

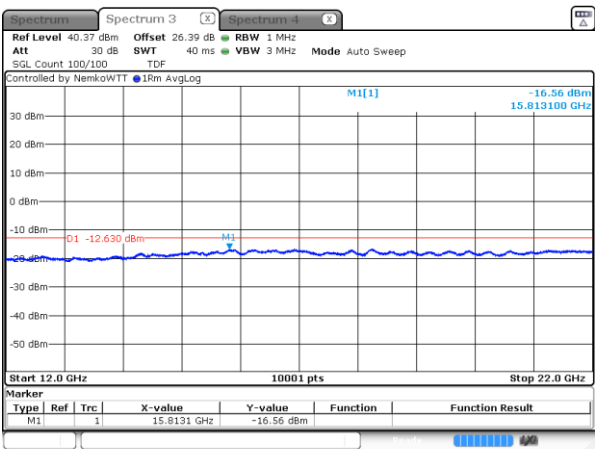


Figure 8.6-471: Conducted Spurious Emissions, High CH 1972.5 MHz, 45 MHz, 64QAM, Frequency range: 12.0 - 22.0 GHz

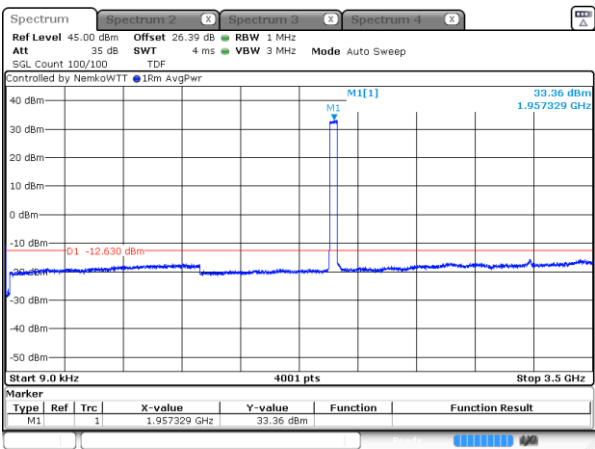


Figure 8.6-472: Conducted Spurious Emissions, Low CH 1952.5 MHz, 45 MHz, 256QAM, Frequency range: 0.009 - 3500 MHz.

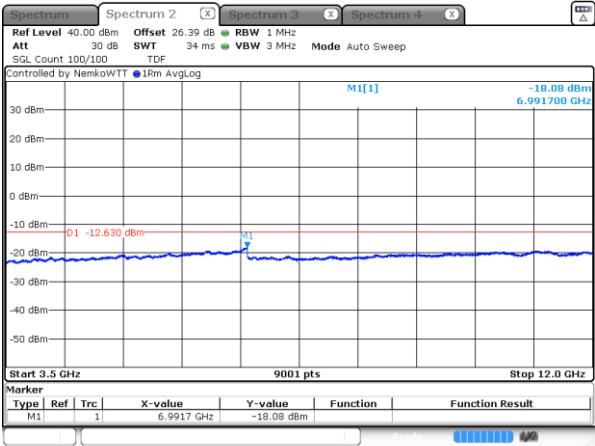


Figure 8.6-473: Conducted Spurious Emissions, Low CH 1952.5 MHz, 45 MHz, 256QAM, Frequency range: 3.5 - 12.0 GHz.

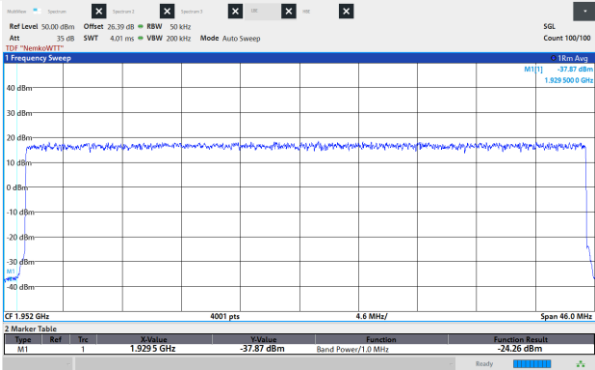


Figure 8.6-474: Conducted Spurious Emissions, Low CH 1952.5 MHz, 45 MHz, 256QAM, Low band edge.

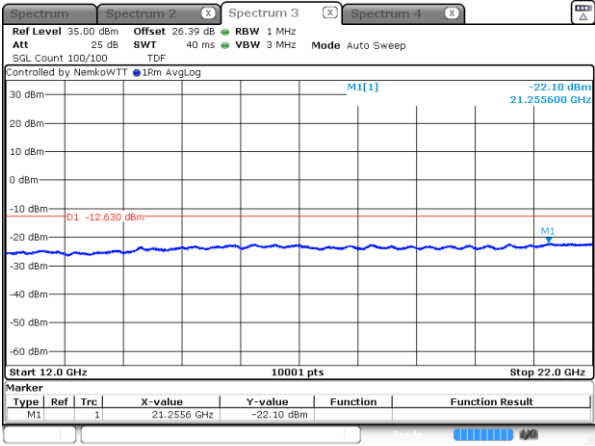


Figure 8.6-475: Conducted Spurious Emissions, Low CH 1952.5 MHz, 45 MHz, 256QAM, Frequency range: 12.0 - 22.0 GHz.

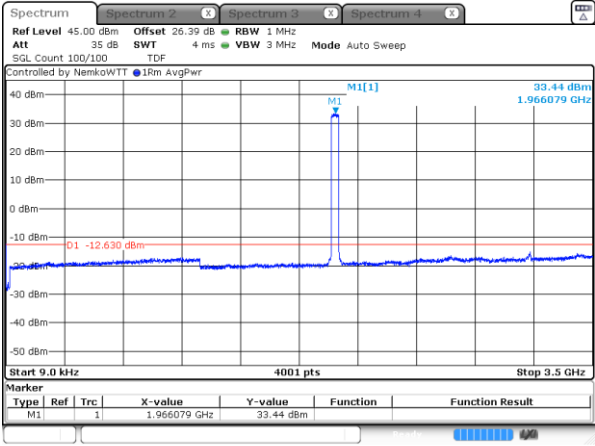


Figure 8.6-476: Conducted Spurious Emissions, Mid CH 1962.5 MHz, 45 MHz, 256QAM, Frequency range: 0.009 - 3500 MHz.

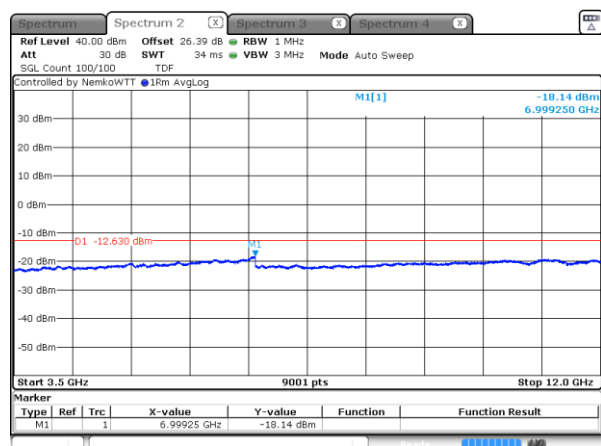


Figure 8.6-477: Conducted Spurious Emissions, Mid CH 1962.5 MHz, 45 MHz, 256QAM, Frequency range: 3.5 – 12.0 GHz.

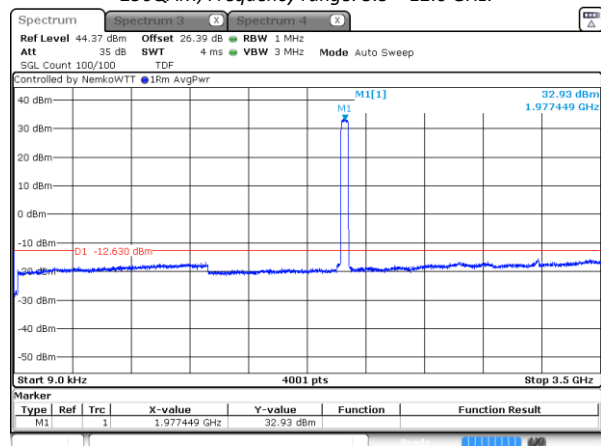


Figure 8.6-479: Conducted Spurious Emissions, High CH 1972.5 MHz, 45 MHz, 256QAM, Frequency range: 0.009 - 3500 MHz.

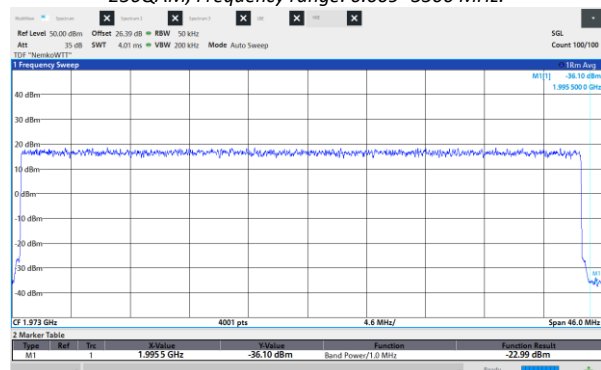


Figure 8.6-481: Conducted Spurious Emissions, High CH 1972.5 MHz, 45 MHz, 256QAM, High band edge.

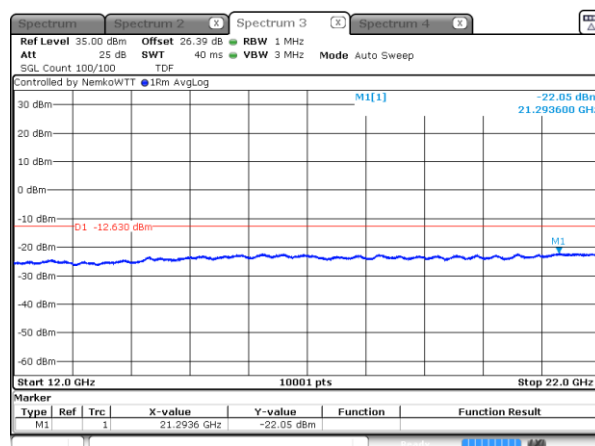


Figure 8.6-478: Conducted Spurious Emissions, Mid CH 1962.5 MHz, 45 MHz, 256QAM, Frequency range: 12.0 - 22.0 GHz.

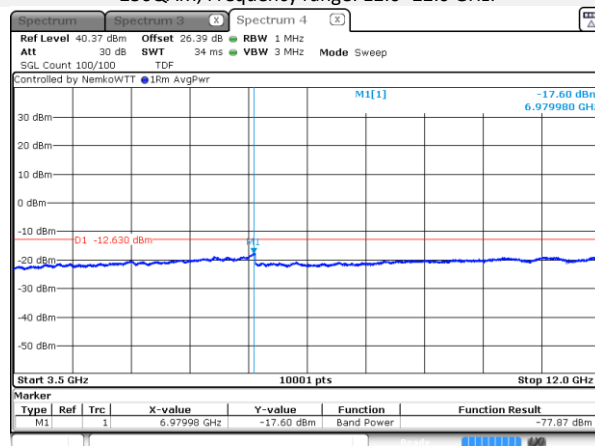


Figure 8.6-480: Conducted Spurious Emissions, High CH 1972.5 MHz, 45 MHz, 256QAM, Frequency range: 3.5 – 12.0 GHz

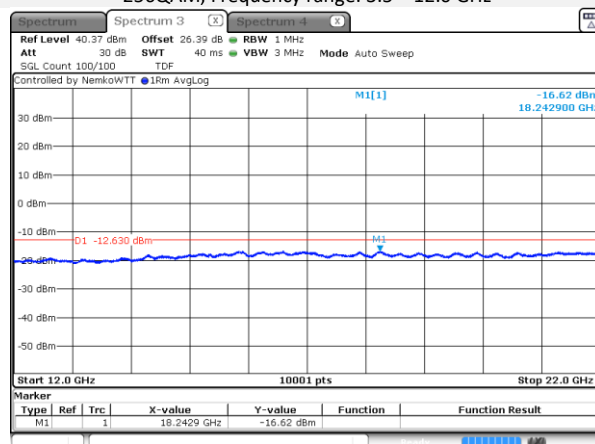


Figure 8.6-482: Conducted Spurious Emissions, High CH 1972.5 MHz, 45 MHz, 256QAM, Frequency range: 12.0 – 22.0 GHz.

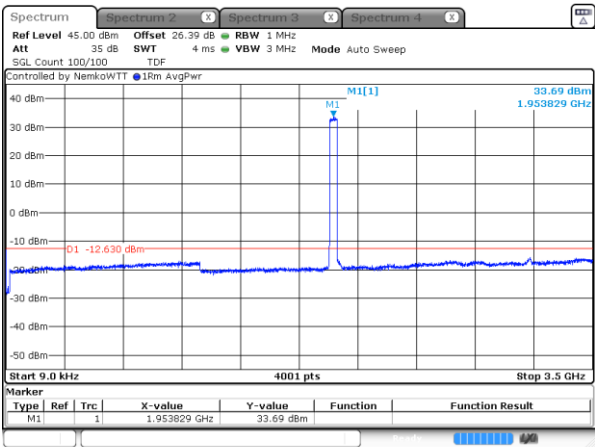


Figure 8.6-483: Conducted Spurious Emissions, Low CH 1952.5 MHz, 45 MHz, 1024QAM, Frequency range: 0.009 -3500 MHz.

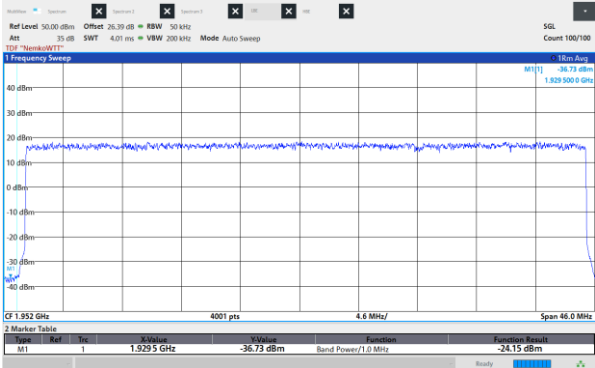


Figure 8.6-485: Conducted Spurious Emissions, Low CH 1952.5 MHz, 45 MHz, 1024QAM, Low band edge.

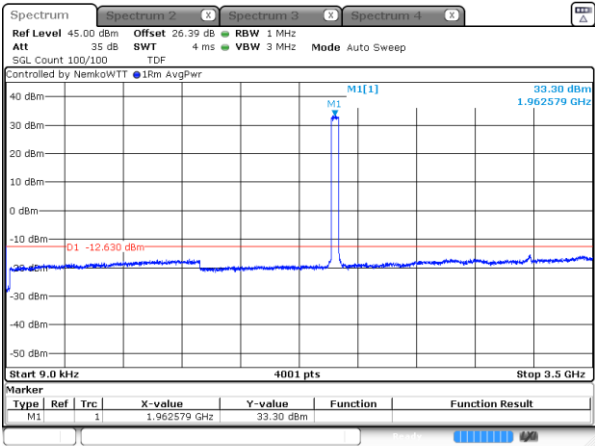


Figure 8.6-487: Conducted Spurious Emissions, Mid CH 1962.5 MHz, 45 MHz, 1024QAM, Frequency range: 0.009 – 3500 MHz.

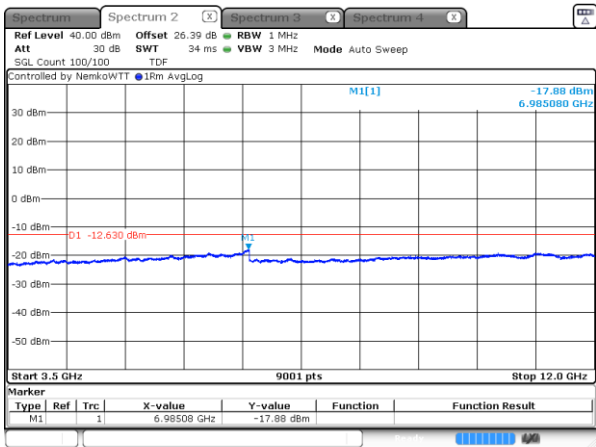


Figure 8.6-484: Conducted Spurious Emissions, Low CH 1952.5 MHz, 45 MHz, 1024QAM, Frequency range: 3.5 -12.0 GHz.

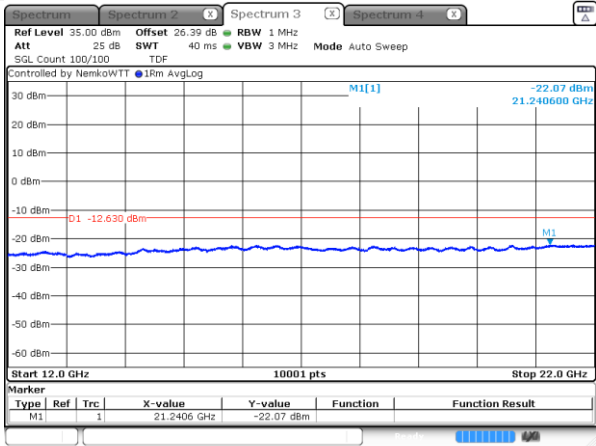


Figure 8.6-486: Conducted Spurious Emissions, Low CH 1952.5 MHz, 45 MHz, 1024QAM, Frequency range: 12.0 – 22.0 GHz.

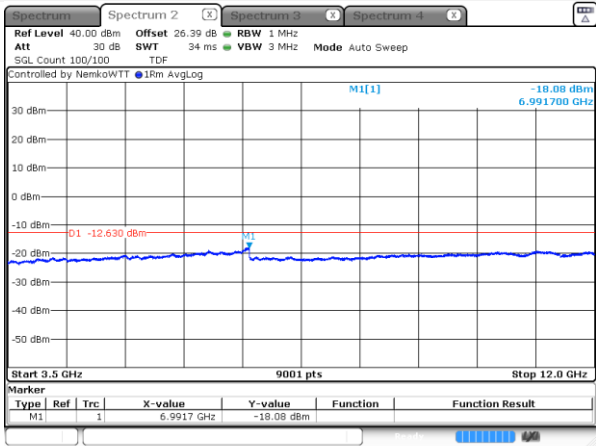


Figure 8.6-488: Conducted Spurious Emissions, Mid CH 1962.5 MHz, 45 MHz, 1024QAM, Frequency range: 3.5 – 12.0 GHz.

