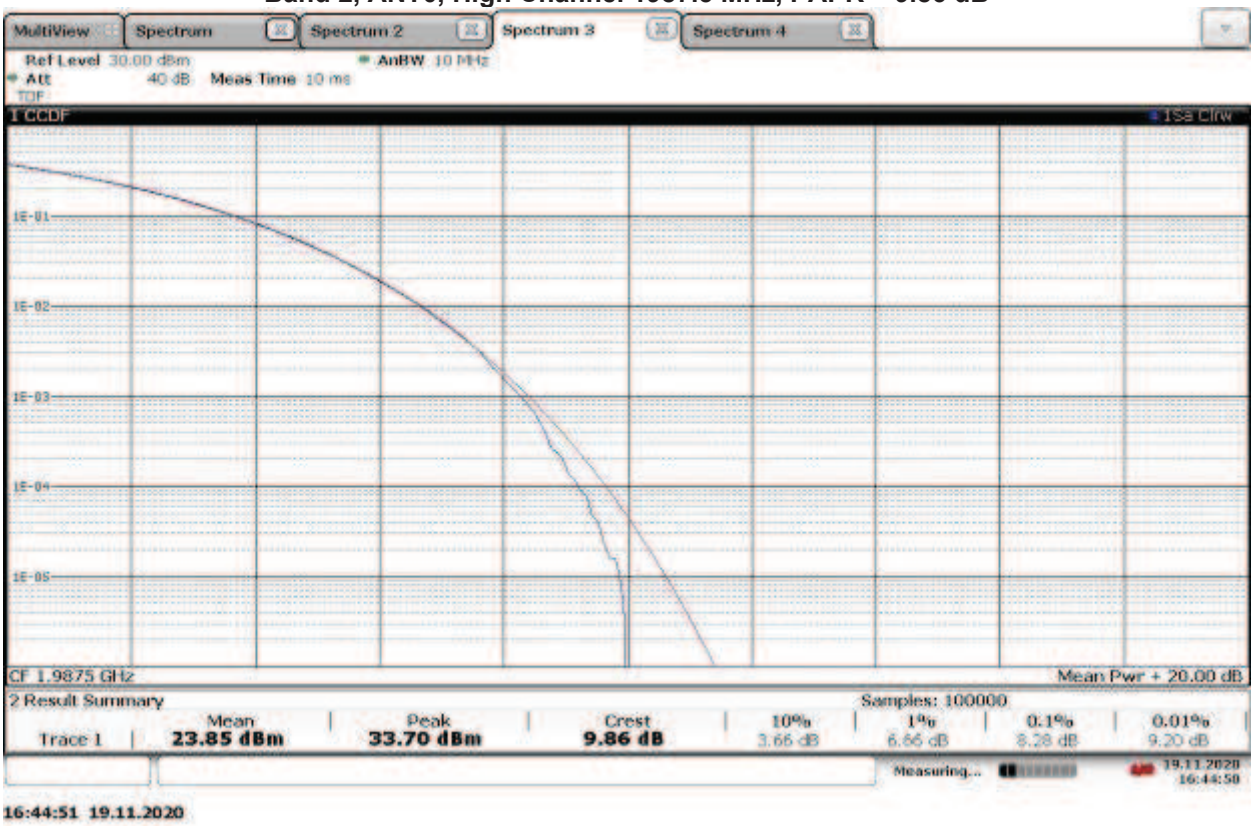
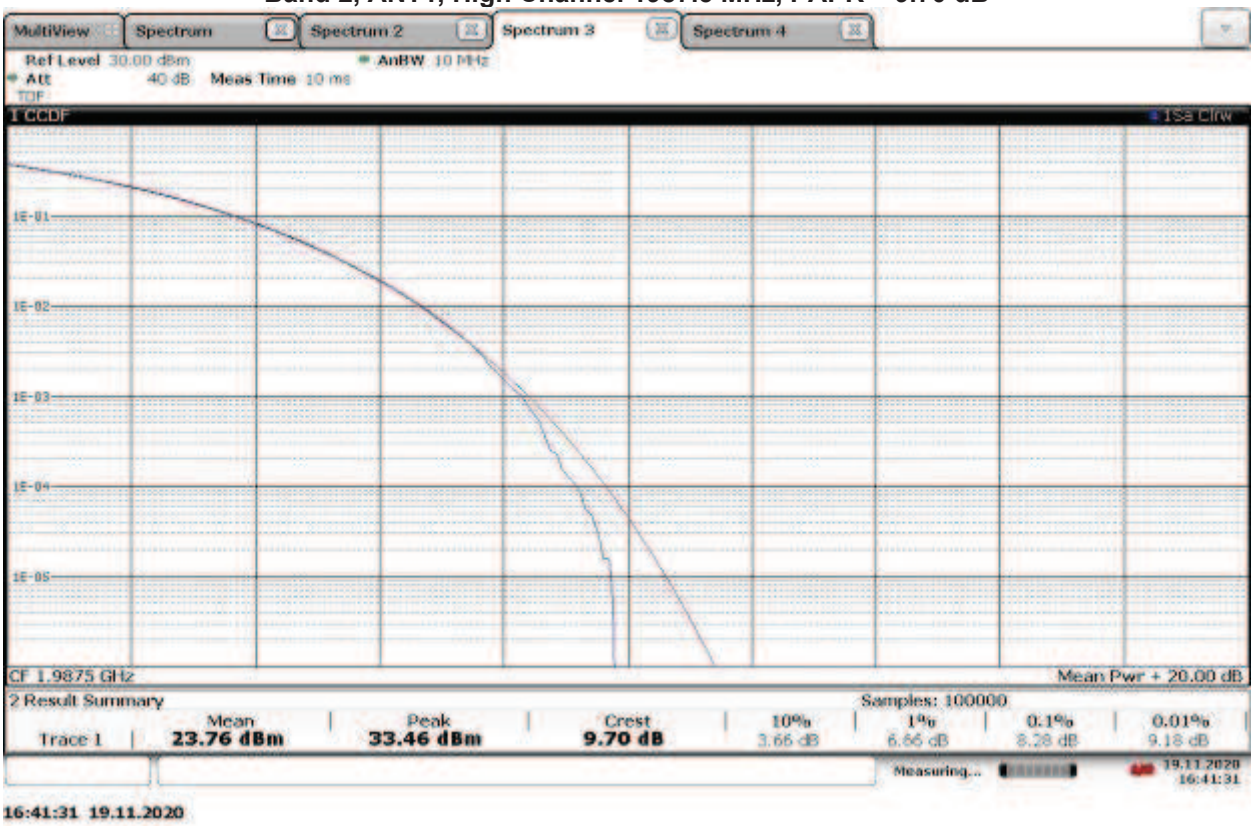
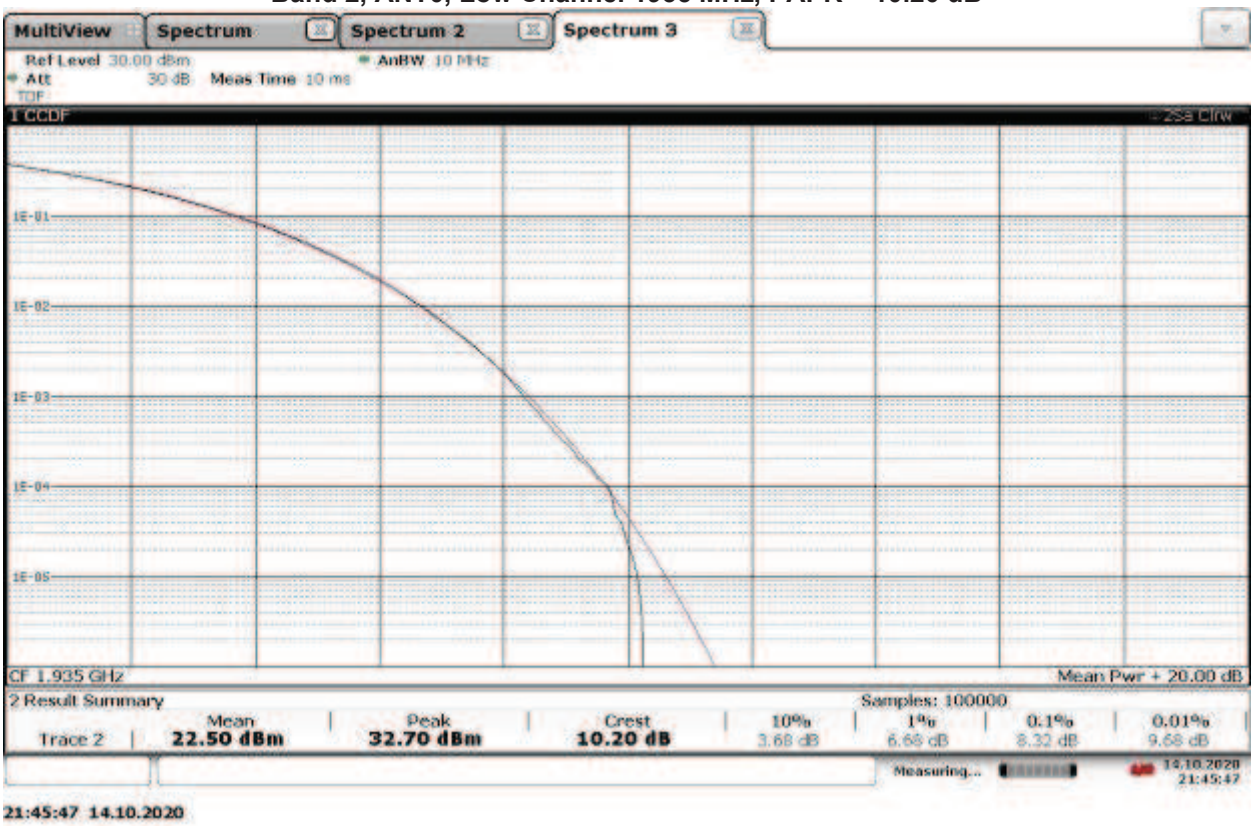
TM3.1-64QAM_5MHz Bandwidth
Band 2, ANT0, High Channel 1987.5 MHz, PAPR = 9.86 dB



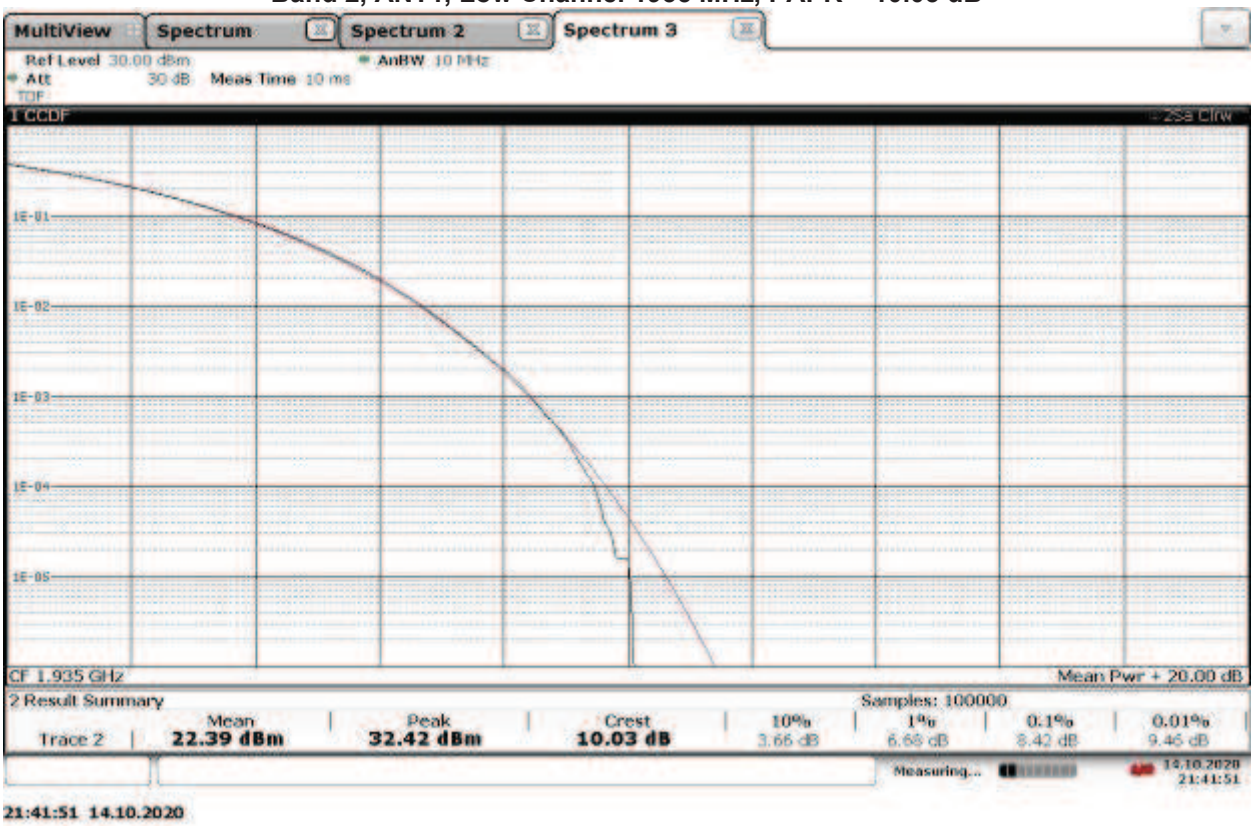
TM3.1-64QAM_5MHz Bandwidth
Band 2, ANT1, High Channel 1987.5 MHz, PAPR = 9.70 dB



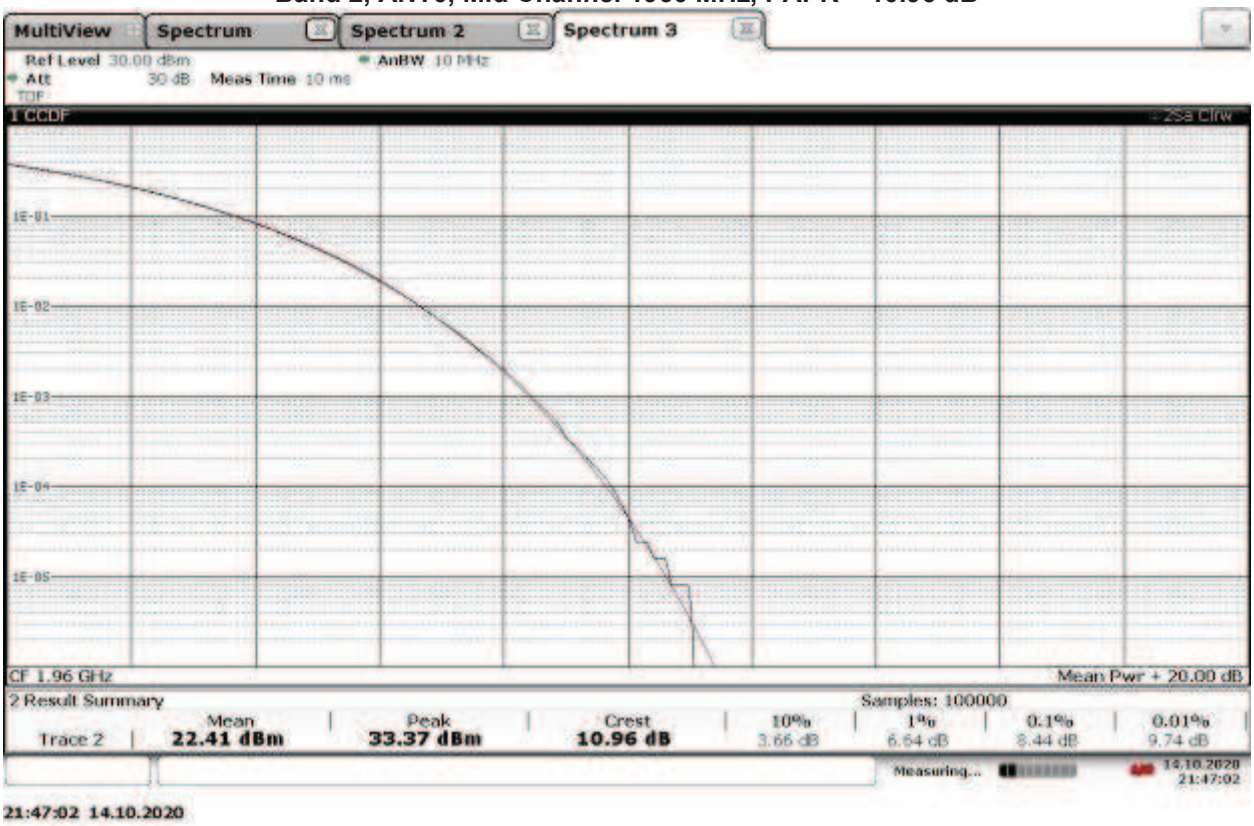
TM3.1-64QAM_10 MHz Bandwidth
Band 2, ANT0, Low Channel 1935 MHz, PAPR = 10.20 dB



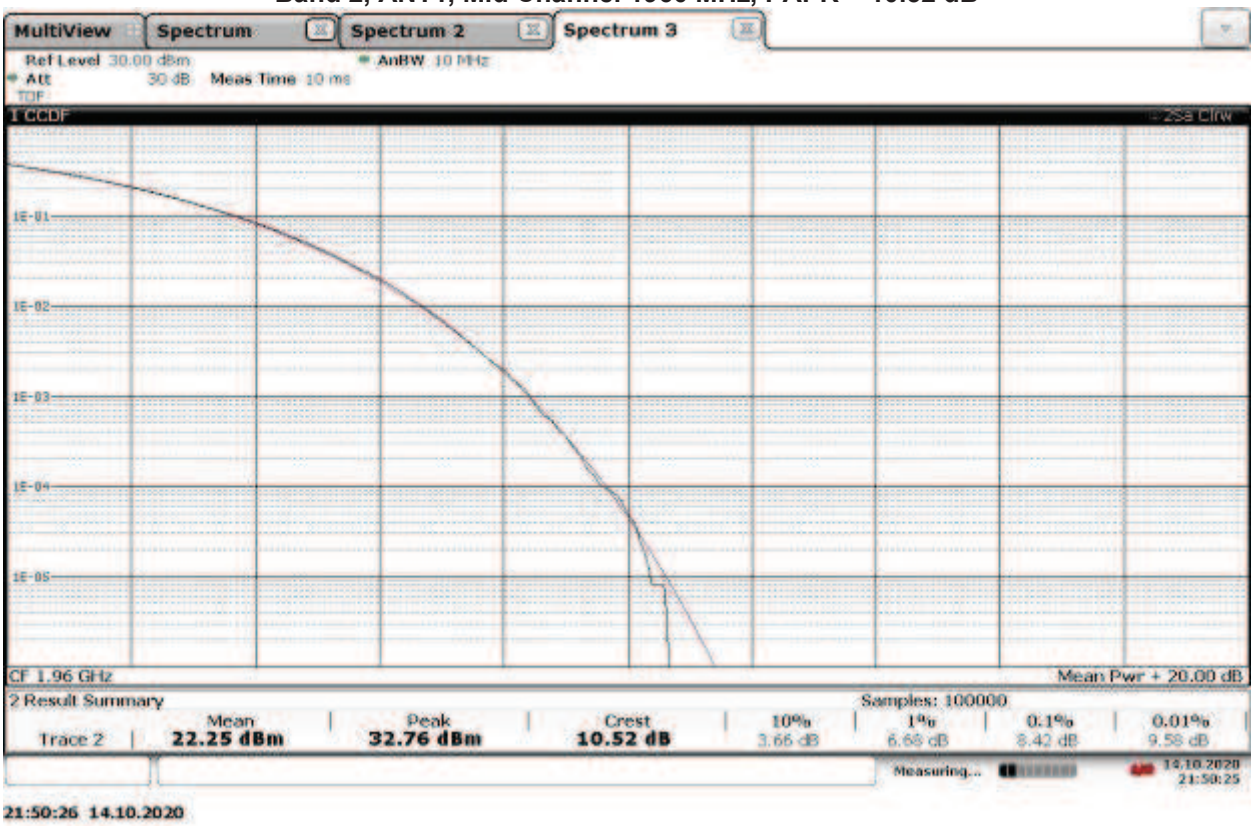
TM3.1-64QAM_10 MHz Bandwidth
Band 2, ANT1, Low Channel 1935 MHz, PAPR = 10.03 dB



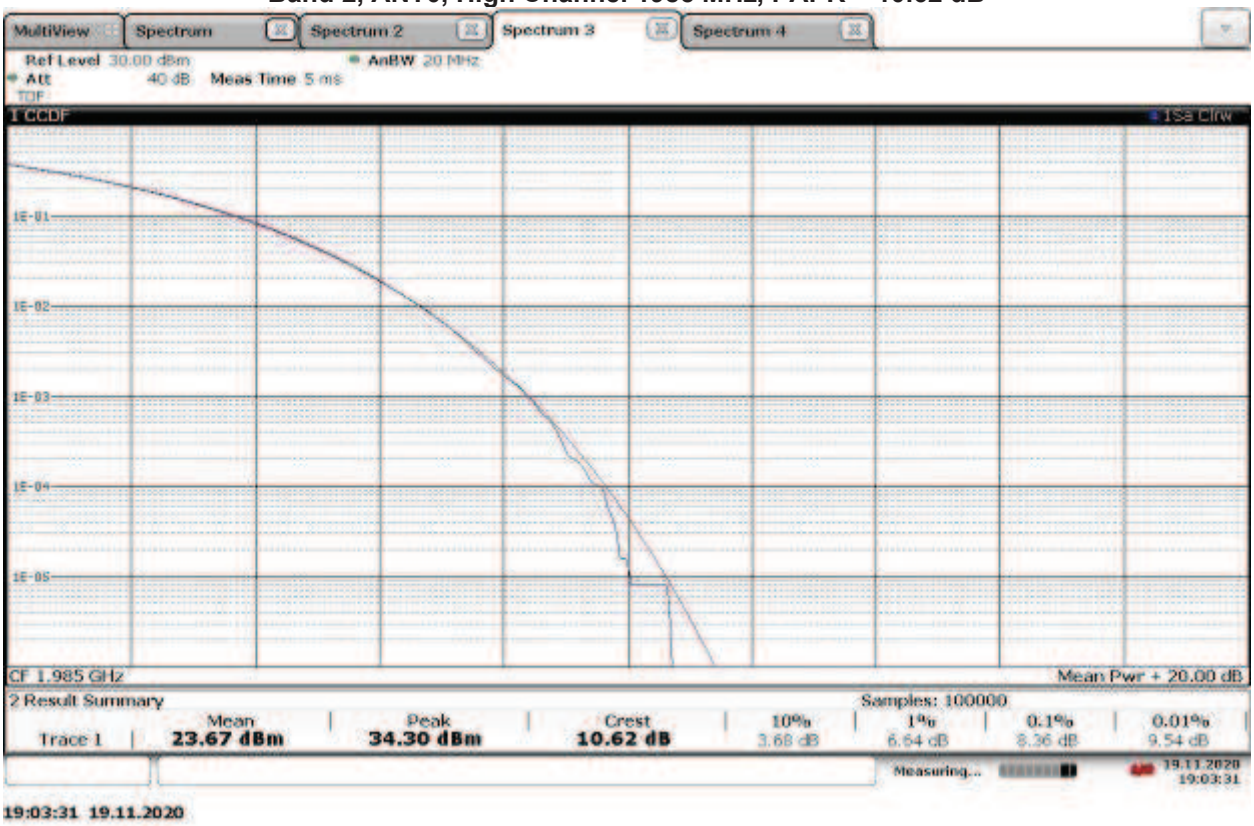
TM3.1-64QAM_10 MHz Bandwidth
Band 2, ANT0, Mid Channel 1960 MHz, PAPR = 10.96 dB



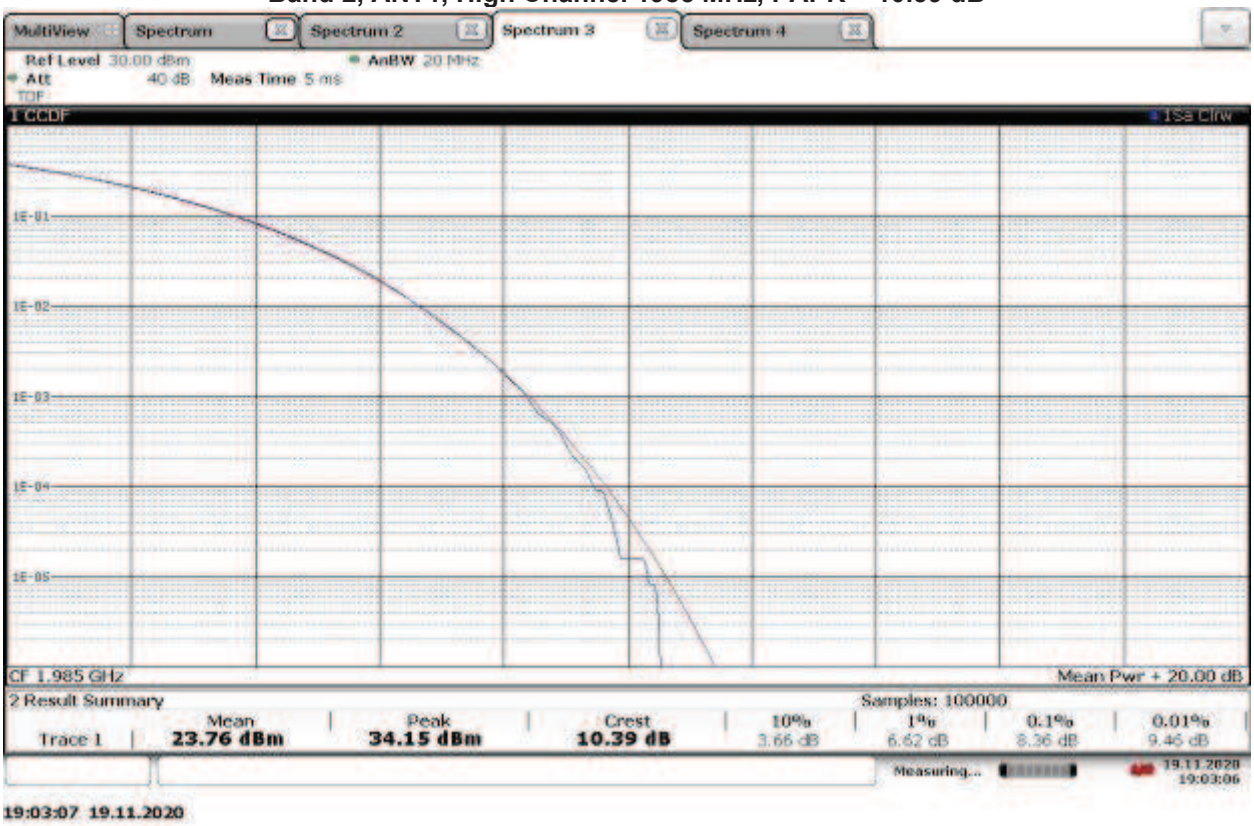
TM3.1-64QAM_10 MHz Bandwidth
Band 2, ANT1, Mid Channel 1960 MHz, PAPR = 10.52 dB



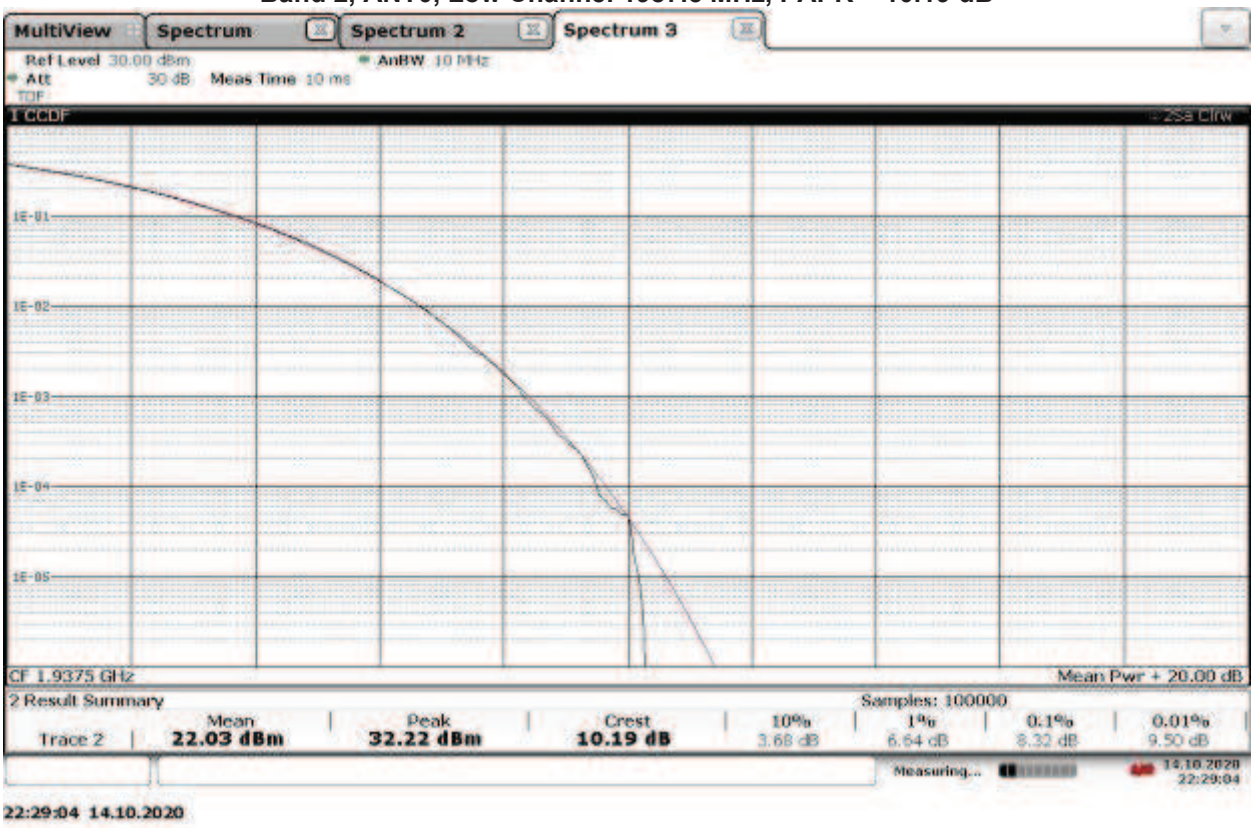
TM3.1-64QAM_10 MHz Bandwidth
Band 2, ANT0, High Channel 1985 MHz, PAPR = 10.62 dB



