COMMSCOPE TECHNOLOGIES, LLC

TEST REPORT

SCOPE OF WORK
Emissions Testing – n77 C Band with 5G W/ RP5200 Host

REPORT NUMBER
105382536BOX-001

ISSUE DATE
April 18, 2023

[REVISED DATE]
Original Issue

DOCUMENT CONTROL NUMBER
Non-Specific Radio Report Shell Rev. October 2022

EMISSIONS TEST REPORT

(FULL COMPLIANCE)

Report Number: 105382536BOX-001
Project Number: G105382536

Report Issue Date: April 18, 2023

Model(s) Tested: n77 C Band with 5G W/ RP5200 Host
Model(s) Partially Tested: None
Model(s) Not Tested but declared equivalent by the client: None

Standards: FCC Title 47 CFR Part 27: 04/23

Tested by:
Intertek
70 Codman Hill Road
Boxborough, MA 01719
USA

Client:
CommScope Technologies, LLC
900 Chelmsford St.
Lowell, MA 01851
USA

Report prepared by Reviewer

Kouma Sinn / Sr. EMC Staff Engineer

Report reviewed by Reviewer

Vathana Ven / Sr. EMC Staff Engineer

Table of Contents

1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
3	Client Information	--
4	Description of Equipment Under Test and Variant Models	--
5	System Setup and Method	--
6	Output Power FCC Title 47 CFR Part 2.1046:04/23, Part 27.50(j)(2): 04/23	Pass
7	Peak-to-average Ratio FCC Title 47 CFR Part 27.50(j)(4): 04/23	Pass
8	Occupied Bandwidth and 26 dB Bandwidth FCC Title 47 CFR Part 2.1049: 04/23	Pass
9	Frequency Stability FCC Title 47 CFR Part 2.1055: 04/23, Part 27.54: 04/23	Pass
10	Band Edge FCC Title 47 CFR Part 2.1051: 04/23, Part 2.1053: 04/23, Part 27.53(l)(1): 04/23	Pass
11	Antenna Port Conducted and Radiated Spurious Emissions FCC Title 47 CFR Part 2.1051: 04/23, Part 2.1053: 04/23, Part 27.53(l)(1): 04/23	Pass
12	AC Mains Conducted Emissions FCC Title 47 CFR Part 15 Subpart B: 04/2023	Pass
13	Revision History	--

3 Client Information

This EUT was tested at the request of:

Client: CommScope Technologies, LLC
900 Chelmsford St.
Lowell, MA 01851
USA

Contact: Zac Johnson
Telephone: None
Fax: None
Email: zac.johnson@commscope.com

4 Description of Equipment Under Test and Variant Models

Manufacturer: CommScope Technologies, LLC
900 Chelmsford St.
Lowell, MA 01851
USA

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
n77 C Band with 5G W/ RP5200 Host base station	CommScope Technologies, LLC	n77 C Band	1912050018

Receive Date:	03/27/2023
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client)
n77 C Band with 5G W/ RP5200 Host base station with four antenna outputs

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
POE	N/A	N/A	N/A

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	The ONECELL was powered for the duration of the evaluation. Serial communications were established with the device, and a test script was sent to the device to enable and initiate transmissions on three specific frequencies: 3720MHz, 3840MHz, 3960MHz. Each frequency was also evaluated for these modulations QPSK, 16-QAM, 64-QAM, 256-QAM

Software used by the EUT:

No.	Descriptions of EUT Exercising
1	Test script 'tx_cal_multi_xtalk_zjsetup.tt1'

Radio/Receiver Characteristics	
Frequency Band(s)	3720-3960 MHz
Modulation Type(s)	QPSK, 16-QAM, 64-QAM, 256-QAM
Maximum Output Power	24.65 dBm (Worst-case Conducted Output Power)
Test Channels	Low – 3720 MHz, Mid – 3840 MHz, High – 3960 MHz
Occupied Bandwidth	37.984 MHz (Worst-case)
MIMO Information (# of Transmit and Receive antenna ports)	Four Antenna Ports
Equipment Type	Plug-in Radio Module
Antenna Type and Gain	Detachable Antenna: +4 dBi (as provided by the client. Intertek takes no responsibility for the accuracy of this information. Actual antenna gain will be determined at the time of licensing)

Variant Models:

The following variant models were not tested as part of this evaluation and are not eligible for certification; but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

5 System Setup and Method

Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
--	Ethernet Cable	1	None	None	POE PS
--	Coaxial Trigger Cable	3	None	None	RF Receiver
--	Coaxial Reference Cable	3	None	None	RF Receiver

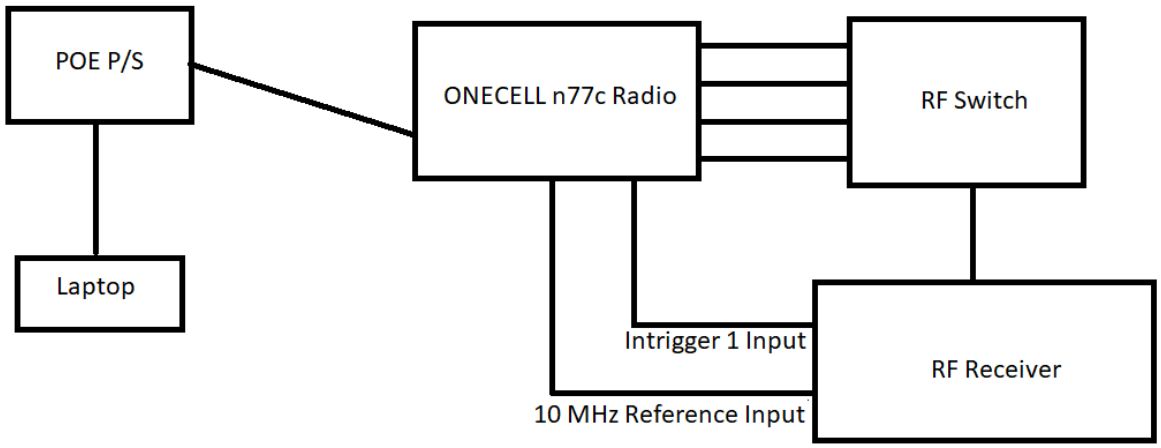
Support Equipment			
Description	Manufacturer	Model Number	Serial Number
POE Power Supply	Phihong	PE90U-1BT-X	None
Laptop	Dell	Latitude 3520	LX-00090997
POE/Analyzer	Sifos Technologies	PDA-604A	None

5.1 Method:

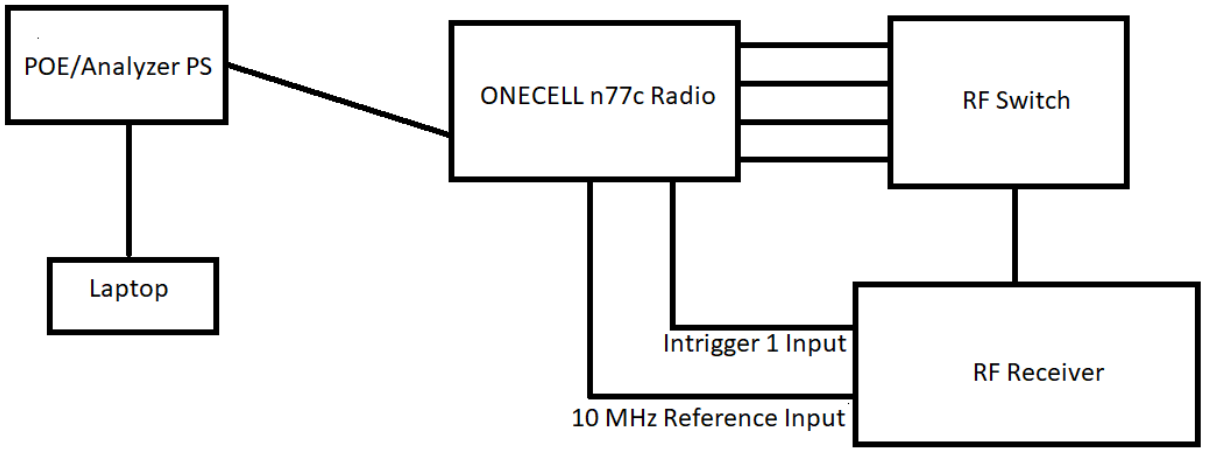
Configuration as required by FCC Title 47 CFR Part 27: 04/23, ANSI C63.4:2014, and ANSI C63.26:2015.

5.2 EUT Block Diagram:

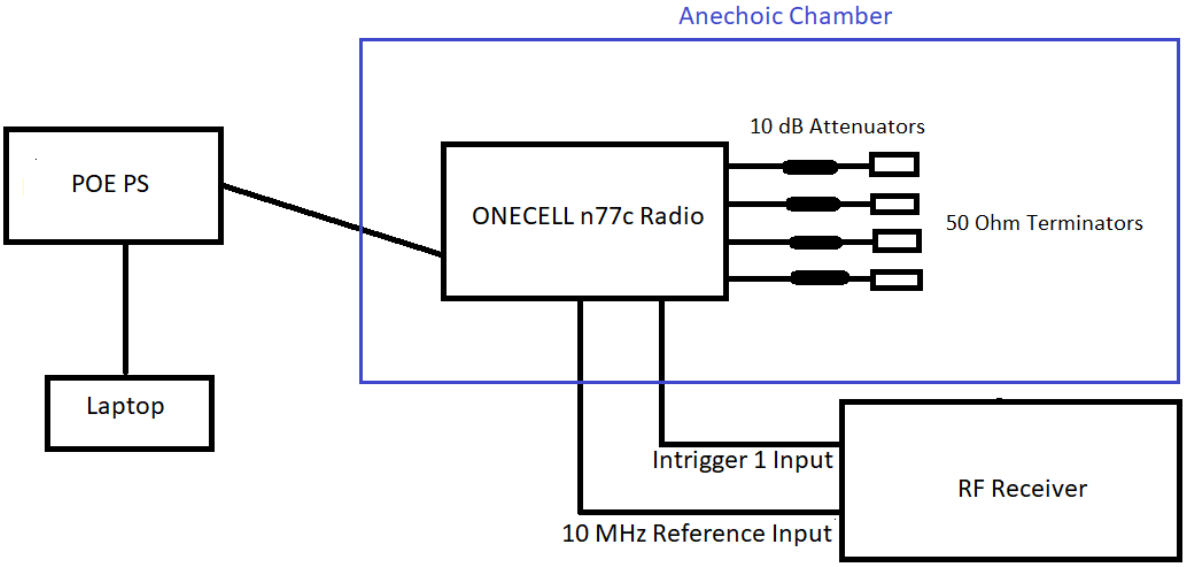
Conducted Output Power, Bandwidths, Band Edges, Spurious Emissions, and Temperature Variation Frequency Stability.



Voltage Variation Frequency Stability.



Radiated Emissions.



6 Output Power

6.1 Method

Tests are performed in accordance with ANSI C63.26:2015.

6.2 Limits

FCC Title 47 CFR Part 27.50(j)(2)
The power of each fixed or base station transmitting in the 3700-3980 MHz band and situated in any geographic location other than that described in paragraph (j)(1) of this section is limited to an EIRP of 1640 Watts/MHz. This limit applies to the aggregate power of all antenna elements in any given sector of a base station.

6.3 Test Site

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.

6.4 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV009'	weather station	Davis Instruments	6351 Vantage VUE	DAV009	03/27/2023	03/27/2024
CEN001'	DC-40GHz attenuator 20dB	cblhf201-5-2	C411-20	CEN001	02/28/2023	02/28/2024
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/18/2022	11/18/2023
None	2m Mini SMA Cable	See Below	None	None	See below	See below
None	RF Switch Controller (DC-18 GHz)	Mini-Circuits	RC-2SP4T-A18	02202230028	See below	See below

Notes: The 2m Mini SMA cable and RF Switch Controller were provided by the manufacturer with the total as follows: Low Frequency, 3720 MHz, -15.09 dB; Mid frequency, 3840 MHz, -15.14dB; High Frequency, 3960 MHz, -15.25 dB.

Software Utilized:

Name	Manufacturer	Version
None	N/A	N/A

6.5 Results:

The sample tested was found to Comply.

6.6 Setup Photograph:

Confidential – Photos not included in this report.

6.7 Plots/Data:

Modulations	Channels	Channel Power dBm, mW				Combined Power	Antenna Gain	EIRP	99% OBW	Combined EIRP
		Port 1	Port 2	Port 3	Port 4	dBm, mW	dBi	dBm, W	MHz	W/MHz
QPSK	Low	23.96	23.89	23.35	23.95	29.82	4.00	33.82		
	3720 MHz	248.89	244.91	216.27	248.31	958.38		2.41	37.976	0.063
	Mid	24.12	24.18	24.31	24.51	30.30	4.00	34.30		
	3840 MHz	258.23	261.82	269.77	282.49	1072.31		2.69	37.981	0.071
	High	24.12	24.55	24.41	24.34	30.38	4.00	34.38		
	3960 MHz	258.23	285.10	276.06	271.64	1091.03		2.74	37.984	0.072
16QAM	Low	23.97	23.86	23.43	24.19	29.89	4.00	33.89		
	3720 MHz	249.46	243.22	220.29	262.42	975.39		2.45	37.970	0.065
	Mid	24.19	24.65	24.33	24.26	30.38	4.00	34.38		
	3840 MHz	262.42	291.74	271.02	266.69	1091.87		2.74	37.958	0.072
	High	24.35	24.64	24.65	24.39	30.53	4.00	34.53		
	3960 MHz	272.27	291.07	291.74	274.79	1129.87		2.84	37.959	0.075
64QAM	Low	23.70	23.85	23.26	23.93	29.71	4.00	33.71		
	3720 MHz	234.42	242.66	211.84	247.17	936.09		2.35	37.946	0.062
	Mid	24.14	24.29	24.23	24.41	30.29	4.00	34.29		
	3840 MHz	259.42	268.53	264.85	276.06	1068.86		2.68	37.905	0.071
	High	24.12	24.18	24.60	24.42	30.35	4.00	34.35		
	3960 MHz	258.23	261.82	288.40	276.69	1085.14		2.73	37.926	0.072
256QAM	Low	23.97	23.91	23.35	23.97	29.83	4.00	33.83		
	3720 MHz	249.46	246.04	216.27	249.46	961.23		2.41	37.946	0.064
	Mid	24.23	24.34	24.34	24.39	30.35	4.00	34.35		
	3840 MHz	264.85	271.64	271.64	274.79	1082.93		2.72	37.919	0.072
	High	24.08	24.56	24.51	24.31	30.39	4.00	34.39		
	3960 MHz	255.86	285.76	282.49	269.77	1093.88		2.75	37.944	0.072

Conducted Power – Low Channel, QPSK, Port 1

04:23:52 PM 03/29/2023

Conducted Power – Low Channel, QPSK, Port 2

04:25:51 PM 03/29/2023

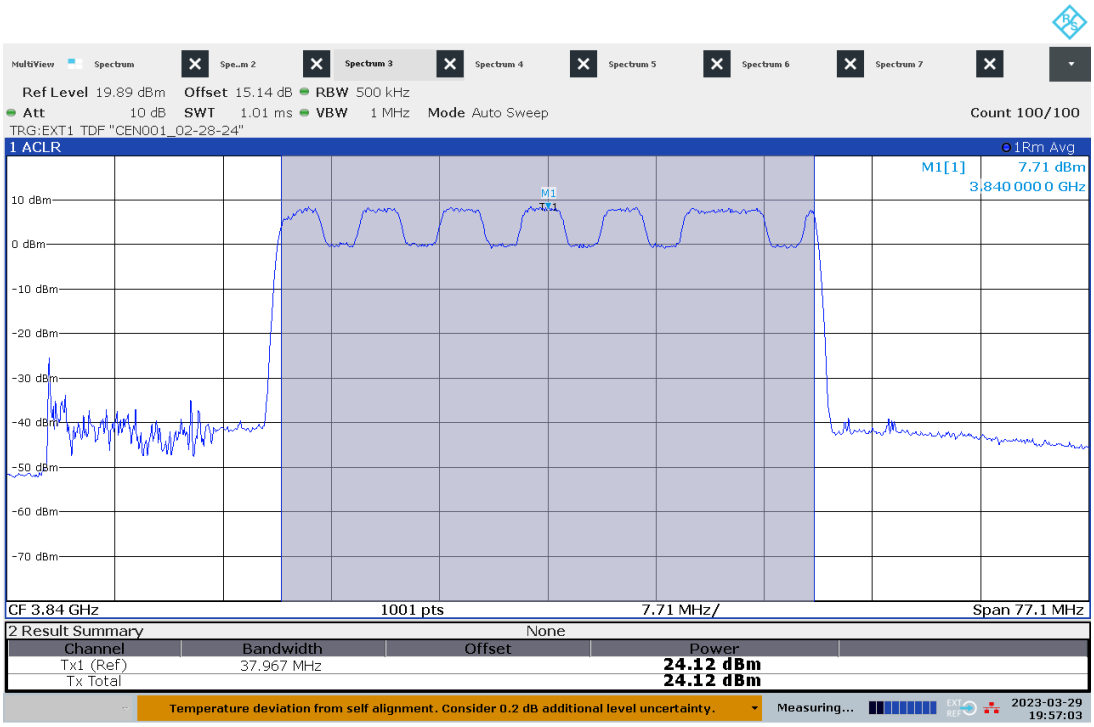
Conducted Power – Low Channel, QPSK, Port 3

04:26:25 PM 03/29/2023

Conducted Power – Low Channel QPSK, Port 4

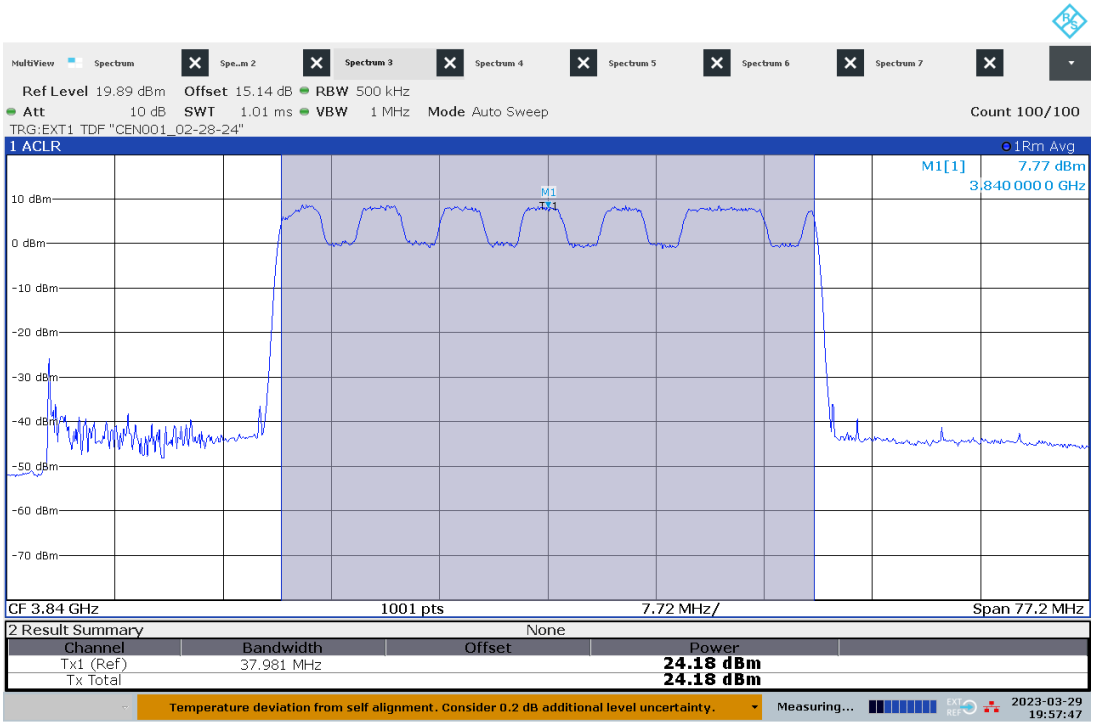
04:27:00 PM 03/29/2023

Conducted Power – Mid Channel, QPSK, Port 1



07:57:03 PM 03/29/2023

Conducted Power – Mid Channel, QPSK, Port 2



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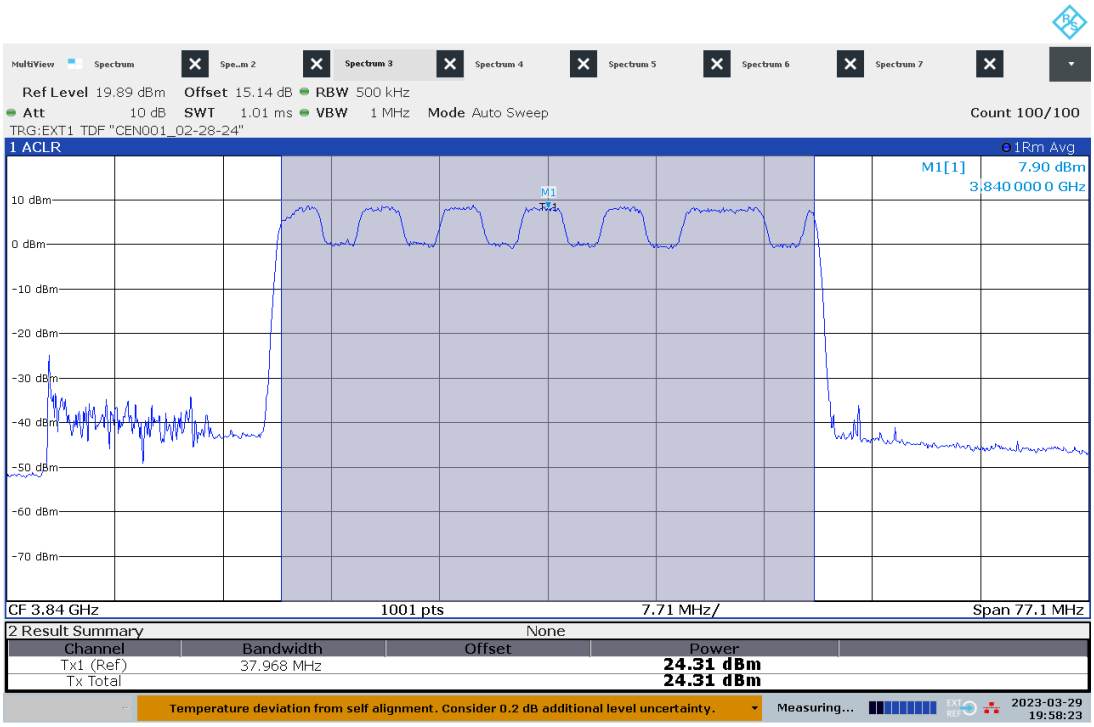
Conducted Power – Mid Channel, QPSK, Port 3



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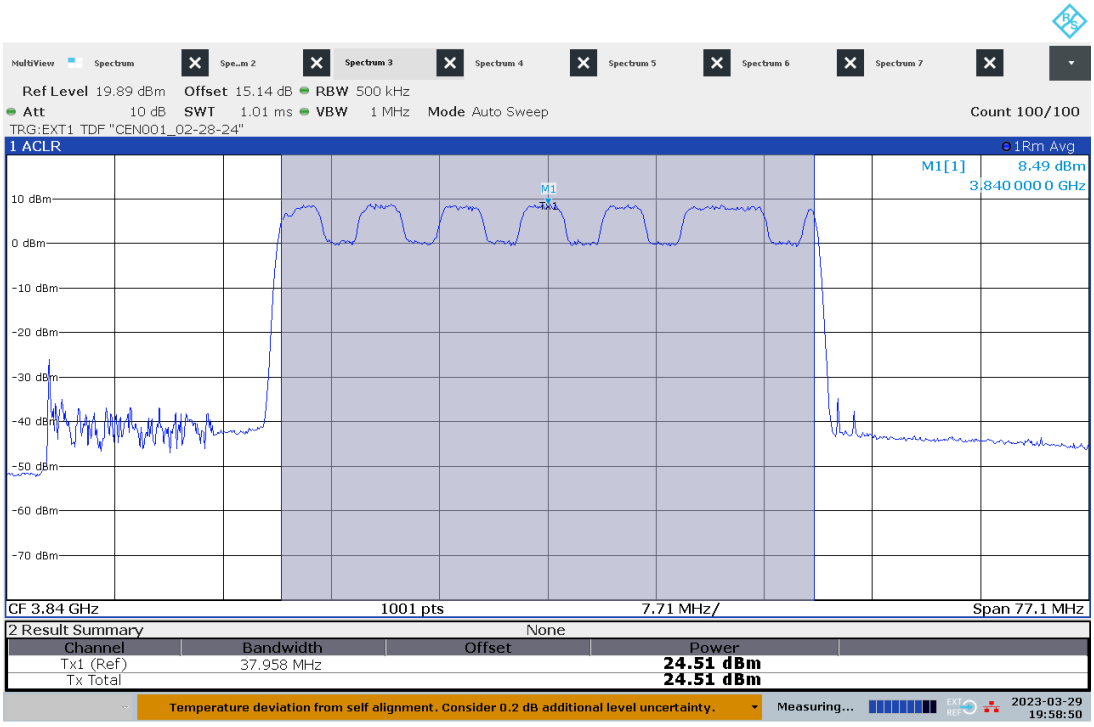
Conducted Power – Mid Channel, QPSK, Port 4



