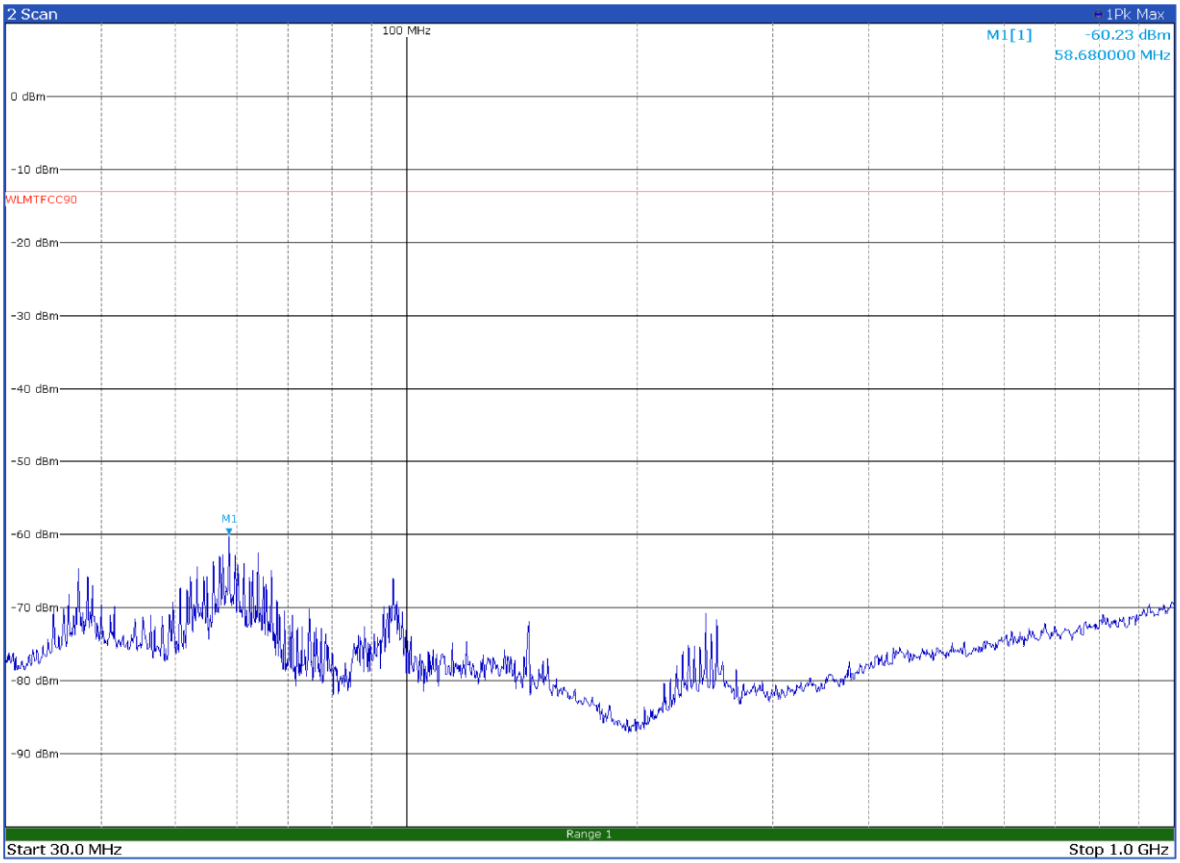

Figure 7.4-13: *Radiated emission with antenna in horizontal polarization on mid channel (TX1)*

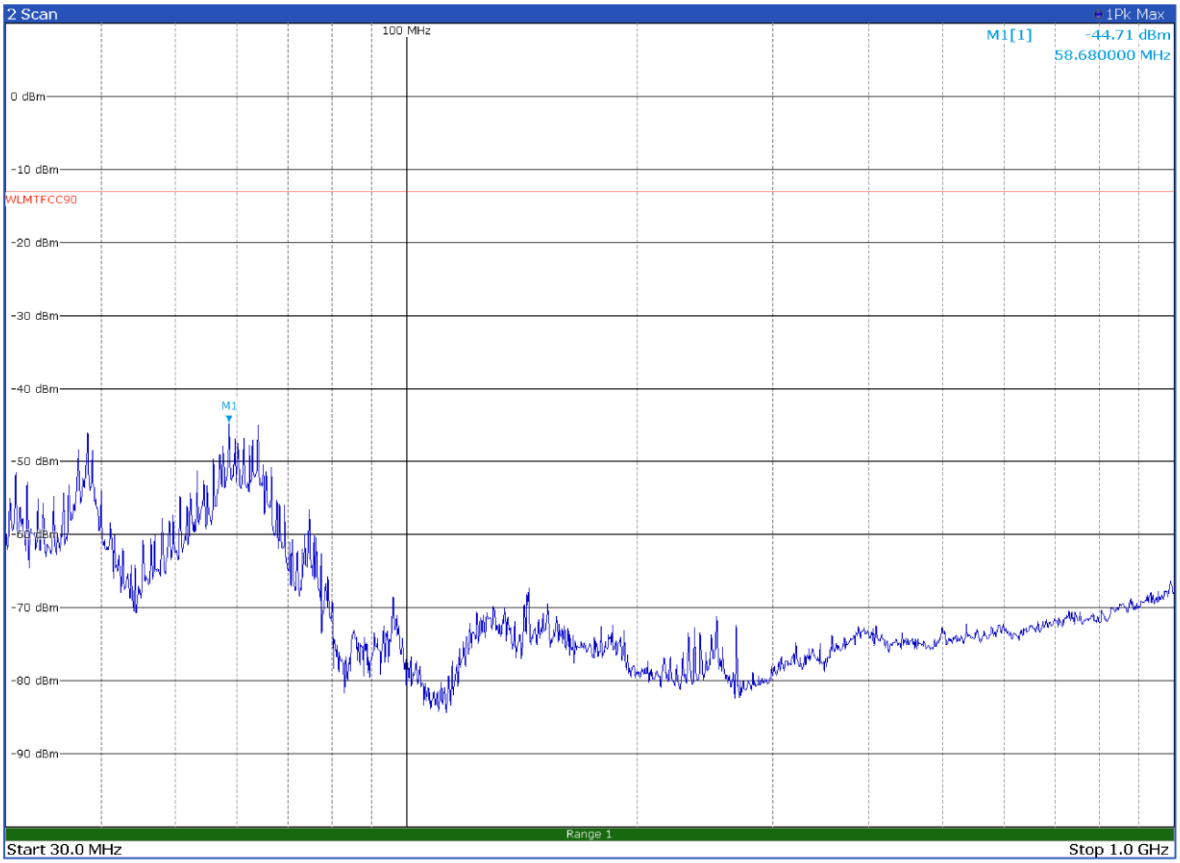

Figure 7.4-14: *Radiated emission with antenna in vertical polarization on mid channel (TX1)*

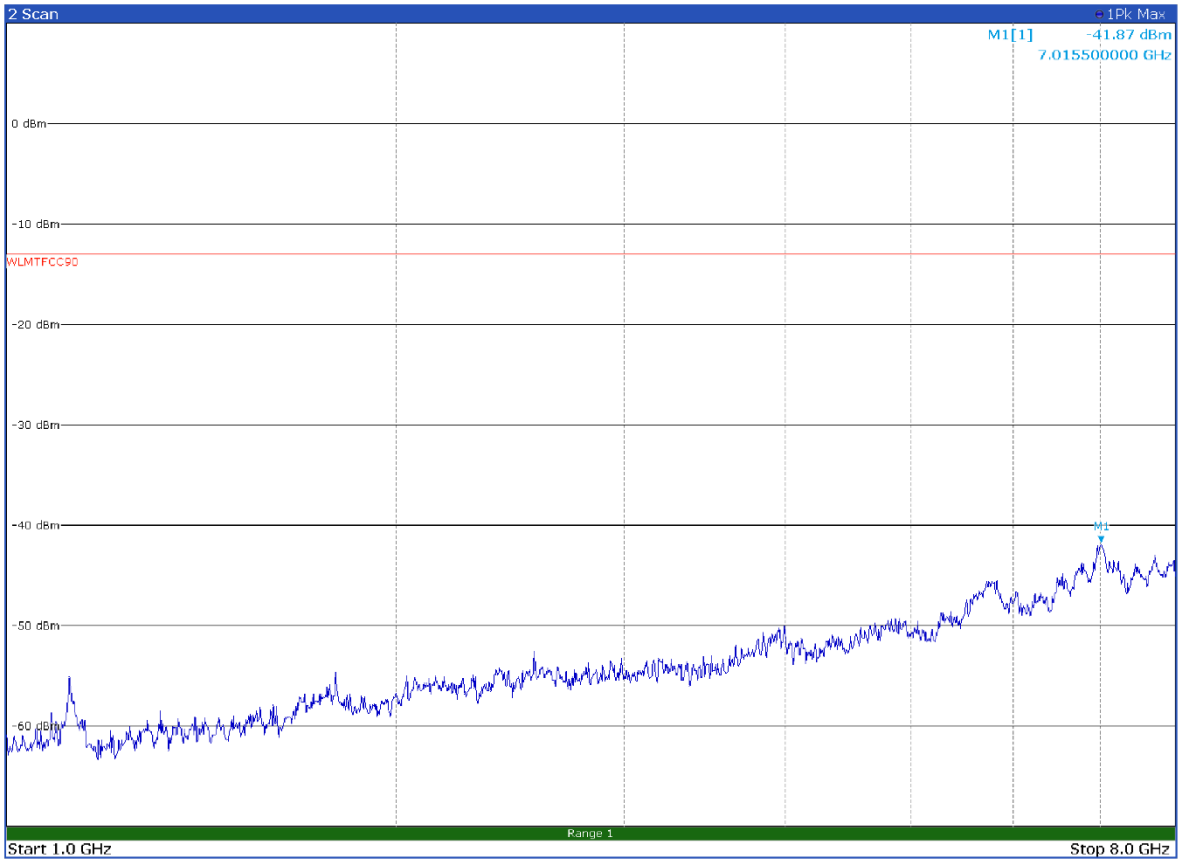

Figure 7.4-15: *Radiated emission with antenna in horizontal polarization on mid channel (TX1)*

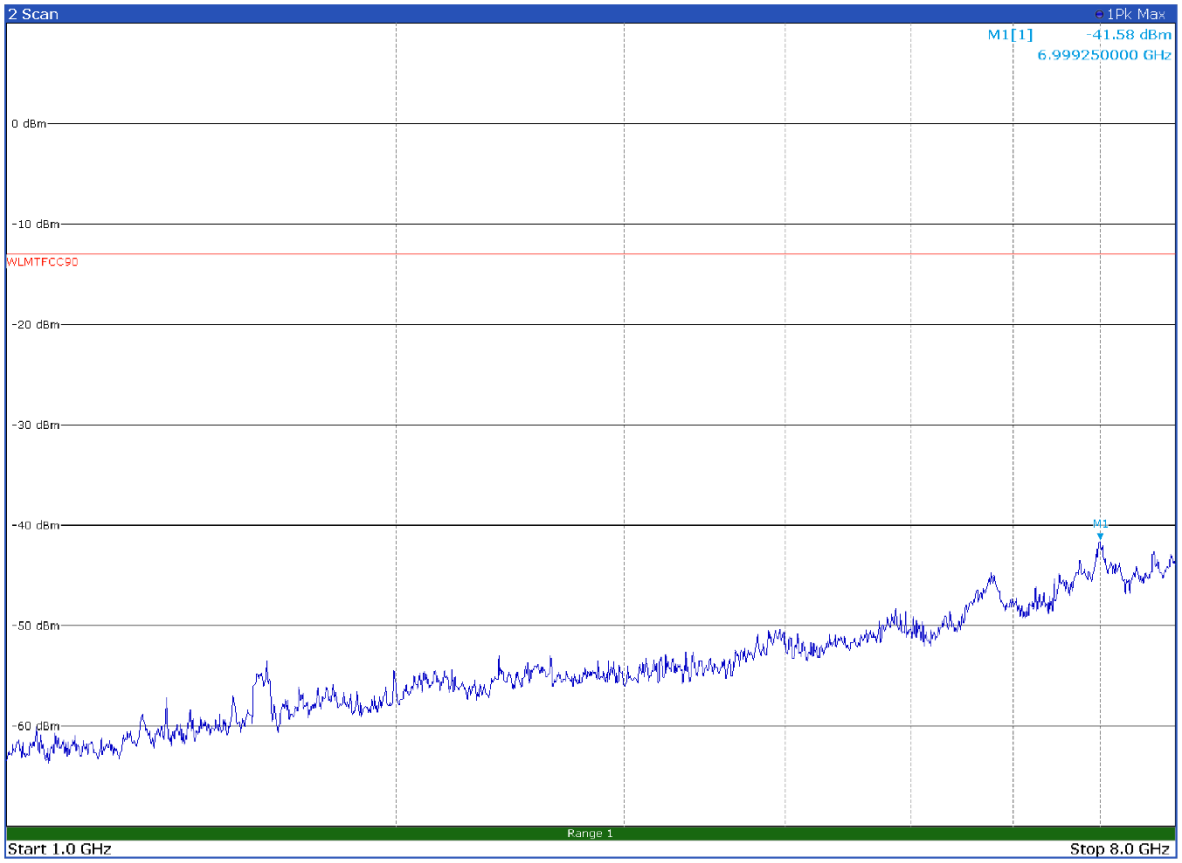

Figure 7.4-16: *Radiated emission with antenna in vertical polarization on mid channel (TX1)*

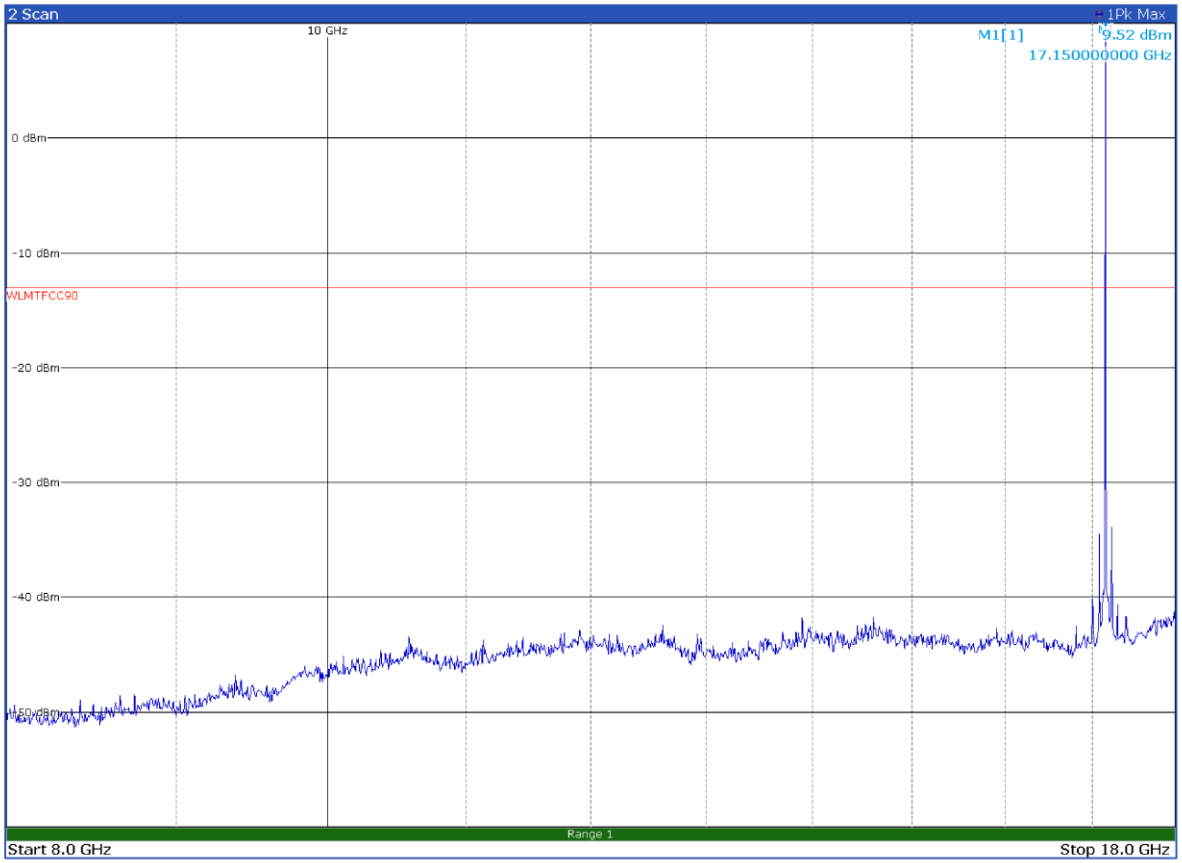

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Figure 7.4-17: *Radiated emission with antenna in horizontal polarization on mid channel (TX1)*

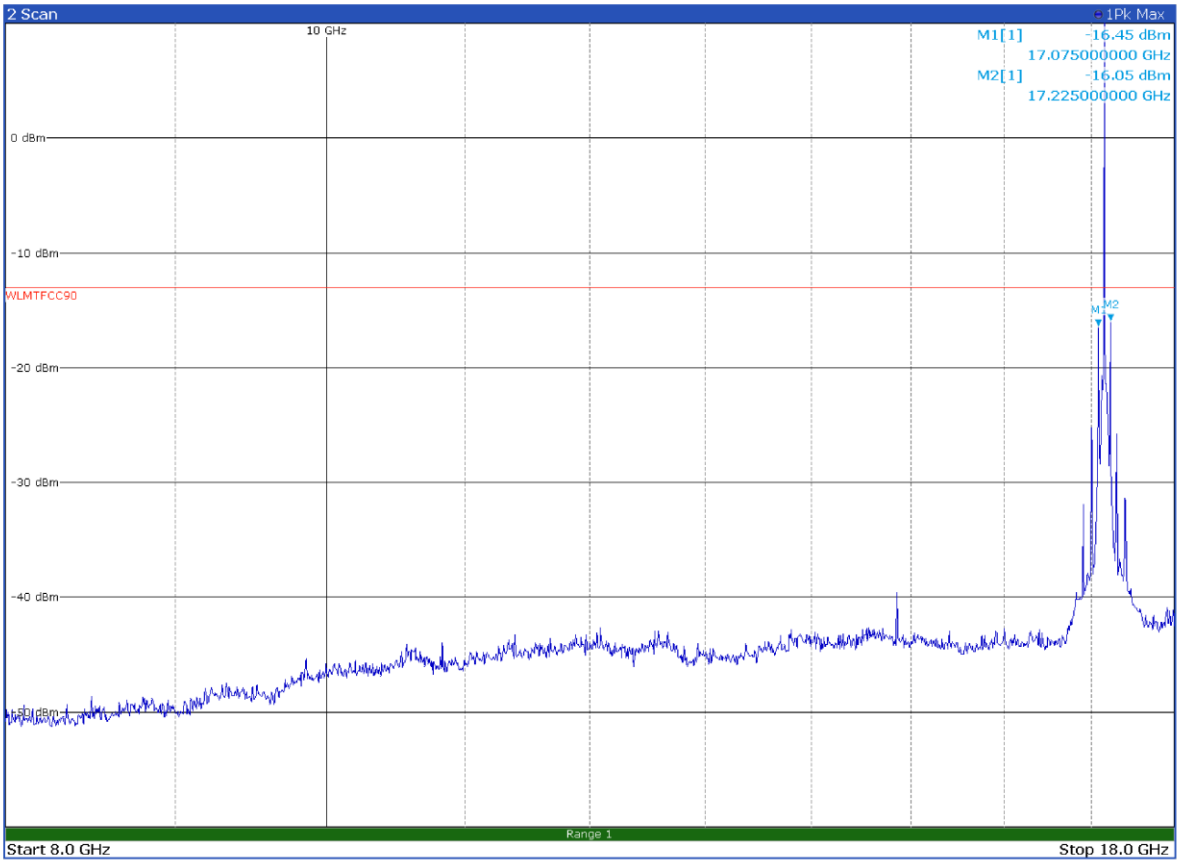

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Figure 7.4-18: *Radiated emission with antenna in vertical polarization on mid channel (TX1)*

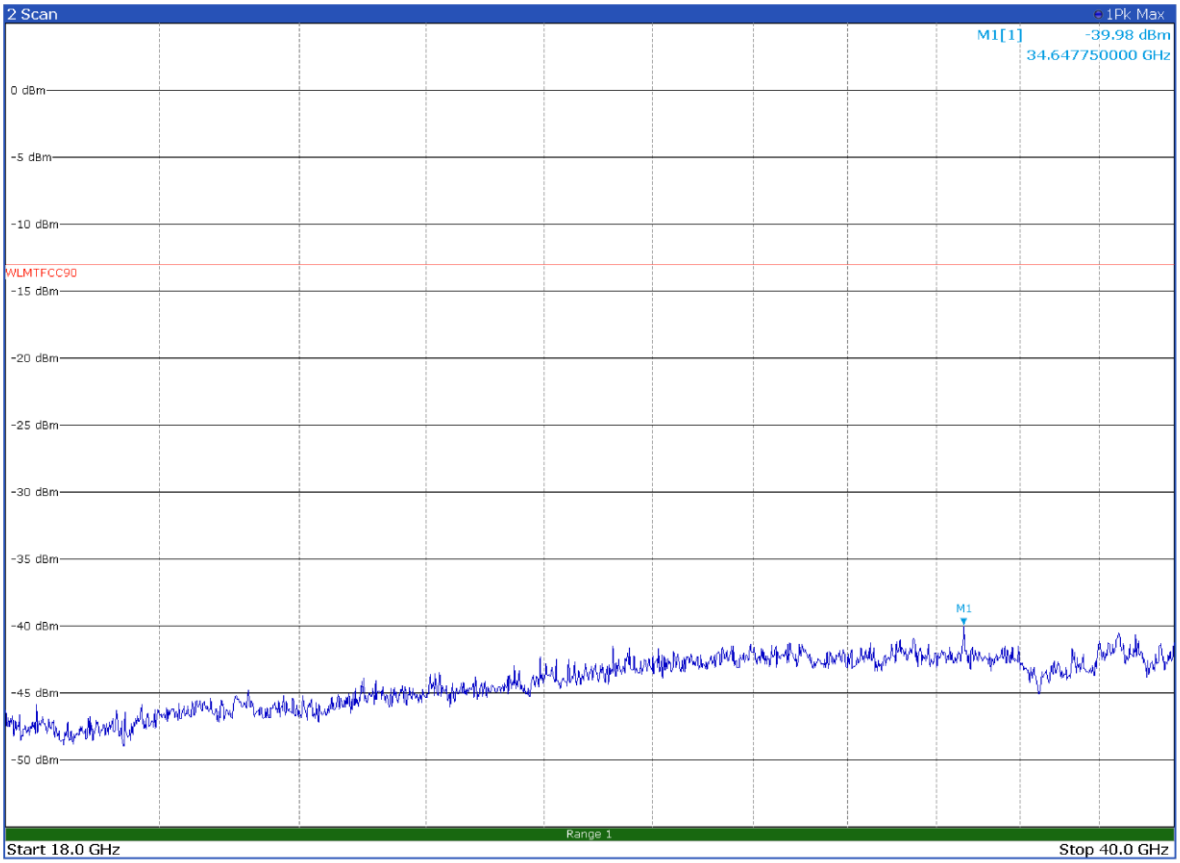

Figure 7.4-19: *Radiated emission with antenna in horizontal polarization on mid channel (TX1)*

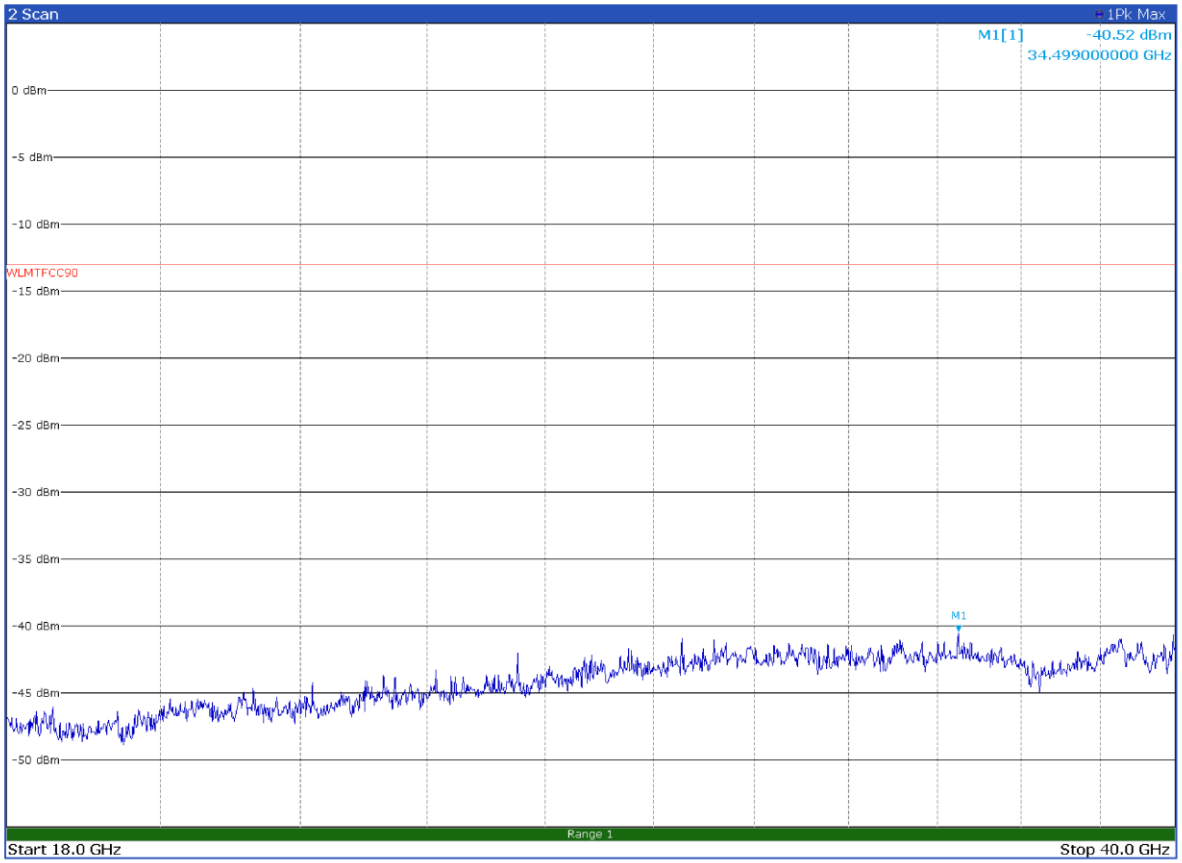

Figure 7.4-20: *Radiated emission with antenna in vertical polarization on mid channel (TX1)*

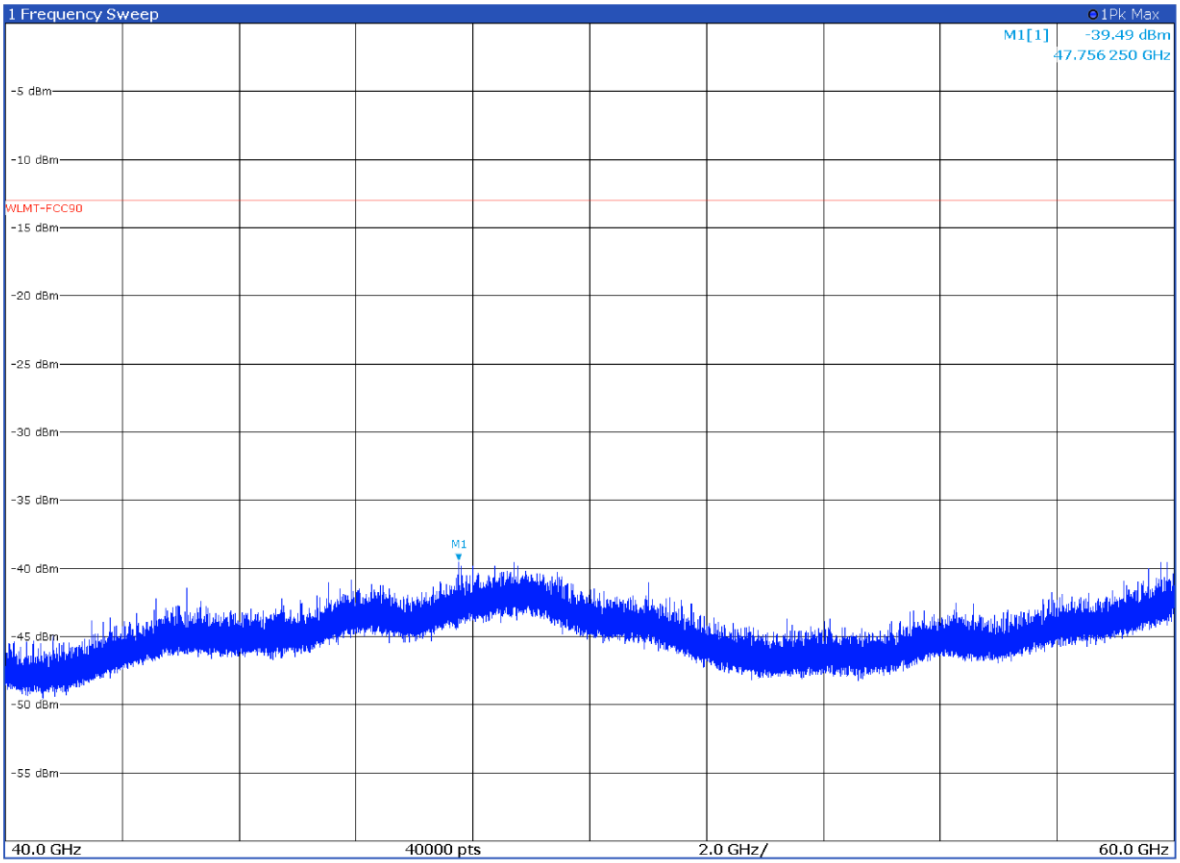

Figure 7.4-21: *Radiated emission with antenna in horizontal polarization on mid channel (TX1)*

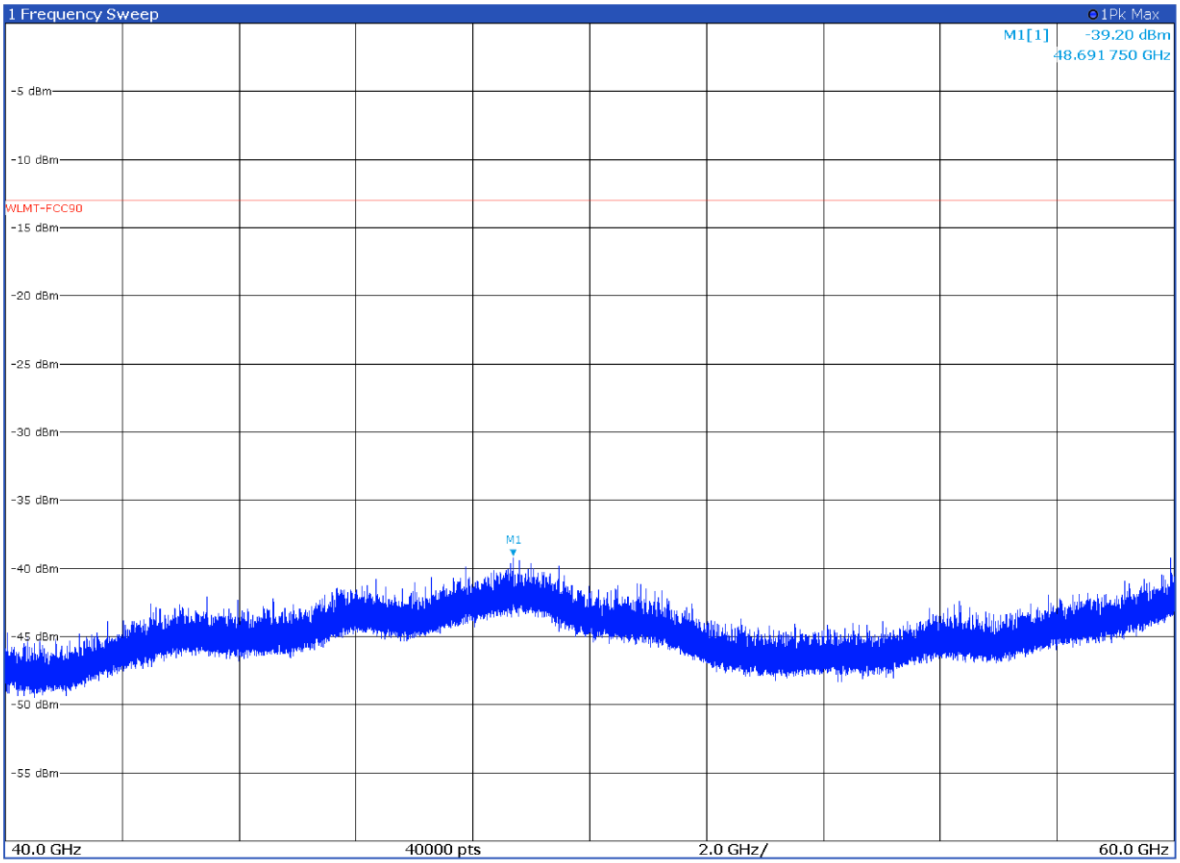

Figure 7.4-22: *Radiated emission with antenna in vertical polarization on mid channel (TX1)*

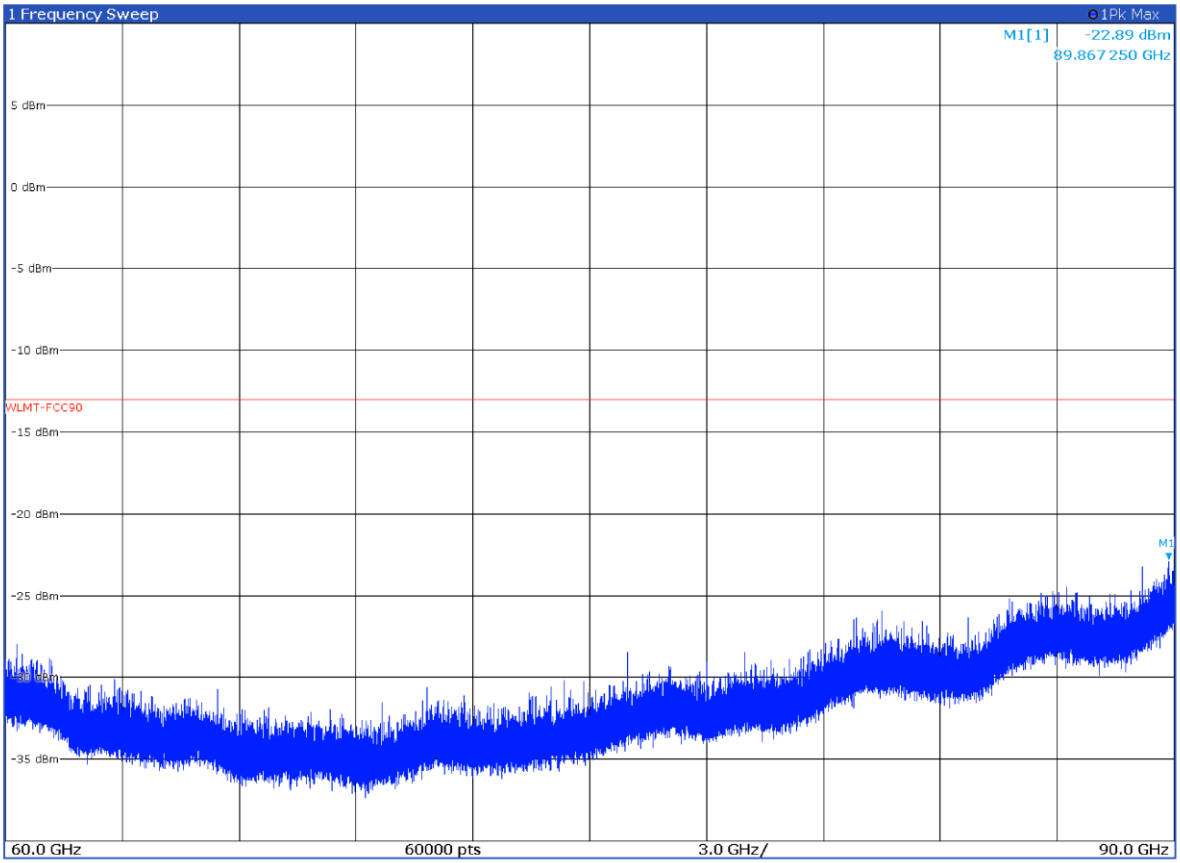

Figure 7.4-23: *Radiated emission with antenna in horizontal polarization on mid channel (TX1)*

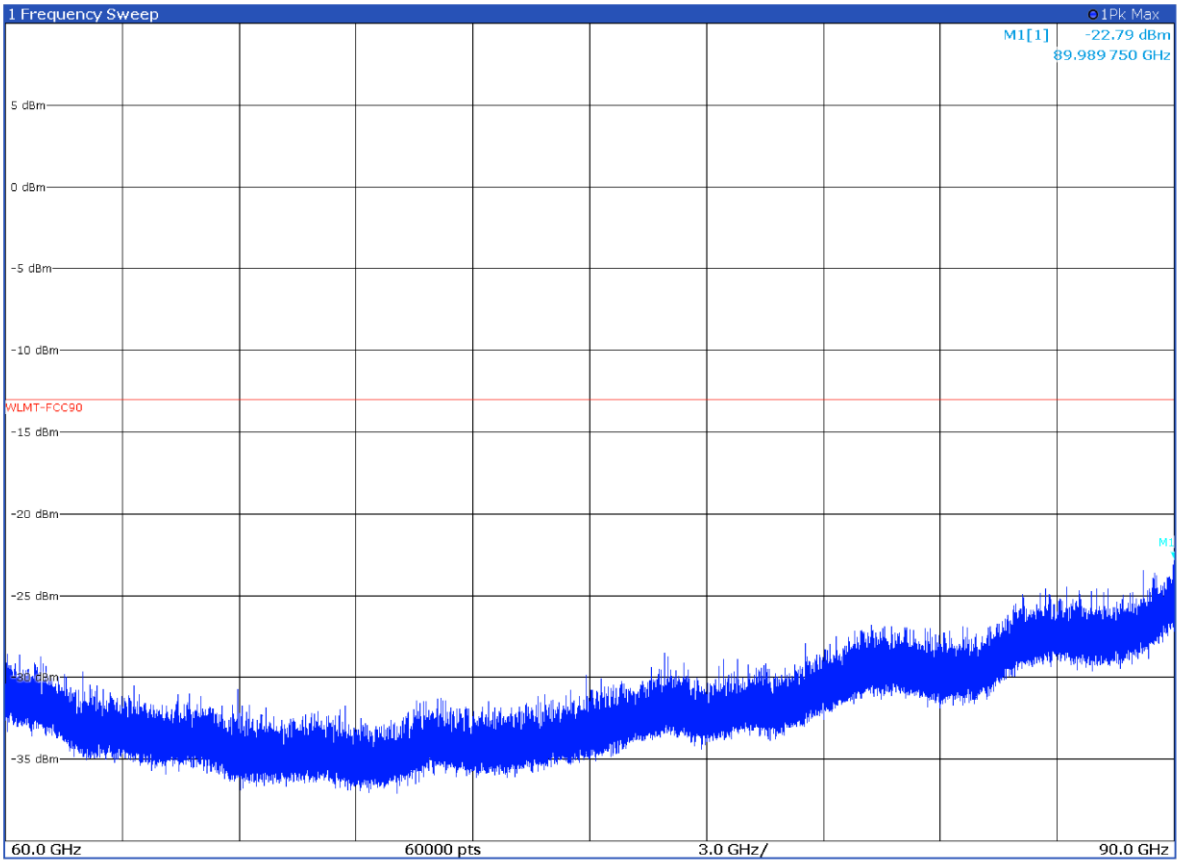

Figure 7.4-24: *Radiated emission with antenna in vertical polarization on mid channel (TX1)*

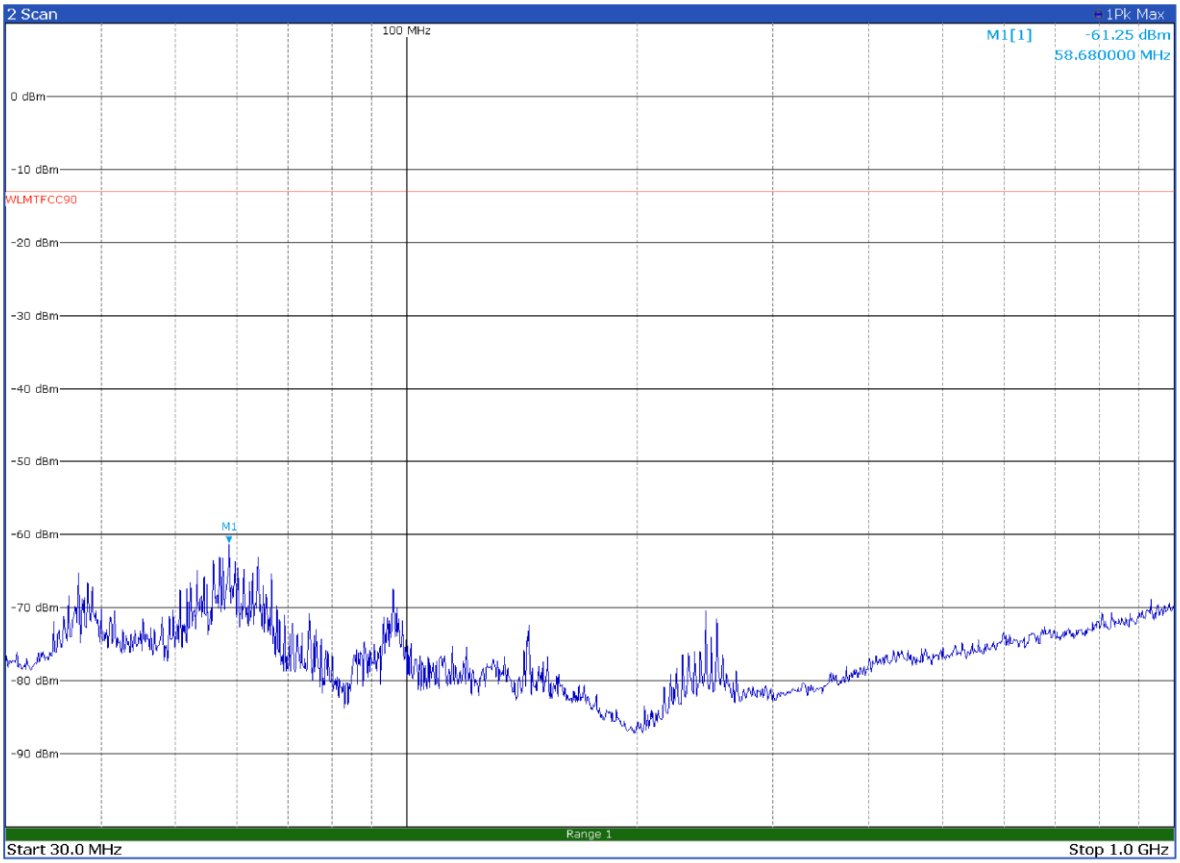

Figure 7.4-25: *Radiated emission with antenna in horizontal polarization on high channel (TX1)*

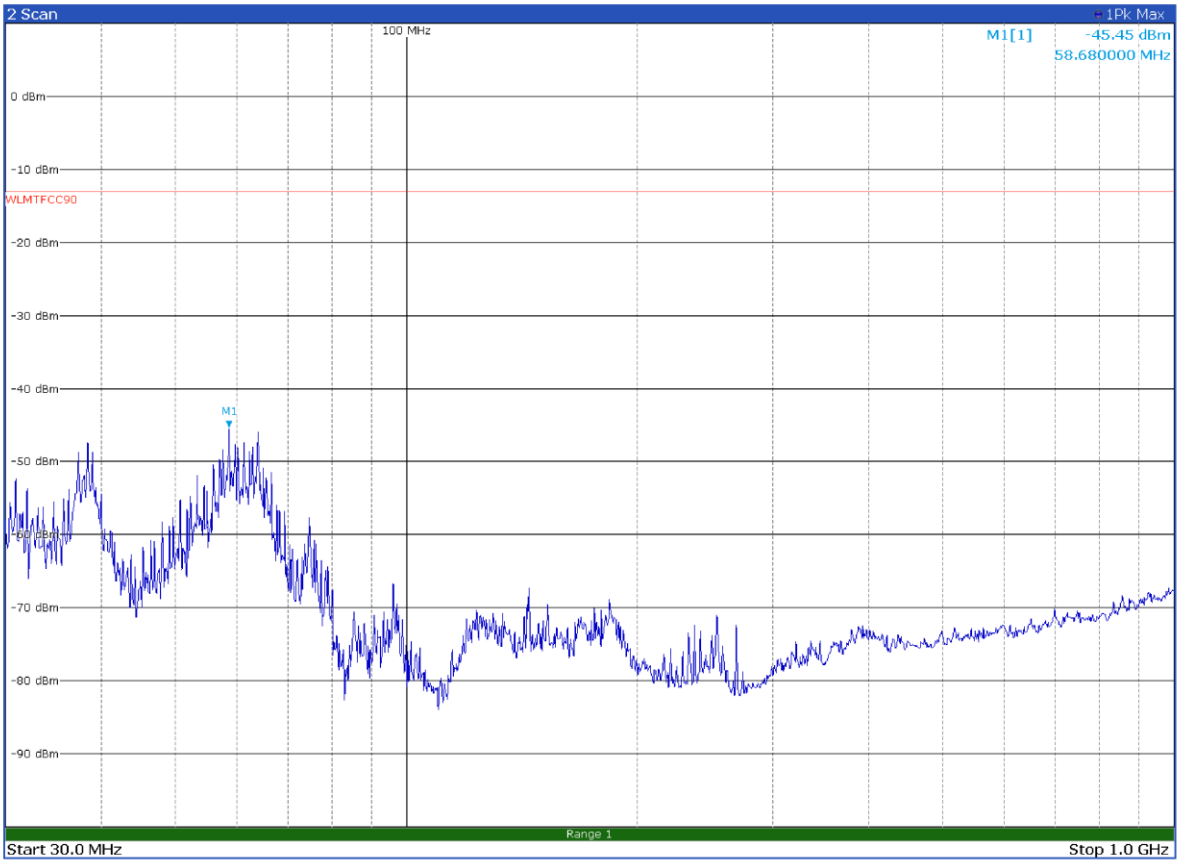

Figure 7.4-26: *Radiated emission with antenna in vertical polarization on high channel (TX1)*

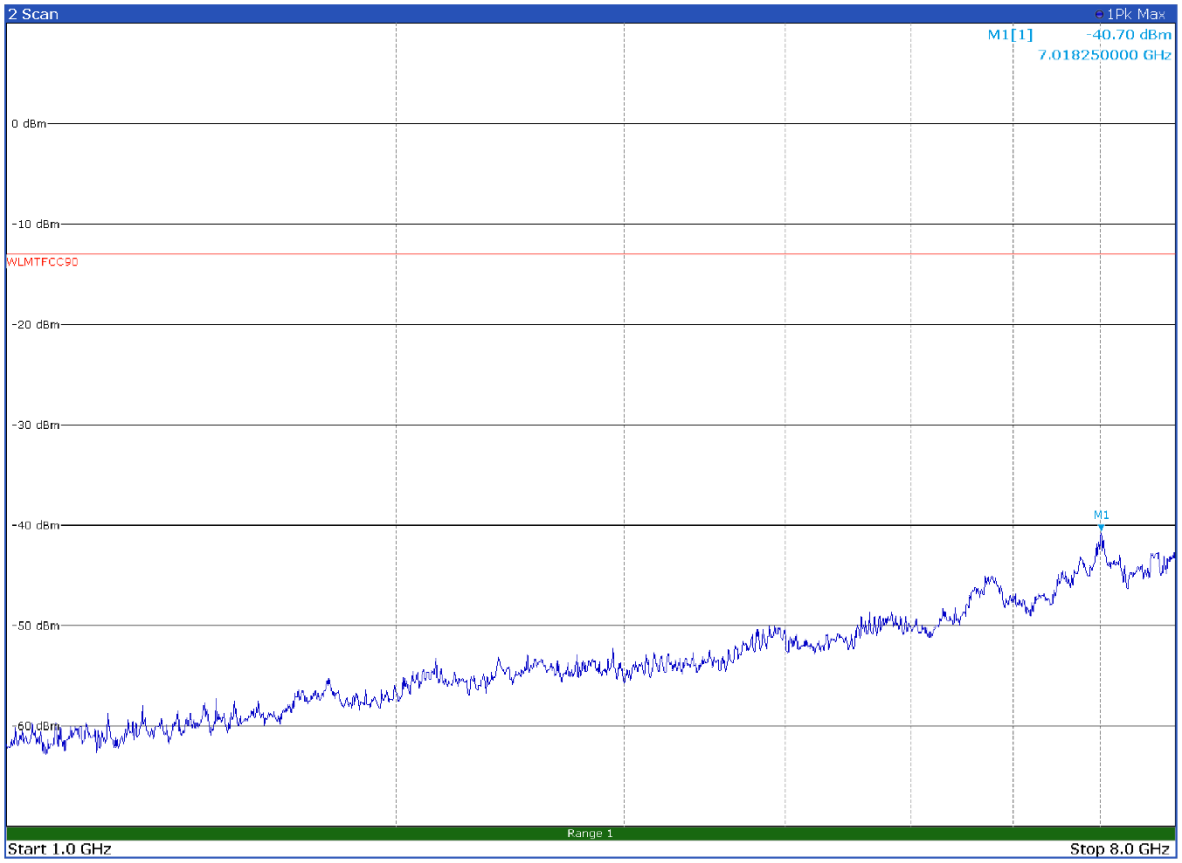

Figure 7.4-27: *Radiated emission with antenna in horizontal polarization on high channel (TX1)*

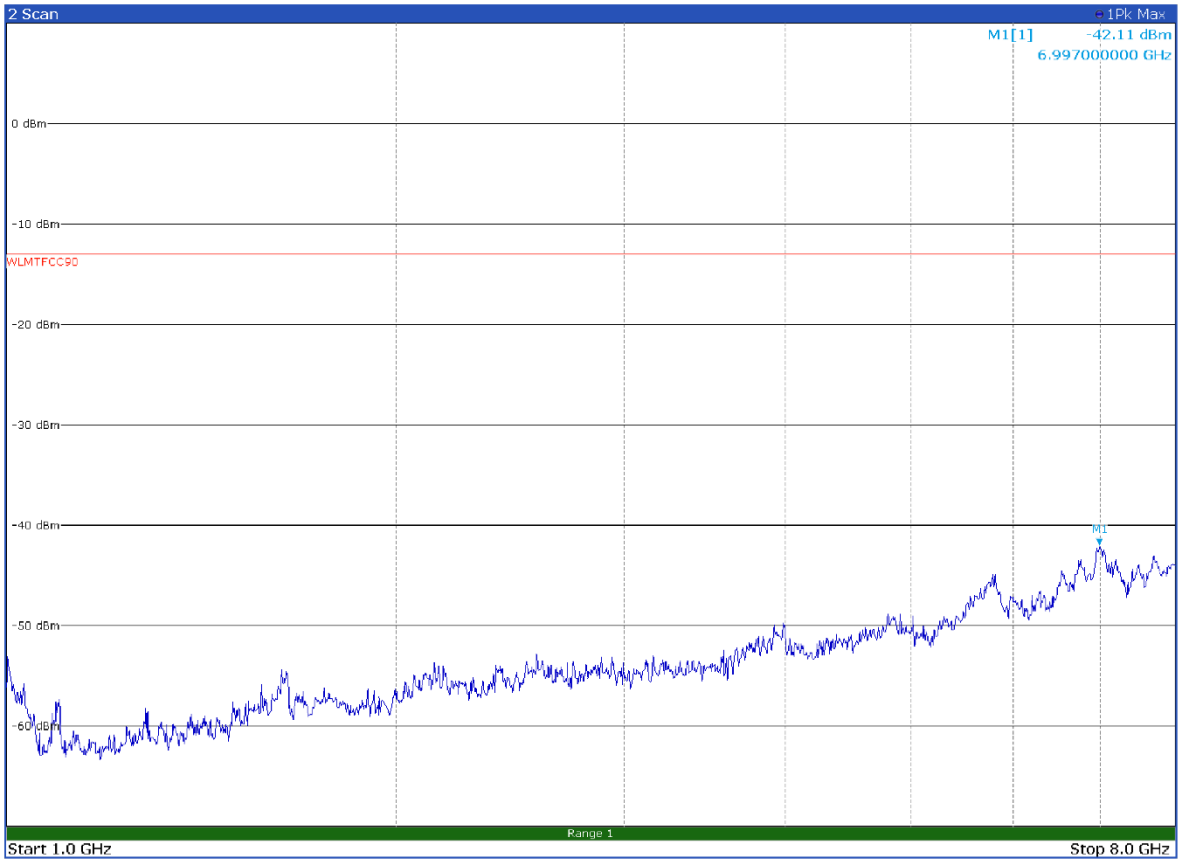

Figure 7.4-28: *Radiated emission with antenna in vertical polarization on high channel (TX1)*

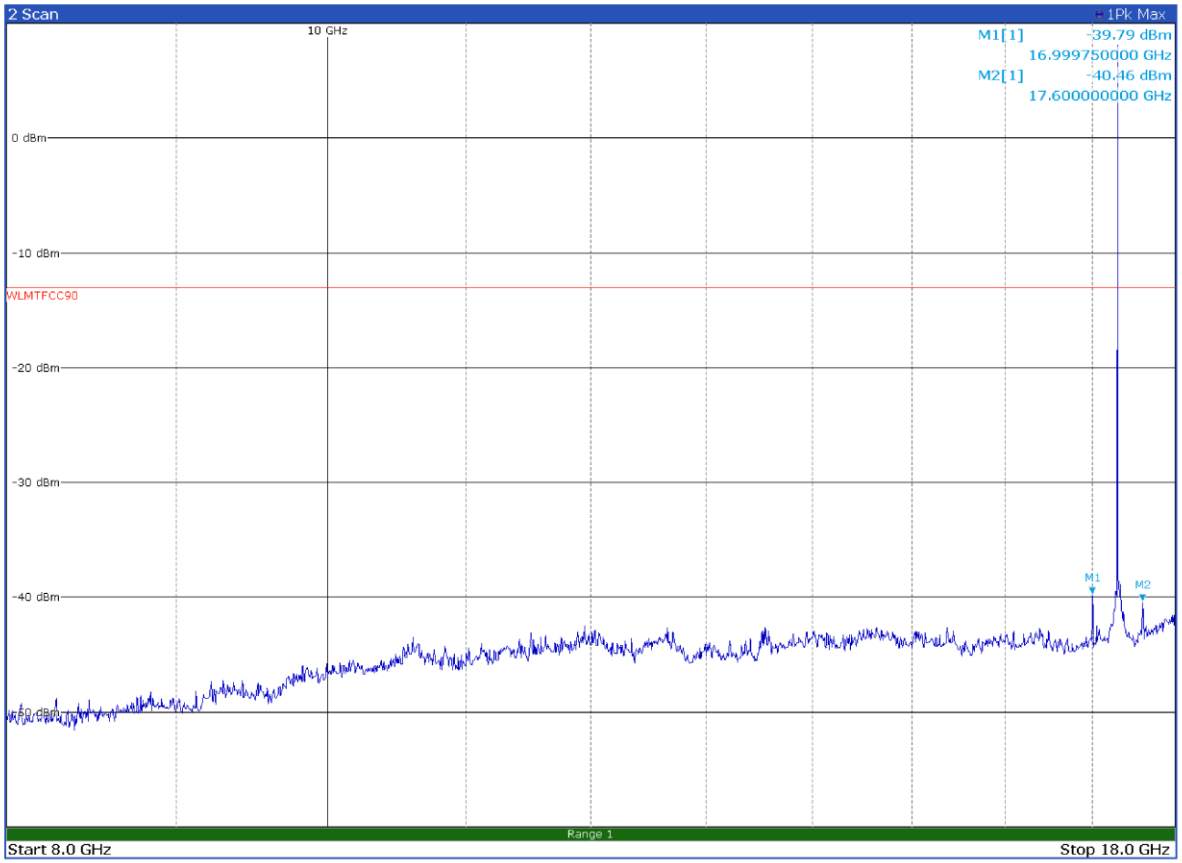

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Figure 7.4-29: *Radiated emission with antenna in horizontal polarization on high channel (TX1)*

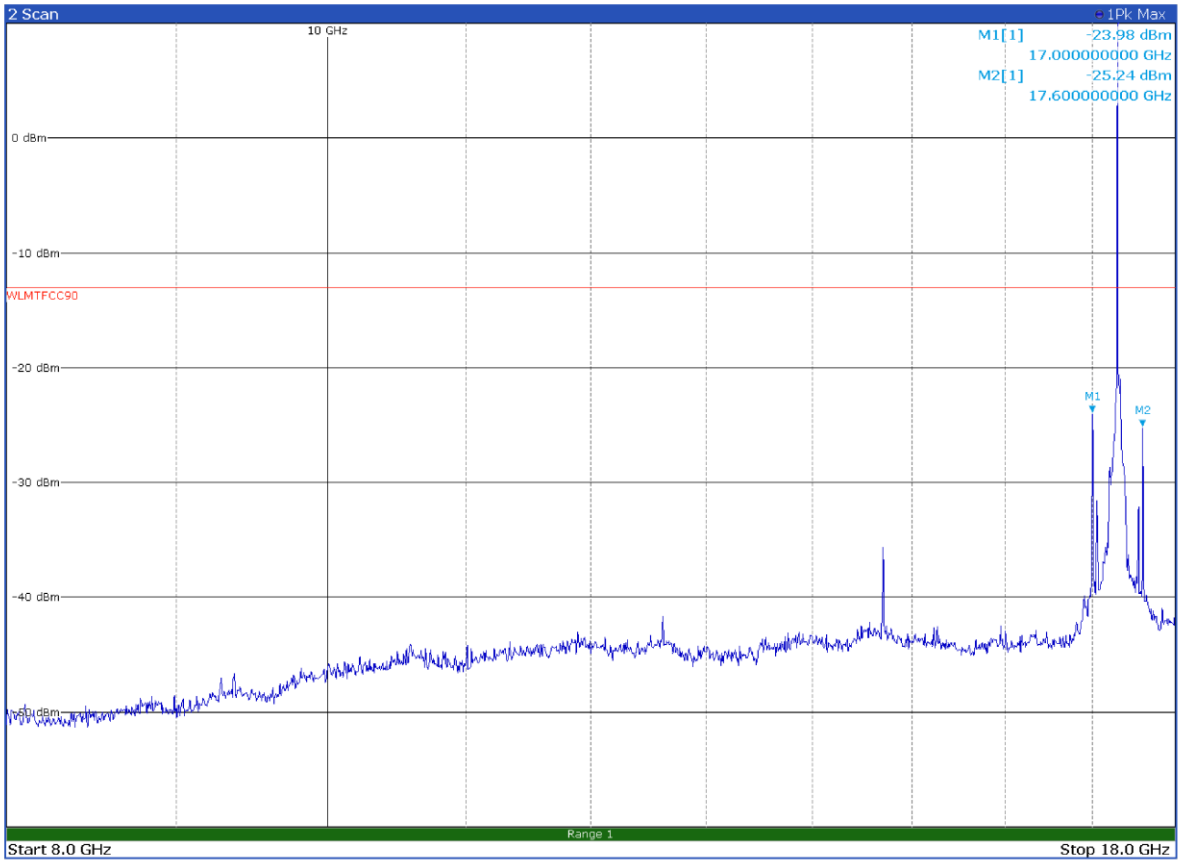

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Figure 7.4-30: *Radiated emission with antenna in vertical polarization on high channel (TX1)*

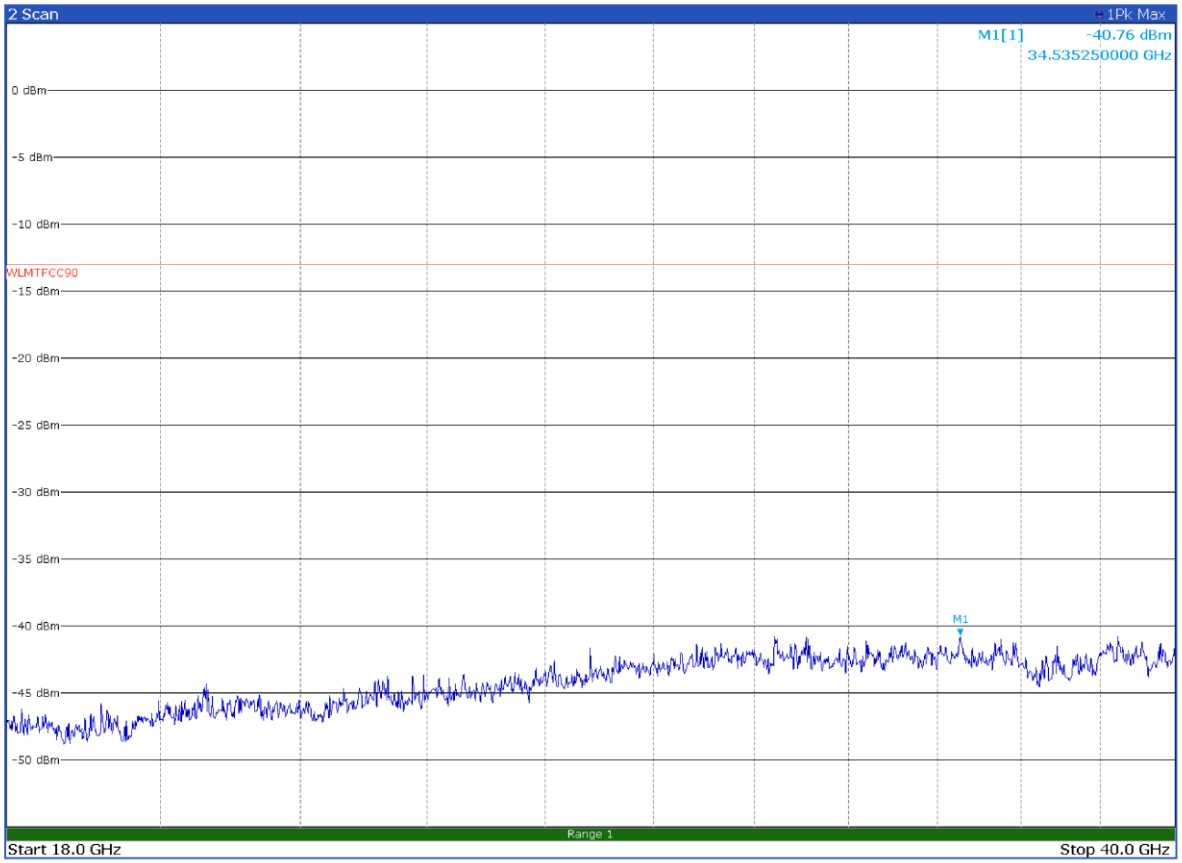


Figure 7.4-31: *Radiated emission with antenna in horizontal polarization on high channel (TX1)*

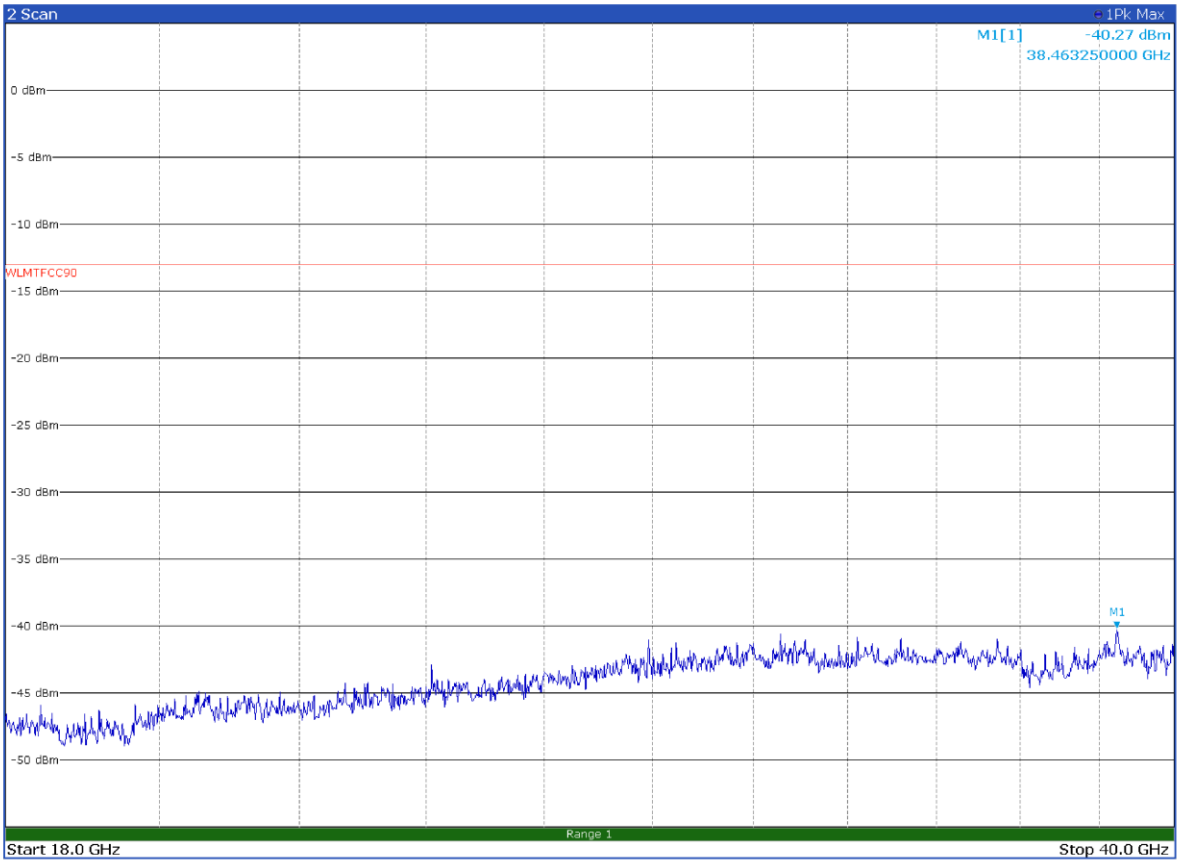


Figure 7.4-32: *Radiated emission with antenna in vertical polarization on high channel (TX1)*

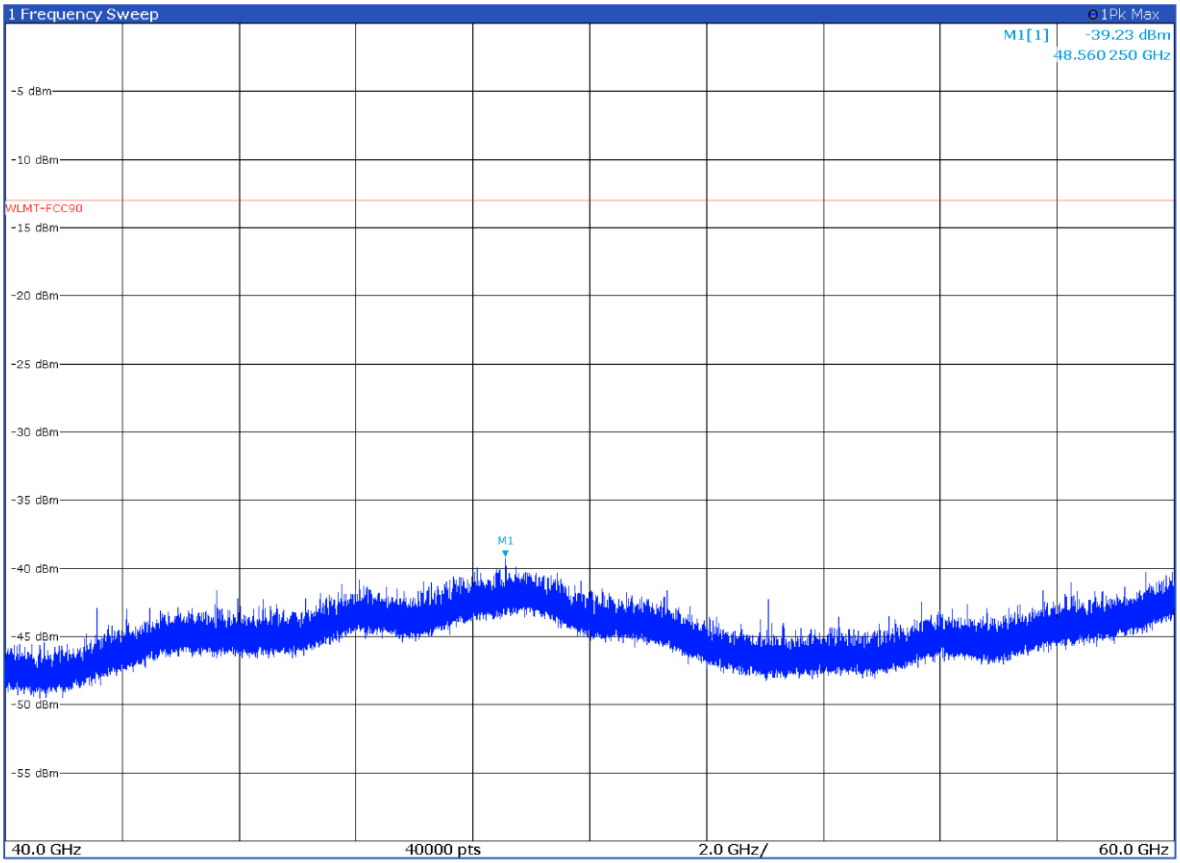


Figure 7.4-33: *Radiated emission with antenna in horizontal polarization on high channel (TX1)*

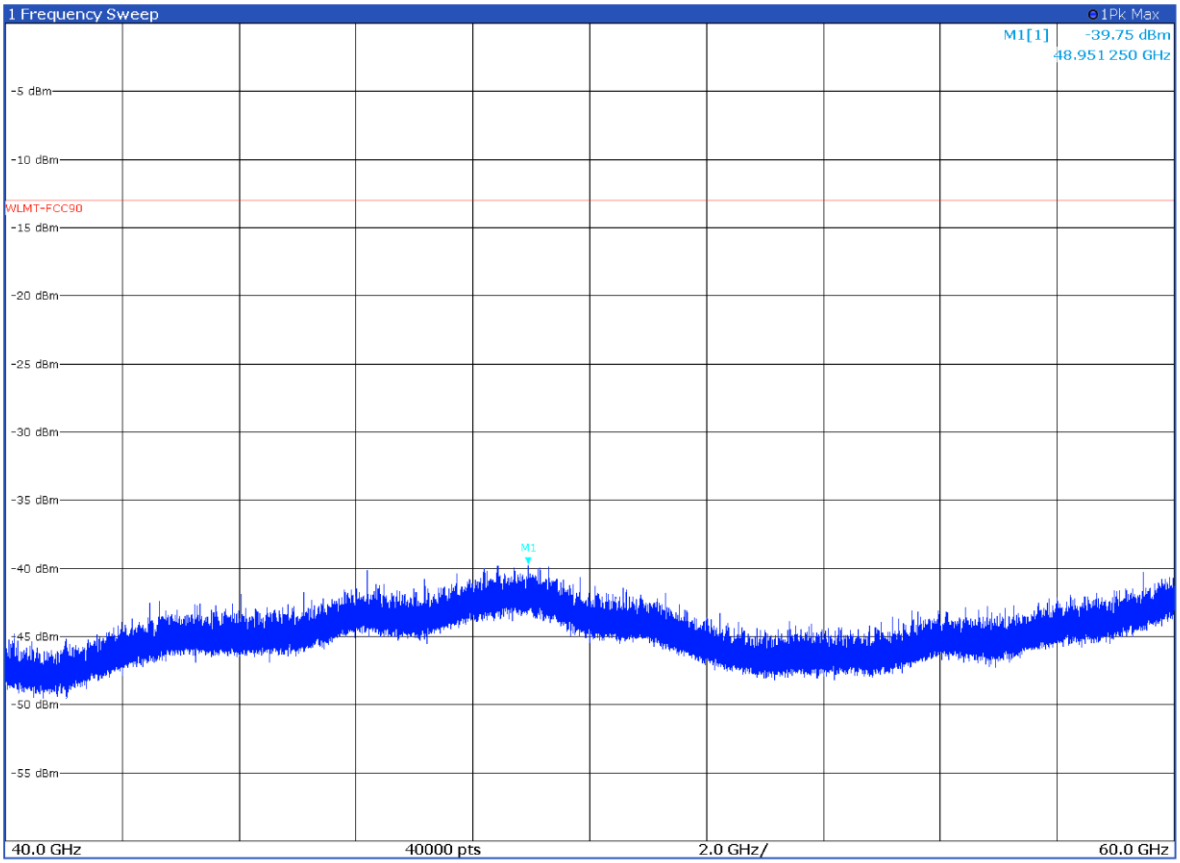


Figure 7.4-34: *Radiated emission with antenna in vertical polarization on high channel (TX1)*

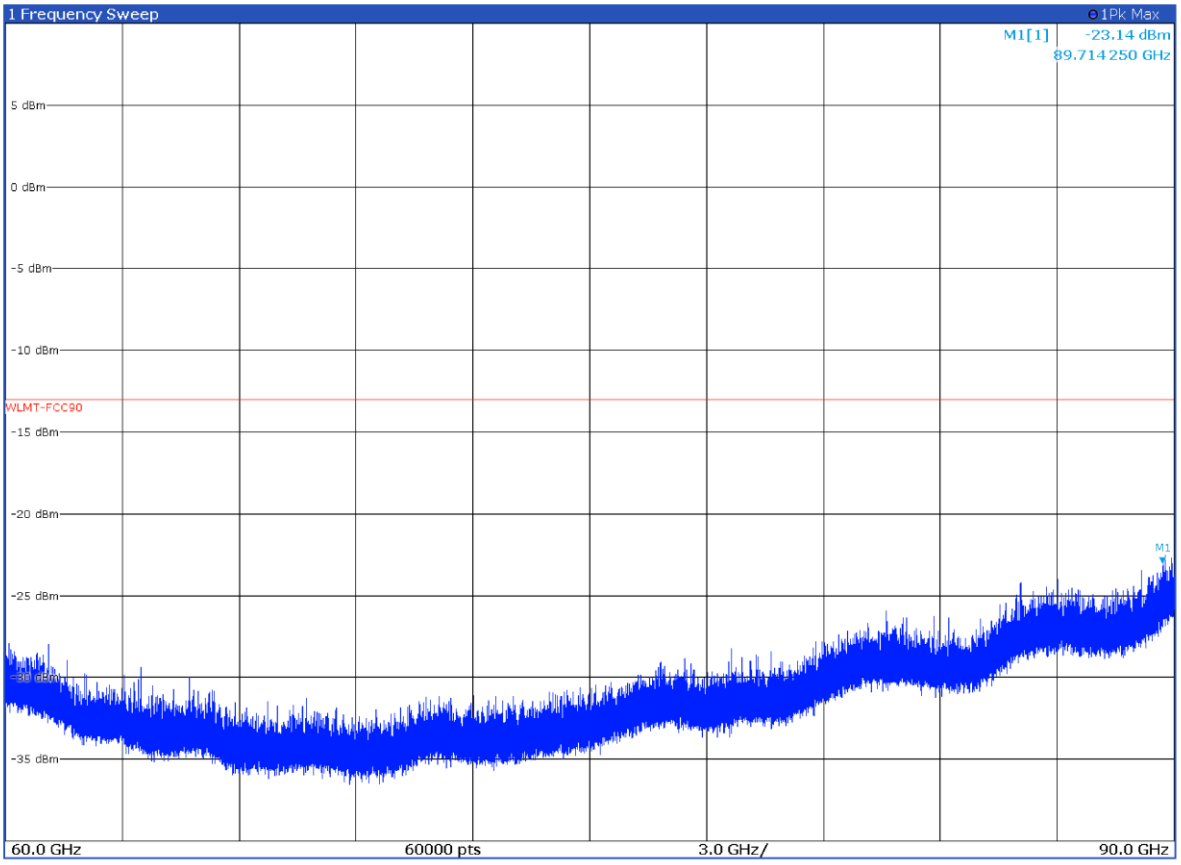


Figure 7.4-35: *Radiated emission with antenna in horizontal polarization on high channel (TX1)*

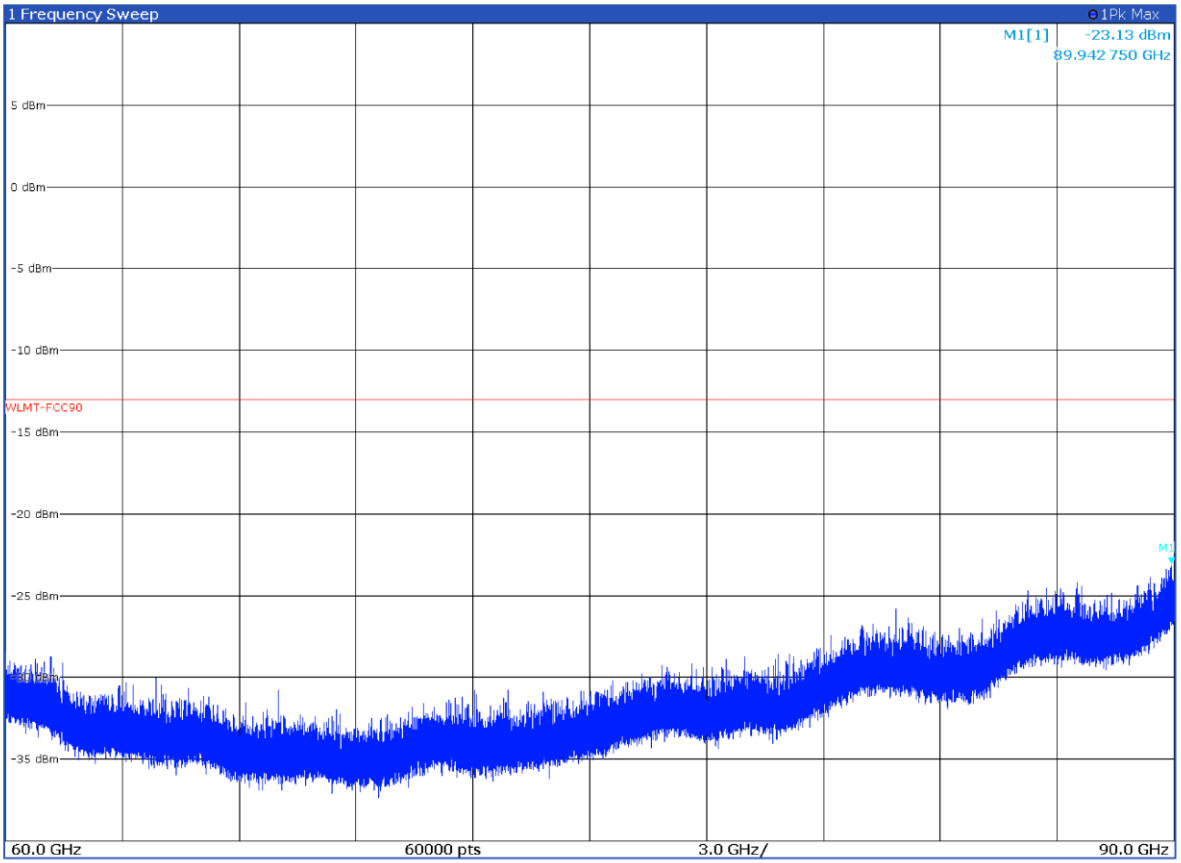


Figure 7.4-36: *Radiated emission with antenna in vertical polarization on high channel (TX1)*

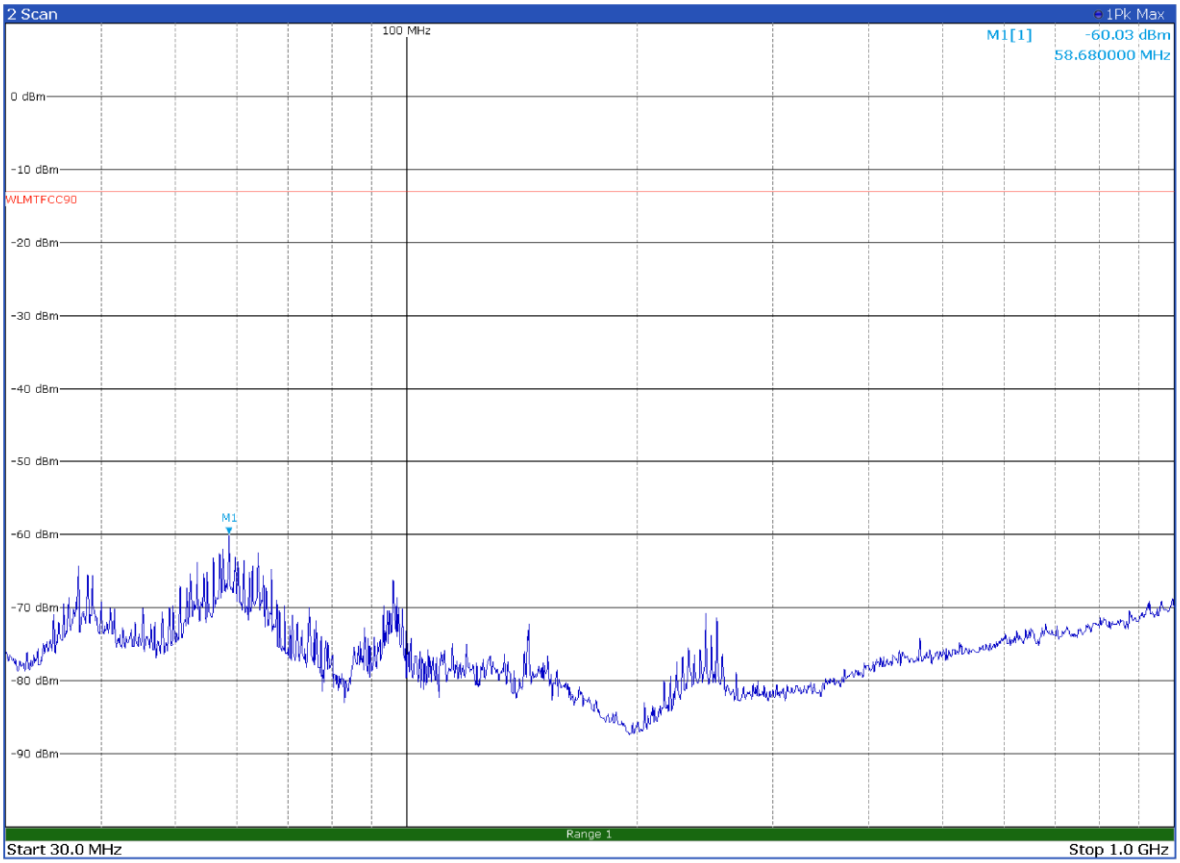


Figure 7.4-37: *Radiated emission with antenna in horizontal polarization on low channel (TX2)*

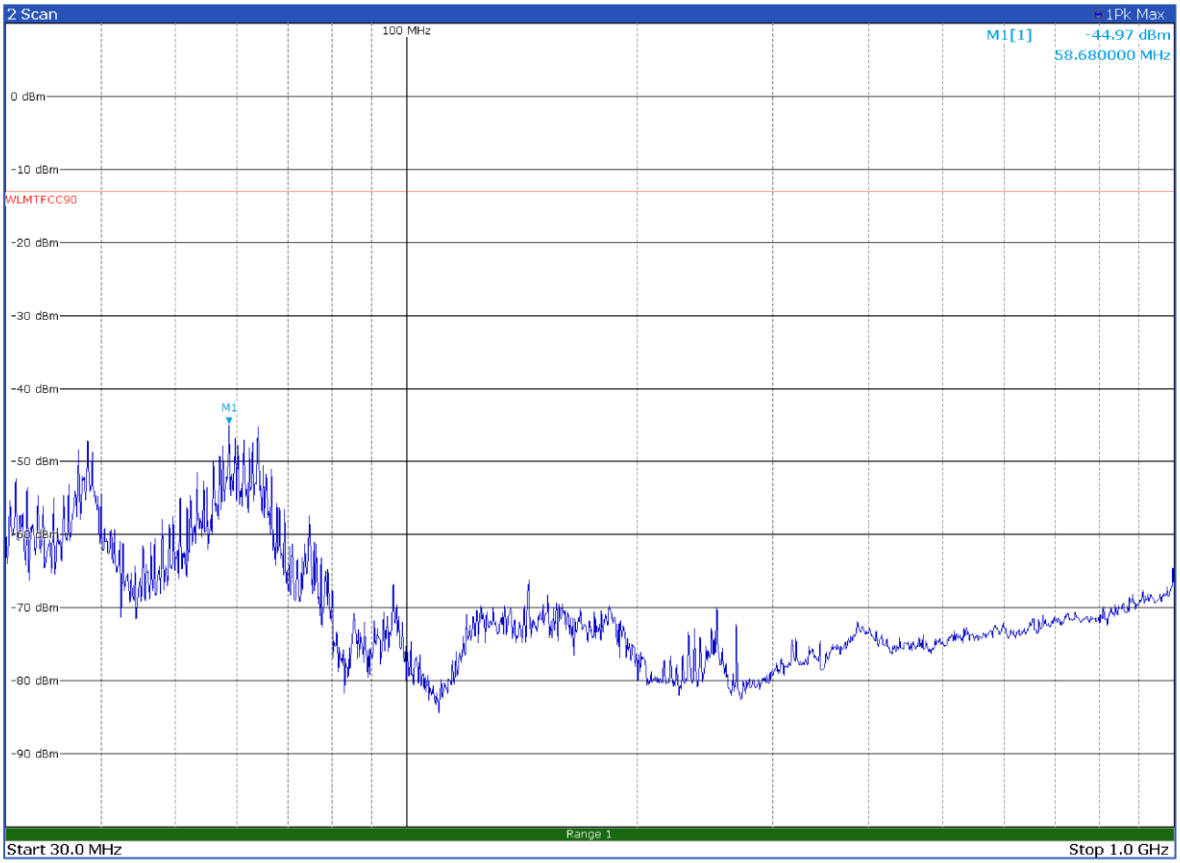


Figure 7.4-38: *Radiated emission with antenna in vertical polarization on low channel (TX2)*

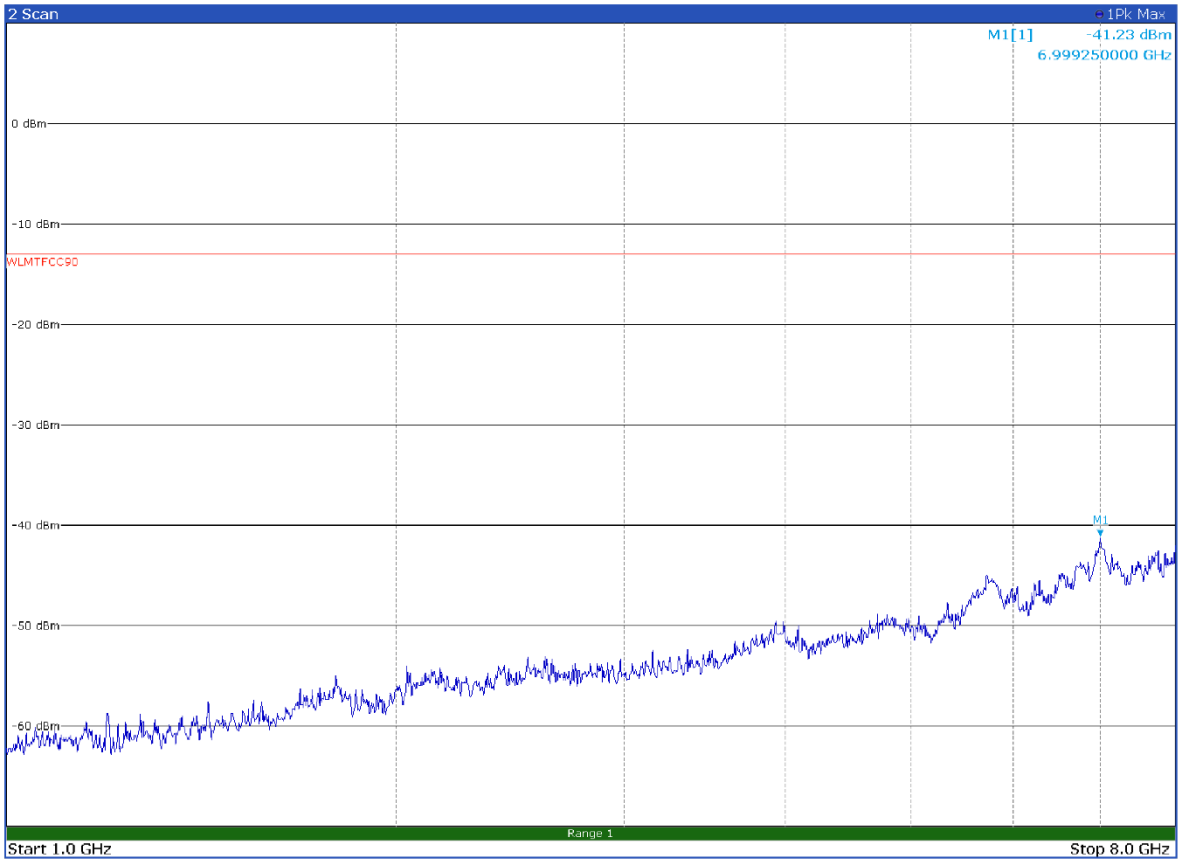


Figure 7.4-39: *Radiated emission with antenna in horizontal polarization on low channel (TX2)*

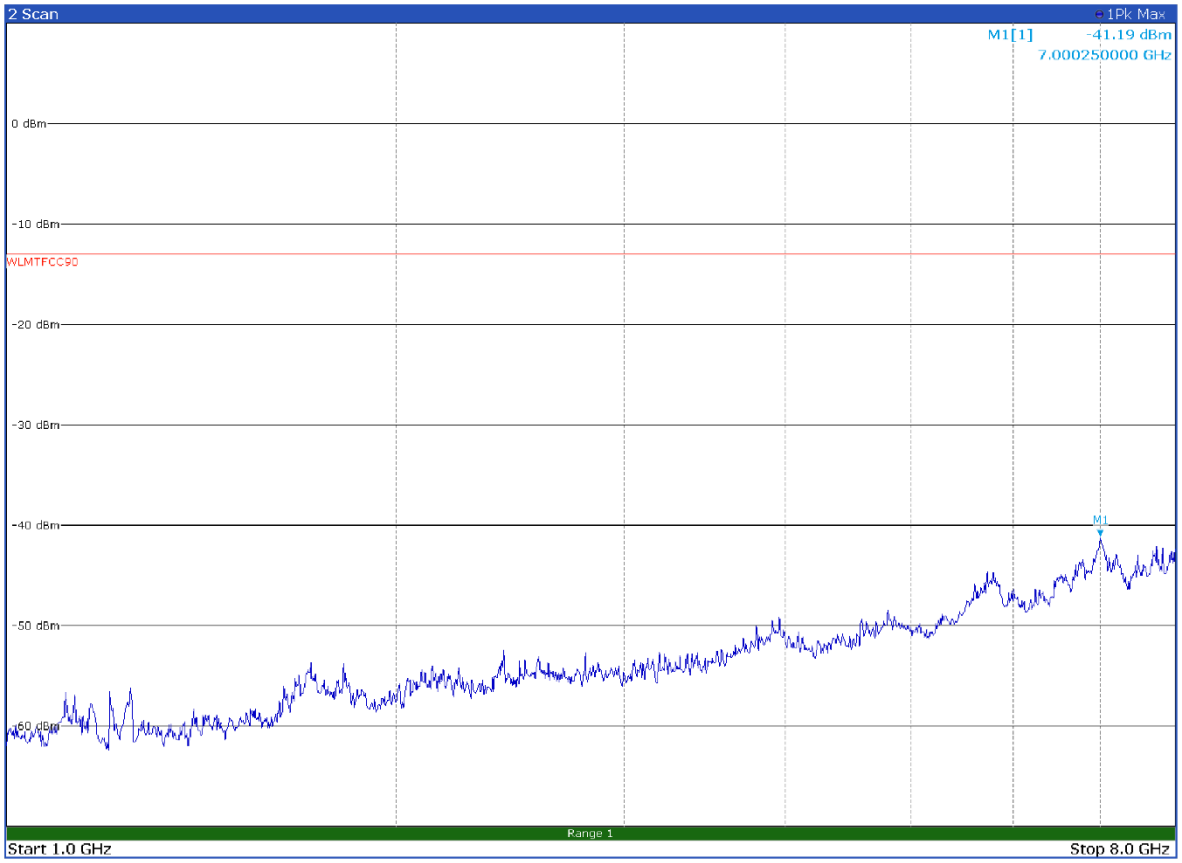
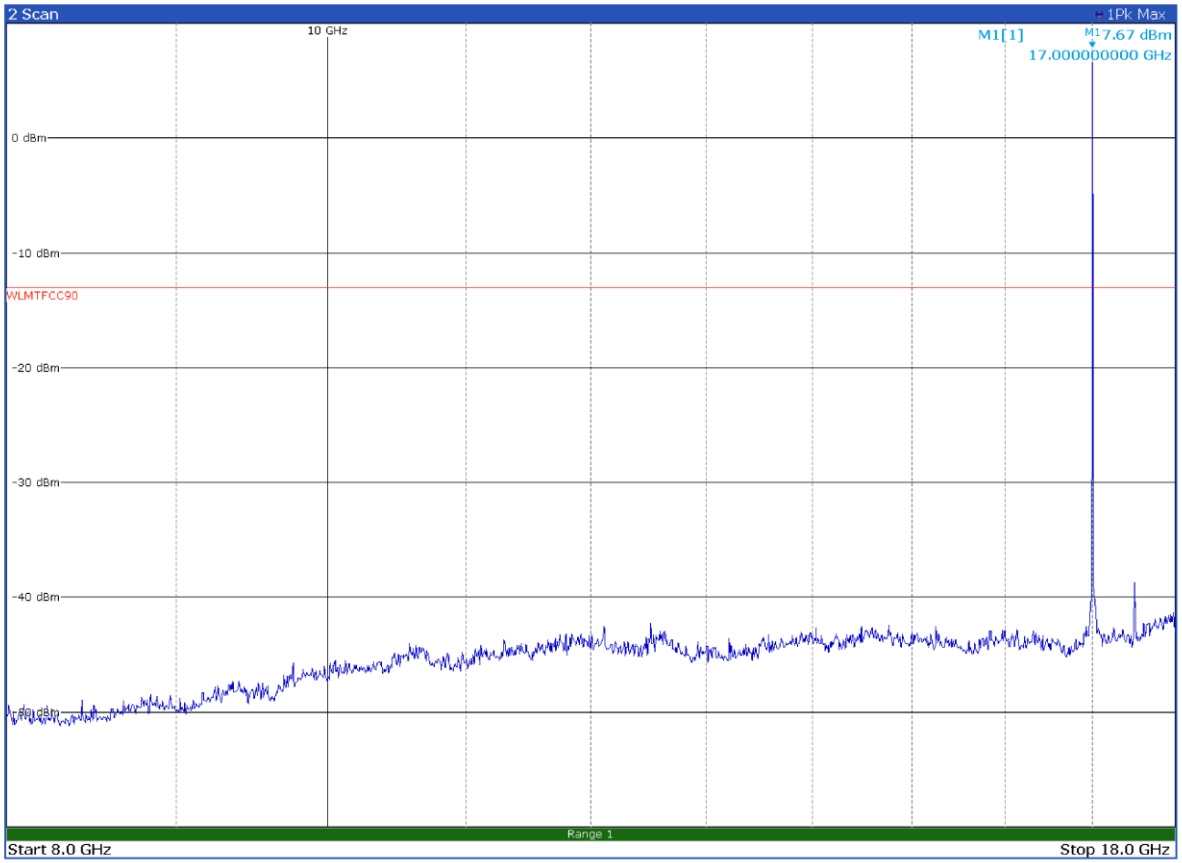
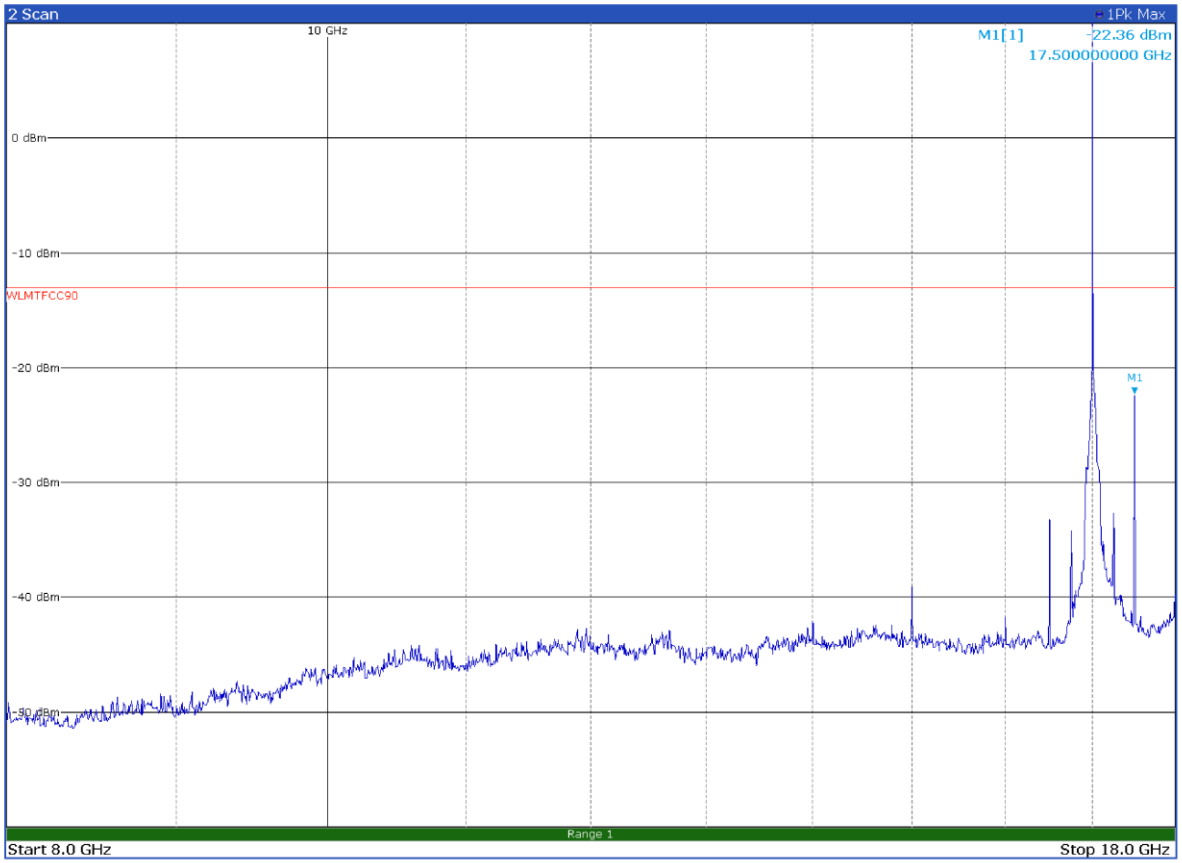


Figure 7.4-40: *Radiated emission with antenna in vertical polarization on low channel (TX2)*



Limit exceeded by the carrier

Figure 7.4-41: *Radiated emission with antenna in horizontal polarization on low channel (TX2)*



Limit exceeded by the carrier

Figure 7.4-42: *Radiated emission with antenna in vertical polarization on low channel (TX2)*

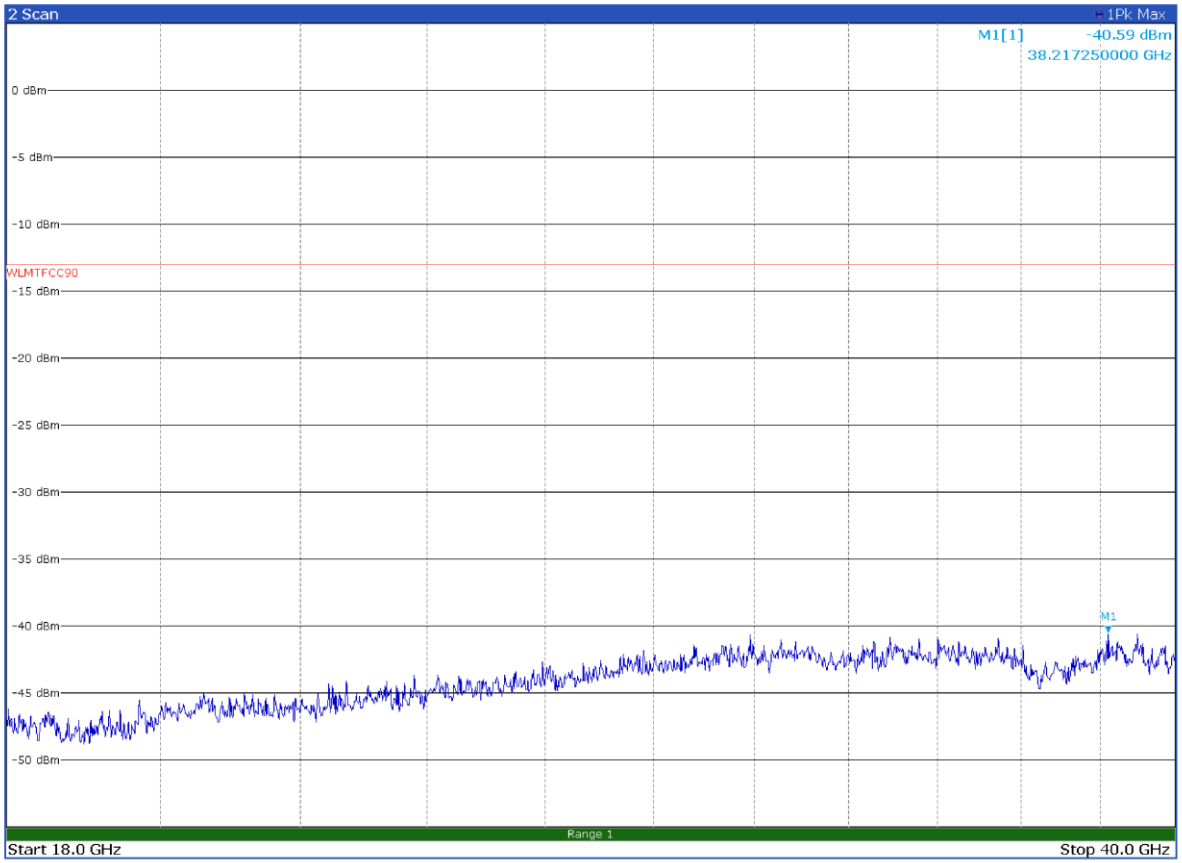


Figure 7.4-43: *Radiated emission with antenna in horizontal polarization on low channel (TX2)*

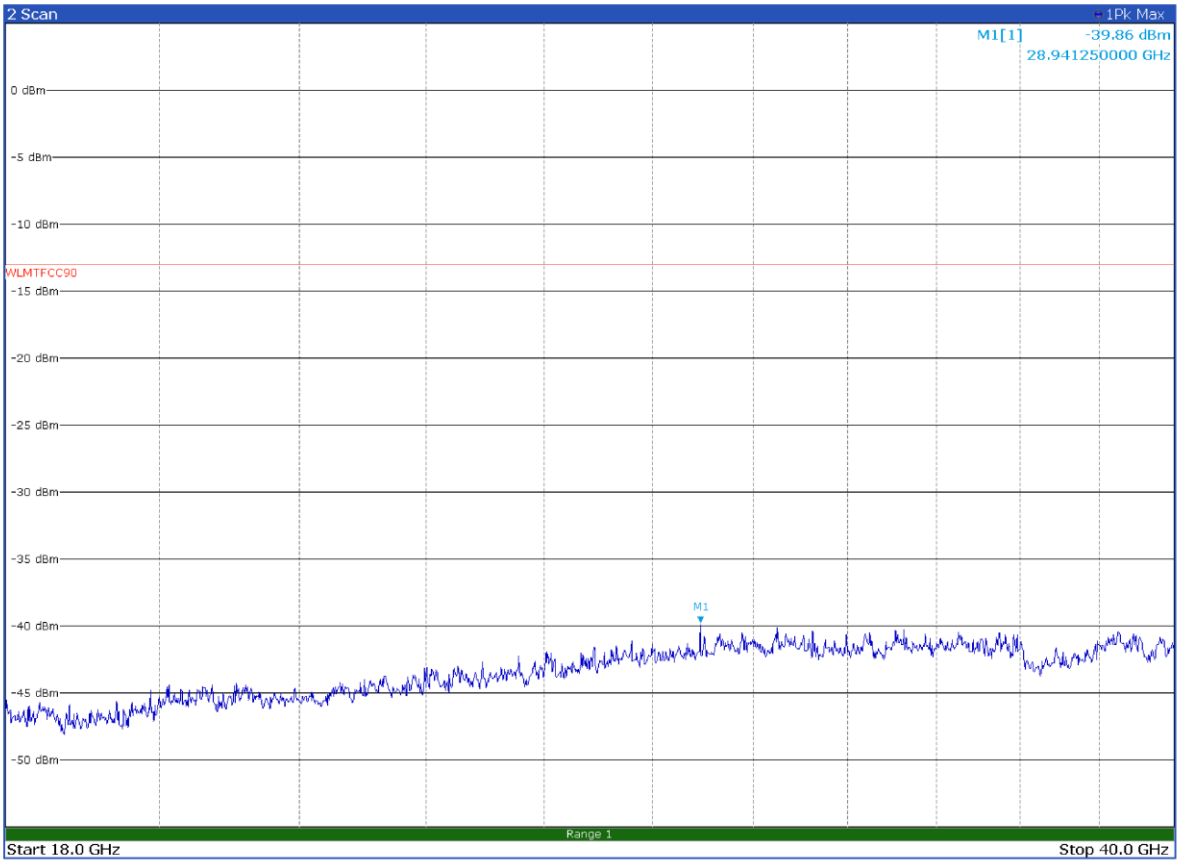


Figure 7.4-44: *Radiated emission with antenna in vertical polarization on low channel (TX2)*

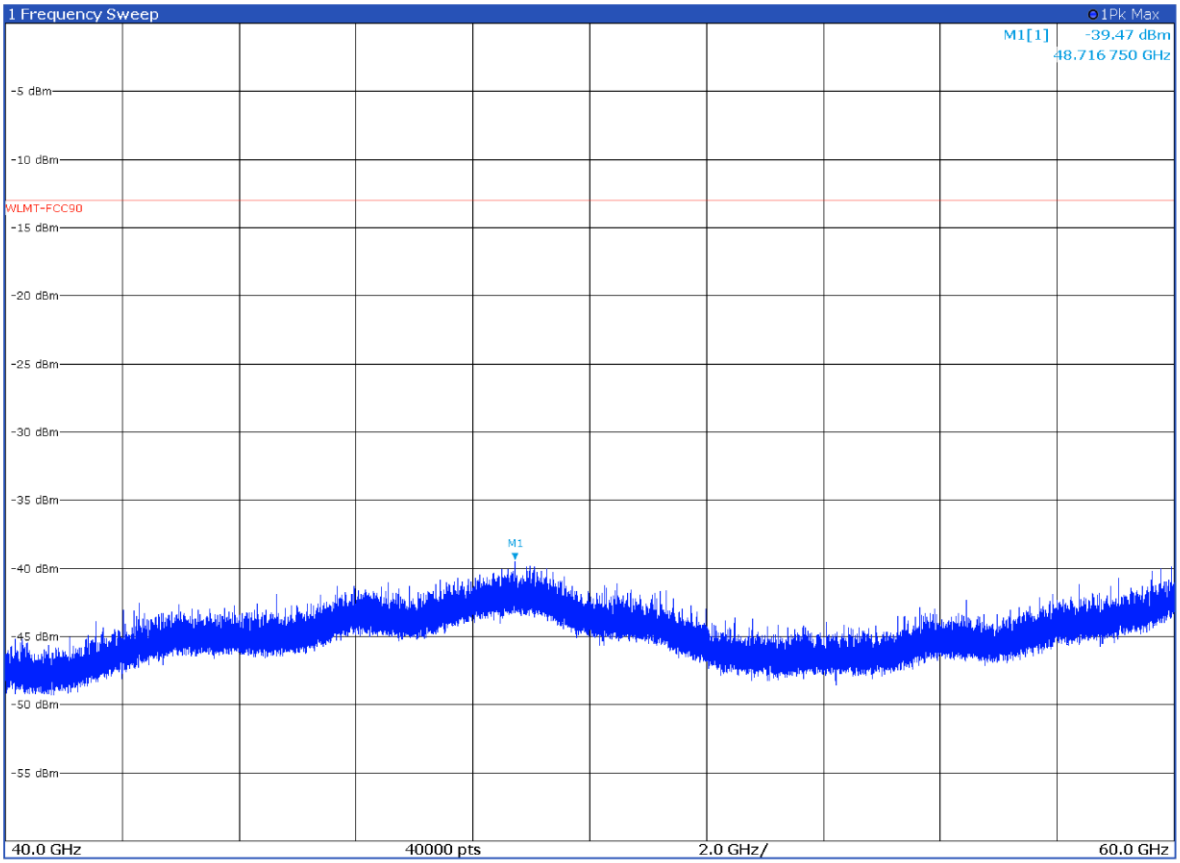


Figure 7.4-45: *Radiated emission with antenna in horizontal polarization on low channel (TX2)*

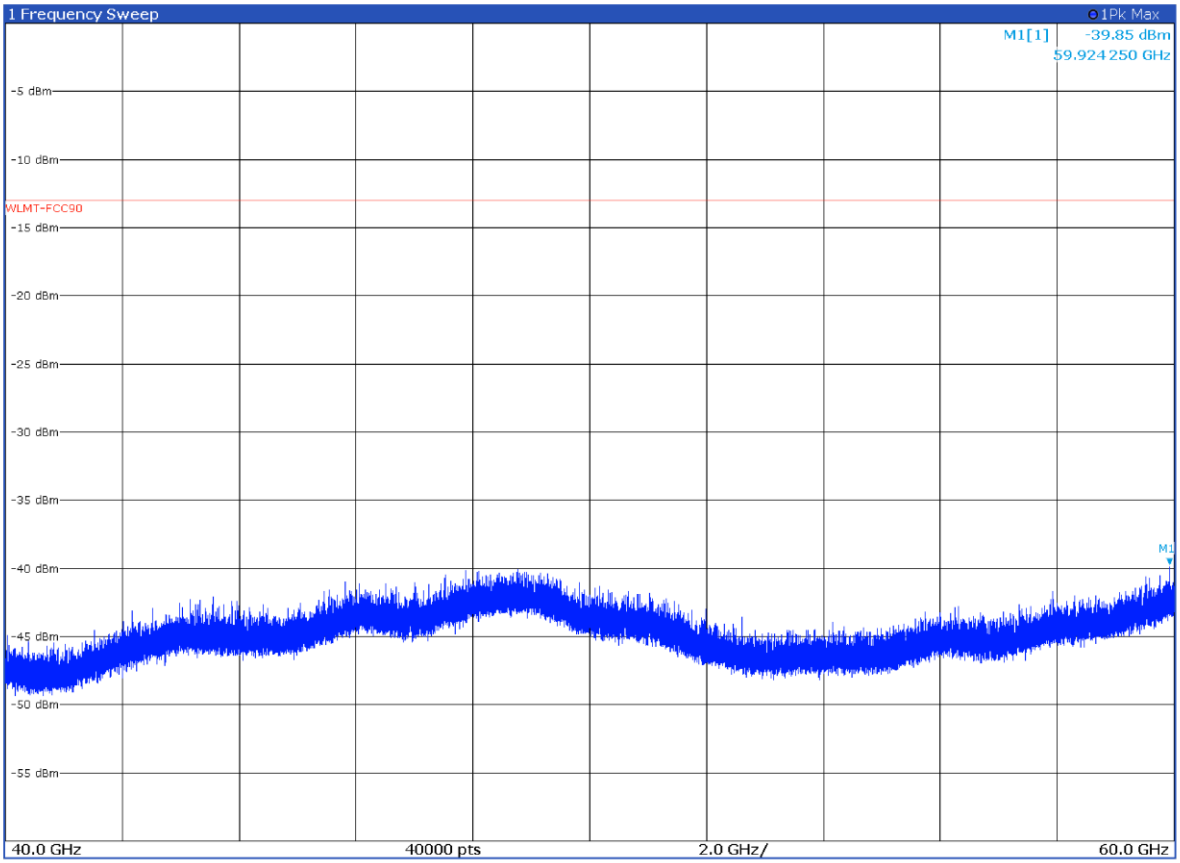


Figure 7.4-46: *Radiated emission with antenna in vertical polarization on low channel (TX2)*

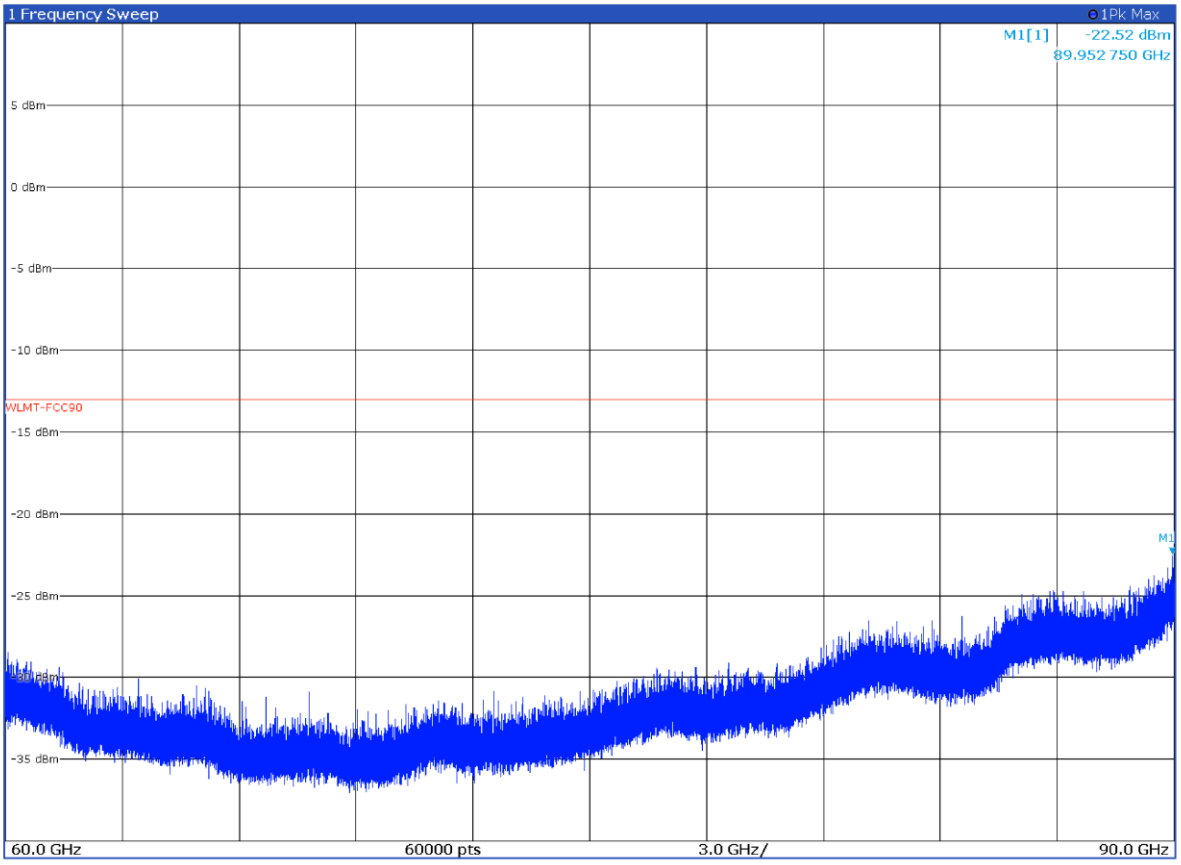


Figure 7.4-47: *Radiated emission with antenna in horizontal polarization on low channel (TX2)*

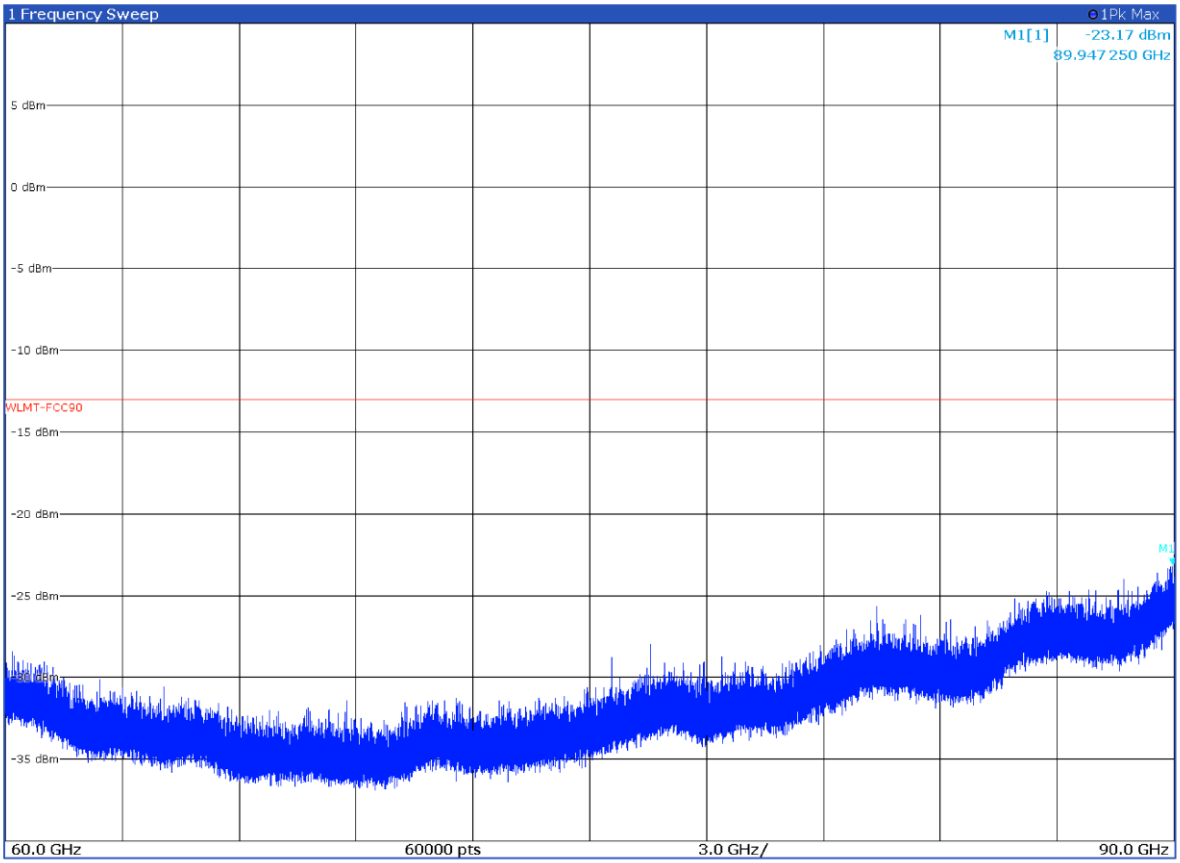


Figure 7.4-48: *Radiated emission with antenna in vertical polarization on low channel (TX2)*

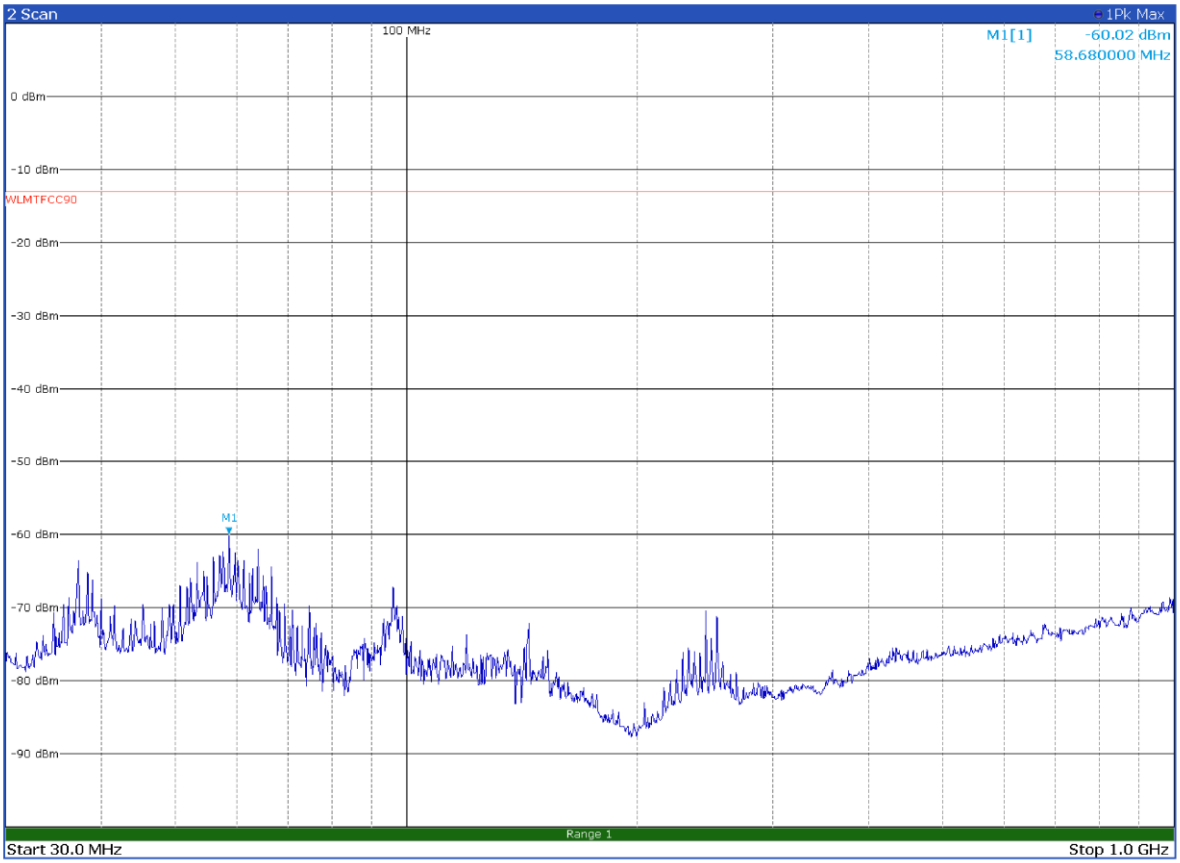


Figure 7.4-49: *Radiated emission with antenna in horizontal polarization on mid channel (TX2)*

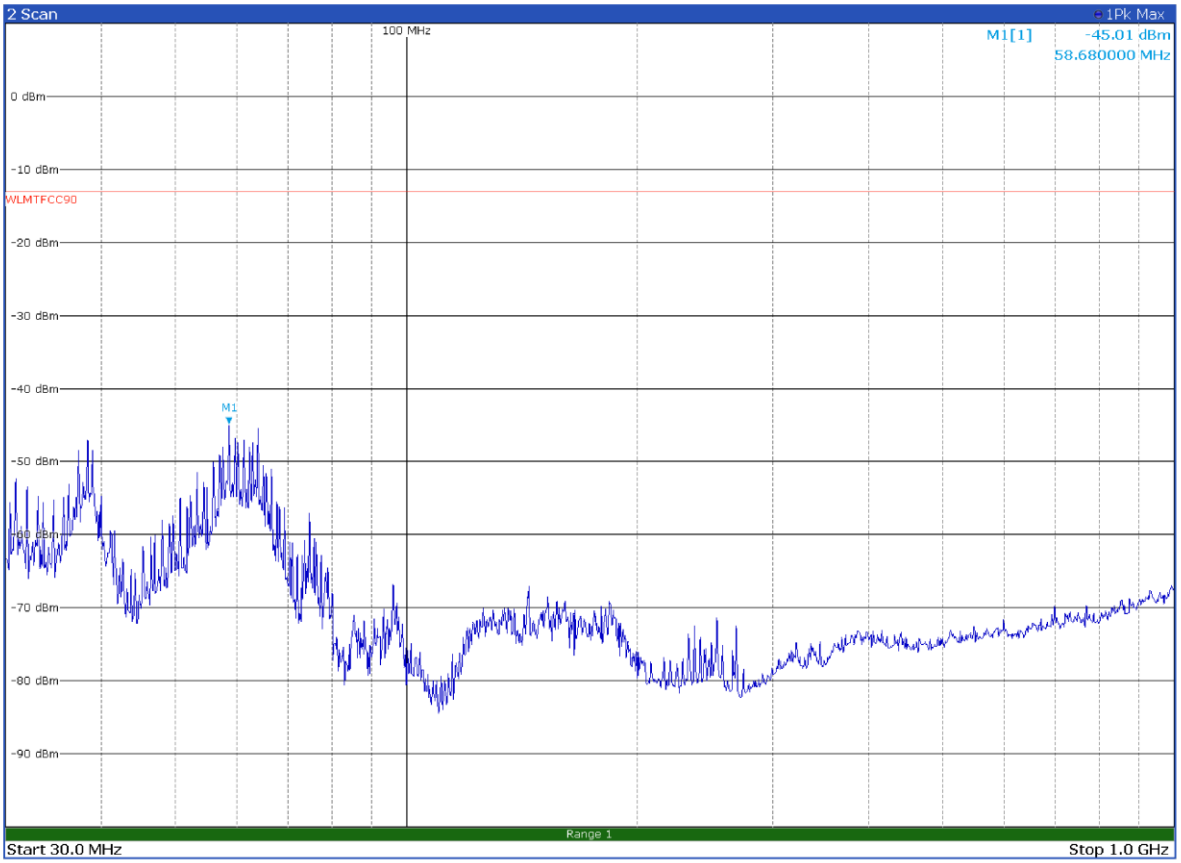


Figure 7.4-50: *Radiated emission with antenna in vertical polarization on mid channel (TX2)*

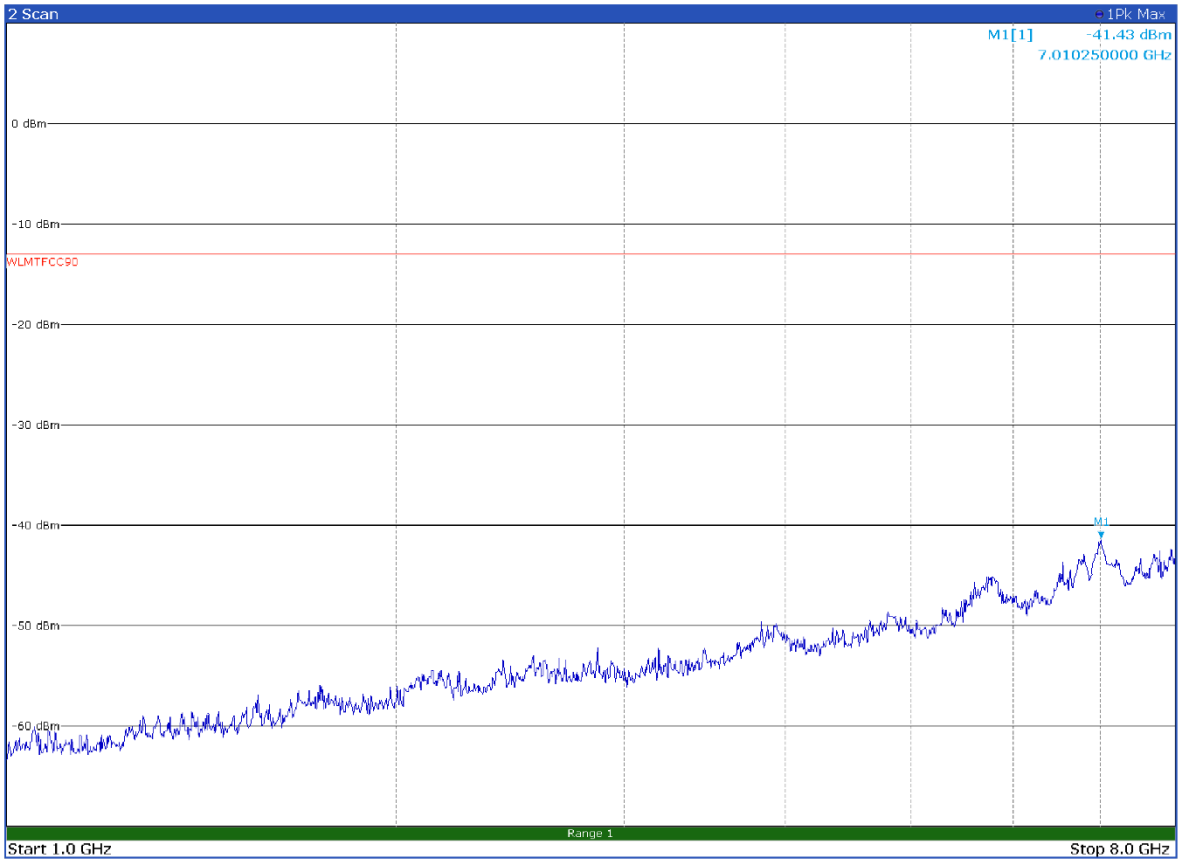


Figure 7.4-51: *Radiated emission with antenna in horizontal polarization on mid channel (TX2)*

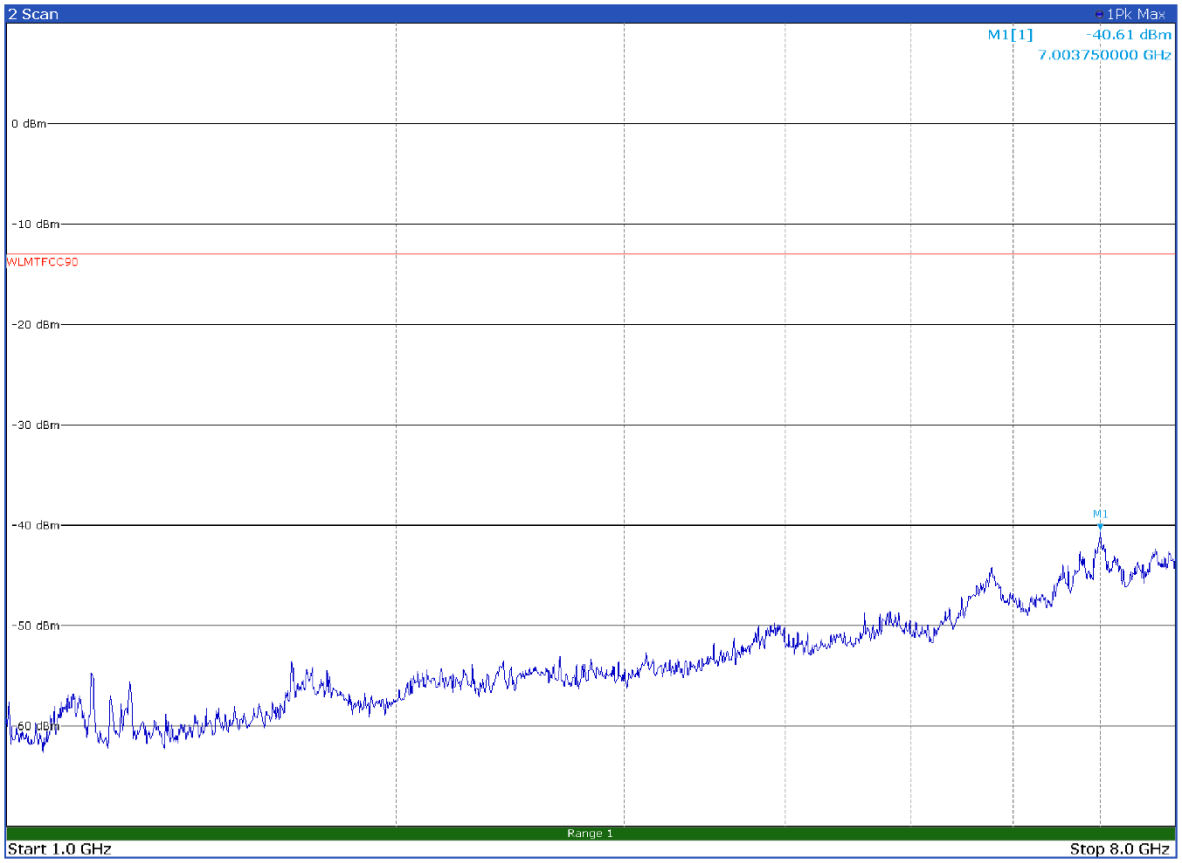


Figure 7.4-52: *Radiated emission with antenna in vertical polarization on mid channel (TX2)*

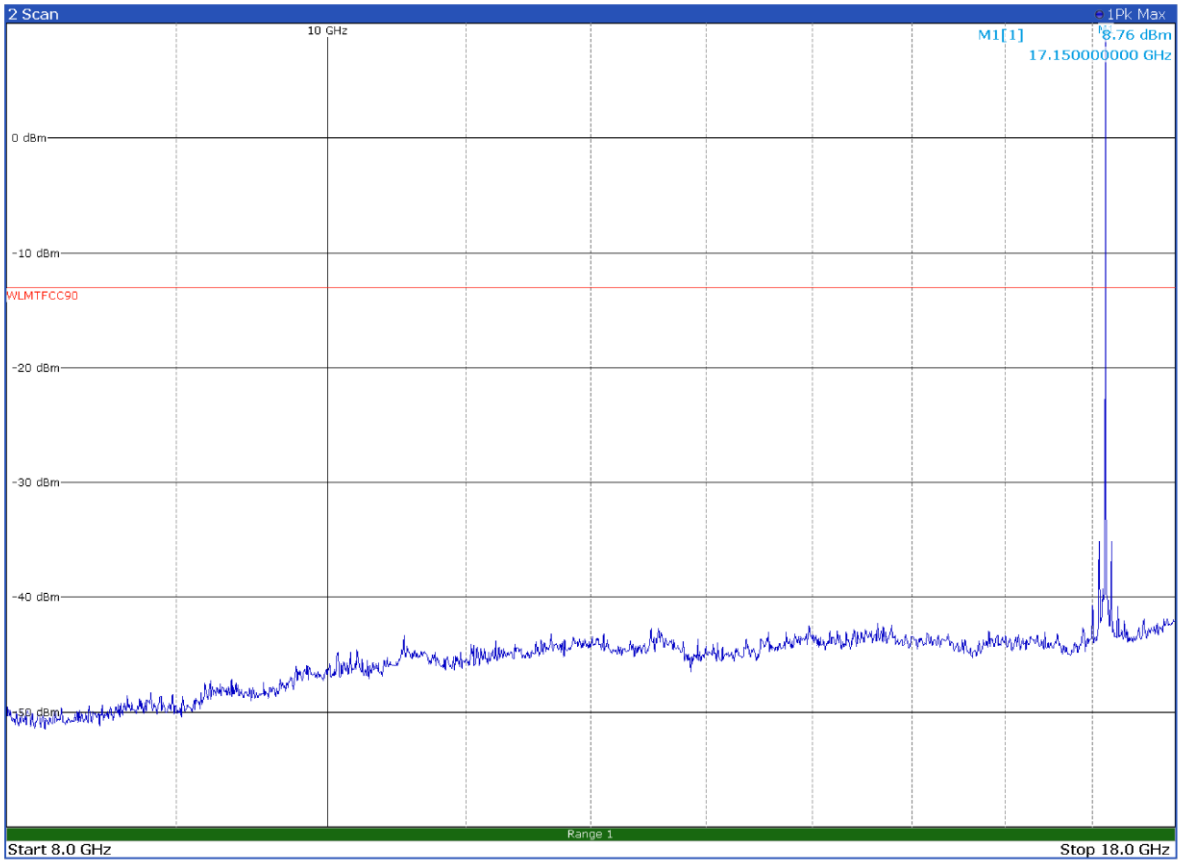


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Figure 7.4-53: *Radiated emission with antenna in horizontal polarization on mid channel (TX2)*

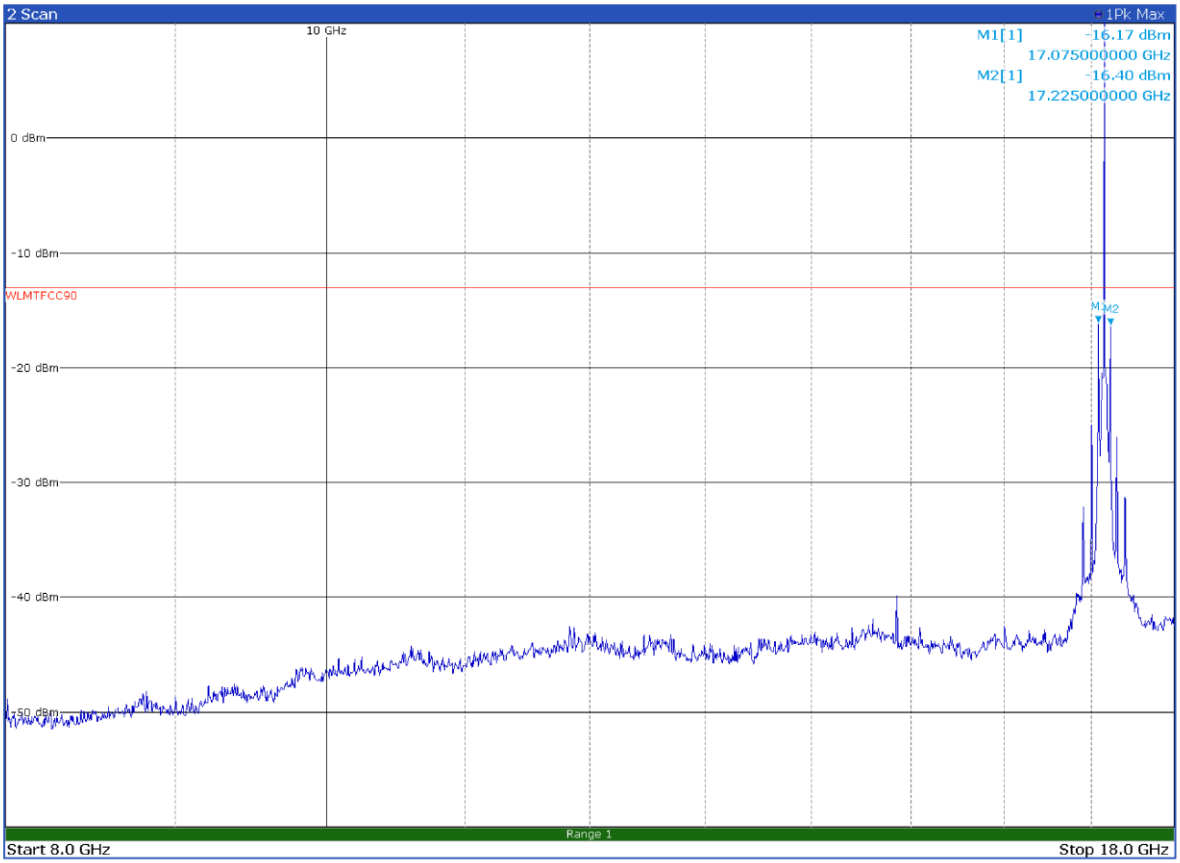

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Figure 7.4-54: *Radiated emission with antenna in vertical polarization on mid channel (TX2)*

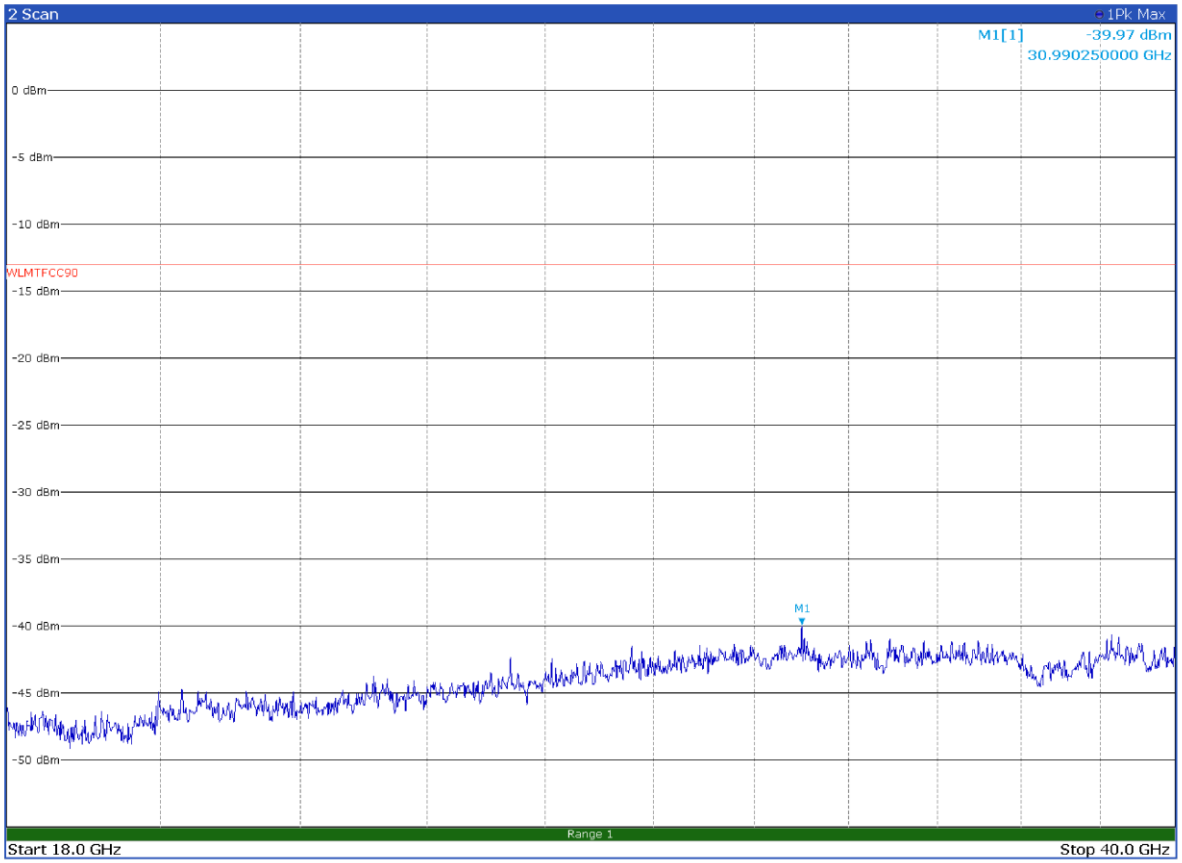


Figure 7.4-55: *Radiated emission with antenna in horizontal polarization on mid channel (TX2)*

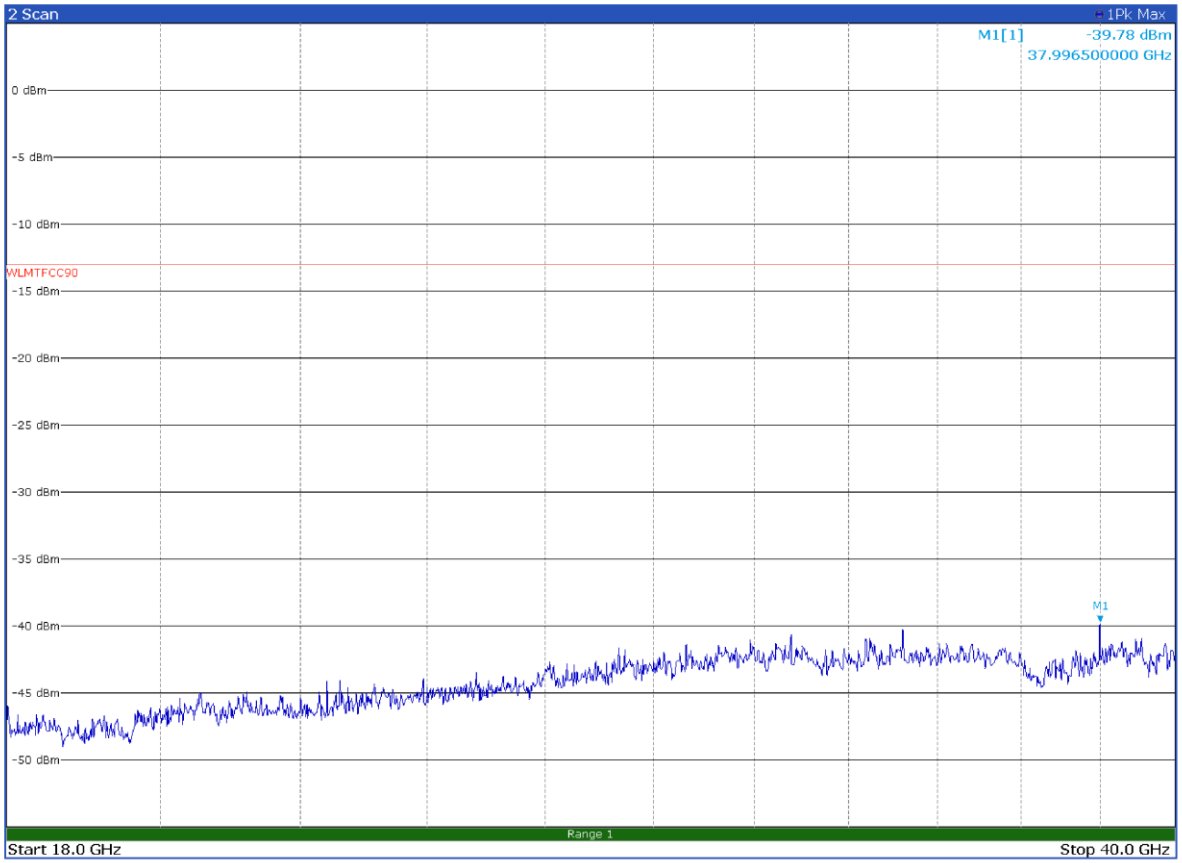


Figure 7.4-56: *Radiated emission with antenna in vertical polarization on mid channel (TX2)*

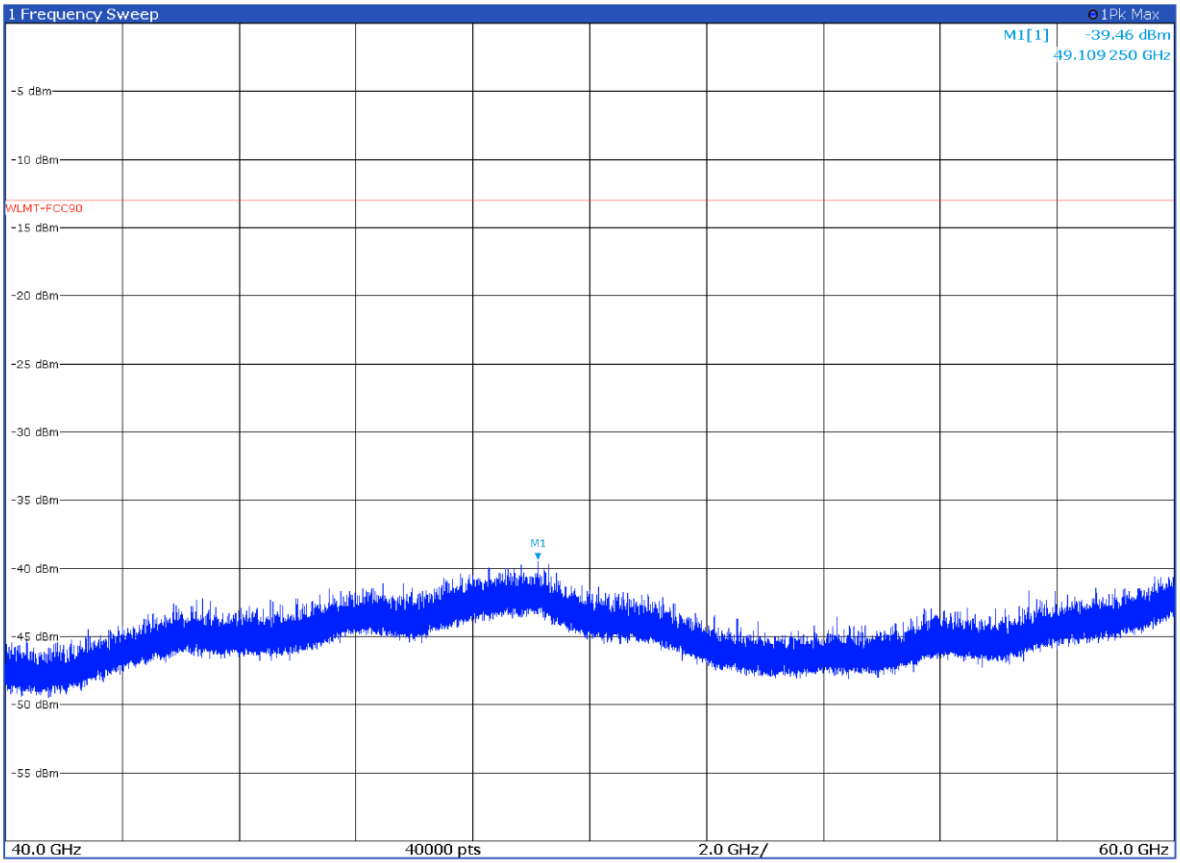


Figure 7.4-57: *Radiated emission with antenna in horizontal polarization on mid channel (TX2)*

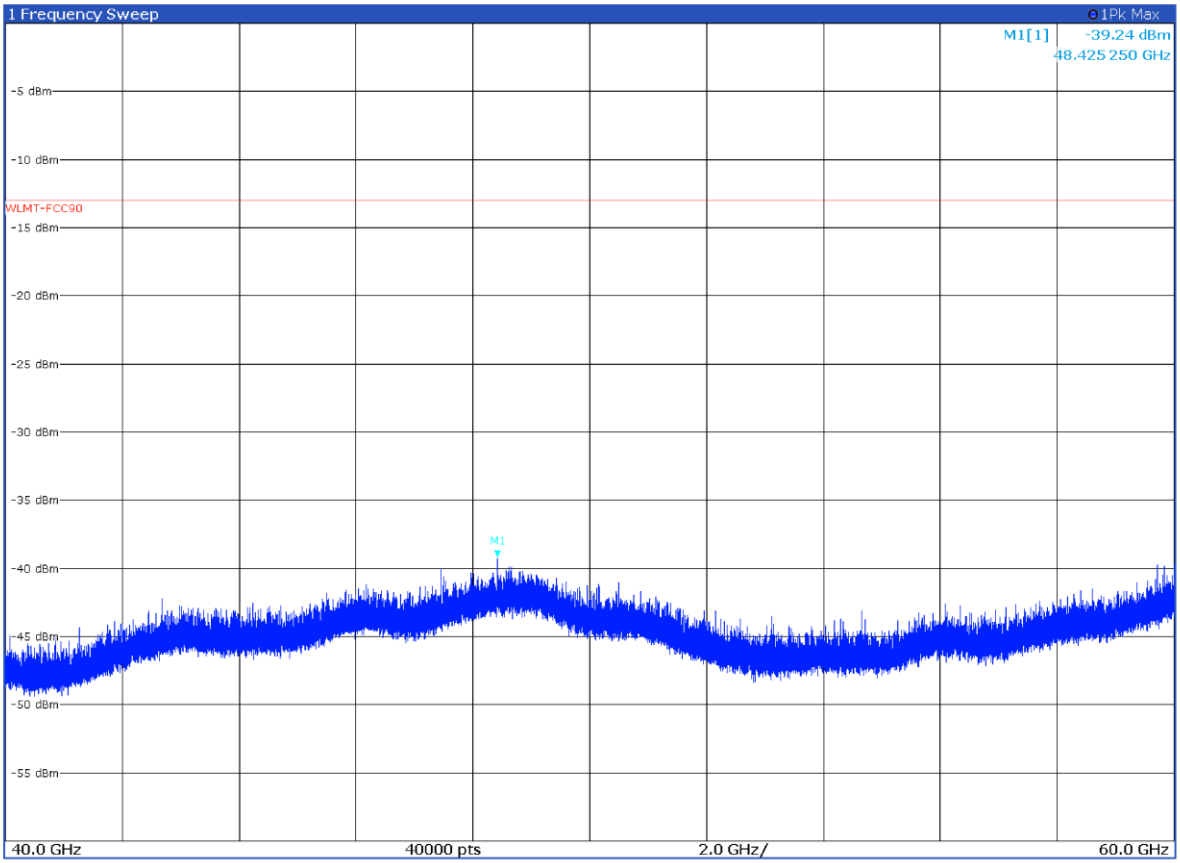


Figure 7.4-58: *Radiated emission with antenna in vertical polarization on mid channel (TX2)*

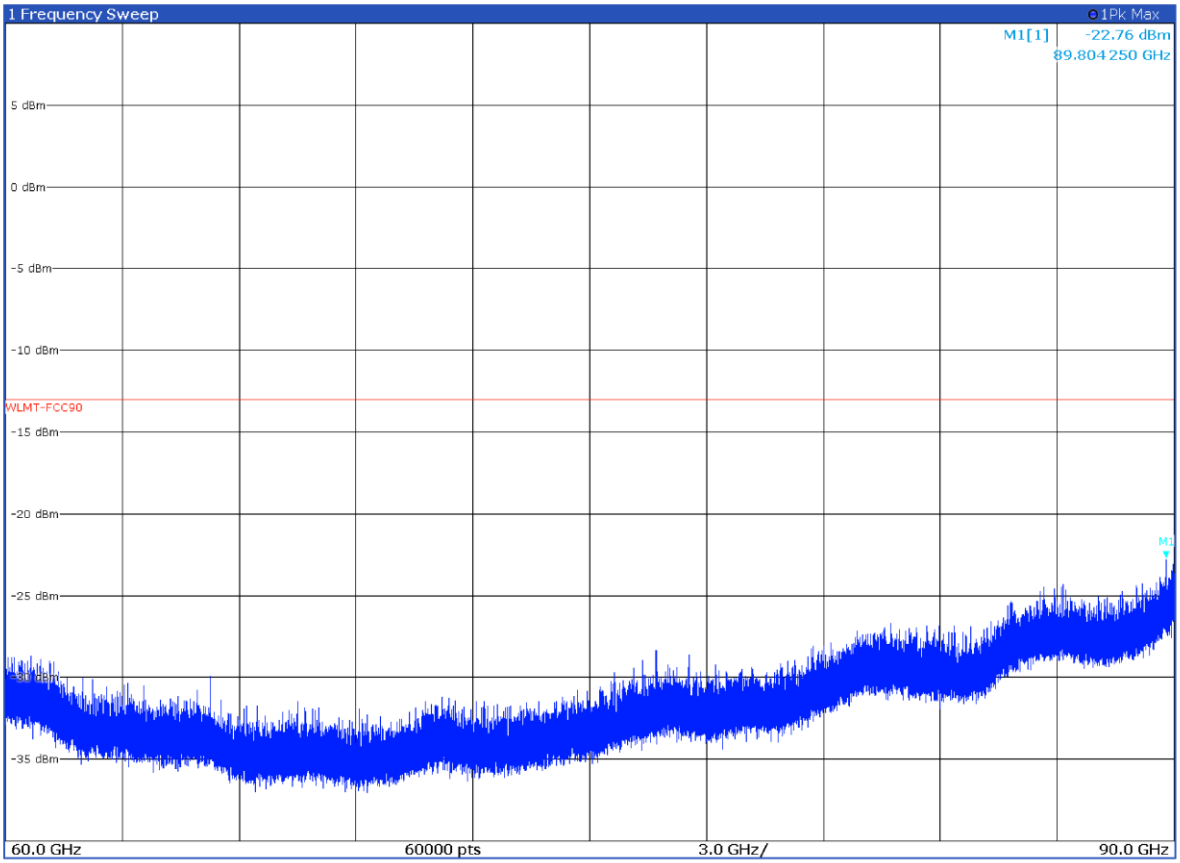


Figure 7.4-59: *Radiated emission with antenna in horizontal polarization on mid channel (TX2)*

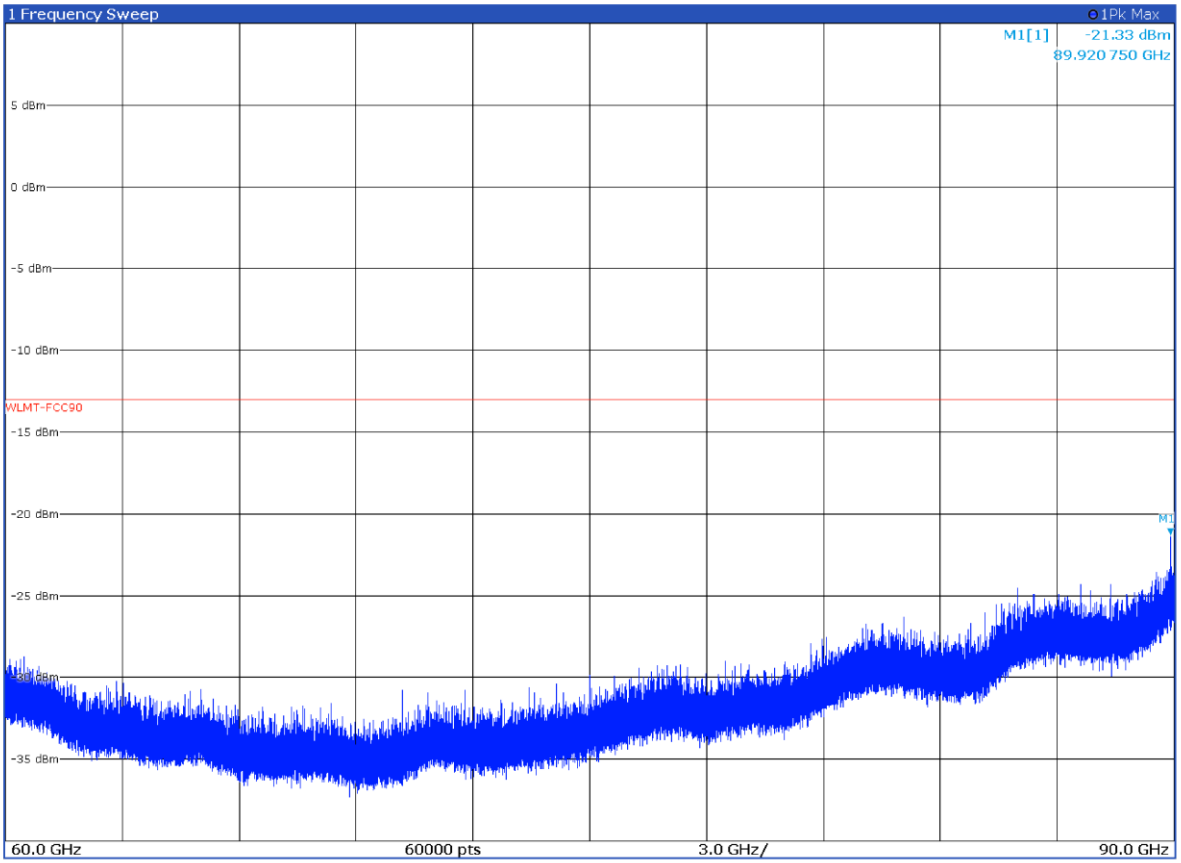


Figure 7.4-60: *Radiated emission with antenna in vertical polarization on mid channel (TX2)*

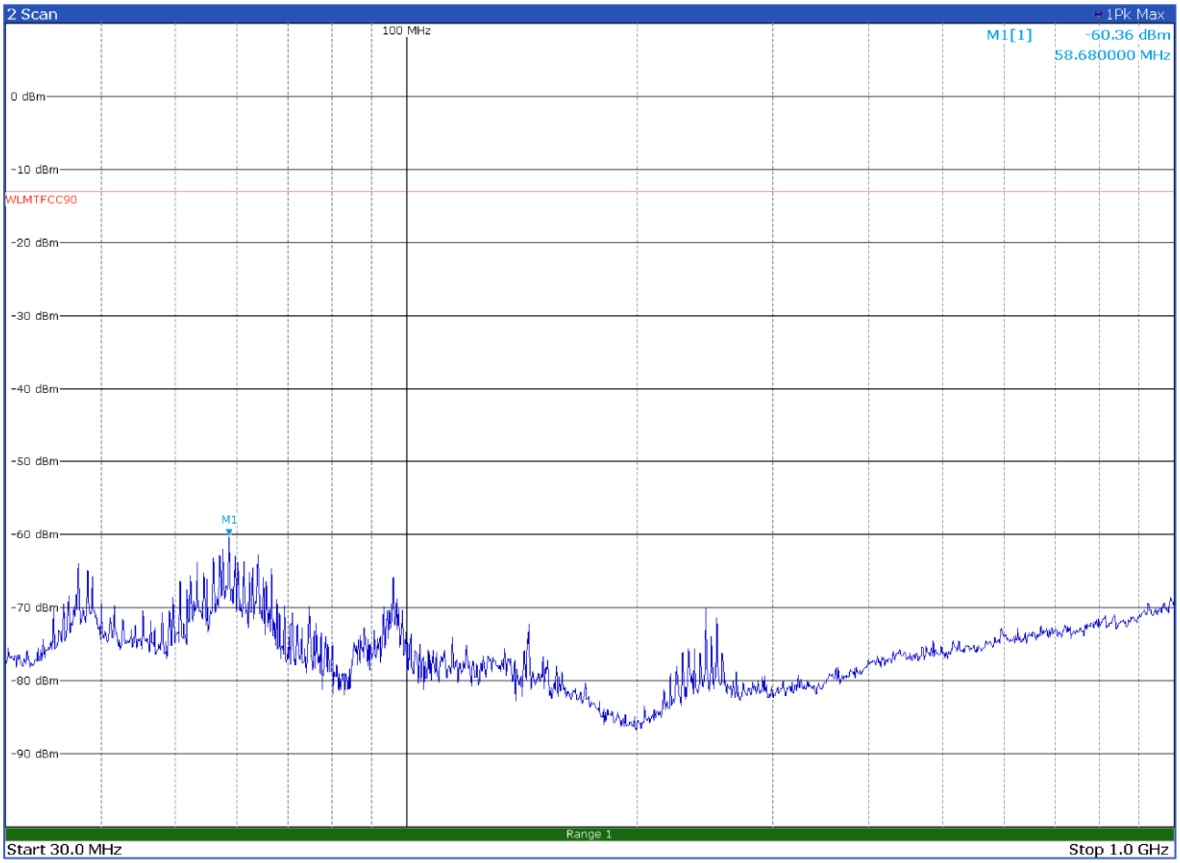


Figure 7.4-61: *Radiated emission with antenna in horizontal polarization on high channel (TX2)*

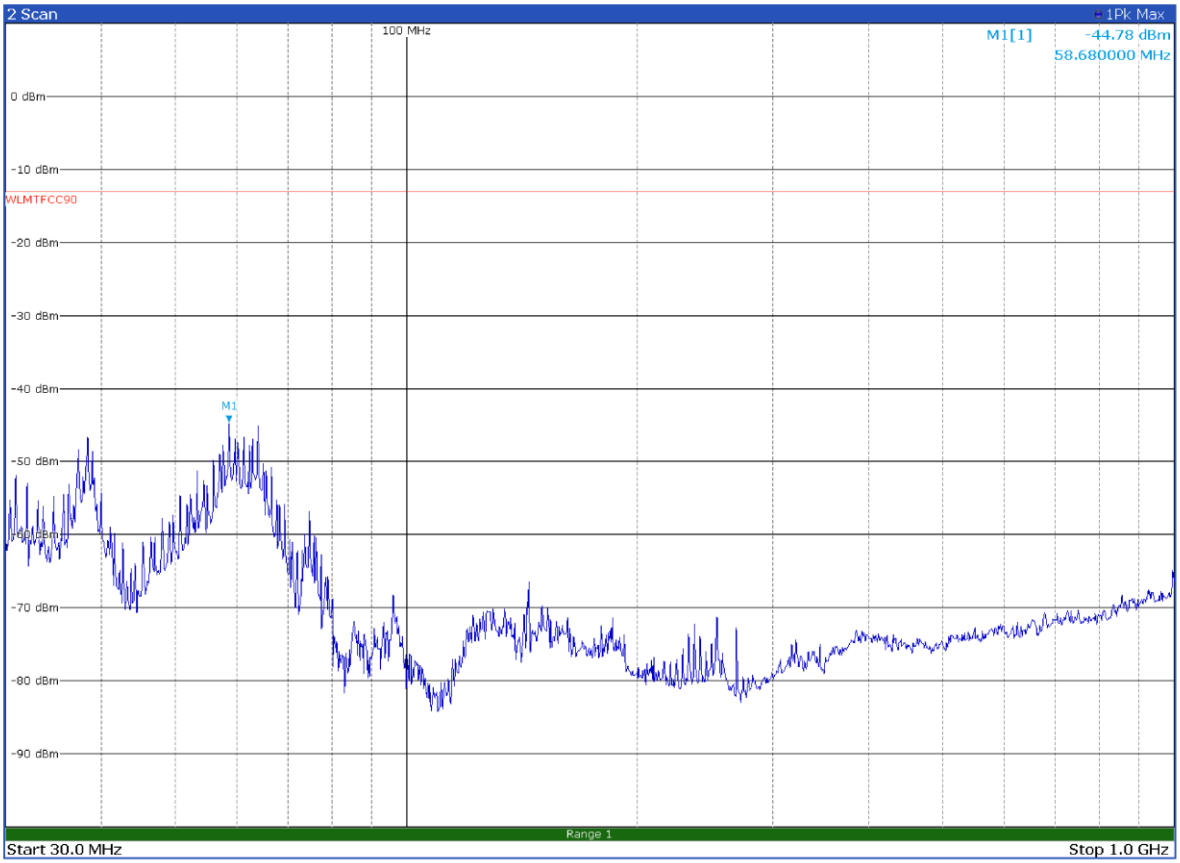


Figure 7.4-62: *Radiated emission with antenna in vertical polarization on high channel (TX2)*

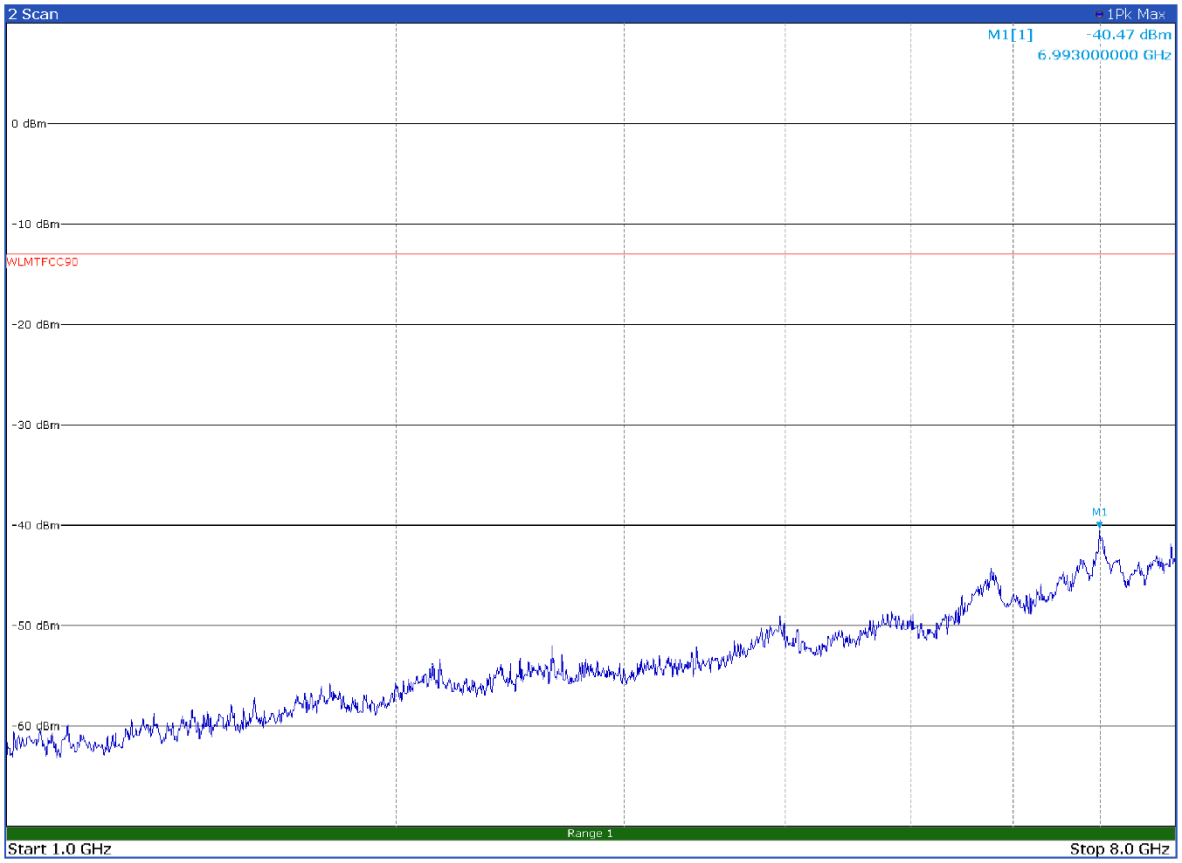


Figure 7.4-63: *Radiated emission with antenna in horizontal polarization on high channel (TX2)*

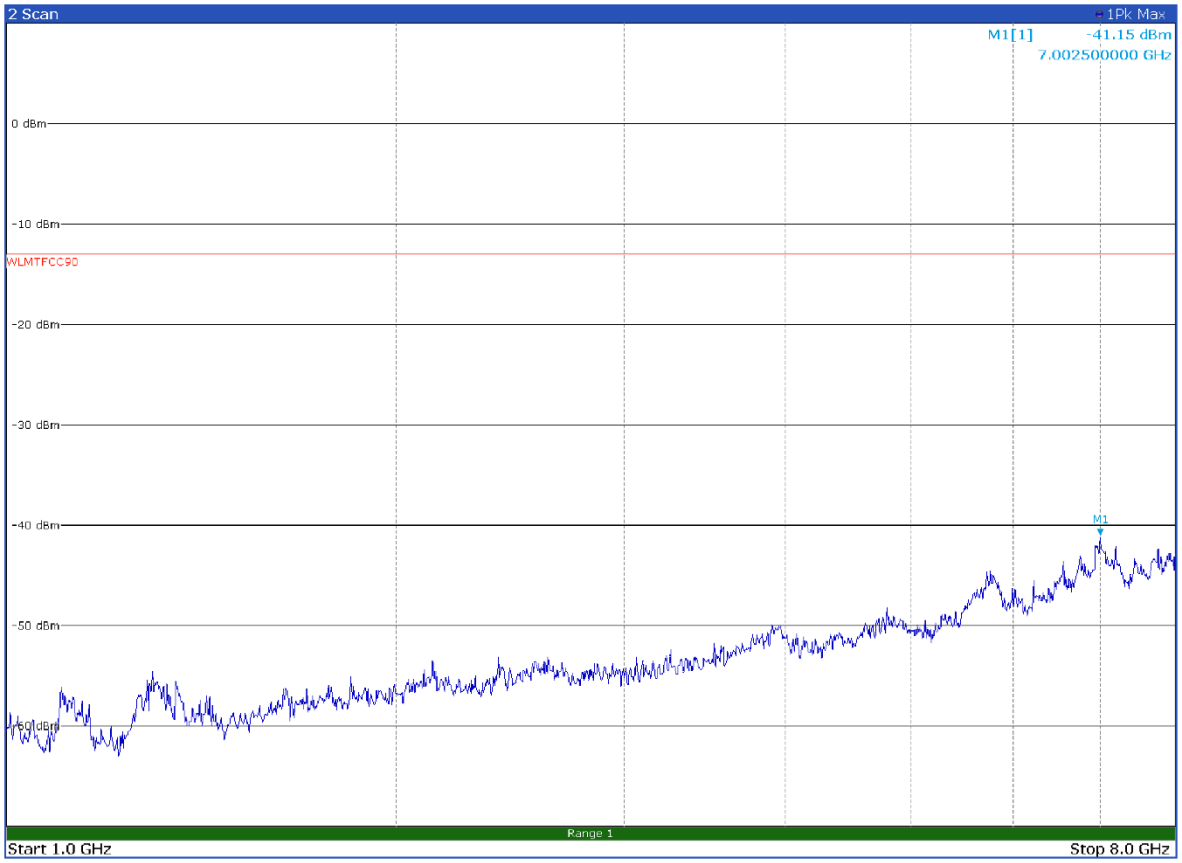
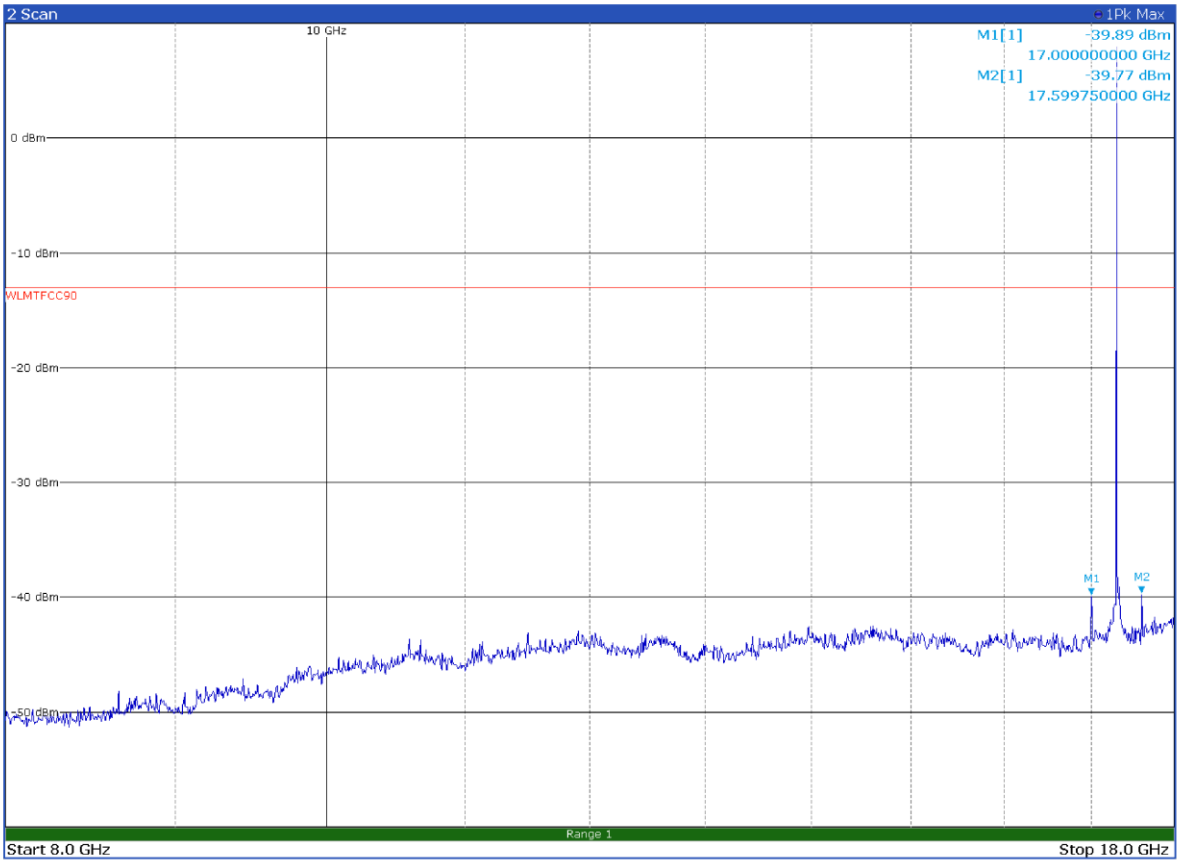
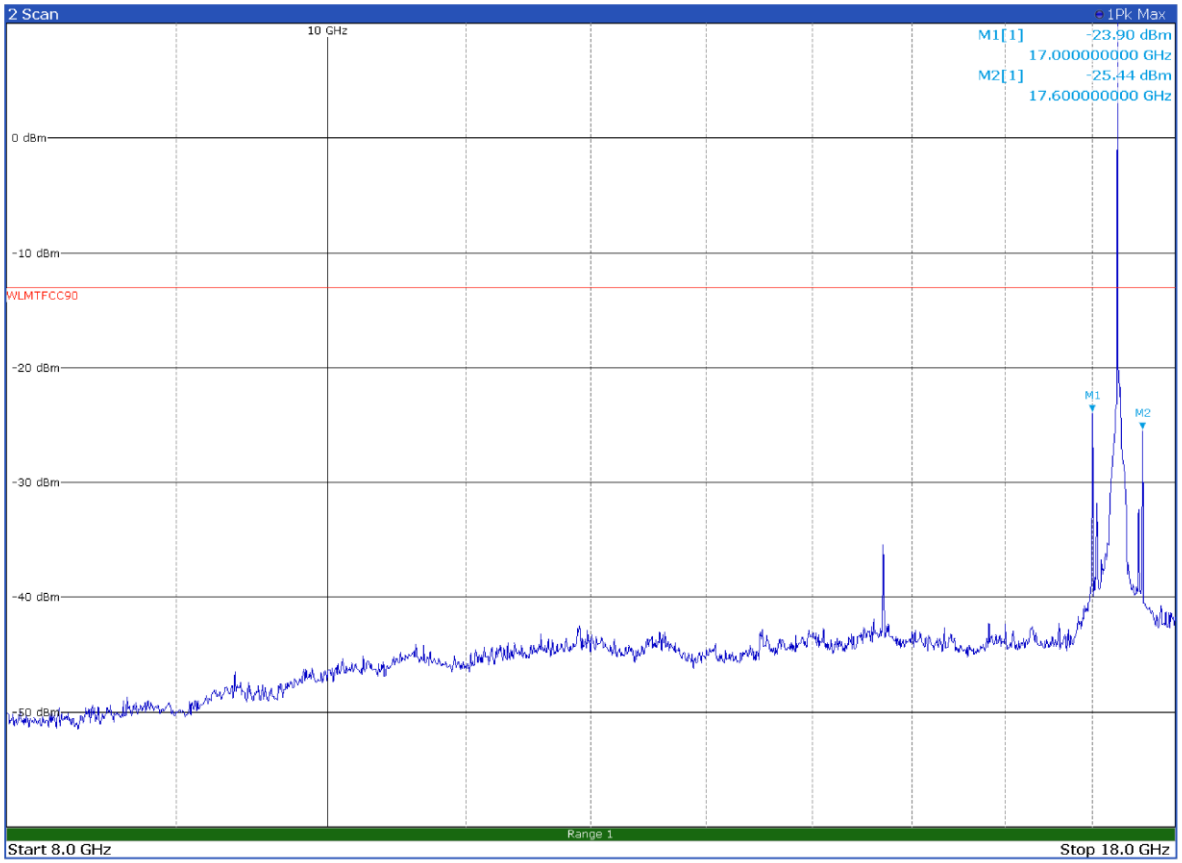


Figure 7.4-64: *Radiated emission with antenna in vertical polarization on high channel (TX2)*



Limit exceeded by the carrier

Figure 7.4-65: *Radiated emission with antenna in horizontal polarization on high channel (TX2)*



Limit exceeded by the carrier

Figure 7.4-66: *Radiated emission with antenna in vertical polarization on high channel (TX2)*

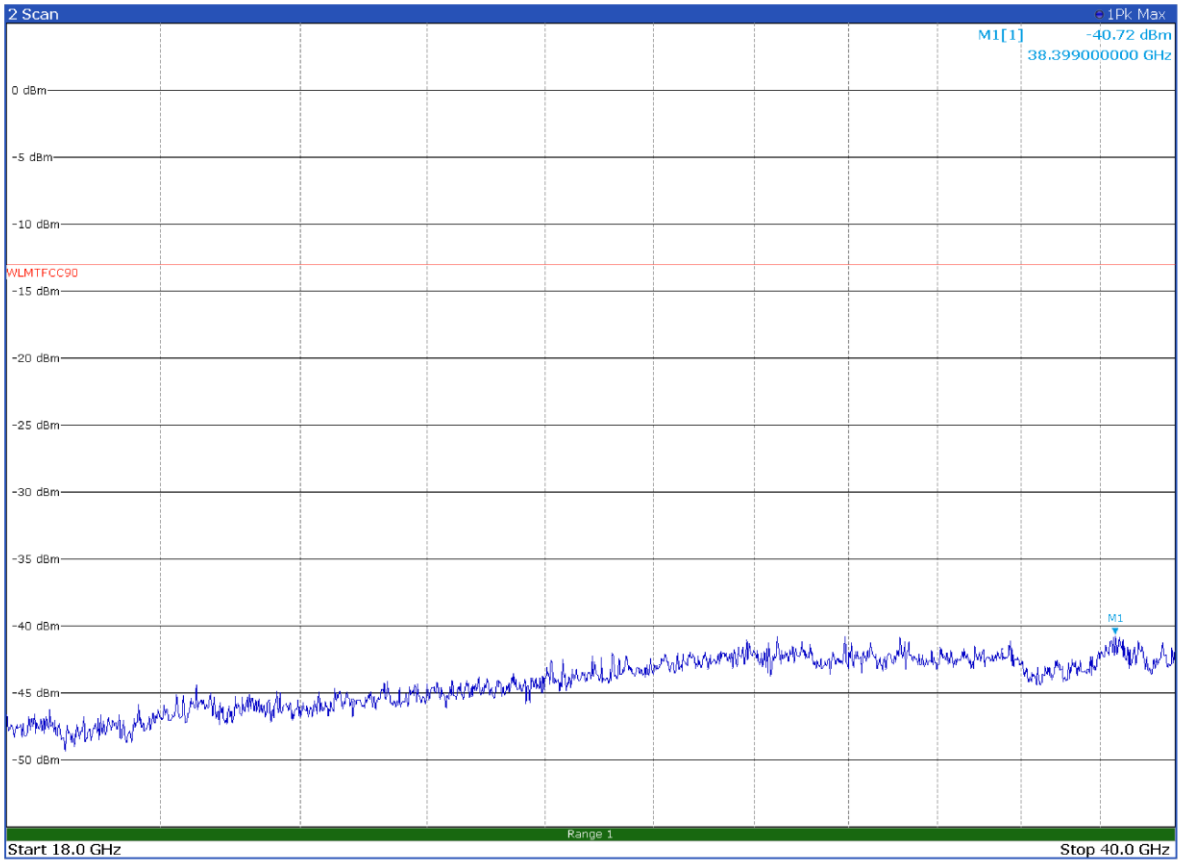


Figure 7.4-67: *Radiated emission with antenna in horizontal polarization on high channel (TX2)*

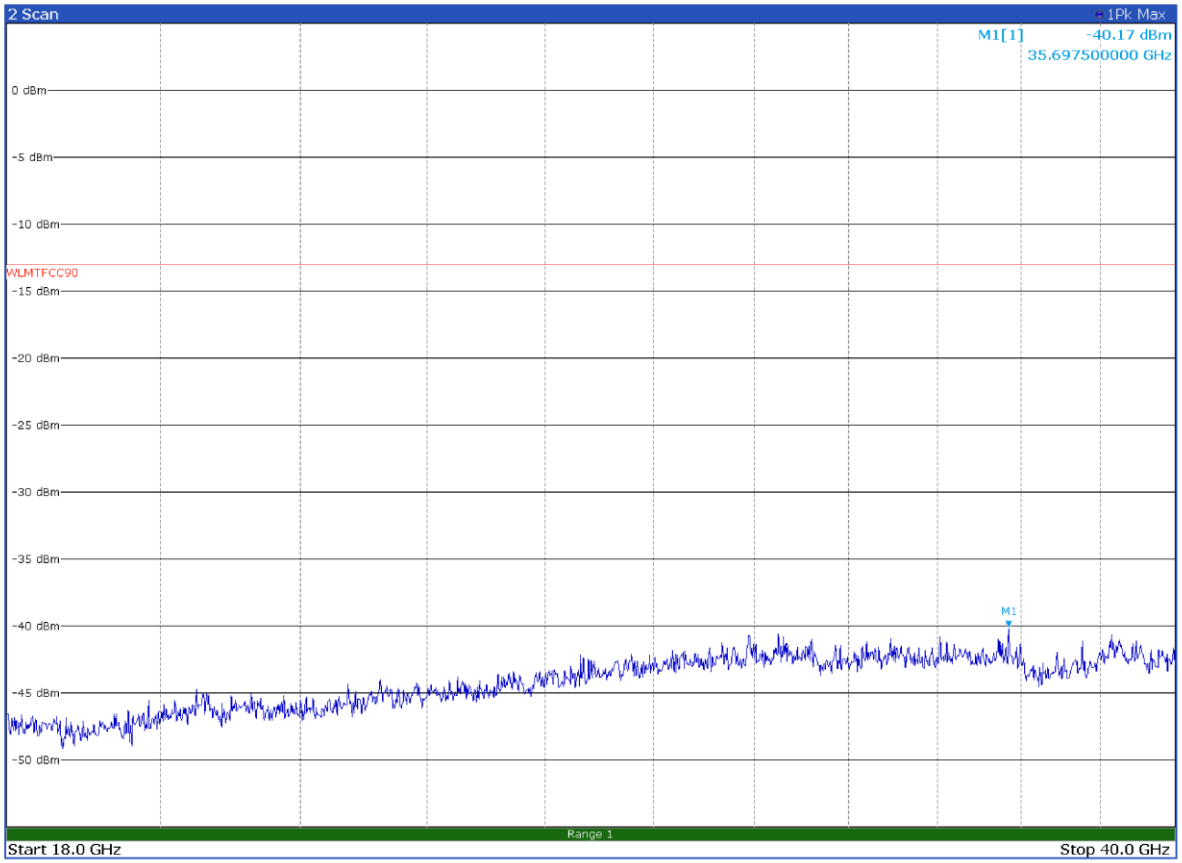


Figure 7.4-68: *Radiated emission with antenna in vertical polarization on high channel (TX2)*

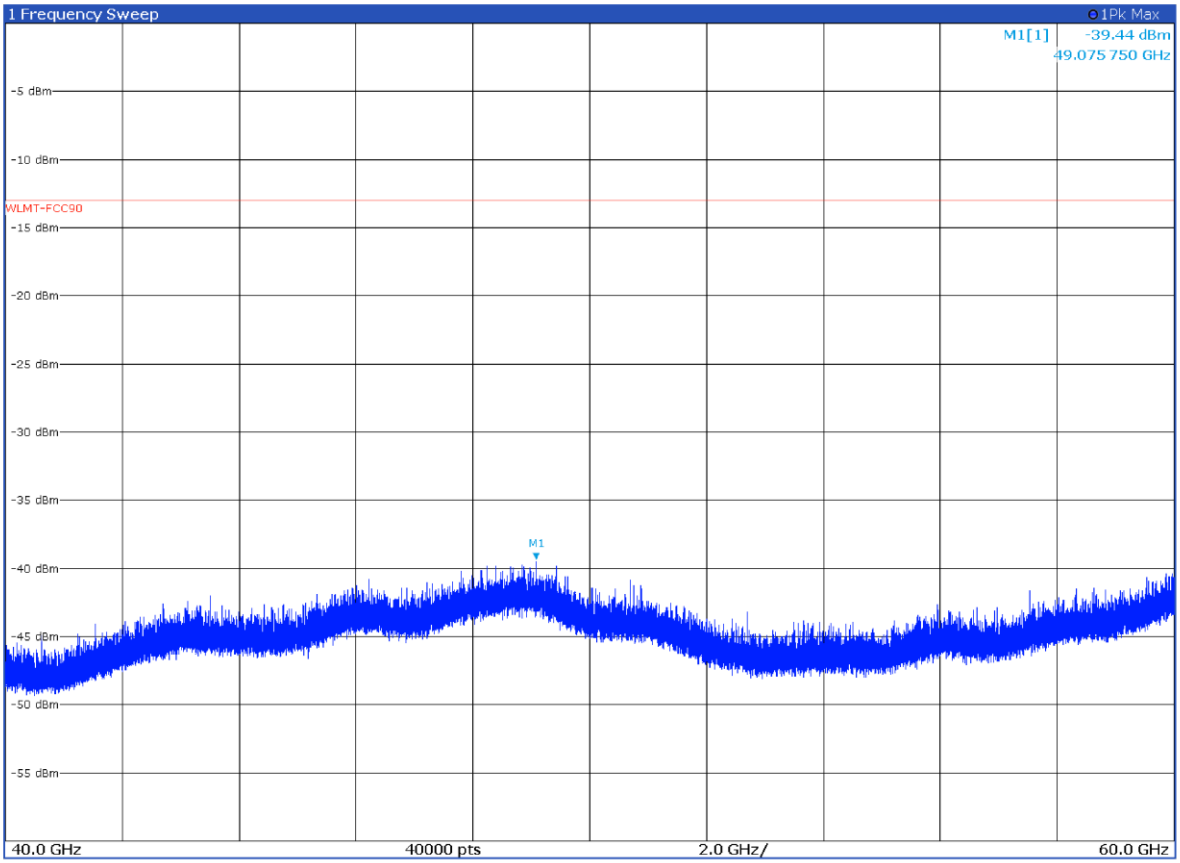


Figure 7.4-69: *Radiated emission with antenna in horizontal polarization on high channel (TX2)*

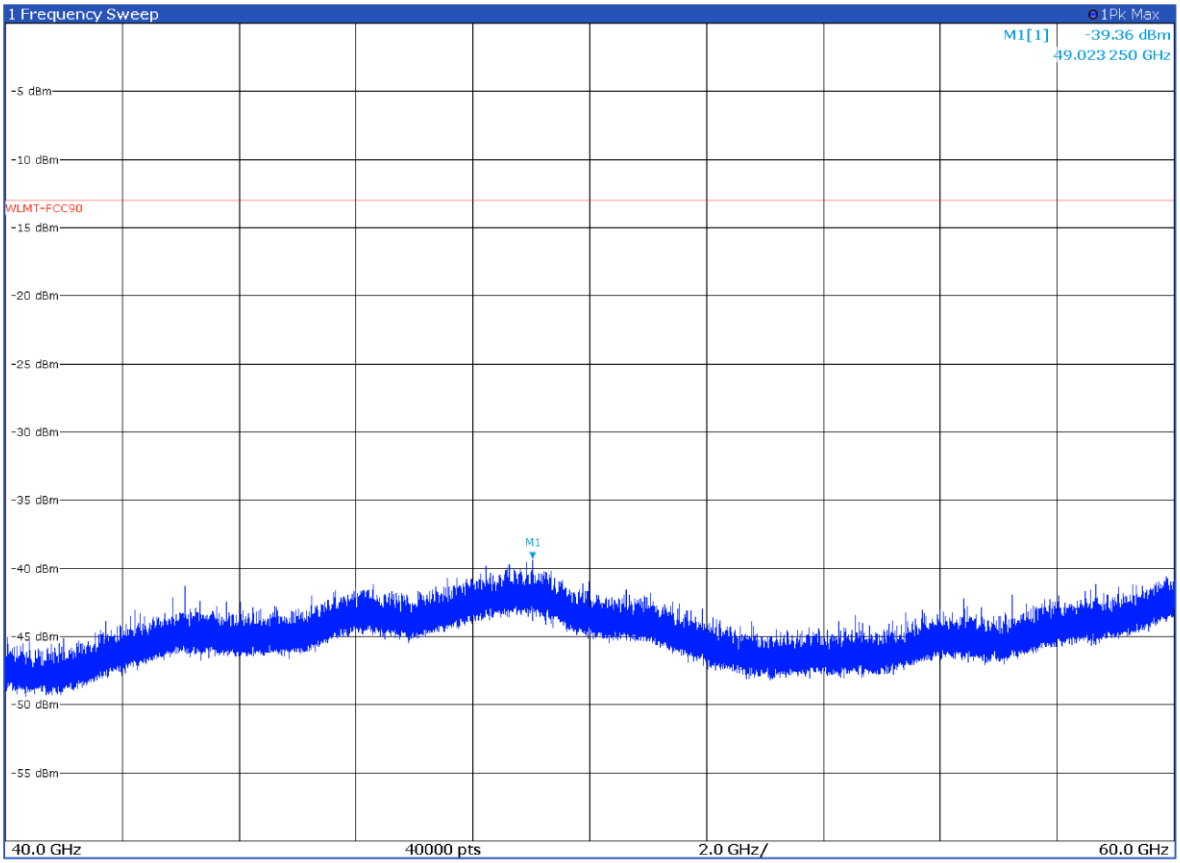


Figure 7.4-70: *Radiated emission with antenna in vertical polarization on high channel (TX2)*

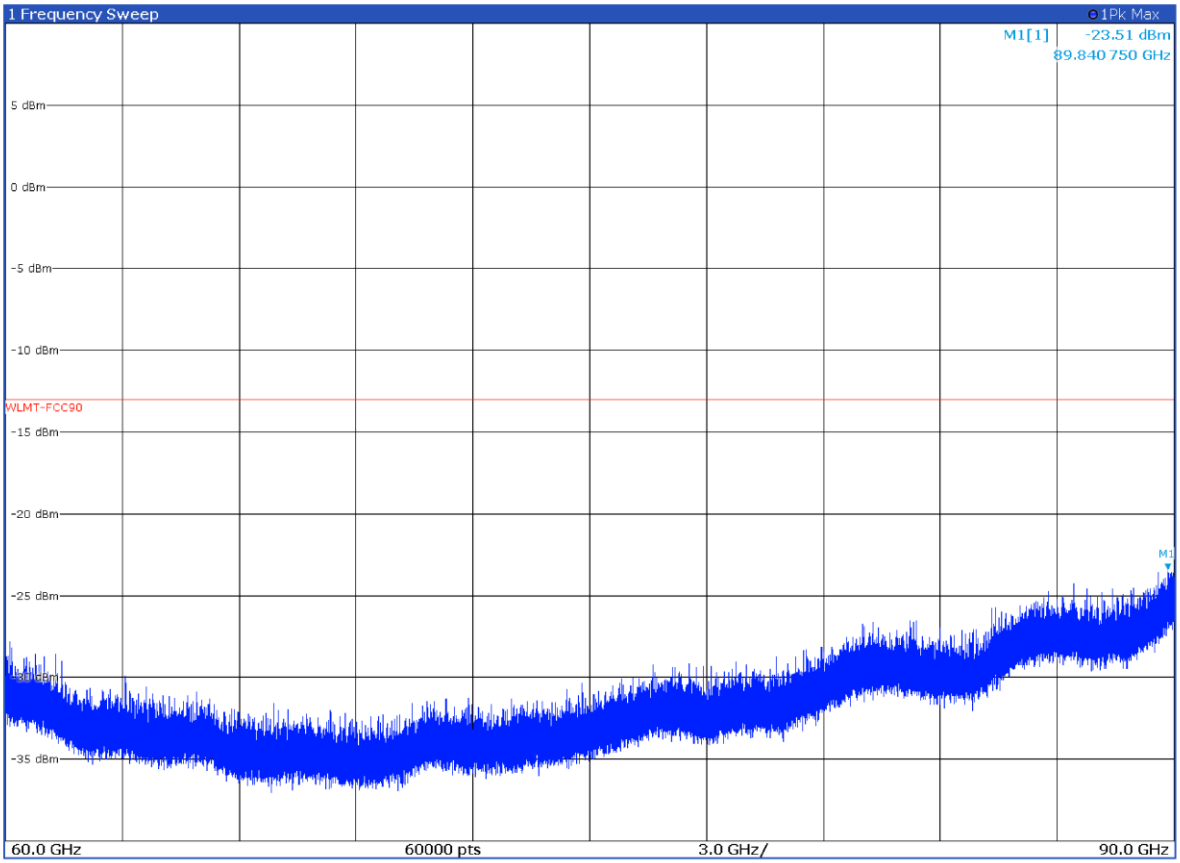


Figure 7.4-71: *Radiated emission with antenna in horizontal polarization on high channel (TX2)*

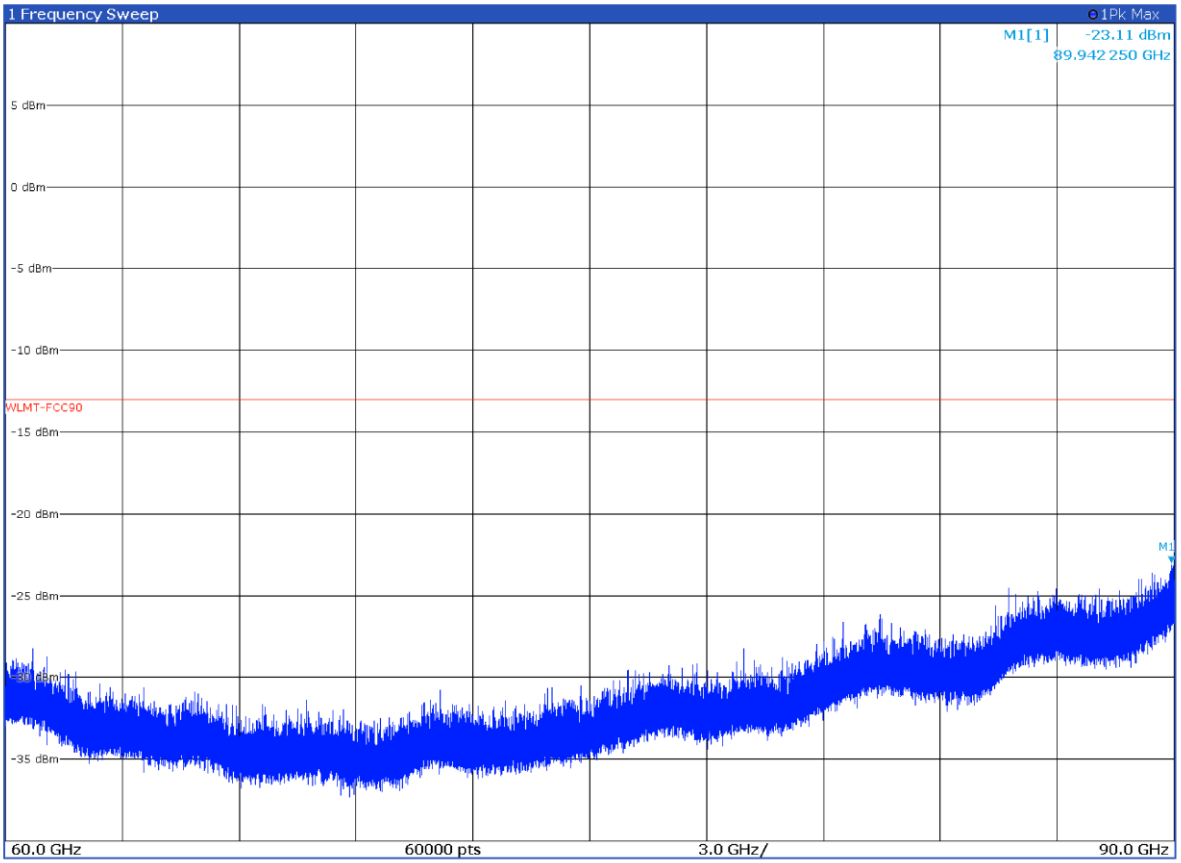


Figure 7.4-72: *Radiated emission with antenna in vertical polarization on high channel (TX2)*

7.5 Frequency stability

7.5.1 Definitions and limits

FCC § 90.213

(a) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table.

TABLE 1 TO § 90.213(a)—MINIMUM FREQUENCY STABILITY [PARTS PER MILLION (PPM)]

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	[1][2][3] 100	100	200
25-50	20	20	50
72-76	5		50
150-174	[5][11] 5	[6] 5	[4][6] 50
216-220	1.0		1.0
220-222 [12]	0.1	1.5	1.5
421-512	[7][11][14] 2.5	[8] 5	[8] 5
806-809	[14] 1.0	1.5	1.5
809-824	[14] 1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	[14] 0.1	1.5	1.5
902-928	2.5	2.5	2.5
902-928 [13]	2.5	2.5	2.5
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	[9] 300	300	300
Above 2450 [10]			

[1] Fixed and base stations with over 200 watts transmitter power must have a frequency stability of 50 ppm except for equipment used in the Public Safety Pool where the frequency stability is 100 ppm.
[2] For single sideband operations below 25 MHz, the carrier frequency must be maintained within 50 Hz of the authorized carrier frequency.
[3] Travelers information station transmitters operating from 530-1700 kHz and transmitters exceeding 200 watts peak envelope power used for disaster communications and long distance circuit operations pursuant to §§ 90.242 and 90.264 must maintain the carrier frequency to within 20 Hz of the authorized frequency.
[4] Stations operating in the 154.45 to 154.49 MHz or the 173.2 to 173.4 MHz bands must have a frequency stability of 5 ppm.
[5] In the 150-174 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.
[6] In the 150-174 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth or designed to operate on a frequency specifically designated for itinerant use or designed for low-power operation of two watts or less, must have a frequency stability of 5.0 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 2.0 ppm.
[7] In the 421-512 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 1.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 0.5 ppm.
[8] In the 421-512 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.
[9] Fixed stations with output powers above 120 watts and necessary bandwidth less than 3 kHz must operate with a frequency stability of 100 ppm. Fixed stations with output powers less than 120 watts and using time-division multiplex, must operate with a frequency stability of 500 ppm.
[10] Frequency stability for DSRCS equipment in the 5895-5925 MHz band is specified in subpart M of this part. For all other equipment, frequency stability is to be specified in the station authorization.
[11] Paging transmitters operating on paging-only frequencies must operate with frequency stability of 5 ppm in the 150-174 MHz band and 2.5 ppm in the 421-512 MHz band.
[12] Mobile units may utilize synchronizing signals from associated base stations to achieve the specified carrier stability.
[13] Fixed non-multilateration transmitters with an authorized bandwidth that is more than 40 kHz from the band edge, intermittently operated hand-held readers, and mobile transponders are not subject to frequency tolerance restrictions.
[14] Control stations may operate with the frequency tolerance specified for associated mobile frequencies.

(b) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table.

7.5.2 Test date

Start date	June 25, 2025

7.5.3 Observations, settings and special notes

EUT tested in CW at mid frequency

7.5.4 Test equipment list

Table 7.5-1: *Equipment list*

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
Spectrum Analyzer	Rohde & Schwarz	FSW43	101767	2025-01	2026-01
Coaxial cable	Rosenberger	ST.ALO-02	1.650	2024-12	2025-12
Climatic Chamber	MSL	EC500DA	15022	2024-07	2026-07

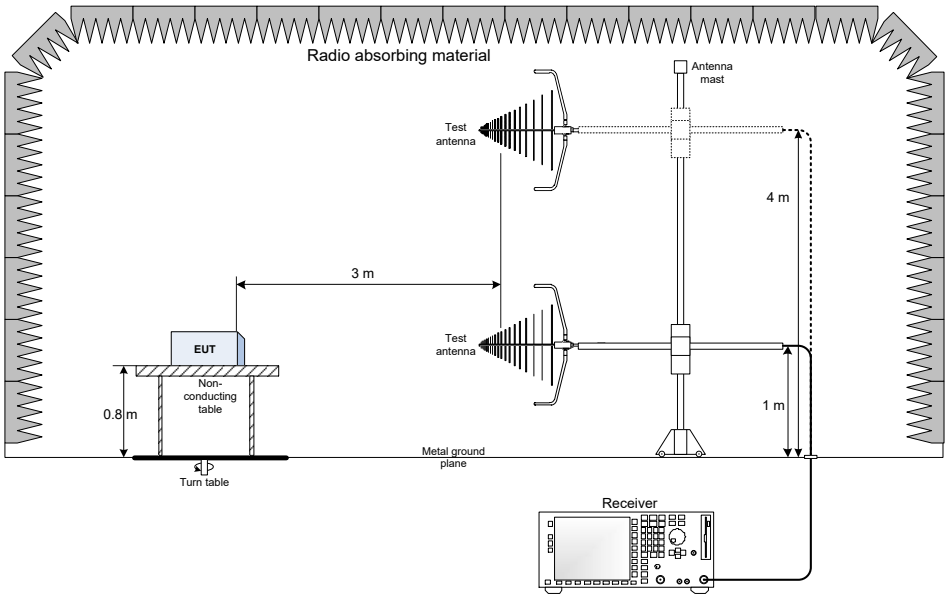
7.5.5 Test data

Table 7.5-2: *Transmitter frequency stability results*

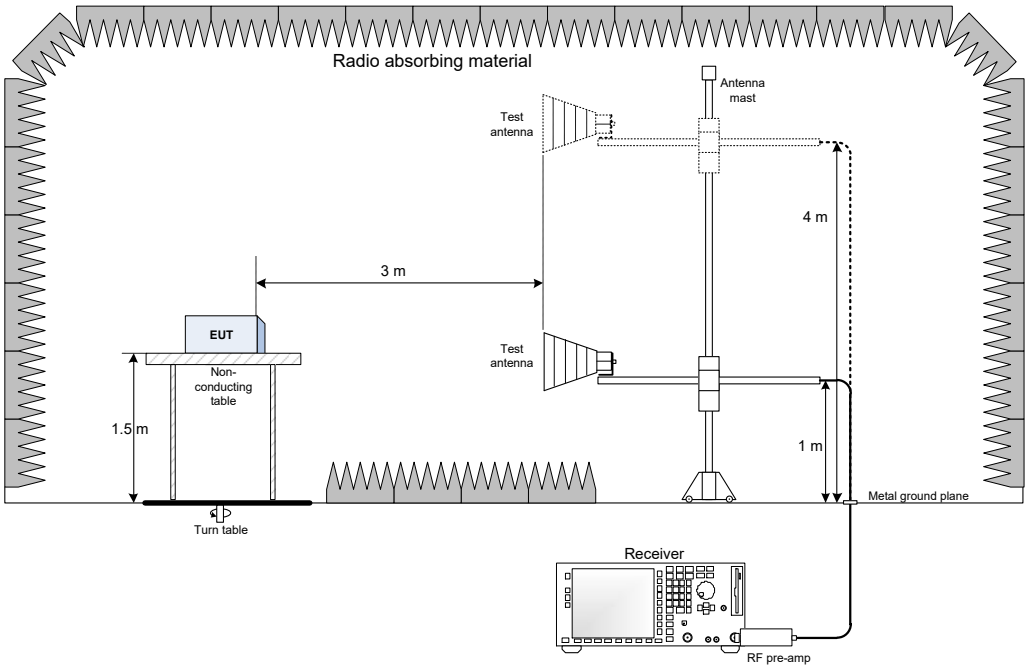
Test conditions	Frequency, Hz	Drift, Hz	Drift, ppm	Limit ±ppm	Margin, ±ppm
+50 °C, Nominal	17149967735	-180585	-10.5	--	--
+40 °C, Nominal	17150036315	-112005	-6.5	--	--
+30 °C, Nominal	17150109141	-39179	-2.3	--	--
+20 °C, +15 %	17150148320	0	0.0	--	--
+20 °C, Nominal	17150148320	Reference	Reference	Reference	Reference
+20 °C, -15 %	17150148320	0	0.0	--	--
+10 °C, Nominal	17150240217	91897	5.4	--	--
0 °C, Nominal	17150281674	133354	7.8	--	--
−10 °C, Nominal	17150326529	178209	10.4	--	--
−20 °C, Nominal	17150339910	191590	11.2	--	--
−30 °C, Nominal	17150353194	204874	11.9	--	--

Section 8. Block diagrams of test set-ups

8.1 Radiated emissions set-up for frequencies below 1 GHz



8.2 Radiated emissions set-up for frequencies above 1 GHz



Section 9. Photos

9.1 Photos of the test set-up

See “Annex A” exhibit.

9.2 Photos of the EUT

See “Annex A” exhibit.

End of report