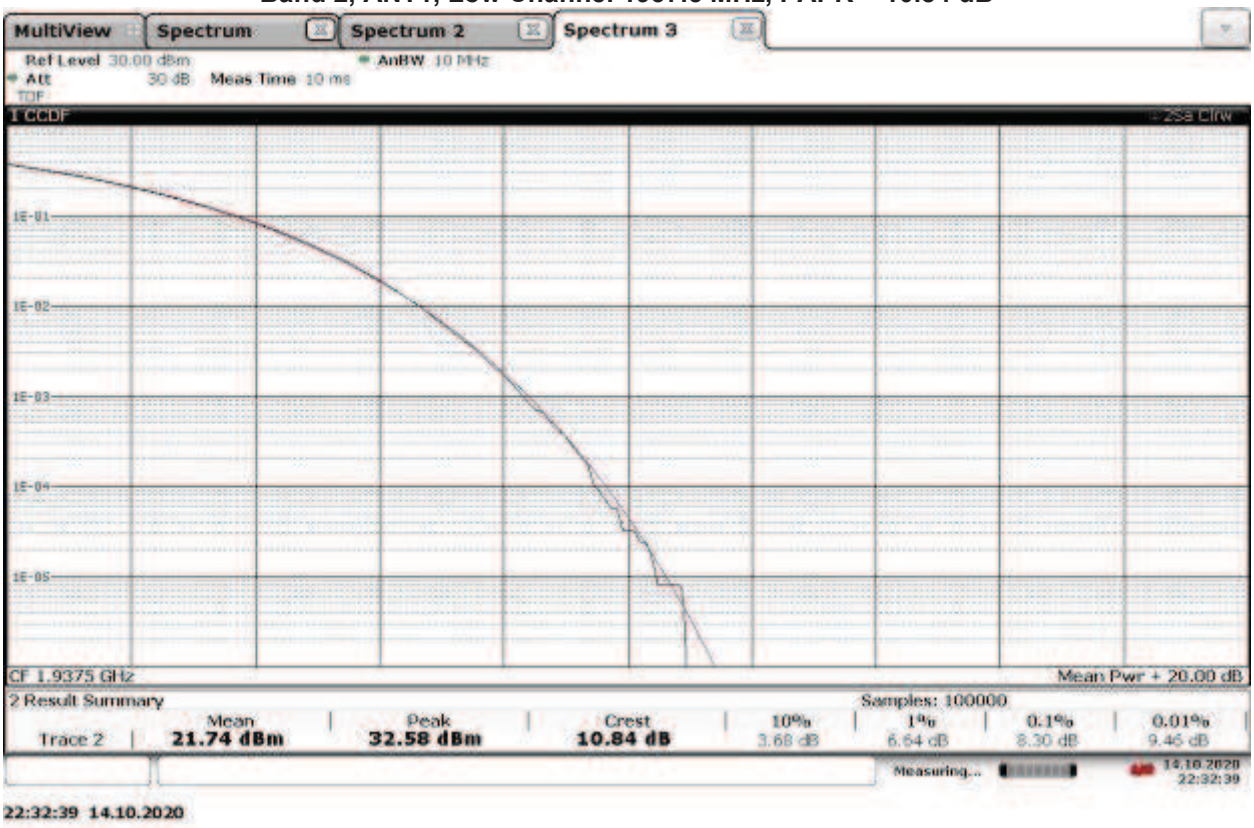
TM3.1-64QAM_10 MHz Bandwidth
Band 2, ANT1, High Channel 1985 MHz, PAPR = 10.39 dB



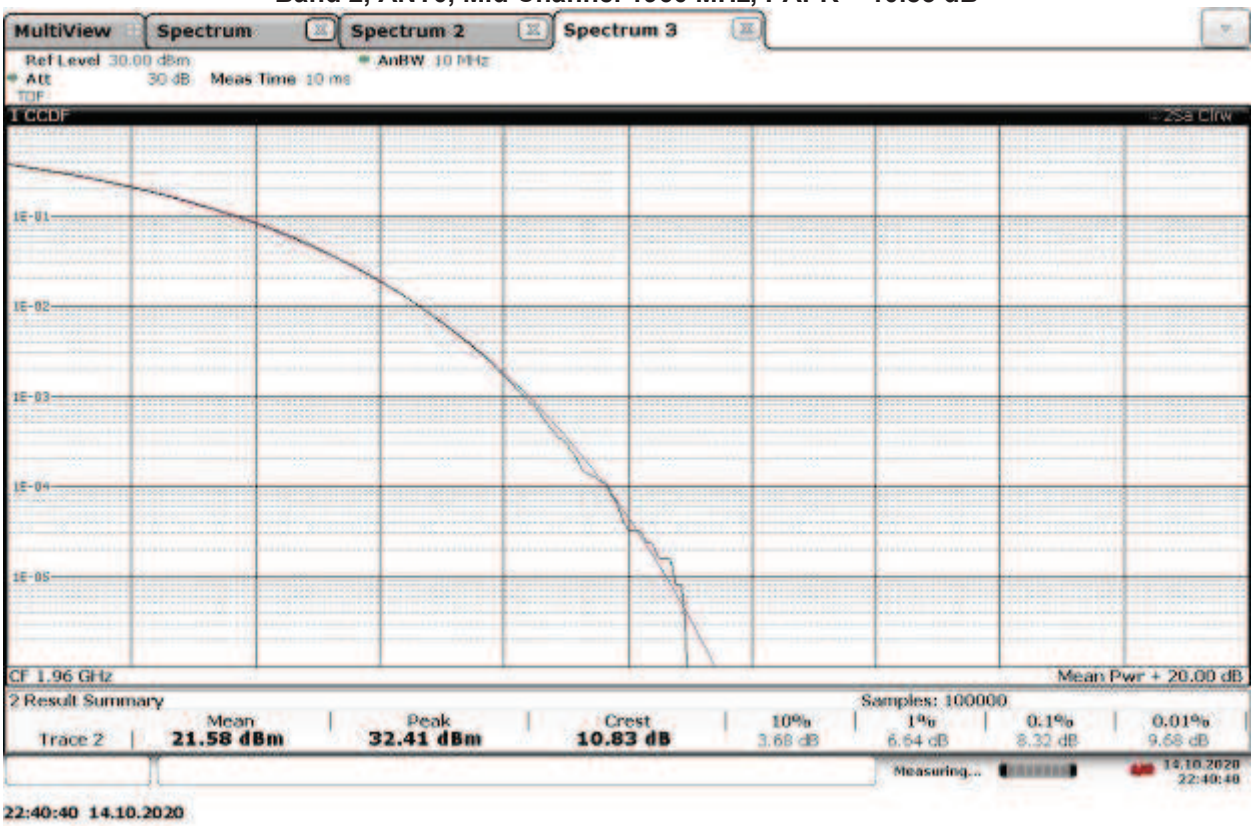
TM3.1-64QAM_15 MHz Bandwidth
Band 2, ANT0, Low Channel 1987.5 MHz, PAPR = 10.19 dB



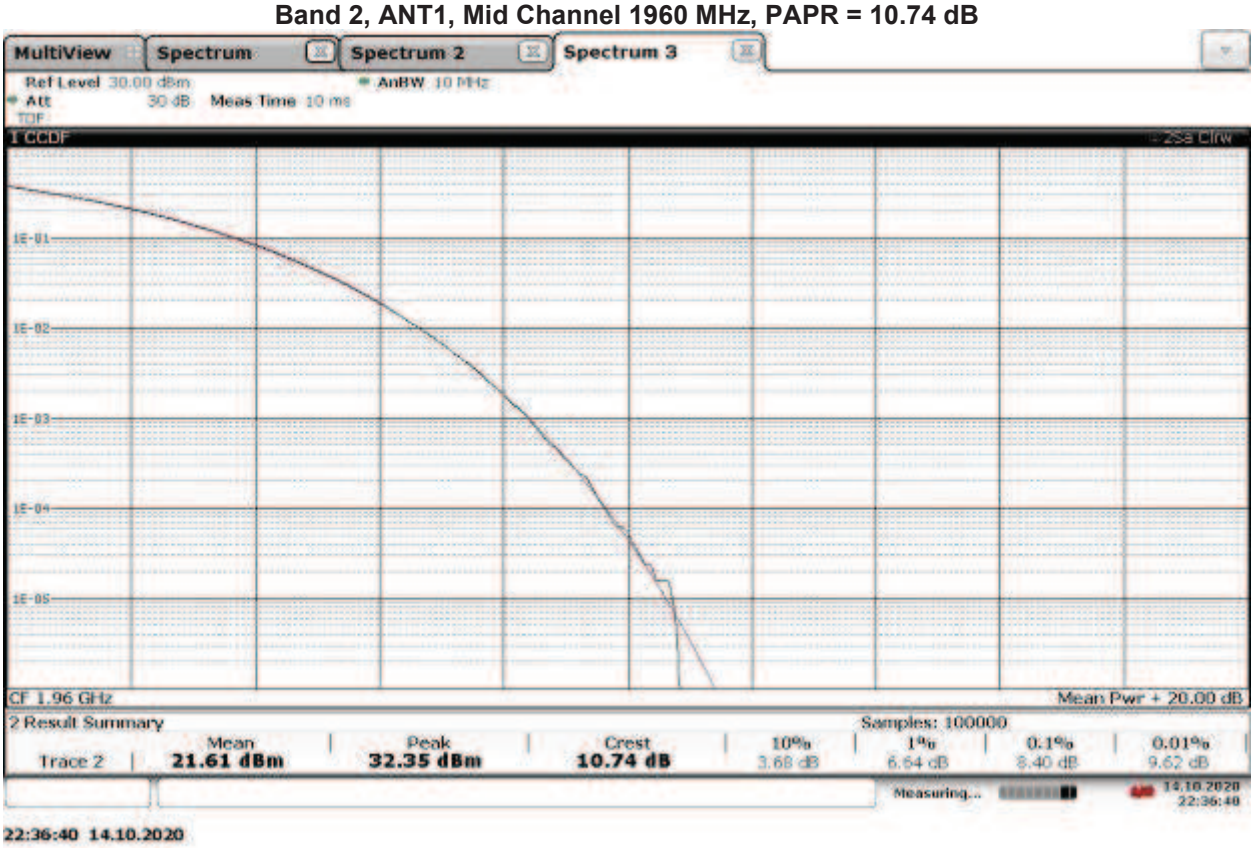
TM3.1-64QAM_15 MHz Bandwidth
Band 2, ANT1, Low Channel 1937.5 MHz, PAPR = 10.84 dB



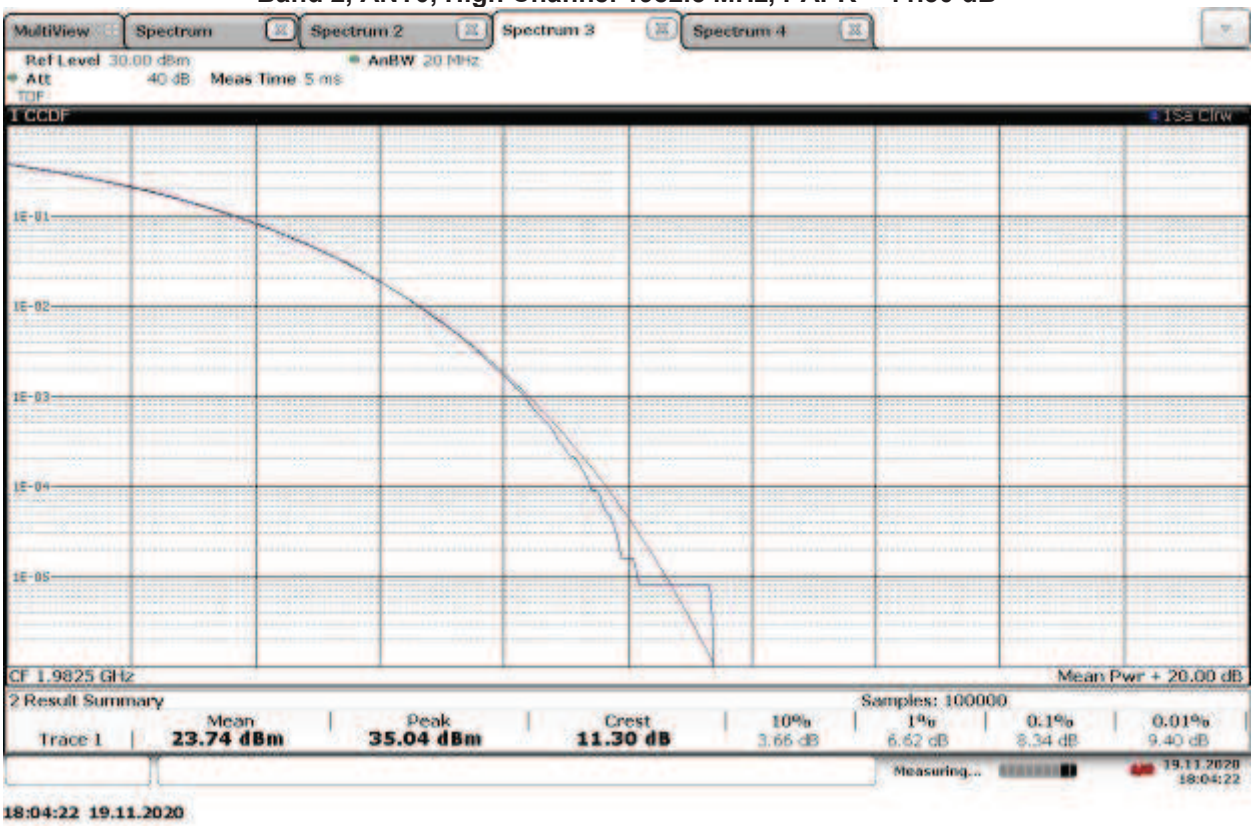
TM3.1-64QAM_15 MHz Bandwidth
Band 2, ANT0, Mid Channel 1960 MHz, PAPR = 10.83 dB



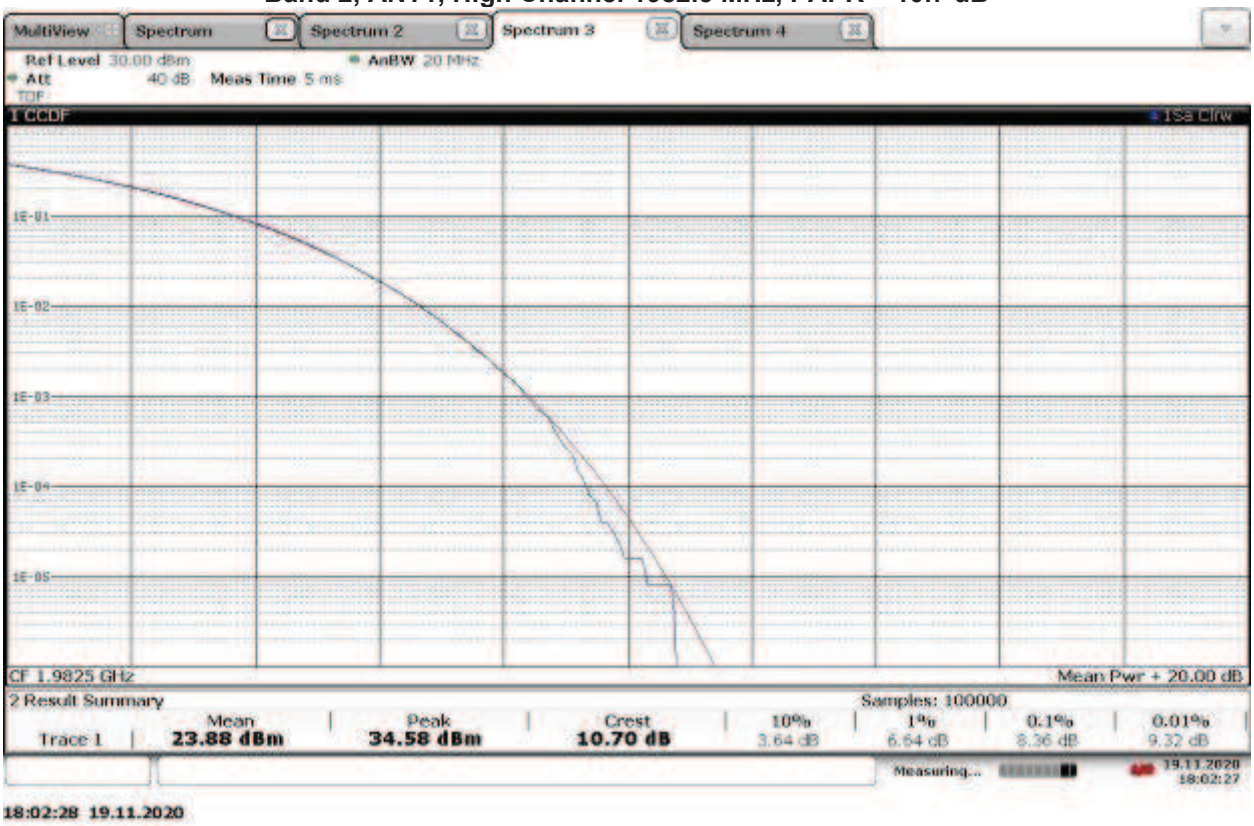
TM3.1-64QAM_15 MHz Bandwidth
Band 2, ANT1, Mid Channel 1960 MHz, PAPR = 10.74 dB



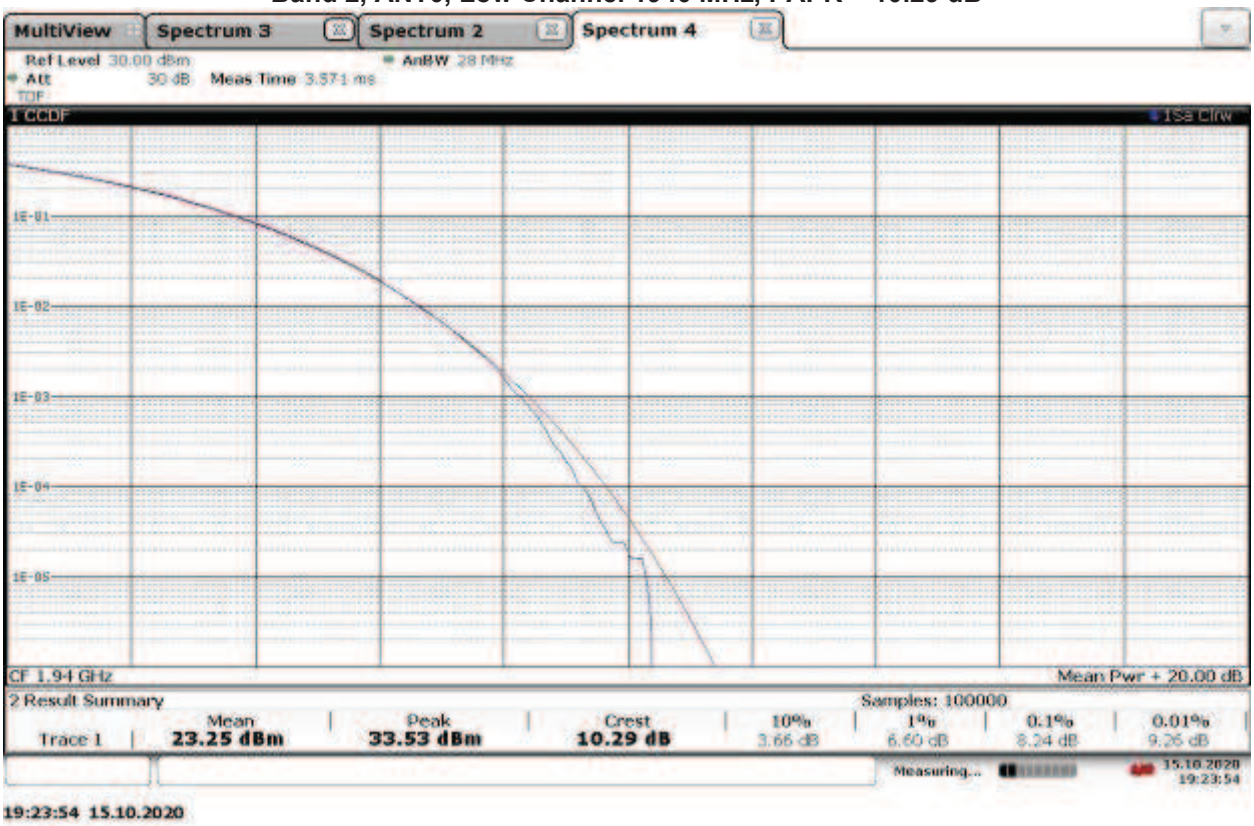
TM3.1-64QAM_15 MHz Bandwidth
Band 2, ANT0, High Channel 1982.5 MHz, PAPR = 11.30 dB



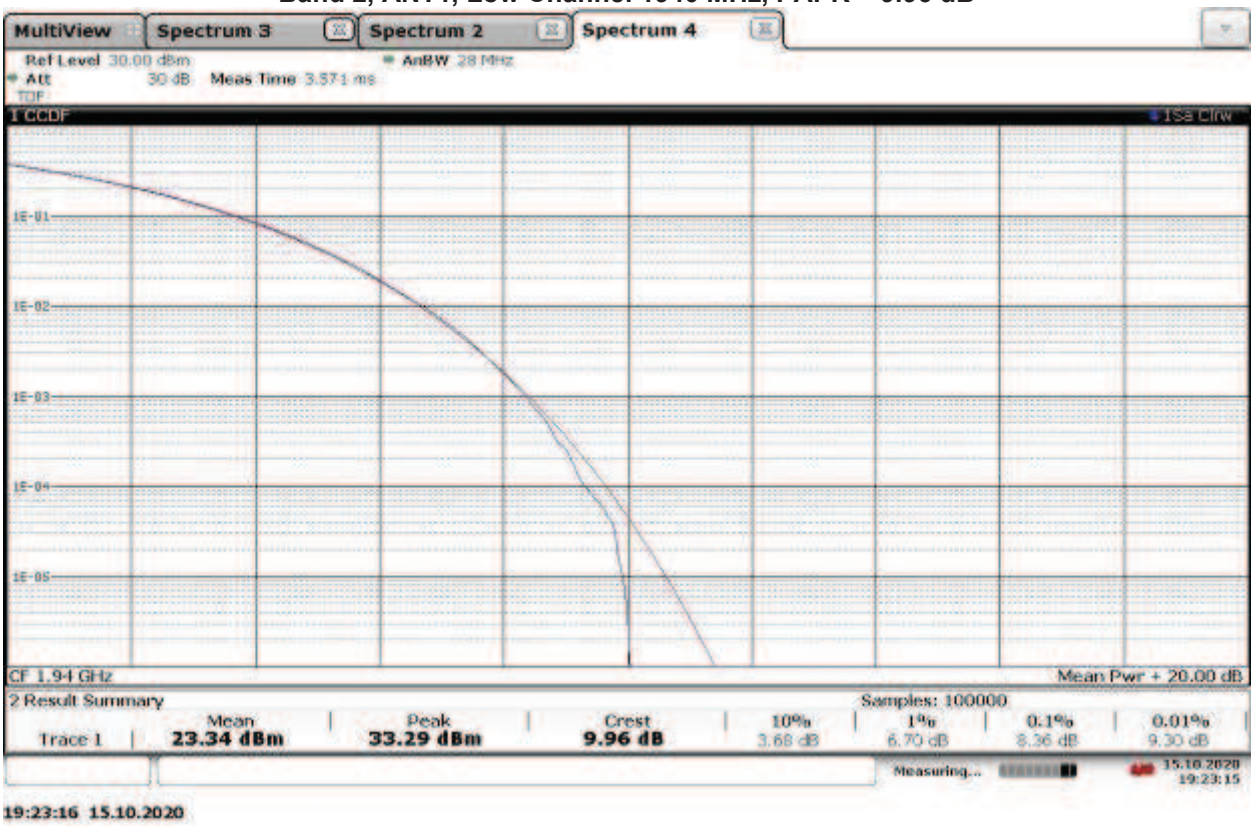
TM3.1-64QAM_15 MHz Bandwidth
Band 2, ANT1, High Channel 1982.5 MHz, PAPR = 10.7 dB



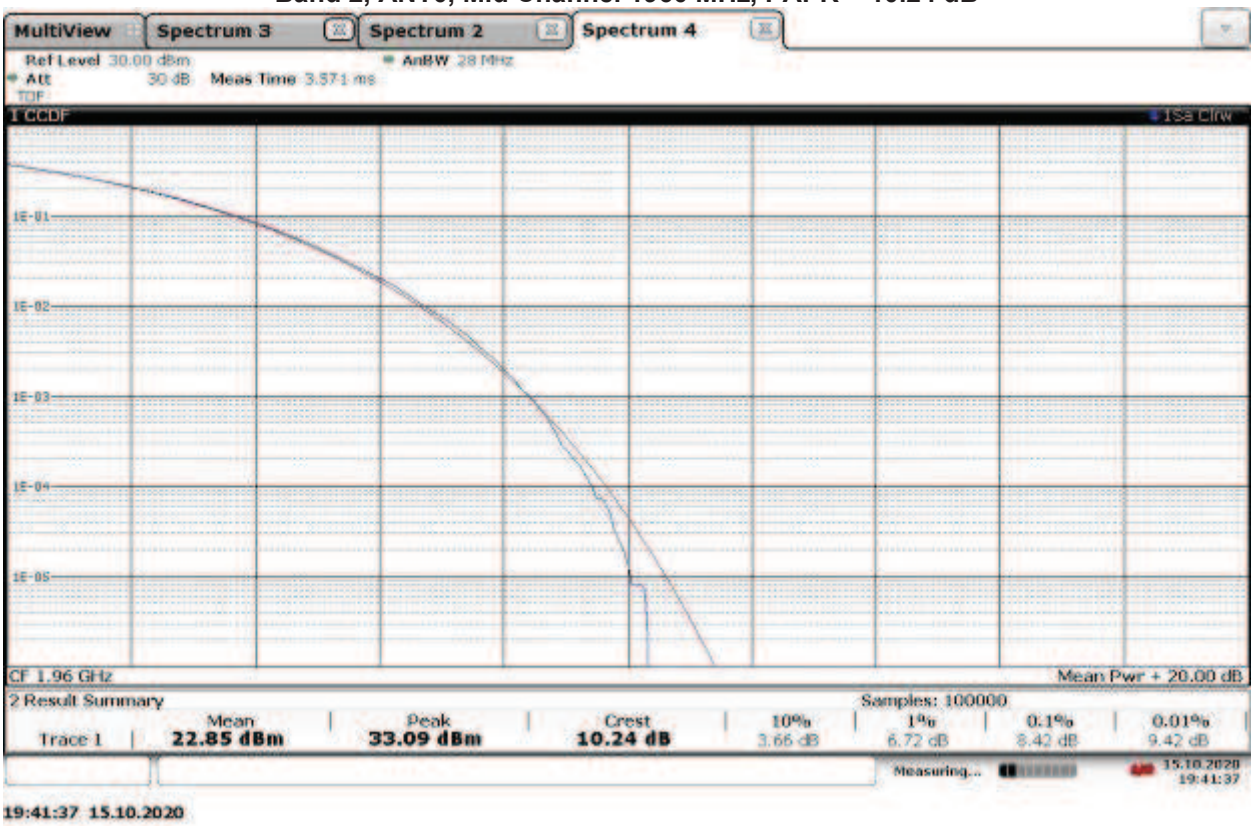
TM3.1-64QAM_20 MHz Bandwidth
Band 2, ANT0, Low Channel 1940 MHz, PAPR = 10.29 dB



