

Figure 8.3-35: HDR-Bandwidth 20MHz conducted spurious emission, 2442 MHz

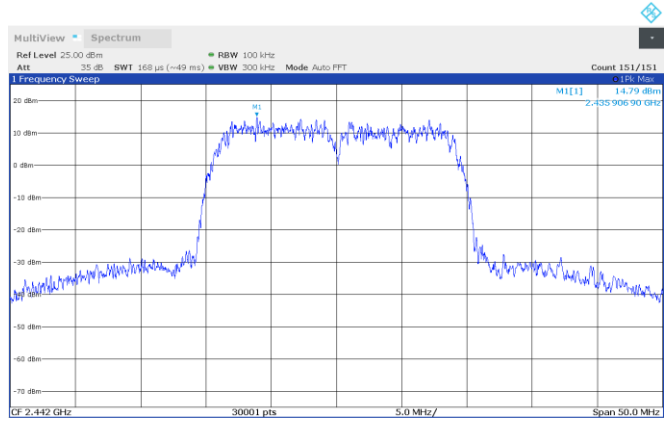


Figure 8.3-36: HDR-Bandwidth 20MHz conducted spurious emission reference level, 2442 MHz

Radiated restricted band edge emissions

TSM-BE-low-TW875-BW1.2-2403MHz

Full Spectrum

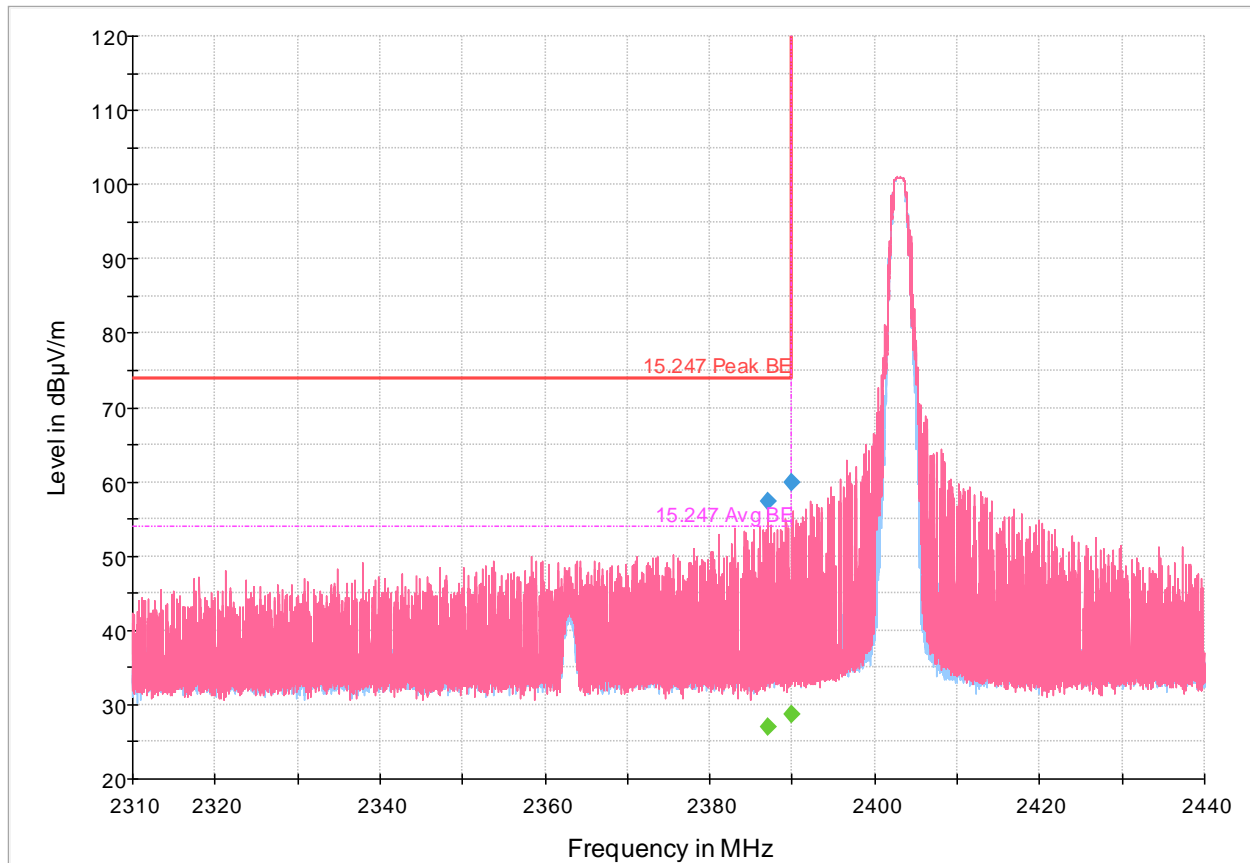


Figure 8.3-37: Radiated emissions spectral plot (2.31 GHz - 2.44 GHz)

Table 8.3-3: 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)
2387.064000	---	26.99	53.90	26.91	5000.0	1000.000	115.0	V	357.0	-10.0
2387.064000	57.28	---	73.90	16.62	5000.0	1000.000	115.0	V	357.0	-10.0
2390.000000	---	28.66	53.90	25.24	5000.0	1000.000	157.0	V	0.0	-10.0
2390.000000	59.90	---	73.90	14.00	5000.0	1000.000	157.0	V	0.0	-10.0

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.

TSM-BE-high-TW875-BW1.2-2478MHz
 Full Spectrum

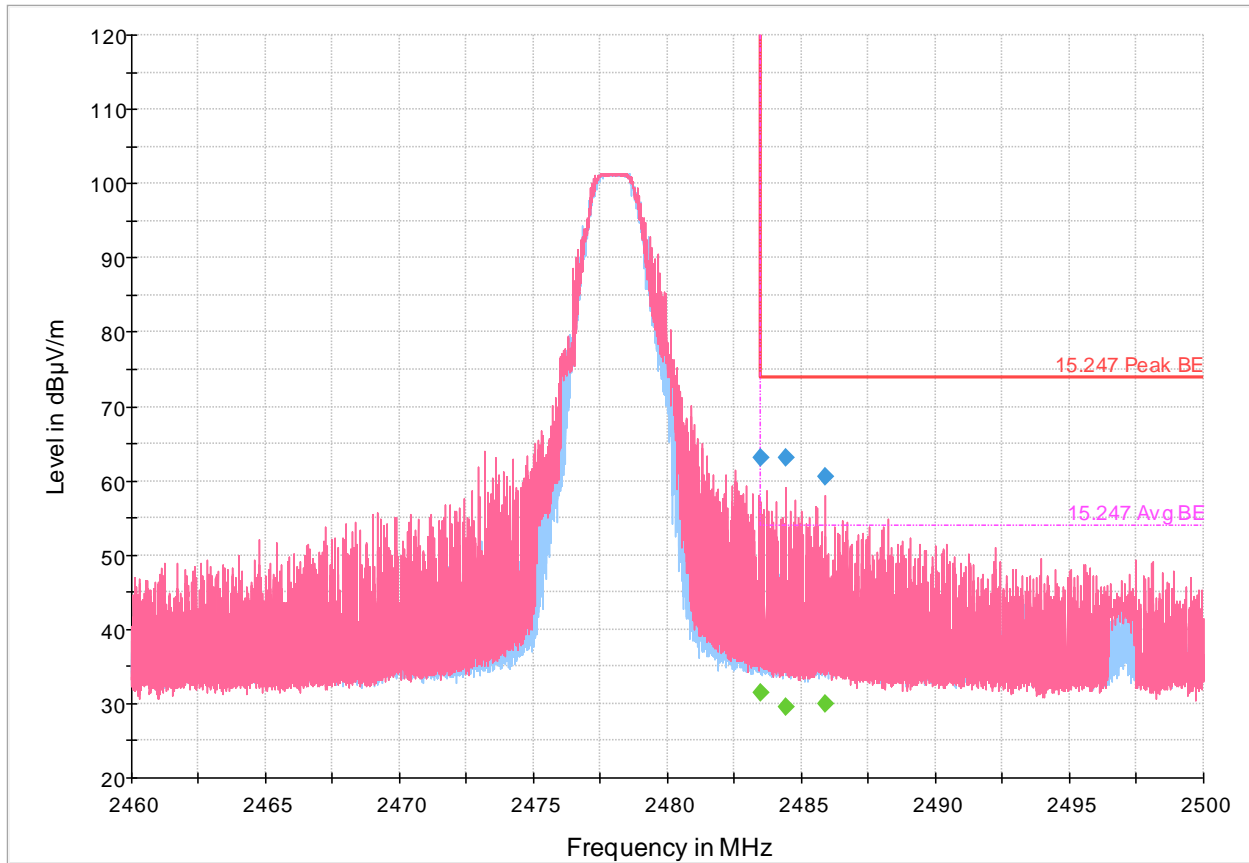


Figure 8.3-38: Radiated emissions spectral plot (2.46 GHz - 2.5 GHz)

Table 8.3-4: 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)
2483.500000	---	31.44	53.90	22.46	5000.0	1000.000	140.0	V	36.0	-9.7
2483.500000	63.19	---	73.90	10.71	5000.0	1000.000	140.0	V	36.0	-9.7
2484.434667	---	29.58	53.90	24.32	5000.0	1000.000	153.0	V	0.0	-9.7
2484.434667	63.03	---	73.90	10.87	5000.0	1000.000	153.0	V	0.0	-9.7
2485.894667	---	30.04	53.90	23.86	5000.0	1000.000	181.0	V	341.0	-9.7
2485.894667	60.49	---	73.90	13.41	5000.0	1000.000	181.0	V	341.0	-9.7

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.

TSM-BE-low-TW875-BW3.6-2404MHz
 Full Spectrum

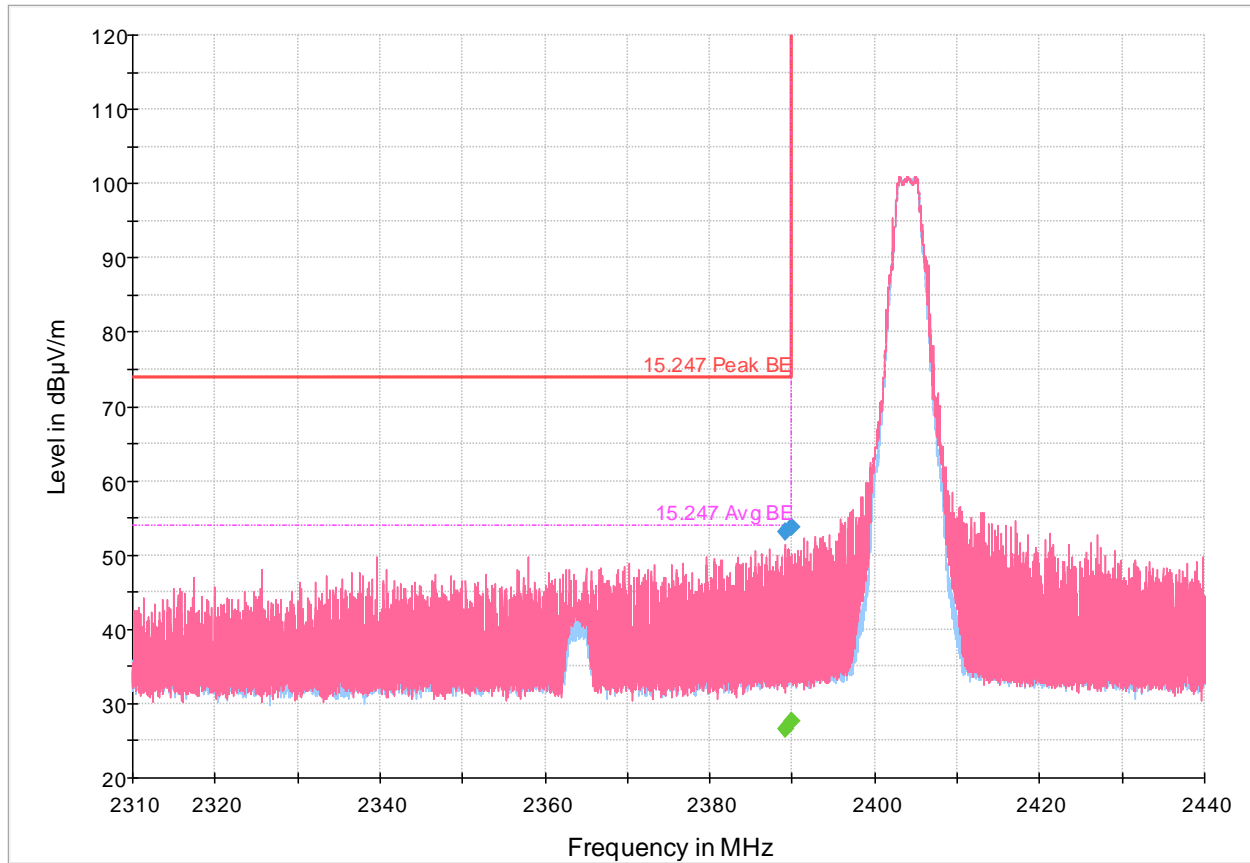


Figure 8.3-39: Radiated emissions spectral plot (2.31 GHz - 2.44 GHz)

Table 8.3-5: 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)
2389.213333	53.14	---	73.90	20.76	5000.0	1000.000	119.0	V	277.0	-10.0
2389.213333	---	26.63	53.90	27.27	5000.0	1000.000	119.0	V	277.0	-10.0
2390.000000	53.73	---	73.90	20.17	5000.0	1000.000	127.0	V	223.0	-10.0
2390.000000	---	27.62	53.90	26.28	5000.0	1000.000	127.0	V	223.0	-10.0

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.

TSM-BE-high-TW875-BW3.6-2478MHz
 Full Spectrum

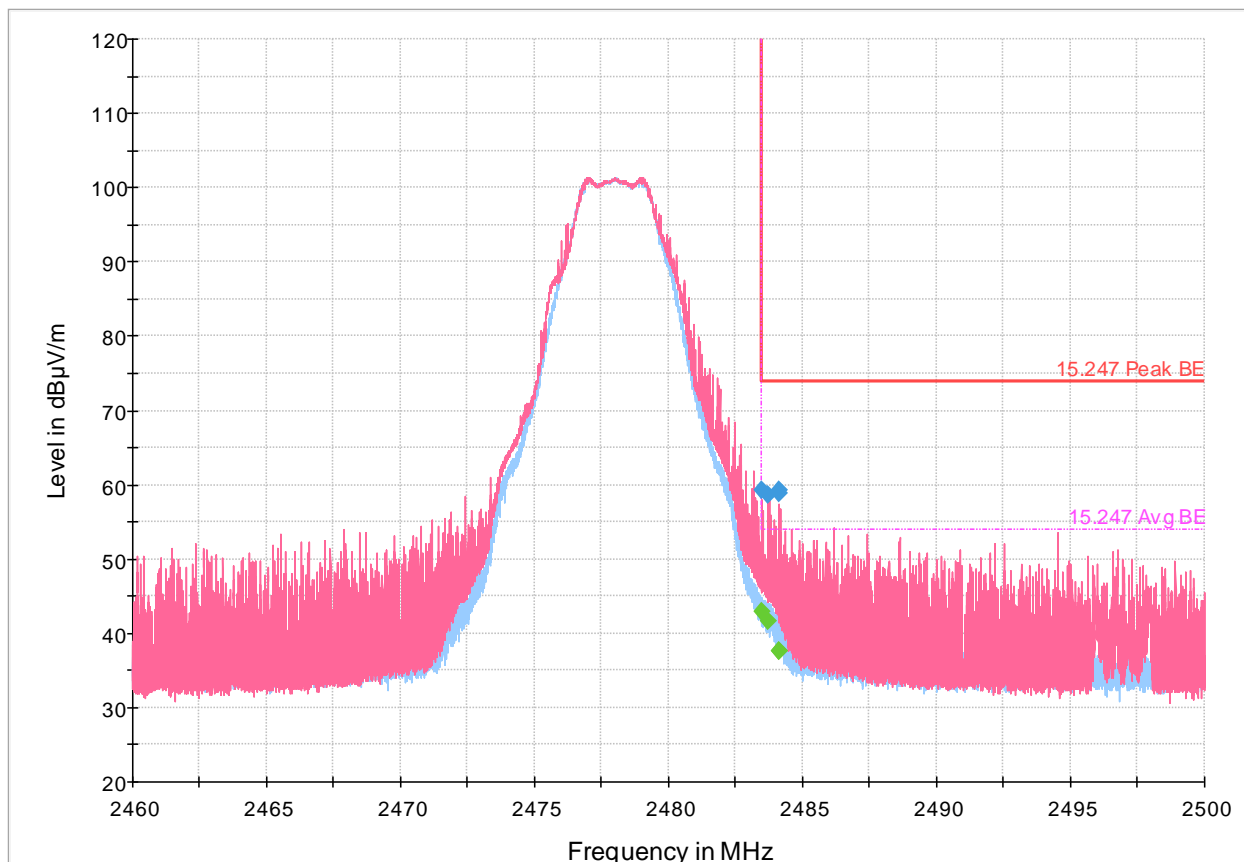


Figure 8.3-40: Radiated emissions spectral plot (2.46 GHz - 2.5 GHz)

Table 8.3-6: 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)
2483.500000	59.31	---	73.90	14.59	5000.0	1000.000	124.0	V	0.0	-9.7
2483.500000	---	42.83	53.90	11.07	5000.0	1000.000	124.0	V	0.0	-9.7
2483.725333	58.66	---	73.90	15.24	5000.0	1000.000	150.0	V	36.0	-9.7
2483.725333	---	41.63	53.90	12.27	5000.0	1000.000	150.0	V	36.0	-9.7
2484.118667	59.30	---	73.90	14.60	5000.0	1000.000	150.0	V	10.0	-9.7
2484.118667	---	37.66	53.90	16.24	5000.0	1000.000	150.0	V	10.0	-9.7
2484.118667	58.94	---	73.90	14.96	5000.0	1000.000	149.0	V	50.0	-9.7
2484.118667	---	37.60	53.90	16.30	5000.0	1000.000	149.0	V	50.0	-9.7

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.

TSM-BE-low-TW950-BW10-2412MHz
 Full Spectrum

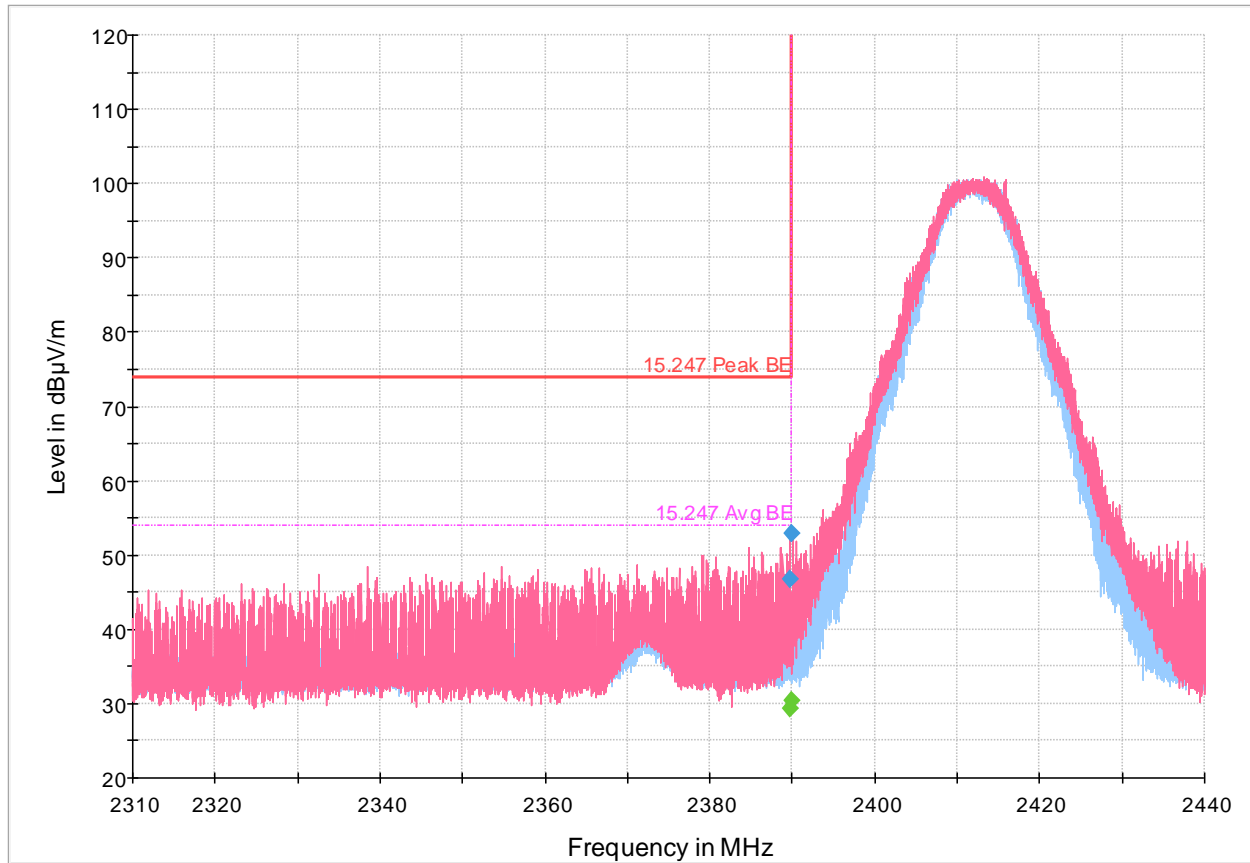


Figure 8.3-41: Radiated emissions spectral plot (2.31 GHz - 2.44 GHz)

Table 8.3-7: 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)
2389.690000	---	29.35	53.90	24.55	5000.0	1000.000	337.0	V	345.0	-10.0
2389.690000	46.76	---	73.90	27.14	5000.0	1000.000	337.0	V	345.0	-10.0
2390.000000	---	30.31	53.90	23.59	5000.0	1000.000	154.0	V	340.0	-10.0
2390.000000	52.92	---	73.90	20.98	5000.0	1000.000	154.0	V	340.0	-10.0

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.

TSM-BE-high-TW950-BW10-2465MHz
 Full Spectrum

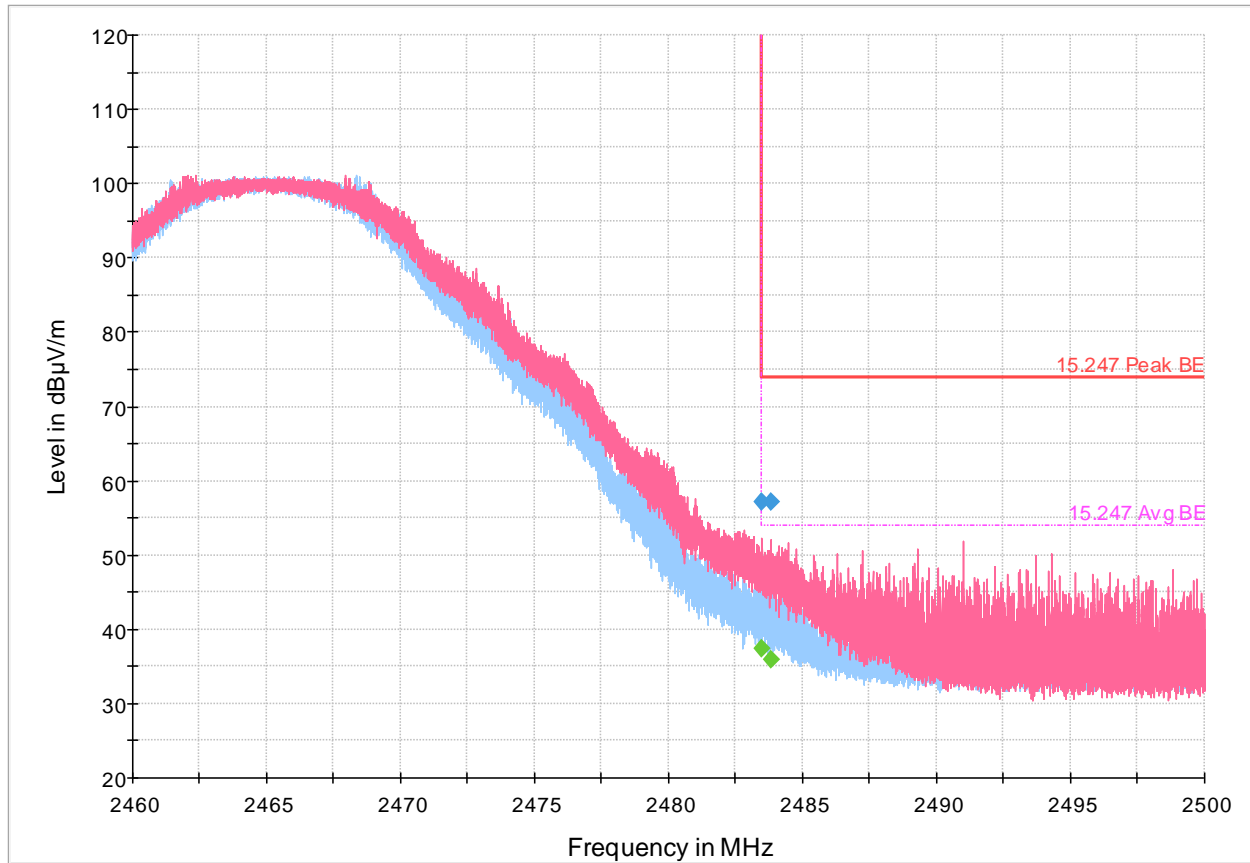


Figure 8.3-42: Radiated emissions spectral plot (2.46 GHz - 2.5 GHz)

Table 8.3-8: 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)
2483.500000	57.12	---	73.90	16.78	5000.0	1000.000	368.0	V	354.0	-9.7
2483.500000	---	37.42	53.90	16.48	5000.0	1000.000	368.0	V	354.0	-9.7
2483.837333	57.24	---	73.90	16.66	5000.0	1000.000	367.0	V	269.0	-9.7
2483.837333	---	35.89	53.90	18.01	5000.0	1000.000	367.0	V	269.0	-9.7

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.

TSM-BE-low-TW950-BW20-2422MHz
 Full Spectrum

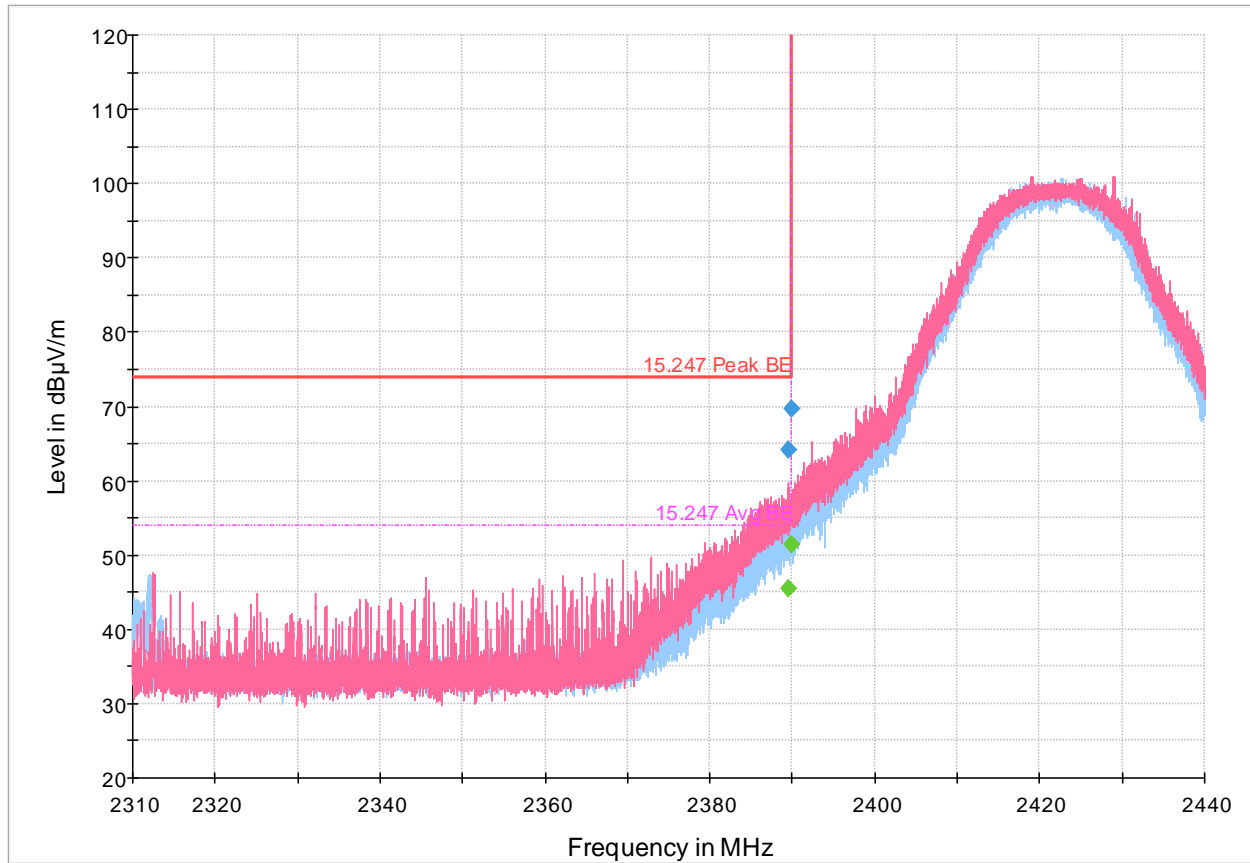


Figure 8.3-43: Radiated emissions spectral plot (2.31 GHz - 2.44 GHz)

Table 8.3-9: 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)
2389.443000	---	45.54	53.90	8.36	5000.0	1000.000	229.0	V	312.0	-10.0
2389.443000	64.16	---	73.90	9.74	5000.0	1000.000	229.0	V	312.0	-10.0
2390.000000	---	51.46	53.90	2.44	5000.0	1000.000	231.0	V	317.0	-10.0
2390.000000	69.76	---	73.90	4.14	5000.0	1000.000	231.0	V	317.0	-10.0

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.

TSM-BE-high-TW950-BW20-2442MHz
 Full Spectrum

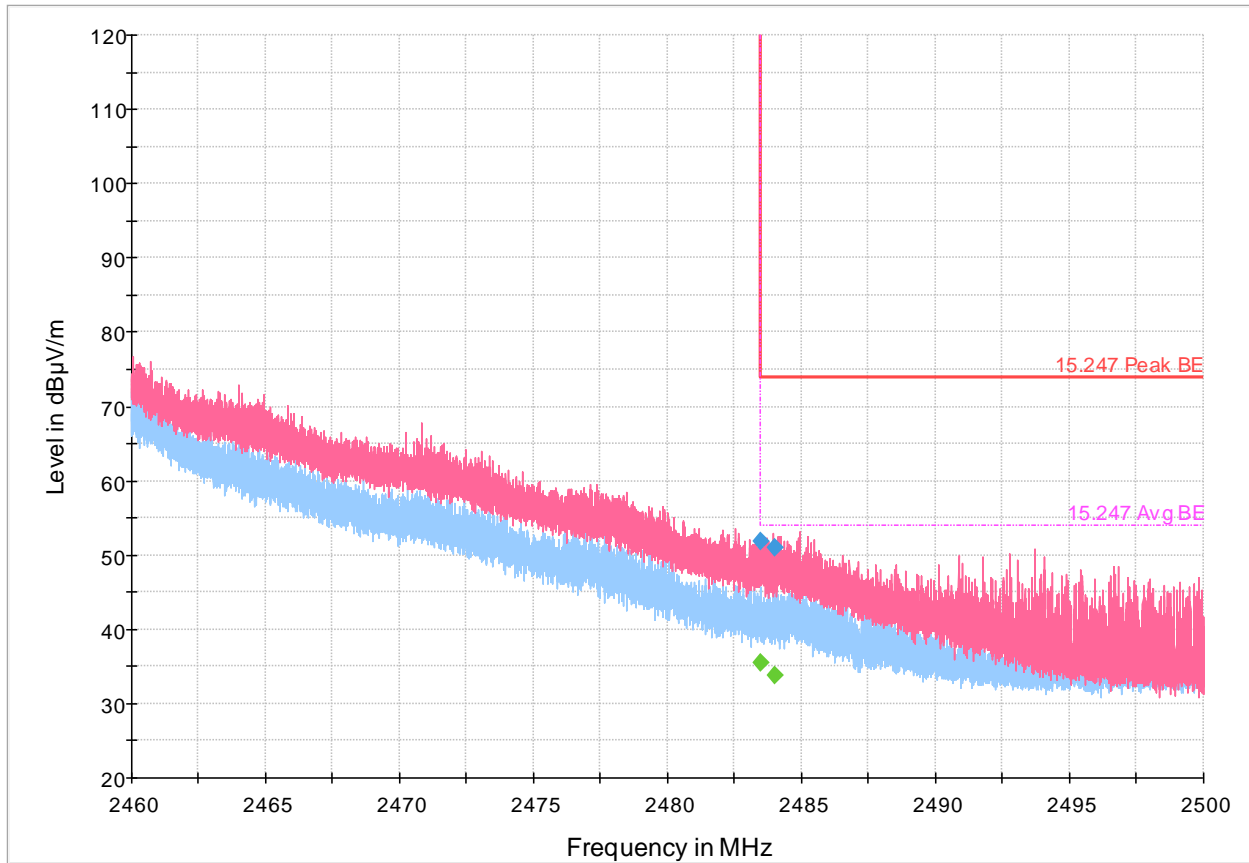


Figure 8.3-44: Radiated emissions spectral plot (2.46 GHz - 2.5 GHz)

Table 8.3-10: 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)
2483.500000	51.91	---	73.90	21.99	5000.0	1000.000	166.0	H	118.0	-9.7
2483.500000	---	35.55	53.90	18.35	5000.0	1000.000	166.0	H	118.0	-9.7
2483.972000	---	33.87	53.90	20.03	5000.0	1000.000	176.0	H	130.0	-9.7
2483.972000	51.03	---	73.90	22.87	5000.0	1000.000	176.0	H	130.0	-9.7

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.

HDR-BE-low-TW950-BW20-2425MHz
 Full Spectrum

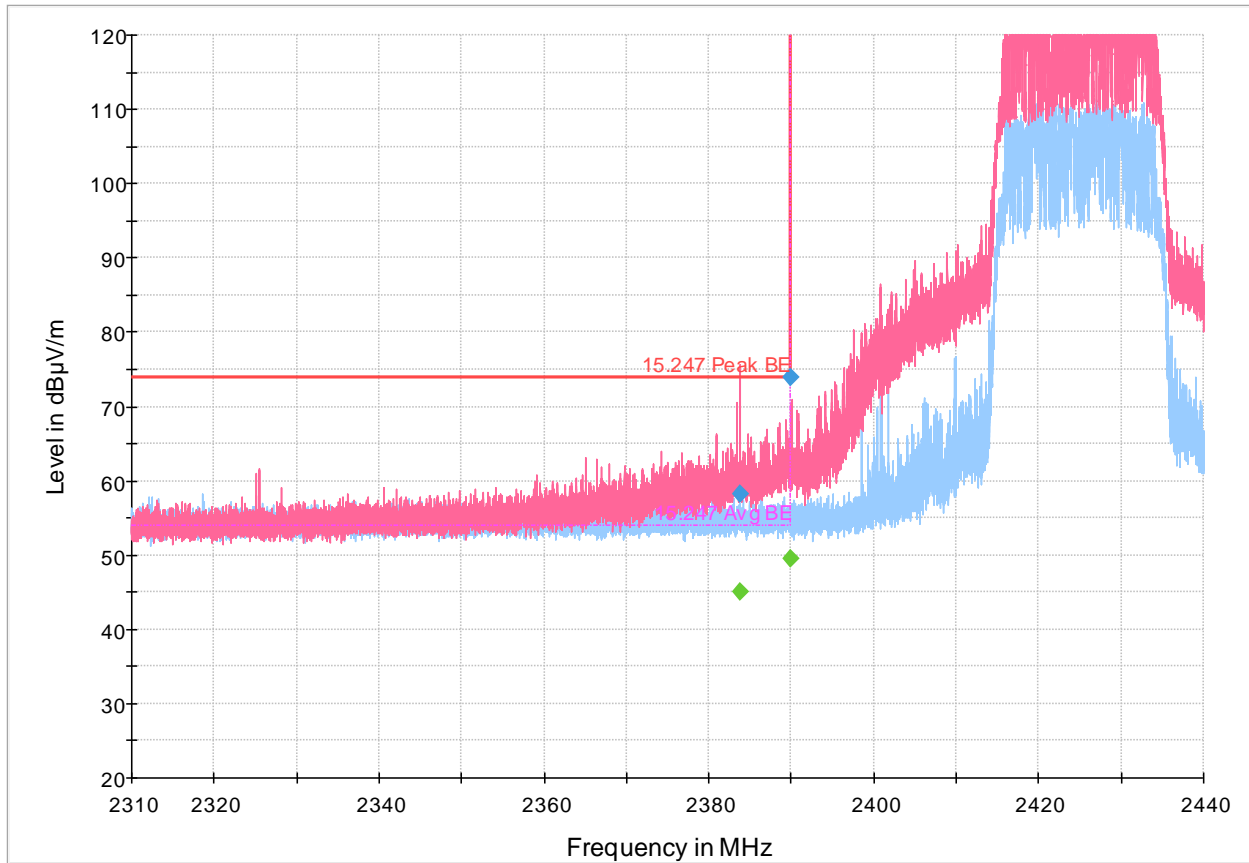


Figure 8.3-45: Radiated emissions spectral plot (2.31 GHz - 2.44 GHz)

Table 8.3-11: 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)
2383.736000	---	45.04	53.90	8.86	5000.0	1000.000	359.0	H	133.0	10.0
2383.736000	58.29	---	73.90	15.61	5000.0	1000.000	359.0	H	133.0	10.0
2390.000000	73.90	---	73.90	0.00	5000.0	1000.000	137.0	V	0.0	10.0
2390.000000	---	49.58	53.90	4.32	5000.0	1000.000	137.0	V	0.0	10.0

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.

HDR-BE-high-TW950-BW20-2439MHz
 Full Spectrum

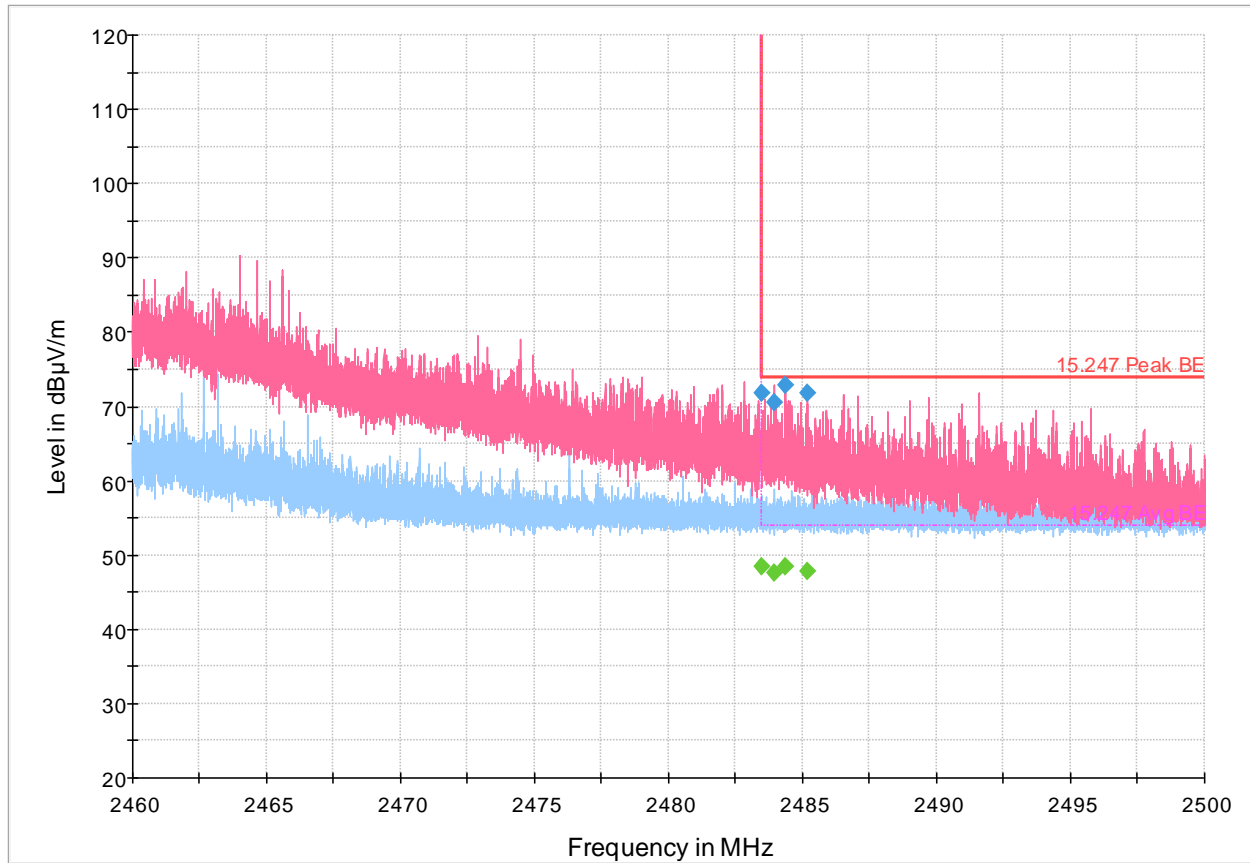


Figure 8.3-46: Radiated emissions spectral plot (2.46 GHz - 2.5 GHz)

Table 8.3-12: 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)
2483.500000	---	48.37	53.90	5.53	5000.0	1000.000	111.0	V	51.0	10.3
2483.500000	71.77	---	73.90	2.13	5000.0	1000.000	111.0	V	51.0	10.3
2483.936000	---	47.58	53.90	6.32	5000.0	1000.000	104.0	V	78.0	10.3
2483.936000	70.61	---	73.90	3.29	5000.0	1000.000	104.0	V	78.0	10.3
2484.358667	---	48.38	53.90	5.52	5000.0	1000.000	124.0	V	108.0	10.3
2484.358667	72.91	---	73.90	0.99	5000.0	1000.000	124.0	V	108.0	10.3
2485.154667	---	47.72	53.90	6.18	5000.0	1000.000	141.0	V	297.0	10.3
2485.154667	71.78	---	73.90	2.12	5000.0	1000.000	141.0	V	297.0	10.3

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.

Radiated emissions in restricted bands

TSM-RE-30-1000MHz-TW950-BW3.6-2404MHz

Full Spectrum

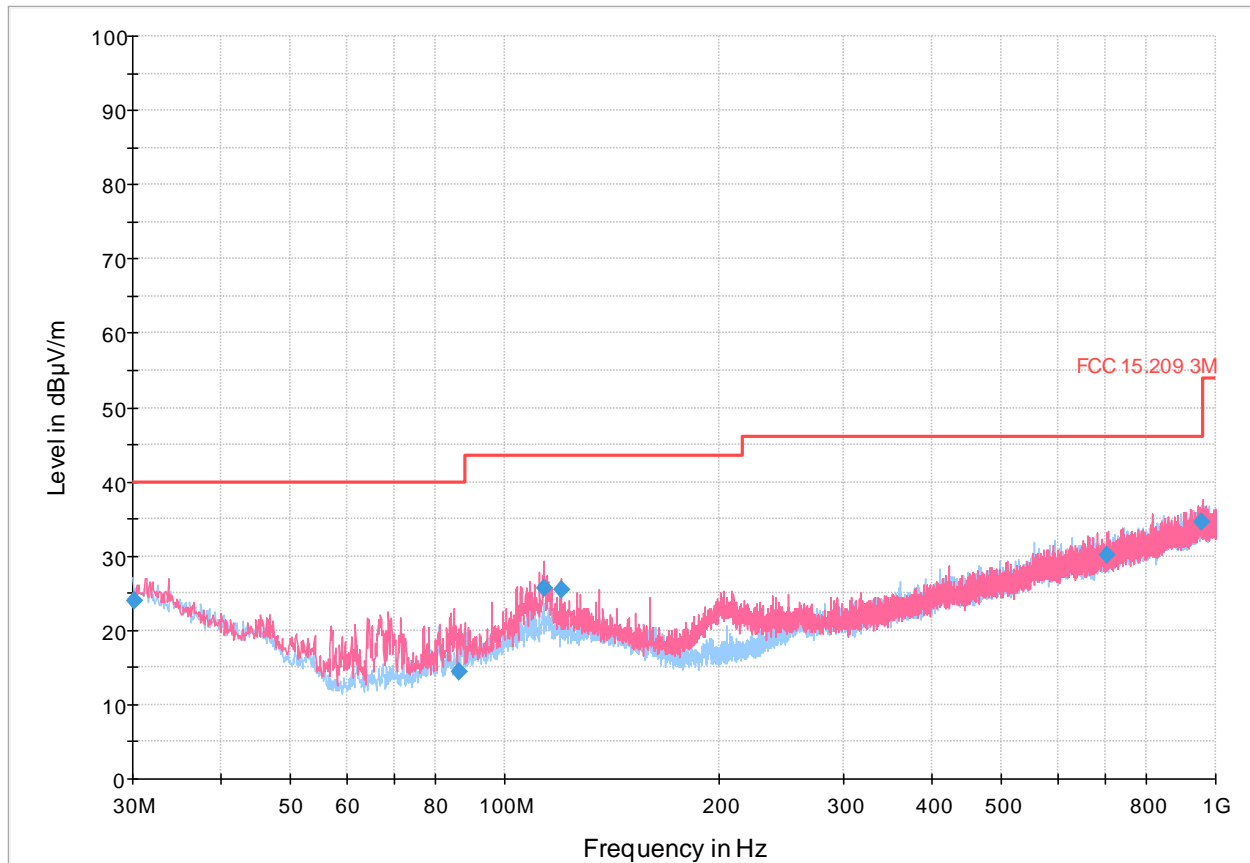


Figure 8.3-47: Radiated emissions spectral plot (30 MHz - 1 GHz)

Table 8.3-13: 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)
30.200000	24.02	40.00	15.98	5000.0	120.000	356.0	H	274.0	26.5
86.199000	14.33	40.00	25.67	5000.0	120.000	190.0	V	275.0	15.8
113.614000	25.71	43.50	17.79	5000.0	120.000	373.0	V	0.0	19.2
120.016000	25.56	43.50	17.94	5000.0	120.000	363.0	V	34.0	19.6
703.310000	30.16	46.00	15.84	5000.0	120.000	344.0	V	303.0	30.5
956.816000	34.70	46.00	11.30	5000.0	120.000	237.0	V	100.0	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.

TSM-RE-30-1000MHz-TW950-BW3.6-2442MHz

Full Spectrum

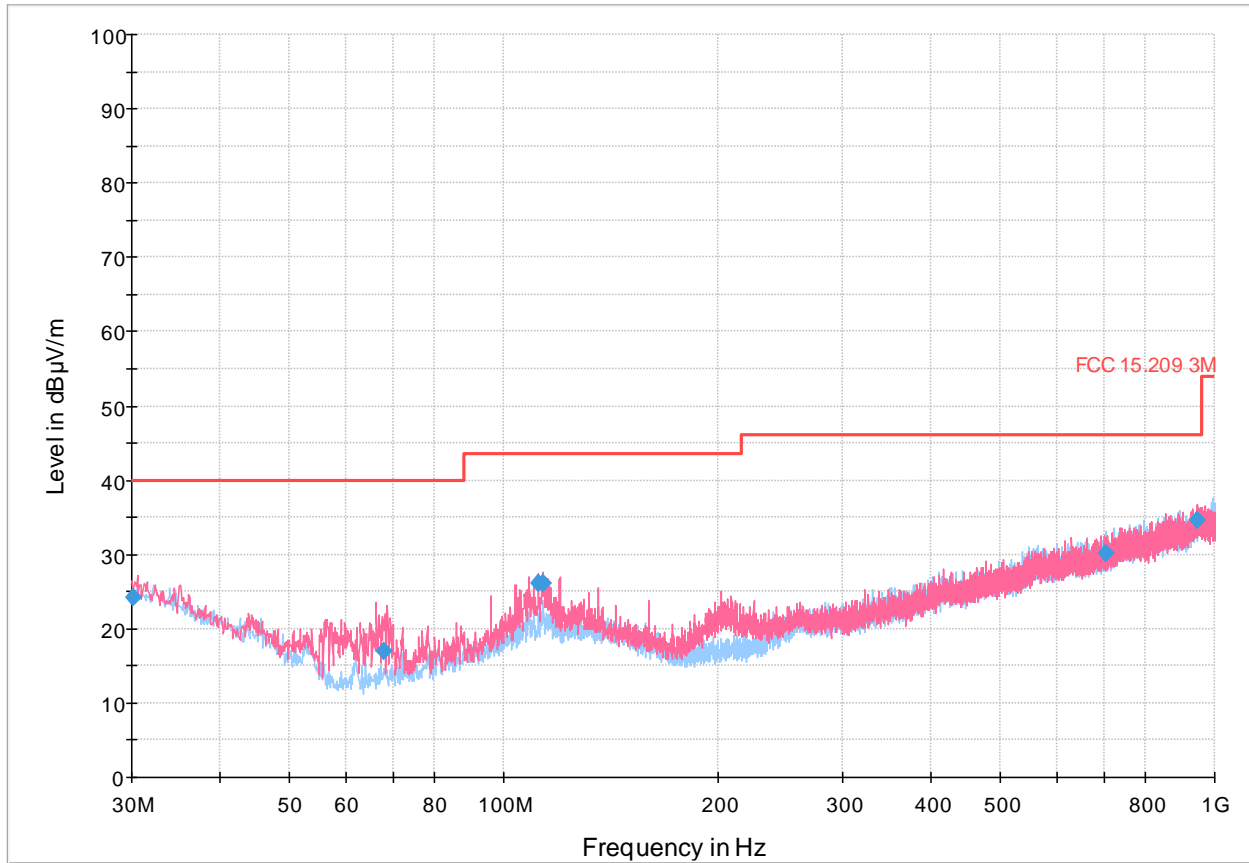


Figure 8.3-48: Radiated emissions spectral plot (30 MHz - 1 GHz)

Table 8.3-14: 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)
30.120000	24.14	40.00	15.86	5000.0	120.000	178.0	V	98.0	26.5
67.781000	17.07	40.00	22.93	5000.0	120.000	133.0	V	261.0	13.4
112.045000	26.11	43.50	17.39	5000.0	120.000	381.0	V	236.0	19.0
113.614000	26.07	43.50	17.43	5000.0	120.000	374.0	V	194.0	19.2
701.530000	30.11	46.00	15.89	5000.0	120.000	371.0	H	212.0	30.5
946.586000	34.52	46.00	11.48	5000.0	120.000	220.0	V	72.0	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.

TSM-RE-30-1000MHz-TW950-BW3.6-2478MHz

Full Spectrum

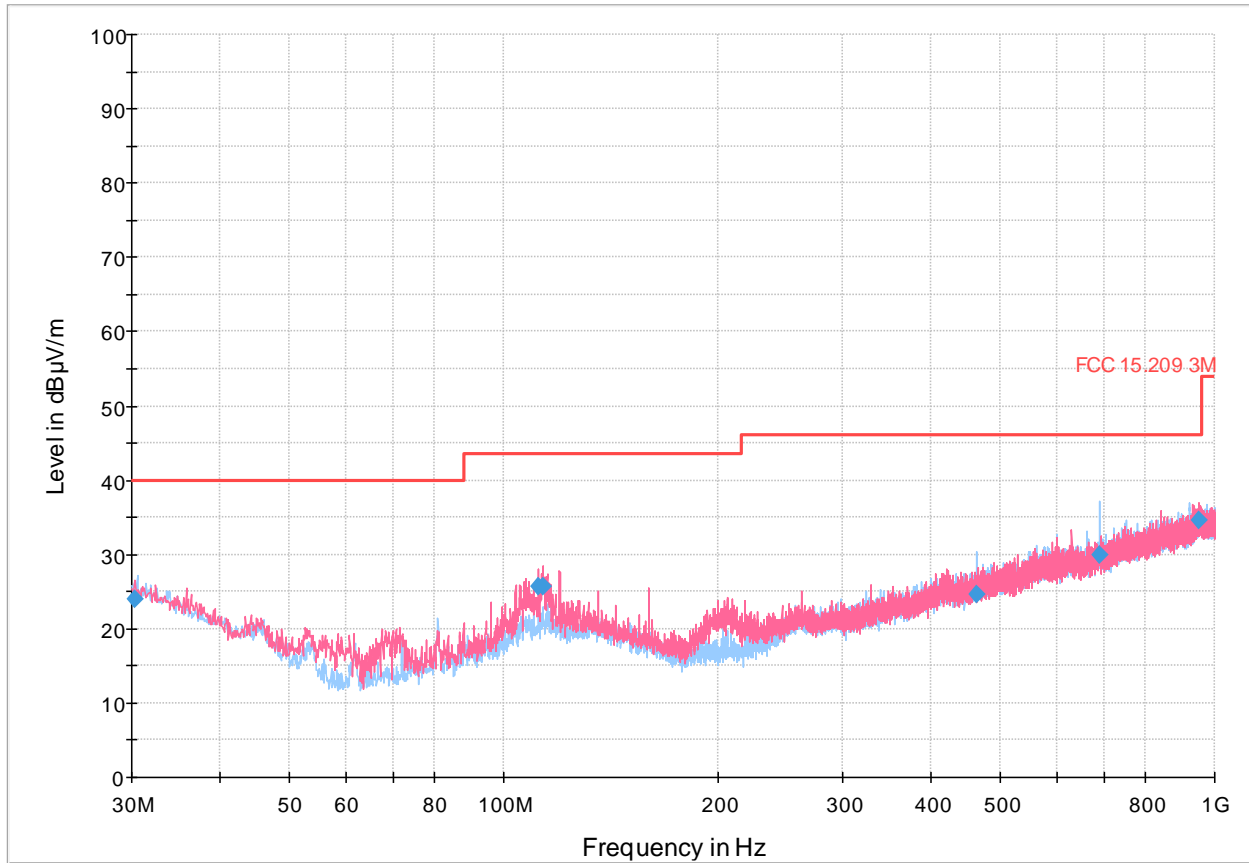


Figure 8.3-49: Radiated emissions spectral plot (30 MHz - 1 GHz)

Table 8.3-15: 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)
30.320000	23.93	40.00	16.07	5000.0	120.000	283.0	H	158.0	26.4
112.005000	25.77	43.50	17.73	5000.0	120.000	365.0	V	70.0	19.0
113.677000	25.71	43.50	17.79	5000.0	120.000	368.0	V	10.0	19.2
462.014000	24.72	46.00	21.28	5000.0	120.000	388.0	H	21.0	26.5
689.588000	30.02	46.00	15.98	5000.0	120.000	223.0	H	0.0	30.5
948.434000	34.67	46.00	11.33	5000.0	120.000	232.0	V	285.0	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.

TSM-RE-1-18GHz-TW950-BW3.6-2404MHz

Full Spectrum

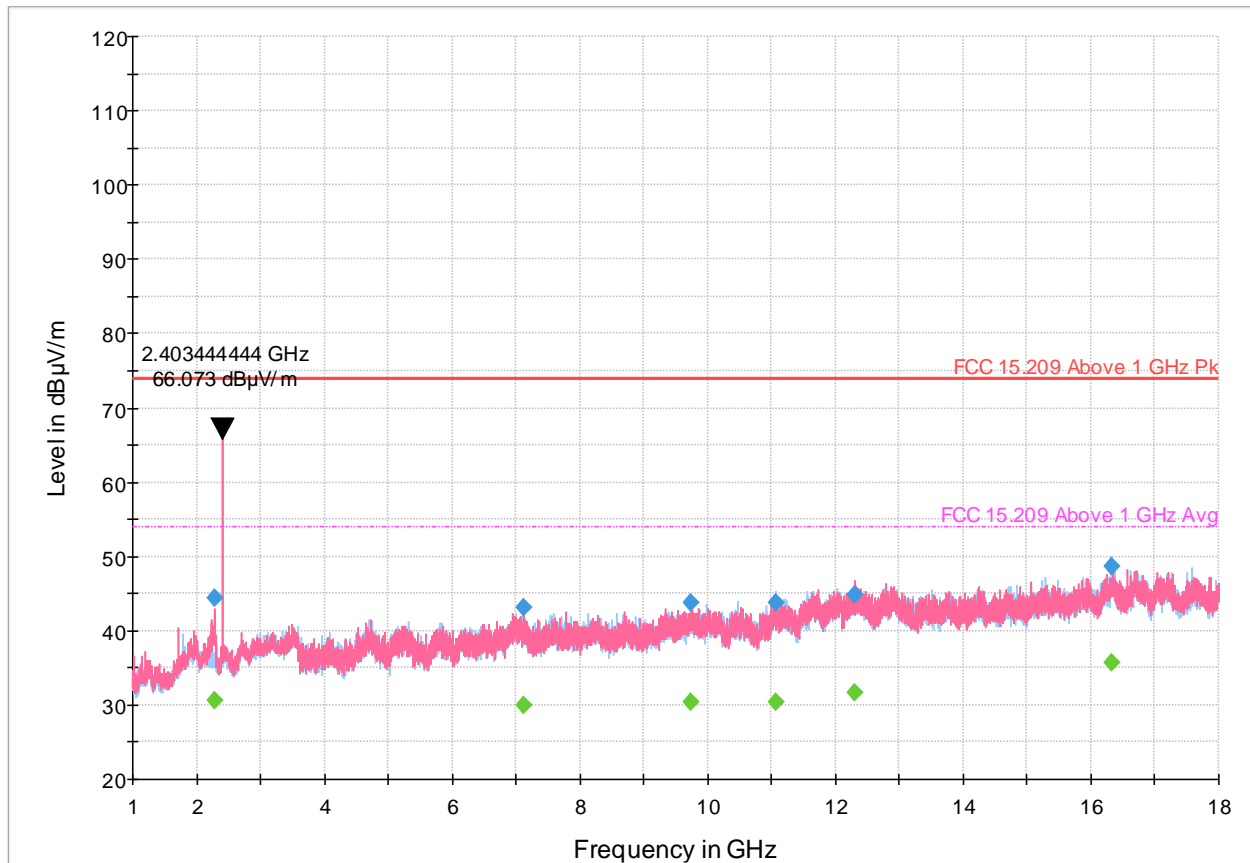


Figure 8.3-50: Radiated emissions spectral plot (1 GHz - 18 GHz)

Table 8.3-16: 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)
2284.588889	44.50	---	73.90	29.40	5000.0	1000.000	159.0	V	335.0	-10.7
2284.588889	---	30.52	53.90	23.38	5000.0	1000.000	159.0	V	335.0	-10.7
7114.577778	43.19	---	73.90	30.71	5000.0	1000.000	324.0	H	78.0	0.7
7114.577778	---	29.90	53.90	24.00	5000.0	1000.000	324.0	H	78.0	0.7
9725.722222	43.78	---	73.90	30.12	5000.0	1000.000	369.0	H	31.0	3.6
9725.722222	---	30.31	53.90	23.59	5000.0	1000.000	369.0	H	31.0	3.6
11064.255556	---	30.48	53.90	23.42	5000.0	1000.000	234.0	H	273.0	4.0
11064.255556	43.71	---	73.90	30.19	5000.0	1000.000	234.0	H	273.0	4.0
12301.800000	44.83	---	73.90	29.07	5000.0	1000.000	233.0	V	53.0	7.1
12301.800000	---	31.78	53.90	22.12	5000.0	1000.000	233.0	V	53.0	7.1
16327.722222	---	35.65	53.90	18.25	5000.0	1000.000	337.0	H	337.0	13.3
16327.722222	48.57	---	73.90	25.33	5000.0	1000.000	337.0	H	337.0	13.3

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.

TSM-RE-1-18GHz-TW950-BW3.6-2442MHz

Full Spectrum

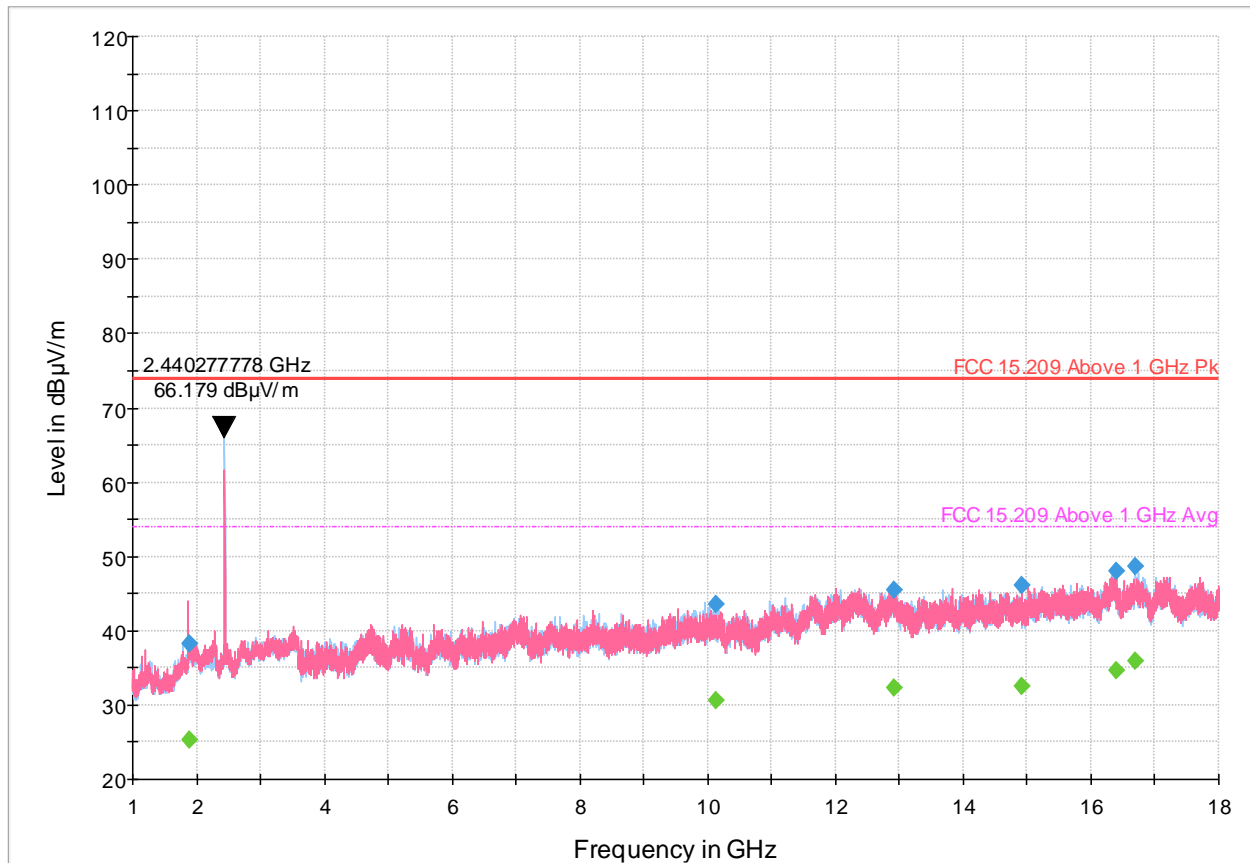


Figure 8.3-51: Radiated emissions spectral plot (1 GHz - 18 GHz)

Table 8.3-17: 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)
1876.811111	---	25.21	53.90	28.69	5000.0	1000.000	263.0	V	349.0	-10.8
1876.811111	38.17	---	73.90	35.73	5000.0	1000.000	263.0	V	349.0	-10.8
10122.422222	---	30.55	53.90	23.35	5000.0	1000.000	288.0	H	179.0	3.9
10122.422222	43.55	---	73.90	30.35	5000.0	1000.000	288.0	H	179.0	3.9
12907.955556	45.53	---	73.90	28.37	5000.0	1000.000	400.0	H	179.0	8.6
12907.955556	---	32.38	53.90	21.52	5000.0	1000.000	400.0	H	179.0	8.6
14916.533333	---	32.58	53.90	21.32	5000.0	1000.000	339.0	V	136.0	10.3
14916.533333	46.04	---	73.90	27.86	5000.0	1000.000	339.0	V	136.0	10.3
16384.377778	---	34.61	53.90	19.29	5000.0	1000.000	240.0	V	249.0	12.7
16384.377778	48.12	---	73.90	25.78	5000.0	1000.000	240.0	V	249.0	12.7
16692.522222	48.74	---	73.90	25.16	5000.0	1000.000	231.0	H	105.0	14.6
16692.522222	---	35.91	53.90	17.99	5000.0	1000.000	231.0	H	105.0	14.6

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.

TSM-RE-1-18GHz-TW950-BW3.6-2478MHz

Full Spectrum

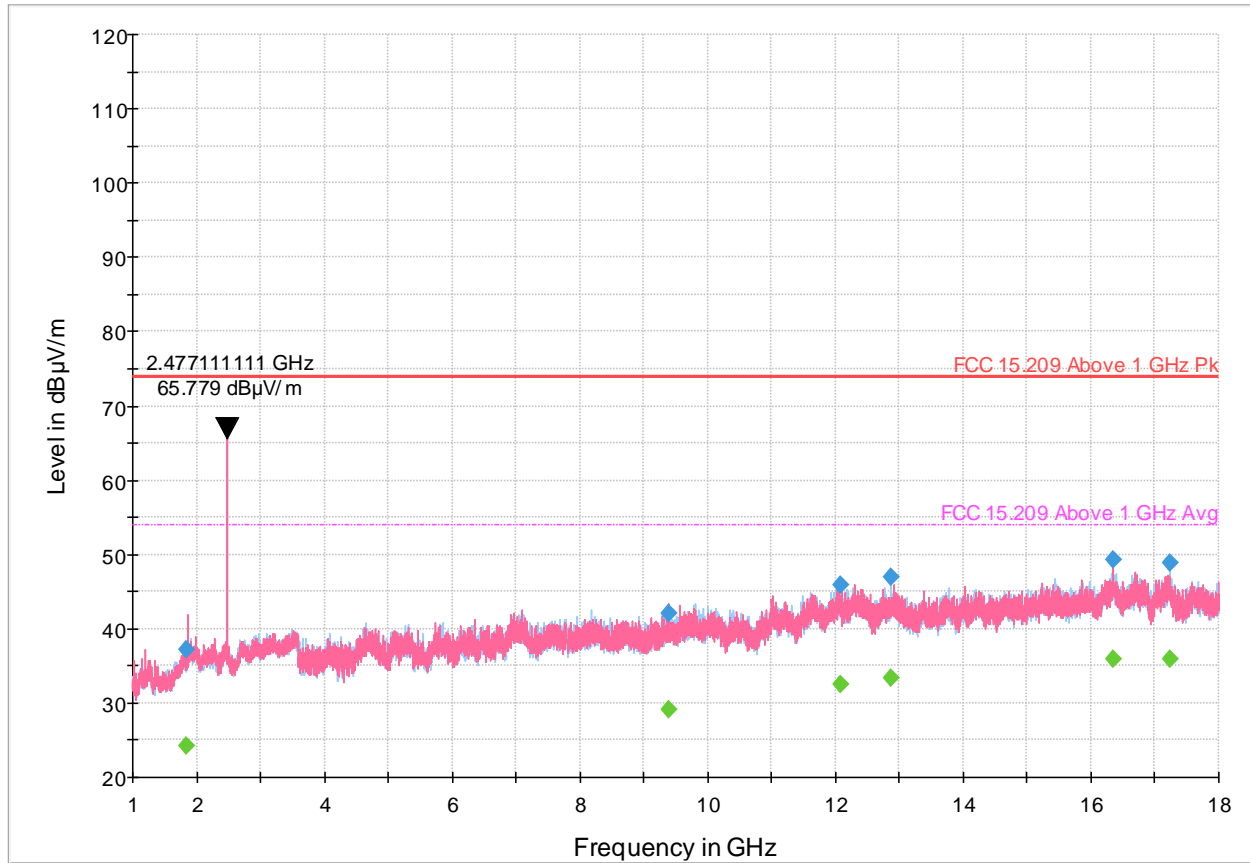


Figure 8.3-52: Radiated emissions spectral plot (1 GHz - 18 GHz)

Table 8.3-18: 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)
1848.177778	---	24.15	53.90	29.75	5000.0	1000.000	375.0	V	305.0	-11.3
1848.177778	37.17	---	73.90	36.73	5000.0	1000.000	375.0	V	305.0	-11.3
9395.933333	42.17	---	73.90	31.73	5000.0	1000.000	228.0	V	307.0	2.9
9395.933333	---	29.20	53.90	24.70	5000.0	1000.000	228.0	V	307.0	2.9
12074.222222	45.89	---	73.90	28.01	5000.0	1000.000	223.0	H	88.0	6.5
12074.222222	---	32.53	53.90	21.37	5000.0	1000.000	223.0	H	88.0	6.5
12859.822222	46.94	---	73.90	26.96	5000.0	1000.000	323.0	H	246.0	8.7
12859.822222	---	33.35	53.90	20.55	5000.0	1000.000	323.0	H	246.0	8.7
16348.100000	49.25	---	73.90	24.65	5000.0	1000.000	136.0	V	20.0	13.1
16348.100000	---	36.02	53.90	17.88	5000.0	1000.000	136.0	V	20.0	13.1
17232.100000	---	35.91	53.90	17.99	5000.0	1000.000	168.0	H	44.0	15.1
17232.100000	48.96	---	73.90	24.94	5000.0	1000.000	168.0	H	44.0	15.1

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.

TSM-RE-18-26.5GHz-TW950-BW3.6-2404MHz

Full Spectrum

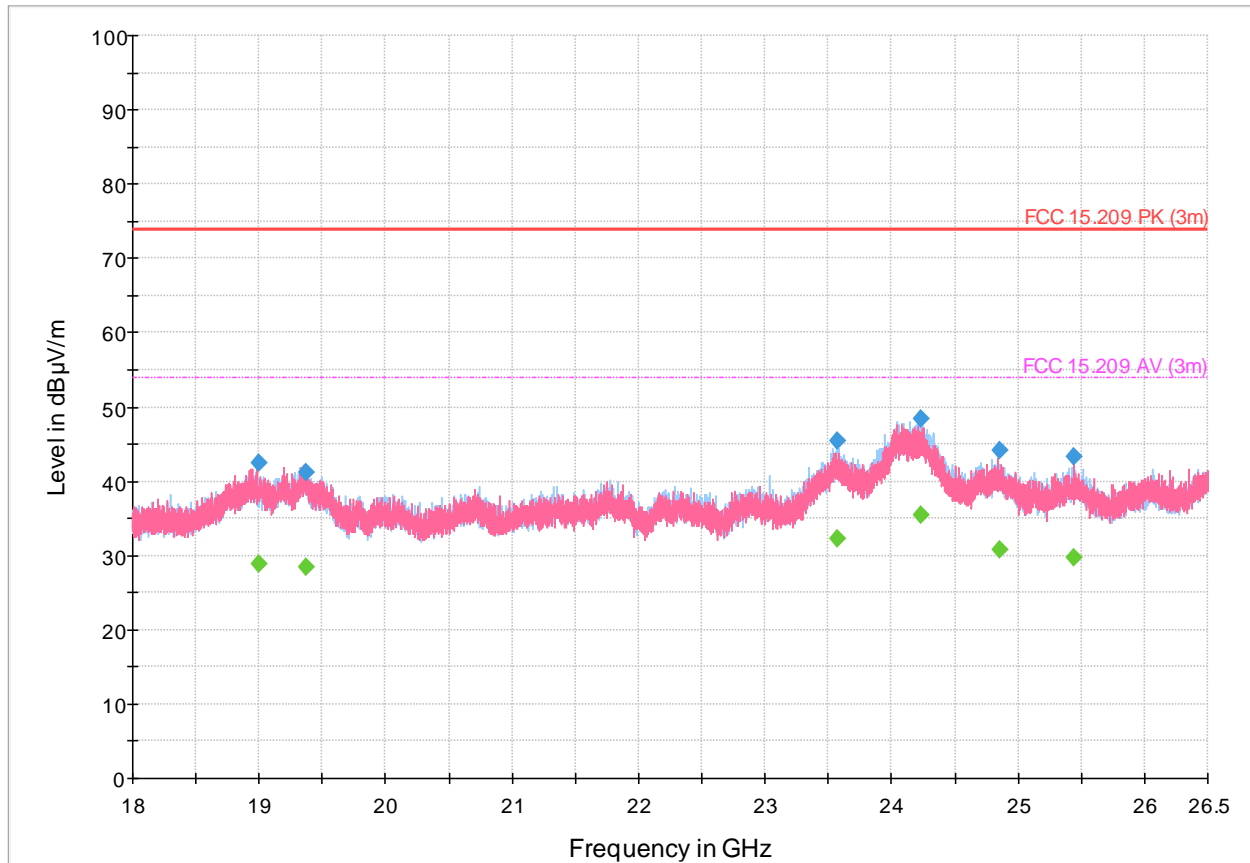


Figure 8.3-53: Radiated emissions spectral plot (18 GHz - 26.5 GHz)

Table 8.3-19: 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)
18997.125000	42.48	---	73.90	31.42	5000.0	1000.000	115.0	V	49.0	16.0
18997.125000	---	28.87	53.90	25.03	5000.0	1000.000	115.0	V	49.0	16.0
19369.406250	41.10	---	73.90	32.80	5000.0	1000.000	227.0	V	304.0	16.7
19369.406250	---	28.35	53.90	25.55	5000.0	1000.000	227.0	V	304.0	16.7
23571.562500	45.41	---	73.90	28.49	5000.0	1000.000	179.0	H	46.0	23.9
23571.562500	---	32.26	53.90	21.64	5000.0	1000.000	179.0	H	46.0	23.9
24227.693750	48.50	---	73.90	25.40	5000.0	1000.000	319.0	H	288.0	27.0
24227.693750	---	35.53	53.90	18.37	5000.0	1000.000	319.0	H	288.0	27.0
24853.487500	---	30.81	53.90	23.09	5000.0	1000.000	164.0	V	34.0	22.3
24853.487500	44.10	---	73.90	29.80	5000.0	1000.000	164.0	V	34.0	22.3
25445.943750	---	29.74	53.90	24.16	5000.0	1000.000	327.0	V	211.0	21.7
25445.943750	43.22	---	73.90	30.68	5000.0	1000.000	327.0	V	211.0	21.7

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.

TSM-RE-18-26.5GHz-TW950-BW3.6-2442MHz

Full Spectrum

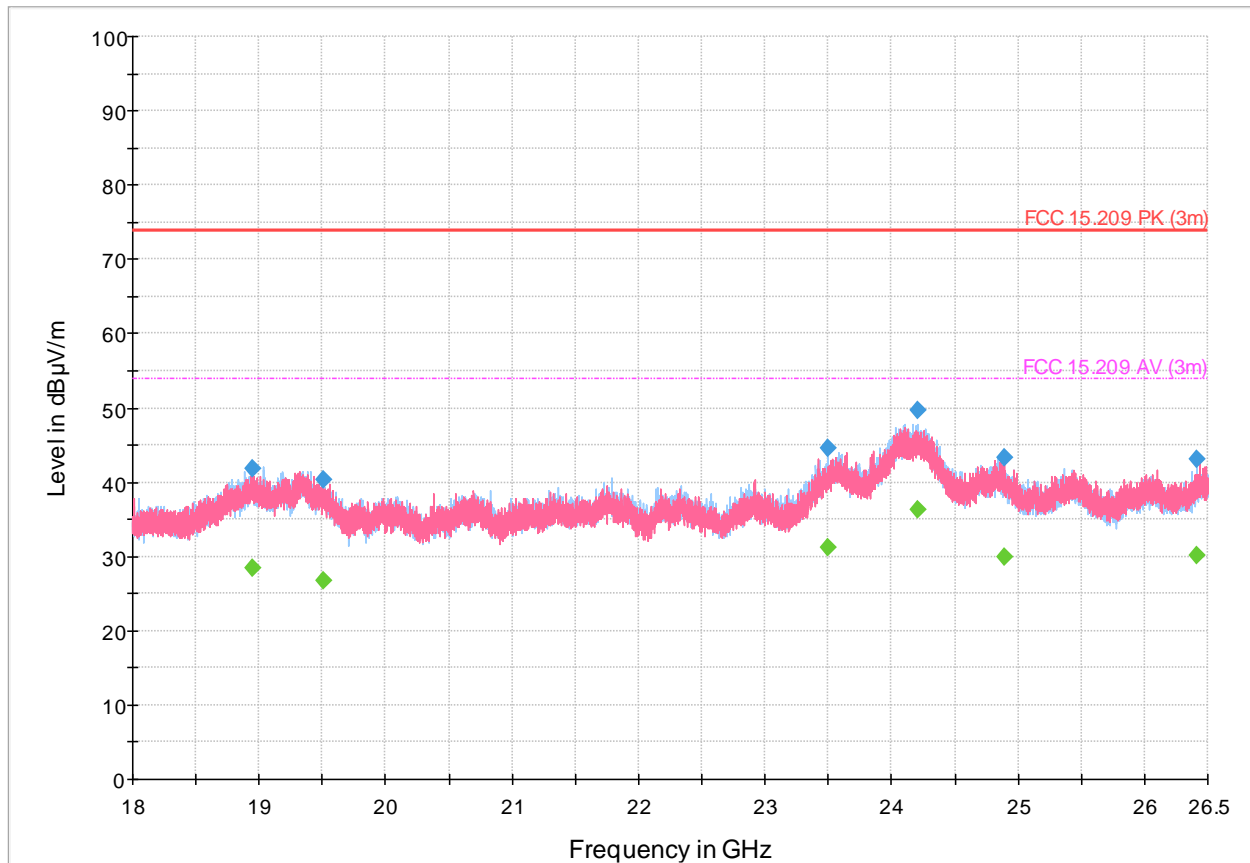


Figure 8.3-54: Radiated emissions spectral plot (18 GHz - 26.5 GHz)

Table 8.3-20: 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)
18944.737500	---	28.51	53.90	25.39	5000.0	1000.000	229.0	V	11.0	15.9
18944.737500	41.78	---	73.90	32.12	5000.0	1000.000	229.0	V	11.0	15.9
19508.131250	40.31	---	73.90	33.59	5000.0	1000.000	340.0	H	0.0	16.4
19508.131250	---	26.68	53.90	27.22	5000.0	1000.000	340.0	H	0.0	16.4
23492.525000	---	31.19	53.90	22.71	5000.0	1000.000	115.0	H	281.0	23.0
23492.525000	44.56	---	73.90	29.34	5000.0	1000.000	115.0	H	281.0	23.0
24203.987500	---	36.38	53.90	17.52	5000.0	1000.000	336.0	H	202.0	27.1
24203.987500	49.65	---	73.90	24.25	5000.0	1000.000	336.0	H	202.0	27.1
24892.500000	---	30.01	53.90	23.89	5000.0	1000.000	301.0	V	136.0	22.3
24892.500000	43.29	---	73.90	30.61	5000.0	1000.000	301.0	V	136.0	22.3
26413.893750	43.09	---	73.90	30.81	5000.0	1000.000	359.0	H	86.0	23.0
26413.893750	---	30.06	53.90	23.84	5000.0	1000.000	359.0	H	86.0	23.0

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.

TSM-RE-18-26.5GHz-TW950-BW3.6-2478MHz

Full Spectrum

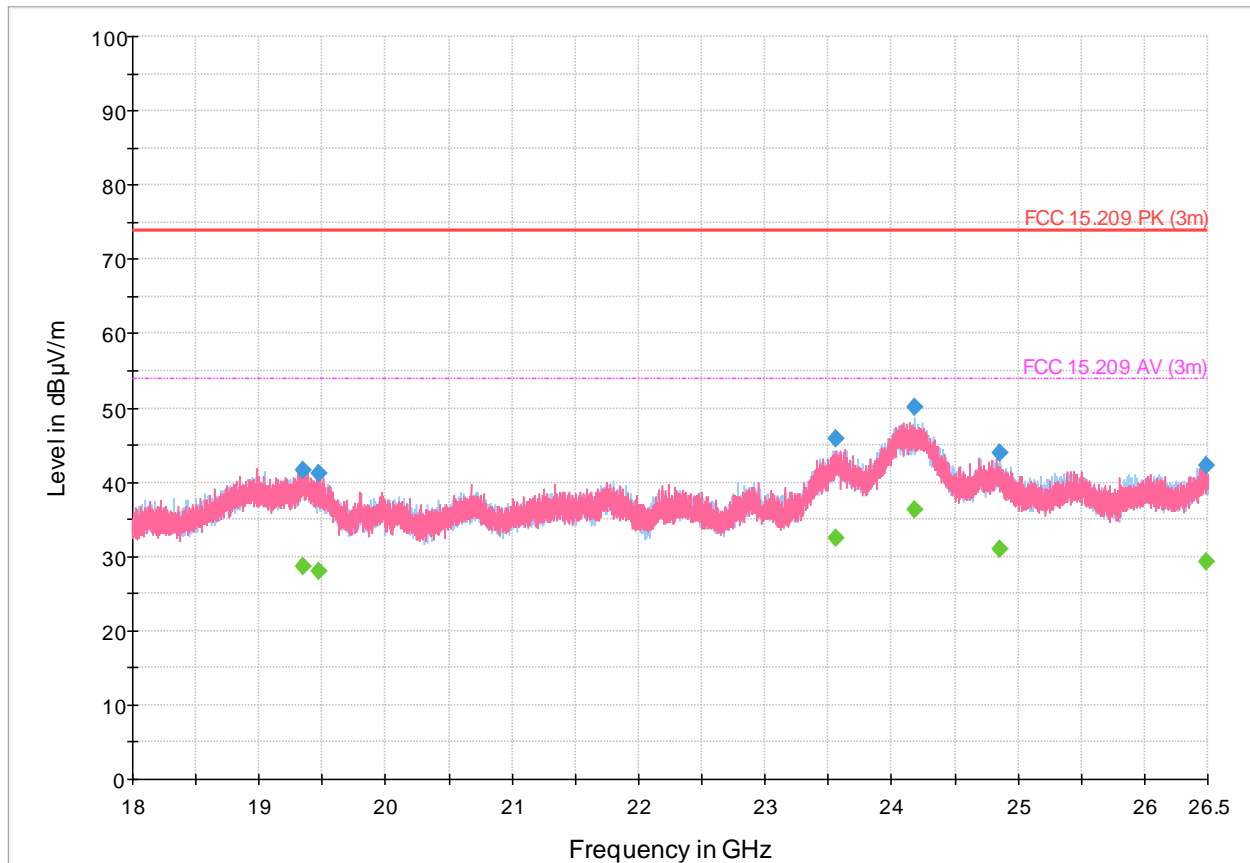


Figure 8.3-55: Radiated emissions spectral plot (18 GHz - 26.5 GHz)

Table 8.3-21: 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)
19344.393750	41.56	---	73.90	32.34	5000.0	1000.000	238.0	V	187.0	16.7
19344.393750	---	28.59	53.90	25.31	5000.0	1000.000	238.0	V	187.0	16.7
19473.343750	---	28.13	53.90	25.77	5000.0	1000.000	230.0	H	224.0	16.5
19473.343750	41.29	---	73.90	32.61	5000.0	1000.000	230.0	H	224.0	16.5
23558.837500	---	32.59	53.90	21.31	5000.0	1000.000	266.0	H	223.0	23.7
23558.837500	45.89	---	73.90	28.01	5000.0	1000.000	266.0	H	223.0	23.7
24177.543750	---	36.35	53.90	17.55	5000.0	1000.000	345.0	H	150.0	27.2
24177.543750	50.10	---	73.90	23.80	5000.0	1000.000	345.0	H	150.0	27.2
24850.243750	---	30.90	53.90	23.00	5000.0	1000.000	255.0	H	278.0	22.3
24850.243750	43.85	---	73.90	30.05	5000.0	1000.000	255.0	H	278.0	22.3
26481.718750	42.17	---	73.90	31.73	5000.0	1000.000	390.0	H	0.0	23.3
26481.718750	---	29.30	53.90	24.60	5000.0	1000.000	390.0	H	0.0	23.3

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.

8.4 Power spectral density

8.4.1 References and limits

- FCC 47 CFR Part 15, Subpart B: §15.247(e)
- RSS-247: §5.2(b)
- Test method: ANSI C63.10 §11.10.7 (Method AVGPSD-3)

§15.247:

(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

RSS-247:

5.4 DTSs include systems that employ digital modulation techniques resulting in spectral characteristics similar to direct sequence systems. The following applies to the bands 902-928 MHz and 2400-2483.5 MHz:

(b) The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of section 5.4(d), (i.e., the power spectral density shall be determined using the same method as is used to determine the conducted output power).

8.4.2 Test summary

Verdict	Pass		
Test date	February 8, 2023	Temperature	19.74 °C
Test engineer	Chenhao Ma, Wireless Test Technician	Air pressure	1002.4 mbar
Test location	<input checked="" type="checkbox"/> Wireless bench <input type="checkbox"/> Other:	Relative humidity	39.98 %

8.4.3 Notes

Testing was performed with the transmitter operating on a fixed channel at full power. Low, middle and high channels were tested. Use method AVGSA-3 for testing.