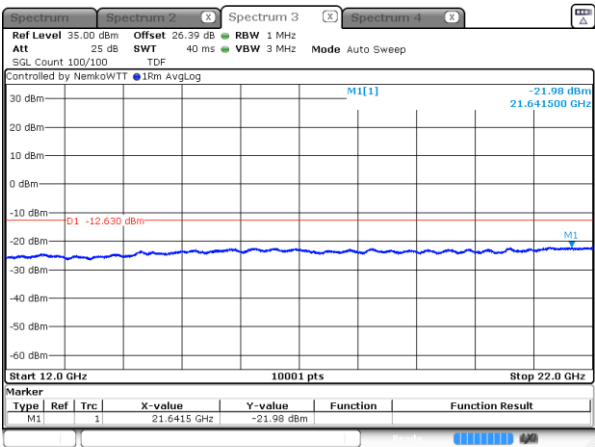


Figure 8.6-489: Conducted Spurious Emissions, Mid CH 1962.5 MHz, 45 MHz, 1024QAM, Frequency range: 12.0 -22.0 GHz.

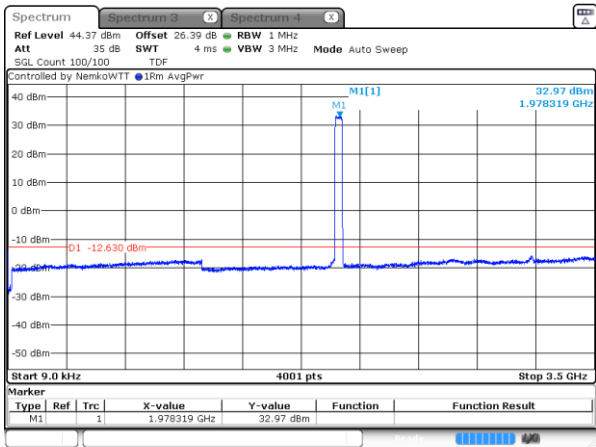


Figure 8.6-490: Conducted Spurious Emissions, High CH 1972.5 MHz, 45 MHz, 1024QAM, Frequency range: 0.009 -3500 MHz.

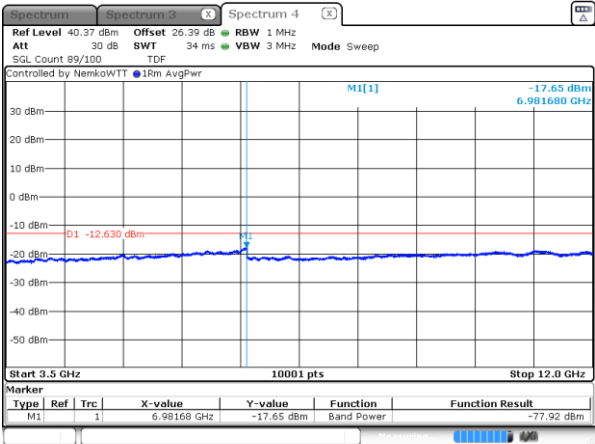


Figure 8.6-491: Conducted Spurious Emissions, High CH 1972.5 MHz, 45 MHz, 1024QAM, Frequency range: 3.5 -12.0 GHz.

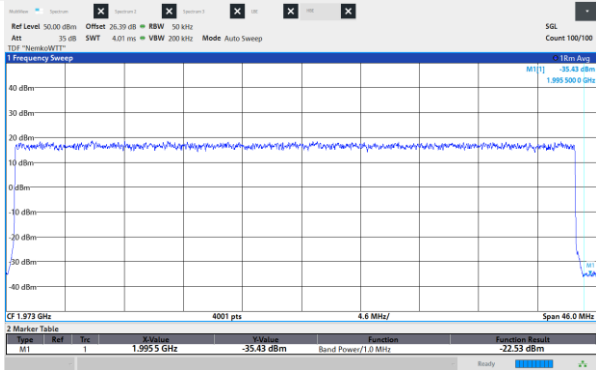


Figure 8.6-492: Conducted Spurious Emissions, High CH 1972.5 MHz, 45 MHz, 1024QAM, High band edge.

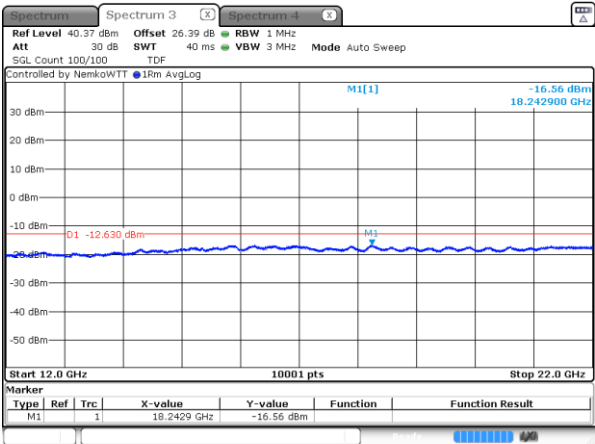


Figure 8.6-493: Conducted Spurious Emissions High CH 1972.5 MHz, 45 MHz, 1024QAM, Frequency range: 12.0 -22.0 GHz.

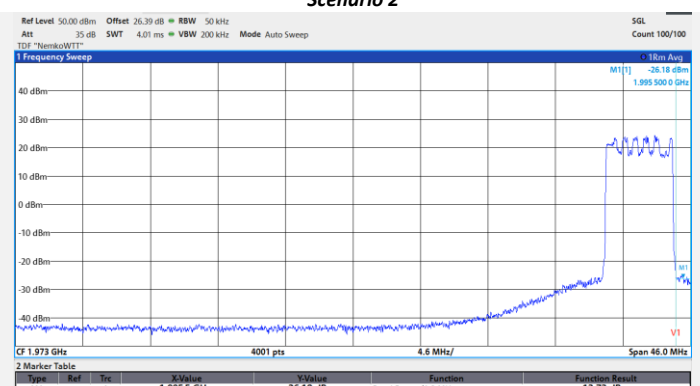
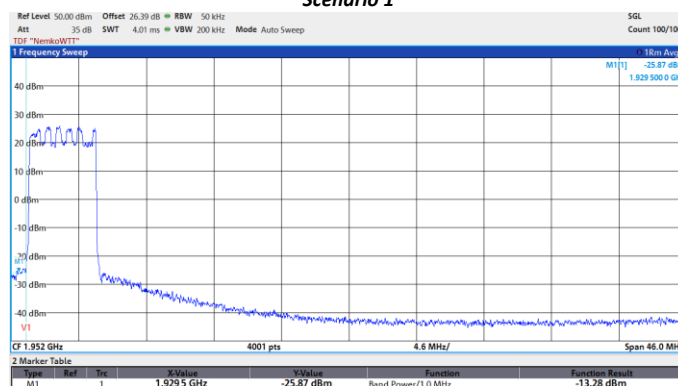
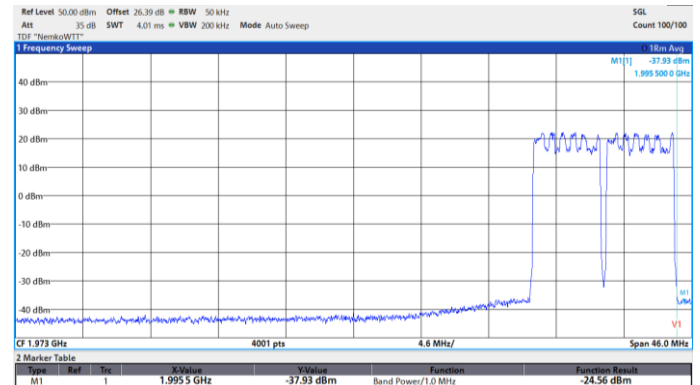
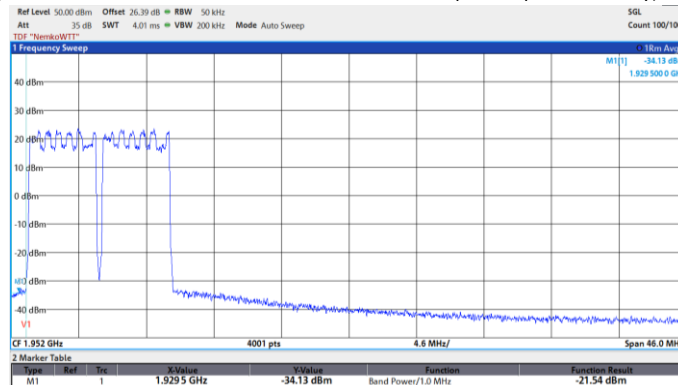
8.6.18 Test data (conducted spurious emissions – 5G NR multi-carrier operation)

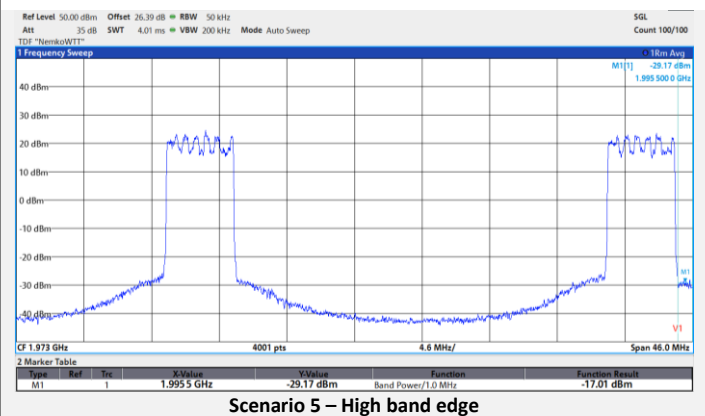
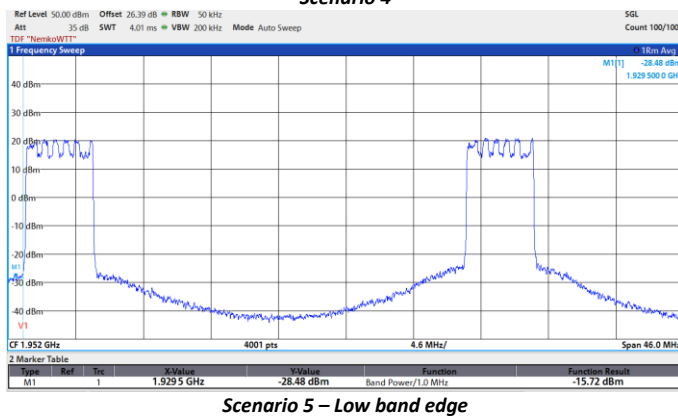
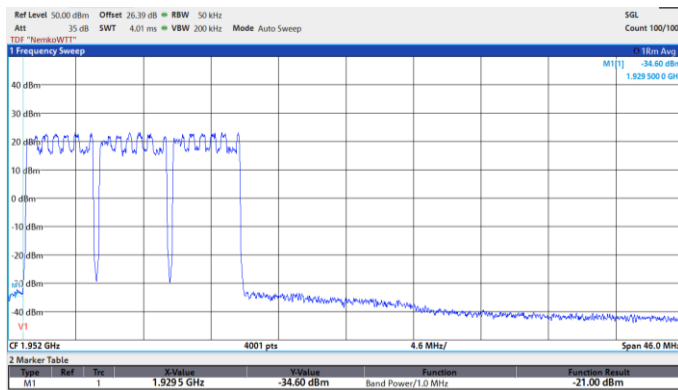
5G NR multi-carrier operation was verified in the following operational modes:

Table 8.6-2: 5G NR multi-carrier operating modes

Scenario	# Carrier	Bandwidth (MHz)	F1 (DL MHz)	F2 (DL MHz)	F3 (DL MHz)	Comments
1	2	5/5	1932.5	1937.5	N/A	64QAM modulation, 2 contiguous carriers at lowest channels
2	2	5/5	1987.5	1992.5	N/A	64QAM modulation, 2 contiguous carriers at highest channels
3	2	5/5	1932.5	1992.5	N/A	64QAM modulation, 2 non-contiguous carriers; one at lowest channel, one at highest channel
4	3	5/5/5	1932.5	1937.5	1942.5	64QAM modulation, 3 contiguous carriers at lowest channels
5	3	5/5/5	1932.5	1962.5	1992.5	64QAM modulation, 3 non-contiguous channels; one at lowest channel, one at middle channel, one at highest channel

(5 MHz channel bandwidth selected to maximize the power spectral density)





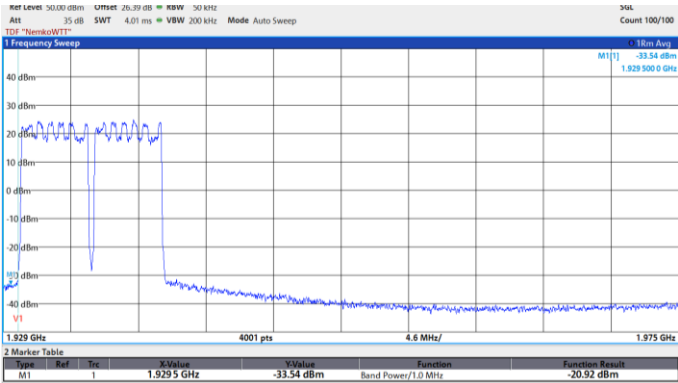
8.6.19 Test data (conducted spurious emissions -5G NR + LTE multi-RAT operation)

LTE + 5G NR multi-RAT operation was verified in the following operational modes:

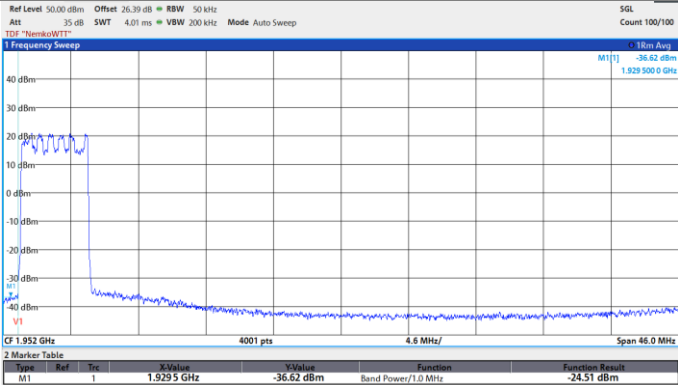
Table 8.6-3: 5G NR + LTE multi-RAT operating modes

Scenario	# Carrier	Bandwidth (MHz)	F1 (DL MHz)	F2 (DL MHz)	F3 (DL MHz)	Comments
1	3	5/5/5	1932.5 (5G NR)	1937.5 (5G NR)	1992.5 (LTE)	64QAM modulation. 2 contiguous 5G NR carriers at the lowest channels, one LTE carrier at highest channel. Low and high band edge emissions measured.
2	3	5/5/5	1932.5 (5G NR)	1987.5 (LTE)	1992.5 (LTE)	64QAM modulation, 1 5G NR carrier at the lowest channel, 2 contiguous LTE carriers at highest channels. Low and high band edge emissions measured.

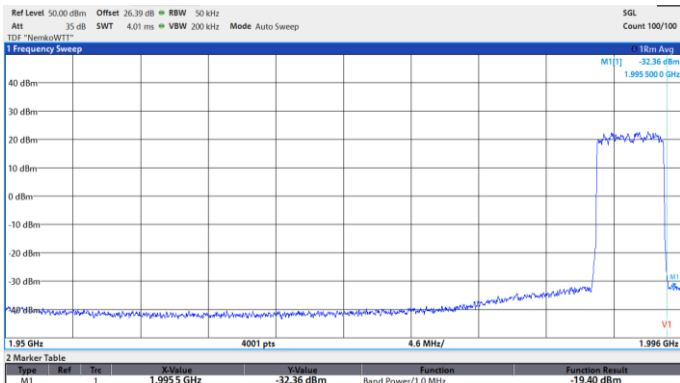
(5 MHz channel bandwidth selected to maximize the power spectral density)



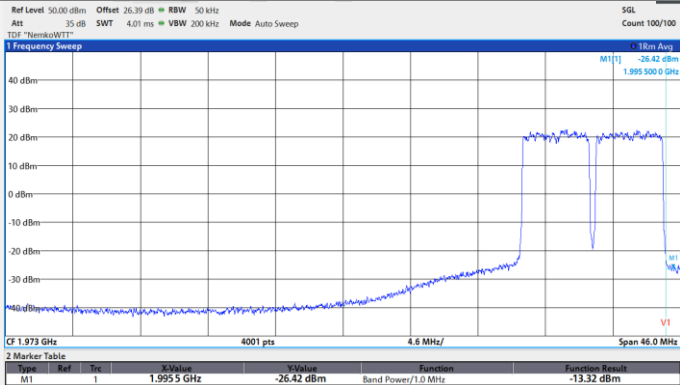
Scenario 1 – Low band edge



Scenario 2 – Low band edge



Scenario 1 – High band edge



Scenario 2 – High band edge

8.6.20 Test data (radiated spurious emissions)

Full Spectrum

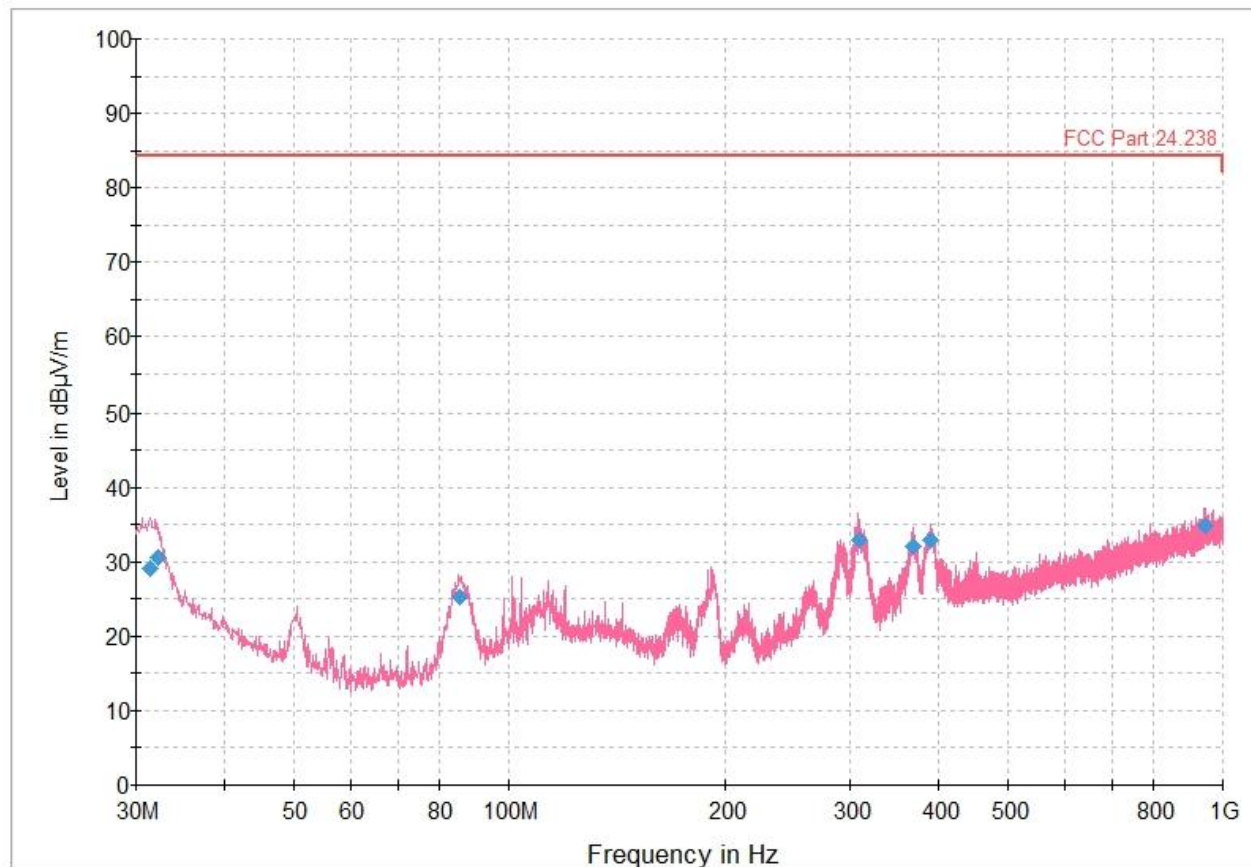


Figure 8.6-494: Radiated emissions spectral plot (30 MHz - 1 GHz) – 1935 MHz (1024QAM, 10MHz BW) - Vertical

Table 8.6-4: Radiated emissions results

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.480000	29.11	84.38	55.27	5000.0	120.000	120.0	V	0.0	25.8
32.180000	30.63	84.38	53.75	5000.0	120.000	140.0	V	11.0	25.4
85.559000	25.19	84.38	59.19	5000.0	120.000	110.0	V	23.0	15.7
308.785000	32.82	84.38	51.56	5000.0	120.000	151.0	V	0.0	22.3
368.193000	32.12	84.38	52.26	5000.0	120.000	101.0	V	95.0	24.2
388.831000	32.85	84.38	51.53	5000.0	120.000	101.0	V	257.0	24.8
947.363000	34.72	84.38	49.66	5000.0	120.000	280.0	V	121.0	34.8

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

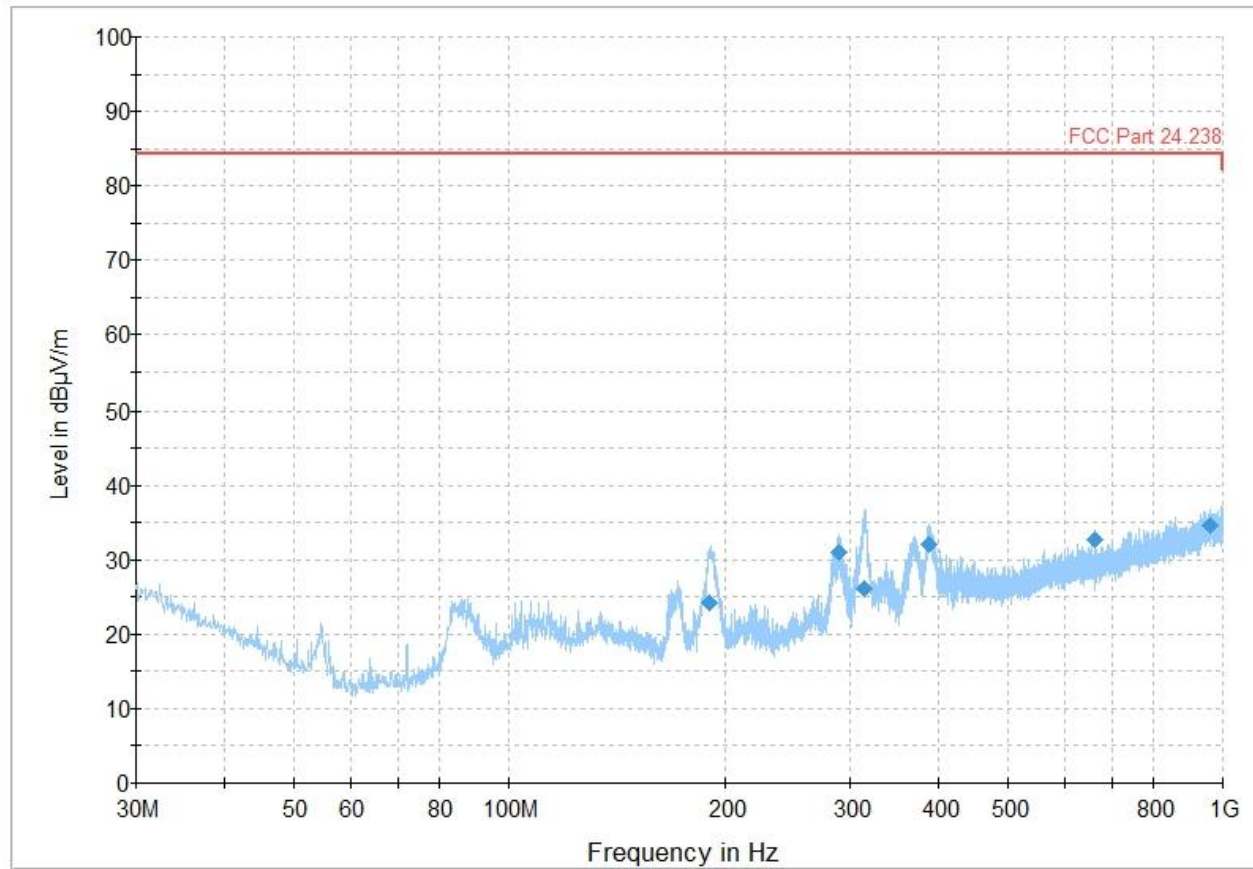


Figure 8.6-495: Radiated emissions spectral plot (30 MHz - 1 GHz) – 1935 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-5: Radiated emissions results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
190.499000	24.19	84.38	60.19	5000.0	120.000	212.0	H	223.0	17.9
289.481000	30.99	84.38	53.39	5000.0	120.000	101.0	H	229.0	21.9
314.020000	26.19	84.38	58.19	5000.0	120.000	159.0	H	90.0	22.4
387.458000	32.05	84.38	52.33	5000.0	120.000	221.0	H	206.0	24.8
660.015000	32.74	84.38	51.64	5000.0	120.000	299.0	H	251.0	29.9
959.455000	34.67	84.38	49.71	5000.0	120.000	388.0	H	285.0	34.8

Notes:

¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

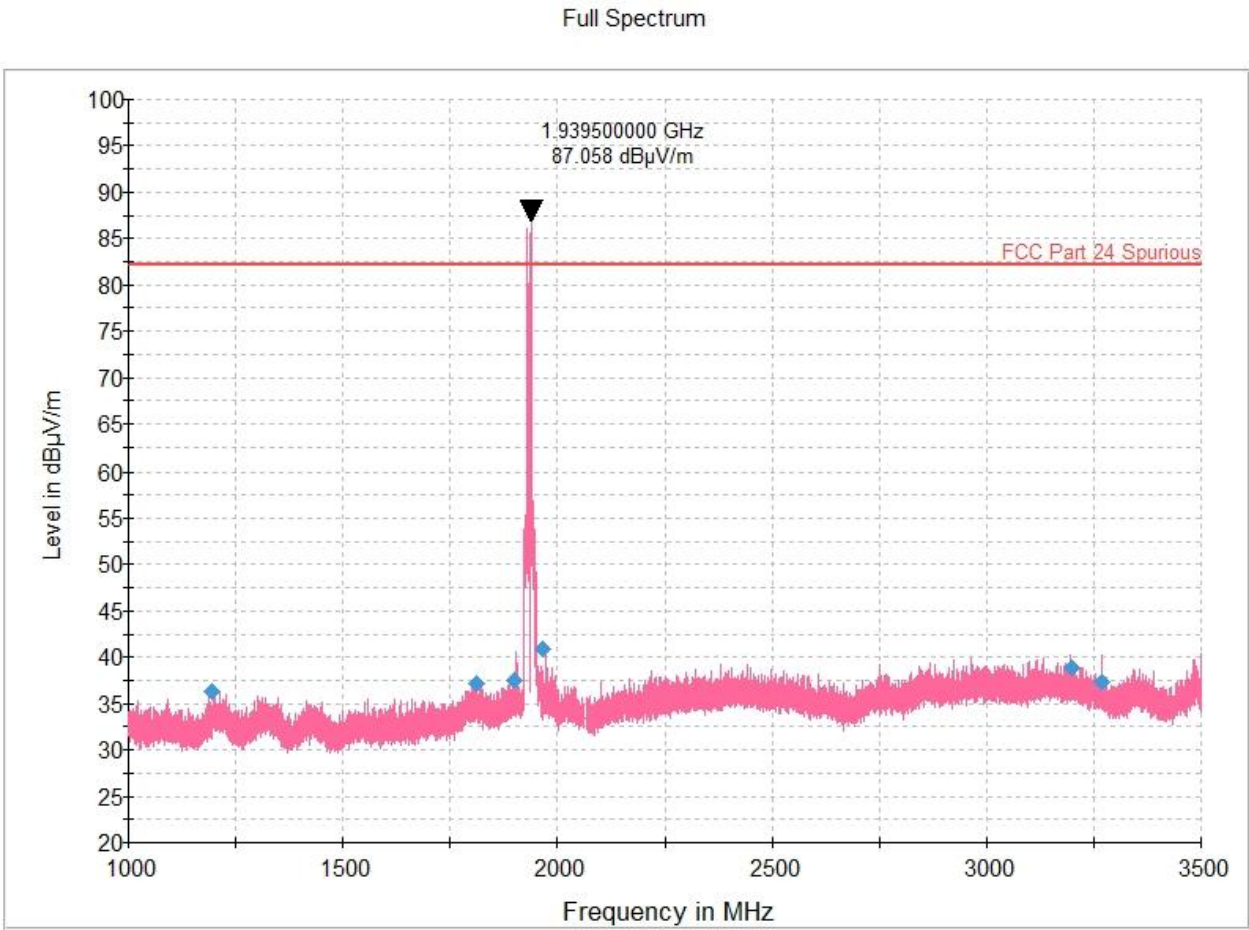


Figure 8.6-496: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 1935 MHz (1024QAM, 10MHz BW) - Vertical

Table 8.6-6: Radiated emissions results

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1194.500000	36.26	82.23	45.97	100.0	1000.000	302.0	V	123.0	-10.8
1813.133333	37.12	82.23	45.11	100.0	1000.000	246.0	V	238.0	-6.5
1901.350000	37.50	82.23	44.73	100.0	1000.000	360.0	V	238.0	-5.5
1965.750000	40.86	82.23	41.37	100.0	1000.000	130.0	V	163.0	-5.5
3199.333333	38.83	82.23	43.40	100.0	1000.000	333.0	V	304.0	-1.6
3267.900000	37.39	82.23	44.84	100.0	1000.000	385.0	V	303.0	-1.3

Notes: ¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

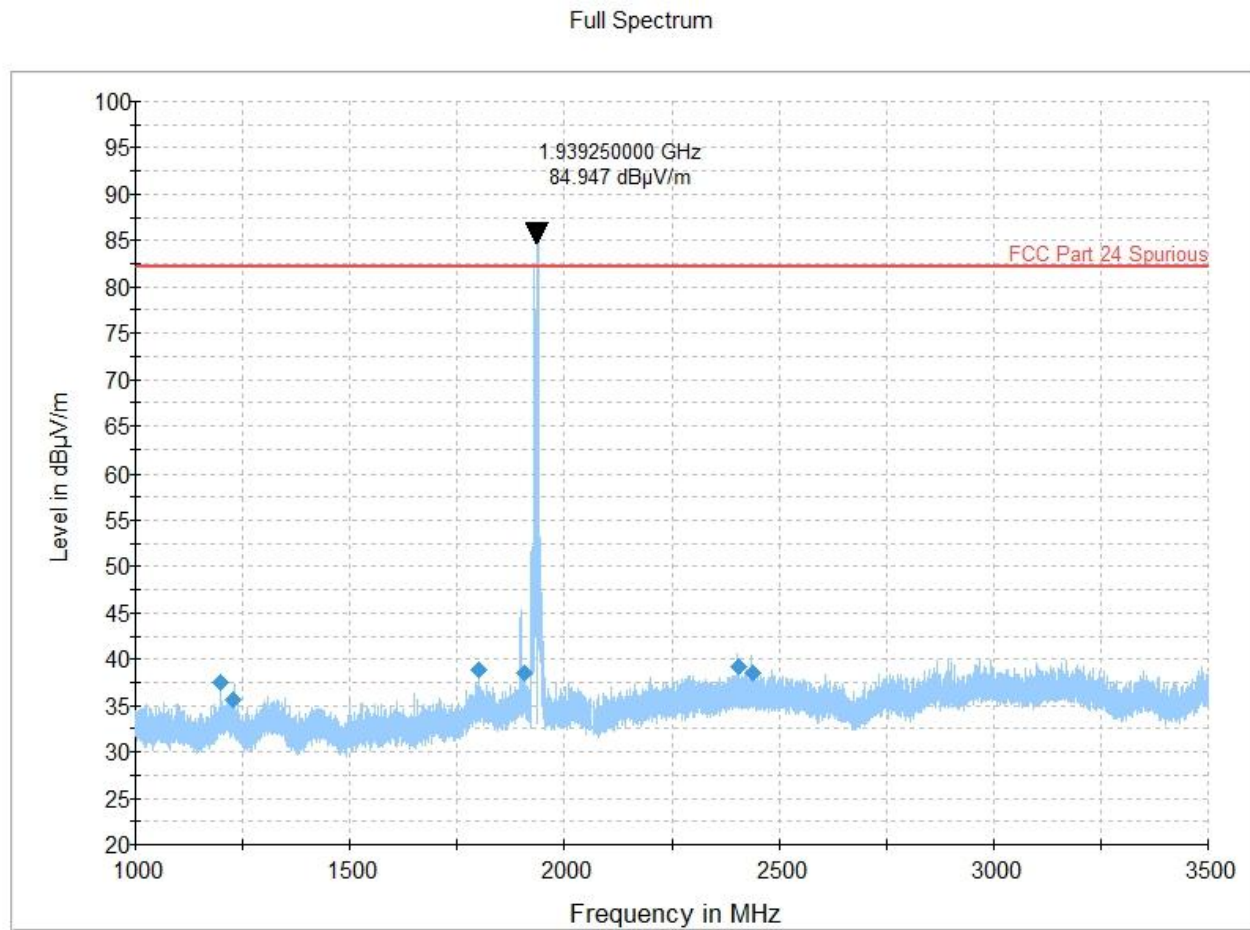


Figure 8.6-497: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 1935 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-7: Radiated emissions results

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1200.000000	37.53	82.23	44.70	100.0	1000.000	203.0	H	154.0	-10.8
1226.283333	35.61	82.23	46.62	100.0	1000.000	192.0	H	120.0	-10.6
1800.000000	38.84	82.23	43.39	100.0	1000.000	266.0	H	23.0	-6.7
1908.116667	38.49	82.23	43.74	100.0	1000.000	110.0	H	57.0	-5.4
2404.633333	39.17	82.23	43.06	100.0	1000.000	338.0	H	155.0	-4.0
2438.983333	38.57	82.23	43.66	100.0	1000.000	152.0	H	0.0	-3.8

Notes:

¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

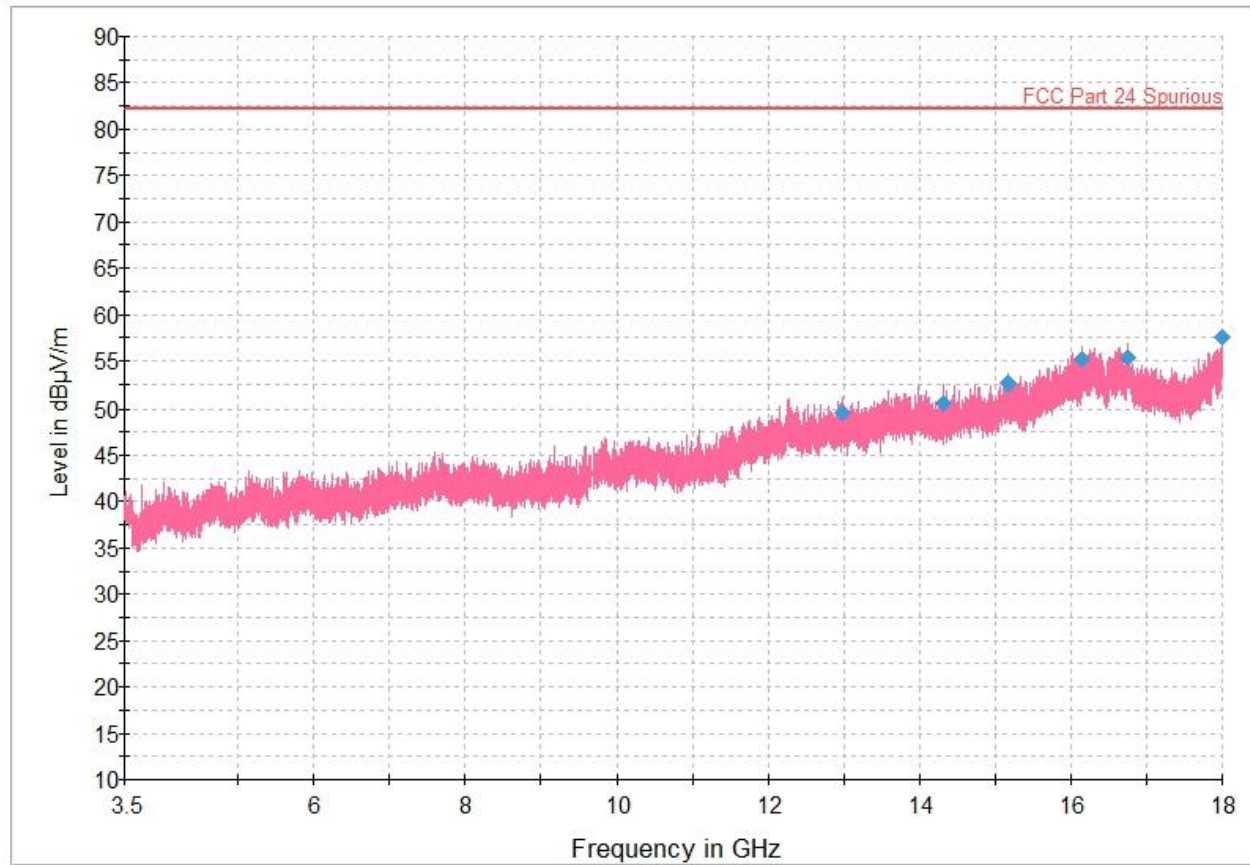


Figure 8.6-498: Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 1935 MHz (1024QAM, 10MHz BW) - Vertical

Table 8.6-8: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
12981.316667	49.66	82.23	32.57	100.0	1000.000	308.0	V	10.0	16.4
14306.466667	50.56	82.23	31.67	100.0	1000.000	299.0	V	351.0	17.3
15172.250000	52.70	82.23	29.53	100.0	1000.000	194.0	V	297.0	19.4
16146.500000	55.13	82.23	27.10	100.0	1000.000	297.0	V	208.0	22.9
16757.000000	55.41	82.23	26.82	100.0	1000.000	309.0	V	290.0	23.4
17999.116667	57.58	82.23	24.65	100.0	1000.000	225.0	V	290.0	25.0

Notes:

¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

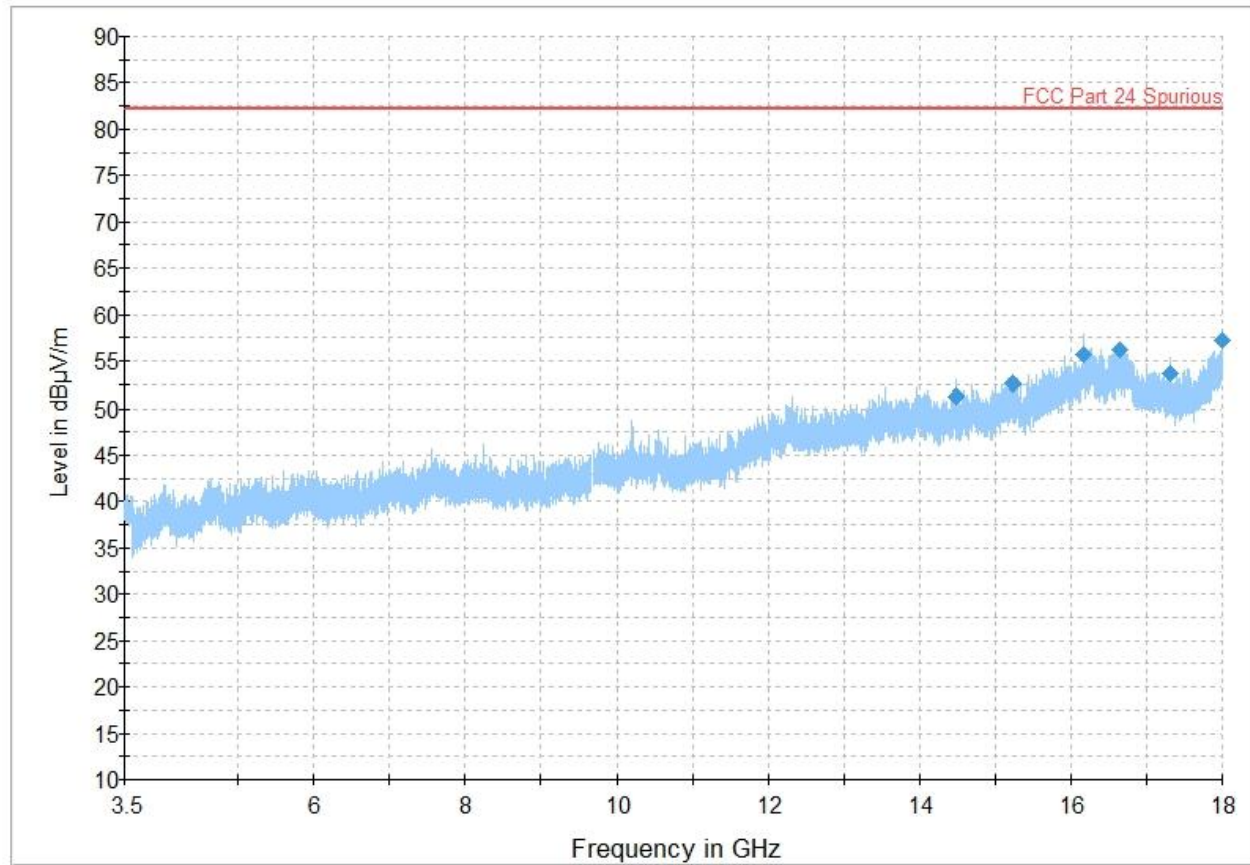


Figure 8.6-499: Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 1935 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-9: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
14468.983333	51.22	82.23	31.01	100.0	1000.000	399.0	H	124.0	17.7
15221.416667	52.69	82.23	29.54	100.0	1000.000	214.0	H	88.0	19.4
16164.750000	55.64	82.23	26.59	100.0	1000.000	375.0	H	107.0	23.1
16636.200000	56.24	82.23	25.99	100.0	1000.000	399.0	H	42.0	23.6
17310.050000	53.68	82.23	28.55	100.0	1000.000	341.0	H	106.0	20.6
17996.466667	57.21	82.23	25.02	100.0	1000.000	372.0	H	154.0	24.9

Notes:

¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

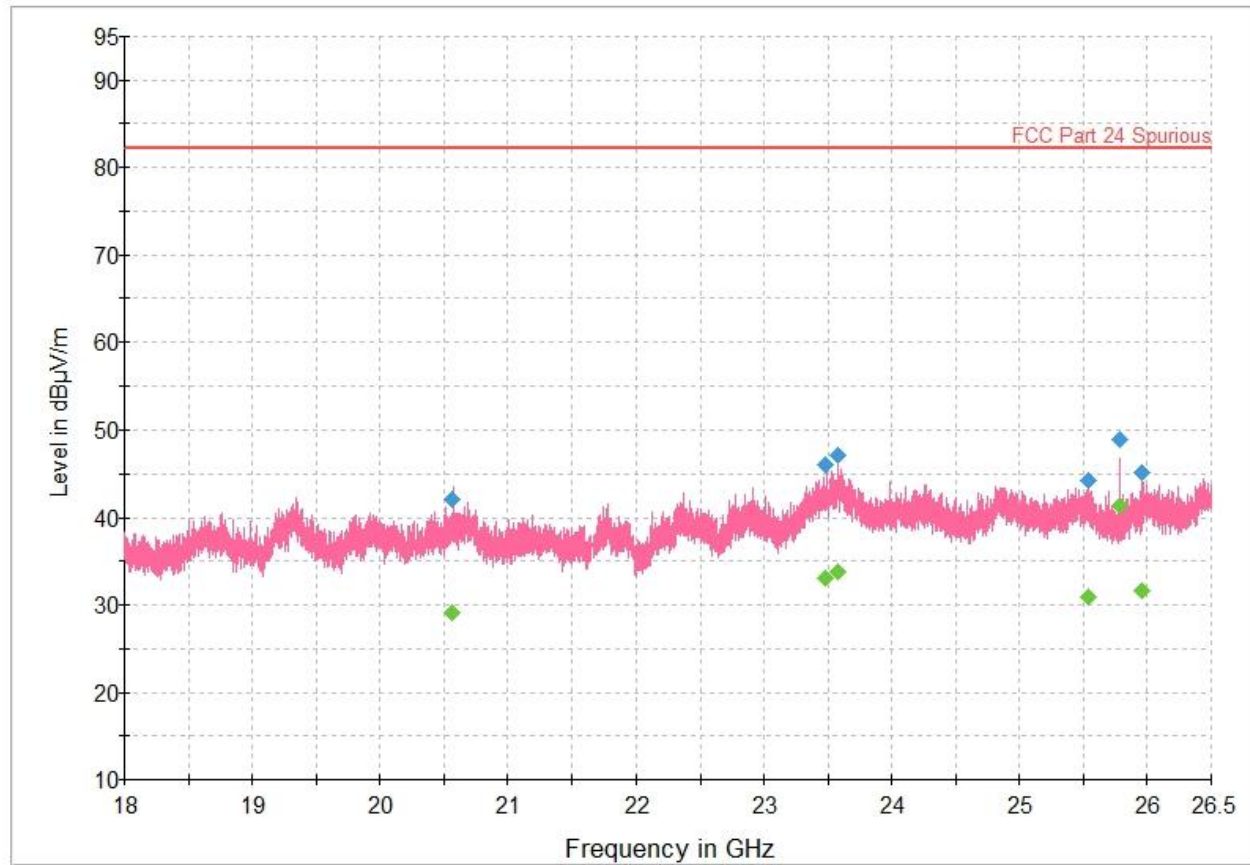


Figure 8.6-500: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 1935 MHz (1024QAM, 10MHz BW) - Vertical

Table 8.6-10: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
20566.893750	---	29.05	---	---	5000.0	1000.000	247.0	V	0.0	15.2
20566.893750	42.06	---	82.23	40.17	5000.0	1000.000	247.0	V	0.0	15.2
23482.018750	---	33.10	---	---	5000.0	1000.000	181.0	V	355.0	22.6
23482.018750	46.18	---	82.23	36.05	5000.0	1000.000	181.0	V	355.0	22.6
23580.318750	47.26	---	82.23	34.97	5000.0	1000.000	110.0	V	322.0	23.2
23580.318750	---	33.83	---	---	5000.0	1000.000	110.0	V	322.0	23.2
25536.250000	---	31.00	---	---	5000.0	1000.000	394.0	V	292.0	21.4
25536.250000	44.35	---	82.23	37.88	5000.0	1000.000	394.0	V	292.0	21.4
25781.218750	---	41.44	---	---	5000.0	1000.000	150.0	V	42.0	21.2
25781.218750	49.02	---	82.23	33.21	5000.0	1000.000	150.0	V	42.0	21.2
25951.293750	45.16	---	82.23	37.07	5000.0	1000.000	101.0	V	241.0	21.6
25951.293750	---	31.67	---	---	5000.0	1000.000	101.0	V	241.0	21.6

Notes: ¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

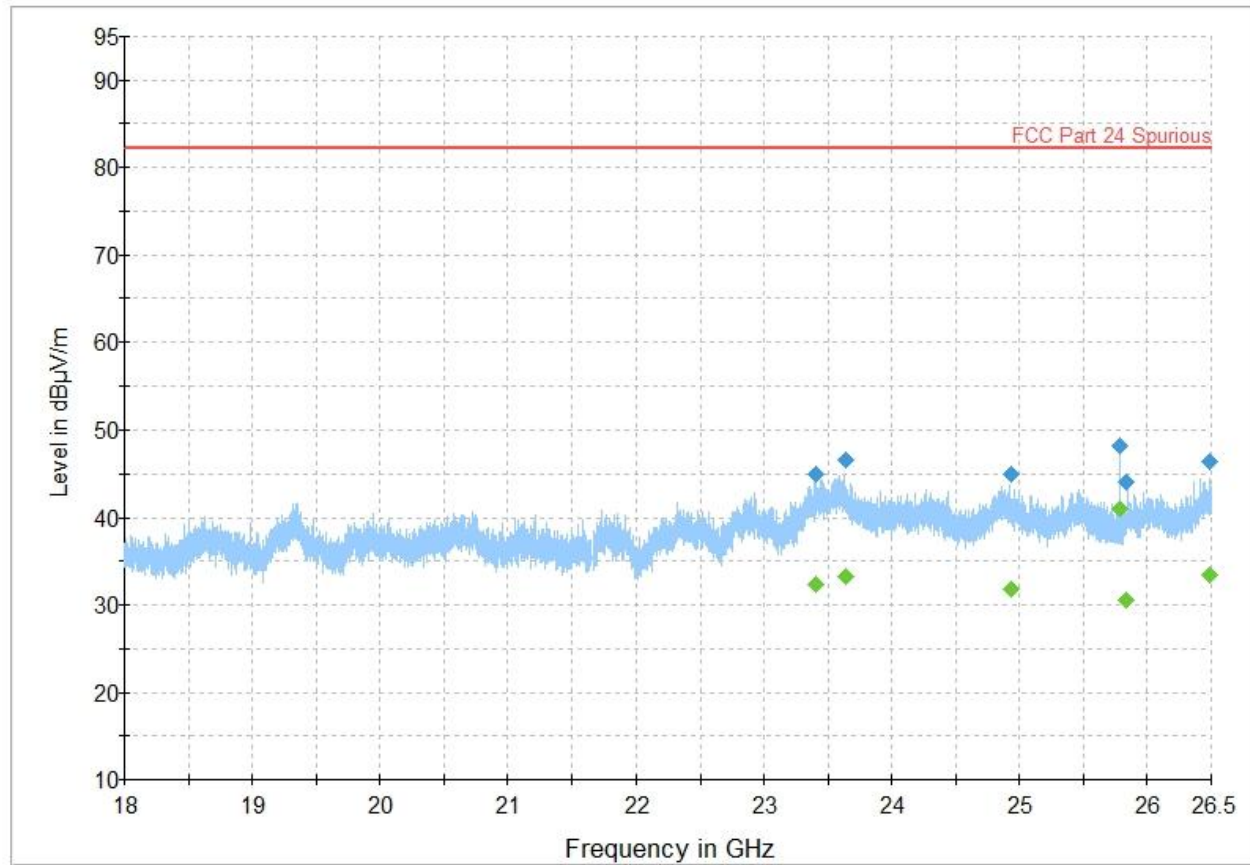


Figure 8.6-501: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 1935 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-11: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23398.393750	---	32.29	---	---	5000.0	1000.000	111.0	H	350.0	22.1
23398.393750	44.98	---	82.23	37.25	5000.0	1000.000	111.0	H	350.0	22.1
23638.750000	---	33.22	---	---	5000.0	1000.000	396.0	H	142.0	22.8
23638.750000	46.56	---	82.23	35.67	5000.0	1000.000	396.0	H	142.0	22.8
24930.168750	45.04	---	82.23	37.19	5000.0	1000.000	383.0	H	290.0	21.2
24930.168750	---	31.78	---	---	5000.0	1000.000	383.0	H	290.0	21.2
25781.450000	48.29	---	82.23	33.94	5000.0	1000.000	120.0	H	228.0	21.2
25781.450000	---	41.10	---	---	5000.0	1000.000	120.0	H	228.0	21.2
25839.712500	---	30.57	---	---	5000.0	1000.000	379.0	H	188.0	21.3
25839.712500	44.17	---	82.23	38.06	5000.0	1000.000	379.0	H	188.0	21.3
26490.600000	---	33.38	---	---	5000.0	1000.000	352.0	H	0.0	24.6
26490.600000	46.50	---	82.23	35.73	5000.0	1000.000	352.0	H	0.0	24.6

Notes: ¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

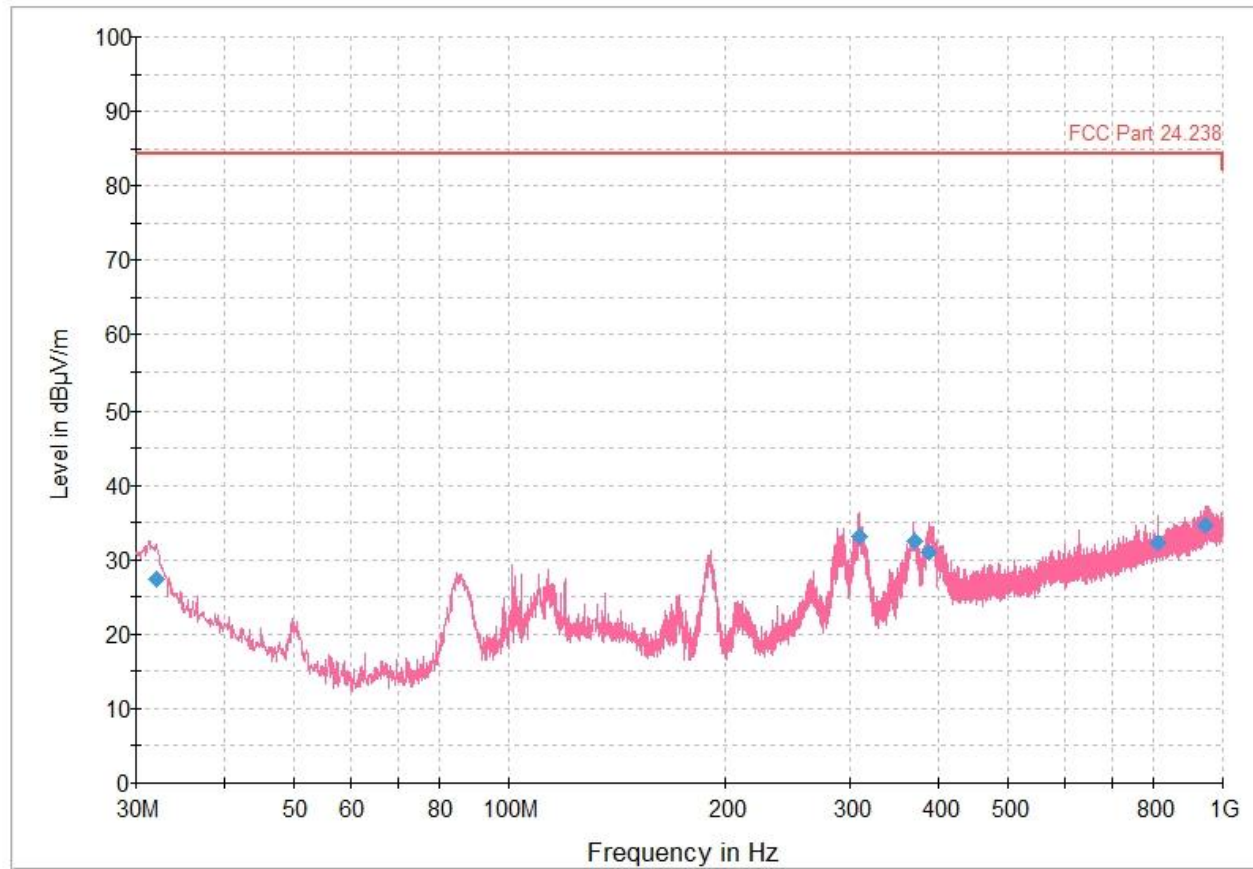


Figure 8.6-502: Radiated emissions spectral plot (30 MHz - 1 GHz) – 1962.5 MHz (1024QAM, 10MHz BW) - Vertical

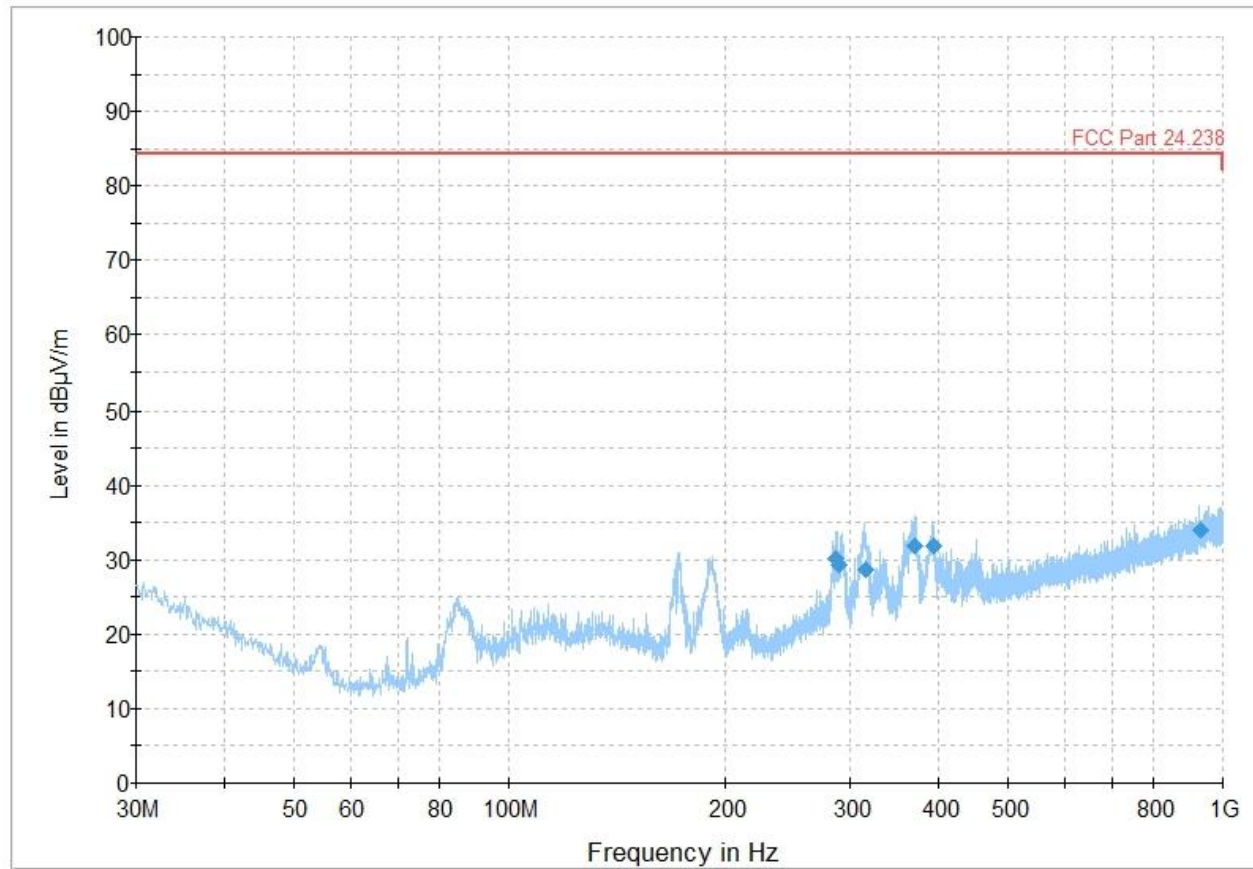
Table 8.6-12: Radiated emissions results

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.998000	27.36	84.38	57.02	5000.0	120.000	120.0	V	235.0	25.5
309.664000	33.11	84.38	51.27	5000.0	120.000	120.0	V	11.0	22.3
368.948000	32.44	84.38	51.94	5000.0	120.000	101.0	V	109.0	24.2
386.332000	31.02	84.38	53.36	5000.0	120.000	101.0	V	0.0	24.7
810.951000	32.29	84.38	52.09	5000.0	120.000	329.0	V	255.0	32.5
943.666000	34.64	84.38	49.74	5000.0	120.000	275.0	V	190.0	34.6

Notes:

¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

**Figure 8.6-503:** Radiated emissions spectral plot (30 MHz - 1 GHz) – 1962.5 MHz (1024QAM, 10MHz BW) - Horizontal**Table 8.6-13:** Radiated emissions results

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
285.948000	30.23	84.38	54.15	5000.0	120.000	101.0	H	222.0	21.8
289.625000	29.32	84.38	55.06	5000.0	120.000	101.0	H	223.0	21.9
314.718000	28.58	84.38	55.80	5000.0	120.000	101.0	H	88.0	22.5
369.105000	31.83	84.38	52.55	5000.0	120.000	307.0	H	203.0	24.2
392.170000	31.88	84.38	52.50	5000.0	120.000	206.0	H	204.0	25.0
928.701000	33.99	84.38	50.39	5000.0	120.000	130.0	H	256.0	34.1

Notes:

¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

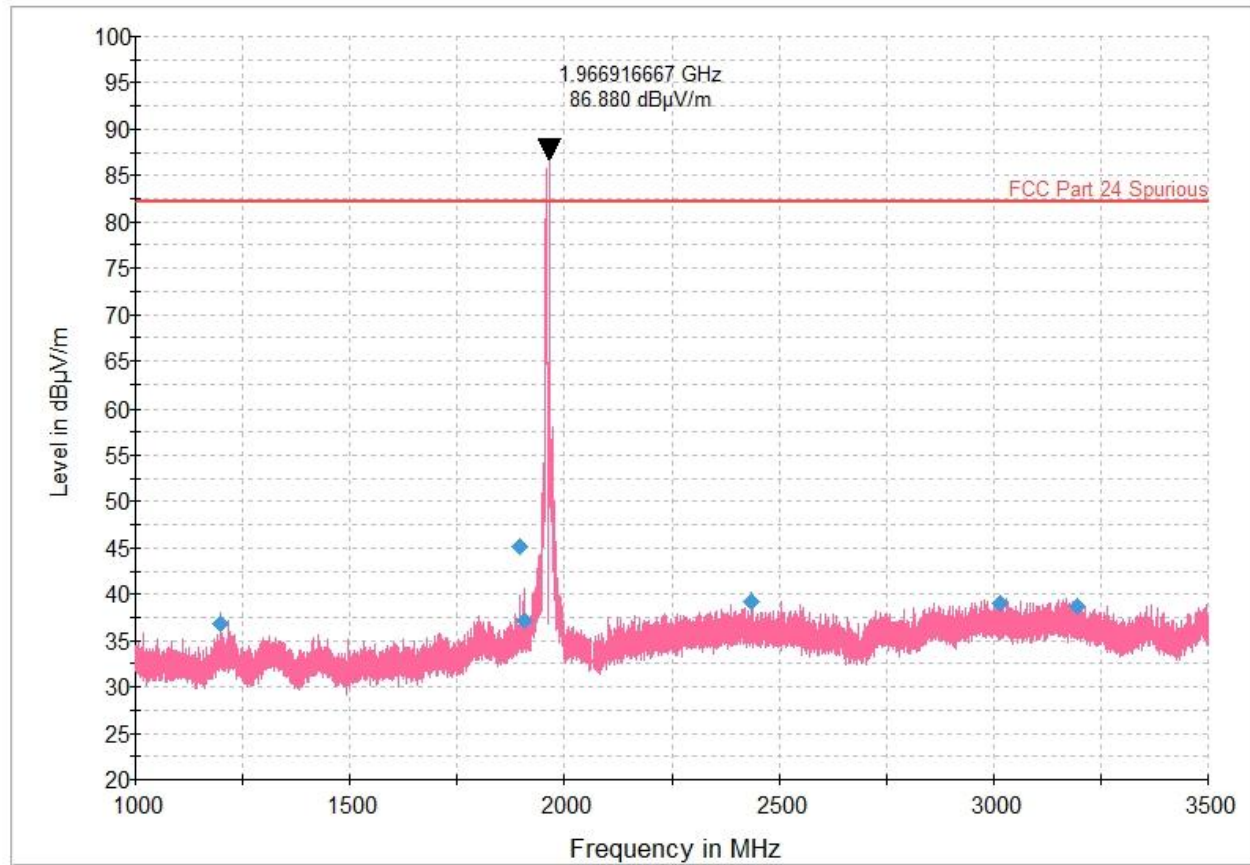


Figure 8.6-504: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 1962.5 MHz (1024QAM, 10MHz BW) - Vertical

Table 8.6-14: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1200.000000	36.88	82.23	45.35	100.0	1000.000	172.0	V	56.0	-10.8
1897.016667	45.21	82.23	37.02	100.0	1000.000	399.0	V	349.0	-5.5
1908.200000	37.11	82.23	45.12	100.0	1000.000	192.0	V	0.0	-5.4
2433.500000	39.15	82.23	43.08	100.0	1000.000	399.0	V	57.0	-3.8
3014.016667	39.03	82.23	43.20	100.0	1000.000	162.0	V	291.0	-2.0
3193.833333	38.61	82.23	43.62	100.0	1000.000	101.0	V	270.0	-1.7

Notes:

¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

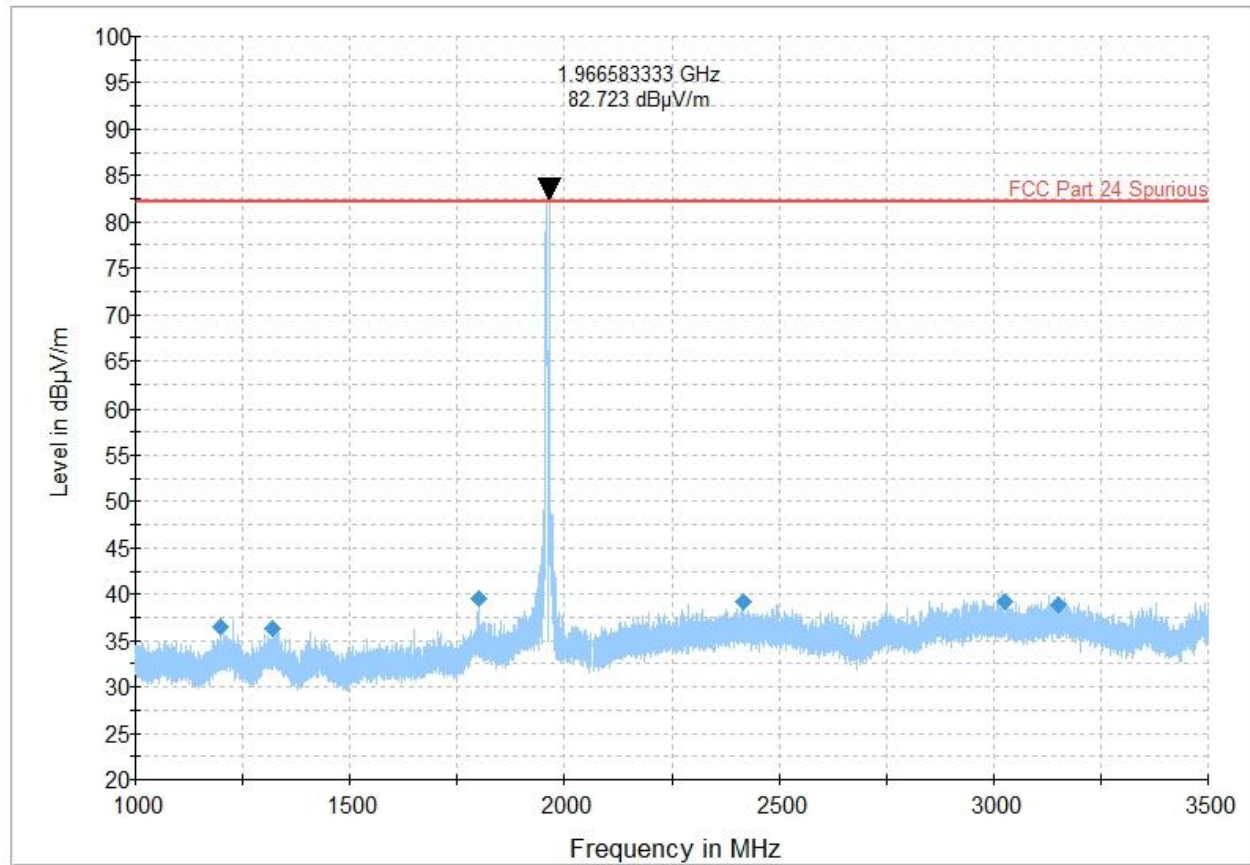


Figure 8.6-505: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 1962.5 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-15: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1199.833333	36.53	82.23	45.70	100.0	1000.000	204.0	H	143.0	-10.8
1321.333333	36.25	82.23	45.98	100.0	1000.000	366.0	H	108.0	-10.4
1800.150000	39.50	82.23	42.73	100.0	1000.000	101.0	H	252.0	-6.7
2414.050000	39.21	82.23	43.02	100.0	1000.000	372.0	H	0.0	-3.9
3026.366667	39.15	82.23	43.08	100.0	1000.000	318.0	H	333.0	-2.0
3149.916667	38.88	82.23	43.35	100.0	1000.000	110.0	H	318.0	-1.9

Notes:

¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

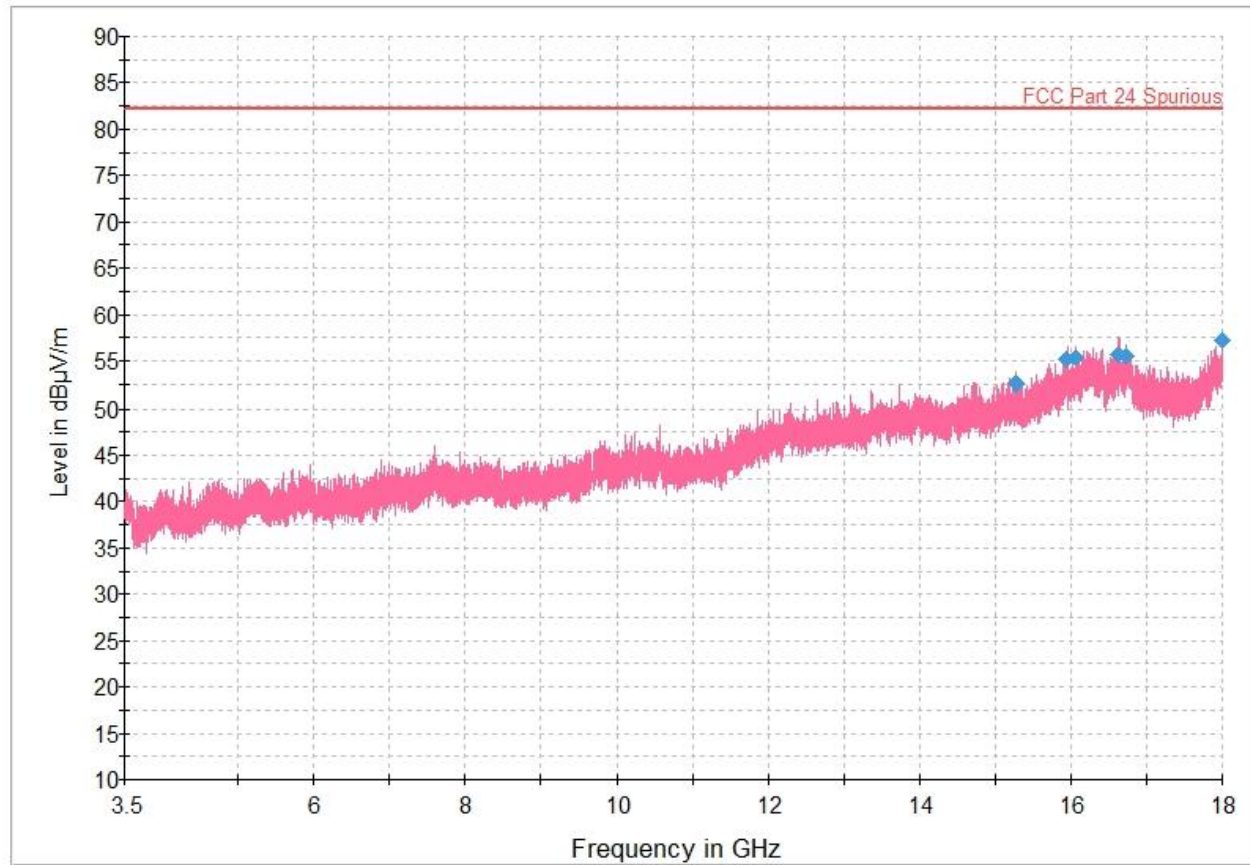


Figure 8.6-506: Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 1962.5 MHz (1024QAM, 10MHz BW) - Vertical

