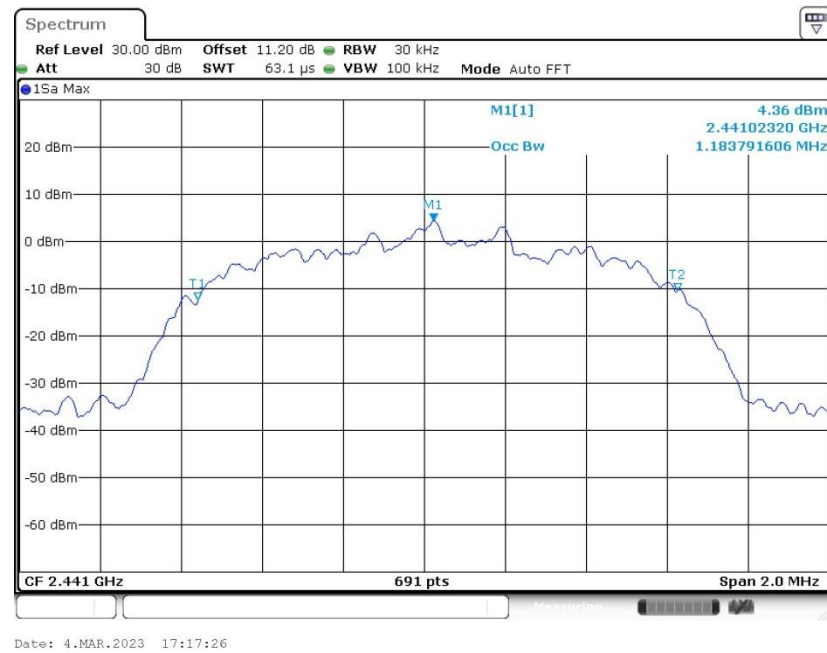


99% Occupied Bandwidth Plot on Channel 39



99% Occupied Bandwidth Plot on Channel 78



Note : The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.5 Output Power Measurement

3.5.1 Limit of Output Power

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

(1) 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. The power limit for 1Mbps, 2Mbps, 3Mbps and AFH modes are 0.125 watts.

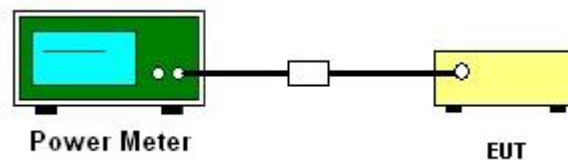
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.5.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power with cable loss and record the results in the test report.
5. Measure and record the results in the test report.

3.5.4 Test Setup



3.5.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.5.6 Test Result of Average Output Power (Reporting Only)

Please refer to Appendix A.

3.6 Conducted Band Edges Measurement

3.6.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

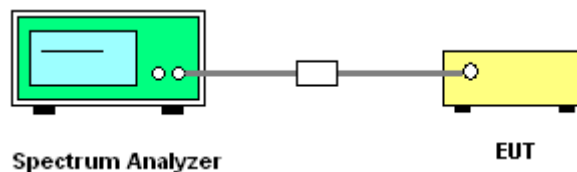
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.6.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100kHz, VBW = 300kHz. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.
4. Enable hopping function of the EUT and then repeat step 2. and 3.
5. Measure and record the results in the test report.

