

Wireless test report – 369095-6TRFWL

Applicant:

Topcon AG Turin

Via Nizza 262, Int. 25 – 10126 Torino (TO) – Italy

Product name:

General Purpose IoT device

Model:

CL-10 LTE VZW

IC: 24901-CL10

FCC ID: 2ASVE-CL10

◆ FCC 47 CFR Part 15 Subpart C, §15.209/RSS 210 §8.9

Radiated emission limits; general requirements.

◆ FCC 47 CFR Part 15 Subpart C, §15.247 (d)/ RSS 247 §5.5

Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

◆ FCC 47 CFR Part 27 Subpart C, §27.53 (c) and (h)

Emission limits.

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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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Site number	FCC test site registration number: 682159 (10 m semi anechoic chamber) ISED test site number: 9109A

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's ISO/IEC 17025 accreditation.

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Date of issue: March 29, 2019

Tested by (name, function)	D. Guarnone	(project handler)	Signature:	
Reviewed by (name, function)	P. Barbieri	(verifier)	Signature:	

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Section 1. Report summary

1.1 Applicant and manufacturer

Company name	Topcon AG Turin
Address	Via Nizza 262, Int. 25 – 10126 Torino (TO) – Italy

1.2 Test specifications

FCC 47 CFR Part 15 Subpart C, §15.209	Radiated emission limits; general requirements.
FCC 47 CFR Part 15 Subpart C, §15.247	Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.
FCC 47 CFR Part 27 Subpart C, §27.53	Emission limits.

1.3 Test methods

ANSI C63.10 v2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
ANSI C63.26 v2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

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
TRF	March 29, 2019	Original report issued

Section 2. Summary of test results

2.1 FCC Part 15 Subpart C, and FCC Part 27 Subpart C test results

Part	Test description	Verdict
§15.209	Radiated emission limits; general requirements.	Pass
§15.247 (d)	Spurious emissions.	Pass
§27.53 (c)	Emission limit for operations in the 746-758 MHz band and the 776-788 MHz band	Pass
§27.53 (h)	Emission limit for for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands	Pass

Section 3. Equipment under test (EUT) details

3.1 Sample information

Receipt date	February 25, 2019
Nemko sample ID number	367596-2/3

3.2 EUT information

Product name	General Purpose IoT device
Model	CL-10 LTE VZW
Serial number	

3.3 Technical information

Frequency band	WIFI/ BLE: 2400–2483.5 MHz band LTE: North America Bands
Type of modulation	GFSK, 802.11a/n, OFDM
Emission classification (F1D, G1D, D1D)	FXD, W7D
EUT power requirements	5 V DC
Antenna information	Integral antennas, antenna connector for receiver diversity antenna mod WL-4GE50 WAVELINK

3.4 EUT setup diagram

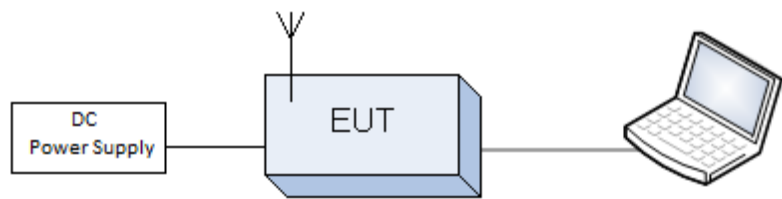


Figure 3.4-1: Setup diagram

3.5 EUT sub assemblies

Table 3.5-1: EUT sub assemblies

Description	Brand name	Model/Part number	Serial number
General Purpose IoT device	Topcon AG Turin	CL-10 LTE VZW	
LTE RX diversity Antenna	WAVELINK	WL-4GE50	--

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

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5. Test conditions

5.1 Atmospheric conditions

Temperature	18–33 °C
Relative humidity	30–60 %
Air pressure	980–1060 mbar

Test equipment used for the monitoring of the environmental conditions

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
Thermohygrometer data loggers	Testo	175-H2	20012380/305	2019-01	2021-01
Thermohygrometer data loggers	Testo	175-H2	38203337/703	2019-01	2021-01
Barometer	MSR	MSR145B	330080	2018-04	2019-04

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

EUT	Type	Test	Range and Setup features	Measurement Uncertainty	Notes
Transmitter	Conducted	Frequency error	0.001 MHz ÷ 40 GHz	0.08 ppm	(1)
		Carrier power	10 kHz ÷ 30 MHz	1.0 dB	(1)
		RF Output Power	30 MHz ÷ 18 GHz	1.5 dB	(1)
			18 MHz ÷ 40 GHz	3.0 dB	(1)
		Adjacent channel power	1 MHz ÷ 18 GHz	1.6 dB	(1)
		Conducted spurious emissions	10 kHz ÷ 26 GHz	3.0 dB	(1)
			26 GHz ÷ 40 GHz	4.5 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)
		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)
	Radiated	Radiated spurious emissions	10 kHz ÷ 26.5 GHz	6.0 dB	(1)
			26.5 GHz ÷ 40 GHz	8.0 dB	(1)
		Effective radiated power transmitter	10 kHz ÷ 26.5 GHz	6.0 dB	(1)
			26,5 GHz ÷ 40 GHz	8.0 dB	(1)
Receiver	Radiated	Radiated spurious emissions	10 kHz ÷ 26.5 GHz	6.0 dB	(1)
			26.5 GHz ÷ 40 GHz	8.0 dB	(1)
		Sensitivity measurement	1 MHz ÷ 18 GHz	6.0 dB	(1)
	Conducted	Conducted spurious emissions	10 kHz ÷ 26 GHz	3.0 dB	(1)
			26 GHz ÷ 40 GHz	4.5 dB	(1)

(1) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$ which has been derived from the assumed normal probability distribution with infinite degrees of freedom and for a coverage probability of 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)	R&S	ESU8	100202	2019-01	2020-01
EMI receiver (20 Hz ÷ 8 GHz)	R&S	ESW44	101620	2018-05	2019-05
Trilog Broadband Antenna	Schwarzbeck	VULB 9162	9162-025	2018-07	2021-07
Bilog antenna (1 ÷ 18 GHz)	Schwarzbeck	STLP 9148	9148-123	2018-07	2021-07
Horn antenna (4 ÷ 40 GHz)	RFSpin	DRH40	061106A40	2017-02	2020-02
Preamplifier (1 ÷ 18 GHz)	Schwarzbeck	BBV9718	9718-137	2018-08	2019-08
Preamplifier (18 ÷ 40 GHz)	Miteq	JS44-18004000-35-8P-R	1.627	2018-08	2019-08
Antenna mast	R&S	HCM	836 529/05	NCR	NCR
Controller	R&S	HCC	836 620/7	NCR	NCR
Turning-table	R&S	HCT	835 803/03	NCR	NCR
Semi-anechoic chamber	Nemko	10m semi-anechoic chamber	530	2018-09	2021-09
Shielded room	Siemens	10m control room	1947	NCR	NCR

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

Section 8. Testing data

8.1 Radiated emission

Definitions and limits

FCC § 15.209 (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.