Table 8.6-16: Radiated emissions results

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
15278.250000	52.57	82.23	29.66	100.0	1000.000	101.0	V	285.0	19.4
15947.133333	55.10	82.23	27.13	100.0	1000.000	235.0	V	270.0	22.5
16062.433333	55.37	82.23	26.86	100.0	1000.000	278.0	V	238.0	22.7
16634.700000	55.64	82.23	26.59	100.0	1000.000	141.0	V	126.0	23.5
16726.200000	55.44	82.23	26.79	100.0	1000.000	120.0	V	334.0	23.2
17999.433333	57.14	82.23	25.09	100.0	1000.000	246.0	V	90.0	25.0

Notes:

¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

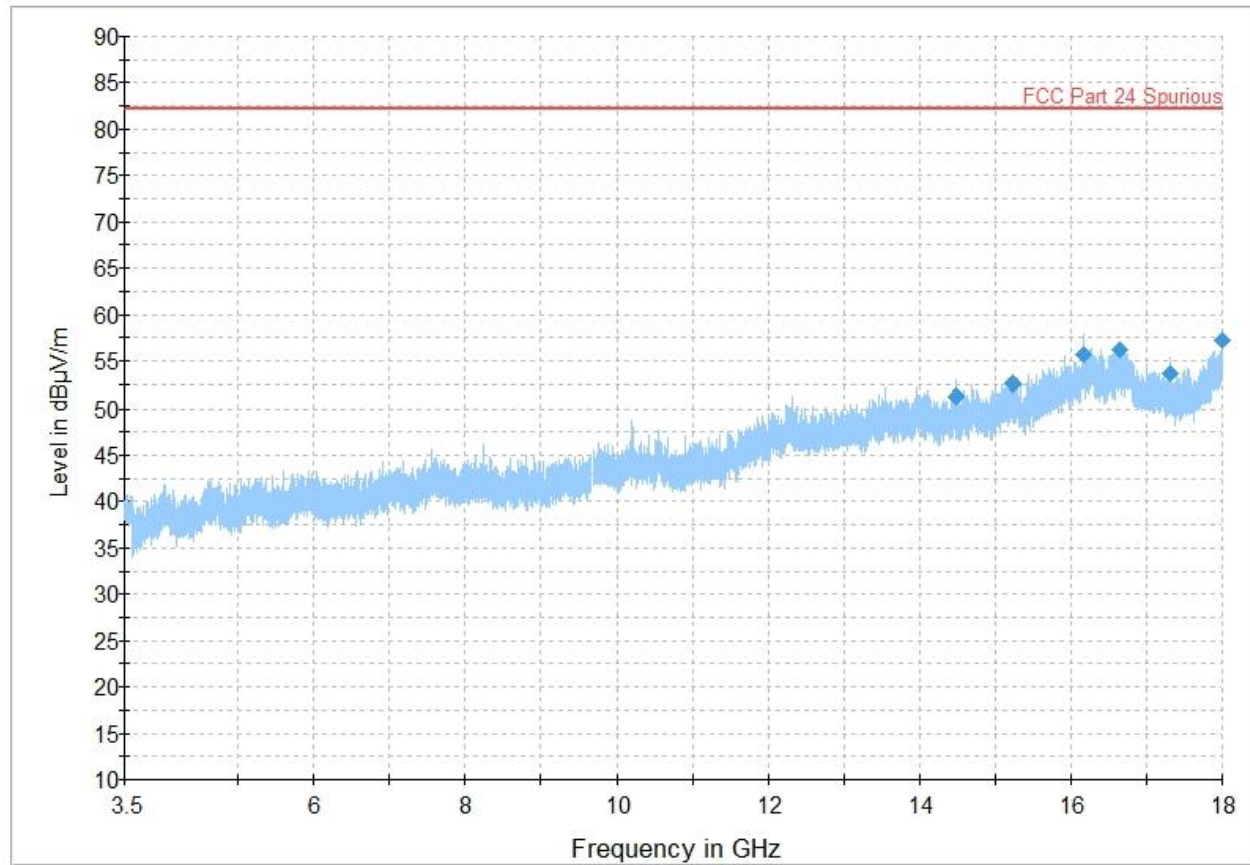


Figure 8.6-507: Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 1962.5 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-17: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
14468.983333	51.22	82.23	31.01	100.0	1000.000	399.0	H	124.0	17.7
15221.416667	52.69	82.23	29.54	100.0	1000.000	214.0	H	88.0	19.4
16164.750000	55.64	82.23	26.59	100.0	1000.000	375.0	H	107.0	23.1
16636.200000	56.24	82.23	25.99	100.0	1000.000	399.0	H	42.0	23.6
17310.050000	53.68	82.23	28.55	100.0	1000.000	341.0	H	106.0	20.6
17996.466667	57.21	82.23	25.02	100.0	1000.000	372.0	H	154.0	24.9

Notes:

¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

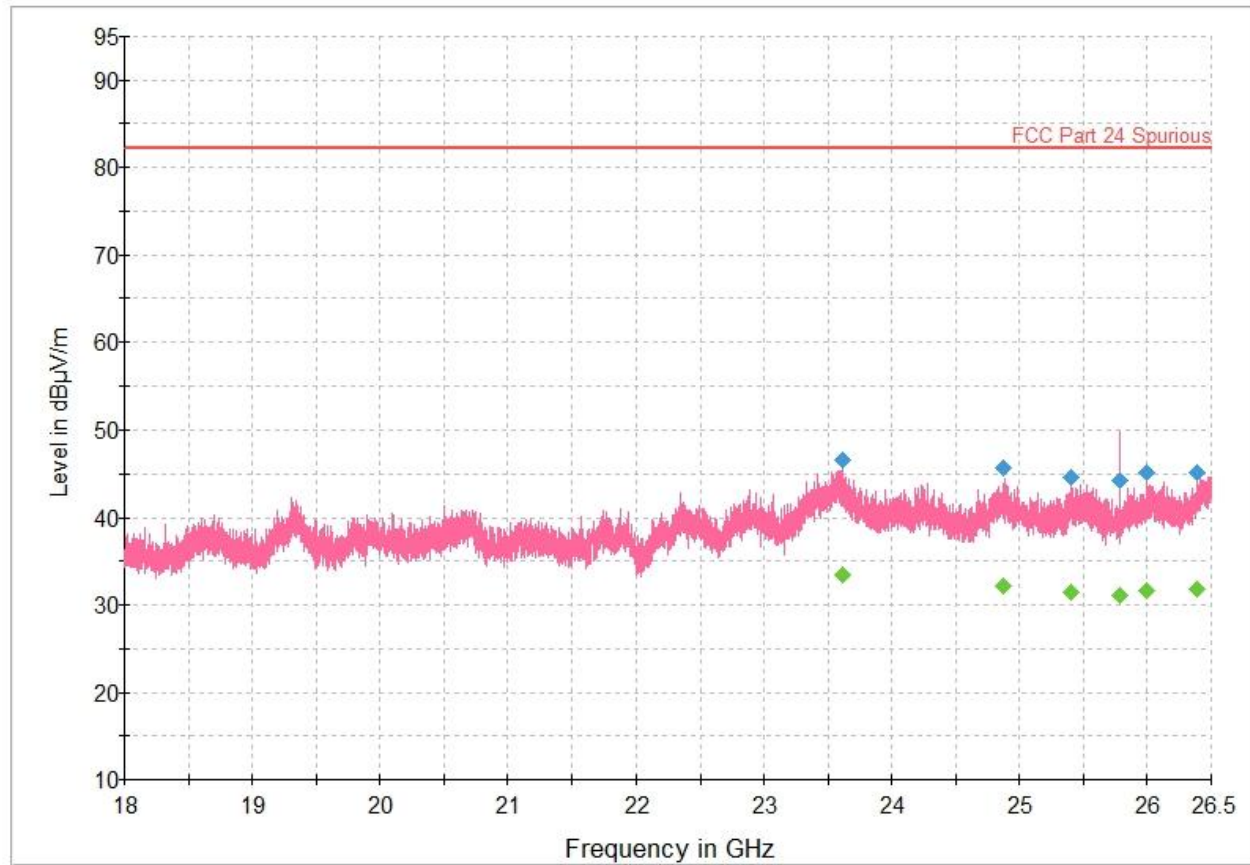


Figure 8.6-508: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 1962.5 MHz (1024QAM, 10MHz BW) - Vertical

Table 8.6-18: Radiated emissions results

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23615.375000	---	33.52	---	---	5000.0	1000.000	319.0	V	106.0	23.0
23615.375000	46.63	---	82.23	35.60	5000.0	1000.000	319.0	V	106.0	23.0
24875.443750	---	32.26	---	---	5000.0	1000.000	110.0	V	11.0	21.0
24875.443750	45.66	---	82.23	36.57	5000.0	1000.000	110.0	V	11.0	21.0
25397.293750	---	31.42	---	---	5000.0	1000.000	181.0	V	23.0	20.7
25397.293750	44.56	---	82.23	37.67	5000.0	1000.000	181.0	V	23.0	20.7
25779.950000	---	31.16	---	---	5000.0	1000.000	184.0	V	305.0	21.2
25779.950000	44.24	---	82.23	37.99	5000.0	1000.000	184.0	V	305.0	21.2
25996.906250	45.20	---	82.23	37.03	5000.0	1000.000	101.0	V	222.0	21.8
25996.906250	---	31.61	---	---	5000.0	1000.000	101.0	V	222.0	21.8
26384.143750	45.16	---	82.23	37.07	5000.0	1000.000	338.0	V	213.0	23.5
26384.143750	---	31.87	---	---	5000.0	1000.000	338.0	V	213.0	23.5

Notes: ¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

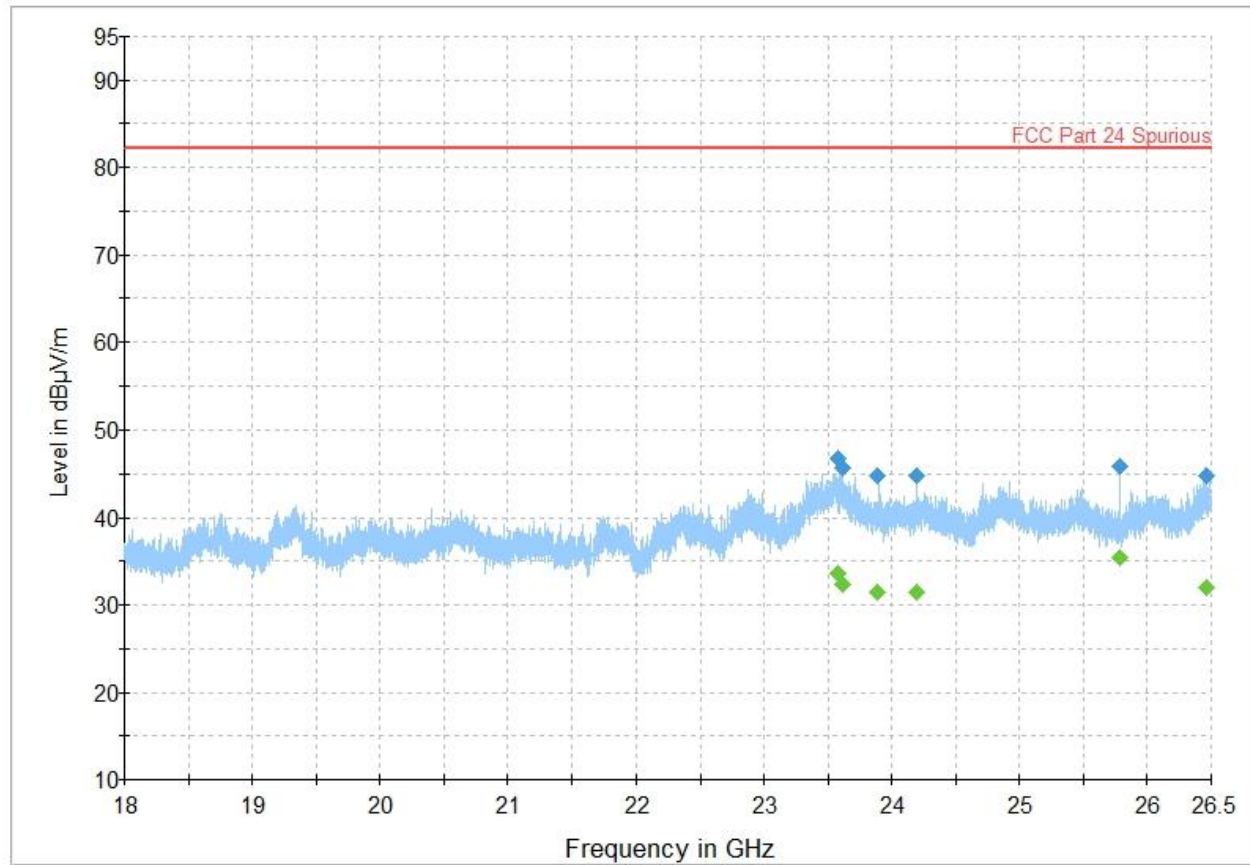


Figure 8.6-509: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 1962.5 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-19: Radiated emissions results

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23580.068750	46.76	---	82.23	35.47	5000.0	1000.000	259.0	H	108.0	23.2
23580.068750	---	33.68	---	---	5000.0	1000.000	259.0	H	108.0	23.2
23619.100000	---	32.46	---	---	5000.0	1000.000	151.0	H	0.0	22.9
23619.100000	45.75	---	82.23	36.48	5000.0	1000.000	151.0	H	0.0	22.9
23884.825000	---	31.51	---	---	5000.0	1000.000	267.0	H	293.0	21.6
23884.825000	44.88	---	82.23	37.35	5000.0	1000.000	267.0	H	293.0	21.6
24193.131250	44.89	---	82.23	37.34	5000.0	1000.000	161.0	H	42.0	21.1
24193.131250	---	31.51	---	---	5000.0	1000.000	161.0	H	42.0	21.1
25781.450000	45.95	---	82.23	36.28	5000.0	1000.000	131.0	H	303.0	21.2
25781.450000	---	35.43	---	---	5000.0	1000.000	131.0	H	303.0	21.2
26458.350000	44.85	---	82.23	37.38	5000.0	1000.000	384.0	H	0.0	24.2
26458.350000	---	32.07	---	---	5000.0	1000.000	384.0	H	0.0	24.2

Notes: ¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

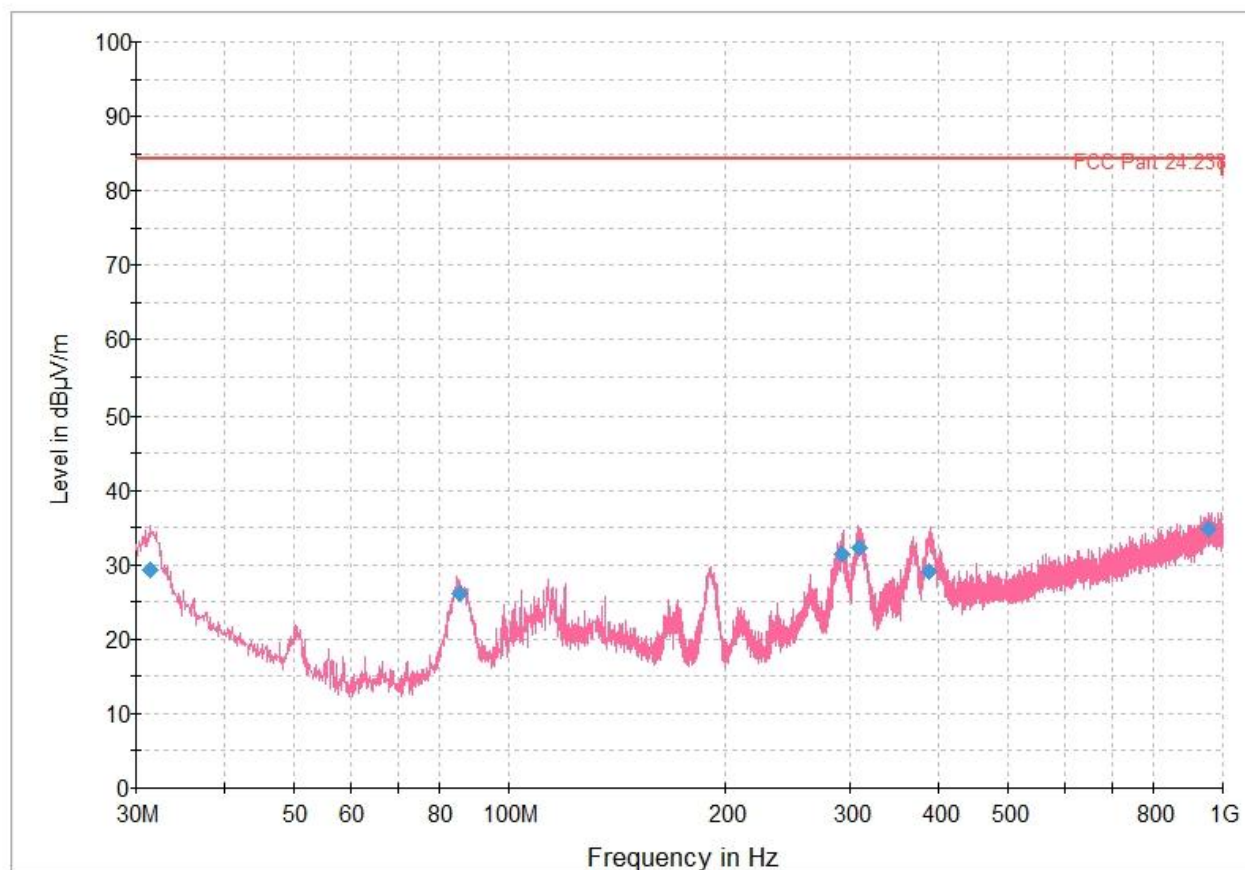


Figure 8.6-510: Radiated emissions spectral plot (30 MHz - 1 GHz) – 1990 MHz (1024QAM, 10MHz BW) - Vertical

Table 8.6-20: Radiated emissions results

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.478000	29.27	84.38	55.11	5000.0	120.000	101.0	V	218.0	25.8
85.508000	26.07	84.38	58.31	5000.0	120.000	101.0	V	0.0	15.7
292.452000	31.42	84.38	52.96	5000.0	120.000	140.0	V	24.0	21.9
308.397000	32.25	84.38	52.13	5000.0	120.000	151.0	V	125.0	22.3
387.044000	29.05	84.38	55.33	5000.0	120.000	223.0	V	154.0	24.8
953.804000	34.92	84.38	49.46	5000.0	120.000	204.0	V	11.0	35.0

Notes:

¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

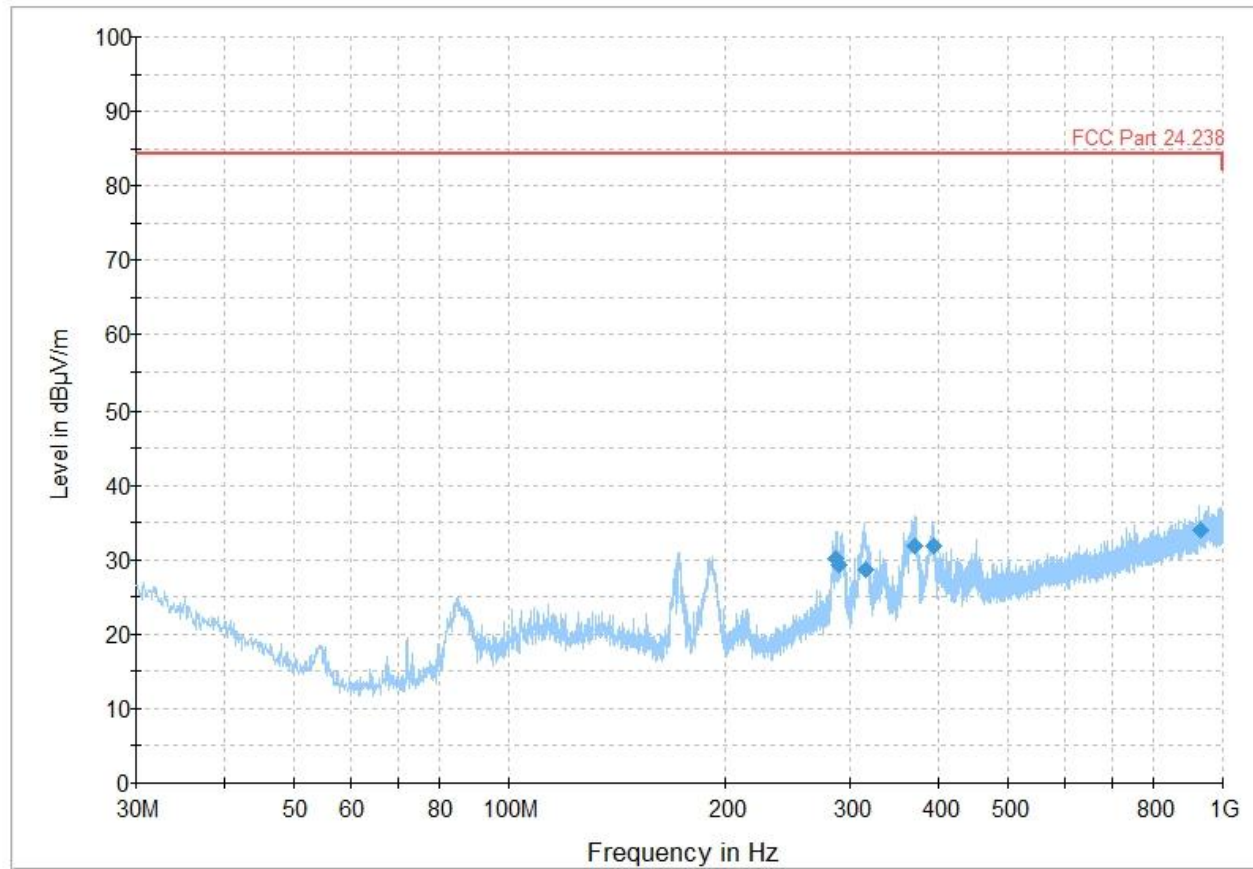


Figure 8.6-511: Radiated emissions spectral plot (30 MHz - 1 GHz) – 1990 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-21: Radiated emissions results

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
285.948000	30.23	84.38	54.15	5000.0	120.000	101.0	H	222.0	21.8
289.625000	29.32	84.38	55.06	5000.0	120.000	101.0	H	223.0	21.9
314.718000	28.58	84.38	55.80	5000.0	120.000	101.0	H	88.0	22.5
369.105000	31.83	84.38	52.55	5000.0	120.000	307.0	H	203.0	24.2
392.170000	31.88	84.38	52.50	5000.0	120.000	206.0	H	204.0	25.0
928.701000	33.99	84.38	50.39	5000.0	120.000	130.0	H	256.0	34.1

Notes:

¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

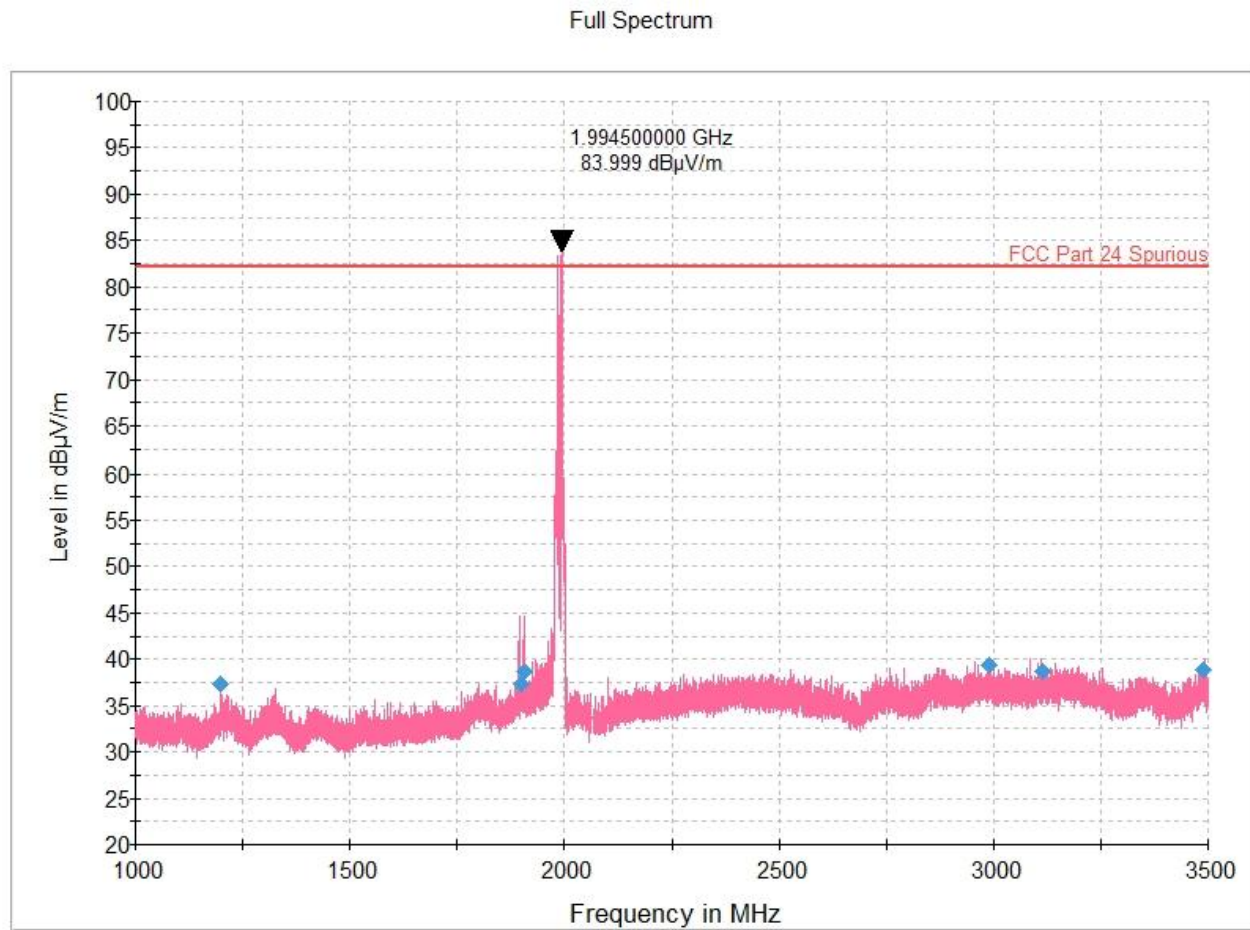


Figure 8.6-512: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 1990 MHz (1024QAM, 10MHz BW) Vertical

Table 8.6-22: Radiated emissions results

Frequency (MHz)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1199.916667	37.30	82.23	44.93	100.0	1000.000	225.0	V	208.0	-10.8
1899.900000	37.39	82.23	44.84	100.0	1000.000	131.0	V	141.0	-5.5
1908.933333	38.60	82.23	43.63	100.0	1000.000	151.0	V	319.0	-5.4
2990.333333	39.41	82.23	42.82	100.0	1000.000	399.0	V	306.0	-2.1
3114.833333	38.76	82.23	43.47	100.0	1000.000	171.0	V	0.0	-1.8
3488.483333	38.81	82.23	43.42	100.0	1000.000	122.0	V	126.0	-0.6

Notes:

¹ Field strength (dB μ V/m) = receiver/spectrum analyzer value (dB μ V) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

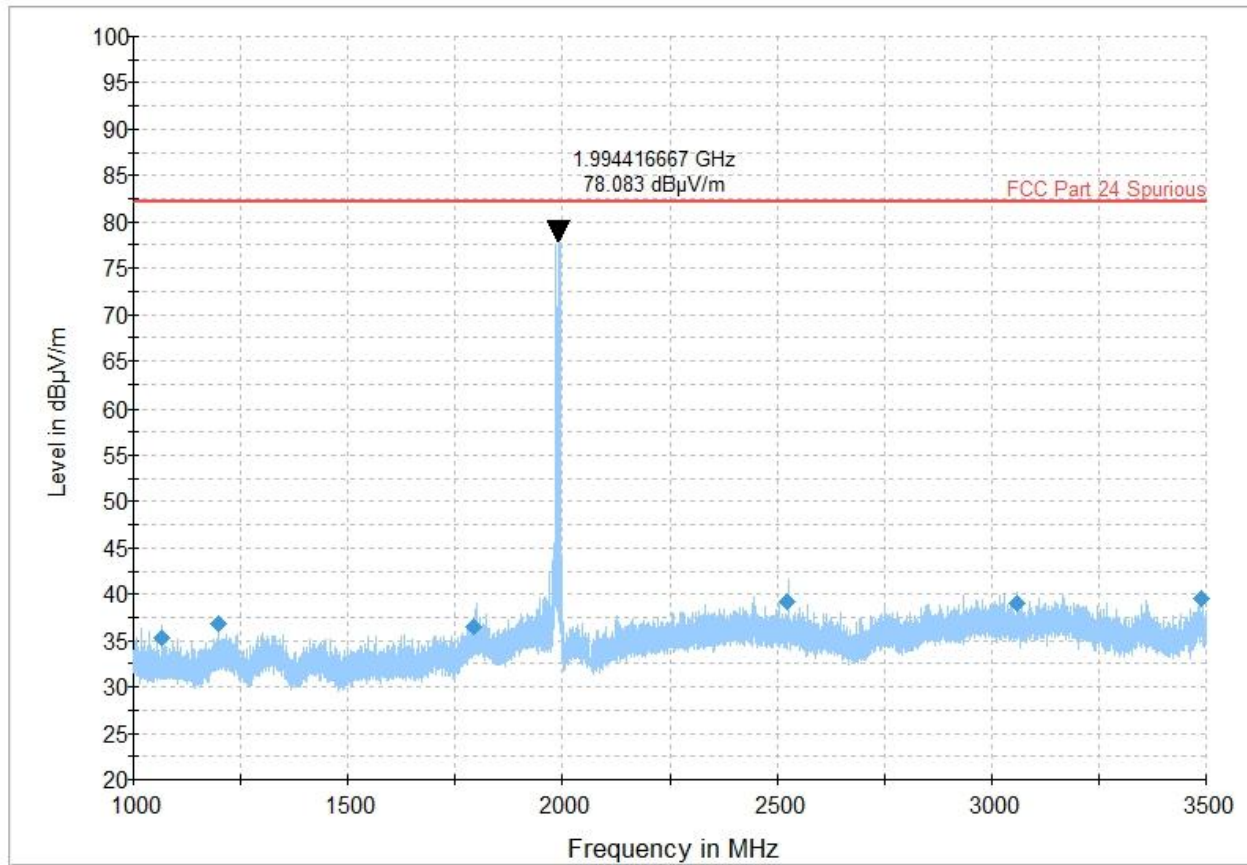


Figure 8.6-513: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 1990 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-23: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1064.683333	35.23	82.23	47.00	100.0	1000.000	173.0	H	323.0	-11.6
1200.000000	36.75	82.23	45.48	100.0	1000.000	206.0	H	126.0	-10.8
1795.683333	36.43	82.23	45.80	100.0	1000.000	191.0	H	242.0	-6.8
2521.183333	39.22	82.23	43.01	100.0	1000.000	363.0	H	0.0	-3.6
3058.450000	39.06	82.23	43.17	100.0	1000.000	212.0	H	237.0	-2.0
3490.650000	39.61	82.23	42.62	100.0	1000.000	399.0	H	0.0	-0.6

Notes:

¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

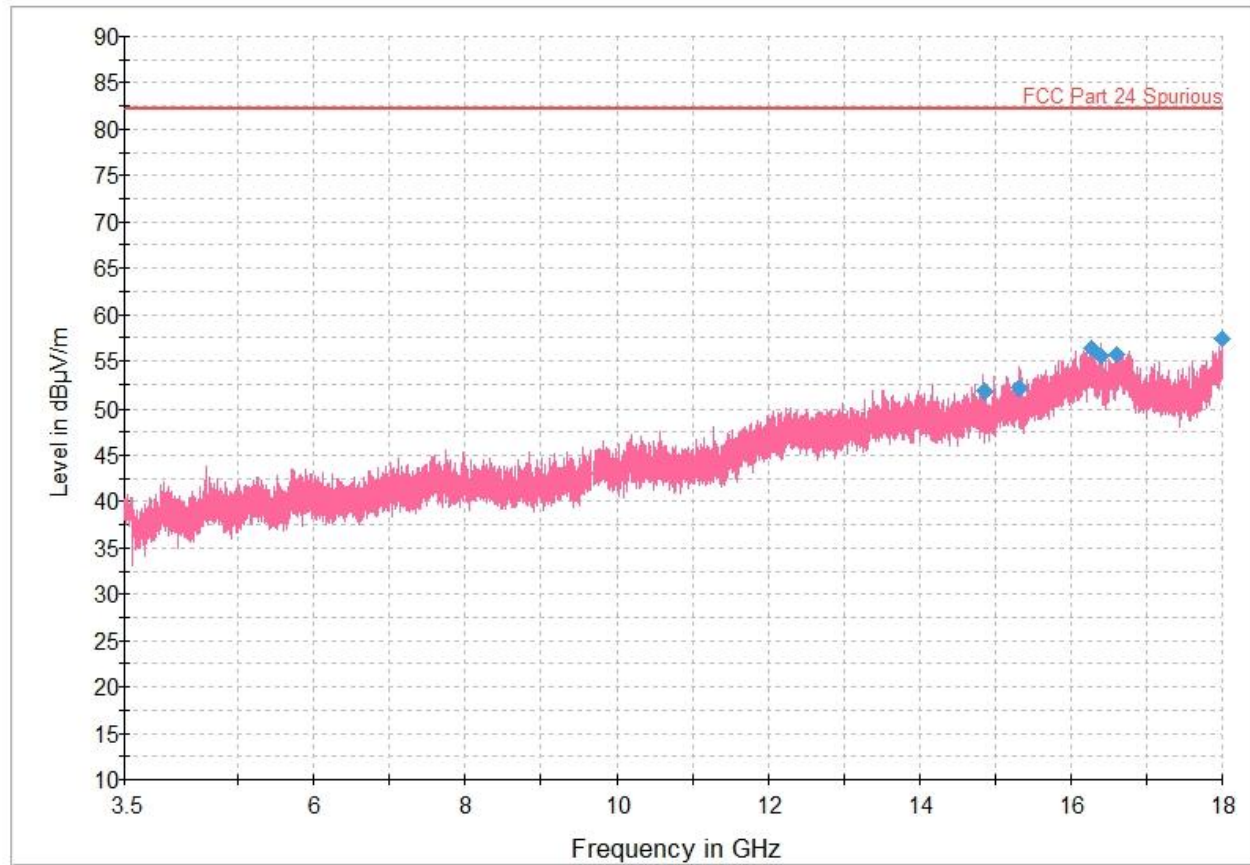


Figure 8.6-514: Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 1990 MHz (1024QAM, 10MHz BW) - Vertical

Table 8.6-24: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
14844.583333	51.81	82.23	30.42	100.0	1000.000	194.0	V	357.0	17.8
15316.083333	52.12	82.23	30.11	100.0	1000.000	328.0	V	277.0	19.2
16270.300000	56.44	82.23	25.79	100.0	1000.000	110.0	V	73.0	23.5
16393.750000	55.51	82.23	26.72	100.0	1000.000	214.0	V	324.0	23.0
16606.550000	55.64	82.23	26.59	100.0	1000.000	101.0	V	237.0	23.2
17999.166667	57.41	82.23	24.82	100.0	1000.000	302.0	V	0.0	25.0

Notes:

¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

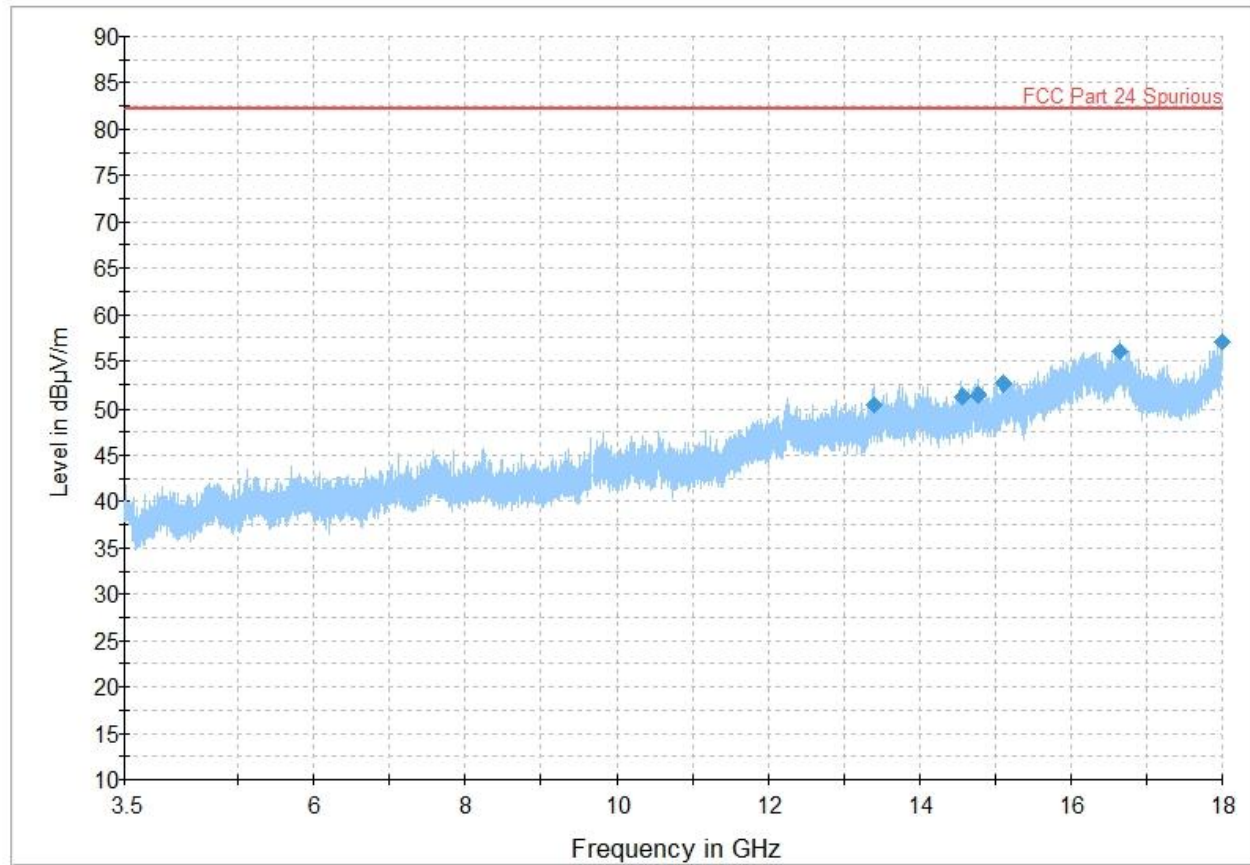


Figure 8.6-515: Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 1990 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-25: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
13401.700000	50.51	82.23	31.72	100.0	1000.000	399.0	H	0.0	17.3
14553.316667	51.29	82.23	30.94	100.0	1000.000	212.0	H	10.0	17.4
14766.050000	51.42	82.23	30.81	100.0	1000.000	143.0	H	351.0	18.2
15111.133333	52.65	82.23	29.58	100.0	1000.000	373.0	H	188.0	19.1
16639.083333	56.11	82.23	26.12	100.0	1000.000	213.0	H	154.0	23.6
17993.250000	57.02	82.23	25.21	100.0	1000.000	387.0	H	90.0	24.8

Notes:

¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

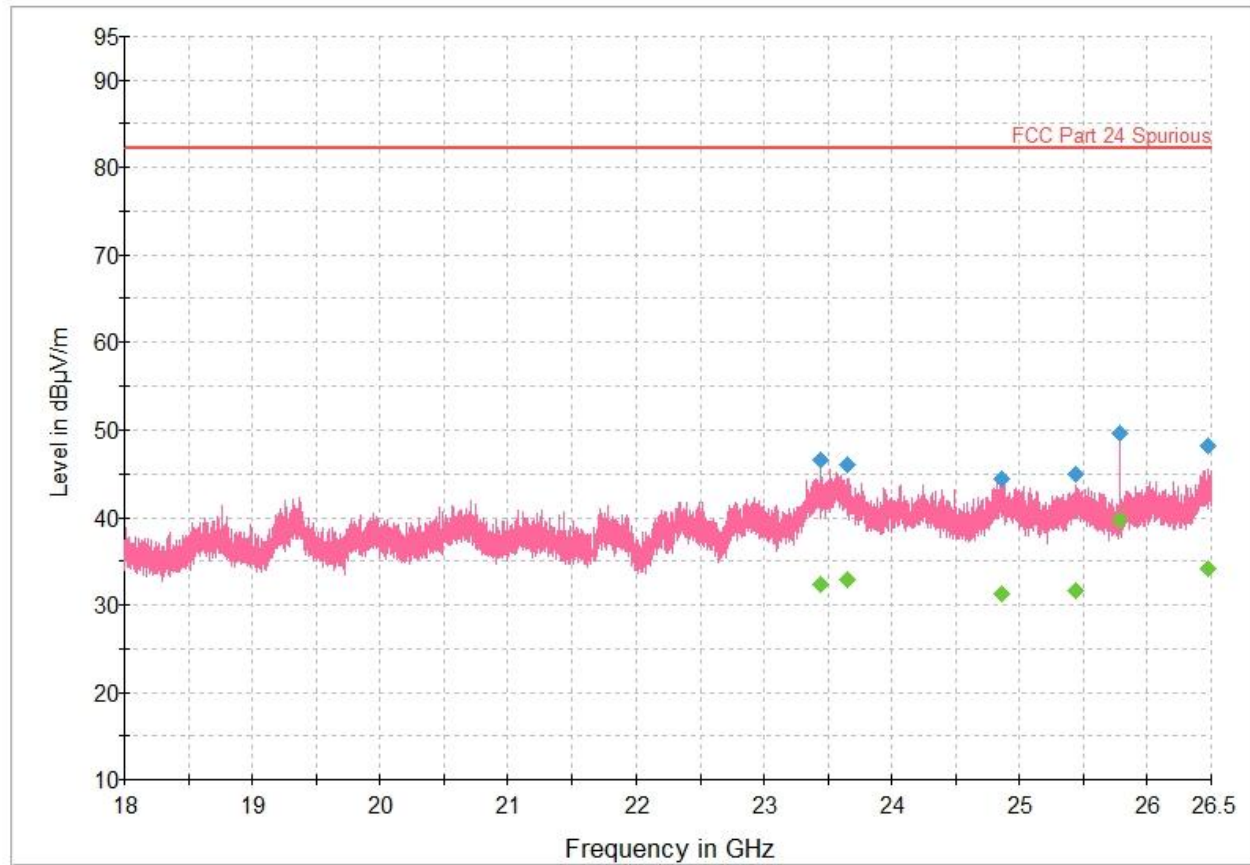


Figure 8.6-516: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 1990 MHz (1024QAM, 10MHz BW) - Vertical

Table 8.6-26: Radiated emissions results

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23436.906250	---	32.40	---	---	5000.0	1000.000	101.0	V	73.0	22.3
23436.906250	46.67	---	82.23	35.56	5000.0	1000.000	101.0	V	73.0	22.3
23651.862500	46.07	---	82.23	36.16	5000.0	1000.000	399.0	V	352.0	22.7
23651.862500	---	32.99	---	---	5000.0	1000.000	399.0	V	352.0	22.7
24853.443750	44.53	---	82.23	37.70	5000.0	1000.000	182.0	V	0.0	21.0
24853.443750	---	31.32	---	---	5000.0	1000.000	182.0	V	0.0	21.0
25442.231250	---	31.72	---	---	5000.0	1000.000	101.0	V	57.0	20.9
25442.231250	45.00	---	82.23	37.23	5000.0	1000.000	101.0	V	57.0	20.9
25781.450000	49.75	---	82.23	32.48	5000.0	1000.000	174.0	V	172.0	21.2
25781.450000	---	39.78	---	---	5000.0	1000.000	174.0	V	172.0	21.2
26478.793750	48.35	---	82.23	33.88	5000.0	1000.000	101.0	V	269.0	24.4
26478.793750	---	34.22	---	---	5000.0	1000.000	101.0	V	269.0	24.4

Notes: ¹ Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

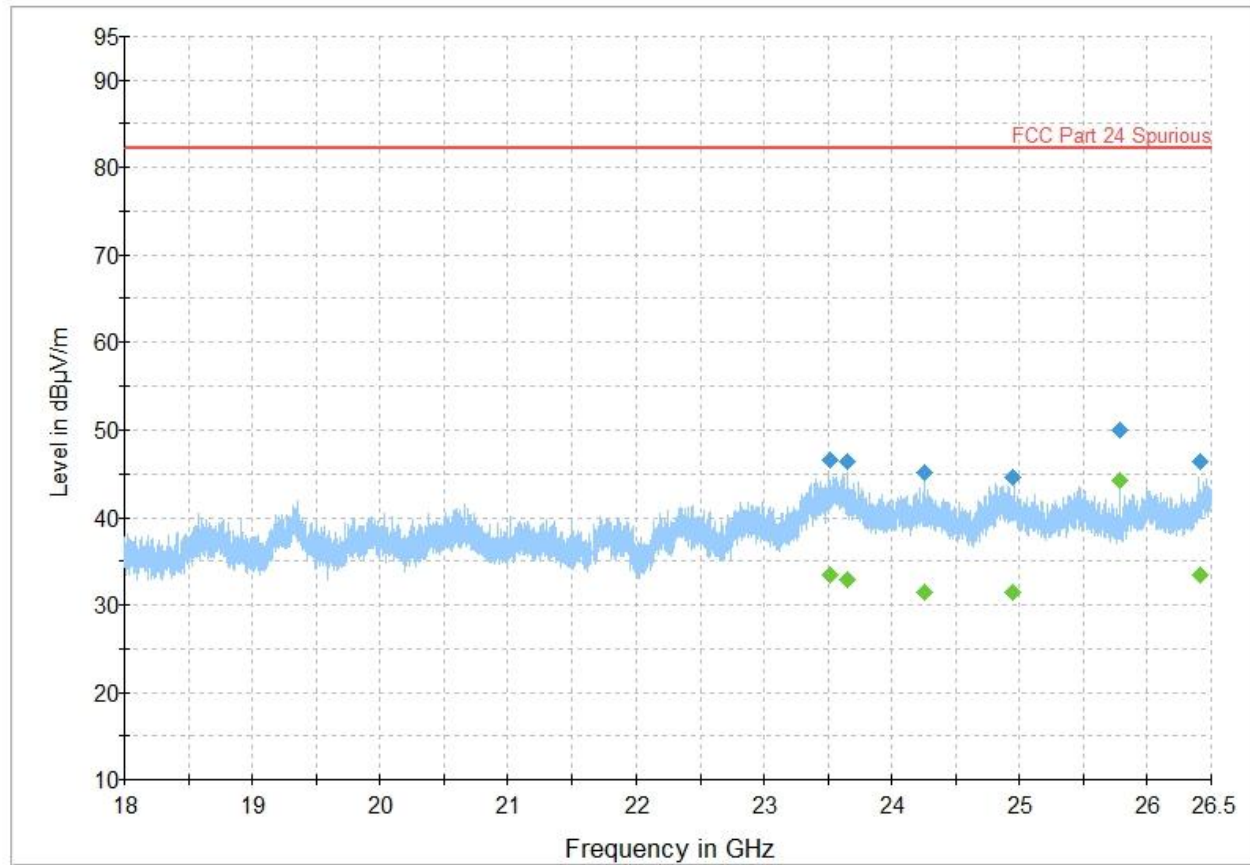


Figure 8.6-517: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 1990 MHz (1024QAM, 10MHz BW) - Horizontal

Table 8.6-27: Radiated emissions results

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23513.050000	46.56	---	82.23	35.67	5000.0	1000.000	151.0	H	0.0	22.8
23513.050000	---	33.49	---	---	5000.0	1000.000	151.0	H	0.0	22.8
23648.993750	---	33.00	---	---	5000.0	1000.000	268.0	H	56.0	22.7
23648.993750	46.46	---	82.23	35.77	5000.0	1000.000	268.0	H	56.0	22.7
24260.156250	45.12	---	82.23	37.11	5000.0	1000.000	341.0	H	289.0	20.9
24260.156250	---	31.56	---	---	5000.0	1000.000	341.0	H	289.0	20.9
24950.000000	---	31.39	---	---	5000.0	1000.000	399.0	H	275.0	21.2
24950.000000	44.59	---	82.23	37.64	5000.0	1000.000	399.0	H	275.0	21.2
25781.218750	---	44.21	---	---	5000.0	1000.000	120.0	H	227.0	21.2
25781.218750	50.02	---	82.23	32.21	5000.0	1000.000	120.0	H	227.0	21.2
26416.700000	---	33.53	---	---	5000.0	1000.000	399.0	H	75.0	23.8
26416.700000	46.46	---	82.23	35.77	5000.0	1000.000	399.0	H	75.0	23.8

Notes: ¹ Field strength (dBμV/m) = receiver/spectrum analyzer value (dBμV) + correction factor (dB)² Correction factors = antenna factor ACF (dB) + cable loss (dB)³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

8.7 FCC 24.235 Frequency stability

8.7.1 Definitions and limits

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§ 2.1055 Measurements required: Frequency stability.

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

(1) From -30° to + 50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

8.7.2 Test summary

Test date	September 16, 2025	Temperature	22 °C
Test engineer	Lan Sayasane, EMC Test Engineer	Air pressure	1003.0 Ombar
Verdict	Pass	Relative humidity	59%

8.7.3 Observations, settings and special notes

The signal was exercised in CW mode, using one channel as representative case. The ppm was calculated using the equation:

$$ppm = \left[\frac{(Reference\ Frequency - Tested\ Frequency)}{Reference\ Frequency} \right] * 1000000$$

The fundamental emission is confirmed to be inside the allocated band in all cases. Band edge emission compliance is demonstrated in section 8.6.

8.7.4 Test Data

Table 8.7-1: FCC 24.235 Frequency stability results

Temperature (°C)	Voltage (V)	Center Frequency (MHz)	Frequency Error			
			ppm	ppm (2 min)	ppm (5 min)	ppm (10 min)
-30	120	1962.5	0.20	0.21	0.21	0.21
-20	120	1962.5	0.21	0.21	0.21	0.21
-10	120	1962.5	0.21	0.21	0.21	0.21
0	120	1962.5	0.21	0.21	0.21	0.21
+10	120	1962.5	0.21	0.21	0.21	0.21
+20	138	1962.5	0.21	0.21	0.21	0.21
+20	120	1962.5	0.21	0.21	0.21	0.21
+20	102	1962.5	0.21	0.21	0.21	0.21
+30	120	1962.5	0.21	0.21	0.21	0.21
+40	120	1962.5	0.21	0.21	0.21	0.21
+50	120	1962.5	0.21	0.21	0.21	0.21

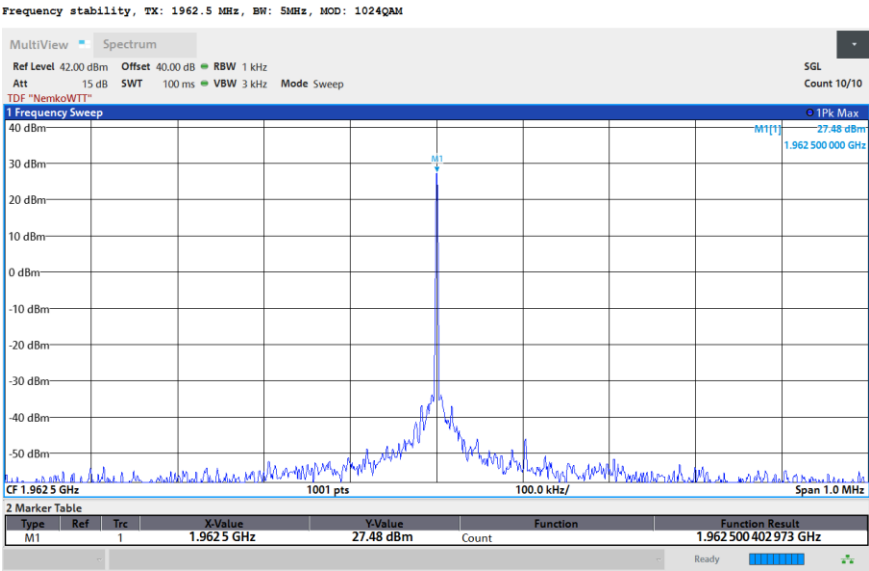


Figure 8.7-1: Frequency stability example plot (signal count function used)

End of report