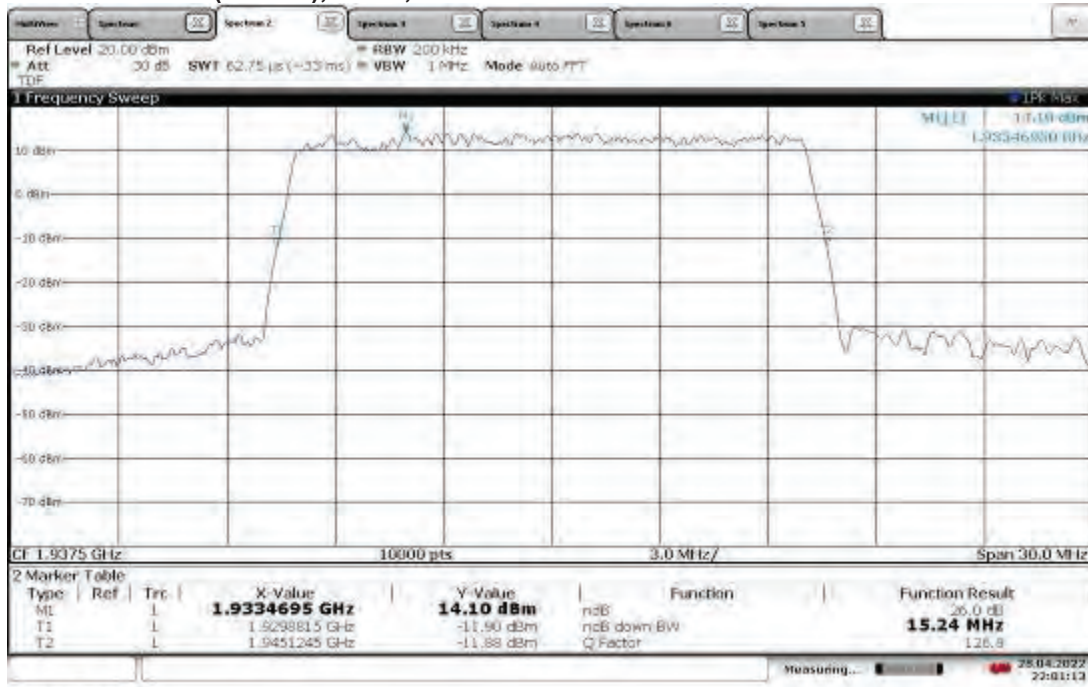
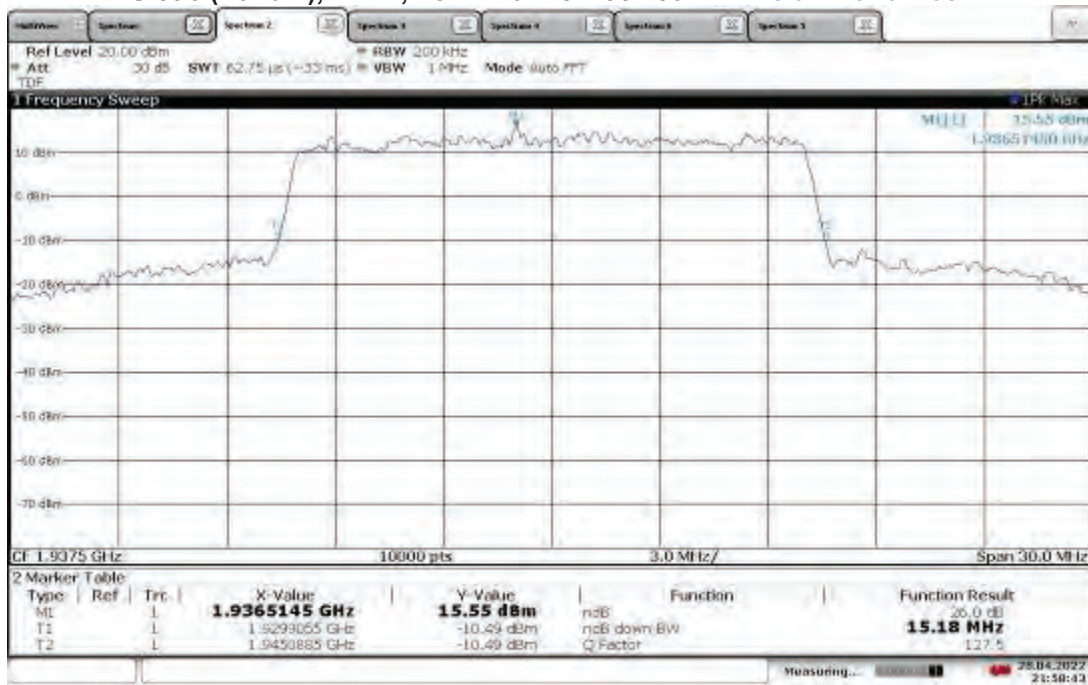


TM3.1-64QAM\_15 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, Low Channel 1937.50 MHz 26 dB Bandwidth



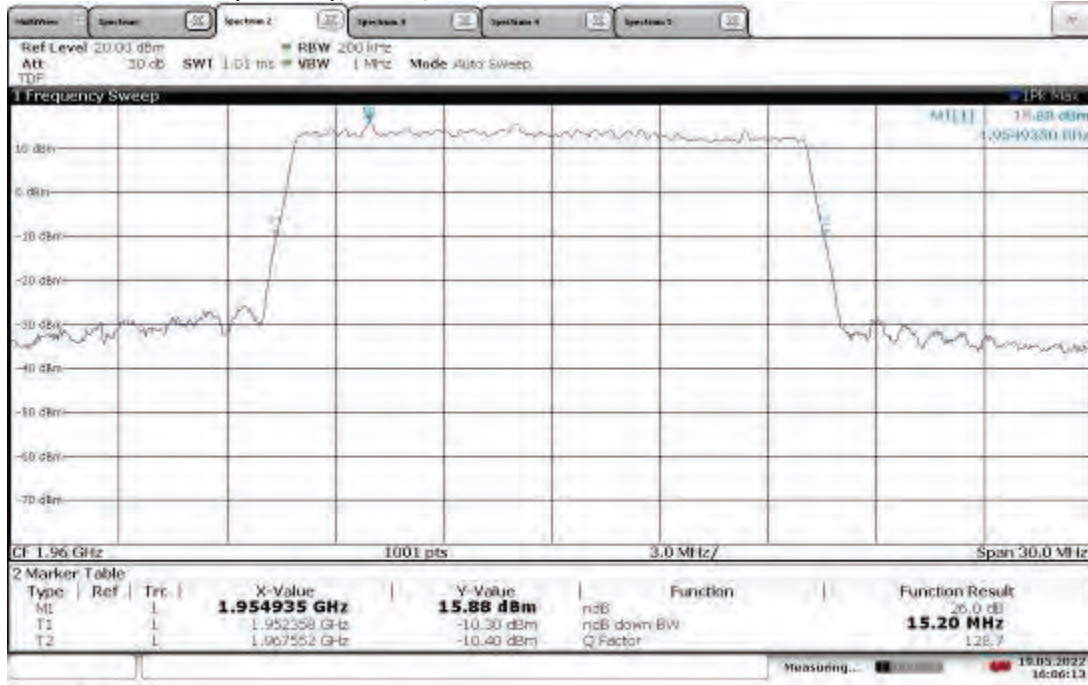
22:01:14 28.04.2022

TM3.1-64QAM\_15 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, Low Channel 1937.50 MHz 26 dB Bandwidth



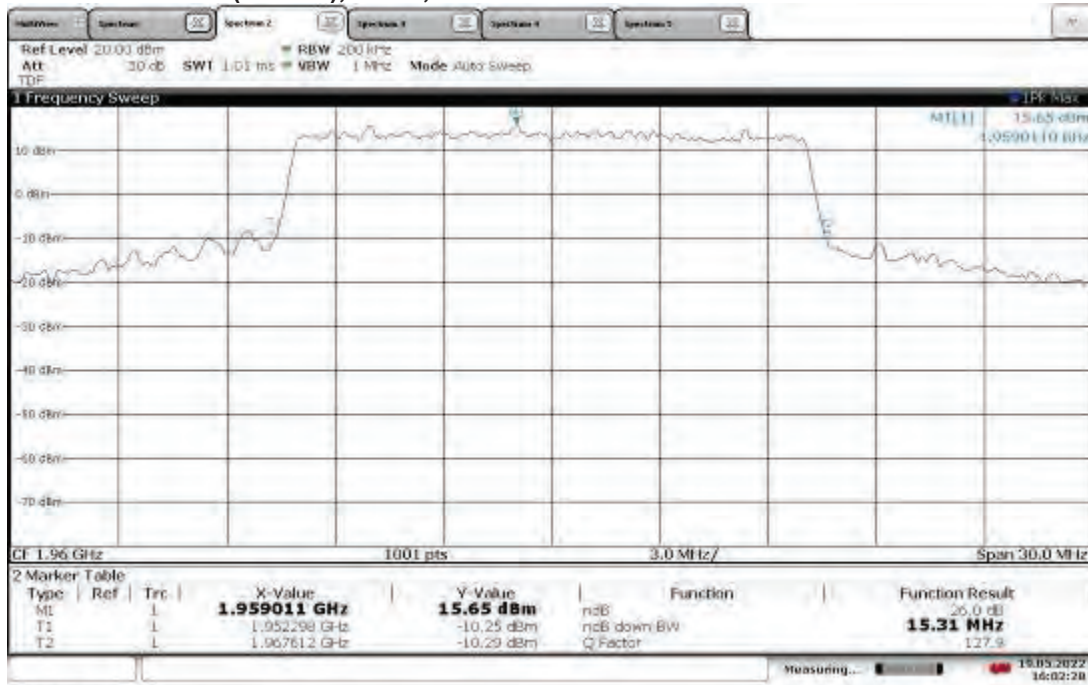
21:58:43 28.04.2022

TM3.1-64QAM\_15 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz 26 dB Bandwidth



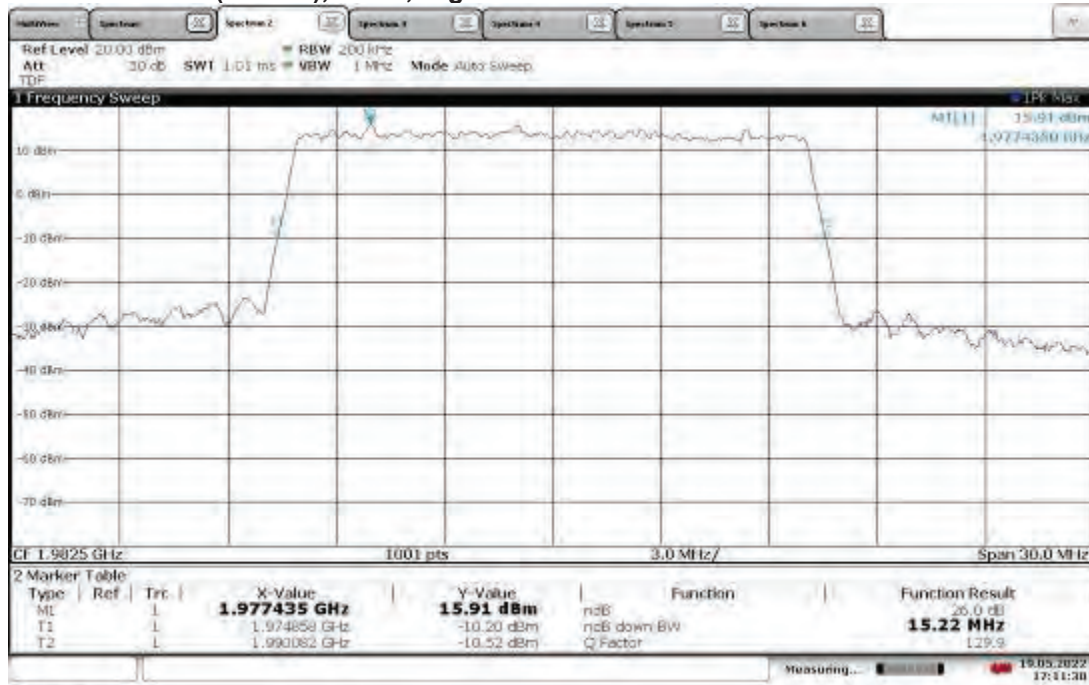
16:06:13 19.05.2022

TM3.1-64QAM\_15 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz 26 dB Bandwidth



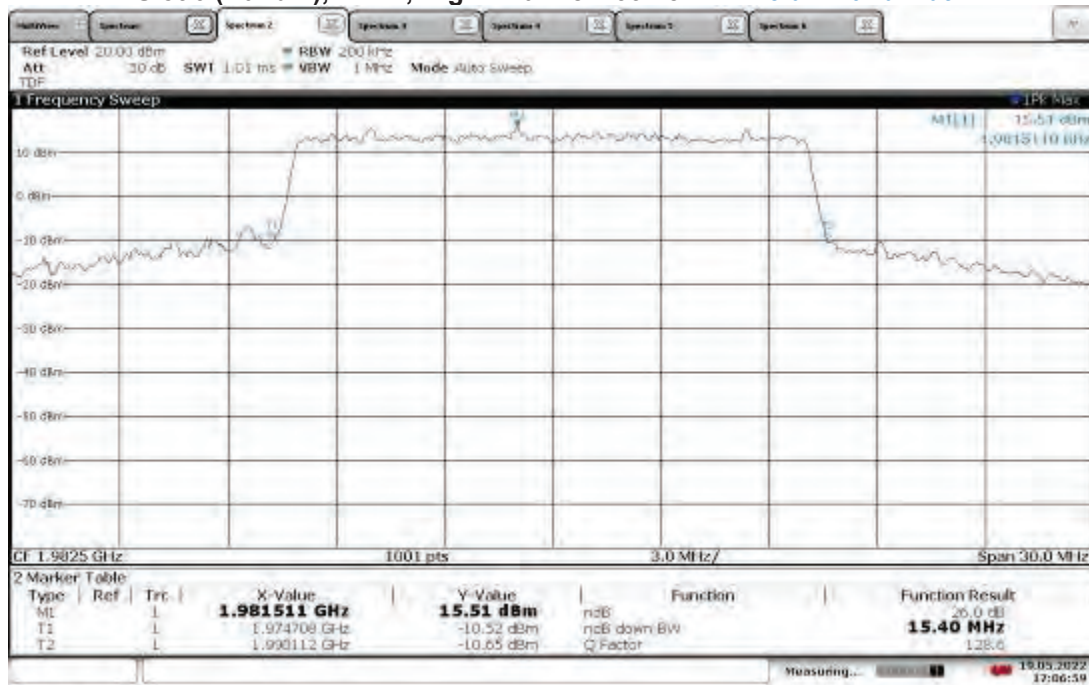
16:02:28 19.05.2022

TM3.1-64QAM\_15 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, High Channel 1992.5 MHz 26 dB Bandwidth



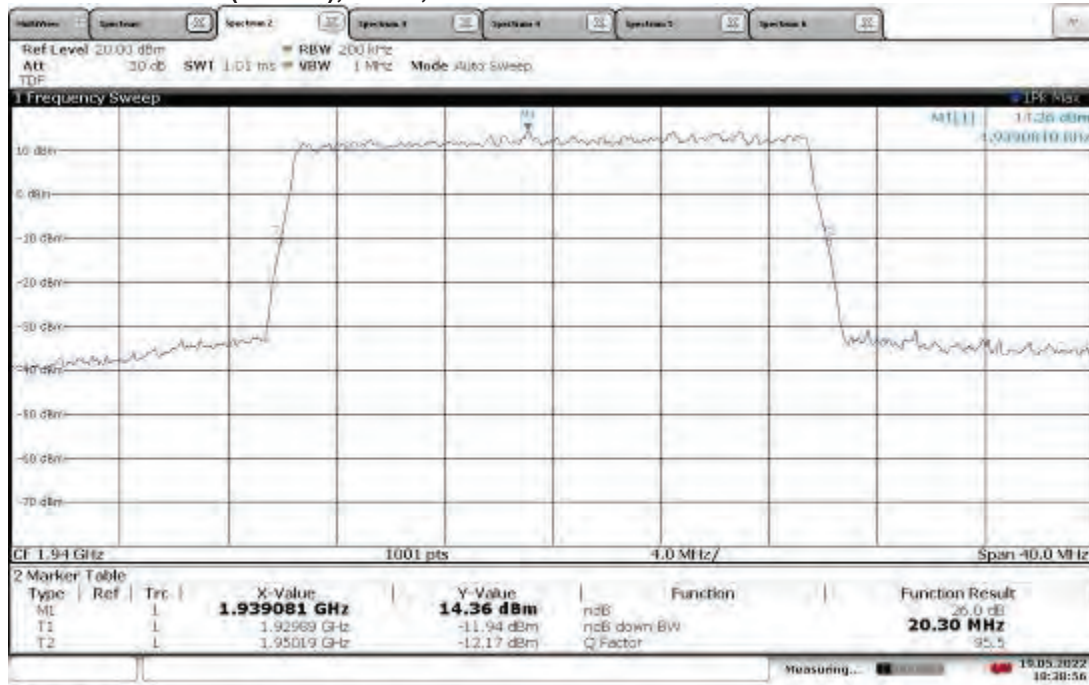
17:11:30 19.05.2022

TM3.1-64QAM\_15 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, High Channel 1992.5 MHz 26 dB Bandwidth



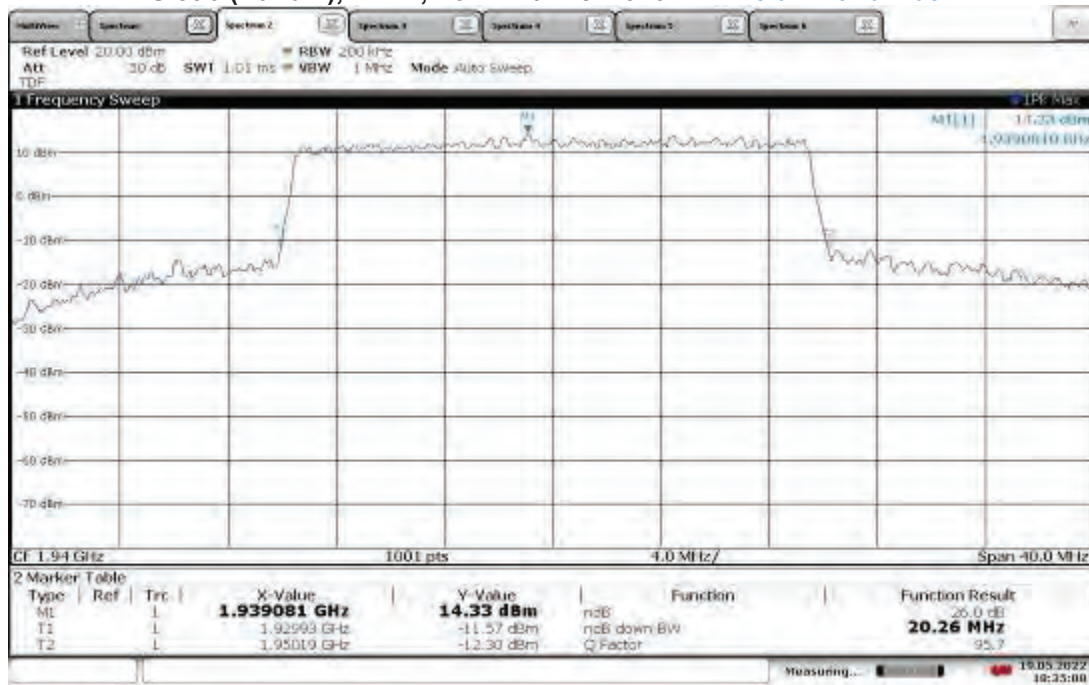
17:06:59 19.05.2022

TM3.1-64QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, Low Channel 1940 MHz **26 dB Bandwidth**



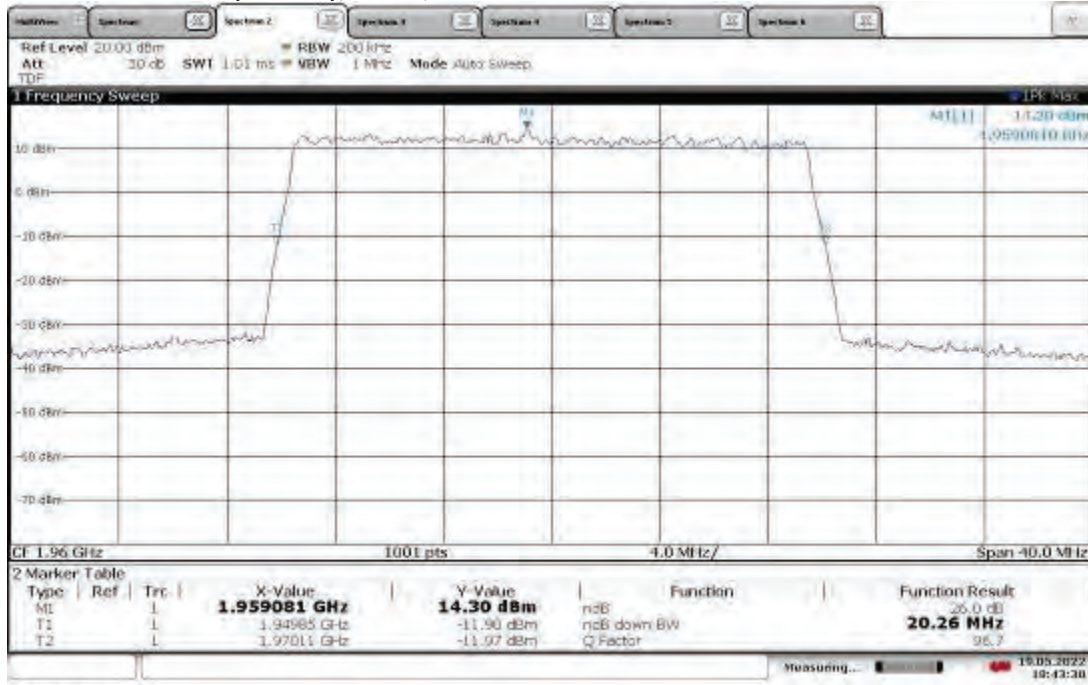
18:38:56 19.05.2022

TM3.1-64QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, Low Channel 1940 MHz **26 dB Bandwidth**



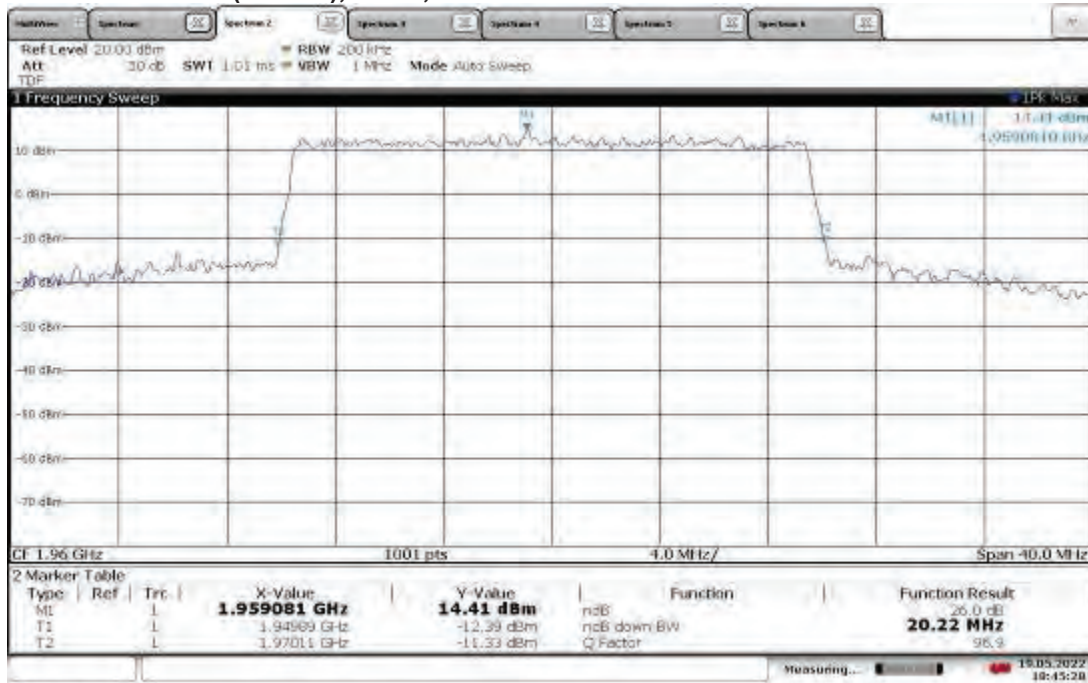
18:35:08 19.05.2022

TM3.1-64QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz 26 dB Bandwidth



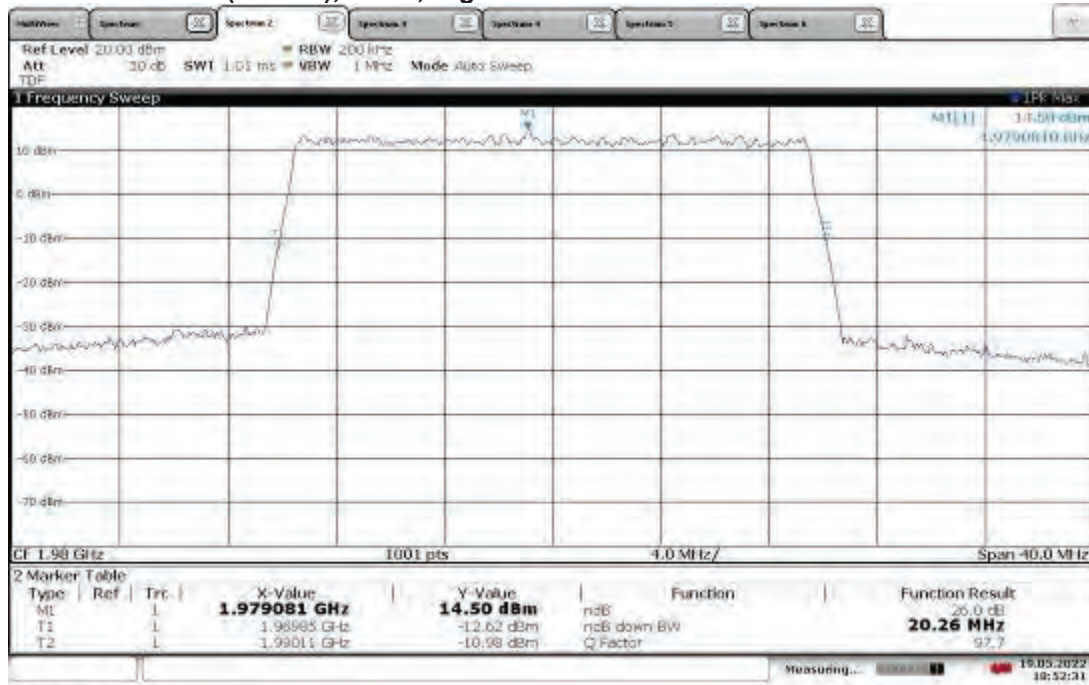
18:43:30 19.05.2022

TM3.1-64QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz 26 dB Bandwidth



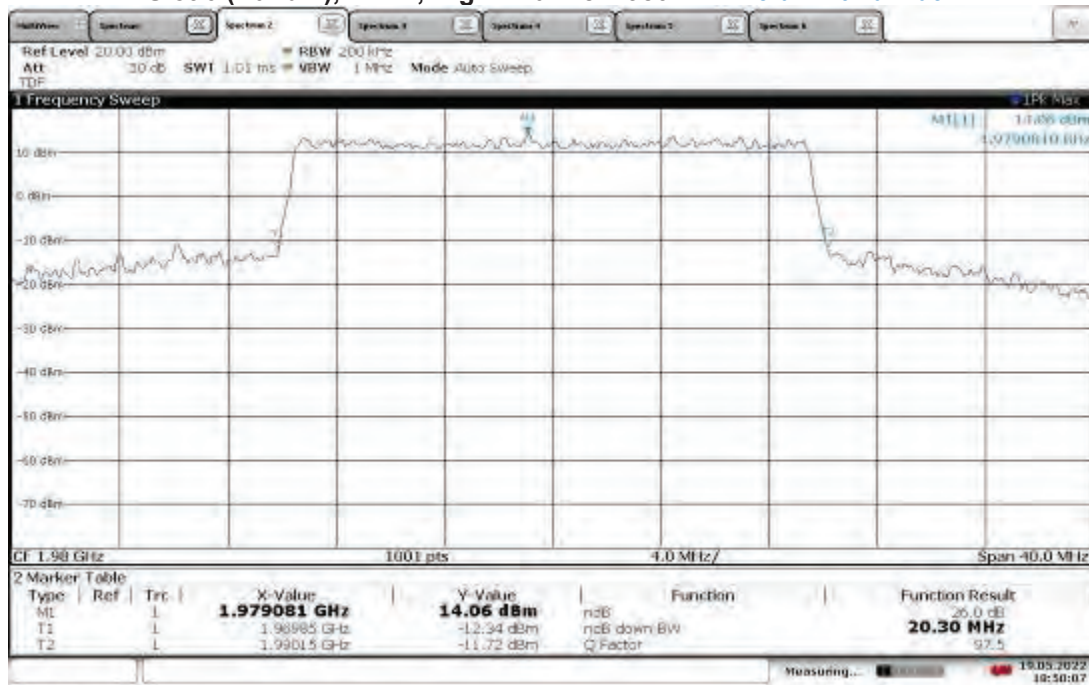
18:45:29 19.05.2022

TM3.1-64QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, High Channel 1980 MHz 26 dB Bandwidth



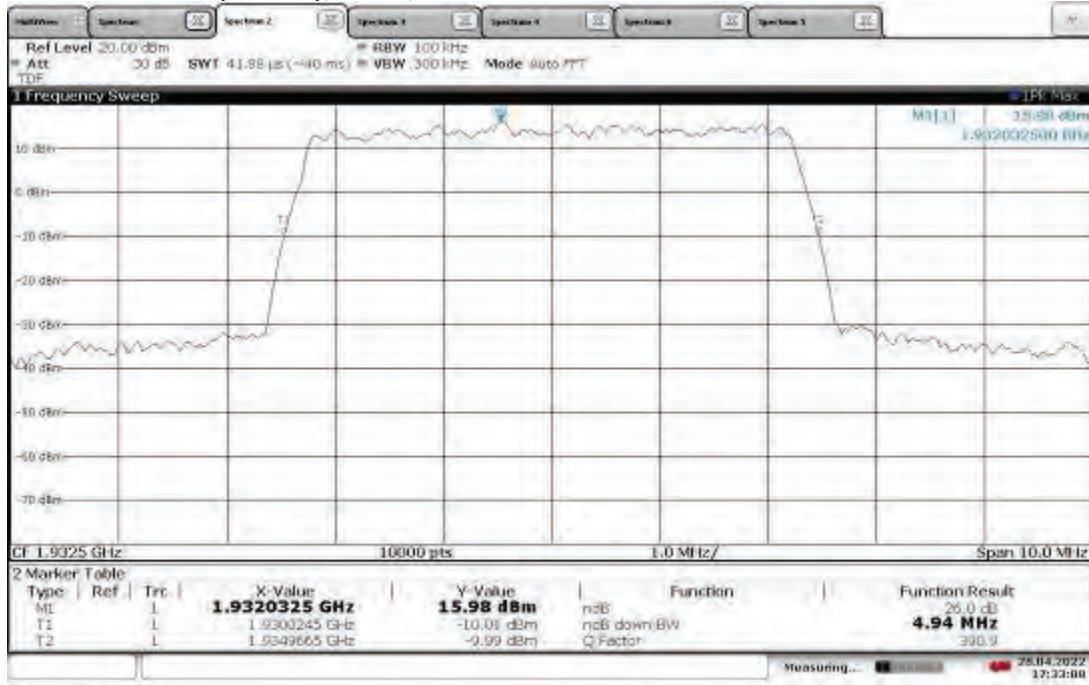
18:52:31 19.05.2022

TM3.1-64QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, High Channel 1980 MHz 26 dB Bandwidth



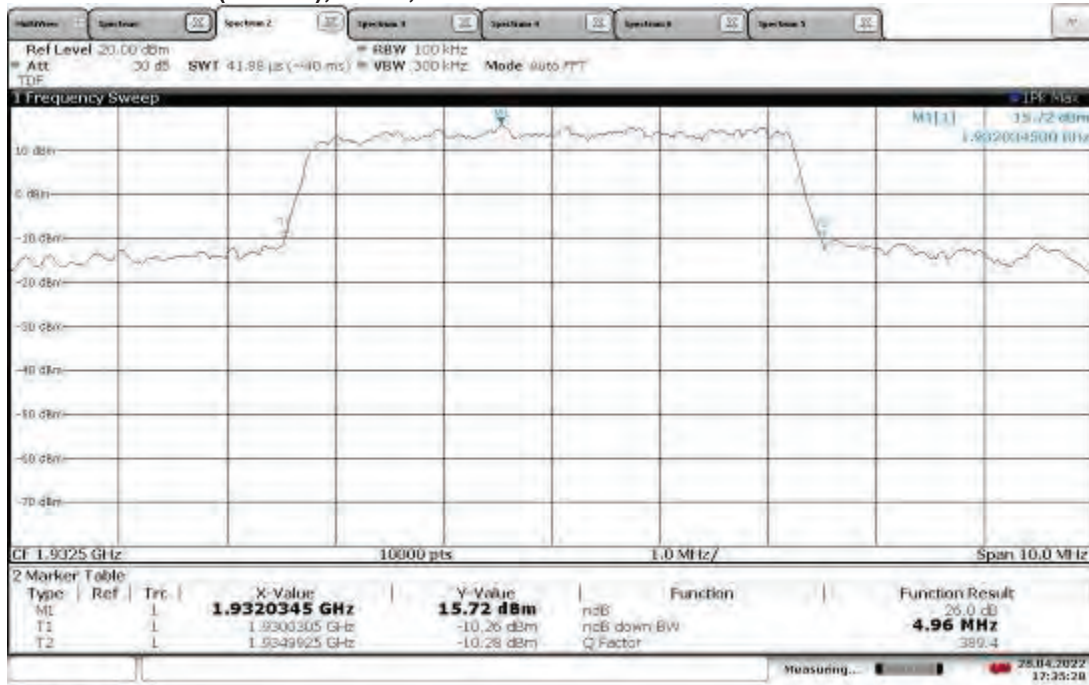
18:50:07 19.05.2022

**TM3.1a-256QAM\_5 MHz Bandwidth (5G NR)**  
**Slot 0 (Band 2), ANT0, Low Channel 1932.5 MHz 26 dB Bandwidth**



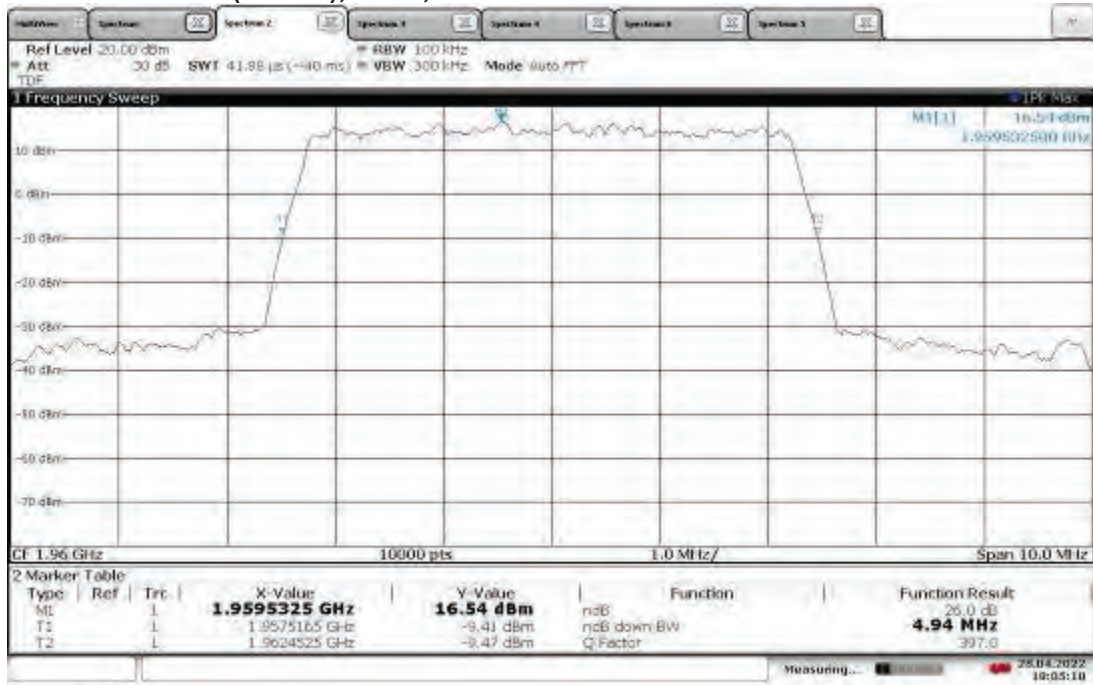
17:33:08 28.04.2022

**TM3.1a-256QAM\_5 MHz Bandwidth (5G NR)**  
**Slot 0 (Band 2), ANT1, Low Channel 1932.5 MHz 26 dB Bandwidth**



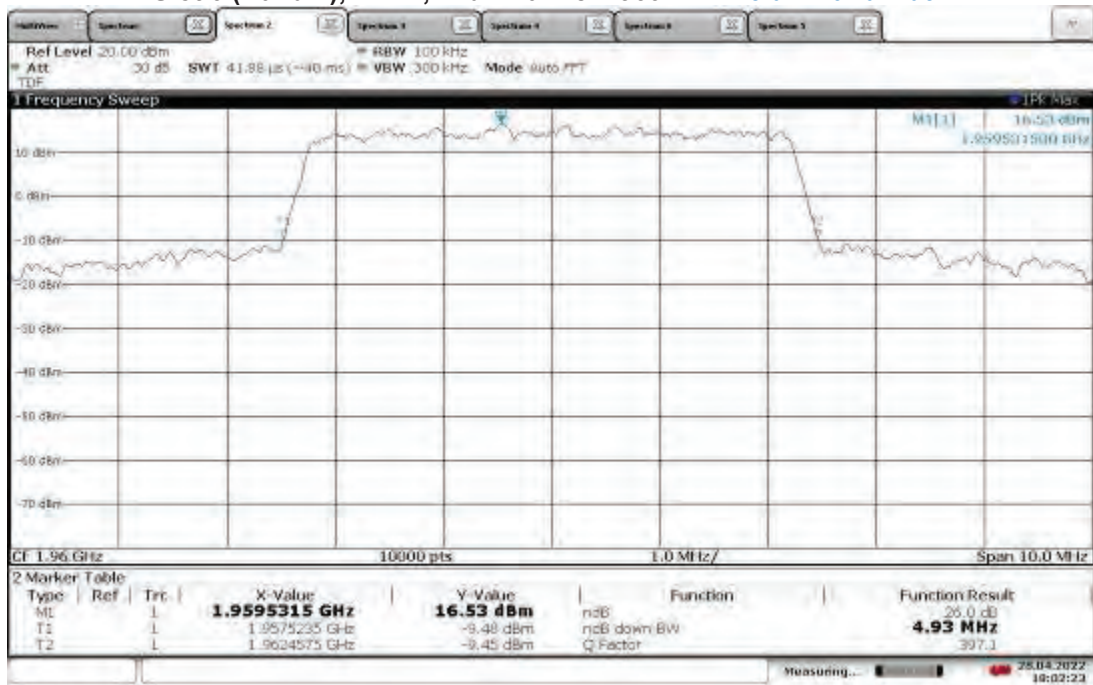
17:35:28 28.04.2022

TM3.1a-256QAM\_5 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz **26 dB Bandwidth**



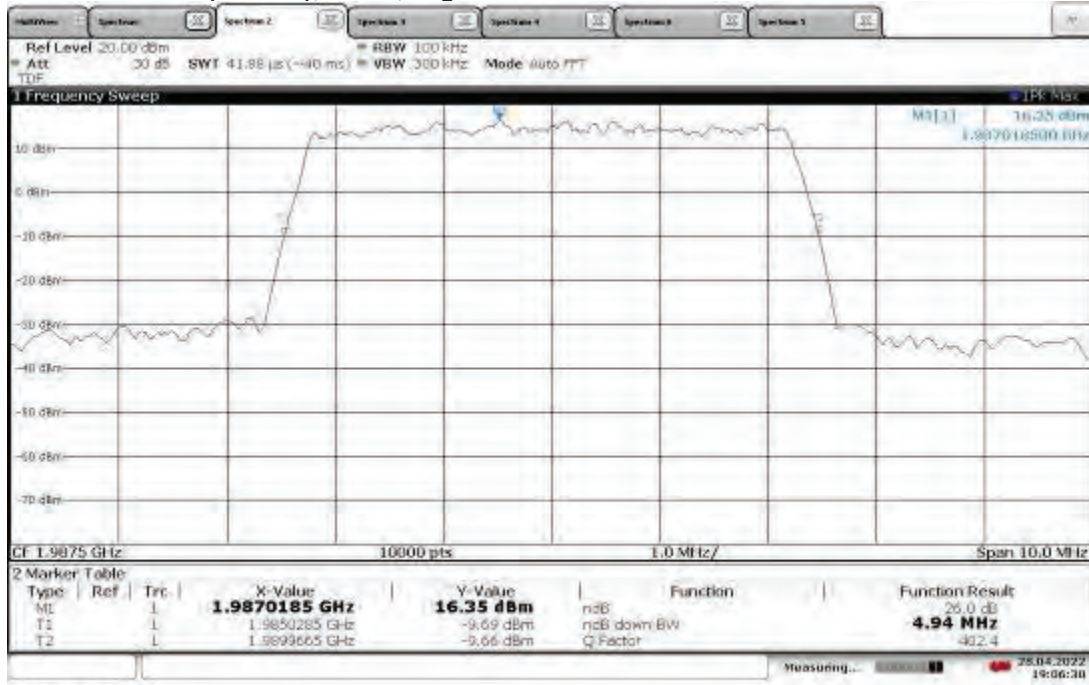
18:05:11 28.04.2022

TM3.1a-256QAM\_5 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz **26 dB Bandwidth**



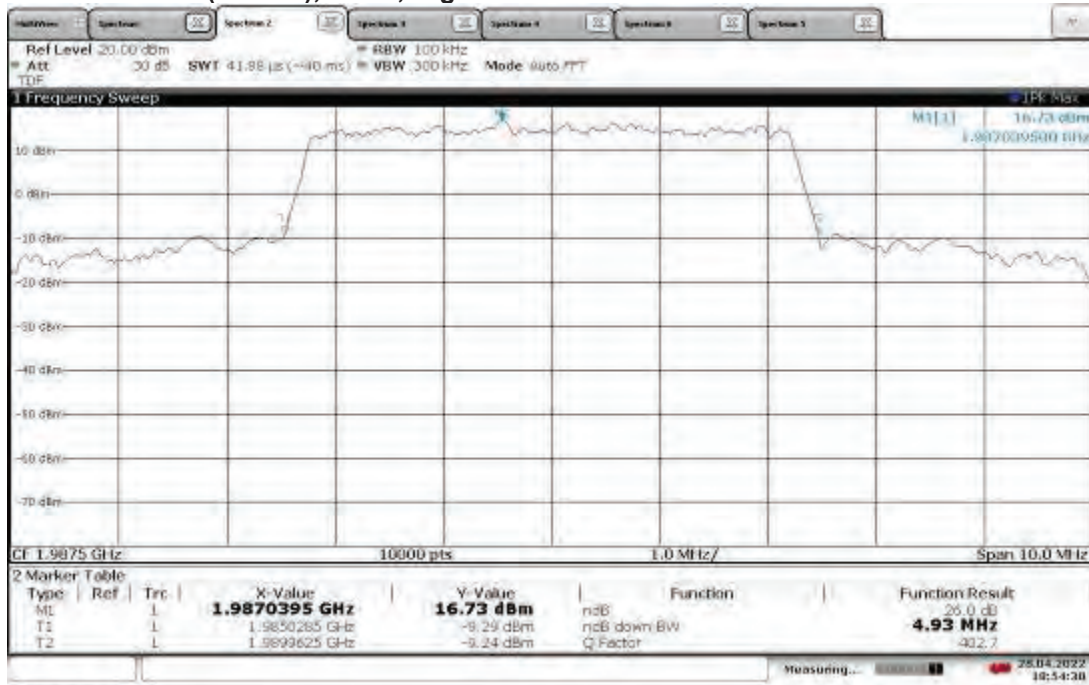
18:02:24 28.04.2022

**TM3.1a-256QAM\_5 MHz Bandwidth (5G NR)**  
**Slot 0 (Band 2), ANT0, High Channel 1987.50 MHz 26 dB Bandwidth**



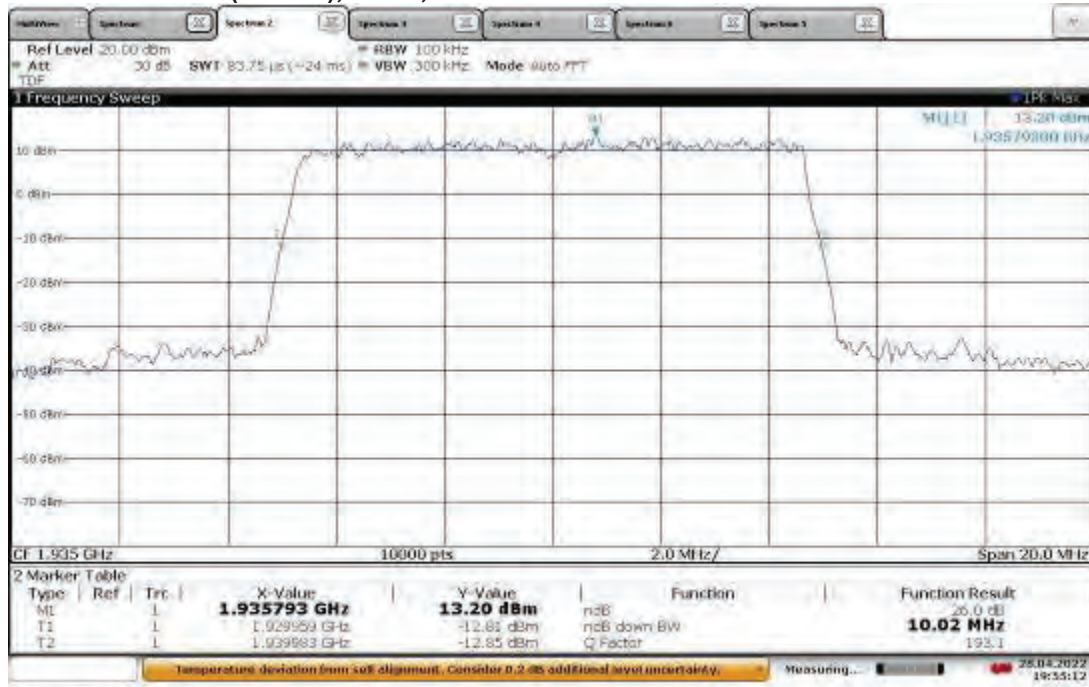
19:06:31 28.04.2022

**TM3.1a-256QAM\_5 MHz Bandwidth (5G NR)**  
**Slot 0 (Band 2), ANT1, High Channel 1987.50 MHz 26 dB Bandwidth**



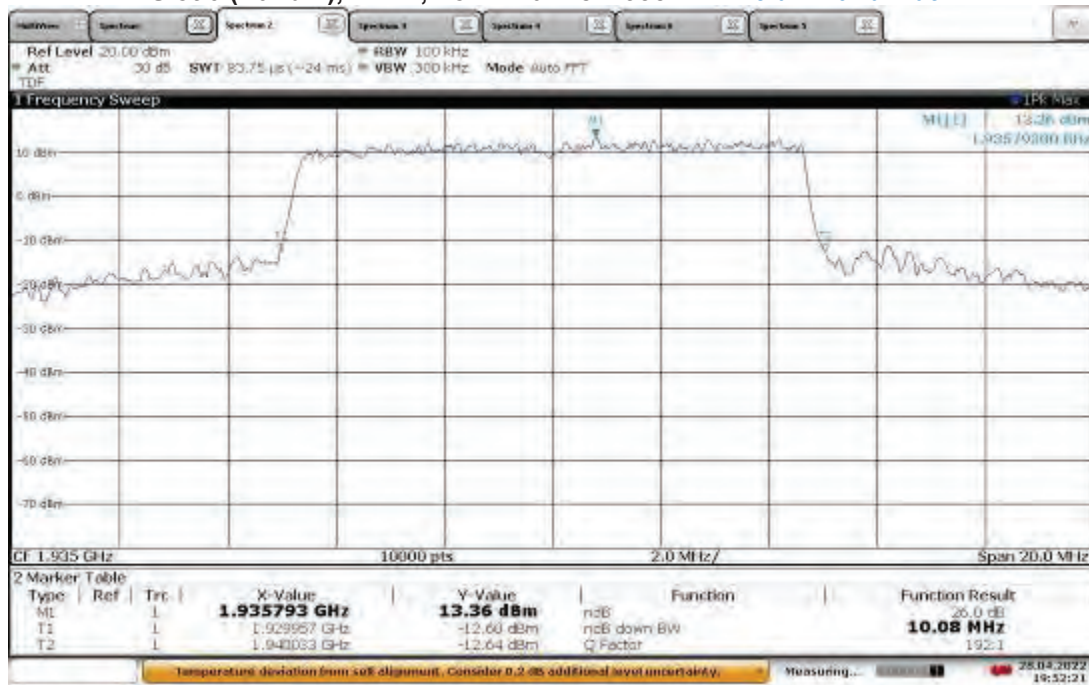
18:54:30 28.04.2022

TM3.1a-256QAM\_10 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, Low Channel 1935 MHz **26 dB Bandwidth**



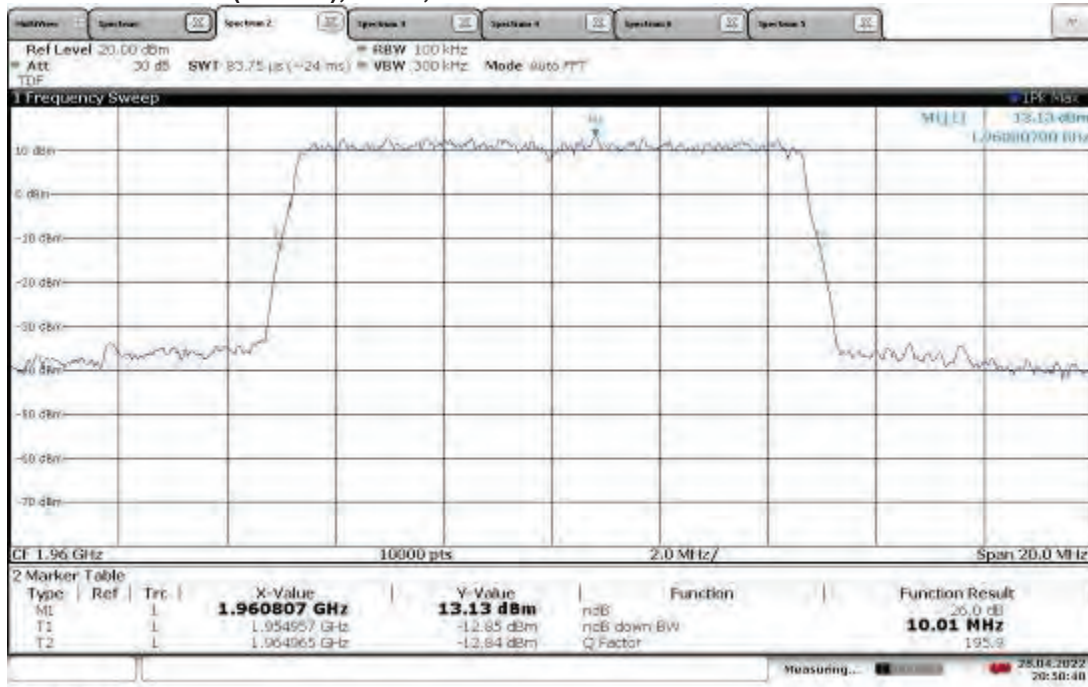
19:55:13 28.04.2022

TM3.1a-256QAM\_10 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, Low Channel 1935 MHz **26 dB Bandwidth**



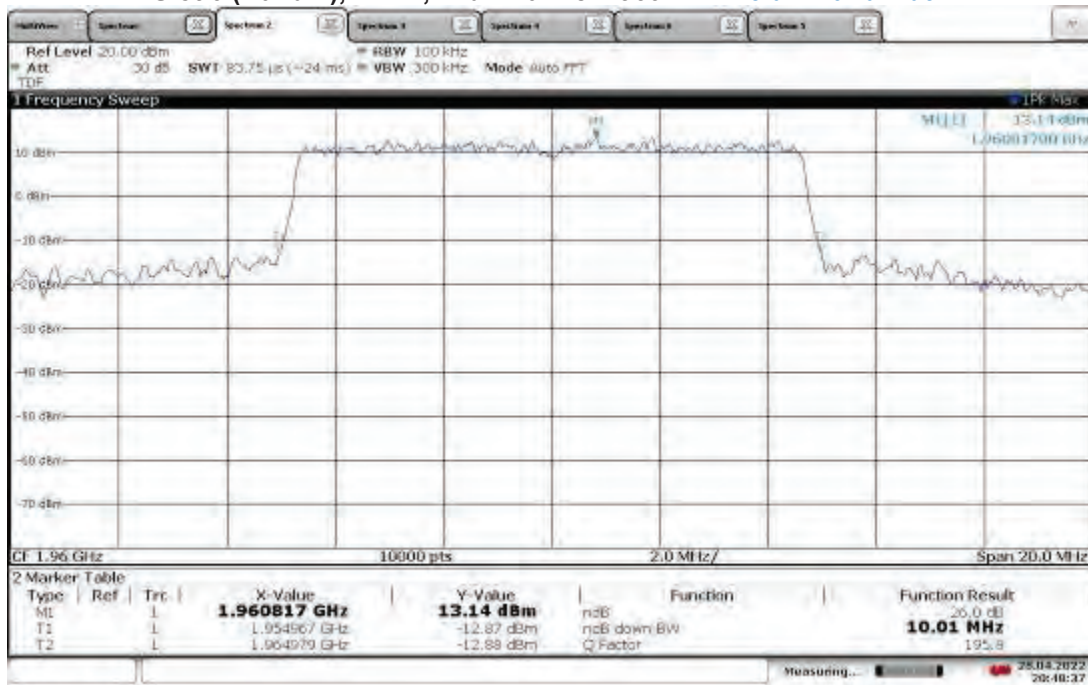
19:52:21 28.04.2022

TM3.1a-256QAM\_10 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz 26 dB Bandwidth



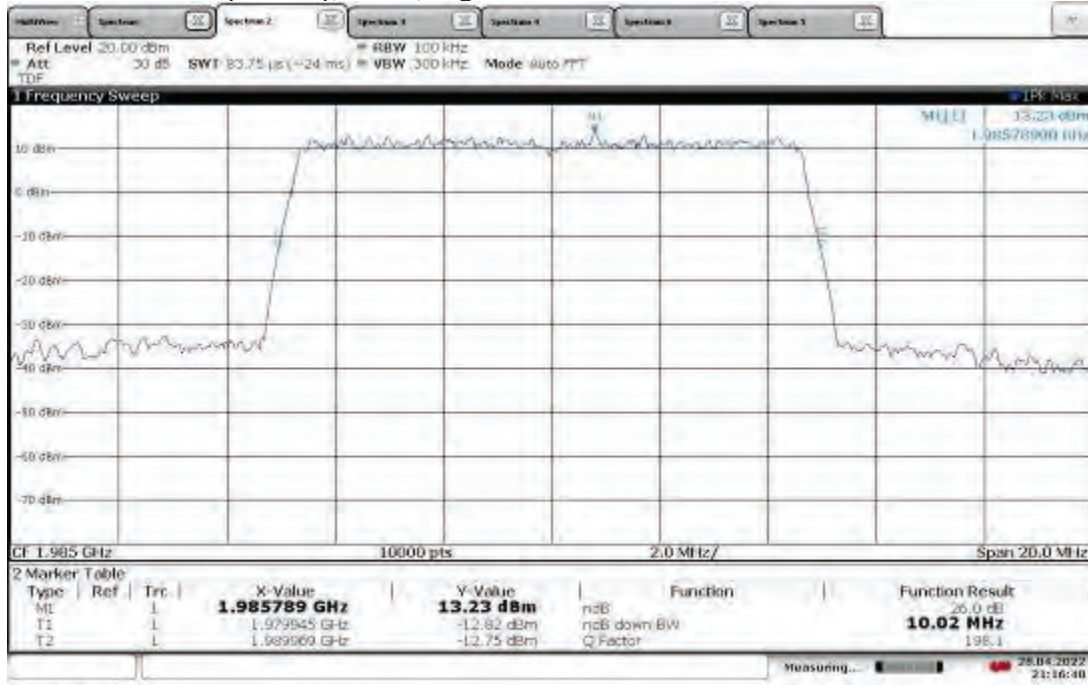
20:50:41 28.04.2022

TM3.1a-256QAM\_10 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz 26 dB Bandwidth



