

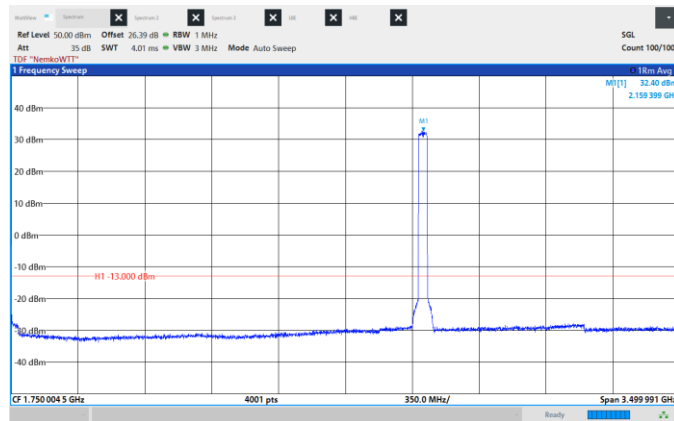


Figure 8.6-464: Conducted Spurious Emissions, Mid CH 2155 MHz, 45 MHz, 64QAM, Frequency range: 0.009 -3500 MHz

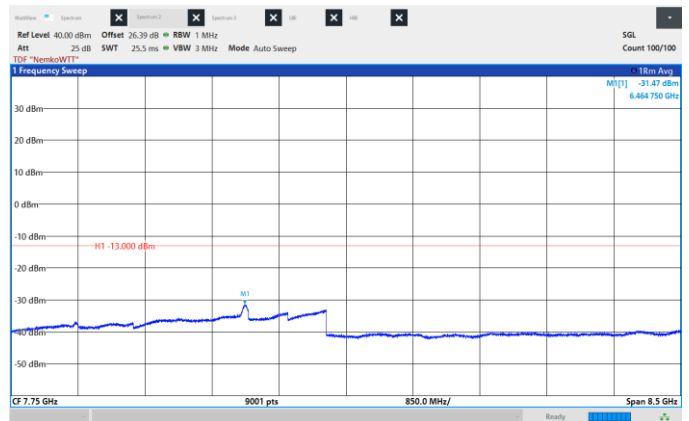


Figure 8.6-465: Conducted Spurious Emissions, Mid CH 2155 MHz, 45 MHz, 64QAM, Frequency range: 3.5 -12.0 GHz.

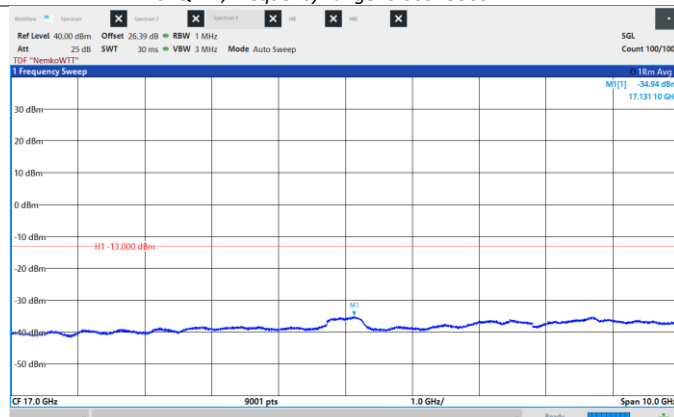


Figure 8.6-466: Conducted Spurious Emissions, Mid CH 2155 MHz, 45 MHz, 64QAM, Frequency range: 12.0 - 22.0 GHz.

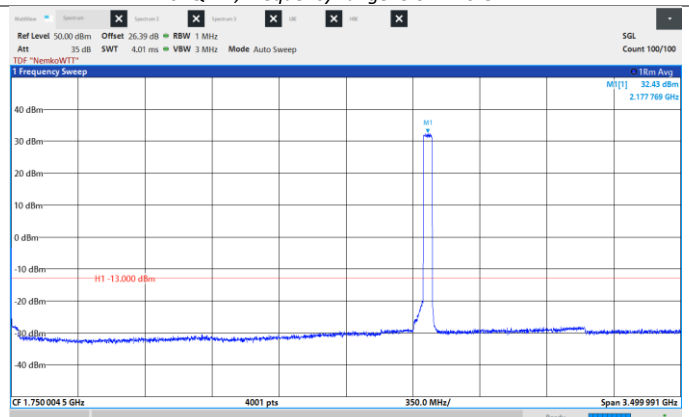


Figure 8.6-467: Conducted Spurious Emissions, High CH 2177.5 MHz, 45 MHz, 64QAM, Frequency range: 0.009 - 3500 MHz.

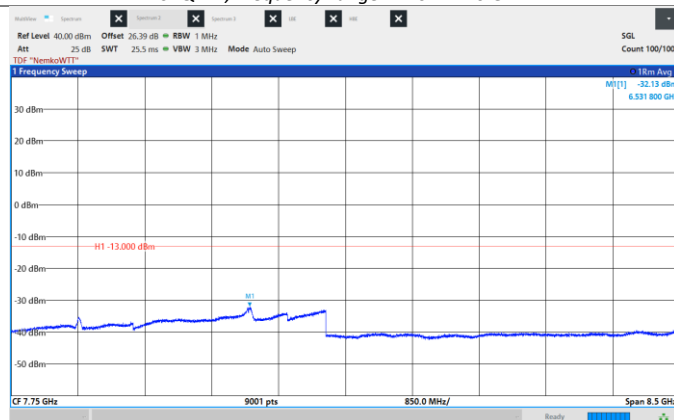


Figure 8.6-468: Conducted Spurious Emissions, High CH 2177.5 MHz, 45 MHz, 64QAM, Frequency range: 3.5 - 12.0 GHz.

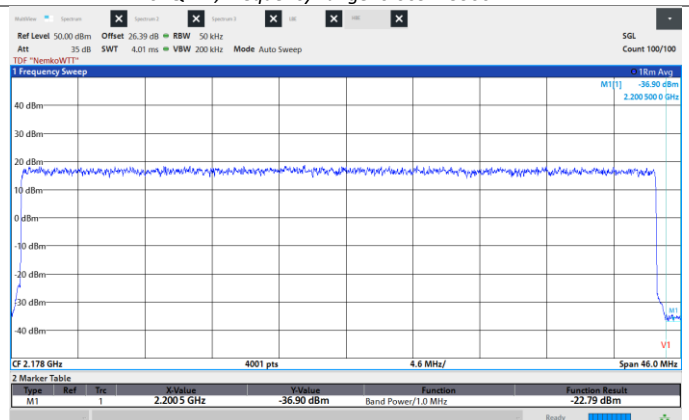


Figure 8.6-469: Conducted Spurious Emissions, High CH 2177.5 MHz, 45 MHz, 64QAM, High band edge.

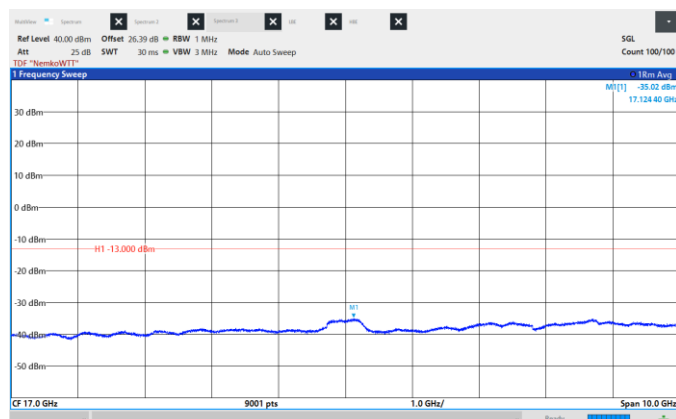


Figure 8.6-470: Conducted Spurious Emissions, High CH 2177.5 MHz, 45 MHz, 64QAM, Frequency range: 12.0-22.0 GHz

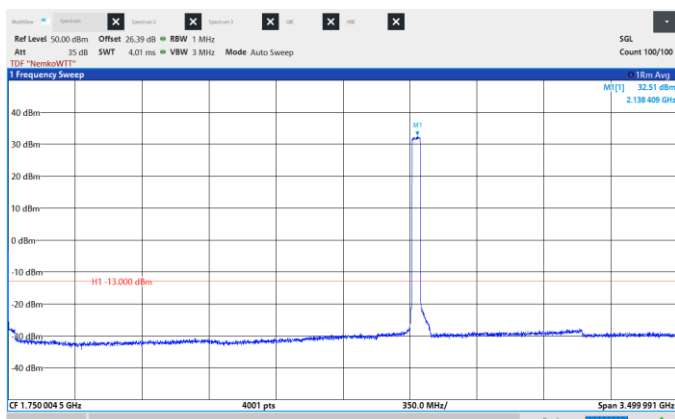


Figure 8.6-471: Conducted Spurious Emissions, Low CH 2132.5 MHz, 45 MHz, 256QAM, Frequency range: 0.009-3500 MHz.

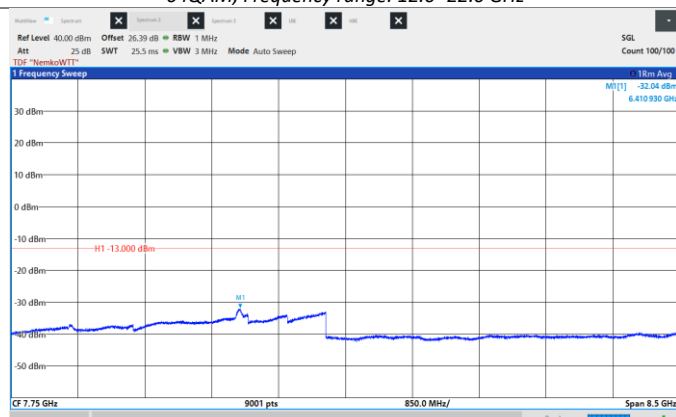


Figure 8.6-472: Conducted Spurious Emissions, Low CH 2132.5 MHz, 45 MHz, 256QAM, Frequency range: 3.5-12.0 GHz.

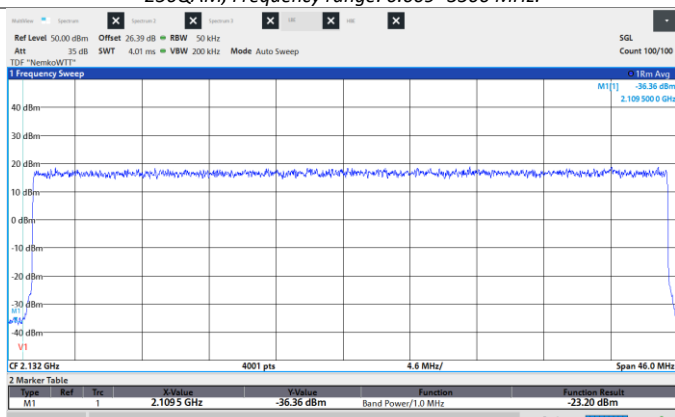


Figure 8.6-473: Conducted Spurious Emissions, Low CH 2132.5 MHz, 45 MHz, 256QAM, Low band edge.

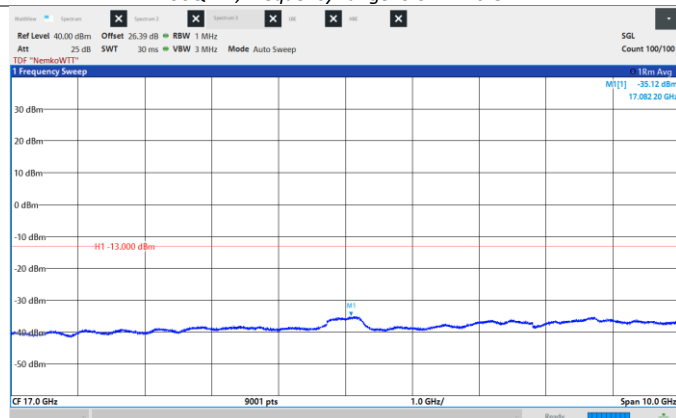


Figure 8.6-474: Conducted Spurious Emissions, Low CH 2132.5 MHz, 45 MHz, 256QAM, Frequency range: 12.0-22.0 GHz.

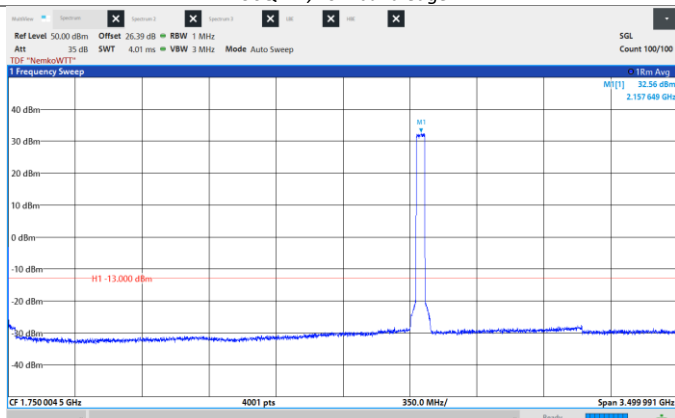


Figure 8.6-475: Conducted Spurious Emissions, Mid CH 2155 MHz, 45 MHz, 256QAM, Frequency range: 0.009-3500 MHz.

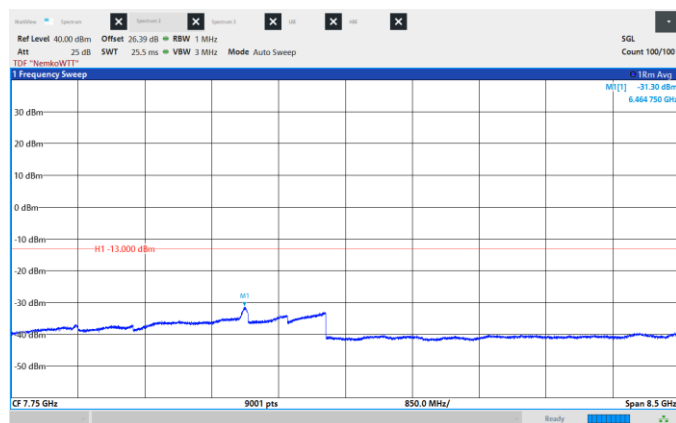


Figure 8.6-476: Conducted Spurious Emissions, Mid CH 2155 MHz, 45 MHz, 256QAM, Frequency range: 3.5 – 12.0 GHz.

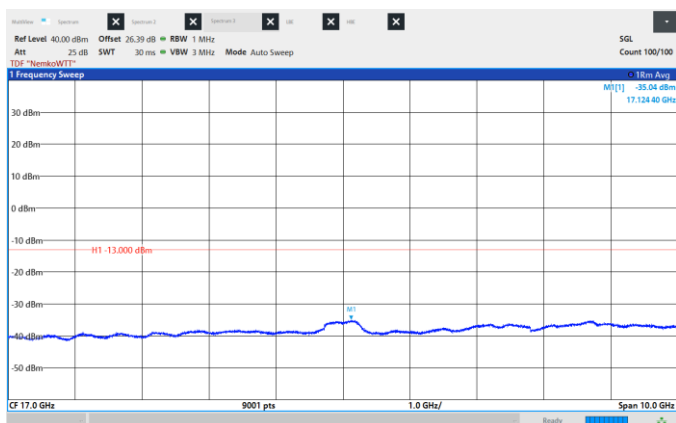


Figure 8.6-477: Conducted Spurious Emissions, Mid CH 2155 MHz, 45 MHz, 256QAM, Frequency range: 12.0 -22.0 GHz.

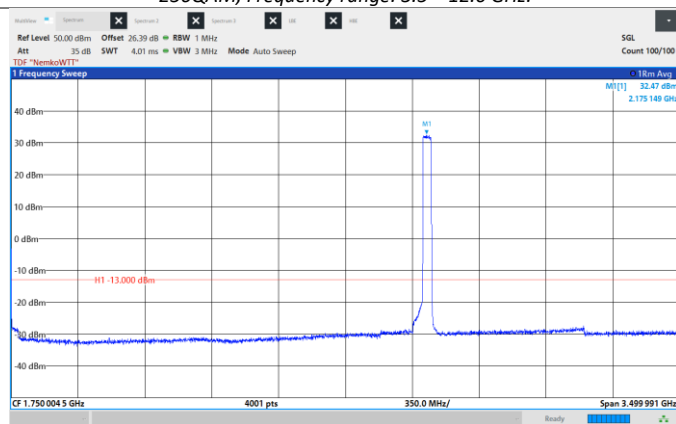


Figure 8.6-478: Conducted Spurious Emissions, High CH 2177.5 MHz, 45 MHz, 256QAM, Frequency range: 0.009 -3500 MHz.

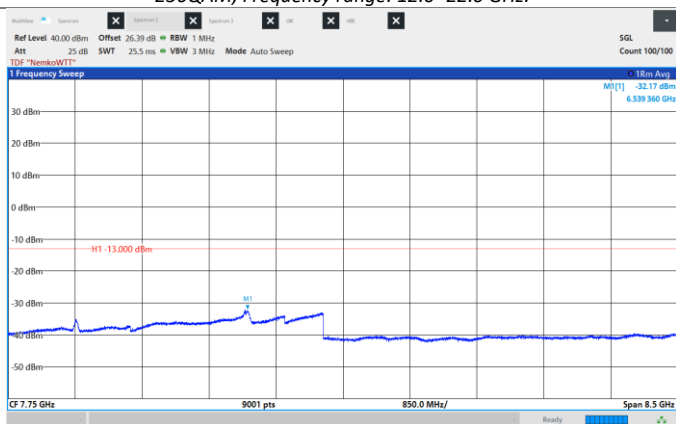


Figure 8.6-479: Conducted Spurious Emissions, High CH 2177.5 MHz, 45 MHz, 256QAM, Frequency range: 3.5 – 12.0 GHz

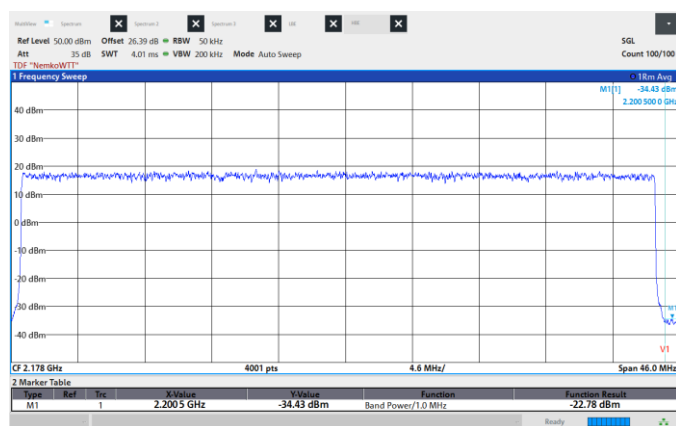


Figure 8.6-480: Conducted Spurious Emissions, High CH 2177.5 MHz, 45 MHz, 256QAM, High band edge.

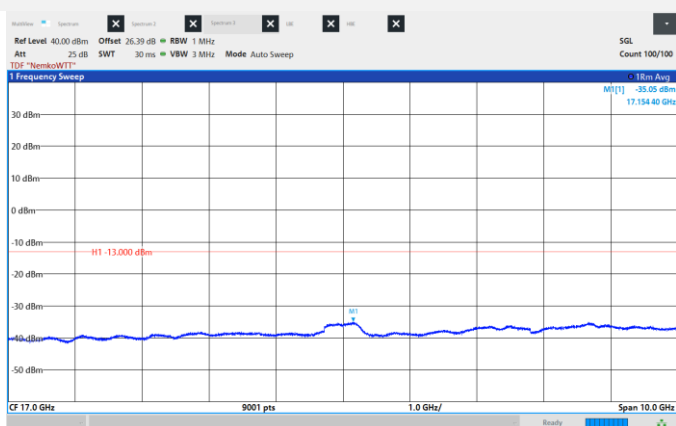


Figure 8.6-481: Conducted Spurious Emissions, High CH 2177.5 MHz, 45 MHz, 256QAM, Frequency range: 12.0 – 22.0 GHz.

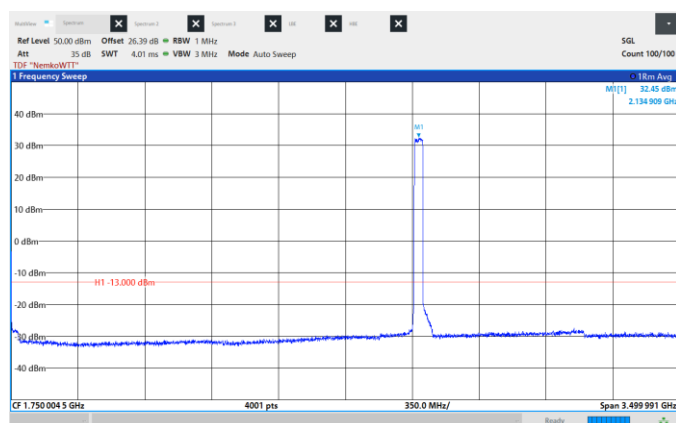


Figure 8.6-482: Conducted Spurious Emissions, Low CH 2132.5 MHz, 45 MHz, 1024QAM, Frequency range: 0.009 -3500 MHz.

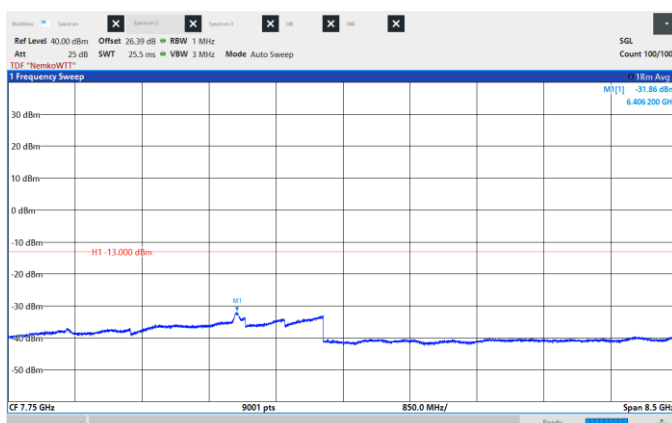


Figure 8.6-483: Conducted Spurious Emissions, Low CH 2132.5 MHz, 45 MHz, 1024QAM, Frequency range: 3.5 -12.0 GHz.

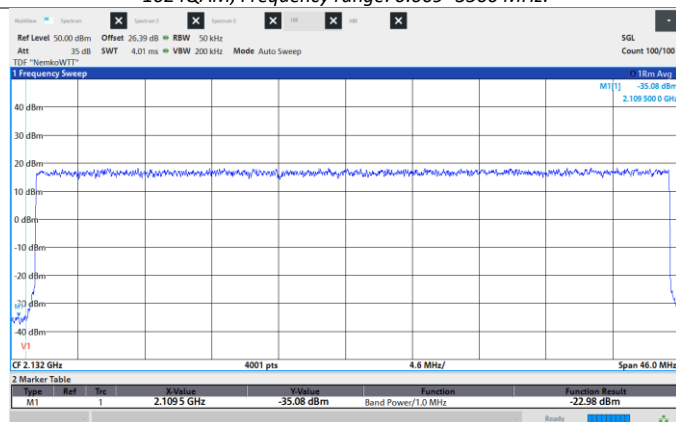


Figure 8.6-484: Conducted Spurious Emissions, Low CH 2132.5 MHz, 45 MHz, 1024QAM, Low band edge.

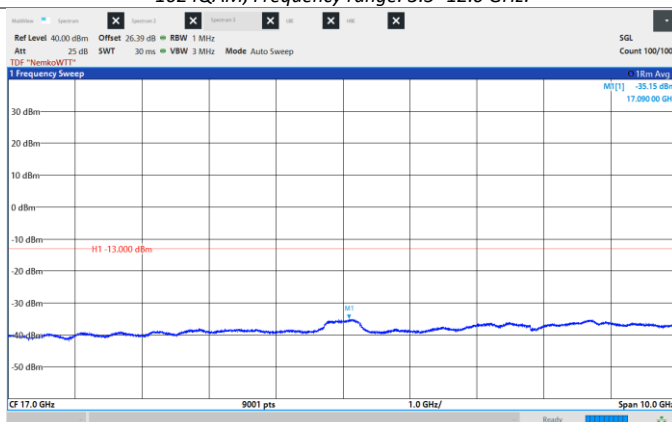


Figure 8.6-485: Conducted Spurious Emissions, Low CH 2132.5 MHz, 45 MHz, 1024QAM, Frequency range: 12.0 - 22.0 GHz.

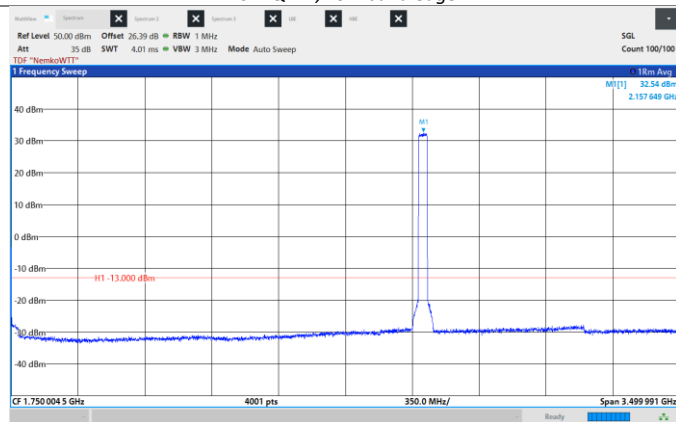


Figure 8.6-486: Conducted Spurious Emissions, Mid CH 2155 MHz, 45 MHz, 1024QAM, Frequency range: 0.009 - 3500 MHz.

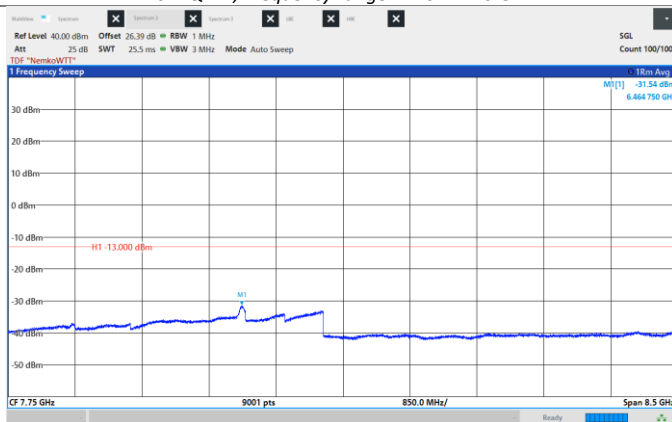


Figure 8.6-487: Conducted Spurious Emissions, Mid CH 2155 MHz, 45 MHz, 1024QAM, Frequency range: 3.5 - 12.0 GHz.

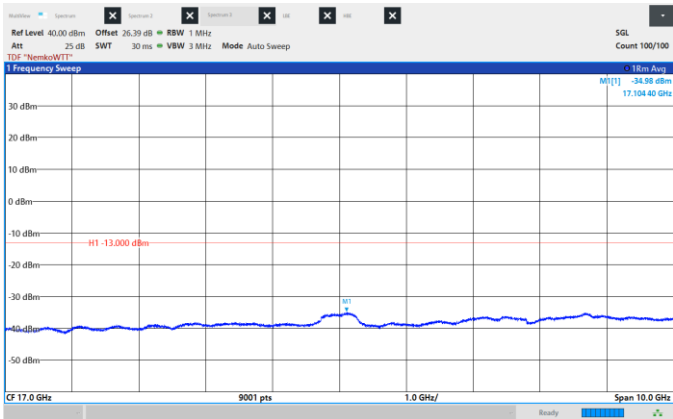


Figure 8.6-488: Conducted Spurious Emissions, Mid CH 2155 MHz, 45 MHz, 1024QAM, Frequency range: 12.0 -22.0 GHz.

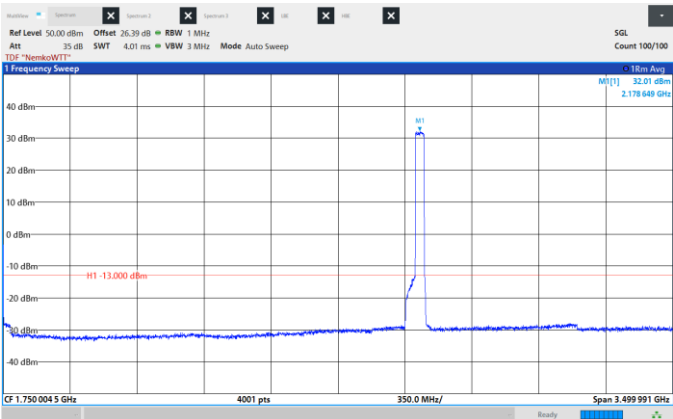


Figure 8.6-489: Conducted Spurious Emissions, High CH 2175 MHz, 45 MHz, 1024QAM, Frequency range: 0.009 -3500 MHz.

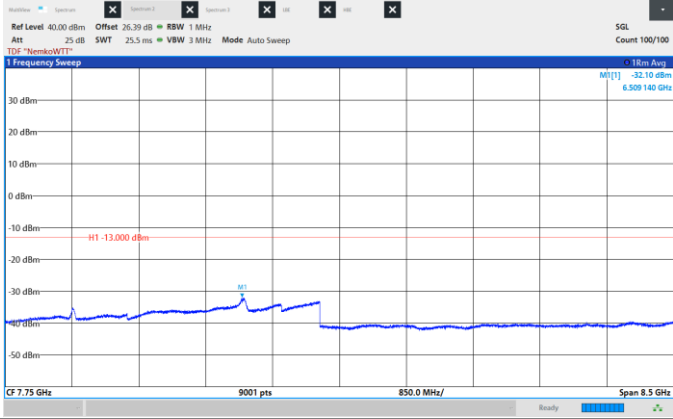


Figure 8.6-490: Conducted Spurious Emissions, High CH 2177.5 MHz, 45 MHz, 1024QAM, Frequency range: 3.5 -12.0 GHz.

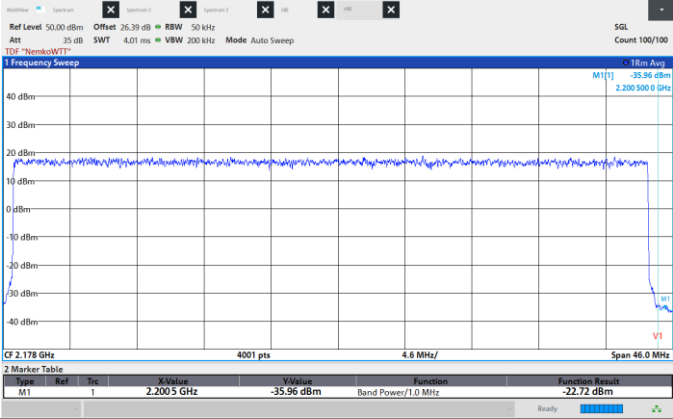


Figure 8.6-491: Conducted Spurious Emissions, High CH 2177.5 MHz, 45 MHz, 1024QAM, High band edge.

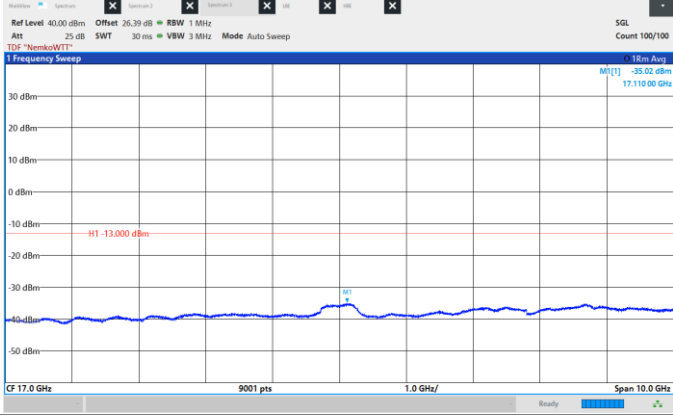


Figure 8.6-492: Conducted Spurious Emissions High CH 2177.5 MHz, 45 MHz, 1024QAM, Frequency range: 12.0 -22.0 GHz.

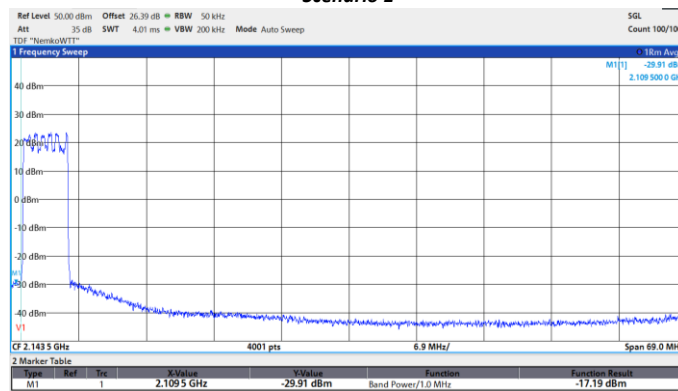
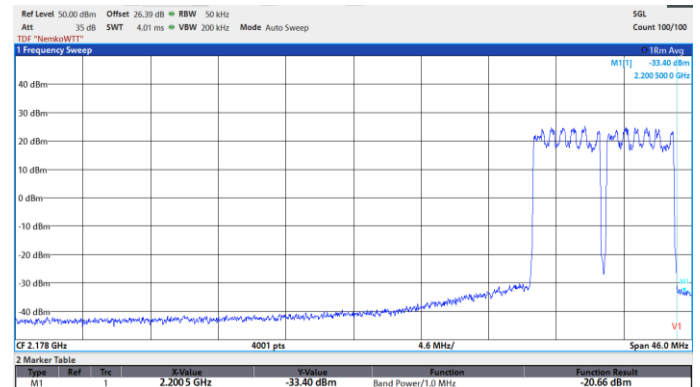
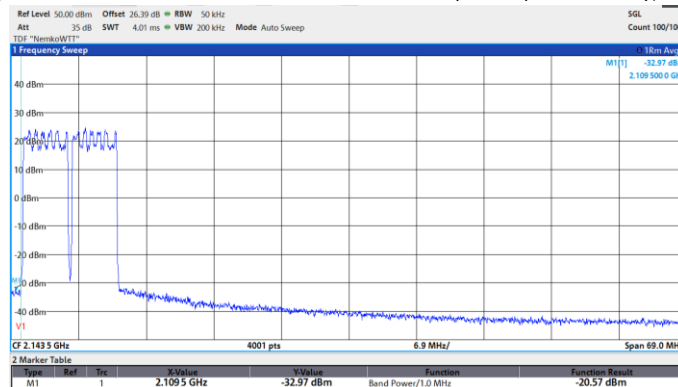
8.6.18 Test data (conducted spurious emissions – 5G NR multi-carrier operation)

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

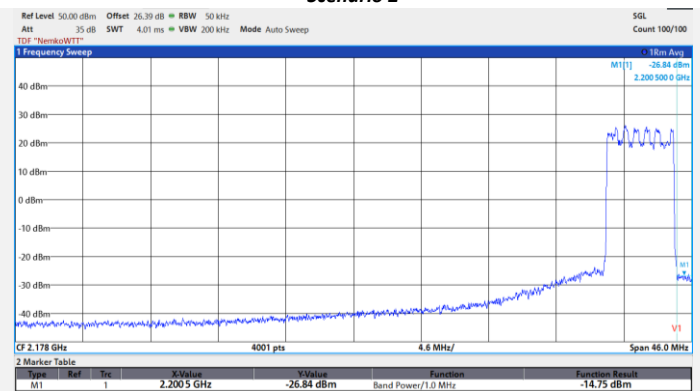
Table 8.6-2: 5G NR multi-carrier operating modes

Scenario	# Carrier	Bandwidth (MHz)	F1 (DL MHz)	F2 (DL MHz)	F3 (DL MHz)	Comments
1	2	5/5	2112.5	2117.5	N/A	64QAM modulation, 2 contiguous carriers at lowest channels
2	2	5/5	2192.5	2197.5	N/A	64QAM modulation, 2 contiguous carriers at highest channels
3	2	5/5	2112.5	2197.5	N/A	64QAM modulation, 2 non-contiguous carriers; one at lowest channel, one at highest channel
4	3	5/5/5	2112.5	2117.5	2122.5	64QAM modulation, 3 contiguous carriers at lowest channels
5	3	5/5/5	2112.5	2155.0	2197.5	64QAM modulation, 3 non-contiguous channels; one at lowest channel, one at middle channel, one at highest channel

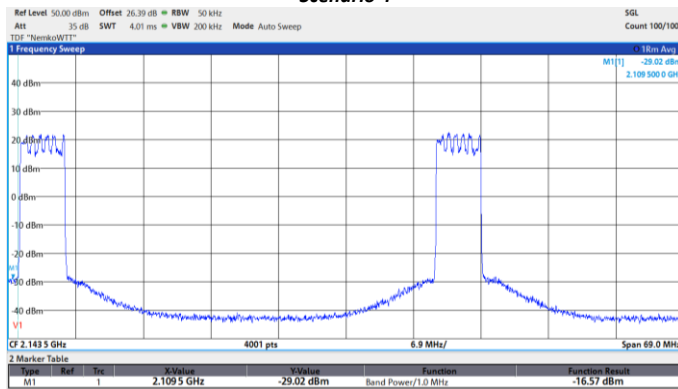
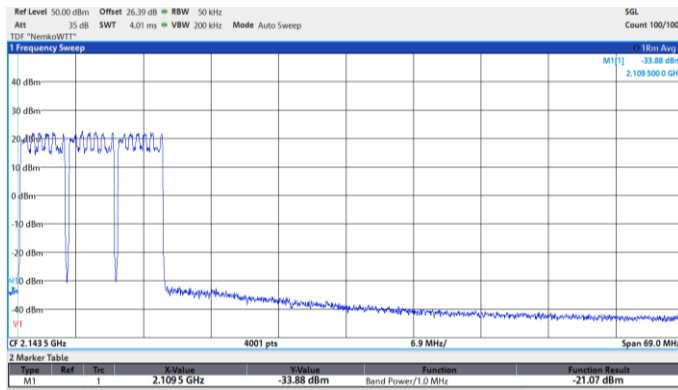
(5 MHz channel bandwidth selected to maximize the power spectral density)



Scenario 3: Low band edge



Scenario 3: High band edge



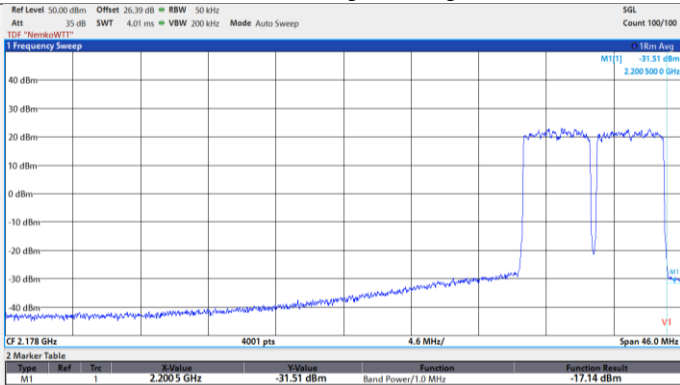
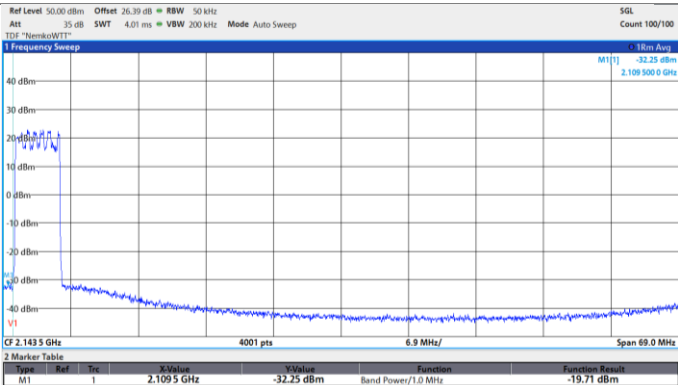
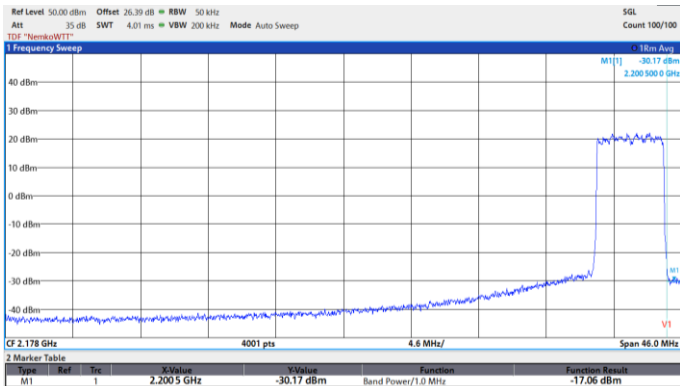
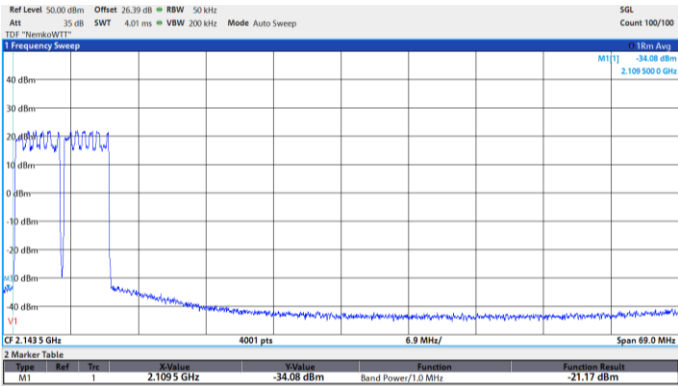
8.6.19 Test data (conducted spurious emissions – 5G NR + LTE multi-RAT operation)

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

Table 8.6-3: LTE multi-carrier operating modes

Scenario	# Carrier	Bandwidth (MHz)	F1 (DL MHz)	F2 (DL MHz)	F3 (DL MHz)	Comments
1	3	5/5/5	2112.5 (5G NR)	2117.5 (5G NR)	2197.5 (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	2112.5 (5G NR)	2192.5 (LTE)	2197.5 (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)



8.6.20 Test data (radiated spurious emissions)

Full Spectrum

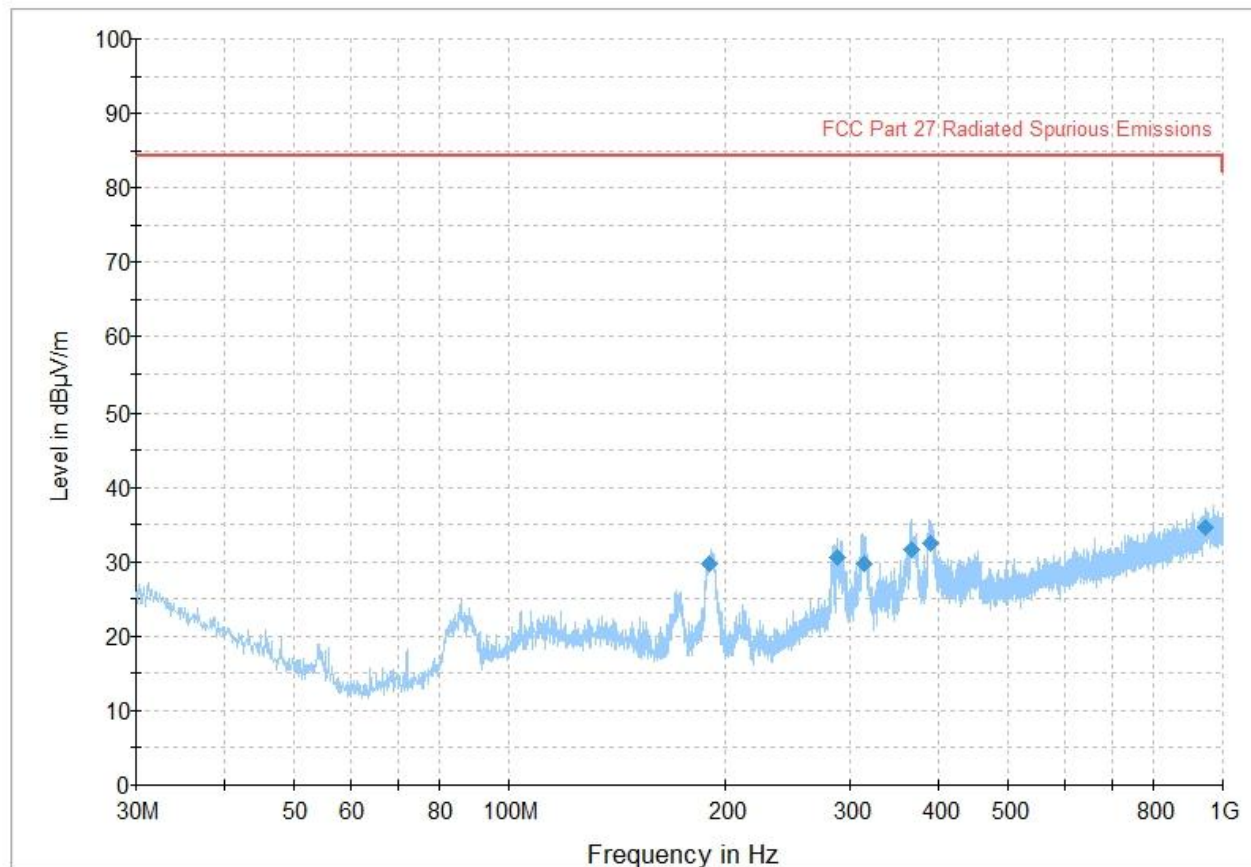


Figure 8.6-493: Radiated emissions spectral plot (30 MHz - 1 GHz) – 2112.5 MHz, 16QAM, 5 MHz BW - Horizontal

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)
190.545000	29.62	84.38	54.76	5000.0	120.000	101.0	H	72.0	17.9
287.266000	30.57	84.38	53.81	5000.0	120.000	101.0	H	239.0	21.8
313.955000	29.68	84.38	54.70	5000.0	120.000	111.0	H	106.0	22.4
366.094000	31.74	84.38	52.64	5000.0	120.000	101.0	H	212.0	24.1
389.050000	32.53	84.38	51.85	5000.0	120.000	101.0	H	219.0	24.9
947.131000	34.65	84.38	49.73	5000.0	120.000	173.0	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.

Full Spectrum

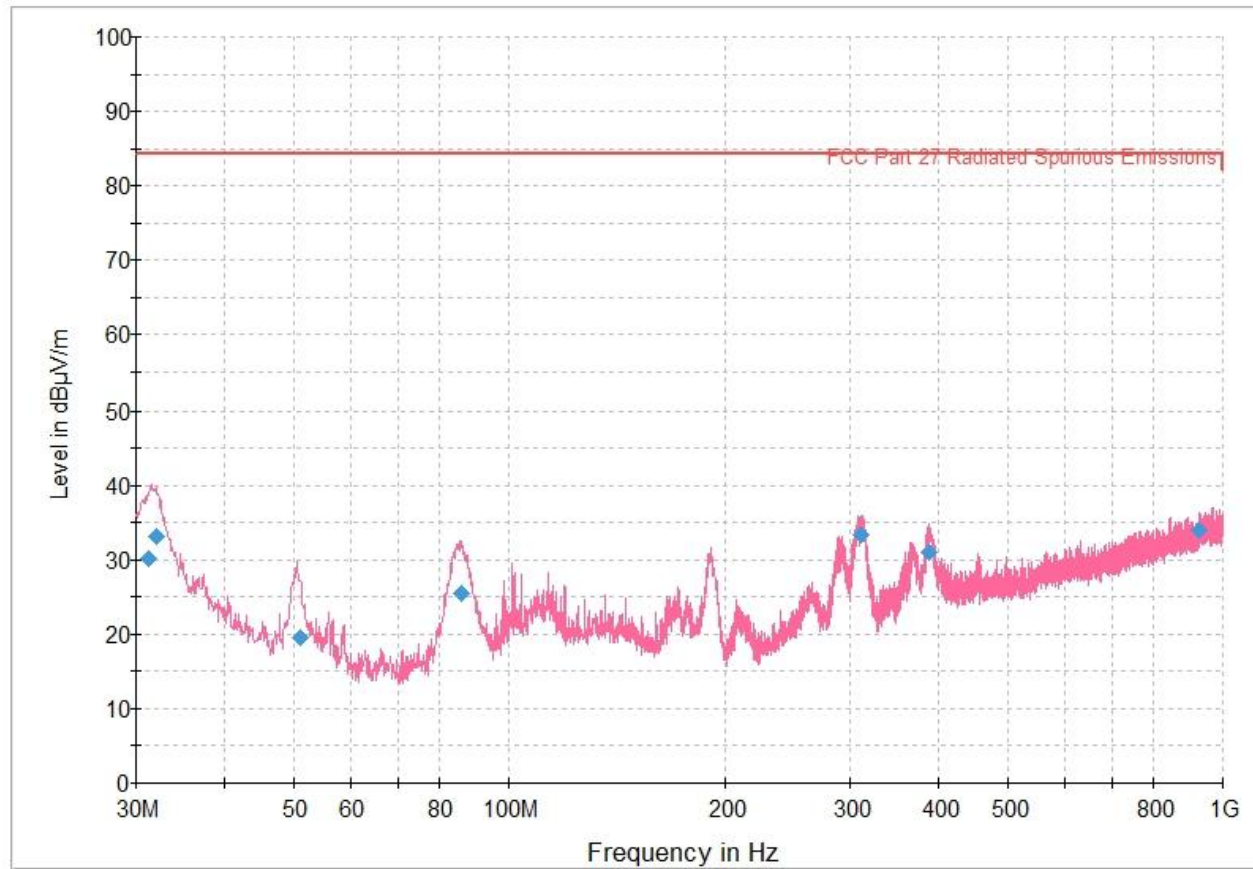


Figure 8.6-494: Radiated emissions spectral plot (30 MHz - 1 GHz) – 2112.5 MHz, 16QAM, 5 MHz BW - Vertical

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)
31.289000	30.13	84.38	54.25	5000.0	120.000	101.0	V	102.0	25.9
32.077000	33.21	84.38	51.17	5000.0	120.000	150.0	V	317.0	25.4
51.050000	19.55	84.38	64.83	5000.0	120.000	120.0	V	319.0	15.5
86.027000	25.43	84.38	58.95	5000.0	120.000	119.0	V	349.0	15.8
310.735000	33.34	84.38	51.04	5000.0	120.000	140.0	V	10.0	22.3
387.595000	30.97	84.38	53.41	5000.0	120.000	101.0	V	0.0	24.8
928.107000	34.00	84.38	50.38	5000.0	120.000	296.0	V	77.0	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.

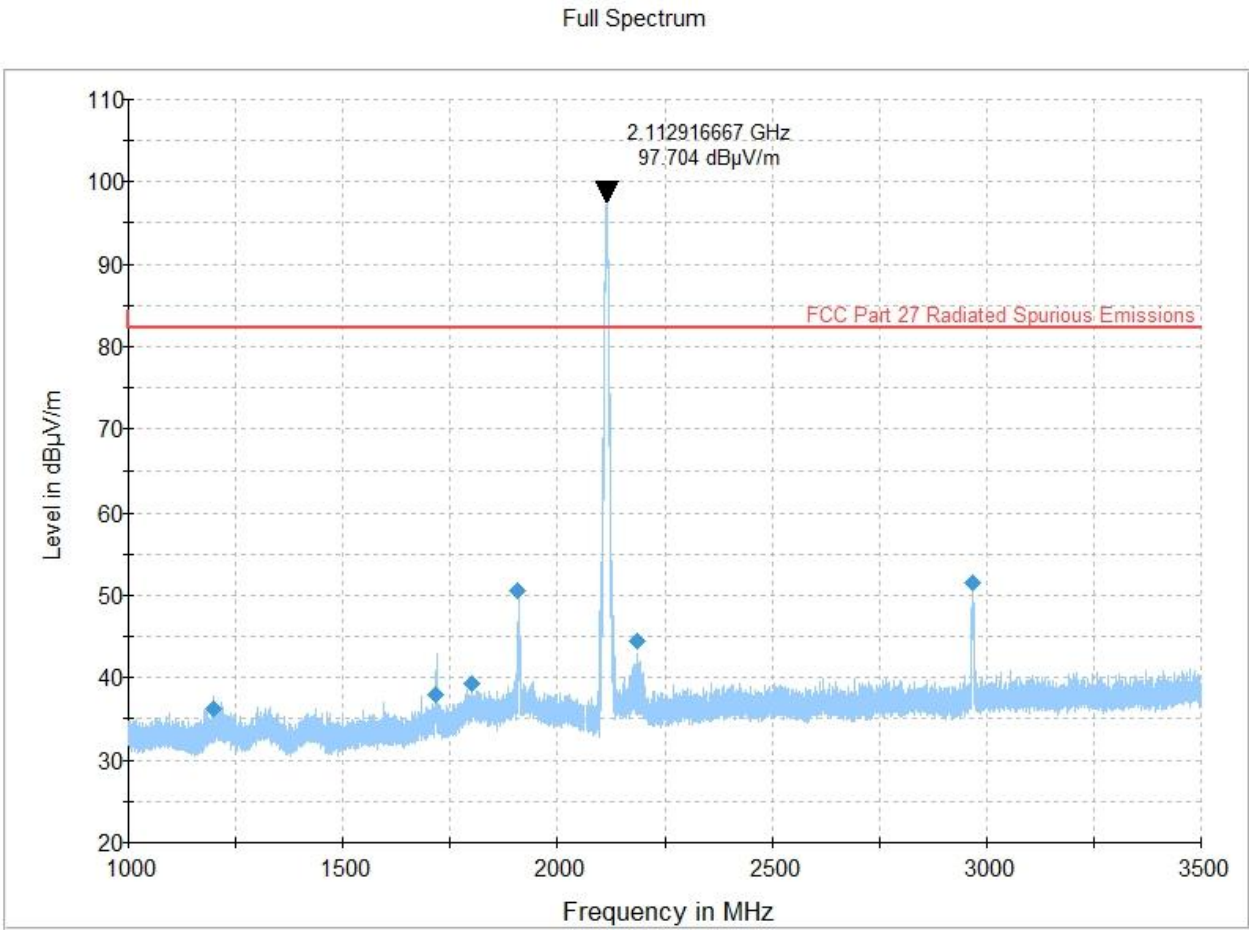


Figure 8.6-495: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 2112.5 MHz, 16QAM, 5 MHz BW - Vertical

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)
1200.233333	36.19	82.23	46.04	100.0	1000.000	174.0	V	122.0	-10.8
1718.700000	37.88	82.23	44.35	100.0	1000.000	214.0	V	0.0	-8.3
1799.916667	39.32	82.23	42.91	100.0	1000.000	343.0	V	92.0	-6.7
1907.966667	50.64	82.23	31.59	100.0	1000.000	130.0	V	24.0	-5.4
2182.333333	44.43	82.23	37.80	100.0	1000.000	101.0	V	23.0	-5.2
2967.500000	51.54	82.23	30.69	100.0	1000.000	130.0	V	11.0	-2.2

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

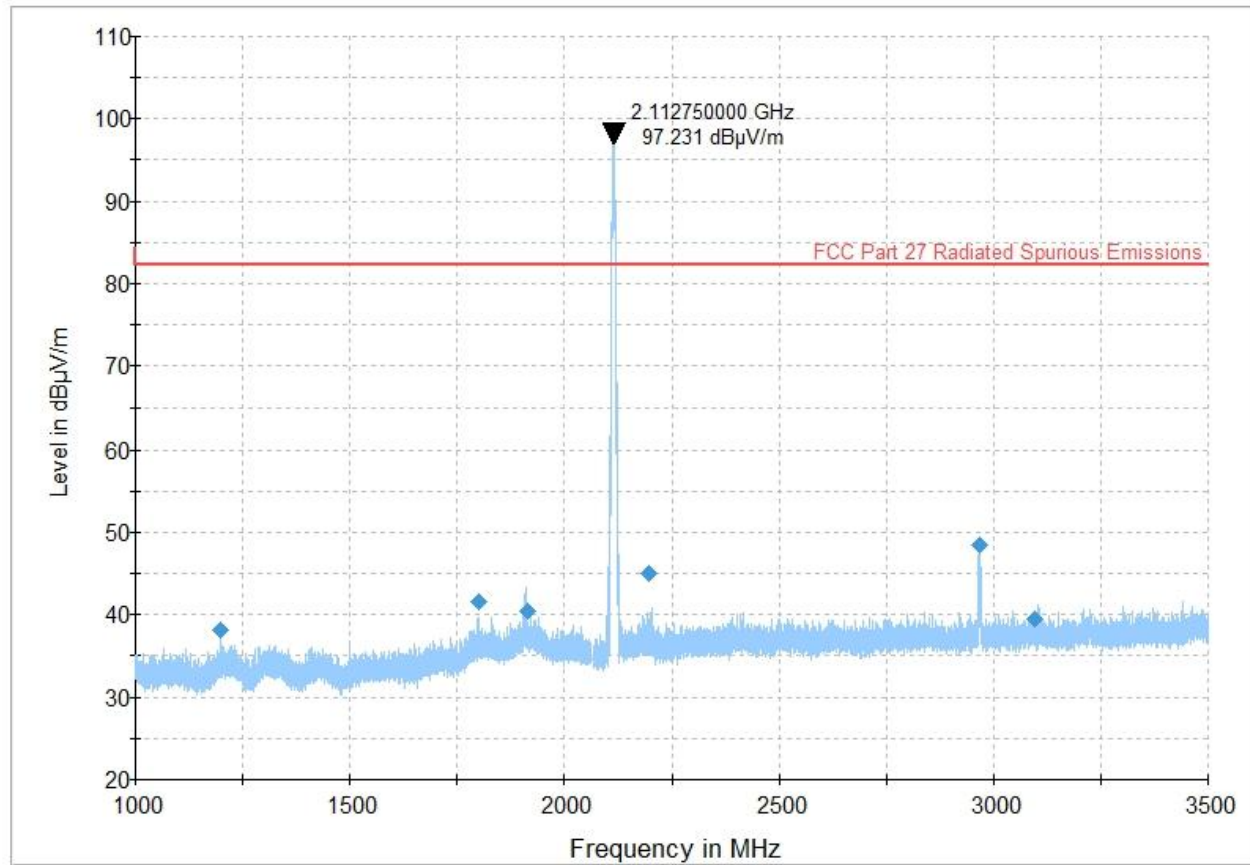


Figure 8.6-496: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 2112.5 MHz, 16QAM, 5 MHz BW - Horizontal

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	38.08	82.23	44.15	100.0	1000.000	152.0	H	0.0	-10.8
1800.066667	41.61	82.23	40.62	100.0	1000.000	101.0	H	0.0	-6.7
1917.150000	40.39	82.23	41.84	100.0	1000.000	183.0	H	109.0	-5.4
2194.550000	45.04	82.23	37.19	100.0	1000.000	131.0	H	40.0	-5.1
2967.350000	48.45	82.23	33.78	100.0	1000.000	162.0	H	23.0	-2.2
3097.333333	39.48	82.23	42.75	100.0	1000.000	182.0	H	172.0	-1.8

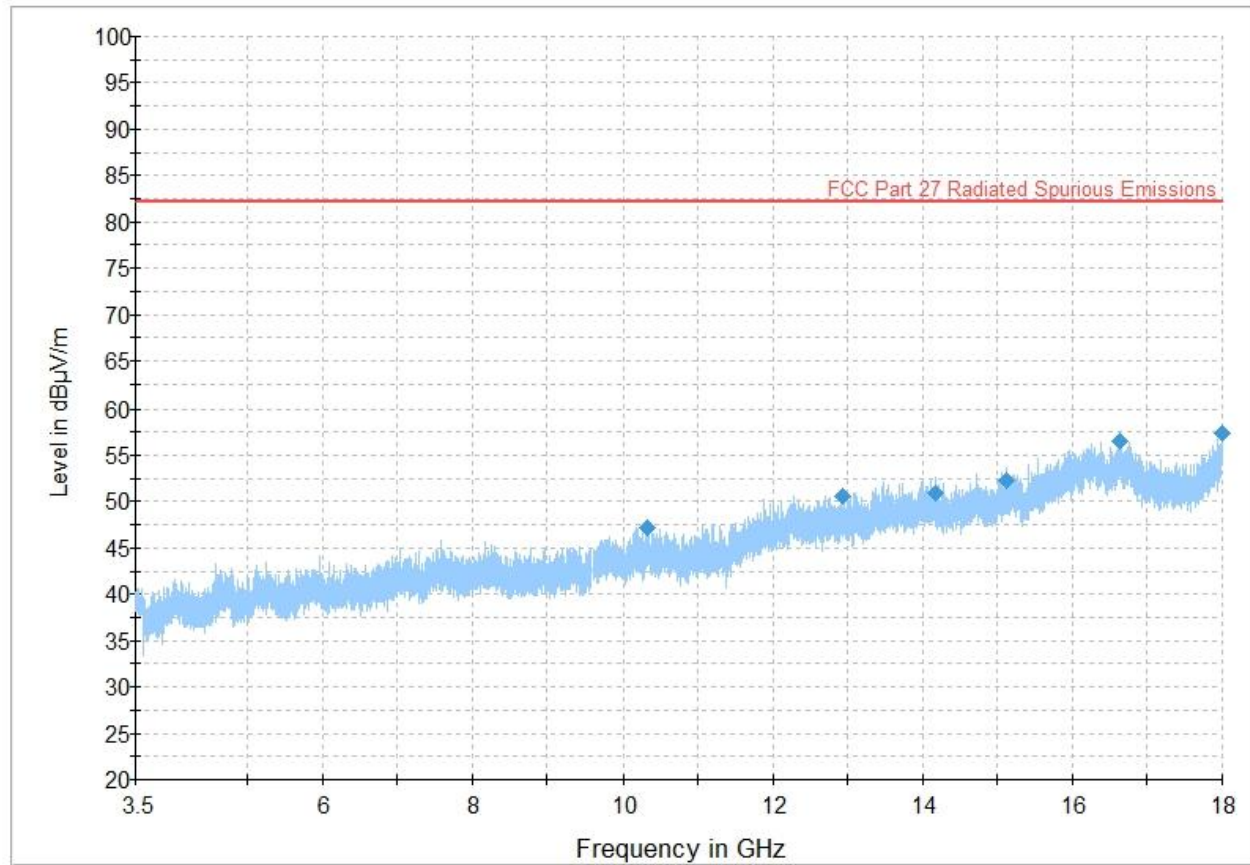
Notes:

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 8.6-497:** Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 2112.5 MHz, 16QAM, 5 MHz 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)
10308.750000	47.13	82.23	35.10	100.0	1000.000	388.0	V	157.0	11.5
12920.300000	50.62	82.23	31.61	100.0	1000.000	287.0	V	258.0	16.0
14178.083333	50.84	82.23	31.39	100.0	1000.000	283.0	V	91.0	17.2
15117.233333	52.31	82.23	29.92	100.0	1000.000	130.0	V	28.0	19.2
16641.383333	56.56	82.23	25.67	100.0	1000.000	399.0	V	270.0	23.6
17998.200000	57.30	82.23	24.93	100.0	1000.000	343.0	V	321.0	24.9

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

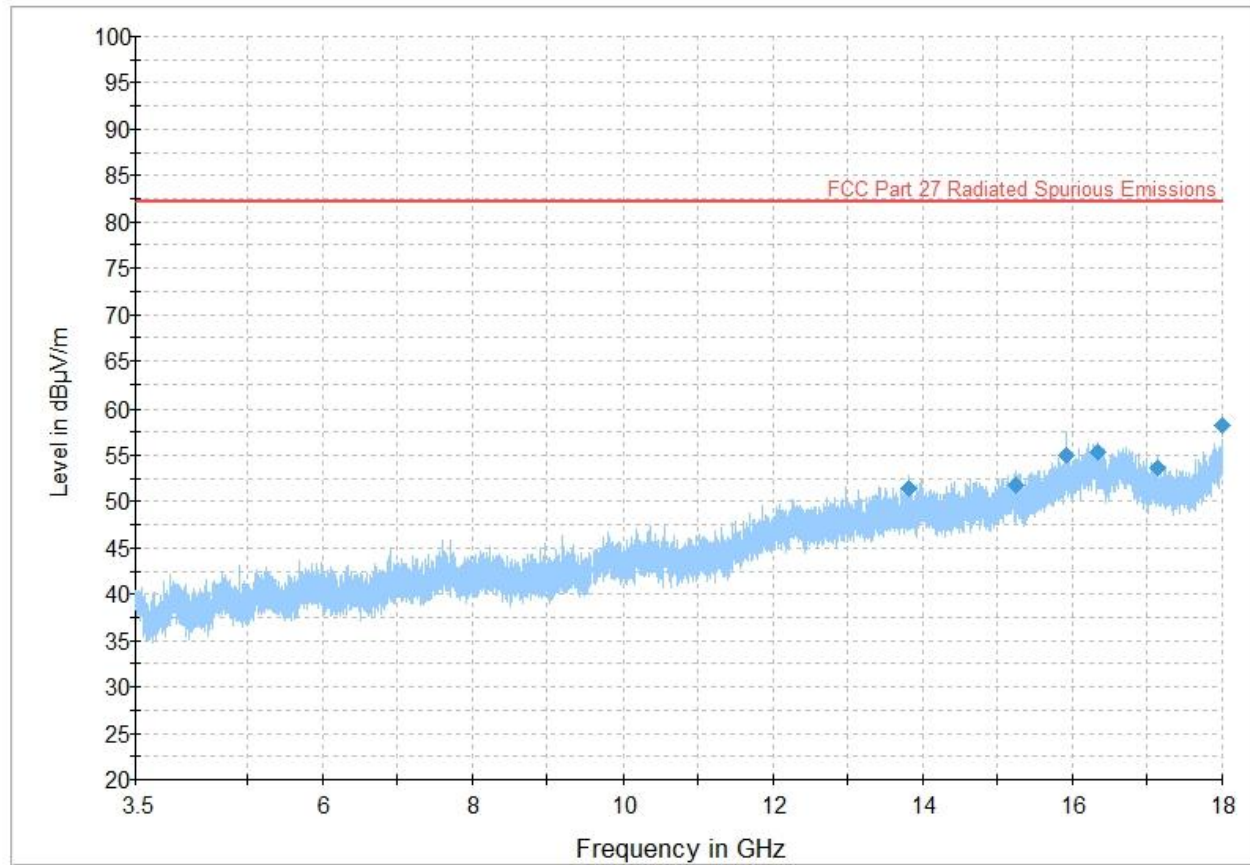


Figure 8.6-498: Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 2112.5 MHz, 16QAM, 5 MHz BW - Horizontal

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)
13803.016667	51.42	82.23	30.81	100.0	1000.000	399.0	H	0.0	18.1
15249.366667	51.82	82.23	30.41	100.0	1000.000	397.0	H	255.0	19.3
15910.400000	55.06	82.23	27.17	100.0	1000.000	101.0	H	332.0	22.6
16335.966667	55.36	82.23	26.87	100.0	1000.000	395.0	H	138.0	22.9
17130.583333	53.64	82.23	28.59	100.0	1000.000	215.0	H	332.0	20.4
17992.733333	58.20	82.23	24.03	100.0	1000.000	140.0	H	90.0	24.8

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

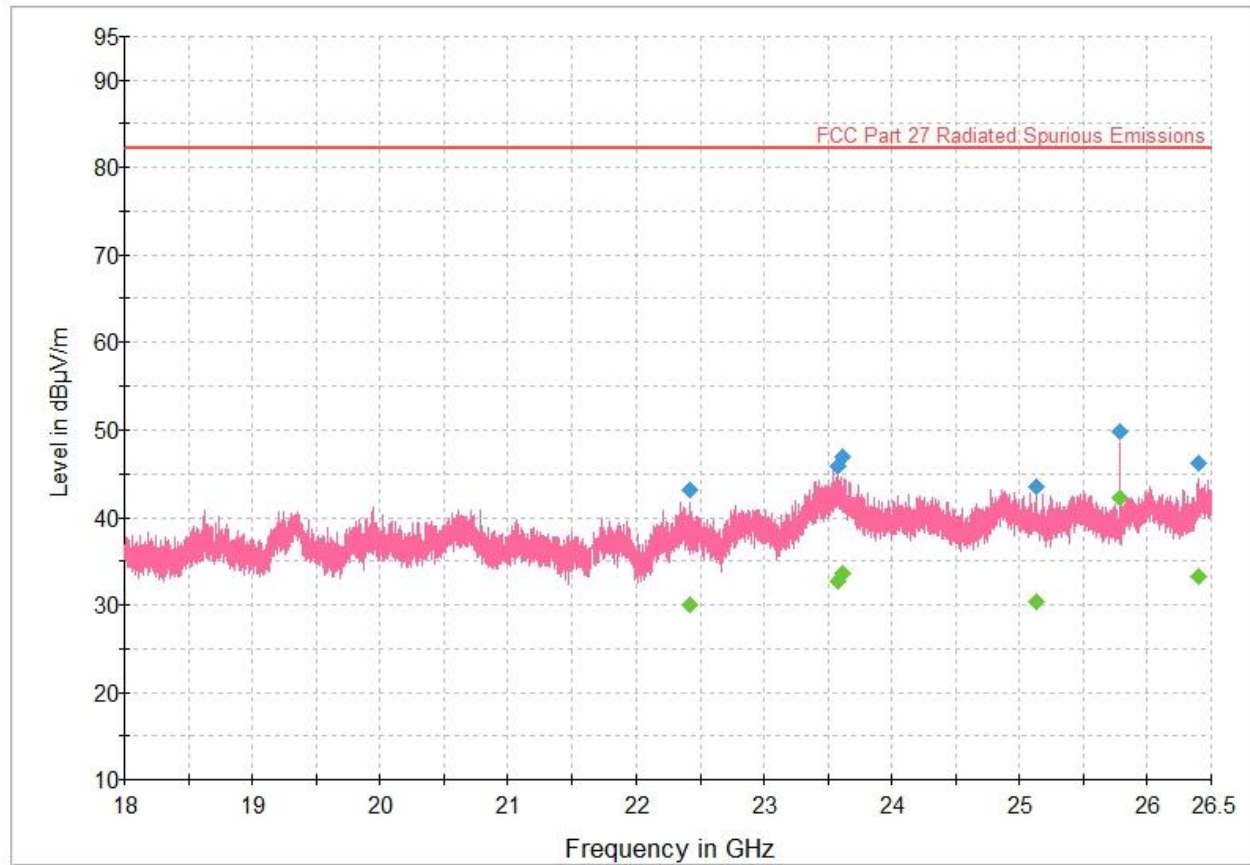


Figure 8.6-499: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 2112.5 MHz, 16QAM, 5 MHz BW - Vertical

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)
22417.525000	43.26	---	82.23	38.97	5000.0	1000.000	101.0	V	92.0	17.3
22417.525000	---	30.01	---	---	5000.0	1000.000	101.0	V	92.0	17.3
23578.881250	45.86	---	82.23	36.37	5000.0	1000.000	399.0	V	174.0	23.2
23578.881250	---	32.74	---	---	5000.0	1000.000	399.0	V	174.0	23.2
23609.925000	---	33.64	---	---	5000.0	1000.000	391.0	V	0.0	23.0
23609.925000	47.04	---	82.23	35.19	5000.0	1000.000	391.0	V	0.0	23.0
25125.387500	---	30.42	---	---	5000.0	1000.000	309.0	V	11.0	20.9
25125.387500	43.61	---	82.23	38.62	5000.0	1000.000	309.0	V	11.0	20.9
25781.218750	49.92	---	82.23	32.31	5000.0	1000.000	174.0	V	352.0	21.2
25781.218750	---	42.27	---	---	5000.0	1000.000	174.0	V	352.0	21.2
26401.118750	46.35	---	82.23	35.88	5000.0	1000.000	101.0	V	0.0	23.6
26401.118750	---	33.34	---	---	5000.0	1000.000	101.0	V	0.0	23.6

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

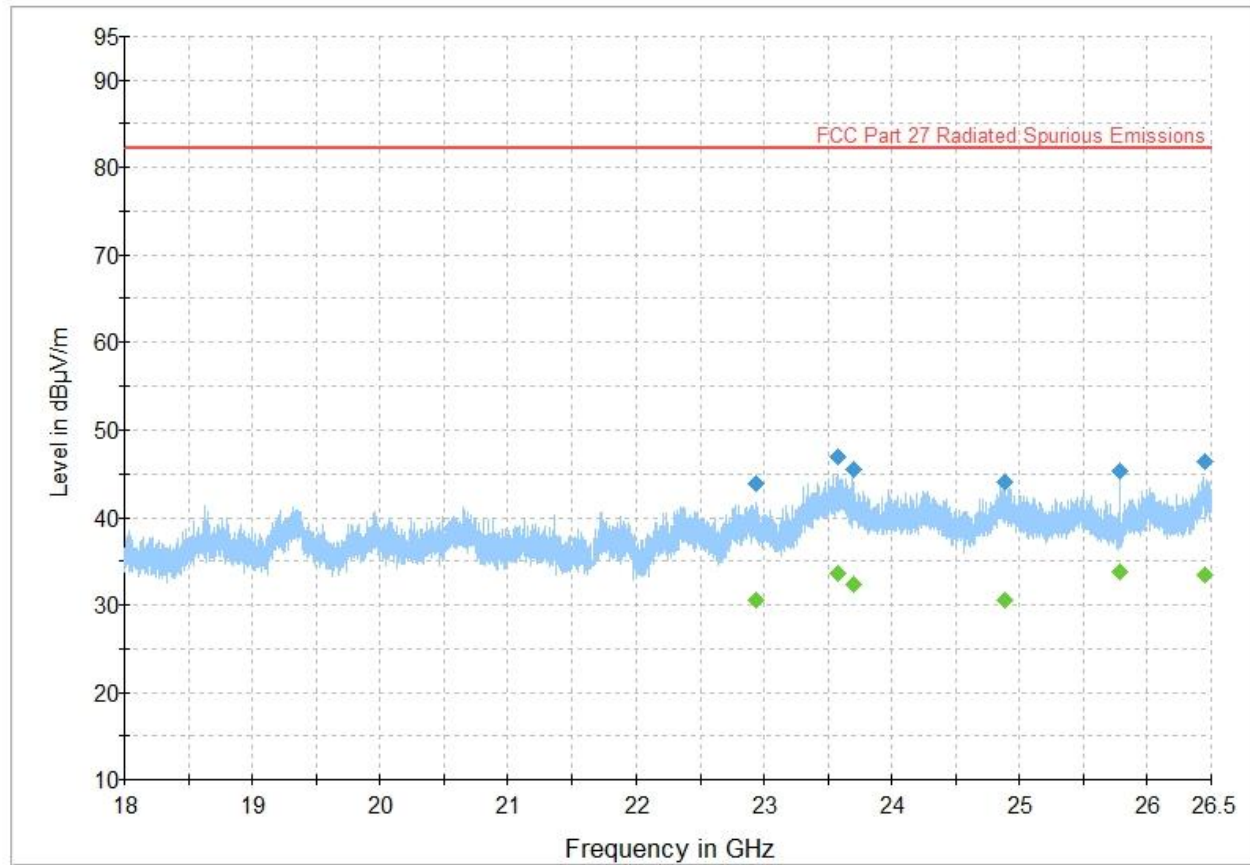


Figure 8.6-500: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 2112.5 MHz, 16QAM, 5 MHz BW - Horizontal

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)
22933.556250	---	30.54	---	---	5000.0	1000.000	319.0	H	339.0	18.9
22933.556250	43.96	---	82.23	38.27	5000.0	1000.000	319.0	H	339.0	18.9
23575.587500	---	33.69	---	---	5000.0	1000.000	162.0	H	293.0	23.2
23575.587500	47.06	---	82.23	35.17	5000.0	1000.000	162.0	H	293.0	23.2
23704.875000	45.53	---	82.23	36.70	5000.0	1000.000	101.0	H	192.0	22.3
23704.875000	---	32.41	---	---	5000.0	1000.000	101.0	H	192.0	22.3
24888.943750	44.11	---	82.23	38.12	5000.0	1000.000	393.0	H	204.0	21.1
24888.943750	---	30.59	---	---	5000.0	1000.000	393.0	H	204.0	21.1
25781.150000	---	33.87	---	---	5000.0	1000.000	130.0	H	273.0	21.2
25781.150000	45.44	---	82.23	36.79	5000.0	1000.000	130.0	H	273.0	21.2
26452.525000	---	33.49	---	---	5000.0	1000.000	399.0	H	108.0	24.2
26452.525000	46.44	---	82.23	35.79	5000.0	1000.000	399.0	H	108.0	24.2

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

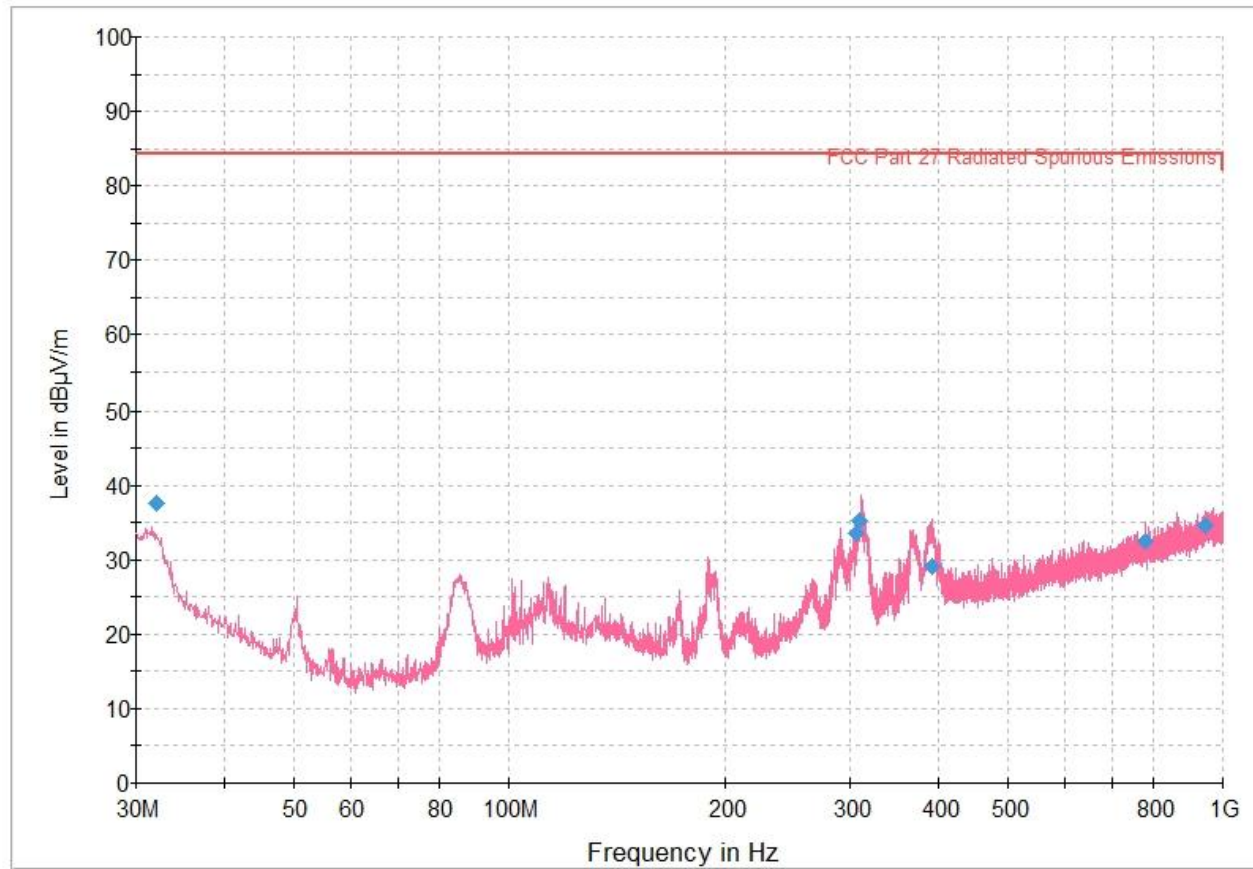


Figure 8.6-501: Radiated emissions spectral plot (30 MHz - 1 GHz) – 2155 MHz, 16QAM, 5 MHz BW - Vertical

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)
32.009000	37.60	84.38	46.78	5000.0	120.000	110.0	V	0.0	25.5
305.242000	33.65	84.38	50.73	5000.0	120.000	110.0	V	24.0	22.2
309.849000	35.19	84.38	49.19	5000.0	120.000	120.0	V	26.0	22.3
391.508000	29.18	84.38	55.20	5000.0	120.000	101.0	V	222.0	24.9
780.044000	32.52	84.38	51.86	5000.0	120.000	349.0	V	357.0	32.0
943.951000	34.61	84.38	49.77	5000.0	120.000	213.0	V	0.0	34.7

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

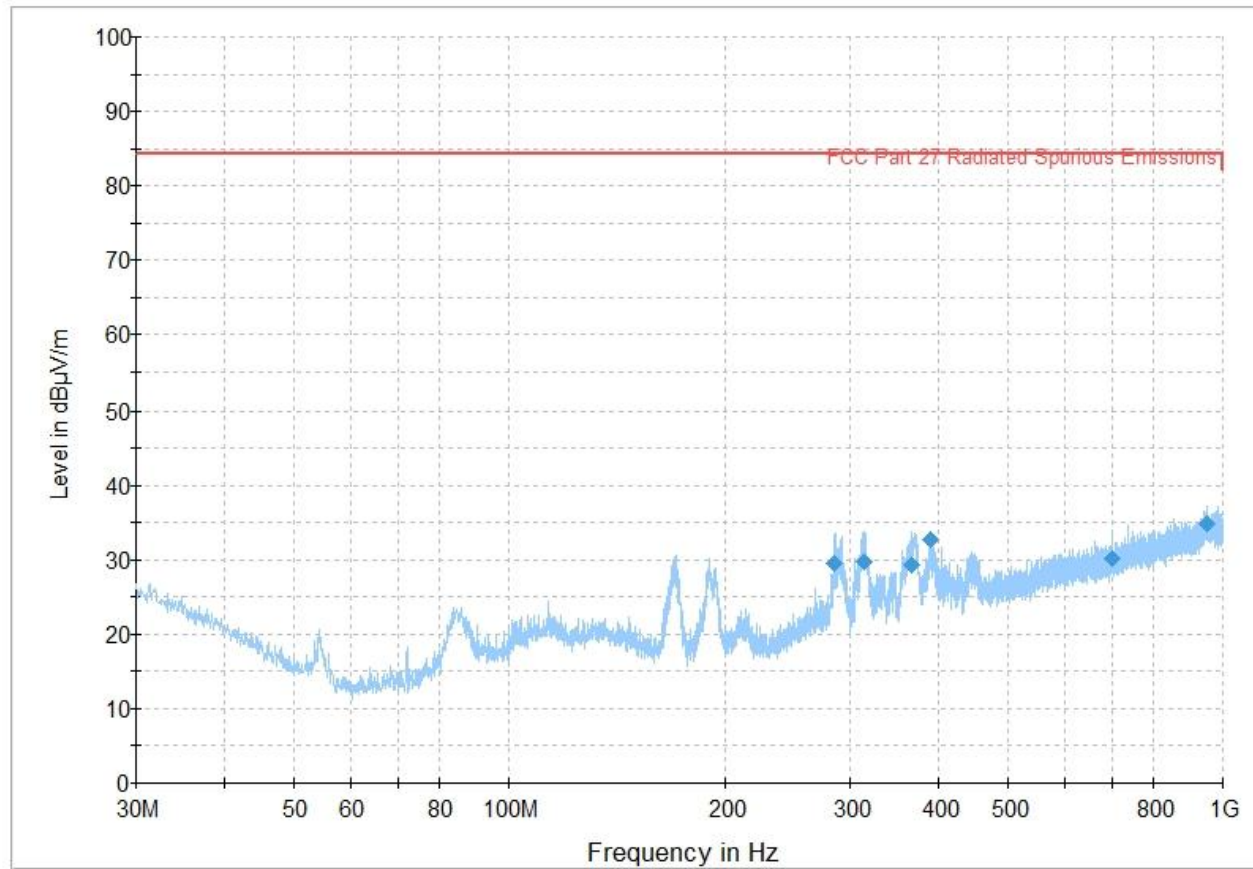


Figure 8.6-502: Radiated emissions spectral plot (30 MHz - 1 GHz) – 2155 MHz, 16QAM, 5 MHz BW - Horizontal

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)
284.812000	29.53	84.38	54.85	5000.0	120.000	101.0	H	226.0	21.7
314.114000	29.68	84.38	54.70	5000.0	120.000	101.0	H	106.0	22.4
365.767000	29.20	84.38	55.18	5000.0	120.000	101.0	H	201.0	24.1
389.943000	32.72	84.38	51.66	5000.0	120.000	224.0	H	206.0	24.9
700.213000	30.19	84.38	54.19	5000.0	120.000	267.0	H	0.0	30.5
949.491000	34.87	84.38	49.51	5000.0	120.000	182.0	H	0.0	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

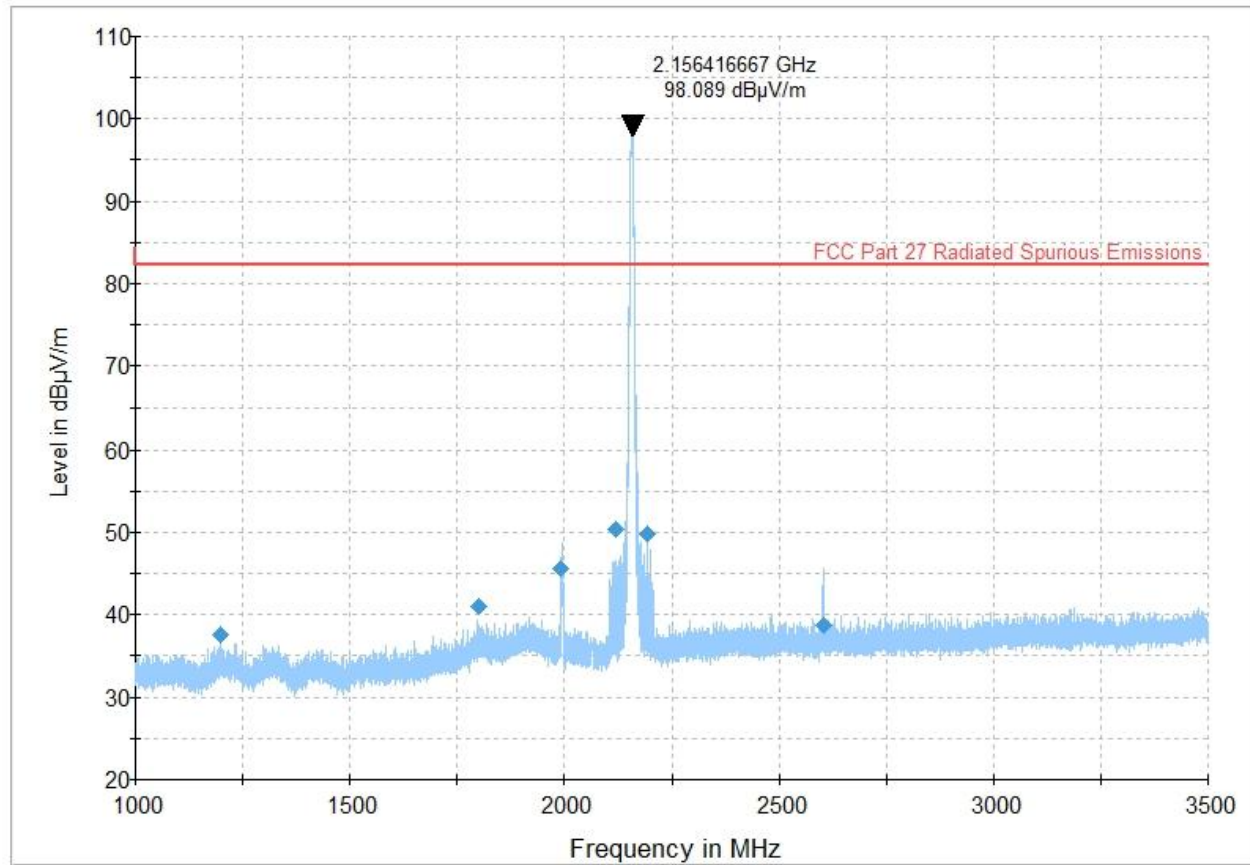


Figure 8.6-503: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 2155 MHz, 16QAM, 5 MHz BW - Vertical

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)
1199.916667	37.54	82.23	44.69	100.0	1000.000	172.0	V	0.0	-10.8
1799.983333	41.03	82.23	41.20	100.0	1000.000	101.0	V	189.0	-6.7
1993.033333	45.56	82.23	36.67	100.0	1000.000	130.0	V	175.0	-5.8
2117.350000	50.37	82.23	31.86	100.0	1000.000	101.0	V	10.0	-5.9
2189.833333	49.83	82.23	32.40	100.0	1000.000	111.0	V	23.0	-5.2
2603.166667	38.80	82.23	43.43	100.0	1000.000	163.0	V	24.0	-3.5

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.

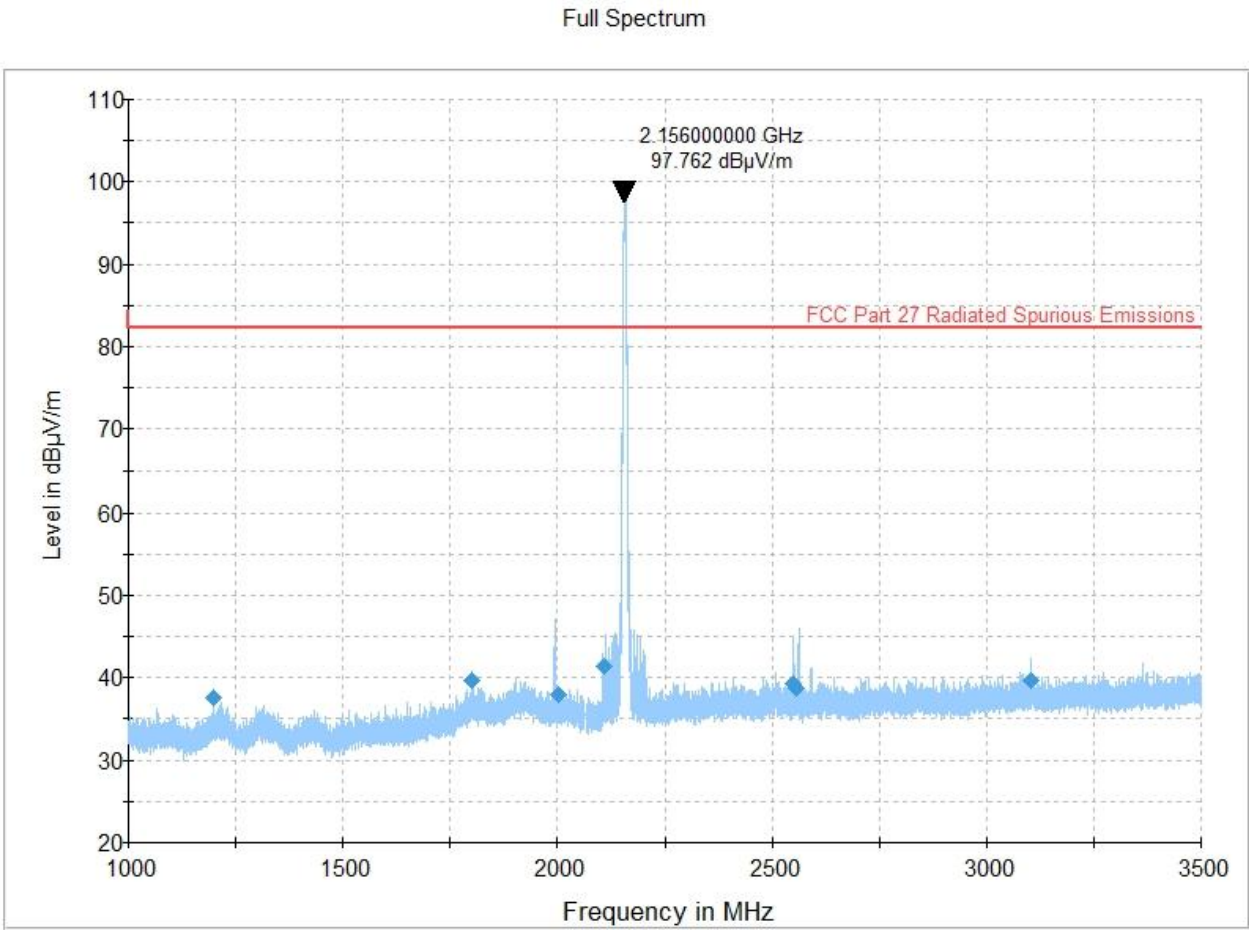


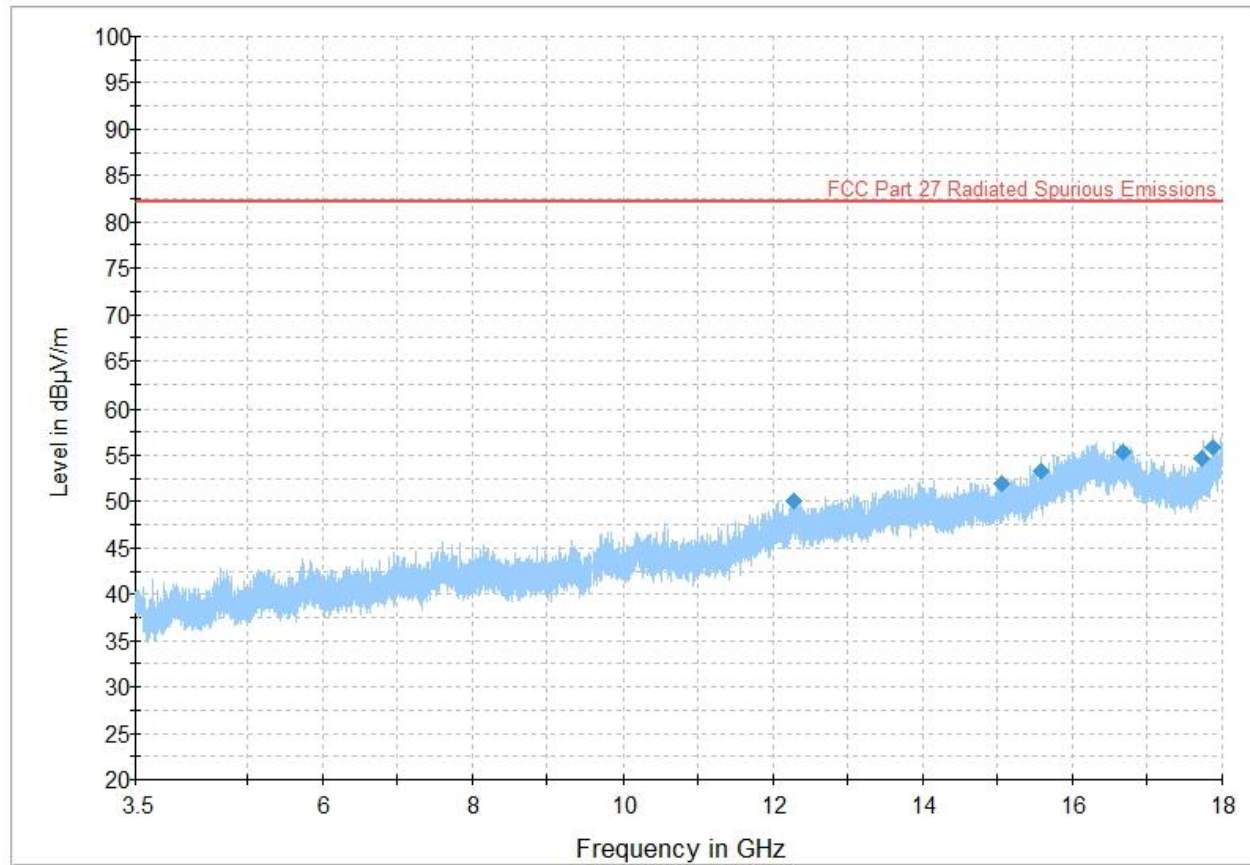
Figure 8.6-504: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 2155 MHz, 16QAM, 5 MHz BW - Horizontal

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)
1200.000000	37.63	82.23	44.60	100.0	1000.000	204.0	H	274.0	-10.8
1799.850000	39.67	82.23	42.56	100.0	1000.000	332.0	H	257.0	-6.7
2004.366667	37.98	82.23	44.25	100.0	1000.000	398.0	H	255.0	-6.0
2105.966667	41.31	82.23	40.92	100.0	1000.000	120.0	H	24.0	-5.9
2549.400000	39.30	82.23	42.93	100.0	1000.000	277.0	H	344.0	-3.6
2555.816667	38.78	82.23	43.45	100.0	1000.000	111.0	H	273.0	-3.6
3103.966667	39.73	82.23	42.50	100.0	1000.000	399.0	H	0.0	-1.8

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 8.6-505:** Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 2155 MHz, 16QAM, 5 MHz 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)
12271.433333	50.00	82.23	32.23	100.0	1000.000	270.0	V	11.0	15.8
15051.600000	51.95	82.23	30.28	100.0	1000.000	372.0	V	205.0	18.4
15581.416667	53.31	82.23	28.92	100.0	1000.000	288.0	V	143.0	20.4
16669.933333	55.35	82.23	26.88	100.0	1000.000	392.0	V	0.0	23.4
17733.316667	54.73	82.23	27.50	100.0	1000.000	322.0	V	304.0	21.7
17877.116667	55.88	82.23	26.35	100.0	1000.000	120.0	V	105.0	23.6

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

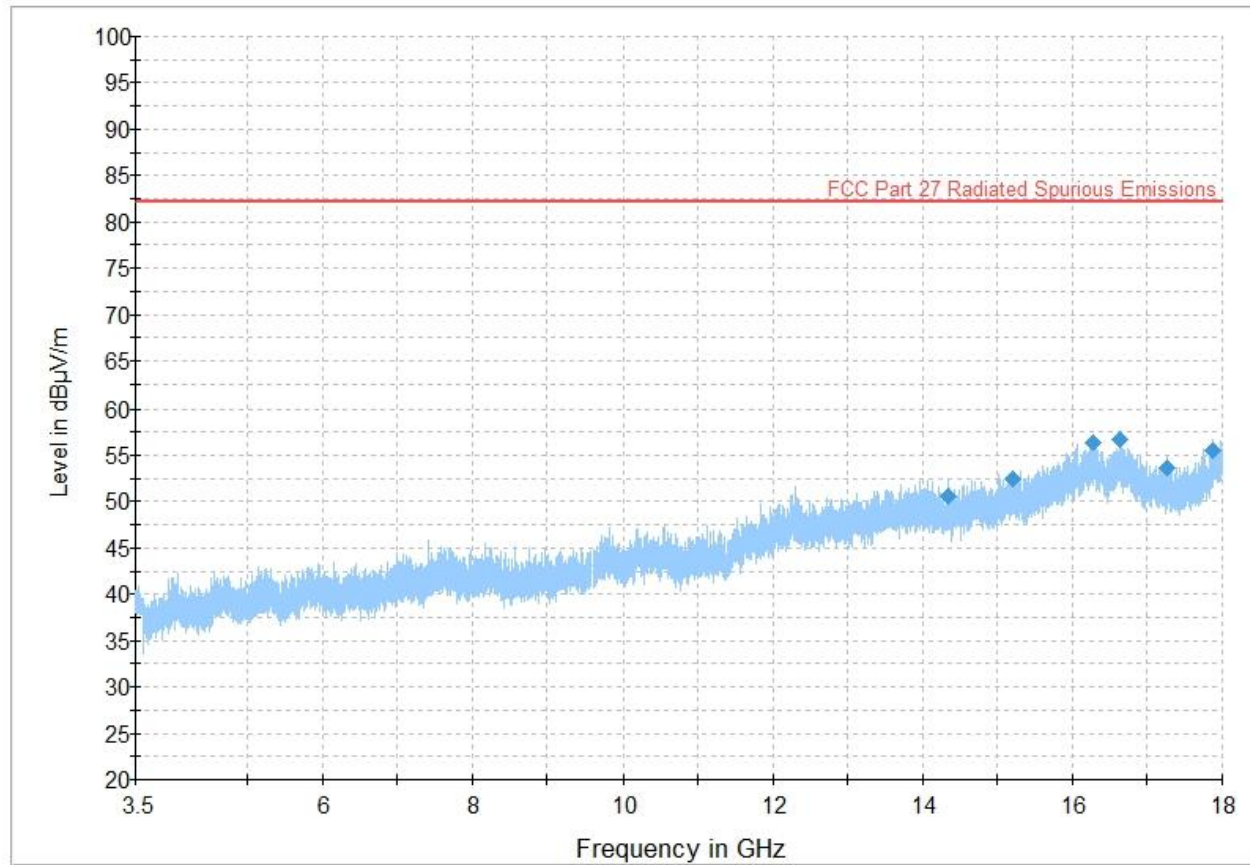


Figure 8.6-506: Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 2155 MHz, 16QAM, 5 MHz BW - Horizontal

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)
14340.883333	50.51	82.23	31.72	100.0	1000.000	279.0	H	352.0	17.5
15205.083333	52.48	82.23	29.75	100.0	1000.000	193.0	H	271.0	19.4
16284.016667	56.31	82.23	25.92	100.0	1000.000	375.0	H	41.0	23.5
16622.583333	56.72	82.23	25.51	100.0	1000.000	355.0	H	154.0	23.4
17260.850000	53.58	82.23	28.65	100.0	1000.000	399.0	H	106.0	20.3
17869.166667	55.53	82.23	26.70	100.0	1000.000	120.0	H	155.0	23.4

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

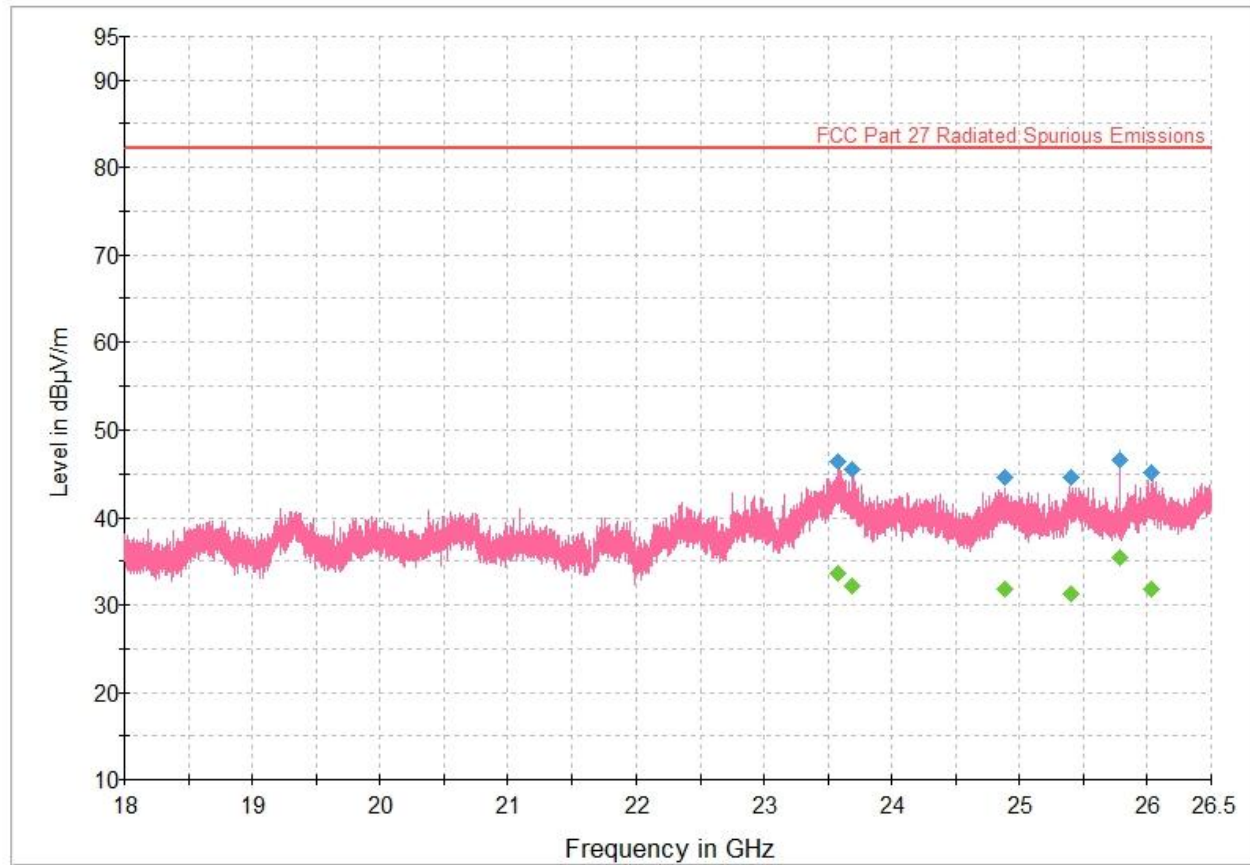


Figure 8.6-507: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 2155 MHz, 16QAM, 5 MHz BW - Vertical

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)
23577.668750	46.48	---	82.23	35.75	5000.0	1000.000	372.0	V	0.0	23.2
23577.668750	---	33.64	---	---	5000.0	1000.000	372.0	V	0.0	23.2
23693.325000	---	32.13	---	---	5000.0	1000.000	237.0	V	0.0	22.4
23693.325000	45.52	---	82.23	36.71	5000.0	1000.000	237.0	V	0.0	22.4
24882.668750	44.60	---	82.23	37.63	5000.0	1000.000	394.0	V	290.0	21.0
24882.668750	---	31.75	---	---	5000.0	1000.000	394.0	V	290.0	21.0
25400.512500	---	31.24	---	---	5000.0	1000.000	396.0	V	96.0	20.7
25400.512500	44.65	---	82.23	37.58	5000.0	1000.000	396.0	V	96.0	20.7
25781.450000	46.71	---	82.23	35.52	5000.0	1000.000	140.0	V	210.0	21.2
25781.450000	---	35.38	---	---	5000.0	1000.000	140.0	V	210.0	21.2
26034.168750	45.28	---	82.23	36.95	5000.0	1000.000	383.0	V	124.0	21.8
26034.168750	---	31.90	---	---	5000.0	1000.000	383.0	V	124.0	21.8

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

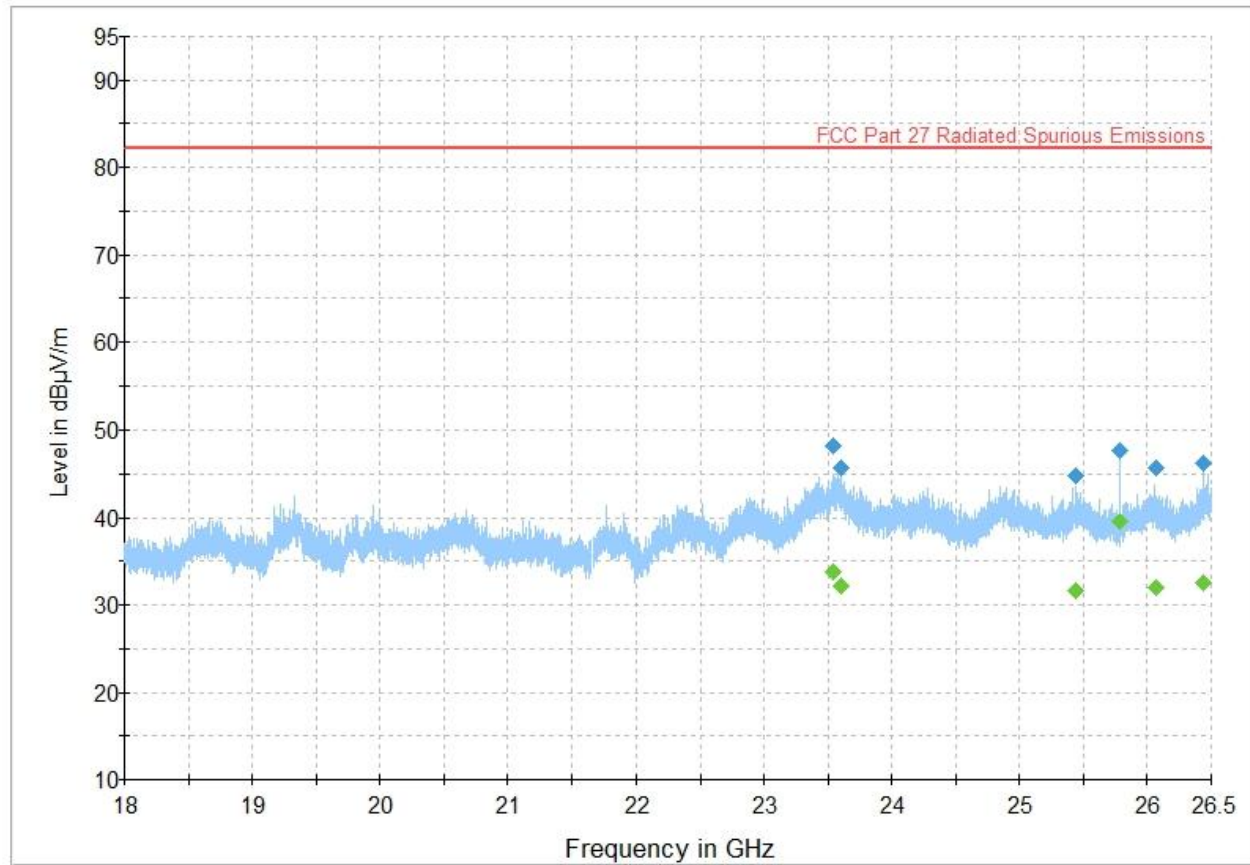


Figure 8.6-508: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 2155 MHz, 16QAM, 5 MHz BW - Horizontal

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)
23540.612500	---	33.78	---	---	5000.0	1000.000	101.0	H	24.0	23.0
23540.612500	48.27	---	82.23	33.96	5000.0	1000.000	101.0	H	24.0	23.0
23596.312500	45.72	---	82.23	36.51	5000.0	1000.000	370.0	H	196.0	23.1
23596.312500	---	32.13	---	---	5000.0	1000.000	370.0	H	196.0	23.1
25437.293750	44.78	---	82.23	37.45	5000.0	1000.000	142.0	H	0.0	20.9
25437.293750	---	31.63	---	---	5000.0	1000.000	142.0	H	0.0	20.9
25781.218750	---	39.58	---	---	5000.0	1000.000	152.0	H	306.0	21.2
25781.218750	47.77	---	82.23	34.46	5000.0	1000.000	152.0	H	306.0	21.2
26068.362500	45.79	---	82.23	36.44	5000.0	1000.000	399.0	H	0.0	21.9
26068.362500	---	32.03	---	---	5000.0	1000.000	399.0	H	0.0	21.9
26436.600000	46.22	---	82.23	36.01	5000.0	1000.000	172.0	H	345.0	24.0
26436.600000	---	32.53	---	---	5000.0	1000.000	172.0	H	345.0	24.0

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

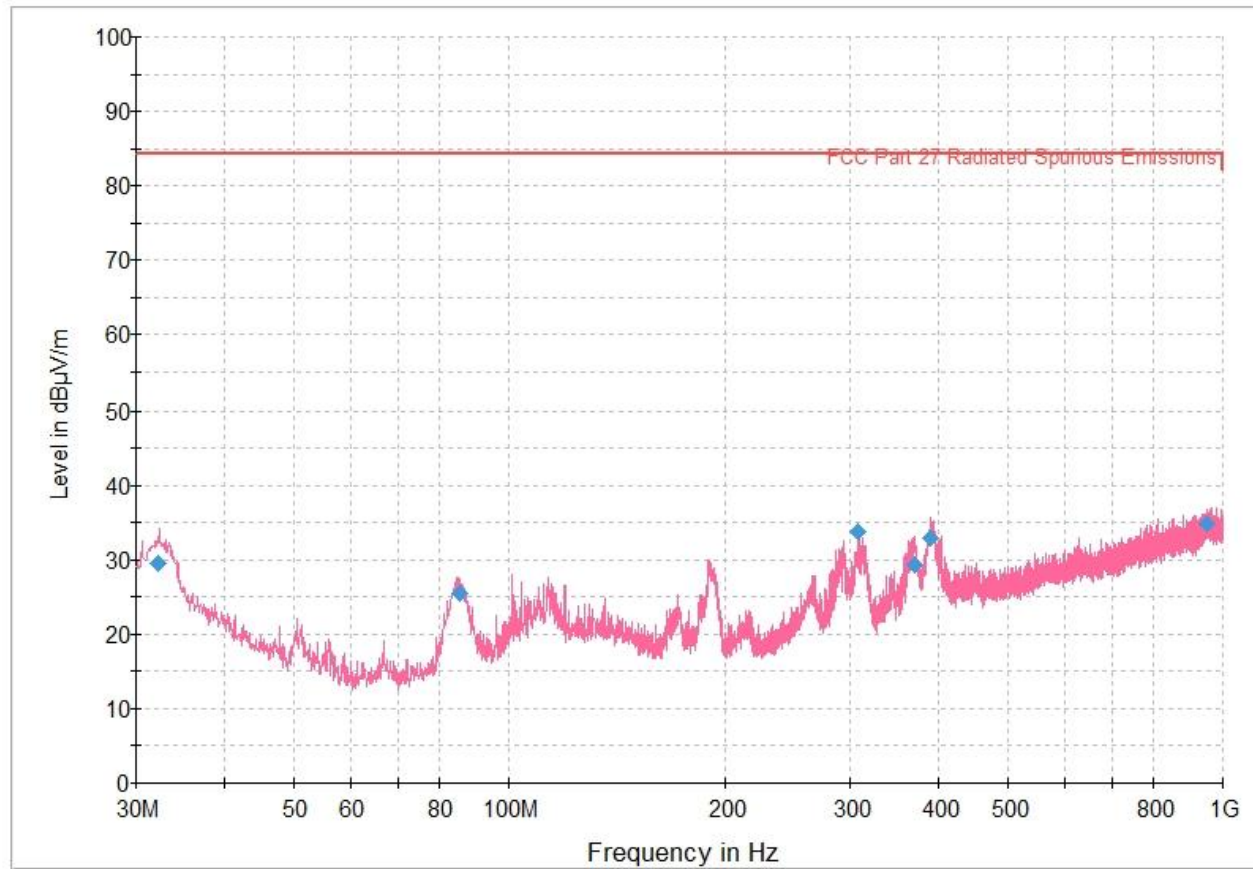


Figure 8.6-509: Radiated emissions spectral plot (30 MHz - 1 GHz) – 2197.5 MHz, 16QAM, 5 MHz BW - Vertical

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)
32.168000	29.55	84.38	54.83	5000.0	120.000	254.0	V	318.0	25.4
85.542000	25.39	84.38	58.99	5000.0	120.000	120.0	V	345.0	15.7
308.014000	33.85	84.38	50.53	5000.0	120.000	130.0	V	11.0	22.3
369.585000	29.28	84.38	55.10	5000.0	120.000	101.0	V	347.0	24.2
388.397000	32.84	84.38	51.54	5000.0	120.000	120.0	V	237.0	24.8
949.059000	34.83	84.38	49.55	5000.0	120.000	286.0	V	40.0	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

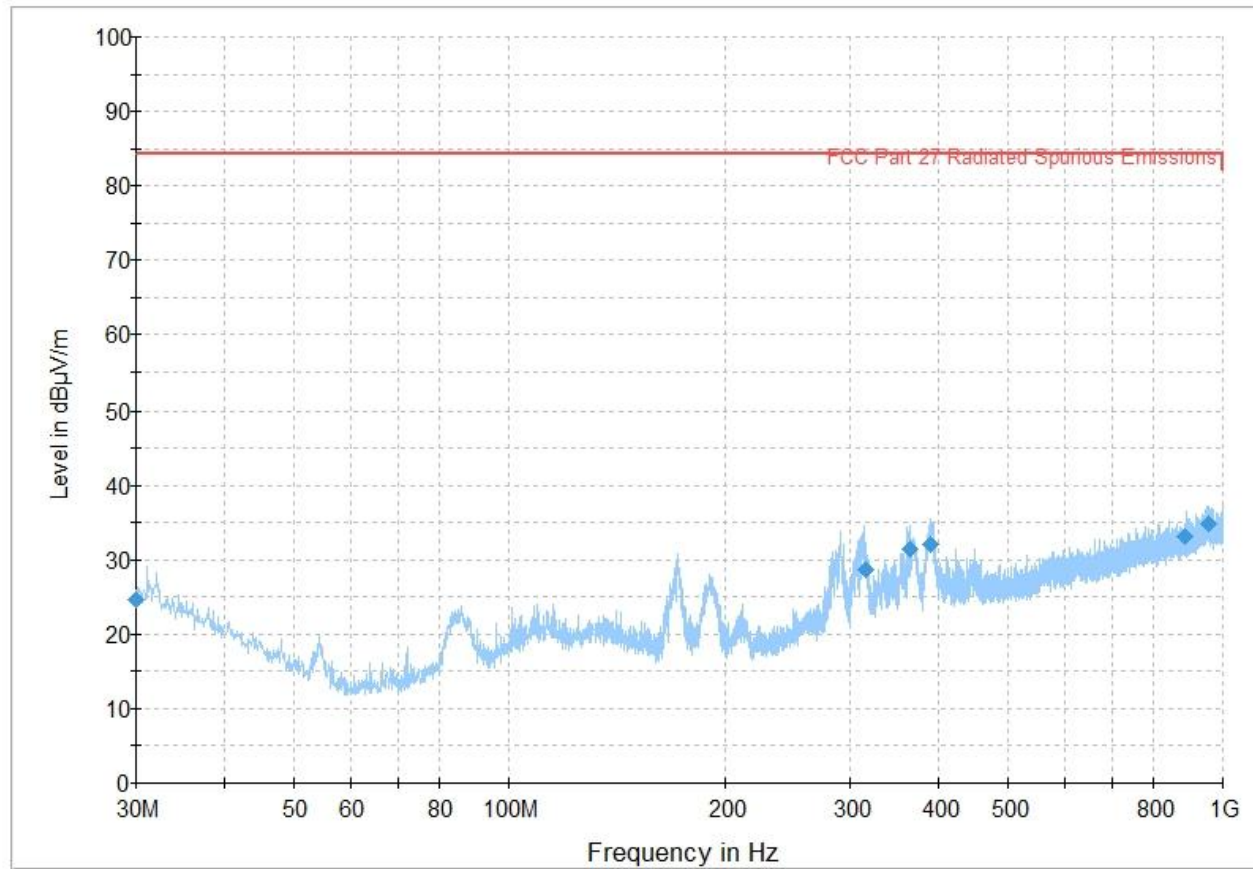


Figure 8.6-510: Radiated emissions spectral plot (30 MHz - 1 GHz) – 2197.5 MHz, 16QAM, 5 MHz BW - Horizontal

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)
30.000000	24.57	84.38	59.81	5000.0	120.000	277.0	H	323.0	26.6
314.862000	28.76	84.38	55.62	5000.0	120.000	111.0	H	93.0	22.5
363.989000	31.47	84.38	52.91	5000.0	120.000	275.0	H	207.0	24.1
388.592000	31.99	84.38	52.39	5000.0	120.000	225.0	H	204.0	24.8
886.417000	33.21	84.38	51.17	5000.0	120.000	194.0	H	56.0	33.3
956.254000	34.78	84.38	49.60	5000.0	120.000	215.0	H	59.0	34.9

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

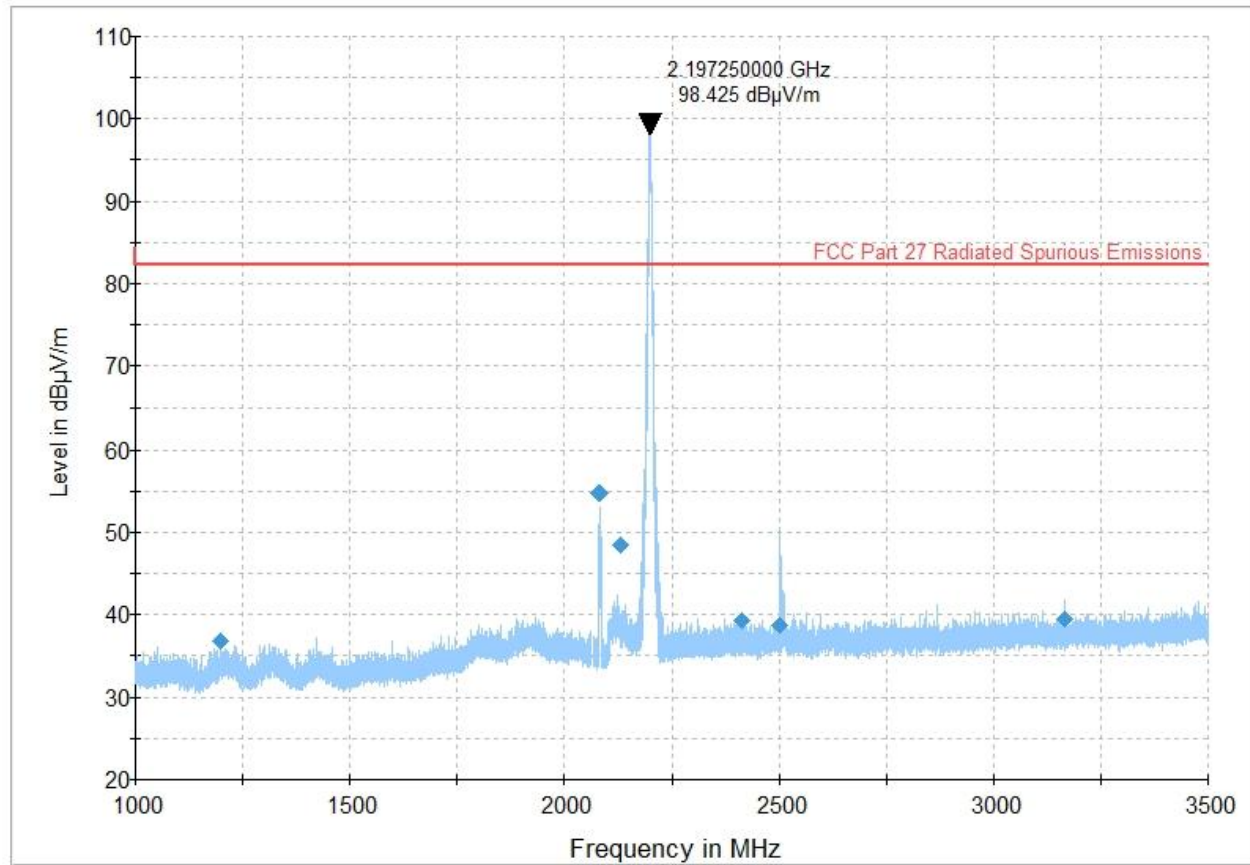


Figure 8.6-511: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 2197.5 MHz, 16QAM, 5 MHz BW - Vertical

Table 8.6-22: 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)
1199.916667	36.86	82.23	45.37	100.0	1000.000	175.0	V	110.0	-10.8
2082.666667	54.82	82.23	27.41	100.0	1000.000	101.0	V	10.0	-6.1
2127.150000	48.56	82.23	33.67	100.0	1000.000	284.0	V	11.0	-5.9
2411.883333	39.29	82.23	42.94	100.0	1000.000	235.0	V	0.0	-3.9
2499.500000	38.82	82.23	43.41	100.0	1000.000	140.0	V	0.0	-3.7
3164.266667	39.57	82.23	42.66	100.0	1000.000	319.0	V	288.0	-1.8

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.

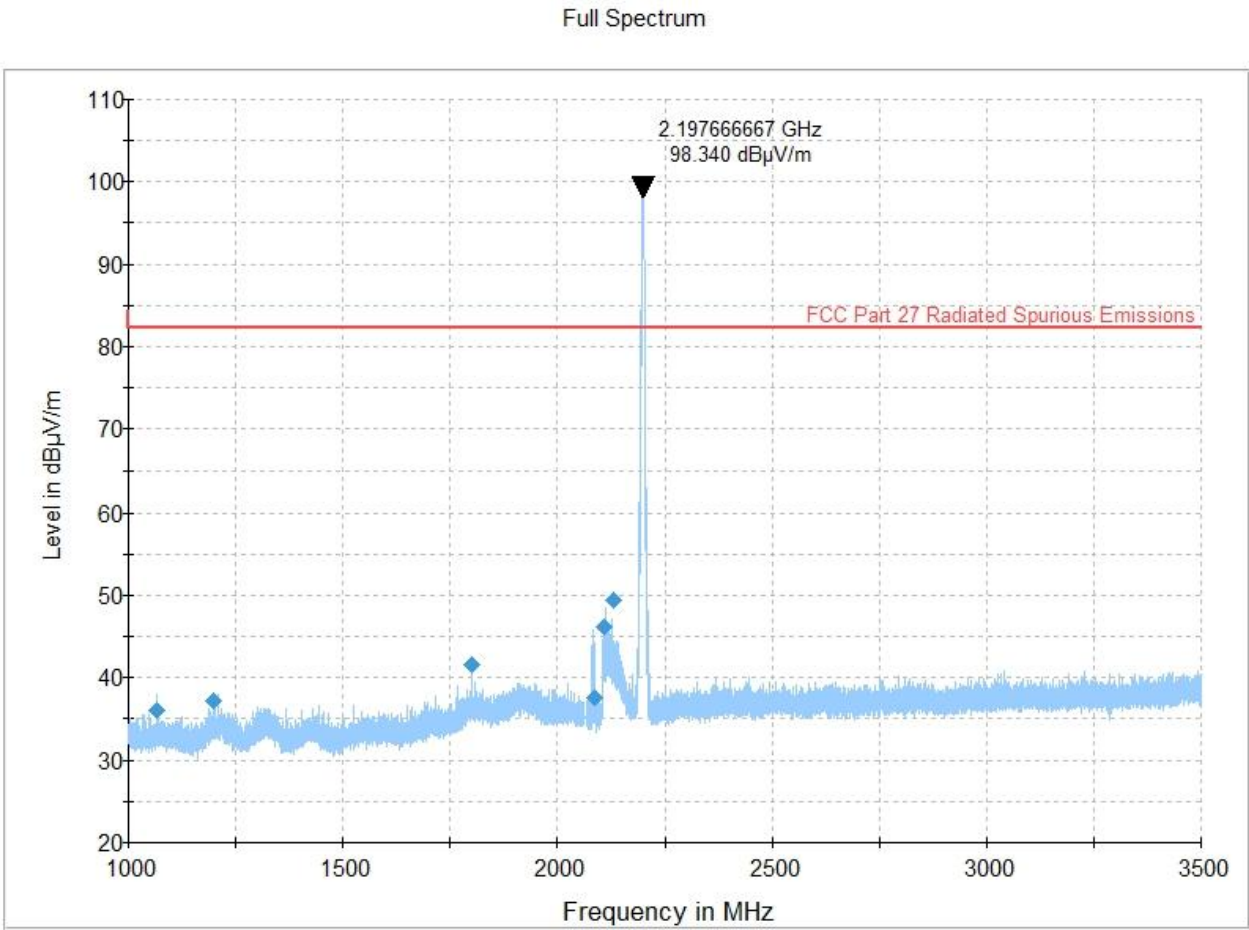


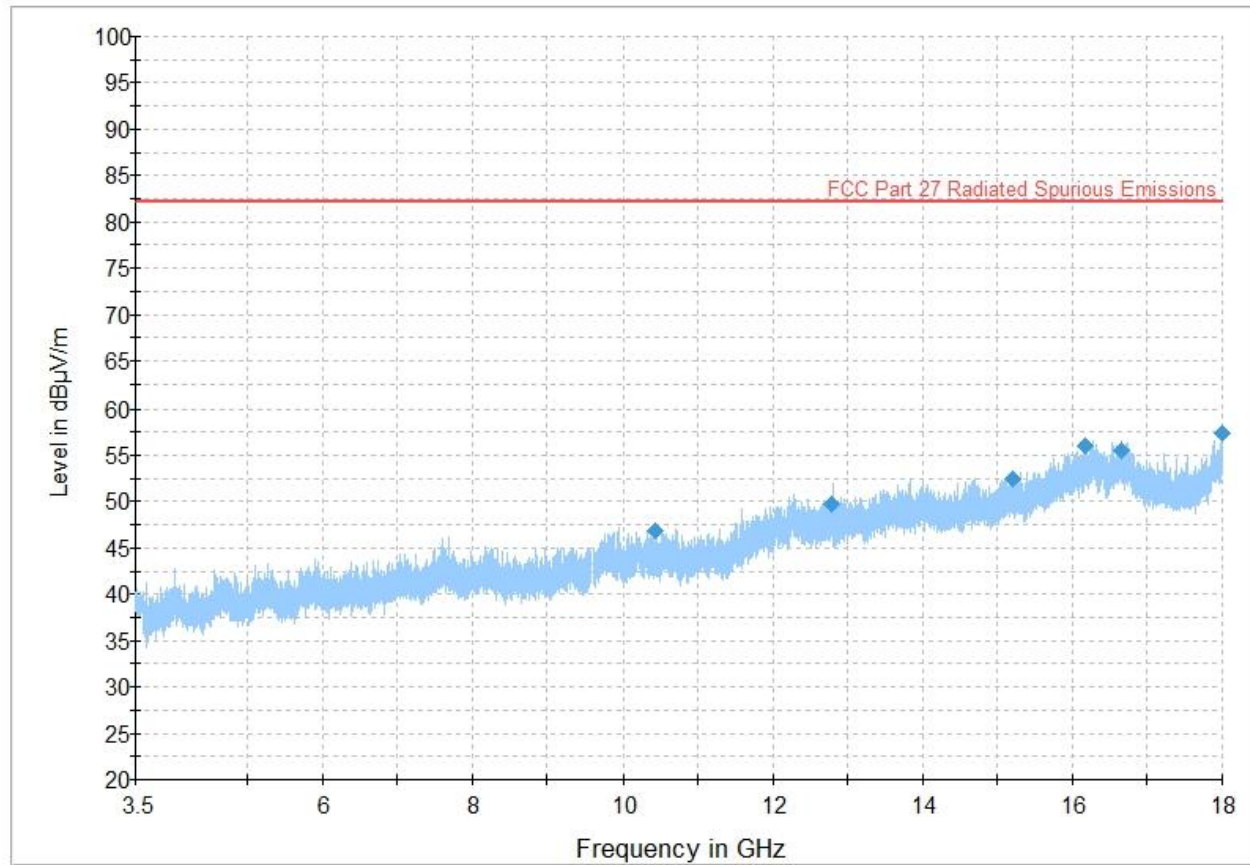
Figure 8.6-512: Radiated emissions spectral plot (1 GHz - 3.5 GHz) – 2197.5 MHz, 16QAM, 5 MHz BW - Horizontal

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)
1064.750000	36.03	82.23	46.20	100.0	1000.000	101.0	H	121.0	-11.6
1200.150000	37.21	82.23	45.02	100.0	1000.000	204.0	H	72.0	-10.8
1799.916667	41.66	82.23	40.57	100.0	1000.000	101.0	H	112.0	-6.7
2086.133333	37.58	82.23	44.65	100.0	1000.000	355.0	H	269.0	-6.0
2107.433333	46.09	82.23	36.14	100.0	1000.000	344.0	H	24.0	-5.9
2127.150000	49.41	82.23	32.82	100.0	1000.000	183.0	H	40.0	-5.9

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 8.6-513:** Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 2197.5 MHz, 16QAM, 5 MHz 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)
10429.600000	46.84	82.23	35.39	100.0	1000.000	288.0	V	0.0	11.3
12791.066667	49.80	82.23	32.43	100.0	1000.000	151.0	V	138.0	16.2
15193.333333	52.49	82.23	29.74	100.0	1000.000	399.0	V	320.0	19.4
16171.266667	55.96	82.23	26.27	100.0	1000.000	120.0	V	347.0	23.1
16659.683333	55.52	82.23	26.71	100.0	1000.000	203.0	V	357.0	23.5
17993.950000	57.42	82.23	24.81	100.0	1000.000	101.0	V	259.0	24.8

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

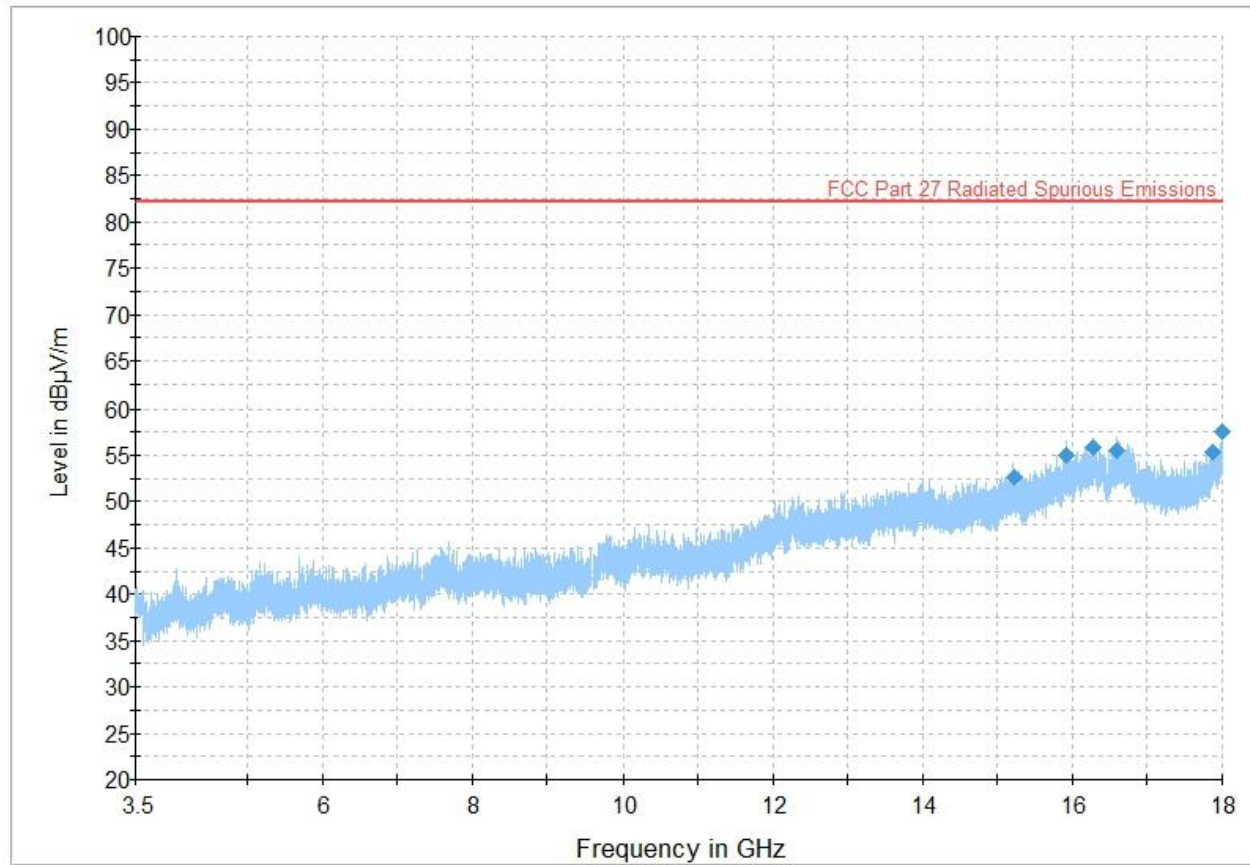


Figure 8.6-514: Radiated emissions spectral plot (3.5 GHz - 18 GHz) – 2197.5 MHz, 16QAM, 5 MHz BW - Horizontal

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)
15213.483333	52.56	82.23	29.67	100.0	1000.000	101.0	H	270.0	19.4
15912.183333	54.92	82.23	27.31	100.0	1000.000	371.0	H	57.0	22.6
16267.500000	55.80	82.23	26.43	100.0	1000.000	399.0	H	0.0	23.5
16588.033333	55.49	82.23	26.74	100.0	1000.000	172.0	H	222.0	22.9
17869.433333	55.36	82.23	26.87	100.0	1000.000	217.0	H	11.0	23.4
17998.583333	57.58	82.23	24.65	100.0	1000.000	163.0	H	256.0	25.0

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

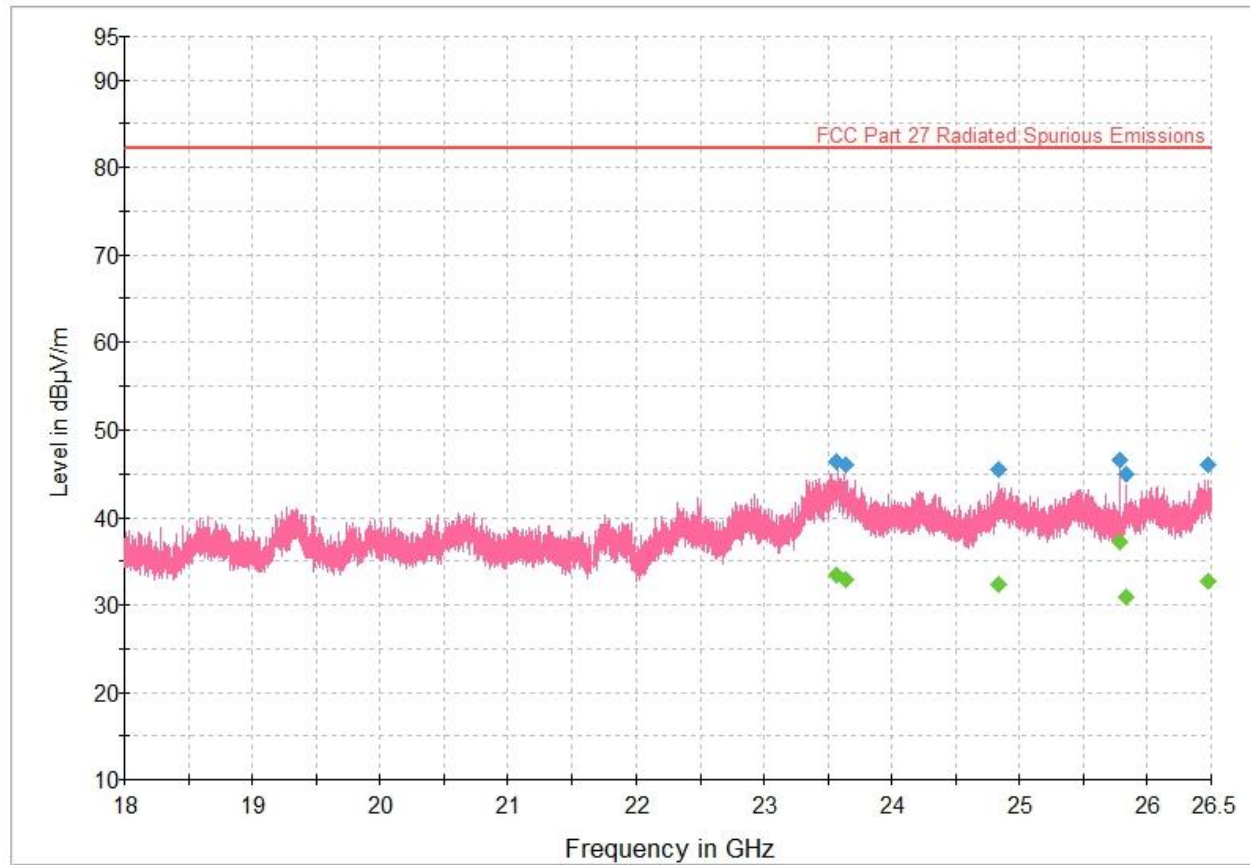


Figure 8.6-515: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 2197.5 MHz, 16QAM, 5 MHz BW - Vertical

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)
23568.225000	46.46	---	82.23	35.77	5000.0	1000.000	161.0	V	0.0	23.2
23568.225000	---	33.41	---	---	5000.0	1000.000	161.0	V	0.0	23.2
23631.850000	---	32.97	---	---	5000.0	1000.000	174.0	V	356.0	22.8
23631.850000	46.12	---	82.23	36.11	5000.0	1000.000	174.0	V	356.0	22.8
24840.018750	45.57	---	82.23	36.66	5000.0	1000.000	141.0	V	0.0	20.9
24840.018750	---	32.43	---	---	5000.0	1000.000	141.0	V	0.0	20.9
25781.150000	---	37.34	---	---	5000.0	1000.000	183.0	V	212.0	21.2
25781.150000	46.67	---	82.23	35.56	5000.0	1000.000	183.0	V	212.0	21.2
25834.693750	44.95	---	82.23	37.28	5000.0	1000.000	226.0	V	0.0	21.3
25834.693750	---	31.02	---	---	5000.0	1000.000	226.0	V	0.0	21.3
26472.400000	46.03	---	82.23	36.20	5000.0	1000.000	317.0	V	255.0	24.4
26472.400000	---	32.68	---	---	5000.0	1000.000	317.0	V	255.0	24.4

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

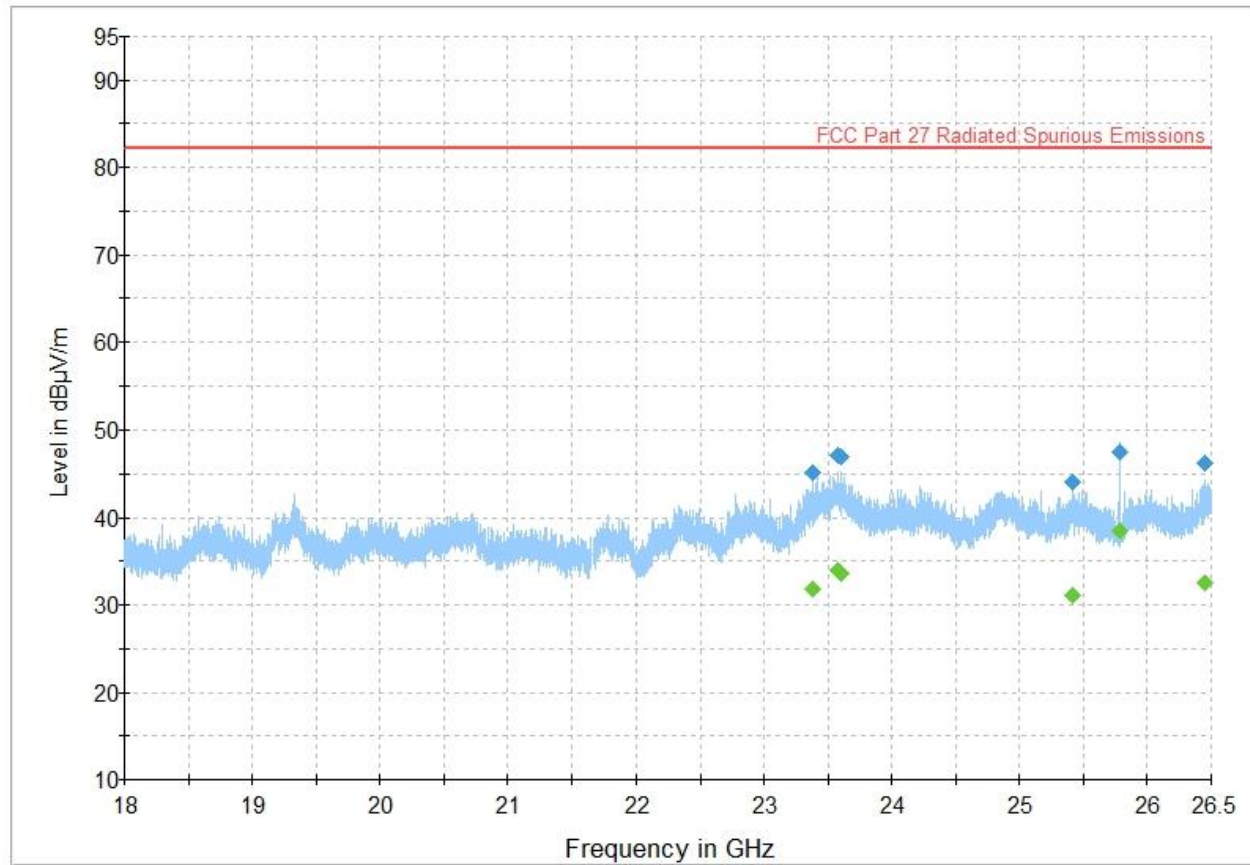


Figure 8.6-516: Radiated emissions spectral plot (18 GHz - 26.5 GHz) – 2197.5 MHz, 16QAM, 5 MHz BW - Horizontal

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)
23376.231250	---	31.81	---	---	5000.0	1000.000	193.0	H	355.0	22.0
23376.231250	45.20	---	82.23	37.03	5000.0	1000.000	193.0	H	355.0	22.0
23575.143750	---	34.08	---	---	5000.0	1000.000	276.0	H	264.0	23.2
23575.143750	47.21	---	82.23	35.02	5000.0	1000.000	276.0	H	264.0	23.2
23600.181250	47.01	---	82.23	35.22	5000.0	1000.000	172.0	H	92.0	23.1
23600.181250	---	33.65	---	---	5000.0	1000.000	172.0	H	92.0	23.1
25410.293750	44.14	---	82.23	38.09	5000.0	1000.000	394.0	H	260.0	20.8
25410.293750	---	31.07	---	---	5000.0	1000.000	394.0	H	260.0	20.8
25781.518750	47.53	---	82.23	34.70	5000.0	1000.000	150.0	H	303.0	21.2
25781.518750	---	38.48	---	---	5000.0	1000.000	150.0	H	303.0	21.2
26455.043750	46.33	---	82.23	35.90	5000.0	1000.000	320.0	H	174.0	24.2
26455.043750	---	32.52	---	---	5000.0	1000.000	320.0	H	174.0	24.2

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.

8.7 FCC 27.54 Frequency stability

8.7.1 Definitions and limits

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

§ 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 0mbar
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:

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

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 27.54 Frequency stability results

Temperature (°C)	Voltage (V)	Center Frequency (MHz)	Frequency Error			
			ppm	ppm (2 min)	ppm (5 min)	ppm (10 min)
-30	120	2155	0.21	0.21	0.21	0.21
-20	120	2155	0.21	0.20	0.20	0.21
-10	120	2155	0.21	0.21	0.21	0.21
0	120	2155	0.21	0.21	0.21	0.21
+10	120	2155	0.21	0.21	0.21	0.21
+20	138	2155	0.21	0.21	0.21	0.21
+20	120	2155	0.21	0.21	0.21	0.21
+20	102	2155	0.21	0.21	0.21	0.21
+30	120	2155	0.21	0.21	0.21	0.21
+40	120	2155	0.21	0.21	0.21	0.21
+50	120	2155	0.20	0.21	0.21	0.21

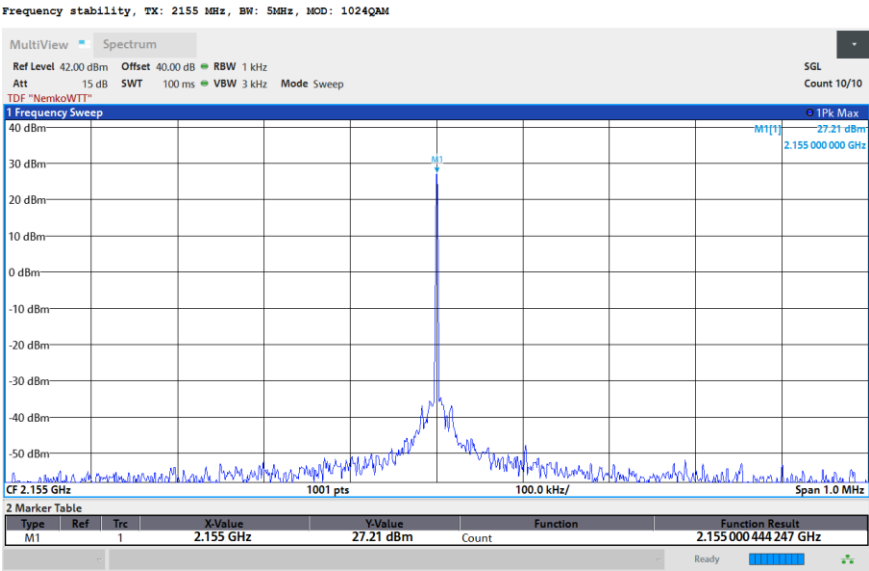


Figure 8.7-1: Frequency stability example plot (signal count function used)

End of report