07:58:50 PM 03/29/2023

Conducted Power – High Channel, QPSK, Port 1

01:27:08 PM 03/29/2023

Conducted Power – High Channel, QPSK, Port 2

01:27:54 PM 03/29/2023

Conducted Power – High Channel, QPSK, Port 3

01:28:19 PM 03/29/2023

Conducted Power – High Channel, QPSK, Port 4

01:28:47 PM 03/29/2023

Conducted Power – Low Channel, 16QAM, Port 1

05:15:21 PM 03/29/2023

Conducted Power – Low Channel, 16QAM, Port 2

05:16:19 PM 03/29/2023

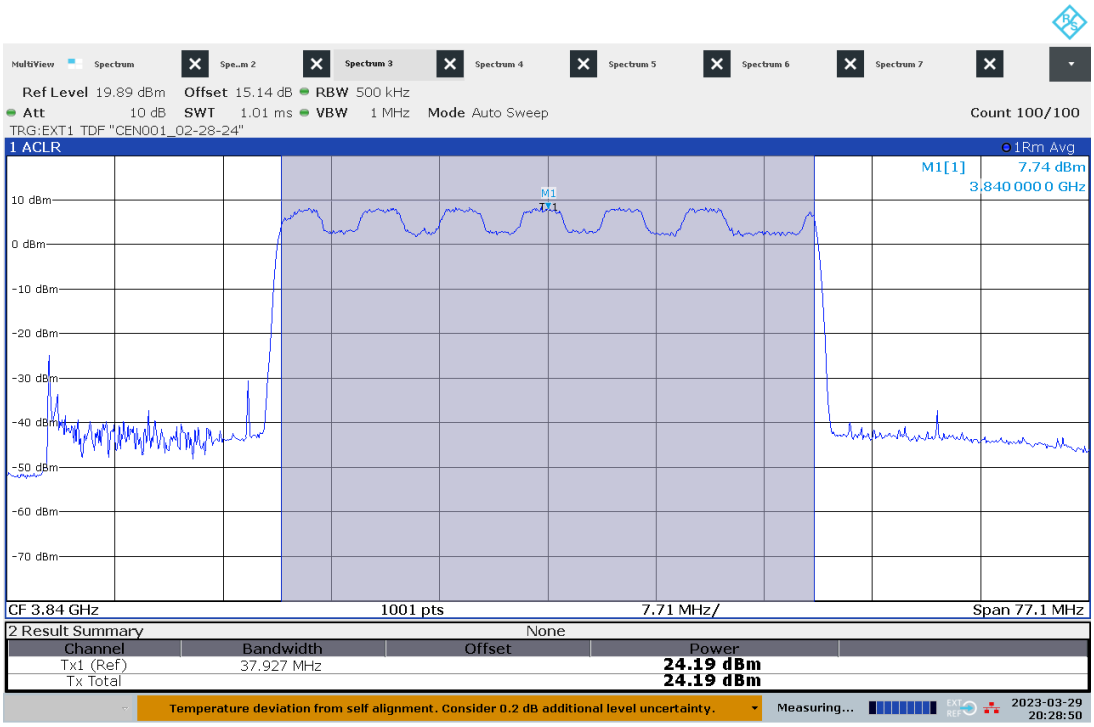
Conducted Power – Low Channel, 16QAM, Port 3

05:16:54 PM 03/29/2023

Conducted Power – Low Channel, 16QAM, Port 4

05:17:22 PM 03/29/2023

Conducted Power – Mid Channel, 16QAM, Port 1



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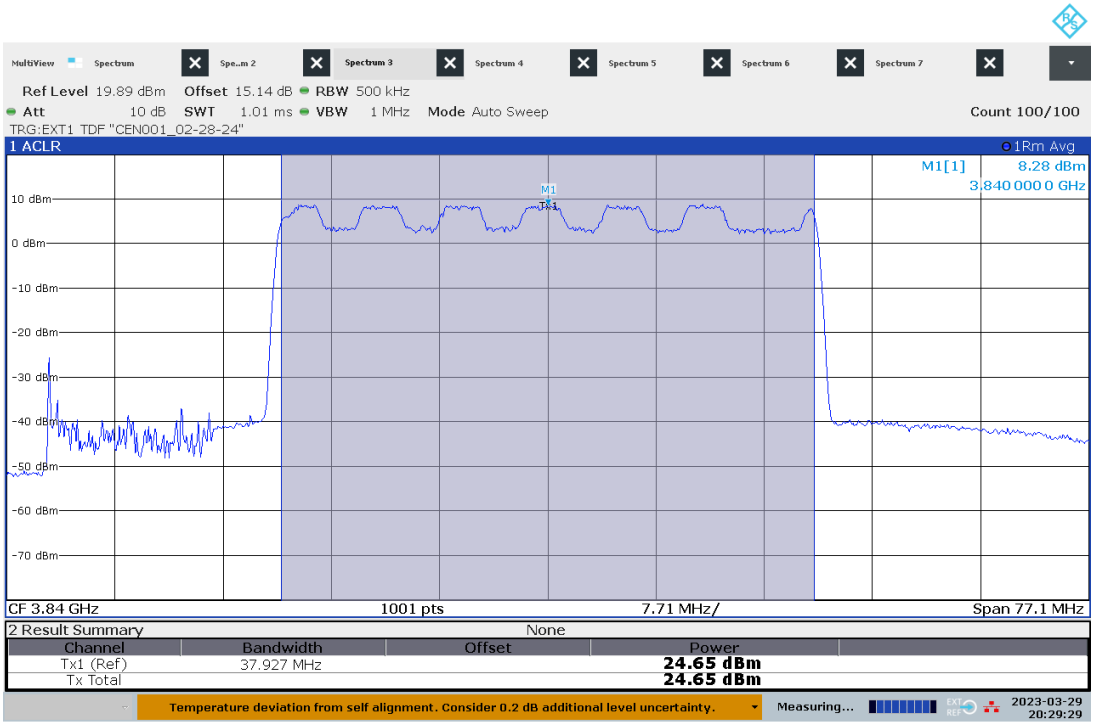
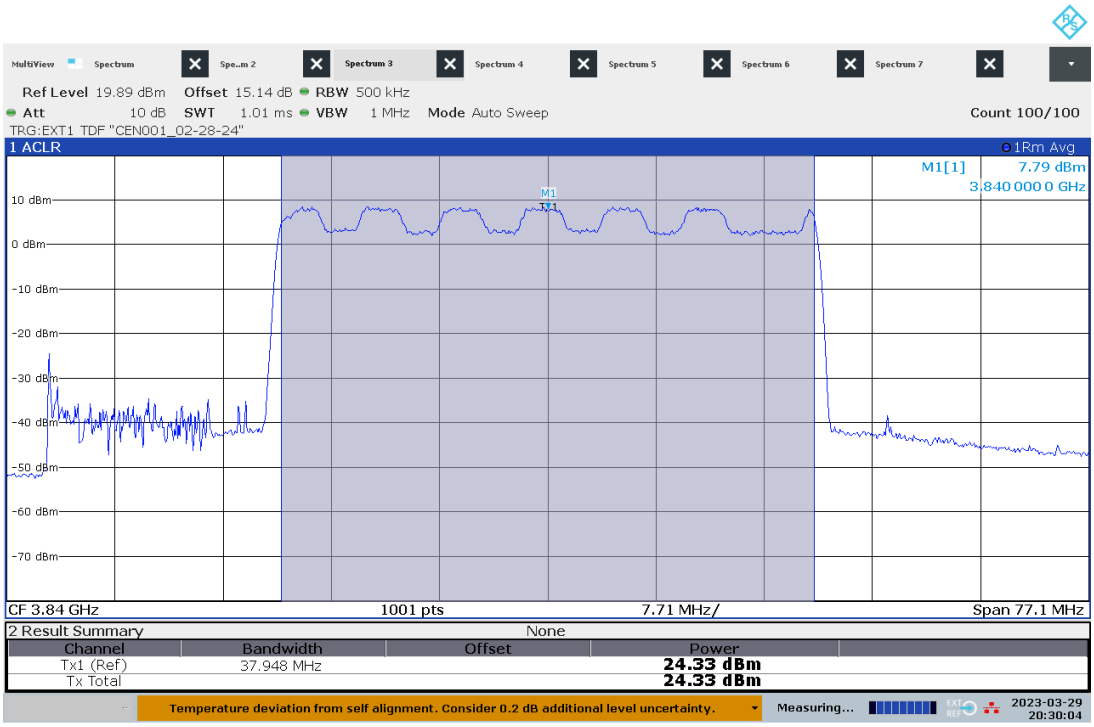
Conducted Power – Mid Channel, 16QAM, Port 2



08:29:29 PM 03/29/2023

Conducted Power – Mid Channel, 16QAM, Port 3



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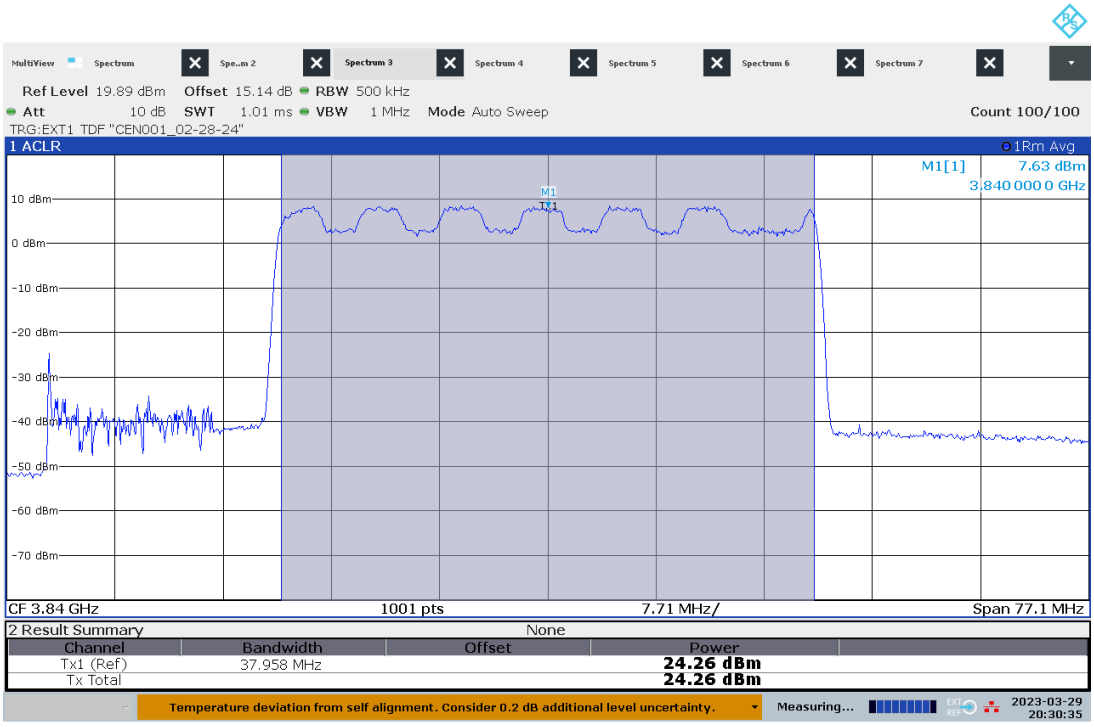
Conducted Power – Mid Channel, 16QAM, Port 4



08:30:35 PM 03/29/2023

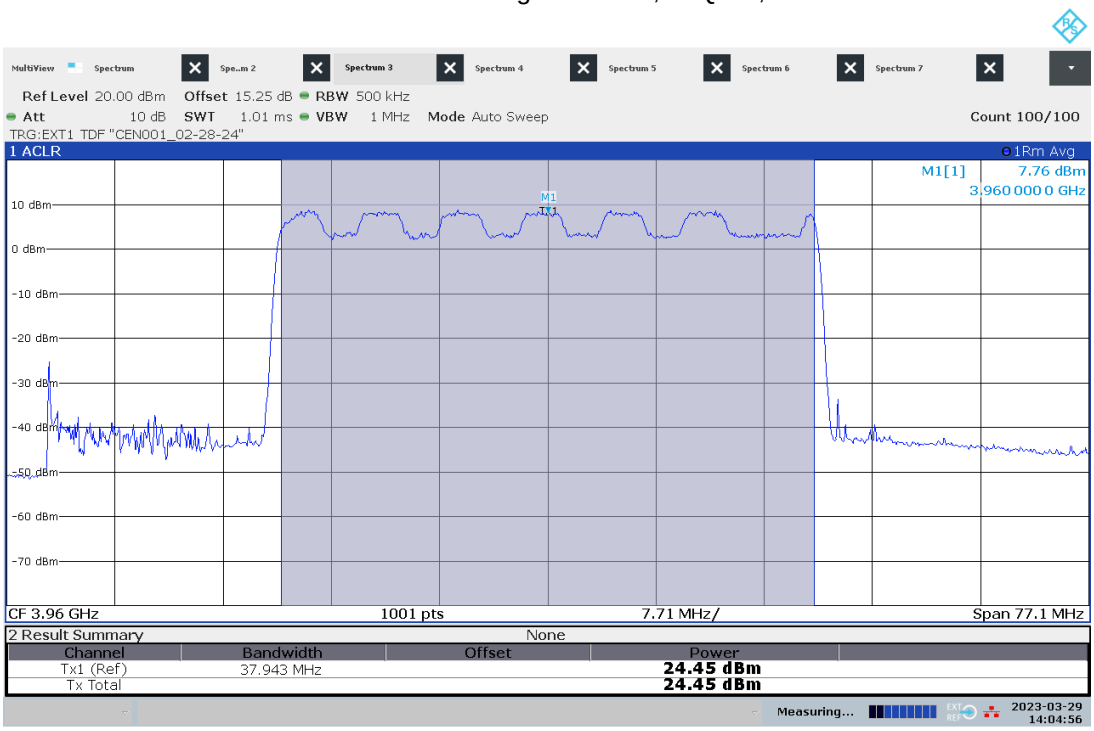
Conducted Power – High Channel, 16QAM, Port 1

02:02:42 PM 03/29/2023

Conducted Power – High Channel, 16QAM, Port 2

02:03:37 PM 03/29/2023

Conducted Power – High Channel, 16QAM, Port 3



02:04:57 PM 03/29/2023

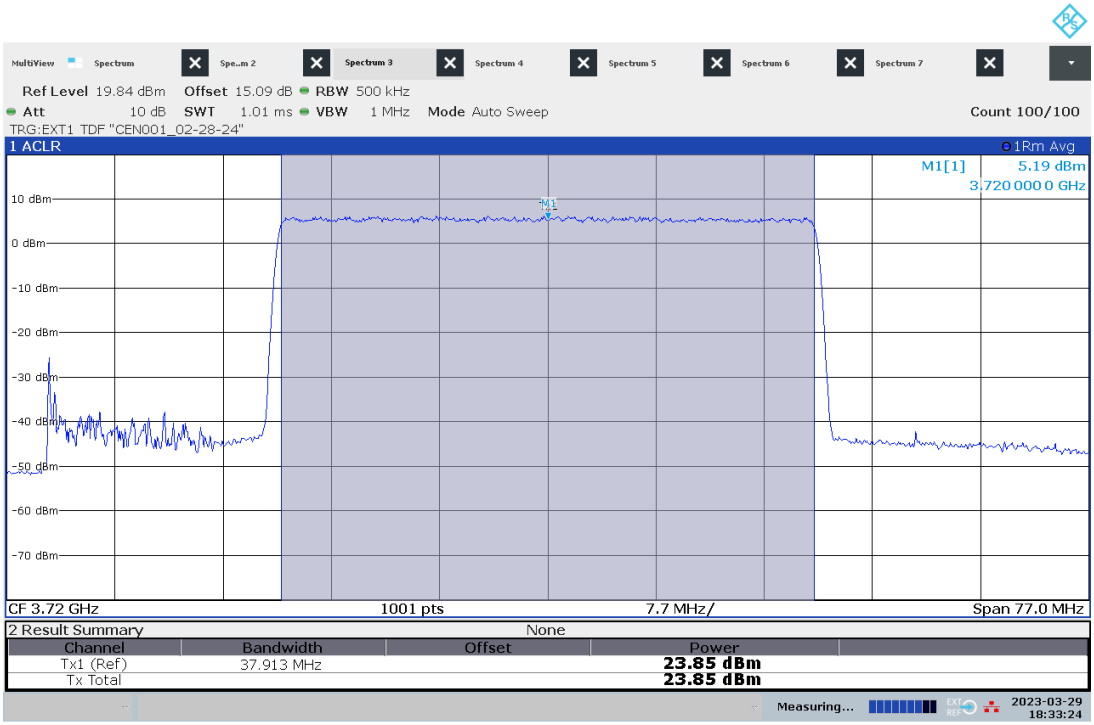
Conducted Power – High Channel, 16QAM, Port 4