FCC §15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

FCC §27.53 (c)

For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

FCC §27.53 (h)

AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

(2) Additional protection levels. Notwithstanding the foregoing paragraph (h)(1) of this section:

(i) Operations in the 2180-2200 MHz band are subject to the out-of-band emission requirements set forth in §27.1134 for the protection of federal government operations operating in the 2200-2290 MHz band.

(ii) For operations in the 2000-2020 MHz band, the power of any emissions below 2000 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.

(iii) For operations in the 1915-1920 MHz band, the power of any emission between 1930-1995 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.

(iv) For operations in the 1995-2000 MHz band, the power of any emission between 2005-2020 MHz shall be attenuated below the transmitter power (P) in watts by at least $70 + 10 \log_{10}(P)$ dB.

(3) Measurement procedure. (i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(ii) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.

(iii) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

(4) Private agreements. (i) For AWS operations in the 2000-2020 MHz and 2180-2200 MHz bands, to the extent a licensee establishes unified operations across the AWS blocks, that licensee may choose not to observe the emission limit specified in paragraph (h)(1), above, strictly between its adjacent block licenses in a geographic area, so long as it complies with other Commission rules and is not adversely affecting the operations of other parties by virtue of exceeding the emission limit.

(ii) For AWS operations in the 2000-2020 MHz band, a licensee may enter into private agreements with all licensees operating between 1995 and 2000 MHz to allow the $70 + 10 \log_{10}(P)$ dB limit to be exceeded within the 1995-2000 MHz band.

(iii) An AWS licensee who is a party to a private agreement described in this section (4) must maintain a copy of the agreement in its station files and disclose it, upon request, to prospective AWS assignees, transferees, or spectrum lessees and to the Commission.

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

Frequency, MHz	Field strength of emissions		Measurement distance, m
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	
0.009–0.490	2400/F	$67.6 - 20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6 - 20 \times \log_{10}(F)$	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: 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			

Test summary

Test start date	March 21, 2019
Test engineer	P. Barbieri

Observations, settings and special notes

The spectrum was searched from 30 MHz to 25 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
Radiated measurements were performed at a distance of 3 m.

Spectrum analyzer settings for frequencies below 1000 MHz:

Detector mode	Quasi-Peak
Resolution bandwidth	120 kHz
Trace mode	Max Hold
Measurement time	100 ms

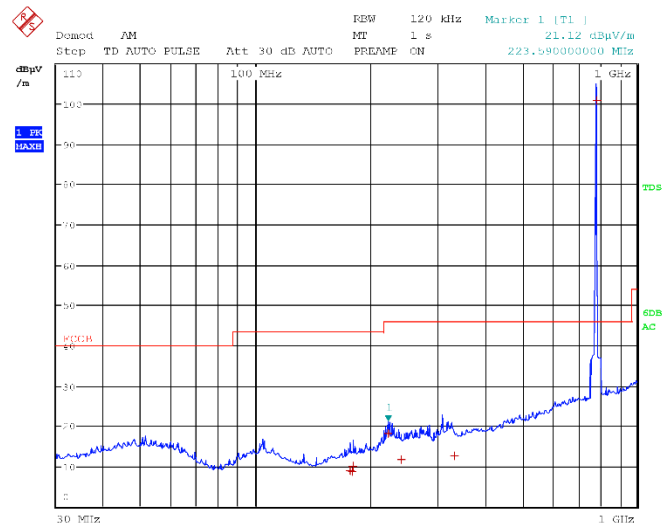
Spectrum analyser settings for peak radiated measurements within restricted bands above 1 GHz:

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:	3 MHz
Detector mode:	Average
Trace mode:	Max Hold

8.1.4 Test data

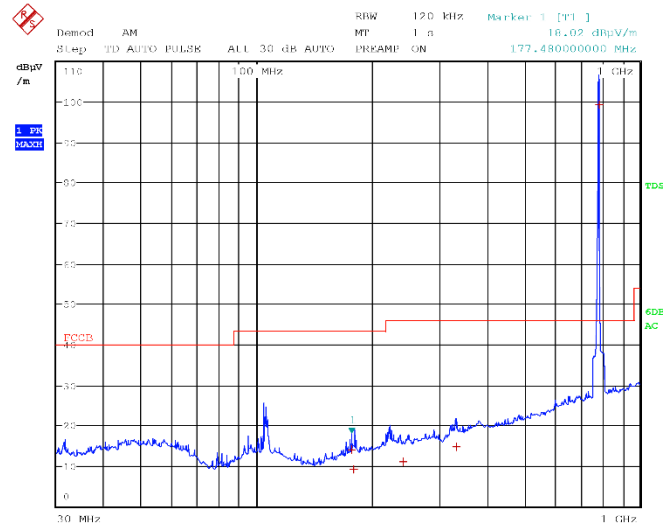


Radiated spurious emissions with antenna in horizontal polarization and with
 LTE Tx at 782 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
177.4800	8.9	43.5	-34.6	QP
179.5500	8.7	43.5	-34.8	QP
179.7000	10.2	43.5	-33.3	QP
223.5900	18.2	46.0	-27.8	QP
240.9000	11.8	46.0	-34.2	QP
332.8200	12.6	46.0	-33.4	QP
783.2100	--	--	--	--