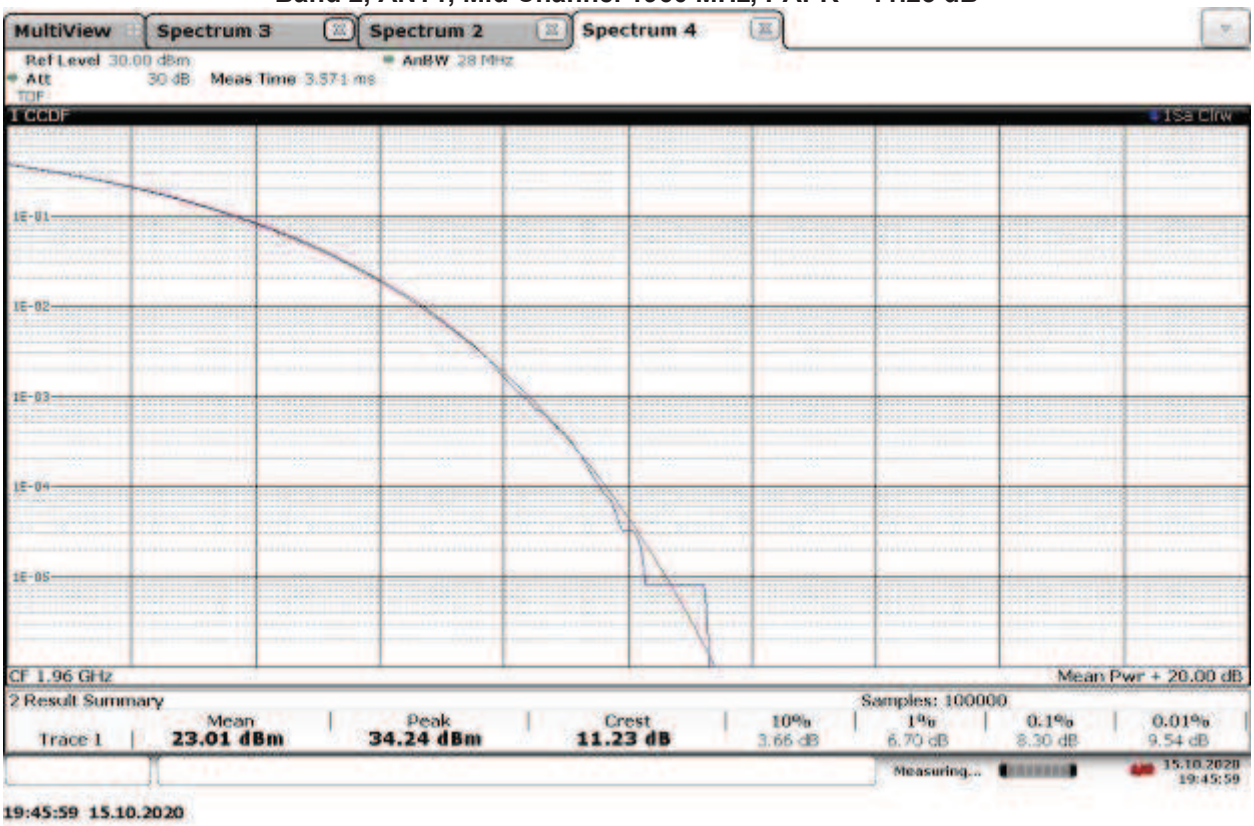
TM3.1-64QAM_20 MHz Bandwidth
Band 2, ANT1, Low Channel 1940 MHz, PAPR = 9.96 dB



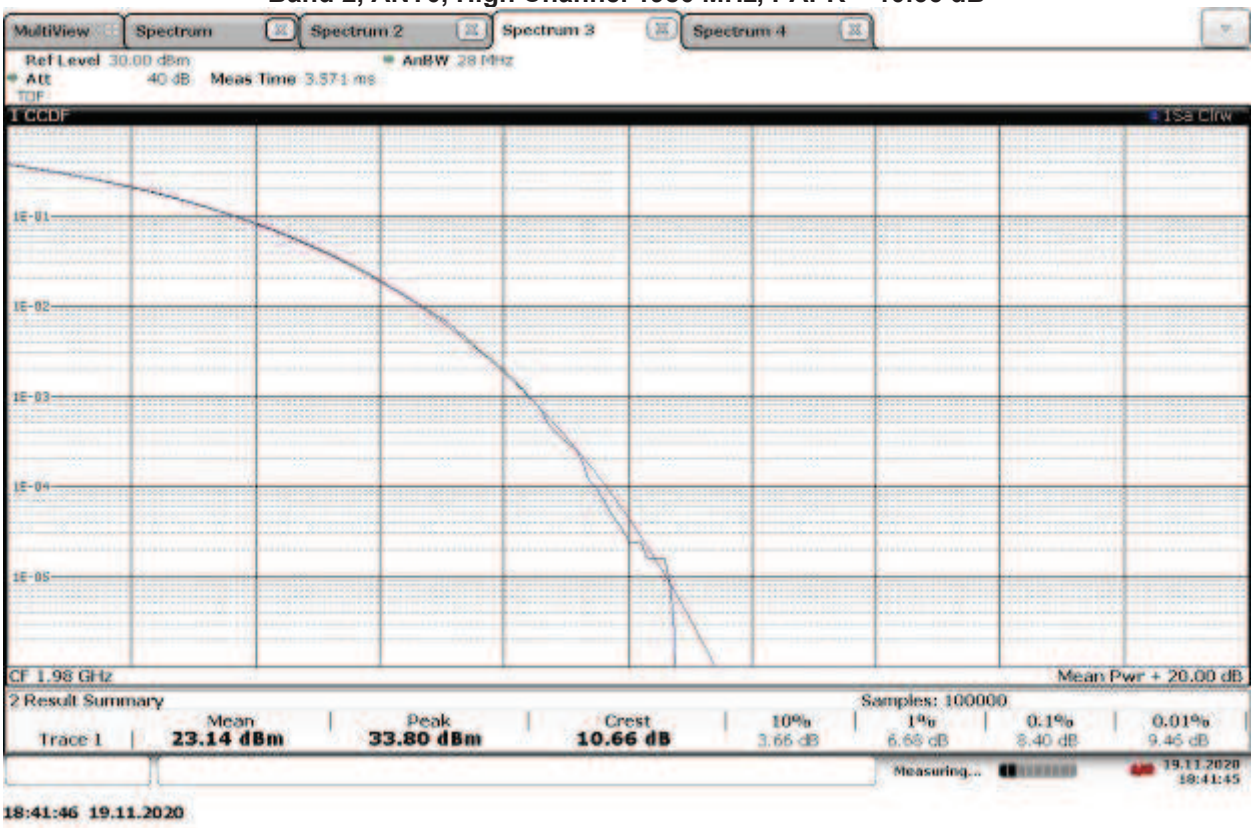
TM3.1-64QAM_20 MHz Bandwidth
Band 2, ANT0, Mid Channel 1960 MHz, PAPR = 10.24 dB



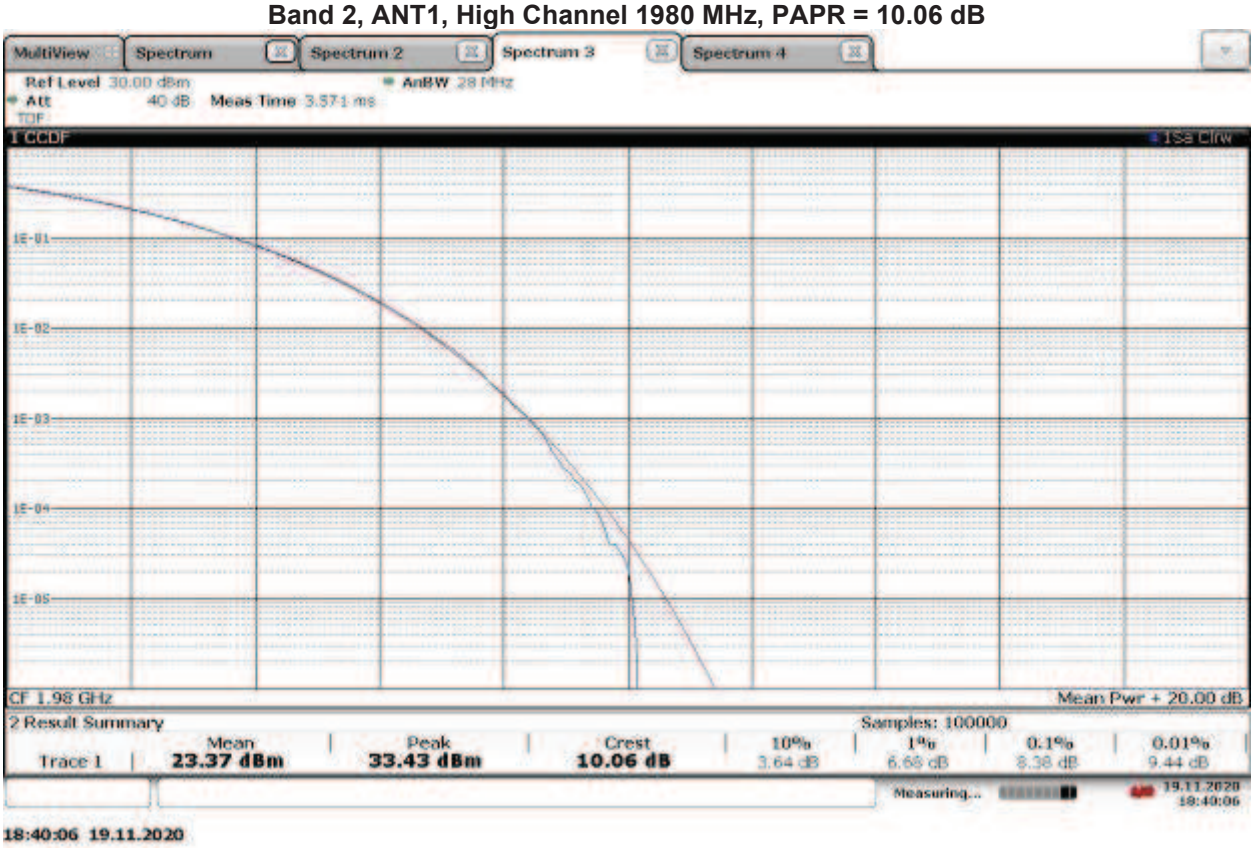
TM3.1-64QAM_20 MHz Bandwidth
Band 2, ANT1, Mid Channel 1960 MHz, PAPR = 11.23 dB



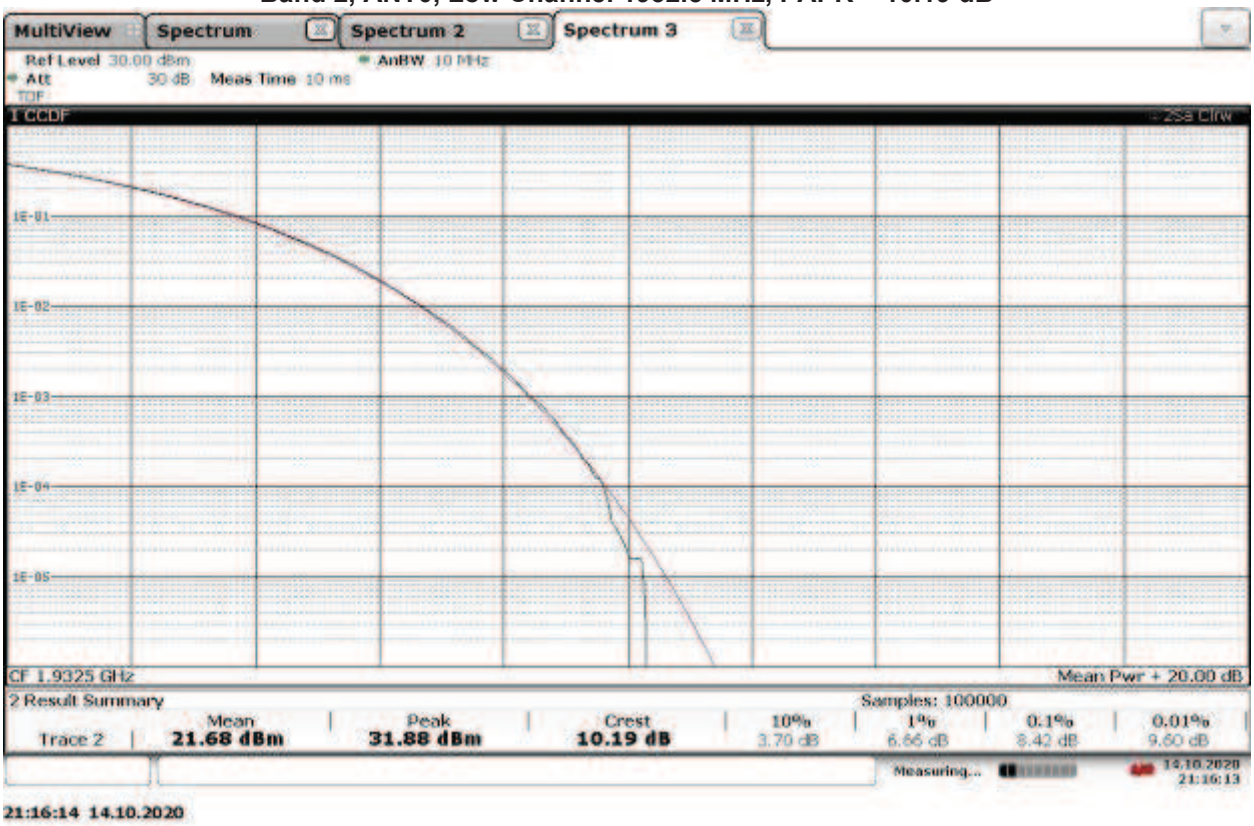
TM3.1-64QAM_20 MHz Bandwidth
Band 2, ANT0, High Channel 1980 MHz, PAPR = 10.66 dB



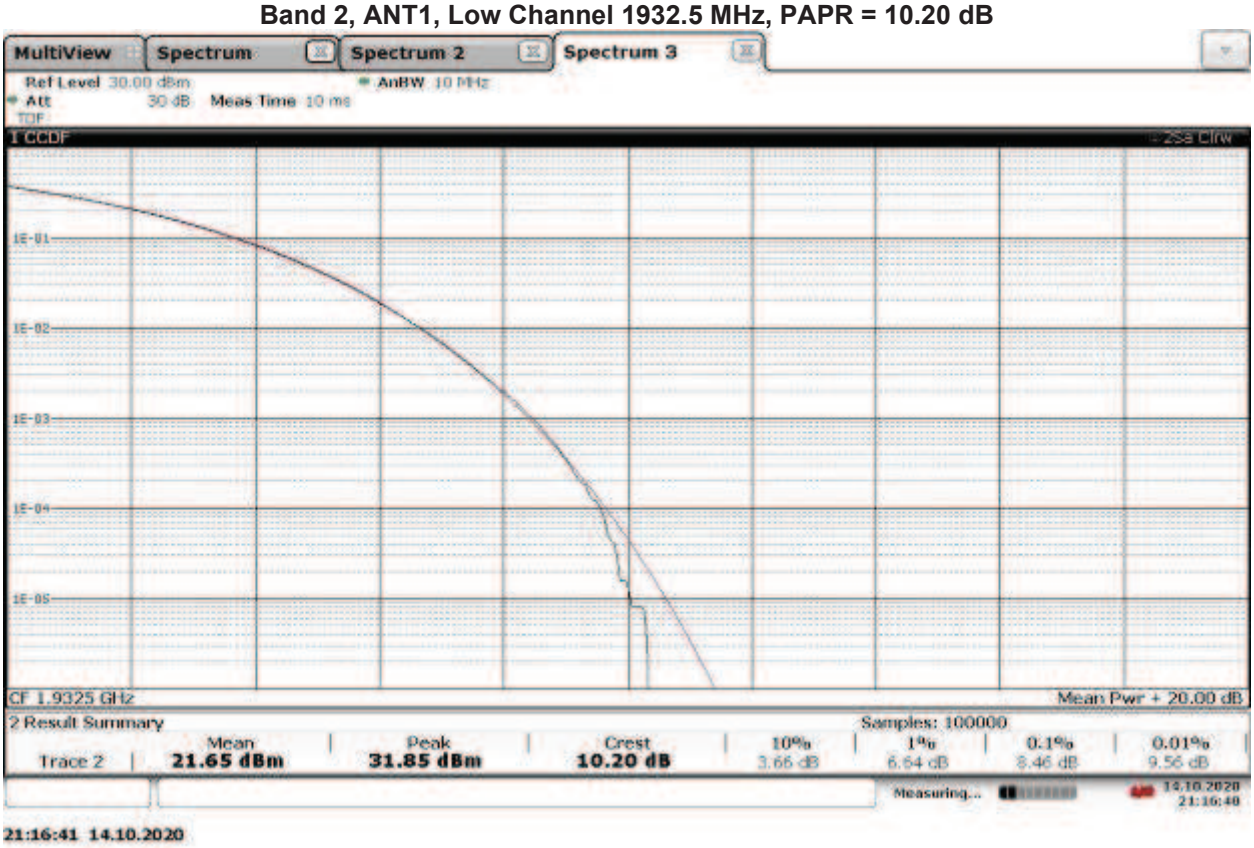
TM3.1-64QAM_20 MHz Bandwidth
Band 2, ANT1, High Channel 1980 MHz, PAPR = 10.06 dB



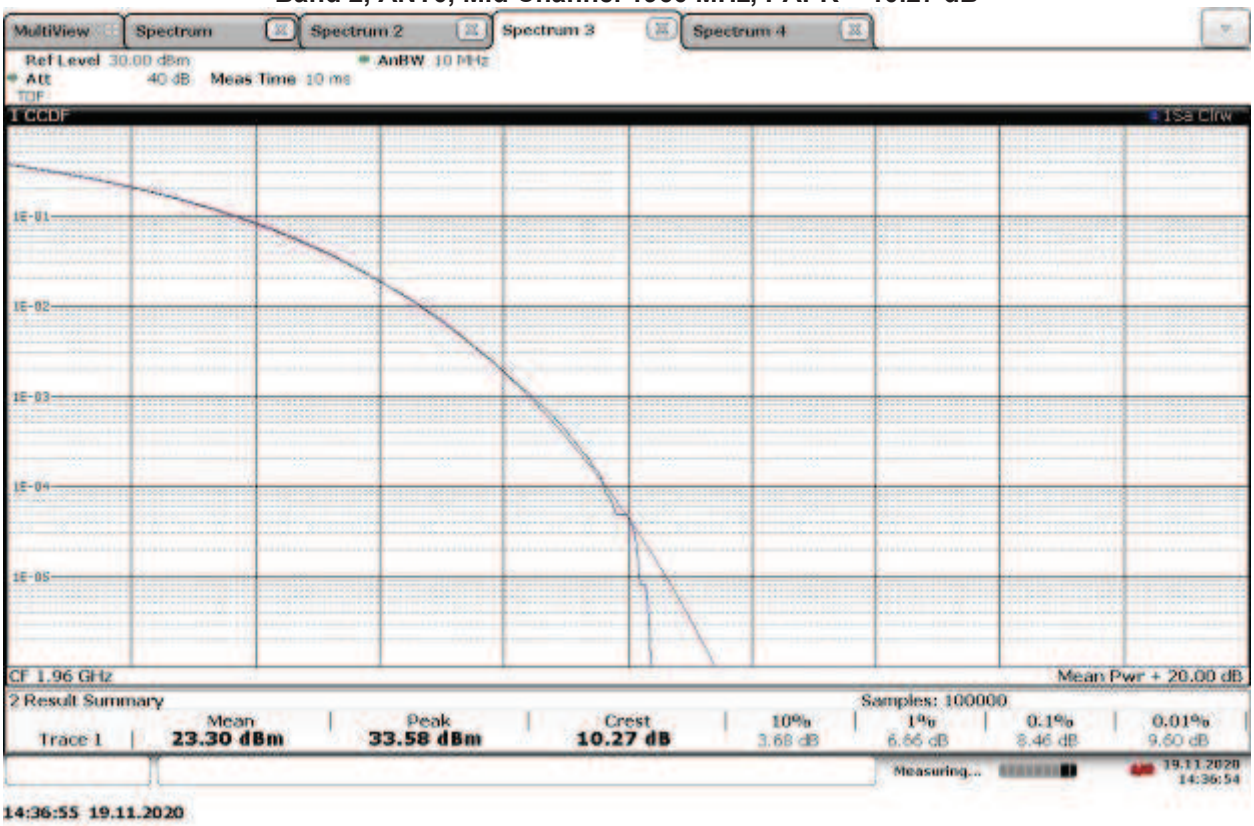
TM3.1a - 256QAM_5MHz Bandwidth
Band 2, ANT0, Low Channel 1932.5 MHz, PAPR = 10.19 dB



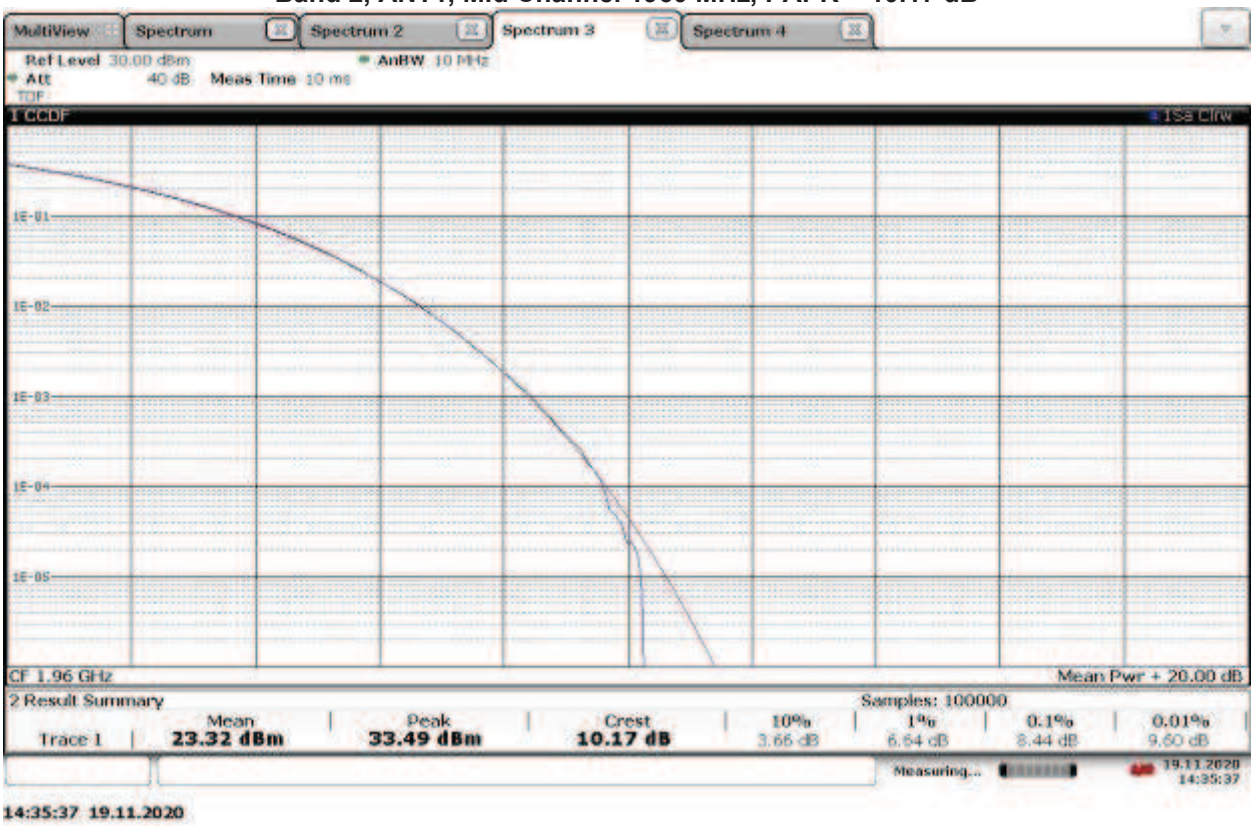
TM3.1a - 256QAM_5MHz Bandwidth
Band 2, ANT1, Low Channel 1932.5 MHz, PAPR = 10.20 dB



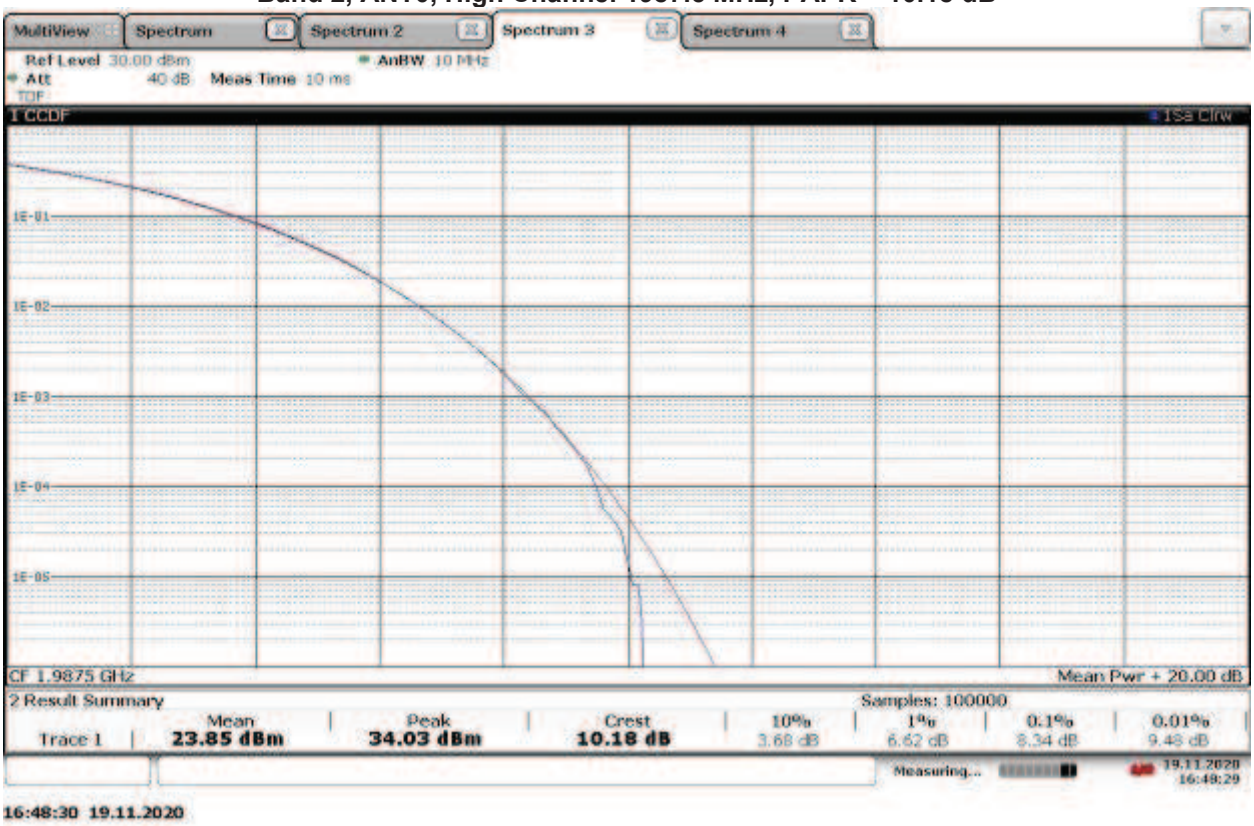
TM3.1a - 256QAM_5MHz Bandwidth
Band 2, ANT0, Mid Channel 1960 MHz, PAPR = 10.27 dB



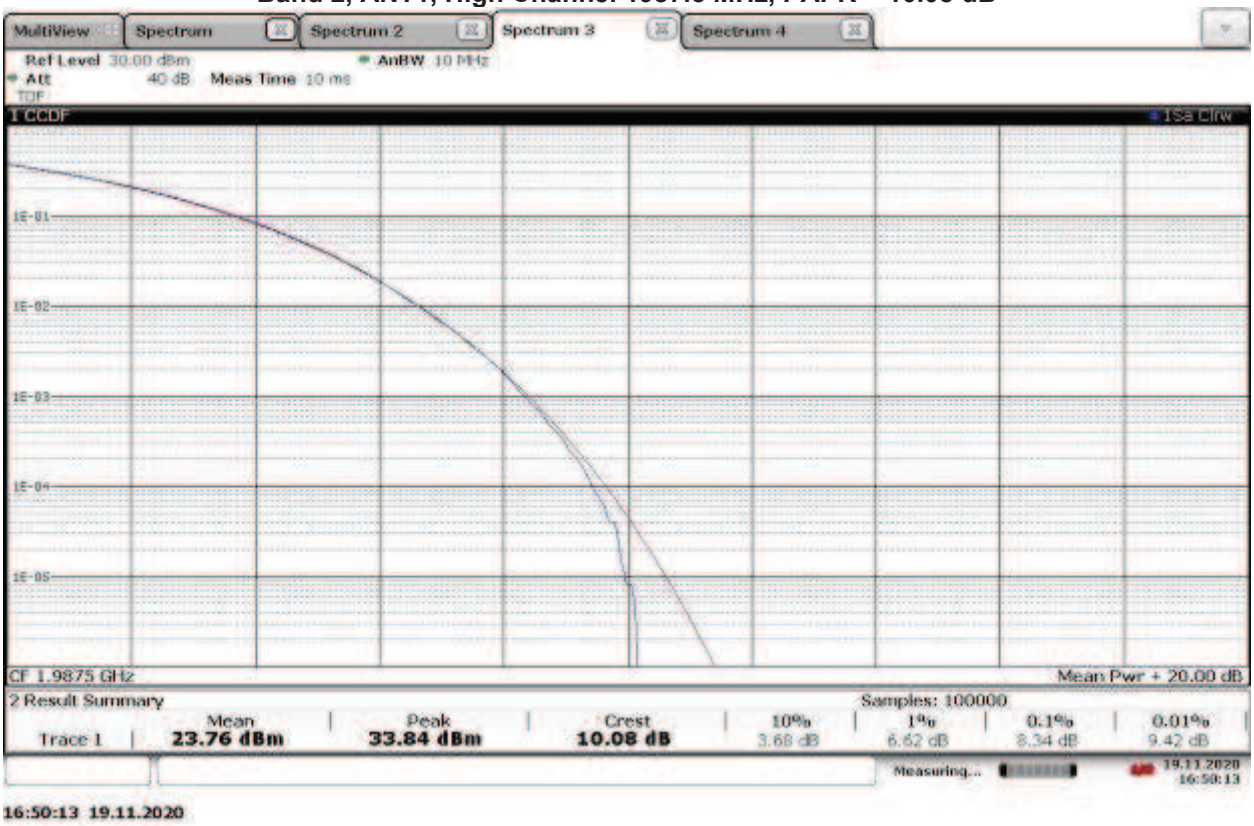
TM3.1a - 256QAM_5MHz Bandwidth
Band 2, ANT1, Mid Channel 1960 MHz, PAPR = 10.17 dB