02:04:27 PM 03/29/2023

Conducted Power – Low Channel, 64QAM, Port 1

06:32:38 PM 03/29/2023

Conducted Power – Low Channel, 64QAM, Port 2

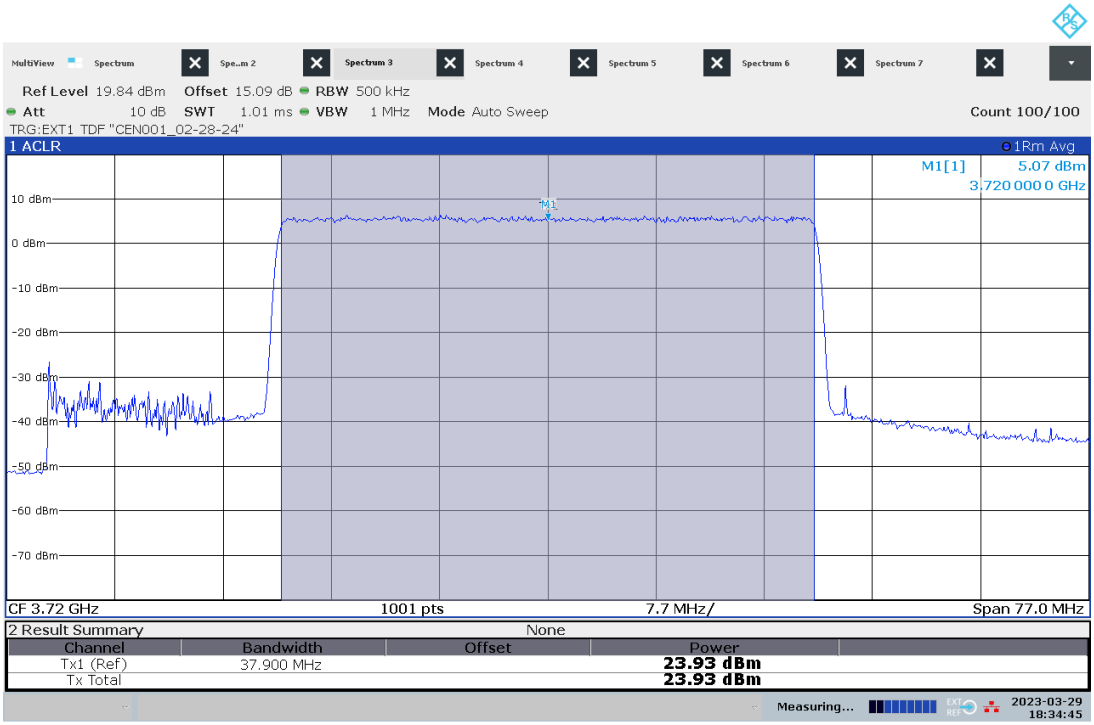


06:33:24 PM 03/29/2023

Conducted Power – Low Channel, 64QAM, Port 3

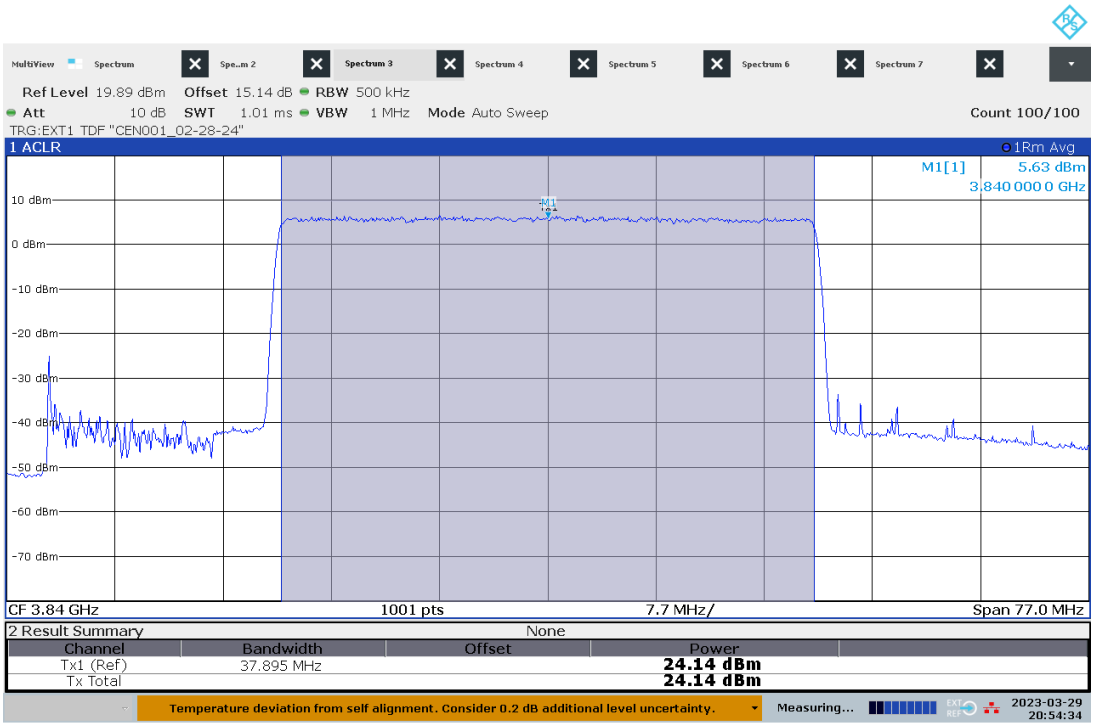
06:33:55 PM 03/29/2023

Conducted Power – Low Channel, 64QAM, Port 4



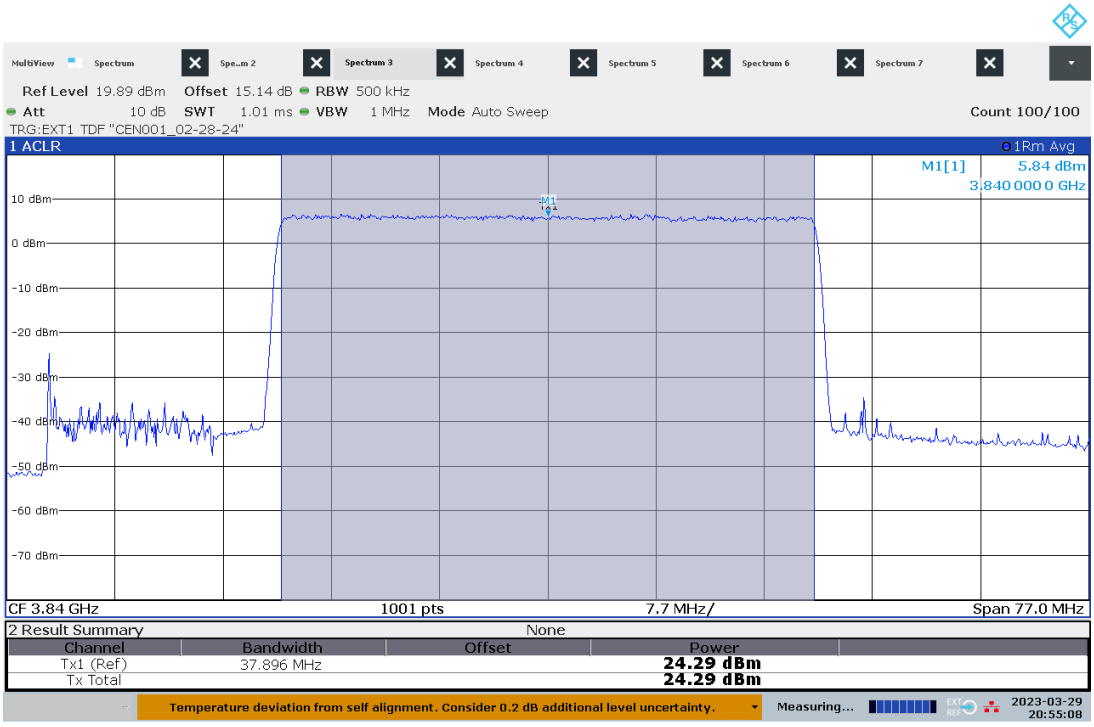
06:34:45 PM 03/29/2023

Conducted Power – Mid Channel, 64QAM, Port 1



08:54:34 PM 03/29/2023

Conducted Power – Mid Channel, 64QAM, Port 2



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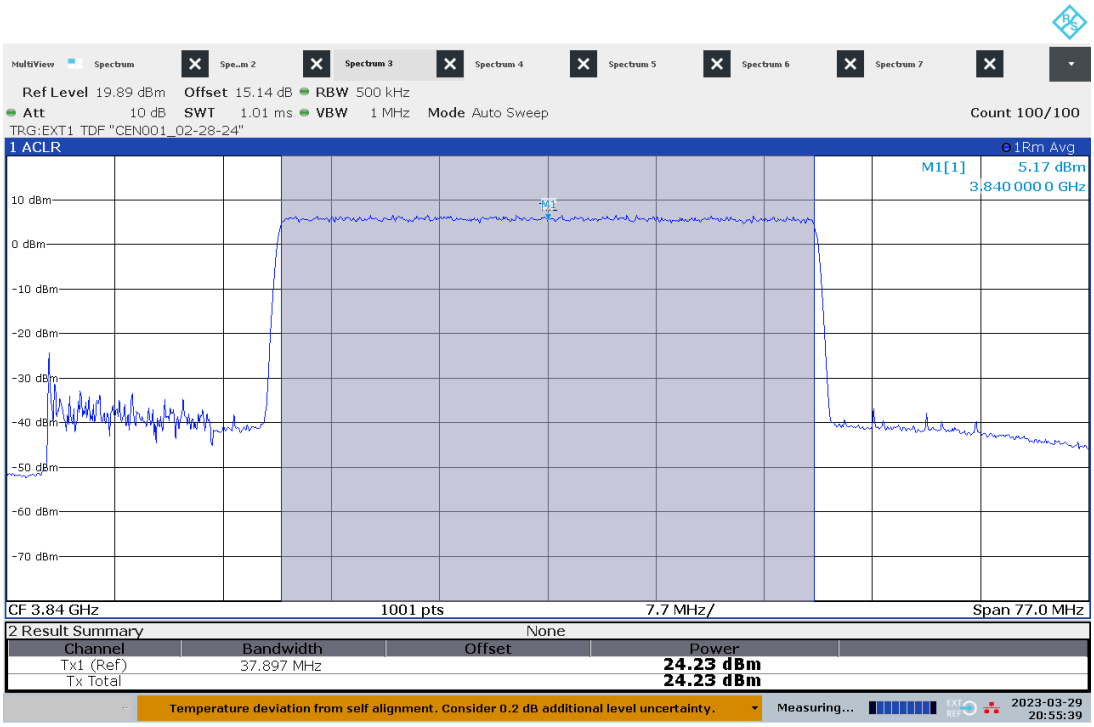
Conducted Power – Mid Channel, 64QAM, Port 3



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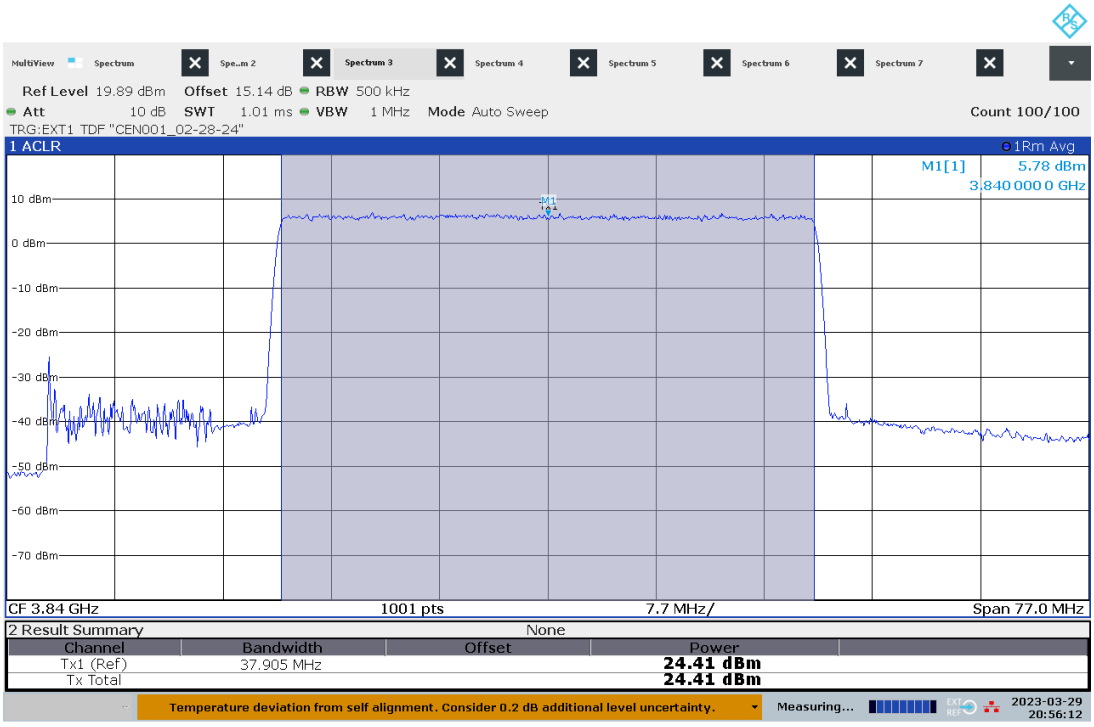
Conducted Power – Mid Channel, 64QAM, Port 4



08:56:12 PM 03/29/2023

Conducted Power – High Channel, 64QAM, Port 1

02:45:35 PM 03/29/2023

Conducted Power – High Channel, 64QAM, Port 2

02:46:01 PM 03/29/2023

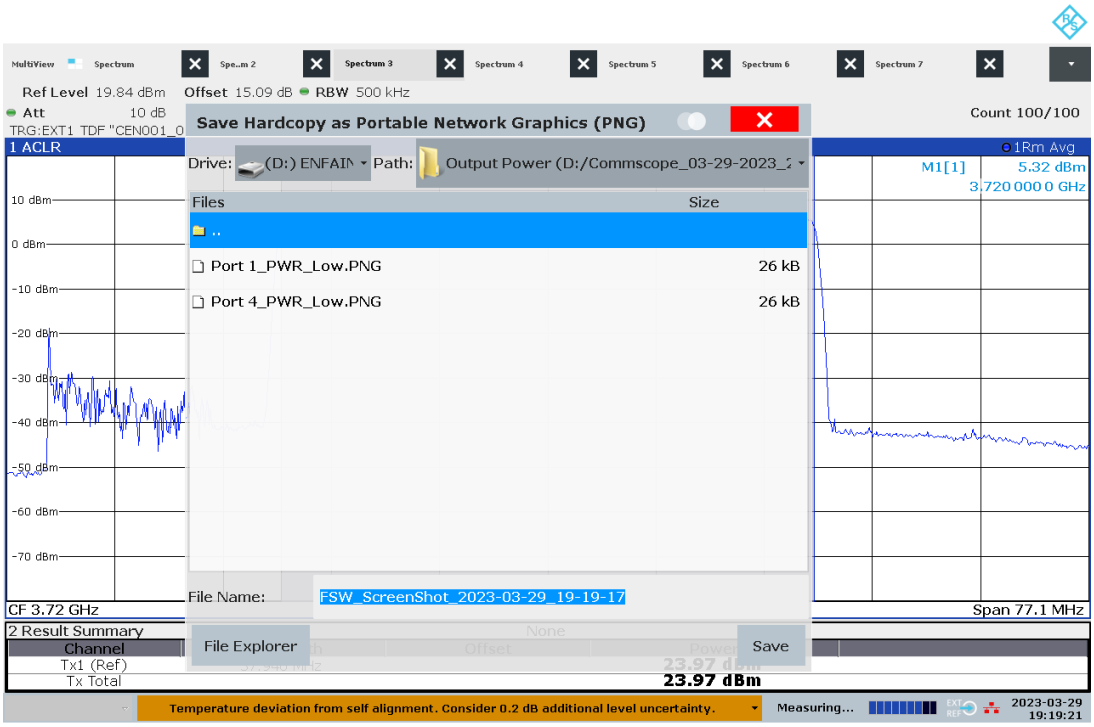
Conducted Power – High Channel, 64QAM, Port 3

02:46:37 PM 03/29/2023

Conducted Power – High Channel, 64QAM, Port 4

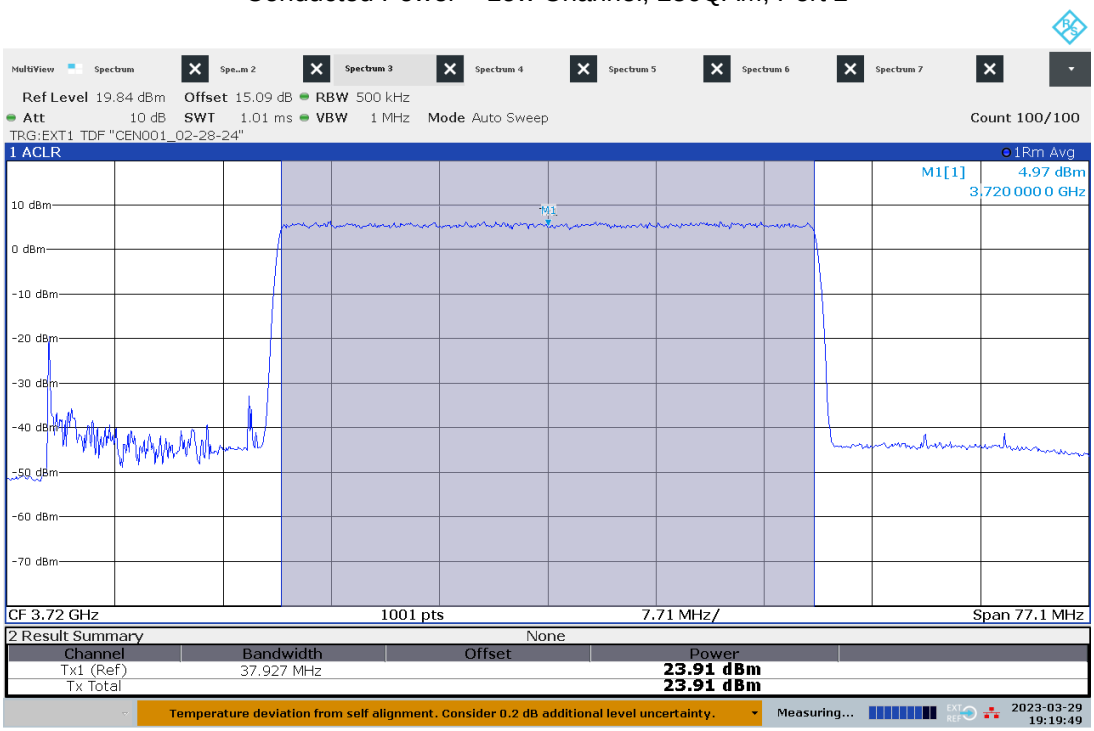
02:47:09 PM 03/29/2023

Conducted Power – Low Channel, 256QAM, Port 1



07:19:21 PM 03/29/2023

Conducted Power – Low Channel, 256QAM, Port 2

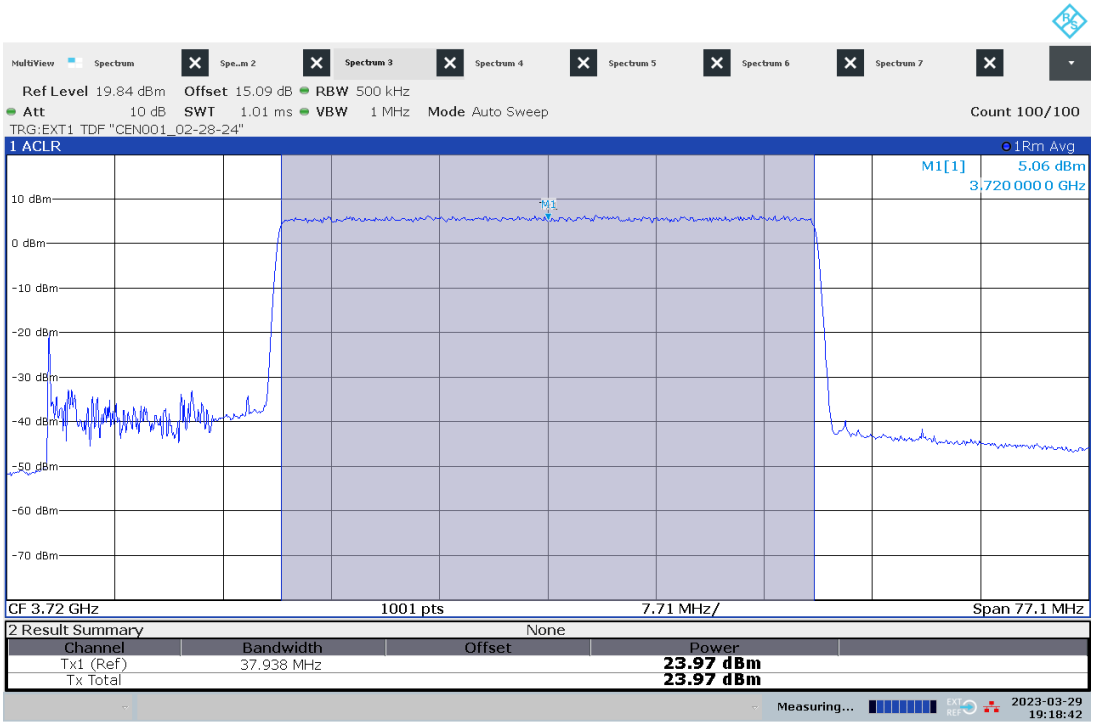


07:19:50 PM 03/29/2023

Conducted Power – Low Channel, 256QAM, Port 3

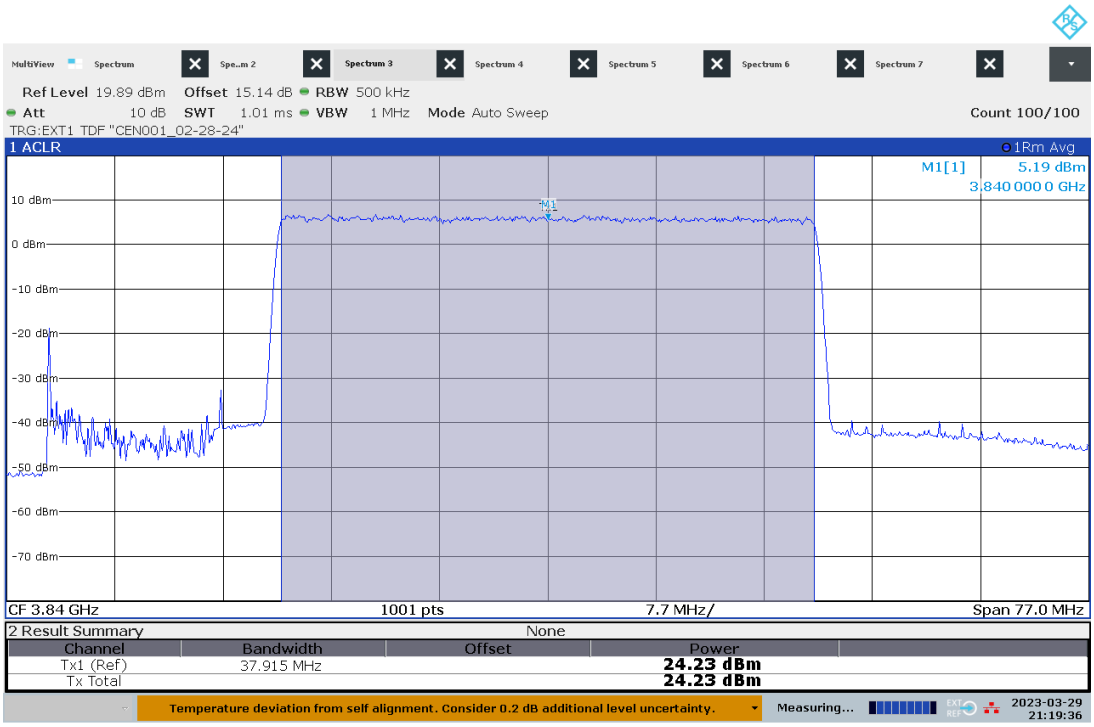
07:20:24 PM 03/29/2023

Conducted Power – Low Channel, 256QAM, Port 4



07:18:42 PM 03/29/2023

Conducted Power – Mid Channel, 256QAM, Port 1

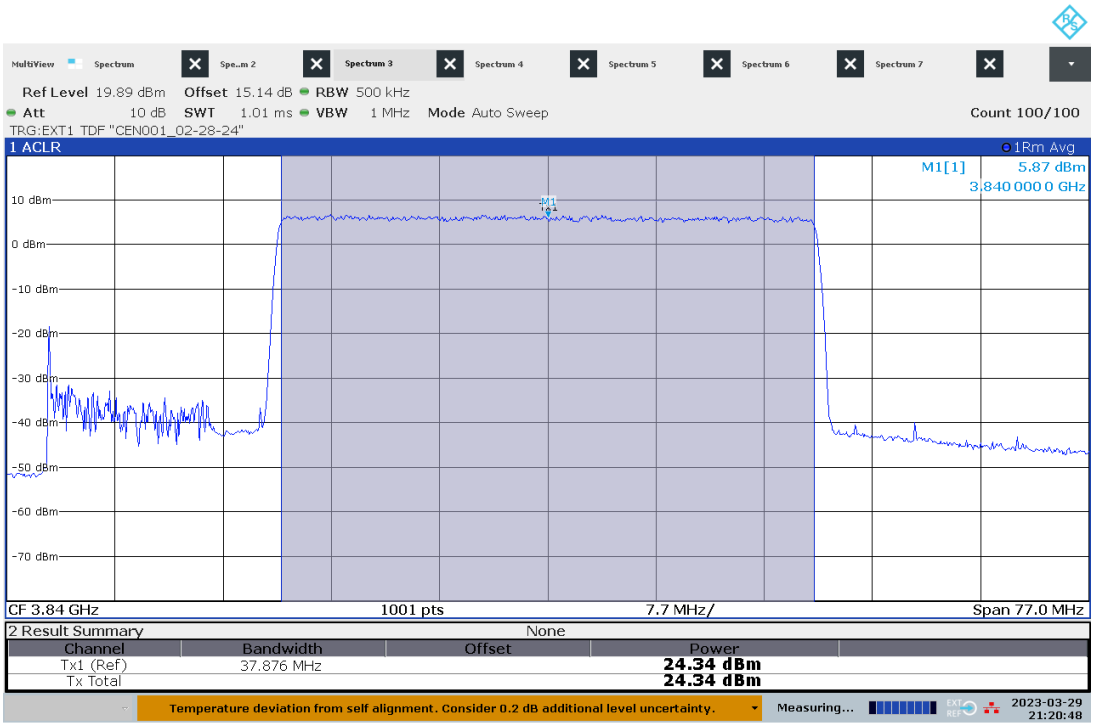


09:19:36 PM 03/29/2023

Conducted Power – Mid Channel, 256QAM, Port 2

09:20:19 PM 03/29/2023

Conducted Power – Mid Channel, 256QAM, Port 3



09:20:48 PM 03/29/2023

Conducted Power – Mid Channel, 256QAM, Port 4

09:21:16 PM 03/29/2023

Conducted Power – High Channel, 256QAM, Port 1

03:17:21 PM 03/29/2023

Conducted Power – High Channel, 256QAM, Port 2

03:18:01 PM 03/29/2023

Conducted Power – High Channel, 256QAM, Port 3

03:18:35 PM 03/29/2023

Conducted Power – High Channel, 256QAM, Port 4

03:19:04 PM 03/29/2023

	Product Standard: FCC Title 47 CFR Part 27			Limit applied: See Report Section 6.2			
Test Date	Test Personnel/ Initials	Supervising Engineer/ Initials	Input Voltage	Mode	Atmospheric Data		
					Temp C°	Relative Humidity %	Atmospheric Pressure mbar
03/29/2023	Kouma Sinn KPS	N/A	48V POE	Transmitting	23	21	1012

Deviations, Additions, or Exclusions: None

7 Peak-to-Average Ratio

7.1 Method

Tests are performed in accordance with ANSI C63.26:2015.

7.2 Limits

FCC Title 47 CFR Part 27.50(j)(4)
Equipment employed must be authorized in accordance with the provisions of § 27.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (j)(5) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

7.3 Test Site

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.

7.4 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV009	weather station	Davis Instruments	6351 Vantage VUE	DAV009	03/27/2023	03/27/2024
CEN001	DC-40GHz attenuator 20dB	cblhf201-5-2	C411-20	CEN001	02/28/2023	02/28/2024
ROS005-1	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/18/2022	11/18/2023
None	2m Mini SMA Cable	See Below	None	None	See below	See below
None	RF Switch Controller (DC-18 GHz)	Mini-Circuits	RC-2SP4T-A18	02202230028	See below	See below

Notes: The 2m Mini SMA cable and RF Switch Controller were provided by the manufacturer with the total as follows: Low Frequency, 3720 MHz, -15.09 dB; Mid frequency, 3840 MHz, -15.14 dB; High Frequency, 3960 MHz, -15.25 dB.

Software Utilized:

Name	Manufacturer	Version
None	N/A	N/A

7.5 Results:

The sample tested was found to Comply.

7.6 Setup Photograph:

Confidential – Photos not included in this report.

7.7 Plots/Data:

Modulations	Channels	Peak-to-Average Ratio (dB)			
		Port 1	Port 2	Port 3	Port 4
QPSK	Low (3720 MHz)	8.340	8.180	8.240	8.320
	Mid (3840 MHz)	8.240	8.220	8.180	8.340
	High (3960 MHz)	8.120	8.120	8.240	8.280
16QAM	Low (3720 MHz)	8.120	8.220	8.180	8.280
	Mid (3840 MHz)	8.180	8.260	8.300	8.200
	High (3960 MHz)	8.160	8.180	8.240	8.240
64QAM	Low (3720 MHz)	8.320	8.260	8.360	8.420
	Mid (3840 MHz)	8.280	8.320	8.240	8.520
	High (3960 MHz)	8.140	8.340	8.34 0	8.340
256QAM	Low (3720 MHz)	8.300	8.260	8.380	8.260
	Mid (3840 MHz)	8.200	8.240	8.300	8.300
	High (3960 MHz)	8.240	8.220	8.240	8.260

Peak-to-Average Ratio – Low Channel, QPSK, Port 1

04:27:39 PM 03/29/2023

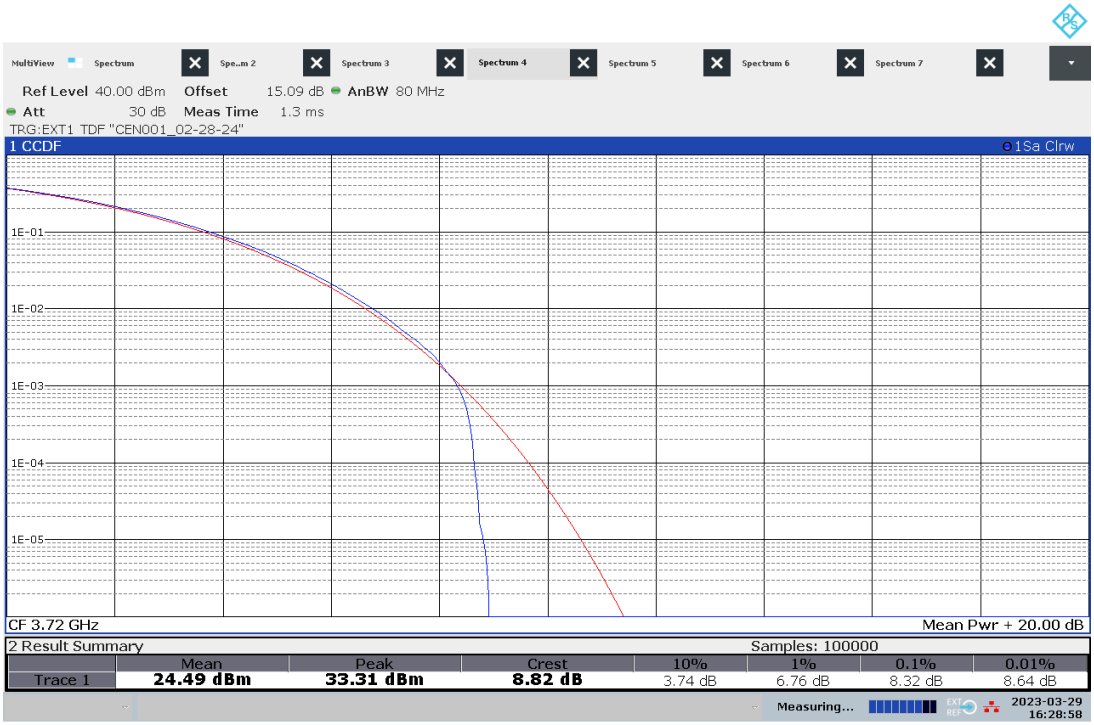
Peak-to-Average Ratio – Low Channel, QPSK, Port 2

04:28:12 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, QPSK, Port 3

04:28:36 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, QPSK, Port 4

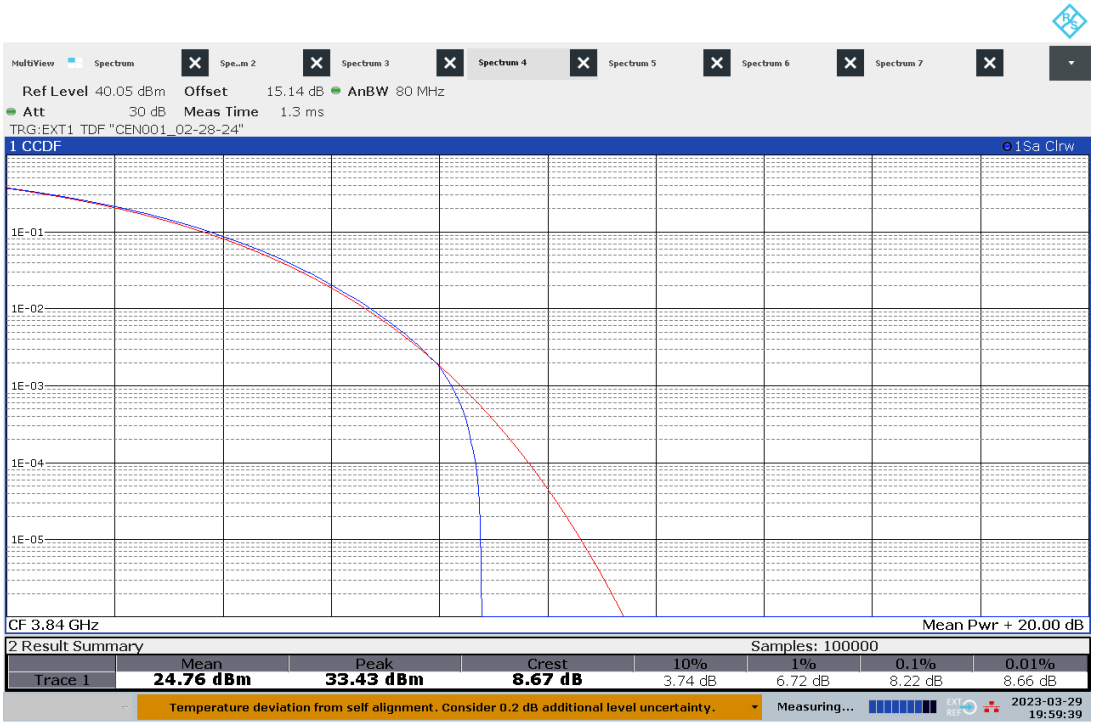


04:28:58 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, QPSK, Port 1

07:59:12 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, QPSK, Port 2

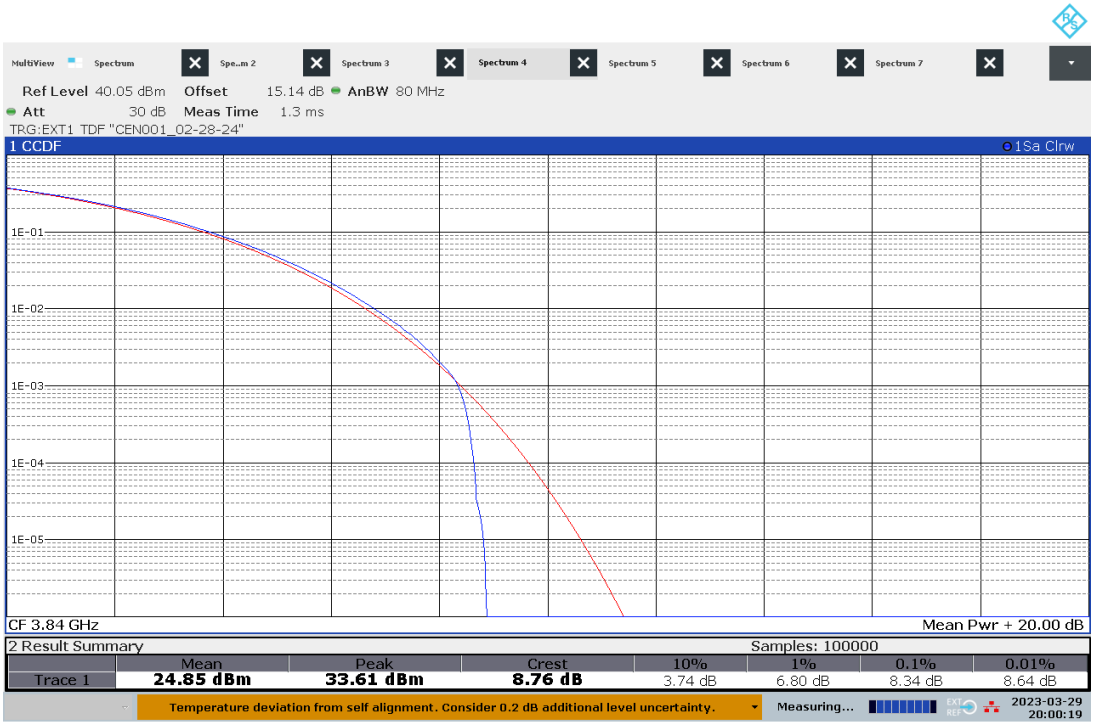


07:59:39 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, QPSK, Port 3

08:00:01 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, QPSK, Port 4

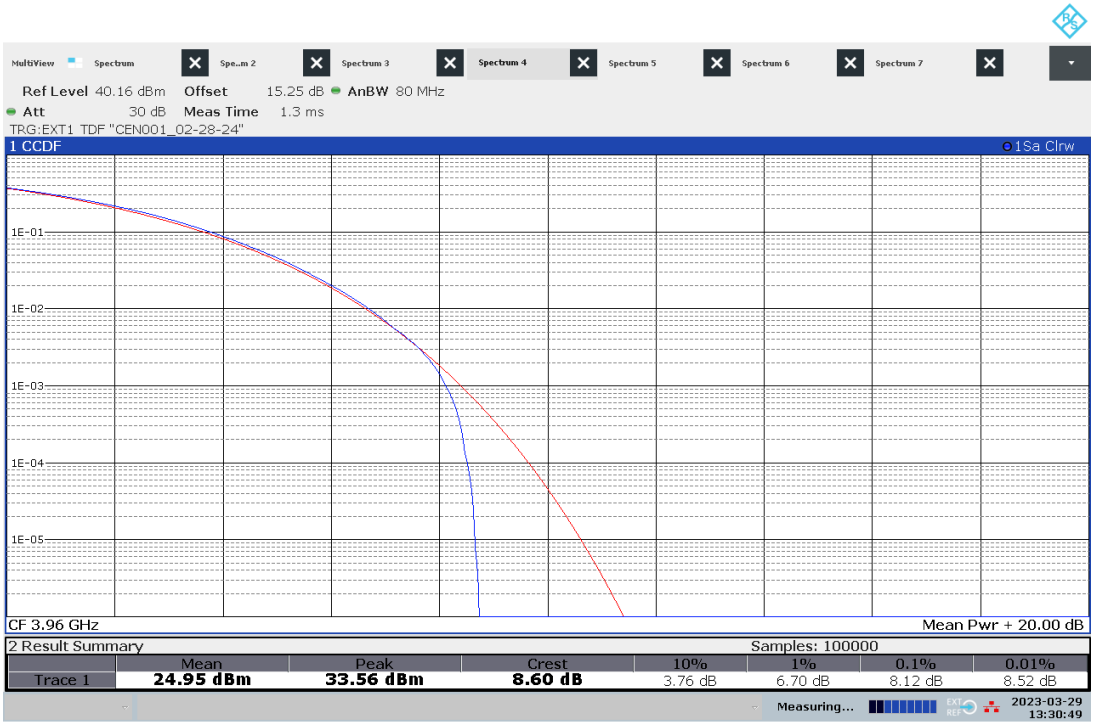


08:00:19 PM 03/29/2023

Peak-to-Average Ratio – High Channel, QPSK, Port 1

01:30:11 PM 03/29/2023

Peak-to-Average Ratio – High Channel, QPSK, Port 2

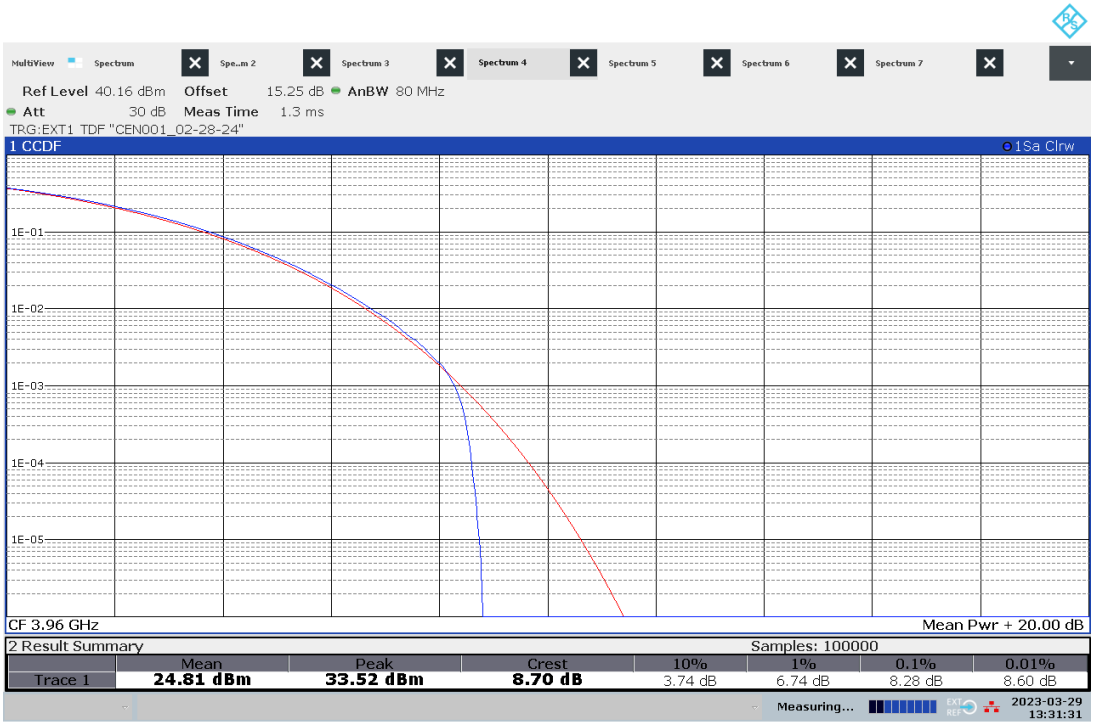


01:30:50 PM 03/29/2023

Peak-to-Average Ratio – High Channel, QPSK, Port 3

01:31:17 PM 03/29/2023

Peak-to-Average Ratio – High Channel, QPSK, Port 4



01:31:32 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, 16QAM, Port 1

05:17:44 PM 03/29/2023

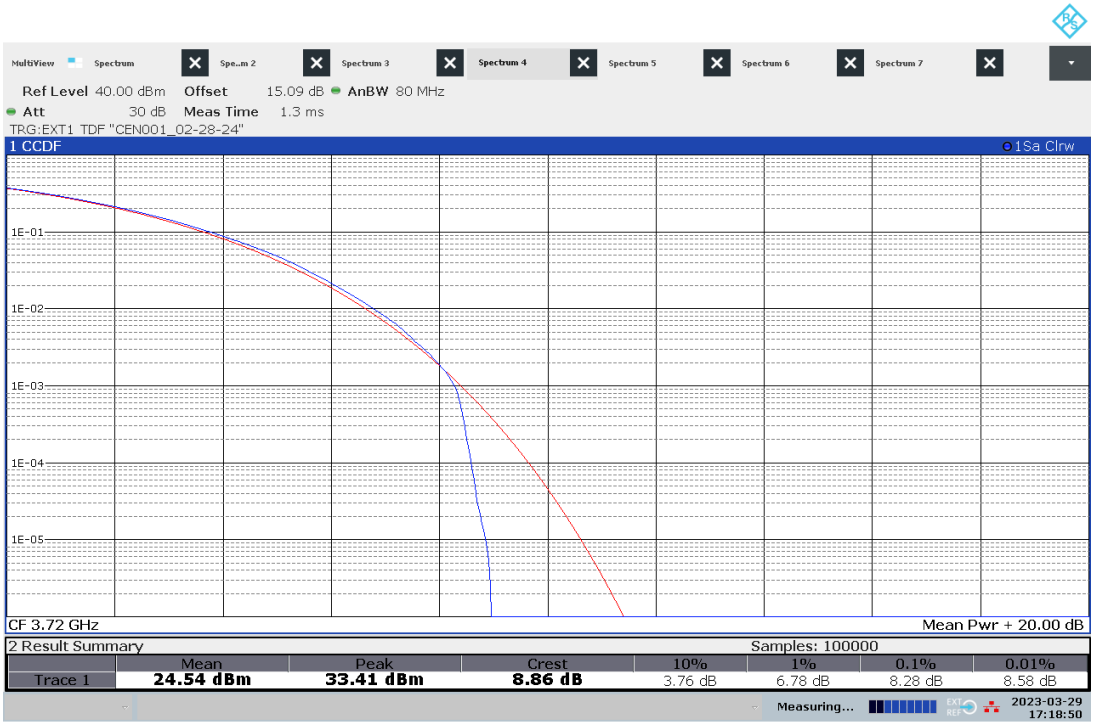
Peak-to-Average Ratio – Low Channel, 16QAM, Port 2

05:18:09 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, 16QAM, Port 3

05:18:34 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, 16QAM, Port 4

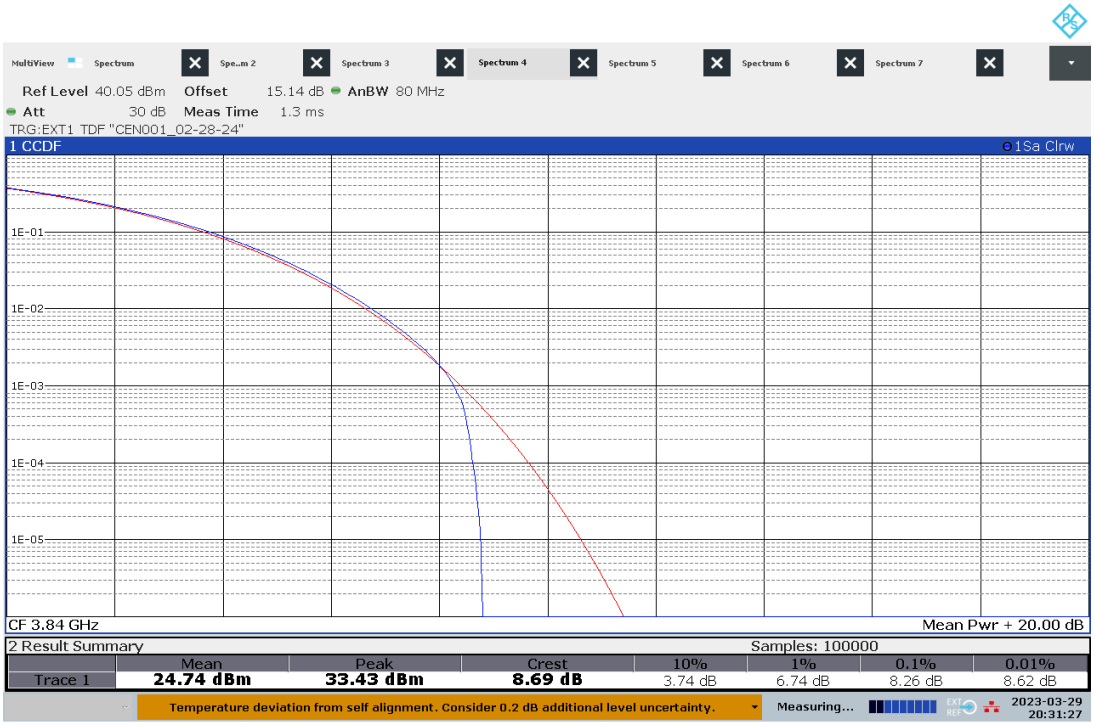


05:18:50 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 16QAM, Port 1

08:31:03 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 16QAM, Port 2

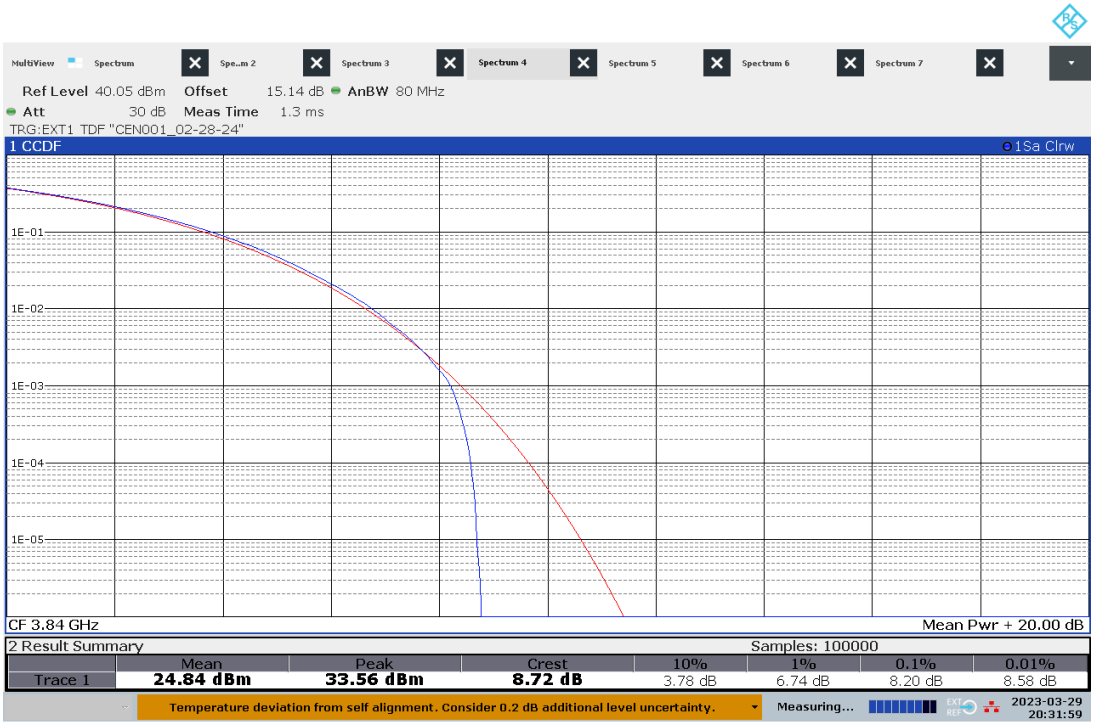


08:31:27 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 16QAM, Port 3

08:31:42 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 16QAM, Port 4

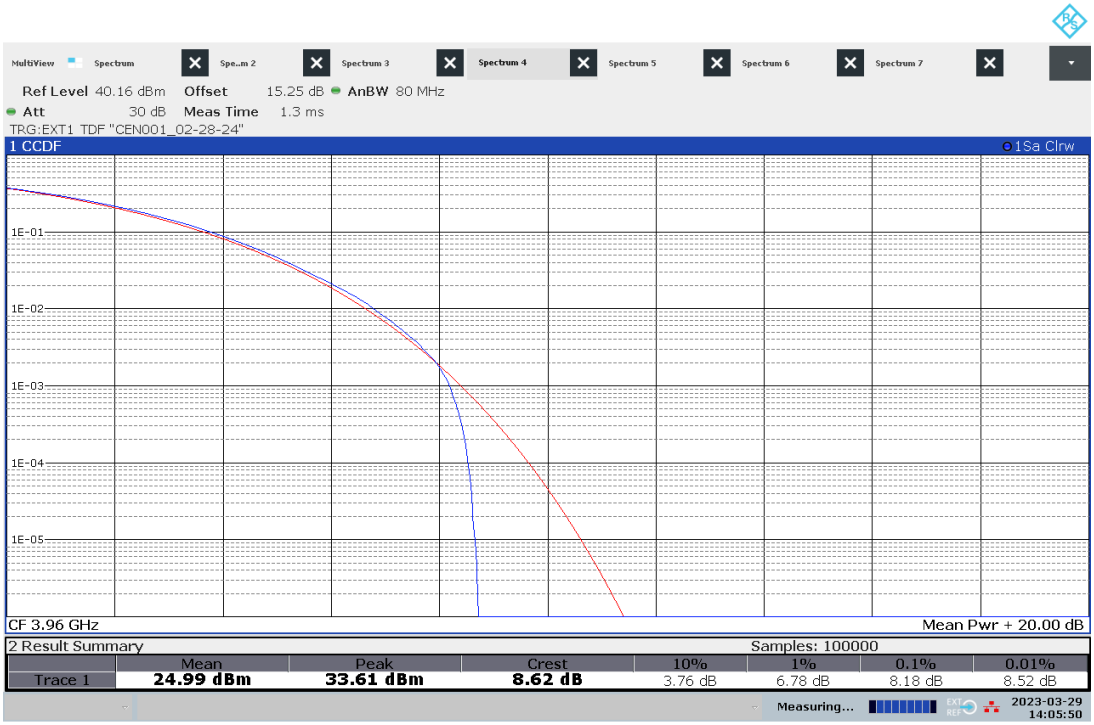


08:32:00 PM 03/29/2023

Peak-to-Average Ratio – High Channel, 16QAM, Port 1

02:05:23 PM 03/29/2023

Peak-to-Average Ratio – High Channel, 16QAM, Port 2

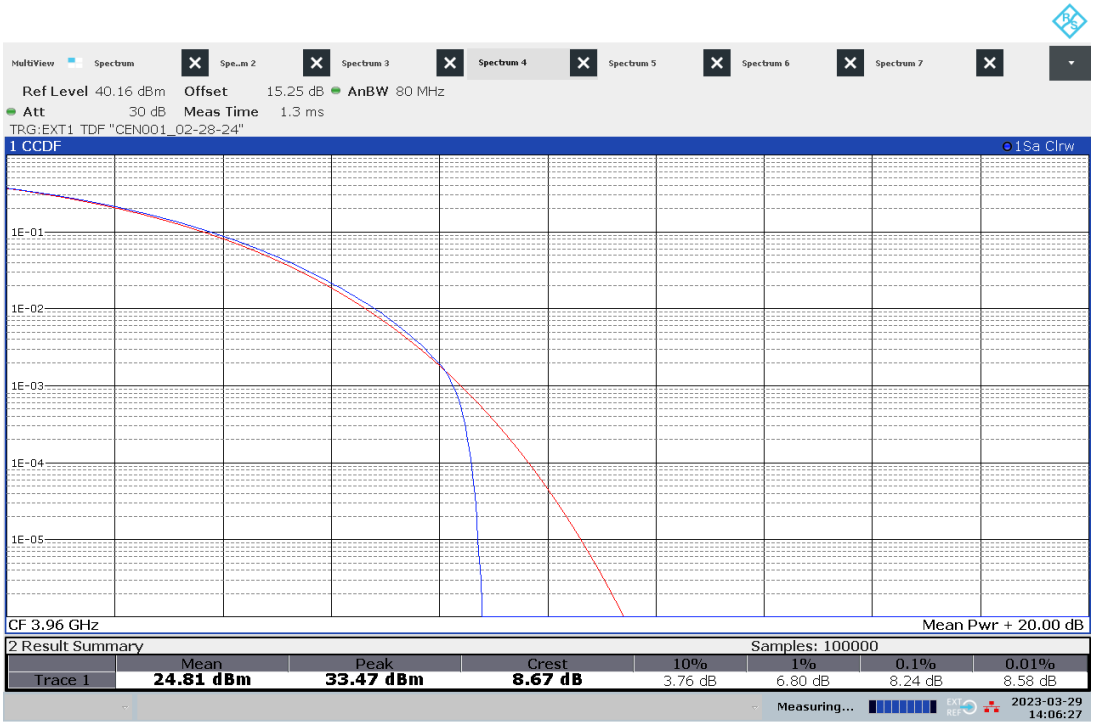


02:05:50 PM 03/29/2023

Peak-to-Average Ratio – High Channel, 16QAM, Port 3

02:06:09 PM 03/29/2023

Peak-to-Average Ratio – High Channel, 16QAM, Port 4

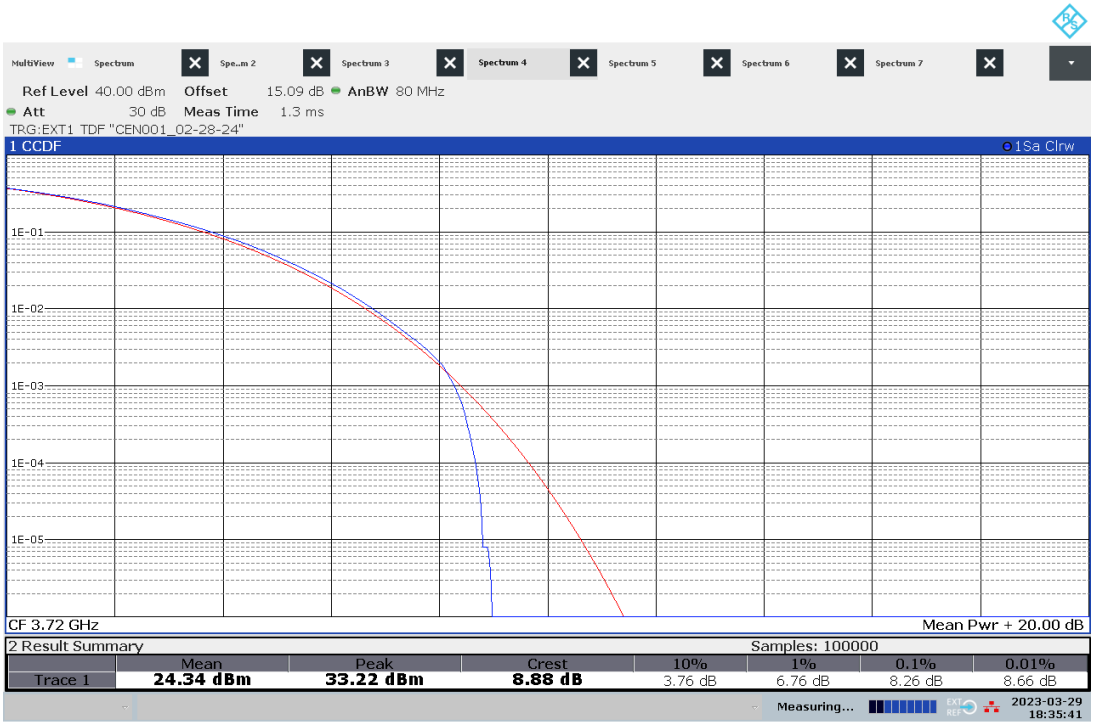


02:06:27 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, 64QAM, Port 1

06:35:12 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, 64QAM, Port 2



06:35:41 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, 64QAM, Port 3

06:36:01 PM 03/29/2023

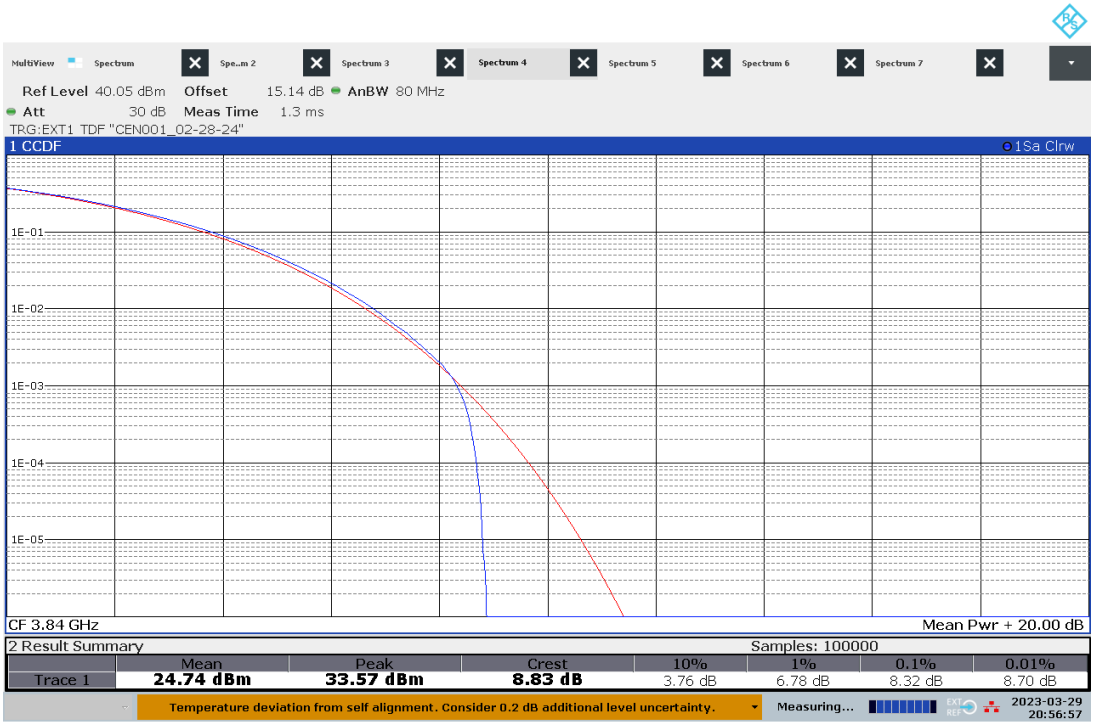
Peak-to-Average Ratio – Low Channel, 64QAM, Port 4

