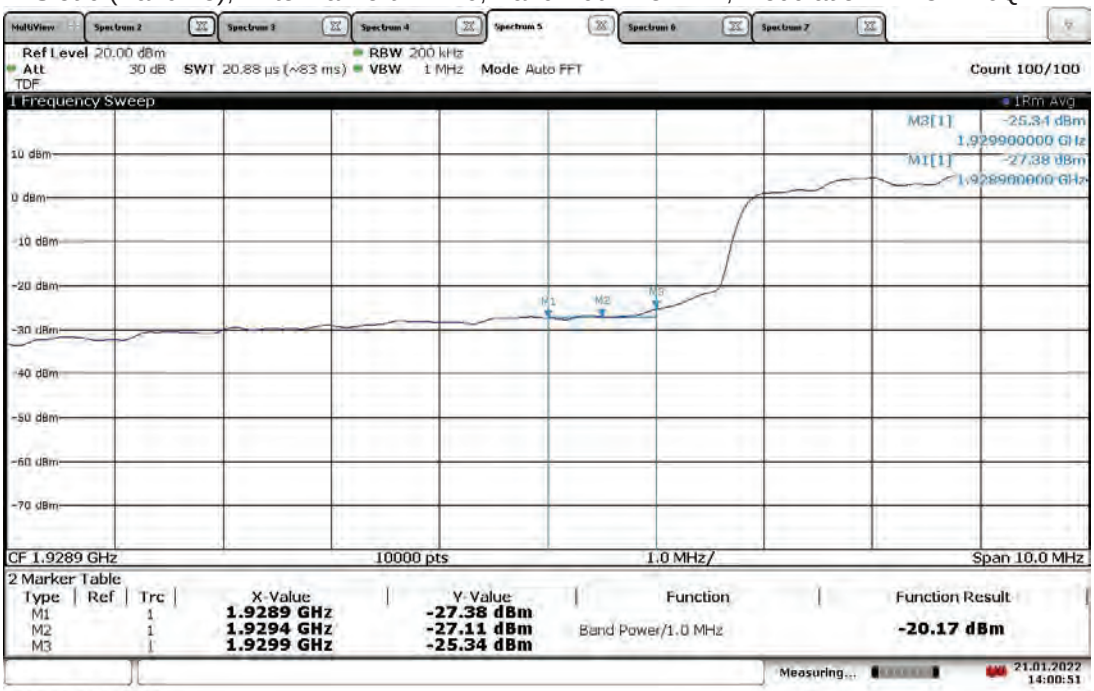
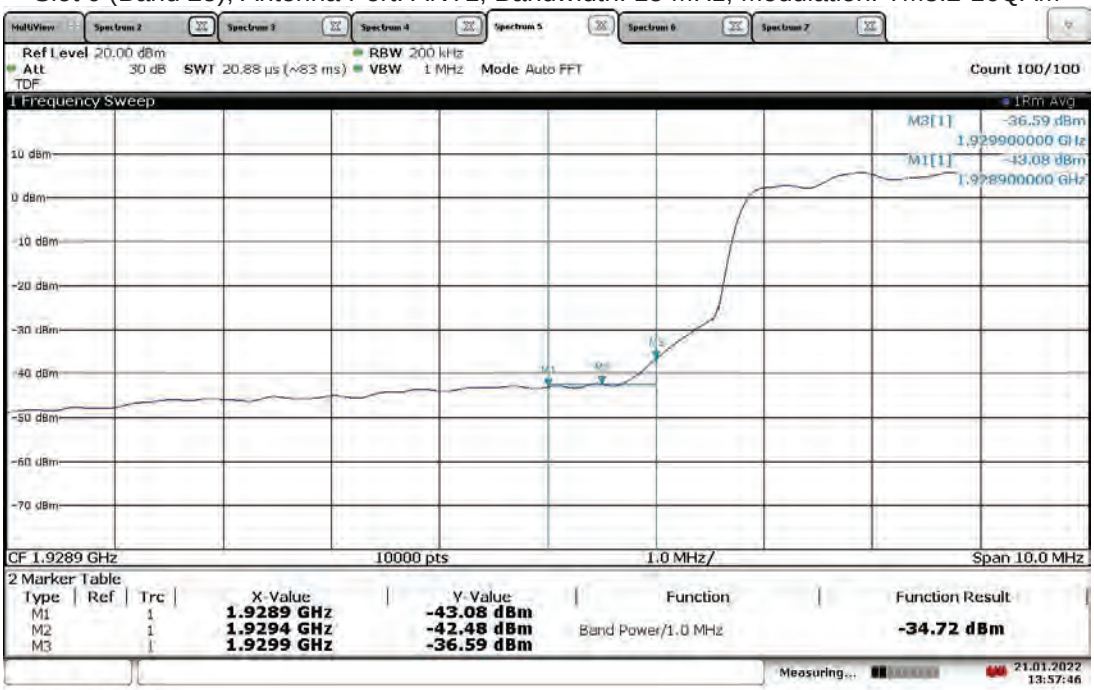
Band Edge Compliant, Lower Band Edge, 1937.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM



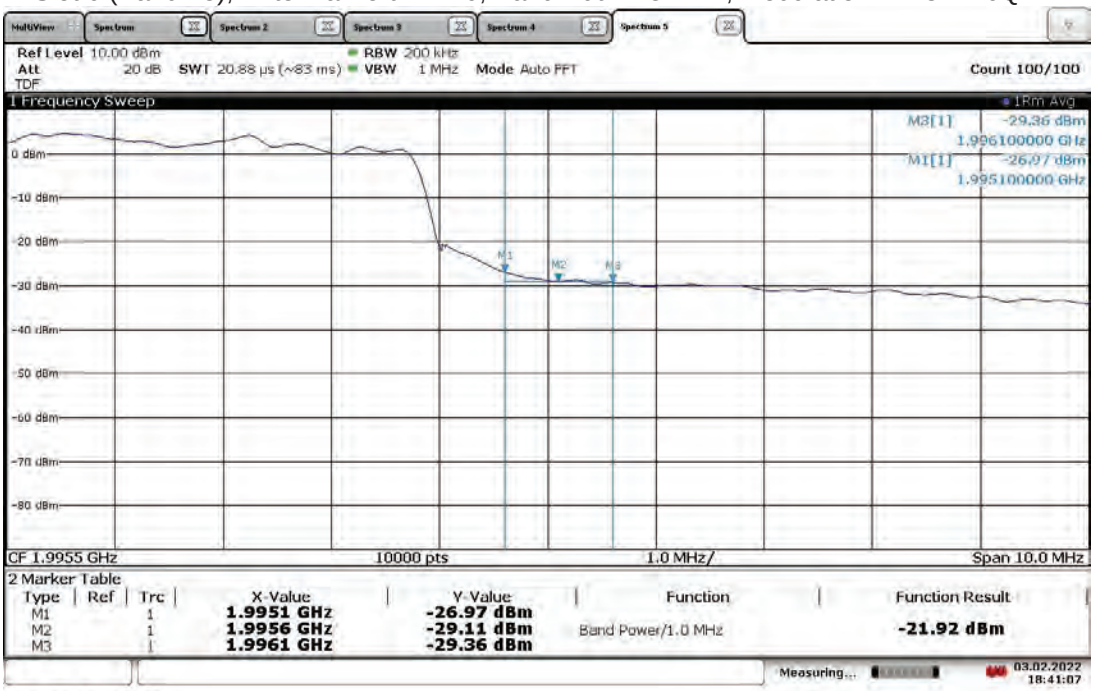
14:00:52 21.01.2022

Band Edge Compliant, Lower Band Edge, 1937.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

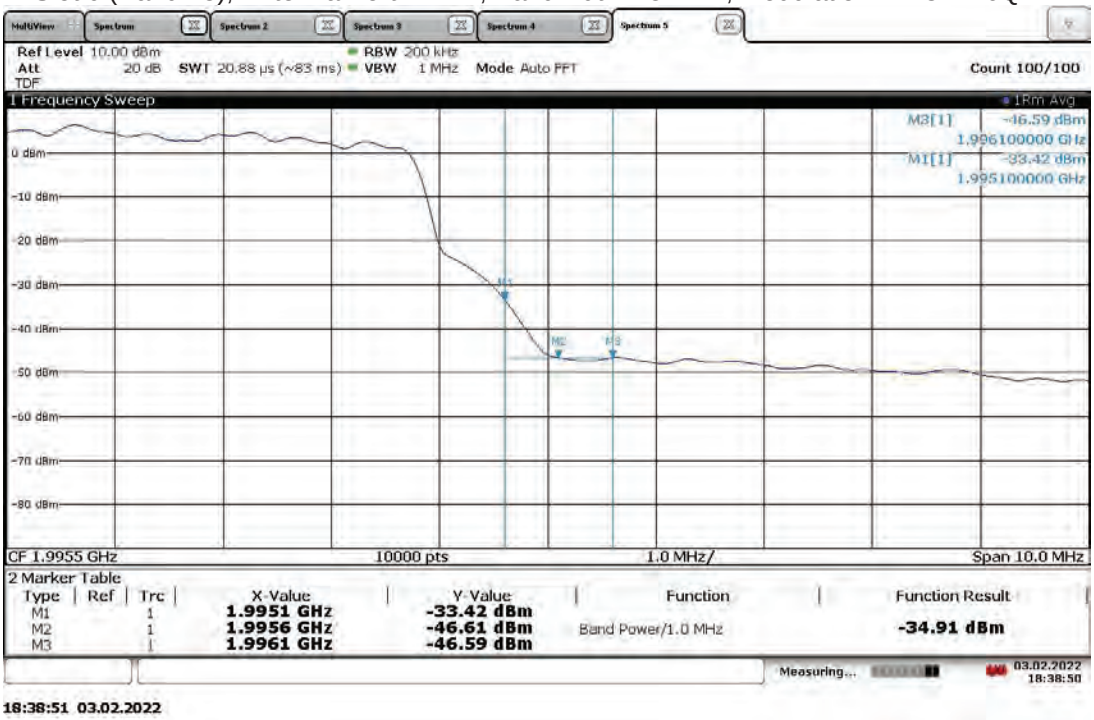


13:57:47 21.01.2022

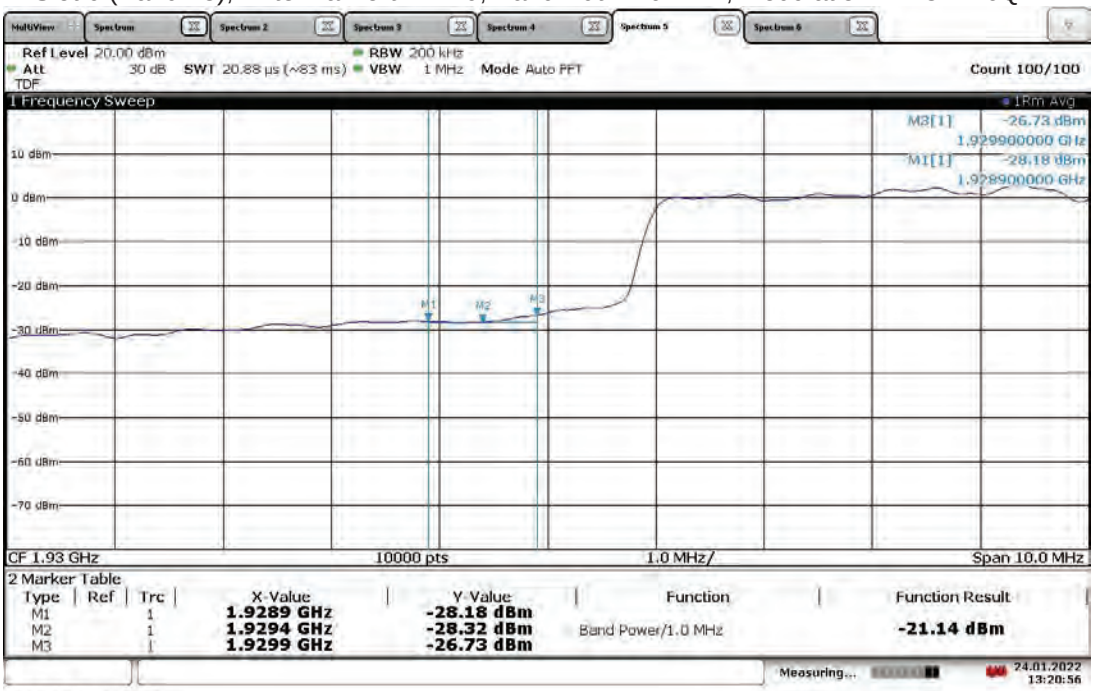
Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM



Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

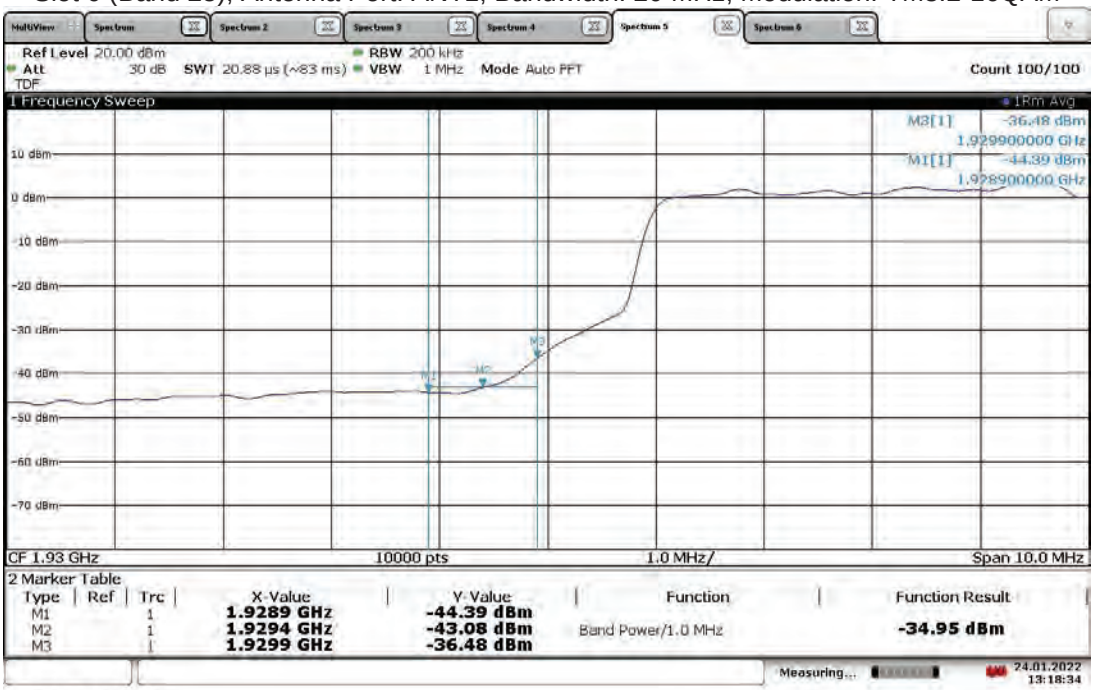


Band Edge Compliant, Lower Band Edge, 1940 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM



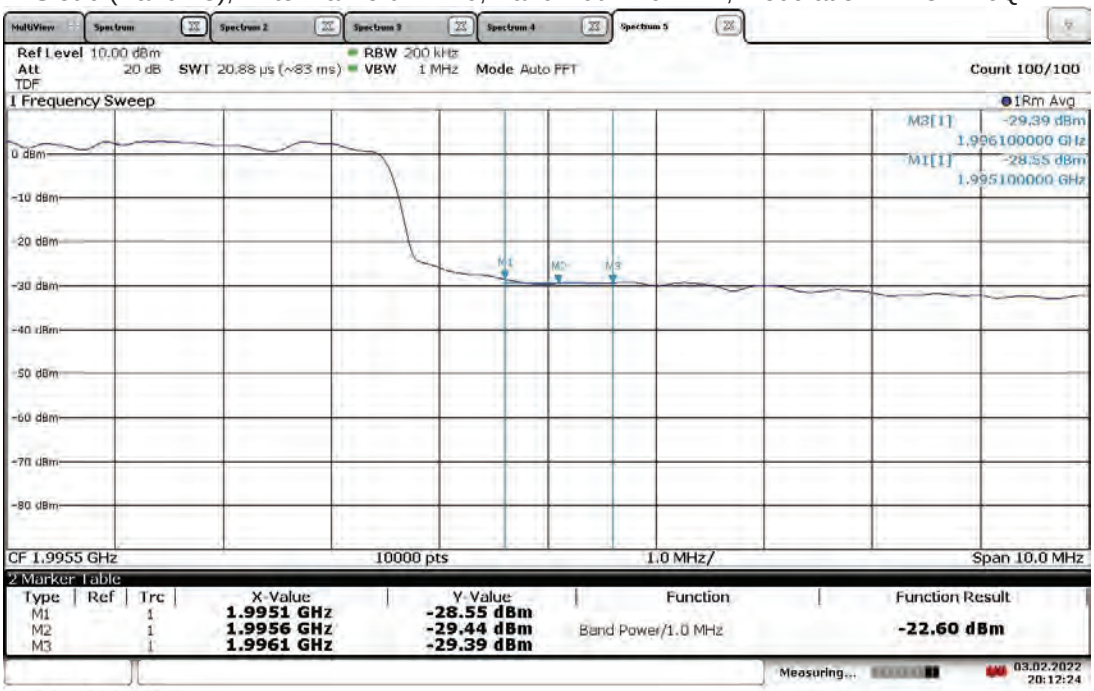
13:20:56 24.01.2022

Band Edge Compliant, Lower Band Edge, 1940 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

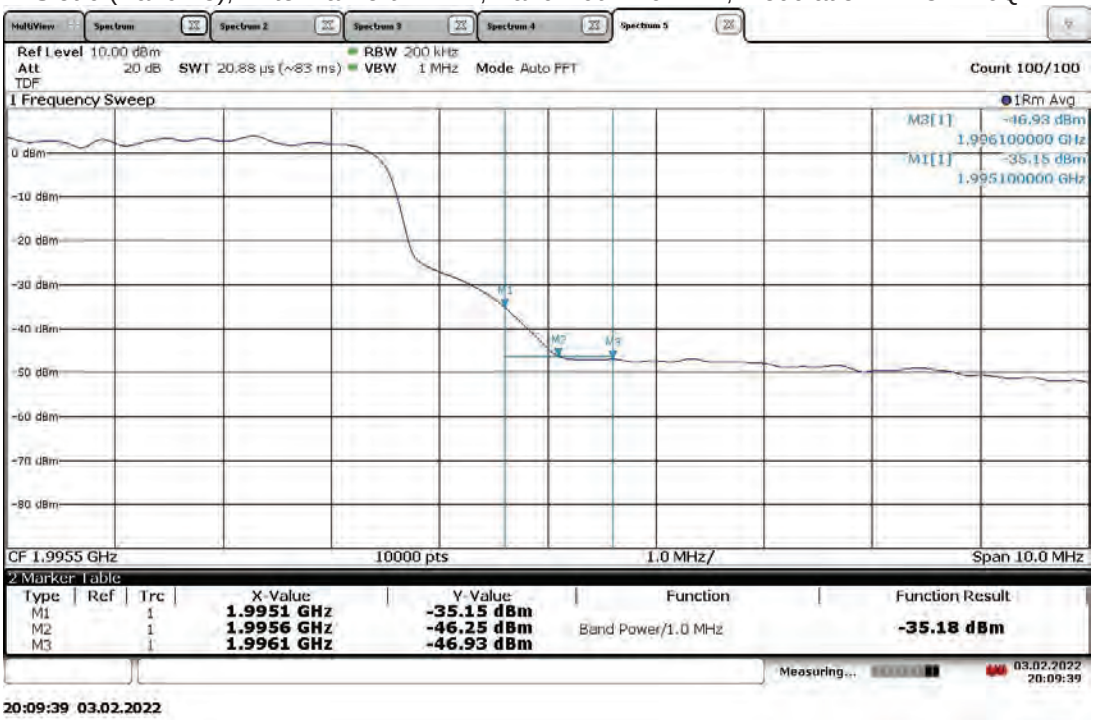


13:18:34 24.01.2022

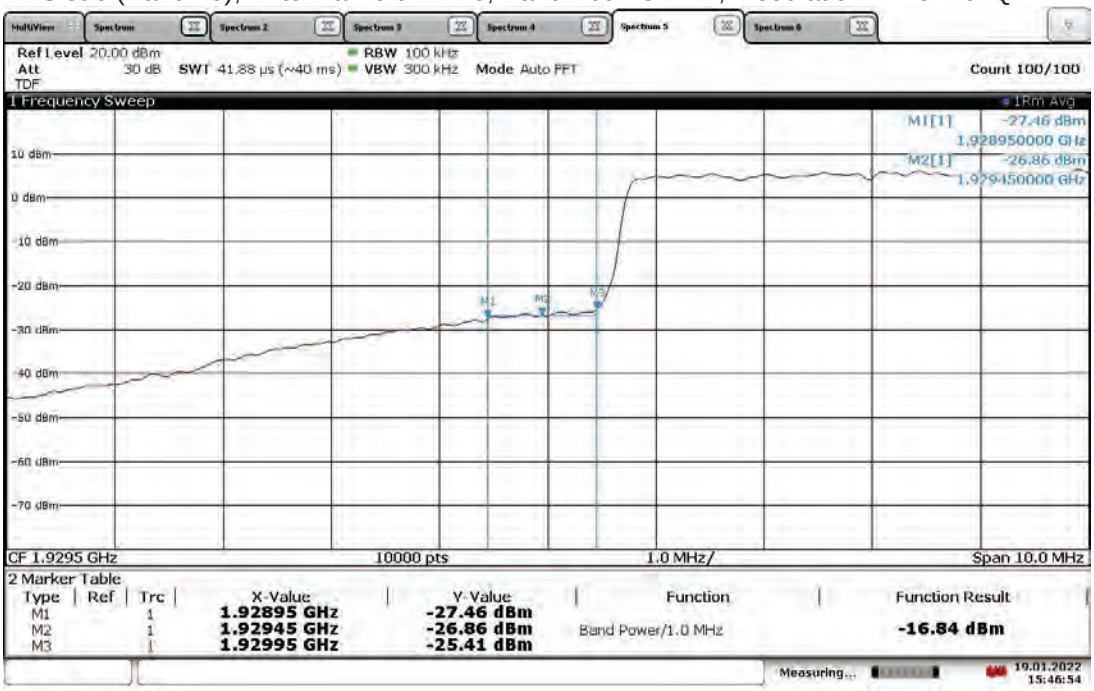
Band Edge Compliant, Upper Band Edge, 1985 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM



Band Edge Compliant, Upper Band Edge, 1985 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

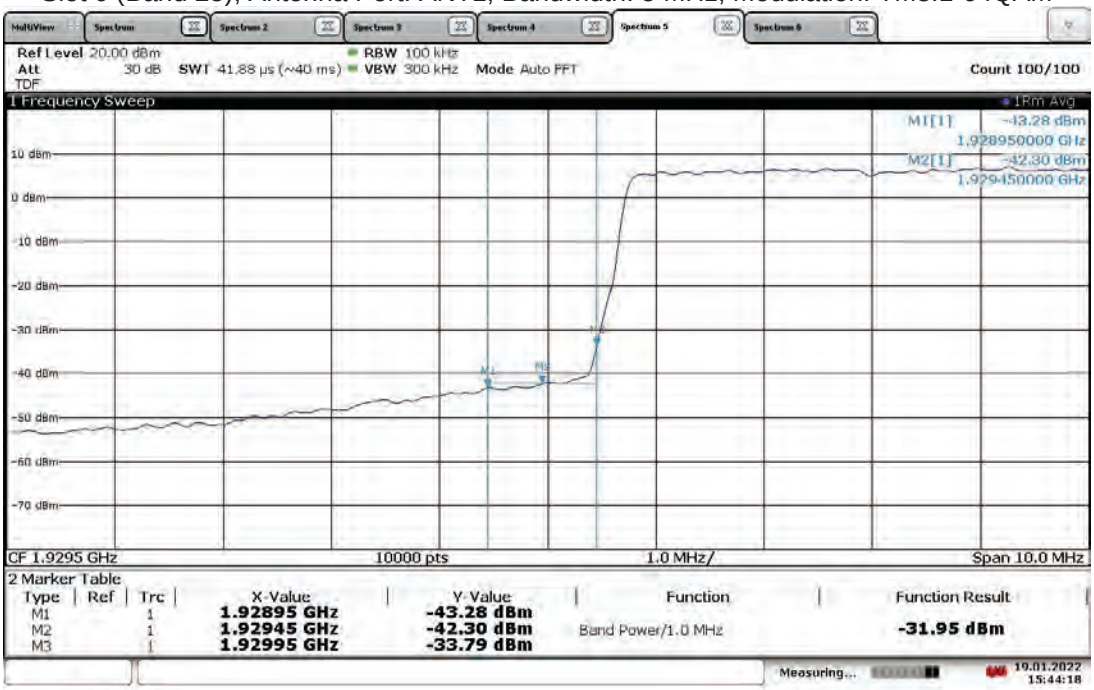


Band Edge Compliant, Lower Band Edge, 1932.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM



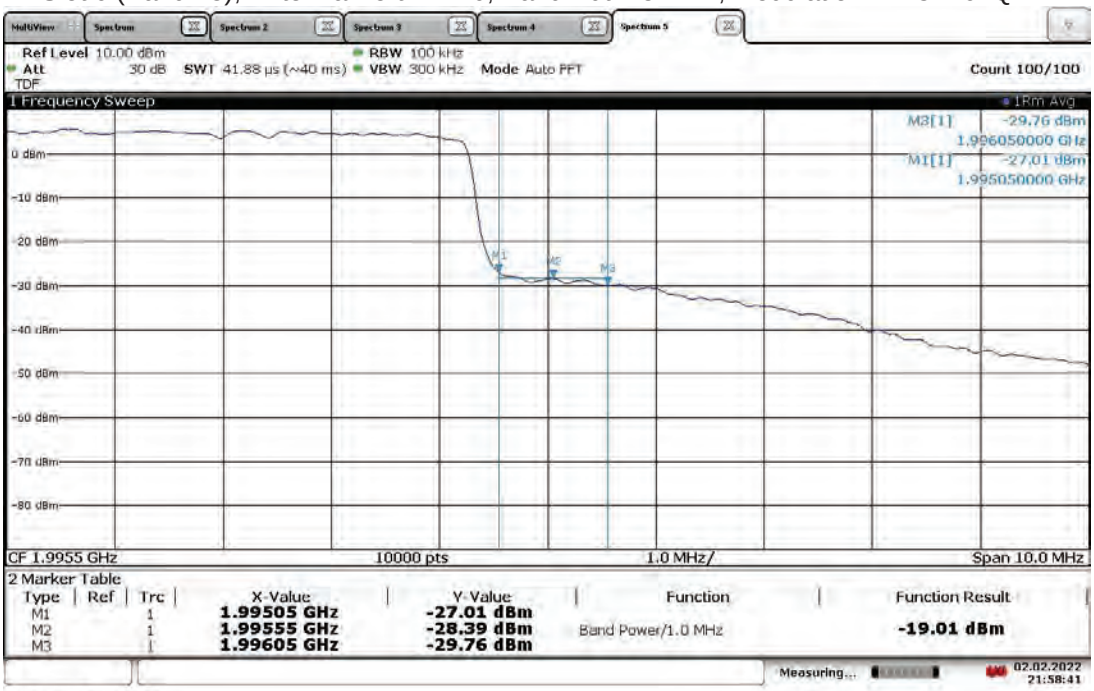
15:46:54 19.01.2022

Band Edge Compliant, Lower Band Edge, 1932.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

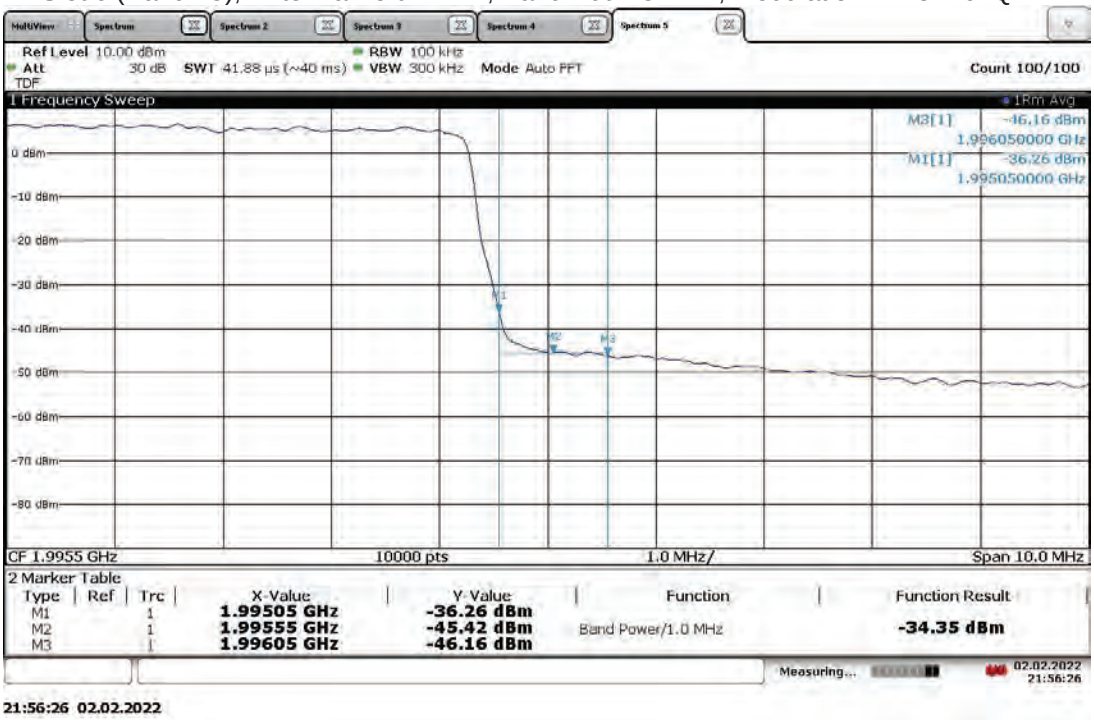


15:44:18 19.01.2022

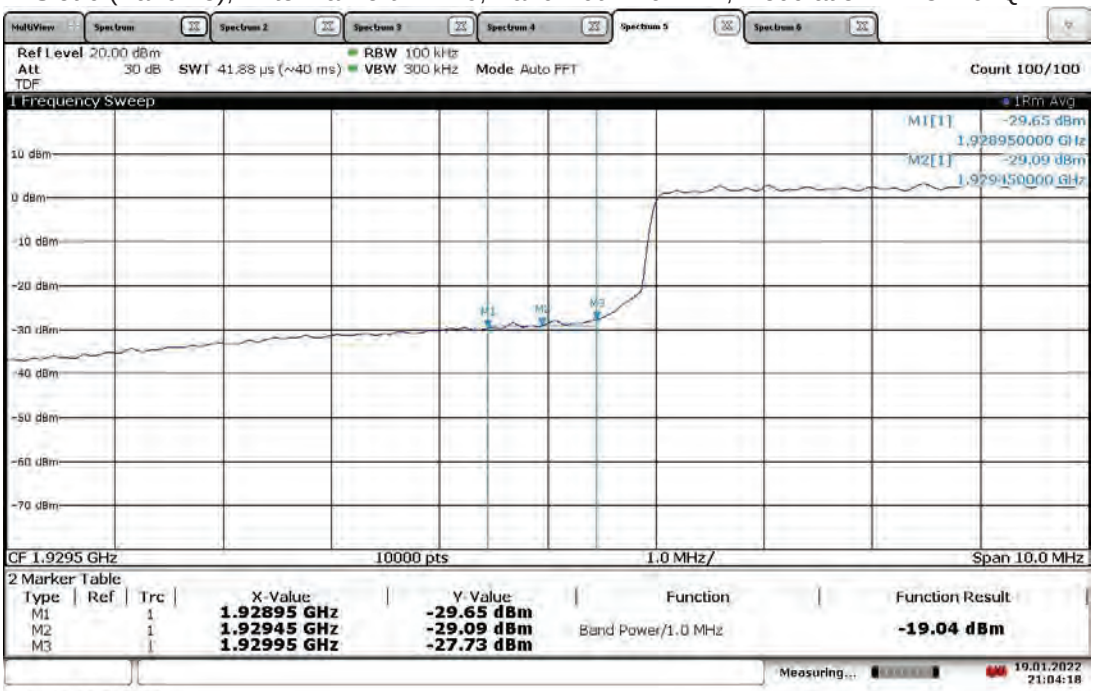
Band Edge Compliant, Upper Band Edge, 1992.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM



Band Edge Compliant, Upper Band Edge, 1992.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

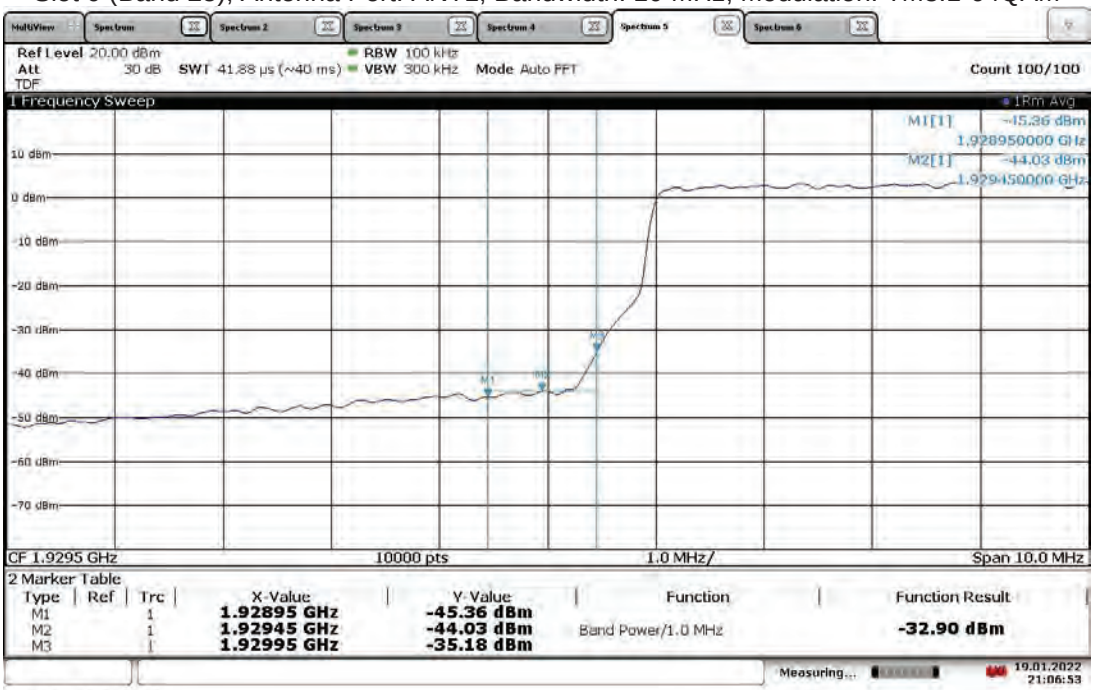


Band Edge Compliant, Lower Band Edge, 1935 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM



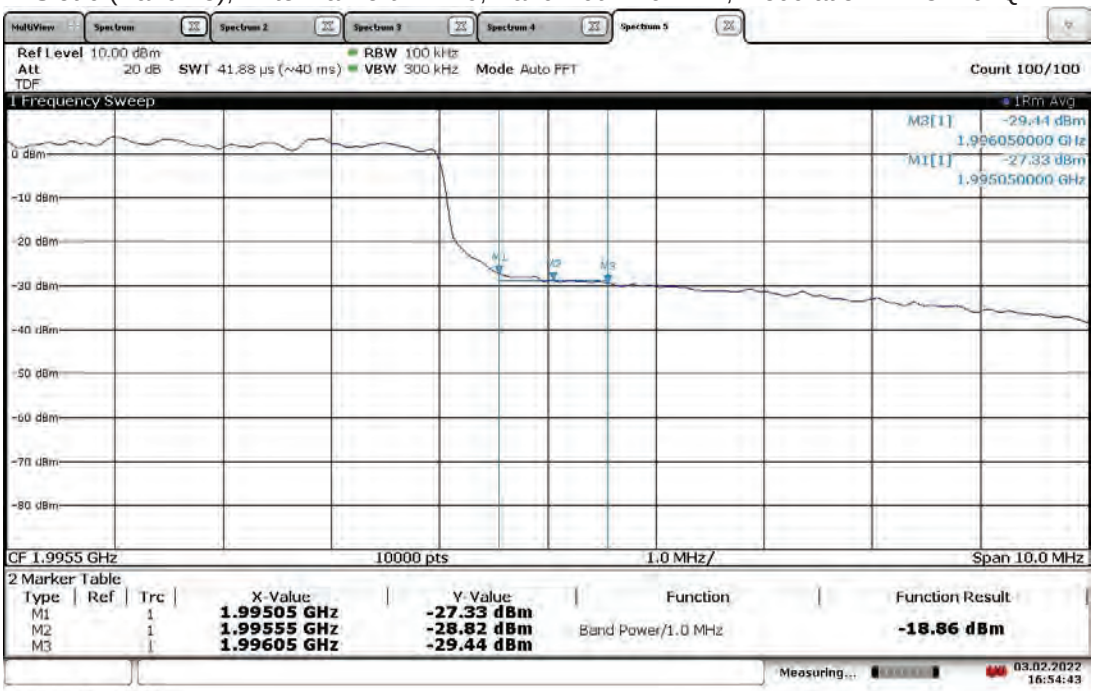
21:04:19 19.01.2022

Band Edge Compliant, Lower Band Edge, 1935 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

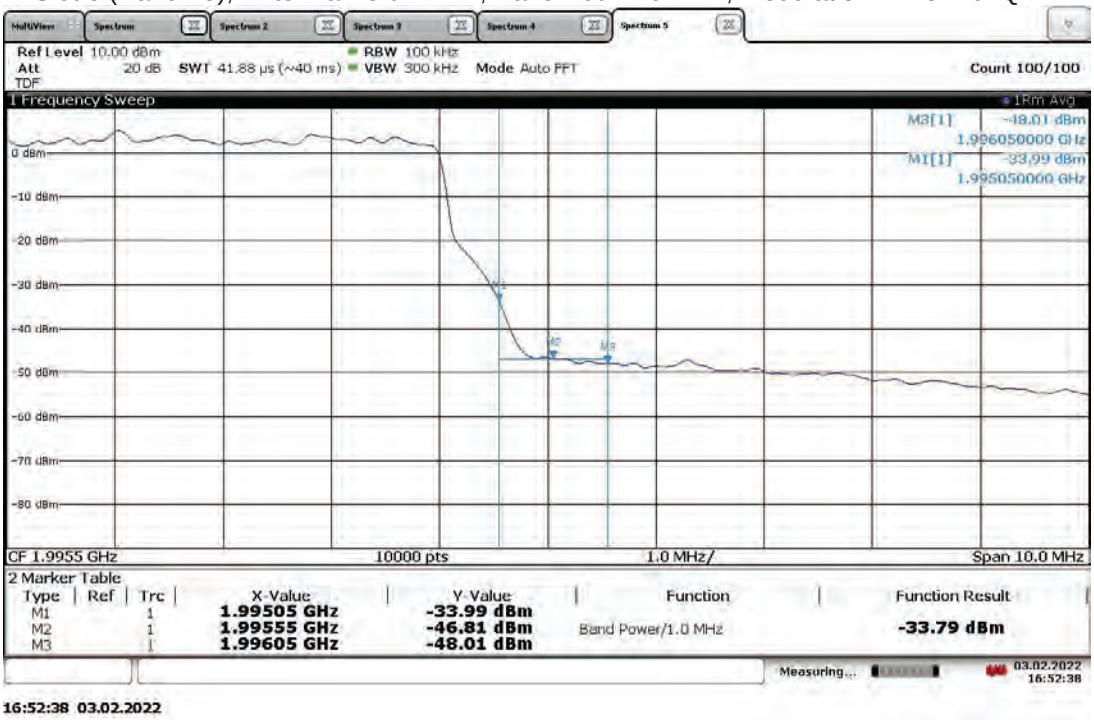


21:06:53 19.01.2022

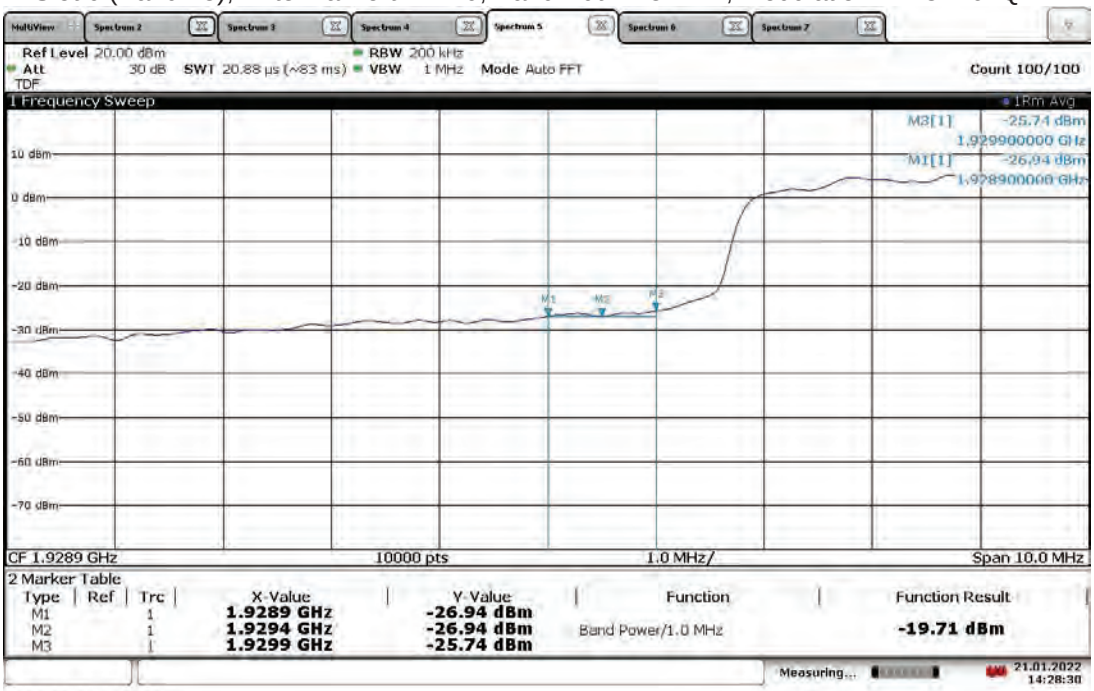
Band Edge Compliant, Upper Band Edge, 1990 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM



Band Edge Compliant, Upper Band Edge, 1990 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

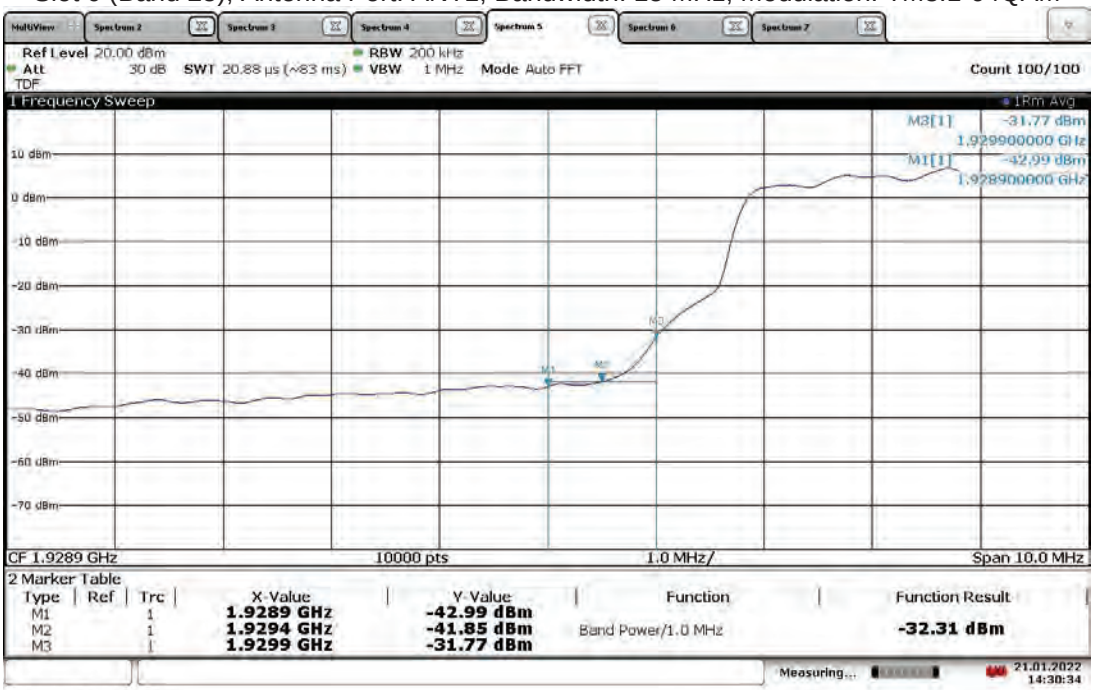


Band Edge Compliant, Lower Band Edge, 1937.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM



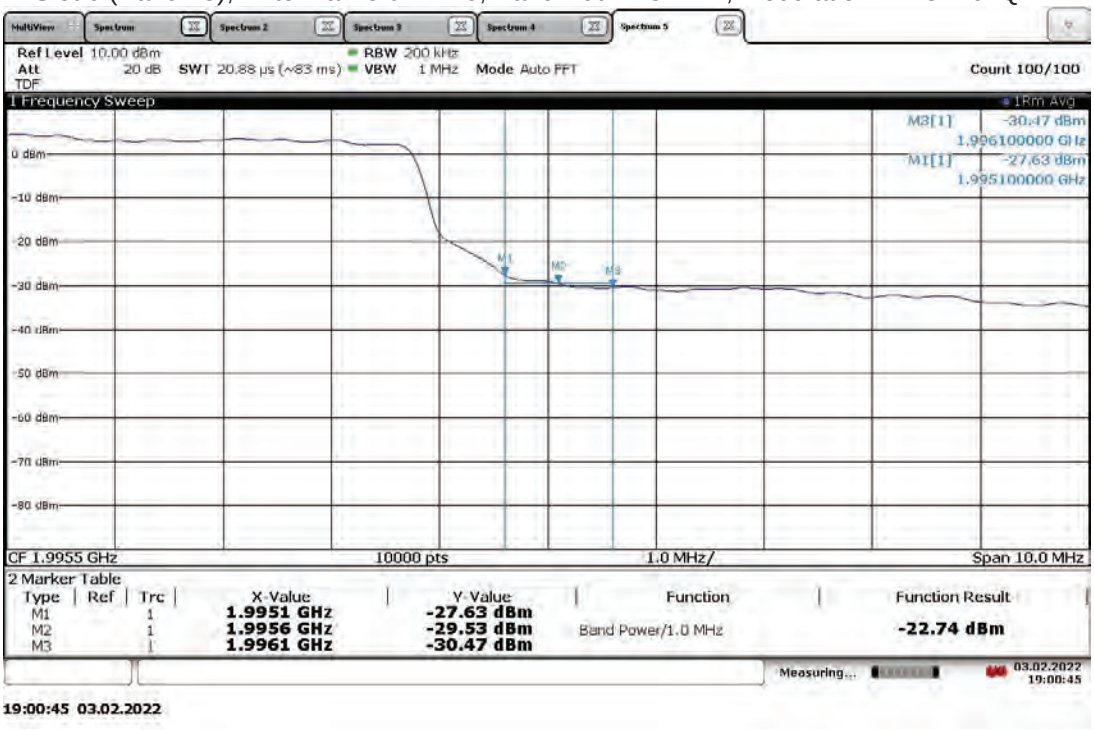
14:28:30 21.01.2022

Band Edge Compliant, Lower Band Edge, 1937.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

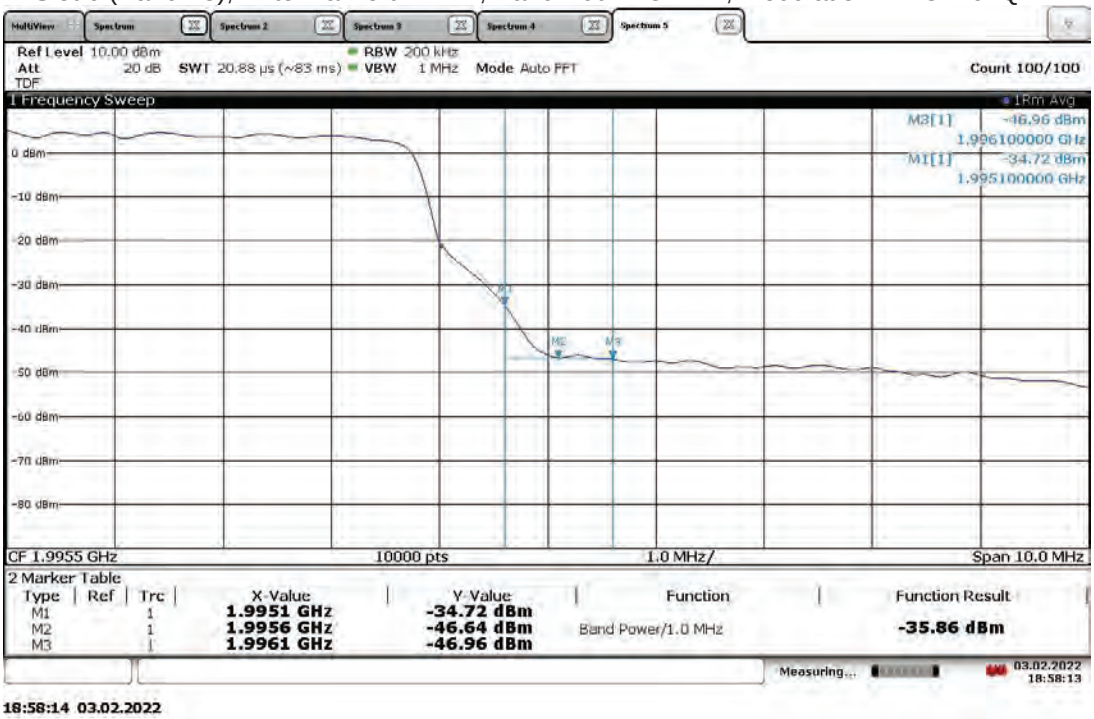


14:30:35 21.01.2022

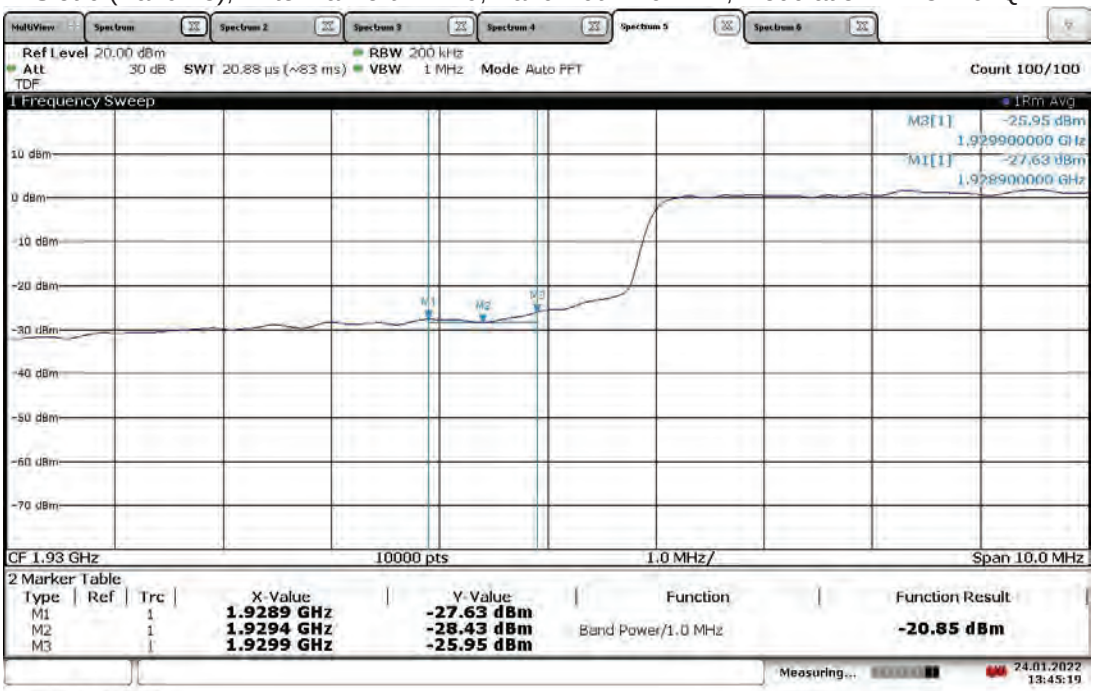
Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM



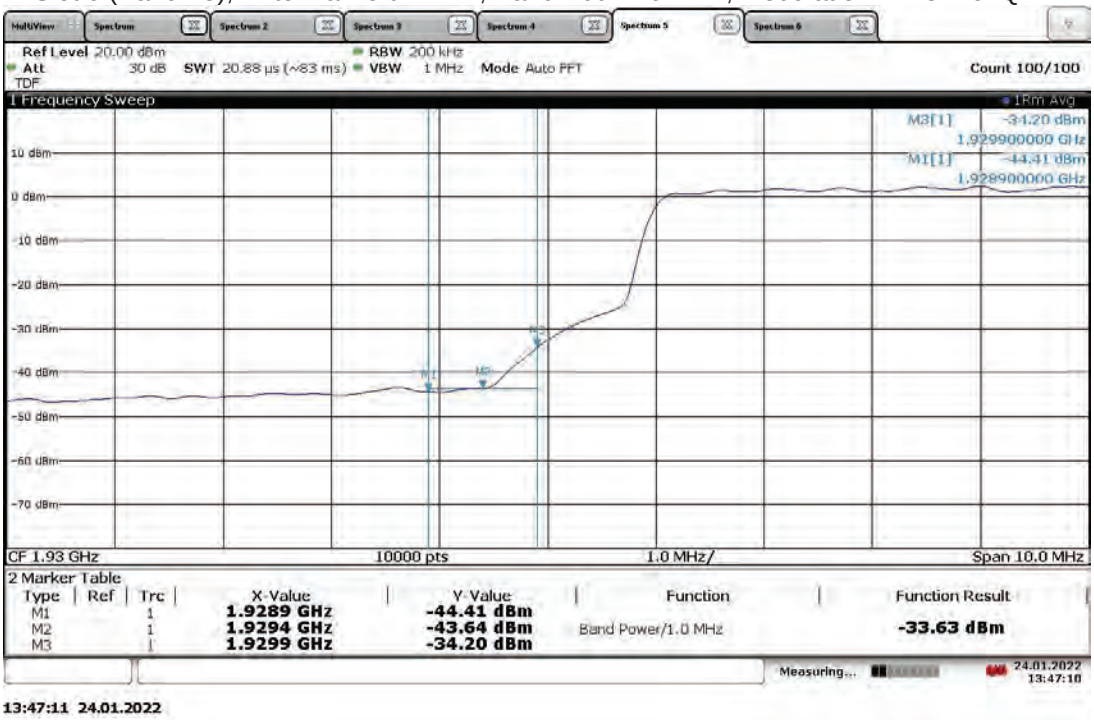
Band Edge Compliant, Upper Band Edge, 1988.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.1-64QAM



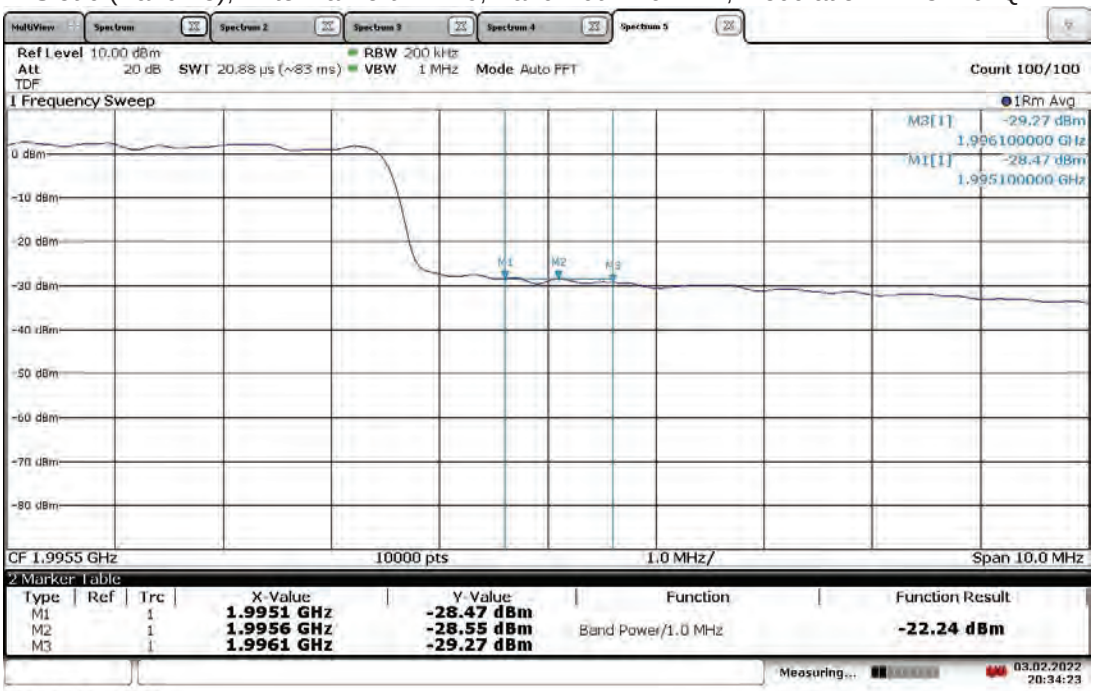
Band Edge Compliant, Lower Band Edge, 1940 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM



Band Edge Compliant, Lower Band Edge, 1940 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

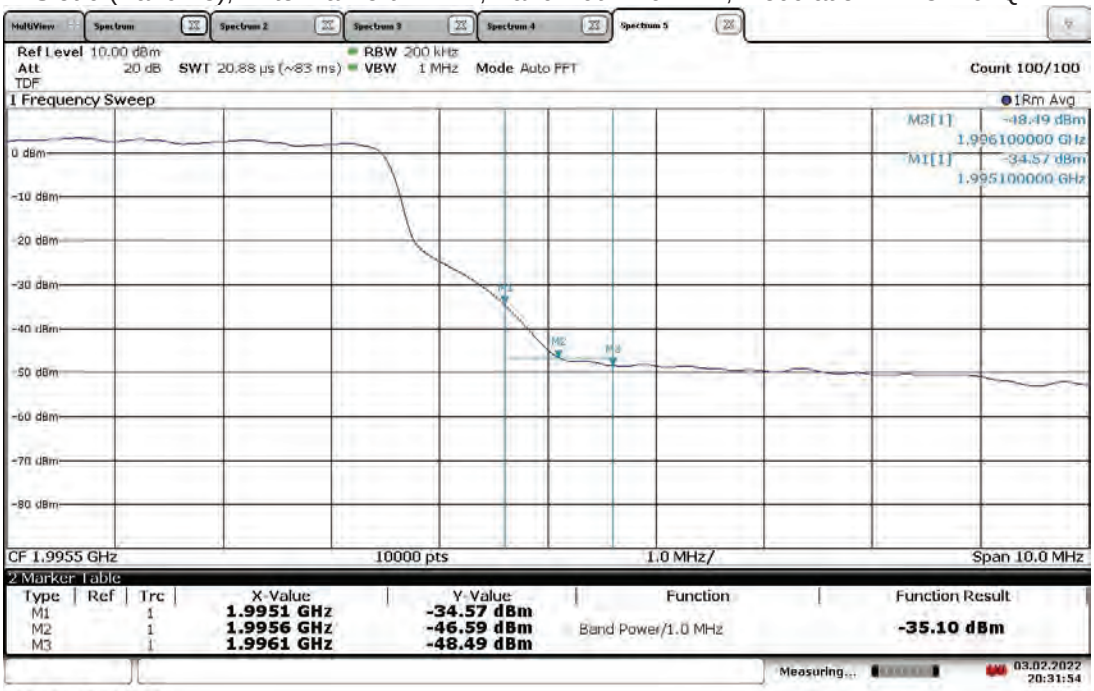


Band Edge Compliant, Upper Band Edge, 1985 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM



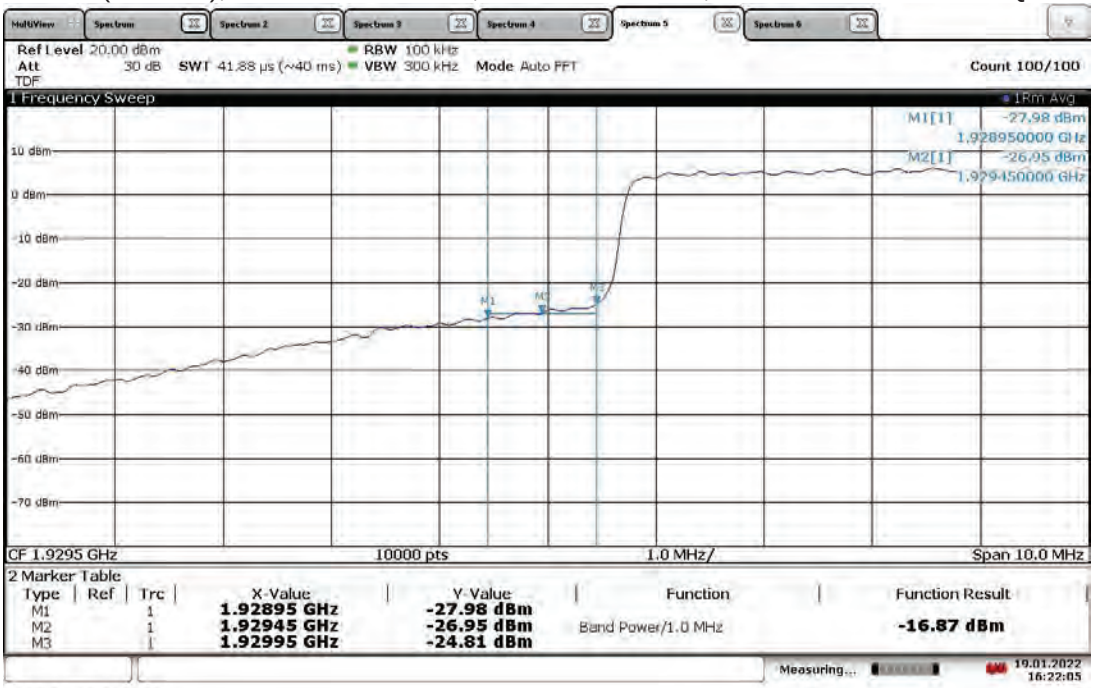
20:34:23 03.02.2022

Band Edge Compliant, Upper Band Edge, 1985 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.1-64QAM



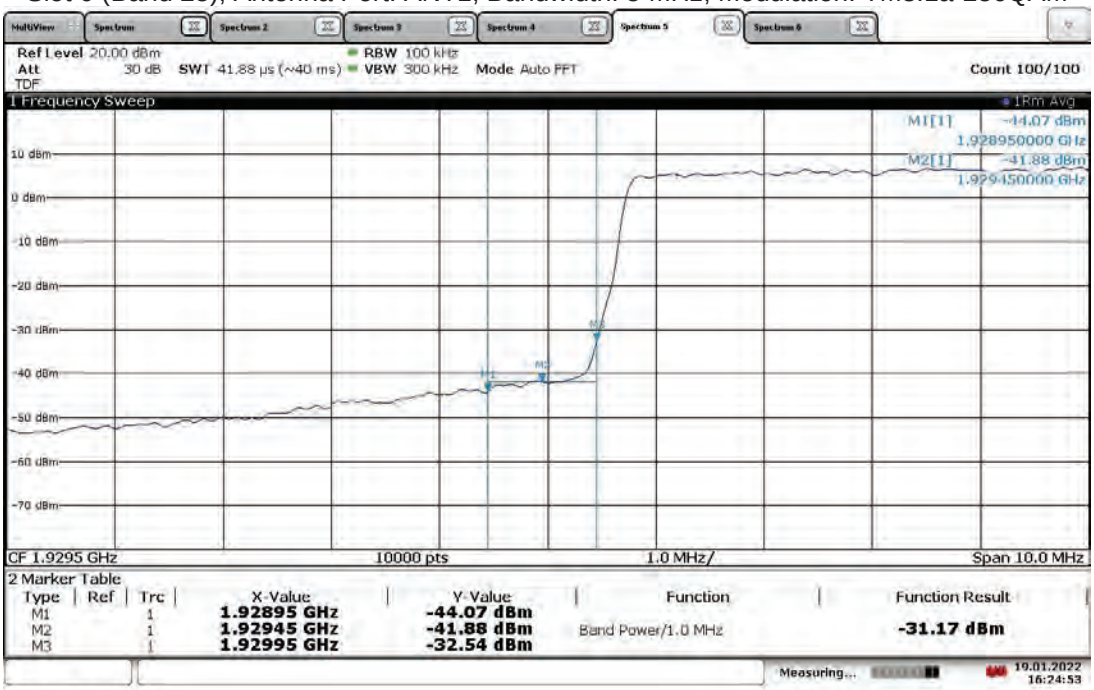
20:31:54 03.02.2022

Band Edge Compliant, Lower Band Edge, 1932.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM



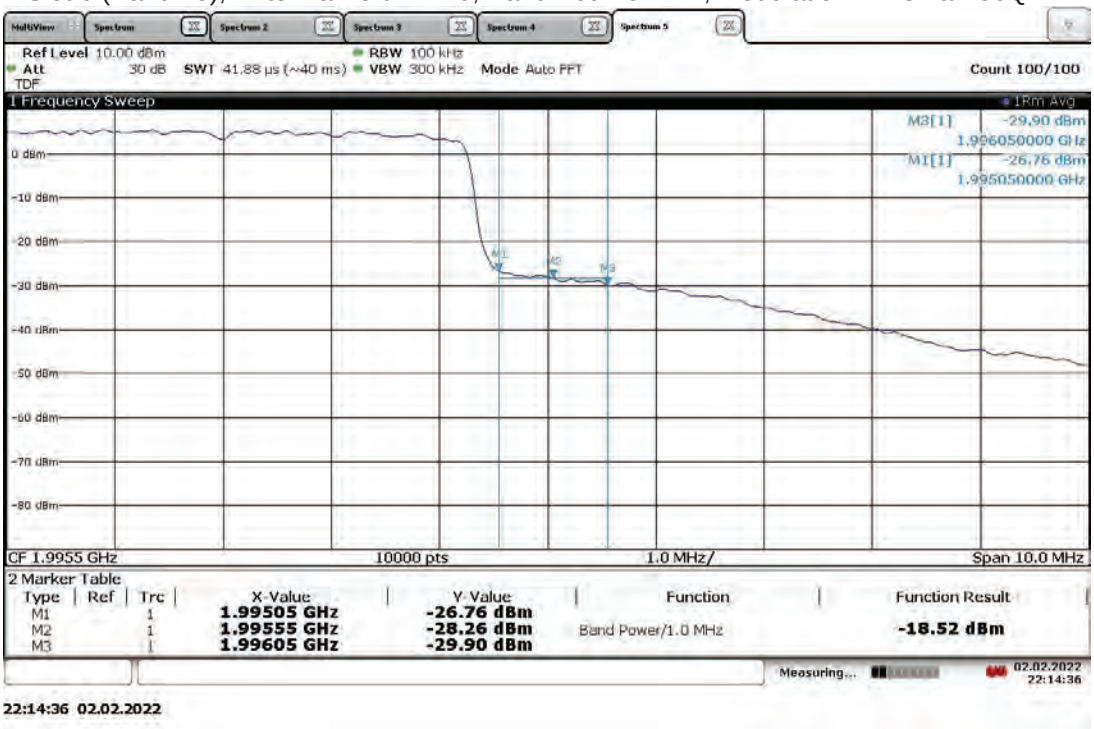
16:22:05 19.01.2022

Band Edge Compliant, Lower Band Edge, 1932.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

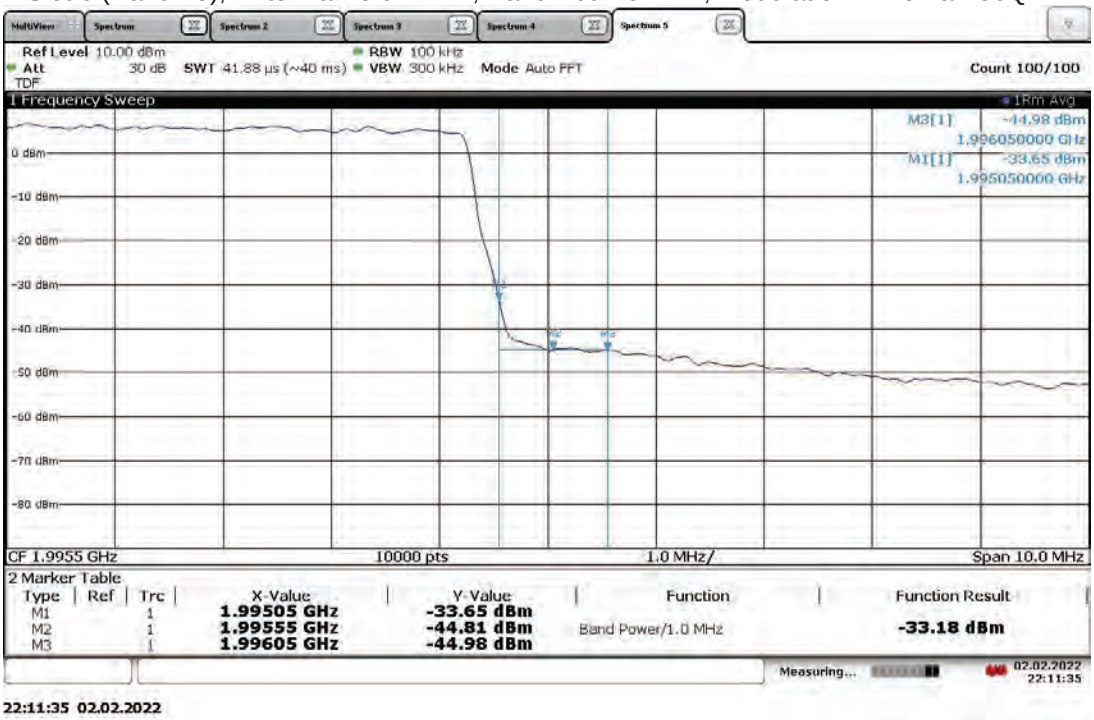


16:24:53 19.01.2022

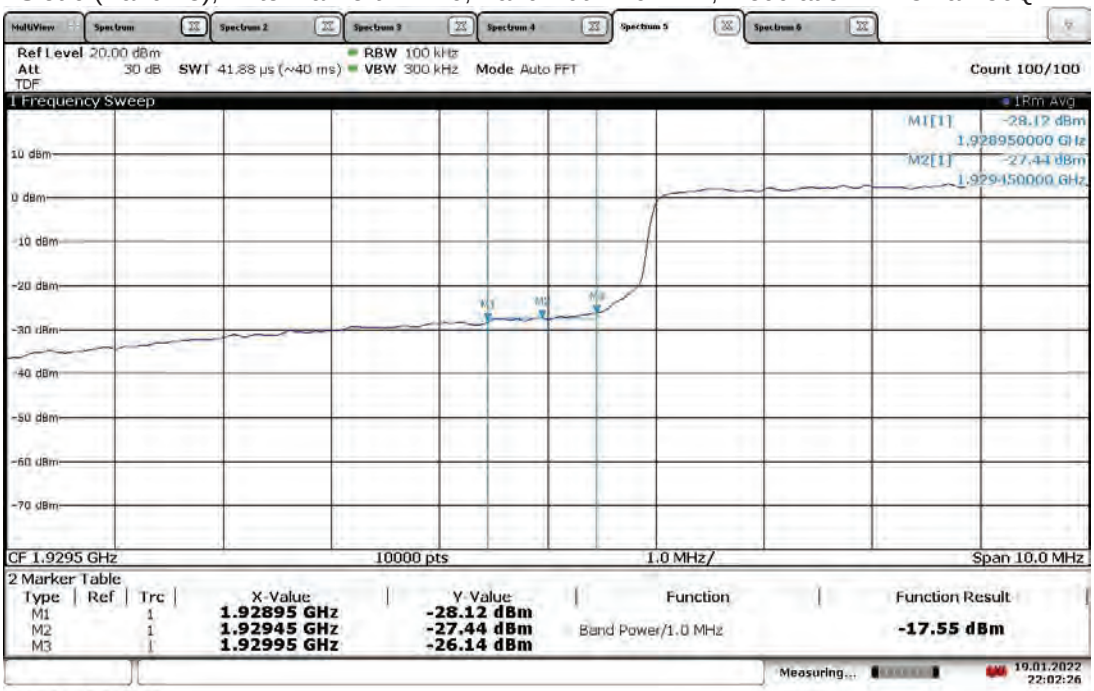
Band Edge Compliant, Upper Band Edge, 1992.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM



Band Edge Compliant, Upper Band Edge, 1992.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

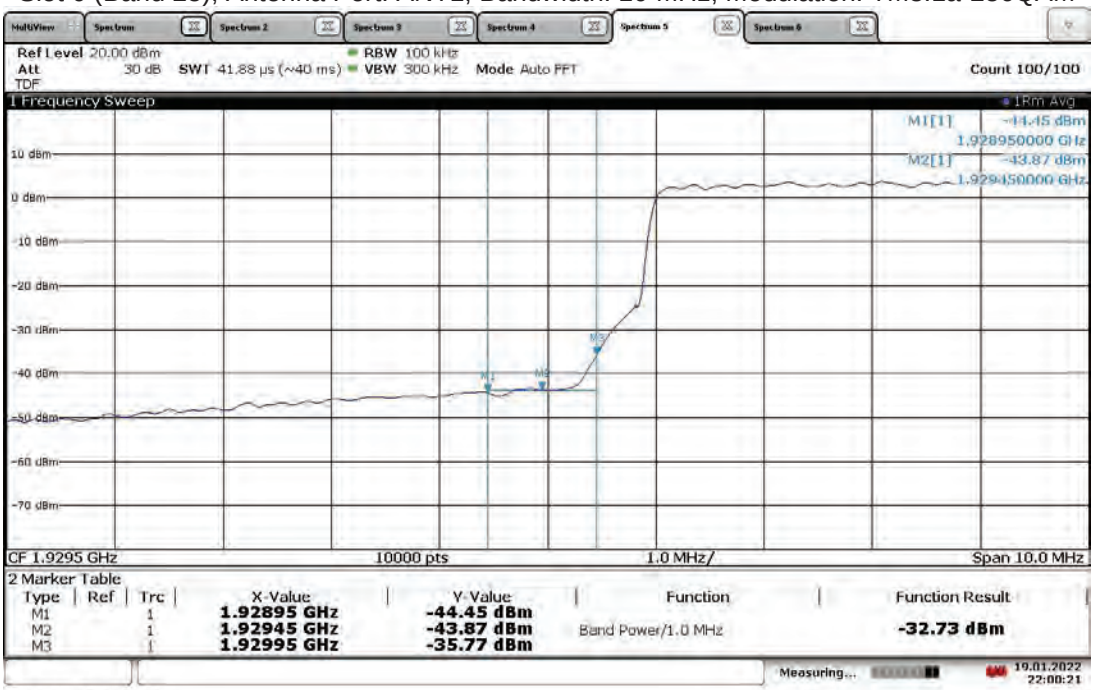


Band Edge Compliant, Lower Band Edge, 1935 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM



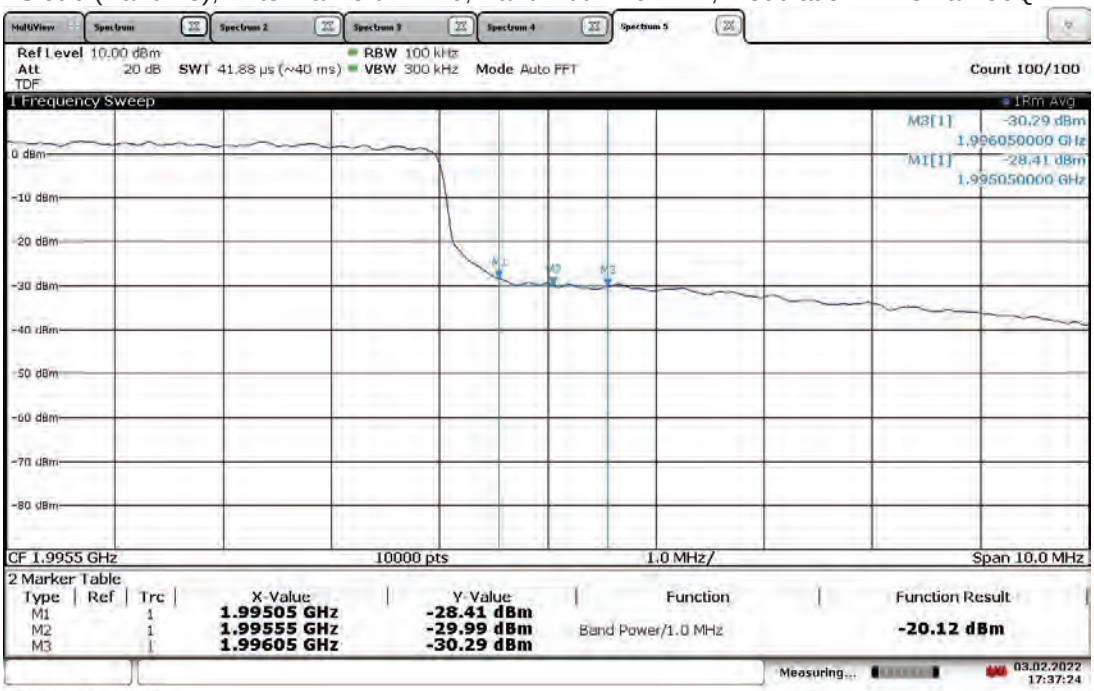
22:02:26 19.01.2022

Band Edge Compliant, Lower Band Edge, 1935 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM



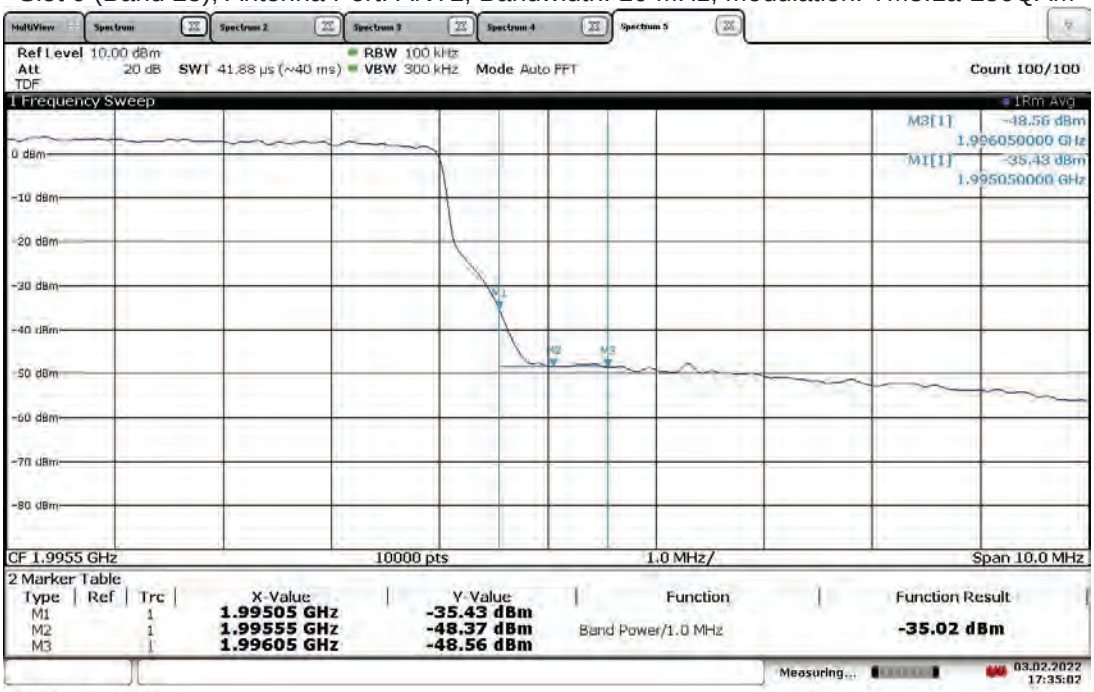
22:00:22 19.01.2022

Band Edge Compliant, Upper Band Edge, 1990 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM



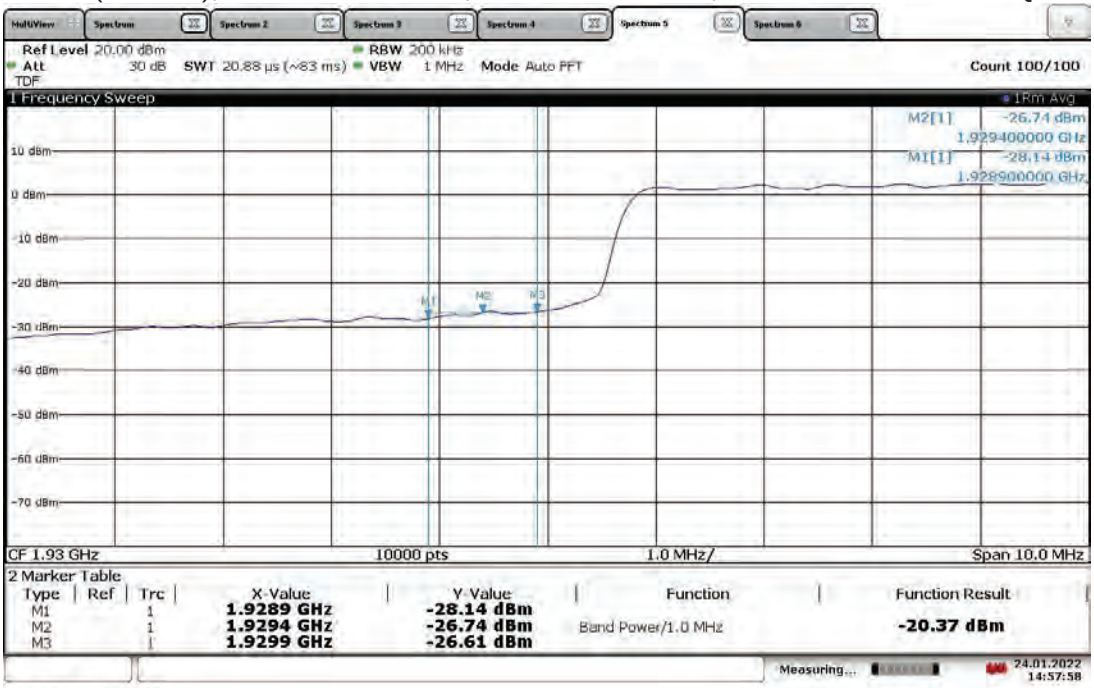
17:37:24 03.02.2022

Band Edge Compliant, Upper Band Edge, 1990 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM

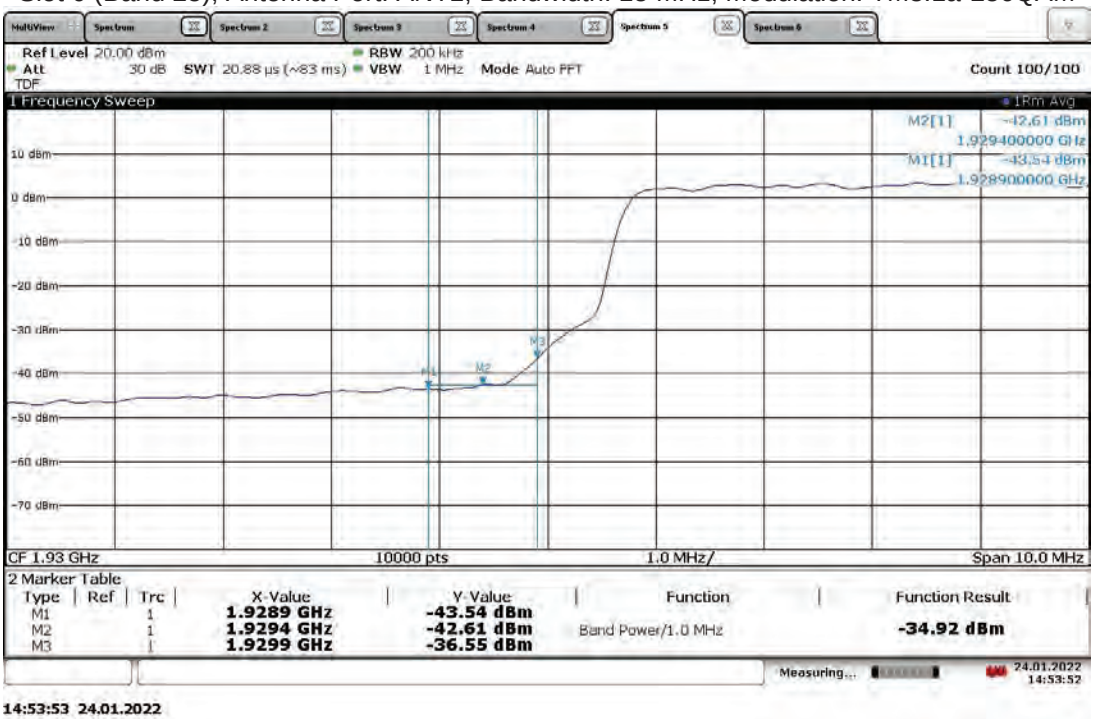


17:35:02 03.02.2022

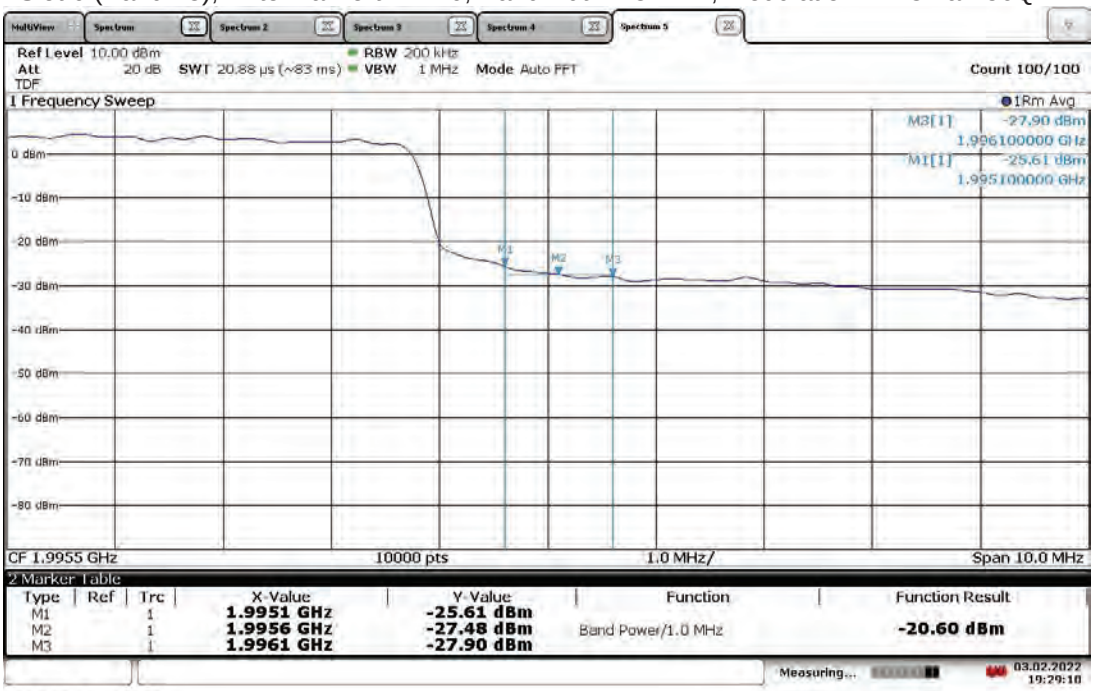
Band Edge Compliant, Lower Band Edge,1937.5MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM



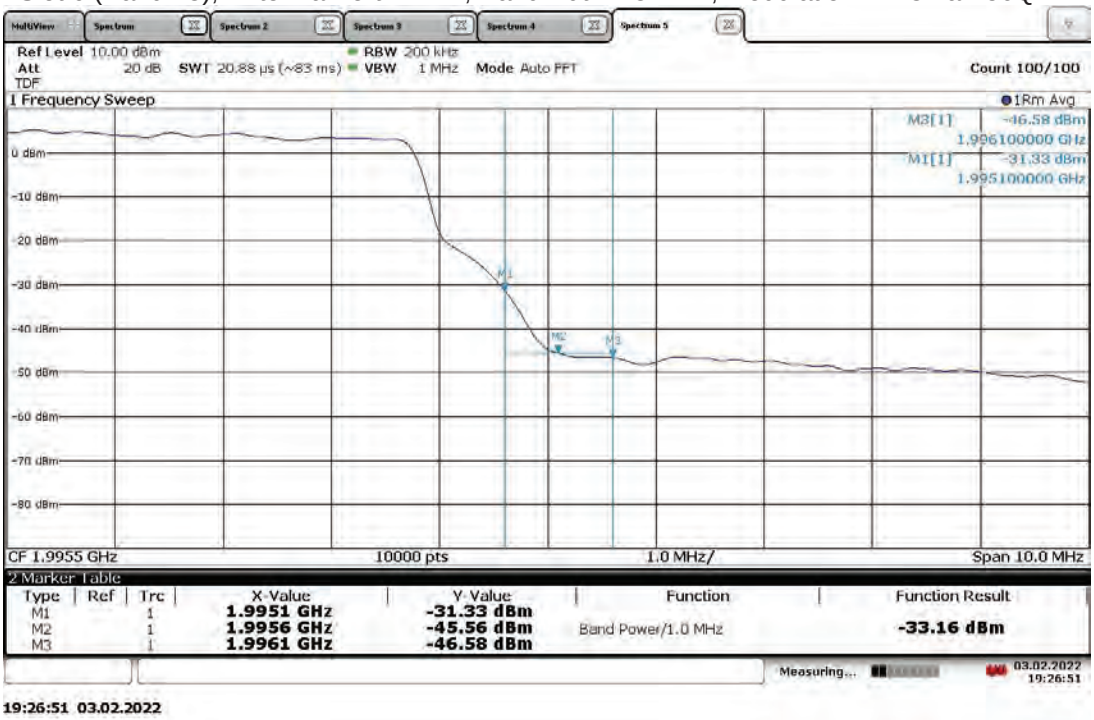
Band Edge Compliant, Lower Band Edge,1937.5MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM



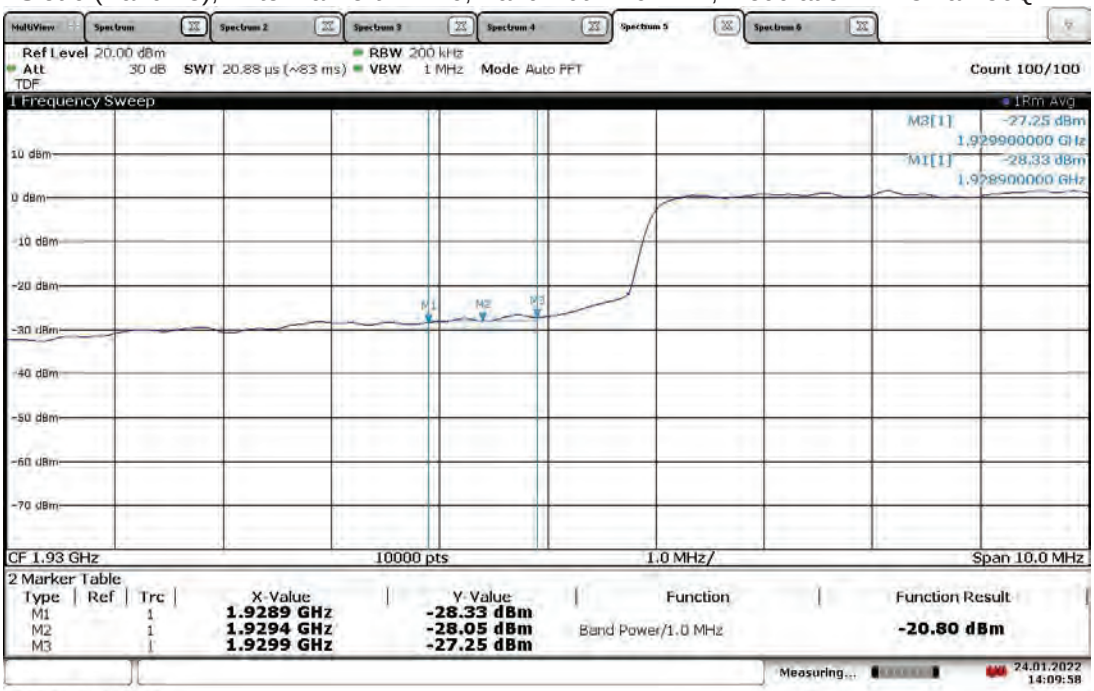
Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM



Band Edge Compliant, Upper Band Edge, 1987.5 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

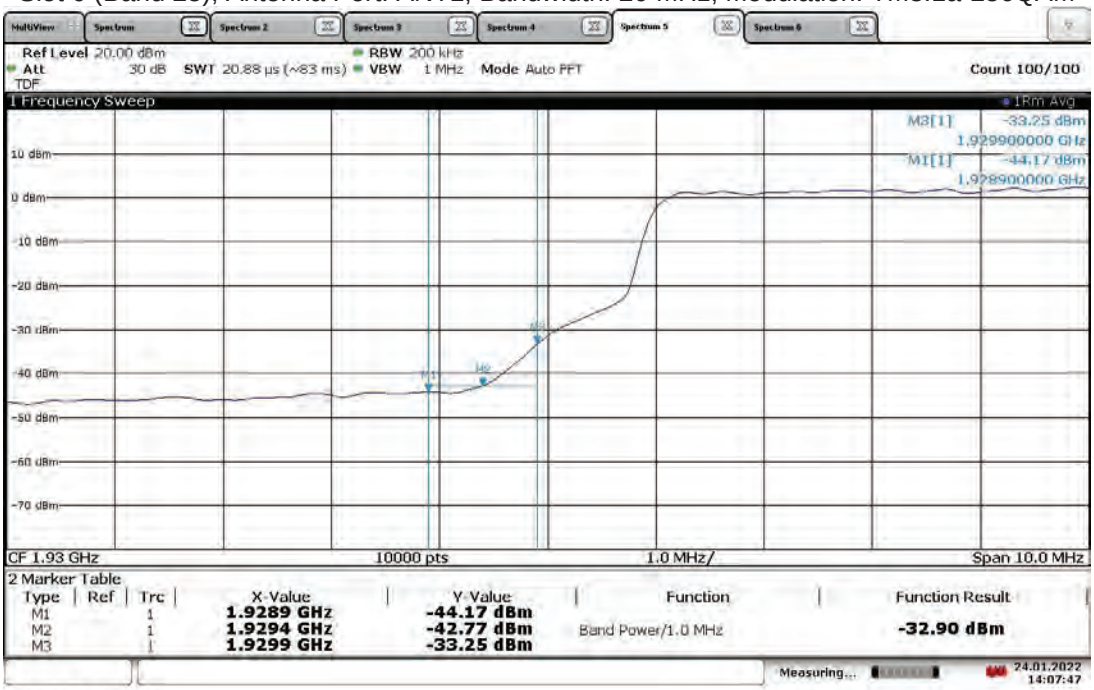


Band Edge Compliant, Lower Band Edge, 1940 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM



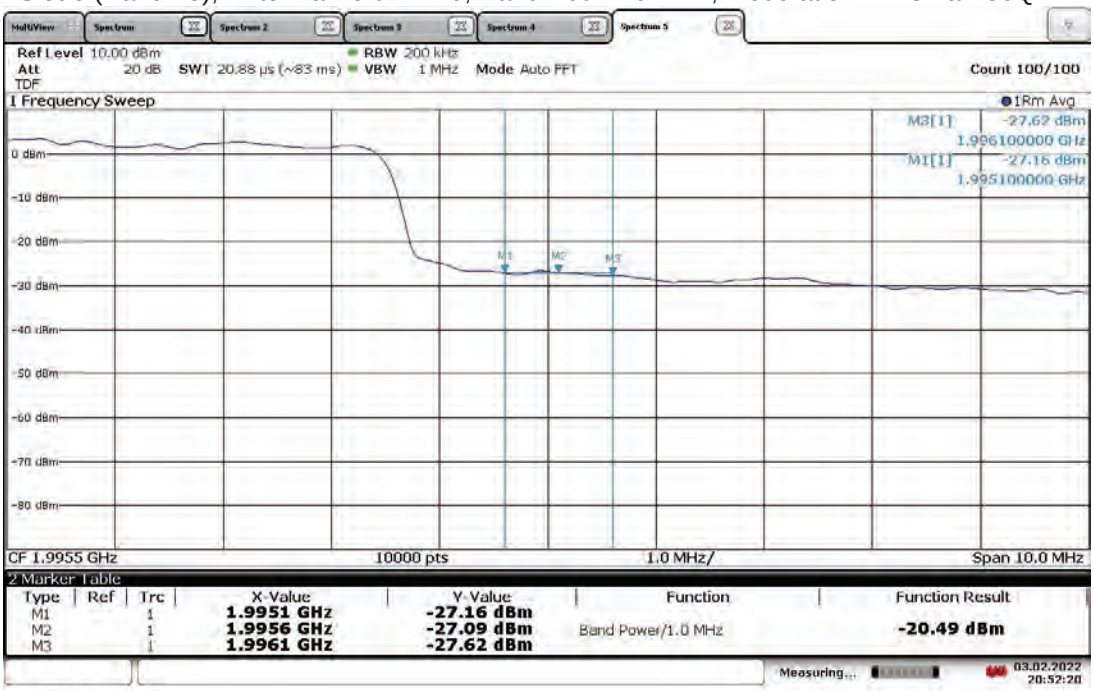
14:09:58 24.01.2022

Band Edge Compliant, Lower Band Edge, 1940 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

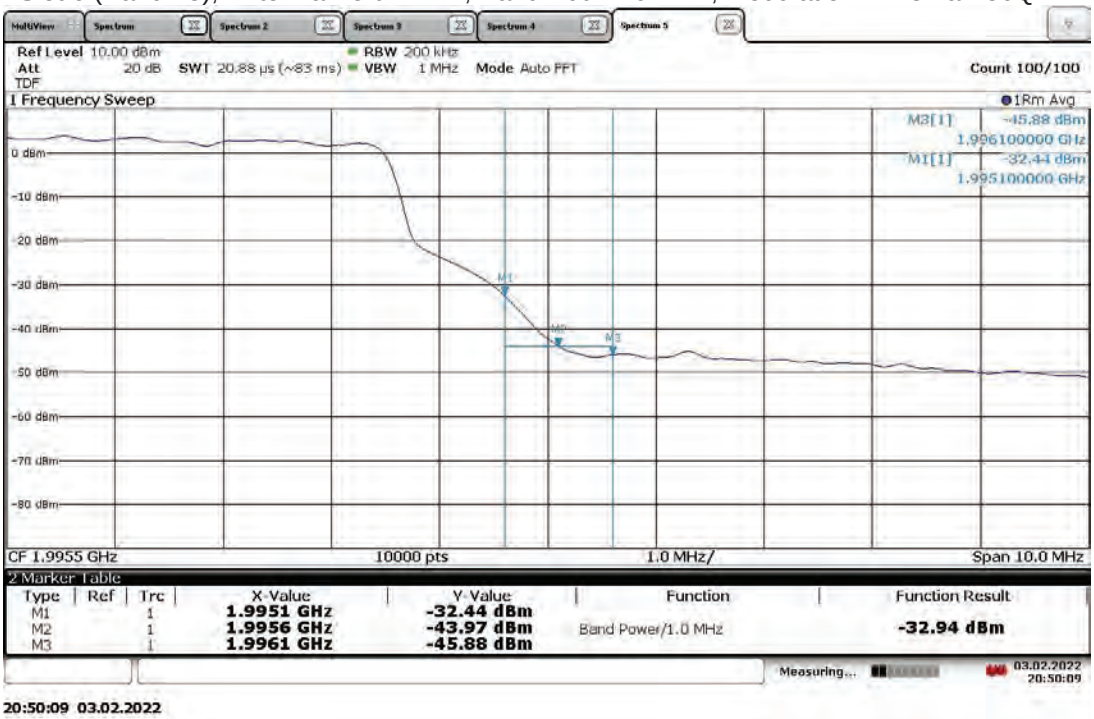


14:07:47 24.01.2022

Band Edge Compliant, Upper Band Edge, 1985 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT0, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM



Band Edge Compliant, Upper Band Edge, 1985 MHz (5G nR)
Slot 0 (Band 25), Antenna Port: ANT1, Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM



Test Personnel:	Kouma Sinn KPS	Test Date:	01/19/2022, 01/21/2022, 01/24/2022
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 24	Limit Applied:	See report section 9.3
Input Voltage:	48 VDC (POE)		
Pretest Verification w/ Ambient Signals or BB Source:	N/A	Ambient Temperature:	24, 24, 23 ºC
		Relative Humidity:	15, 8, 12 %
		Atmospheric Pressure:	1003, 1025, 1002 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	02/10/2021	02/10/2022
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

Software Utilized:

Name	Manufacturer	Version
None	--	--

10.3 Results:

The sample tested was found to Comply.

§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 1930-1995 MHz MHz.

Band 25 (4G LTE), Mod: QPSK, BW: 5 MHz, Antenna Port: ANT1, Low Ch. 1932.5 MHz

Frequency stability over temperature

Band 25 (4G LTE), Modulation: QPSK, Bandwidth: 5MHz, Antenna Port: ANT1 , Low Ch. 1932.5 MHz

Low Edge of Occupied Bandwidth

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.93026121	-8.07E-06	-4.1808E-06	-0.04	2.5
-20	1.93025795	-4.81E-06	-2.4919E-06	-0.02	2.5
-10	1.93025642	-3.28E-06	-1.69926E-06	-0.02	2.5
0	1.9302561	2.96E-06	1.53348E-06	0.02	2.5
10	1.93025357	4.3E-07	2.22769E-07	0.00	2.5
20	1.93025314	0	0	0.00	--
30	1.93025418	1.04E-06	5.38789E-07	0.01	2.5
40	1.93025297	-1.7E-07	-8.80714E-08	0.00	2.5
50	1.93025153	-1.61E-06	-8.34087E-07	-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	1.9347503	-6.17E-06	-3.18905E-06	-0.03	2.5
-20	1.93474897	-4.84E-06	-2.50162E-06	-0.03	2.5
-10	1.93474879	-4.66E-06	-2.40859E-06	-0.02	2.5
0	1.93474806	3.93E-06	2.03128E-06	0.02	2.5
10	1.93474856	4.43E-06	2.28971E-06	0.02	2.5
20	1.93474413	0	0	0.00	--
30	1.93474646	2.33E-06	1.20429E-06	0.01	2.5
40	1.9347453	1.17E-06	6.04731E-07	0.01	2.5
50	1.93474527	1.14E-06	5.89225E-07	0.01	2.5

Band 25 (4G LTE), Mod: QPSK, BW: 5 MHz, Antenna Port: ANT1, High Ch. 1992.5 MHz

Frequency stability over temperature

Band 25 (4G LTE), Modulation: QPSK, Bandwidth: 5 MHz, Antenna Port: ANT1 , High Ch. 1992.5 MHz

Low Edge of Occupied Bandwidth

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.99024093	-4.23E-06	-2.12538E-06	-0.02	2.5
-20	1.9902403	-3.6E-06	-1.80883E-06	-0.02	2.5
-10	1.99023866	-1.96E-06	-9.84807E-07	-0.01	2.5
0	1.99023868	1.98E-06	9.94857E-07	0.01	2.5
10	1.99023599	-7.1E-07	-3.56741E-07	0.00	2.5
20	1.9902367	0	0	0.00	--
30	1.99023534	-1.36E-06	-6.83336E-07	-0.01	2.5
40	1.99023629	-4.1E-07	-2.06006E-07	0.00	2.5
50	1.99023787	1.17E-06	5.8787E-07	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	1.99473487	-3.8E-07	-1.90502E-07	0.00	2.5
-20	1.99473296	1.53E-06	7.67019E-07	0.01	2.5
-10	1.99473214	2.35E-06	1.1781E-06	0.01	2.5
0	1.99473303	-1.46E-06	-7.31927E-07	-0.01	2.5
10	1.99473437	-1.2E-07	-6.01584E-08	0.00	2.5
20	1.99473449	0	0	0.00	--
30	1.99473201	-2.48E-06	-1.24327E-06	-0.01	2.5
40	1.9947339	-5.9E-07	-2.95779E-07	0.00	2.5
50	1.99473041	-4.08E-06	-2.04538E-06	-0.02	2.5

Band 25 (4G LTE), Mod: QPSK, BW: 20 MHz, Antenna Port: ANT1, Low Ch. 1940 MHz

Frequency stability over temperature

Band 25 (4G LTE), Modulation: QPSK, Bandwidth: 20MHz, Antenna Port: ANT1 , Low Ch. 1940 MHz

Low Edge of Occupied Bandwidth

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.93114751	-2.26E-05	-1.1703E-05	-0.12	2.5
-20	1.93111768	7.23E-06	3.74393E-06	0.04	2.5
-10	1.93112489	2E-08	1.03567E-08	0.00	2.5
0	1.93112318	-1.73E-06	-8.95851E-07	-0.01	2.5
10	1.93112501	1E-07	5.17833E-08	0.00	2.5
20	1.93112491	0	0	0.00	--
30	1.9311169	-8.01E-06	-4.14784E-06	-0.04	2.5
40	1.93111597	-8.94E-06	-4.62943E-06	-0.05	2.5
50	1.93109716	-2.775E-05	-1.43699E-05	-0.14	2.5

Upper Edge of Occupied Bandwidth

Temperature	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.94896287	-4.03E-06	-2.06777E-06	-0.02	2.5
-20	1.94895732	1.52E-06	7.79904E-07	0.01	2.5
-10	1.94895193	6.91E-06	3.54548E-06	0.04	2.5
0	1.9489505	-8.34E-06	-4.27921E-06	-0.04	2.5
10	1.94895407	-4.77E-06	-2.44746E-06	-0.02	2.5
20	1.94895884	0	0	0.00	--
30	1.94895474	-4.1E-06	-2.10369E-06	-0.02	2.5
40	1.94893498	-2.386E-05	-1.22424E-05	-0.12	2.5
50	1.94894495	-1.389E-05	-7.12688E-06	-0.07	2.5

Band 25 (4G LTE), Mod: QPSK, BW: 20 MHz, Antenna Port: ANT1, High Ch. 1985 MHz

Frequency stability over temperature

Band 25 (4G LTE), Modulation: QPSK, Bandwidth: 20 MHz, Antenna Port: ANT1 , High Ch. 1985 MHz

Low Edge of Occupied Bandwidth

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.97605237	1.757E-05	8.89139E-06	0.09	2.5
-20	1.97605803	1.191E-05	6.02711E-06	0.06	2.5
-10	1.97605236	1.758E-05	8.89645E-06	0.09	2.5
0	1.97606496	-4.98E-06	-2.52015E-06	-0.03	2.5
10	1.97605988	-1.006E-05	-5.09091E-06	-0.05	2.5
20	1.97606994	0	0	0.00	--
30	1.97606573	-4.21E-06	-2.13049E-06	-0.02	2.5
40	1.97604998	-1.996E-05	-1.01009E-05	-0.10	2.5
50	1.97606189	-8.05E-06	-4.07374E-06	-0.04	2.5

Upper Edge of Occupied Bandwidth

Temperature	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.99389303	-6.19E-06	-3.10449E-06	-0.03	2.5
-20	1.99390345	-1.661E-05	-8.33046E-06	-0.08	2.5
-10	1.99389983	-1.299E-05	-6.51491E-06	-0.07	2.5
0	1.99389981	1.297E-05	6.50488E-06	0.07	2.5
10	1.99389561	8.77E-06	4.39844E-06	0.04	2.5
20	1.99388684	0	0	0.00	--
30	1.99389177	4.93E-06	2.47256E-06	0.02	2.5
40	1.993888839	1.999E-06	1.00256E-06	0.01	2.5
50	1.99389016	3.32E-06	1.66509E-06	0.02	2.5

Band 25 (5G nR), Mod: QPSK, BW: 5 MHz, Antenna Port: ANT1, Low Ch. 1932.5 MHz

Frequency stability over temperature

Band 25 (5G nR), Modulation: QPSK, Bandwidth: 5MHz, Antenna Port: ANT1 , Low Ch. 1932.5 MHz

Low Edge of Occupied Bandwidth

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.93026004	-6.15E-06	-3.18611E-06	-0.03	2.5
-20	1.93025779	-3.9E-06	-2.02046E-06	-0.02	2.5
-10	1.93025674	-2.85E-06	-1.47649E-06	-0.01	2.5
0	1.93025585	1.96E-06	1.01541E-06	0.01	2.5
10	1.9302546	7.1E-07	3.67827E-07	0.00	2.5
20	1.93025389	0	0	0.00	--
30	1.93025375	-1.4E-07	-7.25293E-08	0.00	2.5
40	1.93025285	-1.04E-06	-5.38789E-07	-0.01	2.5
50	1.93025244	-1.45E-06	-7.51197E-07	-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	1.93475033	-2.41E-06	-1.24564E-06	-0.01	2.5
-20	1.93474945	-1.53E-06	-7.90801E-07	-0.01	2.5
-10	1.93474893	-1.01E-06	-5.22032E-07	-0.01	2.5
0	1.93474704	-8.8E-07	-4.5484E-07	0.00	2.5
10	1.93474804	1.2E-07	6.20236E-08	0.00	2.5
20	1.93474792	0	0	0.00	--
30	1.93474696	-9.6E-07	-4.96189E-07	0.00	2.5
40	1.93474647	-1.45E-06	-7.49452E-07	-0.01	2.5
50	1.93474566	-2.26E-06	-1.16811E-06	-0.01	2.5

Band 25 (5G nR), Mod: QPSK, BW: 5 MHz, Antenna Port: ANT1, High Ch. 1992.5 MHz

Frequency stability over temperature

Band 25 (4G LTE), Modulation: QPSK, Bandwidth: 5MHz, Antenna Port: ANT1 , High Ch. 1992.5 MHz

Low Edge of Occupied Bandwidth

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.9902405	-5.57E-06	-2.79866E-06	-0.03	2.5
-20	1.9902402	-5.27E-06	-2.64793E-06	-0.03	2.5
-10	1.99024014	-5.21E-06	-2.61778E-06	-0.03	2.5
0	1.99023862	3.69E-06	1.85405E-06	0.02	2.5
10	1.9902398	4.87E-06	2.44695E-06	0.02	2.5
20	1.99023493	0	0	0.00	--
30	1.99023651	1.58E-06	7.93876E-07	0.01	2.5
40	1.99023734	2.41E-06	1.21091E-06	0.01	2.5
50	1.99023672	1.79E-06	8.99391E-07	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	1.99473386	1.32E-06	6.61742E-07	0.01	2.5
-20	1.99473176	3.42E-06	1.71451E-06	0.02	2.5
-10	1.99473323	1.95E-06	9.77573E-07	0.01	2.5
0	1.99473385	-1.33E-06	-6.66755E-07	-0.01	2.5
10	1.99473442	-7.6E-07	-3.81003E-07	0.00	2.5
20	1.99473518	0	0	0.00	--
30	1.99473014	-5.04E-06	-2.52665E-06	-0.03	2.5
40	1.99473246	-2.72E-06	-1.36359E-06	-0.01	2.5
50	1.99473322	-1.96E-06	-9.82587E-07	-0.01	2.5

Band 25 (5G nR), Mod: QPSK, BW: 20 MHz, Antenna Port: ANT1, Low Ch. 1940 MHz

Frequency stability over temperature

Band 25 (5G nR), Modulation: QPSK, Bandwidth: 20 MHz, Antenna Port: ANT1 , Low Ch. 1940 MHz

Low Edge of Occupied Bandwidth

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.93113416	-3.815E-05	-1.97556E-05	-0.20	2.5
-20	1.93112273	-2.672E-05	-1.38367E-05	-0.14	2.5
-10	1.93112019	-2.418E-05	-1.25214E-05	-0.13	2.5
0	1.93111197	1.596E-05	8.26474E-06	0.08	2.5
10	1.93110994	1.393E-05	7.21352E-06	0.07	2.5
20	1.93109601	0	0	0.00	--
30	1.93111837	2.236E-05	1.15789E-05	0.12	2.5
40	1.93110405	8.04E-06	4.16344E-06	0.04	2.5
50	1.93108885	-7.16E-06	-3.70774E-06	-0.04	2.5

Upper Edge of Occupied Bandwidth

Temperature	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.94896278	1.1E-06	5.64402E-07	0.01	2.5
-20	1.94896251	1.37E-06	7.02938E-07	0.01	2.5
-10	1.94895437	9.51E-06	4.87952E-06	0.05	2.5
0	1.94896644	2.56E-06	1.31352E-06	0.01	2.5
10	1.94896561	1.73E-06	8.87651E-07	0.01	2.5
20	1.94896388	0	0	0.00	--
30	1.94894217	-2.171E-05	-1.11393E-05	-0.11	2.5
40	1.948941	-2.288E-05	-1.17396E-05	-0.12	2.5
50	1.94895419	-9.69E-06	-4.97187E-06	-0.05	2.5

Band 25 (5G nR), Mod: QPSK, BW: 20 MHz, Antenna Port: ANT1, High Ch. 1985 MHz

Frequency stability over temperature

Band 25 (5G nR), Modulation: QPSK, Bandwidth: 20MHz, Antenna Port: ANT1 , High Ch. 1985 MHz

Low Edge of Occupied Bandwidth

Temperature	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(Deg. C)	(GHz)	(GHz)	--	--	PPM
-30	1.97606151	-1.115E-05	-5.64257E-06	-0.06	2.5
-20	1.97604912	1.24E-06	6.27514E-07	0.01	2.5
-10	1.97604317	7.19E-06	3.63857E-06	0.04	2.5
0	1.97606692	1.656E-05	8.38035E-06	0.08	2.5
10	1.97605988	9.52E-06	4.81769E-06	0.05	2.5
20	1.97605036	0	0	0.00	--
30	1.9760658	1.544E-05	7.81357E-06	0.08	2.5
40	1.97604728	-3.08E-06	-1.55866E-06	-0.02	2.5
50	1.97605289	2.53E-06	1.28033E-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	1.99391116	-2.018E-05	-1.01209E-05	-0.10	2.5
-20	1.99391035	-1.937E-05	-9.71467E-06	-0.10	2.5
-10	1.99391658	-2.56E-05	-1.28392E-05	-0.13	2.5
0	1.99389592	4.94E-06	2.47757E-06	0.02	2.5
10	1.99389561	4.63E-06	2.32209E-06	0.02	2.5
20	1.99389098	0	0	0.00	--
30	1.99390004	9.06E-06	4.54388E-06	0.05	2.5
40	1.99389812	7.14E-06	3.58094E-06	0.04	2.5
50	1.99390349	1.251E-05	6.27416E-06	0.06	2.5

Frequency stability over voltages

Band 25 (4G LTE), Modulation: QPSK, Bandwidth: 5MHz, Antenna Port: ANT1 , Low Ch. 1932.5 MHz

Low Channel 1932.5 MHz, Low Edge of Occupied Bandwidth

Voltage	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.93025245	-8E-07	-4.14453E-07	0.00	2.5
48	1.93025325	0	0	0.00	--
57	1.93025313	-1.2E-07	-6.2168E-08	0.00	2.5

Low Channel 1932.5 MHz, Upper Edge of Occupied Bandwidth

Voltage	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.93474316	-3.96E-06	-2.04678E-06	-0.02	2.5
48	1.93474712	0	0	0.00	--
57	1.93474726	1.4E-07	7.23609E-08	0.00	2.5

Band 25 (4G LTE), Modulation: QPSK, Bandwidth: 5MHz, Antenna Port: ANT1 , High Ch. 1992.5 MHz

High Channel 1992.5 MHz, Low Edge of Occupied Bandwidth

Voltage	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.99023582	-1.68E-06	-8.4412E-07	-0.01	2.5
48	1.9902375	0	0	0.00	--
57	1.99023885	1.35E-06	6.78311E-07	0.01	2.5

High Channel 1992.5 MHz, Upper Edge of Occupied Bandwidth

Voltage	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.9947352	6.81E-06	3.414E-06	0.03	2.5
48	1.99472839	0	0	0.00	--
57	1.99473016	1.77E-06	8.87339E-07	0.01	2.5

Frequency stability over voltages

Band 25 (4G LTE), Modulation: QPSK, Bandwidth: 20 MHz, Antenna Port: ANT1 , Low Ch. 1940 MHz

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	1.93111569	5.57E-06	2.88435E-06	0.03	2.5
48	1.93111012	0	0	0.00	--
57	1.93111451	4.39E-06	2.2733E-06	0.02	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	1.94895099	-1.15E-06	-5.90061E-07	-0.01	2.5
48	1.94895214	0	0	0.00	--
57	1.94893734	-1.48E-05	-7.59382E-06	-0.08	2.5

Band 25 (4G LTE), Modulation: QPSK, Bandwidth: 20 MHz, Antenna Port: ANT1 , High Ch. 1985 MHz

High Channel 1985 MHz, Low Edge of Occupied Bandwidth

Voltage	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.97606341	2.8E-07	1.41696E-07	0.00	2.5
48	1.97606313	0	0	0.00	--
57	1.97607555	1.242E-05	6.28522E-06	0.06	2.5

High Channel 1985 MHz, Upper Edge of Occupied Bandwidth

Voltage	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.99389228	2.791E-05	1.39979E-05	0.14	2.5
48	1.99386437	0	0	0.00	--
57	1.99388203	1.766E-05	8.85717E-06	0.09	2.5

Frequency stability over voltages

Band 25 (5G nR), Modulation: QPSK, Bandwidth: 5MHz, Antenna Port: ANT1, Low Channel 1932.5 MHz

Low Channel 1932.5 MHz, Low Edge of Occupied Bandwidth

Voltage	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.93025226	-9.9E-07	-5.12886E-07	-0.01	2.5
48	1.93025325	0	0	0.00	--
57	1.93025133	-1.92E-06	-9.94688E-07	-0.01	2.5

Low Channel 1932.5 MHz, Upper Edge of Occupied Bandwidth

Voltage	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.93474808	9.6E-07	4.96189E-07	0.00	2.5
48	1.93474712	0	0	0.00	--
57	1.93474729	1.7E-07	8.78668E-08	0.00	2.5

Band 25 (5G nR), Modulation: QPSK, Bandwidth: 5MHz, Antenna Port: ANT1 , High Ch. 1992.5 MHz

High Channel 1992.5 MHz, Low Edge of Occupied Bandwidth

Voltage	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.99023856	4.39E-06	2.20577E-06	0.02	2.5
48	1.99023417	0	0	0.00	--
57	1.99024062	6.45E-06	3.24082E-06	0.03	2.5

High Channel 1992.5 MHz, Upper Edge of Occupied Bandwidth

Voltage	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.994727	-2.53E-06	-1.26834E-06	-0.01	2.5
48	1.99472953	0	0	0.00	--
57	1.99472964	1.1E-07	5.51453E-08	0.00	2.5

Frequency stability over voltages

Band 25 (5G nR), Modulation: QPSK, Bandwidth: 20MHz, Antenna Port: ANT1, Low Channel 1940 MHz

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	1.9311072	-1.03E-05	-5.3337E-06	-0.05	2.5
48	1.9311175	0	0	0.00	--
57	1.93109882	-1.868E-05	-9.67316E-06	-0.10	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	1.94895987	-1.035E-05	-5.3105E-06	-0.05	2.5
48	1.94897022	0	0	0.00	--
57	1.94896349	-6.73E-06	-3.45311E-06	-0.03	2.5

Band 25 (5G nR), Modulation: QPSK, Bandwidth: 5MHz, Antenna Port: ANT1 , High Ch. 1992.5 MHz

High Channel 1985 MHz, Low Edge of Occupied Bandwidth

Voltage	Low Edge	Low Edge Deviation	Low Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.97605396	1.703E-05	8.61826E-06	0.09	2.5
48	1.97603693	0	0	0.00	--
57	1.97607239	3.546E-05	1.7945E-05	0.18	2.5

High Channel 1985 MHz, Upper Edge of Occupied Bandwidth

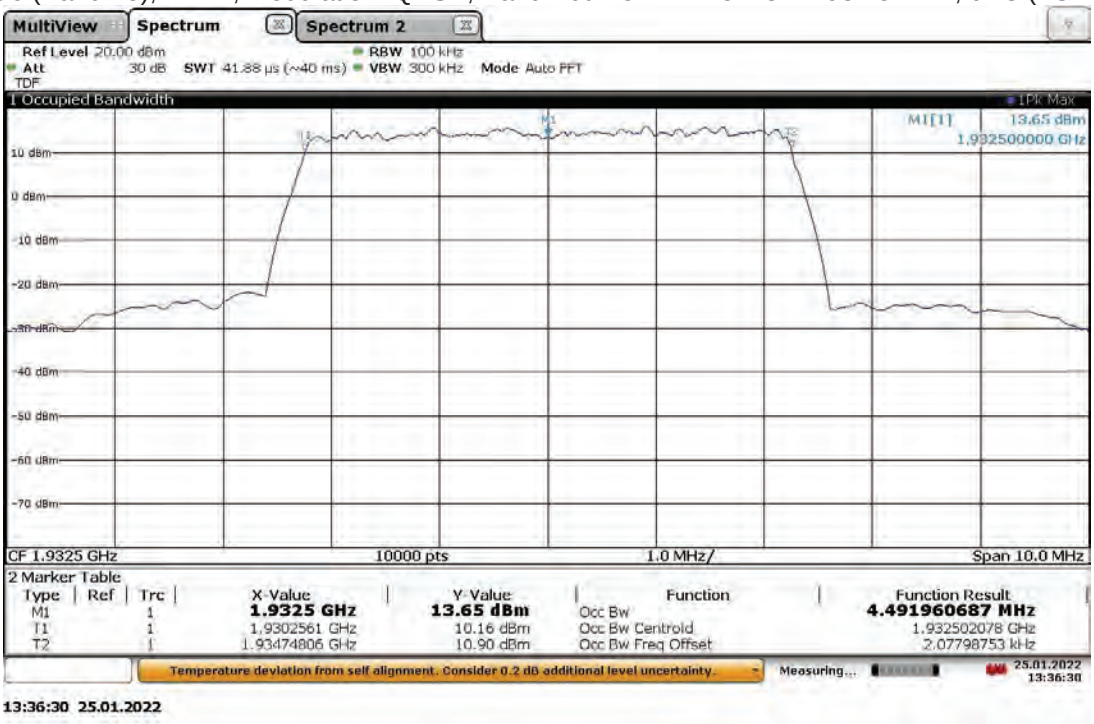
Voltage	Upper Edge	Upper Edge Deviation	Upper Edge (%)	PPM	Limit
(VDC)	(GHz)	(GHz)	--	--	PPM
41.1	1.9939096	1.297E-05	6.50485E-06	0.07	2.5
48	1.99389663	0	0	0.00	--
57	1.99389265	-3.98E-06	-1.99609E-06	-0.02	2.5

10.4 Setup Photographs:

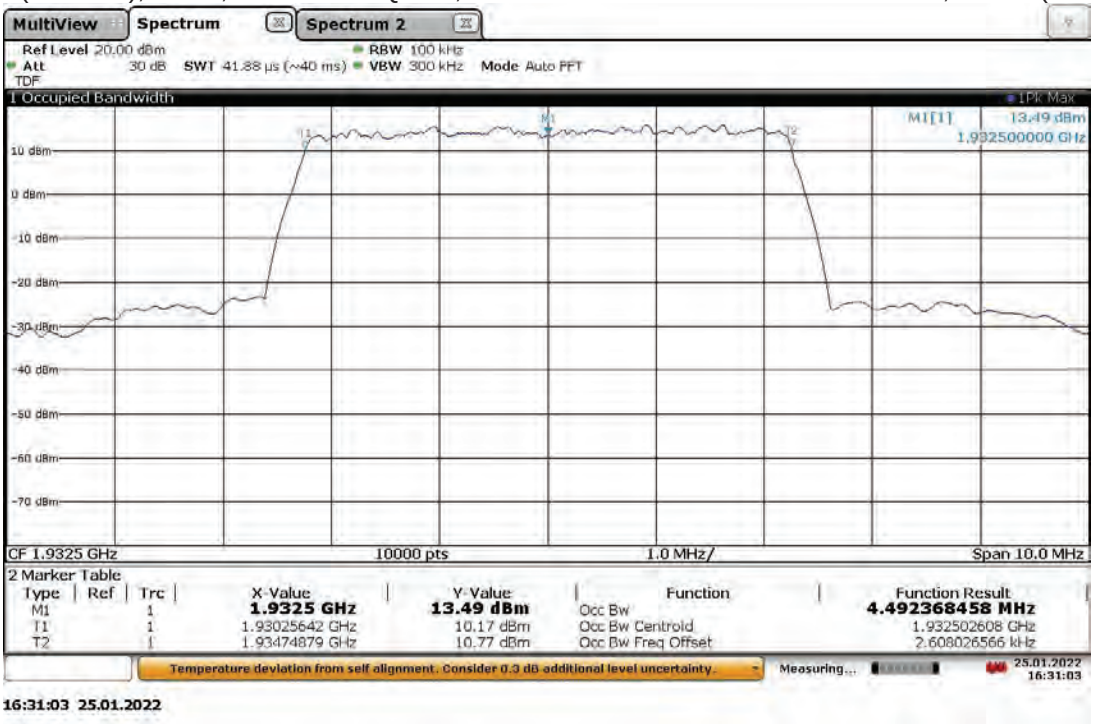
Confidential – Photos not included in this report

10.5 Plots/Data:

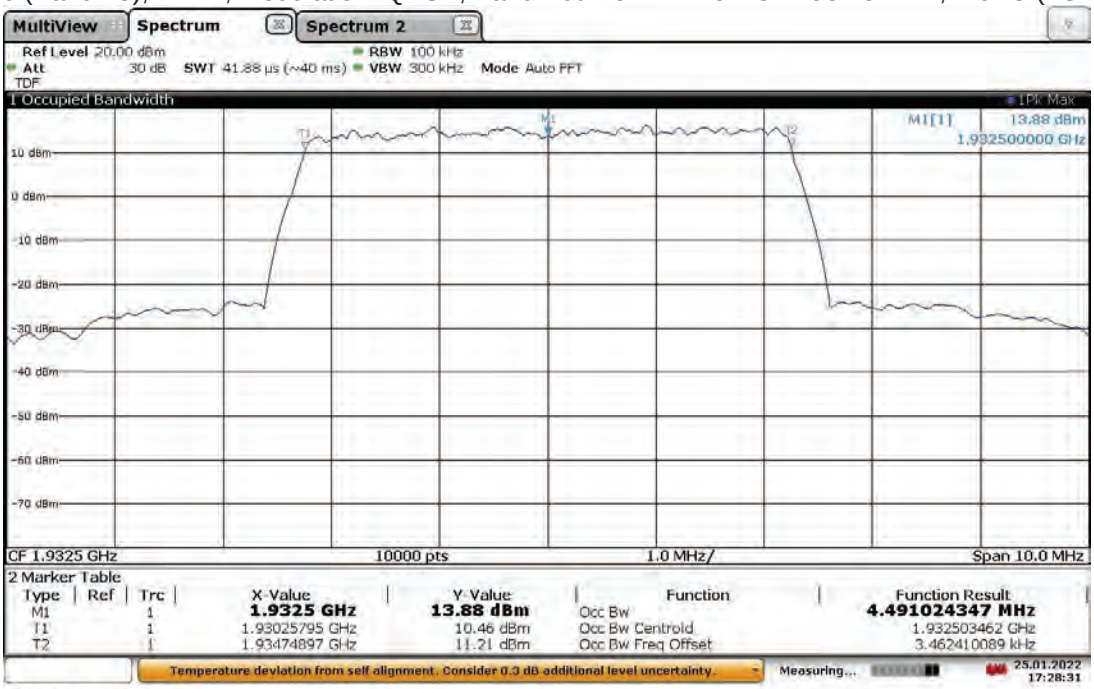
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 0 ºC (4G LTE)



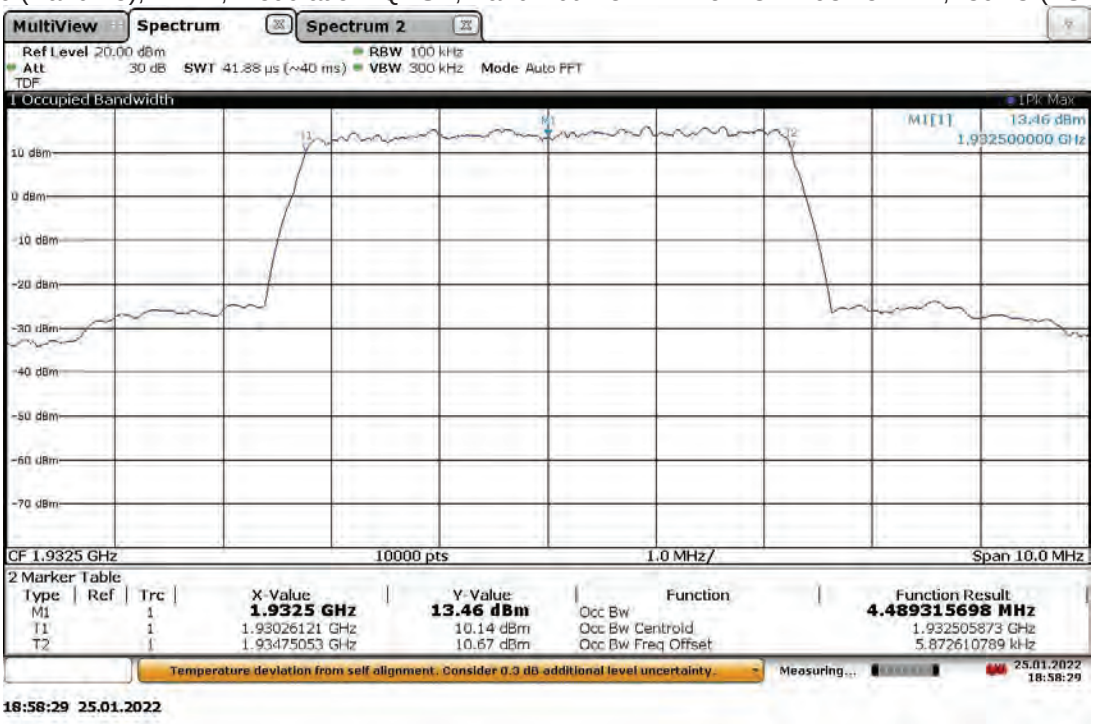
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, -10 ºC (4G LTE)



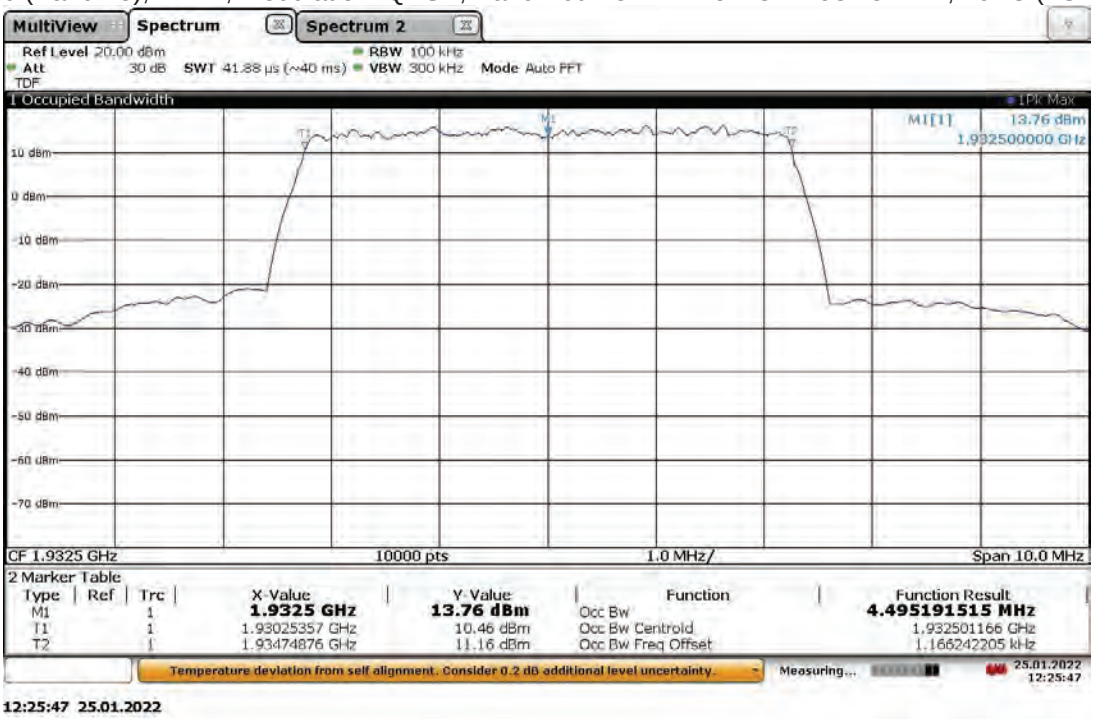
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Ch.1932.5 MHz, -20 ºC (4G LTE)



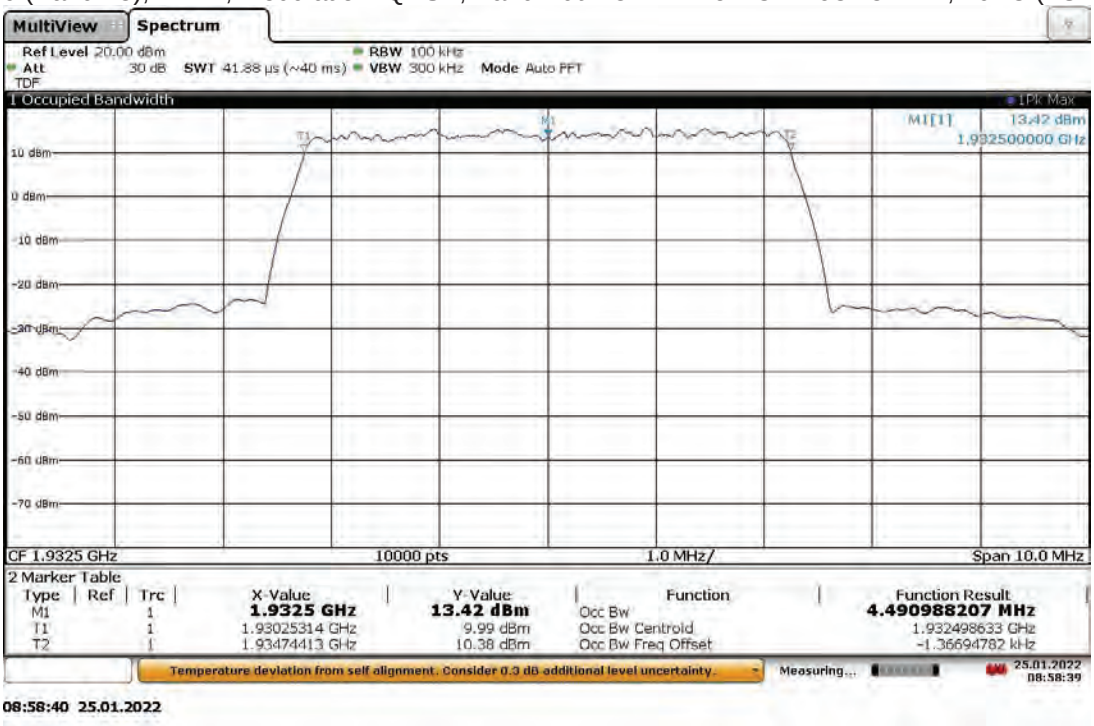
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, -30 ºC (4G LTE)



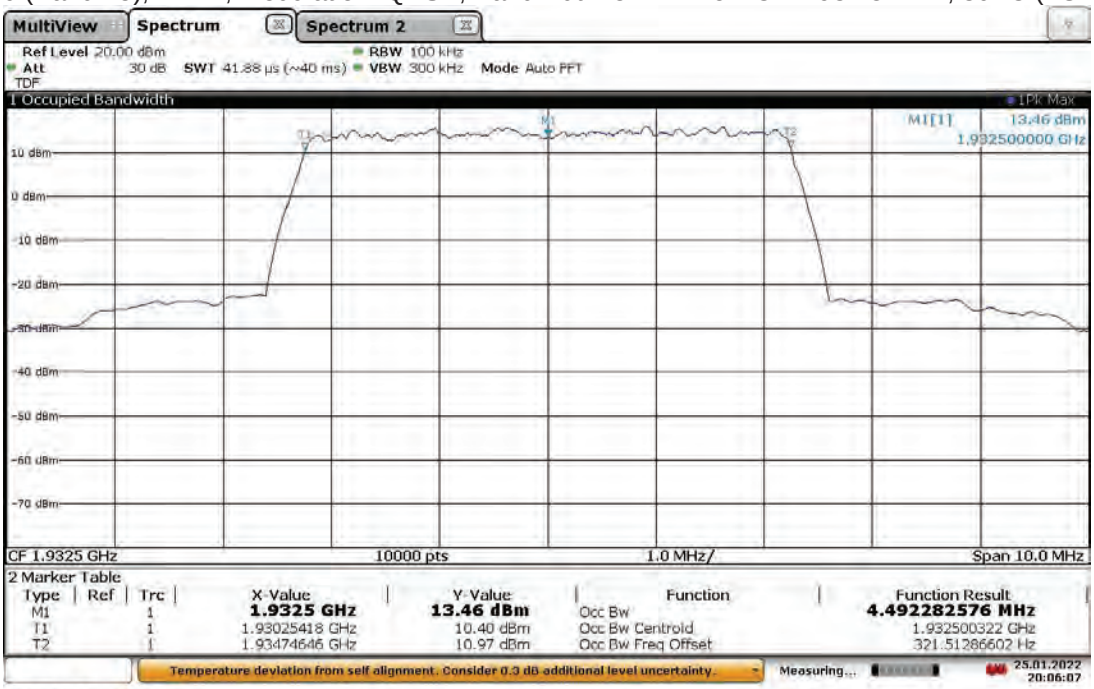
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 10 ºC (4G LTE)



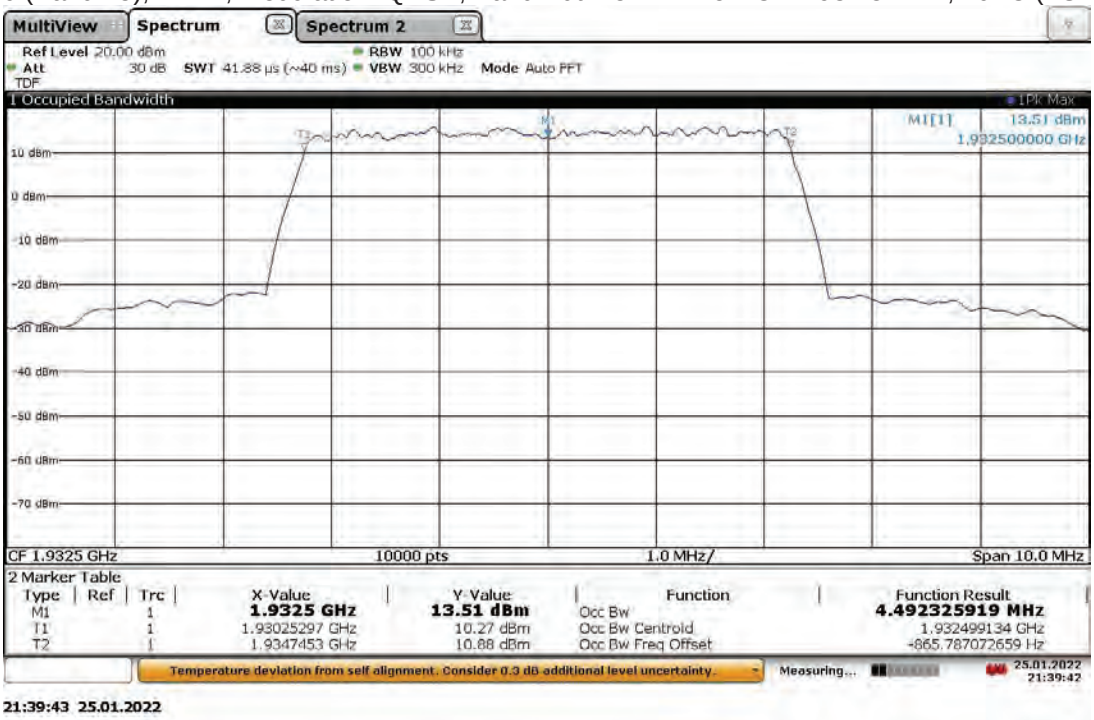
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 20 ºC (4G LTE)



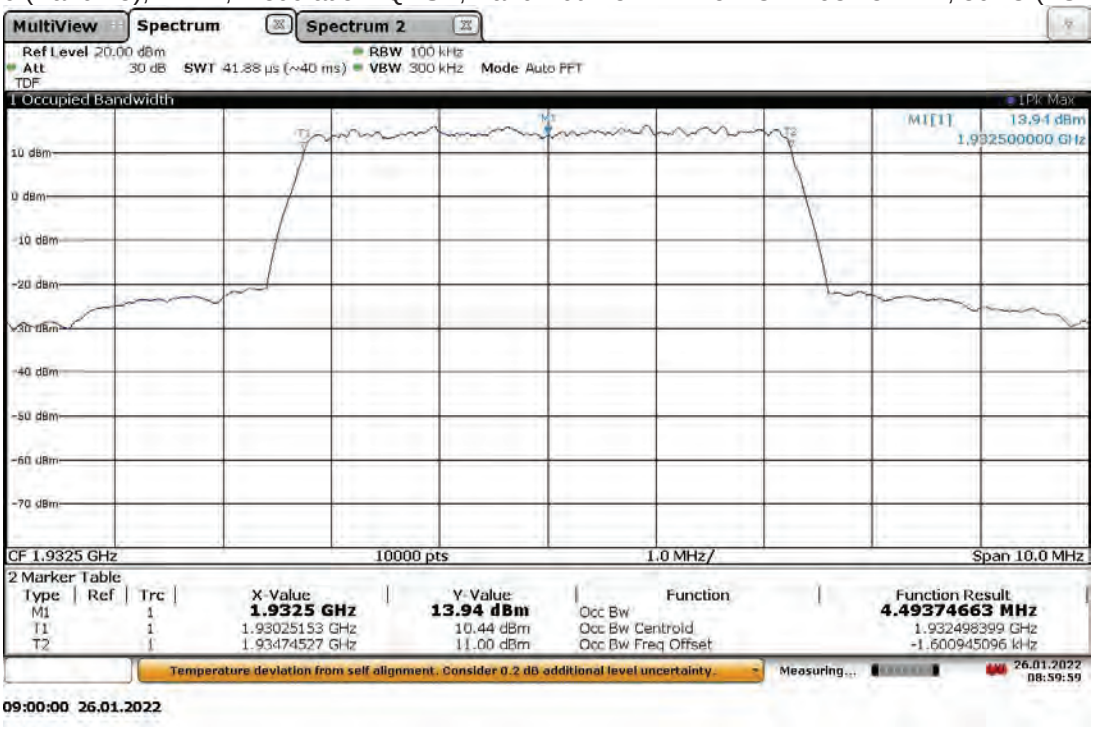
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 30 ºC (4G LTE)



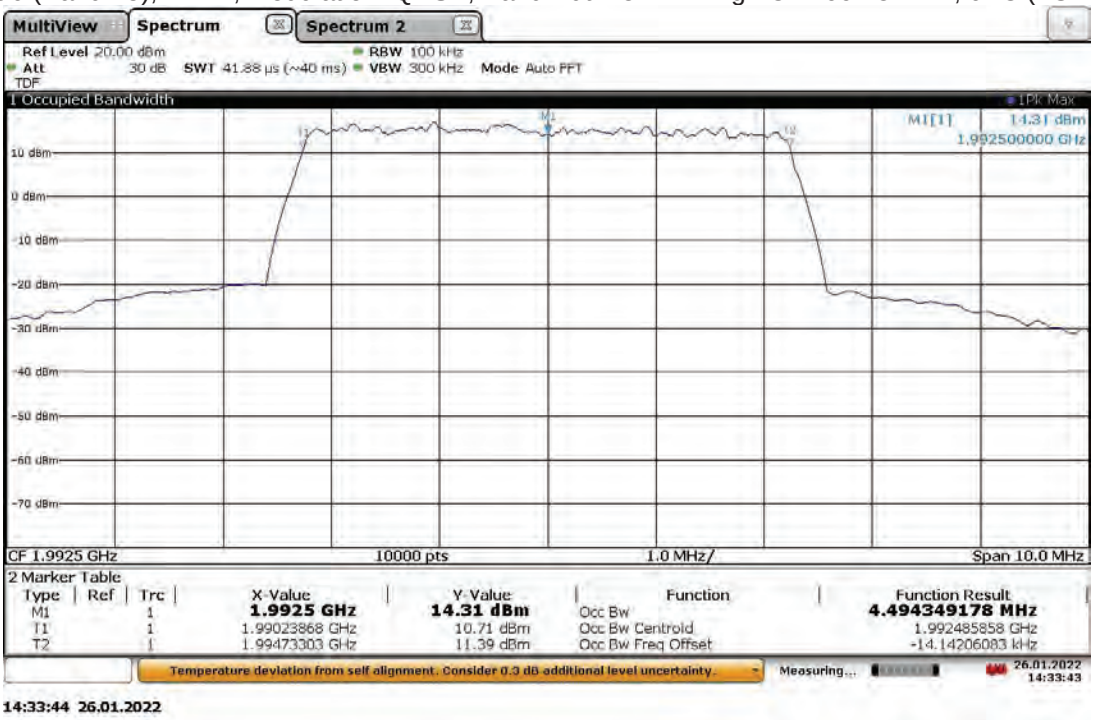
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 40 ºC (4G LTE)



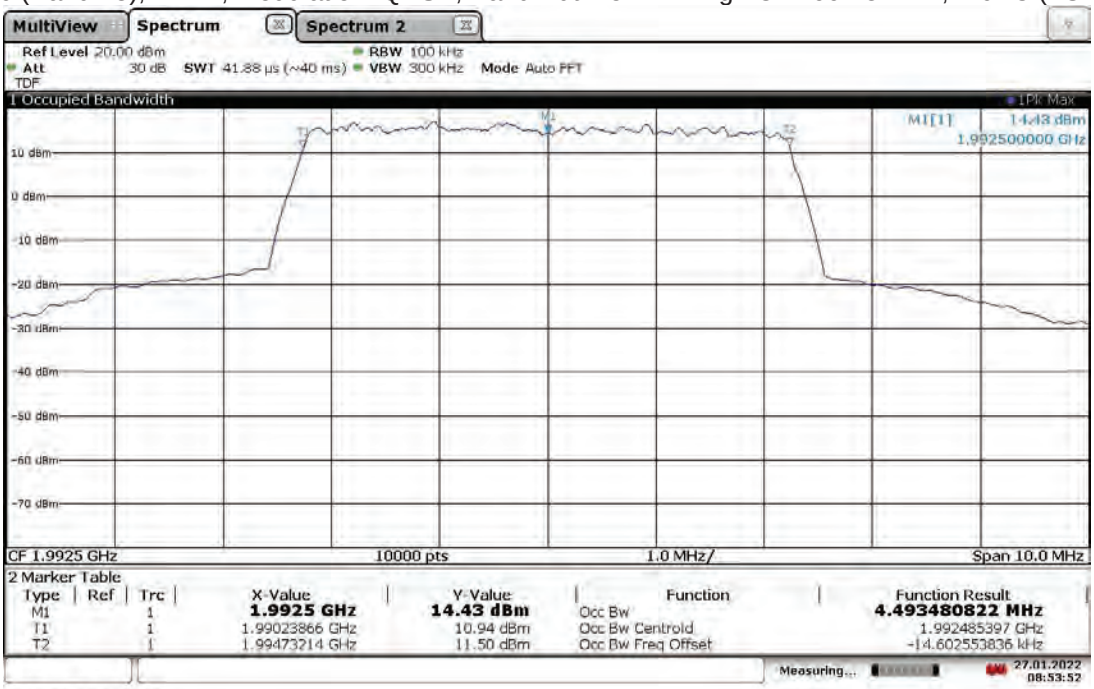
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Ch. 1932.5 MHz, 50 ºC (4G LTE)



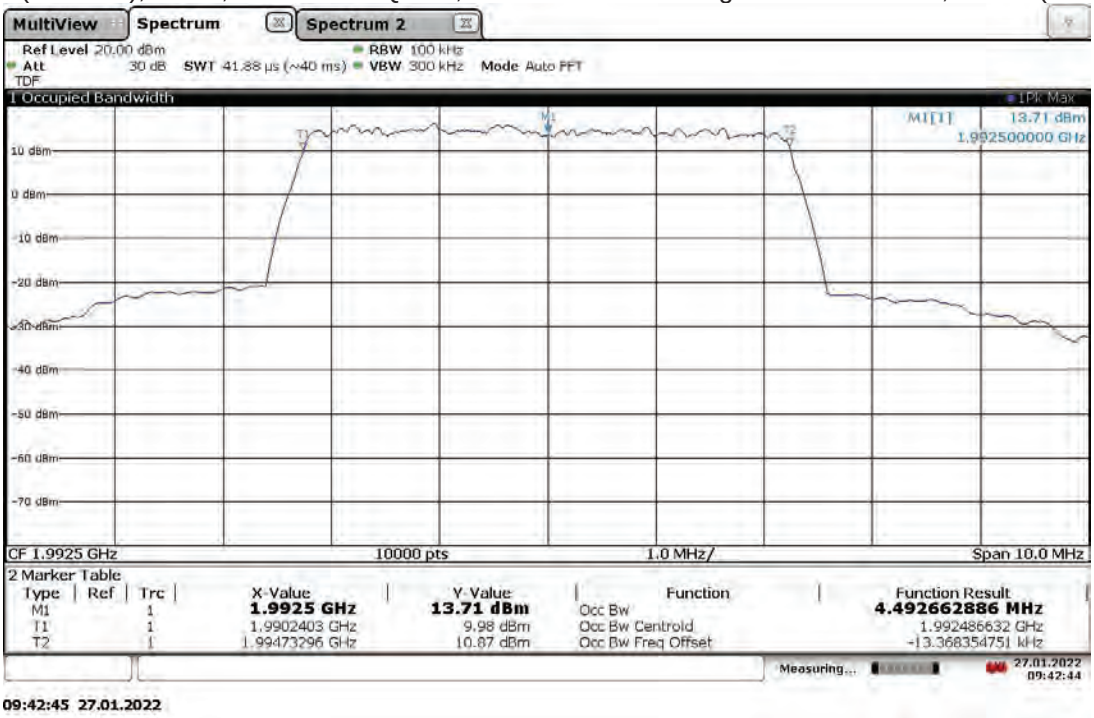
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Ch.1992.5 MHz, 0 ºC (4G LTE)



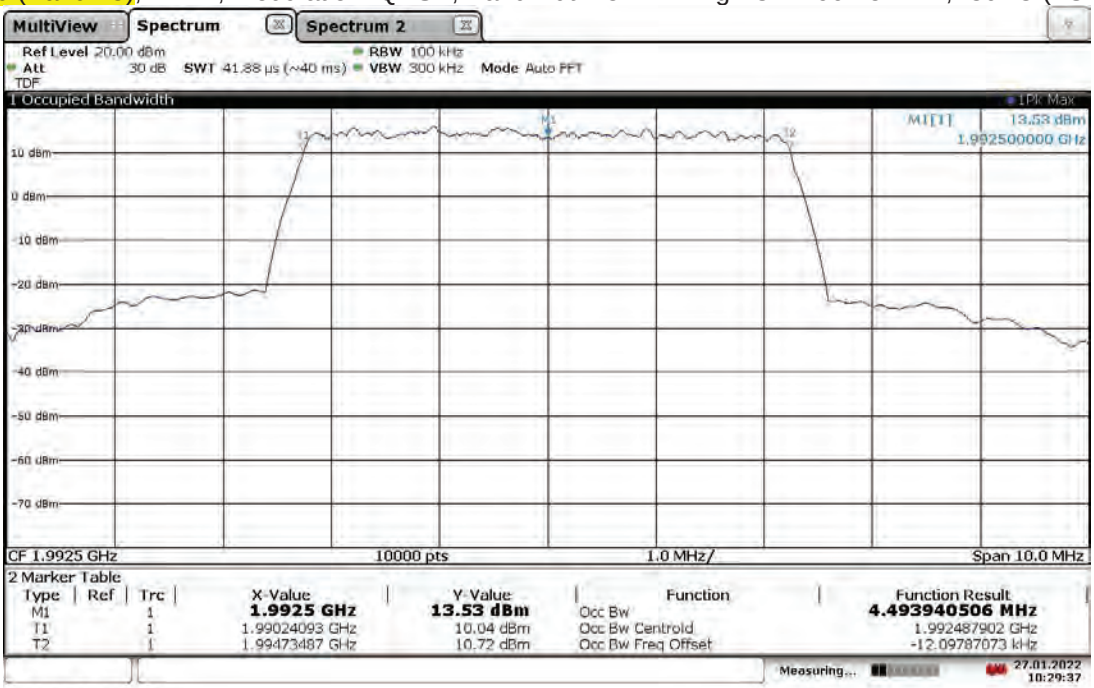
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Ch 1992.5 MHz, -10 ºC (4G LTE)



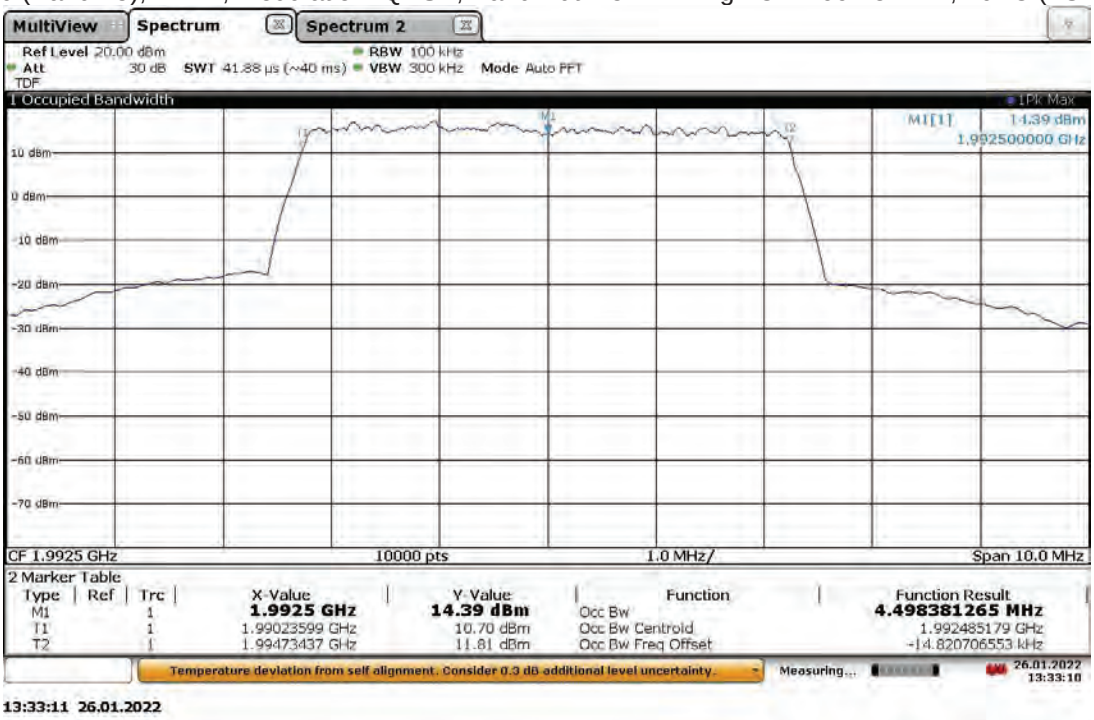
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Ch.1992.5 MHz, -20 ºC (4G LTE)



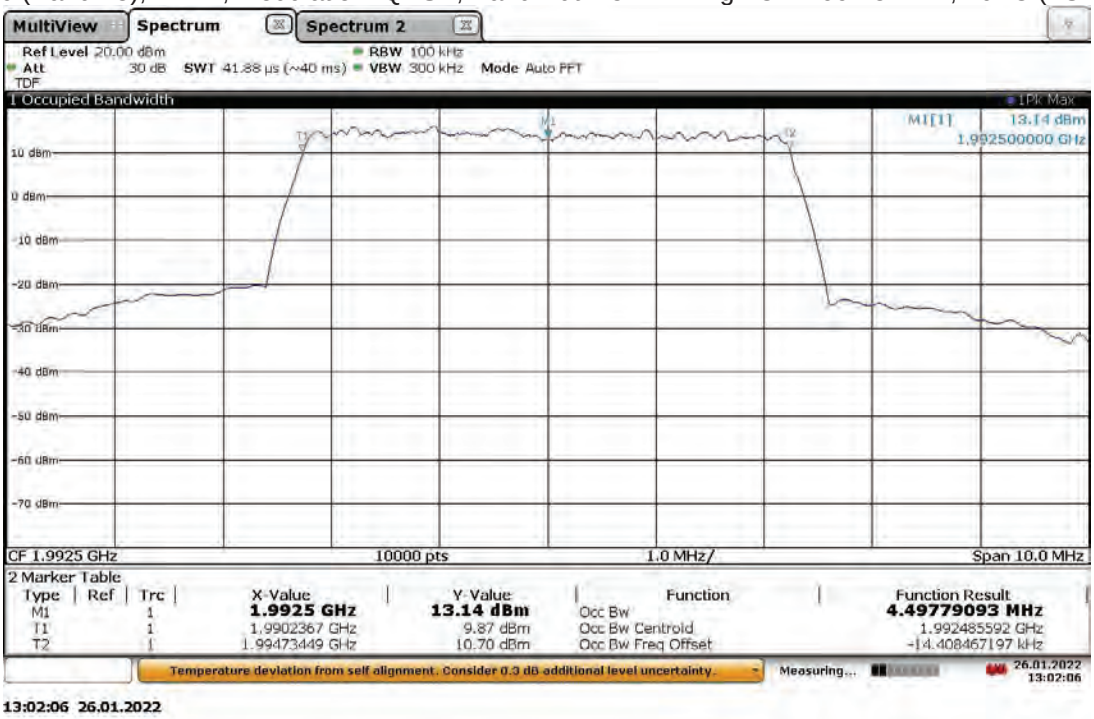
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Ch. 1992.5 MHz, -30 ºC (4G LTE)



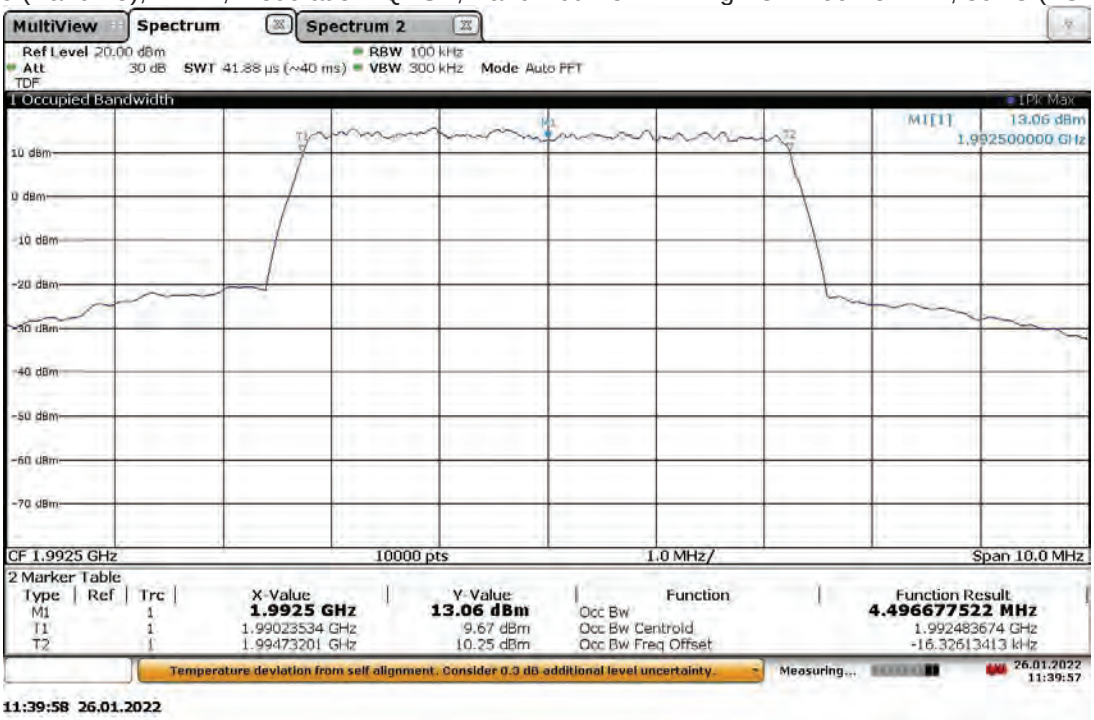
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Ch. 1992.5 MHz, 10 ºC (4G LTE)



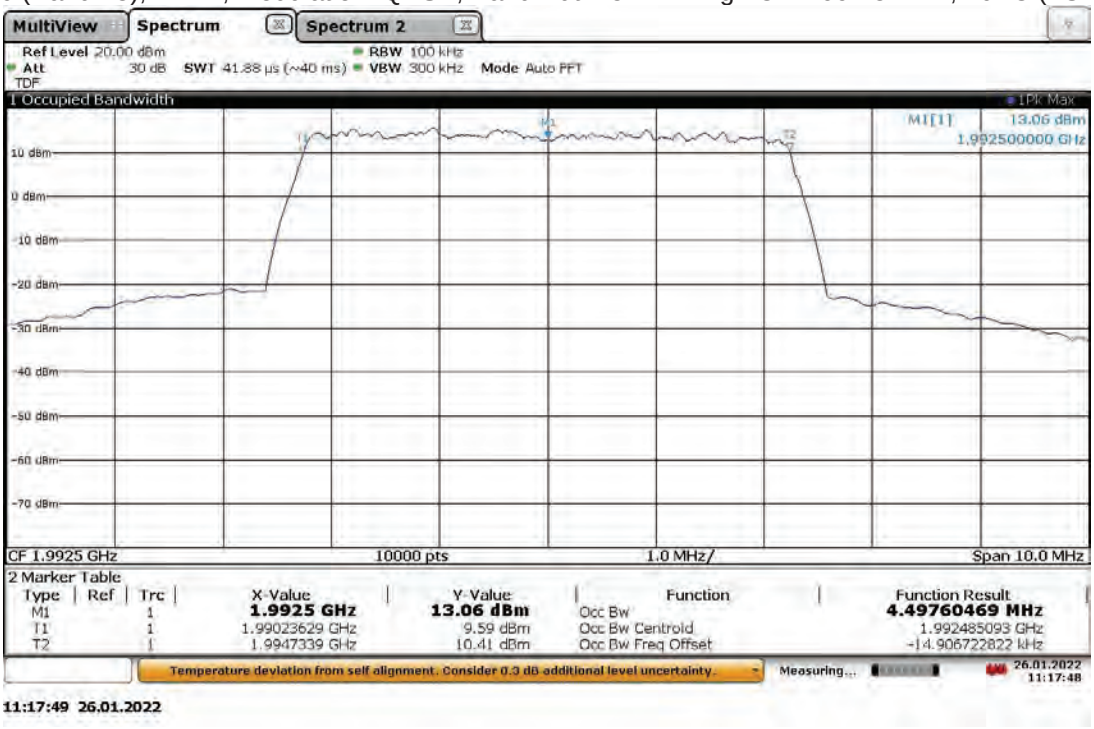
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Ch. 1992.5 MHz, 20 ºC (4G LTE)



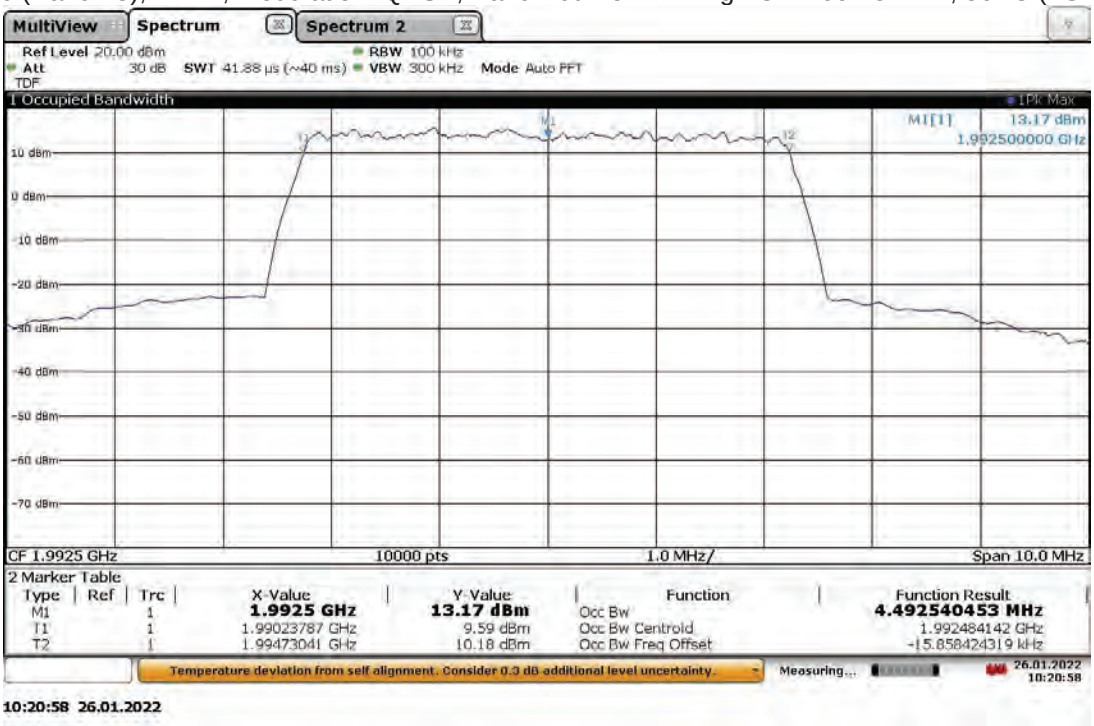
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Ch. 1992.5 MHz, 30 ºC (4G LTE)



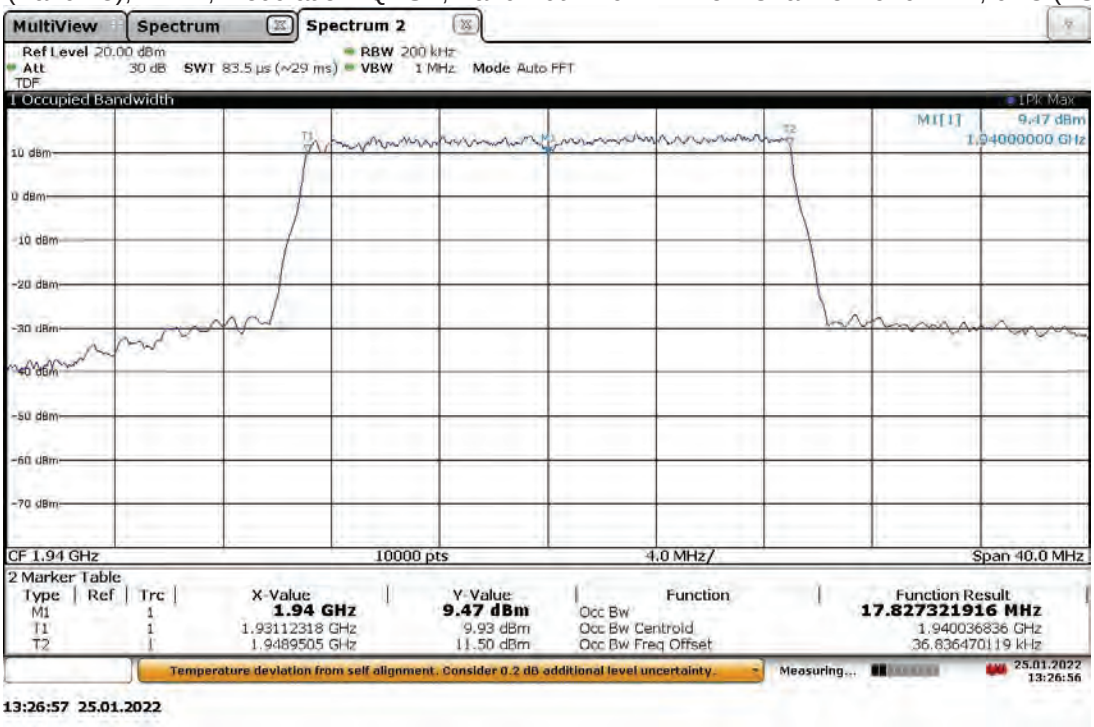
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Ch. 1992.5 MHz, 40 ºC (4G LTE)



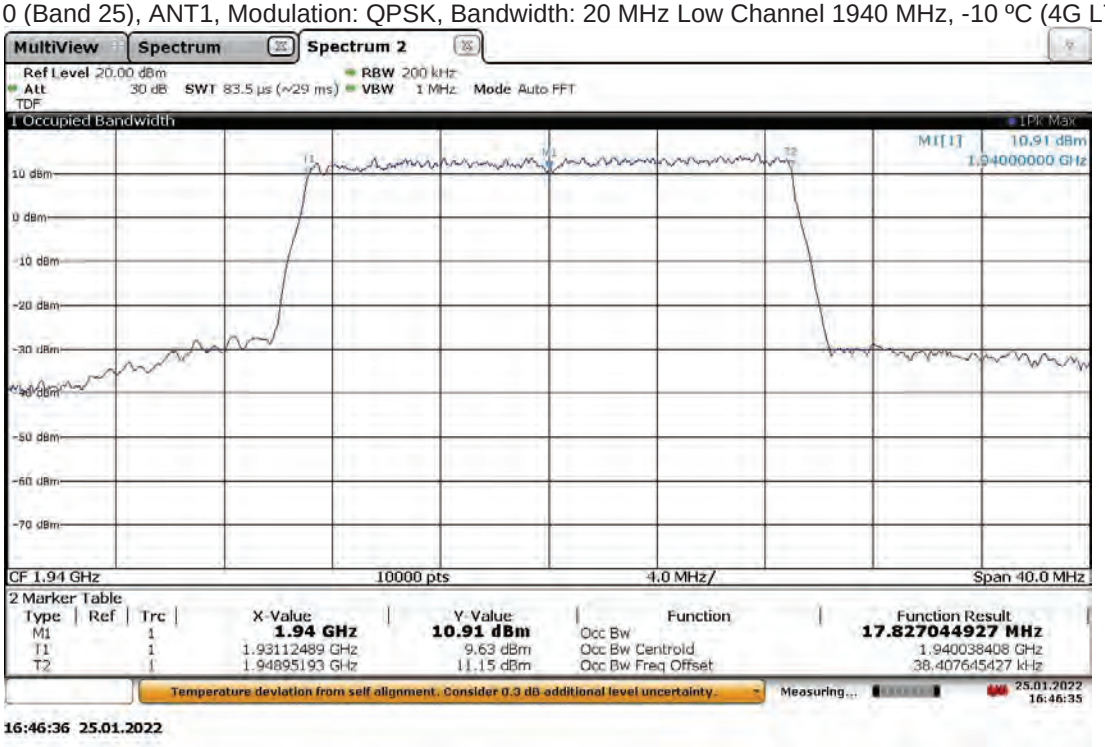
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Ch. 1992.5 MHz, 50 ºC (4G LTE)



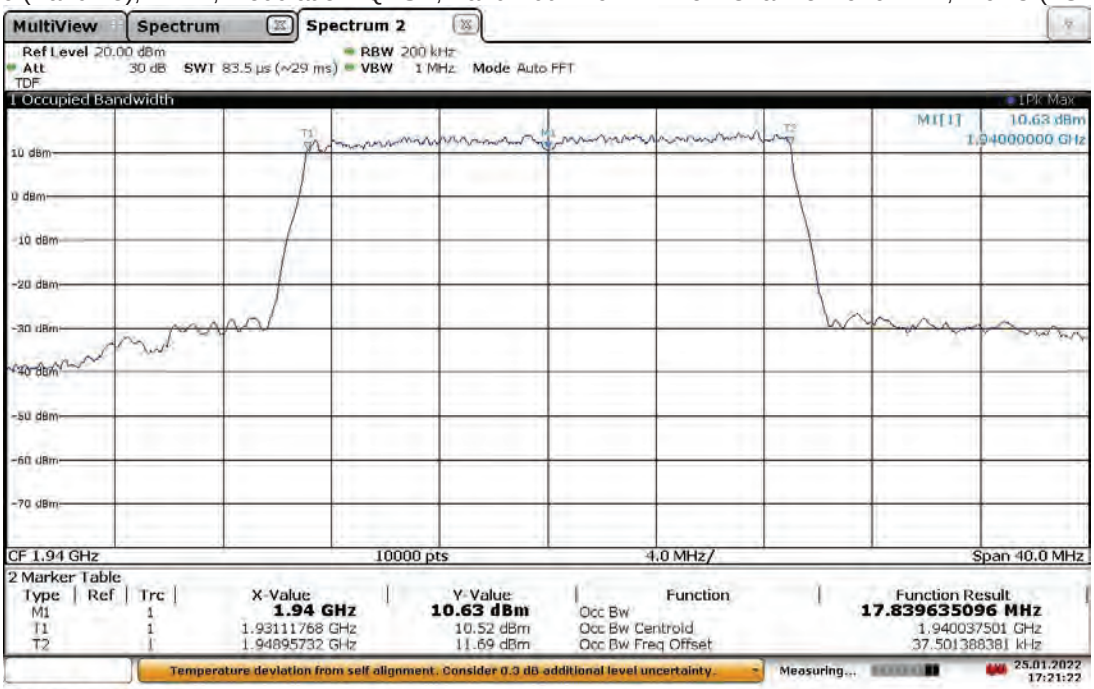
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 1940 MHz, 0 ºC (4G LTE)



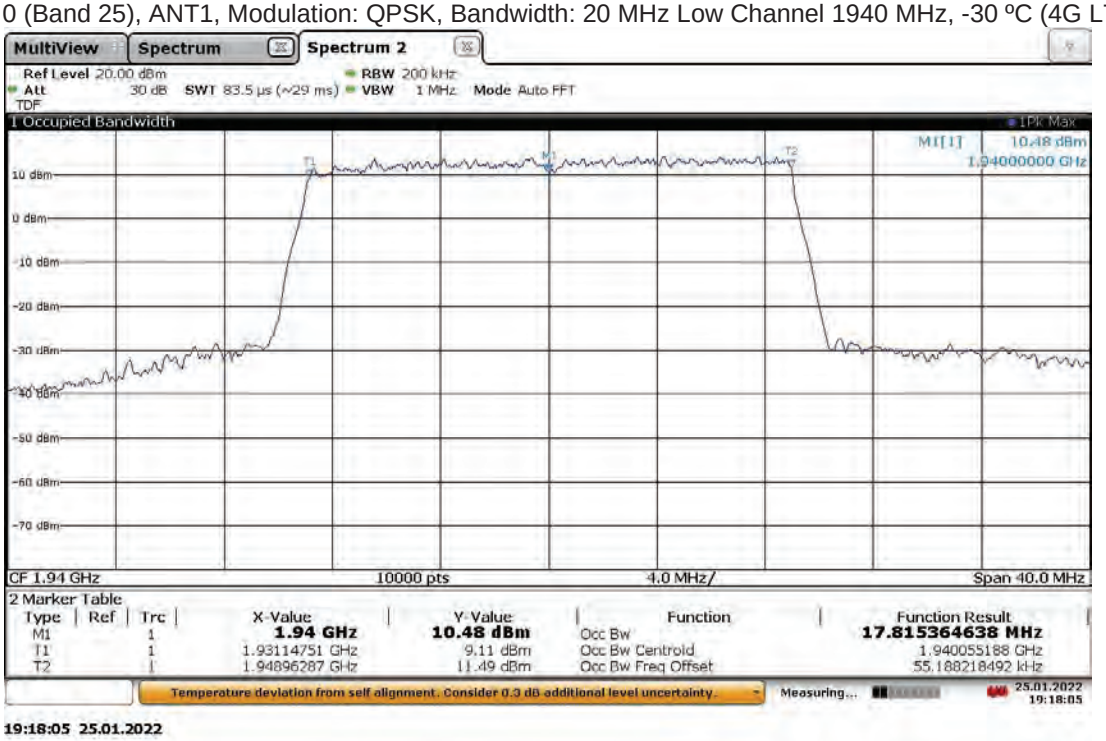
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 1940 MHz, -10 ºC (4G LTE)



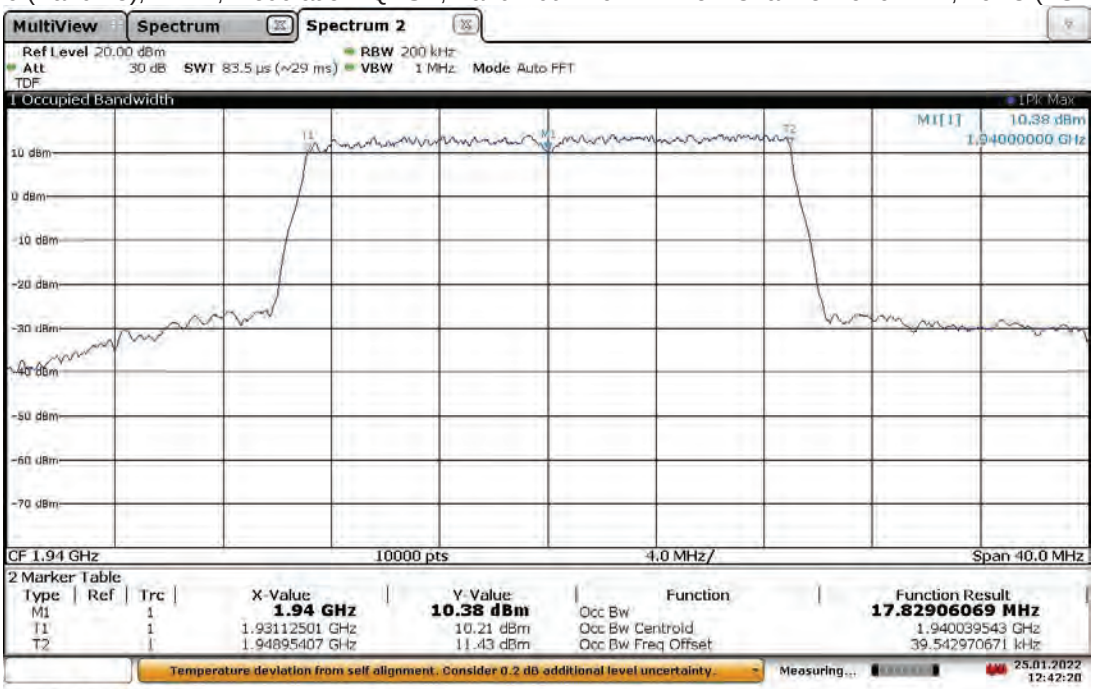
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 1940 MHz, -20 ºC (4G LTE)



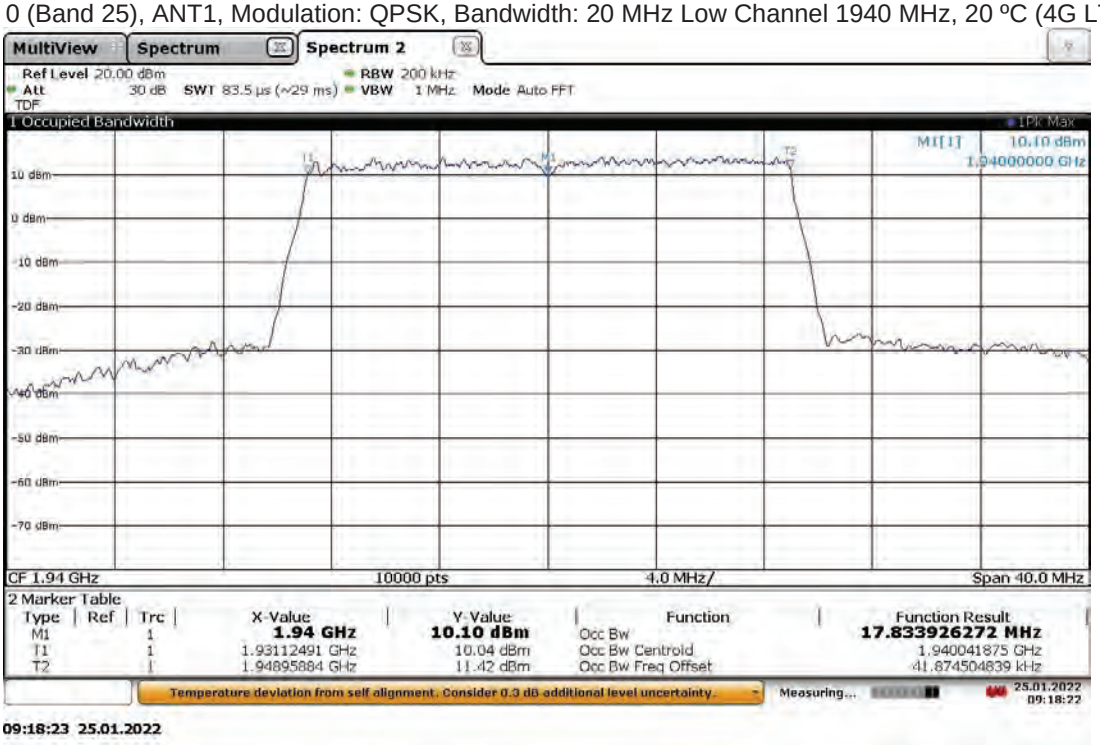
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 1940 MHz, -30 ºC (4G LTE)



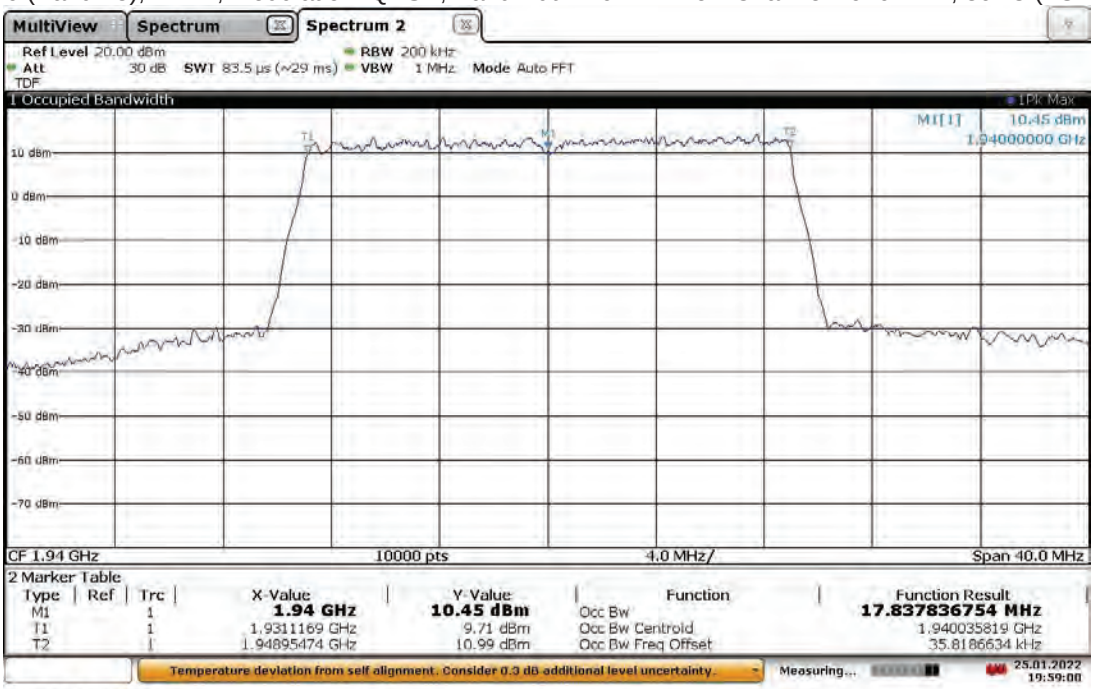
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 1940 MHz, 10 ºC (4G LTE)



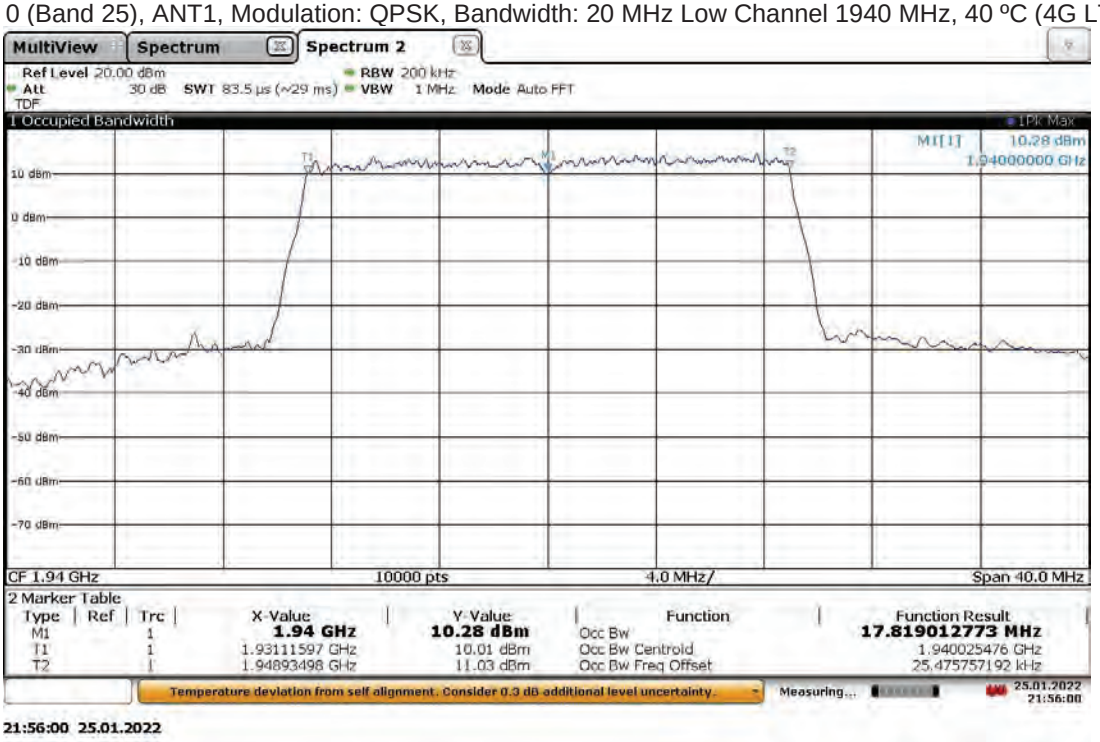
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 1940 MHz, 20 ºC (4G LTE)



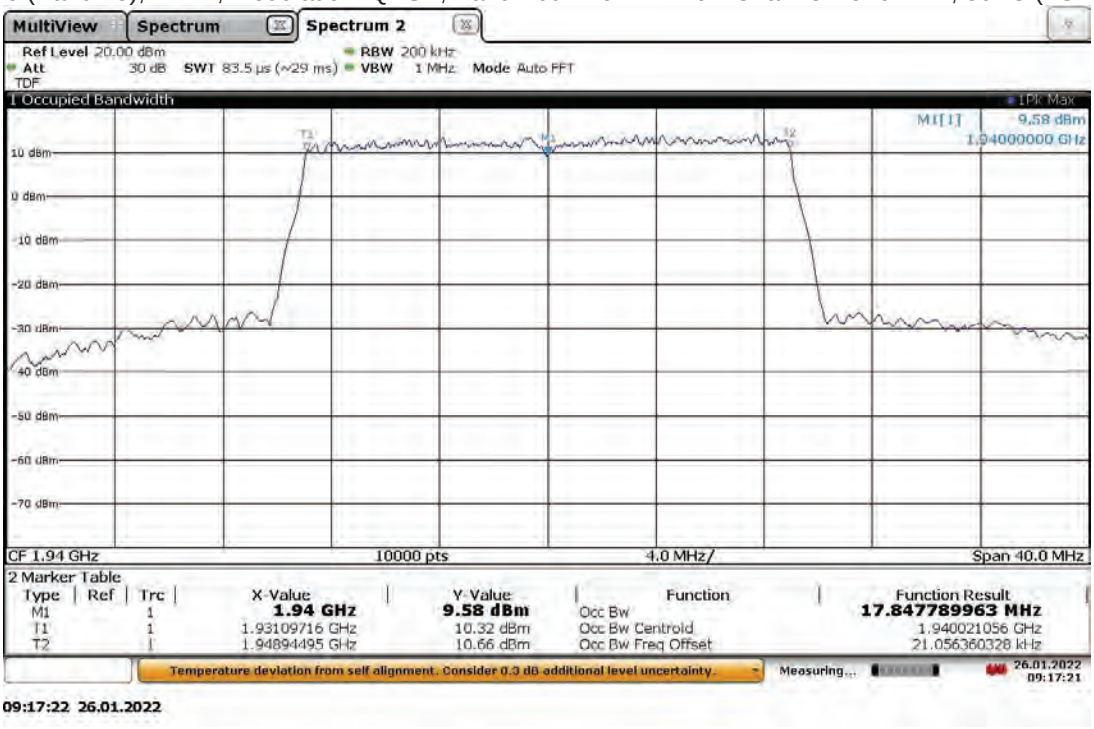
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 1940 MHz, 30 ºC (4G LTE)



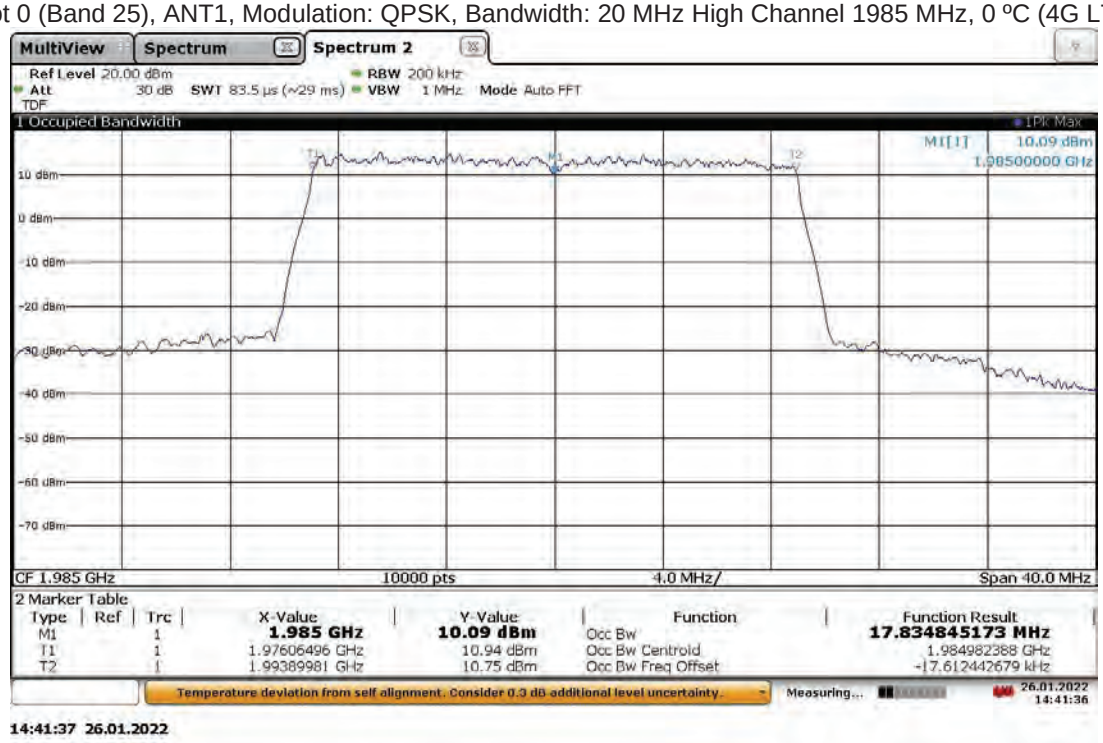
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 1940 MHz, 40 ºC (4G LTE)



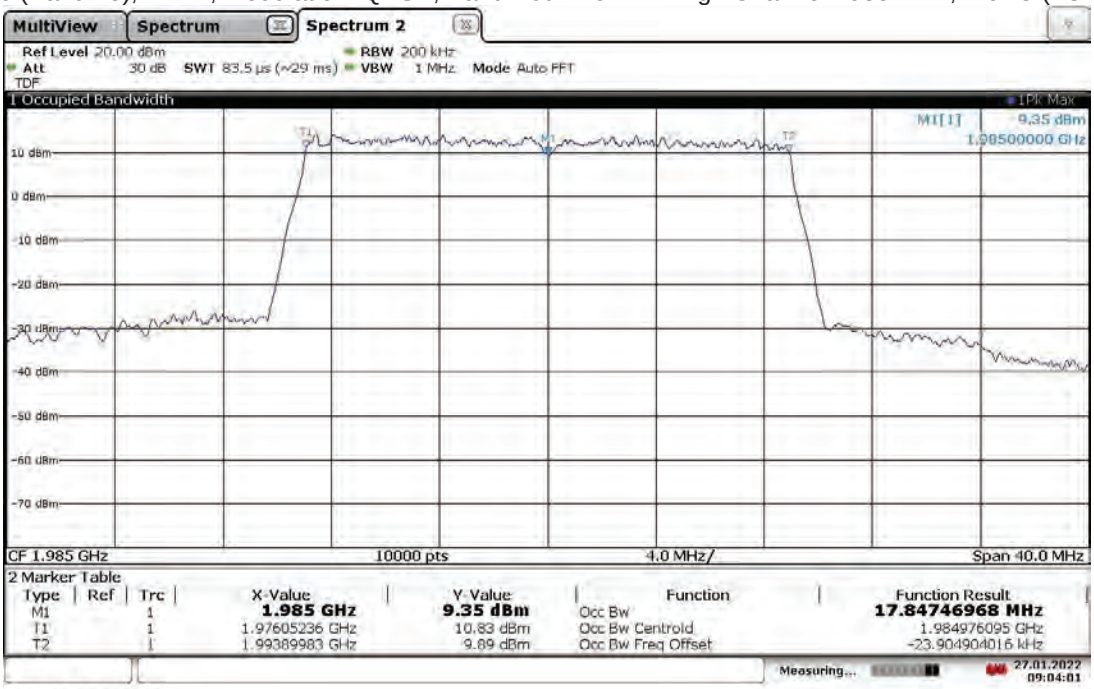
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz Low Channel 1940 MHz, 50 ºC (4G LTE)



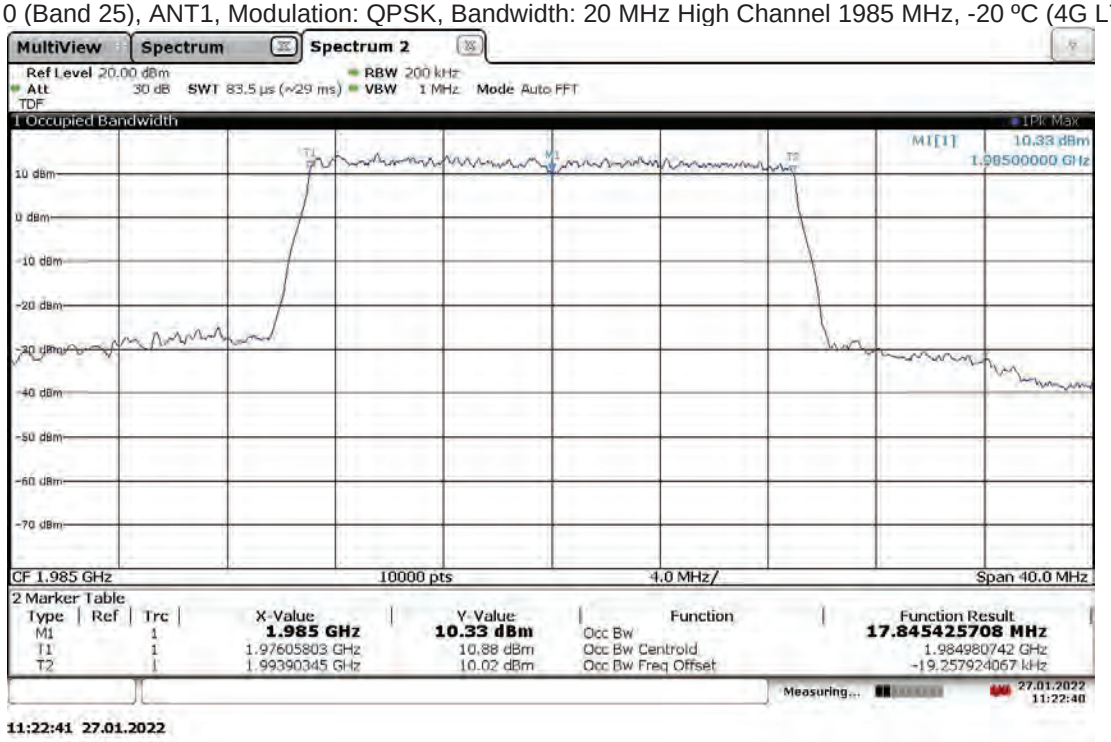
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz High Channel 1985 MHz, 0 ºC (4G LTE)



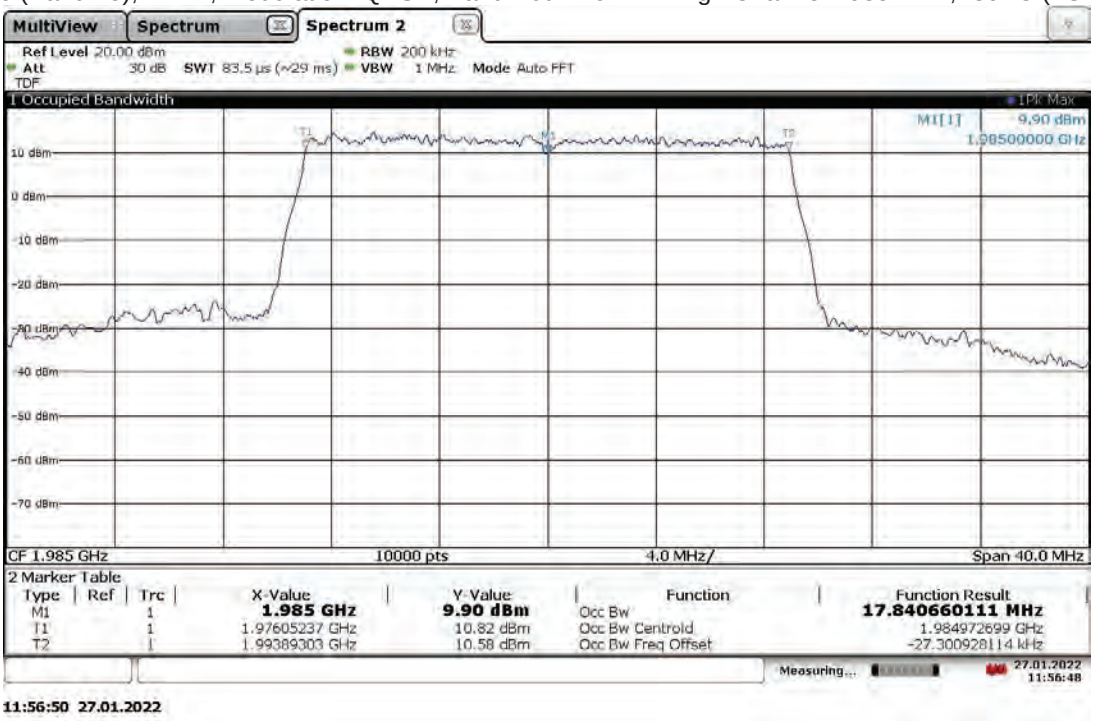
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz High Channel 1985 MHz, -10 ºC (4G LTE)



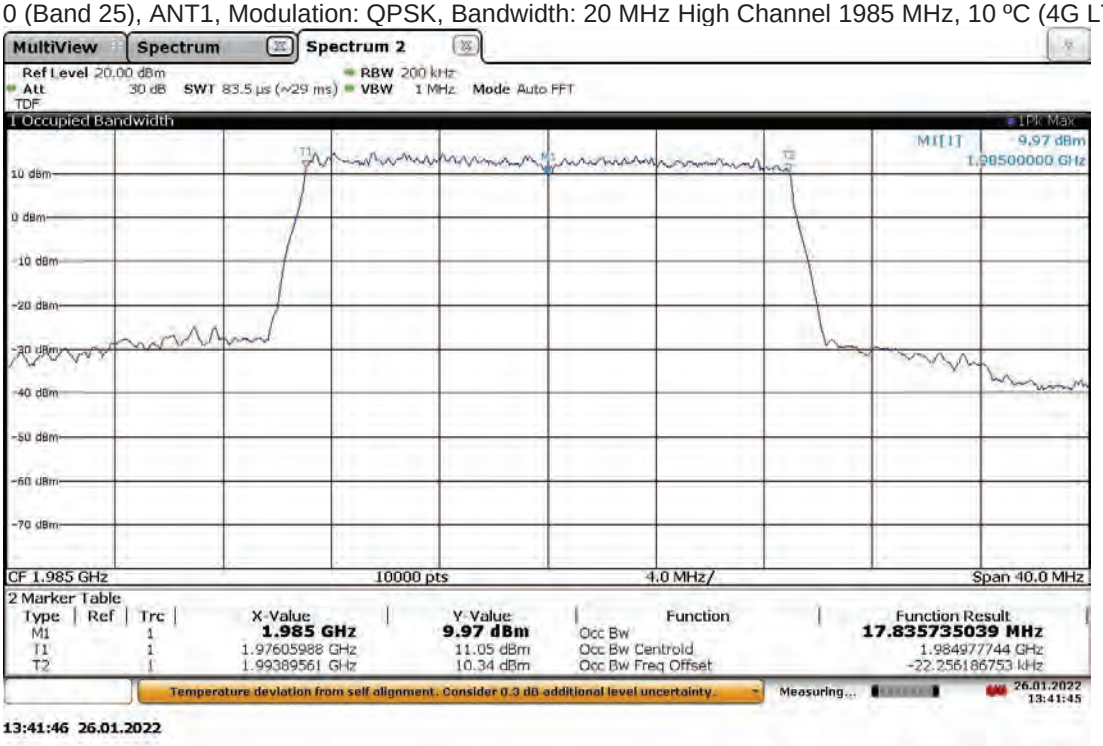
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz High Channel 1985 MHz, -20 ºC (4G LTE)



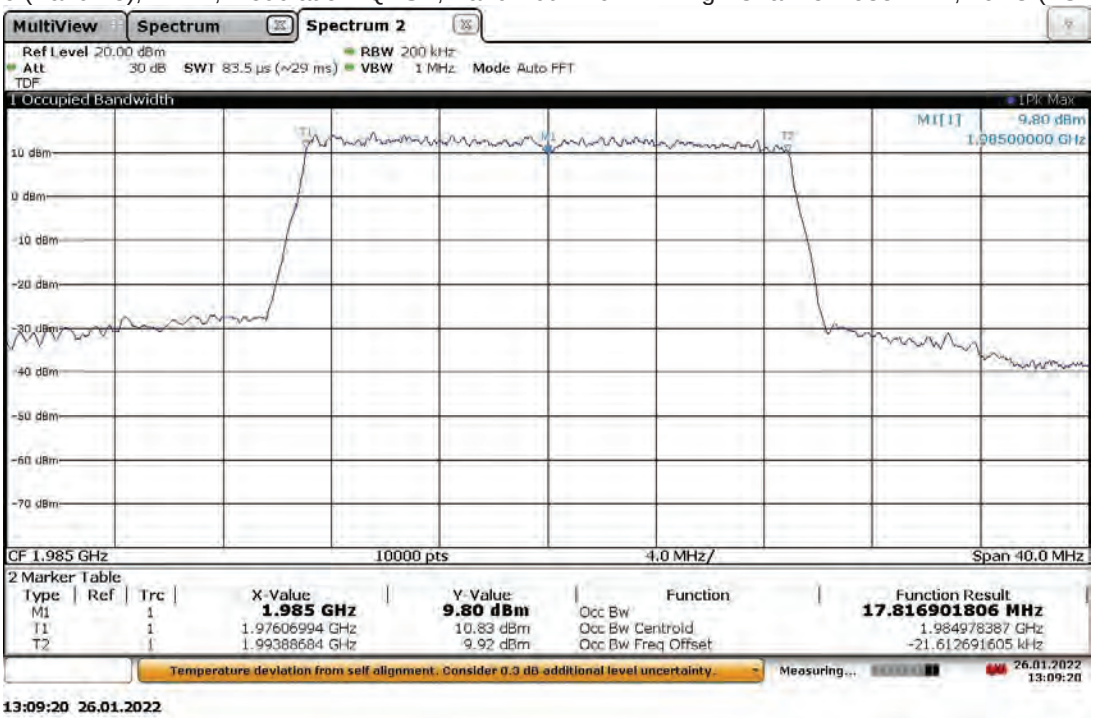
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz High Channel 1985 MHz, -30 ºC (4G LTE)



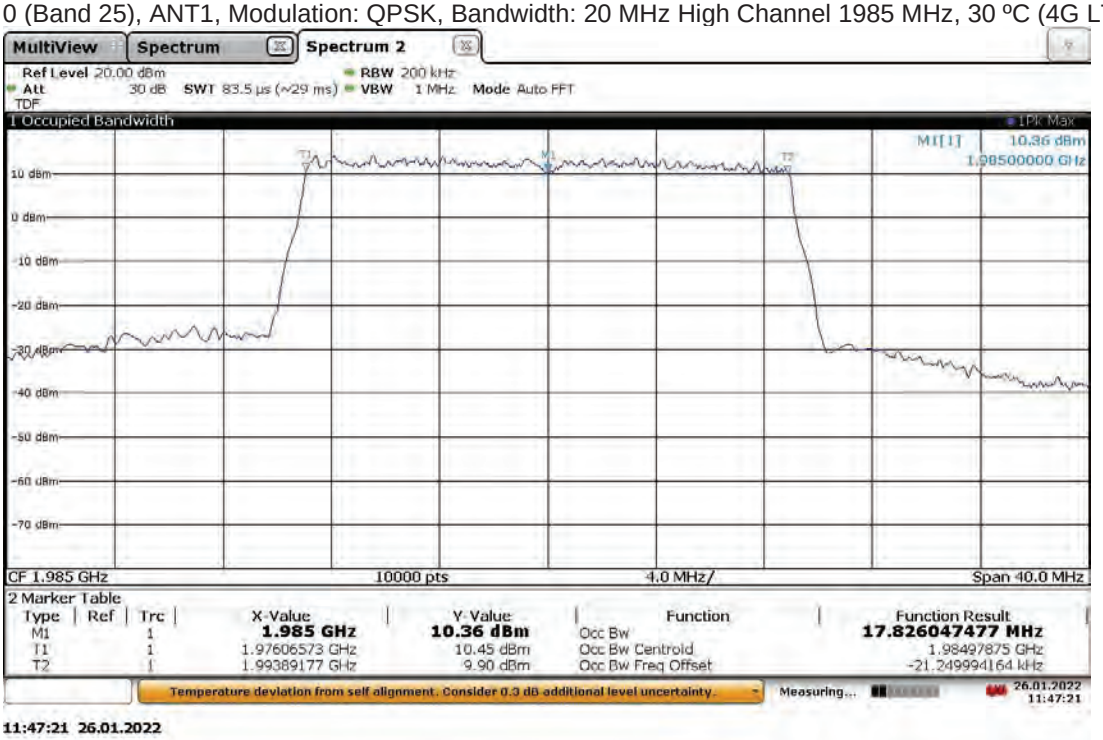
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz High Channel 1985 MHz, 10 ºC (4G LTE)



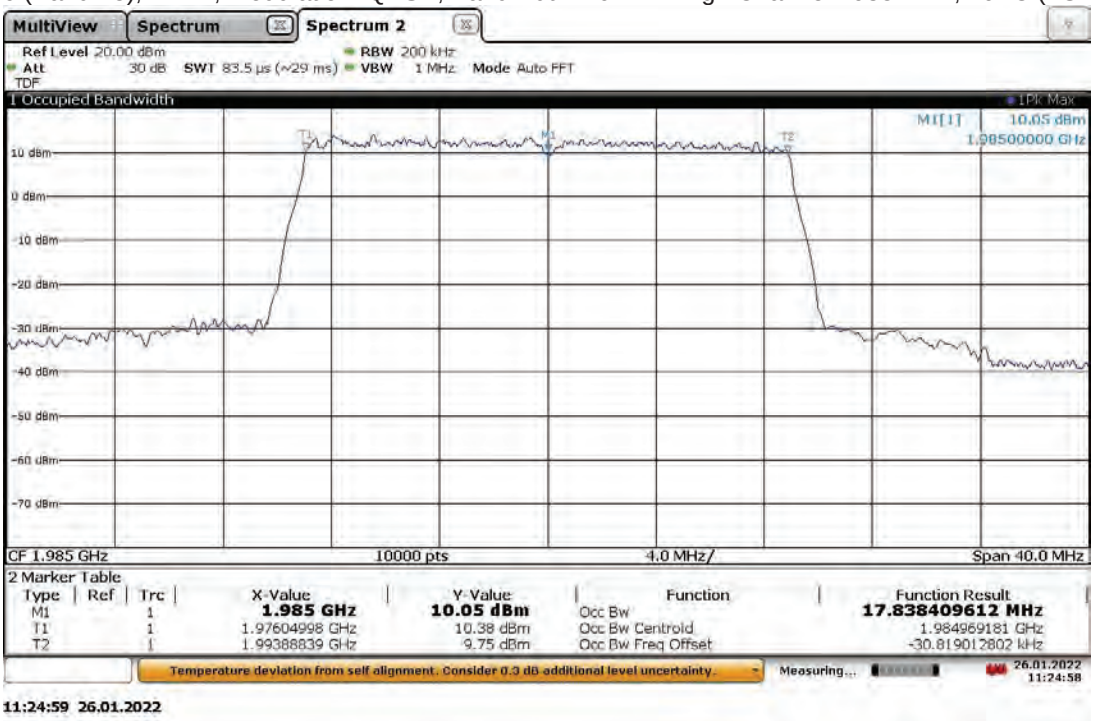
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz High Channel 1985 MHz, 20 ºC (4G LTE)



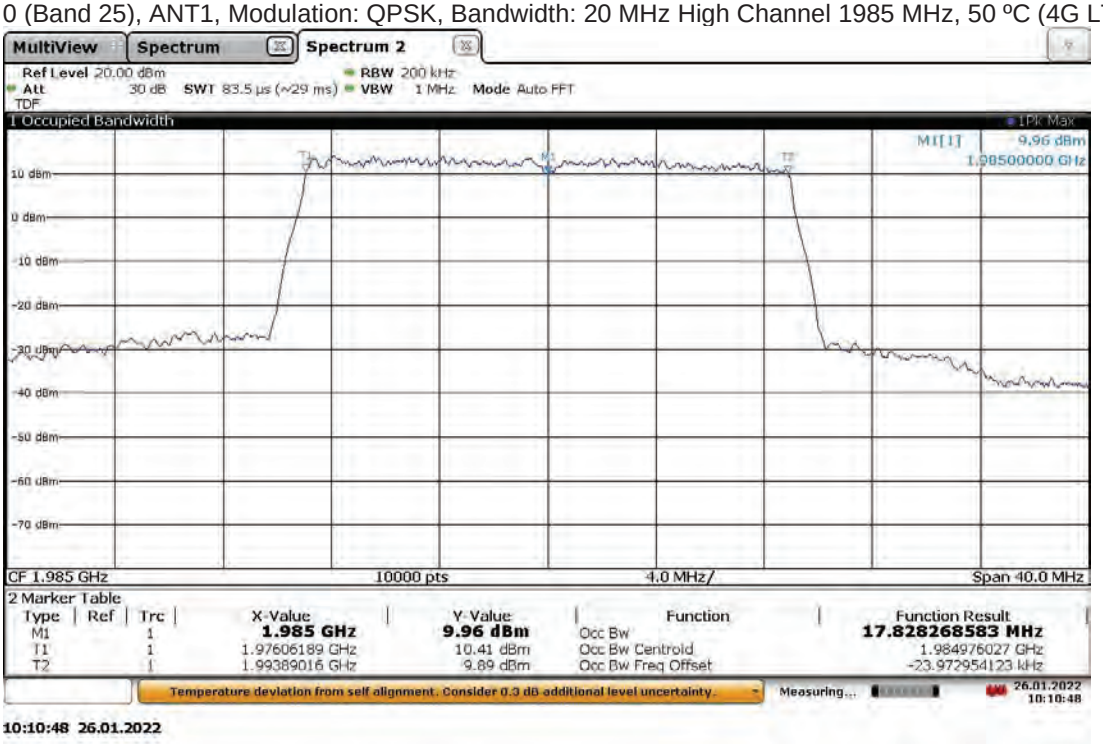
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz High Channel 1985 MHz, 30 ºC (4G LTE)



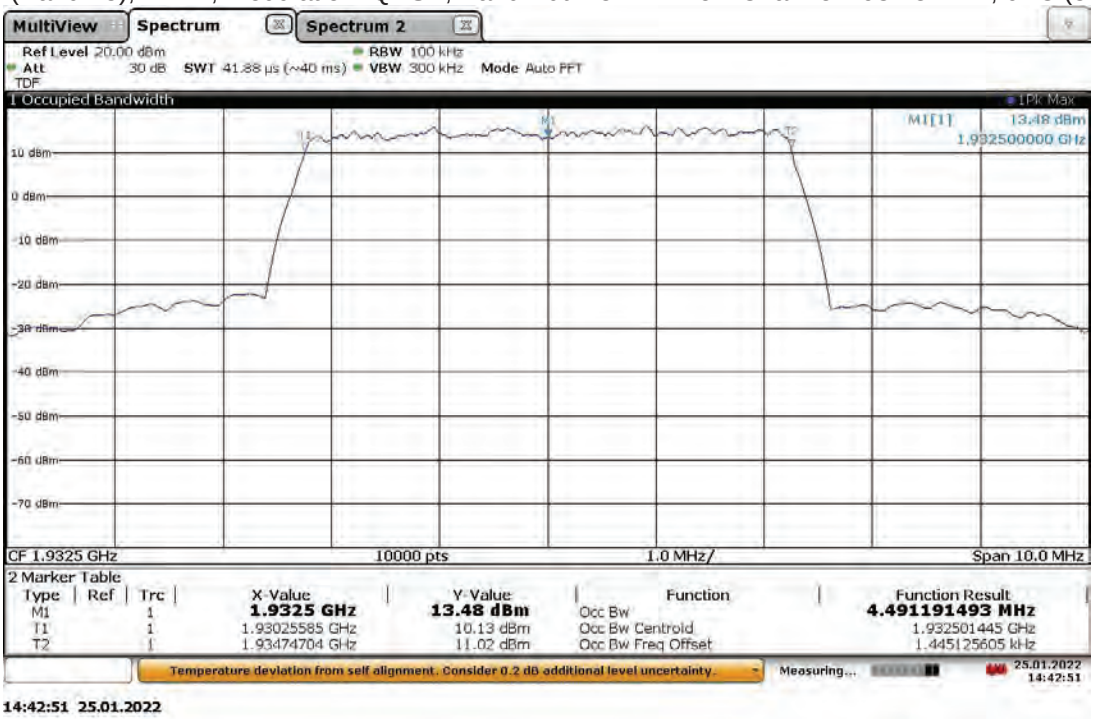
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz High Channel 1985 MHz, 40 ºC (4G LTE)



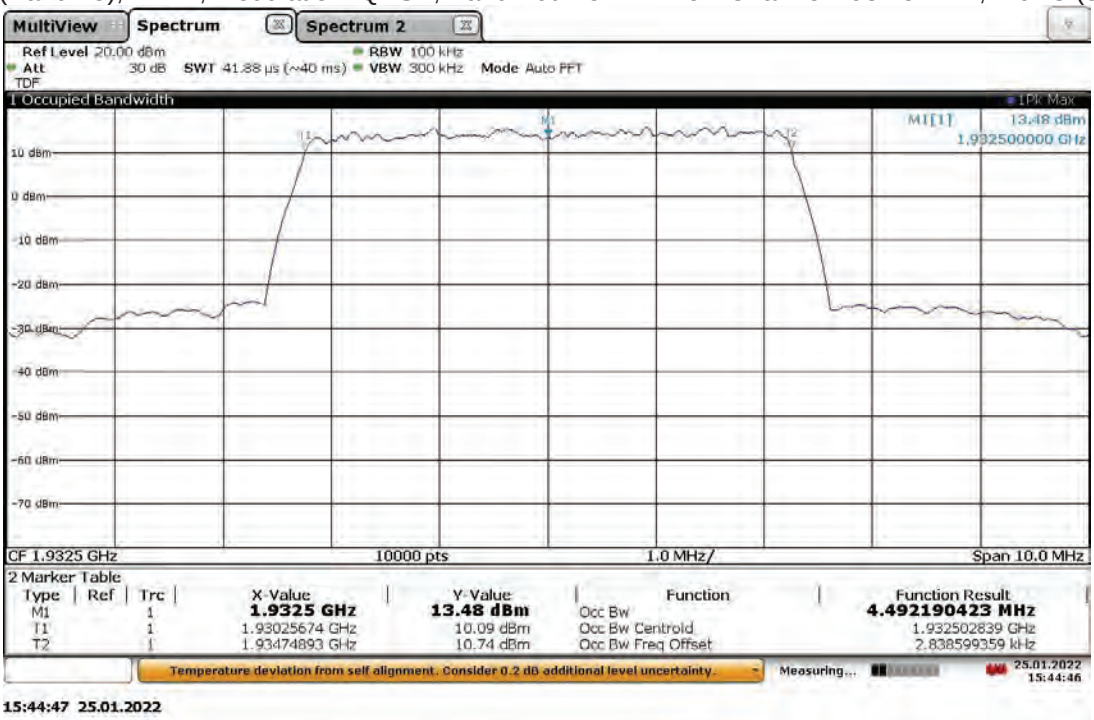
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 20 MHz High Channel 1985 MHz, 50 ºC (4G LTE)



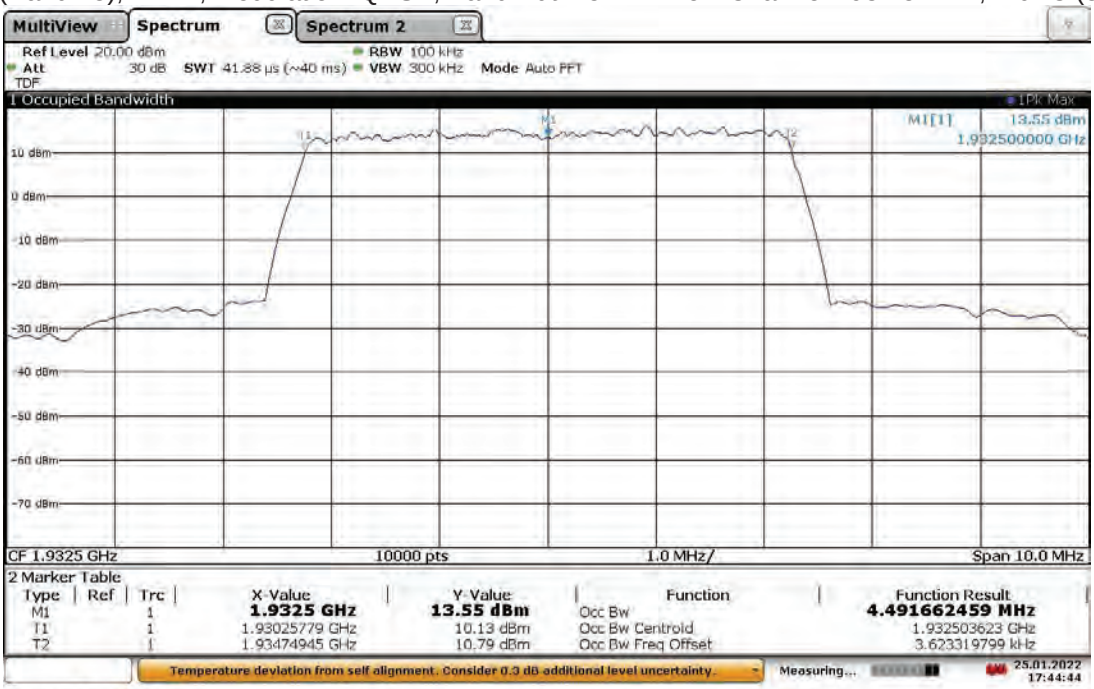
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Channel 1932.5 MHz, 0 ºC (5G nR)



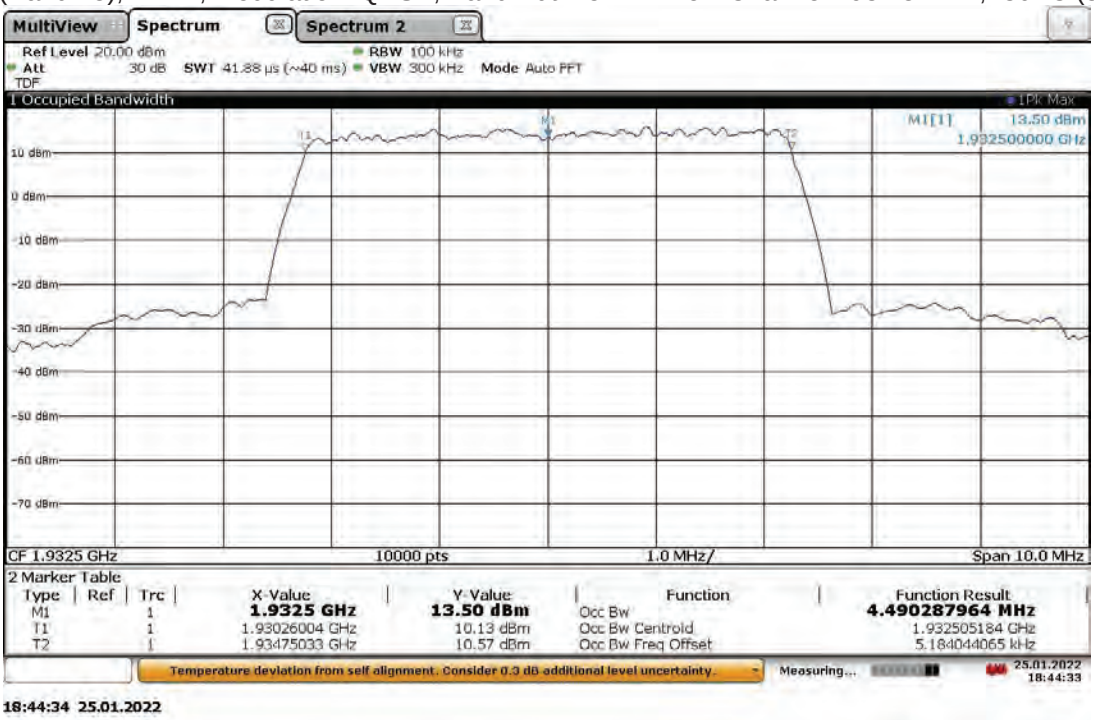
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Channel 1932.5 MHz, -10 ºC (5G nR)



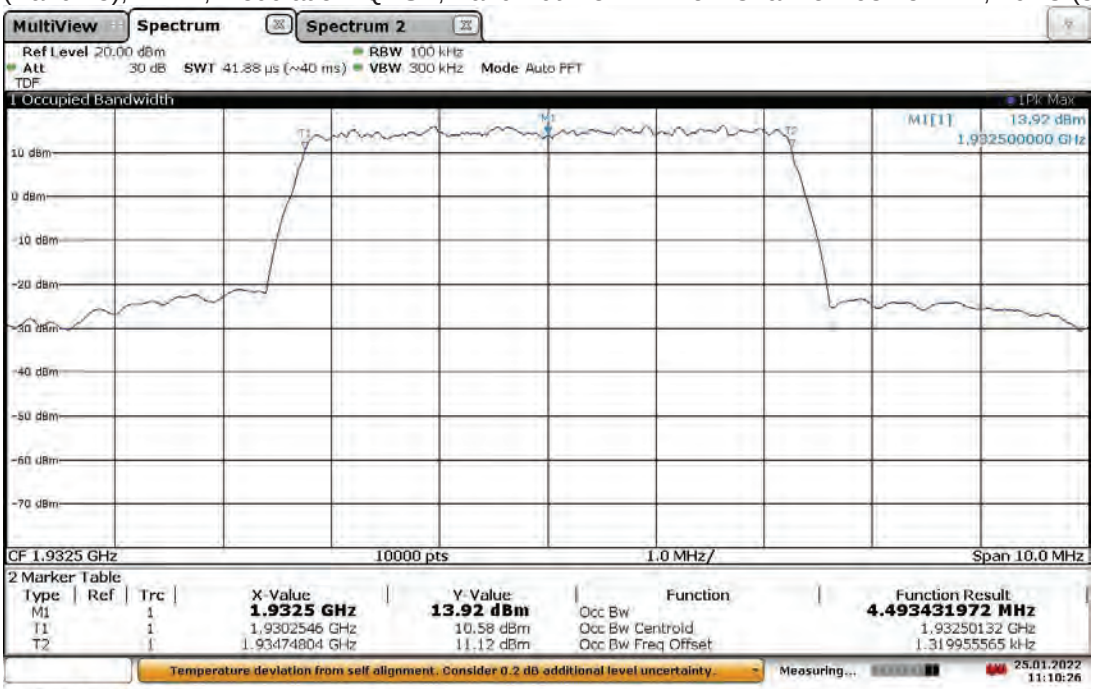
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Channel 1932.5 MHz, -20 ºC (5G nR)



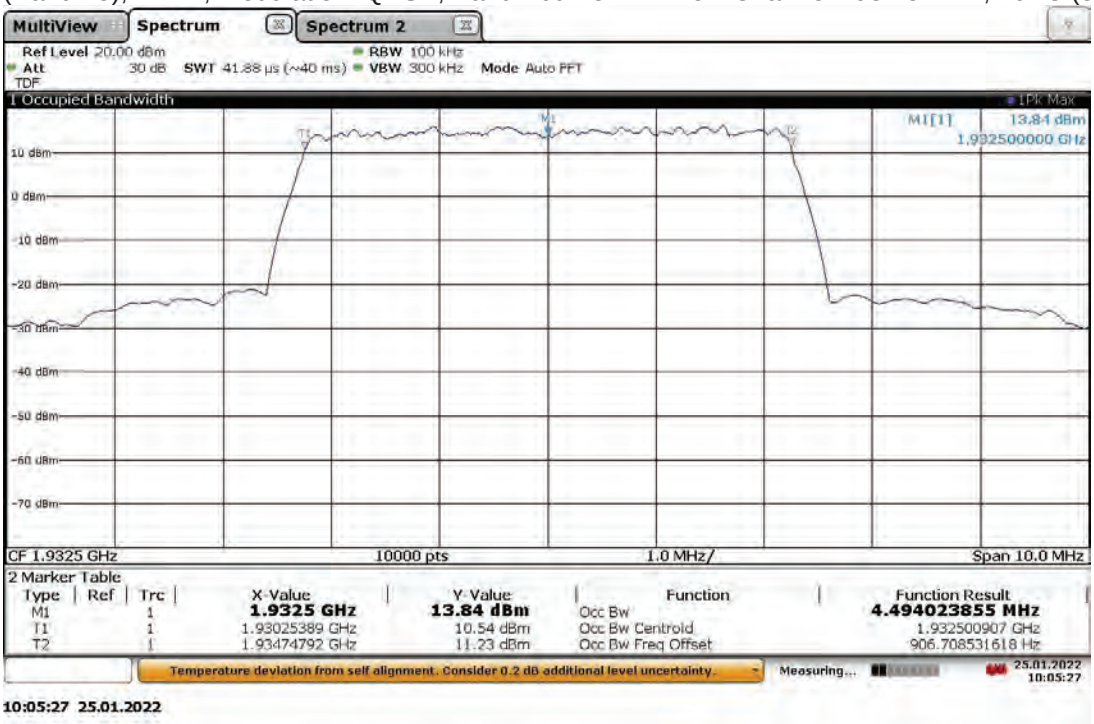
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Channel 1932.5 MHz, -30 ºC (5G nR)



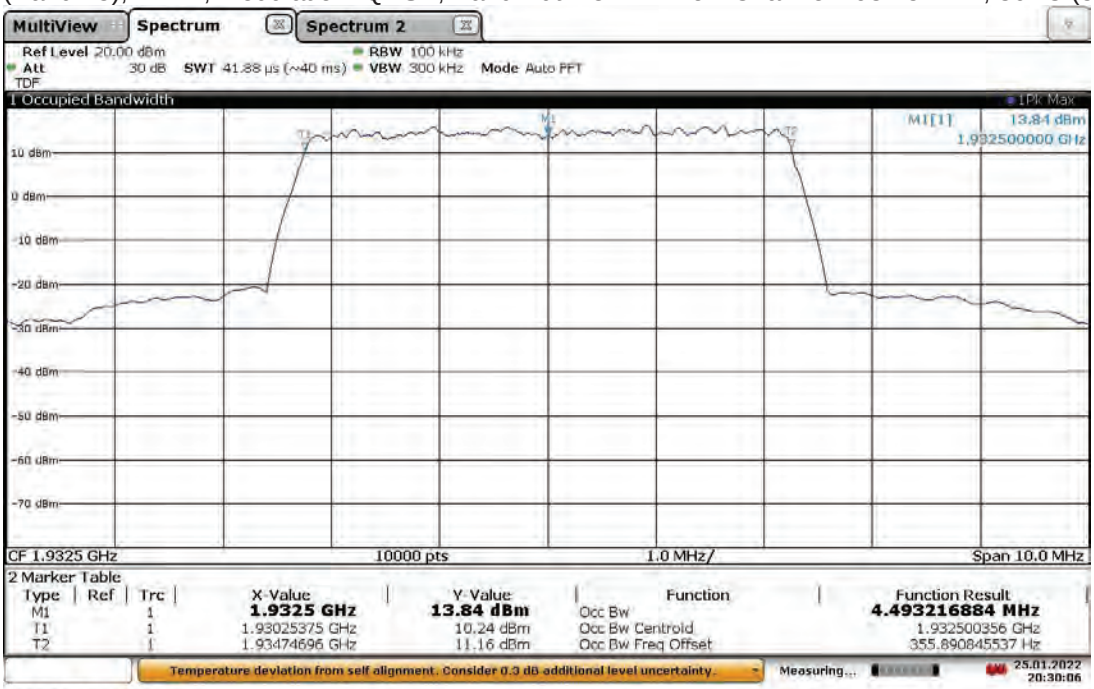
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Channel 1932.5 MHz, 10 ºC (5G nR)



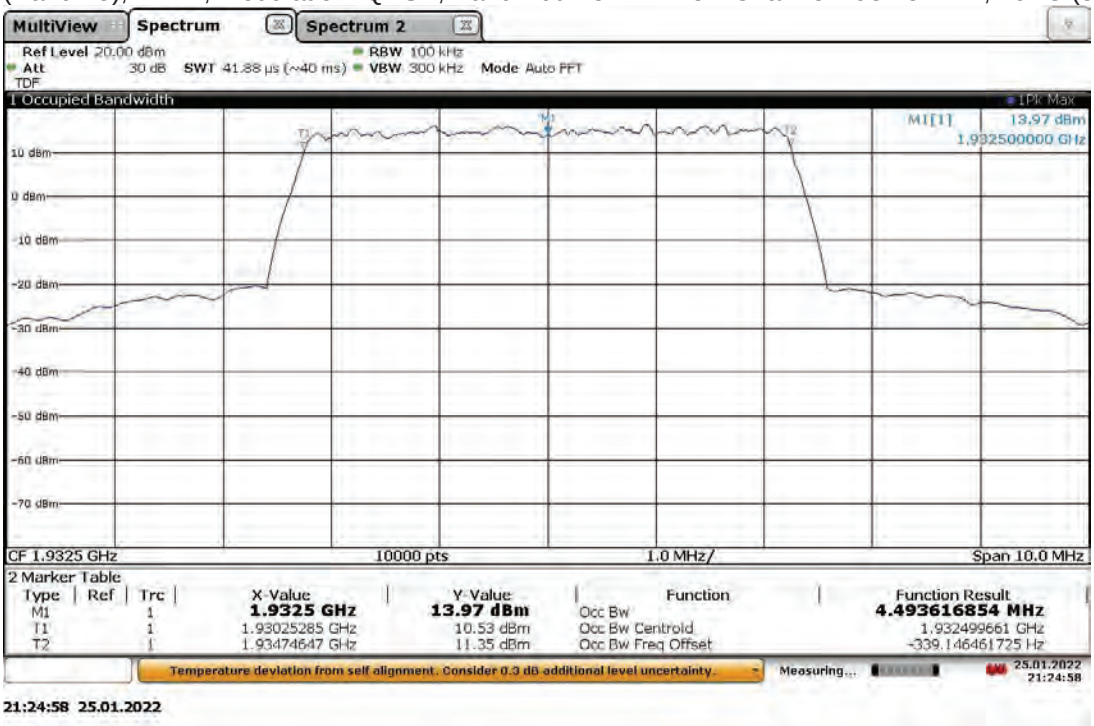
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Channel 1932.5 MHz, 20 ºC (5G nR)



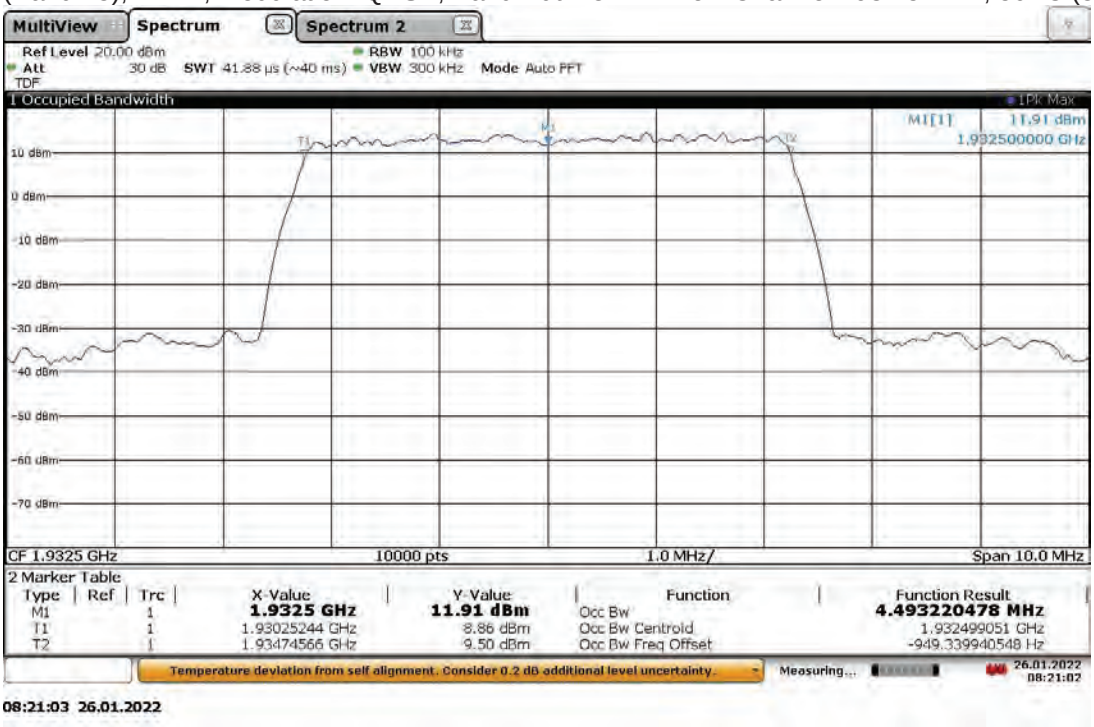
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Channel 1932.5 MHz, 30 ºC (5G nR)



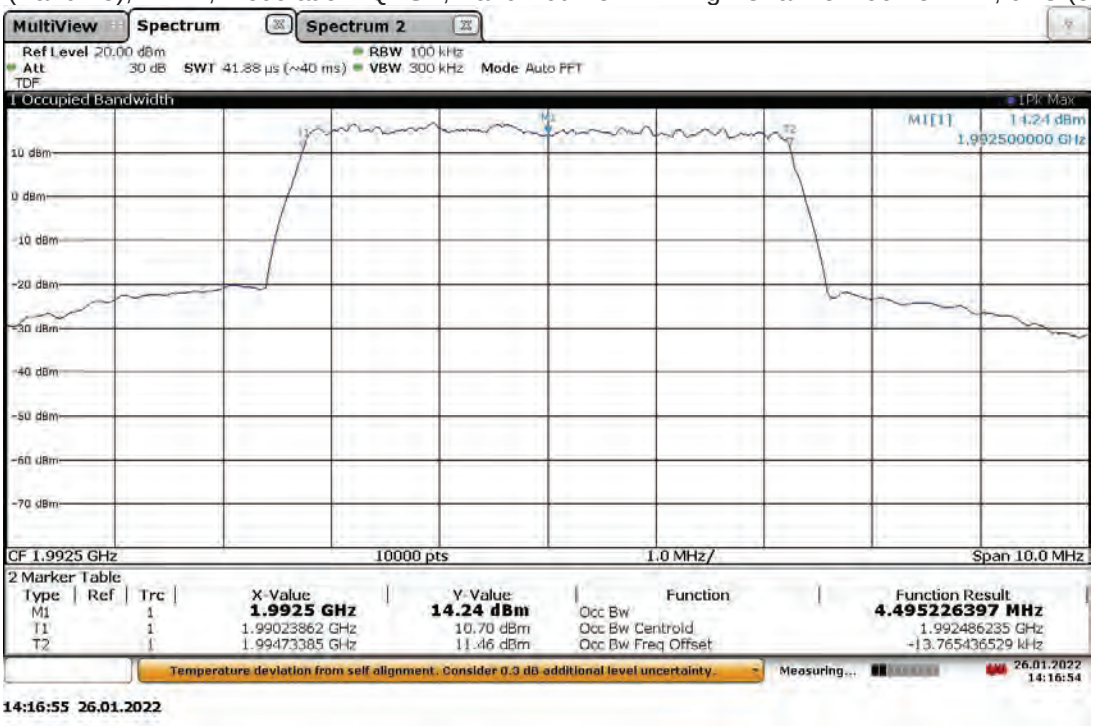
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Channel 1932.5 MHz, 40 ºC (5G nR)



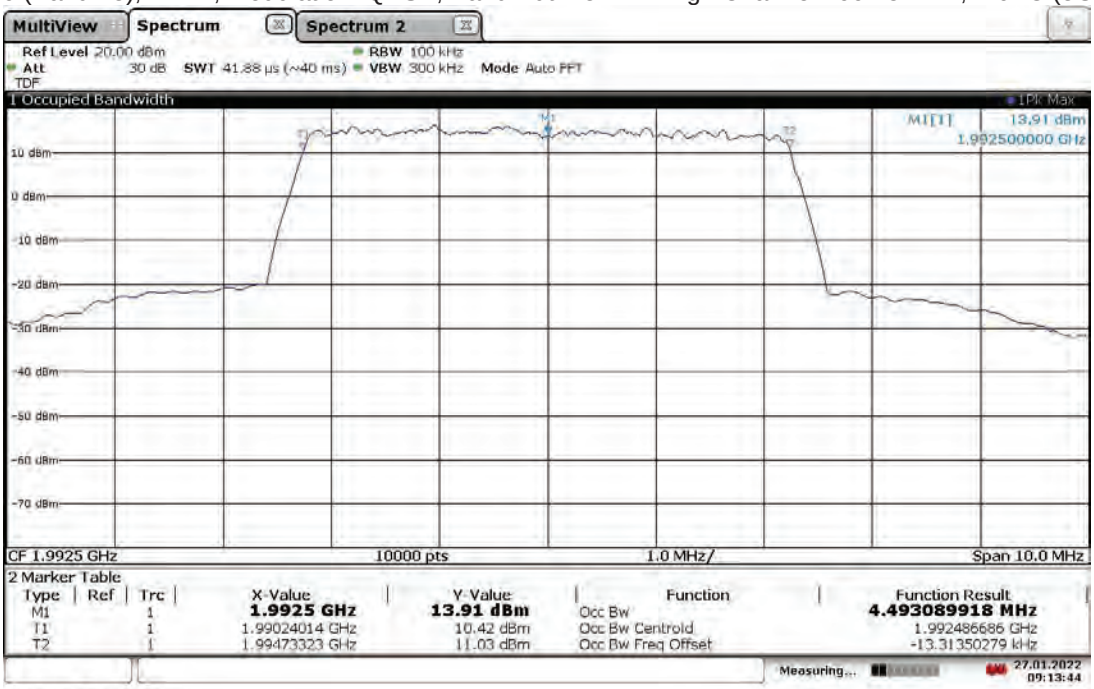
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz Low Channel 1932.5 MHz, 50 ºC (5G nR)



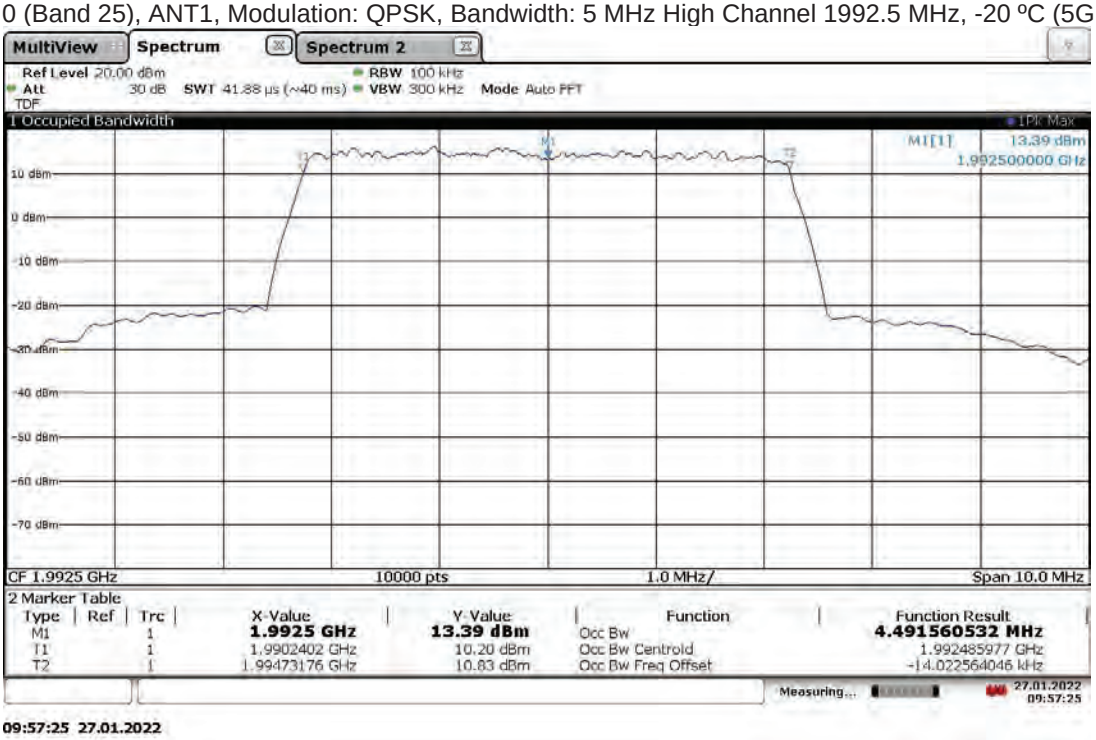
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Channel 1992.5 MHz, 0 ºC (5G nR)



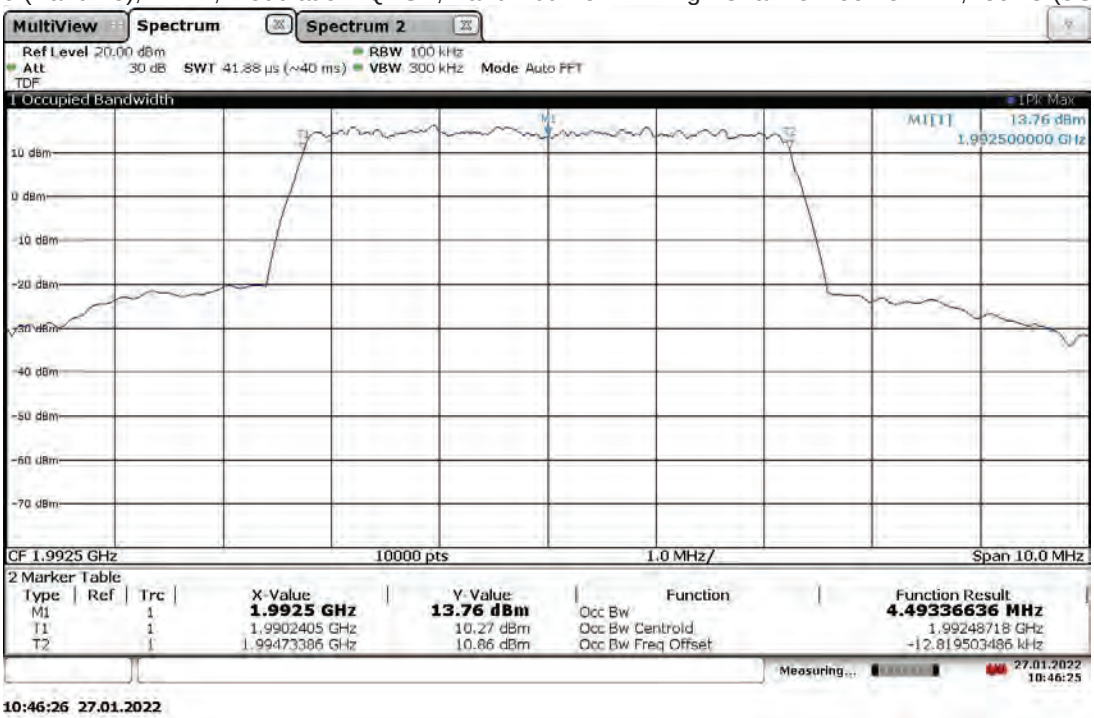
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Channel 1992.5 MHz, -10 ºC (5G nR)



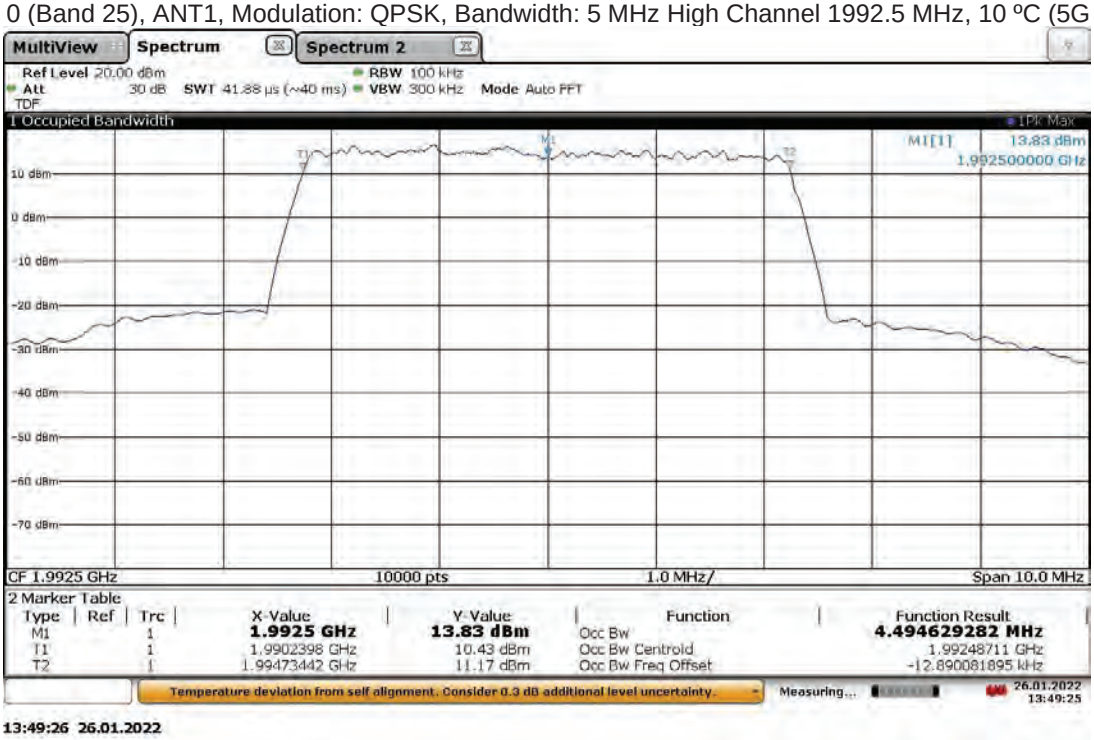
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Channel 1992.5 MHz, -20 ºC (5G nR)



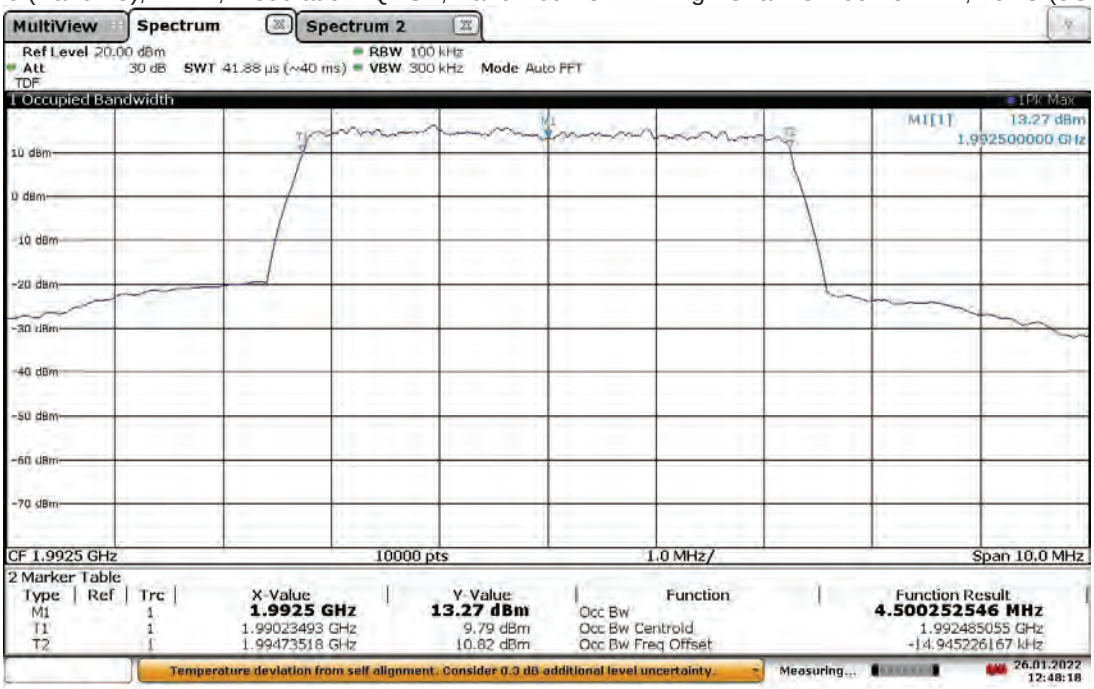
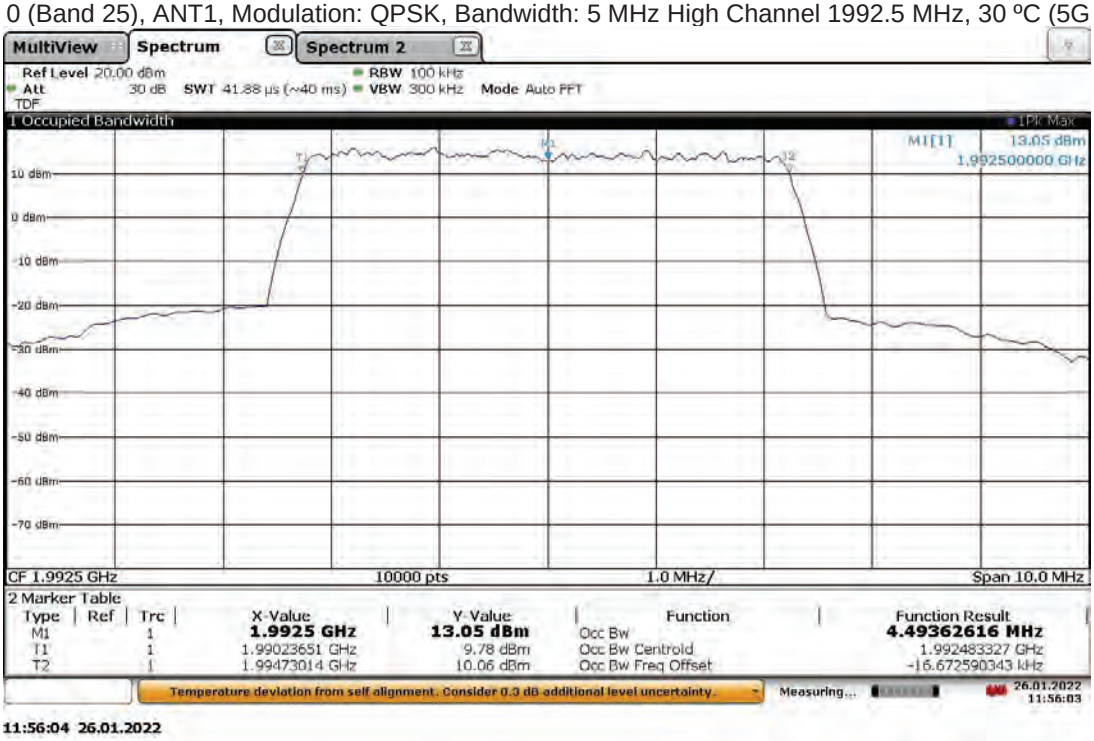
Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Channel 1992.5 MHz, -30 ºC (5G nR)



Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Channel 1992.5 MHz, 10 ºC (5G nR)



Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Channel 1992.5 MHz, 20 ºC (5G nR)



Slot 0 (Band 25), ANT1, Modulation: QPSK, Bandwidth: 5 MHz High Channel 1992.5 MHz, 30 ºC (5G nR)