:** | April 21, 2021 |
| **Temperature:** | 22.4℃ | **Tested by:** | Ray Li |
| **Humidity:** | 53% RH | **Polarity:** | Hor. |




| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 32.91 | -59.09 | -31.43 | -27.19 | -0.47 | -13.00 | -46.09 | H |
| 187.14 | -51.75 | -46.63 | -3.99 | -1.13 | -13.00 | -38.75 | H |
| 308.39 | -61.45 | -58.03 | -1.97 | -1.45 | -13.00 | -48.45 | H |
| 442.25 | -68.76 | -64.92 | -2.10 | -1.74 | -13.00 | -55.76 | H |
| 849.65 | -63.99 | -60.23 | -1.31 | -2.45 | -13.00 | -50.99 | H |
| 978.66 | -62.01 | -58.03 | -1.33 | -2.65 | -13.00 | -49.01 | H |
| 3760.00 | -48.57 | -55.23 | 12.42 | -5.76 | -13.00 | -35.57 | H |
| 5640.00 | -56.77 | -62.89 | 13.26 | -7.14 | -13.00 | -43.77 | H |

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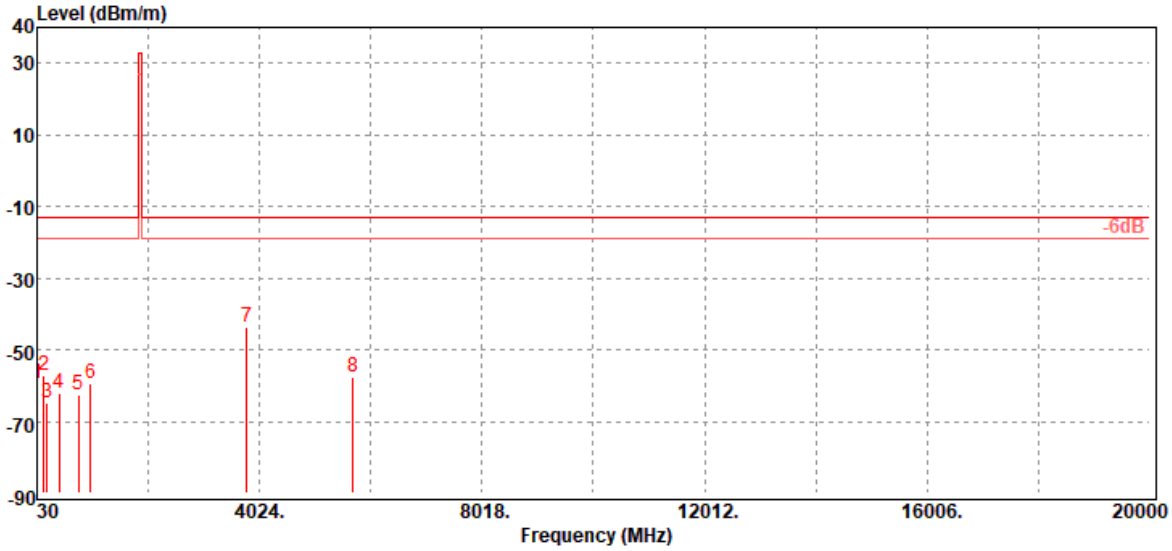
| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / High CH | **Test Date:** | April 21, 2021 |
| **Temperature:** | 22.4℃ | **Tested by:** | Ray Li |
| **Humidity:** | 53% RH | **Polarity:** | Ver. |




| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 34.85 | -59.26 | -33.46 | -25.32 | -0.48 | -13.00 | -46.26 | V |
| 149.31 | -57.30 | -49.13 | -7.17 | -1.00 | -13.00 | -44.30 | V |
| 212.36 | -64.97 | -61.67 | -2.10 | -1.20 | -13.00 | -51.97 | V |
| 427.70 | -62.33 | -58.72 | -1.90 | -1.71 | -13.00 | -49.33 | V |
| 773.99 | -62.50 | -58.76 | -1.40 | -2.34 | -13.00 | -49.50 | V |
| 987.39 | -59.50 | -55.44 | -1.40 | -2.66 | -13.00 | -46.50 | V |
| 3800.00 | -43.51 | -50.22 | 12.50 | -5.79 | -13.00 | -30.51 | V |
| 5700.00 | -57.57 | -63.50 | 13.10 | -7.17 | -13.00 | -44.57 | V |

