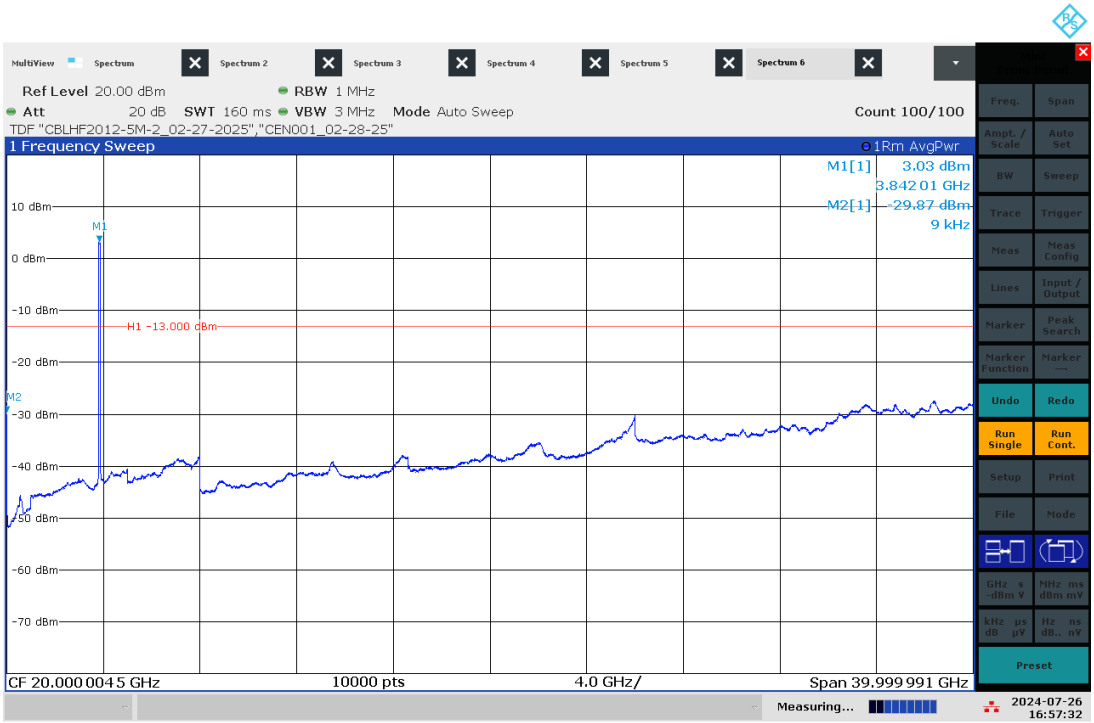
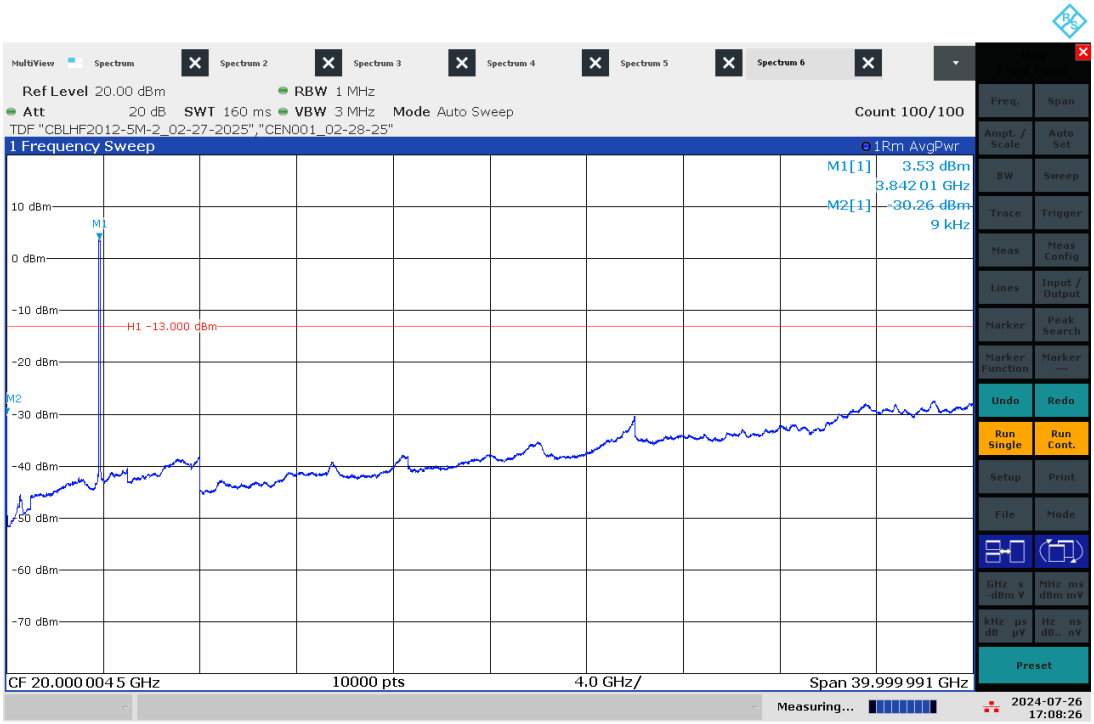
Mid Channel (3840 MHz) Antenna Port Conducted Emissions, Modulation: TM3.1a, Antenna Port 3



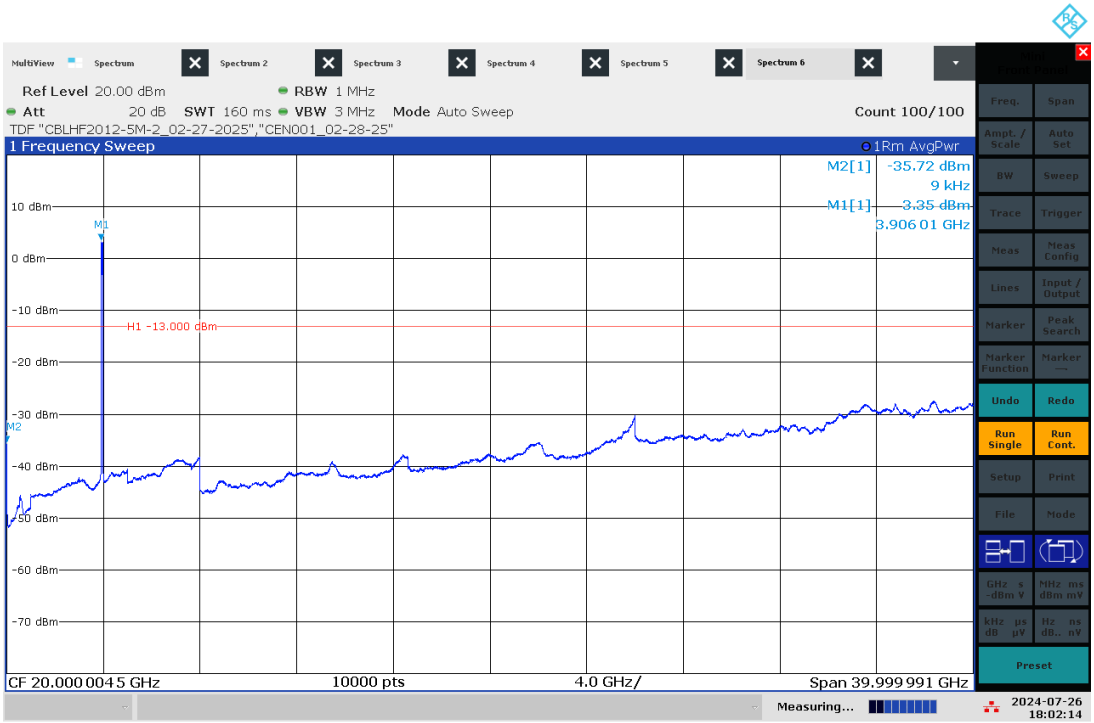
04:57:33 PM 07/26/2024

Mid Channel (3840 MHz) Antenna Port Conducted Emissions, Modulation: TM3.1a, Antenna Port 4



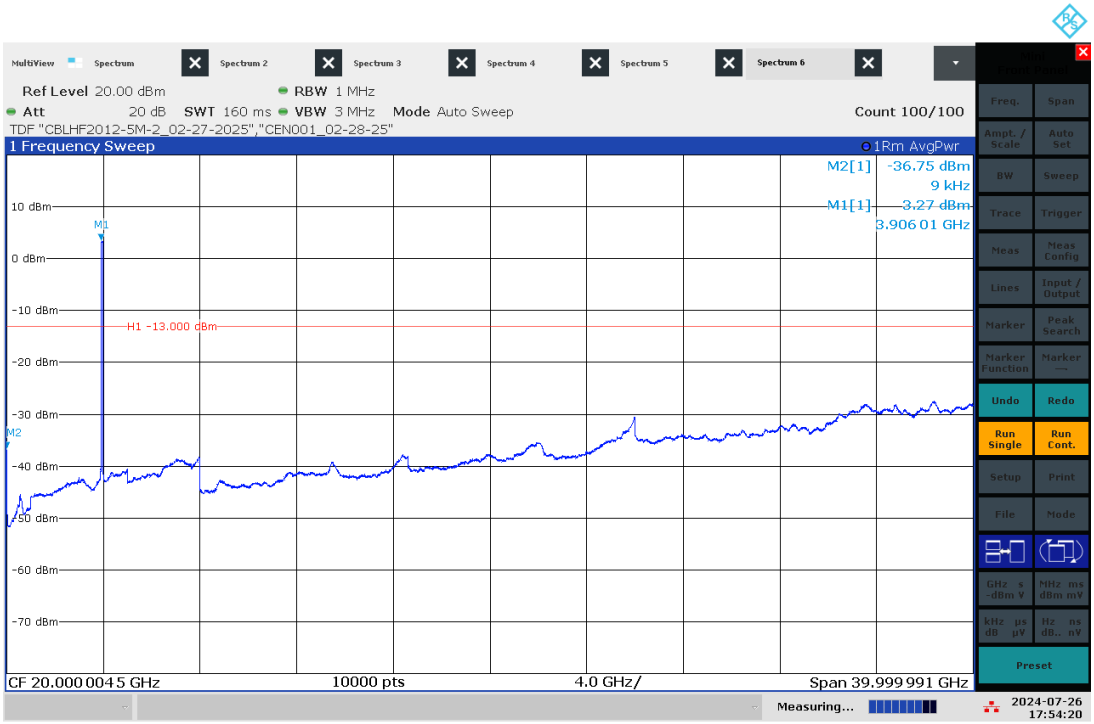
05:08:27 PM 07/26/2024

High Channel (3940 MHz) Antenna Port Conducted Emissions, Modulation: TM3.1a, Antenna Port 1



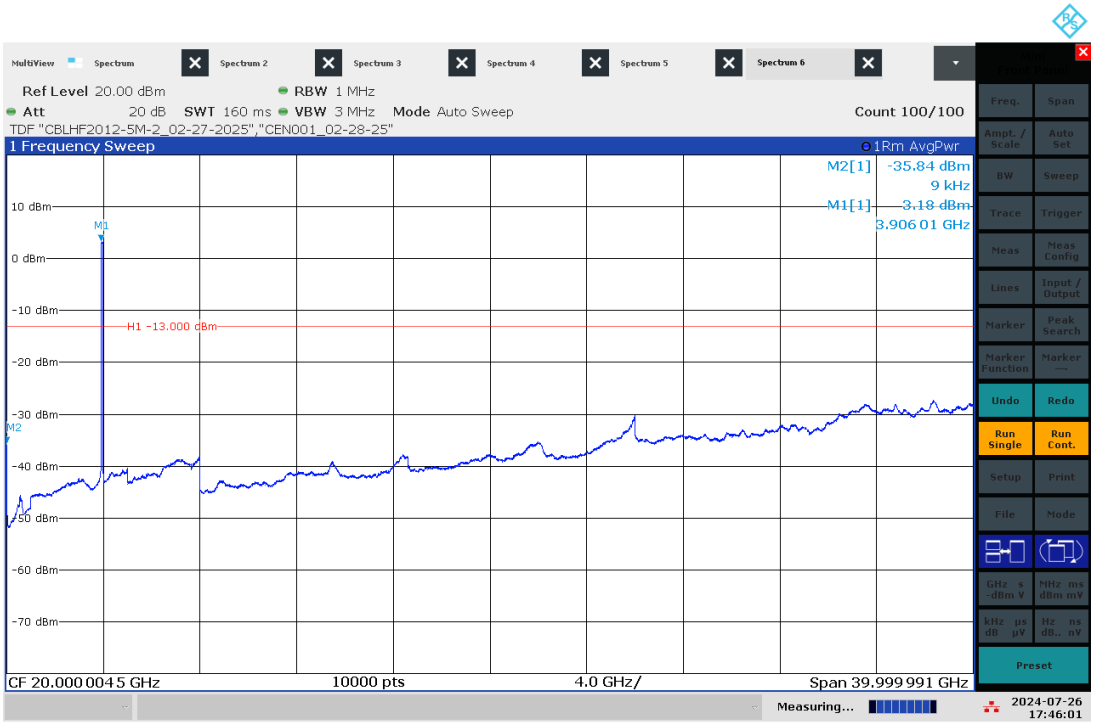
06:02:14 PM 07/26/2024

High Channel (3940 MHz) Antenna Port Conducted Emissions, Modulation: TM3.1a, Antenna Port 2



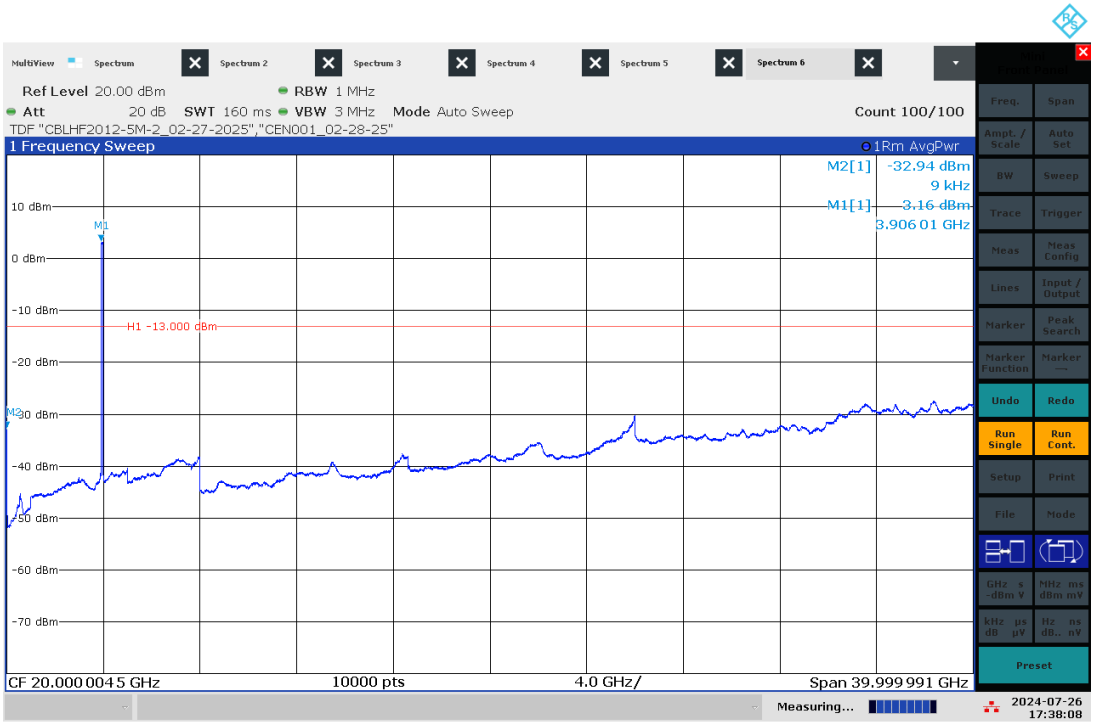
05:54:21 PM 07/26/2024

High Channel (3940 MHz) Antenna Port Conducted Emissions, Modulation: TM3.1a, Antenna Port 3



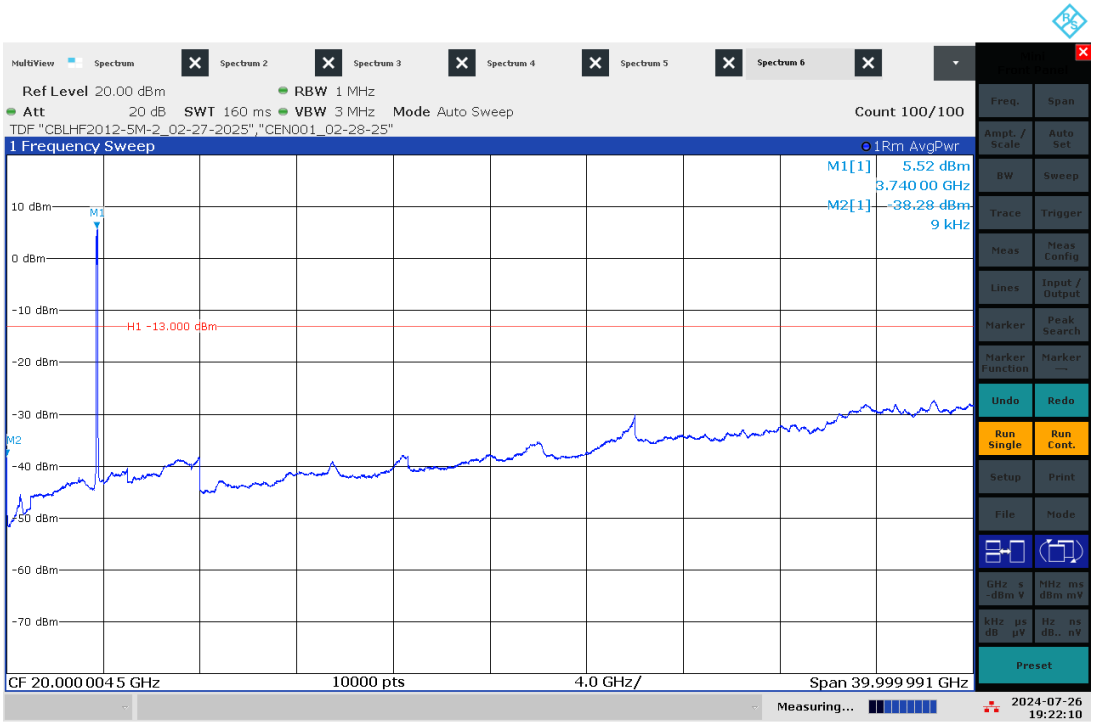
05:46:02 PM 07/26/2024

High Channel (3940 MHz) Antenna Port Conducted Emissions, Modulation: TM3.1a, Antenna Port 4



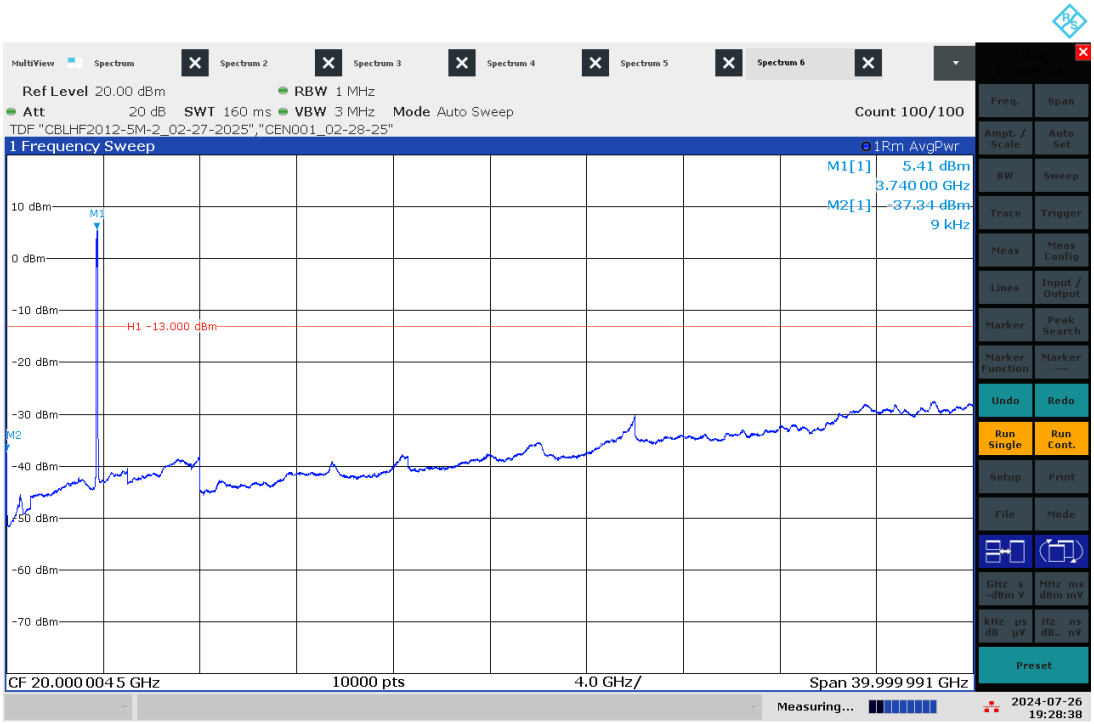
05:38:08 PM 07/26/2024

Low Channel (3740 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 1



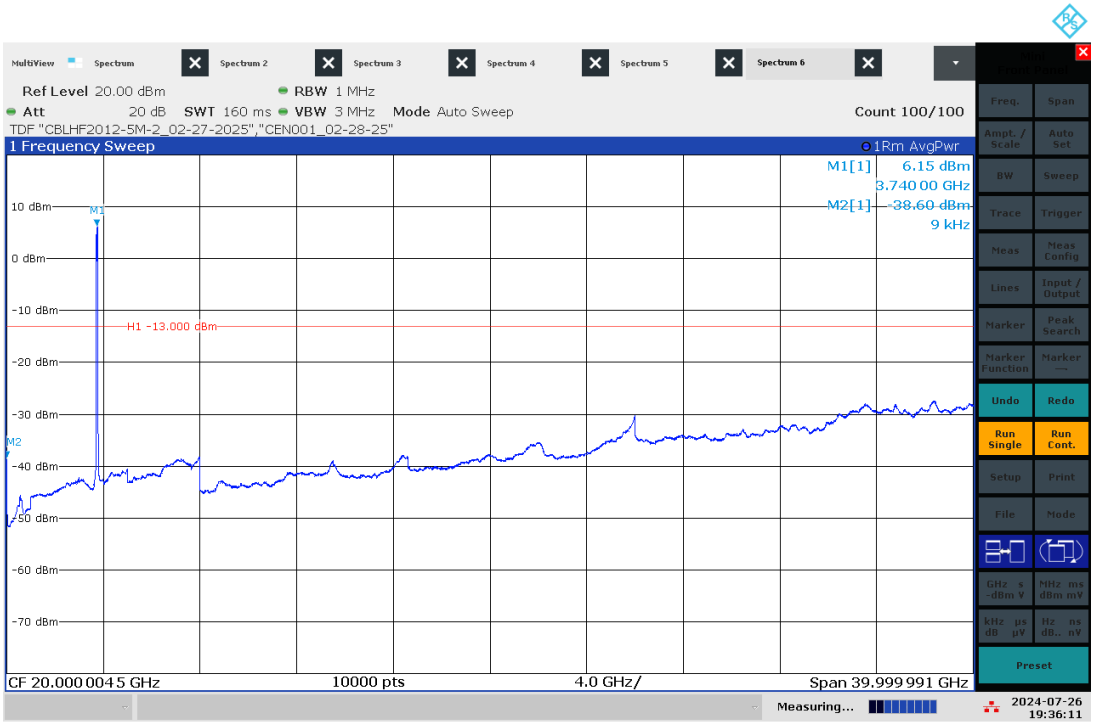
07:22:11 PM 07/26/2024

Low Channel (3740 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 2



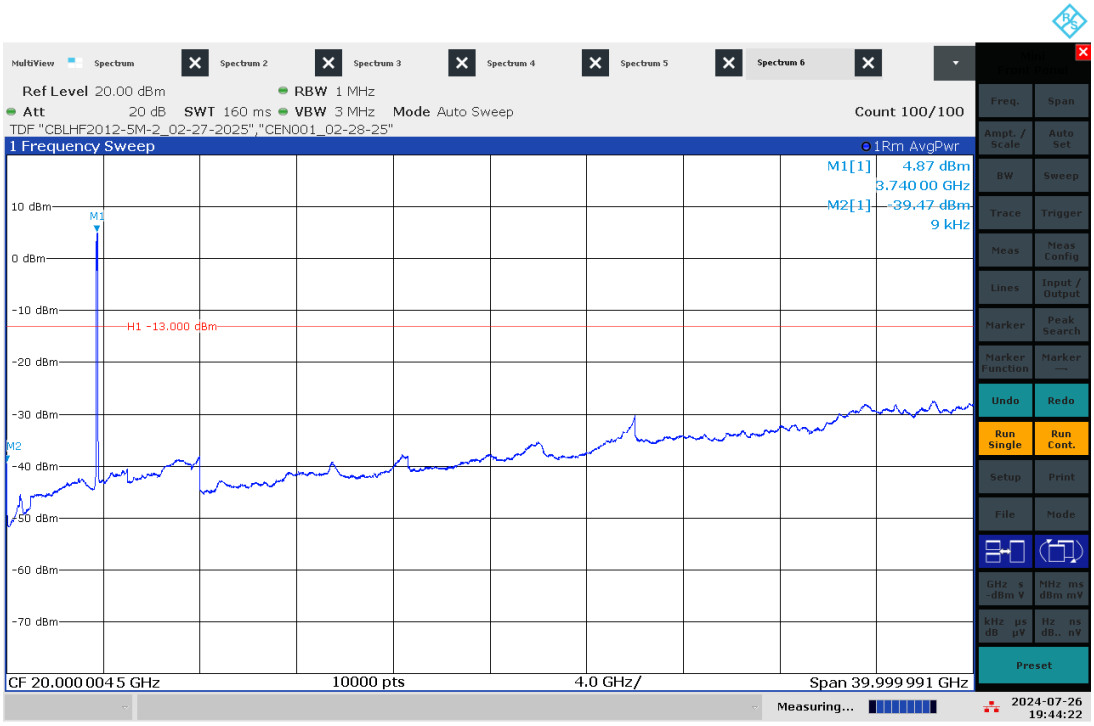
07:28:39 PM 07/26/2024

Low Channel (3740 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 3



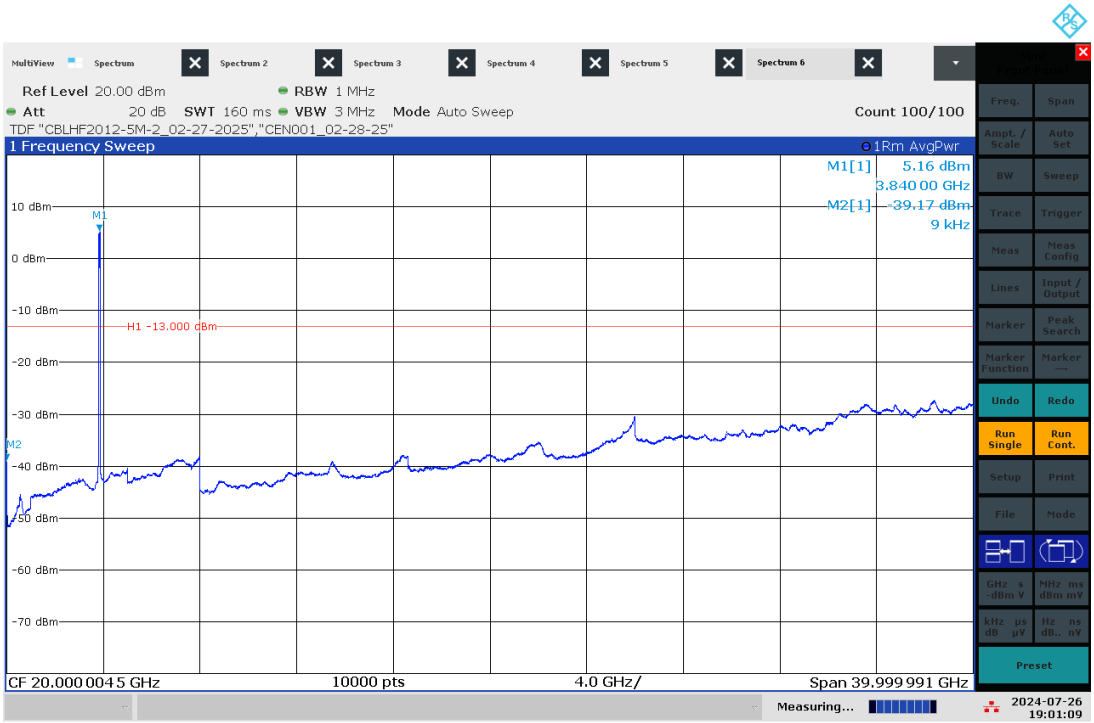
07:36:12 PM 07/26/2024

Low Channel (3740 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 4



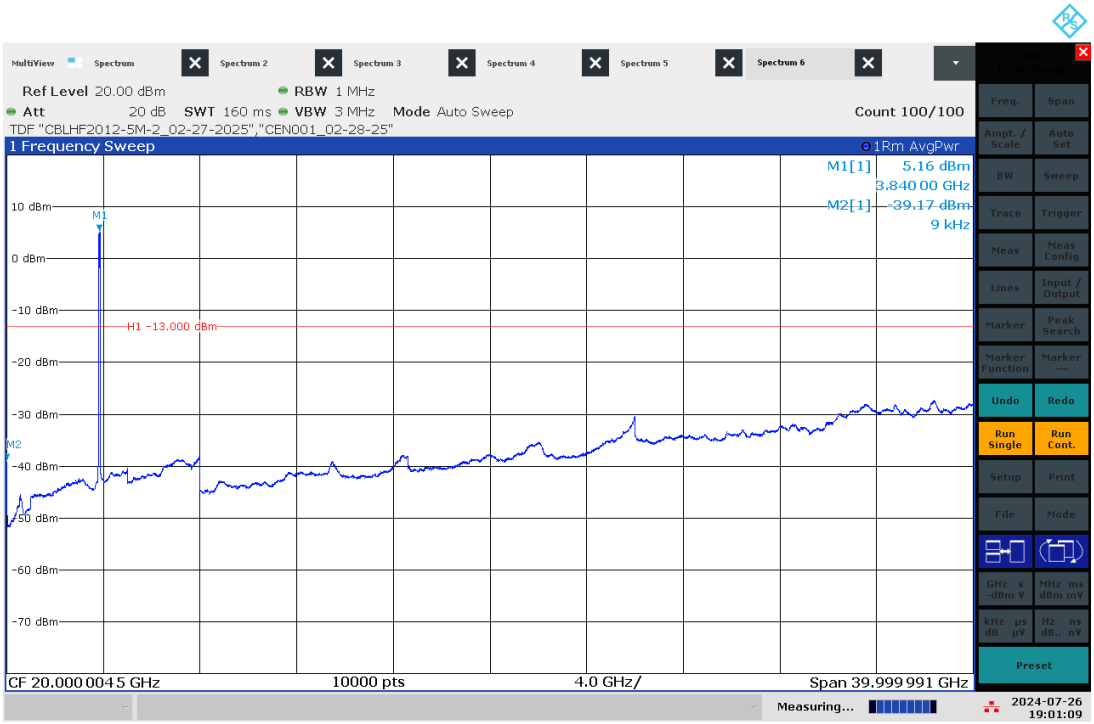
07:44:22 PM 07/26/2024

Mid Channel (3840 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 1



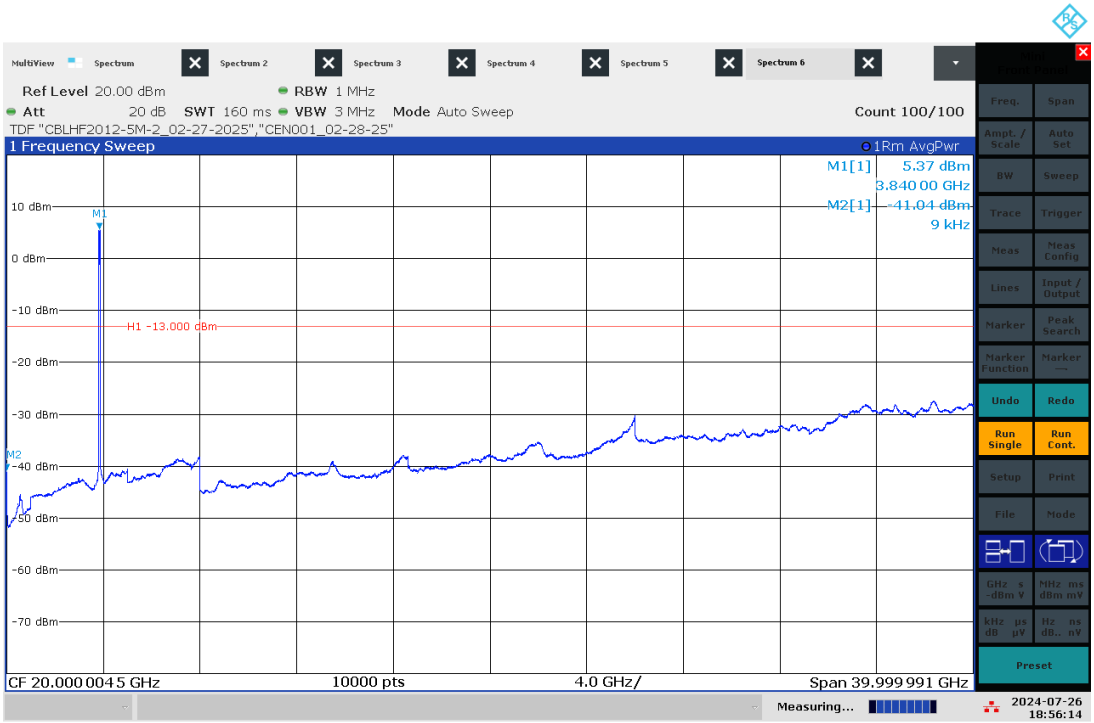
07:01:09 PM 07/26/2024

Mid Channel (3840 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 2



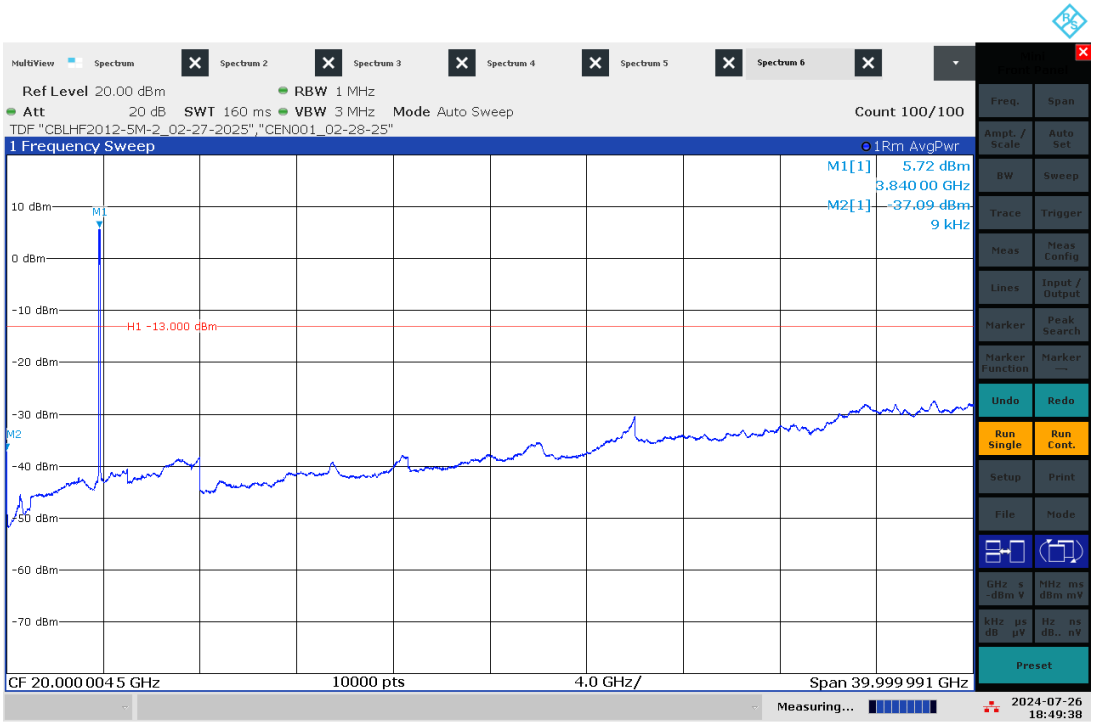
07:01:09 PM 07/26/2024

Mid Channel (3840 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 3



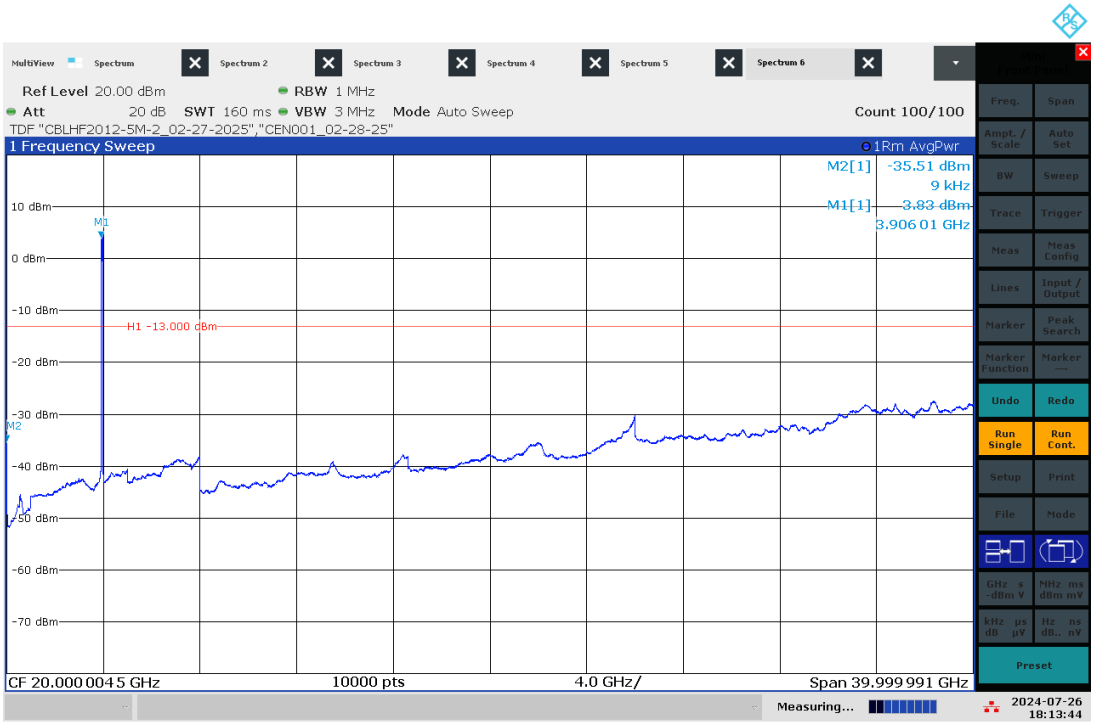
06:56:14 PM 07/26/2024

Mid Channel (3840 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 4



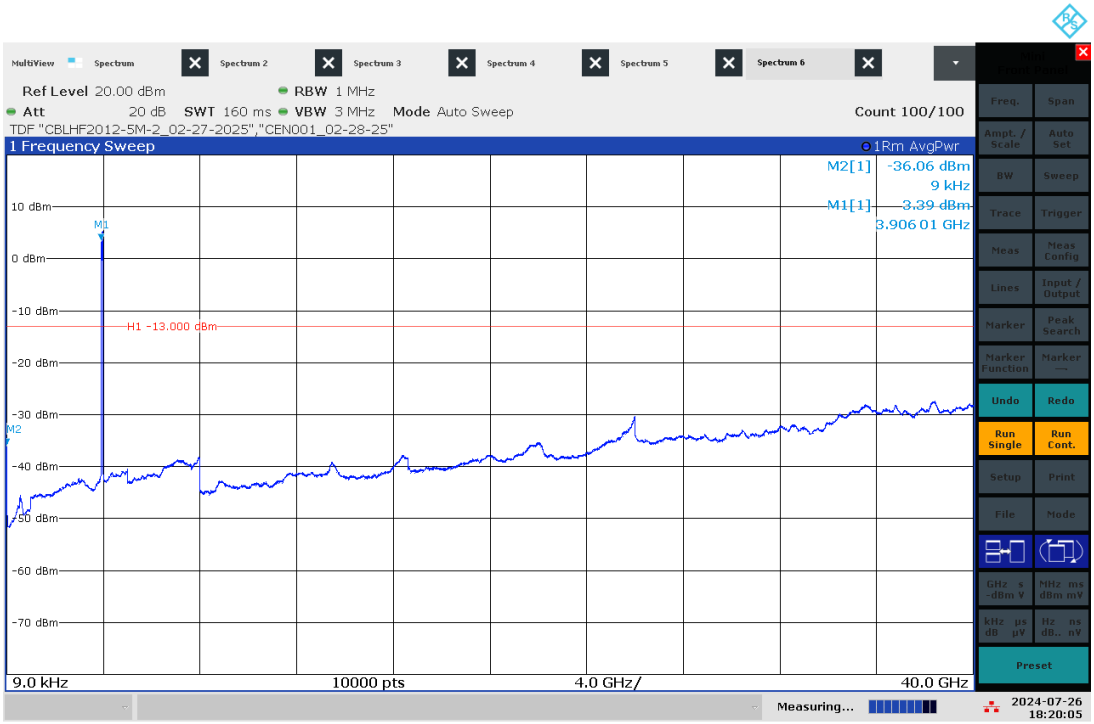
06:49:38 PM 07/26/2024

High Channel (3940 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 1



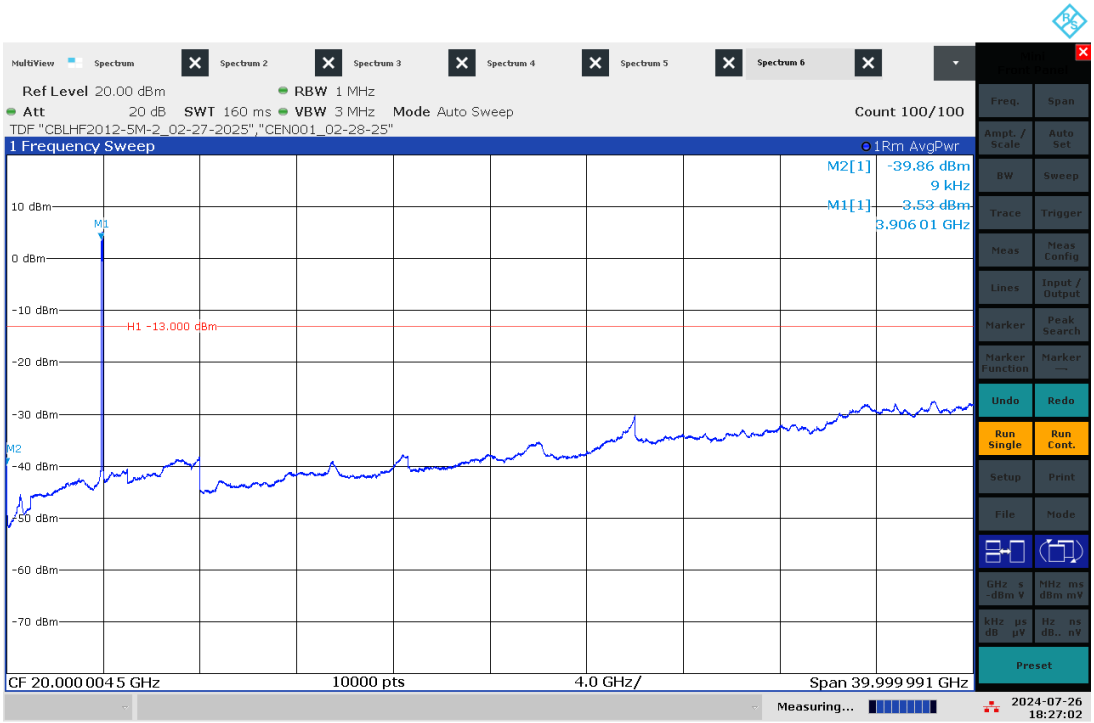
06:13:44 PM 07/26/2024

High Channel (3940 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 2



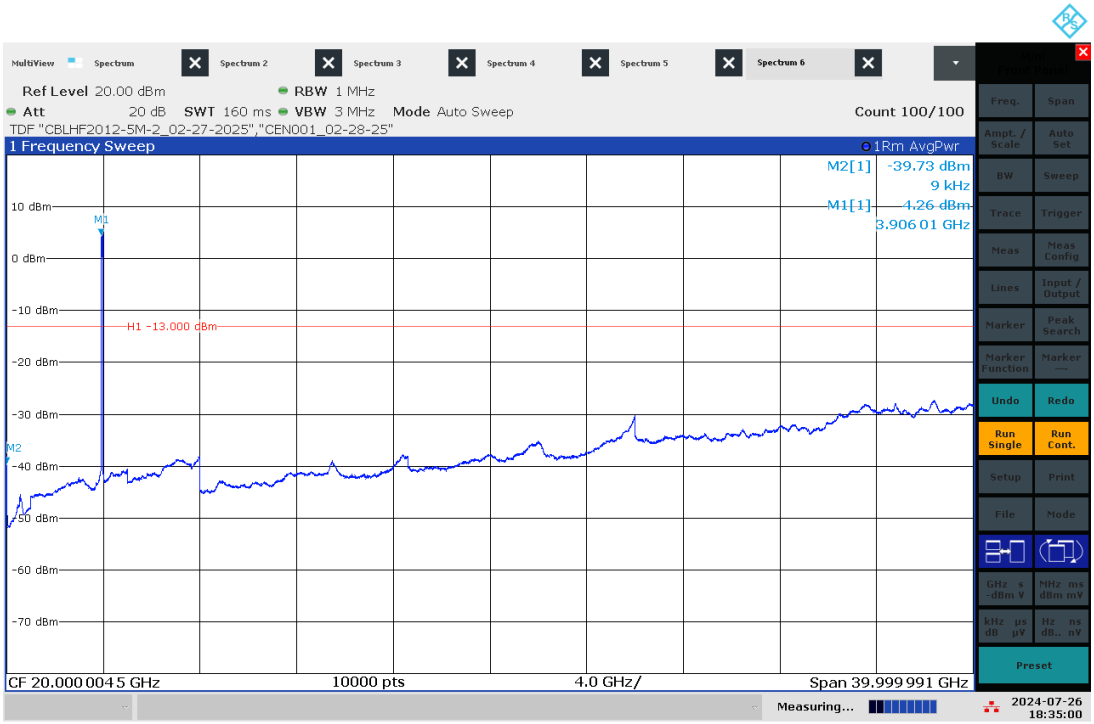
06:20:06 PM 07/26/2024

High Channel (3940 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 3



06:27:03 PM 07/26/2024

High Channel (3940 MHz) Antenna Port Conducted Emissions, Modulation: TM3.3, Antenna Port 4



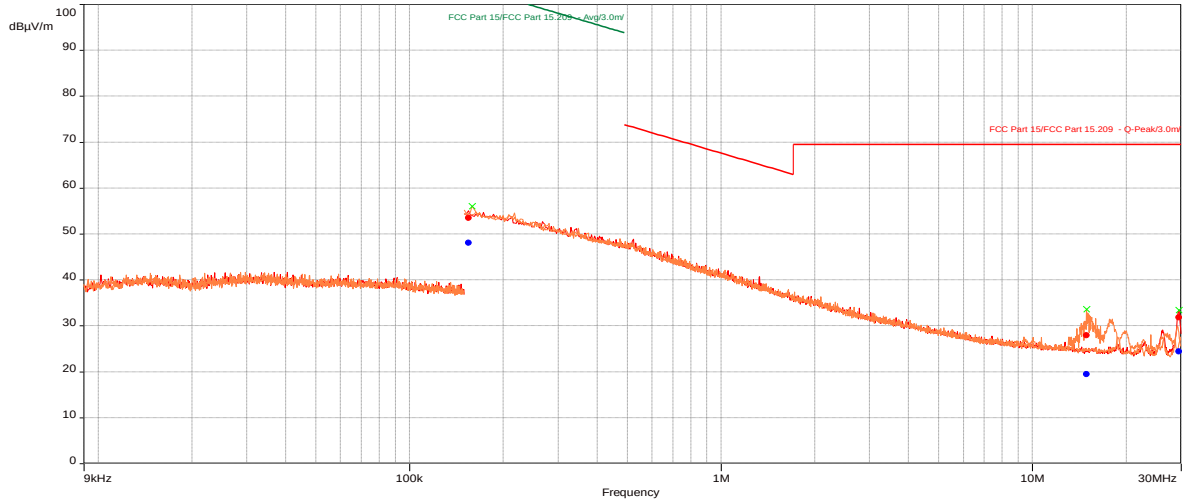
06:35:00 PM 07/26/2024

Low Channel (Worst-case Channel) Modulation: TM1.1 (Worst-case Modulation), 9 kHz-30 MHz

Test Information:

Date and Time	7/29/2024 3:33:48 PM
Client and Project Number	CommScope
Engineer	Kouma Sinn
Temperature	27 deg C
Humidity	48 %
Atmospheric Pressure	1006 mbars
Comments	Scan 4: TM1.1 (Worst-case Modulation), Transmit at Low, RE 9kHz-30MHz, 3m Location

Graph:



Results:

EIRP (PASS) (6)

Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit EIRP (dBm)	Margin EIRP (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Meas.Time	Correction (dB)
0.15421	53.50	-41.73	-13	-28.73	125.10	1	X-axis	9k	0.10	10.96
14.91406	27.92	-67.31	-13	-54.31	336.80	1	X-axis	9k	0.10	10.70
29.49257	31.82	-63.41	-13	-50.41	163.80	1	Z-axis	9k	0.10	8.56

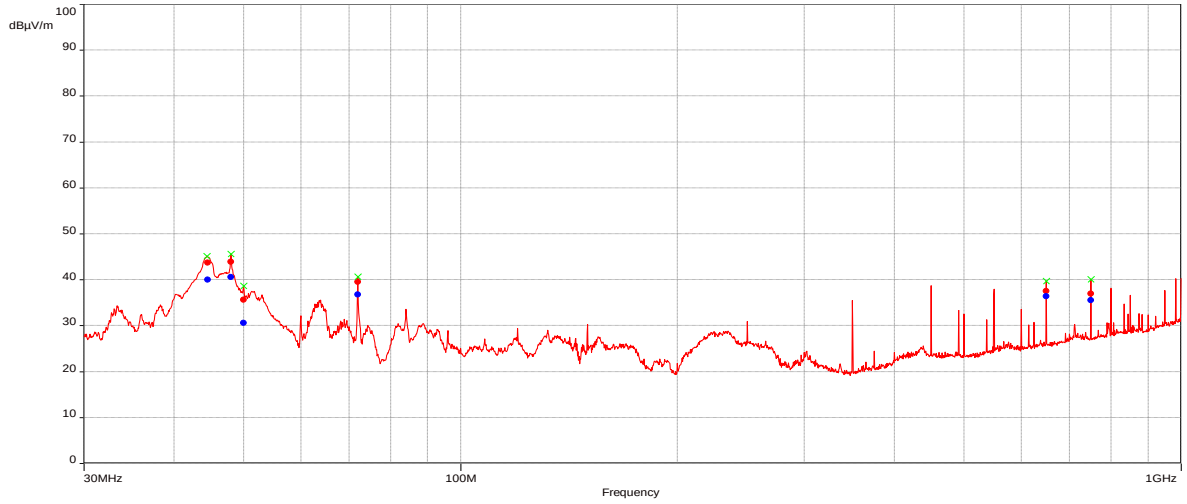
Notes: EIRP (dBm) = Level (dBuV/m) + 20*Log(test distance, 3m) – 104.77

Low Channel, Modulation: TM1.1 (Worst-case Modulation), 30-1000 MHz

Test Information:

Date and Time	7/29/2024 12:37:37 PM
Client and Project Number	CommScope
Engineer	Kouma Sinn
Temperature	27 deg C
Humidity	48 %
Atmospheric Pressure	1006 mbars
Comments	Scan 1: TM1.1 (Worst-case Modulation), Transmit at Low, RE 30-1000MHz

Graph:



Results:

EIRP (PASS) (6)

Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit EIRP (dBm)	Margin EIRP (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Meas.Time	Correction (dB)
44.5483	43.69	-41.08	-13	-28.08	266.90	4.00	Vertical	120k	0.10	-22.89
48.0134	43.93	-40.84	-13	-27.84	6.80	1.61	Vertical	120k	0.10	-24.76
50.0159	35.68	-49.09	-13	-36.09	39.10	3.10	Vertical	120k	0.10	-25.43
72.0105	39.50	-45.27	-13	-32.27	98.90	4.00	Vertical	120k	0.10	-25.09
649.9919	37.53	-47.24	-13	-34.24	158.50	4.00	Horizontal	120k	0.10	-10.81
749.9955	36.97	-47.80	-13	-34.80	223.00	3.89	Horizontal	120k	0.10	-9.19

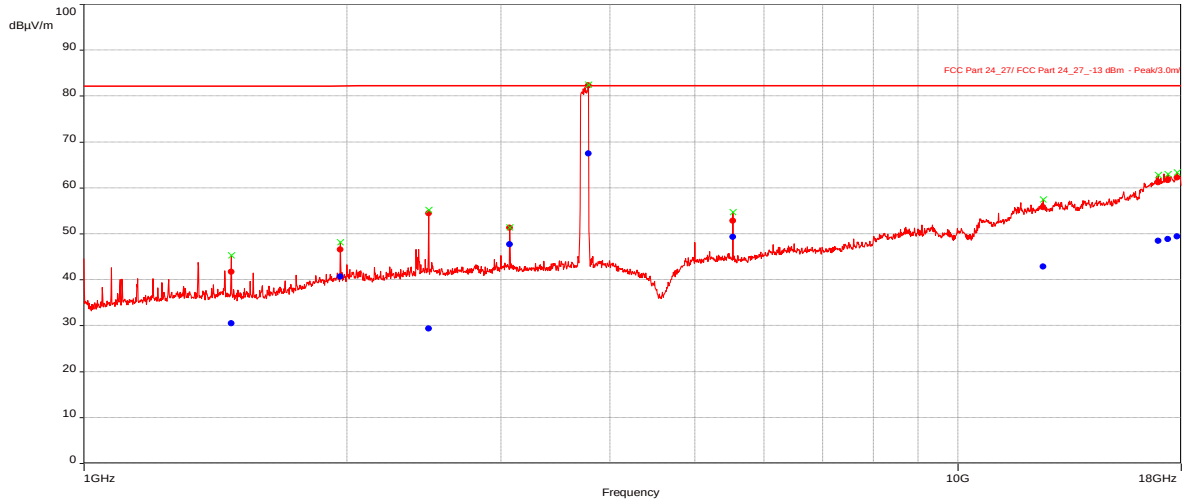
Notes: EIRP (dBm) = Level (dBuV/m) + 20*Log(test distance, 10m) – 104.77

Low Channel, Modulation: TM1.1 (Worst-case Modulation), 1-18 GHz

Test Information:

Date and Time	7/29/2024 4:34:42 PM
Client and Project Number	CommScope
Engineer	Vathana Ven
Temperature	27 deg C
Humidity	48 %
Atmospheric Pressure	1006 mbars
Comments	Scan 5: RE 1 to 18 GHz_TM1.1 (Worst-case Modulation), Transmit at Low CH

Graph:



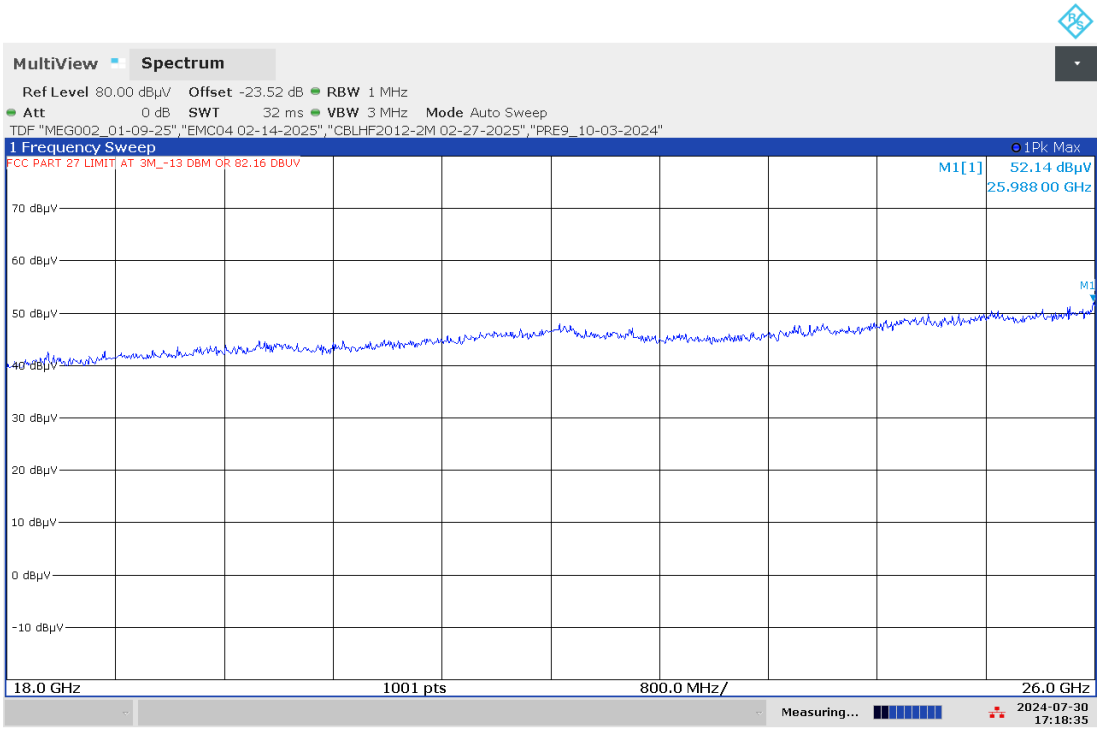
Results:

Peak (PASS) (10)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Meas.Time	Correction (dB)
1474.563	41.73	82.16	-40.43	300.00	1.00	Vertical	1M	0.00	-7.77
1966.099	46.62	82.16	-35.96	300.80	1.00	Vertical	1M	0.00	-4.02
2479.738	54.48	82.16	-27.68	300.70	1.00	Vertical	1M	0.00	-3.12
3072.012	51.36	82.16	-30.8	300.70	4.00	Vertical	1M	0.00	-1.82
3777.05	82.32	--	--	0.00	4.00	Vertical	1M	0.00	-1.08
5529.663	52.85	82.16	-29.31	300.70	1.00	Vertical	1M	0.00	2.63
12517.231	55.80	82.16	-26.36	0.00	4.00	Vertical	1M	0.00	14.00
16958.35	61.23	82.16	-20.93	0.00	1.00	Vertical	1M	0.00	21.68
17382.987	61.71	82.16	-20.45	300.90	4.00	Vertical	1M	0.00	22.09
17819.286	62.27	82.16	-19.89	0.00	1.00	Vertical	1M	0.00	22.63

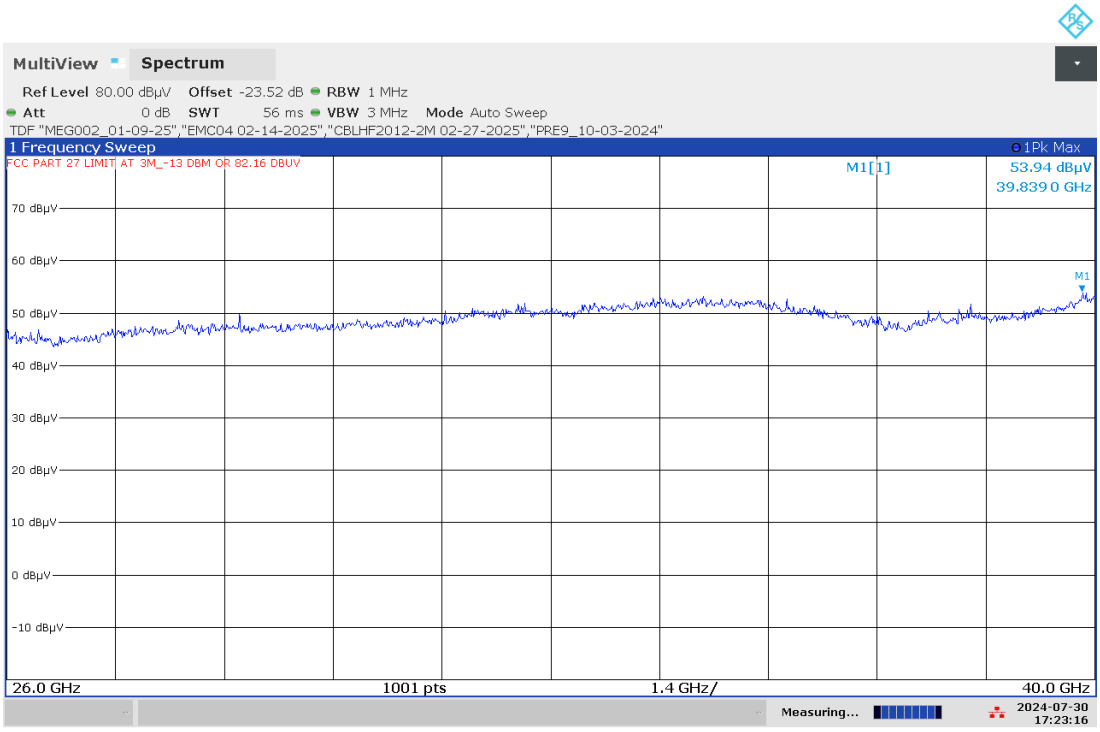
Notes: The -13 dBm limit was converted to field strength using path of 20*Log(test distance, 10m) – 104.77. The highest peak on the plot is the fundamental emission.

Low Channel, Modulation: TM1.1 (Worst-case Modulation), 18-26 GHz



05:18:35 PM 07/30/2024

Low Channel, Modulation: TM1.1 (Worst-case Modulation), 26-40 GHz



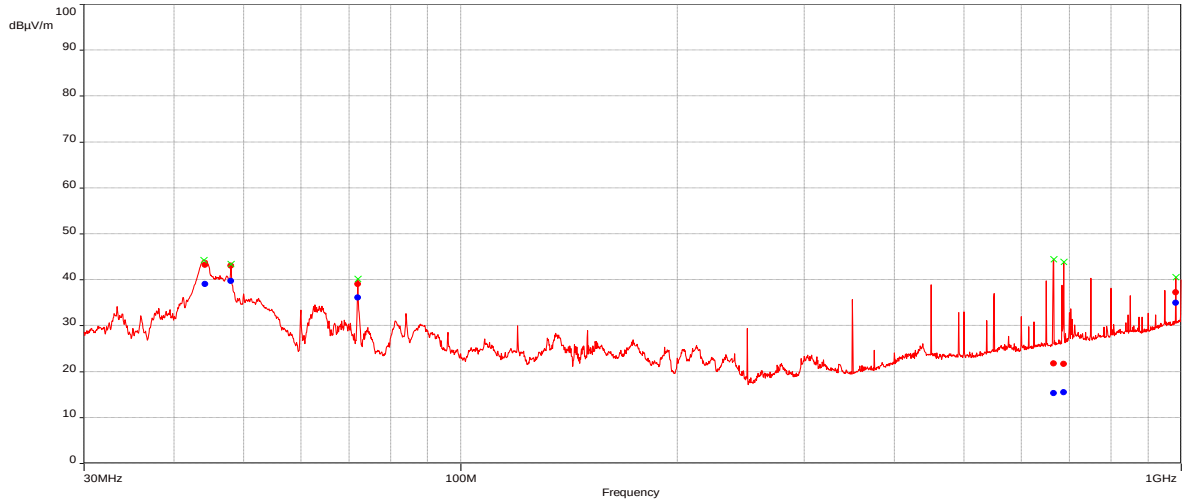
05:23:16 PM 07/30/2024

Mid Channel, Modulation: TM1.1 (Worst-case Modulation), 30-1000 MHz

Test Information:

Date and Time	7/29/2024 1:42:08 PM
Client and Project Number	CommScope
Engineer	Kouma Sinn
Temperature	27 deg C
Humidity	48 %
Atmospheric Pressure	1006 mbars
Comments	Scan 2: TM1.1 (Worst-case Modulation), Transmit at Mid, RE 30-1000MHz

Graph:



Results:

EIRP (PASS) (6)

Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit EIRP (dBm)	Margin EIRP (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Meas.Time	Correction (dB)
44.1941	43.26	-41.51	-13	-28.51	228.40	4.00	Vertical	120k	0.10	-22.65
47.9985	43.03	-41.74	-13	-28.74	0.00	1.00	Vertical	120k	0.10	-24.75
72.0089	39.08	-45.69	-13	-32.69	87.60	4.00	Vertical	120k	0.10	-25.09
665.3416	21.76	-63.01	-13	-50.01	206.90	1.47	Vertical	120k	0.10	-10.62
687.528	21.70	-63.07	-13	-50.07	71.60	4.00	Vertical	120k	0.10	-10.36
983.04	37.24	-47.53	-13	-34.53	93.00	4.00	Vertical	120k	0.10	-5.38

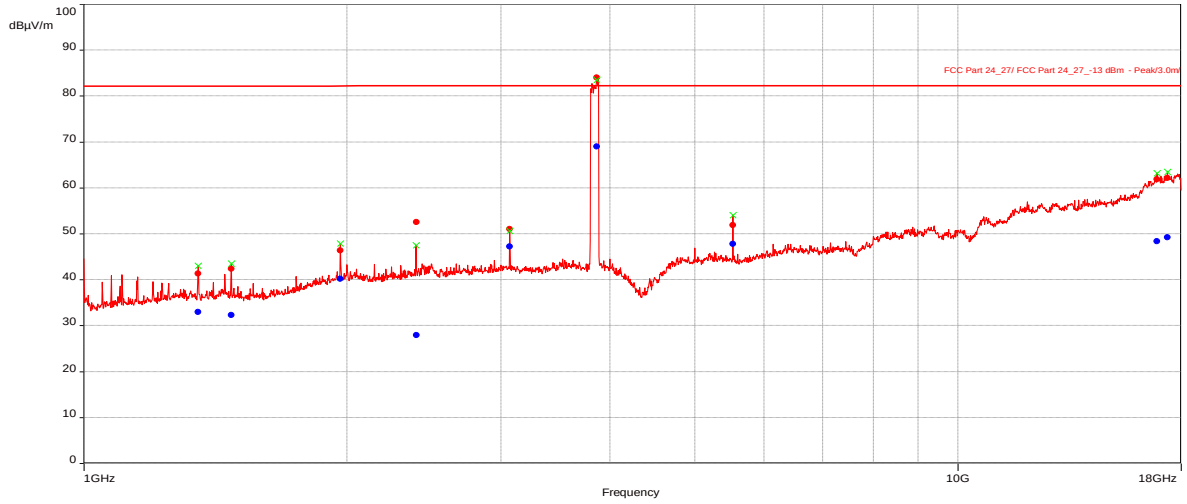
Notes: EIRP (dBm) = Level (dBuV/m) + 20*Log(test distance, 10m) – 104.77

Mid Channel, Modulation: TM1.1 (Worst-case Modulation), 1-18 GHz

Test Information:

Date and Time	7/29/2024 5:42:23 PM
Client and Project Number	CommScope
Engineer	Vathana Ven
Temperature	27 deg C
Humidity	48 %
Atmospheric Pressure	1006 mbars
Comments	Scan 6: RE 1 to 18 GHz_TM1.1 (Worst-case Modulation), transmit at Mid CH

Graph:



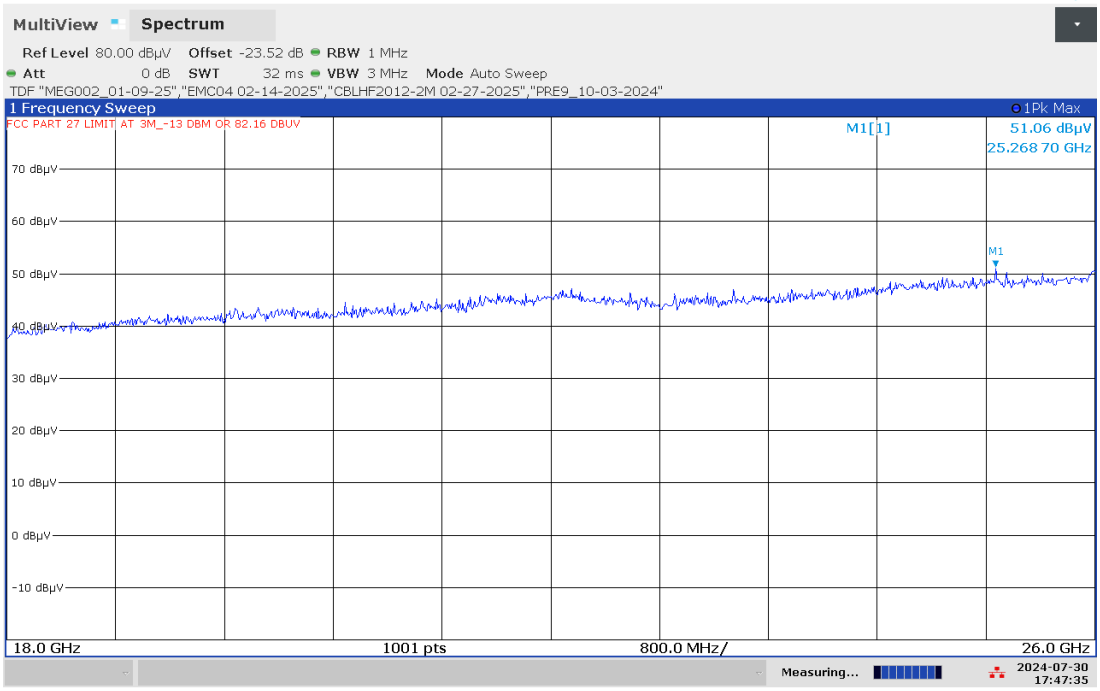
Results:

Peak (PASS) (9)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Meas.Time	Correction (dB)
1351.55	41.37	82.16	-40.79	299.80	1.00	Vertical	1M	0.00	-7.18
1474.625	42.43	82.16	-39.73	300.70	1.00	Vertical	1M	0.00	-7.77
1966.012	46.42	82.16	-35.74	300.80	1.00	Vertical	1M	0.00	-4.02
2401.745	52.54	82.16	-29.62	0.00	1.00	Vertical	1M	0.00	-3.57
3071.95	51.03	82.16	-31.13	300.60	4.00	Vertical	1M	0.00	-1.82
3860.468	84.01	--	--	360.00	1.00	Vertical	1M	0.00	-0.77
5529.612	51.95	82.16	-30.21	300.70	4.00	Vertical	1M	0.00	2.63
16890.897	61.92	82.16	-20.24	300.60	4.00	Vertical	1M	0.00	21.51
17374.416	62.14	82.16	-20.02	300.70	4.00	Horizontal	1M	0.00	22.09

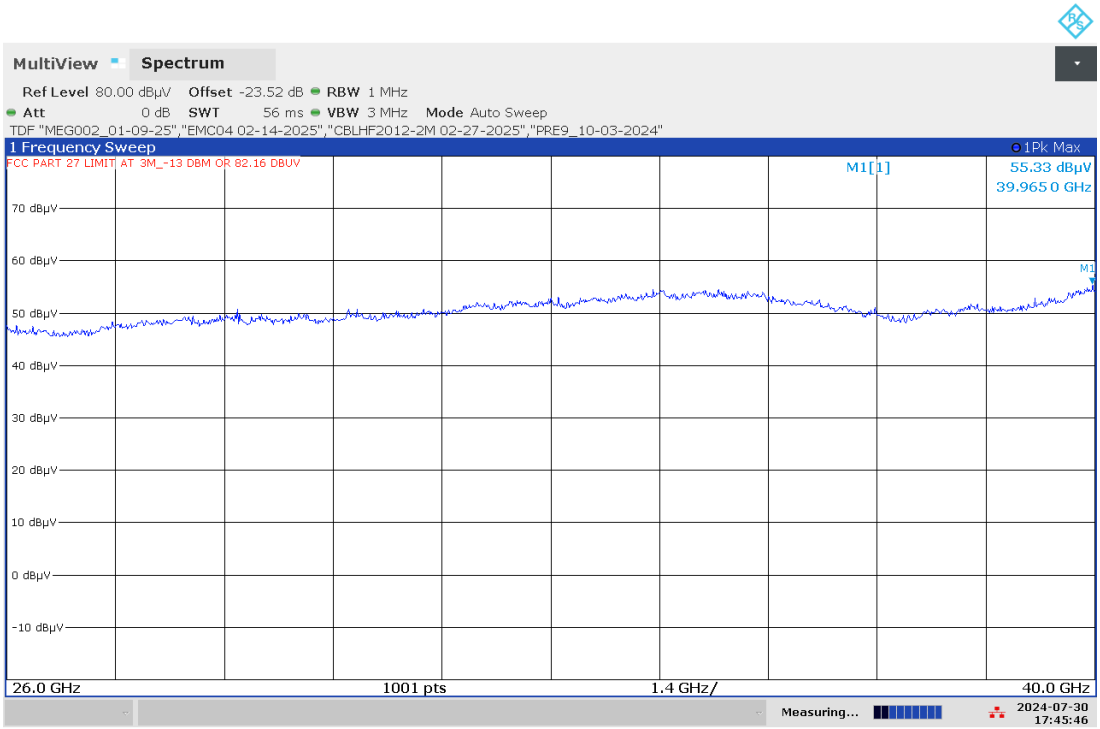
Notes: The -13 dBm limit was converted to field strength using path of 20*Log(test distance, 10m) – 104.77. The highest peak on the plot is the fundamental emission.

Mid Channel, Modulation: TM1.1 (Worst-case Modulation), 18-26 GHz



05:47:35 PM 07/30/2024

Mid Channel, Modulation: TM1.1 (Worst-case Modulation), 26-40 GHz



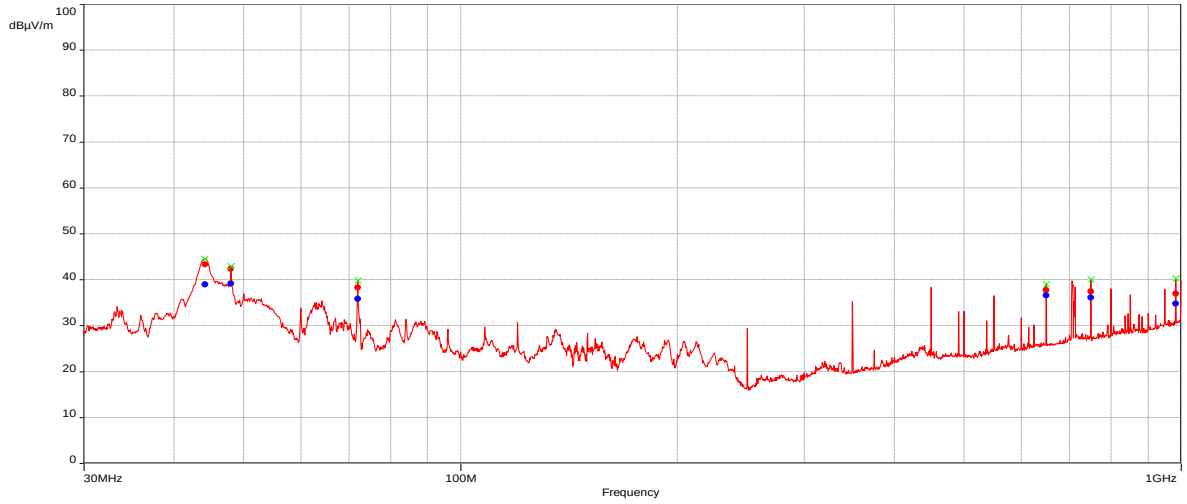
05:45:46 PM 07/30/2024

High Channel, Modulation: TM1.1 (Worst-case Modulation), 30-1000 MHz

Test Information:

Date and Time	7/29/2024 2:18:34 PM
Client and Project Number	CommScope
Engineer	Kouma Sinn
Temperature	27 deg C
Humidity	48 %
Atmospheric Pressure	1006 mbars
Comments	Scan 3: TM1.1 (Worst-case Modulation), Transmit at High, RE 30-1000MHz

Graph:



Results:

EIRP (PASS) (6)

Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit EIRP (dBm)	Margin EIRP (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Meas.Time	Correction (dB)
44.2213	43.32	-41.45	-13	-28.45	77.20	4.00	Vertical	120k	0.10	-22.67
47.997	42.45	-42.32	-13	-29.32	0.00	1.00	Vertical	120k	0.10	-24.75
72.0075	38.29	-46.48	-13	-33.48	12.30	4.00	Vertical	120k	0.10	-25.09
650.0039	37.76	-47.01	-13	-34.01	152.70	4.00	Horizontal	120k	0.10	-10.81
749.9985	37.49	-47.28	-13	-34.28	288.00	1.32	Horizontal	120k	0.10	-9.19
983.0475	36.96	-47.81	-13	-34.81	98.70	4.00	Vertical	120k	0.10	-5.38

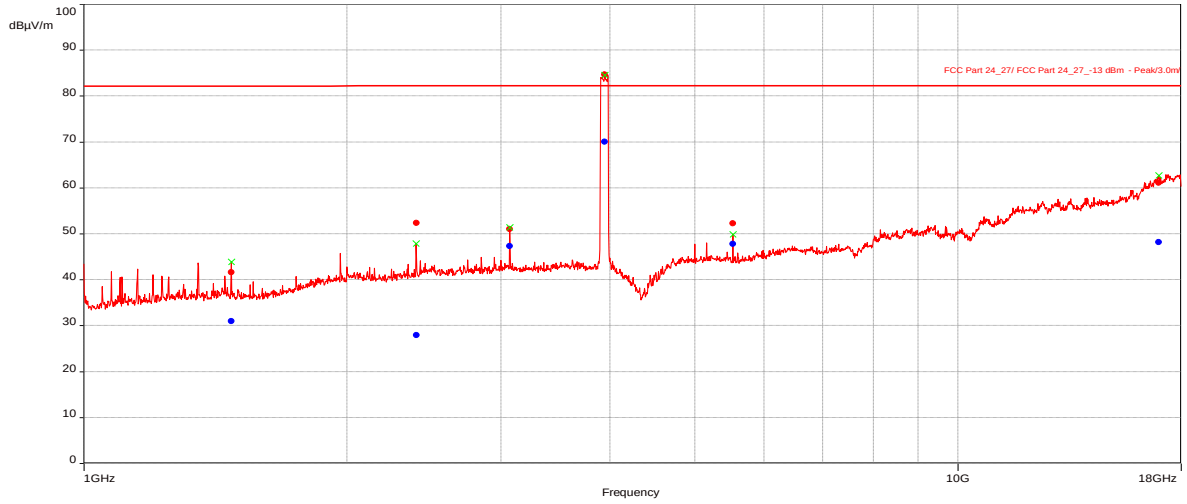
Notes: EIRP (dBm) = Level (dBuV/m) + 20*Log(test distance, 10m) – 104.77

High Channel, Modulation: TM1.1 (Worst-case Modulation), 1-18 GHz

Test Information:

Date and Time	7/29/2024 6:50:44 PM
Client and Project Number	CommScope
Engineer	Vathana Ven
Temperature	27 deg C
Humidity	48 %
Atmospheric Pressure	1006 mbars
Comments	Scan 7: RE 1 to 18 GHz_TM1.1 (Worst-case Modulation), High at Low CH

Graph:



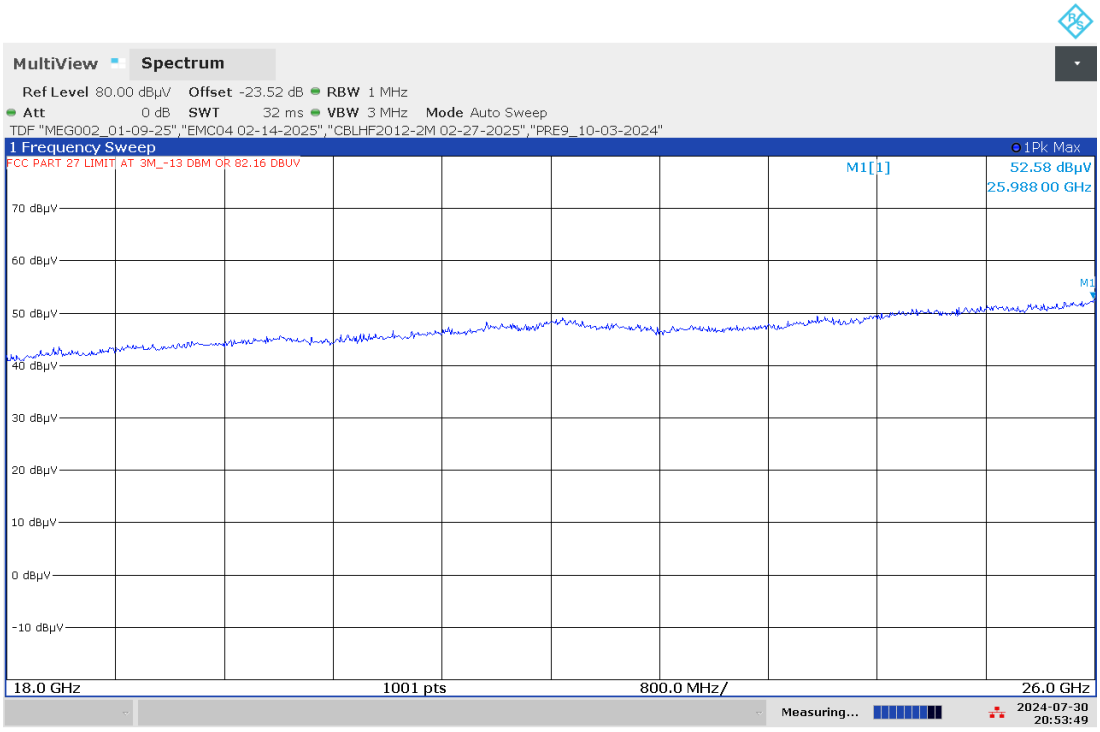
Results:

Peak (PASS) (6)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Meas.Time	Correction (dB)
1474.488	41.67	82.16	-40.49	299.70	1.00	Vertical	1M	0.00	-7.77
2402.194	52.40	82.16	-29.76	0.00	1.00	Vertical	1M	0.00	-3.56
3071.925	51.06	82.16	-31.1	300.60	4.00	Vertical	1M	0.00	-1.82
3944.637	84.66	--	--	0.00	1.00	Vertical	1M	0.00	-0.78
5529.699	52.27	82.16	-29.89	300.60	4.00	Vertical	1M	0.00	2.63
16978.561	61.14	82.16	-21.02	0.00	4.00	Vertical	1M	0.00	21.75

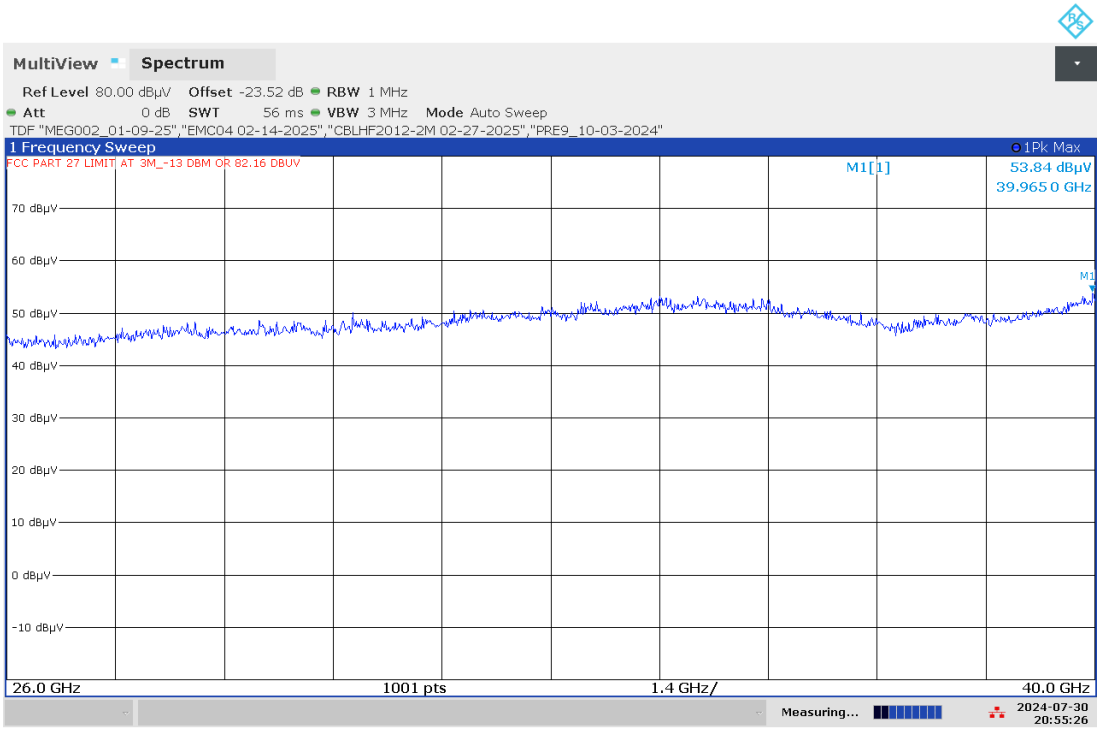
Notes: The -13 dBm limit was converted to field strength using path of 20*Log(test distance, 10m) – 104.77. The highest peak on the plot is the fundamental emission.

High Channel, Modulation: TM1.1 (Worst-case Modulation), 18-26 GHz



08:53:49 PM 07/30/2024

High Channel, Modulation: TM1.1 (Worst-case Modulation), 26-40 GHz



08:55:26 PM 07/30/2024

Product Standard: FCC Title 47 CFR Part 27				Limit applied: See Report Section 10.2			
Test Date	Test Personnel/ Initials	Supervising Engineer/ Initials	Input Voltage	Mode	Atmospheric Data		
					Temp C°	Relative Humidity %	Atmospheric Pressure mbar
07/25/2024	Vathana F. Ven VFV	N/A	POE	Continuous Transmitting	21	49	1005
07/26/2024	Kouma Sinn KPS	N//A	POE	Continuous Transmitting	23	46	1006
07/29/2024 (1st shift)	Kouma Sinn KPS	N//A	POE	Continuous Transmitting	23	46	1006
07/29/2024 (2nd shift)	Vathana F. Ven VFV	N//A	POE	Continuous Transmitting	27	48	1006

Deviations, Additions, or Exclusions: None

11 Frequency Stability

11.1 Method

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

TEST SITE: Safety Lab

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

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
AC Line Conducted Emissions	150 kHz - 30 MHz	2.8 dB	3.4 dB
Telco Port Emissions	150 kHz - 30 MHz	4.1 dB	5.0 dB
AC Line Conducted Emissions	9 kHz - 150 MHz	2.4 dB	3.4 dB

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

Sample Calculations

The following is how net line-conducted readings were determined:

NF = RF + LF + CF + AF
Where NF = Net Reading in dBμV
RF = Reading from receiver in dBμV
LF = LISN or ISN Correction Factor in dB
CF = Cable Correction Factor in dB
AF = Attenuator Loss Factor in dB

To convert from dBμV to μV or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μV
NF = Net Reading in dBμV

Example:
NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 dBμV
$UF = 10^{(49.1\ dB\mu V / 20)}$ = 285.1 μV/m

When BAT-EMC Emission Software is used, the “Level” includes all losses and gains and is compared directly in the “Margin” column to the “Limit”. The “Correction” includes LISN Factor, Attenuator, and Cable Loss. These are already accounted for in the “Level” column.

11.2 Limits:

FCC Title 47 Part 27.54 Frequency stability. The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

11.3 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV009'	weather station	Davis Instruments	6351 Vantage VUE	DAV009	04/05/2024	04/05/2025
ROS005-1'	Signal and Spectrum Analyzer	Rohde and Shwartz	FSW43	100646	11/22/2023	11/22/2024
CBLHF2012-5M-2'	5m 9kHz-40GHz Coaxial Cable - SET2	Huber & Suhner	SF102	252676002	02/27/2024	02/27/2025
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	02/28/2024	02/28/2025
SAF1637'	Enviromental chamber	Russell Tech	GD-16-3-3-AC	07235255	08/25/2023	08/25/2024

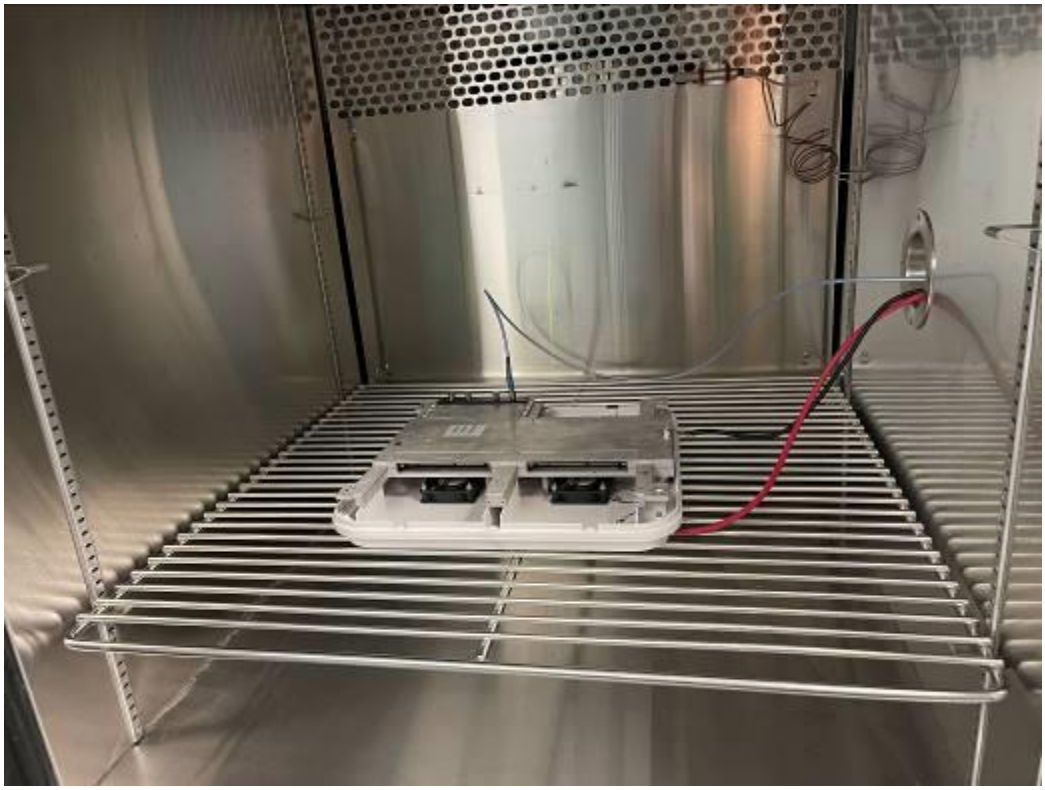
Software Utilized:

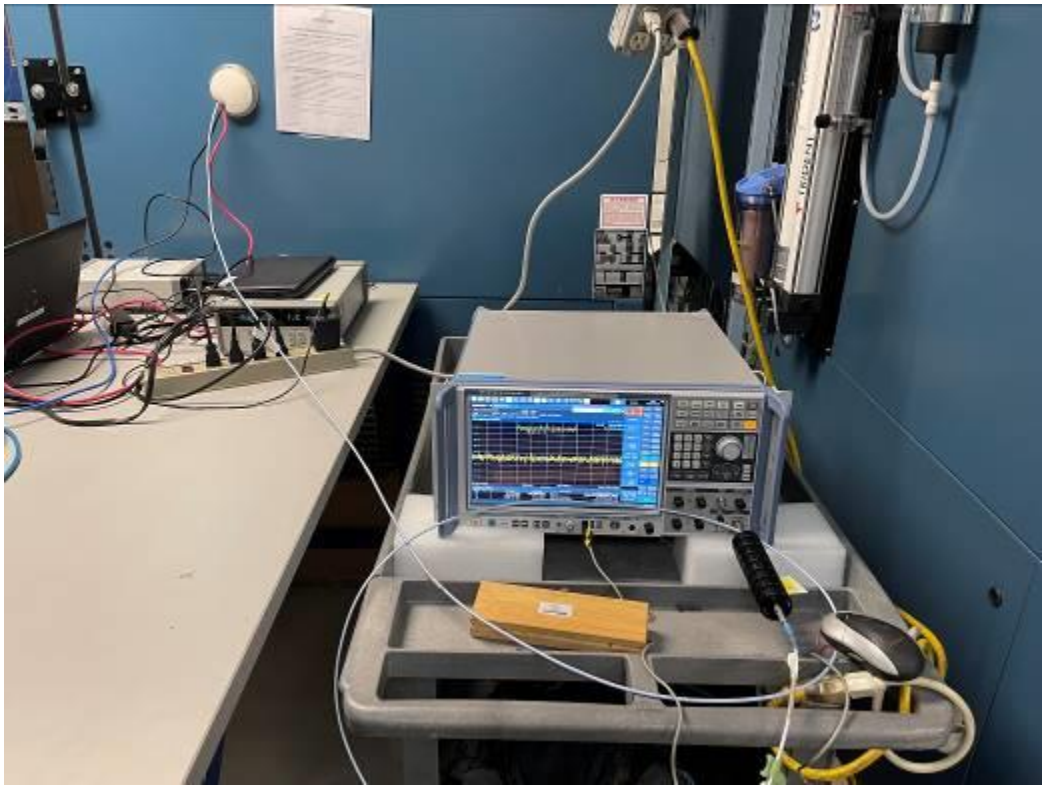
Name	Manufacturer	Version
None	N/A	N/A

11.4 Results:

The sample tested was found to Comply.

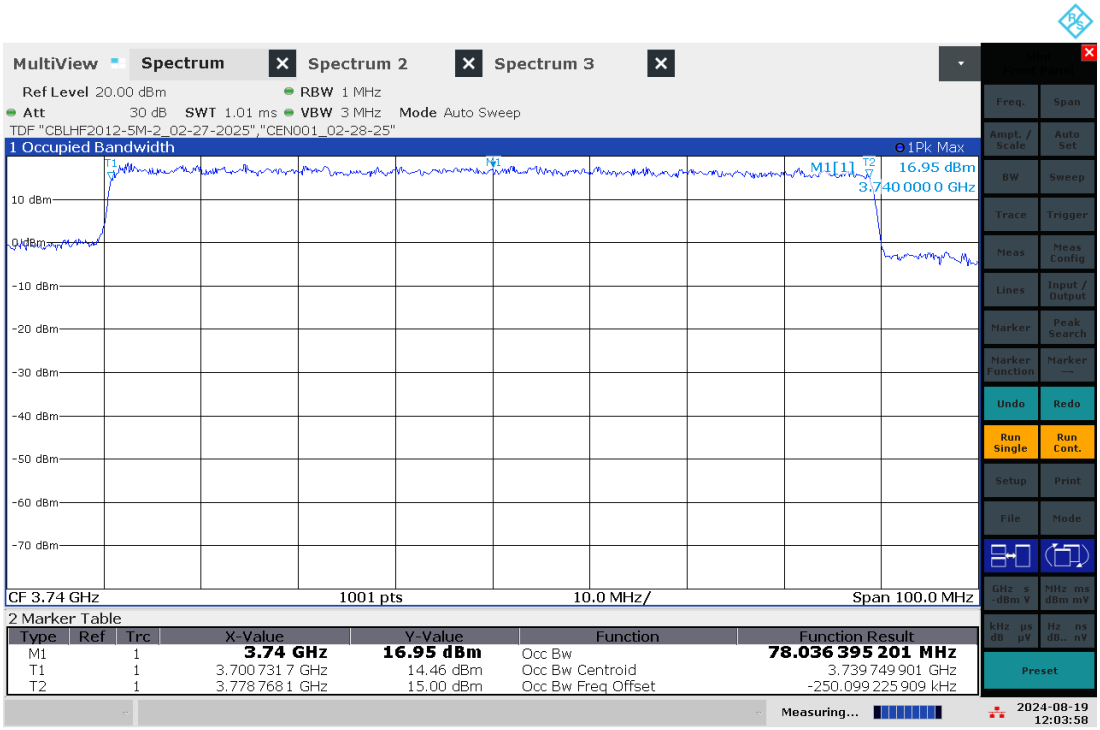
11.5 Setup Photographs:





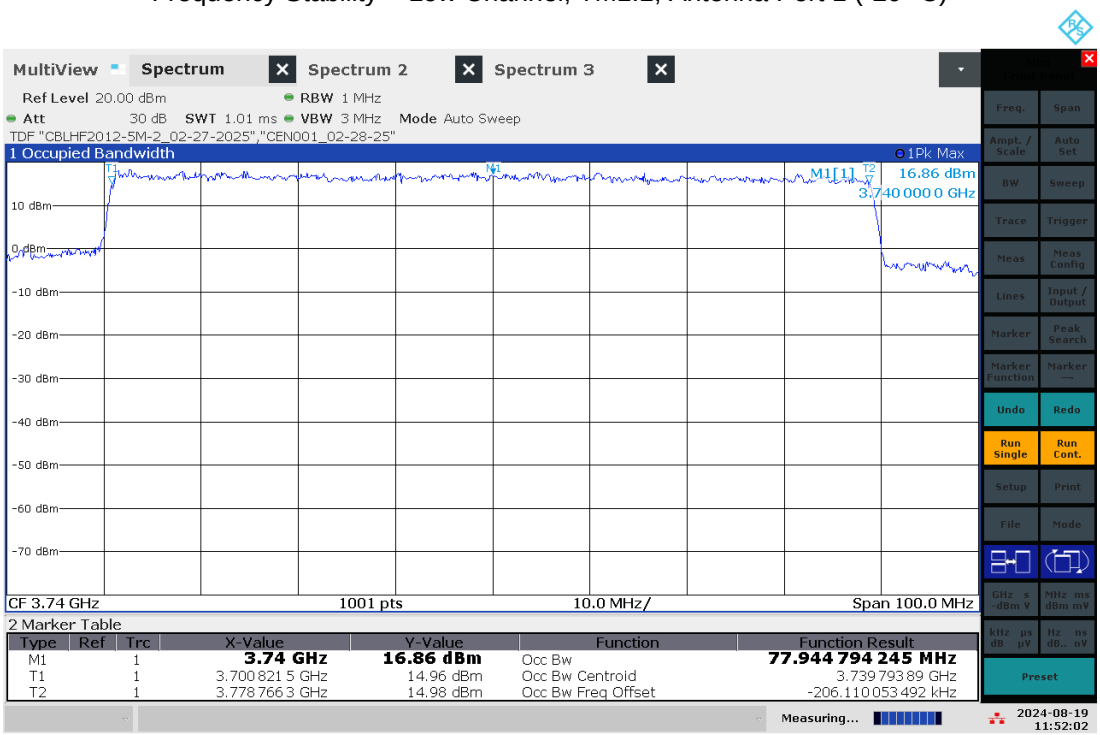
11.6 Plots/Data:

Frequency Stability – Low Channel, TM1.1, Antenna Port 1 (-30 °C)



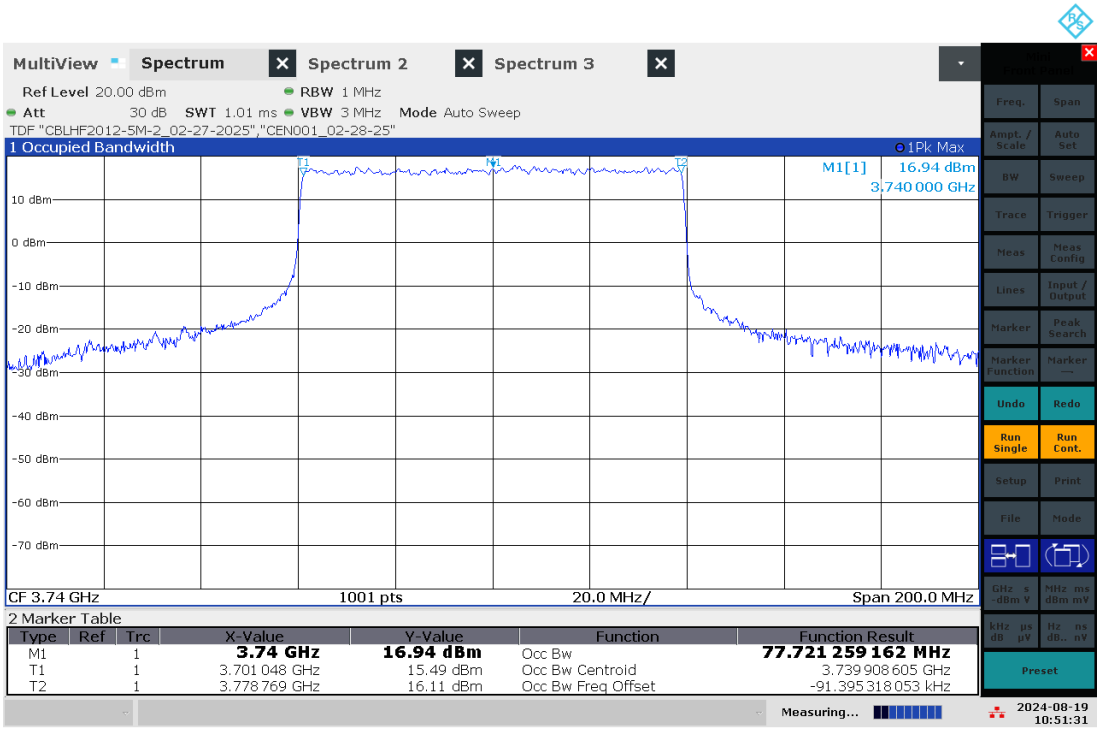
12:03:58 PM 08/19/2024

Frequency Stability – Low Channel, TM1.1, Antenna Port 1 (-20 °C)



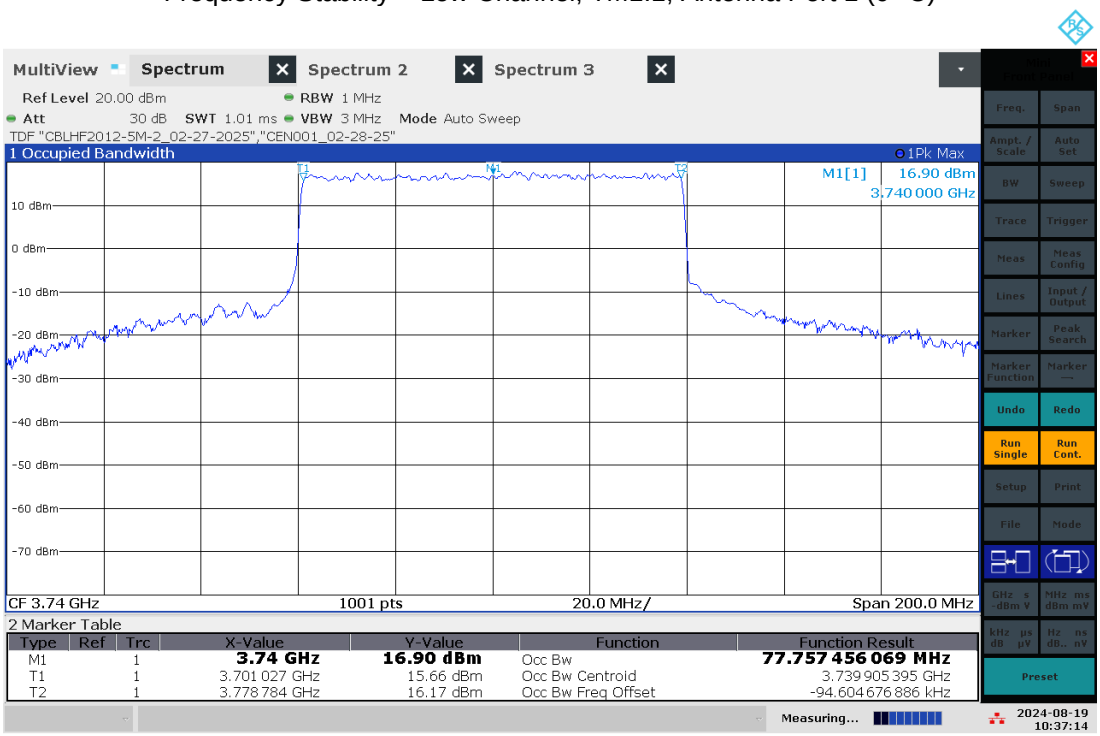
11:52:02 AM 08/19/2024

Frequency Stability – Low Channel, TM1.1, Antenna Port 1 (-10 °C)



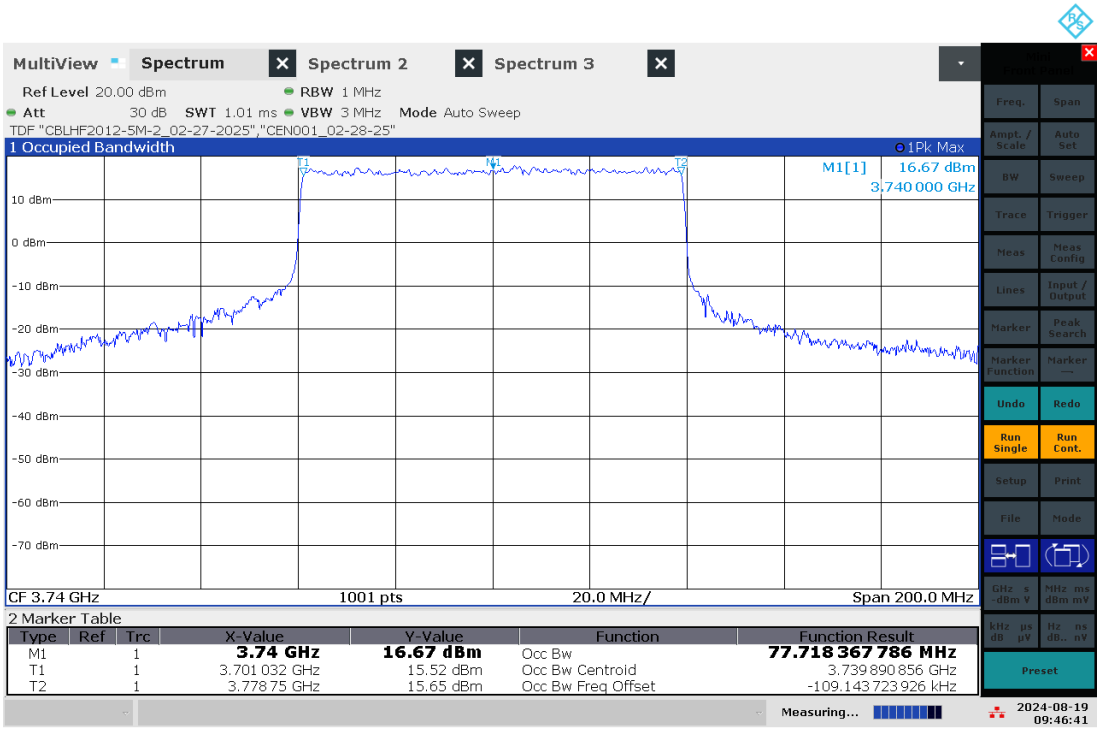
10:51:31 AM 08/19/2024

Frequency Stability – Low Channel, TM1.1, Antenna Port 1 (0 °C)



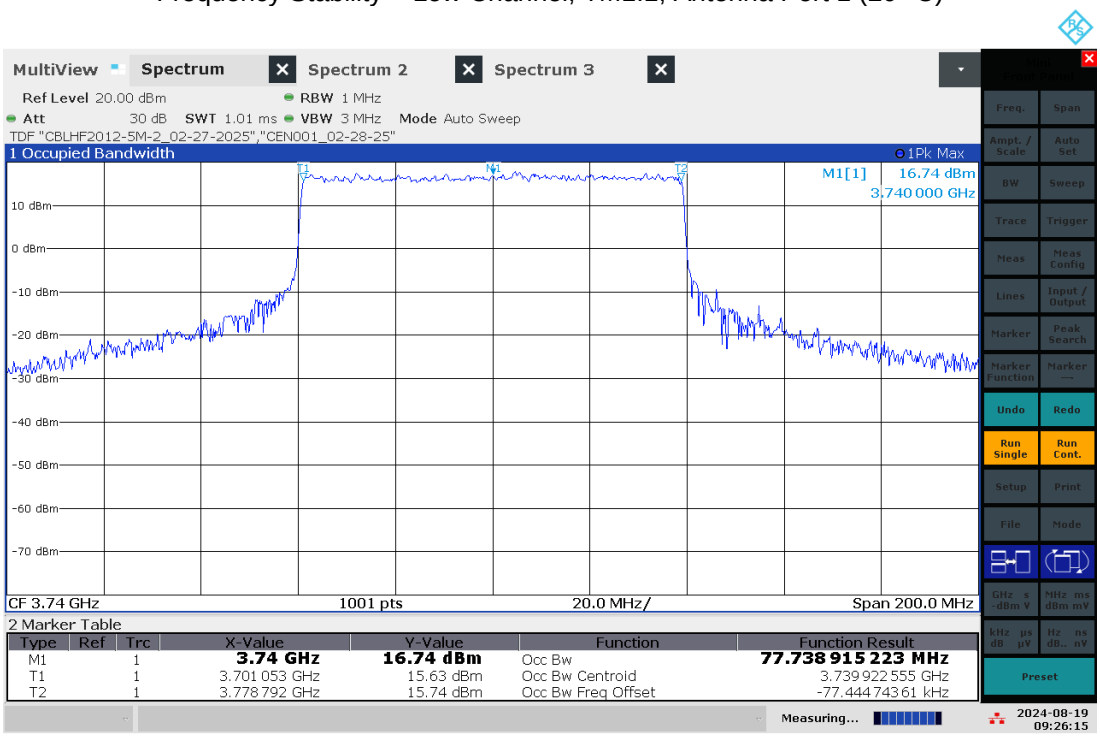
10:37:15 AM 08/19/2024

Frequency Stability – Low Channel, TM1.1, Antenna Port 1 (10 °C)



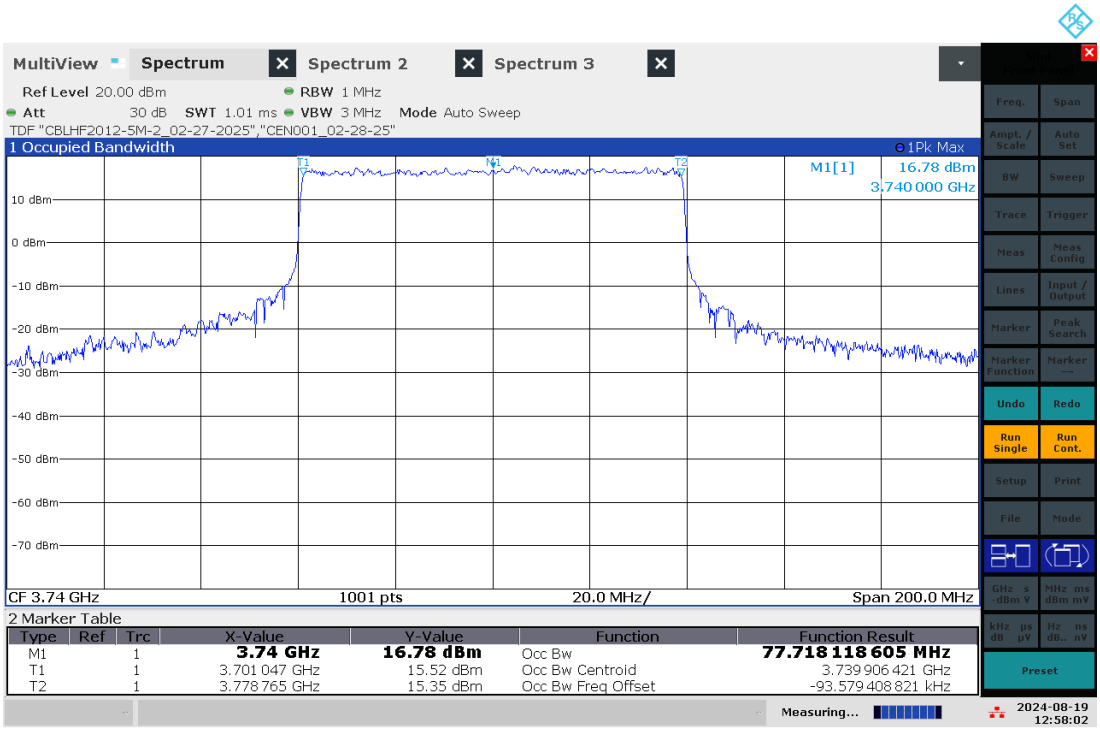
09:46:41 AM 08/19/2024

Frequency Stability – Low Channel, TM1.1, Antenna Port 1 (20 °C)



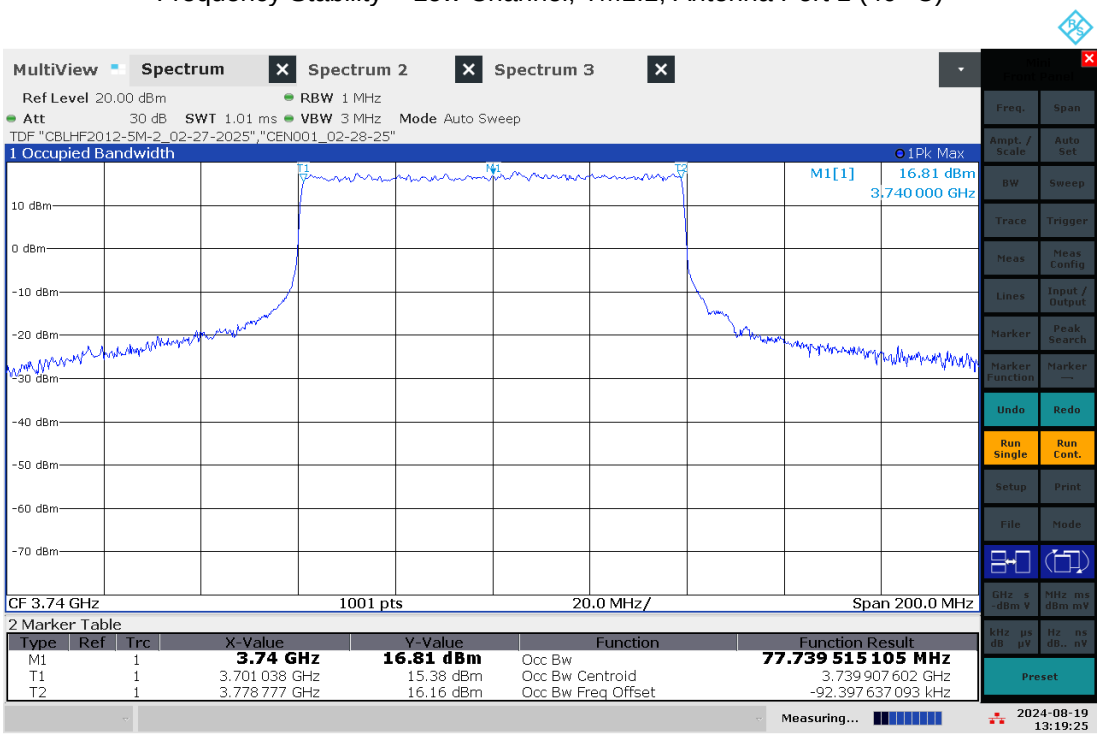
09:26:15 AM 08/19/2024

Frequency Stability – Low Channel, TM1.1, Antenna Port 1 (30 °C)



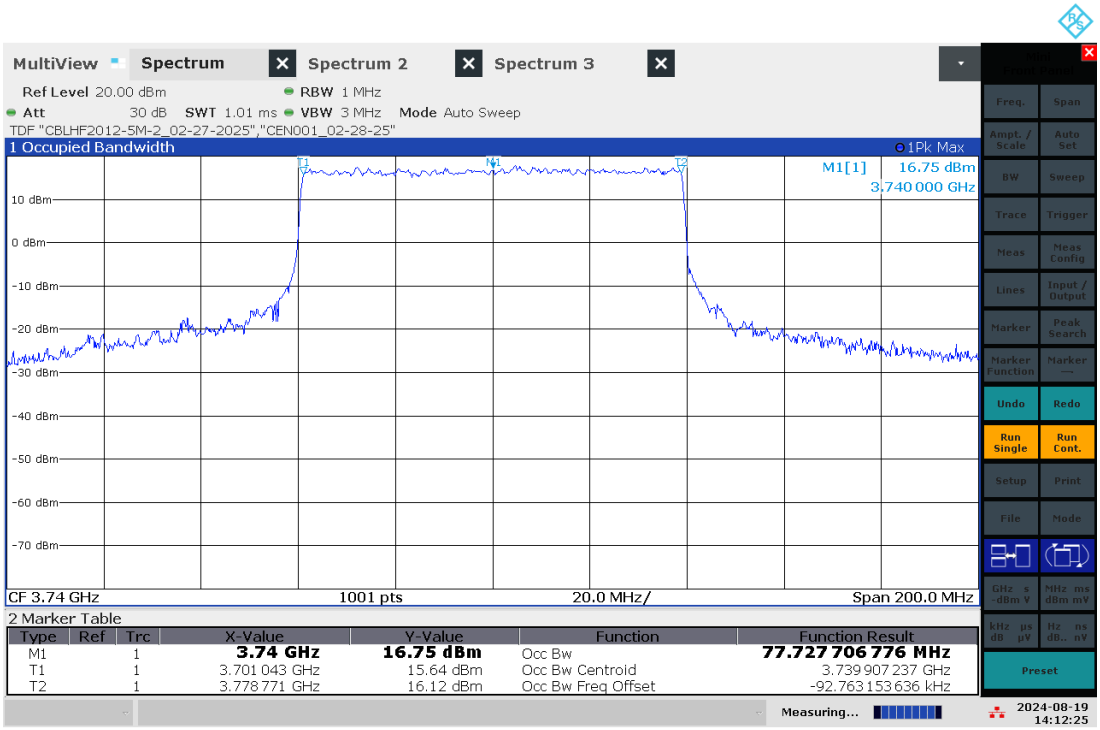
12:58:02 PM 08/19/2024

Frequency Stability – Low Channel, TM1.1, Antenna Port 1 (40 °C)



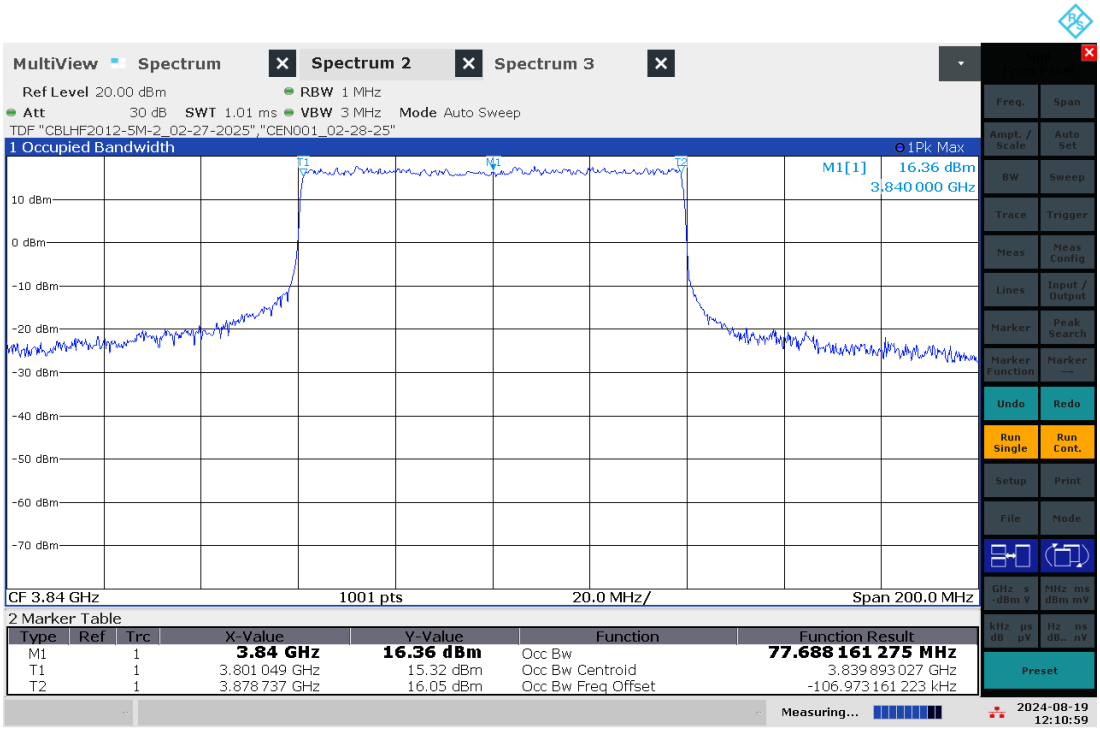
01:19:25 PM 08/19/2024

Frequency Stability – Low Channel, TM1.1, Antenna Port 1 (50 °C)



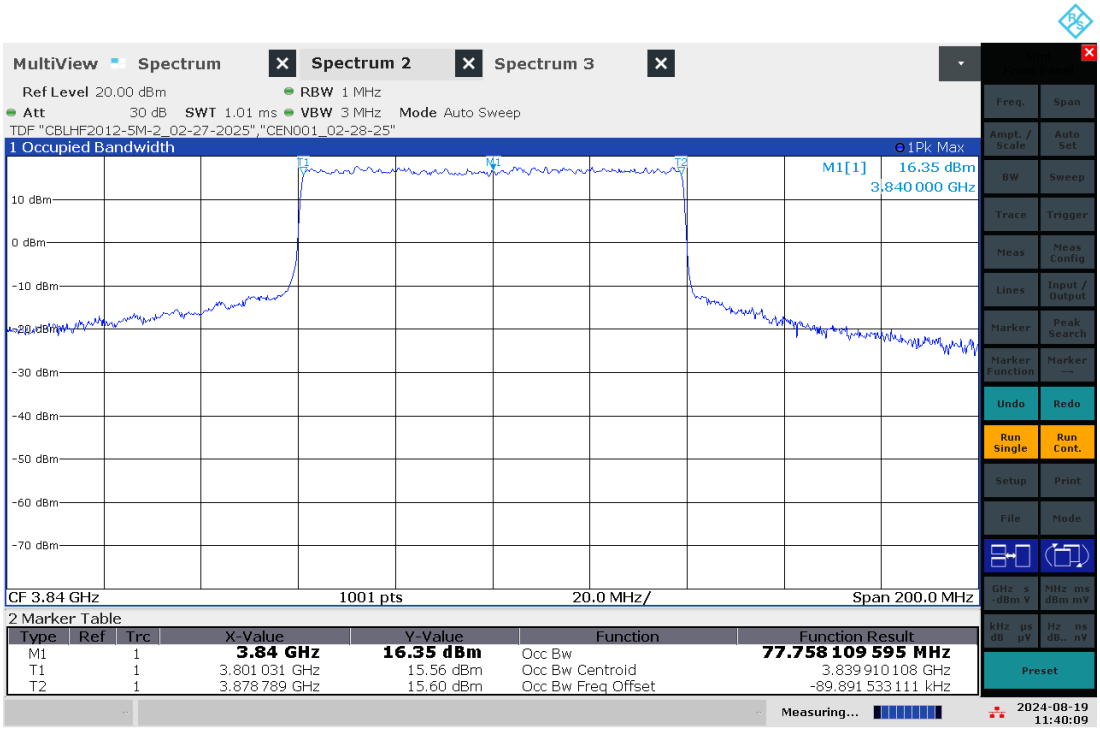
02:12:25 PM 08/19/2024

Frequency Stability – Mid Channel, TM1.1, Antenna Port 1 (-30 °C)



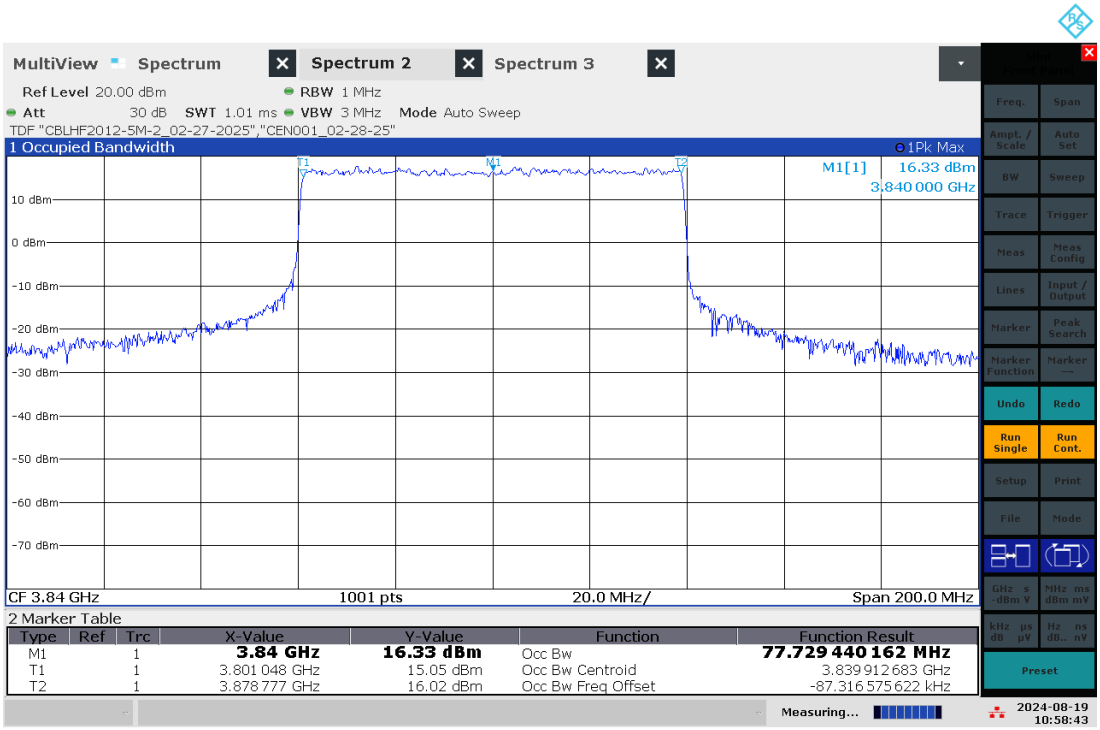
12:10:59 PM 08/19/2024

Frequency Stability – Mid Channel, TM1.1, Antenna Port 1 (-20 °C)



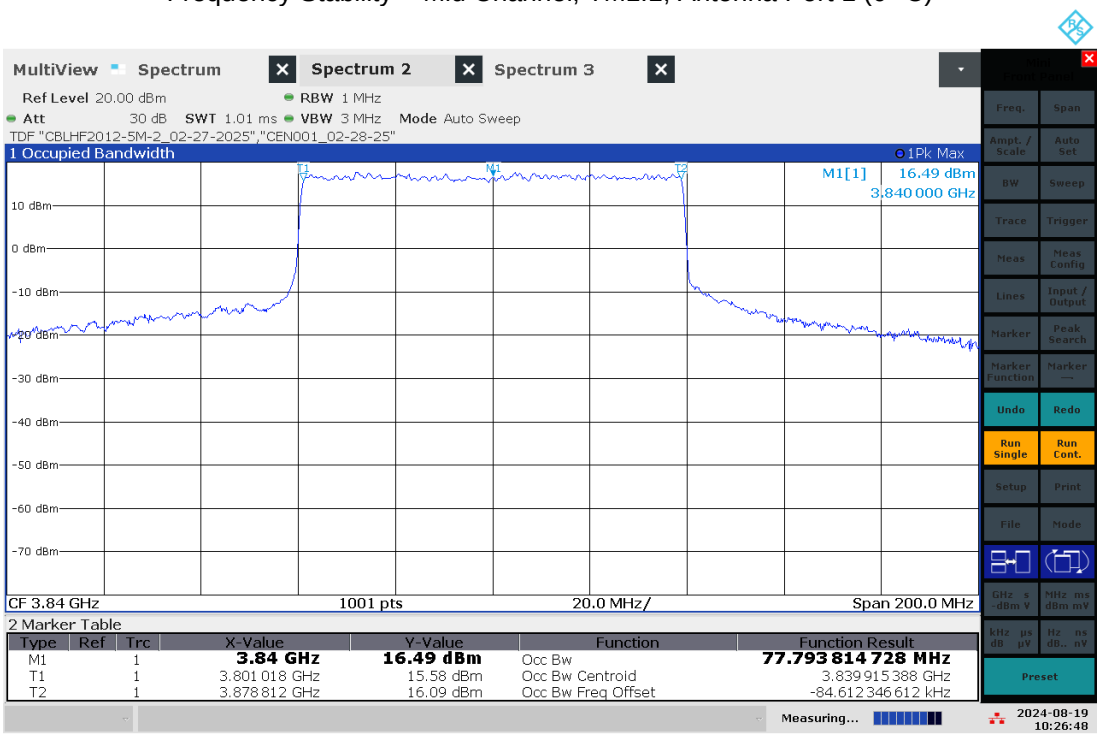
11:40:10 AM 08/19/2024

Frequency Stability – Mid Channel, TM1.1, Antenna Port 1 (-10 °C)



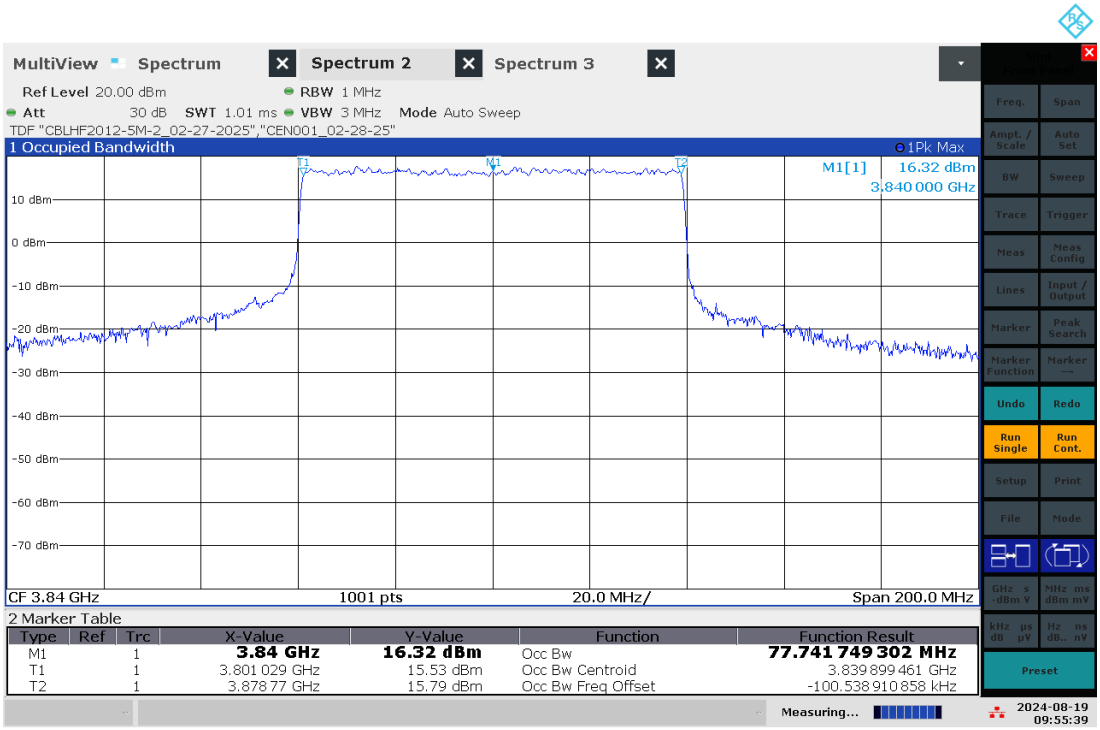
10:58:43 AM 08/19/2024

Frequency Stability – Mid Channel, TM1.1, Antenna Port 1 (0 °C)



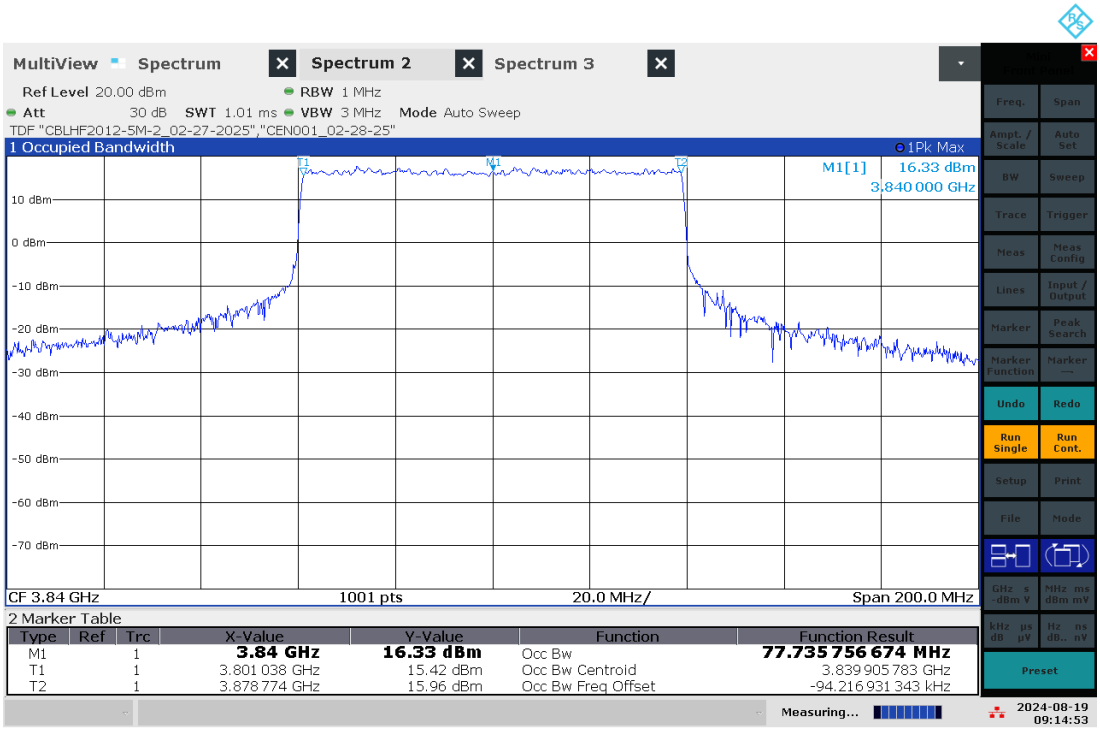
10:26:49 AM 08/19/2024

Frequency Stability – Mid Channel, TM1.1, Antenna Port 1 (10 °C)



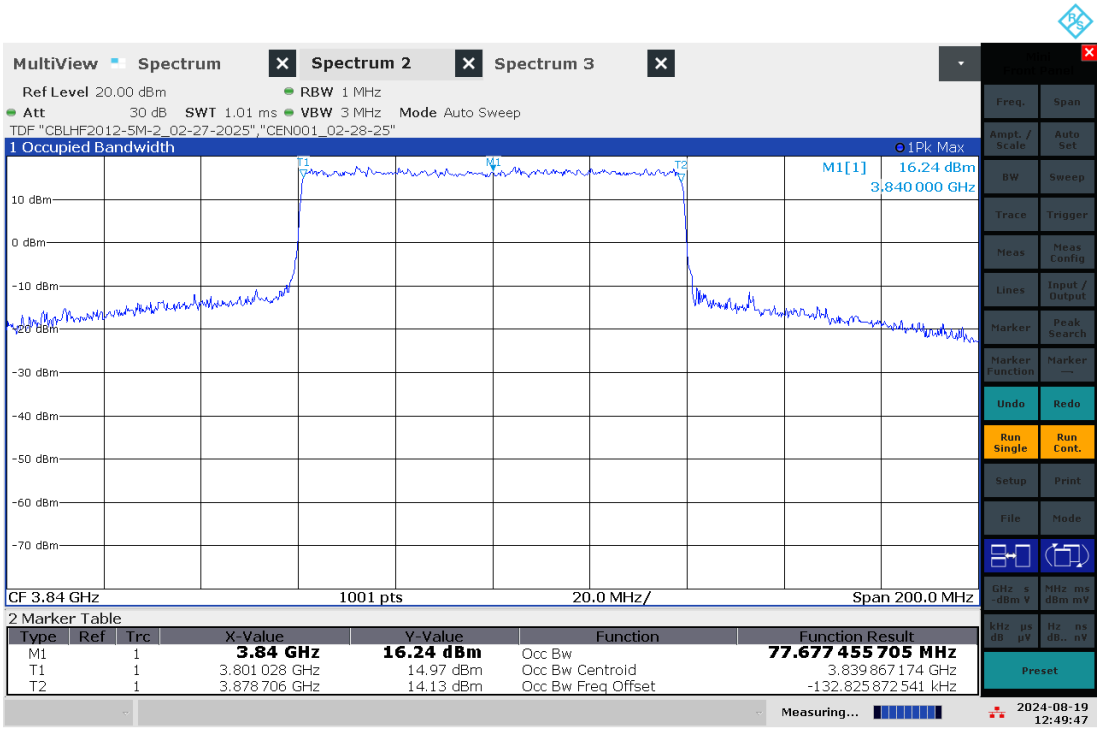
09:55:39 AM 08/19/2024

Frequency Stability – Mid Channel, TM1.1, Antenna Port 1 (20 °C)



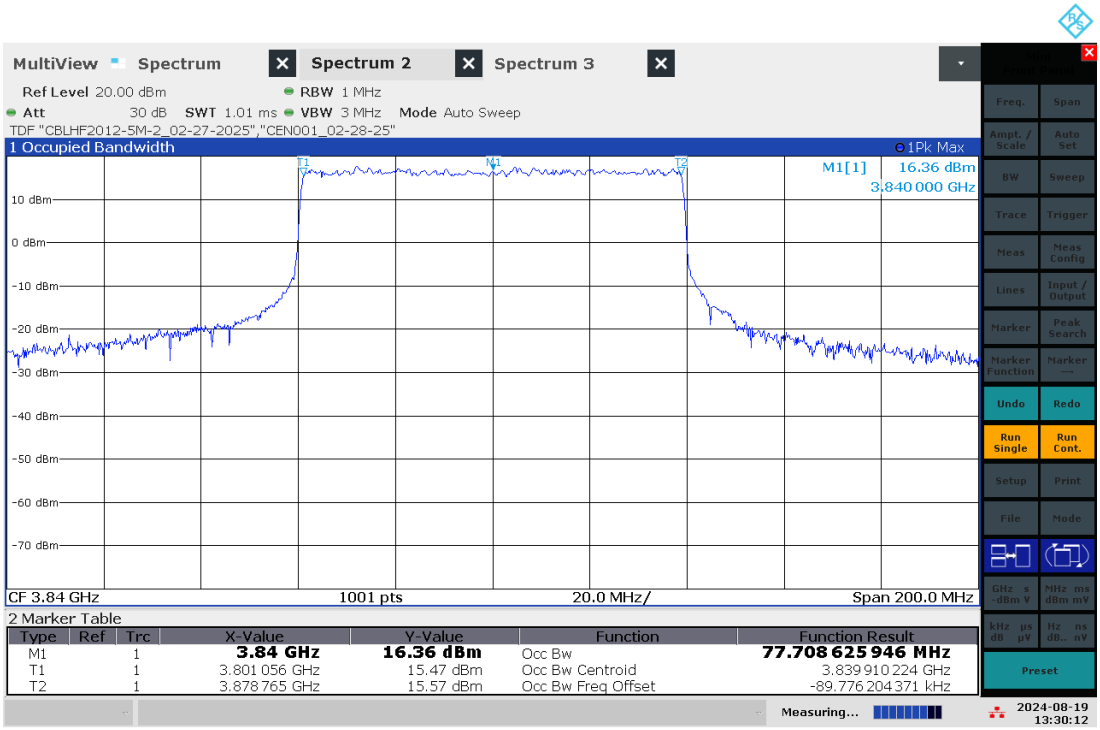
09:14:53 AM 08/19/2024

Frequency Stability – Mid Channel, TM1.1, Antenna Port 1 (30 °C)



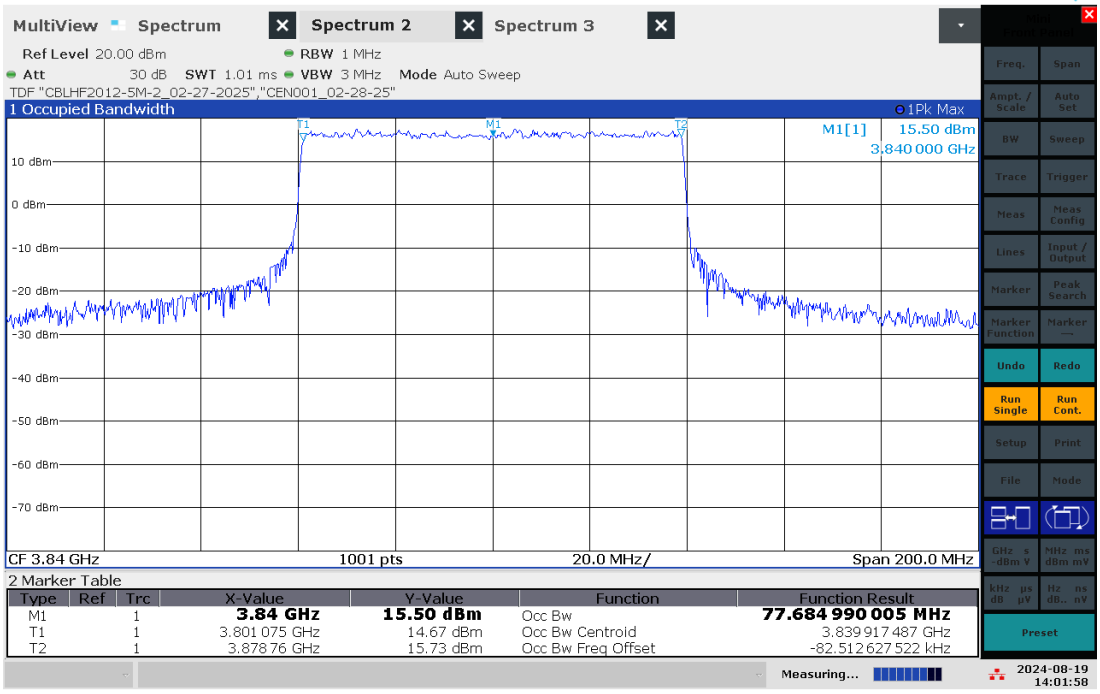
12:49:47 PM 08/19/2024

Frequency Stability – Mid Channel, TM1.1, Antenna Port 1 (40 °C)



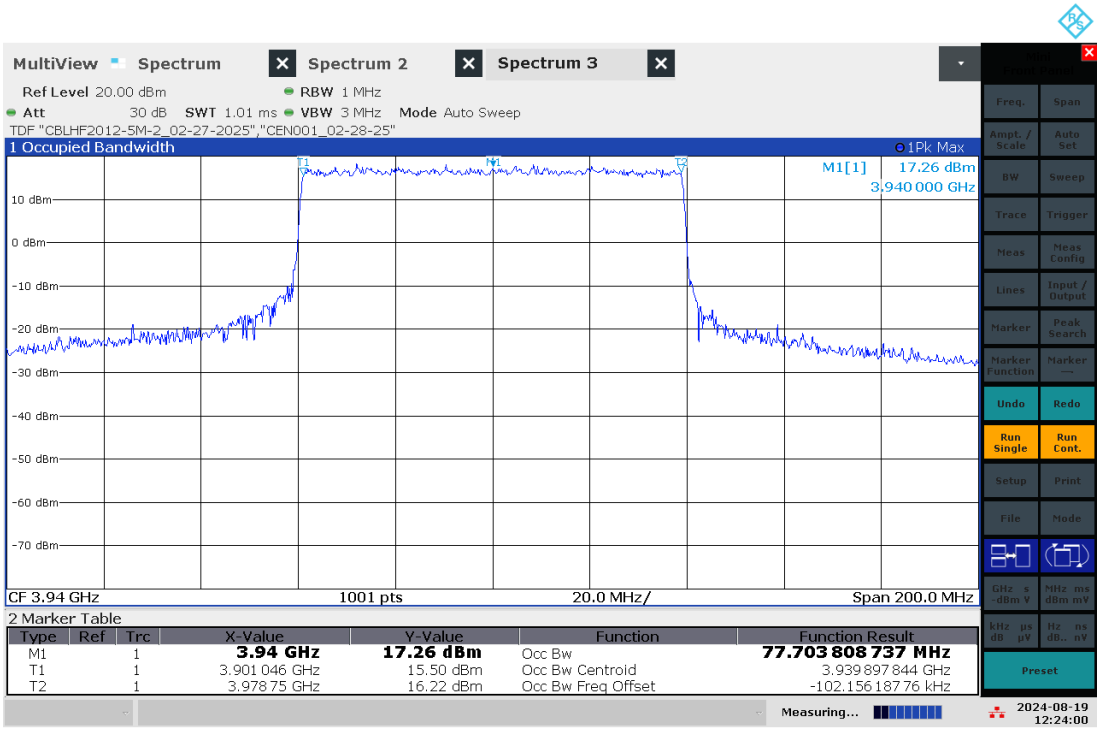
01:30:12 PM 08/19/2024

Frequency Stability – Mid Channel, TM1.1, Antenna Port 1 (50 °C)



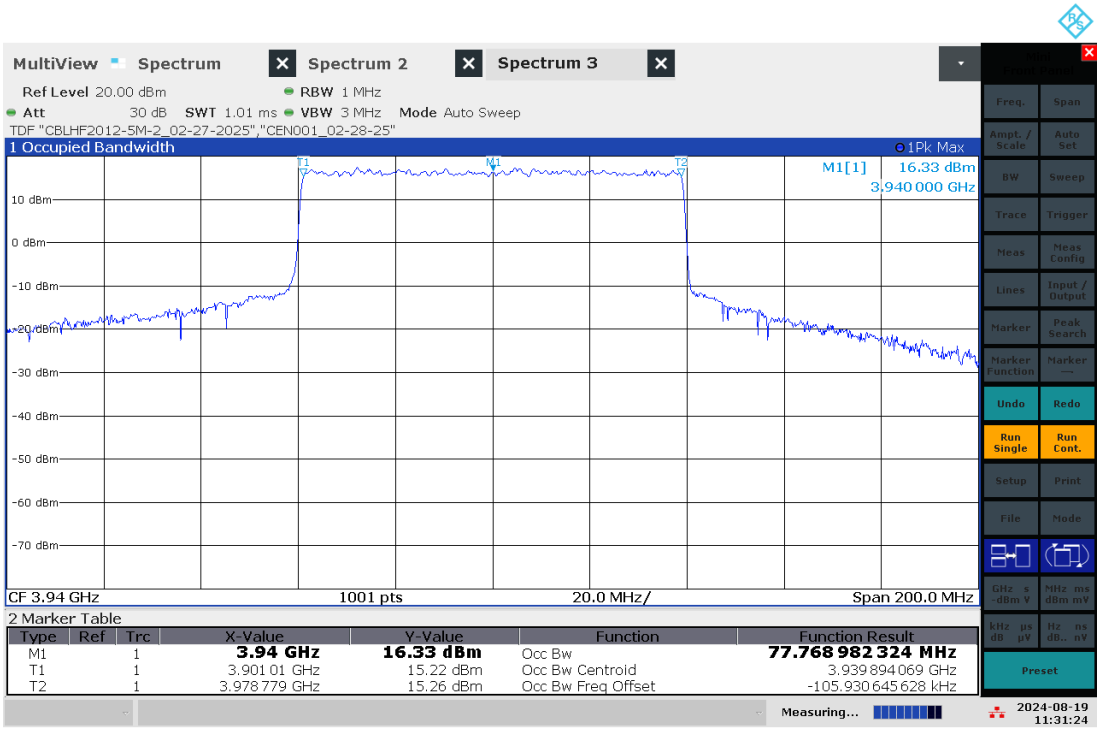
02:01:58 PM 08/19/2024

Frequency Stability – High Channel, TM1.1, Antenna Port 1 (-30 °C)



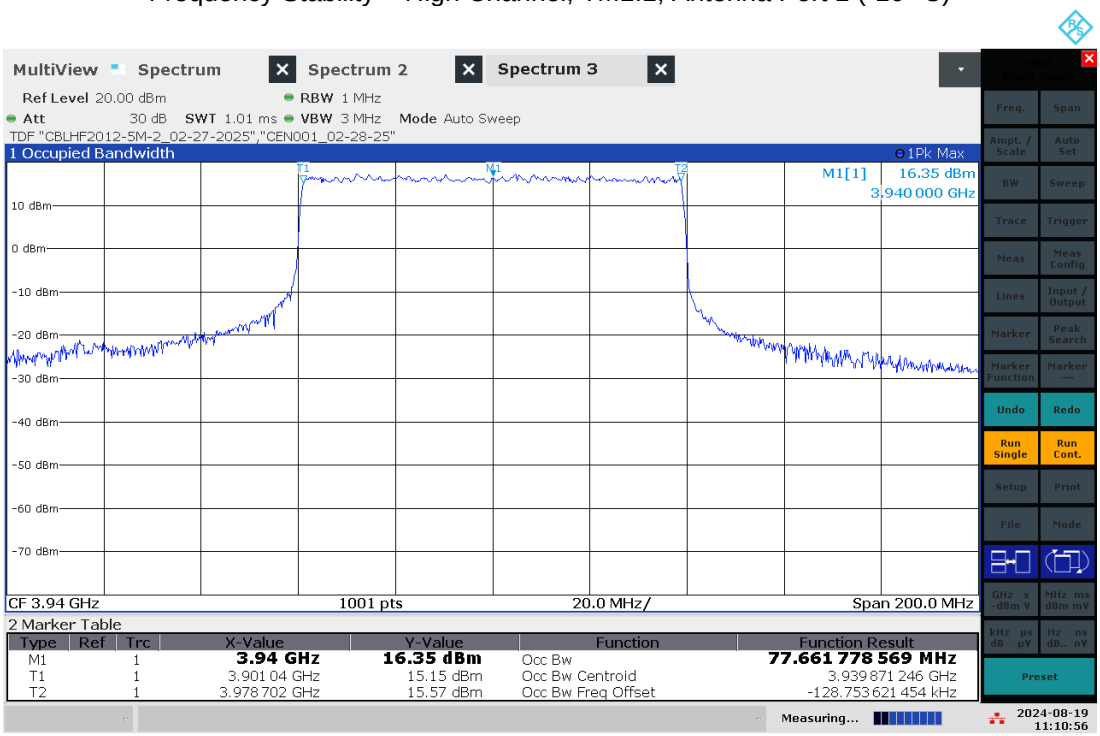
12:24:00 PM 08/19/2024

Frequency Stability – High Channel, TM1.1, Antenna Port 1 (-20 °C)



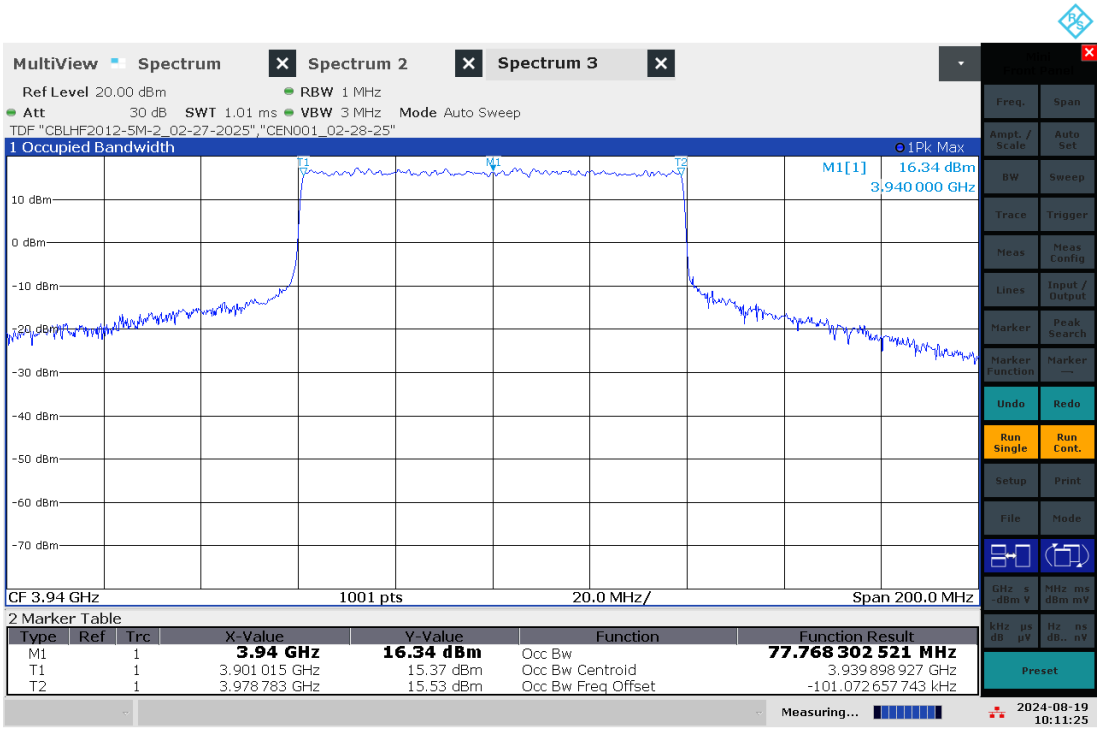
11:31:24 AM 08/19/2024

Frequency Stability – High Channel, TM1.1, Antenna Port 1 (-10 °C)



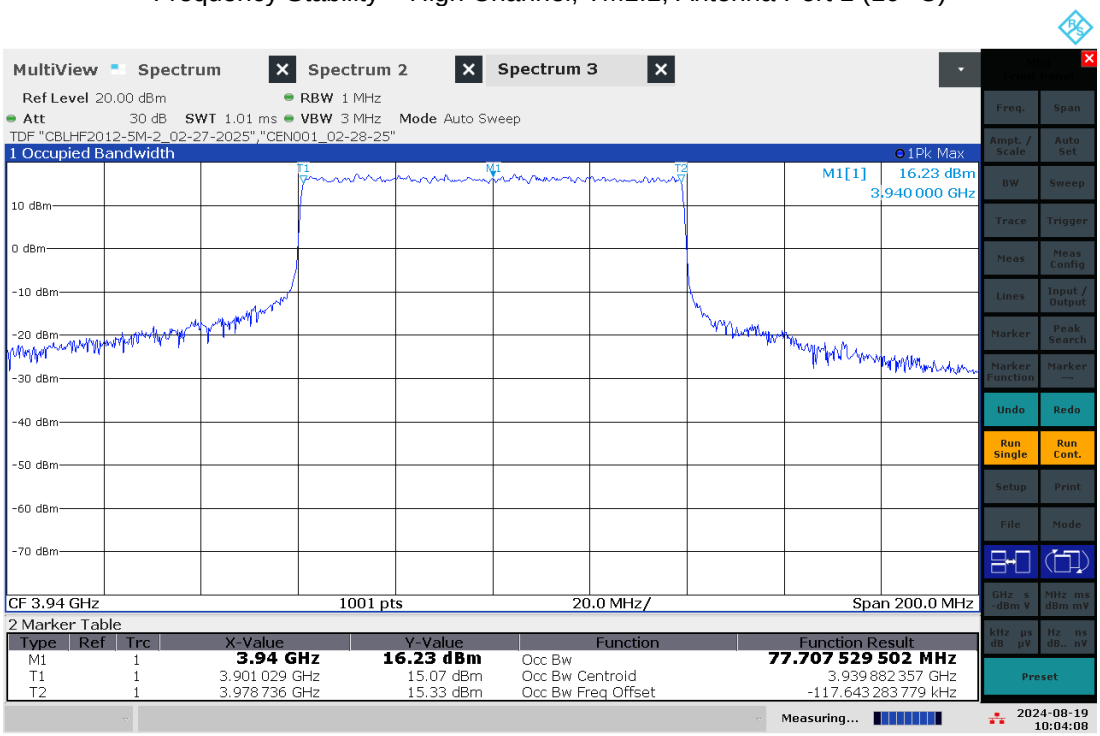
11:10:56 AM 08/19/2024

Frequency Stability – High Channel, TM1.1, Antenna Port 1 (0 °C)



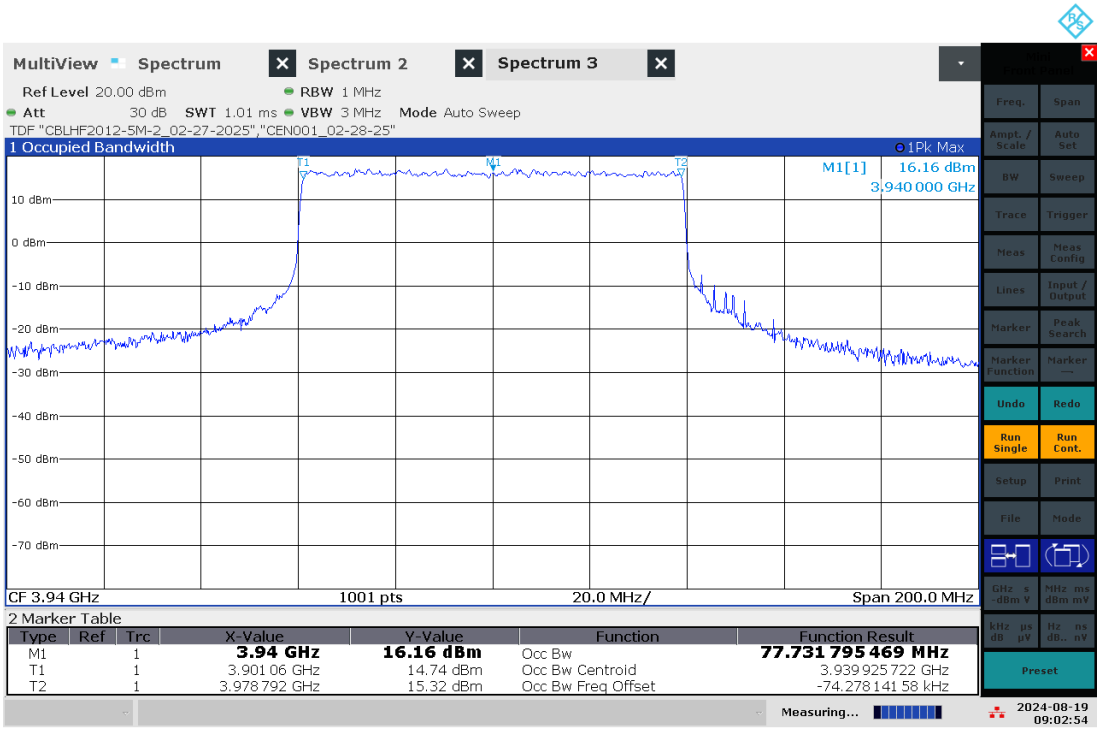
10:11:25 AM 08/19/2024

Frequency Stability – High Channel, TM1.1, Antenna Port 1 (10 °C)



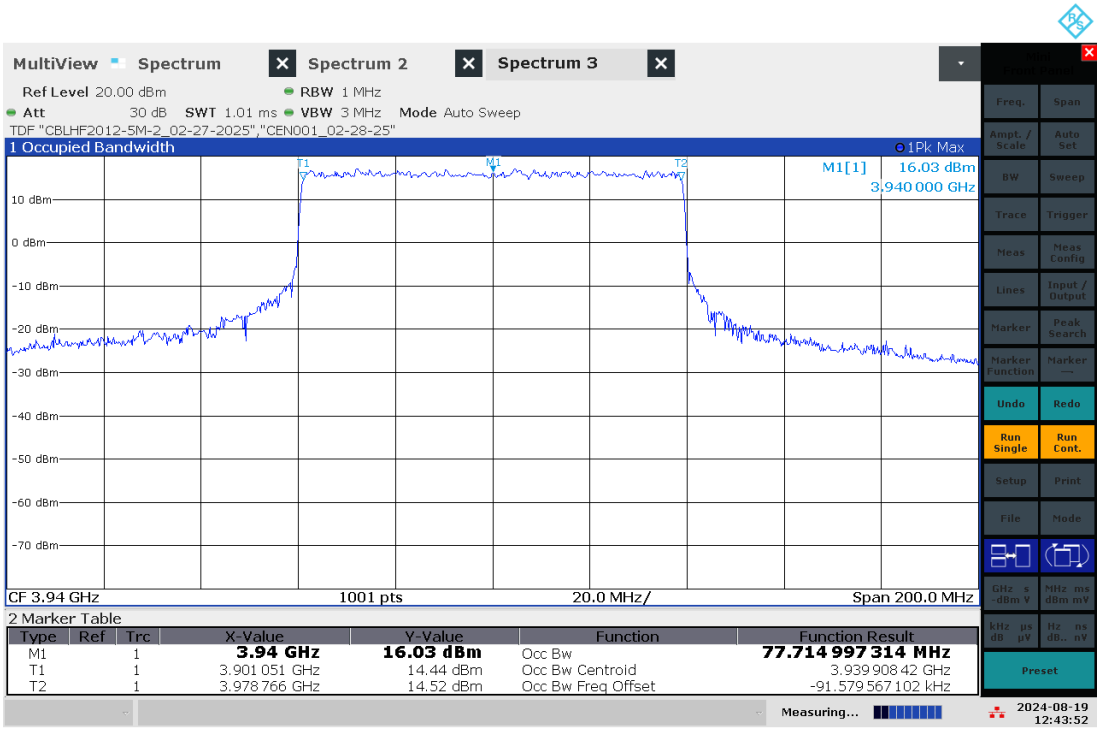
10:04:08 AM 08/19/2024

Frequency Stability – High Channel, TM1.1, Antenna Port 1 (20 °C)



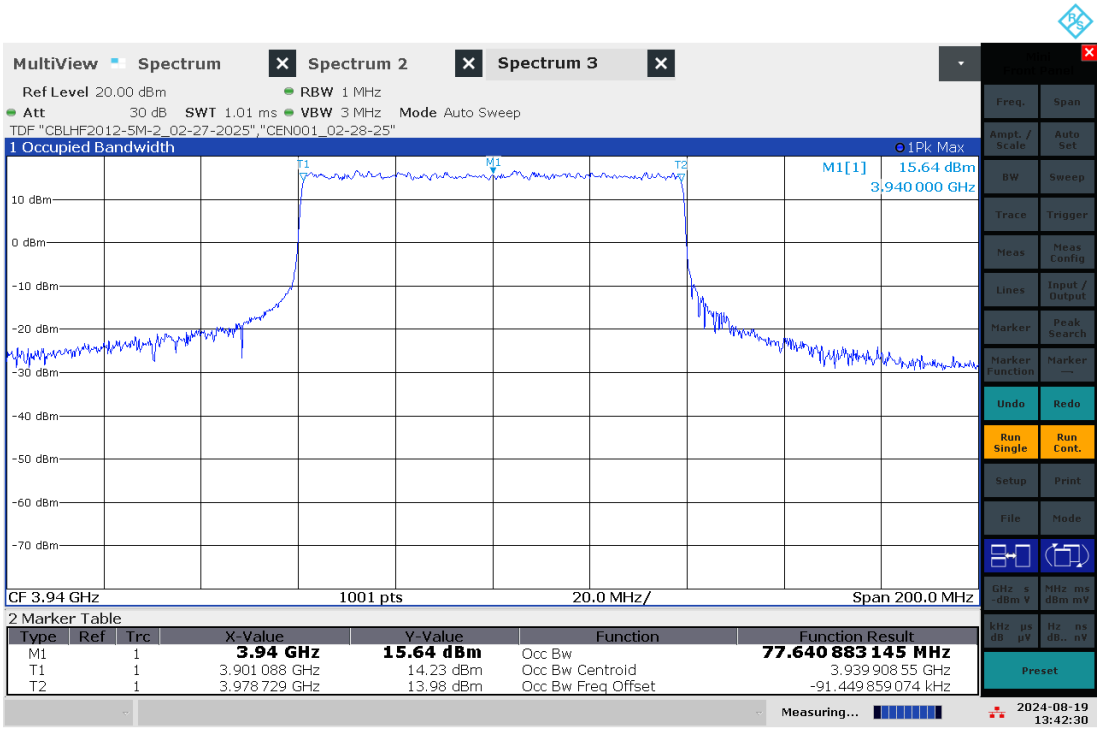
09:02:55 AM 08/19/2024

Frequency Stability – High Channel, TM1.1, Antenna Port 1 (30 °C)



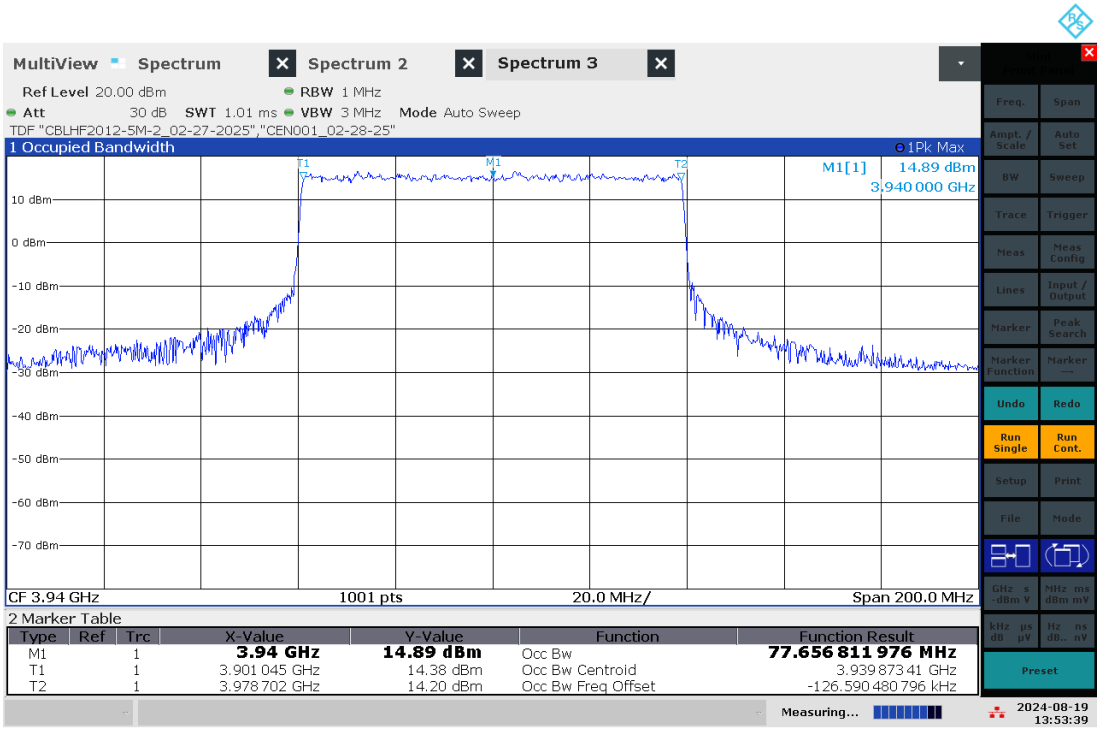
12:43:52 PM 08/19/2024

Frequency Stability – High Channel, TM1.1, Antenna Port 1 (40 °C)



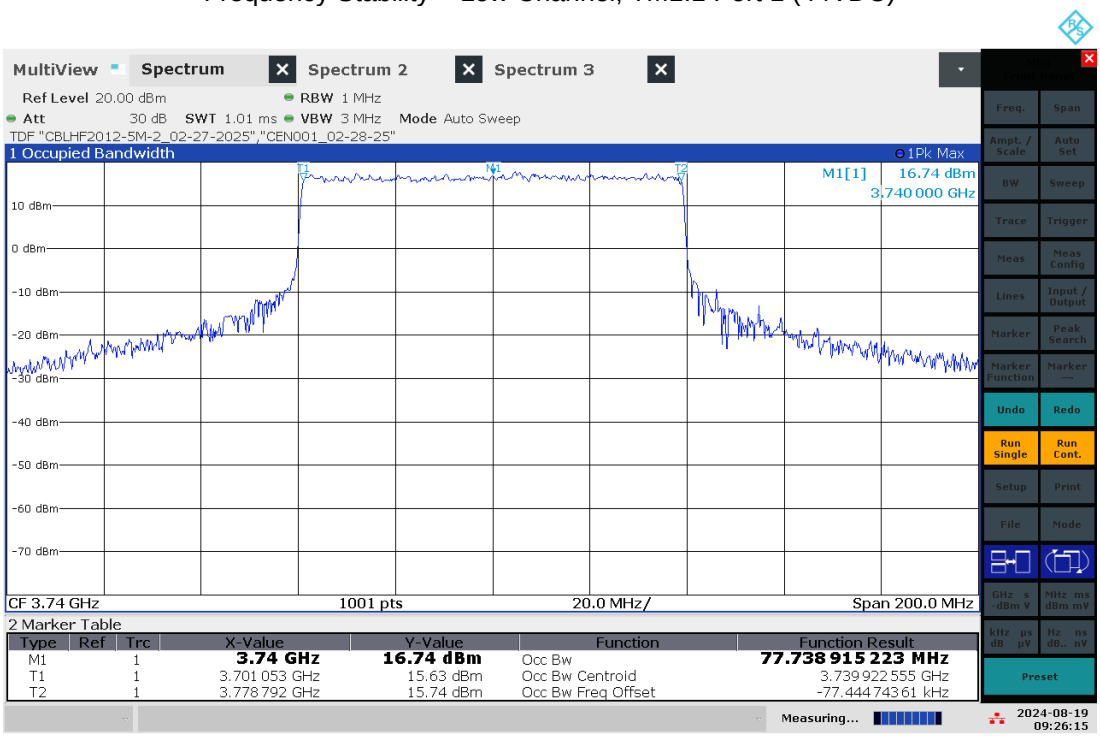
01:42:31 PM 08/19/2024

Frequency Stability – High Channel, TM1.1, Antenna Port 1 (50 °C)



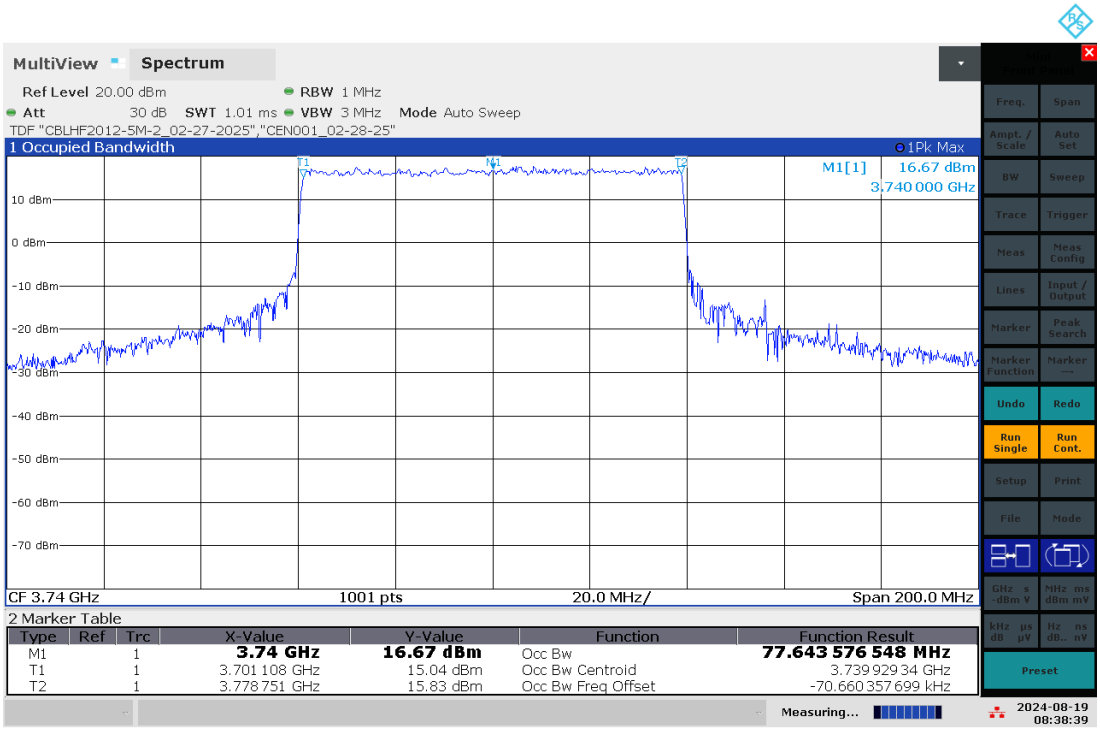
01:53:39 PM 08/19/2024

Frequency Stability – Low Channel, TM1.1 Port 1 (44VDC)



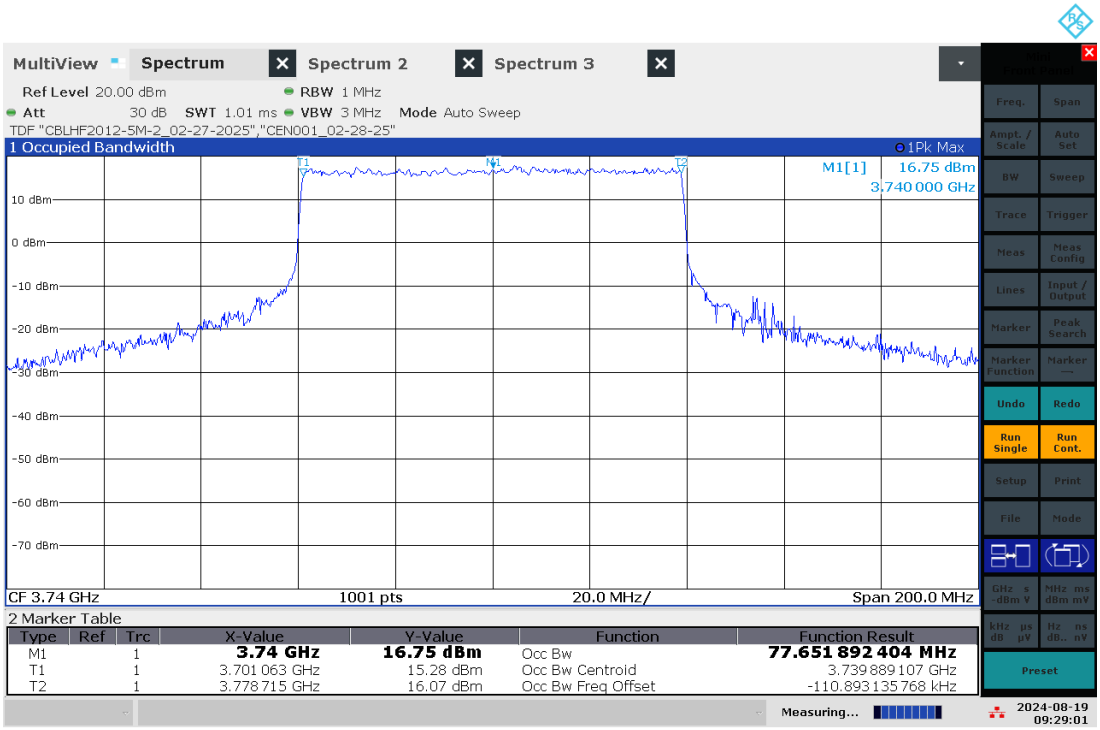
09:26:15 AM 08/19/2024

Frequency Stability – Low Channel, TM1.1 Port 1 (48VDC)



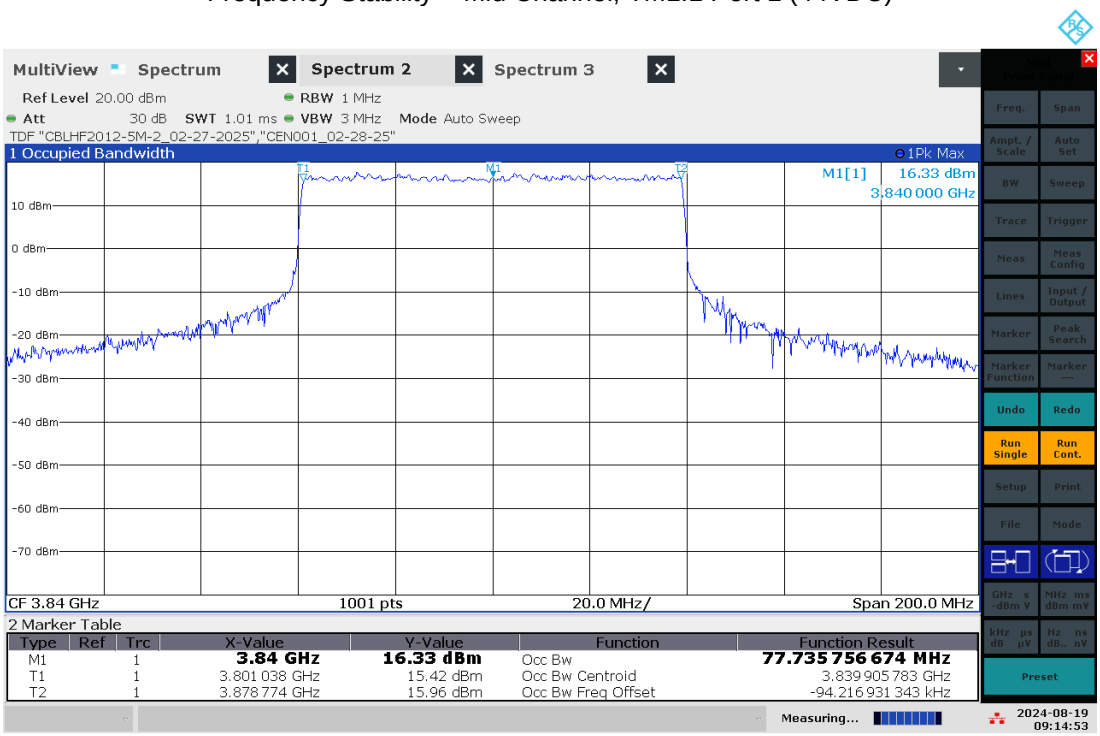
08:38:39 AM 08/19/2024

Frequency Stability – Low Channel, TM1.1 Port 1 (57VDC)



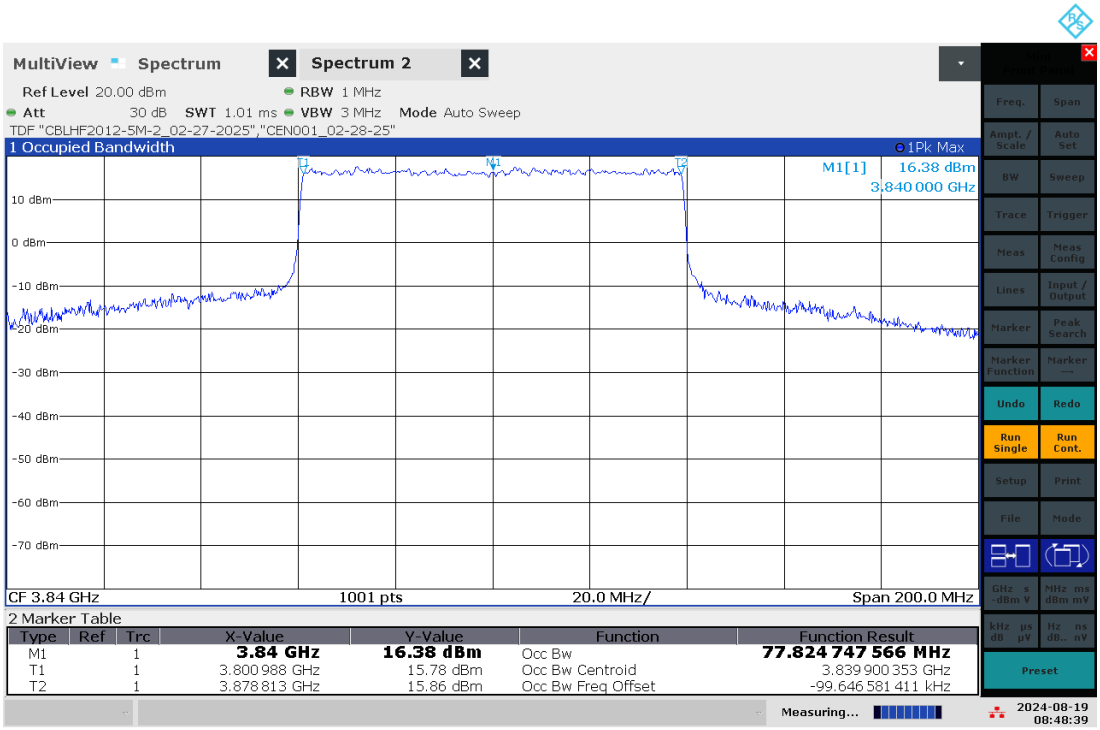
09:29:01 AM 08/19/2024

Frequency Stability – Mid Channel, TM1.1 Port 1 (44VDC)



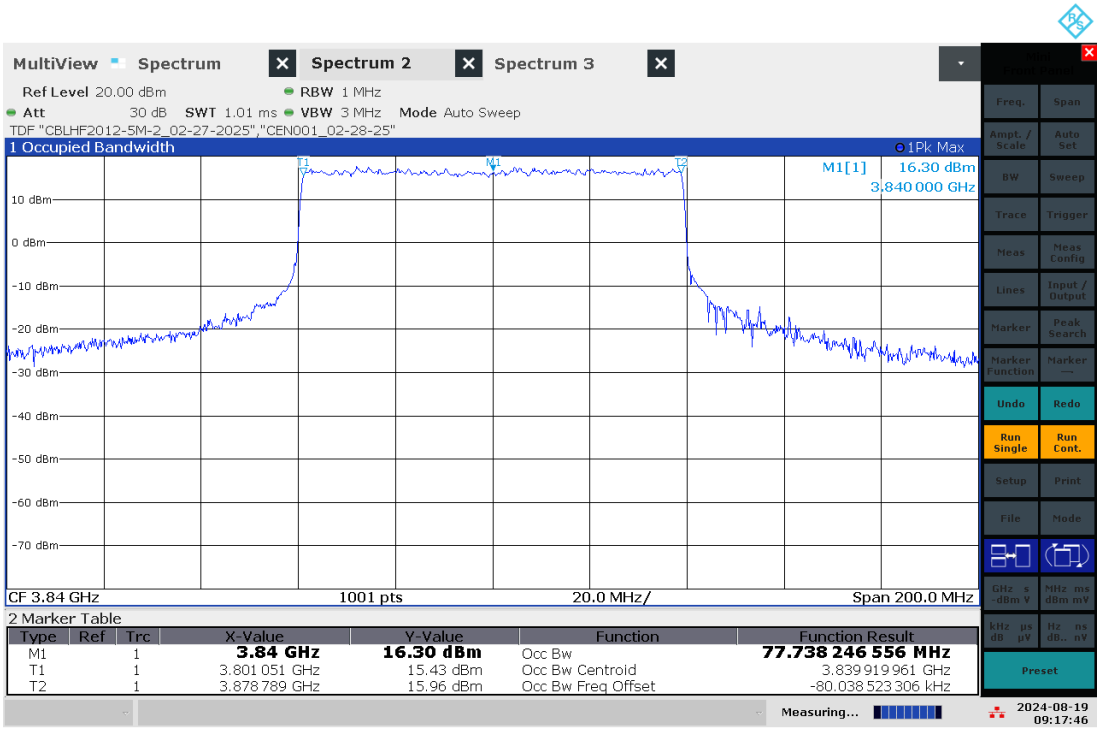
09:14:53 AM 08/19/2024

Frequency Stability – Mid Channel, TM1.1 Port 1 (48VDC)



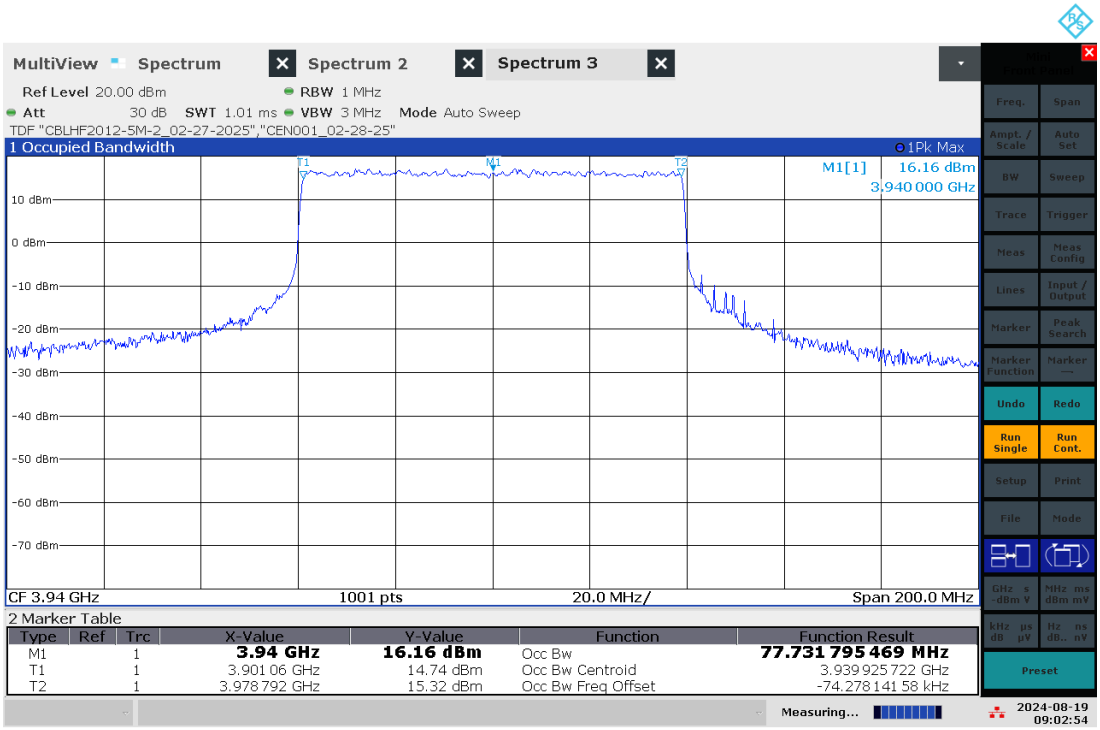
08:48:39 AM 08/19/2024

Frequency Stability – Mid Channel, TM1.1 Port 1 (57VDC)



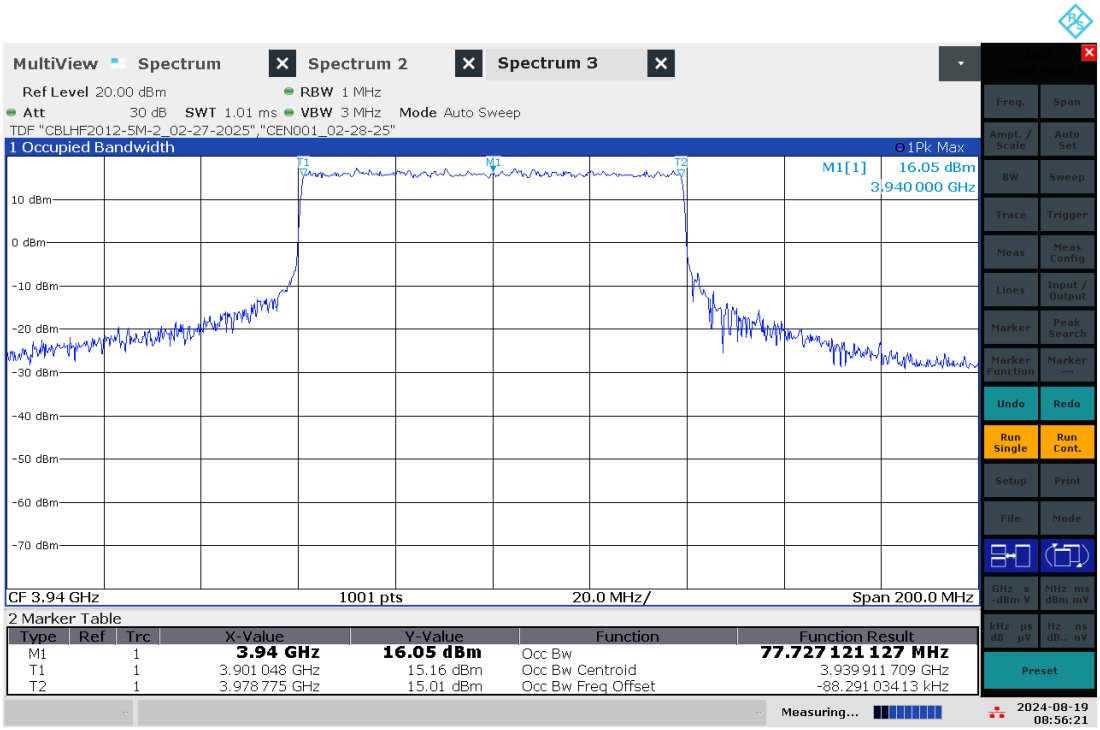
09:17:46 AM 08/19/2024

Frequency Stability – High Channel, TM1.1 Port 1 (44VDC)



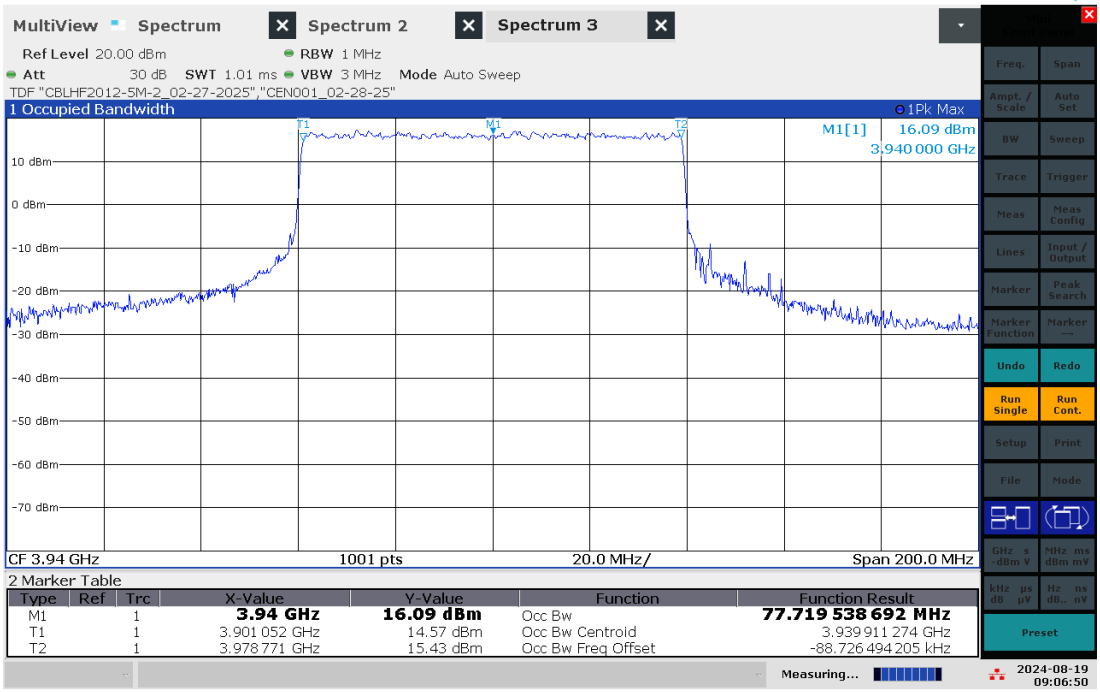
09:02:55 AM 08/19/2024

Frequency Stability – High Channel, TM1.1 Port 1 (48VDC)



08:56:21 AM 08/19/2024

Frequency Stability – High Channel, TM1.1 Port 1 (57VDC)



09:06:50 AM 08/19/2024

Product Standard: FCC Title 47 CFR Part 27				Limit applied: See Report Section 11.2			
Test Date	Test Personnel/ Initials	Supervising Engineer/ Initials	Input Voltage	Mode	Atmospheric Data		
					Temp C°	Relative Humidity %	Atmospheric Pressure mbar
08/19/2024	Kouma Sinn KPS	N/A	POE at 44VDC, 48VDC, 57 VDC	Continuous Transmitting	N/A	N/A	N/A

Deviations, Additions, or Exclusions: None

12 AC Mains Line Conducted Emissions

12.1 Method

Tests are performed in accordance with FCC Part 15B, FCC Part 15.207.

TEST SITE: EMC Lab

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

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
AC Line Conducted Emissions	150 kHz - 30 MHz	2.6 dB	3.4 dB
Telco Port Emissions	150 kHz - 30 MHz	4.1 dB	5.0 dB
AC Line Conducted Emissions	9 kHz - 150 MHz	2.4 dB	3.4 dB

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

Sample Calculations

The following is how net line-conducted readings were determined:

NF = RF + LF + CF + AF
Where NF = Net Reading in dBμV
RF = Reading from receiver in dBμV
LF = LISN or ISN Correction Factor in dB
CF = Cable Correction Factor in dB
AF = Attenuator Loss Factor in dB

To convert from dBμV to μV or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μV
NF = Net Reading in dBμV

Example:
NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 dBμV
$UF = 10^{(49.1\ dB\mu V / 20)}$ = 285.1 μV/m

When BAT-EMC Emission Software is used, the “Level” includes all losses and gains and is compared directly in the “Margin” column to the “Limit”. The “Correction” includes LISN Factor, Attenuator, and Cable Loss. These are already accounted for in the “Level” column.

12.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV009'	weather station	Davis Instruments	6351 Vantage VUE	DAV009	04/05/2024	04/05/2025
ROS002'	9kHz to 3GHz EMI Test Receiver	Rohde & Schwartz	ESCI 1166.5950K03	100067	08/02/2024	08/02/2025
WEI30'	20 dB 18GHz 5W Attenuator	Weinschel	WA2-20-0403	WEI30	02/13/2024	02/13/2025
CBL052'	9kHz-1GHz BNC cable 25 ft long	Belden	RG58A/U	CBL052	01/09/2024	01/09/2025
LISN52'	Single Phase LISN 20 Amp	Com Power	LI-220C	20070070	12/22/2023	12/22/2024

Software Utilized:

Name	Manufacturer	Version
BAT-EMC	Nexio	2022.0.27.0

12.3 Results:

The sample tested was found to Comply.

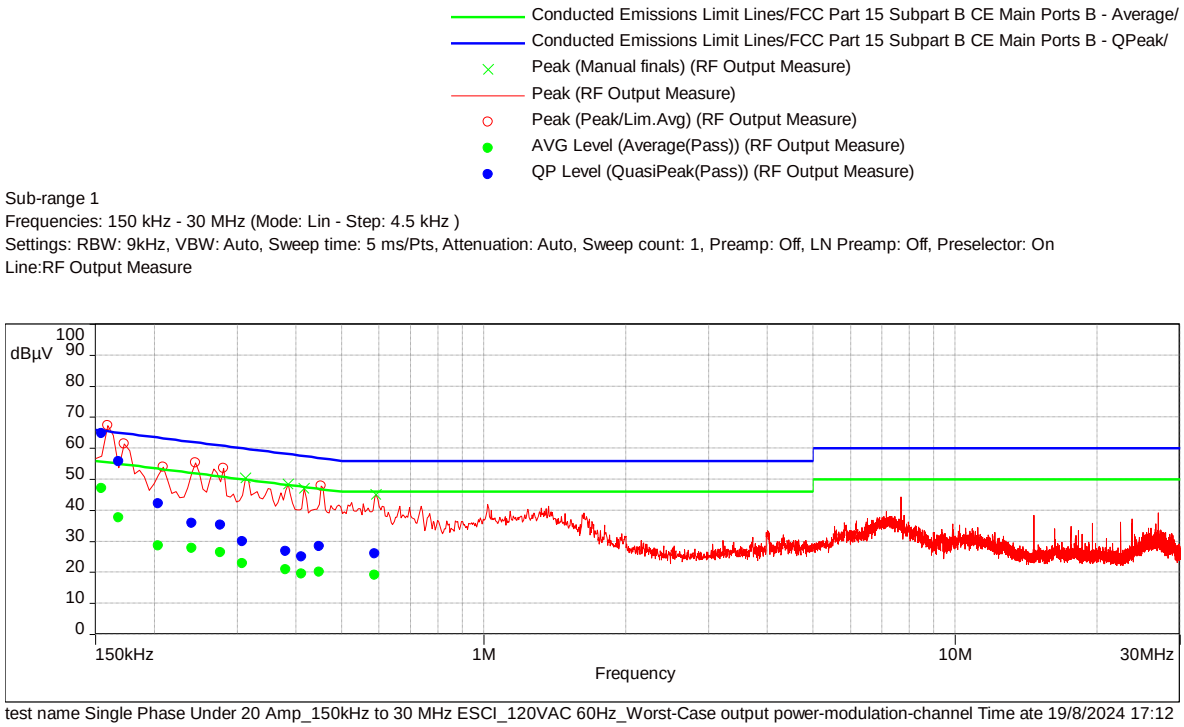
12.4 Setup Photographs:

12.5 Plots/Data:

Test Information:

Date and Time	8/19/2024 4:57:11 PM
Client and Project Number	CommScope_G105852007
Engineer	Vathana Ven
Temperature	21 deg C
Humidity	60 %
Atmospheric Pressure	994 mbars
Comments	Single Phase Under 20 Amp_150kHz to 30 MHz ESCI_120VAC 60Hz_Worst-Case output power-modulation-channel

Graph:



Results:

QuasiPeak(Pass) (10)

Frequency (MHz)	QP Level (dBµV)	QP Limit (dBuV)	QP Margin (dB)	Line	RBW	Meas.Time	Correction (dB)
0.1542	64.81	65.75	-0.94	Phase 1	9k	0.01	19.91
0.16772	55.74	65.06	-9.32	Neutral	9k	0.01	19.90
0.2036	42.06	63.45	-21.39	Neutral	9k	0.01	19.87
0.23952	35.82	62.10	-26.28	Neutral	9k	0.01	19.87
0.2765	35.32	60.94	-25.61	Neutral	9k	0.01	19.86
0.30712	29.85	60.04	-30.19	Neutral	9k	0.01	19.86
0.3804	26.71	58.29	-31.58	Neutral	9k	0.01	19.86
0.41114	24.94	57.63	-32.69	Neutral	9k	0.01	19.85
0.44764	28.29	56.93	-28.64	Neutral	9k	0.01	19.85
0.58702	25.95	56.00	-30.05	Neutral	9k	0.01	19.86

Average(Pass) (10)

Frequency (MHz)	AVG Level (dBµV)	AVG Limit (dBuV)	AVG Margin (dB)	Line	RBW	Meas.Time	Correction (dB)
0.1542	47.01	55.75	-8.74	Phase 1	9k	0.01	19.91
0.16772	37.54	55.06	-17.52	Neutral	9k	0.01	19.90
0.2036	28.63	53.45	-24.81	Neutral	9k	0.01	19.87
0.23952	27.85	52.10	-24.24	Neutral	9k	0.01	19.87
0.2765	26.31	50.94	-24.62	Neutral	9k	0.01	19.86
0.30712	22.82	50.04	-27.21	Neutral	9k	0.01	19.86
0.3804	20.82	48.29	-27.47	Neutral	9k	0.01	19.86
0.41114	19.44	47.63	-28.19	Neutral	9k	0.01	19.85
0.44764	19.99	46.93	-26.94	Neutral	9k	0.01	19.85
0.58702	19.13	46.00	-26.87	Neutral	9k	0.01	19.86

Product Standard: FCC Title 47 CFR Part 15B, 15.207				Limit applied: Class B Pretest Verification w/ artifact: Yes			
Test Date	Test Personnel/ Initials	Supervising Engineer/ Initials	Input Voltage	Mode	Atmospheric Data		
					Temp C°	Relative Humidity %	Atmospheric Pressure mbar
08/19/2024	Vathana Ven	N/A	120VAC 60Hz	Continuous Transmitting	21	60	994

Deviations, Additions, or Exclusions: None

13 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	08/20/2024	105852007BOX-001	VFV	KPS	Original Issue