

Intertek

Report Number: 104567487BOX-001

Issued: 02/03/2021

Band 4, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2152.5 | ANT0 | -29.94 |
| | | ANT1 | -28.40 |

Band 4, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2150.00 | ANT0 | -32.42 |
| | | ANT1 | -31.04 |

Band 4, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2147.50 | ANT0 | -33.84 |
| | | ANT1 | -32.41 |

Band 4, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2145.00 | ANT0 | -35.02 |
| | | ANT1 | -33.73 |

Band 4, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2152.5 | ANT0 | -30.11 |
| | | ANT1 | -28.82 |

Band 4, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2150.00 | ANT0 | -32.24 |
| | | ANT1 | -30.99 |

Band 4, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2147.50 | ANT0 | -33.89 |
| | | ANT1 | -32.68 |

Band 4, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2145.00 | ANT0 | -34.64 |
| | | ANT1 | -34.47 |

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Band 4, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2152.5 | ANT0 | -29.90 |
| | | ANT1 | -28.80 |

Band 4, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2150.00 | ANT0 | -31.40 |
| | | ANT1 | -32.32 |

Band 4, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2147.50 | ANT0 | -34.06 |
| | | ANT1 | -32.66 |

Band 4, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2145.00 | ANT0 | -35.01 |
| | | ANT1 | -33.68 |

Band 4, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2152.5 | ANT0 | -29.99 |
| | | ANT1 | -28.55 |

Band 4, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

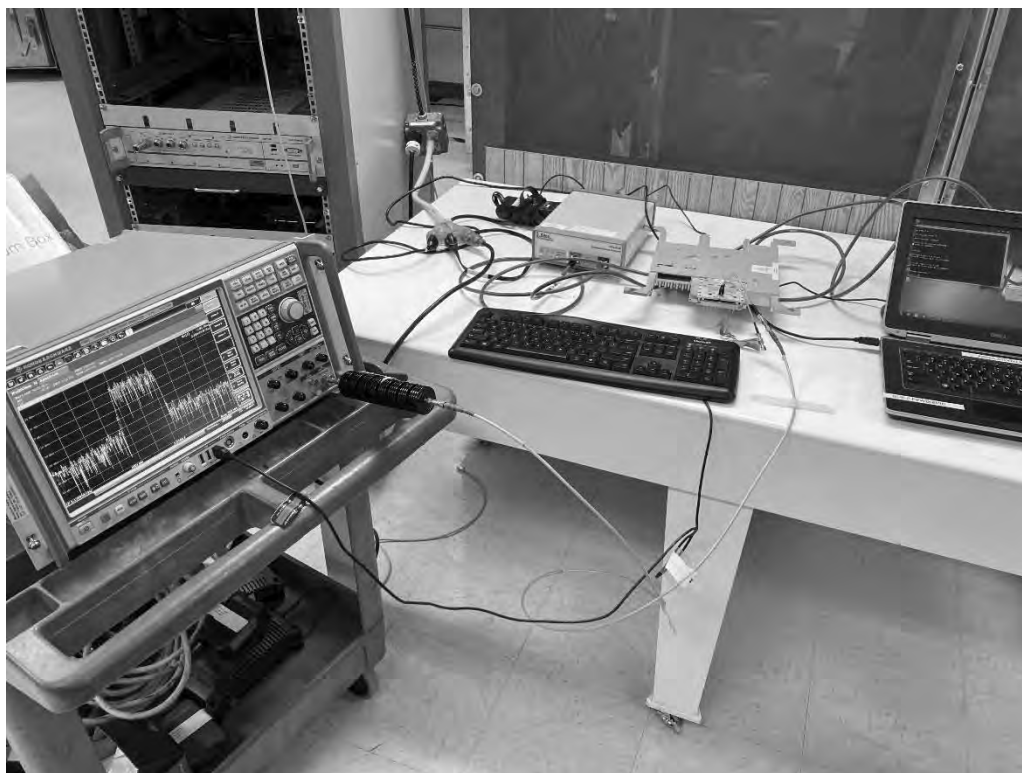
| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2150.00 | ANT0 | -32.47 |
| | | ANT1 | -31.27 |

Band 4, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2147.50 | ANT0 | -34.43 |
| | | ANT1 | -32.62 |

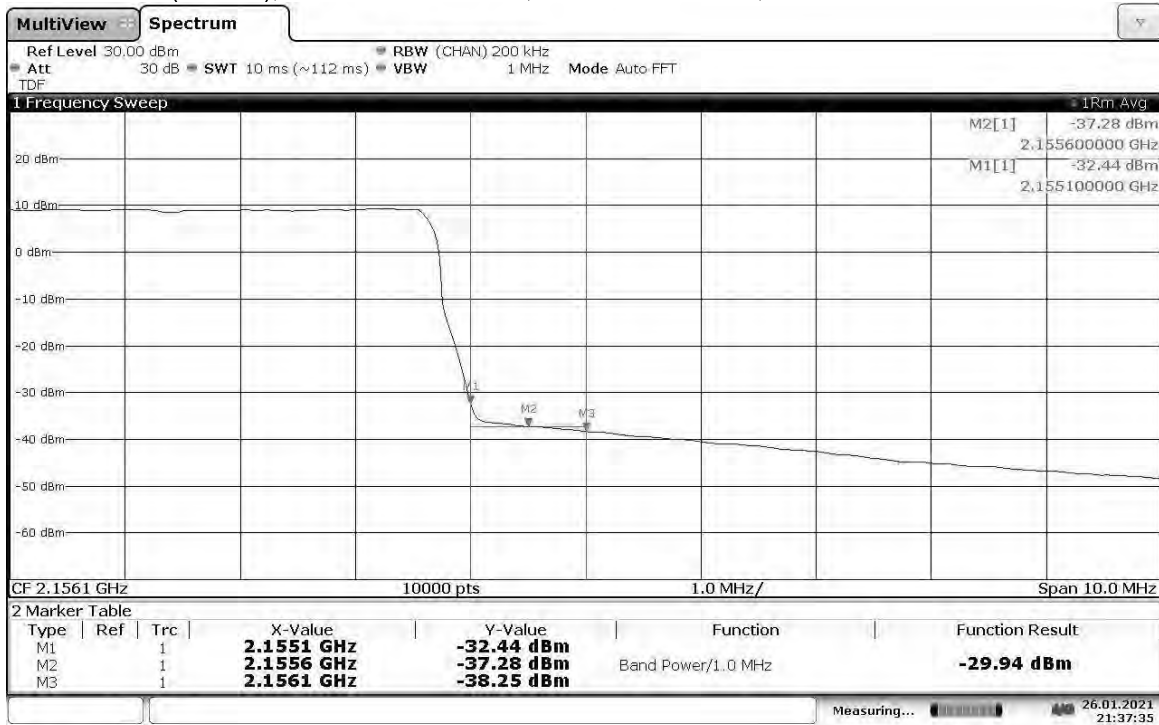
Band 4, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) |
|-----------|-----------------|--------------|---------------|
| High | 2145.00 | ANT0 | -34.82 |
| | | ANT1 | -33.42 |

9.4 Setup Photograph:

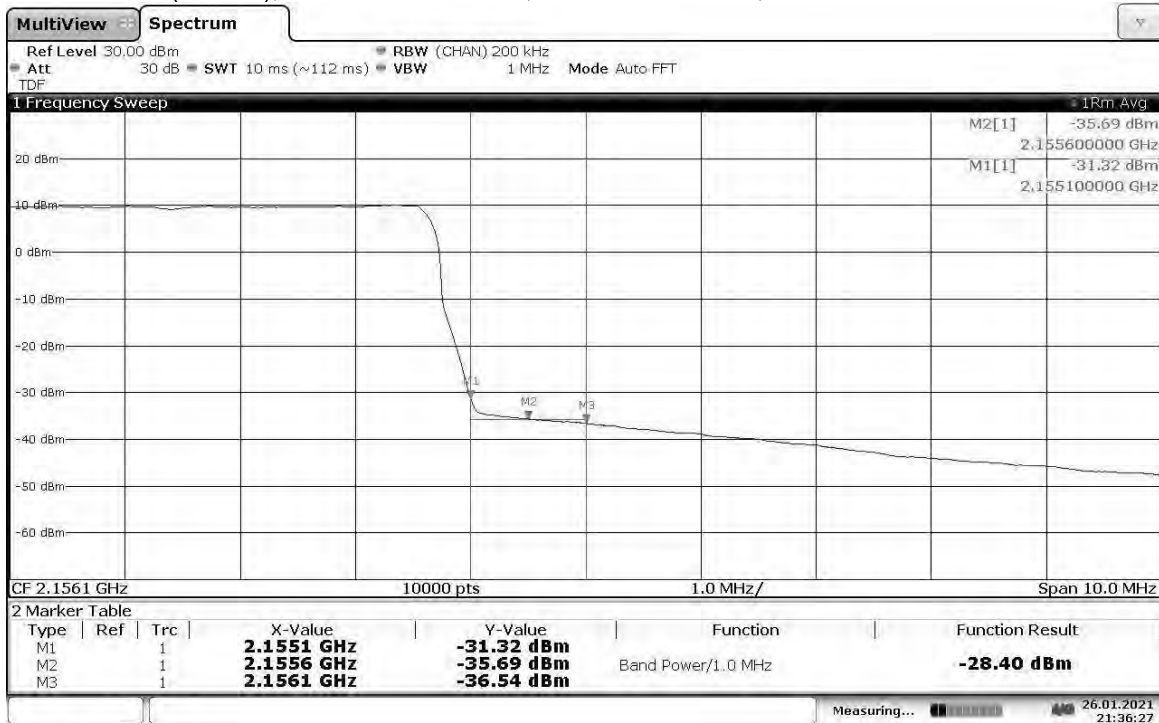
9.5 Plots/Data:

Band Edge Compliant, Upper Band Edge, 2152.5 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK



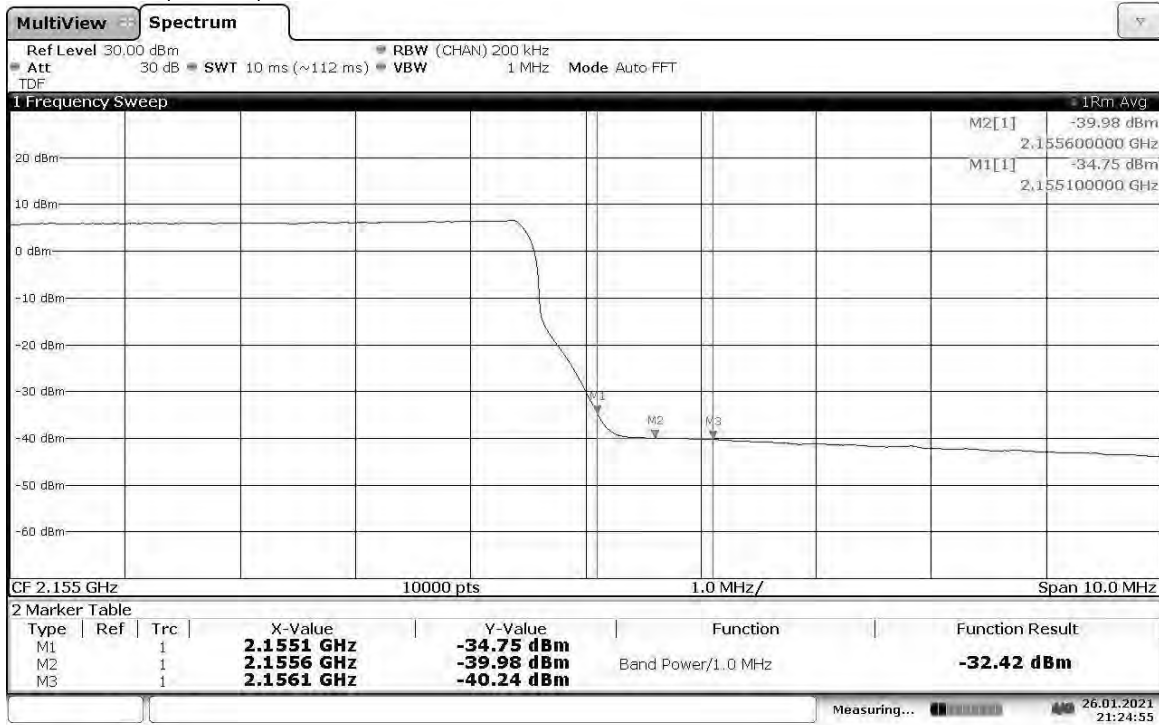
21:37:35 26.01.2021

Band Edge Compliant, Upper Band Edge, 2152.5 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK



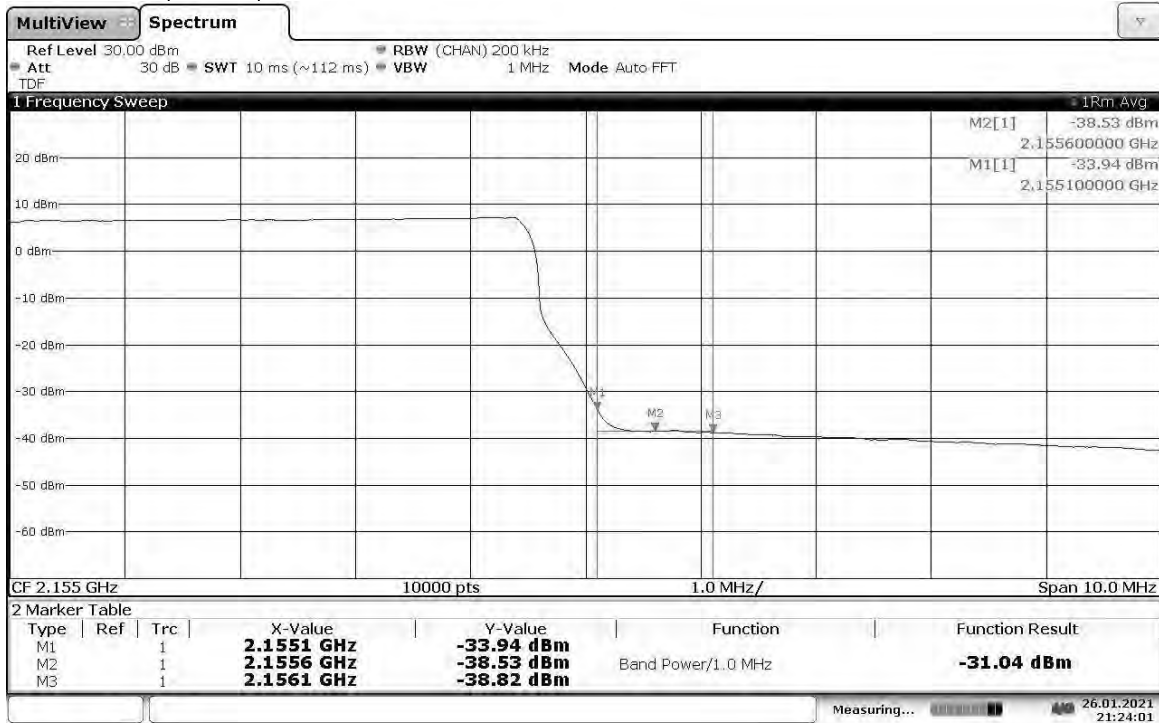
21:36:28 26.01.2021

Band Edge Compliant, Upper Band Edge, 2150 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK



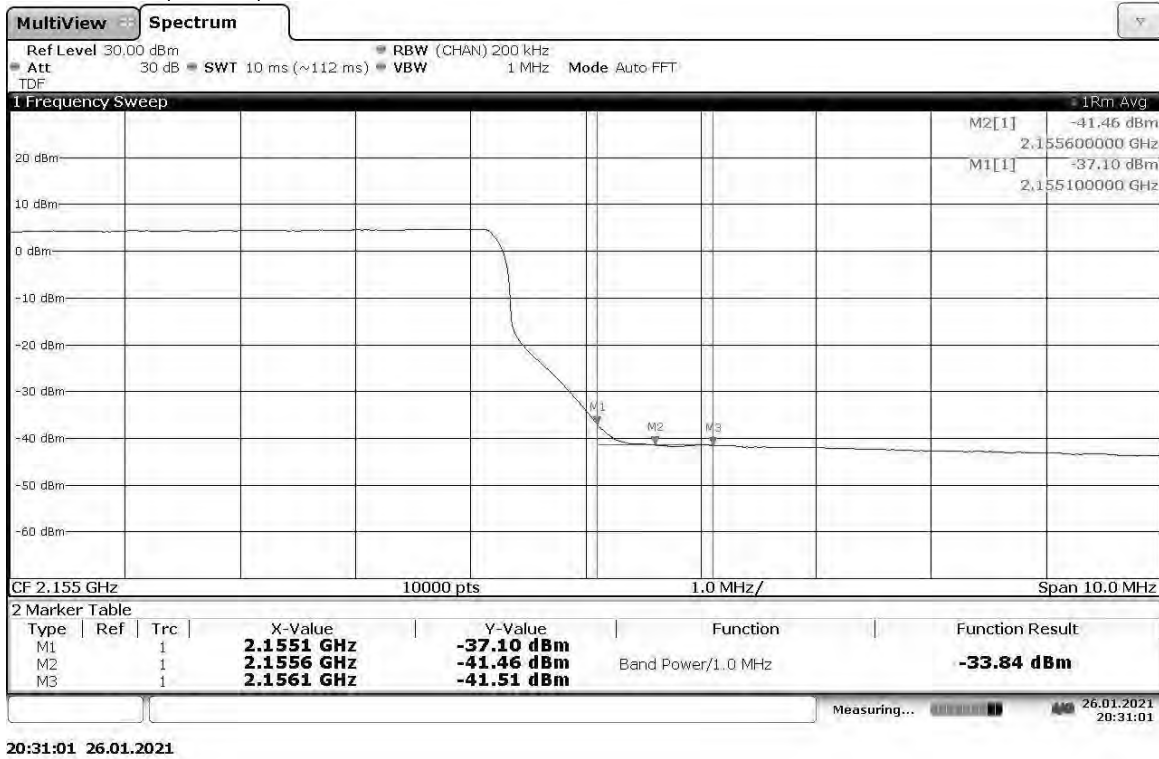
21:24:55 26.01.2021

Band Edge Compliant, Upper Band Edge, 2150 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

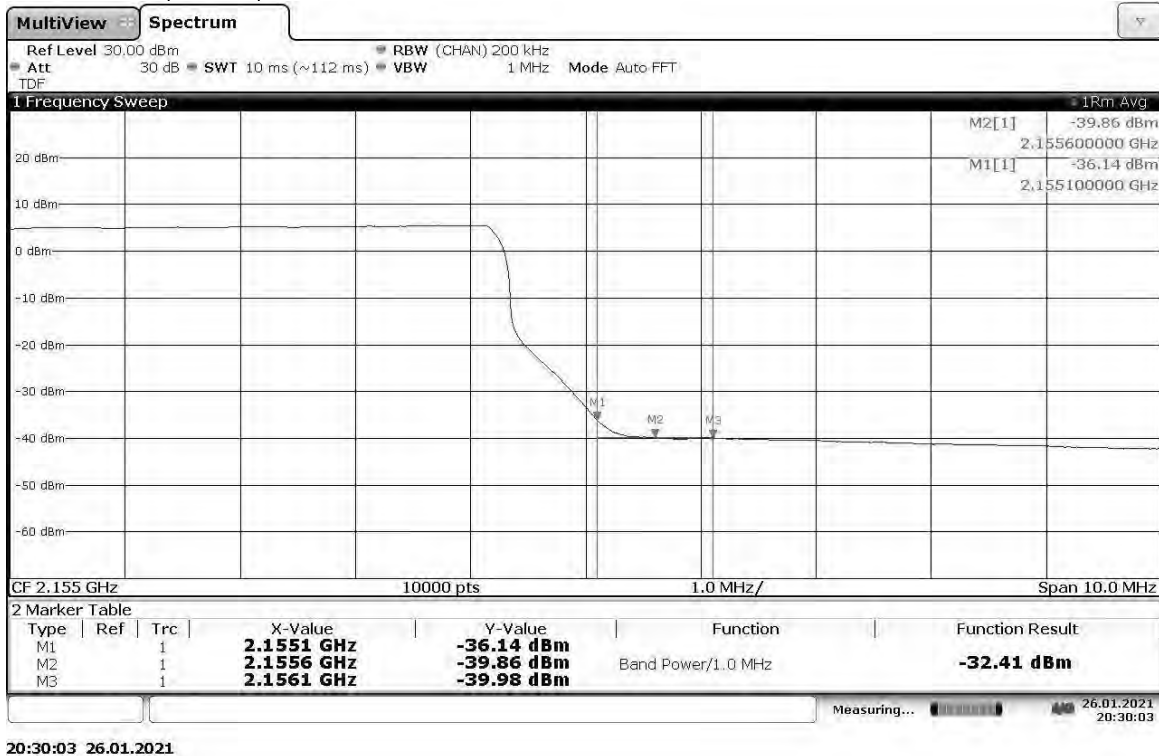


21:24:01 26.01.2021

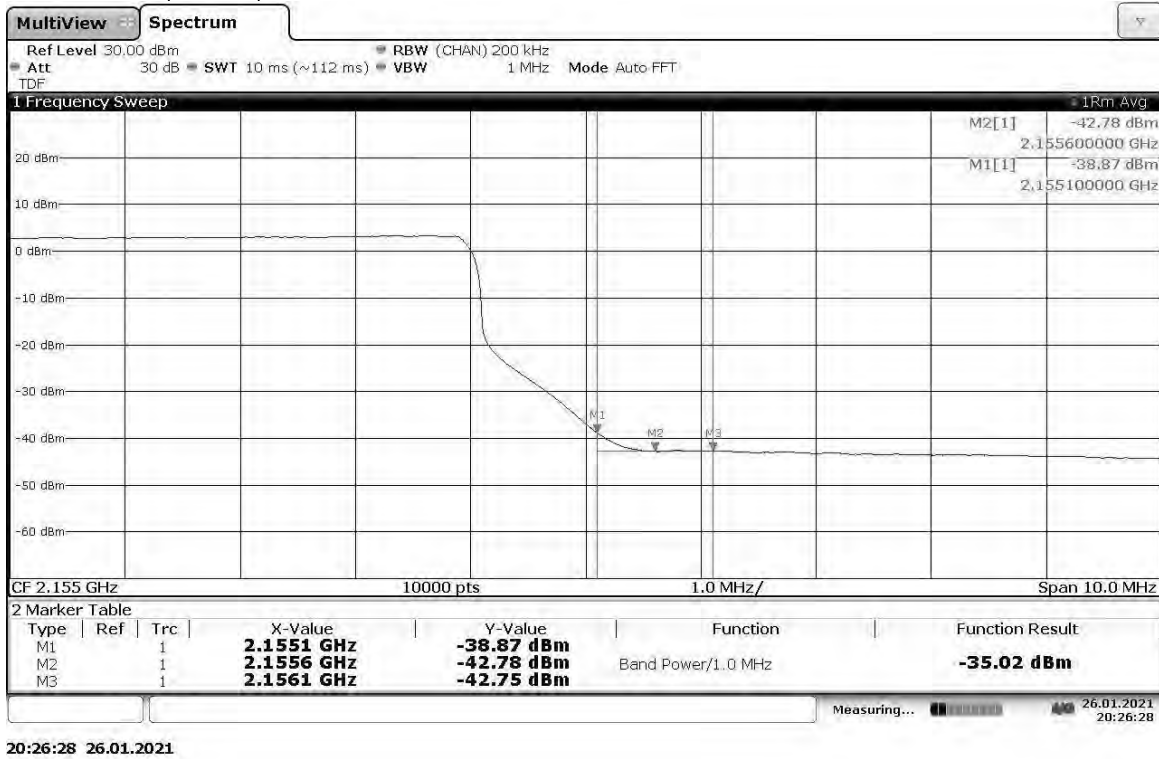
Band Edge Compliant, Upper Band Edge, 2147.5 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK



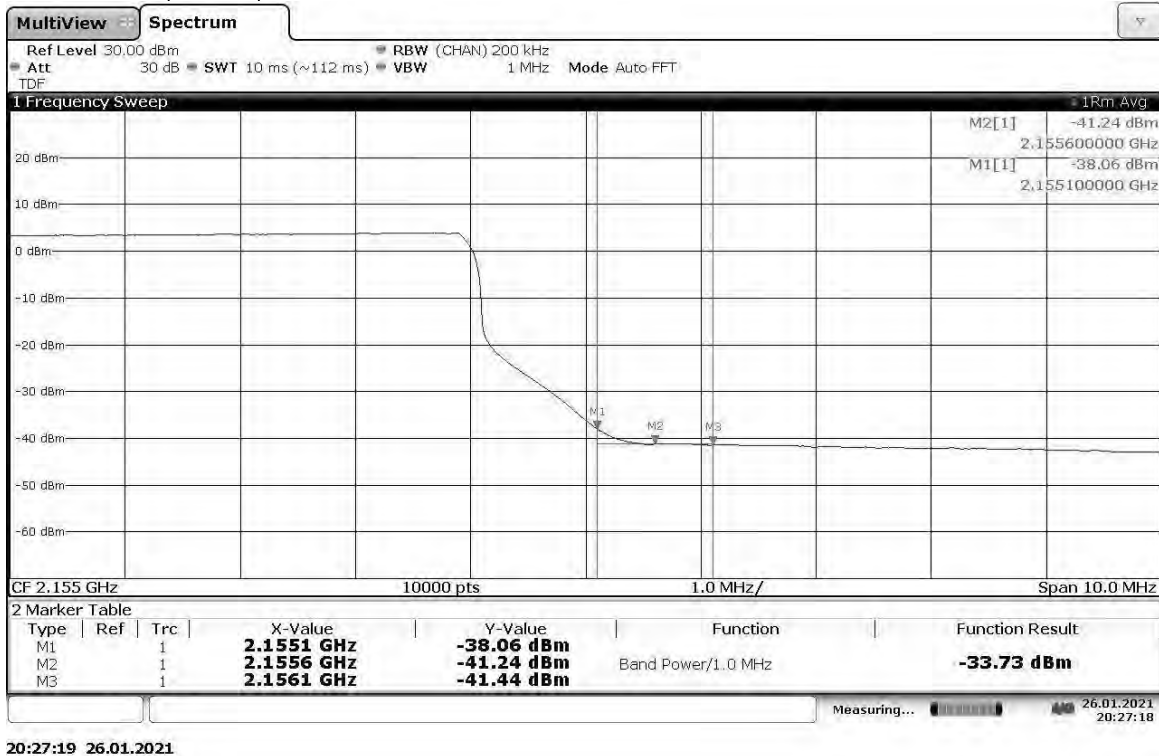
Band Edge Compliant, Upper Band Edge, 2147.5 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK



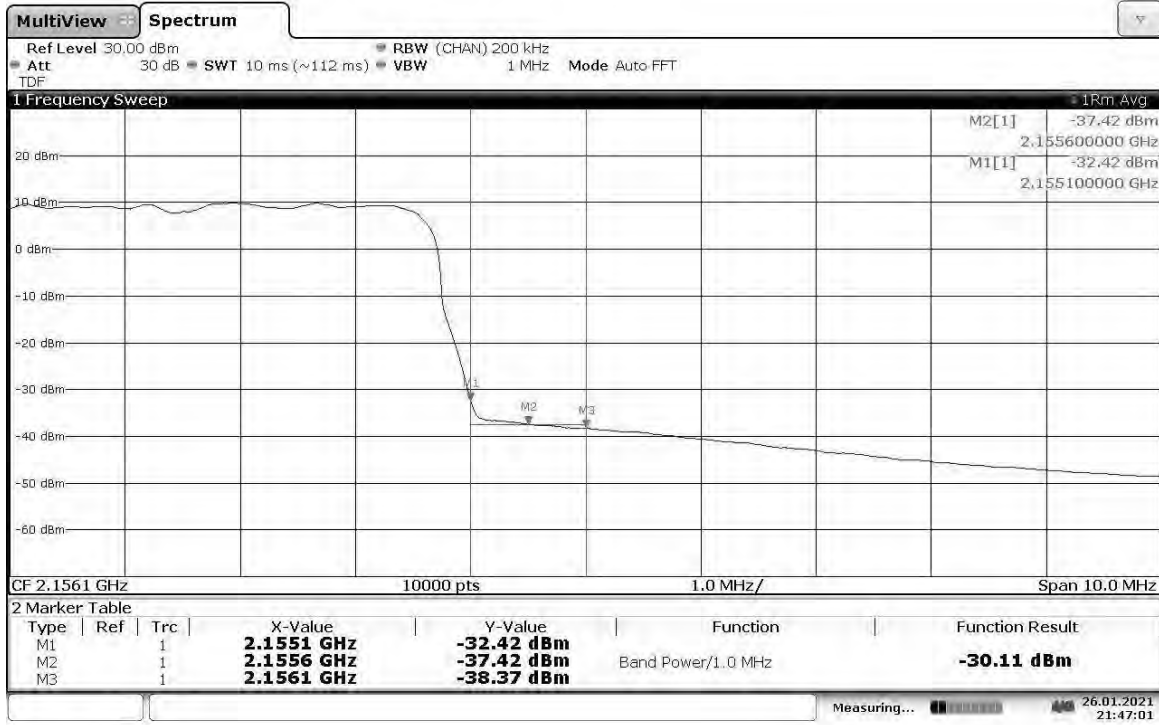
Band Edge Compliant, Upper Band Edge, 2145 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK



Band Edge Compliant, Upper Band Edge, 2145 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

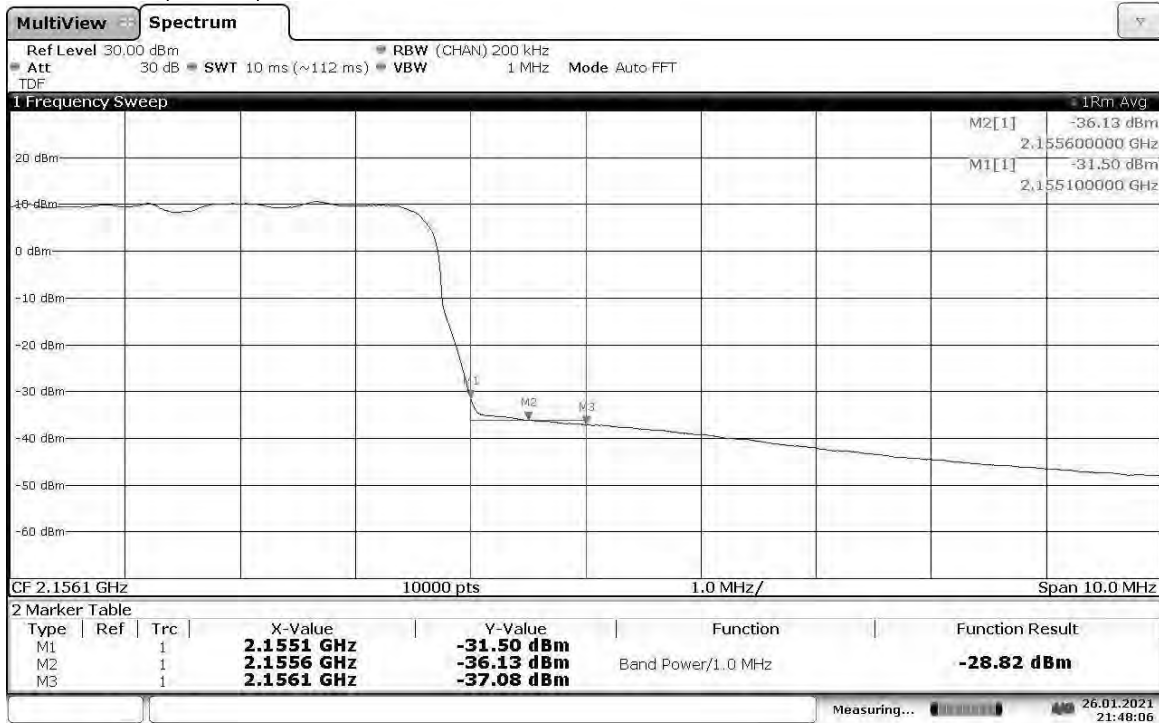


Band Edge Compliant, Upper Band Edge, 2152.5 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM



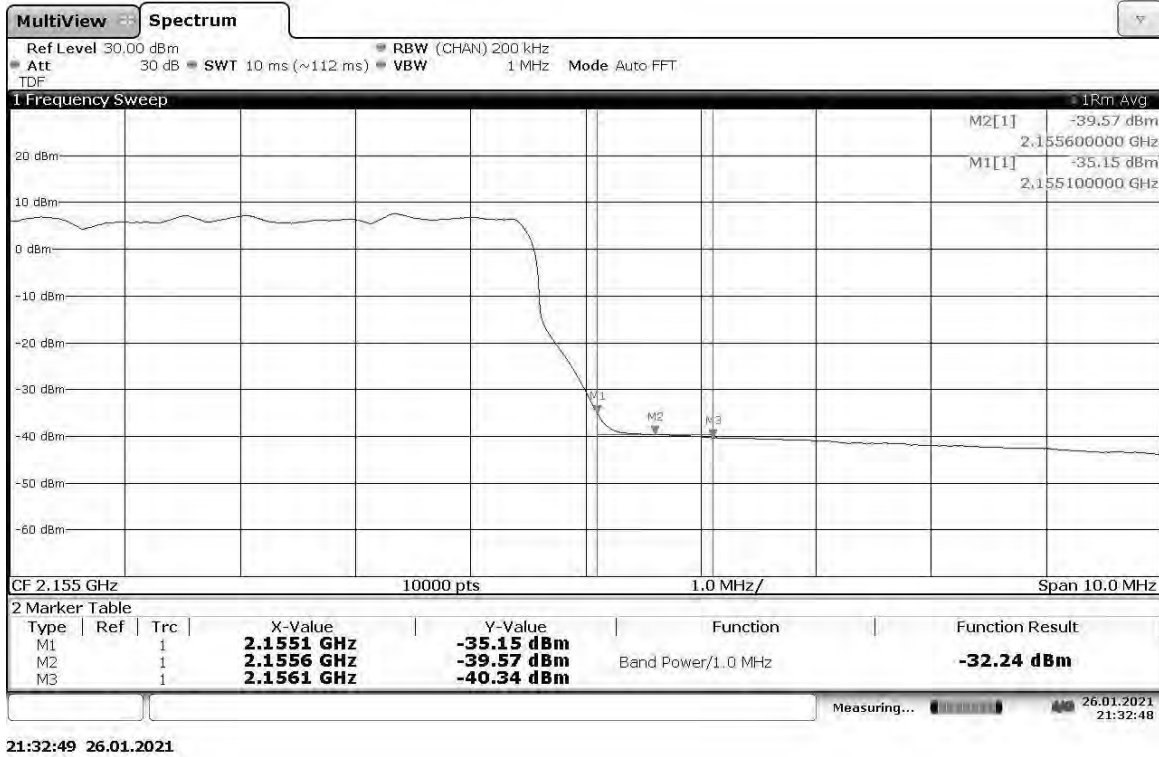
21:47:01 26.01.2021

Band Edge Compliant, Upper Band Edge, 2152.5 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

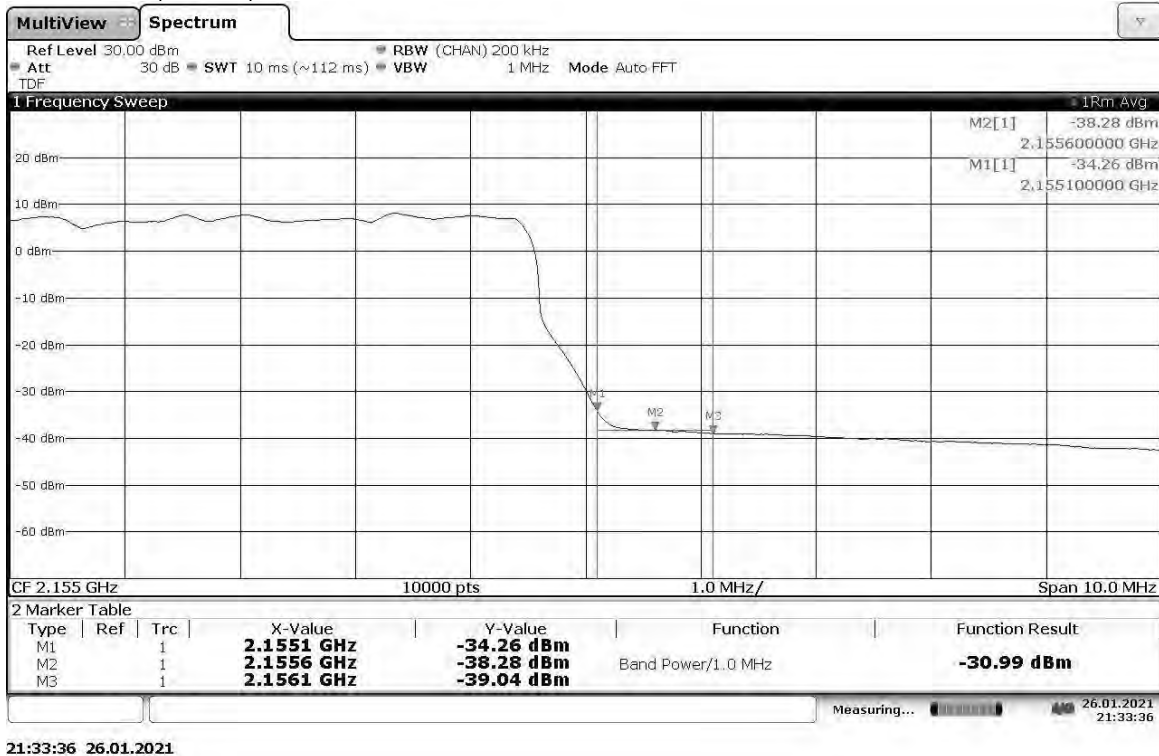


21:48:06 26.01.2021

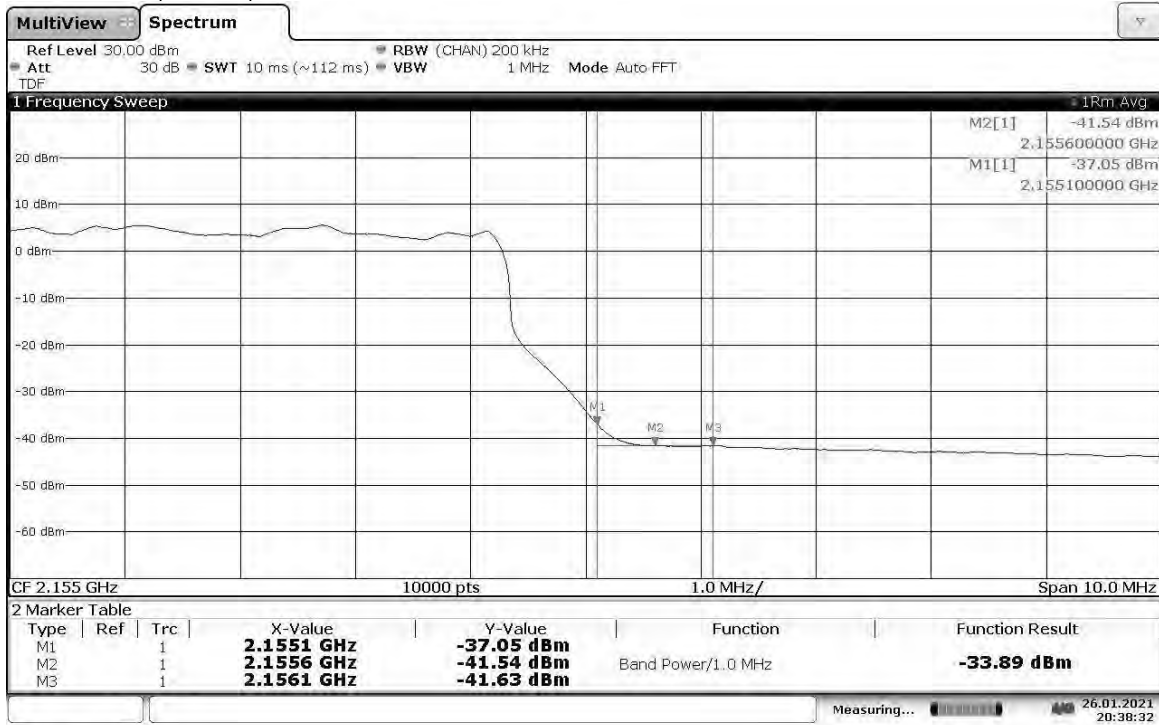
Band Edge Compliant, Upper Band Edge, 2150 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM



Band Edge Compliant, Upper Band Edge, 2150 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

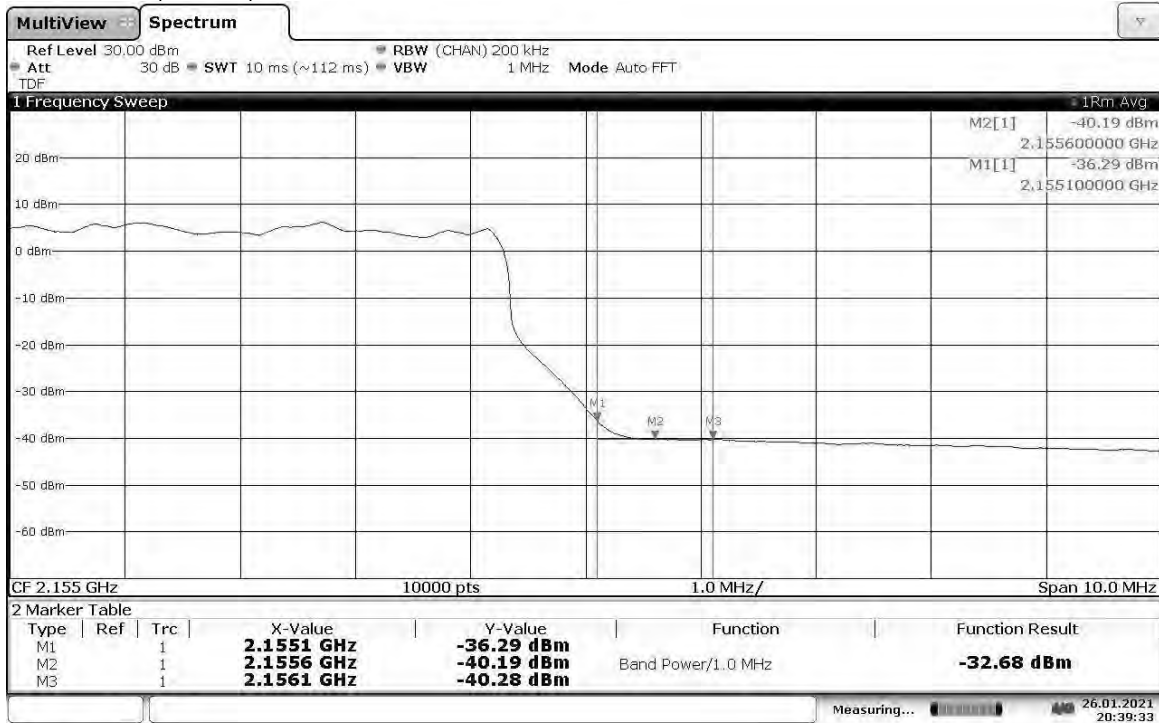


Band Edge Compliant, Upper Band Edge, 2147.5 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM



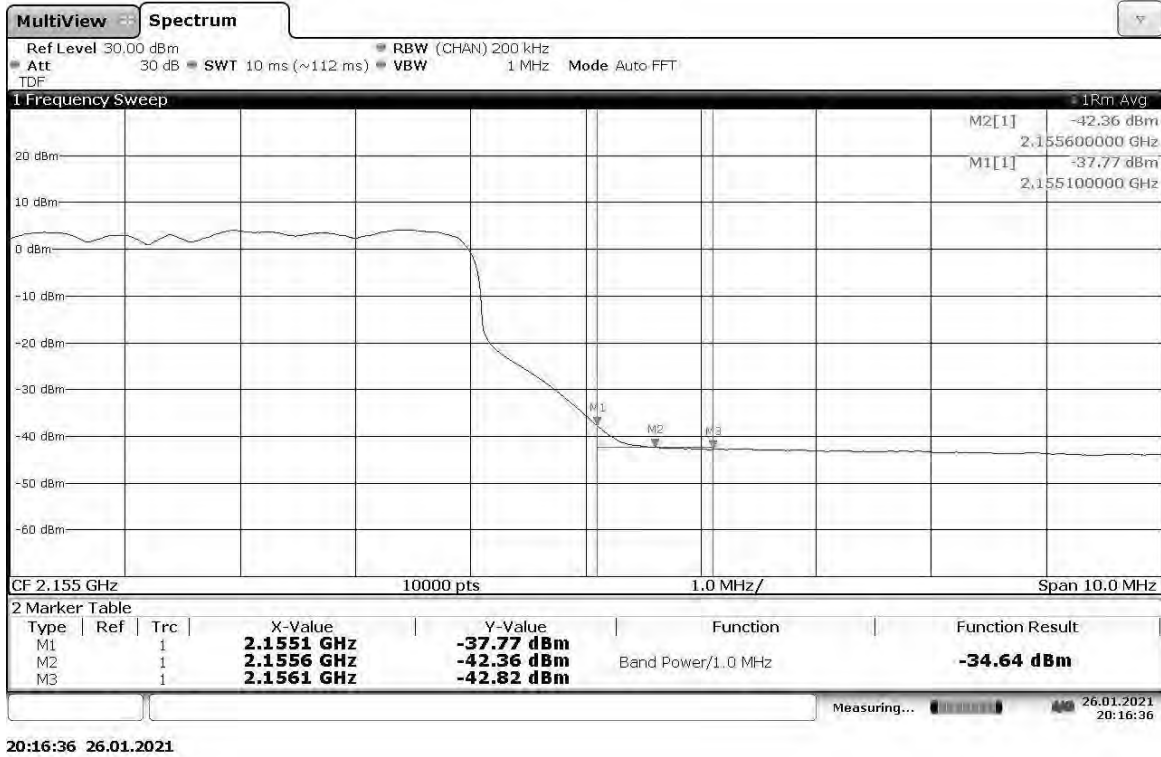
20:38:33 26.01.2021

Band Edge Compliant, Upper Band Edge, 2147.5 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

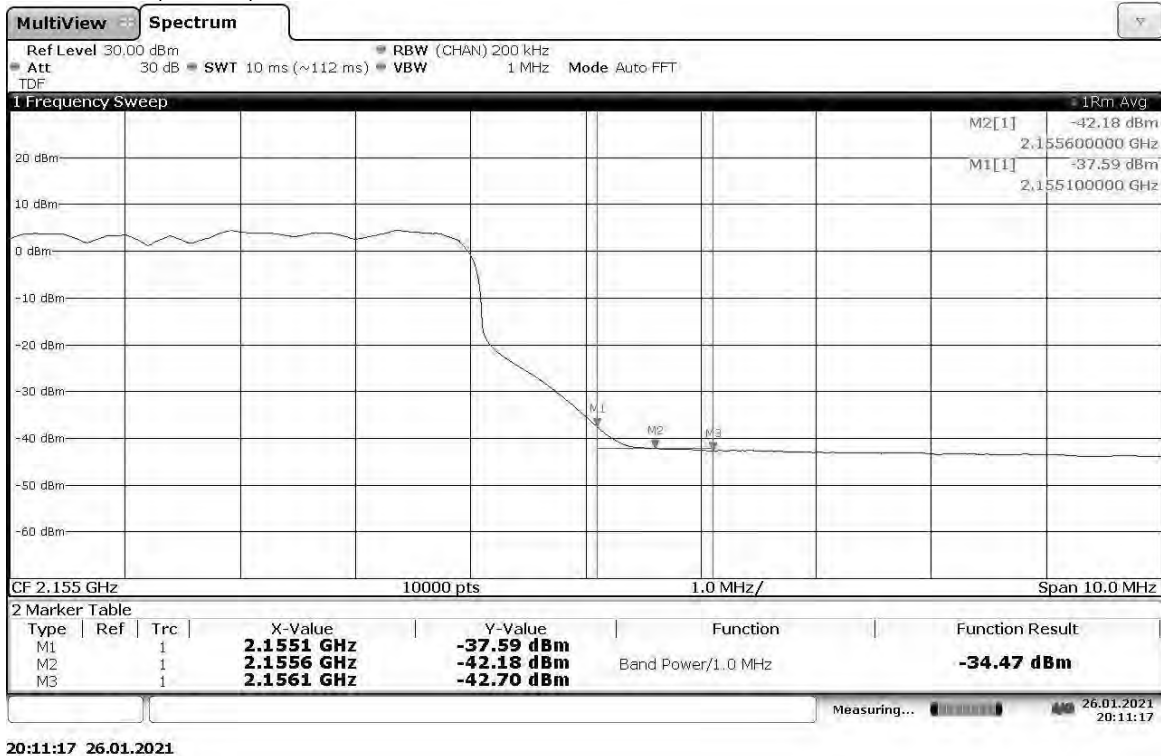


20:39:34 26.01.2021

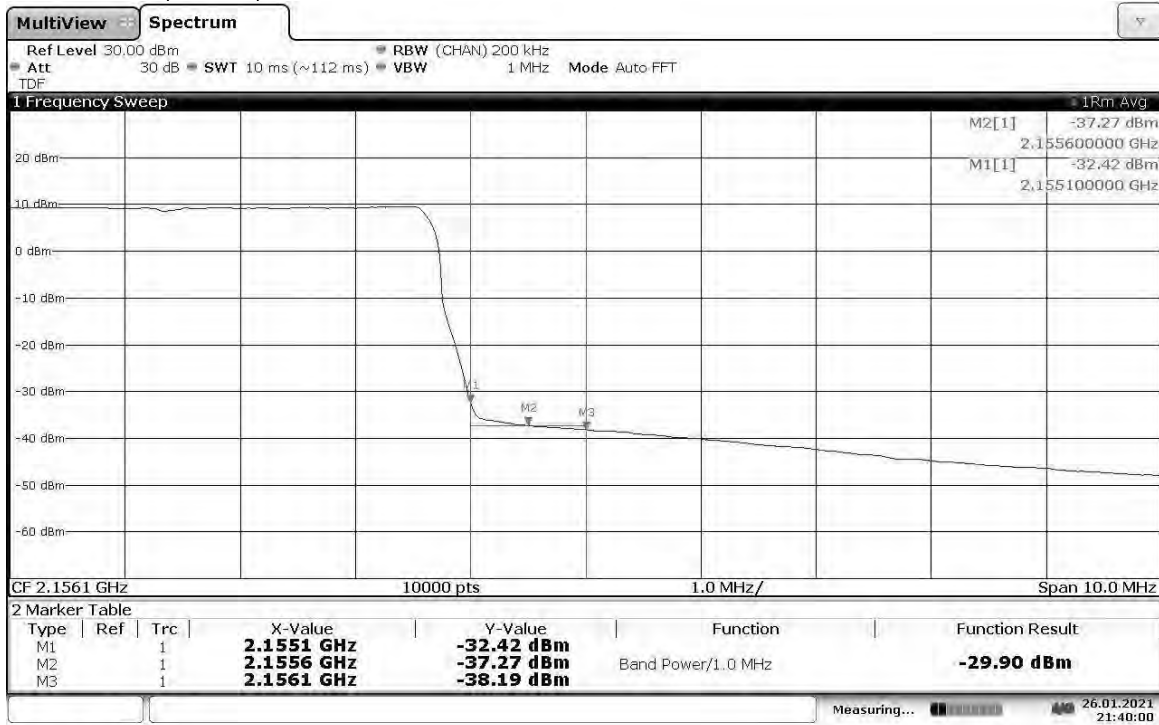
Band Edge Compliant, Upper Band Edge, 2145 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM



Band Edge Compliant, Upper Band Edge, 2145 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

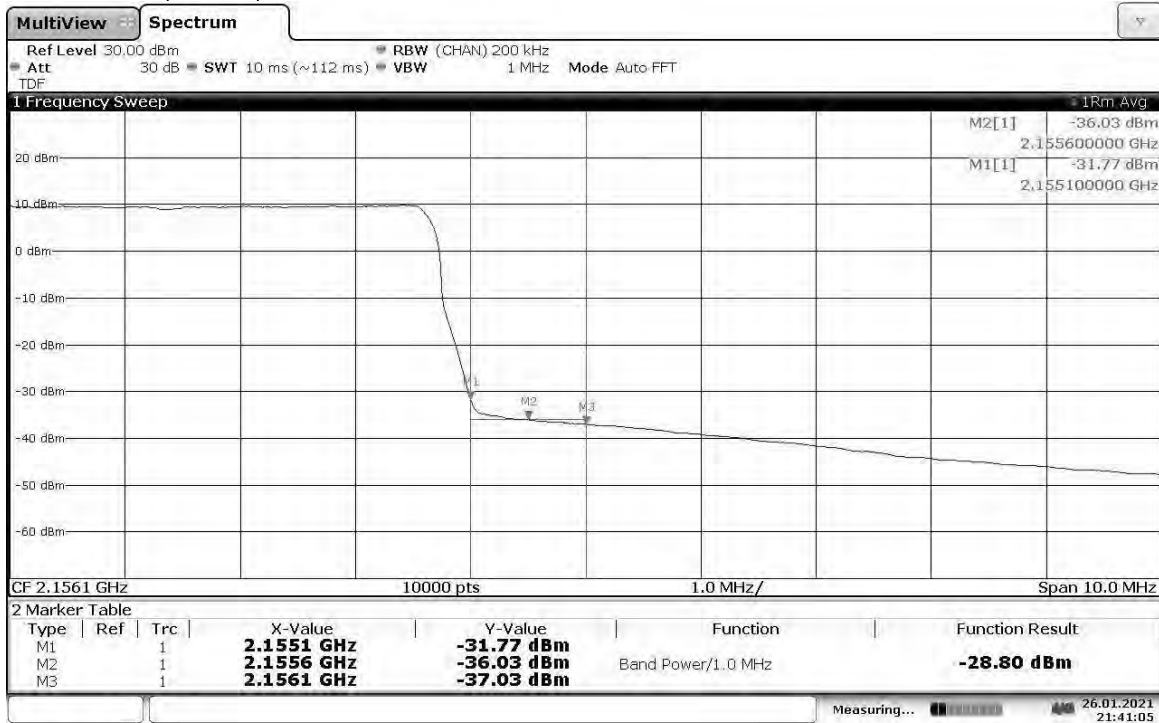


Band Edge Compliant, Upper Band Edge, 2152.5 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM



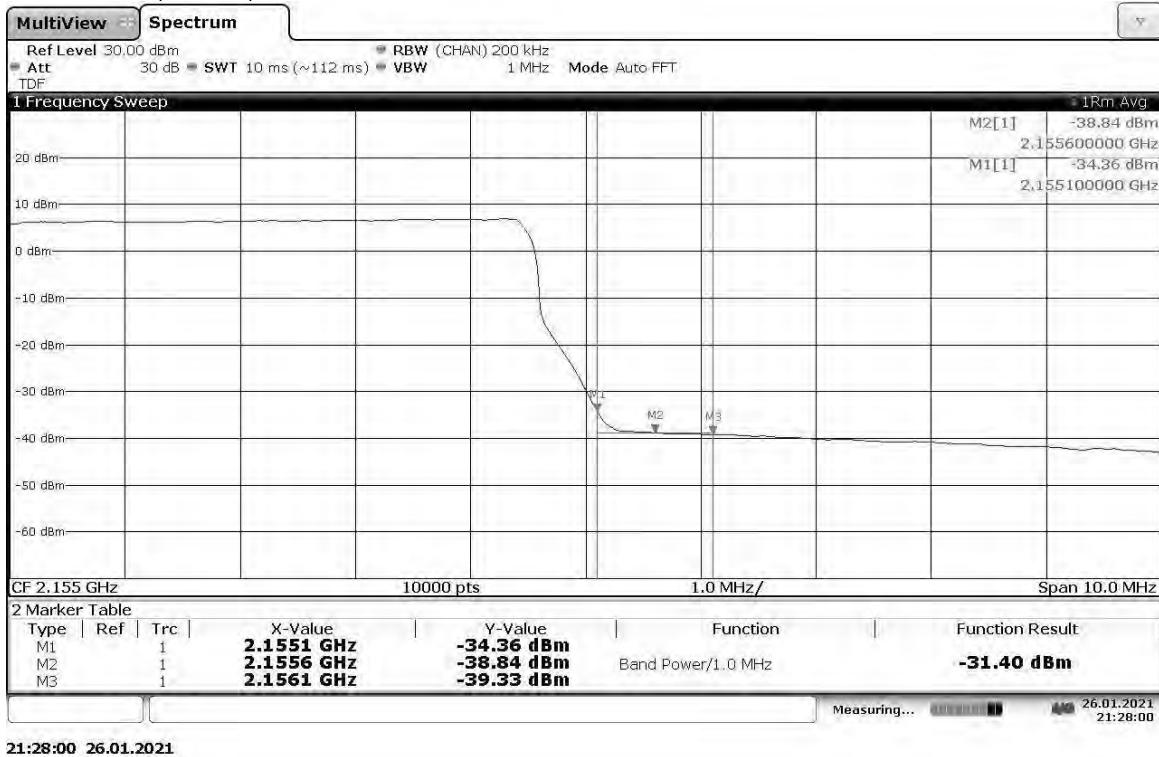
21:40:00 26.01.2021

Band Edge Compliant, Upper Band Edge, 2152.5 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

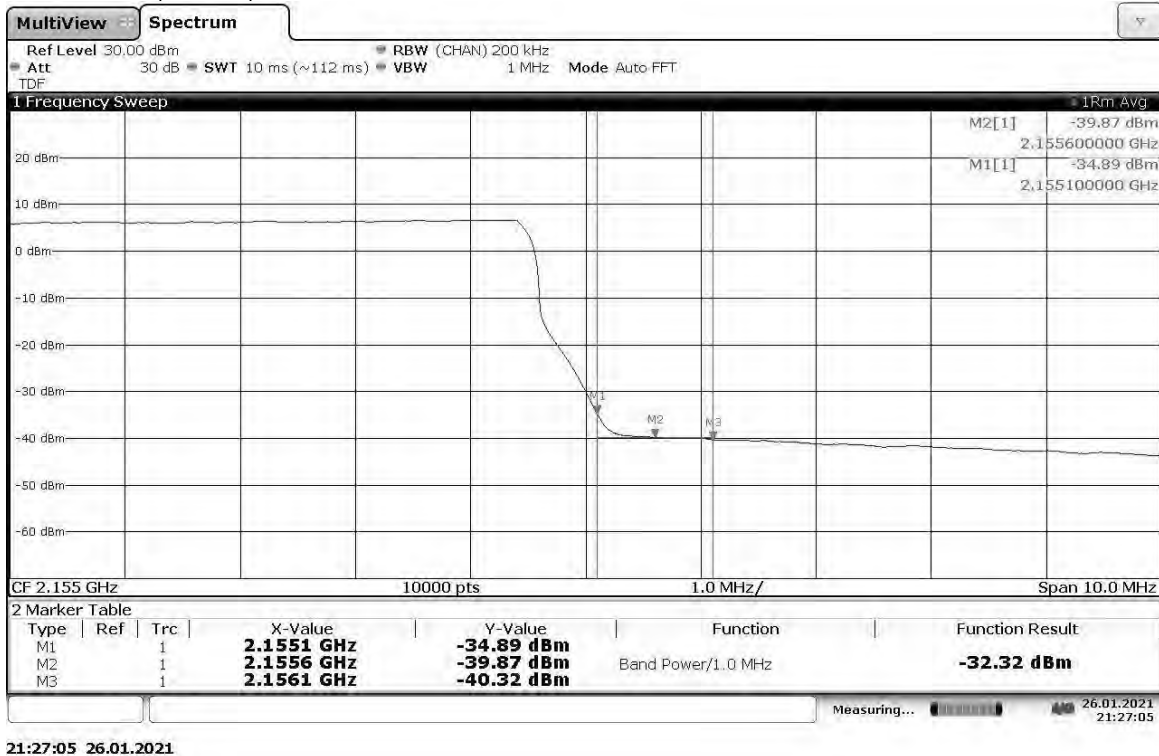


21:41:06 26.01.2021

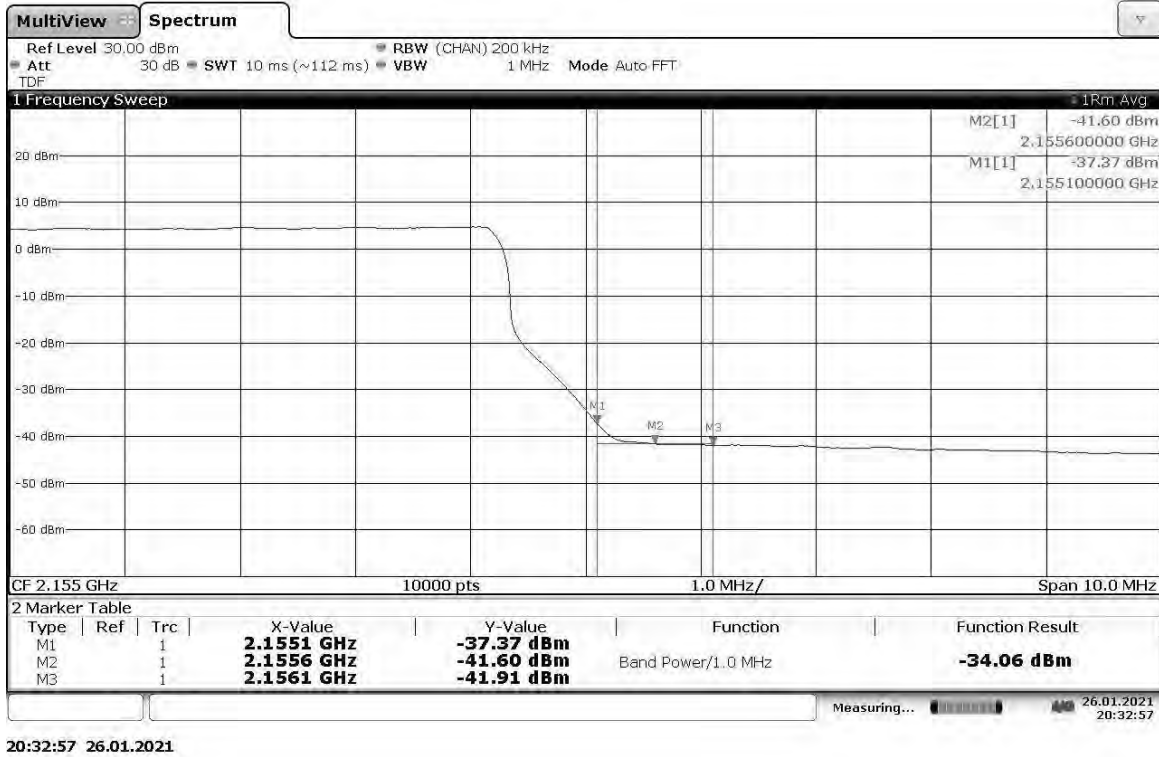
Band Edge Compliant, Upper Band Edge, 2150 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM



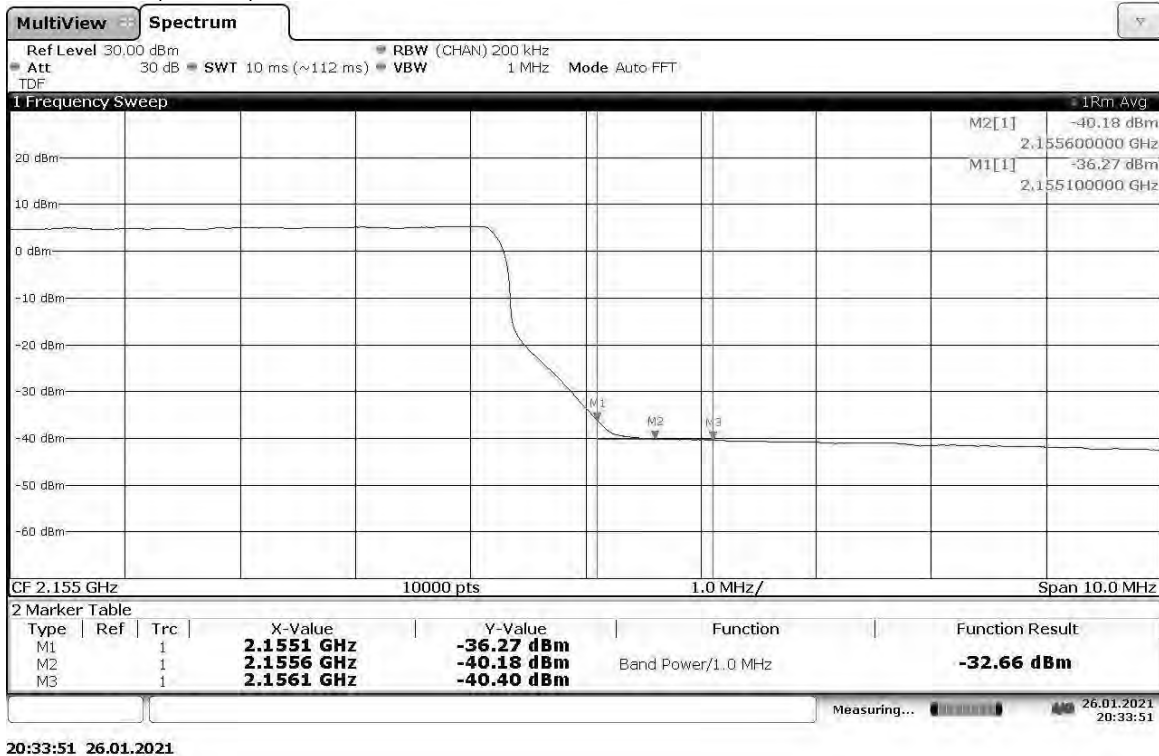
Band Edge Compliant, Upper Band Edge, 2150 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM



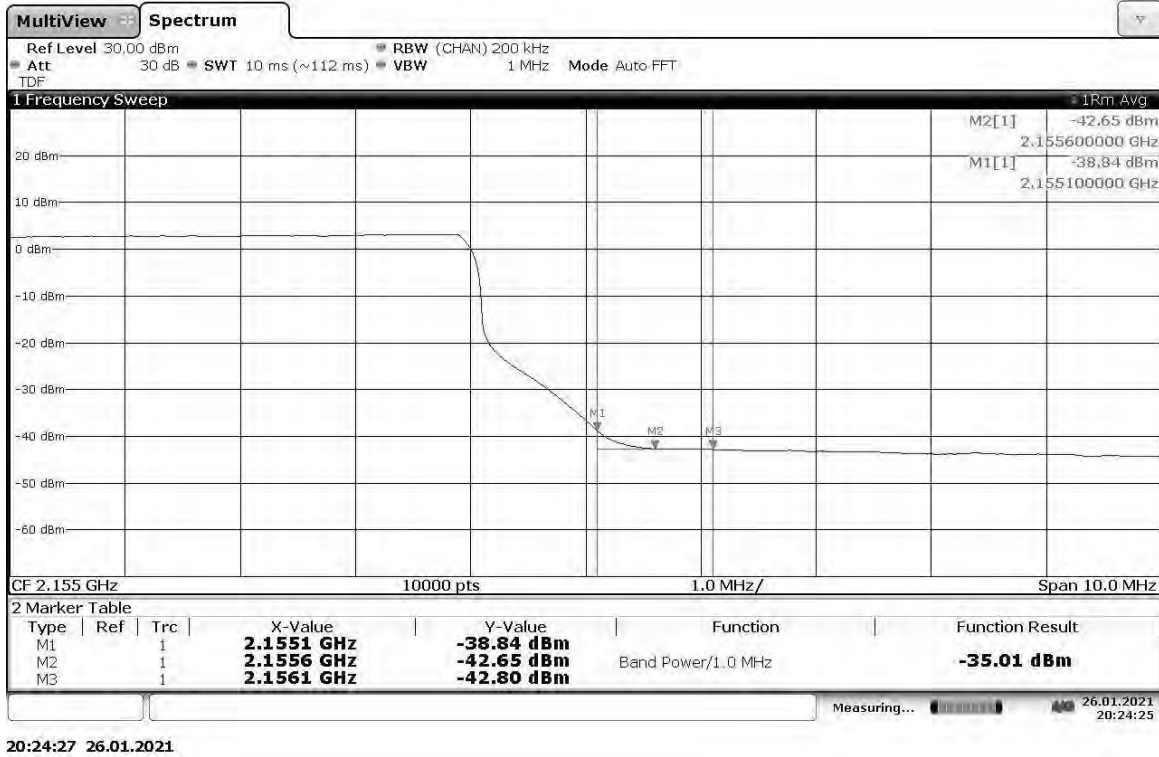
Band Edge Compliant, Upper Band Edge, 2147.5 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM



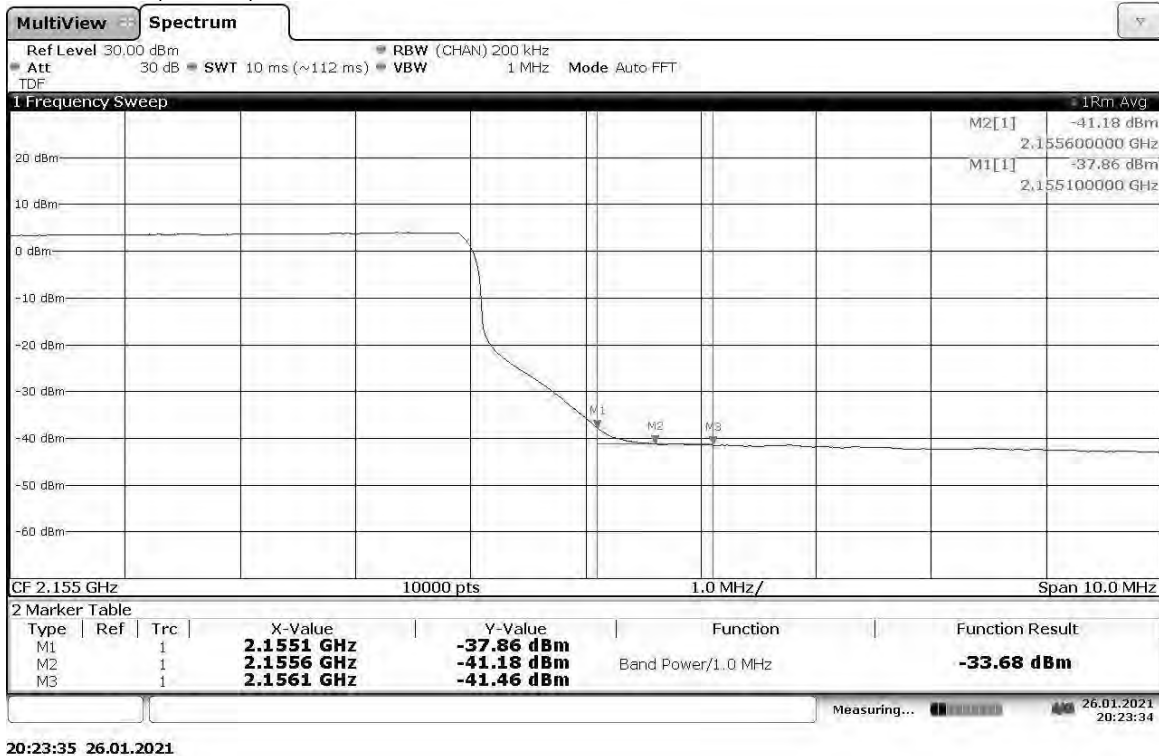
Band Edge Compliant, Upper Band Edge, 2147.5 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM



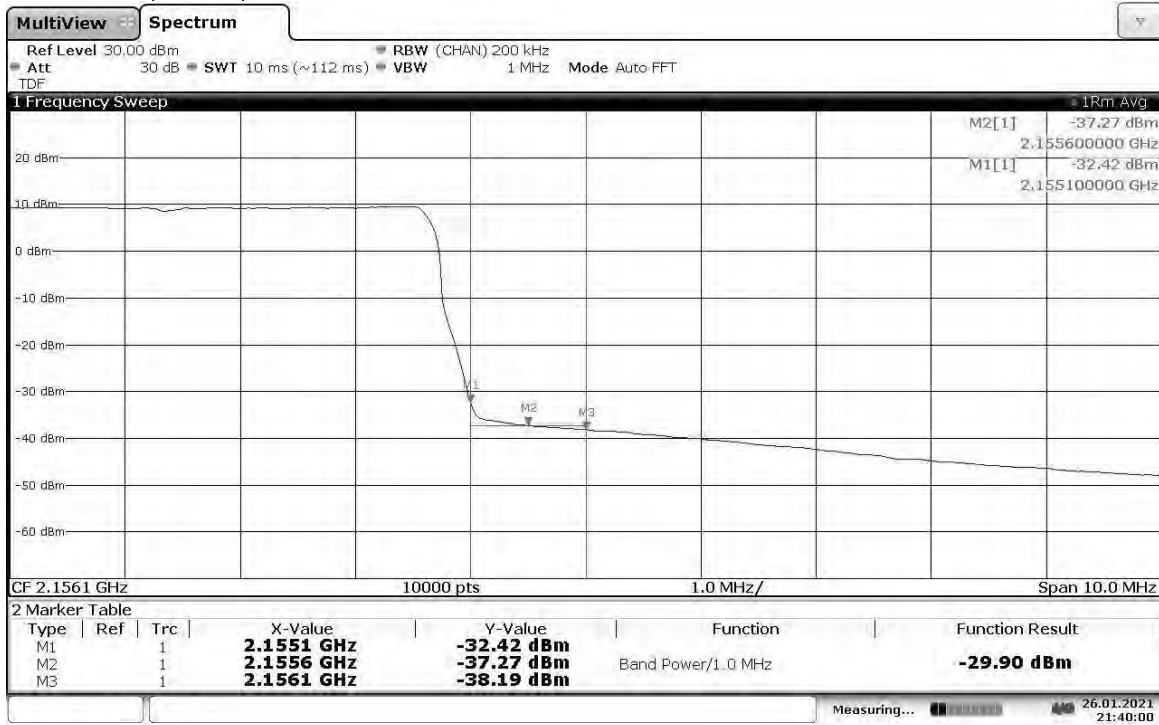
Band Edge Compliant, Upper Band Edge, 2145 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM



Band Edge Compliant, Upper Band Edge, 2145 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

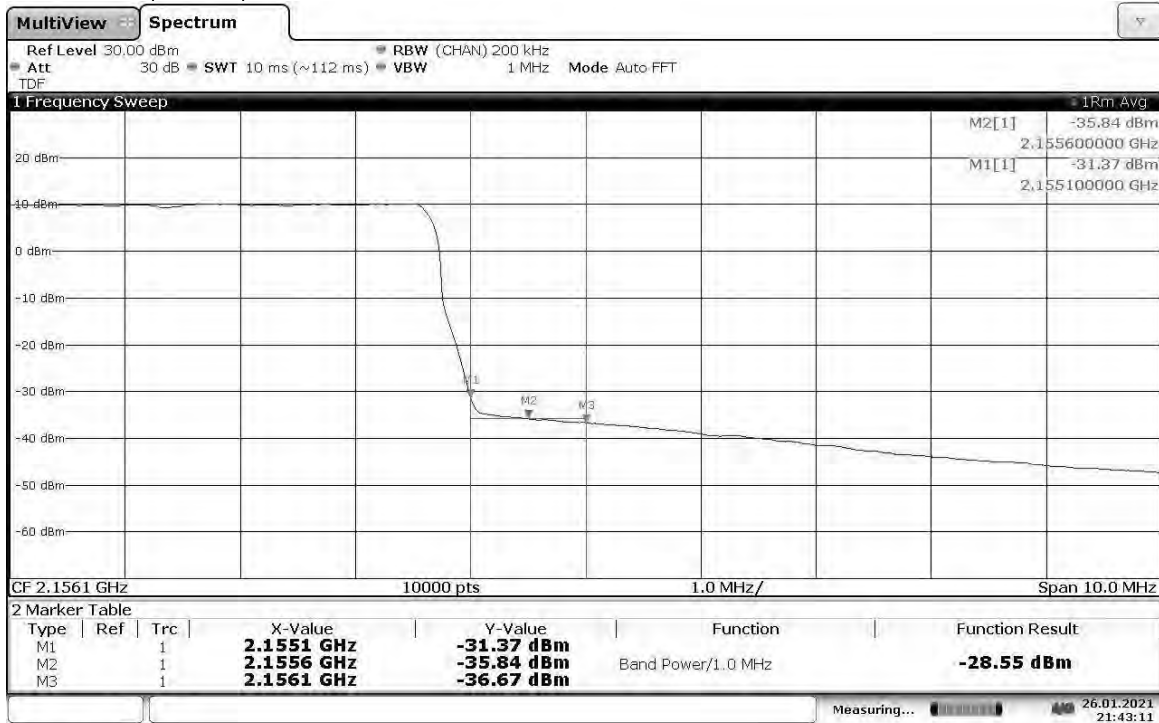


Band Edge Compliant, Upper Band Edge, 2152.5 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM



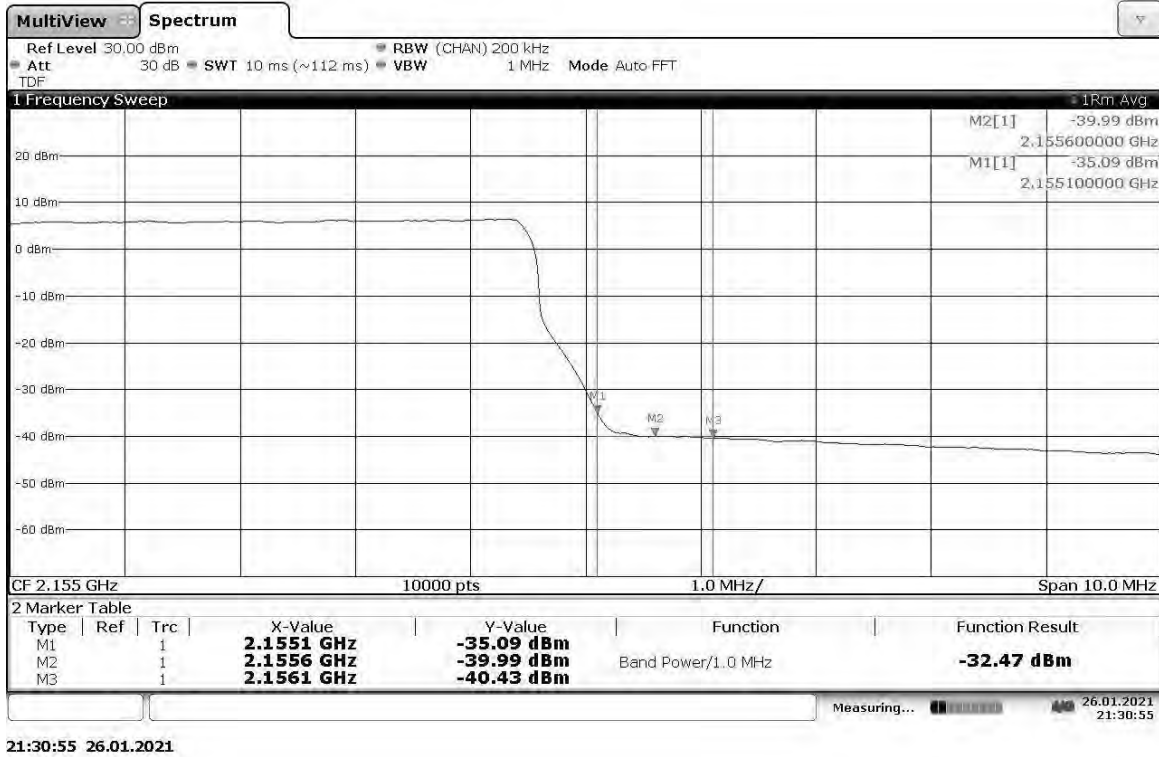
21:40:00 26.01.2021

Band Edge Compliant, Upper Band Edge, 2152.5 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

