

Dates of Tests: May 23, 2023 ~ June 28, 2023

Test Report S/N: LR500112306C

Test Site : LTA CO., LTD.

CERTIFICATION OF COMPLIANCE

FCC ID

2BBRCHN-SSC

APPLICANT

Honeynaps Co., Ltd

| | | |
|---------------------------|---|--|
| Equipment Class | : | Part 15 Spread Spectrum Transmitter (DSS) |
| Manufacturing Description | : | Sleep Sensing Device |
| Manufacturer | : | Honeynaps Co., Ltd |
| Model name | : | HN-SSC |
| Test Device Serial No.: | : | Identical prototype |
| Rule Part(s) | : | FCC Part 15.247 Subpart C ; ANSI C63.10 - 2013 |
| Frequency Range | : | EDR 2402 ~ 2480 MHz |
| RF power | : | Max 3.80 dBm - Conducted |
| Data of issue | : | June 28, 2023 |

This test report is issued under the authority of:

The test was supervised by:



Ja-Beom Koo, Manager



Eun-Hwan Jung, Test Engineer

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1. General information

1-1 Test Performed

Company name : LTA Co., Ltd.
 Address : 243, Jubug-ri, Yangji-Myeon, Youngin-Si, Kyunggi-Do, Korea. 449-822
 Web site : <http://www.ltalab.com>
 E-mail : chahn@ltalab.com
 Telephone : +82-31-323-6008
 Facsimile : +82-31-323-6010

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competents of calibration and testing laboratory”.

1-2 Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

| Agency | Country | Accreditation No. | Validity | Reference |
|--------|---------|-------------------|------------|---------------------|
| NVLAP | U.S.A | 200723-0 | 2023-09-28 | ECT accredited Lab. |
| RRA | KOREA | KR0049 | - | EMC accredited Lab. |
| FCC | U.S.A | 649054 | 2024-04-08 | FCC CAB |
| VCCI | JAPAN | C-4948, | 2023-09-10 | VCCI registration |
| VCCI | JAPAN | T-2416, | 2023-09-10 | VCCI registration |
| VCCI | JAPAN | R-4483(10 m), | 2023-10-15 | VCCI registration |
| VCCI | JAPAN | G-847 | 2024-12-13 | VCCI registration |
| IC | CANADA | 5799A-1 | 2024-08-15 | IC filing |

2. Information about test item

2-1 Client & Manufacturer

Client Company name : Honeynaps Co., Ltd
 Address : 4F, 529, Nonhyeon-ro, Gangnam-gu, Seoul, Republic of Korea
 Tel / Fax : +82 10-6795-8804 / +82 2-567-0134
 Manufacturer : Honeynaps Co., Ltd
 Address : 4F, 529, Nonhyeon-ro, Gangnam-gu, Seoul, Republic of Korea
 Tel / Fax : +82 10-6795-8804 / +82 2-567-0134

2-2 Equipment Under Test (EUT)

Model name : HN-SSC
 Serial number : Identical prototype
 Date of receipt : May 23, 2023
 EUT condition : Pre-production, not damaged
 Antenna type : FPCB Antenna (Max Gain : 5 dBi)
 Frequency Range : 2402 ~ 2480MHz
 RF output power : Max 3.80 dBm – Conducted
 Type of Modulation : Pi/4 DQPSK, 8DPSK
 Power Source : DC 5 V
 Firmware Version : V0.1

2-3 Tested frequency

| Bluetooth | LOW | MID | HIGH |
|-------------------|------|------|------|
| Frequency (MHz) – | 2402 | 2440 | 2480 |

2-4 Ancillary Equipment

| Equipment | Model No. | Serial No. | Manufacturer |
|-----------|-----------|------------|--------------|
| Notebook | - | MS-1736 | MSI |

3. Test Report

3.1 Summary of tests

| FCC Part Section(s) | Parameter | Limit | Test Condition | Status (note 1) |
|------------------------|----------------------------------|---|-------------------|--------------------|
| 15.247(a) | Carrier Frequency Separation | $\geq 2/3$ of 20dB BW | Conducted | C |
| 15.247(a) | Number of Hopping Frequencies | ≥ 15 channels | | C |
| 15.247(a) | 20 dB Bandwidth 99% Bandwidth | — | | C |
| 15.247(a) | Dwell Time | ≤ 0.4 seconds | | C |
| 15.247(b) | Transmitter Output Power | ≤ 1 W for 1Mbps ≤ 125 mW for 2,3Mbps | | C |
| 15.247(d) | Conducted Spurious emission | > 20 dBc | | C |
| 15.247(d) | Band Edge | > 20 dBc | | C |
| 15.249 / 15.209 | Field Strength of Harmonics | < 54 dBuV (at 3m) | Radiated | C |
| 15.109 | Field Strength | — | | C |
| 15.207 / 15.107 | AC Conducted Emissions | EN 55022 | Line Conducted | N/A |
| 15.203 | Antenna requirement | — | — | C |

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: This product operates only with battery and does not operate during charging.

Note 1: Antenna Requirement

Honeynaps Co., Ltd FCC ID: 2BBRCHN-SSC unit complies with the requirement of §15.203.

The antenna type is FPCB Antenna

The sample was tested according to the following specification:

*FCC Parts 15.247; ANSI C-63.4-2014; ANSI C-63.10-2013

*FCC KDB Publication No. 558074 D01 v03r05

*FCC TCB Workshop 2012, April

3.2 Frequency Hopping System Requirements

3.2.1 Standard Applicable

According to FCC Part 15.247(a)(1), The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

(g) Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

(h) The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

3.3 TECHNICAL CHARACTERISTIC TEST

3.3.1 Carrier Frequency Separation

Procedure:

The test follows ANSI C63.10. The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

After the trace being stable, the reading value between the peaks of the adjacent channels using the marker-delta function was recorded as the measurement results.

The spectrum analyzer is set to:

- Span = 2~ 3 MHz (wide enough to capture the peaks of two adjacent channels)
- RBW = 10 kHz (1% of the span or more) Sweep = auto
- VBW = 10 kHz Detector function = peak
- Trace = max hold

Measurement Data:

| Test Results | |
|------------------------------------|----------|
| Carrier Frequency Separation (MHz) | Result |
| 0.999 (BDR) | Complies |
| 1.003 (EDR) | |

- See next pages for actual measured spectrum plots.

Minimum Standard:

The EUT shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of 20 dB bandwidth of the hopping channel, whichever is greater.

Measurement Setup

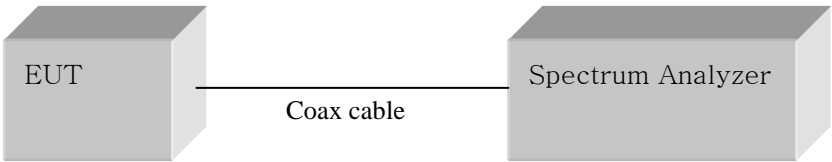
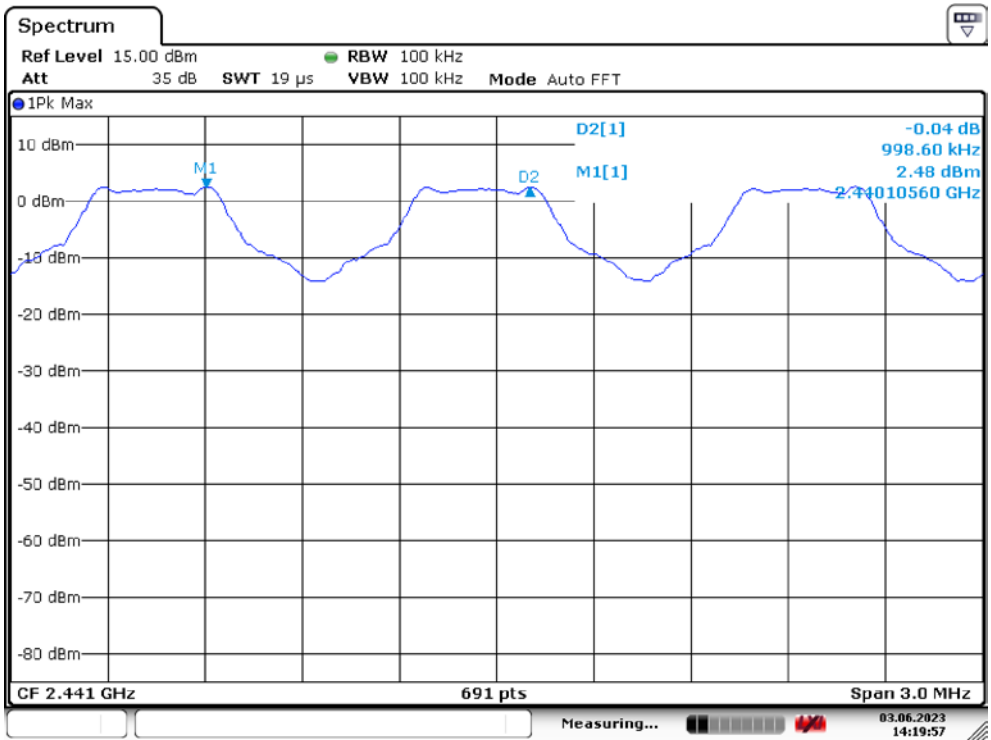


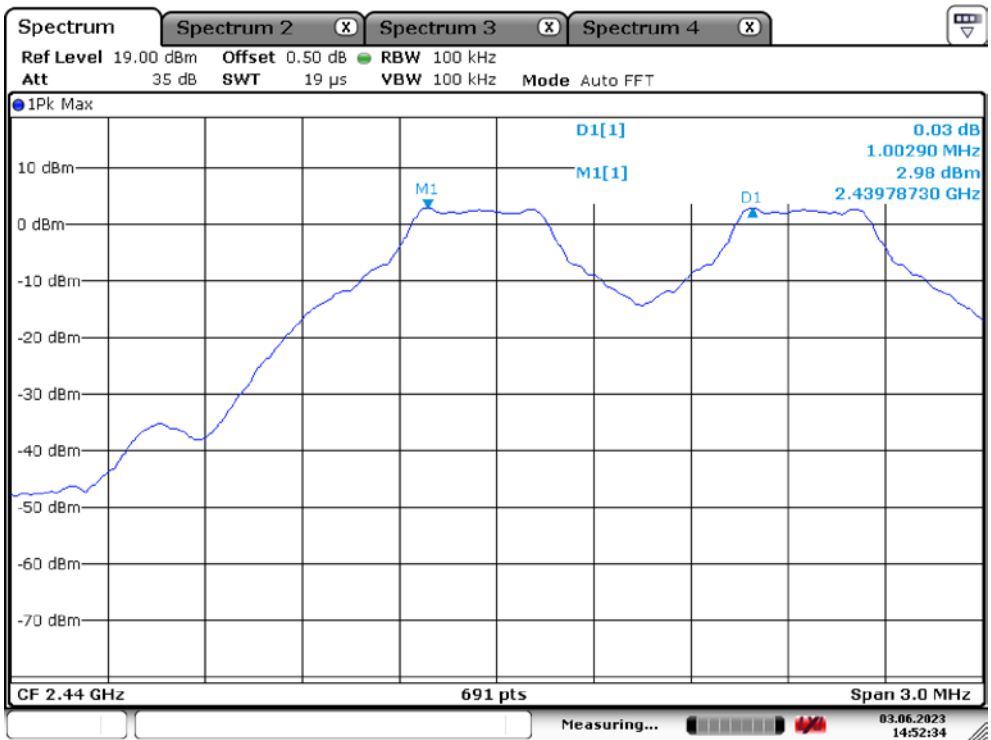
Figure 1: Measurement setup for the carrier frequency separation

Carrier Frequency Separation

BDR Mode



EDR Mode



3.3.2 Number of Hopping Frequencies

Procedure:

The test follows ANSI C63.10. The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

To get higher resolution, four frequency ranges within the 2400 ~ 2483.5 MHz FH band were examined.

The spectrum analyzer is set to (Bluetooth):

Frequency range Start = 2400.0 MHz, Stop = 2483.5 MHz

RBW = 100 kHz (1% of the span or more) Sweep = auto

VBW = 100 kHz (VBW ≥ RBW) Detector function = peak

Trace = max hold Span > 40 MHz

Measurement Data : **Complies**

| | |
|----------------------------------|-----------------|
| Total number of Hopping Channels | 79 (Basic, EDR) |
|----------------------------------|-----------------|

- See next pages for actual measured spectrum plots.

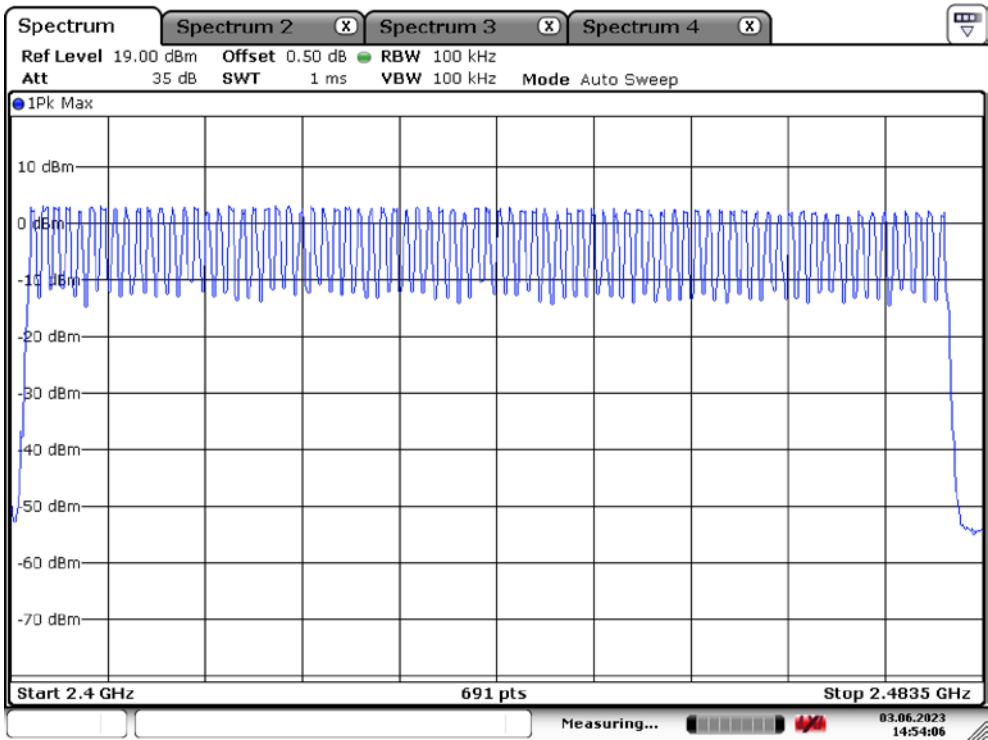
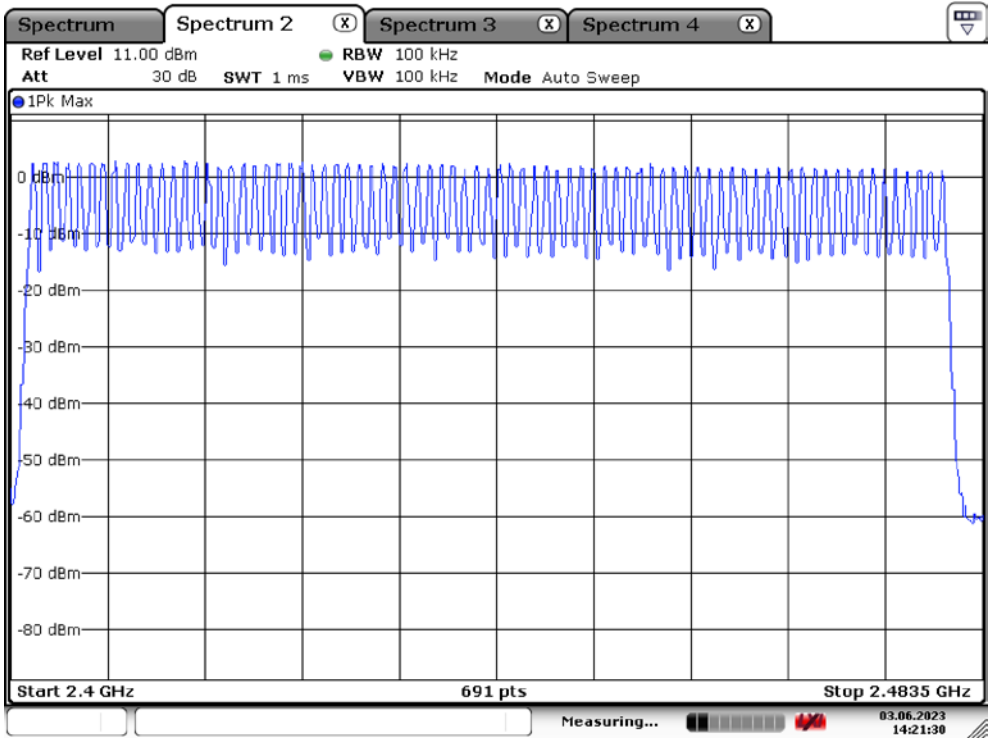
Minimum Standard:

| |
|----------------------|
| At least 15 channels |
|----------------------|

Measurement Setup

Same as the Chapter 3.3.1 (Figure 1)

Number of Hopping Frequencies (BDR, EDR)



3.3.3 20 dB Bandwidth

Procedure:

The bandwidth at 20 dB below the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

The spectrum analyzer is set to (Bluetooth):

Center frequency = the highest, middle and the lowest channels

Span = 3 MHz (approximately 2 or 3 times of the 20 dB bandwidth)

RBW = 30 kHz

Sweep = auto

VBW = 30 kHz (VBW \geq RBW)

Detector function = peak

Trace = max hold

Measurement Data: BDR Mode

| Frequency (MHz) | Channel No. | Test Results(MHz) | |
|--------------------|-------------|-------------------|---------------|
| | | 20dB Bandwidth | 99% Bandwidth |
| 2402 | 1 | 1.059 | 0.834 |
| 2440 | 39 | 1.055 | 0.838 |
| 2480 | 79 | 1.055 | 0.838 |

Measurement Data: EDR Mode

| Frequency (MHz) | Channel No. | Test Results(MHz) | |
|--------------------|-------------|-------------------|---------------|
| | | 20dB Bandwidth | 99% Bandwidth |
| 2402 | 1 | 1.055 | 0.834 |
| 2440 | 39 | 1.055 | 0.829 |
| 2480 | 79 | 1.055 | 0.834 |

- See next pages for actual measured spectrum plots.

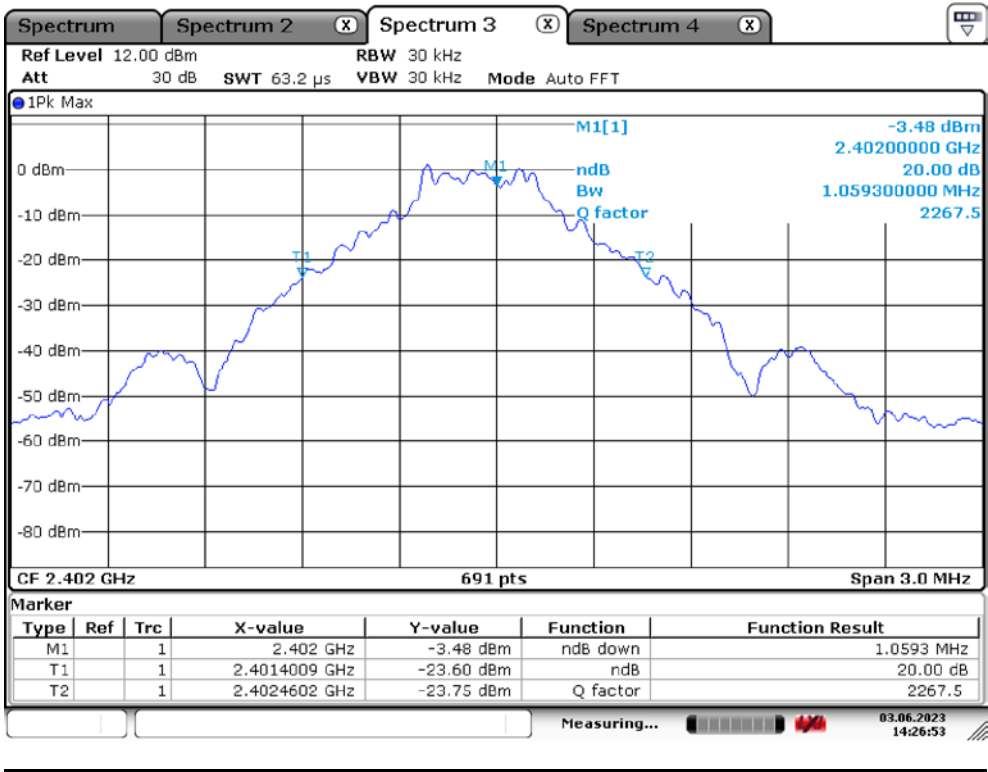
Minimum Standard:

N/A

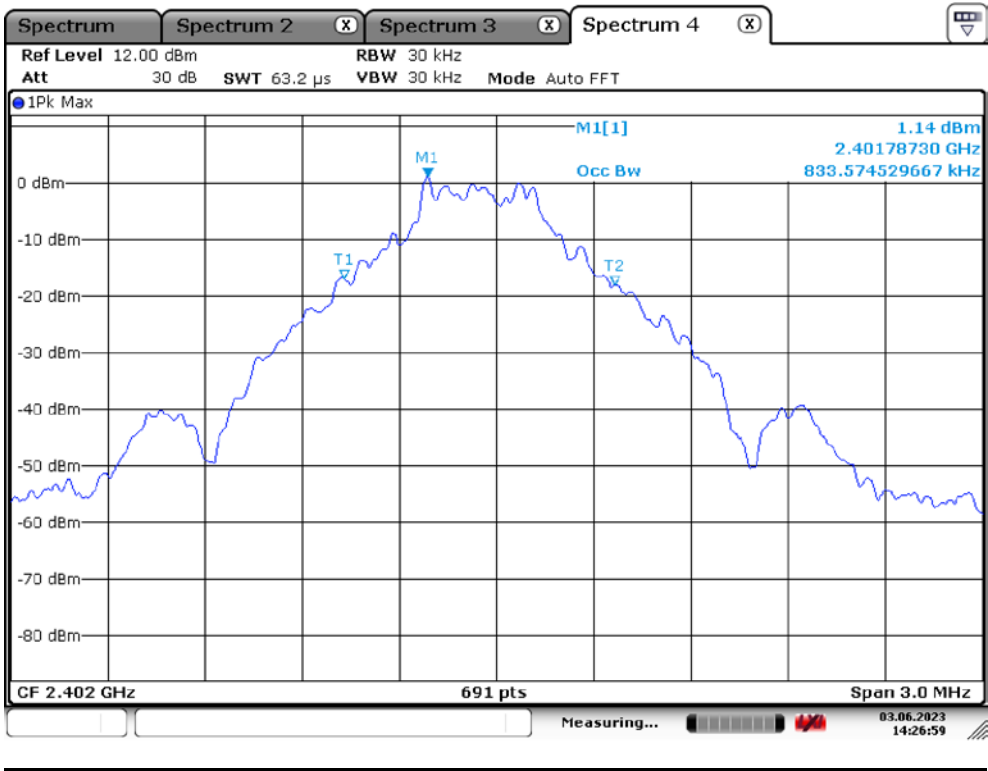
Measurement Setup

Same as the Chapter 3.3.1 (Figure 1)