Limit exceeded by the carriers

8.1.4 Test data, continued

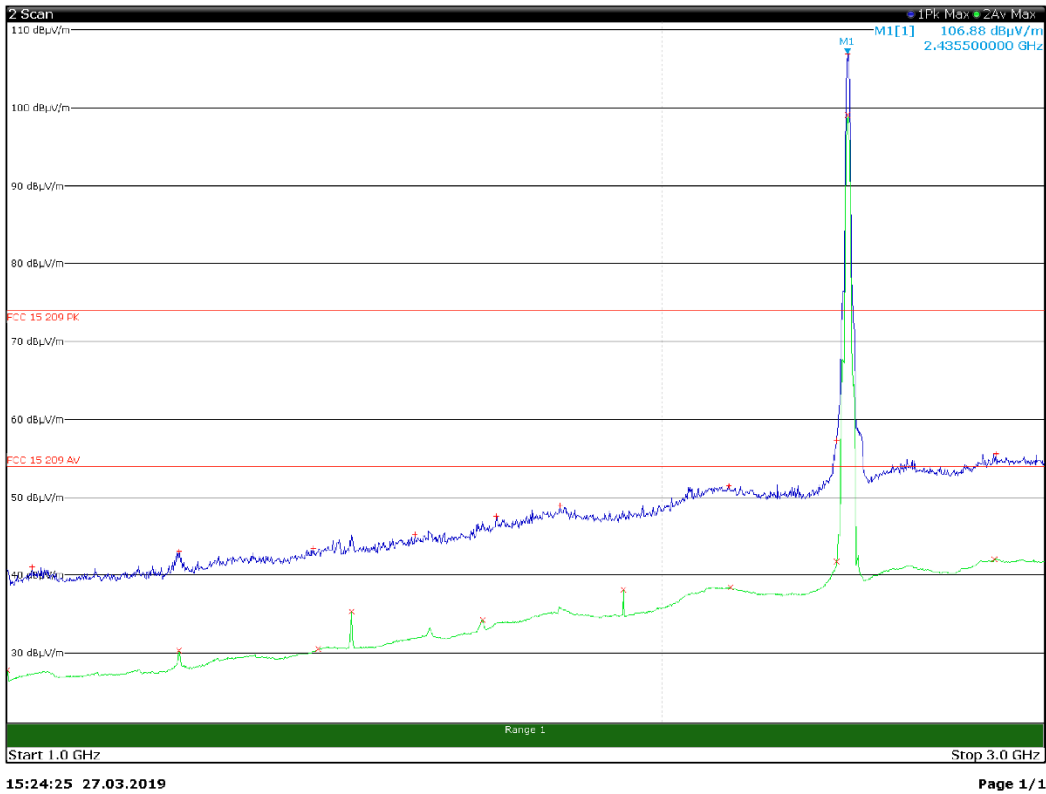


Radiated spurious emissions with antenna in vertical polarization and with
LTE Tx at 782 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
177.4800	14.1	43.5	-29.4	QP
179.5500	9.2	43.5	-34.3	QP
240.9000	11.0	46.0	-35.0	QP
332.8200	14.7	46.0	-31.3	QP
783.2100	--	--	--	--

Limit exceeded by the carriers

8.1.4 Test data, continued



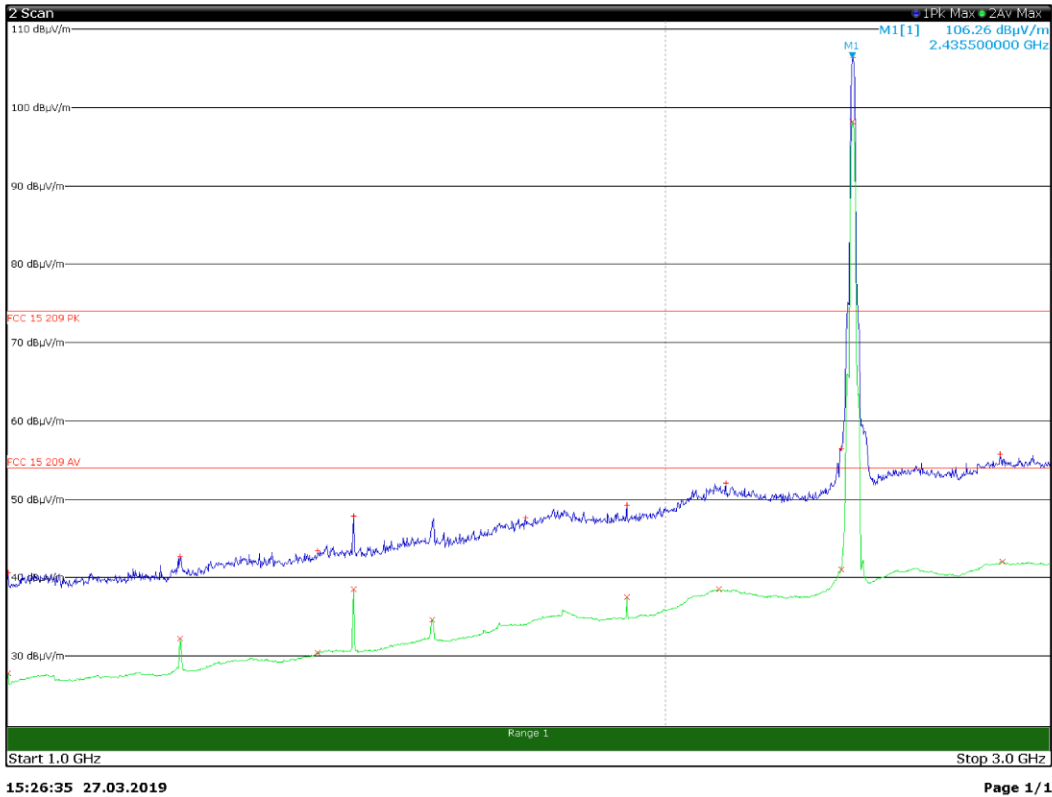
Radiated spurious emissions with antenna in horizontal polarization and with
LTE Tx at 782 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
2437.0000	106.9	--	--	Pk

Limit exceeded by the carriers

8.1.4 Test data, continued

Radiated spurious emissions with antenna in vertical polarization and with
LTE Tx at 782 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz

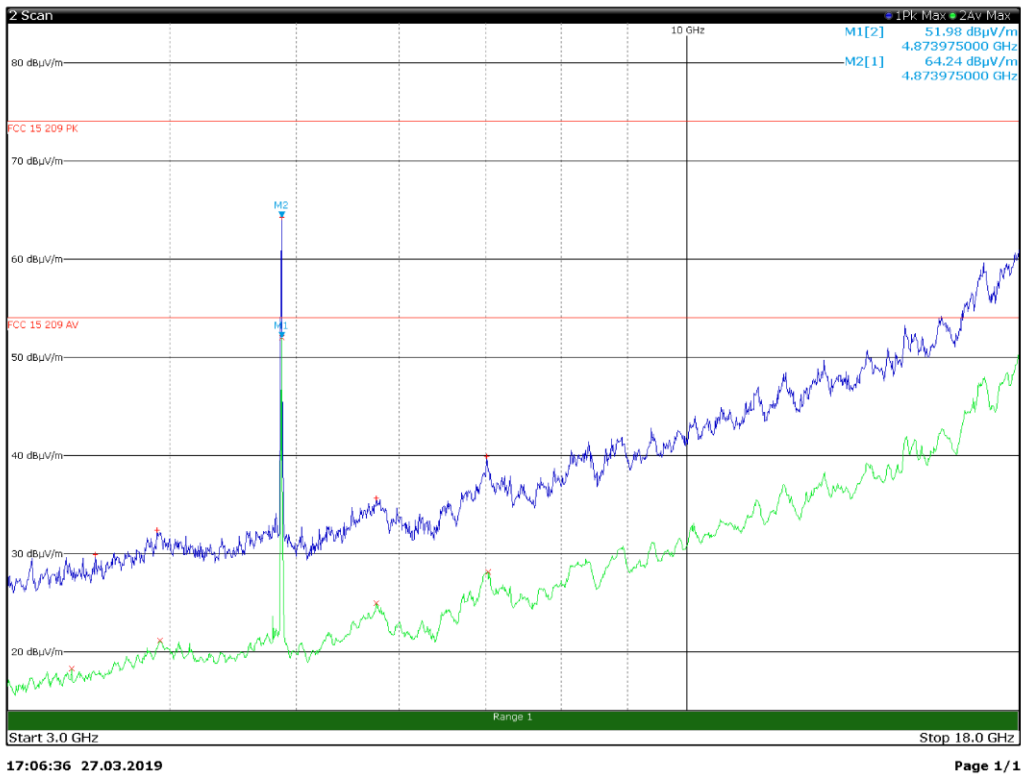


Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
2437.0000	106.5	--	--	Pk

Limit exceeded by the carriers



8.1.4 Test data, continued

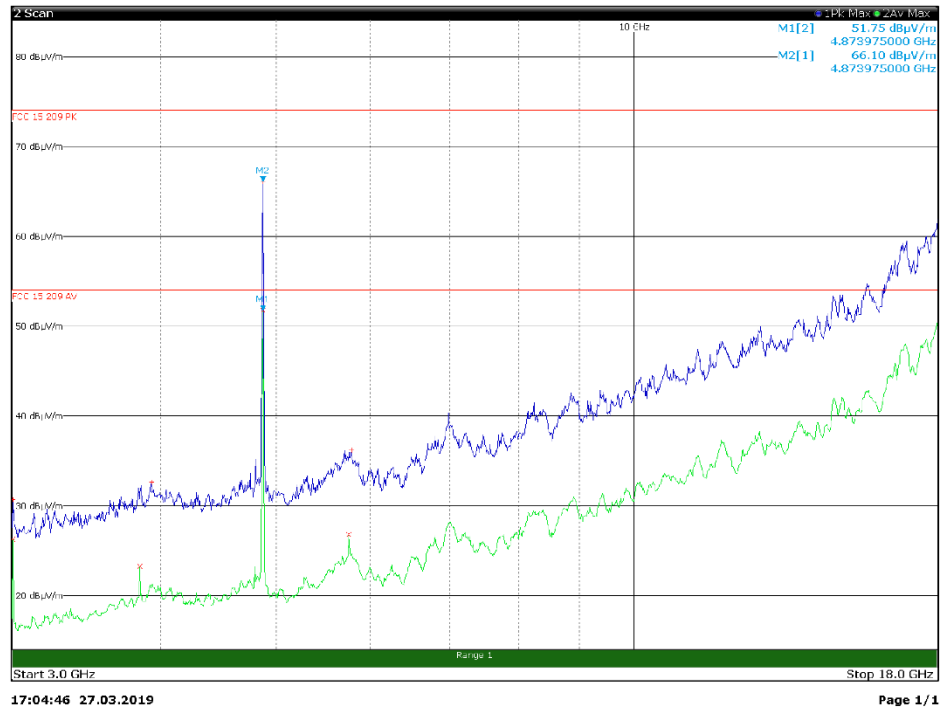


Radiated spurious emissions with antenna in horizontal polarization and with
LTE Tx at 782 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
4873.9750	64.3	82.2	-17.9	Pk

The limit for FCC 27.53 is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

8.1.4 Test data, continued



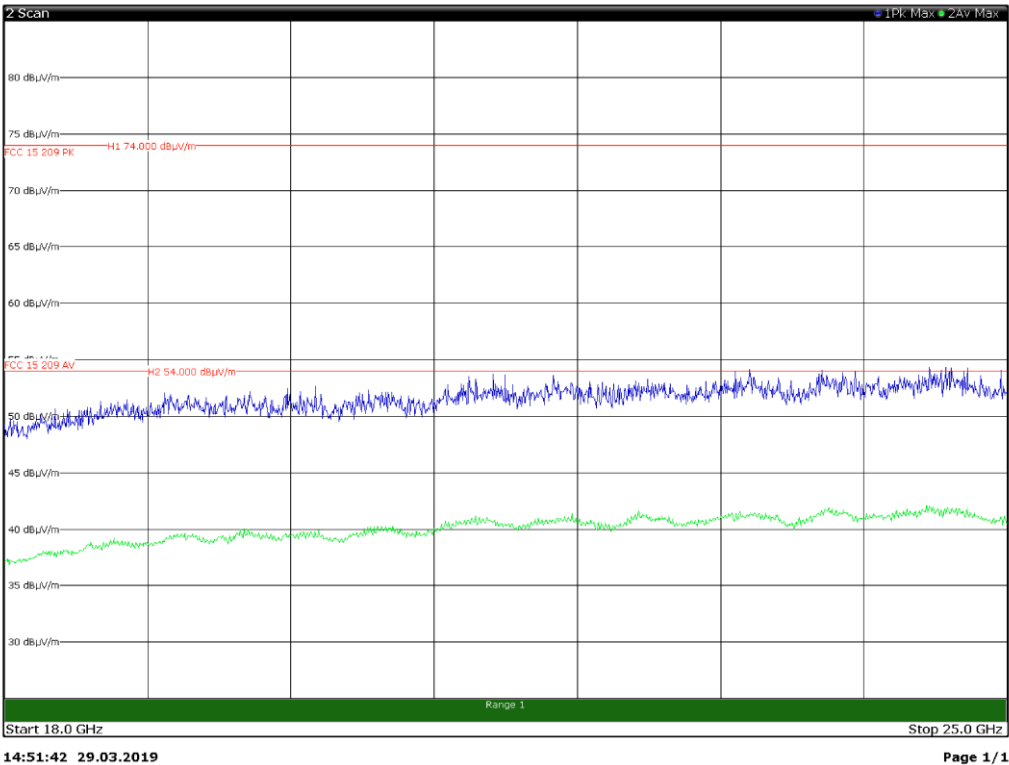
Radiated spurious emissions with antenna in vertical polarization and with
LTE Tx at 782 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
4873.9750	66.1	82.2	-16,1	Pk