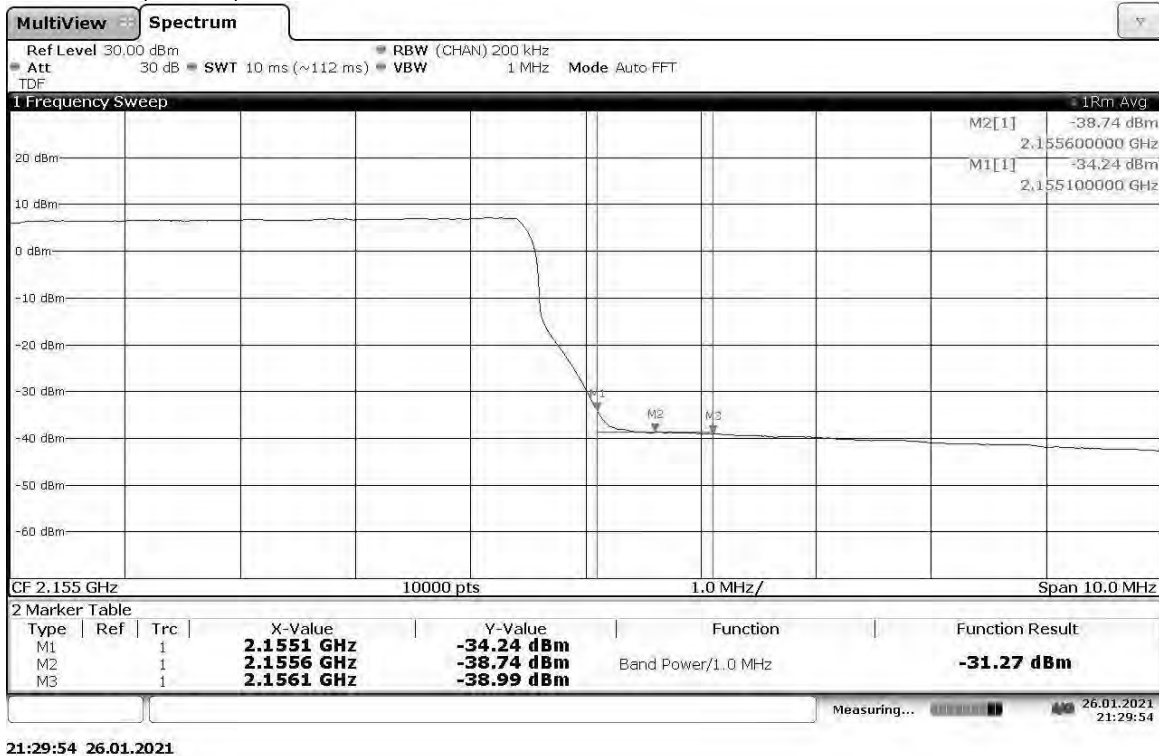


21:43:12 26.01.2021

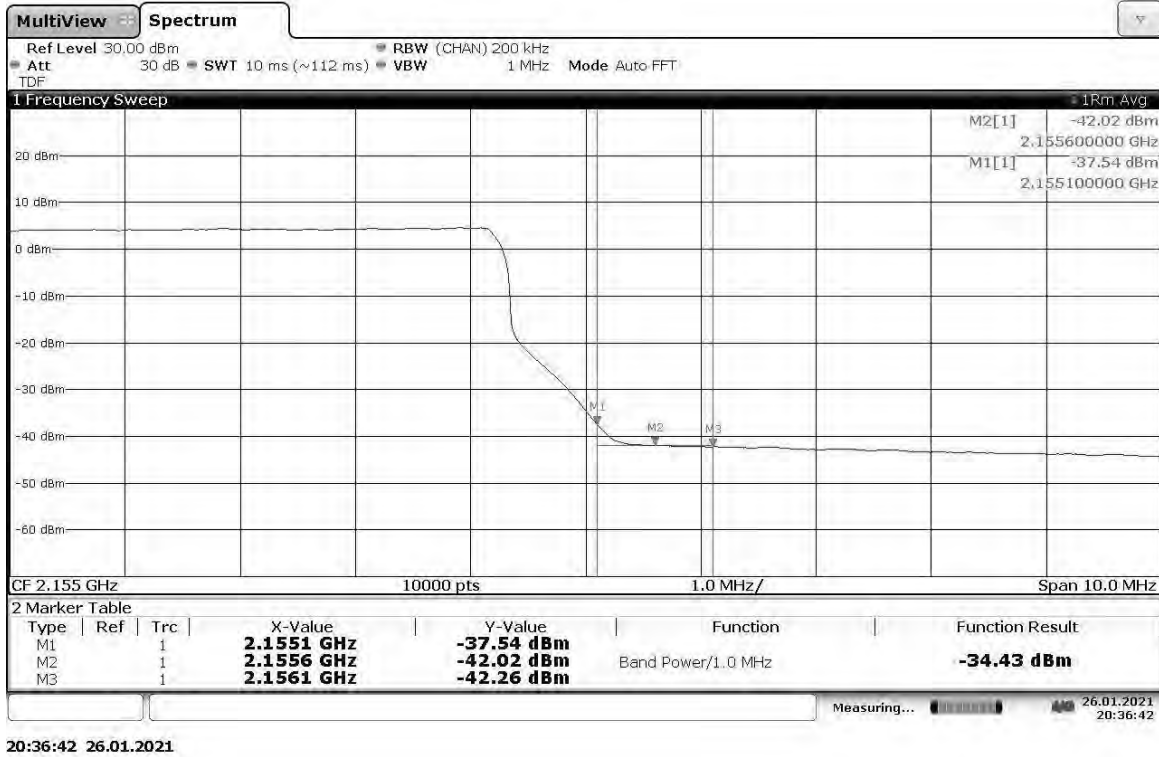
Band Edge Compliant, Upper Band Edge, 2150 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM



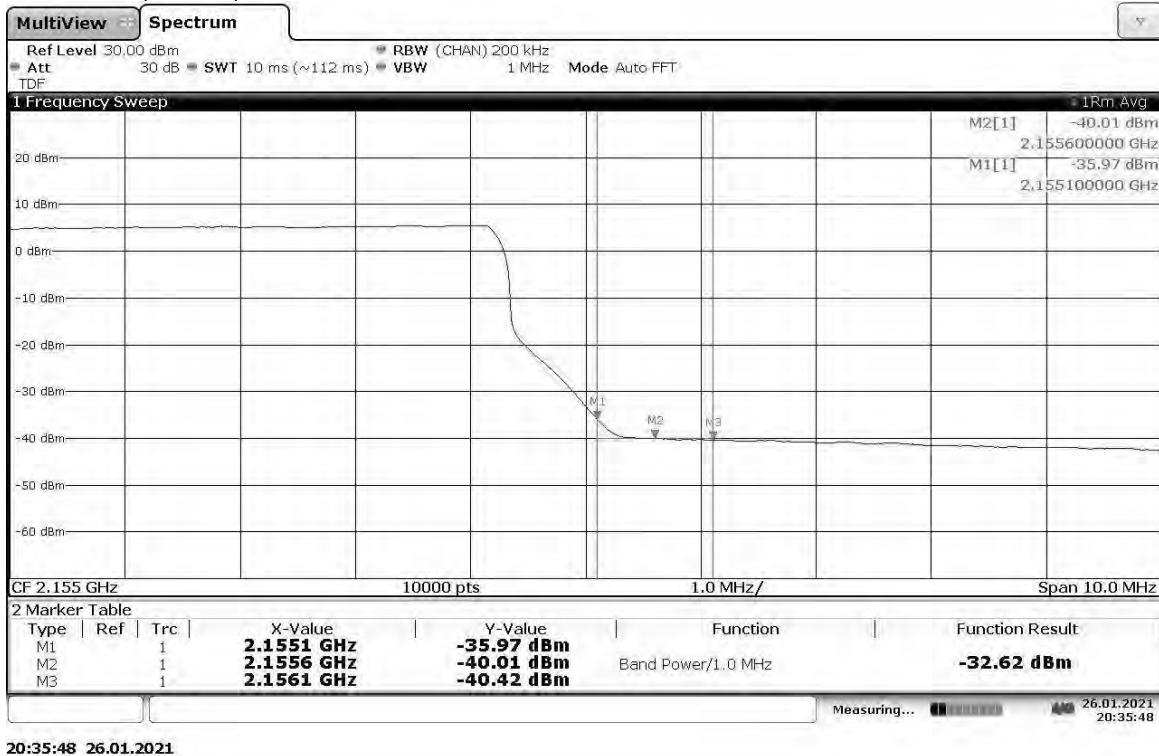
Band Edge Compliant, Upper Band Edge, 2150 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM



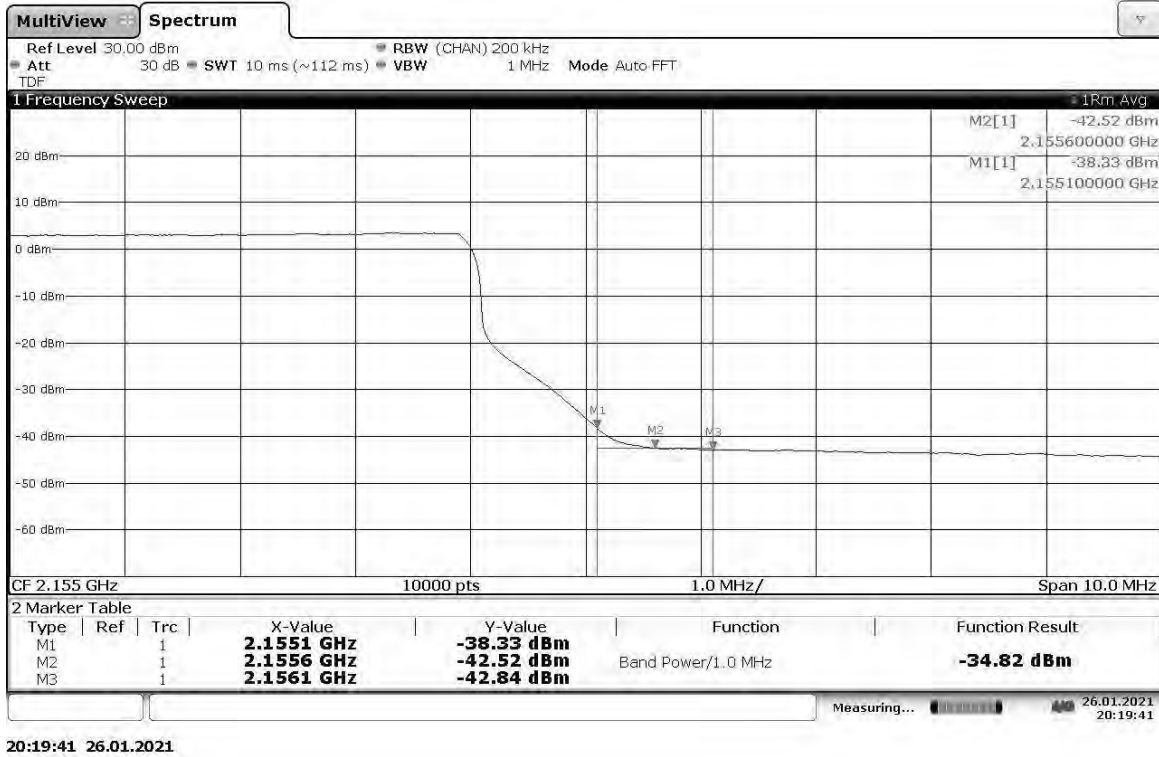
Band Edge Compliant, Upper Band Edge, 2147.5 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM



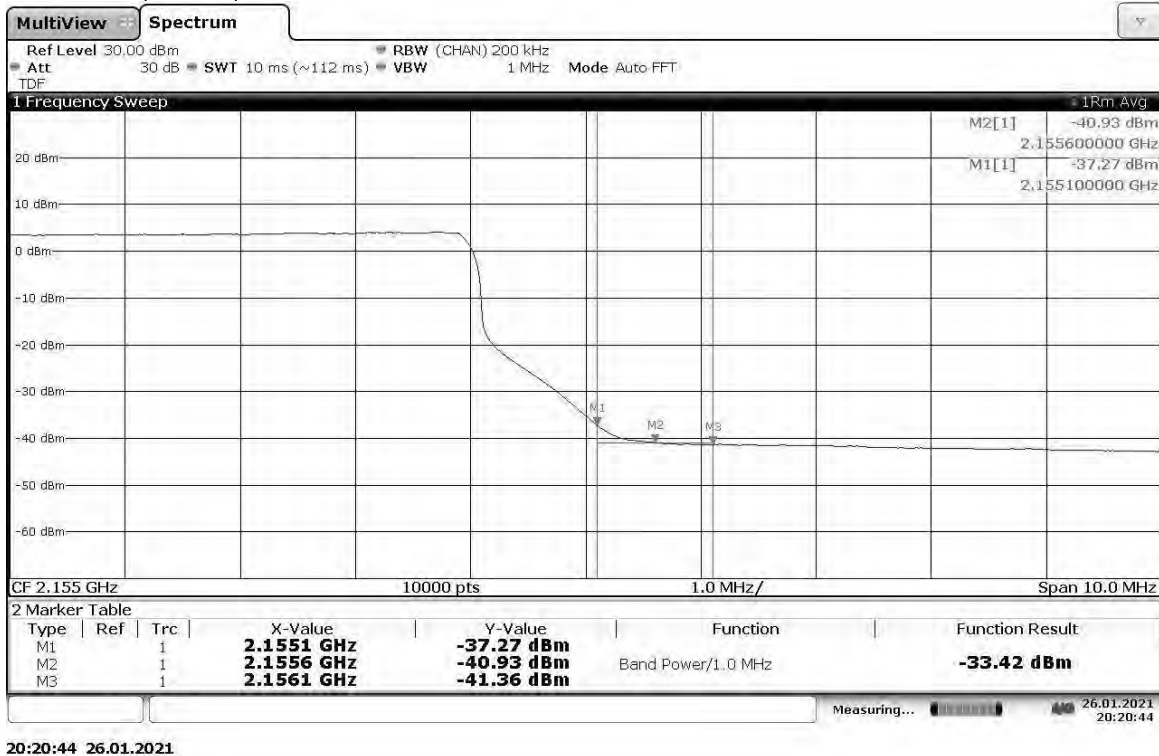
Band Edge Compliant, Upper Band Edge, 2147.5 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM



Band Edge Compliant, Upper Band Edge, 2145 MHz
Slot 3 (Band 4), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM



Band Edge Compliant, Upper Band Edge, 2145 MHz
Slot 3 (Band 4), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM



Test Personnel: Vathana Ven *VSV*
Supervising/Reviewing
Engineer:
(Where Applicable) N/A

Test Date: 01/19/2021
01/26/2021

Product Standard: FCC Part 27
Input Voltage: 48 VDC (POE)

Limit Applied: See report section 9.3

Pretest Verification w/
Ambient Signals or
BB Source: N/A

Ambient Temperature: 22, 23°C

Relative Humidity: 21, 15%

Atmospheric Pressure: 1004, 1013mbars

Deviations, Additions, or Exclusions: None

10 Transmitter spurious emissions

10.1 Method

Tests are performed in accordance with ANSI C63.26, CFR47 FCC Parts 2.1051, 2.1053, 2.1057, and 27.

TEST SITE: EMC Lab & 10m ALSE

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

| Measurement | Frequency Range | Expanded Uncertainty (k=2) | U _{cispr} |
|-------------------------|-----------------|----------------------------|--------------------|
| Radiated Emissions, 10m | 30-1000 MHz | 4.6dB | 6.3 dB |
| Radiated Emissions, 3m | 30-1000 MHz | 5.3 dB | 6.3 dB |
| Radiated Emissions, 3m | 1-6 GHz | 4.5 dB | 5.2 dB |
| Radiated Emissions, 3m | 6-15 GHz | 5.2 dB | 5.5 dB |
| Radiated Emissions, 3m | 15-18 GHz | 5.0 dB | 5.5 dB |
| Radiated Emissions, 3m | 18-40 GHz | 5.0 dB | 5.5 dB |

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μ V
NF = Net Reading in dB μ V

Example:

$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$
 $UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$

Alternately, when BAT-EMC Emission Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". The "Correction" includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the "Level" column.

10.2 Test Equipment Used:

Test equipment used for antenna port conducted test

| Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due |
|-----------------|------------------------------------|--------------------|---------|-----------------|------------|------------|
| CEN001' | DC-40GHz attenuator 20dB | Centric RF | C411-20 | CEN001 | 01/22/2021 | 01/22/2022 |
| CBLHF2012-2M-1' | 2m 9kHz-40GHz Coaxial Cable - SET1 | Huber & Suhner | SF102 | 252675001 | 02/17/2020 | 02/17/2021 |
| ROS005-1' | Signal and Spectrum Analyzer | Rohde and Schwartz | FSW43 | 100646 | 10/27/2020 | 10/27/2021 |
| DAV005' | Weather Station | Davis | 6250 | MS19121808 3 | 02/05/2020 | 02/05/2021 |

Software Utilized:

| Name | Manufacturer | Version |
|------|--------------|---------|
| None | -- | -- |

Test equipment used for Radiated emissions

| Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due |
|-----------------|---|-------------------------|--------------------------|-----------------|------------|------------|
| DAV007' | Weather Station Vantage Vue | Davis | 6250 | MS19121200 3 | 03/12/2020 | 03/12/2021 |
| 145145' | Broadband Hybrid Antenna 30 MHz - 3 GHz | Sunol Sciences Corp. | JB3 | A122313 | 05/07/2020 | 05/07/2021 |
| PRE11' | 50dB gain pre-amp | Pasternack | PRE11 | PRE11 | 09/21/2020 | 09/21/2021 |
| ETS002' | 1-18GHz DRG Horn Antenna | ETS Lindgren | 3117 | 00143260 | 01/21/2020 | 01/21/2021 |
| CBLHF2012-2M-1' | 2m 9kHz-40GHz Coaxial Cable - SET1 | Sucoflex (Huber Suhner) | SF102 | 252675001 | 02/17/2020 | 02/17/2021 |
| PRE9' | PREAMPLIFIER 1- 40 GHz | MITEQ | NSP4000-NFG | 1260417 | 09/22/2020 | 09/22/2021 |
| 145-420' | Receiver to floor cable | Utiflex | UFB311A-2-0591- 70070 | 145-420 | 02/17/2020 | 02/17/2021 |
| 145108' | Receiver | Rhode & Schwarz | ESIB40 | 100209 | 06/08/2020 | 06/08/2021 |
| Pre10' | Pre-amplifier | ITS | Pre10 | Pre10 | 02/28/2020 | 02/28/2021 |
| 145-422' | 10Amp Pre-amp to under floor | Utiflex | UFB311A-0-2756- 70070 | 145-422 | 02/17/2020 | 02/17/2021 |
| HS002' | DC-18GHz cable 1.5M long | Huber & Suhner | SucoFlex 106A | HS002 | 11/19/2020 | 11/19/2021 |
| 145-423' | Pre-amp to under floor | Huber and Suhner | SF106A/11N/11N/1.5 m | 145-423 | 03/27/2020 | 03/27/2021 |
| 145-424' | 9kHz to 40GHz Cable | Huber and Suhner | Sucoflex | 145-424 | 03/27/2020 | 03/27/2021 |
| 145-414' | 3m Track A cables | Huber + Suhner | 3m Track A cables | multiple | 06/25/2020 | 06/25/2021 |
| BONN001' | 1-18GHz low noise pre-amp | Bonn | BLMA 0118-M | 1811749 | 07/11/2020 | 07/11/2021 |
| ETS004' | 18-40GHz horn antenna | ets004 | 3116C | 00218579 | 01/28/2020 | 01/28/2021 |

Software Utilized:

| Name | Manufacturer | Version |
|---------|--------------|-----------|
| BAT-EMC | Nexio | 3.18.0.16 |

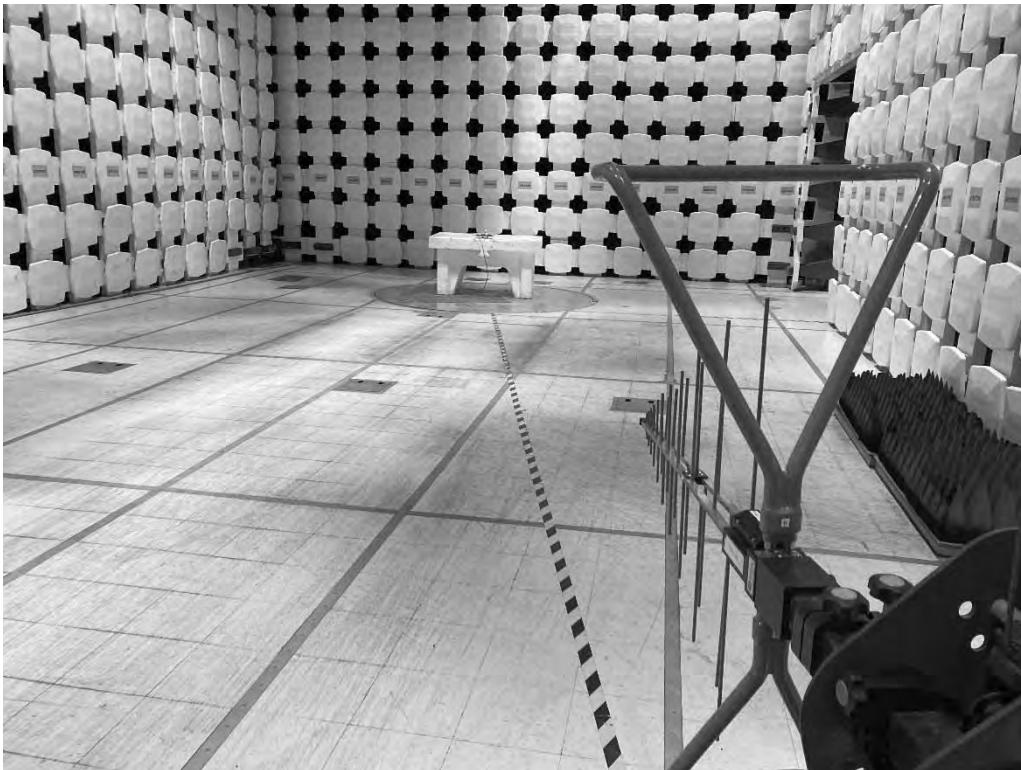
10.3 Results:

The sample tested was found to Comply. Where a resolution bandwidth of less than 1 MHz was used (in some cases, 120 kHz or 100 kHz), more than 10 dB margin to the limit is shown. Since the two antenna ports transmit uncorrelated data streams and use cross polarized antennas, no adjustments to the test results were applied due to MIMO operation, per KDB 662911.

