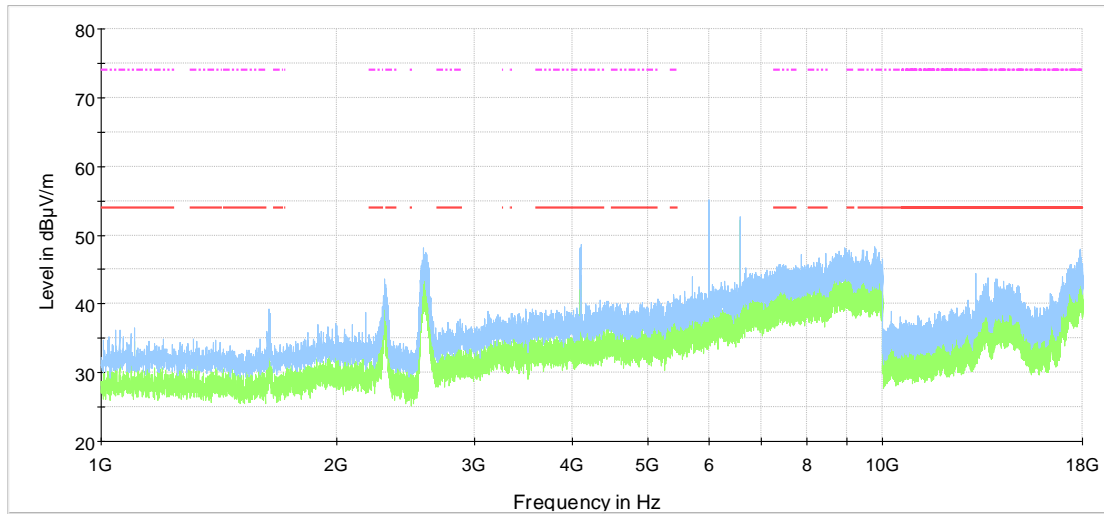
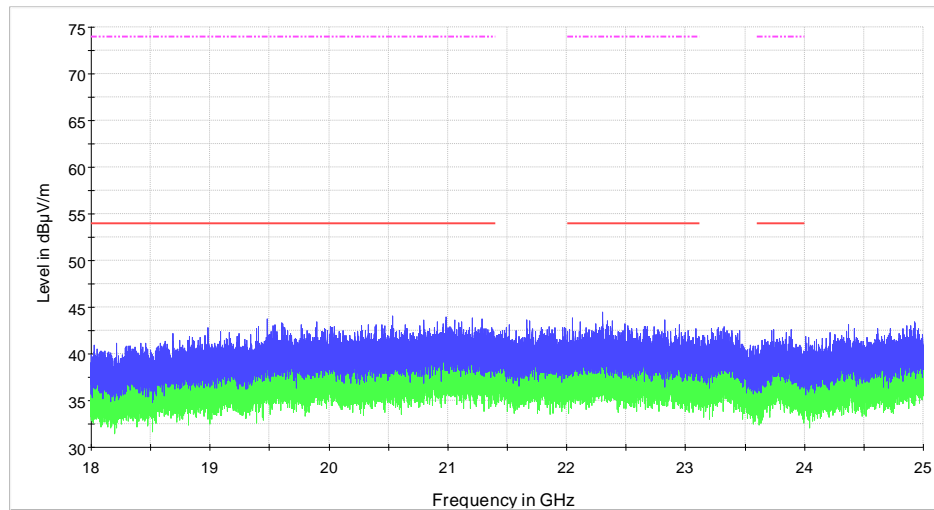


Test data, continued



SPR 1 GHz to 18 GHz high channel
 Preview Result 2-AVG
 Preview Result 1-PK+
 FCC 15.209 and RSS-210 limit line RstrB
 FCC 15.209 and RSS-210 limit line RstrB pk

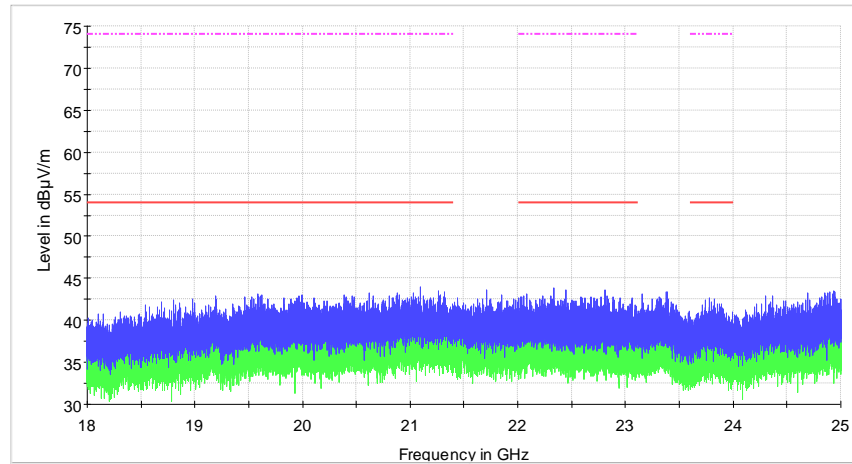
Figure 7.6-60: radiated spurious emissions from 1 GHz to 18 GHz on 802.11n (MCS0) at high channel



SPR 18 GHz to 25 GHz high channel
 AVG_MAXH
 PK+_MAXH
 FCC 15.209 and RSS-210 limit line RstrB
 FCC 15.209 and RSS-210 limit line RstrB pk

Figure 7.6-61: radiated spurious emissions from 18 GHz to 25 GHz on 802.11n (MCS0) at low channel

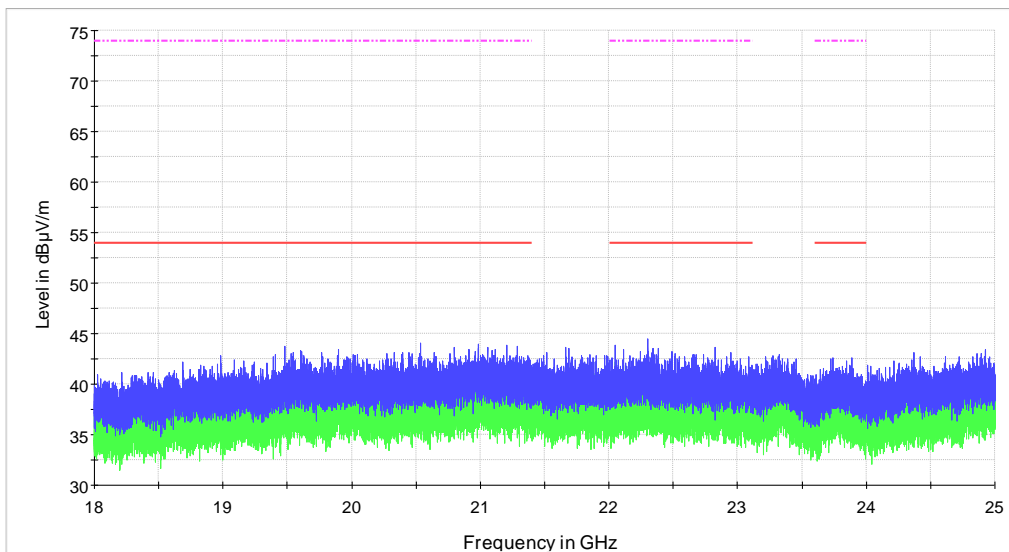
Test data, continued



SPR 18 GHz to 25 GHz mid channel

— AVG_MAXH
 — PK+_MAXH
 — FCC 15.209 and RSS-210 limit line RstrB
 — FCC 15.209 and RSS-210 limit line RstrB pk

Figure 7.6-62: radiated spurious emissions from 18 GHz to 25 GHz on 802.11n (MCS0) at mid channel



SPR 18 GHz to 25 GHz high channel

— AVG_MAXH
 — PK+_MAXH
 — FCC 15.209 and RSS-210 limit line RstrB
 — FCC 15.209 and RSS-210 limit line RstrB pk

Figure 7.6-63: radiated spurious emissions from 18 GHz to 25 GHz on 802.11n (MCS0) at high channel

Test data, continued

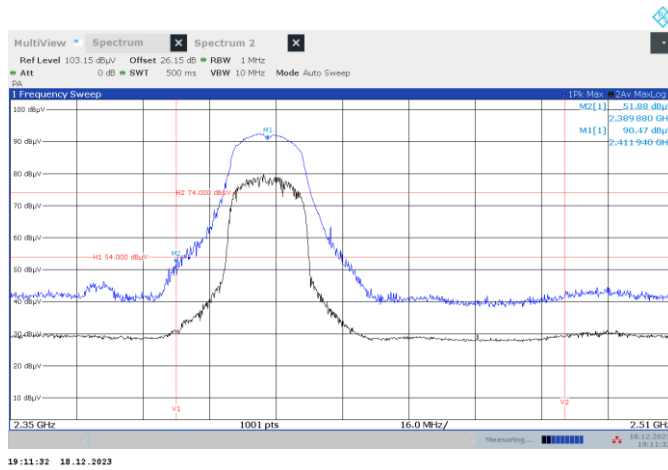


Figure 7.6-64: Radiated band edge spurious emissions on 802.11n (MCS0) at low band edge

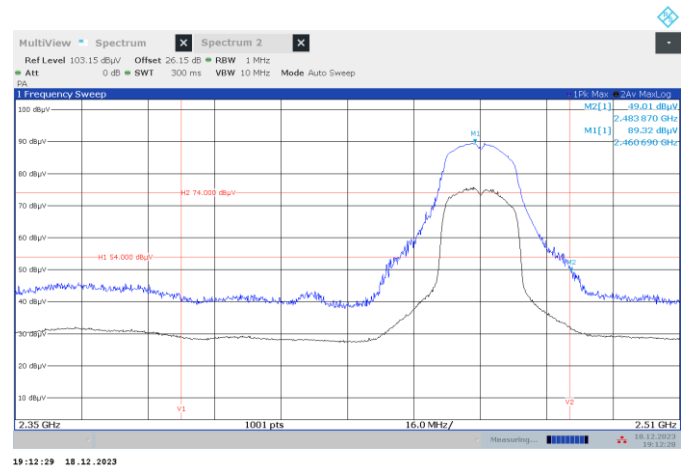


Figure 7.6-65: Radiated band edge spurious emissions on 802.11n (MCS0) at high band edge

Test data, continued

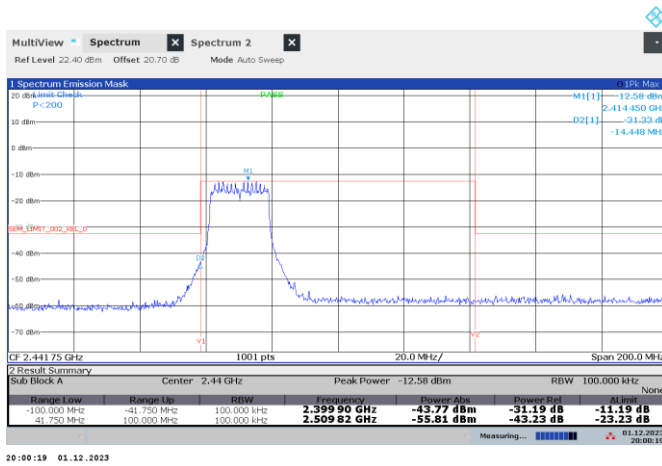


Figure 7.6-66: Band edge spurious emissions on 802.11n (MCS7) at low band edge

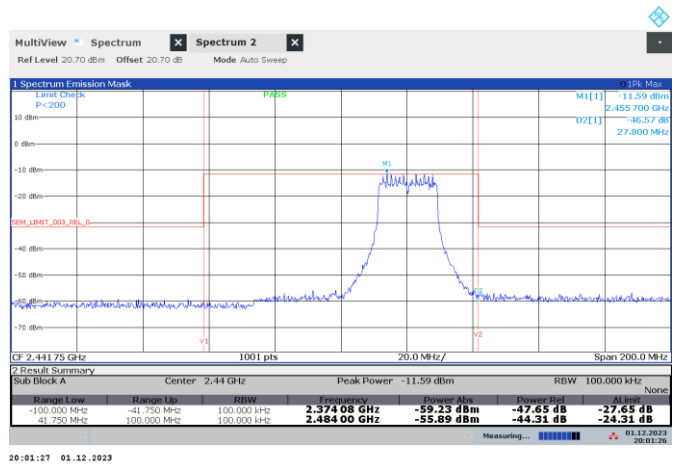
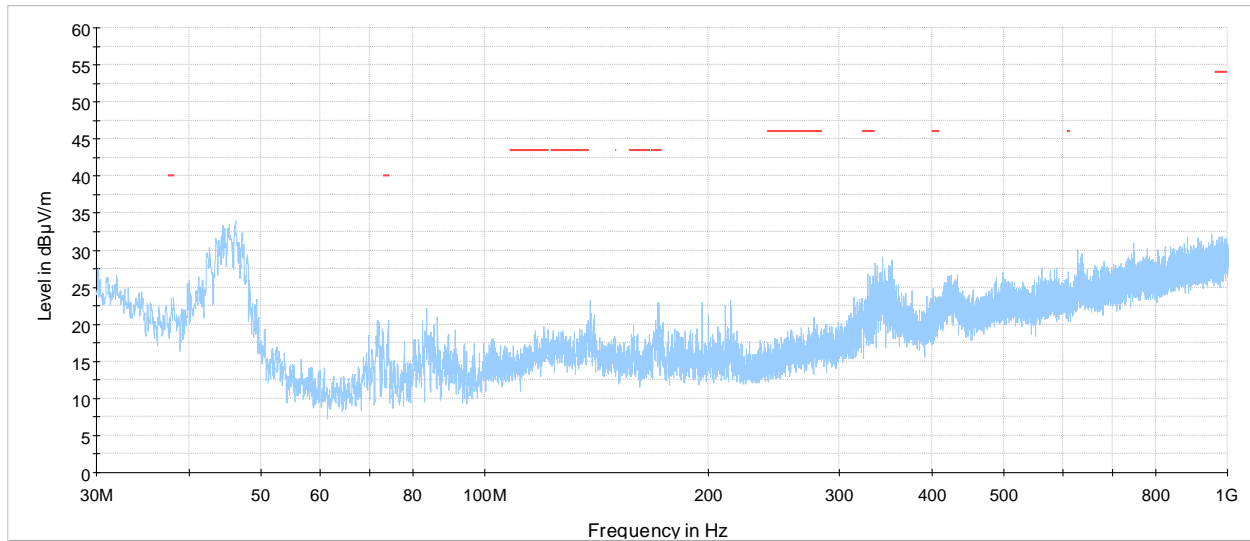


Figure 7.6-67: Band edge spurious emissions on 802.11n (MCS7) at high band edge



SPR 30 MHz to 1 GHz low channel

— Preview Result 1-PK+
— FCC 15.209 and RSS-210 limit line RstrB

Figure 7.6-68: radiated spurious emissions from 30 MHz to 1000 MHz on 802.11n (MCS7) at low channel

Test data, continued

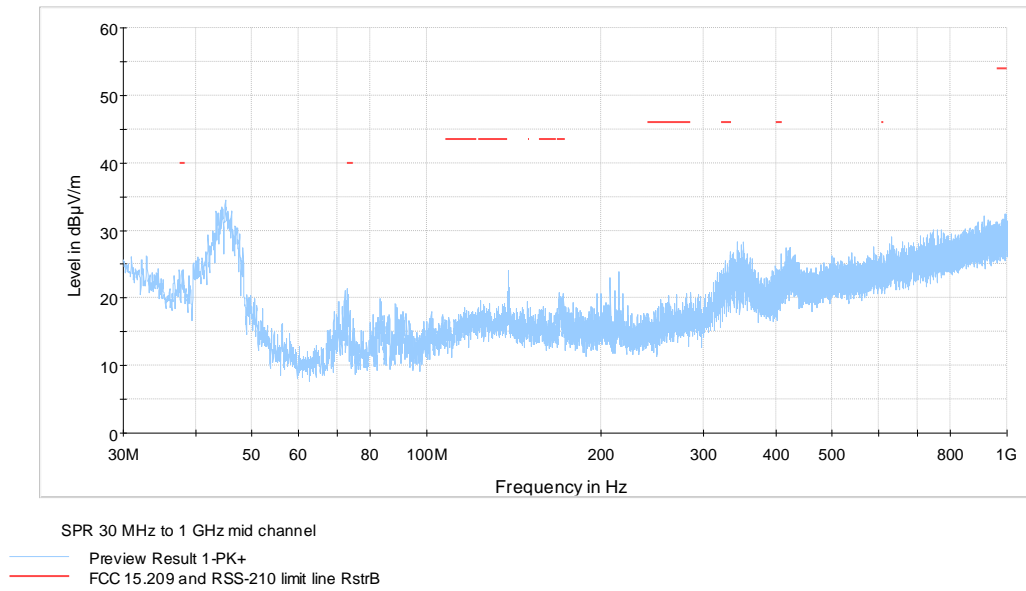


Figure 7.6-69: radiated spurious emissions from 30 MHz to 1000 MHz on 802.11n (MCS7) at mid channel

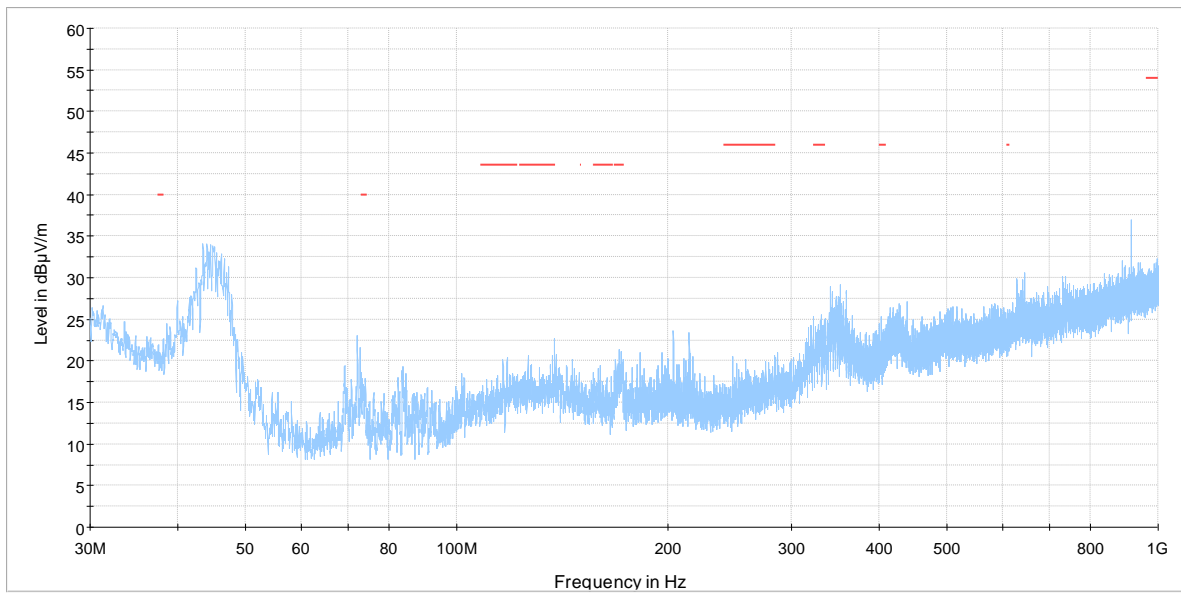
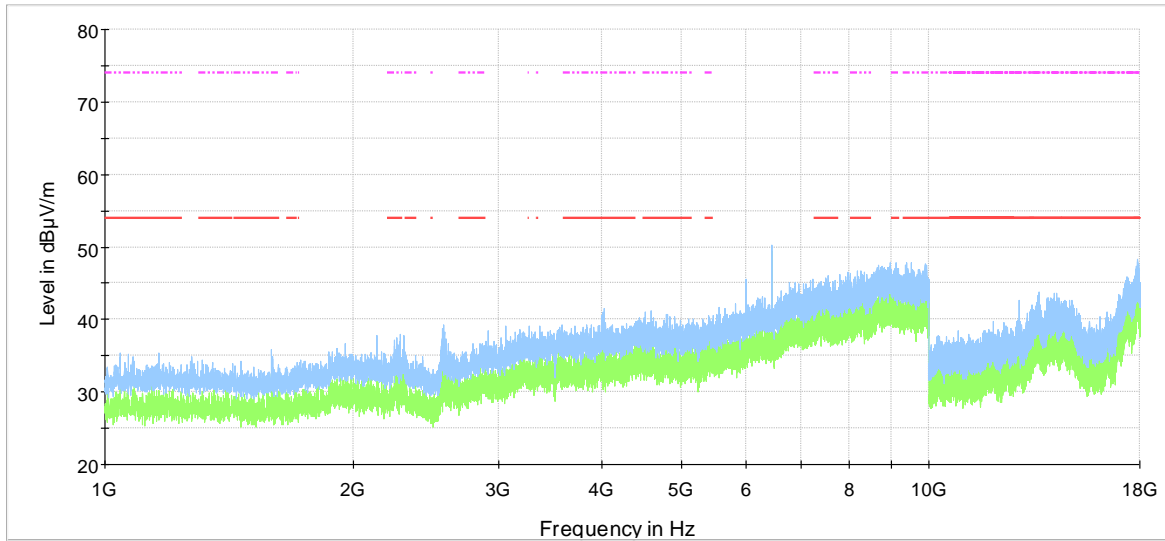


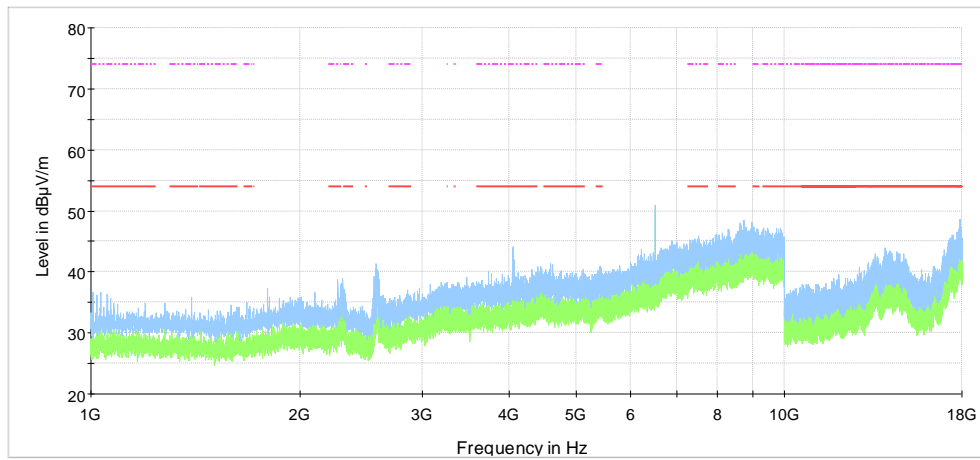
Figure 7.6-70: radiated spurious emissions from 30 MHz to 1000 MHz on 802.11n (MCS7) at high channel

Test data, continued



SPR 1 GHz to 18 GHz low channel
 Preview Result 2-AVG
 Preview Result 1-PK+
 FCC 15.209 and RSS-210 limit line RstrB
 FCC 15.209 and RSS-210 limit line RstrB pk

Figure 7.6-71: radiated spurious emissions from 1 GHz to 18 GHz on 802.11n (MCS7) at low channel



SPR 1 GHz to 18 GHz mid channel
 Preview Result 2-AVG
 Preview Result 1-PK+
 FCC 15.209 and RSS-210 limit line RstrB
 FCC 15.209 and RSS-210 limit line RstrB pk

Figure 7.6-72: radiated spurious emissions from 1 GHz to 18 GHz on 802.11n (MCS7) at mid channel

Test data, continued

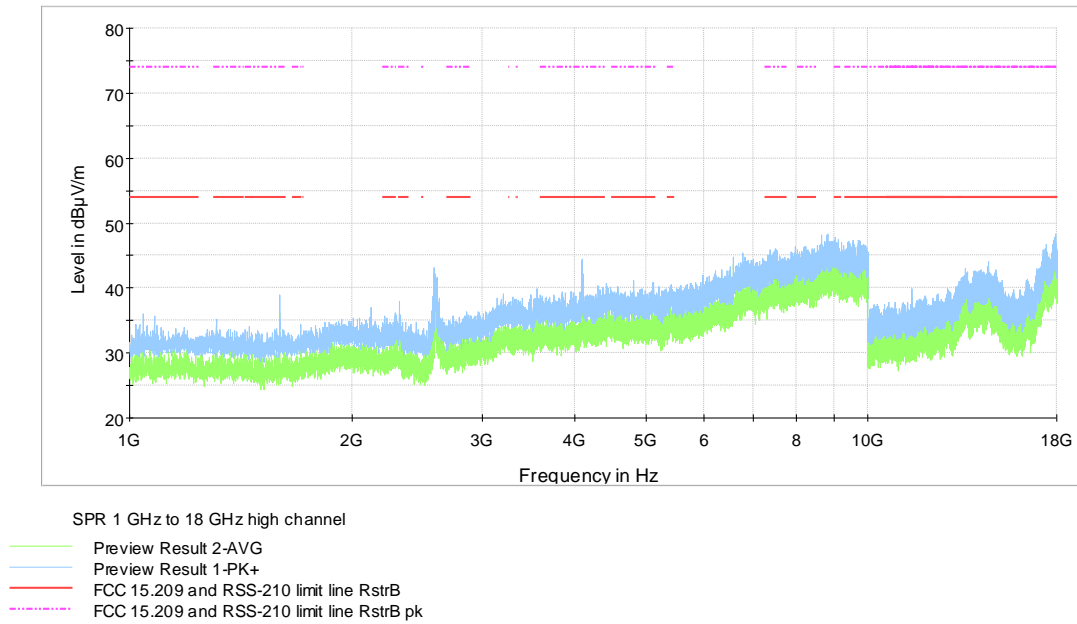


Figure 7.6-73: radiated spurious emissions from 1 GHz to 18 GHz on 802.11n (MCS7) at high channel

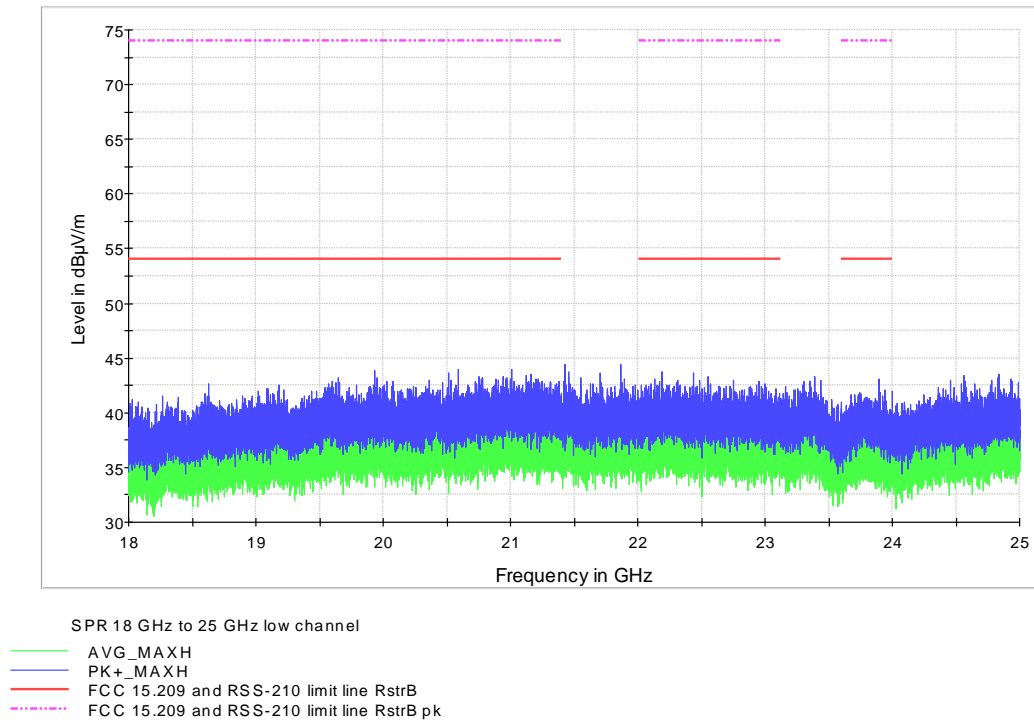
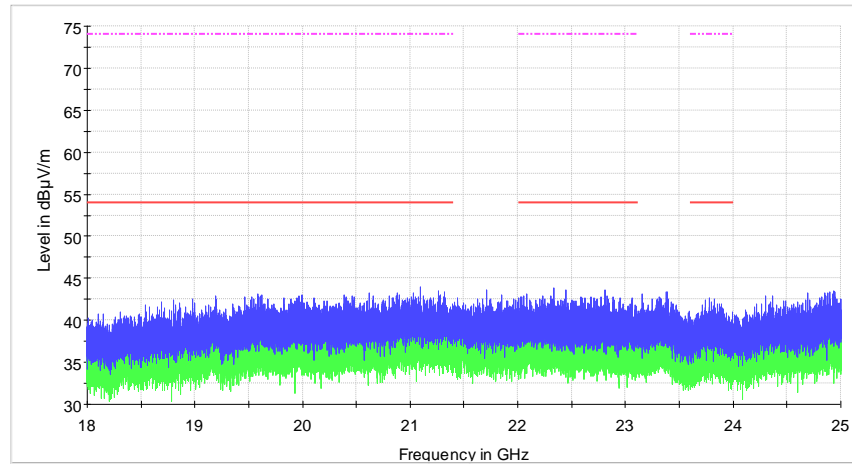


Figure 7.6-74: radiated spurious emissions from 18 GHz to 25 GHz on 802.11n (MCS7) at low channel

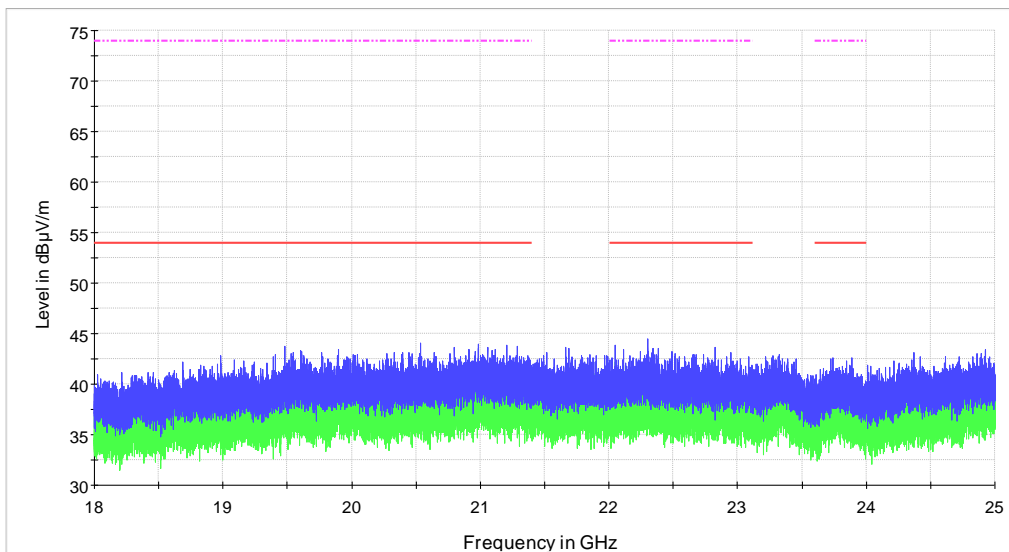
Test data, continued



SPR 18 GHz to 25 GHz mid channel

— AVG_MAXH
 — PK+_MAXH
 — FCC 15.209 and RSS-210 limit line RstrB
 — FCC 15.209 and RSS-210 limit line RstrB pk

Figure 7.6-75: radiated spurious emissions from 18 GHz to 25 GHz on 802.11n (MCS7) at mid channel



SPR 18 GHz to 25 GHz high channel

— AVG_MAXH
 — PK+_MAXH
 — FCC 15.209 and RSS-210 limit line RstrB
 — FCC 15.209 and RSS-210 limit line RstrB pk

Figure 7.6-76: radiated spurious emissions from 18 GHz to 25 GHz on 802.11n (MCS7) at high channel

Test data, continued

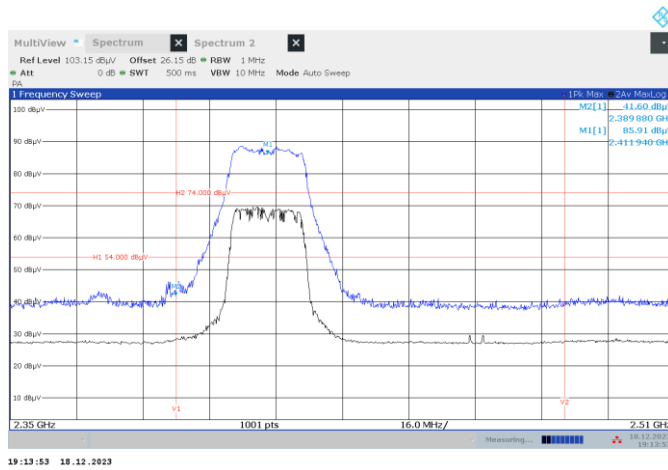


Figure 7.6-77: Radiated band edge spurious emissions on 802.11n (MCS7) at low band edge

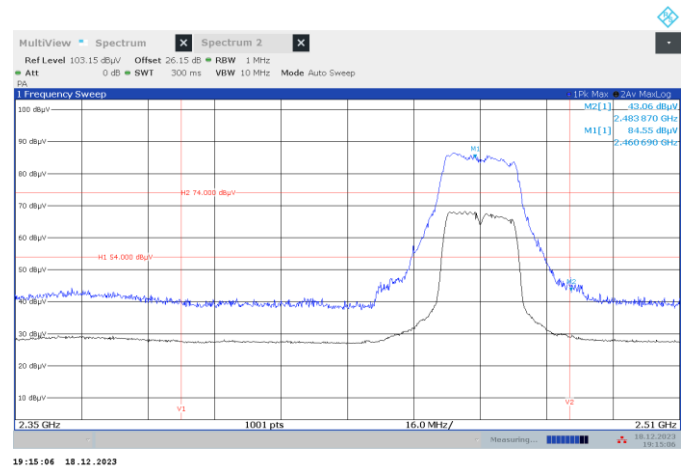


Figure 7.6-78: Radiated band edge spurious emissions on 802.11n (MCS7) at high band edge

Test data, continued

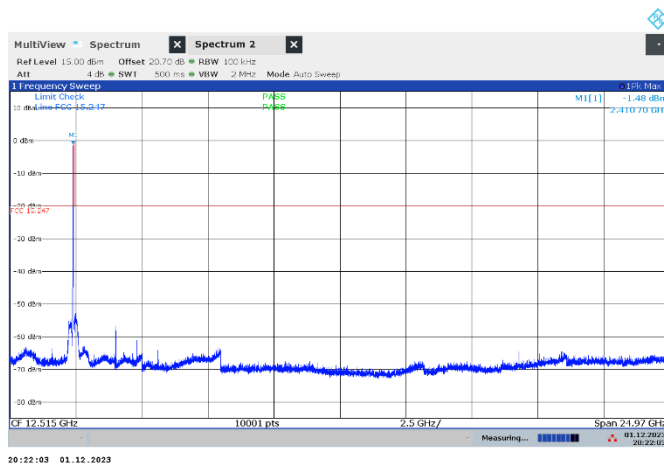


Figure 7.6-79: Conducted spurious emissions for 802.11b, 1 Mbps data rate, low channel

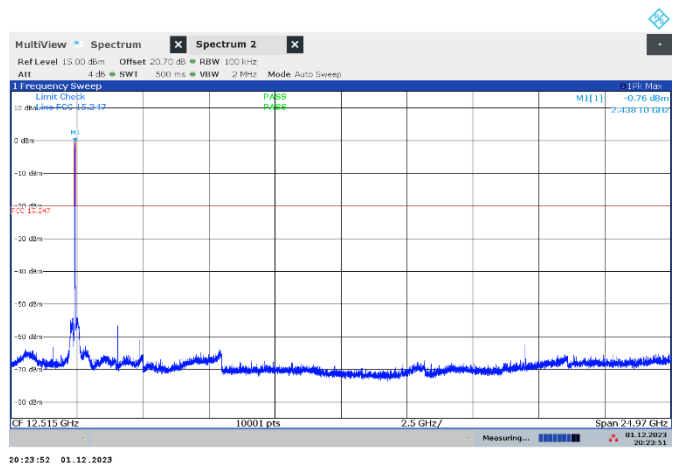


Figure 7.6-80: Conducted spurious emissions for 802.11b, 1 Mbps data rate, mid channel

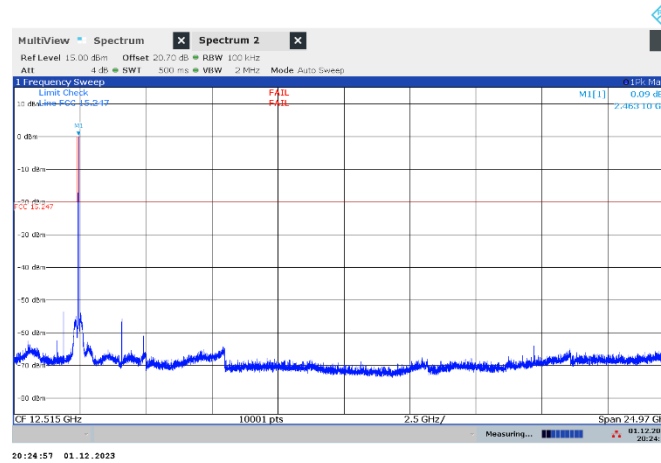


Figure 7.6-81: Conducted spurious emissions for 802.11b, 1 Mbps data rate, high channel

Test data, continued

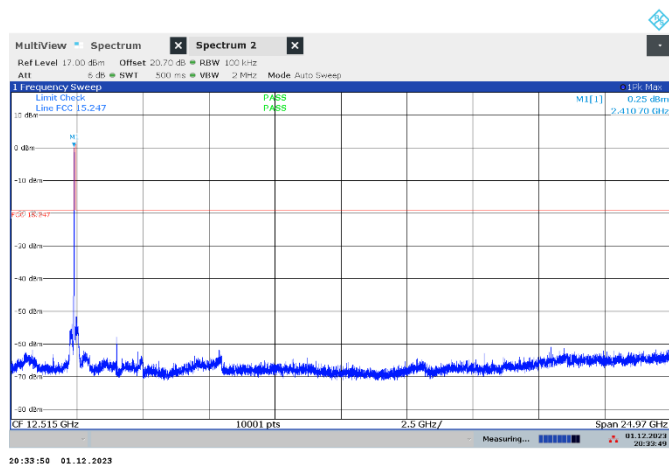


Figure 7.6-82: Conducted spurious emissions for 802.11b, 11 Mbps data rate, low channel

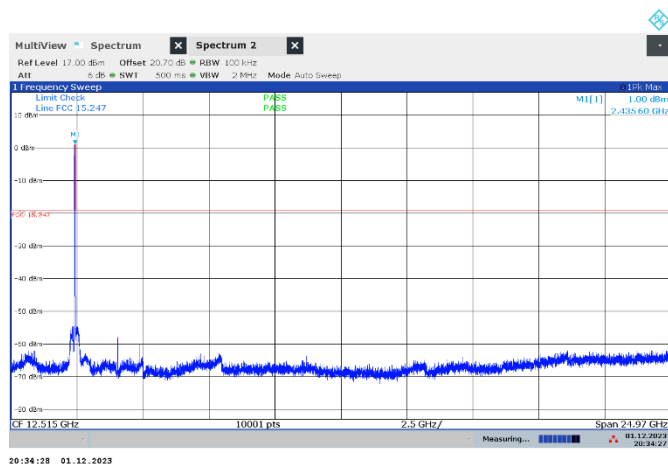


Figure 7.6-83: Conducted spurious emissions for 802.11b, 11 Mbps data rate, mid channel

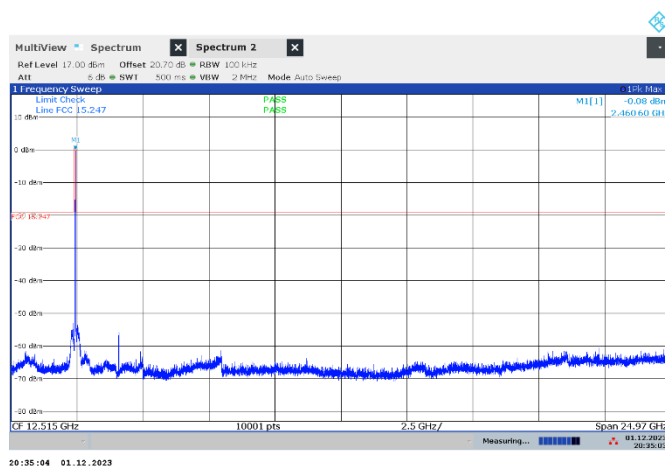


Figure 7.6-84: Conducted spurious emissions for 802.11b, 11 Mbps data rate, high channel

Test data, continued

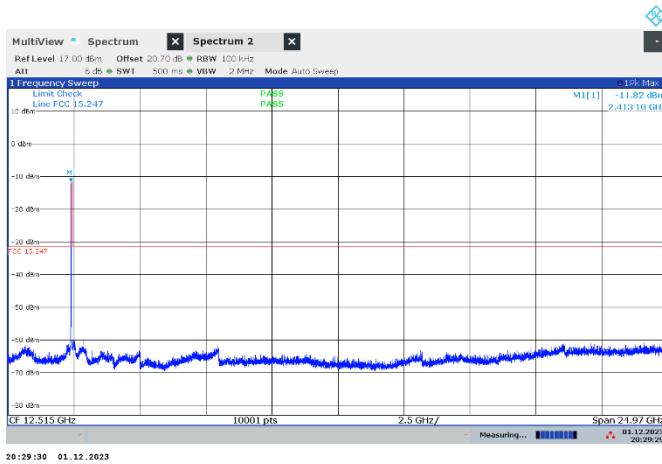


Figure 7.6-85: Conducted spurious emissions for 802.11g, 6 Mbps data rate, low channel

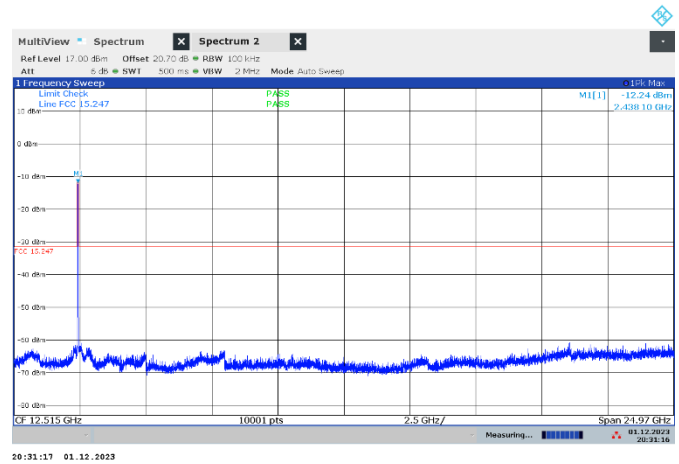


Figure 7.6-86: Conducted spurious emissions for 802.11g, 6 Mbps data rate, mid channel

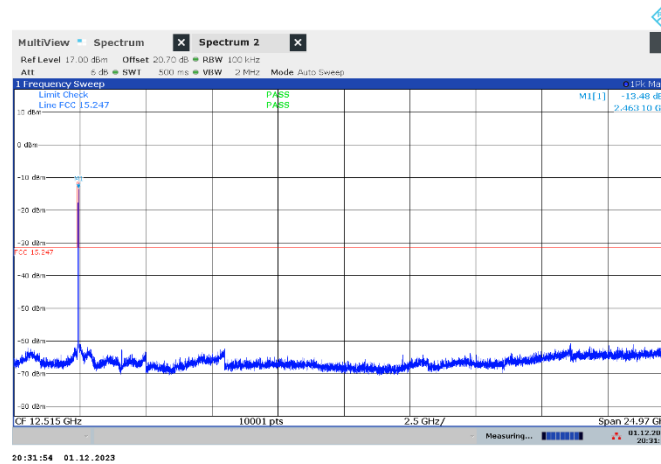


Figure 7.6-87: Conducted spurious emissions for 802.11g, 6 Mbps data rate, high channel

Test data, continued

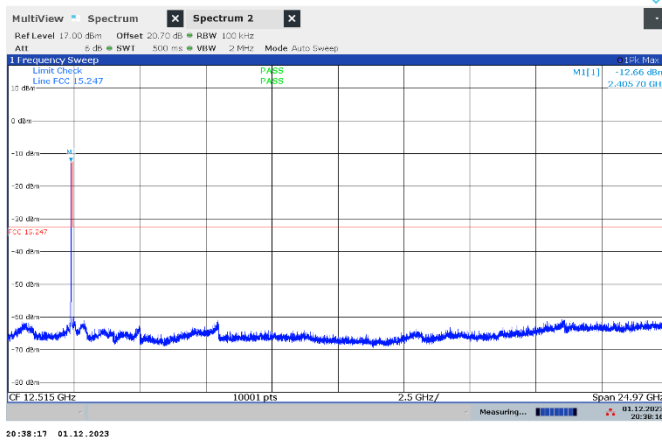


Figure 7.6-88: Conducted spurious emissions for 802.11g, 54 Mbps data rate, low channel

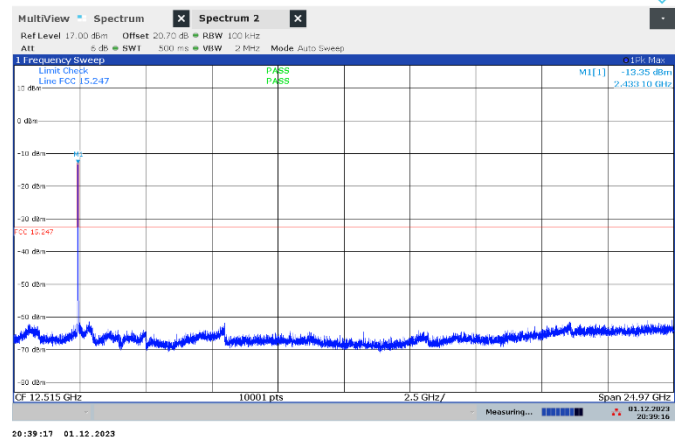


Figure 7.6-89: Conducted spurious emissions for 802.11g, 54 Mbps data rate, mid channel

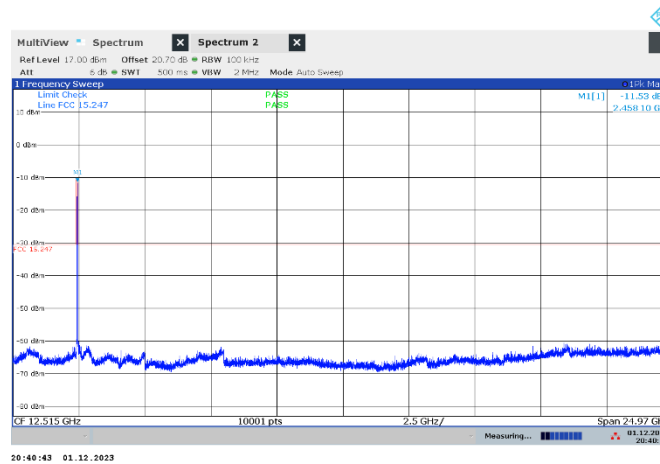


Figure 7.6-90: Conducted spurious emissions for 802.11g, 54 Mbps data rate, high channel

Test data, continued

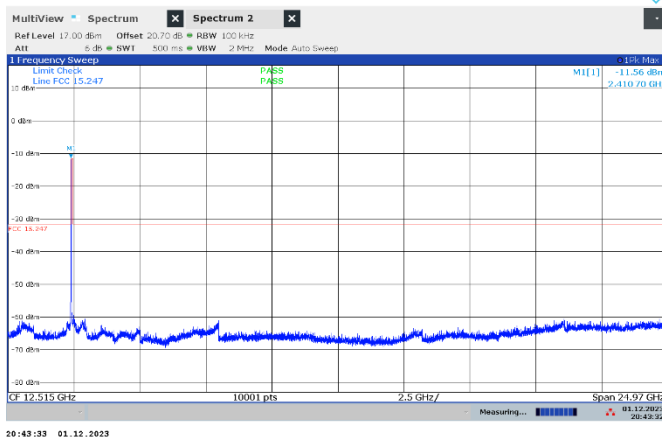


Figure 7.6-91: Conducted spurious emissions for 802.11g, MCS0 data rate, low channel

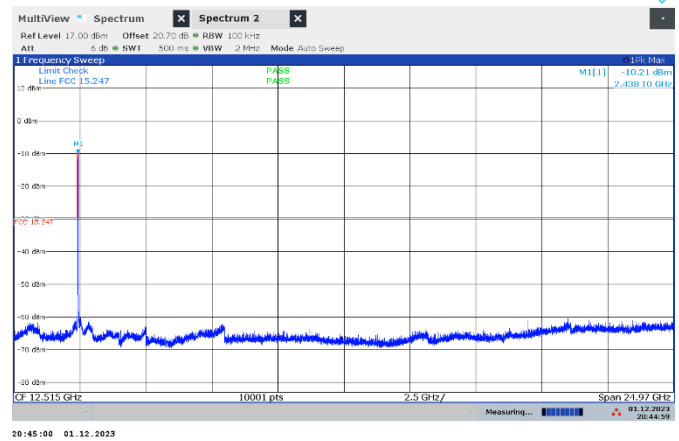


Figure 7.6-92: Conducted spurious emissions for 802.11g, MCS0 data rate, mid channel

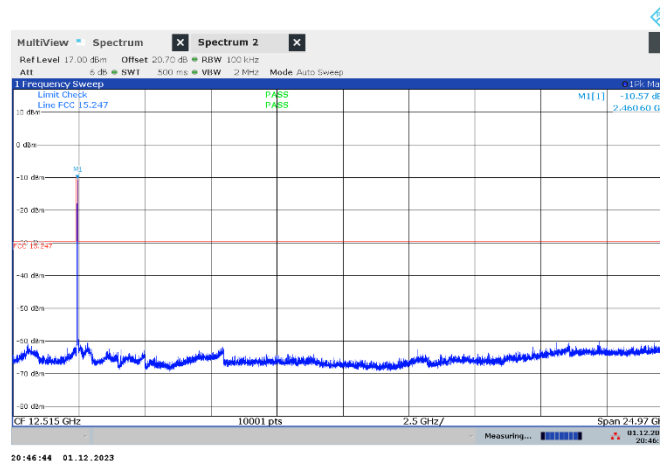


Figure 7.6-93: Conducted spurious emissions for 802.11g, MCS0 data rate, high channel

Test data, continued

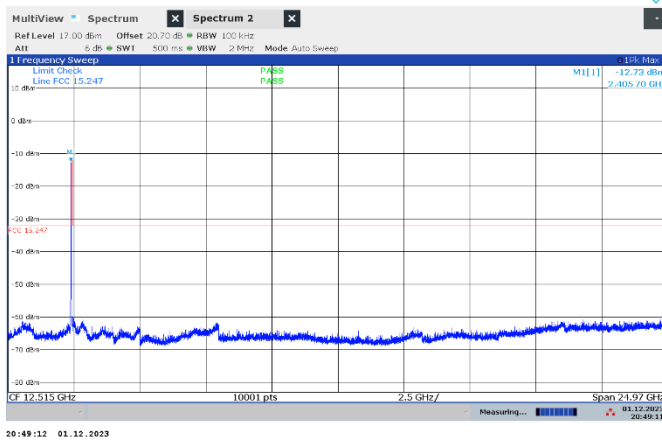


Figure 7.6-94: Conducted spurious emissions for 802.11g, MCS7 data rate, low channel

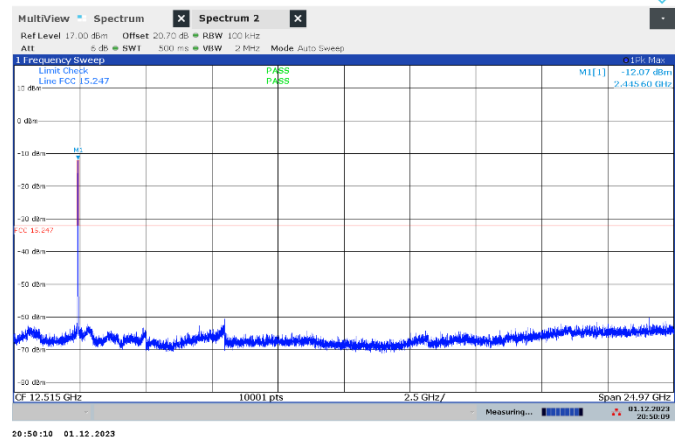


Figure 7.6-95: Conducted spurious emissions for 802.11g, MCS7 data rate, mid channel

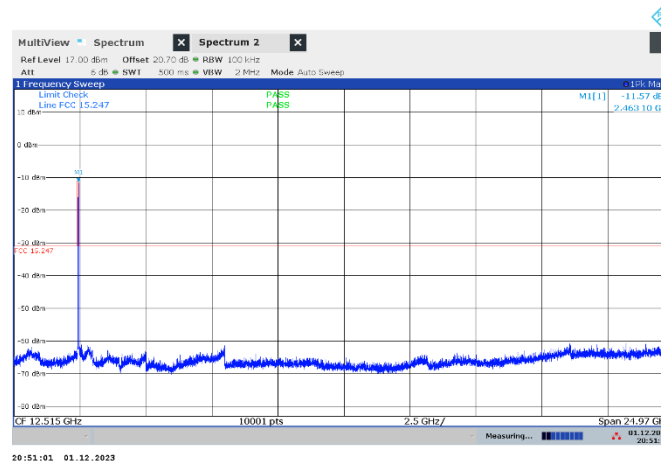


Figure 7.6-96: Conducted spurious emissions for 802.11g, MCS7 data rate, high channel

7.7 Power spectral density for digitally modulated devices

7.7.1 References, definitions and limits

FCC §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.
- (f) For the purposes of this section, hybrid systems are those that employ a combination of both frequency hopping and digital modulation techniques. The frequency hopping operation of the hybrid system, with the direct sequence or digital modulation operation turned-off, shall have an average time of occupancy on any frequency not to exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4. The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RSS-247, Clause 5.2:

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).

RSS-247, Clause 5.3:

Hybrid systems employ a combination of both frequency hopping and digital transmission techniques and shall comply with the following:

- b. With the frequency hopping turned off, the digital transmission operation shall comply with the power spectral density requirements for digital modulation systems set out in of section 5.2(b) or section 6.2.4 for hybrid devices operating in the band 5725–5850 MHz.

7.7.2 Test summary

Verdict	Pass		
Test date	November 30, 2023	Temperature	22.39 °C
Tested by	Hossein Zamani	Air pressure	990.20 mbar
Test location	Montreal	Relative humidity	34.47 %

7.7.3 Observations, settings and special notes

Power spectral density test was performed as per KDB 558074, section 8.4 with reference to ANSI C63.10 subclause 11.10.

The test was performed using method PKPSD (peak PSD).

Spectrum analyser settings:

Resolution bandwidth:	3 kHz
Video bandwidth:	$\geq 3 \times \text{RBW}$
Frequency span:	1.5 times the DTS BW (Peak)
Detector mode:	Peak
Trace mode:	Maxhold

7.7.4 Test data

Table 7.7-1: PSD results (antenna port measurement)

Modulation	Data rate	Frequency, MHz	PSD, dBm/3 kHz	PSD limit, dBm/3 kHz	Margin, dB
802.11b	1 Mbps	2412	-11.98	8.0	19.98
		2437	-11.61	8.0	19.61
		2462	-10.79	8.0	18.79
	11 Mbps	2412	-11.33	8.0	19.33
		2437	-10.19	8.0	18.19
		2462	-10.17	8.0	18.17
802.11g	6 Mbps	2412	-14.17	8.0	22.17
		2437	-10.82	8.0	18.82
		2462	-13.48	8.0	21.48
	54 Mbps	2412	-19.38	8.0	27.38
		2437	-17.66	8.0	25.66
		2462	-19.57	8.0	27.57
802.11n	MCS0	2412	-14.63	8.0	22.63
		2437	-11.94	8.0	19.94
		2462	-14.78	8.0	22.78
	MCS7	2412	-19.37	8.0	27.37
		2437	-18.90	8.0	26.9
		2462	-18.78	8.0	26.78

Test data, continued

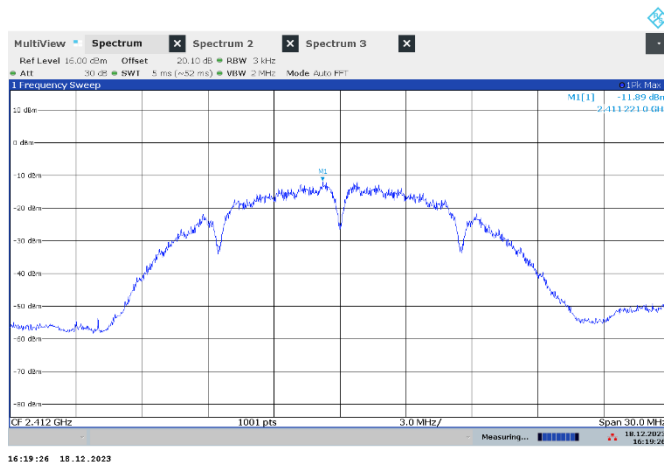


Figure 7.7-1: Power spectral density on 802.11b (1 Mbps) low channel

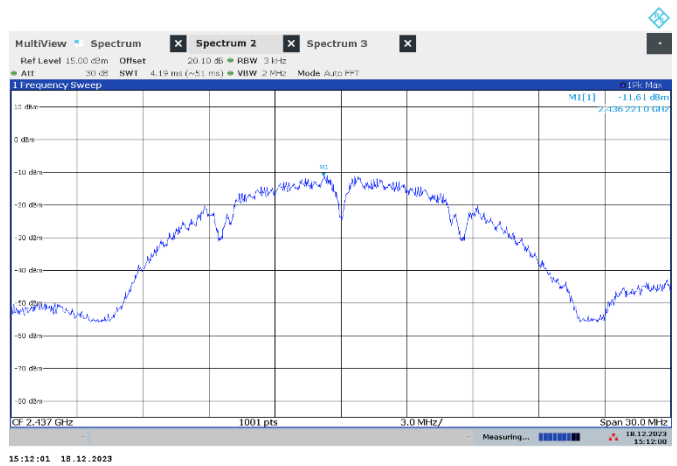


Figure 7.7-2: Power spectral density on 802.11b (1 Mbps) mid channel

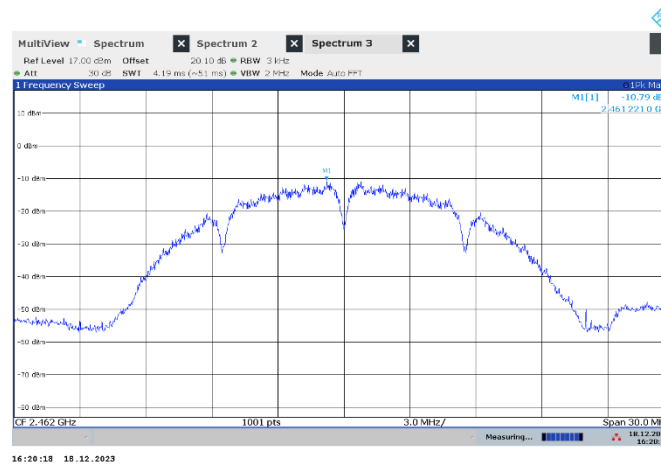


Figure 7.7-3: Power spectral density on 802.11b (1 Mbps) high channel

Test data, continued

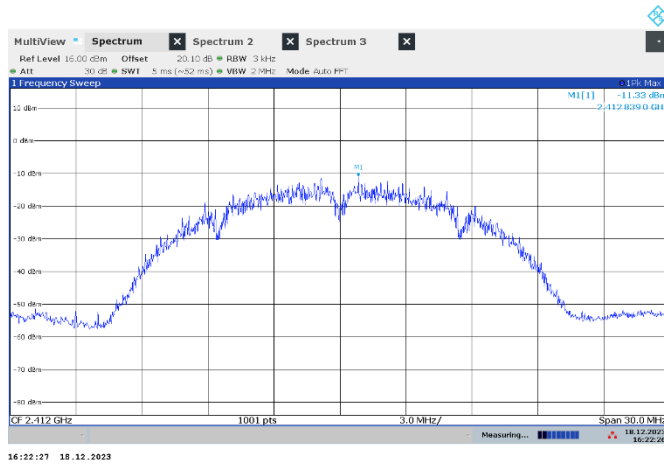


Figure 7.7-4: Power spectral density on 802.11b (11 Mbps) low channel

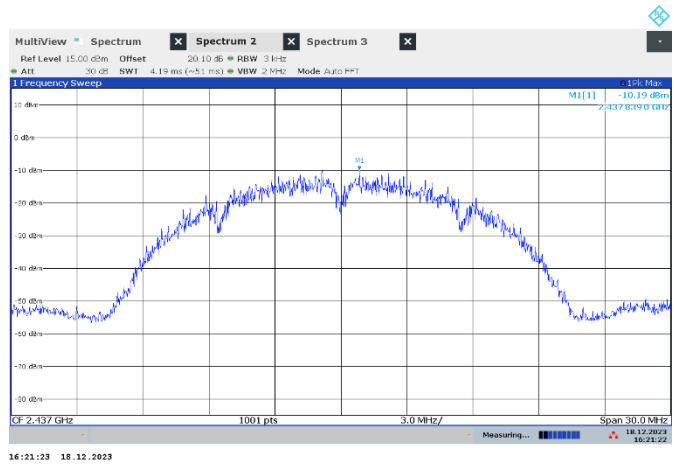


Figure 7.7-5: Power spectral density on 802.11b (11 Mbps) mid channel

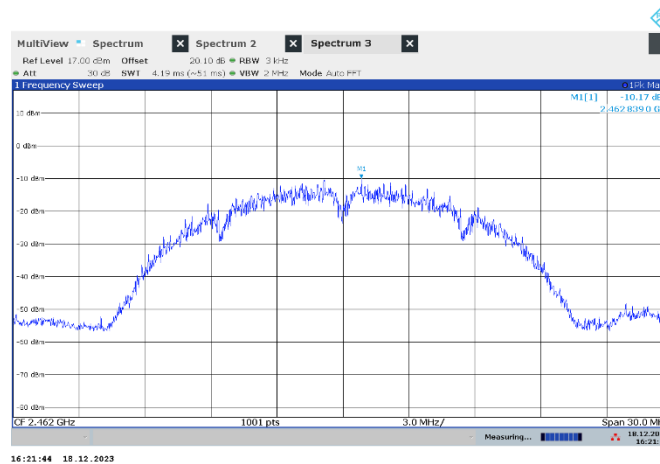


Figure 7.7-6: Power spectral density on 802.11b (11 Mbps) high channel

Test data, continued

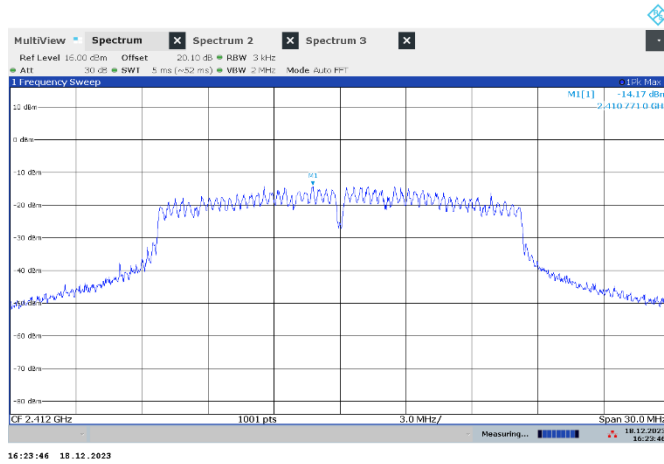


Figure 7.7-7: Power spectral density on 802.11g (6 Mbps) low channel

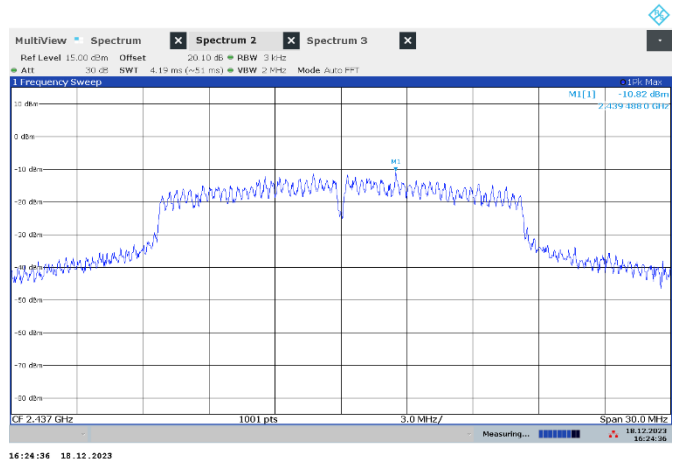


Figure 7.7-8: Power spectral density on 802.11g (6 Mbps) mid channel

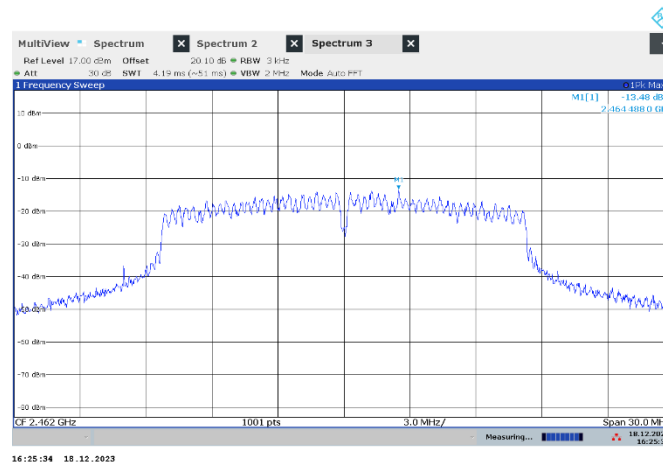


Figure 7.7-9: Power spectral density on 802.11g (6 Mbps) high channel

Test data, continued

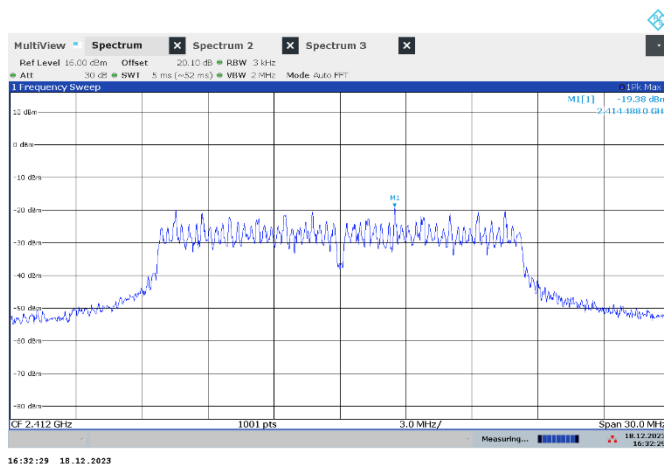


Figure 7.7-10: Power spectral density on 802.11g (54 Mbps) low channel

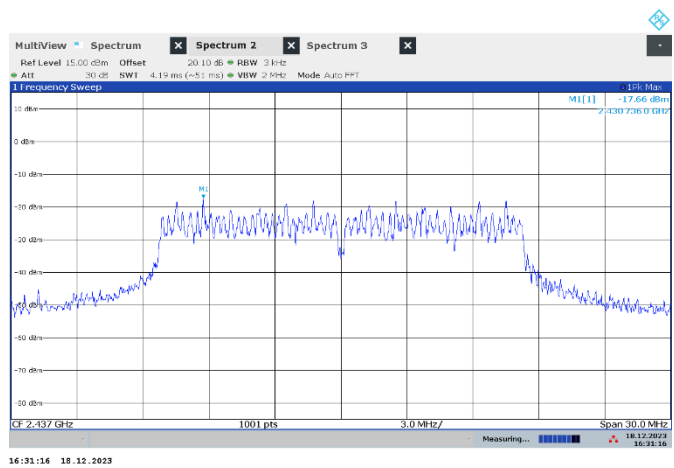


Figure 7.7-11: Power spectral density on 802.11g (54 Mbps) mid channel

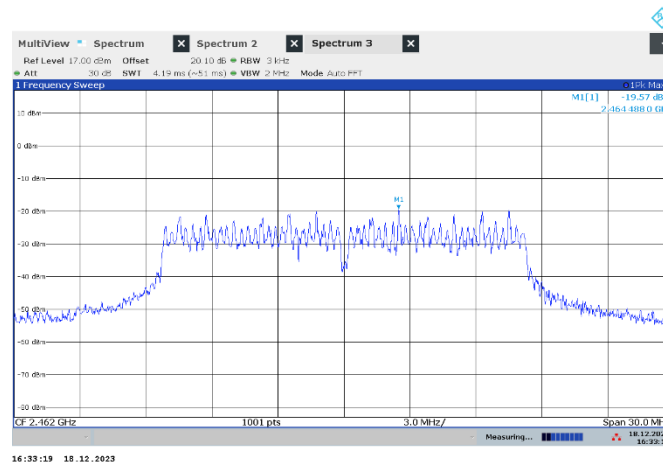


Figure 7.7-12: Power spectral density on 802.11g (54 Mbps) high channel

Test data, continued

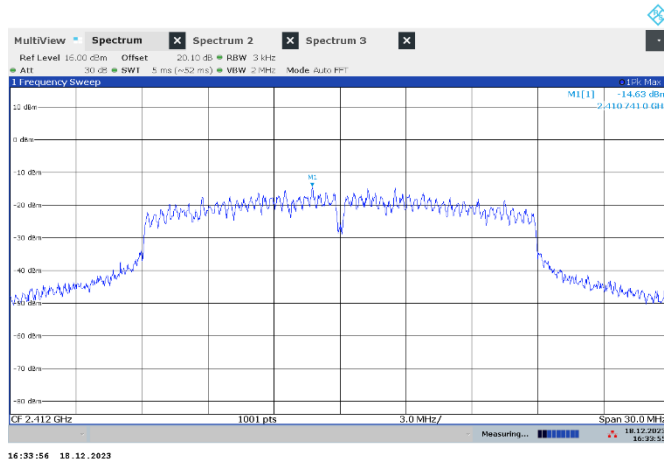


Figure 7.7-13: Power spectral density on 802.11n (MCS0) low channel

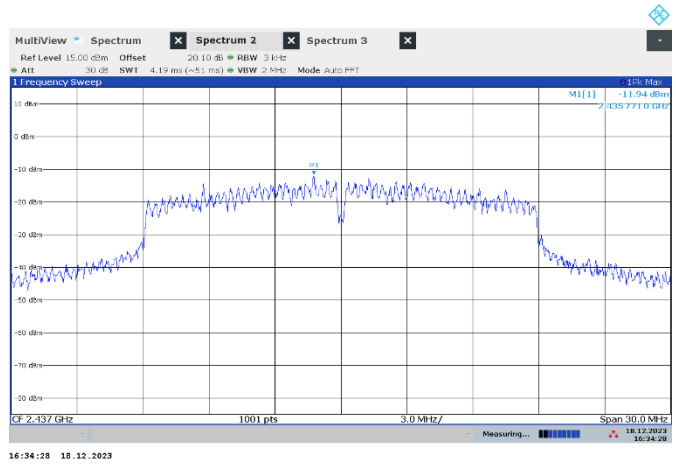


Figure 7.7-14: Power spectral density on 802.11n (MCS0) mid channel

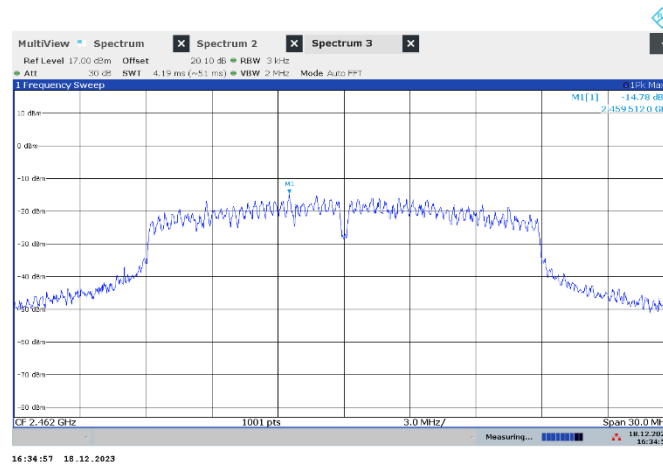


Figure 7.7-15: Power spectral density on 802.11n (MCS0) high channel

Test data, continued

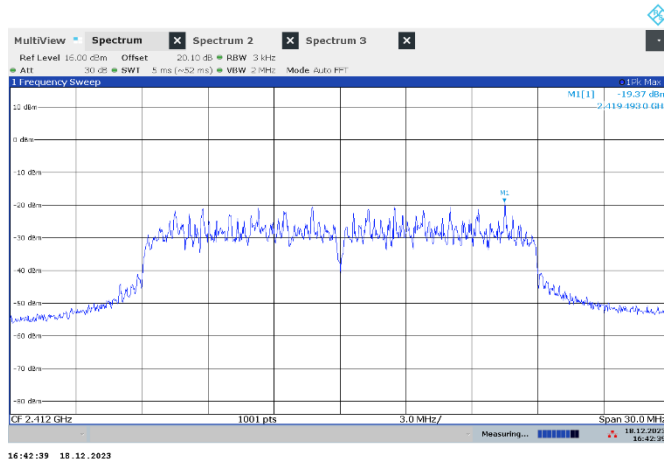


Figure 7.7-16: Power spectral density on 802.11n (MCS7) low channel

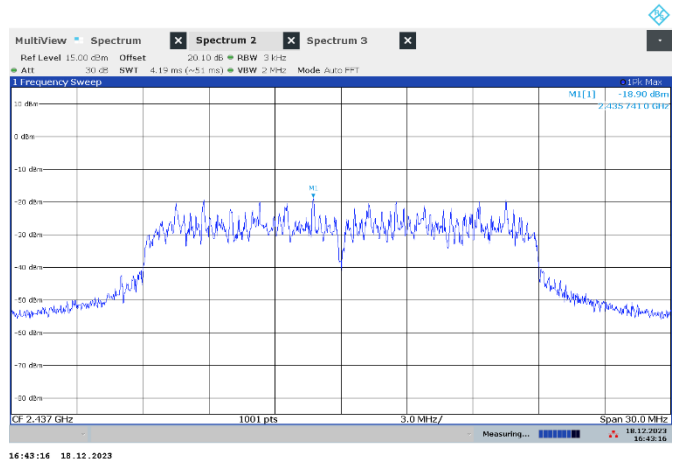


Figure 7.7-17: Power spectral density on 802.11n (MCS7) mid channel

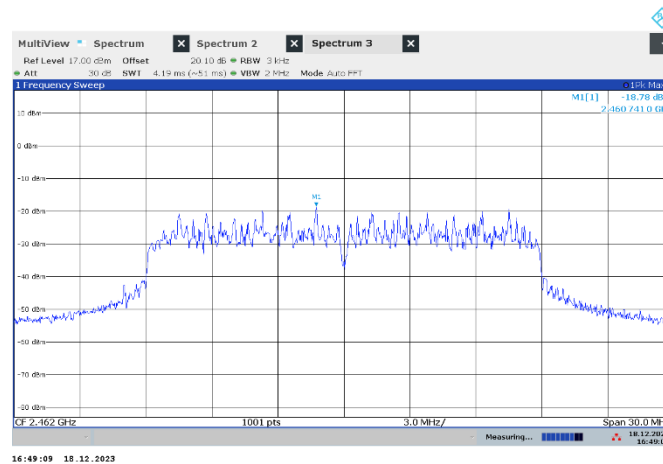
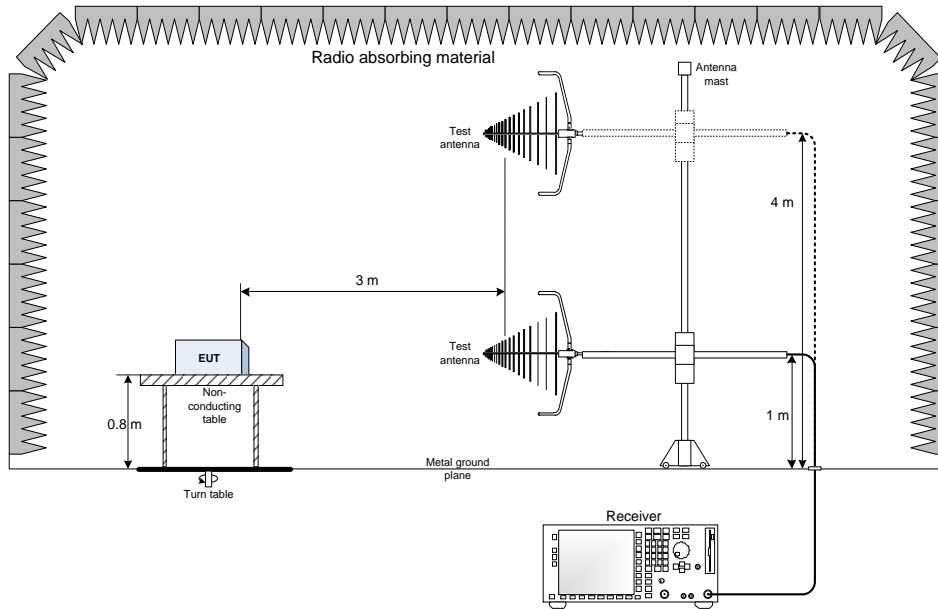


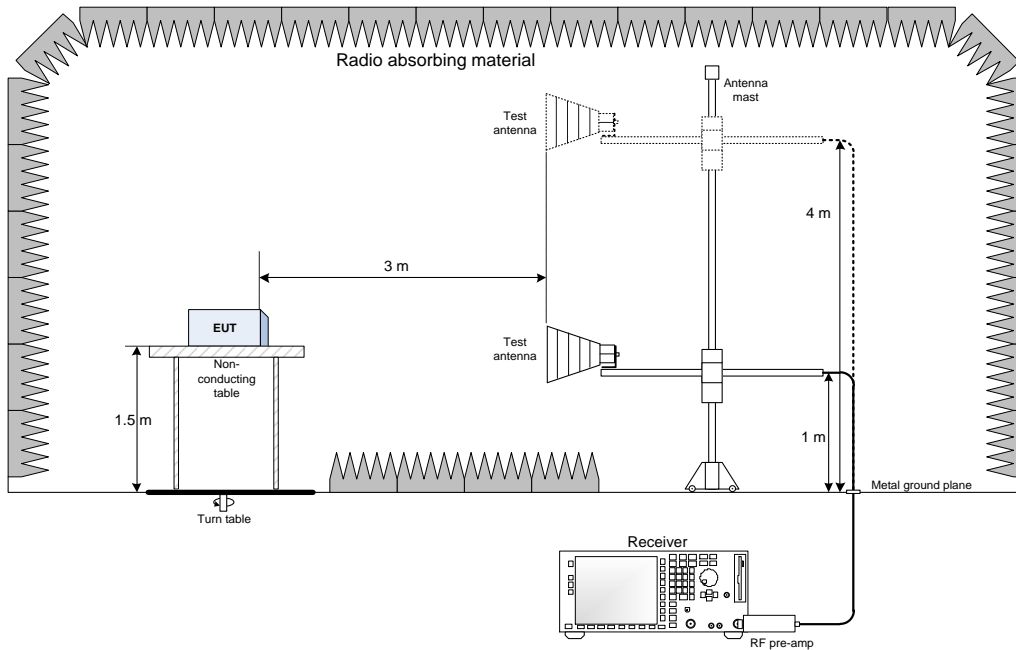
Figure 7.7-18: Power spectral density on 802.11n (MCS7) high channel

Section 8 Test setup diagrams

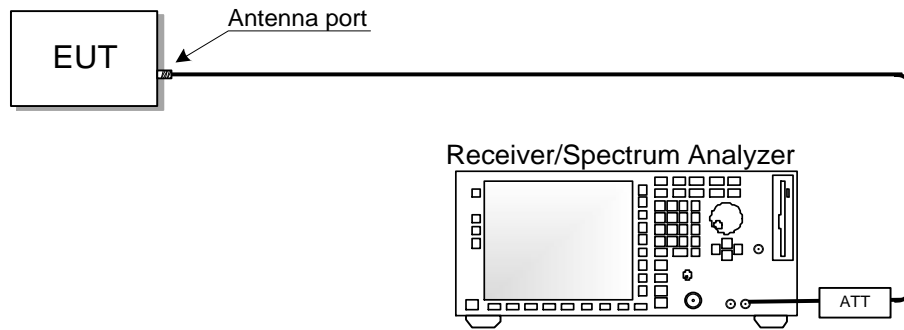
8.1 Radiated emissions set-up for frequencies below 1 GHz



8.2 Radiated emissions set-up for frequencies above 1 GHz



8.3 Antenna port set-up



End of the test report