The limit for FCC 27.53 is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m



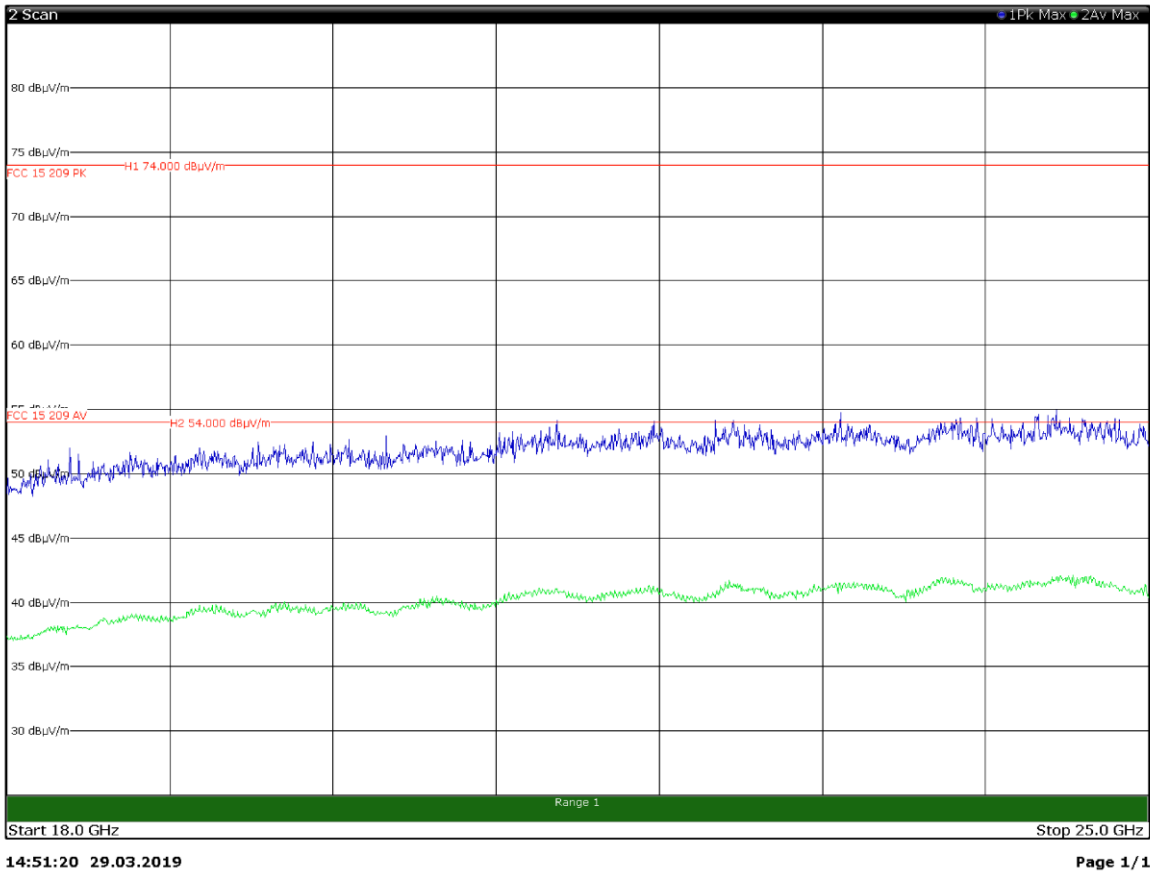
8.1.4 Test data, continued



Radiated spurious emissions with antenna in horizontal polarization and with
LTE Tx at 782 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz



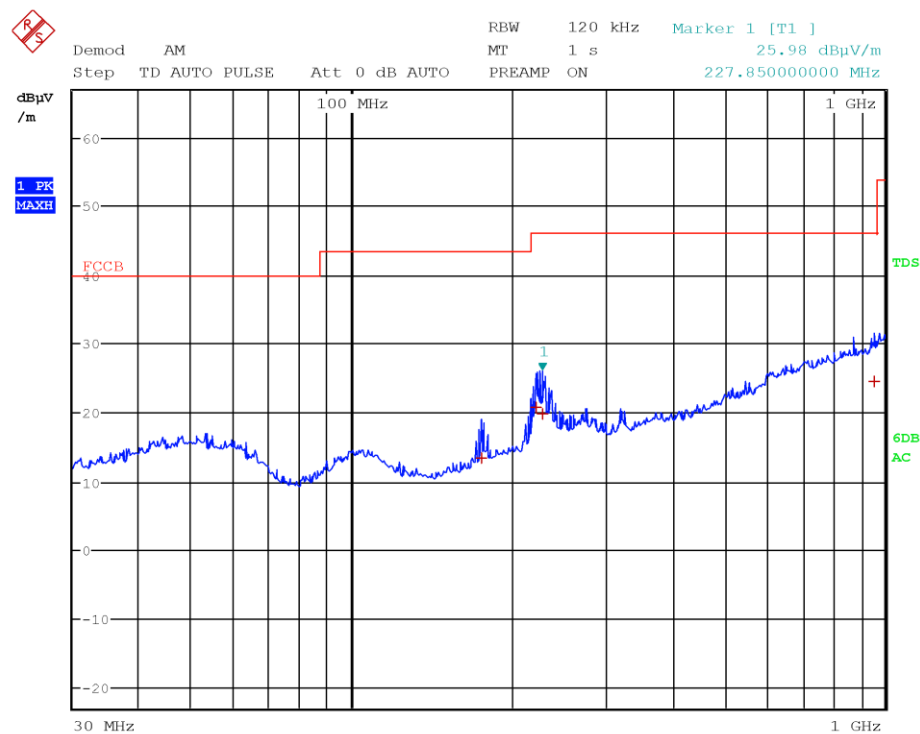
8.1.4 Test data, continued



Radiated spurious emissions with antenna in vertical polarization and with
LTE Tx at 782 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz



8.1.4 Test data, continued

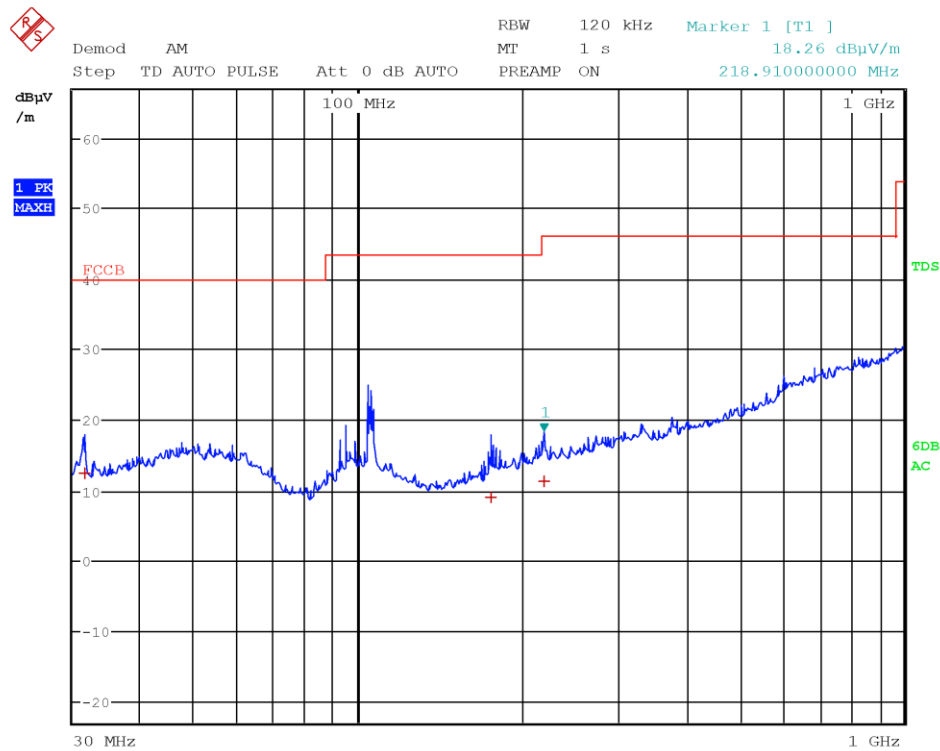


Radiated spurious emissions with antenna in horizontal polarization and with
LTE Tx at 1732.5 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz (configuration 2)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
175.2300	13.4	43.5	-30.1	QP
221.2800	20.8	46.0	-25.2	QP
227.8500	19.9	46.0	-26.1	QP
957.9600	24.5	46.0	-21.5	QP



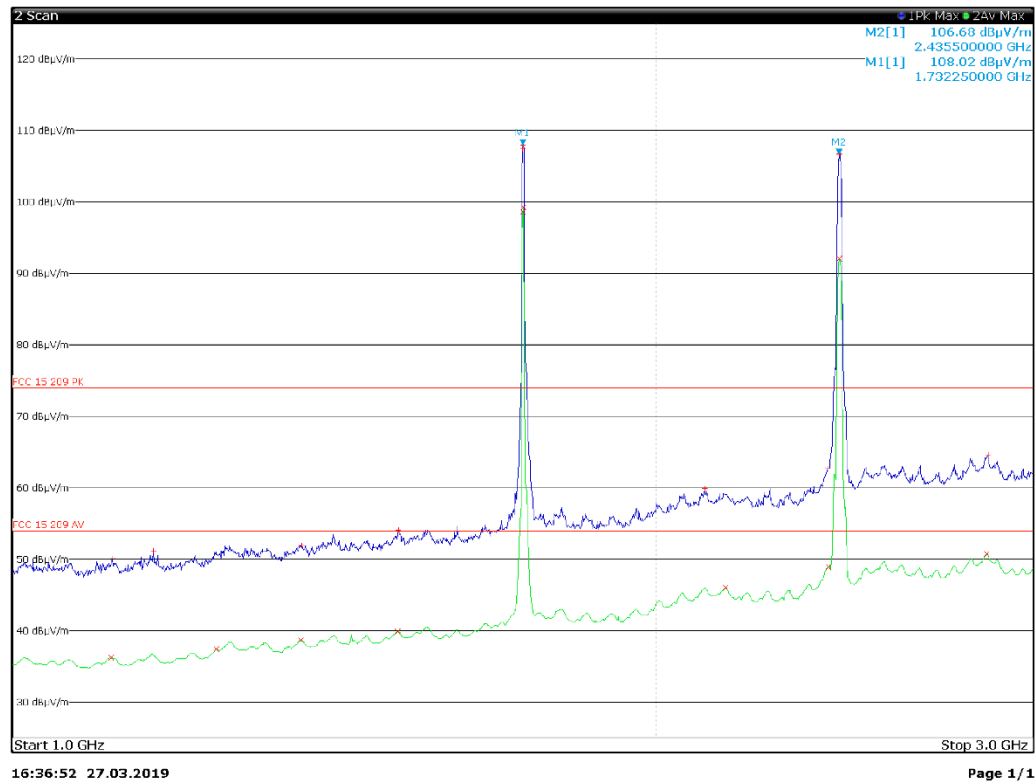
8.1.4 Test data, continued



Radiated spurious emissions with antenna in vertical polarization and with
LTE Tx at 1732.5 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz (configuration 2)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
31.4400	12.5	40.0	-27.5	QP
175.0800	9.2	43.5	-34.3	QP
218.9100	11.4	46.0	-34.6	QP