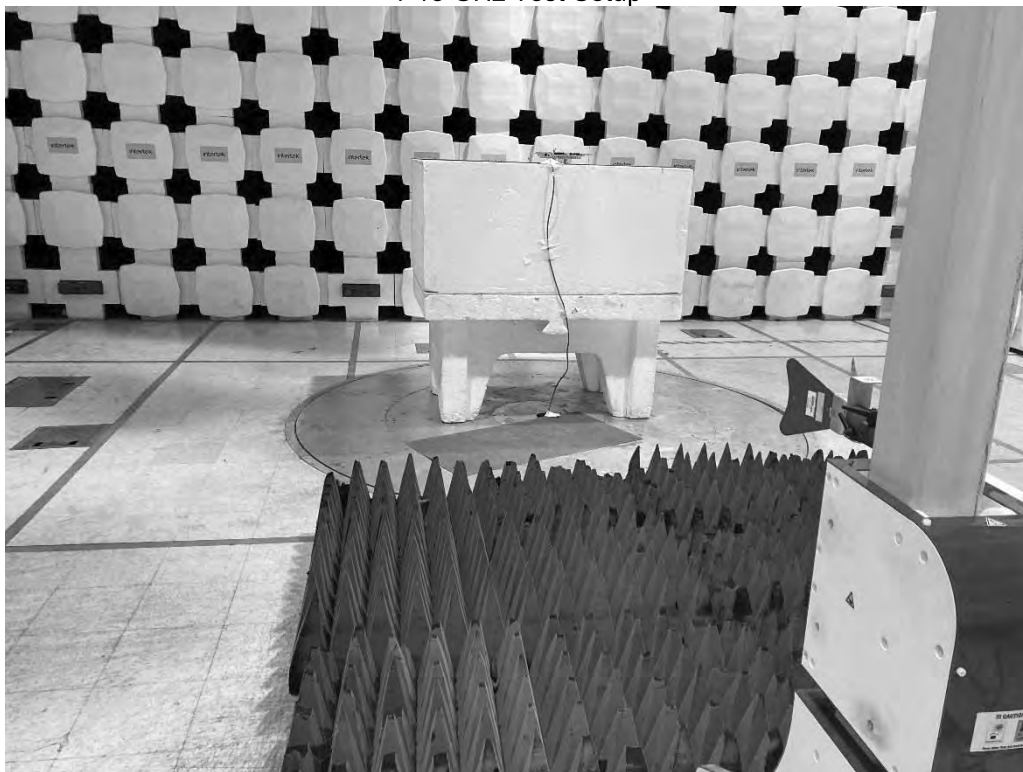
§27.53(h): The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

10.4 Setup Photographs:

30-1000 MHz Test Setup



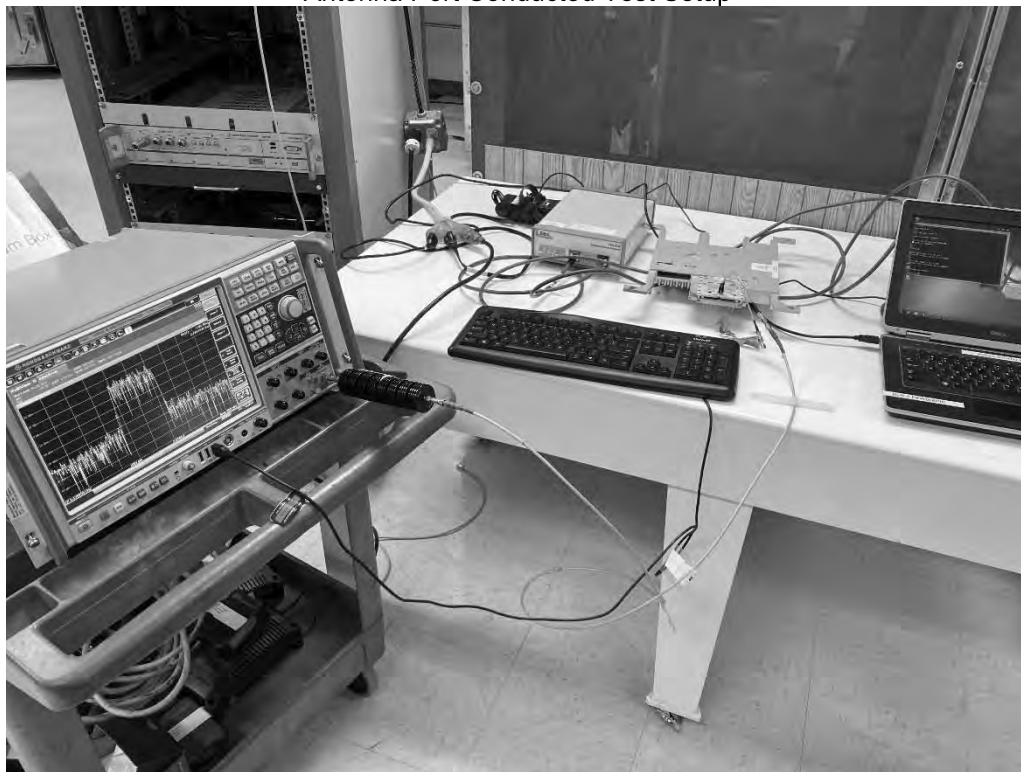
1-18 GHz Test Setup



18-22 GHz

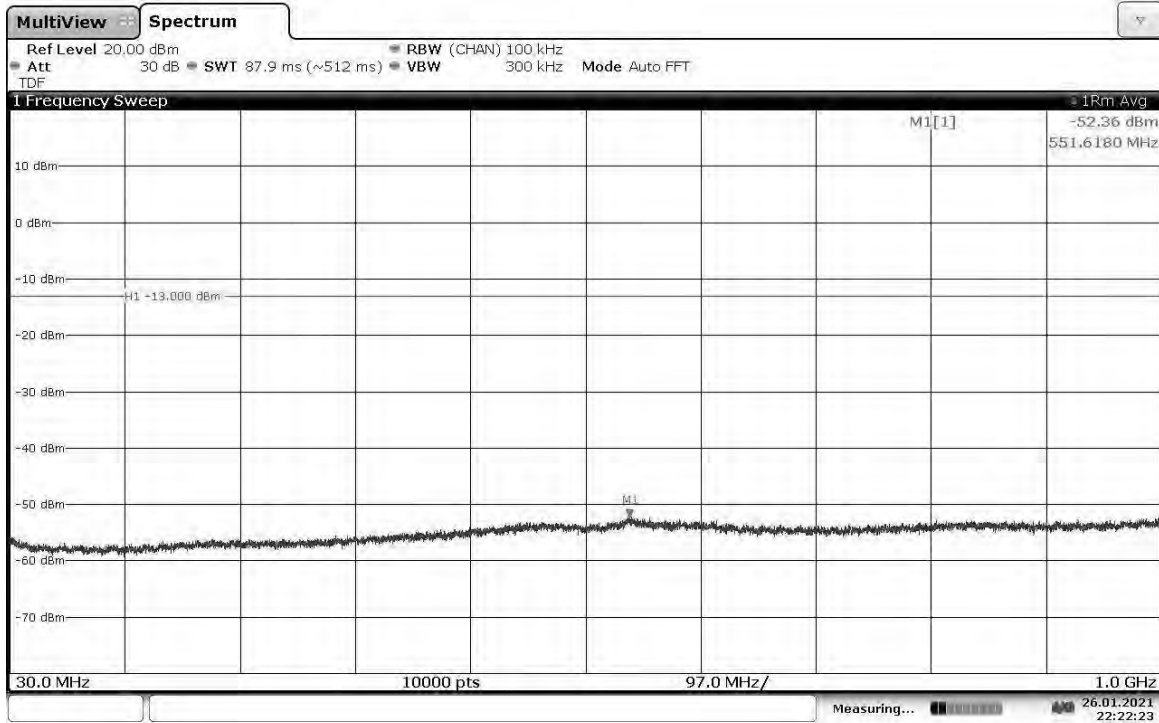


Antenna Port Conducted Test Setup



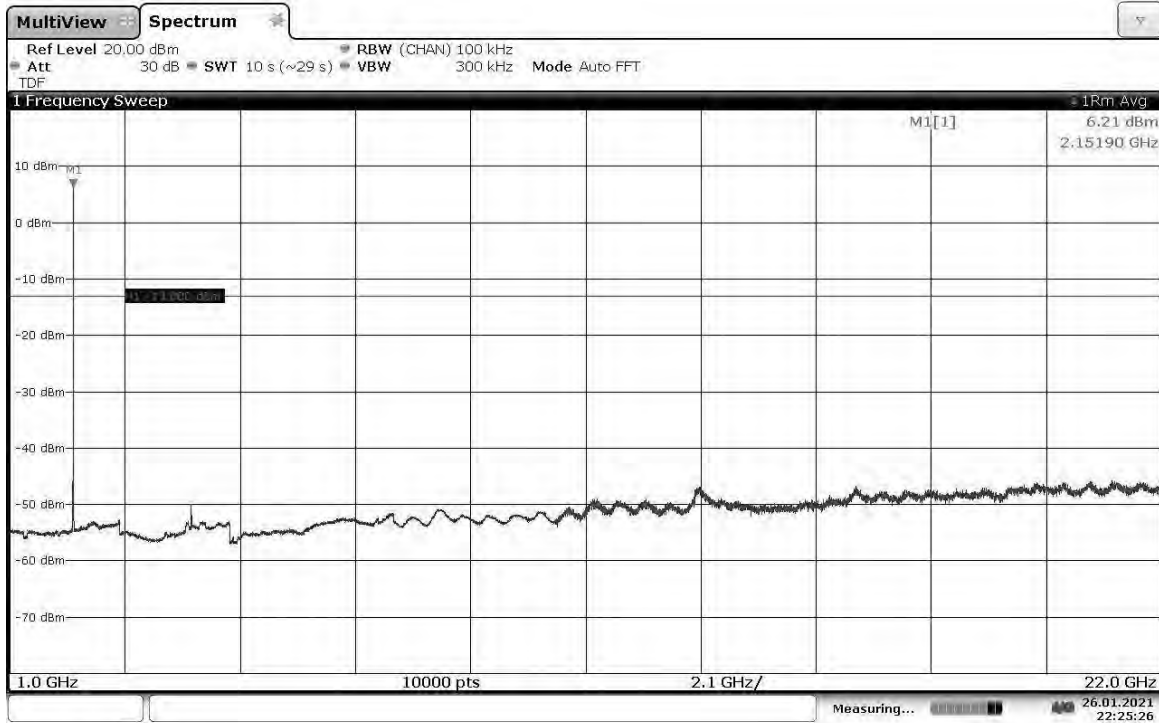
10.5 Plots/Data:

Slot 3 (Band 4), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel
30MHz-1GHz



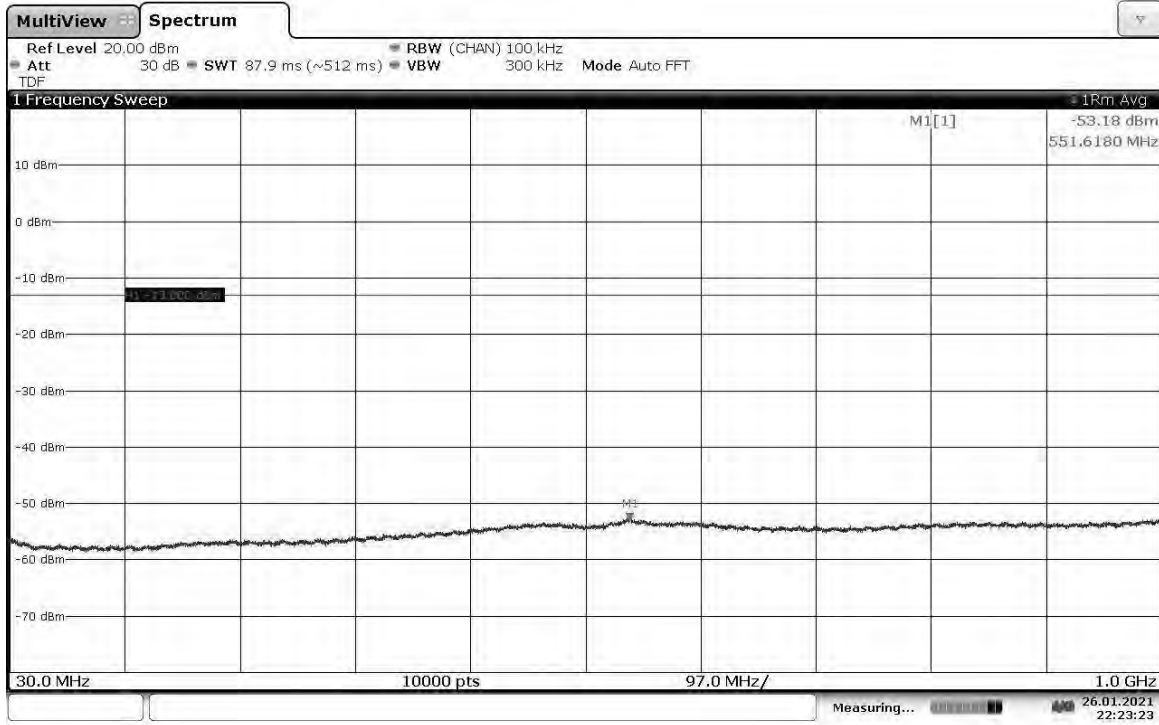
22:22:23 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel
1-22GHz



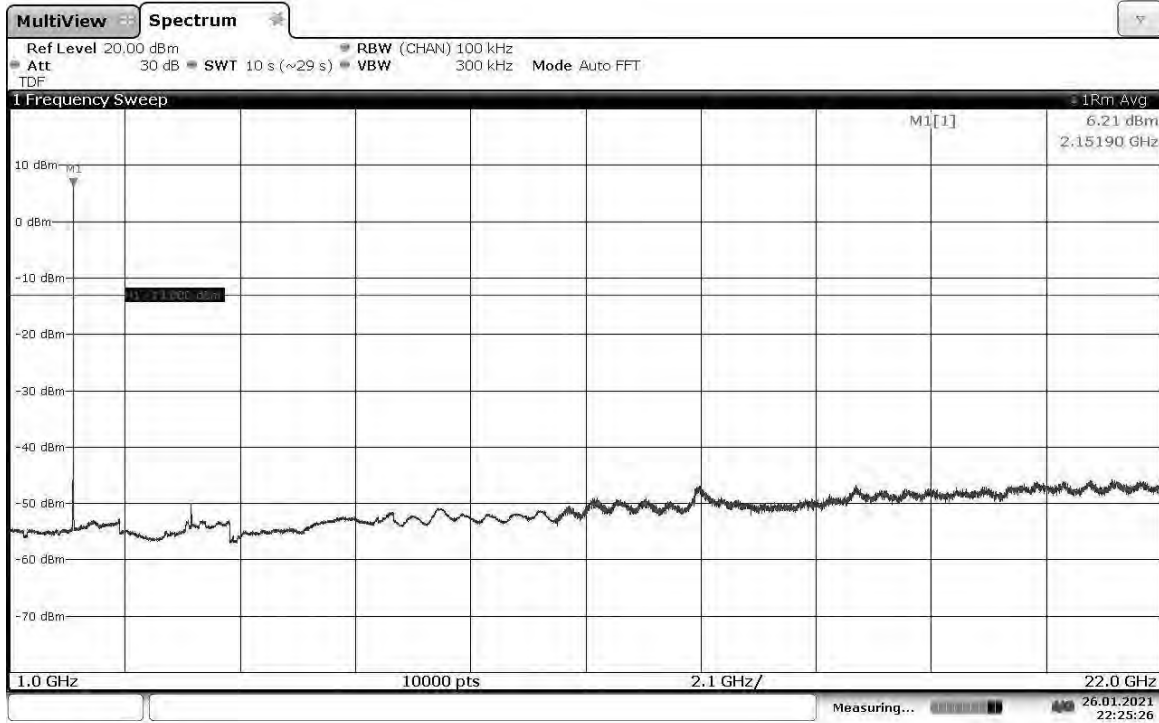
22:25:26 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel
30MHz-1GHz



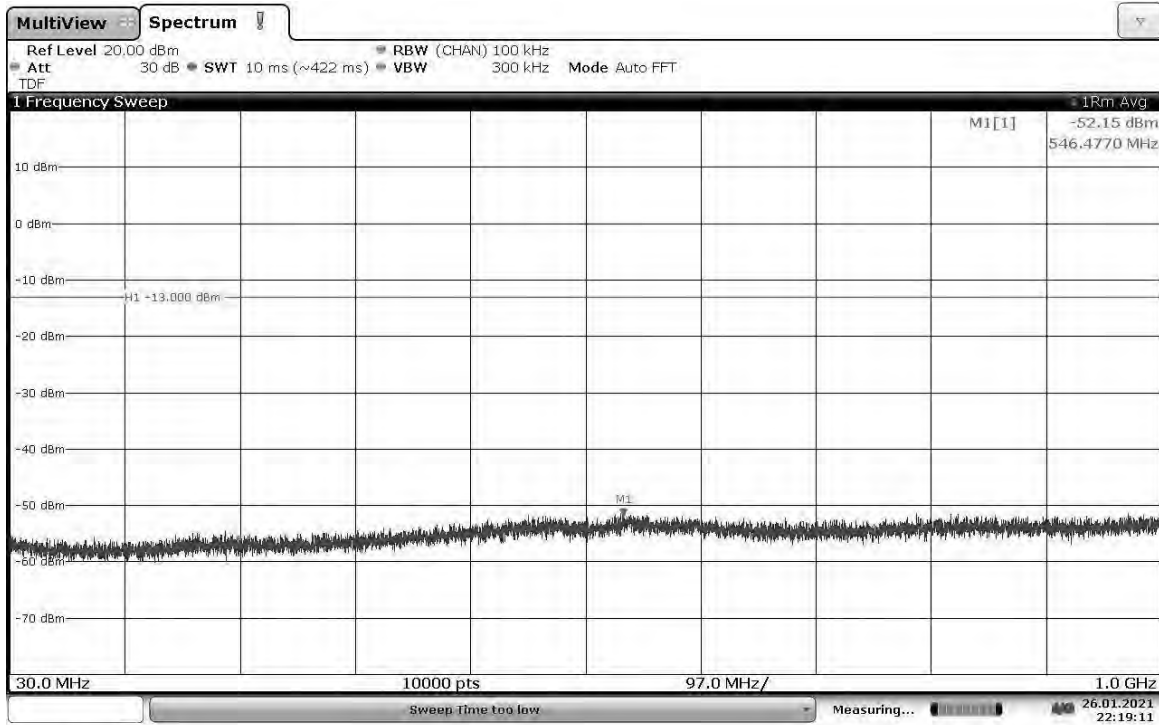
22:23:24 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel
1-22GHz



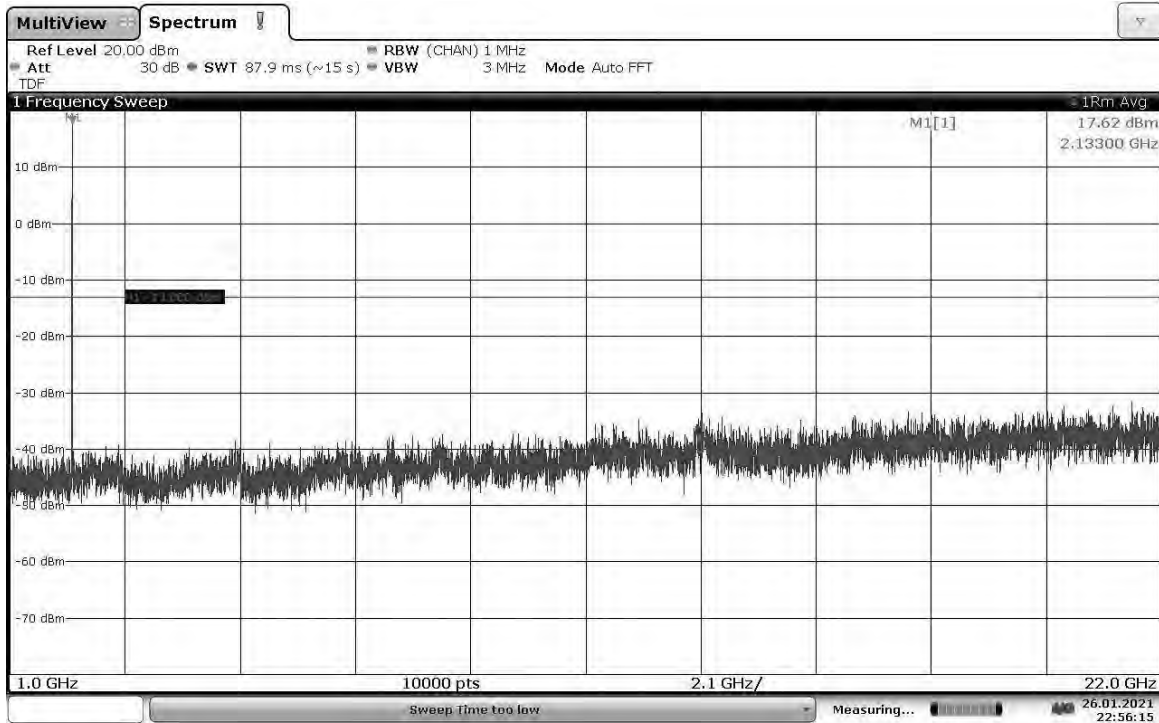
22:25:26 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel
30MHz-1GHz



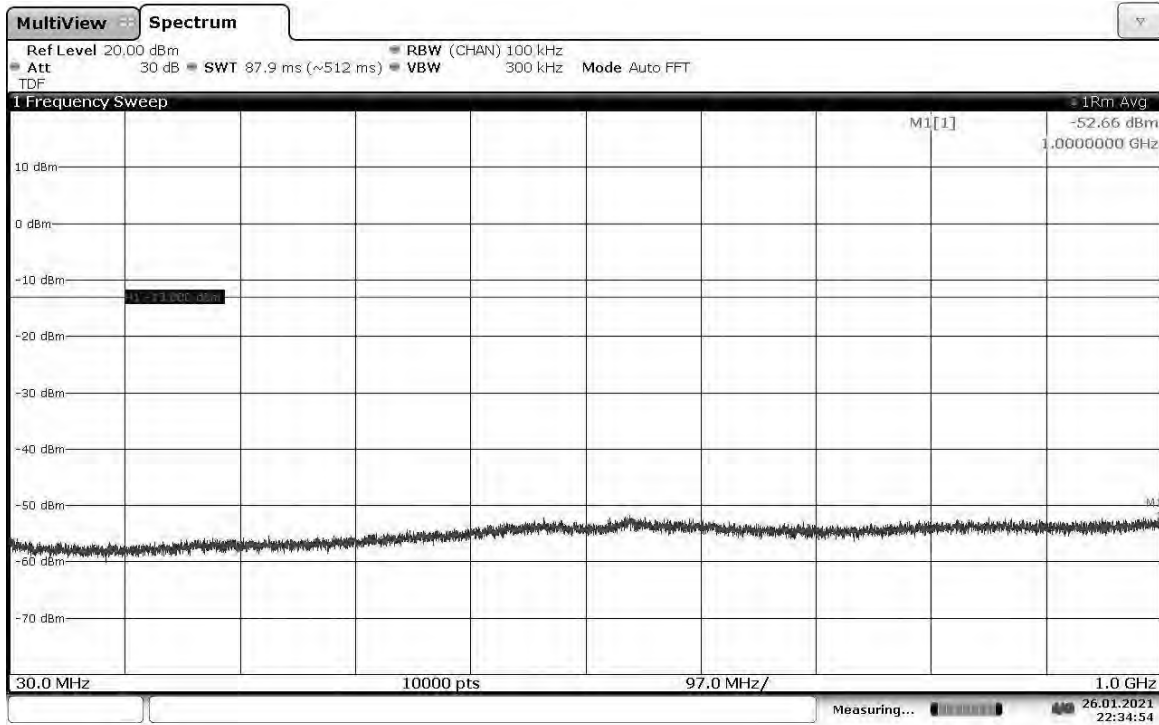
22:19:11 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, Mid Channel
1-22GHz



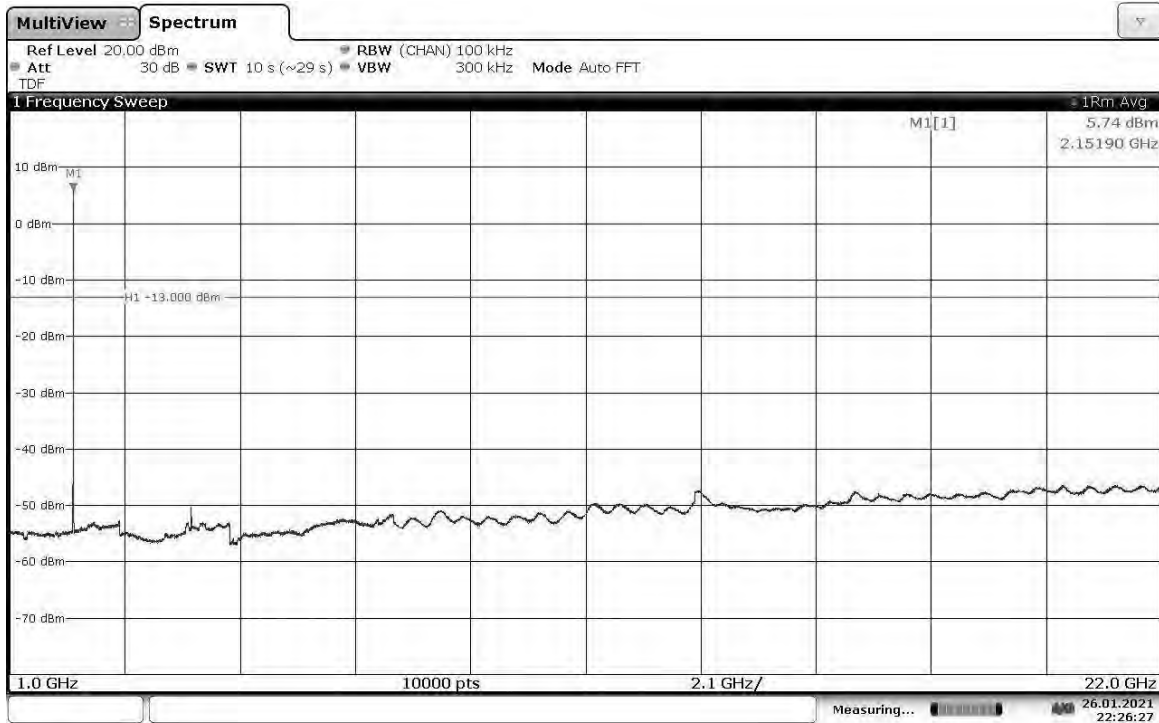
22:56:15 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel
30MHz-1GHz



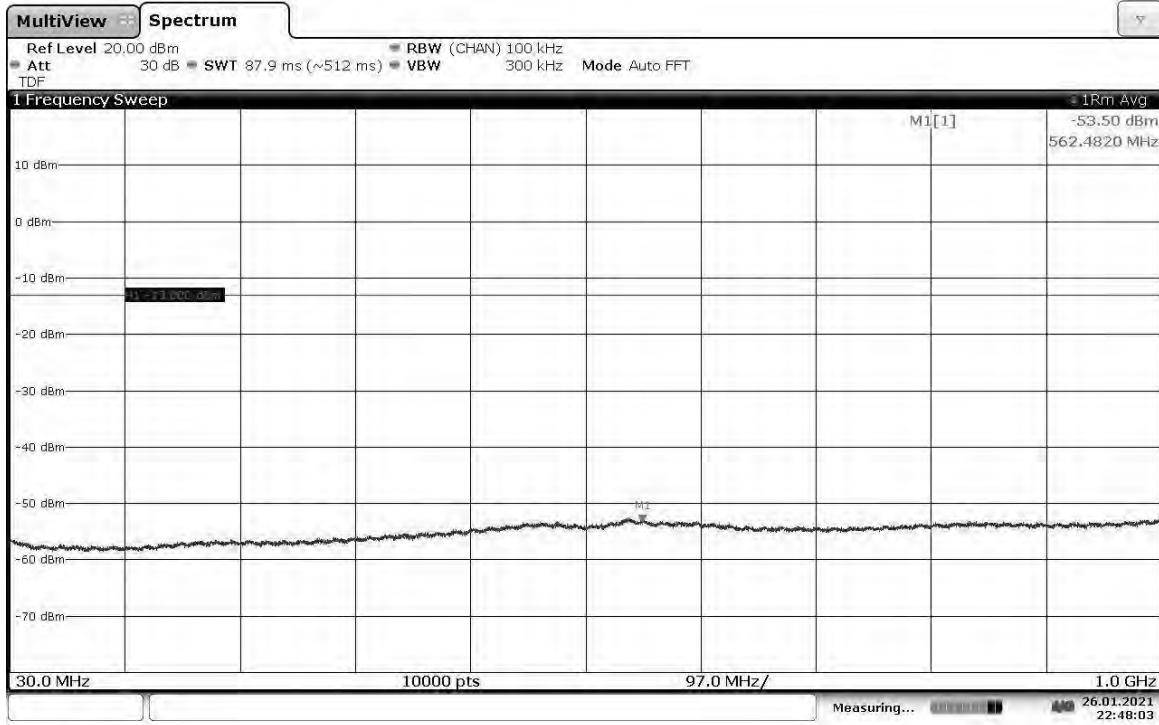
22:34:54 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM1.1-QPSK, Bandwidth: 5 MHz, High Channel
1-22GHz



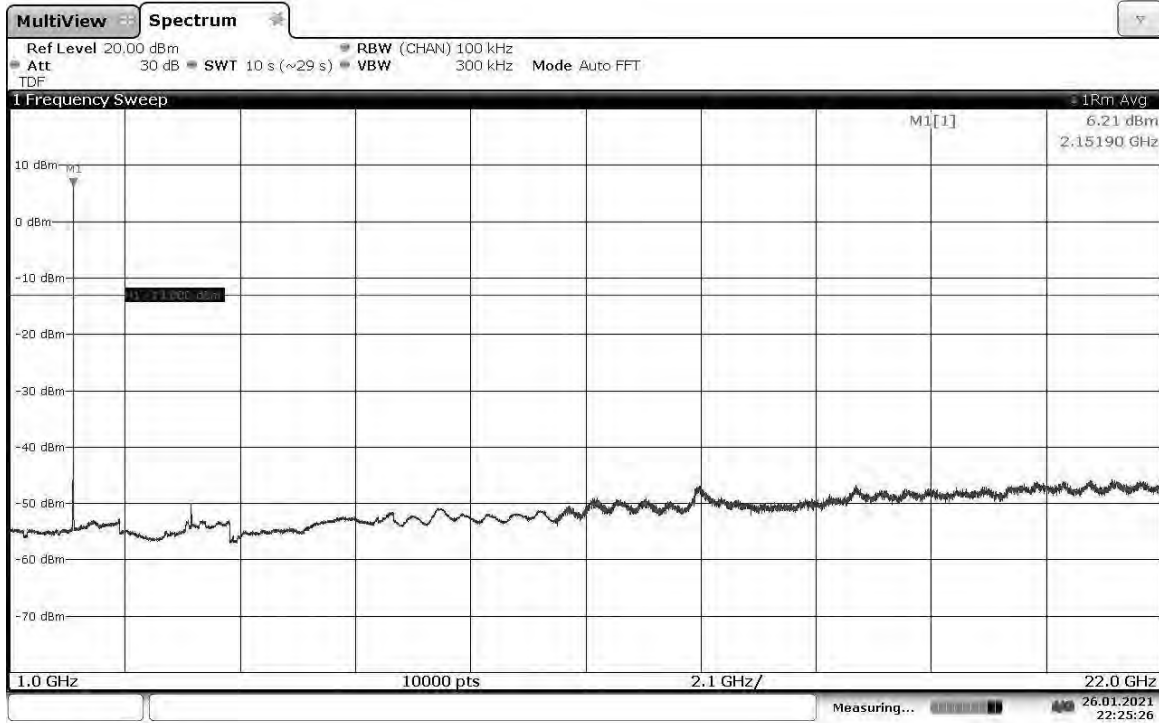
22:26:28 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Mid Channel
30MHz-1GHz



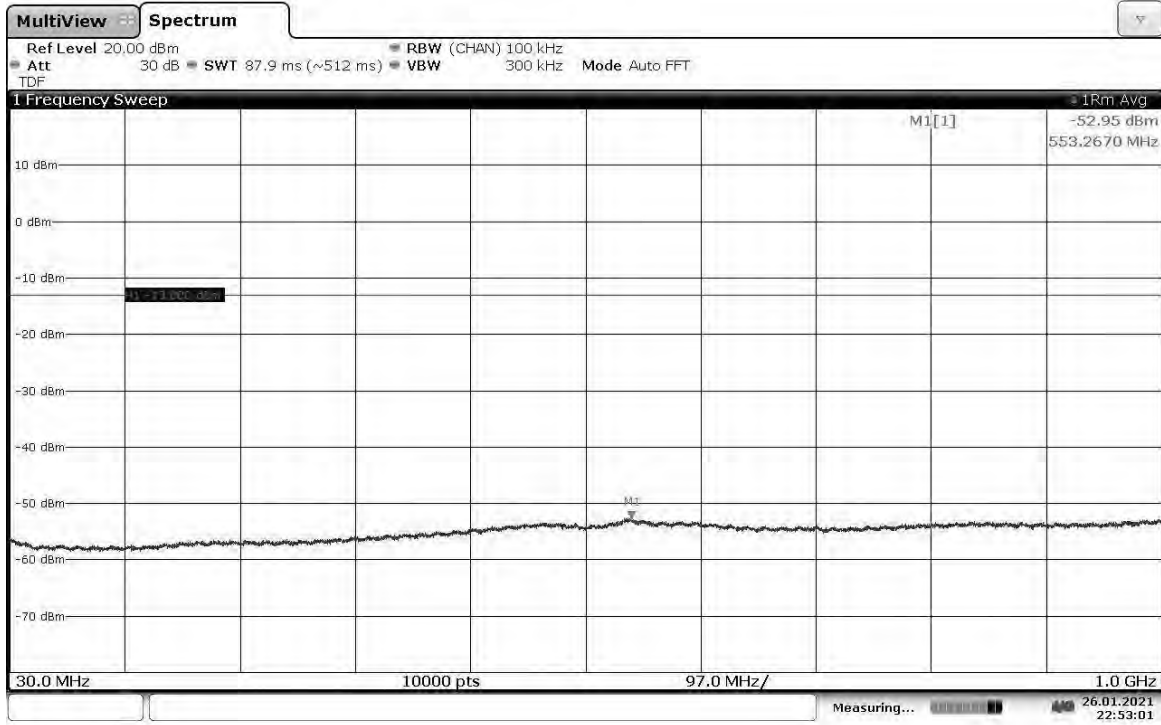
22:48:03 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Mid Channel
1-22GHz



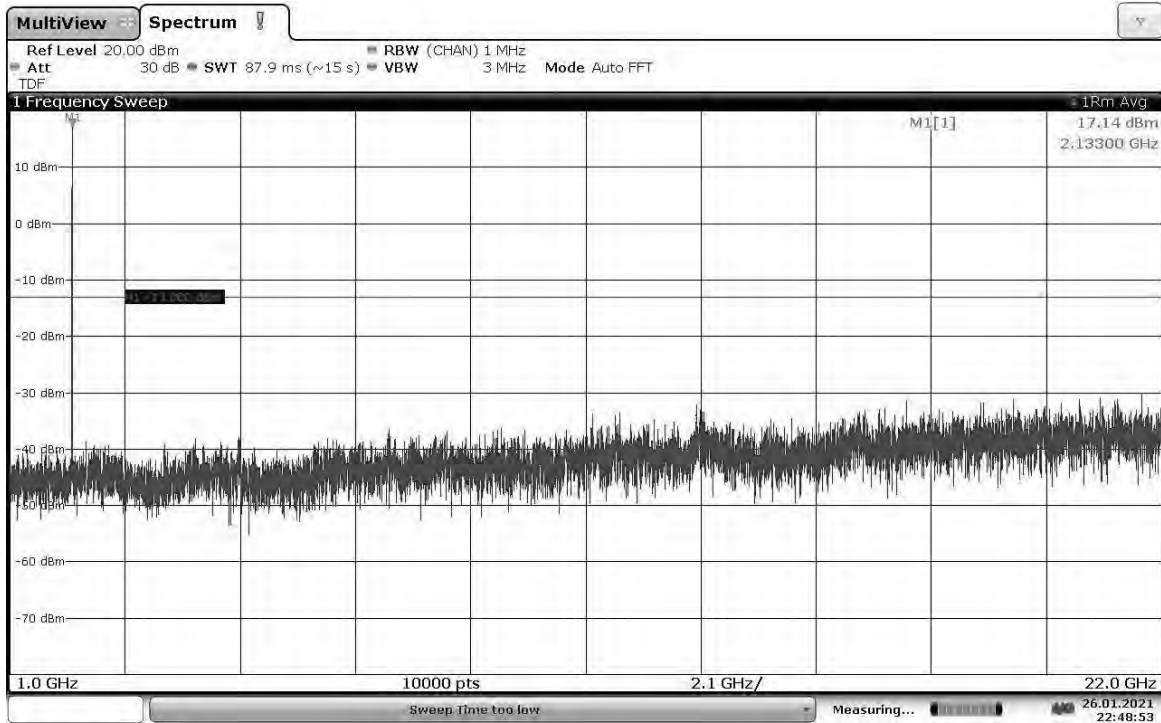
22:25:26 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, High Channel
30MHz-1GHz



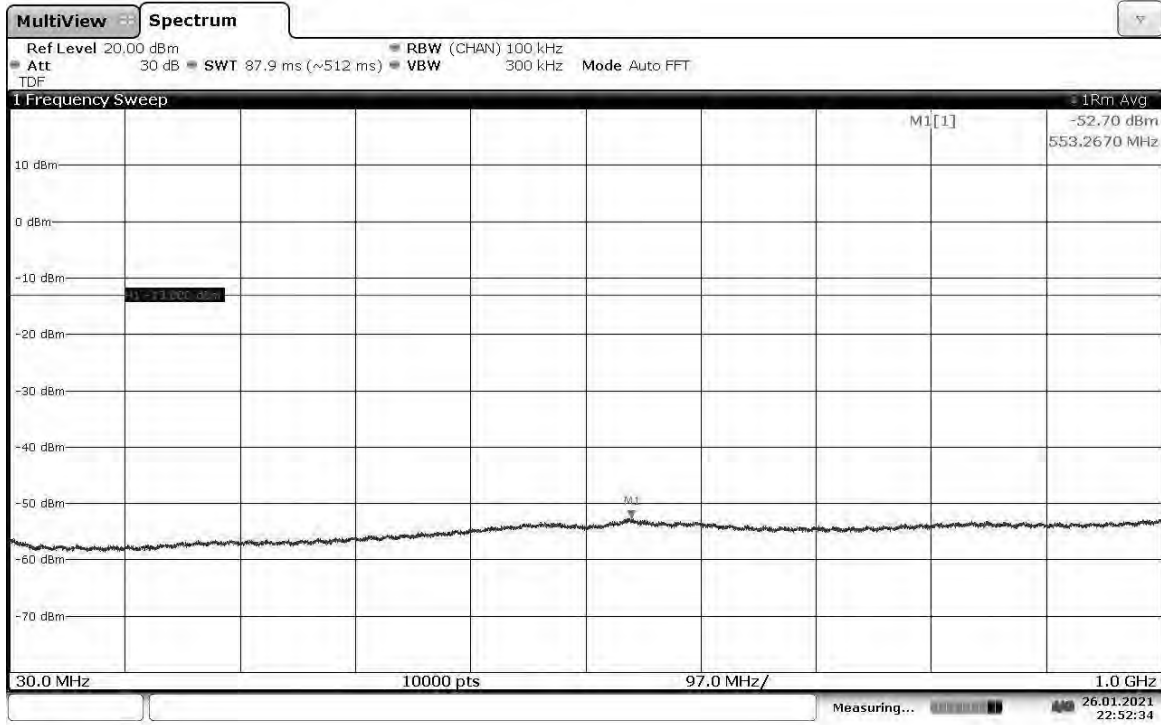
22:53:01 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, High Channel
1-22GHz



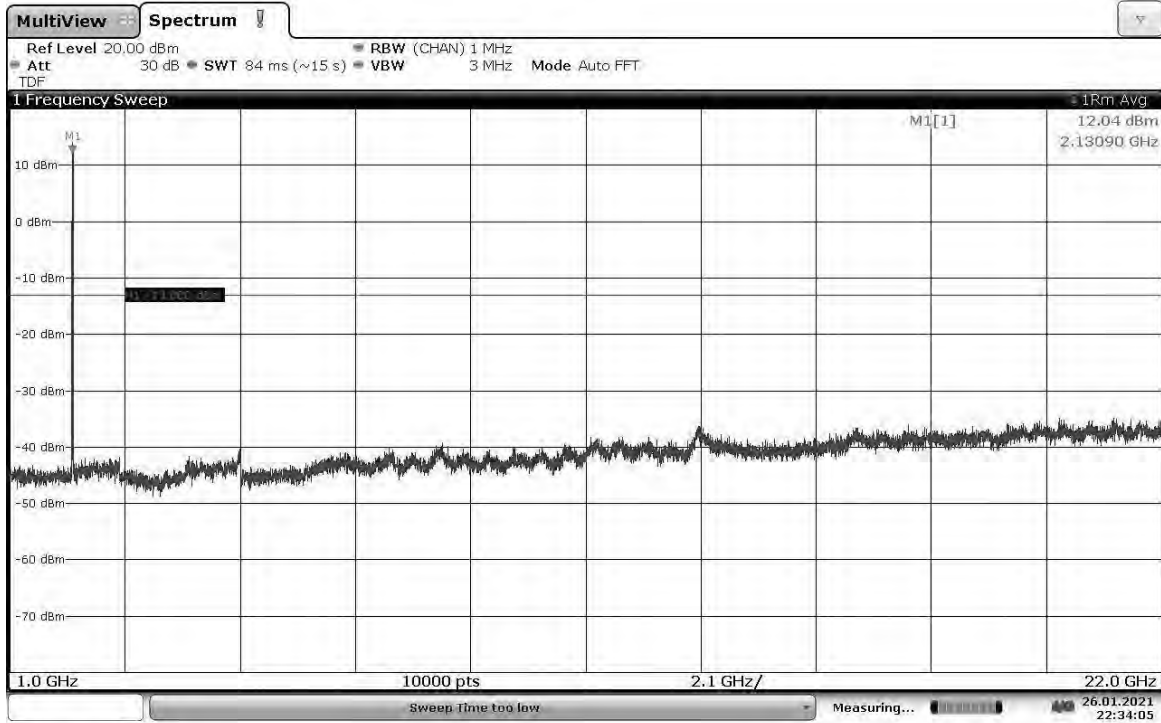
22:48:53 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Mid Channel
30MHz-1GHz



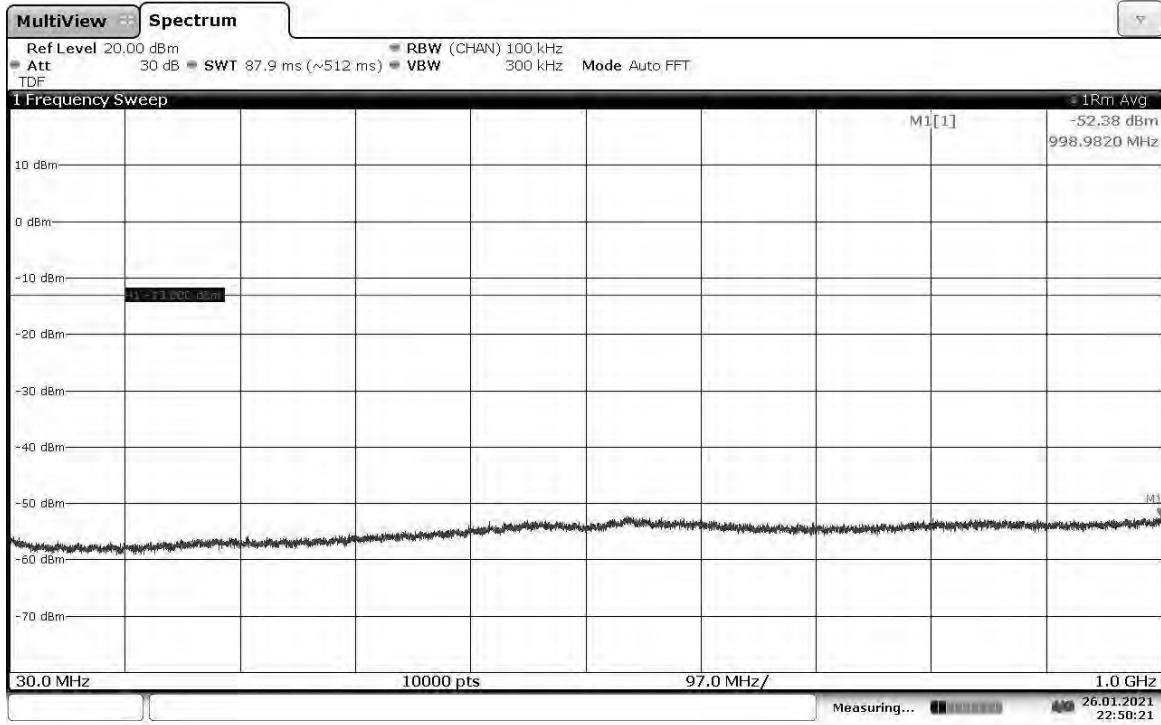
22:52:34 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, Mid Channel
1-22GHz



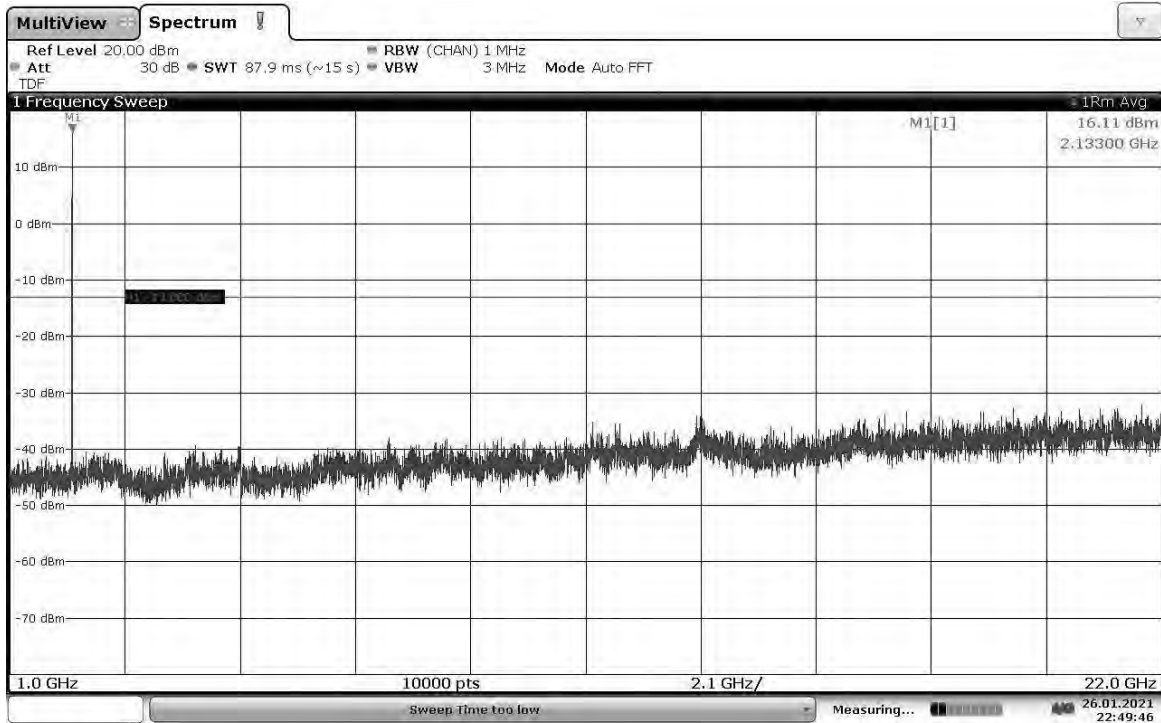
22:34:05 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, High Channel
30MHz-1GHz



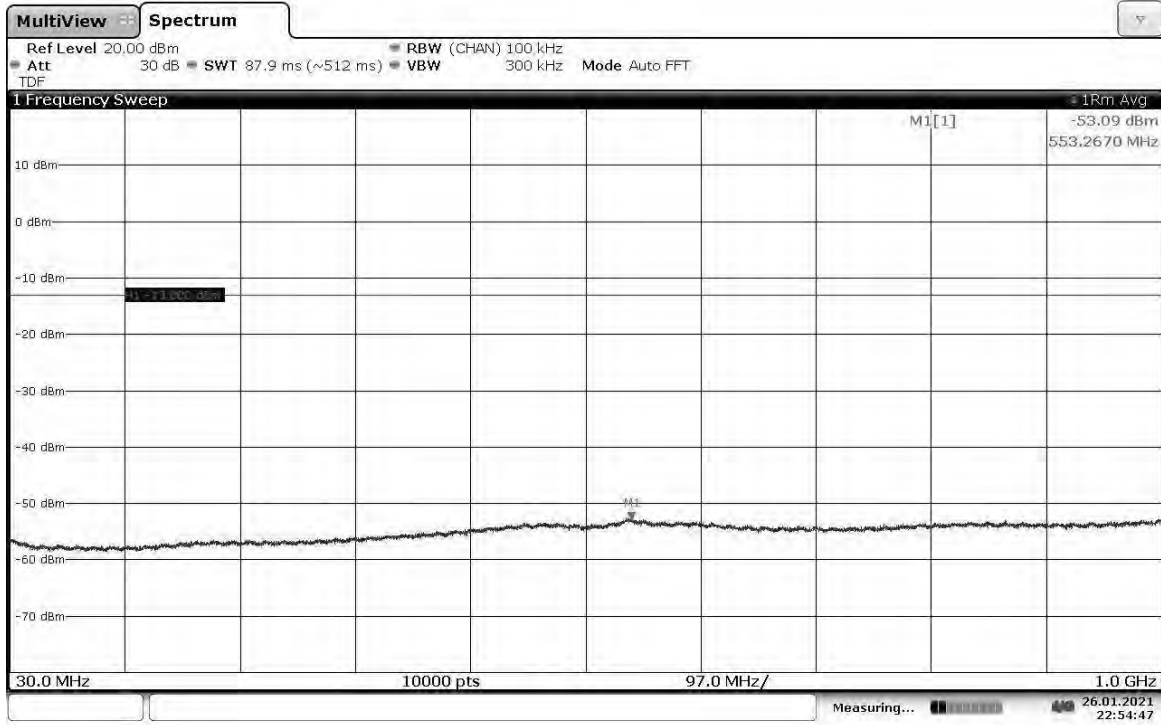
22:50:22 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.2-16QAM, Bandwidth: 5 MHz, High Channel
1-22GHz



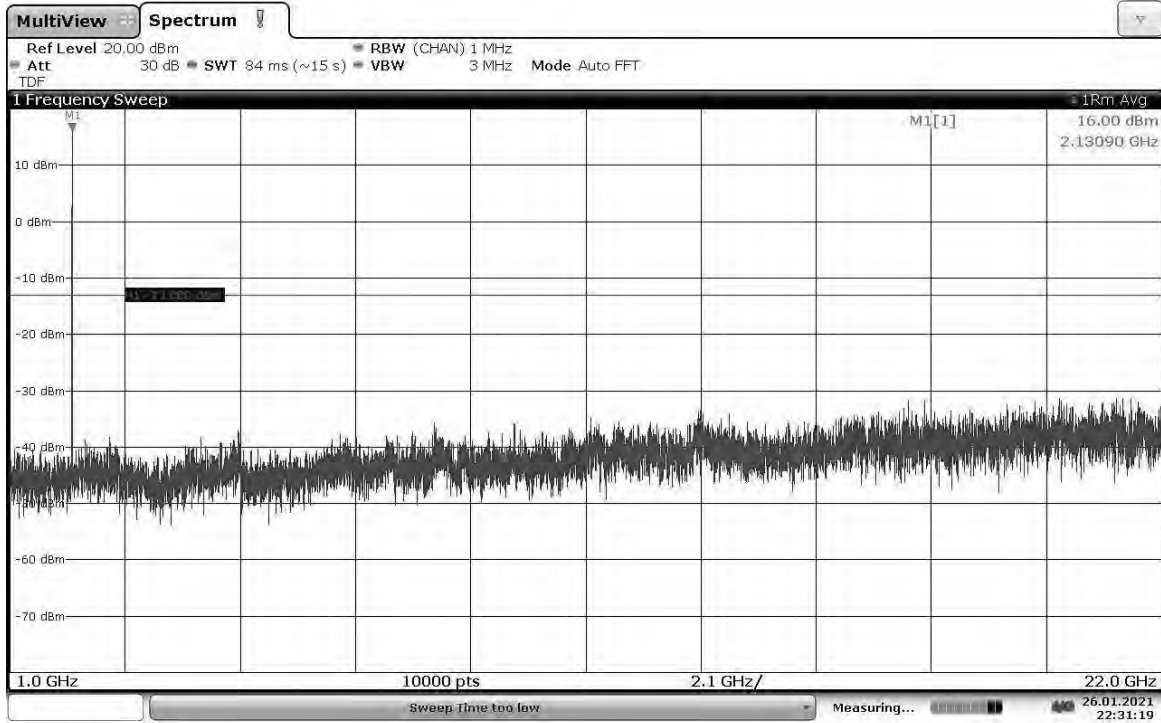
22:49:46 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel
30MHz-1GHz



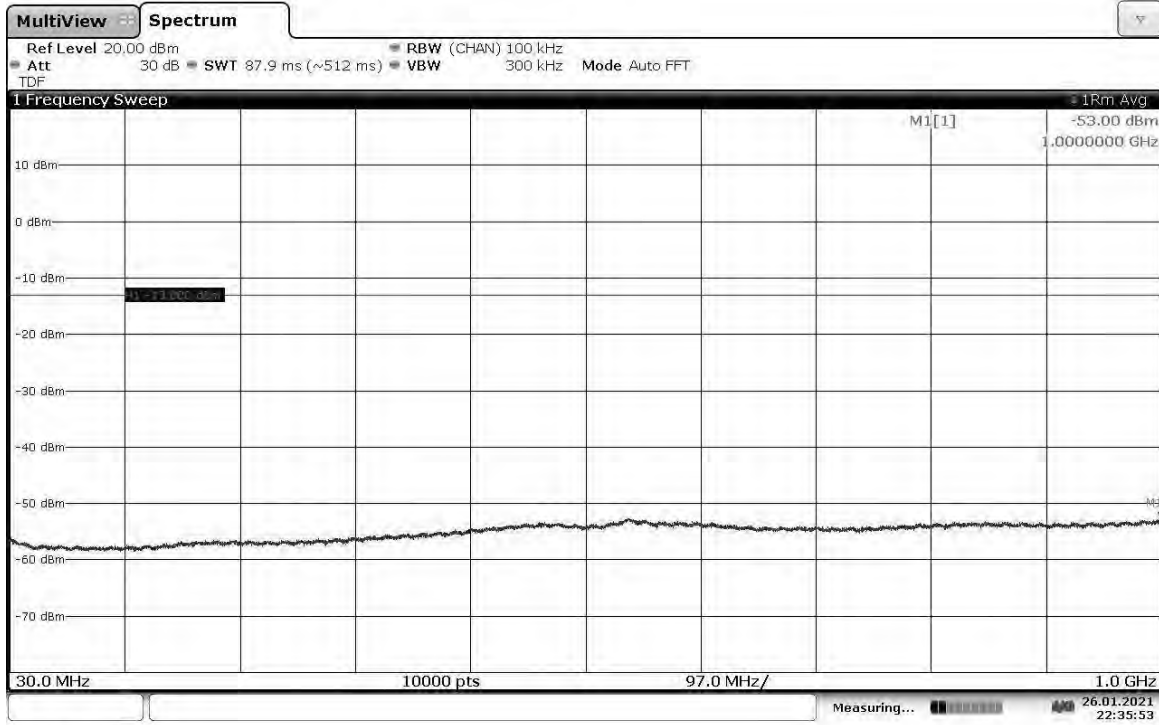
22:54:47 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel
1-22GHz



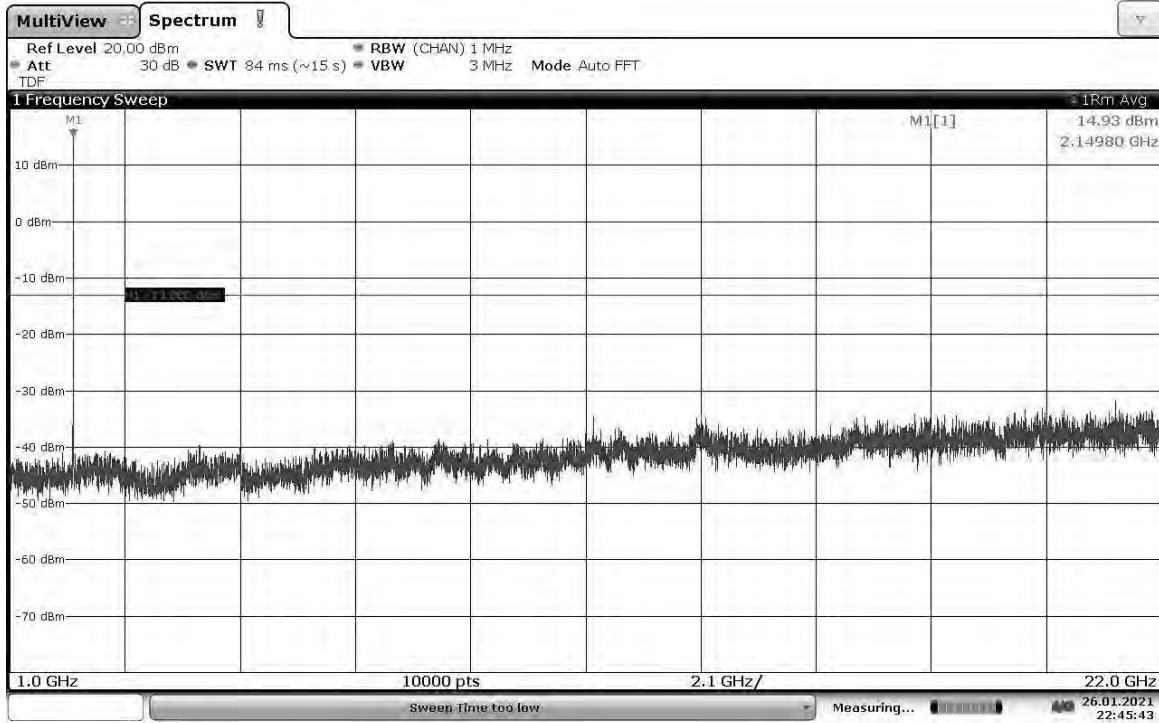
22:31:19 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel
30MHz-1GHz



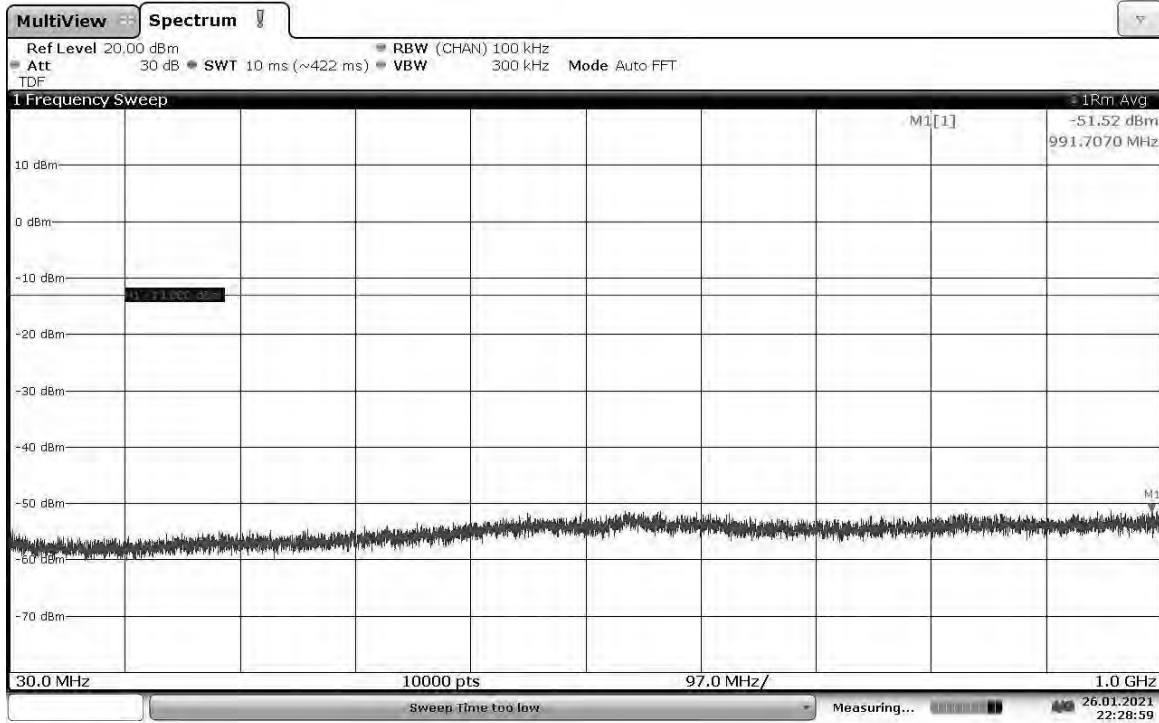
22:35:53 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel
1-22GHz



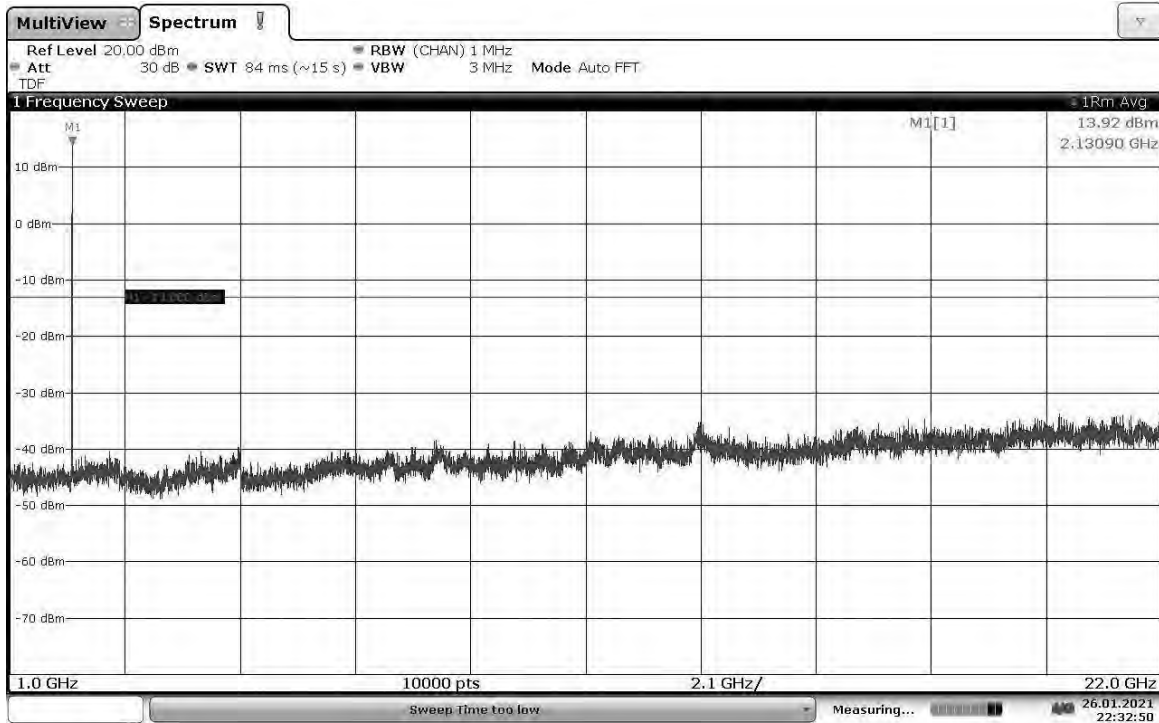
22:45:43 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel
30MHz-1GHz



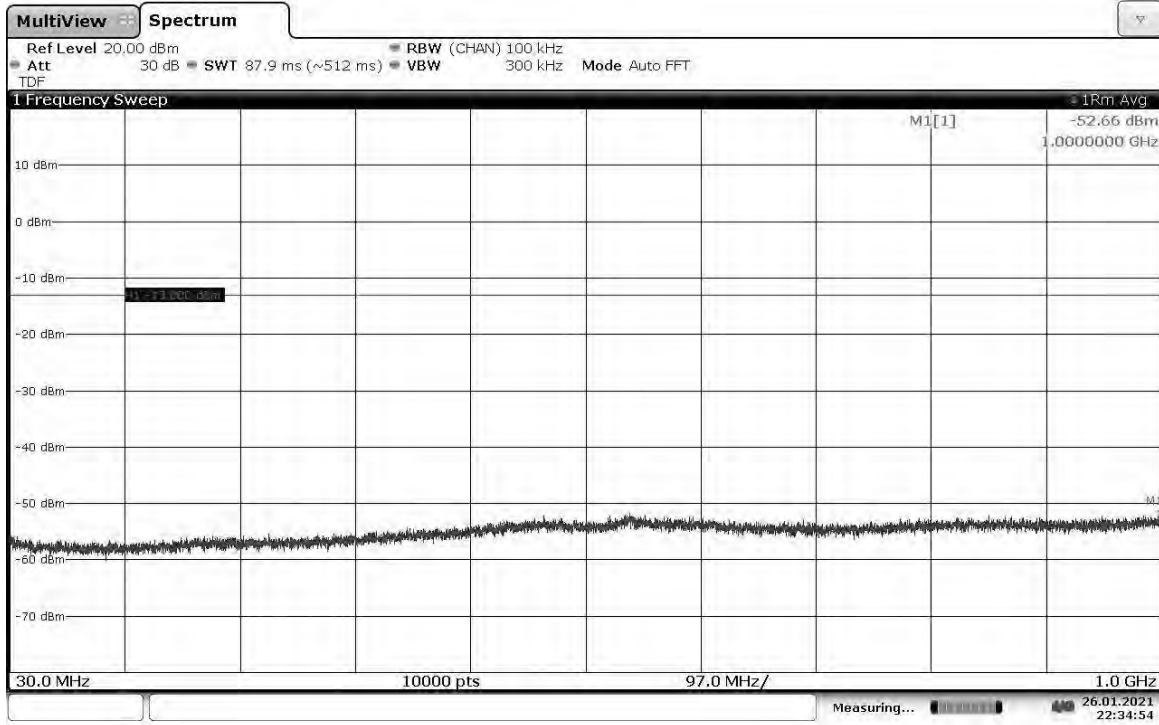
22:28:59 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel
1-22GHz



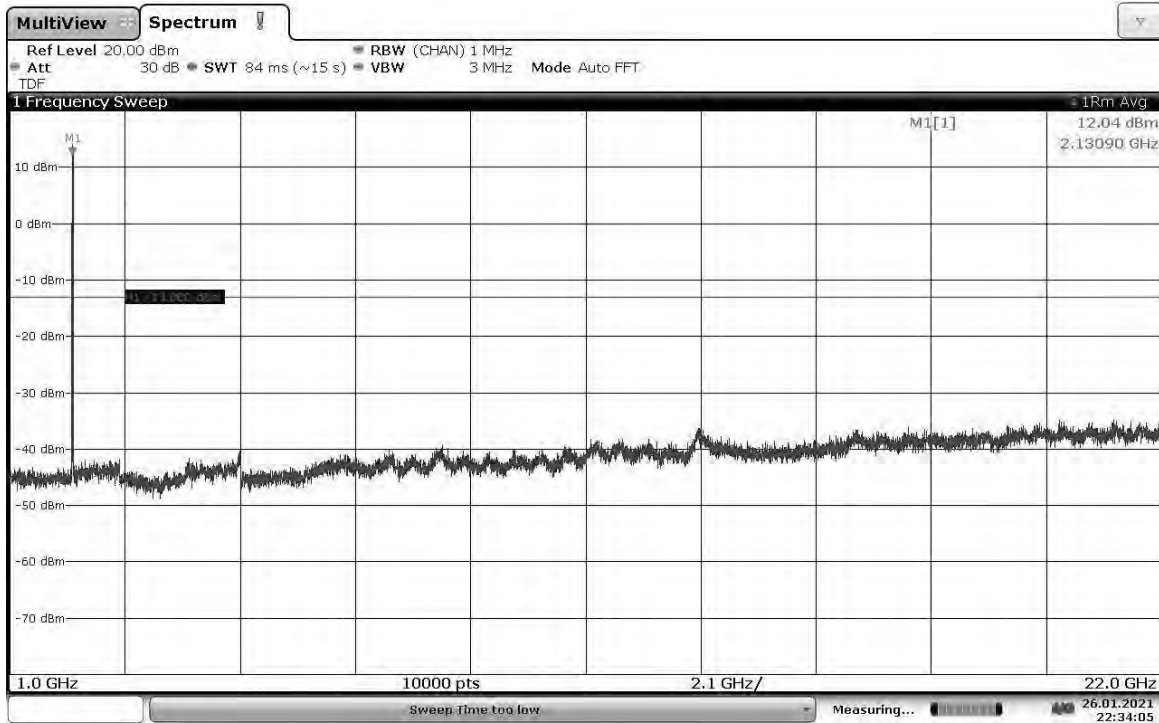
22:32:51 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel 30MHz-1GHz



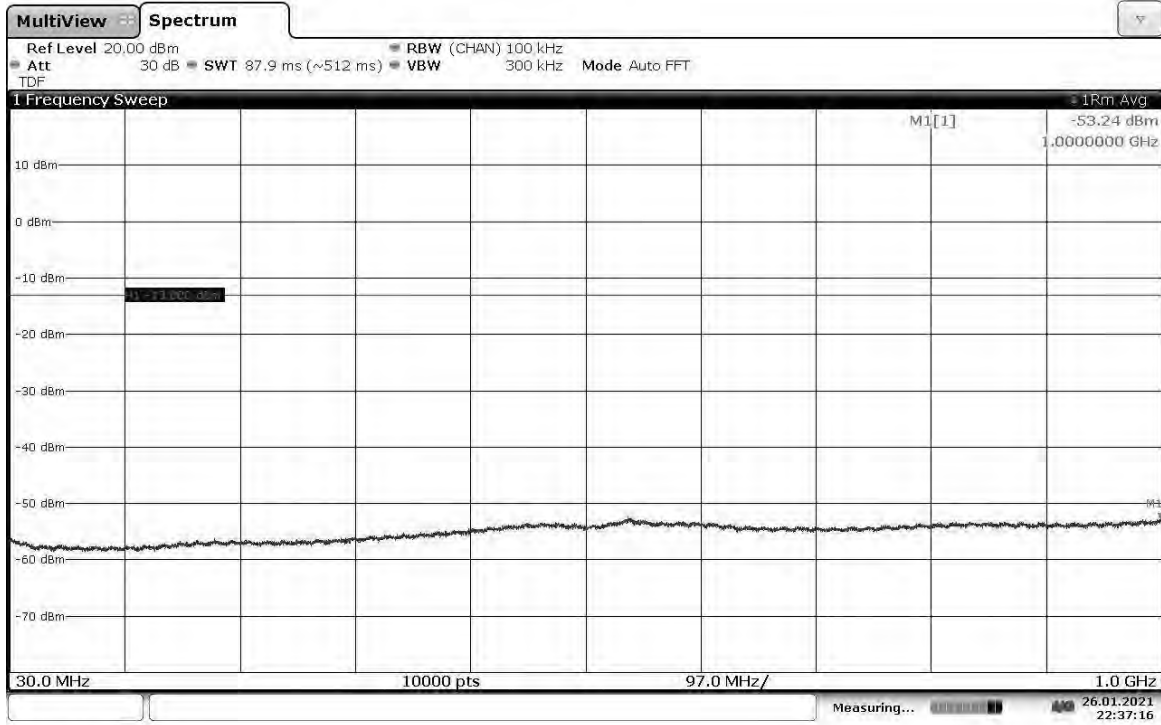
22:34:54 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel 1-22GHz



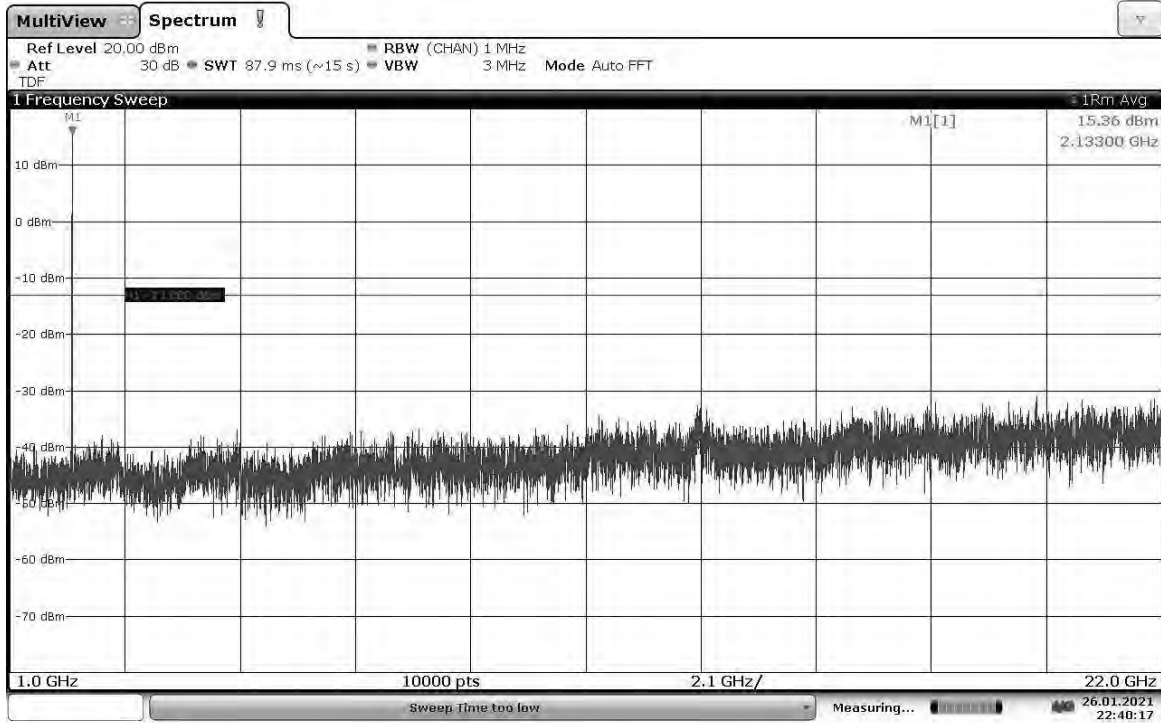
22:34:05 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Mid Channel 30MHz-1GHz



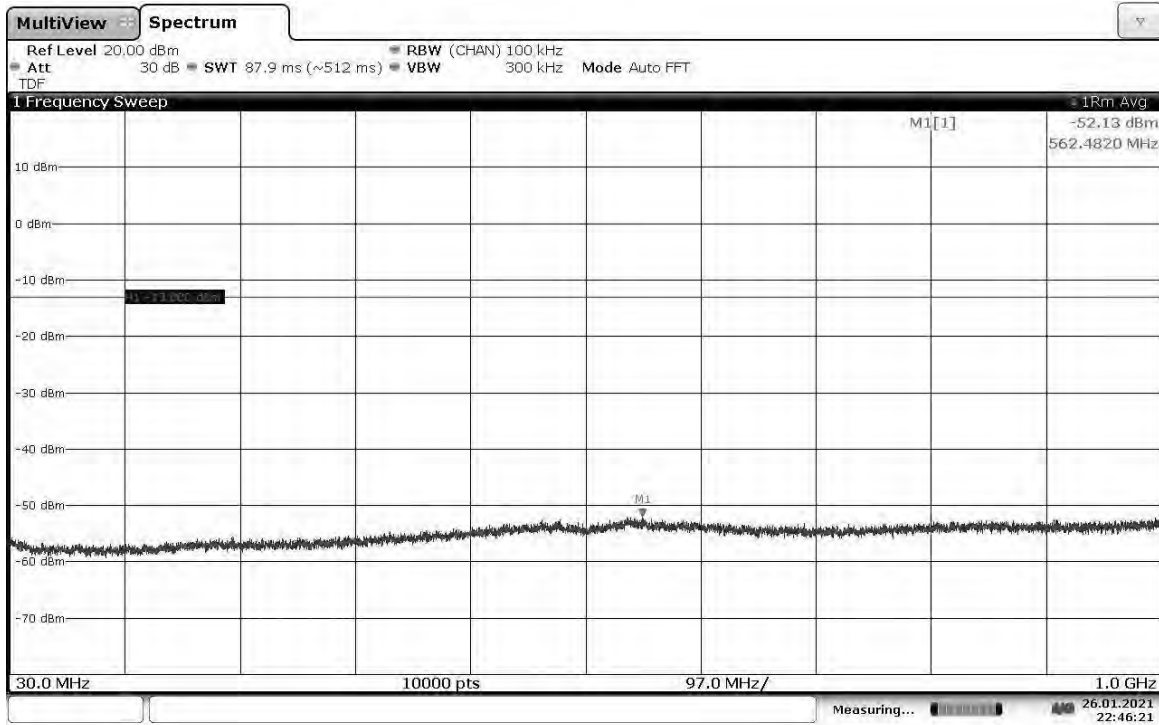
22:37:16 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Mid Channel 1-22GHz



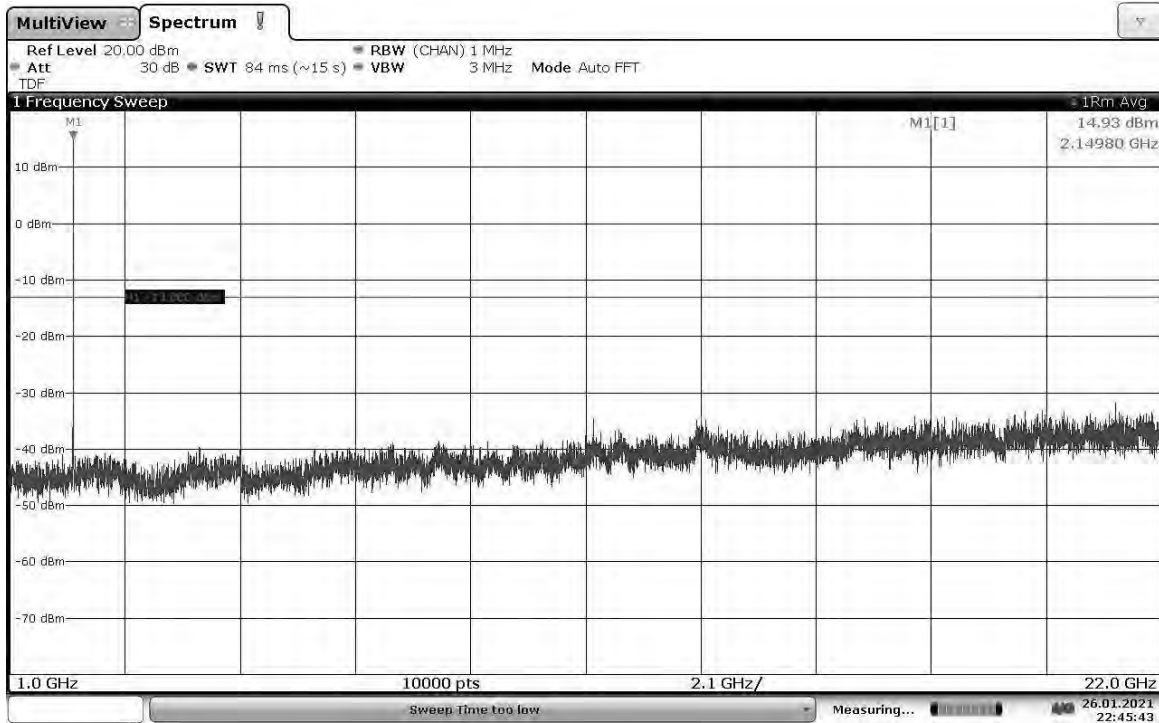
22:40:17 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, High Channel 30MHz-1GHz



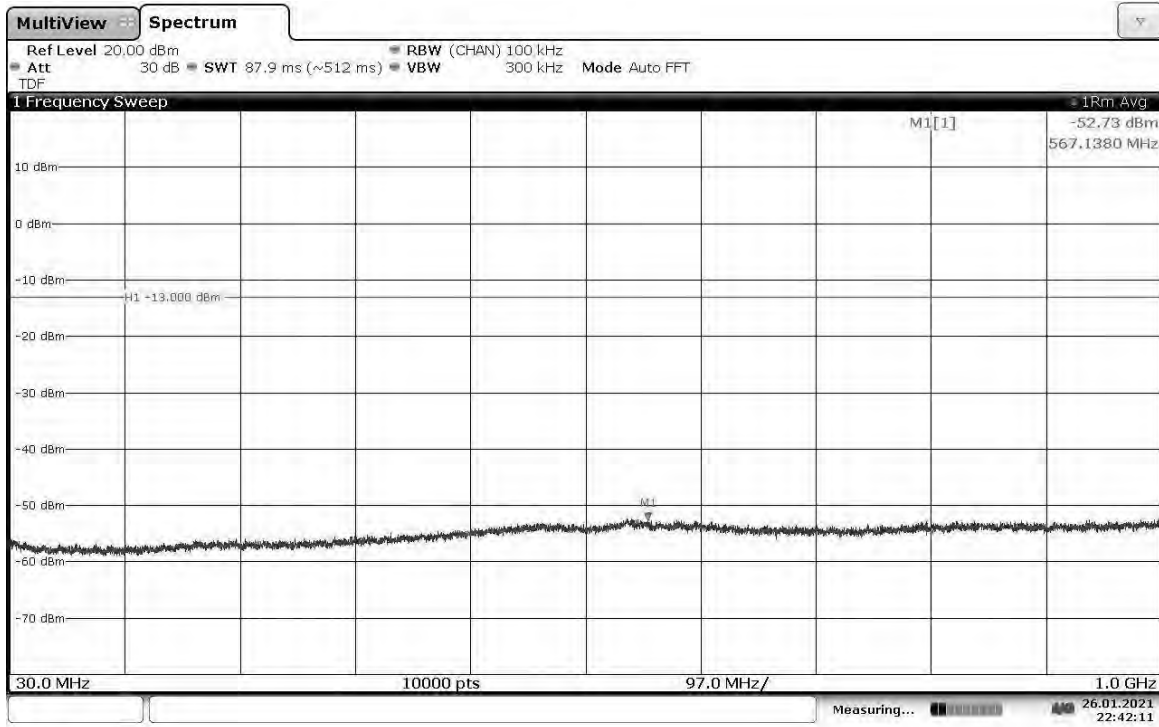
22:46:21 26.01.2021

Slot 3 (Band 4), ANT0, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, High Channel 1-22GHz



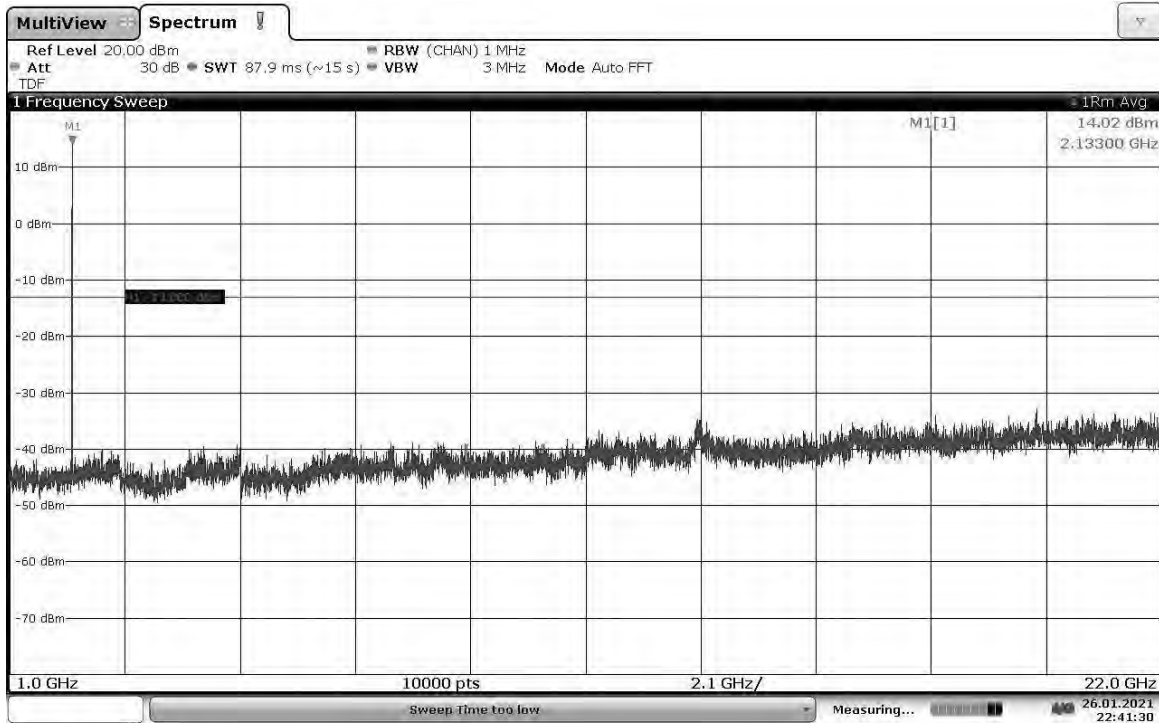
22:45:43 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Mid Channel 30MHz-1GHz



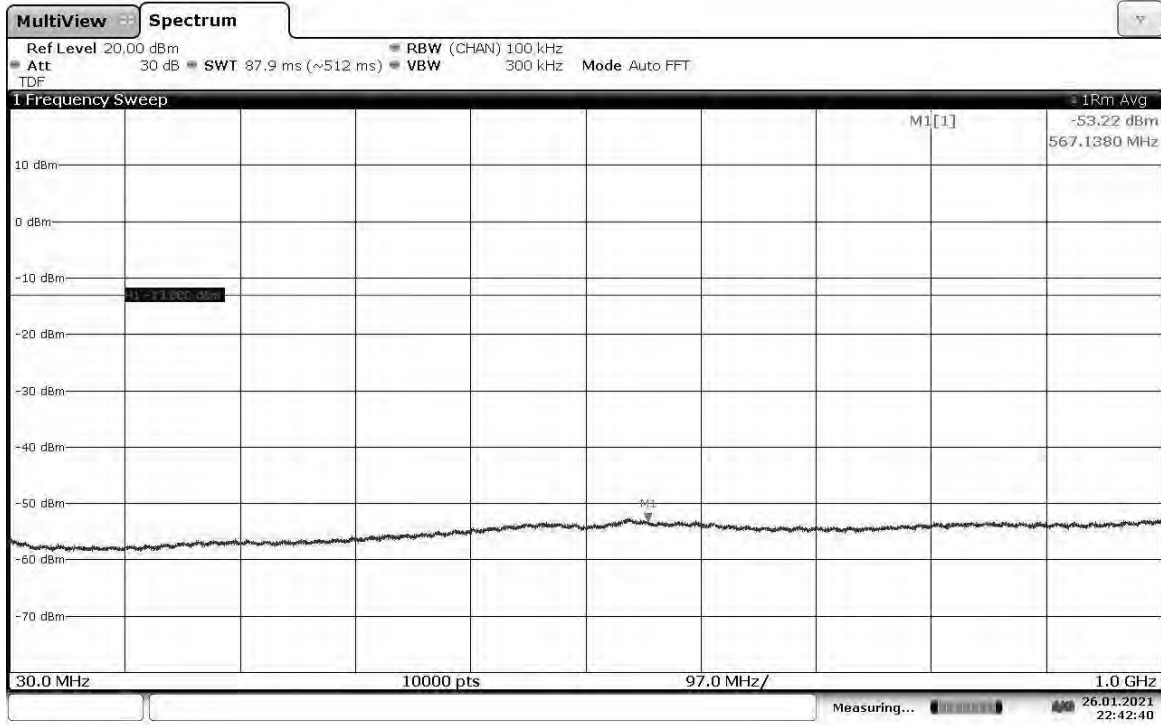
22:42:11 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, Mid Channel 1-22GHz



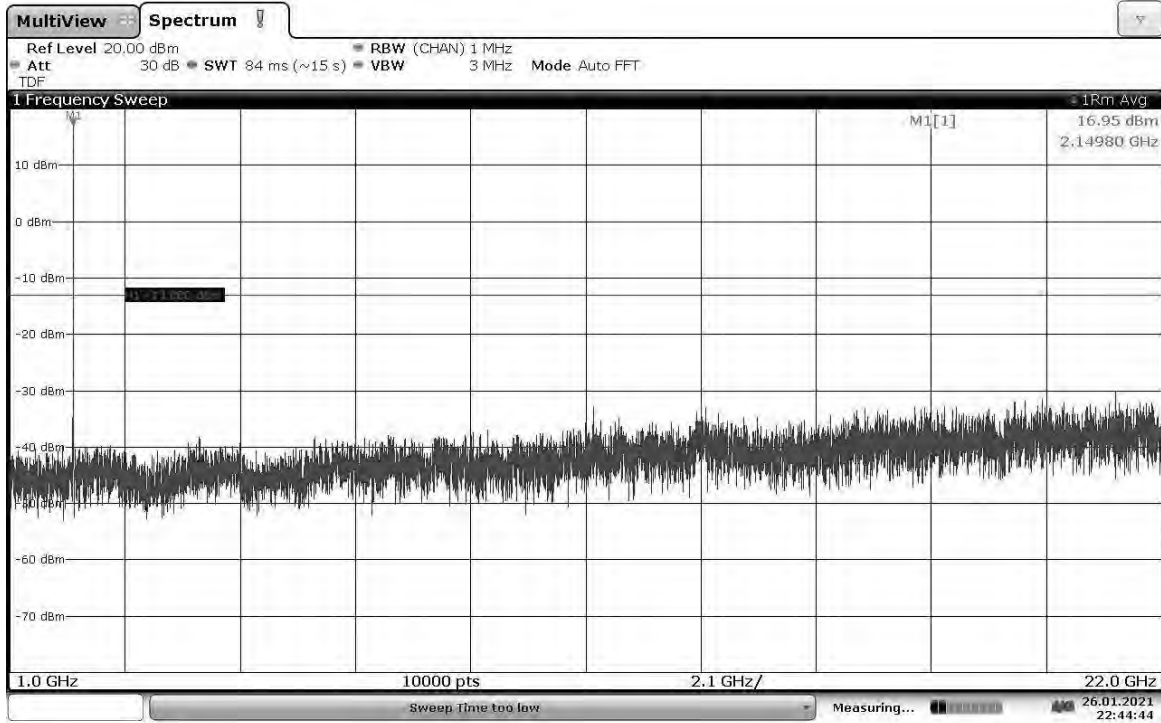
22:41:30 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, High Channel
30MHz-1GHz



22:42:40 26.01.2021

Slot 3 (Band 4), ANT1, Modulation: TM3.1a-256QAM, Bandwidth: 5 MHz, High Channel
1-22GHz



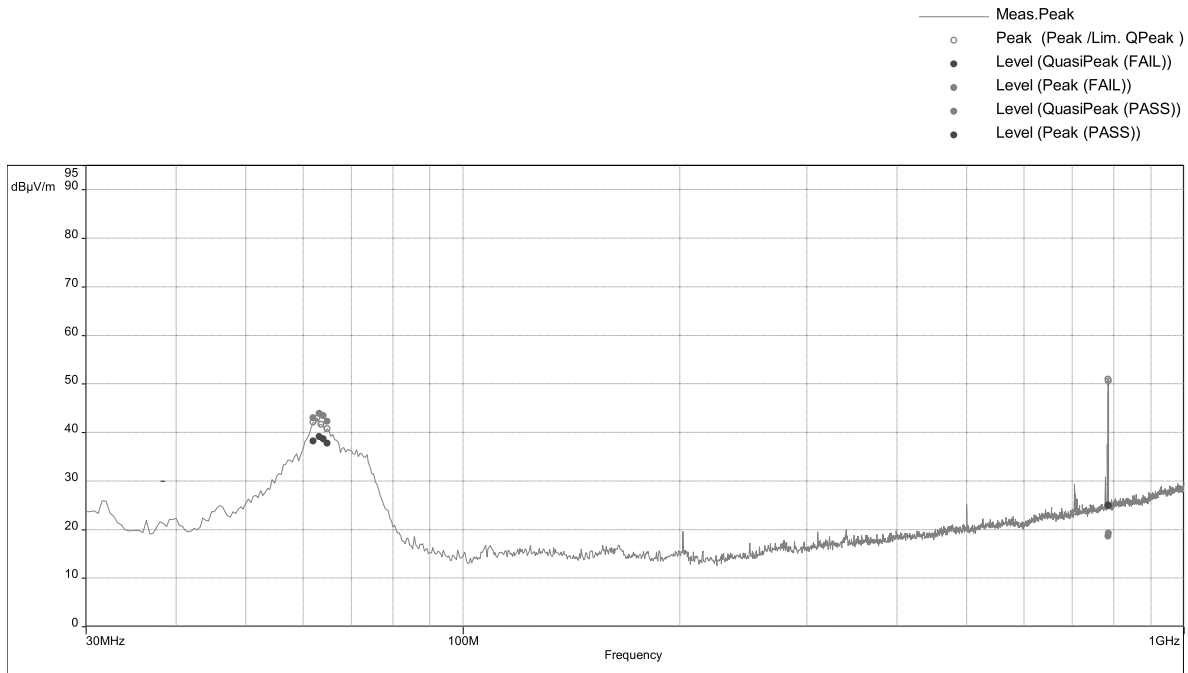
22:44:45 26.01.2021

**Radiated Emissions: 30-1000 MHz, Transmit @ Mid Channel 2132.5 MHz
Slot 3 (Band 4), Modulation: TM1.1-QPSK, Bandwidth 5 MHz**

Test Information:

| | |
|---------------------------|---|
| Date and Time | 1/20/2021 6:44:50 PM |
| Client and Project Number | Commscope_G104567487 |
| Engineer | Vathana Ven |
| Temperature | 24 deg C |
| Humidity | 16% |
| Atmospheric Pressure | 1002 mB |
| Comments | RE 30-1000MHz_POE_BAND 4_Tx mode_Mid CH_Worst-case TM3.1a 5MHz BW |

Graph:



Results:

Peak

| Frequency (MHz) | Level Peak (dBuV/m) | Level EIRP (dBm) | Limit (dBm) | Margin (dB) | Azimuth (°) (dB) | Height (m) (dB) | Pol. (dB) | RBW (dB) | Correction (dB) |
|-----------------|---------------------|------------------|-------------|-------------|------------------|-----------------|-----------|-----------|-----------------|
| 61.93684211 | 42.98 | -41.82 | -13.00 | -28.82 | 292.00 | 2.48 | Vertical | 120000.00 | -25.13 |
| 63.02105263 | 43.92 | -40.88 | -13.00 | -27.88 | 0.00 | 1.44 | Vertical | 120000.00 | -25.00 |
| 63.97894737 | 43.45 | -41.35 | -13.00 | -28.35 | 99.00 | 2.10 | Vertical | 120000.00 | -24.99 |
| 64.95789474 | 42.23 | -42.57 | -13.00 | -29.57 | 129.00 | 2.84 | Vertical | 120000.00 | -24.89 |
| 785.0421053 | 25.02 | -59.78 | -13.00 | -46.78 | 186.00 | 2.45 | Vertical | 120000.00 | -7.51 |
| 785.8105263 | 24.93 | -59.87 | -13.00 | -46.87 | 255.00 | 1.67 | Vertical | 120000.00 | -7.50 |

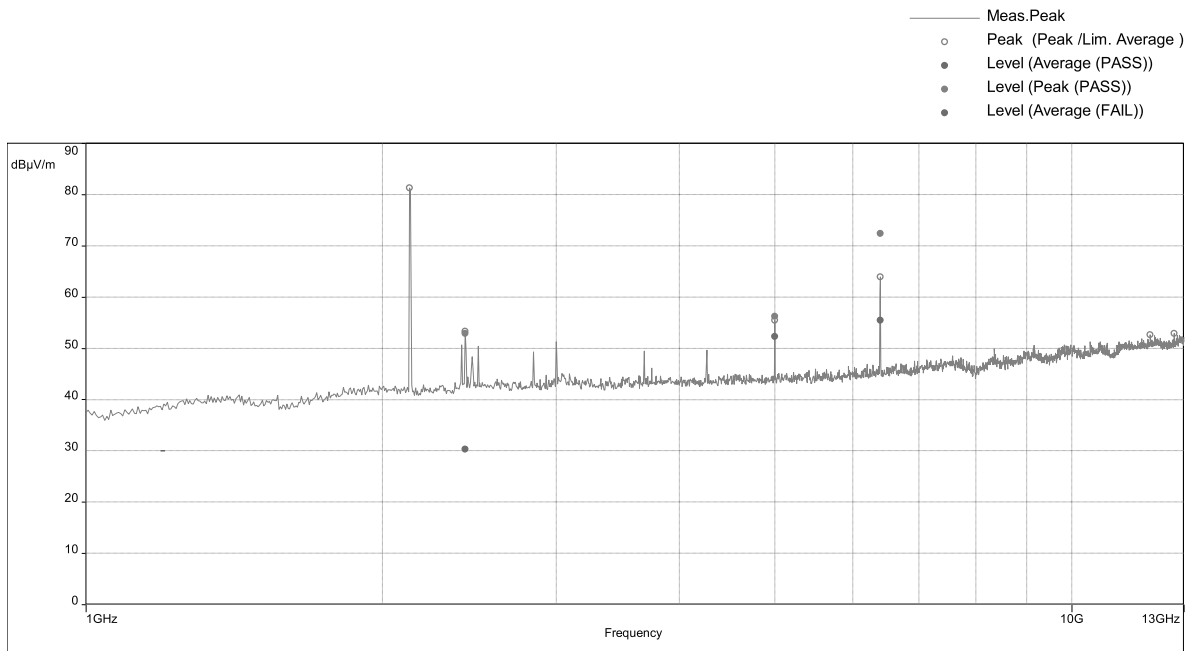
Level EIRP (dBm) = Level Peak (dBuV/m) - 84.8

**Radiated Emissions: 1-22 GHz, Transmit @ Mid Channel 2132.5 MHz
Slot 3 (Band 4), Modulation: TM1.1-QPSK, Bandwidth 5 MHz**

Test Information:

| | |
|---------------------------|--|
| Date and Time | 1/20/2021 8:49:02 PM |
| Client and Project Number | Commscope_G104567487 |
| Engineer | Vathana Ven |
| Temperature | 24 deg C |
| Humidity | 16% |
| Atmospheric Pressure | 1002 mB |
| Comments | RE 1 to 13 POE BAND 4 Tx mode Mid CH Worst-case TM3.1a 5MHz BW |

Graph:



Results:

Peak (PASS) (3)

| Frequency (MHz) | Level Peak (dBμV/m) | Level EIRP (dBm) | Limit (dBm) | Margin (dB) | Azimuth (°) (dB) | Height (m) (dB) | Pol. (dB) | RBW (dB) | Correction (dB) |
|-----------------|---------------------|------------------|-------------|-------------|------------------|-----------------|-----------|------------|-----------------|
| 2425.789474 | 52.86 | -42.40 | -13.00 | -29.40 | 62.00 | 2.75 | Vertical | 1000000.00 | -15.01 |
| 5000.263158 | 56.20 | -39.06 | -13.00 | -26.06 | 9.00 | 3.44 | Vertical | 1000000.00 | -9.72 |
| 6396.315789 | 72.42 | -22.84 | -13.00 | -9.84 | 143.00 | 1.75 | Vertical | 1000000.00 | -6.95 |

Level EIRP (dBm) = Level Peak (dBμV/m) – 95.26

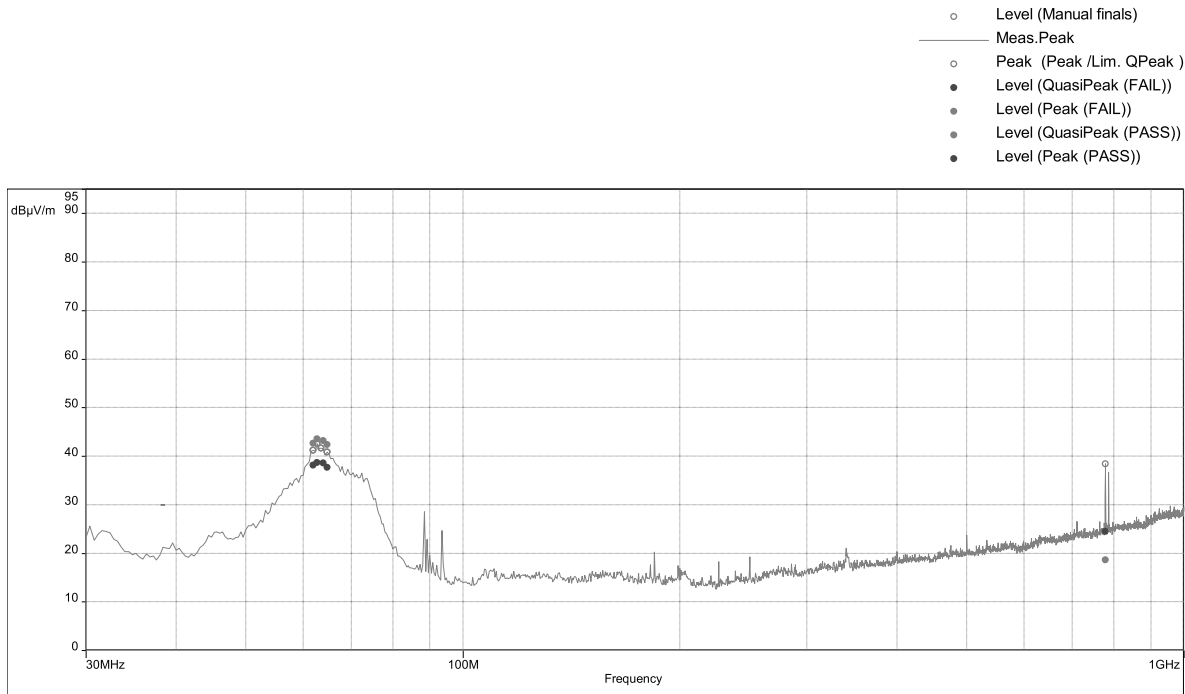
Big peak was a fundamental frequency. Testing from 13-22GHz was performed manually at a close distance. No emissions were detected above the measuring equipment noise floor.

**Radiated Emissions: 30-1000 MHz, Transmit @ High Channel 2152.5 MHz
Slot 3 (Band 4), Modulation: TM3.1a-QPSK, Bandwidth 5 MHz**

Test Information:

| | |
|---------------------------|---|
| Date and Time | 1/20/2021 7:28:47 PM |
| Client and Project Number | Commscope_G104567487 |
| Engineer | Vathana Ven |
| Temperature | 24 deg C |
| Humidity | 16% |
| Atmospheric Pressure | 1002 mB |
| Comments | RE 30-1000MHz_POE_BAND 4_Tx mode_Hight CH_Worst-case TM3.1a 5MHz BW |

Graph:



Results:

Peak

| Frequency (MHz) | Level Peak (dBμV/m) | Level EIRP (dBm) | Limit (dBm) | Margin (dB) | Azimuth (°) (dB) | Height (m) (dB) | Pol. (dB) | RBW (dB) | Correction (dB) |
|-----------------|---------------------|------------------|-------------|-------------|------------------|-----------------|------------|-----------|-----------------|
| 61.93684211 | 42.59 | -41.21 | -13.00 | -29.21 | 298.00 | 1.86 | Vertical | 120000.00 | -25.13 |
| 62.70526316 | 43.54 | -41.26 | -13.00 | -28.26 | 336.00 | 2.60 | Vertical | 120000.00 | -25.04 |
| 63.91578947 | 43.16 | -41.64 | -13.00 | -28.64 | 335.00 | 2.44 | Vertical | 120000.00 | -24.99 |
| 64.89473684 | 42.35 | -42.45 | -13.00 | -29.45 | 173.00 | 2.58 | Vertical | 120000.00 | -24.90 |
| 778.2736842 | 24.49 | -60.31 | -13.00 | -47.31 | 32.00 | 1.59 | Horizontal | 120000.00 | -7.58 |

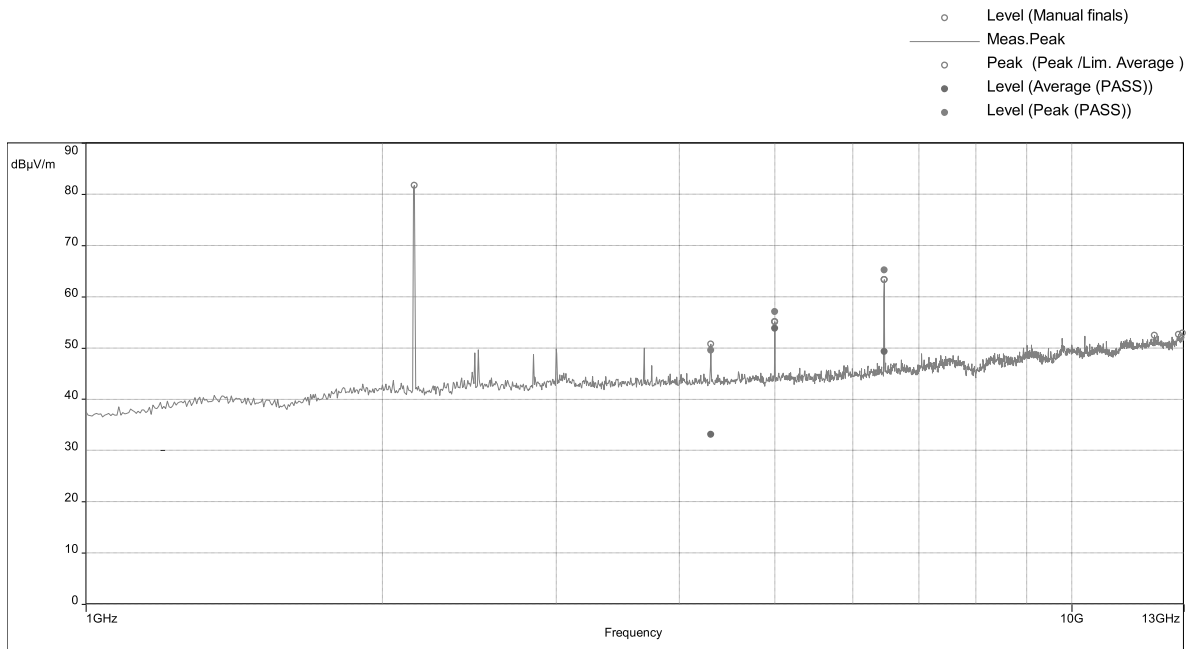
Level EIRP (dBm) = Level Peak (dBuV/m) - 84.8

**Radiated Emissions: 1-22 GHz, Transmit @ High Channel 2152.5 MHz
Slot 3 (Band 4), Modulation: TM3.1a-QPSK, Bandwidth 5 MHz**

Test Information:

| | |
|---------------------------|---|
| Date and Time | 1/20/2021 8:29:19 PM |
| Client and Project Number | Commscope_G104567487 |
| Engineer | Vathana Ven |
| Temperature | 24 deg C |
| Humidity | 16% |
| Atmospheric Pressure | 1002 mB |
| Comments | RE 1 to 13 POE_BAND 4_Tx mode_High CH_Worst-case TM3.1a 5MHz BW |

Graph:



Results:

Peak (PASS) (3)

| Frequency (MHz) | Level Peak (dBμV/m) | Level EIRP (dBm) | Limit (dBm) | Margin (dB) | Azimuth (°) (dB) | Height (m) (dB) | Pol. (dB) | RBW (dB) | Correction (dB) |
|-----------------|---------------------|------------------|-------------|-------------|------------------|-----------------|-----------|------------|-----------------|
| 4305 | 49.56 | -45.70 | -13.00 | -32.70 | 306.00 | 1.25 | Vertical | 1000000.00 | -11.21 |
| 5000 | 57.11 | -38.15 | -13.00 | -25.15 | 11.00 | 2.95 | Vertical | 1000000.00 | -9.72 |
| 6456.052632 | 65.17 | -30.09 | -13.00 | -17.09 | 321.00 | 1.00 | Vertical | 1000000.00 | -6.84 |

Level EIRP (dBm) = Level Peak (dBμV/m) – 95.26

Big peak was a fundamental frequency. Testing from 13-22GHz was performed manually at a close distance. No emissions were detected above the measuring equipment noise floor.

Test Personnel: Vathana Ven *VSV*
 Supervising/Reviewing
 Engineer:
 (Where Applicable) N/A

Test Date: 01/20/2021
01/26/2021

Product Standard: FCC Part 27
 Input Voltage: 48 VDC (POE)

Limit Applied: See report section 10.3

Pretest Verification w/
 Ambient Signals or
 BB Source: N/A



Ambient Temperature: 24, 23°C

Relative Humidity: 16, 15%

Atmospheric Pressure: 1002, 1013mbars

Deviations, Additions, or Exclusions: None

11 Revision History

| Revision Level | Date | Report Number | Prepared By | Reviewed By | Notes |
|----------------|------------|------------------|---|---|----------------|
| 0 | 02/03/2021 | 104567487BOX-001 | VFV  | MFM  | Original Issue |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |