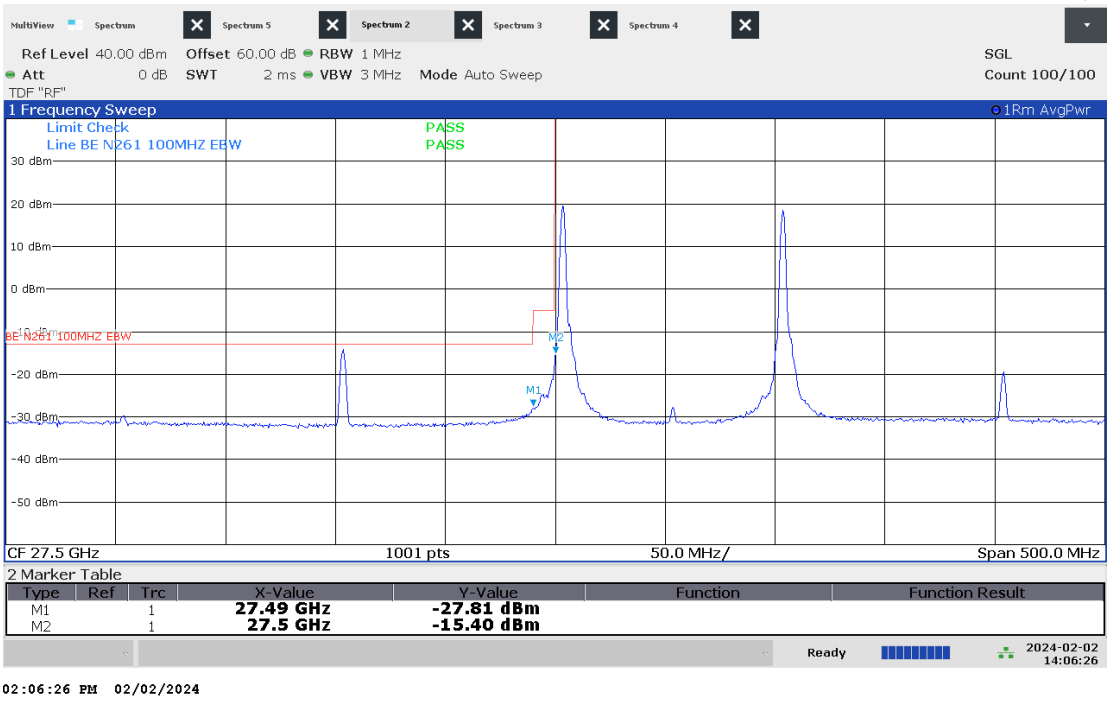
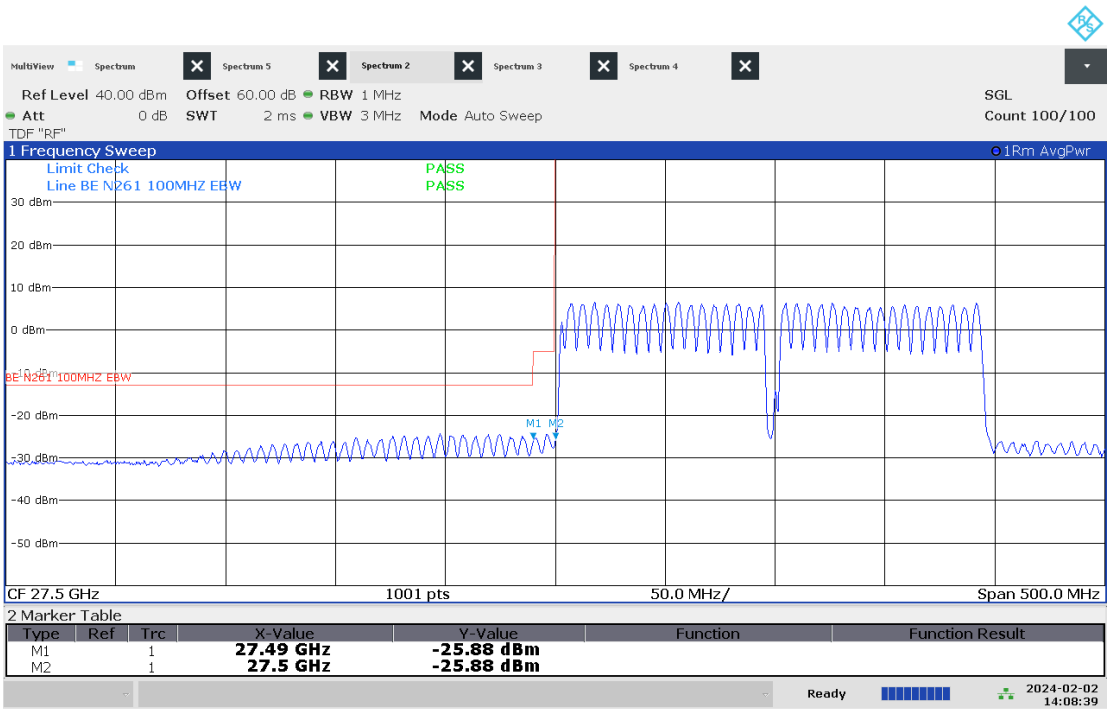
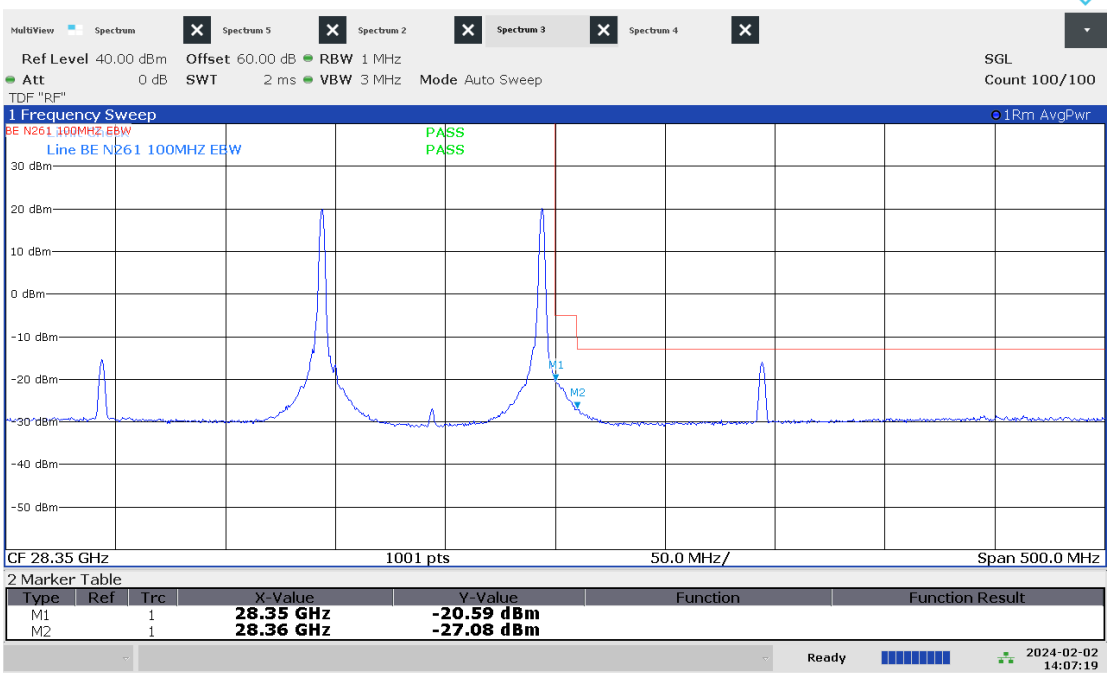
n261, ANT 0, SISO (2TX), QPSK, 2CC



100MHz Bandwidth, Low Channel, Single RB



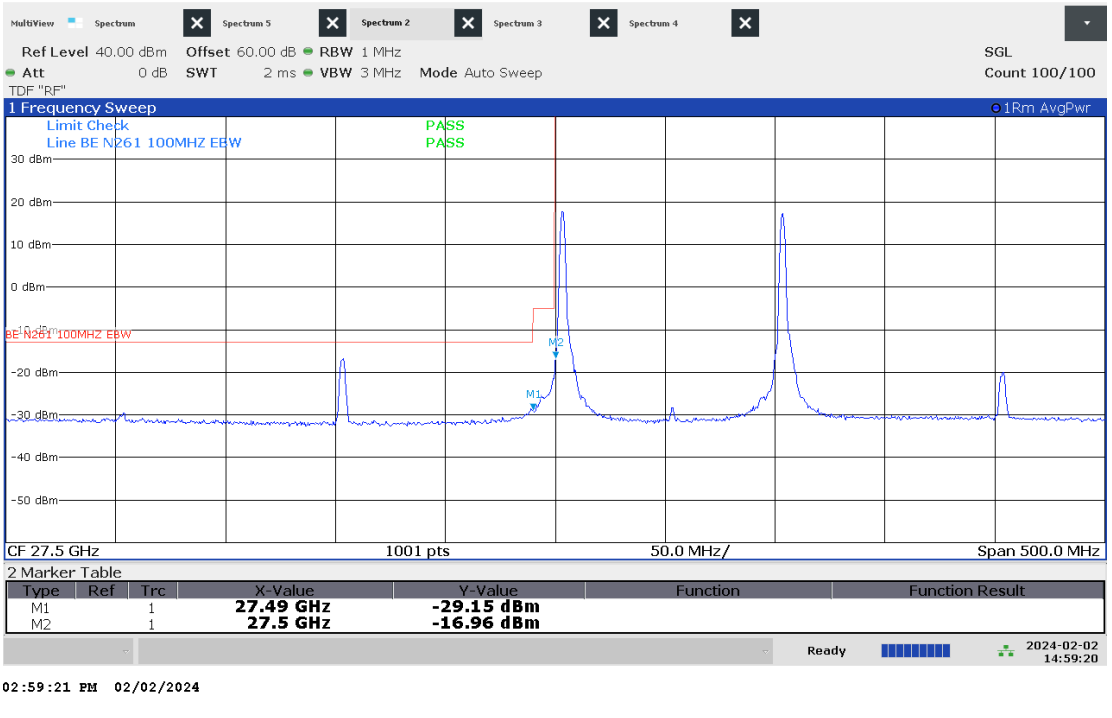
100MHz Bandwidth, Low Channel, Full RB



100MHz Bandwidth, High Channel, Single RB

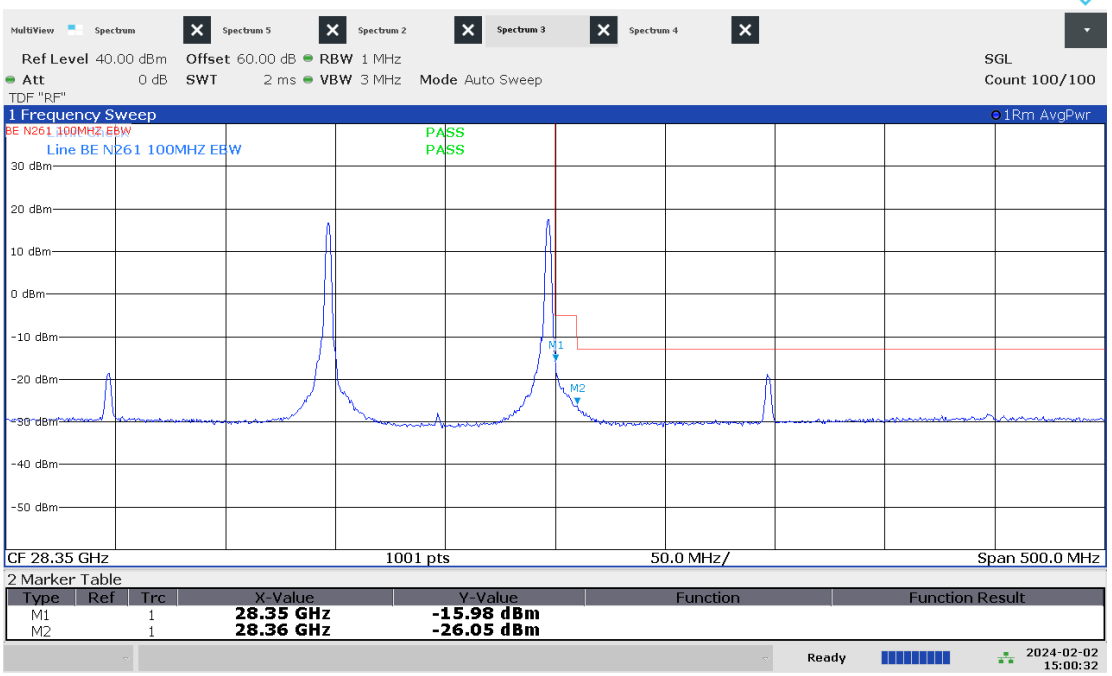
100MHz Bandwidth, High Channel, Full RB

n261, ANT 0, MIMO, QPSK, 2CC



100MHz Bandwidth, Low Channel, Single RB

100MHz Bandwidth, Low Channel, Full RB



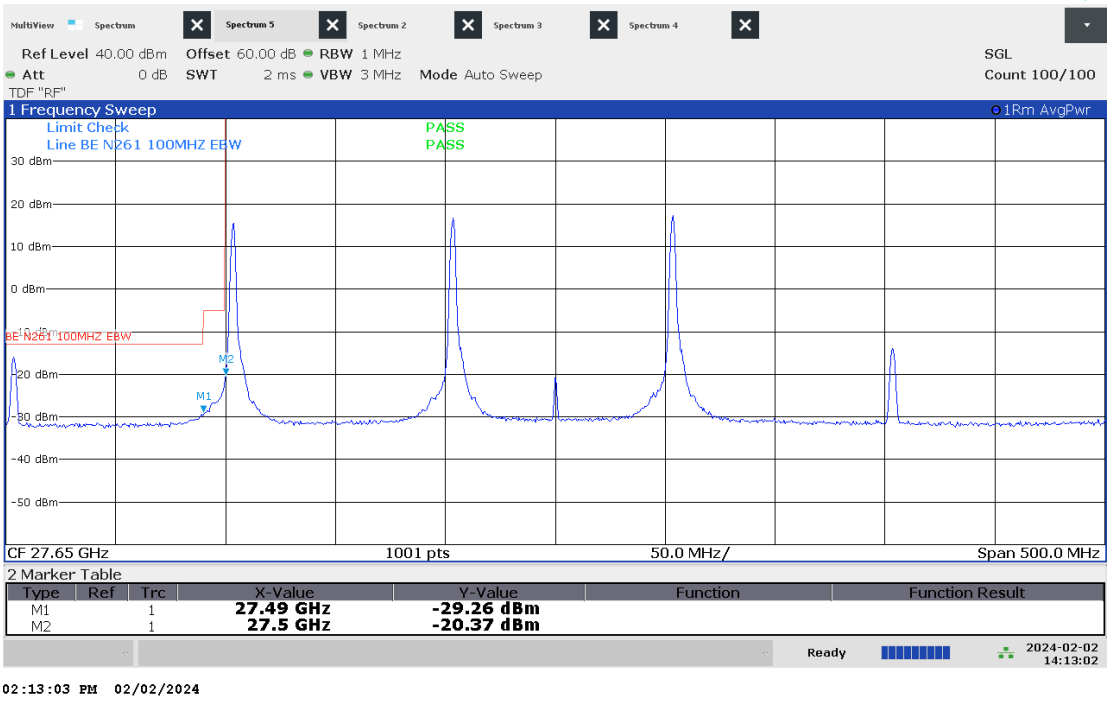
100MHz Bandwidth, High Channel, Single RB

100MHz Bandwidth, High Channel, Full RB

8.3.10. n261 3CC 100MHz BANDWIDTH RESULTS

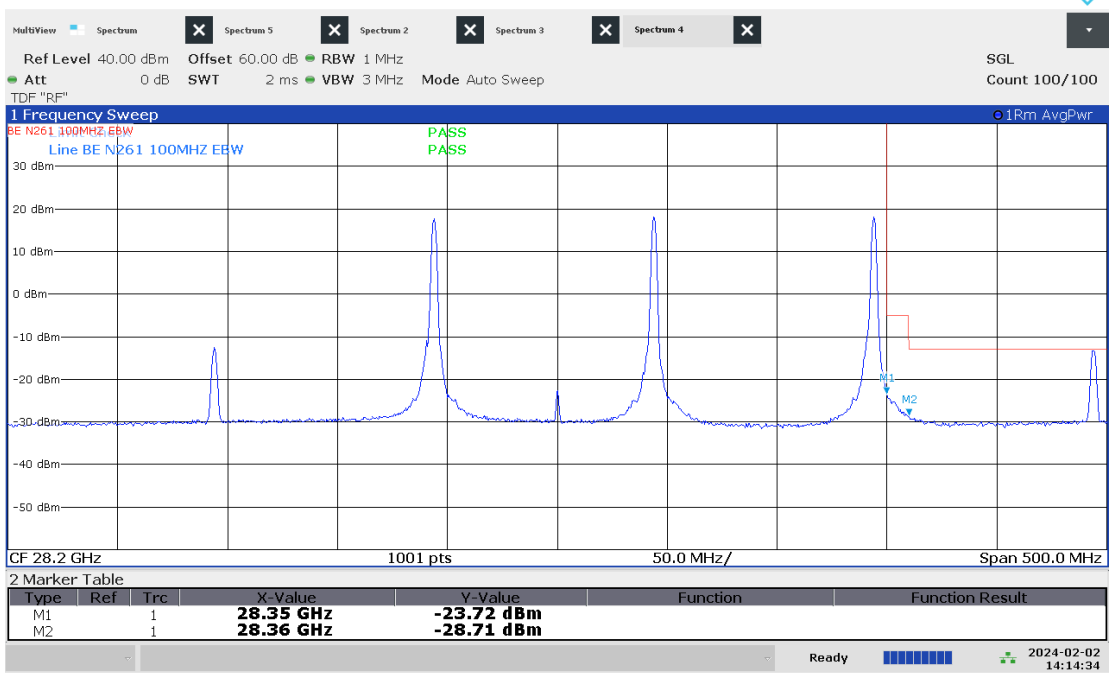
Modulation	Antenna	Control System	RB (Size/Offset)	Channel	Frequency (GHz)	Avg EIRP (dBm)	EUT Ant Gain (dBi)	Adj. EIRP (dBm)	Avg TRP Limit (dBm)	Margin (dB)
QPSK	ANT0	SISO 2TX	1/0	Low	27.49	-29.26	11.2	-40.46	-13	-27.46
					27.50	-20.37	11.2	-31.57	-5	-26.57
			64/0	Low	27.49	-28.69	11.2	-39.89	-13	-26.89
					27.50	-24.45	11.2	-35.65	-5	-30.65
			1/63	High	28.35	-23.72	11.2	-34.92	-5	-29.92
					28.36	-28.71	11.2	-39.91	-13	-26.91
			64/0	High	28.35	-26.02	11.2	-37.22	-5	-32.22
					28.36	-24.27	11.2	-35.47	-13	-22.47
		MIMO	1/0	Low	27.49	-28.91	11.2	-40.11	-13	-27.11
					27.50	-17.30	11.2	-28.5	-5	-23.5
			66/0	Low	27.49	-28.37	11.2	-39.57	-13	-26.57
					27.50	-27.48	11.2	-38.68	-5	-33.68
			1/65	High	28.35	-20.11	11.2	-31.31	-5	-26.31
					28.36	-28.51	11.2	-39.71	-13	-26.71
			66/0	High	28.35	-27.81	11.2	-39.01	-5	-34.01
					28.36	-28.00	11.2	-39.2	-13	-26.2
	ANT1	SISO 2TX	1/0	Low	27.49	-30.20	10.4	-40.6	-13	-27.6
					27.50	-19.78	10.4	-30.18	-5	-25.18
			64/0	Low	27.49	-29.85	10.4	-40.25	-13	-27.25
					27.50	-27.18	10.4	-37.58	-5	-32.58
			1/63	High	28.35	-25.90	10.4	-36.3	-5	-31.3
					28.36	-30.04	10.4	-40.44	-13	-27.44
			64/0	High	28.35	-27.62	10.4	-38.02	-5	-33.02
					28.36	-25.37	10.4	-35.77	-13	-22.77
		MIMO	1/0	Low	27.49	-30.25	10.4	-40.65	-13	-27.65
					27.50	-19.27	10.4	-29.67	-5	-24.67
			66/0	Low	27.49	-29.39	10.4	-39.79	-13	-26.79
					27.50	-28.44	10.4	-38.84	-5	-33.84
			1/65	High	28.35	-18.45	10.4	-28.85	-5	-23.85
					28.36	-29.58	10.4	-39.98	-13	-26.98
			66/0	High	28.35	-27.66	10.4	-38.06	-5	-33.06
					28.36	-28.25	10.4	-38.65	-13	-25.65

n261, ANT 0, SISO (2TX), QPSK, 3CC



100MHz Bandwidth, Low Channel, Single RB

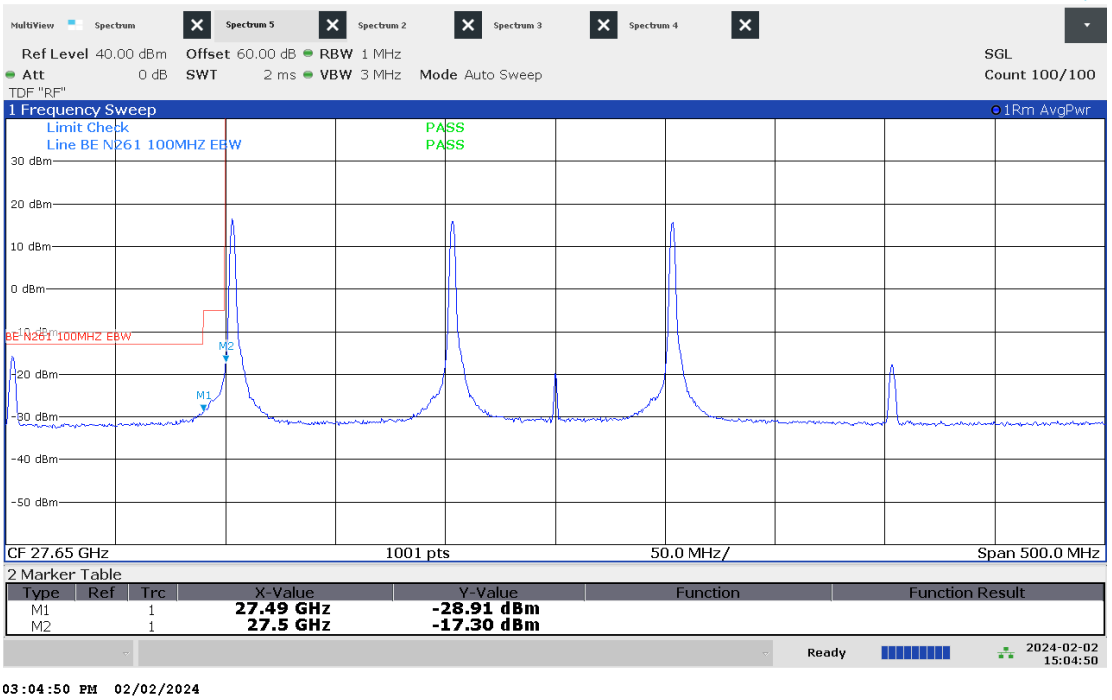
100MHz Bandwidth, Low Channel, Full RB



100MHz Bandwidth, High Channel, Single RB

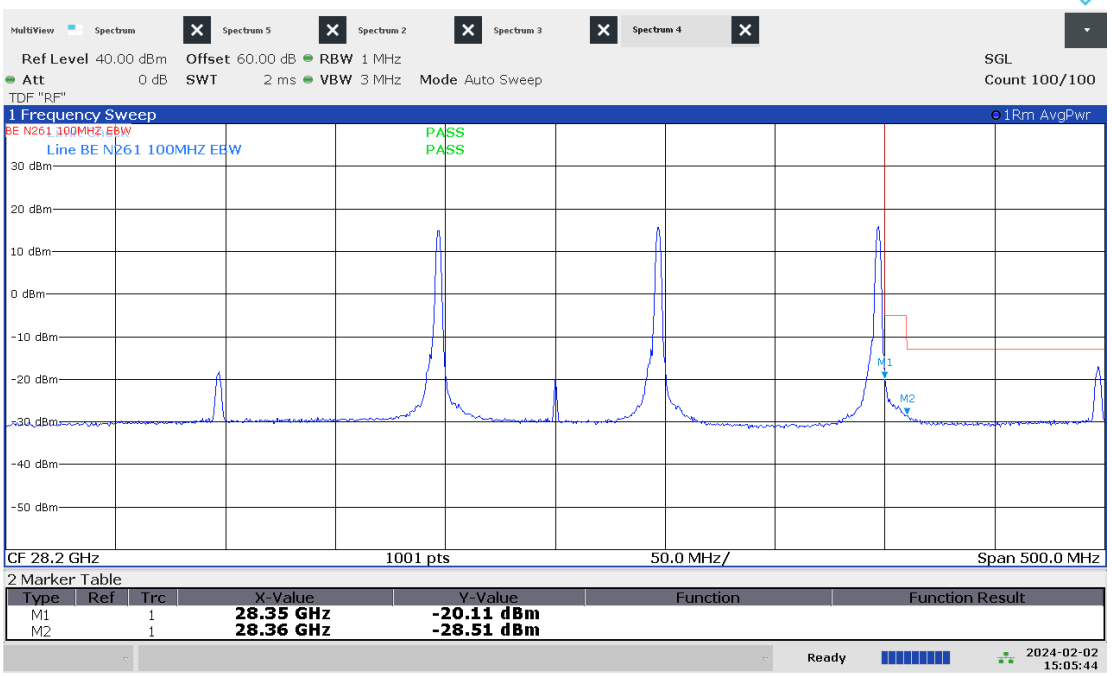
100MHz Bandwidth, High Channel, Full RB

n261, ANT 0, MIMO, QPSK, 3CC

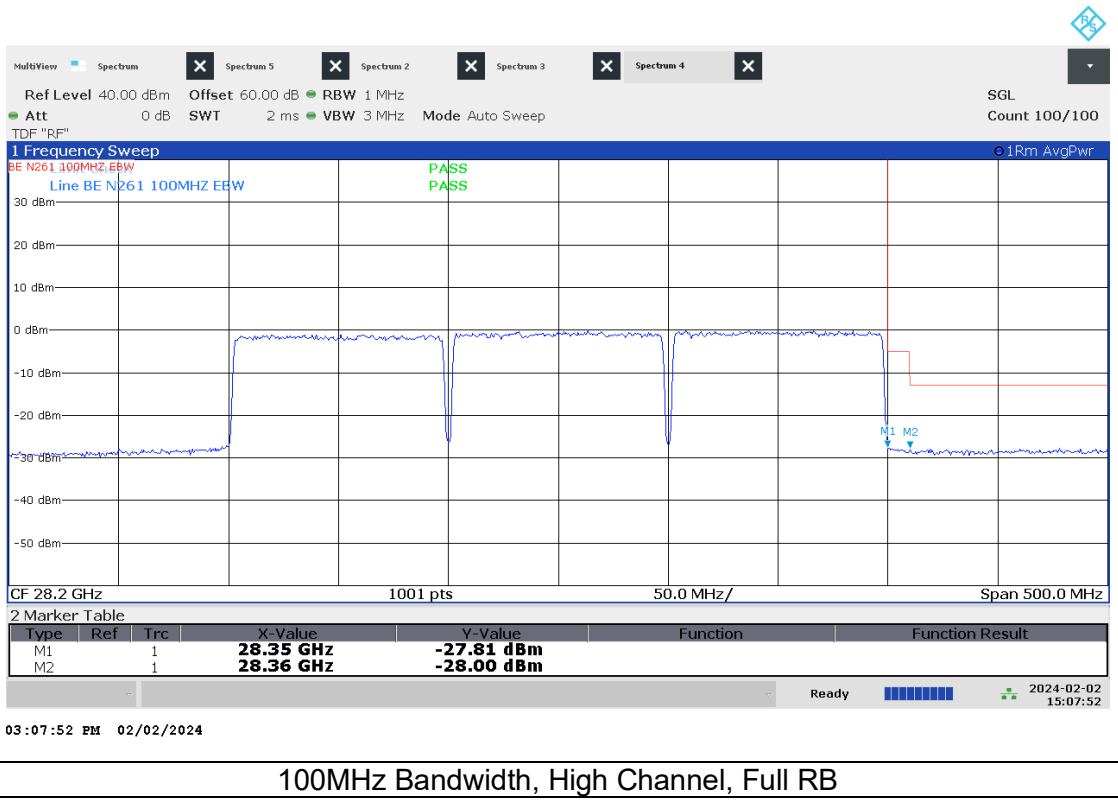


100MHz Bandwidth, Low Channel, Single RB

100MHz Bandwidth, Low Channel, Full RB



100MHz Bandwidth, High Channel, Single RB

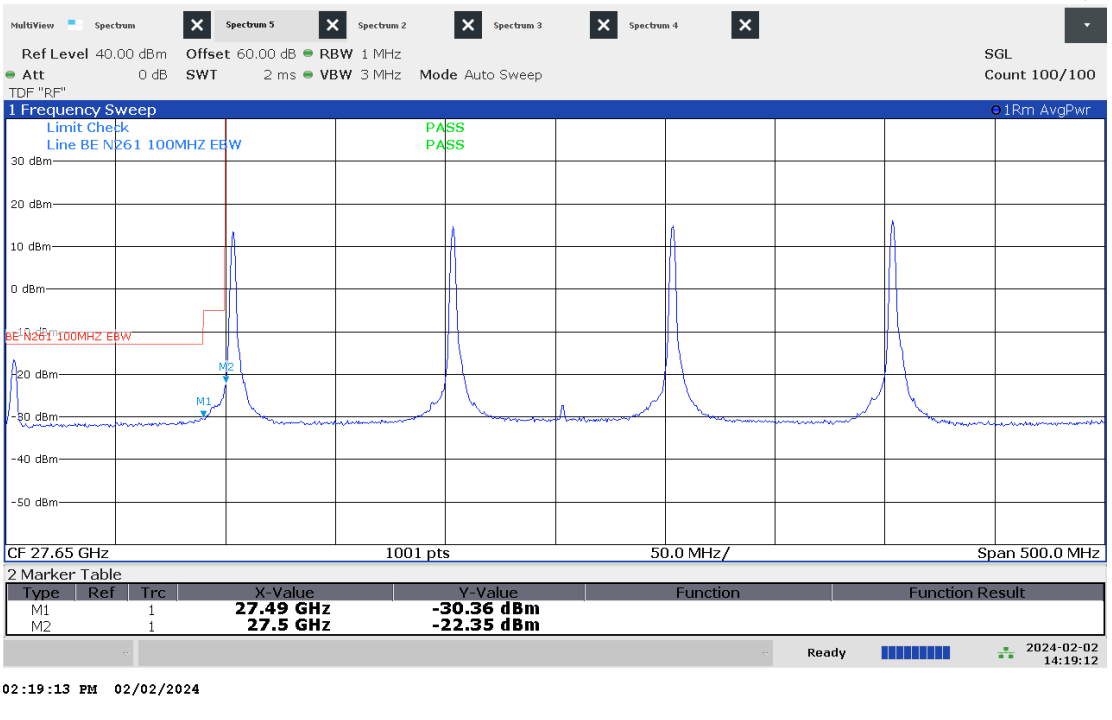


100MHz Bandwidth, High Channel, Full RB

8.3.11. n261 4CC 100MHz BANDWIDTH RESULTS

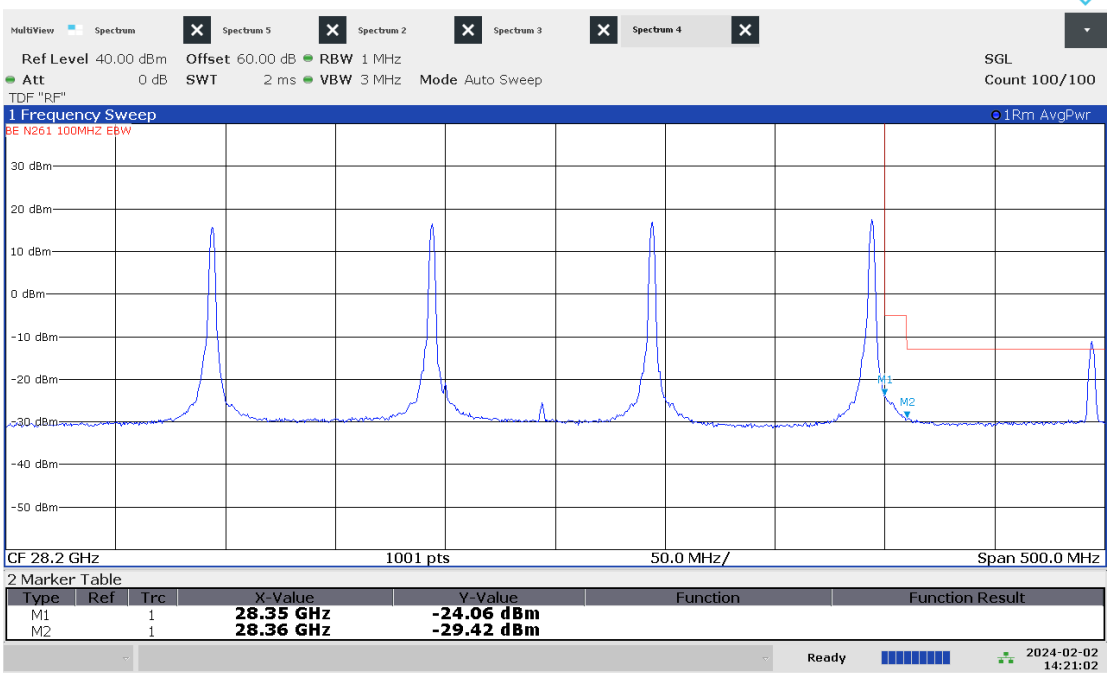
Modulation	Antenna	Control System	RB (Size/Offset)	Channel	Frequency (GHz)	Avg EIRP (dBm)	EUT Ant Gain (dBi)	Adj. EIRP (dBm)	Avg TRP Limit (dBm)	Margin (dB)
QPSK	ANT0	SISO 2TX	1/0	Low	27.49	-30.36	11.2	-41.56	-13	-28.56
					27.50	-22.35	11.2	-33.55	-5	-28.55
			64/0	Low	27.49	-29.42	11.2	-40.62	-13	-27.62
					27.50	-24.98	11.2	-36.18	-5	-31.18
			1/63	High	28.35	-24.06	11.2	-35.26	-5	-30.26
					28.36	-29.42	11.2	-40.62	-13	-27.62
			64/0	High	28.35	-25.00	11.2	-36.2	-5	-31.2
					28.36	-24.85	11.2	-36.05	-13	-23.05
		MIMO	1/0	Low	27.49	-29.55	11.2	-40.75	-13	-27.75
					27.50	-19.25	11.2	-30.45	-5	-25.45
			66/0	Low	27.49	-28.73	11.2	-39.93	-13	-26.93
					27.50	-26.99	11.2	-38.19	-5	-33.19
			1/65	High	28.35	-19.06	11.2	-30.26	-5	-25.26
					28.36	-29.33	11.2	-40.53	-13	-27.53
			66/0	High	28.35	-28.09	11.2	-39.29	-5	-34.29
					28.36	-29.03	11.2	-40.23	-13	-27.23
	ANT1	SISO 2TX	1/0	Low	27.49	-30.71	10.4	-41.11	-13	-28.11
					27.50	-20.50	10.4	-30.9	-5	-25.9
			64/0	Low	27.49	-29.98	10.4	-40.38	-13	-27.38
					27.50	-27.48	10.4	-37.88	-5	-32.88
			1/63	High	28.35	-27.34	10.4	-37.74	-5	-32.74
					28.36	-29.85	10.4	-40.25	-13	-27.25
			64/0	High	28.35	-28.36	10.4	-38.76	-5	-33.76
					28.36	-25.53	10.4	-35.93	-13	-22.93
		MIMO	1/0	Low	27.49	-30.64	10.4	-41.04	-13	-28.04
					27.50	-22.26	10.4	-32.66	-5	-27.66
			66/0	Low	27.49	-29.76	10.4	-40.16	-13	-27.16
					27.50	-27.98	10.4	-38.38	-5	-33.38
			1/65	High	28.35	-19.09	10.4	-29.49	-5	-24.49
					28.36	-29.59	10.4	-39.99	-13	-26.99
			66/0	High	28.35	-28.34	10.4	-38.74	-5	-33.74
					28.36	-29.16	10.4	-39.56	-13	-26.56

n261, ANT 0, SISO (2TX), QPSK, 4CC



100MHz Bandwidth, Low Channel, Single RB

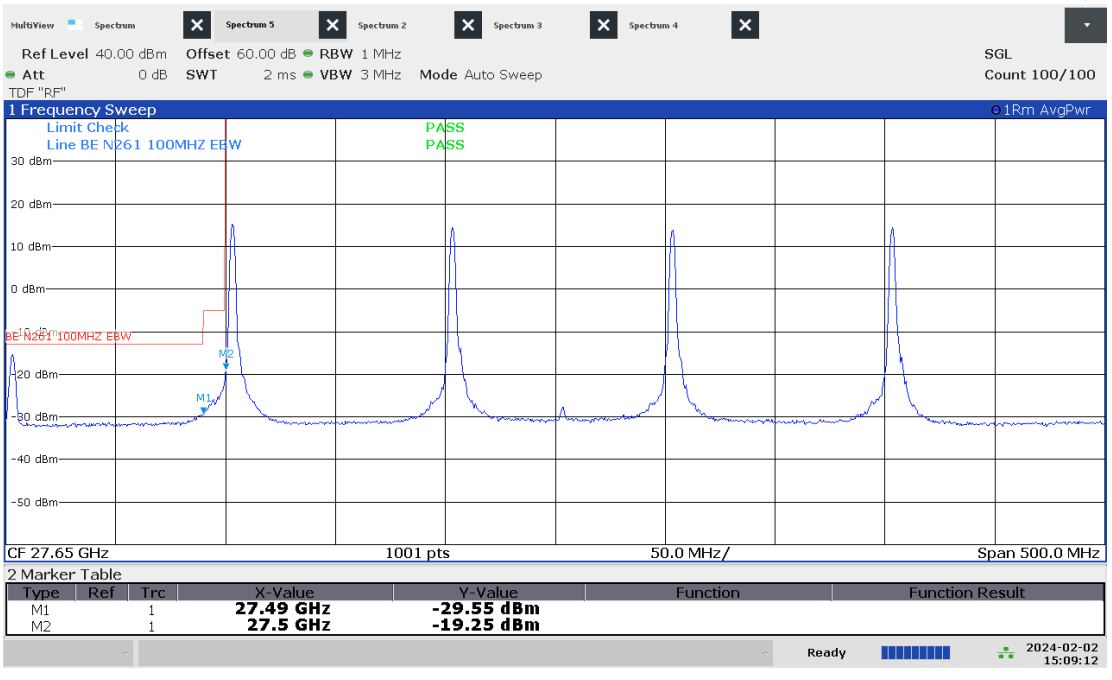
100MHz Bandwidth, Low Channel, Full RB



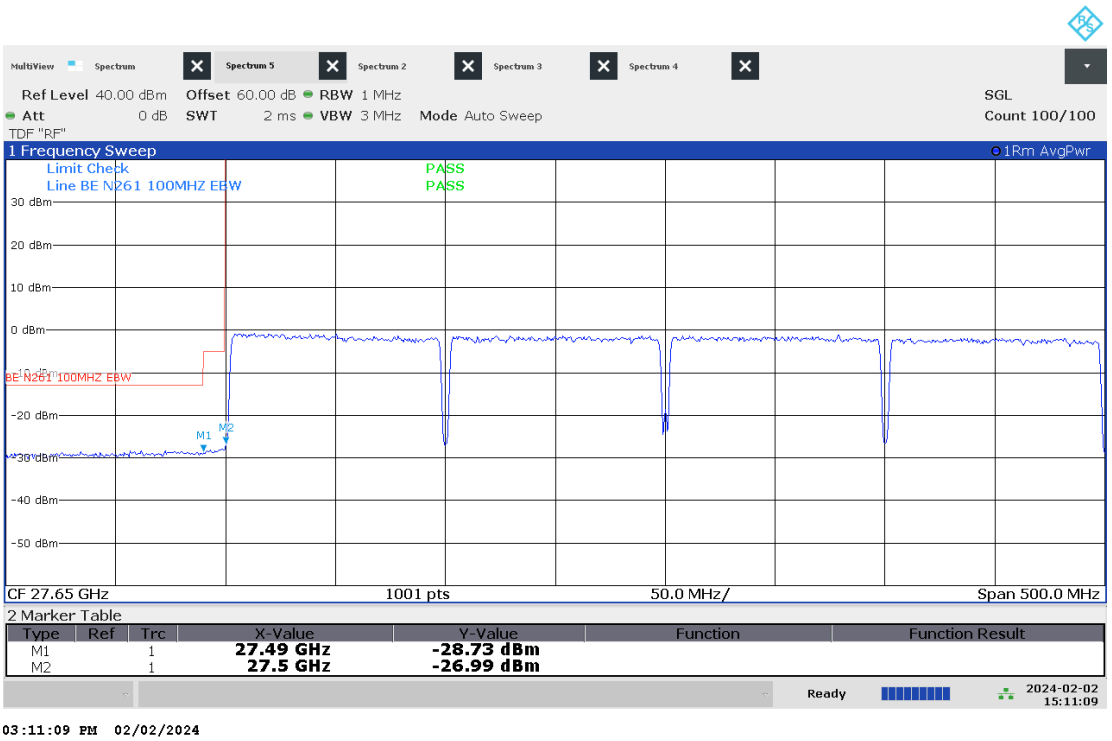
100MHz Bandwidth, High Channel, Single RB

100MHz Bandwidth, High Channel, Full RB

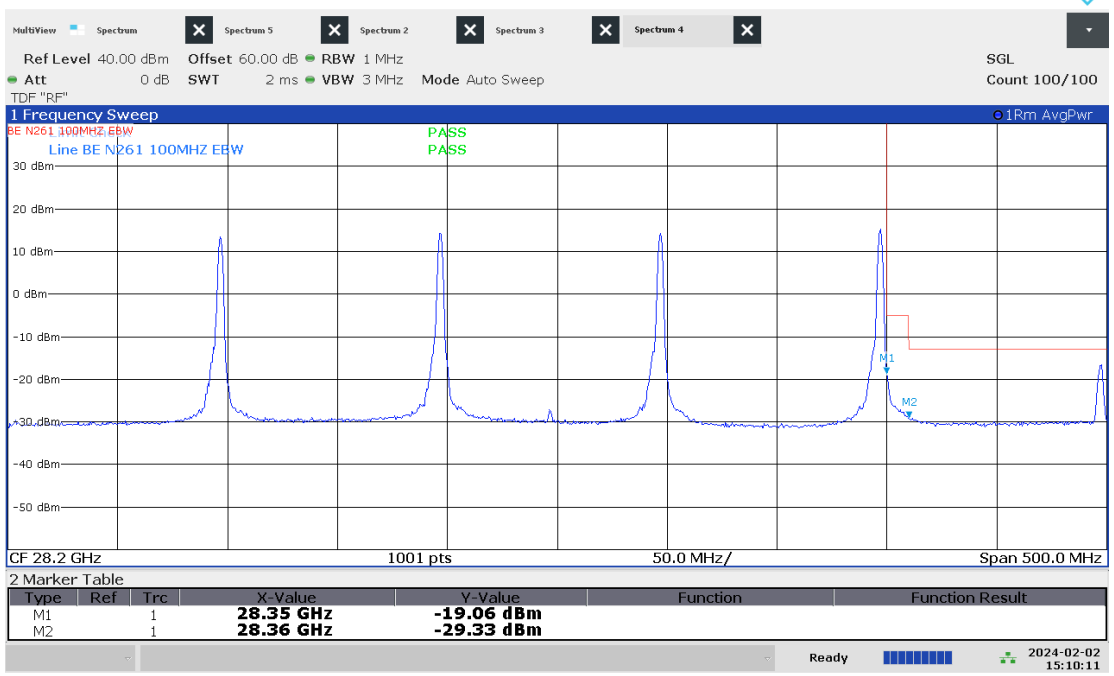
n261, ANT 0, MIMO, QPSK, 4CC



100MHz Bandwidth, Low Channel, Single RB



100MHz Bandwidth, Low Channel, Full RB



100MHz Bandwidth, High Channel, Single RB

100MHz Bandwidth, High Channel, Full RB

8.4. RADIATED SPURIOUS EMISSIONS

RULE PART(S)

FCC: §2.1051, §30.203

LIMIT

30.203 (a) The conductive power or the total radiated power of any emission outside a licensee's frequency block shall be −13 dBm/MHz or lower.

TEST PROCEDURE

KDB 842590 D01 Upper Microwave Flexible Use Service v01r02 Section 4.4.3.
ANSI C63.26-2015 Clause 5.5.4 and Annex C.5.2.

All radiated spurious emissions were measured as EIRP to compare with the §30.203 TRP limits to demonstrate compliance.

Radiated spurious emissions was investigated from 30 MHz – 100 GHz on n258 Sub-bands 1 & 2 and n261 band.

Plots below 18 GHz are corrected field strength levels, measured at 3-meter test distance. The average EIRP reported below is calculated per section 5.2.7 of ANSI C63.26-2015 which states: EIRP (dBm) = E (dBµV/m) + 20log(D) − 104.8; where D is the measurement distance (in the far field region) in m. The field strength E is calculated E (dBµV/m) = Spectrum Analyzer Level (dBm) + Antenna Factor (dB/m) + Cable Loss (dB) + 107.

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The EUT is configured in accordance with ANSI C63.26 set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements in the 30-1000MHz range, 9kHz for peak and/or quasi-peak detection measurements in the 0.15-30MHz range and 200Hz for peak and/or quasi-peak detection measurements in the 9 to 150kHz range. Peak detection is used unless otherwise noted as quasi-peak or average (9-90kHz and 110-490kHz).

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3MHz for peak measurements.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. Below 18 GHz, the antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Above 18 GHz the EUT is installed in a roll-axis positioner, thus full 1-to-4-meter height scan was not performed.

3D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel).

The antenna to EUT distance is 3 meters below 18 GHz and as defined in Section 5.7 above 18 GHz. RSE from 18 – 50 GHz were measured using a spectrum analyzer or EMI receiver with an internal preamplifier, as applicable. Emissions above 50 GHz were measured using a downconverter with spectrum analyzer, while an external LNA was used when applicable.

EIRP of RSE was calculated using the equations on ANSI C63.26-2015 Annex C.5.2. The total correction factor of cable loss, horn antenna gain, harmonic mixer loss, LNA gain and far-field path loss were calculated using equations C.8 and C.9 and pre-loaded into the spectrum analyzer.

Sample calculation of EIRP:

Total Correction Factor = Cable Loss (dB) – Horn Ant Gain (dBi) + Mixer Loss (dB) – LNA Gain (dB) + Path Loss (dB)
= 4 – 23 + 12 – 30 + 71
= 34 dB

EIRP = $P_{measured}$ (dBm), where Total Correction Factor preloaded.

Worse-Case Configuration

All RSE were measured for the configuration with the highest EIRP as representing the worst case as described below. Preliminary radiated emissions tests on the low, middle and high channels indicated that the worst case radiated spurious emissions were on the channel with the highest EIRP and so only the test data for that channel is included in this report.

The following configurations with the highest EIRP from ANT0 and ANT1 in each frequency band were used for radiated spurious emissions investigation at the pre-determined worst-case orientation Z-Axis (Portrait) orientation:

n258 SB1 Band:
ANT0: QPSK, 100MHz BW, 1CC, 1RB-Mid (1/32), Mid Channel, SISO-2TX
ANT1: QPSK, 100MHz BW, 1CC, 1RB-Mid (1/32), Mid Channel, SISO-2TX

n258 SB2 Band:
ANT0: QPSK, 100MHz BW, 1CC, 1RB-Mid (1/32), Mid Channel, SISO-2TX
ANT1: QPSK, 100MHz BW, 1CC, 1RB-Mid (1/32), High Channel, SISO-2TX

n261 Band:
ANT0: QPSK, 50MHz BW, 1CC, 1RB-Mid (1/32), Mid Channel, SISO-2TX
ANT1: QPSK, 100MHz BW, 1CC, 1RB-Mid (1/32), Low Channel, SISO-2TX

In addition, the 2CC – 4CC multi-carrier operations were verified for IMD product at near the upper and lower band edge regions, approximately 1GHz wide. The measurements were made with the single RB active in each channel and plots showing the IMD product are provided. Both (50 MHz + 50 MHz) and (100 MHz + 100 MHz) channel bandwidths are tested and the signal level of the IMD products are similar for both modes. Antenna gain is not factored into the EIRP calculation of IMD product measurements. The test data for the worst case IMD emissions are reported.

Where the measured EIRP value is above the TRP limit, a TRP measurement using Equal Sector Method is made. Otherwise, the Peak or EIRP value is compared with the §30.203 TRP limits to demonstrate compliance.

For the investigation of simultaneous transmission of multiple wireless technologies refer to UL Report Number R15103618-E10.

RESULTS

See the following pages.

TESTED BY

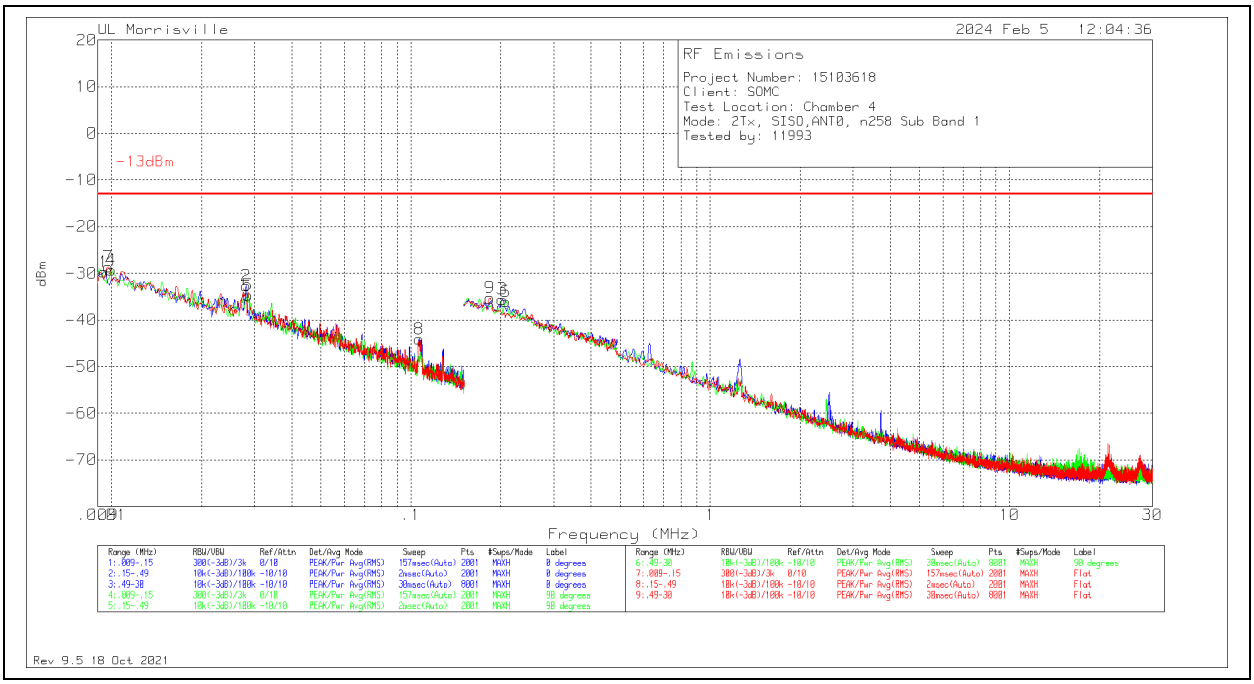
Below 18 GHz Test Site: Chamber 4
Employee IDs: 11993
Test Dates: 2024-02-05

Above 18 GHz Test Site: Chamber 3, Chamber 5
Employee IDs: 11322, 23854
Test Dates: 2024-01-11 to 2024-02-08

8.4.1. n258 SB1 RESULTS

8.4.1.1. SPURIOUS EMISSIONS 9kHz - 30MHz

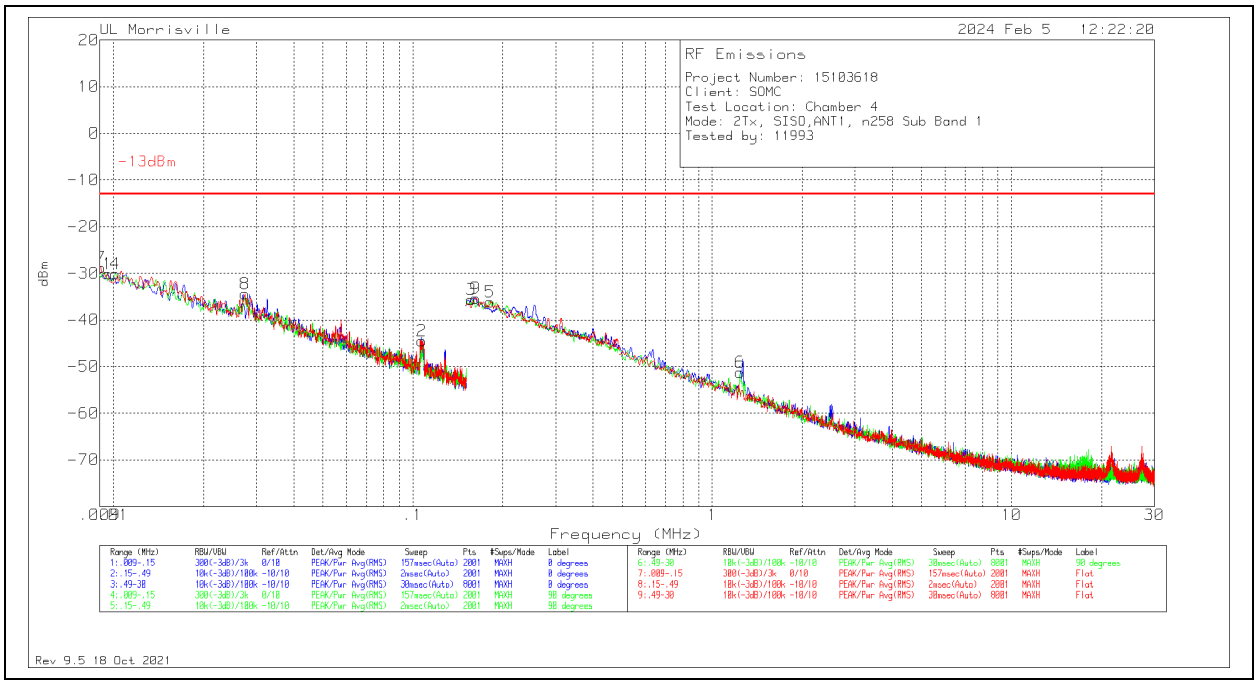
ANTENNA 0, WORST-CASE CONFIGURATION



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	135144 (dBuV/m)	Gain/Loss (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Loop Angle
1	.00943	-60.3	Pk	18.8	0	11.8	-29.7	-13	-16.7	0-360	0 degs
7	.00975	-59.03	Pk	18.6	0	11.8	-28.63	-13	-15.63	0-360	Flat
4	.00999	-59.62	Pk	18.5	0	11.8	-29.32	-13	-16.32	0-360	90 degs
2	.02824	-58.04	Pk	13.6	0	11.8	-32.64	-13	-19.64	0-360	0 degs
5	.0286	-60.1	Pk	13.6	0	11.8	-34.7	-13	-21.7	0-360	90 degs
8	.10648	-67.02	Pk	11.1	0	11.8	-44.12	-13	-31.12	0-360	Flat
9	.18358	-58.19	Pk	11.1	0	11.8	-35.29	-13	-22.29	0-360	Flat
3	.20194	-58.46	Pk	11.1	0	11.8	-35.56	-13	-22.56	0-360	0 degs
6	.20763	-59.06	Pk	11.1	.1	11.8	-36.06	-13	-23.06	0-360	90 degs

Pk - Peak detector

ANTENNA 1, WORST-CASE CONFIGURATION



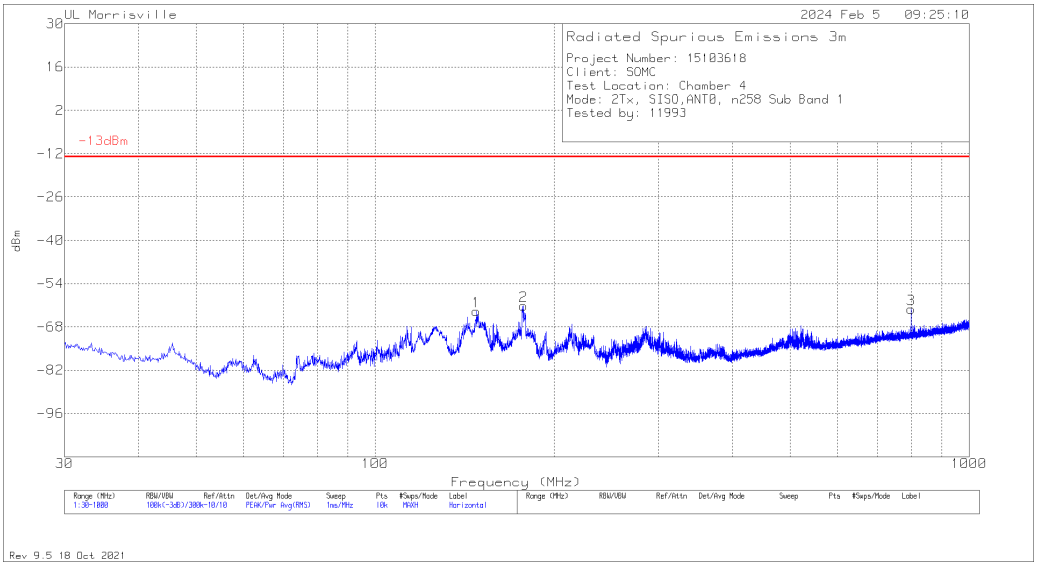
Marker	Frequency (MHz)	Meter Reading (dBm)	Det	135144 (dBuV/m)	Gain/Loss (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Loop Angle
7	.00907	-59.51	Pk	18.9	0	11.8	-28.81	-13	-15.81	0-360	Flat
1	.00957	-60.63	Pk	18.7	0	11.8	-30.13	-13	-17.13	0-360	0 degs
4	.01014	-60.26	Pk	18.4	0	11.8	-30.06	-13	-17.06	0-360	90 degs
8	.02746	-59.86	Pk	13.6	0	11.8	-34.46	-13	-21.46	0-360	Flat
2	.10705	-67.4	Pk	11.1	0	11.8	-44.5	-13	-31.5	0-360	0 degs
3	.15706	-58.55	Pk	11.1	0	11.8	-35.65	-13	-22.65	0-360	0 degs
9	.16199	-58.22	Pk	11.1	0	11.8	-35.32	-13	-22.32	0-360	Flat
5	.18128	-59.01	Pk	11.1	0	11.8	-36.11	-13	-23.11	0-360	90 degs
6	1.23887	-74.52	Pk	11.4	.1	11.8	-51.22	-13	-38.22	0-360	90 degs

Pk - Peak detector

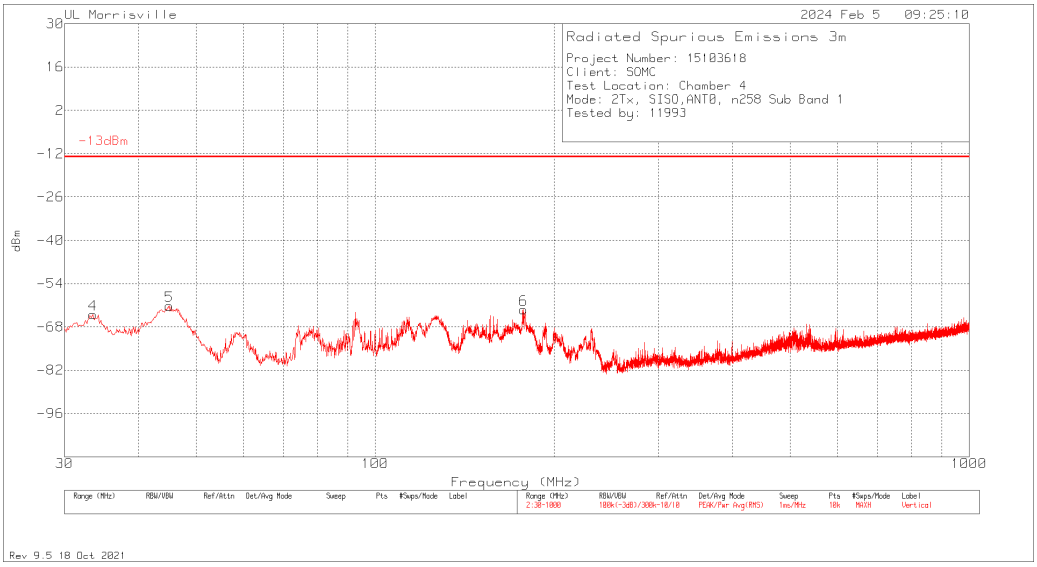
8.4.1.2. SPURIOUS EMISSIONS 30 - 1000MHz

ANTENNA 0, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL

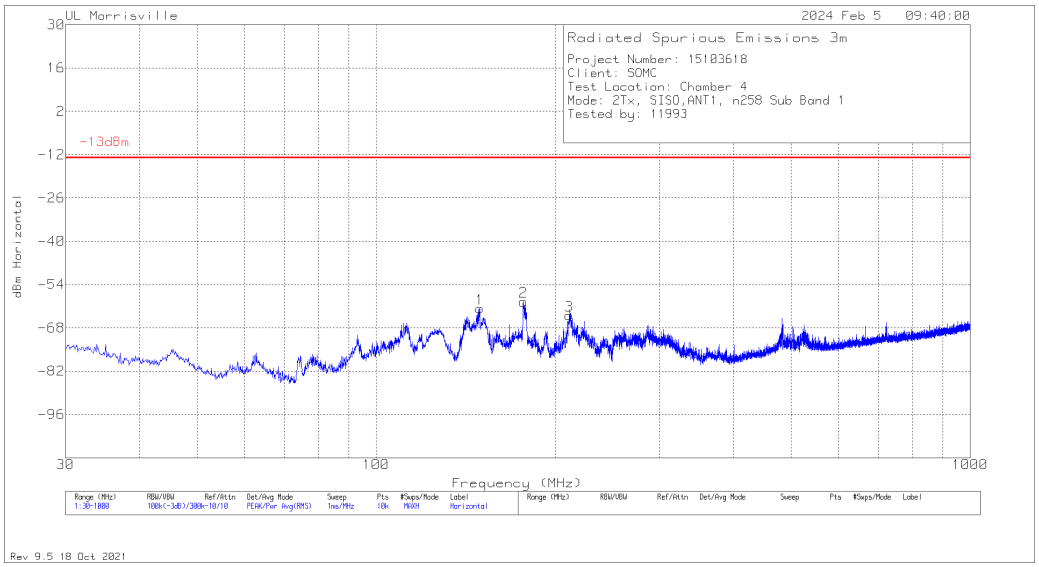


Marker	Frequency (MHz)	Meter Reading (dBm)	Det	90628 (dB/m)	Gain/Loss (dB)	Filter (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	33.492	-66.36	Pk	24.6	-32.1	.2	11.8	-61.86	-13	-48.86	0-360	100	V
5	45.035	-55.69	Pk	16.5	-32	.2	11.8	-59.19	-13	-46.19	0-360	100	V
1	147.952	-60.61	Pk	18.7	-31.1	.4	11.8	-60.81	-13	-47.81	0-360	200	H
2	177.634	-57.82	Pk	17.4	-31	.5	11.8	-59.12	-13	-46.12	0-360	100	H
6	177.828	-59.03	Pk	17.4	-31	.5	11.8	-60.33	-13	-47.33	0-360	100	V
3	798.628	-71.8	Pk	27.2	-28.3	1	11.8	-60.1	-13	-47.1	0-360	200	H

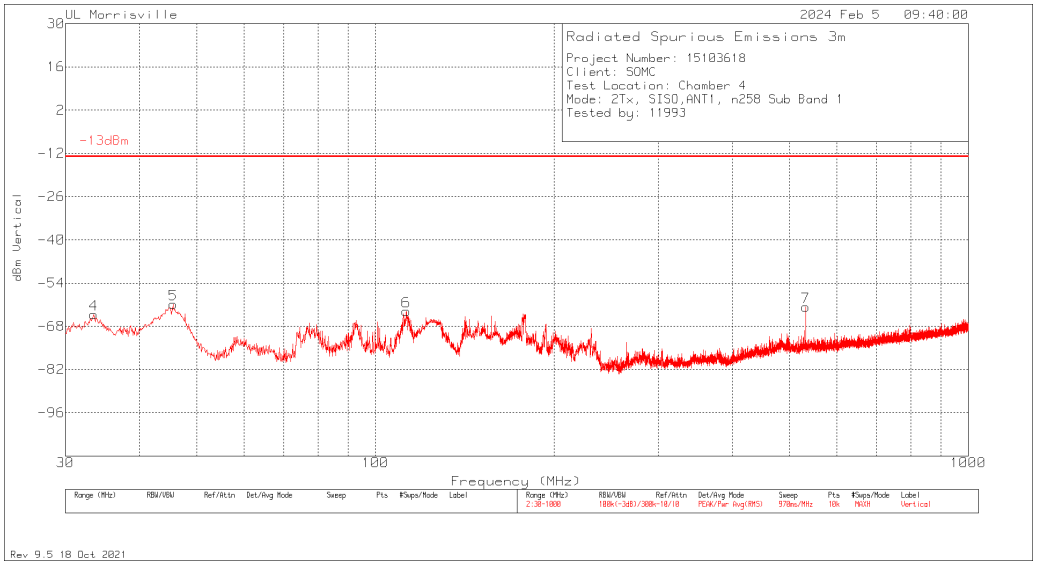
Pk - Peak detector

ANTENNA 1, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL



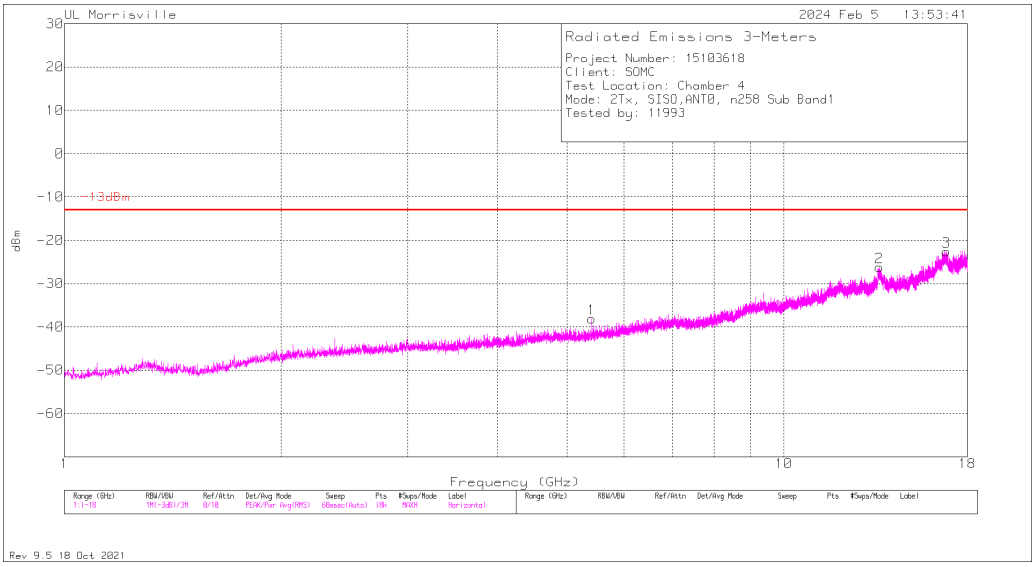
Marker	Frequency (MHz)	Meter Reading (dBm)	Det	90628 (dB/m)	Gain/Loss (dB)	Filter (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	33.492	-66.49	Pk	24.6	-32.1	.2	11.8	-61.99	-13	-48.99	0-360	100	V
5	45.617	-54.84	Pk	16.1	-32	.2	11.8	-58.74	-13	-45.74	0-360	100	V
6	112.741	-61.17	Pk	19.3	-31.4	.4	11.8	-61.07	-13	-48.07	0-360	100	V
1	149.407	-59.38	Pk	18.7	-31.1	.4	11.8	-59.58	-13	-46.58	0-360	100	H
2	177.052	-56.35	Pk	17.5	-30.9	.5	11.8	-57.45	-13	-44.45	0-360	100	H
3	211.487	-60.03	Pk	16.5	-30.7	.6	11.8	-61.83	-13	-48.83	0-360	100	H
7	531.781	-66.91	Pk	24.1	-29.5	.9	11.8	-59.61	-13	-46.61	0-360	100	V

Pk - Peak detector

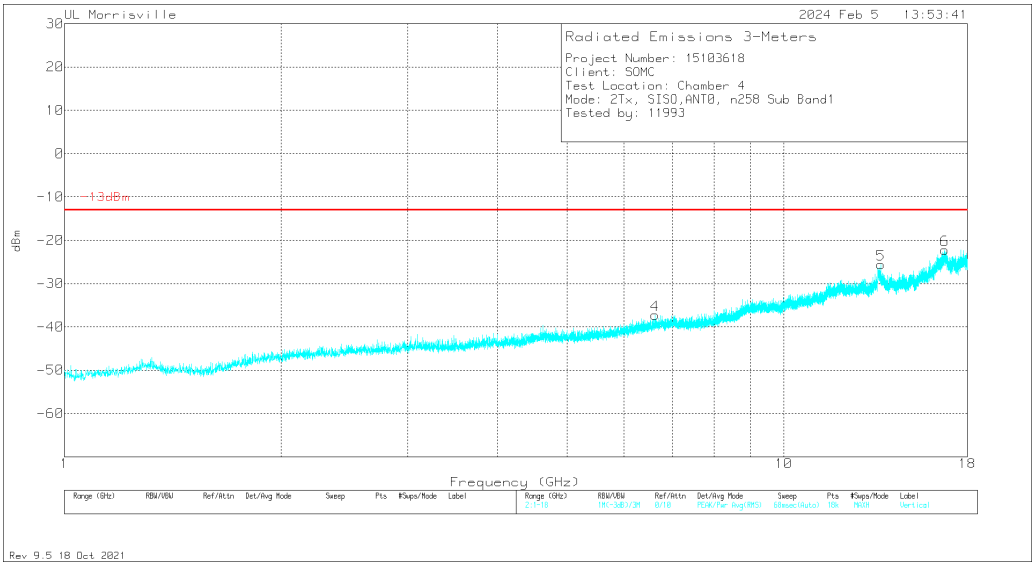
8.4.1.3. SPURIOUS EMISSIONS 1 – 18GHz

ANTENNA 0, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL

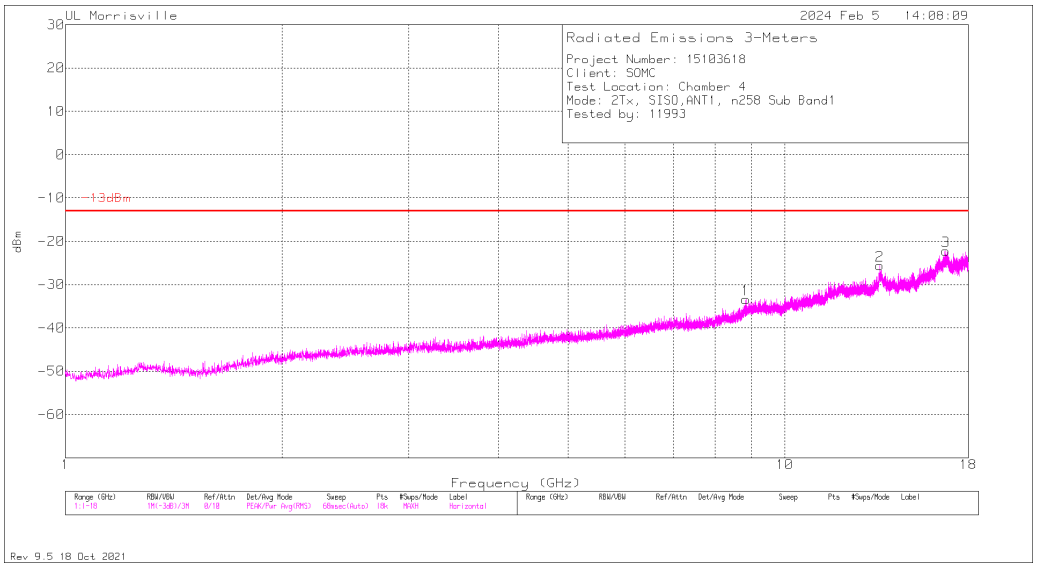


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	89509 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.40866	-62.9	Pk	34.6	-21.6	11.8	-38.1	-13	-25.1	0-360	100	H
4	6.62133	-65.68	Pk	35.5	-18.9	11.8	-37.28	-13	-24.28	0-360	300	V
2	13.57338	-64	Pk	38.8	-12.8	11.8	-26.2	-13	-13.2	0-360	100	H
5	13.65177	-63.79	Pk	38.6	-12.2	11.8	-25.59	-13	-12.59	0-360	200	V
6	16.73916	-66.38	Pk	41.9	-9.6	11.8	-22.28	-13	-9.28	0-360	300	V
3	16.82227	-66.94	Pk	41.9	-9.4	11.8	-22.64	-13	-9.64	0-360	100	H

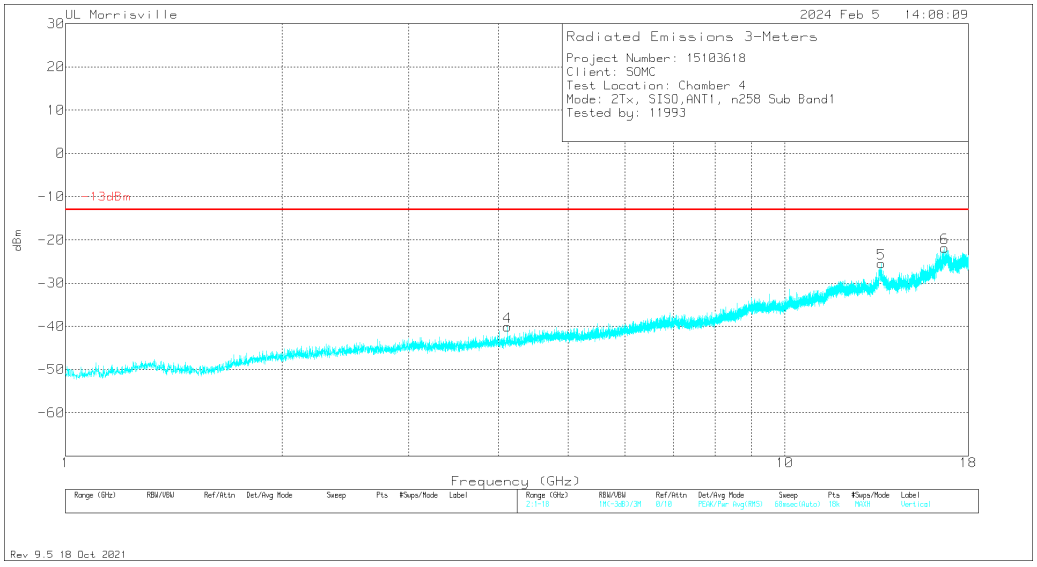
Pk - Peak detector

ANTENNA 1, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL

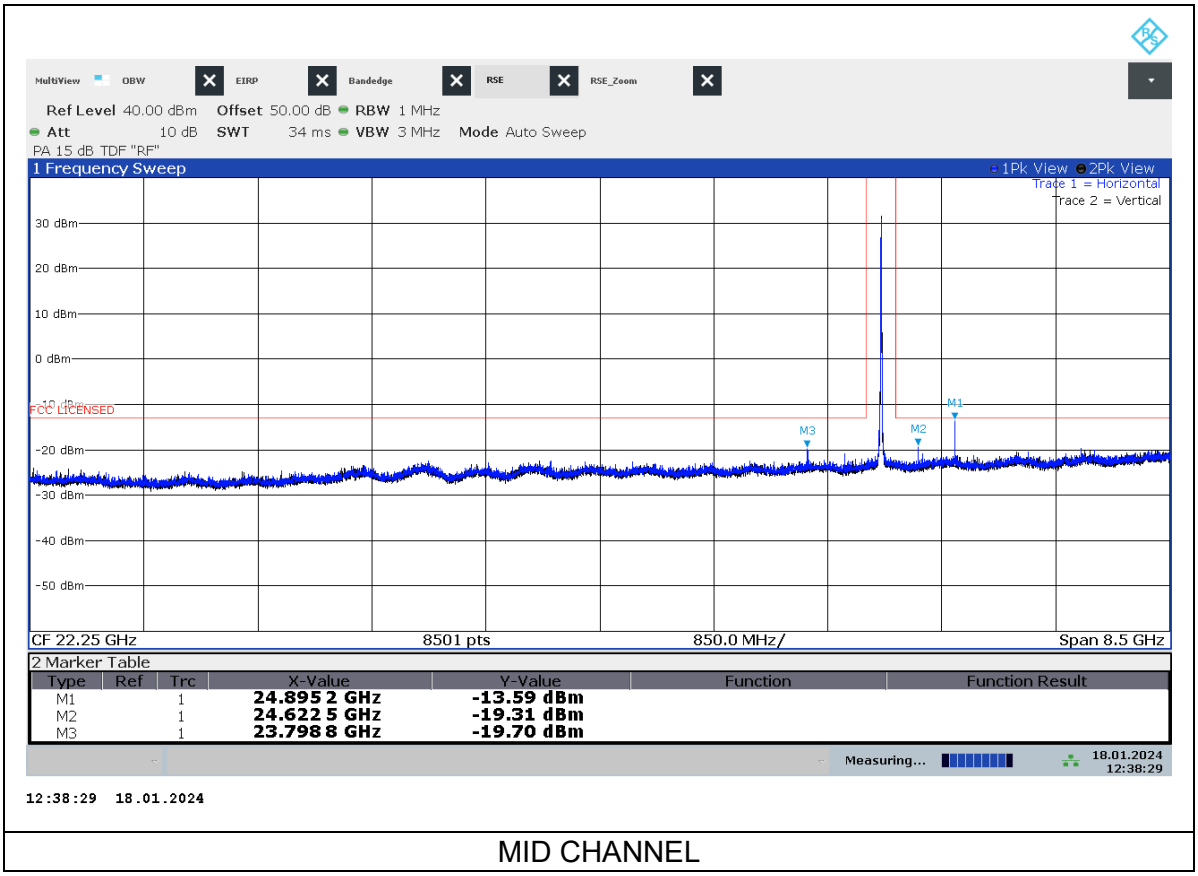


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	89509 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	4.1195	-62.36	Pk	33.4	-22.9	11.8	-40.06	-13	-27.06	0-360	200	V
1	8.83227	-65.55	Pk	36.2	-15.9	11.8	-33.45	-13	-20.45	0-360	100	H
2	13.54694	-63.65	Pk	38.8	-12.5	11.8	-25.55	-13	-12.55	0-360	200	H
5	13.61966	-63.69	Pk	38.7	-12.3	11.8	-25.49	-13	-12.49	0-360	300	V
6	16.67588	-65.34	Pk	41.8	-10.1	11.8	-21.84	-13	-8.84	0-360	300	V
3	16.75144	-66.02	Pk	41.9	-9.9	11.8	-22.22	-13	-9.22	0-360	200	H

Pk - Peak detector

8.4.1.4. SPURIOUS EMISSIONS 18 – 26.5GHz

ANTENNA 0, 1CC CONFIGURATION

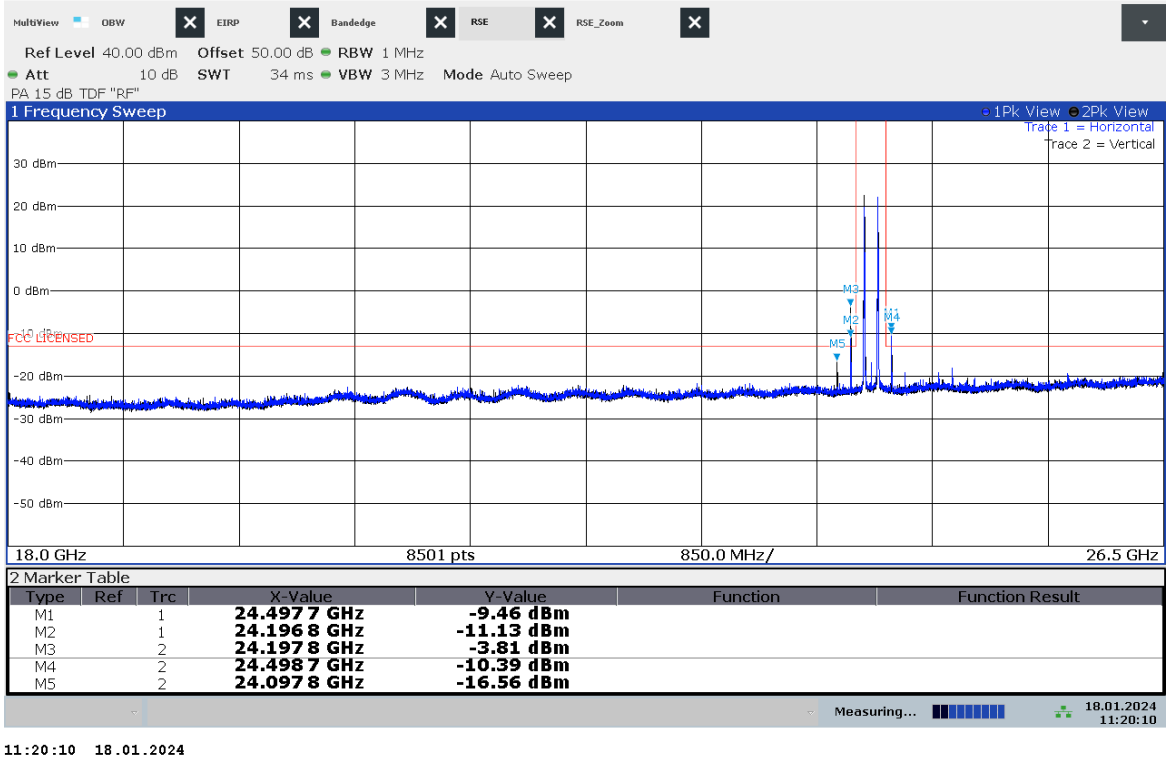


MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	24.896	RMS	-26.55	-13	-13.55	H

RMS - EIRP, Power RMS Average detector

ANTENNA 0, 2CC CONFIGURATION

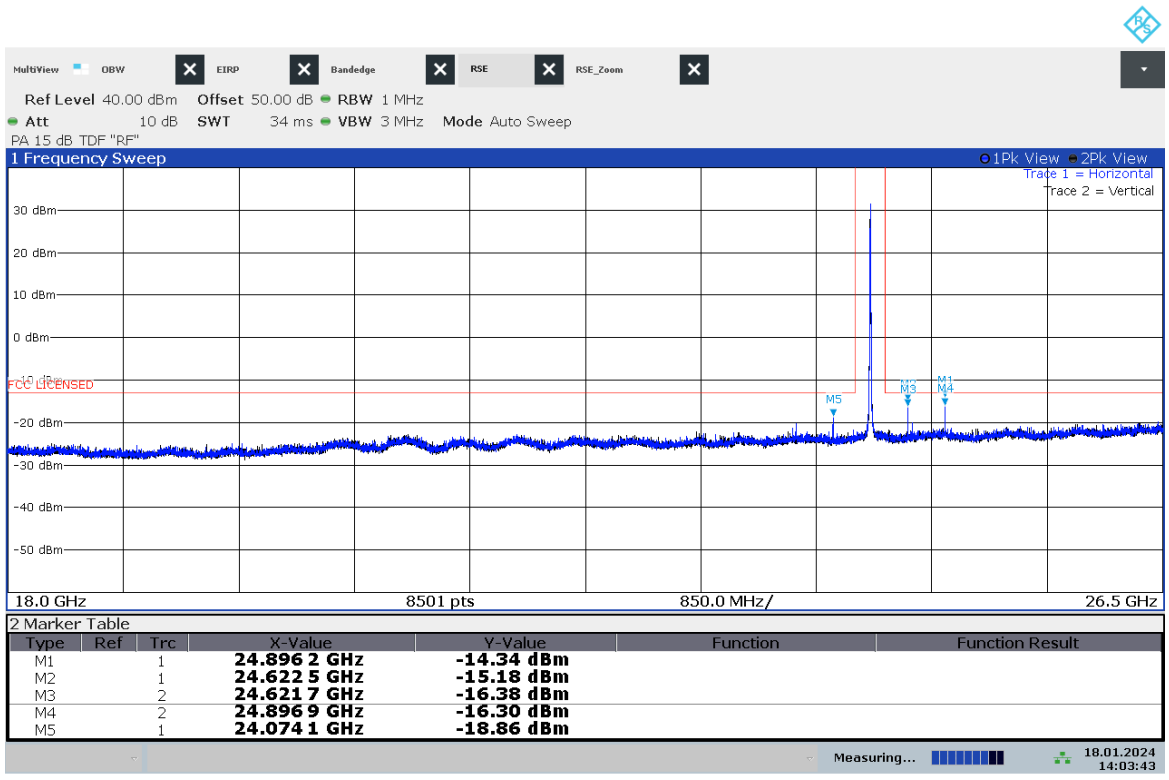


MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	24.4979	RMS	-19.09	-13	-6.09	H
2	24.1987	RMS	-22.65	-13	-9.65	H
3	24.1980	TRP	-16.57	-13	-3.57	-
4	24.4988	RMS	-22.50	-13	-9.5	V
5	24.0977	RMS	-30.82	-13	-17.82	V

RMS - EIRP, Power RMS Average detector
TRP - KDB 842590 Section 4.4.3.3.3 Equal Sector Method

ANTENNA 1, 1CC CONFIGURATION

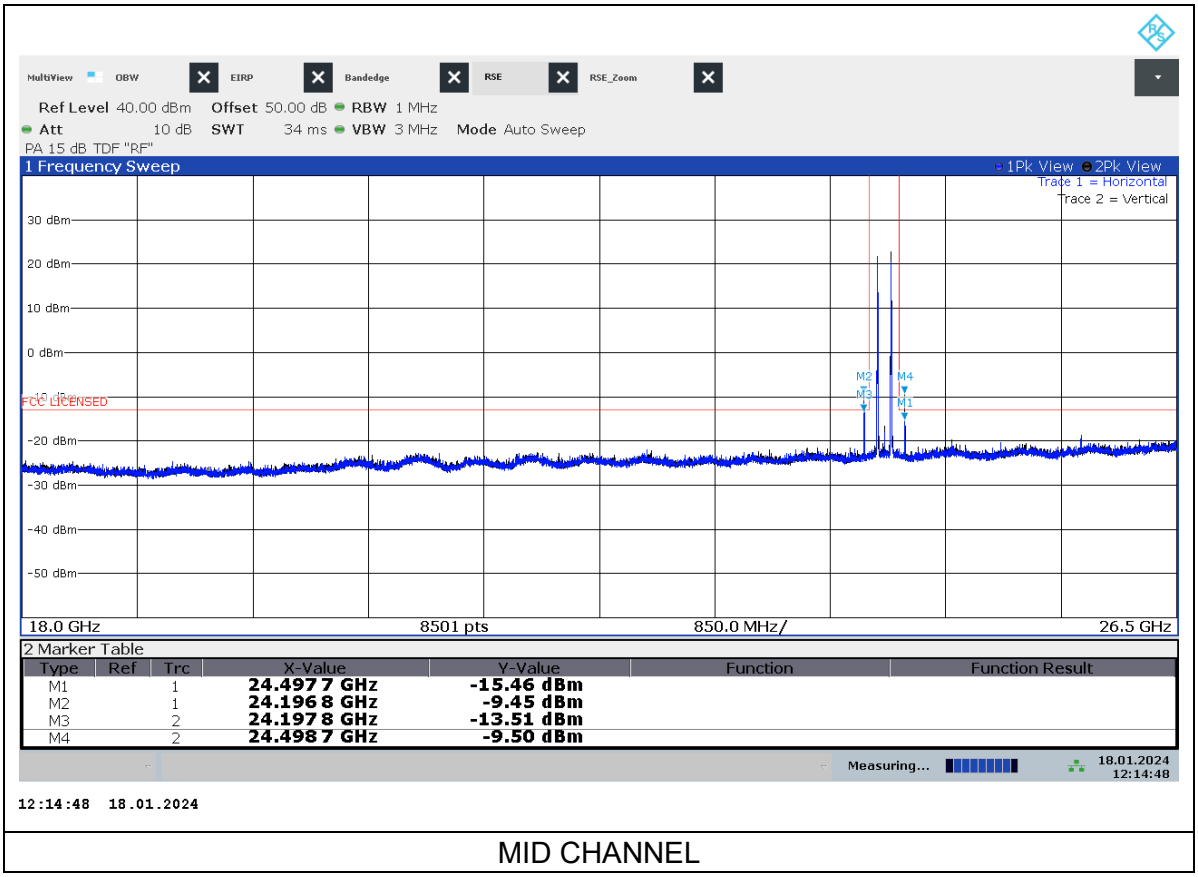


MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	24.8965	RMS	-22.19	-13	-9.19	H
2	24.6220	RMS	-31.39	-13	-18.39	H
3	24.8961	RMS	-26.48	-13	-13.48	V
4	24.6218	RMS	-32.15	-13	-19.15	V
5	24.0736	RMS	-32.09	-13	-19.09	H

RMS - EIRP, Power RMS Average detector

ANTENNA 1, 2CC CONFIGURATION



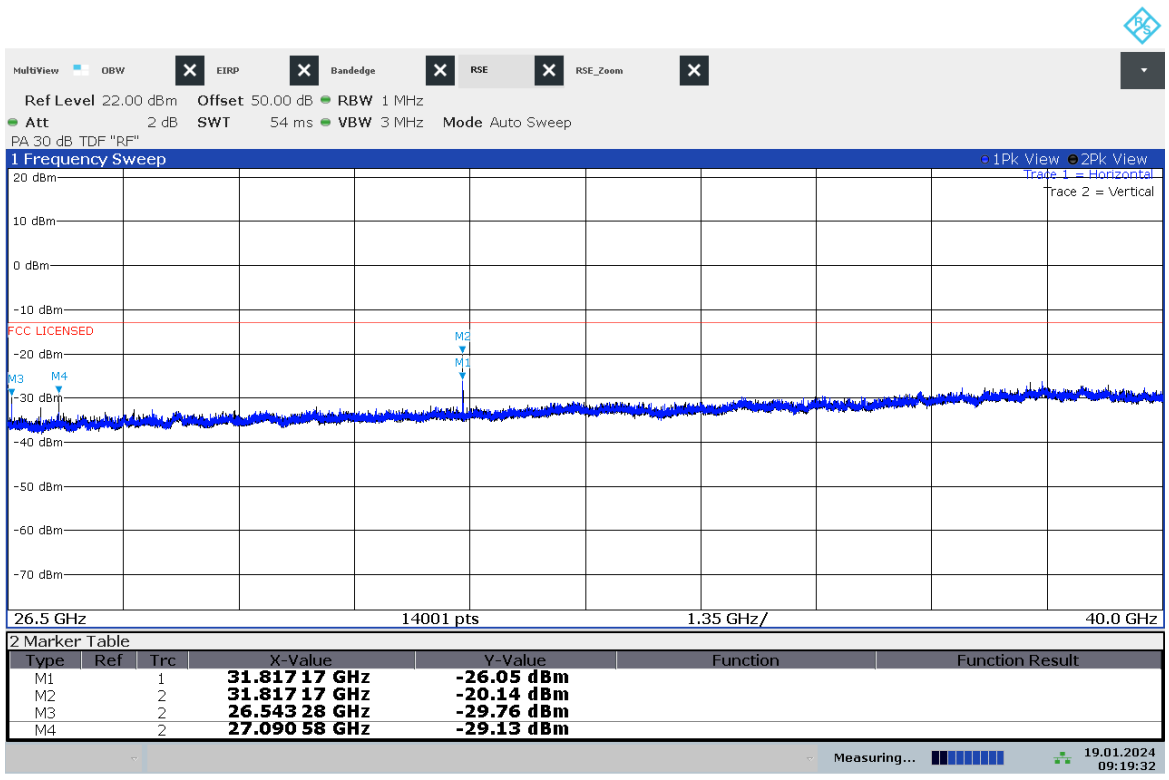
MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	24.4965	RMS	-25.11	-13	-12.11	H
2	24.1975	RMS	-16.03	-13	-3.03	H
3	24.1990	RMS	-21.04	-13	-8.04	V
4	24.4977	RMS	-15.33	-13	-2.33	V

RMS - EIRP, Power RMS Average detector

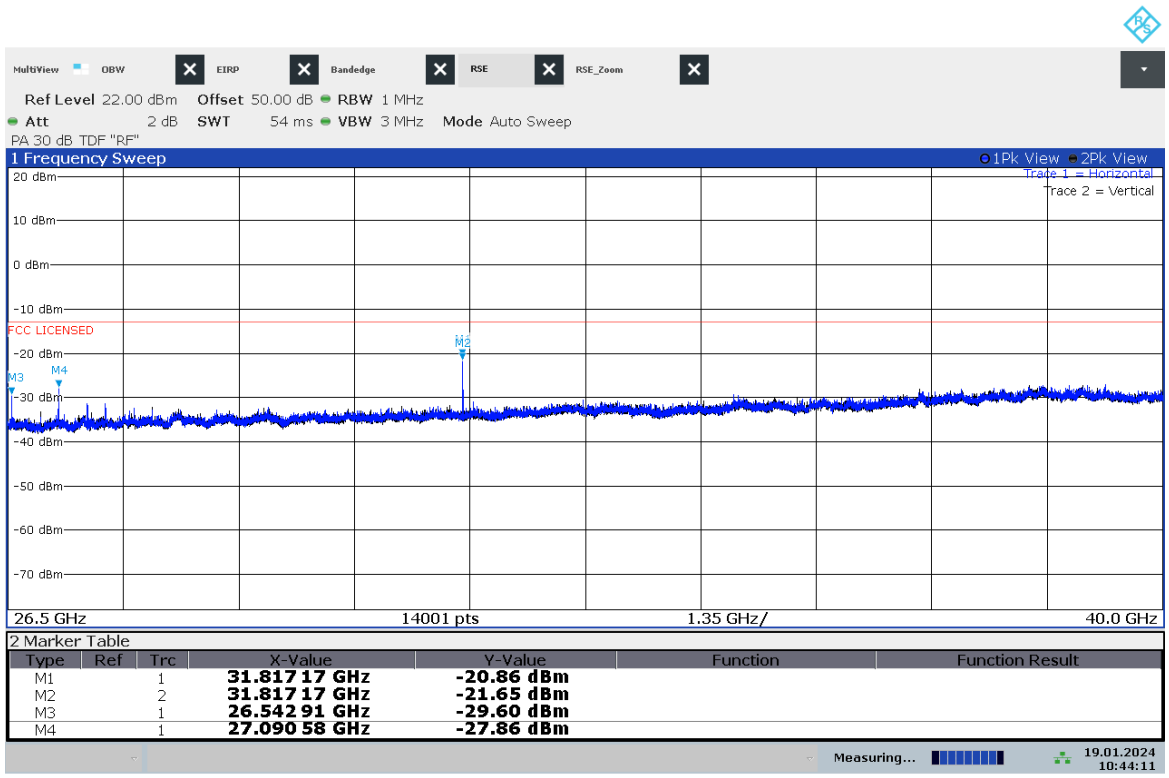
8.4.1.5. SPURIOUS EMISSIONS 26.5 – 40GHz

ANTENNA 0, 1CC CONFIGURATION



MID CHANNEL

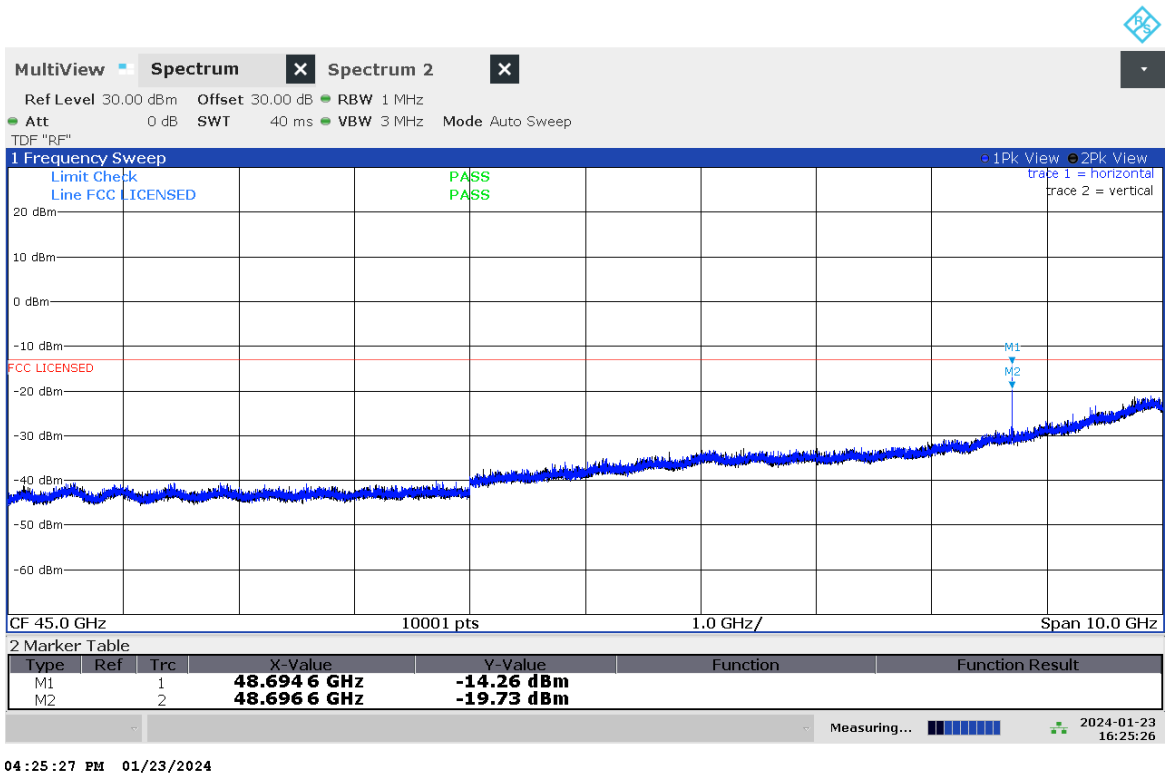
ANTENNA 1, 1CC CONFIGURATION



MID CHANNEL

8.4.1.6. SPURIOUS EMISSIONS 40 – 50GHz

ANTENNA 0, 1CC CONFIGURATION

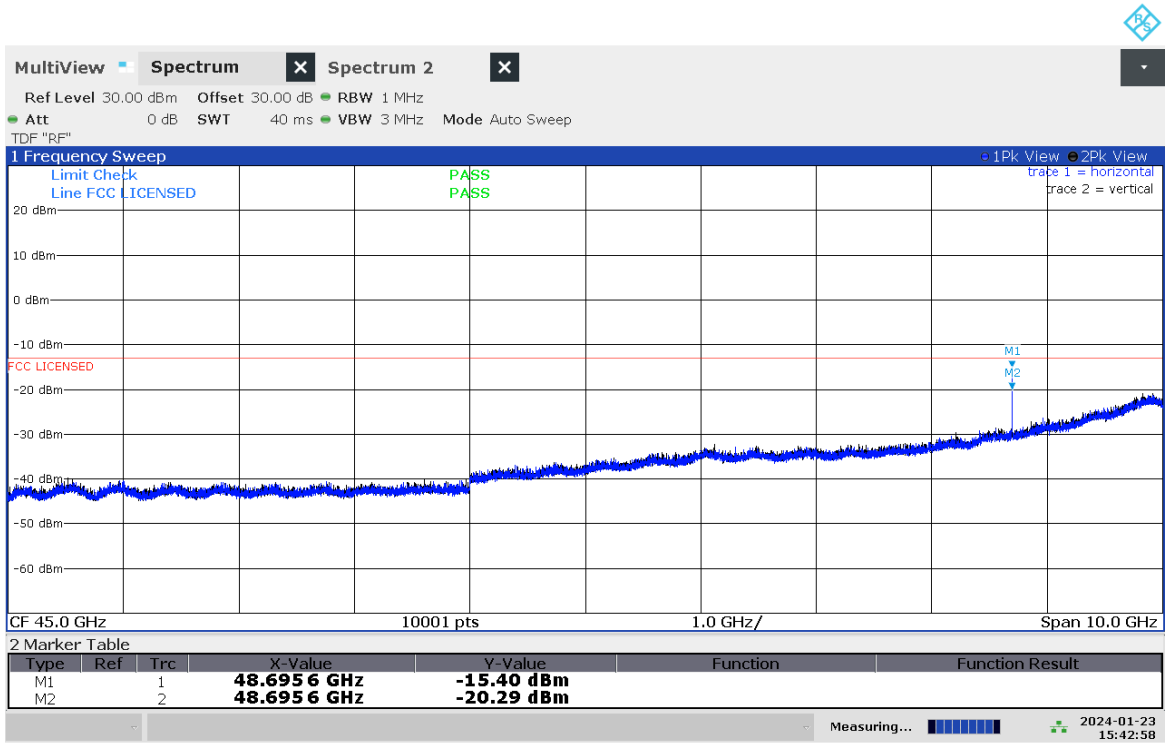


MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	48.695	RMS	-22.51	-13	-9.51	H

RMS - EIRP, Power RMS Average detector

ANTENNA 1, 1CC CONFIGURATION



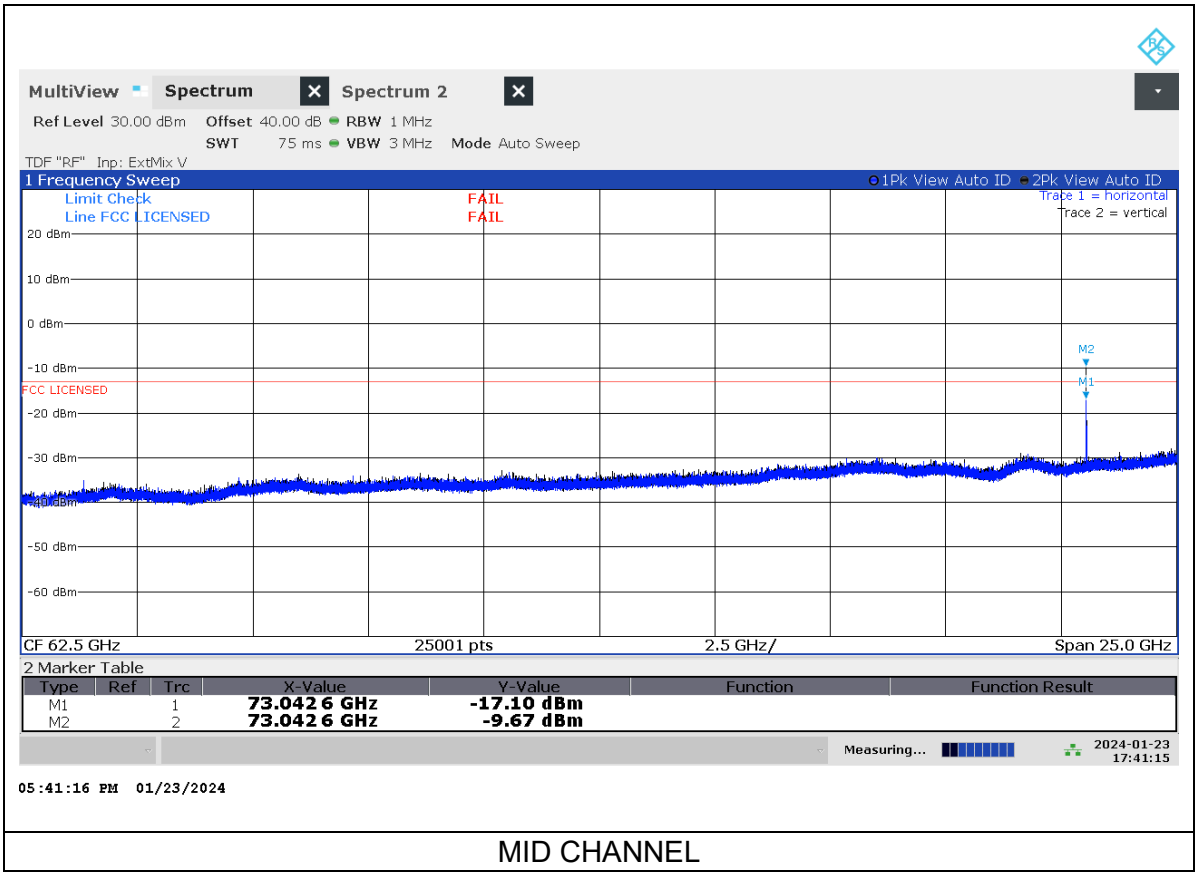
MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	48.686	RMS	-22.51	-13	-9.51	H

RMS - EIRP, Power RMS Average detector

8.4.1.7. SPURIOUS EMISSIONS 50 – 75GHz

ANTENNA 0, 1CC CONFIGURATION

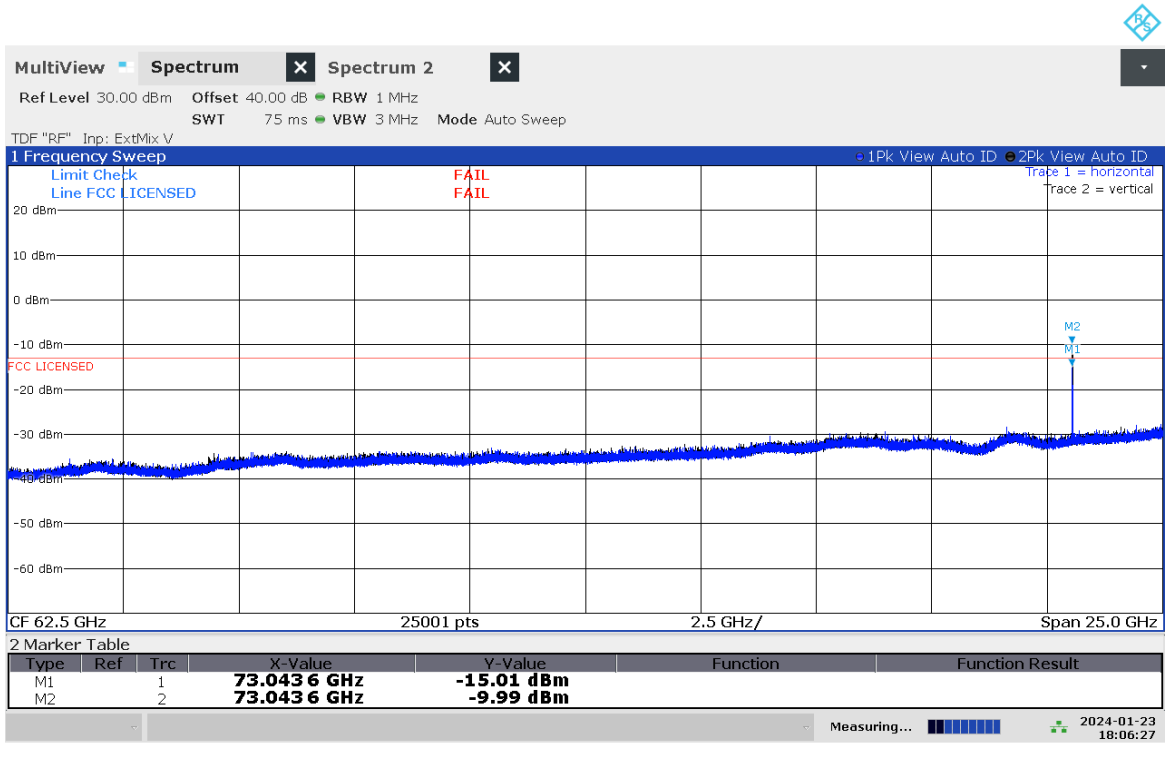


MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	73.043	RMS	-26.82	-13	-13.82	H
2	73.043	RMS	-18.79	-13	-5.79	V

RMS - EIRP, Power RMS Average detector

ANTENNA 1, 1CC CONFIGURATION



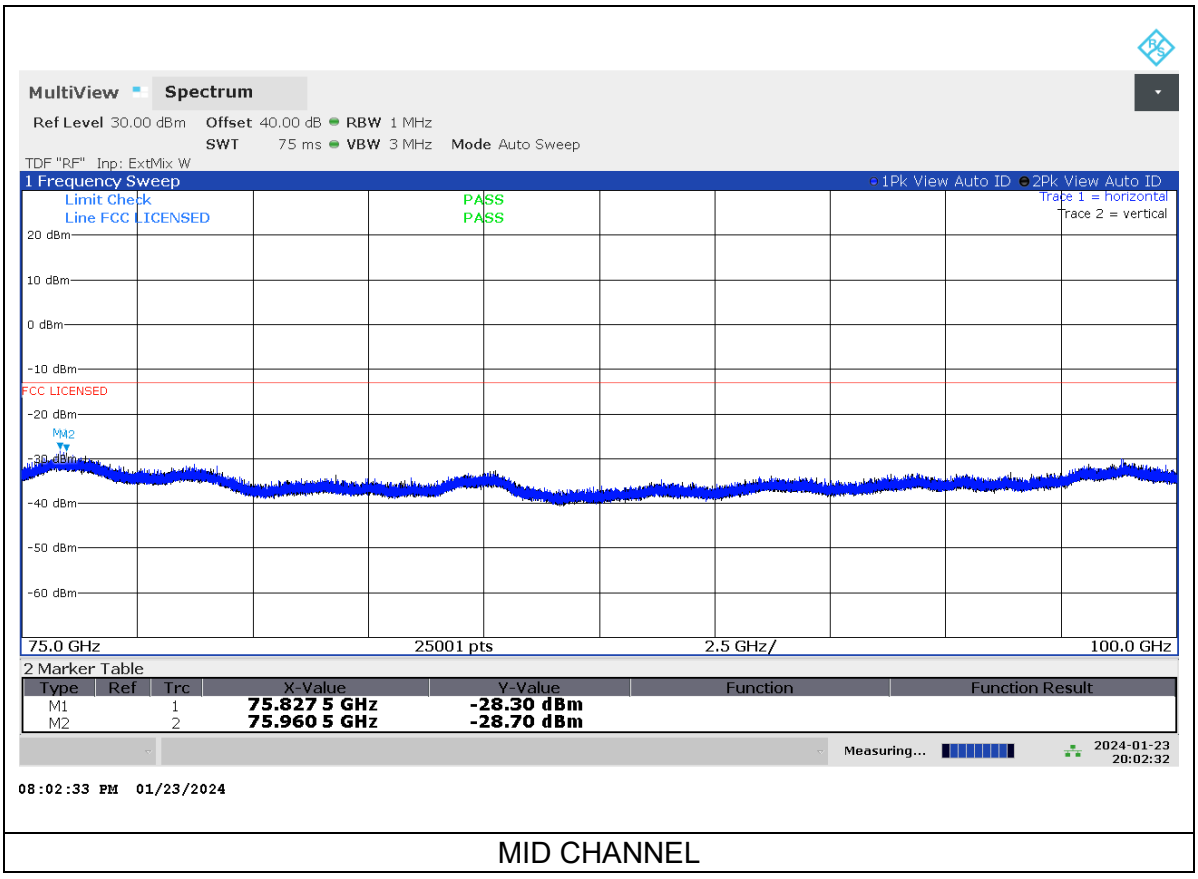
MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	73.043	RMS	-23.43	-13	-10.43	H
2	73.043	RMS	-19.13	-13	-6.13	V

RMS - EIRP, Power RMS Average detector

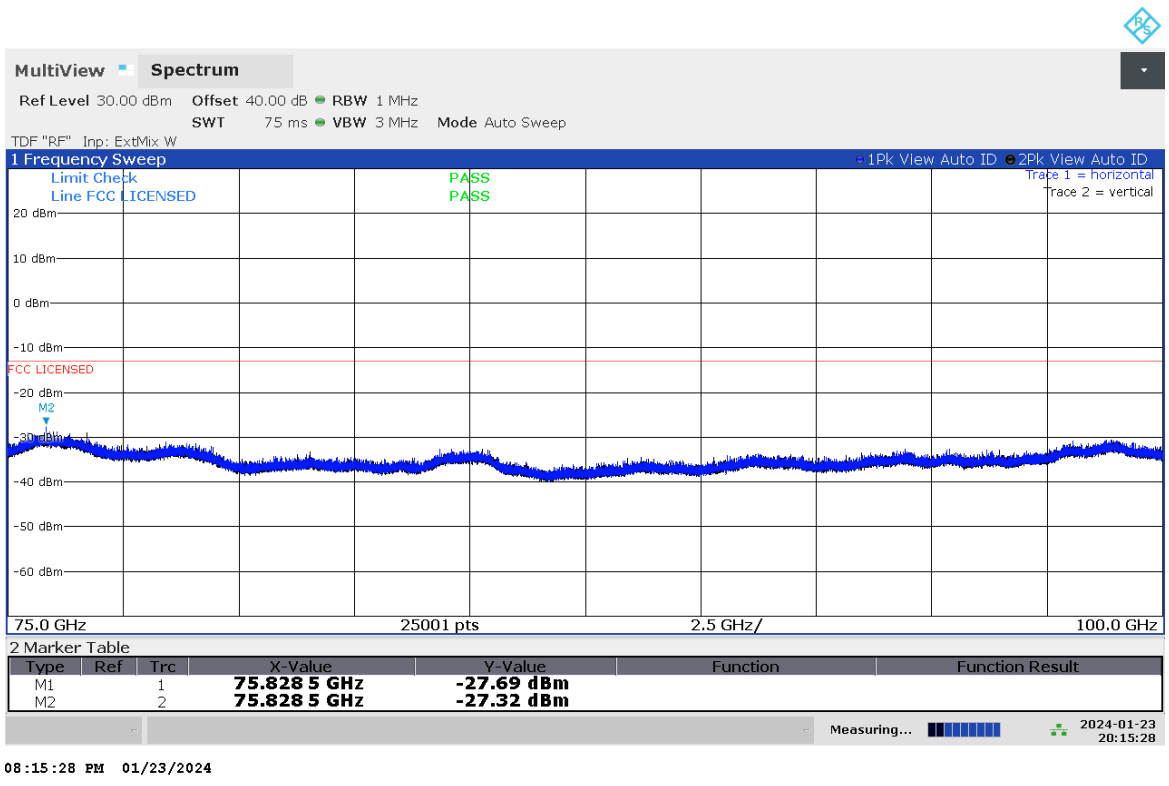
8.4.1.8. SPURIOUS EMISSIONS 75 – 100GHz

ANTENNA 0, 1CC CONFIGURATION



MID CHANNEL

ANTENNA 1, 1CC CONFIGURATION

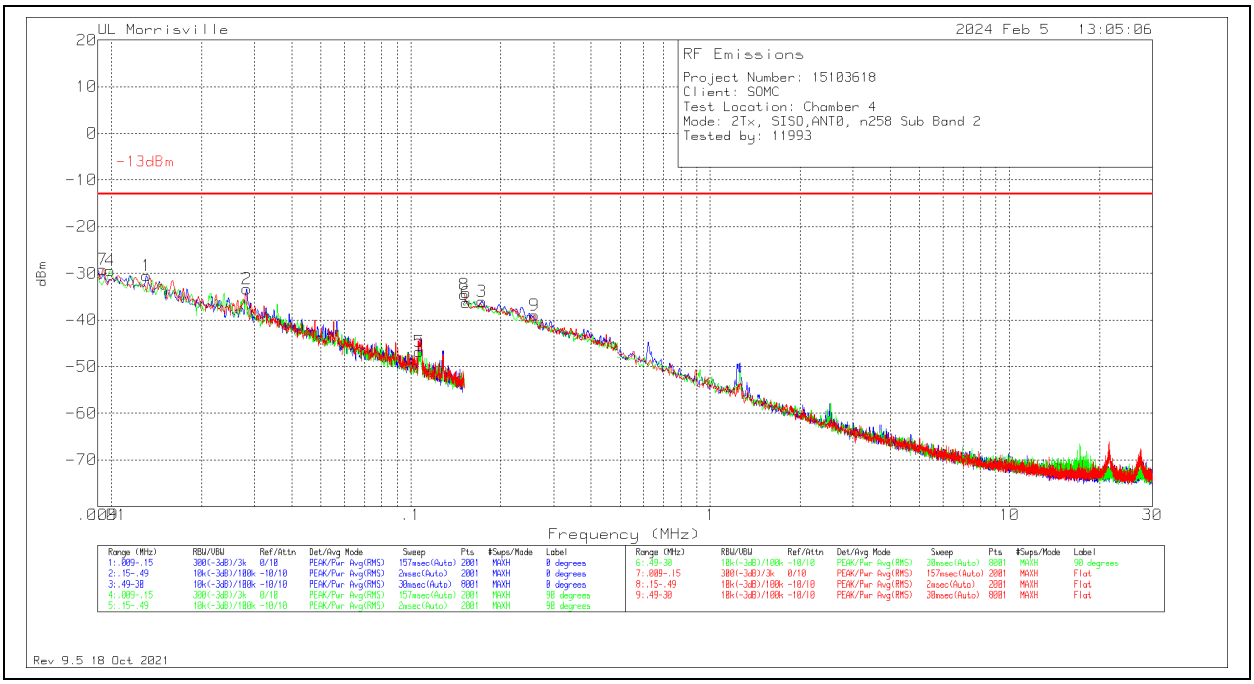


MID CHANNEL

8.4.2. n258 SB2 RESULTS

8.4.2.1. SPURIOUS EMISSIONS 9kHz - 30MHz

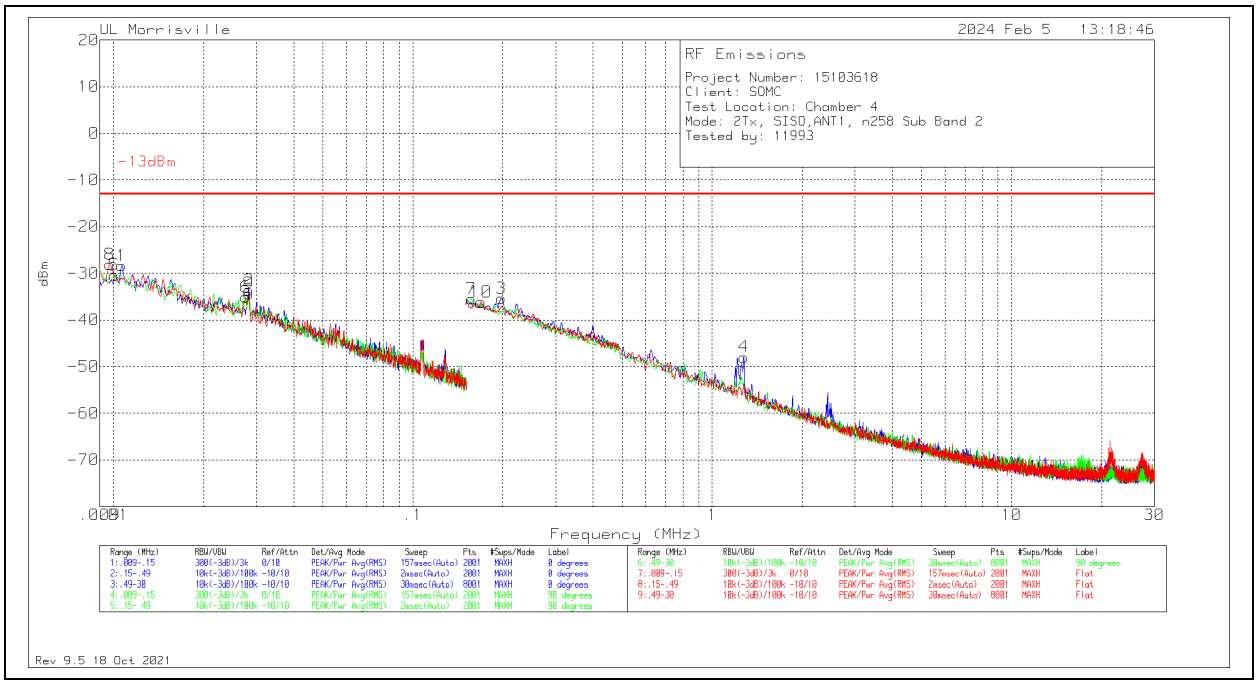
ANTENNA 0, WORST-CASE CONFIGURATION



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	135144 (dBuV/m)	Gain/Loss (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Loop Angle
7	.00936	-59.83	Pk	18.8	0	11.8	-29.23	-13	-16.23	0-360	Flat
4	.00992	-59.78	Pk	18.5	0	11.8	-29.48	-13	-16.48	0-360	90 degs
1	.01312	-59.47	Pk	17.1	0	11.8	-30.57	-13	-17.57	0-360	0 degs
2	.02831	-58.76	Pk	13.6	0	11.8	-33.36	-13	-20.36	0-360	0 degs
5	.10655	-69.74	Pk	11.1	0	11.8	-46.84	-13	-33.84	0-360	90 degs
8	.15068	-57.5	Pk	11.1	0	11.8	-34.6	-13	-21.6	0-360	Flat
6	.15323	-59.24	Pk	11.1	0	11.8	-36.34	-13	-23.34	0-360	90 degs
3	.1727	-58.95	Pk	11.1	0	11.8	-36.05	-13	-23.05	0-360	0 degs
9	.25889	-61.96	Pk	11.1	.1	11.8	-38.96	-13	-25.96	0-360	Flat

Pk - Peak detector

ANTENNA 1, WORST-CASE CONFIGURATION



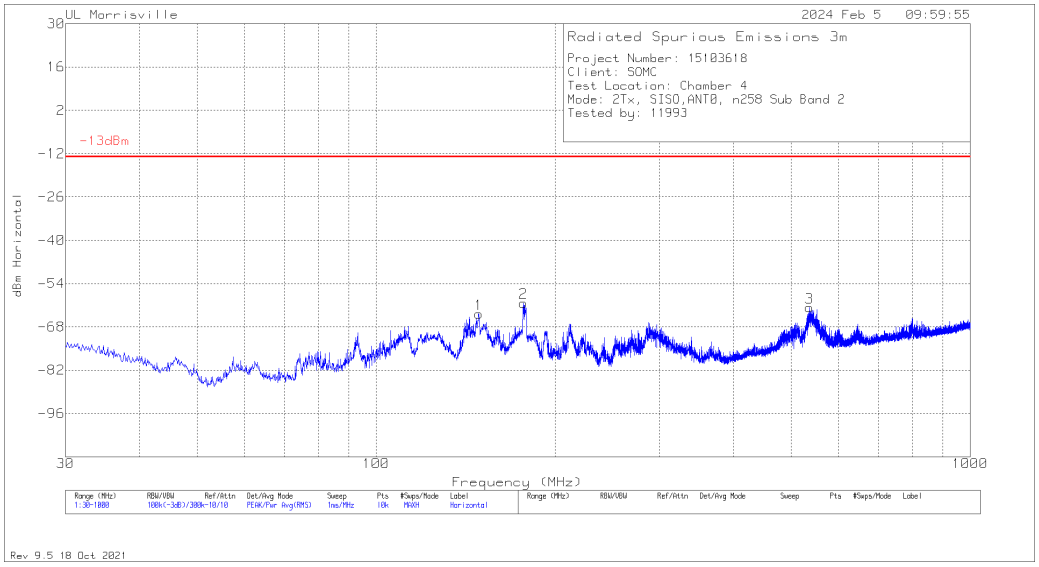
Marker	Frequency (MHz)	Meter Reading (dBm)	Det	135144 (dBuV/m)	Gain/Loss (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Loop Angle
8	.00971	-58.54	Pk	18.6	0	11.8	-28.14	-13	-15.14	0-360	Flat
5	.01007	-60.64	Pk	18.5	0	11.8	-30.34	-13	-17.34	0-360	90 degs
1	.01067	-58.39	Pk	18.2	0	11.8	-28.39	-13	-15.39	0-360	0 degs
6	.0276	-60.55	Pk	13.6	0	11.8	-35.15	-13	-22.15	0-360	90 degs
9	.02828	-59.75	Pk	13.6	0	11.8	-34.35	-13	-21.35	0-360	Flat
2	.02835	-59.05	Pk	13.6	0	11.8	-33.65	-13	-20.65	0-360	0 degs
7	.15655	-58.41	Pk	11.1	0	11.8	-35.51	-13	-22.51	0-360	90 degs
10	.16896	-59.13	Pk	11.1	0	11.8	-36.23	-13	-23.23	0-360	Flat
3	.19752	-58.27	Pk	11.1	0	11.8	-35.37	-13	-22.37	0-360	0 degs
4	1.27576	-71.23	Pk	11.4	.1	11.8	-47.93	-13	-34.93	0-360	0 degs

Pk - Peak detector

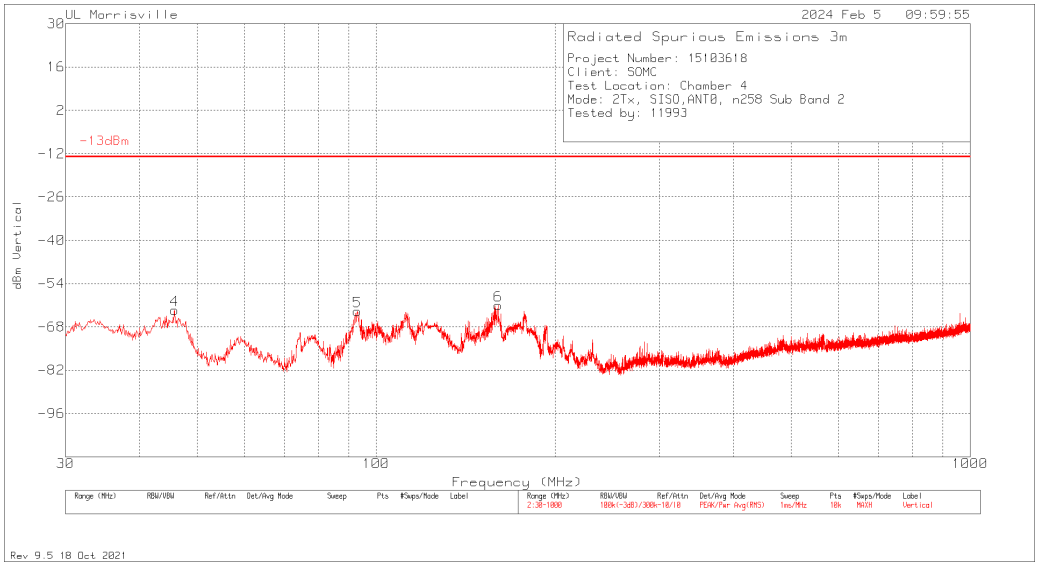
8.4.2.2. SPURIOUS EMISSIONS 30 - 1000MHz

ANTENNA 0, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL

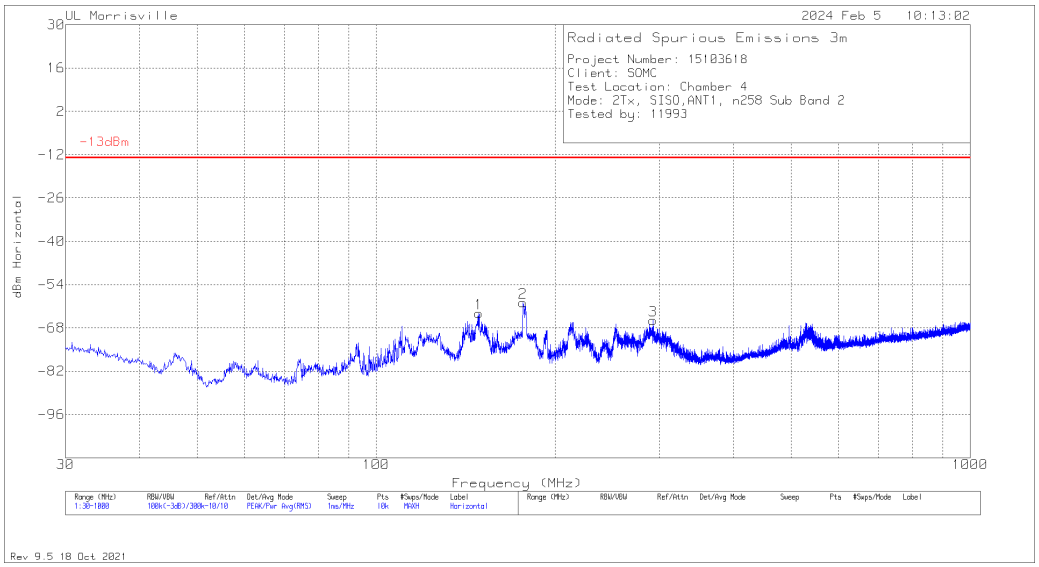


Marker	Frequency (MHz)	Meter Reading (dBm)	Det	90628 (dB/m)	Gain/Loss (dB)	Filter (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	45.811	-56.54	Pk	16	-32	.2	11.8	-60.54	-13	-47.54	0-360	100	V
5	92.953	-55.96	Pk	14.5	-31.5	.3	11.8	-60.86	-13	-47.86	0-360	100	V
1	148.7765	-61.46	Pk	18.7	-31.1	.4	11.8	-61.66	-13	-48.66	0-360	100	H
6	160.368	-58.59	Pk	18.4	-31	.5	11.8	-58.89	-13	-45.89	0-360	100	V
2	176.955	-57.05	Pk	17.5	-30.9	.5	11.8	-58.15	-13	-45.15	0-360	100	H
3	536.34	-67.13	Pk	24.2	-29.4	.9	11.8	-59.63	-13	-46.63	0-360	100	H

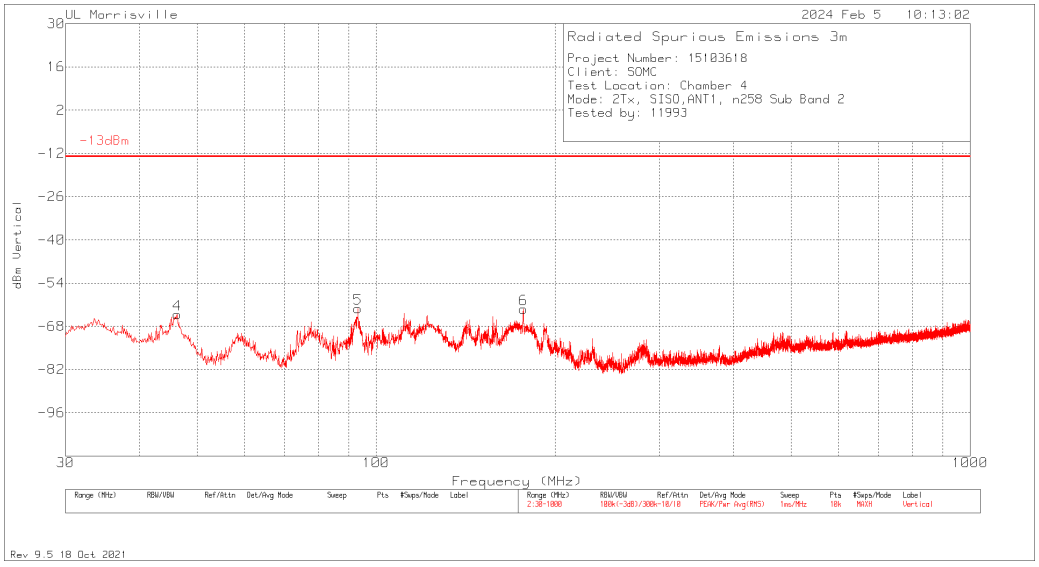
Pk - Peak detector

ANTENNA 1, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL



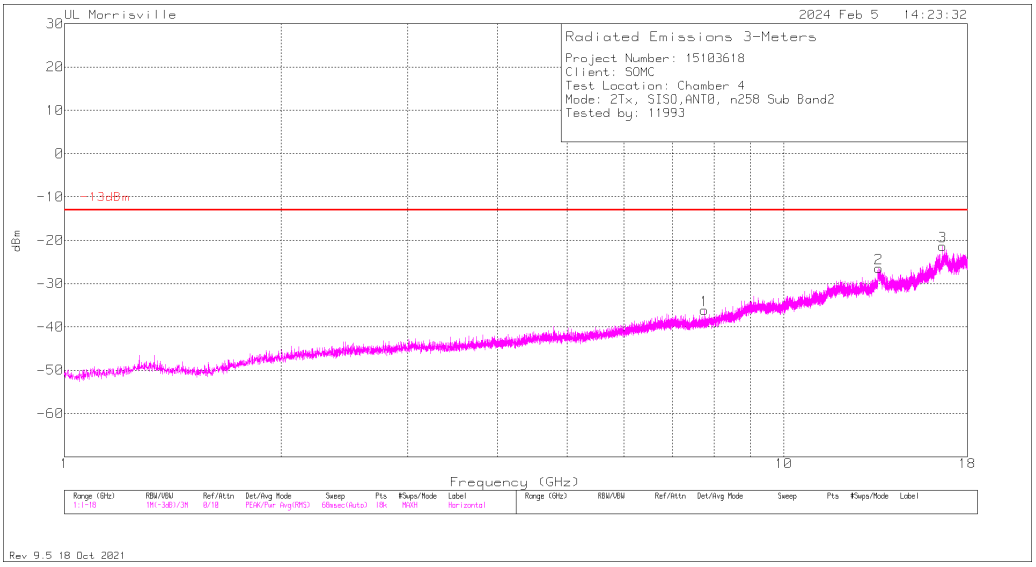
Marker	Frequency (MHz)	Meter Reading (dBm)	Det	90628 (dB/m)	Gain/Loss (dB)	Filter (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	46.296	-57.83	Pk	15.8	-32	.2	11.8	-62.03	-13	-49.03	0-360	100	V
5	93.244	-55.43	Pk	14.6	-31.5	.3	11.8	-60.23	-13	-47.23	0-360	100	V
1	148.825	-61.04	Pk	18.7	-31.1	.4	11.8	-61.24	-13	-48.24	0-360	100	H
2	176.761	-56.57	Pk	17.5	-30.9	.5	11.8	-57.67	-13	-44.67	0-360	100	H
6	176.858	-59.22	Pk	17.5	-30.9	.5	11.8	-60.32	-13	-47.32	0-360	100	V
3	292.191	-64.78	Pk	19.4	-30.4	.5	11.8	-63.48	-13	-50.48	0-360	100	H

Pk - Peak detector

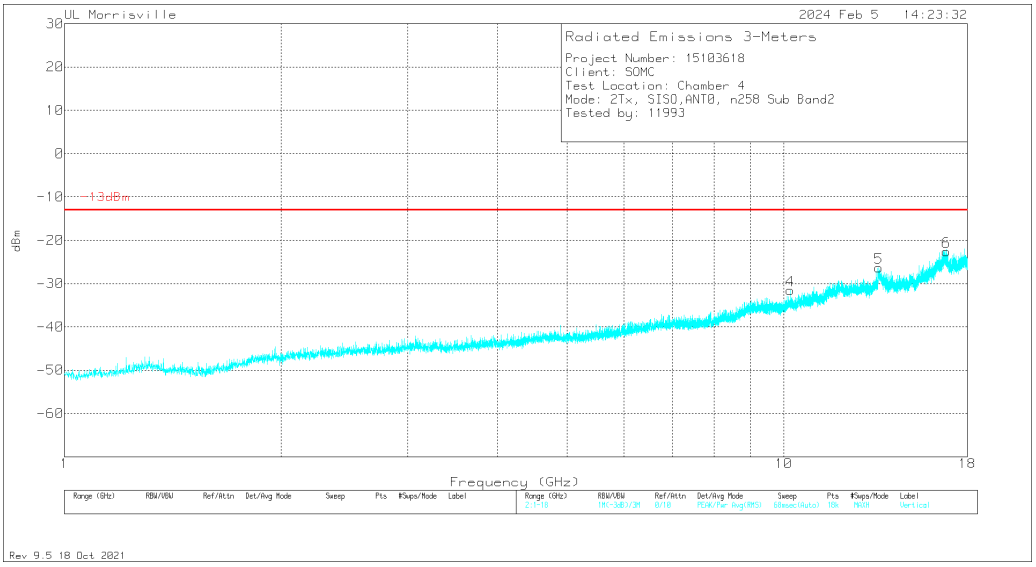
8.4.2.3. SPURIOUS EMISSIONS 1 – 18GHz

ANTENNA 0, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL



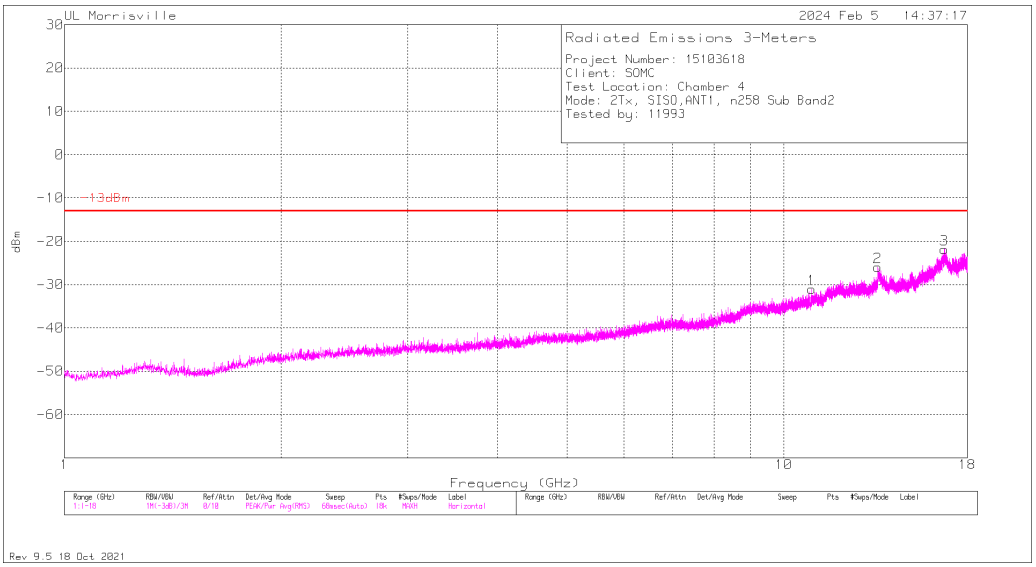
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	89509 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	7.75844	-65.37	Pk	35.7	-18.3	11.8	-36.17	-13	-23.17	0-360	200	H
4	10.21872	-64.66	Pk	37.4	-16.1	11.8	-31.56	-13	-18.56	0-360	200	V
5	13.55072	-64.38	Pk	38.8	-12.5	11.8	-26.28	-13	-13.28	0-360	300	V
2	13.56488	-64.62	Pk	38.8	-12.4	11.8	-26.42	-13	-13.42	0-360	200	H
3	16.64094	-65.1	Pk	41.7	-9.8	11.8	-21.4	-13	-8.4	0-360	100	H
6	16.84305	-65.88	Pk	41.9	-10.4	11.8	-22.58	-13	-9.58	0-360	300	V

Pk - Peak detector

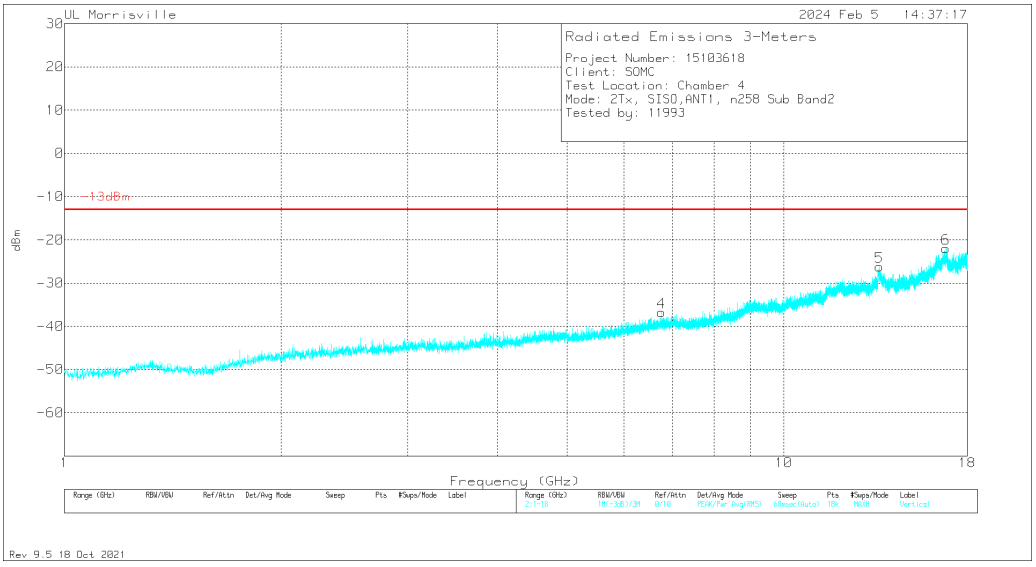
UL LLC
12 Laboratory Dr., RTP, NC 27709, USA TEL: (919) 549-1400

ANTENNA 1, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL

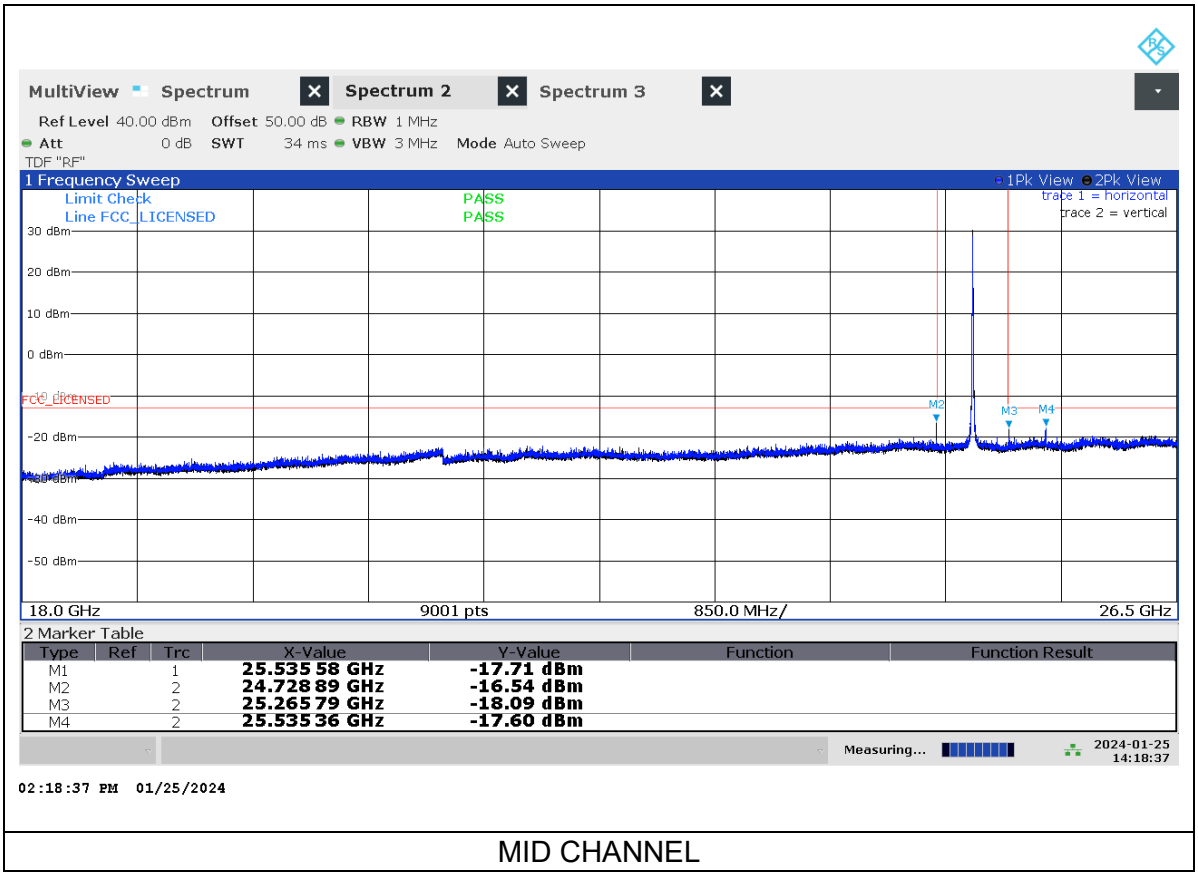


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	89509 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	6.76205	-65.03	Pk	35.5	-19	11.8	-36.73	-13	-23.73	0-360	300	V
1	10.93272	-65.49	Pk	37.9	-15.3	11.8	-31.09	-13	-18.09	0-360	100	H
2	13.51388	-64.17	Pk	38.8	-12.4	11.8	-25.97	-13	-12.97	0-360	100	H
5	13.57716	-64.58	Pk	38.7	-12.1	11.8	-26.18	-13	-13.18	0-360	200	V
3	16.72216	-65.97	Pk	41.8	-9.5	11.8	-21.87	-13	-8.87	0-360	100	H
6	16.81283	-65.16	Pk	41.9	-10.5	11.8	-21.96	-13	-8.96	0-360	300	V

Pk - Peak detector

8.4.2.4. SPURIOUS EMISSIONS 18 – 26.5GHz

ANTENNA 0, 100MHz BW, 1CC CONFIGURATION



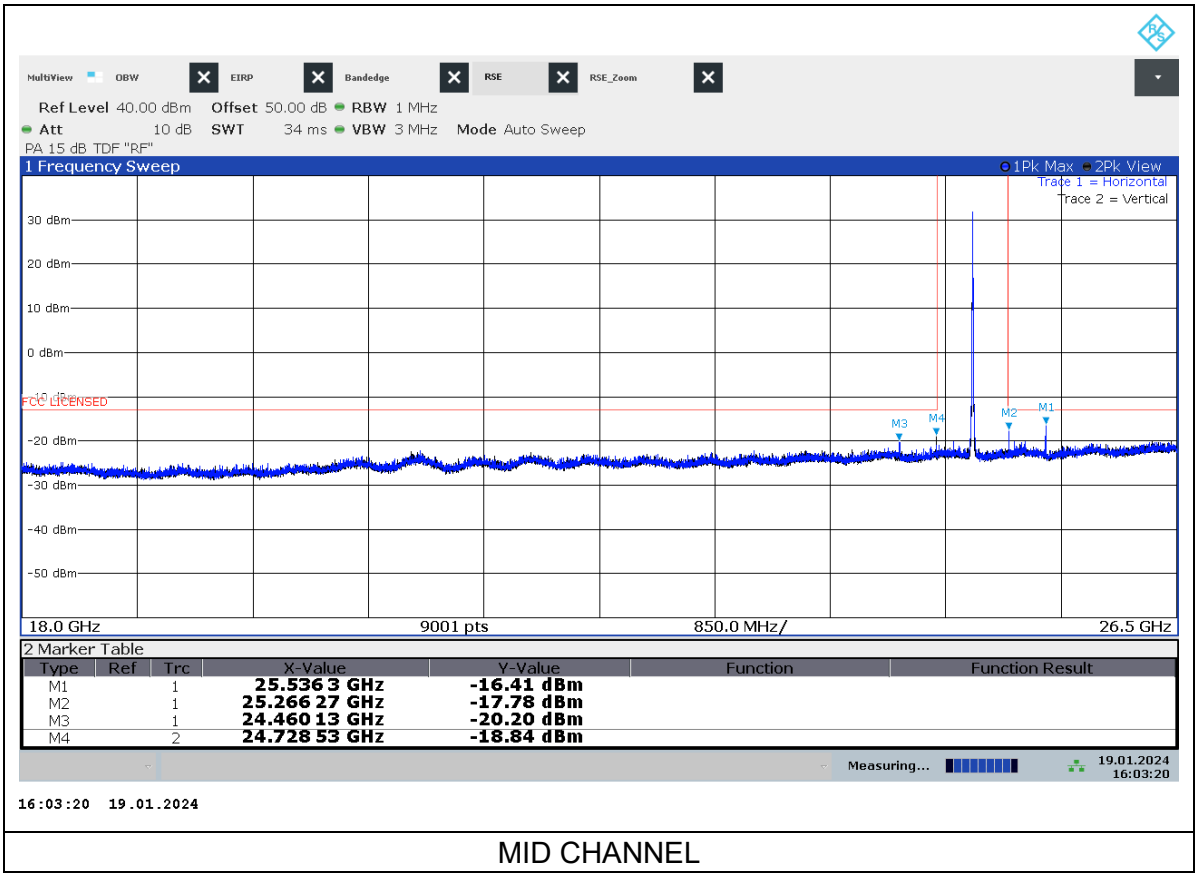
MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	25.535	RMS	-29.99	-13	-16.99	H
2	24.729	RMS	-32.63	-13	-19.63	V
3	25.267	RMS	-32.62	-13	-19.62	V
4	25.535	RMS	-28.47	-13	-15.47	V

RMS - EIRP, Power RMS Average detector

UL LLC
12 Laboratory Dr., RTP, NC 27709, USA TEL: (919) 549-1400

ANTENNA 1, 100MHz BW, 1CC CONFIGURATION

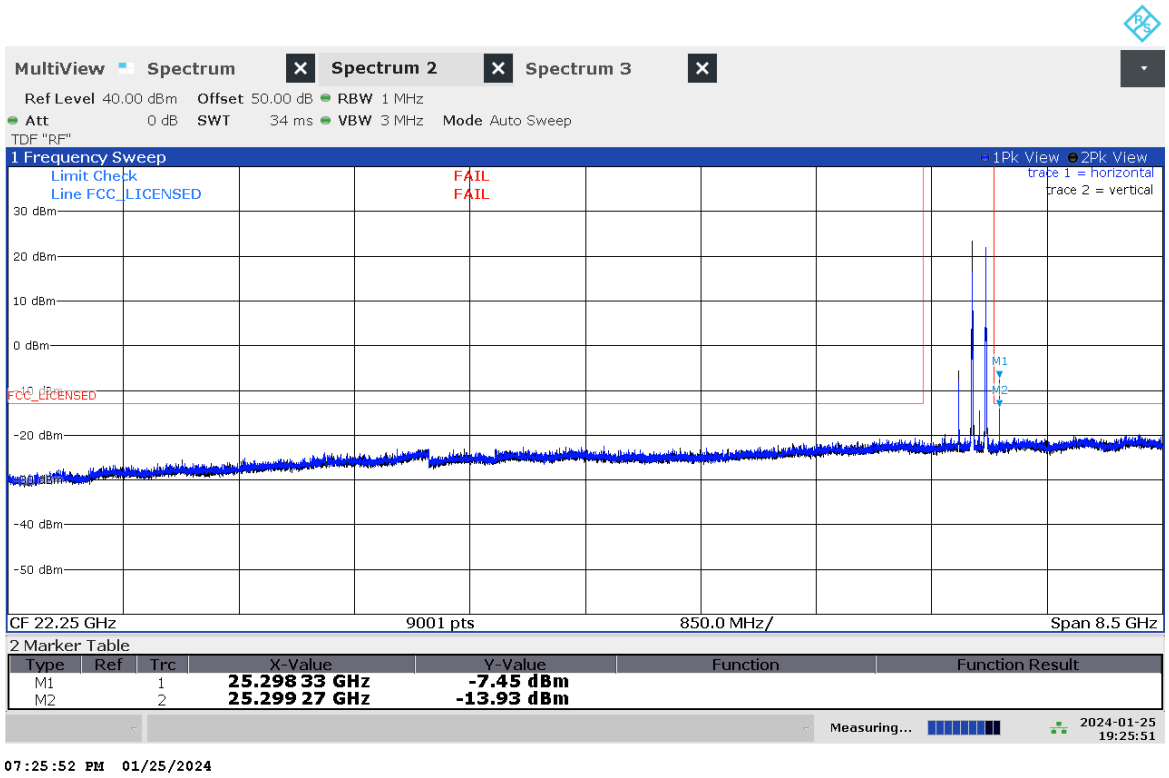


MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	25.535	RMS	-25.60	-13	-12.6	H
2	25.267	RMS	-31.62	-13	-18.62	H
4	24.729	RMS	-32.71	-13	-19.71	V

RMS - EIRP, Power RMS Average detector

ANTENNA 0, 100MHz BW, 2CC CONFIGURATION

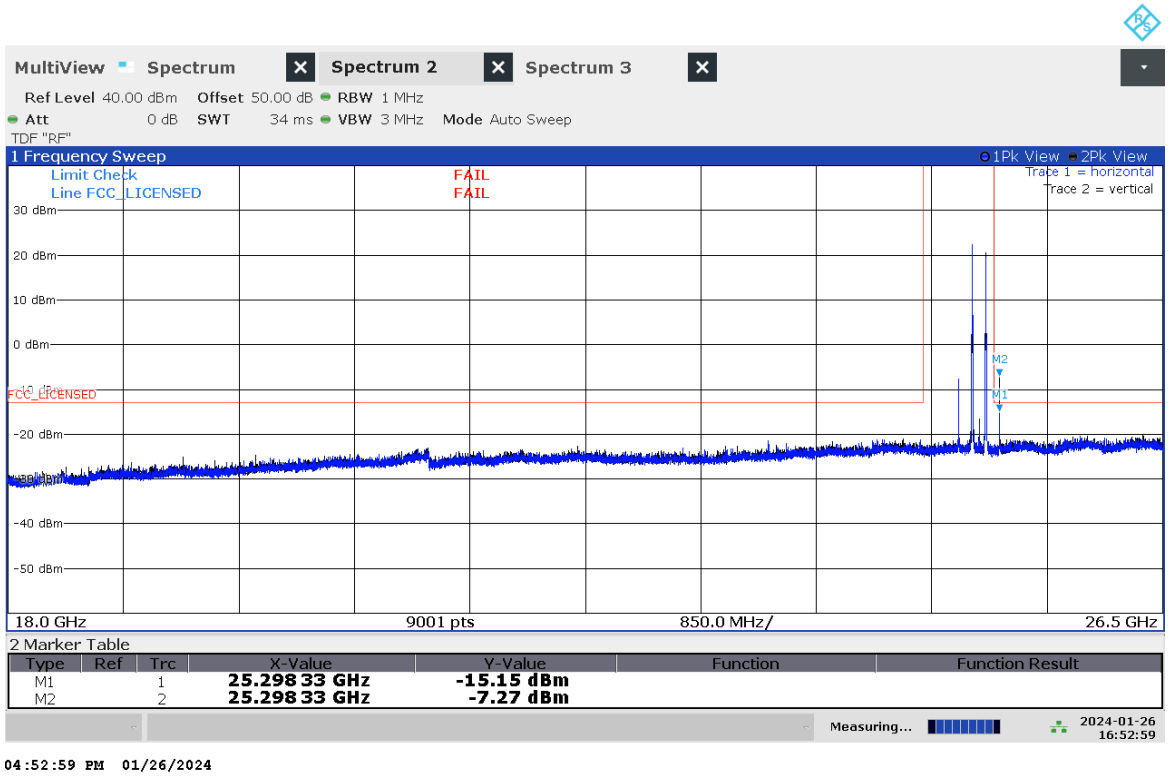


HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	25.298	RMS	-18.05	-13	-5.05	H
2	25.299	RMS	-24.67	-13	-11.67	V

RMS - EIRP, Power RMS Average detector

ANTENNA 1, 100MHz BW, 2CC CONFIGURATION



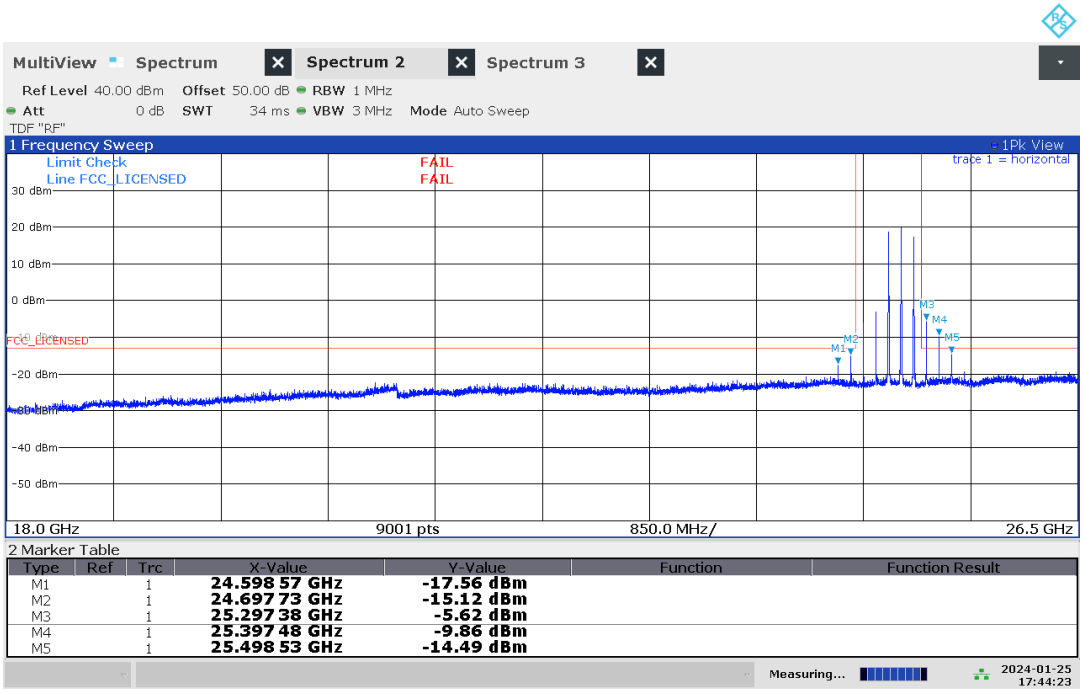
HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	25.298	RMS	-25.99	-13	-12.99	H
2	25.298	RMS	-17.65	-13	-4.65	V

RMS - EIRP, Power RMS Average detector

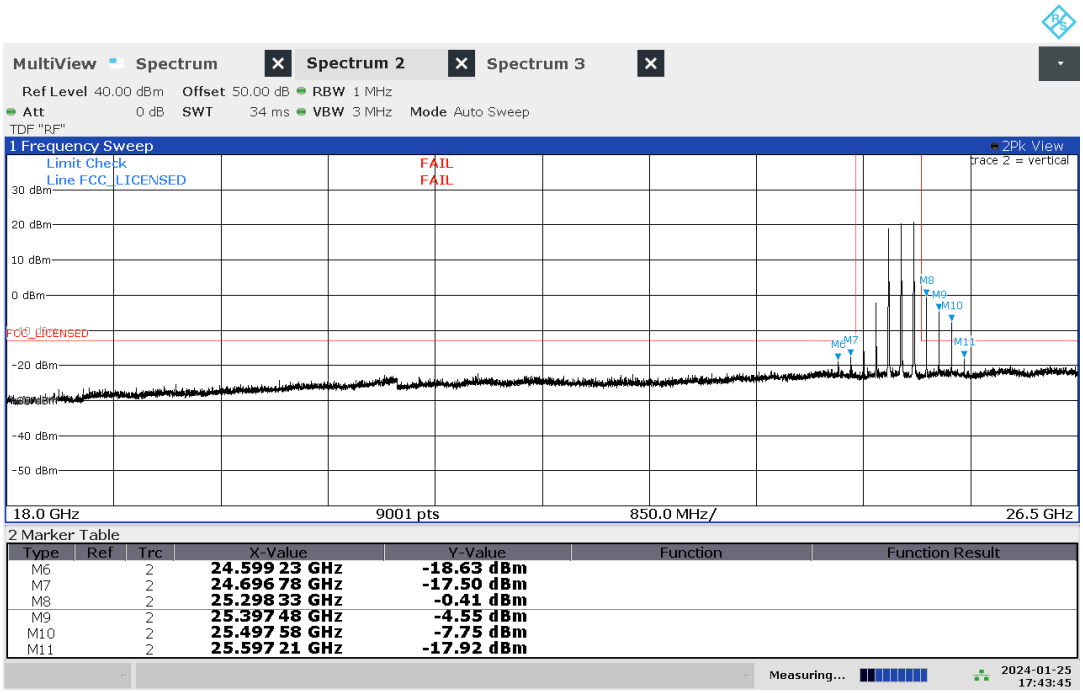
ANTENNA 0, 100MHz BW, 3CC CONFIGURATION

HORIZONTAL



05:44:23 PM 01/25/2024

VERTICAL



05:43:46 PM 01/25/2024

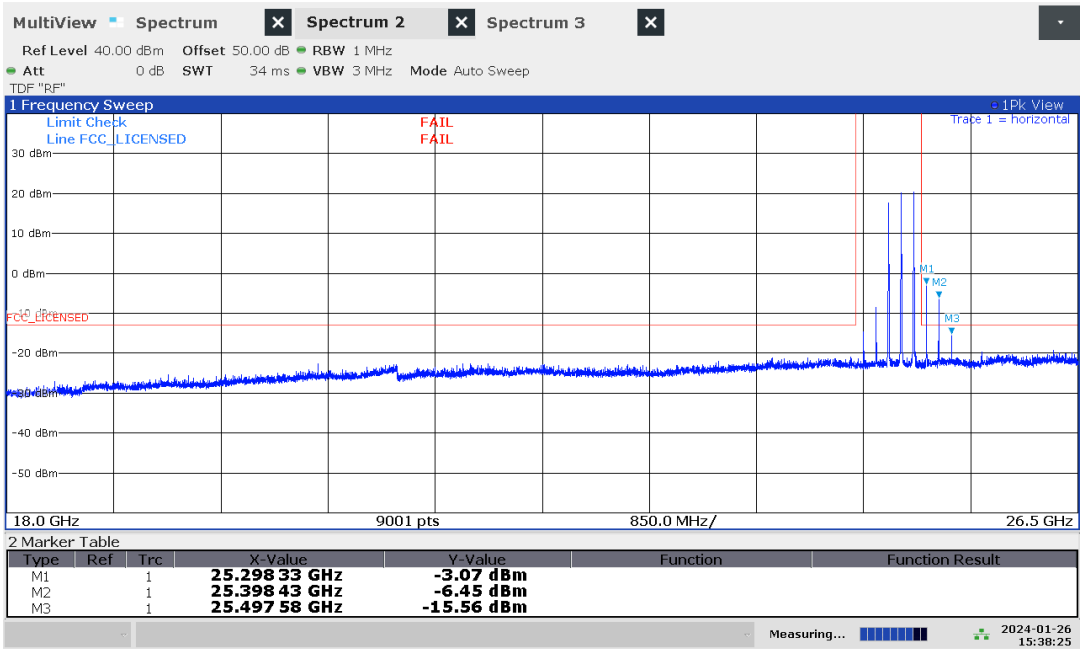
HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	24.598	RMS	-32.20	-13	-19.2	H
2	24.697	RMS	-31.08	-13	-18.08	H
3/8	25.297	TRP	-17.90	-13	-4.9	-
4	25.397	RMS	-22.07	-13	-9.07	H
5	25.496	RMS	-30.68	-13	-17.68	H
6	24.598	RMS	-32.29	-13	-19.29	V
7	24.697	RMS	-31.78	-13	-18.78	V
9	25.398	RMS	-16.98	-13	-3.98	V
10	25.497	RMS	-25.88	-13	-12.88	V
11	25.597	RMS	-31.87	-13	-18.87	V

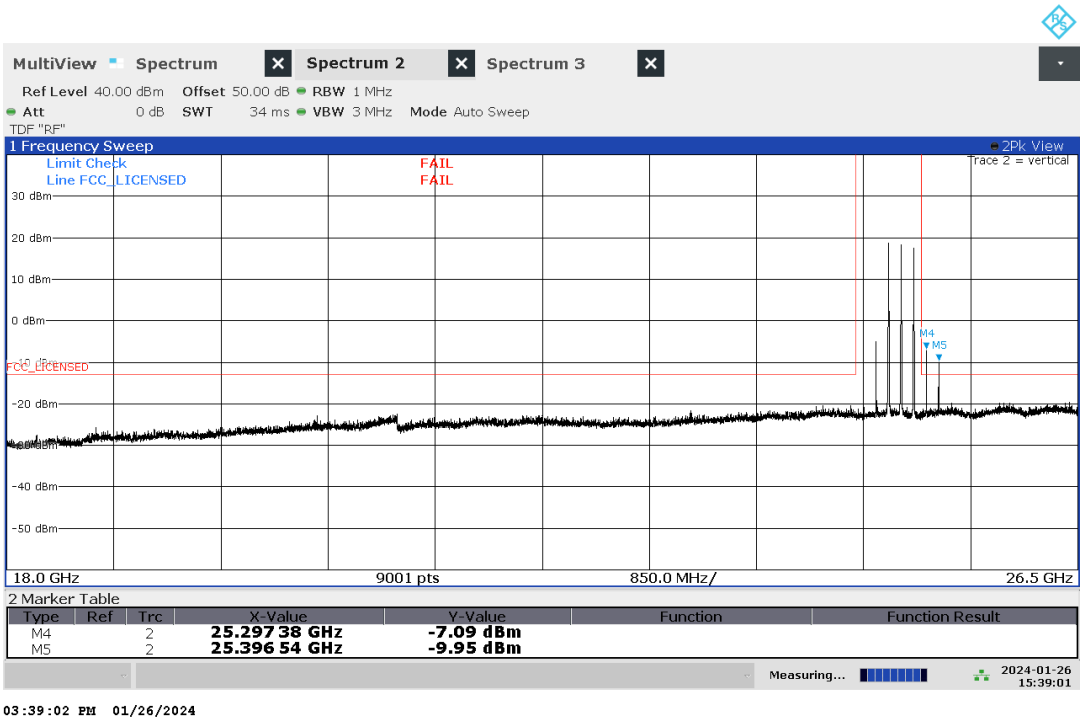
RMS - EIRP, Power RMS Average detector
TRP - KDB 842590 Section 4.4.3.3.3 Equal Sector Method

ANTENNA 1, 100MHz BW, 3CC CONFIGURATION

HORIZONTAL



VERTICAL



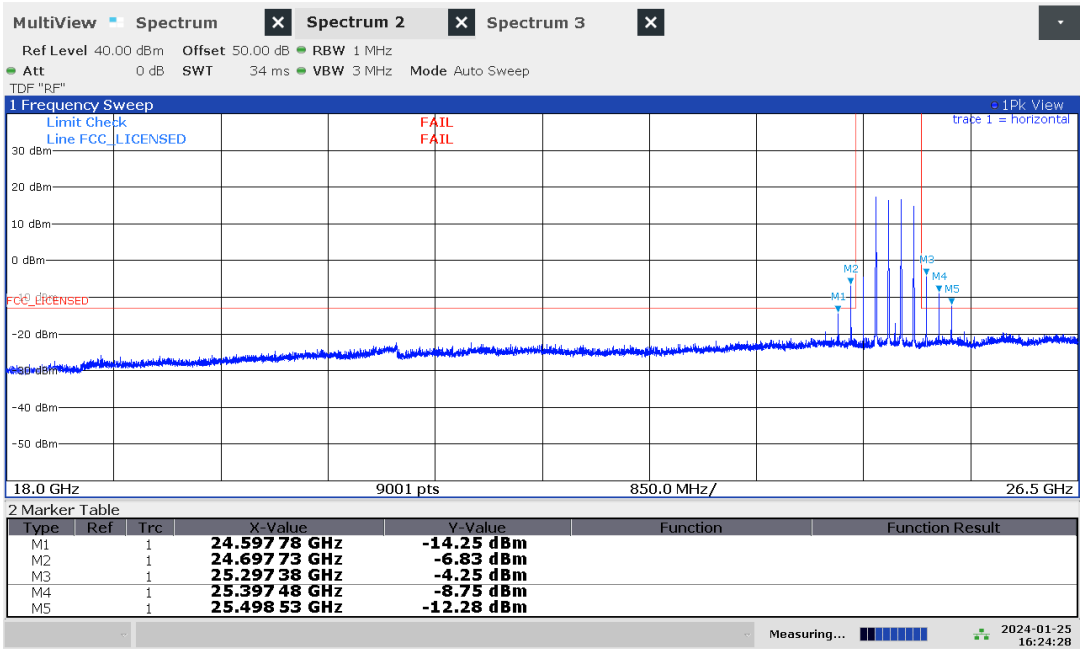
HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1/4	25.298	TRP	-17.78	-13	-4.78	-
2	25.397	RMS	-17.73	-13	-4.73	H
3	25.498	RMS	-29.90	-13	-16.90	H
5	25.397	RMS	-20.94	-13	-7.94	V

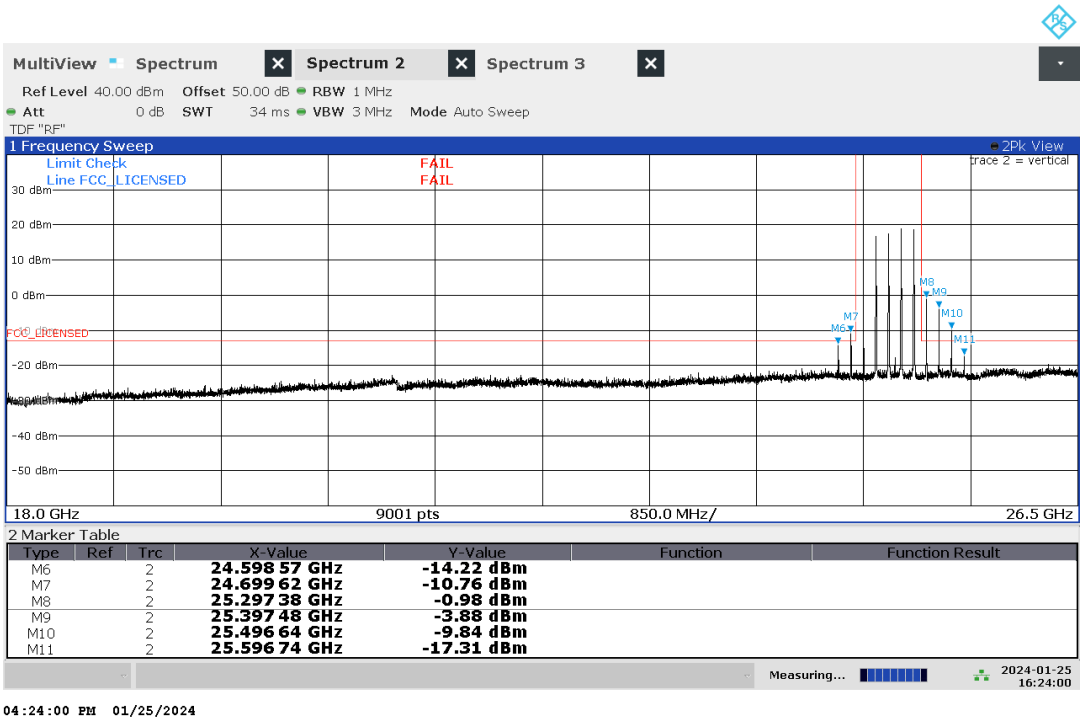
RMS - EIRP, Power RMS Average detector
TRP - KDB 842590 Section 4.4.3.3.3 Equal Sector Method

ANTENNA 0, 100MHz BW, 4CC CONFIGURATION

HORIZONTAL



VERTICAL



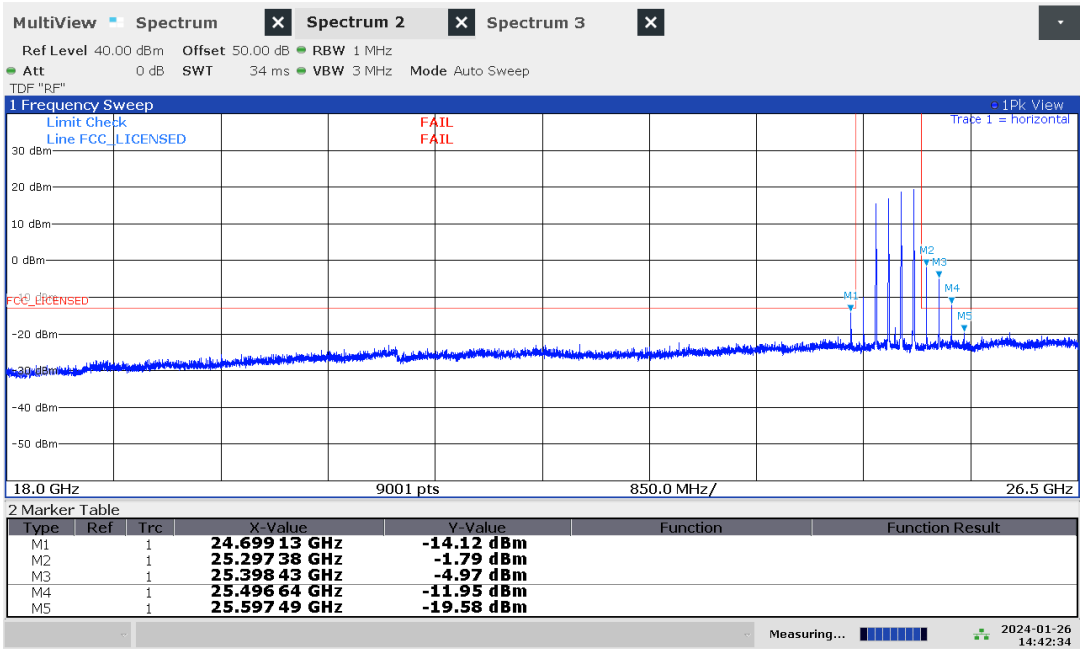
HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	24.597	RMS	-26.32	-13	-13.32	H
2	24.698	RMS	-19.59	-13	-6.59	H
3/8	25.298	TRP	-17.63	-13	-4.63	-
4	25.397	RMS	-20.65	-13	-7.65	H
5	25.498	RMS	-27.89	-13	-14.89	H
6	24.599	RMS	-26.15	-13	-13.15	V
7	24.698	RMS	-19.76	-13	-6.76	V
9	25.398	RMS	-15.28	-13	-2.28	V
10	25.497	RMS	-23.35	-13	-10.35	V
11	25.597	RMS	-30.67	-13	-17.67	V

RMS - EIRP, Power RMS Average detector
TRP - KDB 842590 Section 4.4.3.3.3 Equal Sector Method

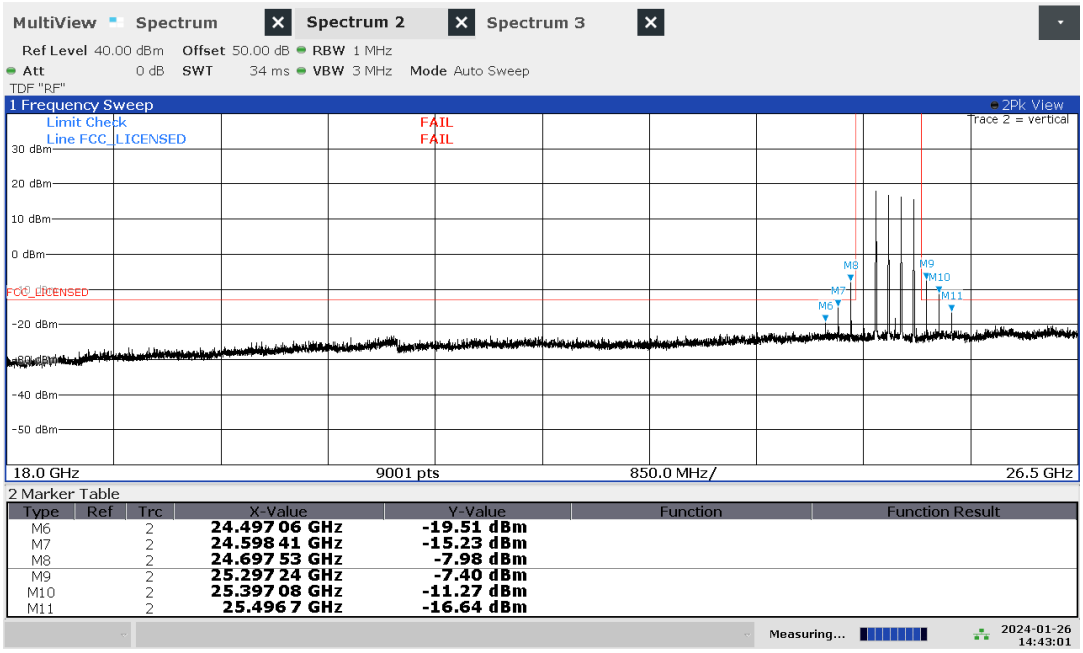
ANTENNA 1, 100MHz BW, 4CC CONFIGURATION

HORIZONTAL



02:42:34 PM 01/26/2024

VERTICAL



02:43:01 PM 01/26/2024

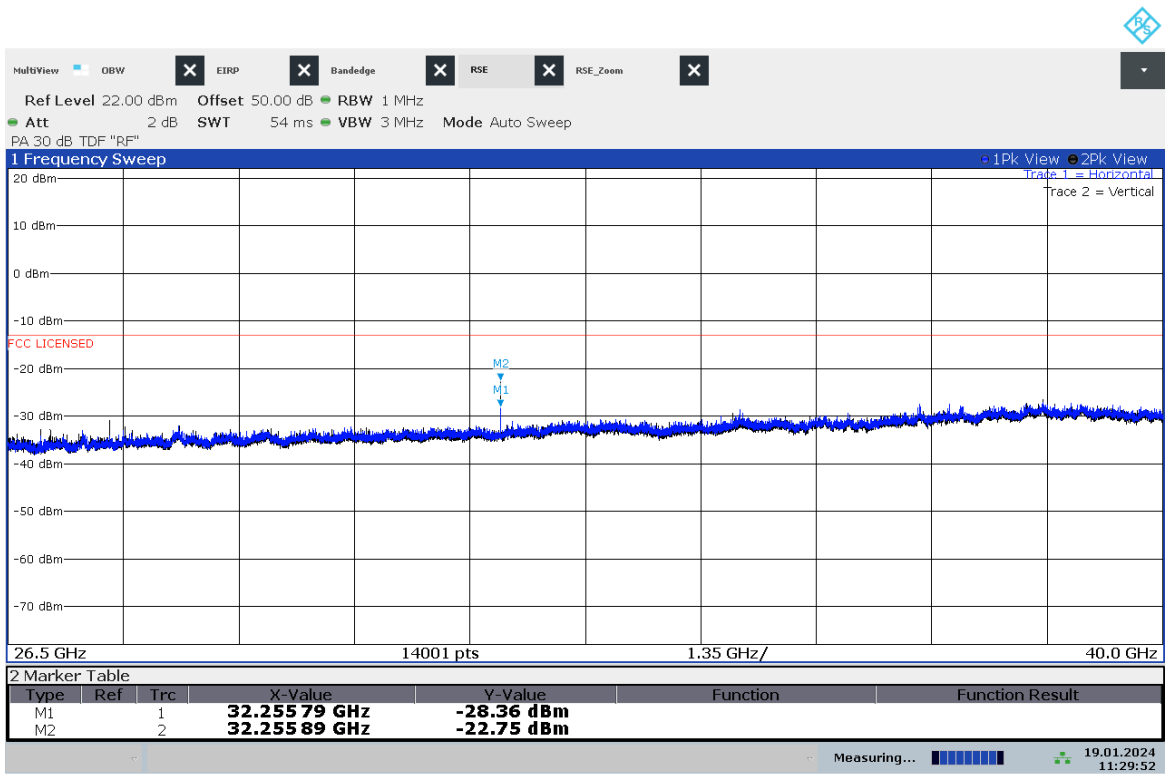
HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	24.698	RMS	-24.71	-13	-11.71	H
2/9	25.297	TRP	-17.68	-13	-4.68	-
3	25.398	RMS	-15.62	-13	-2.62	H
4	25.497	RMS	-23.62	-13	-10.62	H
5	25.596	RMS	-30.95	-13	-17.95	H
6	24.498	RMS	-30.85	-13	-17.85	V
7	24.598	RMS	-24.89	-13	-11.89	V
8	24.698	RMS	-18.24	-13	-5.24	V
10	25.397	RMS	-21.16	-13	-8.16	V
11	25.496	RMS	-28.22	-13	-15.22	V

RMS - EIRP, Power RMS Average detector
TRP - KDB 842590 Section 4.4.3.3.3 Equal Sector Method

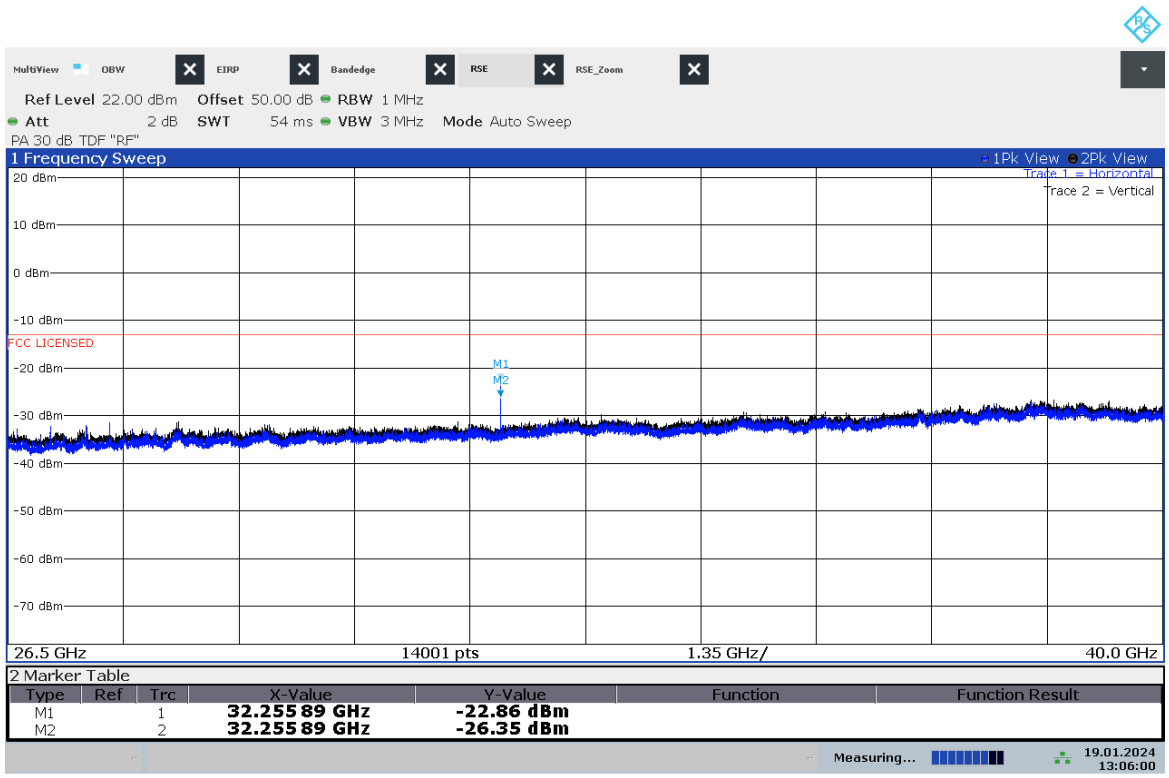
8.4.2.5. SPURIOUS EMISSIONS 26.5 – 40GHz

ANTENNA 0, 100MHz BW, 1CC CONFIGURATION



MID CHANNEL

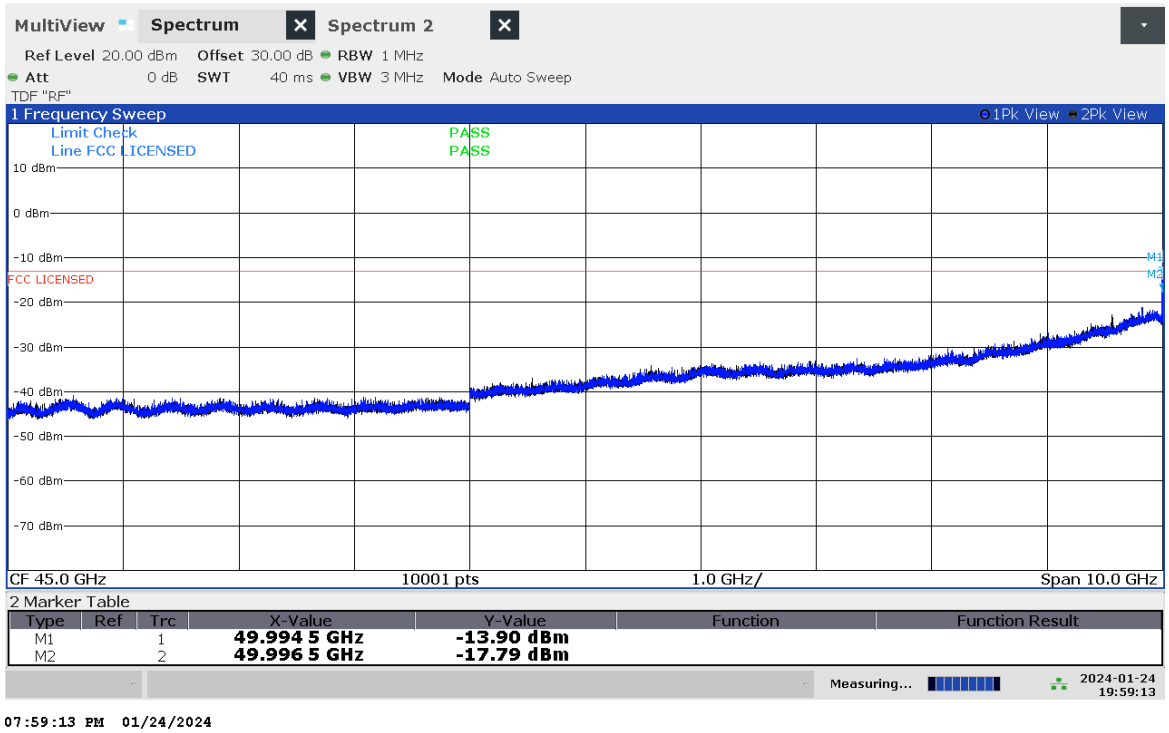
ANTENNA 1, 100MHz BW, 1CC CONFIGURATION



MID CHANNEL

8.4.2.6. SPURIOUS EMISSIONS 40 – 50GHz

ANTENNA 0, 100MHz BW, 1CC CONFIGURATION

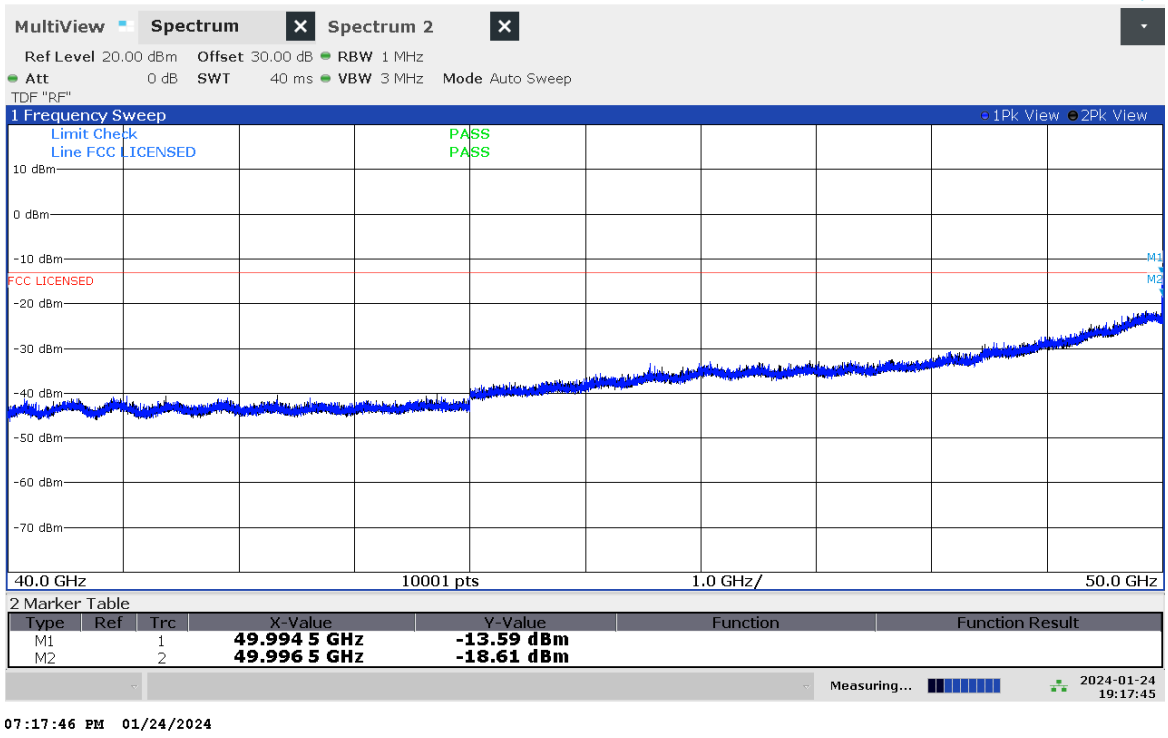


MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	49.995	RMS	-21	-13	-7	H
2	49.996	RMS	-25.71	-13	-12.71	V

RMS - EIRP, Power RMS Average detector

ANTENNA 1, 100MHz BW, 1CC CONFIGURATION



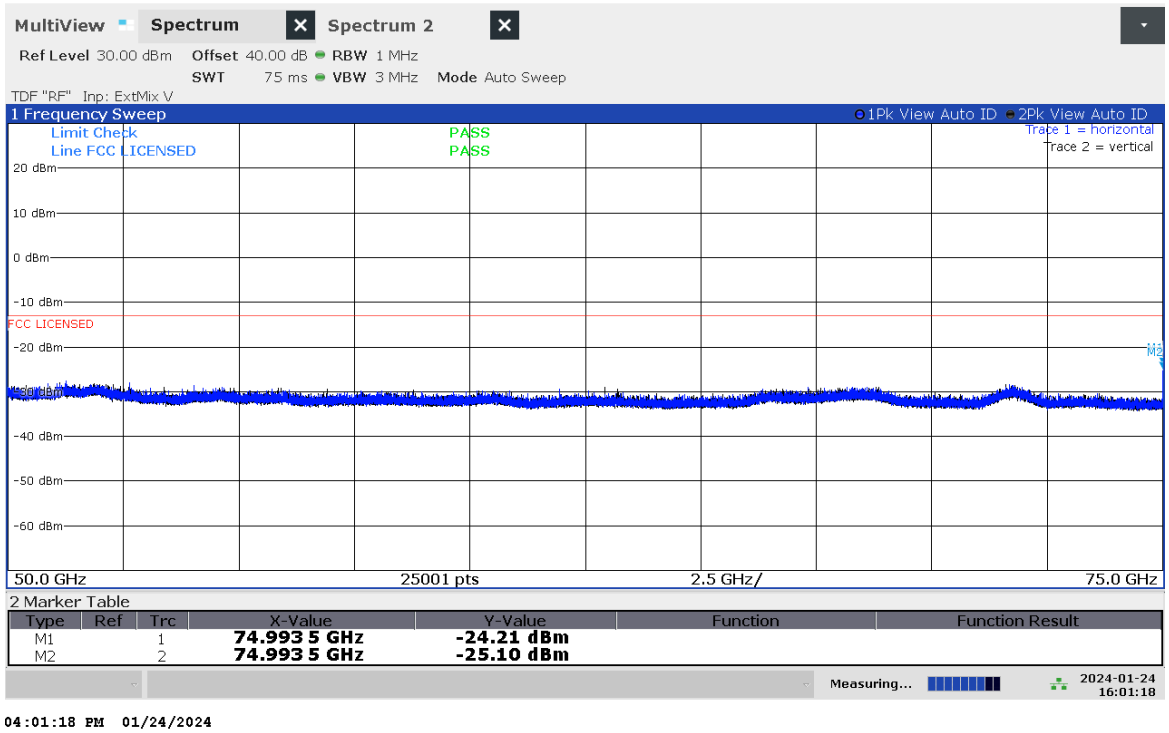
MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	49.995	RMS	-20.08	-13	-7.08	H
2	49.996	RMS	-26.68	-13	-13.68	V

RMS - EIRP, Power RMS Average detector

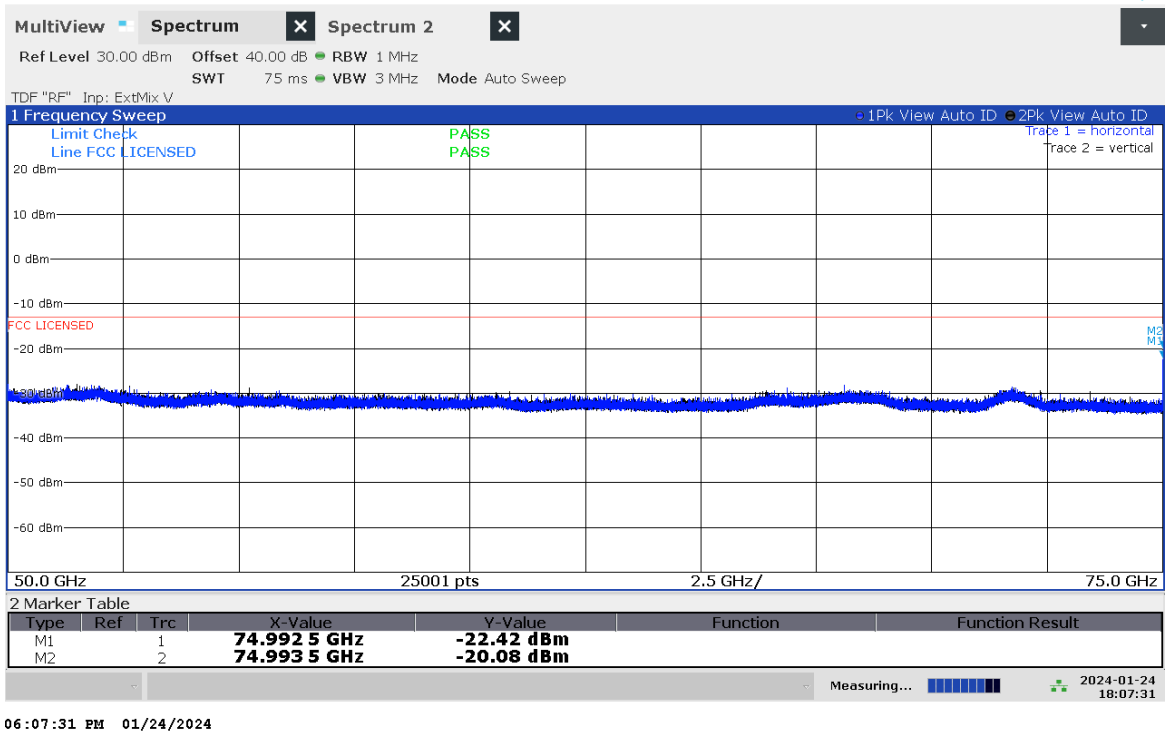
8.4.2.7. SPURIOUS EMISSIONS 50 – 75GHz

ANTENNA 0, 100MHz BW, 1CC CONFIGURATION



MID CHANNEL

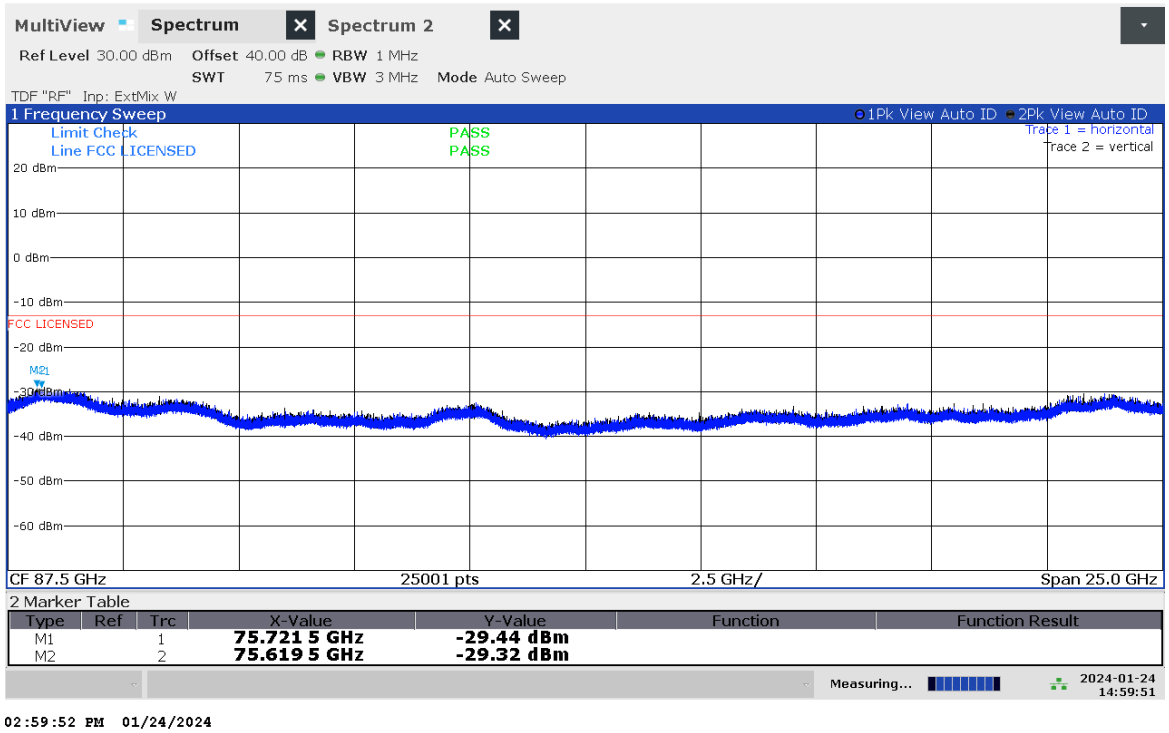
ANTENNA 1, 100MHz BW, 1CC CONFIGURATION



MID CHANNEL

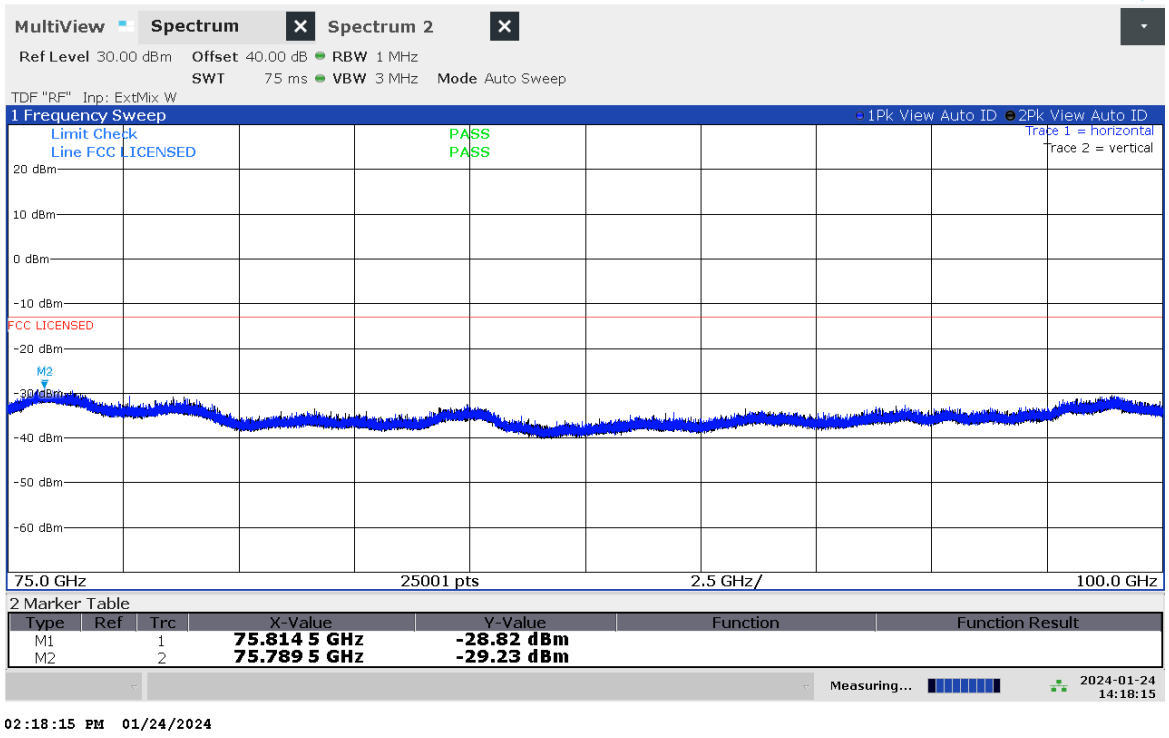
8.4.2.8. SPURIOUS EMISSIONS 75 – 100GHz

ANTENNA 0, 100MHz BW, 1CC CONFIGURATION



MID CHANNEL

ANTENNA 1, 100MHz BW, 1CC CONFIGURATION



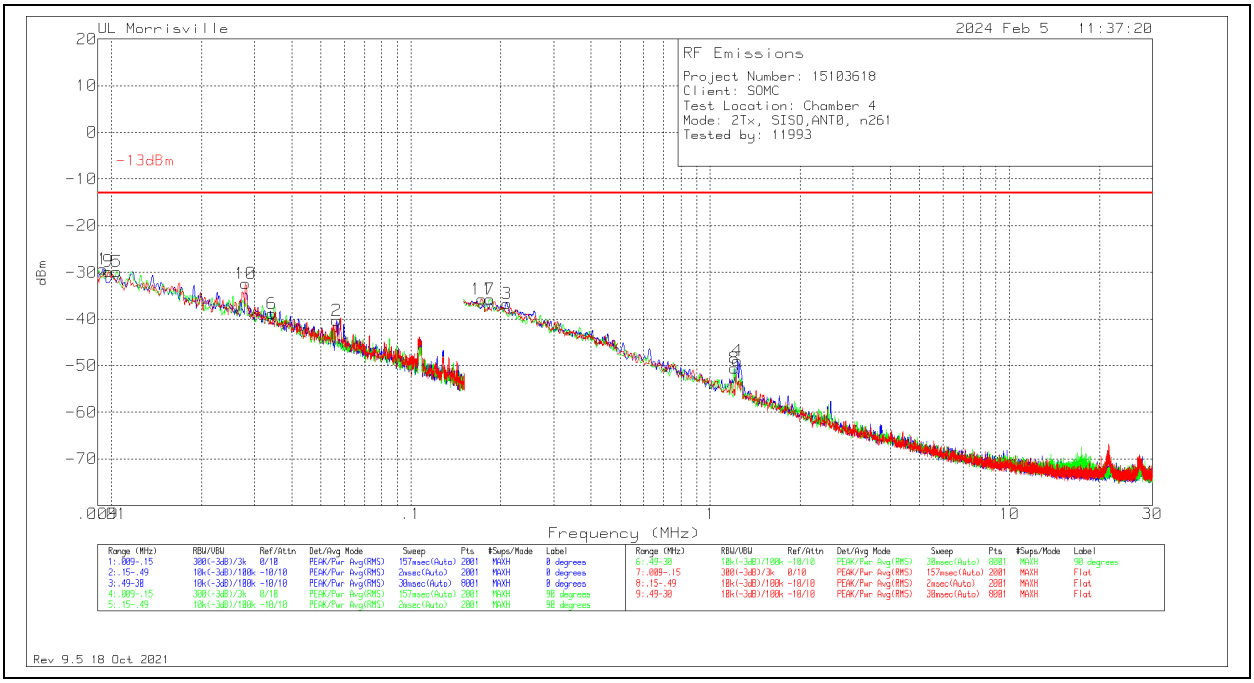
MID CHANNEL

8.4.3. n261 RESULTS

Note: In the 1CC configuration for ANT0, testing was performed only in 50MHz bandwidth mode; for ANT1, testing was performed only in 100MHz bandwidth mode as these represent the worst-case.

8.4.3.1. SPURIOUS EMISSIONS 9kHz - 30MHz

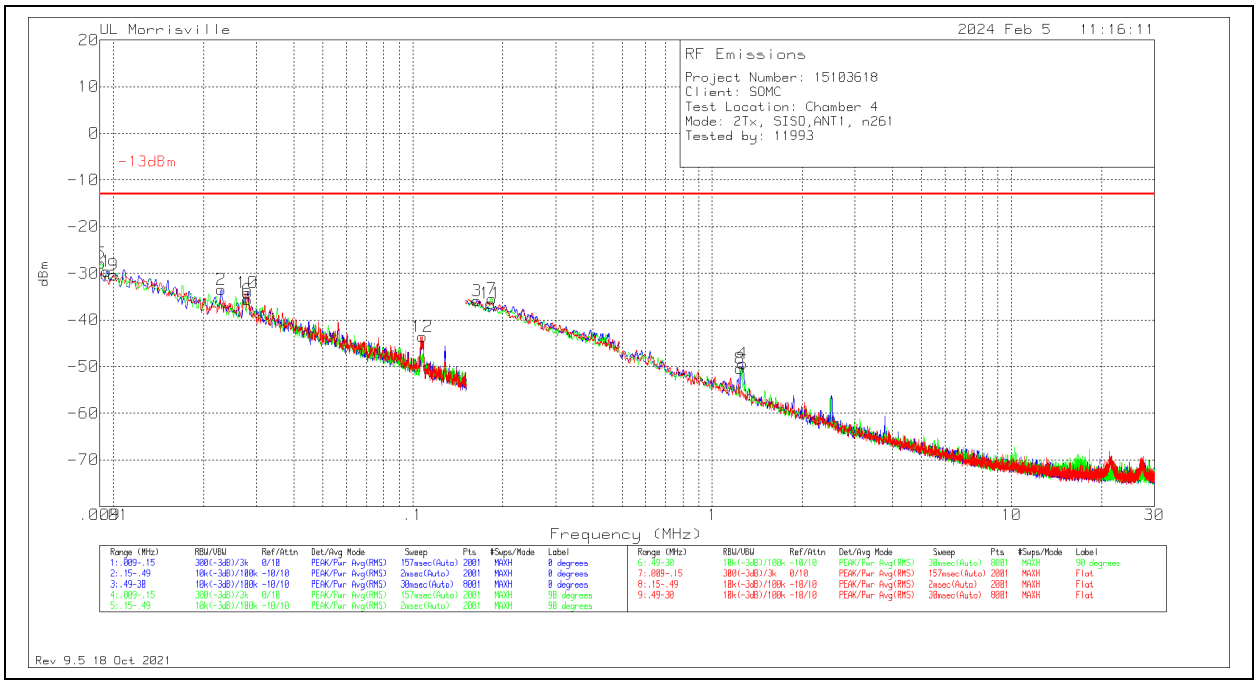
ANTENNA 0, WORST-CASE CONFIGURATION



Marker	Frequency (MHz)	Meter Reading (dBm)	Det	135144 (dBuV/m)	Gain/Loss (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Loop Angle
1	.00936	-59.89	Pk	18.8	0	11.8	-29.29	-13	-16.29	0-360	0 degs
9	.00978	-60.18	Pk	18.6	0	11.8	-29.78	-13	-16.78	0-360	Flat
5	.01042	-59.92	Pk	18.3	0	11.8	-29.82	-13	-16.82	0-360	90 degs
10	.0281	-57.8	Pk	13.6	0	11.8	-32.4	-13	-19.4	0-360	Flat
6	.03428	-63.71	Pk	13	0	11.8	-38.91	-13	-25.91	0-360	90 degs
2	.05657	-63.72	Pk	11.6	0	11.8	-40.32	-13	-27.32	0-360	0 degs
11	.17236	-58.62	Pk	11.1	0	11.8	-35.72	-13	-22.72	0-360	Flat
7	.18409	-58.72	Pk	11.1	0	11.8	-35.82	-13	-22.82	0-360	90 degs
3	.2095	-59.69	Pk	11.1	.1	11.8	-36.69	-13	-23.69	0-360	0 degs
8	1.20198	-73.85	Pk	11.4	.1	11.8	-50.55	-13	-37.55	0-360	90 degs
4	1.23518	-72.3	Pk	11.4	.1	11.8	-49	-13	-36	0-360	0 degs

Pk - Peak detector

ANTENNA 1, WORST-CASE CONFIGURATION



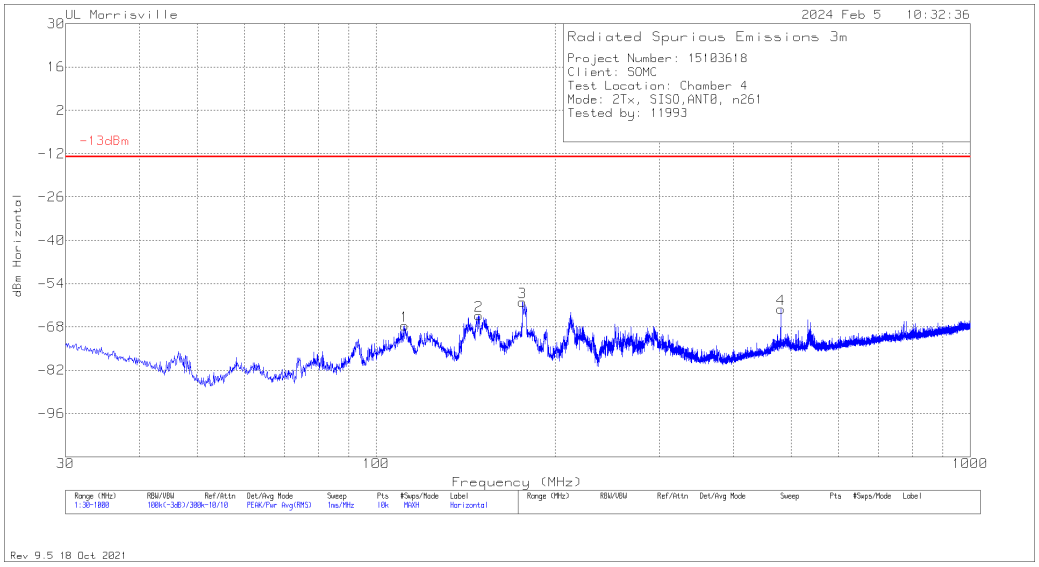
Marker	Frequency (MHz)	Meter Reading (dBm)	Det	135144 (dBuV/m)	Gain/Loss (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Loop Angle
5	.00907	-58.5	Pk	18.9	0	11.8	-27.8	-13	-14.8	0-360	90 degs
1	.0095	-60.08	Pk	18.7	0	11.8	-29.58	-13	-16.58	0-360	0 degs
9	.00999	-60.66	Pk	18.5	0	11.8	-30.36	-13	-17.36	0-360	Flat
2	.02292	-59.09	Pk	13.8	0	11.8	-33.49	-13	-20.49	0-360	0 degs
10	.02803	-59.49	Pk	13.6	0	11.8	-34.09	-13	-21.09	0-360	Flat
6	.0281	-61.07	Pk	13.6	0	11.8	-35.67	-13	-22.67	0-360	90 degs
12	.10762	-66.48	Pk	11.1	0	11.8	-43.58	-13	-30.58	0-360	Flat
3	.1636	-58.75	Pk	11.1	0	11.8	-35.85	-13	-22.85	0-360	0 degs
11	.18213	-59.35	Pk	11.1	0	11.8	-36.45	-13	-23.45	0-360	Flat
7	.18366	-58.36	Pk	11.1	0	11.8	-35.46	-13	-22.46	0-360	90 degs
8	1.23887	-73.75	Pk	11.4	.1	11.8	-50.45	-13	-37.45	0-360	90 degs
4	1.26469	-72.68	Pk	11.4	.1	11.8	-49.38	-13	-36.38	0-360	0 degs

Pk - Peak detector

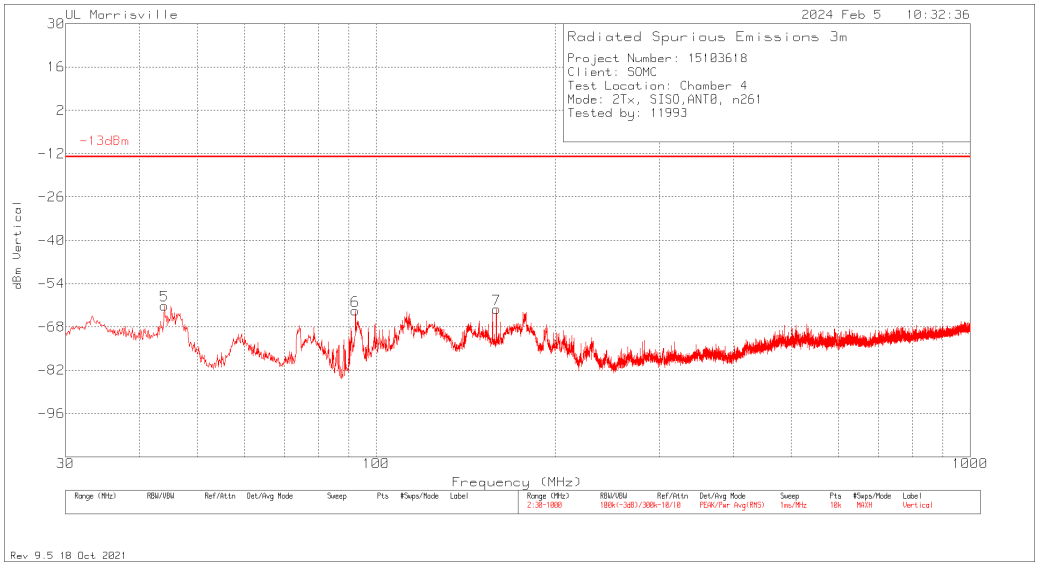
8.4.3.1. SPURIOUS EMISSIONS 30 - 1000MHz

ANTENNA 0, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL

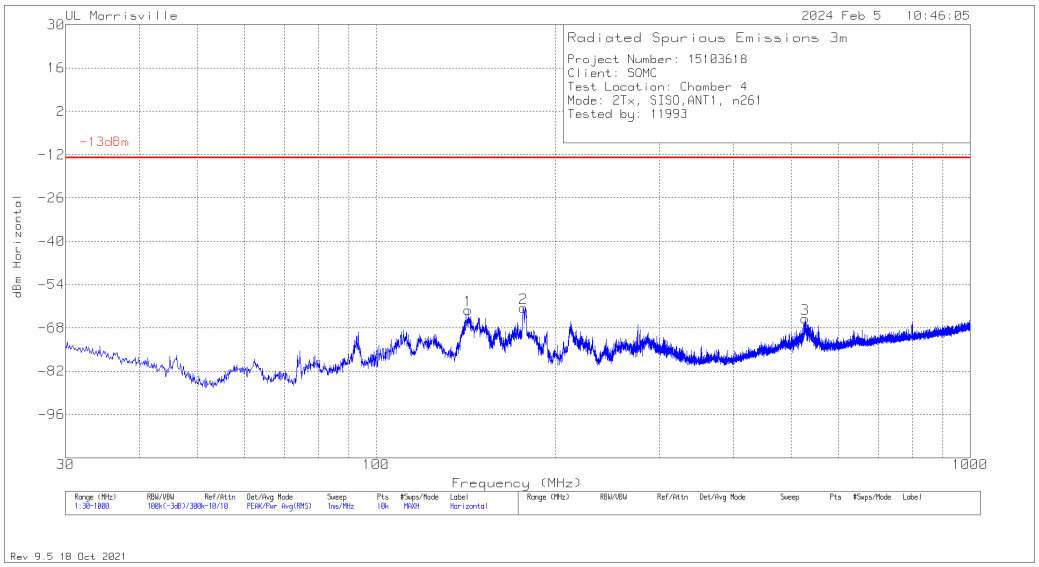


Marker	Frequency (MHz)	Meter Reading (dBm)	Det	90628 (dB/m)	Gain/Loss (dB)	Filter (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	43.968	-56.22	Pk	17.2	-32	.2	11.8	-59.02	-13	-46.02	0-360	100	V
6	92.274	-55.42	Pk	14.2	-31.5	.3	11.8	-60.62	-13	-47.62	0-360	100	V
1	111.771	-65.41	Pk	19.1	-31.4	.4	11.8	-65.51	-13	-52.51	0-360	200	H
2	149.019	-62.03	Pk	18.7	-31.1	.4	11.8	-62.23	-13	-49.23	0-360	100	H
7	159.398	-59.78	Pk	18.4	-31	.5	11.8	-60.08	-13	-47.08	0-360	100	V
3	176.373	-56.72	Pk	17.5	-30.9	.5	11.8	-57.82	-13	-44.82	0-360	100	H
4	479.789	-66.89	Pk	23.8	-29.7	.8	11.8	-60.19	-13	-47.19	0-360	100	H

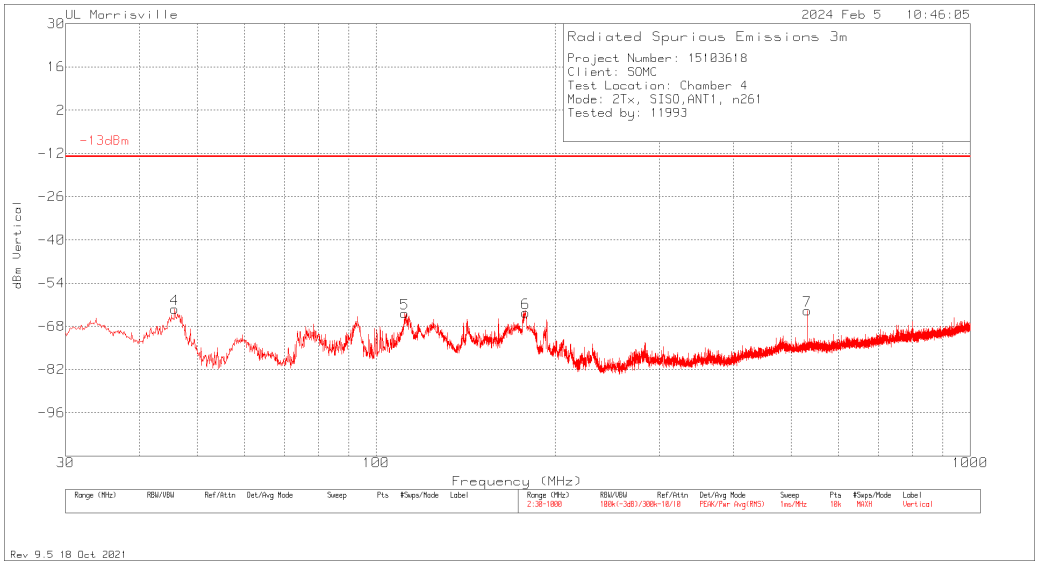
Pk - Peak detector

ANTENNA 1, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL



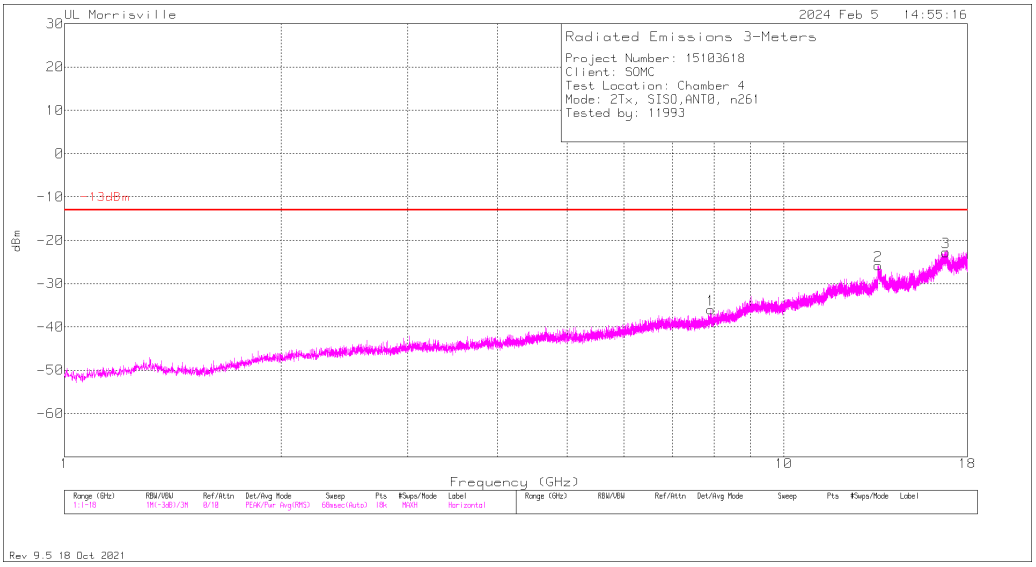
Marker	Frequency (MHz)	Meter Reading (dBm)	Det	90628 (dB/m)	Gain/Loss (dB)	Filter (dB)	Conversion Factor (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	45.811	-56.33	Pk	16	-32	.2	11.8	-60.33	-13	-47.33	0-360	100	V
5	111.674	-61.54	Pk	19.1	-31.4	.4	11.8	-61.64	-13	-48.64	0-360	100	V
1	142.811	-60.17	Pk	19	-31.2	.4	11.8	-60.17	-13	-47.17	0-360	100	H
2	176.955	-58.32	Pk	17.5	-30.9	.5	11.8	-59.42	-13	-46.42	0-360	100	H
6	178.41	-60.18	Pk	17.4	-31	.5	11.8	-61.48	-13	-48.48	0-360	100	V
3	527.319	-70.18	Pk	24	-29.5	.9	11.8	-62.98	-13	-49.98	0-360	100	H
7	531.684	-68.17	Pk	24.1	-29.5	.9	11.8	-60.87	-13	-47.87	0-360	100	V

Pk - Peak detector

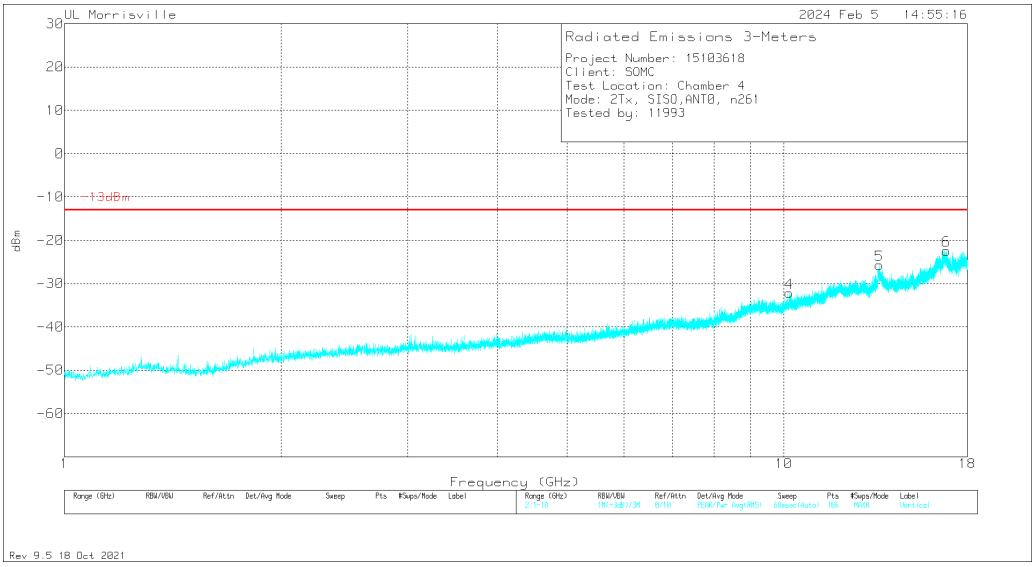
8.4.3.2. SPURIOUS EMISSIONS 1 – 18GHz

ANTENNA 0, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL

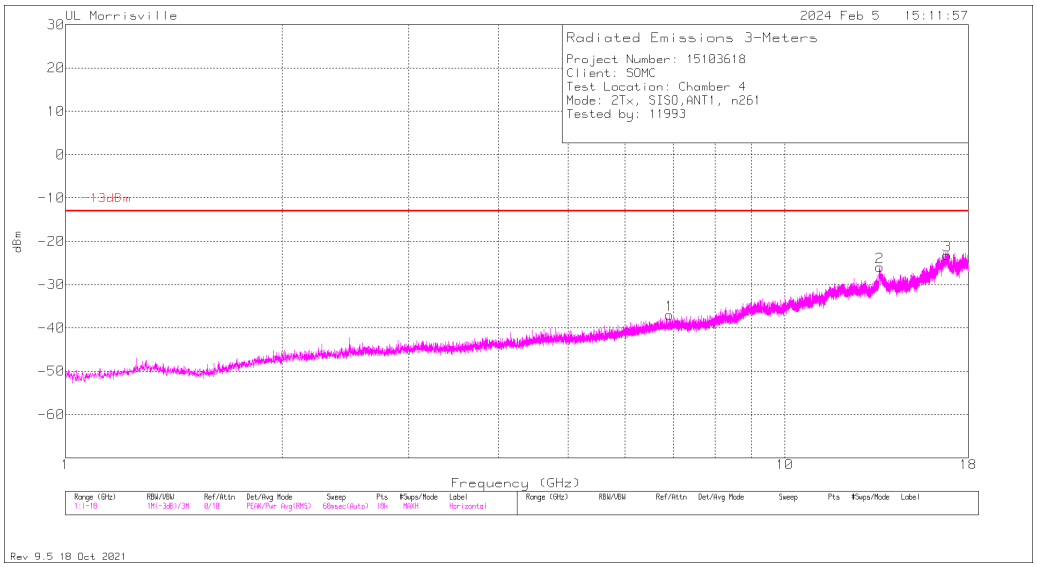


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	89509 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	7.91616	-65.96	Pk	35.8	-17.6	11.8	-35.96	-13	-22.96	0-360	200	H
4	10.18472	-65.21	Pk	37.4	-16.2	11.8	-32.21	-13	-19.21	0-360	300	V
2	13.52333	-64.25	Pk	38.8	-12.2	11.8	-25.85	-13	-12.85	0-360	100	H
5	13.56961	-63.92	Pk	38.8	-12.4	11.8	-25.72	-13	-12.72	0-360	300	V
3	16.80244	-66.89	Pk	41.9	-9.6	11.8	-22.79	-13	-9.79	0-360	100	H
6	16.82038	-66.92	Pk	41.9	-9.2	11.8	-22.42	-13	-9.42	0-360	200	V

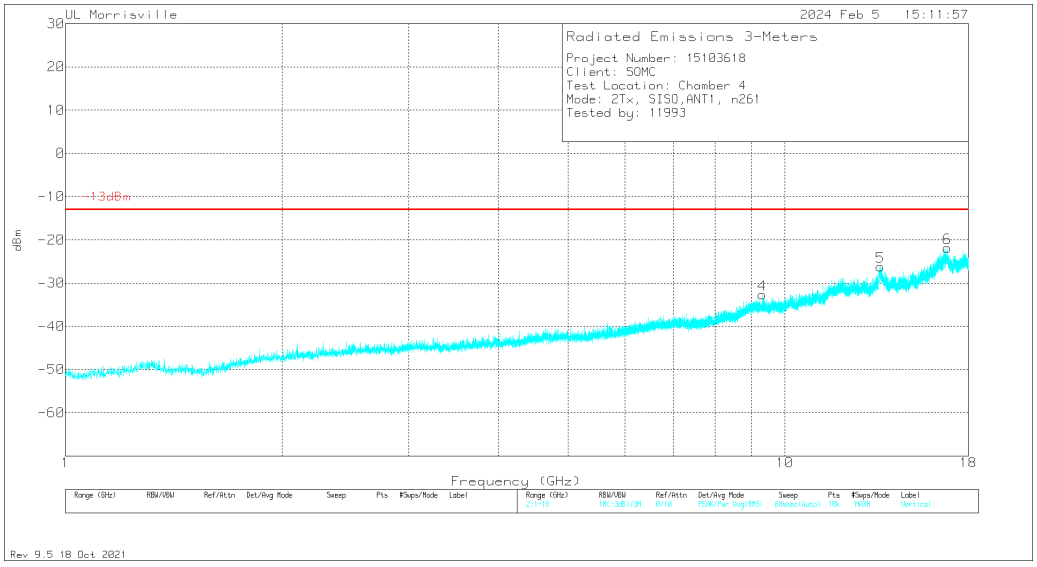
Pk - Peak detector

ANTENNA 1, WORST-CASE CONFIGURATION

HORIZONTAL



VERTICAL

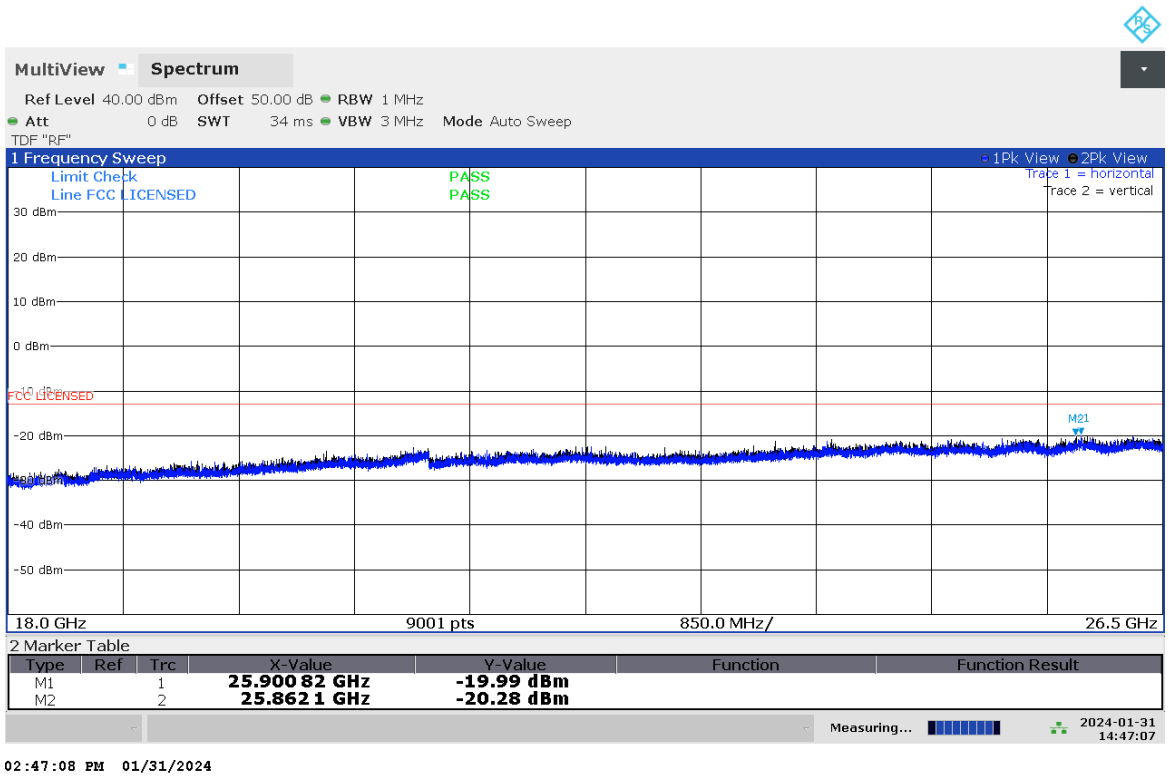


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	89509 ACF (dB/m)	Gain/Loss (dB)	CF (dB)	Corrected Reading dBm	TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	6.91883	-66.1	Pk	35.5	-18.2	11.8	-37	-13	-24	0-360	100	H
4	9.30922	-64.97	Pk	36.4	-15.9	11.8	-32.67	-13	-19.67	0-360	300	V
2	13.55166	-64.08	Pk	38.8	-12.5	11.8	-25.98	-13	-12.98	0-360	100	H
5	13.56961	-64.42	Pk	38.8	-12.4	11.8	-26.22	-13	-13.22	0-360	200	V
3	16.81849	-67.28	Pk	41.9	-9.6	11.8	-23.18	-13	-10.18	0-360	100	H
6	16.82227	-66.22	Pk	41.9	-9.4	11.8	-21.92	-13	-8.92	0-360	200	V

Pk - Peak detector

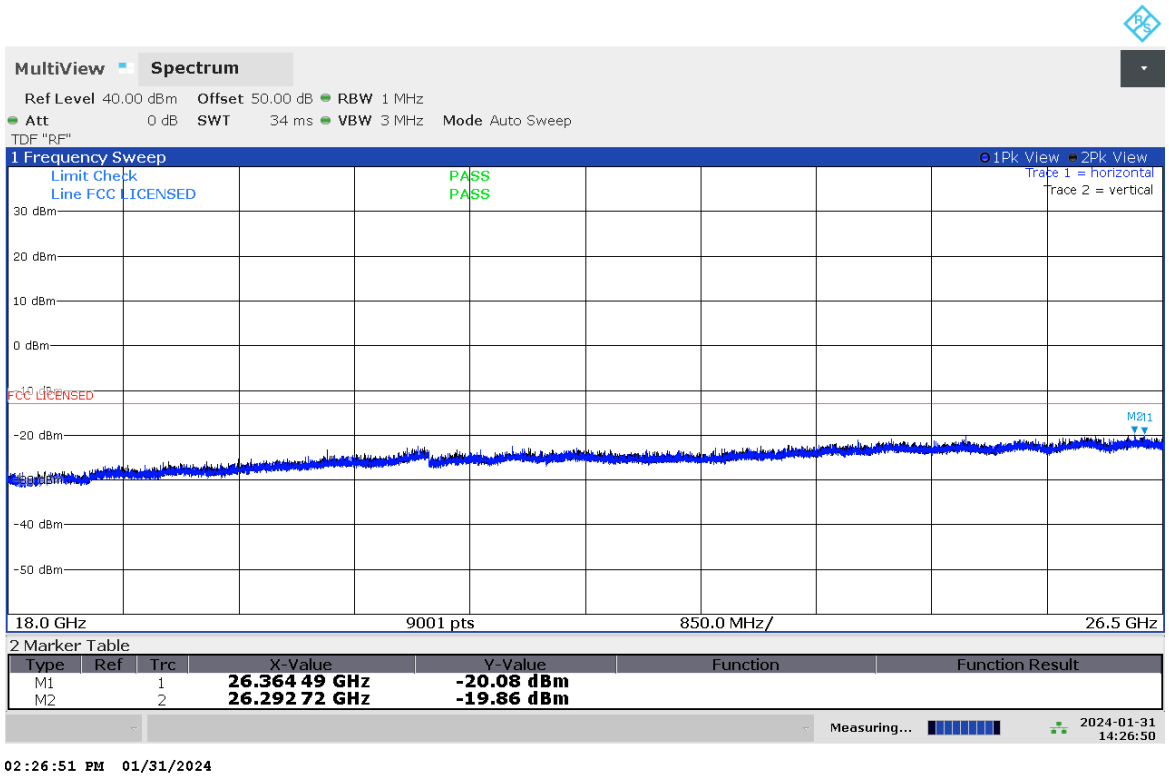
8.4.3.3. SPURIOUS EMISSIONS 18 – 26.5GHz

ANTENNA 0, 50MHz BW, 1CC CONFIGURATION



MID CHANNEL

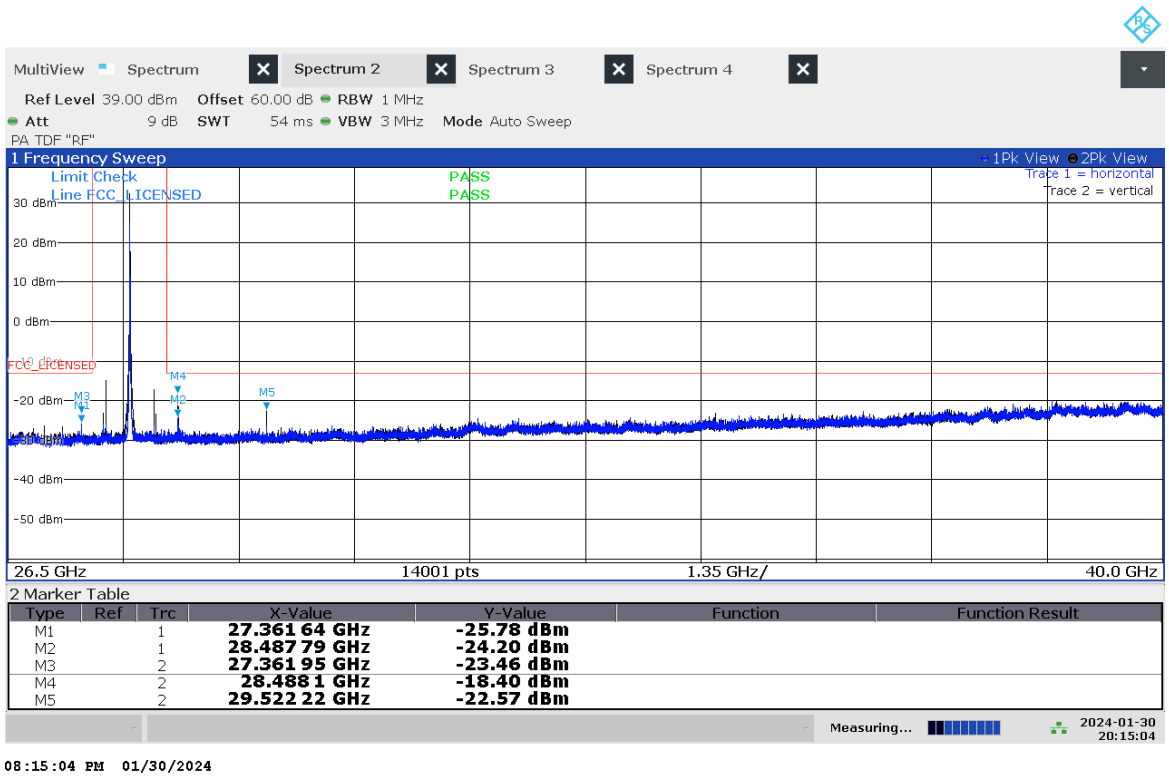
ANTENNA 1, 100MHz BW, 1CC CONFIGURATION



MID CHANNEL

8.4.3.4. SPURIOUS EMISSIONS 26.5 – 40GHz

ANTENNA 0, 50MHz BW, 1CC CONFIGURATION

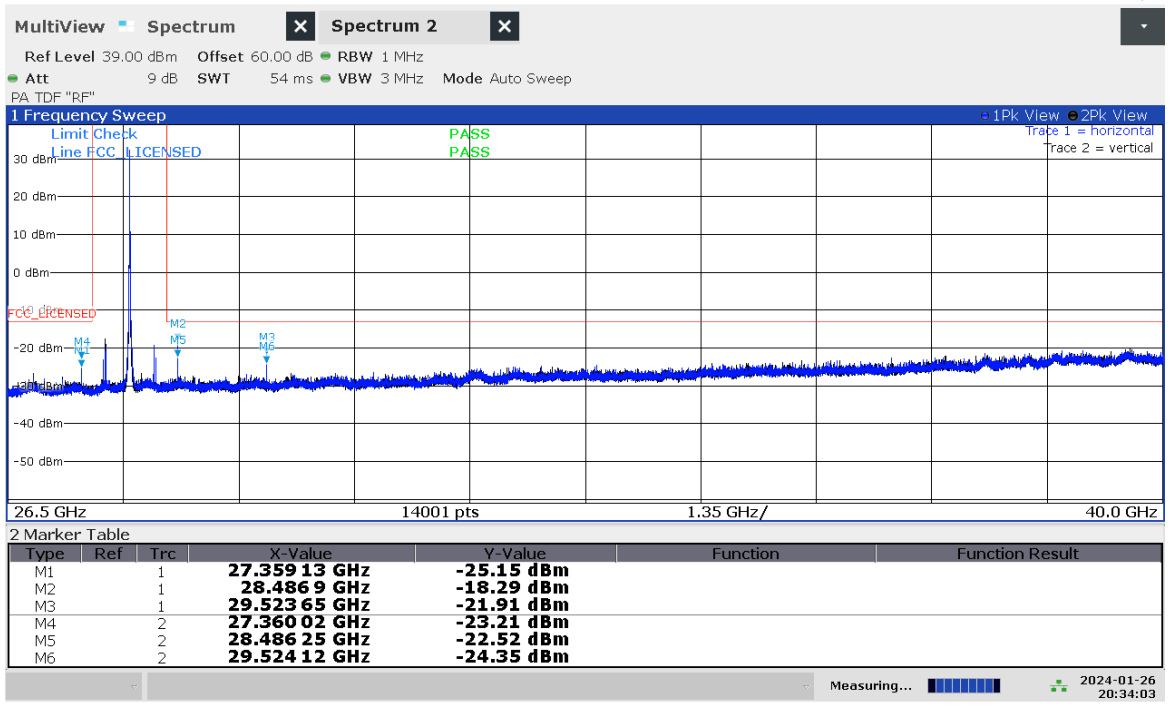


MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
4	28.488	RMS	-29.13	-13	-16.13	V

RMS - EIRP, Power RMS Average detector

ANTENNA 1, 100MHz BW, 1CC CONFIGURATION

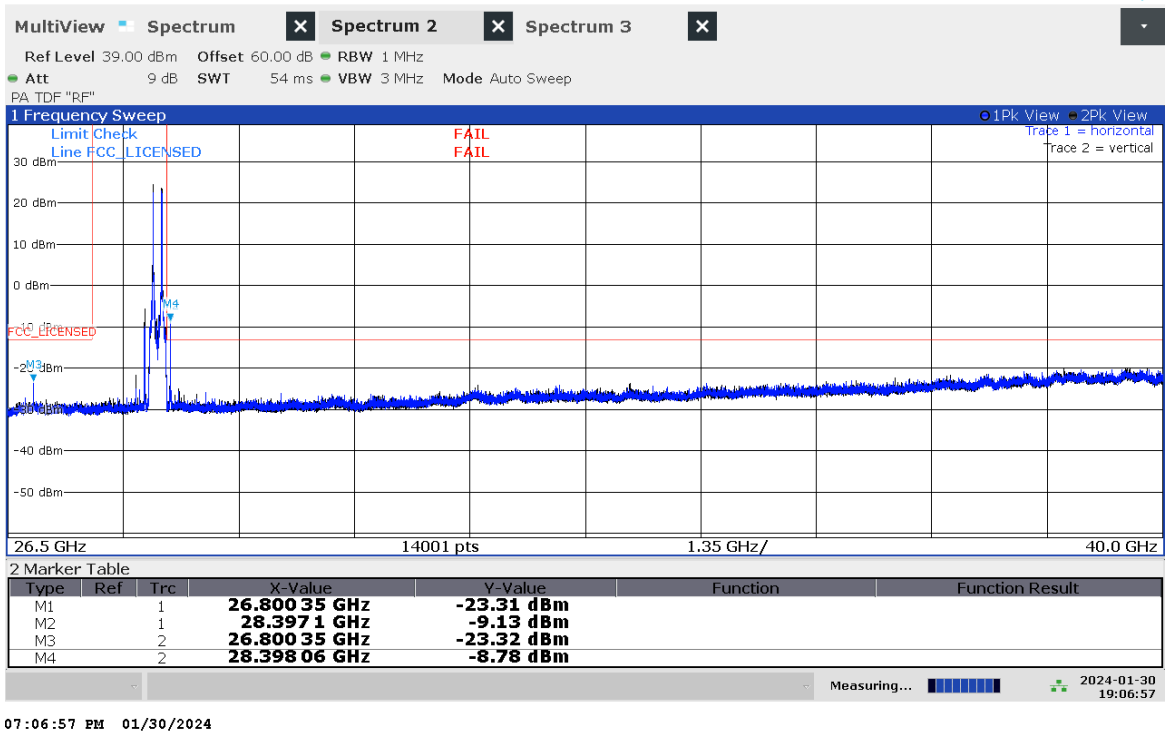


MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
2	28.486	RMS	-30.19	-13	-17.19	H

RMS - EIRP, Power RMS Average detector

ANTENNA 0, 100MHz BW, 2CC CONFIGURATION

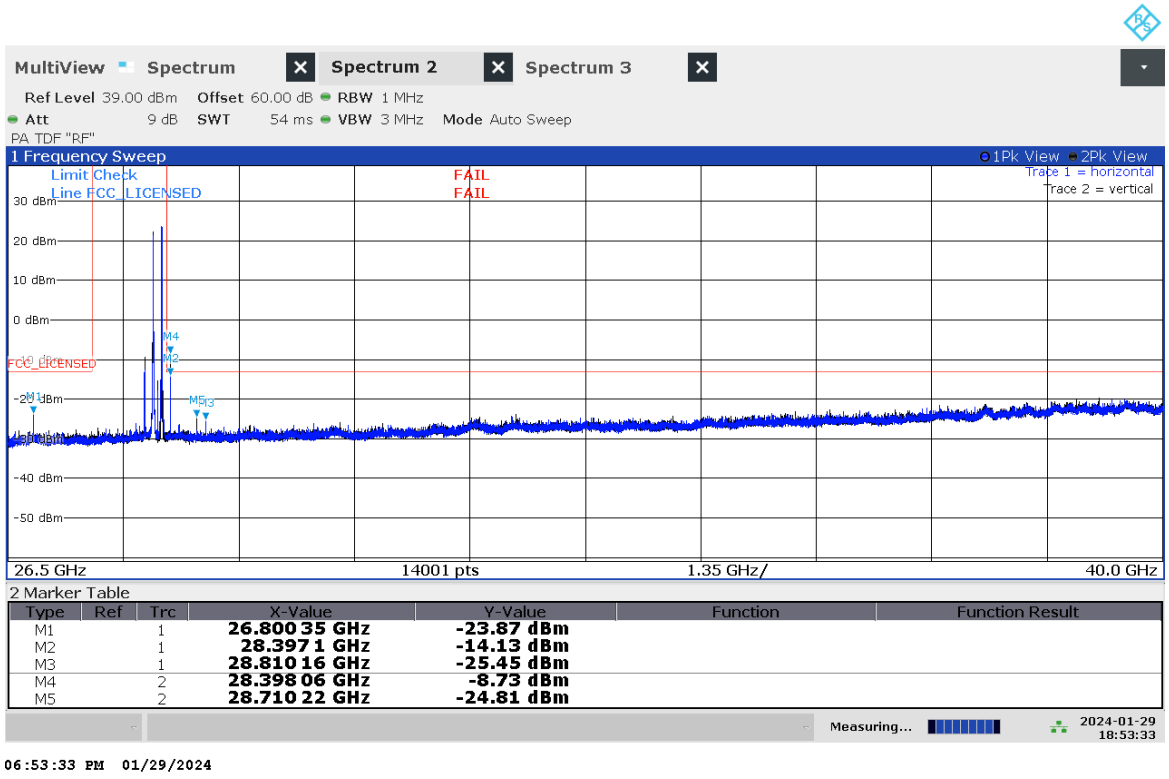


HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
2	28.398	RMS	-17.62	-13	-4.62	H
4	28.398	RMS	-17.90	-13	-4.9	V

RMS - EIRP, Power RMS Average detector

ANTENNA 1, 100MHz BW, 2CC CONFIGURATION



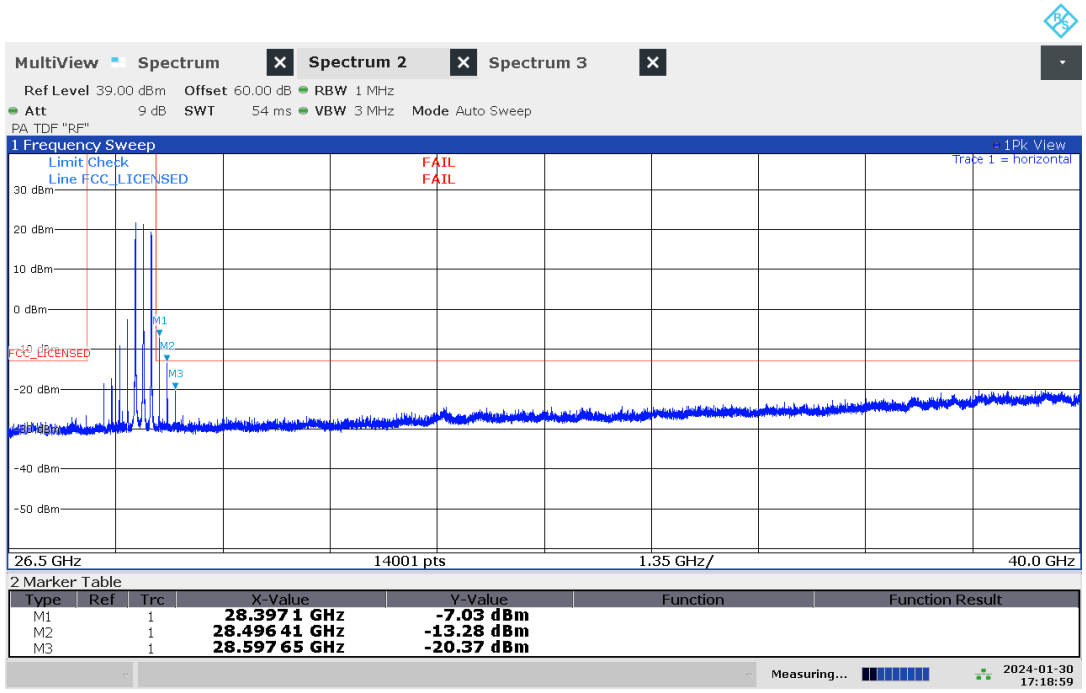
HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
2	28.397	RMS	-22.42	-13	-9.42	H
4	28.398	RMS	-18.96	-13	-5.96	V

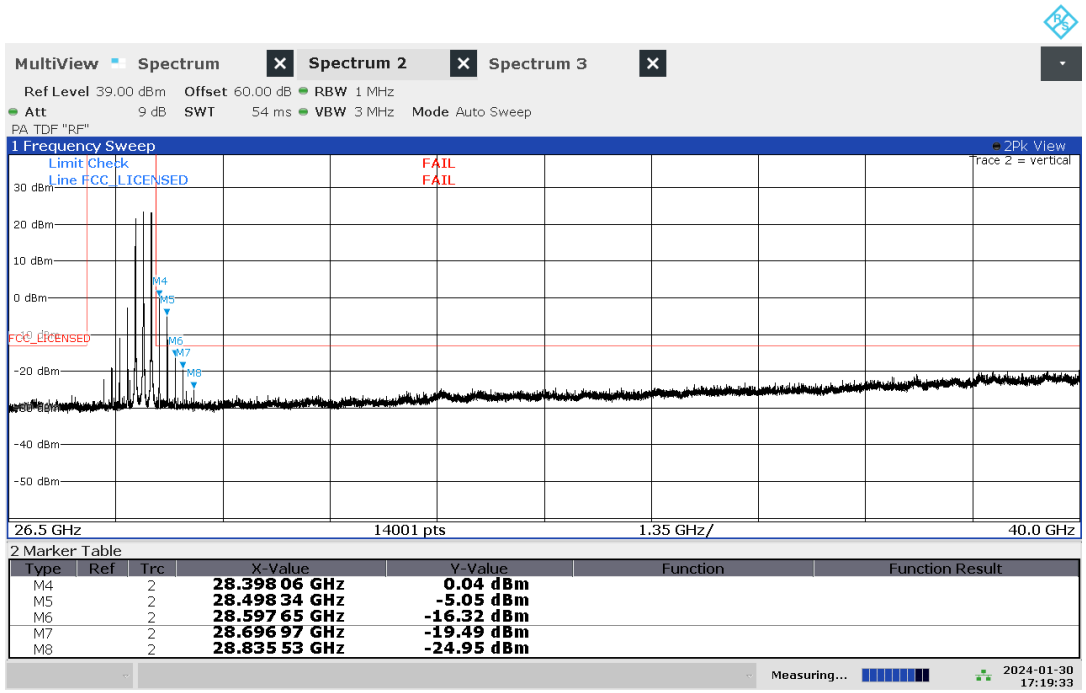
RMS - EIRP, Power RMS Average detector

ANTENNA 0, 100MHz BW, 3CC CONFIGURATION

HORIZONTAL



VERTICAL



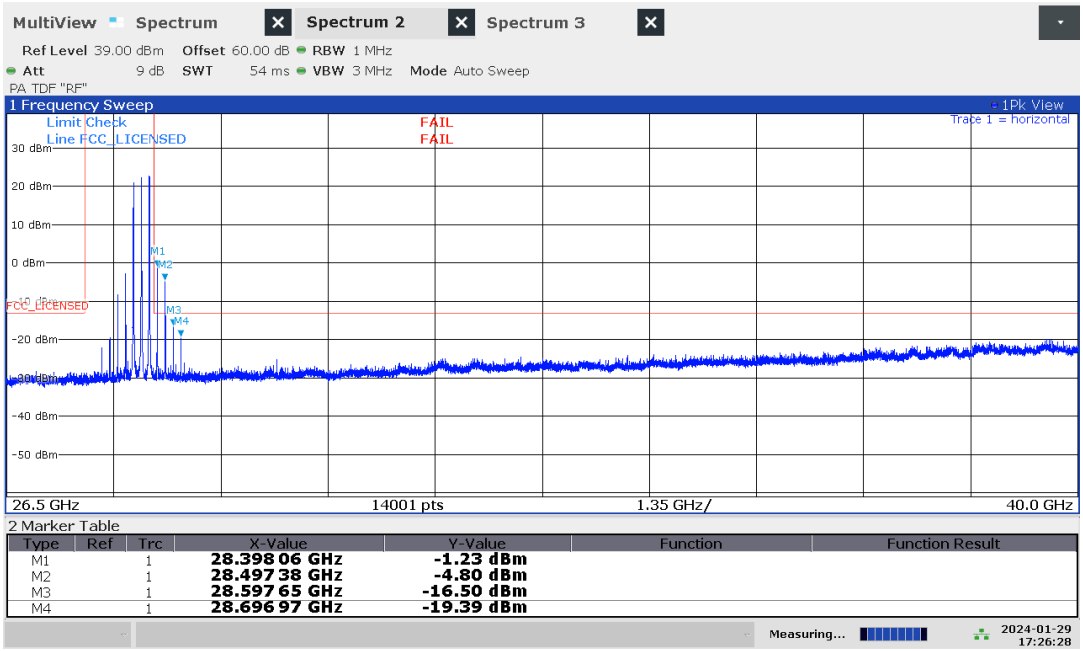
HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1/4	28.397	TRP	-16.68	-13	-3.68	-
2	28.497	RMS	-22.03	-13	-9.03	H
5	28.498	RMS	-15.57	-13	-2.57	V
6	28.598	RMS	-31.48	-13	-18.48	V

RMS - EIRP, Power RMS Average detector
TRP - KDB 842590 Section 4.4.3.3.3 Equal Sector Method

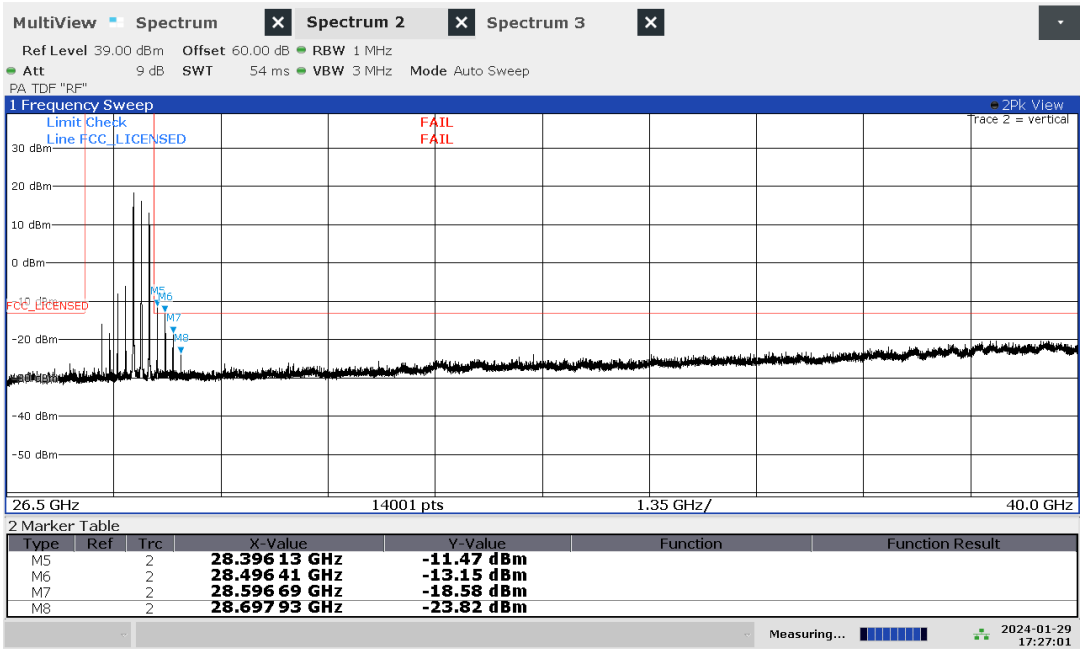
ANTENNA 1, 100MHz BW, 3CC CONFIGURATION

HORIZONTAL



05:26:28 PM 01/29/2024

VERTICAL



05:27:02 PM 01/29/2024

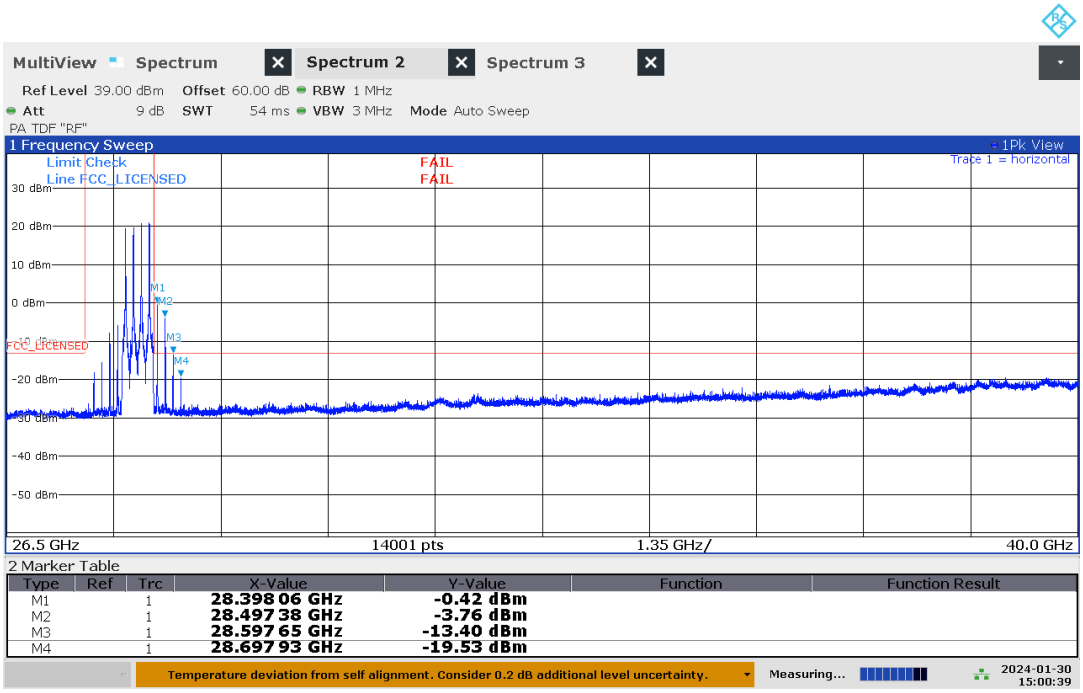
HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1/5	28.397	TRP	-17.82	-13	-4.82	-
2	28.497	RMS	-15.88	-13	-2.88	H
6	28.497	RMS	-26.31	-13	-13.31	V
7	28.596	RMS	-35.72	-13	-22.72	V

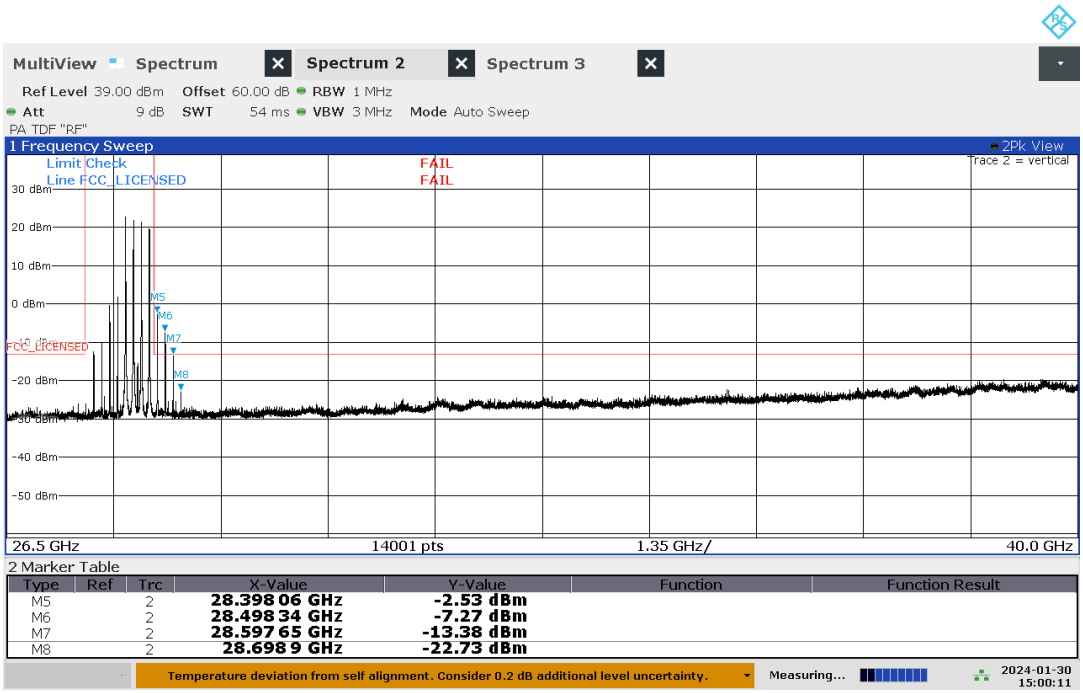
RMS - EIRP, Power RMS Average detector
TRP - KDB 842590 Section 4.4.3.3.3 Equal Sector Method

ANTENNA 0, 100MHz BW, 4CC CONFIGURATION

HORIZONTAL



VERTICAL



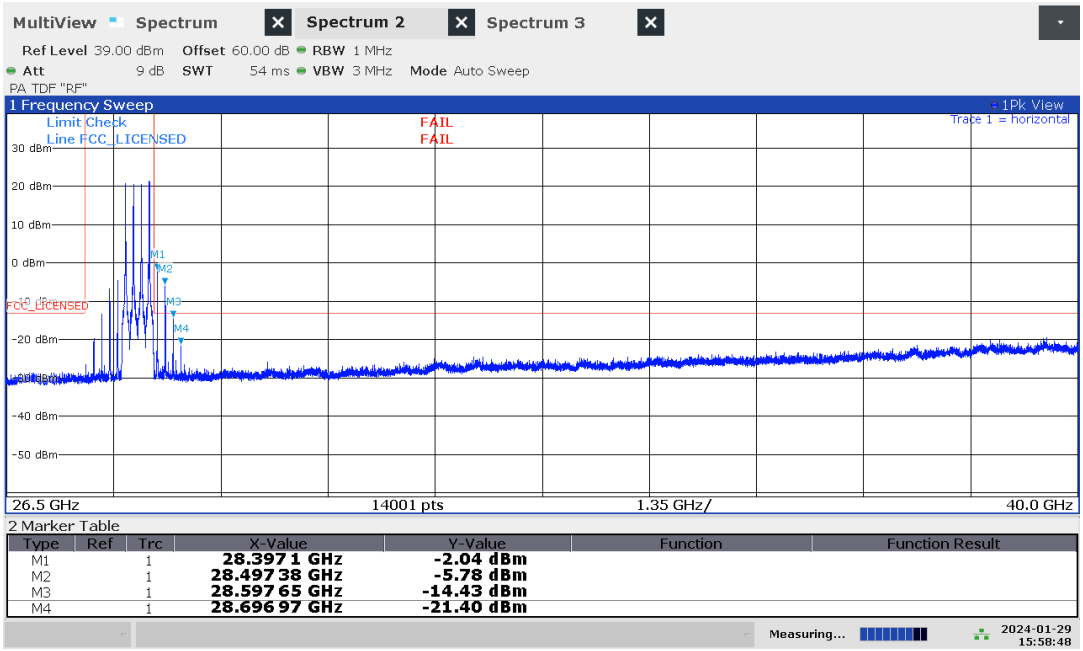
HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1/5	28.397	TRP	-16.54	-13	-3.54	-
2	28.498	RMS	-15.86	-13	-2.86	H
3	28.597	RMS	-25.24	-13	-12.24	H
6	28.498	RMS	-18.16	-13	-5.16	V
7	28.598	RMS	-27.35	-13	-14.35	V

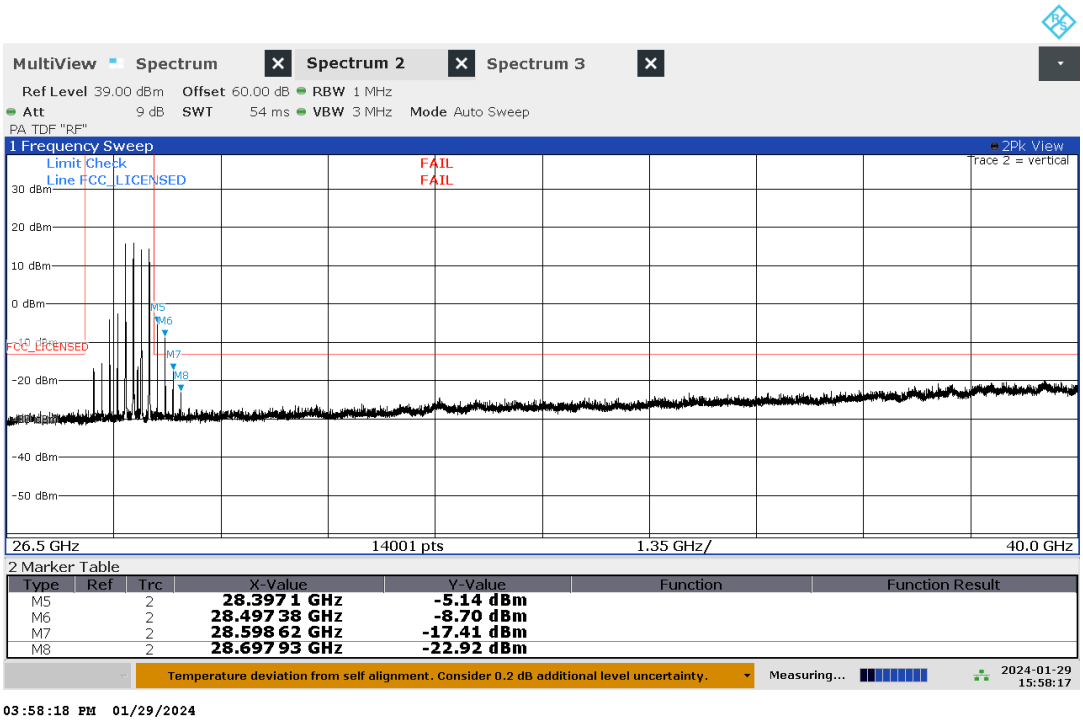
RMS - EIRP, Power RMS Average detector
TRP - KDB 842590 Section 4.4.3.3.3 Equal Sector Method

ANTENNA 1, 100MHz BW, 4CC CONFIGURATION

HORIZONTAL



VERTICAL



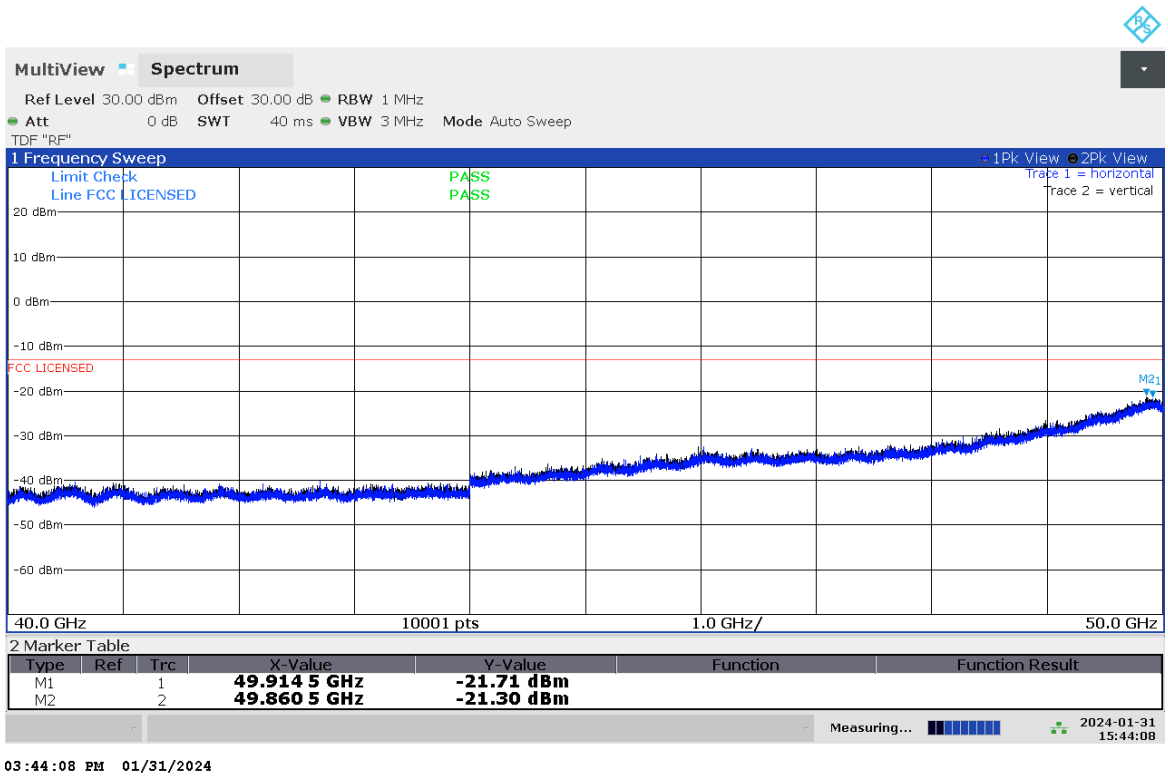
HIGH CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1/5	28.397	TRP	-16.99	-13	-3.99	-
2	28.498	RMS	-15.04	-13	-2.04	H
3	28.598	RMS	-24.63	-13	-11.63	H
6	28.497	RMS	-20.63	-13	-7.63	V
7	28.597	RMS	-29.46	-13	-16.46	V

RMS - EIRP, Power RMS Average detector
TRP - KDB 842590 Section 4.4.3.3.3 Equal Sector Method

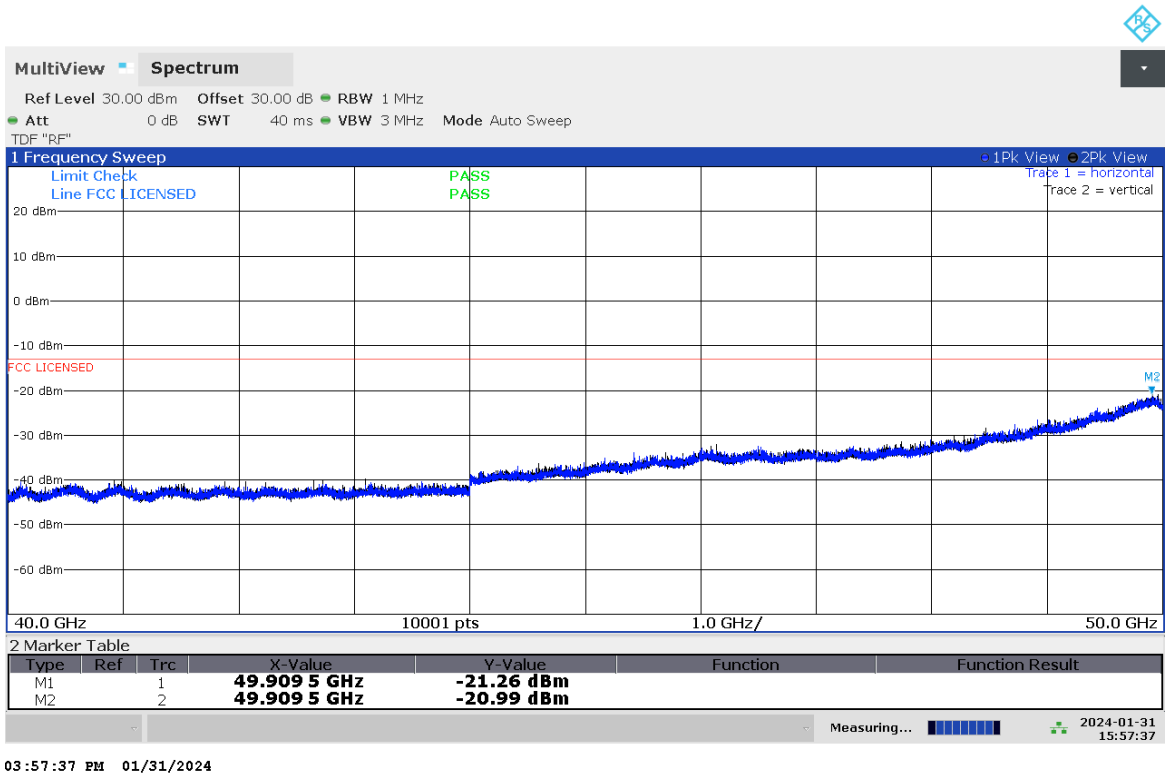
8.4.3.5. SPURIOUS EMISSIONS 40 – 50GHz

ANTENNA 0, 50MHz BW, 1CC CONFIGURATION



MID CHANNEL

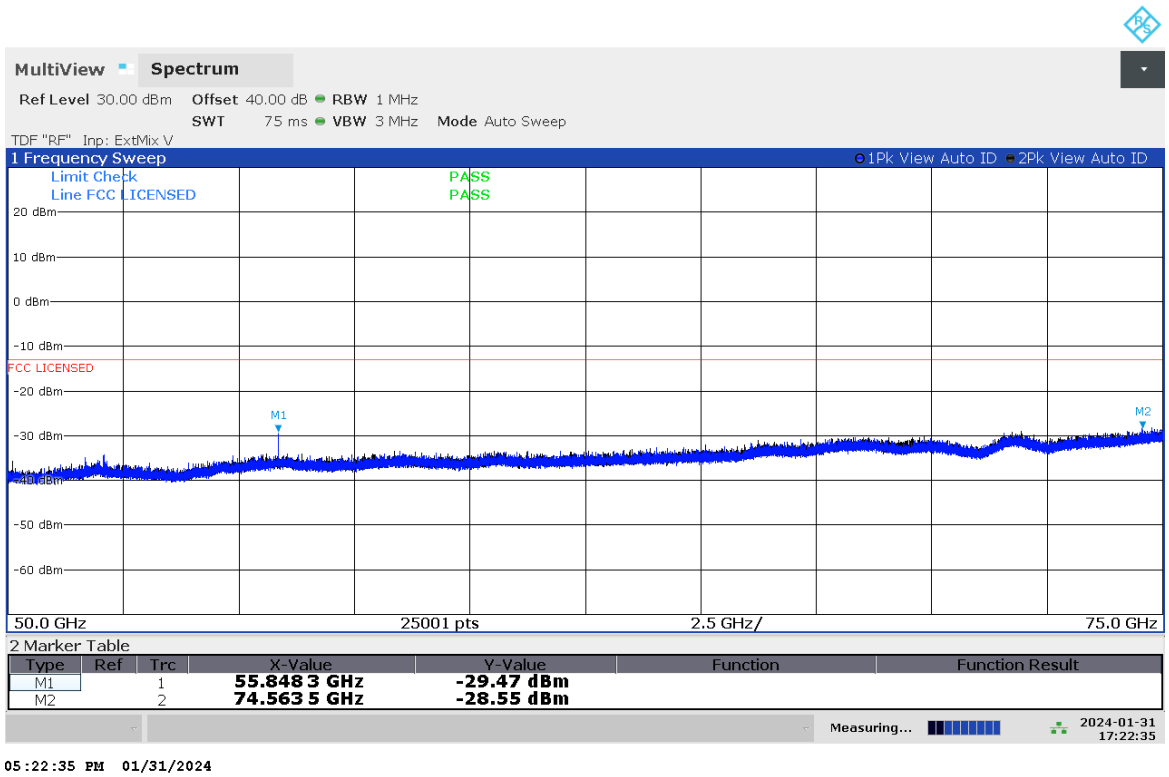
ANTENNA 1, 100MHz BW, 1CC CONFIGURATION



MID CHANNEL

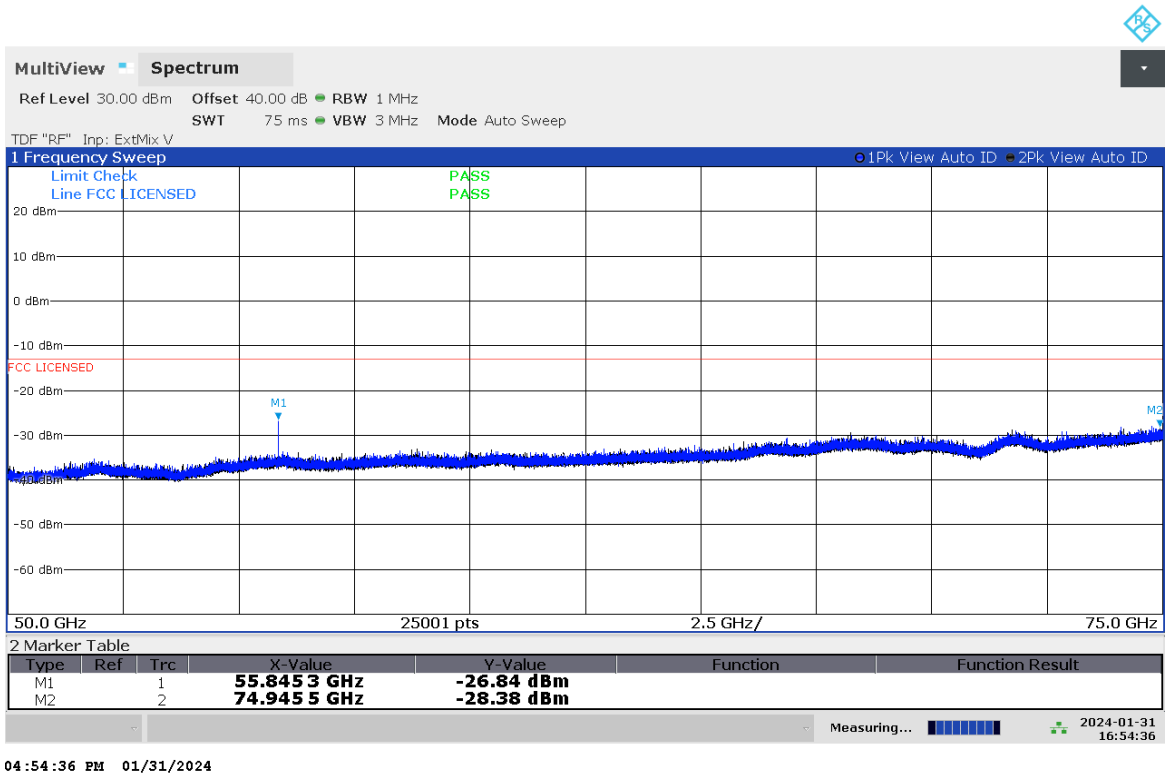
8.4.3.6. SPURIOUS EMISSIONS 50 – 75GHz

ANTENNA 0, 50MHz BW, 1CC CONFIGURATION



MID CHANNEL

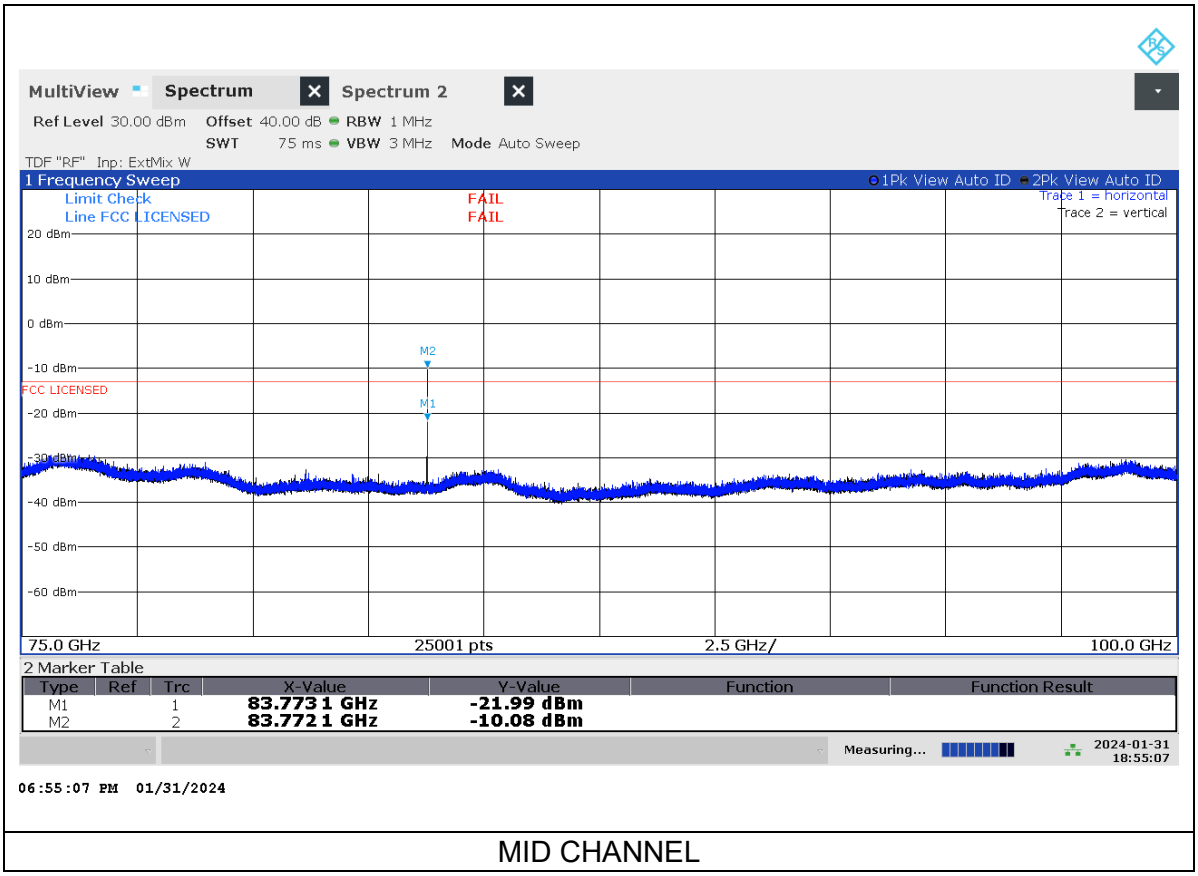
ANTENNA 1, 100MHz BW, 1CC CONFIGURATION



MID CHANNEL

8.4.3.7. SPURIOUS EMISSIONS 75 – 100GHz

ANTENNA 0, 50MHz BW, 1CC CONFIGURATION

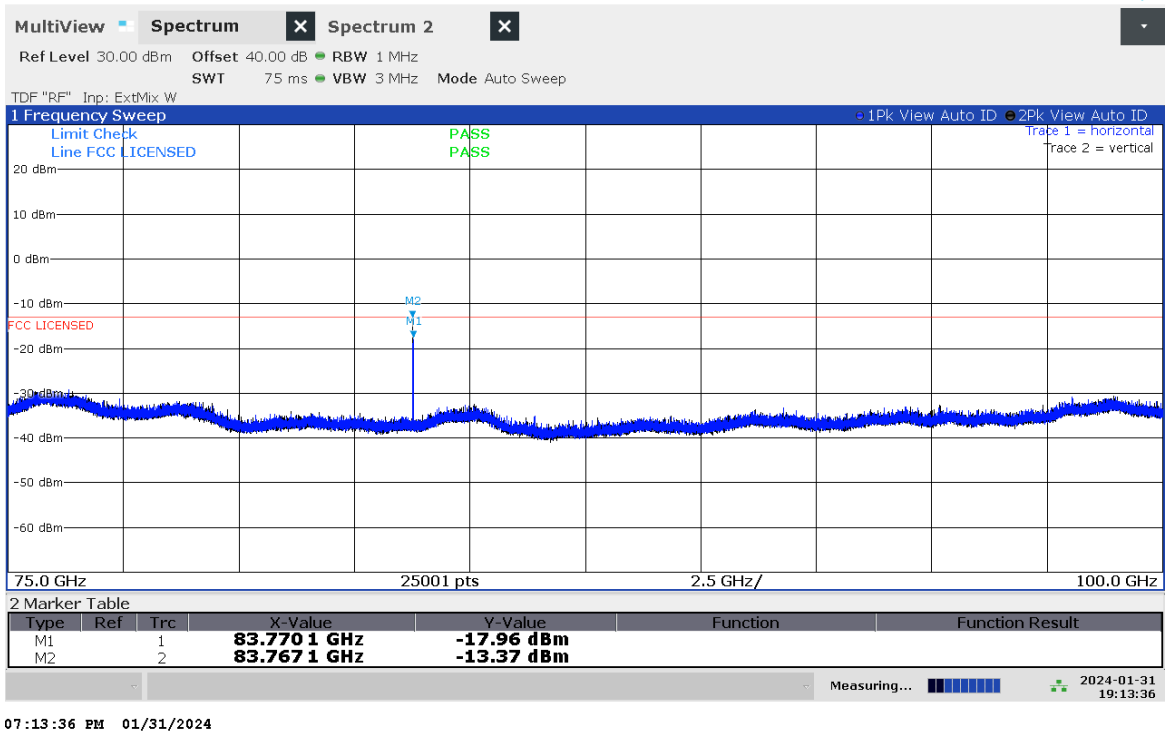


MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
2	83.772	RMS	-19.78	-13	-6.78	V

RMS - EIRP, Power RMS Average detector

ANTENNA 1, 100MHz BW, 1CC CONFIGURATION



MID CHANNEL

Marker	Frequency (GHz)	Det	Corrected Reading (dBm)	TRP Limit (dBm)	Margin (dB)	Polarity
1	83.769	RMS	-29.83	-13	-16.83	H
2	83.768	RMS	-24.38	-13	-11.38	V

RMS - EIRP, Power RMS Average detector

8.5. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055

LIMIT

For reporting purposes only

TEST PROCEDURES

KDB 842590 D01 Upper Microwave Flexible Use Service v01r02 Section 4.5
ANSI C63.26-2015 Section 5.6

Test procedures for temperature variation:

a. Position the EUT in temperature/humidity chamber with powered off.
b. Set chamber temperature to 50°C.
c. Power on EUT and allow sufficient time for the EUT to stabilize.
c. Record the frequency.
d. Decrease chamber temperature at 10°C intervals from 50°C to -30°C. Record the frequency at each temperature step after allowing sufficient time for temperature stabilization.

- Temp. = −30°C to +50°C

Test procedures for voltage variation:

a. Test is performed at ambient room temperature (15°C to 25°C).
b. The primary supply voltage is varied from 85% to 115% of the nominal value for AC and DC powered equipment. For hand-carried, battery-powered equipment the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.
c. Power on the EUT and record the frequency at the extreme voltage values.

- Nominal Voltage = 4.28 Vdc
- Low (End point) Voltage = 3.69 Vdc

The measurements were performed with a modulated carrier and the mean frequency of each frequency band was recorded. For the low voltage (end-point) test condition, the battery was drained to < 10% capacity and measurements were performed in this state.

Testing was performed on ANT0 and ANT1 for all supported bands to evaluate both chipsets.

RESULTS

See the following page.

TESTED BY

Employee IDs: 11322
Test Dates: 2024-02-07
Test Location: Conducted 1

8.5.1. FREQUENCY STABILITY n258 SB1

Input Voltage	Temperature (°C)	n258 SB1, ANT 0	
		Frequency (GHz)	Delta (Hz)
Normal	50	24.347748894	-186784
Normal	40	24.347785580	-150098
Normal	30	24.347848839	-86839
Normal	**20**	**24.347935678**	**Reference**
Normal	10	24.347725133	-210545
Normal	0	24.347791954	-143724
Normal	-10	24.347778185	-157493
Normal	-20	24.347743600	-192078
Normal	-30	24.347843954	-91724
End Point	20	24.347922369	-13309

Input Voltage	Temperature (°C)	n258 SB1, ANT 1	
		Frequency (GHz)	Delta (Hz)
Normal	50	24.347917857	39192
Normal	40	24.347714530	-164135
Normal	30	24.347729716	-148949
Normal	**20**	**24.347878665**	**Reference**
Normal	10	24.347864978	-13687
Normal	0	24.347624166	-254499
Normal	-10	24.347666723	-211942
Normal	-20	24.347700214	-178451
Normal	-30	24.347724037	-154628
End Point	20	24.347822010	-56655

The largest occupied bandwidth (Section 8.1) of all Low & High channels are smaller than the channel bandwidths by at least 5 MHz for all modes of operation, so the signal is at least 2.5 MHz from either edge of the channel. The channels are fully contained within the FCC-allocated band and the frequency stability is significantly less than 2.5 MHz, with maximum frequency shift of 254.499 kHz over the test conditions (ANT1, 0°C). Therefore, the signal is always contained within the allocated channel / band.

8.5.2. FREQUENCY STABILITY n258 SB2

Input Voltage	Temperature (°C)	n258 SB2, ANT 0	
		Frequency (GHz)	Delta (Hz)
Normal	50	24.997518367	-83392
Normal	40	24.997479445	-122314
Normal	30	24.997644152	42393
Normal	**20**	**24.997601759**	**Reference**
Normal	10	24.997499625	-102134
Normal	0	24.997409609	-192150
Normal	-10	24.997456881	-144878
Normal	-20	24.997694413	92654
Normal	-30	24.997466506	-135253
End Point	20	24.997436326	-165433

Input Voltage	Temperature (°C)	n258 SB2, ANT 1	
		Frequency (GHz)	Delta (Hz)
Normal	50	25.197851623	178661
Normal	40	25.197780696	107734
Normal	30	25.197622759	-50203
Normal	**20**	**25.197672962**	**Reference**
Normal	10	25.197780517	107555
Normal	0	25.197736425	63463
Normal	-10	25.197886623	213661
Normal	-20	25.197837593	164631
Normal	-30	25.197622759	-50203
End Point	20	25.197894826	221864

The largest occupied bandwidth (Section 8.1) of all Low & High channels are smaller than the channel bandwidths by at least 2 MHz for all modes of operation, so the signal is at least 1 MHz from either edge of the channel. The channels are fully contained within the FCC-allocated band and the frequency stability is significantly less than 1 MHz, with maximum frequency shift of 221.864 kHz over the test conditions (ANT1, 20°C). Therefore, the signal is always contained within the allocated channel / band.

8.5.3. FREQUENCY STABILITY n261

Input Voltage	Temperature (°C)	n261, ANT 0	
		Frequency (GHz)	Delta (Hz)
Normal	50	27.92390046	145130
Normal	40	27.92404472	289396
Normal	30	27.92389882	143491
Normal	**20**	**27.92375533**	**Reference**
Normal	10	27.92399945	244118
Normal	0	27.92417157	416247
Normal	-10	27.92431028	554954
Normal	-20	27.92444012	684790
Normal	-30	27.92443929	683961
End Point	20	27.92425614	500808

Input Voltage	Temperature (°C)	n261, ANT 1	
		Frequency (GHz)	Delta (Hz)
Normal	50	27.54803929	152161
Normal	40	27.54809751	210381
Normal	30	27.54783105	-56079
Normal	**20**	**27.54788713**	**Reference**
Normal	10	27.54802214	135004
Normal	0	27.54785624	-30892
Normal	-10	27.54797905	91916
Normal	-20	27.5479653	78173
Normal	-30	27.54772632	-160811
End Point	20	27.54794415	57014

The largest occupied bandwidth (Section 8.1) of all Low & High channels are smaller than the channel bandwidths by at least 2.2 MHz for all modes of operation, so the signal is at least 1.1 MHz from either edge of the channel. The channels are fully contained within the FCC-allocated band and the frequency stability is significantly less than 1.1 MHz, with maximum frequency shift of 684.790 kHz over the test conditions (ANT0, -20°C). Therefore, the signal is always contained within the allocated channel / band.

9. SETUP PHOTOS

Please refer to report R15103618-EP1 for setup photos.

APPENDIX A

DOWNCONVERTER CERTIFICATE OF CONFORMANCE

Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902
Phone: 434-297-3257
Fax: 434-297-3258

Certificate of Conformance

To: UL LLC
2800 Perimeter Park Drive
Suite B
Morrisville, NC 27560
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Packing List No:	231573	**Today's Date:**	04/11/2023
Shipping Date:	4/10/2023	**PO Number:**	7202160444

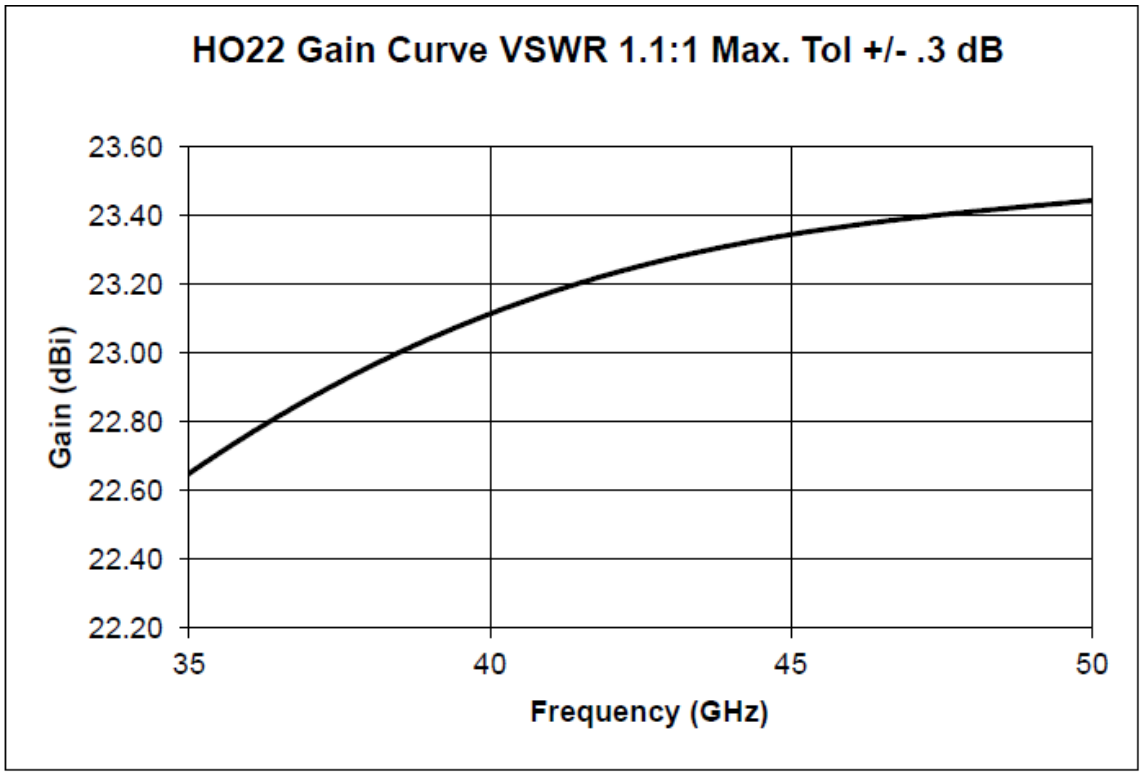
Quantity Shipped	Unit	Description	Order-Job Number
1	EA	RETEST-WR15SAX-F - WR15SAX-F / SN: SAX 820	230103A-01
1	EA	RETEST-WR10SAX-F - WR10SAX-F / SN: SAX 821	230103A-02
1	EA	RETEST-WR6.5SAX-F - WR6.5SAX-F / SN: SAX 822	230103A-03
1	EA	RETEST-WR4.3SAX-F - WR4.3SAX-F / SN: SAX 823	230103A-04

The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

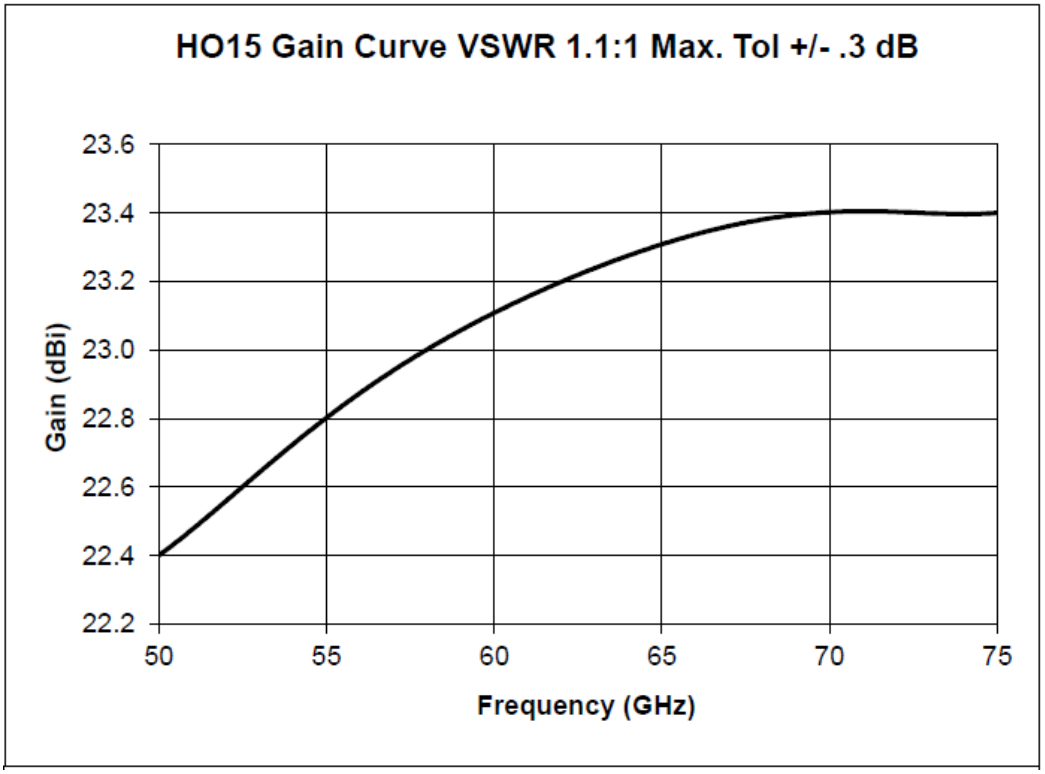
DocuSigned by:
82D411A1AE5647A...
Authorized Signature
Virginia Diodes, Inc

DS HDS

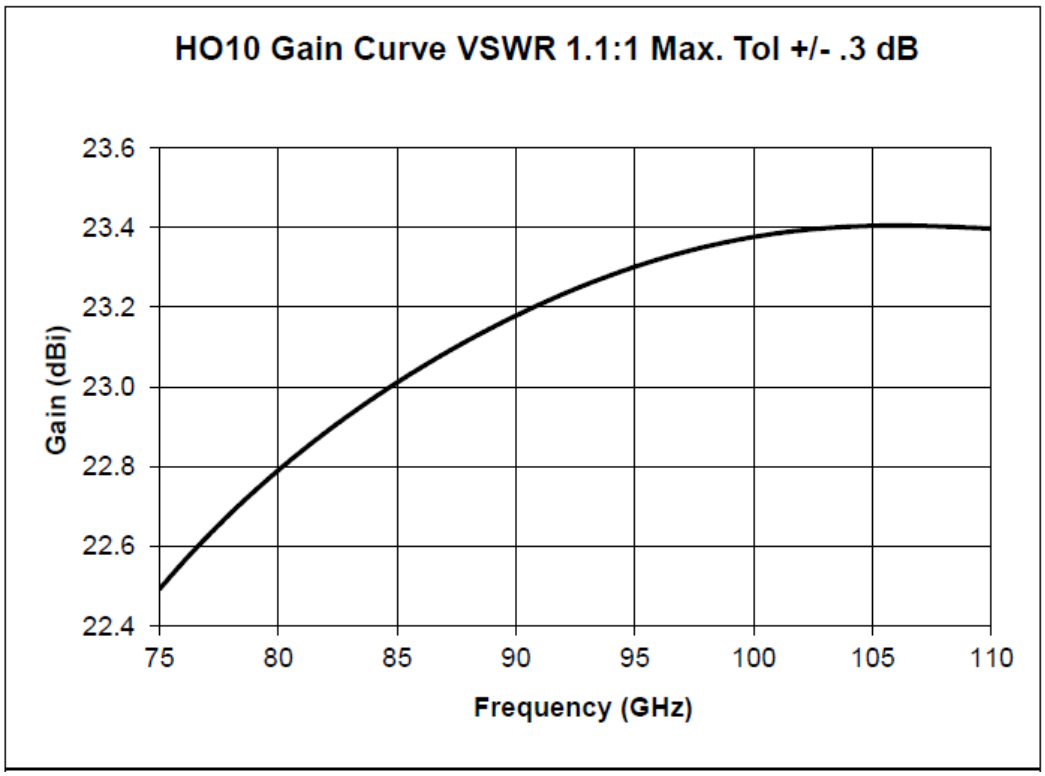
35-50 GHz CMI HO22R HORN ANTENNA



50-75 GHz CMI HO15R HORN ANTENNA



75-110 GHz CMI HO10R HORN ANTENNA



LABORATORY ACCREDITATION

Accredited Laboratory

A2LA has accredited

UL LLC

Research Triangle Park, North Carolina

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 3rd day of May 2022.

Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0751.06
Valid to February 29, 2024

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
Unintentional Radiators Part 15B	ANSI C63.4:2014	40000
Industrial, Scientific, and Medical Equipment Part 18	FCC MP-5:1986	260000
Intentional Radiators Part 15C	ANSI C63.10:2013	260000
Unlicensed Personal Communication Systems Devices Part 15D	ANSI C63.17:2013	40000
U-NII without DFS Intentional Radiators Part 15E	ANSI C63.10:2013	40000
U-NII with DFS Intentional Radiators Part 15E	FCC KDB 905462 D02 (v02)	40000
UWB Intentional Radiators FCC Part 15, Subpart F	ANSI C63.10:2013	200000
Commercial Mobile Services (FCC Licensed Radio Service Equipment) Parts 22 (cellular), 24, 25 (below 3 GHz), and 27	ANSI/TIA-603-E, TIA-102.CAAA-E; ANSI C63.26:2015	40000
General Mobile Radio Services (FCC Licensed Radio Service Equipment) Parts 22 (non-cellular), 90 (below 3 GHz), 95 (below 3 GHz), 97 (below 3 GHz), and 101 (below 3 GHz)	ANSI/TIA-603-E; ANSI C63.26:2015	40000
Microwave and Millimeter Bands Radio Services Part 25 (above 3 GHz), Part 30, Part 74, Part 90 (above 3 GHz), Part 95 (above 3 GHz), Part 97 (above 3 GHz) Part 101	ANSI C63.26:2015	260000
Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment) Part 96	ANSI/TIA-603-E; TIA-102.CAAA-E	40000
RF Exposure Devices Subject to SAR Requirements	IEEE Std 1528:2013	6000

END OF REPORT