

Spectrum 2 Spectrum 3 Spectrum 4

Ref Level 13.01 dBm Offset 10.19 dB RBW 1 kHz
 Att 20 dB SWT 20 s VBW 1 kHz Mode Auto Sweep
 SGL

1Rm Clrw

Line 422mask-200bw-rel

PASS

PASS

CF 653.05 MHz 691 pts Span 1.0 MHz

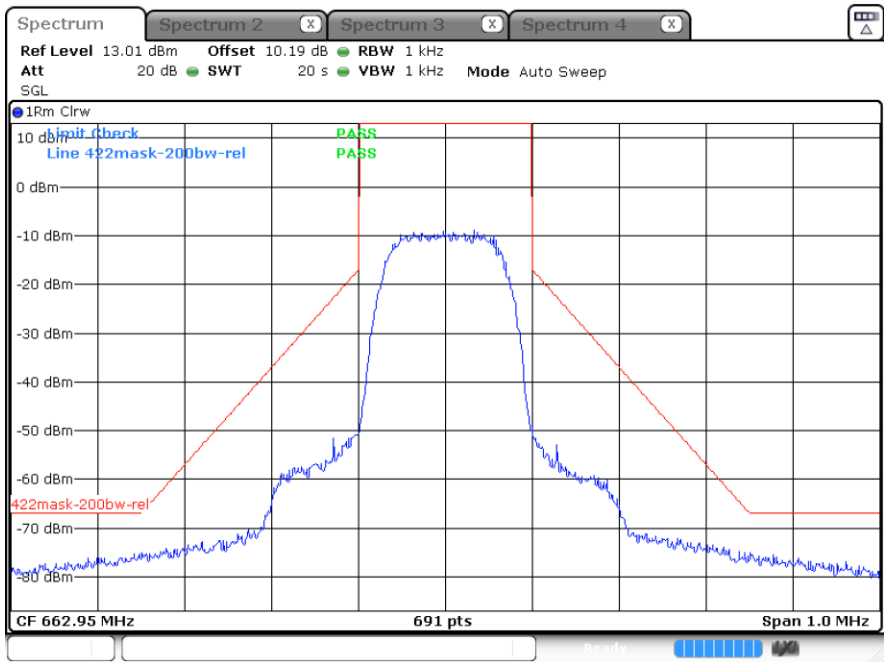
Date: 13.DEC.2024 20:36:58

The screenshot shows a Spectrum Analyzer interface with the following details:

- Top Panel:**
 - Buttons: Spectrum 2, Spectrum 3, Spectrum 4.
 - Parameters: Ref Level 13.01 dBm, Offset 10.19 dB, RBW 1 kHz, Att 20 dB, SWT 2 s, VBW 1 kHz, Mode Auto Sweep.
- Plot Area:**
 - Y-axis: Power in dBm, ranging from -80 dBm to 10 dBm.
 - X-axis: Frequency in MHz, centered at 653.05 MHz with a span of 2.0 MHz.
 - Blue Trace: The signal spectrum, showing a peak around -10 dBm.
 - Red Trace: A mask or reference level, showing a flat line at -20 dBm with a central peak at -10 dBm.
 - Annotations: "Limit check" and "Line 74.861e6_200kbw_20mW" are visible in the top left of the plot area.
- Bottom Panel:**
 - CF 653.05 MHz
 - 691 pts
 - Span 2.0 MHz

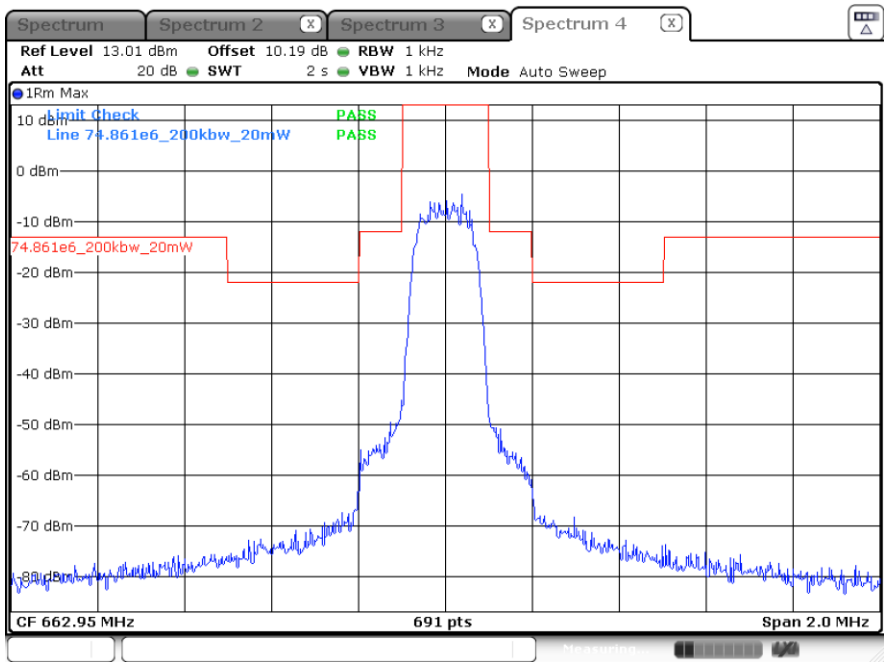
Date: 13.DEC.2024 18:59:12

D2 mode: 662.950 MHz, Emission Mask (1)



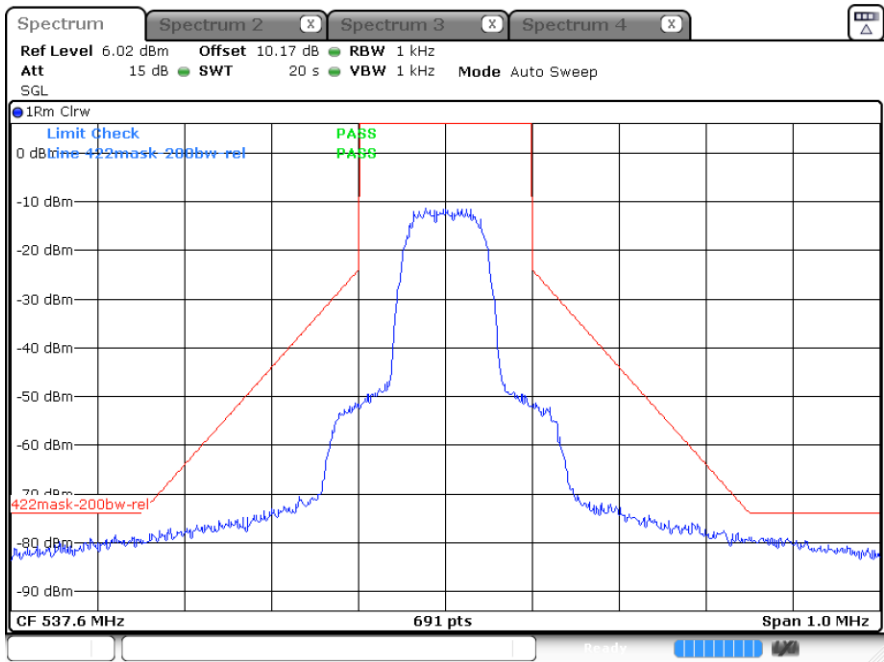
Date: 13.DEC.2024 18:56:26

D2 mode: 662.950 MHz, Emission Mask (2)



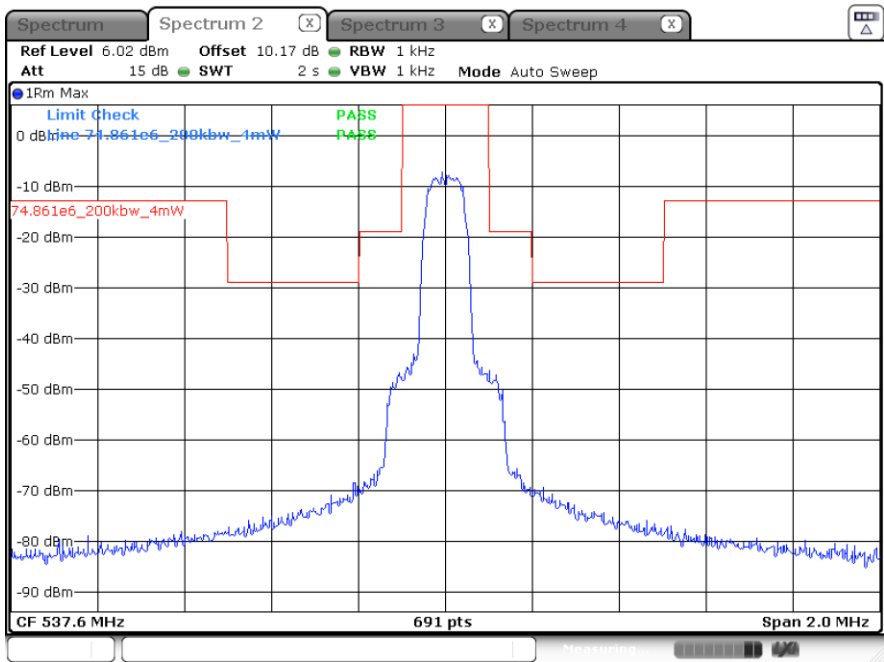
Date: 13.DEC.2024 18:56:50

HDM mode: 537.600 MHz, Emission Mask (1)



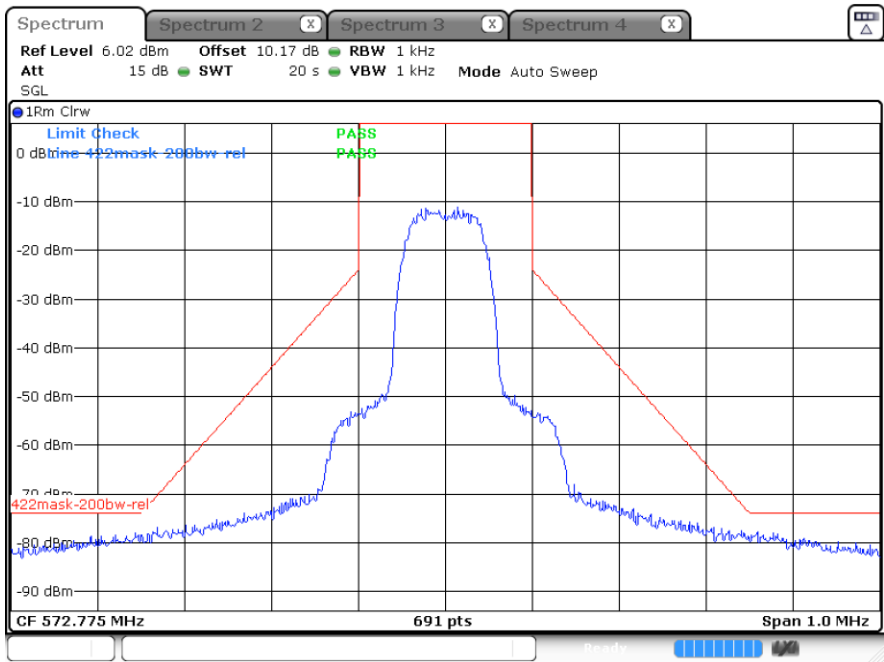
Date: 13.DEC.2024 20:47:18

HDM mode: 537.600 MHz, Emission Mask (2)



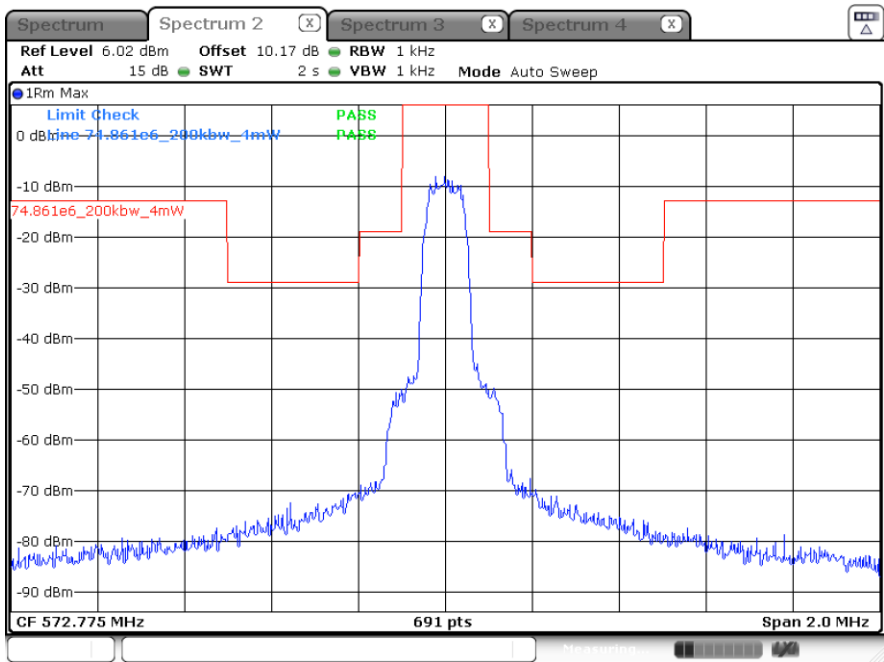
Date: 13.DEC.2024 20:45:17

HDM mode: 572.775 MHz, Emission Mask (1)



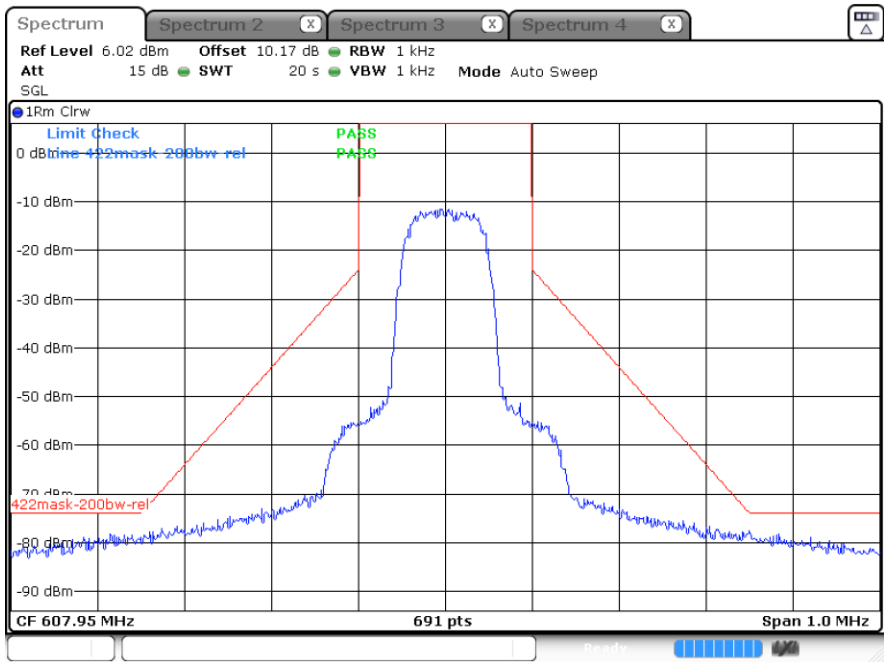
Date: 13.DEC.2024 20:57:00

HDM mode: 572.775 MHz, Emission Mask (2)



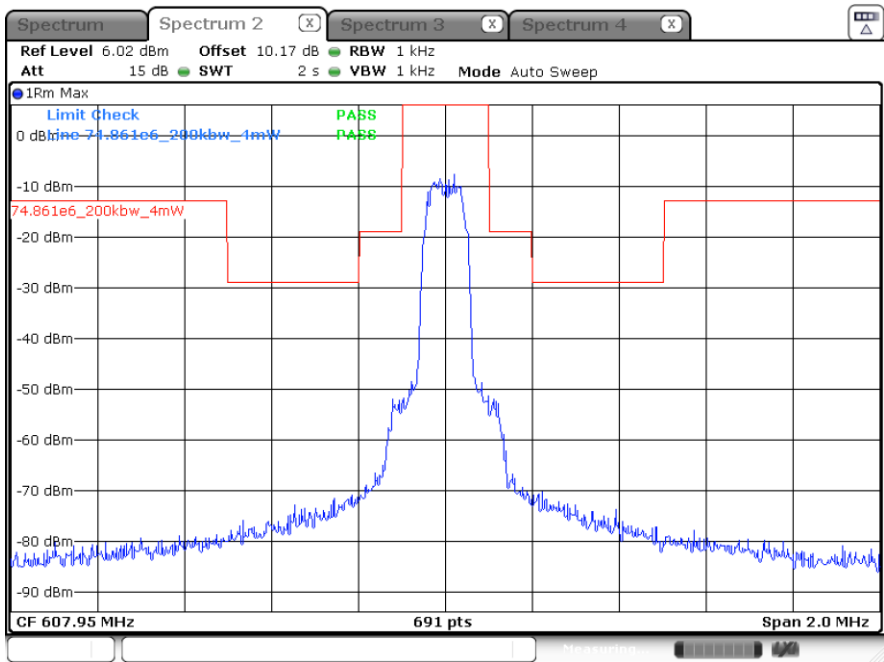
Date: 13.DEC.2024 20:58:11

HDM mode: 607.950 MHz, Emission Mask (1)



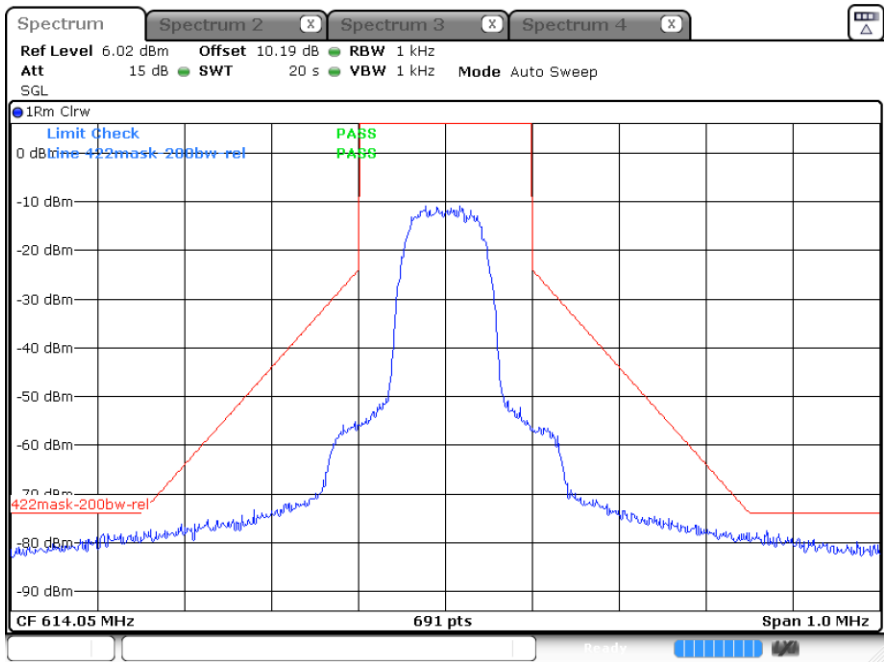
Date: 13.DEC.2024 21:01:10

HDM mode: 607.950 MHz, Emission Mask (2)



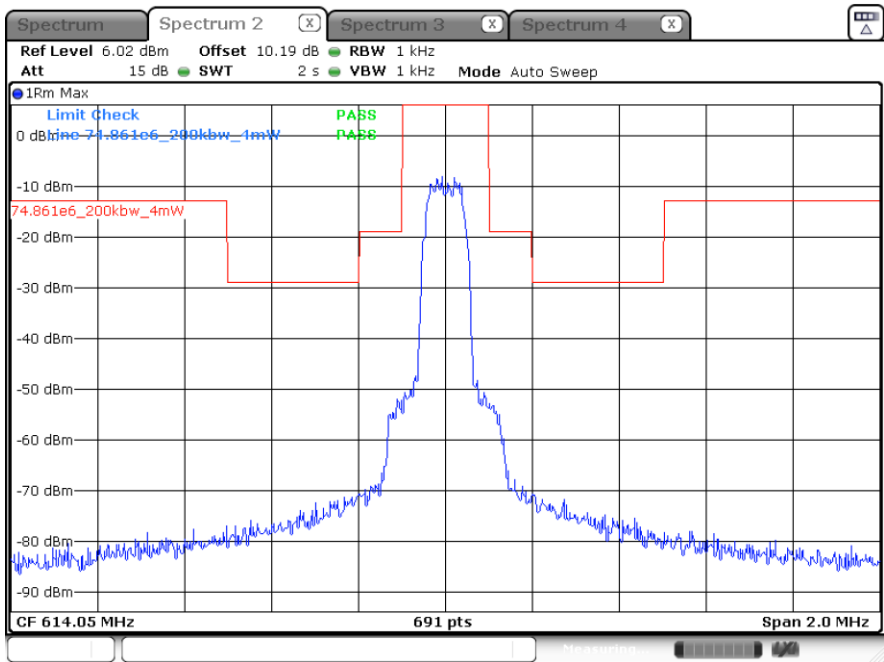
Date: 13.DEC.2024 20:59:50

HDM mode: 614.050 MHz, Emission Mask (1)



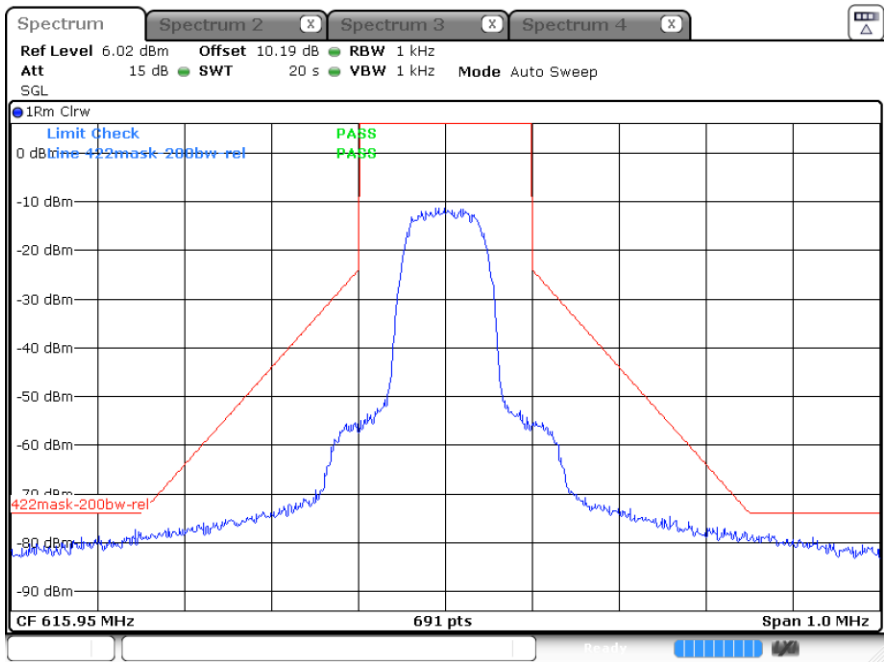
Date: 13.DEC.2024 20:32:21

HDM mode: 614.050 MHz, Emission Mask (2)



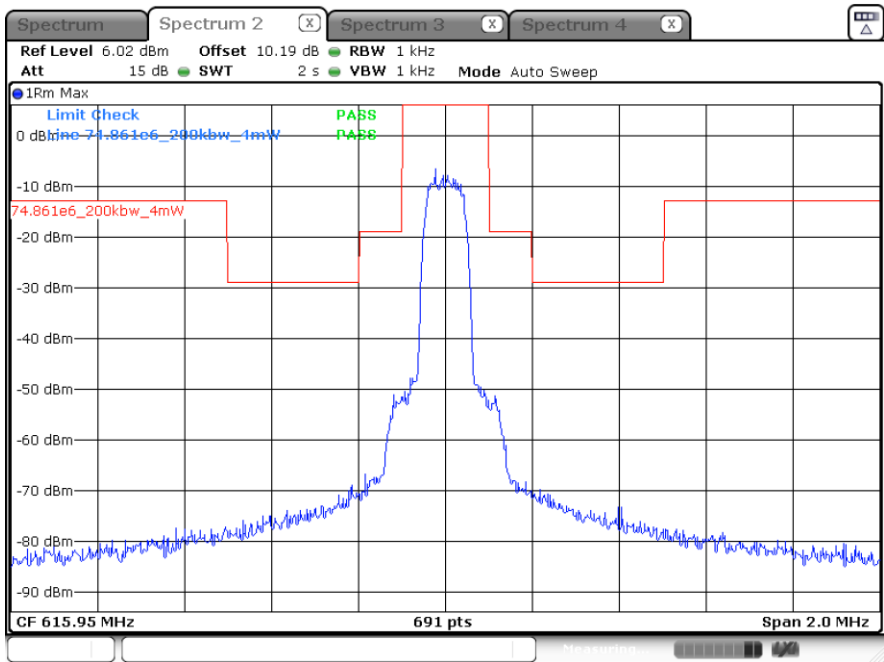
Date: 13.DEC.2024 20:33:07

HDM mode: 615.950 MHz, Emission Mask (1)



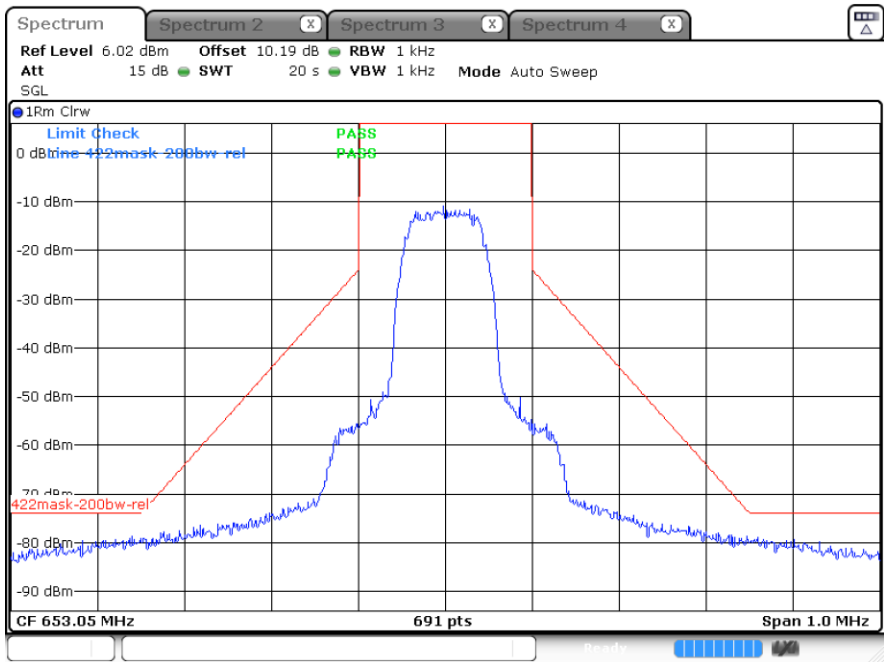
Date: 20 DEC 2024 20:40:18

HDM mode: 615.950 MHz, Emission Mask (2)



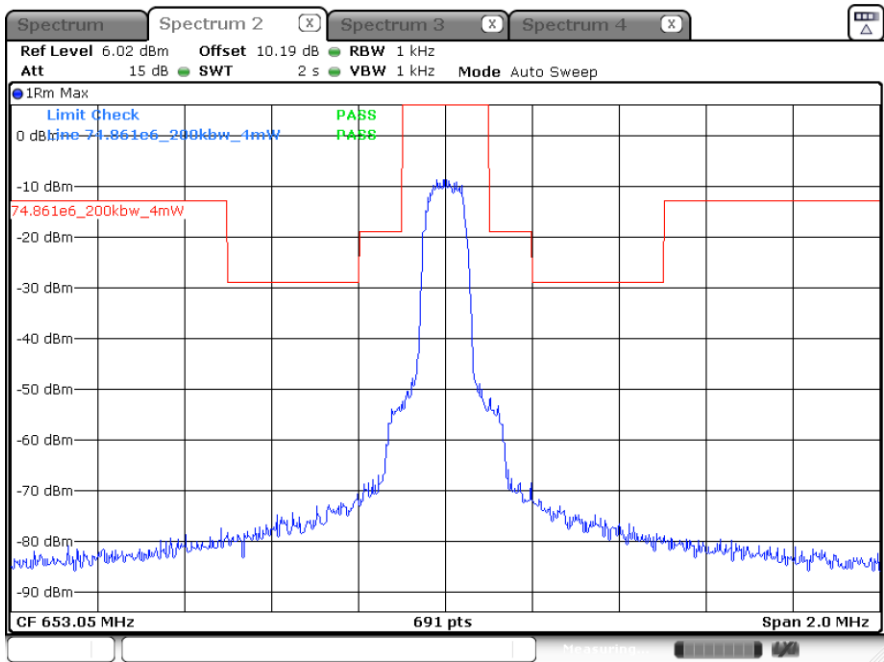
Date: 20 DEC 2024 20:39:20

HDM mode: 653.050 MHz, Emission Mask (1)



Date: 13.DEC.2024 20:37:58

HDM mode: 653.050 MHz, Emission Mask (2)



Date: 13.DEC.2024 20:40:15

Spectrum 2 Spectrum 3 Spectrum 4

Ref Level 6.02 dBm Offset 10.19 dB RBW 1 kHz
Att 15 dB SWT 20 s VBW 1 kHz Mode Auto Sweep
SGL

1Rm Clrw

Limit Check
line 422mask-200bw-rel

PASS
PASS

0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm

CF 662.95 MHz 691 pts Span 1.0 MHz

Date: 13.DEC.2024 18:51:52

Spectrum 2 Spectrum 3 Spectrum 4

Ref Level 6.02 dBm Offset 10.19 dB RBW 1 kHz
Att 15 dB SWT 2 s VBW 1 kHz Mode Auto Sweep

1Rm Max

Limit Check

Line 71.861e6_200kbw_1mW PASS

Line 71.861e6_200kbw_4mW

0 dBm

-10 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm

-60 dBm

-70 dBm

-80 dBm

-90 dBm

CF 662.95 MHz

691 pts

Span 2.0 MHz

The screenshot shows a spectrum analyzer interface with three tabs at the top: 'Spectrum 2', 'Spectrum 3', and 'Spectrum 4'. The 'Spectrum 2' tab is active. The top status bar displays the following settings: 'Ref Level 6.02 dBm', 'Offset 10.19 dB', 'RBW 1 kHz', 'Att 15 dB', 'SWT 2 s', 'VBW 1 kHz', and 'Mode Auto Sweep'. The main display area shows a spectrum plot with a blue trace representing the signal. A red trace represents the limit check. The signal is a narrowband peak centered at 662.95 MHz. The peak is labeled 'Line 71.861e6_200kbw_4mW' in red text. The limit check is labeled 'Limit Check' in blue text. The signal is within the limit check range, and the word 'PASS' is displayed in green text. The y-axis is labeled from 0 dBm to -90 dBm in 10 dB increments. The x-axis is labeled 'CF 662.95 MHz' and 'Span 2.0 MHz'. The number of points is '691 pts'. The top left corner shows '1Rm Max'. The top right corner shows a small icon of a spectrum analyzer.

Date: 13.DEC.2024 20:41:20

6. FCC §74.861 (e)(7)(iv), RSS-210 Section G.5 & ETSI EN 300 422-1 (4.2.4.1.2) – Spurious Emissions at Antenna Port

6.1 Applicable Standards

According to FCC §74.861 (e)(7)(iv):

Emissions outside of the emission masks listed in paragraphs (e)(7)(i) through (e)(7)(iii) shall comply with the limits specified in section 4.2.4.1.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 74.35).

According to RSS-210 Section G.5:

The transmitter unwanted emissions shall meet and be measured according to the requirements in sections 4.2.4.1.2 and 4.2.4.2.2 of ETSI EN 300 422-1.

According to ETSI EN 300 422-1 V2.2.1 (2021-11) Section 4.2.4.1.2:

The level of transmitter unwanted emissions in the spurious domain shall not exceed the limits given in table 4.

**Table 4: Transmitter unwanted emission limits
(from ERC Recommendation 74-01 [2])**

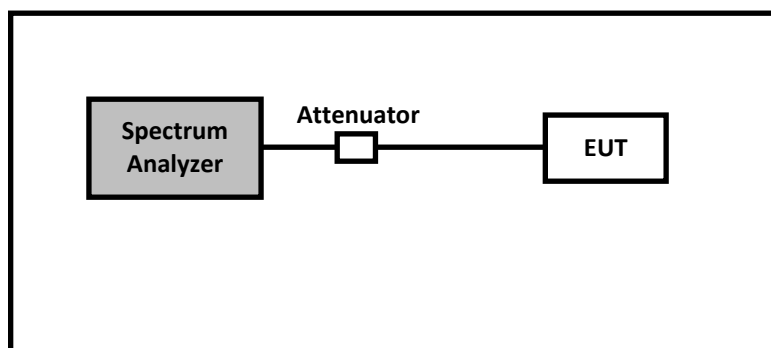
Frequency range	Maximum power	RBW
9 kHz - 150 kHz	-36 dBm	1 kHz
150 kHz - 30 MHz	-36 dBm	10 kHz
30 MHz - 1 GHz	-36 dBm	$F_c + 2,5 B \leq f \leq f_c + 4 B$: 1 kHz $F_c + 4 B < f \leq f_c + 10 B$: 10 kHz $f > f_c + 10 B$: 100 kHz $f < f_c - 10 B$: 100 kHz $f_c - 10 B \leq f < f_c - 4 B$: 10 kHz $f_c - 4 B \leq f \leq f_c - 2,5 B$: 1 kHz
except:		
47 MHz - 74 MHz 87,5 MHz - 118 MHz	-54 dBm	100 kHz
174 MHz - 230 MHz 470 MHz - 862 MHz	-54 dBm	$F_c + 2,5 B \leq f \leq f_c + 4 B$: 1 kHz $F_c + 4 B < f \leq f_c + 10 B$: 10 kHz $f > f_c + 10 B$: 100 kHz $f < f_c - 10 B$: 100 kHz $f_c - 10 B \leq f < f_c - 4 B$: 10 kHz $f_c - 4 B \leq f \leq f_c - 2,5 B$: 1 kHz
$1 \text{ GHz} < f \leq F_{\text{upper}}$	-30 dBm	$F_c + 2,5 B \leq f \leq f_c + 10 B$: 30 kHz $F_c + 10 B < f \leq f_c + 12 B$: 300 kHz $f > f_c + 12 B$: 1 MHz $f < f_c - 12 B$: 1 MHz $f_c - 12 B \leq f < f_c - 10 B$: 300 kHz $f_c - 10 B \leq f \leq f_c - 2,5 B$: 30 kHz

with B being the Declared Channel Bandwidth.

6.2 Test Procedure

Please refer to KDB 971168 D01 v03r01 Section 6 and ETSI EN 300 422-1 V2.2.1 (2021-11) Section 5.4.4.

6.3 Test Setup Block Diagram



6.4 Test Equipment List and Details

BACL No.	Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Interval
912	Rohde & Schwarz	Signal Analyzer	FSV40	1321.3008k39-101203-UW	2024-07-25	1 year
-	-	10dB Attenuator	-	-	Each time ¹	Each time ¹
-	-	RF Cable	-	-	Each time ¹	Each time ¹

Note¹: cable and attenuator included in the test set-up were checked each time before testing.

Statement of Traceability: *BACL Corp.* attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 “A2LA Policy on Metrological Traceability”.

6.5 Test Environmental Conditions

Temperature:	17 to 19 °C
Relative Humidity:	47.2 to 51.7 %
ATM Pressure:	101.2 to 101.7 kPa

The testing was performed by Arturo Reyes from 2024-12-04 to 2024-12-20 at RF test site.

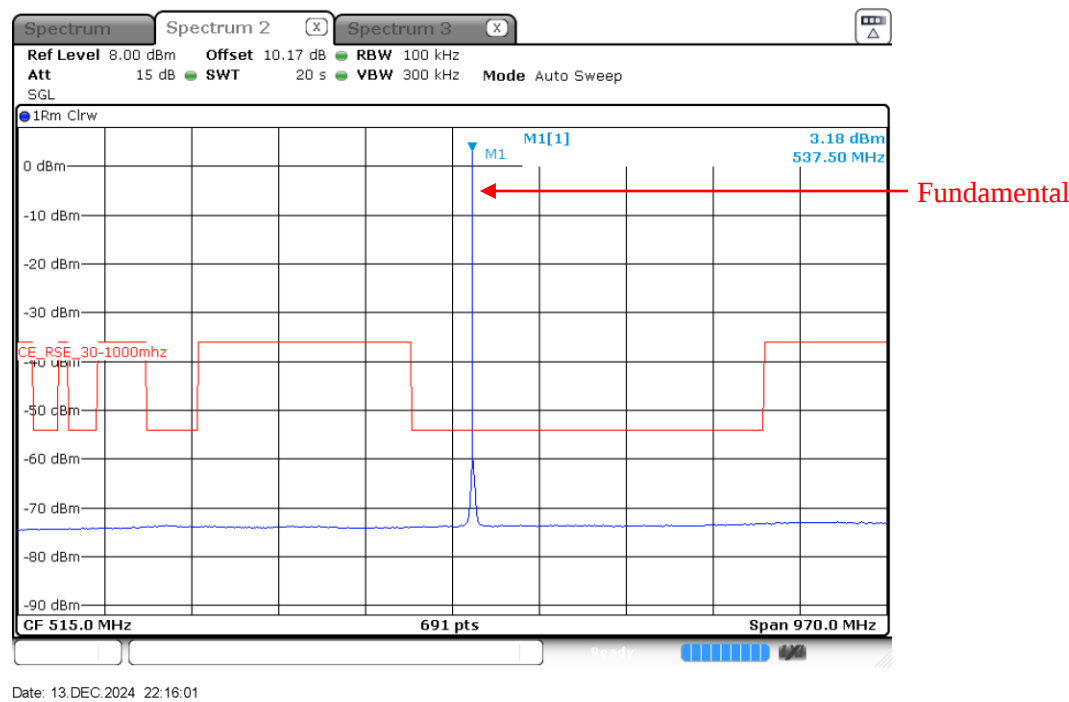
6.6 Test Results

Test Result: Pass

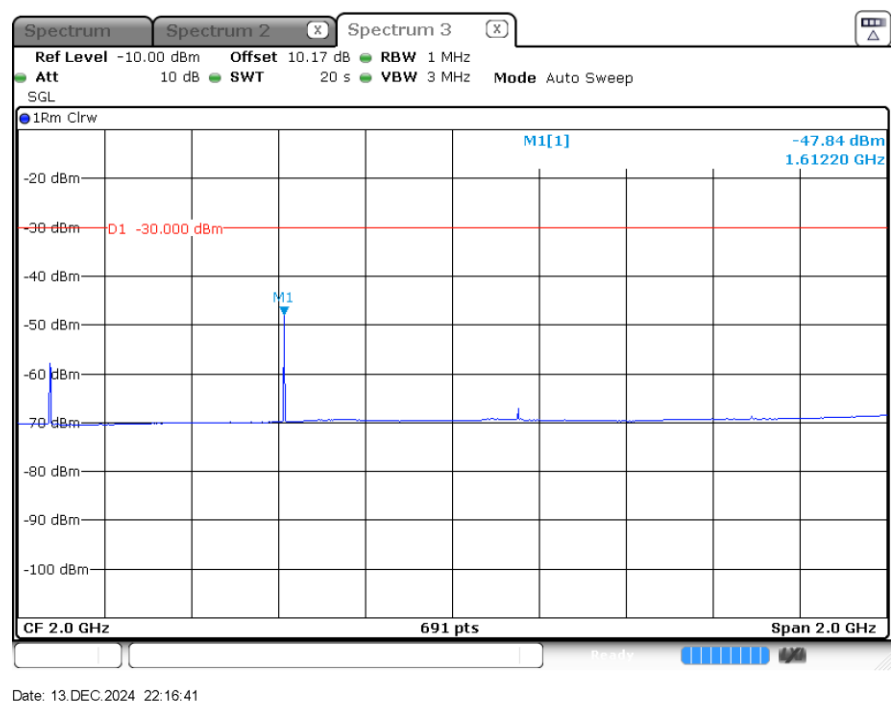
Please refer to Section 6.7 for detailed Spurious Emissions at Antenna Port plots.

6.7 Spurious Emissions at Antenna Port Test Plots

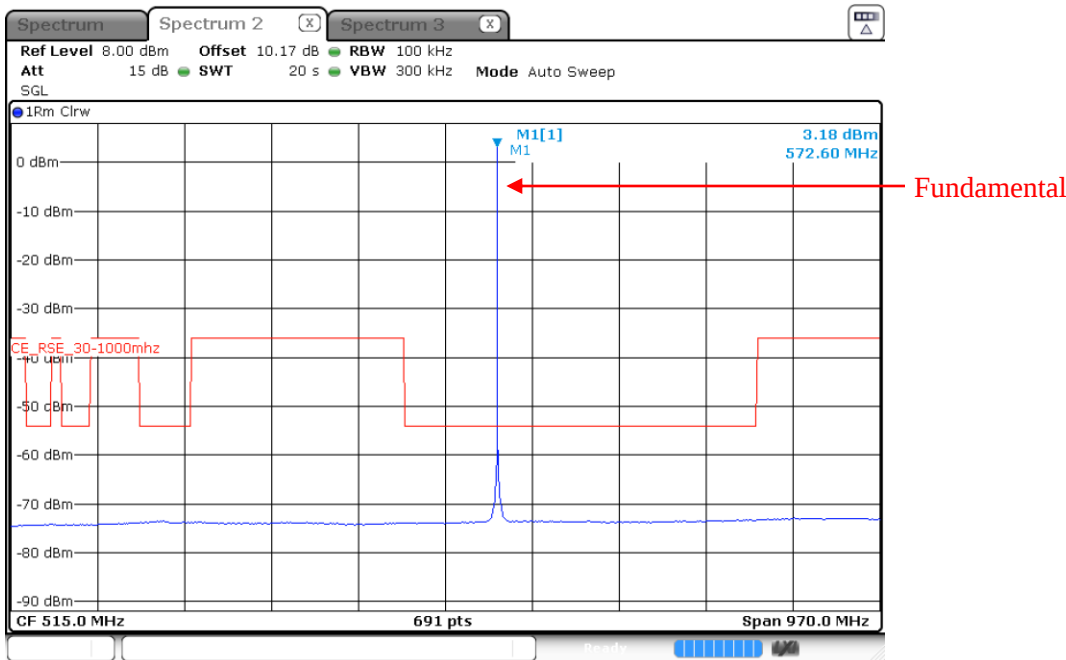
D2 mode: 537.600 MHz, 30-1000 MHz



D2 mode: 537.600 MHz, Above 1 GHz

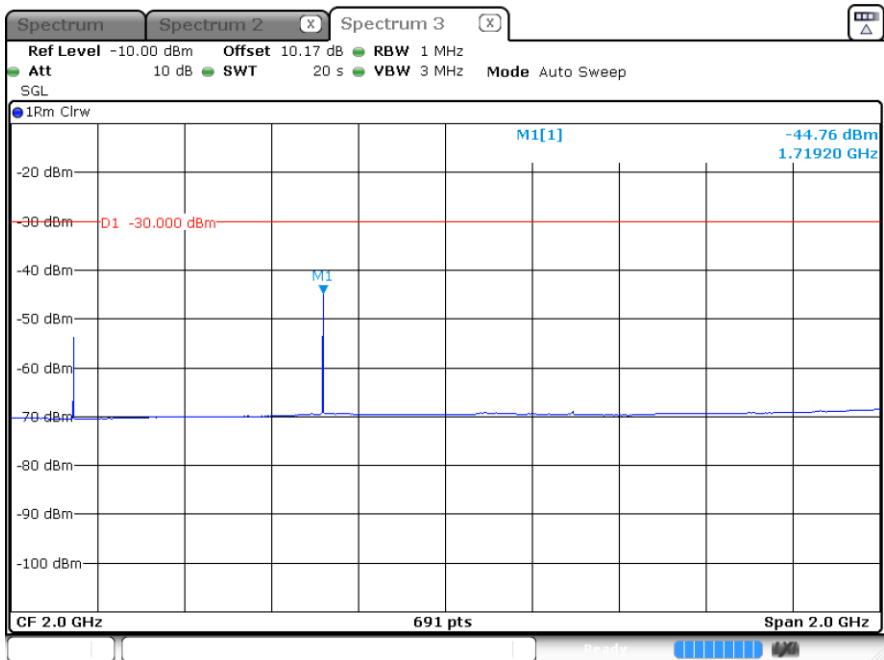


D2 mode: 572.775 MHz, 30-1000 MHz



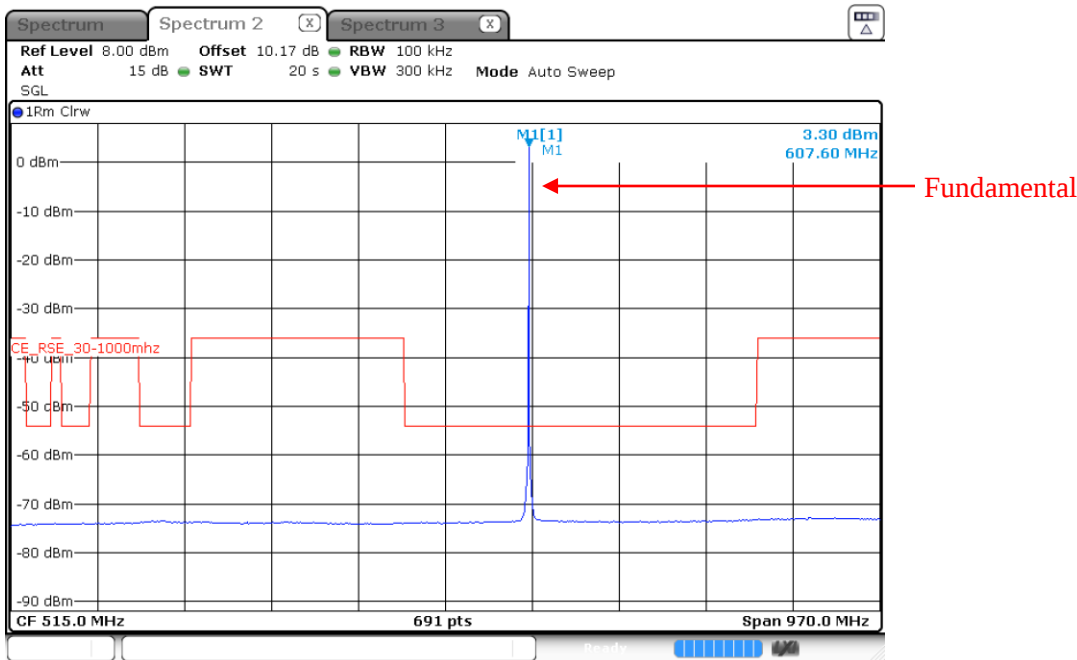
Date: 13.DEC.2024 22:19:48

D2 mode: 572.775 MHz, Above 1 GHz



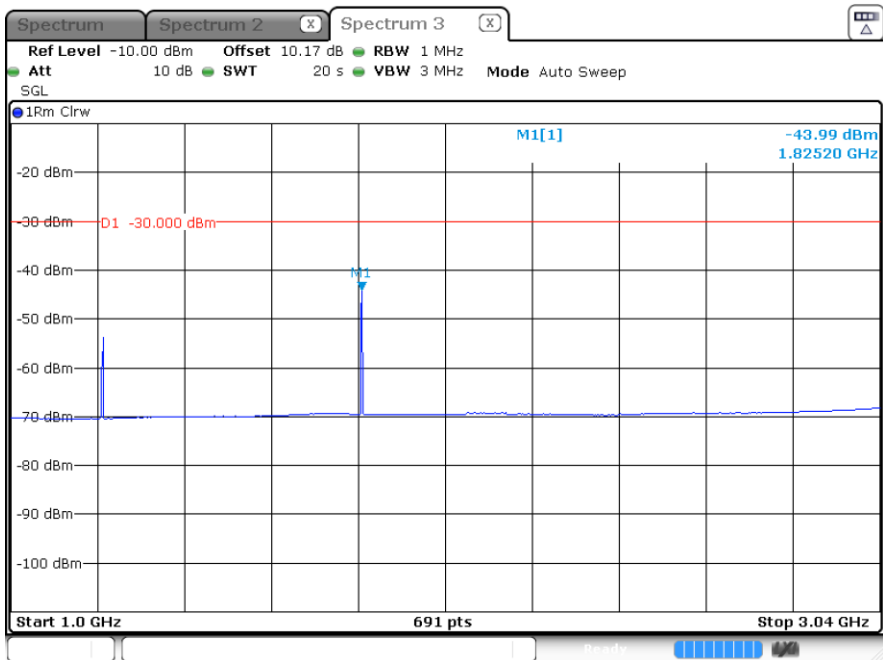
Date: 13.DEC.2024 22:20:56

D2 mode: 607.950 MHz, 30-1000 MHz



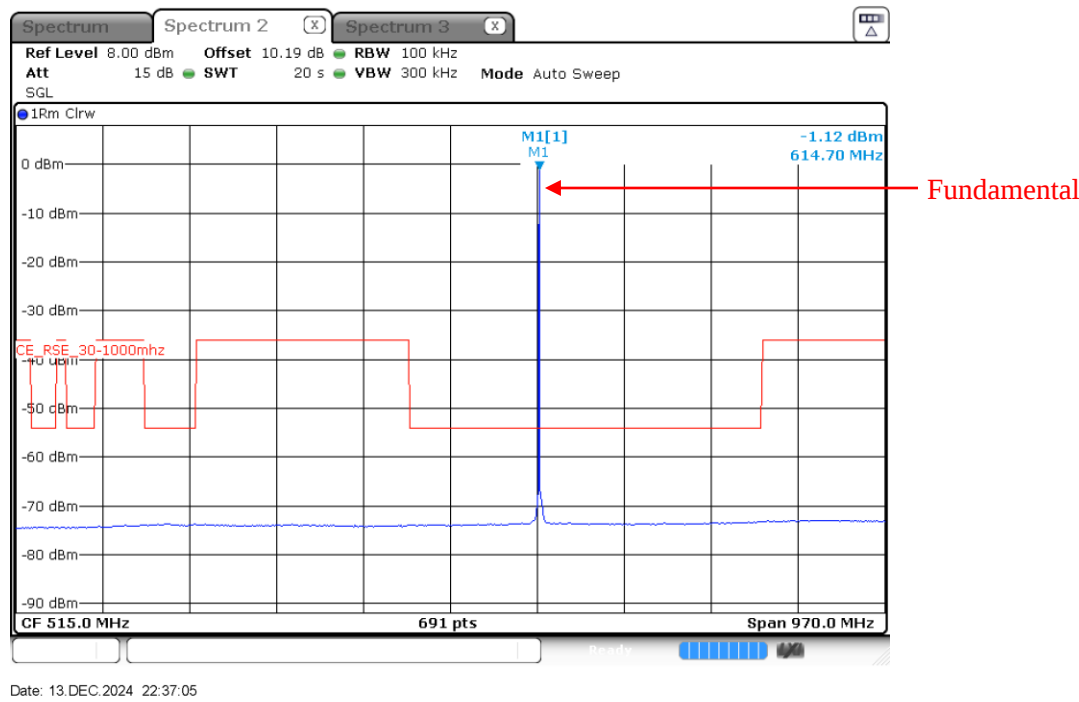
Date: 13.DEC.2024 22:25:34

D2 mode: 607.950 MHz, Above 1 GHz

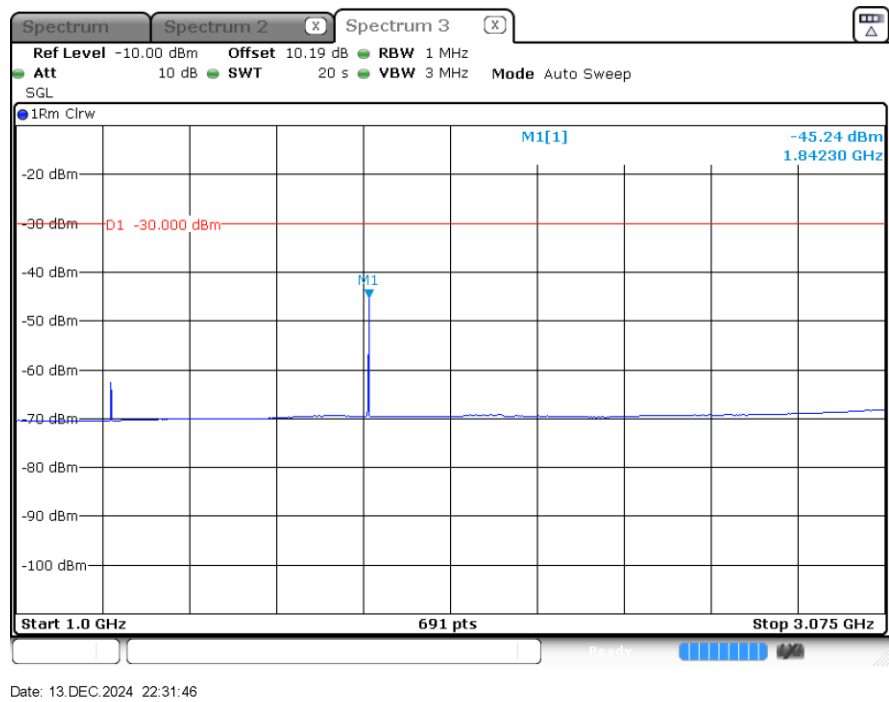


Date: 13.DEC.2024 22:24:41

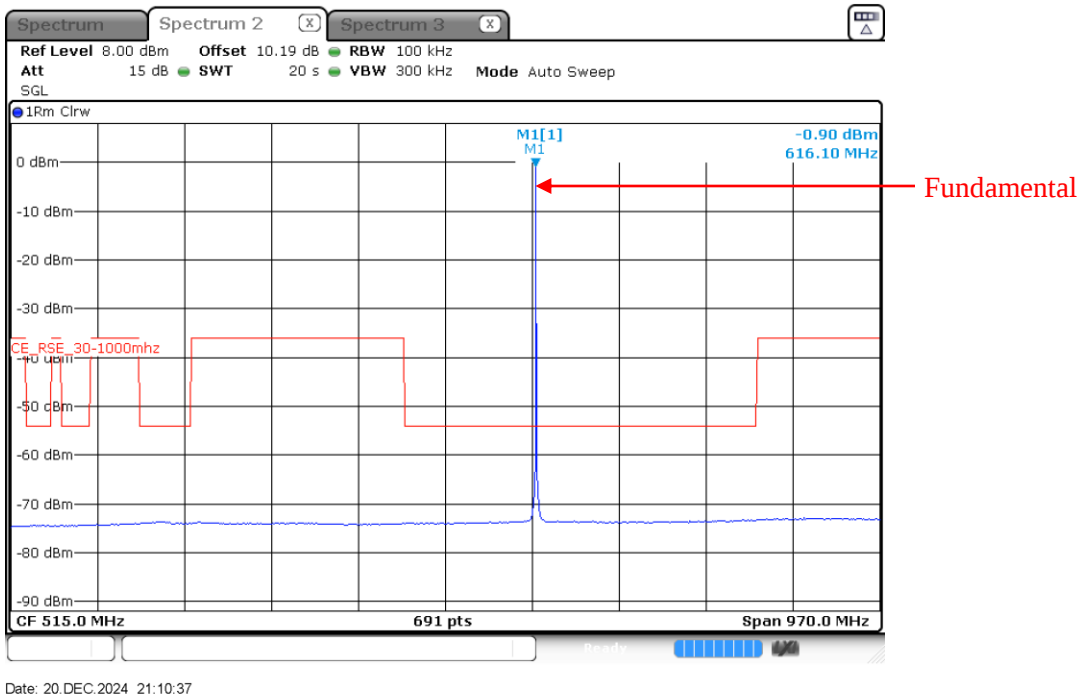
D2 mode: 614.050 MHz, 30-1000 MHz



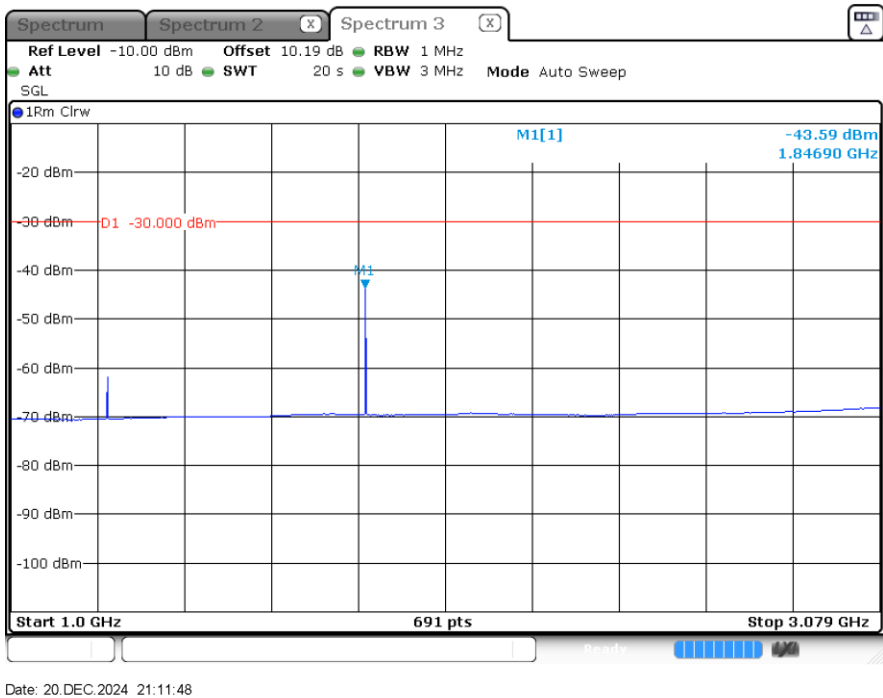
D2 mode: 614.050 MHz, Above 1 GHz



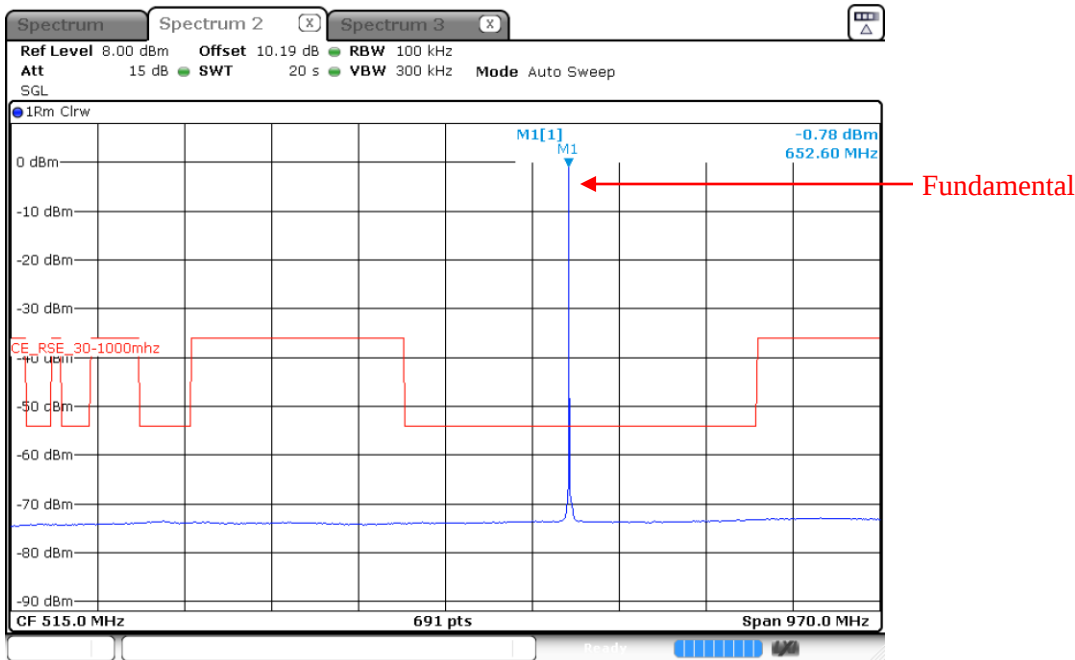
D2 mode: 615.950 MHz, 30-1000 MHz



D2 mode: 615.950 MHz, Above 1 GHz

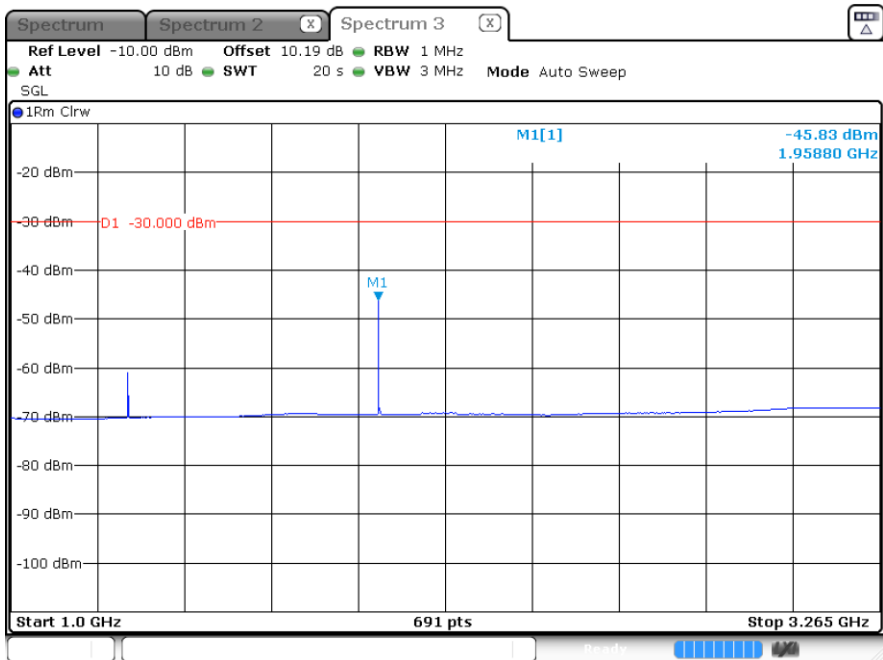


D2 mode: 653.050 MHz, 30-1000 MHz



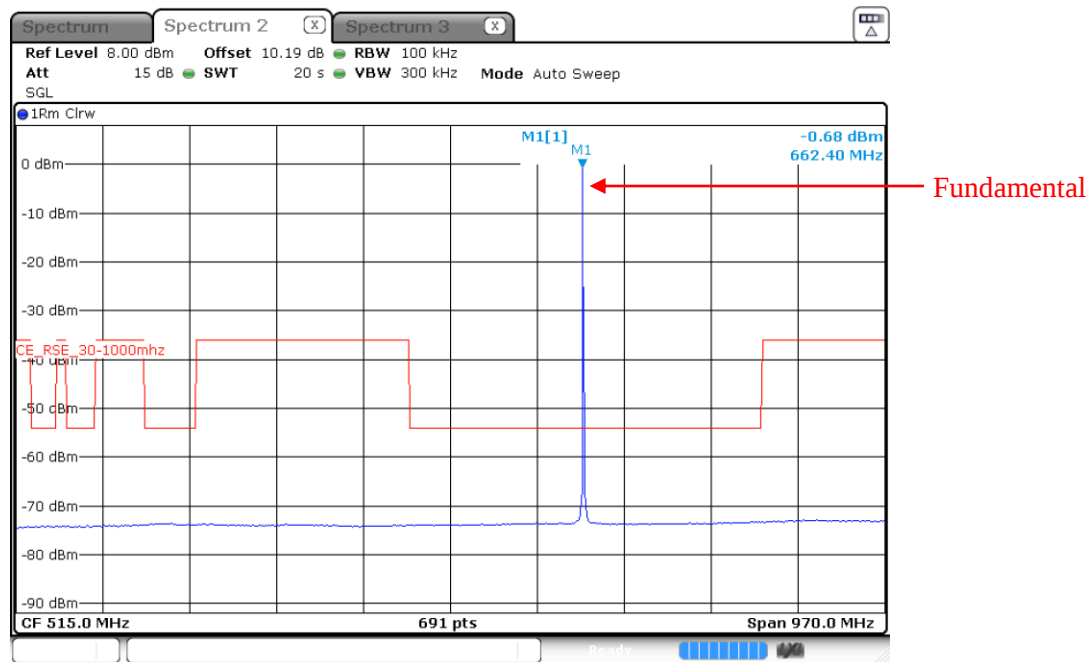
Date: 13.DEC.2024 22:49:12

D2 mode: 653.050 MHz, Above 1 GHz



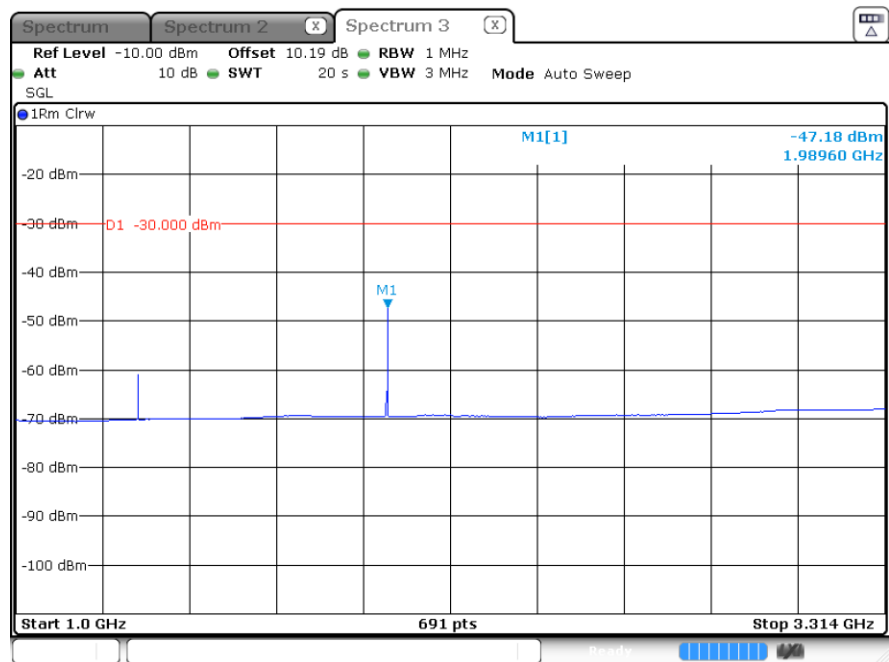
Date: 13.DEC.2024 22:46:31

D2 mode: 662.950 MHz, 30-1000 MHz



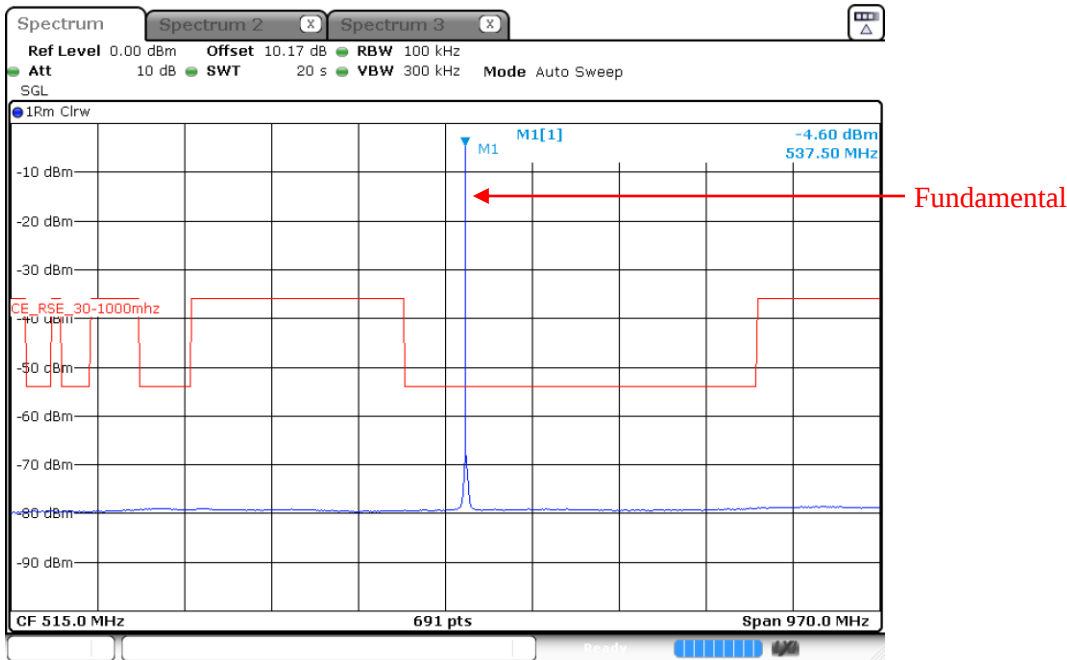
Date: 13.DEC.2024 22:54:11

D2 mode: 662.950 MHz, Above 1 GHz

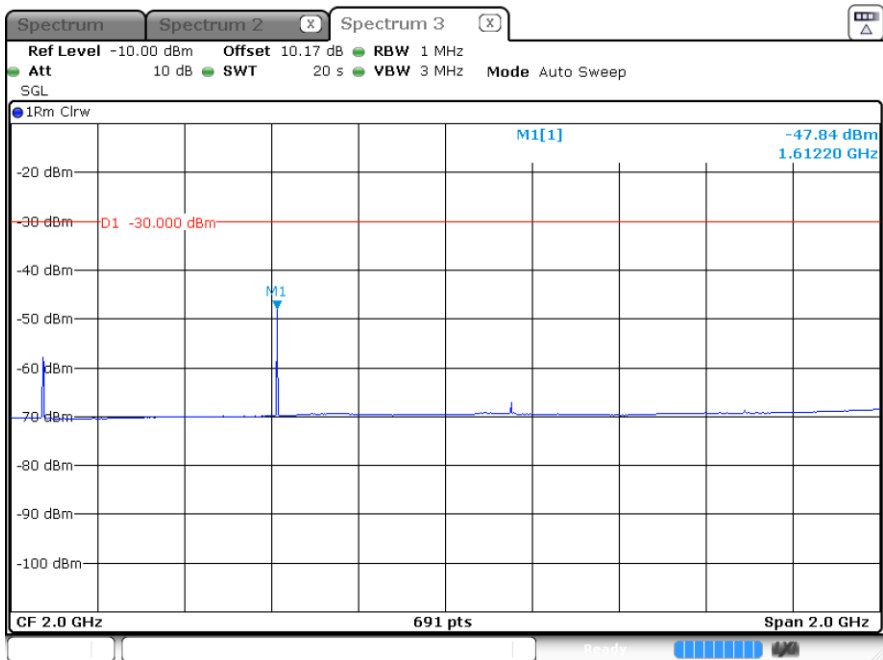


Date: 13.DEC.2024 22:55:41

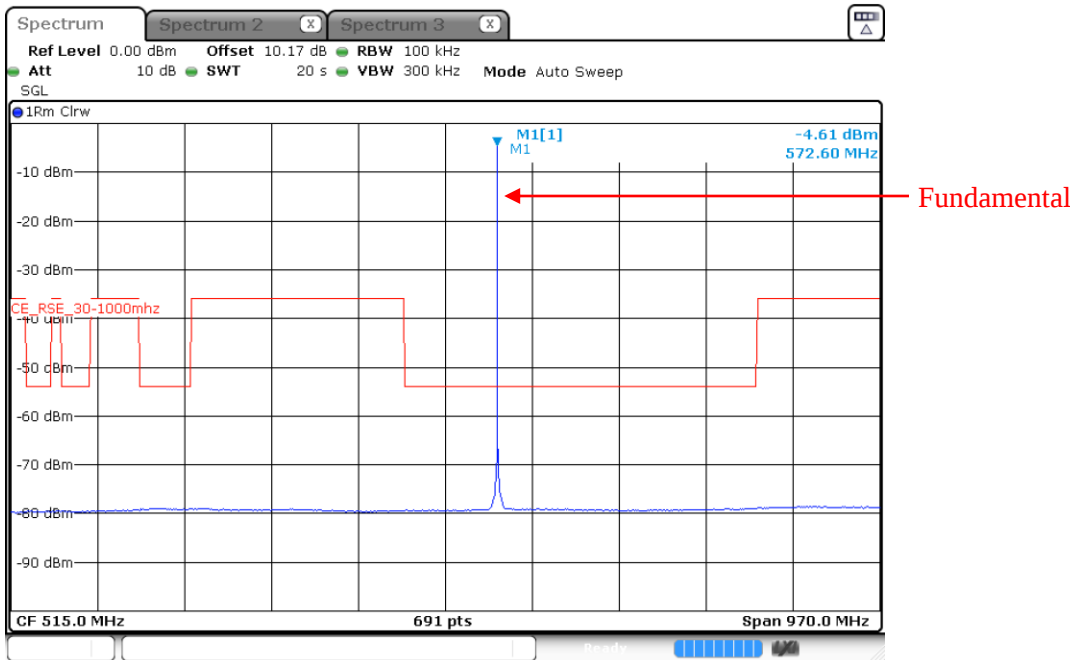
HDM mode: 537.600 MHz, 30-1000 MHz



HDM mode: 537.600 MHz, Above 1 GHz

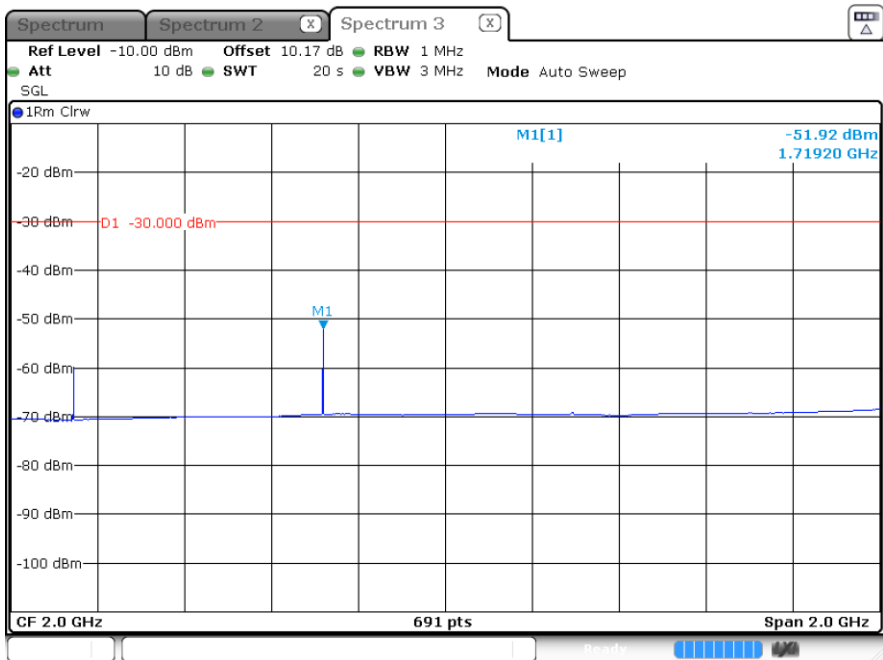


HDM mode: 572.775 MHz, 30-1000 MHz



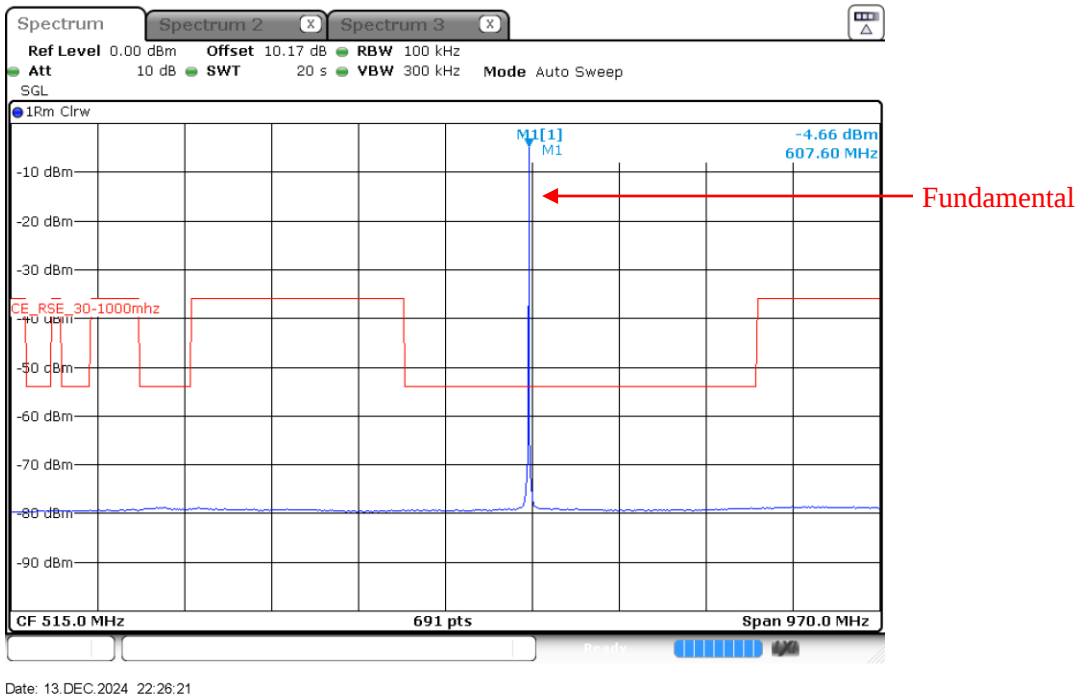
Date: 13.DEC.2024 22:19:16

HDM mode: 572.775 MHz, Above 1 GHz

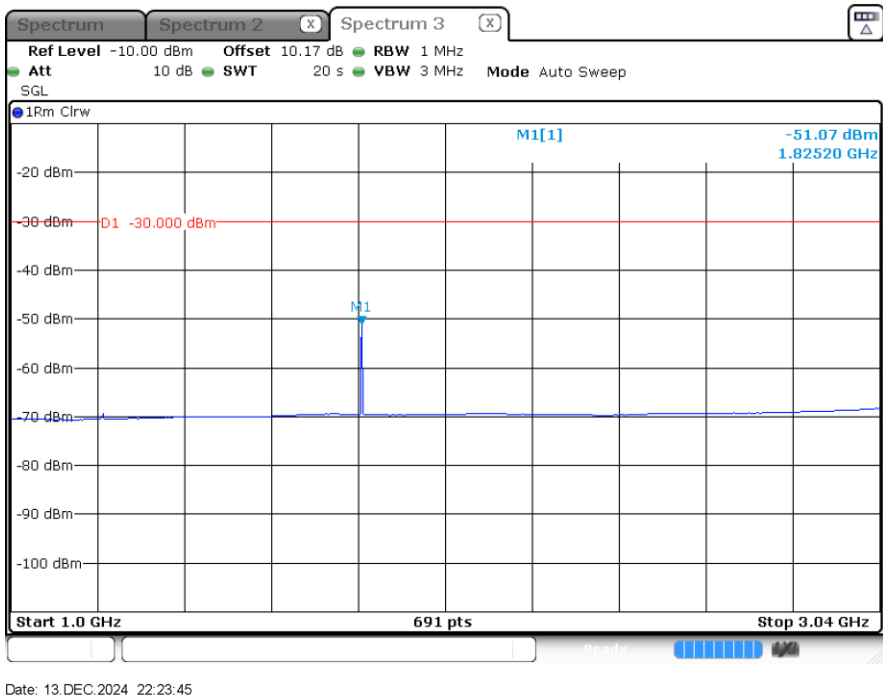


Date: 13.DEC.2024 22:21:28

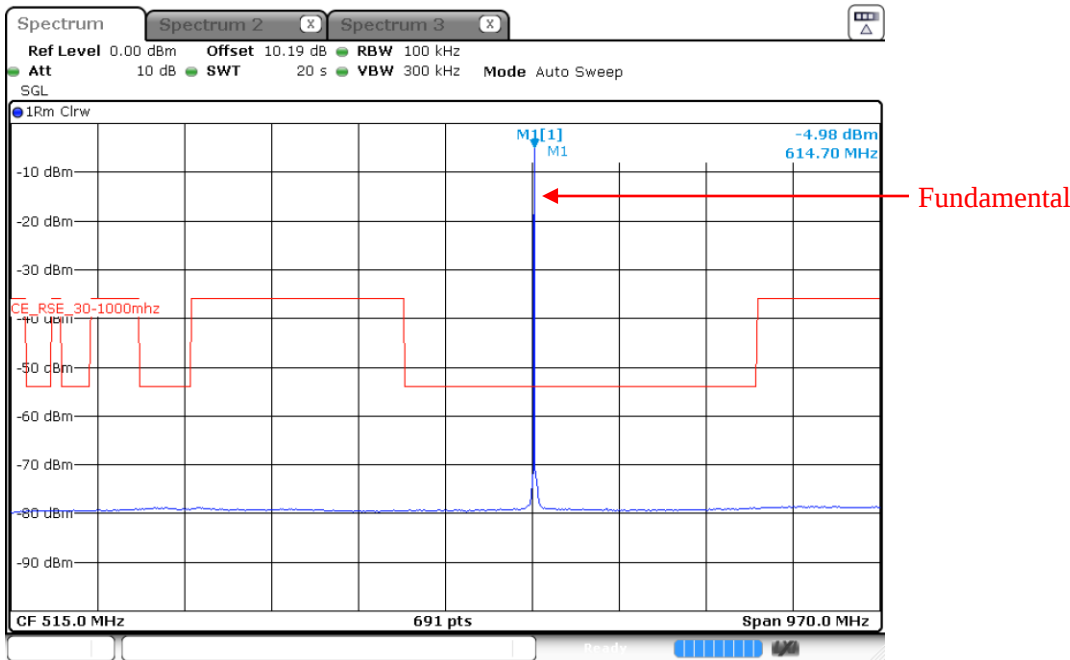
HDM mode: 607.950 MHz, 30-1000 MHz



HDM mode: 607.950 MHz, Above 1 GHz

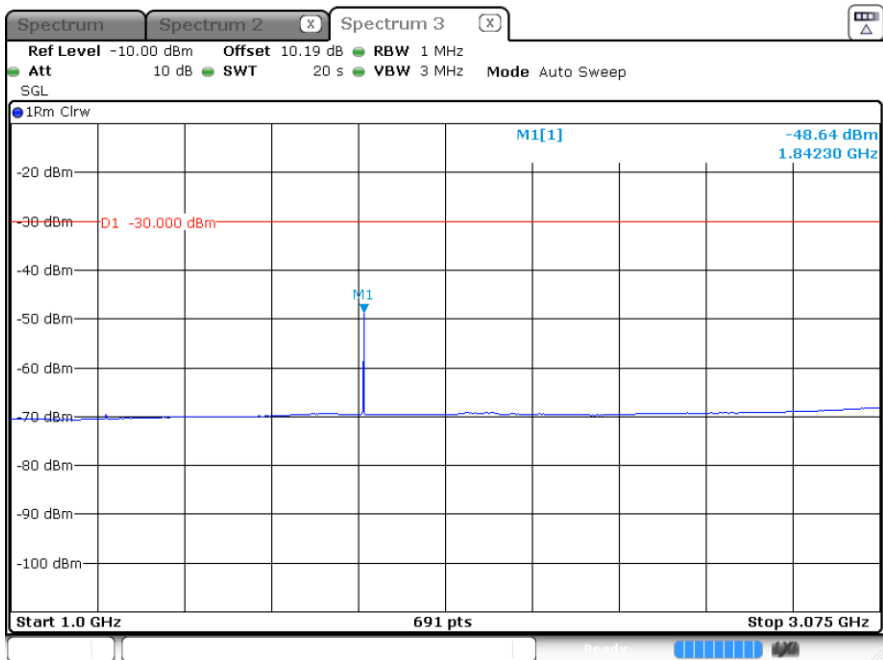


HDM mode: 614.050 MHz, 30-1000 MHz



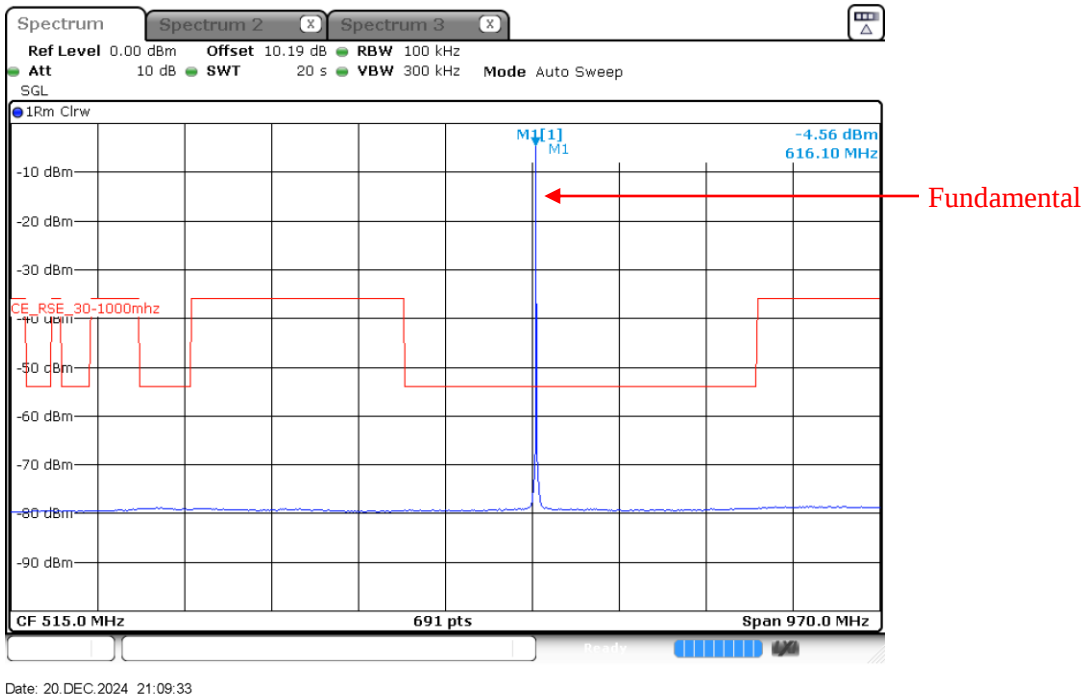
Date: 13.DEC.2024 22:33:37

HDM mode: 614.050 MHz, Above 1 GHz

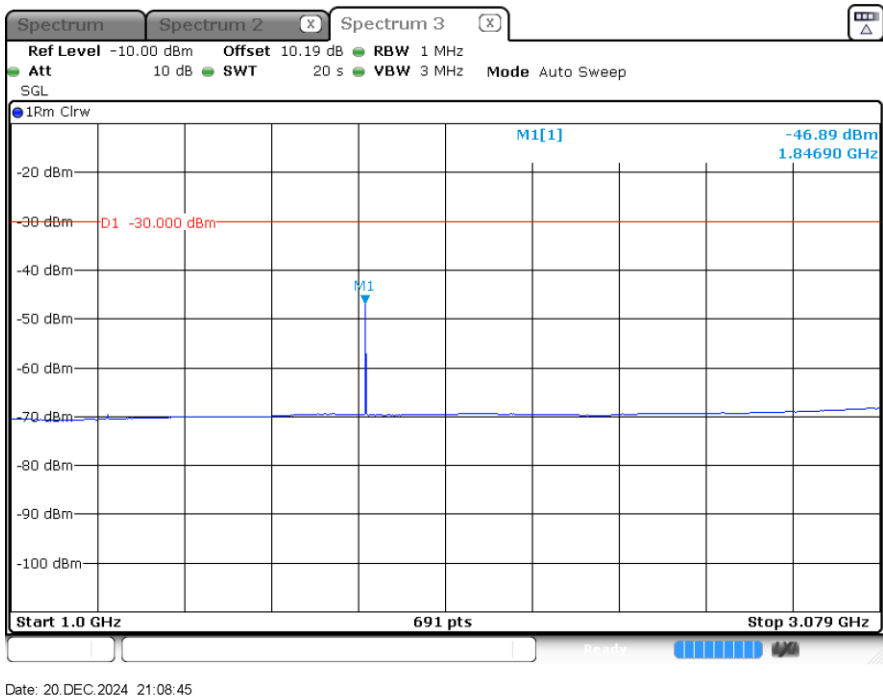


Date: 13.DEC.2024 22:32:31

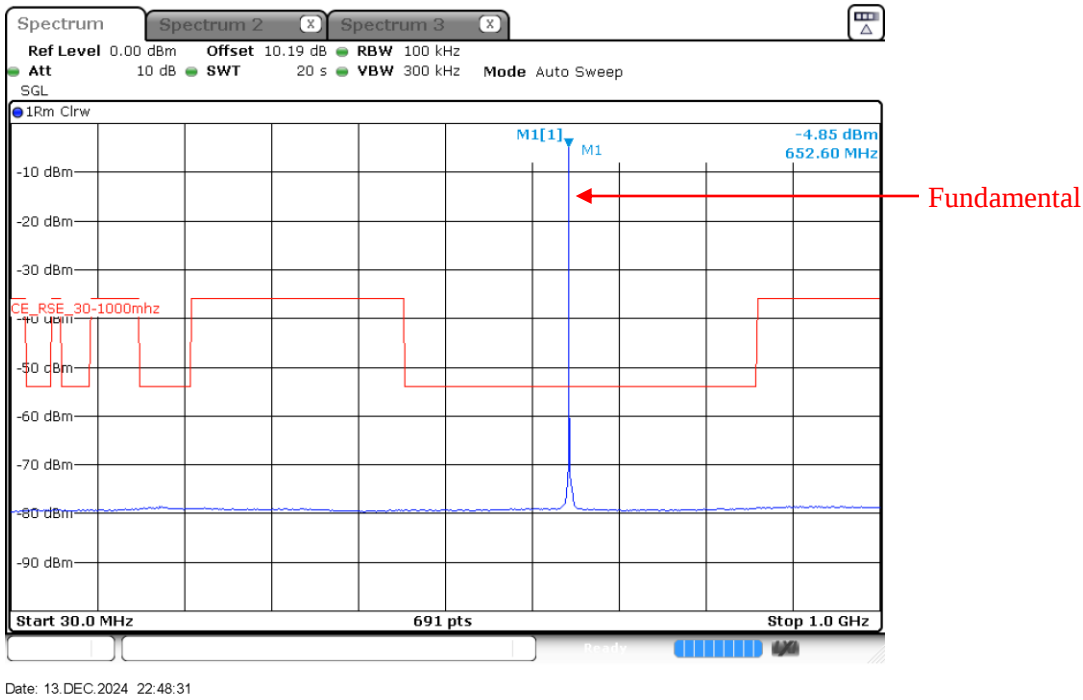
HDM mode: 615.950 MHz, 30-1000 MHz



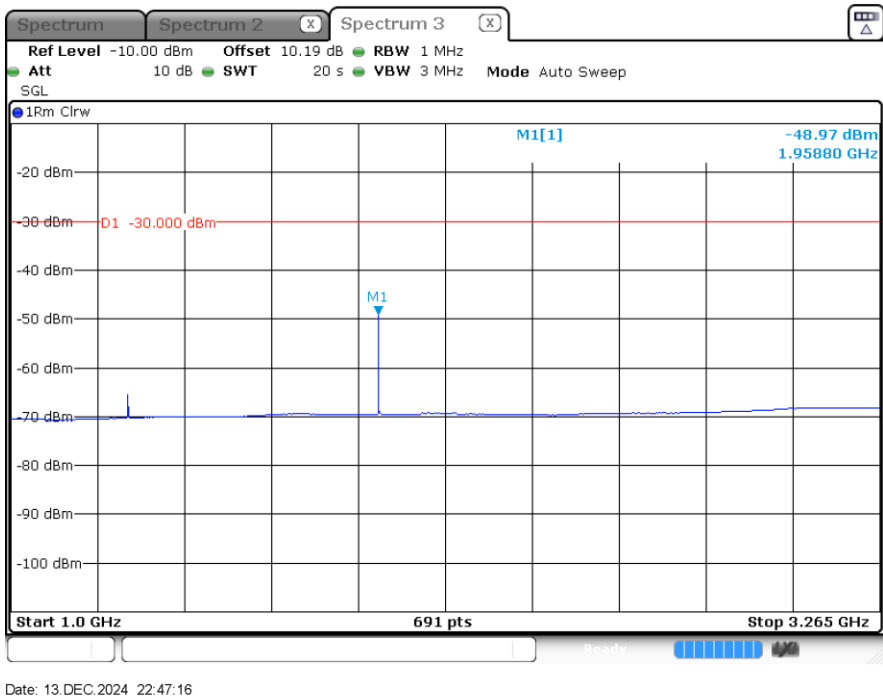
HDM mode: 615.950 MHz, Above 1 GHz



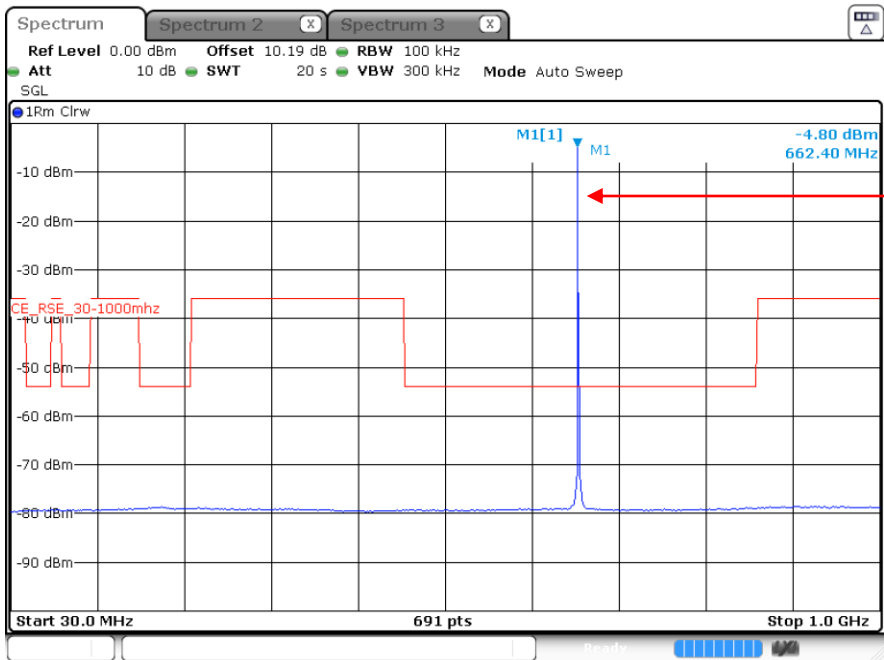
HDM mode: 653.050 MHz, 30-1000 MHz



HDM mode: 653.050 MHz, Above 1 GHz

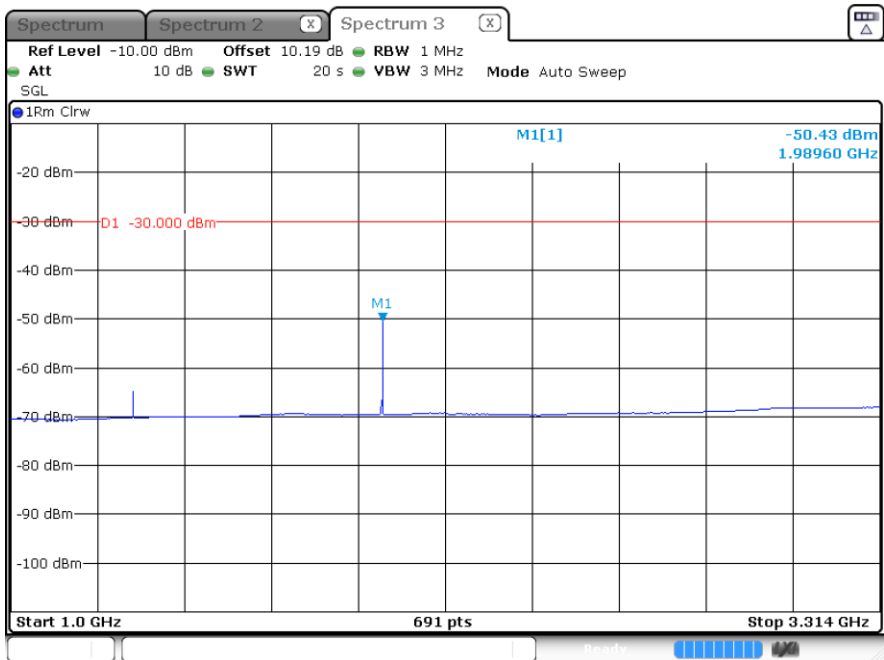


HDM mode: 662.950 MHz, 30-1000 MHz



Date: 13.DEC.2024 22:53:37

HDM mode: 662.950 MHz, Above 1 GHz



Date: 13.DEC.2024 22:56:25

7. FCC §74.861 (e)(7)(iv), RSS-210 Section G.5 & ETSI EN 300 422-1 (4.2.4.1.2) – Field Strength of Spurious Radiation

7.1 Applicable Standards

According to FCC §74.861 (e)(7)(iv):

Emissions outside of the emission masks listed in paragraphs (e)(7)(i) through (e)(7)(iii) shall comply with the limits specified in section 4.2.4.1.2 of ETSI EN 300 422-1 V2.2.1 (2021-11) (incorporated by reference, see § 74.35).

According to RSS-210 Section G.5:

The transmitter unwanted emissions shall meet and be measured according to the requirements in sections 4.2.4.1.2 and 4.2.4.2.2 of ETSI EN 300 422-1.

According to ETSI EN 300 422-1 V2.2.1 (2021-11) Section 4.2.4.1.2:

The level of transmitter unwanted emissions in the spurious domain shall not exceed the limits given in table 4.

**Table 4: Transmitter unwanted emission limits
(from ERC Recommendation 74-01 [2])**

Frequency range	Maximum power	RBW
9 kHz - 150 kHz	-36 dBm	1 kHz
150 kHz - 30 MHz	-36 dBm	10 kHz
30 MHz - 1 GHz	-36 dBm	$F_c + 2,5 B \leq f \leq f_c + 4 B$: 1 kHz $F_c + 4 B < f \leq f_c + 10 B$: 10 kHz $f > f_c + 10 B$: 100 kHz $f < f_c - 10 B$: 100 kHz $f_c - 10 B \leq f < f_c - 4 B$: 10 kHz $f_c - 4 B \leq f \leq f_c - 2,5 B$: 1 kHz
except:		
47 MHz - 74 MHz 87,5 MHz - 118 MHz	-54 dBm	100 kHz
174 MHz - 230 MHz 470 MHz - 862 MHz	-54 dBm	$F_c + 2,5 B \leq f \leq f_c + 4 B$: 1 kHz $F_c + 4 B < f \leq f_c + 10 B$: 10 kHz $f > f_c + 10 B$: 100 kHz $f < f_c - 10 B$: 100 kHz $f_c - 10 B \leq f < f_c - 4 B$: 10 kHz $f_c - 4 B \leq f \leq f_c - 2,5 B$: 1 kHz
$1 \text{ GHz} < f \leq F_{\text{upper}}$	-30 dBm	$F_c + 2,5 B \leq f \leq f_c + 10 B$: 30 kHz $F_c + 10 B < f \leq f_c + 12 B$: 300 kHz $f > f_c + 12 B$: 1 MHz $f < f_c - 12 B$: 1 MHz $f_c - 12 B \leq f < f_c - 10 B$: 300 kHz $f_c - 10 B \leq f \leq f_c - 2,5 B$: 30 kHz

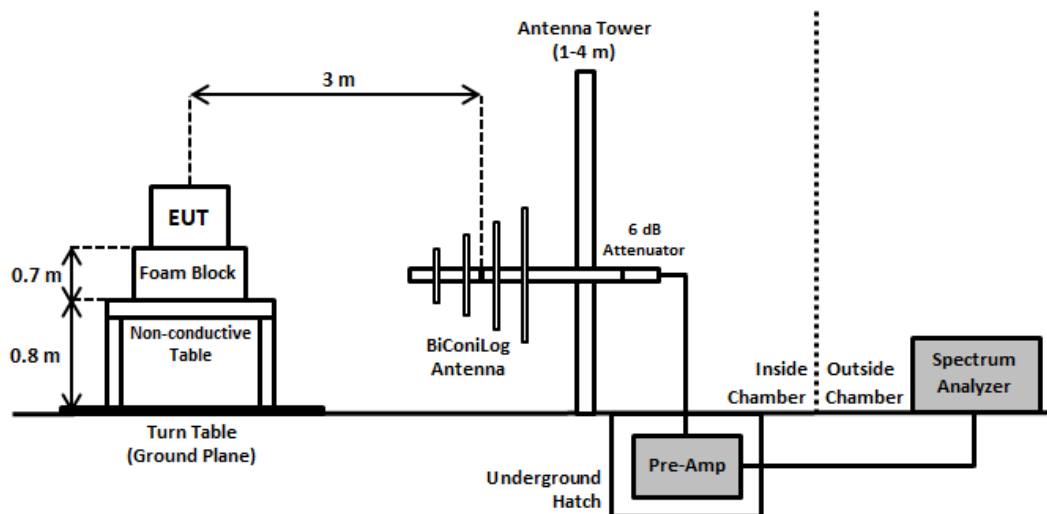
with B being the Declared Channel Bandwidth.

7.2 Test Procedure

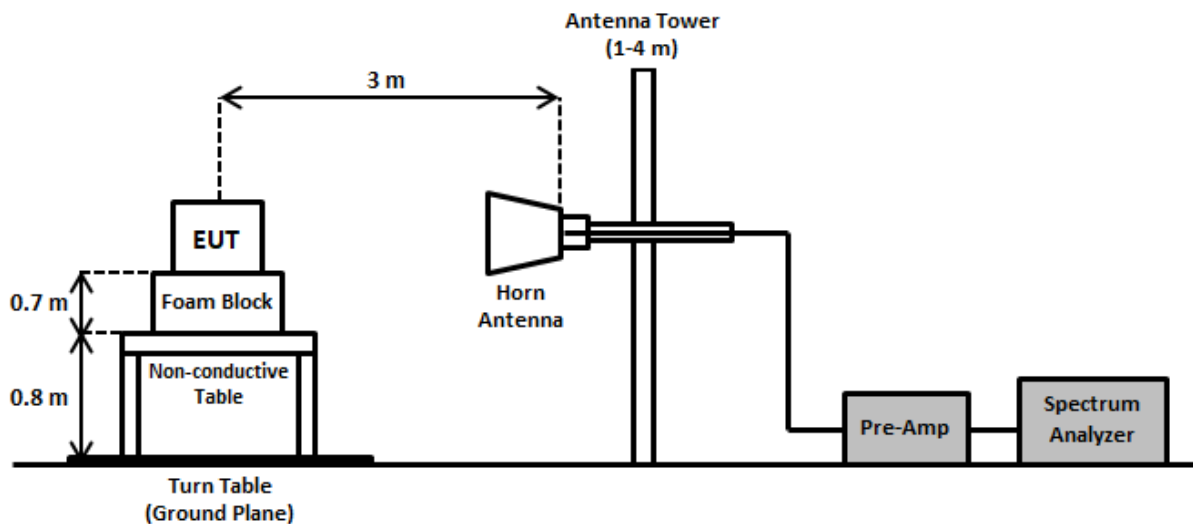
Please refer to KDB 971168 D01 v03r01 Section 7 and ETSI EN 300 422-1 V2.2.1 (2021-11) Section 5.4.4.

7.3 Test Setup Diagram

Below 1 GHz



Above 1 GHz



7.4 Test Equipment List and Details

BACL No.	Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Interval
1432	Keysight Technologies	MXE EMI Receiver, Multi-touch	N9038B	MY60180008	2024-01-15	1 year
316	Sonoma Instruments	Preamplifier 10 kHz - 2.5 GHz	317	260406	2024-08-30	6 months
321	Sunol Sciences	Biconilog Antenna	JB3	A020106-2; 1504	2023-12-18	2 years
1245	-	Attenuator	PE7390-6	01182018A	2023-12-18	2 years
1248	Pasternack	RG214 COAX Cable	PE3062	NA	2024-10-01	6 months
1249	Time Microwave	LMR-400 Cable Dc-3 GHz	AE13684	2k80612-5 6fts	2024-04-09	1 year
1359	Pasternack	N 600in RF Cable	PE3496LF-600	NA	2024-07-26	6 months
1246	HEWLET PACKARD	RF Limiter	11867A	01734	2024-04-09	1 year
568	Com-Power	Dipole Antenna	AD-100	721033DB1, 721033DB2, 721033DB3, 721032DB4	2023-07-11	2 years
1192	ETS Lindgren	Horn Antenna	3117	00218973	2024-10-23	2 years
1449	BACL	Preamplifier	BACL1313-A100M18G	4052472	2024-08-19	6 months
1295	Carlisle Interconnected Technologies	10m Coaxial Cable	UFB142A-1-3937-200200	64639890912-001	2024-10-16	6 months
1397	Mini Circuit	CBL ASSY 2.92MM PLUG TO PLUG 12"	FL086-12KM+	QN2318110-2318	2024-08-16	6 months
473	EMCO	Horn Antenna	3115	9511-4627	2024-11-26	2 years
1130	Aglient	MXG Analog Signal Generator	N5183A	MY50140453	2024-11-07	1 year

Statement of Traceability: **BACL Corp.** attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".

7.5 Test Environmental Conditions

Temperature:	17 to 19 °C
Relative Humidity:	47.2 to 52.6 %
ATM Pressure:	101.2 to 102.2 kPa

The testing was performed by Arturo Reyes from 2024-12-05 to 2024-12-19 in 5m Chamber 3.

7.6 Test Results

Note: The data below are based on worst case mode (D2) when transmitting at maximum output power.

Freq. (MHz)	S.A. Amp. (dBμV)	Table Azimuth (Degrees)	Test Antenna		Substitution				Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Freq. (MHz)	S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
537.600 MHz											
51.787	36.726	360	150	H	51.787	-82.004	0.7	0.83	-82.134	-54	-28.134
50.307	35.628	360	150	V	50.307	-81.712	1.2	0.83	-81.342	-54	-27.342
1052.852	43.35	360	150	H	1052.852	-70.4	5.78	1.35	-65.97	-30	-35.97
1081.664	42.28	360	150	V	1081.664	-71.49	5.78	1.35	-67.06	-30	-37.06
572.775 MHz											
51.159	35.784	360	150	H	51.159	-82.946	0.7	0.83	-83.076	-54	-29.076
51.109	35.27	360	150	V	51.109	-82.07	1.2	0.83	-81.7	-54	-27.7
1052.35	43.53	360	150	H	1052.35	-70.22	5.78	1.35	-65.79	-30	-35.79
1081.096	43.44	360	150	V	1081.096	-70.33	5.78	1.35	-65.9	-30	-35.9
607.950 MHz											
51.568	35.164	360	150	H	51.568	-83.566	0.7	0.83	-83.696	-54	-29.696
51.797	35.597	360	150	V	51.797	-81.743	1.2	0.83	-81.373	-54	-27.373
1070.522	42.91	360	150	H	1070.522	-70.84	5.78	1.35	-66.41	-30	-36.41
1094.373	42.52	360	150	V	1094.373	-71.25	5.78	1.35	-66.82	-30	-36.82
614.050 MHz											
50.593	36.335	360	150	H	50.593	-82.395	0.7	0.83	-82.525	-54	-28.525
50.915	38.421	360	150	V	50.915	-78.919	1.2	0.83	-78.549	-54	-24.549
1068.837	42.84	360	150	H	1068.837	-70.91	5.78	1.35	-66.48	-30	-36.48
1094.778	42.8	360	150	V	1094.778	-70.97	5.78	1.35	-66.54	-30	-36.54
615.950 MHz											
51.876	36.021	360	150	H	51.876	-82.709	0.7	0.83	-82.839	-54	-28.839
50.729	36.824	360	150	V	50.729	-80.516	1.2	0.83	-80.146	-54	-26.146
1050.91	43.17	360	150	H	1050.91	-70.58	5.78	1.35	-66.15	-30	-36.15
1051.539	42.64	360	150	V	1051.539	-71.13	5.78	1.35	-66.7	-30	-36.7
653.050 MHz											
50.711	37.194	360	150	H	50.711	-81.536	0.7	0.83	-81.666	-54	-27.666
50.977	36.744	360	150	V	50.977	-80.596	1.2	0.83	-80.226	-54	-26.226
1058.233	46.98	360	150	H	1058.233	-66.77	5.78	1.35	-62.34	-30	-32.34
1204.874	41.58	360	150	V	1204.874	-72.19	5.78	1.35	-67.76	-30	-37.76

662.950 MHz											
51.82	37.894	360	150	H	51.82	-80.836	0.7	0.83	-80.966	-54	-26.966
51.55	37.004	360	150	V	51.55	-80.336	1.2	0.83	-79.966	-54	-25.966
1060.445	46.42	360	150	H	1060.445	-67.33	5.78	1.35	-62.9	-30	-32.9
1097.917	44.39	360	150	V	1097.917	-69.38	5.78	1.35	-64.95	-30	-34.95