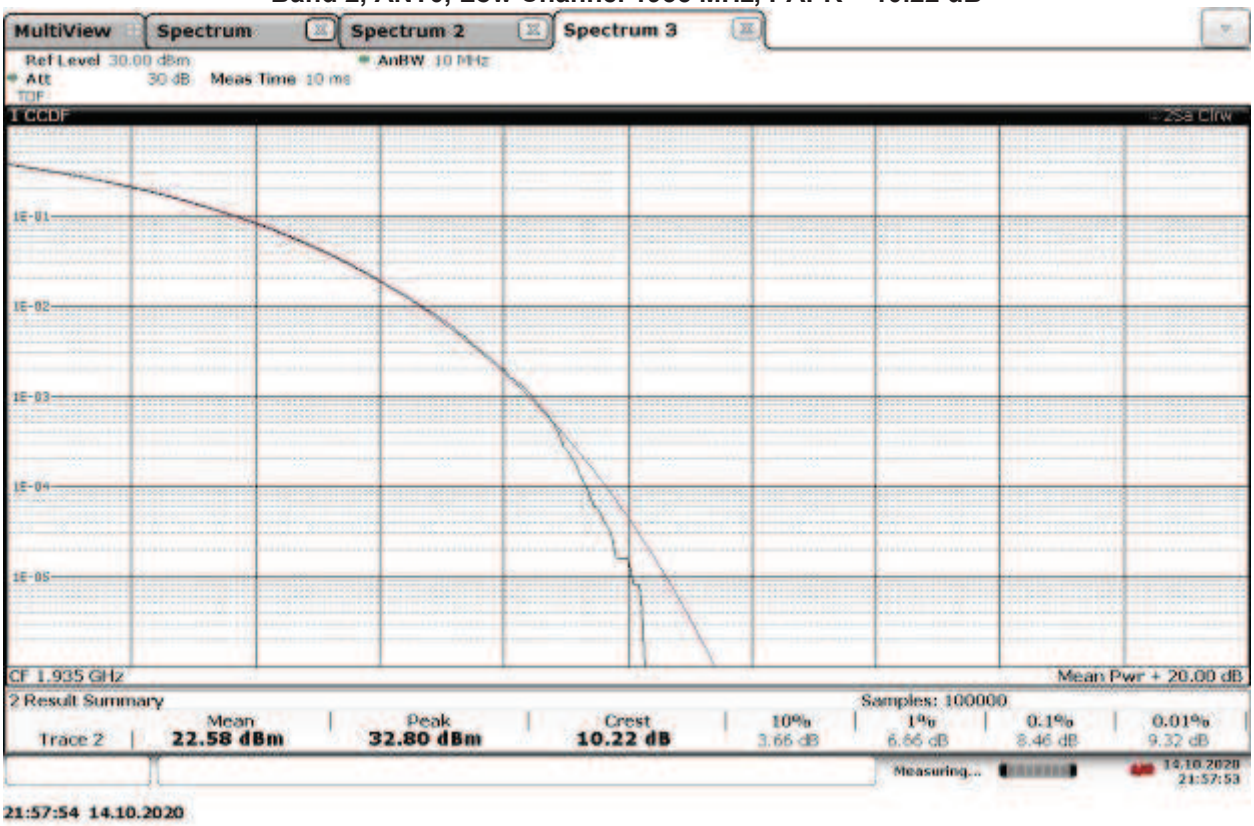
TM3.1a - 256QAM_5MHz Bandwidth
Band 2, ANT0, High Channel 1987.5 MHz, PAPR = 10.18 dB



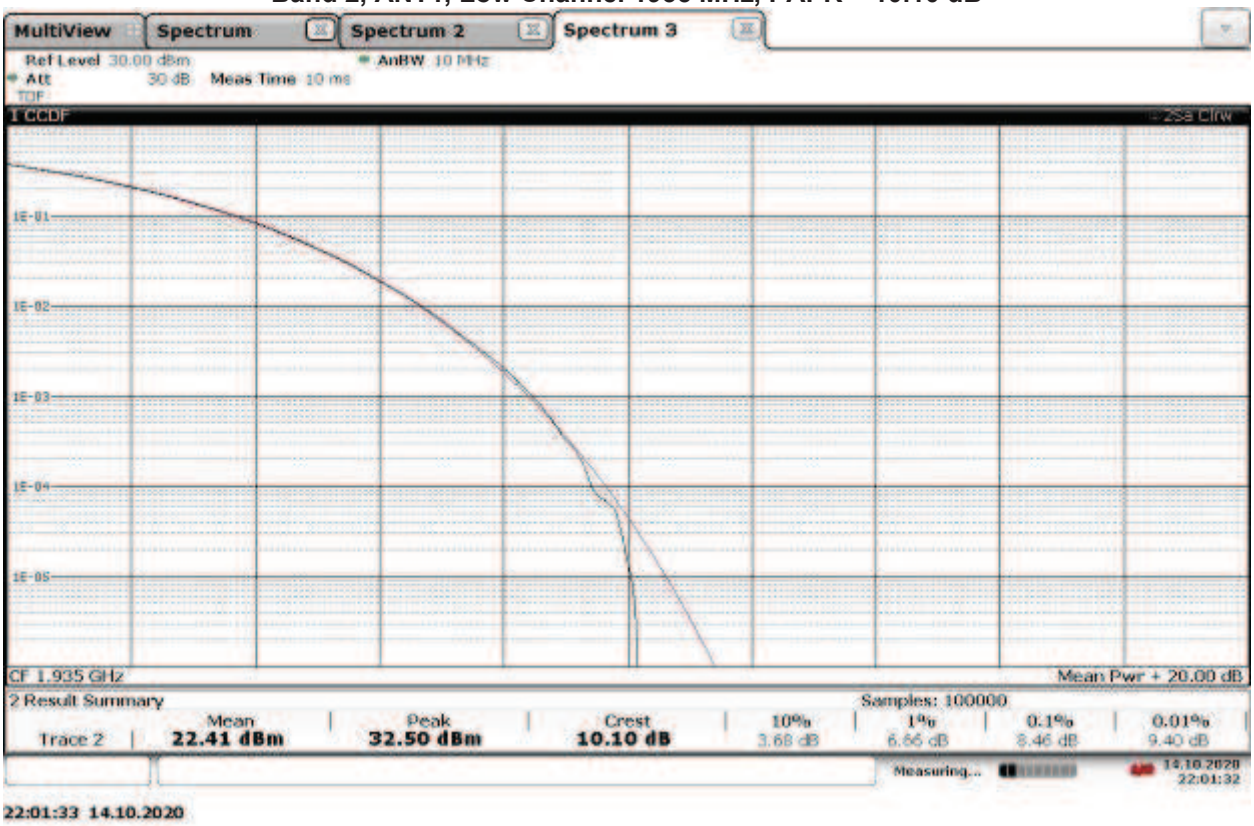
TM3.1a - 256QAM_5MHz Bandwidth
Band 2, ANT1, High Channel 1987.5 MHz, PAPR = 10.08 dB



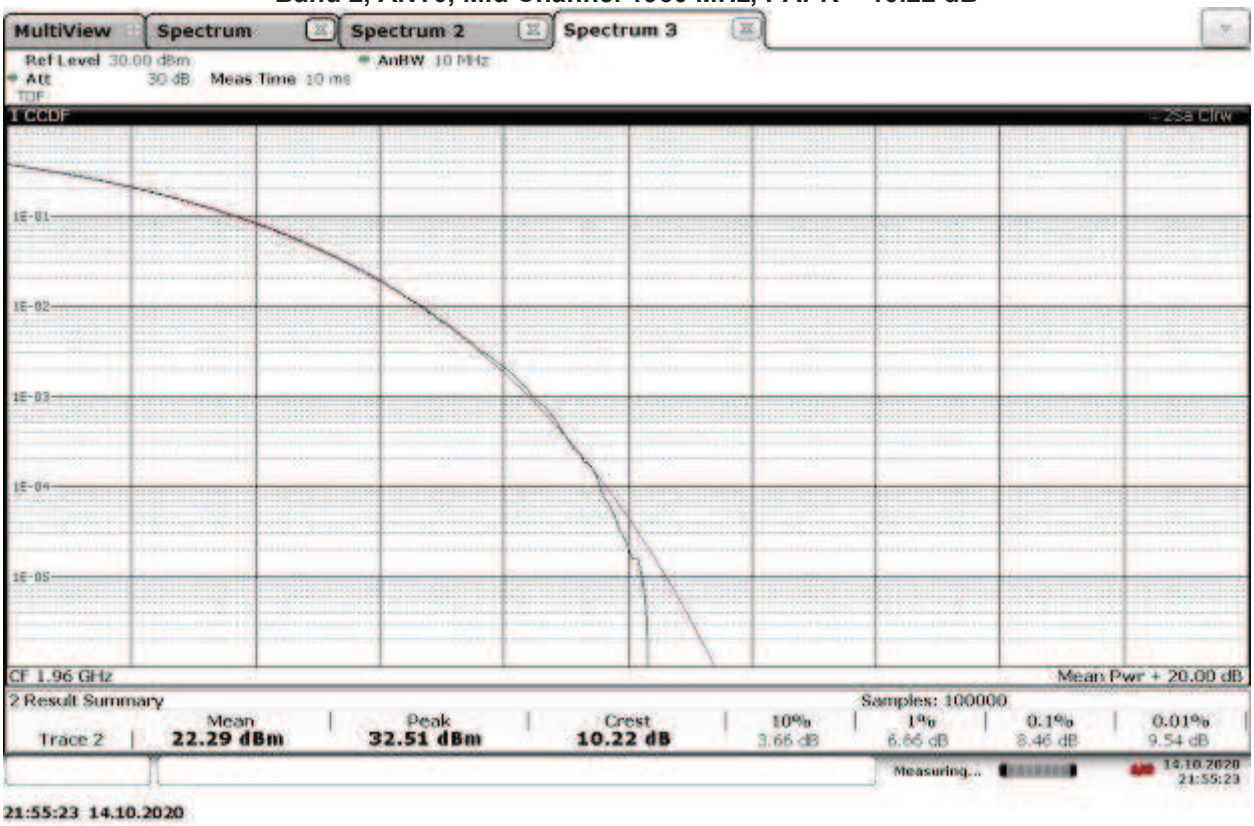
TM3.1a - 256QAM_10 MHz Bandwidth
Band 2, ANT0, Low Channel 1935 MHz, PAPR = 10.22 dB



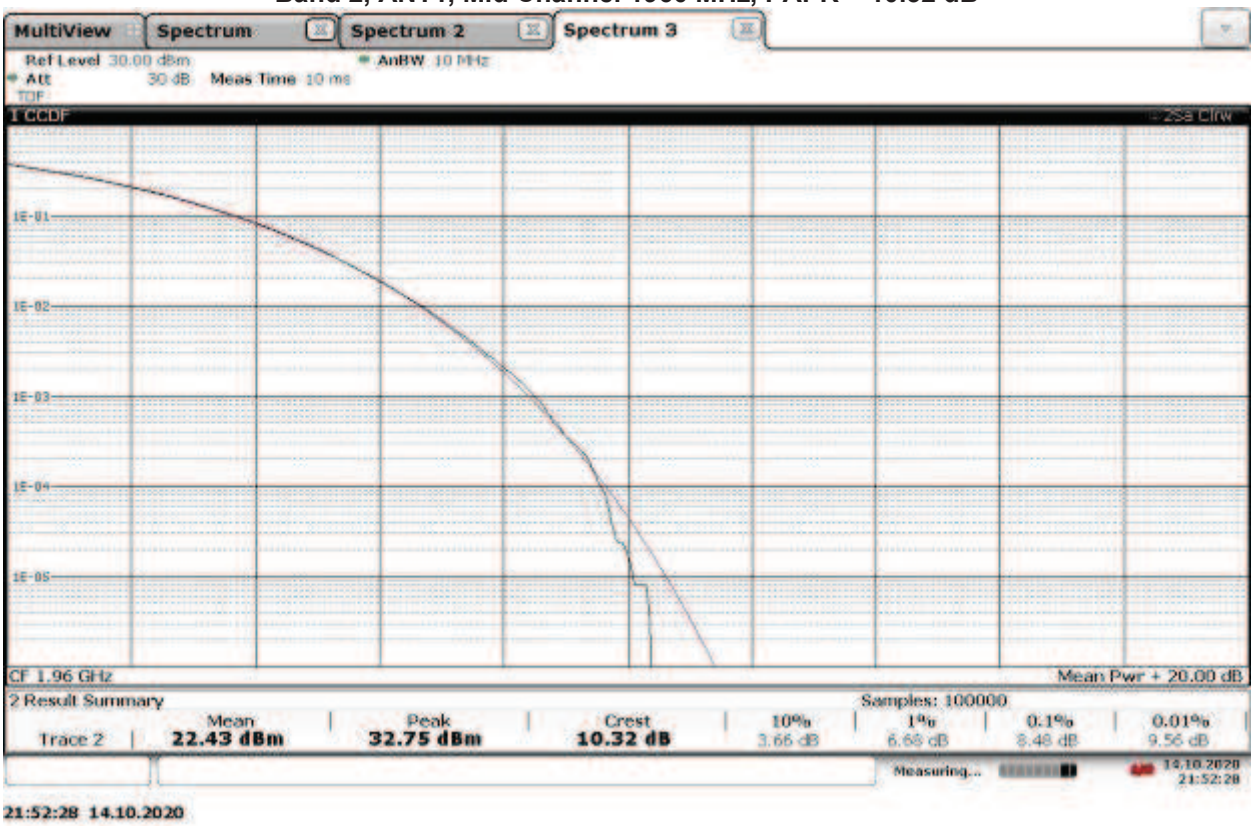
TM3.1a - 256QAM_10 MHz Bandwidth
Band 2, ANT1, Low Channel 1935 MHz, PAPR = 10.10 dB



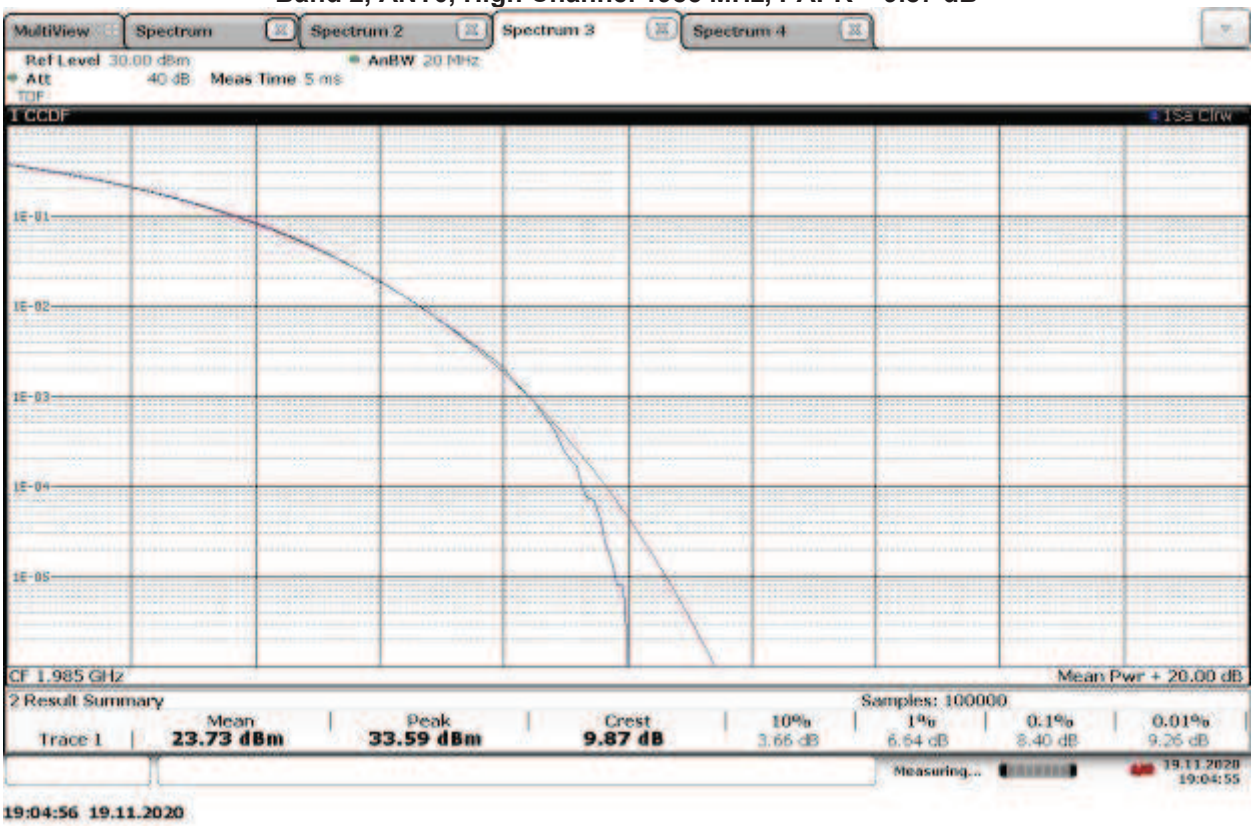
TM3.1a - 256QAM_10 MHz Bandwidth
Band 2, ANT0, Mid Channel 1960 MHz, PAPR = 10.22 dB



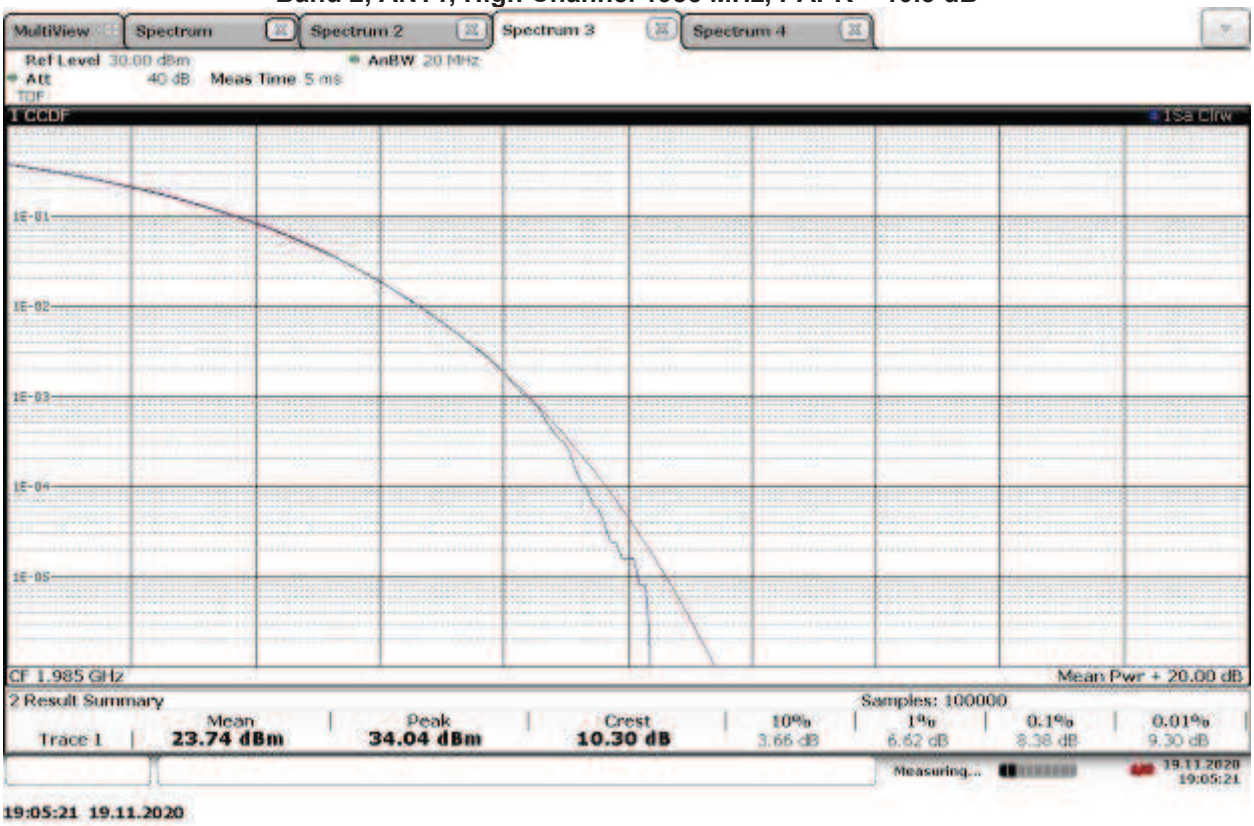
TM3.1a - 256QAM_10 MHz Bandwidth
Band 2, ANT1, Mid Channel 1960 MHz, PAPR = 10.32 dB



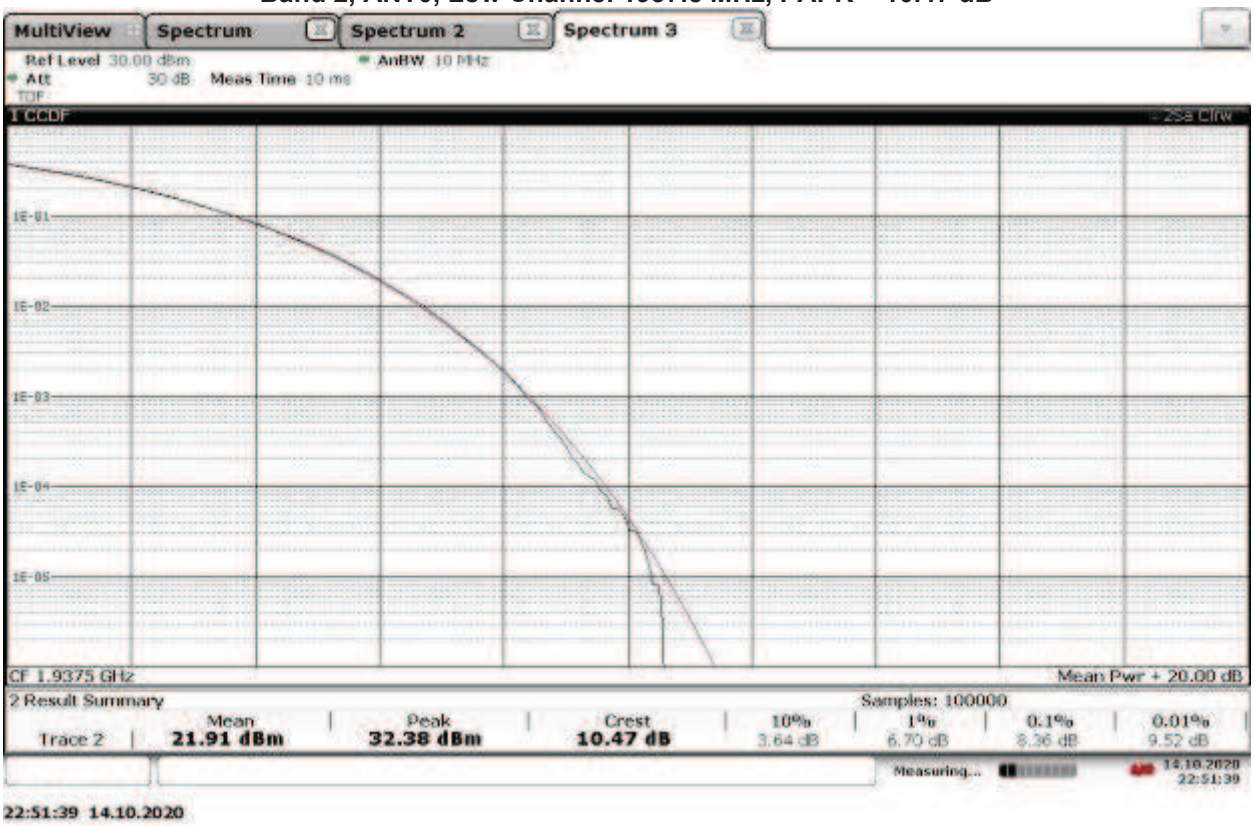
TM3.1a - 256QAM_10 MHz Bandwidth
Band 2, ANT0, High Channel 1985 MHz, PAPR = 9.87 dB



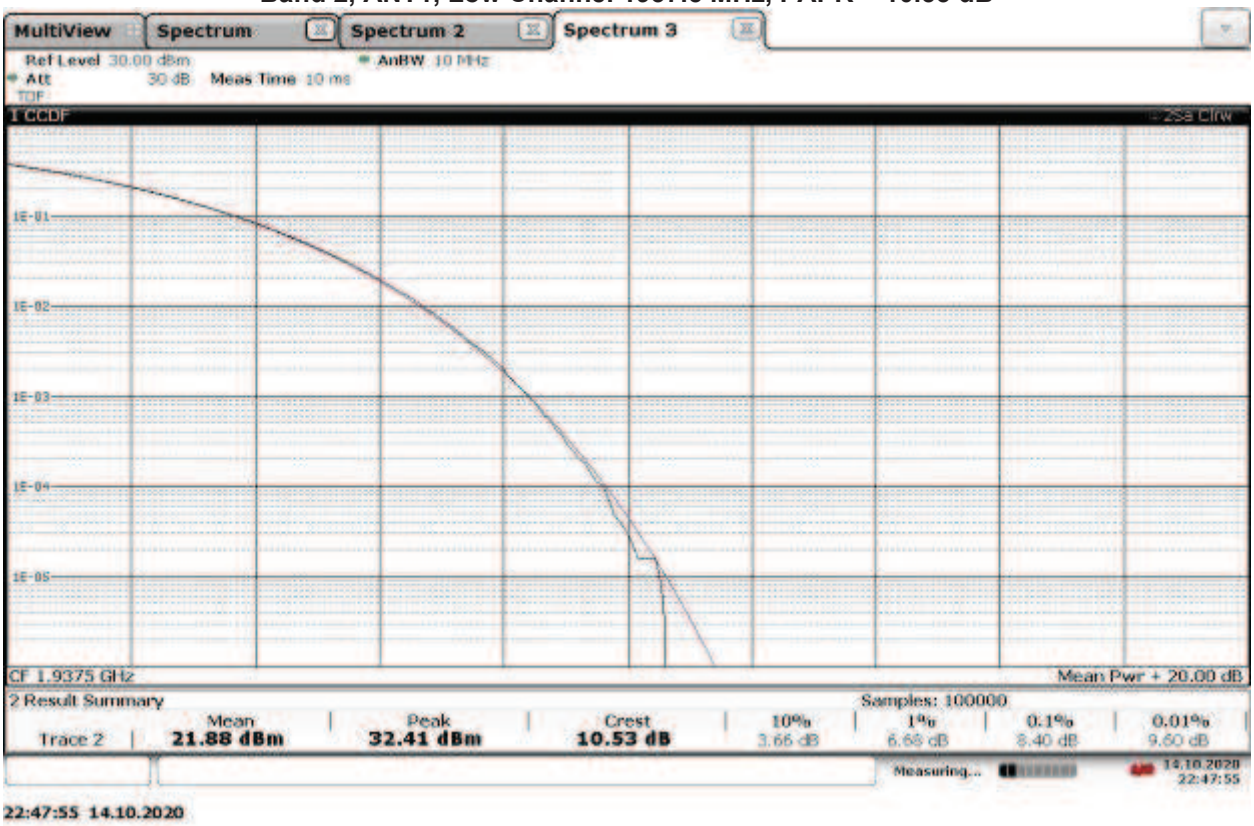
TM3.1a - 256QAM_10 MHz Bandwidth
Band 2, ANT1, High Channel 1985 MHz, PAPR = 10.3 dB



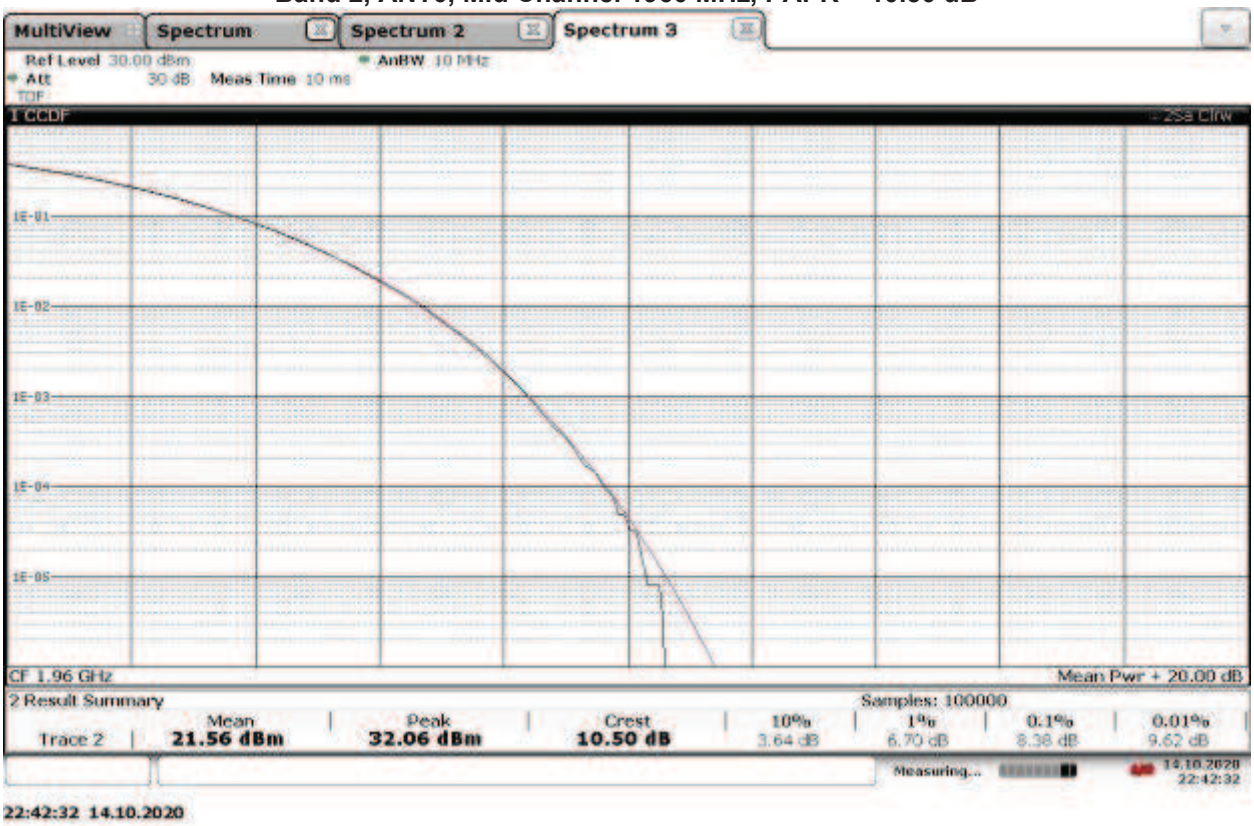
TM3.1a - 256QAM_15 MHz Bandwidth
Band 2, ANT0, Low Channel 1937.5 MHz, PAPR = 10.47 dB



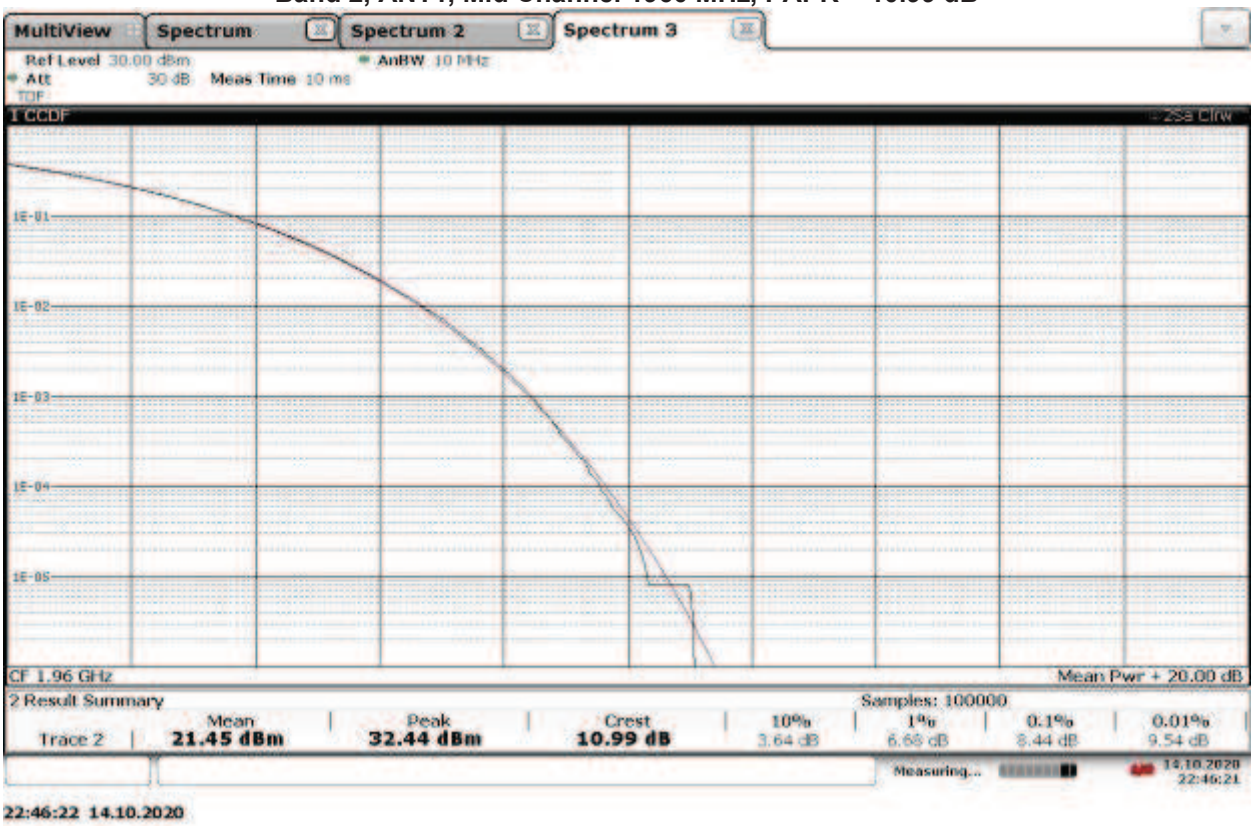
TM3.1a - 256QAM_15 MHz Bandwidth
Band 2, ANT1, Low Channel 1937.5 MHz, PAPR = 10.53 dB



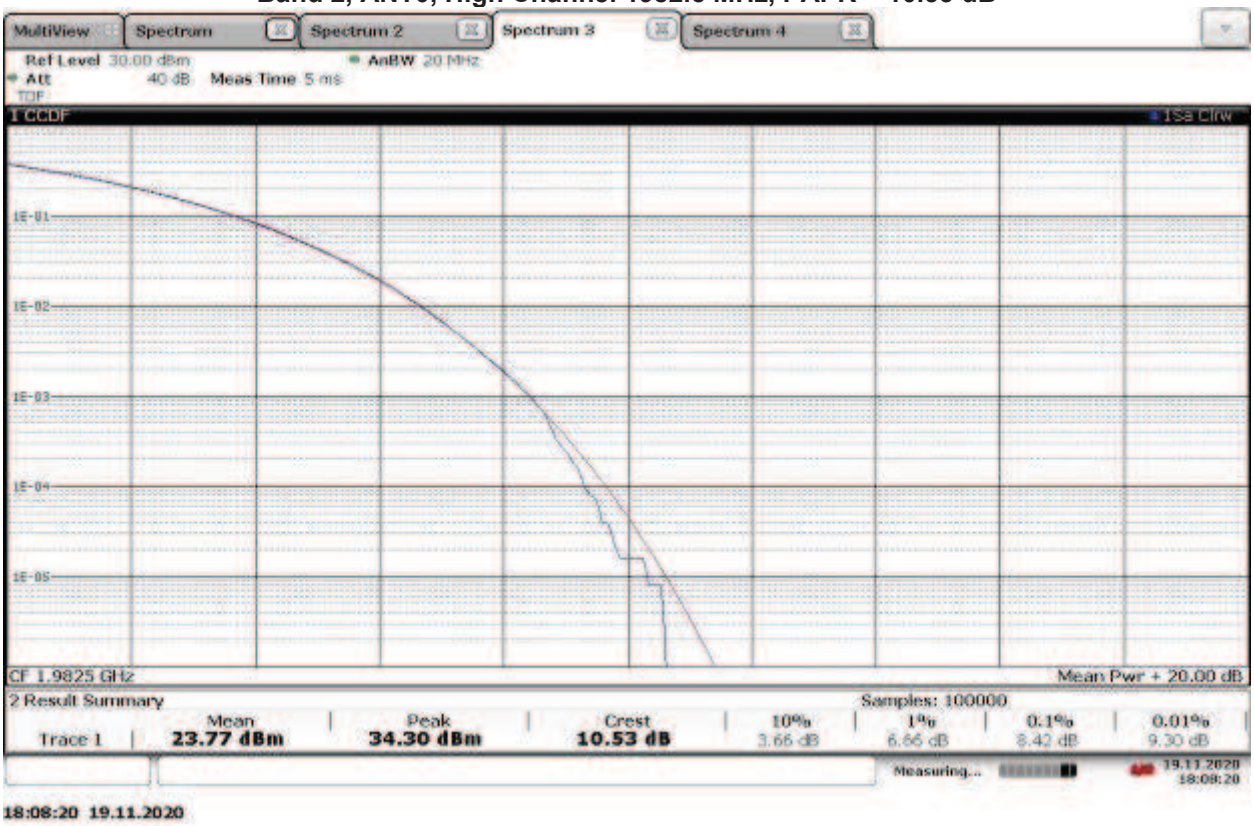
TM3.1a - 256QAM_15 MHz Bandwidth
Band 2, ANT0, Mid Channel 1960 MHz, PAPR = 10.50 dB



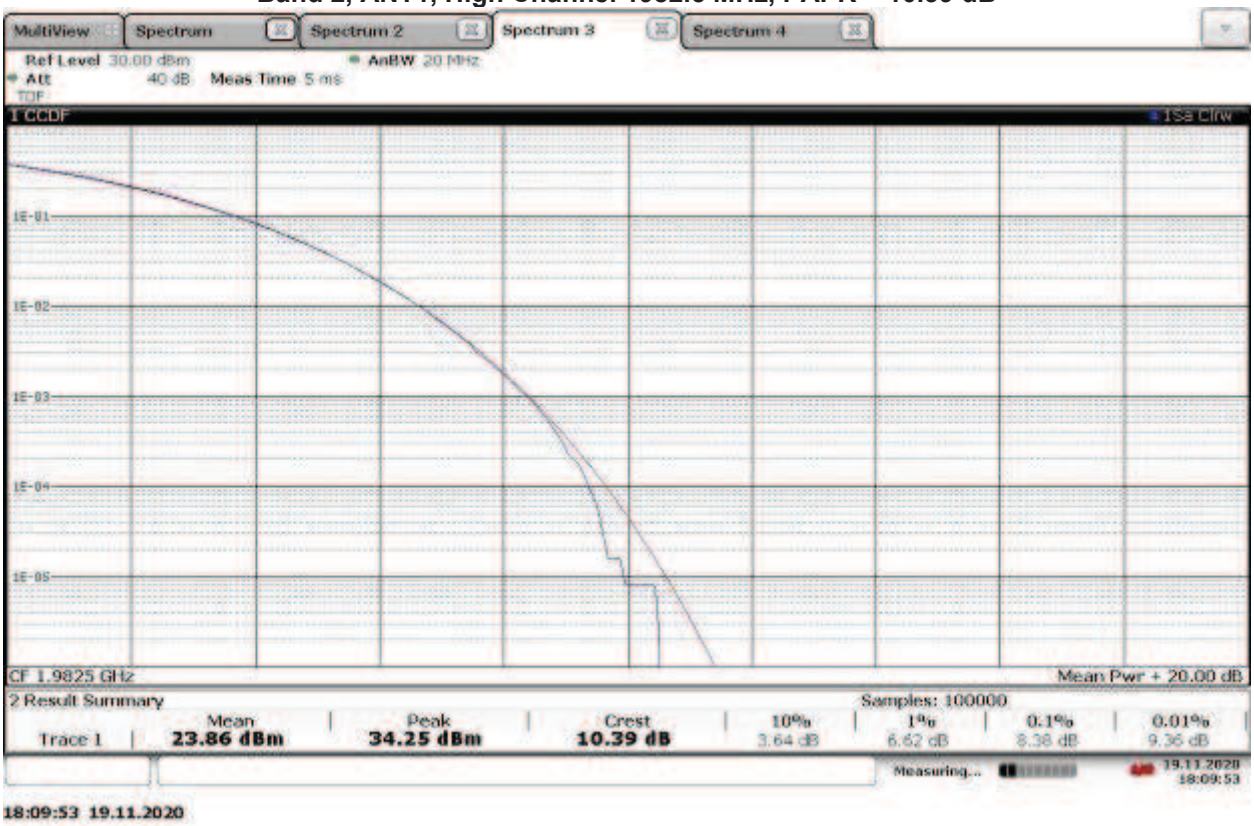
TM3.1a - 256QAM_15 MHz Bandwidth
Band 2, ANT1, Mid Channel 1960 MHz, PAPR = 10.99 dB



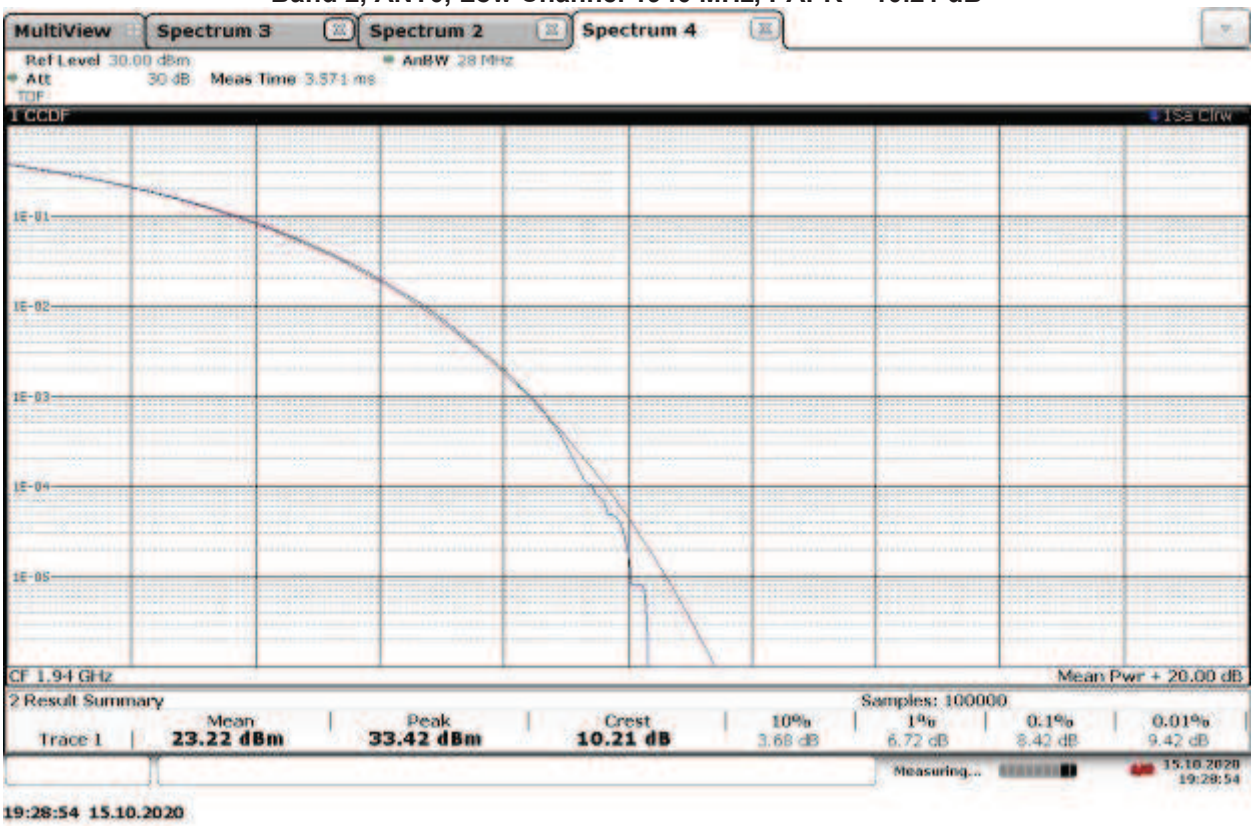
TM3.1a - 256QAM_15 MHz Bandwidth
Band 2, ANT0, High Channel 1982.5 MHz, PAPR = 10.53 dB



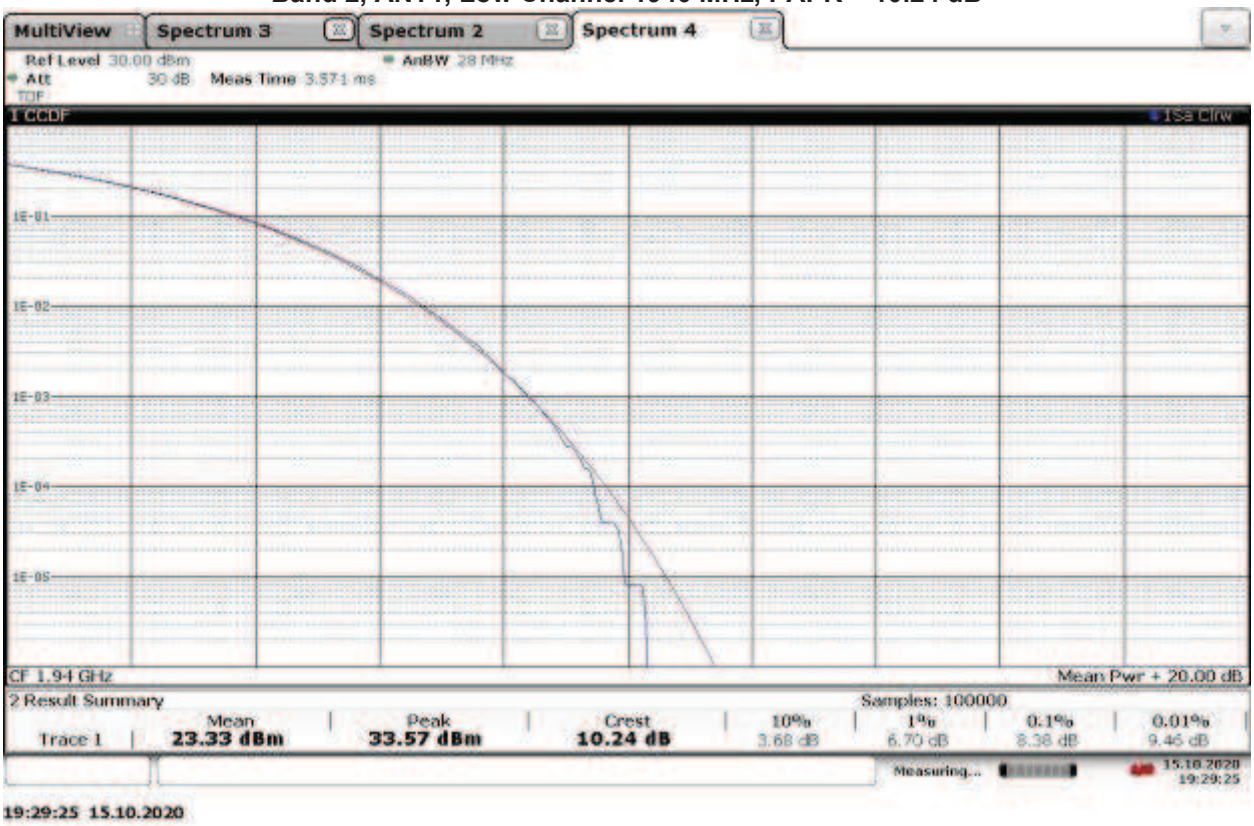
TM3.1a - 256QAM_15 MHz Bandwidth
Band 2, ANT1, High Channel 1982.5 MHz, PAPR = 10.39 dB



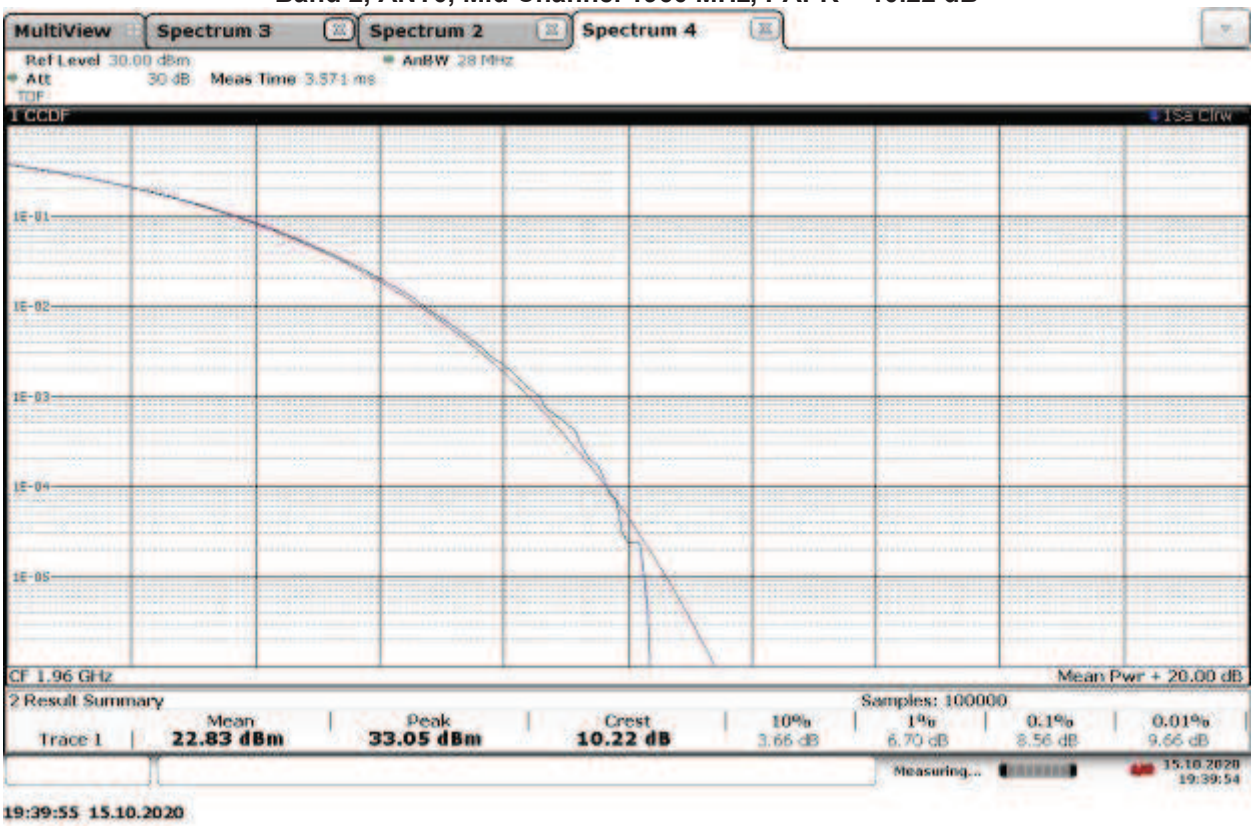
TM3.1a - 256QAM_20 MHz Bandwidth
Band 2, ANT0, Low Channel 1940 MHz, PAPR = 10.21 dB



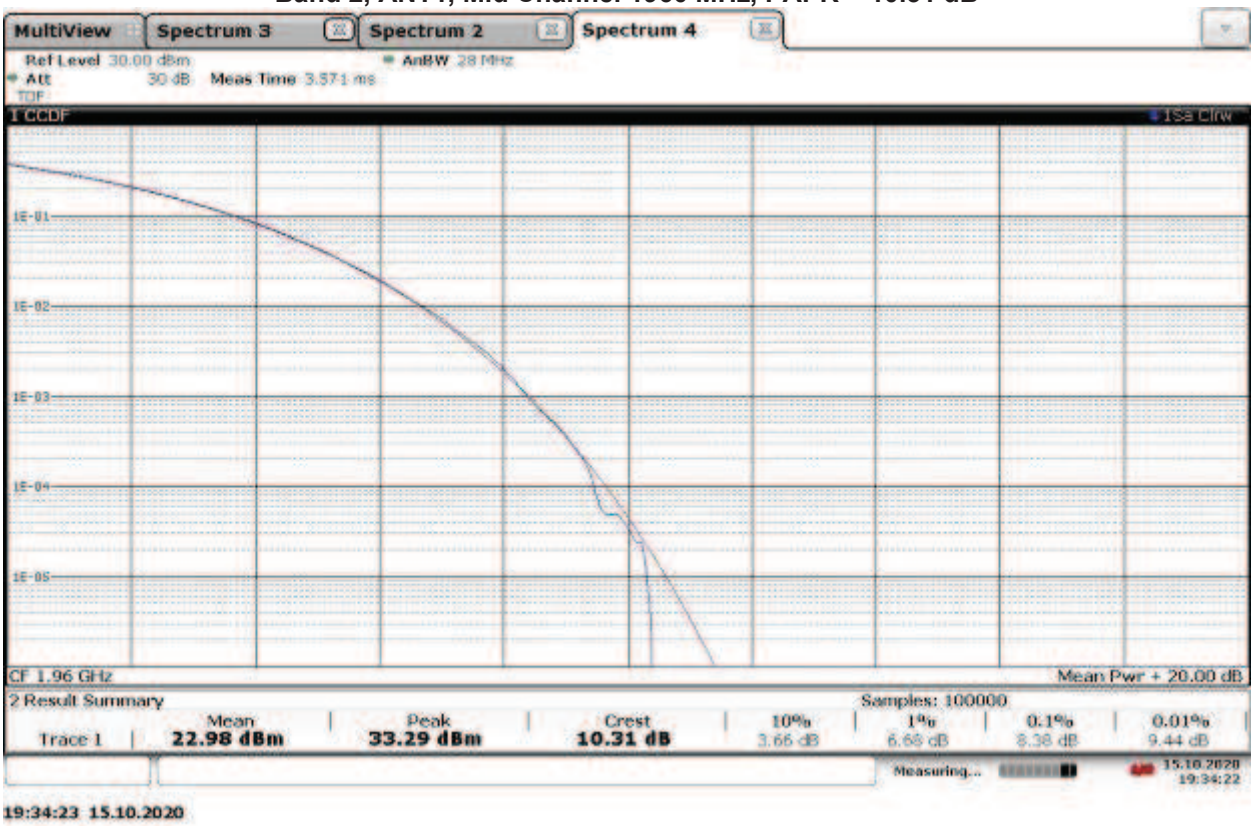
TM3.1a - 256QAM_20 MHz Bandwidth
Band 2, ANT1, Low Channel 1940 MHz, PAPR = 10.24 dB



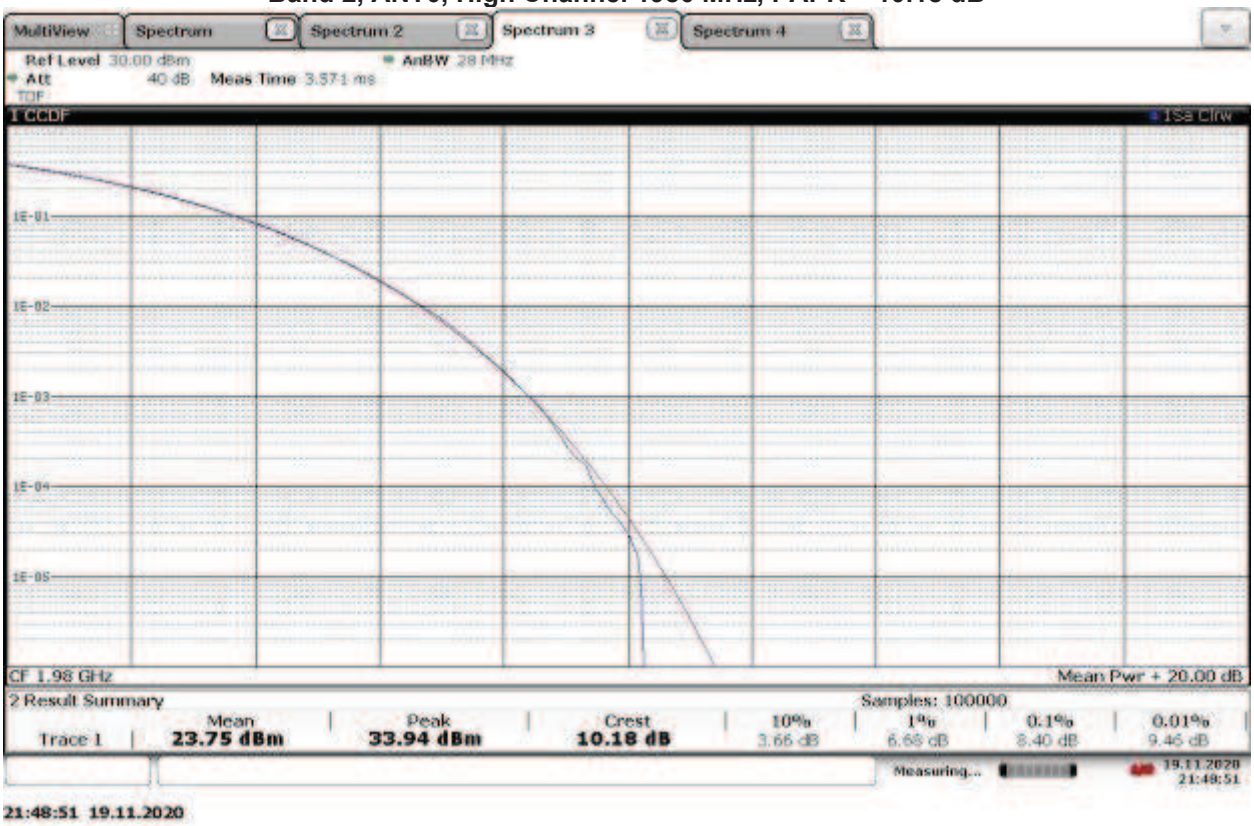
TM3.1a - 256QAM_20 MHz Bandwidth
Band 2, ANT0, Mid Channel 1960 MHz, PAPR = 10.22 dB



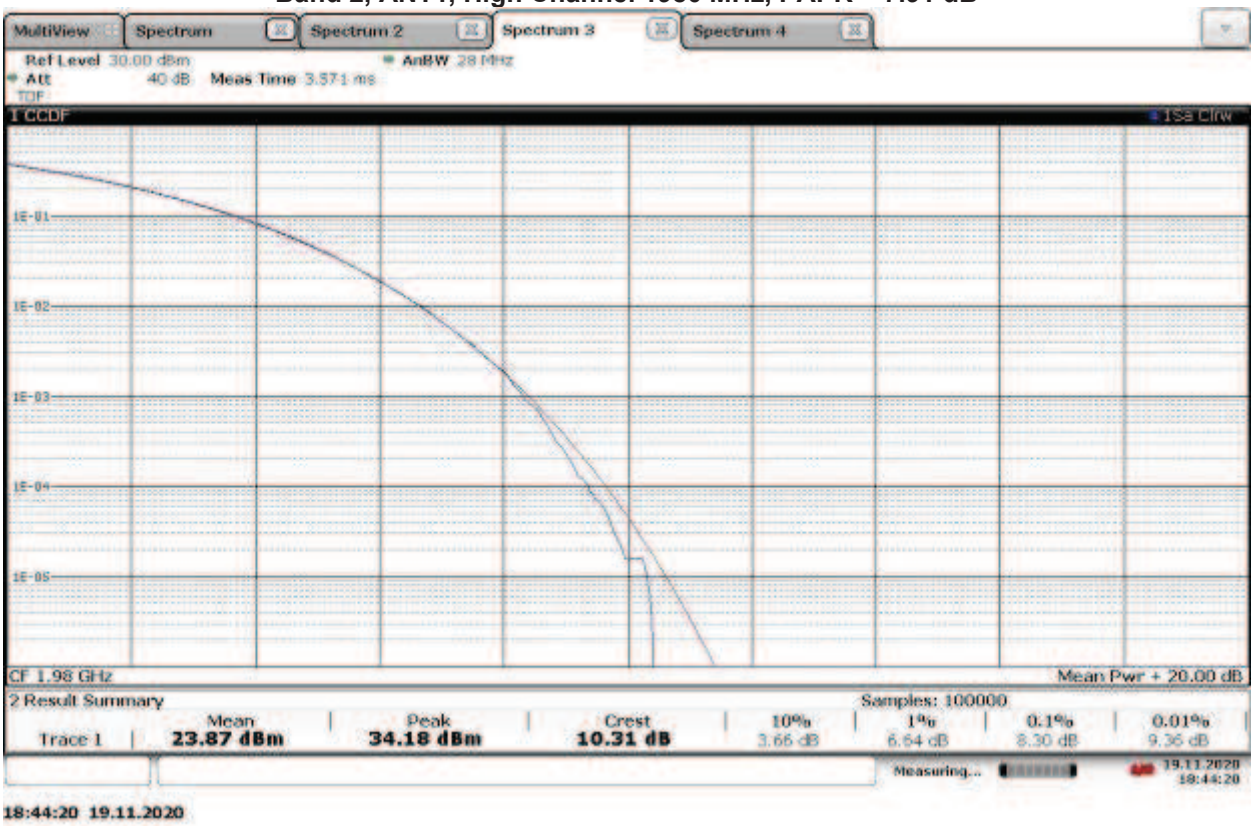
TM3.1a - 256QAM_20 MHz Bandwidth
Band 2, ANT1, Mid Channel 1960 MHz, PAPR = 10.31 dB



TM3.1a - 256QAM_20 MHz Bandwidth
Band 2, ANT0, High Channel 1980 MHz, PAPR = 10.18 dB



TM3.1a - 256QAM_20 MHz Bandwidth
Band 2, ANT1, High Channel 1980 MHz, PAPR = 7.91 dB



Test Personnel:	Kouma Sinn KPS	Test Date:	10/14/2020, 10/15/2020, 11/19/2020
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 24	Limit Applied:	See report section 7.3
Input Voltage:	48 VDC (POE)		
Pretest Verification w/ Ambient Signals or BB Source:	N/A	Ambient Temperature:	22, 22, 24 ºC
		Relative Humidity:	41, 45, 21 %
		Atmospheric Pressure:	1007, 1006, 1015 mbars

Deviations, Additions, or Exclusions: None

8 Band Edge Compliance

8.1 Method

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

8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	01/22/2020	01/22/2021
CBLHF2012-2M-1'	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252675001	02/17/2020	02/17/2021
ROS005-1'	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	100646	10/27/2020	10/27/2021
DAV005'	Weather Station	Davis	6250	MS191218083	02/05/2020	02/05/2021

Software Utilized:

Name	Manufacturer	Version
None	--	--

8.3 Results:

The sample tested was found to Comply.