8.4.4 Setup details

EUT power input during test	Battery supply
EUT setup configuration	<input checked="" type="checkbox"/> Table-top <input type="checkbox"/> Floor standing <input type="checkbox"/> Other:

Spectrum analyzer settings:

Resolution bandwidth	See plot
Video bandwidth	See plot
Detector mode	RMS
Trace mode	Max Hold
Measurement time	Long enough for trace to stabilize

8.4.5 Test data

Table 8.4-1: TSM-Bandwidth 1.2MHz power spectral density test data

Test frequency (MHz)	Measured power spectral density (dBm/3kHz)	Limit (dBm/3kHz)
2403	6.43	8.0
2442	6.61	8.0
2478	6.23	8.0

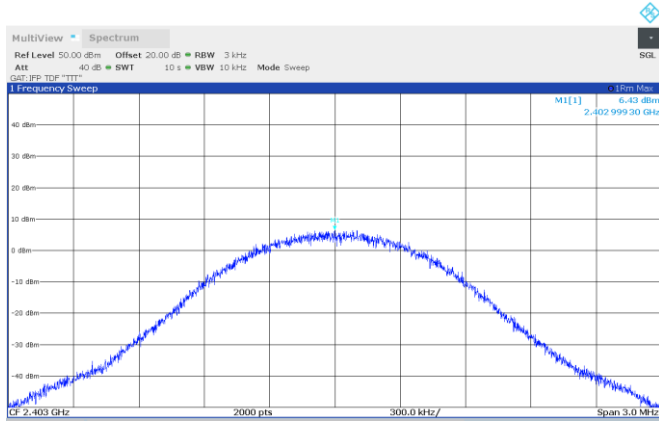


Figure 8.4-1: TSM-Power spectral density, 2403 MHz

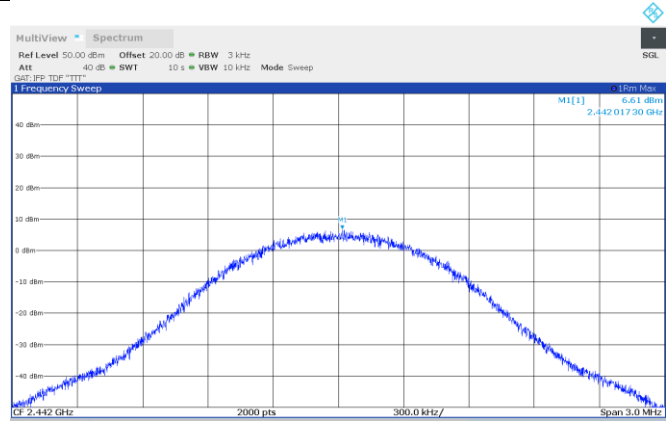


Figure 8.4-2: TSM-Power spectral density, 2442 MHz

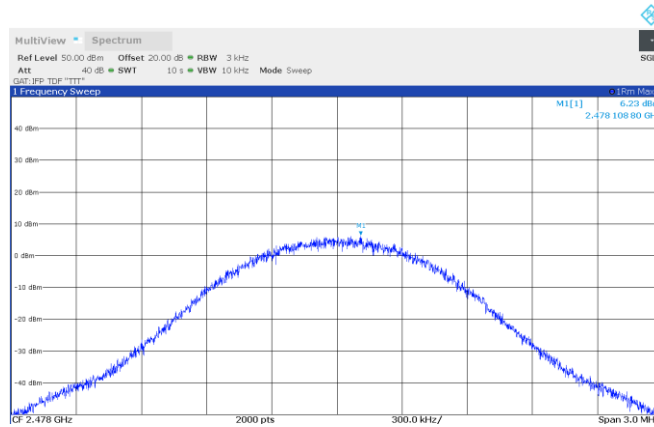


Figure 8.4-3: TSM-Power spectral density, 2478 MHz

Table 8.4-2: TSM-Bandwidth 3.6MHz power spectral density test data

Test frequency (MHz)	Measured power spectral density (dBm/3kHz)	Limit (dBm/3kHz)
2404	1.56	8.0
2442	3.05	8.0
2478	2.31	8.0

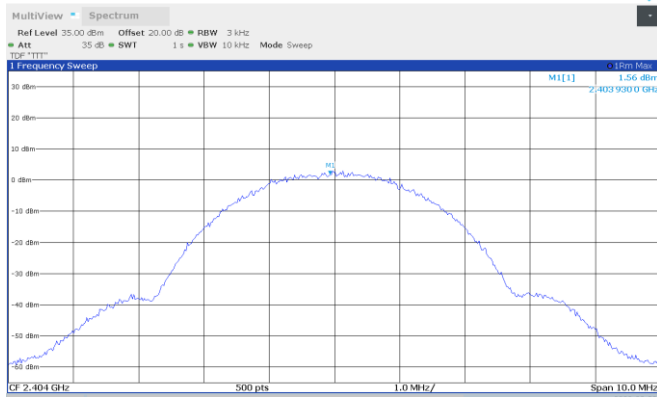


Figure 8.4-4: TSM- Bandwidth 3.6MHz Power spectral density, 2404 MHz

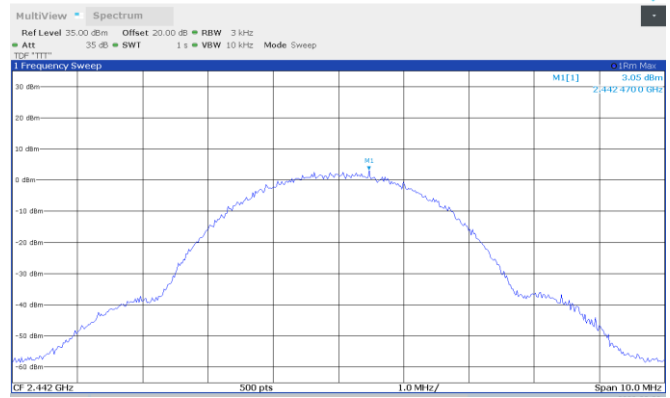


Figure 8.4-5: TSM- Bandwidth 3.6MHz Power spectral density, 2442 MHz

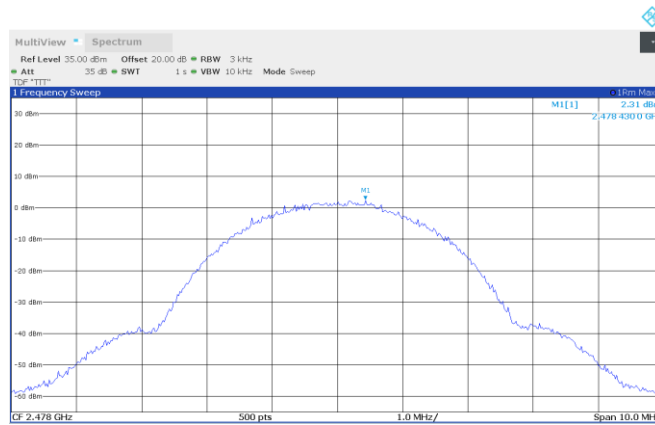


Figure 8.4-6: TSM- Bandwidth 3.6MHz Power spectral density, 2478 MHz

Table 8.4-3: TSM-Bandwidth 10MHz power spectral density test data

Test frequency (MHz)	Measured power spectral density (dBm/3kHz)	Limit (dBm/3kHz)
2412	2.36	8.0
2442	2.22	8.0
2465	1.56	8.0

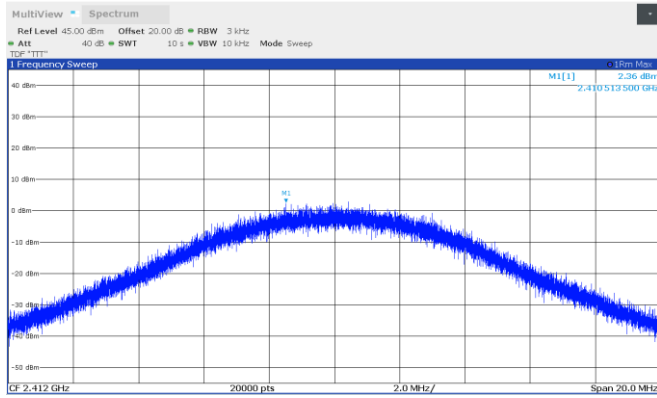


Figure 8.4-7: TSM- Bandwidth 10MHz Power spectral density, 2412 MHz

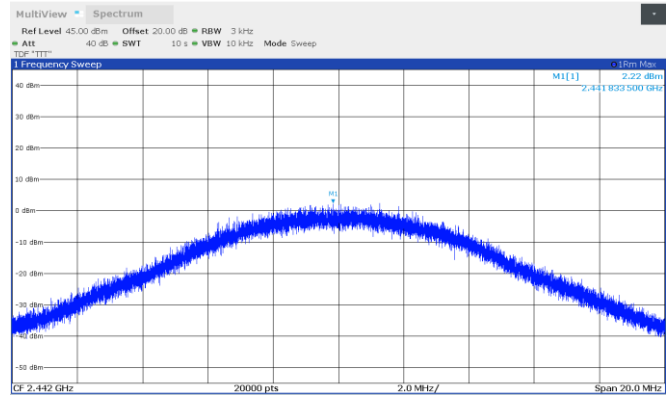


Figure 8.4-8: TSM- Bandwidth 10MHz Power spectral density, 2442 MHz

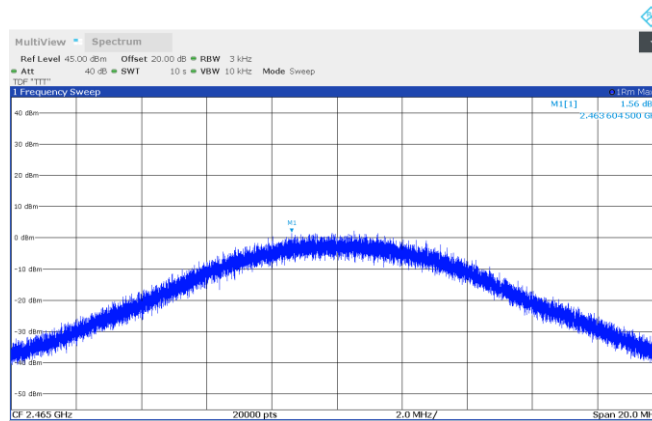


Figure 8.4-9: TSM- Bandwidth 10MHz Power spectral density, 2465 MHz

Table 8.4-4: TSM-Bandwidth 20MHz power spectral density test data

Test frequency (MHz)	Measured power spectral density (dBm/3kHz)	Limit (dBm/3kHz)
2422	0.99	8.0
2442	1.88	8.0

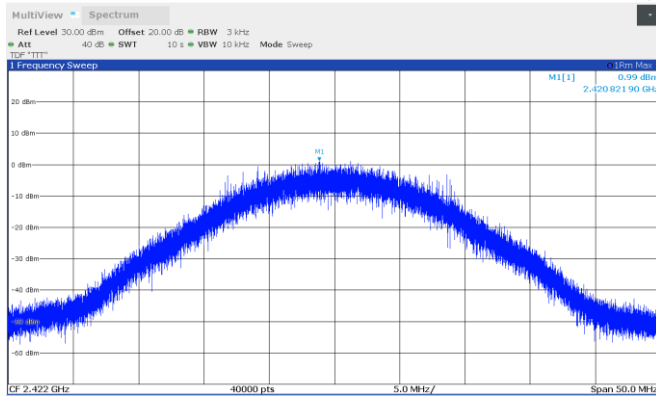


Figure 8.4-10: TSM- Bandwidth 20MHz Power spectral density, 2422 MHz

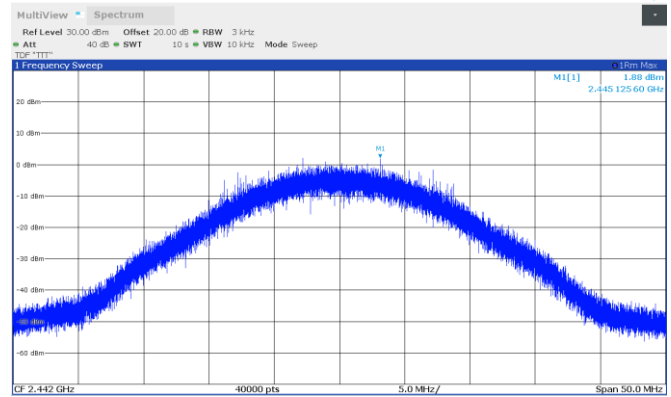


Figure 8.4-11: TSM- Bandwidth 20MHz Power spectral density, 2442 MHz

Table 8.4-5: HDR-Bandwidth 20MHz power spectral density test data

Test frequency (MHz)	Measured power spectral density (dBm/3kHz)	Limit (dBm/3kHz)
2422	3.88	8.0
2442	2.5	8.0

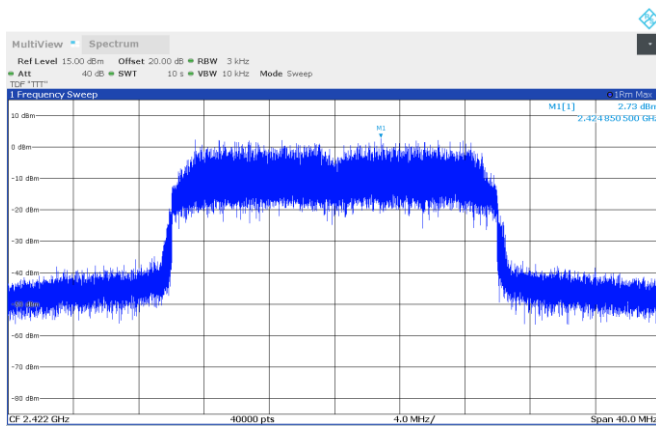


Figure 8.4-12: HDR- Bandwidth 20MHz Power spectral density, 2422 MHz

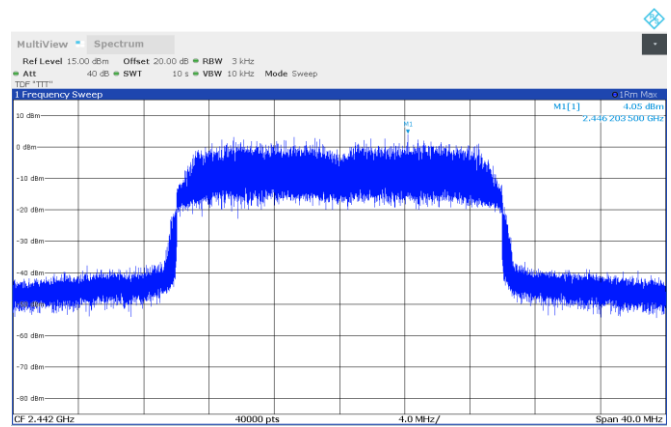


Figure 8.4-13: HDR- Bandwidth 20MHz Power spectral density, 2442 MHz

8.5 99 % occupied bandwidth

8.5.1 References and limits

- RSS-Gen: §6.7
- Test method: ANSI C63.4-2014: §6.9.2

RSS-GEN:

6.7 The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

8.5.2 Test summary

Verdict	Pass		
Test date	February 6, 2023	Temperature	19.77 °C
Test engineer	Chenhao Ma, Wireless Test Technician	Air pressure	997.1 mbar
Test location	<input checked="" type="checkbox"/> Wireless bench <input type="checkbox"/> Other:	Relative humidity	44.1 %

8.5.3 Notes

Testing was performed with the transmitter operating on a fixed channel at full power. Low, middle and high channels were tested.

8.5.4 Setup details

EUT power input during test	12 VDC
EUT setup configuration	<input checked="" type="checkbox"/> Table-top <input type="checkbox"/> Floor standing <input type="checkbox"/> Other:

Receiver settings:

Resolution bandwidth	See plot
Video bandwidth	See plot
Detector mode	Peak
Trace mode	Max Hold
Measurement time	Long enough for trace to stabilize

8.5.5

8.5.6 Test data

Table 8.5-1: TSM-bandwidth 1.2MHz 99 % occupied bandwidth test data

Test frequency (MHz)	Bandwidth (MHz)	Measured f_c (MHz)	Measured f_l (MHz)	Measured f_H (MHz)	Limit
2403	1.243	2402.979	2402.385	2403.628	f_H and f_L within 2400 – 2483.5 MHz
2442	1.246	2442.021	2441.367	2442.613	f_H and f_L within 2400 – 2483.5 MHz
2478	1.227	2478.021	2477.391	2478.619	f_H and f_L within 2400 – 2483.5 MHz

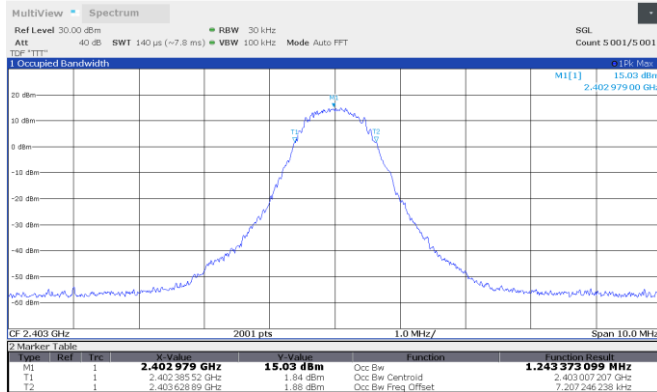


Figure 8.5-1: TSM-Bandwidth 1.2MHz 99 % occupied bandwidth, 2403 MHz

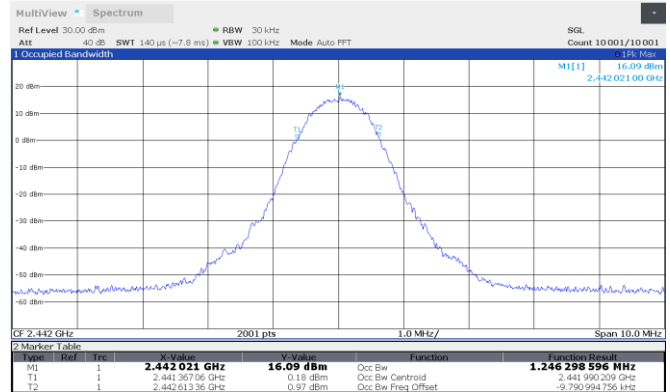


Figure 8.5-2: TSM-Bandwidth 1.2MHz 99 % occupied bandwidth, 2442 MHz

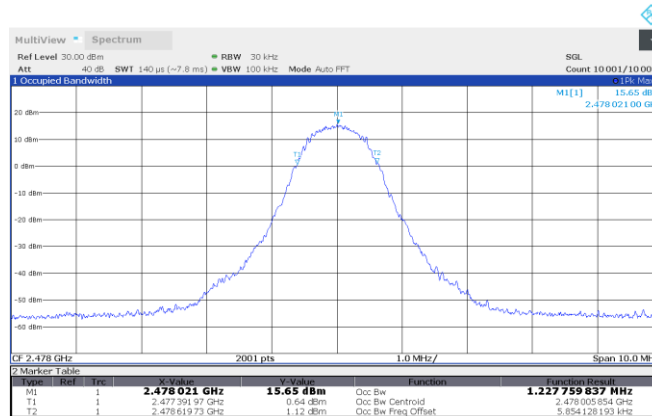


Figure 8.5-3: TSM-Bandwidth 1.2MHz 99 % occupied bandwidth, 2478 MHz

Table 8.5-2: TSM-bandwidth 3.6MHz 99 % occupied bandwidth test data

Test frequency (MHz)	Bandwidth (MHz)	Measured f_c (MHz)	Measured f_L (MHz)	Measured f_H (MHz)	Limit
2404	3.561	2404.021	2402.224	2405.785	f_H and f_L within 2400 – 2483.5 MHz
2442	3.553	2442.021	2440.228	2443.782	f_H and f_L within 2400 – 2483.5 MHz
2478	3.560	2478.021	2476.219	2479.78	f_H and f_L within 2400 – 2483.5 MHz

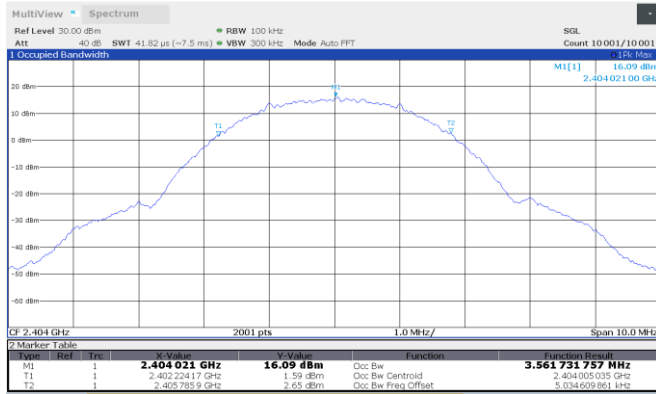


Figure 8.5-4: TSM-Bandwidth 3.6MHz 99 % occupied bandwidth, 2404 MHz

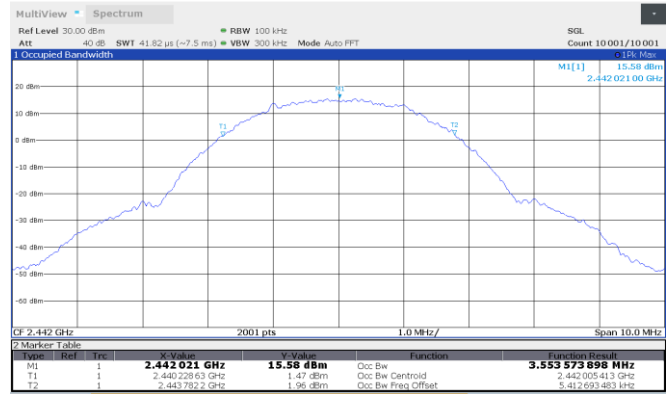


Figure 8.5-5: TSM-Bandwidth 3.6MHz 99 % occupied bandwidth, 2442 MHz

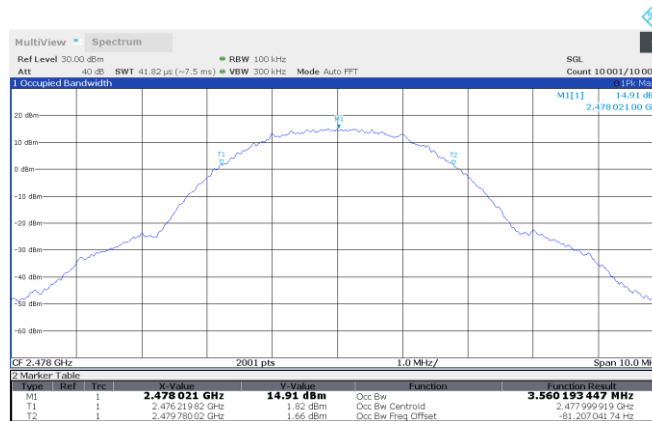


Figure 8.5-6: TSM-Bandwidth 3.6MHz 99 % occupied bandwidth, 2478 MHz

Table 8.5-3: TSM-bandwidth 10MHz 99 % occupied bandwidth test data

Test frequency (MHz)	Bandwidth (MHz)	Measured f_c (MHz)	Measured f_L (MHz)	Measured f_H (MHz)	Limit
2412	10.944	2412.021	2406.608	2417.553	f_H and f_L within 2400 – 2483.5 MHz
2442	11.071	2442.021	2436.523	2447.595	f_H and f_L within 2400 – 2483.5 MHz
2465	10.997	2465.021	2459.583	2470.581	f_H and f_L within 2400 – 2483.5 MHz

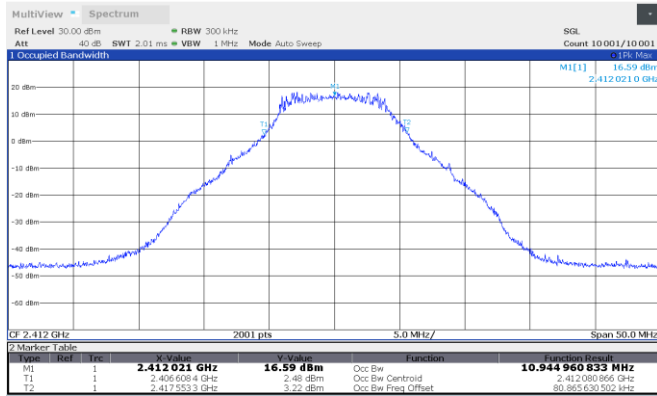


Figure 8.5-7: TSM-Bandwidth 10MHz 99 % occupied bandwidth, 2412 MHz

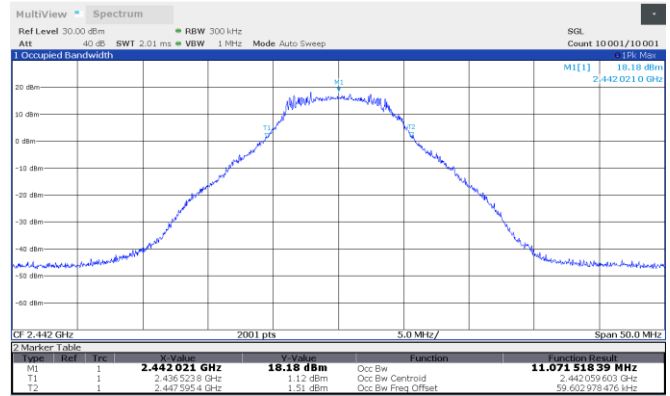


Figure 8.5-8: TSM-Bandwidth 10MHz 99 % occupied bandwidth, 2442 MHz

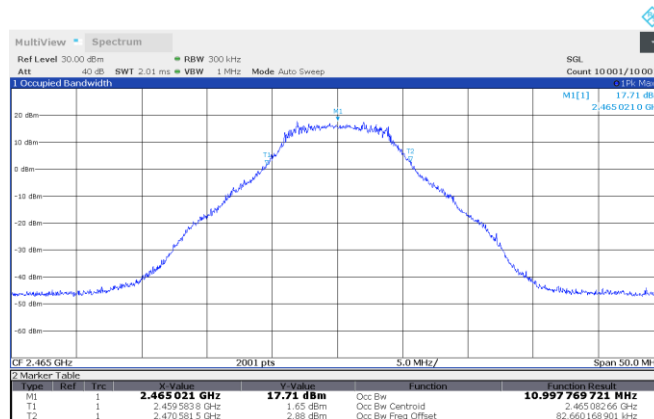


Figure 8.5-9: TSM-Bandwidth 10MHz 99 % occupied bandwidth, 2465 MHz

Table 8.5-4: TSM-bandwidth 20MHz 99 % occupied bandwidth test data

Test frequency (MHz)	Bandwidth (MHz)	Measured f_c (MHz)	Measured f_L (MHz)	Measured f_H (MHz)	Limit
2422	20.008	2422.021	2412.197	2432.205	f_H and f_L within 2400 – 2483.5 MHz
2442	20.122	2442.021	2432.099	2452.221	f_H and f_L within 2400 – 2483.5 MHz

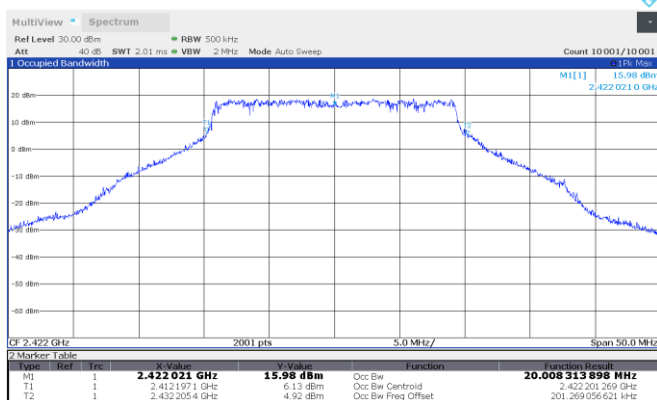


Figure 8.5-10: TSM-Bandwidth 20MHz 99 % occupied bandwidth, 2422 MHz

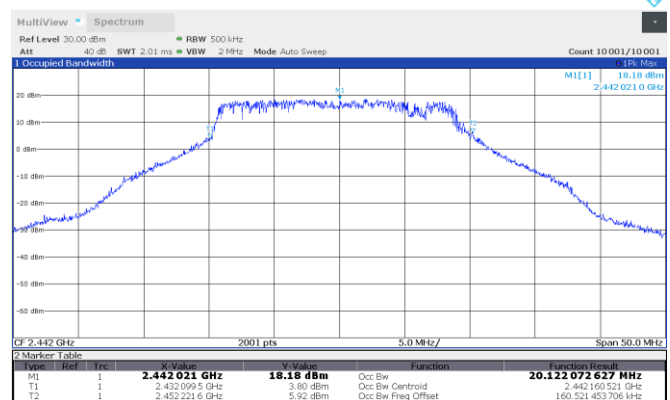


Figure 8.5-11: TSM-Bandwidth 20MHz 99 % occupied bandwidth, 2442 MHz

Table 8.5-5: HDR-bandwidth 20MHz 99 % occupied bandwidth test data

Test frequency (MHz)	Bandwidth (MHz)	Measured f_c (MHz)	Measured f_L (MHz)	Measured f_H (MHz)	Limit
2422	18.654	2421.979	2412.674	2431.328	f_H and f_L within 2400 – 2483.5 MHz
2442	18.650	2441.979	2432.671	2451.321	f_H and f_L within 2400 – 2483.5 MHz

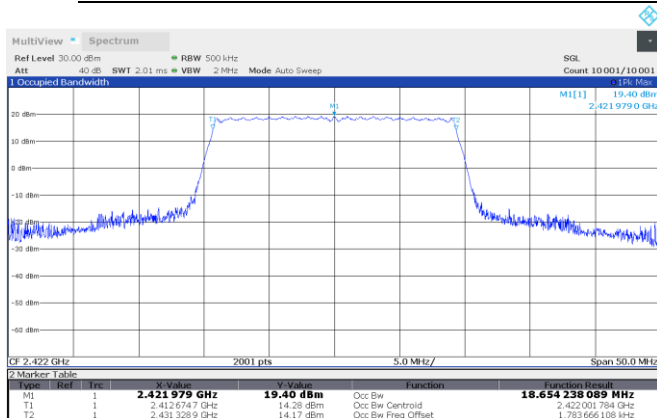


Figure 8.5-12: HDR-Bandwidth 20MHz 99 % occupied bandwidth, 2422 MHz

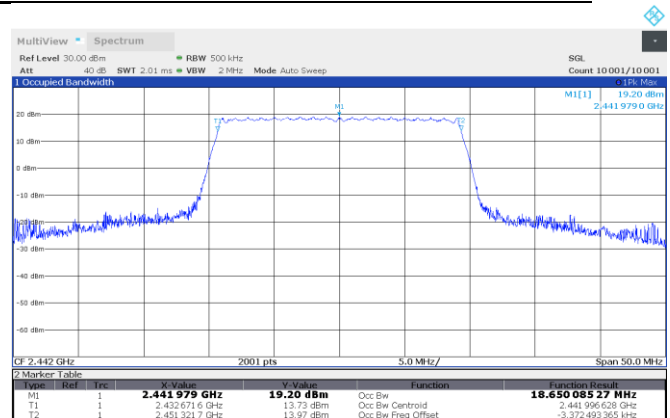


Figure 8.5-13: HDR-Bandwidth 20MHz 99 % occupied bandwidth, 2442 MHz

Section 9 Attestation Letter

Not provided

End of test report