8.1.4 Test data, continued

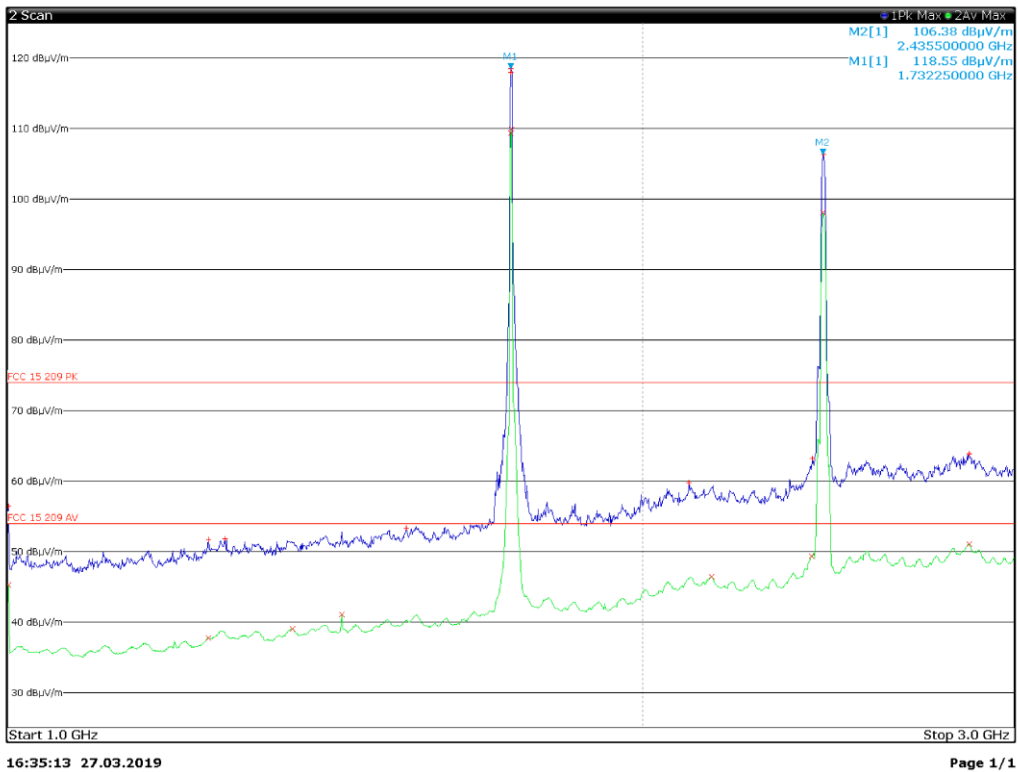


Radiated spurious emissions with antenna in horizontal polarization and with
LTE Tx at 1732.5 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz (configuration 2)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1732.5	108.0	--	--	Pk
2437.0	106.7	--	--	Pk

Limit exceeded by the carriers

8.1.4 Test data, continued

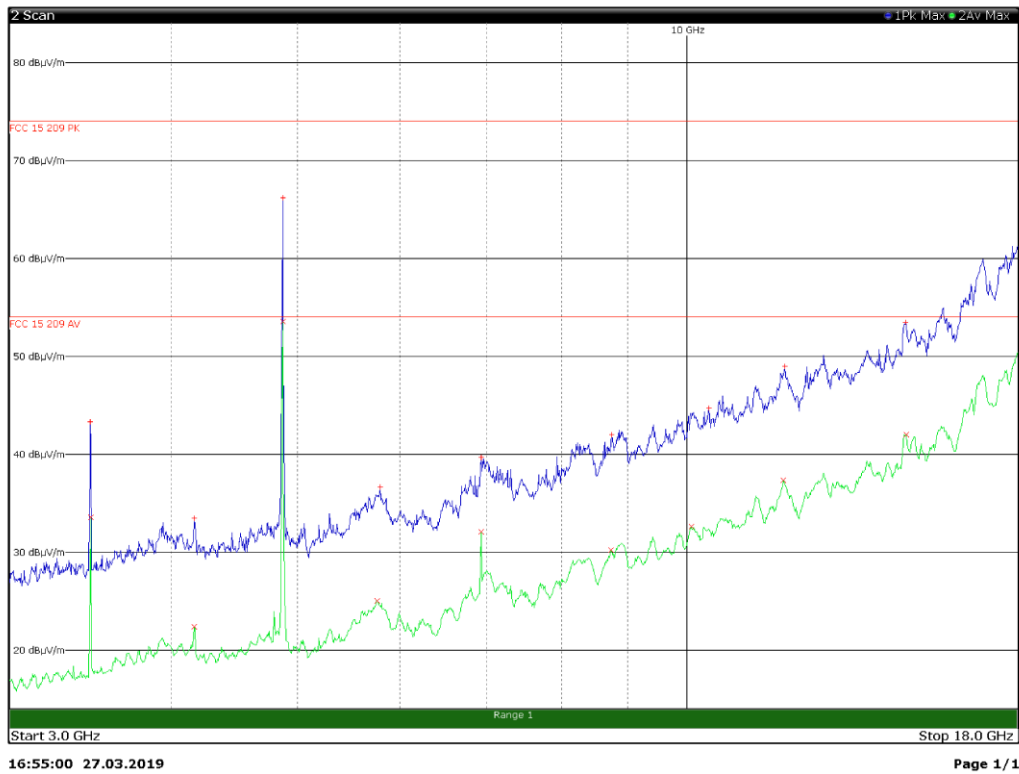


Radiated spurious emissions with antenna in vertical polarization and with
LTE Tx at 1732.5 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz (configuration 2)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1732.5	118.5	--	--	Pk
2437.0	106.4	--	--	Pk