3.6.4 Test Setup



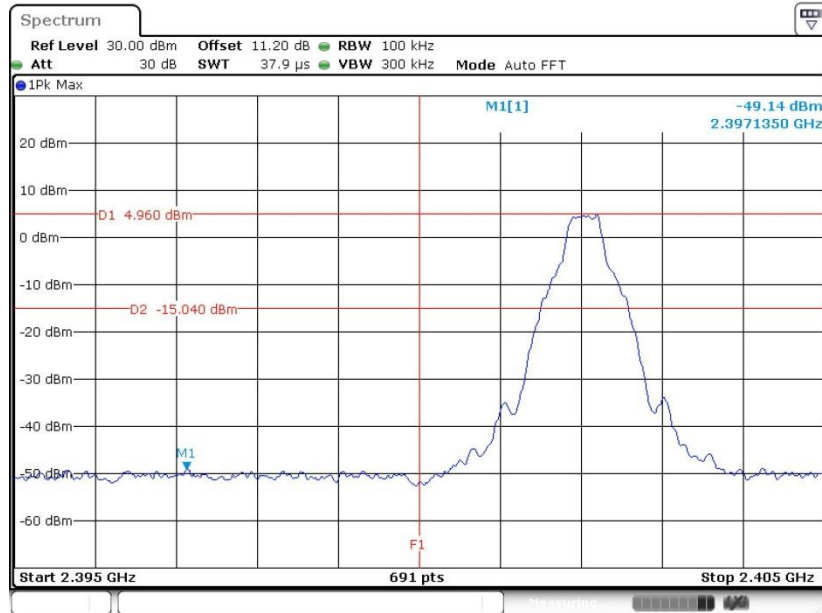


3.6.5 Test Result of Conducted Band Edges

<Ant5>

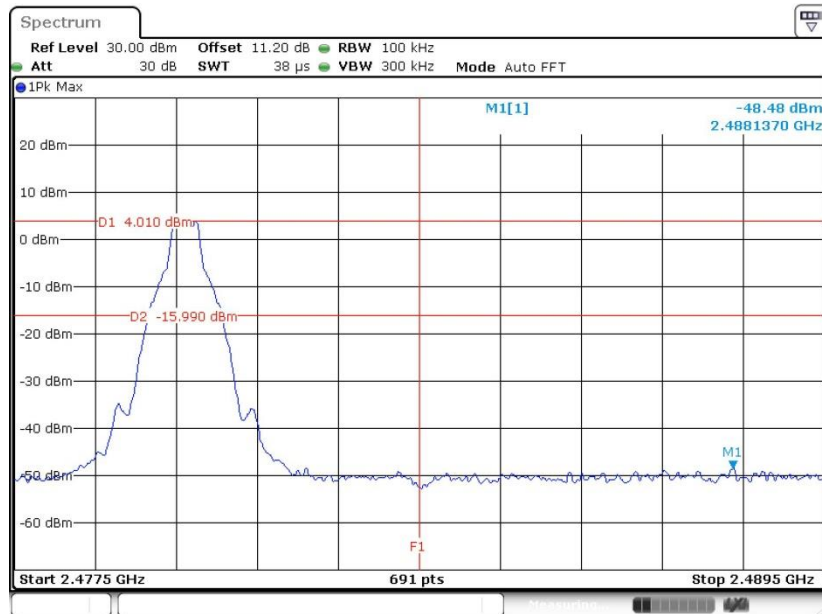
<1Mbps>

Low Band Edge Plot on Channel 00



Date: 24.MAR.2023 01:10:58

High Band Edge Plot on Channel 78

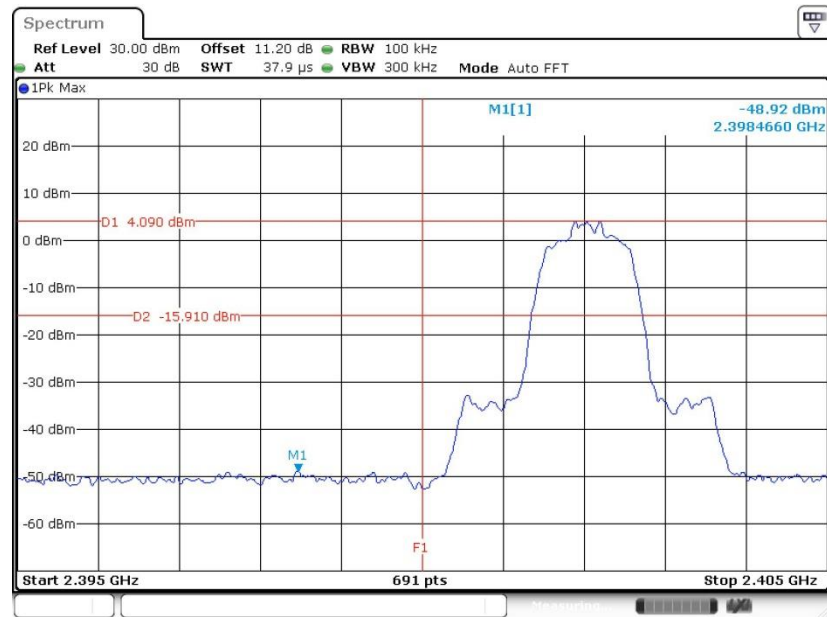


Date: 24.MAR.2023 01:23:21



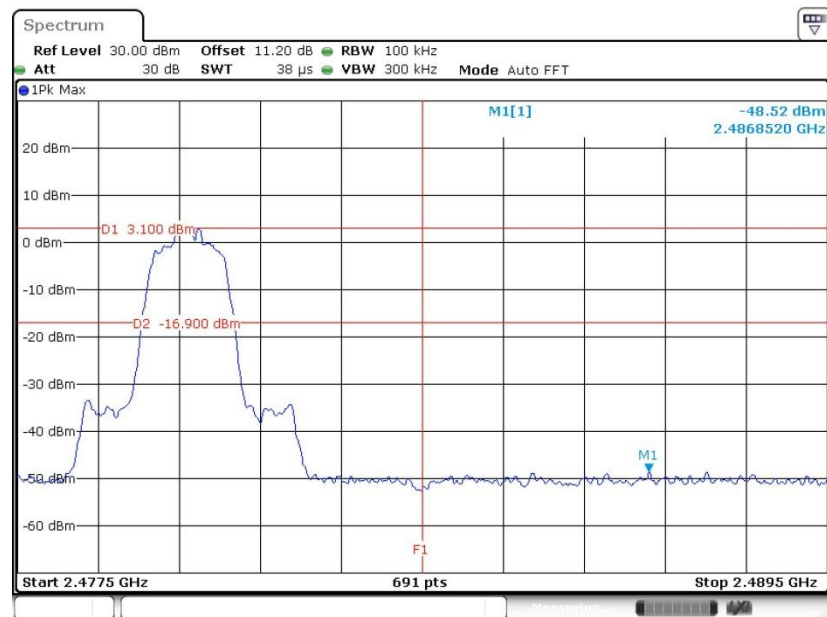
<2Mbps>

Low Band Edge Plot on Channel 00



Date: 24.MAR.2023 01:32:51

High Band Edge Plot on Channel 78

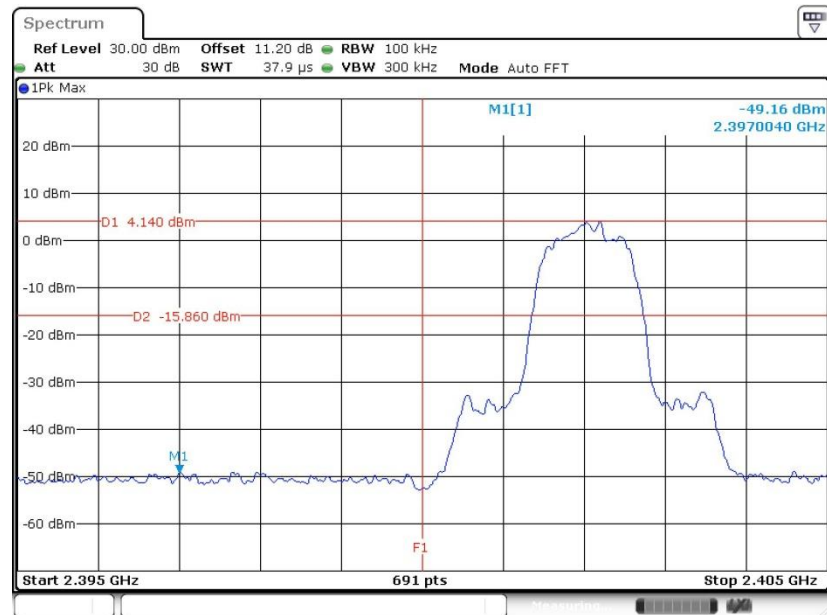


Date: 24.MAR.2023 01:56:50



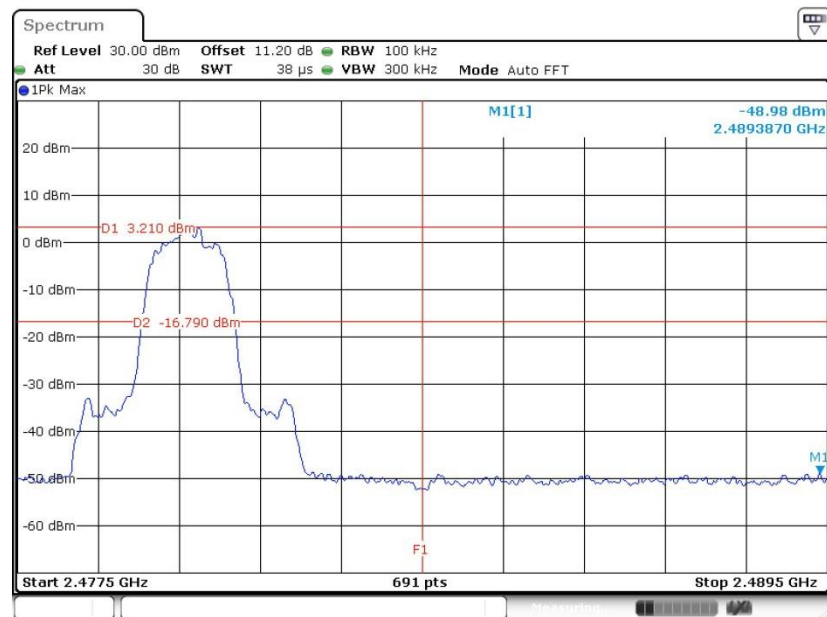
<3Mbps>

Low Band Edge Plot on Channel 00



Date: 24.MAR.2023 02:04:18

High Band Edge Plot on Channel 78



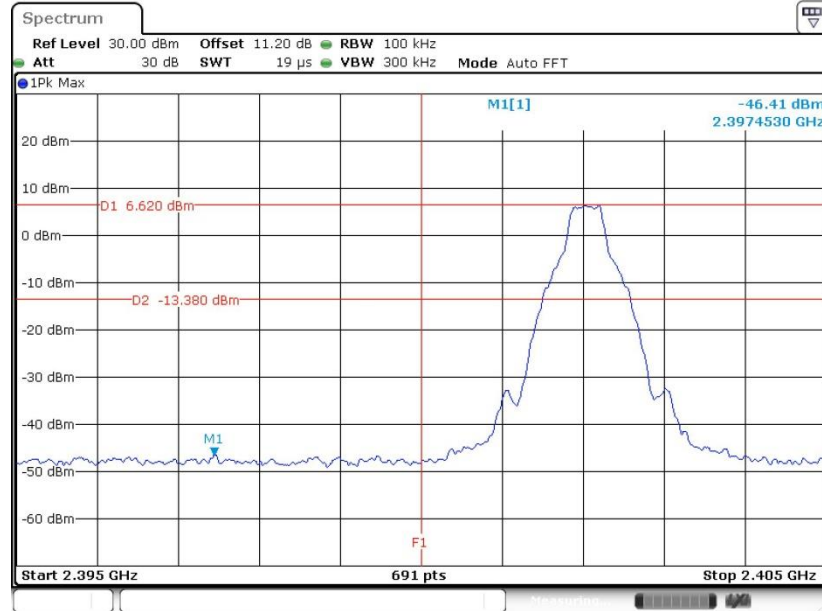
Date: 24.MAR.2023 02:15:59



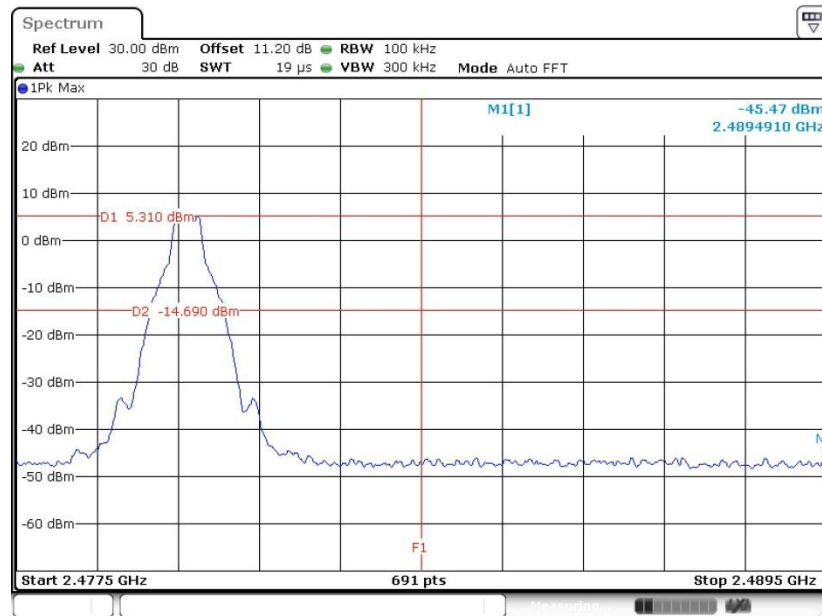
<Ant6>

<1Mbps>

Low Band Edge Plot on Channel 00



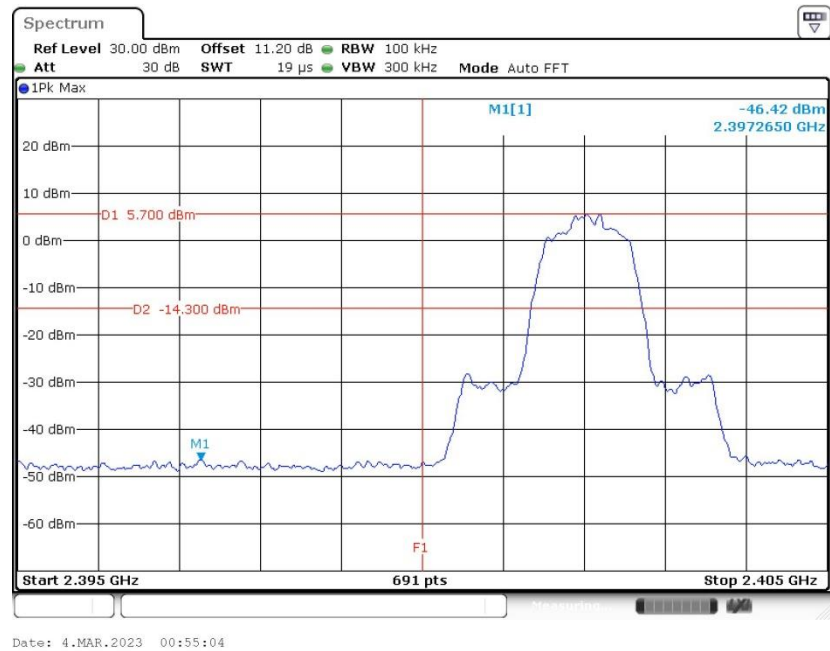
High Band Edge Plot on Channel 78



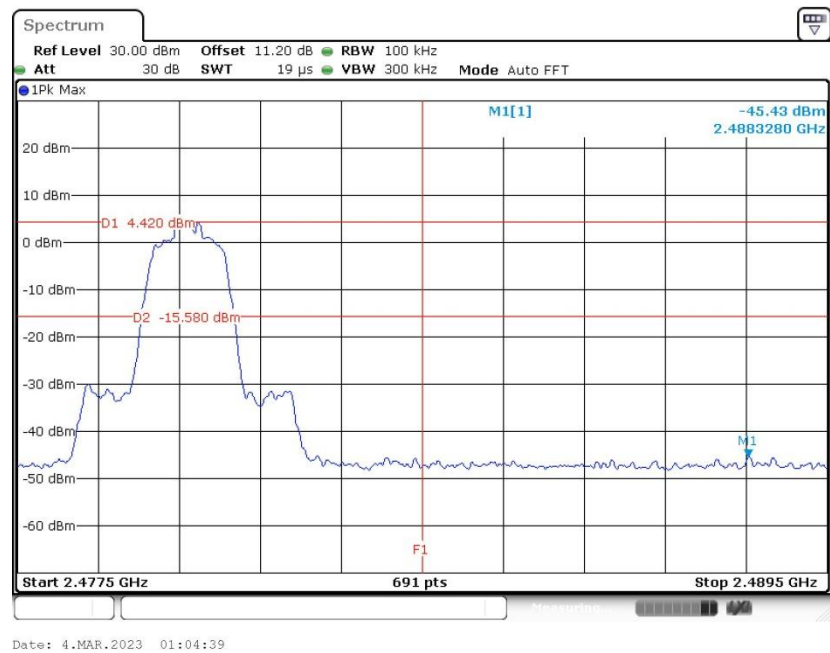


<2Mbps>

Low Band Edge Plot on Channel 00



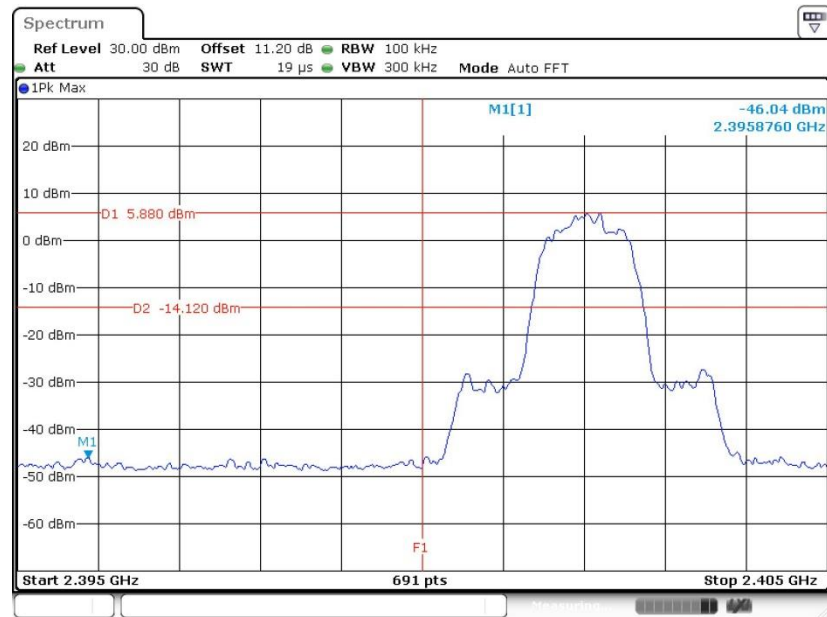
High Band Edge Plot on Channel 78





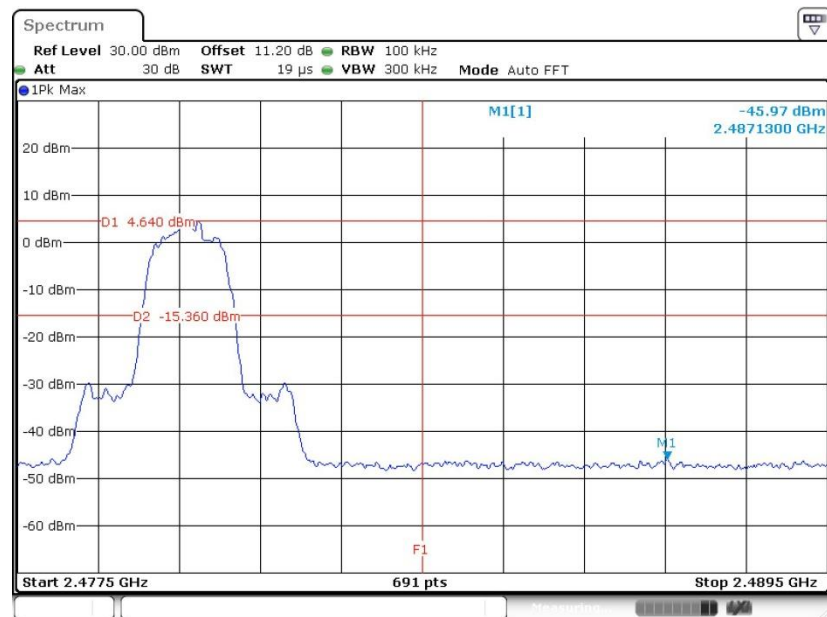
<3Mbps>

Low Band Edge Plot on Channel 00



Date: 4.MAR.2023 17:09:45

High Band Edge Plot on Channel 78



Date: 4.MAR.2023 17:29:34

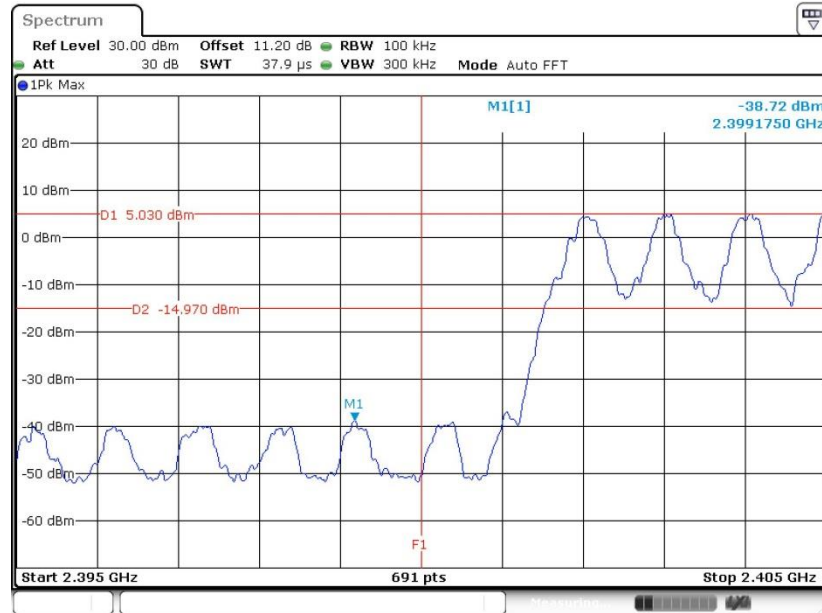


3.6.6 Test Result of Conducted Hopping Mode Band Edges

<Ant5>

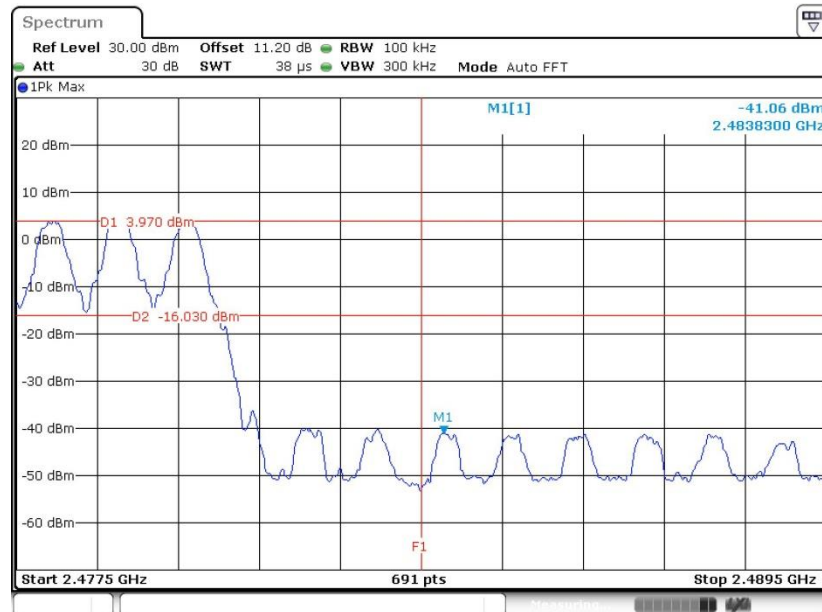
<1Mbps>

Hopping Mode Low Band Edge Plot



Date: 24.MAR.2023 03:12:36

Hopping Mode High Band Edge Plot

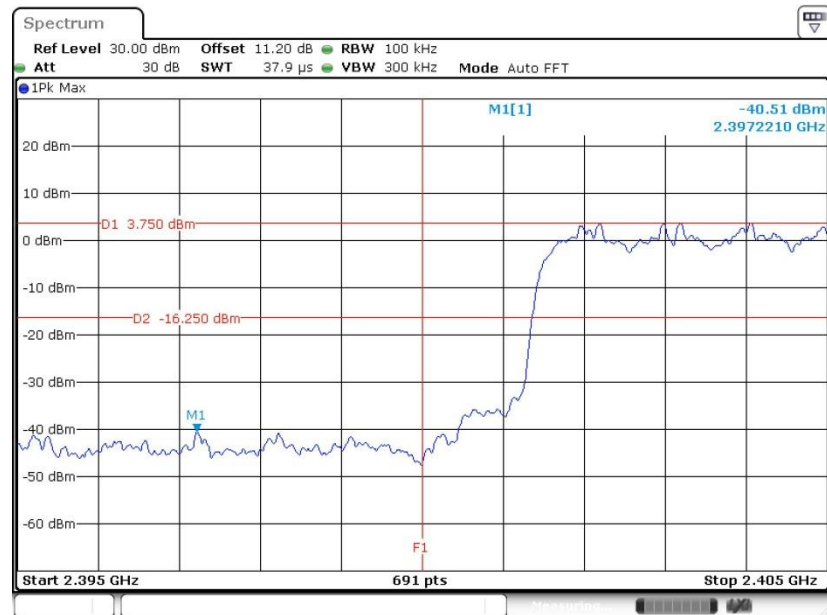


Date: 24.MAR.2023 03:12:55



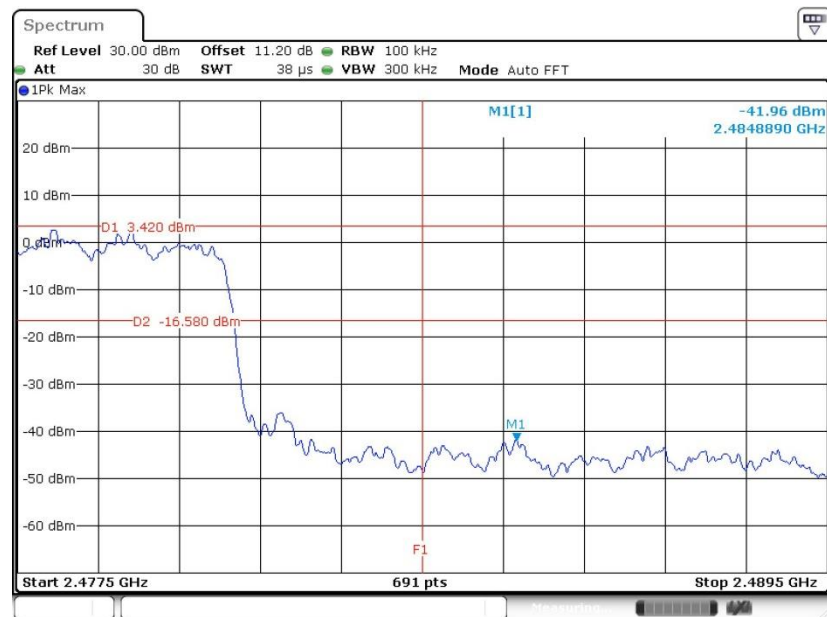
<2Mbps>

Hopping Mode Low Band Edge Plot



Date: 24.MAR.2023 03:25:50

Hopping Mode High Band Edge Plot

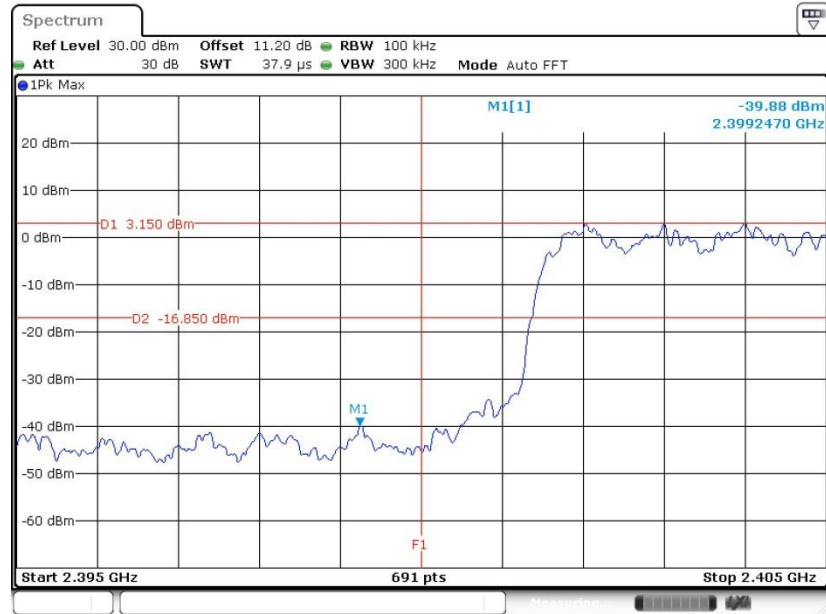


Date: 24.MAR.2023 03:24:58



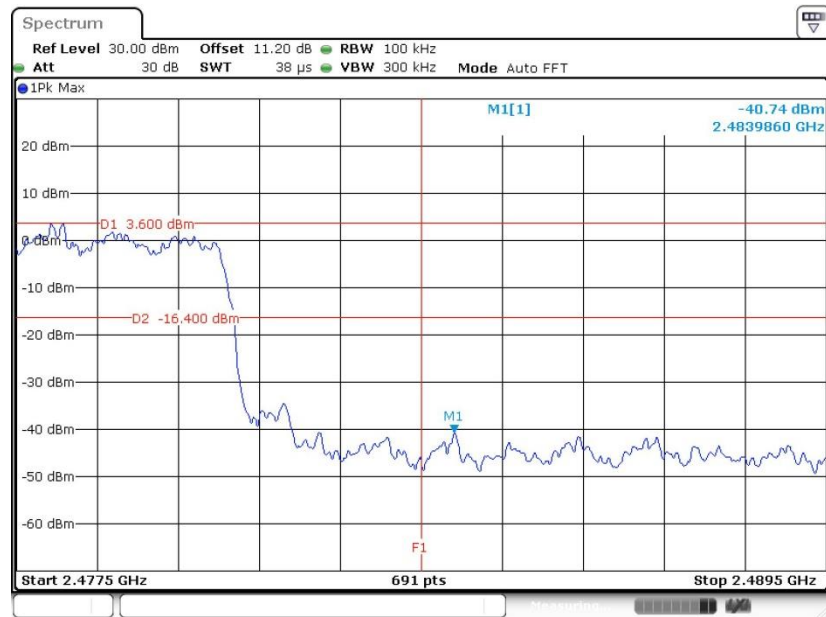
<3Mbps>

Hopping Mode Low Band Edge Plot



Date: 24.MAR.2023 03:23:07

Hopping Mode High Band Edge Plot



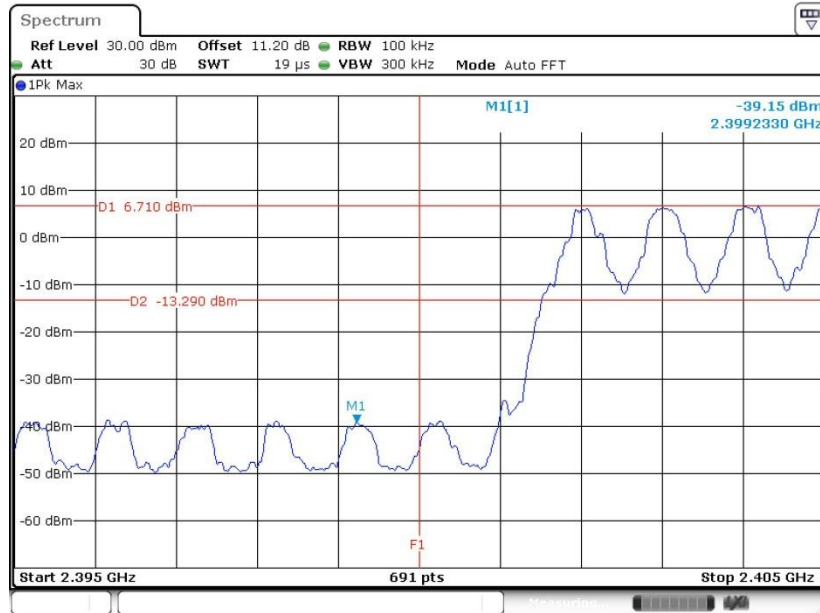
Date: 24.MAR.2023 03:24:21



<Ant6>

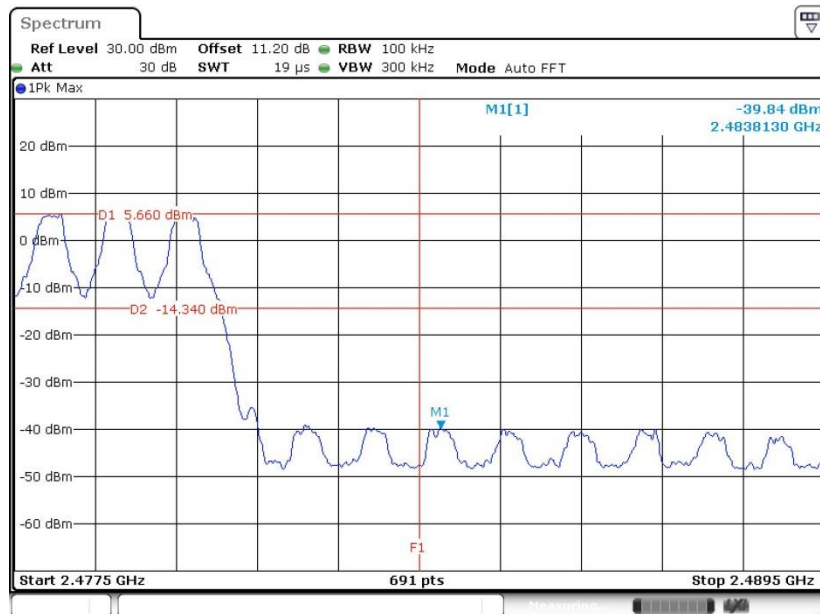
<1Mbps>

Hopping Mode Low Band Edge Plot



Date: 4.MAR.2023 17:37:18

Hopping Mode High Band Edge Plot

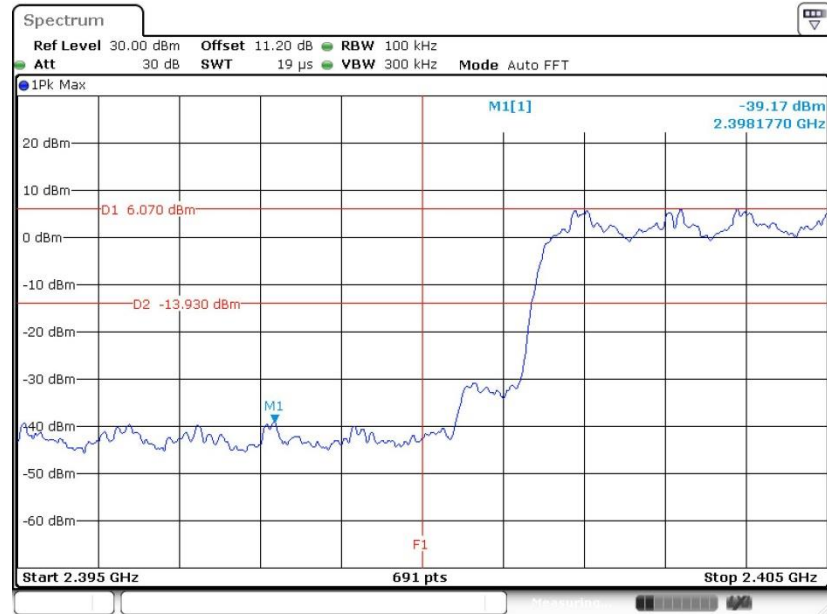


Date: 4.MAR.2023 17:38:29



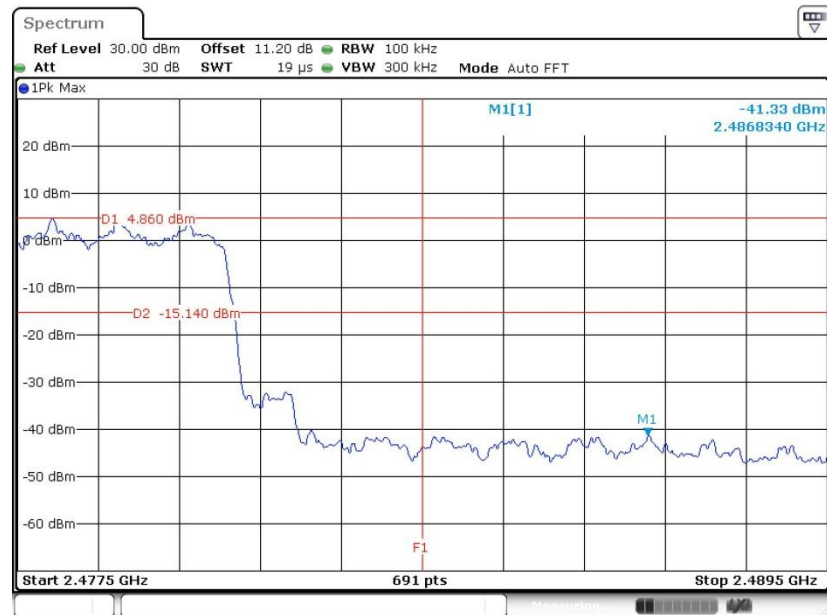
<2Mbps>

Hopping Mode Low Band Edge Plot



Date: 4.MAR.2023 17:41:49

Hopping Mode High Band Edge Plot

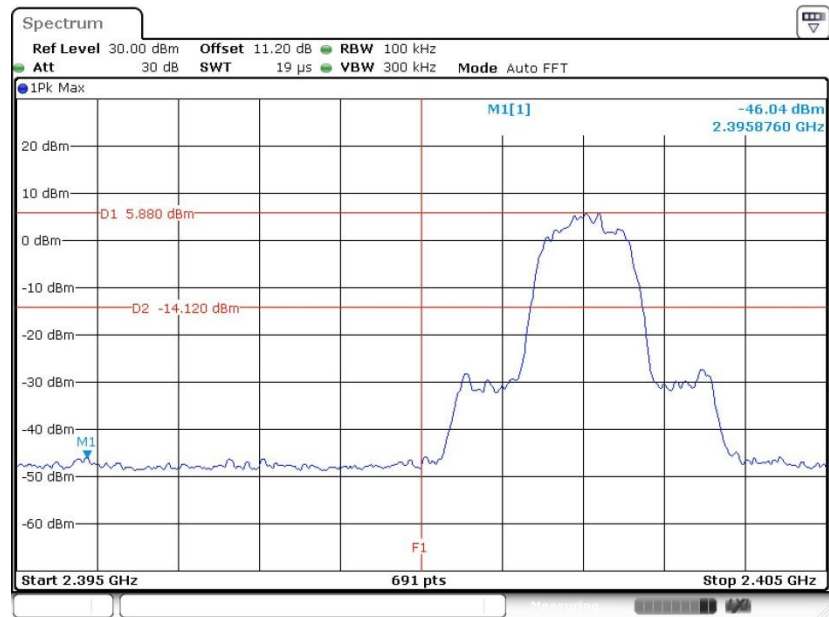


Date: 4.MAR.2023 17:42:10



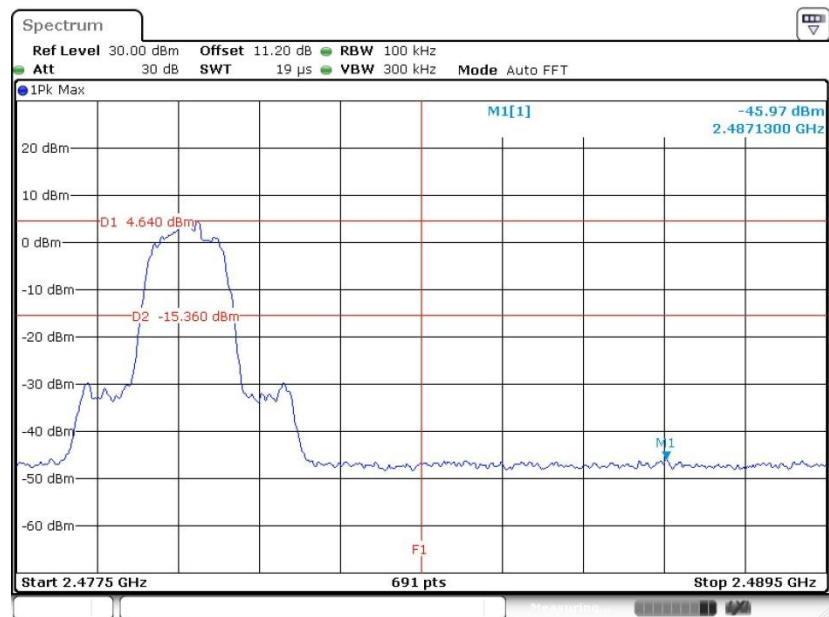
<3Mbps>

Hopping Mode Low Band Edge Plot



Date: 4.MAR.2023 17:09:45

Hopping Mode High Band Edge Plot



Date: 4.MAR.2023 17:29:34

3.7 Conducted Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

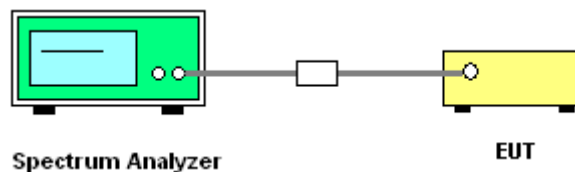
3.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Procedure

1. The testing follows ANSI C63.10-2013 clause 7.8.8.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW = 300kHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.7.4 Test Setup

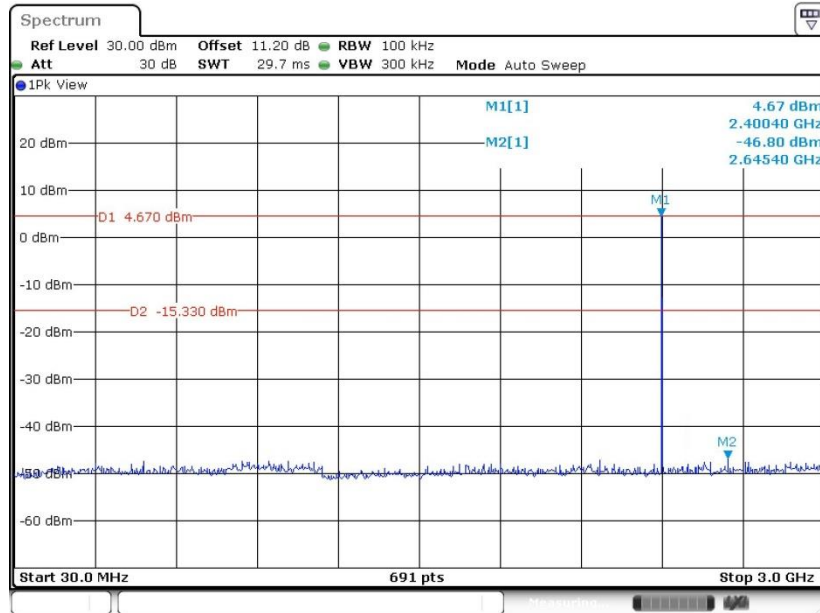


3.7.5 Test Result of Conducted Spurious Emission

<Ant5>

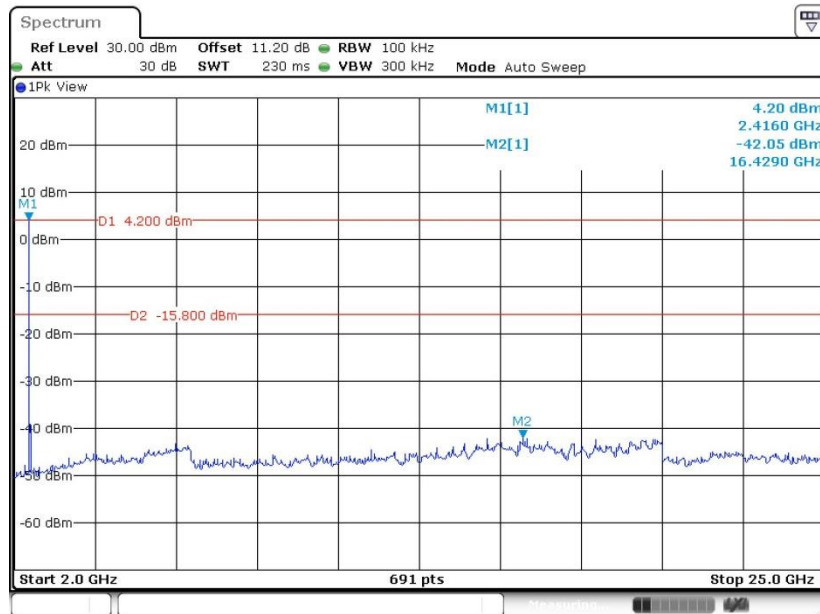
<1Mbps>

CSE Plot on Ch 00 between 30MHz ~ 3 GHz



Date: 24.MAR.2023 01:14:13

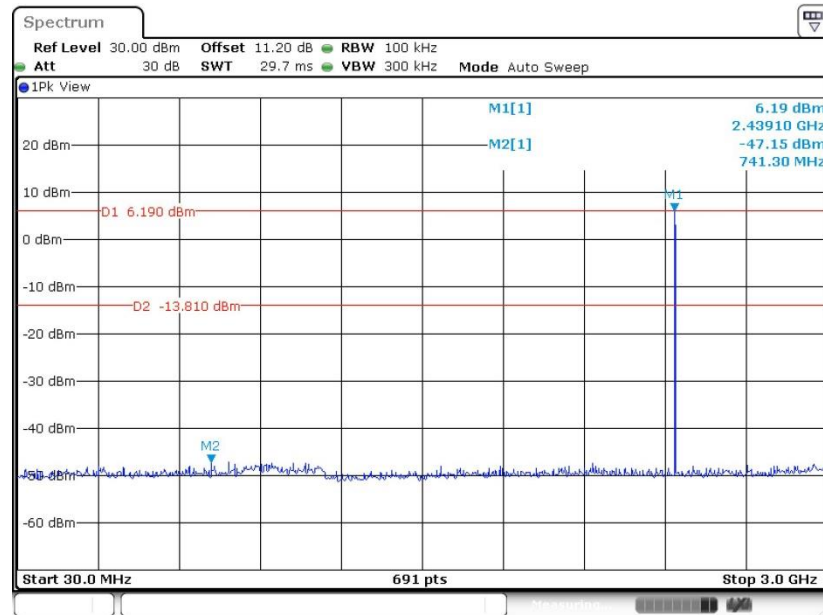
CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



Date: 24.MAR.2023 01:14:54

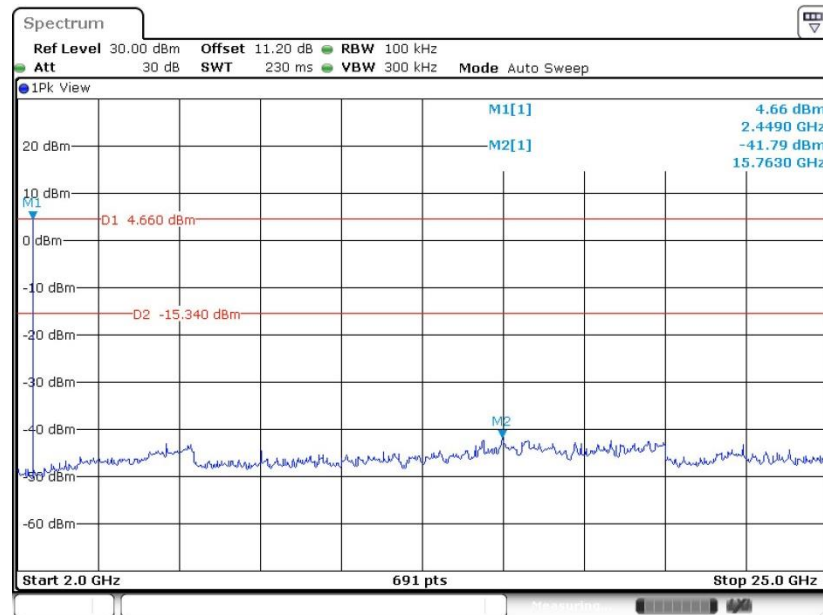


CSE Plot on Ch 39 between 30MHz ~ 3 GHz



Date: 24.MAR.2023 01:20:31

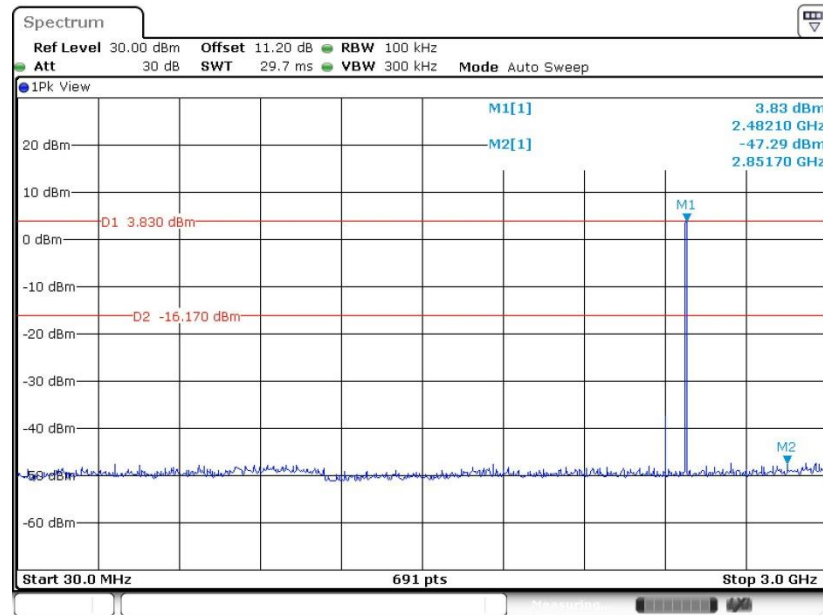
CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



Date: 24.MAR.2023 01:21:04

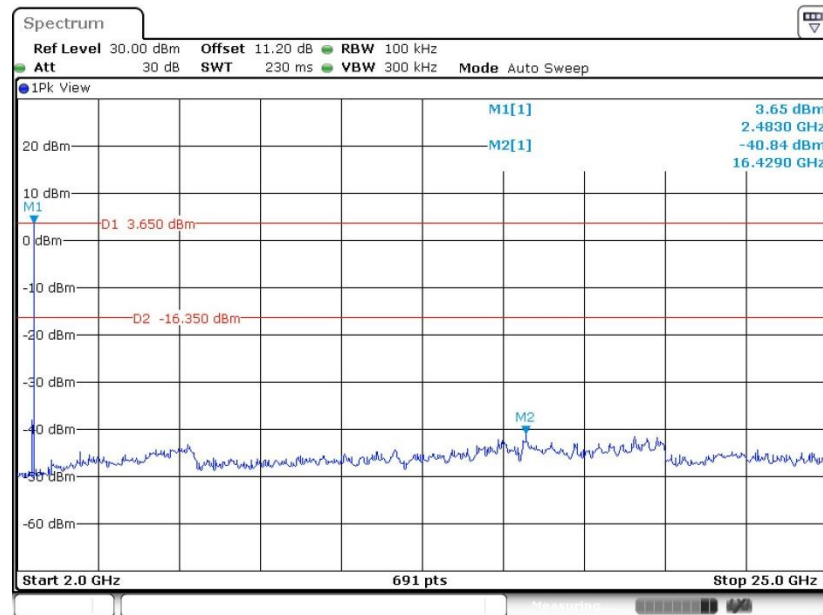


CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 24.MAR.2023 01:26:13

CSE Plot on Ch 78 between 2 GHz ~ 25 GHz

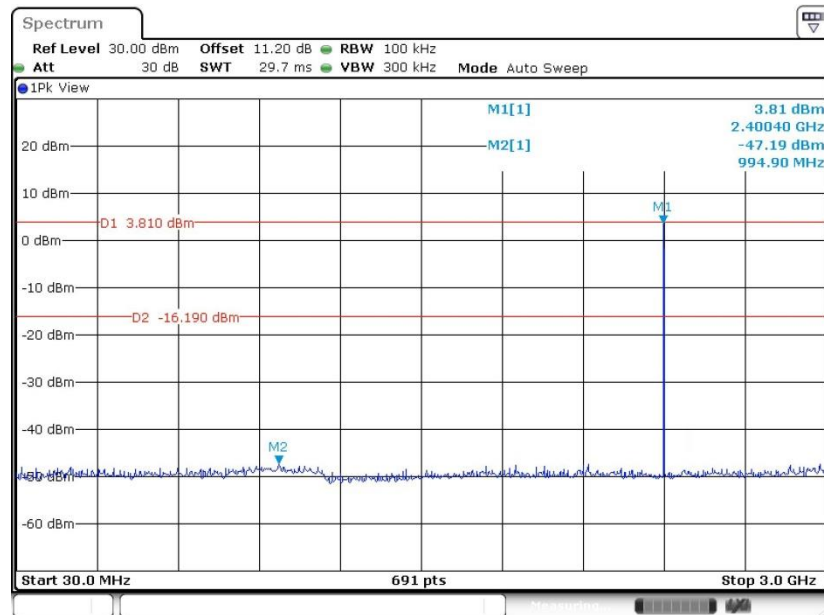


Date: 24.MAR.2023 01:26:52



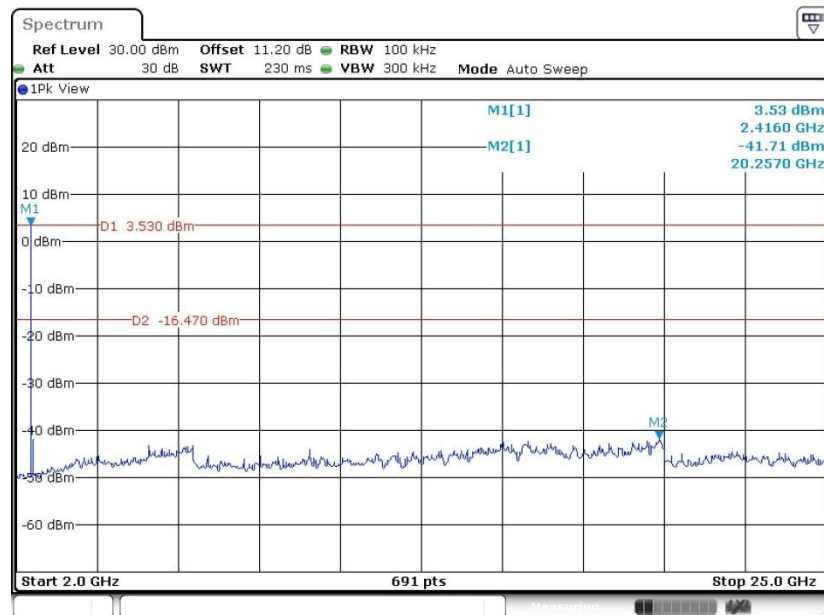
<2Mbps>

CSE Plot on Ch 00 between 30MHz ~ 3 GHz



Date: 24.MAR.2023 01:37:57

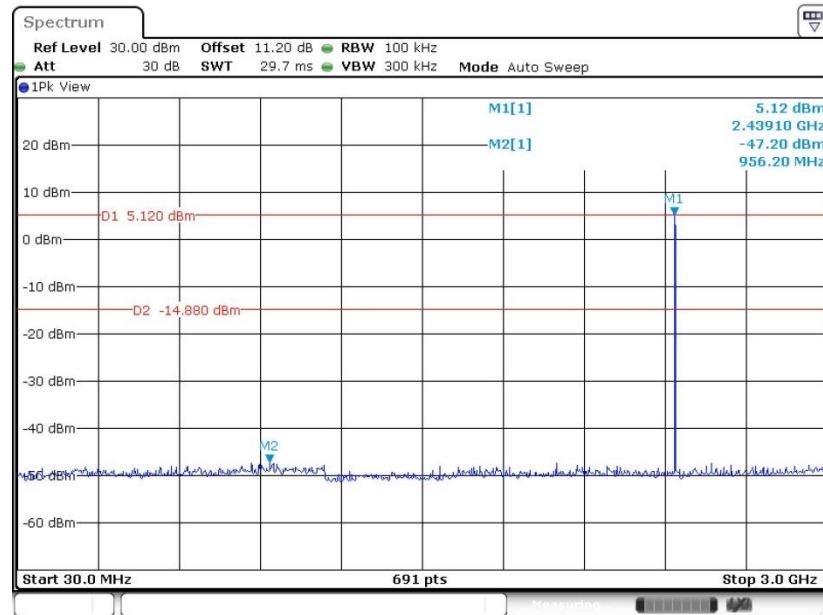
CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



Date: 24.MAR.2023 01:38:28

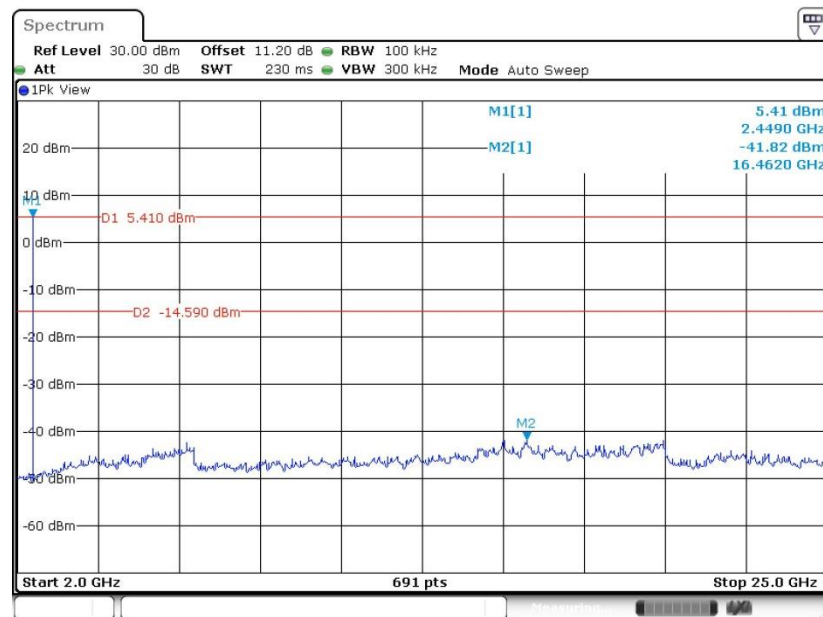


CSE Plot on Ch 39 between 30MHz ~ 3 GHz



Date: 24.MAR.2023 01:47:54

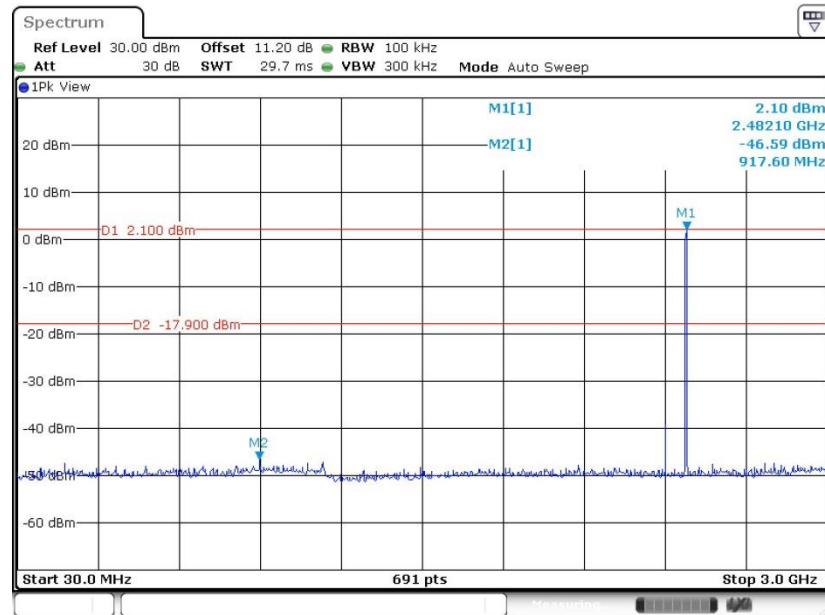
CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



Date: 24.MAR.2023 01:48:33

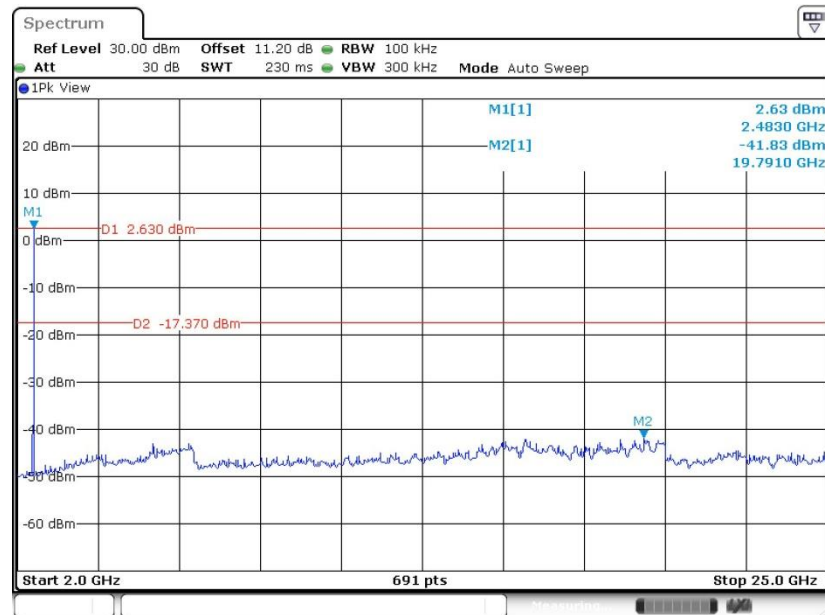


CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 24.MAR.2023 02:00:06

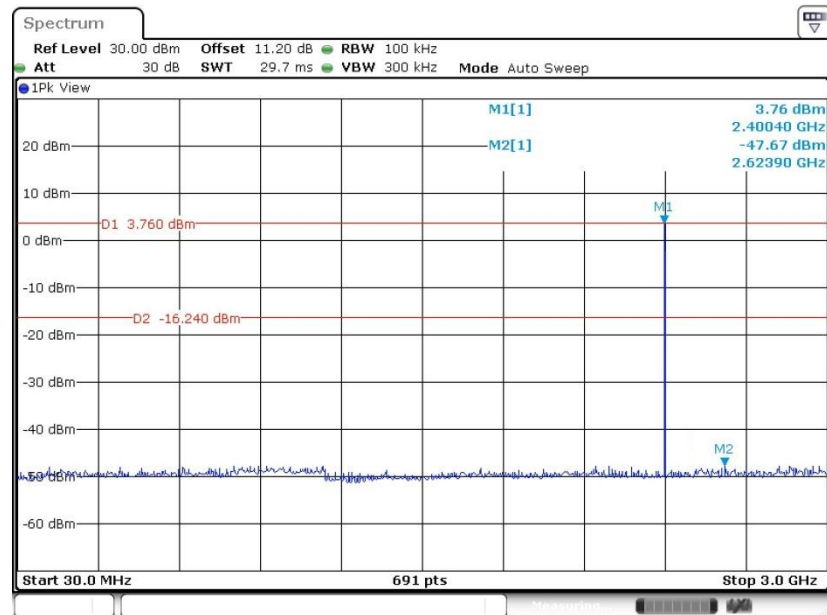
CSE Plot on Ch 78 between 2 GHz ~ 25 GHz



Date: 24.MAR.2023 02:00:52

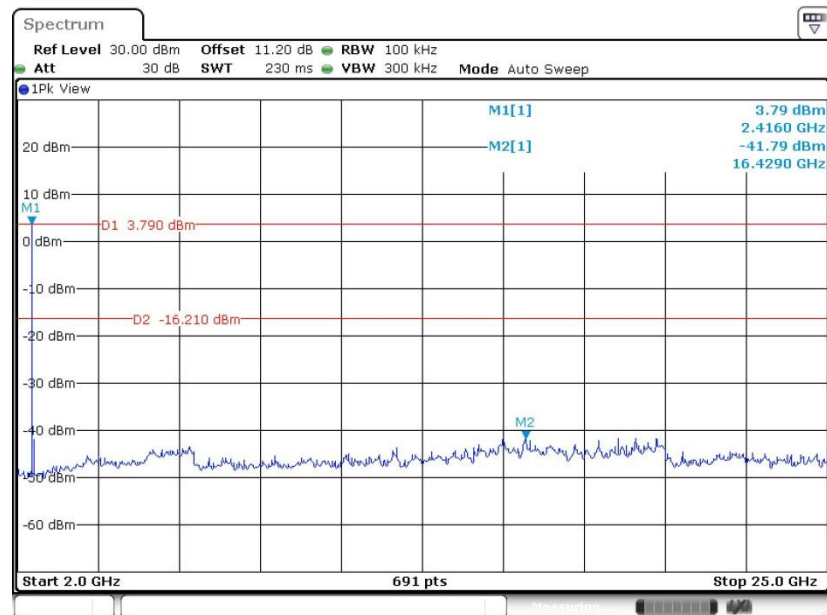
<3Mbps>

CSE Plot on Ch 00 between 30MHz ~ 3 GHz



Date: 24.MAR.2023 02:06:49

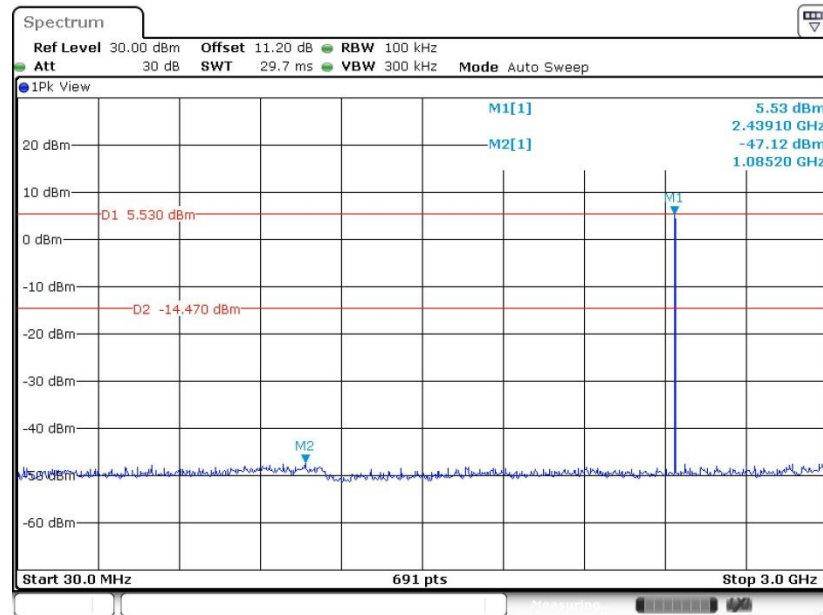
CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



Date: 24.MAR.2023 02:07:30

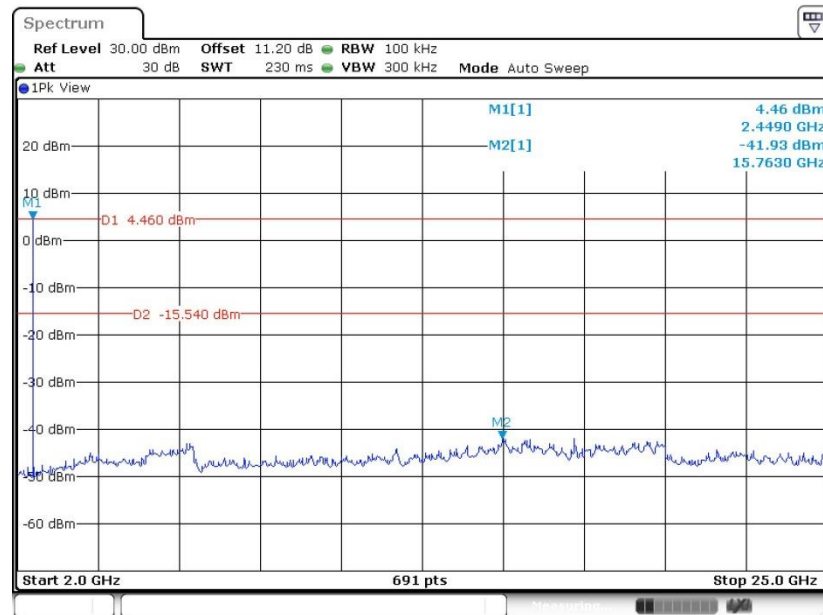


CSE Plot on Ch 39 between 30MHz ~ 3 GHz



Date: 24.MAR.2023 02:12:07

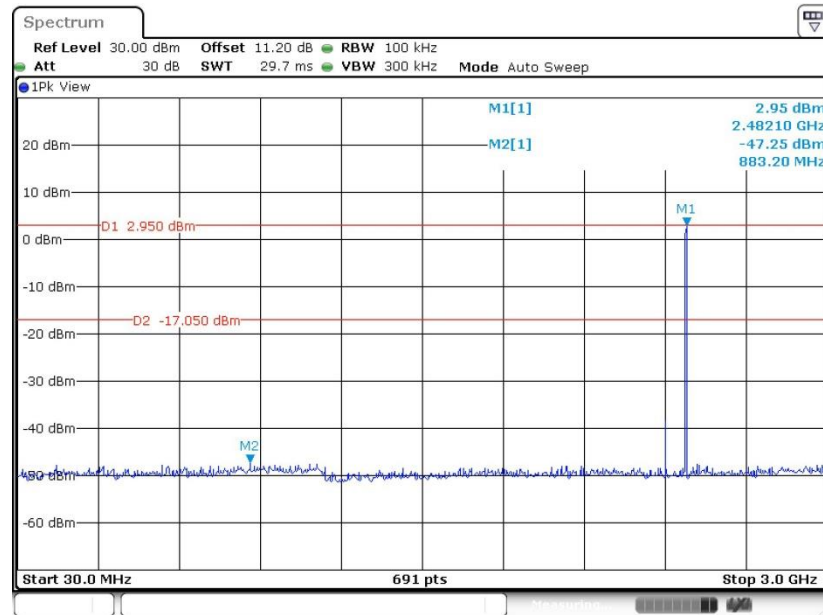
CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



Date: 24.MAR.2023 02:12:36

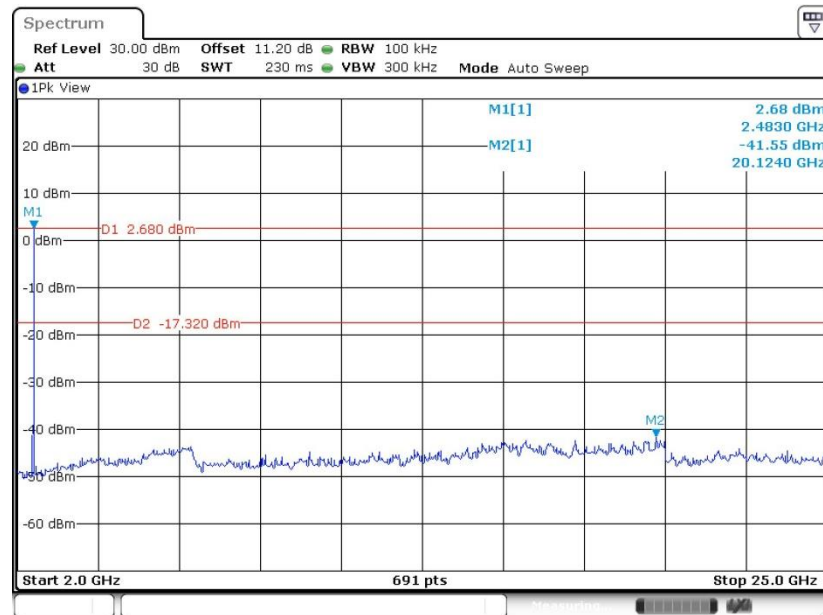


CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 24.MAR.2023 02:18:28

CSE Plot on Ch 78 between 2 GHz ~ 25 GHz



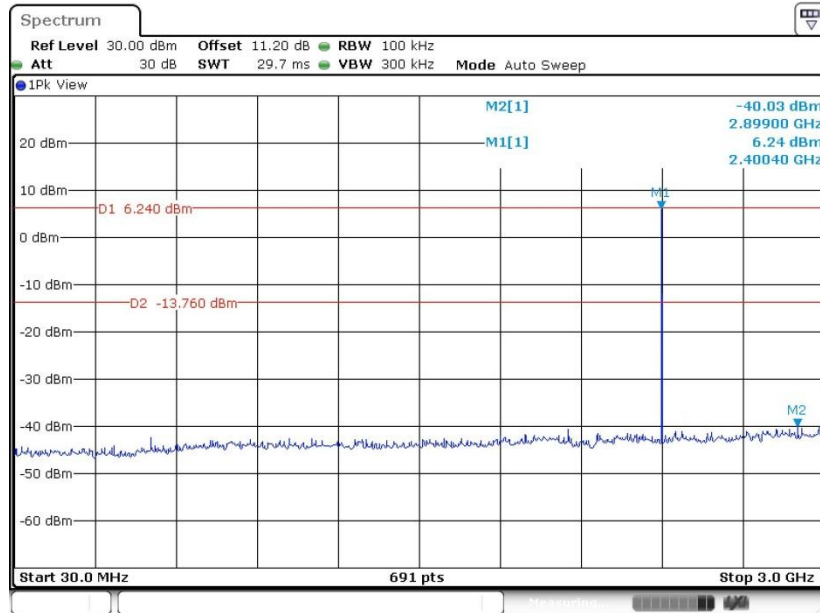
Date: 24.MAR.2023 02:19:26



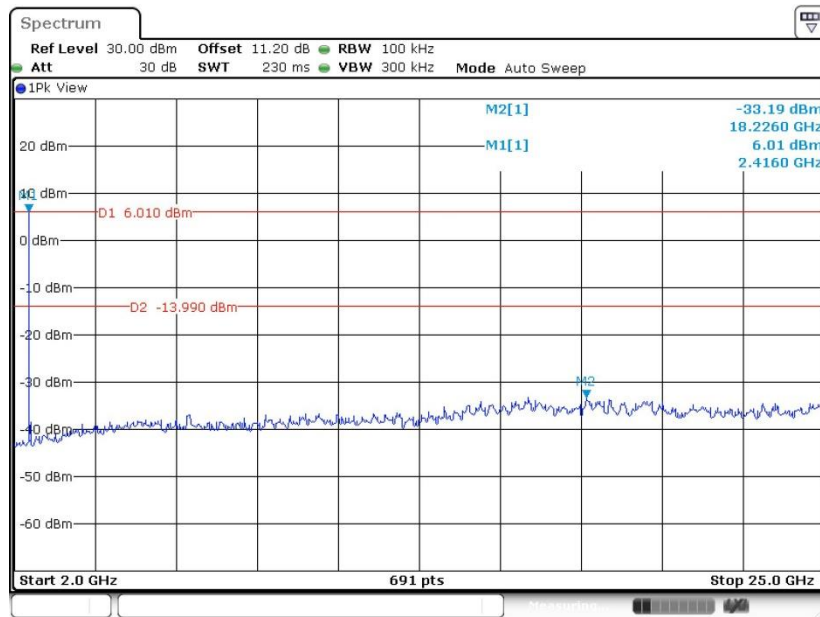
<Ant6>

<1Mbps>

CSE Plot on Ch 00 between 30MHz ~ 3 GHz

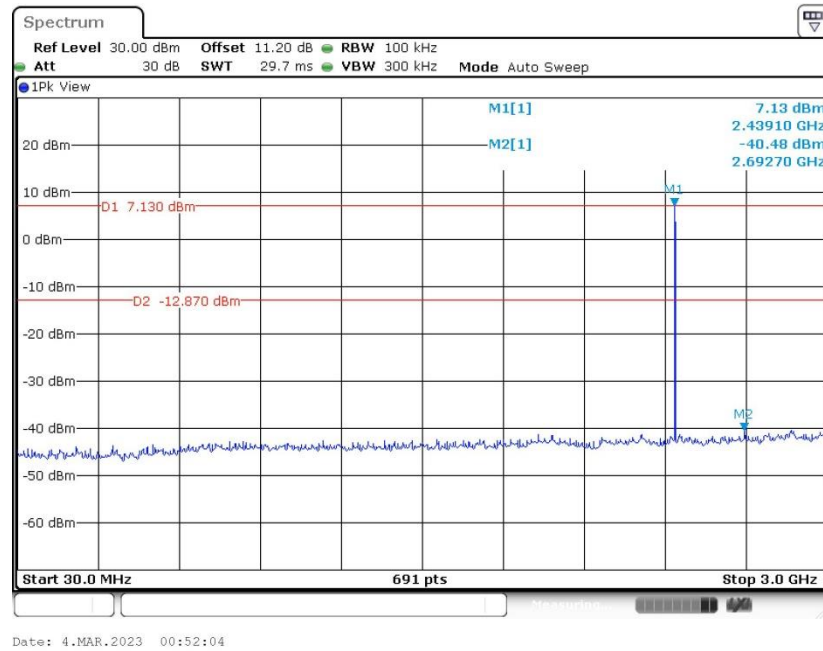


CSE Plot on Ch 00 between 2 GHz ~ 25 GHz

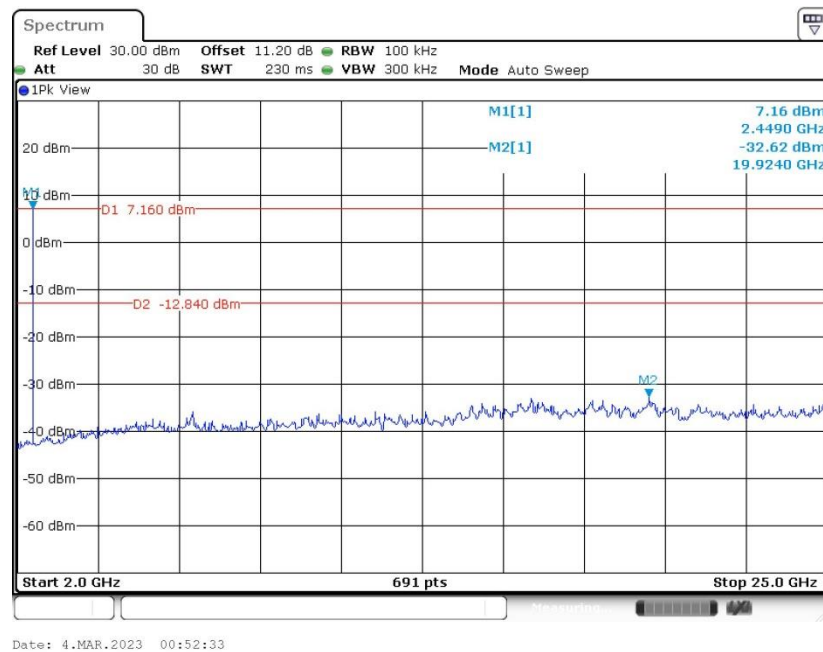




CSE Plot on Ch 39 between 30MHz ~ 3 GHz

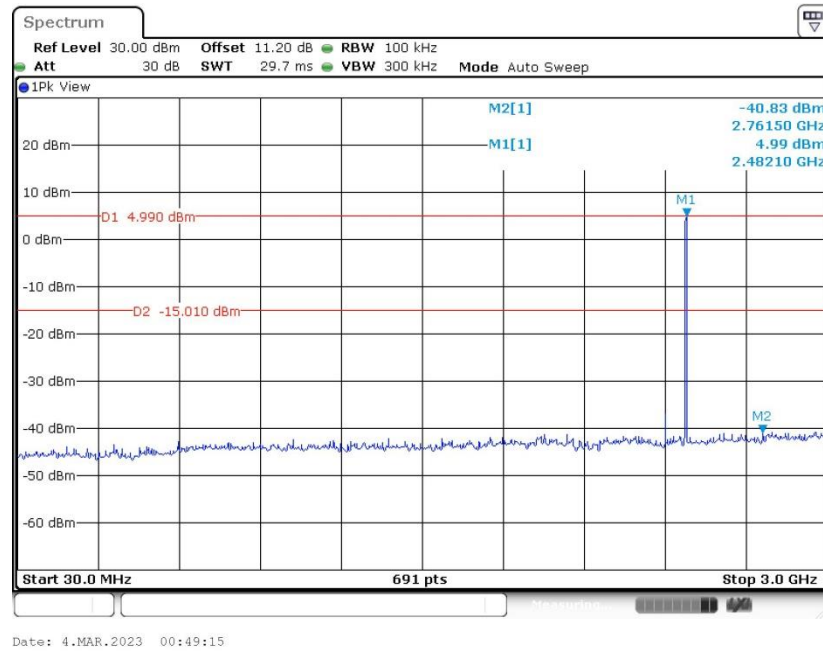


CSE Plot on Ch 39 between 2 GHz ~ 25 GHz

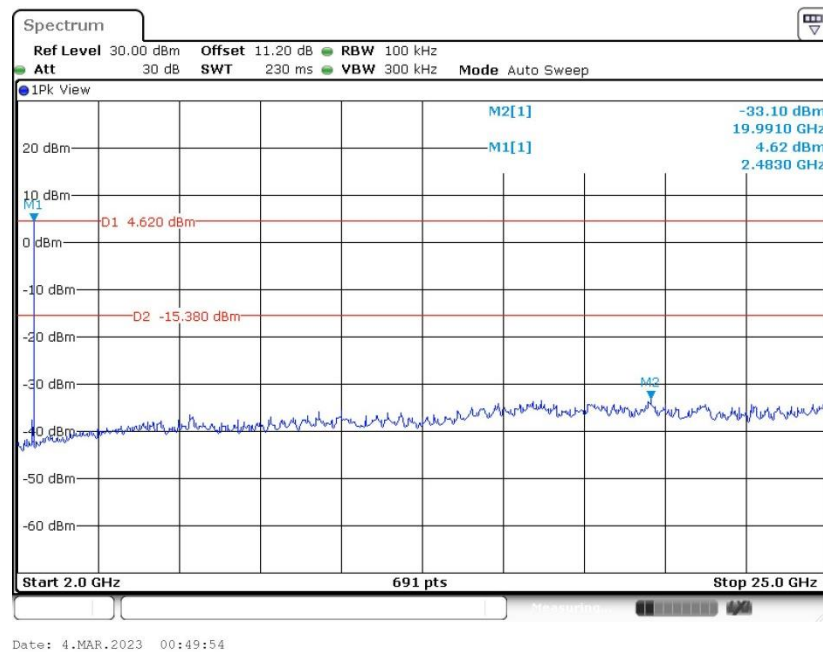




CSE Plot on Ch 78 between 30MHz ~ 3 GHz



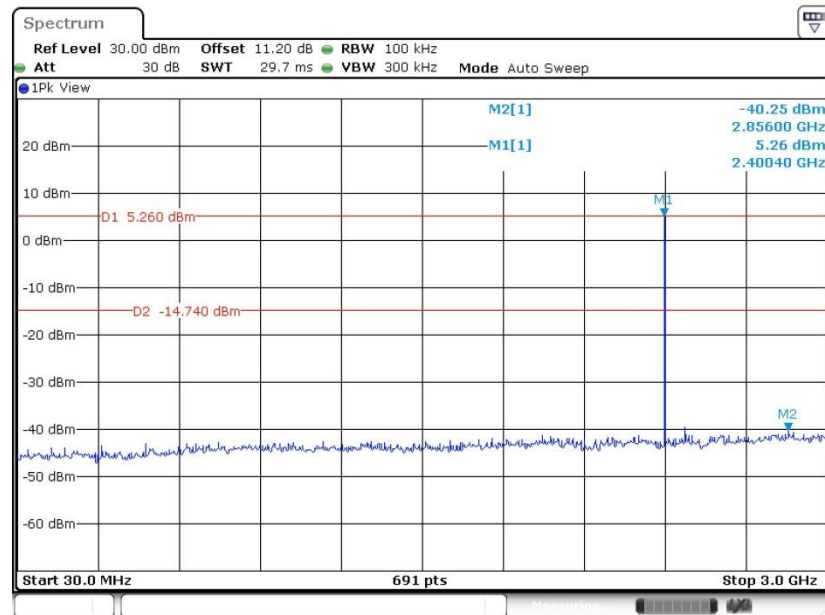
CSE Plot on Ch 78 between 2 GHz ~ 25 GHz





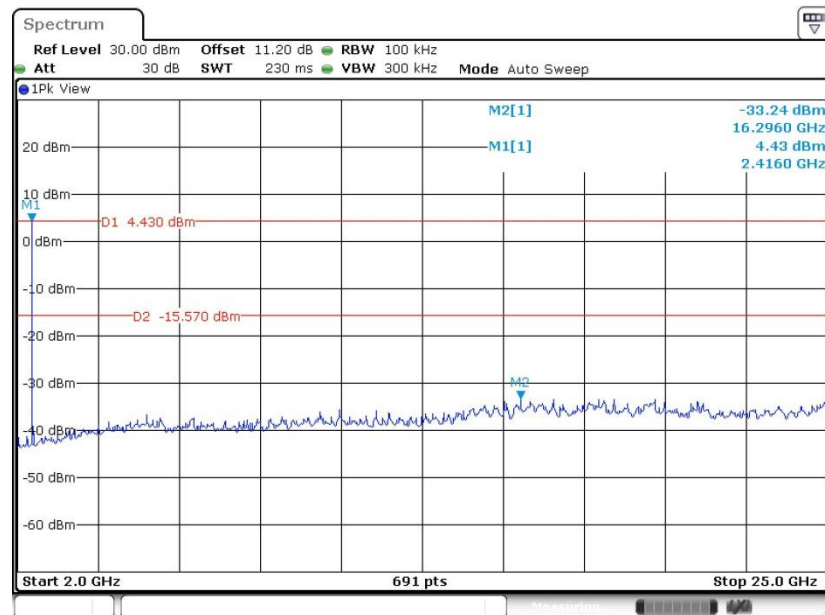
<2Mbps>

CSE Plot on Ch 00 between 30MHz ~ 3 GHz



Date: 4.MAR.2023 00:56:18

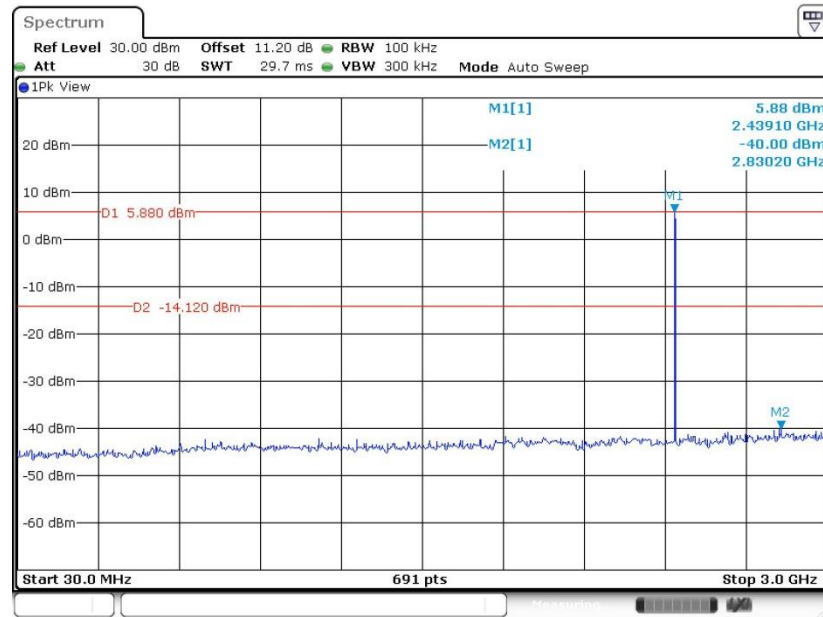
CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



Date: 4.MAR.2023 00:56:47

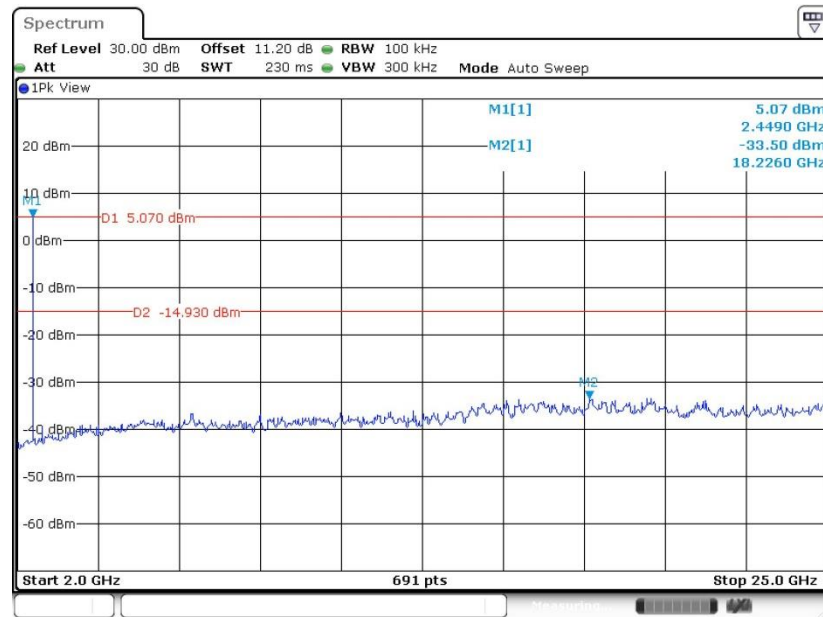


CSE Plot on Ch 39 between 30MHz ~ 3 GHz



Date: 4.MAR.2023 00:59:49

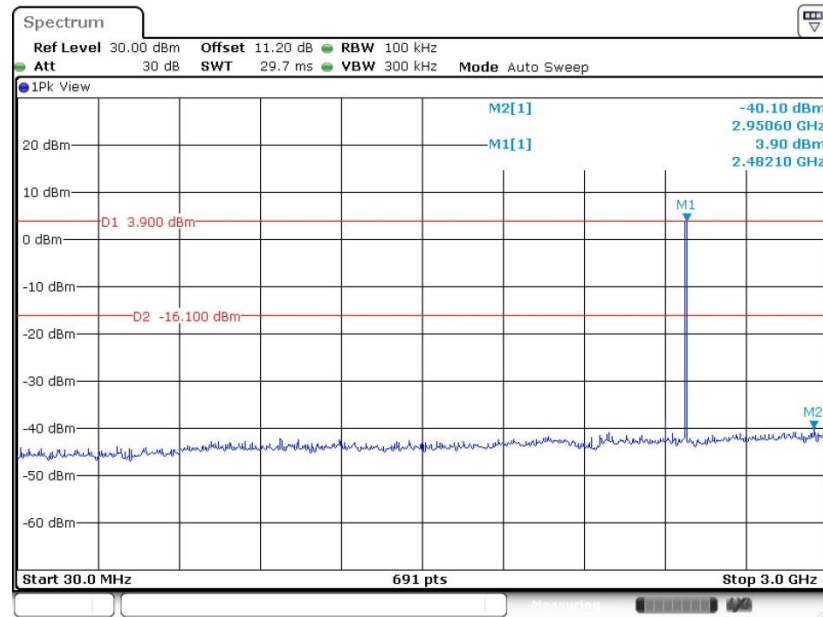
CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



Date: 4.MAR.2023 01:00:20

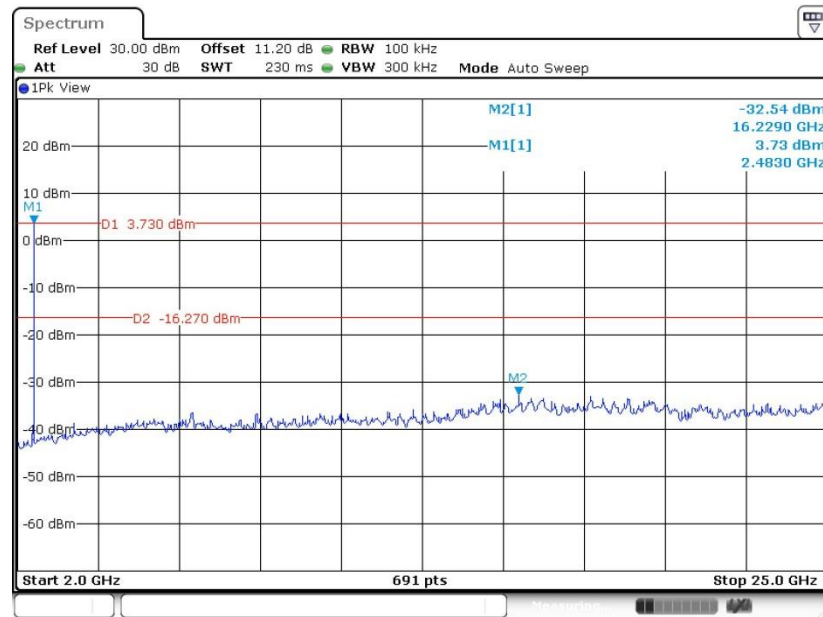


CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 4.MAR.2023 01:16:37

CSE Plot on Ch 78 between 2 GHz ~ 25 GHz

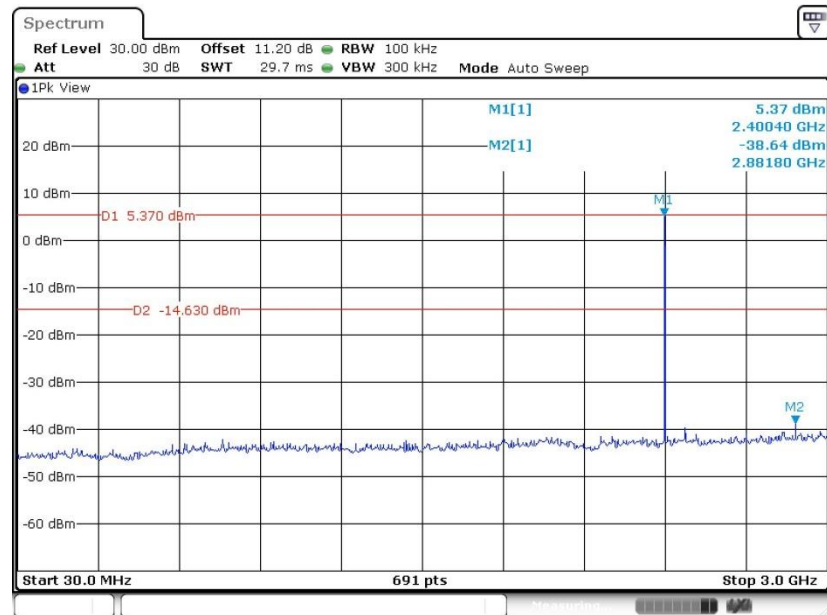


Date: 4.MAR.2023 01:17:07



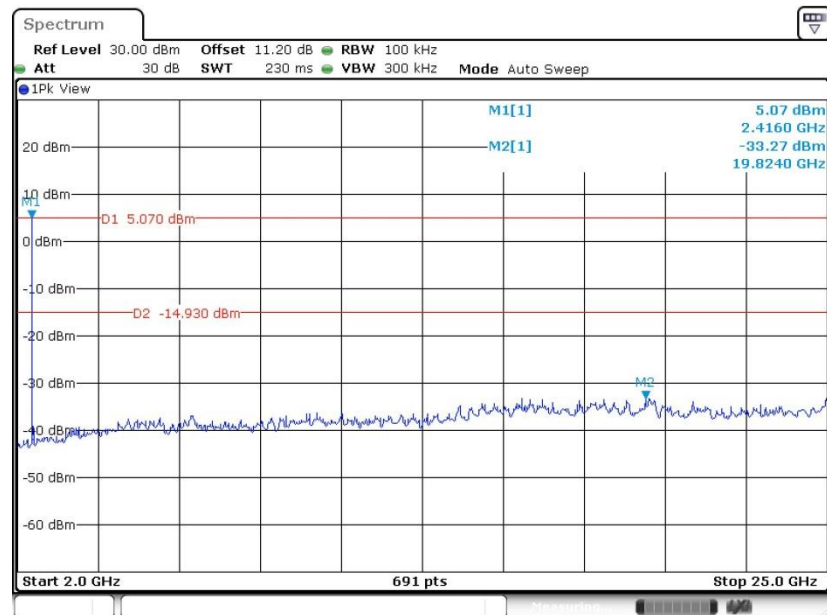
<3Mbps>

CSE Plot on Ch 00 between 30MHz ~ 3 GHz



Date: 4.MAR.2023 17:13:48

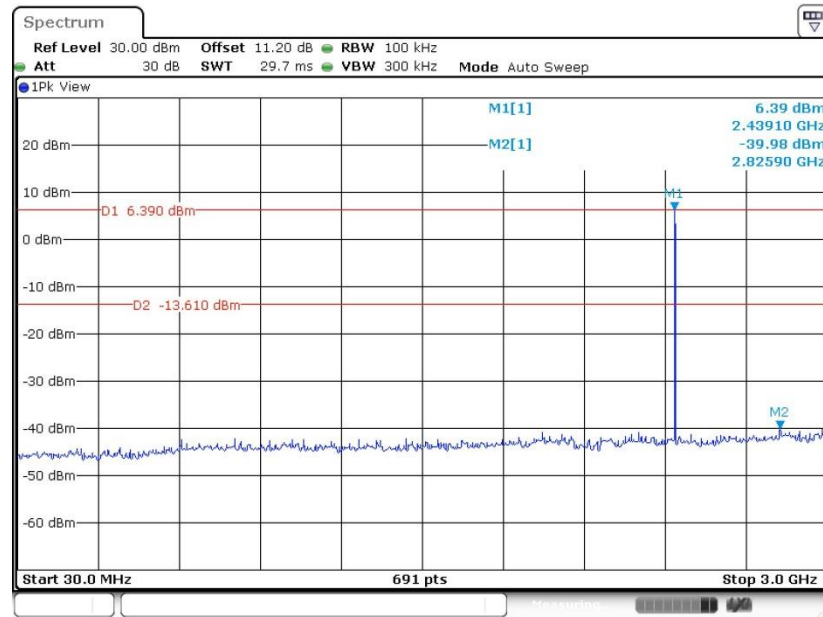
CSE Plot on Ch 00 between 2 GHz ~ 25 GHz



Date: 4.MAR.2023 17:14:24

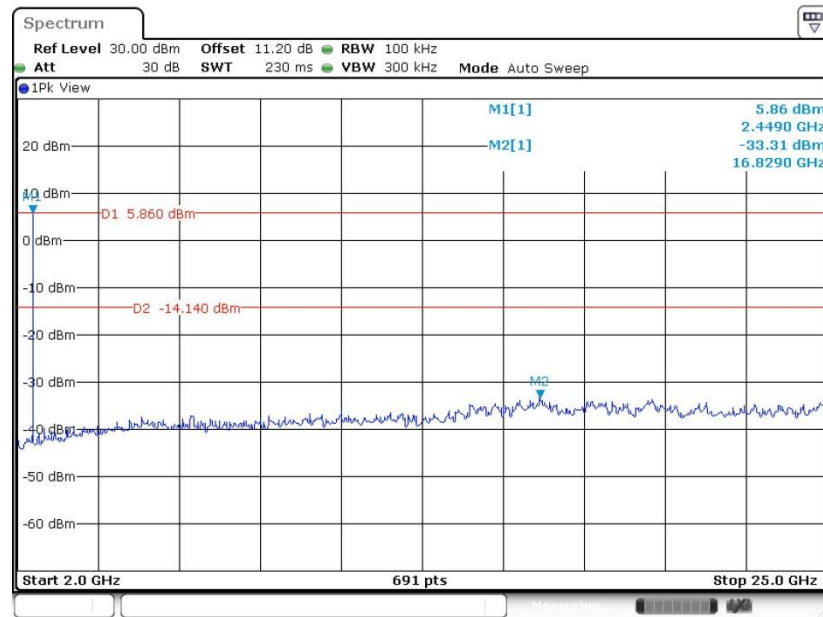


CSE Plot on Ch 39 between 30MHz ~ 3 GHz



Date: 4.MAR.2023 17:18:07

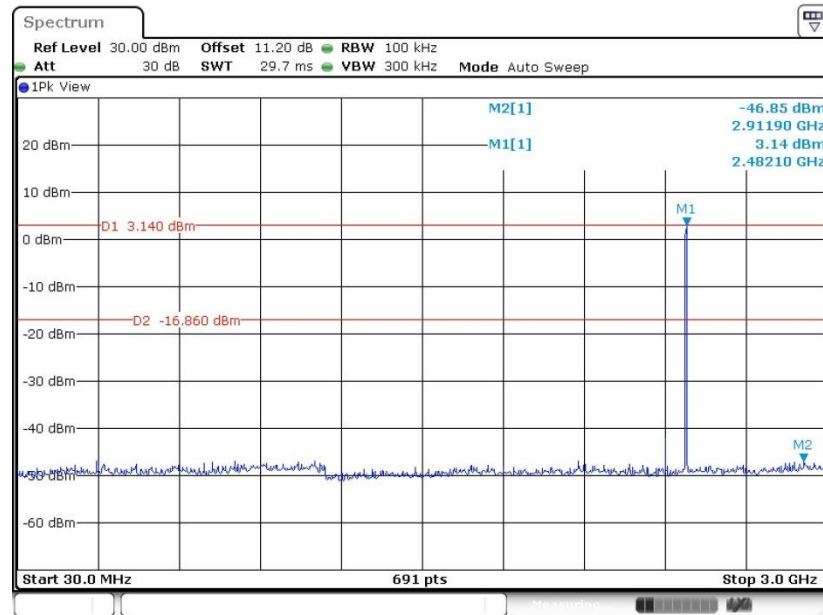
CSE Plot on Ch 39 between 2 GHz ~ 25 GHz



Date: 4.MAR.2023 17:27:01

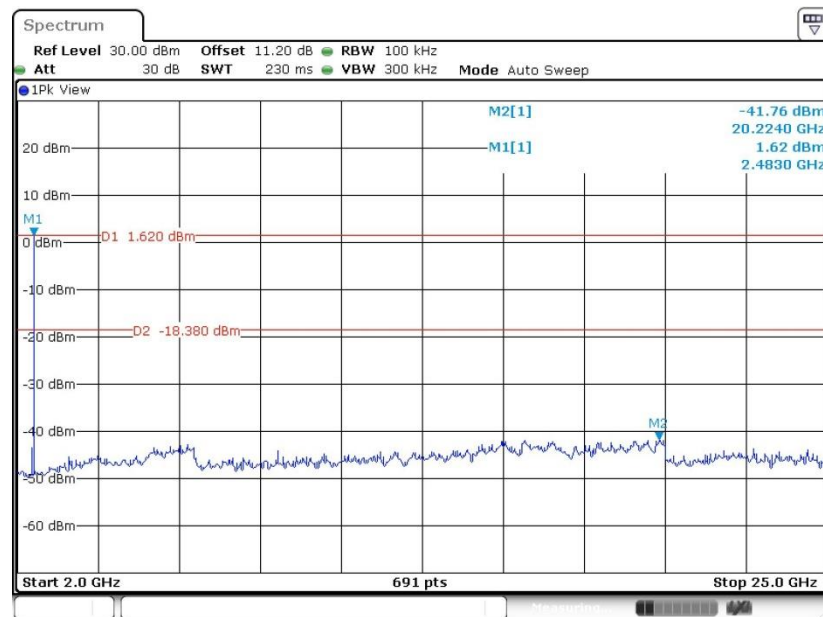


CSE Plot on Ch 78 between 30MHz ~ 3 GHz



Date: 2 APR.2023 03:59:11

CSE Plot on Ch 78 between 2 GHz ~ 25 GHz



Date: 2 APR.2023 03:59:53

3.8 Radiated Band Edges and Spurious Emission Measurement

3.8.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.8.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

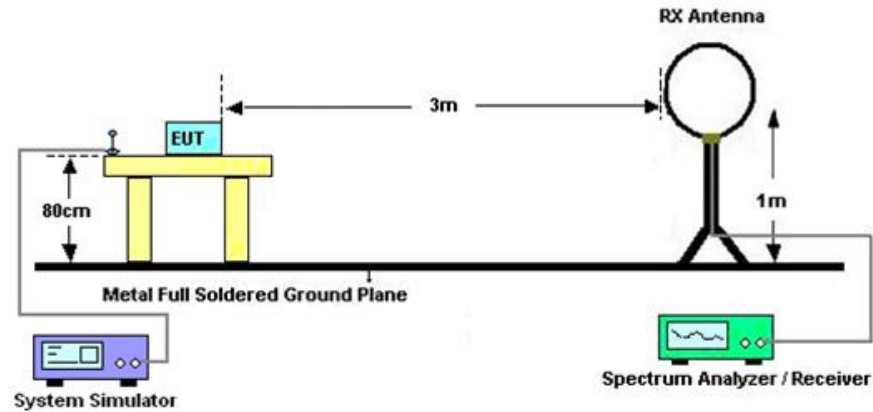
3.8.3 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz, RBW=1MHz for $f > 1$ GHz ; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
 - (3) For average measurement: use duty cycle correction factor method per 15.35(c).
Duty cycle = On time/100 milliseconds
On time = $N_1 * L_1 + N_2 * L_2 + \dots + N_{n-1} * L_{n-1} + N_n * L_n$
Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
Average Emission Level = Peak Emission Level + $20 * \log(\text{Duty cycle})$
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

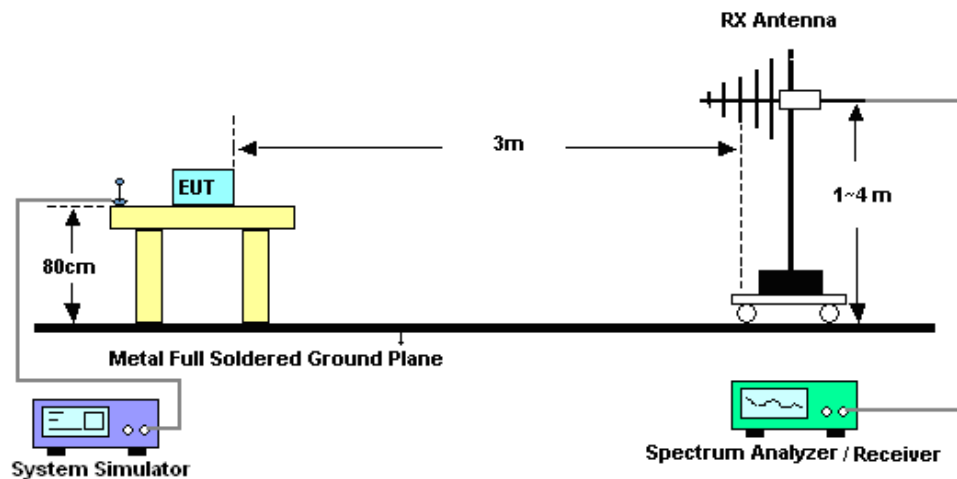
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (-24.79dB) derived from $20 \log(\text{dwell time}/100\text{ms})$. This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

3.8.4 Test Setup

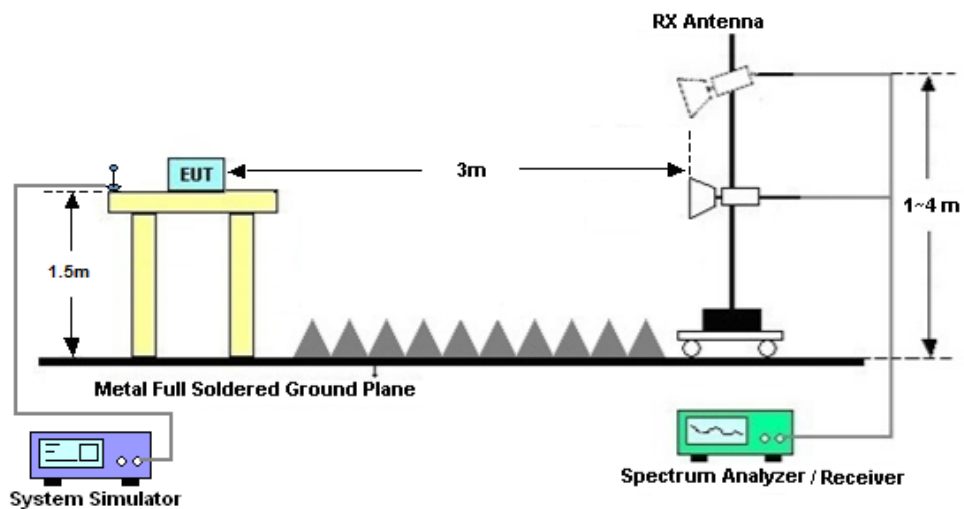
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





3.8.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.8.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C&D.

3.8.7 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic or 40GHz, whichever is lower)

Please refer to Appendix C&D.

3.8.8 Duty cycle correction factor for average measurement

Please refer to Appendix E.