06:36:20 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 64QAM, Port 1

08:56:28 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 64QAM, Port 2

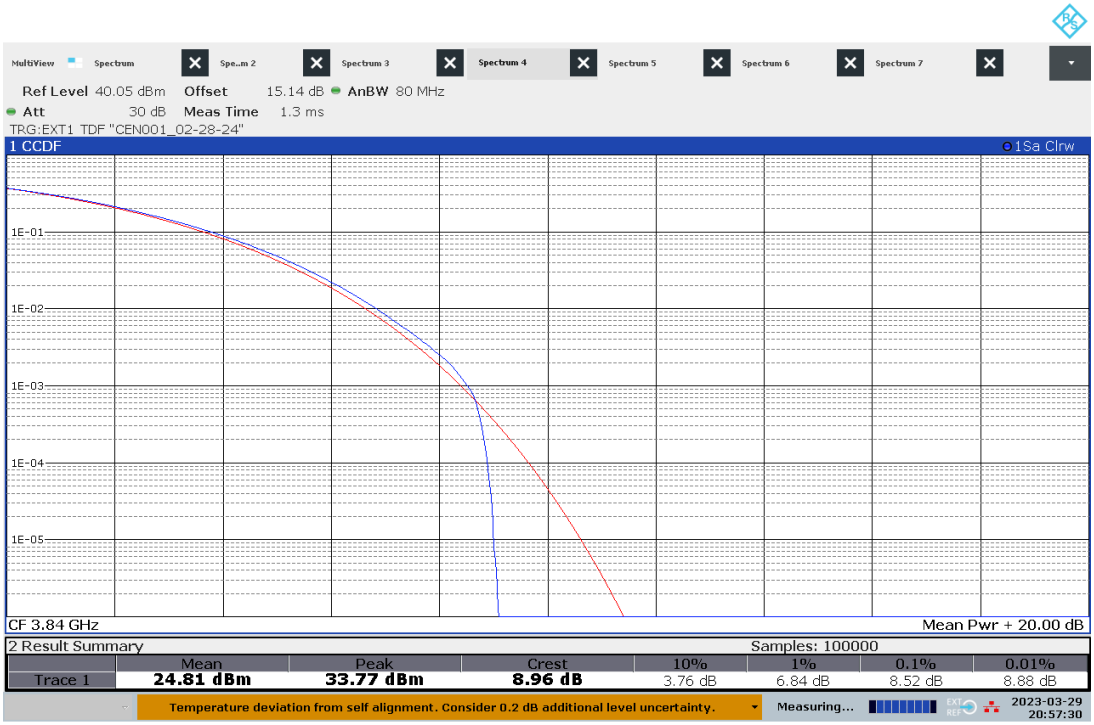


08:56:57 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 64QAM, Port 3

08:57:14 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 64QAM, Port 4

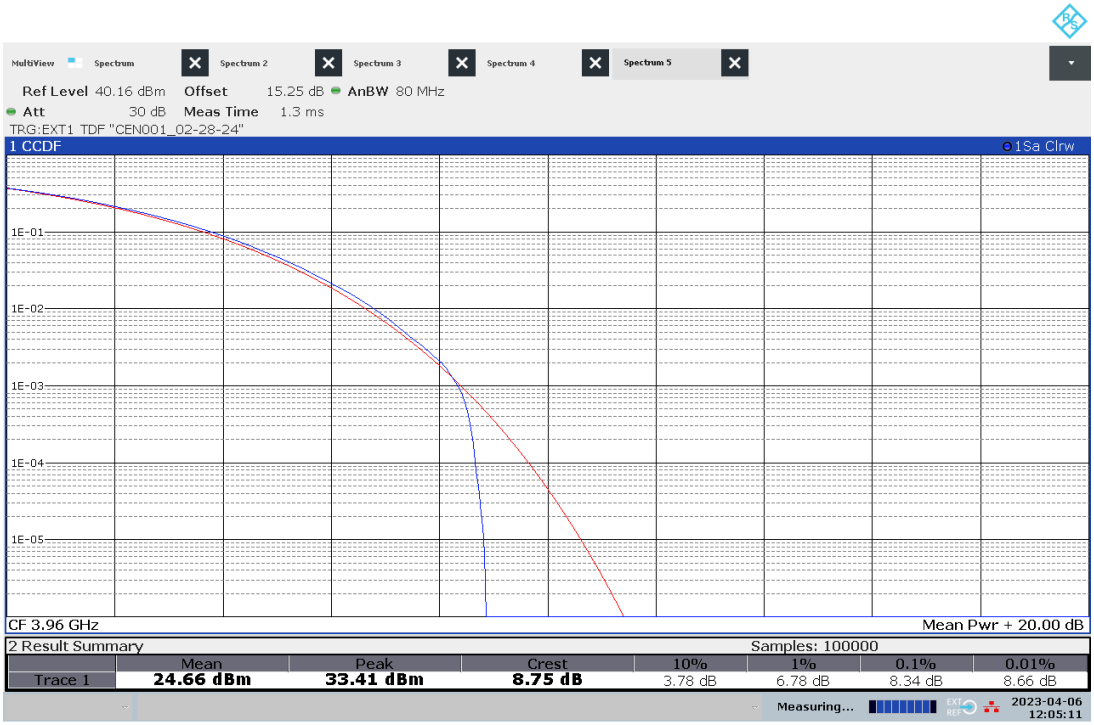


08:57:30 PM 03/29/2023

Peak-to-Average Ratio – High Channel, 64QAM, Port 1

12:03:34 PM 04/06/2023

Peak-to-Average Ratio – High Channel, 64QAM, Port 2

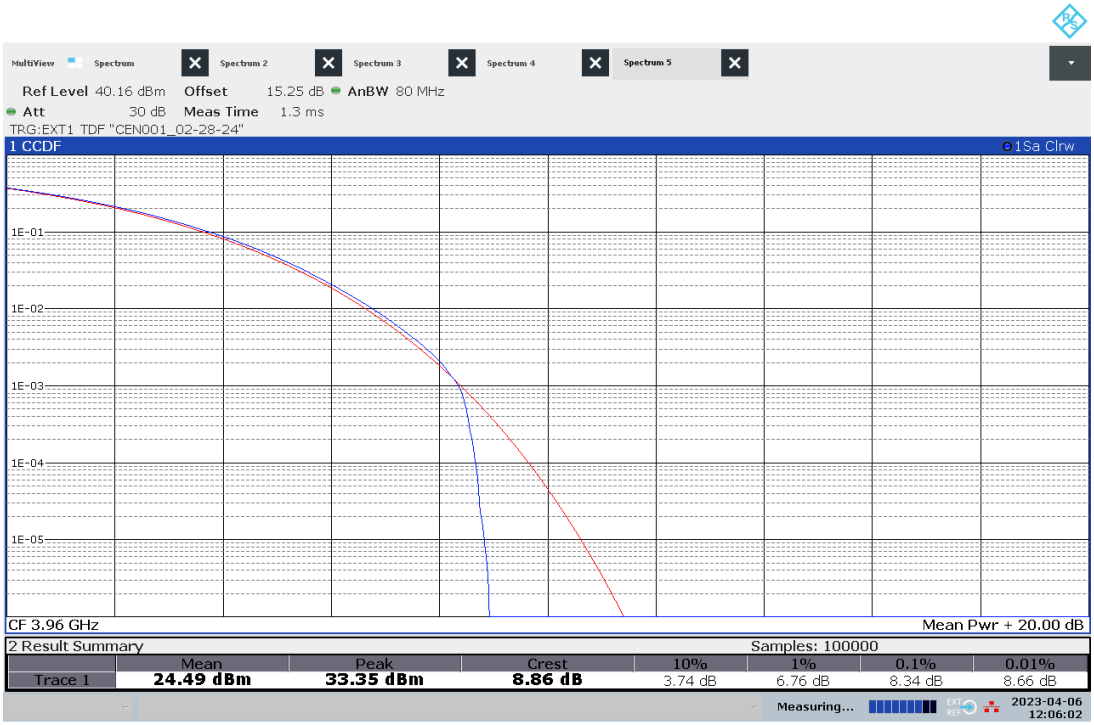


12:05:11 PM 04/06/2023

Peak-to-Average Ratio – High Channel, 64QAM, Port 3

12:05:36 PM 04/06/2023

Peak-to-Average Ratio – High Channel, 64QAM, Port 4

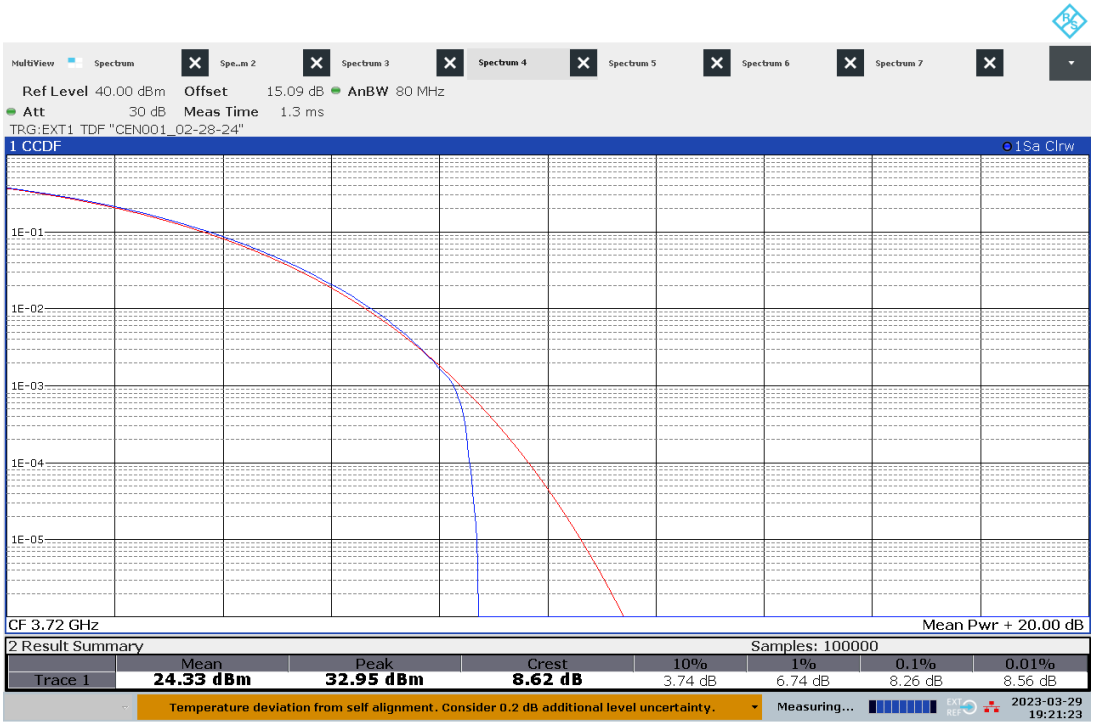


12:06:03 PM 04/06/2023

Peak-to-Average Ratio – Low Channel, 256QAM, Port 1

07:20:54 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, 256QAM, Port 2

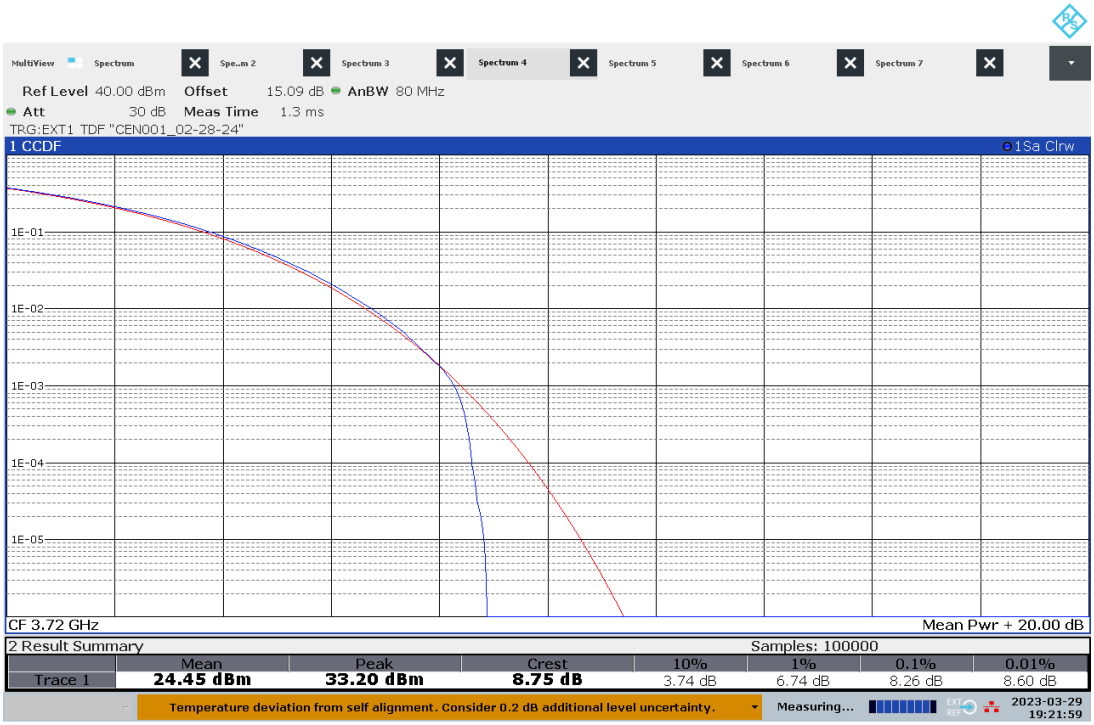


07:21:23 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, 256QAM, Port 3

07:21:43 PM 03/29/2023

Peak-to-Average Ratio – Low Channel, 256QAM, Port 4

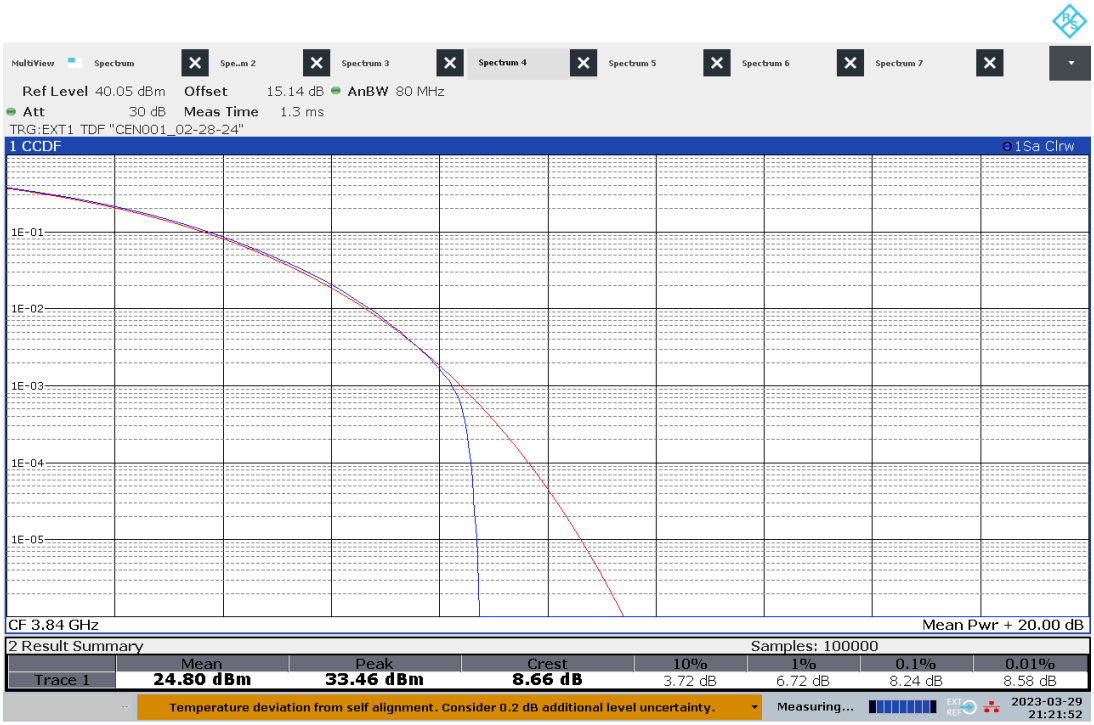


07:21:59 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 256QAM, Port 1

09:21:32 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 256QAM, Port 2

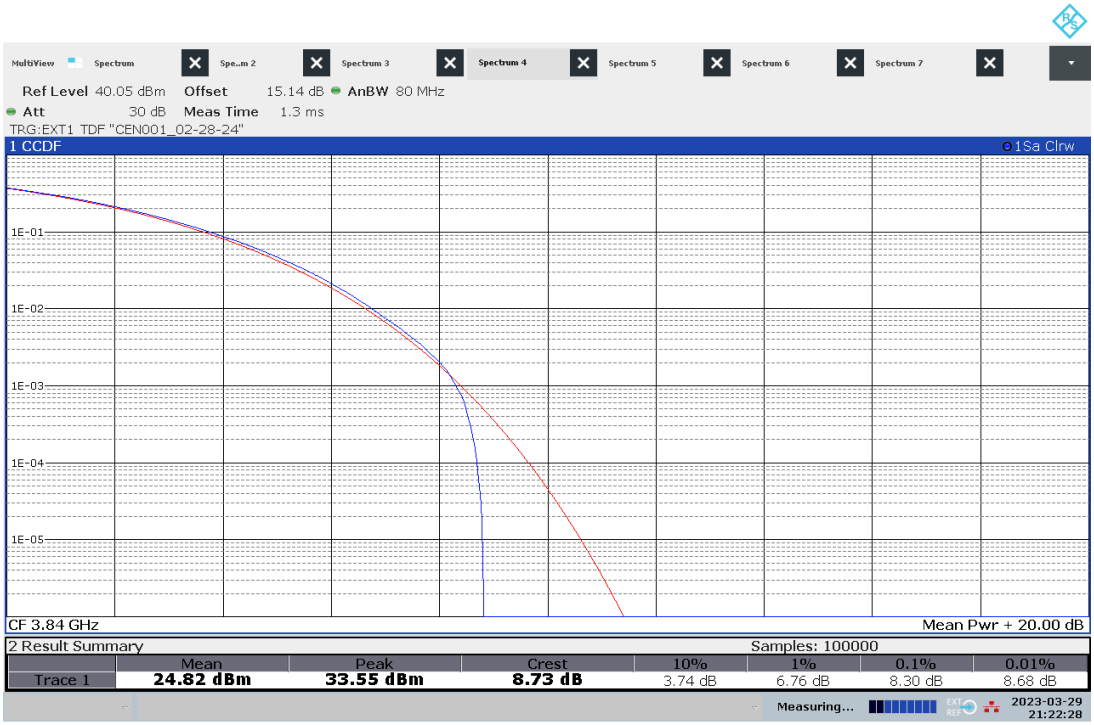


09:21:52 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 256QAM, Port 3

09:22:08 PM 03/29/2023

Peak-to-Average Ratio – Mid Channel, 256QAM, Port 4



09:22:28 PM 03/29/2023

Peak-to-Average Ratio – High Channel, 256QAM, Port 1

03:19:29 PM 03/29/2023

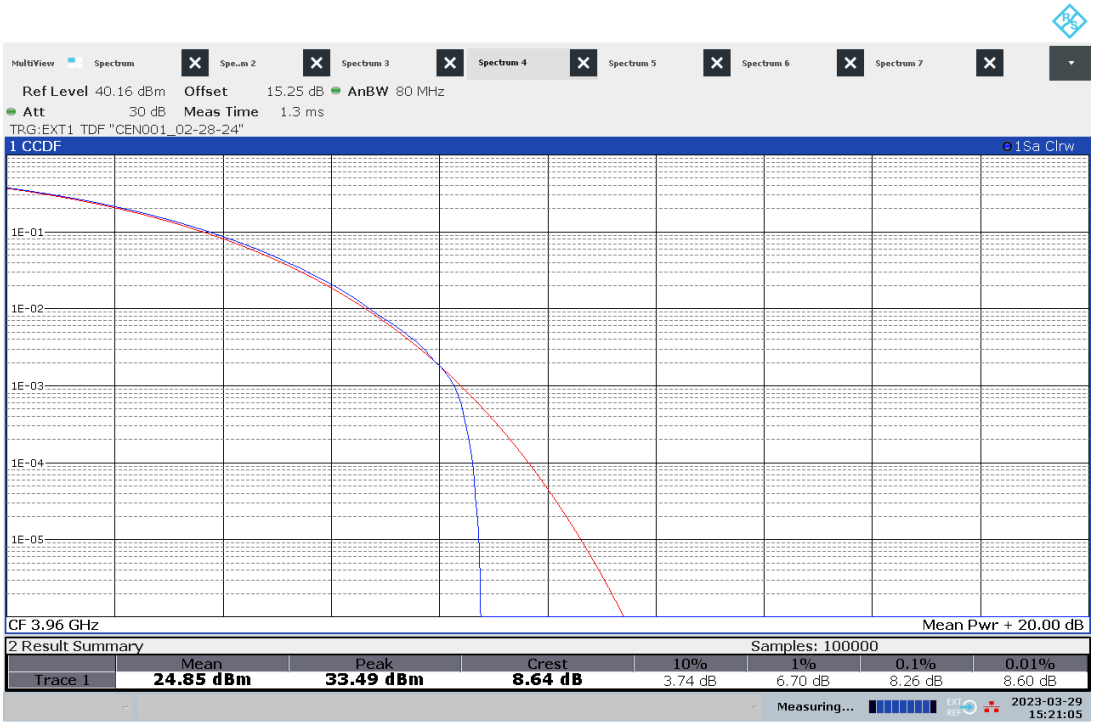
Peak-to-Average Ratio – High Channel, 256QAM, Port 2

03:20:17 PM 03/29/2023

Peak-to-Average Ratio – High Channel, 256QAM, Port 3

03:20:41 PM 03/29/2023

Peak-to-Average Ratio – High Channel, 256QAM, Port 4



03:21:05 PM 03/29/2023

Test Date	Product Standard: FCC Title 47 CFR Part 27			Limit applied: See Report Section 7.2			
	Test Personnel/ Initials	Supervising Engineer/ Initials	Input Voltage	Mode	Atmospheric Data		
					Temp C°	Relative Humidity %	Atmospheric Pressure mbar
03/29/2023	Kouma Sinn KPS	Vathana Ven VJV	48V POE	Transmitting	23	21	1012
04/06/2023	Kouma Sinn KPS	Vathana Ven VJV	48V POE	Transmitting	25	31	1011

Deviations, Additions, or Exclusions: None

8 Occupied Bandwidth and 26 dB Bandwidth

8.1 Method

Tests are performed in accordance with ANSI C63.26:2015.

8.2 Limits

The upper and lower edges of the bandwidth stay within the assigned band.

8.3 Test Site

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.

8.4 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV009	weather station	Davis Instruments	6351 Vantage VUE	DAV009	03/27/2023	03/27/2024
CEN001	DC-40GHz attenuator 20dB	cblhf201-5-2	C411-20	CEN001	02/28/2023	02/28/2024
ROS005-1	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/18/2022	11/18/2023
None	2m Mini SMA Cable	See Below	None	None	See below	See below
None	RF Switch Controller (DC-18 GHz)	Mini-Circuits	RC-2SP4T-A18	02202230028	See below	See below

Notes: The 2m Mini SMA cable and RF Switch Controller were provided by the manufacturer with the total as follows: Low Frequency, 3720 MHz, -15.09 dB; Mid frequency, 3840 MHz, -15.14 dB; High Frequency, 3960 MHz, -15.25 dB.

Software Utilized:

Name	Manufacturer	Version
None	N/A	N/A

8.5 Results:

The sample tested was found to Comply.

8.6 Setup Photograph:

Confidential – Photos not included in this report.

8.7 Plots/Data:

Modulations	Channels	Occupied Bandwidth (MHz)				26 dB Bandwidth (MHz)			
		Port 1	Port 2	Port 3	Port 4	Port 1	Port 2	Port 3	Port 4
QPSK	Low (3720 MHz)	37.968	37.973	37.976	37.967	40.280	40.280	40.530	40.120
	Mid (3840 MHz)	37.967	37.981	37.968	37.958	40.370	40.370	40.450	40.120
	High (3960 MHz)	37.963	37.984	37.984	37.966	40.530	40.530	40.850	40.120
16QAM	Low (3720 MHz)	37.970	37.939	37.942	37.947	39.960	39.630	39.720	39.720
	Mid (3840 MHz)	37.927	37.949	37.948	37.958	39.800	39.630	39.630	39.630
	High (3960 MHz)	37.959	37.943	37.943	37.952	40.200	39.630	39.960	39.880
64QAM	Low (3720 MHz)	37.946	37.913	37.904	37.901	42.400	41.180	41.100	40.850
	Mid (3840 MHz)	37.895	37.896	37.897	37.905	42.150	41.020	41.100	40.930
	High (3960 MHz)	37.926	37.918	37.917	37.895	42.070	40.930	40.770	41.260
256QAM	Low (3720 MHz)	37.946	37.927	37.934	37.938	40.280	39.880	39.880	39.880
	Mid (3840 MHz)	37.915	37.919	37.876	37.885	40.200	39.880	39.630	39.800
	High (3960 MHz)	37.938	37.921	37.935	37.944	40.120	40.280	40.850	40.040

Occupied Bandwidth – Low Channel, QPSK, Port 1

03:56:29 PM 03/29/2023

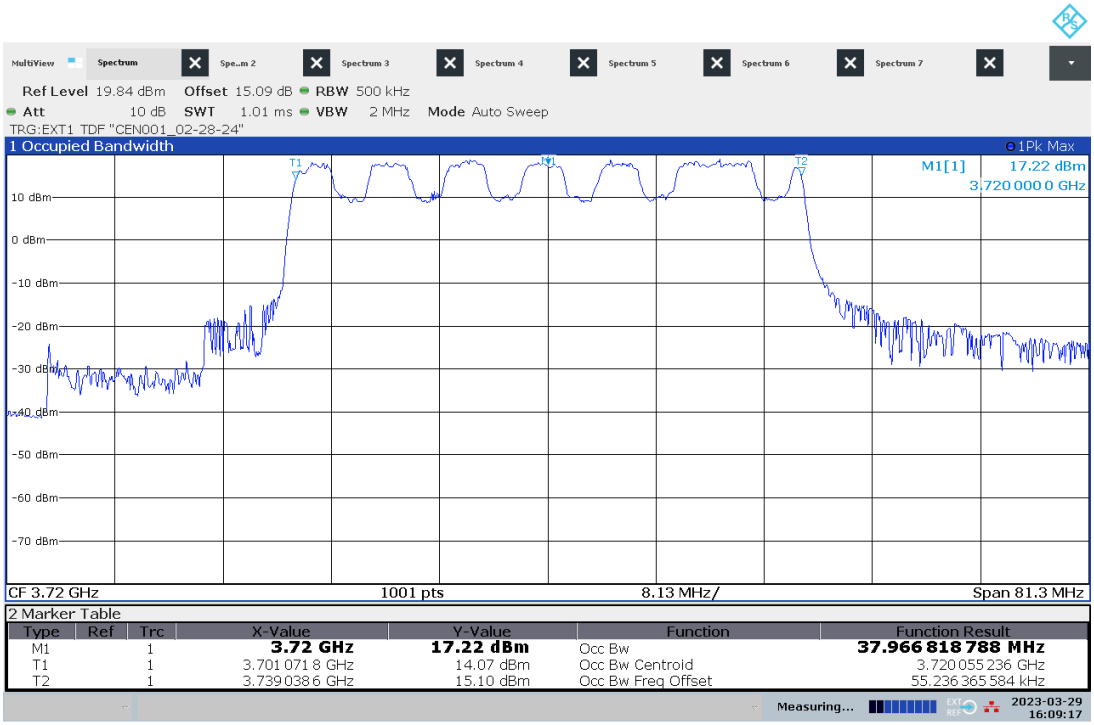
Occupied Bandwidth – Low Channel, QPSK, Port 2

04:01:55 PM 03/29/2023

Occupied Bandwidth – Low Channel, QPSK, Port 3

04:04:50 PM 03/29/2023

Occupied Bandwidth – Low Channel, QPSK, Port 4



04:09:18 PM 03/29/2023

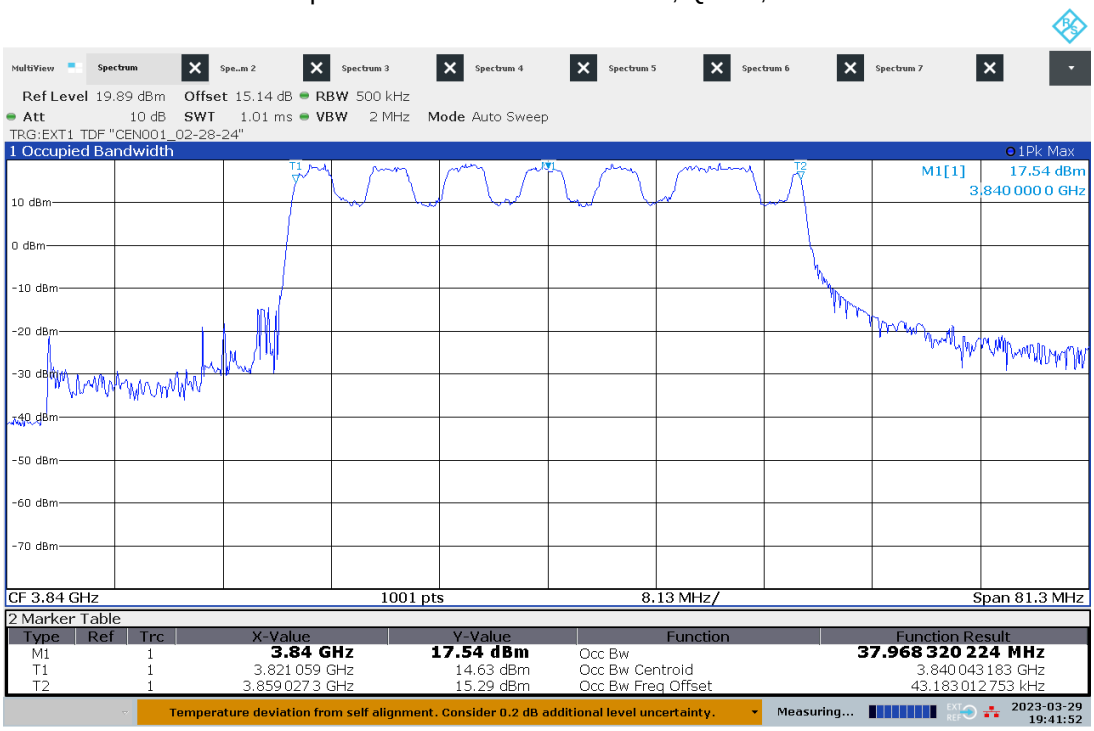
Occupied Bandwidth – Mid Channel, QPSK, Port 1

07:36:07 PM 03/29/2023

Occupied Bandwidth – Mid Channel, QPSK, Port 2

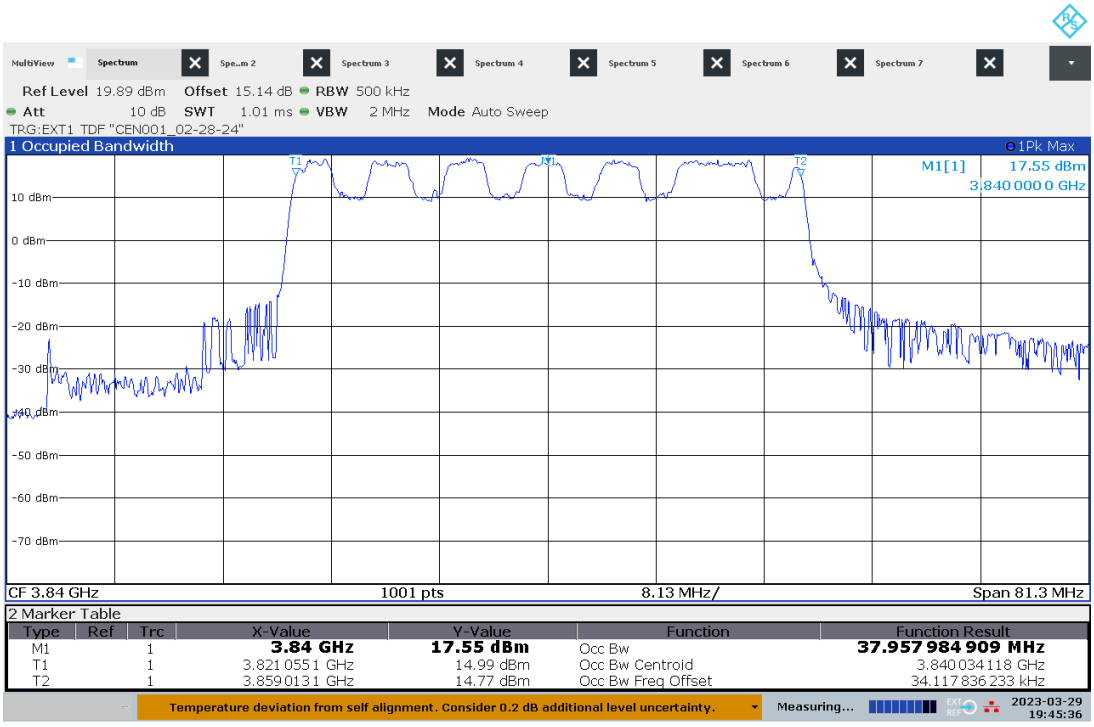
07:39:17 PM 03/29/2023

Occupied Bandwidth – Mid Channel, QPSK, Port 3



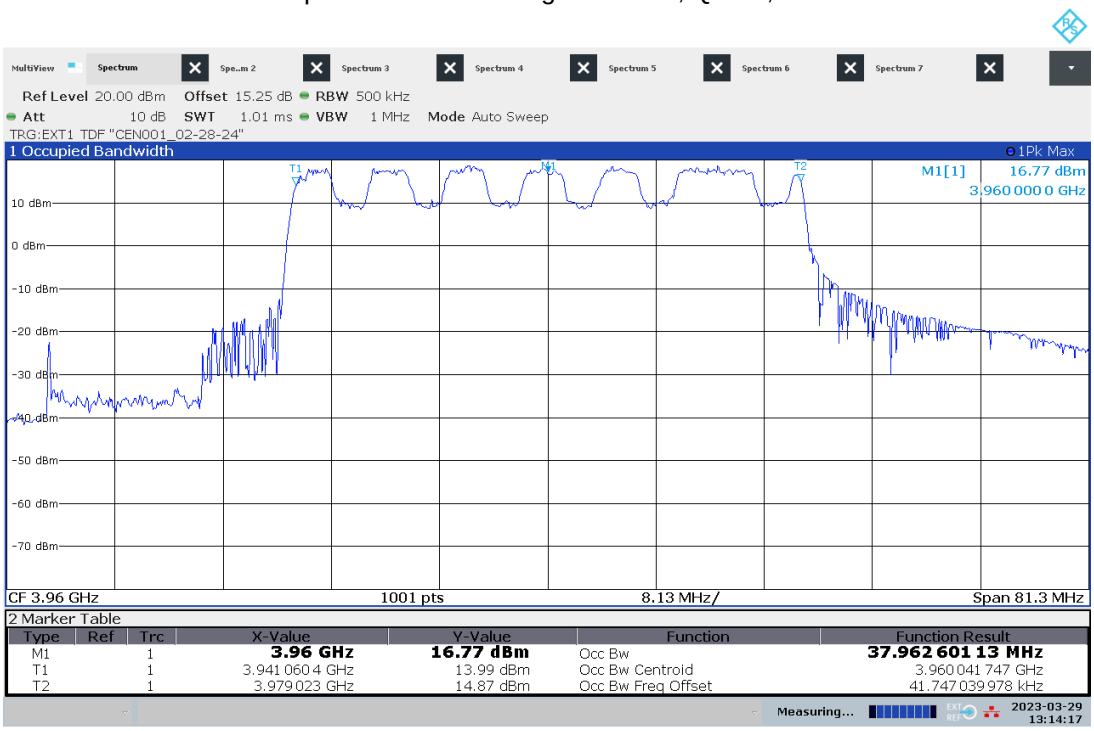
07:41:52 PM 03/29/2023

Occupied Bandwidth – Mid Channel, QPSK, Port 4



07:45:36 PM 03/29/2023

Occupied Bandwidth – High Channel, QPSK, Port 1



01:14:17 PM 03/29/2023

Occupied Bandwidth – High Channel, QPSK, Port 2

01:12:13 PM 03/29/2023

Occupied Bandwidth – High Channel, QPSK, Port 3

01:06:22 PM 03/29/2023

Occupied Bandwidth – High Channel, QPSK, Port 4

01:09:28 PM 03/29/2023

Occupied Bandwidth – Low Channel, 16QAM, Port 1

04:42:56 PM 03/29/2023

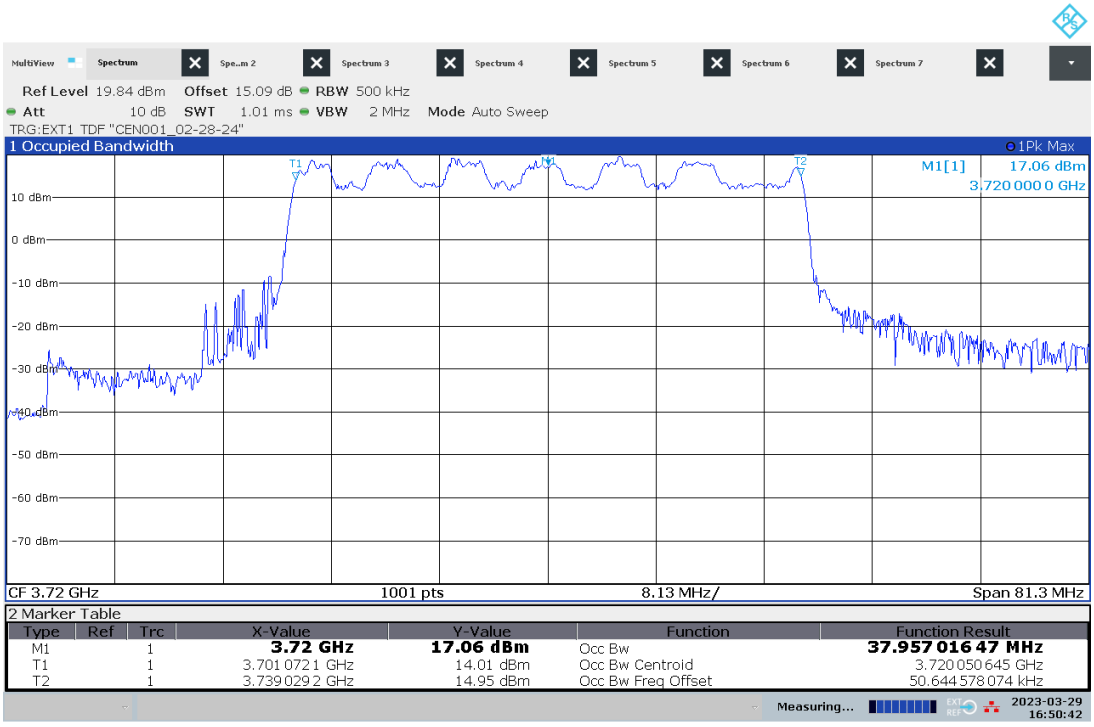
Occupied Bandwidth – Low Channel, 16QAM, Port 2

04:45:56 PM 03/29/2023

Occupied Bandwidth – Low Channel, 16QAM, Port 3

04:48:06 PM 03/29/2023

Occupied Bandwidth – Low Channel, 16QAM, Port 4



04:50:42 PM 03/29/2023

Occupied Bandwidth – Mid Channel, 16QAM, Port 1

08:10:16 PM 03/29/2023

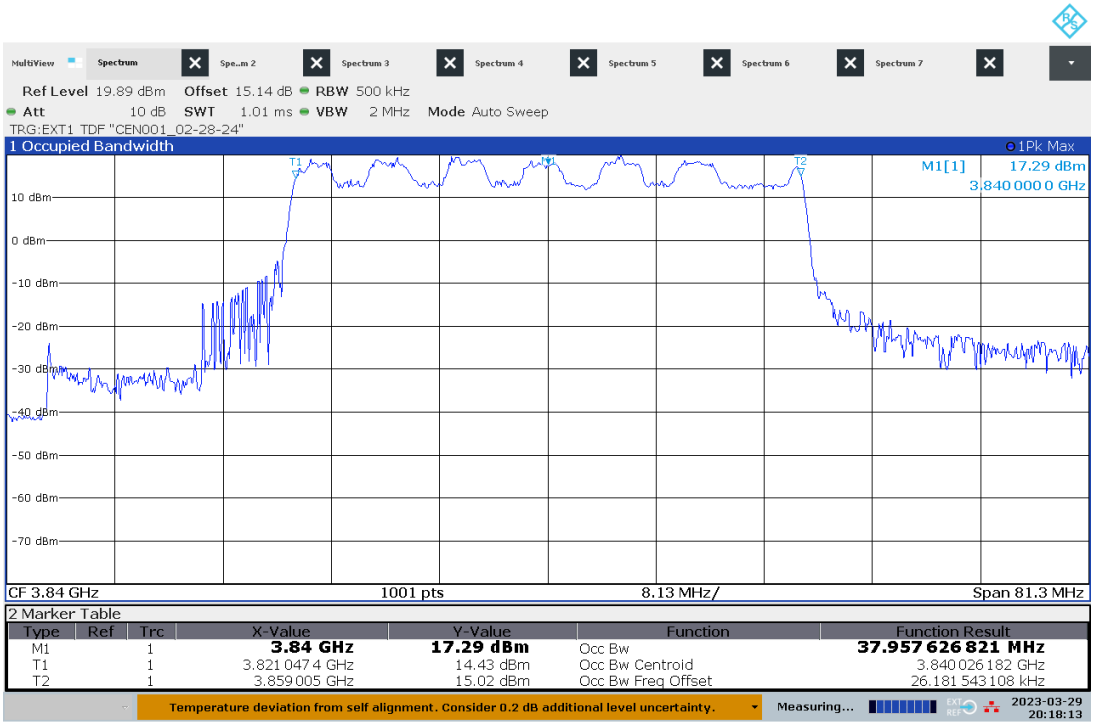
Occupied Bandwidth – Mid Channel, 16QAM, Port 2

08:13:17 PM 03/29/2023

Occupied Bandwidth – Mid Channel, 16QAM, Port 3

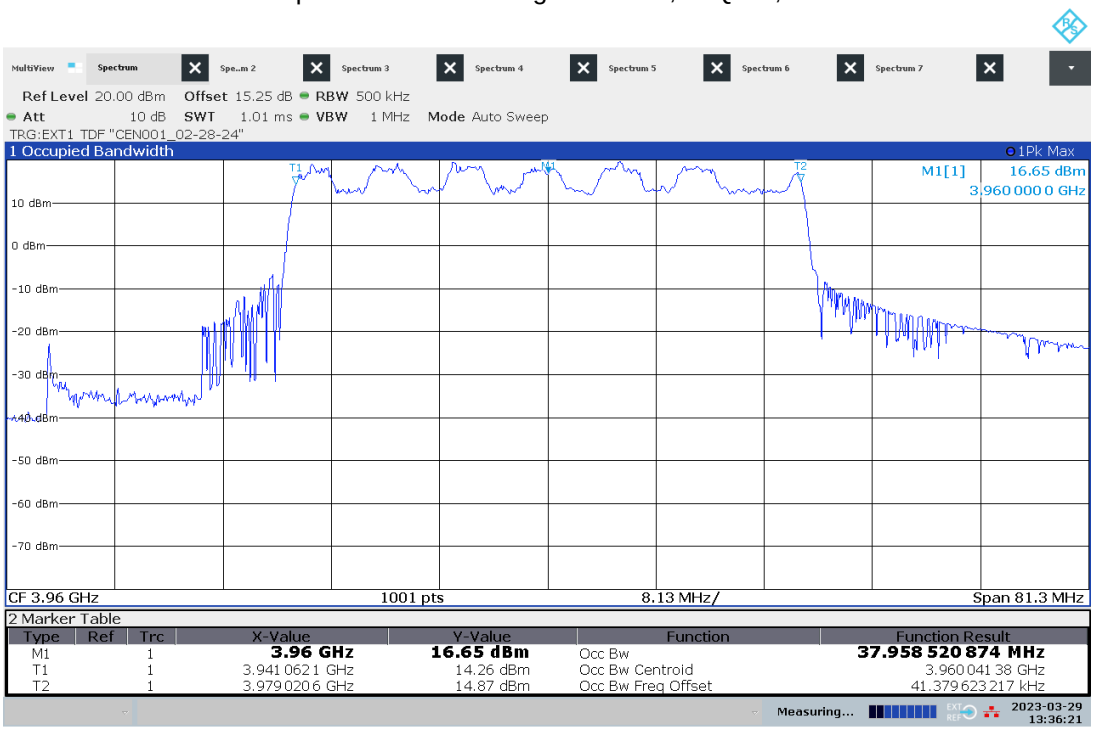
08:15:44 PM 03/29/2023

Occupied Bandwidth – Mid Channel, 16QAM, Port 4



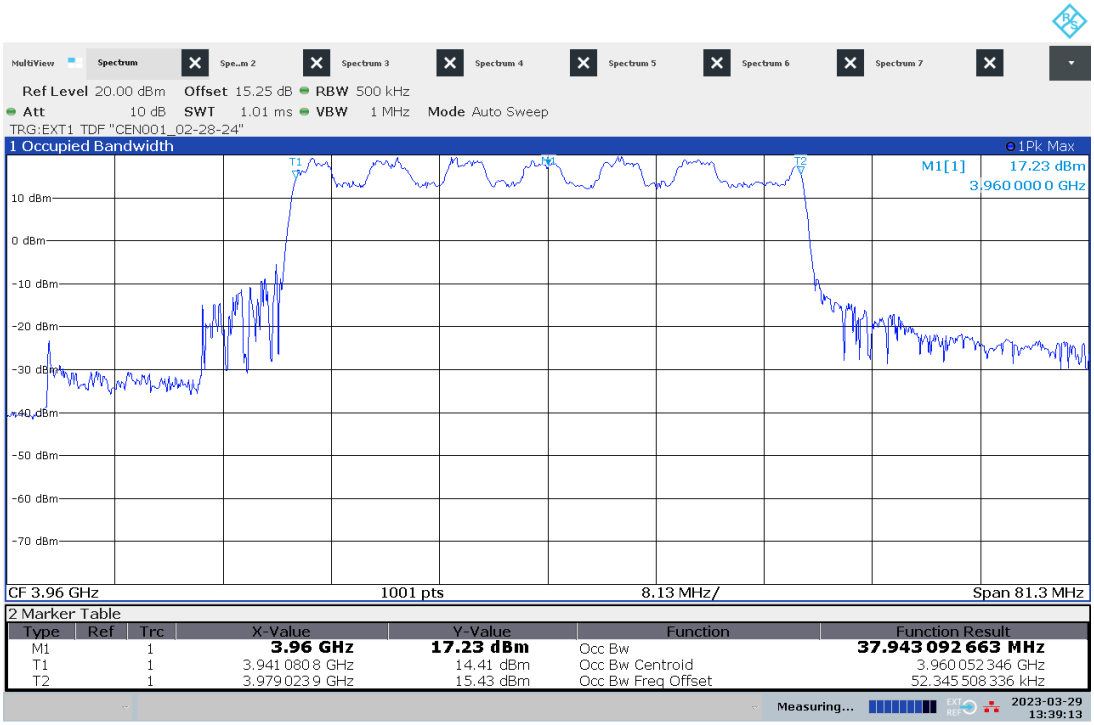
08:18:13 PM 03/29/2023

Occupied Bandwidth – High Channel, 16QAM, Port 1



01:36:21 PM 03/29/2023

Occupied Bandwidth – High Channel, 16QAM, Port 2



01:39:13 PM 03/29/2023

Occupied Bandwidth – High Channel, 16QAM, Port 3

01:41:47 PM 03/29/2023

Occupied Bandwidth – High Channel, 16QAM, Port 4

01:44:55 PM 03/29/2023

Occupied Bandwidth – Low Channel, 64QAM, Port 1

06:13:32 PM 03/29/2023

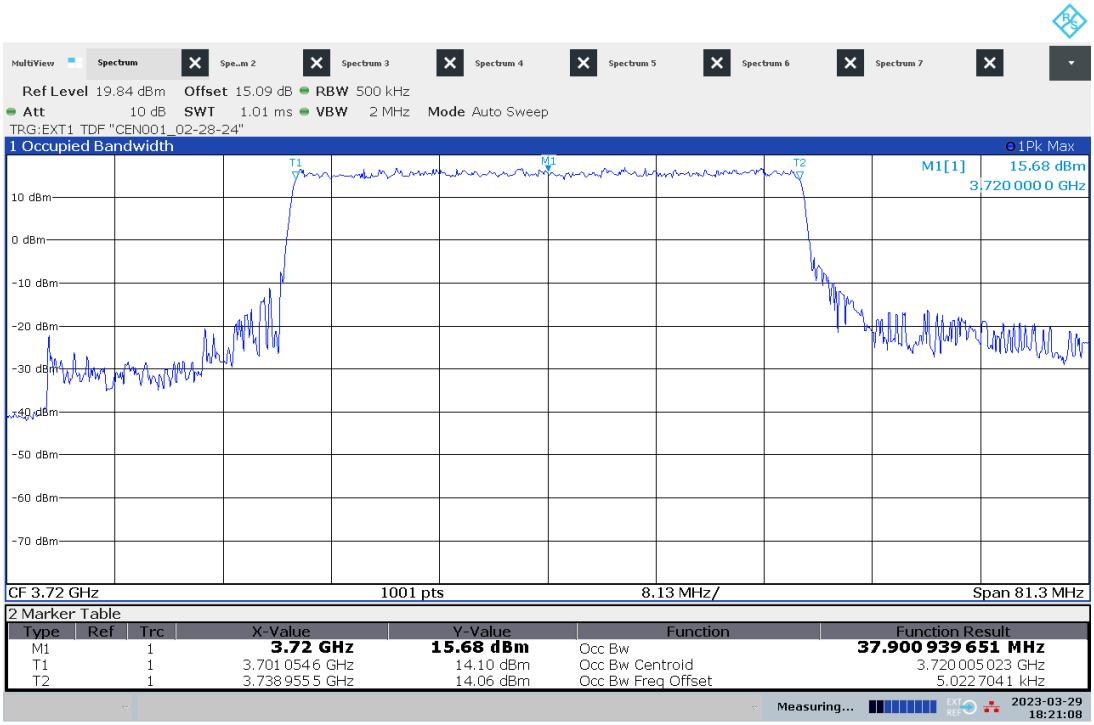
Occupied Bandwidth – Low Channel, 64QAM, Port 2

06:16:27 PM 03/29/2023

Occupied Bandwidth – Low Channel, 64QAM, Port 3

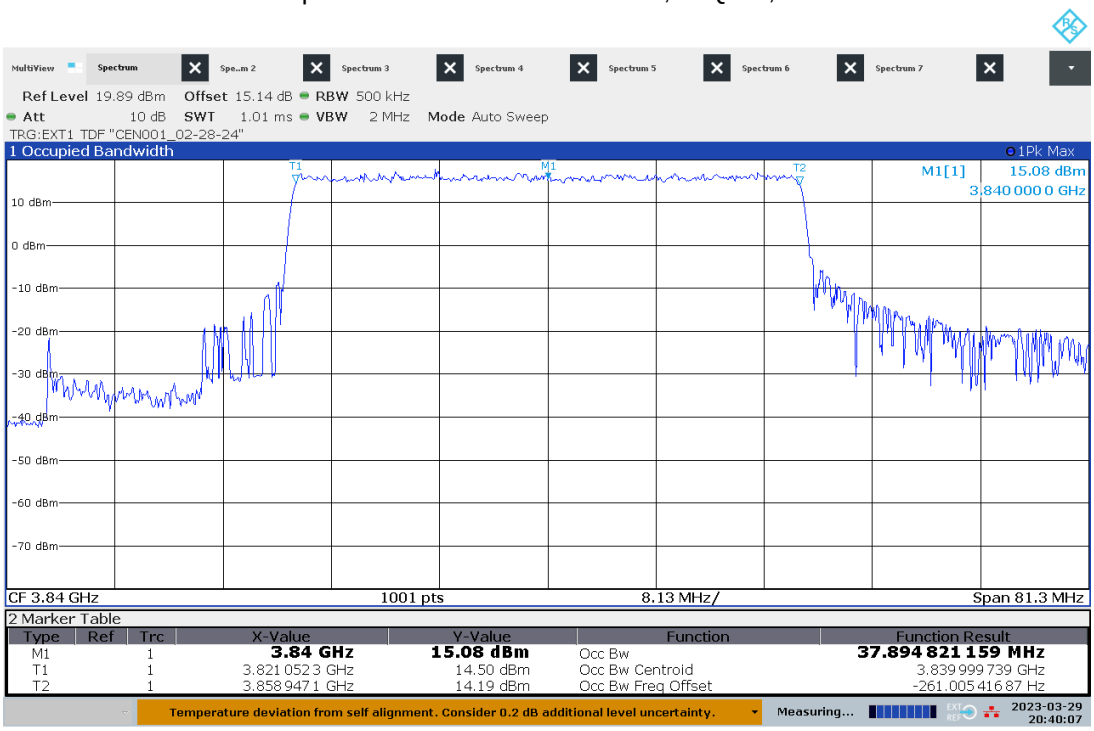
06:19:04 PM 03/29/2023

Occupied Bandwidth – Low Channel, 64QAM, Port 4



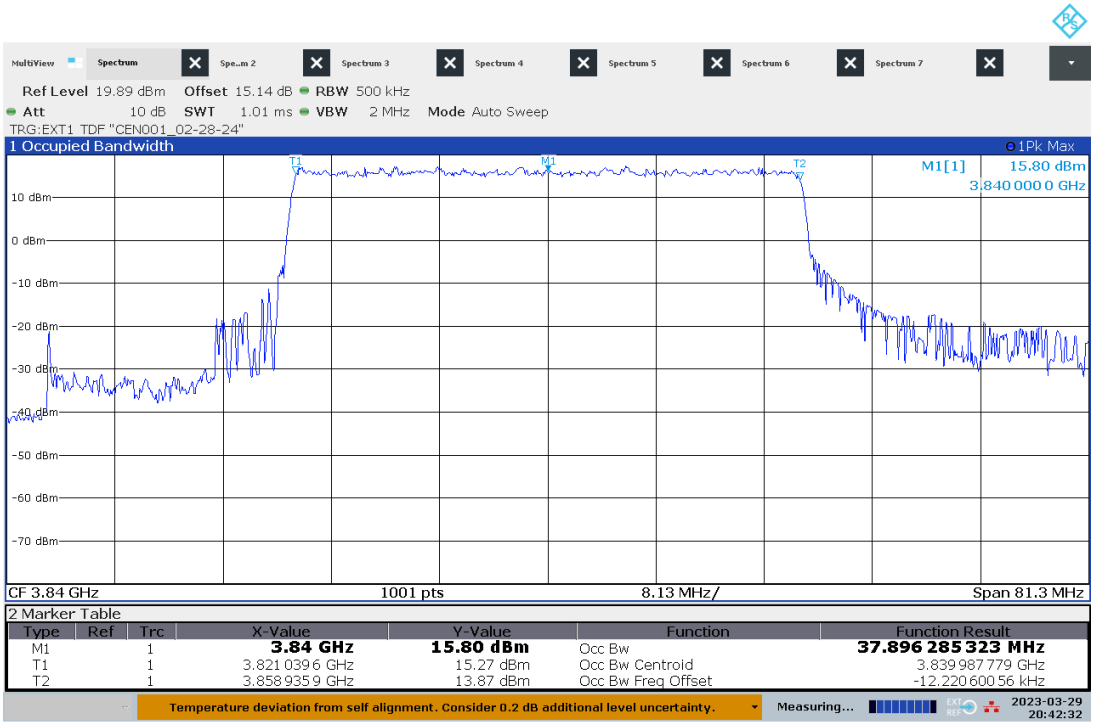
06:21:08 PM 03/29/2023

Occupied Bandwidth – Mid Channel, 64QAM, Port 1



08:40:07 PM 03/29/2023

Occupied Bandwidth – Mid Channel, 64QAM, Port 2

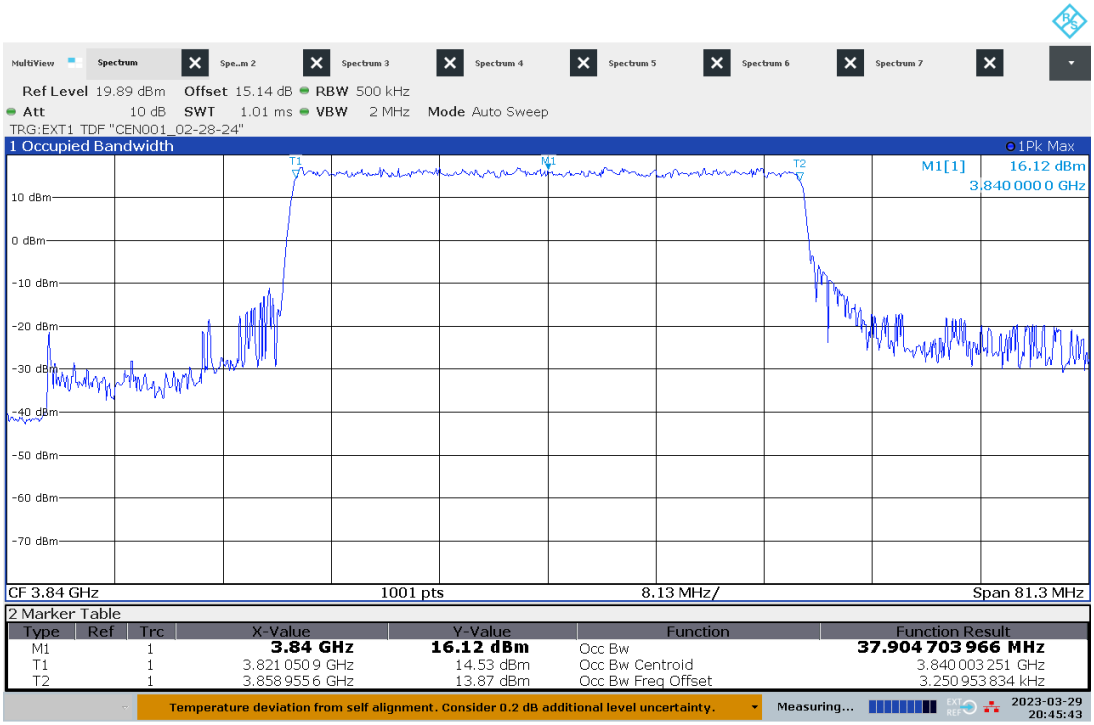


08:42:32 PM 03/29/2023

Occupied Bandwidth – Mid Channel, 64QAM, Port 3

08:44:21 PM 03/29/2023

Occupied Bandwidth – Mid Channel, 64QAM, Port 4



08:45:43 PM 03/29/2023

Occupied Bandwidth – High Channel, 64QAM, Port 1

02:22:57 PM 03/29/2023

Occupied Bandwidth – High Channel, 64QAM, Port 2

1 02:25:24 PM 03/29/2023

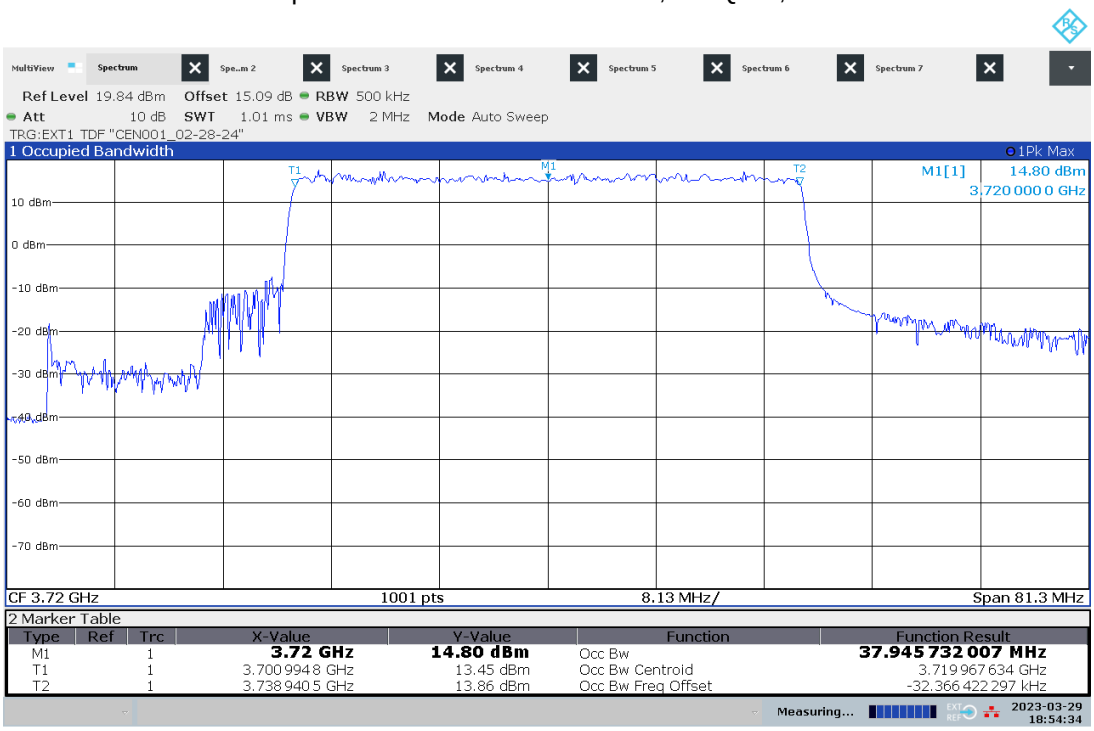
Occupied Bandwidth – High Channel, 64QAM, Port 3

02:27:37 PM 03/29/2023

Occupied Bandwidth – High Channel, 64QAM, Port 4

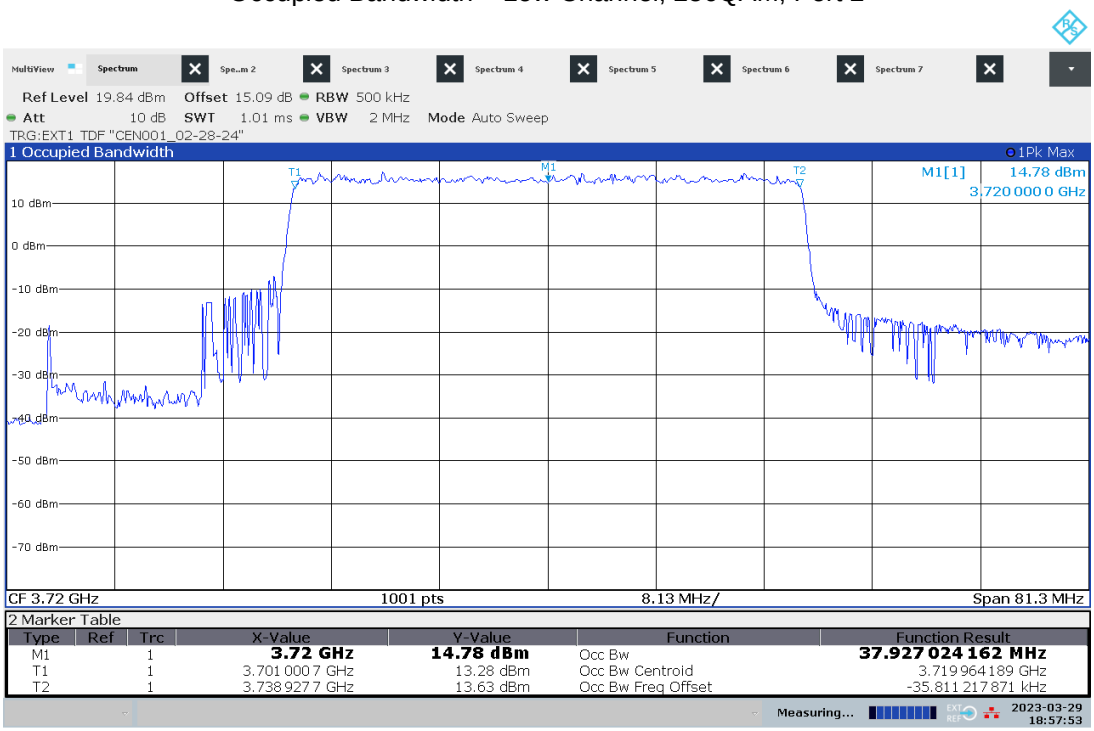
02:29:43 PM 03/29/2023

Occupied Bandwidth – Low Channel, 256QAM, Port 1



06:54:34 PM 03/29/2023

Occupied Bandwidth – Low Channel, 256QAM, Port 2



06:57:54 PM 03/29/2023

Occupied Bandwidth – Low Channel, 256QAM, Port 3

07:02:11 PM 03/29/2023

Occupied Bandwidth – Low Channel, 256QAM, Port 4

06:51:13 PM 03/29/2023

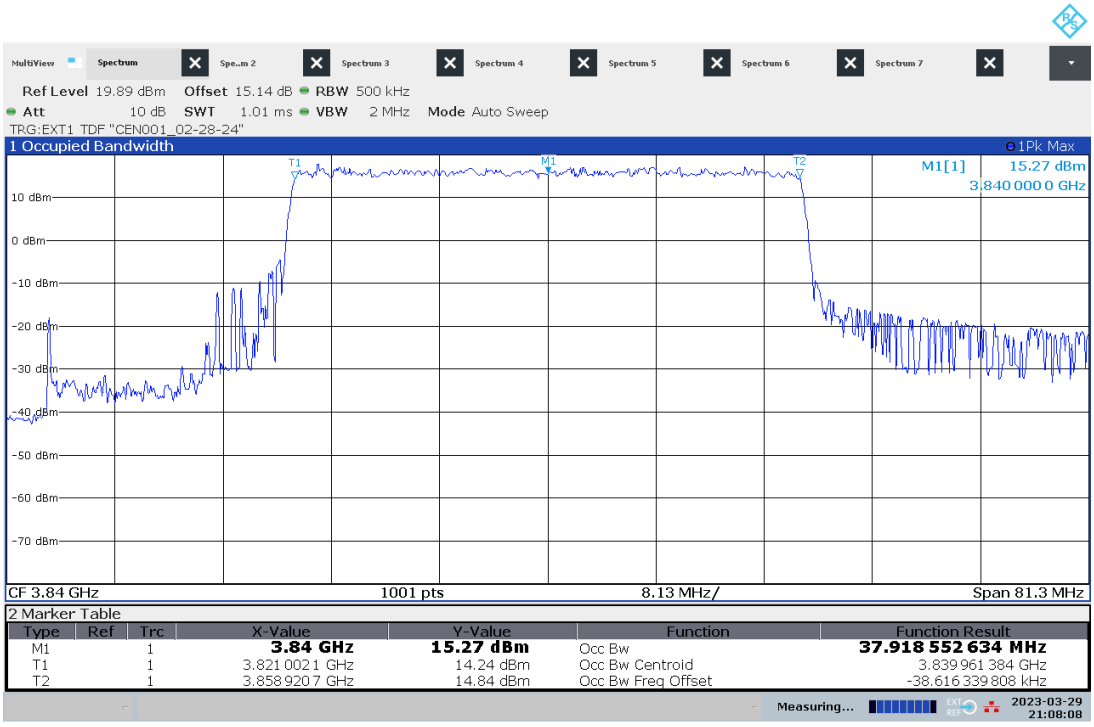
Occupied Bandwidth – Mid Channel, 256QAM, Port 1

2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	**3.84 GHz**	**15.21 dBm**	Occ Bw	**37.915 162 109 MHz**
T1		1	3.821 021 8 GHz	14.04 dBm	Occ Bw Centroid	3.839 979 414 GHz
T2		1	3.858 937 GHz	14.14 dBm	Occ Bw Freq Offset	-20.585 680 489 kHz

09:05:55 PM 03/29/2023

Occupied Bandwidth – Mid Channel, 256QAM, Port 2

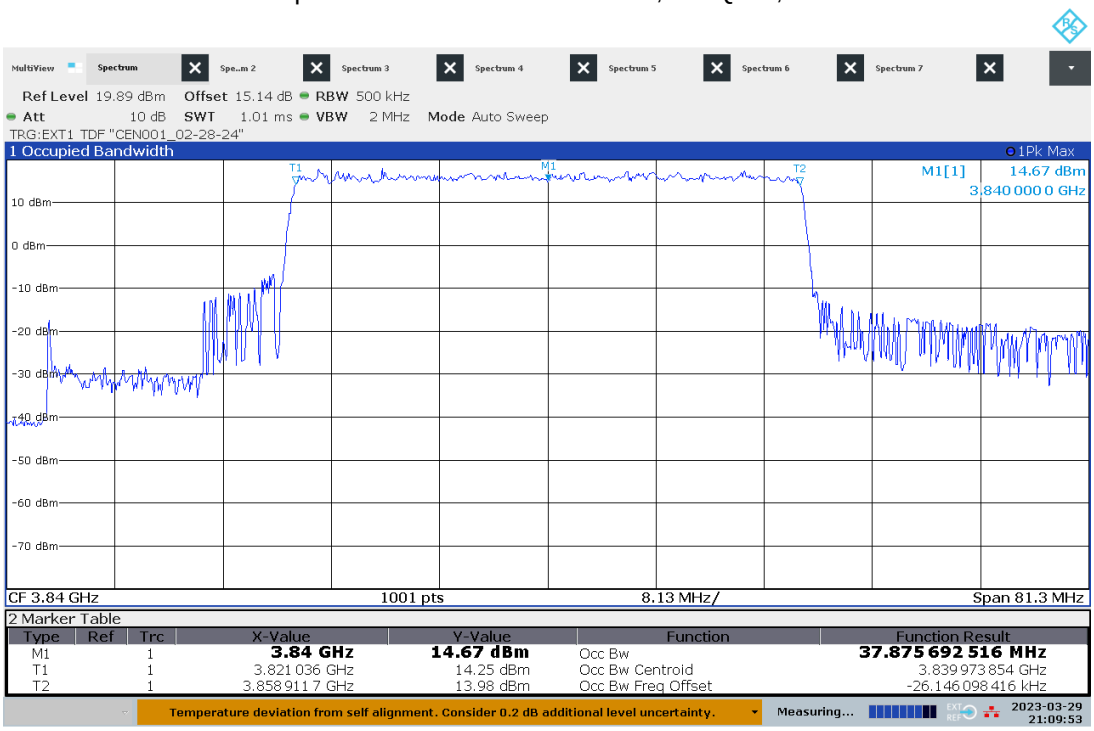


2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	**3.84 GHz**	**15.27 dBm**	Occ Bw	**37.918 552 634 MHz**
T1		1	3.821 002 1 GHz	14.24 dBm	Occ Bw Centroid	3.839 961 384 GHz
T2		1	3.858 920 7 GHz	14.84 dBm	Occ Bw Freq Offset	-38.616 339 808 kHz

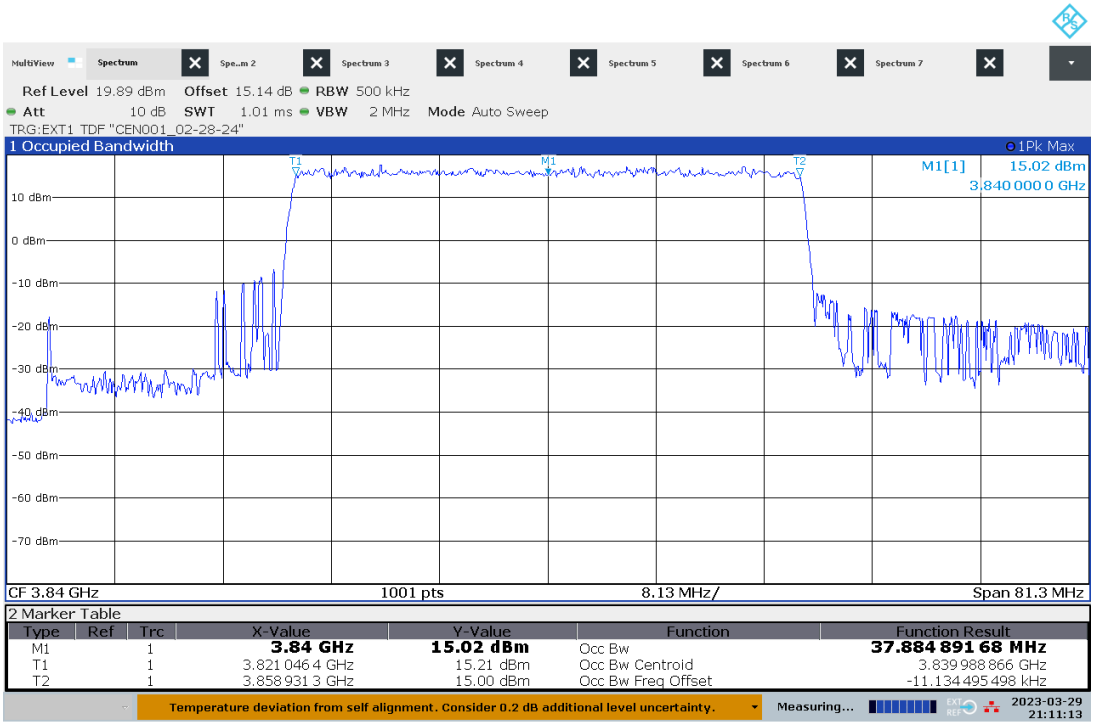
09:08:09 PM 03/29/2023

Occupied Bandwidth – Mid Channel, 256QAM, Port 3



09:09:53 PM 03/29/2023

Occupied Bandwidth – Mid Channel, 256QAM, Port 4



09:11:14 PM 03/29/2023

Occupied Bandwidth – High Channel, 256QAM, Port 1

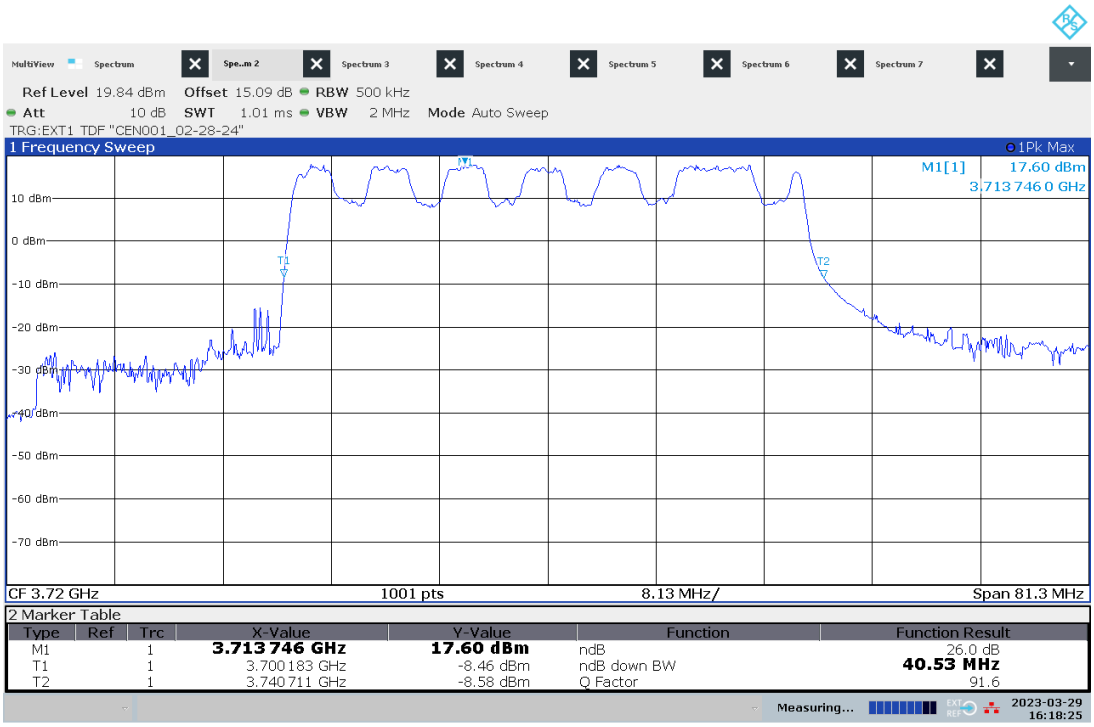
26 dB Bandwidth – Low Channel, QPSK, Port 1

04:12:19 PM 03/29/2023

26 dB Bandwidth – Low Channel, QPSK, Port 2

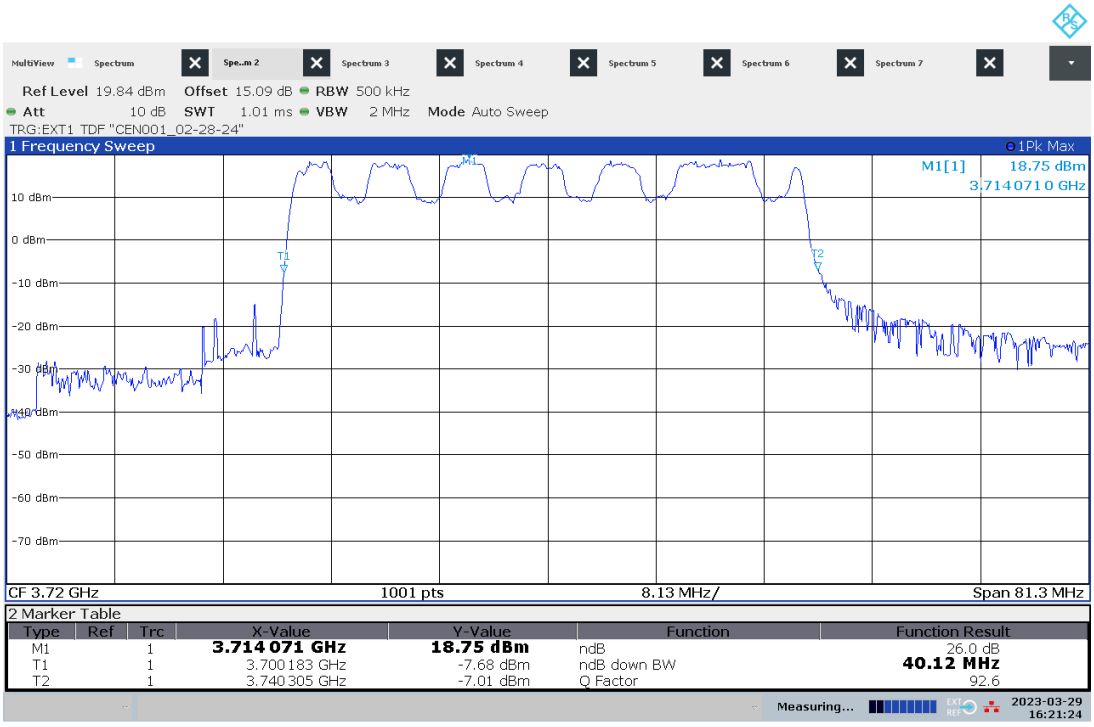
04:15:32 PM 03/29/2023

26 dB Bandwidth – Low Channel, QPSK, Port 3



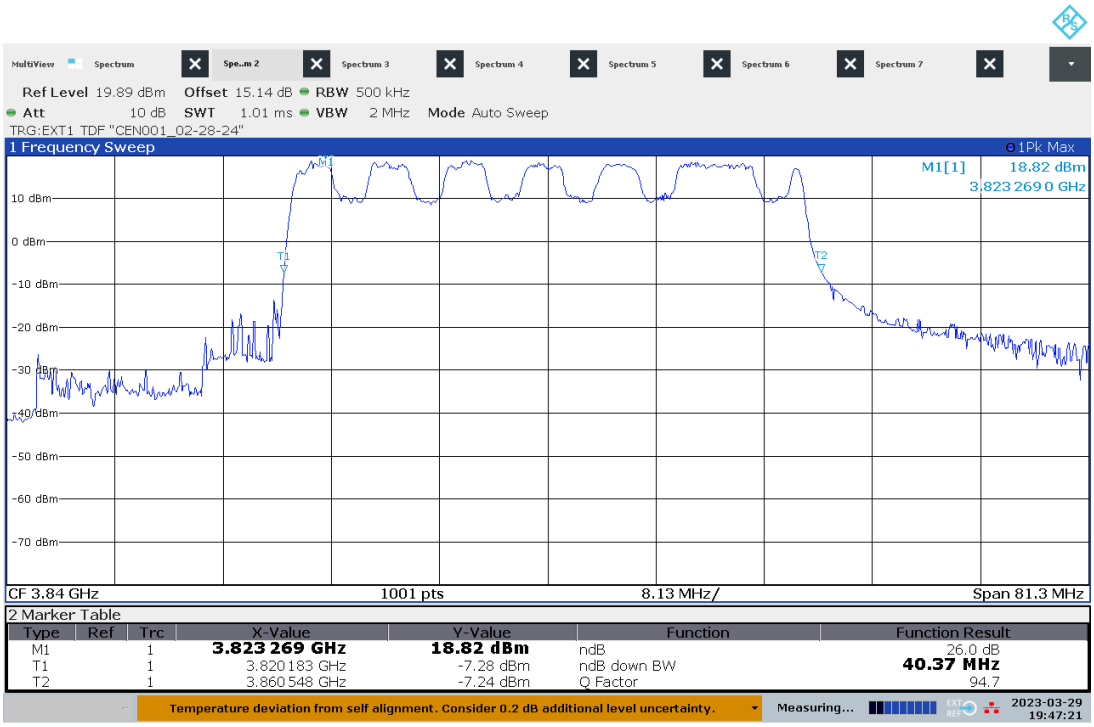
04:18:25 PM 03/29/2023

26 dB Bandwidth – Low Channel, QPSK, Port 4



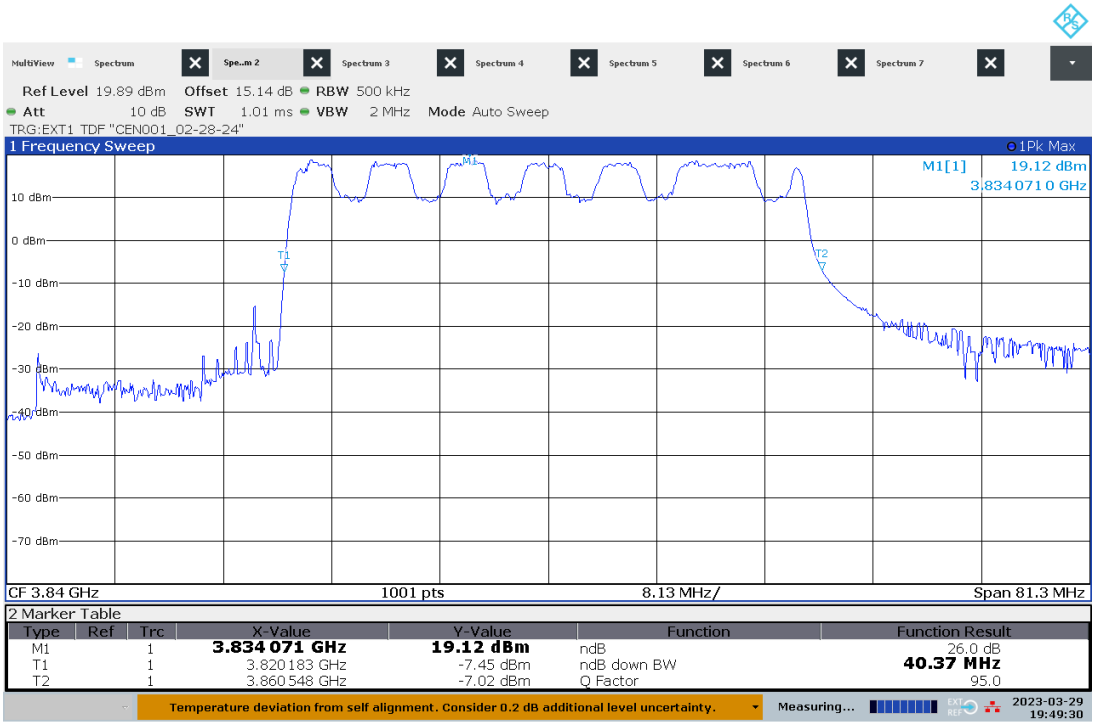
04:21:24 PM 03/29/2023

26 dB Bandwidth – Mid Channel, QPSK, Port 1



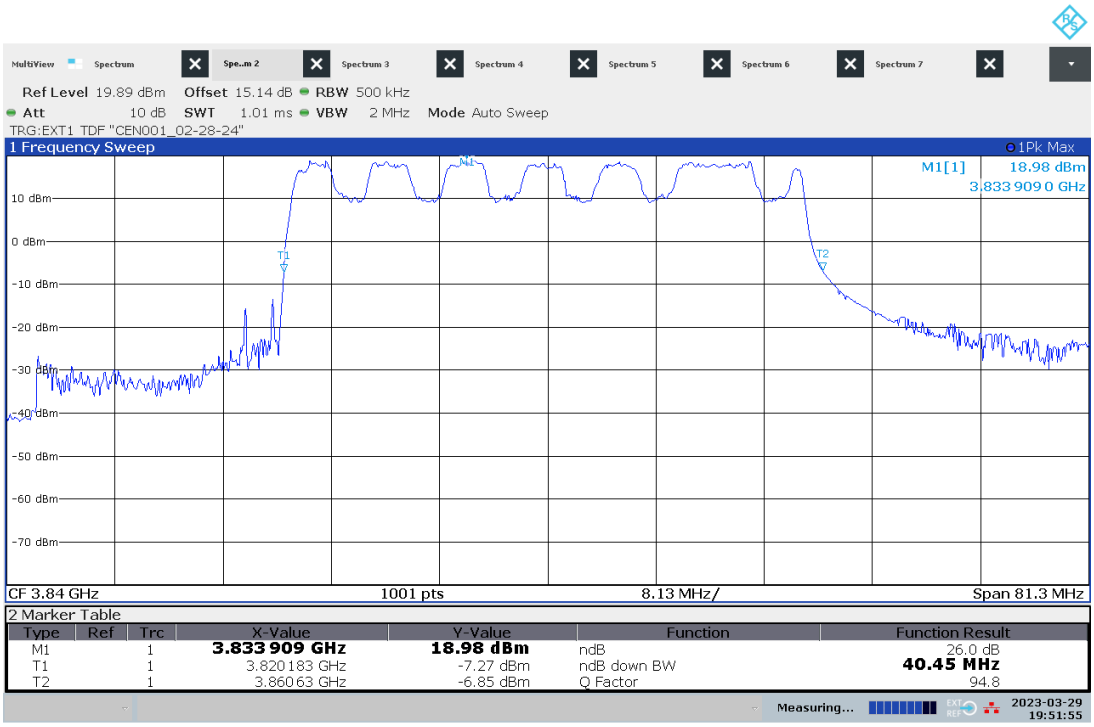
07:47:21 PM 03/29/2023

26 dB Bandwidth – Mid Channel, QPSK, Port 2



1 07:49:30 PM 03/29/2023

26 dB Bandwidth – Mid Channel, QPSK, Port 3

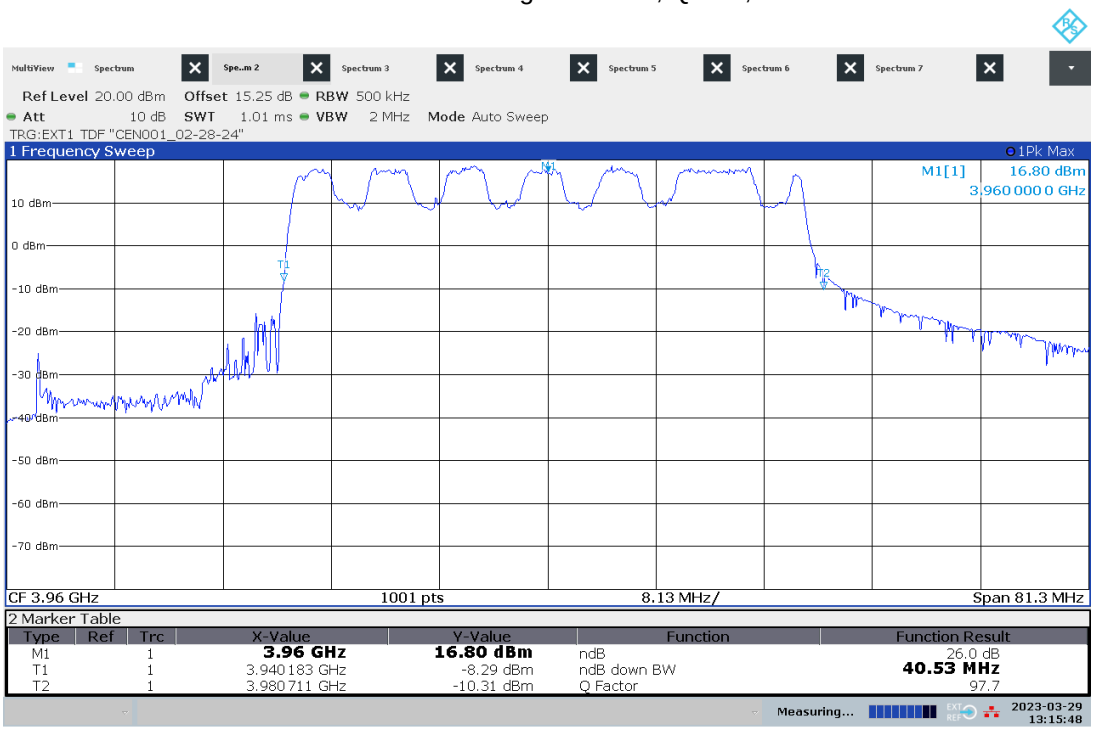


07:51:55 PM 03/29/2023

26 dB Bandwidth – Mid Channel, QPSK, Port 4

07:54:27 PM 03/29/2023

26 dB Bandwidth – High Channel, QPSK, Port 1



01:15:48 PM 03/29/2023

26 dB Bandwidth – High Channel, QPSK, Port 2

01:18:55 PM 03/29/2023