§24.238(a)(b) 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.

Band 2, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1932.50	ANT0	-31.44
		ANT1	-33.12
High	1987.50	ANT0	-34.85
		ANT1	-35.09

Band 2, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1935.00	ANT0	-32.16
		ANT1	-32.59
High	1985.00	ANT0	-37.77
		ANT1	-38.15

Band 2, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1937.50	ANT0	-25.59
		ANT1	-23.62
High	1982.50	ANT0	-39.04
		ANT1	-39.39

Band 2, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1940	ANT0	-33.90
		ANT1	-35.67
High	1980	ANT0	-39.68
		ANT1	-40.51

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

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1932.50	ANT0	-31.26
		ANT1	-33.54
High	1987.50	ANT0	-35.01
		ANT1	-35.03

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

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1935.00	ANT0	-33.06
		ANT1	-34.89
High	1985.00	ANT0	-37.36
		ANT1	-37.78

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

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1937.50	ANT0	-21.02
		ANT1	-27.63
High	1982.50	ANT0	-38.63
		ANT1	-38.64

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

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1940.00	ANT0	-36.33
		ANT1	-34,65
High	1980.00	ANT0	-39.57
		ANT1	-39.39

Band 2, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1932.50	ANT0	-31.18
		ANT1	-37.15
High	1987.50	ANT0	-34.88
		ANT1	-35.25

Band 2, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1935.00	ANT0	-32.74
		ANT1	-33.52
High	1985.00	ANT0	-37.57
		ANT1	-37.65

Band 2, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1937.50	ANT0	-25.69
		ANT1	-21.58
High	1982.50	ANT0	-38.62
		ANT1	-38.35

Band 2, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1940.00	ANT0	-35.91
		ANT1	-36.32
High	1980.00	ANT0	-40.23
		ANT1	-40.65

Band 2, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1932.50	ANT0	-29.88
		ANT1	-30.53
High	1987.50	ANT0	-35.19
		ANT1	-35.09

Band 2, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1935.00	ANT0	-33.09
		ANT1	-33.81
High	1985.00	ANT0	-37.50
		ANT1	-37.31

Band 2, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1937.00	ANT0	-25.74
		ANT1	-30.91
High	1982.50	ANT0	-38.68
		ANT1	-38.53

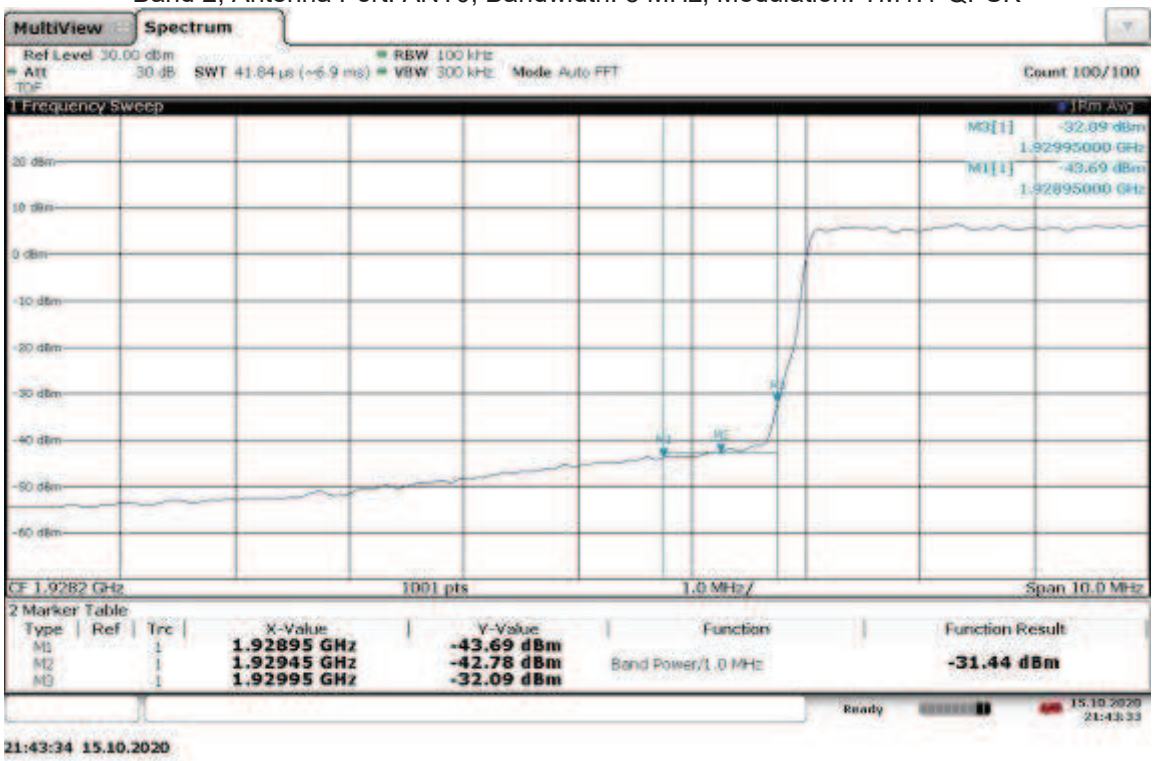
Band 2, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Band Edge	Frequency (MHz)	Antenna Port	Reading (dBm)
Low	1940.50	ANT0	-35.92
		ANT1	-36.77
High	1980.00	ANT0	-39.77
		ANT1	-39.30

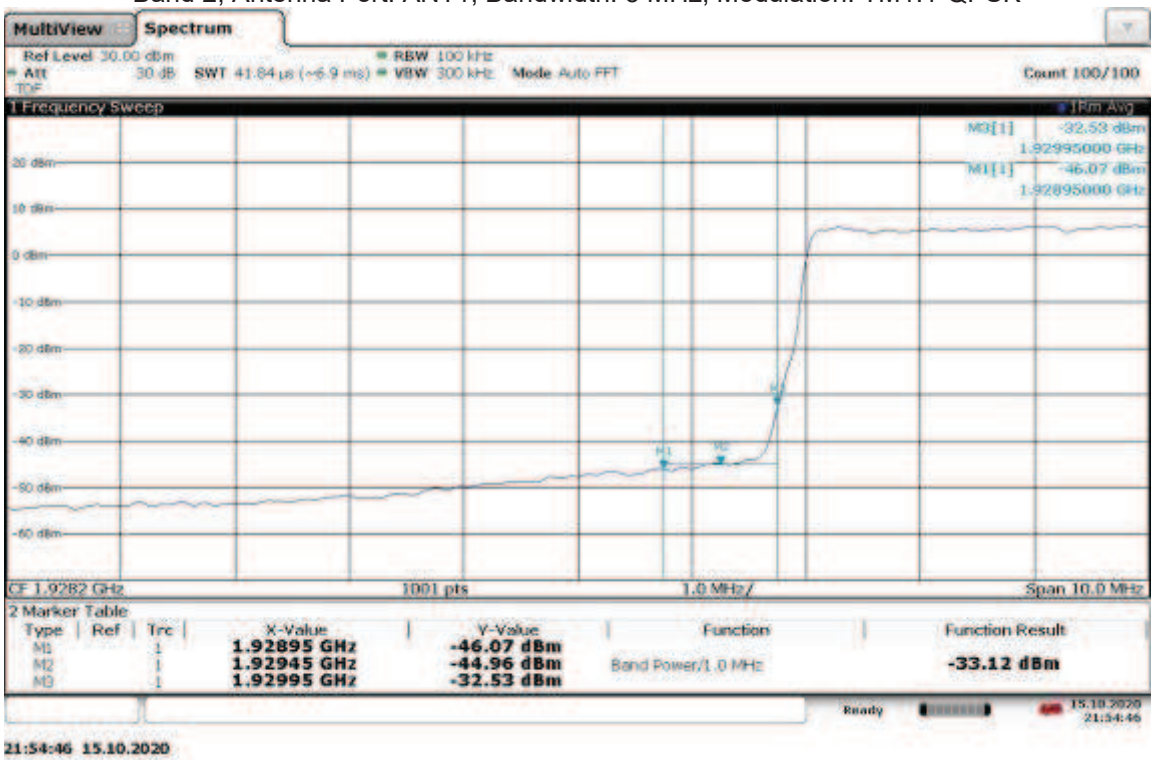
8.4 Setup Photograph:

8.5 Plots/Data:

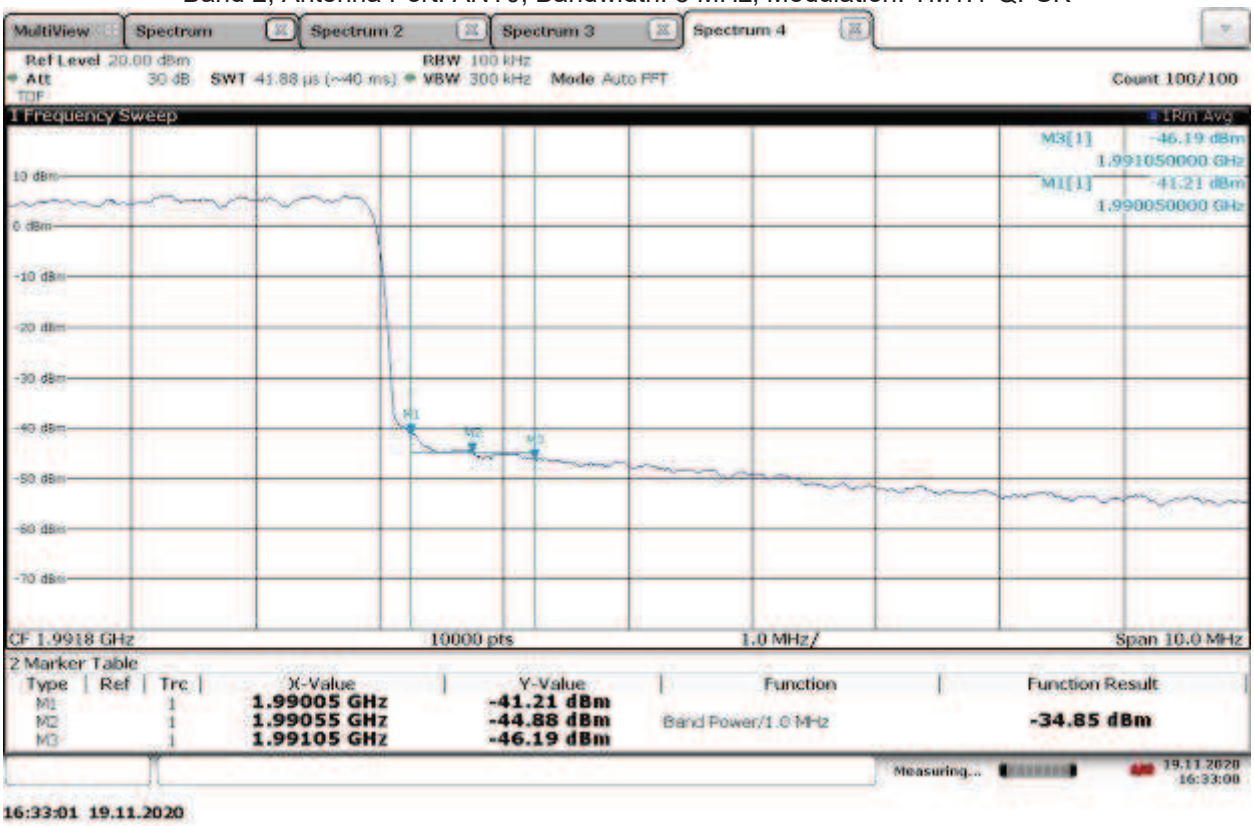
Band Edge Compliant, Lower Band Edge, 1932.5 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK



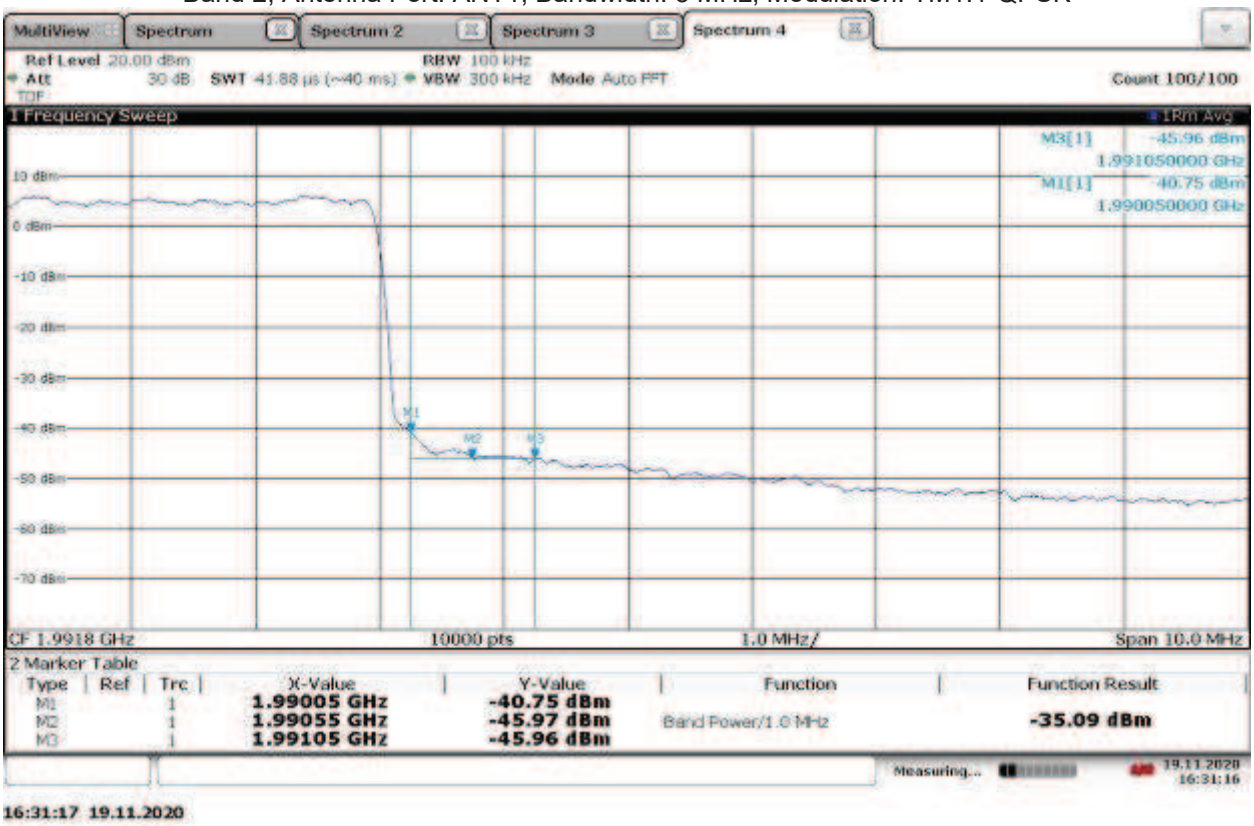
Band Edge Compliant, Lower Band Edge, 1932.5 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK



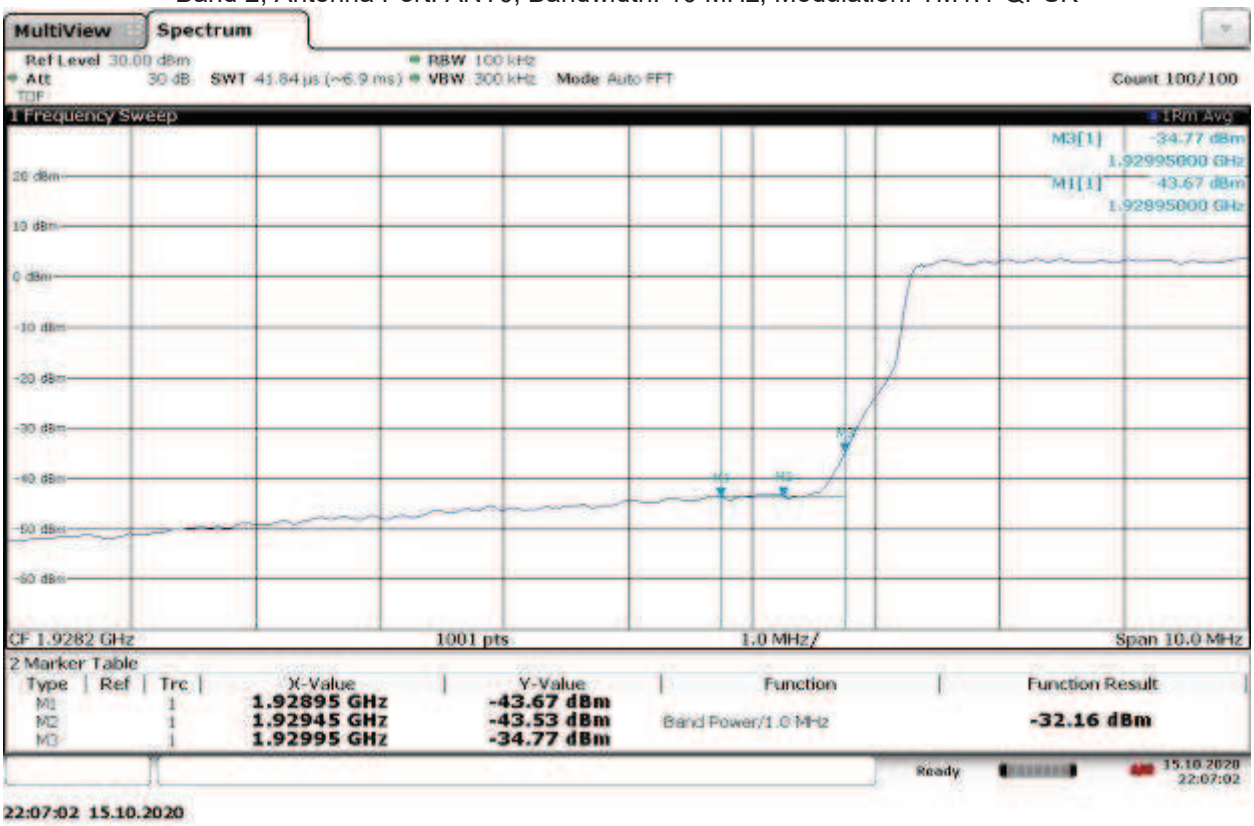
Band Edge Compliant, Upper Band Edge, 1987.5 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK



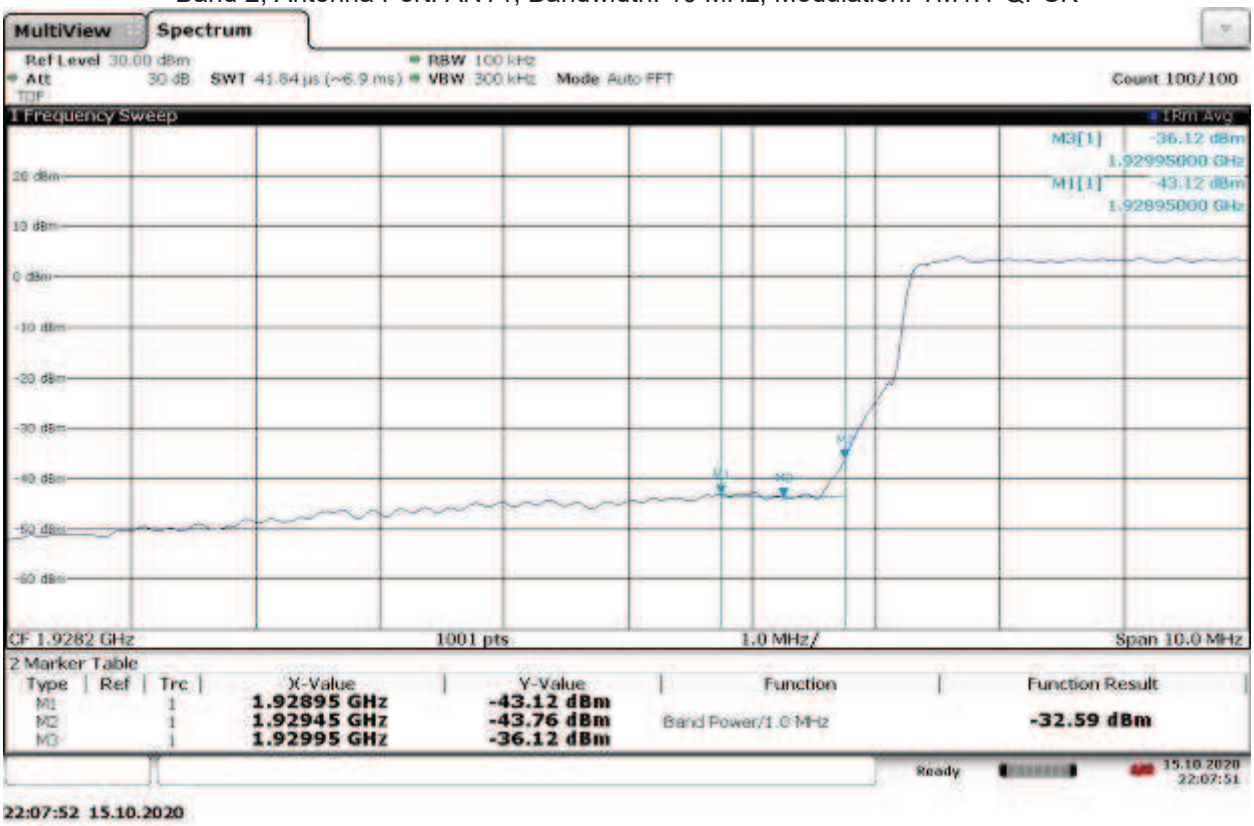
Band Edge Compliant, Upper Band Edge, 1987.5 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM1.1-QPSK



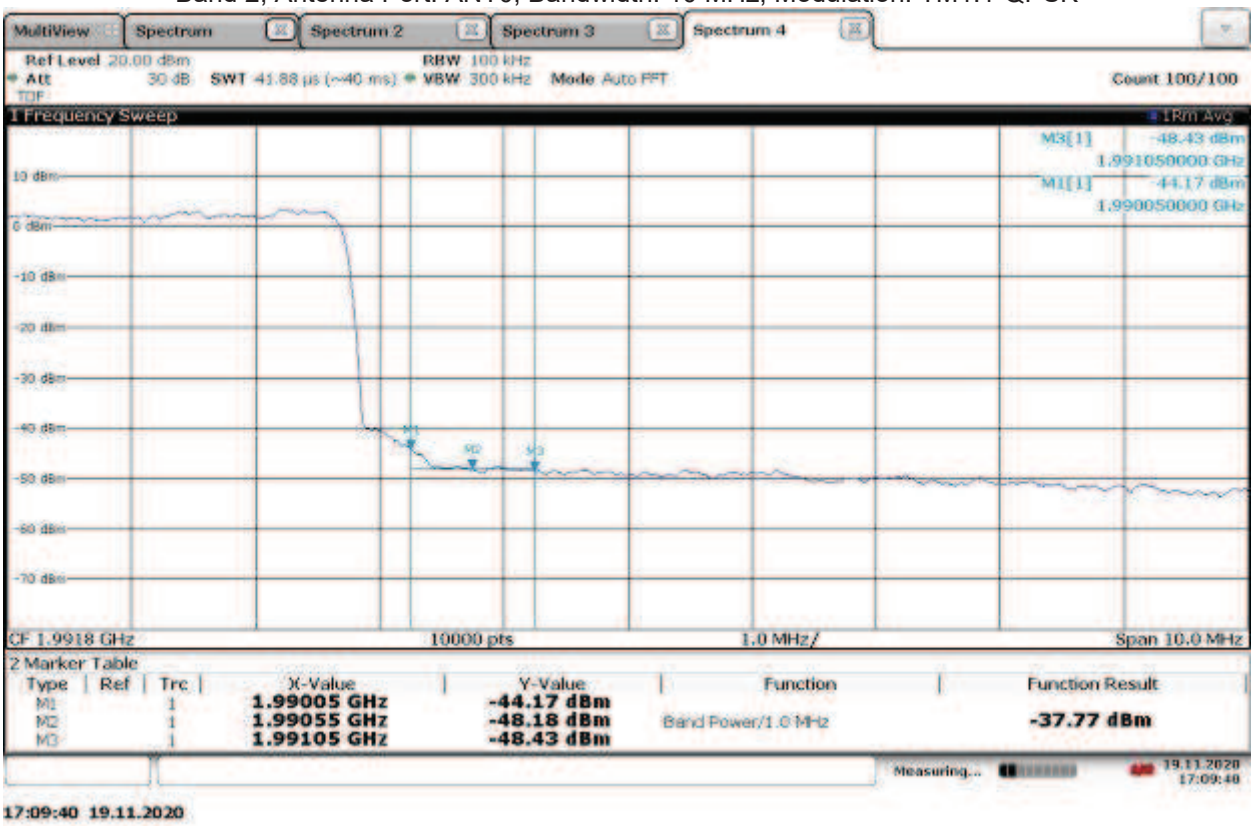
Band Edge Compliant, Lower Band Edge, 1935 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK



Band Edge Compliant, Lower Band Edge, 1935 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

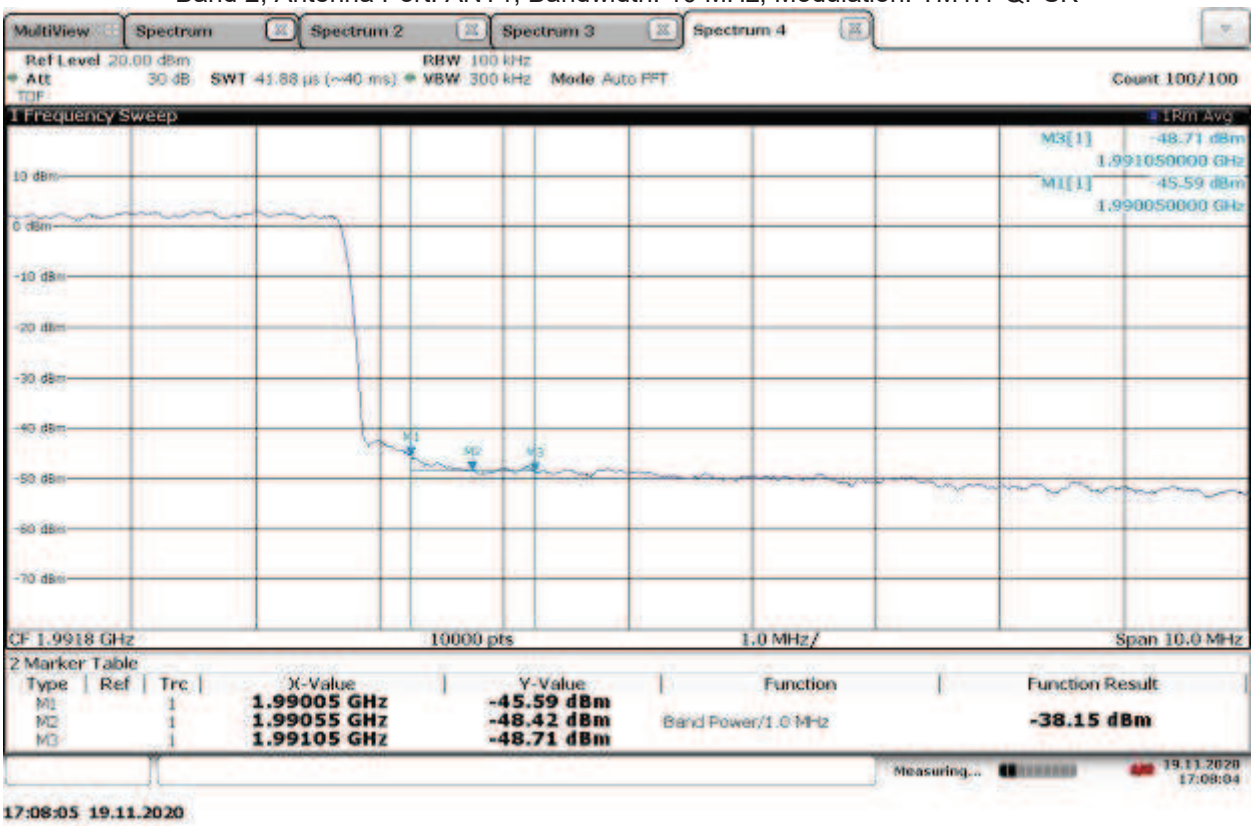


Band Edge Compliant, Upper Edge, 1985 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK



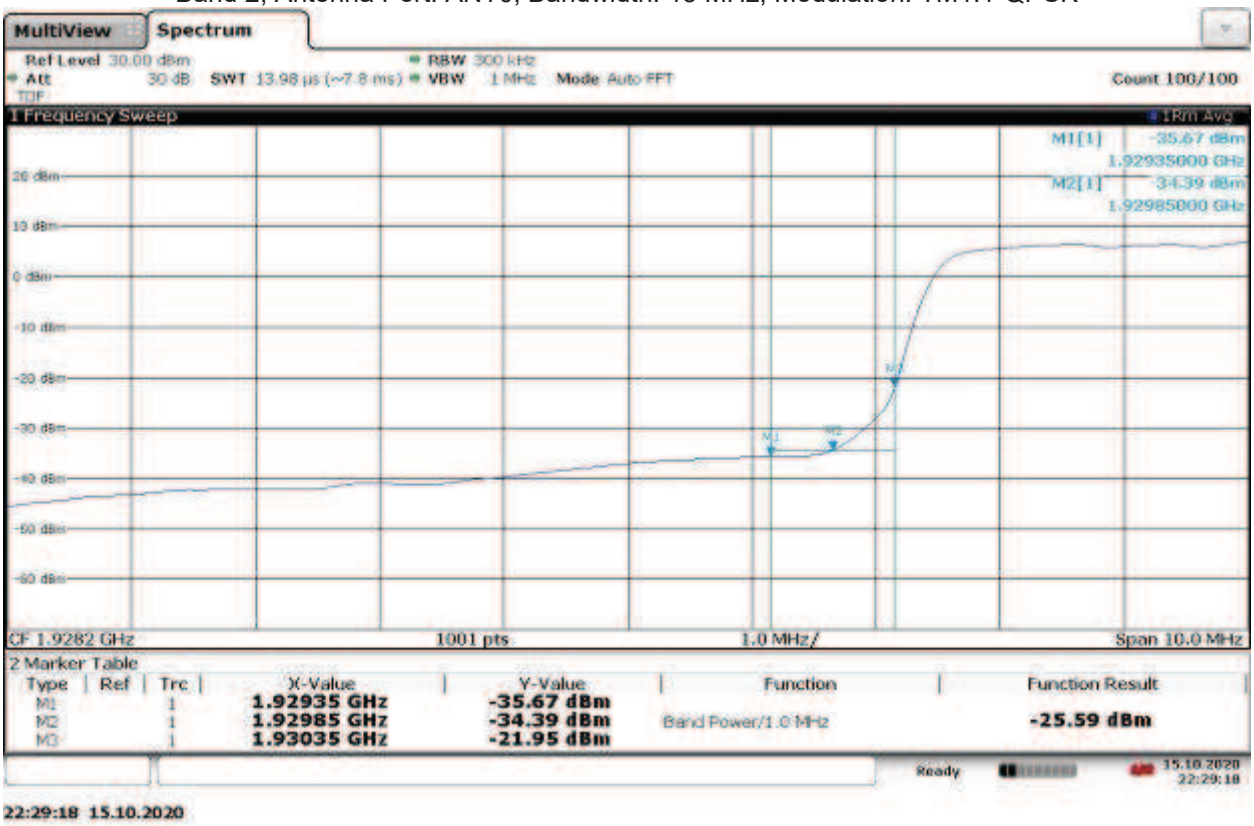
17:09:40 19.11.2020

Band Edge Compliant, Upper Edge, 1985 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

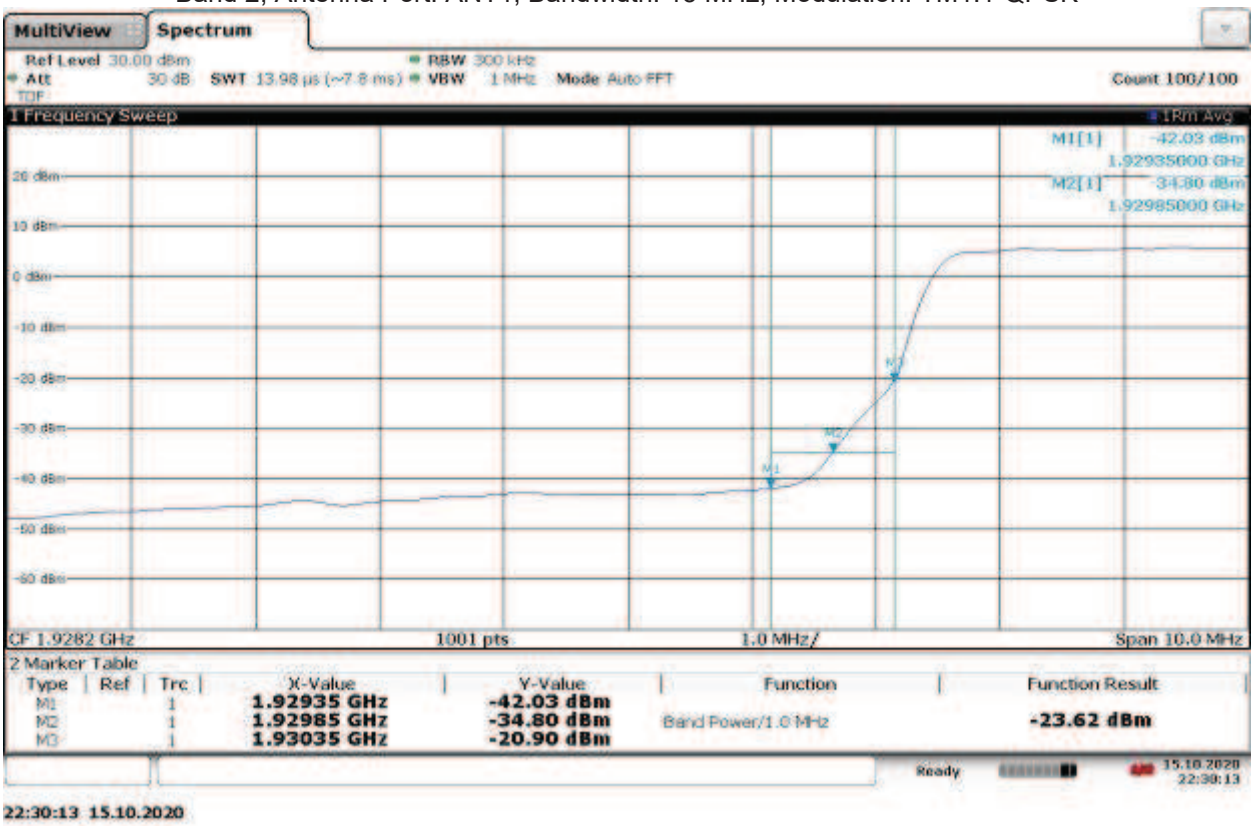


17:08:05 19.11.2020

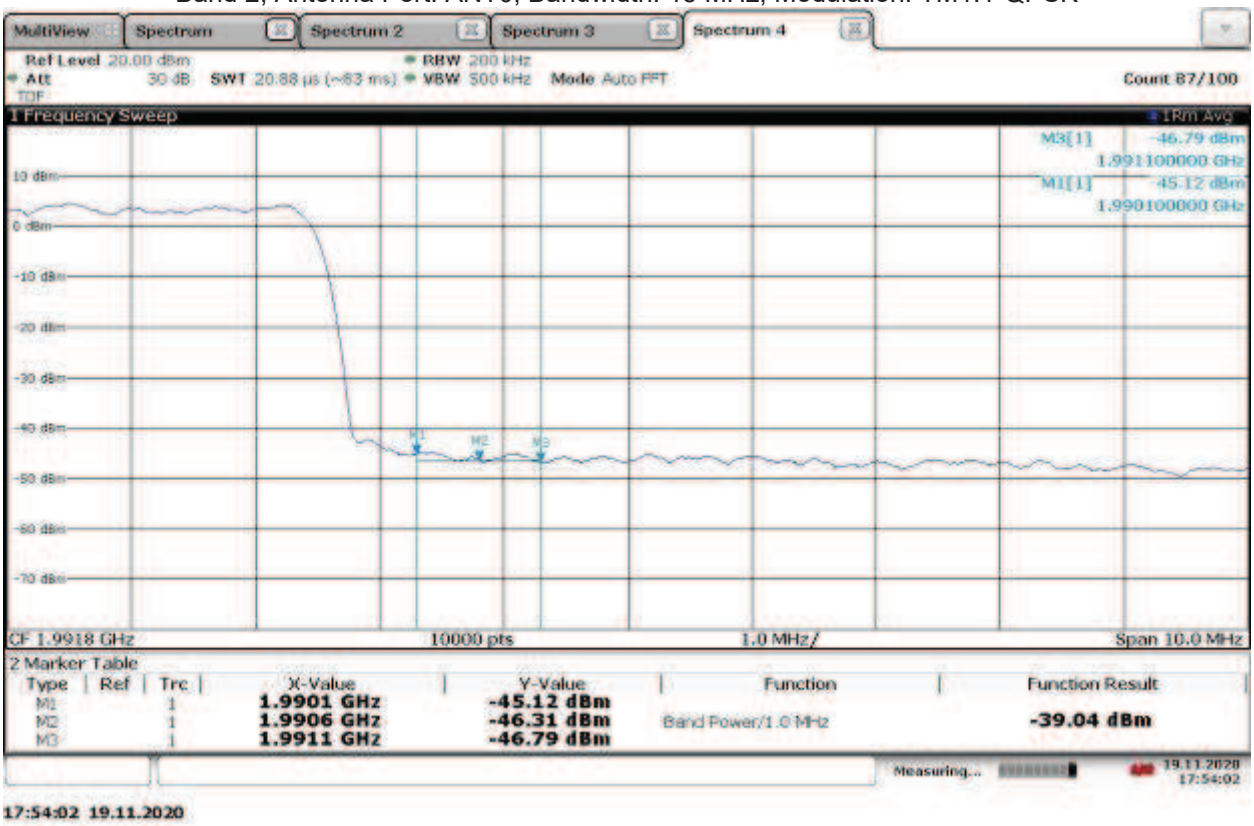
Band Edge Compliant, Lower Band Edge, 1937.5 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK



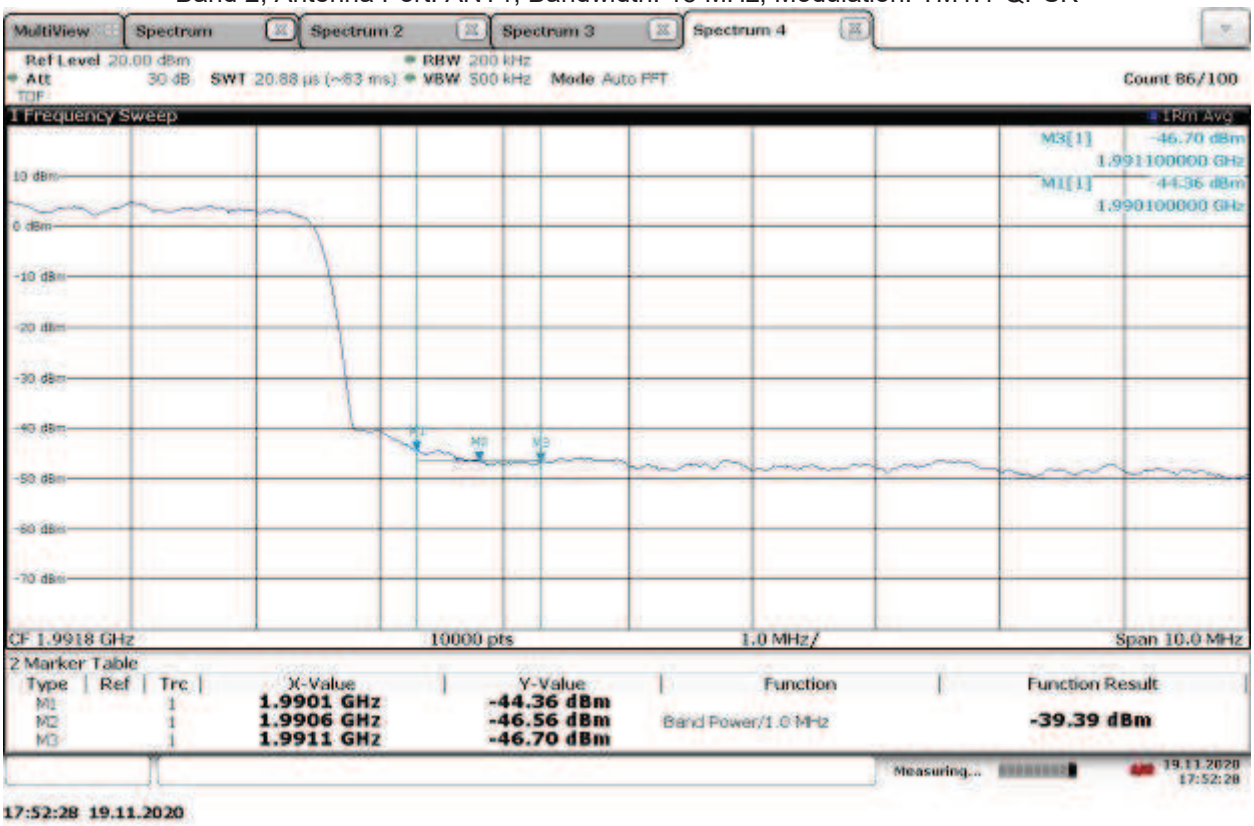
Band Edge Compliant, Lower Band Edge, 1937.5 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK



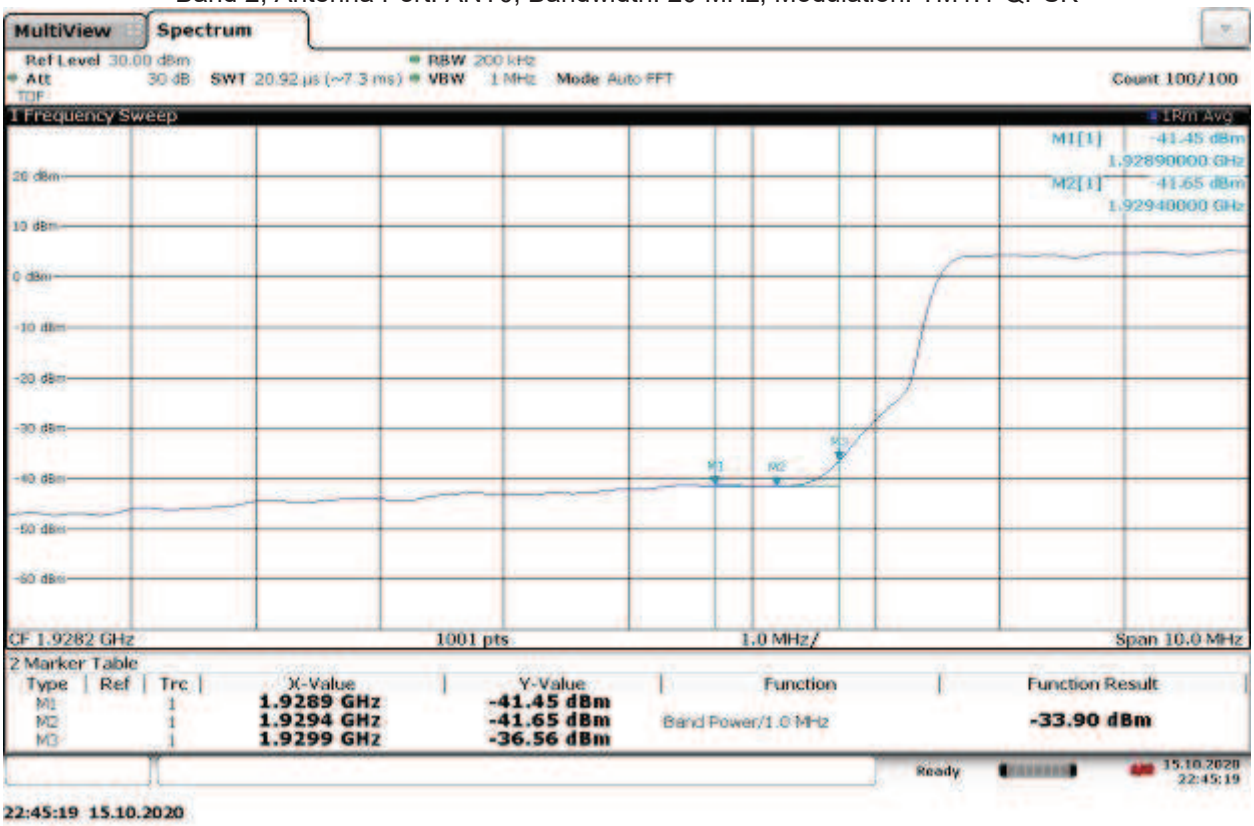
Band Edge Compliant, Upper Band Edge, 1982.5 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK



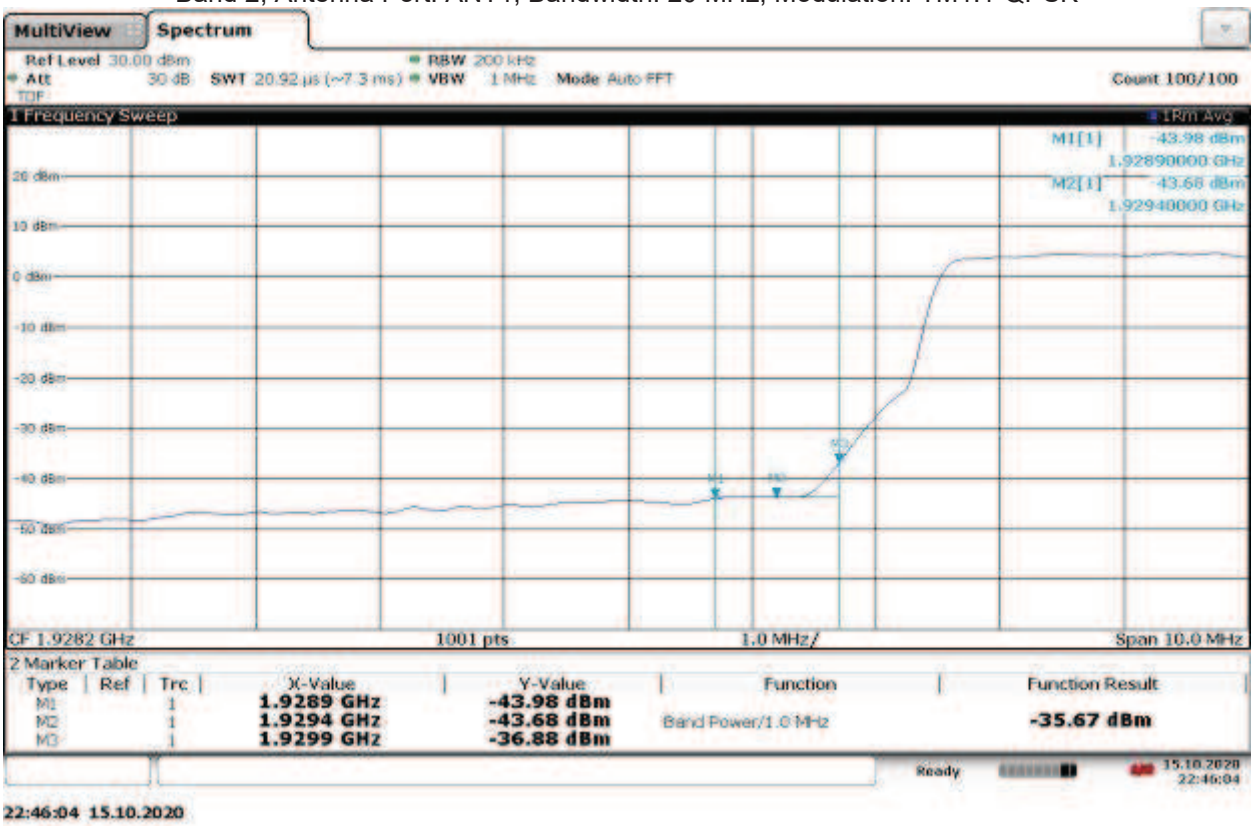
Band Edge Compliant, Upper Band Edge, 1982.5 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM1.1-QPSK



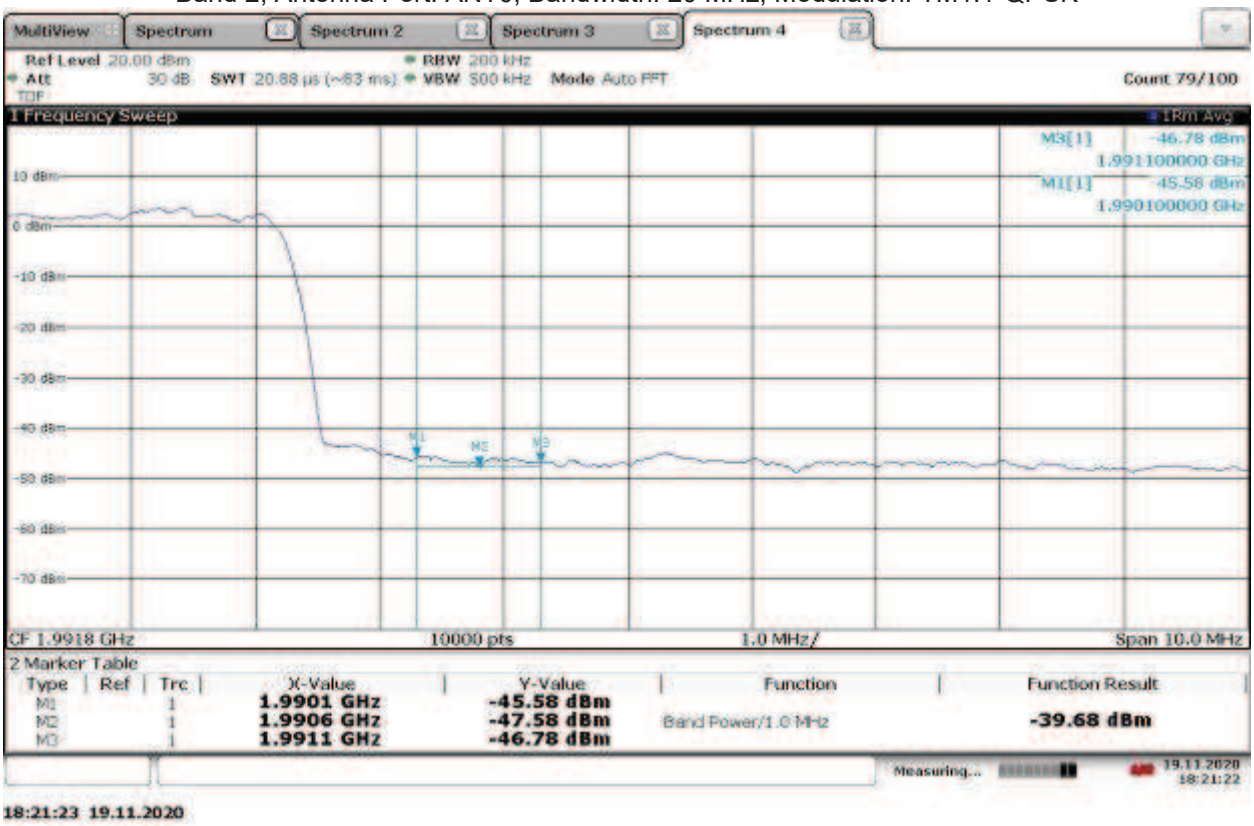
Band Edge Compliant, Lower Band Edge, 1940 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK



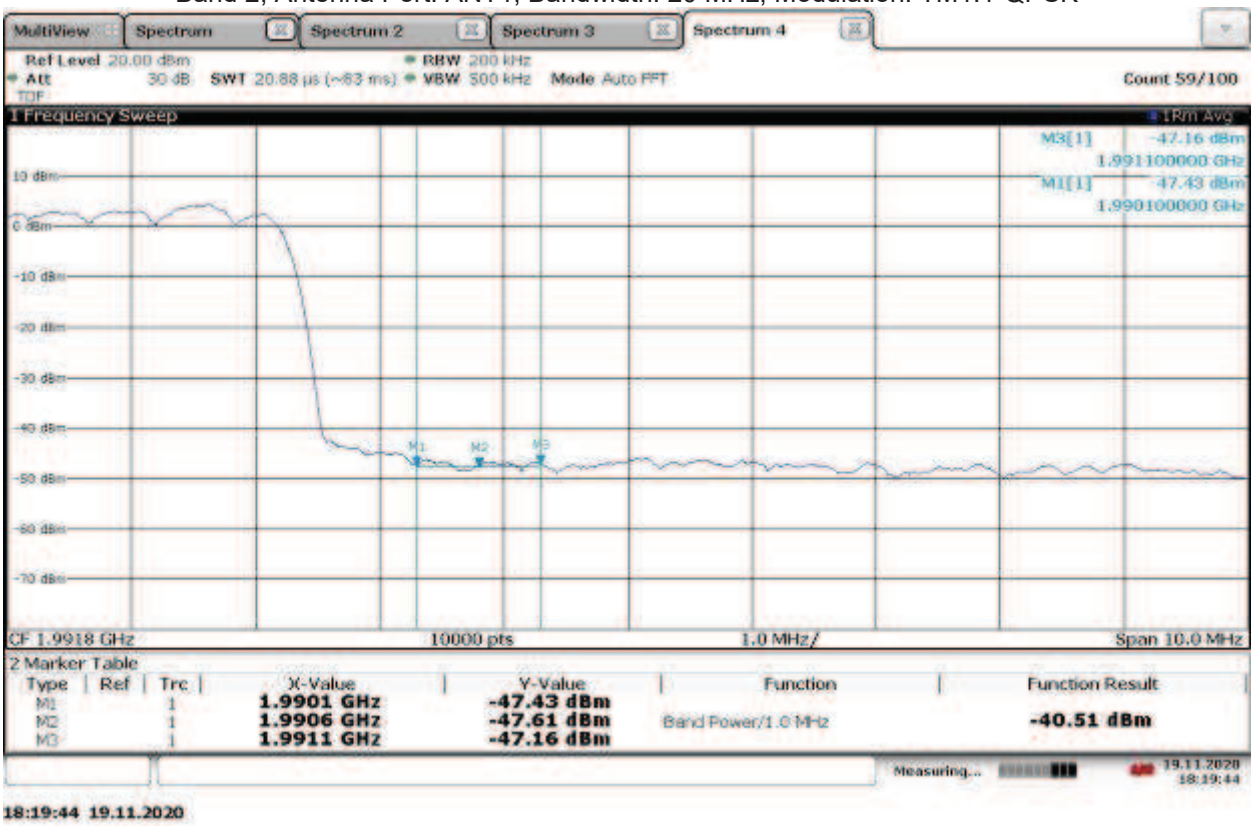
Band Edge Compliant, Lower Band Edge, 1940 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK



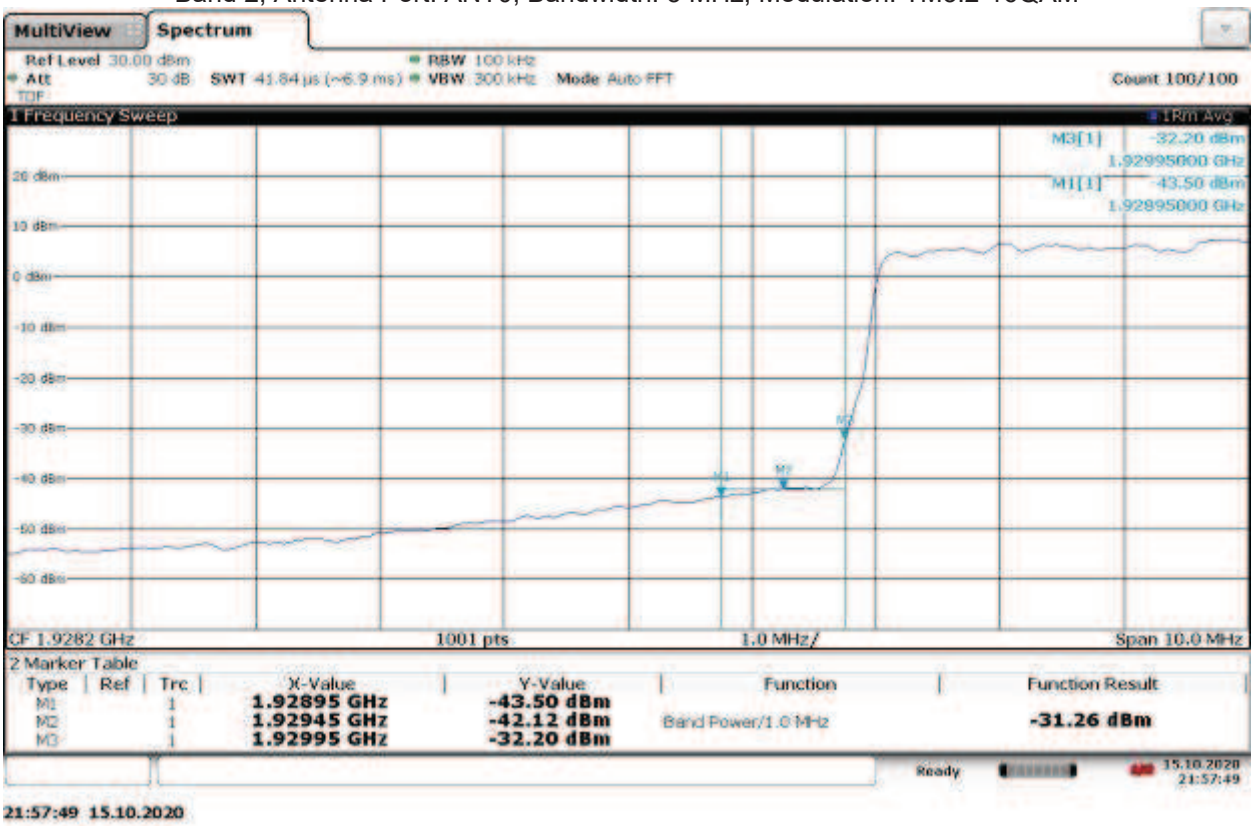
Band Edge Compliant, Upper Band Edge, 1980 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK



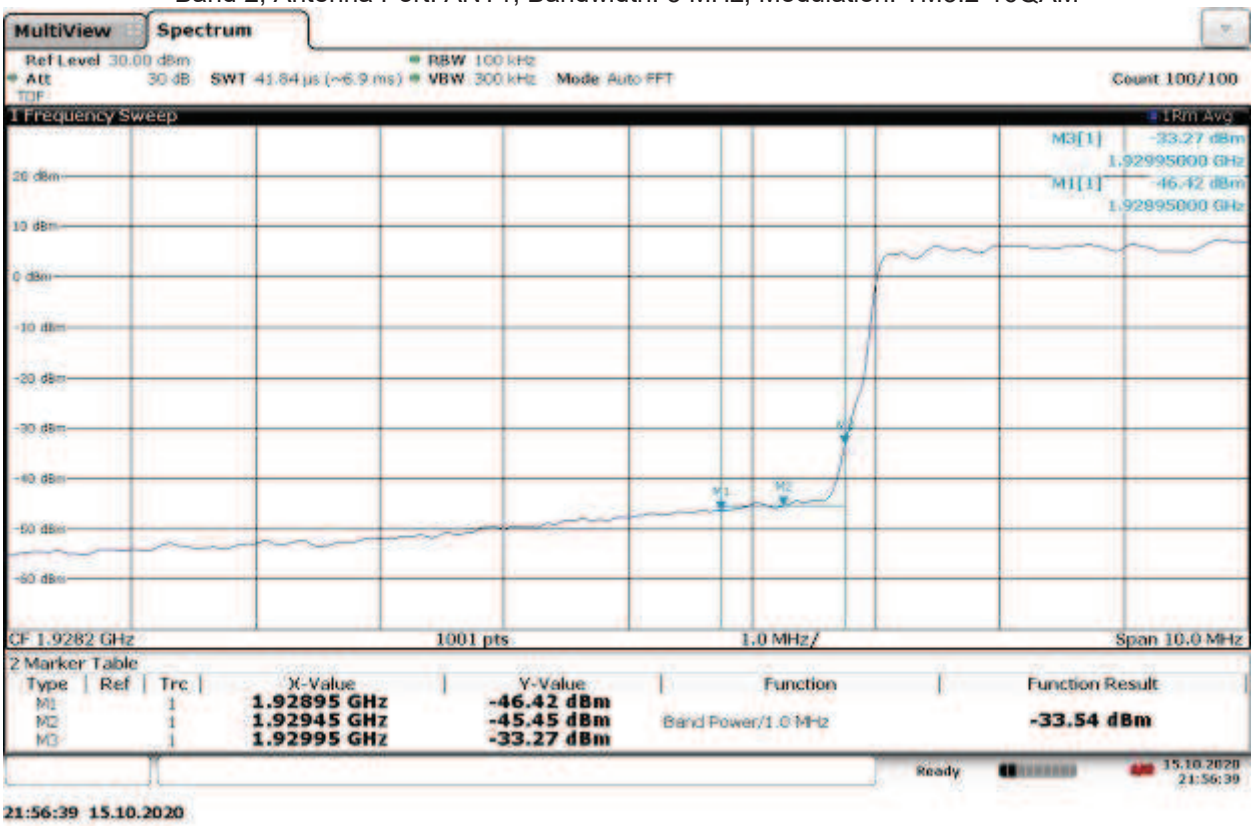
Band Edge Compliant, Upper Band Edge, 1980 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM1.1-QPSK



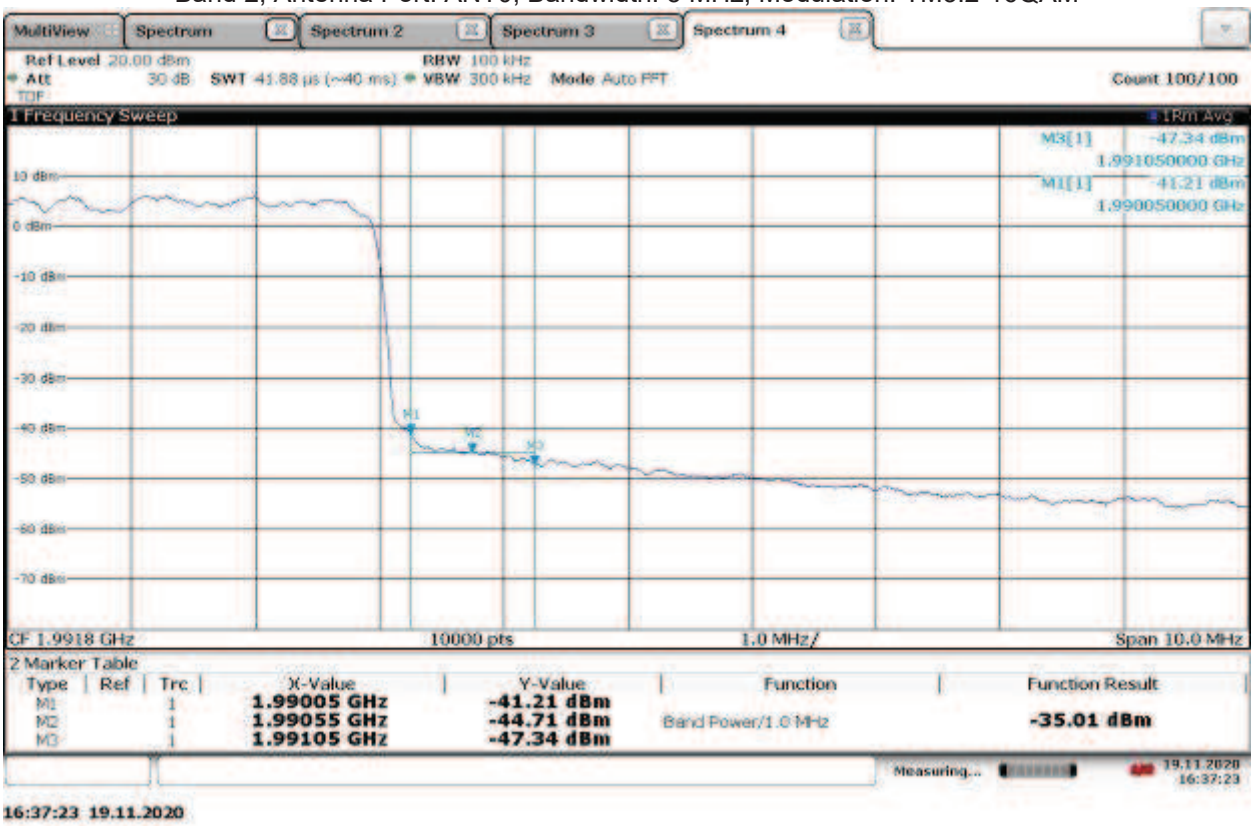
Band Edge Compliant, Lower Band Edge, 1932.5MHz
Band 2, Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM



Band Edge Compliant, Lower Band Edge, 1932.5MHz
Band 2, Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

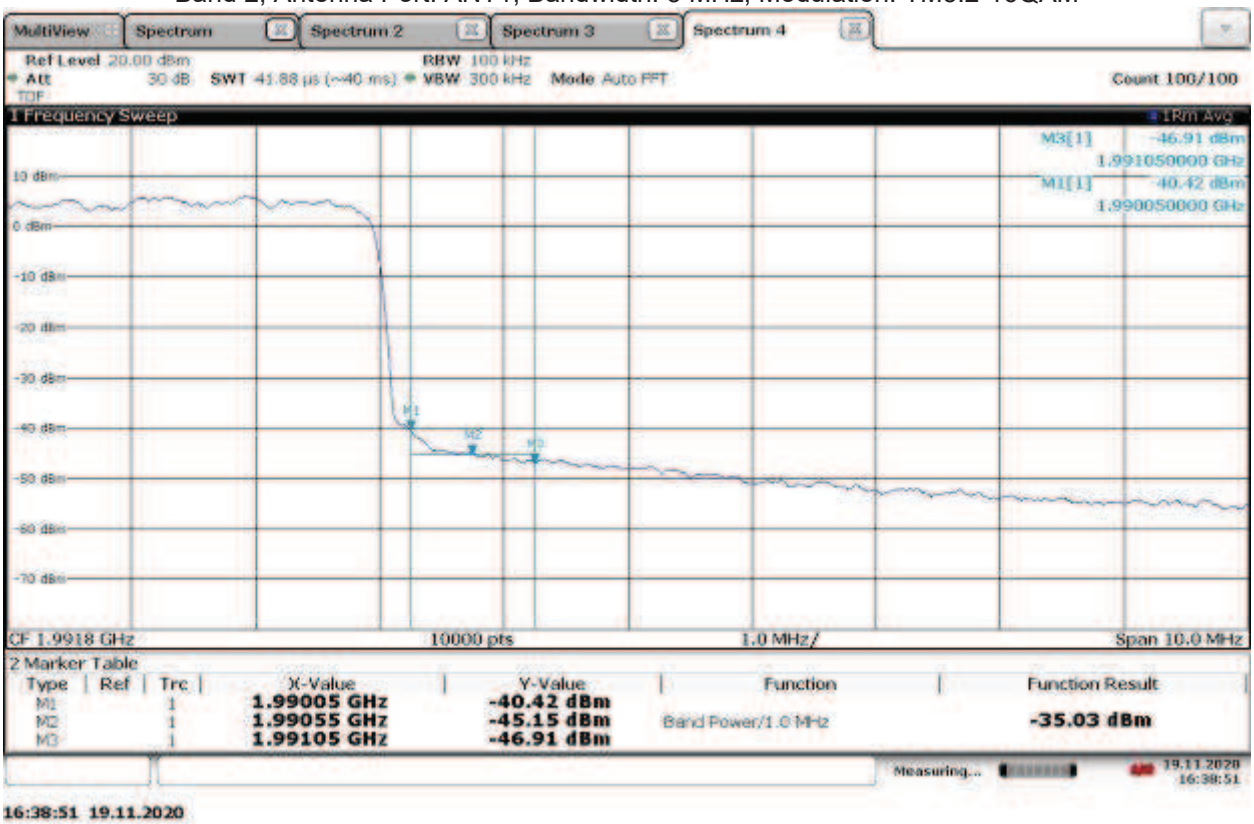


Band Edge Compliant, Upper Band Edge, 1987.5 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM



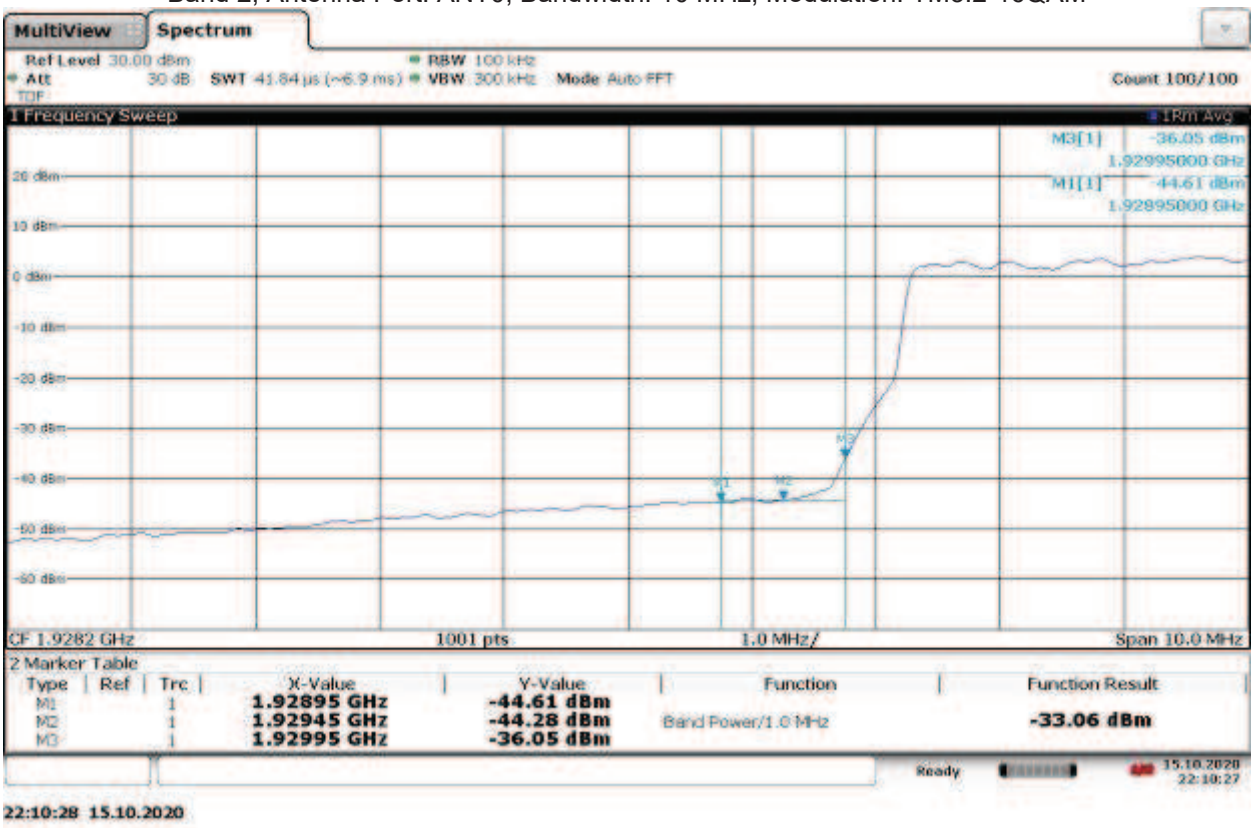
16:37:23 19.11.2020

Band Edge Compliant, Upper Band Edge, 1987.5 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

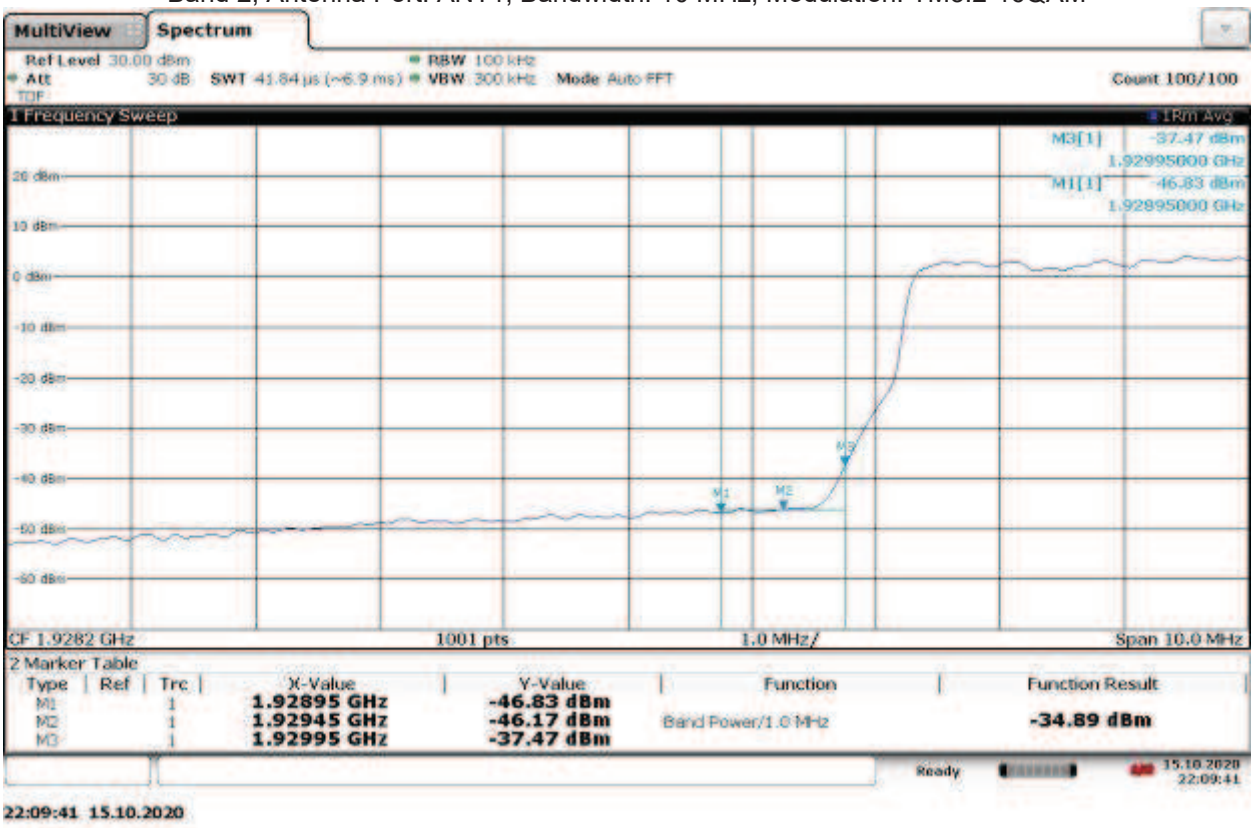


16:38:51 19.11.2020

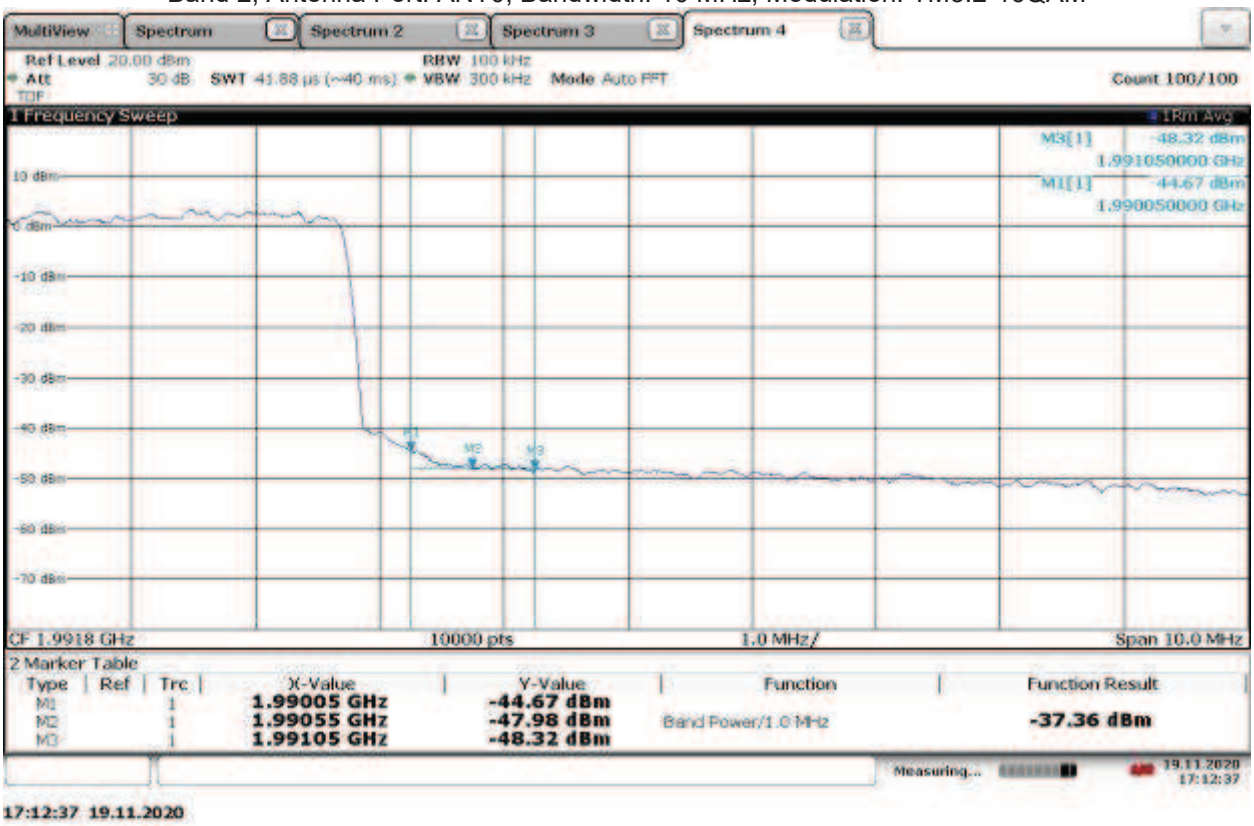
Band Edge Compliant, Lower Band Edge, 1935 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM



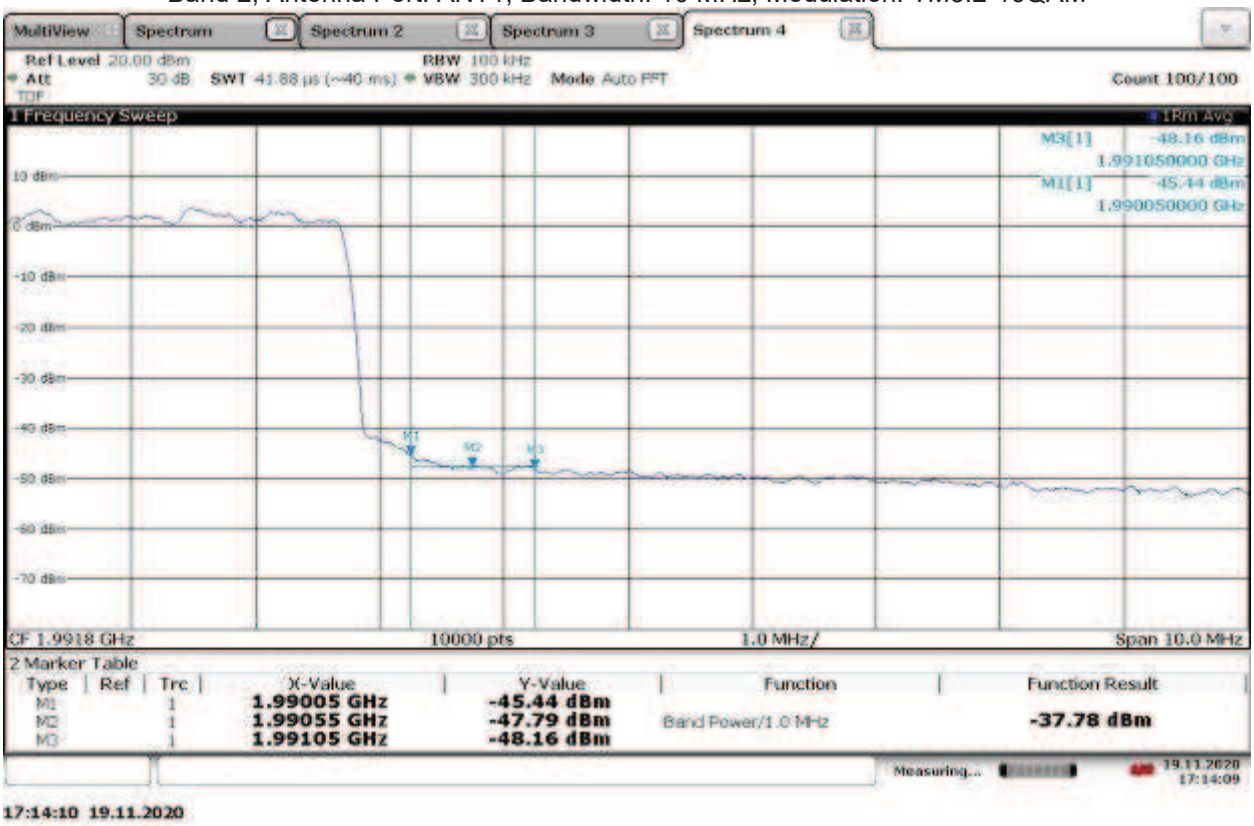
Band Edge Compliant, Lower Band Edge, 1935 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM



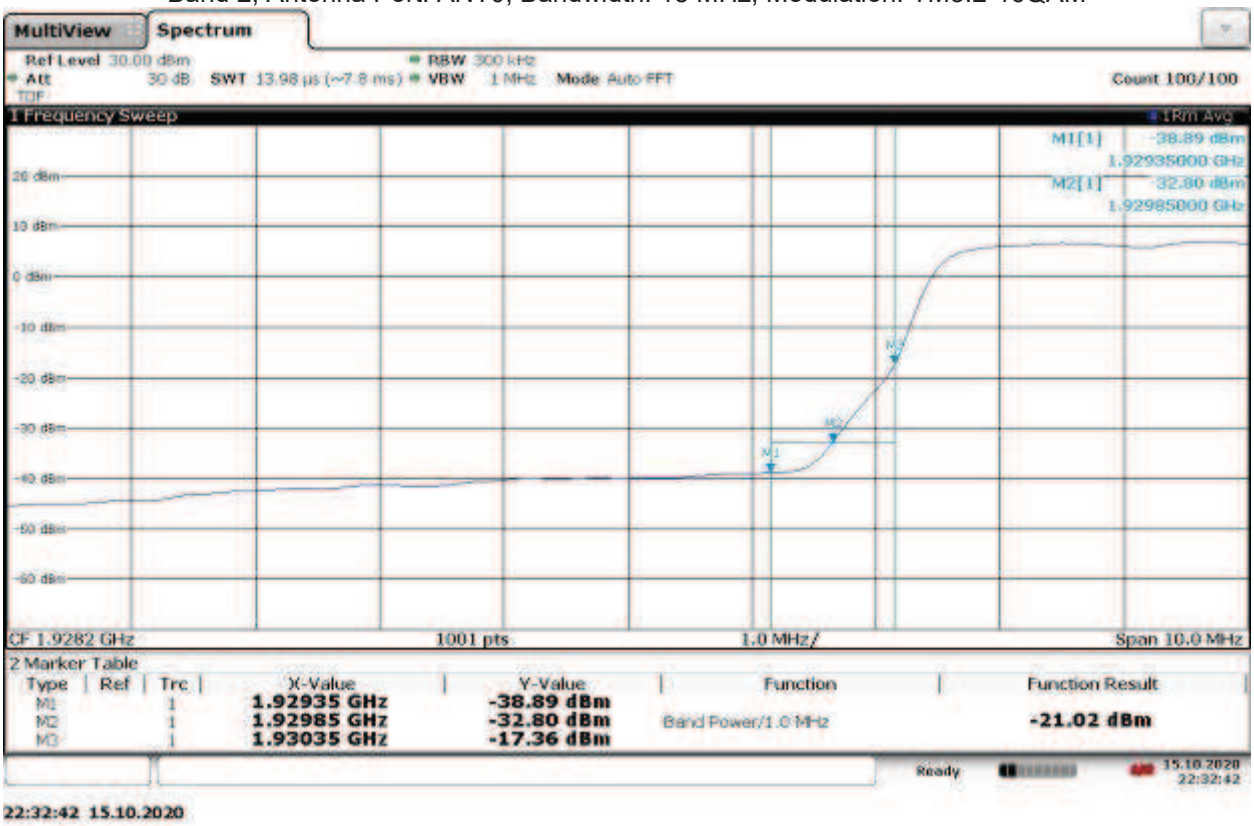
Band Edge Compliant, Upper Band Edge, 1985 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM



Band Edge Compliant, Upper Band Edge, 1985 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.2-16QAM



Band Edge Compliant, Lower Band Edge, 1937.5 MHz
Band 2, Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM



Band Edge Compliant, Lower Band Edge, 1937.5 MHz
Band 2, Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM