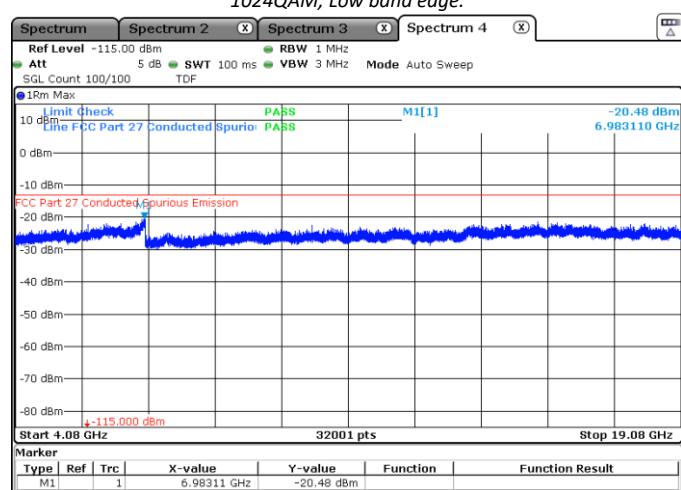
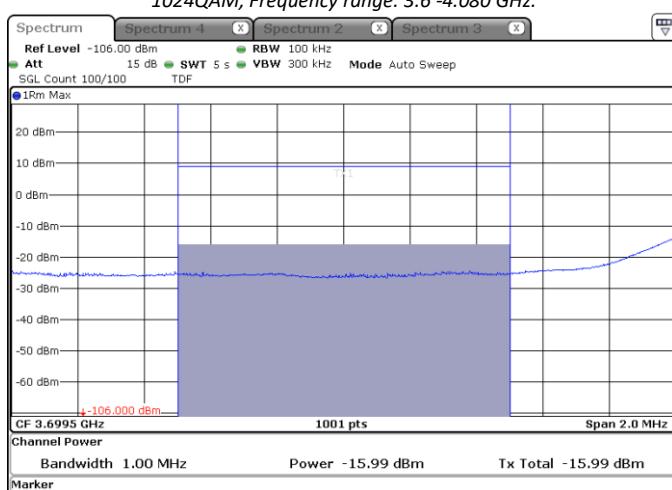
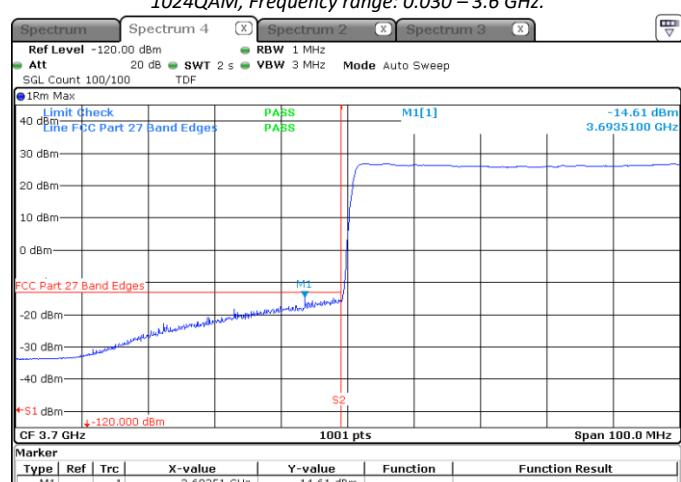
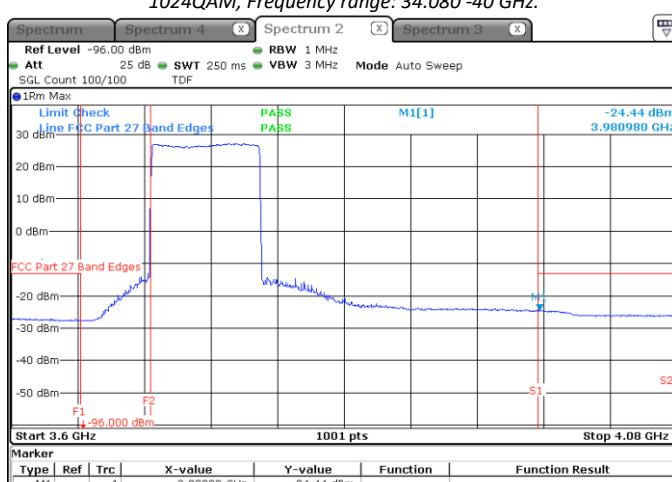
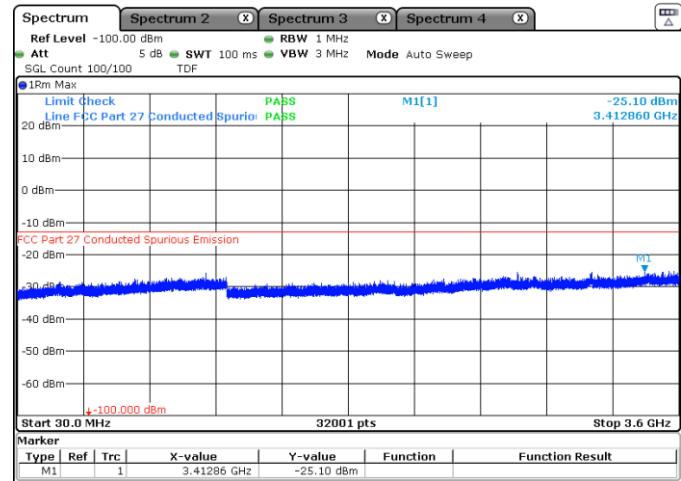
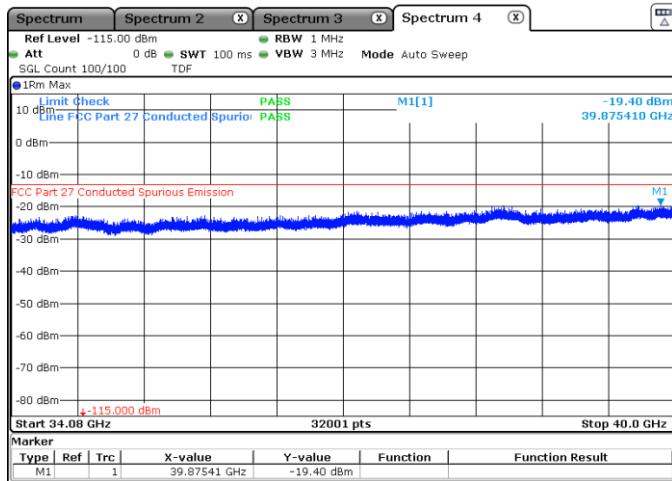


## Section 8:

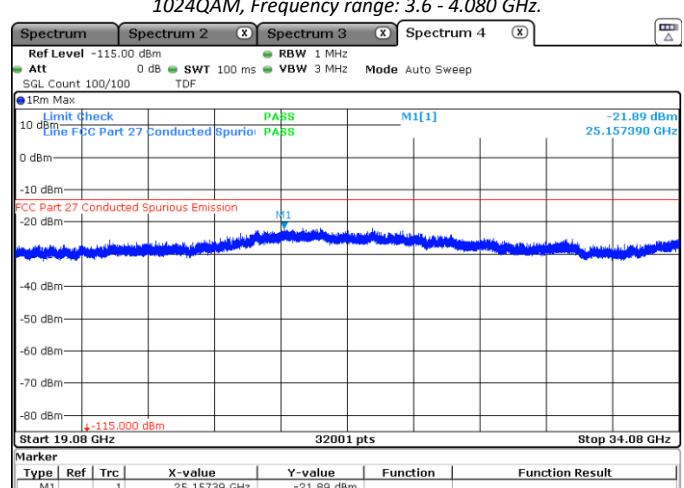
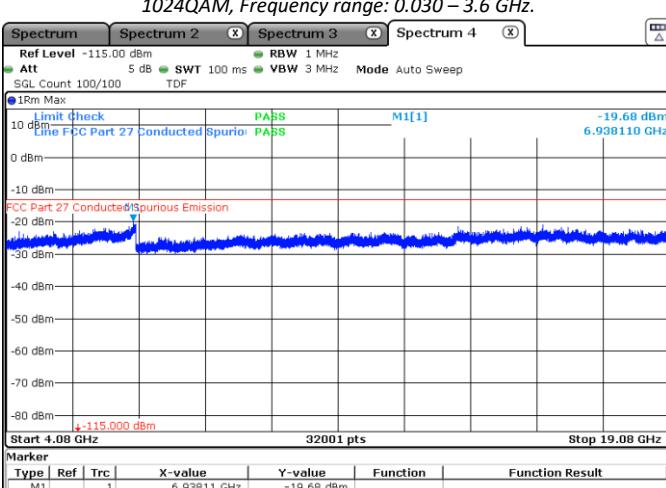
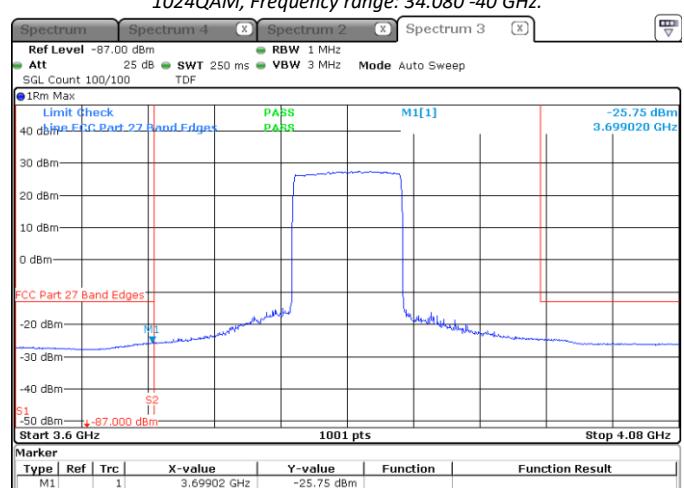
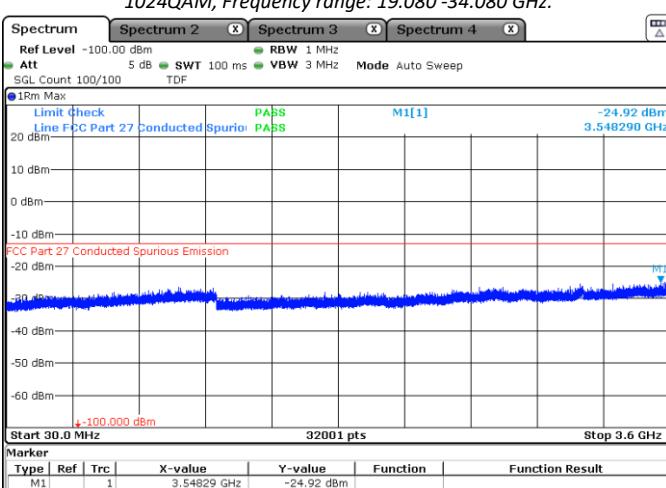
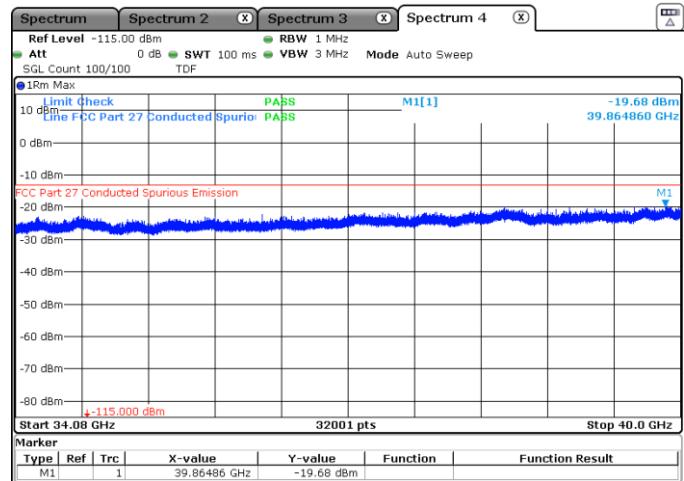
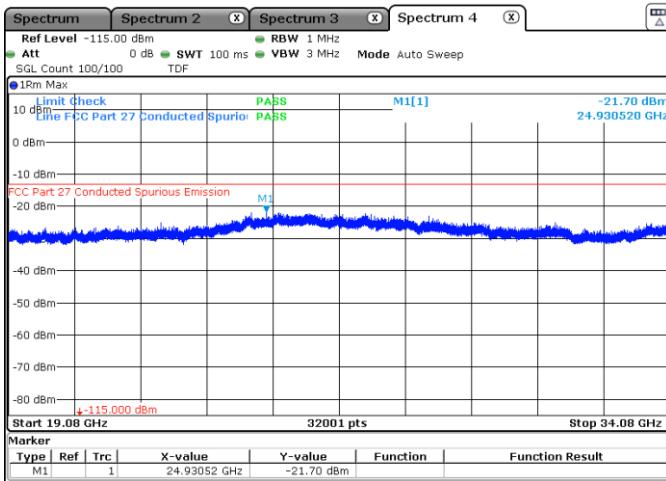
Testing data



The evaluation of range F1 to F2 was excluded from the figure 8.6-55. The detailed evaluation was made in the figure 8.6-56, except the 1 MHz range before the edge which was evaluated in the figure 8.6-57 (3699 MHz to 3700 MHz).

## Section 8:

Testing data



## Section 8:

Testing data

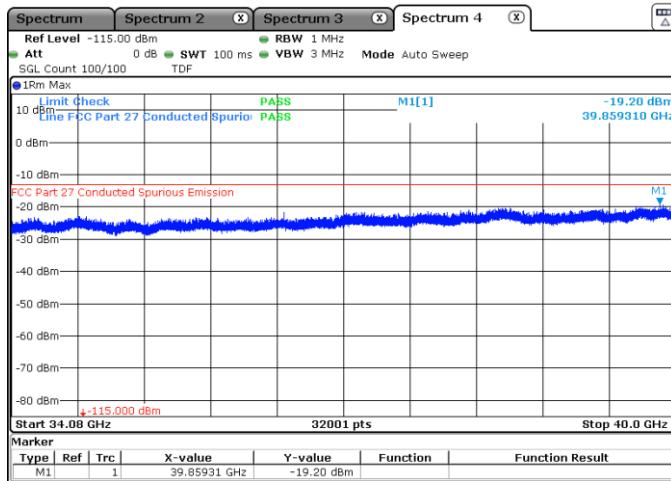


Figure 8.6-65: Conducted Spurious Emissions, Mid CH 3840 MHz, 80 MHz, 1024QAM, Frequency range: 34.080 - 40 GHz.

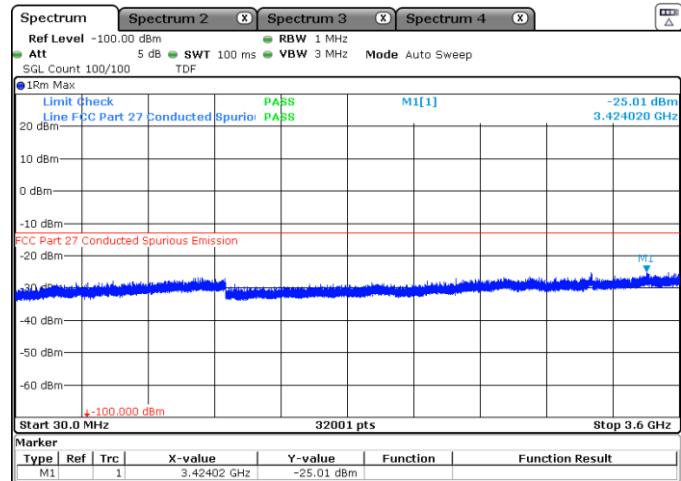


Figure 8.6-66: Conducted Spurious Emissions, High CH 3940 MHz, 80 MHz, 1024QAM, Frequency range: 0.030 – 3.6 GHz.

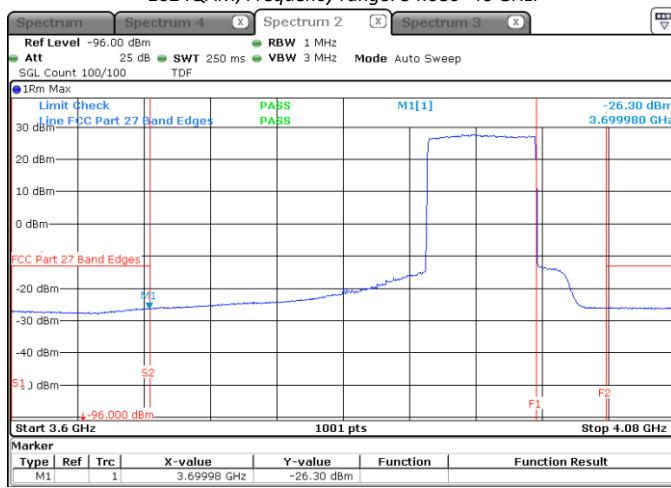


Figure 8.6-67: Conducted Spurious Emissions, High CH 3940 MHz, 80 MHz, 1024QAM, Frequency range: 3.6 – 4.080 GHz.

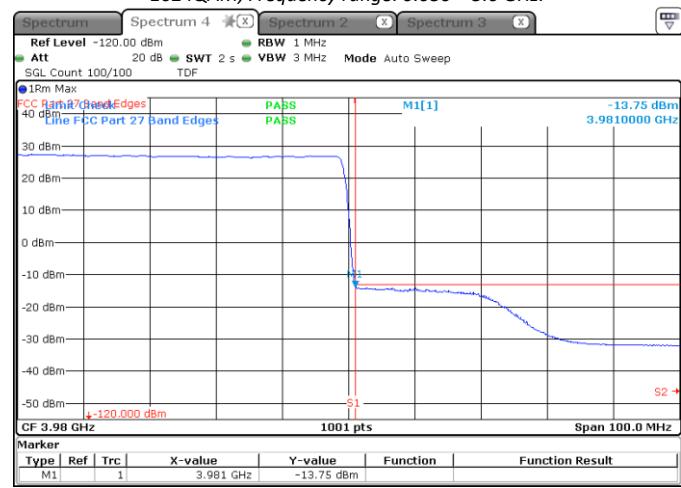


Figure 8.6-68: Conducted Spurious Emissions, High CH 3940 MHz, 80 MHz, 1024QAM, High band edge.

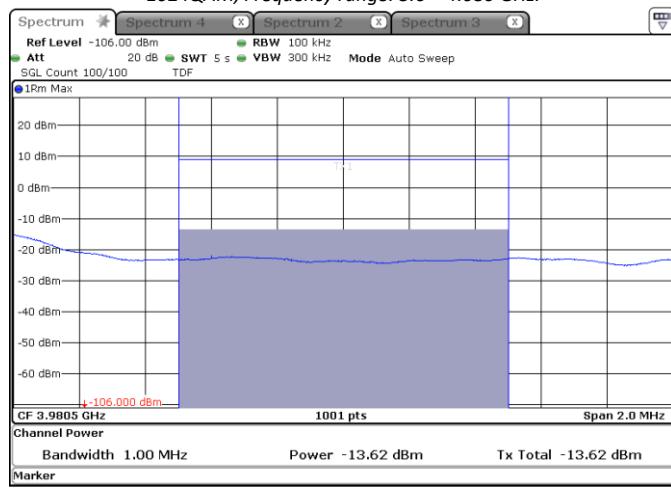


Figure 8.6-69: Conducted Spurious Emissions, High CH 3940 MHz, 80 MHz, 1024QAM, High band edge (1 MHz next to the band).

The evaluation of range F1 to F2 was excluded from the figure 8.6-67. The detailed evaluation was made in the figure 8.6-68, except the 1 MHz range before the edge which was evaluated in the figure 8.6-69 (3980 MHz to 3981 MHz).

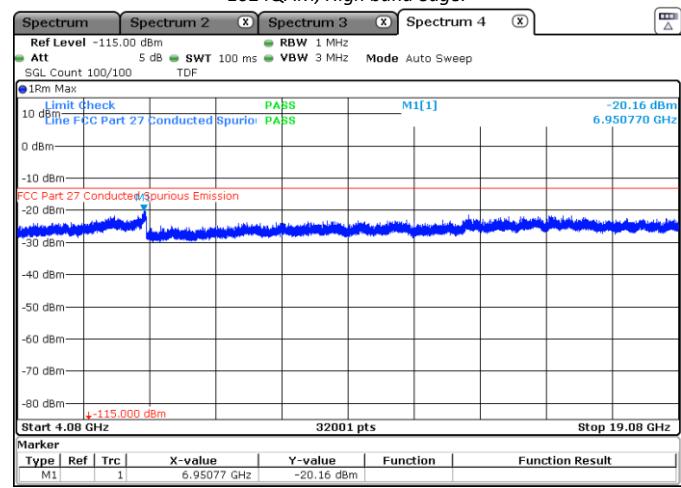
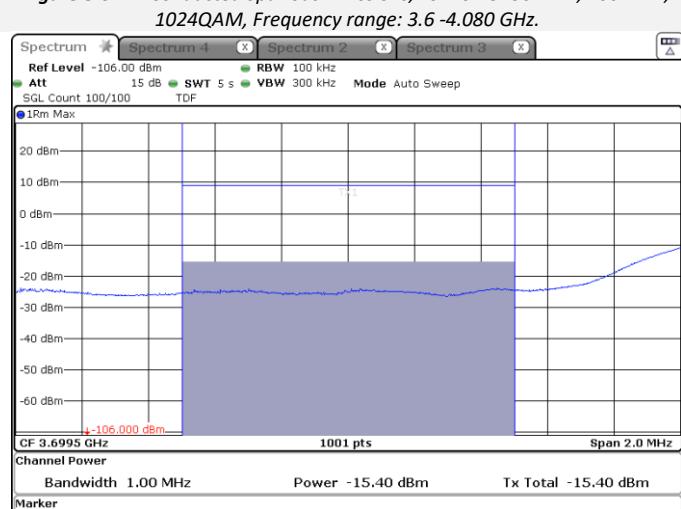
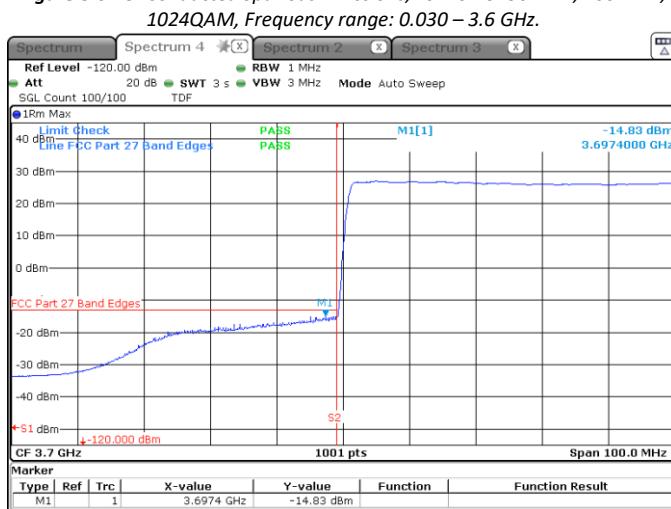
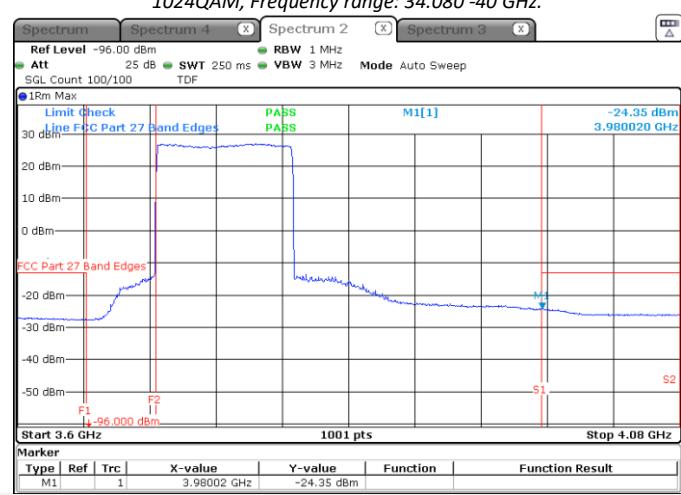
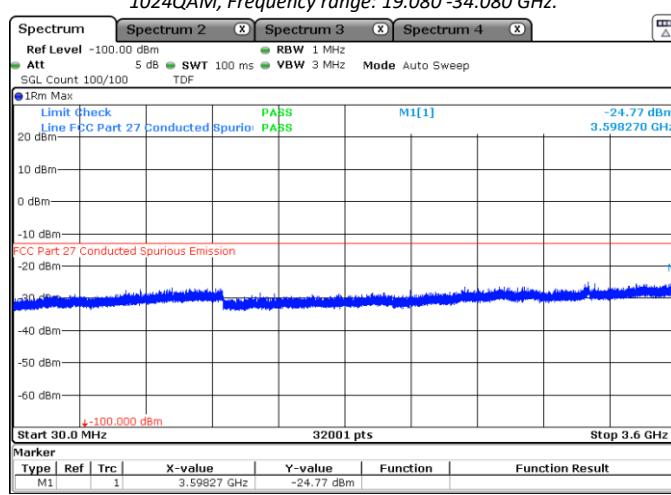
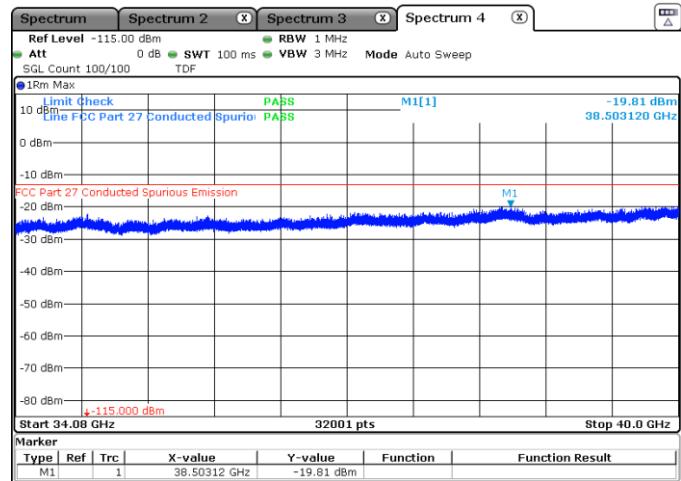
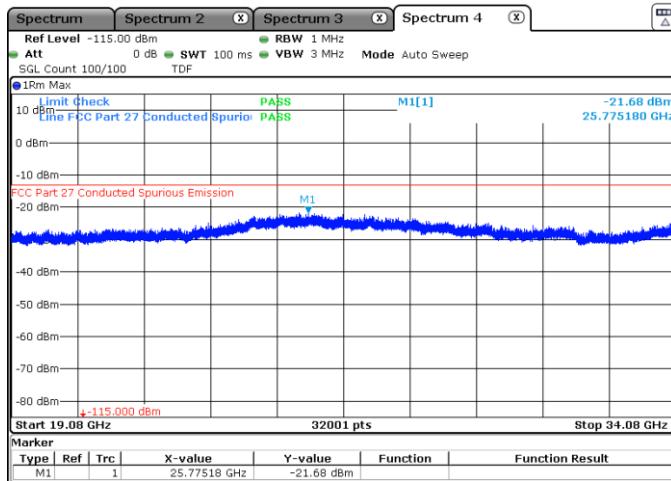


Figure 8.6-70: Conducted Spurious Emissions, High CH 3940 MHz, 80 MHz, 1024QAM, Frequency range: 4.080 -19.080 GHz.

## Section 8:

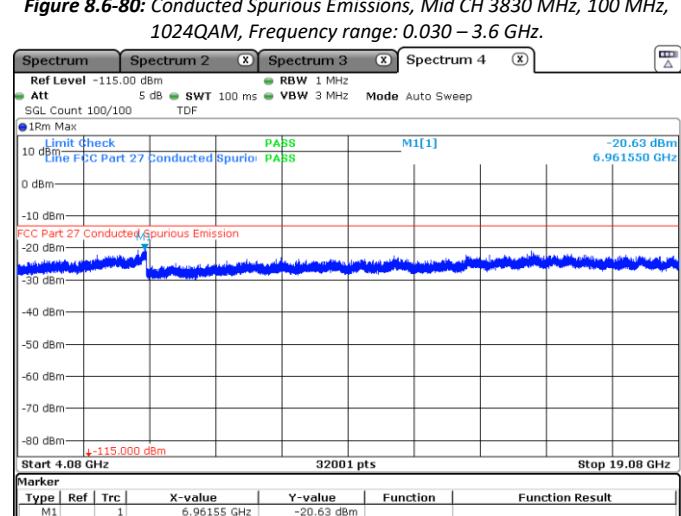
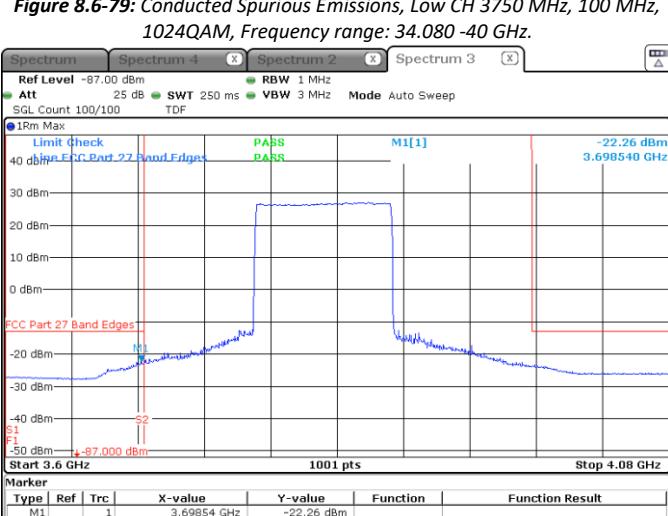
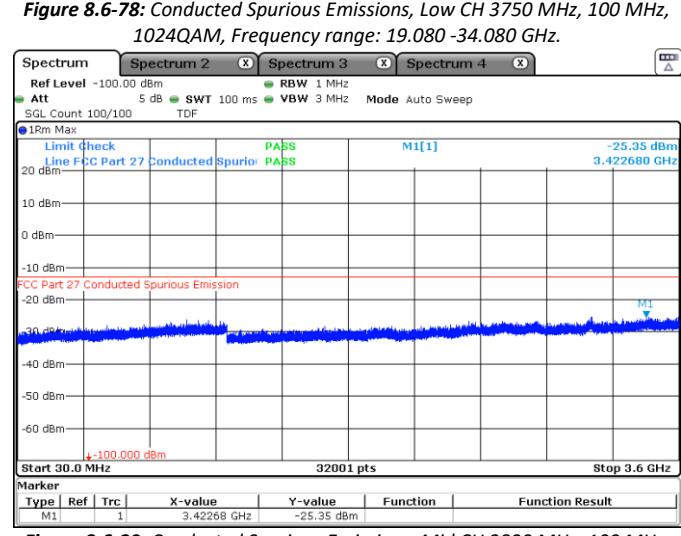
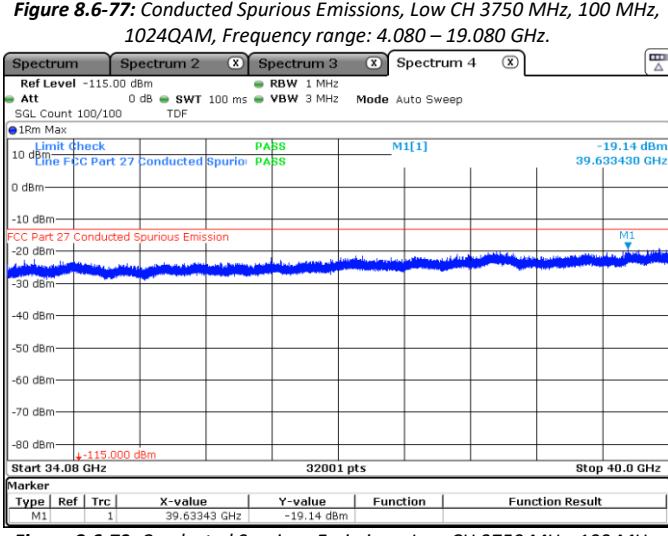
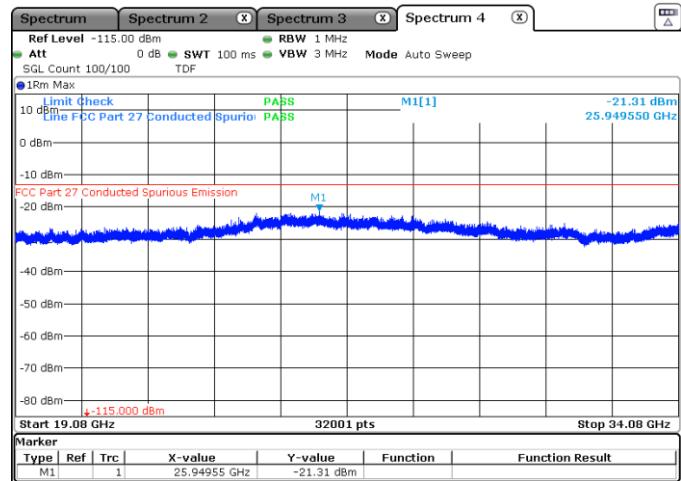
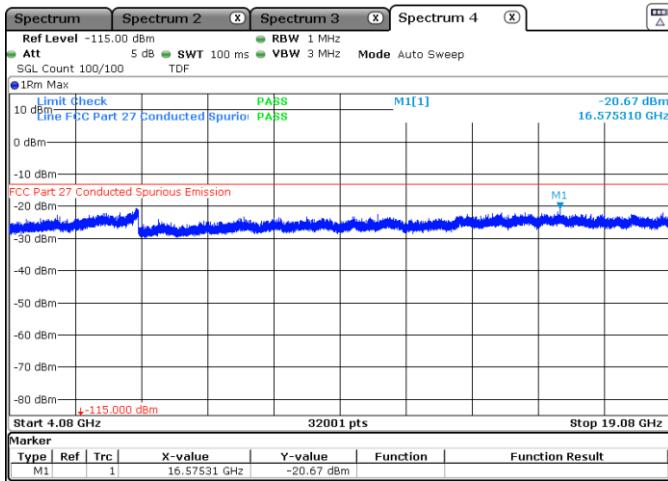
Testing data



The evaluation of range F1 to F2 was excluded from the figure 8.6-74. The detailed evaluation was made in the figure 8.6-75, except the 1 MHz range before the edge which was evaluated in the figure 8.6-76 (3699 MHz to 3700 MHz).

## Section 8:

### Testing data



## Section 8:

Testing data

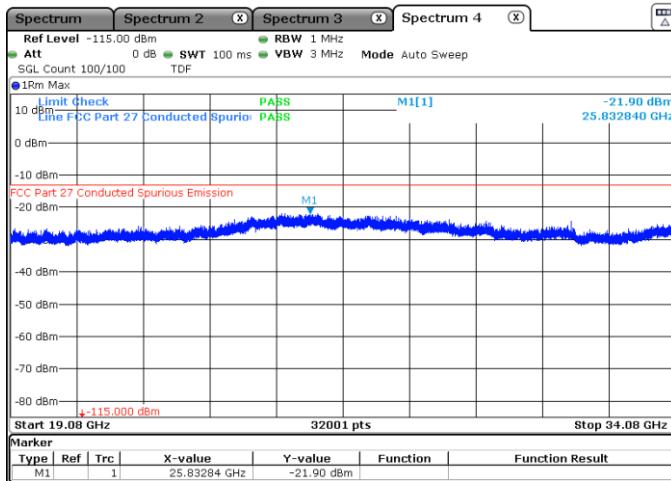


Figure 8.6-83: Conducted Spurious Emissions, Mid CH 3830 MHz, 100 MHz, 1024QAM, Frequency range: 19.080 -34.080 GHz.

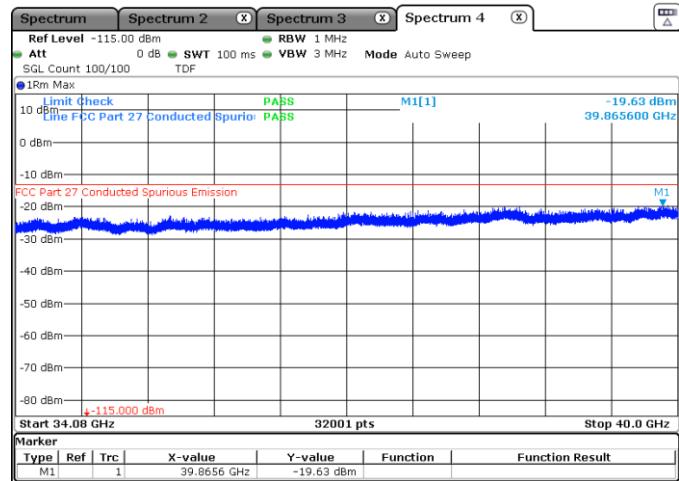


Figure 8.6-84: Conducted Spurious Emissions, Mid CH 3830 MHz, 100 MHz, 1024QAM, Frequency range: 34.080 -40.0 GHz

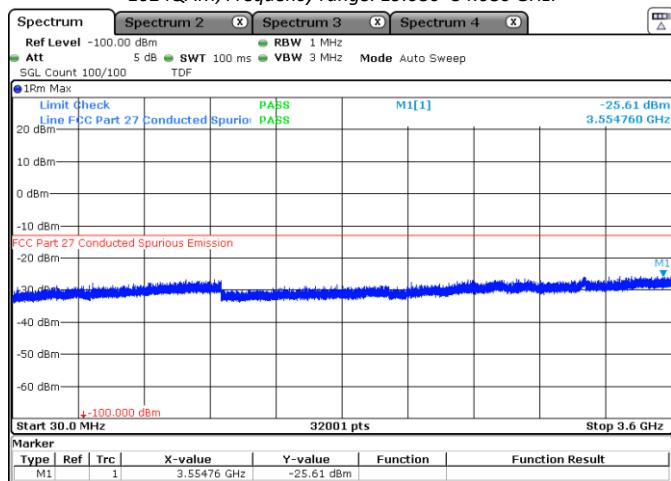


Figure 8.6-85: Conducted Spurious Emissions, High CH 3930 MHz, 100 MHz, 1024QAM, Frequency range: 0.030 – 3.6 GHz

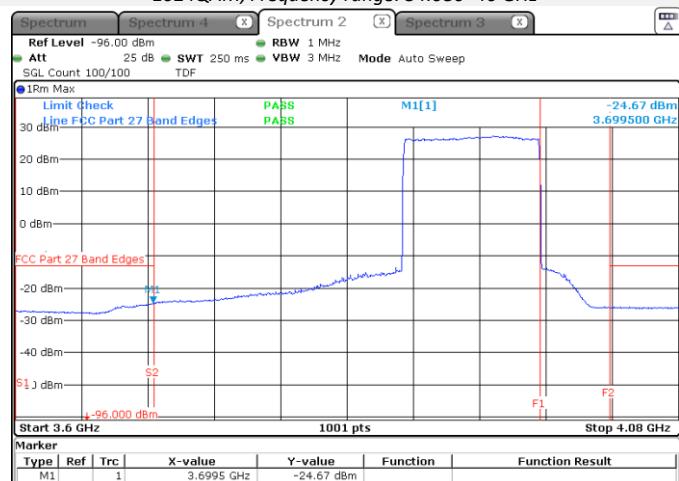


Figure 8.6-86: Conducted Spurious Emissions, High CH 3930 MHz, 100 MHz, 1024QAM, Frequency range: 3.6 – 4.080 GHz.

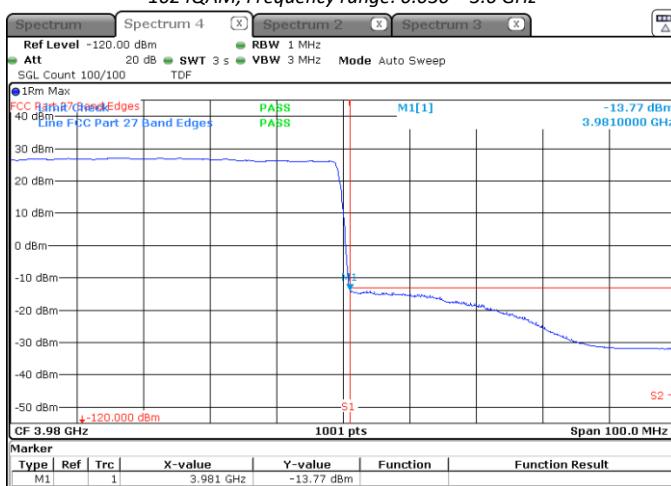
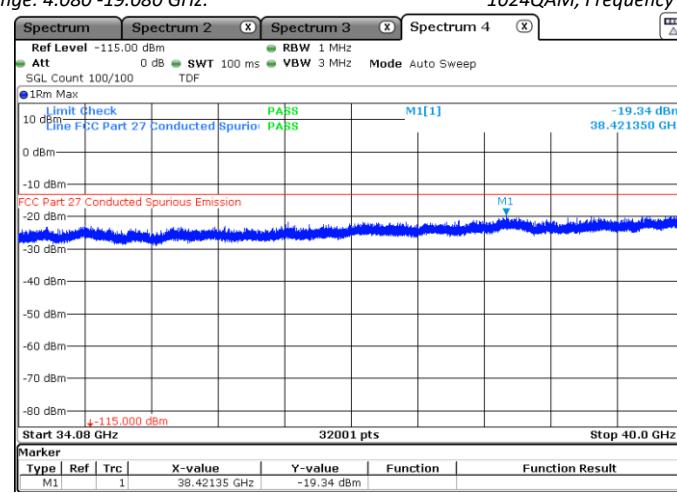
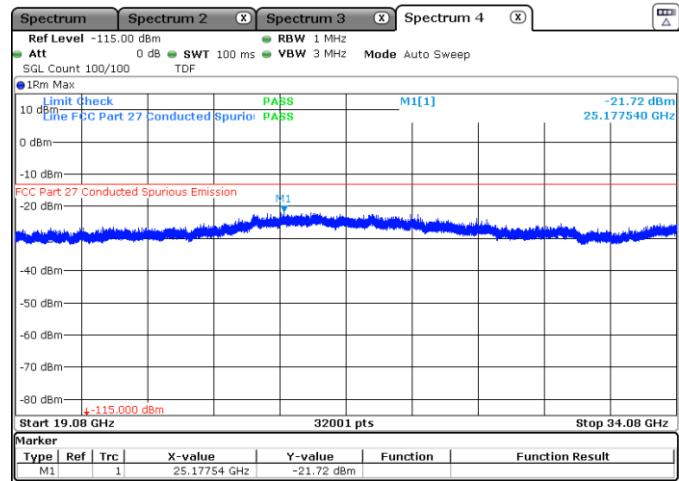
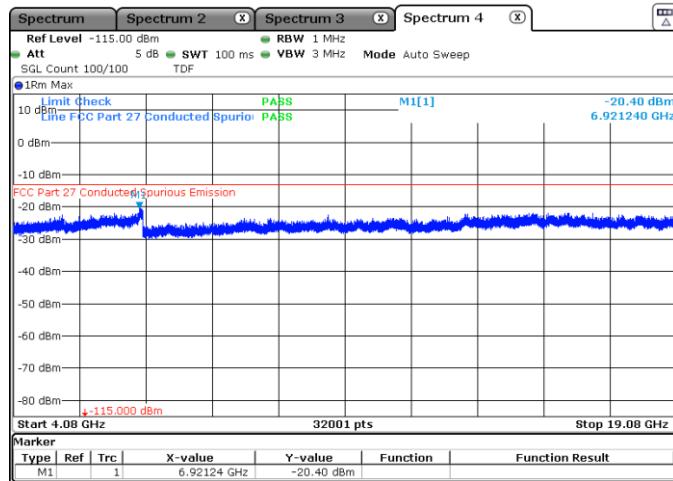


Figure 8.6-87: Conducted Spurious Emissions, High CH 3930 MHz, 100 MHz, 1024QAM, High band edge.

The evaluation of range F1 to F2 was excluded from the figure 8.6-86. The detailed evaluation was made in the figure 8.6-87, except the 1 MHz range before the edge which was evaluated in the figure 8.6-88 (3980 MHz to 3981 MHz).

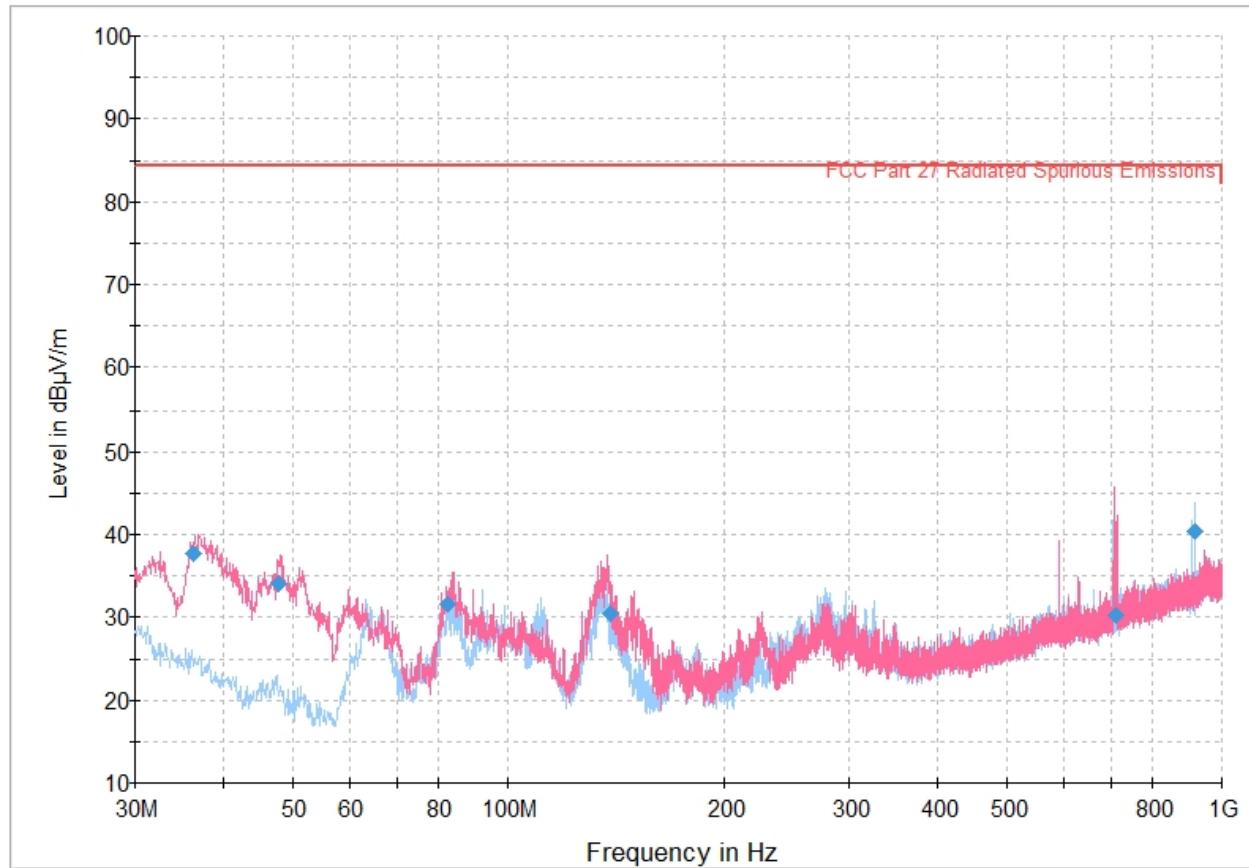


Figure 8.6-88: Conducted Spurious Emissions, High CH 3930 MHz, 100 MHz, 1024QAM, High band edge (1 MHz next to the band).



## 8.6.5 Test data (radiated testing)

## Full Spectrum



The spectral plot shows the vertical (red plot) and horizontal (blue plot) scans. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-92: Emissions limit plot – Field strength measured from 0.030 to 1 GHz, Low channel: 3710 MHz (1024QAM and 20 MHz BW).**

Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
36.207000	37.62	84.38	46.76	5000.0	120.000	101.0	V	0.0	23.2
47.642000	34.16	84.38	50.22	5000.0	120.000	117.0	V	20.0	17.2
82.492000	31.61	84.38	52.77	5000.0	120.000	105.0	V	20.0	15.3
138.453000	30.42	84.38	53.96	5000.0	120.000	105.0	V	178.0	19.8
709.178000	30.27	84.38	54.11	5000.0	120.000	331.0	V	255.0	30.6
914.788000	40.38	84.38	44.00	5000.0	120.000	281.0	H	316.0	33.4

**Table 8.6-1: Emissions limit results – Field strength measured from 0.030 to 1 GHz, Low channel: 3710 MHz (1024QAM and 20 MHz BW).**

Notes:

<sup>1</sup> Field strength (dB $\mu$ V/m) = receiver/spectrum analyzer value (dB $\mu$ V) + correction factor (dB)

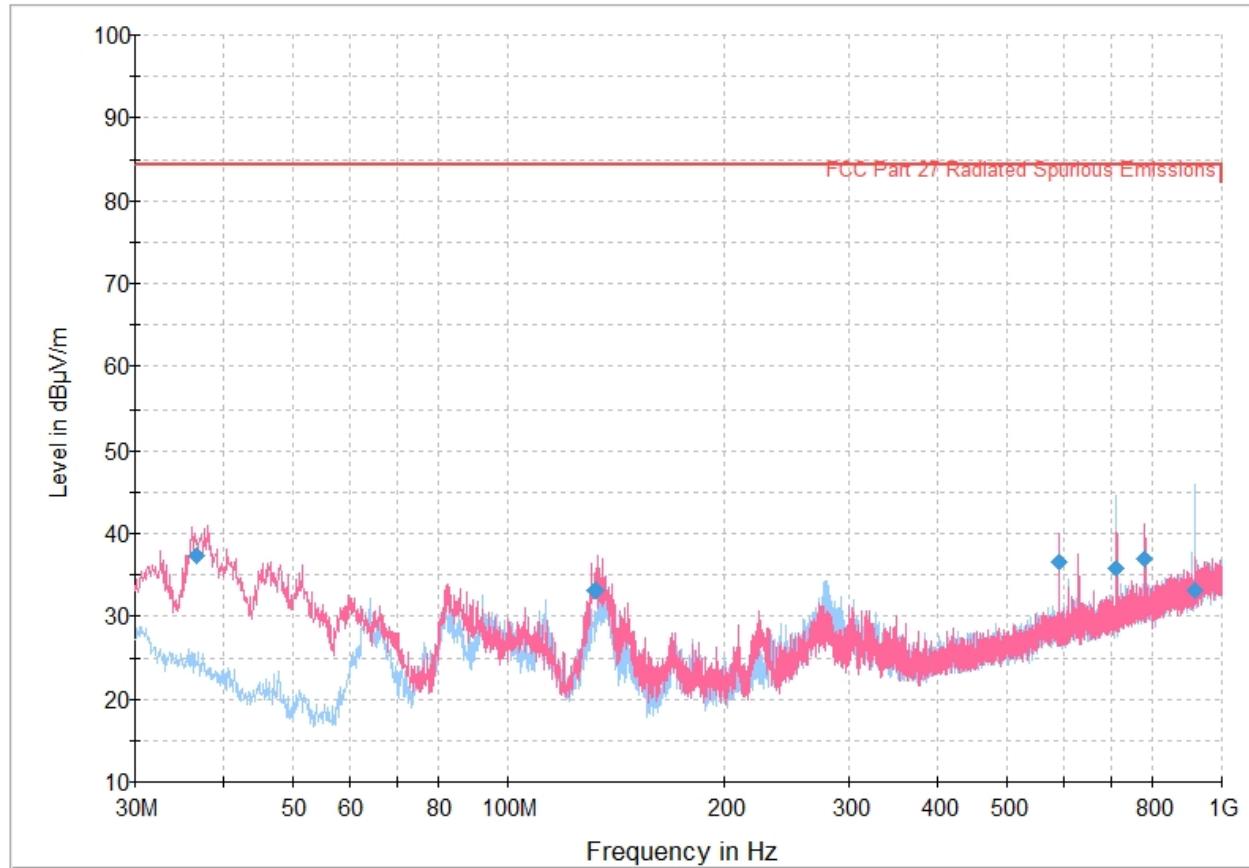
<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)

<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup> The spectral plot shows the vertical and horizontal scan separately.

<sup>5</sup> This measurement was done at 3m

## Full Spectrum



The spectral plot shows the vertical (red plot) and horizontal (blue plot) scans separately. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-93:** Emissions limit plot – Field strength measured from 0.030 to 1 GHz, Middle channel: 3830 MHz (1024QAM and 20 MHz BW).

Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
36.554000	37.37	84.38	47.01	5000.0	120.000	101.0	V	323.0	23.1
132.654000	33.03	84.38	51.35	5000.0	120.000	111.0	V	220.0	19.8
589.981000	36.47	84.38	47.91	5000.0	120.000	162.0	V	200.0	29.1
710.569000	35.85	84.38	48.53	5000.0	120.000	118.0	H	20.0	30.6
777.967000	36.94	84.38	47.44	5000.0	120.000	190.0	V	166.0	32.0
915.434000	33.19	84.38	51.19	5000.0	120.000	336.0	H	20.0	33.4

**Table 8.6-2:** Emissions limit results – Field strength measured from 0.030 to 1 GHz, Middle channel: 3830 MHz (1024QAM and 20 MHz BW).

Notes:

<sup>1</sup> Field strength (dB $\mu$ V/m) = receiver/spectrum analyzer value (dB $\mu$ V) + correction factor (dB)

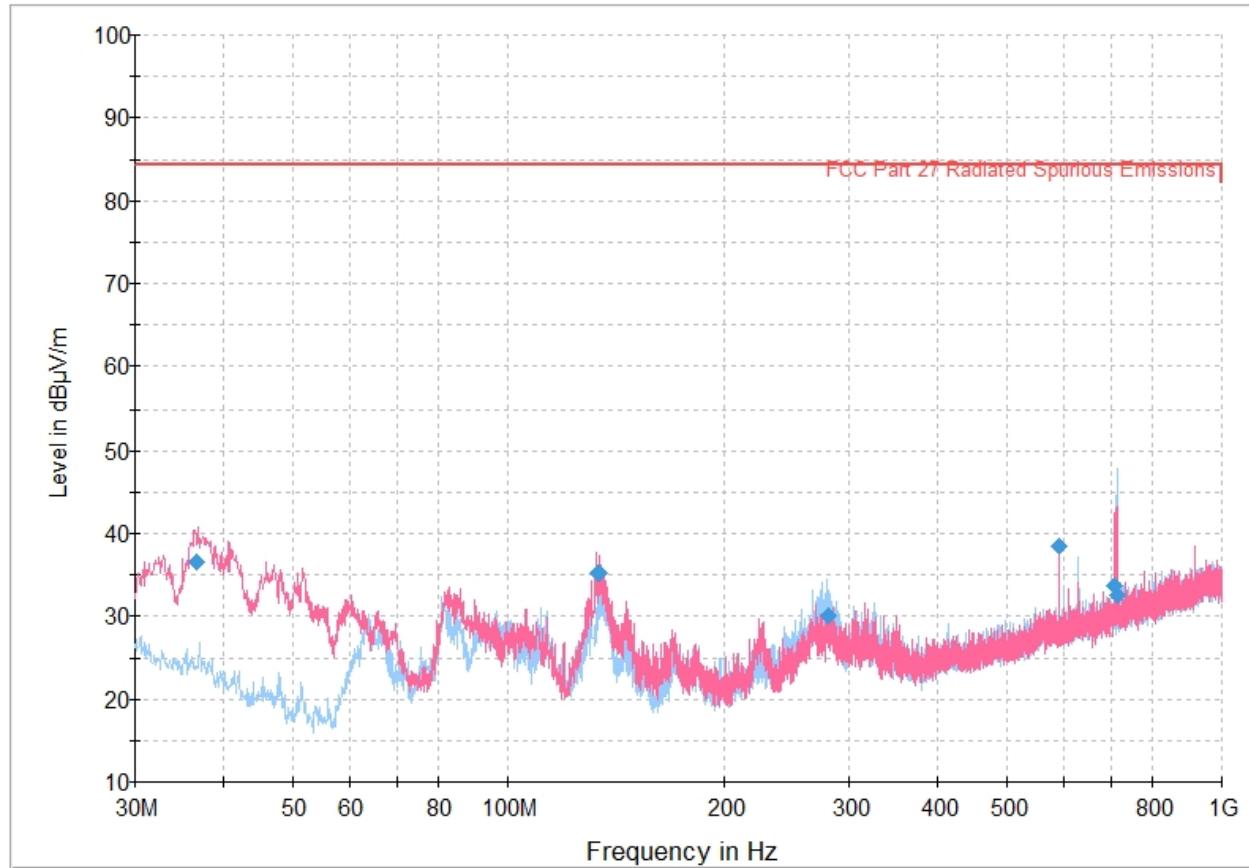
<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)

<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot shows the vertical and horizontal scan separately.

<sup>5</sup>This measurement was done at 3m

## Full Spectrum



The spectral plot shows the vertical (red plot) and horizontal (blue plot) scans separately. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-94: Emissions limit plot – Field strength measured from 0.030 to 1 GHz, High channel: 3970 MHz (1024QAM and 20 MHz BW).**

Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
36.647000	36.52	84.38	47.86	5000.0	120.000	101.0	V	163.0	23.0
134.089000	35.27	84.38	49.11	5000.0	120.000	101.0	V	151.0	19.8
280.438000	30.05	84.38	54.33	5000.0	120.000	158.0	H	189.0	21.6
589.981000	38.38	84.38	46.00	5000.0	120.000	121.0	V	262.0	29.1
708.150000	33.78	84.38	50.60	5000.0	120.000	101.0	V	270.0	30.6
712.829000	32.45	84.38	51.93	5000.0	120.000	194.0	H	0.0	30.7

**Table 8.6-3: Emissions limit results – Field strength measured from 0.030 to 1 GHz, High channel: 3970 MHz (1024QAM and 20 MHz BW).**

Notes: <sup>1</sup> Field strength (dB $\mu$ V/m) = receiver/spectrum analyzer value (dB $\mu$ V) + correction factor (dB)

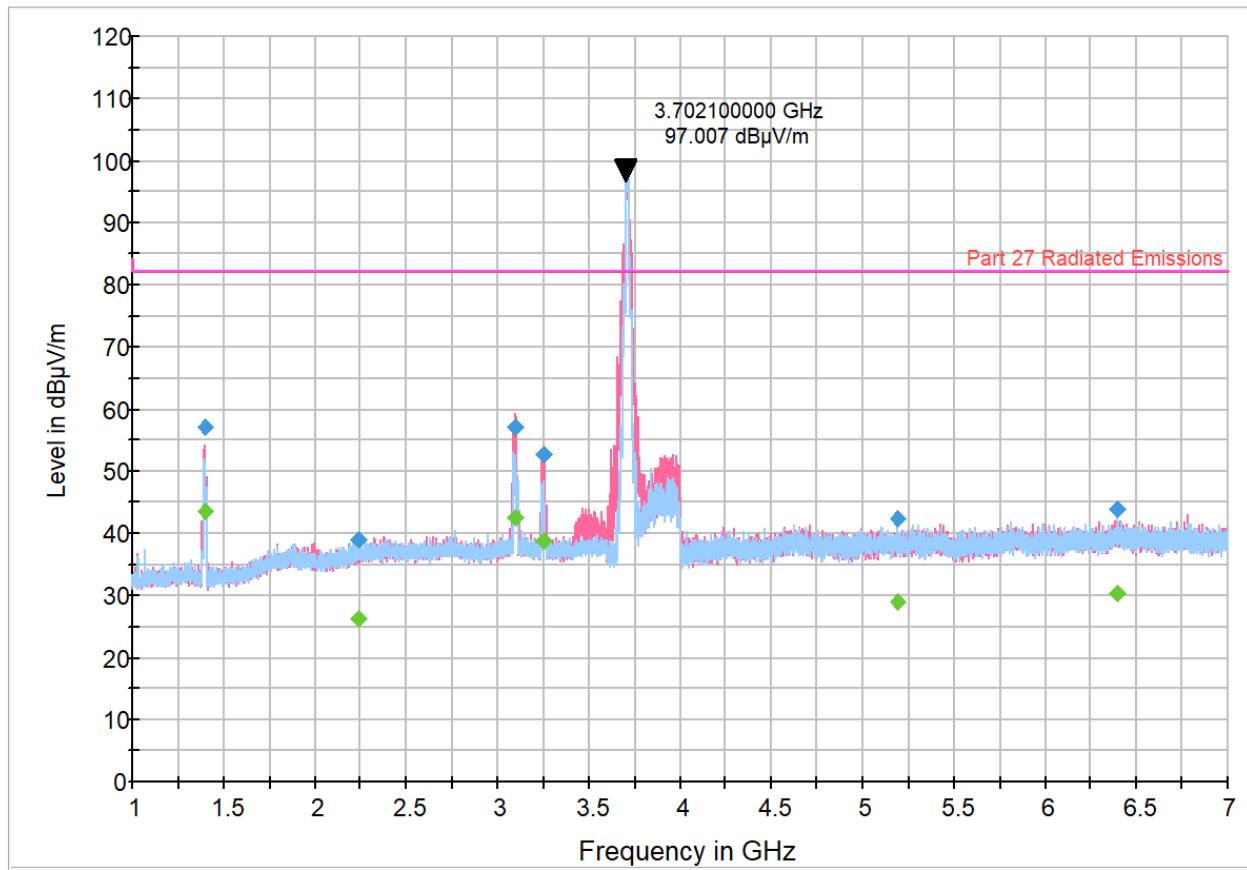
<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)

<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot shows the vertical and horizontal scan separately.

<sup>5</sup>This measurement was done at 3m

## Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-95:** Emissions limit plot – Field strength measured from 1 to 7 GHz, Low channel: 3710 MHz (1024QAM and 20 MHz BW).

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)
1395.200000	57.09	---	82.23	25.14	5000.0	1000.000	138.0	V	196.0	-14.6
1395.200000	---	43.57	82.23	38.66	5000.0	1000.000	138.0	V	196.0	-14.6
2241.000000	39.10	---	82.23	43.13	5000.0	1000.000	266.0	H	0.0	-10.5
2241.000000	---	26.16	82.23	56.07	5000.0	1000.000	266.0	H	0.0	-10.5
3096.900000	---	42.55	82.23	39.68	5000.0	1000.000	191.0	V	174.0	-7.6
3096.900000	56.95	---	82.23	25.28	5000.0	1000.000	191.0	V	174.0	-7.6
3253.100000	---	38.72	82.23	43.51	5000.0	1000.000	188.0	V	175.0	-7.3
3253.100000	52.65	---	82.23	29.58	5000.0	1000.000	188.0	V	175.0	-7.3
5192.900000	---	29.02	82.23	53.21	5000.0	1000.000	388.0	H	229.0	-2.6
5192.900000	42.27	---	82.23	39.96	5000.0	1000.000	388.0	H	229.0	-2.6
6395.100000	---	30.21	82.23	52.02	5000.0	1000.000	118.0	H	141.0	-0.3
6395.100000	43.75	---	82.23	38.48	5000.0	1000.000	118.0	H	141.0	-0.3

**Table 8.6-4:** Emissions limit results – Field strength measured from 1 to 7 GHz, Low channel: 3710 MHz (1024QAM and 20 MHz BW).

Notes:

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

<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

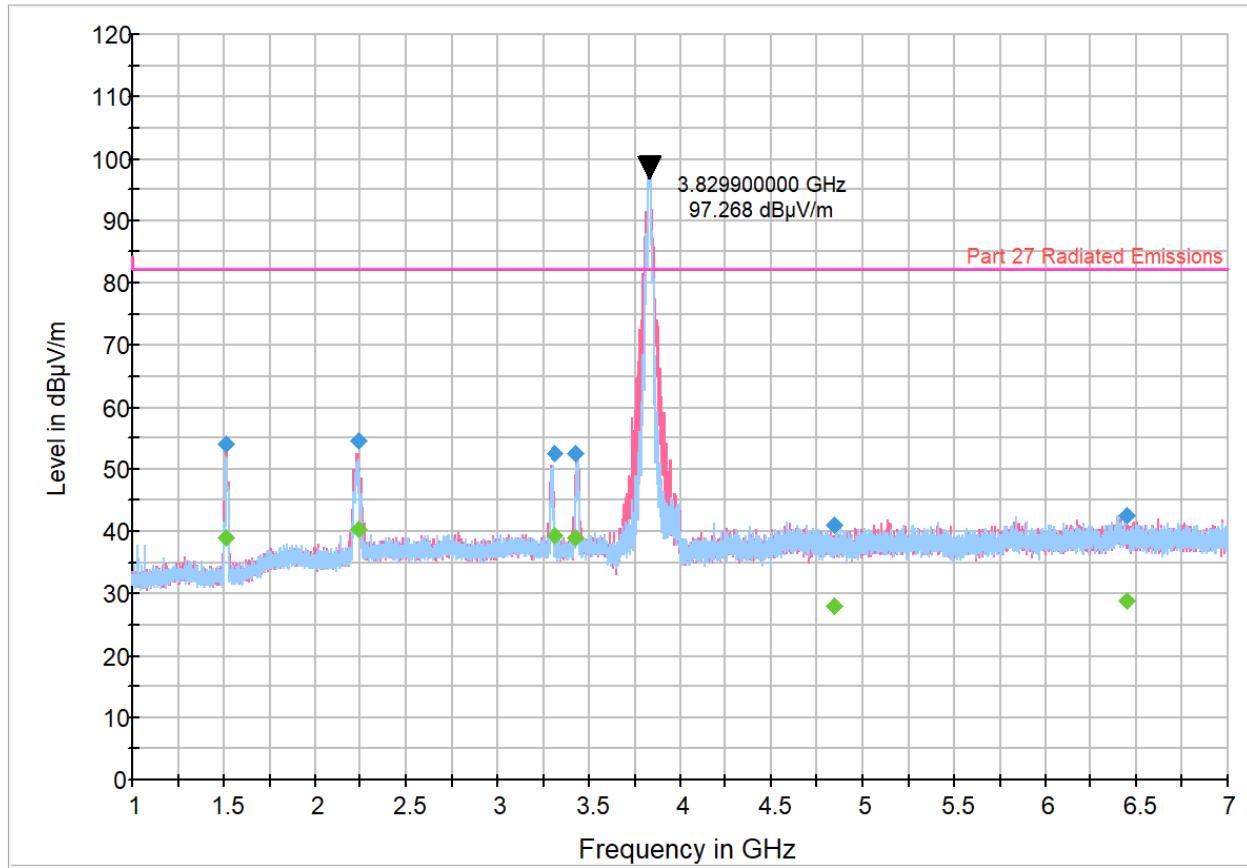
<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

<sup>6</sup>The signal over the limit, corresponding to the fundamental signal and it is out from the scope of this test.

## Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-96:** Emissions limit plot – Field strength measured from 1 to 7 GHz, Middle channel: 3830 MHz (1024QAM and 20 MHz BW).

Frequency (MHz)	MaxPeak (dB $\mu$ V/m)	CAverage (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1510.400000	---	38.88	82.23	43.35	5000.0	1000.000	98.0	V	199.0	-14.5
1510.400000	54.08	---	82.23	28.15	5000.0	1000.000	98.0	V	199.0	-14.5
2238.600000	---	40.22	82.23	42.01	5000.0	1000.000	148.0	V	194.0	-10.5
2238.600000	54.44	---	82.23	27.79	5000.0	1000.000	148.0	V	194.0	-10.5
3307.600000	---	39.18	82.23	43.05	5000.0	1000.000	109.0	V	190.0	-6.8
3307.600000	52.53	---	82.23	29.70	5000.0	1000.000	109.0	V	190.0	-6.8
3426.100000	---	39.08	82.23	43.15	5000.0	1000.000	197.0	V	209.0	-6.7
3426.100000	52.53	---	82.23	29.70	5000.0	1000.000	197.0	V	209.0	-6.7
4846.800000	---	28.15	82.23	54.08	5000.0	1000.000	188.0	H	26.0	-2.8
4846.800000	41.07	---	82.23	41.16	5000.0	1000.000	188.0	H	26.0	-2.8
6443.800000	---	28.83	82.23	53.40	5000.0	1000.000	118.0	H	0.0	-0.6
6443.800000	42.47	---	82.23	39.76	5000.0	1000.000	118.0	H	0.0	-0.6

**Table 8.6-5:** Emissions limit results – Field strength measured from 1 to 7 GHz, Middle channel: 3830 MHz (1024QAM and 20 MHz BW).

Notes:

<sup>1</sup>Field strength (dB $\mu$ V/m) = receiver/spectrum analyzer value (dB $\mu$ V) + correction factor (dB)

<sup>2</sup>Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

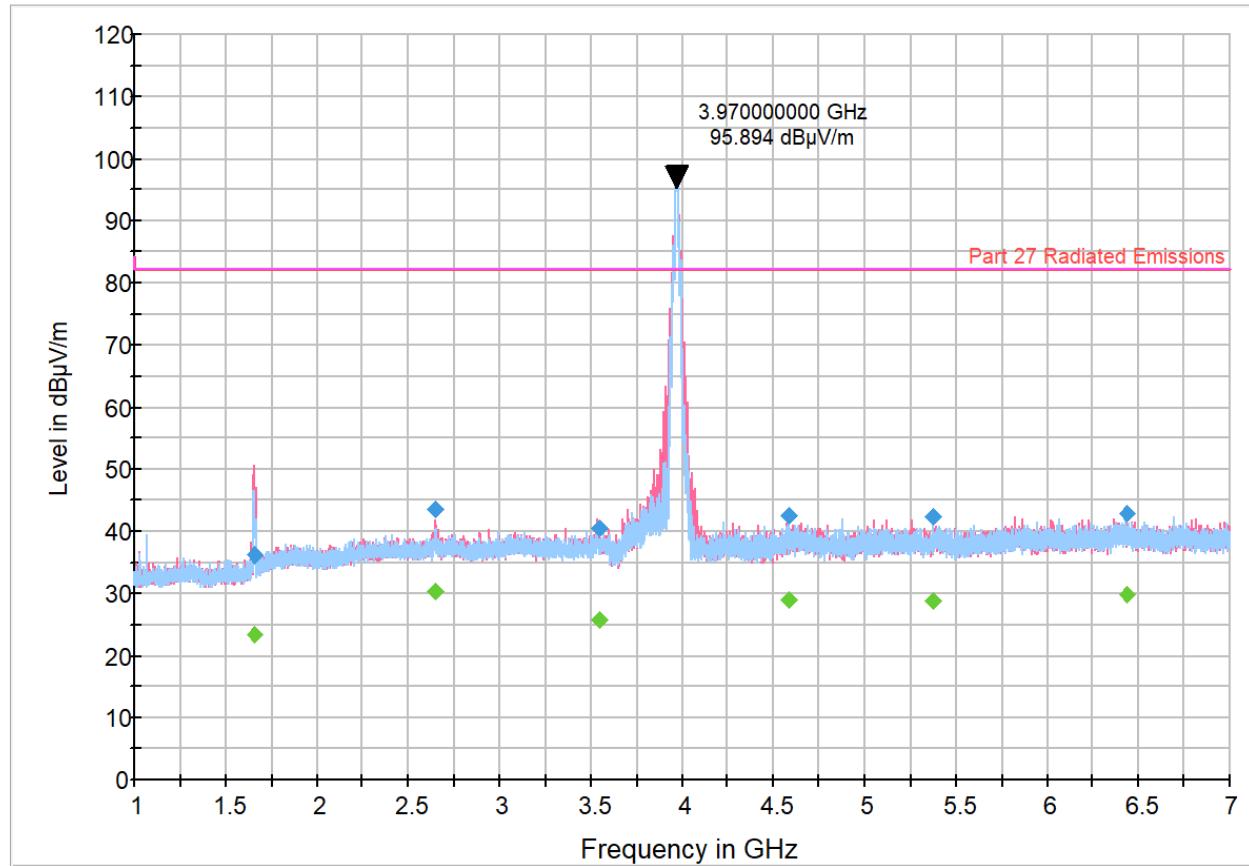
<sup>3</sup>The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

<sup>6</sup>The signal over the limit, corresponding to the fundamental signal and it is out from the scope of this test.

## Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-97:** Emissions limit plot – Field strength measured from 1 to 7 GHz, High channel: 3970 MHz (1024QAM and 20 MHz BW).

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)
1655.400000	36.24	---	82.23	45.99	5000.0	1000.000	188.0	V	174.0	-13.8
1655.400000	---	23.37	82.23	58.86	5000.0	1000.000	188.0	V	174.0	-13.8
2649.200000	43.61	---	82.23	38.62	5000.0	1000.000	118.0	V	223.0	-9.3
2649.200000	---	30.21	82.23	52.02	5000.0	1000.000	118.0	V	223.0	-9.3
3542.500000	40.56	---	82.23	41.67	5000.0	1000.000	98.0	V	143.0	-6.3
3542.500000	---	25.66	82.23	56.57	5000.0	1000.000	98.0	V	143.0	-6.3
4580.600000	---	29.04	82.23	53.19	5000.0	1000.000	268.0	H	40.0	-2.3
4580.600000	42.52	---	82.23	39.71	5000.0	1000.000	268.0	H	40.0	-2.3
5368.800000	42.17	---	82.23	40.06	5000.0	1000.000	318.0	H	110.0	-2.6
5368.800000	---	28.85	82.23	53.38	5000.0	1000.000	318.0	H	110.0	-2.6
6433.800000	---	29.75	82.23	52.48	5000.0	1000.000	239.0	V	322.0	-0.5
6433.800000	42.82	---	82.23	39.41	5000.0	1000.000	239.0	V	322.0	-0.5

**Table 8.6-6:** Emissions limit results – Field strength measured from 1 to 7 GHz, High channel: 3970 MHz (1024QAM and 20 MHz BW).

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

<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

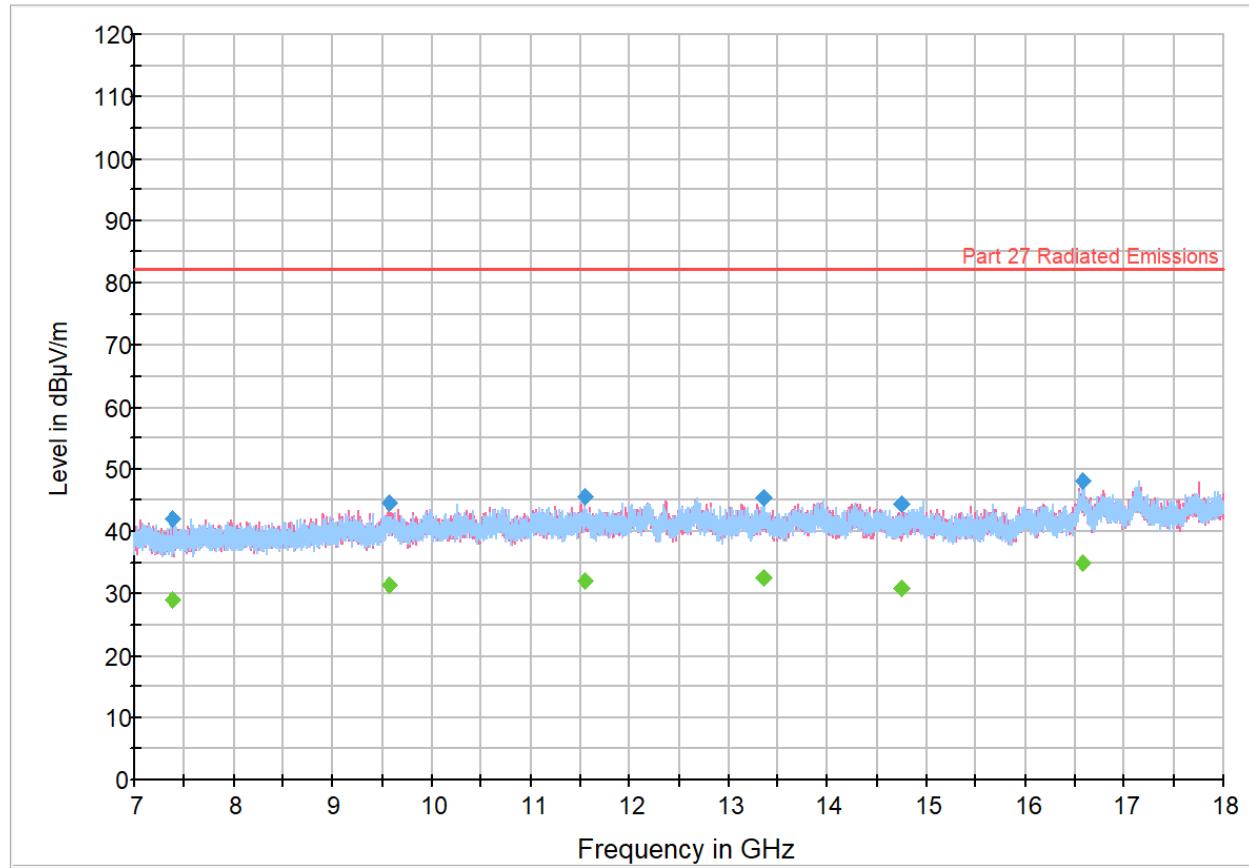
<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

<sup>6</sup>The signal over the limit, corresponding to the fundamental signal and it is out from the scope of this test.

## Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-98: Emissions limit plot – Field strength measured from 7 to 18 GHz, Low channel: 3710 MHz (1024QAM and 20 MHz BW).**

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)
7389.200000	42.11	---	82.23	40.12	5000.0	1000.000	169.0	H	0.0	-1.2
7389.200000	---	29.00	82.23	53.23	5000.0	1000.000	169.0	H	0.0	-1.2
9566.850000	---	31.39	82.23	50.84	5000.0	1000.000	129.0	V	177.0	1.8
9566.850000	44.65	---	82.23	37.58	5000.0	1000.000	129.0	V	177.0	1.8
11549.500000	---	32.12	82.23	50.11	5000.0	1000.000	189.0	H	276.0	2.9
11549.500000	45.50	---	82.23	36.73	5000.0	1000.000	189.0	H	276.0	2.9
13357.300000	---	32.59	82.23	49.64	5000.0	1000.000	109.0	H	227.0	7.4
13357.300000	45.48	---	82.23	36.75	5000.0	1000.000	109.0	H	227.0	7.4
14749.000000	---	30.80	82.23	51.43	5000.0	1000.000	178.0	V	106.0	6.5
14749.000000	44.28	---	82.23	37.95	5000.0	1000.000	178.0	V	106.0	6.5
16577.250000	48.25	---	82.23	33.98	5000.0	1000.000	220.0	H	246.0	12.7
16577.250000	---	35.02	82.23	47.21	5000.0	1000.000	220.0	H	246.0	12.7

**Table 8.6-7: Emissions limit results – Field strength measured from 7 to 18 GHz, Low channel: 3710 MHz (1024QAM and 20 MHz BW).**

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

<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

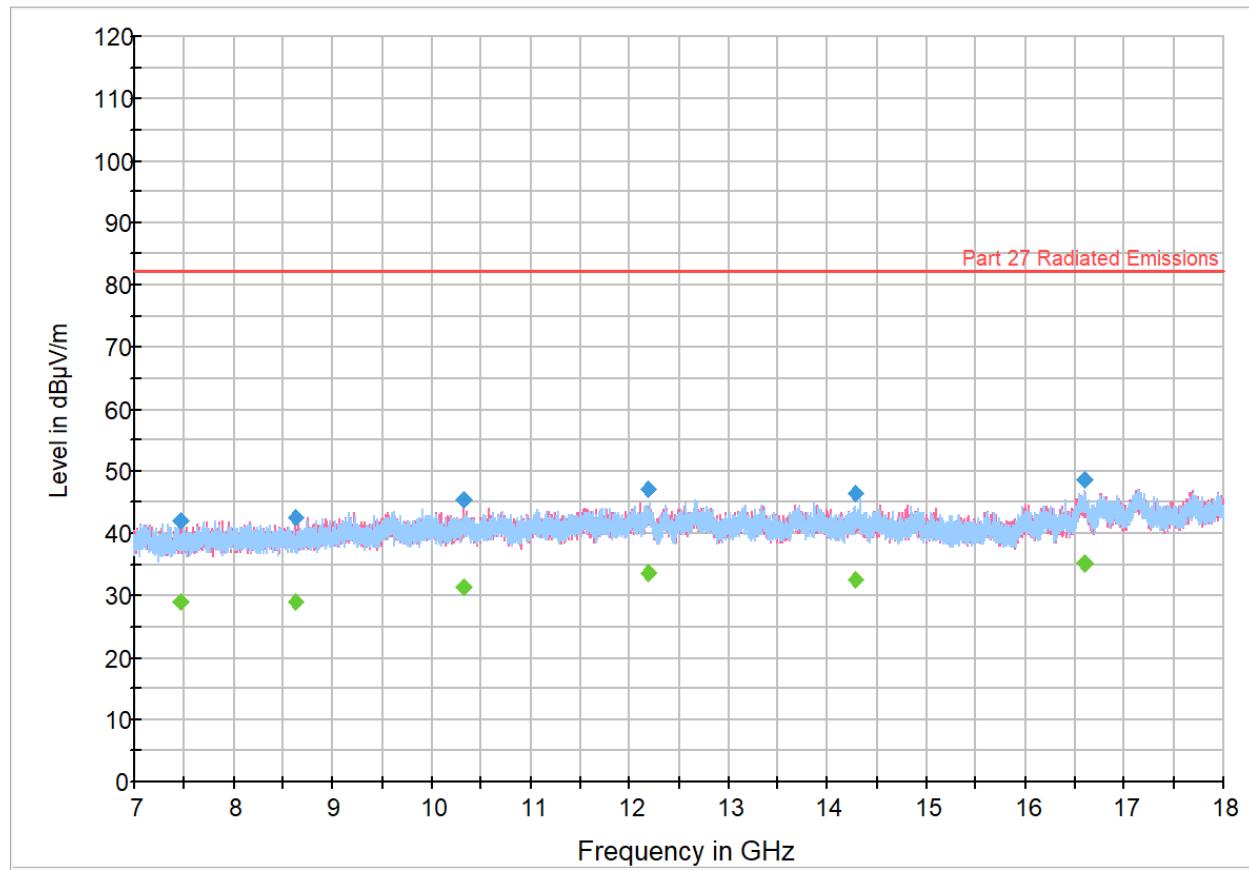
<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

<sup>6</sup>A highpass filter was used to suppress the fundamental signal.

## Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-99: Emissions limit plot – Field strength measured from 7 to 18 GHz, Middle channel: 3830 MHz (1024QAM and 20 MHz BW).**

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)
7469.950000	42.06	---	82.23	40.17	5000.0	1000.000	210.0	V	40.0	-0.8
7469.950000	---	29.17	82.23	53.06	5000.0	1000.000	210.0	V	40.0	-0.8
8627.650000	42.46	---	82.23	39.77	5000.0	1000.000	110.0	V	92.0	0.4
8627.650000	---	29.14	82.23	53.09	5000.0	1000.000	110.0	V	92.0	0.4
10314.800000	45.37	---	82.23	36.86	5000.0	1000.000	283.0	V	358.0	2.3
10314.800000	---	31.37	82.23	50.86	5000.0	1000.000	283.0	V	358.0	2.3
12188.000000	47.22	---	82.23	35.01	5000.0	1000.000	209.0	H	227.0	5.3
12188.000000	---	33.55	82.23	48.68	5000.0	1000.000	209.0	H	227.0	5.3
14280.850000	46.31	---	82.23	35.92	5000.0	1000.000	148.0	H	0.0	7.9
14280.850000	---	32.57	82.23	49.66	5000.0	1000.000	148.0	H	0.0	7.9
16589.600000	48.78	---	82.23	33.45	5000.0	1000.000	209.0	V	124.0	12.7
16589.600000	---	35.19	82.23	47.04	5000.0	1000.000	209.0	V	124.0	12.7

**Table 8.6-8: Emissions limit results – Field strength measured from 7 to 18 GHz, Middle channel: 3830 MHz (1024QAM and 20 MHz BW).**

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

<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

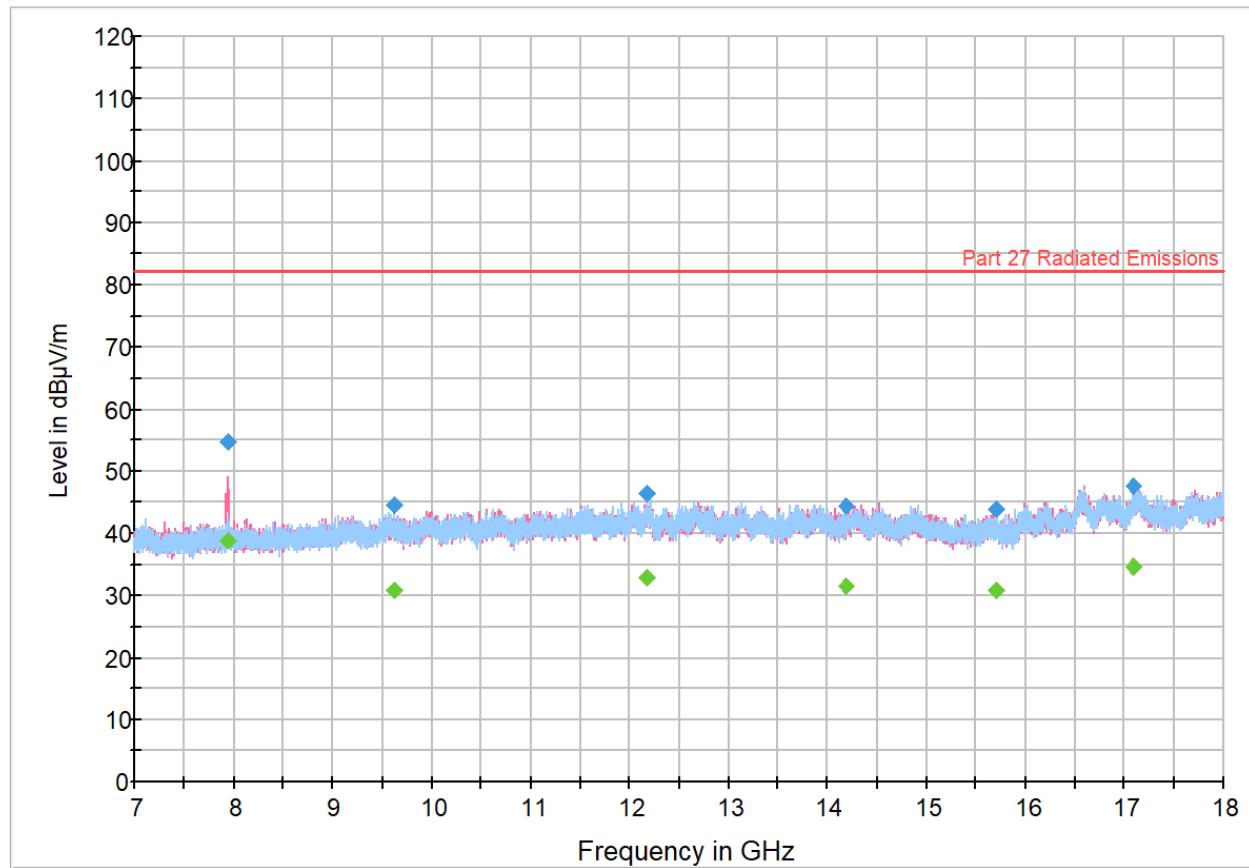
<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

<sup>6</sup>A highpass filter was used to suppress the fundamental signal.

## Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-100: Emissions limit plot – Field strength measured from 7 to 18 GHz, High channel: 3970 MHz (1024QAM and 20 MHz BW).**

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)
7945.600000	---	38.74	82.23	43.49	5000.0	1000.000	149.0	V	195.0	-0.3
7945.600000	54.89	---	82.23	27.34	5000.0	1000.000	149.0	V	195.0	-0.3
9625.150000	---	30.92	82.23	51.31	5000.0	1000.000	321.0	V	194.0	2.0
9625.150000	44.62	---	82.23	37.61	5000.0	1000.000	321.0	V	194.0	2.0
12174.300000	---	32.89	82.23	49.34	5000.0	1000.000	247.0	H	25.0	5.2
12174.300000	46.31	---	82.23	35.92	5000.0	1000.000	247.0	H	25.0	5.2
14182.050000	44.38	---	82.23	37.85	5000.0	1000.000	383.0	H	24.0	6.3
14182.050000	---	31.50	82.23	50.73	5000.0	1000.000	383.0	H	24.0	6.3
15701.150000	43.87	---	82.23	38.36	5000.0	1000.000	373.0	V	0.0	7.8
15701.150000	---	30.76	82.23	51.47	5000.0	1000.000	373.0	V	0.0	7.8
17086.550000	---	34.68	82.23	47.55	5000.0	1000.000	380.0	H	11.0	11.4
17086.550000	47.69	---	82.23	34.54	5000.0	1000.000	380.0	H	11.0	11.4

**Table 8.6-9: Emissions limit results – Field strength measured from 7 to 18 GHz, High channel: 3970 MHz (1024QAM and 20 MHz BW).**

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

<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

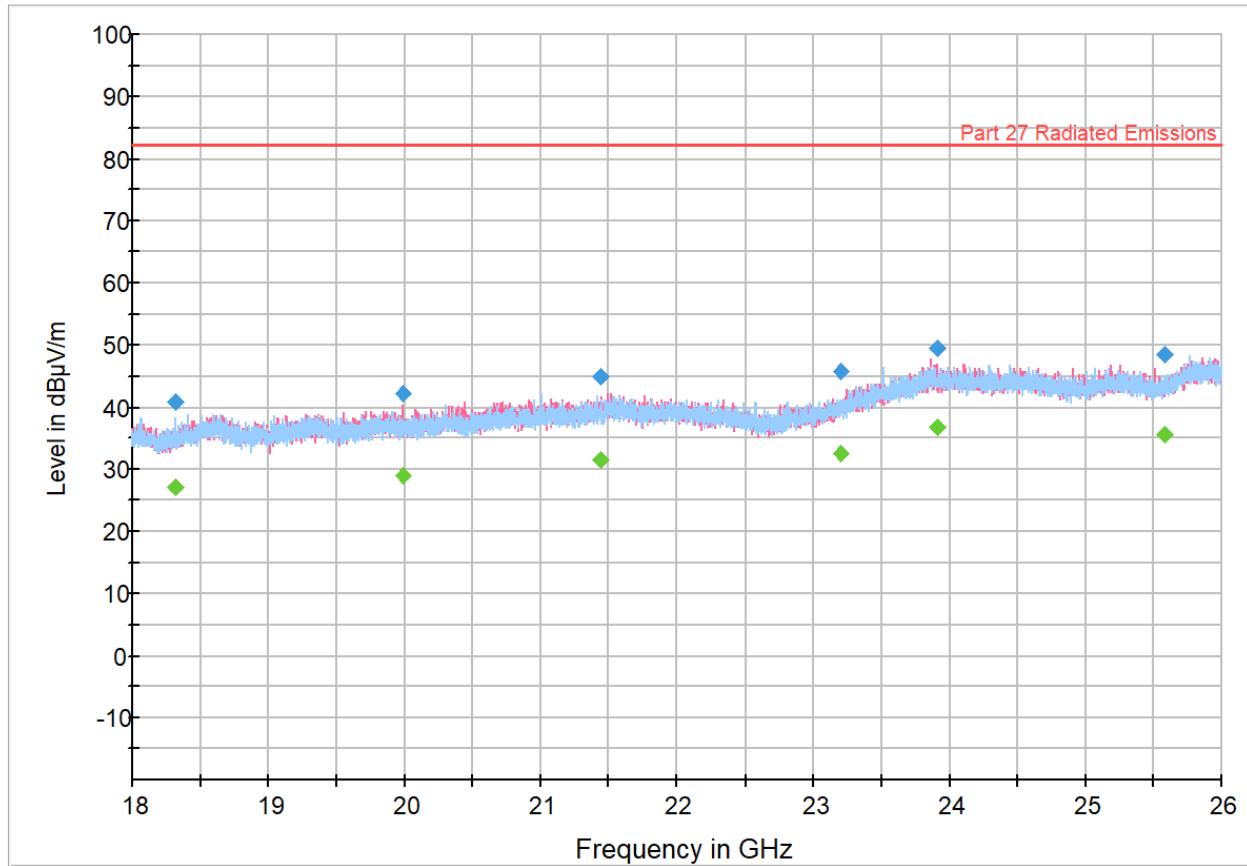
<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

<sup>6</sup>A highpass filter was used to suppress the fundamental signal.

## Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-101: Emissions limit plot – Field strength measured from 18 to 26 GHz, Low channel: 3710 MHz (1024QAM and 20 MHz BW).**

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)
18317.800000	---	27.23	82.23	55.00	5000.0	1000.000	200.0	H	148.0	8.3
18317.800000	40.82	---	82.23	41.41	5000.0	1000.000	200.0	H	148.0	8.3
19985.000000	42.08	---	82.23	40.15	5000.0	1000.000	285.0	V	303.0	10.3
19985.000000	---	28.82	82.23	53.41	5000.0	1000.000	285.0	V	303.0	10.3
21436.200000	45.09	---	82.23	37.14	5000.0	1000.000	229.0	V	242.0	13.3
21436.200000	---	31.34	82.23	50.89	5000.0	1000.000	229.0	V	242.0	13.3
23204.600000	45.70	---	82.23	36.53	5000.0	1000.000	117.0	V	244.0	14.9
23204.600000	---	32.55	82.23	49.68	5000.0	1000.000	117.0	V	244.0	14.9
23905.800000	---	36.70	82.23	45.53	5000.0	1000.000	155.0	V	284.0	18.8
23905.800000	49.65	---	82.23	32.58	5000.0	1000.000	155.0	V	284.0	18.8
25579.800000	48.49	---	82.23	33.74	5000.0	1000.000	181.0	H	86.0	17.4
25579.800000	---	35.50	82.23	46.73	5000.0	1000.000	181.0	H	86.0	17.4

**Table 8.6-10: Emissions limit results – Field strength measured from 18 to 26 GHz, Low channel: 3710 MHz (1024QAM and 20 MHz BW).**

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

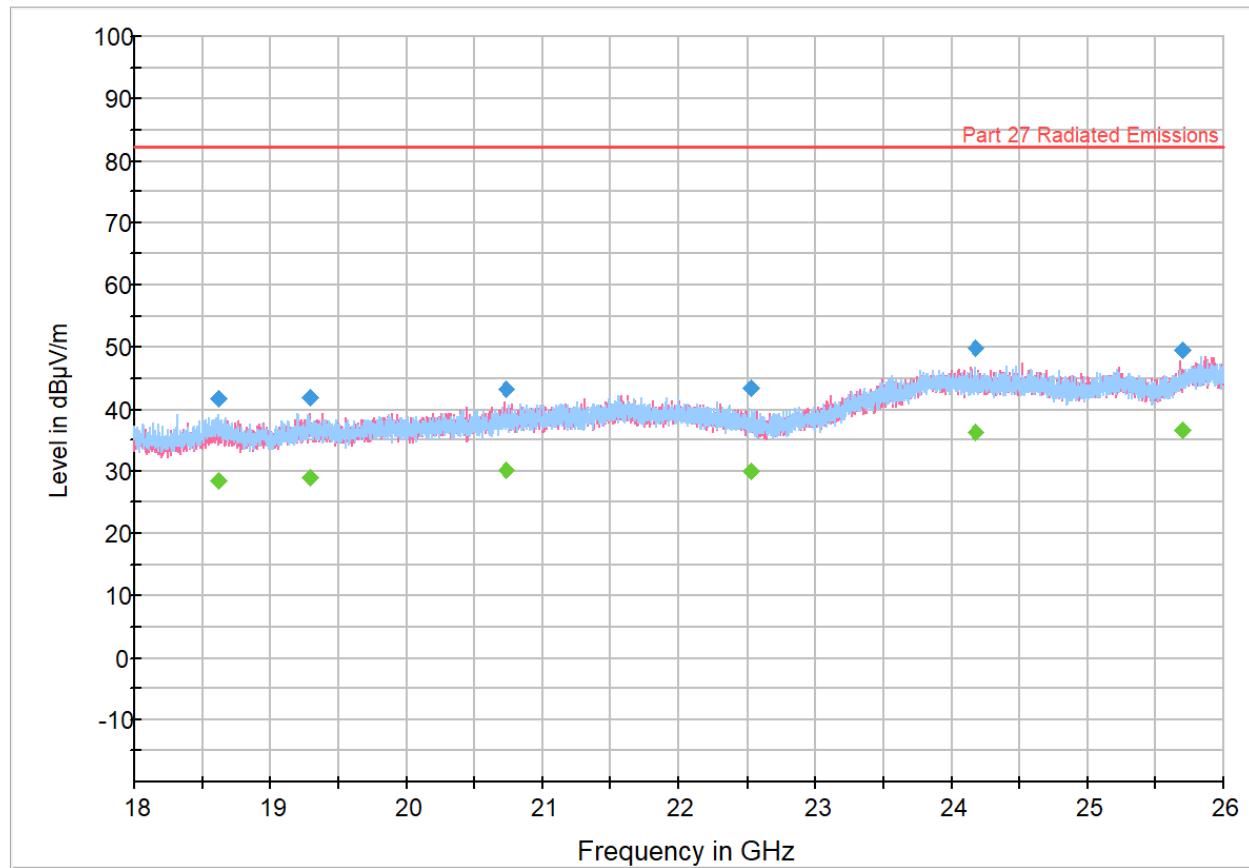
<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

## Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

Figure 8.6-102: Emissions limit plot – Field strength measured from 18 to 26 GHz, Middle channel: 3830 MHz (1024QAM and 20 MHz BW).

Frequency (MHz)	MaxPeak (dB $\mu$ V/m)	CAverage (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18621.000000	---	28.53	82.23	53.70	5000.0	1000.000	340.0	H	11.0	8.9
18621.000000	41.70	---	82.23	40.53	5000.0	1000.000	340.0	H	11.0	8.9
19291.800000	42.03	---	82.23	40.20	5000.0	1000.000	302.0	V	240.0	10.2
19291.800000	---	28.85	82.23	53.38	5000.0	1000.000	302.0	V	240.0	10.2
20731.000000	43.30	---	82.23	38.93	5000.0	1000.000	156.0	V	55.0	11.8
20731.000000	---	30.30	82.23	51.93	5000.0	1000.000	156.0	V	55.0	11.8
22523.000000	43.34	---	82.23	38.89	5000.0	1000.000	111.0	H	322.0	12.1
22523.000000	---	30.02	82.23	52.21	5000.0	1000.000	111.0	H	322.0	12.1
24174.600000	49.73	---	82.23	32.50	5000.0	1000.000	342.0	V	0.0	18.5
24174.600000	---	36.42	82.23	45.81	5000.0	1000.000	342.0	V	0.0	18.5
25699.800000	---	36.66	82.23	45.57	5000.0	1000.000	360.0	V	229.0	17.9
25699.800000	49.45	---	82.23	32.78	5000.0	1000.000	360.0	V	229.0	17.9

Table 8.6-11: Emissions limit results – Field strength measured from 18 to 26 GHz, Middle channel: 3830 MHz (1024QAM and 20 MHz BW).

Notes: <sup>1</sup>Field strength (dB $\mu$ V/m) = receiver/spectrum analyzer value (dB $\mu$ V) + correction factor (dB)

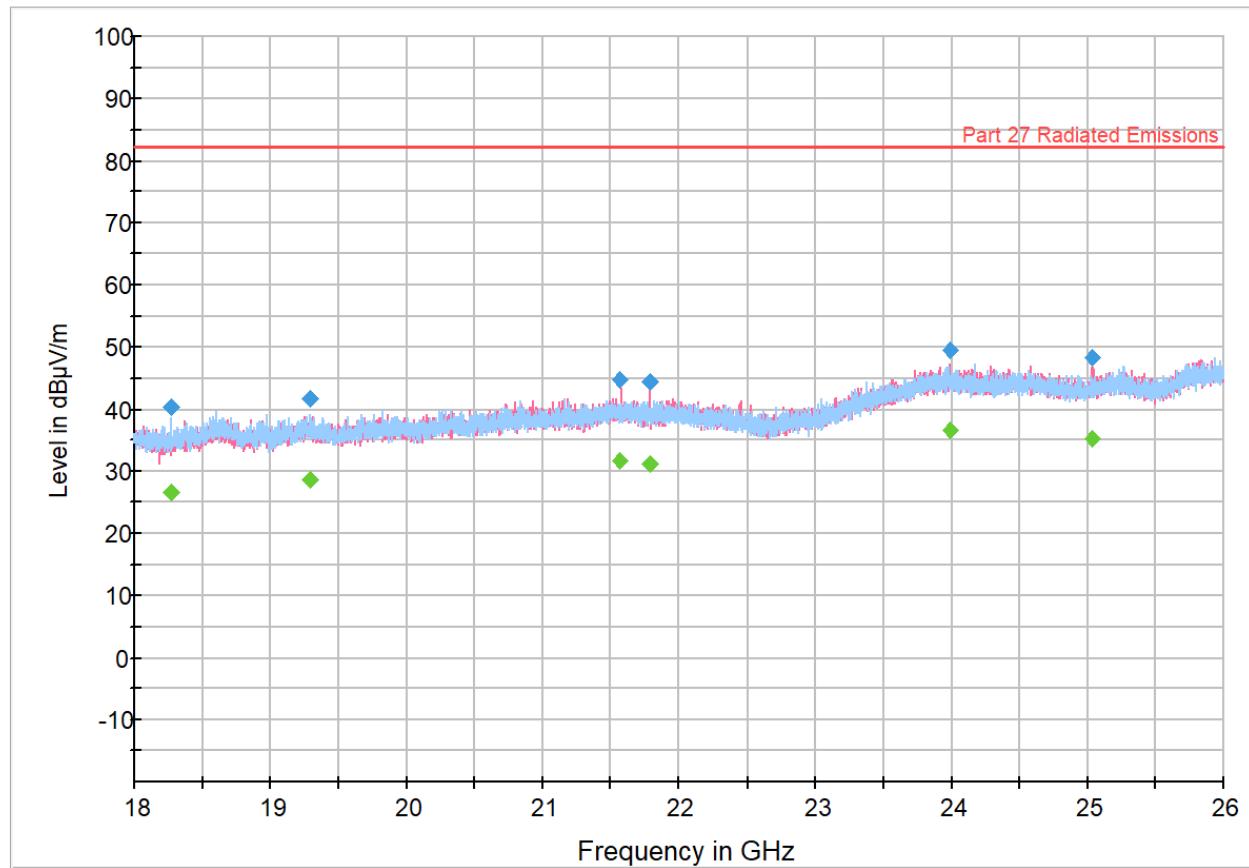
<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

## Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-103: Emissions limit plot – Field strength measured from 18 to 26 GHz, High channel: 3970 MHz (1024QAM and 20 MHz BW).**

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)
18261.800000	---	26.72	82.23	55.51	5000.0	1000.000	249.0	H	0.0	8.0
18261.800000	40.31	---	82.23	41.92	5000.0	1000.000	249.0	H	0.0	8.0
19285.400000	---	28.66	82.23	53.57	5000.0	1000.000	145.0	H	121.0	10.2
19285.400000	41.77	---	82.23	40.46	5000.0	1000.000	145.0	H	121.0	10.2
21566.600000	---	31.74	82.23	50.49	5000.0	1000.000	370.0	V	10.0	13.6
21566.600000	44.79	---	82.23	37.44	5000.0	1000.000	370.0	V	10.0	13.6
21785.000000	---	31.15	82.23	51.08	5000.0	1000.000	351.0	V	212.0	13.1
21785.000000	44.36	---	82.23	37.87	5000.0	1000.000	351.0	V	212.0	13.1
23992.200000	---	36.63	82.23	45.60	5000.0	1000.000	257.0	V	304.0	18.8
23992.200000	49.48	---	82.23	32.75	5000.0	1000.000	257.0	V	304.0	18.8
25036.200000	---	35.39	82.23	46.84	5000.0	1000.000	402.0	V	12.0	16.9
25036.200000	48.25	---	82.23	33.98	5000.0	1000.000	402.0	V	12.0	16.9

**Table 8.6-12: Emissions limit results – Field strength measured from 18 to 26 GHz, High channel: 3970 MHz (1024QAM and 20 MHz BW).**

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

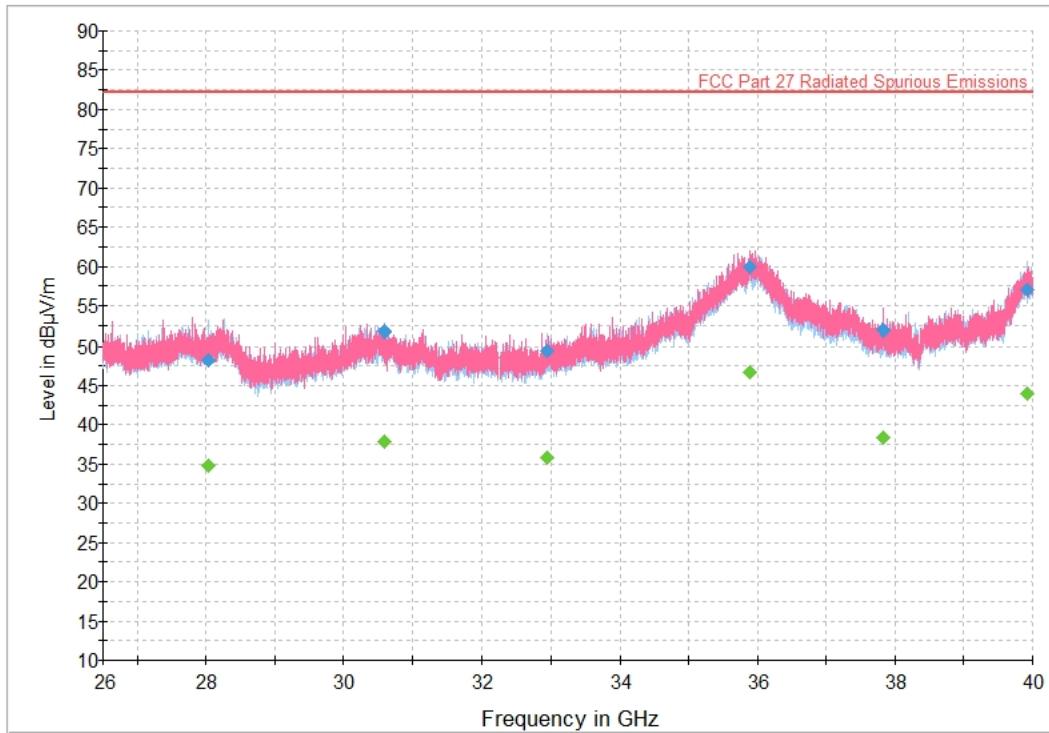
<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

## Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-104:** Emissions limit plot – Field strength measured from 26 to 40 GHz, Low channel: 3710 MHz (1024QAM and 20 MHz BW).

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)
28030.056250	48.23	---	82.23	34.00	5000.0	1000.000	157.0	H	10.0	11.5
28030.056250	---	34.88	82.23	47.35	5000.0	1000.000	157.0	H	10.0	11.5
30585.756250	51.71	---	82.23	30.52	5000.0	1000.000	121.0	H	3.0	11.7
30585.756250	---	37.91	82.23	44.32	5000.0	1000.000	121.0	H	3.0	11.7
32933.537500	---	35.90	82.23	46.33	5000.0	1000.000	158.0	H	62.0	10.2
32933.537500	49.40	---	82.23	32.83	5000.0	1000.000	158.0	H	62.0	10.2
35896.131250	60.02	---	82.23	22.21	5000.0	1000.000	114.0	V	146.0	20.4
35896.131250	---	46.74	82.23	35.49	5000.0	1000.000	114.0	V	146.0	20.4
37828.056250	51.94	---	82.23	30.29	5000.0	1000.000	118.0	V	263.0	13.0
37828.056250	---	38.40	82.23	43.83	5000.0	1000.000	118.0	V	263.0	13.0
39913.375000	---	44.05	82.23	38.18	5000.0	1000.000	198.0	H	171.0	18.2
39913.375000	57.07	---	82.23	25.16	5000.0	1000.000	198.0	H	171.0	18.2

**Table 8.6-13:** Emissions limit results – Field strength measured from 26 to 40 GHz, Low channel: 3710 MHz (1024QAM and 20 MHz BW).

Notes:

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

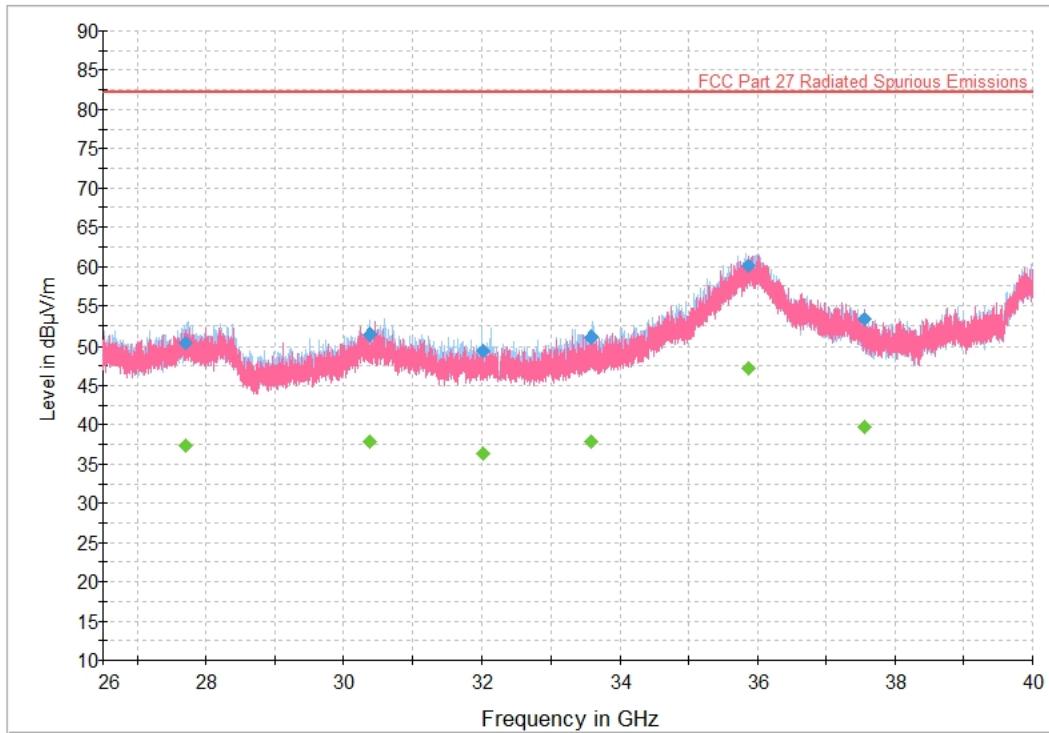
<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

Full Spectrum



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-105:** Emissions limit plot – Field strength measured from 26 to 40 GHz, Middle channel: 3830 MHz (1024QAM and 20 MHz BW).

Frequency (MHz)	MaxPeak (dB $\mu$ V/m)	CAverage (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
27710.987500	---	37.41	82.23	44.82	5000.0	1000.000	131.0	H	317.0	11.4
27710.987500	50.36	---	82.23	31.87	5000.0	1000.000	131.0	H	317.0	11.4
30378.100000	51.44	---	82.23	30.79	5000.0	1000.000	177.0	H	226.0	11.6
30378.100000	---	37.78	82.23	44.45	5000.0	1000.000	177.0	H	226.0	11.6
32020.150000	---	36.38	82.23	45.85	5000.0	1000.000	187.0	H	-1.0	10.5
32020.150000	49.40	---	82.23	32.83	5000.0	1000.000	187.0	H	-1.0	10.5
33586.112500	51.18	---	82.23	31.05	5000.0	1000.000	173.0	H	205.0	11.4
33586.112500	---	37.91	82.23	44.32	5000.0	1000.000	173.0	H	205.0	11.4
35877.856250	60.05	---	82.23	22.18	5000.0	1000.000	184.0	V	205.0	20.3
35877.856250	---	47.14	82.23	35.09	5000.0	1000.000	184.0	V	205.0	20.3
37548.606250	53.34	---	82.23	28.89	5000.0	1000.000	186.0	V	-1.0	13.5
37548.606250	---	39.73	82.23	42.50	5000.0	1000.000	186.0	V	-1.0	13.5

**Table 8.6-14:** Emissions limit results – Field strength measured from 26 to 40 GHz, Middle channel: 3830 MHz (1024QAM and 20 MHz BW).

Notes:

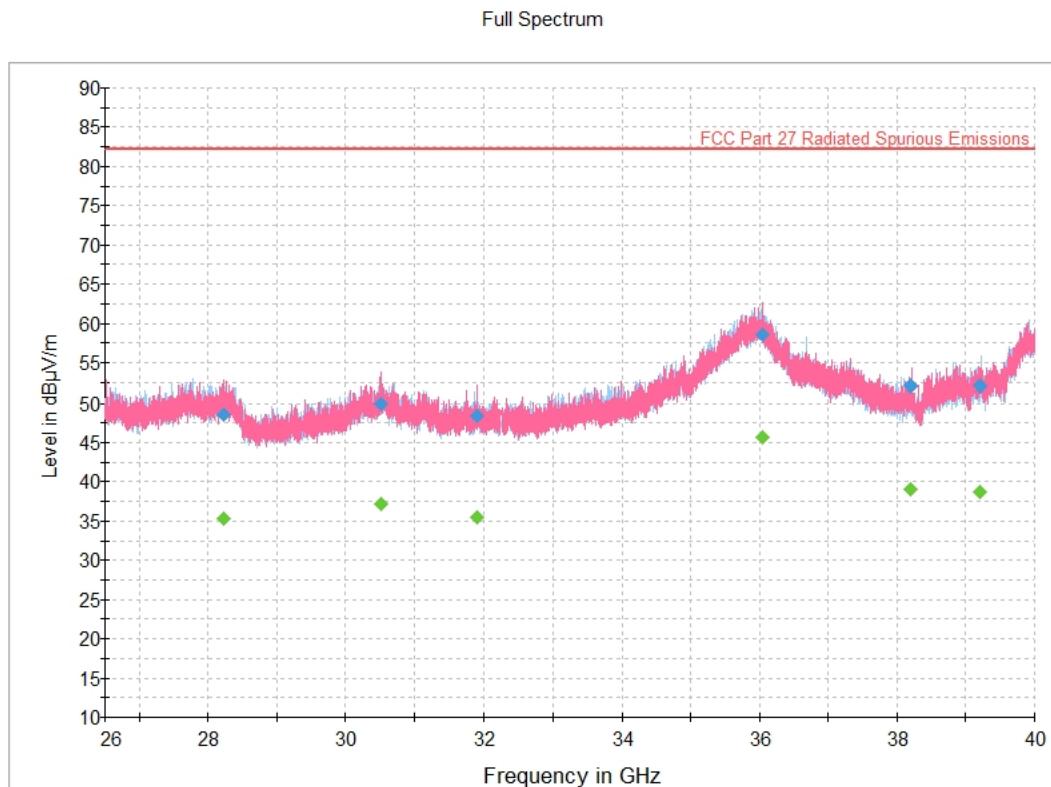
<sup>1</sup> Field strength (dB $\mu$ V/m) = receiver/spectrum analyzer value (dB $\mu$ V) + correction factor (dB)

<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

**Figure 8.6-106:** Emissions limit plot – Field strength measured from 26 to 40 GHz, High channel: 3970 MHz (1024QAM and 20 MHz BW).

Frequency (MHz)	MaxPeak (dB $\mu$ V/m)	CAverage (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
28224.025000	48.47	---	82.23	33.76	5000.0	1000.000	111.0	V	22.0	11.6
28224.025000	---	35.28	82.23	46.95	5000.0	1000.000	111.0	V	22.0	11.6
30506.425000	49.90	---	82.23	32.33	5000.0	1000.000	106.0	V	30.0	12.0
30506.425000	---	37.10	82.23	45.13	5000.0	1000.000	106.0	V	30.0	12.0
31908.962500	---	35.54	82.23	46.69	5000.0	1000.000	104.0	V	10.0	10.5
31908.962500	48.44	---	82.23	33.79	5000.0	1000.000	104.0	V	10.0	10.5
36041.706250	58.64	---	82.23	23.59	5000.0	1000.000	146.0	V	24.0	20.1
36041.706250	---	45.68	82.23	36.55	5000.0	1000.000	146.0	V	24.0	20.1
38199.175000	52.08	---	82.23	30.15	5000.0	1000.000	175.0	V	13.0	12.8
38199.175000	---	39.02	82.23	43.21	5000.0	1000.000	175.0	V	13.0	12.8
39213.212500	---	38.77	82.23	43.46	5000.0	1000.000	171.0	H	296.0	13.4
39213.212500	52.05	---	82.23	30.18	5000.0	1000.000	171.0	H	296.0	13.4

**Table 8.6-15:** Emissions limit results – Field strength measured from 26 to 40 GHz, High channel: 3970 MHz (1024QAM and 20 MHz BW).

Notes:

<sup>1</sup> Field strength (dB $\mu$ V/m) = receiver/spectrum analyzer value (dB $\mu$ V) + correction factor (dB)

<sup>2</sup> Correction factors = antenna factor ACF (dB) + cable loss (dB)+20 dB attenuator to protect the test equipment

<sup>3</sup> The maximum measured value observed over a period of 5 seconds was recorded.

<sup>4</sup>The spectral plot is a summation of a vertical and horizontal scan.

<sup>5</sup>This measurement was done at 3m

## 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  $-30^{\circ}$  to  $+50^{\circ}$  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	April 14, 2025	Temperature	20 °C
Test engineer	Martha Espinoza, Wireless Test Engineer	Air pressure	1007 mbar
Verdict	Pass	Relative humidity	57%

### 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:

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

Since there was no observable frequency drift, 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)	ppm
-30	48	3840.000	0.00
-20	48	3840.000	0.00
-10	48	3840.000	0.00
0	48	3840.000	0.00
+10	48	3840.000	0.00
<b>+20</b>	<b>55.2</b>	3840.000	0.00
<b>+20</b>	<b>48</b>	3840.000	0.00
<b>+20</b>	<b>40.8</b>	3840.000	0.00
+30	48	3840.000	0.00
+40	48	3840.000	0.00
+50	48	3840.000	0.00

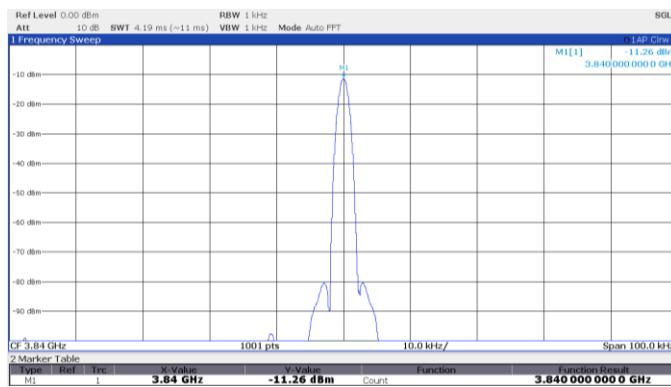


Figure 8.7-1: Frequency stability example plot (signal count function used)