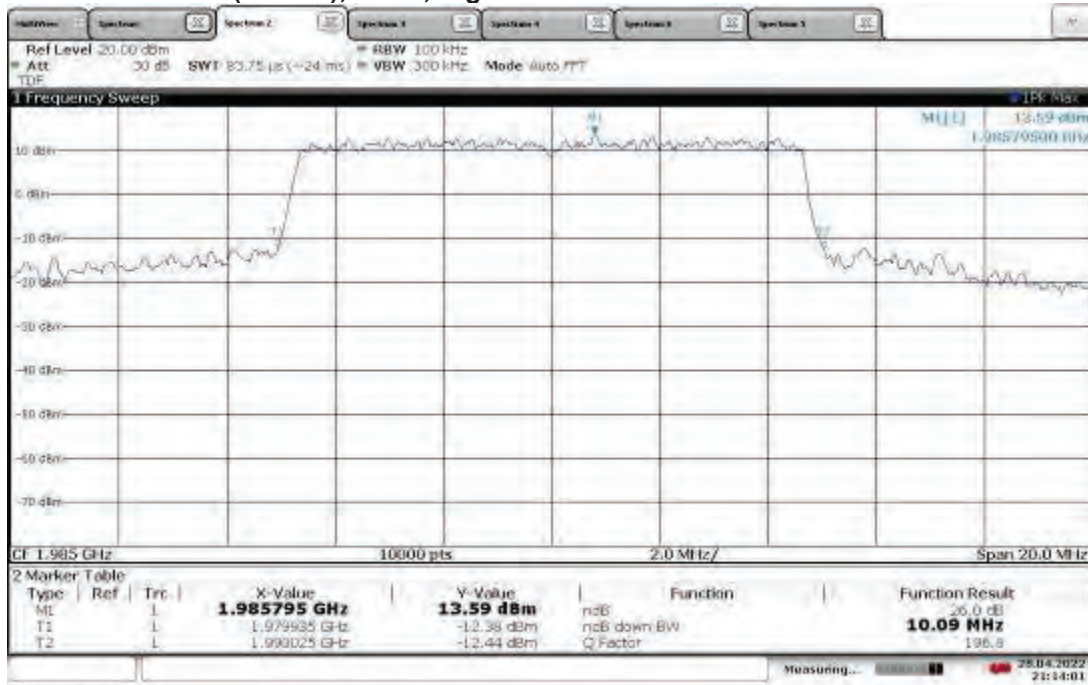
20:48:38 28.04.2022

**TM3.1a-256QAM\_10 MHz Bandwidth (5G NR)**  
**Slot 0 (Band 2), ANT0, High Channel 1985 MHz 26 dB Bandwidth**



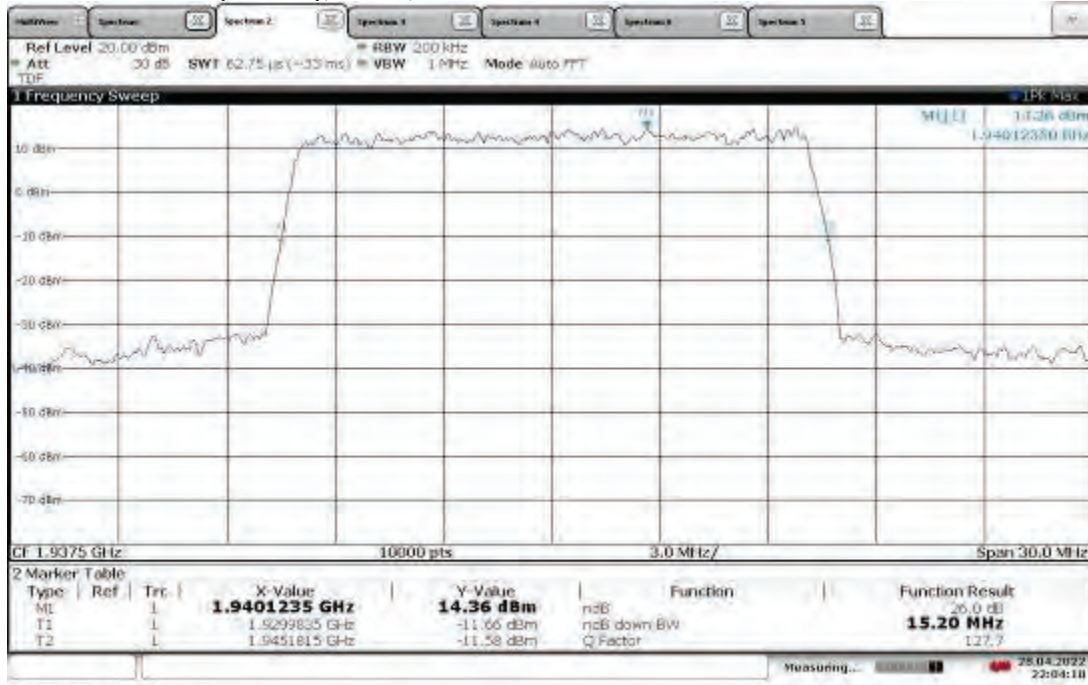
21:16:41 28.04.2022

**TM3.1a-256QAM\_10 MHz Bandwidth (5G NR)**  
**Slot 0 (Band 2), ANT1, High Channel 1985 MHz 26 dB Bandwidth**



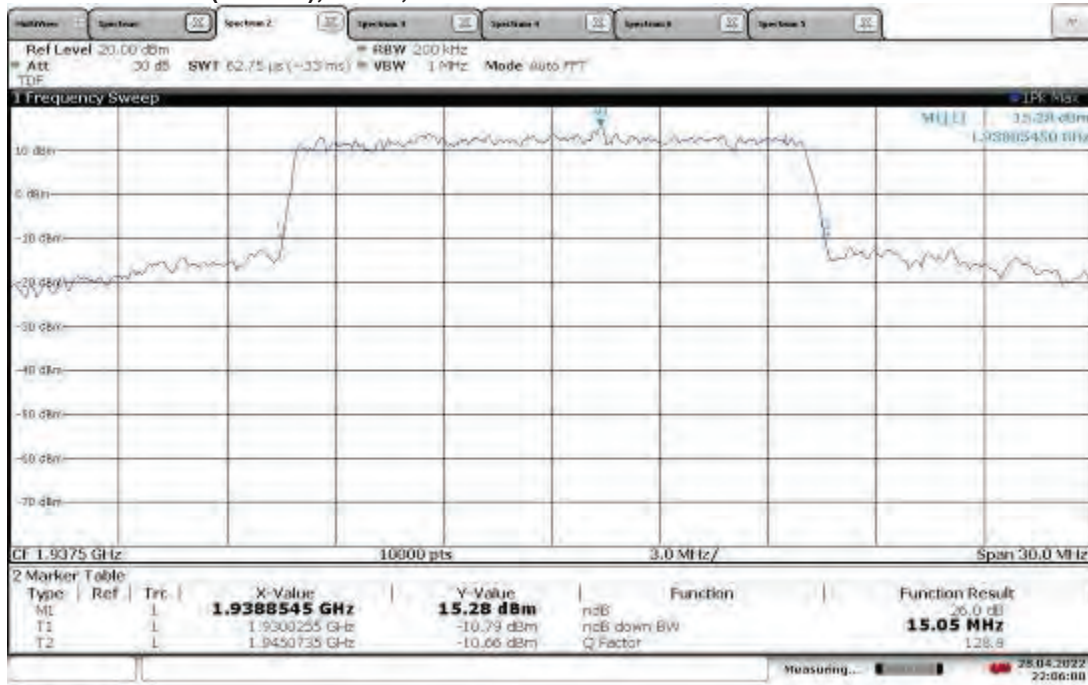
21:14:01 28.04.2022

**TM3.1a-256QAM\_15 MHz Bandwidth (5G NR)**  
**Slot 0 (Band 2), ANT0, Low Channel 1937.5 MHz 26 dB Bandwidth**



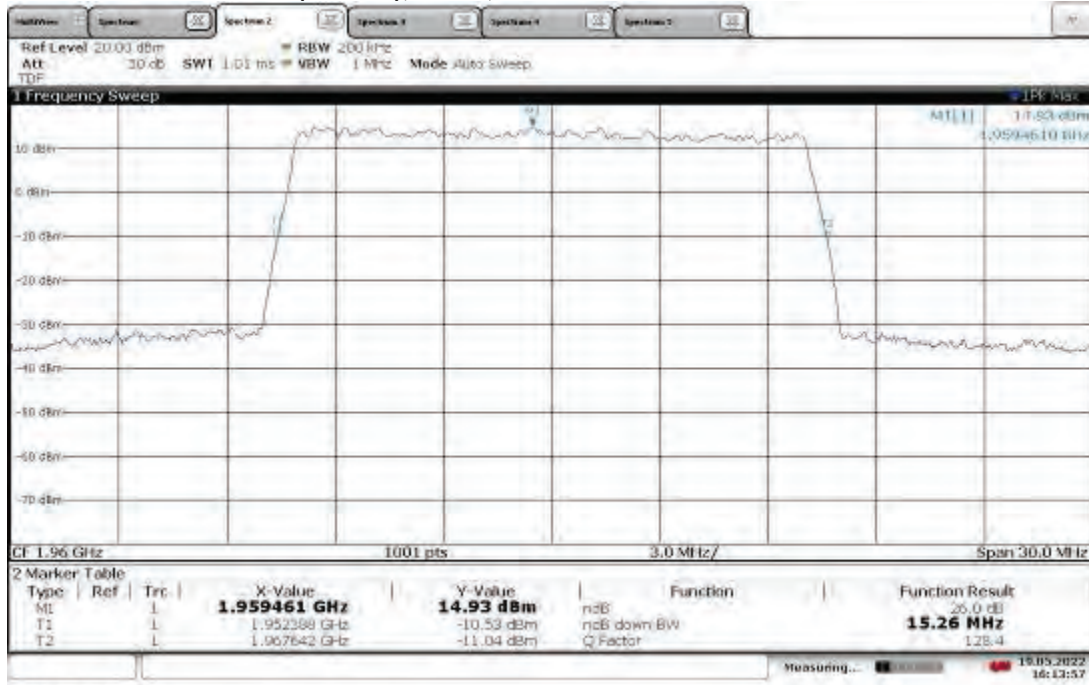
22:04:10 28.04.2022

**TM3.1a-256QAM\_15 MHz Bandwidth (5G NR)**  
**Slot 0 (Band 2), ANT1, Low Channel 1937.50 MHz 26 dB Bandwidth**



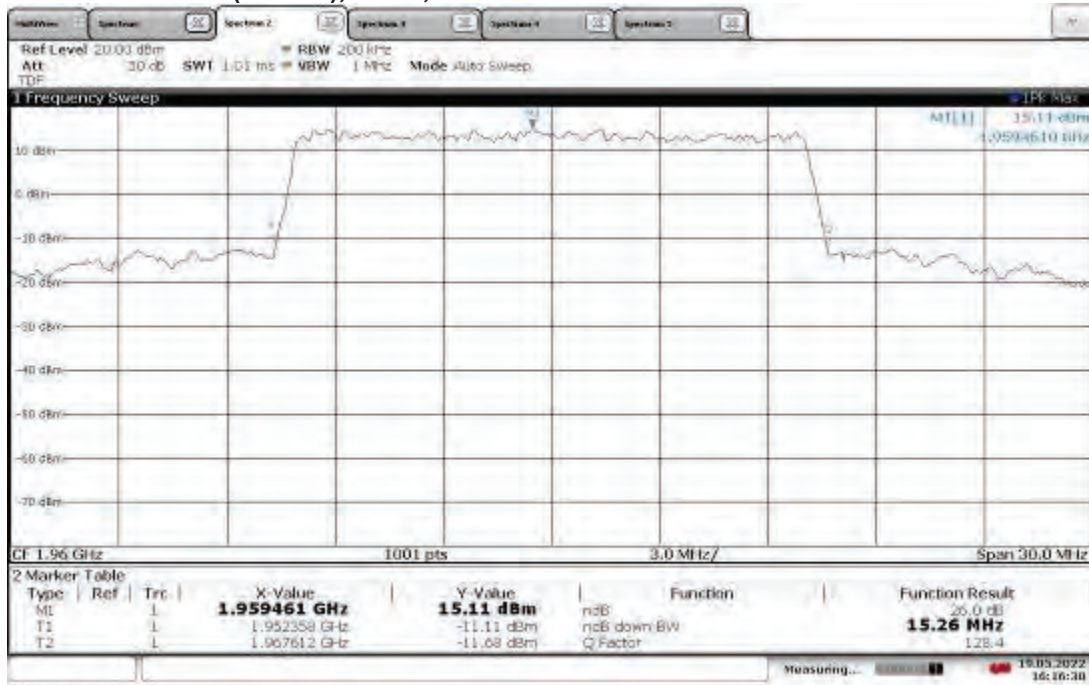
22:06:00 28.04.2022

**TM3.1a-256QAM\_15 MHz Bandwidth (5G NR)**  
**Slot 0 (Band 2), ANT0, Mid Channel 26 dB Bandwidth**



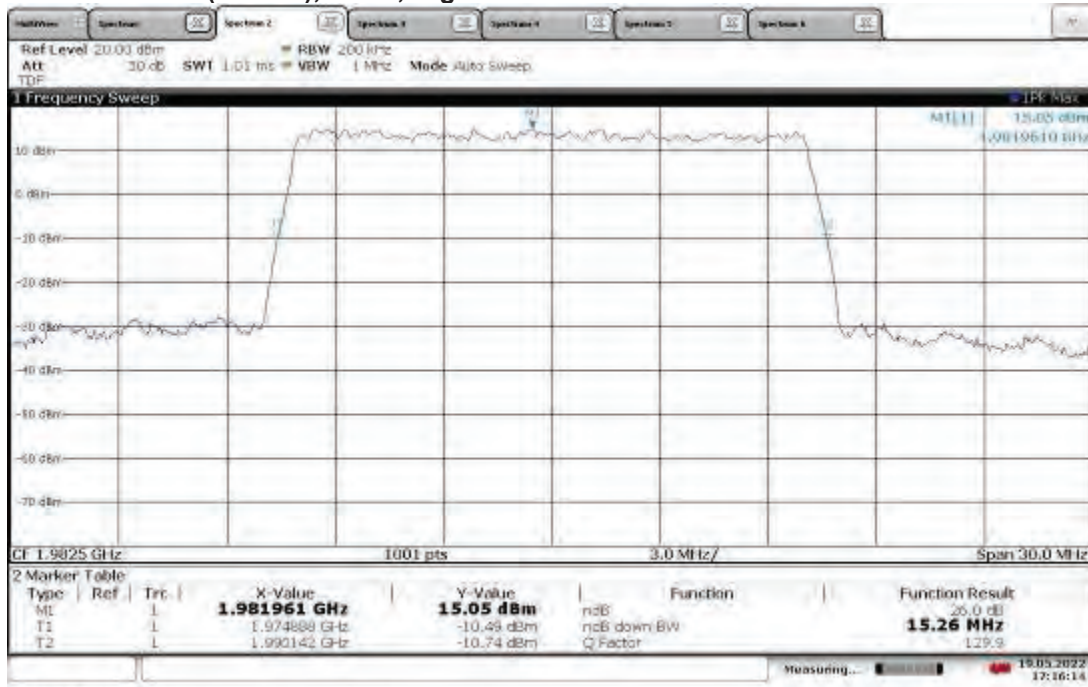
16:13:57 19.05.2022

**TM3.1a-256QAM\_15 MHz Bandwidth (5G NR)**  
**Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz 26 dB Bandwidth**



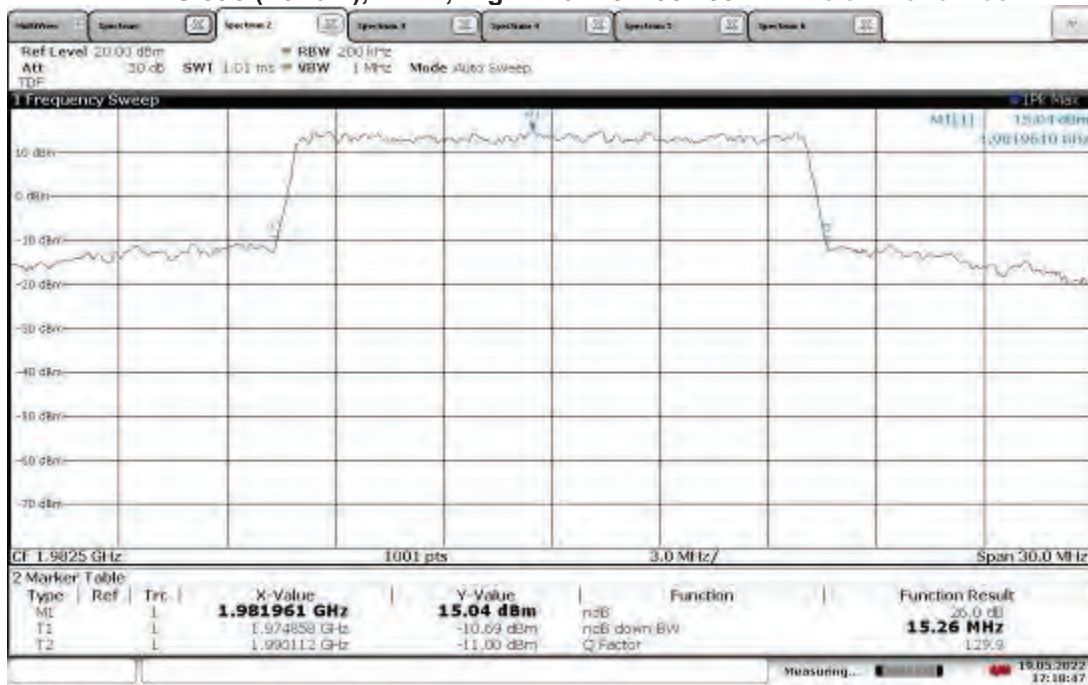
16:16:30 19.05.2022

TM3.1a-256QAM\_15 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, High Channel 1982.50 MHz 26 dB Bandwidth



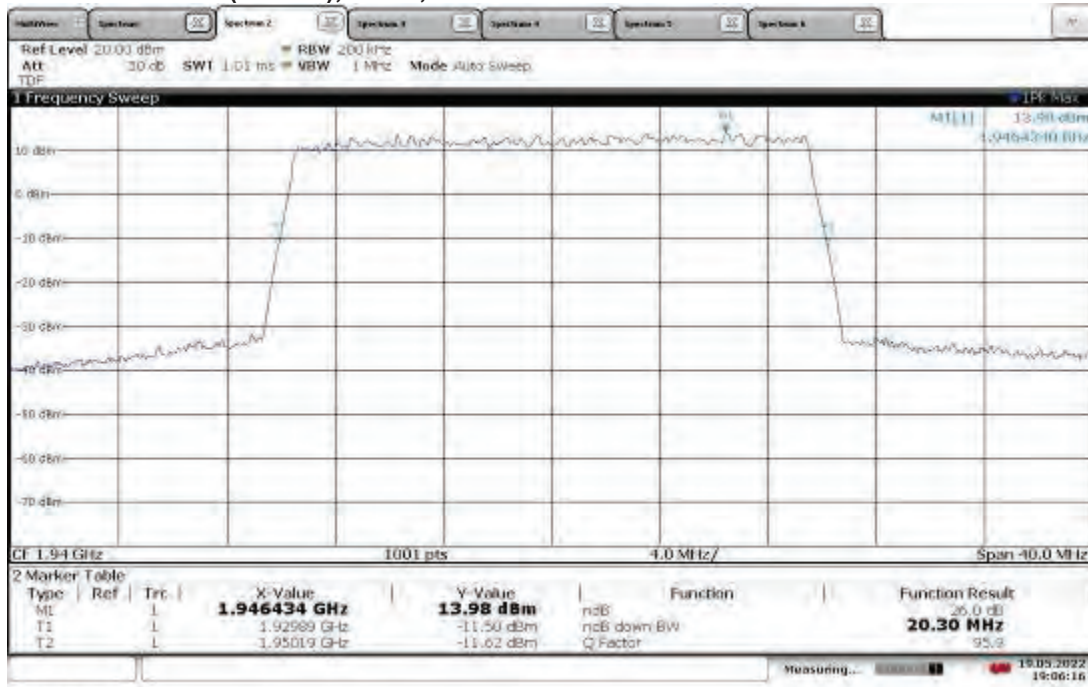
17:16:14 19.05.2022

TM3.1a-256QAM\_15 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, High Channel 1982.50 MHz 26 dB Bandwidth



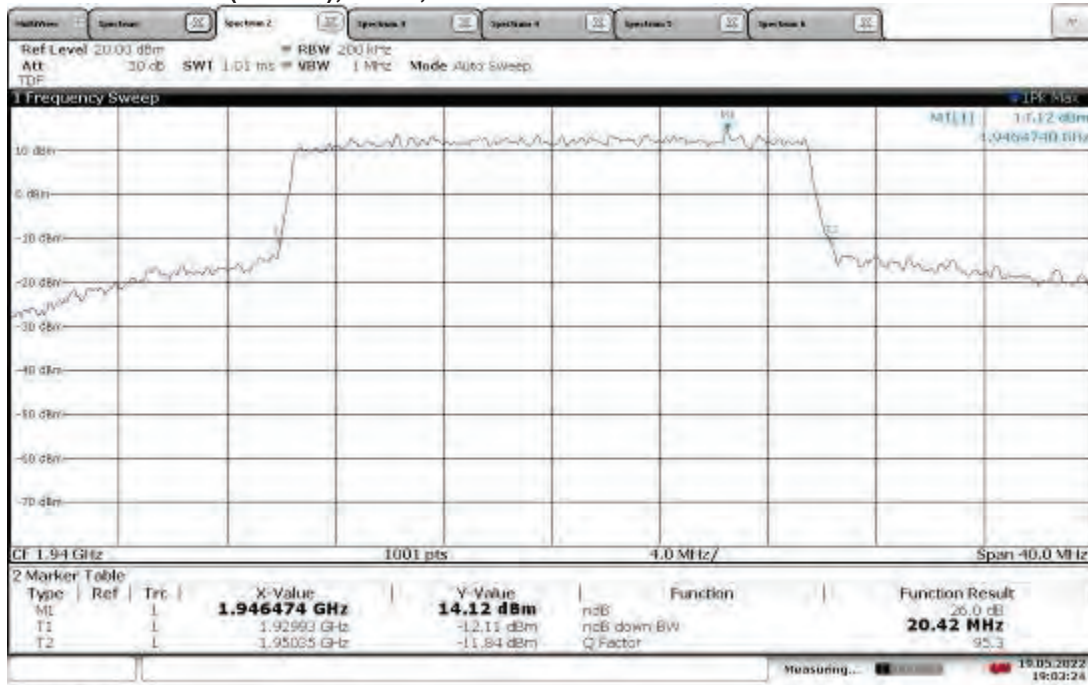
17:18:47 19.05.2022

TM3.1a-256QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, Low Channel 1940 MHz **26 dB Bandwidth**



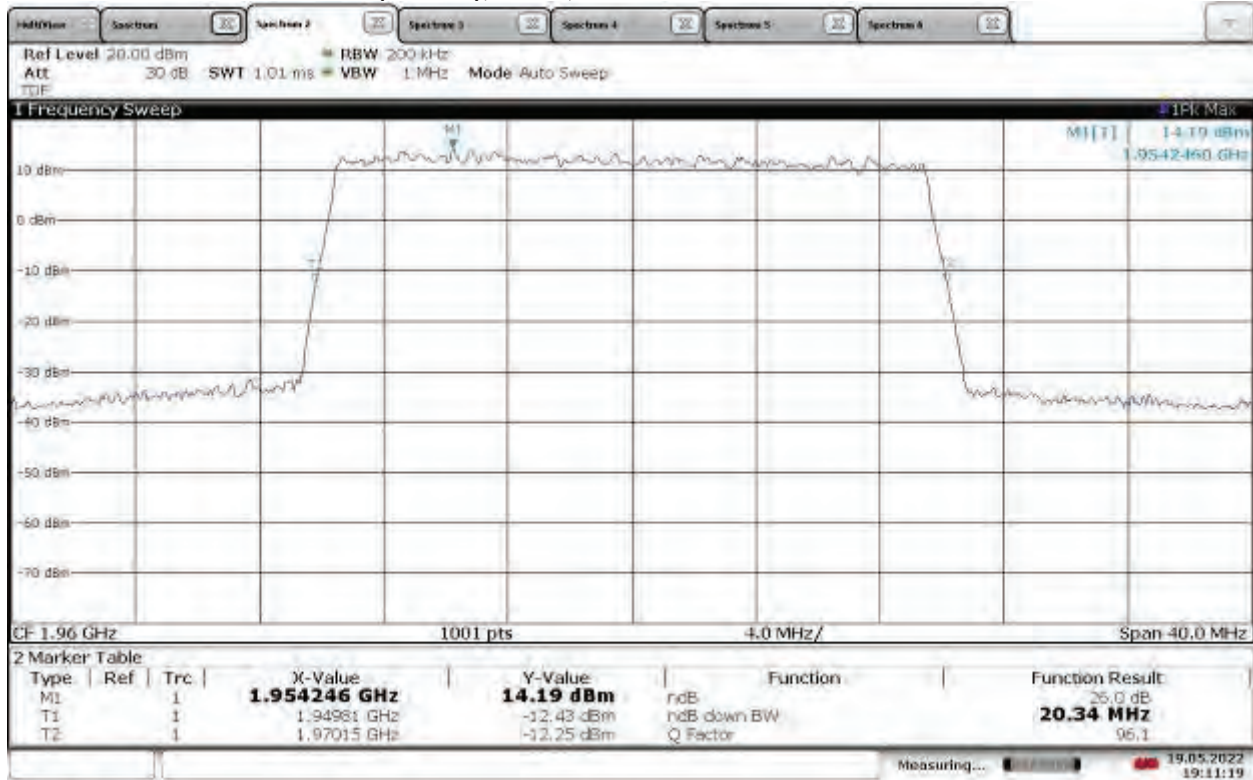
19:06:17 19.05.2022

TM3.1a-256QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, Low Channel 1940 MHz **26 dB Bandwidth**



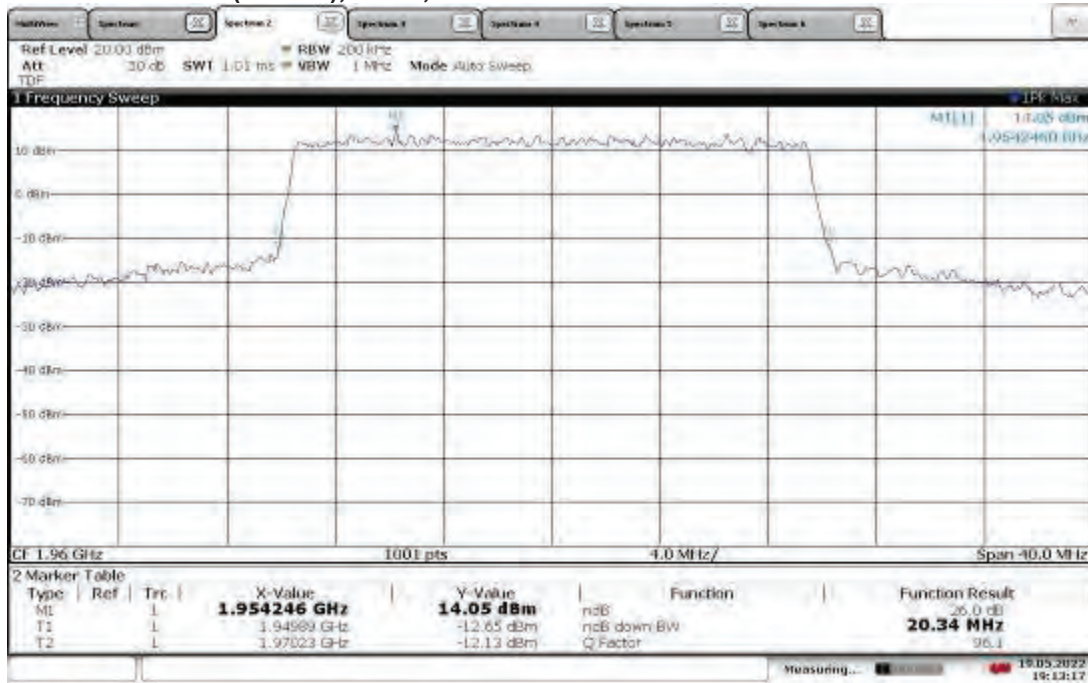
19:03:24 19.05.2022

TM3.1a-256QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, Mid Channel 26 dB Bandwidth



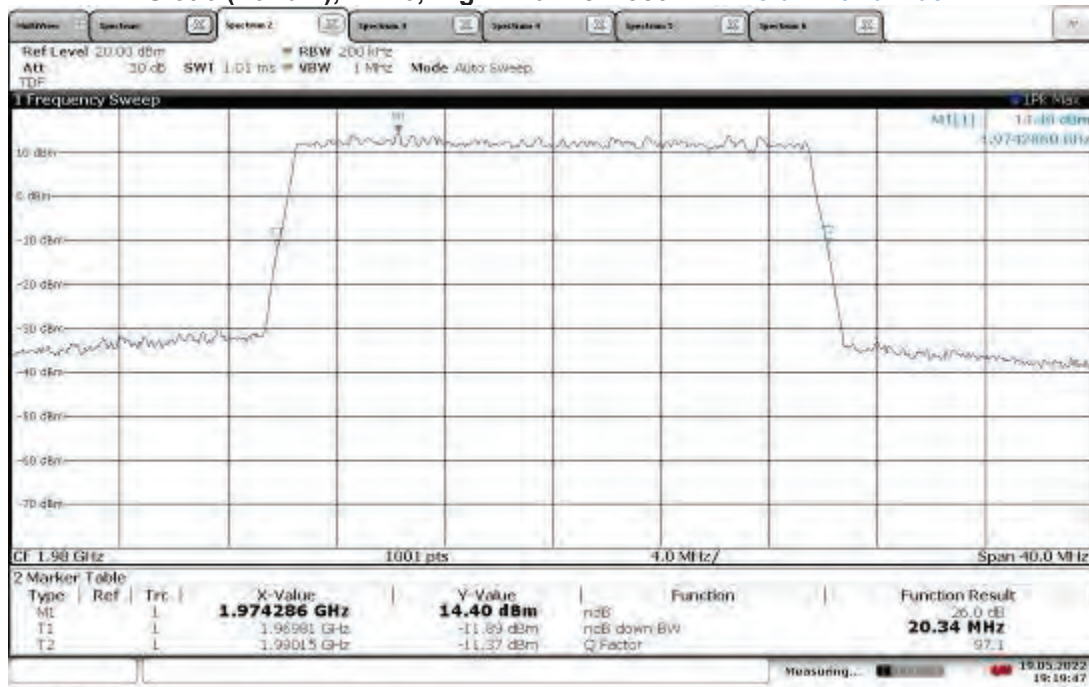
19:11:20 19.05.2022

TM3.1a-256QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz 26 dB Bandwidth



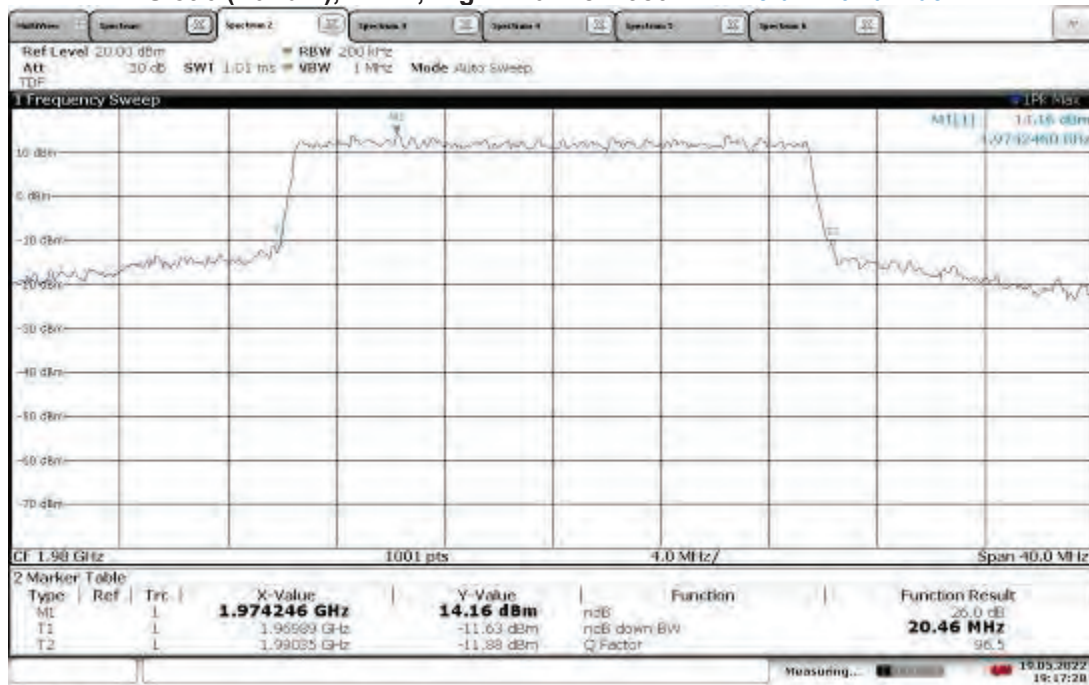
19:13:17 19.05.2022

TM3.1a-256QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT0, High Channel 1980 MHz 26 dB Bandwidth



19:19:47 19.05.2022

TM3.1a-256QAM\_20 MHz Bandwidth (5G NR)  
Slot 0 (Band 2), ANT1, High Channel 1980 MHz 26 dB Bandwidth



19:17:28 19.05.2022

Test Personnel: Kouma Sinn *KPS*  
Supervising/Reviewing  
Engineer:  
(Where Applicable) Vathana F. Ven *VFP*

Test Date: 04/18/2022, 04/19/2022, 04/21/2022

Product Standard: FCC Part 24  
Input Voltage: 48 VDC (POE)

Limit Applied: See report section 8.3

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

Ambient Temperature: 25, 25, 24 °C

Relative Humidity: 18, 34, 23 %

Atmospheric Pressure: 1015, 988, 1024 mbars

Deviations, Additions, or Exclusions: None

## 9 Band Edge Compliance

### 9.1 Method

Tests are performed in accordance with ANSI C63.26, CFR47 FCC Part §2.1051, and CFR47 FCC Part §24.

**TEST SITE:** EMC Lab

**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.

### 9.2 Test Equipment Used:

| Asset           | Description                        | Manufacturer       | Model   | Serial      | Cal Date   | Cal Due    |
|-----------------|------------------------------------|--------------------|---------|-------------|------------|------------|
| DAV005'         | Weather Station                    | Davis              | 6250    | MS191218083 | 02/11/2022 | 02/11/2023 |
| ROS005-1'       | Signal and Spectrum Analyzer       | Rohde and Schwartz | FSW43   | 100646      | 11/02/2021 | 11/02/2022 |
| CEN001'         | DC-40GHz attenuator 20dB           | Centric RF         | C411-20 | CEN001      | 01/26/2022 | 01/26/2023 |
| CBLHF2012-2M-2' | 2m 9kHz-40GHz Coaxial Cable - SET2 | Huber & Suhner     | SF102   | 252675002   | 02/10/2023 | 02/10/2023 |

#### Software Utilized:

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

### 9.3 Results:

The sample tested was found to Comply. 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.

Limits – FCC Part §24.238(a): 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.  
 (b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

**Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM1.1-QPSK (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1932.50         | ANT0         | -30.38        | -13         | -17.38      |
|           |                 | ANT1         | -15.97        | -13         | -2.97       |
| High      | 1987.50         | ANT0         | -30.64        | -13         | -17.64      |
|           |                 | ANT1         | -13.10        | -13         | -0.1        |

**Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM1.1-QPSK (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1935            | ANT0         | -30.89        | -13         | -17.89      |
|           |                 | ANT1         | -16.33        | -13         | -3.33       |
| High      | 1985            | ANT0         | -30.44        | -13         | -17.44      |
|           |                 | ANT1         | -14.57        | -13         | -1.57       |

**Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM1.1-QPSK (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1937.50         | ANT0         | -29.58        | -13         | -16.58      |
|           |                 | ANT1         | -17.56        | -13         | -4.56       |
| High      | 1982.50         | ANT0         | -28.78        | -13         | -15.78      |
|           |                 | ANT1         | -16.57        | -13         | -3.57       |

**Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM1.1-QPSK (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1940            | ANT0         | -31.12        | -13         | -18.12      |
|           |                 | ANT1         | -19.62        | -13         | -6.62       |
| High      | 1980            | ANT0         | -29.58        | -13         | -16.58      |
|           |                 | ANT1         | -18.64        | -13         | -5.64       |

**Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM3.2-16QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1932.50         | ANT0         | -29.41        | -13         | -16.41      |
|           |                 | ANT1         | -14.27        | -13         | -1.27       |
| High      | 1987.50         | ANT0         | -31.00        | -13         | -18         |
|           |                 | ANT1         | -13.07        | -13         | -0.07       |

**Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM3.2-16QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1935            | ANT0         | -30.10        | -13         | -17.1       |
|           |                 | ANT1         | -15.99        | -13         | -2.99       |
| High      | 1985            | ANT0         | -31.63        | -13         | -18.63      |
|           |                 | ANT1         | -15.70        | -13         | -2.7        |

**Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM3.2-16QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1937.50         | ANT0         | -17.48        | -13         | -4.48       |
|           |                 | ANT1         | -17.72        | -13         | -4.72       |
| High      | 1982.50         | ANT0         | -29.60        | -13         | -16.6       |
|           |                 | ANT1         | -16.26        | -13         | -3.26       |

**Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM3.2-16QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1940            | ANT0         | -32.63        | -13         | -19.63      |
|           |                 | ANT1         | -19.07        | -13         | -6.07       |
| High      | 1980            | ANT0         | -32.59        | -13         | -19.59      |
|           |                 | ANT1         | -18.92        | -13         | -5.92       |

**Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM3.1-64QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1932.50         | ANT0         | -30.13        | -13         | -17.13      |
|           |                 | ANT1         | -15.19        | -13         | -2.19       |
| High      | 1987.50         | ANT0         | -29.81        | -13         | -16.81      |
|           |                 | ANT1         | -13.50        | -13         | -0.5        |

**Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM3.1-64QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1935            | ANT0         | -30.36        | -13         | -17.36      |
|           |                 | ANT1         | -17.13        | -13         | -4.13       |
| High      | 1985            | ANT0         | -31.24        | -13         | -18.24      |
|           |                 | ANT1         | -15.58        | -13         | -2.58       |

**Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM3.1-64QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1937.50         | ANT0         | -21.12        | -13         | -8.12       |
|           |                 | ANT1         | -17.92        | -13         | -4.92       |
| High      | 1982.50         | ANT0         | -32.51        | -13         | -19.51      |
|           |                 | ANT1         | -17.50        | -13         | -4.5        |

**Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM3.1-64QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1940            | ANT0         | -31.12        | -13         | -18.12      |
|           |                 | ANT1         | -20.65        | -13         | -7.65       |
| High      | 1980            | ANT0         | -30.46        | -13         | -17.46      |
|           |                 | ANT1         | -18.97        | -13         | -5.97       |

**Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1932.50         | ANT0         | -30.40        | -13         | -17.4       |
|           |                 | ANT1         | -14.41        | -13         | -1.41       |
| High      | 1987.50         | ANT0         | -29.12        | -13         | -16.12      |
|           |                 | ANT1         | -13.20        | -13         | -0.2        |

**Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1935            | ANT0         | -30.39        | -13         | -17.39      |
|           |                 | ANT1         | -16.76        | -13         | -3.76       |
| High      | 1985            | ANT0         | -30.53        | -13         | -17.53      |
|           |                 | ANT1         | -15.09        | -13         | -2.09       |

**Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM (5G NR)**

| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1937.50         | ANT0         | -31.81        | -13         | -18.81      |
|           |                 | ANT1         | -18.35        | -13         | -5.35       |
| High      | 1982.50         | ANT0         | -31.54        | -13         | -18.54      |
|           |                 | ANT1         | -16.49        | -13         | -3.49       |

**Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM (5G NR)**

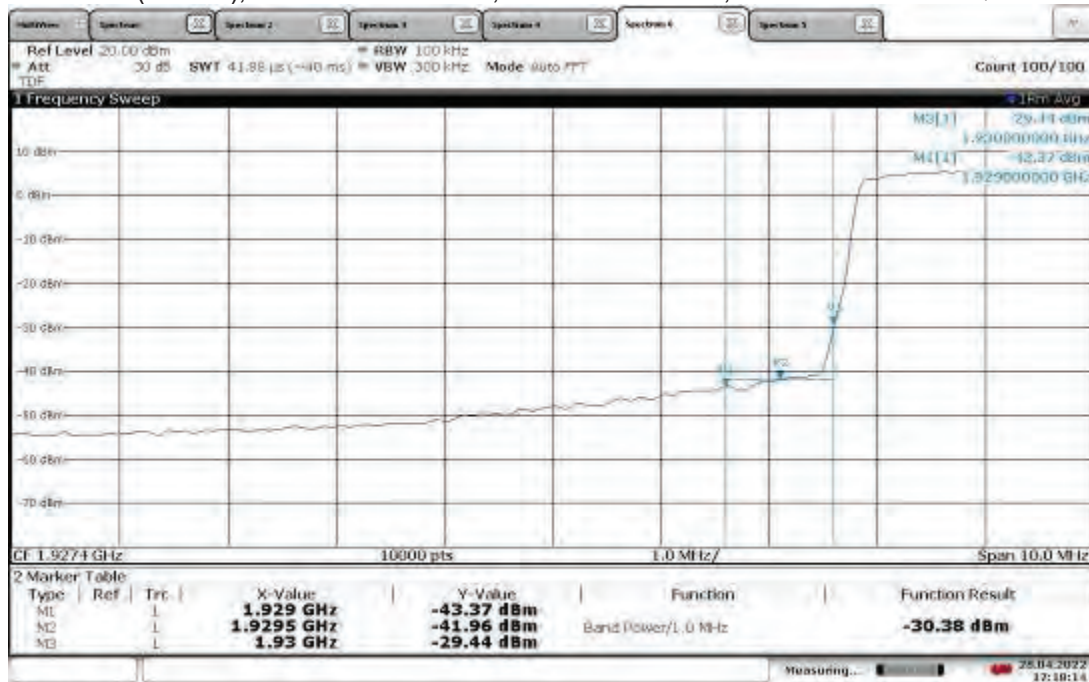
| Band Edge | Frequency (MHz) | Antenna Port | Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|--------------|---------------|-------------|-------------|
| Low       | 1940            | ANT0         | -31.99        | -13         | -18.99      |
|           |                 | ANT1         | -19.41        | -13         | -6.41       |
| High      | 1980            | ANT0         | -29.03        | -13         | -16.03      |
|           |                 | ANT1         | -18.54        | -13         | -5.54       |

#### **9.4 Setup Photograph:**

Confidential – Photos not included in this report

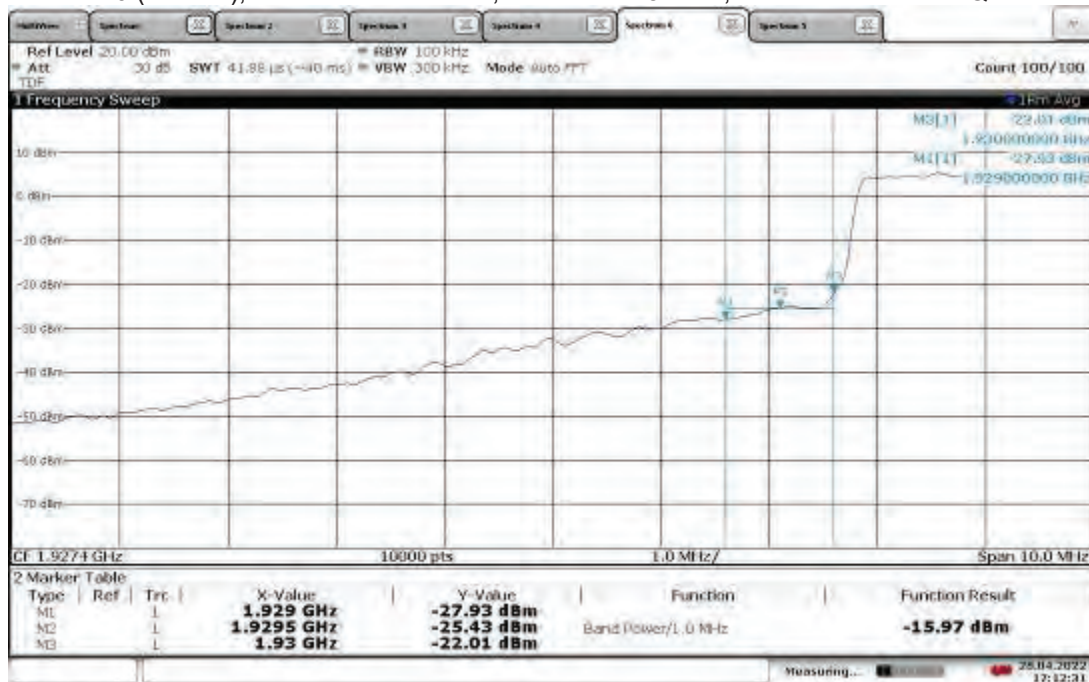
## 9.5 Plots/Data:

Band Edge Compliant, Lower Band Edge, 1932.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK



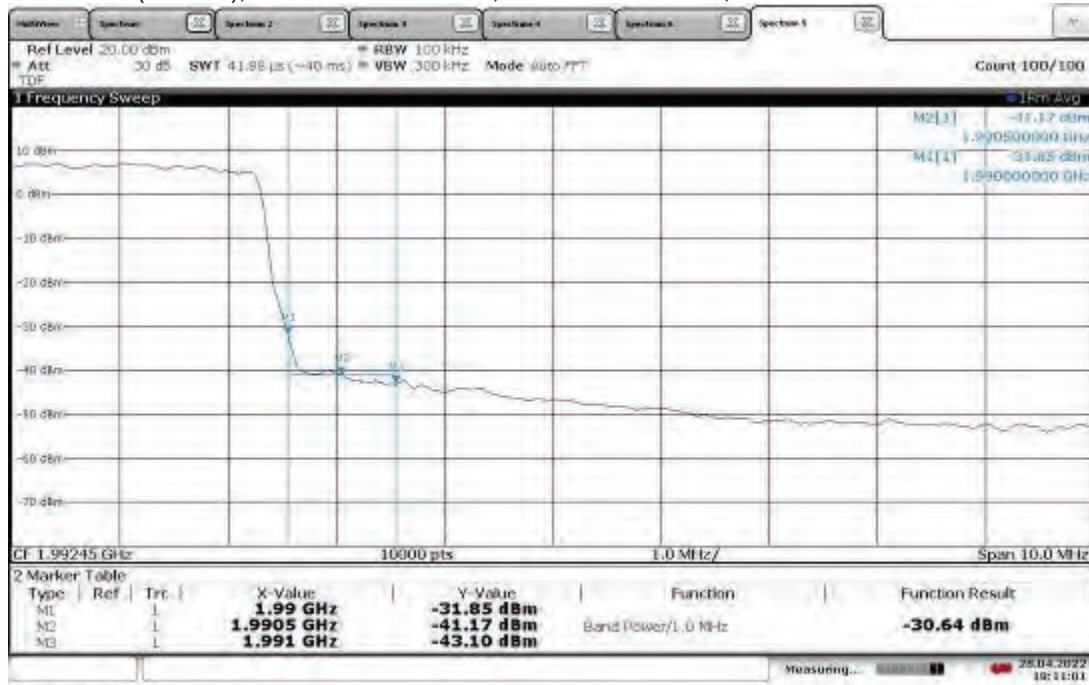
17:18:15 28.04.2022

Band Edge Compliant, Lower Band Edge, 1932.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK



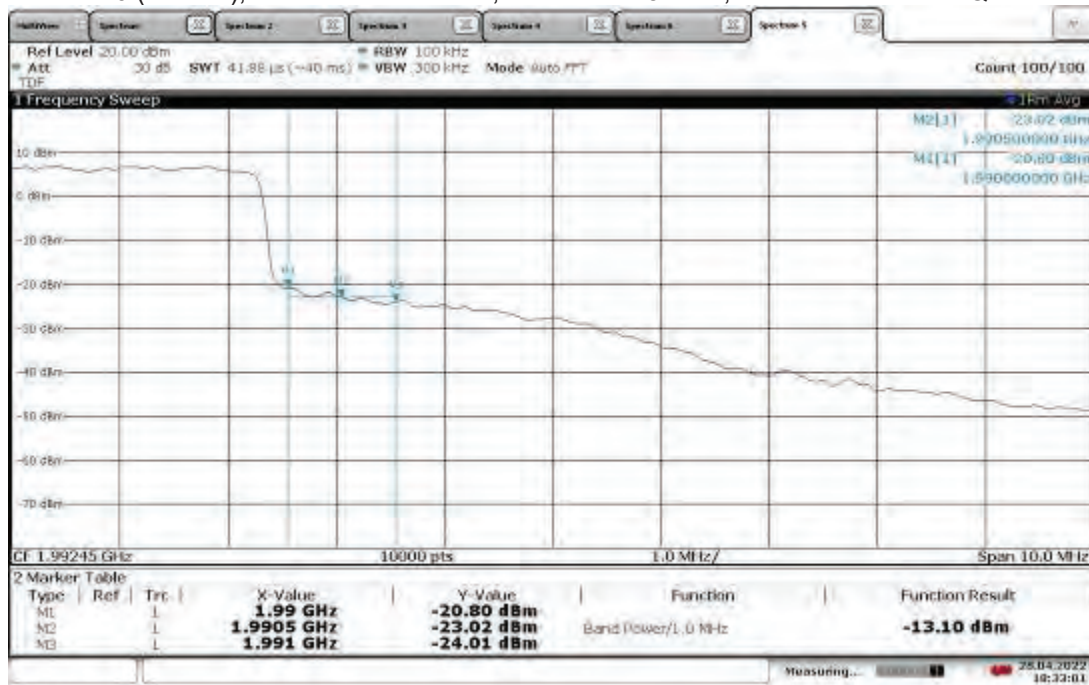
17:12:31 28.04.2022

Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK



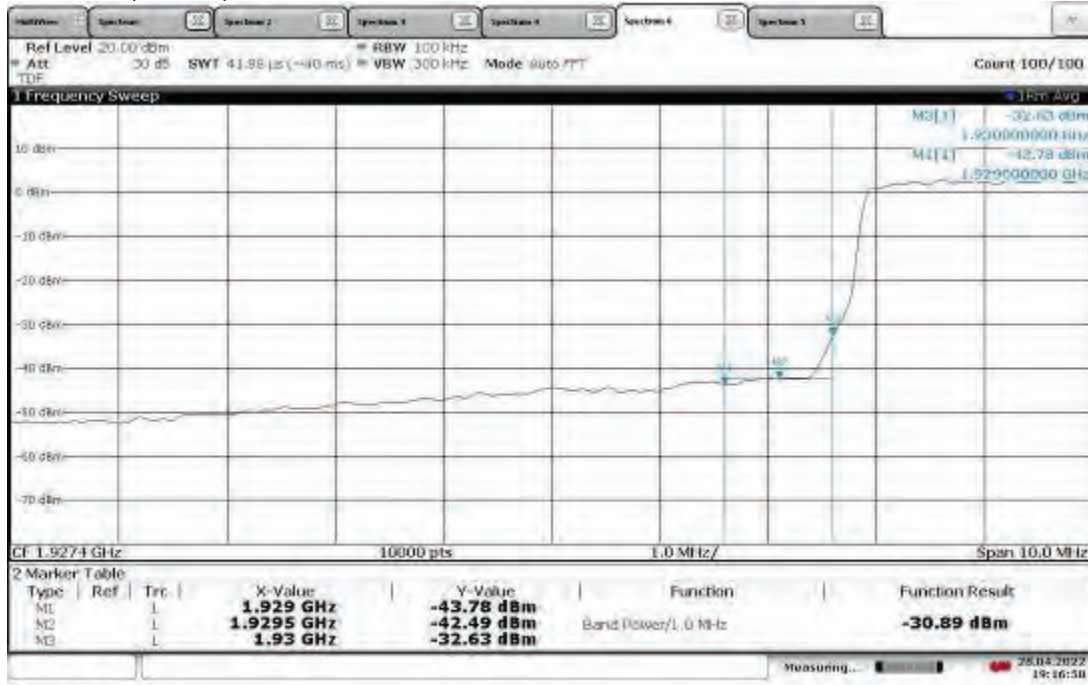
18:11:01 28.04.2022

Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK



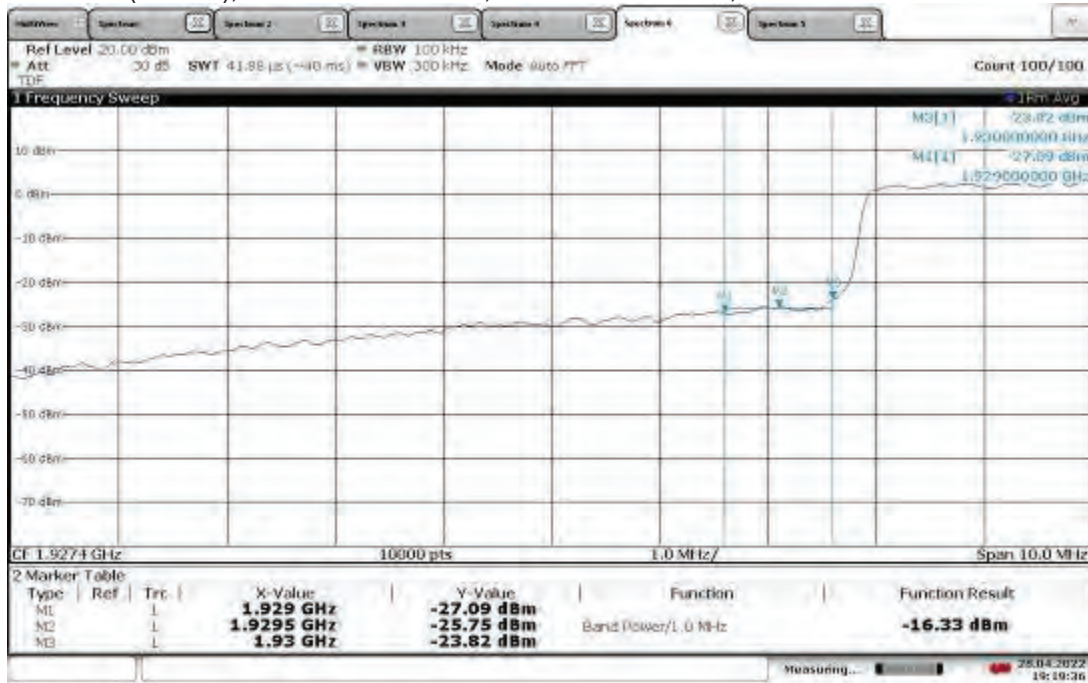
18:33:02 28.04.2022

Band Edge Compliant, Lower Band Edge, 1935 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK



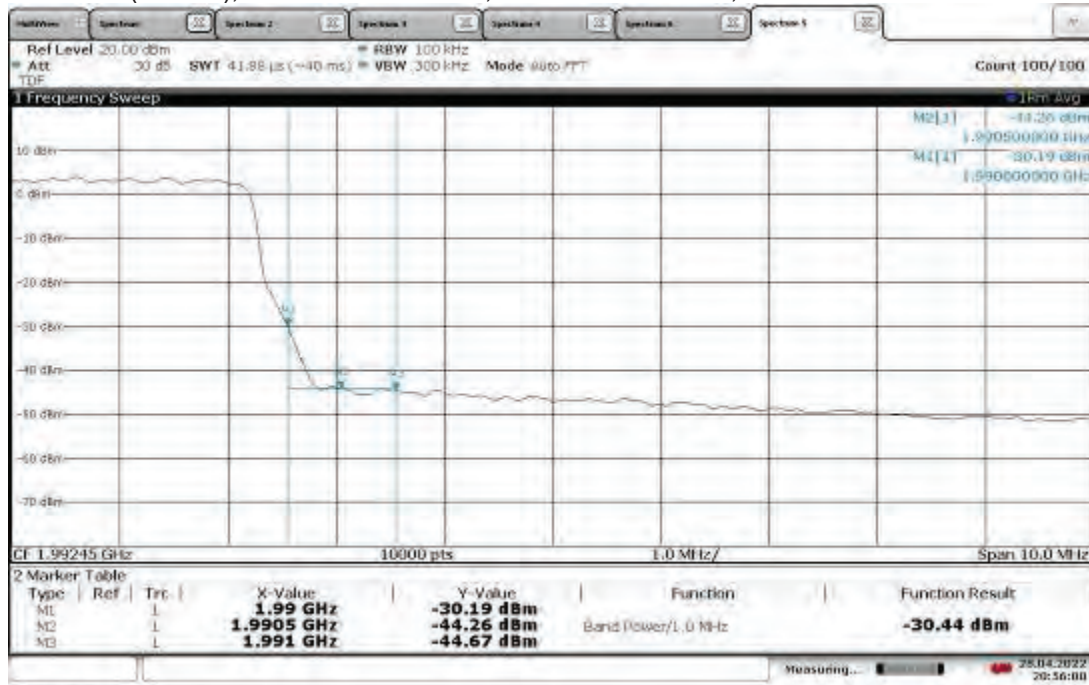
19:16:50 28.04.2022

Band Edge Compliant, Lower Band Edge, 1935 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK



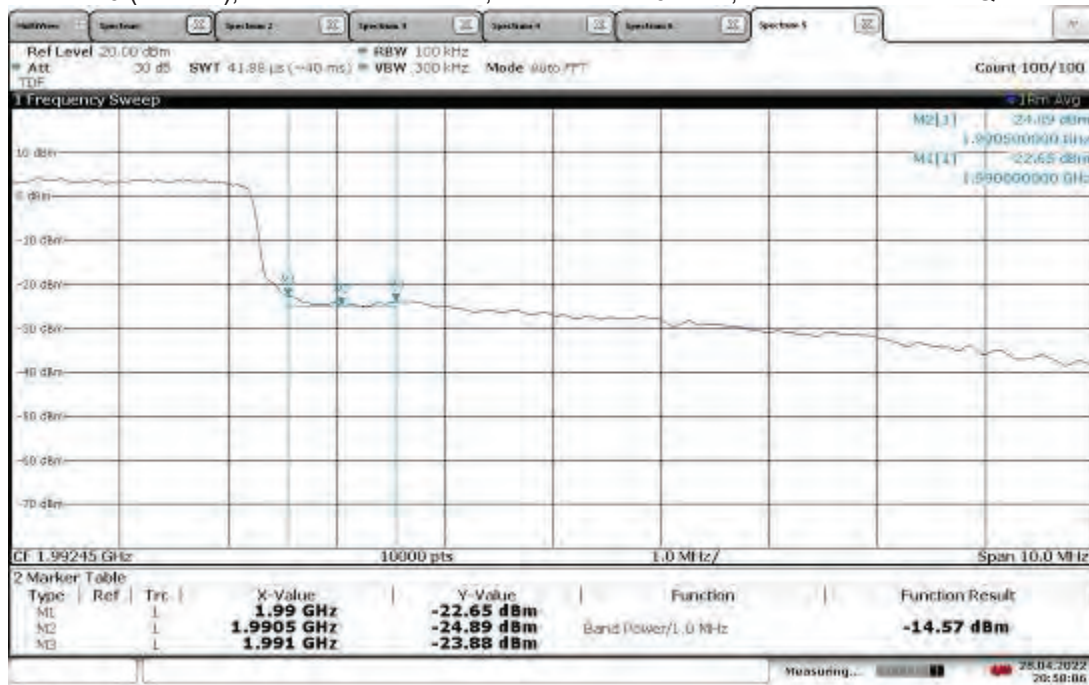
19:19:37 28.04.2022

Band Edge Compliant, Upper Edge, 1985 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK



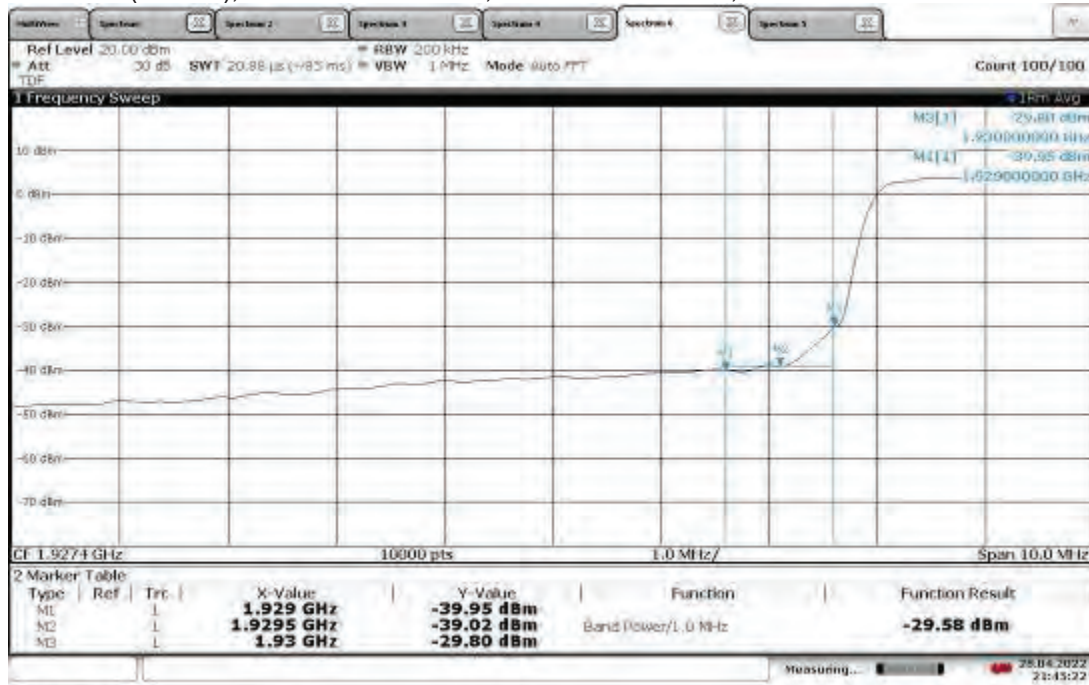
20:56:00 28.04.2022

Band Edge Compliant, Upper Edge, 1985 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK



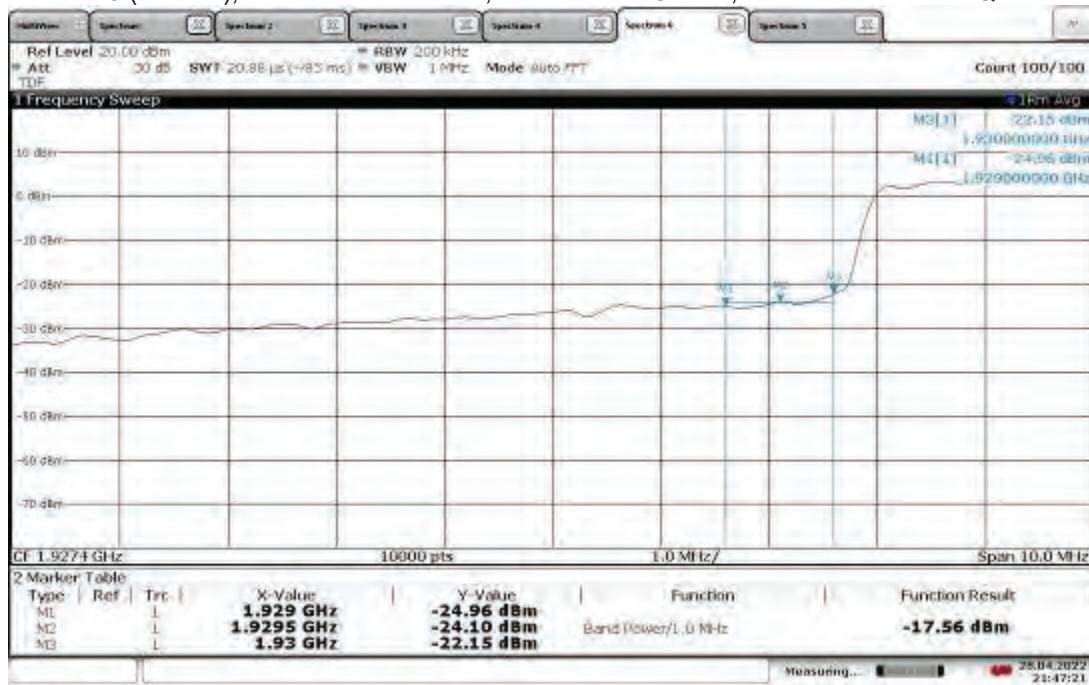
20:58:06 28.04.2022

Band Edge Compliant, Lower Band Edge, 1937.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK



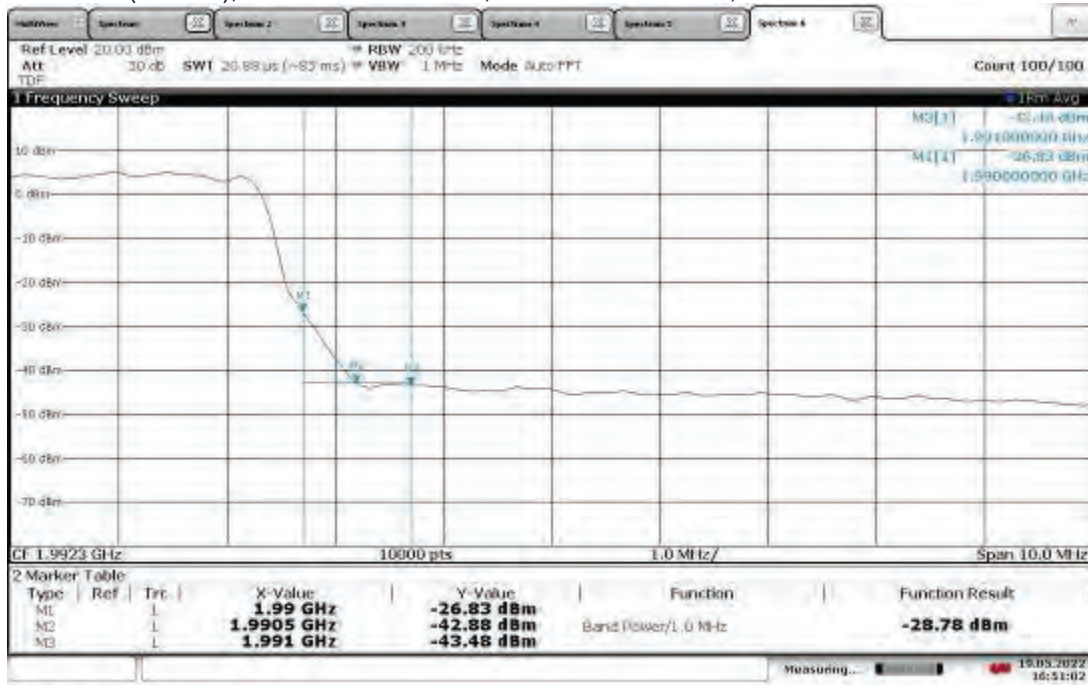
21:45:22 28.04.2022

Band Edge Compliant, Lower Band Edge, 1937.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK



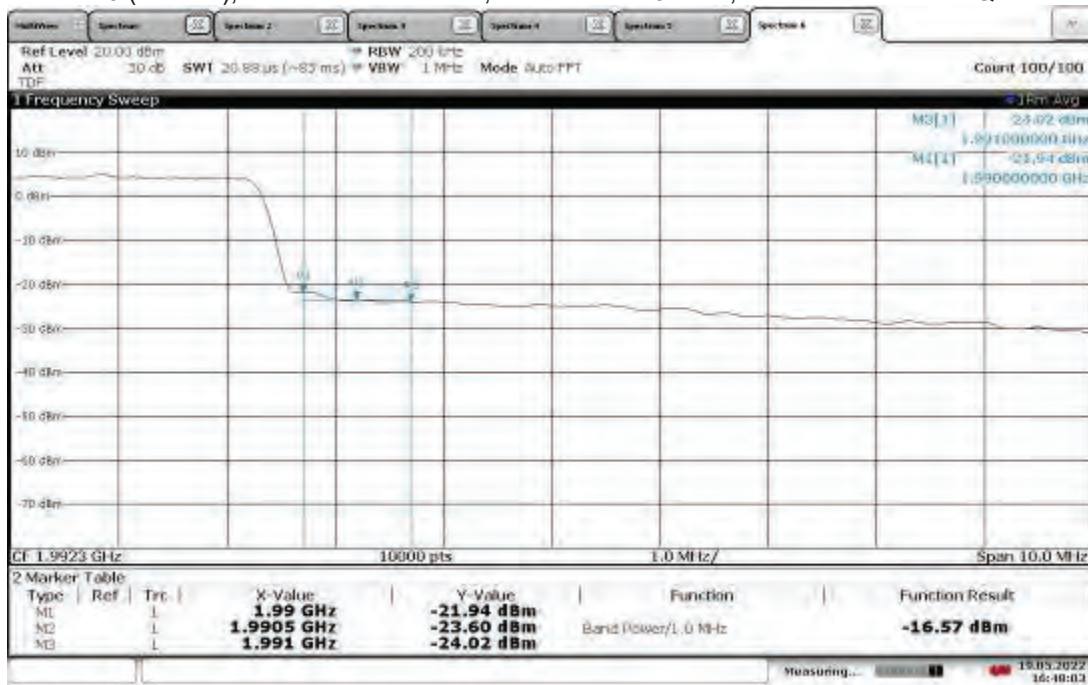
21:47:22 28.04.2022

Band Edge Compliant, Upper Band Edge, 1982.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK



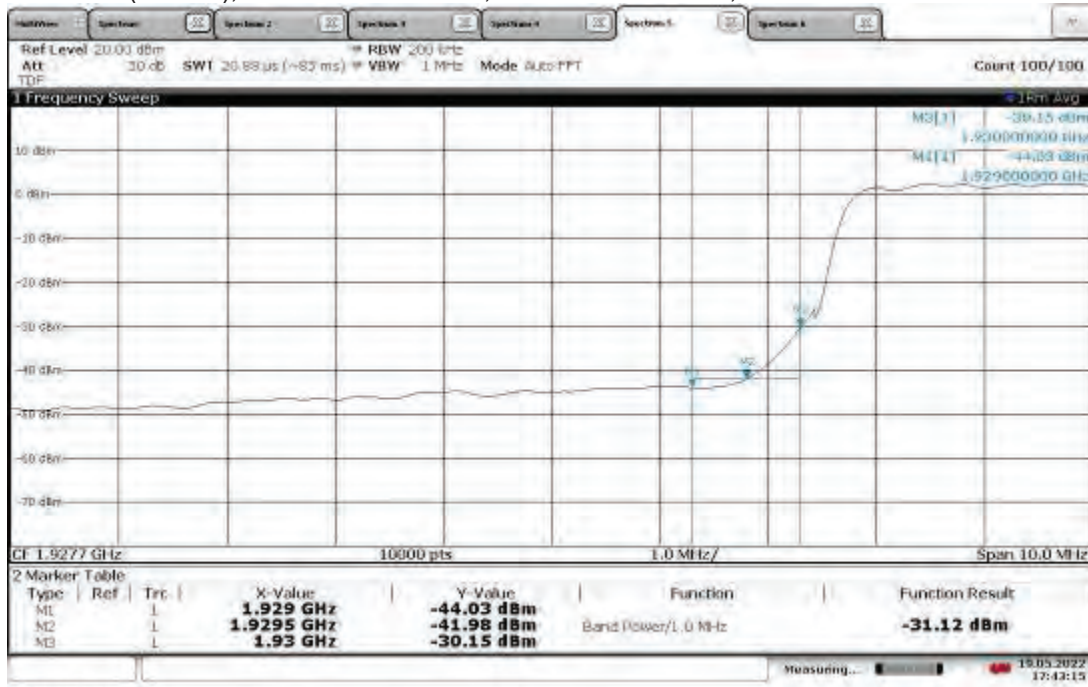
16:51:03 19.05.2022

Band Edge Compliant, Upper Band Edge, 1982.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK



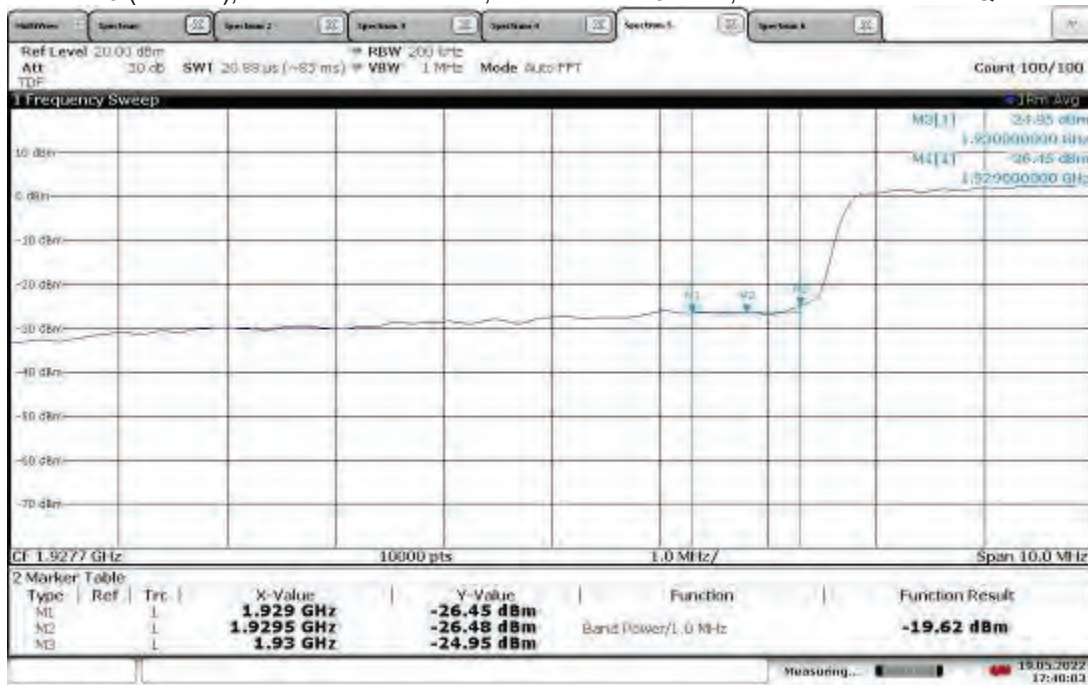
16:48:03 19.05.2022

Band Edge Compliant, Lower Band Edge, 1940 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK



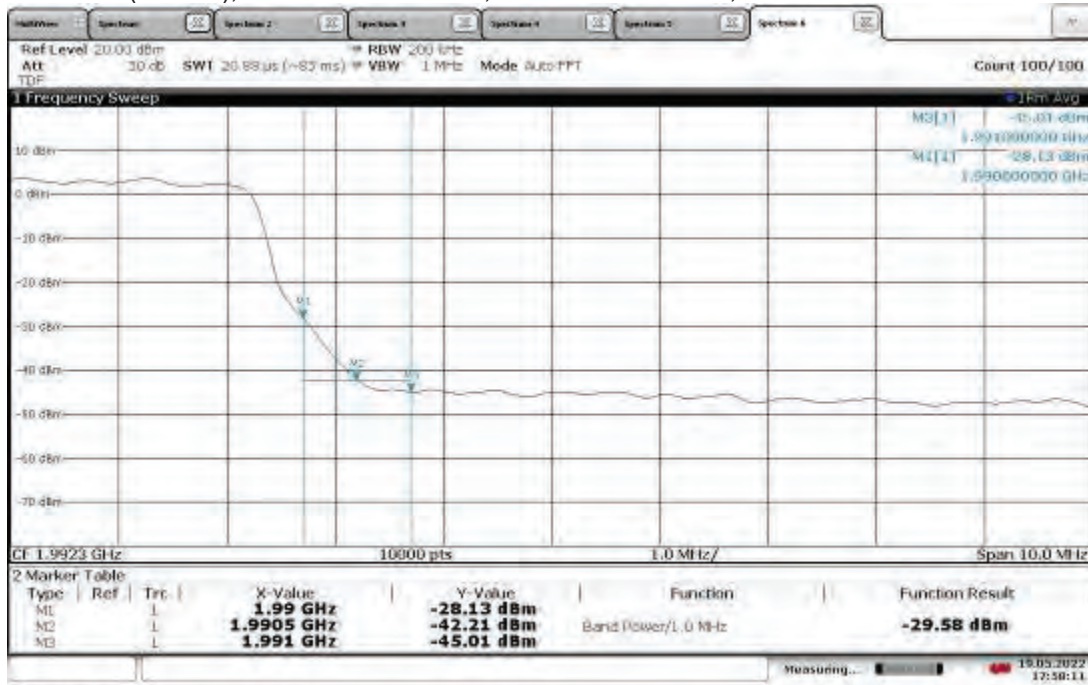
17:43:15 19.05.2022

Band Edge Compliant, Lower Band Edge, 1940 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK



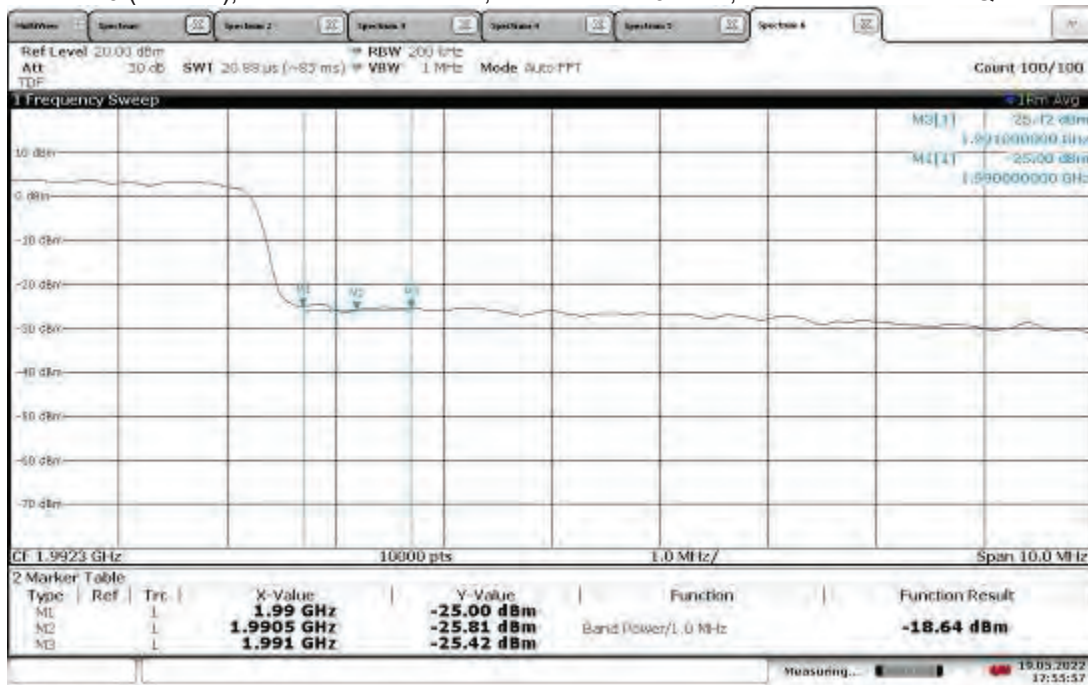
17:40:04 19.05.2022

Band Edge Compliant, Upper Band Edge, 1980 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK



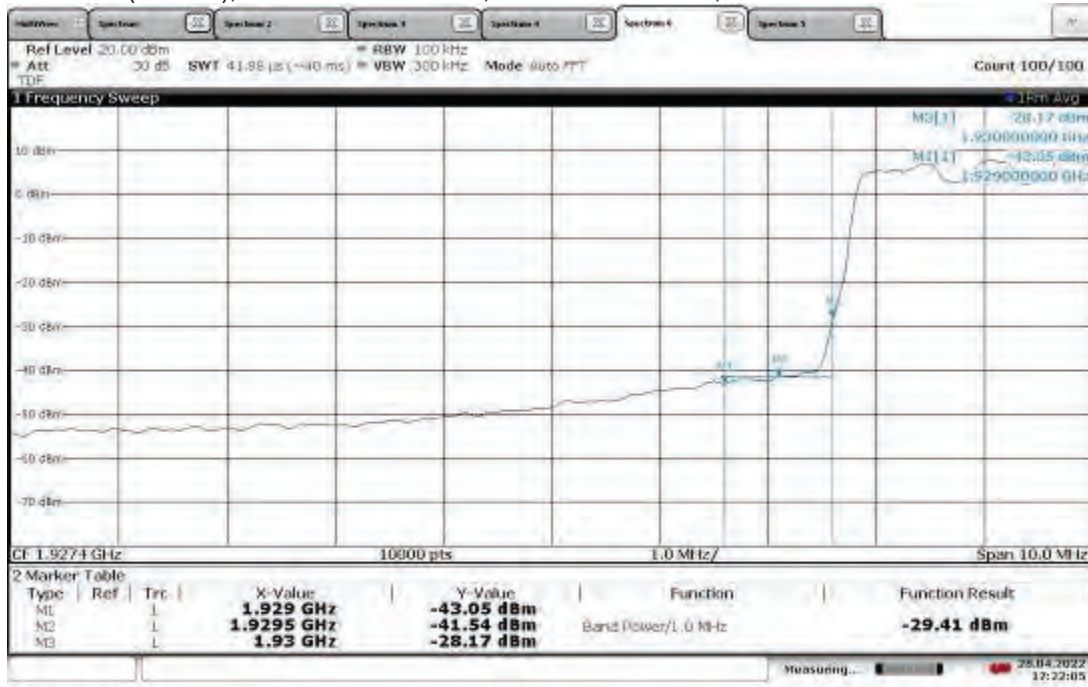
17:58:11 19.05.2022

Band Edge Compliant, Upper Band Edge, 1980 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK



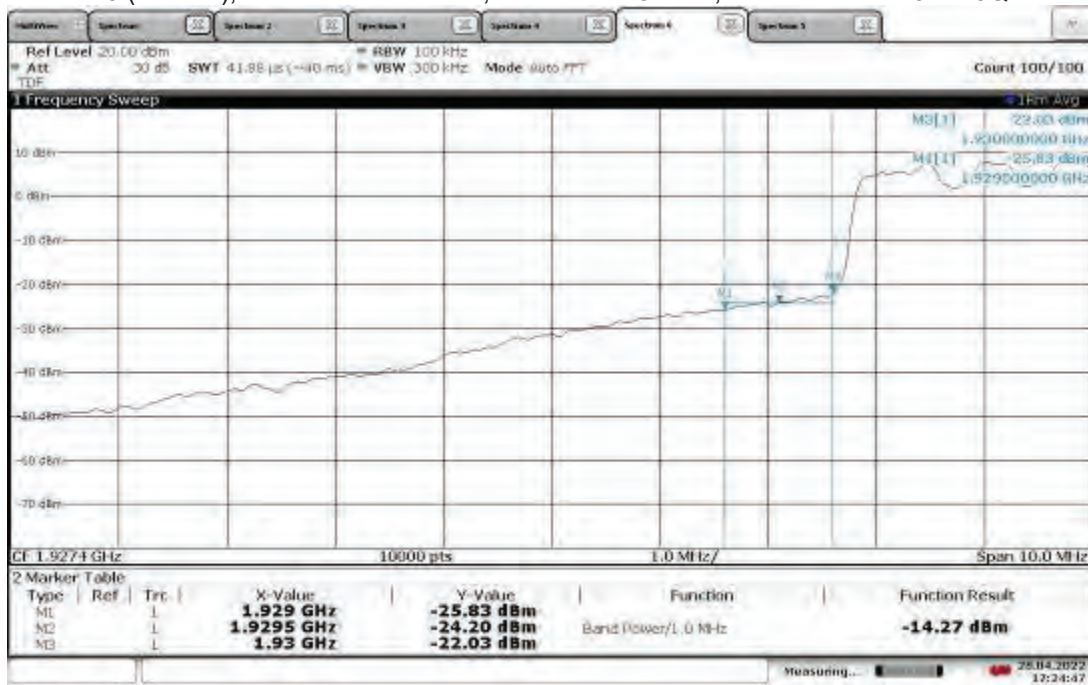
17:55:57 19.05.2022

Band Edge Compliant, Lower Band Edge, 1932.5MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM



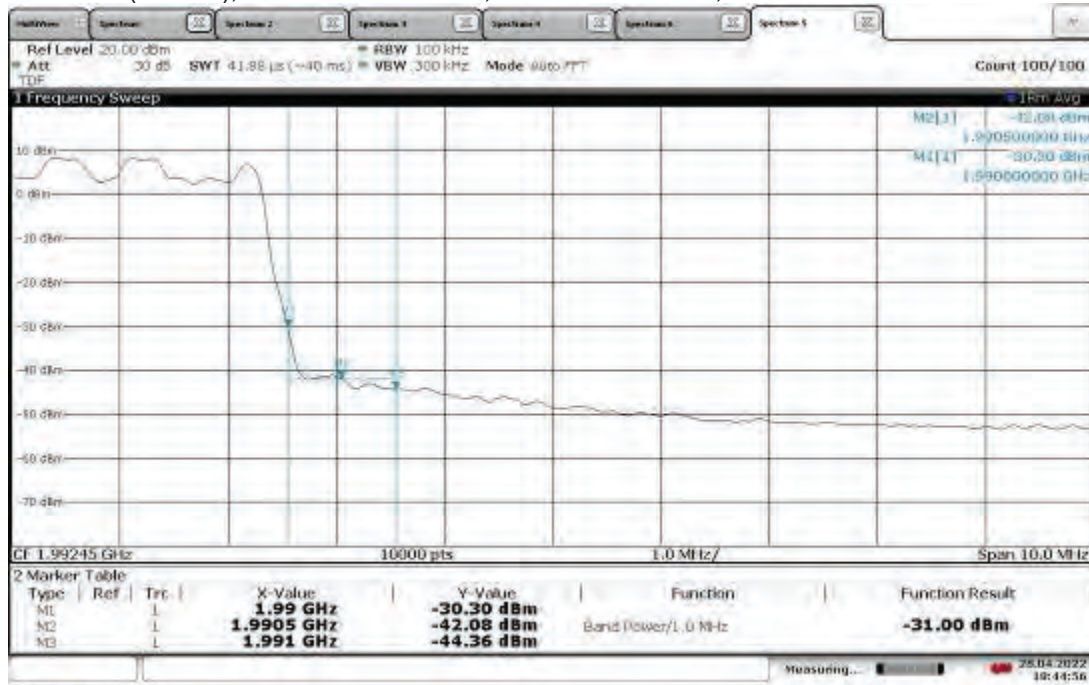
17:22:06 28.04.2022

Band Edge Compliant, Lower Band Edge, 1932.5MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM



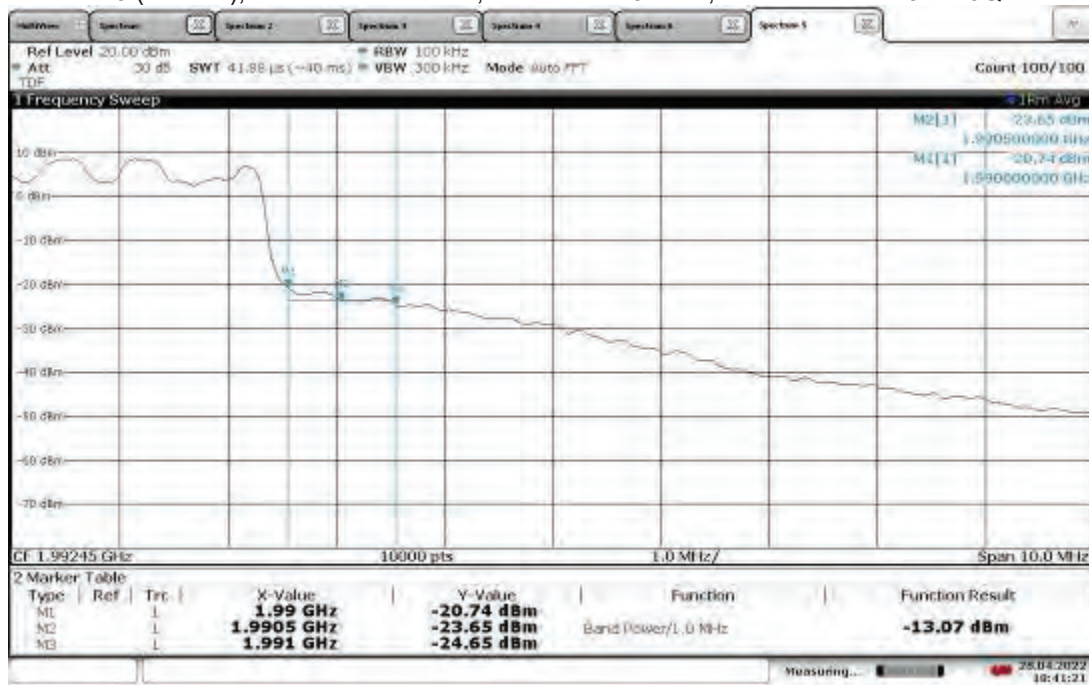
17:24:47 28.04.2022

Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM



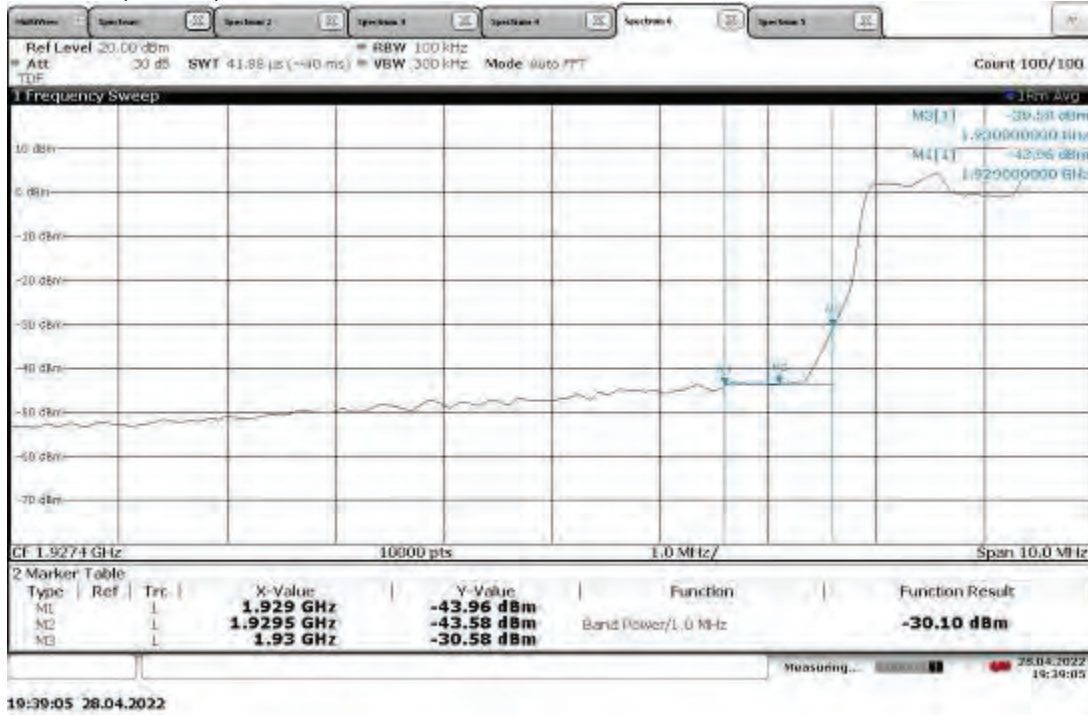
18:44:57 28.04.2022

Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

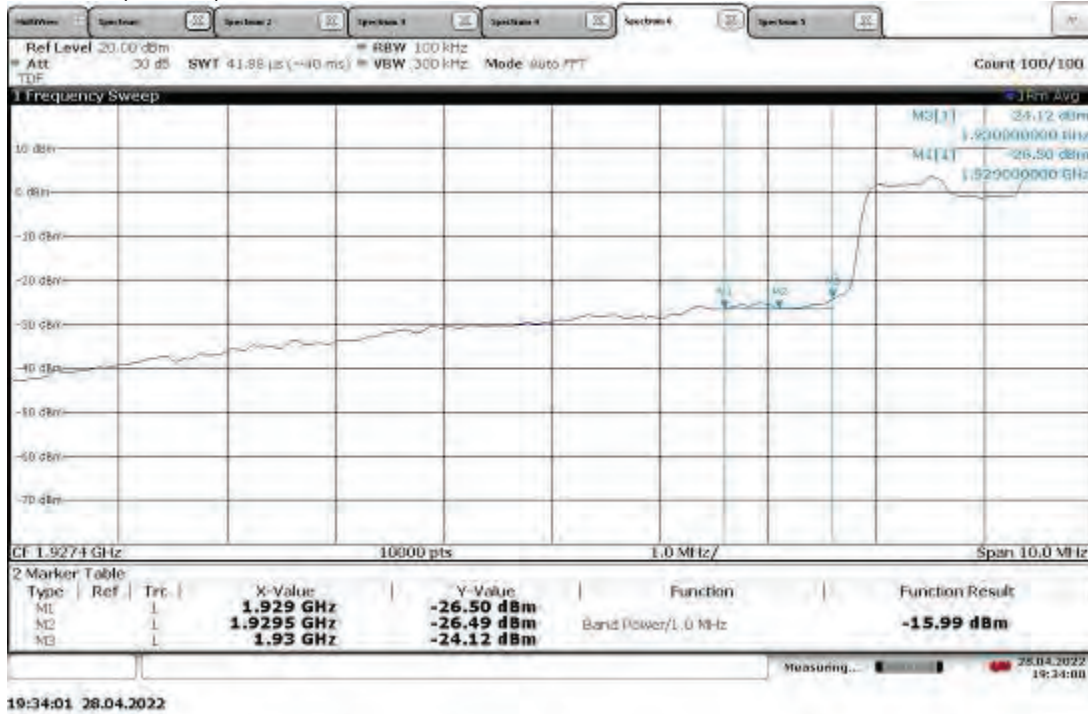


18:41:21 28.04.2022

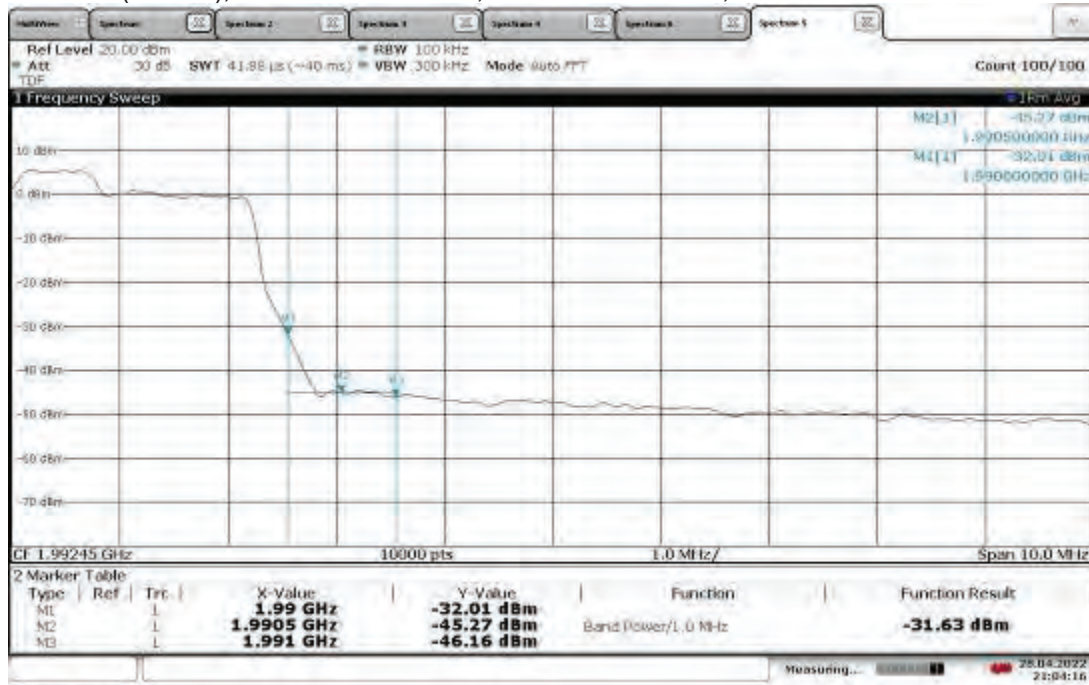
Band Edge Compliant, Lower Band Edge, 1935 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM



Band Edge Compliant, Lower Band Edge, 1935 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

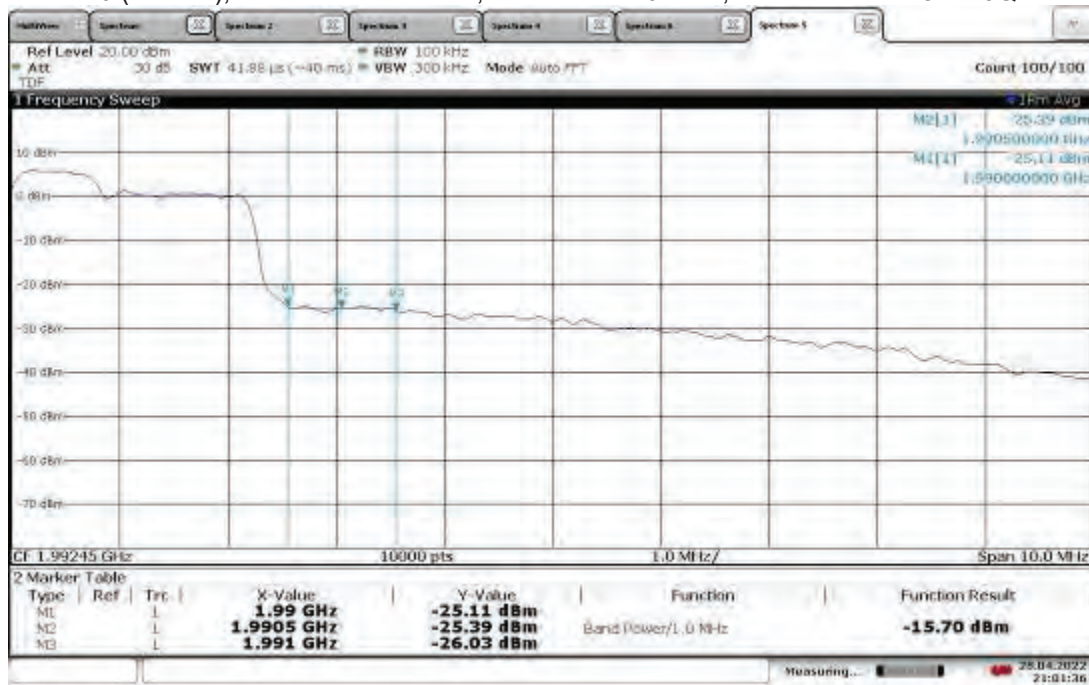


Band Edge Compliant, Upper Band Edge, 1985 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM



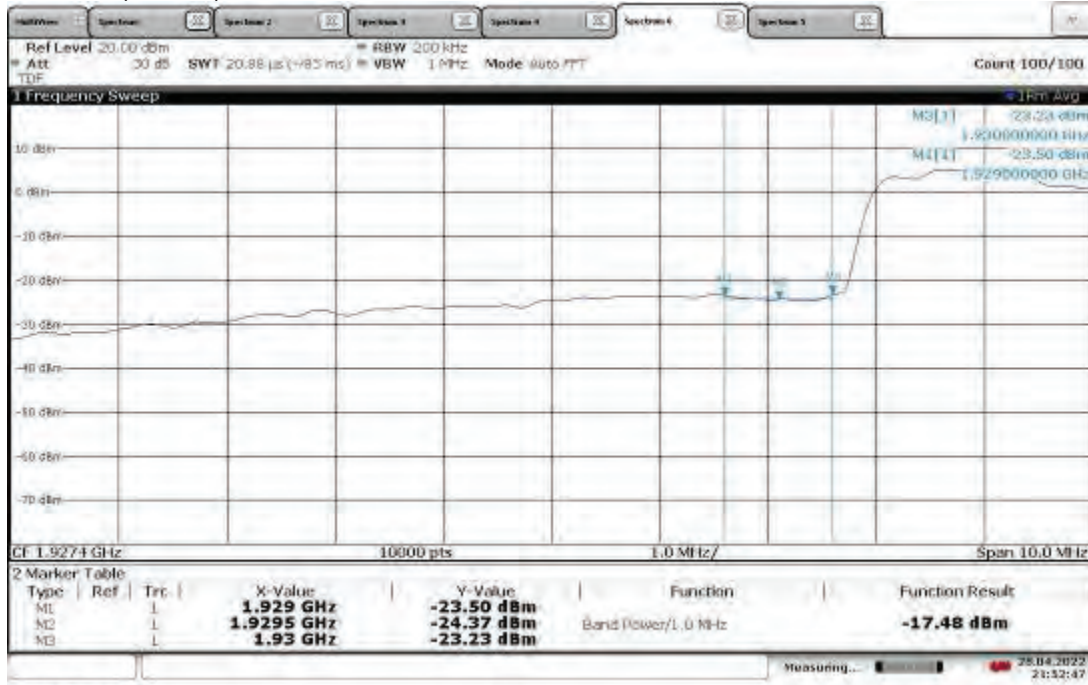
21:04:17 28.04.2022

Band Edge Compliant, Upper Band Edge, 1985 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM



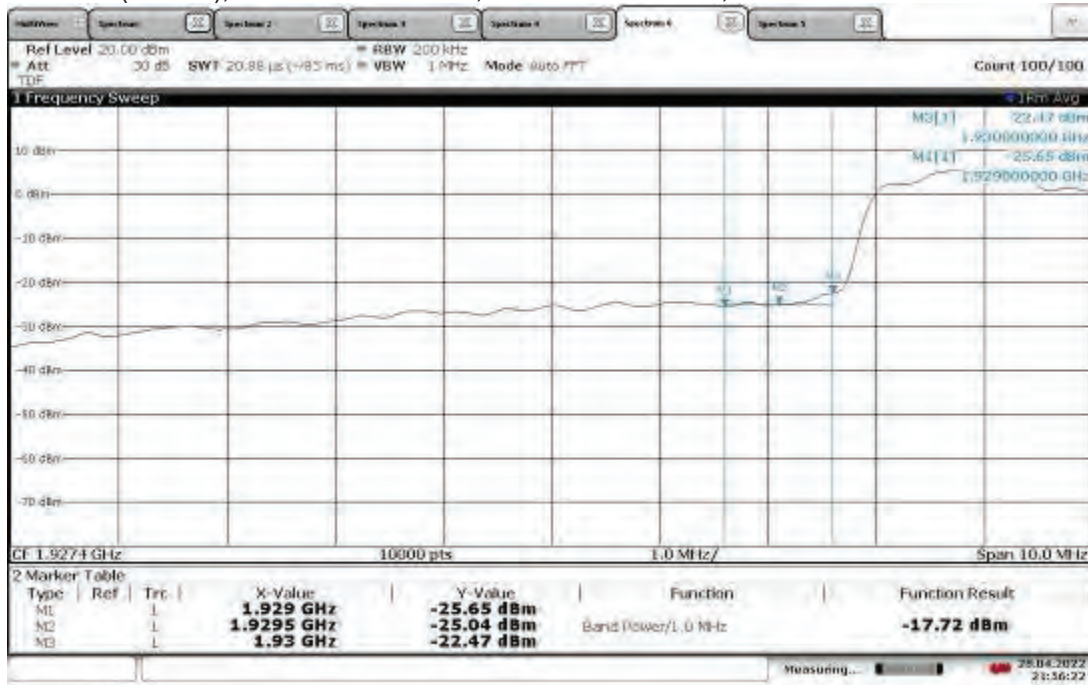
21:01:37 28.04.2022

Band Edge Compliant, Lower Band Edge, 1937.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM



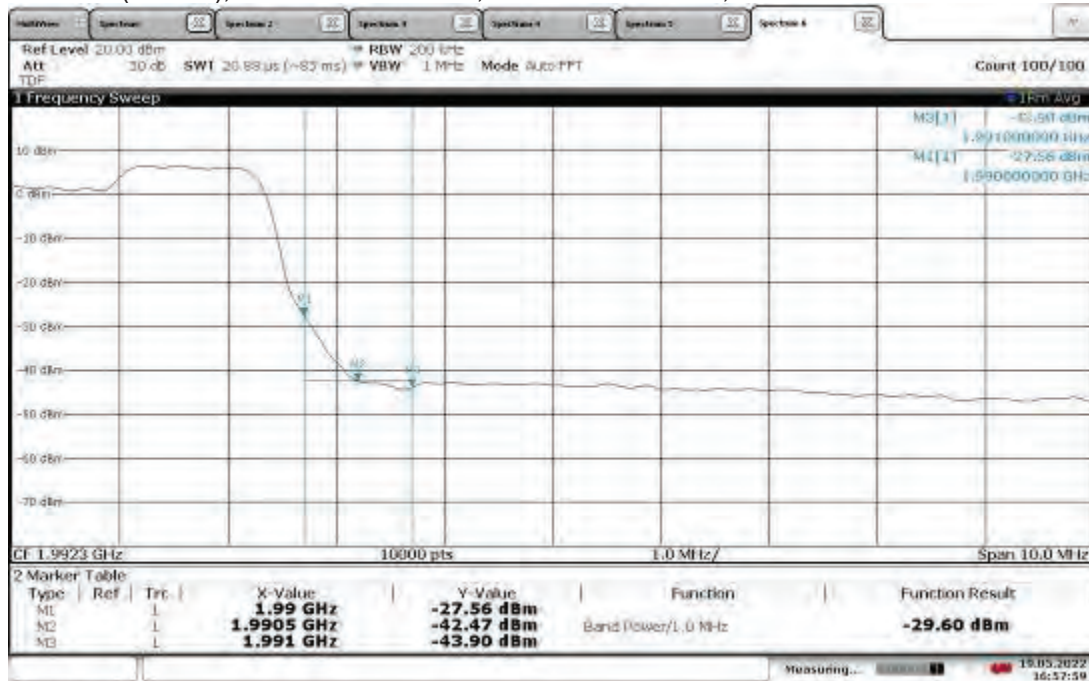
21:52:48 28.04.2022

Band Edge Compliant, Lower Band Edge, 1937.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM



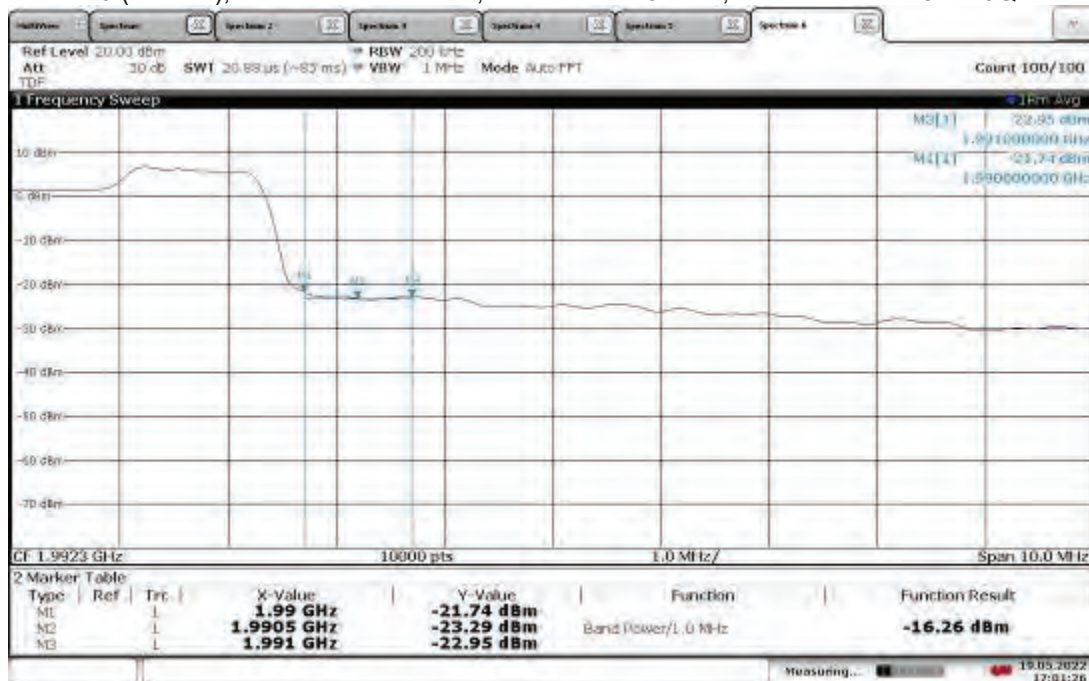
21:56:22 28.04.2022

Band Edge Compliant, Upper Band Edge, 1982.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM



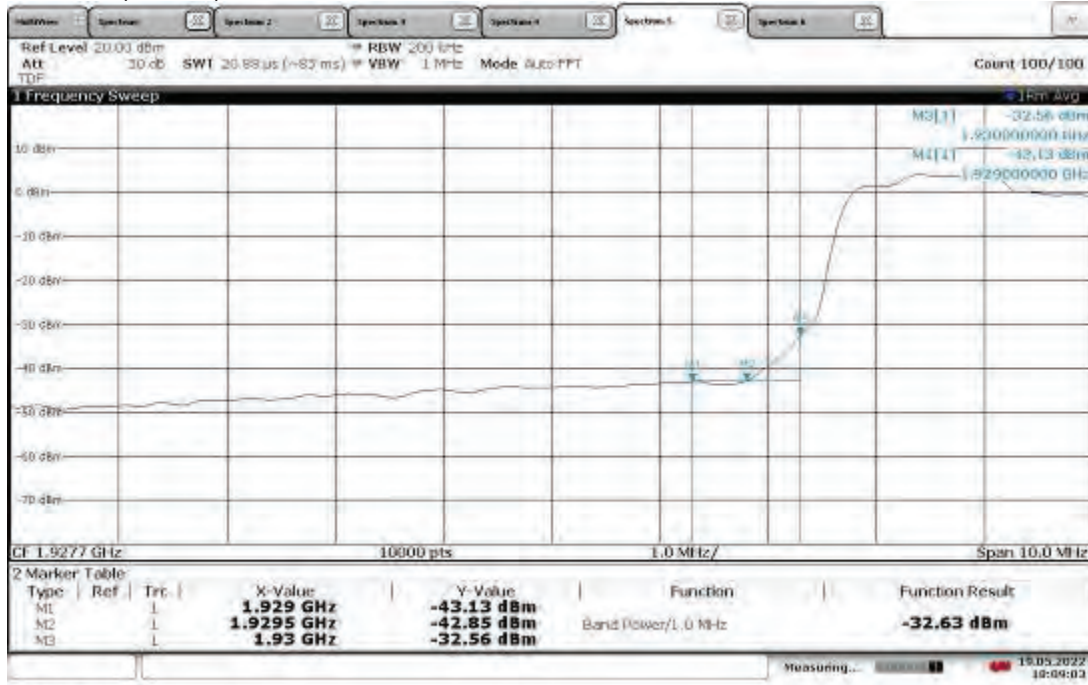
16:57:59 19.05.2022

Band Edge Compliant, Upper Band Edge, 1982.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM



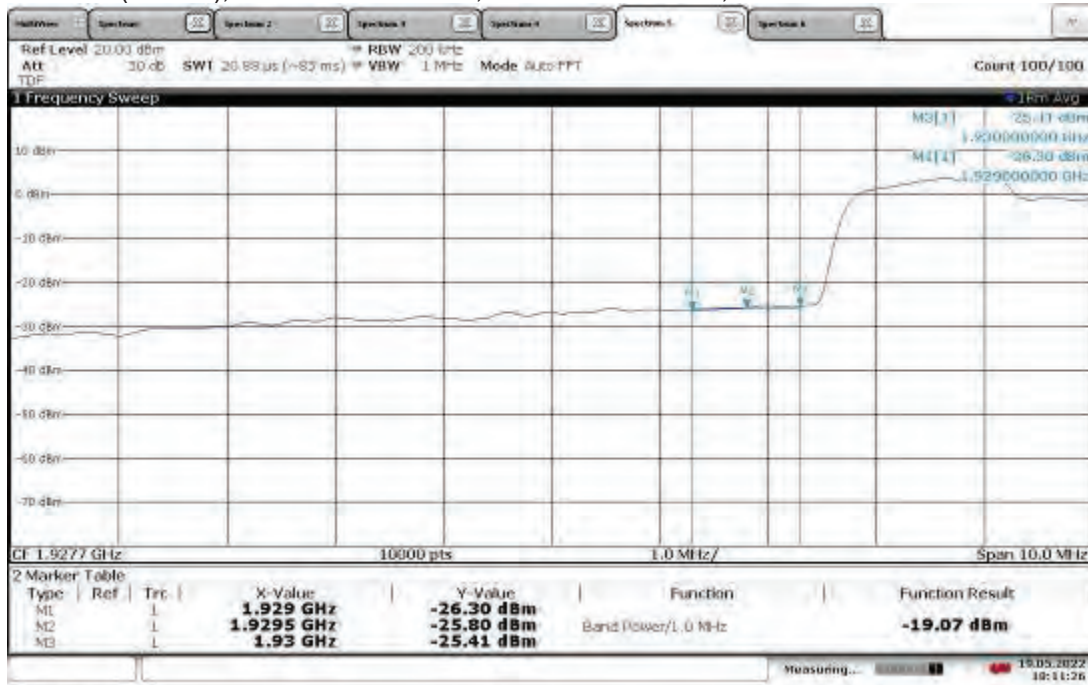
17:01:26 19.05.2022

Band Edge Compliant, Lower Band Edge, 1940 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM



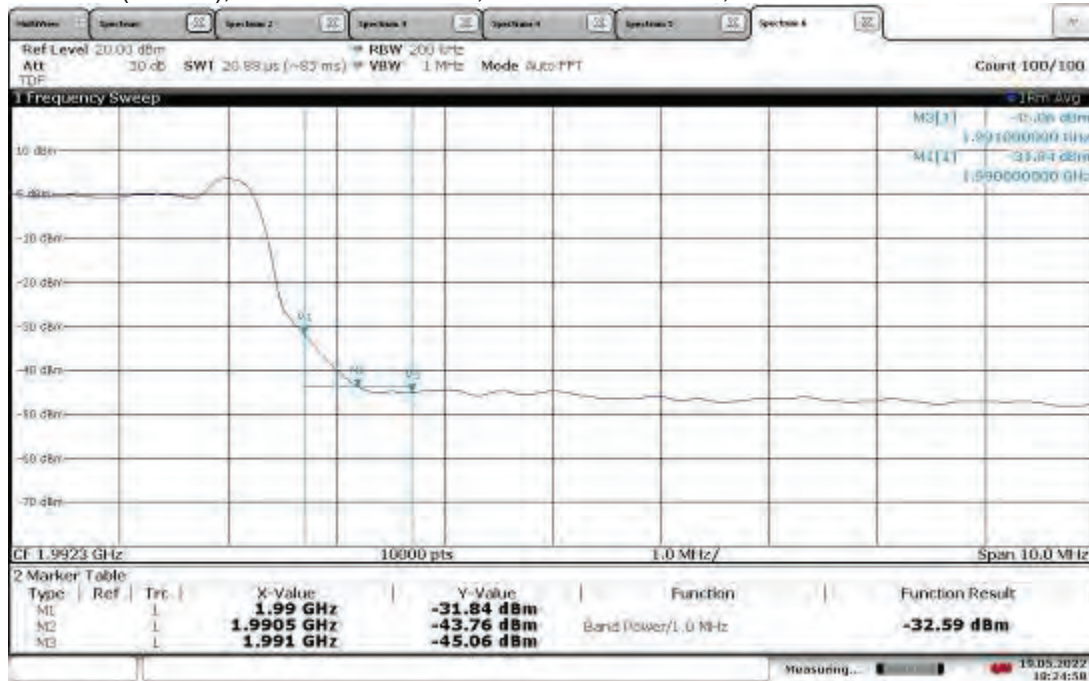
18:09:03 19.05.2022

Band Edge Compliant, Lower Band Edge, 1940 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM



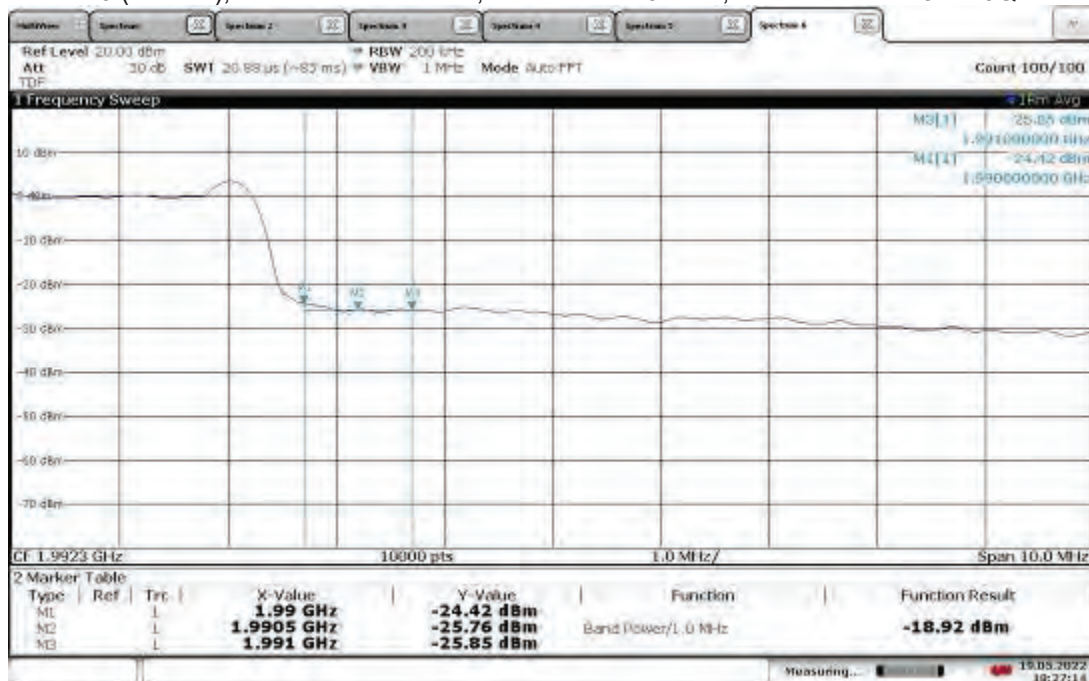
18:11:27 19.05.2022

Band Edge Compliant, Upper Band Edge, 1980 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM



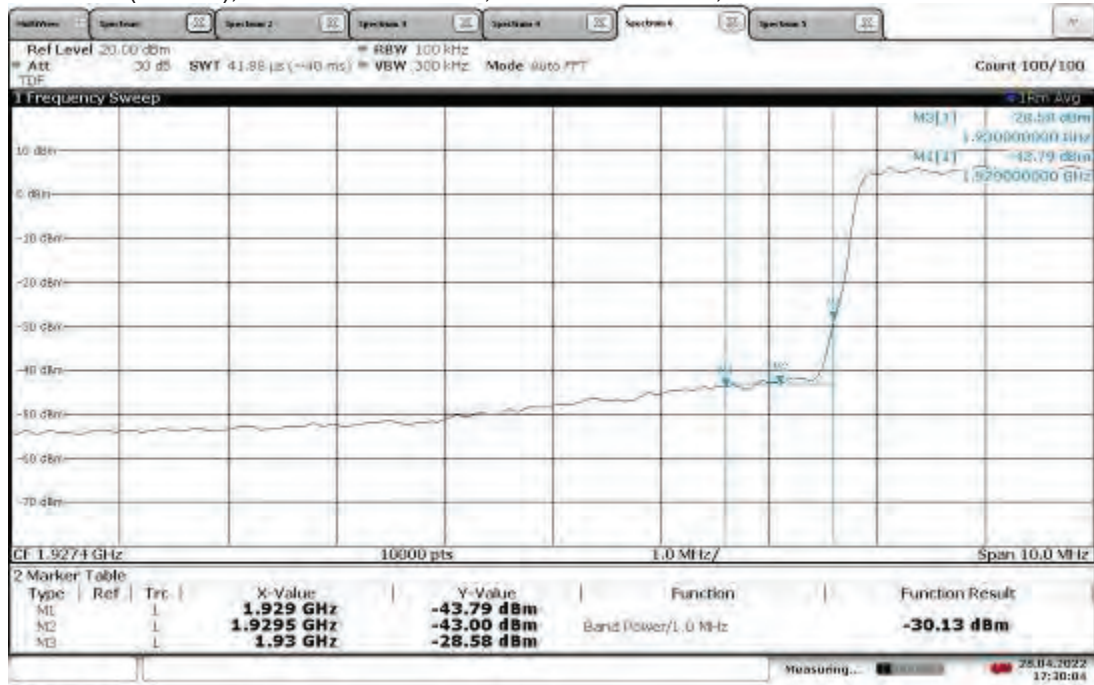
18:24:58 19.05.2022

Band Edge Compliant, Upper Band Edge, 1980 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM



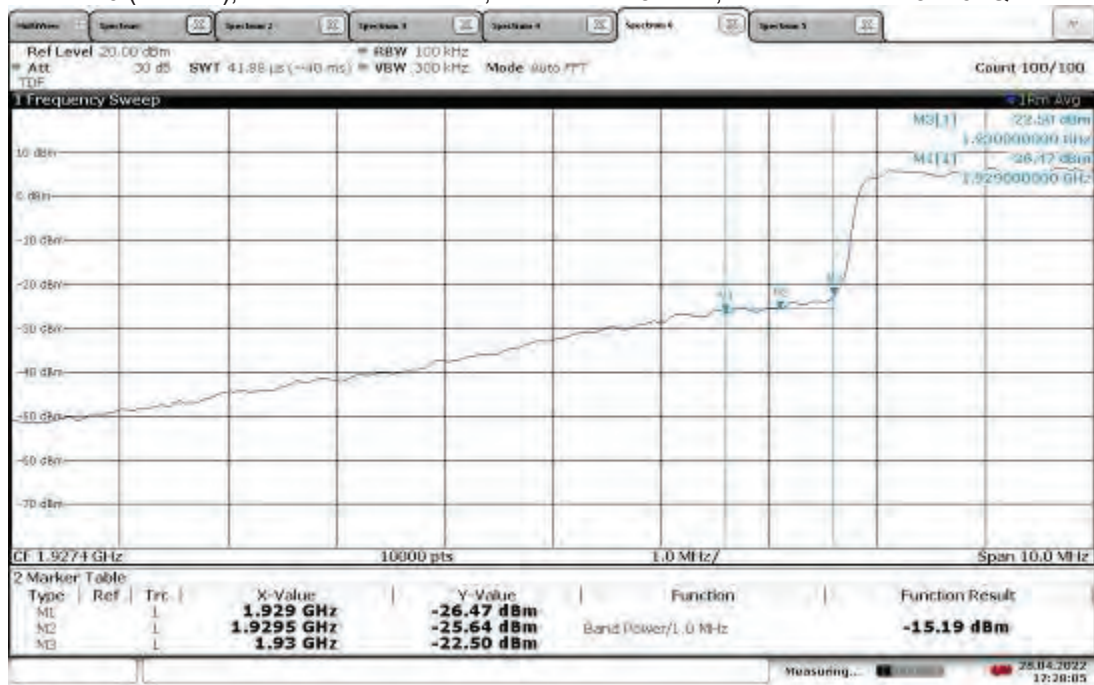
18:27:14 19.05.2022

Band Edge Compliant, Lower Band Edge, 1932.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM



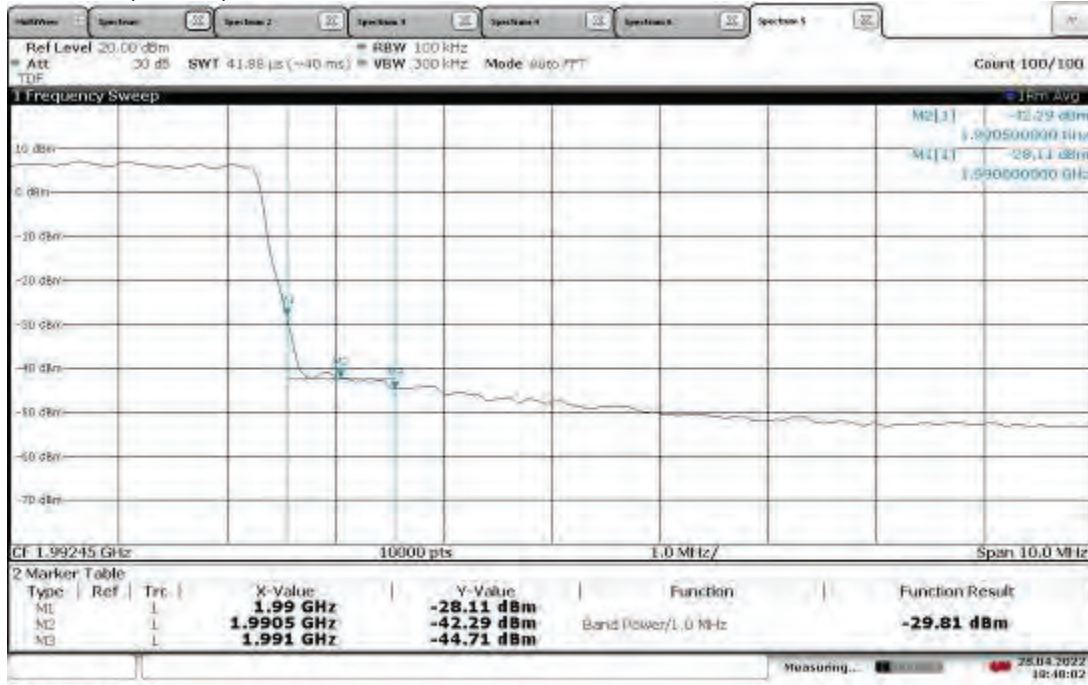
17:30:04 28.04.2022

Band Edge Compliant, Lower Band Edge, 1932.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM



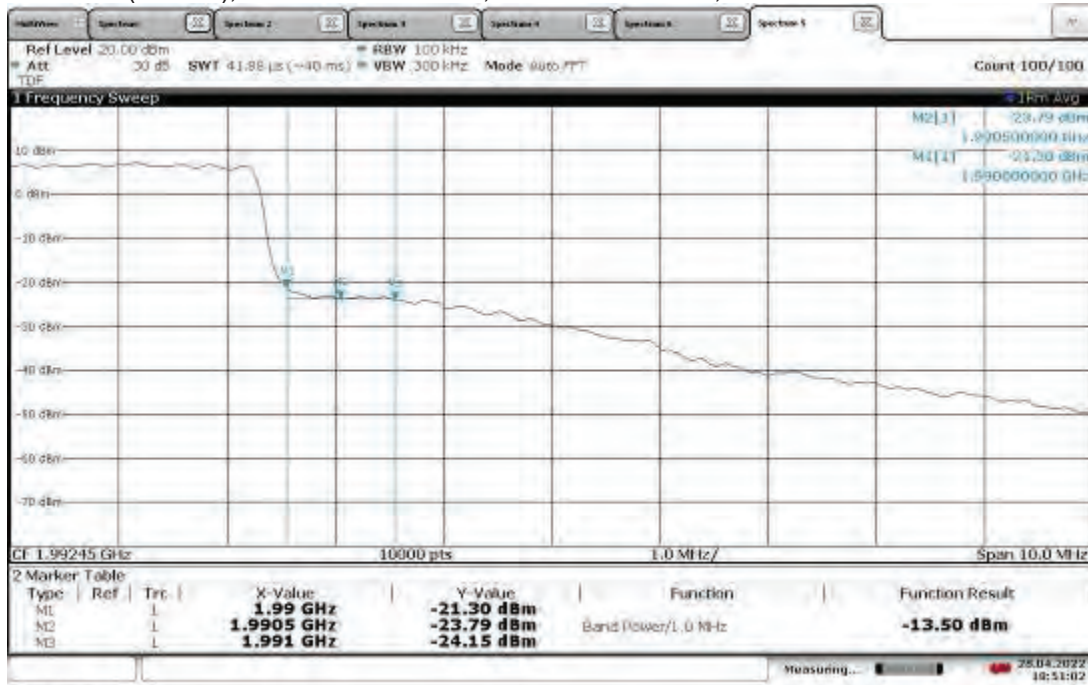
17:28:06 28.04.2022

Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM



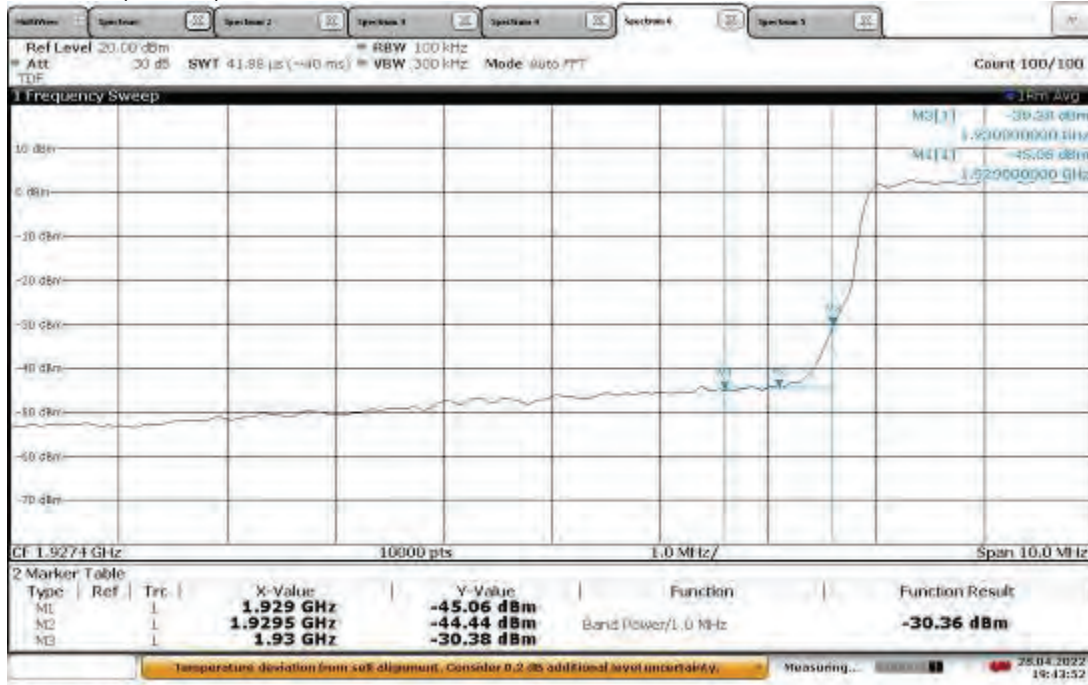
18:48:02 28.04.2022

Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM



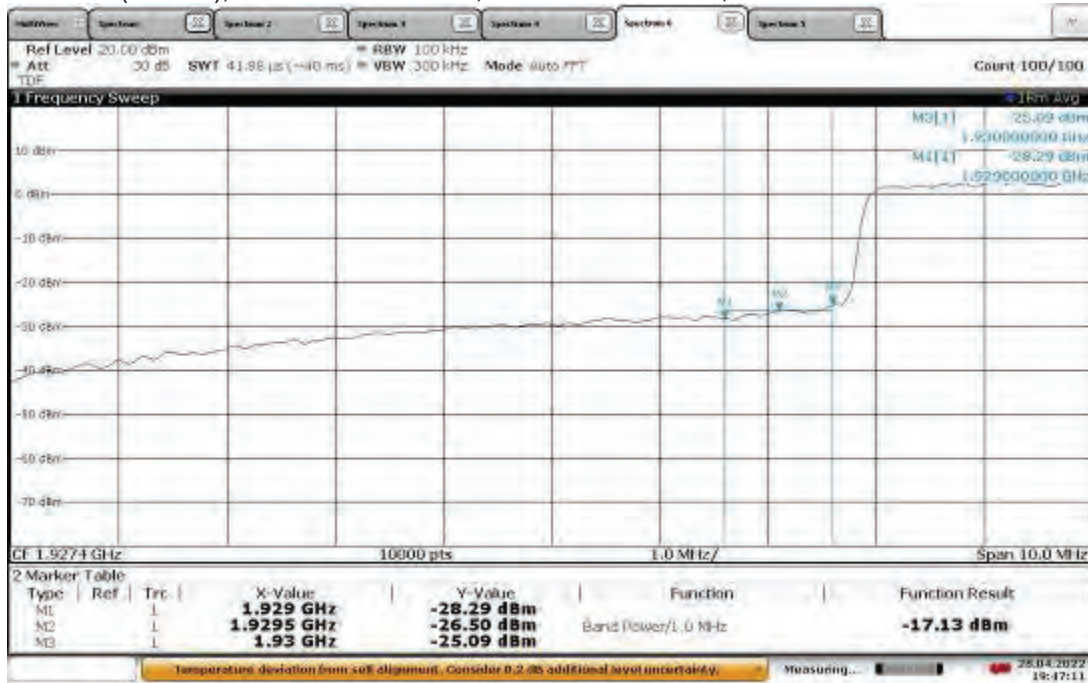
18:51:03 28.04.2022

Band Edge Compliant, Lower Band Edge, 1935 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM



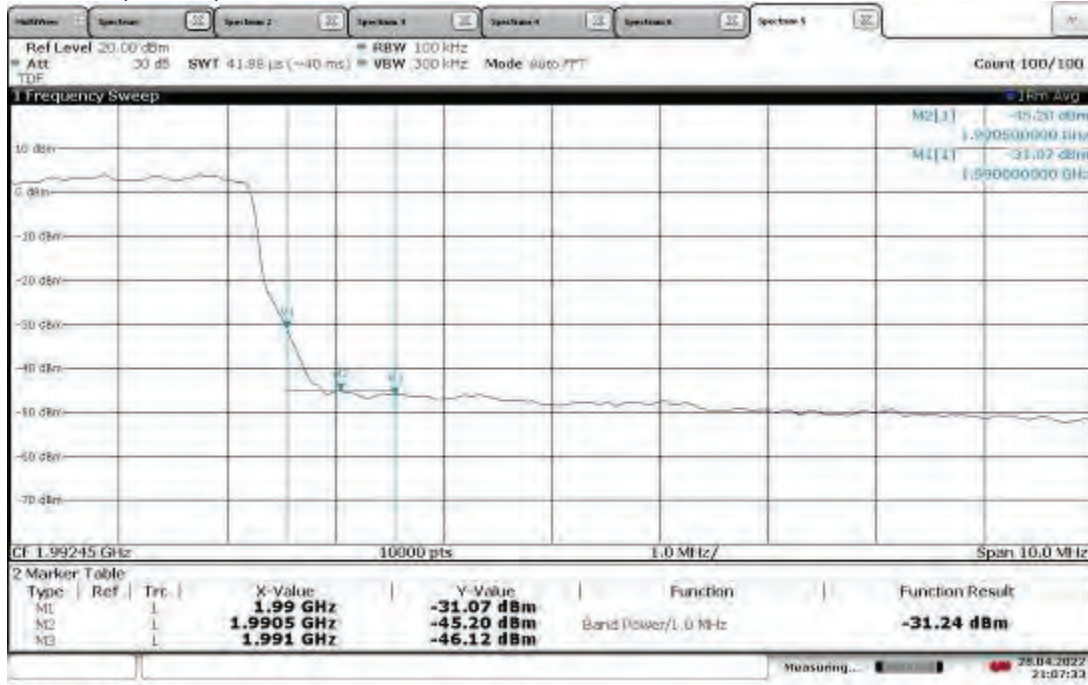
19:43:52 28.04.2022

Band Edge Compliant, Lower Band Edge, 1935 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM



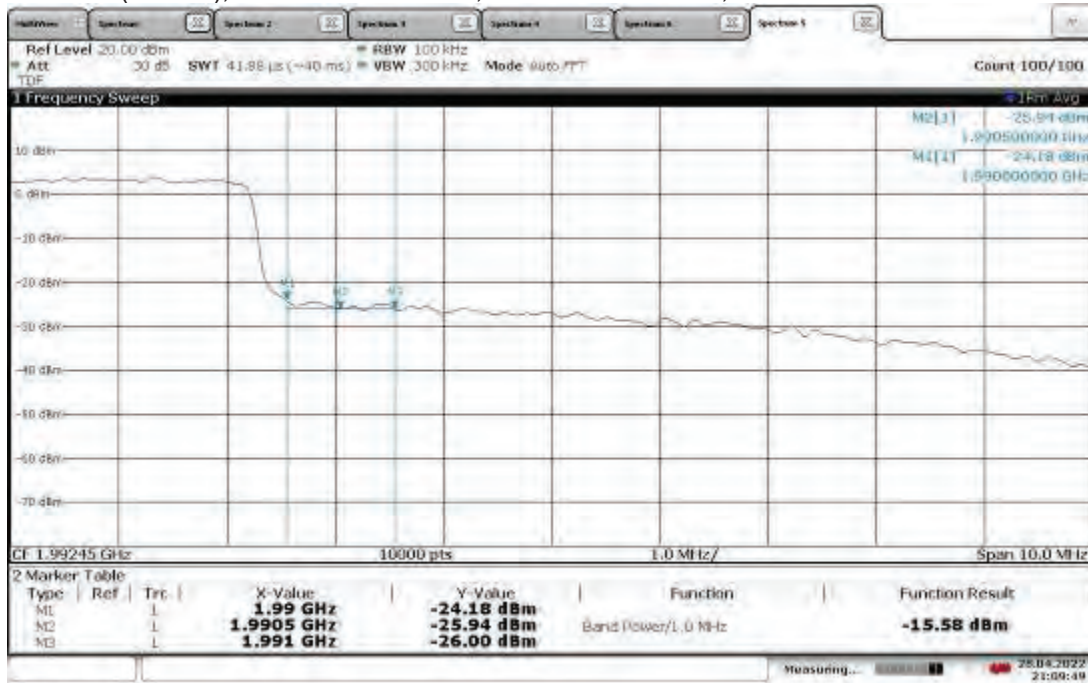
19:47:11 28.04.2022

Band Edge Compliant, Upper Band Edge, 1985 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM



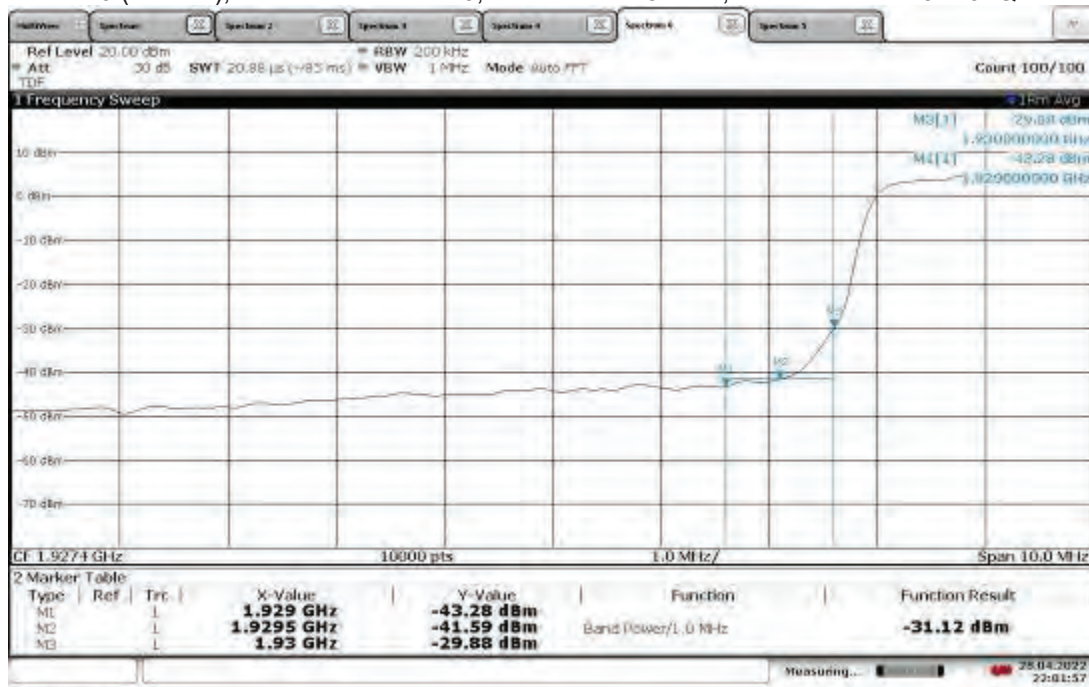
21:07:33 28.04.2022

Band Edge Compliant, Upper Band Edge, 1985 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM



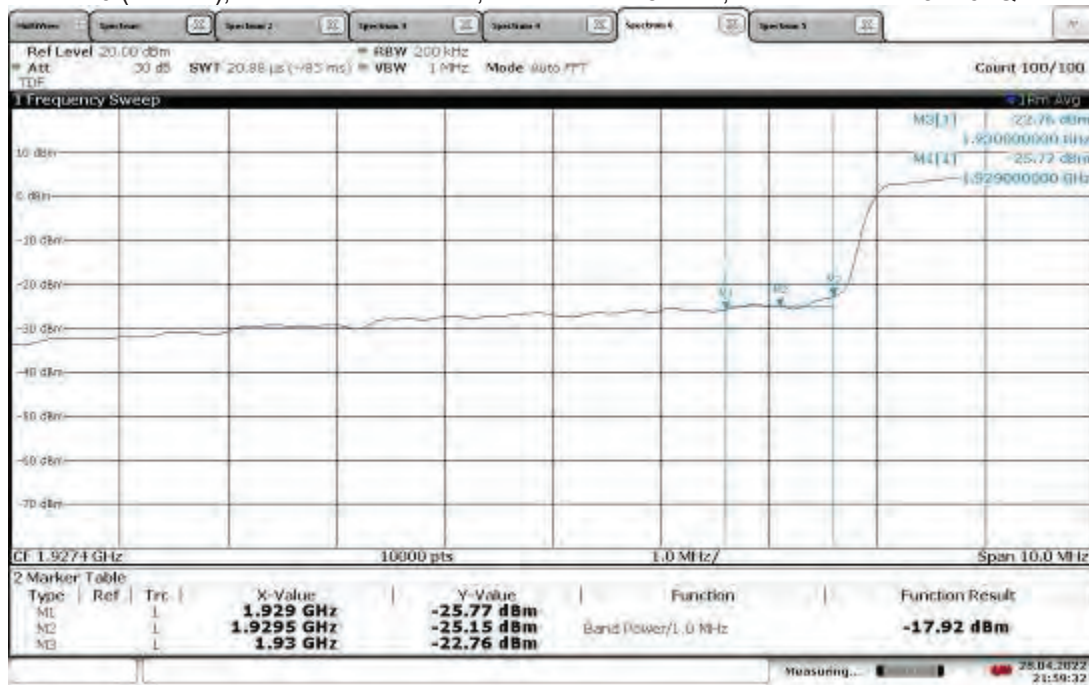
21:09:49 28.04.2022

Band Edge Compliant, Lower Band Edge, 1937.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM



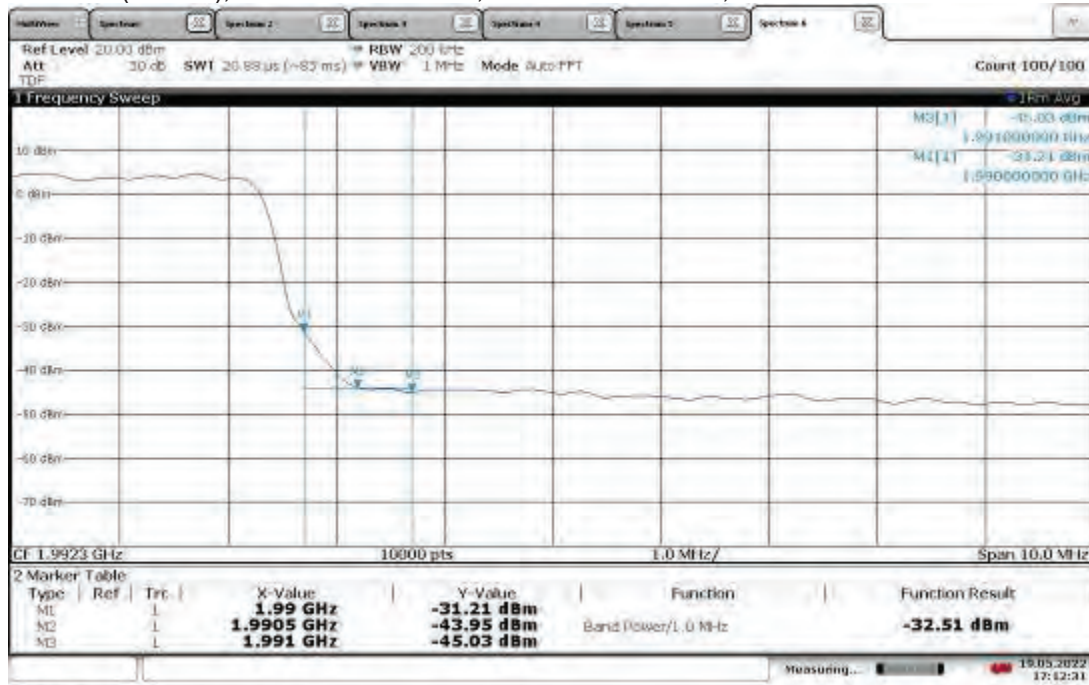
22:01:57 28.04.2022

Band Edge Compliant, Lower Band Edge, 1937.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM



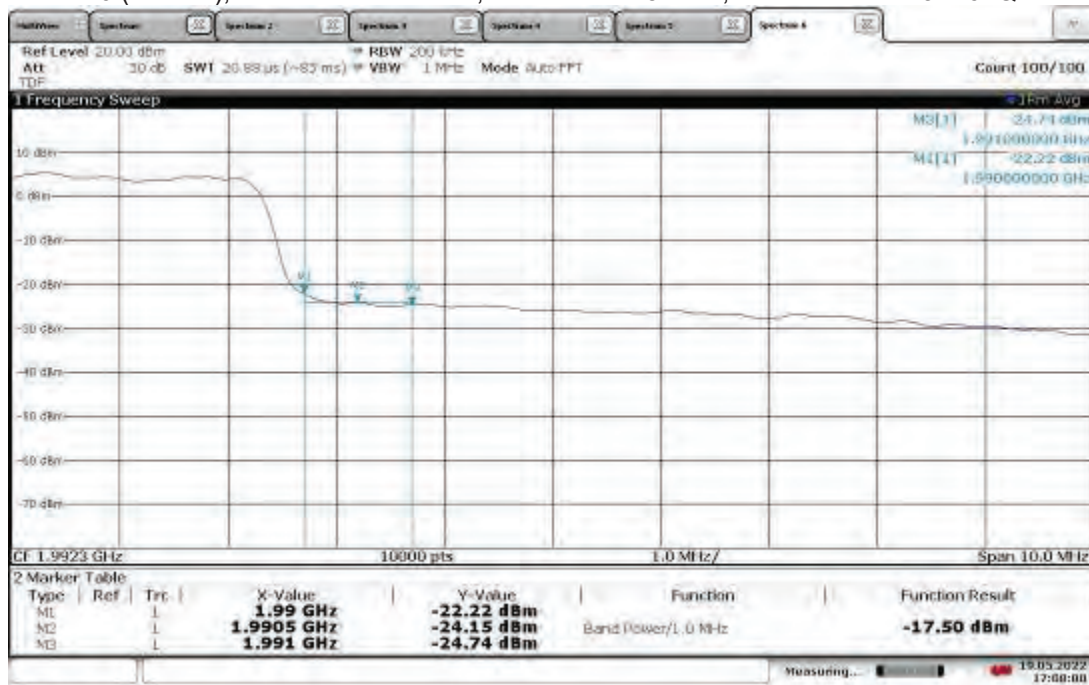
21:59:32 28.04.2022

Band Edge Compliant, Upper Band Edge, 1982.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM



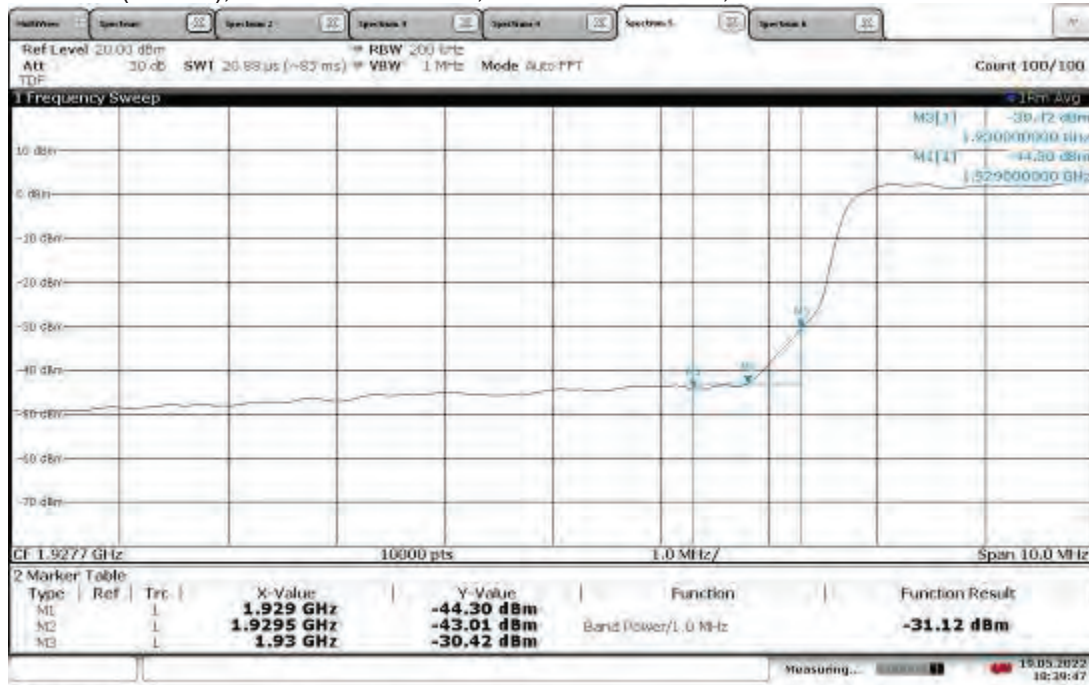
17:12:31 19.05.2022

Band Edge Compliant, Upper Band Edge, 1982.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM



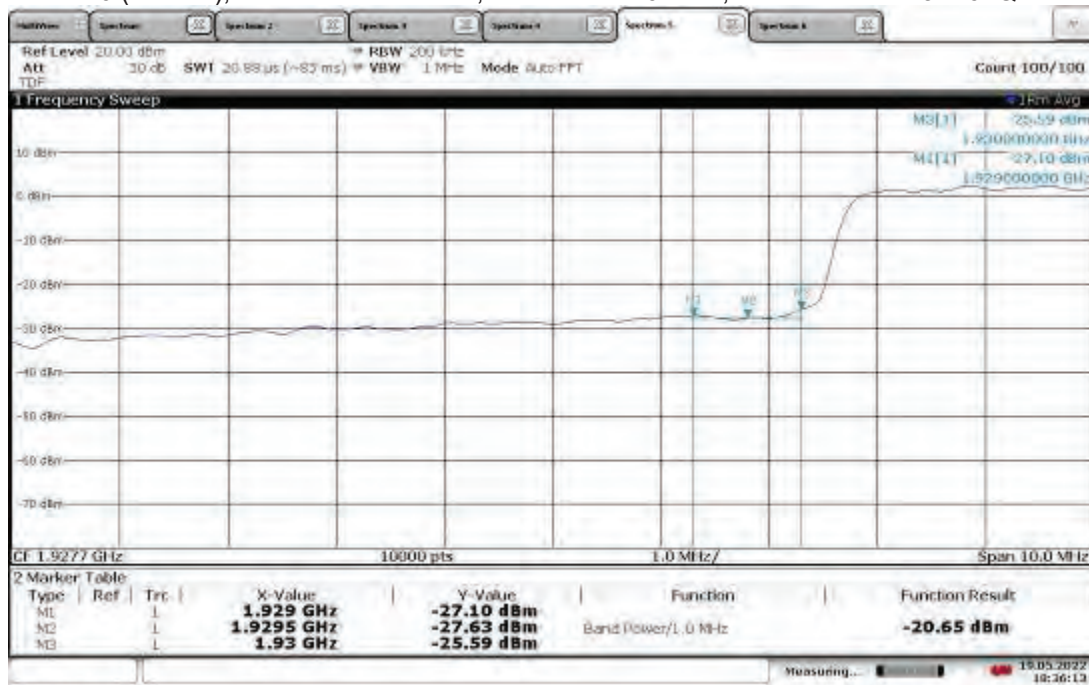
17:08:01 19.05.2022

Band Edge Compliant, Lower Band Edge, 1940 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM



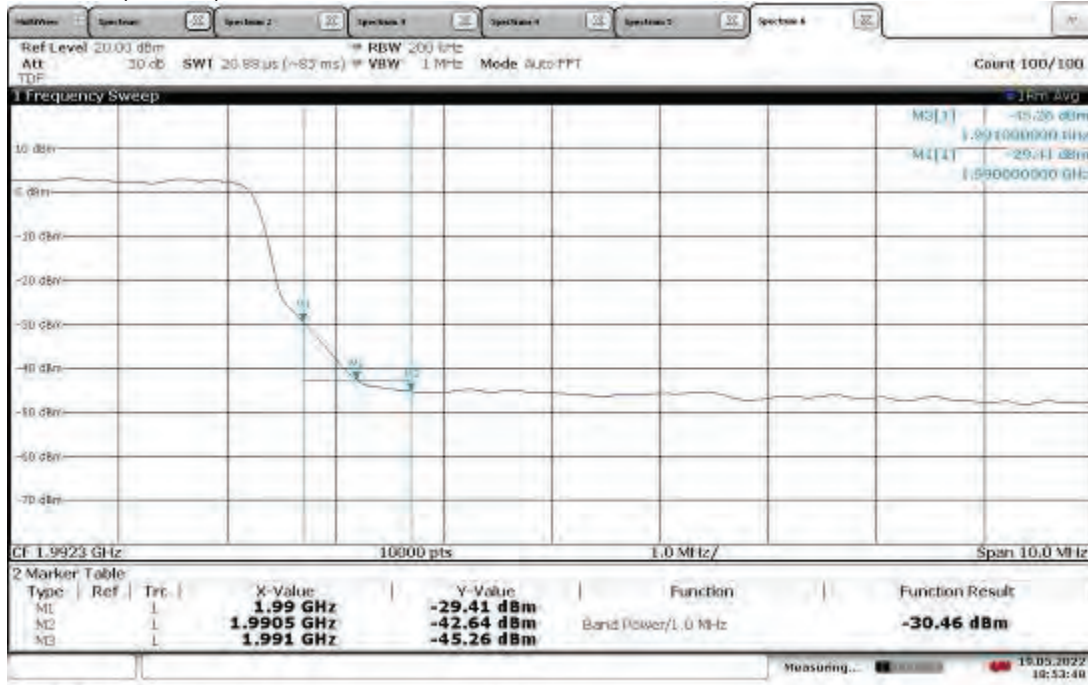
18:39:47 19.05.2022

Band Edge Compliant, Lower Band Edge, 1940 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM



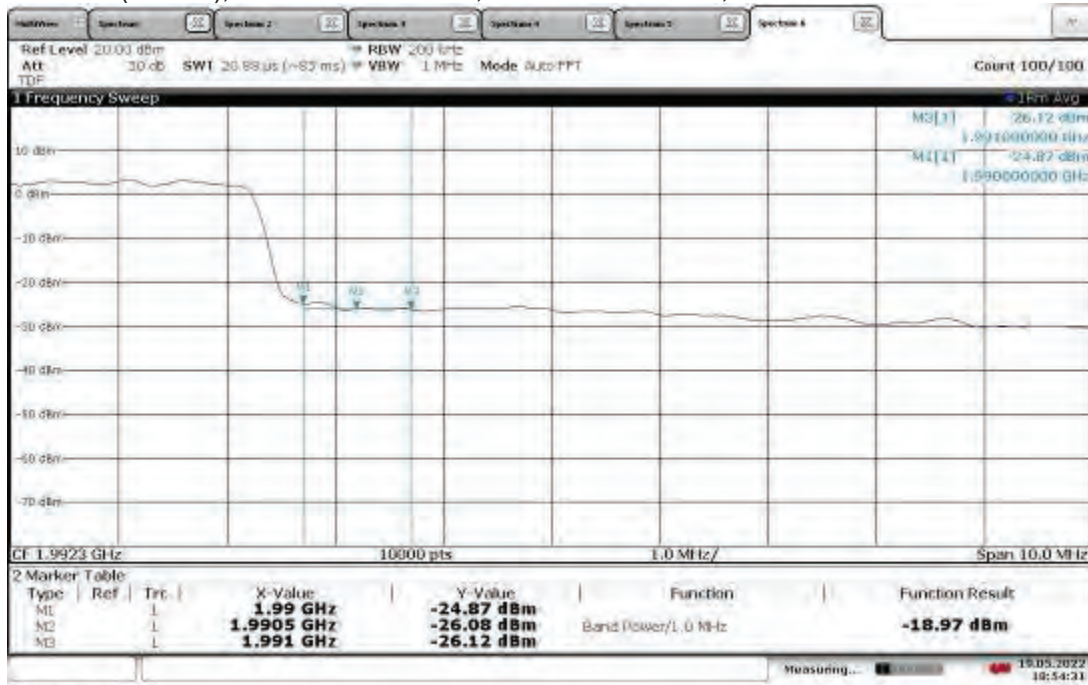
18:36:13 19.05.2022

Band Edge Compliant, Upper Band Edge, 1980 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM



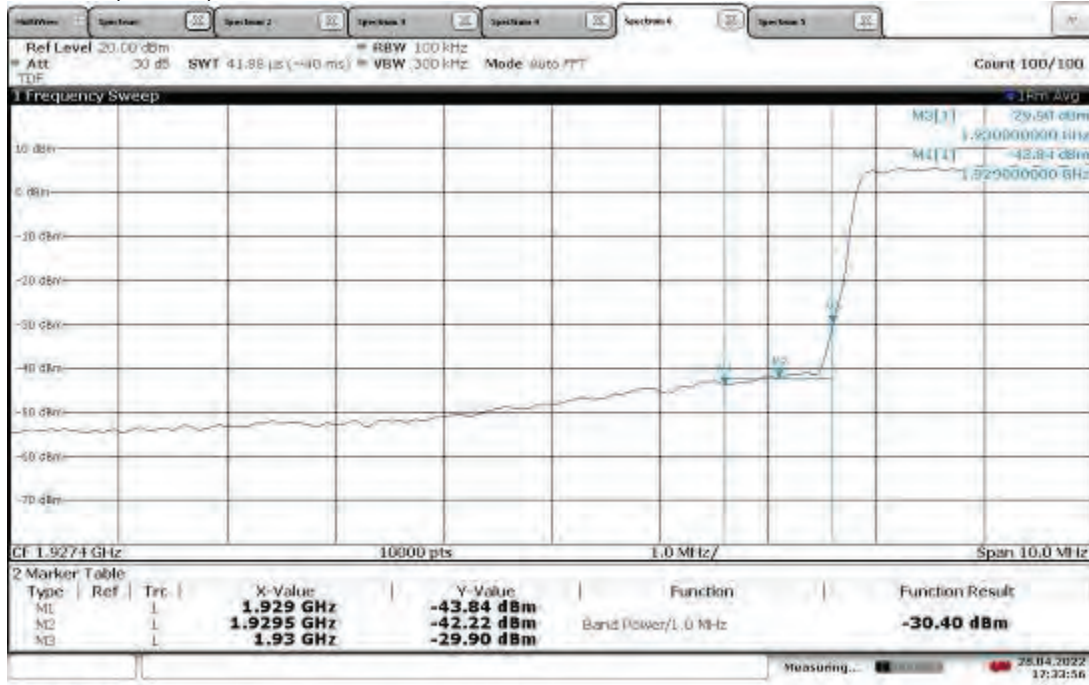
18:53:48 19.05.2022

Band Edge Compliant, Upper Band Edge, 1980 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM



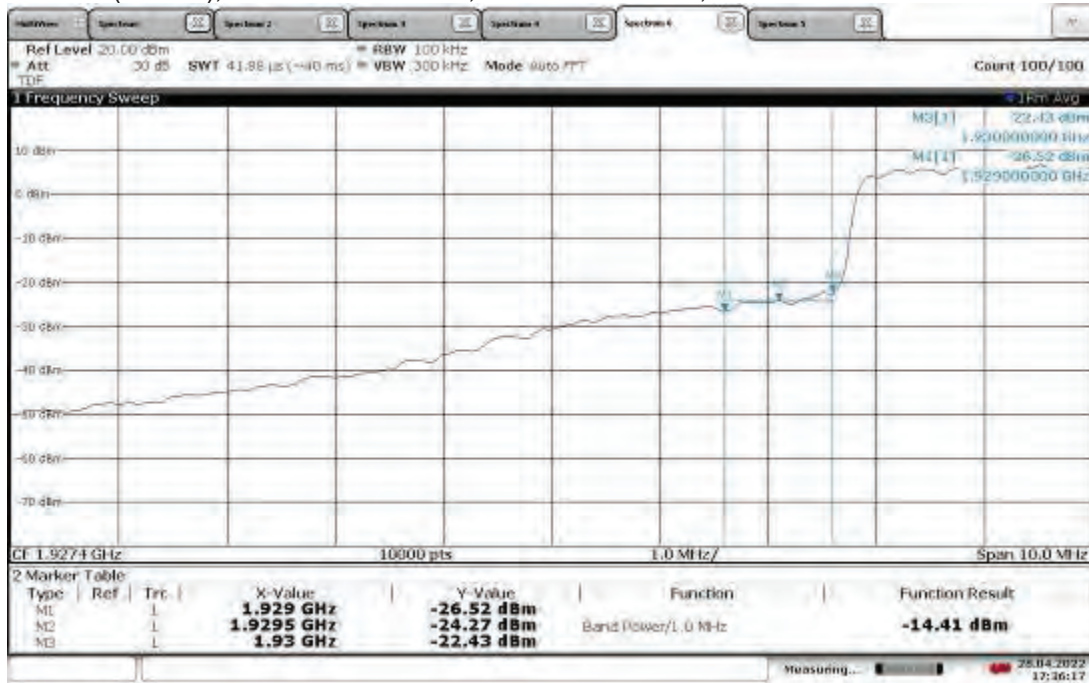
18:54:31 19.05.2022

Band Edge Compliant, Lower Band Edge, 1932.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM



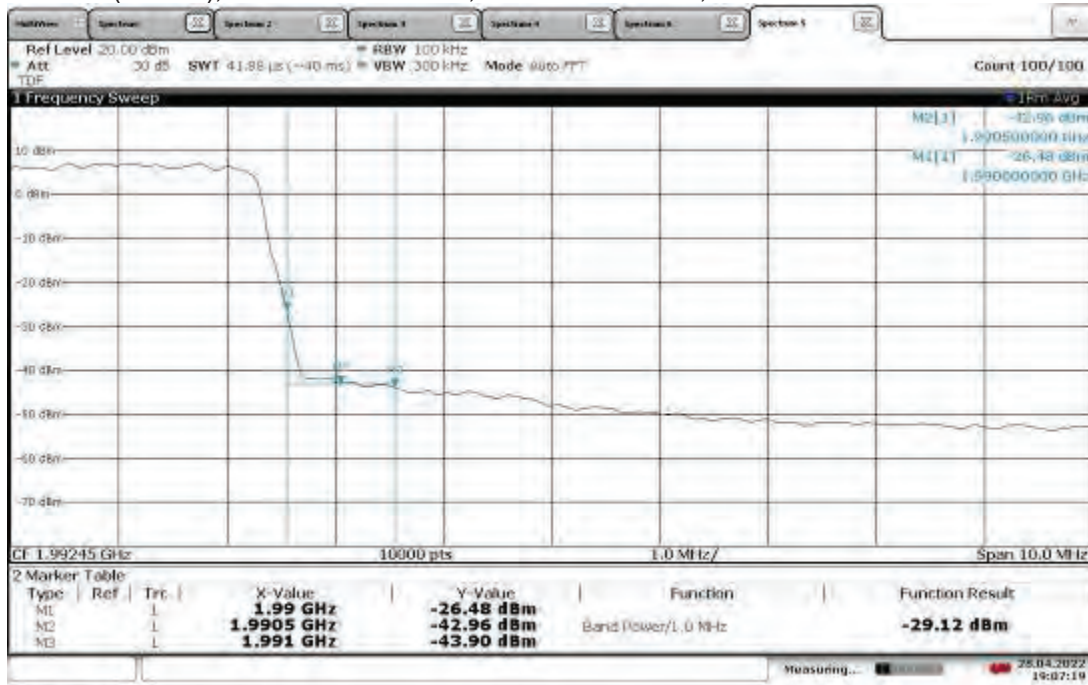
17:33:56 28.04.2022

Band Edge Compliant, Lower Band Edge, 1932.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM



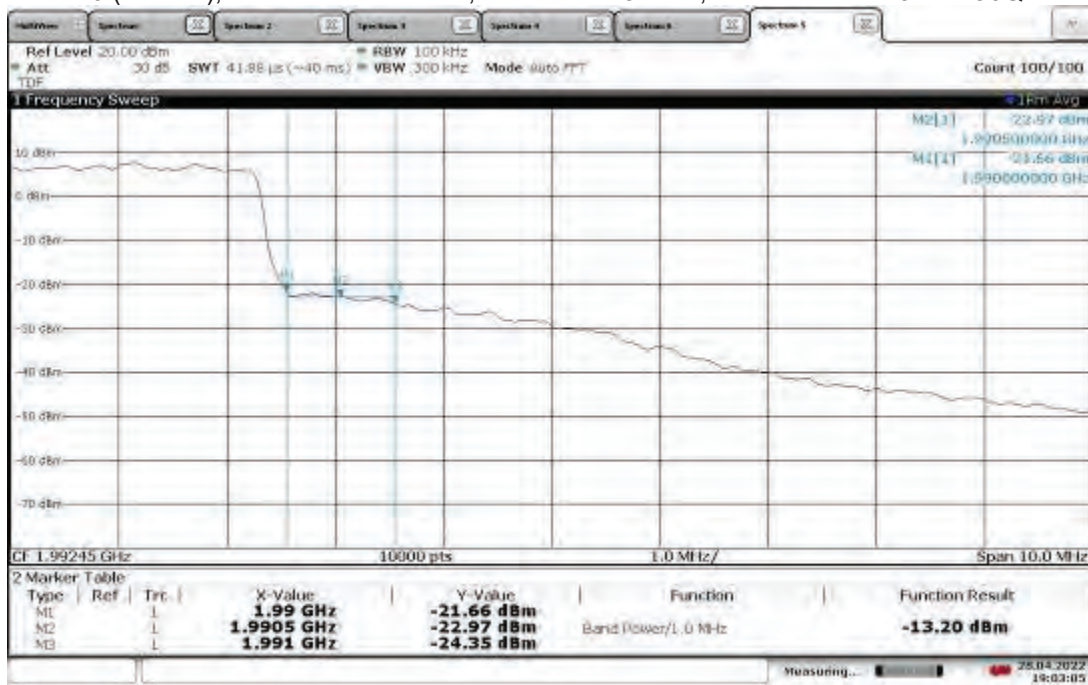
17:36:18 28.04.2022

Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM



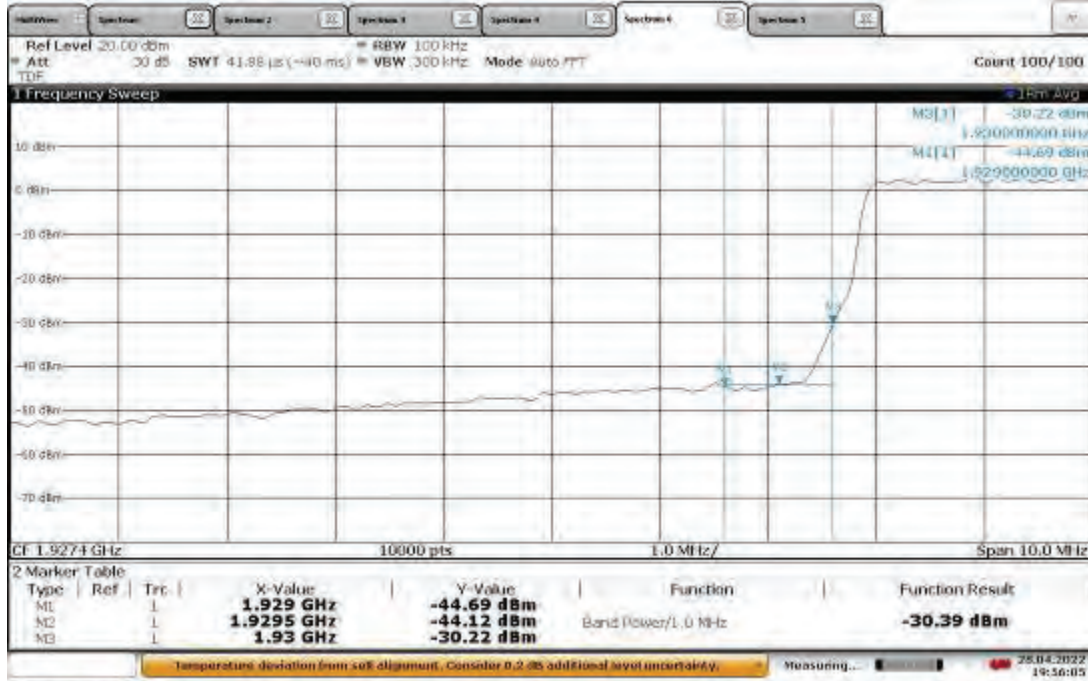
19:07:19 28.04.2022

Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM



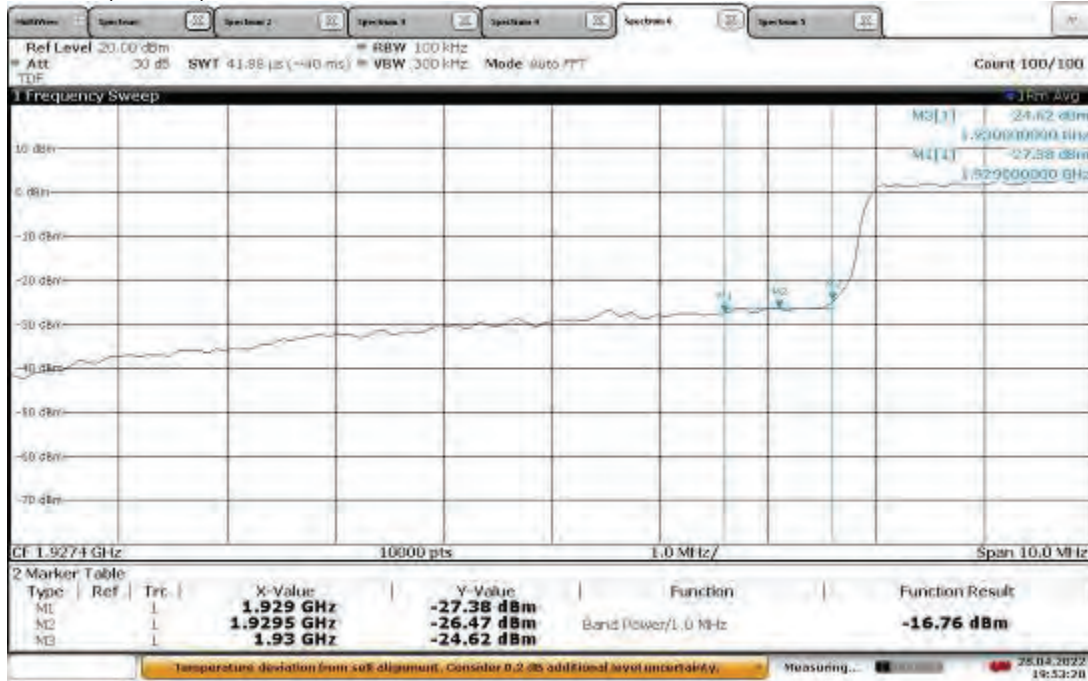
19:03:06 28.04.2022

Band Edge Compliant, Lower Band Edge, 1935 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM



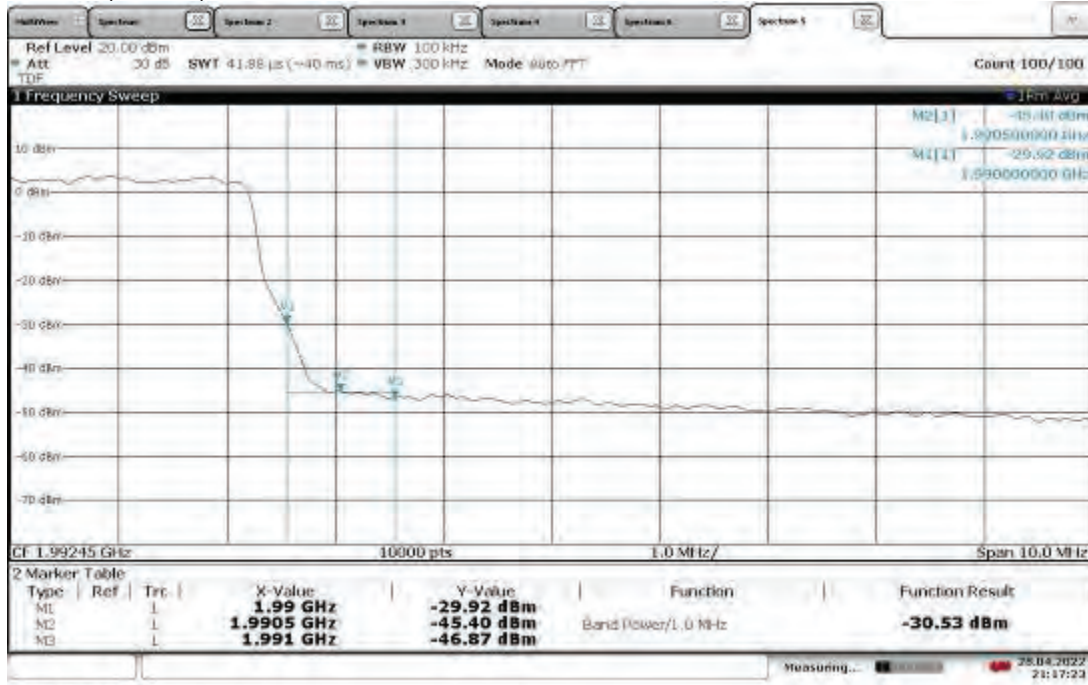
19:56:05 28.04.2022

Band Edge Compliant, Lower Band Edge, 1935 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM



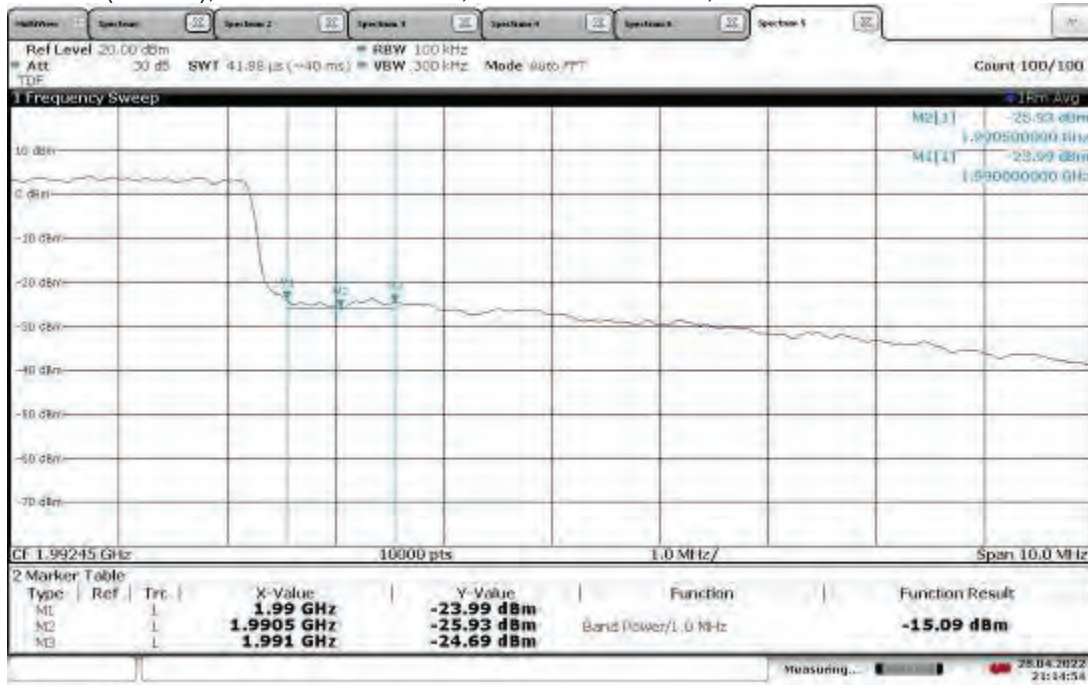
19:53:20 28.04.2022

Band Edge Compliant, Upper Band Edge, 1985 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM



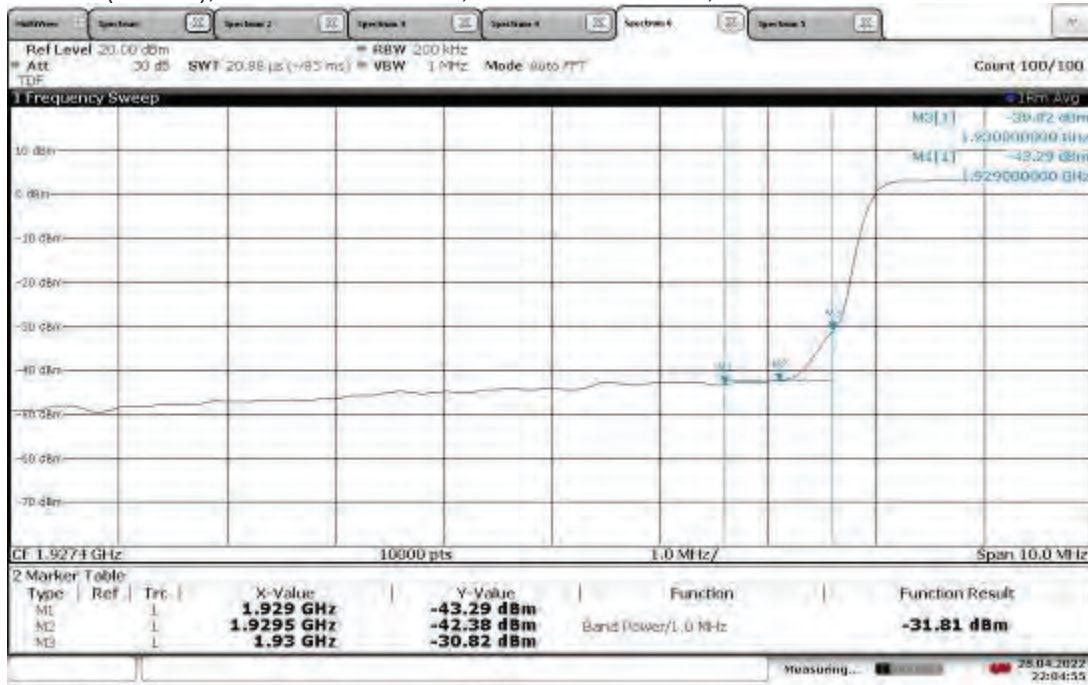
21:17:23 28.04.2022

Band Edge Compliant, Upper Band Edge, 1985 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM



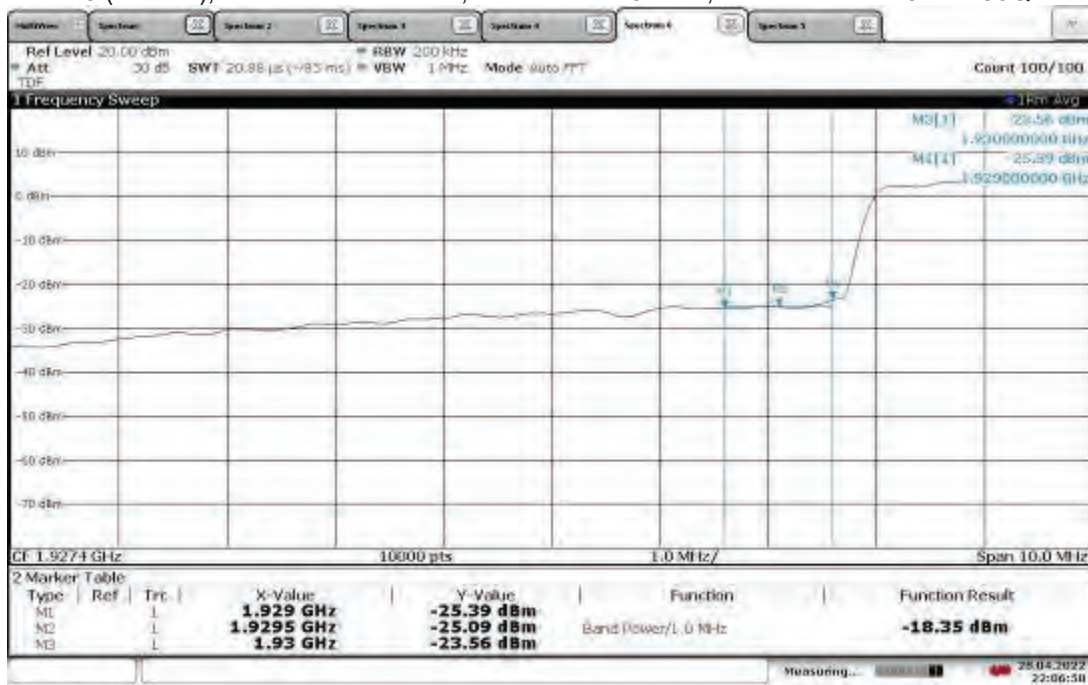
21:14:54 28.04.2022

Band Edge Compliant, Lower Band Edge, 1937.5MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM



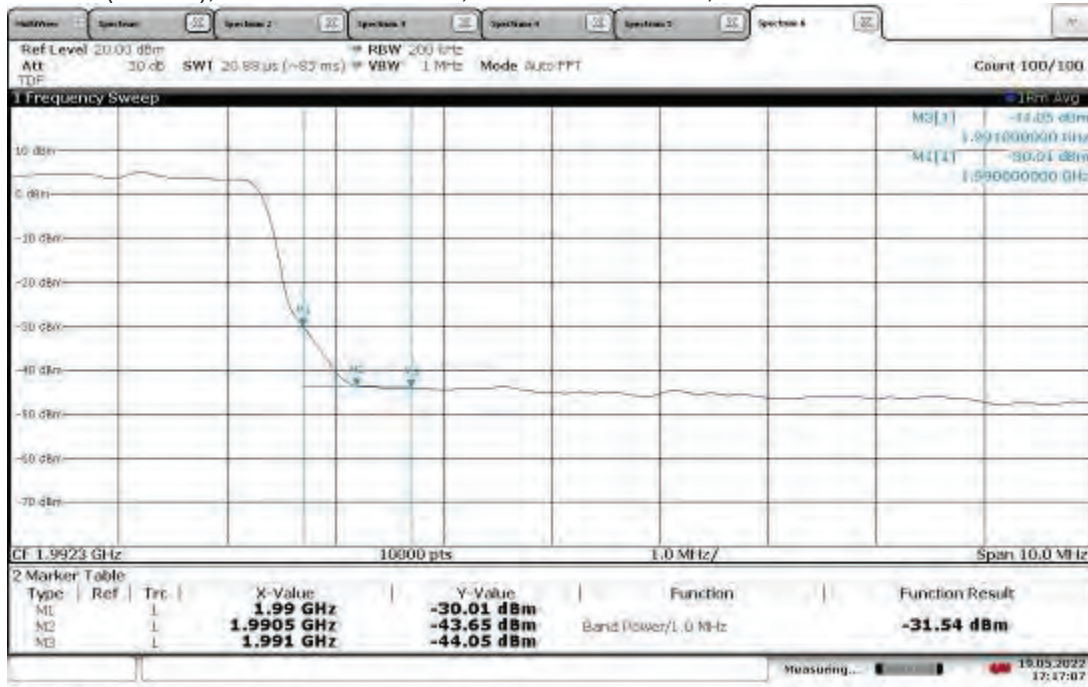
22:04:55 28.04.2022

Band Edge Compliant, Lower Band Edge, 1937.5MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM



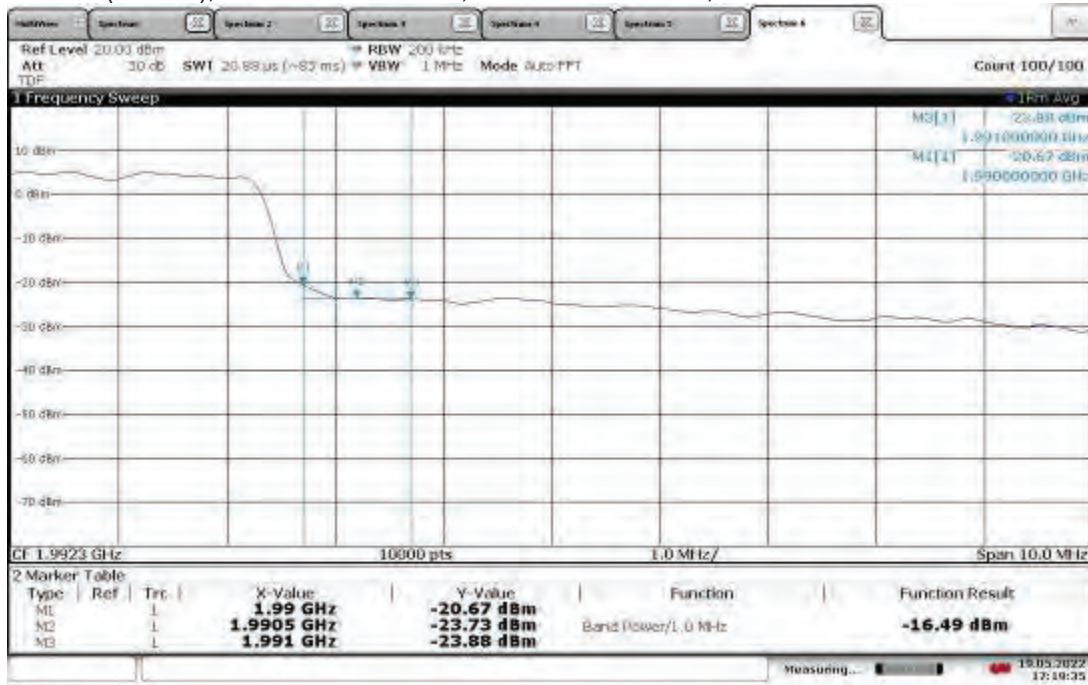
22:06:51 28.04.2022

Band Edge Compliant, Upper Band Edge, 1982.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM



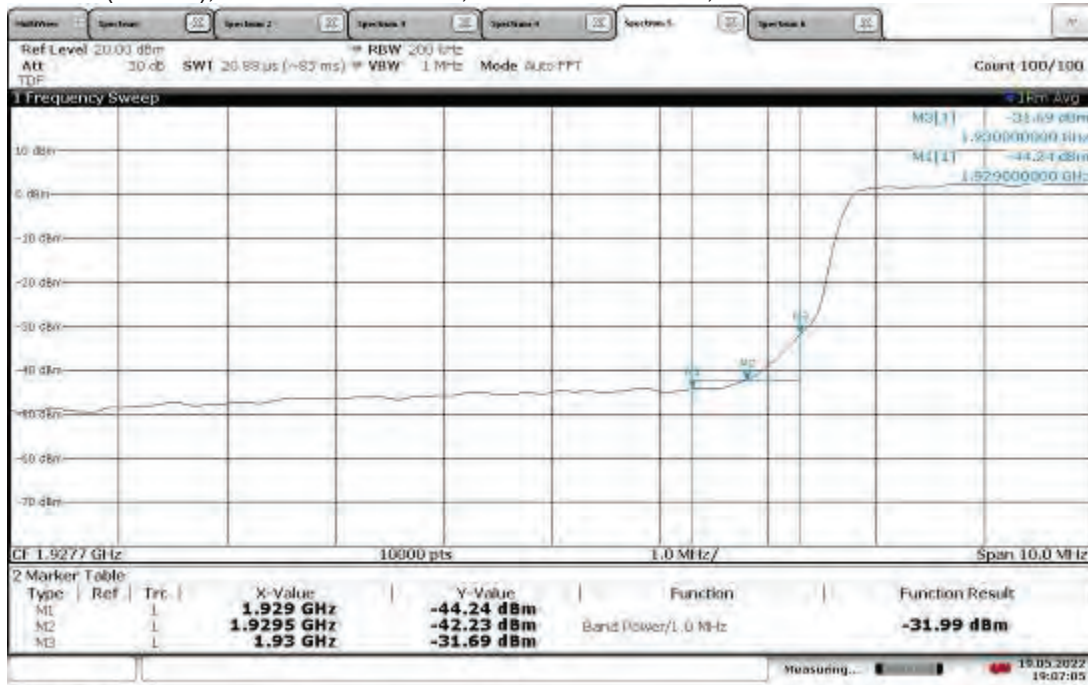
17:17:08 19.05.2022

Band Edge Compliant, Upper Band Edge, 1982.5 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM



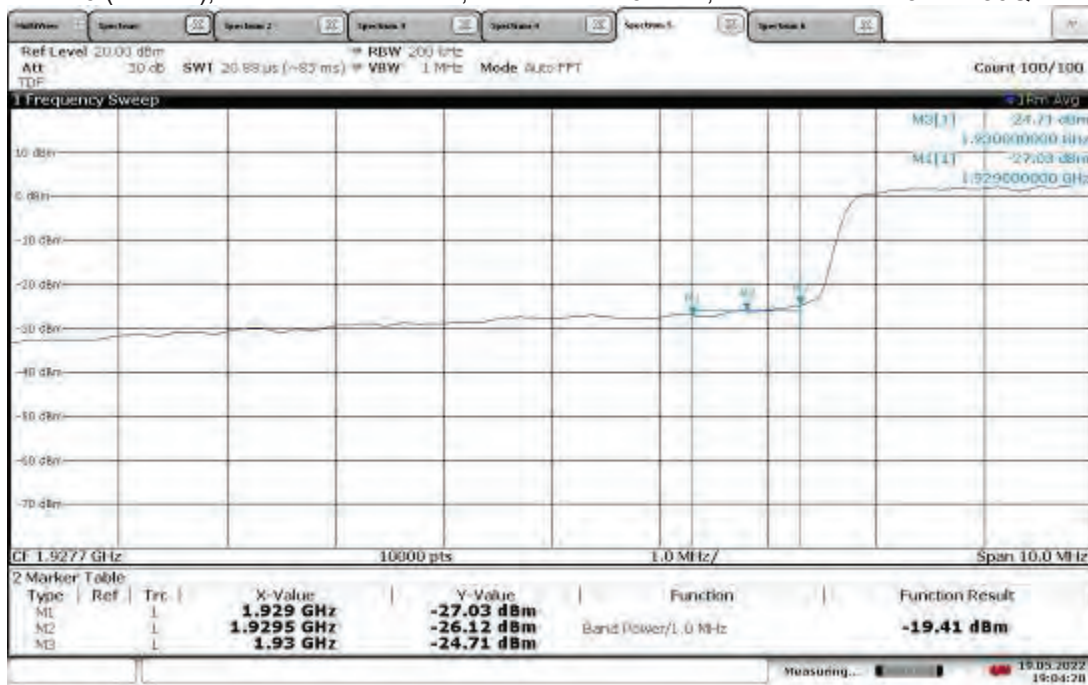
17:19:36 19.05.2022

Band Edge Compliant, Lower Band Edge, 1940 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM



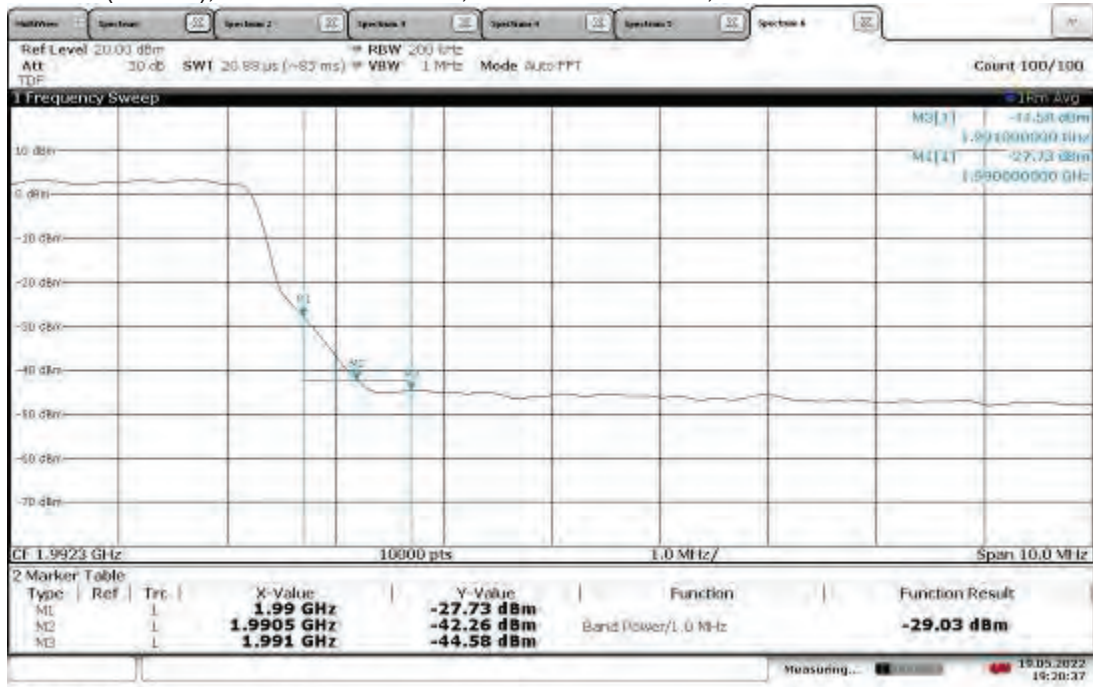
19:07:06 19.05.2022

Band Edge Compliant, Lower Band Edge, 1940 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM



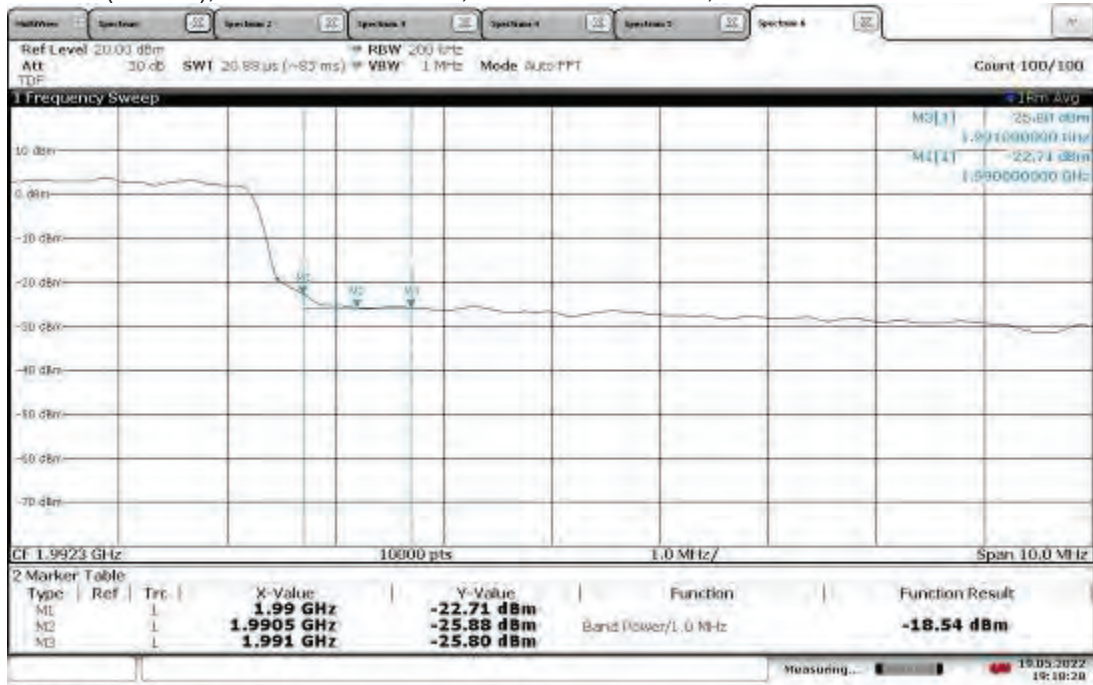
19:04:21 19.05.2022

Band Edge Compliant, Upper Band Edge, 1980 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM



19:20:37 19.05.2022

Band Edge Compliant, Upper Band Edge, 1980 MHz (5G NR)  
Slot 0 (Band 2), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM



19:18:28 19.05.2022

Test Personnel: Kouma Sinn *KS*  
Supervising/Reviewing  
Engineer:  
(Where Applicable) N/A

Test Date: 04/18/2022, 04/21/2022, 05/12/2022

Product Standard: FCC Part 24  
Input Voltage: 48 VDC (POE)

Limit Applied: See report section 9.3

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

Ambient Temperature: 25, 24, 25 °C

Relative Humidity: 18, 23, 46 %

Atmospheric Pressure: 1015, 1024, 1017 mbars

Deviations, Additions, or Exclusions: None

## 10 Frequency Stability

### 10.1 Method

Tests are performed in accordance with ANSI C63.26 and CFR47 FCC Parts 2.1055 and 24.

**TEST SITE:** Safety Lab

### 10.2 Test Equipment Used:

| Asset           | Description                                                                               | Manufacturer        | Model                | Serial         | Cal Date   | Cal Due    |
|-----------------|-------------------------------------------------------------------------------------------|---------------------|----------------------|----------------|------------|------------|
| ROS005-1'       | Signal and Spectrum Analyzer                                                              | Rohde and Shwartz   | FSW43                | 100646         | 11/02/2021 | 11/02/2022 |
| CEN001'         | DC-40GHz attenuator 20dB                                                                  | Centric RF          | C411-20              | CEN001         | 01/26/2022 | 01/26/2023 |
| CBLHF2012-2M-2' | 2m 9kHz-40GHz Coaxial Cable - SET2                                                        | Huber & Suhner      | SF102                | 252675002      | 02/10/2023 | 02/10/2023 |
| SAF1153'        | Freezing Rain/Icing\Temp\Humidity\ -73deg C to +190deg C, 95% humidity, Ice Freezing Rain | Cincinnati Sub-Zero | CTH-(FR)64-6-6-SC/AC | 12-CT15628     | 11/22/2021 | 11/22/2022 |
| 148012'         | Temp/Humidity Chamber                                                                     | Envirotronics       | SH27C                | 08015563S11263 | 11/22/2021 | 11/18/2022 |
| DAV005'         | Weather Station                                                                           | Davis               | 6250                 | MS191218083    | 02/07/2021 | 02/07/2022 |

### Software Utilized:

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

### 10.3 Results:

The sample tested was found to Comply.

FCC Part §24.235 Frequency stability – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The occupied bandwidth measurement was used to make sure the lower and upper frequencies of the occupied bandwidth remains within the assigned band of 1930-1990 MHz.

**Frequency stability over temperature (5 MHz Bandwidth, Low Channel)**

Band 2, Mod: 16QAM (worst-case output power, 22.12 dBm), BW: 5MHz, Antenna Port: ANT0 , Channel: Low 1932.5 MHz

Equipment used: 148012, ROS005-1, CEN001, CBLHF2012-5M-2, DAV005

25 deg C

65% 1007 mB

## Low Edge of Occupied Bandwidth

| Temperature<br>(Deg. C) | Low Edge<br>(GHz) | Low Edge Deviation<br>(GHz) | Low Edge (%)<br>-- | PPM<br>-- | Limit<br>PPM |
|-------------------------|-------------------|-----------------------------|--------------------|-----------|--------------|
| -30                     | 1.9302581         | -2.6E-06                    | -1.34697E-06       | -0.01     | 2.5          |
| -20                     | 1.9302581         | -2.6E-06                    | -1.34697E-06       | -0.01     | 2.5          |
| -10                     | 1.9302565         | -1E-06                      | -5.18066E-07       | -0.01     | 2.5          |
| 0                       | 1.9302561         | 6E-07                       | 3.1084E-07         | 0.00      | 2.5          |
| 10                      | 1.9302548         | -7E-07                      | -3.62646E-07       | 0.00      | 2.5          |
| 20                      | 1.9302555         | 0                           | 0                  | 0.00      | --           |
| 30                      | 1.9302544         | -1.1E-06                    | -5.69873E-07       | -0.01     | 2.5          |
| 40                      | 1.9302548         | -7E-07                      | -3.62646E-07       | 0.00      | 2.5          |
| 50                      | 1.9302536         | -1.9E-06                    | -9.84326E-07       | -0.01     | 2.5          |

## Upper Edge of Occupied Bandwidth

| Temperature<br>(Deg. C) | Upper Edge<br>(GHz) | Upper Edge Deviation<br>(GHz) | Upper Edge (%)<br>-- | PPM<br>-- | Limit<br>PPM |
|-------------------------|---------------------|-------------------------------|----------------------|-----------|--------------|
| -30                     | 1.9347753           | -3.7E-06                      | -1.91237E-06         | -0.02     | 2.5          |
| -20                     | 1.9347747           | -3.1E-06                      | -1.60226E-06         | -0.02     | 2.5          |
| -10                     | 1.9347729           | -1.3E-06                      | -6.71914E-07         | -0.01     | 2.5          |
| 0                       | 1.9347716           | 0                             | 0                    | 0.00      | 2.5          |
| 10                      | 1.934772            | 4E-07                         | 2.06743E-07          | 0.00      | 2.5          |
| 20                      | 1.9347716           | 0                             | 0                    | 0.00      | --           |
| 30                      | 1.9347714           | -2E-07                        | -1.03371E-07         | 0.00      | 2.5          |
| 40                      | 1.9347712           | -4E-07                        | -2.06743E-07         | 0.00      | 2.5          |
| 50                      | 1.9347711           | -5E-07                        | -2.58428E-07         | 0.00      | 2.5          |

**Frequency stability over temperature (5 MHz Bandwidth, High Channel)**

Band 2, Mod: 64QAM (worst-case output power, 22.88 dBm), BW: 5MHz, Antenna Port: ANT1 , Channel: High 1987.5 MHz

Equipment used: 148012, ROS005-1, CEN001, CBLHF2012-5M-2, DAV005

25 deg C

65% 1007 mB

**Low Edge of Occupied Bandwidth**

| Temperature<br>(Deg. C) | Low Edge<br>(GHz) | Low Edge Deviation<br>(GHz) | Low Edge (%)<br>-- | PPM<br>-- | Limit<br>PPM |
|-------------------------|-------------------|-----------------------------|--------------------|-----------|--------------|
| -30                     | 1.9852419         | -8.7E-06                    | -4.38236E-06       | -0.04     | 2.5          |
| -20                     | 1.985242          | -8.8E-06                    | -4.43273E-06       | -0.04     | 2.5          |
| -10                     | 1.9852421         | -8.9E-06                    | -4.4831E-06        | -0.04     | 2.5          |
| 0                       | 1.985242          | 8.8E-06                     | 4.43273E-06        | 0.04      | 2.5          |
| 10                      | 1.985242          | 8.8E-06                     | 4.43273E-06        | 0.04      | 2.5          |
| 20                      | 1.9852332         | 0                           | 0                  | 0.00      | --           |
| 30                      | 1.9852337         | 5E-07                       | 2.5186E-07         | 0.00      | 2.5          |
| 40                      | 1.9852417         | 8.5E-06                     | 4.28161E-06        | 0.04      | 2.5          |
| 50                      | 1.9852419         | 8.7E-06                     | 4.38236E-06        | 0.04      | 2.5          |

**Upper Edge of Occupied Bandwidth**

| Temperature<br>(Deg. C) | Upper Edge<br>(GHz) | Upper Edge Deviation<br>(GHz) | Upper Edge (%)<br>-- | PPM<br>-- | Limit<br>PPM |
|-------------------------|---------------------|-------------------------------|----------------------|-----------|--------------|
| -30                     | 1.9897215           | 1.25E-05                      | 6.28225E-06          | 0.06      | 2.5          |
| -20                     | 1.9897215           | 1.25E-05                      | 6.28225E-06          | 0.06      | 2.5          |
| -10                     | 1.9897213           | 1.27E-05                      | 6.38276E-06          | 0.06      | 2.5          |
| 0                       | 1.9897216           | -1.24E-05                     | -6.23199E-06         | -0.06     | 2.5          |
| 10                      | 1.9897217           | -1.23E-05                     | -6.18173E-06         | -0.06     | 2.5          |
| 20                      | 1.989734            | 0                             | 0                    | 0.00      | --           |
| 30                      | 1.9897334           | -6E-07                        | -3.01548E-07         | 0.00      | 2.5          |
| 40                      | 1.9897197           | -1.43E-05                     | -7.18689E-06         | -0.07     | 2.5          |
| 50                      | 1.9897196           | -1.44E-05                     | -7.23715E-06         | -0.07     | 2.5          |

| Frequency stability over temperature (20 MHz Bandwidth, Low Channel)                     |            |                      |                |       |       |
|------------------------------------------------------------------------------------------|------------|----------------------|----------------|-------|-------|
| Band 2, Modulation: 256QAM, Bandwidth: 20MHz, Antenna Port: ANT0 , Channel: Low 1940 MHz |            |                      |                |       |       |
| Worst-case output power, 22.68 dBm                                                       |            |                      |                |       |       |
| Low Edge of Occupied Bandwidth                                                           |            |                      |                |       |       |
| Temperature                                                                              | Low Edge   | Low Edge Deviation   | Low Edge (%)   | PPM   | Limit |
| (Deg. C)                                                                                 | (GHz)      | (GHz)                | --             | --    | PPM   |
| -30                                                                                      | 1.9305729  | -2.32E-05            | -1.20173E-05   | -0.12 | 2.5   |
| -20                                                                                      | 1.930567   | -1.73E-05            | -8.96118E-06   | -0.09 | 2.5   |
| -10                                                                                      | 1.9305609  | -1.12E-05            | -5.80146E-06   | -0.06 | 2.5   |
| 0                                                                                        | 1.9305555  | 5.8E-06              | 3.00433E-06    | 0.03  | 2.5   |
| 10                                                                                       | 1.9305521  | 2.4E-06              | 1.24317E-06    | 0.01  | 2.5   |
| 20                                                                                       | 1.9305497  | 0                    | 0              | 0.00  | --    |
| 30                                                                                       | 1.9305475  | -2.2E-06             | -1.13957E-06   | -0.01 | 2.5   |
| 40                                                                                       | 1.930545   | -4.7E-06             | -2.43454E-06   | -0.02 | 2.5   |
| 50                                                                                       | 1.9305408  | -8.9E-06             | -4.61009E-06   | -0.05 | 2.5   |
| Upper Edge of Occupied Bandwidth                                                         |            |                      |                |       |       |
| Temperature                                                                              | Upper Edge | Upper Edge Deviation | Upper Edge (%) | PPM   | Limit |
| (Deg. C)                                                                                 | (GHz)      | (GHz)                | --             | --    | PPM   |
| -30                                                                                      | 1.9494838  | -5.3E-06             | -2.71868E-06   | -0.03 | 2.5   |
| -20                                                                                      | 1.9494825  | -4E-06               | -2.05183E-06   | -0.02 | 2.5   |
| -10                                                                                      | 1.9494812  | -2.7E-06             | -1.38499E-06   | -0.01 | 2.5   |
| 0                                                                                        | 1.94948    | 1.5E-06              | 7.69437E-07    | 0.01  | 2.5   |
| 10                                                                                       | 1.9494795  | 1E-06                | 5.12958E-07    | 0.01  | 2.5   |
| 20                                                                                       | 1.9494785  | 0                    | 0              | 0.00  | --    |
| 30                                                                                       | 1.9494779  | -6E-07               | -3.07775E-07   | 0.00  | 2.5   |
| 40                                                                                       | 1.9494778  | -7E-07               | -3.5907E-07    | 0.00  | 2.5   |
| 50                                                                                       | 1.9494782  | -3E-07               | -1.53887E-07   | 0.00  | 2.5   |

**Frequency stability over temperature (20 MHz Bandwidth, High Channel)**

Band 2, Modulation: 16QAM, Bandwidth: 20MHz, Antenna Port: ANT0 , Channel: High 1980 MHz

Worst-case output power, 22.76 dBm

Low Edge of Occupied Bandwidth

| Temperature | Low Edge  | Low Edge Deviation | Low Edge (%) | PPM   | Limit |
|-------------|-----------|--------------------|--------------|-------|-------|
| (Deg. C)    | (GHz)     | (GHz)              | --           | --    | PPM   |
| -30         | 1.9704888 | 3.1E-06            | 1.57321E-06  | 0.02  | 2.5   |
| -20         | 1.9704903 | 1.6E-06            | 8.1198E-07   | 0.01  | 2.5   |
| -10         | 1.970491  | 9E-07              | 4.56739E-07  | 0.00  | 2.5   |
| 0           | 1.9704911 | -8E-07             | -4.0599E-07  | 0.00  | 2.5   |
| 10          | 1.9704925 | 6E-07              | 3.04492E-07  | 0.00  | 2.5   |
| 20          | 1.9704919 | 0                  | 0            | 0.00  | --    |
| 30          | 1.9704924 | 5E-07              | 2.53744E-07  | 0.00  | 2.5   |
| 40          | 1.9704893 | -2.6E-06           | -1.31947E-06 | -0.01 | 2.5   |
| 50          | 1.9704894 | -2.5E-06           | -1.26872E-06 | -0.01 | 2.5   |

Upper Edge of Occupied Bandwidth

| Temperature | Upper Edge | Upper Edge Deviation | Upper Edge (%) | PPM   | Limit |
|-------------|------------|----------------------|----------------|-------|-------|
| (Deg. C)    | (GHz)      | (GHz)                | --             | --    | PPM   |
| -30         | 1.9894901  | 1.3E-06              | 6.53433E-07    | 0.01  | 2.5   |
| -20         | 1.9894903  | 1.1E-06              | 5.52905E-07    | 0.01  | 2.5   |
| -10         | 1.9894903  | 1.1E-06              | 5.52905E-07    | 0.01  | 2.5   |
| 0           | 1.9894908  | -6E-07               | -3.01585E-07   | 0.00  | 2.5   |
| 10          | 1.9894914  | 0                    | 0              | 0.00  | 2.5   |
| 20          | 1.9894914  | 0                    | 0              | 0.00  | --    |
| 30          | 1.9894906  | -8E-07               | -4.02113E-07   | 0.00  | 2.5   |
| 40          | 1.9894083  | -8.31E-05            | -4.17695E-05   | -0.42 | 2.5   |
| 50          | 1.9894042  | -8.72E-05            | -4.38303E-05   | -0.44 | 2.5   |

**Frequency stability over voltages (5 MHz Band, Low and High Channels)**Band 2 (5G NR), Modulation: 16QAM, Bandwidth: 5MHz, Antenna Port: ANT0 , [Low Ch. 1932.5 MHz](#)

Worst-case output power 21.12 dBm

Low Channel 1940 MHz, Low Edge of Occupied Bandwidth

| Voltage | Low Edge  | Low Edge Deviation | Low Edge (%) | PPM  | Limit |
|---------|-----------|--------------------|--------------|------|-------|
| (VDC)   | (GHz)     | (GHz)              | --           | --   | PPM   |
| 41.1    | 1.9302442 | 2E-07              | 1.03614E-07  | 0.00 | 2.5   |
| 48      | 1.930244  | 0                  | 0            | 0.00 | --    |
| 57      | 1.9302443 | 3E-07              | 1.55421E-07  | 0.00 | 2.5   |

Low Channel 1940 MHz, Upper Edge of Occupied Bandwidth

| Voltage | Upper Edge | Upper Edge Deviation | Upper Edge (%) | PPM  | Limit |
|---------|------------|----------------------|----------------|------|-------|
| (VDC)   | (GHz)      | (GHz)                | --             | --   | PPM   |
| 41.1    | 1.9347841  | 1E-07                | 5.16854E-08    | 0.00 | 2.5   |
| 48      | 1.934784   | 0                    | 0              | 0.00 | --    |
| 57      | 1.9347841  | 1E-07                | 5.16854E-08    | 0.00 | 2.5   |

Band 2 (5G NR), Modulation: 64QAM, Bandwidth: 5MHz, Antenna Port: ANT0 , [High Ch. 1987.5 MHz](#)

Worst-case output power 22.88 dBm

High Channel 1980 MHz, Low Edge of Occupied Bandwidth

| Voltage | Low Edge  | Low Edge Deviation | Low Edge (%) | PPM  | Limit |
|---------|-----------|--------------------|--------------|------|-------|
| (VDC)   | (GHz)     | (GHz)              | --           | --   | PPM   |
| 41.1    | 1.9852324 | -2E-07             | -1.00744E-07 | 0.00 | 2.5   |
| 48      | 1.9852326 | 0                  | 0            | 0.00 | --    |
| 57      | 1.9852325 | -1E-07             | -5.03719E-08 | 0.00 | 2.5   |

High Channel 1980 MHz, Upper Edge of Occupied Bandwidth

| Voltage | Upper Edge | Upper Edge Deviation | Upper Edge (%) | PPM  | Limit |
|---------|------------|----------------------|----------------|------|-------|
| (VDC)   | (GHz)      | (GHz)                | --             | --   | PPM   |
| 41.1    | 1.989735   | 1E-07                | 5.0258E-08     | 0.00 | 2.5   |
| 48      | 1.9897349  | 0                    | 0              | 0.00 | --    |
| 57      | 1.9897351  | 2E-07                | 1.00516E-07    | 0.00 | 2.5   |

**Frequency stability over voltages (20 MHz Bandwidth, Low and High Channels)**

Band 2 (5G NR), Modulation: 256QAM, Bandwidth: 20MHz, Antenna Port: ANT0 , [Low Ch. 1940 MHz](#)

Worst-case output 22.68 dBm

Low Channel 1940 MHz, Low Edge of Occupied Bandwidth

| Voltage | Low Edge  | Low Edge Deviation | Low Edge (%) | PPM  | Limit |
|---------|-----------|--------------------|--------------|------|-------|
| (VDC)   | (GHz)     | (GHz)              | --           | --   | PPM   |
| 41.1    | 1.9305479 | -3E-07             | -1.55396E-07 | 0.00 | 2.5   |
| 48      | 1.9305482 | 0                  | 0            | 0.00 | --    |
| 57      | 1.9305479 | -3E-07             | -1.55396E-07 | 0.00 | 2.5   |

Low Channel 1940 MHz, Upper Edge of Occupied Bandwidth

| Voltage | Upper Edge | Upper Edge Deviation | Upper Edge (%) | PPM  | Limit |
|---------|------------|----------------------|----------------|------|-------|
| (VDC)   | (GHz)      | (GHz)                | --             | --   | PPM   |
| 41.1    | 1.9494787  | 0                    | 0              | 0.00 | 2.5   |
| 48      | 1.9494787  | 0                    | 0              | 0.00 | --    |
| 57      | 1.9494785  | -2E-07               | -1.02592E-07   | 0.00 | 2.5   |

Band 2 (5G NR), Modulation: 16QAM, Bandwidth: 20MHz, Antenna Port: ANT0 , [High Ch. 1980 MHz](#)

Worst-case output power 22.76 dBm

High Channel 1980 MHz, Low Edge of Occupied Bandwidth

| Voltage | Low Edge  | Low Edge Deviation | Low Edge (%) | PPM  | Limit |
|---------|-----------|--------------------|--------------|------|-------|
| (VDC)   | (GHz)     | (GHz)              | --           | --   | PPM   |
| 41.1    | 1.9704913 | -5E-07             | -2.53744E-07 | 0.00 | 2.5   |
| 48      | 1.9704918 | 0                  | 0            | 0.00 | --    |
| 57      | 1.9704921 | 3E-07              | 1.52246E-07  | 0.00 | 2.5   |

High Channel 1980 MHz, Upper Edge of Occupied Bandwidth

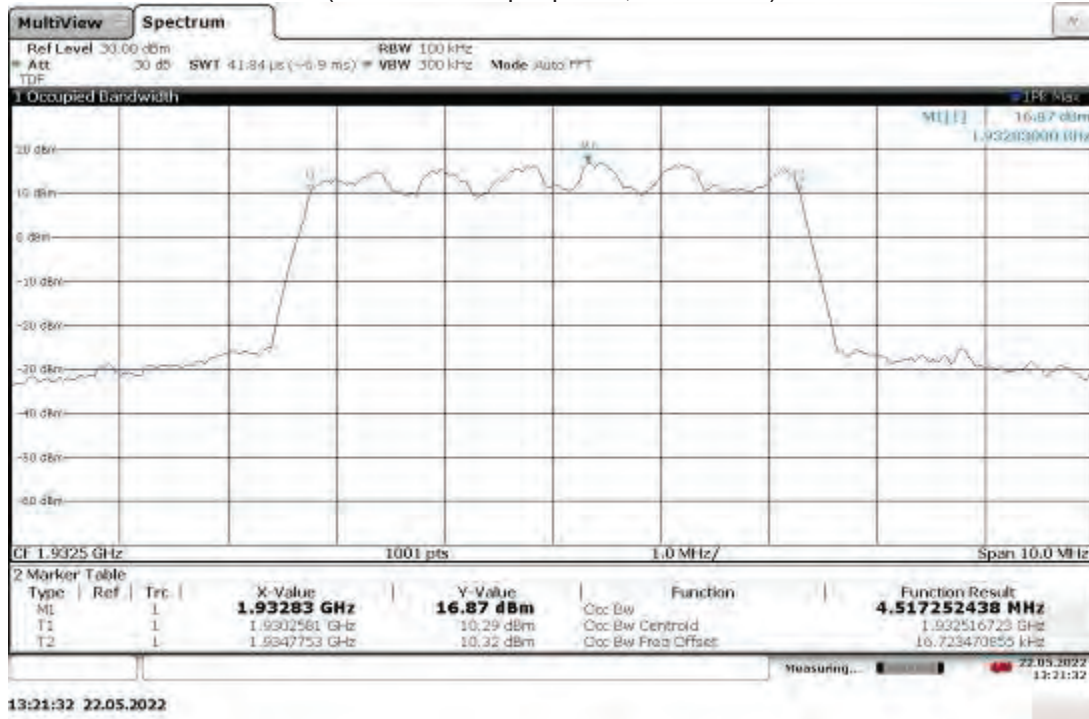
| Voltage | Upper Edge | Upper Edge Deviation | Upper Edge (%) | PPM  | Limit |
|---------|------------|----------------------|----------------|------|-------|
| (VDC)   | (GHz)      | (GHz)                | --             | --   | PPM   |
| 41.1    | 1.9894912  | 1E-07                | 5.02641E-08    | 0.00 | 2.5   |
| 48      | 1.9894911  | 0                    | 0              | 0.00 | --    |
| 57      | 1.989491   | -1E-07               | -5.02641E-08   | 0.00 | 2.5   |

#### **10.4 Setup Photographs:**

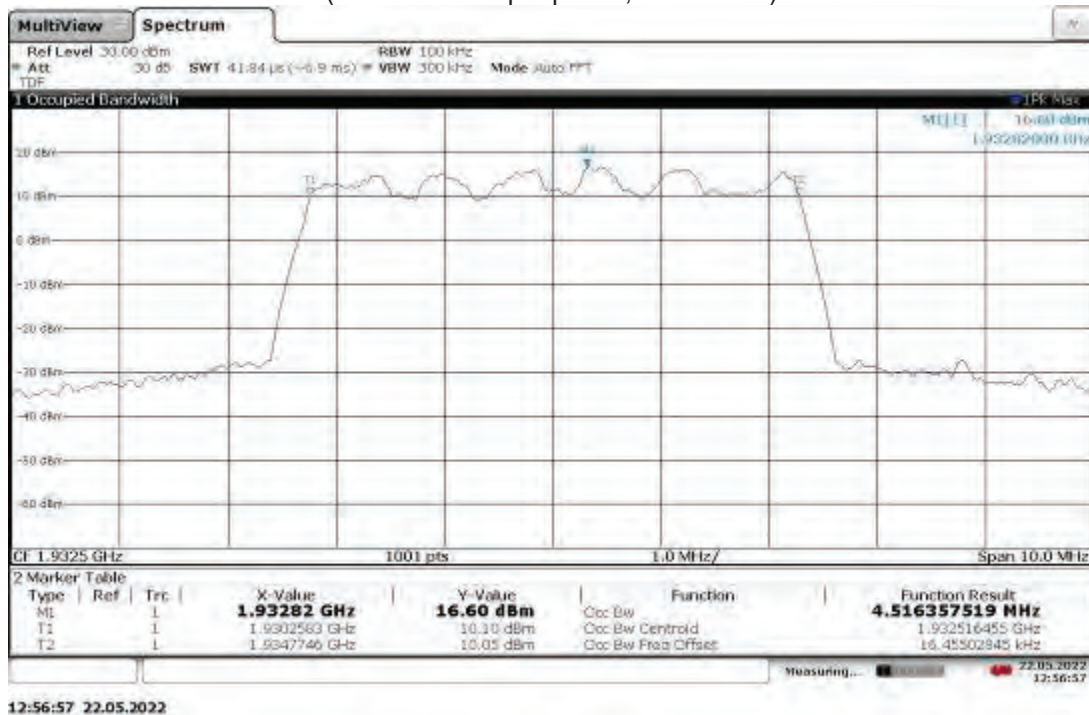
Confidential – Photos not included in this report

## 10.5 Plots/Data:

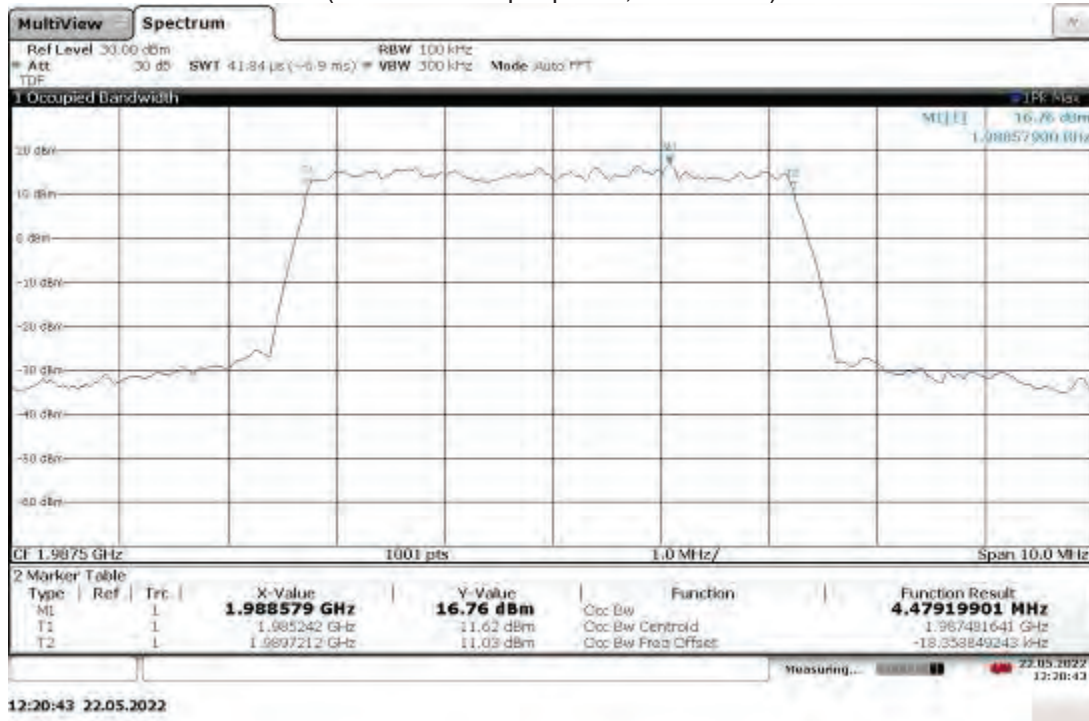
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, -30 °C (5G NR)  
(worst-case output power, 22.12 dBm)



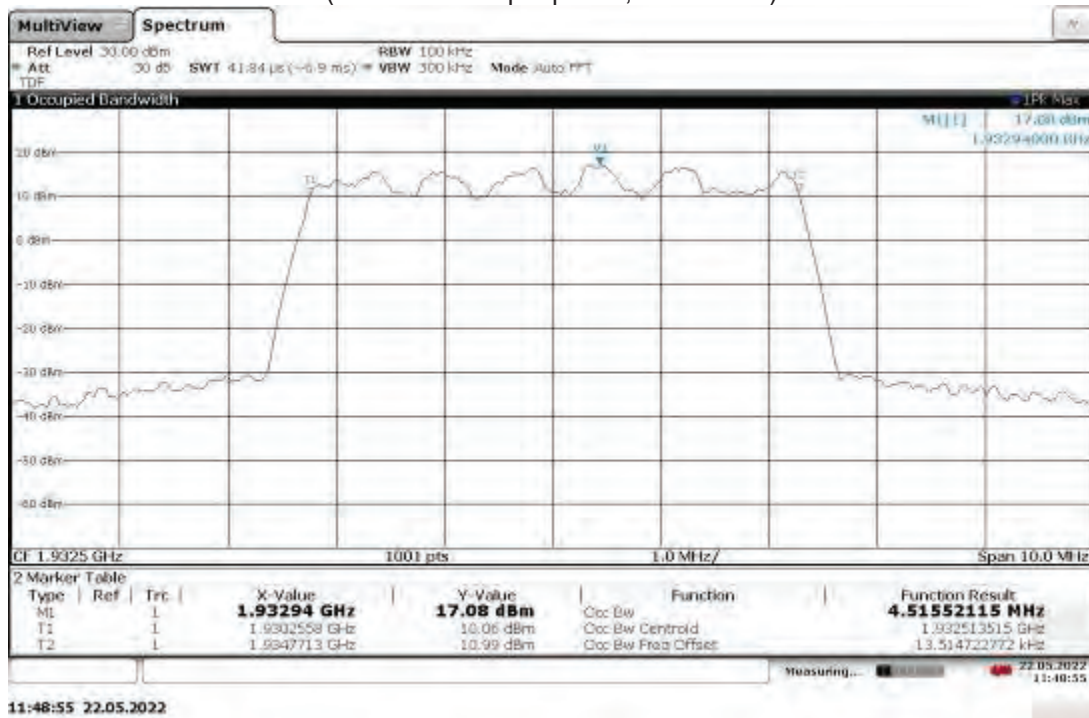
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, -20 °C (5G NR)  
(worst-case output power, 22.12 dBm)



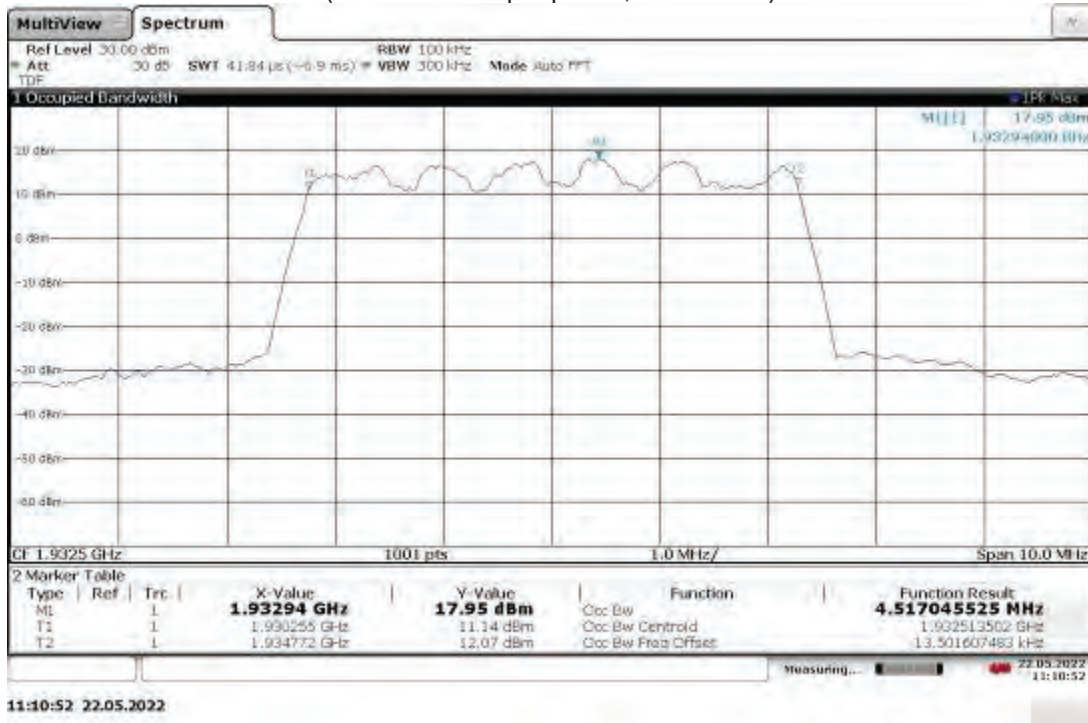
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, -10 °C (5G NR)  
(worst-case output power, 22.12 dBm)



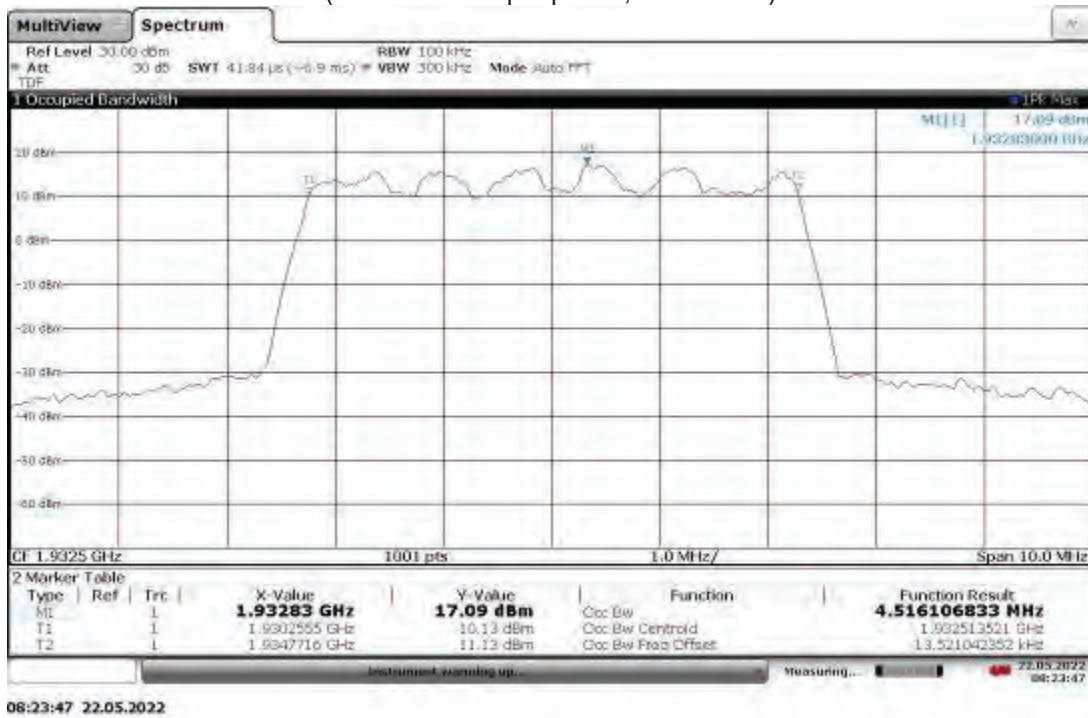
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 0 °C (5G NR)  
(worst-case output power, 22.12 dBm)



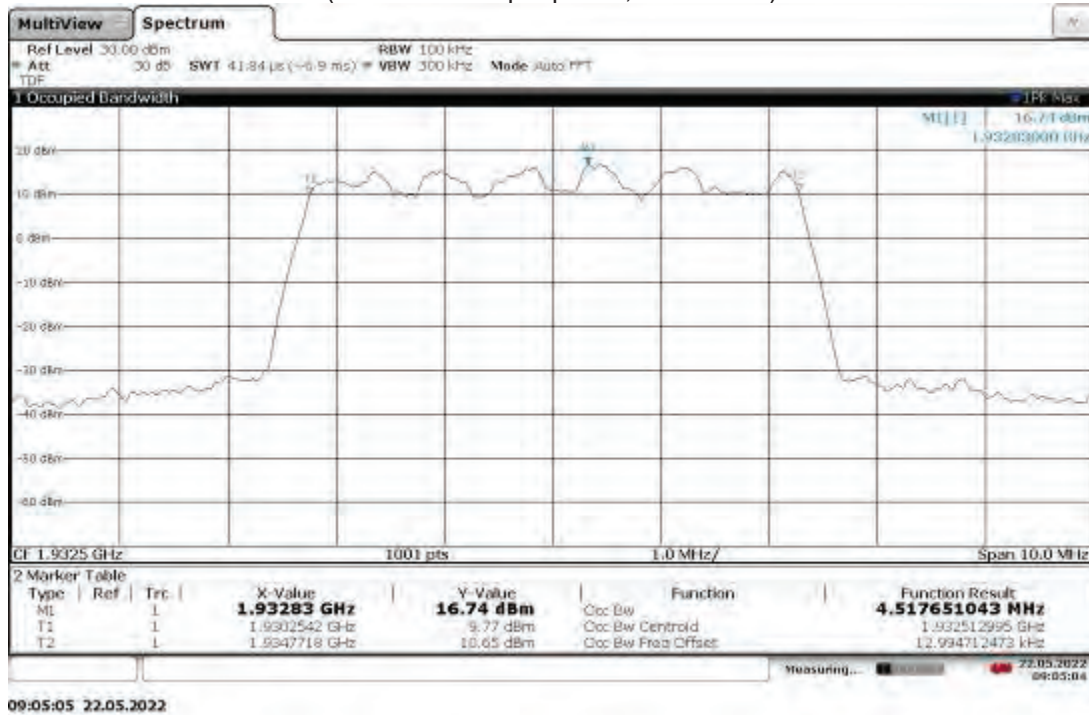
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 10 °C (5G NR)  
(worst-case output power, 22.12 dBm)



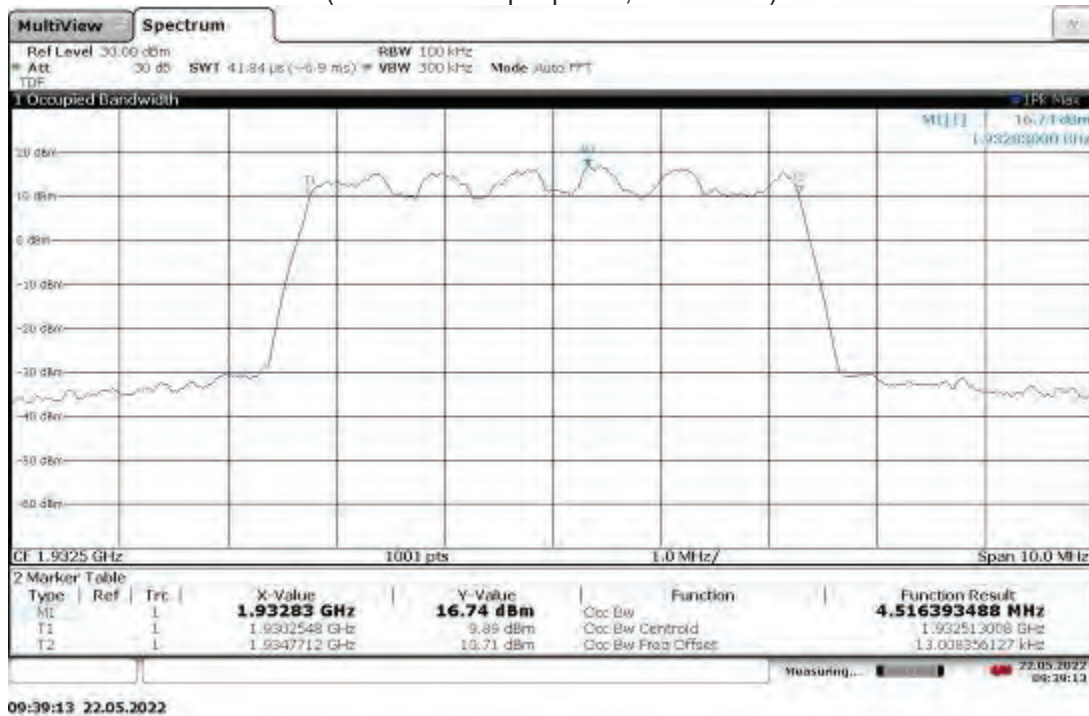
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 20 °C (5G NR)  
(worst-case output power, 22.12 dBm)



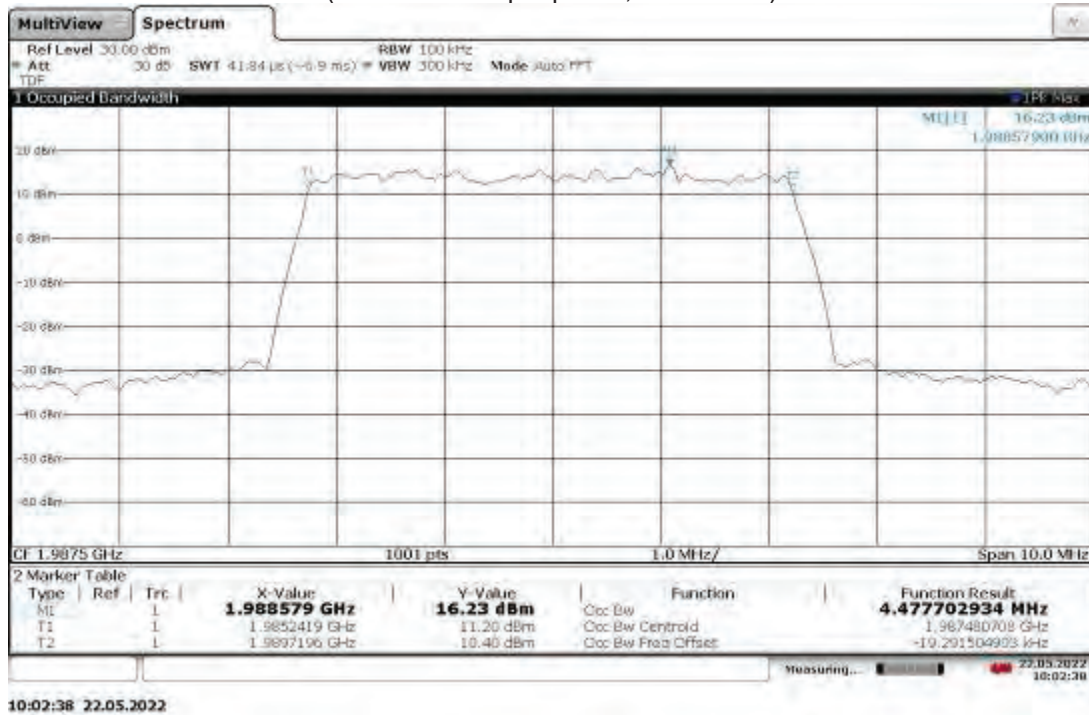
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 30 °C (5G NR)  
(worst-case output power, 22.12 dBm)



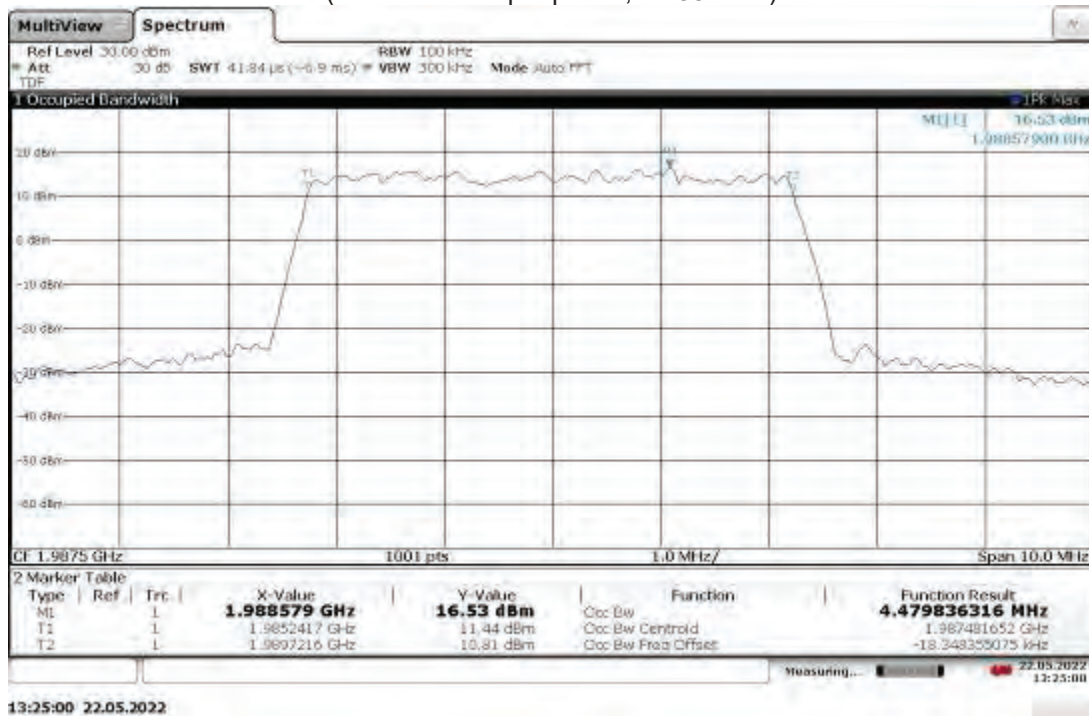
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 40 °C (5G NR)  
(worst-case output power, 22.12 dBm)



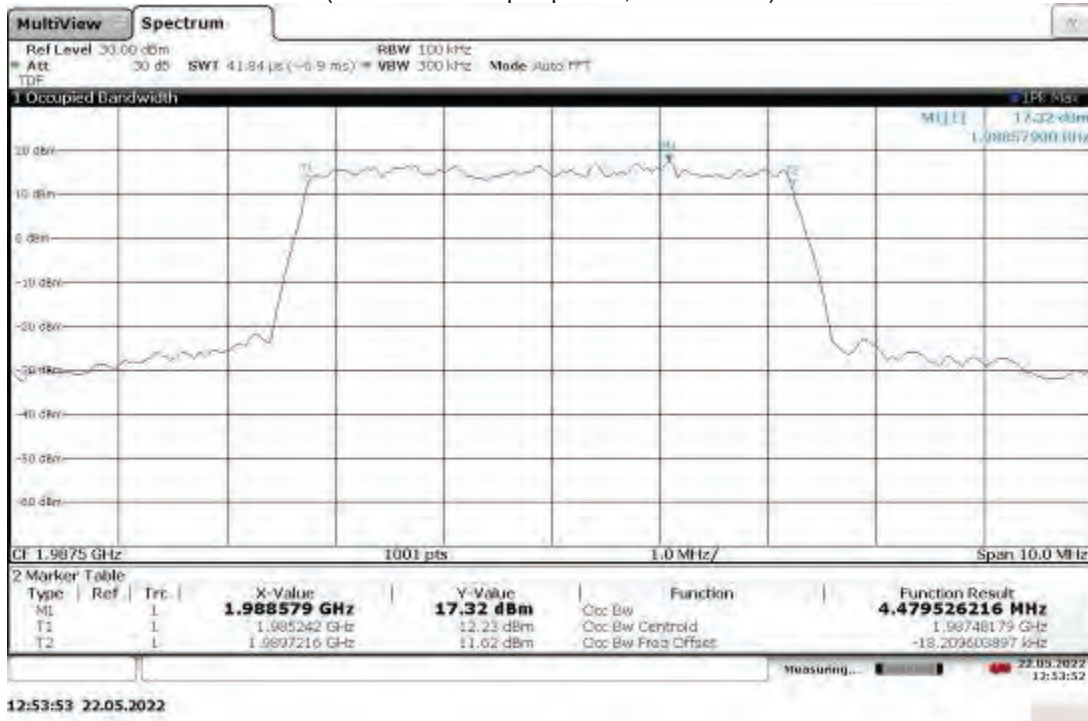
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 50 °C (5G NR)  
(worst-case output power, 22.12 dBm)



