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Wireless test report – 393383-5TRFWL

Applicant:

Eurotech SpA

Product name:

ReliaGATE 10-12

DynaGATE 10-12

Model:

REGATE-10-12-GS04

Model variant:

DYGATE-10-12-GS04

FCC ID:

UKMMRG1012

IC Registration number:

21442-MRG1012

Specifications:

◆ **FCC 47 CFR Part 15 Subpart C, §15.209**

Radiated emission limits; general requirements.

◆ **RSS-GEN, Issue 5, Apr. 2018, section 8.9**

Transmitter Emission Limits

Date of issue: **May 12, 2020**

Tested by

(name, function and signature) **P. Barbieri**

(project handler) **Signature:**

Reviewed by

(name, function and signature) **D. Guarnone**

(verifier) **Signature:**

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The test report merely corresponds to the tested sample.

The phase of sampling / collection of equipment under test is carried out by the customer.



Test location(s)

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Province	MB
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Country	Italy
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Website	www.nemko.com
Site number	FCC: 682159; IC: 9109A (10 m semi anechoic chamber)

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report. This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contained in this report are within Nemko Spa ISO/IEC 17025 accreditation.

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Table of contents

Table of contents	3
Section 1. Report summary	4
1.1 Applicant and manufacturer	4
1.2 Test specifications	4
1.3 Test methods.....	4
1.4 Statement of compliance	4
1.5 Exclusions	4
1.6 Test report revision history	4
Section 2. Summary of test results.....	5
2.1 FCC Part 15 Subpart C, general requirements test results.....	5
2.2 ISED RSS-GEN, Issue 5, test results	5
Section 3. Equipment under test (EUT) details	6
3.1 Sample information.....	6
3.2 EUT information	6
3.3 Technical information	6
3.4 EUT setup diagram	7
3.5 Product description and theory of operation	7
3.6 EUT sub assemblies	7
3.7 EUT exercise details.....	7
Section 4. Engineering considerations.....	8
4.1 Modifications incorporated in the EUT.....	8
4.2 Technical judgment	8
4.3 Deviations from laboratory tests procedures.....	8
Section 5. Test conditions.....	9
5.1 Atmospheric conditions	9
5.2 Power supply range.....	9
Section 6. Measurement uncertainty	10
6.1 Uncertainty of measurement	10
Section 7. Test equipment	12
7.1 Test equipment list.....	12
Section 8. Testing data	13
8.1 FCC 15.209 and RSS-GEN section 8.9 Radiated emission limits; general requirements.....	13
Section 9. Block diagrams of test set-ups	215
9.1 Radiated emissions set-up for frequencies below 1 GHz.....	215
9.2 Radiated emissions set-up for frequencies above 1 GHz.....	215
Section 10. Photos.....	216
10.1 Photos of the test set-up	216
10.2 Photos of the EUT.....	219

Section 1. Report summary

1.1 Applicant and manufacturer

Company name	Eurotech SpA
Address	Via Fratelli Solari 3/a – 33020 Amaro (UD) – Italy

1.2 Test specifications

FCC 47 CFR Part 15 Subpart C, §15.209	Radiated emission limits; general requirements.
RSS-GEN, Issue 5, section 8.9	Transmitter Emission Limits for Licence-Exempt Radio Apparatus

1.3 Test methods

ANSI C63.10 v2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
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1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard except as noted in section 1.5 below. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

1.5 Exclusions

As per quote, the purpose of this report is verification of transmitters colocation. Only inter-modulation products within restricted bands were assessed, other requirements were excluded from the scope of this report.

1.6 Test report revision history

Revision #	Date of issue	Details of changes made to test report
393383-5TRFWL	May 12, 2020	Original report issued

Section 2. Summary of test results

2.1 FCC Part 15 Subpart C, general requirements test results

Part	Test description	Verdict
§15.209	Radiated emission limits; general requirements.	Pass

2.2 ISED RSS-GEN, Issue 5, test results

Part	Test description	Verdict
8.9	Transmitter Emission Limits for Licence-Exempt Radio Apparatus	Pass

Section 3. Equipment under test (EUT) details

3.1 Sample information

Receipt date	March 25, 2020
Nemko sample ID number	393383-1/1

3.2 EUT information

Product name	ReliaGATE 10-12
Model	REGATE-10-12-GS04
Model variant	DYGATE-10-12-GS04
Serial number	Y118KNA0003 and Y119LKA0010

3.3 Technical information

RSS number and Issue number	RSS-GEN, Issue 5, Apr. 2018, section 8.9
Frequency band	WIFI/ BT/BLE:2400–2483.5 MHz band WIFI:5150–5250 MHz, 5725–5850 MHz bands LTE North America Bands
Type of modulation	GFSK, 802.11a/n, OFDM
Emission classification (F1D, G1D, D1D)	F1D, W7D
EUT power requirements	24 V _{DC} , via 120 V _{AC} adapter or battery
Antenna information	<p>The EUT uses a unique antenna coupling.</p> <p>EUT has 3 antenna configurations as following</p> <p>Configuration 1: Case a</p> <p>Configuration 2: Case b</p> <p>Configuration 3: Case c</p>

CASE	TECHNOLOGY	INDOOR/OUTDOOR	MOUNT	VENDOR	MODEL	BANDS	Peak Gain (dBi)
a	CELLULAR	INDOOR	TELEMATIC	2J-ANTENNA	2JW0124	698-960 / 1710-2170 / 2500-2700 MHz	0.5 / 2.5 / 1.5
b	CELLULAR	INDOOR	MAGNETIC	2J-ANTENNA	2J3024M	698-960 / 1710-2170 / 2500-2700 MHz	1.0 / 2.4 / 2.1 (2m cable)
c	CELLULAR	INDOOR	ADHESIVE	2J-ANTENNA	2J5424P	698-960 / 1710-2170 / 2500-2700 MHz	1.8 / 2.4 / 2.1 (2m cable)
a	WiFi	INDOOR	TELEMATIC	LINX	ANT-DB1-RAF-RPS	2.40-2.483 / 5.15-5.825 GHz	2.5 / 4.6
b,c	WiFi	OUTDOOR: IP 67	MAGNETIC/ADHESIVE	2J-ANTENNA	2J6302MP	2410-2490 / 4920-5925	1.7 / 2.3 (2m cable)
a,b,c	GNSS	INDOOR	MAGNETIC/ADHESIVE	2J-ANTENNA	2J4301MPGF	1575.42 - 1606 MHz	--

3.4 EUT setup diagram

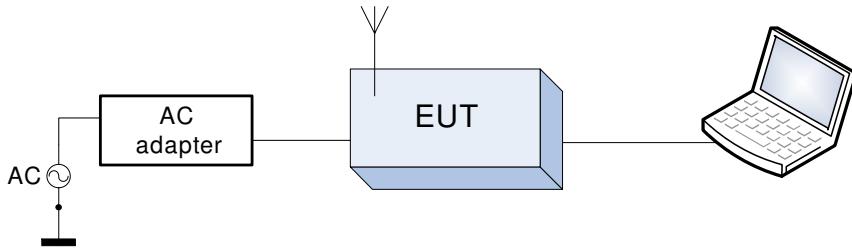


Figure 3.4-1: Setup diagram

3.5 Product description and theory of operation

The ReliaGATE and DynaGATE 10-12 are IoT Edge Gateways that have been designed to deliver LTE connectivity (with 3G fallback) to industrial and lightly rugged applications. Based on the TI AM335x Cortex-A8 (Sitara) processor family, with 1 GB of RAM, 4 GB of eMMC and user-accessible MicroSD and dual Micro-SIM slots, the ReliaGATE and DynaGATE 10-12 are low power gateways suitable for demanding use cases. They support a 6 to 36 V power supply with transient protection and ignition sense, two protected RS-232/RS-485 serial ports, two CAN bus interfaces, three noise and surge protected USB ports, and four isolated digital interfaces

3.6 EUT sub assemblies

Table 3.6-1: EUT sub assemblies

Description	Brand name	Model/Part number	Serial number
ReliaGATE 10-12	Eurotech	REGATE-10-12-GS04	Y118KNA0003
AC adapter	Sunny	SYS1541-2424	None

3.7 EUT exercise details

EUT was set to continuously transmit mode during tests, by test software provided by client.

The EUT runs a Linux operating system which allows for the testing to be performed using engineering test tools and scripts. Communication with the EUT is via a serial console or Ethernet connection which provides a Linux command line interface for execution of the test tools/scripts. These tools/scripts configure the radio modules to enable continuous transmission with the ability to adjust modulation, frequency and output power as required.

WiFi/BT – using a engineering test tool provided by the silicon vendor allowing for full radio control.

Cellular – using Linux scripts running AT command sequences provided by the cellular radio module vendor allowing for full radio control.

Linux operating system version: 4.9.57-eurotech-ti.

Section 4. Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

The EUT has WIFI and Bluetooth in 2.4 GHz band, WIFI is chosen to be the representative worst-case due to higher output power.

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5. Test conditions

5.1 Atmospheric conditions

In the laboratory, the following ambient conditions are respected for each test reported below:

Temperature	18 – 33 °C
Relative humidity	25 – 70 %
Air pressure	860 – 1060 mbar

The following instruments are used to monitor the environmental conditions:

Equipment	Manufacturer	Model no.	Asset no.	Cal date	Next cal.
Thermo-hygrometer data loggers	Testo	175-H2	20012380/305	2019-01	2021-01
Thermo-hygrometer data loggers	Testo	175-H2	38203337/703	2019-01	2021-01
Barometer	Castle	GPB 3300	072015	2019-12	2020-12

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$, for which the equipment was designed.

Section 6. Measurement uncertainty

6.1 Uncertainty of measurement

The measurement uncertainty was calculated for each test and quantity listed in this test report, according to CISPR 16-4-2 and other specific test standard and is documented in Nemko Spa working manual WML1002.

The assessment of conformity for each test performed on the equipment is performed not taking into account the measurement uncertainty. The two following possible verdicts are stated in the report:

P (Pass) - The measured values of the equipment respect the specification limit at the points tested. The specific risk of false accept is up to 50% when the measured result is close to the limit.

F (Fail) - One or more measured values of the equipment do not respect the specification limit at the points tested. The specific risk of false reject is up to 50% when the measured result is close to the limit.

Hereafter Nemko's measurement uncertainties are reported:

EUT	Type	Test	Range	Measurement Uncertainty	Notes
Transmitter	Conducted	Frequency error	0.001 MHz ÷ 40 GHz	0.08 ppm	(1)
			0.009 MHz ÷ 30 MHz	1.1 dB	(1)
		Carrier power	30 MHz ÷ 18 GHz	1.5 dB	(1)
		RF Output Power	18 MHz ÷ 40 GHz	3.0 dB	(1)
			40 MHz ÷ 140 GHz	5.0 dB	(1)
		Adjacent channel power	1 MHz ÷ 18 GHz	1.4 dB	(1)
			0.009 MHz ÷ 18 GHz	3.0 dB	(1)
		Conducted spurious emissions	18 GHz ÷ 40 GHz	4.2 dB	(1)
			40 GHz ÷ 220 GHz	6.0 dB	(1)
		Intermodulation attenuation	1 MHz ÷ 18 GHz	2.2 dB	(1)
		Attack time – frequency behaviour	1 MHz ÷ 18 GHz	2.0 ms	(1)
		Attack time – power behaviour	1 MHz ÷ 18 GHz	2.5 ms	(1)
		Release time – frequency behaviour	1 MHz ÷ 18 GHz	2.0 ms	(1)
		Release time – power behaviour	1 MHz ÷ 18 GHz	2.5 ms	(1)
		Transient behaviour of the transmitter – Transient frequency behaviour	1 MHz ÷ 18 GHz	0.2 kHz	(1)
		Transient behaviour of the transmitter – Power level slope	1 MHz ÷ 18 GHz	9%	(1)
		Frequency deviation - Maximum permissible frequency deviation	0.001 MHz ÷ 18 GHz	1.3%	(1)
		Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz	0.001 MHz ÷ 18 GHz	0.5 dB	(1)
	Radiated	Dwell time	-	3%	(1)
		Hopping Frequency Separation	0.01 MHz ÷ 18 GHz	1%	(1)
		Occupied Channel Bandwidth	0.01 MHz ÷ 18 GHz	2%	(1)
		Modulation Bandwidth	0.01 MHz ÷ 18 GHz	2%	(1)
			0.009 MHz ÷ 26.5 GHz	6.0 dB	(1)
		Radiated spurious emissions	26.5 GHz ÷ 66 GHz	8.0 dB	(1)
			66 GHz ÷ 220 GHz	10 dB	(1)
	Effective radiated power transmitter		10 kHz ÷ 26.5 GHz	6.0 dB	(1)
			26.5 GHz ÷ 66 GHz	8.0 dB	(1)
			66 GHz ÷ 220 GHz	10 dB	(1)

EUT	Type	Test	Range	Measurement Uncertainty	Notes
Receiver	Radiated	Radiated spurious emissions	0.009 MHz ÷ 26.5 GHz	6.0 dB	(1)
			26.5 GHz ÷ 66 GHz	8.0 dB	(1)
			66 GHz ÷ 220 GHz	10 dB	(1)
	Sensitivity measurement		1 MHz ÷ 18 GHz	6.0 dB	(1)
	Conducted	Conducted spurious emissions	0.009 MHz ÷ 18 GHz	3.0 dB	(1)
			18 GHz ÷ 40 GHz	4.2 dB	(1)
			40 GHz ÷ 220 GHz	6.0 dB	(1)

NOTES:

(1) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95 %

Section 7. Test equipment

7.1 Test equipment list

Table 7.1-1: Equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
EMI receiver (20 Hz ÷ 8 GHz)	Rohde & Schwarz	ESU8	100202	2020-01	2021-01
EMI receiver (20 Hz ÷ 8 GHz)	Rohde & Schwarz	ESW44	101620	2019-08	2020-08
Trilog Antenna (30 MHz ÷ 7 GHz)	Schwarzbeck	VULB 9162	9162-025	2018-07	2021-07
Bilog antenna (1 ÷ 18 GHz)	Schwarzbeck	STLP 9148	9148-123	2018-07	2021-07
Preamplifier (1 ÷ 18 GHz)	Schwarzbeck	BBV 9718	9718-137	2019-09	2020-09
Horn antenna (18 ÷ 40 GHz)	A.H. System	SAS-574	558	2020-01	2023-01
Preamplifier (18 ÷ 40 GHz)	Miteq	JS44-18004000-35-8P-R	1.627	2019-09	2020-09
Controller	Maturo	FCU3.0	10041	NCR	NCR
Tilt antenna mast	Maturo	TAM4.0-E	10042	NCR	NCR
Turntable	Maturo	TT4.0-5T	2.527	NCR	NCR
Semi-anechoic chamber	Nemko	10m semi-anechoic chamber	530	2019-09	2021-09
Shielded room	Siemens	10m control room	1947	NCR	NCR
LISN three phase (9 kHz ÷ 30 MHz)	Rohde & Schwarz	ESH2-Z5	872 460/041	2019-09	2020-09
Shielded room	Siemens	Conducted emission test room	1862	NCR	NCR

Note: NCR - no calibration required, VOU - verify on use

Section 8. Testing data

8.1 FCC 15.209 and RSS-GEN section 8.9 Radiated emission limits; general requirements

8.1.1 Definitions and limits

FCC:

(f) In accordance with §15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in §15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in §15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in §15.109 that are applicable to the incorporated digital device.

ISED:

Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in Table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

Table 8.1-1: FCC §15.209 and RSS-Gen – Radiated emission limits

Frequency, MHz	Field strength of emissions μV/m	Field strength of emissions dB μ V/m	Measurement distance, m
0.009–0.490	2400/F	67.6 – 20 × log ₁₀ (F)	300
0.490–1.705	24000/F	87.6 – 20 × log ₁₀ (F)	30
1.705–30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Notes: In the emission table above, the tighter limit applies at the band edges.

For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test

Table 8.1-2: ISED restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	12.57675–12.57725	399.9–410	7.25–7.75
0.495–0.505	13.36–13.41	608–614	8.025–8.5
2.1735–2.1905	16.42–16.423	960–1427	9.0–9.2
3.020–3.026	16.69475–16.69525	1435–1626.5	9.3–9.5
4.125–4.128	16.80425–16.80475	1645.5–1646.5	10.6–12.7
4.17725–4.17775	25.5–25.67	1660–1710	13.25–13.4
4.20725–4.20775	37.5–38.25	1718.8–1722.2	14.47–14.5
5.677–5.683	73–74.6	2200–2300	15.35–16.2
6.215–6.218	74.8–75.2	2310–2390	17.7–21.4
6.26775–6.26825	108–138	2483.5–2500	22.01–23.12
6.31175–6.31225	149.9–150.05	2655–2900	23.6–24.0
8.291–8.294	156.52475–156.52525	3260–3267	31.2–31.8
8.362–8.366	156.7–156.9	3332–3339	36.43–36.5
8.37625–8.38675	162.0125–167.17	3345.8–3358	
8.41425–8.41475	167.72–173.2	3500–4400	
12.29–12.293	240–285	4500–5150	Above 38.6
12.51975–12.52025	322–335.4	5350–5460	

Note: Certain frequency bands listed in Table 8.1-2 and above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

Table 8.1-3: FCC restricted frequency bands

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	Above 38.6
13.36–13.41			

8.1.2 Test summary

Test start date	April 9, 2020
Test engineer	P. Barbieri

8.1.3 Observations, settings and special notes

The spectrum was searched from 30 MHz to 40 GHz.

EUT's LTE and WIFI transmitters were set to transmit continuously, different channel setting has been investigated as per provided by client's setup, only the worst-case is presented.

Radiated measurements were performed at a distance of 3 m for frequency range below 18 GHz, and 1 m for frequency range above 18 GHz. No inter-modulation products emissions were detected above 18 GHz within 6 dB below the limit.

Spectrum analyzer settings for frequencies below 30 MHz:

Detector mode	Quasi-Peak
Resolution bandwidth	9 kHz
Video bandwidth	30 kHz
Trace mode	Max Hold
Measurement time	100 ms

Spectrum analyser settings for radiated measurements within restricted bands 30 MHz to 1 GHz:

Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Detector mode:	Peak
Trace mode:	Max Hold

Spectrum analyser settings for average radiated measurements within restricted bands above 1 GHz:

Resolution bandwidth:	1 MHz
Video bandwidth:	10 Hz
Detector mode:	Peak
Trace mode:	Max Hold

8.1.4 Test data for REGATE-10-12-GS04

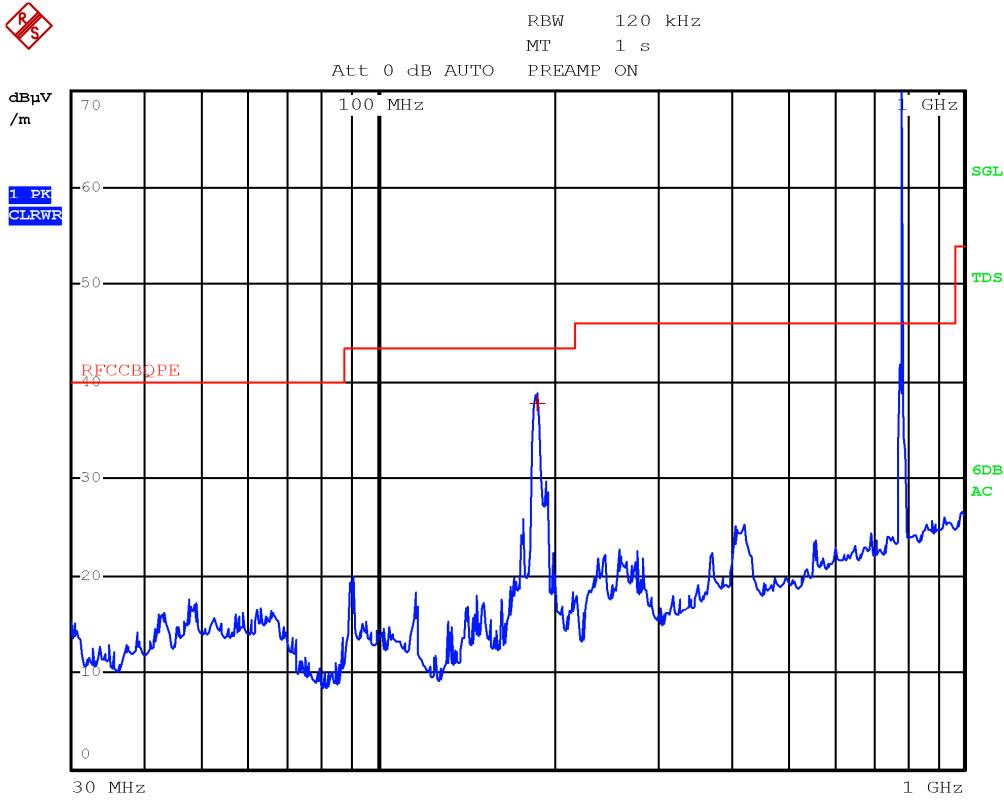


Figure 8.1-1: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
186.8000	37.8	43.5	-5.7	QP

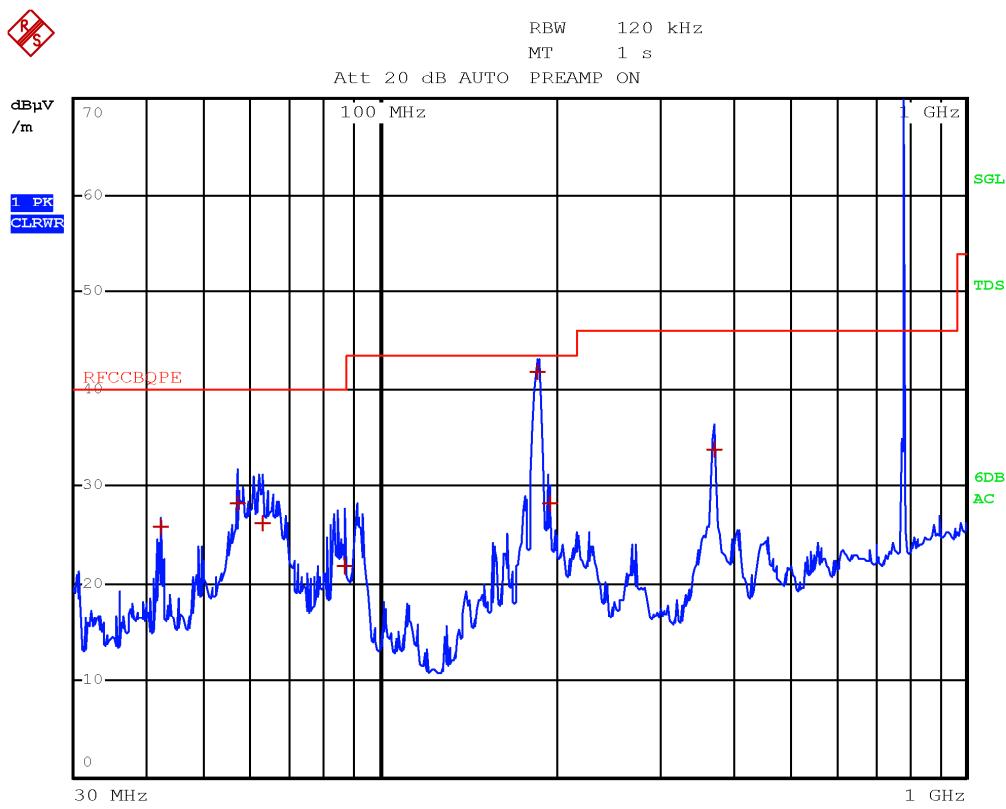


Figure 8.1-2: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
42.2800	25.9	40.0	-14.1	QP
57.0400	28.2	40.0	-11.8	QP
63.1200	26.3	40.0	-13.7	QP
87.1200	21.8	40.0	-18.2	QP
185.9600	41.9	43.5	-1.6	QP
194.9600	28.3	43.5	-15.2	QP
372.0000	33.8	46.0	-12.2	QP

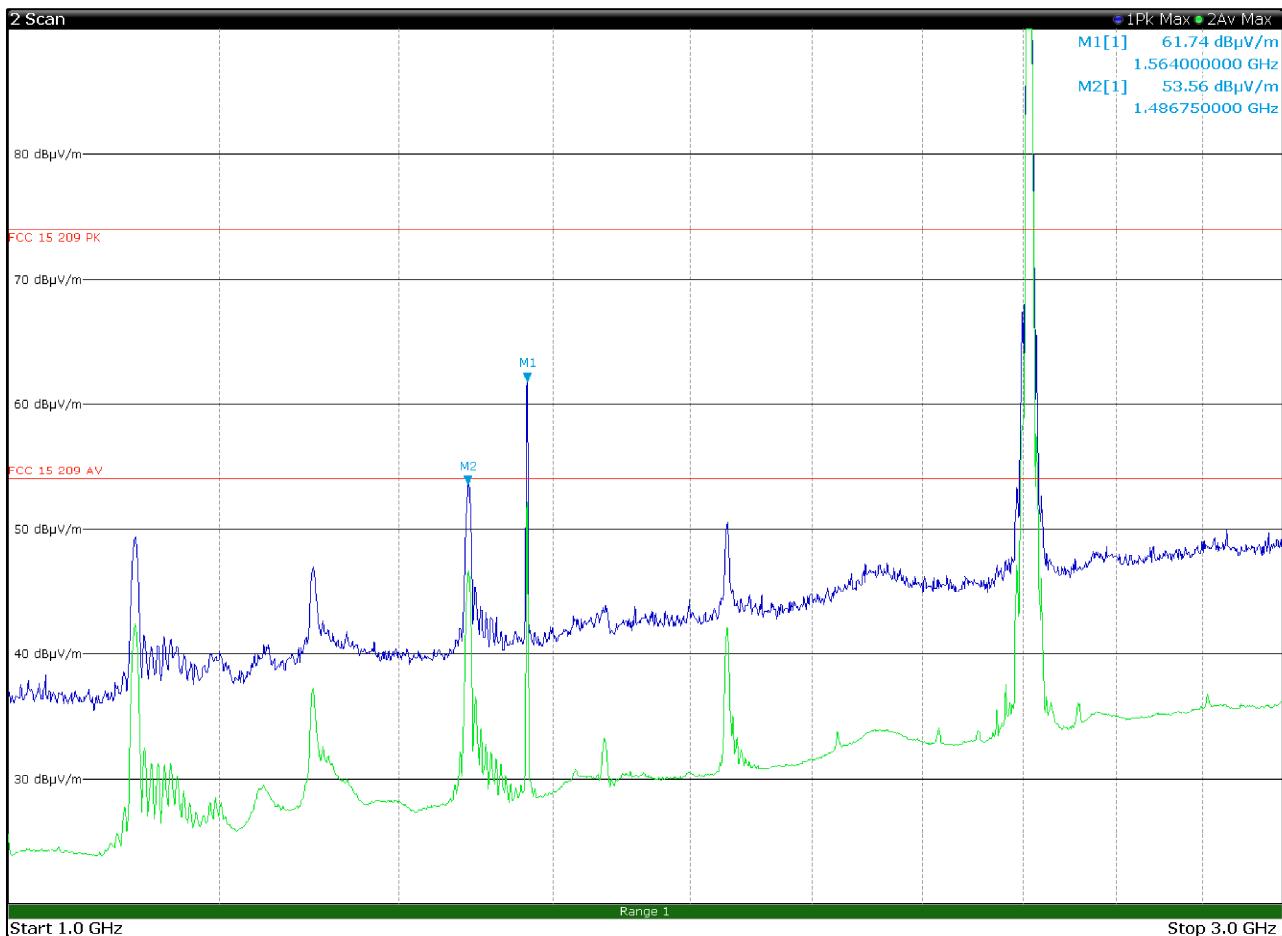


Figure 8.1-3: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1.5640	61.8	82.2	-20.4	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

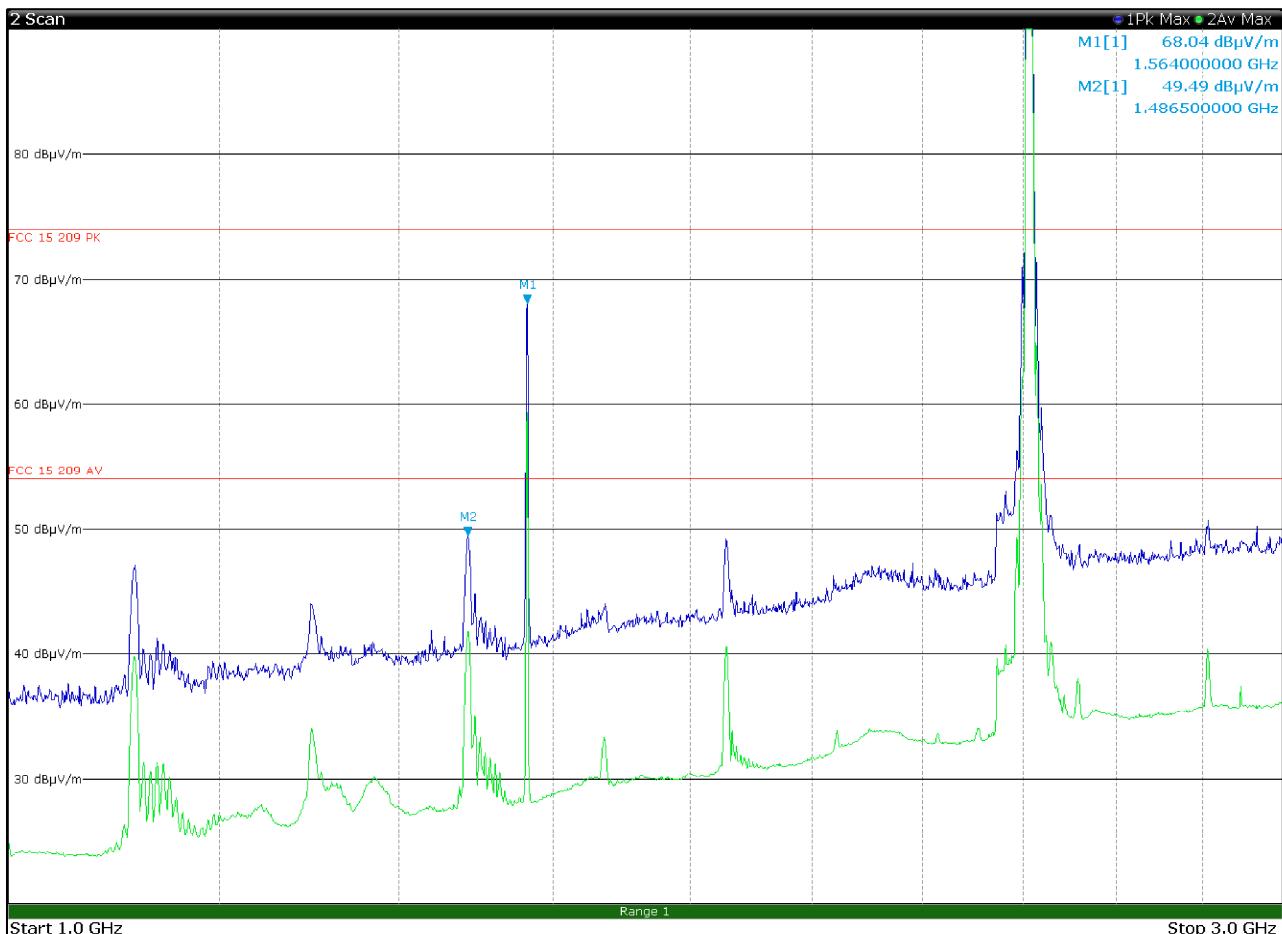


Figure 8.1-4: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1.5640	68.1	82.2	-14.1	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

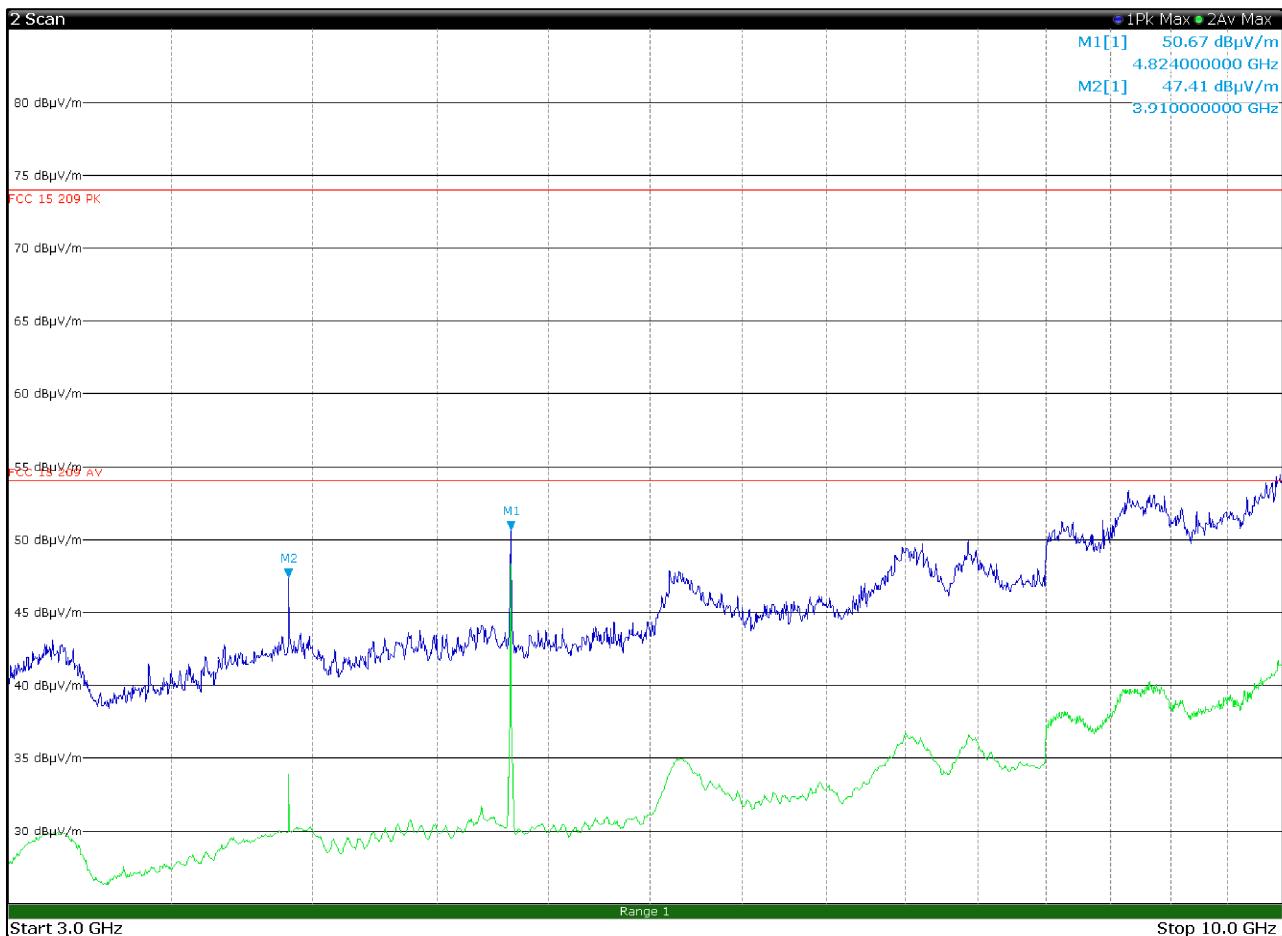


Figure 8.1-5: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

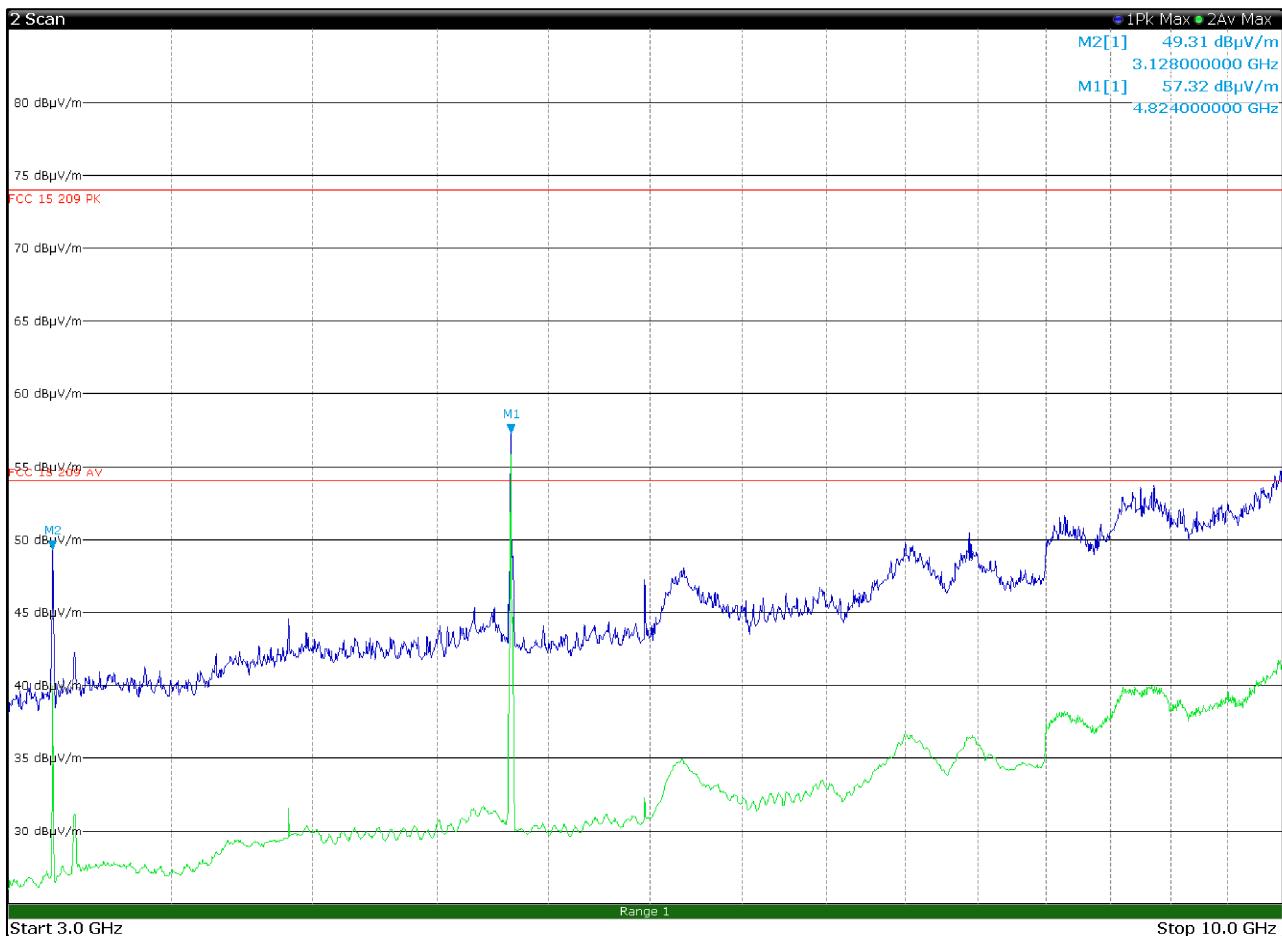


Figure 8.1-6: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
4.8240	57.4	74.0	-16.1	PK
4.8240	53.9	54.0	-0.1	AV

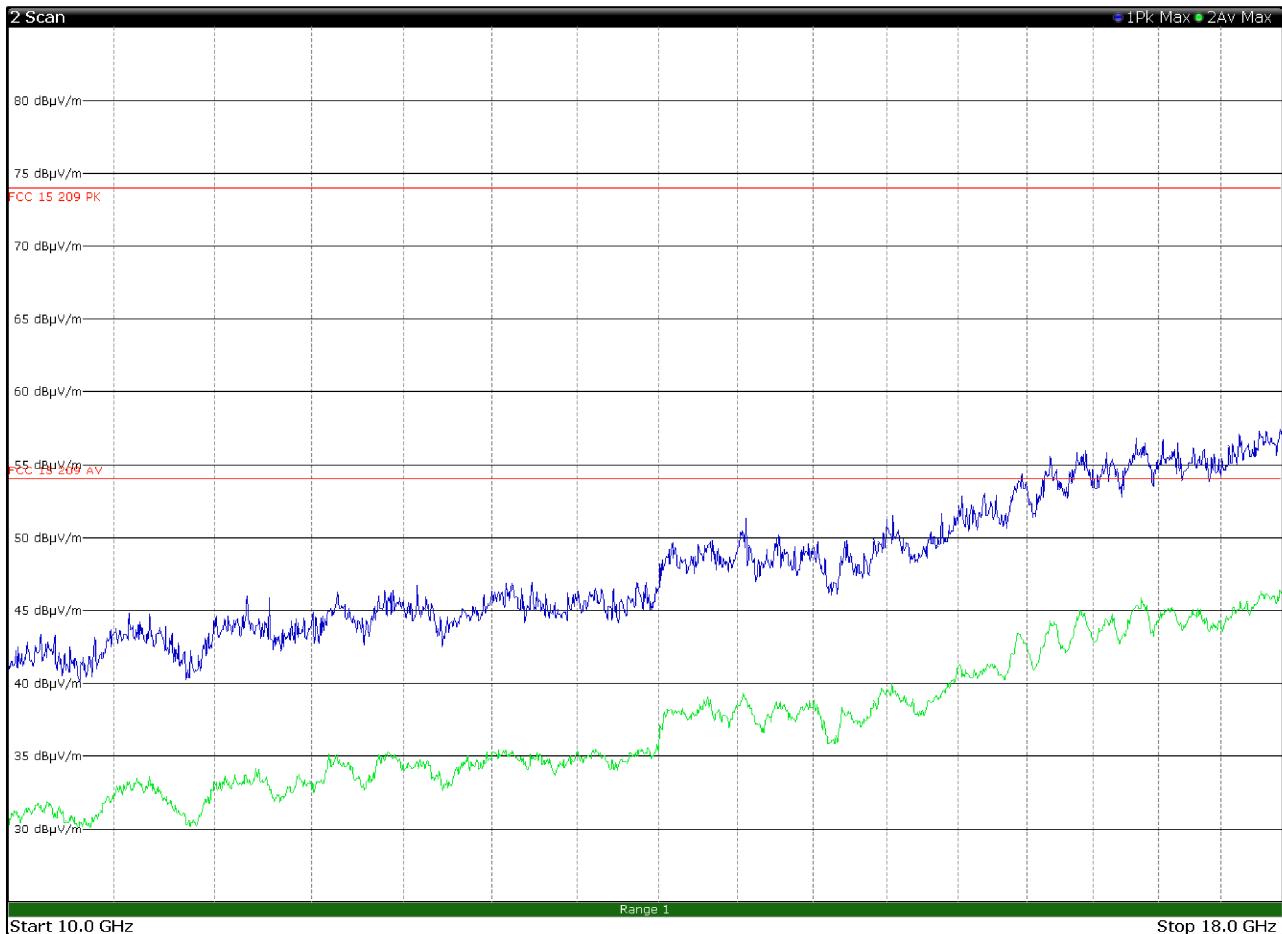


Figure 8.1-7: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

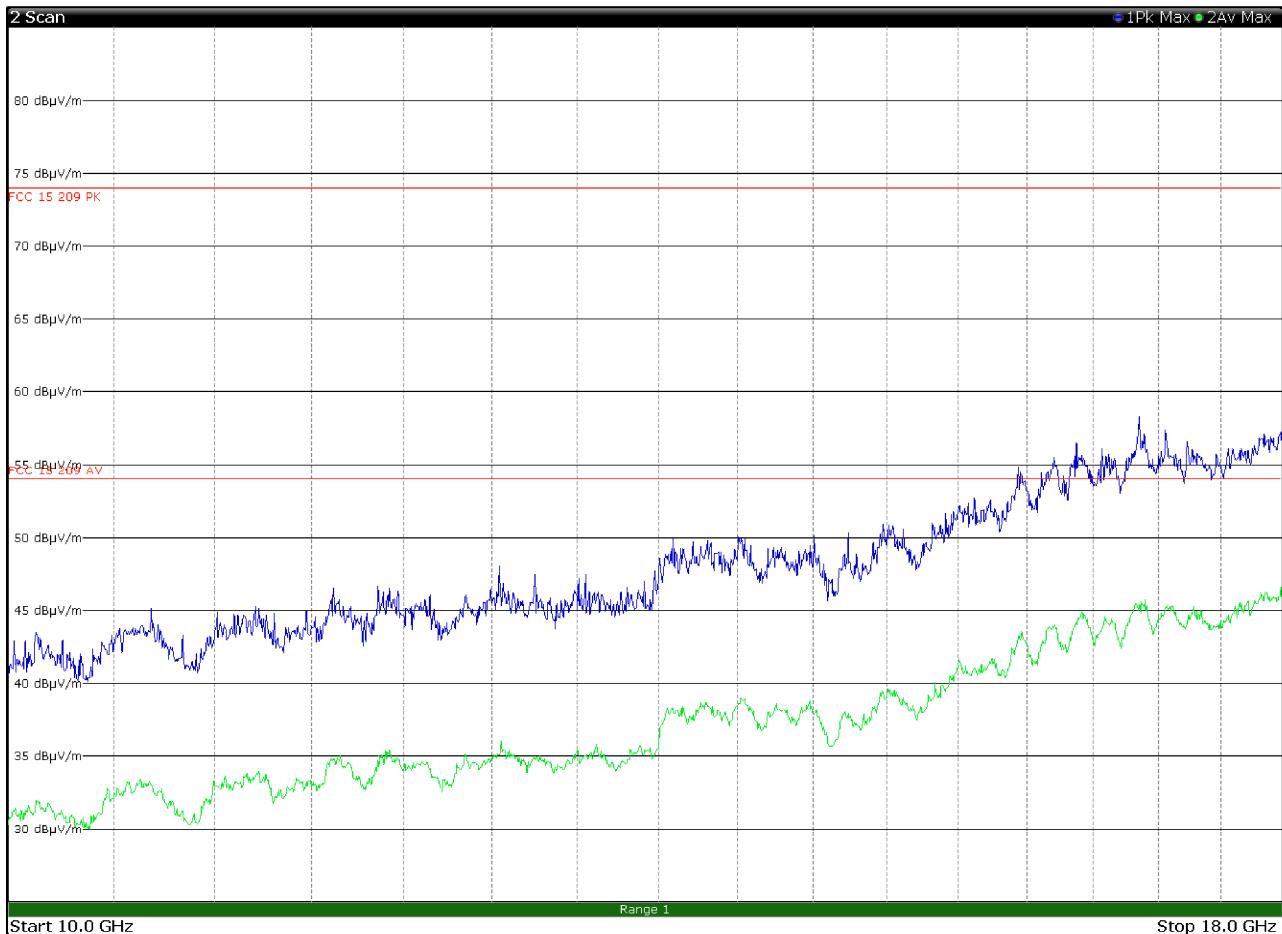


Figure 8.1-8: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

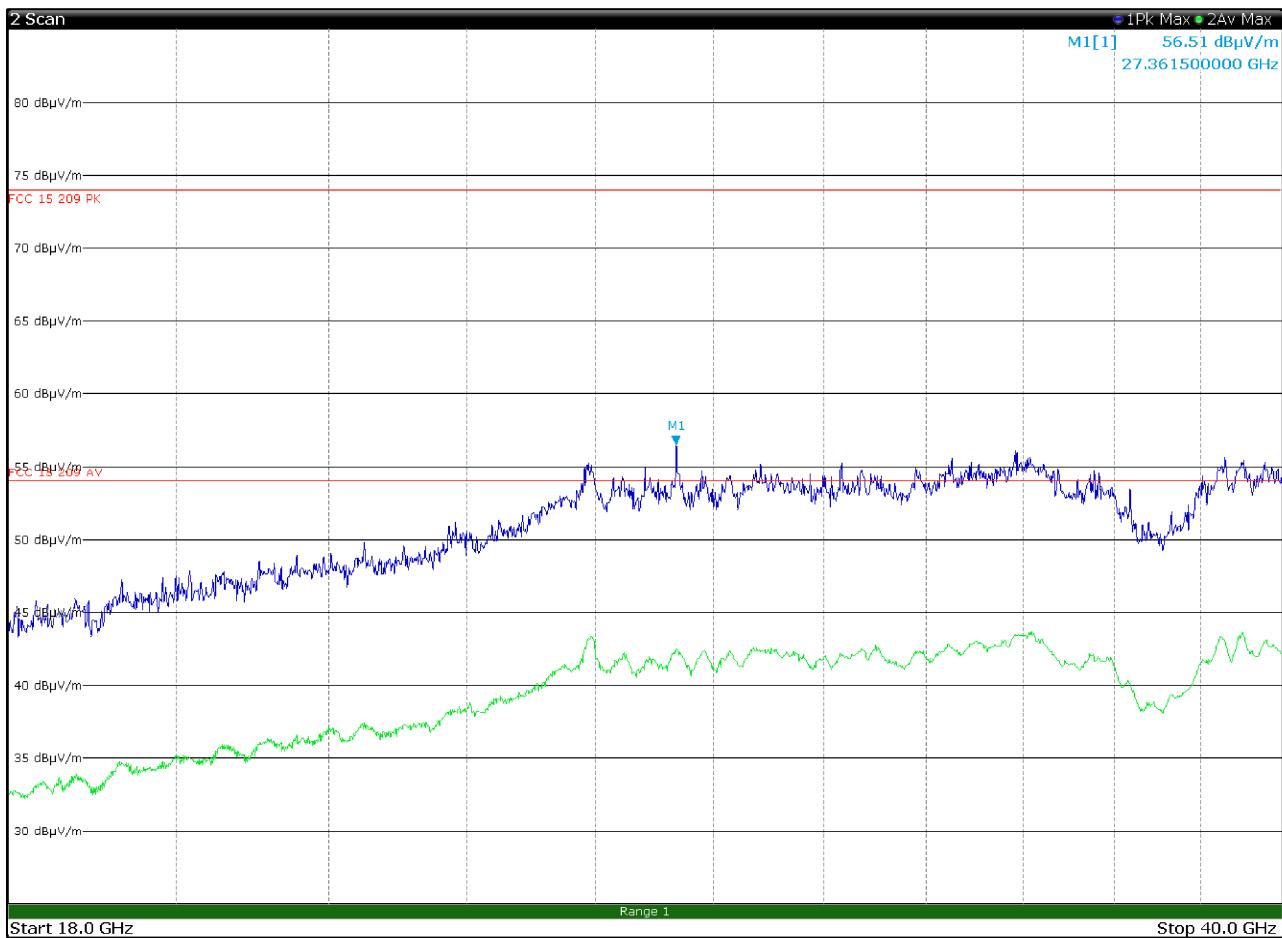


Figure 8.1-9: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

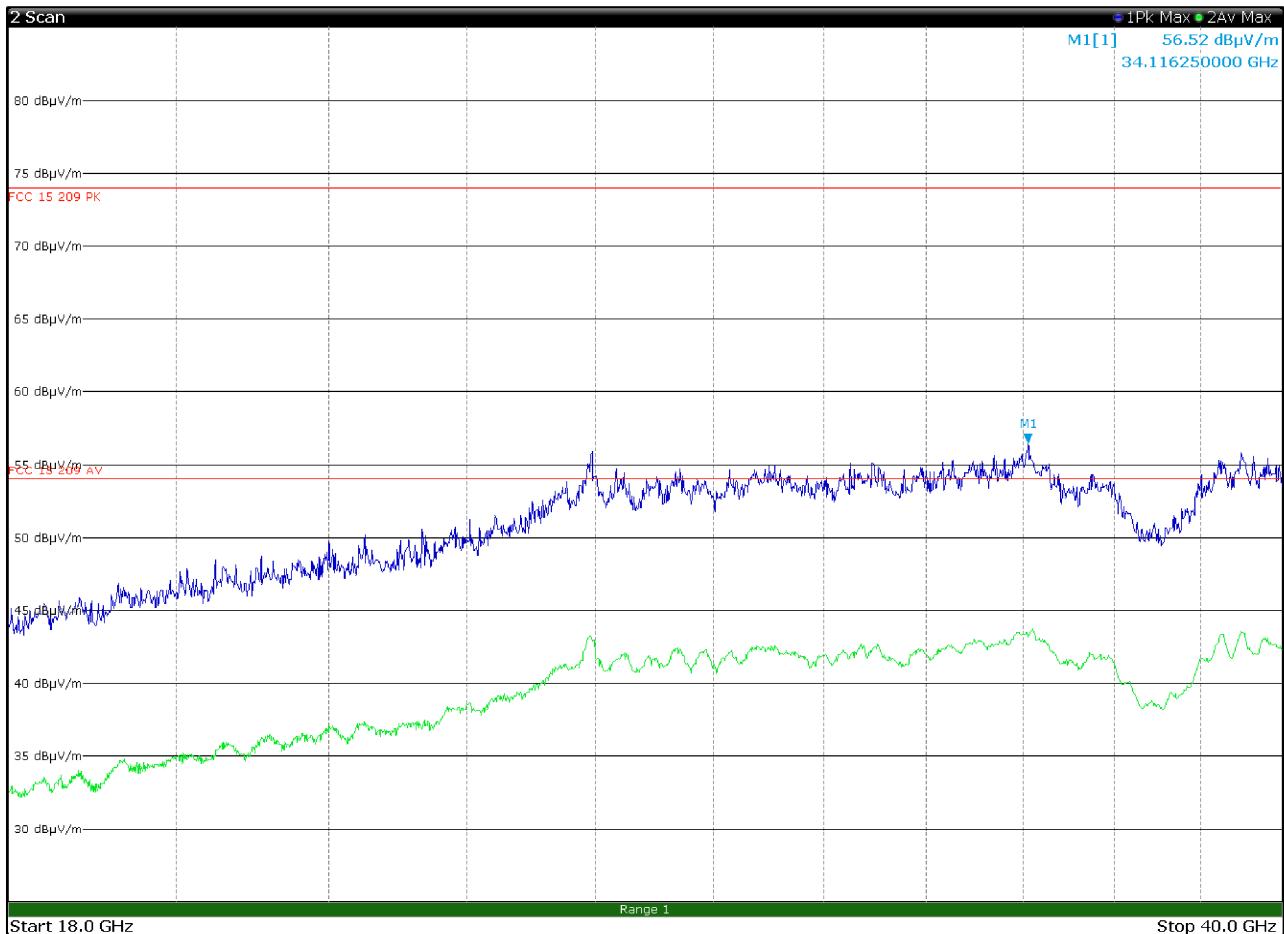


Figure 8.1-10: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

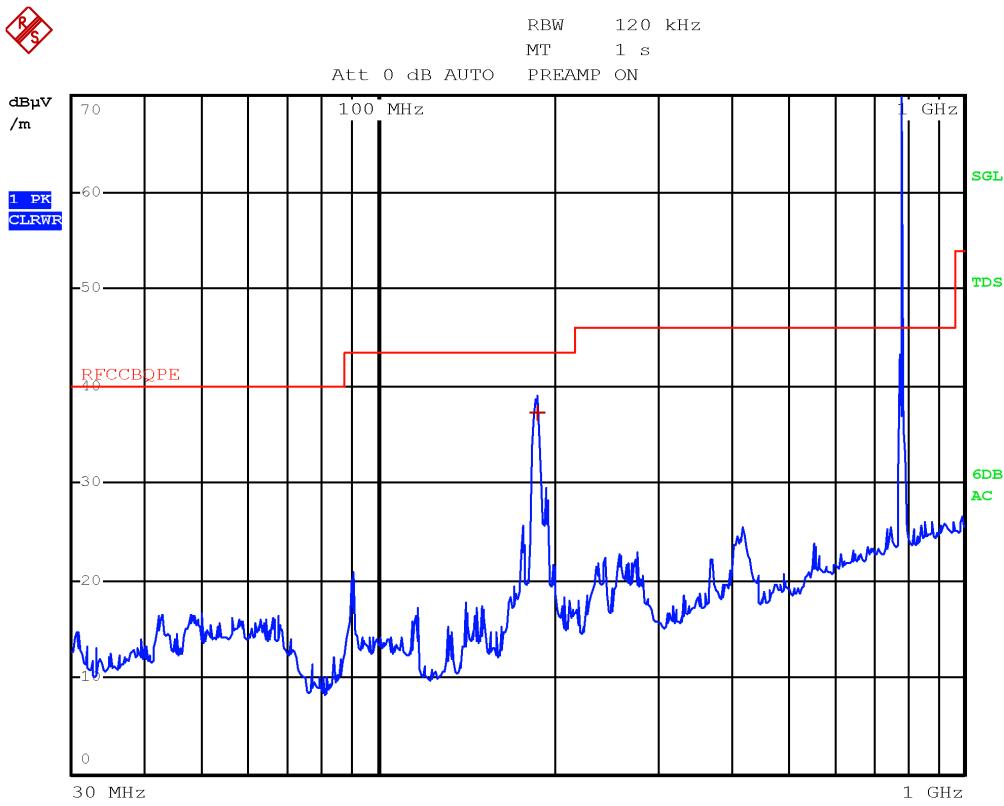


Figure 8.1-11: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
186.4400	37.3	43.5	-6.2	QP

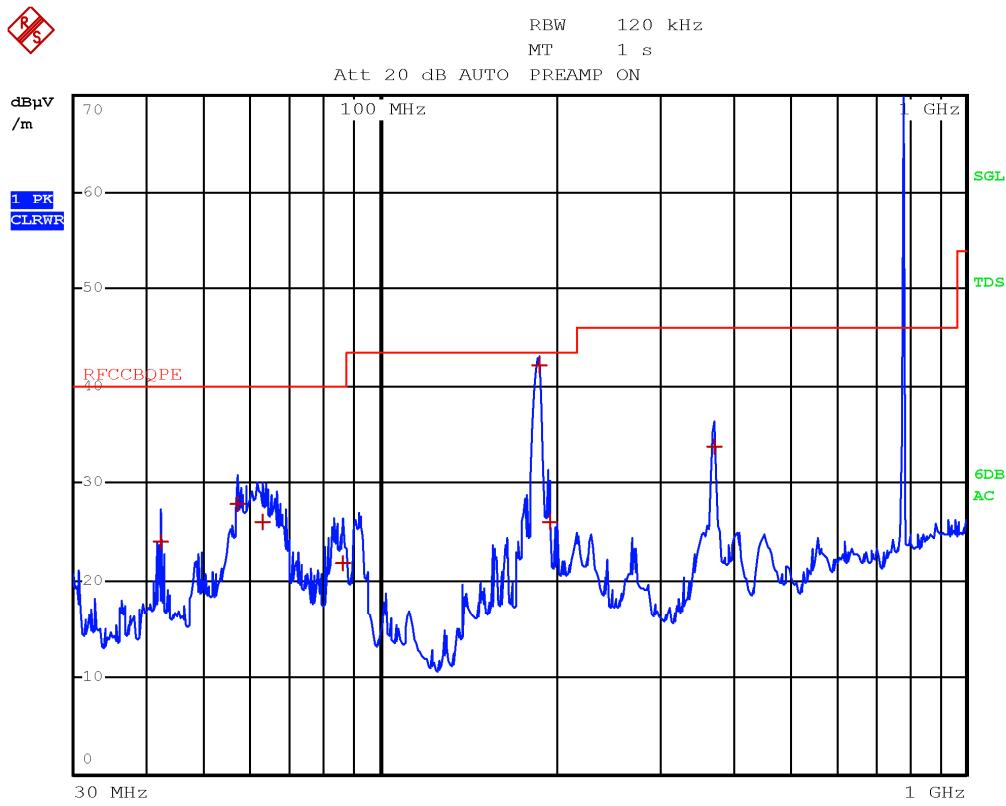


Figure 8.1-12: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
42.3200	24.1	40.0	-15.9	QP
57.0400	27.9	40.0	-12.1	QP
63.0400	26.0	40.0	-14.0	QP
86.6800	21.9	40.0	-18.1	QP
186.5200	42.3	43.5	-1.2	QP
195.2000	26.1	43.5	-17.4	QP
372.5600	33.7	46.0	-12.3	QP

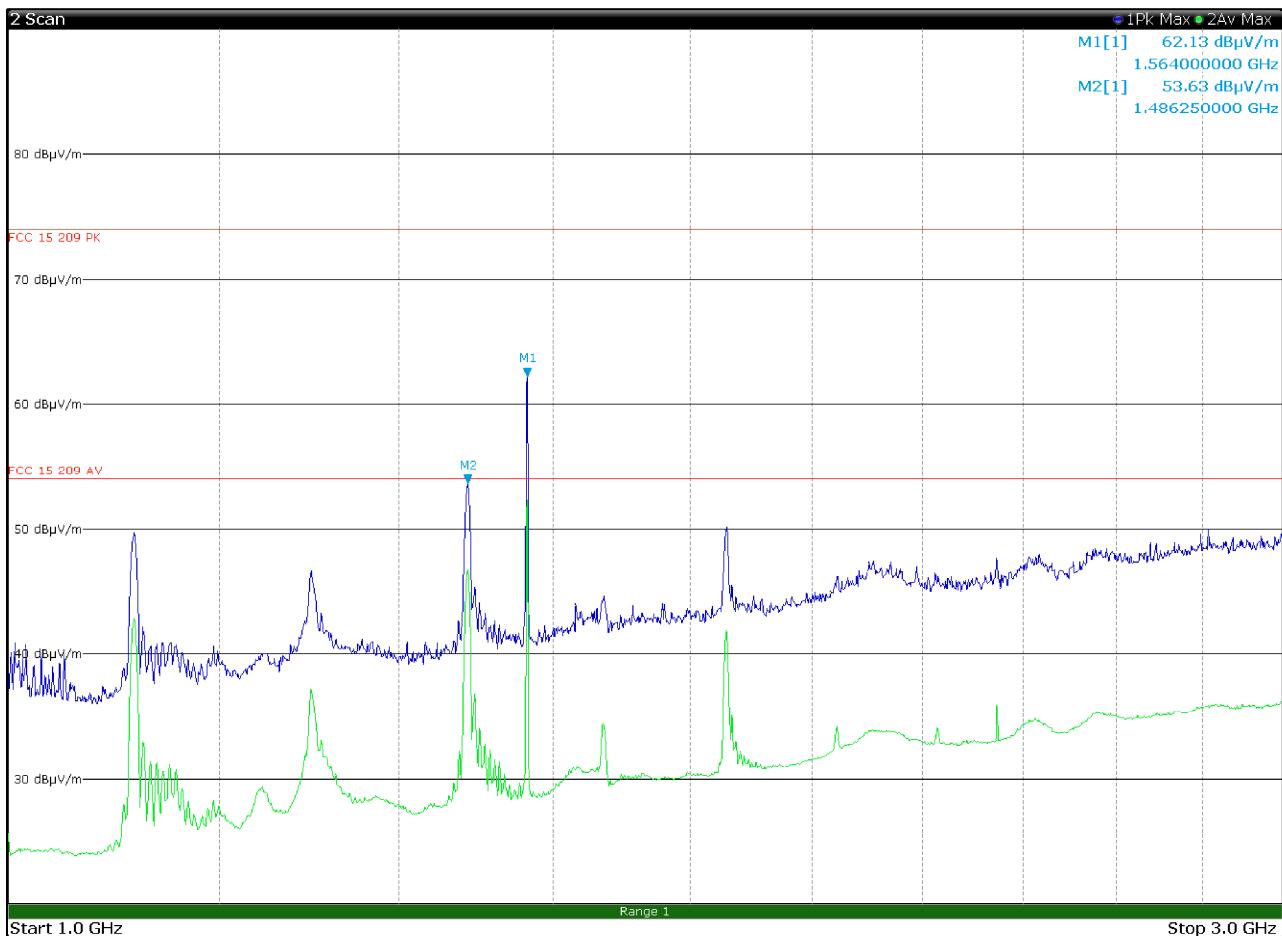


Figure 8.1-13: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1.5640	62.2	82.2	-20.0	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

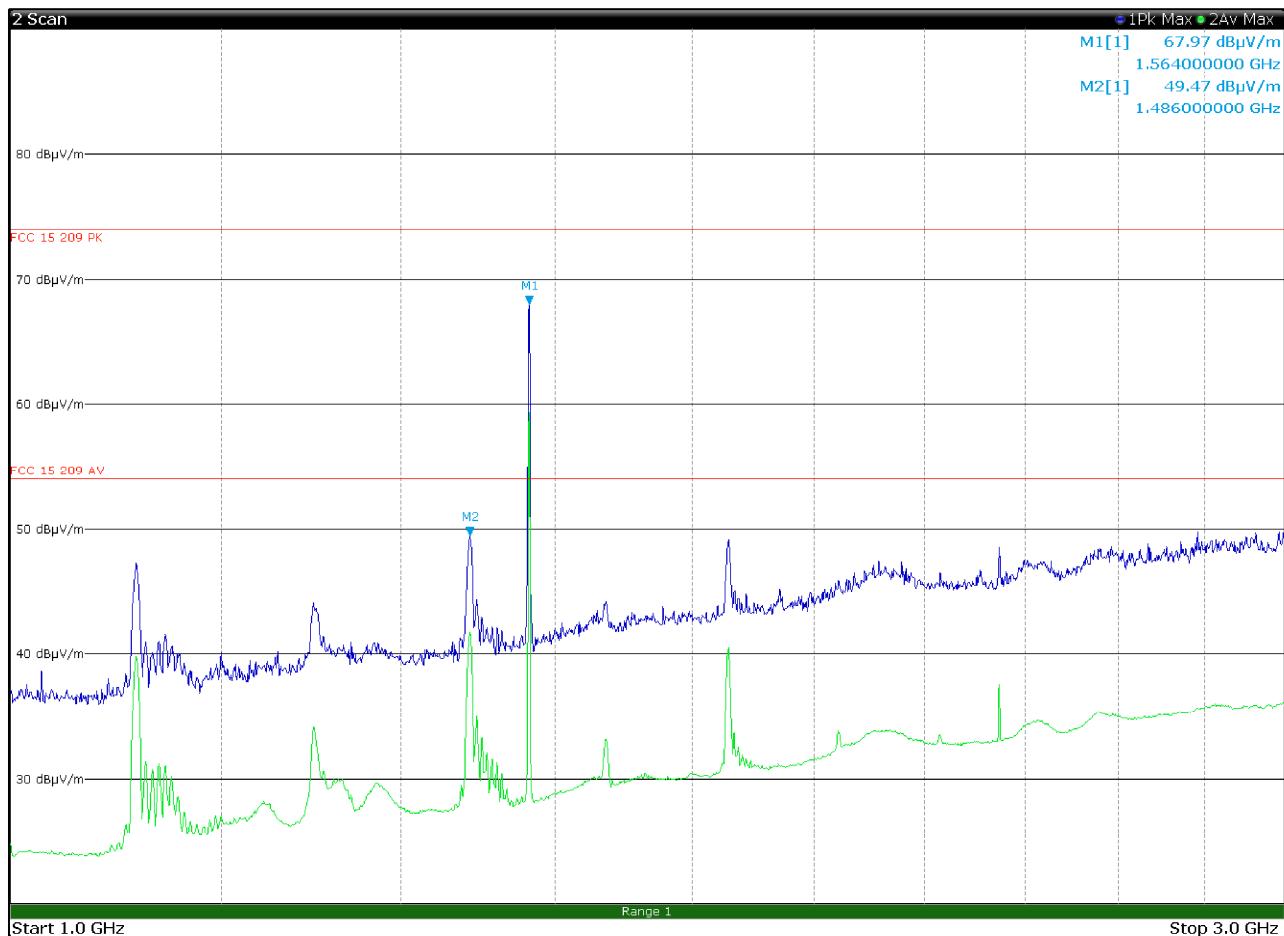


Figure 8.1-14: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1.5640	68.0	82.2	-14.2	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

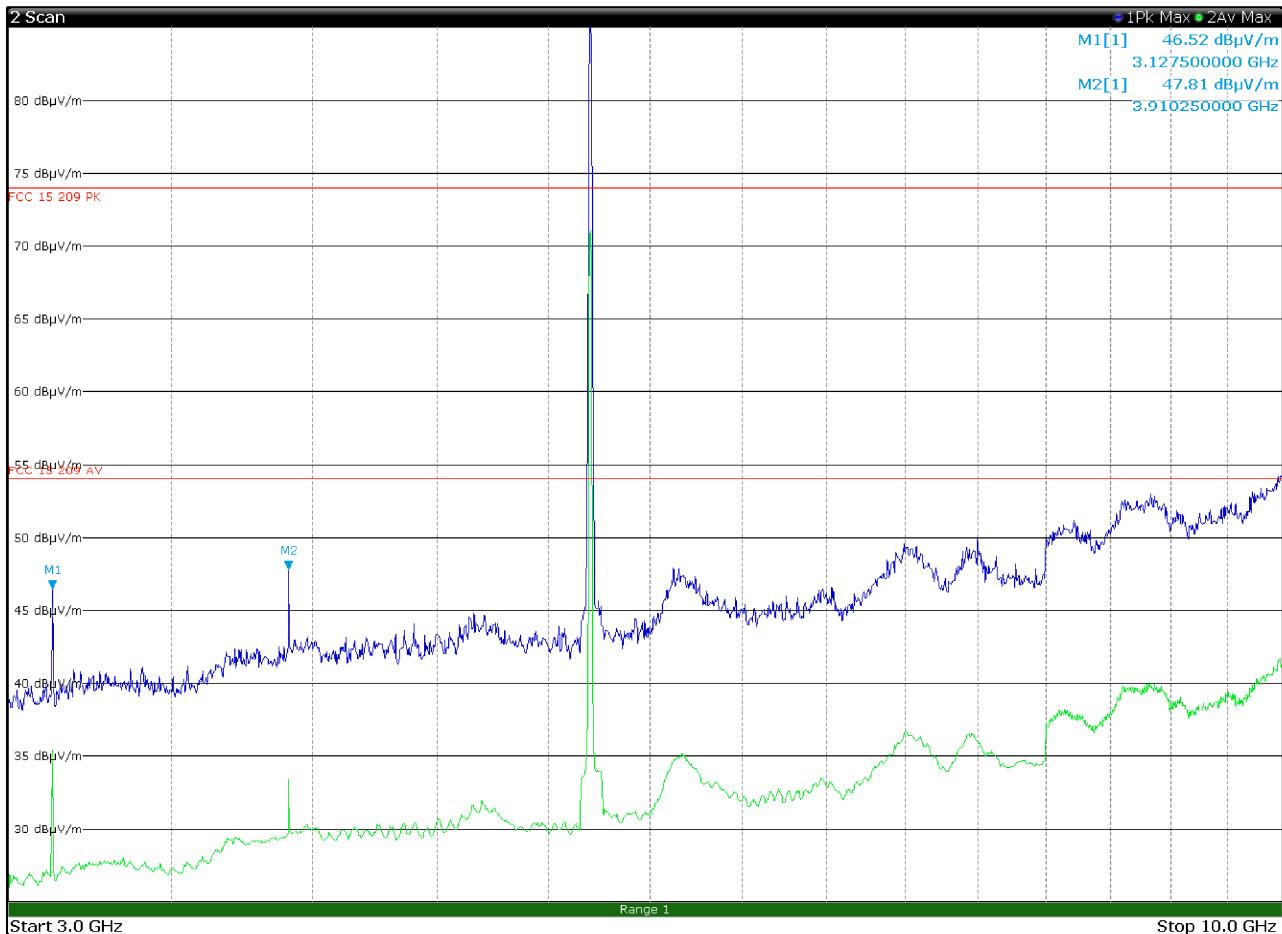


Figure 8.1-15: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

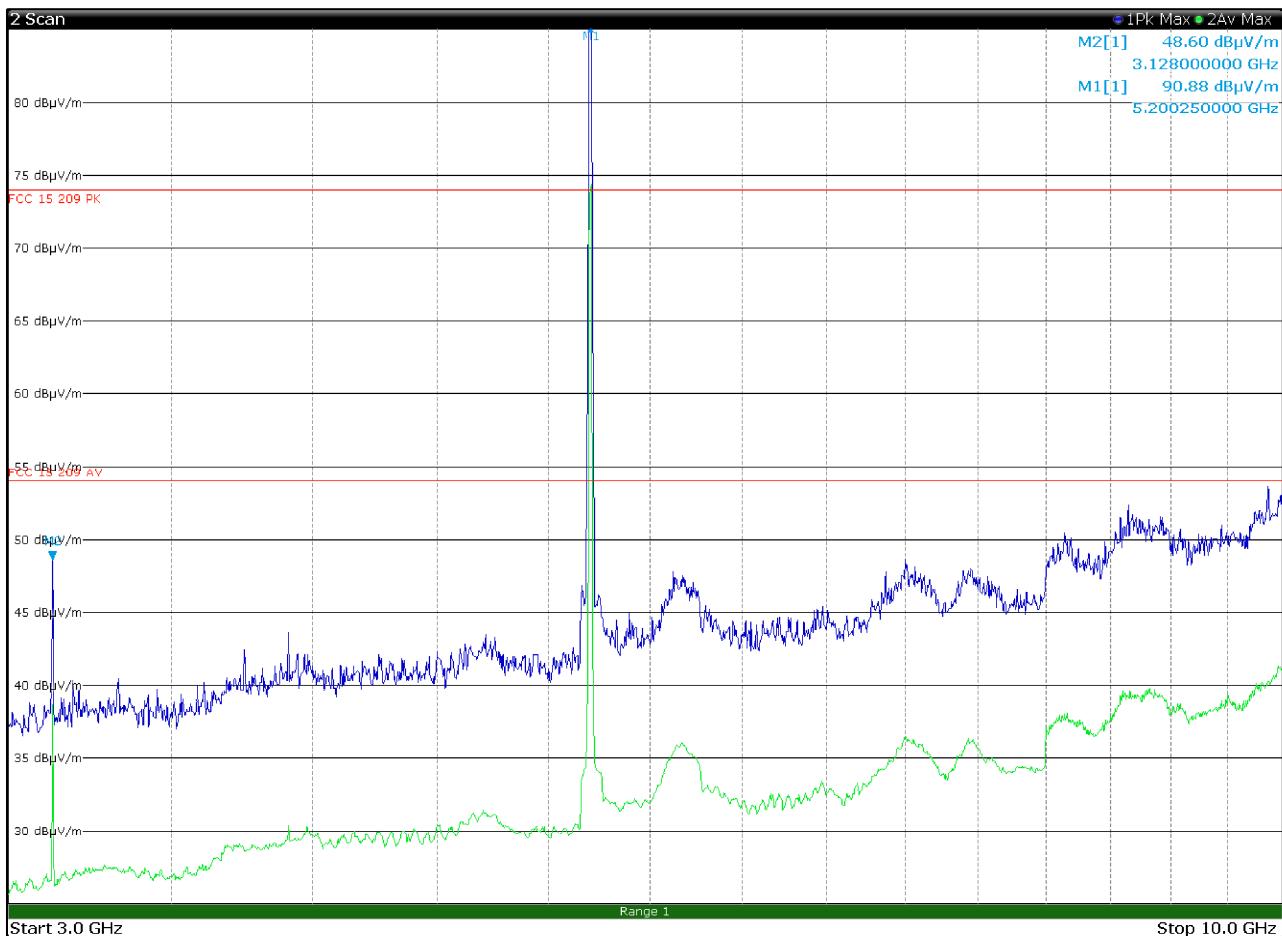


Figure 8.1-16: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

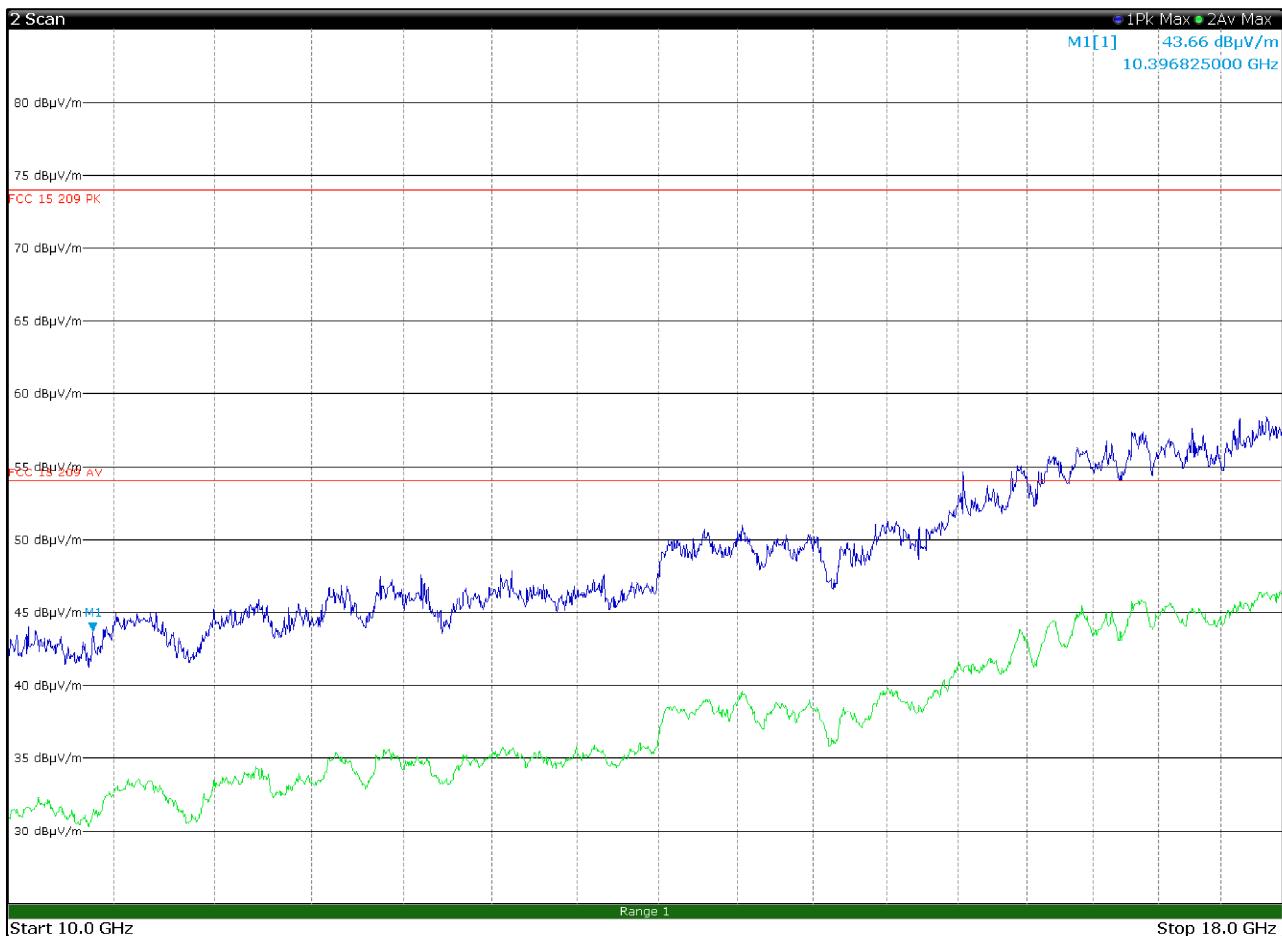


Figure 8.1-17: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 1

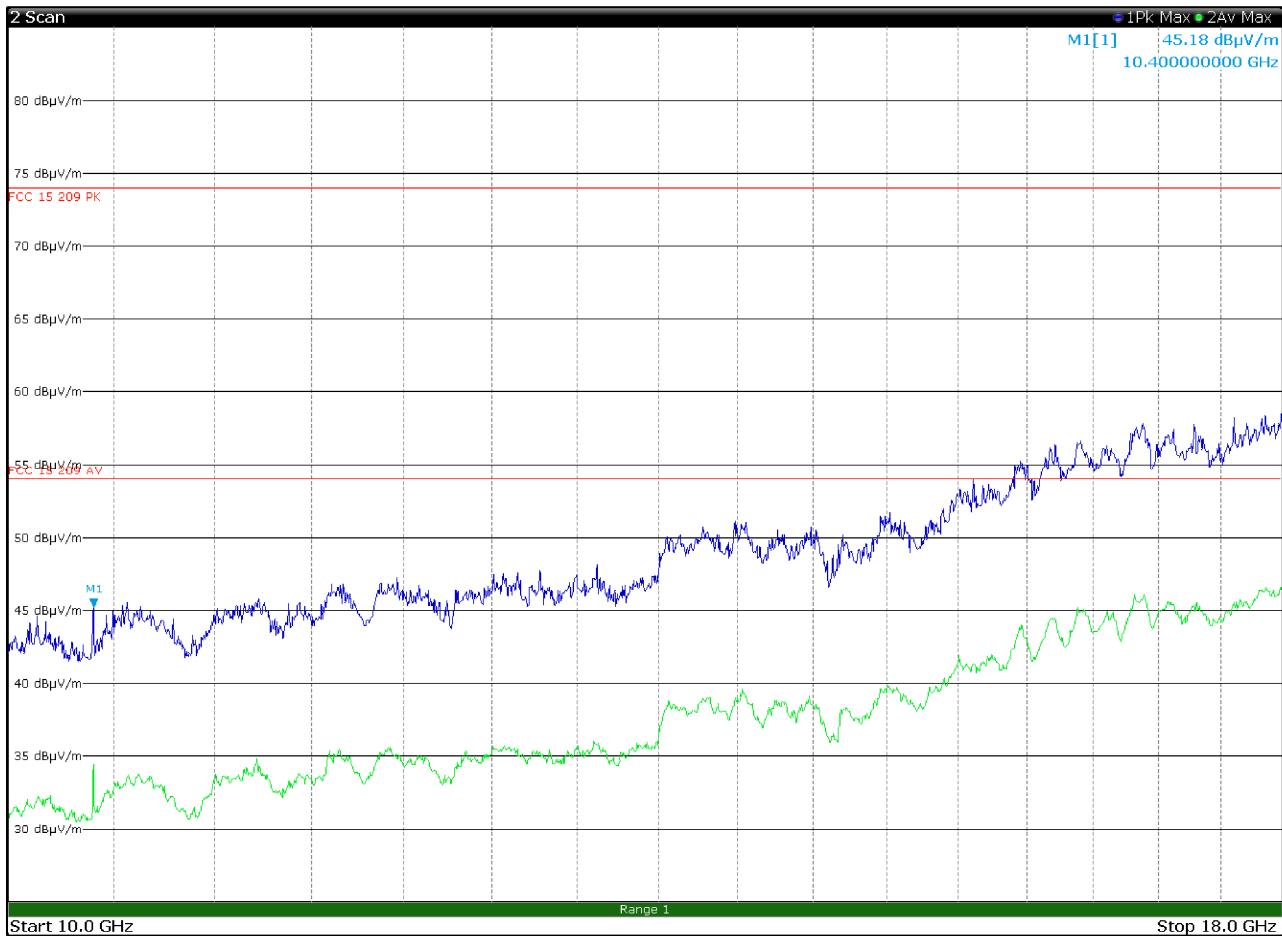


Figure 8.1-18: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 1

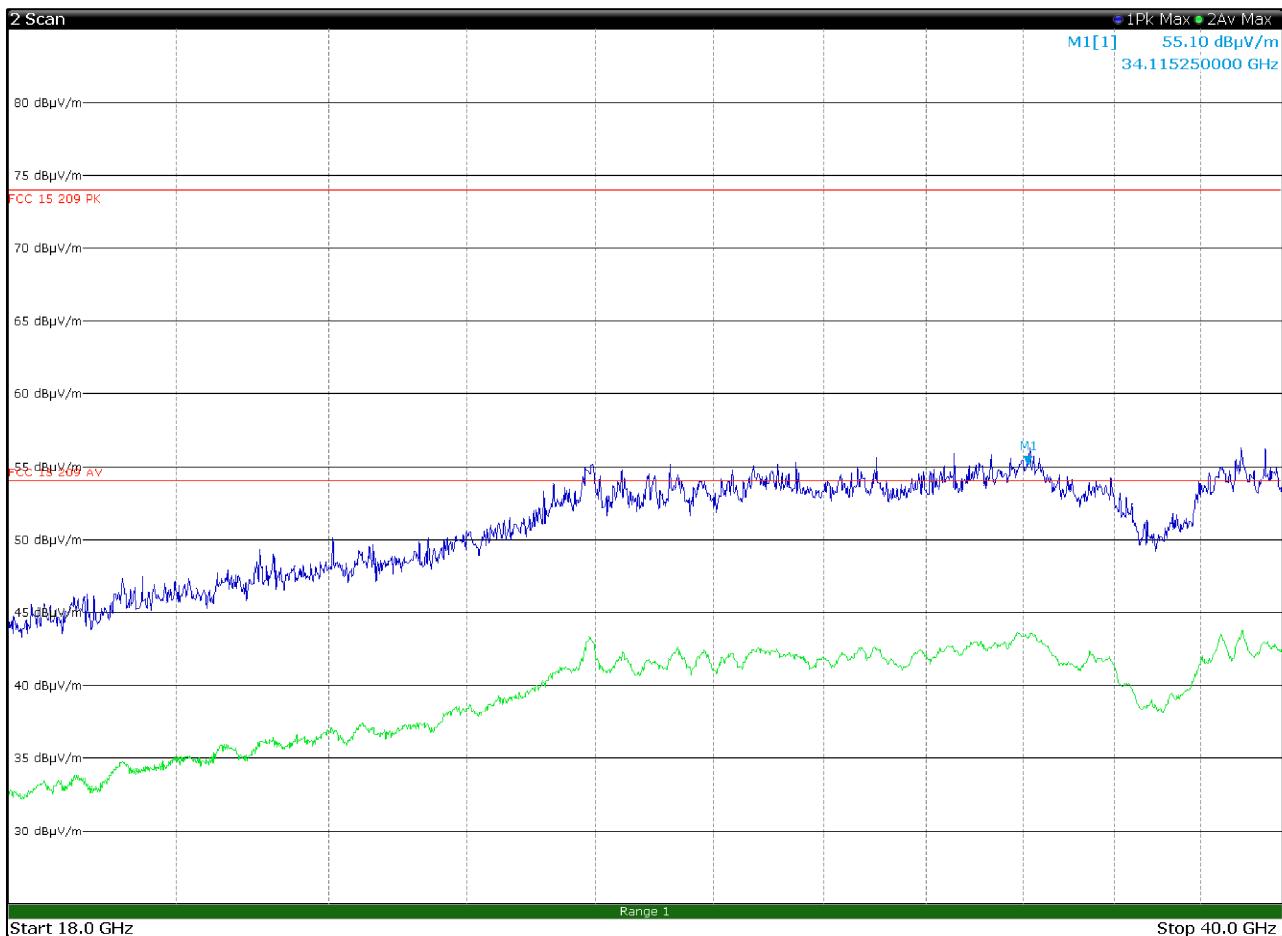


Figure 8.1-19: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 1

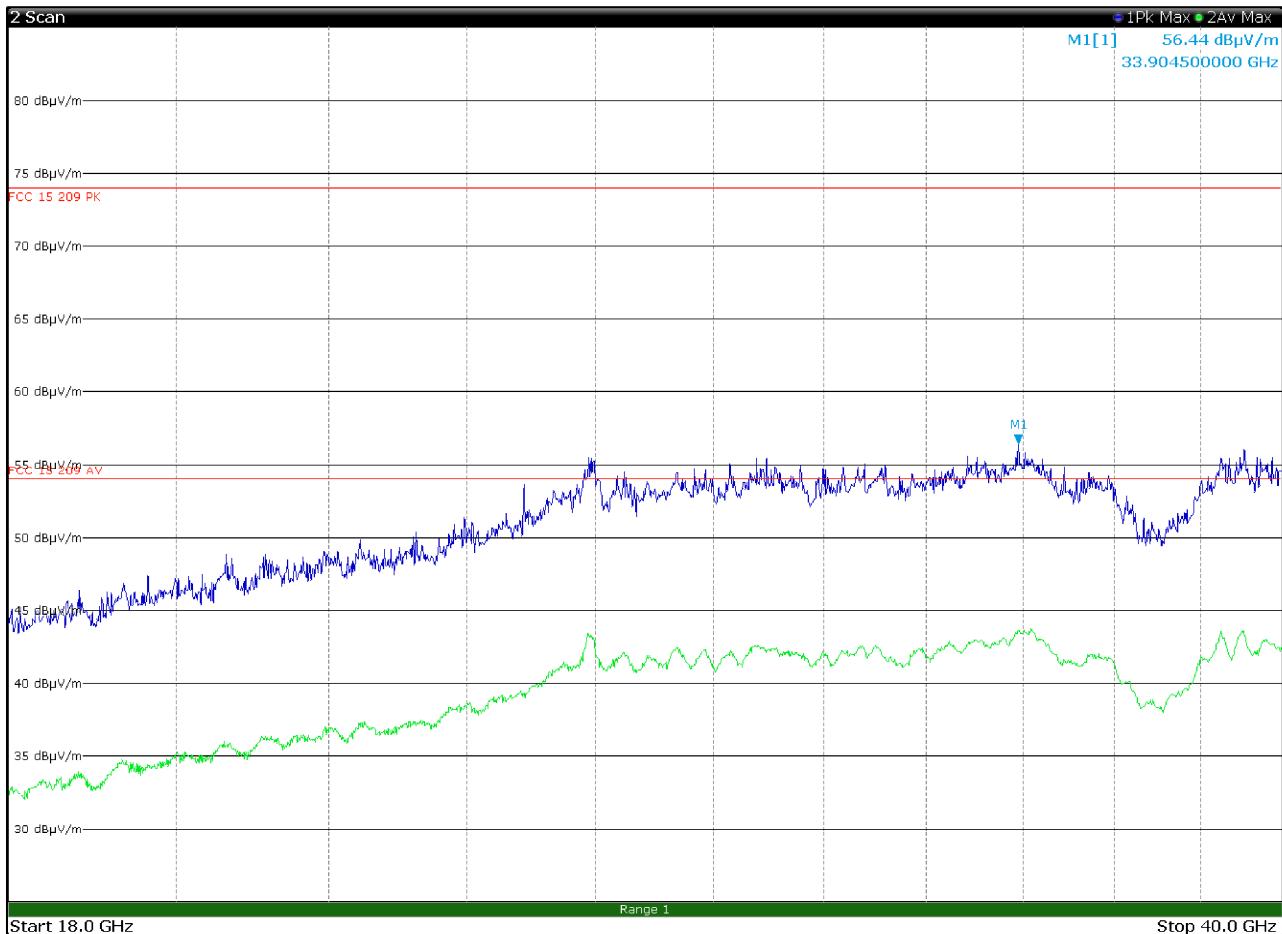


Figure 8.1-20: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 1

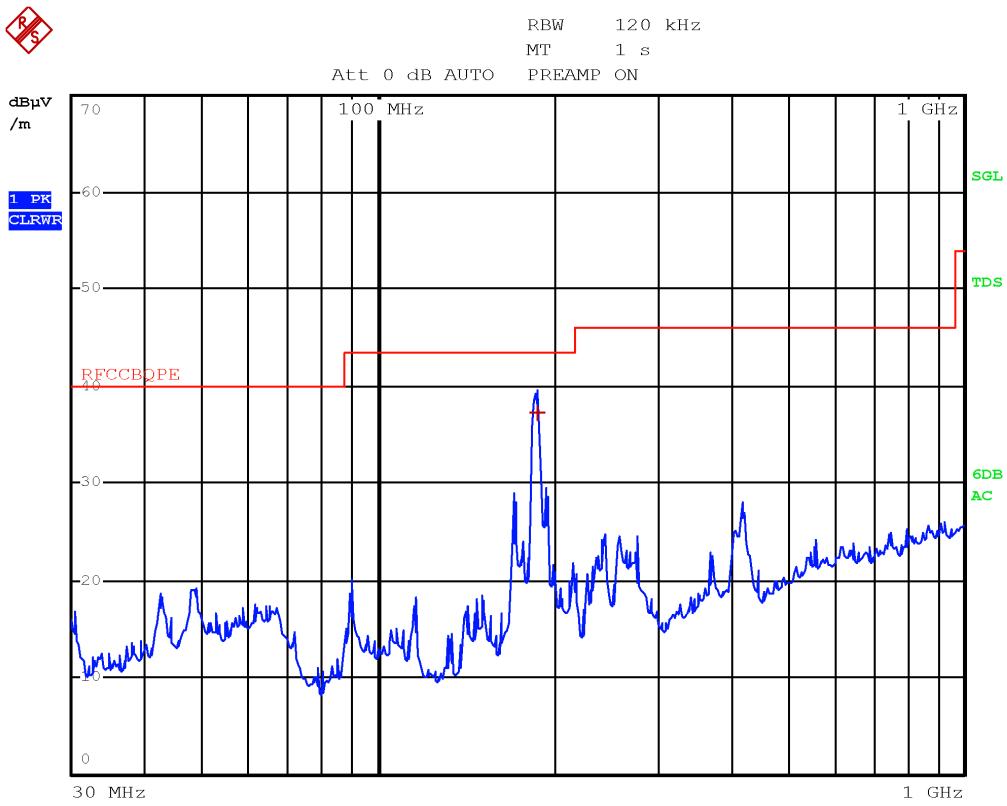


Figure 8.1-21: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
186.7600	37.2	43.5	-6.3	QP

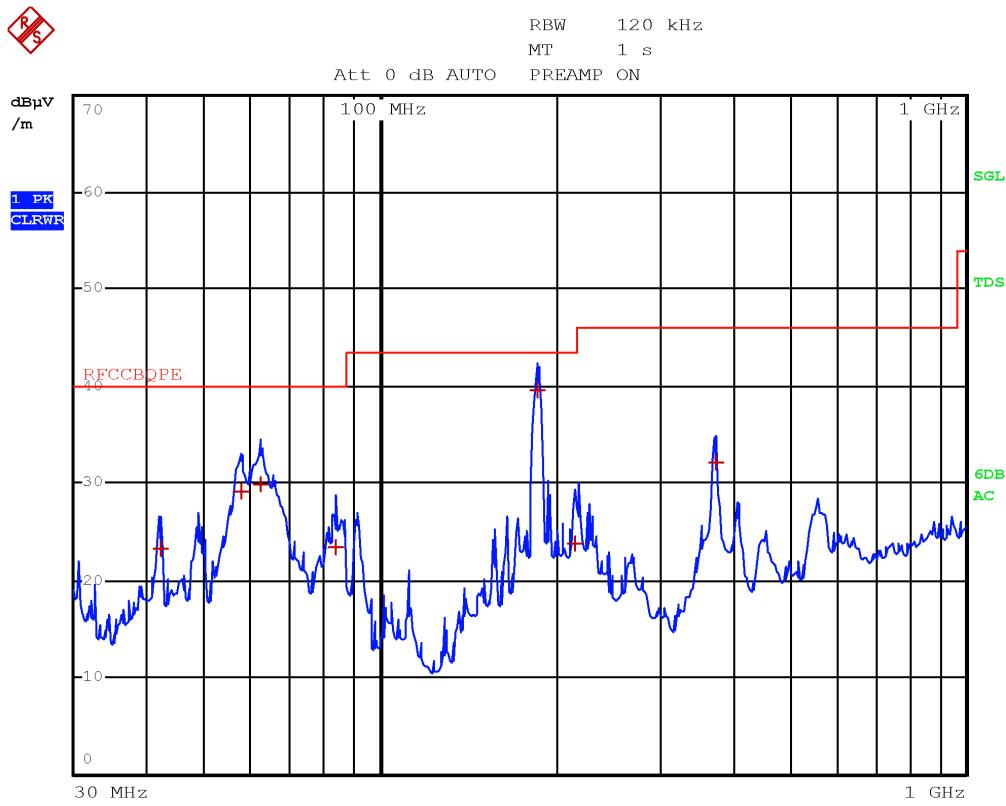


Figure 8.1-22: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
42.3600	23.3	40.0	-16.7	QP
57.9600	29.2	40.0	-10.8	QP
62.4800	30.0	40.0	-10.0	QP
83.8400	23.5	40.0	-16.5	QP
186.2400	39.6	43.5	-3.9	QP
215.5600	23.8	43.5	-19.7	QP
373.3600	32.2	46.0	-13.8	QP

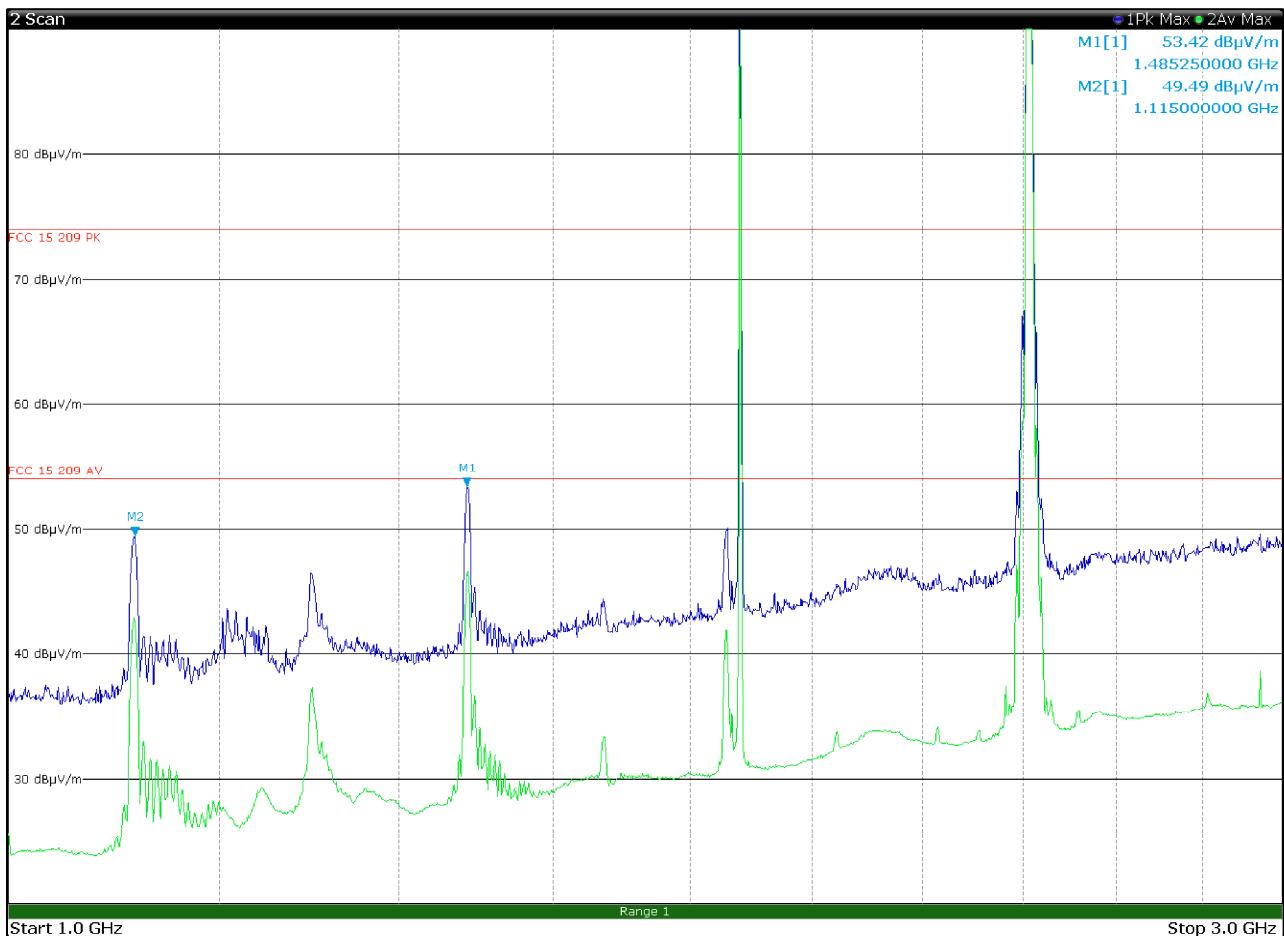


Figure 8.1-23: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

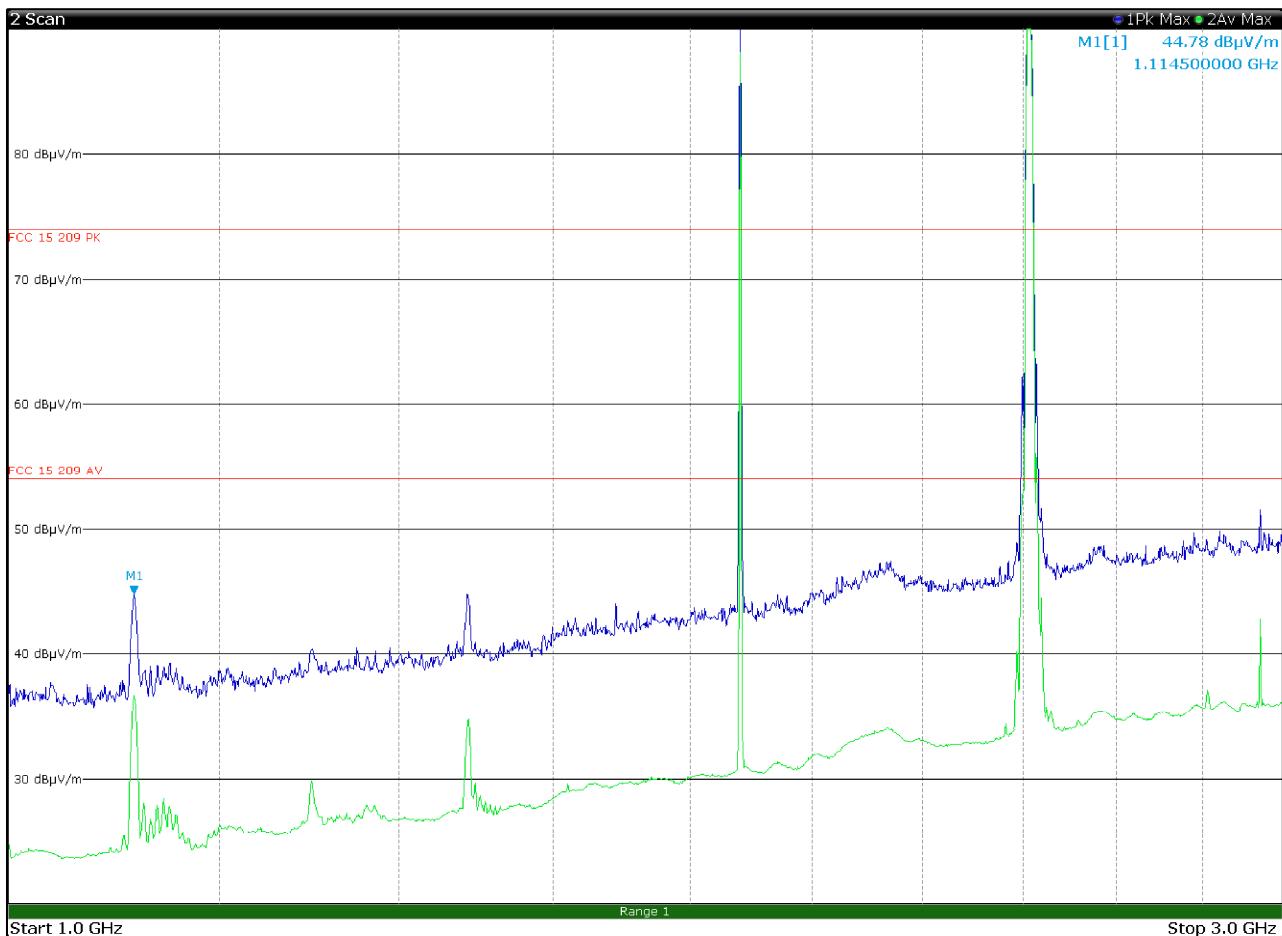


Figure 8.1-24: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

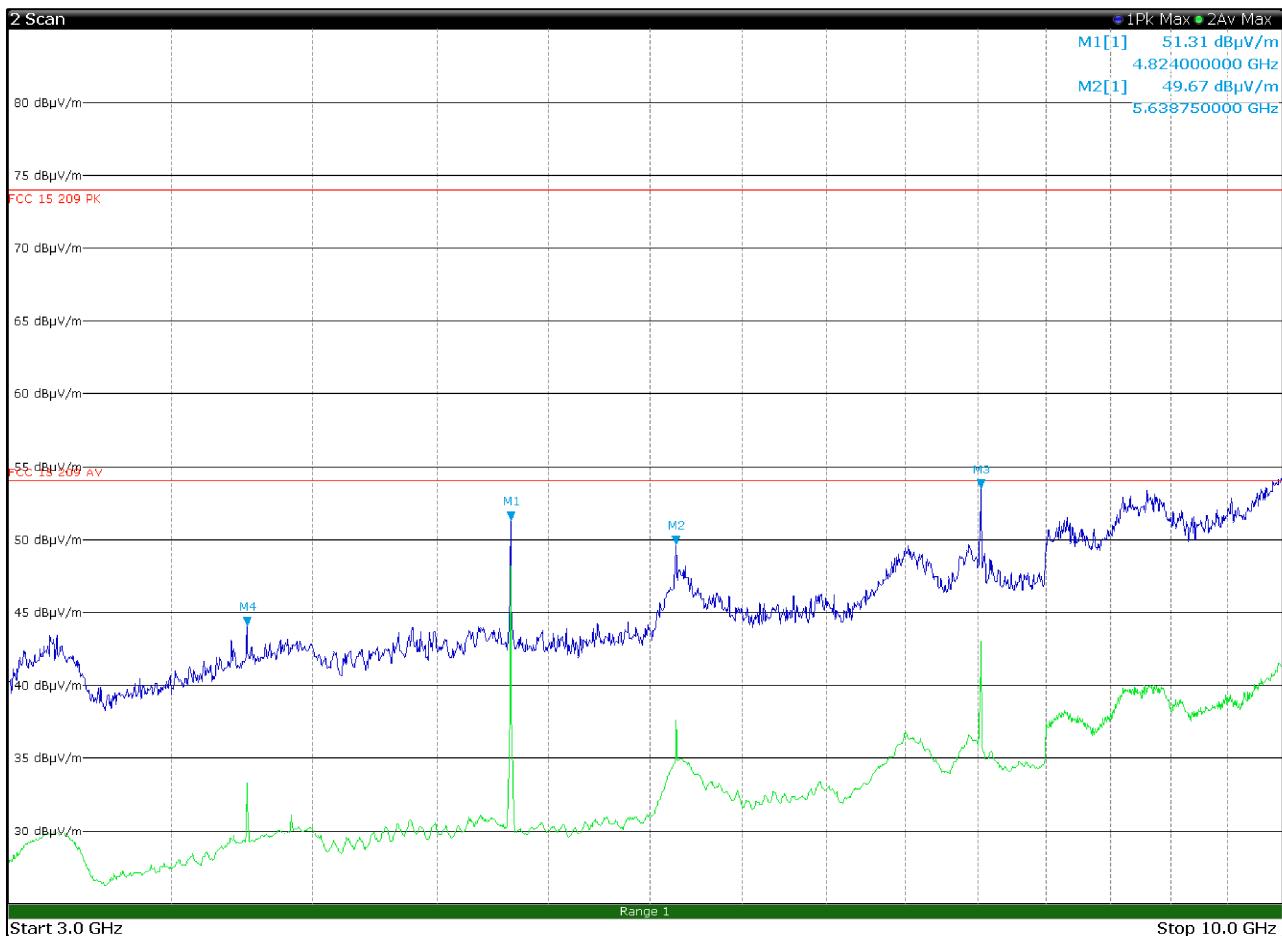


Figure 8.1-25: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
4.8240	51.3	74.0	-22.7	PK
4.8240	47.8	54.0	-6.2	AV
3.7590	44.1	82.2	-38.1	PK
5.6387	49.7	82.2	-32.5	PK
7.5200	53.5	82.2	-28.7	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

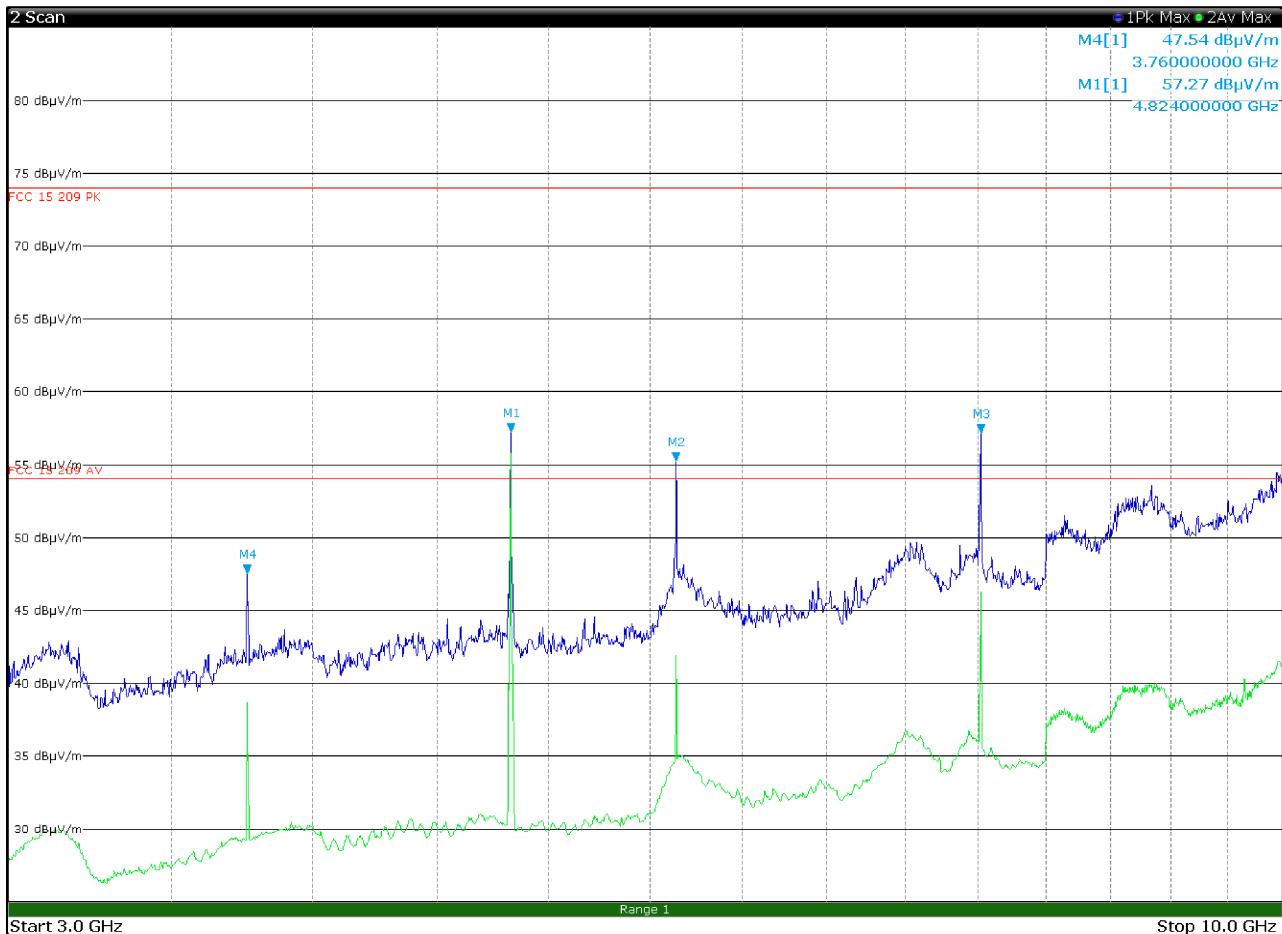


Figure 8.1-26: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
4.8240	57.3	74.0	-16.7	PK
4.8240	53.8	54.0	-0.2	AV
3.7600	47.6	82.2	-34.6	PK
5.6400	55.3	82.2	-26.9	PK
7.5200	57.2	82.2	-25.0	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

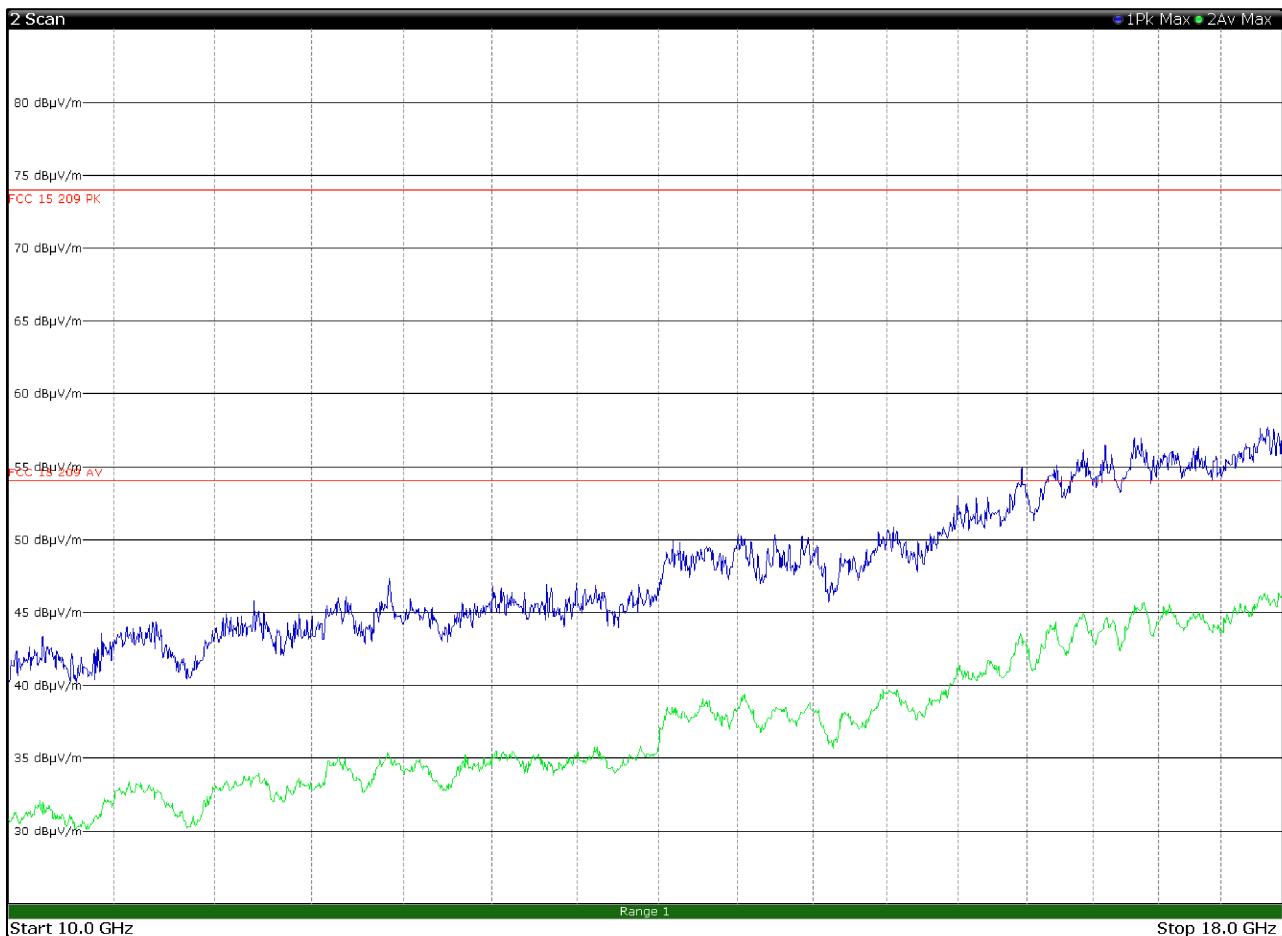


Figure 8.1-27: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

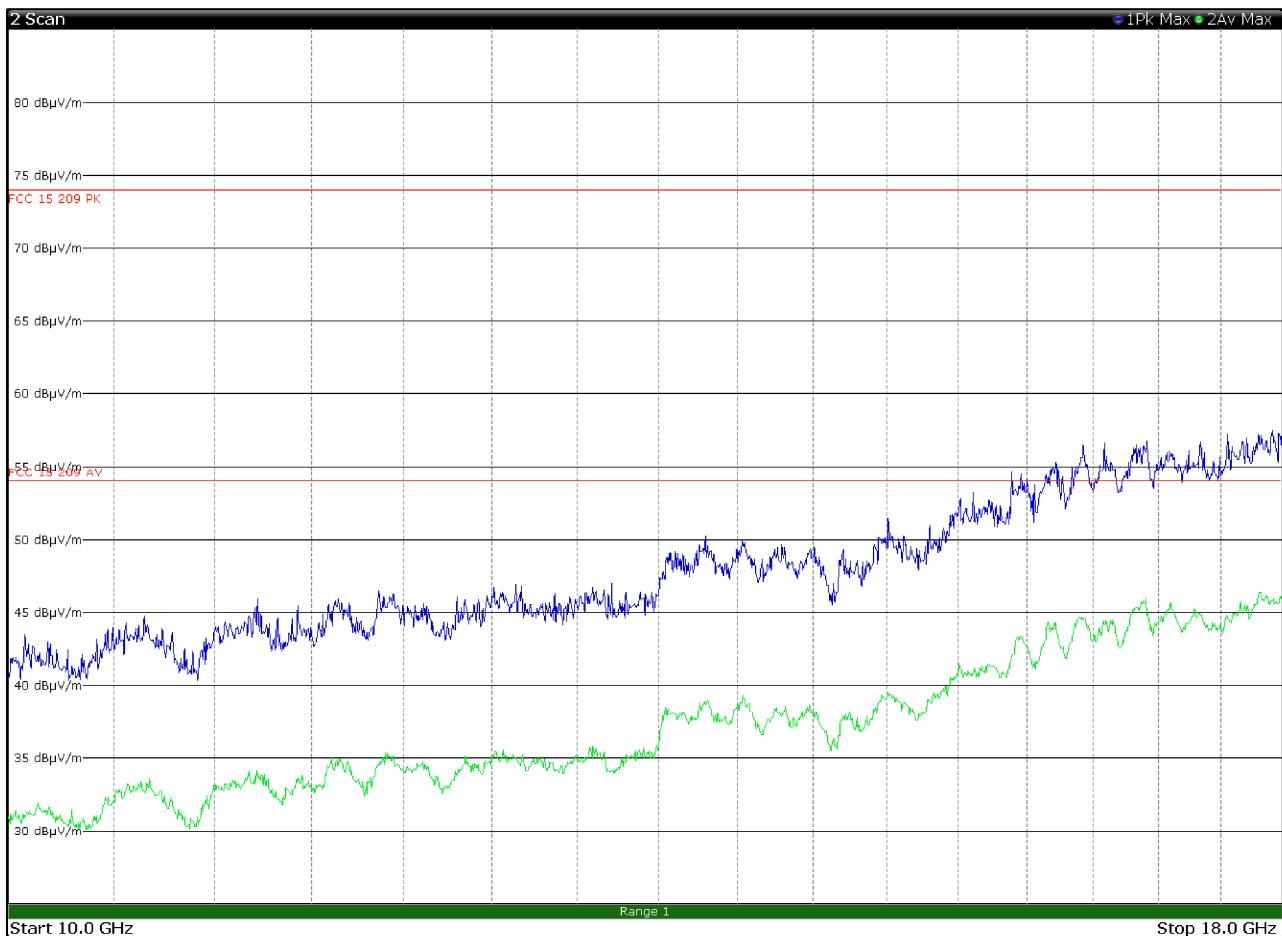


Figure 8.1-28: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

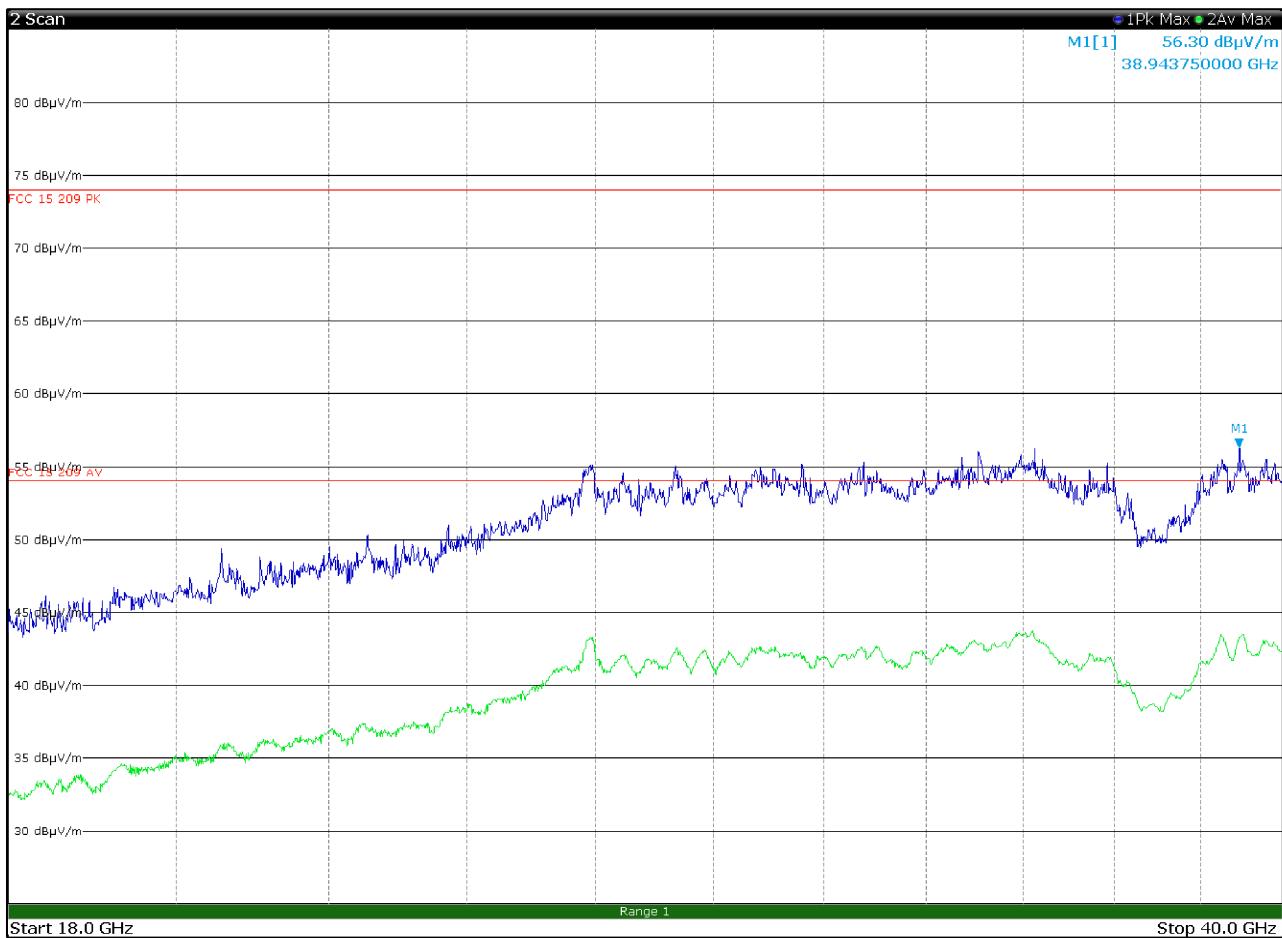


Figure 8.1-29: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

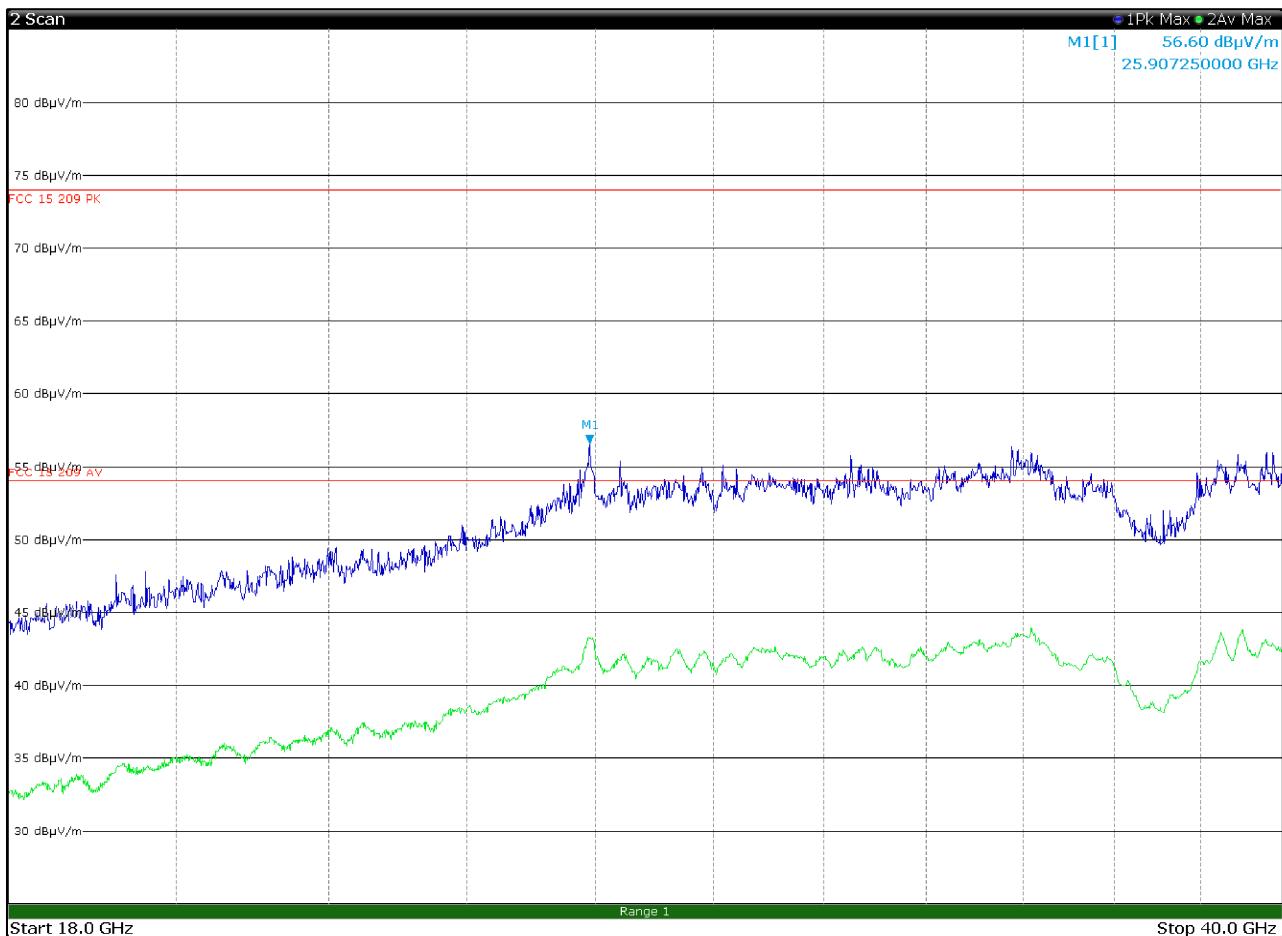


Figure 8.1-30: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

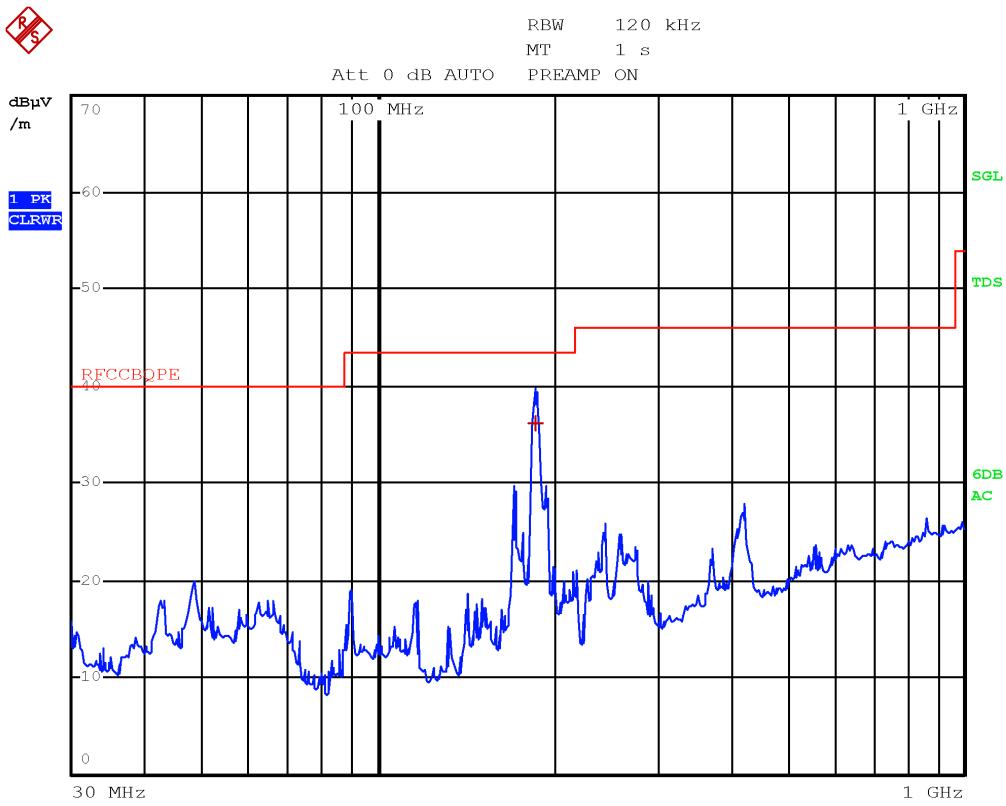


Figure 8.1-31: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 1

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
185.6800	36.1	43.5	-7.4	QP

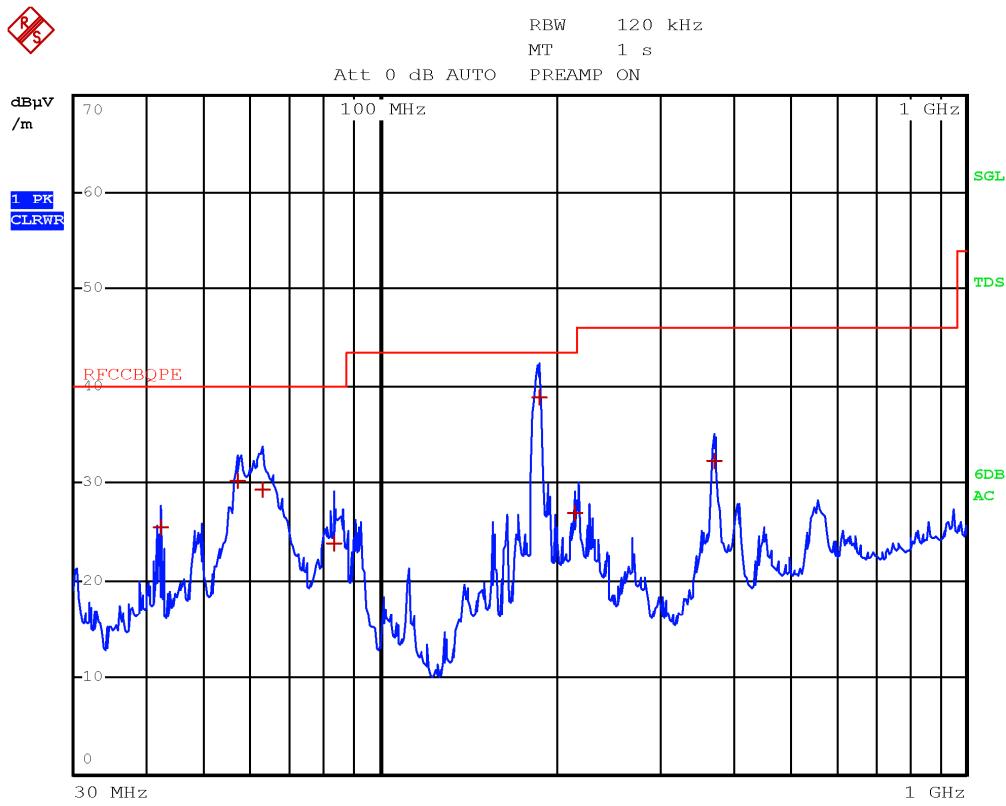


Figure 8.1-32: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 1

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
42.2400	25.5	40.0	-14.5	QP
57.0400	30.3	40.0	-9.7	QP
63.2400	29.4	40.0	-10.6	QP
83.4400	23.8	40.0	-16.2	QP
186.8000	38.9	43.5	-4.6	QP
215.3600	27.0	43.5	-16.5	QP
372.7200	32.2	46.0	-13.8	QP

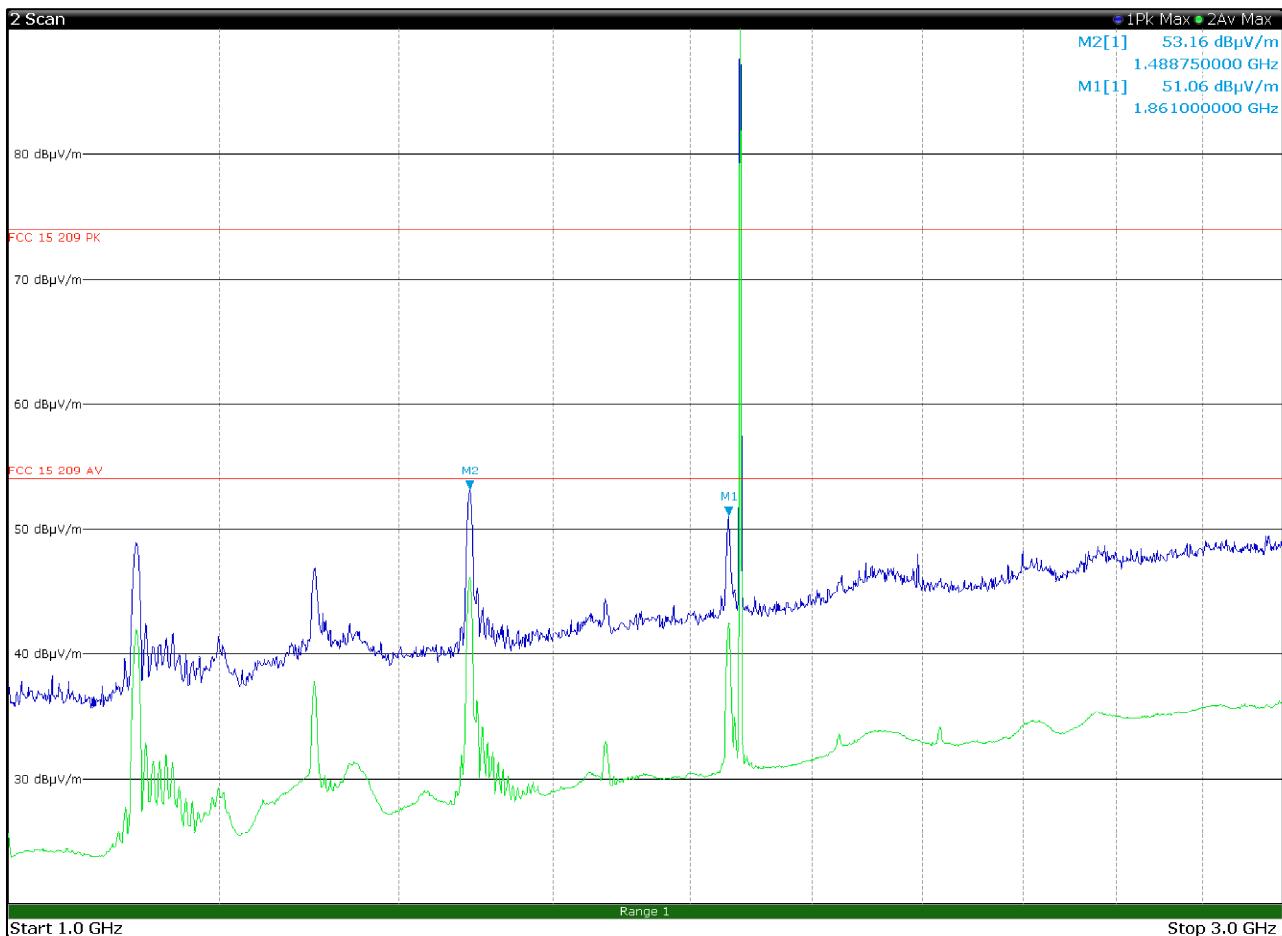


Figure 8.1-33: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

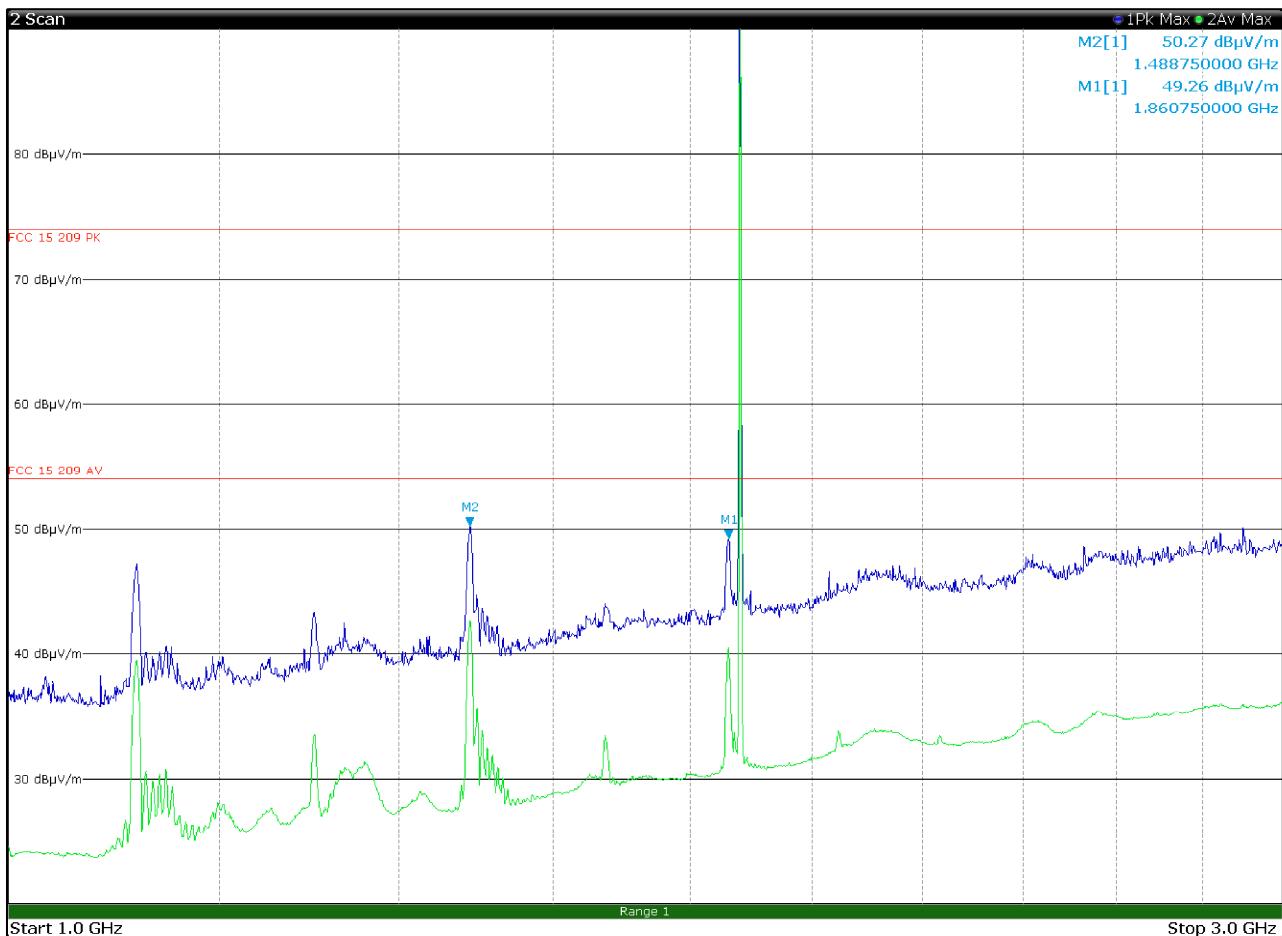


Figure 8.1-34: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

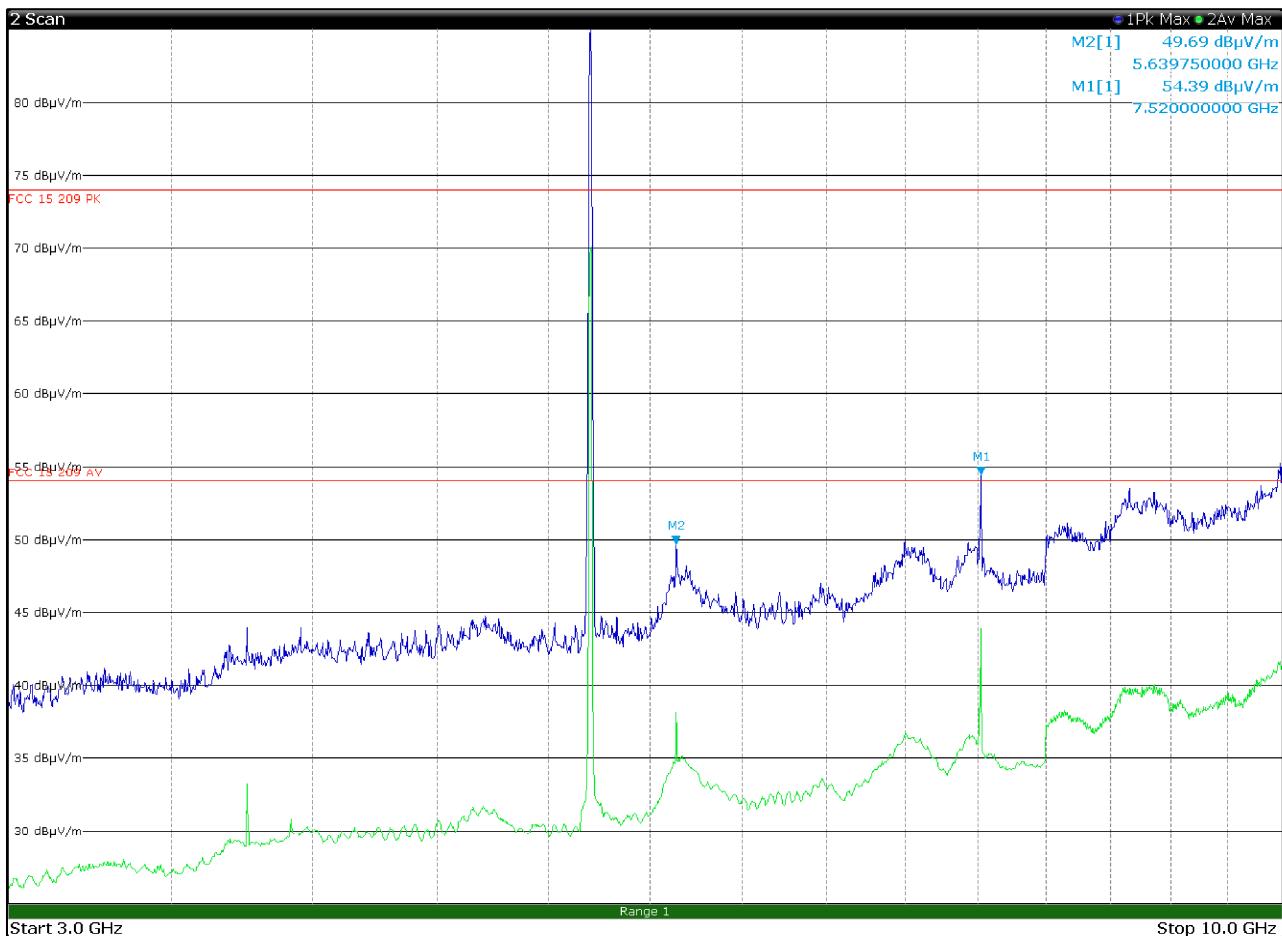


Figure 8.1-35: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
5.6397	49.7	82.2	-32.5	PK
7.5200	54.4	82.2	-27.8	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

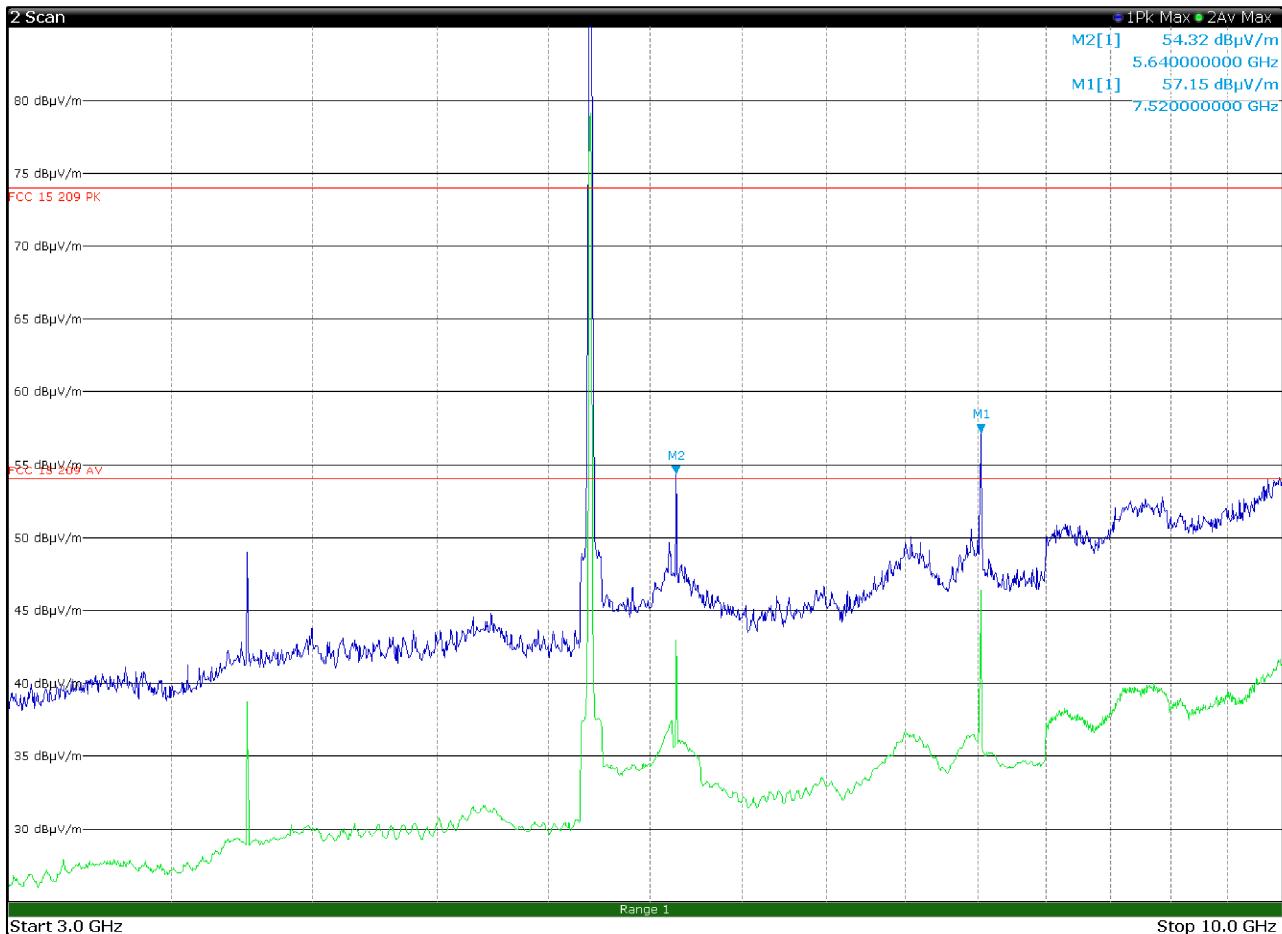


Figure 8.1-36: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
5.6400	54.4	82.2	-27.8	PK
7.5200	57.2	82.2	-25.0	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

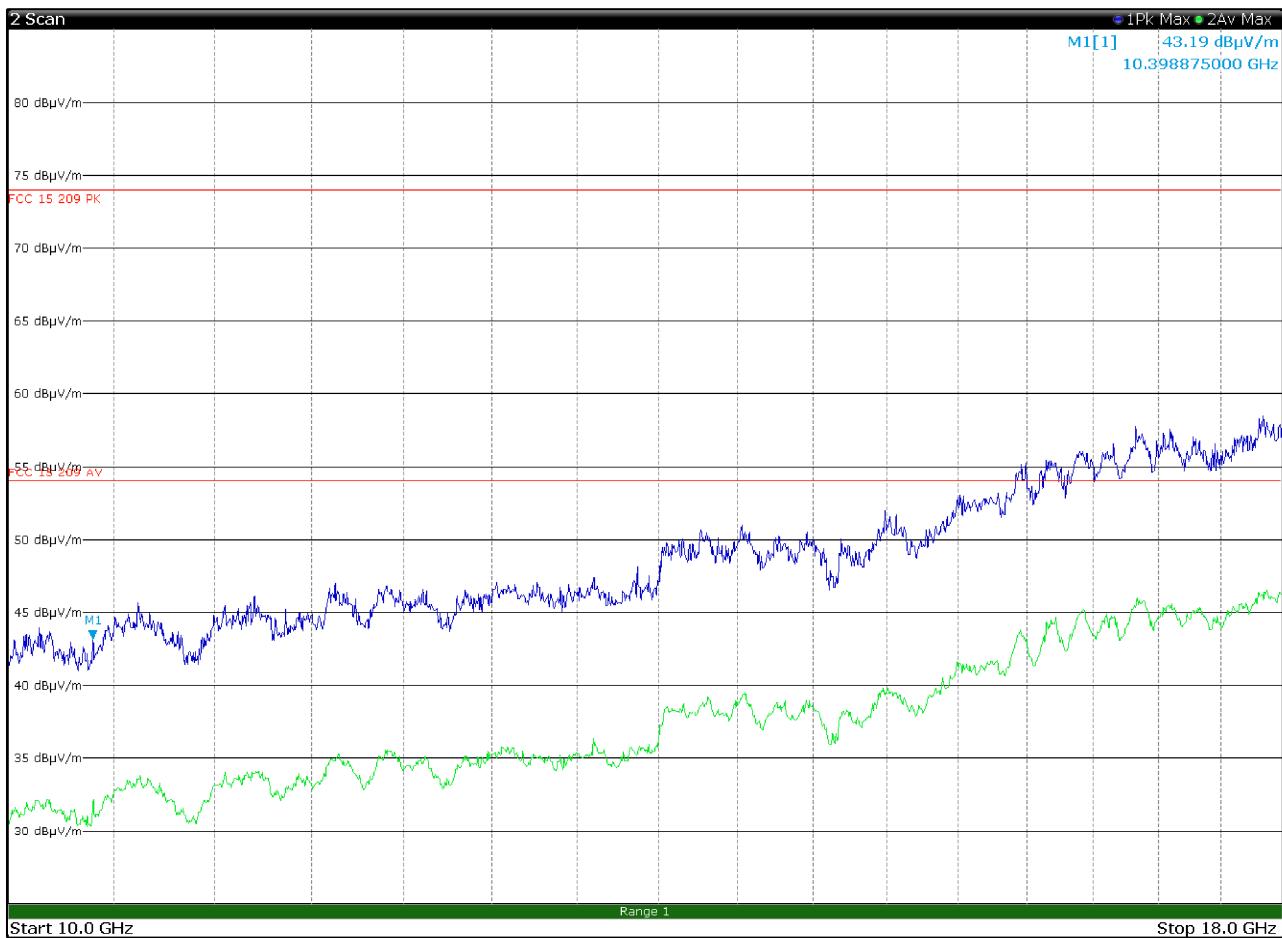


Figure 8.1-37: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 1

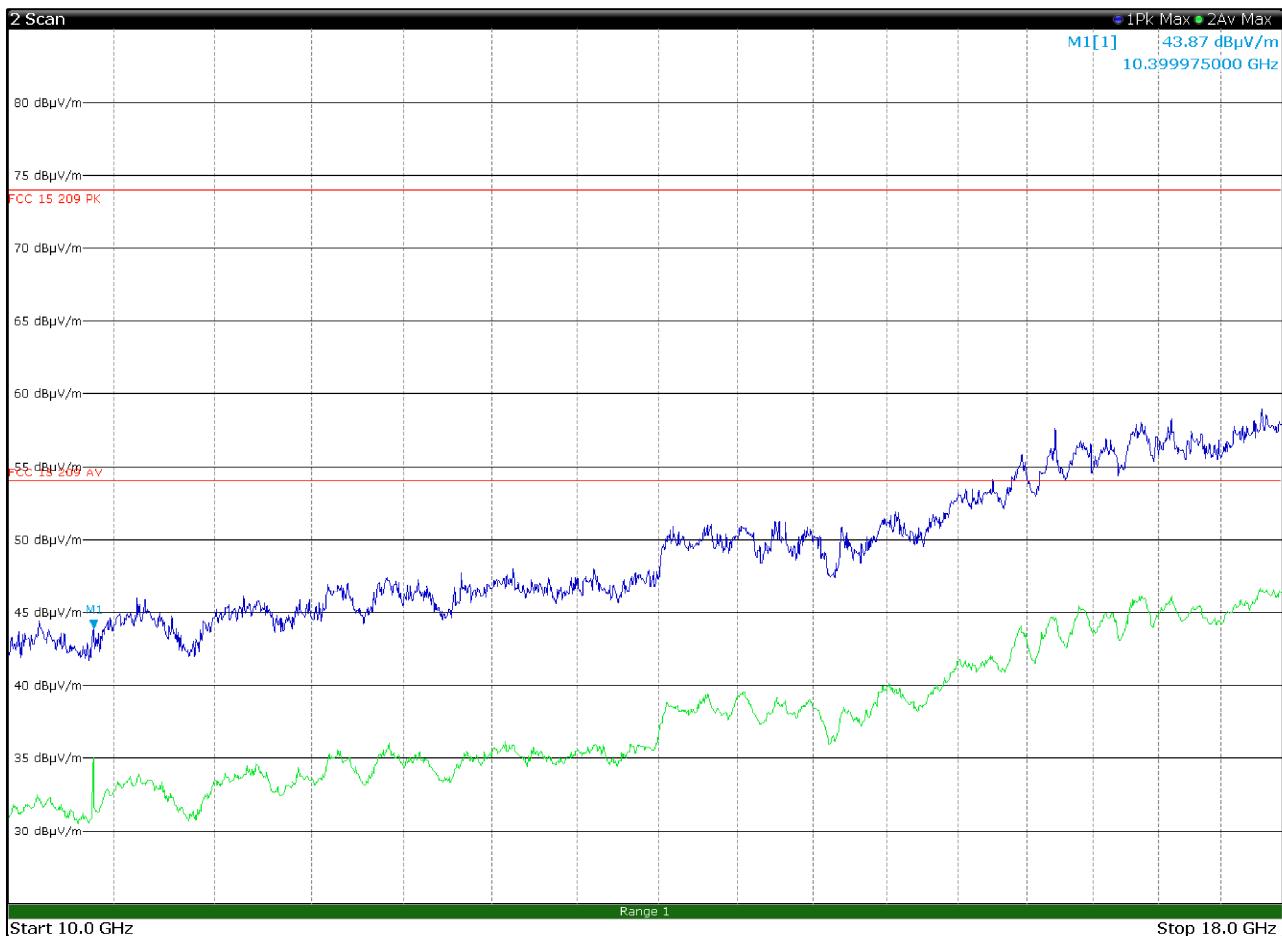


Figure 8.1-38: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 1

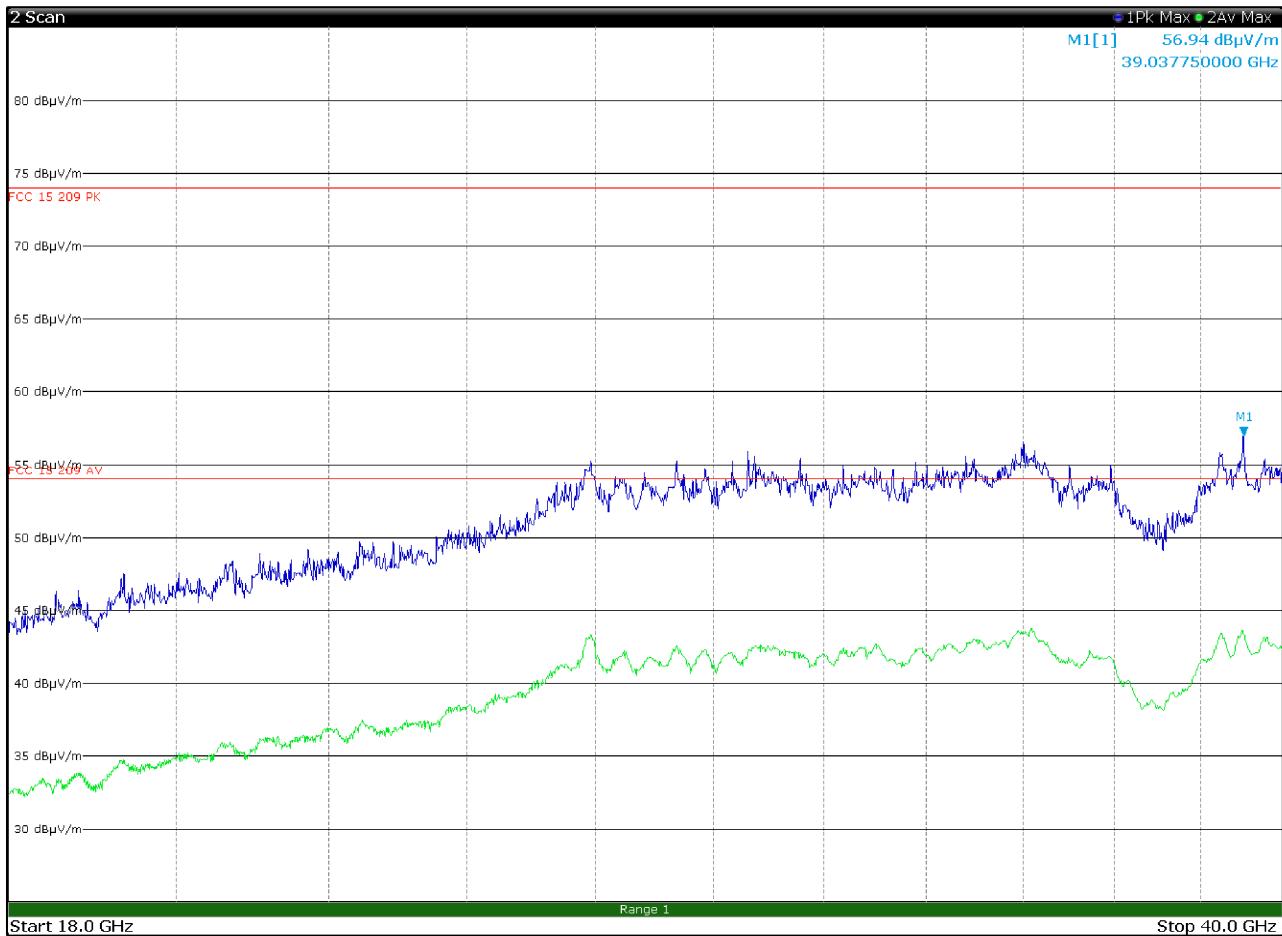


Figure 8.1-39: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 1

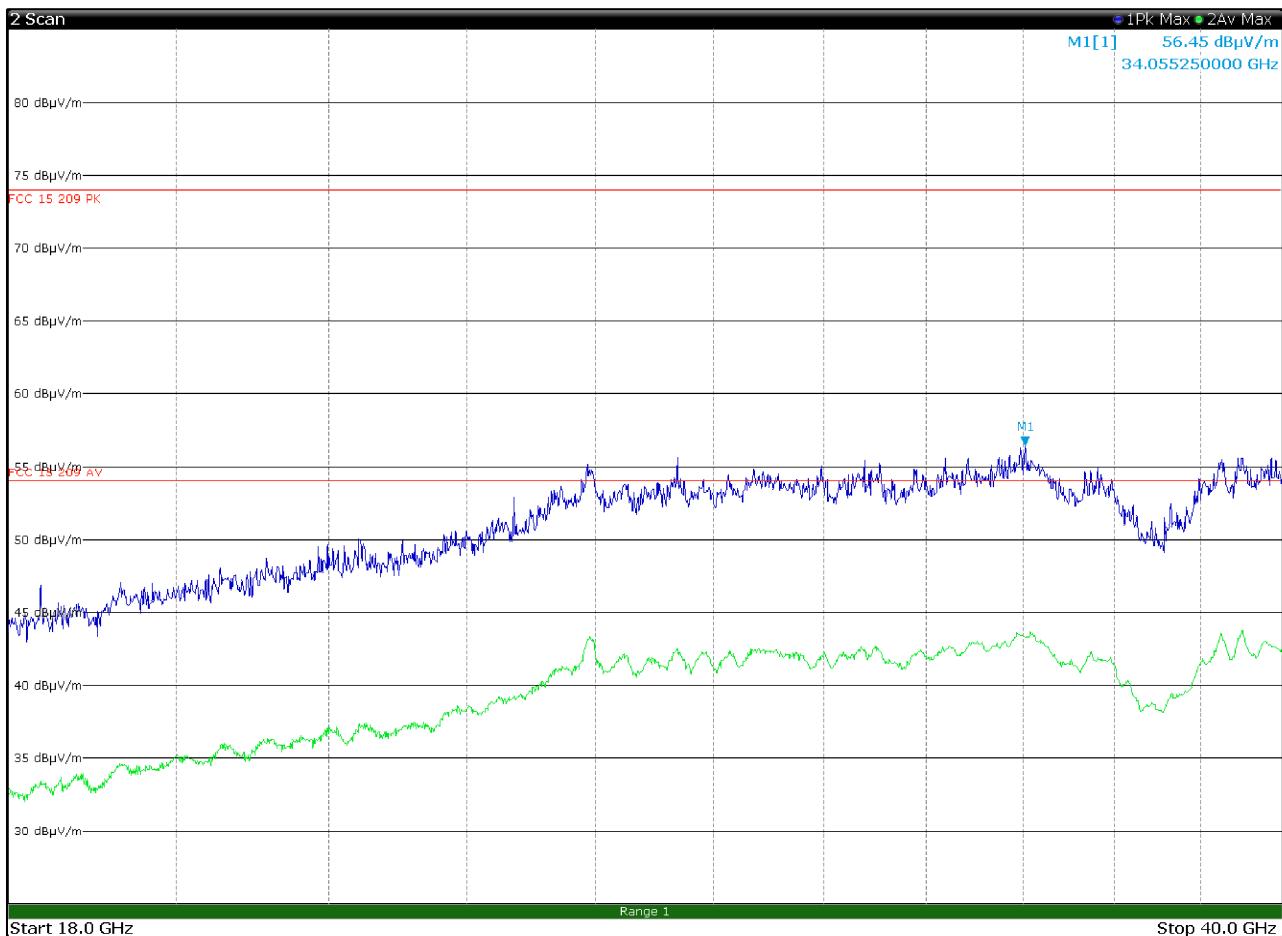


Figure 8.1-40: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 1

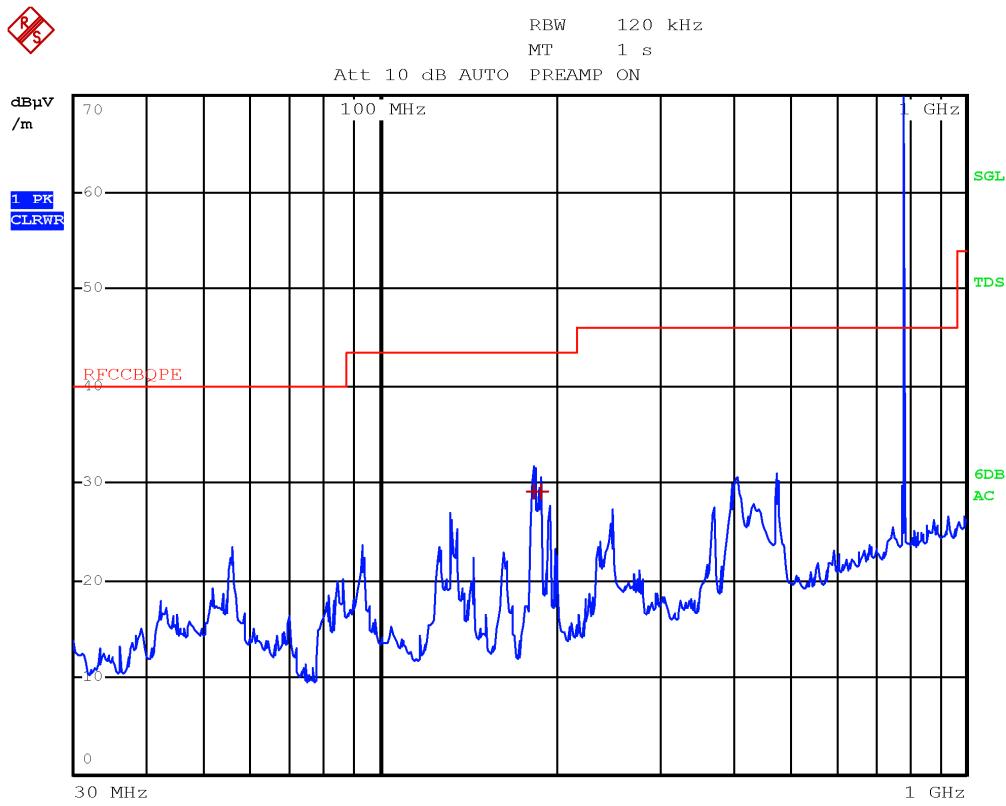


Figure 8.1-41: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
182.8400	29.1	43.5	-14.4	QP
187.8400	29.2	43.5	-14.3	QP

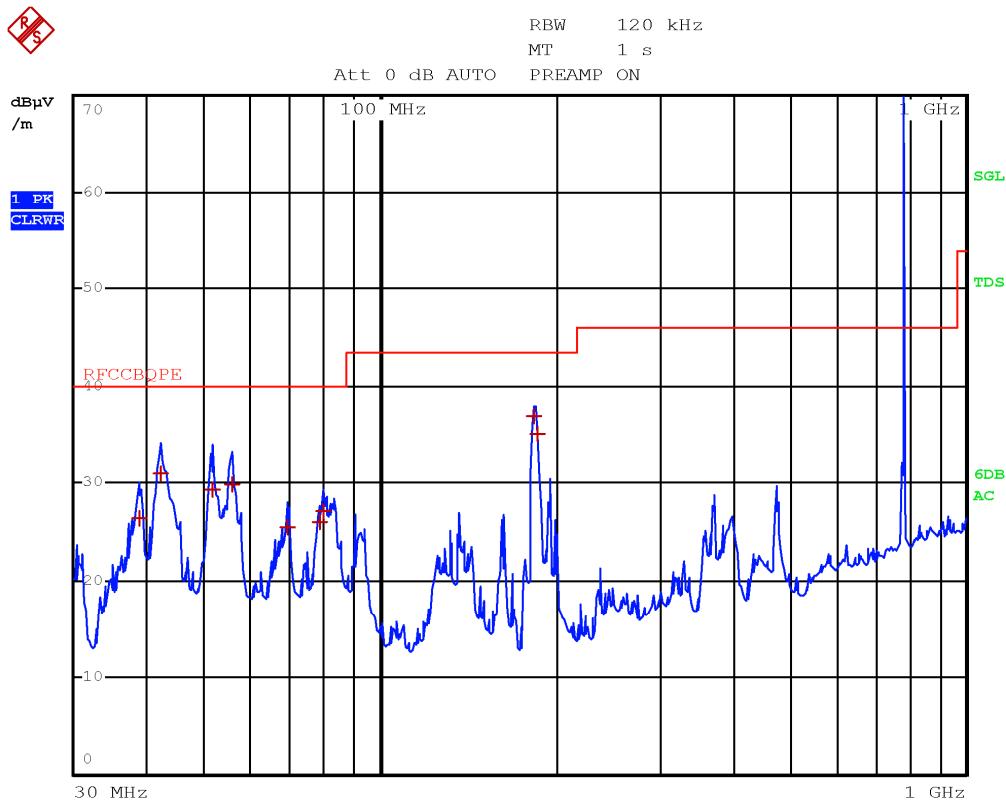


Figure 8.1-42: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
38.8400	26.5	40.0	-13.5	QP
42.3600	31.1	40.0	-8.9	QP
51.6400	29.4	40.0	-10.6	QP
55.8000	29.8	40.0	-10.2	QP
69.4400	25.4	40.0	-14.6	QP
79.0800	26.0	40.0	-14.0	QP
80.1600	27.1	40.0	-12.9	QP
183.5200	36.9	43.5	-6.6	QP
185.8000	35.1	43.5	-8.4	QP

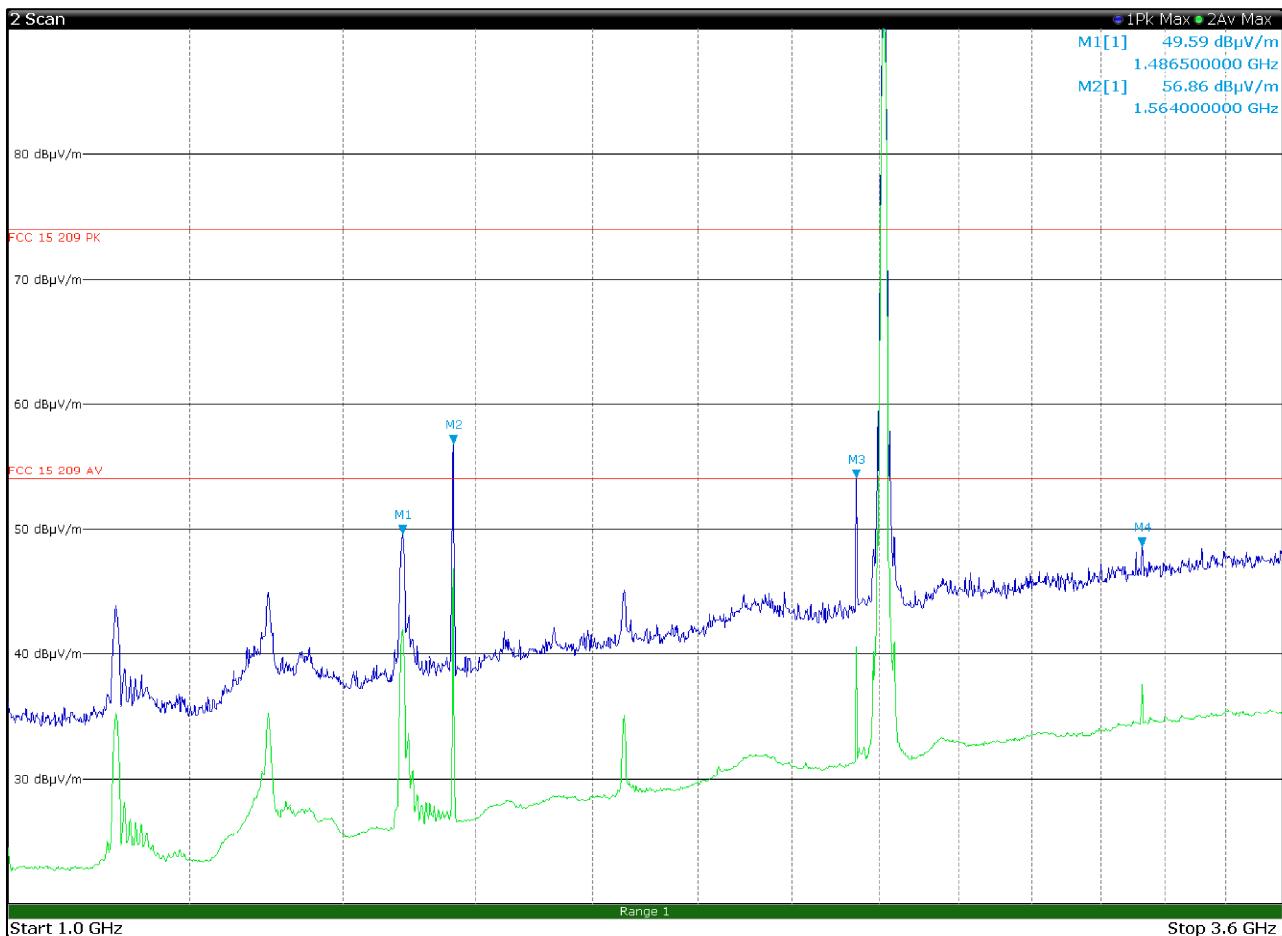


Figure 8.1-43: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1.5640	61.7	82.2	-20.5	PK
2.3460	54.1	82.2	-28.1	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

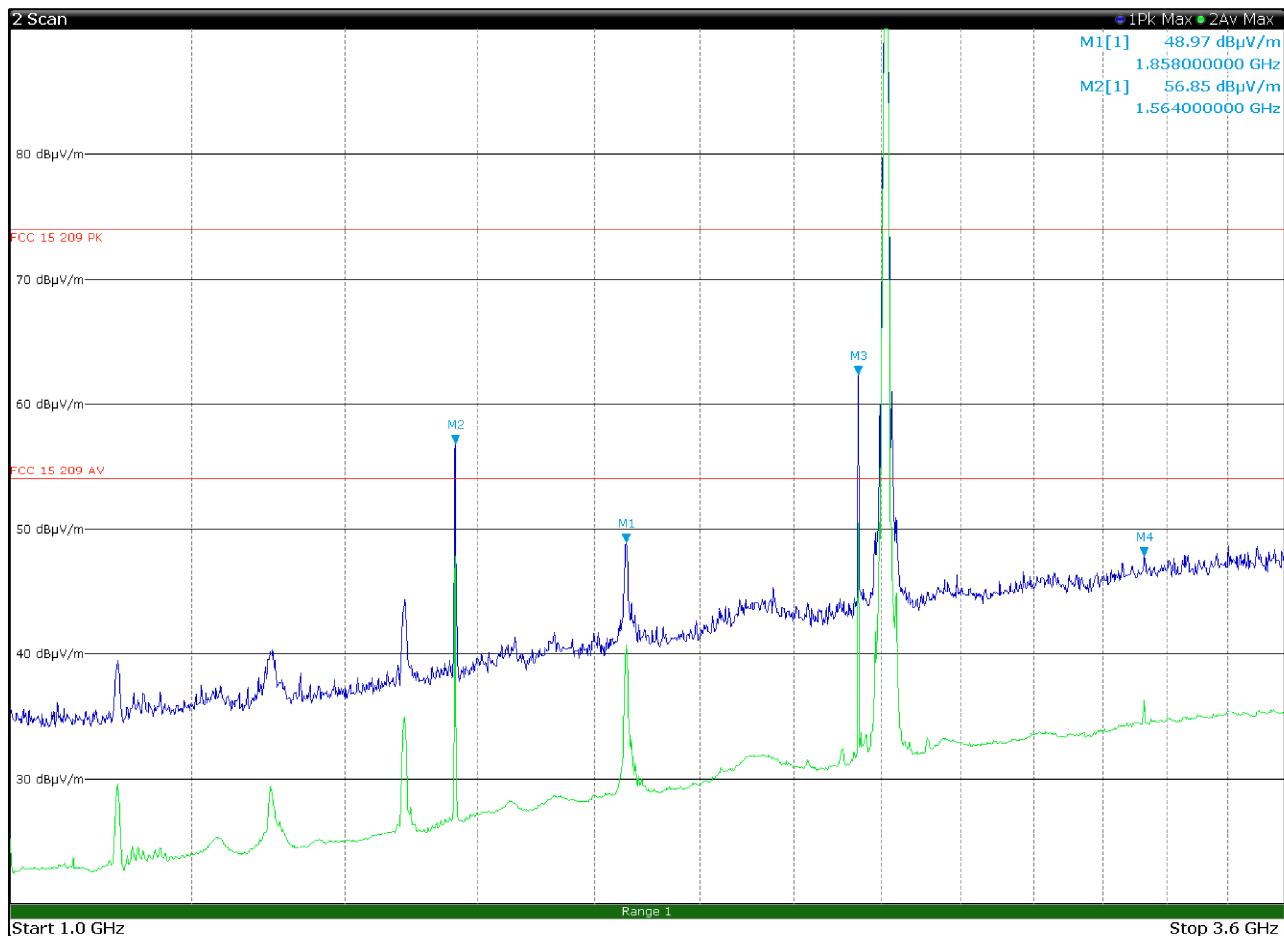


Figure 8.1-44: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1.5640	56.9	82.2	-25.3	PK
2.3460	62.4	82.2	-19.8	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

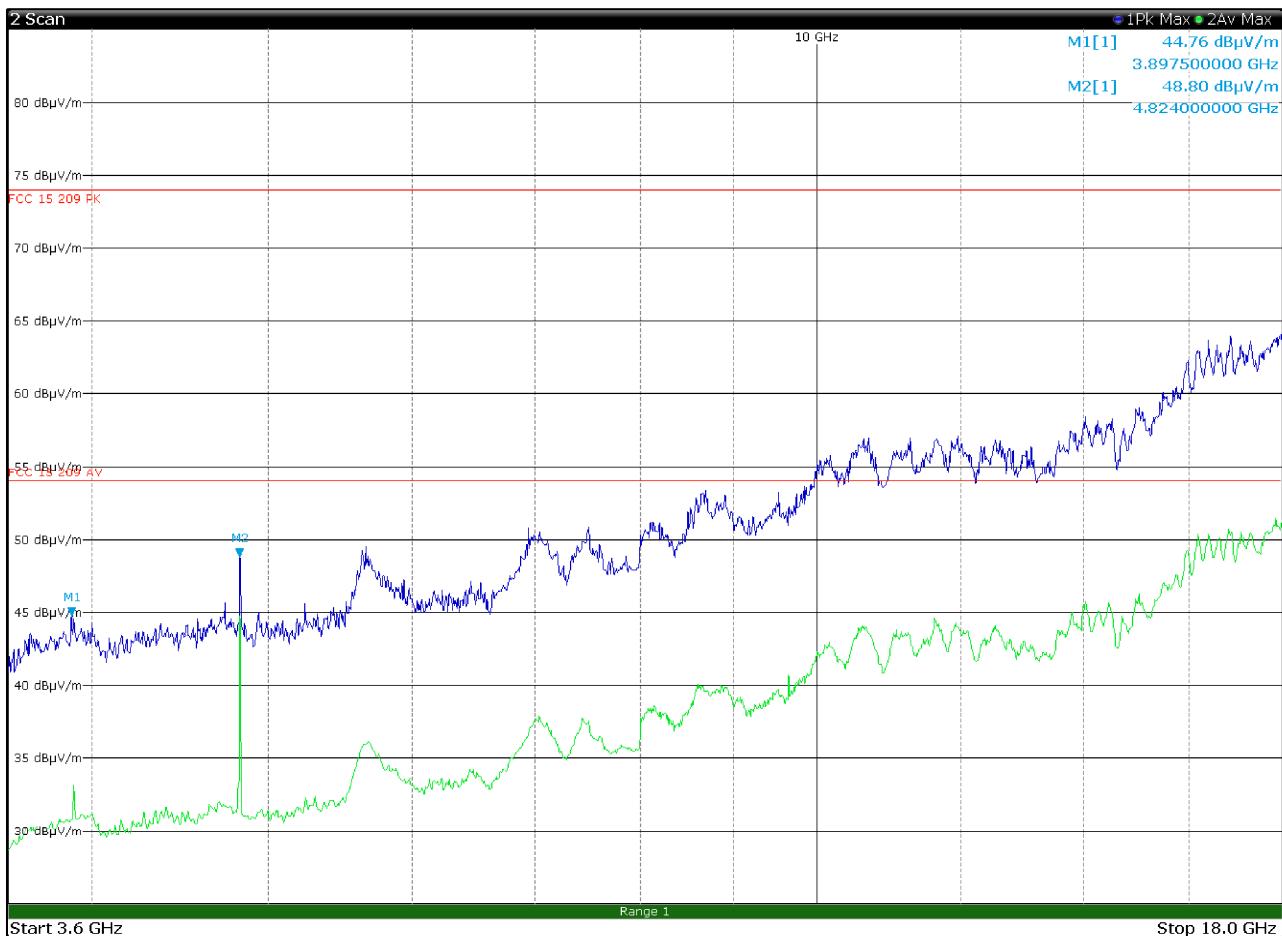


Figure 8.1-45: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 2

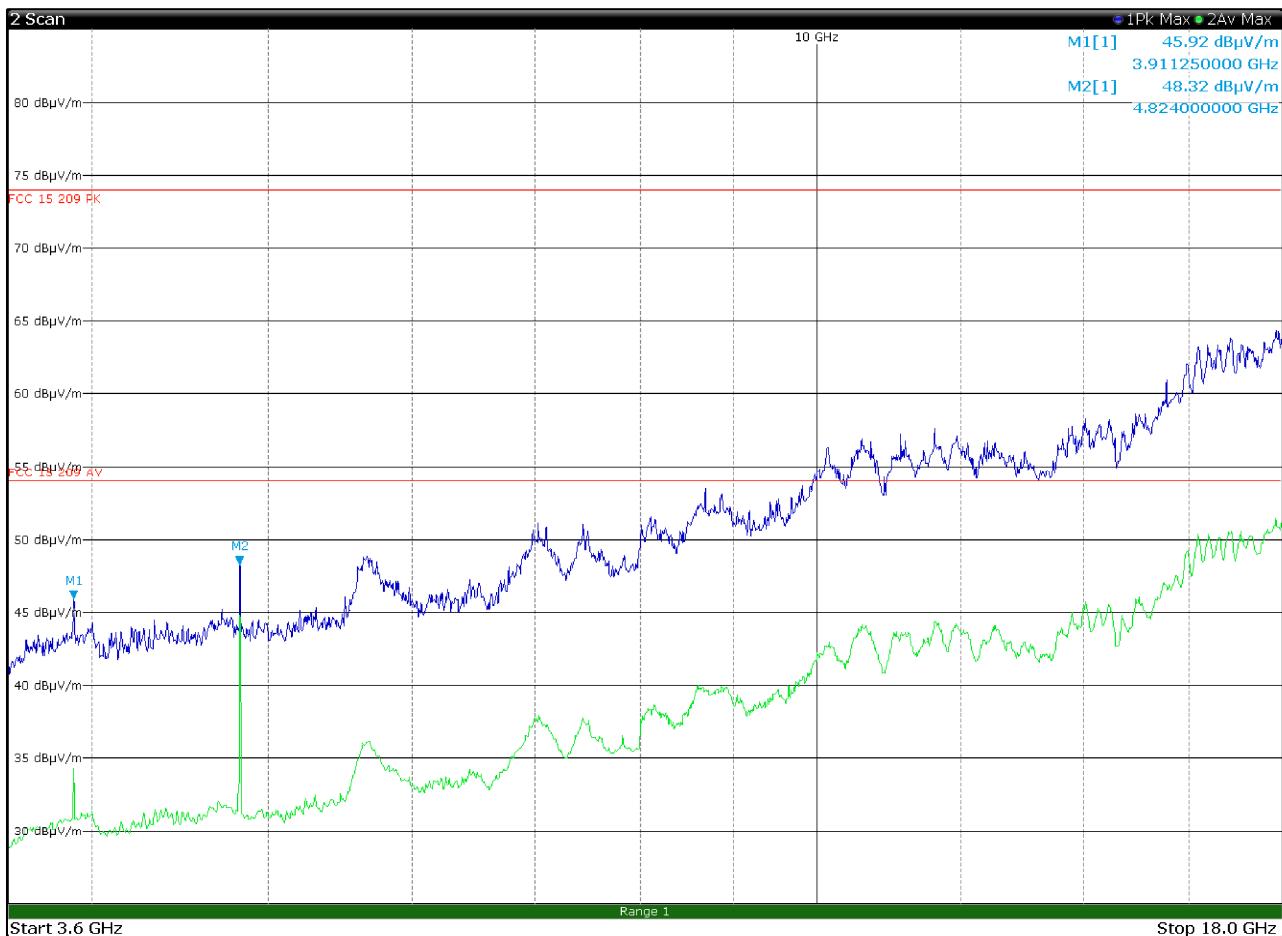


Figure 8.1-46: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 2

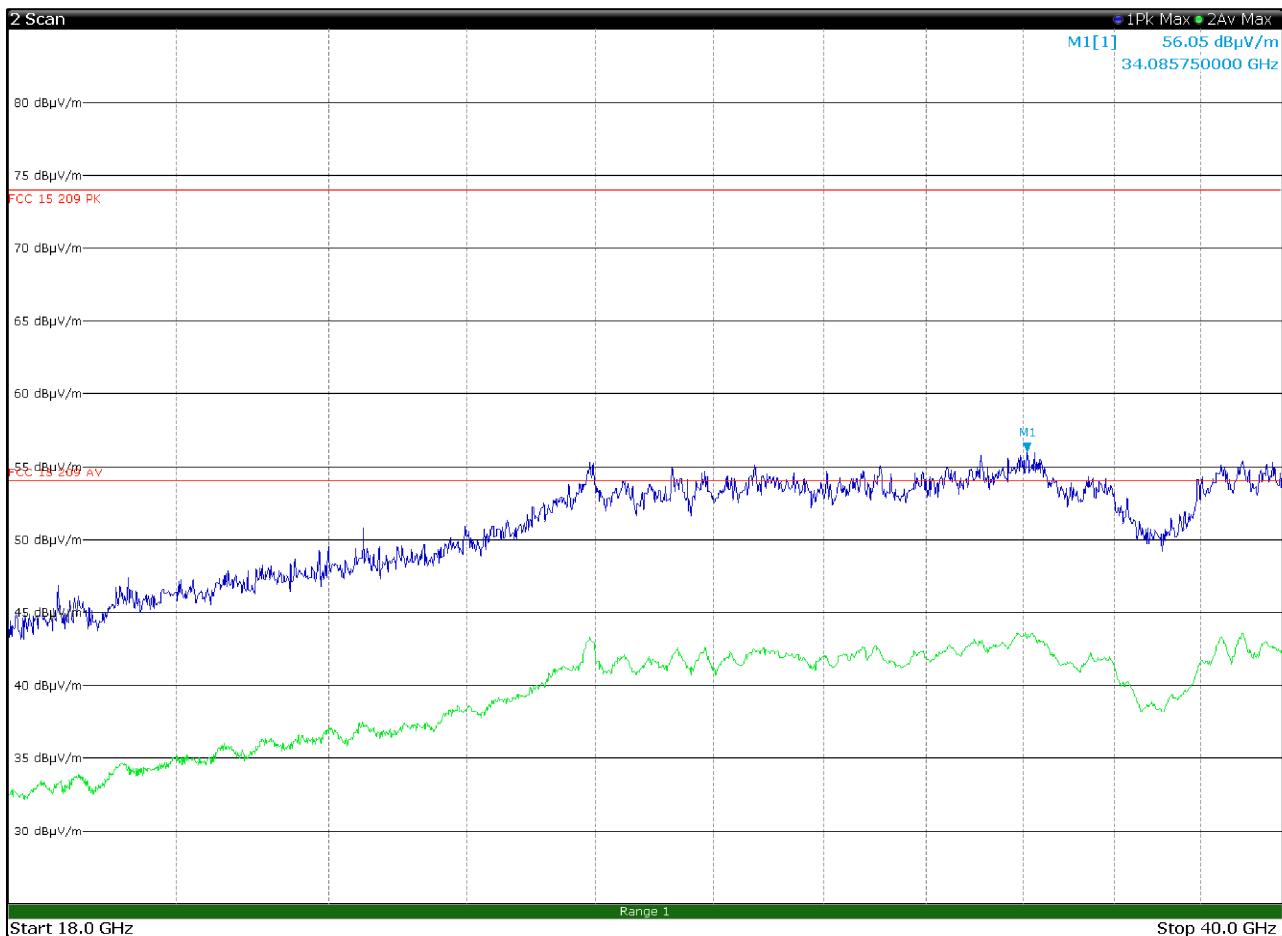


Figure 8.1-47: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 2

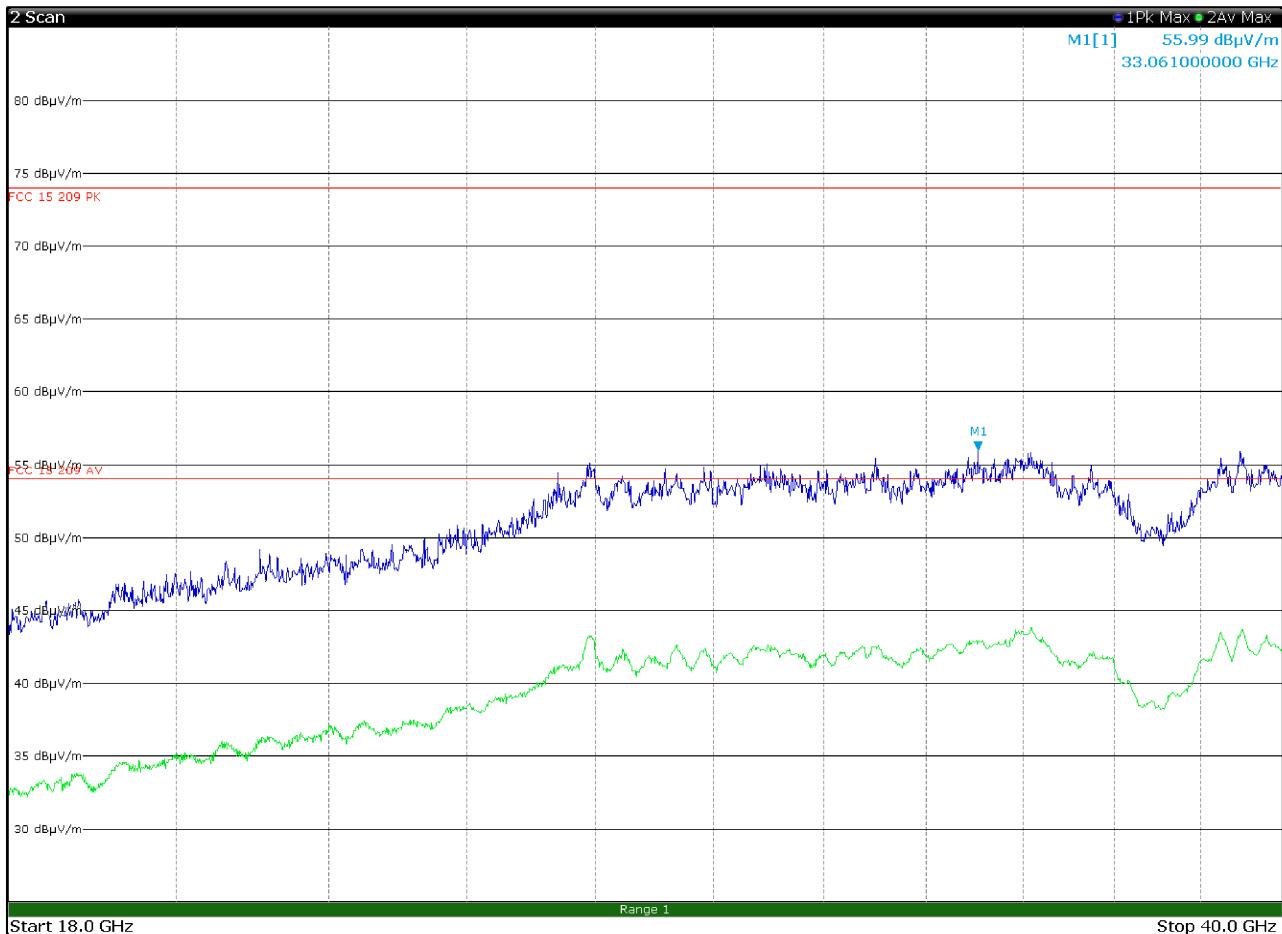


Figure 8.1-48: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 2

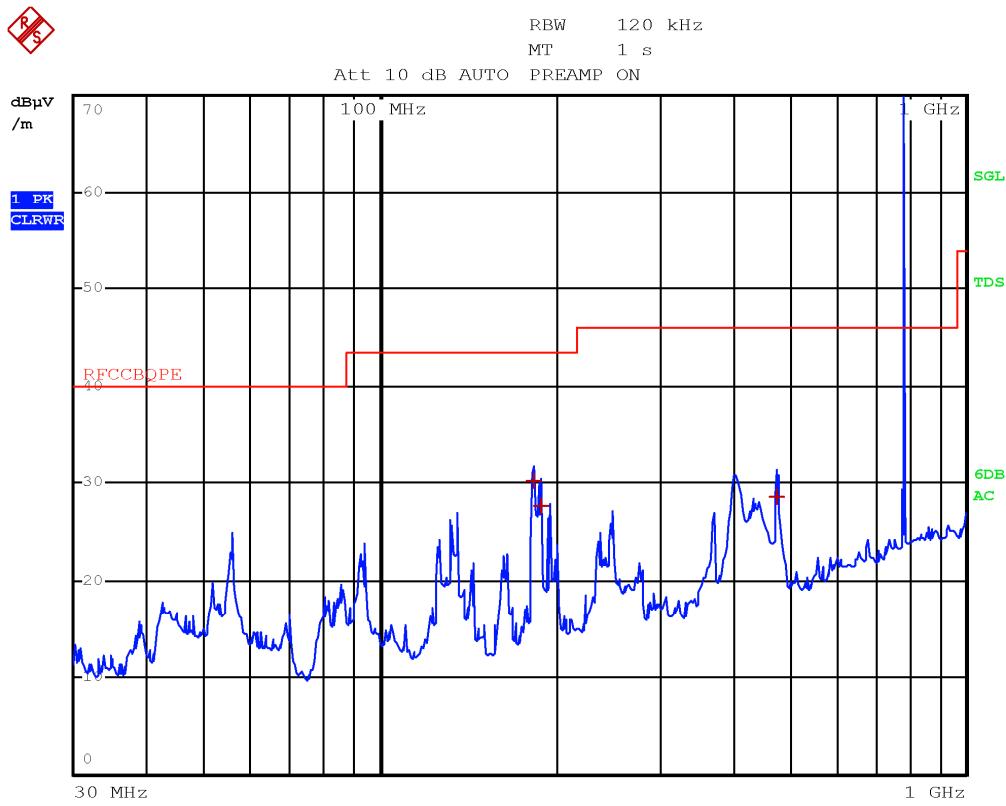


Figure 8.1-49: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
183.0400	30.3	43.5	-13.2	QP
187.7200	27.7	43.5	-15.8	QP
475.5200	28.6	46.0	-17.4	QP

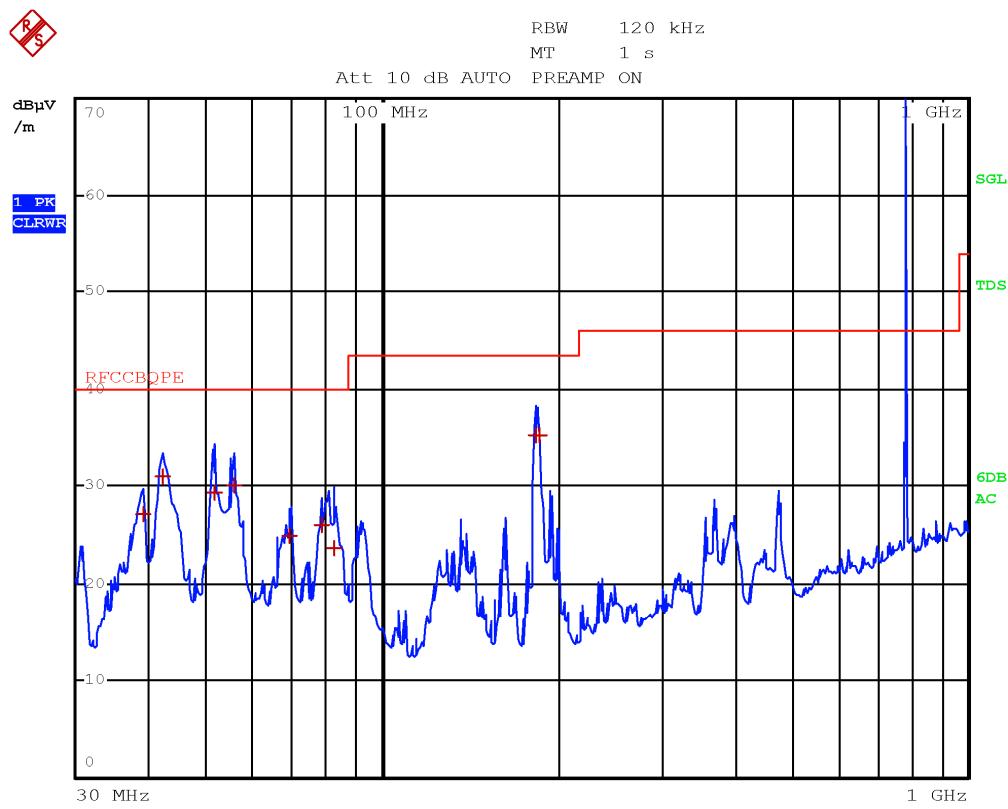


Figure 8.1-50: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
39.0000	27.1	40.0	-12.9	QP
42.3600	31.1	40.0	-8.9	QP
51.7600	29.3	40.0	-10.7	QP
55.8800	30.1	40.0	-9.9	QP
69.4800	24.9	40.0	-15.1	QP
79.0800	26.1	40.0	-13.9	QP
83.0400	23.6	40.0	-16.4	QP
183.6400	35.3	43.5	-8.2	QP
185.8400	35.2	43.5	-8.3	QP

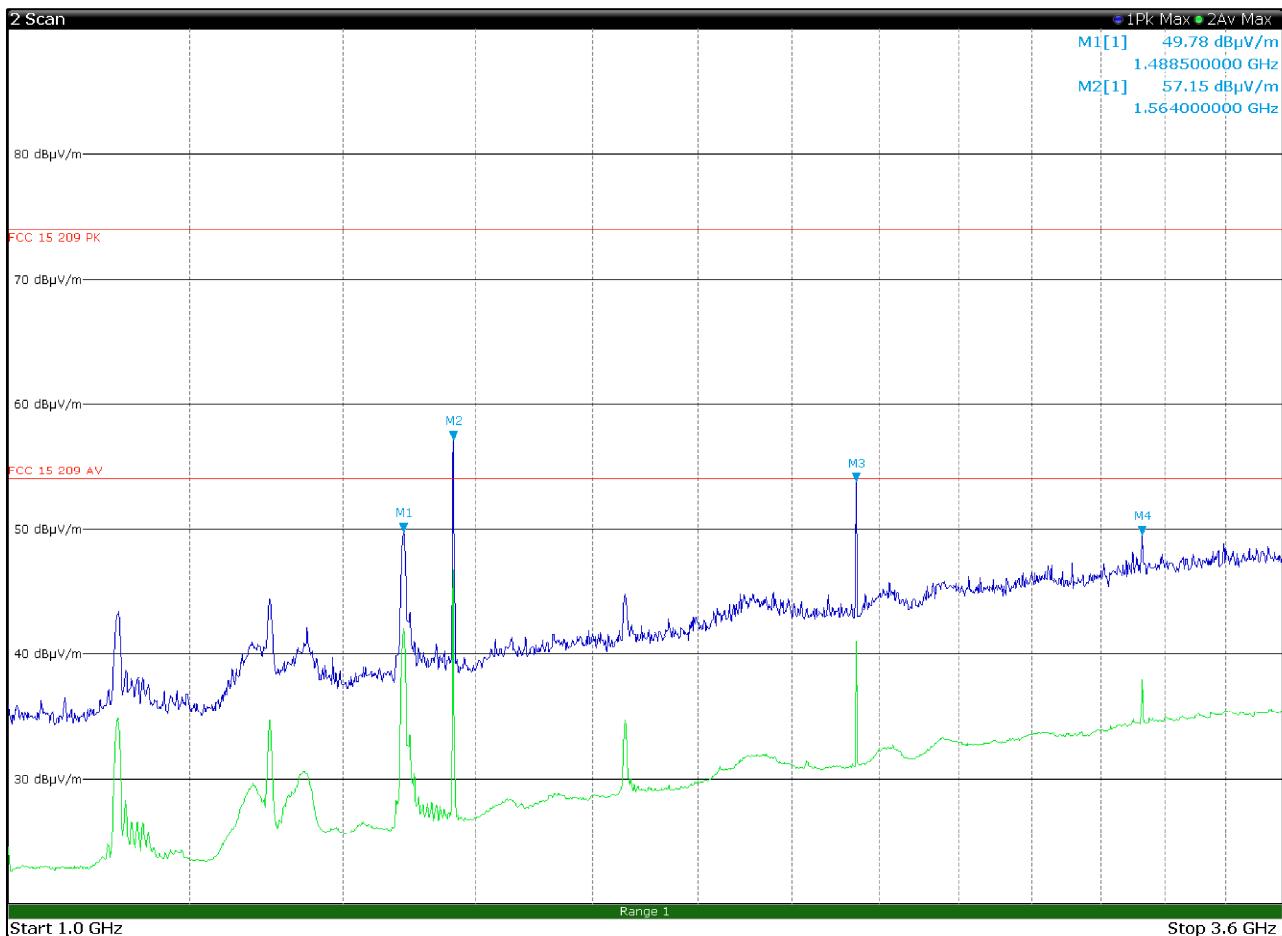


Figure 8.1-51: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1.5640	57.2	82.2	-25.0	PK
2.3460	53.8	82.2	-28.4	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

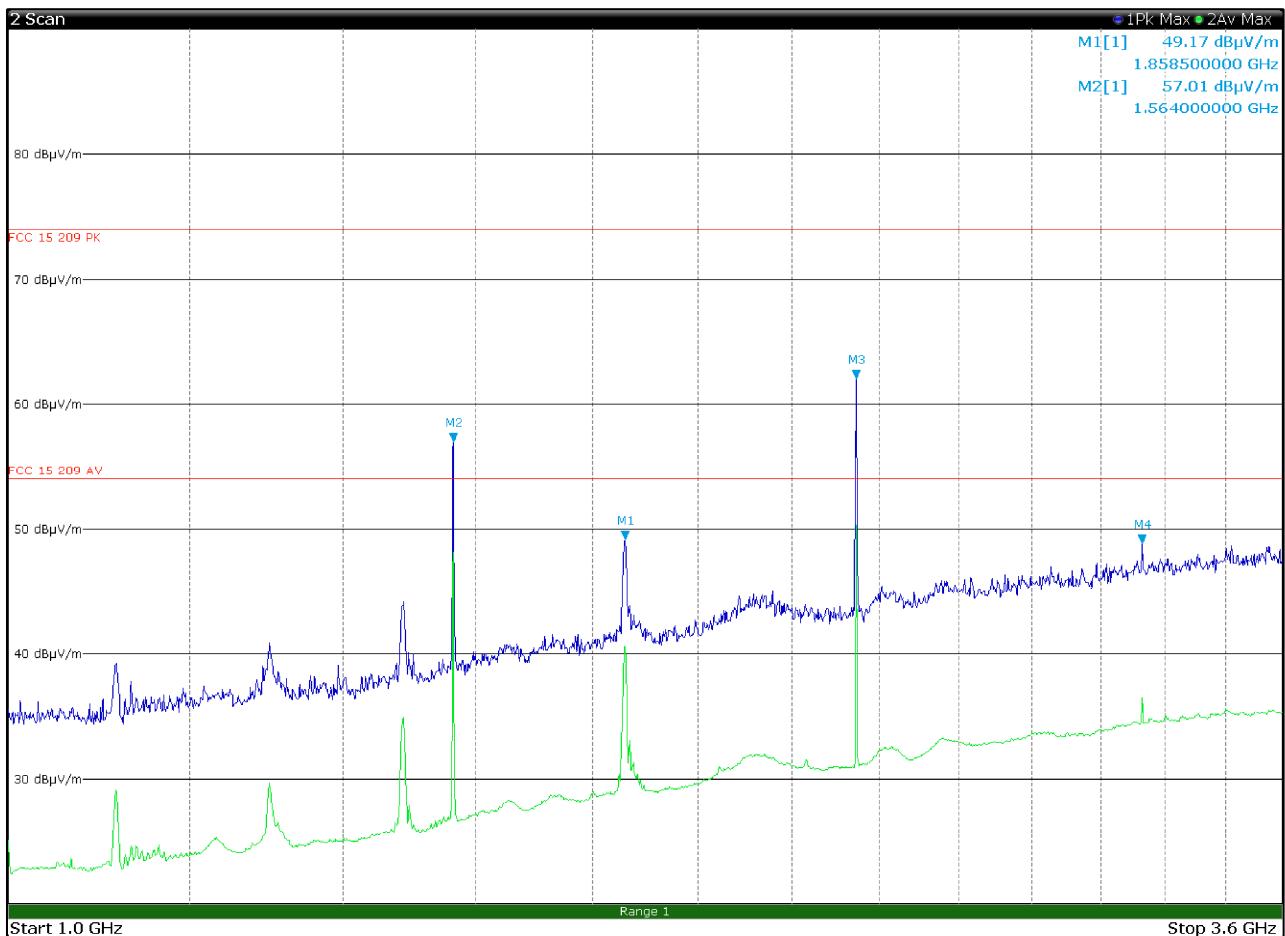


Figure 8.1-52: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1.5640	57.1	82.2	-25.1	PK
2.3460	62.0	82.2	-20.2	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

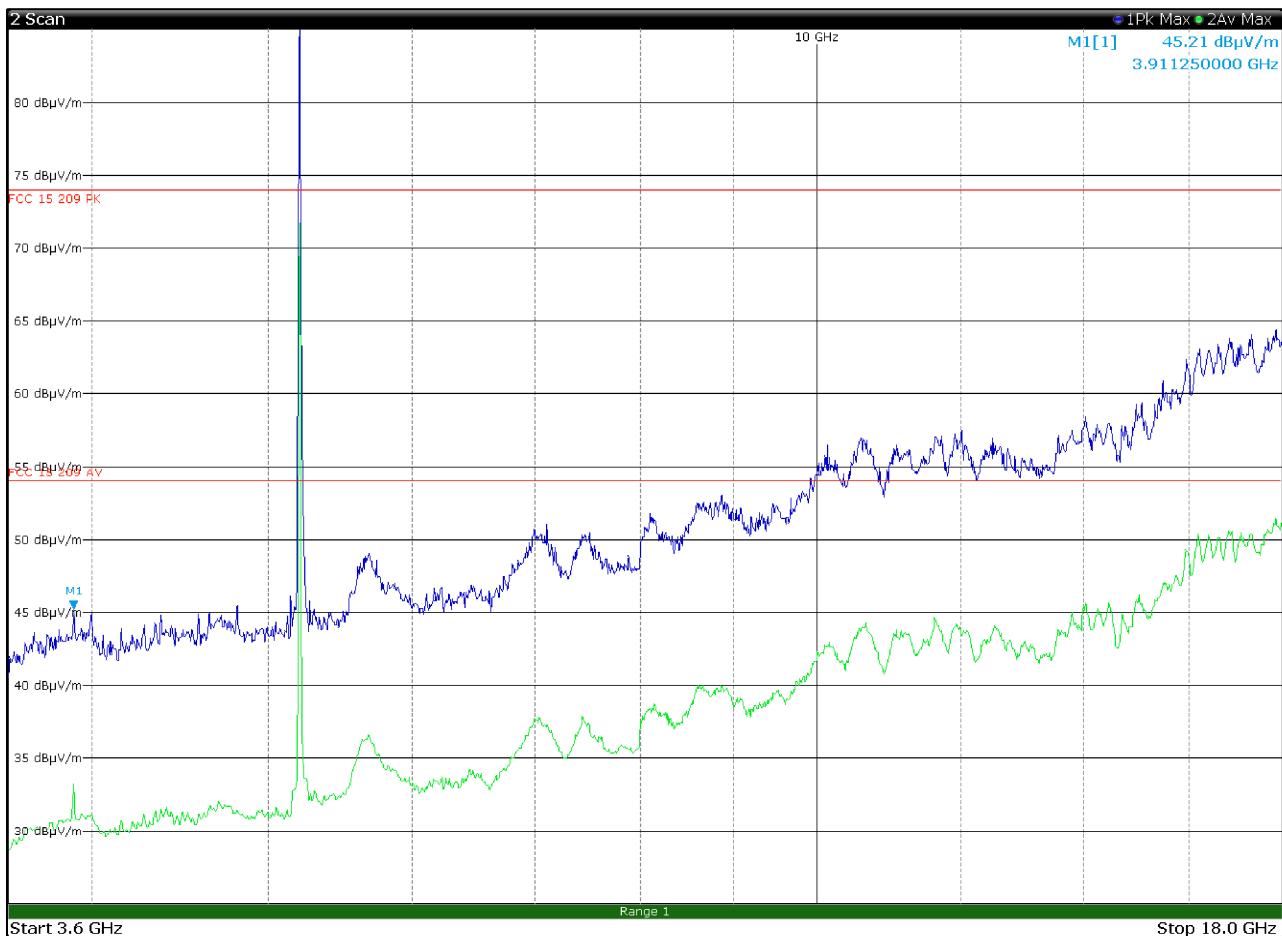


Figure 8.1-53: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

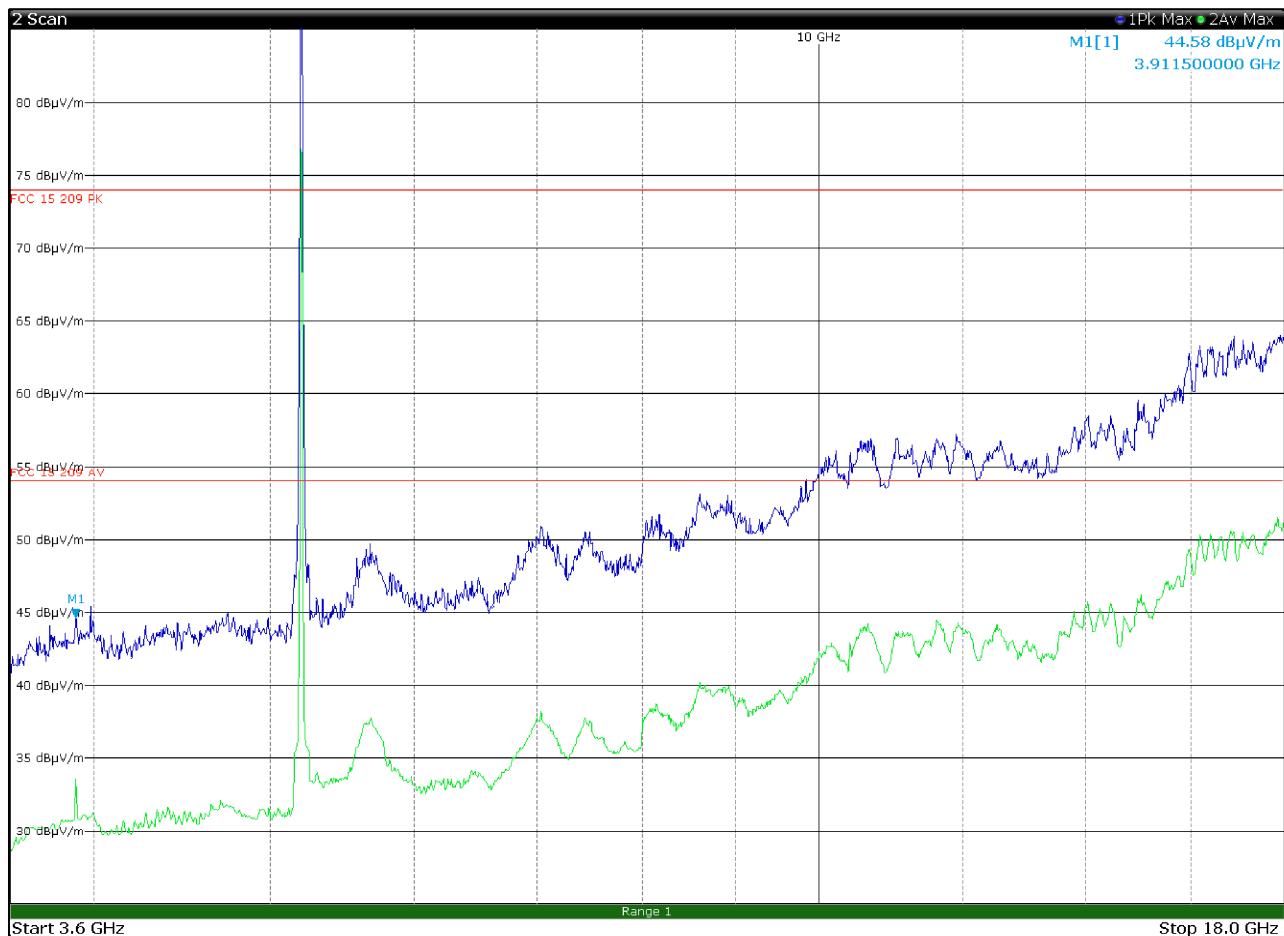


Figure 8.1-54: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

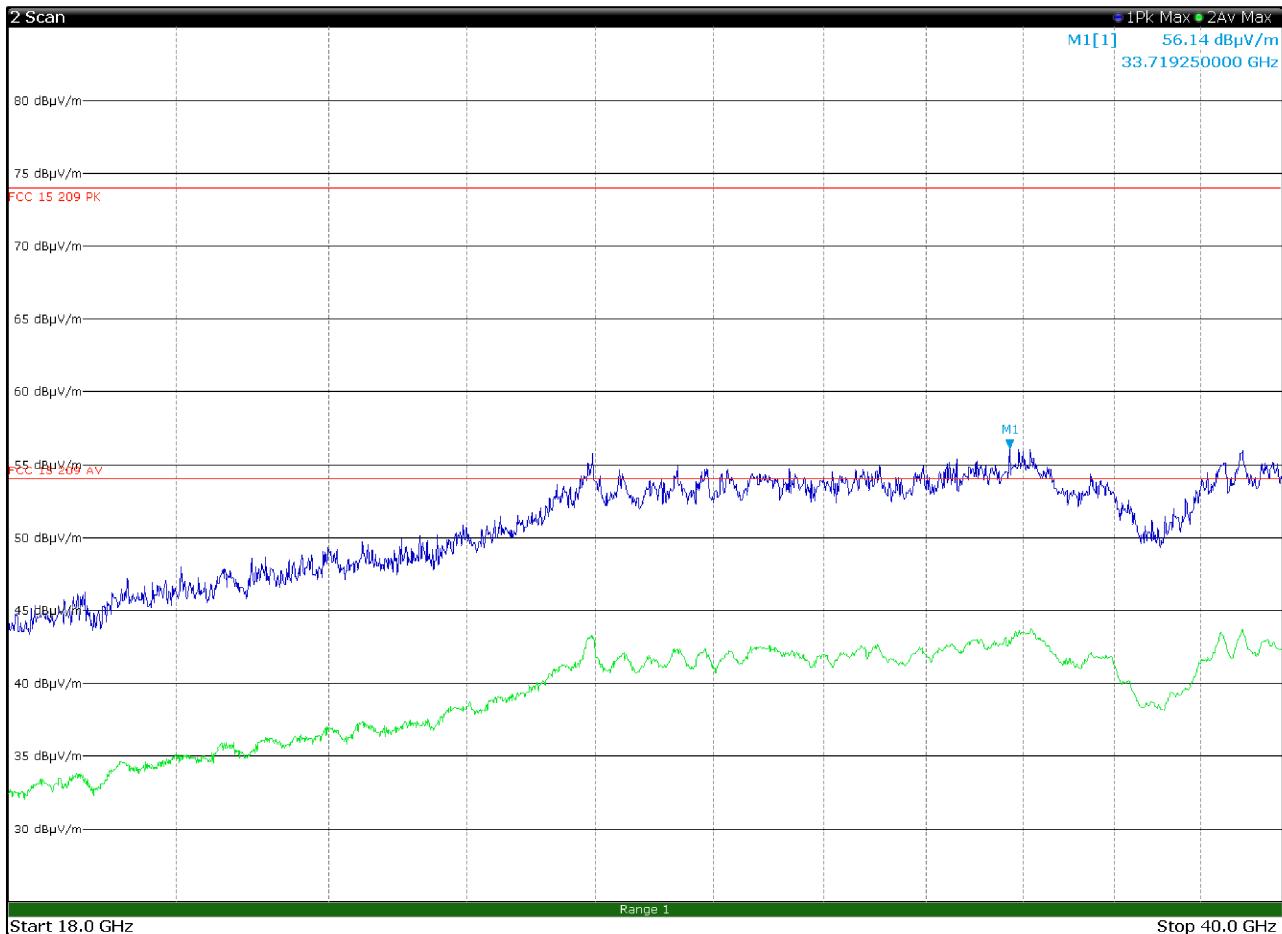


Figure 8.1-55: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 2

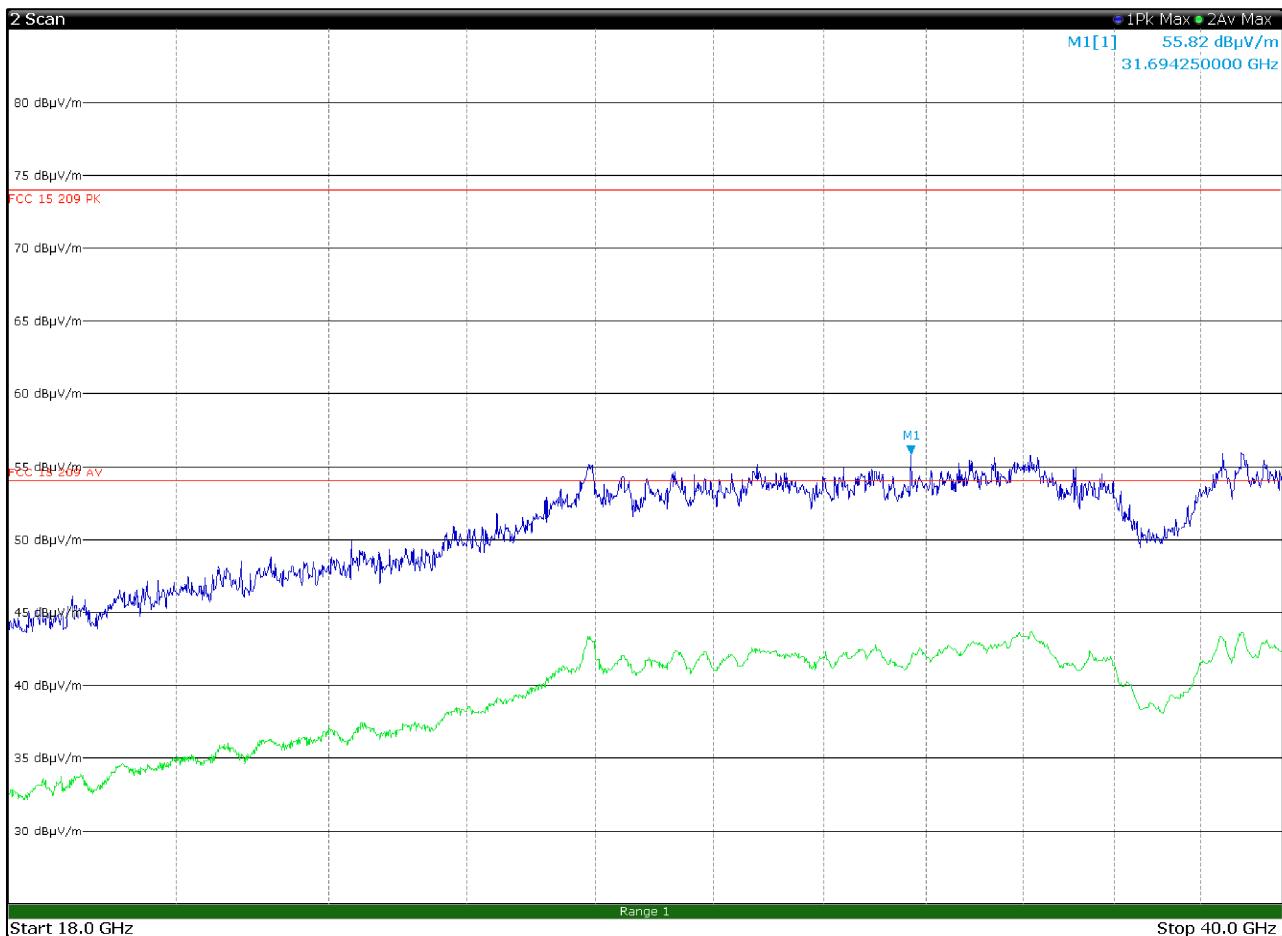


Figure 8.1-56: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 2

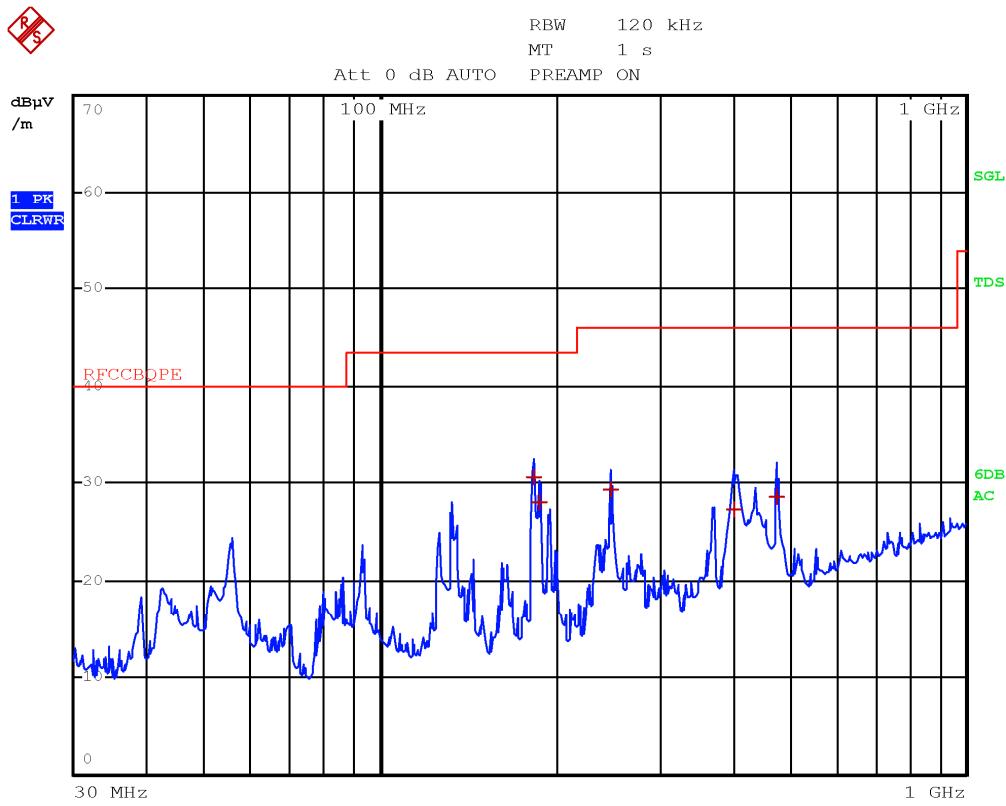


Figure 8.1-57: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
183.2800	30.6	43.5	-12.9	QP
187.2800	28.0	43.5	-15.5	QP
248.1200	29.4	46.0	-16.6	QP
402.9600	27.3	46.0	-18.7	QP
476.0800	28.7	46.0	-17.3	QP

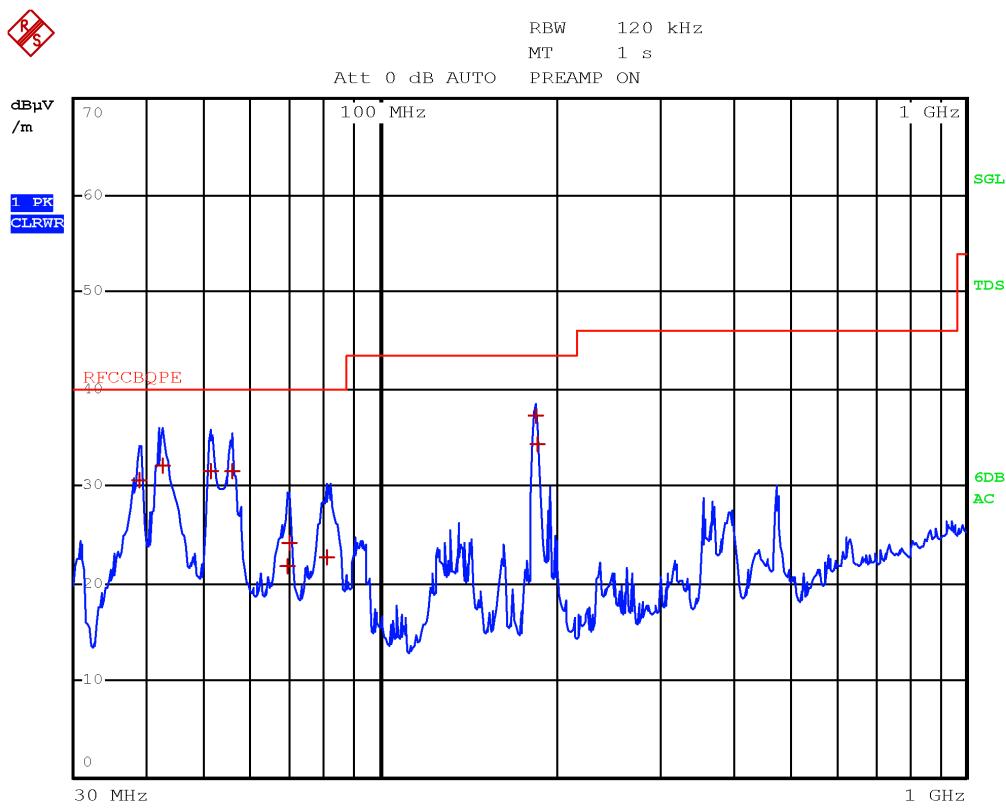


Figure 8.1-58: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
38.9600	30.6	40.0	-9.4	QP
42.5600	32.1	40.0	-7.9	QP
51.3600	31.6	40.0	-8.4	QP
56.0000	31.5	40.0	-8.5	QP
69.4400	21.9	40.0	-18.1	QP
70.0800	24.2	40.0	-15.8	QP
81.1600	22.8	40.0	-17.2	QP
184.3200	37.2	43.5	-6.3	QP
185.9200	34.2	43.5	-9.3	QP

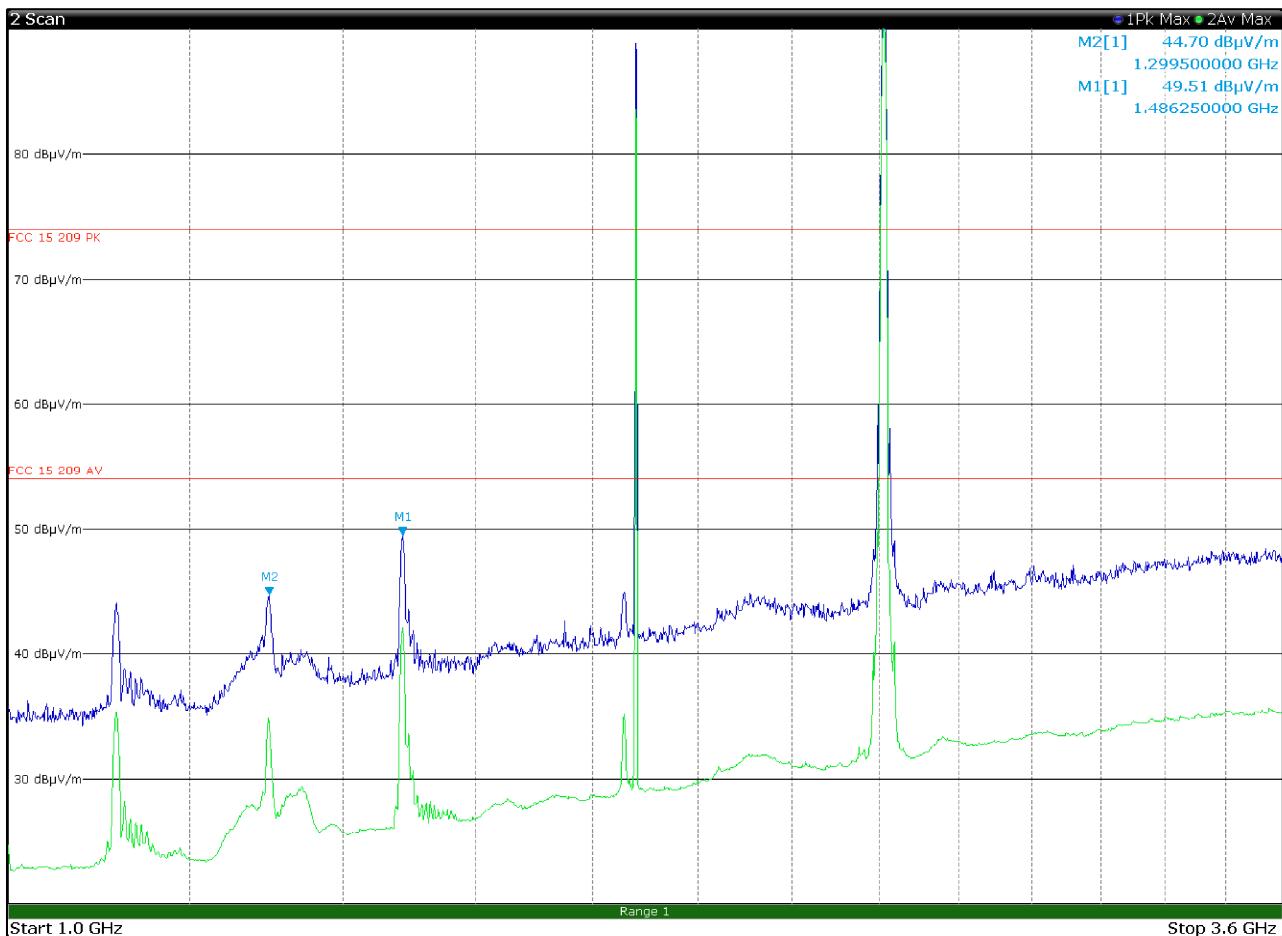


Figure 8.1-59: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

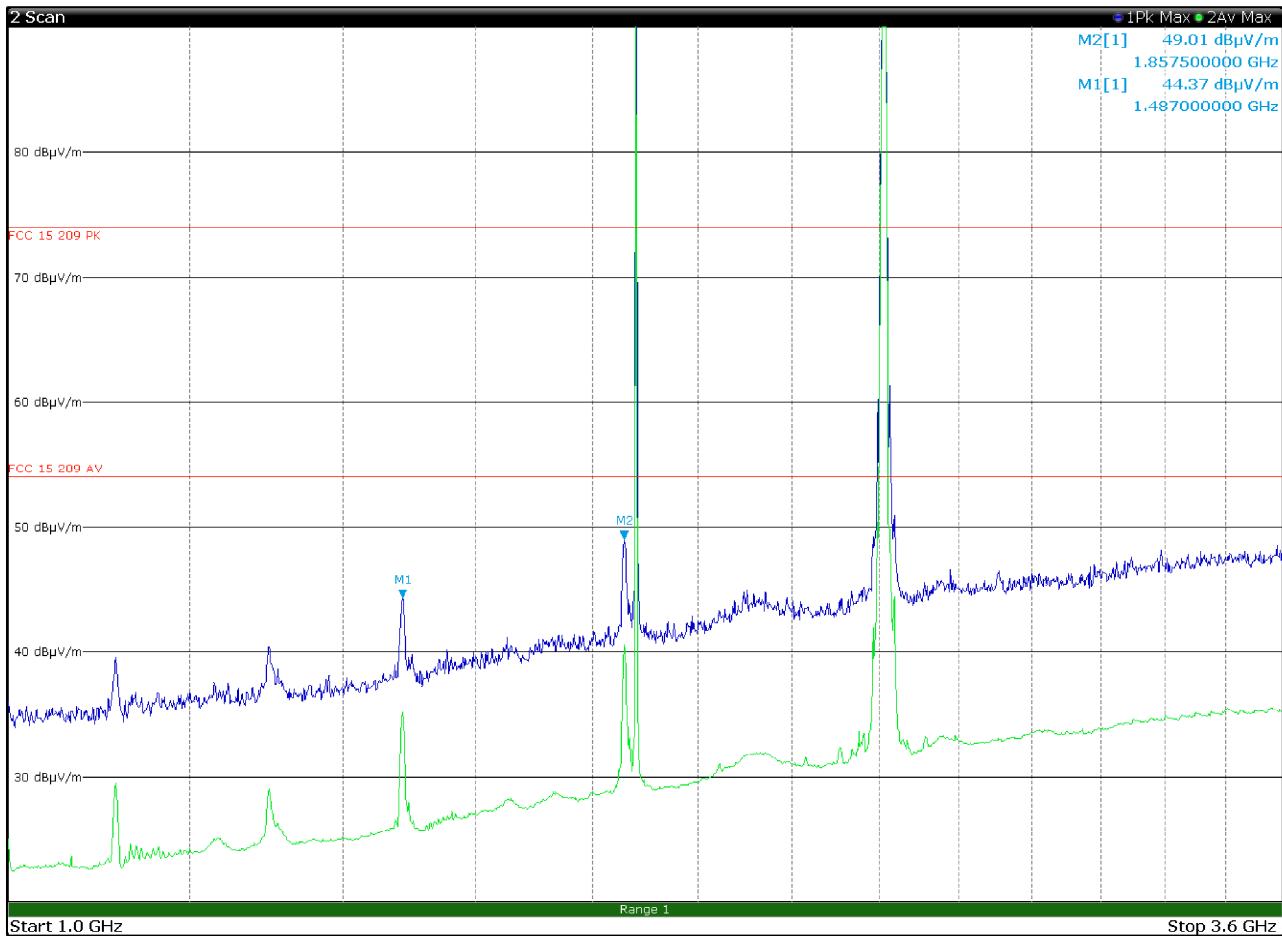


Figure 8.1-60: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

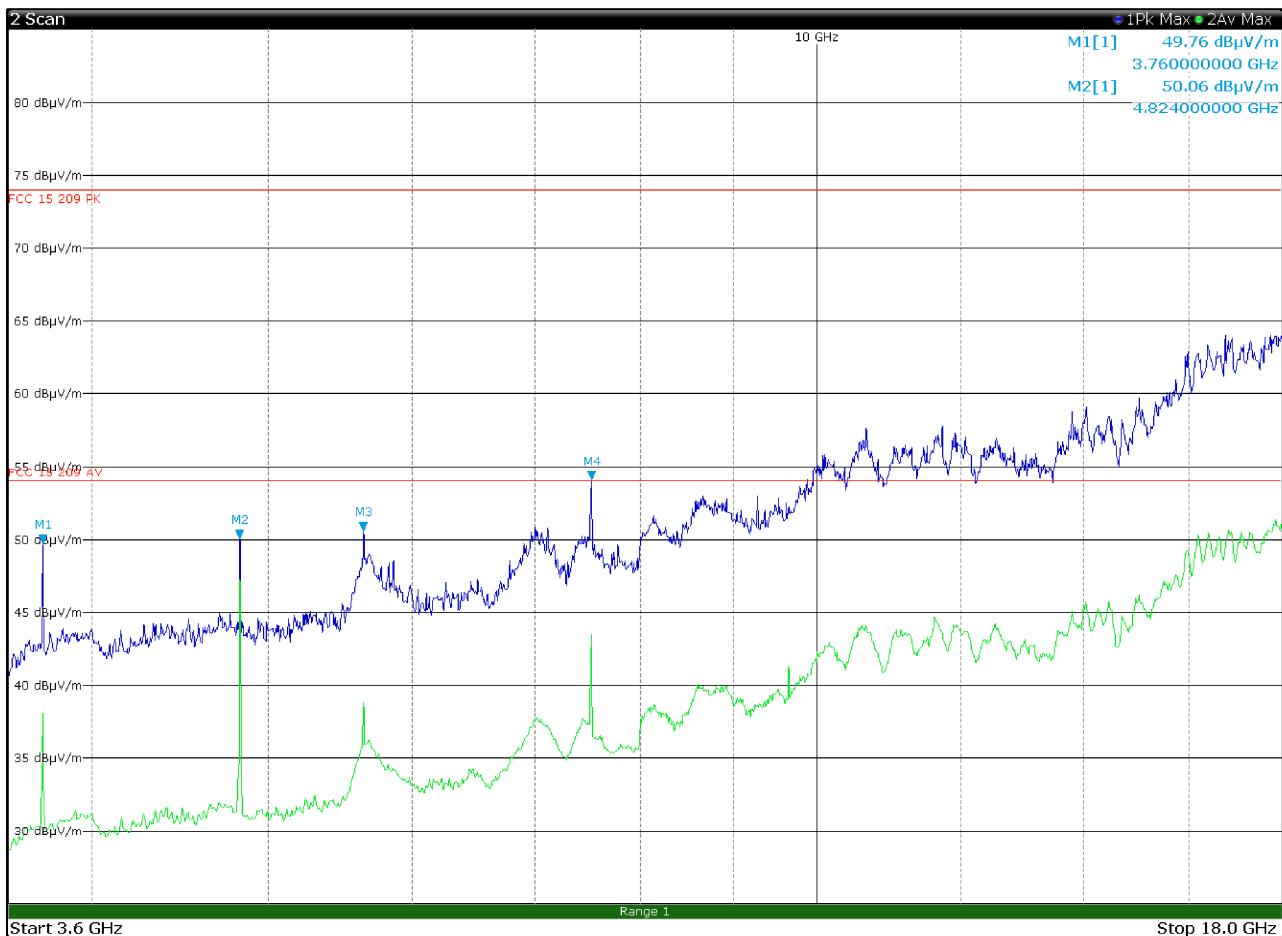


Figure 8.1-61: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
4.8240	50.1	74.0	-23.9	PK
4.8240	46.6	54.0	-7.4	AV
3.7600	49.8	82.2	-32.4	PK
5.6400	50.6	82.2	-31.6	PK
7.5200	54.1	82.2	-28.1	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

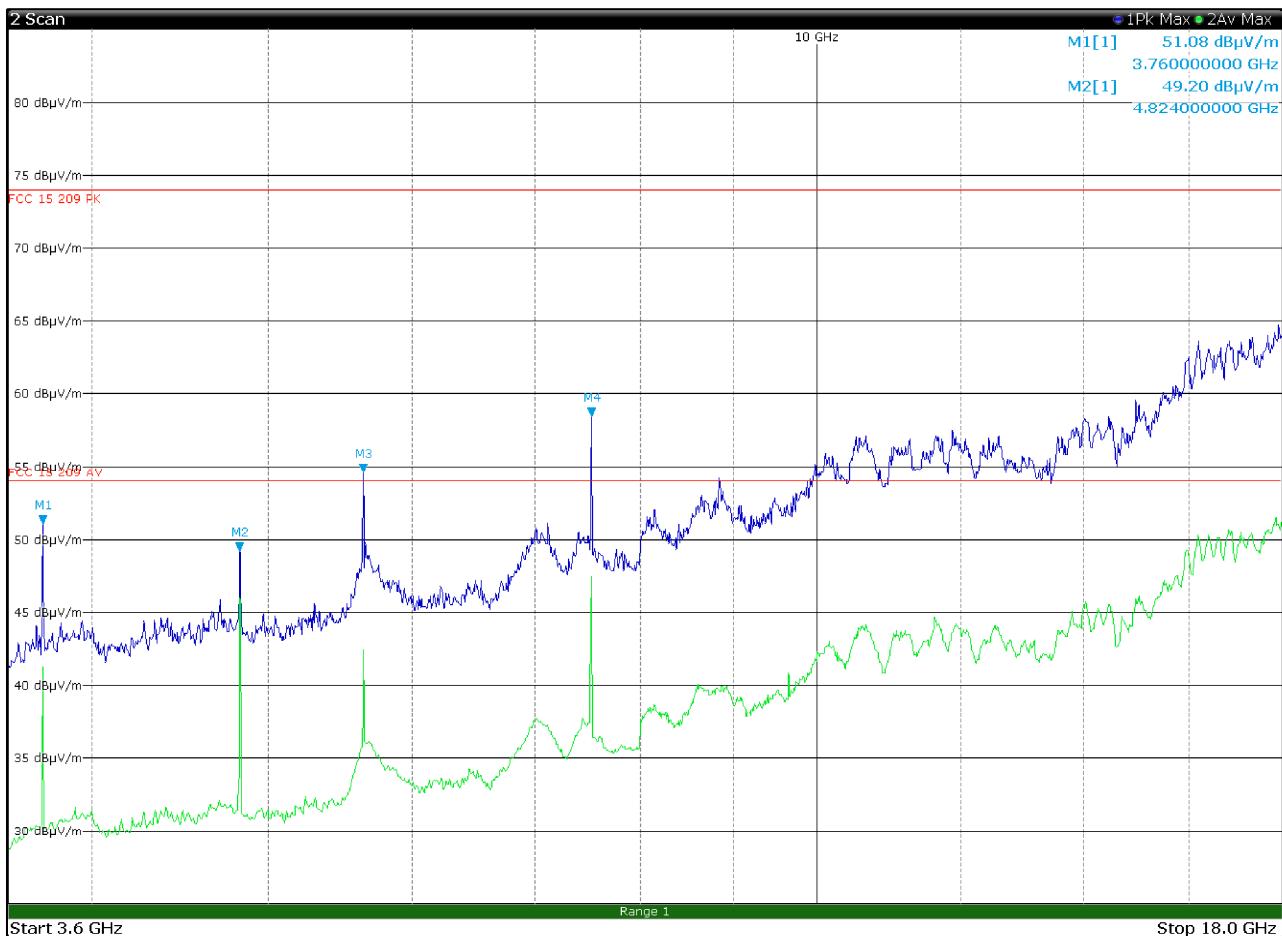


Figure 8.1-62: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
4.8240	49.2	74.0	-24.8	PK
4.8240	45.7	54.0	-8.3	AV
3.7600	51.1	82.2	-31.1	PK
5.6400	54.7	82.2	-27.5	PK
7.5200	58.5	82.2	-23.7	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

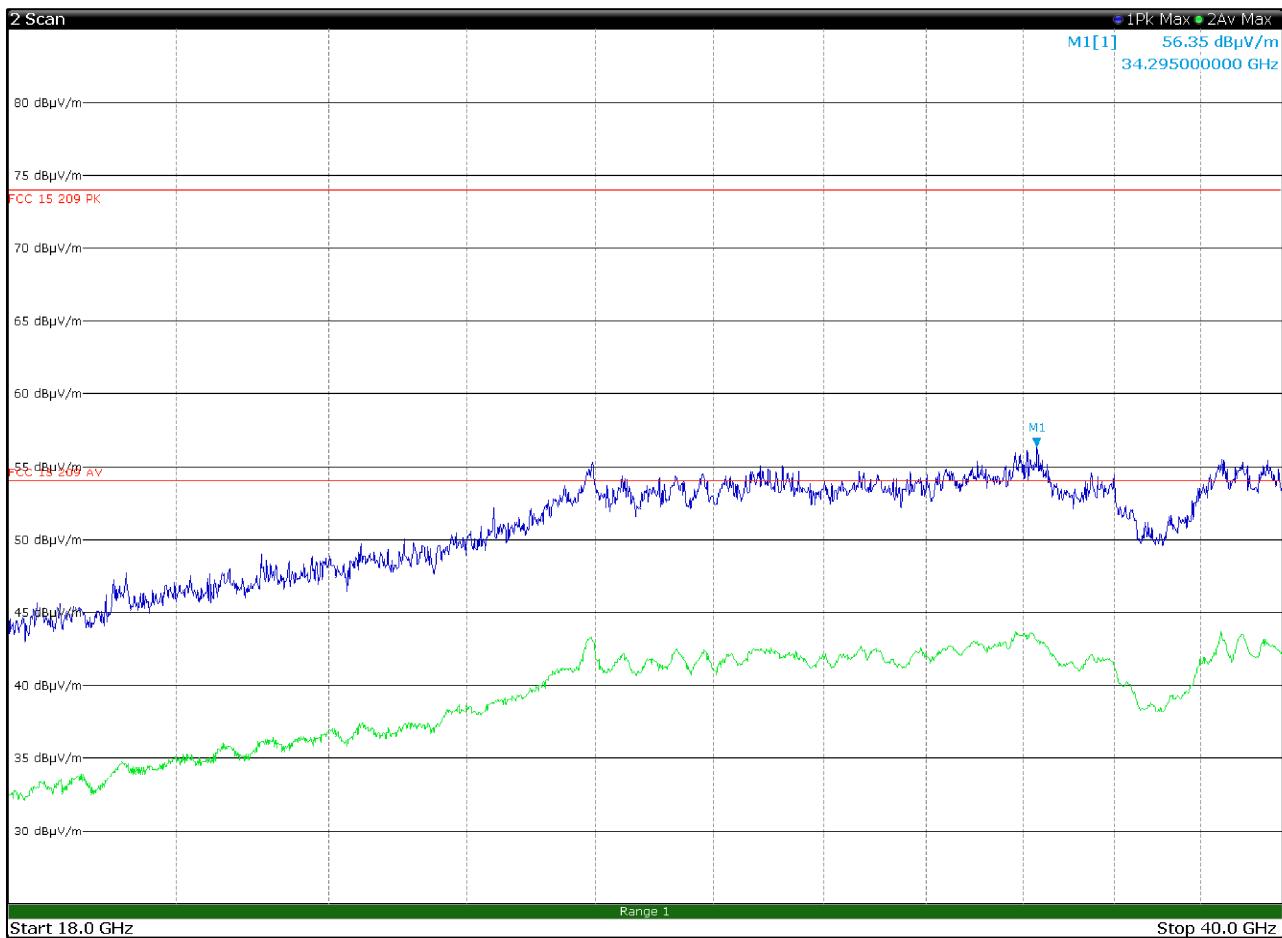


Figure 8.1-63: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 2

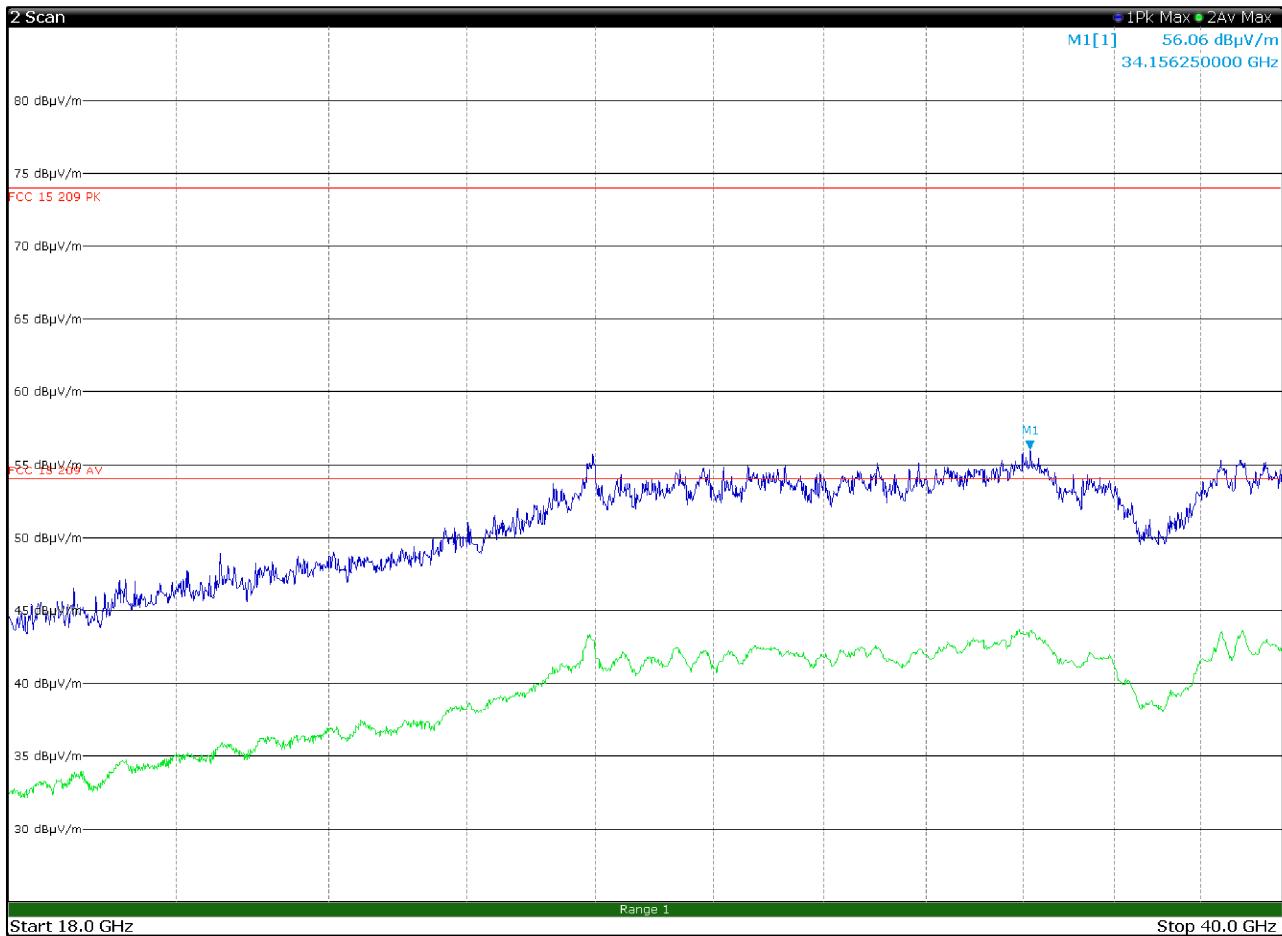


Figure 8.1-64: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 2

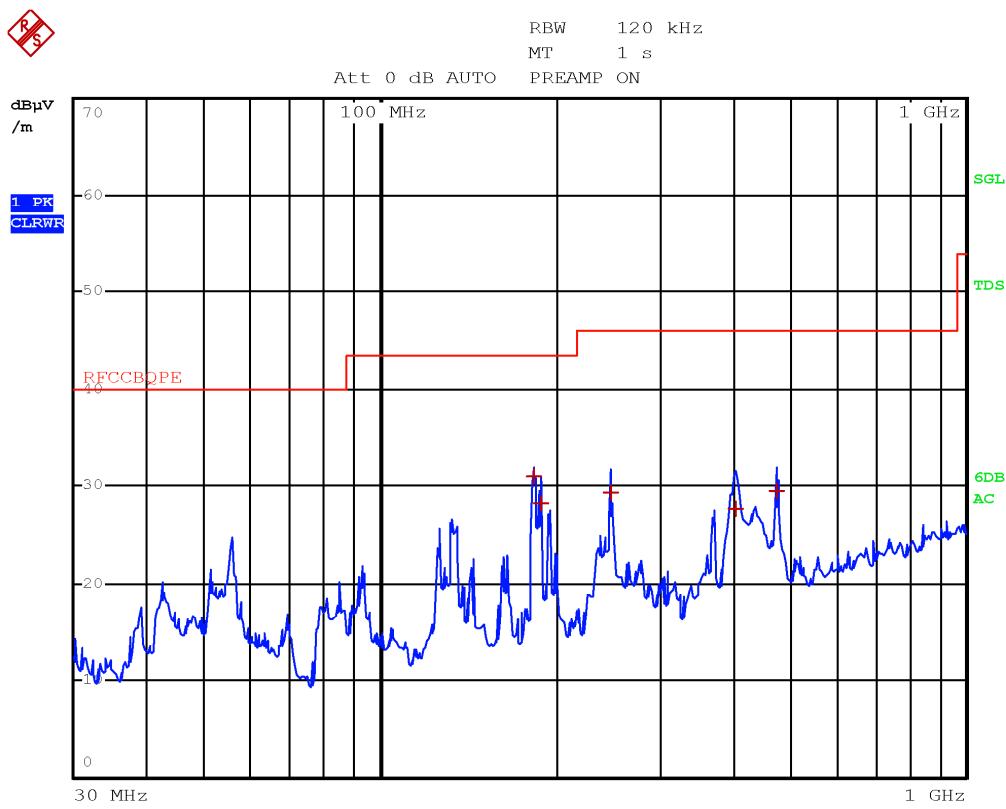


Figure 8.1-65: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 2

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
183.1600	31.0	43.5	-12.5	QP
187.8000	28.3	43.5	-15.2	QP
248.1600	29.4	46.0	-16.6	QP
403.7600	27.6	46.0	-18.4	QP
476.0400	29.6	46.0	-16.4	QP

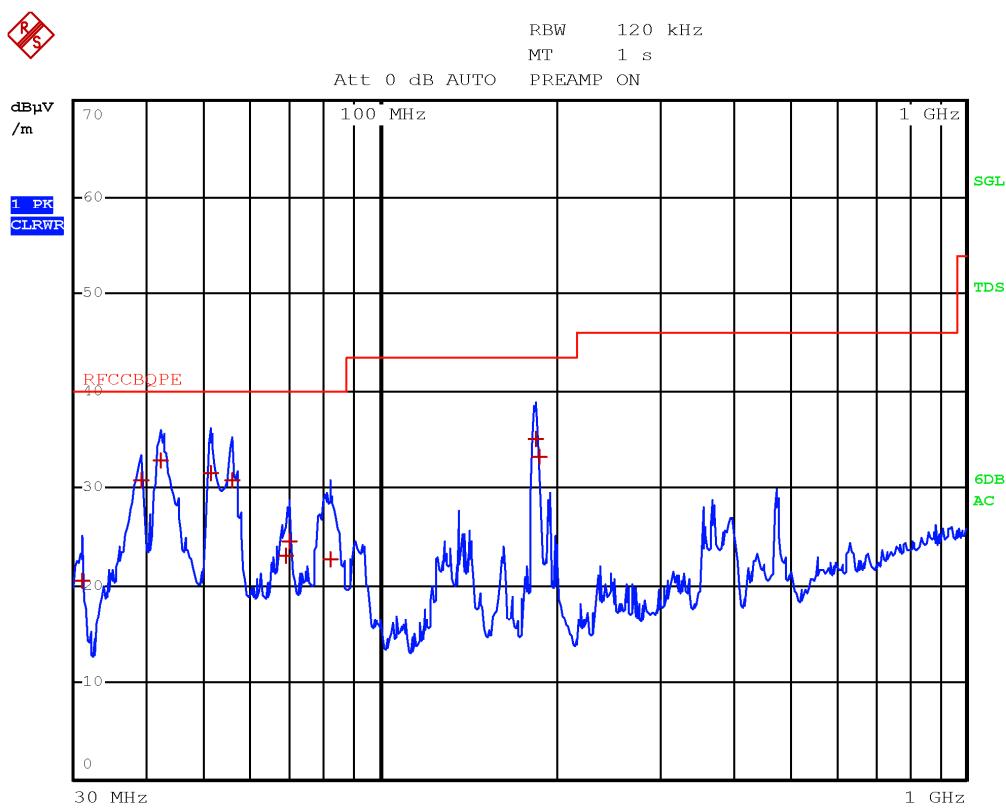


Figure 8.1-66: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 2

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
31.0000	20.5	40.0	-19.5	QP
39.2000	30.8	40.0	-9.2	QP
42.2800	32.8	40.0	-7.2	QP
51.3600	31.6	40.0	-8.4	QP
56.1200	30.8	40.0	-9.2	QP
69.3600	23.0	40.0	-17.0	QP
70.1600	24.5	40.0	-15.5	QP
82.3600	22.7	40.0	-17.3	QP
184.2800	35.1	43.5	-8.4	QP
185.9600	33.2	43.5	-10.3	QP

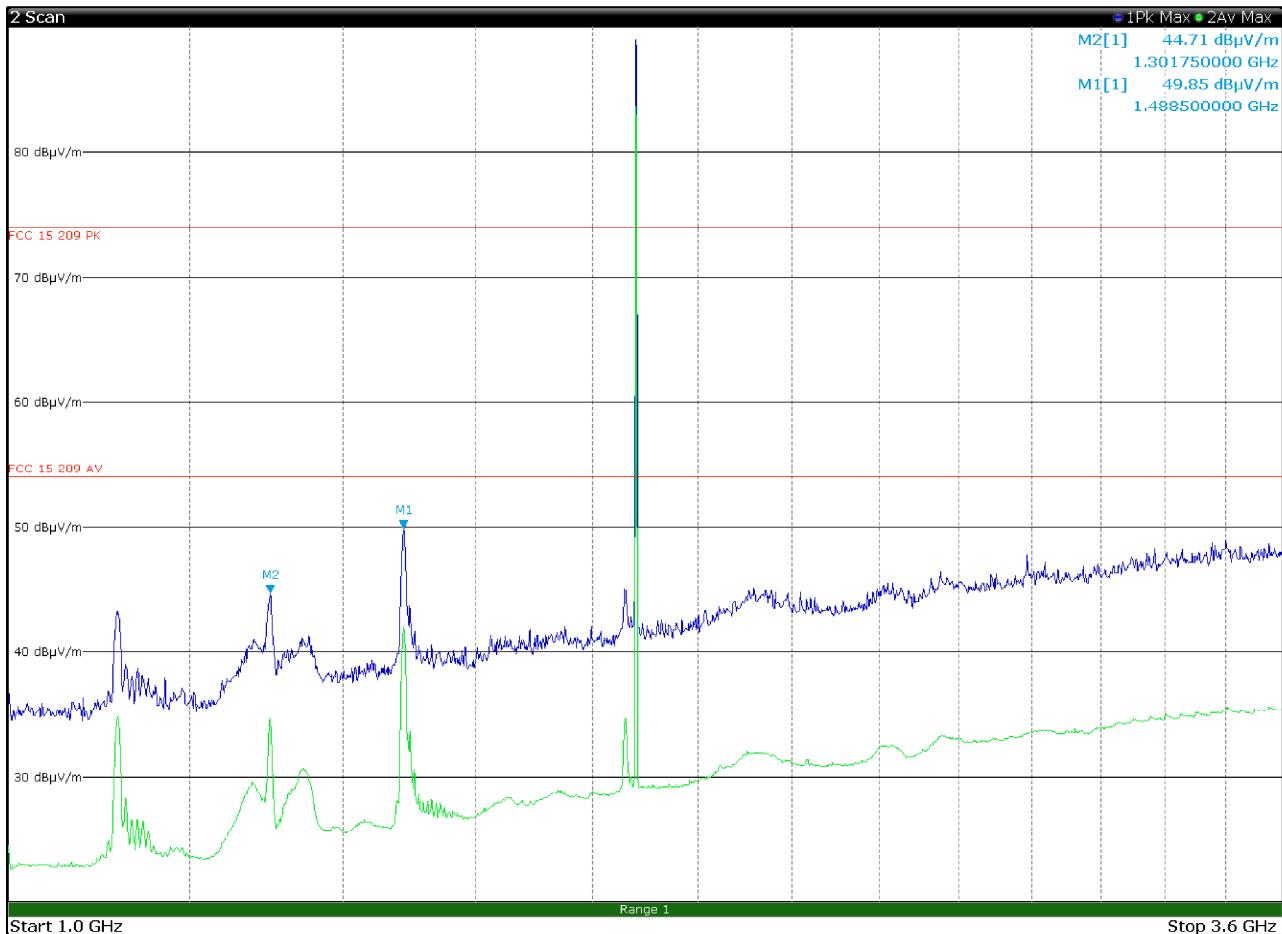


Figure 8.1-67: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

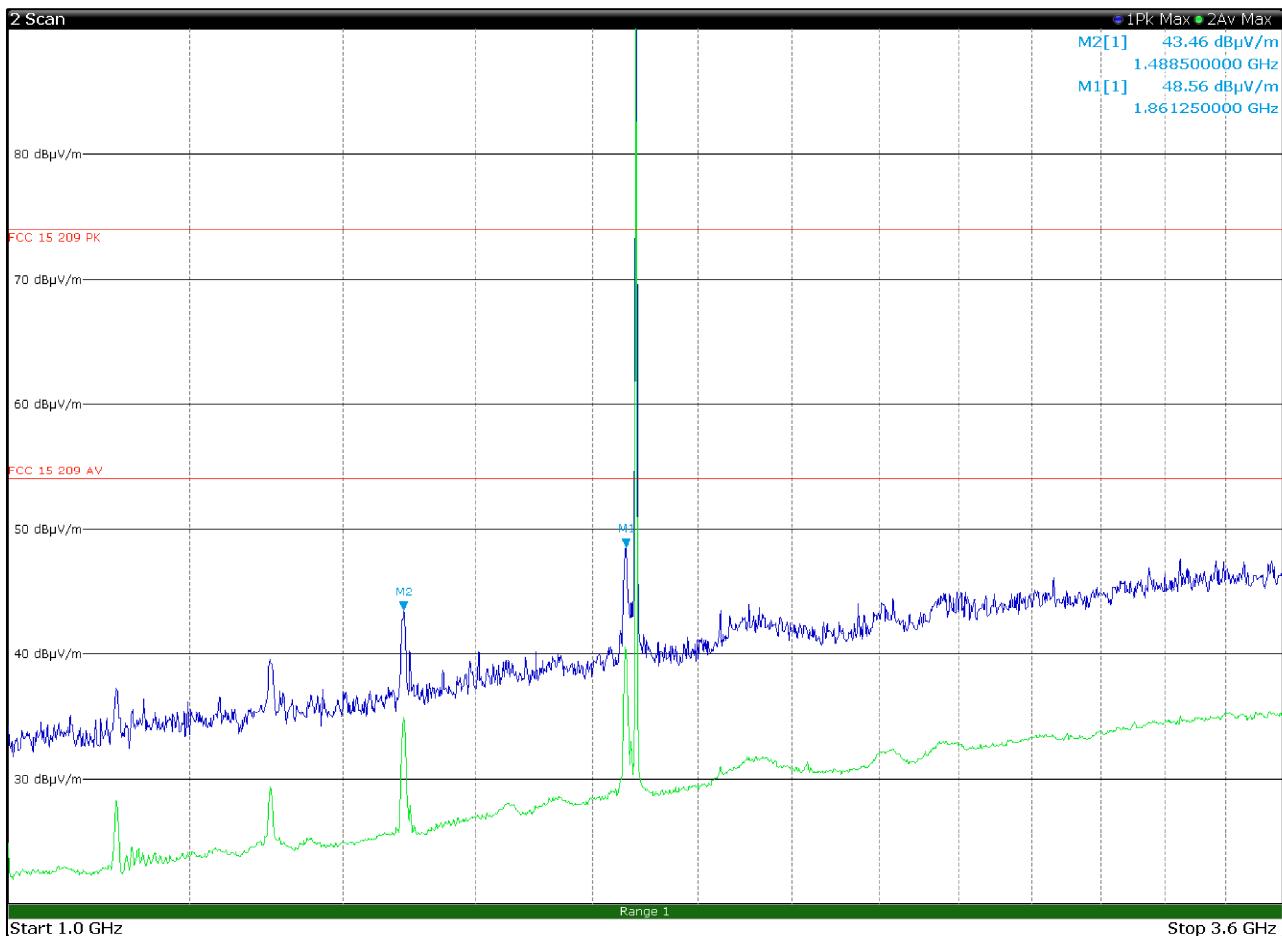


Figure 8.1-68: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

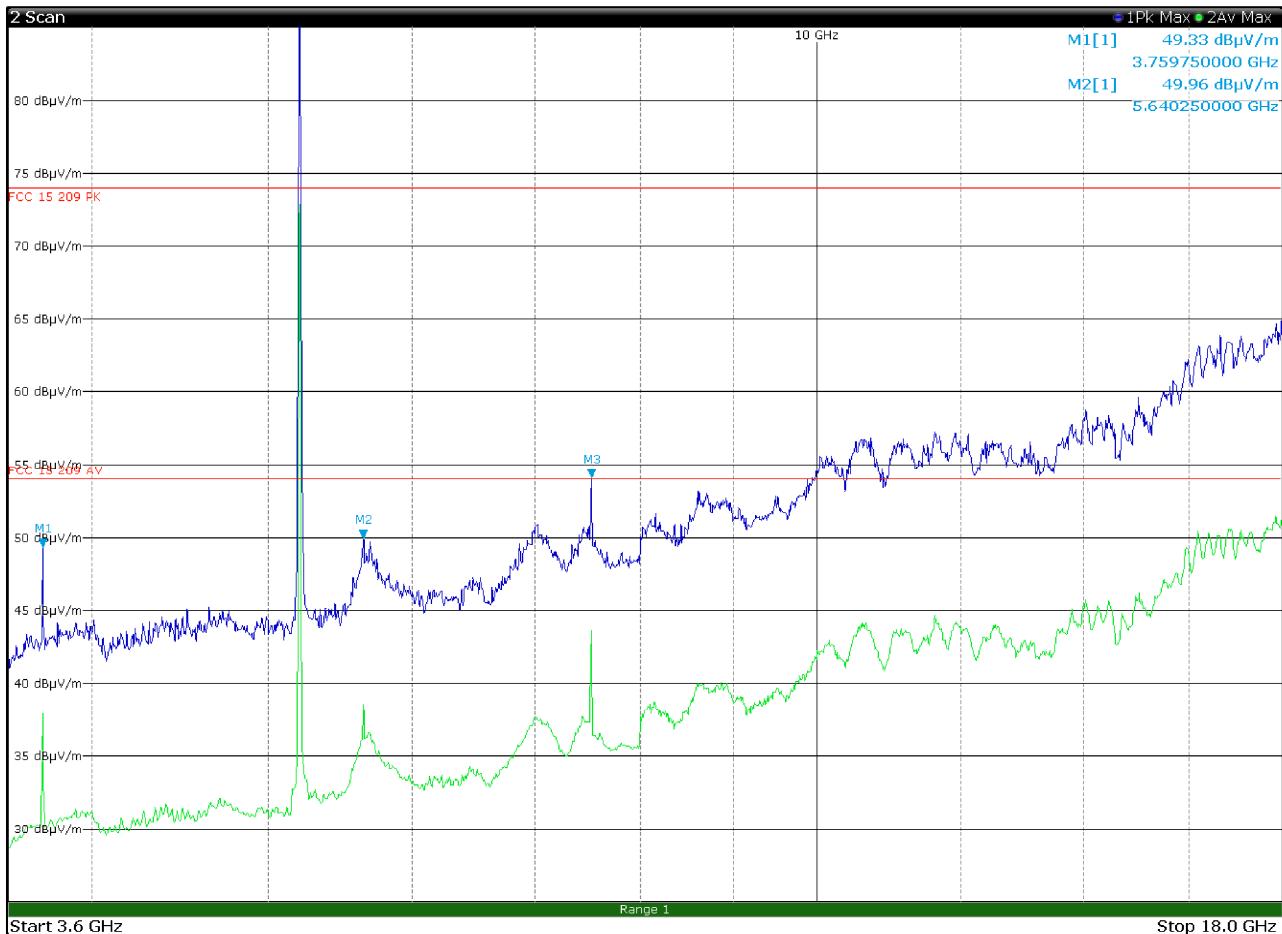


Figure 8.1-69: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
3.7597	49.4	82.2	-32.3	PK
5.6425	50.0	82.2	-32.2	PK
7.5192	54.1	82.2	-28.1	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

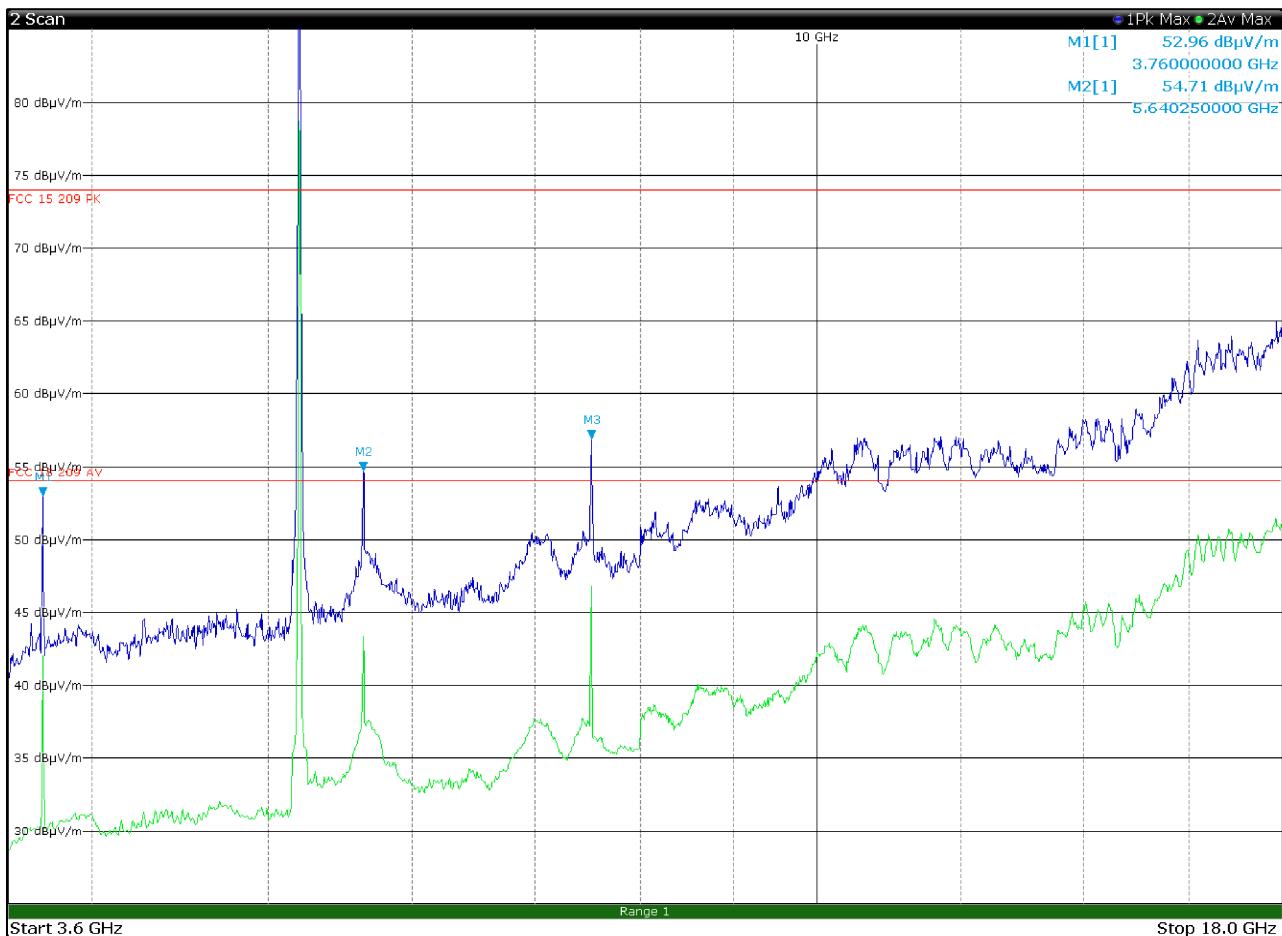


Figure 8.1-70: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 2

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
3.7600	53.0	82.2	-29.2	PK
5.6402	54.8	82.2	-27.4	PK
7.5200	57.0	82.2	-25.2	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

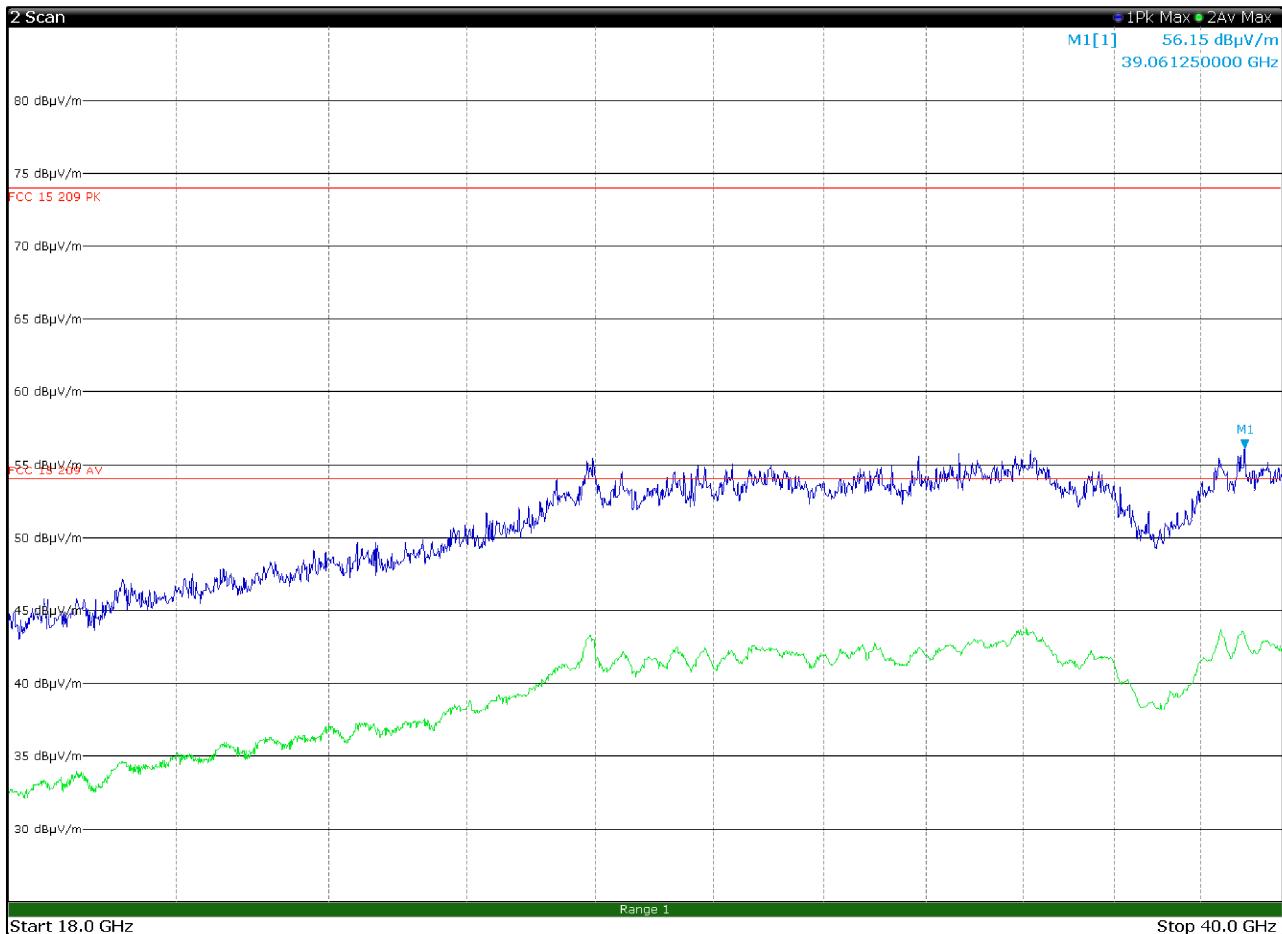


Figure 8.1-71: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 2

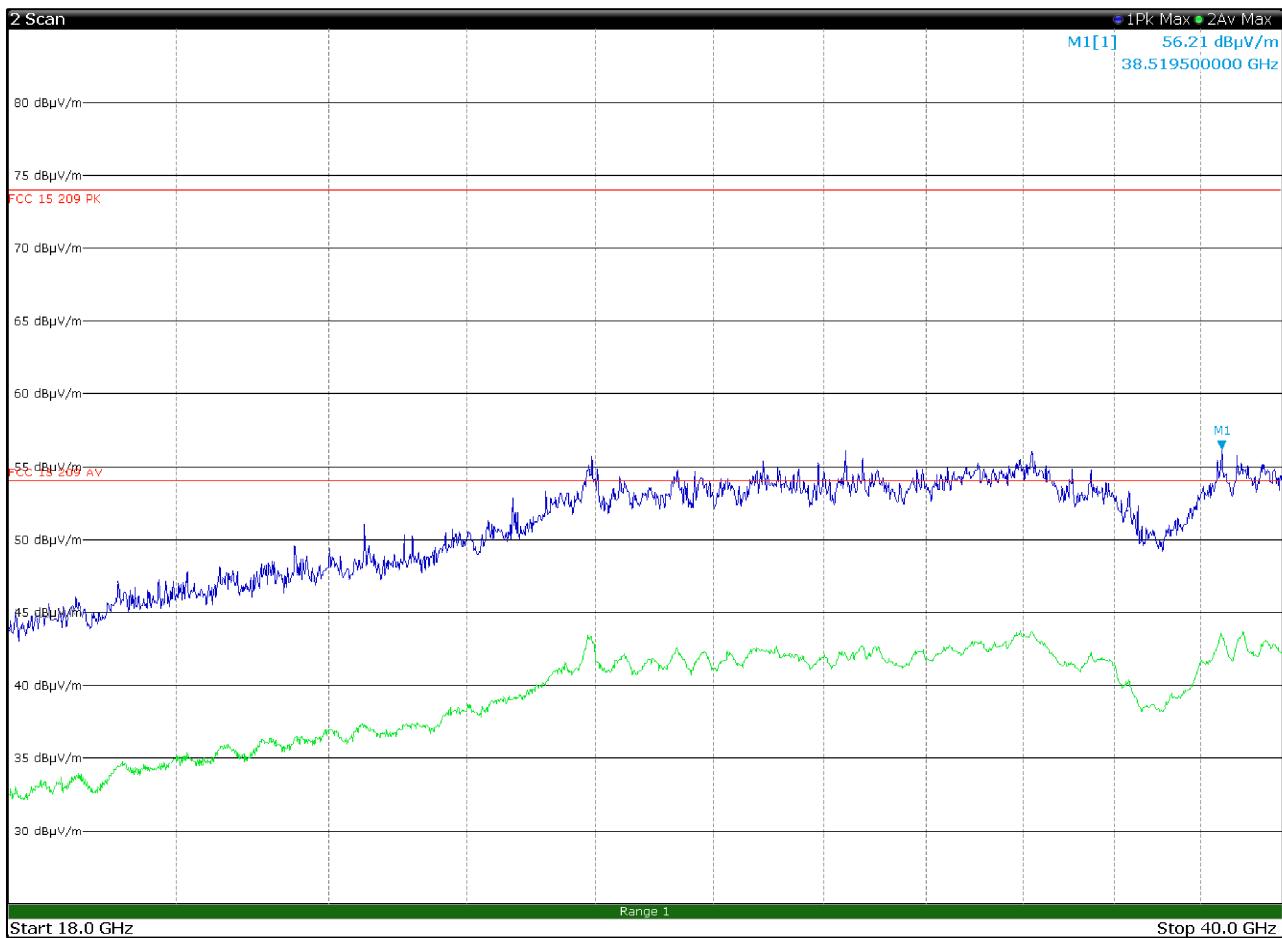


Figure 8.1-72: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 2

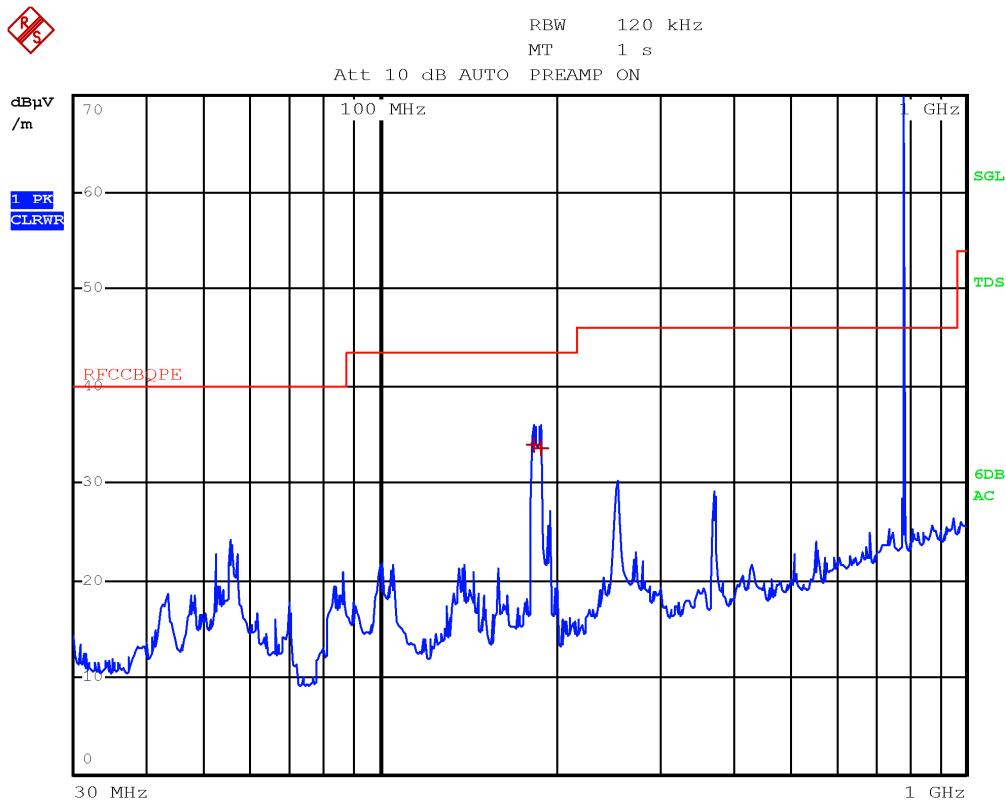


Figure 8.1-73: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
182.7600	33.9	43.5	-9.6	QP
187.8400	33.6	43.5	-9.9	QP

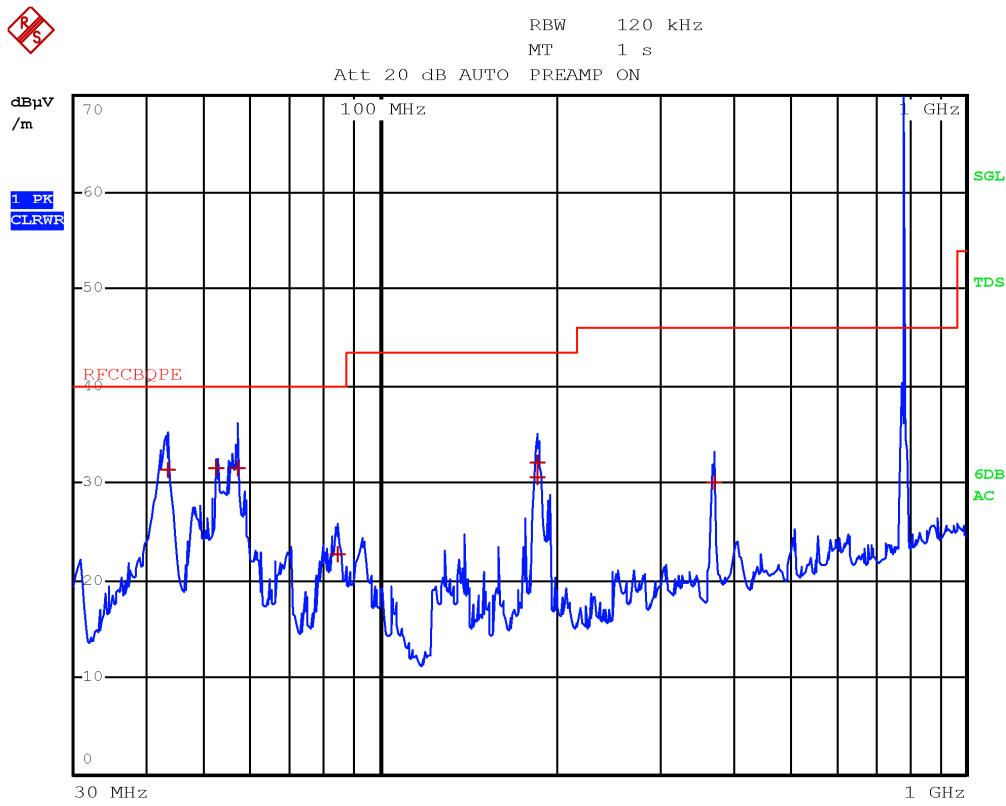


Figure 8.1-74: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
43.3200	31.4	40.0	-8.6	QP
52.5200	31.6	40.0	-8.4	QP
57.0000	31.5	40.0	-8.5	QP
84.6400	22.7	40.0	-17.3	QP
185.4400	30.7	43.5	-12.8	QP
186.2000	32.2	43.5	-11.3	QP
372.3600	30.2	46.0	-15.8	QP

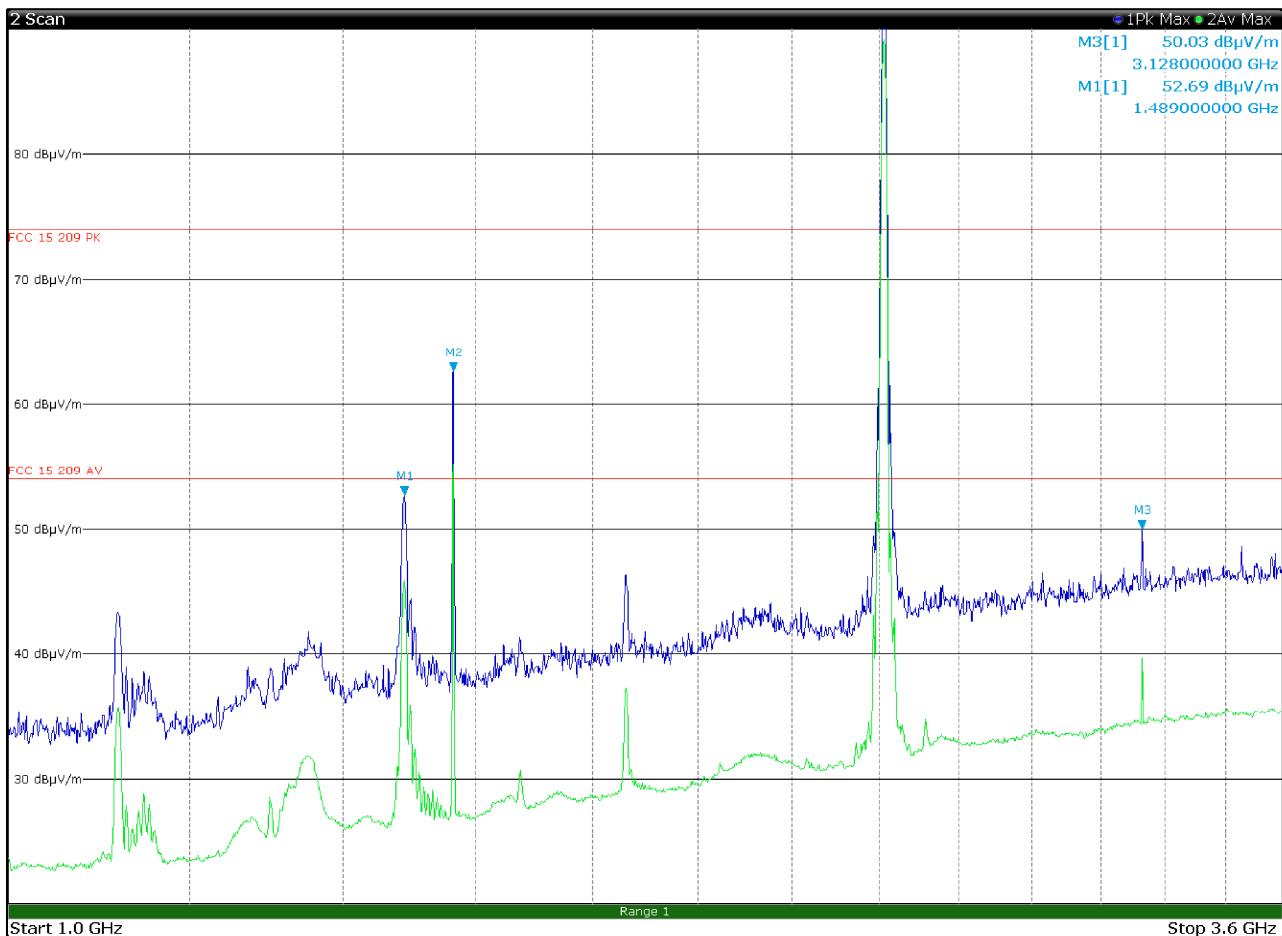


Figure 8.1-75: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1.5640	62.6	82.2	-19.6	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

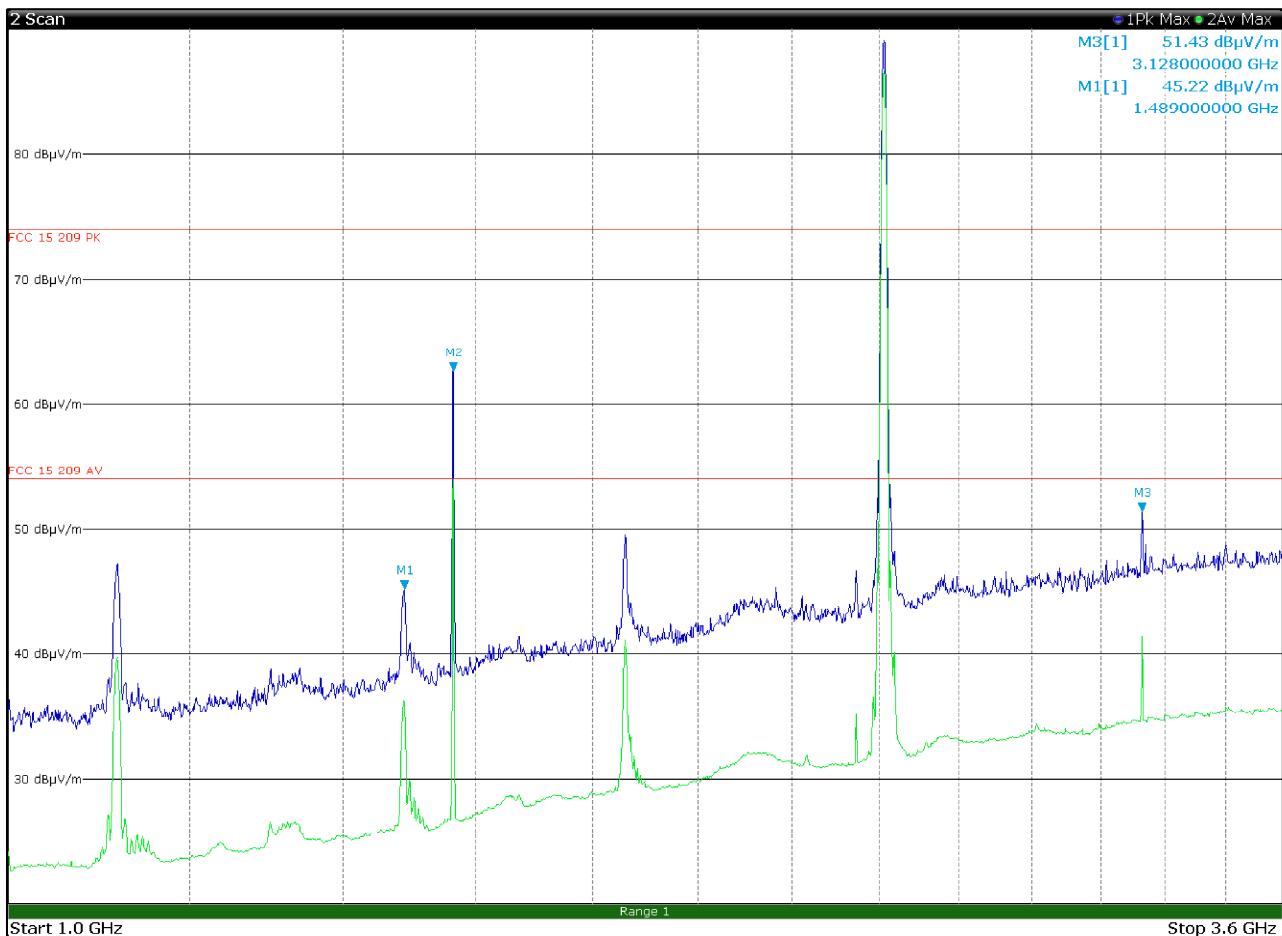


Figure 8.1-76: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1.5640	62.6	82.2	-19.6	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

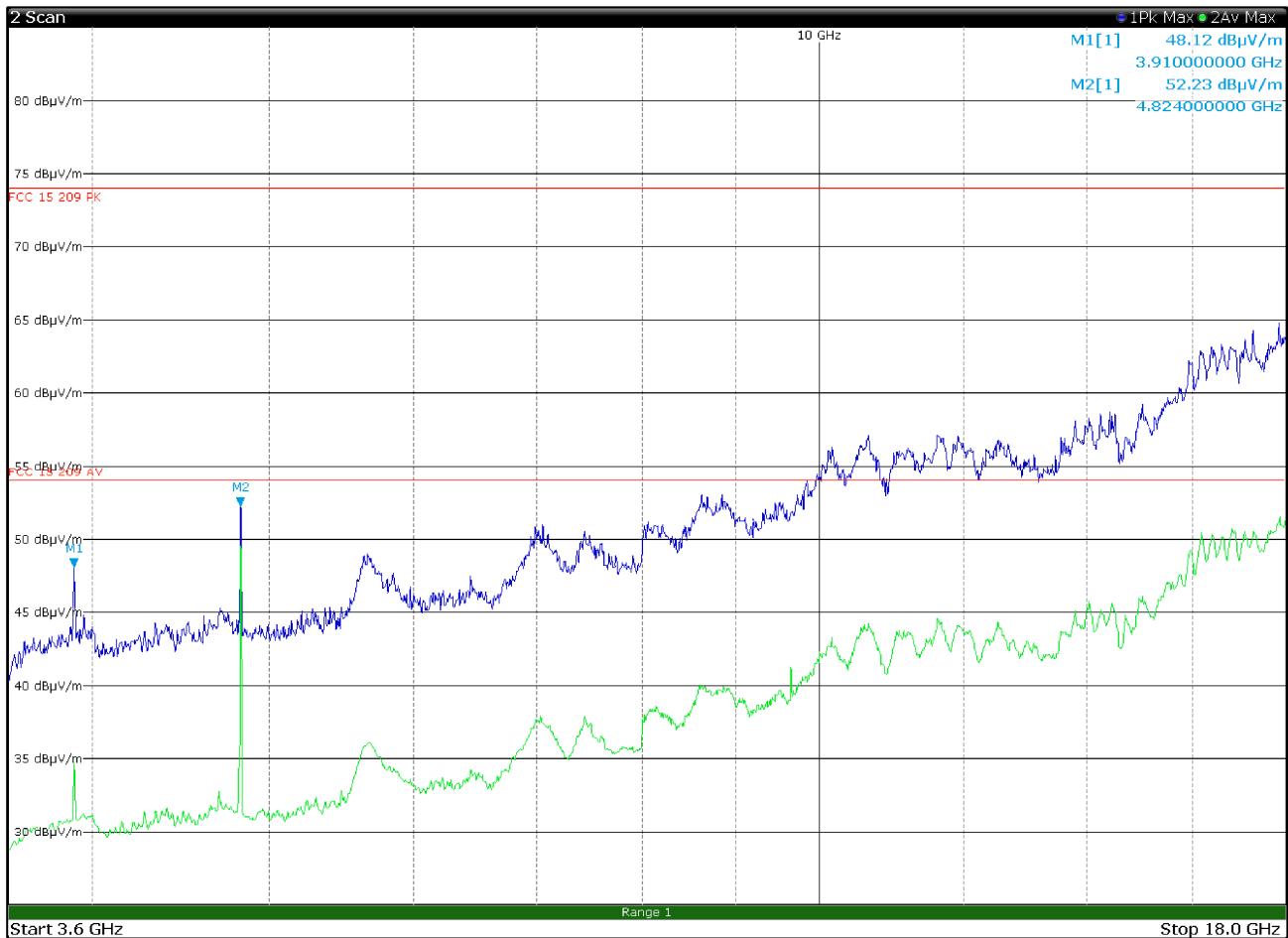


Figure 8.1-77: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 3

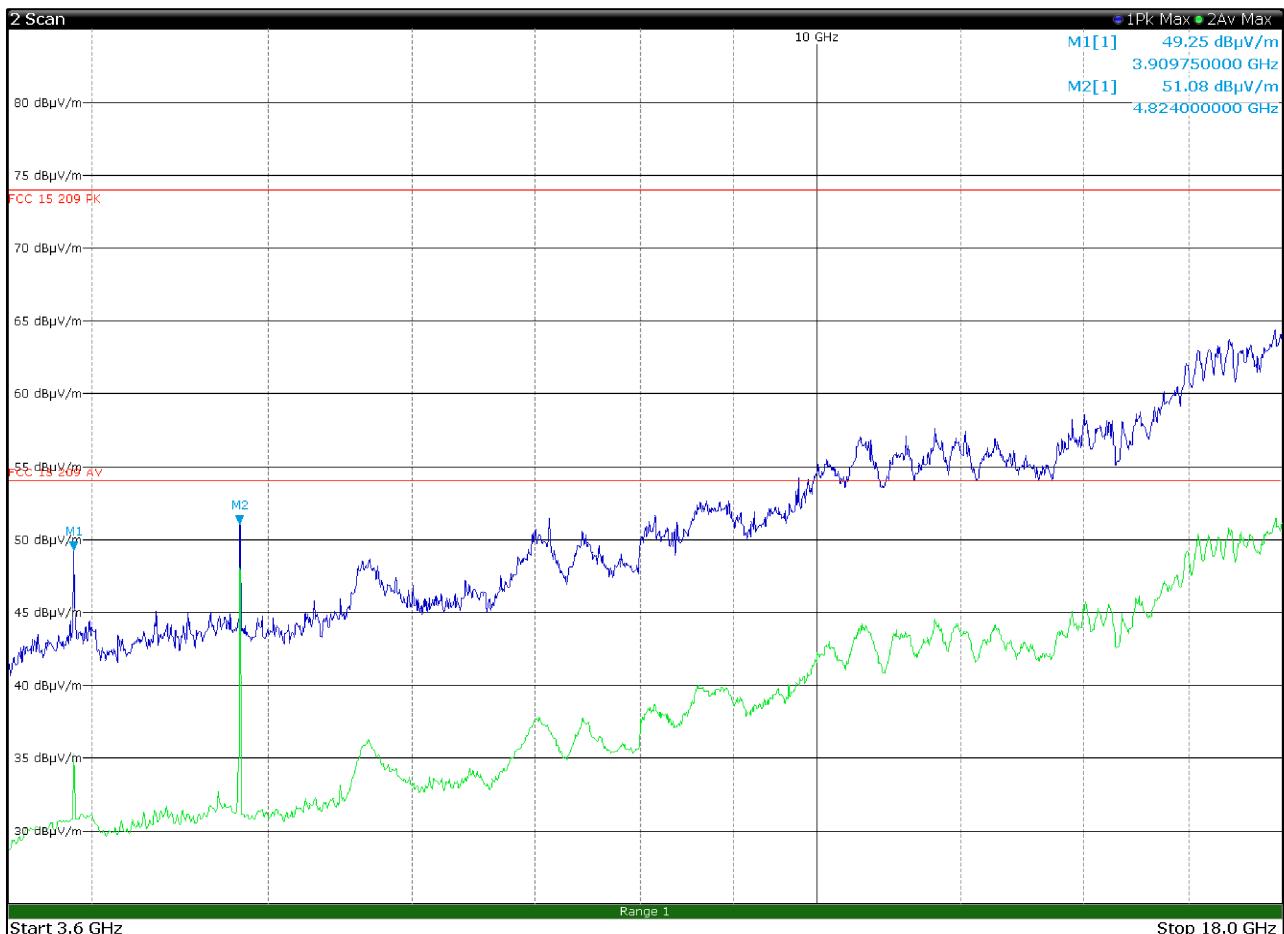


Figure 8.1-78: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 3

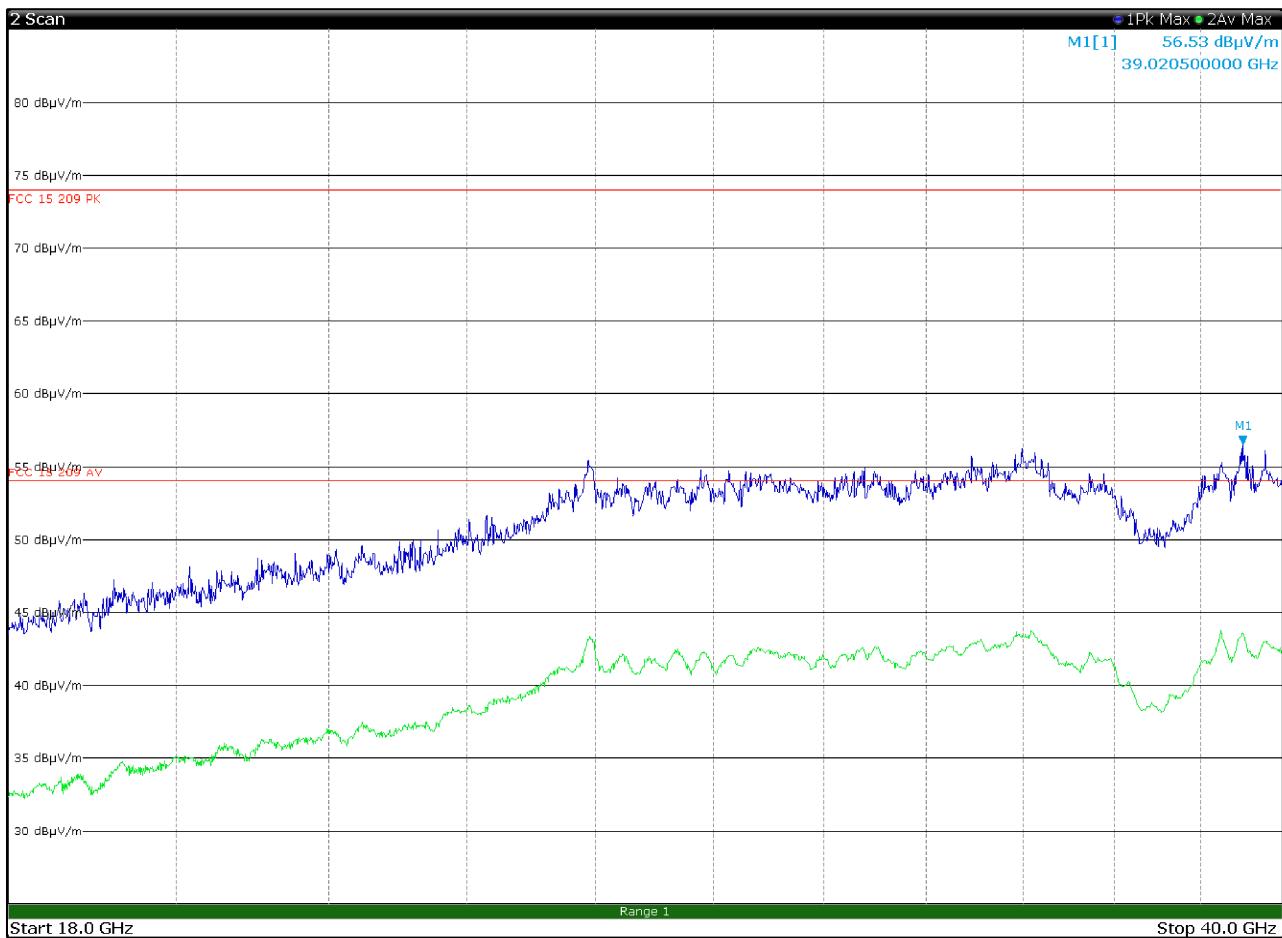


Figure 8.1-79: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 3

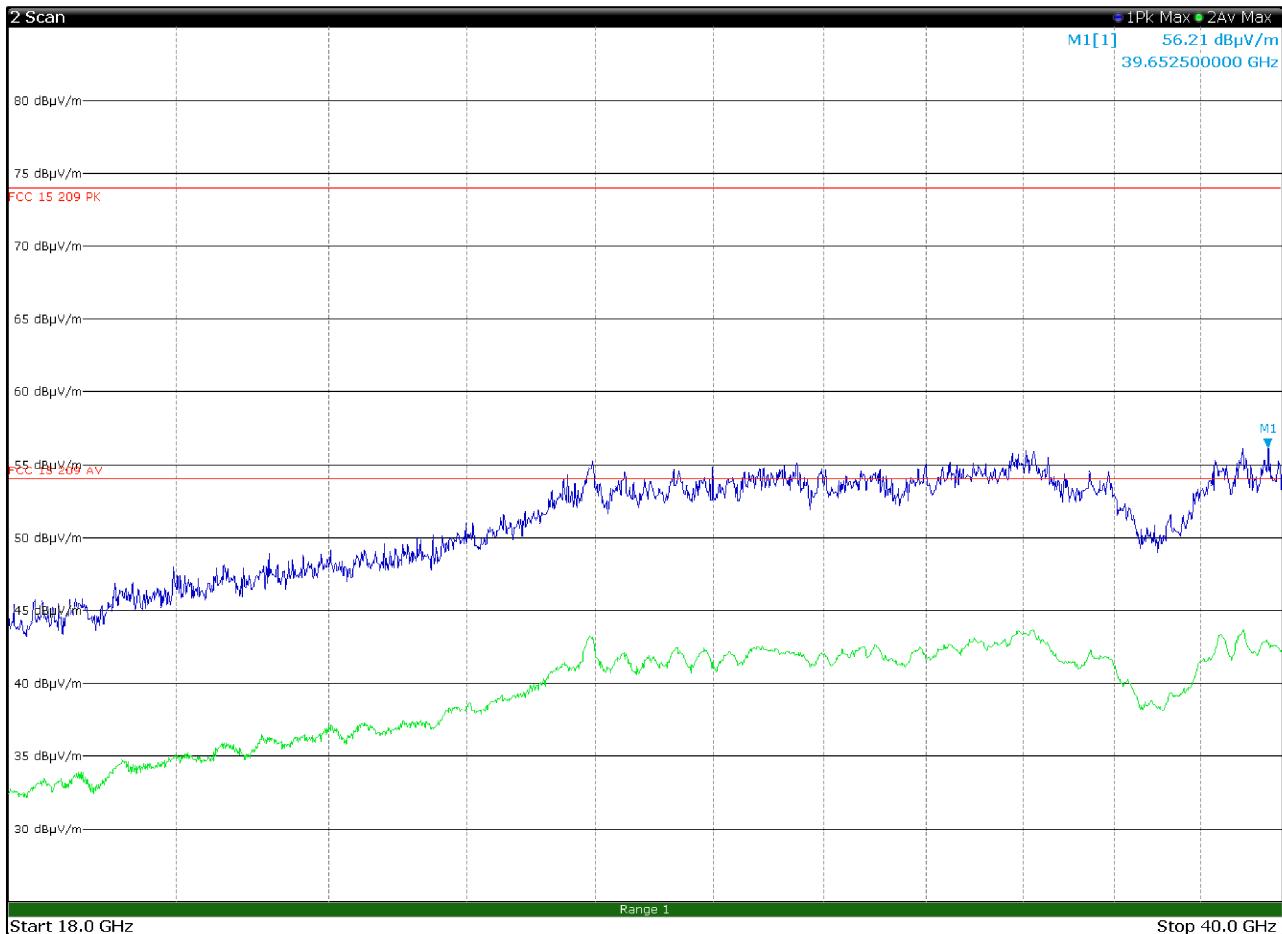


Figure 8.1-80: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 3

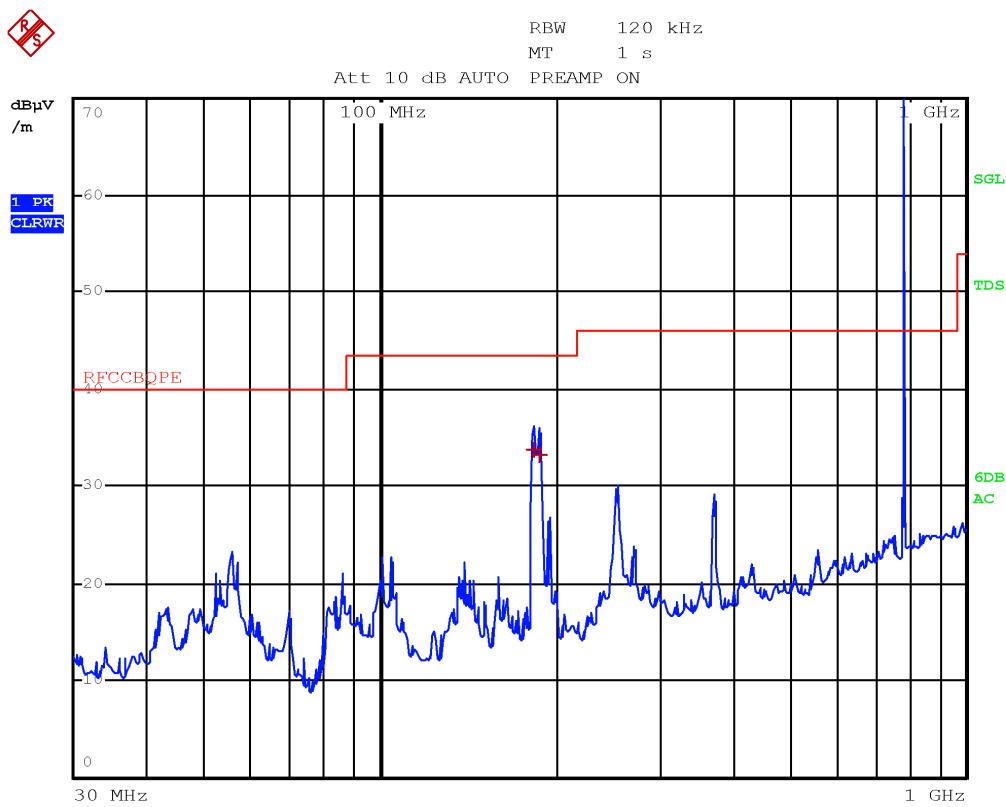


Figure 8.1-81: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
183.1600	33.8	43.5	-9.7	QP
187.4400	33.3	43.5	-10.2	QP

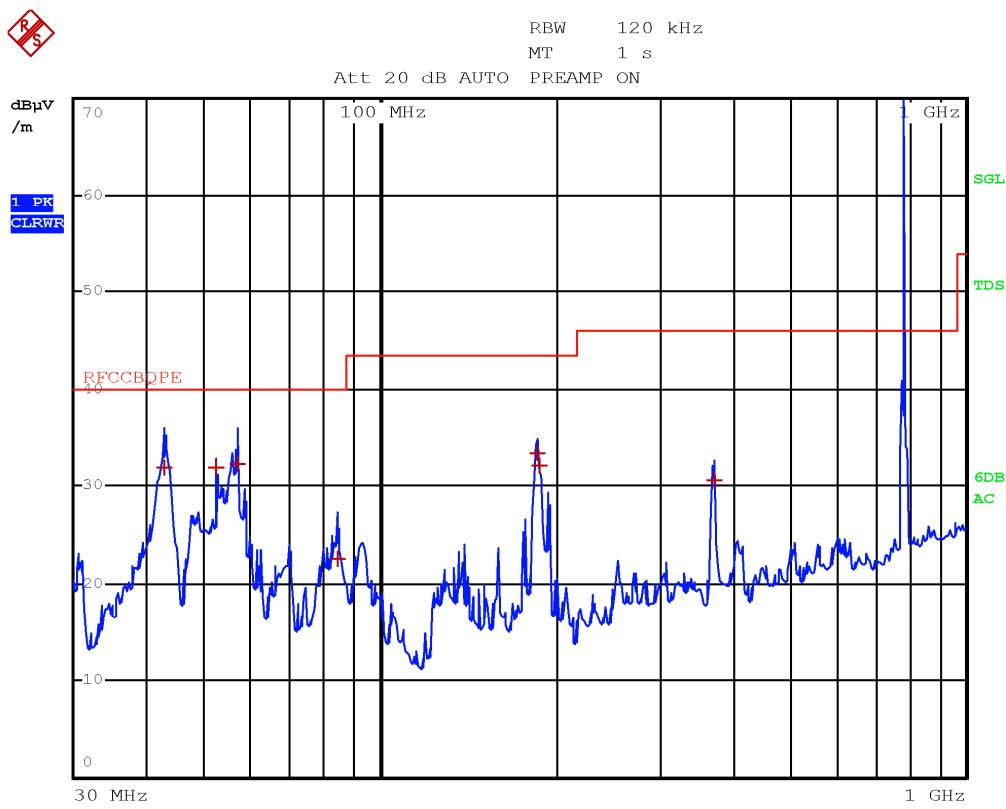


Figure 8.1-82: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
42.9600	31.9	40.0	-8.1	QP
52.5200	31.8	40.0	-8.2	QP
57.0400	32.3	40.0	-7.7	QP
84.7200	22.5	40.0	-17.5	QP
185.2400	33.4	43.5	-10.1	QP
186.8400	32.2	43.5	-11.3	QP
371.6000	30.7	46.0	-15.3	QP

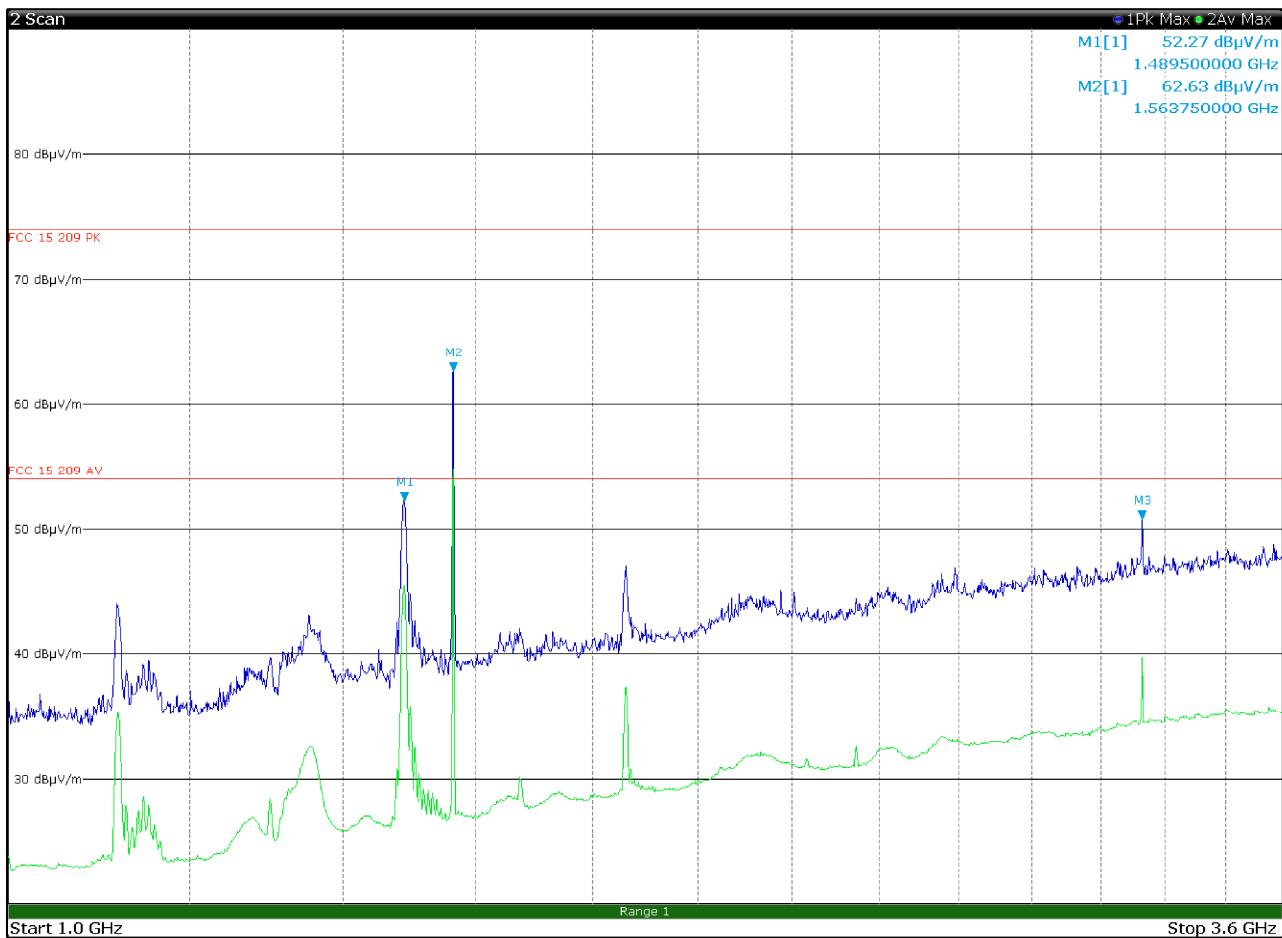


Figure 8.1-83: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1.5640	62.7	82.2	-19.5	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

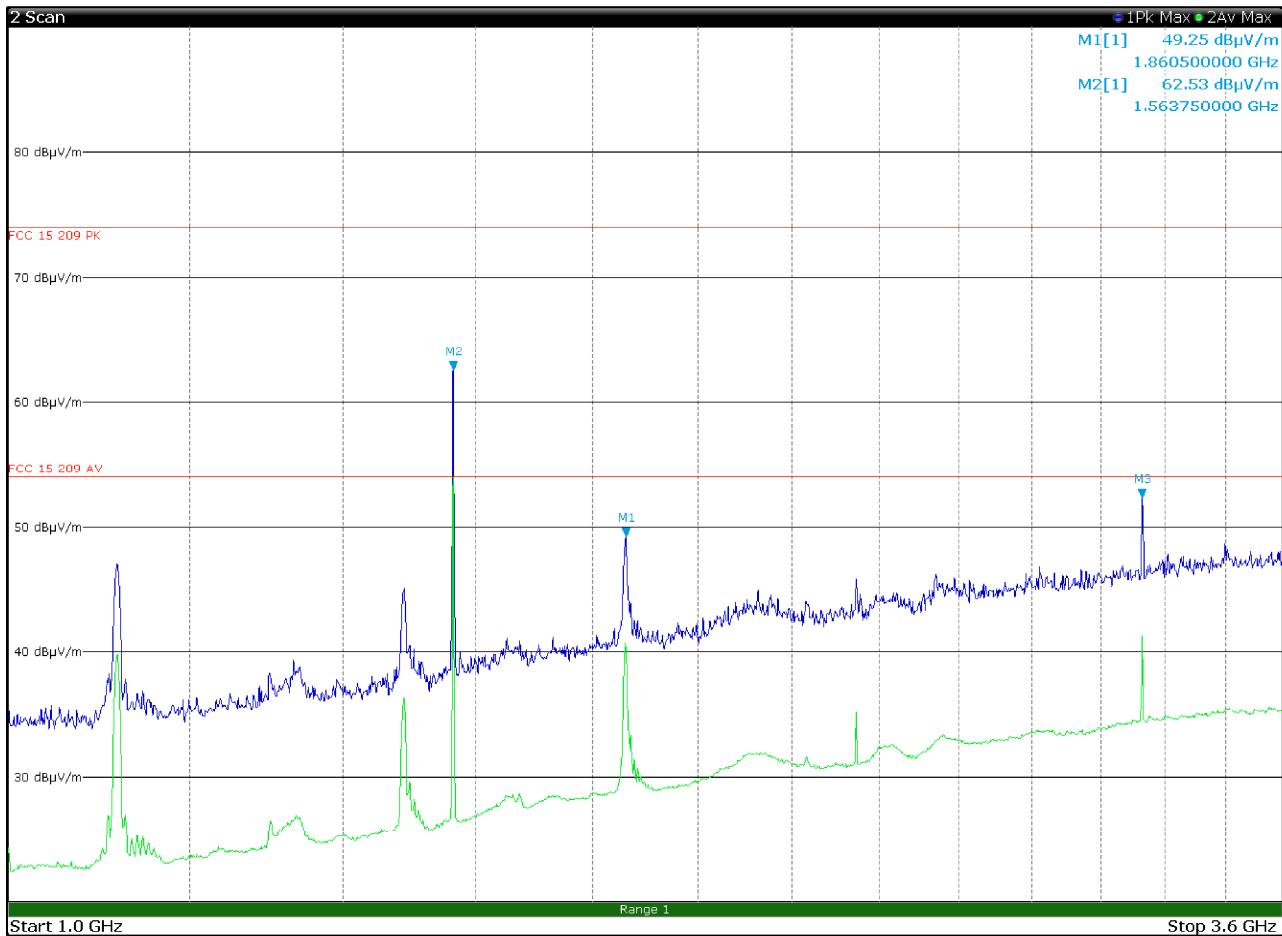


Figure 8.1-84: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1.5640	62.6	82.2	-19.6	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

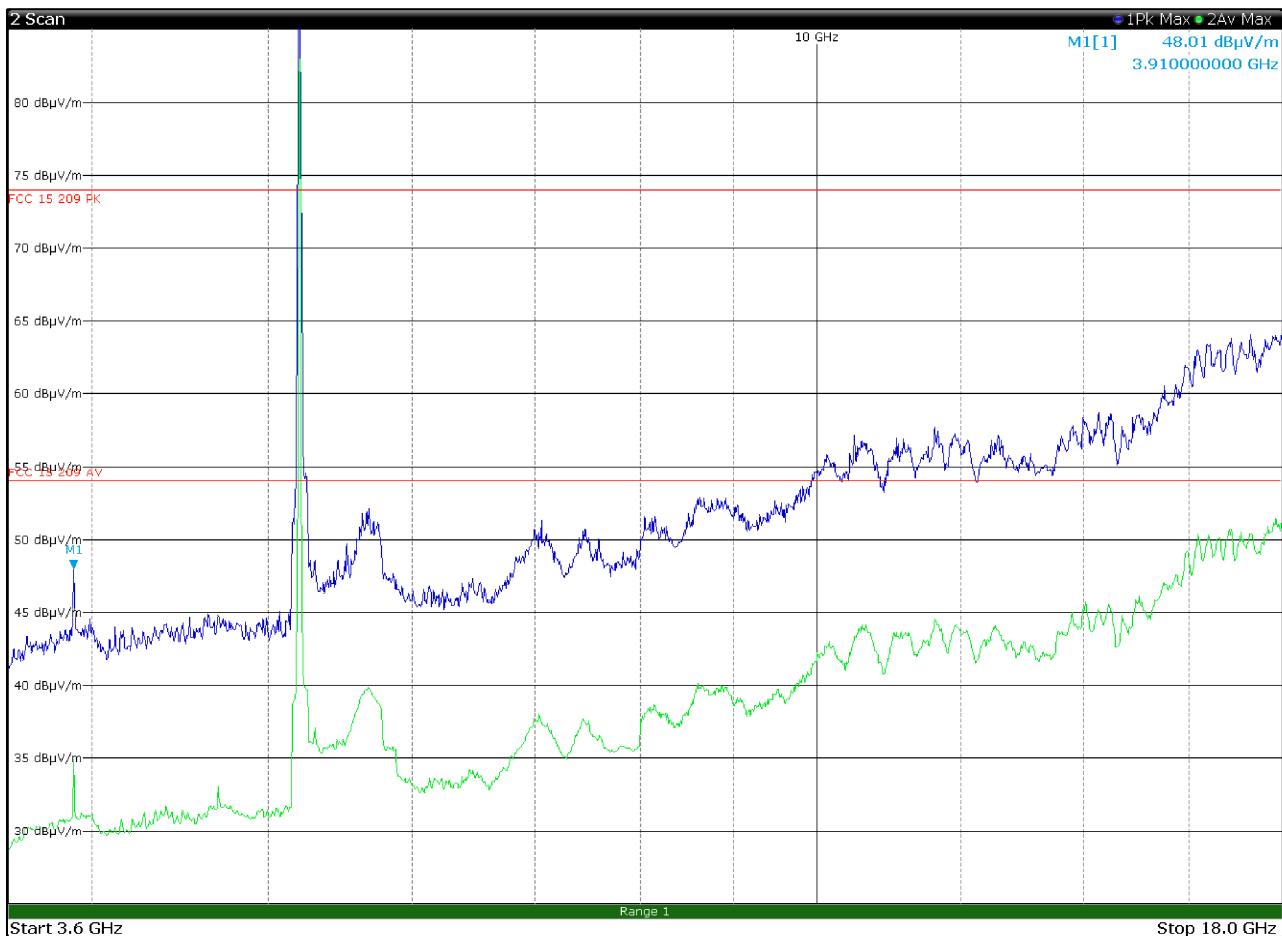


Figure 8.1-85: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

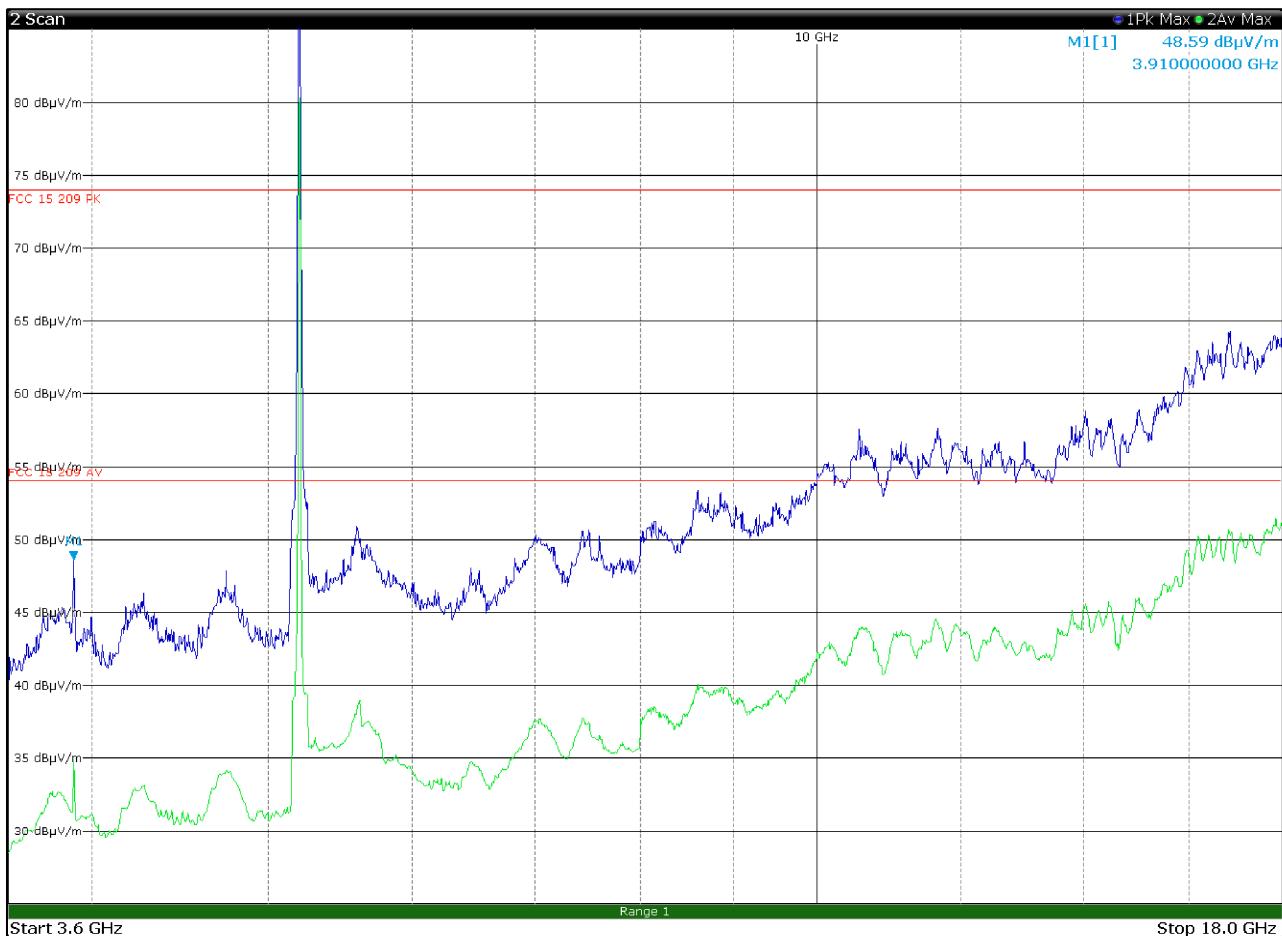


Figure 8.1-86: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

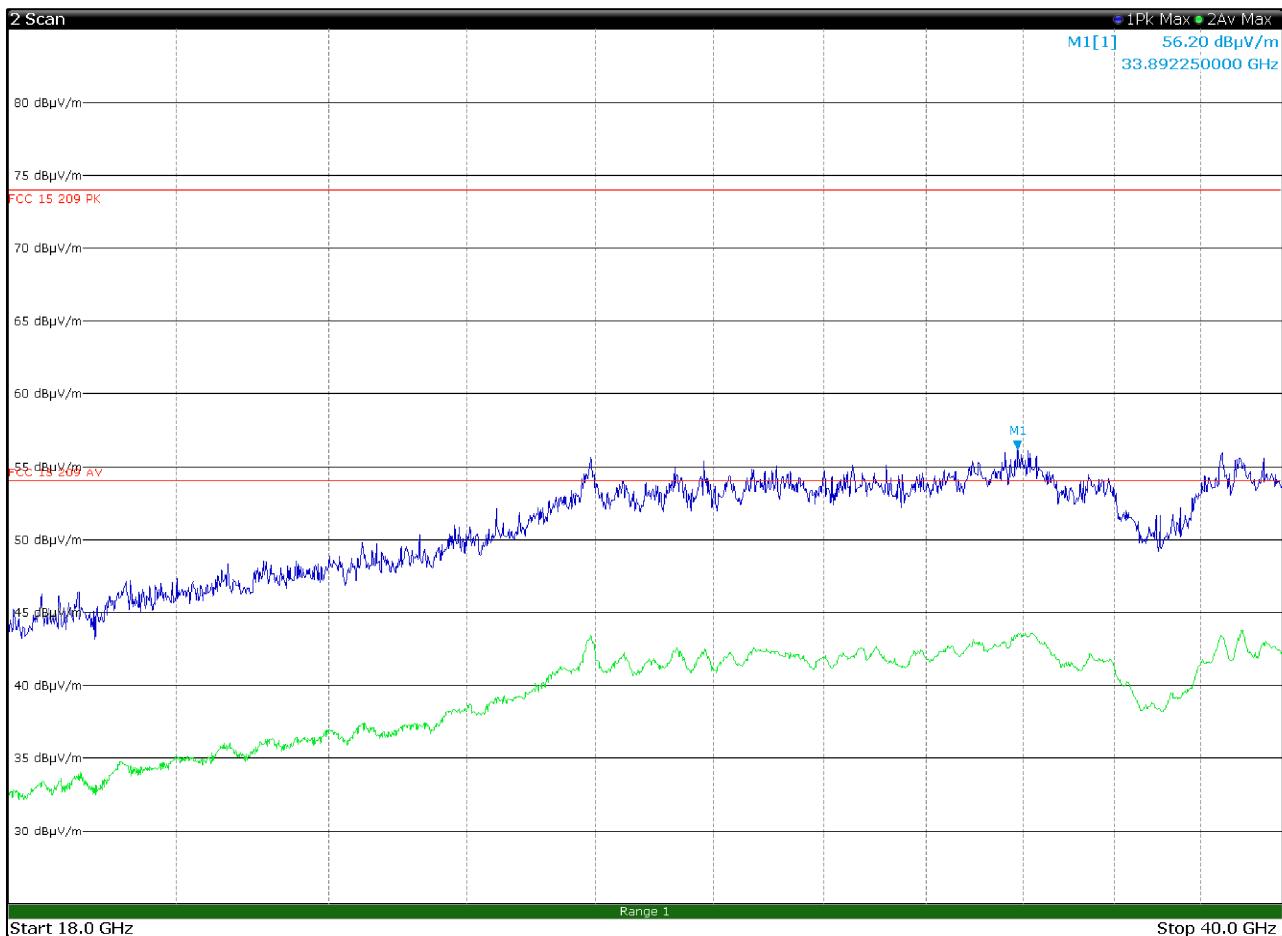


Figure 8.1-87: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 3

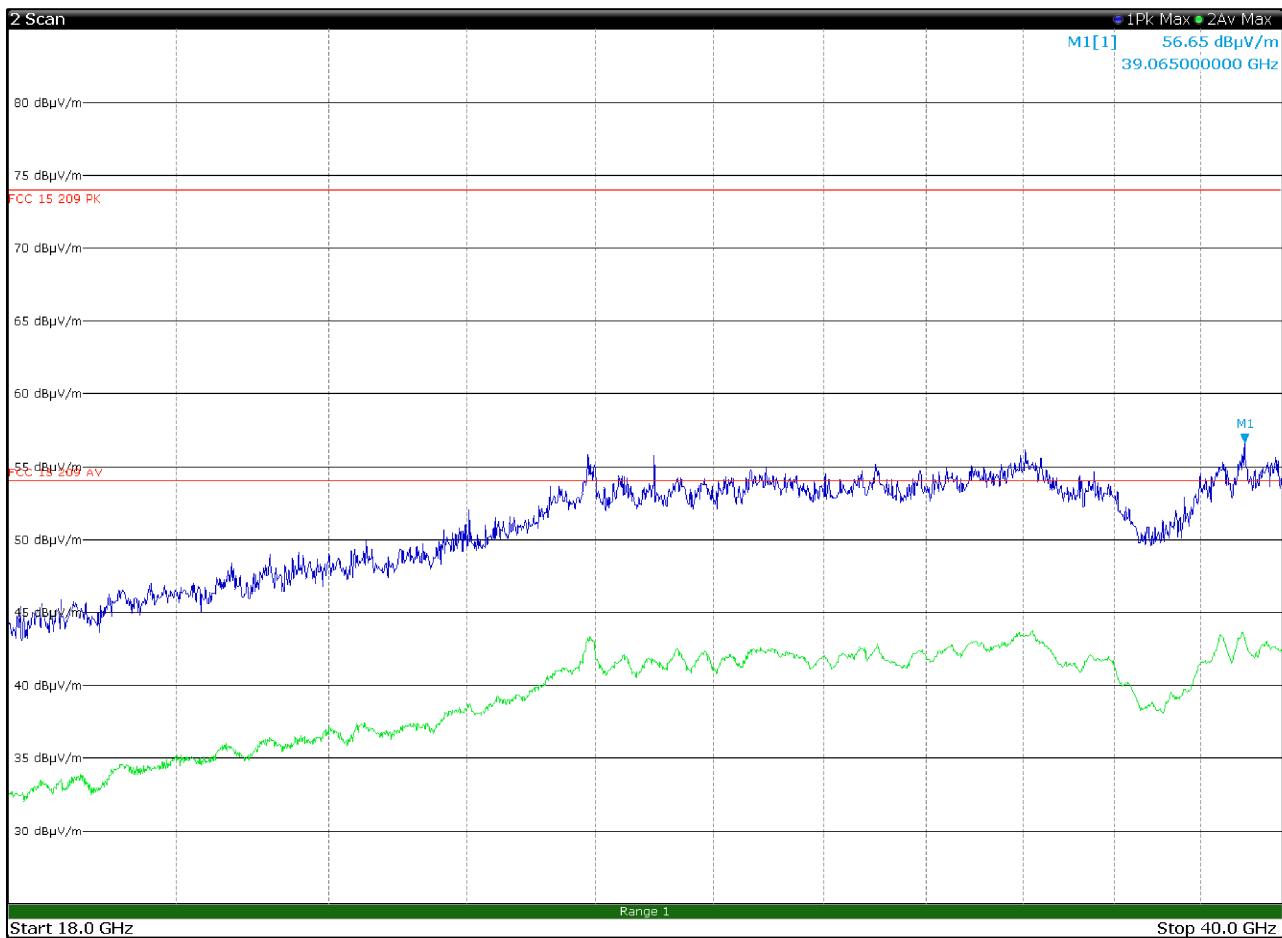


Figure 8.1-88: Radiated spurious emissions, LTE Tx at 782 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 3

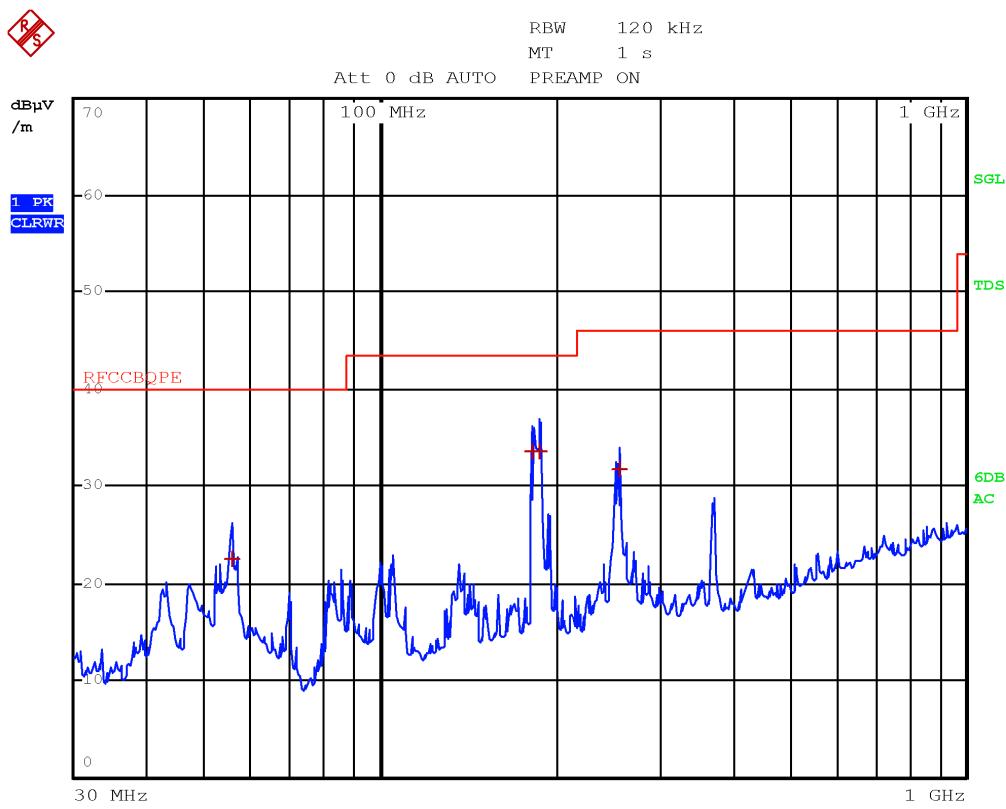


Figure 8.1-89: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 3

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
55.8800	22.6	40.0	-17.4	QP
182.3200	33.7	43.5	-9.8	QP
187.3600	33.6	43.5	-9.9	QP
255.8000	31.8	46.0	-14.2	QP

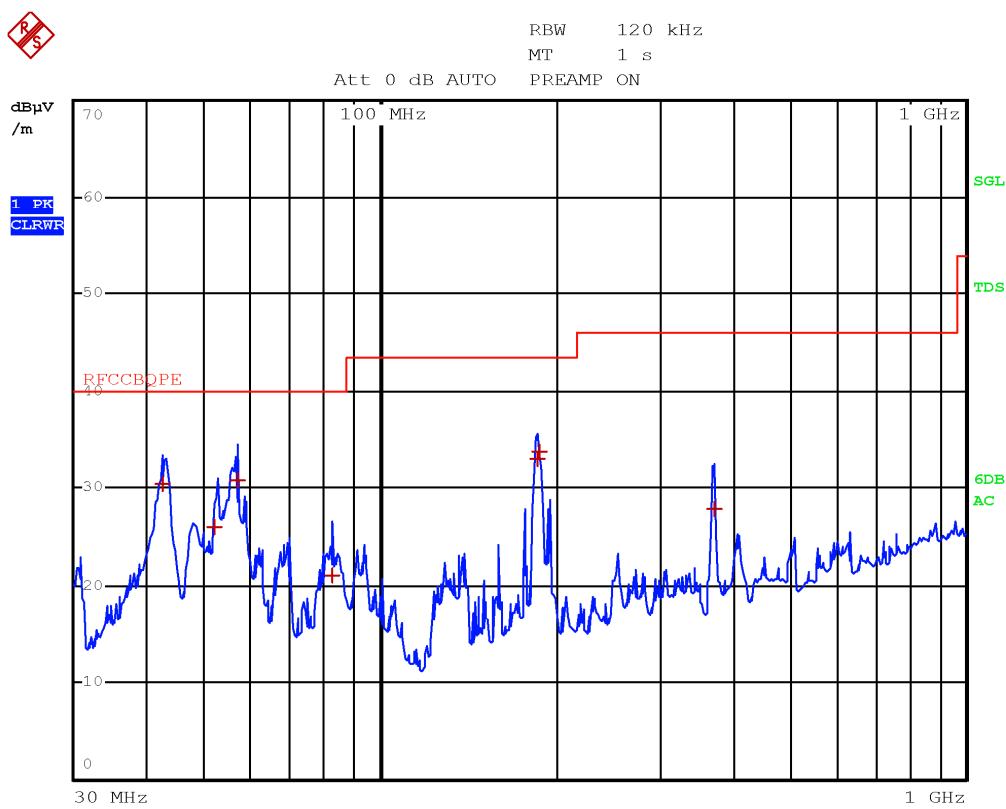


Figure 8.1-90: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 3

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
42.6800	30.5	40.0	-9.5	QP
52.1600	26.1	40.0	-13.9	QP
57.1200	30.8	40.0	-9.2	QP
83.1200	21.1	40.0	-18.9	QP
185.5600	32.9	43.5	-10.6	QP
186.2800	33.8	43.5	-9.7	QP
370.9600	28.0	46.0	-18.0	QP

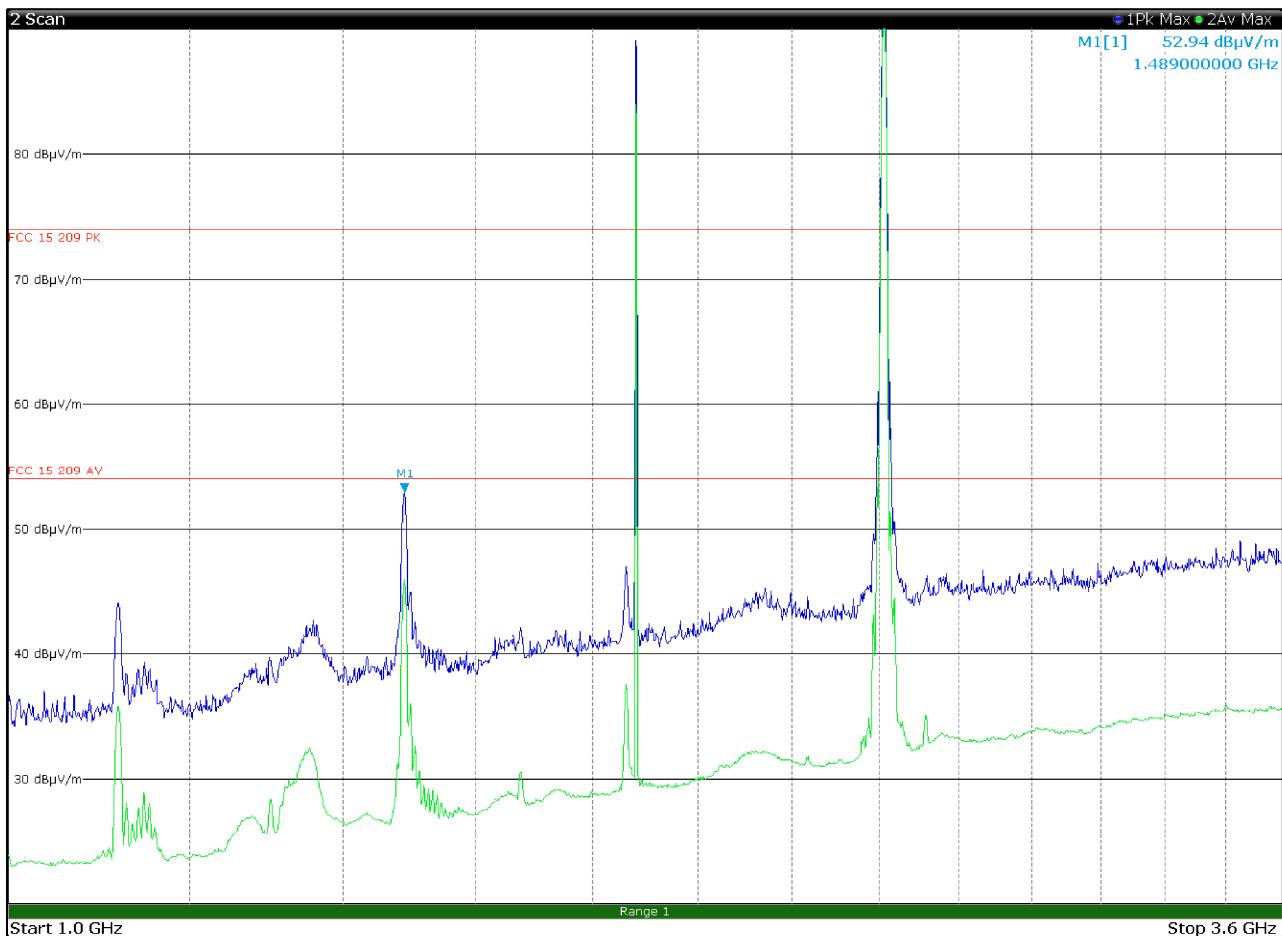


Figure 8.1-91: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

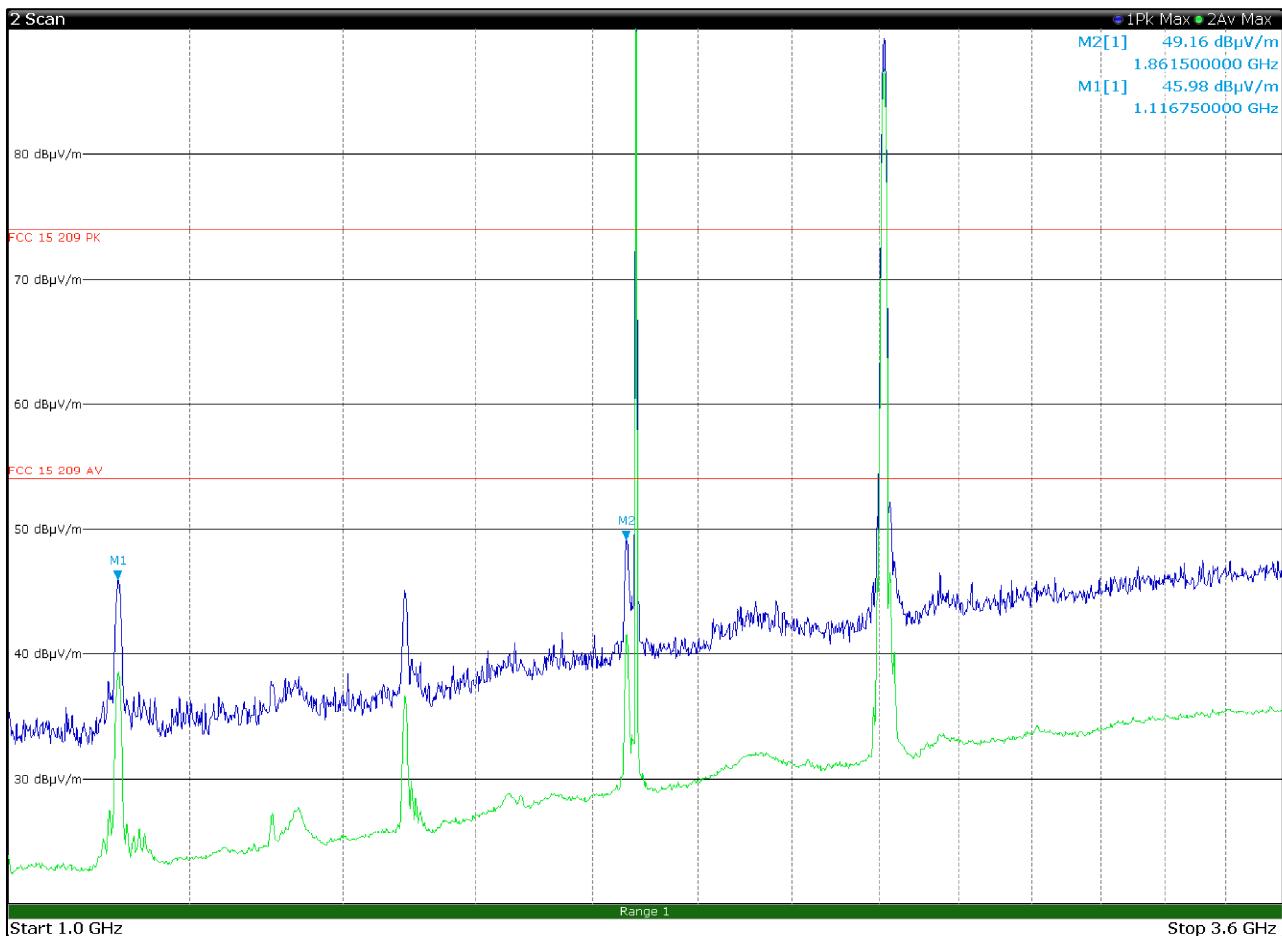


Figure 8.1-92: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

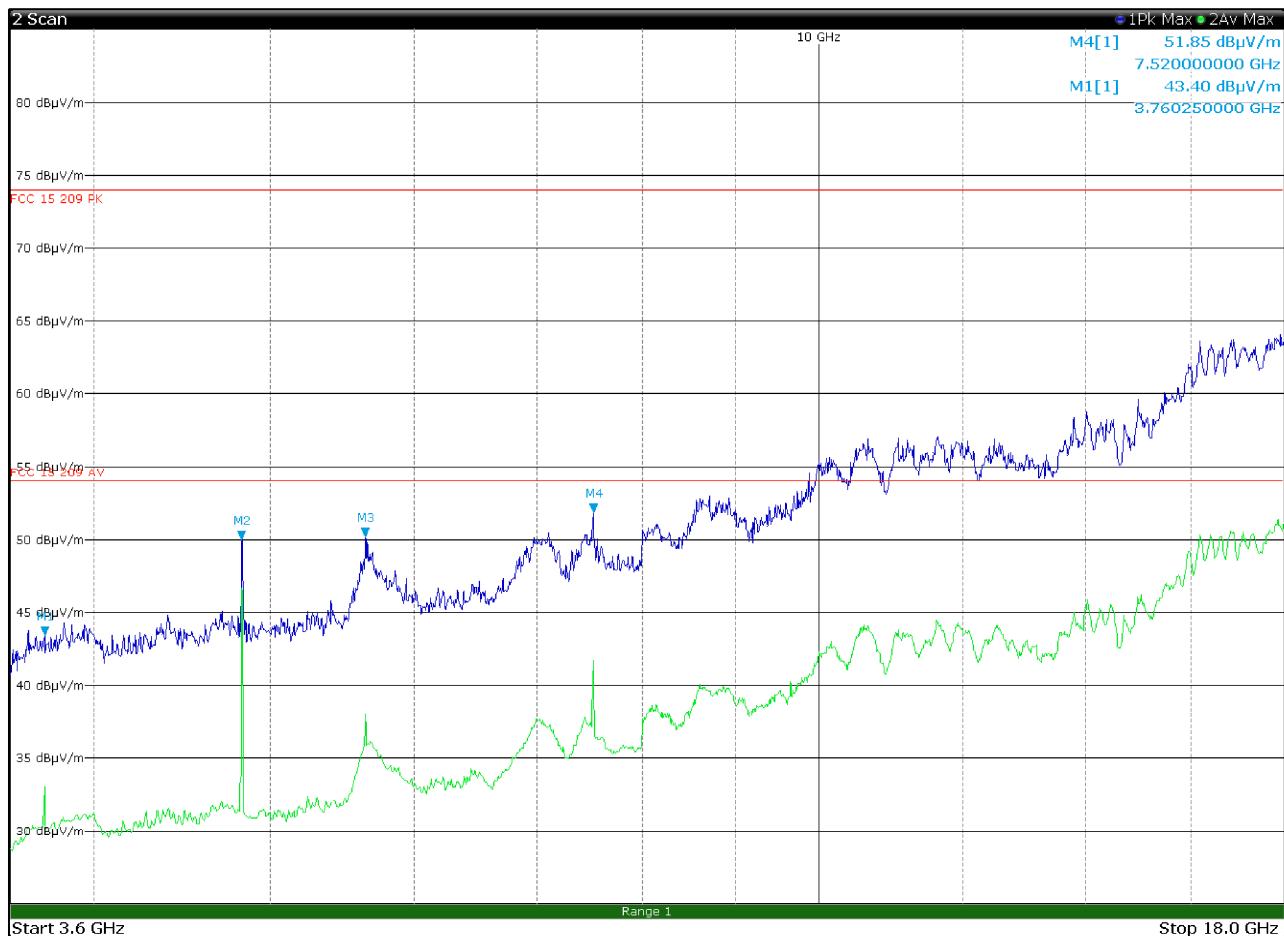


Figure 8.1-93: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
4.8240	50.0	74.0	-24.0	PK
4.8240	46.6	54.0	-7.4	AV
3.7602	43.4	82.2	-38.8	PK
5.6400	50.2	82.2	-32.0	PK
7.5200	51.9	82.2	-30.3	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

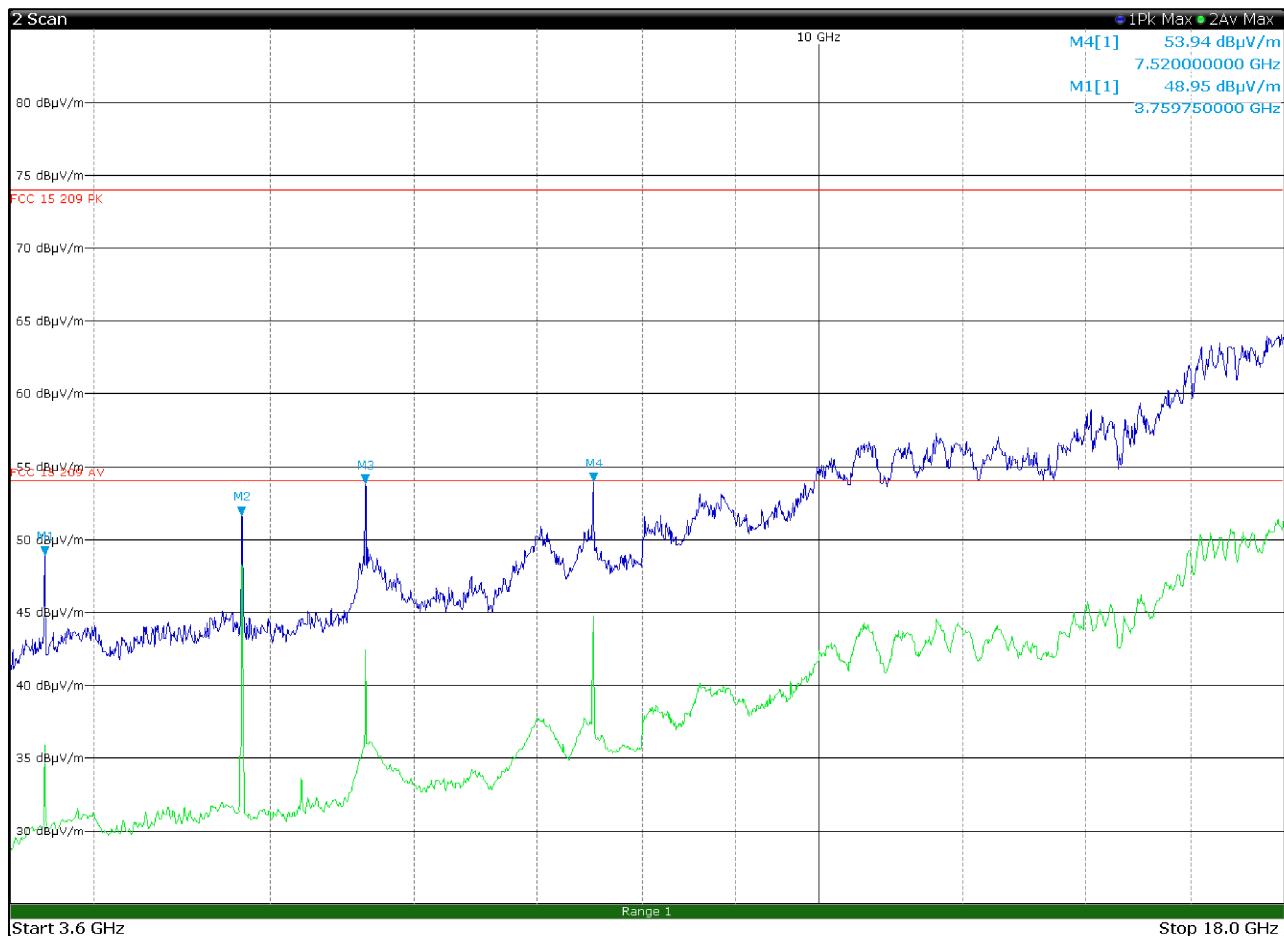


Figure 8.1-94: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
4.8240	51.7	74.0	-22.3	PK
4.8240	48.3	54.0	-5.7	AV
3.7602	49.0	82.2	-33.2	PK
5.6400	53.9	82.2	-28.3	PK
7.5200	54.0	82.2	-28.2	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

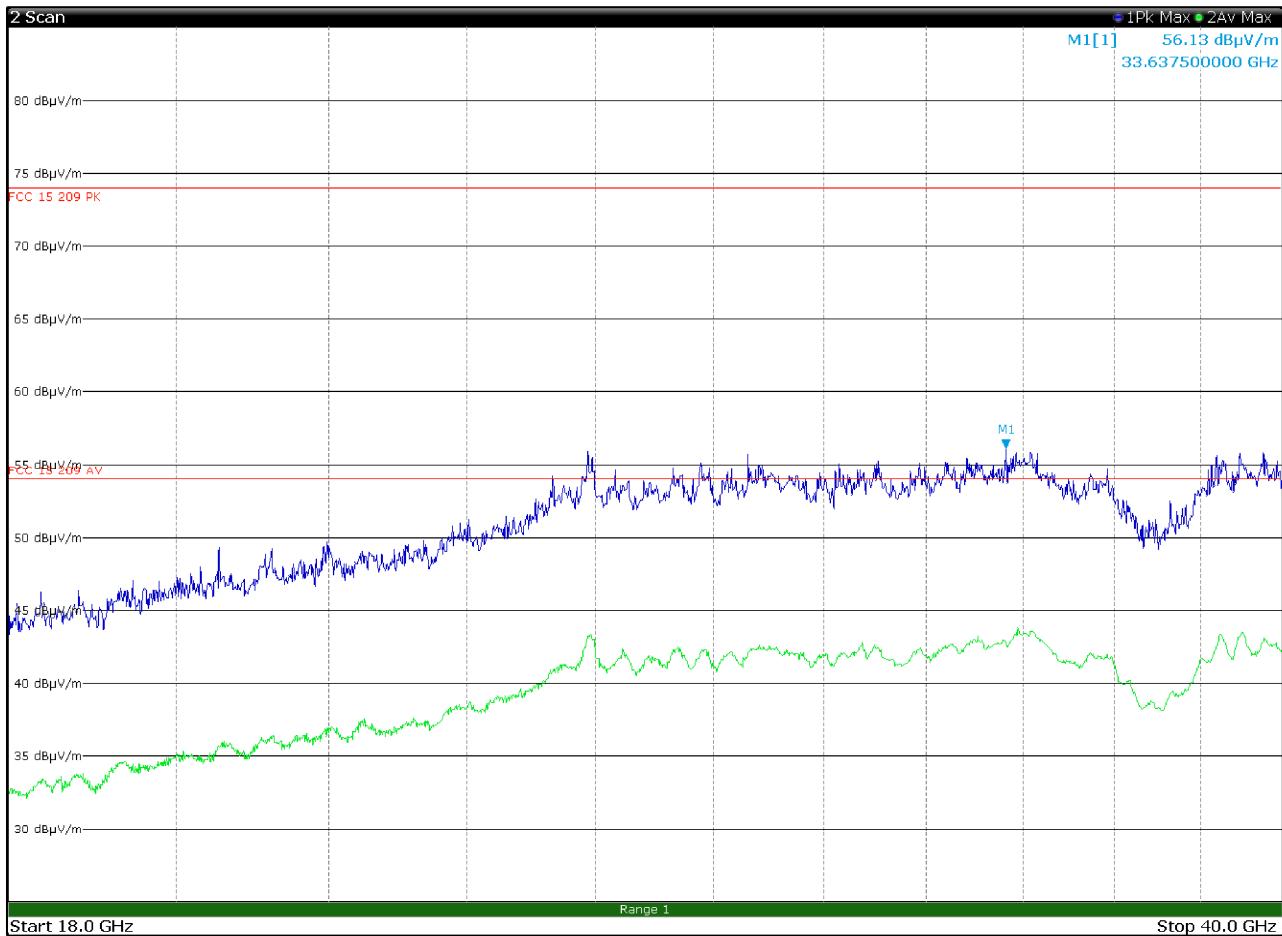


Figure 8.1-95: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 3

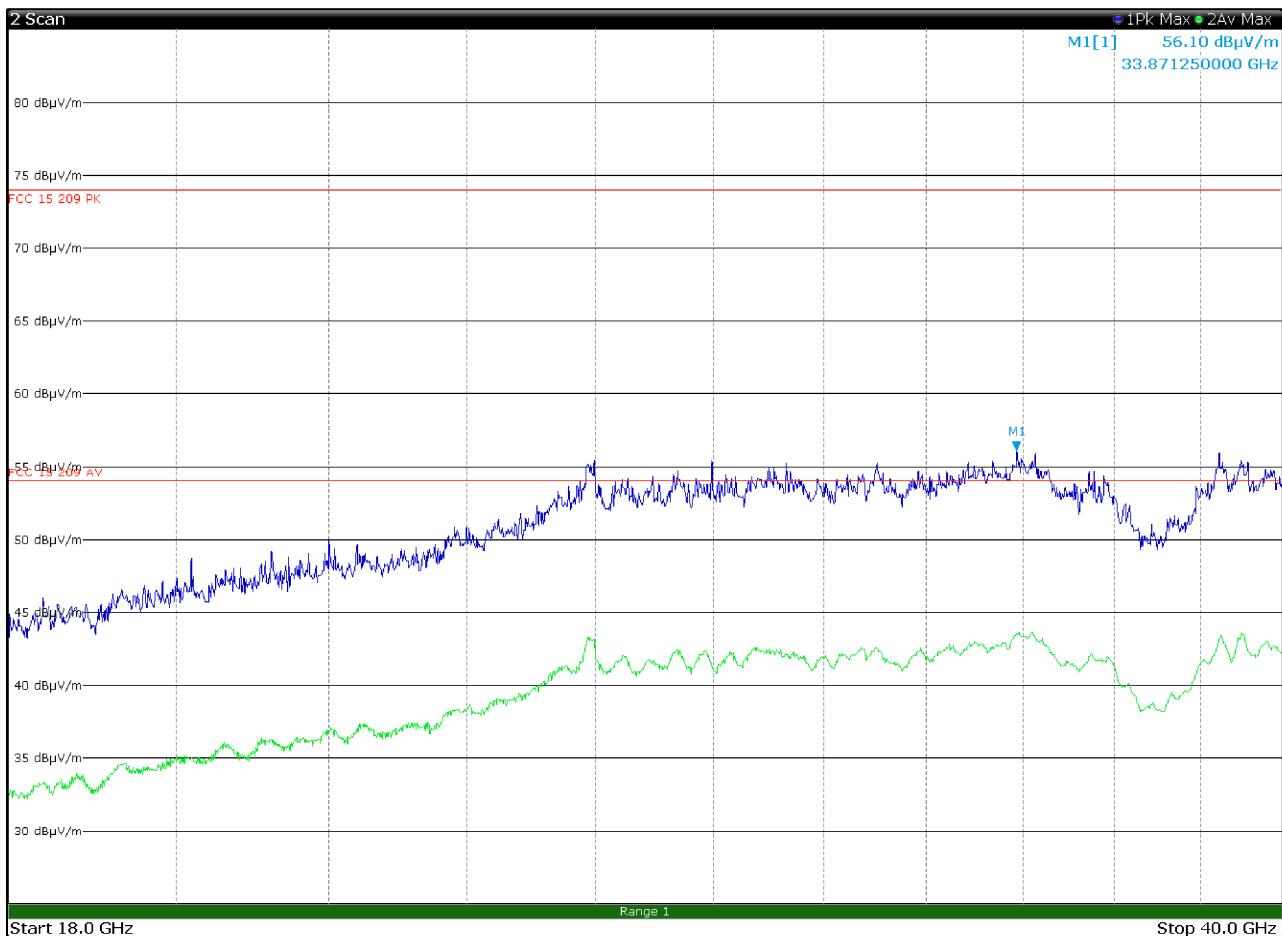


Figure 8.1-96: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 3

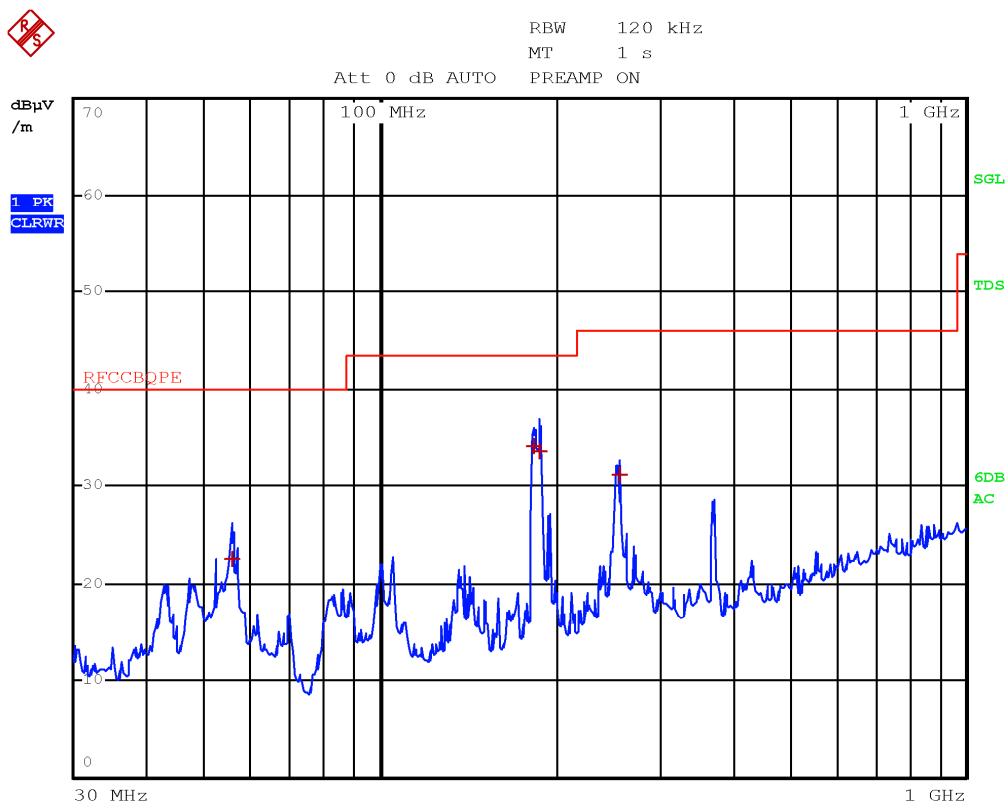


Figure 8.1-97: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 3

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
55.8800	22.6	40.0	-17.4	QP
183.7200	34.1	43.5	-9.4	QP
187.6000	33.6	43.5	-9.9	QP
255.8400	31.2	46.0	-14.8	QP

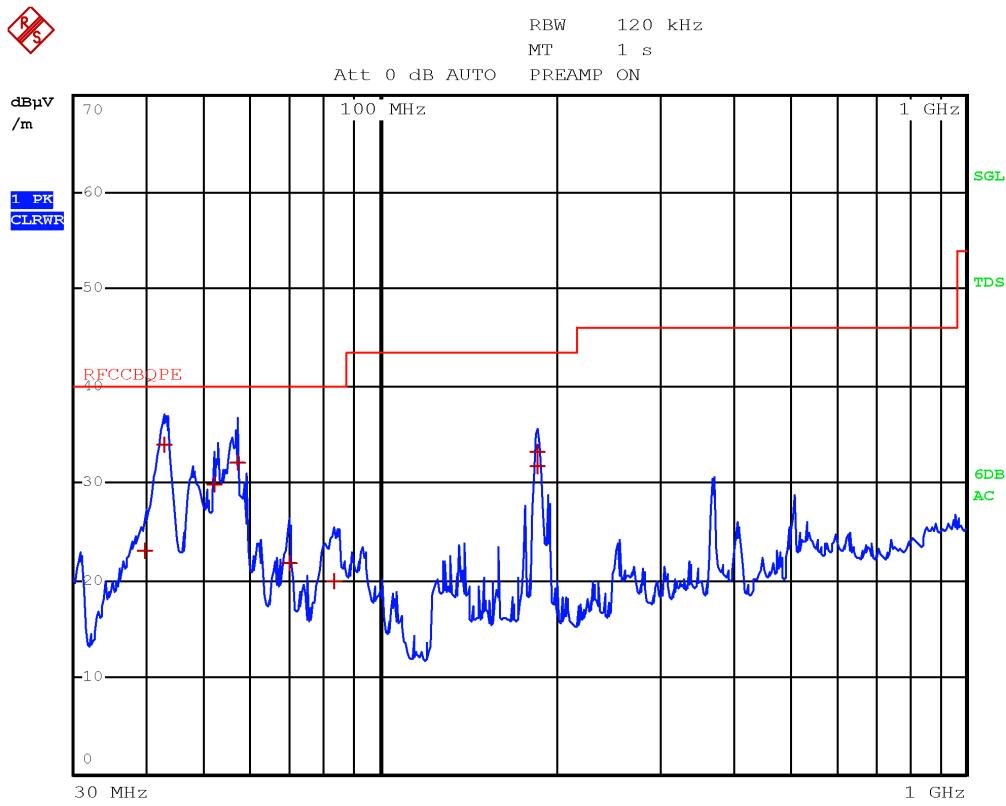


Figure 8.1-98: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 3

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
39.6400	23.0	40.0	-17.0	QP
42.7600	33.9	40.0	-6.1	QP
52.3200	29.9	40.0	-10.1	QP
57.1200	32.0	40.0	-8.0	QP
70.2800	21.8	40.0	-18.2	QP
83.4800	20.0	40.0	-20.0	QP
185.6400	31.8	43.5	-11.7	QP
186.0800	33.3	43.5	-10.2	QP

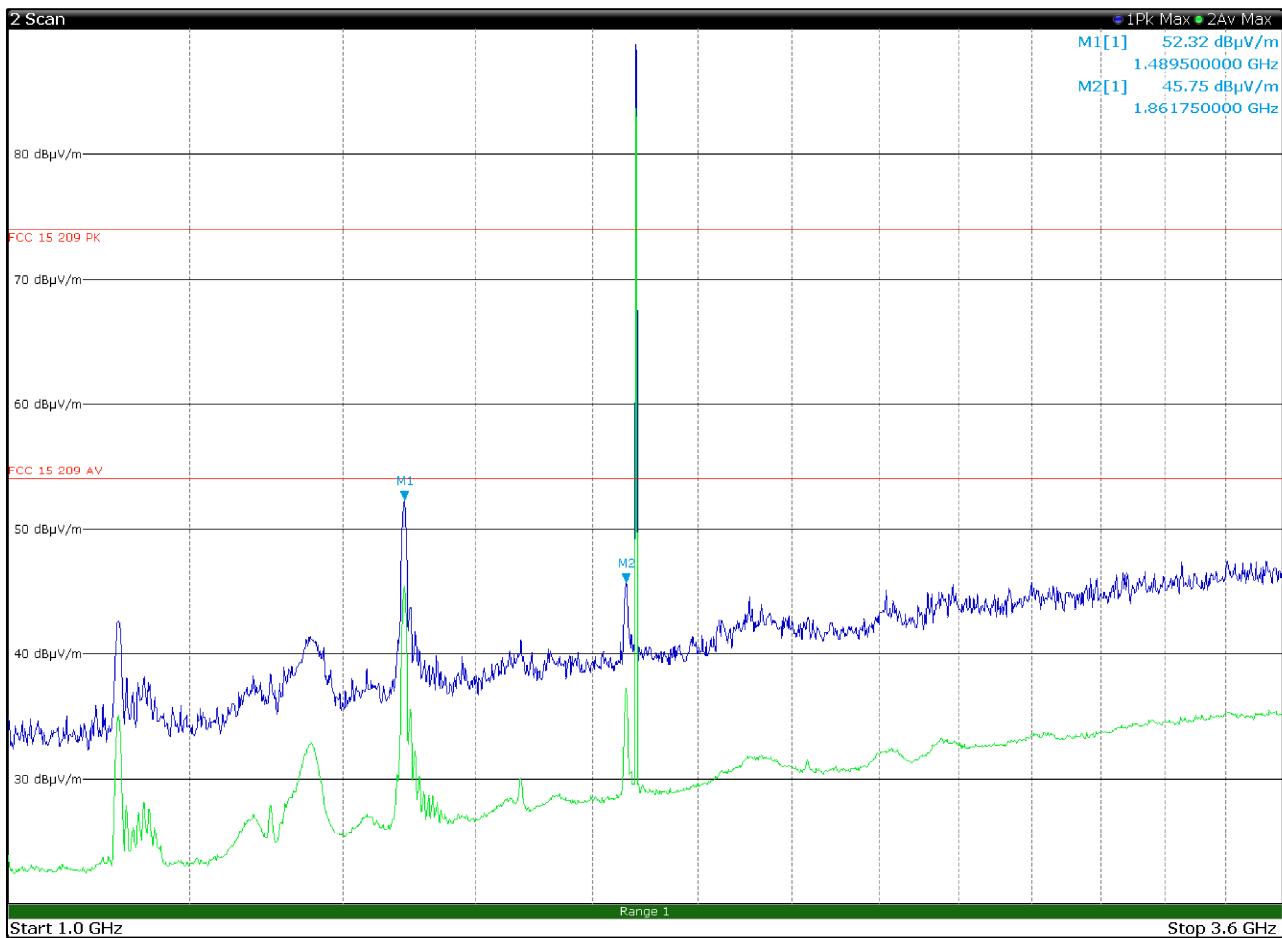


Figure 8.1-99: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

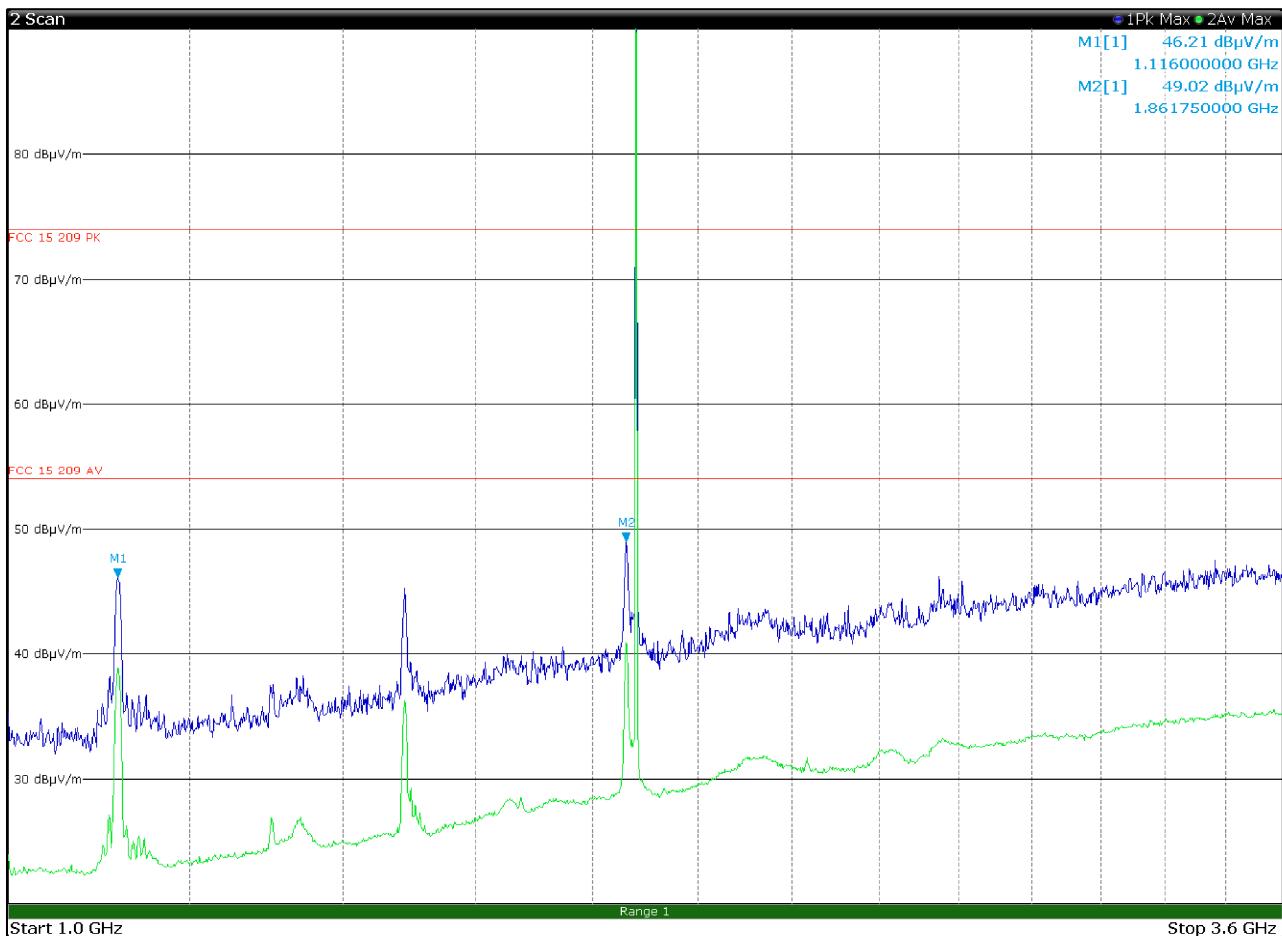


Figure 8.1-100: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

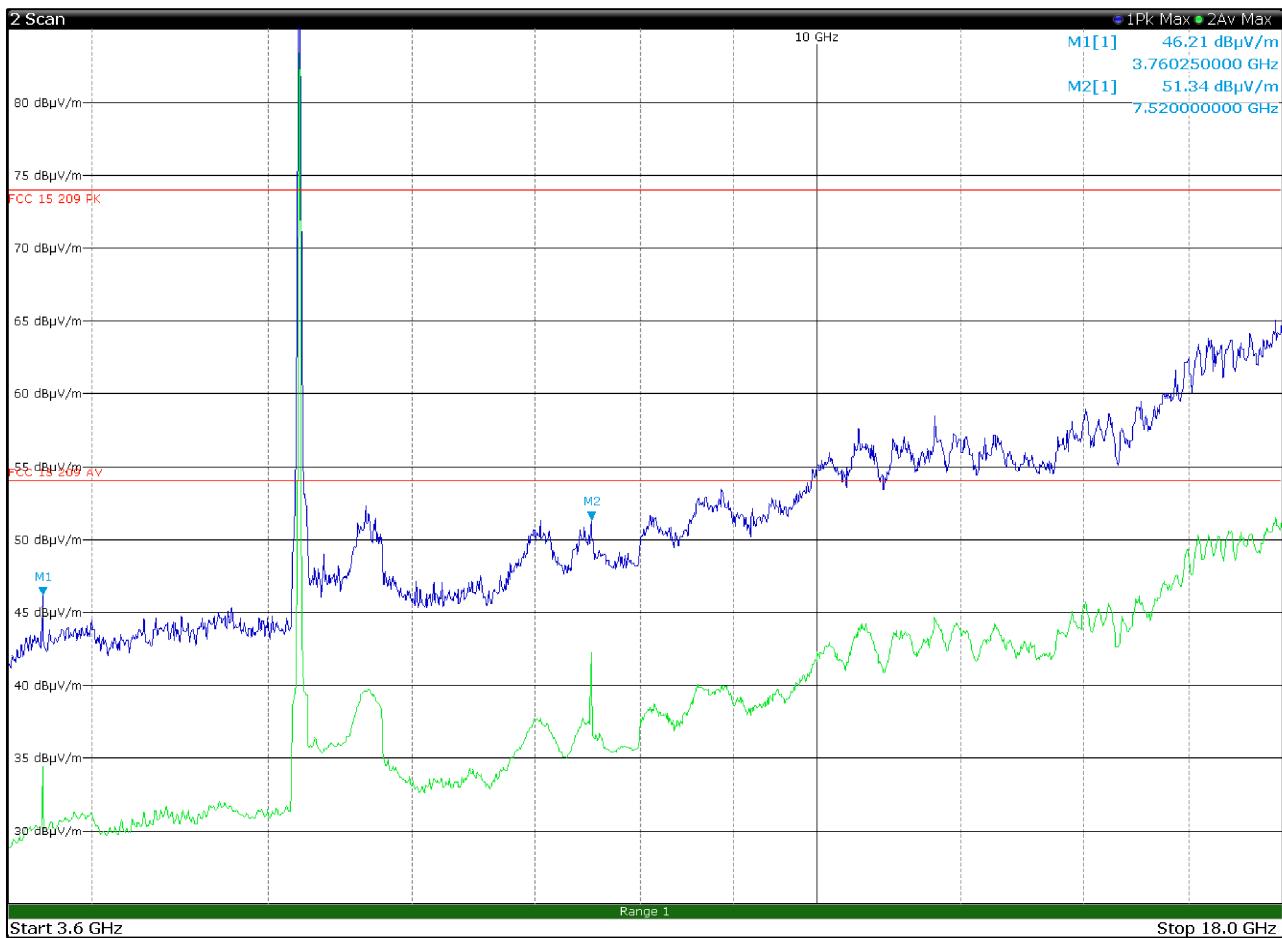


Figure 8.1-101: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 3

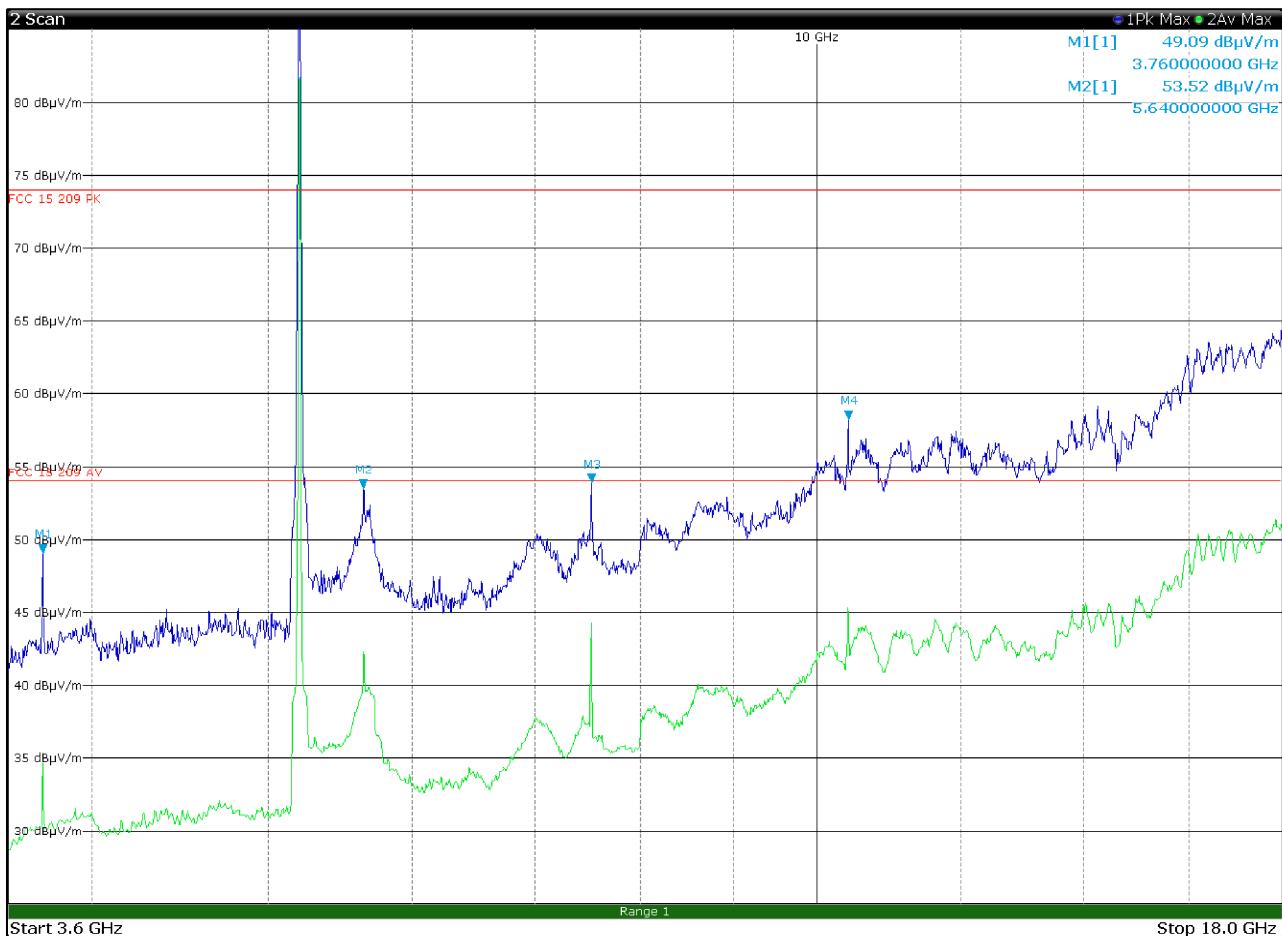


Figure 8.1-102: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 3

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
3.7600	49.1	82.2	-33.1	PK
5.6400	53.6	82.2	-28.6	PK
7.5200	53.9	82.2	-28.3	PK
10.4042	58.3	82.2	-23.9	PK

The limit for LTE is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

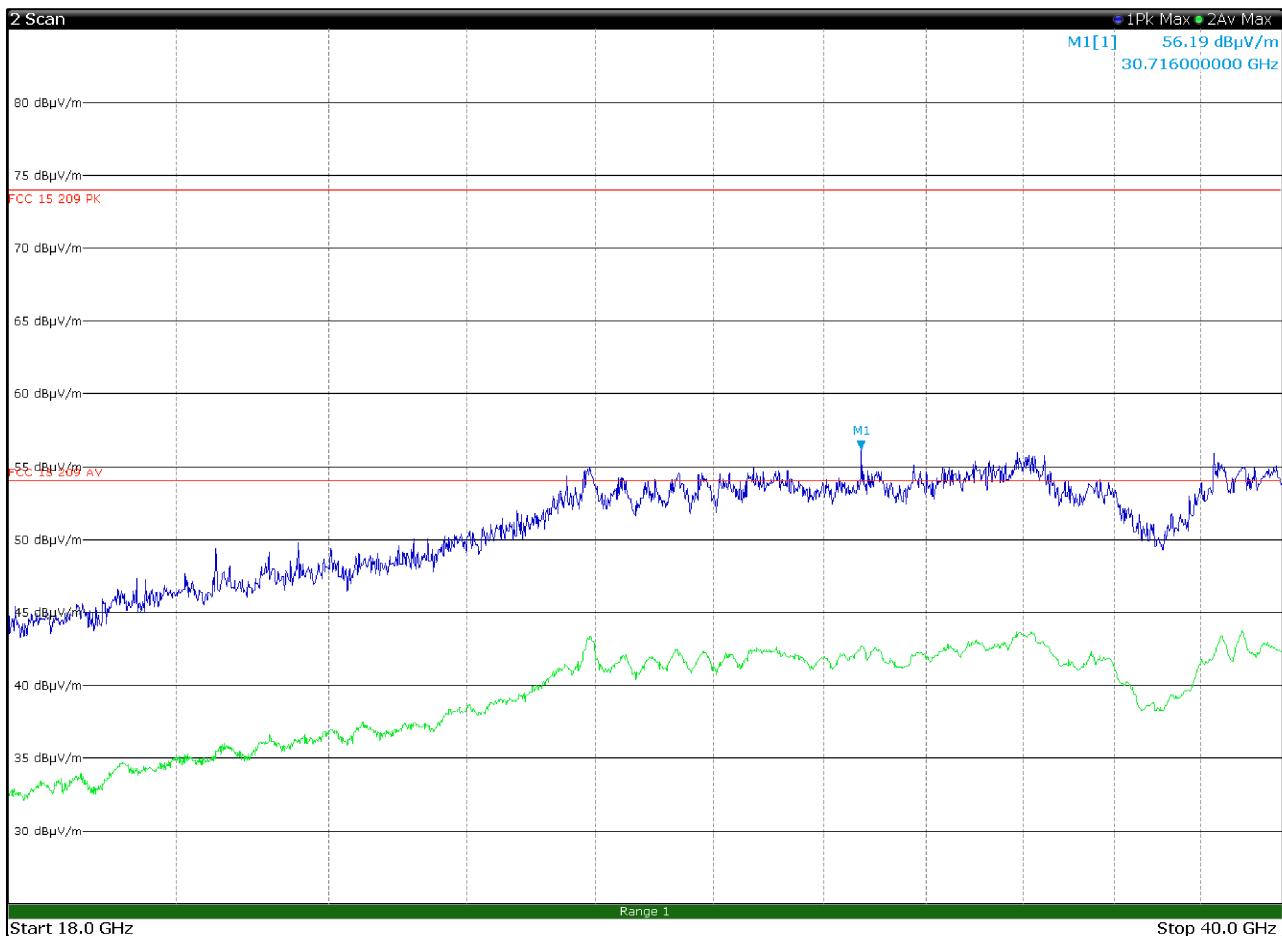


Figure 8.1-103: Radiated spurious emissions, LTE Tx at 1883 MHz, WiFi Tx at 5200 MHz – antenna in horizontal polarization – EUT in configuration 3

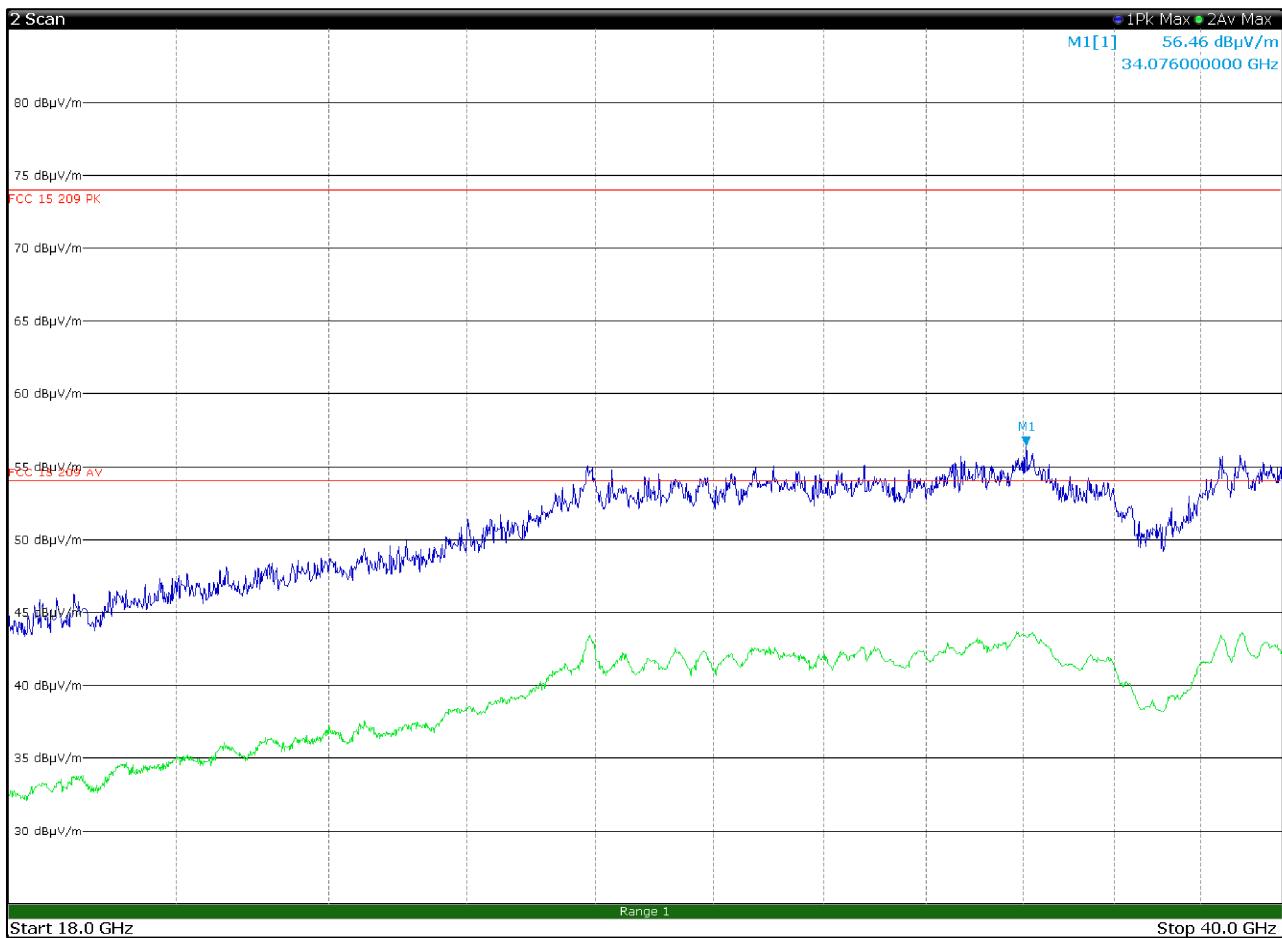


Figure 8.1-104: Radiated spurious emissions, LTE Tx at 1883 MHz, WIFI Tx at 5200 MHz – antenna in vertical polarization – EUT in configuration 3

8.1.1 Test data for DYGATE-10-12-GS04

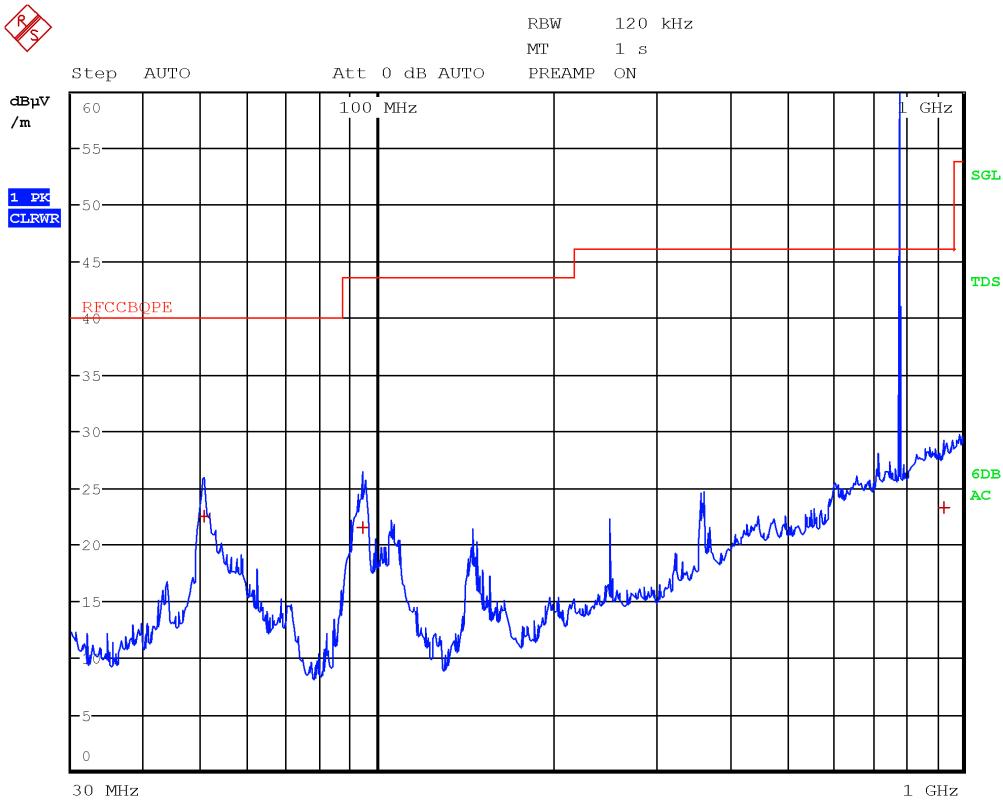


Figure 8.1-105: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
50.6400	22.6	40.0	-17.4	QP
94.3200	21.6	43.5	-21.9	QP
927.8000	23.4	46.0	-22.6	QP

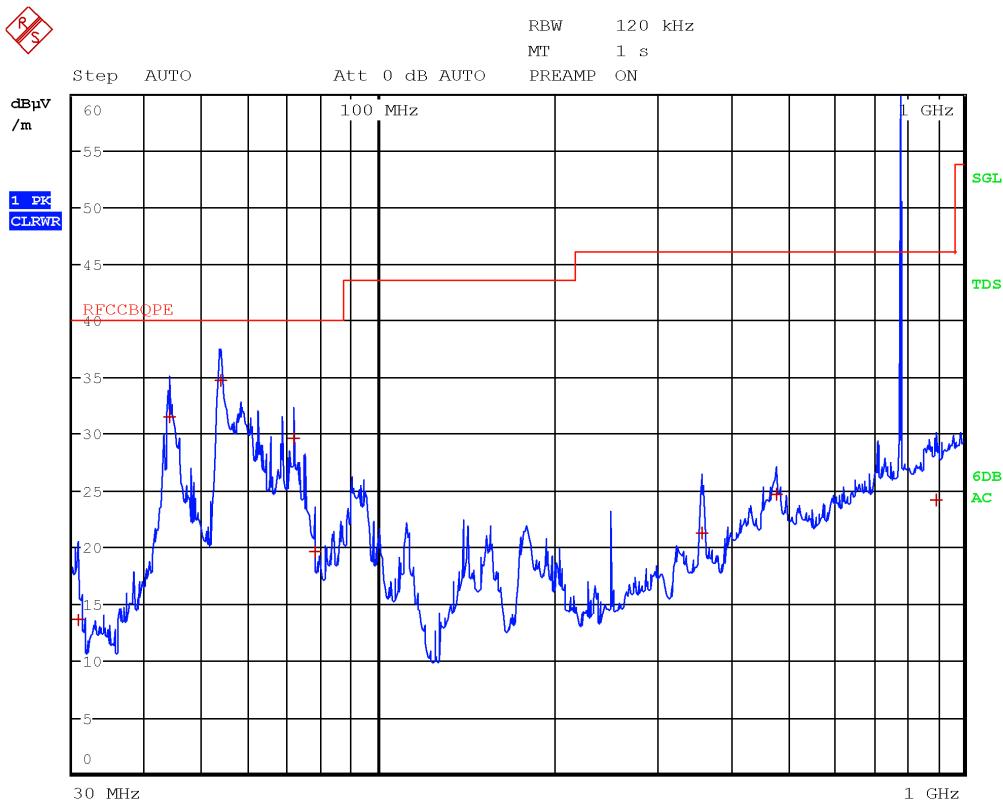


Figure 8.1-106: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
30.6800	13.6	40.0	-26.4	QP
43.8000	31.5	40.0	-8.5	QP
53.8400	34.8	40.0	-5.2	QP
71.6400	29.6	40.0	-10.4	QP
77.8800	19.7	40.0	-20.3	QP
357.9200	21.3	46.0	-24.7	QP
477.7600	24.7	46.0	-21.3	QP
782.0000	89.6	46.0	43.5	QP
898.4400	24.2	46.0	-21.8	QP

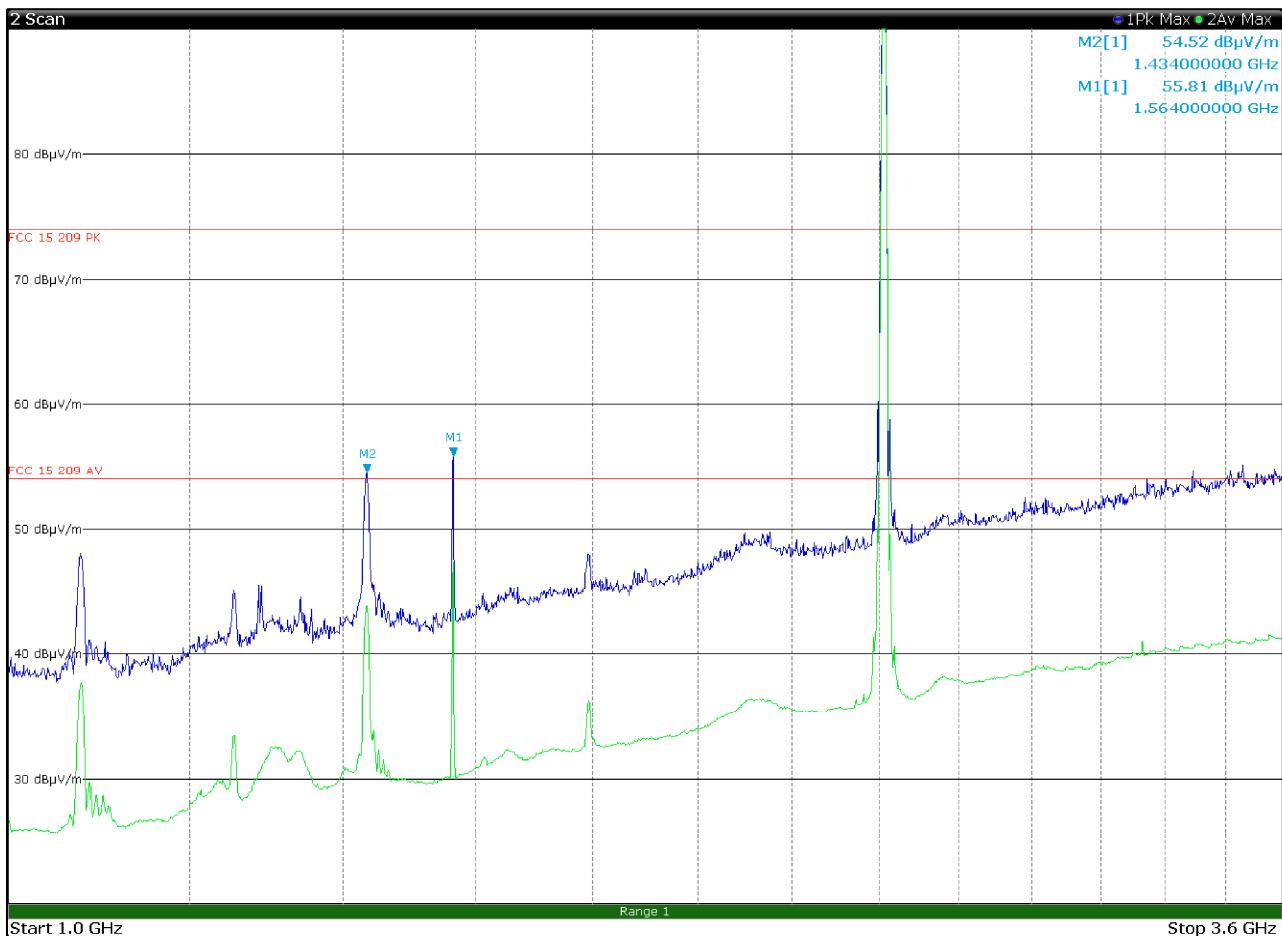


Figure 8.1-107: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in horizontal polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1.4340	54.6	74.0	-19.4	PK
1.4340	43.9	54.0	-10.1	AV
1.5640	55.9	82.2	-26.3	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m

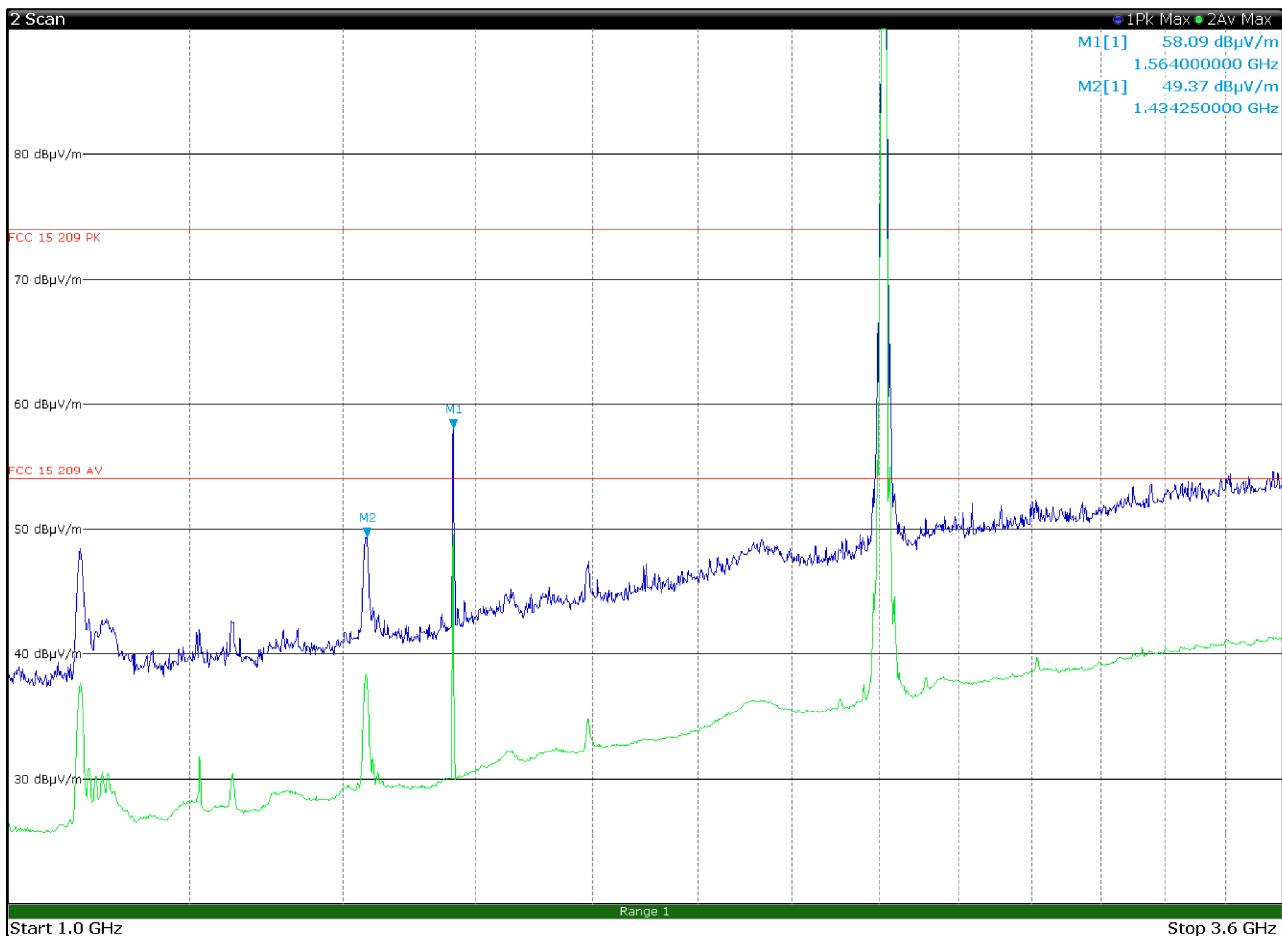


Figure 8.1-108: Radiated spurious emissions, LTE Tx at 782 MHz, WIFI Tx at 2412 MHz – antenna in vertical polarization – EUT in configuration 1

Note: Emissions above the limit were from intentional emissions. no intermodulation emissions were detected

Frequency (GHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1.4342	49.4	74.0	-24.6	PK
1.4342	38.7	54.0	-15.3	AV
1.5640	58.1	82.2	-24.1	PK

The limit for LTE is -13 dBm. Limit (dB μ V/m) = limit (dBm) + 95.23 = 82.2 dB μ V/m