Channel 1 of BDR mode
20 dB Bandwidth

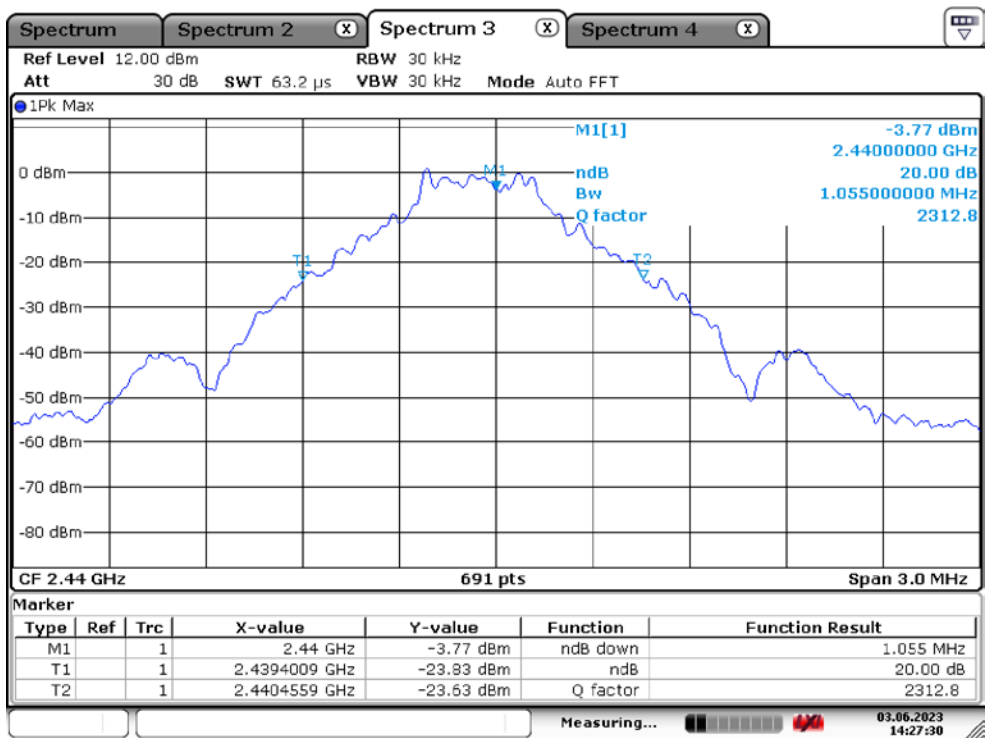


99% Bandwidth

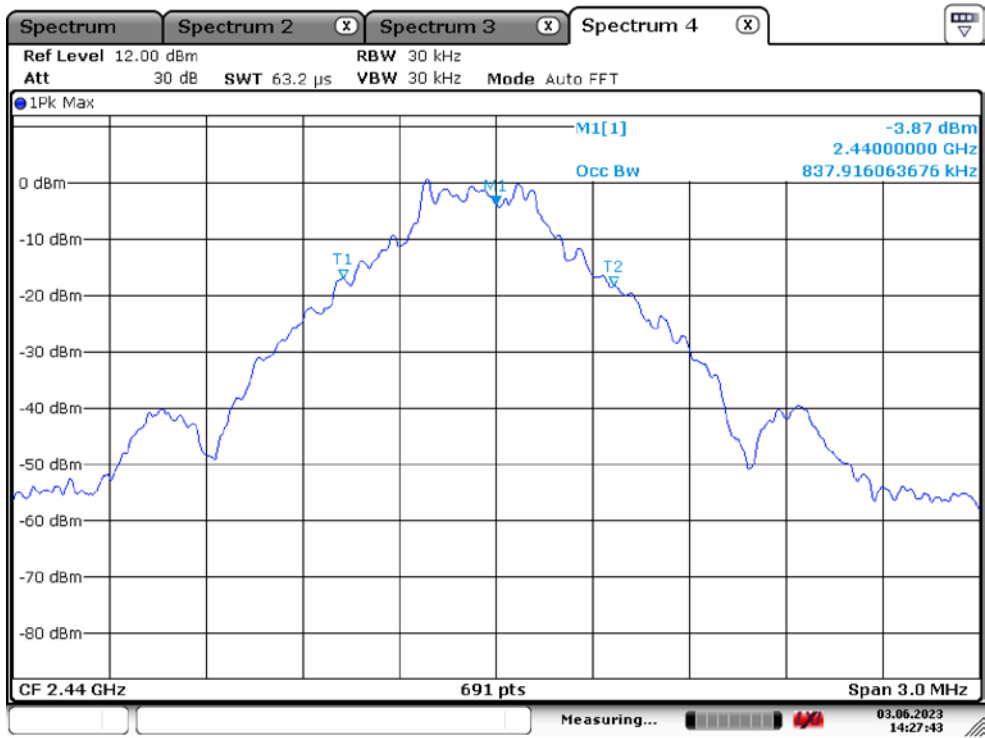


Channel 39 of EDR mode

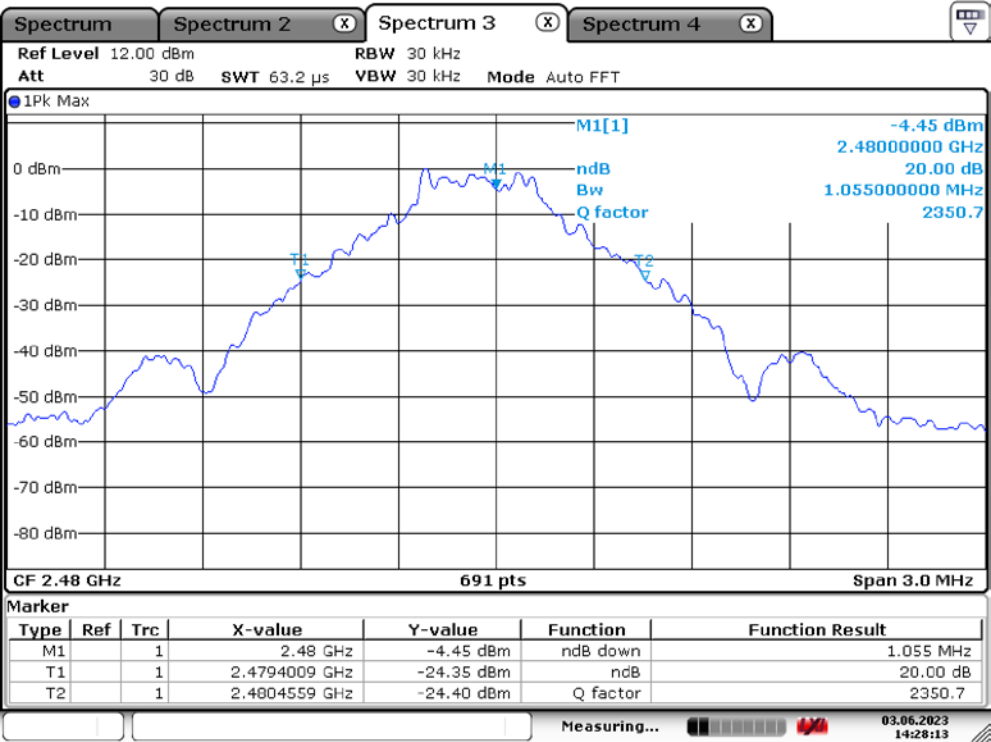
20 dB Bandwidth



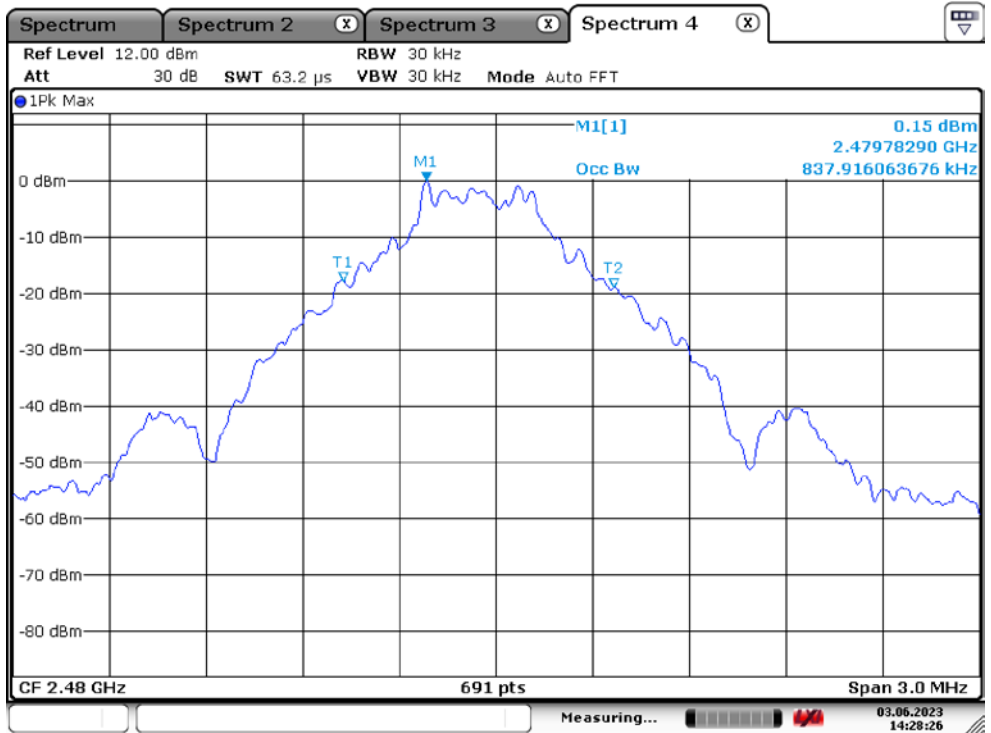
99% Bandwidth



Channel 79 of EDR mode
20 dB Bandwidth

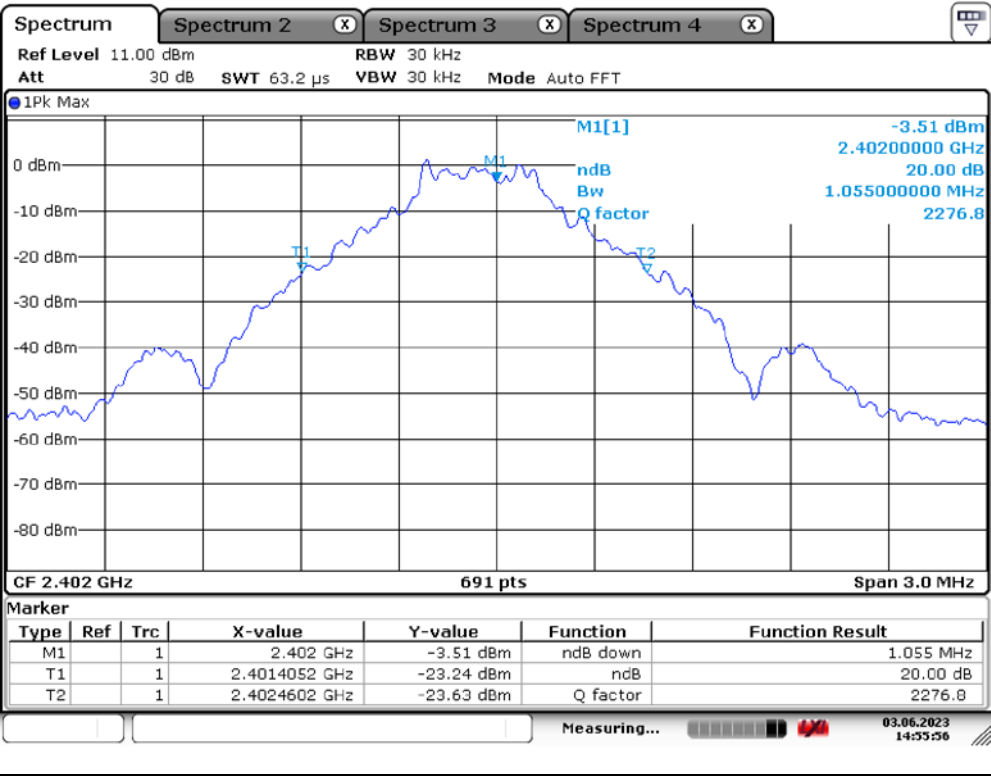


99% Bandwidth

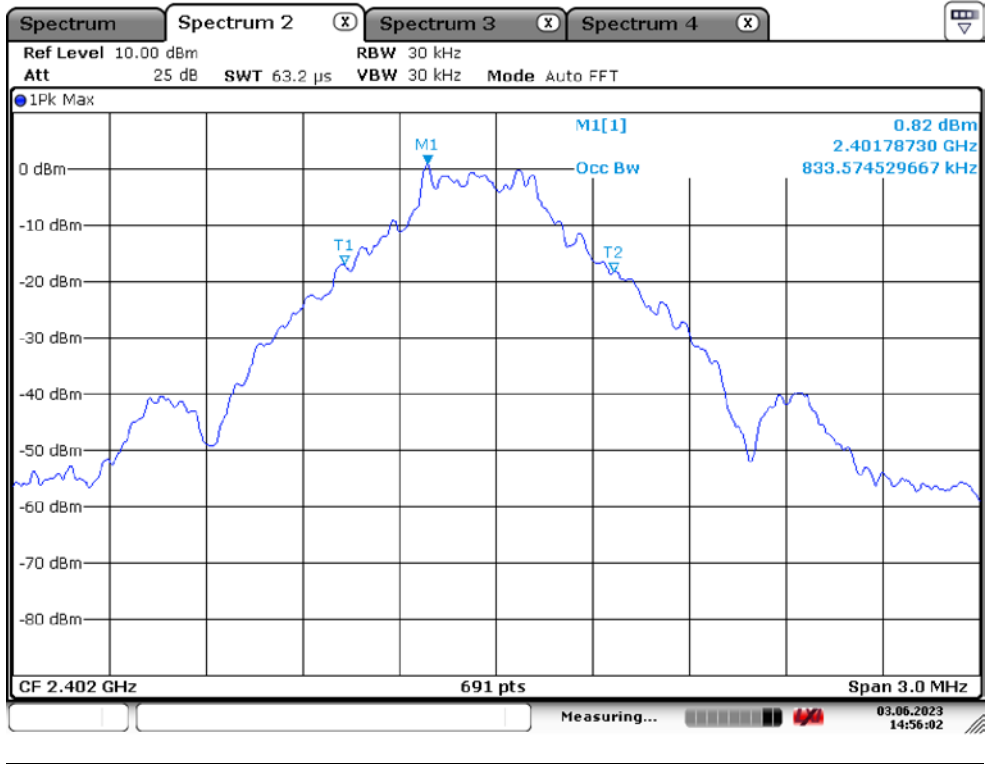


Channel 1 of EDR mode

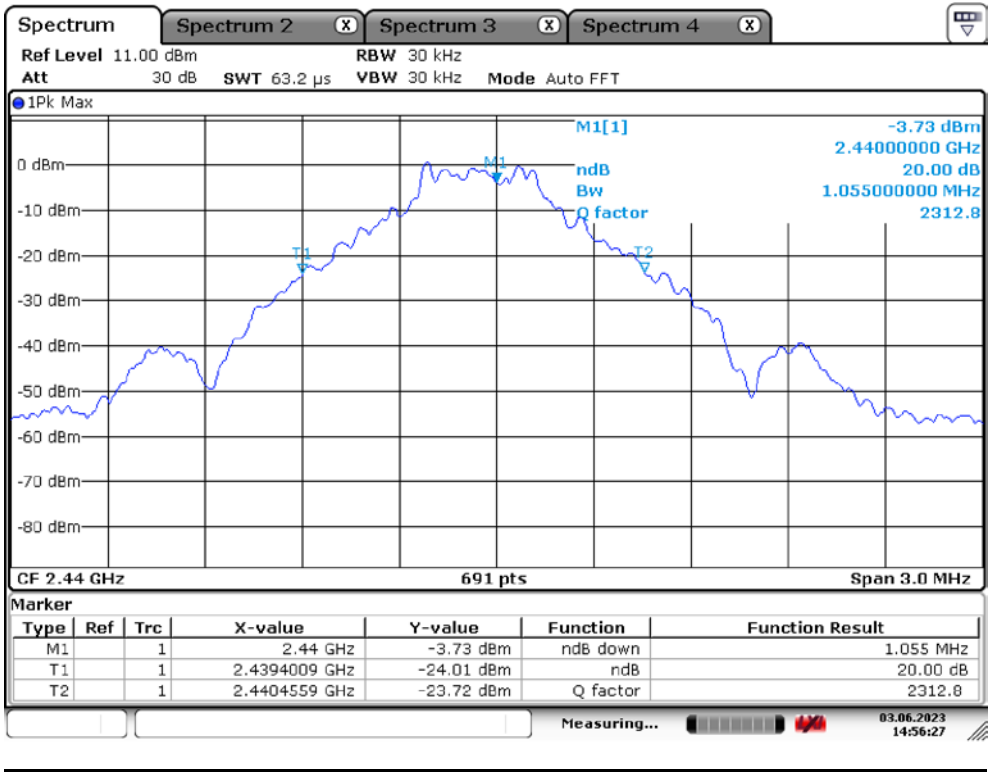
20 dB Bandwidth



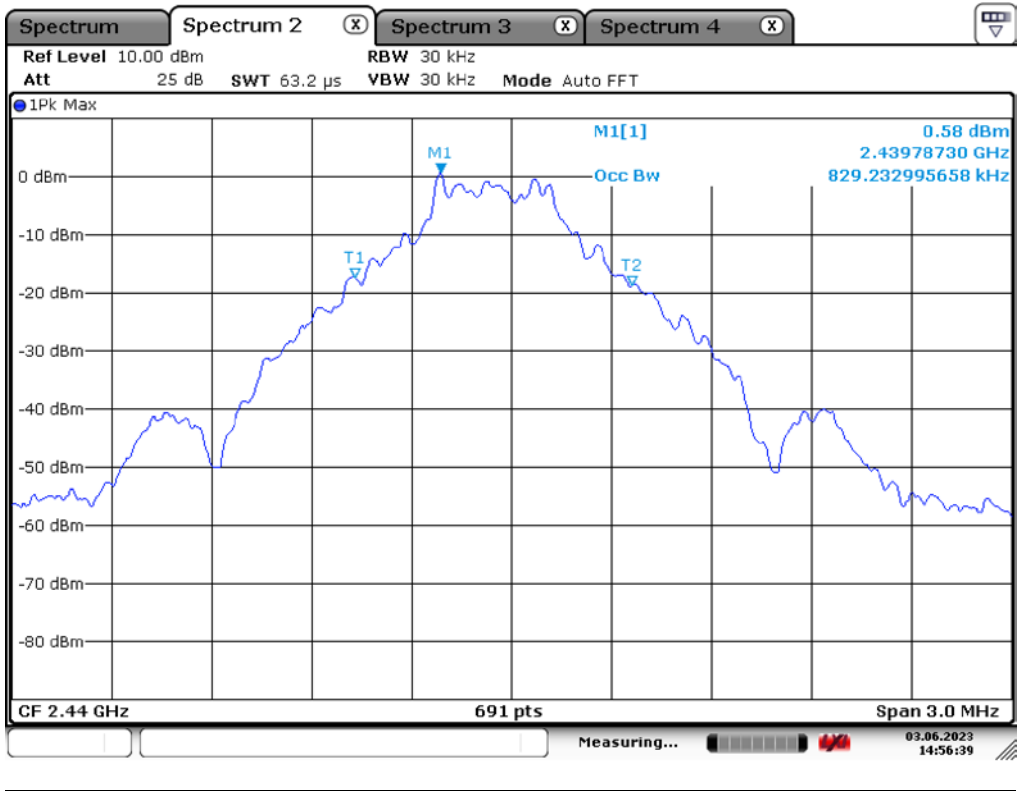
99% Bandwidth



Channel 40 of EDR mode
20 dB Bandwidth

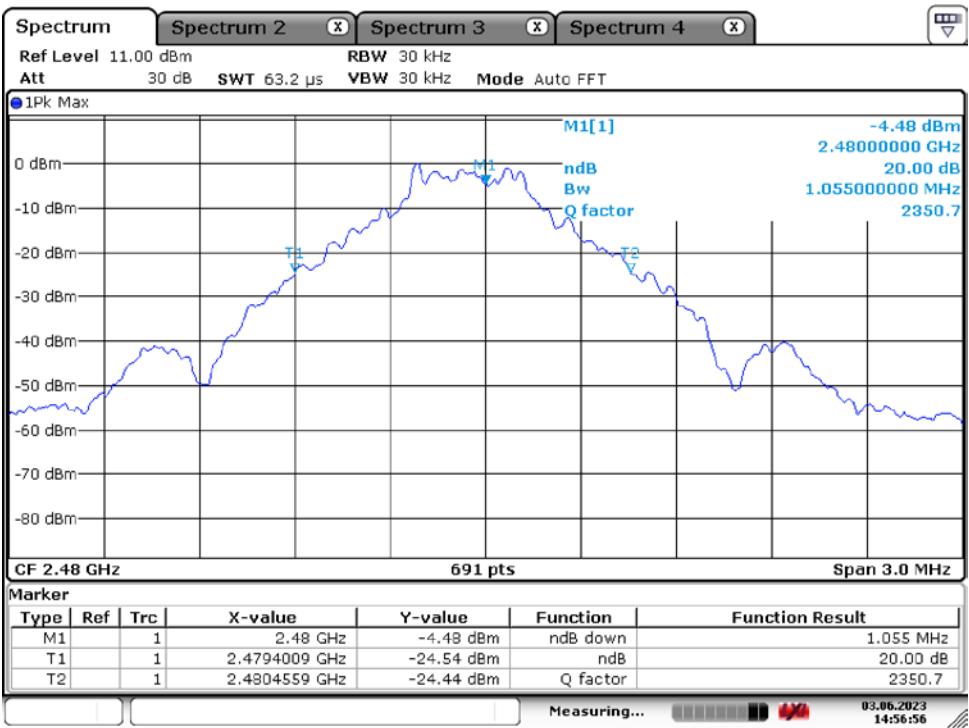


99% Bandwidth

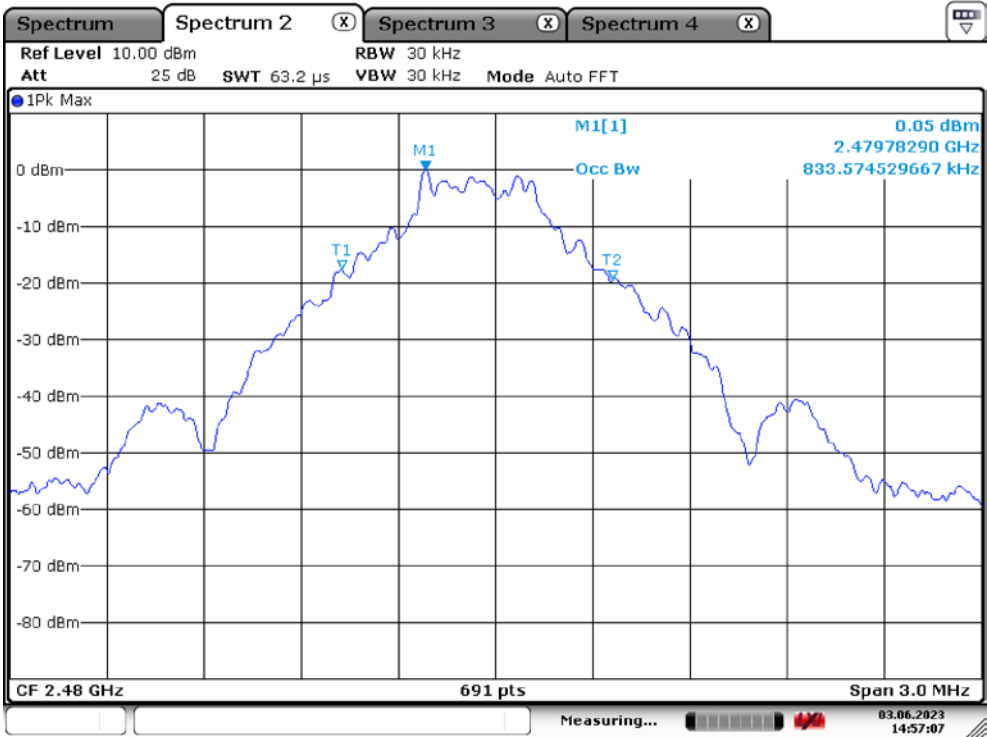


Channel 79 of EDR mode

20 dB Bandwidth



99% Bandwidth



3.3.4 Time of Occupancy (Dwell Time)

Procedure:

The test follows ANSI C63.10. The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to :

Center frequency = 2440 MHz

Span = zero

RBW = 1 MHz

VBW = 1 MHz (VBW \geq RBW)

Trace = max hold

Detector function = peak

Measurement Data (Basic,EDR):

| Mode | Number of transmission in a 31.6s (79Hopping*0.4) | Length of Transmission Time (msec) | Result (msec) | Limit (msec) |
|-------|---|---------------------------------------|------------------|-----------------|
| DH5 | 10(Times / 3sec) *0.133 = 1.330 | 0.333 | 0.443 | 400 |
| 3-DH5 | 9(Times / 3sec) *0.145 = 1.305 | 0.362 | 0.482 | 400 |

- See next pages for actual measured spectrum plots.
- dwell time = {(number of hopping per second / number of slot) x duration time per channel} x 0.4 ms