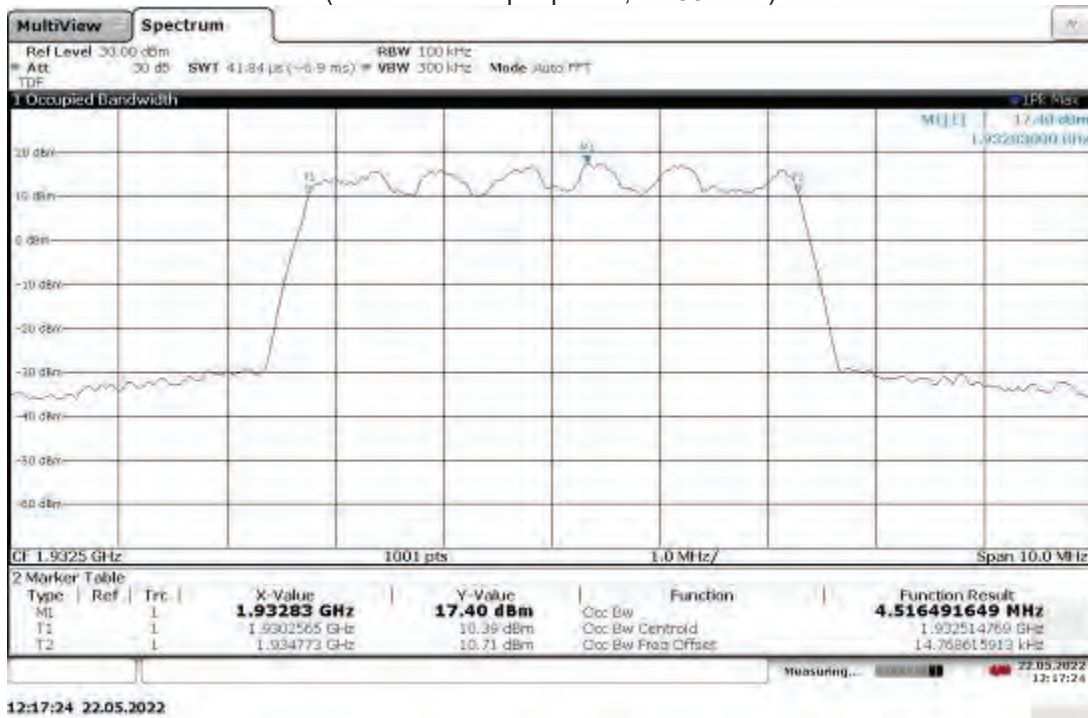
Slot 0 (Band 2), ANT1, Modulation: 64QAM, Bandwidth: 5 MHz High Ch. 1987.5 MHz, -30 °C (5G NR)  
(worst-case output power, 22.88 dBm)



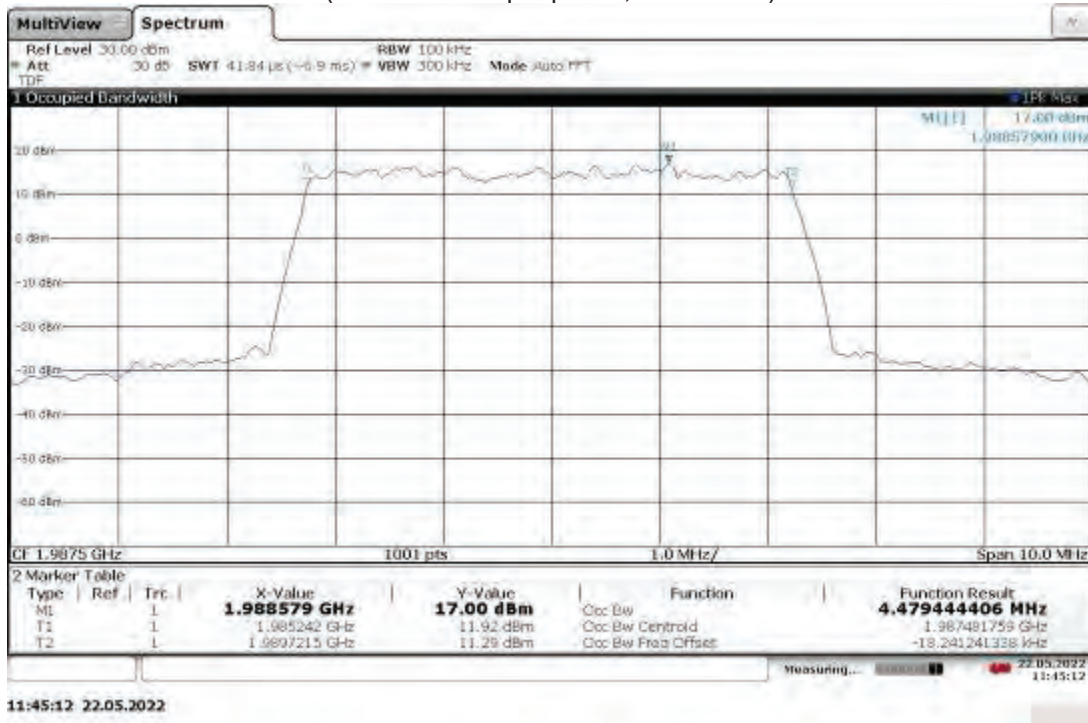
Slot 0 (Band 2), ANT1, Modulation: 64QAM, Bandwidth: 5 MHz High Ch. 1987.5 MHz, -20 °C (5G NR)  
(worst-case output power, 22.88 dBm)



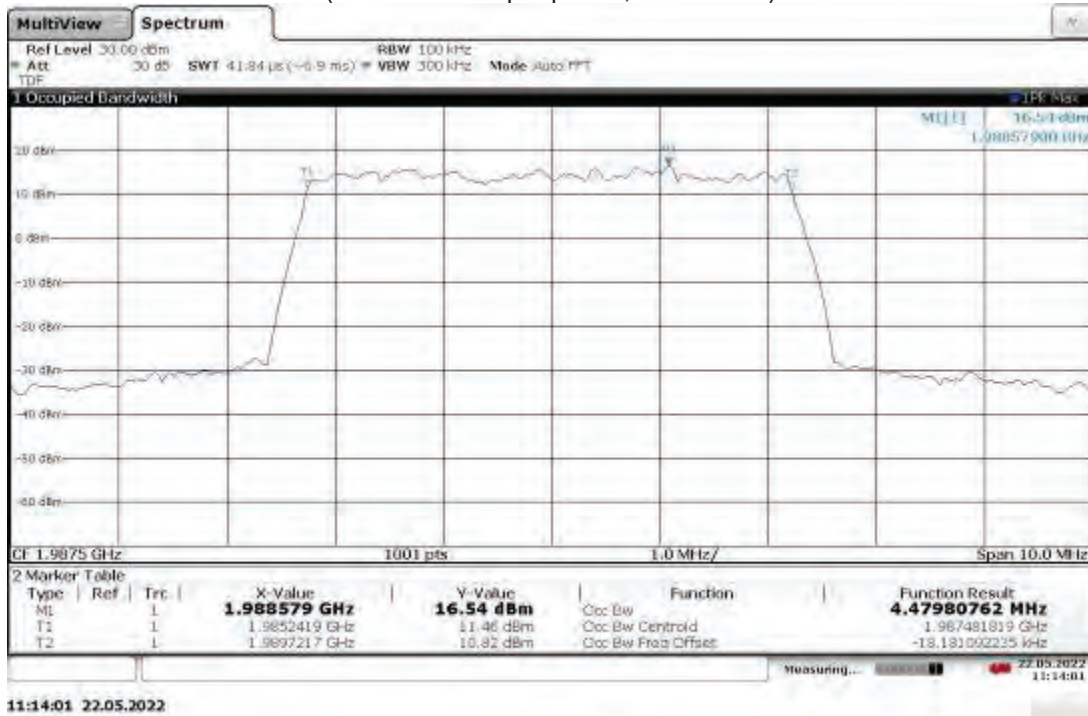
Slot 0 (Band 2), ANT1, Modulation: 64QAM, Bandwidth: 5 MHz High Ch. 1987.5 MHz, -10 °C (5G NR)  
(worst-case output power, 22.88 dBm)



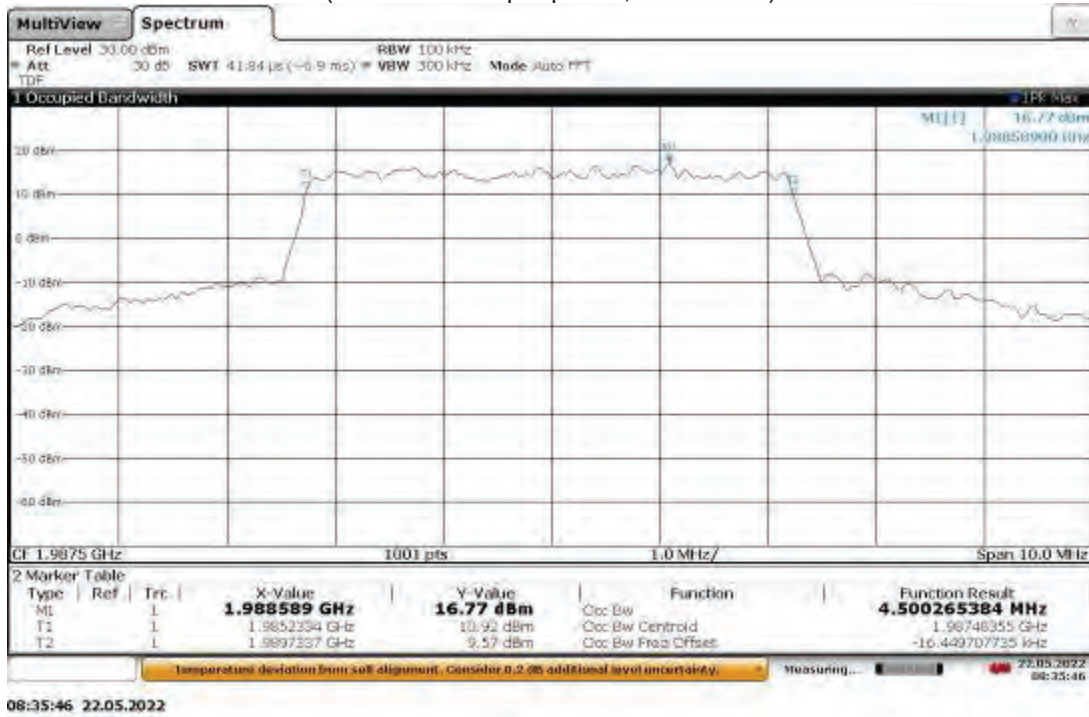
Slot 0 (Band 2), ANT1, Modulation: 64QAM, Bandwidth: 5 MHz High Ch. 1987.5 MHz, 0 °C (5G NR)  
(worst-case output power, 22.88 dBm)



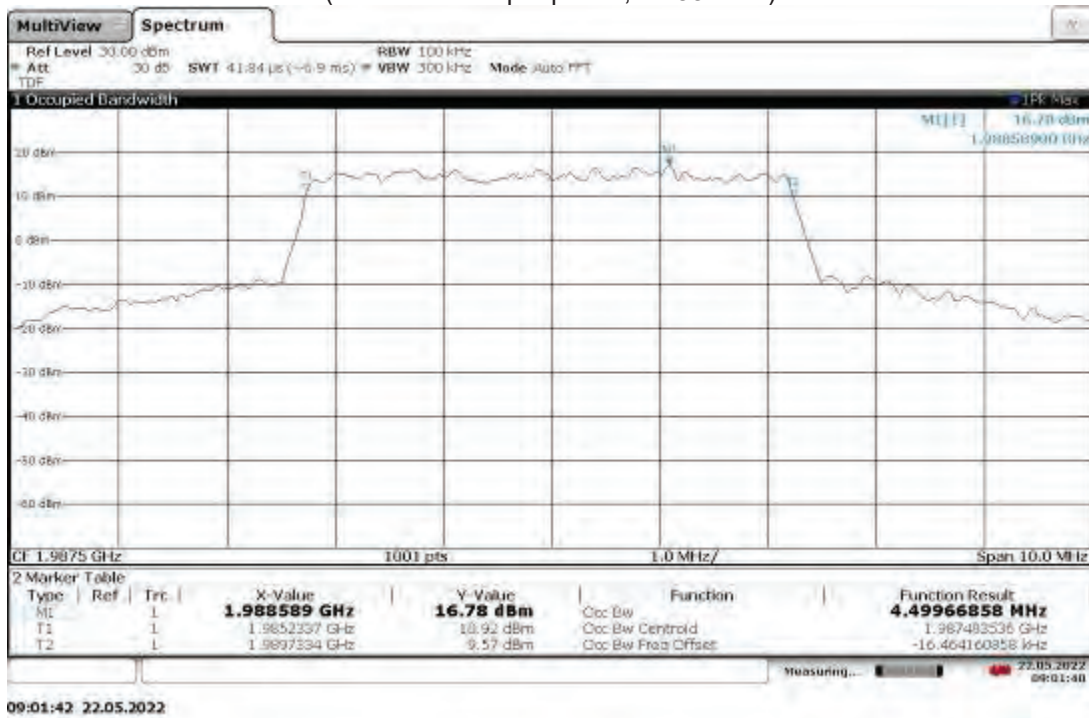
Slot 0 (Band 2), ANT1, Modulation: 64QAM, Bandwidth: 5 MHz High Ch. 1987.5 MHz, 10 °C (5G NR)  
(worst-case output power, 22.88 dBm)



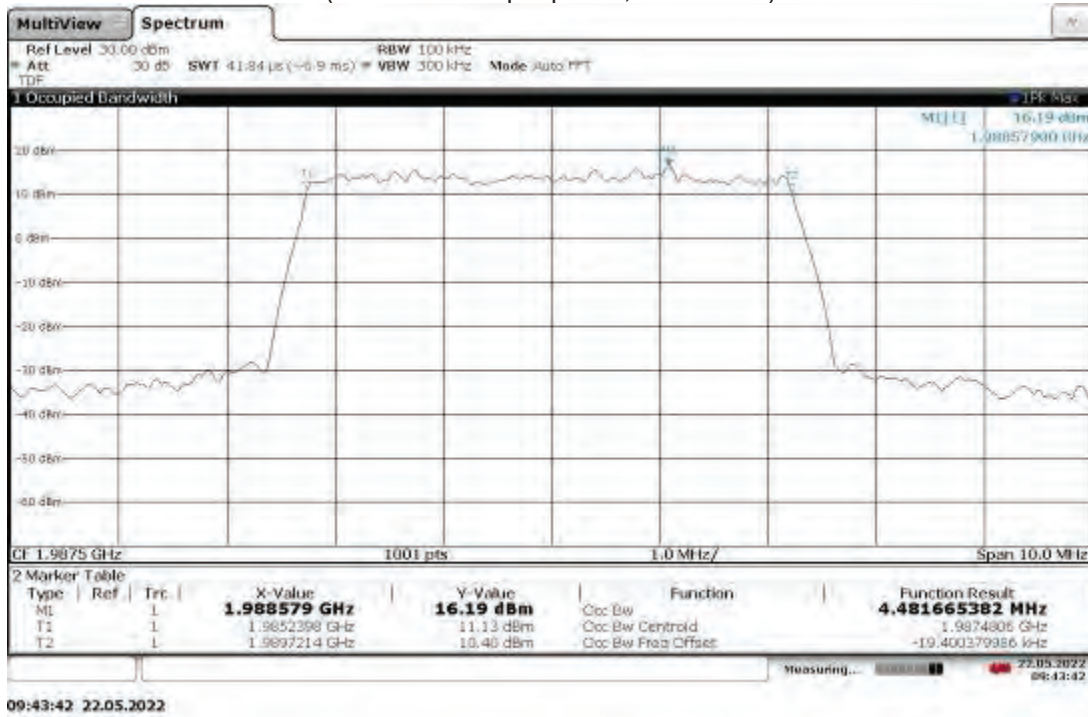
Slot 0 (Band 2), ANT1, Modulation: 64QAM, Bandwidth: 5 MHz High Ch. 1987.5 MHz, 20 °C (5G NR)  
(worst-case output power, 22.88 dBm)



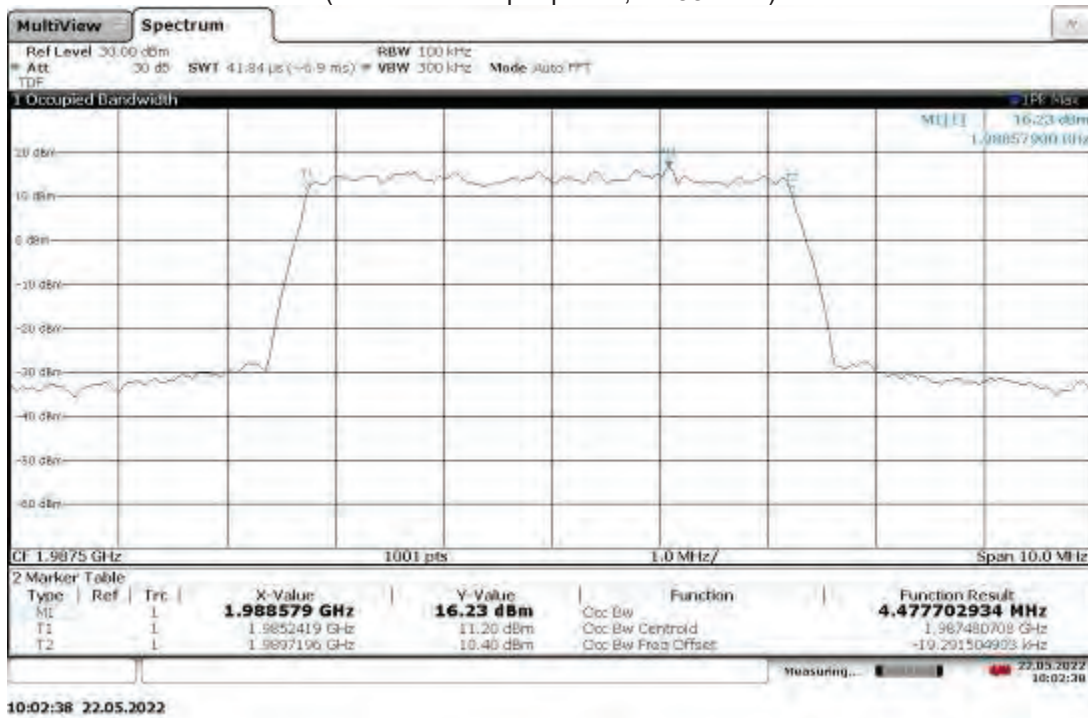
Slot 0 (Band 2), ANT1, Modulation: 64QAM, Bandwidth: 5 MHz High Ch. 1987.5 MHz, 30 °C (5G NR)  
(worst-case output power, 22.88 dBm)



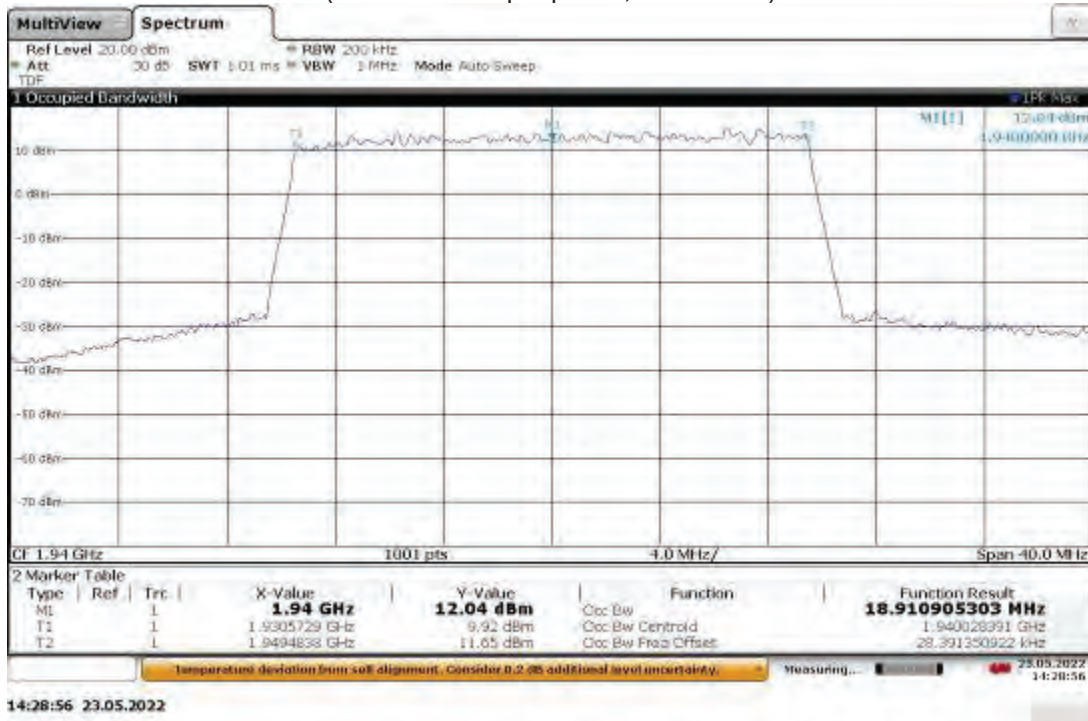
Slot 0 (Band 2), ANT1, Modulation: 64QAM, Bandwidth: 5 MHz High Ch. 1987.5 MHz, 40 °C (5G NR)  
(worst-case output power, 22.88 dBm)



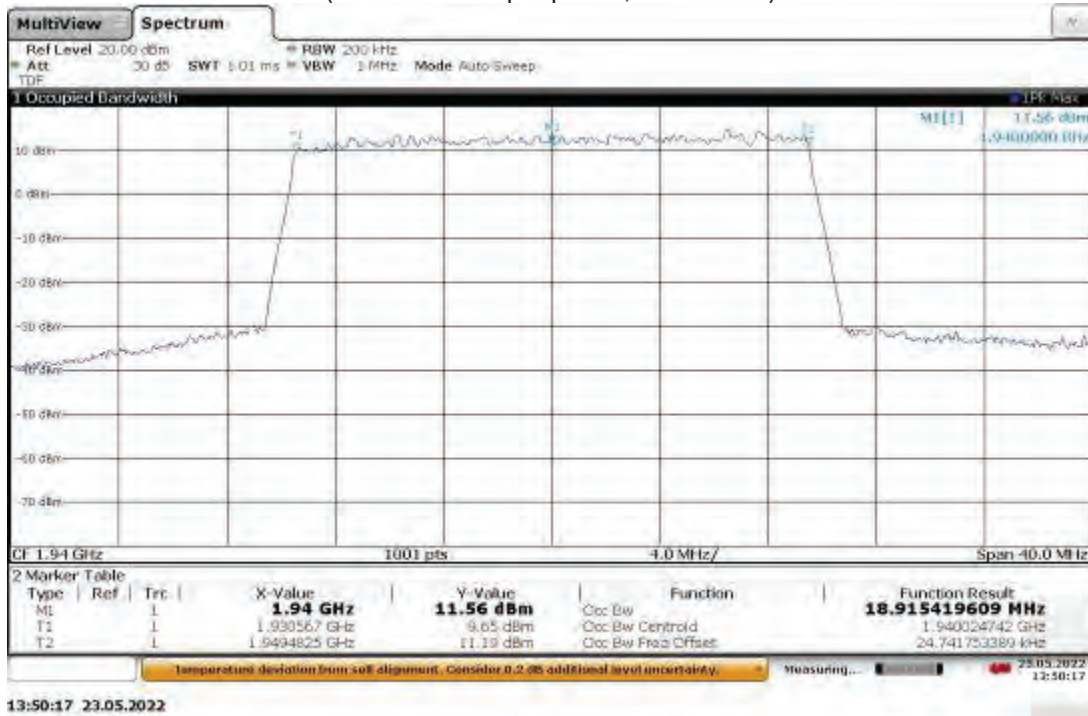
Slot 0 (Band 2), ANT1, Modulation: 64QAM, Bandwidth: 5 MHz High Ch. 1987.5 MHz, 50 °C (5G NR)  
(worst-case output power, 22.88 dBm)



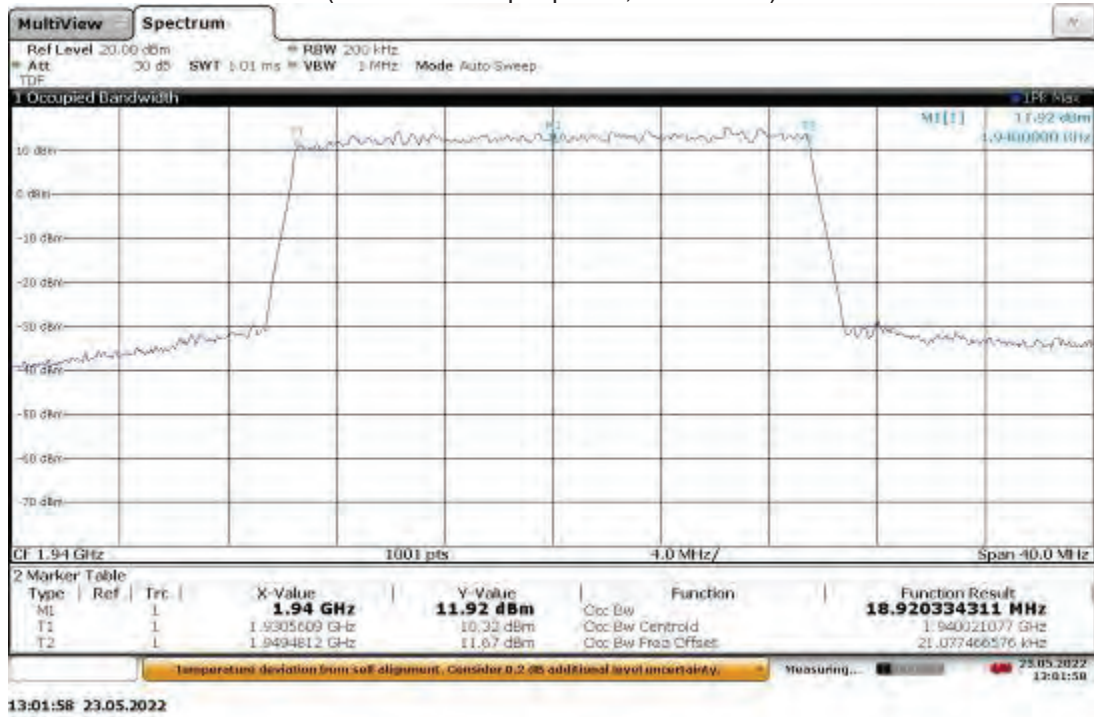
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz Low Ch. 1940 MHz, -30 °C (5G NR)  
(worst-case output power, 22.68 dBm)



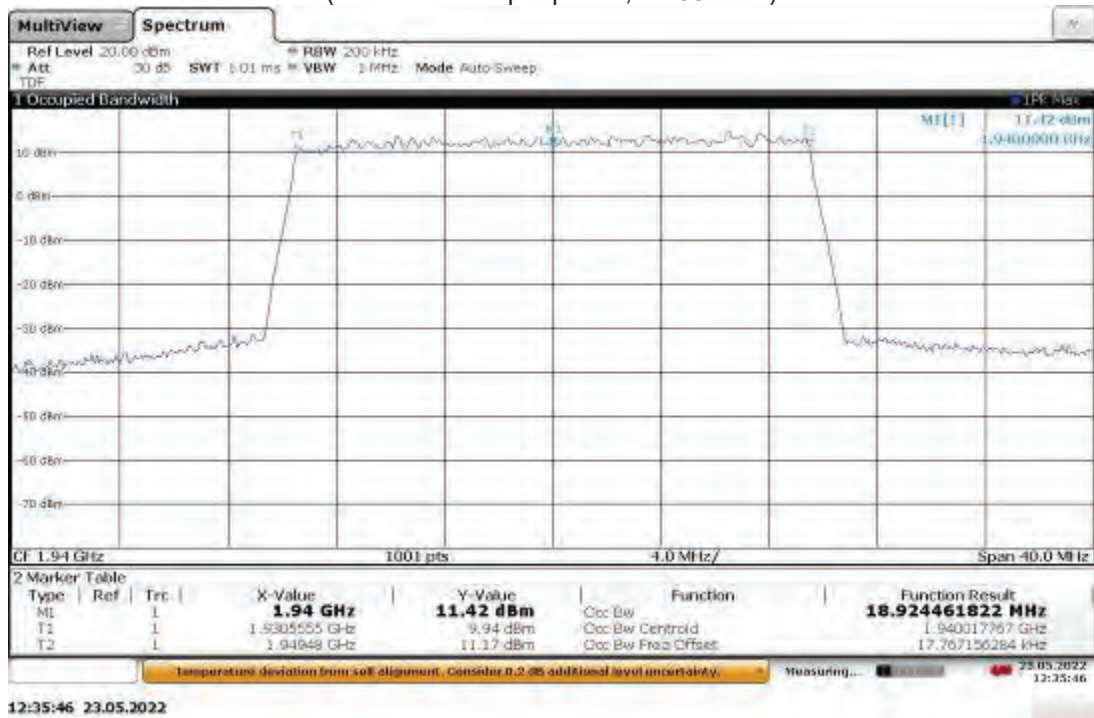
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz Low Ch. 1940 MHz, -20 °C (5G NR)  
(worst-case output power, 22.68 dBm)



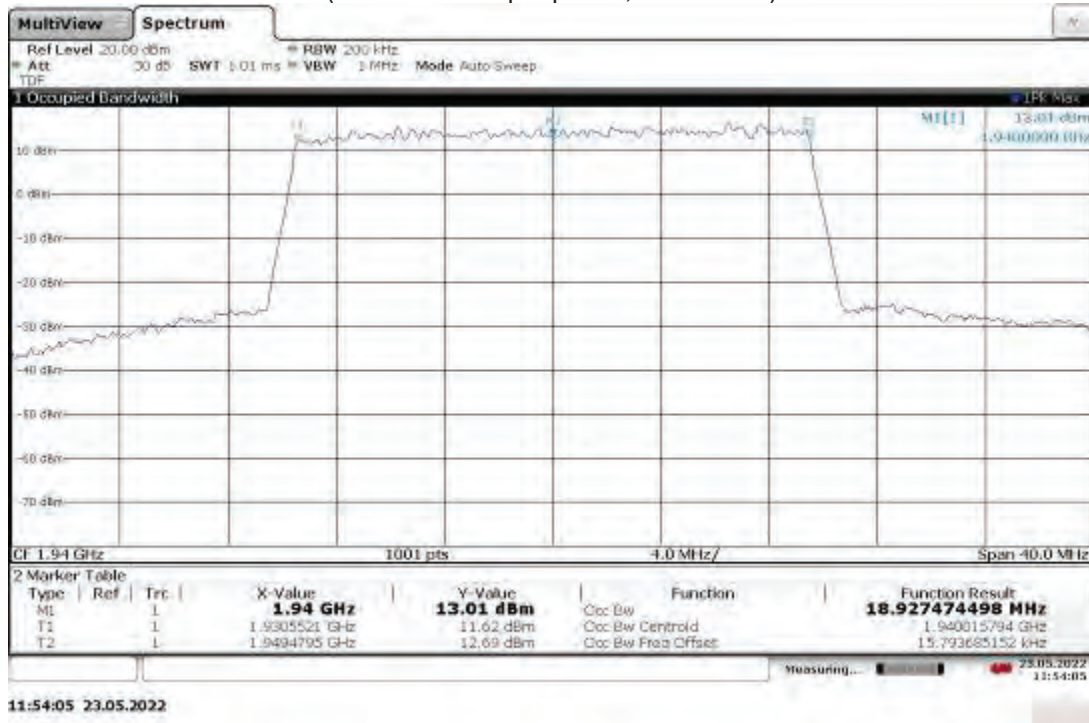
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz Low Ch. 1940 MHz, -10 °C (5G NR)  
(worst-case output power, 22.68 dBm)



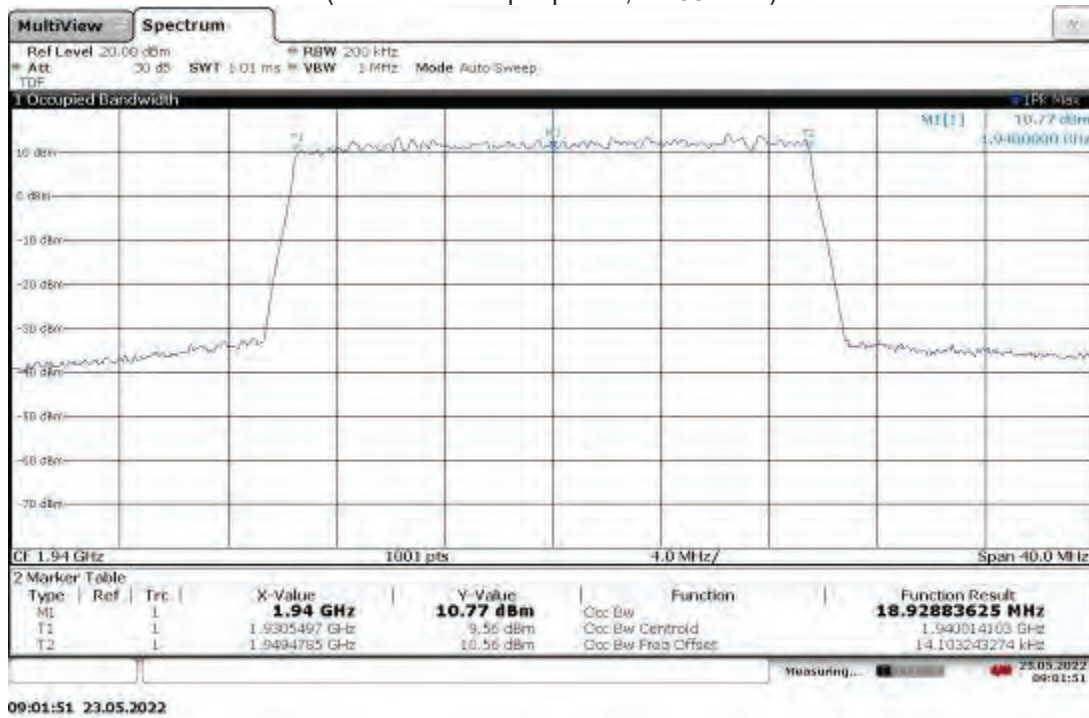
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz Low Ch. 1940 MHz, 0 °C (5G NR)  
(worst-case output power, 22.68 dBm)



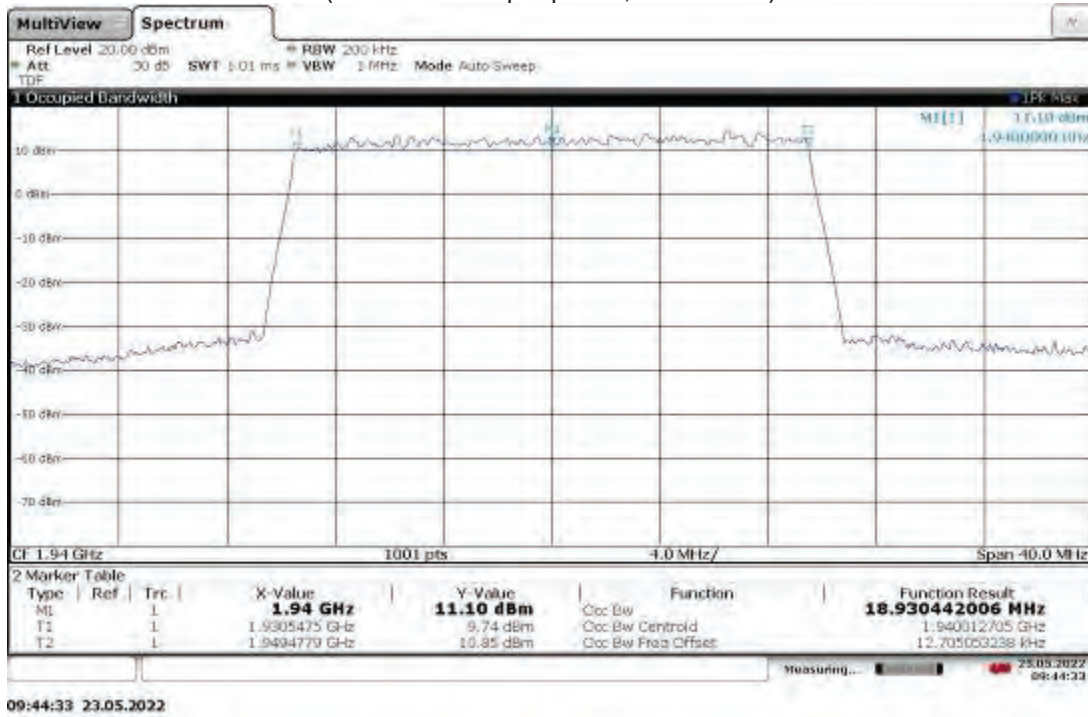
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz Low Ch. 1940 MHz, 10 °C (5G NR)  
(worst-case output power, 22.68 dBm)



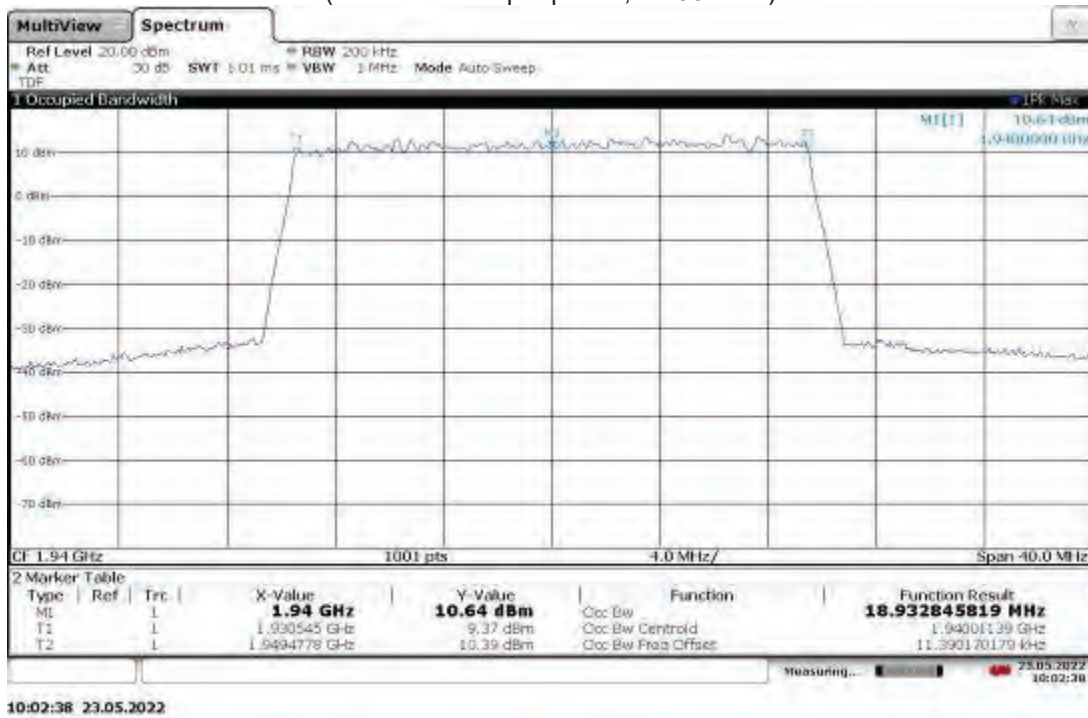
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz Low Ch. 1940 MHz, 20 °C (5G NR)  
(worst-case output power, 22.68 dBm)



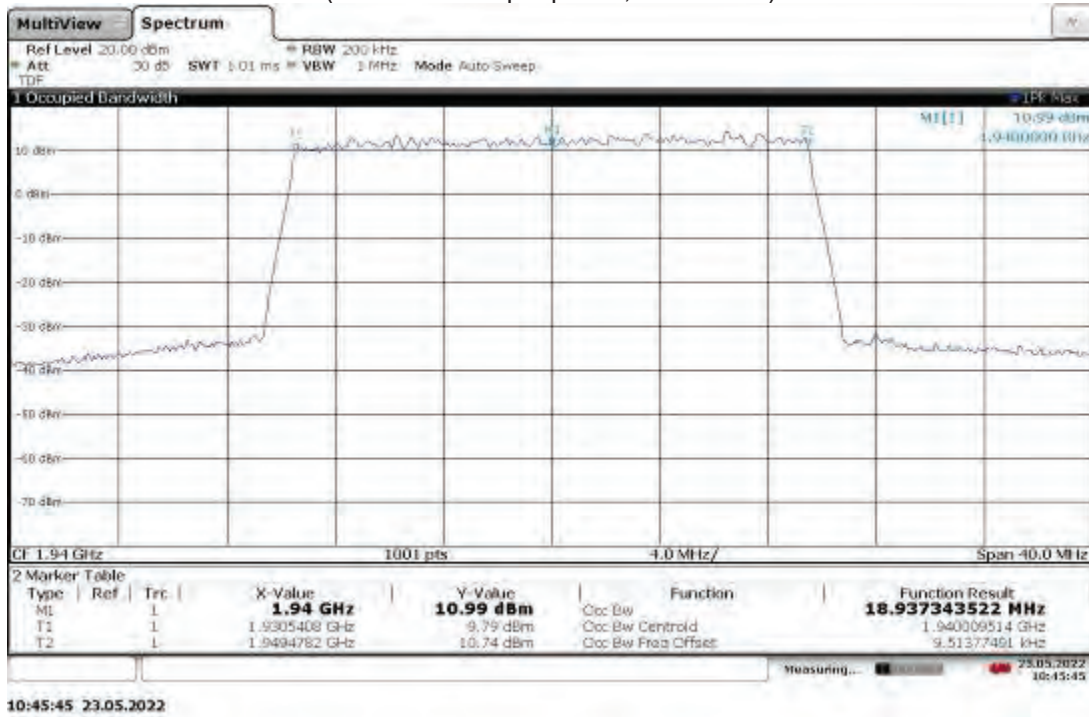
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz Low Ch. 1940 MHz, 30 °C (5G NR)  
(worst-case output power, 22.68 dBm)



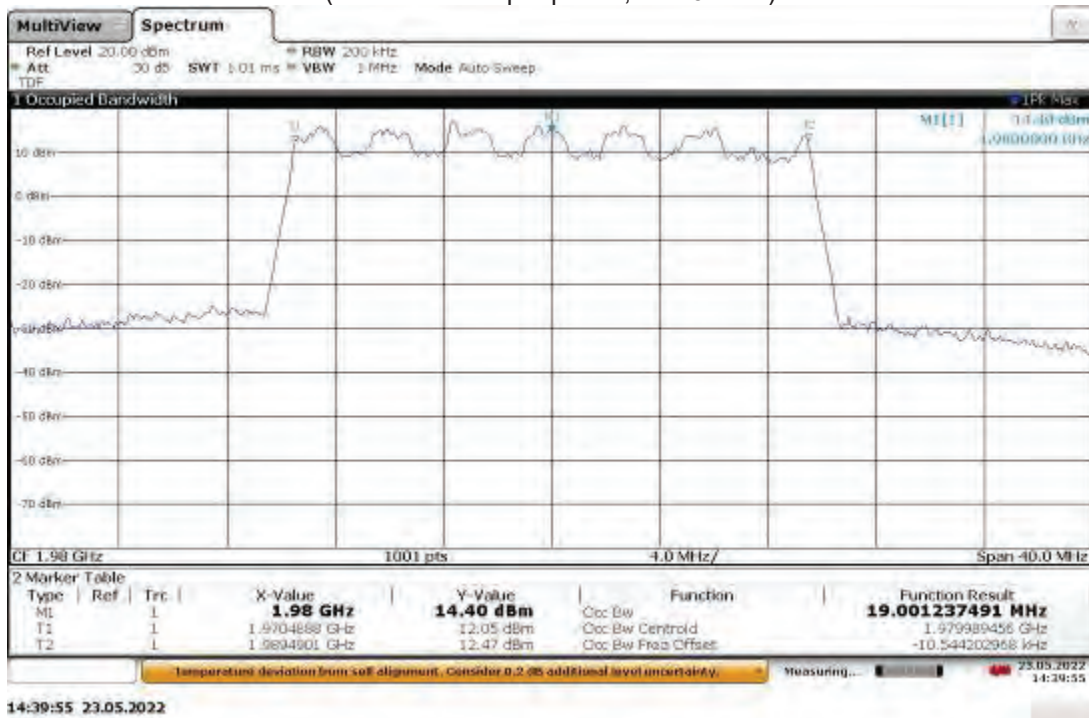
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz Low Ch. 1940 MHz, 40 °C (5G NR)  
(worst-case output power, 22.68 dBm)



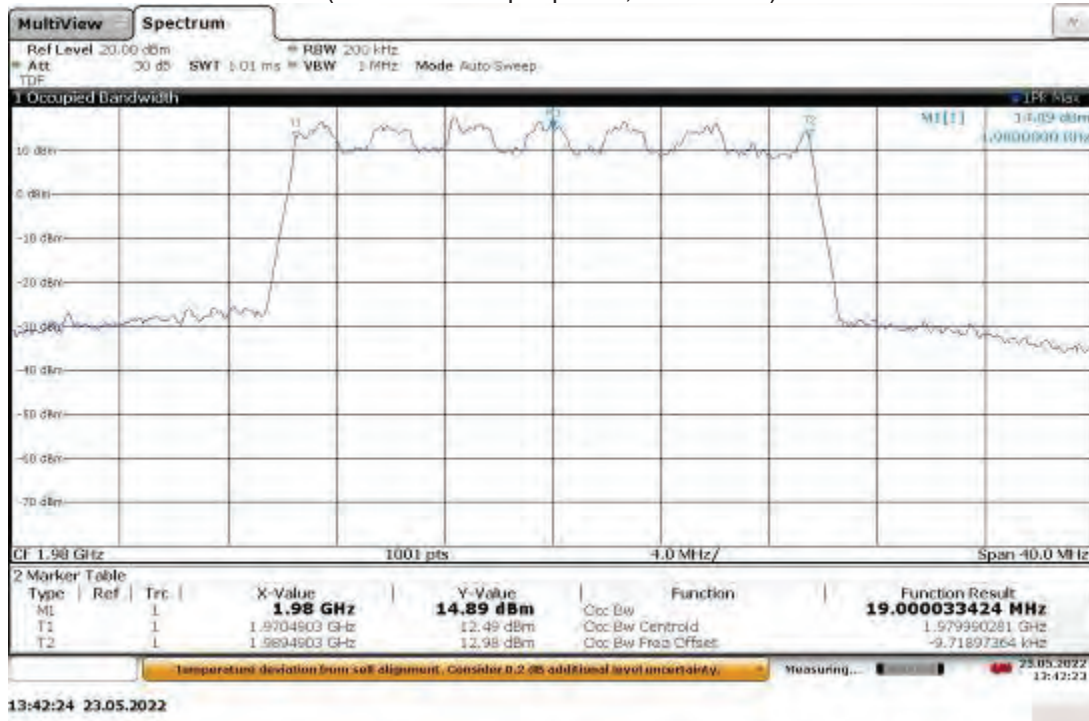
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz Low Ch. 1940 MHz, 50 °C (5G NR)  
(worst-case output power, 22.68 dBm)



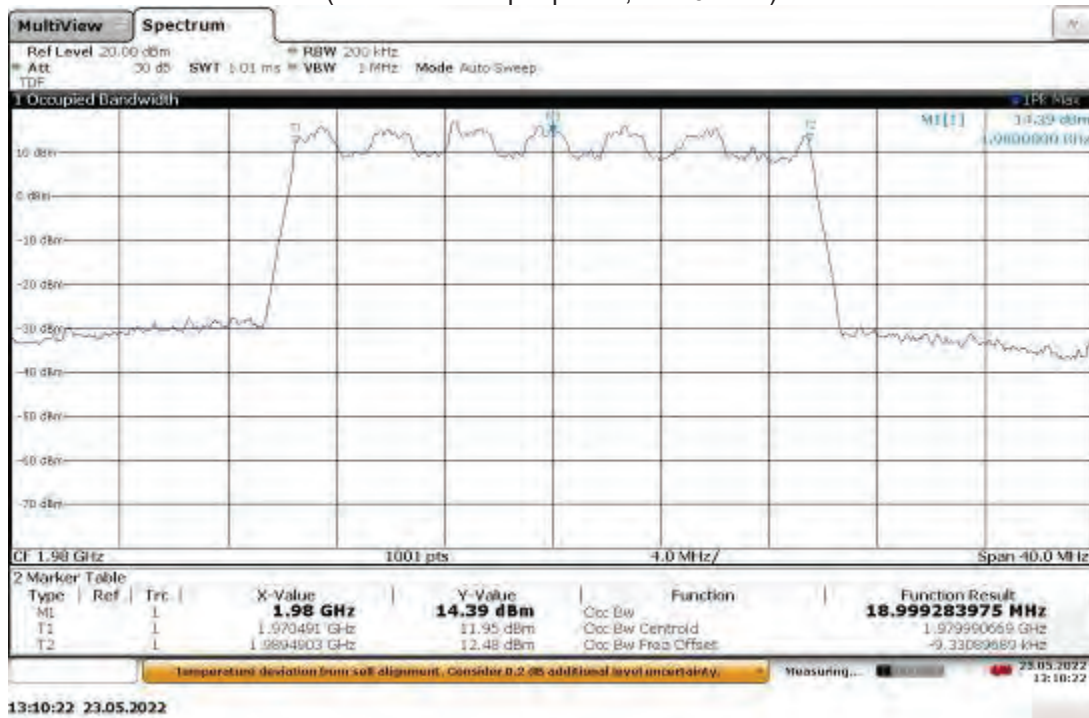
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 20 MHz High Ch. 1980 MHz, -30 °C (5G NR)  
(worst-case output power, 22.76 dBm)



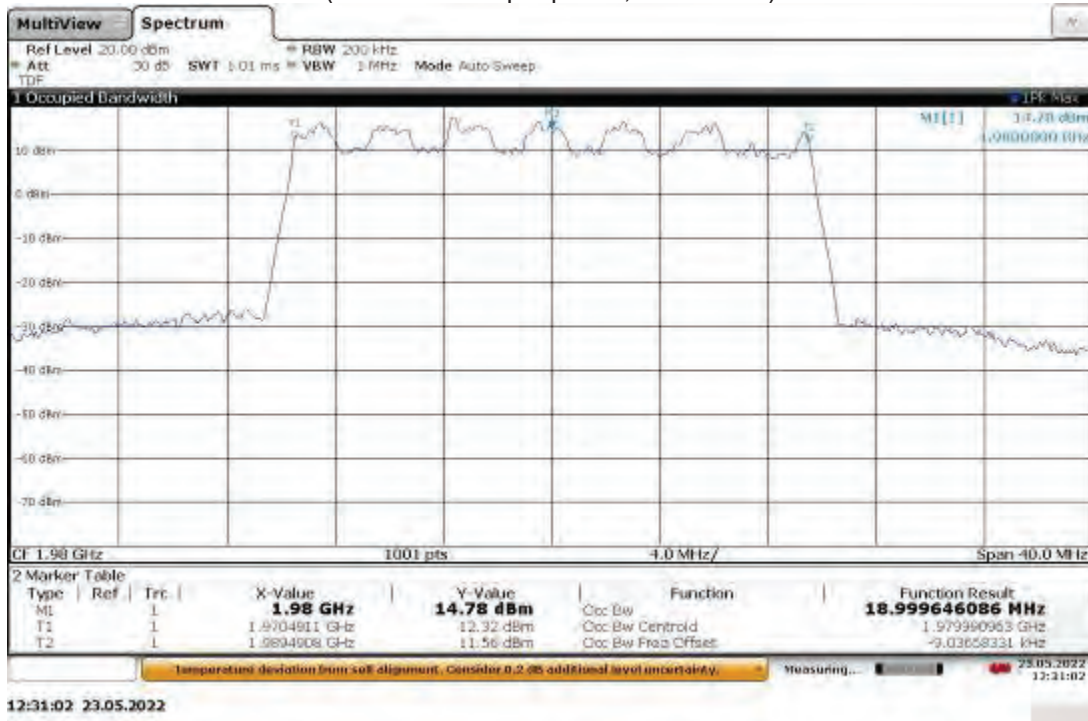
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 20 MHz High Ch. 1980 MHz, -20 °C (5G NR)  
(worst-case output power, 22.76 dBm)



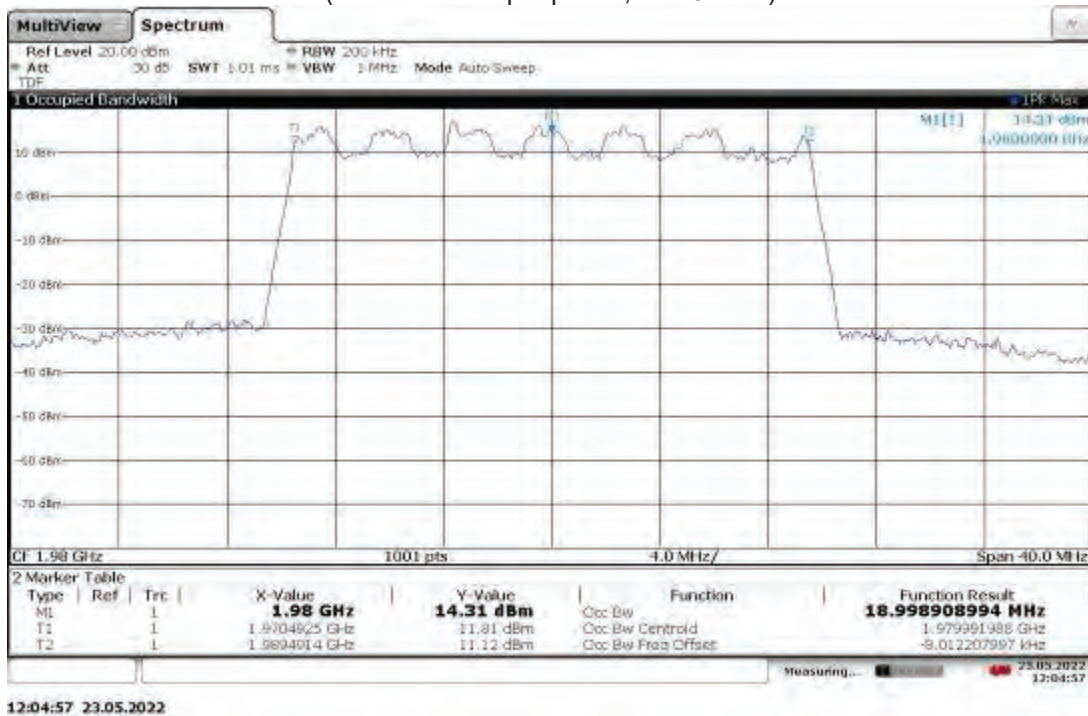
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 20 MHz High Ch. 1980 MHz, -10 °C (5G NR)  
(worst-case output power, 22.76 dBm)



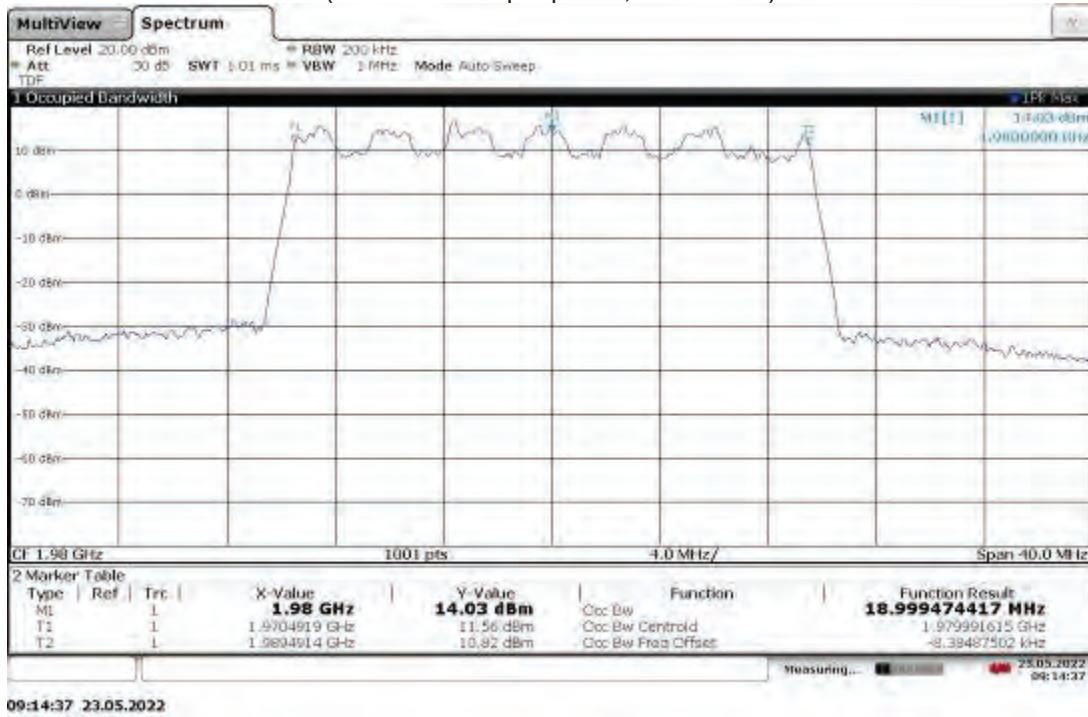
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 20 MHz High Ch. 1980 MHz, 0 °C (5G NR)  
(worst-case output power, 22.76 dBm)



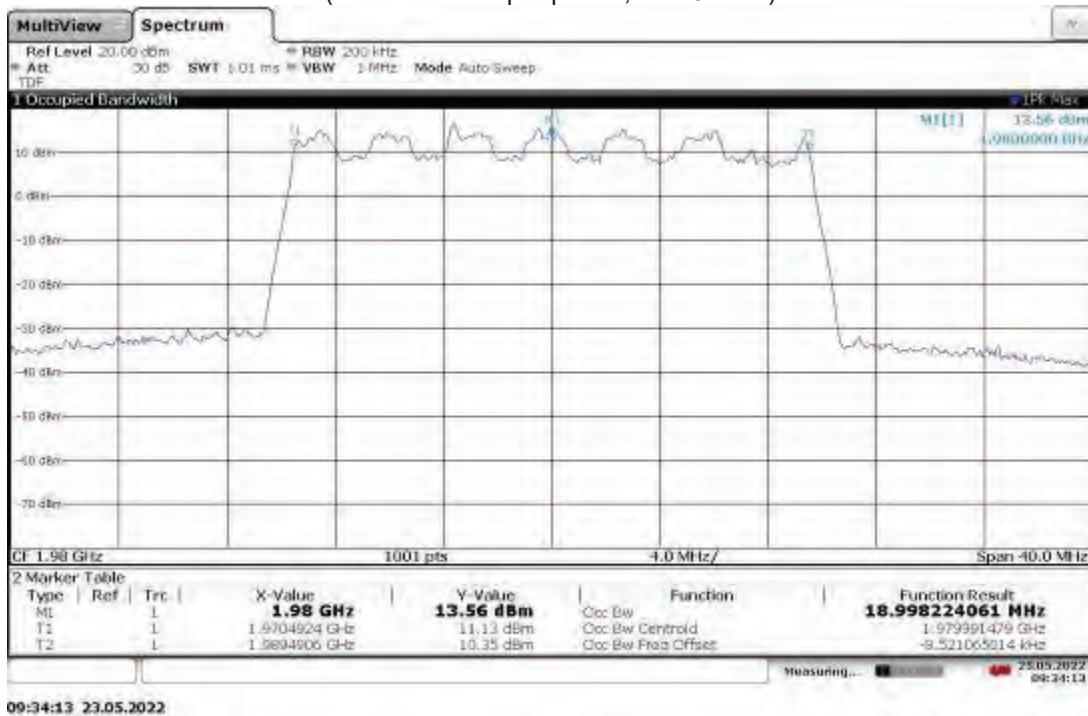
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 20 MHz High Ch. 1980 MHz, 10 °C (5G NR)  
(worst-case output power, 22.76 dBm)



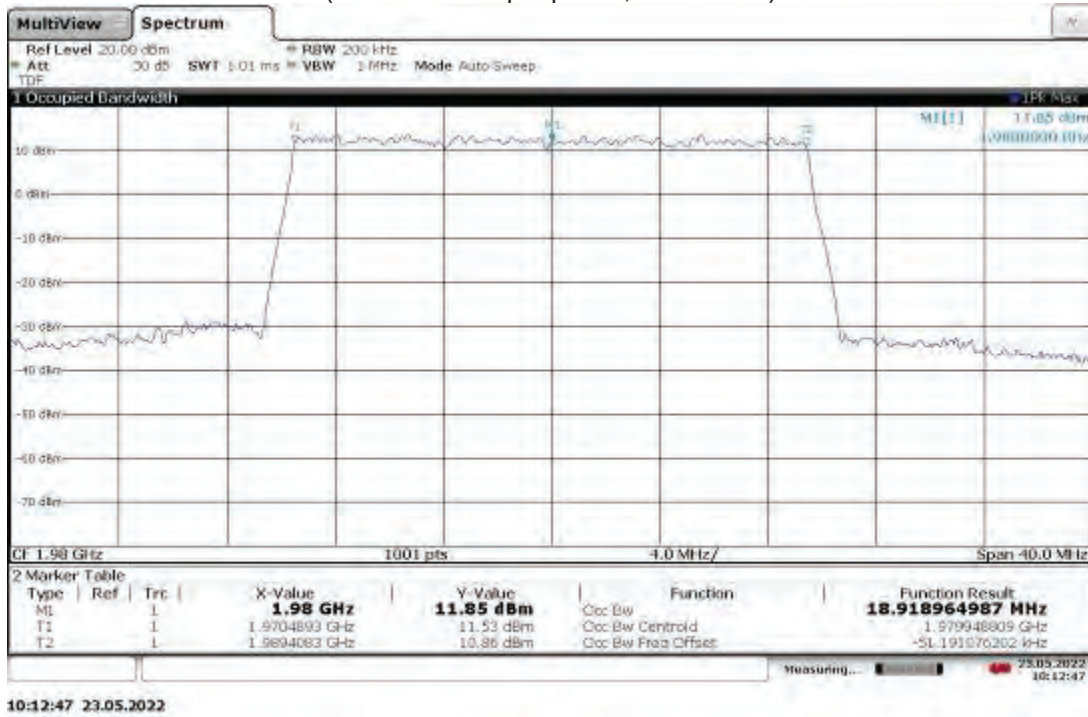
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 20 MHz High Ch. 1980 MHz, 20 °C (5G NR)  
(worst-case output power, 22.76 dBm)



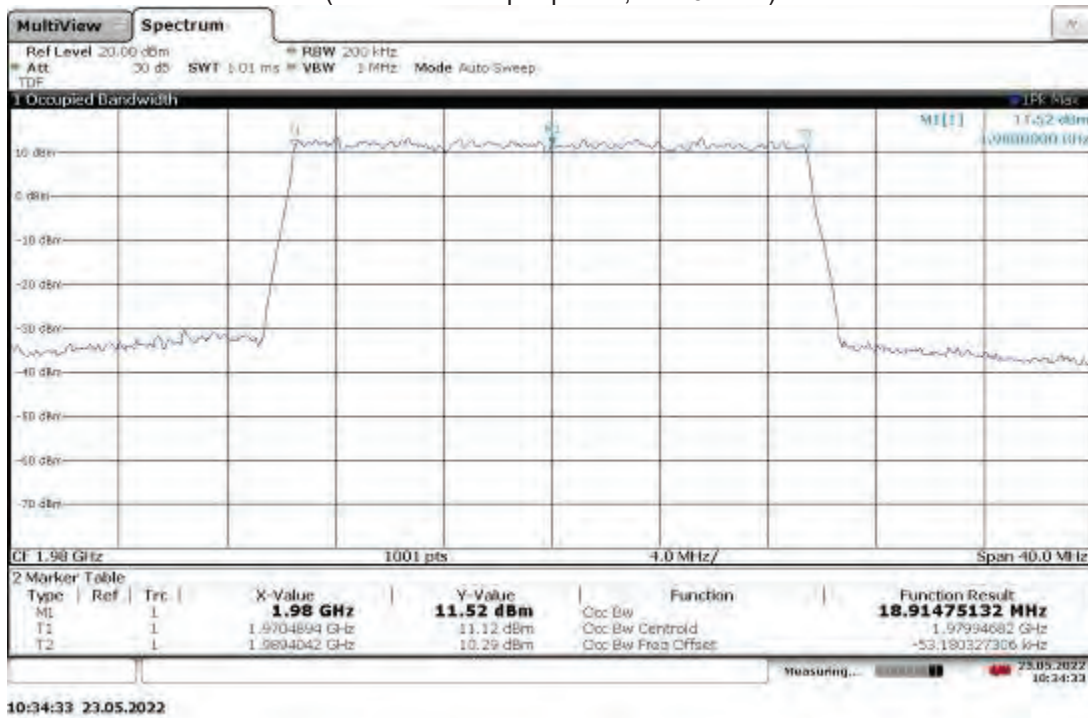
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 20 MHz High Ch. 1980 MHz, 30 °C (5G NR)  
(worst-case output power, 22.76 dBm)



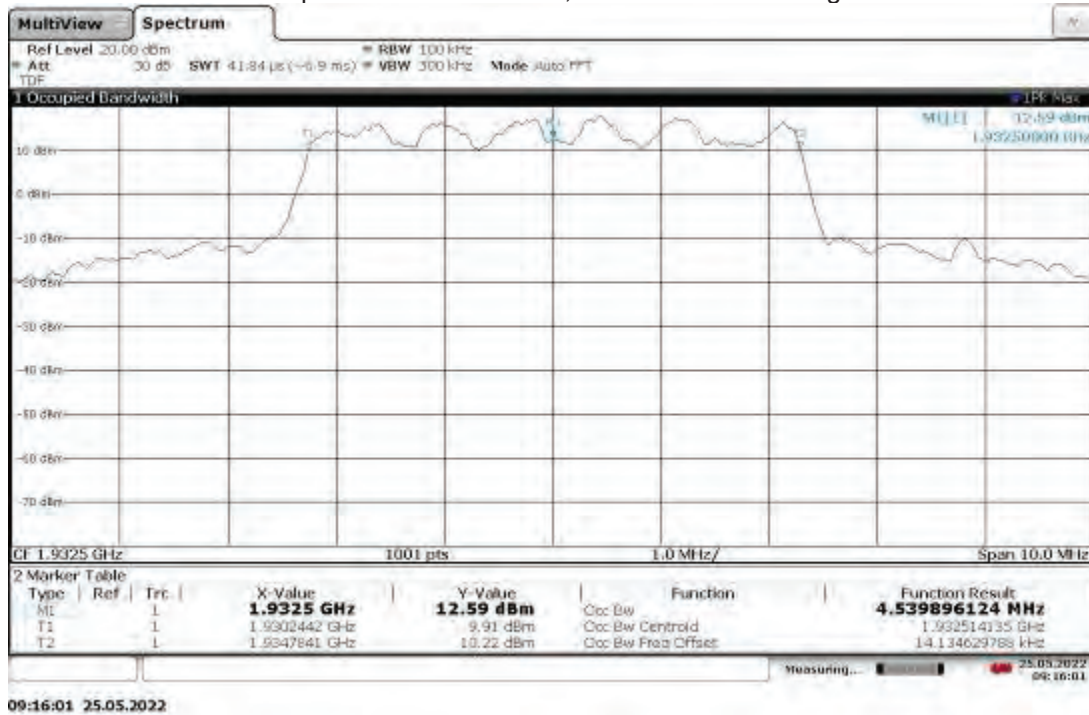
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 20 MHz High Ch. 1980 MHz, 40 °C (5G NR)  
(worst-case output power, 22.76 dBm)



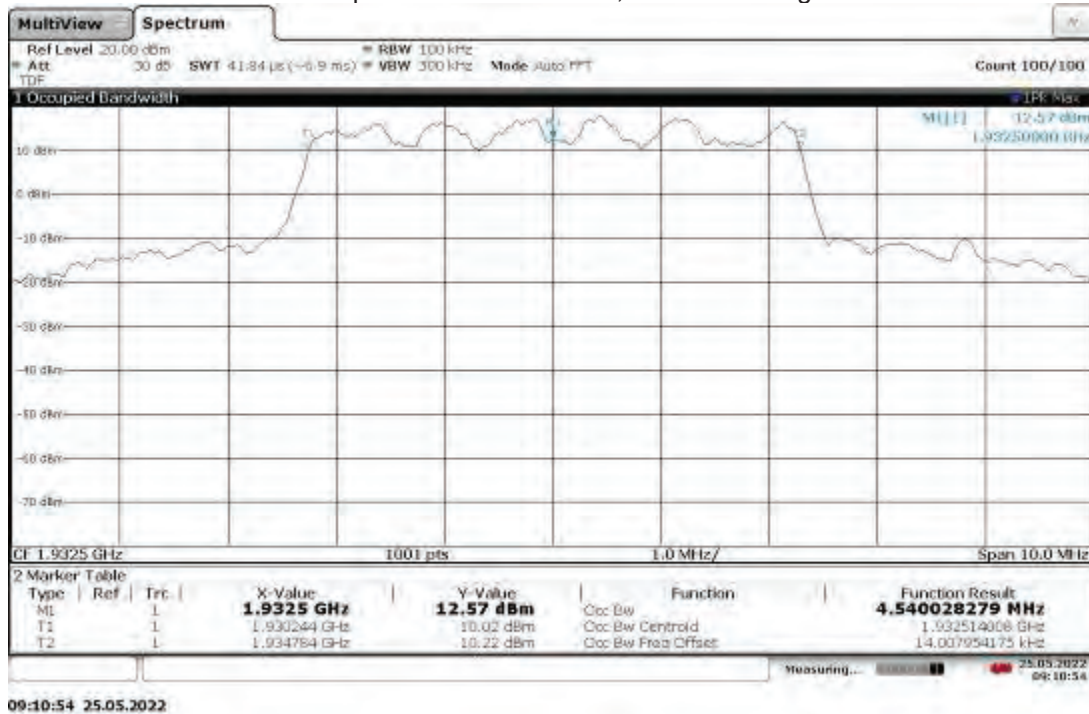
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 20 MHz High Ch. 1980 MHz, 50 °C (5G NR)  
(worst-case output power, 22.76 dBm)



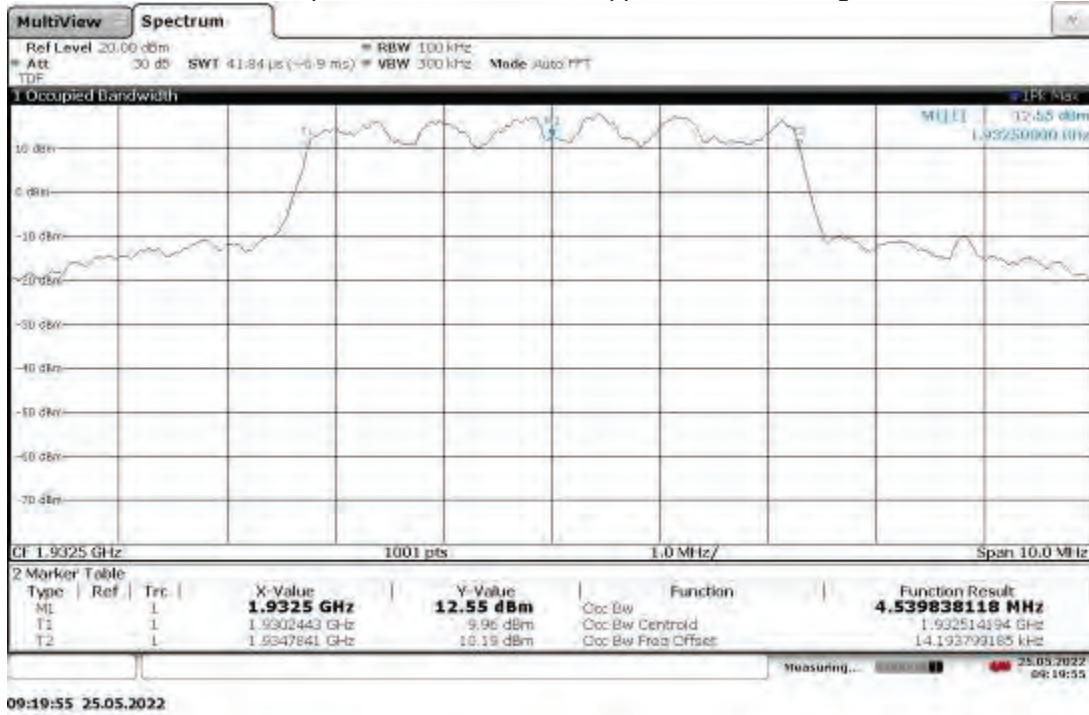
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz, Low Channel 1932.5 MHz (5G NR)  
Worst-case Output Power: 22.12 dBm, Lower Extreme Voltage: 41.1 VDC



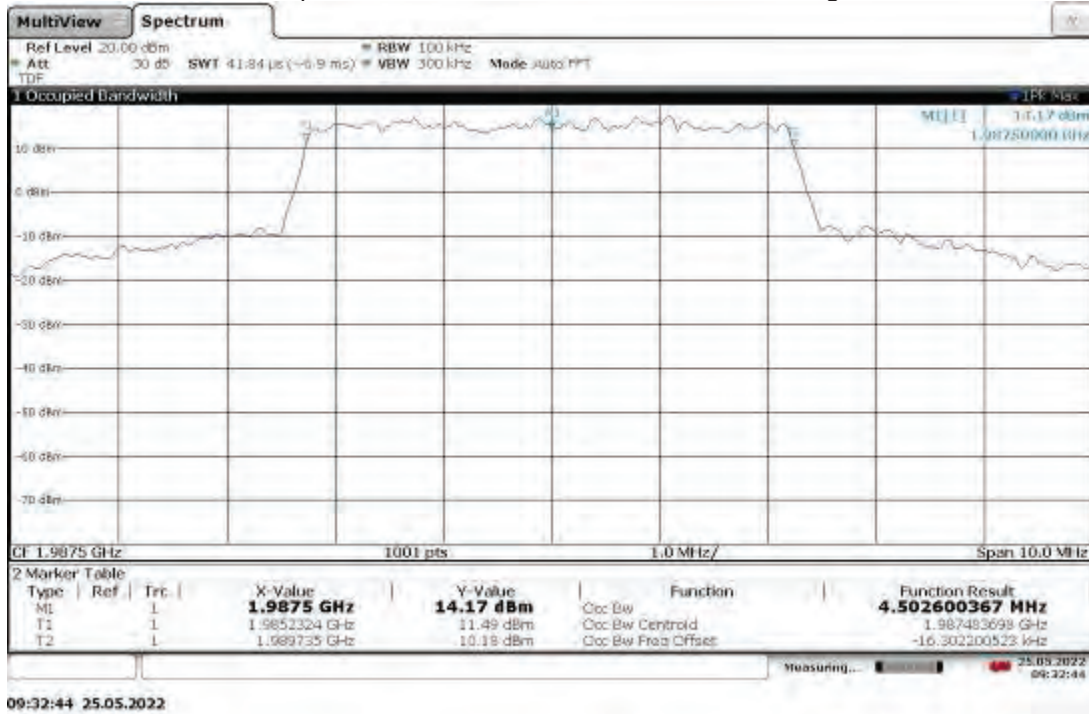
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz, Low Channel 1932.5 MHz (5G NR)  
Worst-case Output Power: 22.12 dBm, Nominal Voltage: 48 VDC



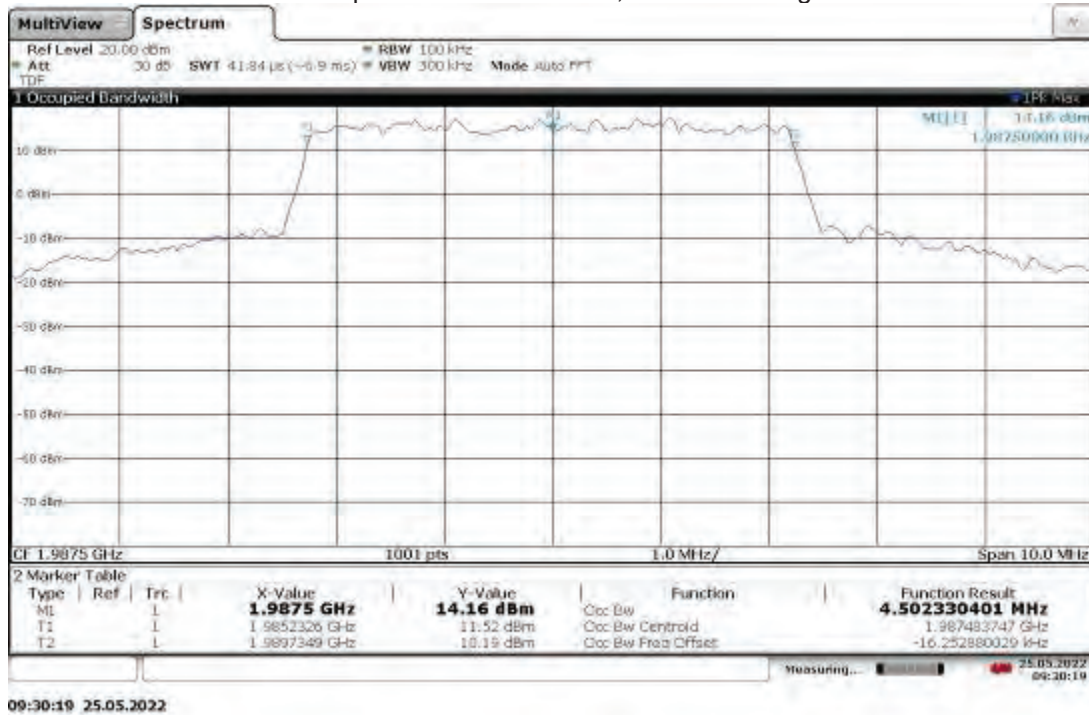
Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 5 MHz, Low Channel 1932.5 MHz (5G NR)  
Worst-case Output Power: 22.12 dBm, Upper Extreme Voltage: 57 VDC



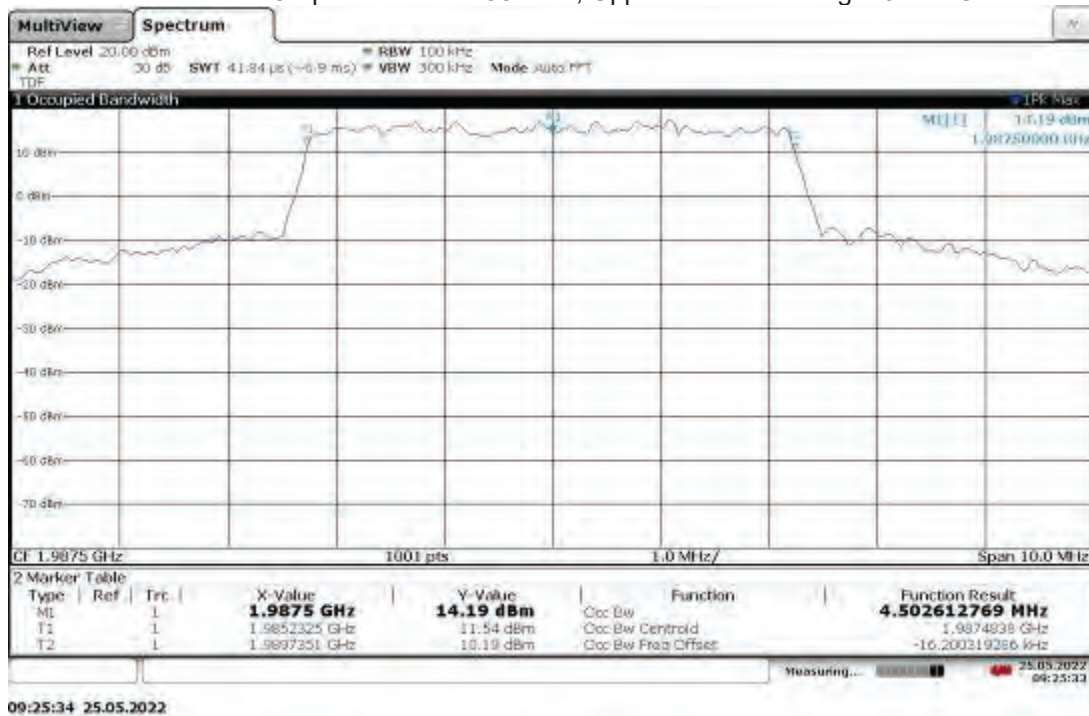
Slot 0 (Band 2), ANT0, Modulation: 64QAM, Bandwidth: 5 MHz, High Channel 1987.5 MHz (5G NR)  
Worst-case Output Power: 22.88 dBm, Lower Extreme Voltage: 41.1 VDC



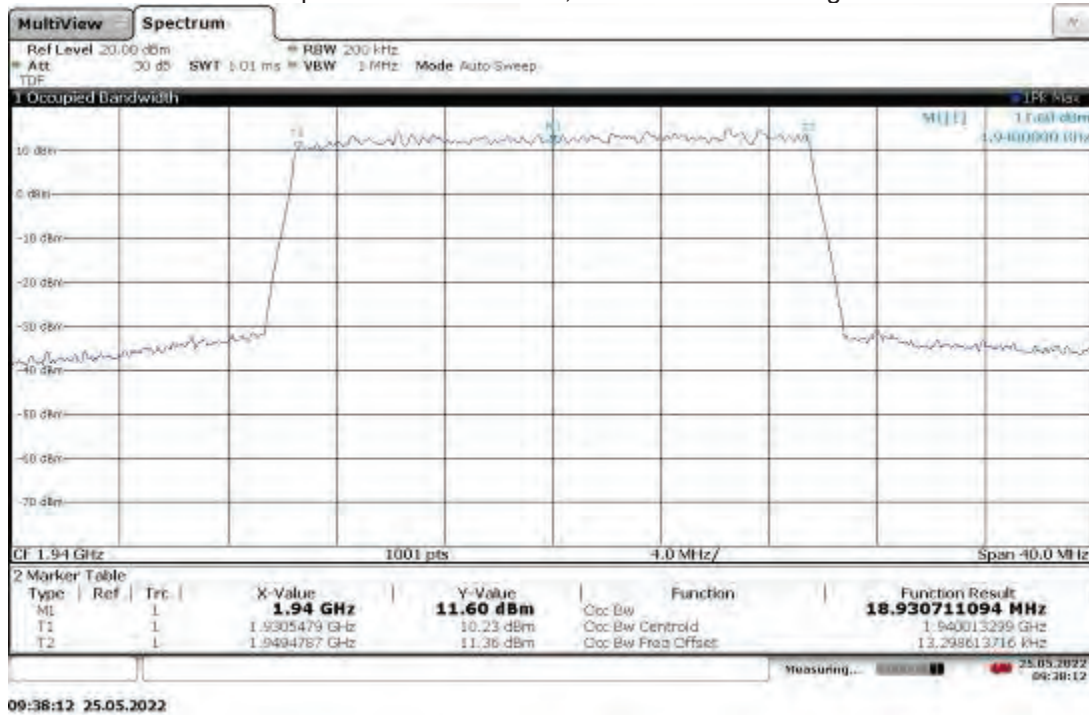
Slot 0 (Band 2), ANT0, Modulation: 64QAM, Bandwidth: 5 MHz, High Channel 1987.5 MHz (5G NR)  
Worst-case Output Power: 22.88 dBm, Nominal Voltage: 48 VDC



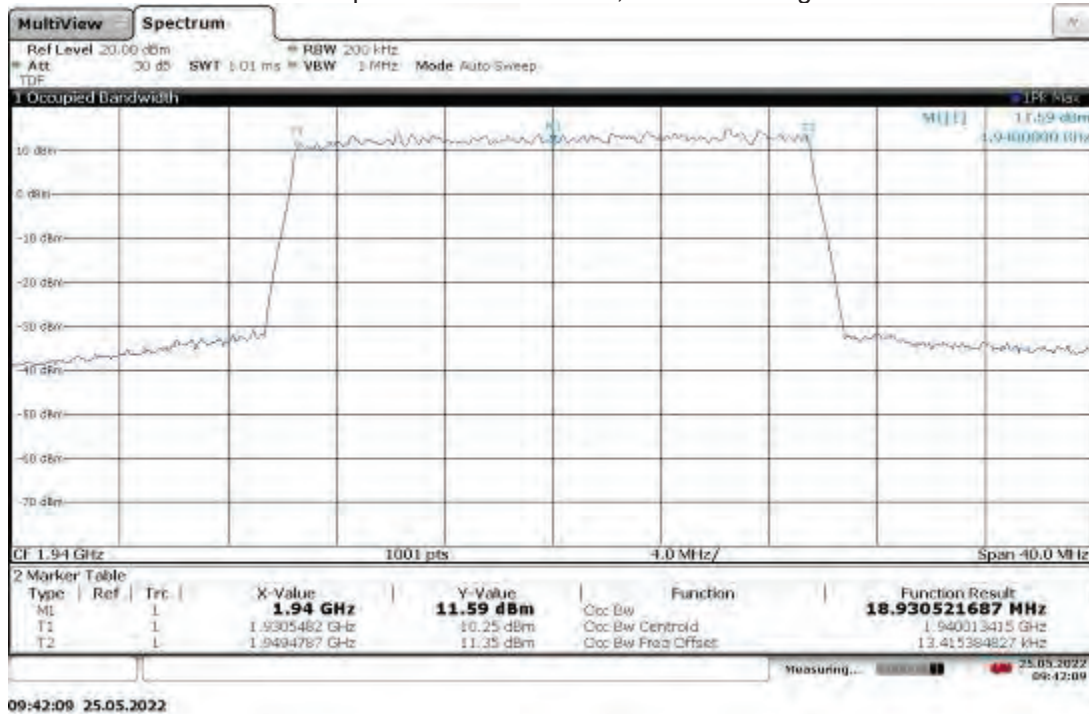
Slot 0 (Band 2), ANT0, Modulation: 64QAM, Bandwidth: 5 MHz, High Channel 1987.5 MHz (5G NR)  
Worst-case Output Power: 22.88 dBm, Upper Extreme Voltage: 57 VDC



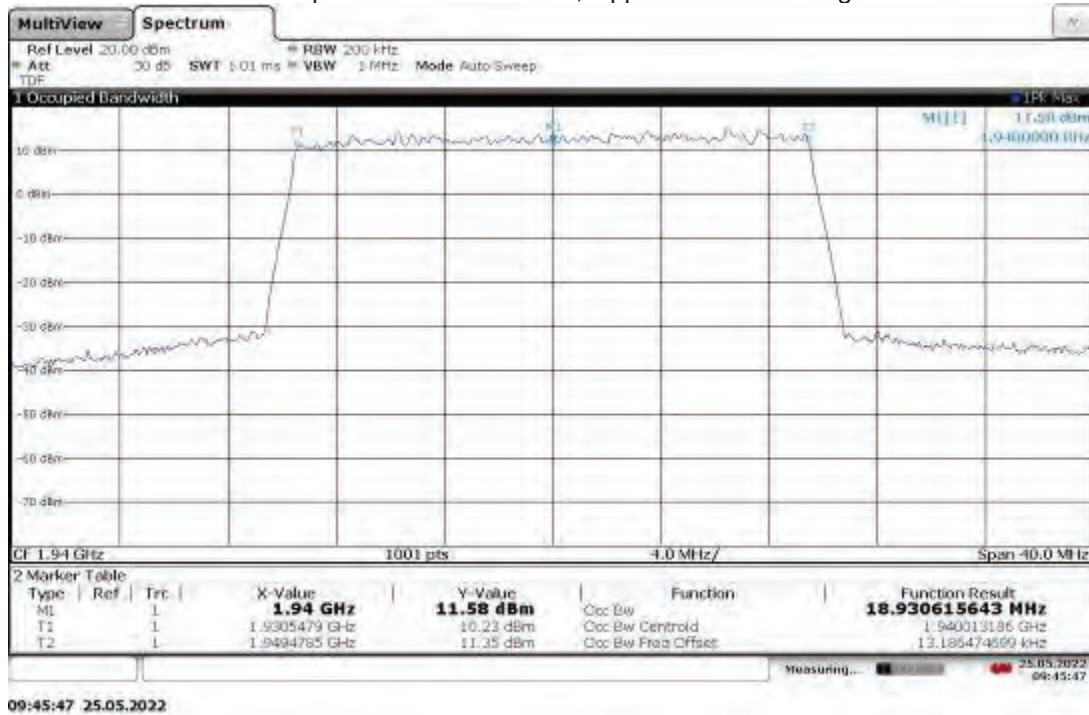
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz, Low Channel 1940 MHz (5G NR)  
Worst-case Output Power: 22.68 dBm, Lower Extreme Voltage: 41.1 VDC



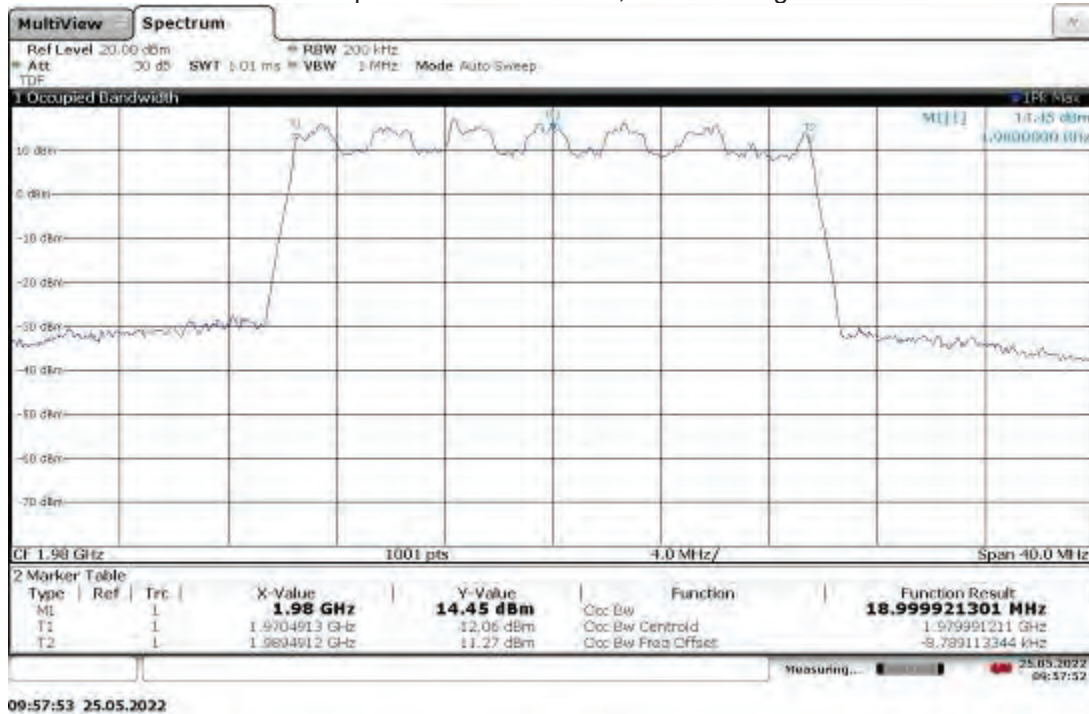
Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz, Low Channel 1940 MHz (5G NR)  
Worst-case Output Power: 22.68 dBm, Nominal Voltage: 48 VDC



Slot 0 (Band 2), ANT0, Modulation: 256QAM, Bandwidth: 20 MHz, Low Channel 1940 MHz (5G NR)  
Worst-case Output Power: 22.68 dBm, Upper Extreme Voltage: 57 VDC



Slot 0 (Band 2), ANT0, Modulation: 16QAM, Bandwidth: 20 MHz, High Channel 1980 MHz (5G NR)  
Worst-case Output Power: 22.76 dBm, Lower Voltage: 41.1 VDC



**MultiView Spectrum**

Ref Level 20.00 dBm    RBW 200 kHz  
 Att 30 dB    SWT 1.01 ms    VBW 1 MHz    Mode Auto/Sweep

**1 Occupied Bandwidth**

10 dBm  
 0 dBm  
 -10 dBm  
 -20 dBm  
 -30 dBm  
 -40 dBm  
 -50 dBm  
 -60 dBm  
 -70 dBm

CF 1.98 GHz    1001 pts    4.0 MHz/pt    Span 40.0 MHz

**2 Marker Table**

| Type | Ref | Freq          | Power     | Function           |
|------|-----|---------------|-----------|--------------------|
| M1   | 1   | 1.9804918 GHz | 14.45 dBm | Coc Bw             |
| T1   | 1   | 1.9704918 GHz | 12.05 dBm | Coc Bw Centroid    |
| T2   | 1   | 1.9904911 GHz | 11.28 dBm | Coc Bw Peak Offset |

**Function Result**  
**18.999339513 MHz**  
 1.979961422 GHz  
 -9.578012184 kHz

Measuring...    25.05.2022 09:54:37

**MultiView** **Spectrum**

Ref Level 20.00 dBm RBW 200 kHz  
 Att 30 dB SWT 1.01 ms VBW 1 MHz Mode Auto-Sweep

**1 Occupied Bandwidth**

10 dBm  
 0 dBm  
 -10 dBm  
 -20 dBm  
 -30 dBm  
 -40 dBm  
 -50 dBm  
 -60 dBm  
 -70 dBm

CF 1.98 GHz 1001 pts 4.0 MHz Span 40.0 MHz

**2 Marker Table**

| Type | Ref | Trc | X-Value       | Y-Value   | Function           |
|------|-----|-----|---------------|-----------|--------------------|
| M1   | 1   |     | 1.98 GHz      | 14.46 dBm | Occ Bw             |
| T1   | 1   |     | 1.9704921 GHz | 12.08 dBm | Occ Bw Centroid    |
| T2   | 1   |     | 1.989491 GHz  | 11.29 dBm | Occ Bw Freq Offset |

**Function Result**  
**18.998929116 MHz**  
 1.979991556 GHz  
 -8.444491144 kHz

Measuring... 25.05.2022 09:50:16

|                                                             |                           |                       |                                      |
|-------------------------------------------------------------|---------------------------|-----------------------|--------------------------------------|
| Test Personnel:                                             | Kouma Sinn <i>KPS</i>     | Test Date:            | 05/03/2022-05/05/2022,<br>05/25/2022 |
|                                                             | Vathana F. Ven <i>VFP</i> |                       | 05/22/2022                           |
| Supervising/Reviewing<br>Engineer:<br>(Where Applicable)    | N/A                       |                       |                                      |
| Product Standard:                                           | FCC Part 24               | Limit Applied:        | See report section 10.3              |
| Input Voltage:                                              | 48VDC (POE)               |                       |                                      |
| Pretest Verification w/<br>Ambient Signals or<br>BB Source: | N/A                       | Ambient Temperature:  | 23 °C (05/25/2022)                   |
|                                                             |                           | Relative Humidity:    | 39 % (05/25/2022)                    |
|                                                             |                           | Atmospheric Pressure: | 1020 mbar (05/25/2022)               |

Deviations, Additions, or Exclusions: None

## 11 Transmitter spurious emissions

### 11.1 Method

Tests are performed in accordance with ANSI C63.26 and CFR47 FCC Parts 2.1051, 2.1053, 2.1057, and 24.

**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) | Ucisprr |
|-------------------------|-----------------|----------------------------|---------|
| 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 $\mu$ V/m
- RA = Receiver Amplitude (including preamplifier) in dB $\mu$ 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 $\mu$ 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 $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

RA = 52.0 dB $\mu$ V  
AF = 7.4 dB/m  
CF = 1.6 dB  
AG = 29.0 dB  
FS = 32 dB $\mu$ V/m

To convert from dB $\mu$ V to  $\mu$ V or mV the following was used:

$UF = 10^{(NF / 20)}$  where UF = Net Reading in  $\mu$ V  
NF = Net Reading in dB $\mu$ 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 comPAPRed 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.

## 11.2 Test Equipment Used:

Test equipment used for antenna port conducted measurements

| Asset           | Description                        | Manufacturer       | Model   | Serial      | Cal Date   | Cal Due    |
|-----------------|------------------------------------|--------------------|---------|-------------|------------|------------|
| DAV005'         | Weather Station                    | Davis              | 6250    | MS191218083 | 02/11/2022 | 02/11/2023 |
| ROS005-1'       | Signal and Spectrum Analyzer       | Rohde and Schwartz | FSW43   | 100646      | 11/02/2021 | 11/02/2022 |
| CEN001'         | DC-40GHz attenuator 20dB           | Centric RF         | C411-20 | CEN001      | 01/26/2022 | 01/26/2023 |
| CBLHF2012-2M-2' | 2m 9kHz-40GHz Coaxial Cable - SET2 | Huber & Suhner     | SF102   | 252675002   | 02/10/2023 | 02/10/2023 |

### Software Utilized:

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

Test equipment used for radiated emissions from 9 kHz-30 MHz

| Asset    | Description                            | Manufacturer    | Model             | Serial      | Cal Date   | Cal Due    |
|----------|----------------------------------------|-----------------|-------------------|-------------|------------|------------|
| DAV007'  | Weather Station Vantage Vue            | Davis           | 6250              | MS191212003 | 03/08/2022 | 03/08/2023 |
| 145-414' | Cables 145-400 145-403 145-405 145-409 | Huber + Suhner  | 3m Track A cables | multiple    | 07/09/2021 | 07/09/2022 |
| IW001'   | 2 meter cable                          | Insulated Wire  | 2801-NPS          | 001         | 09/23/2021 | 09/23/2022 |
| IW002'   | 2 meter Armored cable                  | Insulated Wire  | 2800-NPS          | 002         | 09/23/2021 | 09/23/2022 |
| IW003'   | 8.4 meter cable                        | Insulated Wire  | 2800-NPS          | 003         | 10/15/2022 | 10/15/2022 |
| 145108'  | EMI Test Receiver (20Hz - 40GHz)       | Rohde & Schwarz | ESIB40            | 100209      | 06/22/2021 | 06/22/2022 |
| ETS003'  | 9kHz-30MHz Active Loop Antenna         | ETS Lindgren    | 6502              | 00143396    | 08/26/2021 | 08/26/2022 |

### Software Utilized:

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

Test equipment used for radiated emissions from 30-1000 MHz

| Asset   | Description                             | Manufacturer         | Model         | Serial      | Cal Date   | Cal Due    |
|---------|-----------------------------------------|----------------------|---------------|-------------|------------|------------|
| IW001'  | 2 meter cable                           | Insulated Wire       | 2801-NPS      | 001         | 09/23/2021 | 09/23/2022 |
| 145106' | Bilog Antenna (30MHz - 5GHz)            | Sunol Sciences       | JB5           | A111003     | 07/15/2021 | 07/15/2022 |
| HS002'  | DC-18GHz cable 1.5M long                | Huber & Suhner       | SucoFlex 106A | HS002       | 12/06/2021 | 12/06/2022 |
| IW006'  | DC-18GHz cable 8.4m long                | Insulated Wire       | 2800-NPS      | IW006       | 07/22/2021 | 07/22/2022 |
| PRE11'  | 50dB gain pre-amp                       | Pasternack           | PRE11         | PRE11       | 09/02/2021 | 09/02/2022 |
| DAV007' | Weather Station Vantage Vue             | Davis                | 6250          | MS191212003 | 03/08/2022 | 03/08/2023 |
| 145145' | Broadband Hybrid Antenna 30 MHz - 3 GHz | Sunol Sciences Corp. | JB3           | A122313     | 06/09/2021 | 06/09/2022 |
| 145108' | EMI Test Receiver (20Hz - 40GHz)        | Rohde & Schwarz      | ESIB40        | 100209      | 06/22/2021 | 06/22/2022 |

### Software Utilized:

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

Test equipment used for radiated emissions from 1-18 GHz

| Asset    | Description                            | Manufacturer    | Model             | Serial      | Cal Date   | Cal Due    |
|----------|----------------------------------------|-----------------|-------------------|-------------|------------|------------|
| DAV007'  | Weather Station Vantage Vue            | Davis           | 6250              | MS191212003 | 03/08/2022 | 03/08/2023 |
| 145-414' | Cables 145-400 145-403 145-405 145-409 | Huber + Suhner  | 3m Track A cables | multiple    | 07/09/2021 | 07/09/2022 |
| IW001'   | 2 meter cable                          | Insulated Wire  | 2801-NPS          | 001         | 09/23/2021 | 09/23/2022 |
| IW002'   | 2 meter Armored cable                  | Insulated Wire  | 2800-NPS          | 002         | 09/23/2021 | 09/23/2022 |
| IW003'   | 8.4 meter cable                        | Insulated Wire  | 2800-NPS          | 003         | 10/15/2022 | 10/15/2022 |
| 145108'  | EMI Test Receiver (20Hz - 40GHz)       | Rohde & Schwarz | ESIB40            | 100209      | 06/22/2021 | 06/22/2022 |
| ETS002'  | 1-18GHz DRG Horn Antenna               | ETS Lindgren    | 3117              | 00143260    | 08/24/2021 | 08/24/2022 |
| PRE12'   | Pre-amplifier                          | Com Power       | PAM-118A          | 18040117    | 12/06/2021 | 12/06/2022 |

Test equipment used for radiated emissions from 18-20 GHz

| Asset           | Description                        | Manufacturer            | Model      | Serial      | Cal Date   | Cal Due    |
|-----------------|------------------------------------|-------------------------|------------|-------------|------------|------------|
| DAV007'         | Weather Station Vantage Vue        | Davis                   | 6250       | MS191212003 | 03/08/2022 | 03/08/2023 |
| PRE8'           | PREAMPLIFIER 1- 40 GHz             | MITEQ                   | NSP4000-NF | 507145      | 12/27/2021 | 12/27/2022 |
| CBLHF2012-5M-2' | 5m 9kHz-40GHz Coaxial Cable - SET2 | Huber & Suhner          | SF102      | 252676002   | 02/16/2022 | 02/16/2023 |
| CBLSHF202'      | Cable, SMA - SMA, 9kHz-40GHz       | Sucoflex (Huber Suhner) | 104PE      | CBLSHF202   | 01/21/2022 | 02/21/2023 |
| ETS004'         | 18-40GHz horn antenna              | ets004                  | 3116C      | 00218579    | 03/11/2022 | 03/11/2023 |
| ROS005-1'       | Signal and Spectrum Analyzer       | Rohde and Schwartz      | FSW43      | 100646      | 11/02/2021 | 11/02/2022 |

### 11.3 Results:

The sample tested was found to Comply. Where a resolution bandwidth of less than 1 MHz was used, 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.

§24.238(a): 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.

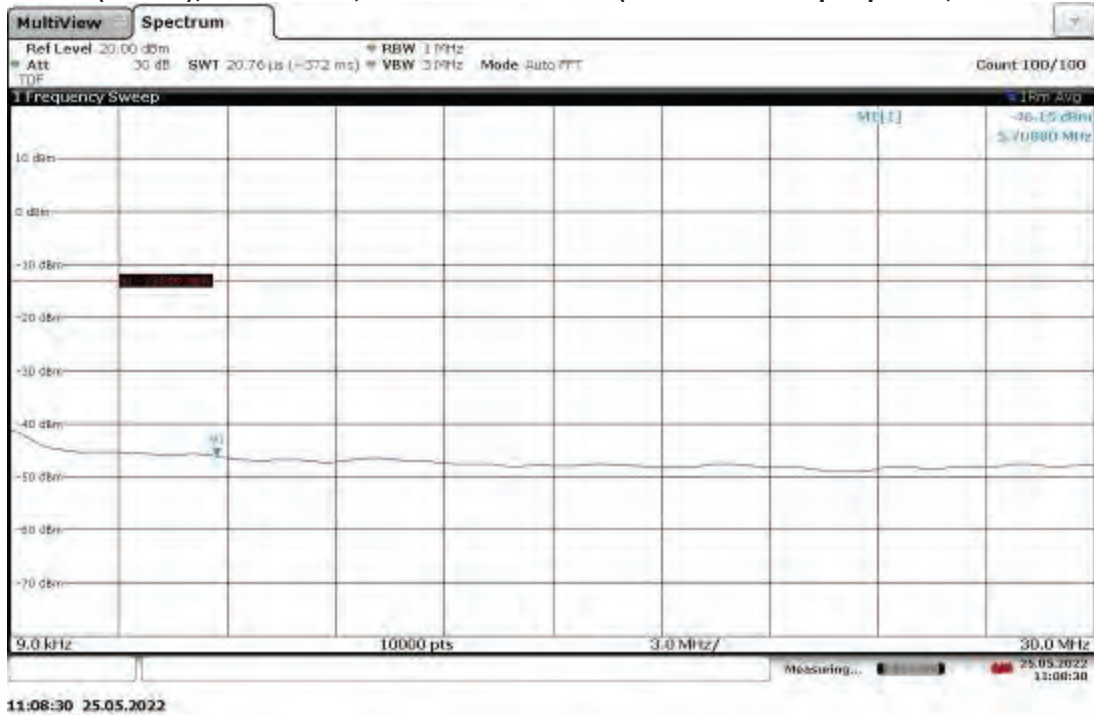
(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

#### **11.4 Setup Photographs:**

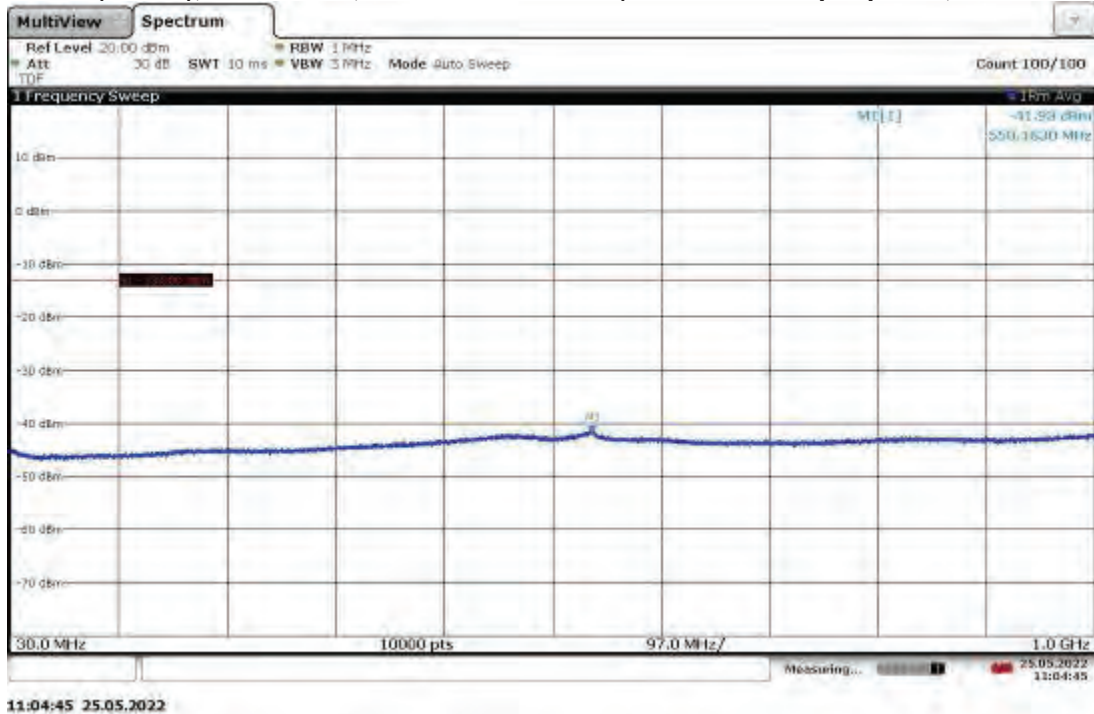
Confidential – Photos not included in this report

## 11.5 Plots/Data:

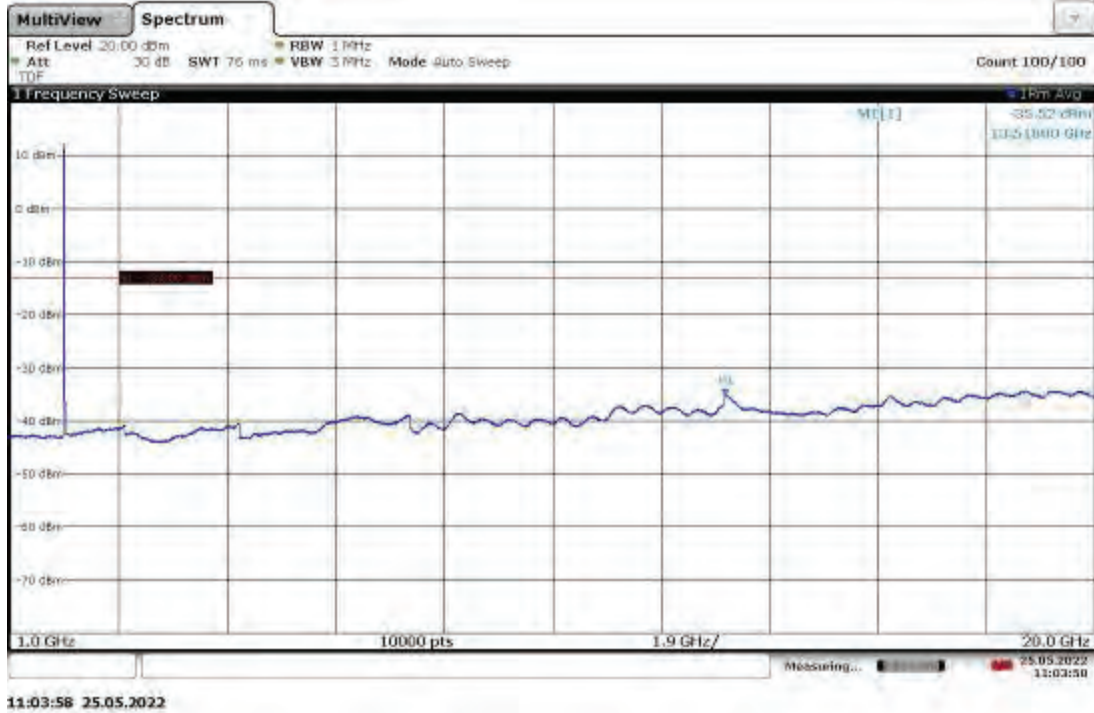
Low Channel 1937.50 MHz, Antenna Port (ANT0) Conducted Emissions, 9kHz-30MHz  
Band 2 (5G NR), BW 15 MHz, Modulation 64QAM (Worst-case output power, 22.81 dBm)



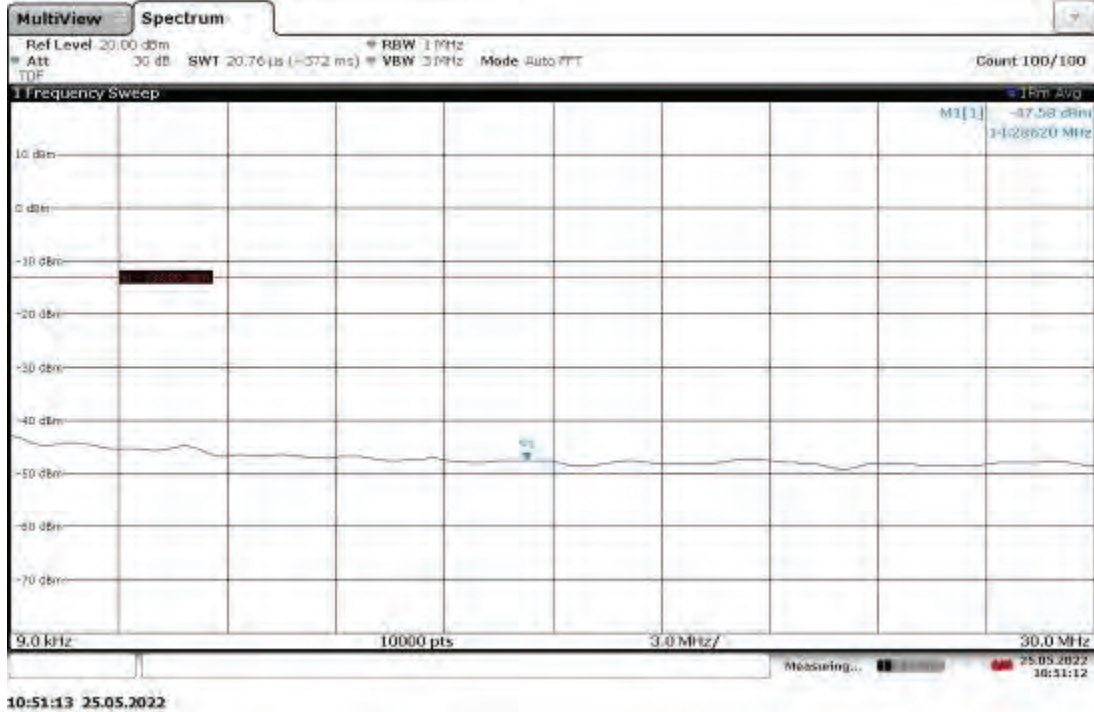
Low Channel 1937.50 MHz, Antenna Port (ANT0) Conducted Emissions, 30-1000 MHz  
Band 2 (5G NR), BW 15 MHz, Modulation 64QAM (Worst-case output power, 22.81 dBm)



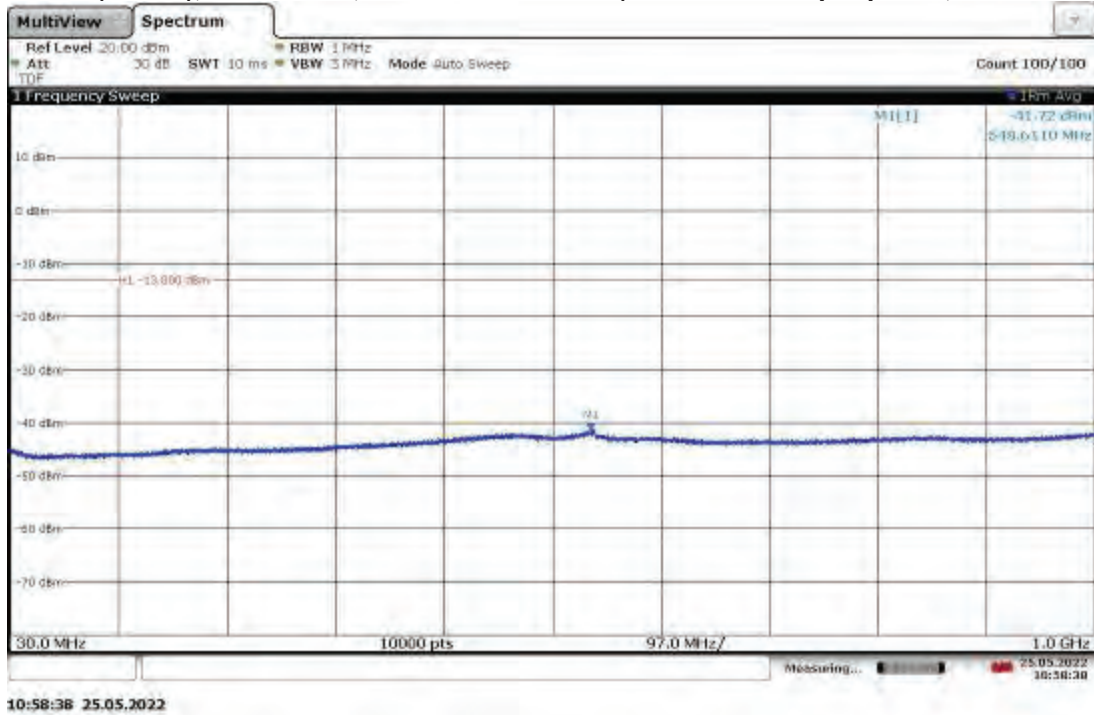
**Low Channel 1937.50 MHz, Antenna Port (ANT0) Conducted Emissions, 1-20 GHz  
Band 2 (5G NR), BW 15 MHz, Modulation 64QAM (Worst-case output power, 22.81 dBm)**



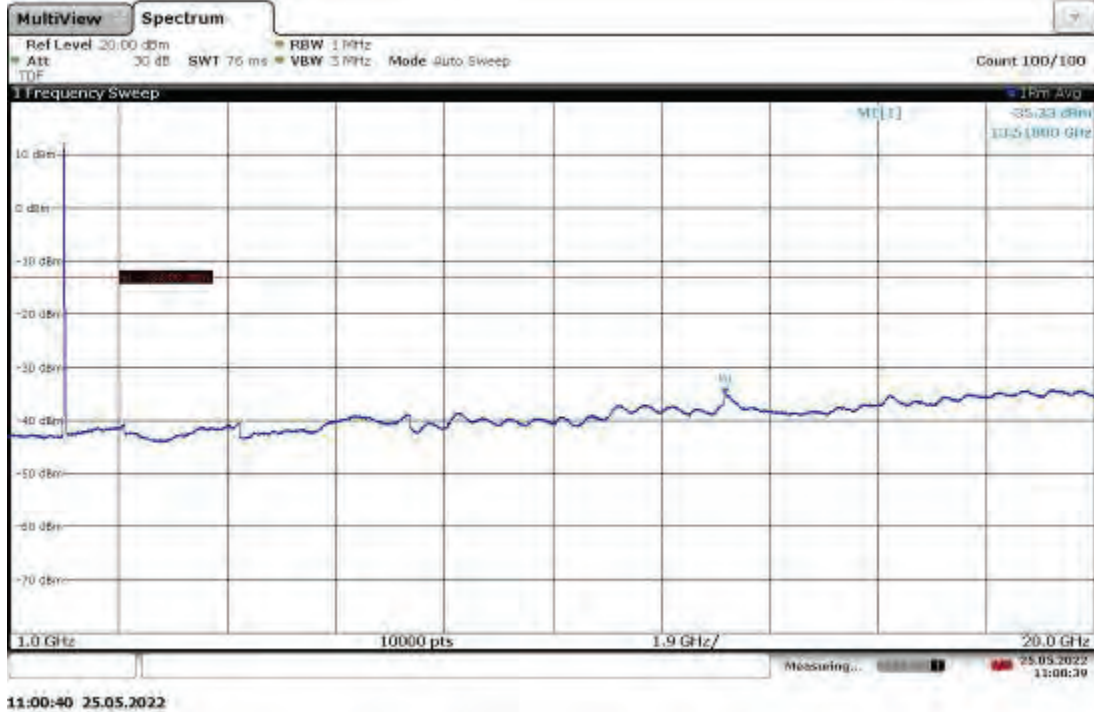
**Low Channel 1937.50 MHz, Antenna Port (ANT1) Conducted Emissions, 9kHz-30MHz  
Band 2 (5G NR), BW 15 MHz, Modulation 64QAM (Worst-case output power, 22.85 dBm)**



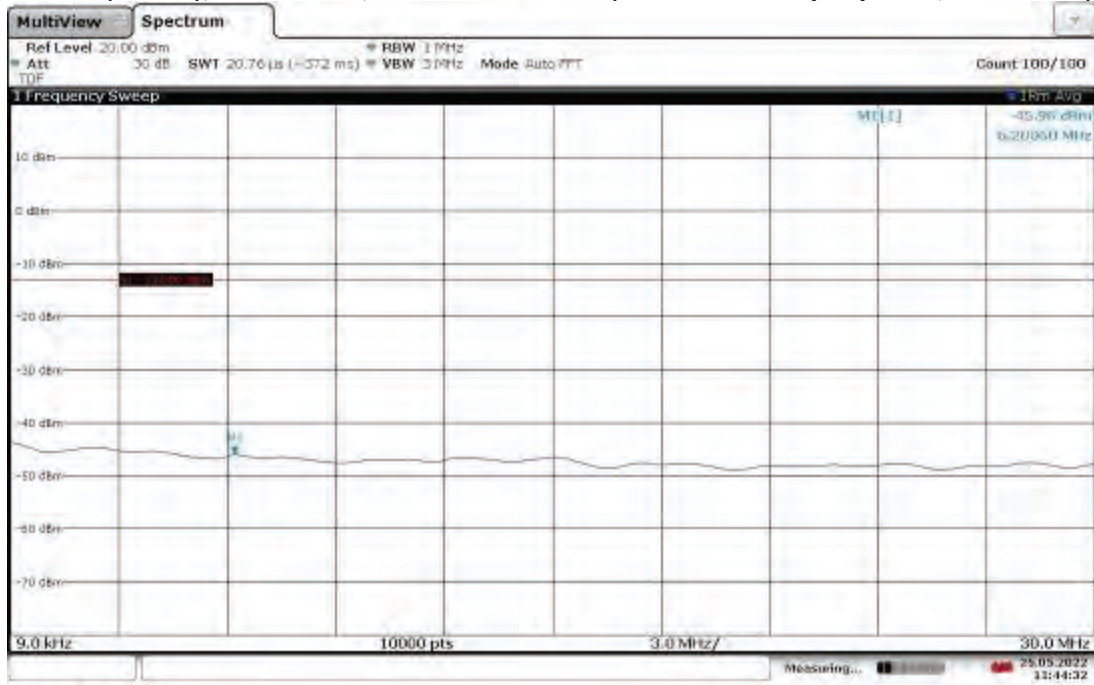
**Low Channel 1937.50 MHz, Antenna Port (ANT1) Conducted Emissions, 30-1000 MHz  
Band 2 (5G NR), BW 15 MHz, Modulation 64QAM (Worst-case output power, 22.85 dBm)**



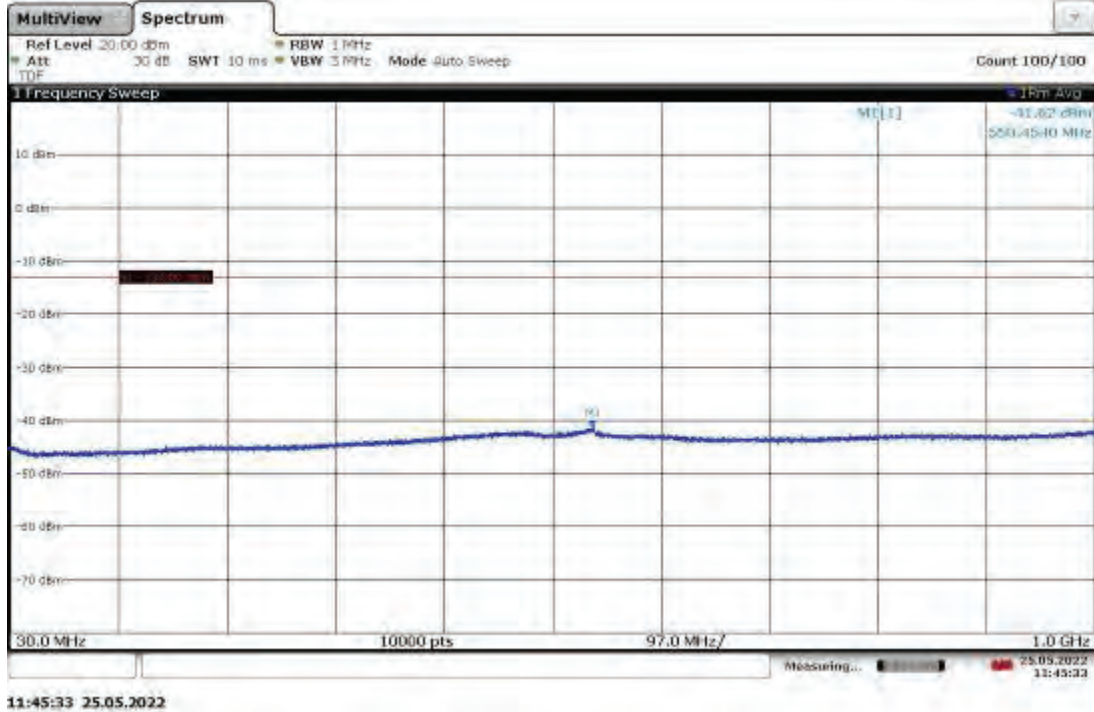
**Low Channel 1937.50 MHz, Antenna Port (ANT1) Conducted Emissions, 1-20 GHz  
Band 2 (5G NR), BW 15 MHz, Modulation 64QAM (Worst-case output power, 22.85 dBm)**



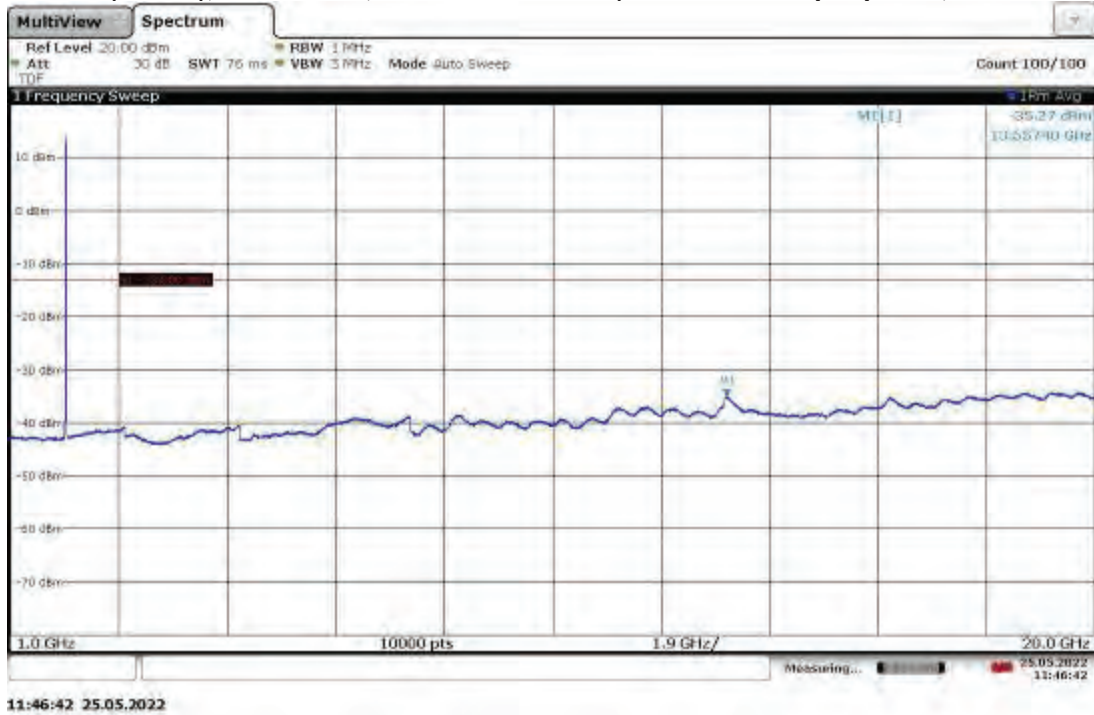
**Mid Channel 1960 MHz, Antenna Port (ANT0) Conducted Emissions, 9kHz-30MHz  
Band 2 (5G NR), BW 10 MHz, Modulation QPSK (Worst-case output power, 22.63 dBm)**



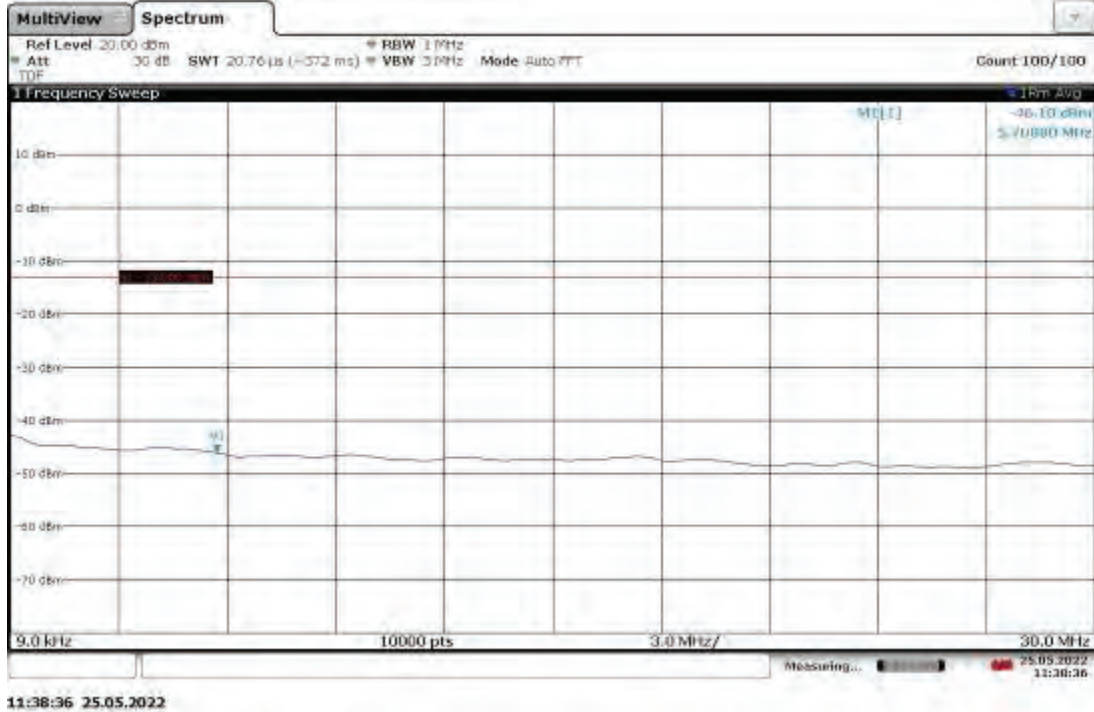
**Mid Channel 1960 MHz, Antenna Port (ANT0) Conducted Emissions, 30MHz-1GHz  
Band 2 (5G NR), BW 10 MHz, Modulation QPSK (Worst-case output power, 22.63 dBm)**



**Mid Channel 1960 MHz, Antenna Port (ANT0) Conducted Emissions, 1-20 GHz  
Band 2 (5G NR), BW 10 MHz, Modulation QPSK (Worst-case output power, 22.63 dBm)**

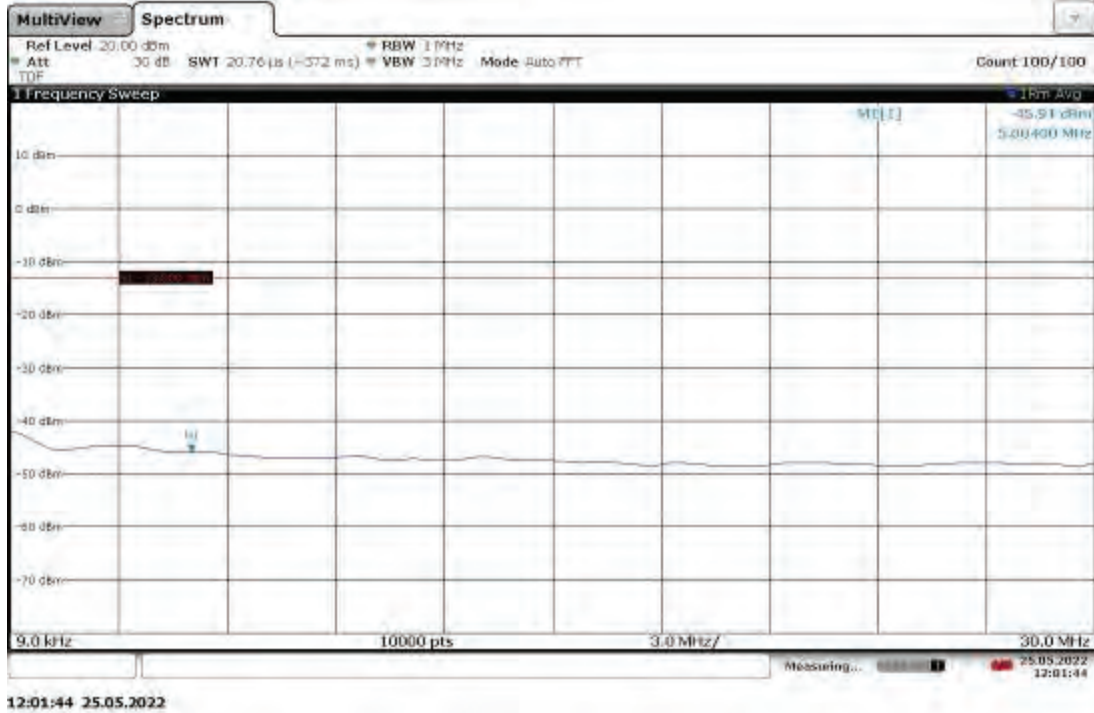


**Mid Channel 1960 MHz, Antenna Port (ANT1) Conducted Emissions, 9kHz-30MHz  
Band 2 (5G NR), BW 10 MHz, Modulation 256QAM (Worst-case output power, 22.73 dBm)**

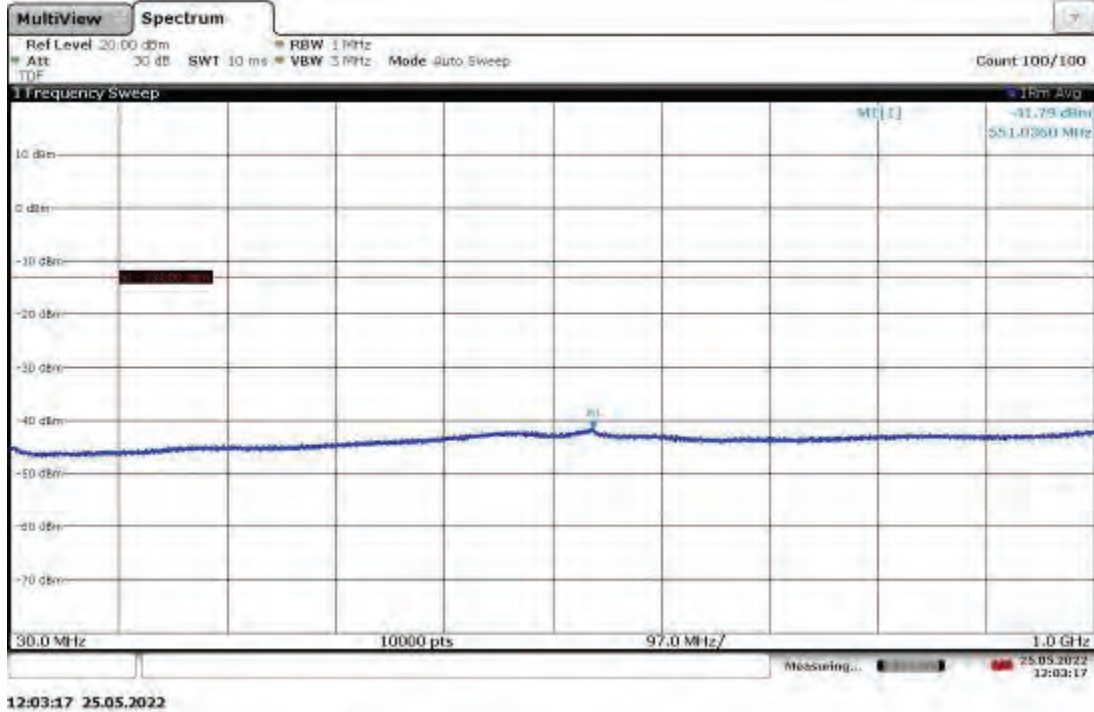




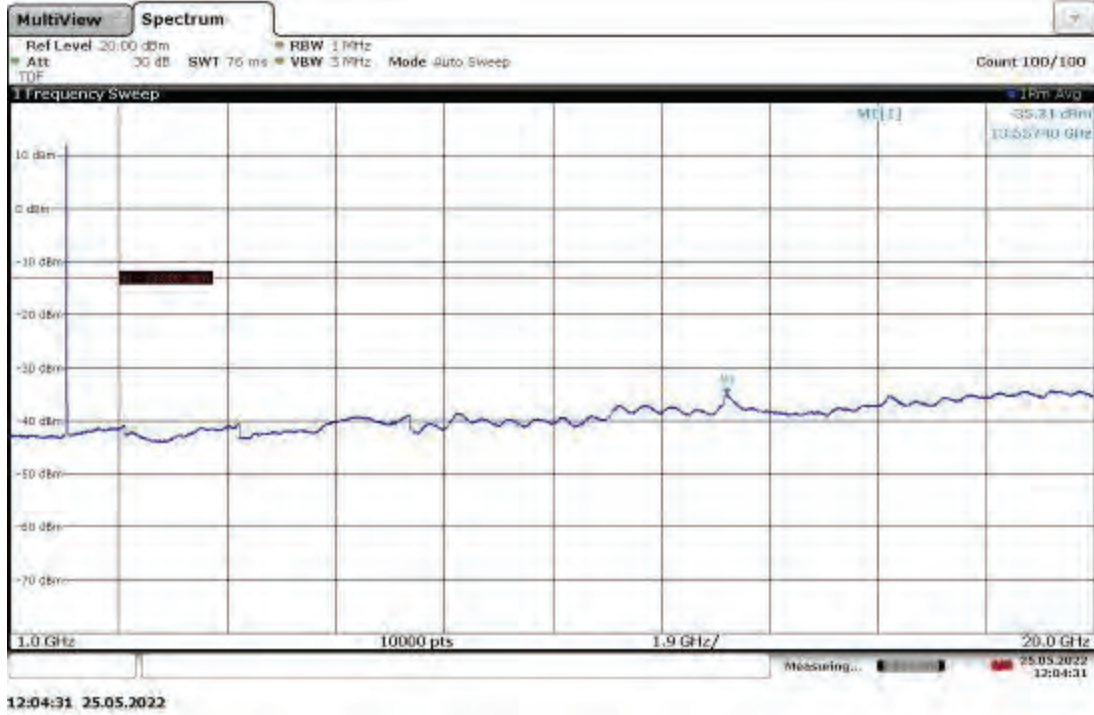
**High Channel 1982.50 MHz, Antenna Port (ANT0) Conducted Emissions, 9kHz-30MHz Band 2 (5G NR), BW 15 MHz, Modulation QPSK (Worst-case output power, 22.80 dBm)**



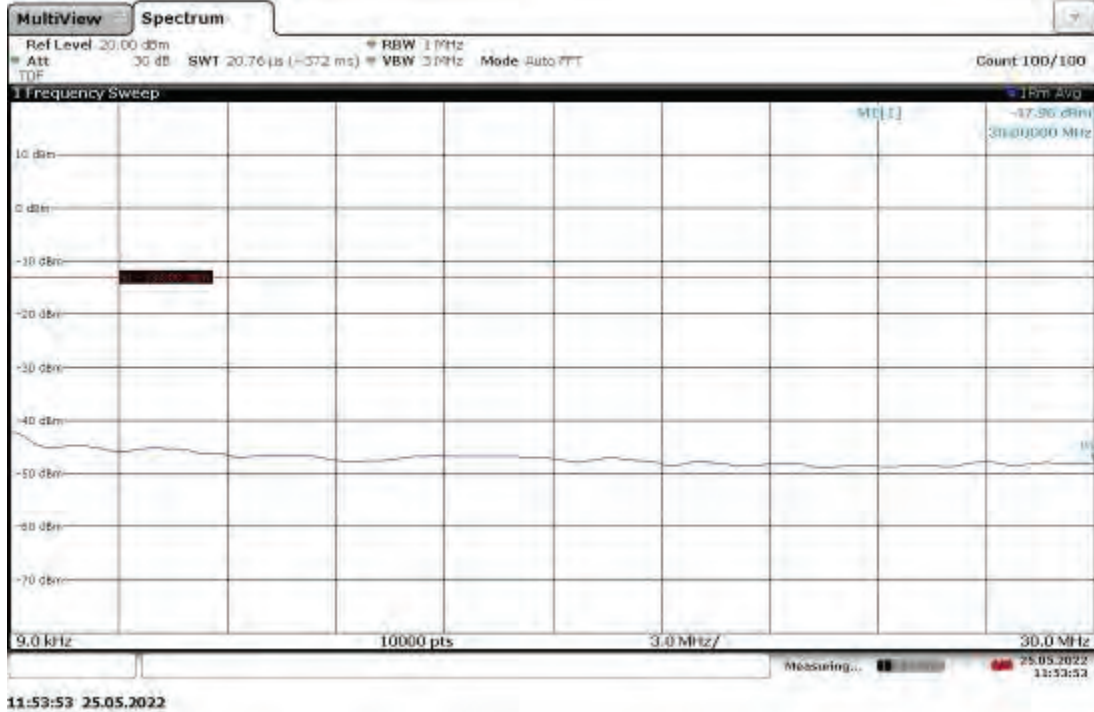
**High Channel 1982.50 MHz, Antenna Port (ANT0) Conducted Emissions, 30MHz-1GHz Band 2 (5G NR), BW 15 MHz, Modulation QPSK (Worst-case output power, 22.80 dBm)**

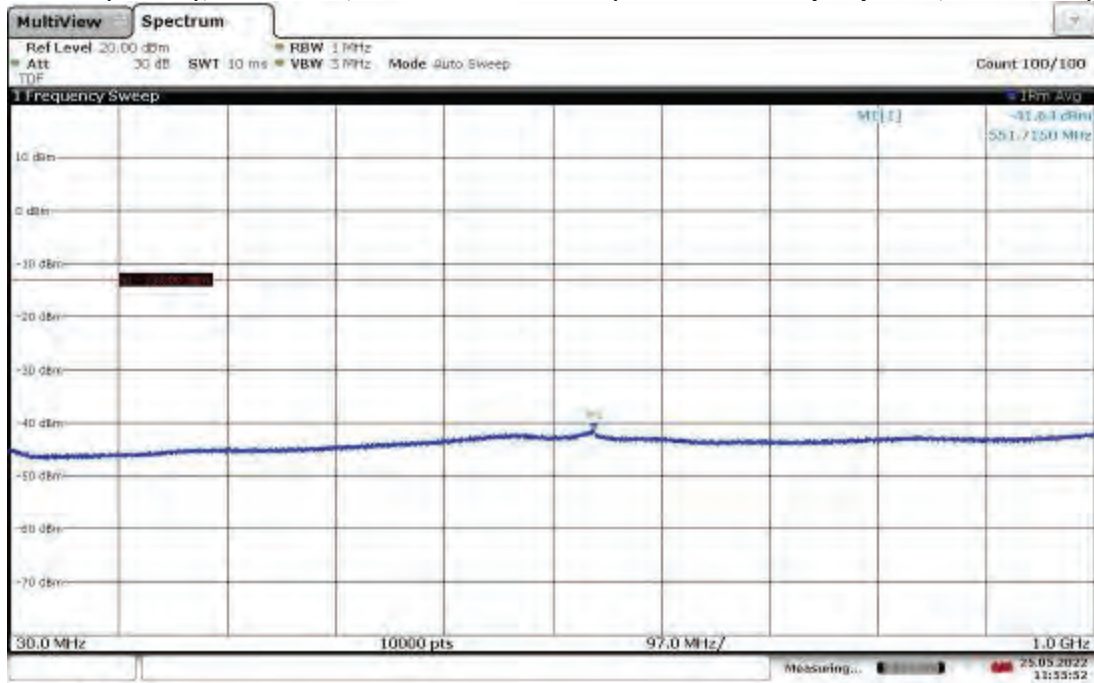


**High Channel 1982.50 MHz, Antenna Port (ANT0) Conducted Emissions, 1-20 GHz  
Band 2 (5G NR), BW 15 MHz, Modulation QPSK (Worst-case output power, 22.80 dBm)**

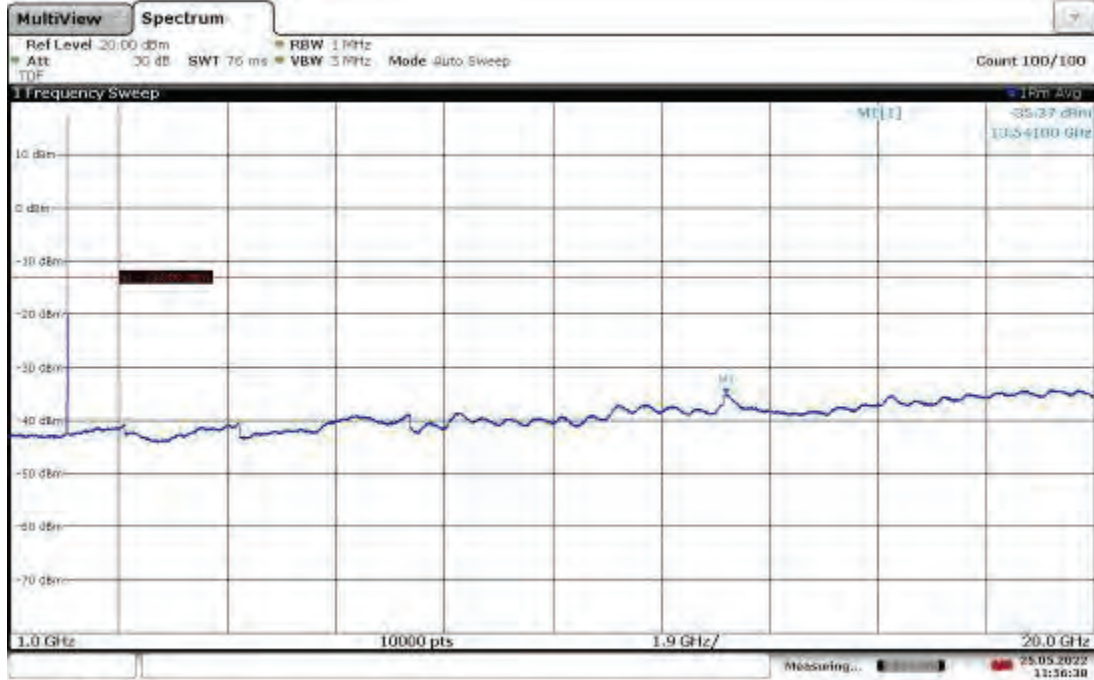


**High Channel 1987.50 MHz, Antenna Port (ANT1) Conducted Emissions, 9kHz-30MHz  
Band 2 (5G NR), BW 5 MHz, Modulation 64QAM (Worst-case output power, 22.88 dBm)**



**High Channel 1987.50 MHz, Antenna Port (ANT1) Conducted Emissions, 30MHz-1GHz  
Band 2 (5G NR), BW 5 MHz, Modulation 64QAM (Worst-case output power, 22.88 dBm)**

11:55:52 25.05.2022

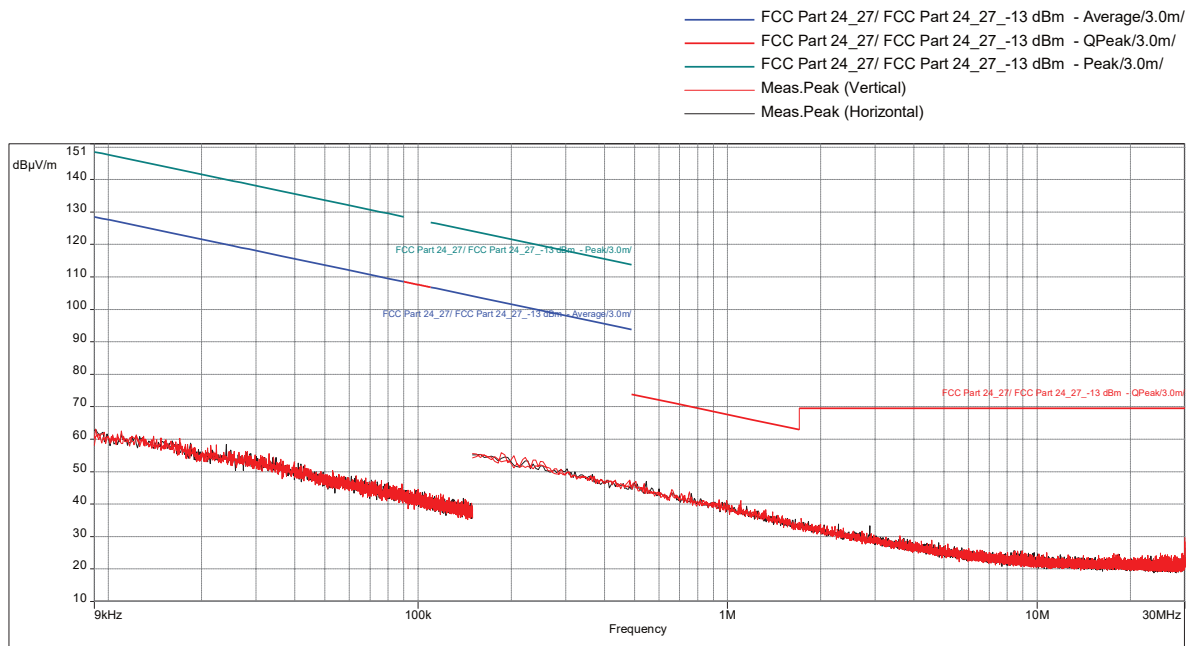
**High Channel 1987.50 MHz, Antenna Port (ANT1) Conducted Emissions, 1-20 GHz  
Band 2 (5G NR), BW 5 MHz, Modulation 64QAM (Worst-case output power, 22.88 dBm)**

11:56:38 25.05.2022

**High Channel 19 87.5 MHz, Radiated Emissions, 9 kHz-30 MHz**  
**Band 2 (5G NR), BW 5 MHz, Modulation 64QAM (Worst-case output power, 22.88 dBm)**

**Test Information:**

|                           |                                                                                                                  |
|---------------------------|------------------------------------------------------------------------------------------------------------------|
| Date and Time             | 5/20/2022 4:47:50 PM                                                                                             |
| Client and Project Number | Commscope                                                                                                        |
| Engineer                  | Kouma Sinn                                                                                                       |
| Temperature               | 27 C                                                                                                             |
| Humidity                  | 34 %                                                                                                             |
| Atmospheric Pressure      | 1005 mbar                                                                                                        |
| Comments                  | Scan 1: Band 2, H Ch 1987.5 MHz (BW: 5 MHz, Mod: 64QAM, ANT1: 22.88 dBm - worst-case power), RE 9kHz-30MHz at 3m |

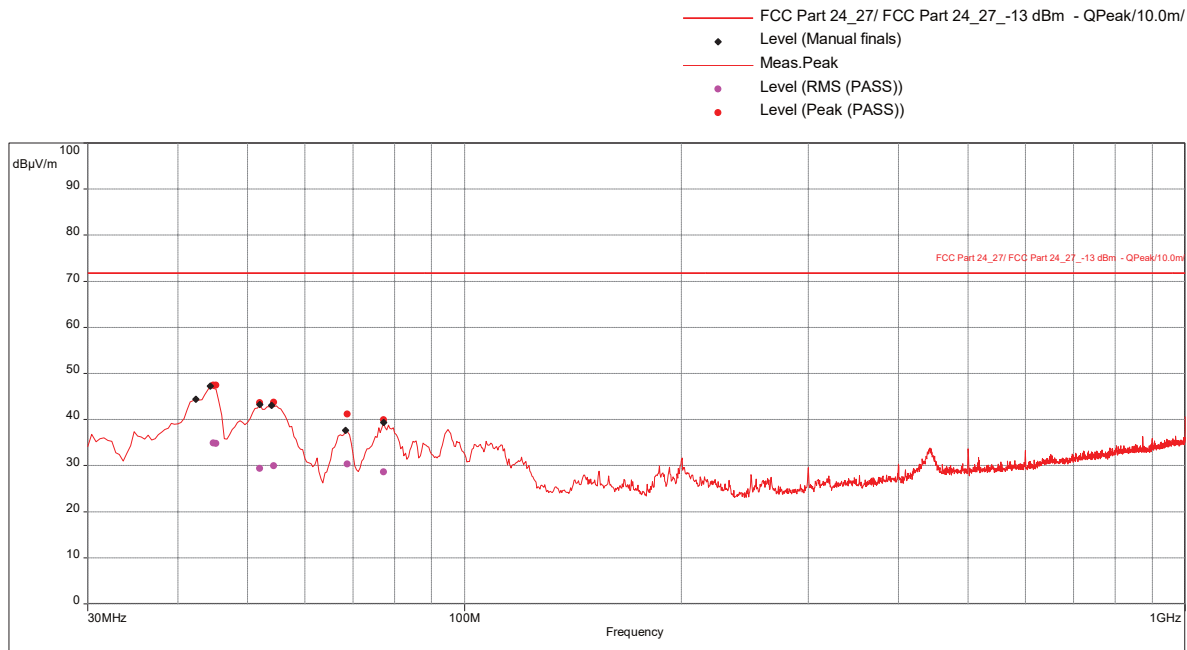
**Graph:**

**Results:** Only one worst-case channel was selected for testing from 9 kHz-30 MHz. No emission was detected.

**Low Channel 1937.50 MHz, Radiated Emissions, 30-1000 MHz  
Band 2 (5G NR), BW 15 MHz, Modulation 64QAM (Worst-case output power, 22.85 dBm)**

**Test Information:**

|                           |                                                                                                                     |
|---------------------------|---------------------------------------------------------------------------------------------------------------------|
| Date and Time             | 5/20/2022 8:41:49 PM                                                                                                |
| Client and Project Number | Commscope                                                                                                           |
| Engineer                  | Kouma Sinn                                                                                                          |
| Temperature               | 27 C                                                                                                                |
| Humidity                  | 34 %                                                                                                                |
| Atmospheric Pressure      | 1005 mbar                                                                                                           |
| Comments                  | Scan 3: Band 2, L1937.5 MHz, BW: 15 MHz, Mod:64QAM, ANT1:22.85 dBm (Worst-case Output Power), RE 30-1000MHz SA mode |

**Graph:****Results:****EIRP Peak (PASS) (6)**

| Frequency (MHz) | Peak Level (dBμV/m) | EIRP Level (dBm) | Limit (dBm) | EIRP Margin (dB) | Azimuth (°) | Height (m) | Pol.     | RBW (Hz)   | Correction (dB) |
|-----------------|---------------------|------------------|-------------|------------------|-------------|------------|----------|------------|-----------------|
| 44.92631579     | 47.40               | -47.86           | -13         | -34.86           | 61.00       | 2.26       | Vertical | 1000000.00 | -22.74          |
| 45.03157895     | 47.48               | -47.78           | -13         | -34.78           | 68.00       | 2.79       | Vertical | 1000000.00 | -22.81          |
| 52              | 43.68               | -51.58           | -13         | -38.58           | 31.00       | 1.30       | Vertical | 1000000.00 | -25.99          |
| 54.26315789     | 43.76               | -51.50           | -13         | -38.50           | 17.00       | 1.00       | Vertical | 1000000.00 | -26.27          |
| 68.92631579     | 41.13               | -54.13           | -13         | -41.13           | 10.00       | 2.46       | Vertical | 1000000.00 | -25.11          |
| 77.2            | 39.96               | -55.30           | -13         | -42.30           | 163.00      | 3.22       | Vertical | 1000000.00 | -25.35          |

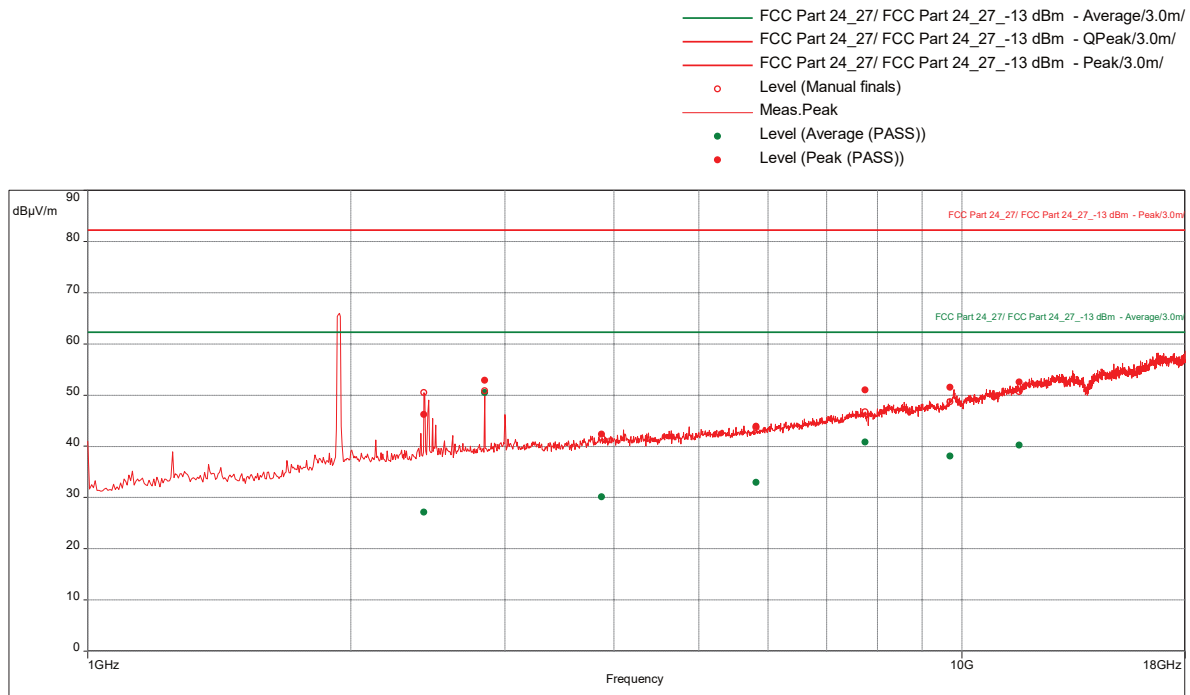
**Notes:**

The level in EIRP (dBm) is calculated from the peak readings as  $EIRP (dBm) = E \text{ Peak } (dB\mu V/m) + 20 \cdot \log(d) - 104.8$ , where d is the measurement distance (in the far field region) in meter.

**Low Channel 1937.50 MHz, Radiated Emissions, 1-20 GHz**  
**Band 2 (5G NR), BW 15 MHz, Modulation 64QAM (Worst-case output power, 22.85 dBm)**

**Test Information:**

|                           |                                                                                                                      |
|---------------------------|----------------------------------------------------------------------------------------------------------------------|
| Date and Time             | 5/21/2022 11:49:22 AM                                                                                                |
| Client and Project Number | Commscope                                                                                                            |
| Engineer                  | Kouma Sinn                                                                                                           |
| Temperature               | 25 C                                                                                                                 |
| Humidity                  | 49 %                                                                                                                 |
| Atmospheric Pressure      | 1007 mbar                                                                                                            |
| Comments                  | Scan 10: Band 2, L1937.50MHz, BW: 15 MHz, Mod: 64QAM, ANT1: 22.85 dBm (Worst-case Output Power), RE 1-18 GHz SA mode |

**Graph:****Results:****EIRP Peak (7)**

| Frequency (MHz) | Peak Level (dBμV/m) | EIRP Level (dBm) | Limit (dBm) | EIRP Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW (Hz)   | Correction (dB) |
|-----------------|---------------------|------------------|-------------|------------------|-------------|------------|------------|------------|-----------------|
| 2425.789474     | 46.22               | -49.04           | -13         | -36.04           | 60.00       | 3.79       | Vertical   | 1000000.00 | -3.57           |
| 2844.473684     | 52.89               | -42.37           | -13         | -29.37           | 112.00      | 1.45       | Vertical   | 1000000.00 | -2.82           |
| 3872.105263     | 42.38               | -52.88           | -13         | -39.88           | 140.00      | 1.85       | Horizontal | 1000000.00 | -1.09           |
| 5814.210526     | 43.87               | -51.39           | -13         | -38.39           | 83.00       | 1.80       | Vertical   | 1000000.00 | 2.98            |
| 7750            | 51.00               | -44.26           | -13         | -31.26           | 0.00        | 1.00       | Horizontal | 1000000.00 | 6.30            |
| 9690.789474     | 51.50               | -43.76           | -13         | -30.76           | 118.00      | 2.80       | Vertical   | 1000000.00 | 8.99            |
| 11628.15789     | 52.53               | -42.73           | -13         | -29.73           | 184.00      | 3.84       | Horizontal | 1000000.00 | 12.14           |

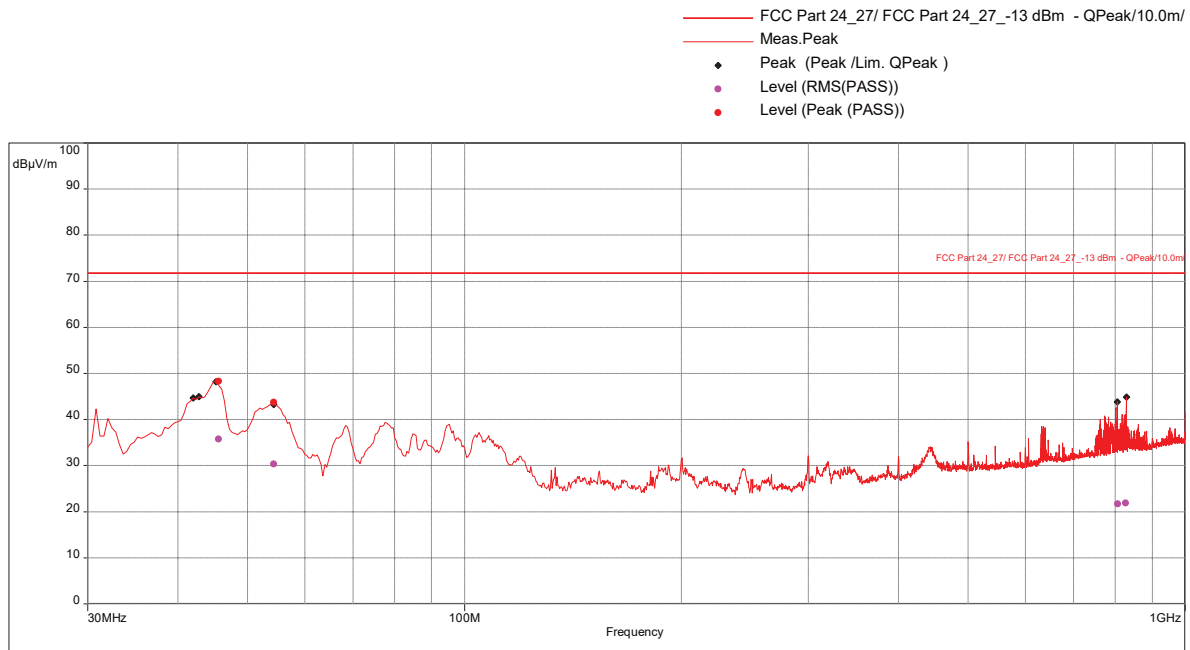
**Notes:**

The level in EIRP (dBm) is calculated from the peak readings as  $EIRP (dBm) = E \text{ Peak } (dB\mu V/m) + 20 \cdot \log(d) - 104.8$ , where  $d$  is the measurement distance (in the far field region) in meter. Manual scan was performed from 18-20 GHz at a distance of 10 cm with no emission was detected above measuring instrument noise floor.

**Mid Channel 1960 MHz, Radiated Emissions, 30-1000 MHz**  
**Band 2 (5G NR), BW 10 MHz, Modulation 256QAM (Worst-case output power, 22.73 dBm)**

**Test Information:**

|                           |                                                                                                                     |
|---------------------------|---------------------------------------------------------------------------------------------------------------------|
| Date and Time             | 5/20/2022 8:48:25 PM                                                                                                |
| Client and Project Number | Commscope                                                                                                           |
| Engineer                  | Kouma Sinn                                                                                                          |
| Temperature               | 27 C                                                                                                                |
| Humidity                  | 34 %                                                                                                                |
| Atmospheric Pressure      | 1005 mbar                                                                                                           |
| Comments                  | Scan 4: Band 2, M1960 MHz, BW: 10 MHz, Mod: 256QAM, ANT1:22.73 dBm (Worst-case Output Power), RE 30-1000MHz SA mode |

**Graph:****Results:**

## EIRP Peak (PASS) (4)

| Frequency (MHz) | Peak Level (dBμV/m) | EIRP Level (dBm) | Limit (dBm) | EIRP Margin (dB) | Azimuth (°) | Height (m) | Pol.     | RBW (Hz)   | Correction (dB) |
|-----------------|---------------------|------------------|-------------|------------------|-------------|------------|----------|------------|-----------------|
| 45.46315789     | 48.28               | -36.52           | -13         | -23.52           | 68.00       | 2.84       | Vertical | 1000000.00 | -23.10          |
| 54.4            | 43.76               | -41.04           | -13         | -28.04           | 54.00       | 1.30       | Vertical | 1000000.00 | -26.27          |
| 805.8631579     | 34.63               | -50.17           | -13         | -37.17           | 126.00      | 1.52       | Vertical | 1000000.00 | -7.79           |
| 826.9578947     | 34.73               | -50.07           | -13         | -37.07           | 178.00      | 2.73       | Vertical | 1000000.00 | -7.42           |

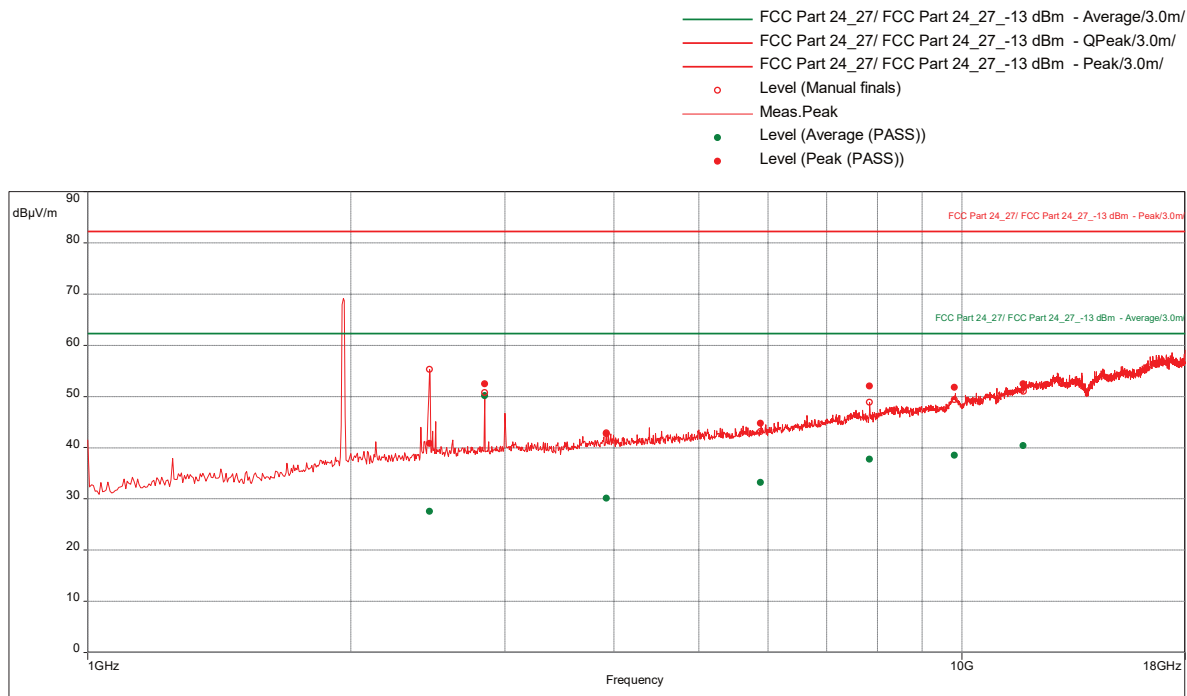
**Notes:**

The level in EIRP (dBm) is calculated from the peak readings as  $EIRP (dBm) = E \text{ Peak } (dB\mu V/m) + 20 \cdot \log(d) - 104.8$ , where  $d$  is the measurement distance (in the far field region) in meter.

**Mid Channel 1960 MHz, Radiated Emissions, 1-20 GHz  
Band 2 (5G NR), BW 10 MHz, Modulation 256QAM (Worst-case output power, 22.73 dBm)**

|                           |                                                                                                                     |
|---------------------------|---------------------------------------------------------------------------------------------------------------------|
| Date and Time             | 5/21/2022 12:29:46 PM                                                                                               |
| Client and Project Number | Commscope                                                                                                           |
| Engineer                  | Kouma Sinn                                                                                                          |
| Temperature               | 25 C                                                                                                                |
| Humidity                  | 49 %                                                                                                                |
| Atmospheric Pressure      | 1007 mbar                                                                                                           |
| Comments                  | Scan 11: Band 2, M1960 MHz, BW: 10 MHz, Mod: 256QAM, ANT1: 22.73 dBm (Worst-case Output Power), RE 1-18 GHz SA mode |

**Graph:**



**Results:**

**EIRP Peak (7)**

| Frequency (MHz) | Peak Level (dBμV/m) | EIRP Level (dBm) | Limit (dBm) | EIRP Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW (Hz)   | Correction (dB) |
|-----------------|---------------------|------------------|-------------|------------------|-------------|------------|------------|------------|-----------------|
| 2459.473684     | 40.85               | -54.41           | -13         | -41.41           | 148.00      | 1.00       | Vertical   | 1000000.00 | -3.30           |
| 2844.473684     | 52.49               | -42.77           | -13         | -29.77           | 112.00      | 1.50       | Vertical   | 1000000.00 | -2.82           |
| 3918.947368     | 42.71               | -52.55           | -13         | -39.55           | 228.00      | 2.65       | Vertical   | 1000000.00 | -1.03           |
| 5879.736842     | 44.71               | -50.55           | -13         | -37.55           | 148.00      | 2.30       | Vertical   | 1000000.00 | 3.17            |
| 7840.263158     | 52.06               | -43.2            | -13         | -30.2            | 17.00       | 1.30       | Horizontal | 1000000.00 | 6.69            |
| 9798.684211     | 51.78               | -43.48           | -13         | -30.48           | 162.00      | 2.55       | Vertical   | 1000000.00 | 9.96            |
| 11756.57895     | 52.42               | -42.84           | -13         | -29.84           | 0.00        | 3.10       | Horizontal | 1000000.00 | 12.53           |

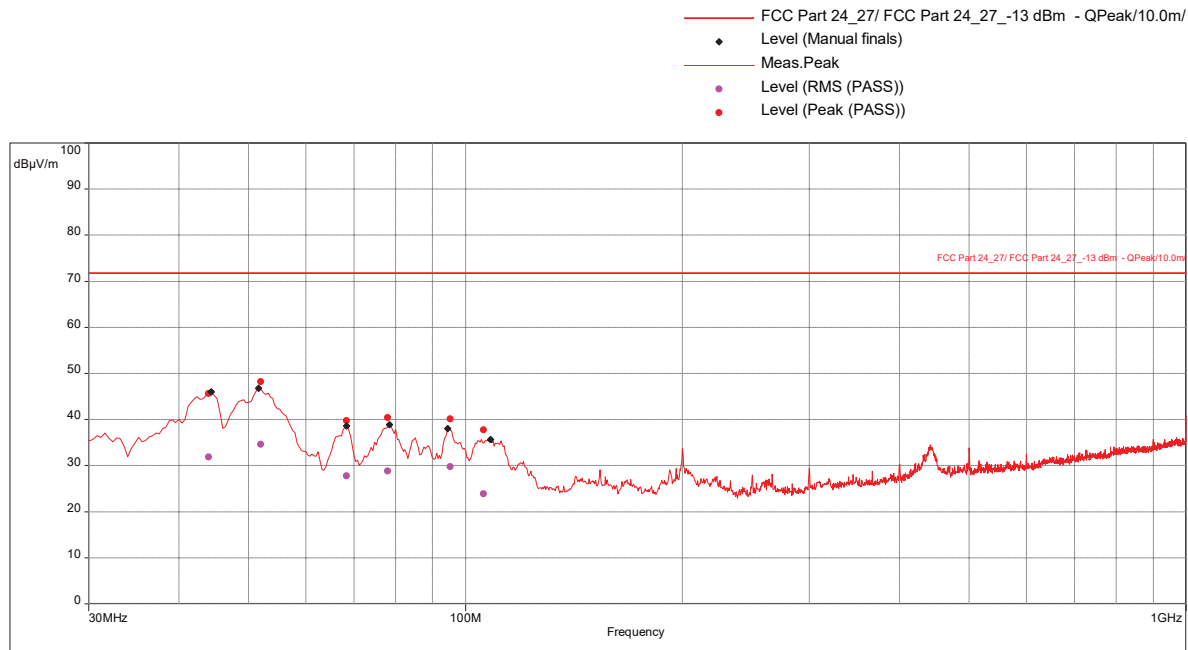
**Notes:**

The level in EIRP (dBm) is calculated from the peak readings as  $EIRP (dBm) = E \text{ Peak } (dB\mu V/m) + 20 \cdot \log(d) - 104.8$ , where d is the measurement distance (in the far field region) in meter

**High Channel 1987.5 MHz, Radiated Emissions, 30-1000 MHz**  
**Band 2 (5G NR), BW 5 MHz, Modulation 64QAM (Worst-case output power, 22.88 dBm)**

**Test Information:**

|                           |                                                                                                                      |
|---------------------------|----------------------------------------------------------------------------------------------------------------------|
| Date and Time             | 5/20/2022 9:51:28 PM                                                                                                 |
| Client and Project Number | Commscope                                                                                                            |
| Engineer                  | Kouma Sinn                                                                                                           |
| Temperature               | 27 C                                                                                                                 |
| Humidity                  | 34 %                                                                                                                 |
| Atmospheric Pressure      | 1005 mbar                                                                                                            |
| Comments                  | Scan 5: Band 2, H1987.5 MHz, BW: 5 MHz, Mod: 64QAM, ANT1: 22.88 dBm (Worst-case Output Power), RE 30-1000MHz SA mode |

**Graph:****Results:**

## EIRP Peak (PASS) (6)

| Frequency (MHz) | Peak Level (dBμV/m) | EIRP Level (dBm) | Limit (dBm) | EIRP Margin (dB) | Azimuth (°) | Height (m) | Pol.     | RBW (Hz)   | Correction (dB) |
|-----------------|---------------------|------------------|-------------|------------------|-------------|------------|----------|------------|-----------------|
| 44.13684211     | 45.65               | -39.15           | -13         | -26.15           | 38.00       | 2.40       | Vertical | 1000000.00 | -22.28          |
| 51.86315789     | 48.20               | -36.6            | -13         | -23.6            | 83.00       | 1.00       | Vertical | 1000000.00 | -25.97          |
| 68.4            | 39.77               | -45.03           | -13         | -32.03           | 31.00       | 2.48       | Vertical | 1000000.00 | -25.12          |
| 78.13684211     | 40.41               | -44.39           | -13         | -31.39           | 169.00      | 3.94       | Vertical | 1000000.00 | -25.43          |
| 95.18947368     | 40.13               | -44.67           | -13         | -31.67           | 193.00      | 2.24       | Vertical | 1000000.00 | -24.03          |
| 106.0315789     | 37.79               | -47.01           | -13         | -34.01           | 301.00      | 1.41       | Vertical | 1000000.00 | -21.10          |

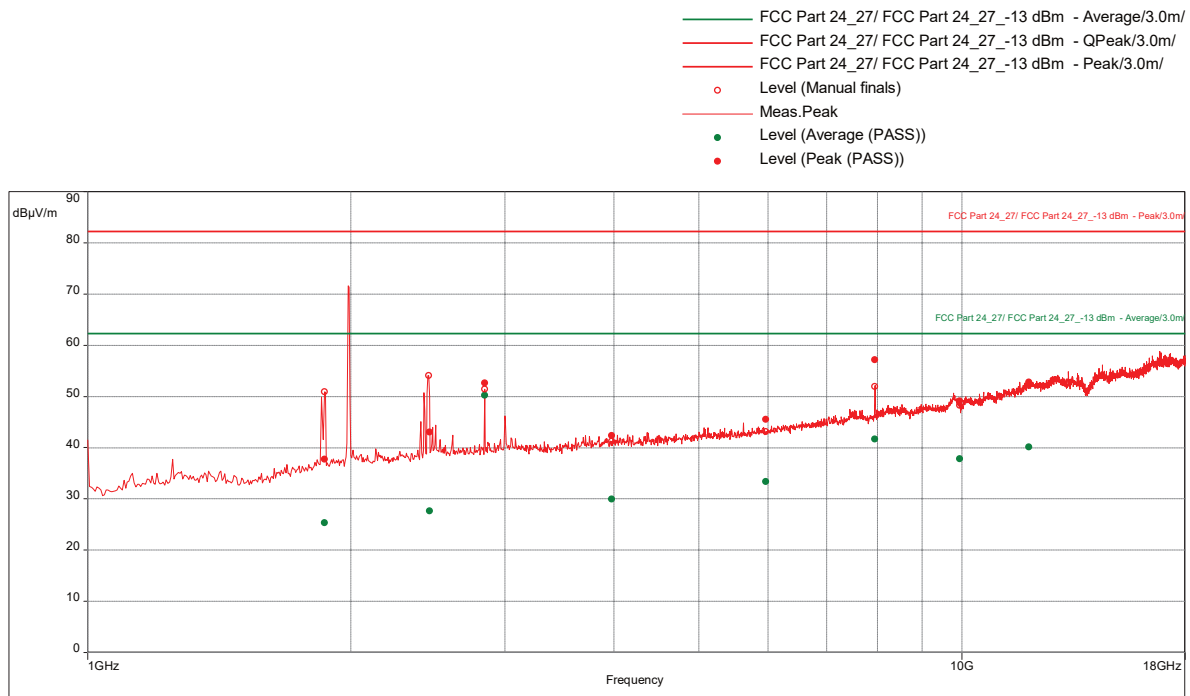
**Notes:**

The level in EIRP (dBm) is calculated from the peak readings as  $EIRP (dBm) = E \text{ Peak (dB}\mu\text{V/m)} + 20 \cdot \log(d) - 104.8$ , where  $d$  is the measurement distance (in the far field region) in meter.

**High Channel 1987.5 MHz, Radiated Emissions, 1-20 GHz**  
**Band 2 (5G NR), BW 5 MHz, Modulation 64QAM (Worst-case output power, 22.88 dBm)**

**Test Information:**

|                           |                                                                                                                         |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Date and Time             | 5/21/2022 1:12:11 PM                                                                                                    |
| Client and Project Number | Commscope                                                                                                               |
| Engineer                  | Kouma Sinn                                                                                                              |
| Temperature               | 25 C                                                                                                                    |
| Humidity                  | 49 %                                                                                                                    |
| Atmospheric Pressure      | 1007 mbar                                                                                                               |
| Comments                  | Scan 12: Band 2, H1987.50 MHz, BW: 5 MHz, Mod: 64QAM, ANT1: 22.88 dBm (Worst-case Output Power), RE 1 to 18 GHz SA mode |

**Graph:****Results:****EIRP Peak (8)**

| Frequency (MHz) | Peak Level (dBμV/m) | EIRP Level (dBm) | Limit (dBm) | EIRP Margin (dB) | Azimuth (°) | Height (m) | Pol.       | RBW (Hz)   | Correction (dB) |
|-----------------|---------------------|------------------|-------------|------------------|-------------|------------|------------|------------|-----------------|
| 1864.736842     | 37.74               | -57.52           | -13         | -44.52           | 96.00       | 1.01       | Horizontal | 1000000.00 | -4.90           |
| 2460            | 43.00               | -52.26           | -13         | -39.26           | 133.00      | 2.71       | Vertical   | 1000000.00 | -3.29           |
| 2844.473684     | 52.62               | -42.64           | -13         | -29.64           | 112.00      | 1.45       | Vertical   | 1000000.00 | -2.82           |
| 3974.210526     | 42.36               | -52.9            | -13         | -39.9            | 10.00       | 3.49       | Vertical   | 1000000.00 | -0.98           |
| 5965.789474     | 45.49               | -49.77           | -13         | -36.77           | 359.00      | 3.84       | Vertical   | 1000000.00 | 3.40            |
| 7950            | 57.13               | -38.13           | -13         | -25.13           | 338.00      | 1.10       | Vertical   | 1000000.00 | 7.15            |
| 9938.947368     | 49.13               | -46.13           | -13         | -33.13           | 68.00       | 3.34       | Vertical   | 1000000.00 | 9.39            |
| 11926.05263     | 52.78               | -42.48           | -13         | -29.48           | 278.00      | 2.40       | Vertical   | 1000000.00 | 12.81           |

**Notes:**

The level in EIRP (dBm) is calculated from the peak readings as  $EIRP (dBm) = E \text{ Peak } (dB\mu V/m) + 20 \cdot \log(d) - 104.8$ , where  $d$  is the measurement distance (in the far field region) in meter. Manual scan was performed from 18-20 GHz at a distance of 10 cm with no emission was detected above measuring instrument noise floor.

Test Personnel: Kouma Sinn *KPS*  
Supervising/Reviewing  
Engineer:  
(Where Applicable) Vathana F. Ven *VSV*

Test Date: 05/20/2022, 05/21/2022

Product Standard: FCC Part 24  
Input Voltage: 48 VDC (POE)

Limit Applied: See report section 11.3

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

Ambient Temperature: 27, 24 °C

Relative Humidity: 34, 49 %

Atmospheric Pressure: 1005, 1007 mbars

Deviations, Additions, or Exclusions: None

**12 Revision History**

| Revision Level | Date       | Report Number     | PrePAPRed By   | Reviewed By    | Notes          |
|----------------|------------|-------------------|----------------|----------------|----------------|
| 0              | 06/08/2022 | 105029958BOX-005b | KPS <i>KPS</i> | VFV <i>VFV</i> | Original Issue |
|                |            |                   |                |                |                |
|                |            |                   |                |                |                |
|                |            |                   |                |                |                |
|                |            |                   |                |                |                |
|                |            |                   |                |                |                |