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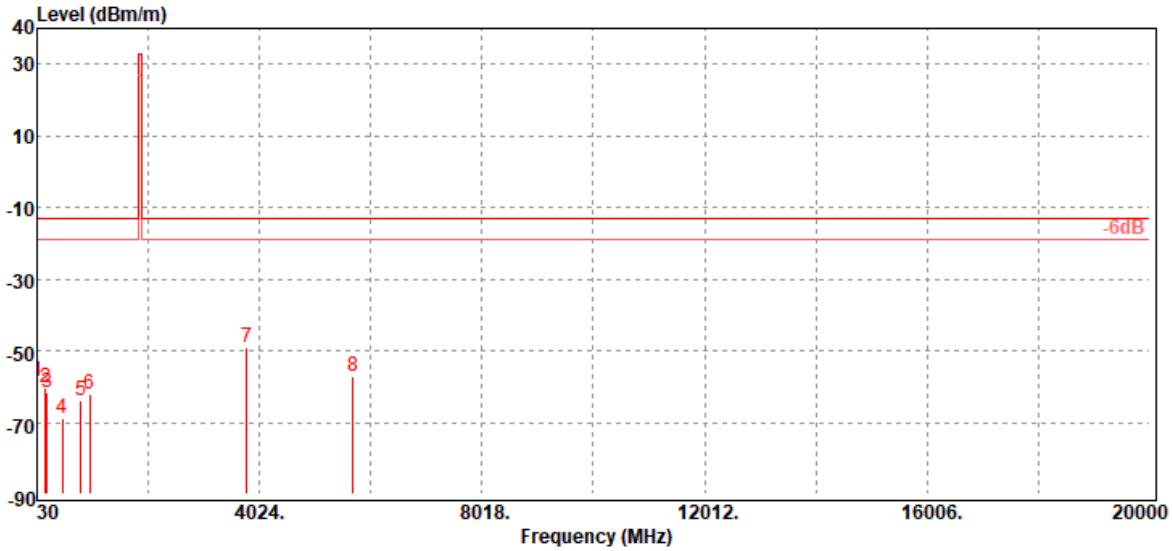
| | | | |
|---|---|---|---|
| **Operation Mode:** | Tx / High CH | **Test Date:** | April 21, 2021 |
| **Temperature:** | 22.4℃ | **Tested by:** | Ray Li |
| **Humidity:** | 53% RH | **Polarity:** | Hor. |




| Freq. (MHz) | ERP/EIRP (dBm) | SG Output Level (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | Limit (dBm) | Margin (dB) | Antenna Polarization (V/H) |
|---|---|---|---|---|---|---|---|
| 31.94 | -58.36 | -29.73 | -28.16 | -0.47 | -13.00 | -45.36 | H |
| 187.14 | -60.11 | -54.99 | -3.99 | -1.13 | -13.00 | -47.11 | H |
| 216.24 | -61.51 | -58.22 | -2.08 | -1.21 | -13.00 | -48.51 | H |
| 481.05 | -68.87 | -64.67 | -2.38 | -1.82 | -13.00 | -55.87 | H |
| 812.79 | -63.84 | -60.01 | -1.44 | -2.39 | -13.00 | -50.84 | H |
| 975.75 | -62.28 | -58.26 | -1.38 | -2.64 | -13.00 | -49.28 | H |
| 3800.00 | -49.24 | -55.95 | 12.50 | -5.79 | -13.00 | -36.24 | H |
| 5700.00 | -56.95 | -62.88 | 13.10 | -7.17 | -13.00 | -43.95 | H |

**- End of Test Report -**

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