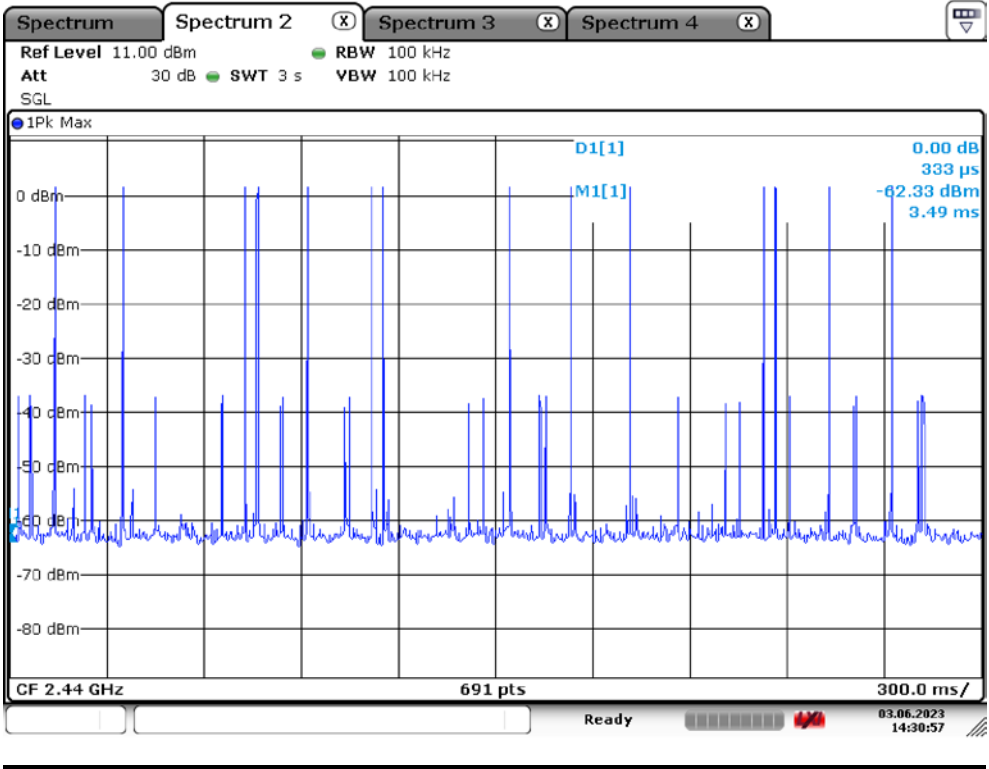
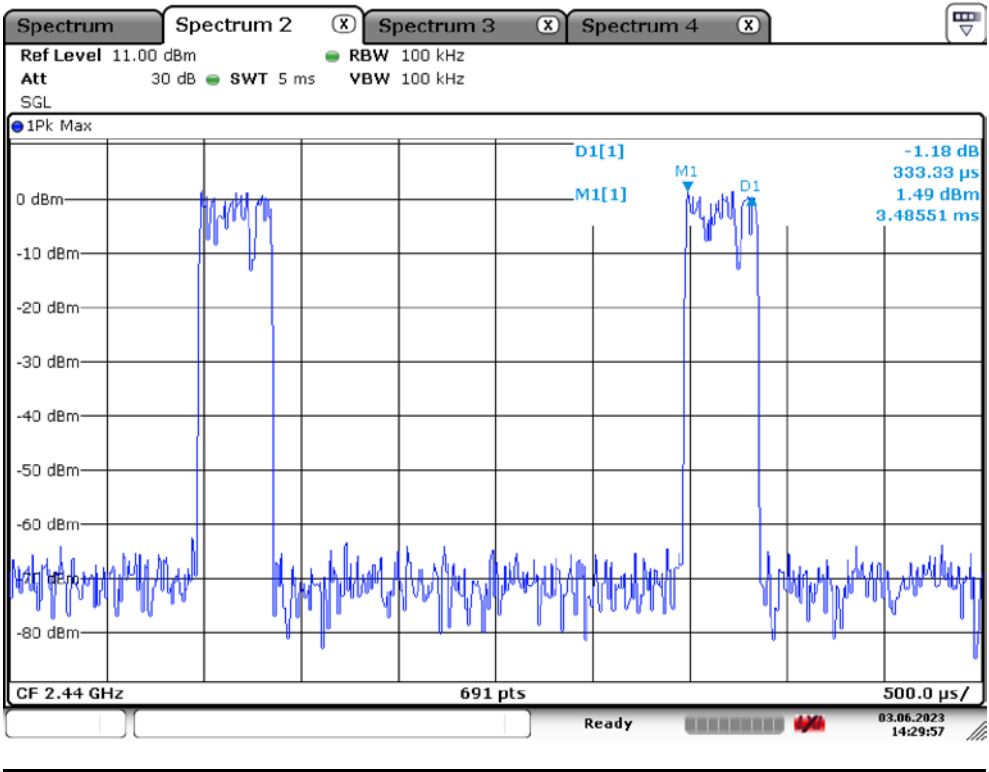
Minimum Standard:

0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed

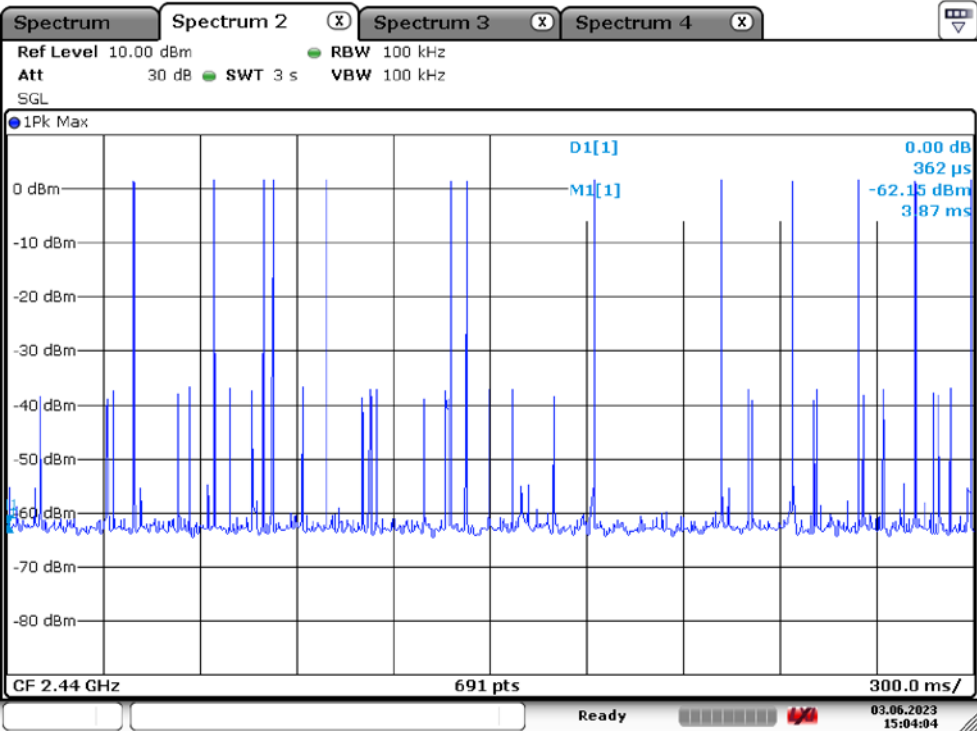
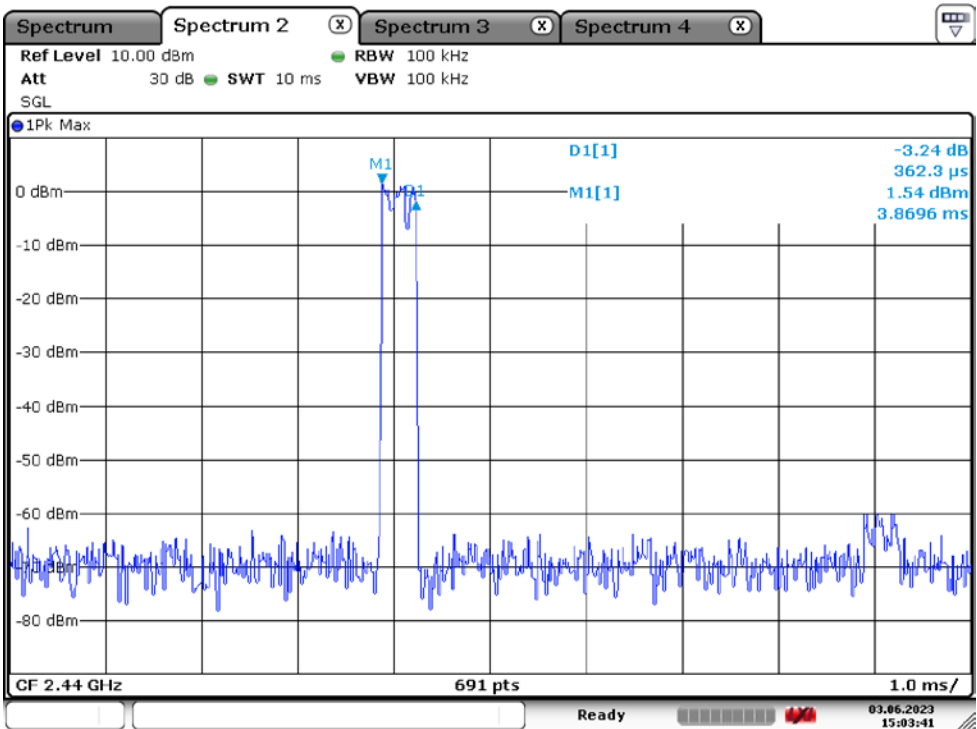
Measurement Setup

Same as the Chapter 3.3.1 (Figure 1)

DH5 at EDR mode



3-DH5 at EDR mode



3.3.5 Transmitter Output Power

Procedure:

The test follows ANSI C63.10. The peak output power was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power.

The spectrum analyzer is set to :

Center frequency = the highest, middle and the lowest channels

Span = 10 MHz (approximately 5 times of the 20 dB bandwidth)

RBW = 3 MHz (greater than the 20 dB bandwidth of the emission being measured)

VBW = 3 MHz (VBW \geq RBW)

Detector function = peak

Trace = max hold

Sweep = auto

Measurement Data : BDR Mode

| Frequency (MHz) | Ch. | Test Results | | |
|-----------------|-----|--------------|------|----------|
| | | dBm | mW | Result |
| 2402 | 1 | 3.73 | 2.36 | Complies |
| 2440 | 39 | 3.44 | 2.21 | Complies |
| 2480 | 79 | 3.80 | 2.40 | Complies |

Measurement Data : EDR Mode

| Frequency (MHz) | Ch. | Test Results | | |
|-----------------|-----|--------------|------|----------|
| | | dBm | mW | Result |
| 2402 | 1 | 3.72 | 2.36 | Complies |
| 2440 | 39 | 3.40 | 2.19 | Complies |
| 2480 | 79 | 2.80 | 1.91 | Complies |

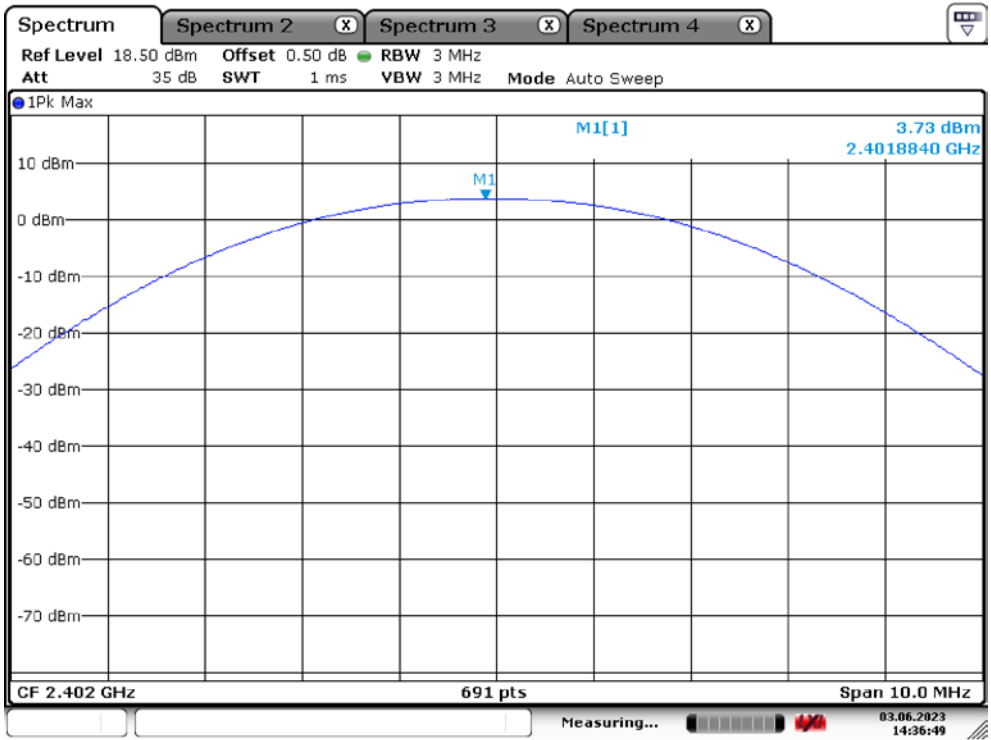
- See next pages for actual measured spectrum plots.

| | |
|--------------------------|--|
| Minimum Standard: | For frequency hopping systems with at least 75 non-overlapping hopping channels: 1 watt. For all other frequency hopping systems: 0.125 W. |
|--------------------------|--|

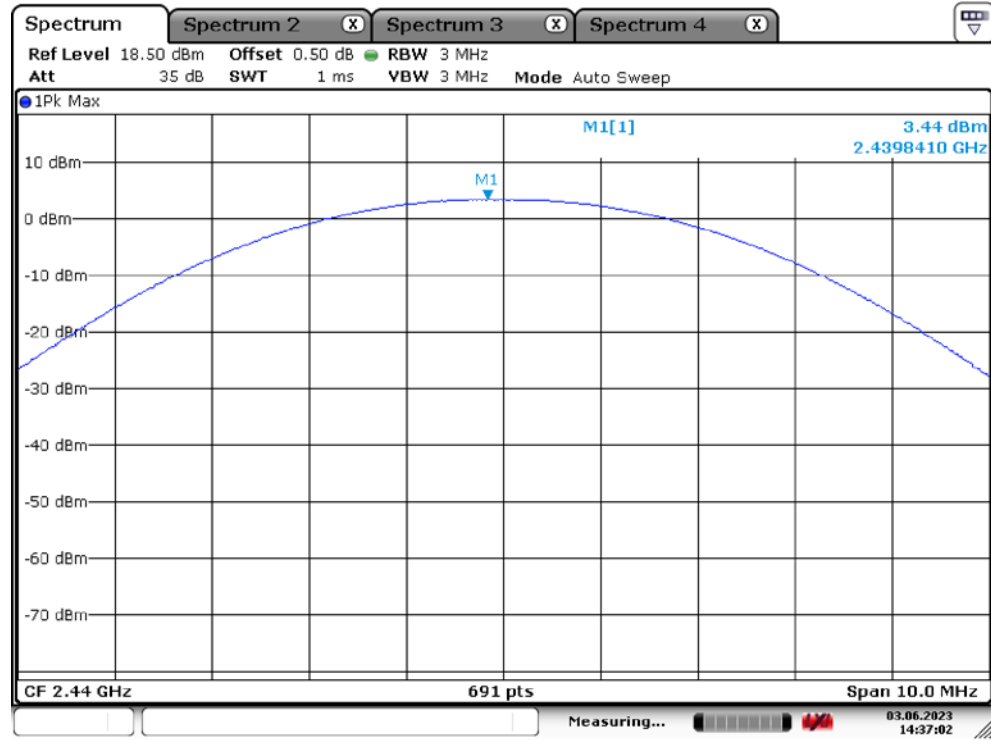
Measurement Setup

Same as the Chapter 3.3.1 (Figure 1)

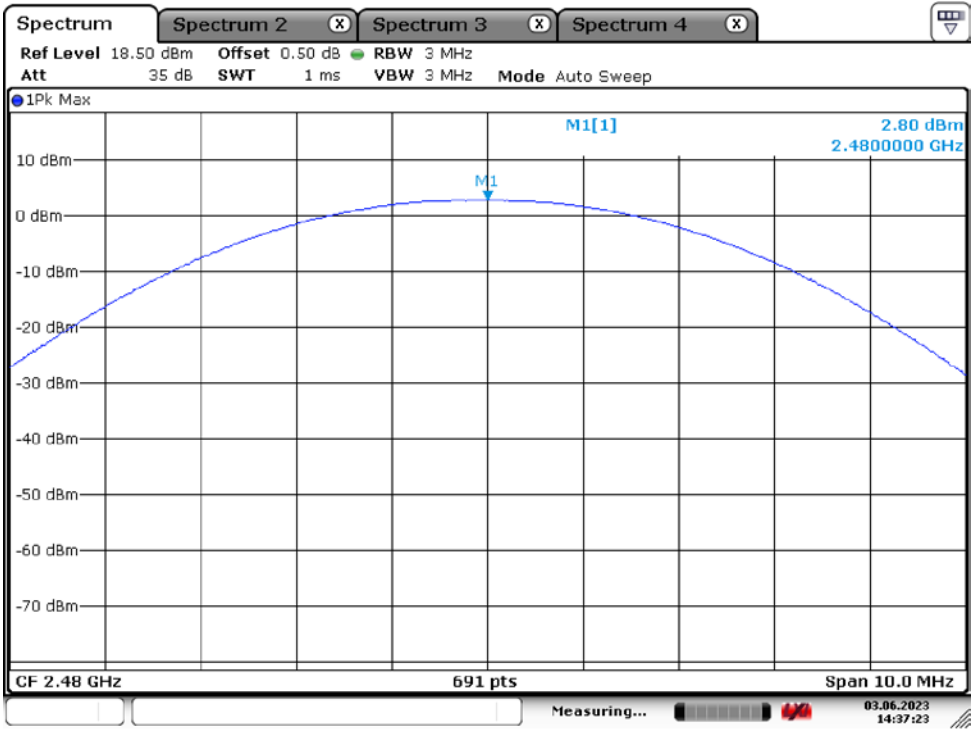
Channel 1
BDR mode



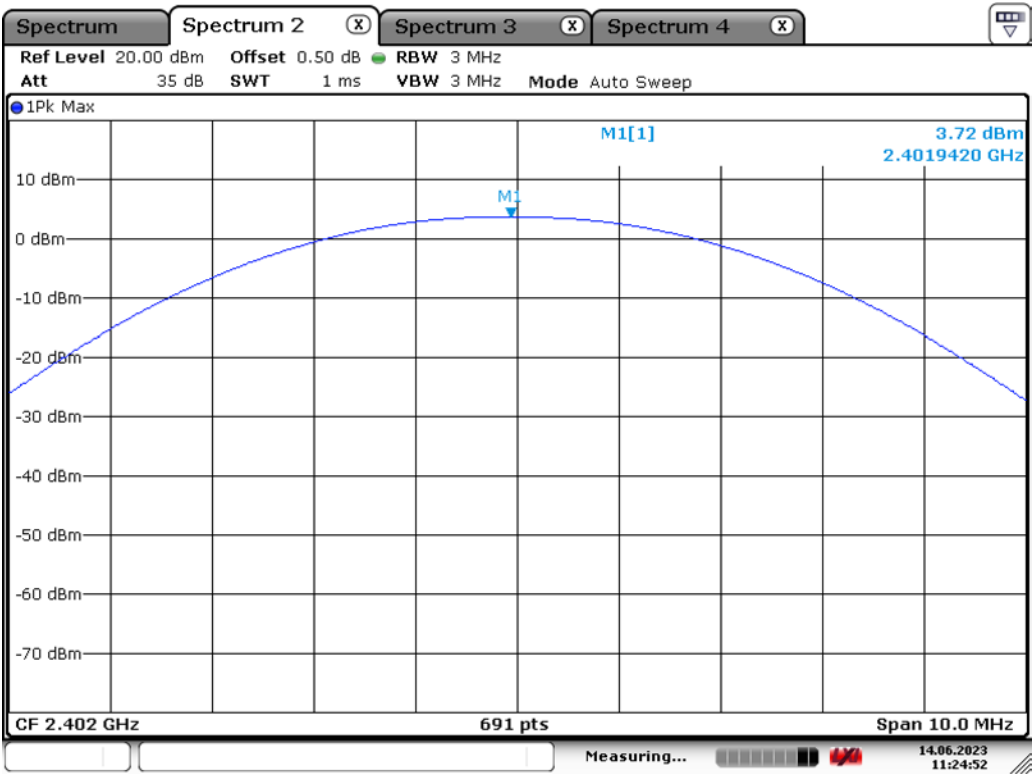
Channel 39
BDR mode



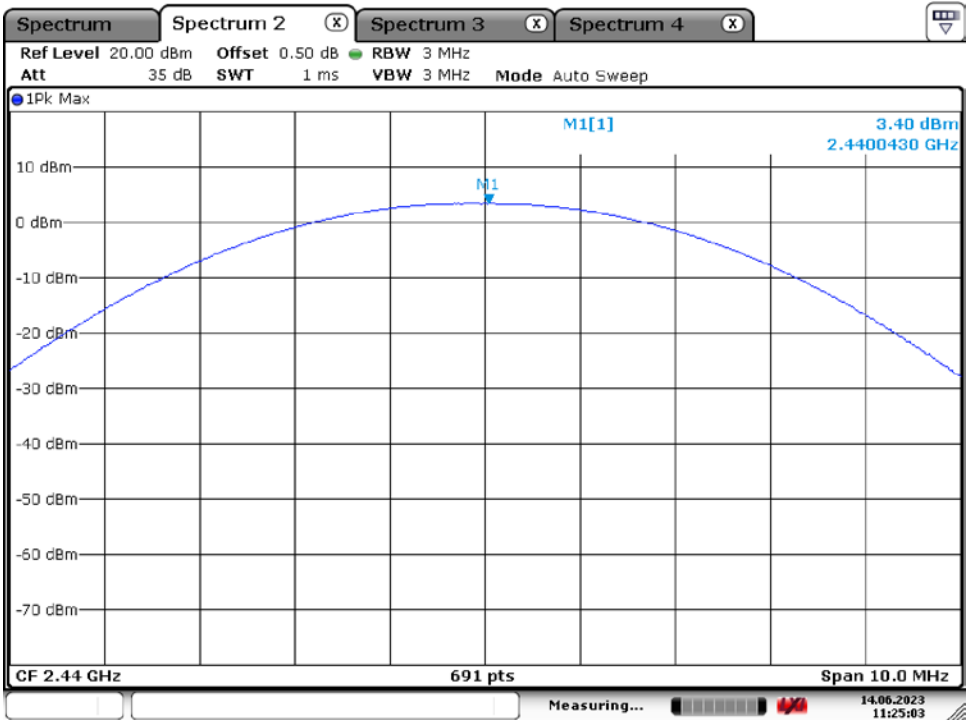
Channel 79
BDR mode



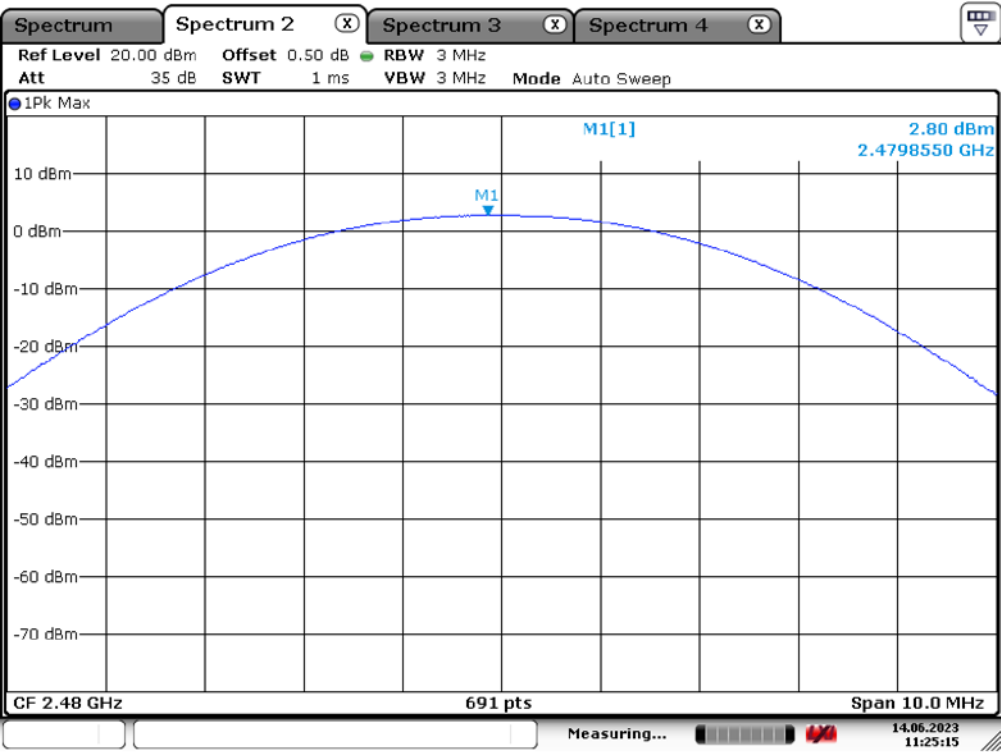
Channel 1
EDR mode



Channel 40
EDR mode



Channel 79
EDR mode



3.3.6 Band Edge

Procedure:

The bandwidth at 20 dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels.

After the trace being stable, Use the marker-to-peak function to measure 20 dB down both sides of the intentional emission.

The spectrum analyzer is set to:

Center frequency = the highest, middle and the lowest channels

RBW = 100 kHz

Span = 10~30 MHz

Trace = max hold

VBW = 100 kHz

Detector function = peak

Sweep = auto

Measurement Data: **Complies**

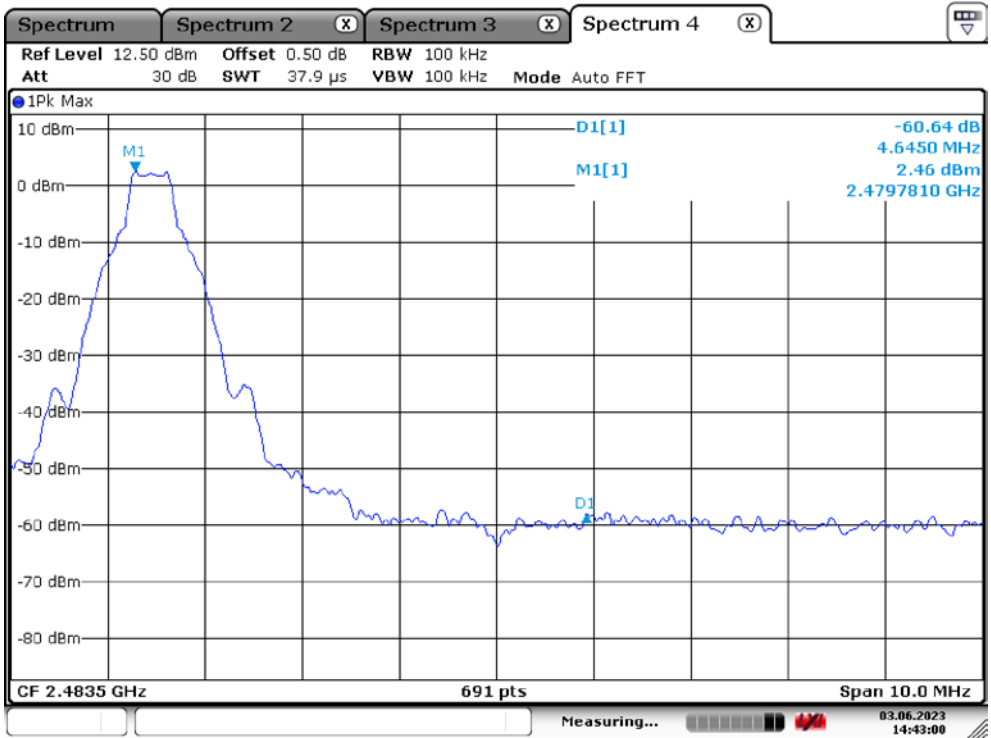
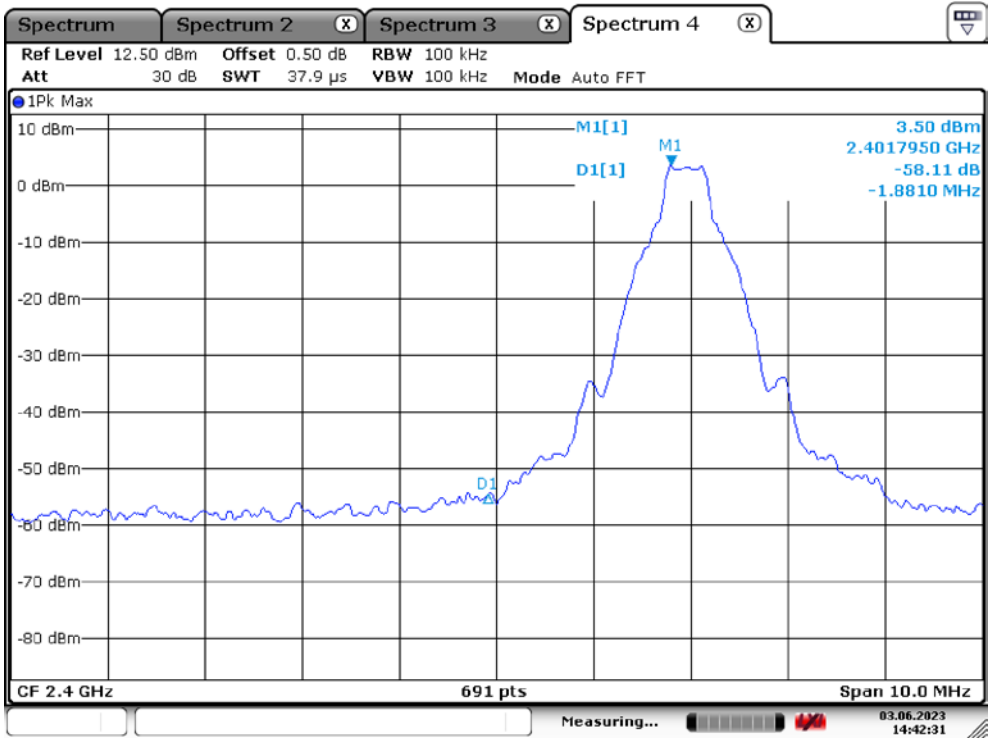
- All conducted emission in any 100 kHz bandwidth outside of the spread spectrum band was at least 20 dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

| | |
|-------------------|----------|
| Minimum Standard: | > 20 dBc |
|-------------------|----------|

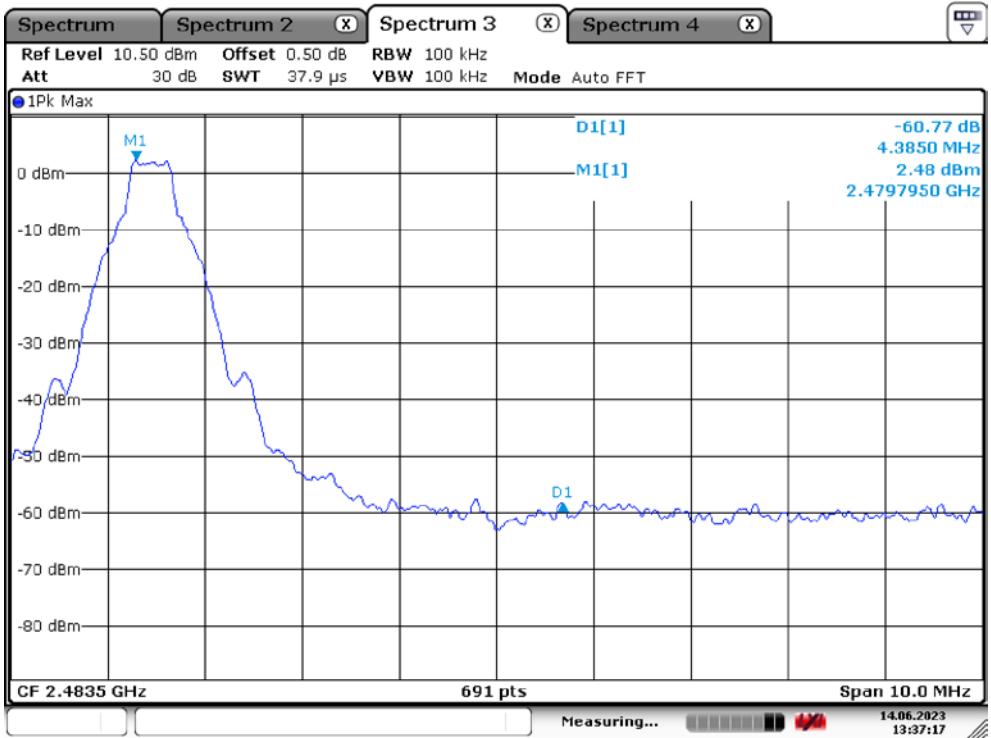
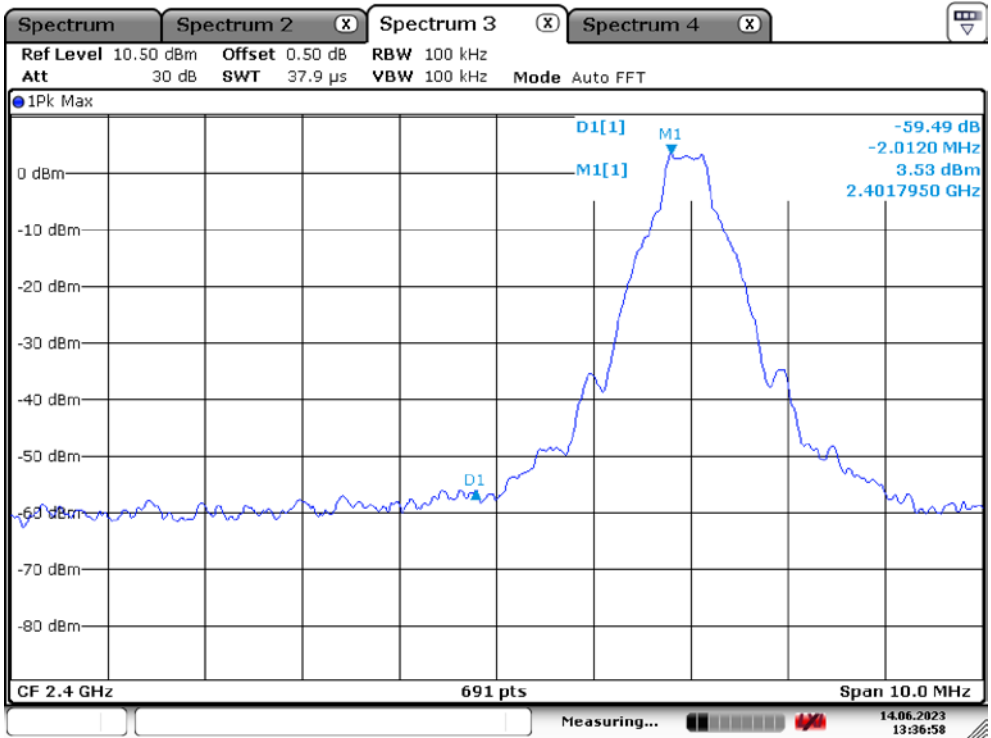
Measurement Setup

Same as the Chapter 3.3.1 (Figure 1)

BDR



EDR



3.3.7 Conducted Spurious Emissions

Procedure:

The test follows ANSI C63.10. The conducted spurious emissions were measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels..

After the trace being stable, set the marker on the peak of any spurious emission recorded.

The spectrum analyzer is set to:

- Span = wide enough to capture the peak level of the in-band emission and all spurious emissions
- RBW = 100 kHz
- Sweep = auto
- VBW = 100 kHz
- Detector function = peak
- Trace = max hold

Measurement Data: **Complies**

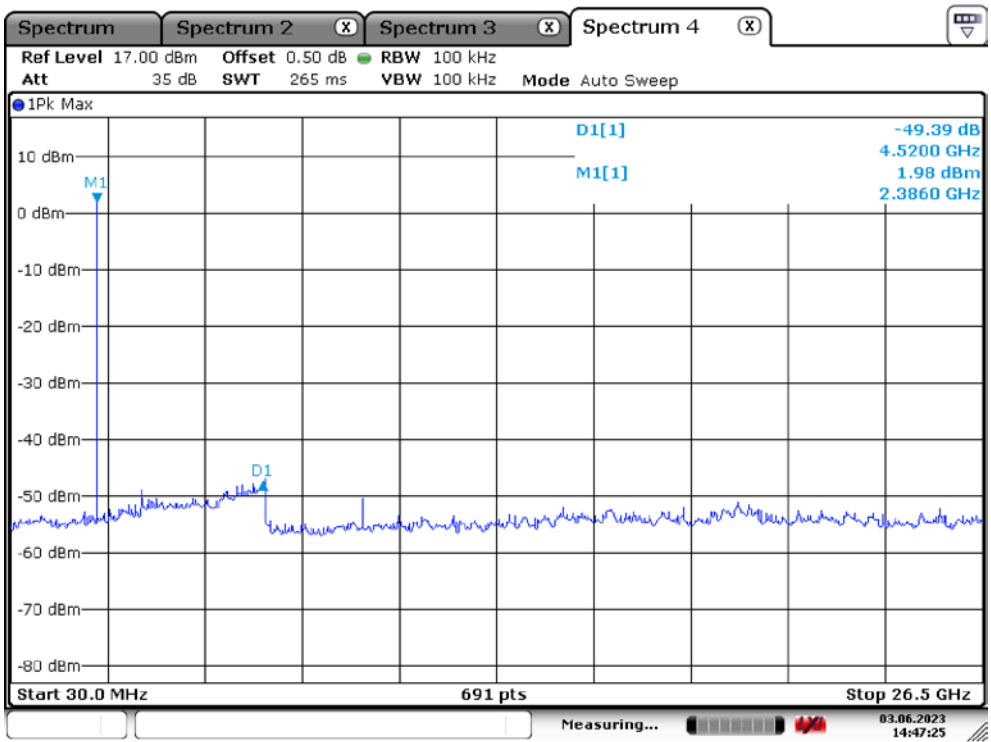
- All conducted emission in any 100 kHz bandwidth outside of the spread spectrum band was at least 20 dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.
- See next pages for actual measured spectrum plots.

| | |
|-------------------|----------|
| Minimum Standard: | > 20 dBc |
|-------------------|----------|

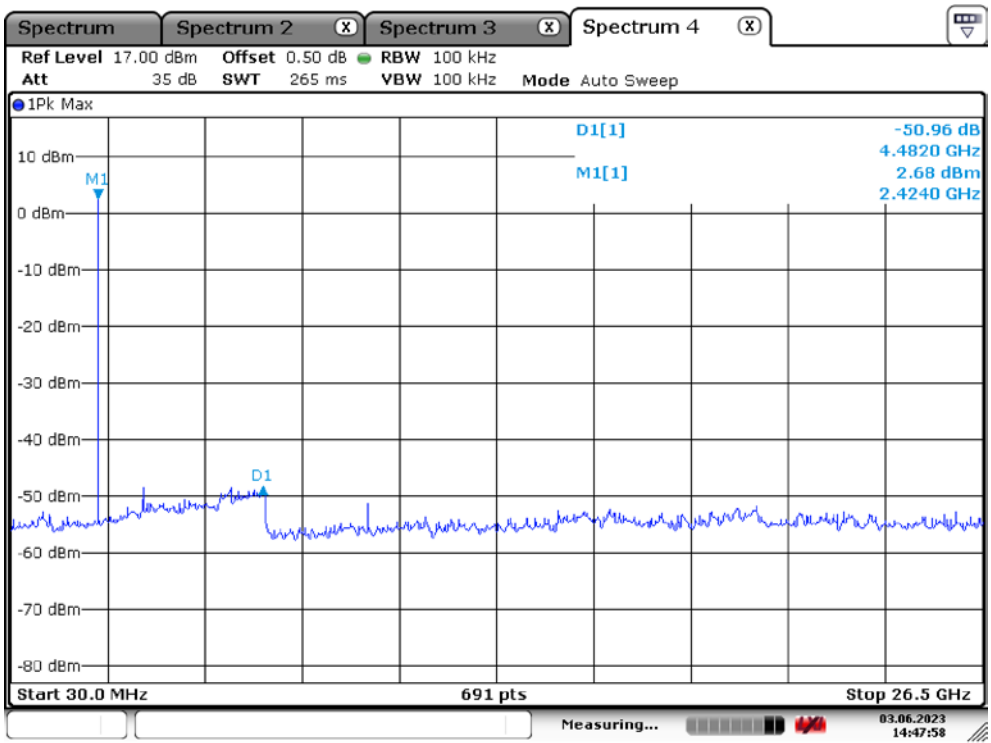
Measurement Setup

Same as the Chapter 3.3.1 (Figure 1)

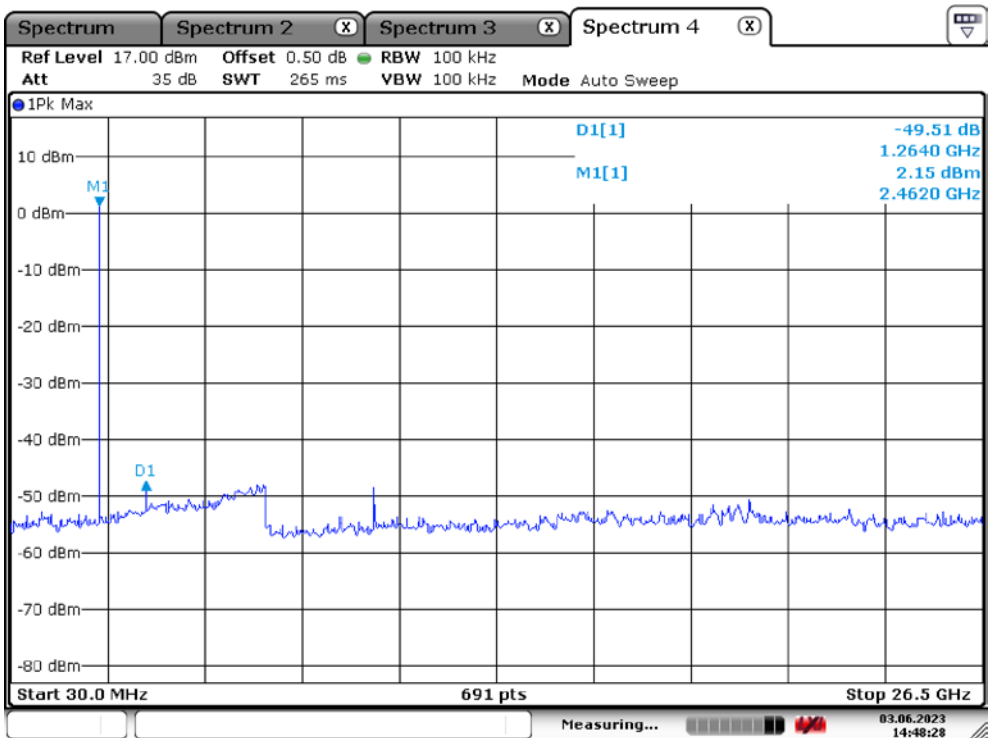
Unwanted Emission – Low channel
Frequency Range = 30 MHz ~ 26.5 GHz



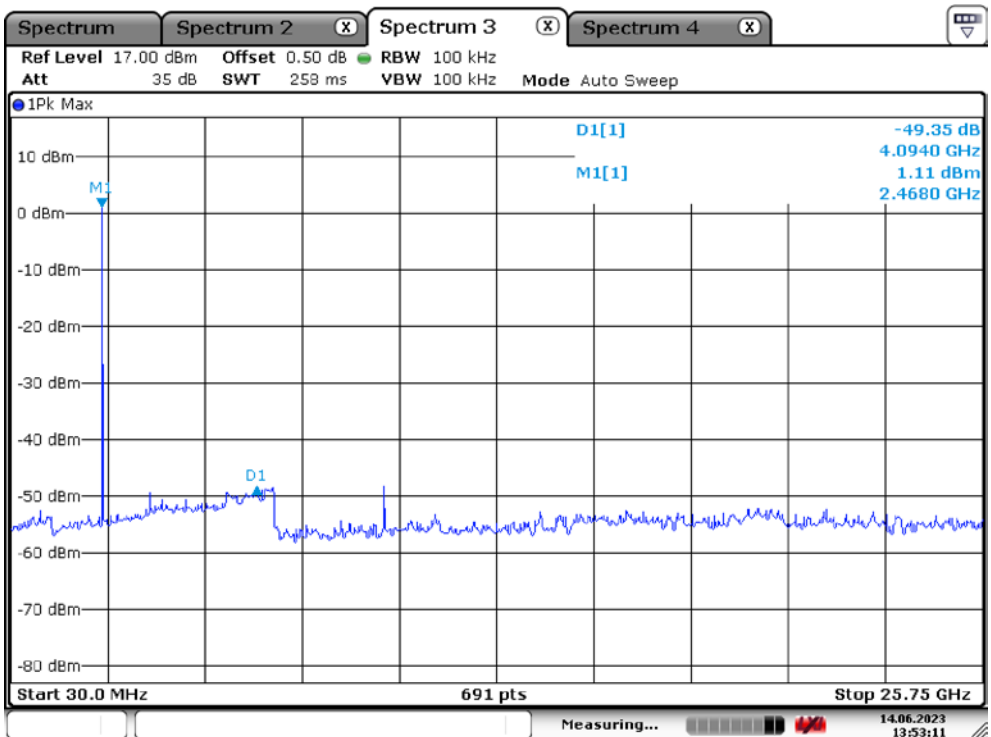
Unwanted Emission – Middle channel
Frequency Range = 30 MHz ~ 26.5 GHz



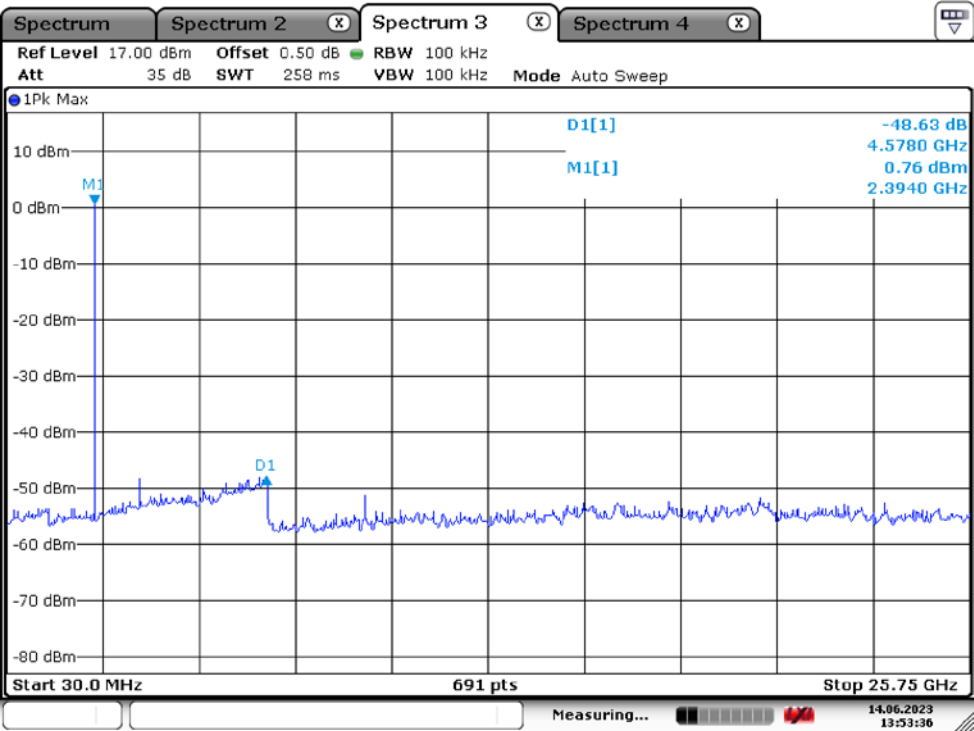
Unwanted Emission – High channel
Frequency Range = 30 MHz ~ 26.5 GHz



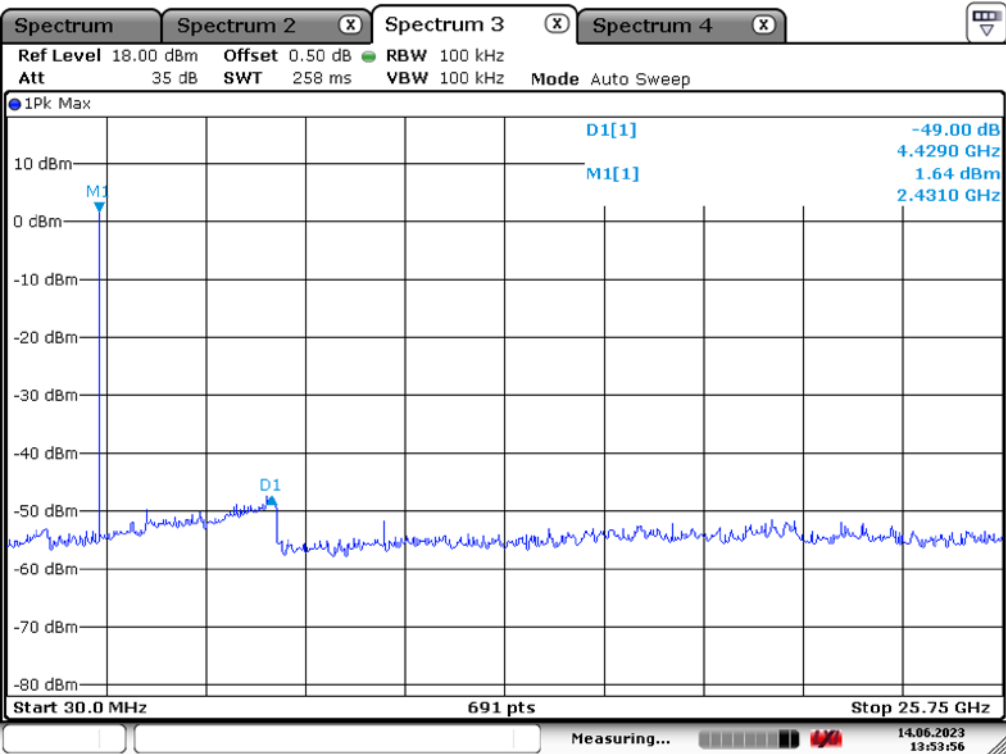
Unwanted Emission – Low channel
Frequency Range = 30 MHz ~ 26.5 GHz



Unwanted Emission – Middle channel
Frequency Range = 30 MHz ~ 26.5 GHz



Unwanted Emission – High channel
Frequency Range = 30 MHz ~ 26.5 GHz



3.3.8 Radiated Spurious Emissions

Procedure:

Radiated emissions from the EUT were measured according to the dictates of ANSI C63.10. The EUT was placed on a 0.8 m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

- (a) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 3 m distance from the EUT. The center of the Loop Test Antenna is 1 m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
- (b) In the frequency range above 30 MHz, Bi-Log Test Antenna (30 MHz to 1 GHz) and Horn Test Antenna (above 1 GHz) are used. Test Antenna is 3 m away from the EUT. Test Antenna height is carried from 1 m to 4 m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

The spectrum analyzer is set to:

Center frequency = the worst channel

Frequency Range = 9 kHz ~ 10th harmonic.

RBW = 120 kHz (30 MHz ~ 1 GHz)

= 1 MHz (1 GHz ~ 10th harmonic)

Span = 100 MHz

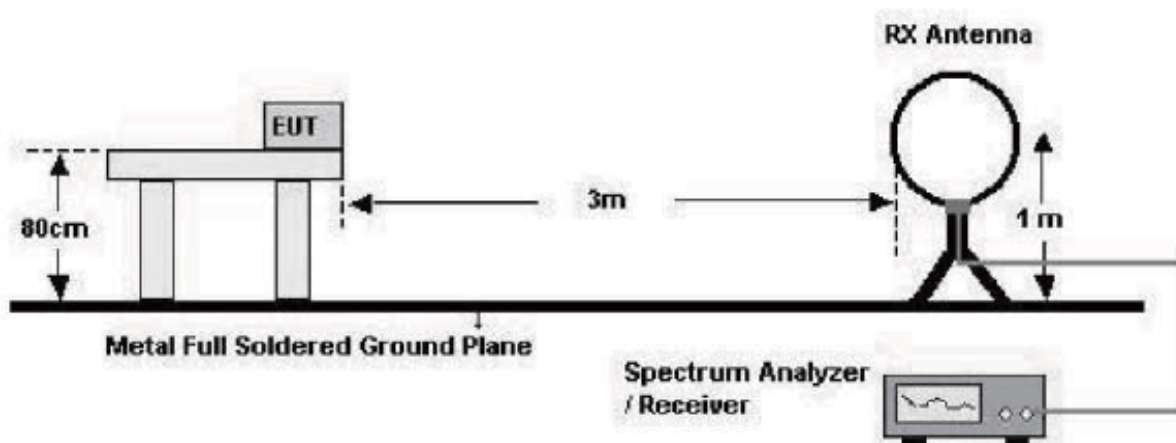
Trace = max hold

VBW \geq RBW

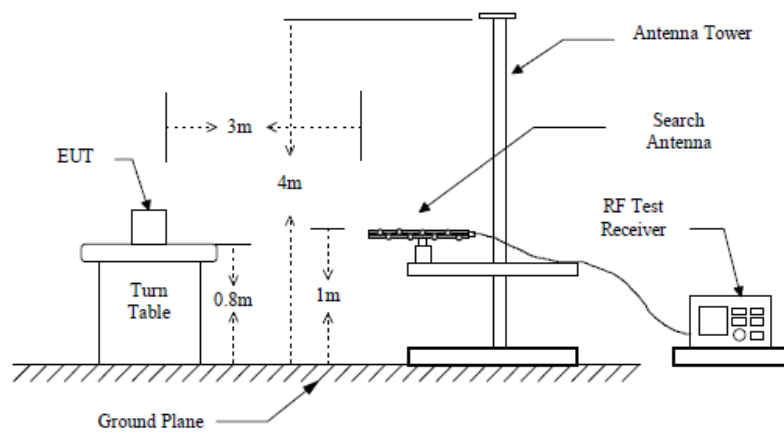
Detector function = peak

Sweep = auto

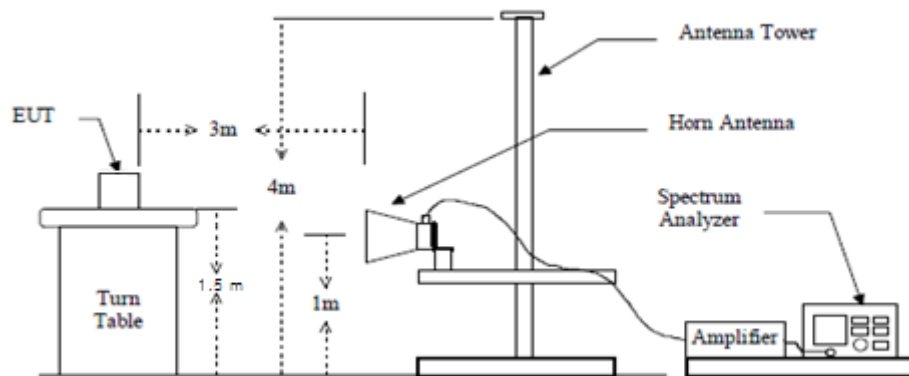
below 30 MHz



below 1 GHz (30 MHz to 1 GHz)



above 1 GHz



Measurement Data: Complies

- See next pages for actual measured data.
- No other emissions were detected at a level greater than 20 dB below limit include from 9 kHz to 30 MHz.
- The test results for the worst of the various operating modes are presented in accordance with 6.3.4 of ANSI C63.10.
- Checked with a red circle is the fundamental frequency.

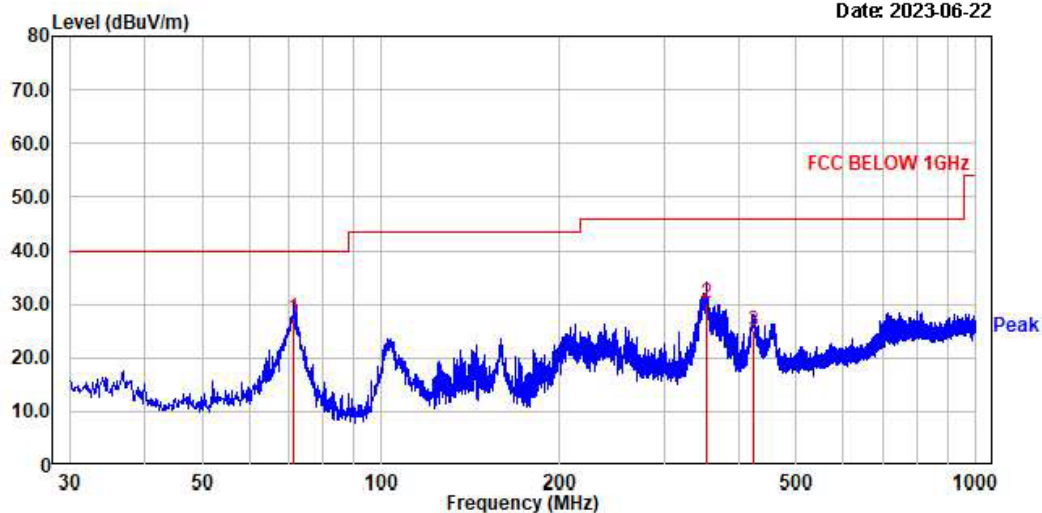
Minimum Standard: FCC Part 15.209(a)

| Frequency (MHz) | Limit (uV/m) @ 3m |
|------------------------|------------------------------|
| 0.009 ~ 0.490 | 2400/F(kHz) (@ 300m) |
| 0.490 ~ 1.705 | 24000/F(kHz) (@ 30m) |
| 1.705 ~ 30 | 30(@ 30m) |
| 30 ~ 88 | 100 ** |
| 88 ~ 216 | 150 ** |
| 216 ~ 960 | 200 ** |
| Above 960 | 500 |

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

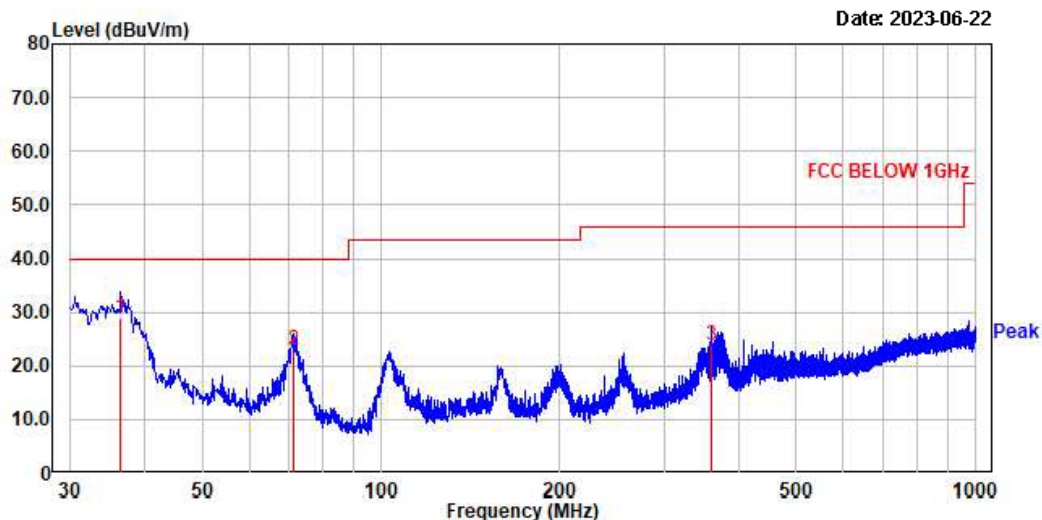
Radiated Emissions BDR

Date: 2023-06-22



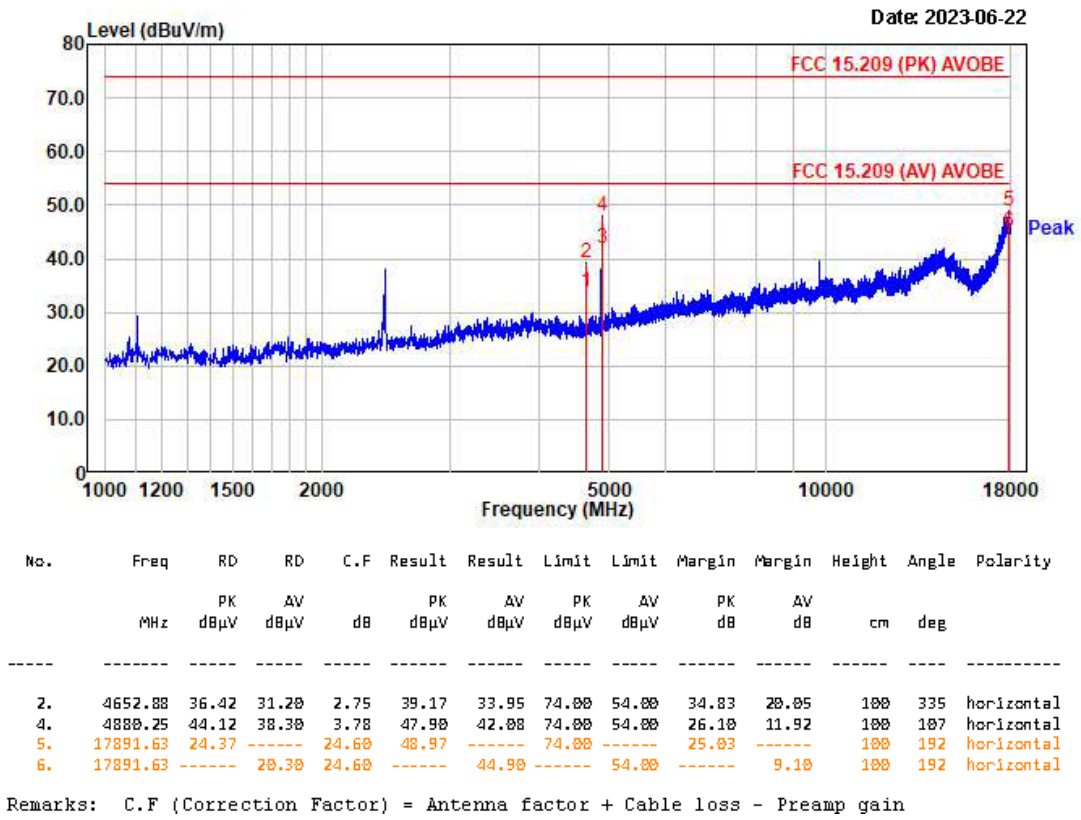
| Trace: | | | | | | | | |
|--------|--------|---------|--------|--------------|--------|--------|--------|------------------|
| No. | Freq | Reading | C.F | Result | Limit | Margin | Height | Angle Polarity |
| | MHz | dBμV | dB | QP dBμV/m | dBμV/m | dB | cm | deg |
| 1. | 71.35 | 42.30 | -14.83 | 27.47 | 40.00 | 12.53 | ----- | ----- horizontal |
| 2. | 352.28 | 38.79 | -8.75 | 30.04 | 46.00 | 15.96 | ----- | ----- horizontal |
| 3. | 423.82 | 32.01 | -6.90 | 25.11 | 46.00 | 20.89 | ----- | ----- horizontal |

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



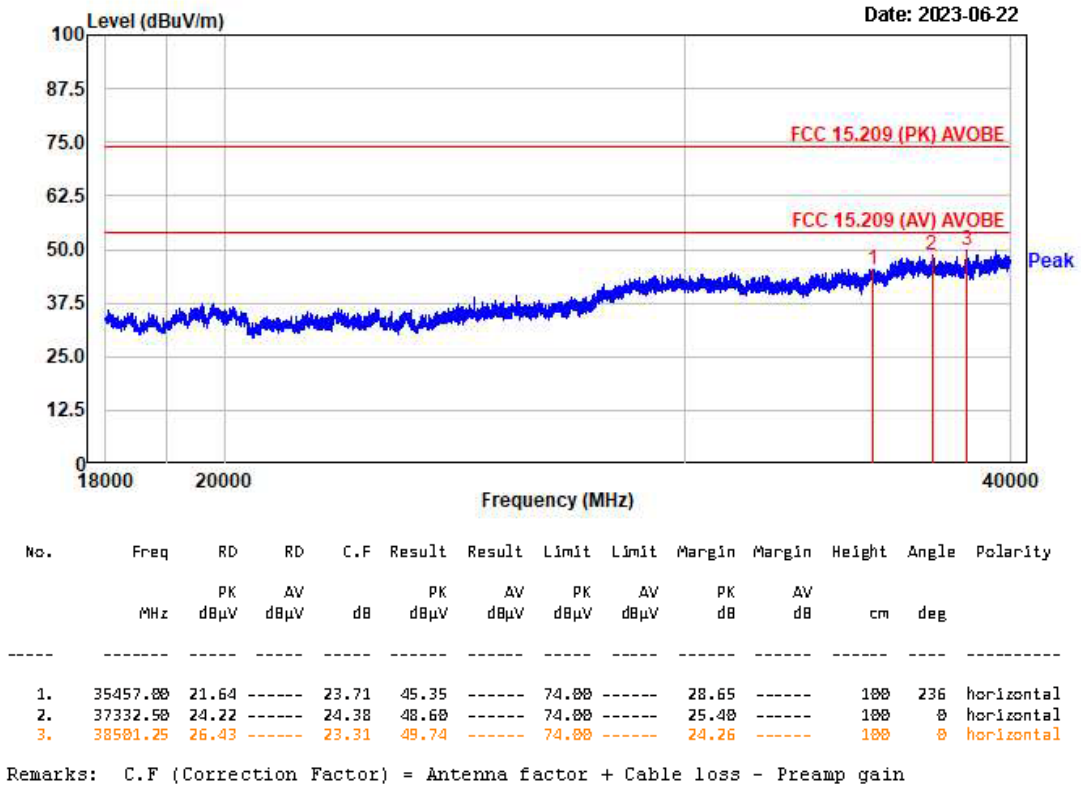
| Trace: | | | | | | | | |
|--------|--------|---------|--------|--------------|--------|--------|--------|----------------|
| No. | Freq | Reading | C.F | Result | Limit | Margin | Height | Angle Polarity |
| | MHz | dBμV | dB | QP dBμV/m | dBμV/m | dB | cm | deg |
| 1. | 36.43 | 42.70 | -13.78 | 28.92 | 40.00 | 11.08 | ----- | ----- vertical |
| 2. | 71.35 | 37.79 | -14.99 | 22.80 | 40.00 | 17.20 | ----- | ----- vertical |
| 3. | 360.77 | 32.60 | -8.64 | 23.96 | 46.00 | 22.04 | ----- | ----- vertical |

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



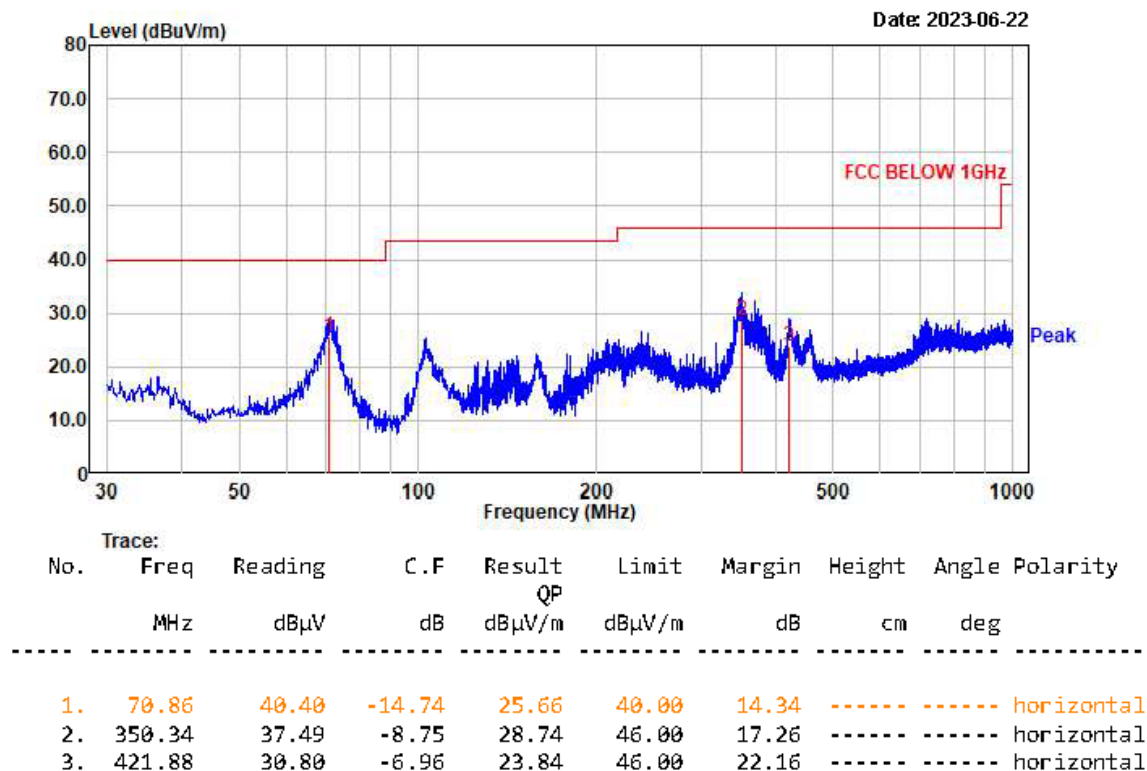
Level (dBuV/m)

Date: 2023-06-22

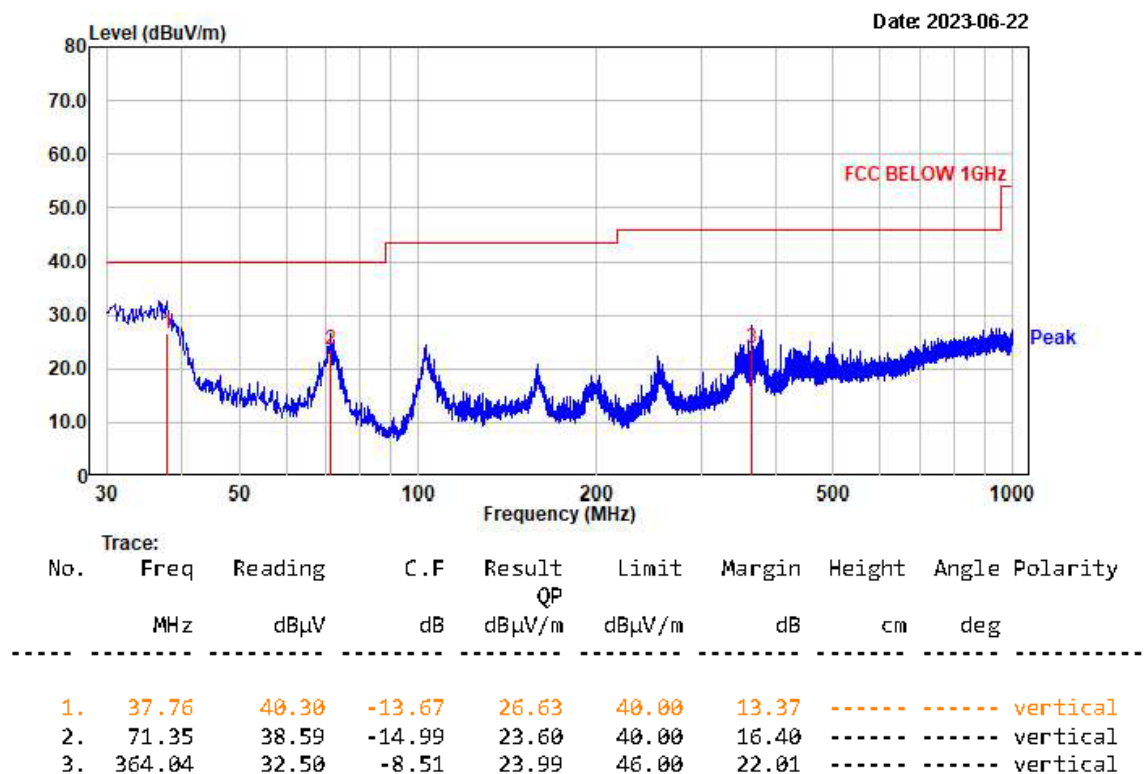


Level (dBuV/m)

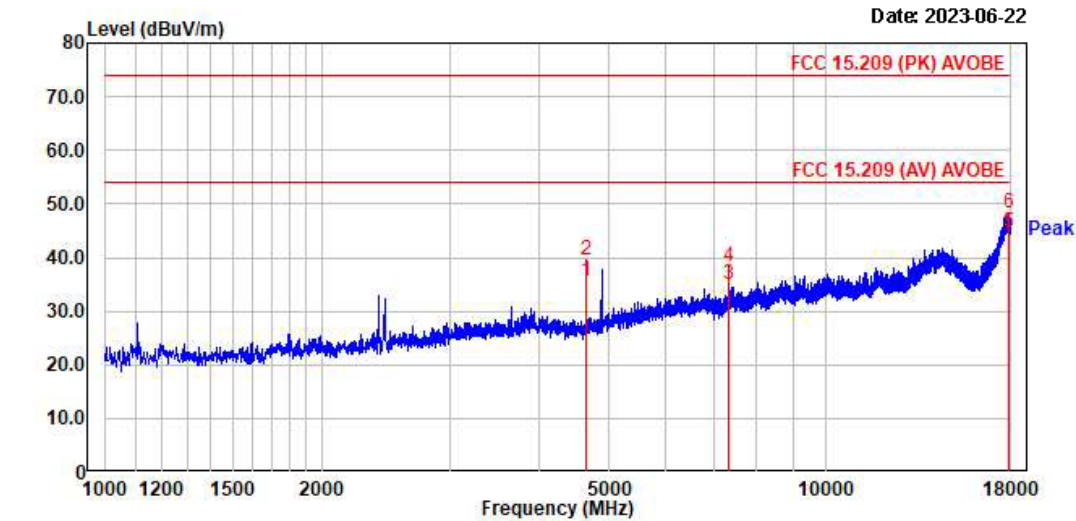
Date: 2023-06-22

Radiated Emissions EDR

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

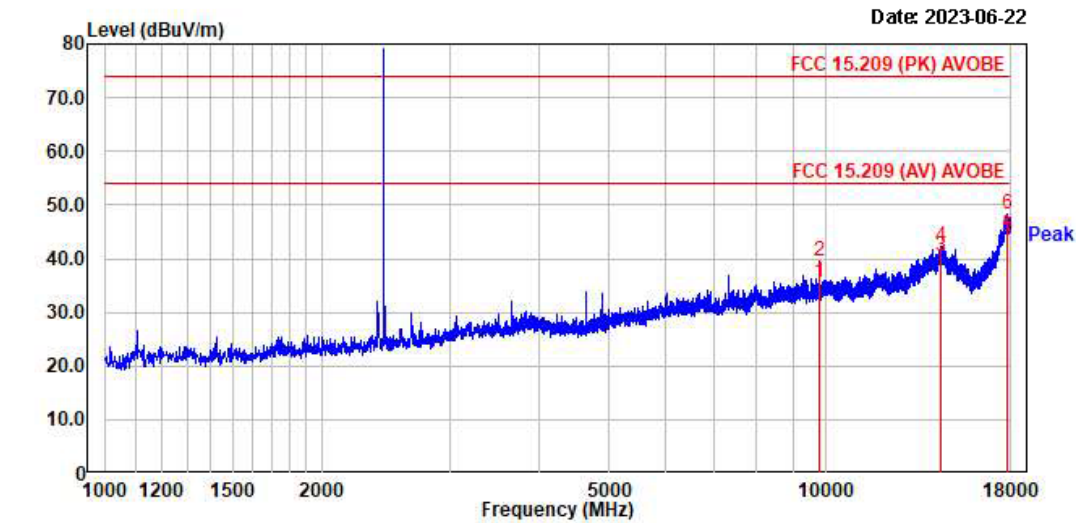


Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



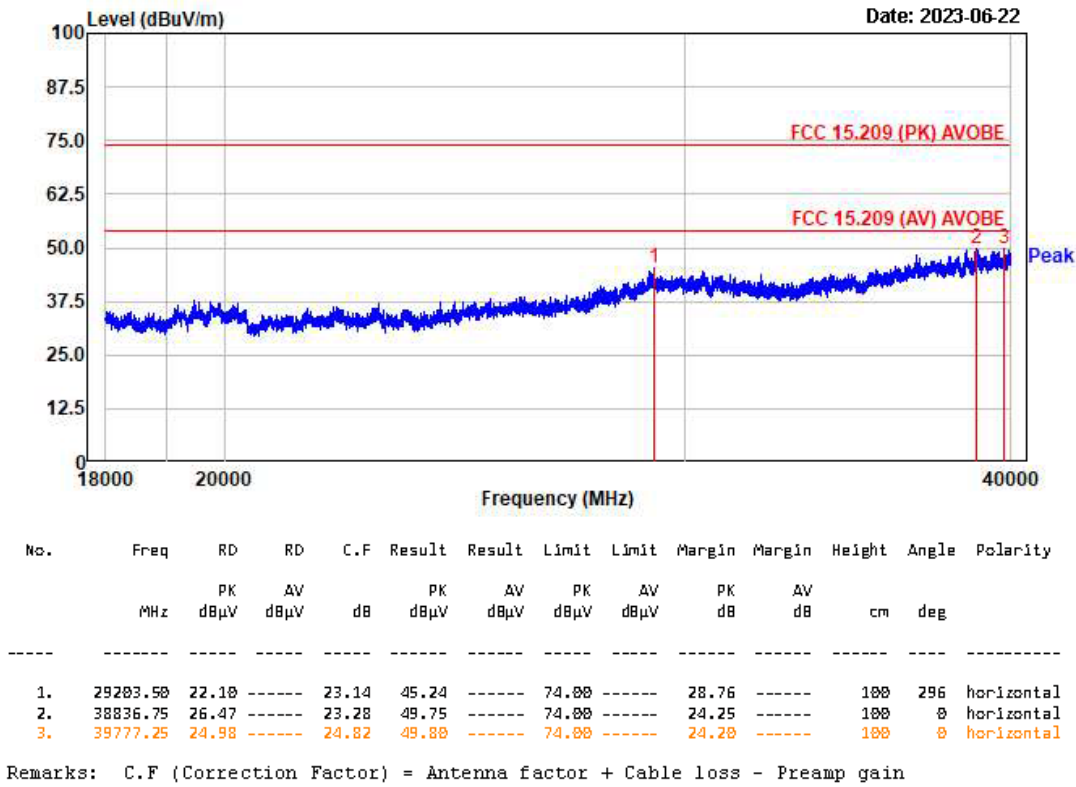
| No. | Freq MHz | RD | | C.F | Result | | Limit | | Margin | | Height cm | Angle deg | Polarity |
|-----|-------------|------------|------------|-------|------------|------------|------------|------------|----------|----------|--------------|--------------|------------|
| | | PK dBμV | AV dBμV | | PK dBμV | AV dBμV | PK dBμV | AV dBμV | PK dB | AV dB | | | |
| 2. | 4652.88 | 36.89 | 32.88 | 2.75 | 39.64 | 35.55 | 74.00 | 54.00 | 34.36 | 18.45 | 180 | 331 | horizontal |
| 4. | 7321.88 | 29.60 | 26.40 | 8.61 | 38.21 | 35.01 | 74.00 | 54.00 | 35.79 | 18.99 | 180 | 75 | horizontal |
| 6. | 17919.25 | 23.83 | 20.89 | 24.59 | 48.42 | 44.68 | 74.00 | 54.00 | 25.58 | 9.32 | 180 | 62 | horizontal |

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



| No. | Freq MHz | RD | | C.F | Result | | Limit | | Margin | | Height cm | Angle deg | Polarity |
|-----|-------------|------------|------------|-------|------------|------------|------------|------------|----------|----------|--------------|--------------|----------|
| | | PK dBμV | AV dBμV | | PK dBμV | AV dBμV | PK dBμV | AV dBμV | PK dB | AV dB | | | |
| 2. | 9763.50 | 28.48 | 24.51 | 11.16 | 39.64 | 35.67 | 74.00 | 54.00 | 34.36 | 18.33 | 180 | 4 | vertical |
| 4. | 14430.00 | 23.51 | 21.61 | 18.85 | 42.36 | 40.46 | 74.00 | 54.00 | 31.64 | 13.54 | 180 | 357 | vertical |
| 6. | 17847.00 | 23.73 | 19.50 | 24.50 | 48.23 | 44.00 | 74.00 | 54.00 | 25.77 | 10.00 | 180 | 360 | vertical |

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain



Level (dBuV/m)

Date: 2023-06-22

3.3.9 AC Conducted Emissions

Procedure:

AC power line conducted emissions from the EUT were measured according to the dictates of ANSI C63.4:2003.

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its hopping function disabled at the middle channels in line with Section 15.31(m). Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data: N/A

Minimum Standard: FCC Part 15.207(a)/EN 55022

| Frequency Range | Quasi-Peak | Average |
|-----------------|------------|------------|
| 0.15 ~ 0.5 | 66 to 56 * | 56 to 46 * |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |

* Note: This product operates only with battery and does not operate during charging.

APPENDIX

TEST EQUIPMENT USED FOR TESTS

| | Use | Description | Model No. | Serial No. | Manufacturer | Interval | Next Cal. Date |
|----|-----|--------------------------------------|------------------|-------------|------------------------|----------|----------------|
| 1 | ■ | Signal Analyzer (9 kHz ~ 30 GHz) | FSV30 | 100757 | R&S | 1 year | 2023-08-30 |
| 2 | ■ | Signal Generator (~3.2 GHz) | 8648C | 3623A02597 | HP | 1 year | 2024-03-14 |
| 3 | | SYNTHESIZED CW GENERATOR | 83711B | US34490456 | HP | 1 year | 2024-03-14 |
| 4 | ■ | Double Ridge Horn Antenna | 3116B | 133350 | ETS | 1 year | 2024-04-03 |
| 5 | ■ | AMPLIFIER | PAM-840A | 461314 | COM-POWER CORPORATION | 2 year | 2024-03-15 |
| 6 | ■ | EMI Test Receiver (~7 GHz) | ESCI7 | 100722 | R&S | 1 year | 2023-08-30 |
| 7 | | RF Amplifier (~1.3 GHz) | 8447D OPT 010 | 2944A07684 | HP | 1 year | 2023-08-30 |
| 8 | | RF Amplifier (1~26.5 GHz) | 8449B | 3008A02126 | HP | 1 year | 2024-03-14 |
| 9 | ■ | Horn Antenna (1~18 GHz) | 3115 | 00114105 | ETS | 2 year | 2023-08-30 |
| 10 | ■ | DRG Horn (Small) | 3116B | 81109 | ETS-Lindgren | 2 year | 2024-03-18 |
| 11 | ■ | DRG Horn (Small) | 3116B | 133350 | ETS-Lindgren | 2 year | 2024-03-18 |
| 12 | ■ | TRILOG Antenna | VULB 9160 | 9160-3237 | SCHWARZBECK | 2 year | 2024-03-14 |
| 13 | | Temp.Humidity Data Logger | SK-L200TH II A | 00801 | SATO | 1 year | 2024-03-14 |
| 14 | | Splitter (SMA) | ZFSC-2-2500 | SF617800326 | Mini-Circuits | - | - |
| 15 | ■ | DC Power Supply | 6674A | 3637A01657 | Agilent | - | - |
| 17 | ■ | Power Meter | EPM-441A | GB32481702 | HP | 1 year | 2024-03-14 |
| 18 | ■ | Power Sensor | 8481A | 3318A94972 | HP | 1 year | 2023-08-30 |
| 19 | | Audio Analyzer | 8903B | 3729A18901 | HP | 1 year | 2023-08-30 |
| 20 | | Modulation Analyzer | 8901B | 3749A05878 | HP | 1 year | 2023-08-30 |
| 21 | | TEMP & HUMIDITY Chamber | YJ-500 | LTAS06041 | JinYoung Tech | 1 year | 2023-08-30 |
| 22 | | Stop Watch | HS-3 | 812Q08R | CASIO | 2 year | 2026-03-14 |
| 23 | | LISN | KNW-407 | 8-1430-1 | Kyoritsu | 1 year | 2024-03-14 |
| 24 | | Two-Lime V-Network | ESH3-Z5 | 893045/017 | R&S | 1 year | 2024-03-14 |
| 25 | | UNIVERSAL RADIO COMMUNICATION TESTER | CMU200 | 106243 | R&S | 1 year | 2024-03-14 |
| 26 | | Highpass Filter | WHKX1.5/15G-10SS | 74 | Wainwright Instruments | 1 year | 2024-03-14 |
| 27 | | Highpass Filter | WHKX3.0/18G-10SS | 118 | Wainwright Instruments | 1 year | 2024-03-14 |
| 28 | | OSP120 BASE UNIT | OSP120 | 101230 | R&S | 1 year | 2024-03-14 |
| 29 | ■ | Signal Generator(100 kHz ~ 40 GHz) | SMB100A03 | 177621 | R&S | 1 year | 2024-03-14 |
| 30 | ■ | Signal Analyzer (10 Hz ~ 40 GHz) | FSV40 | 101367 | R&S | 1 year | 2024-03-14 |
| 31 | ■ | Active Loop Antenna | FMZB 1519 | 1519-031 | SCHWARZBECK | 2 year | 2024-03-16 |