Limit exceeded by the carriers

8.1.4 Test data, continued

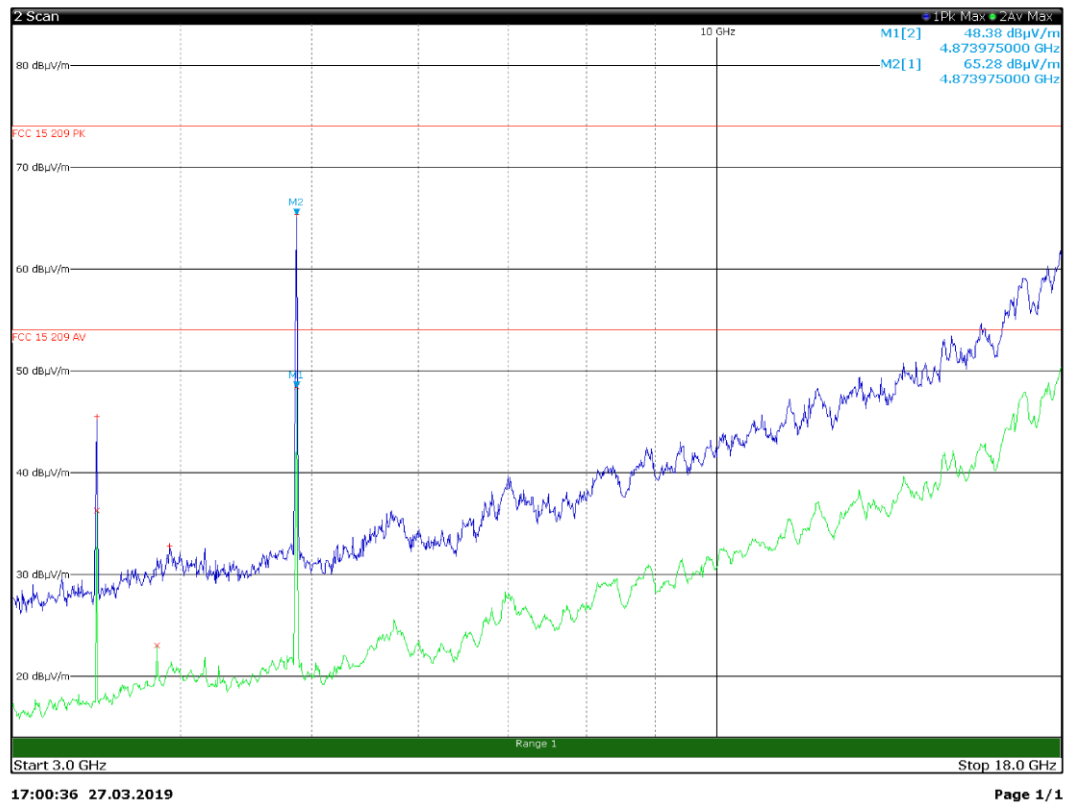


Radiated spurious emissions with antenna in horizontal polarization and with
LTE Tx at 1732.5 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz (configuration 2)

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
3465	43.4	82.2	-38.8	Pk
4874	66.0	82.2	-16.2	Pk

The limit for FCC 27.53 is -13 dBm. Limit (dBµV/m) = limit (dBm) + 95.23 = 82.2 dBµV/m

8.1.4 Test data, continued



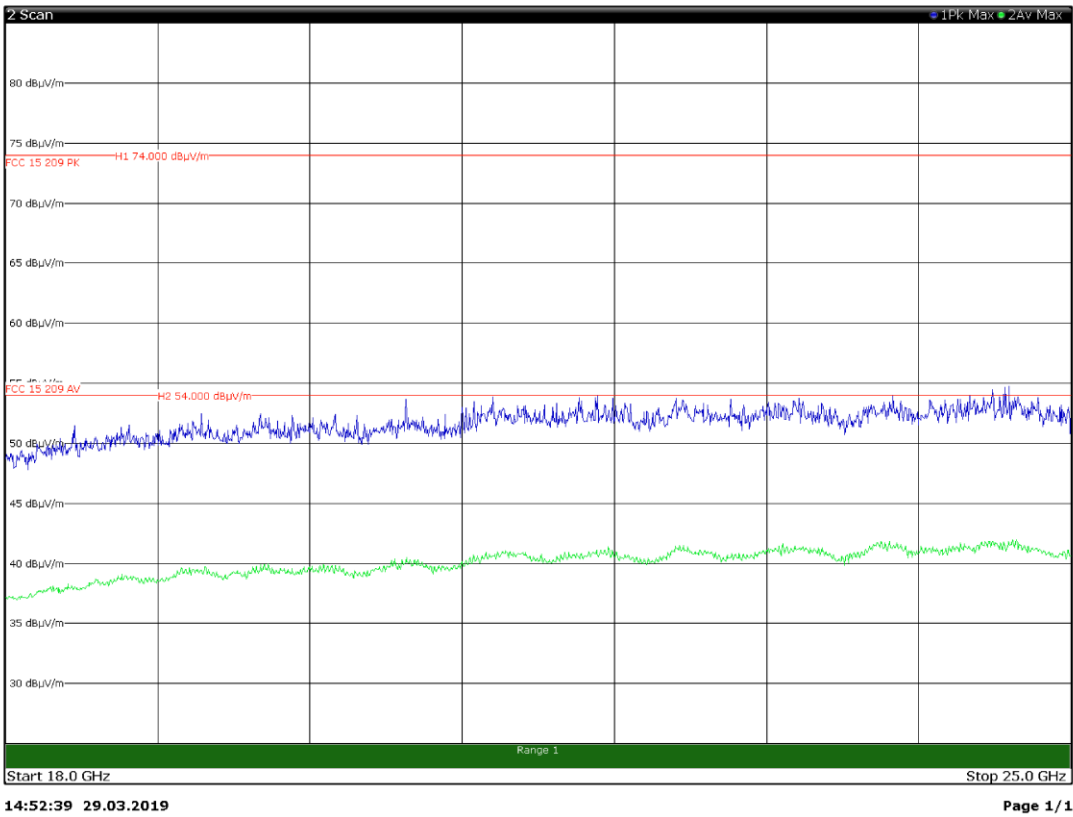
Radiated spurious emissions with antenna in vertical polarization and with
LTE Tx at 1732.5 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz (configuration 2)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
3465	45.5	82.2	-36.7	Pk
4874	66.0	82.2	-16.2	Pk

The limit for FCC 27.53 is -13 dBm. Limit (dBμV/m) = limit (dBm) + 95.23 = 82.2 dBμV/m

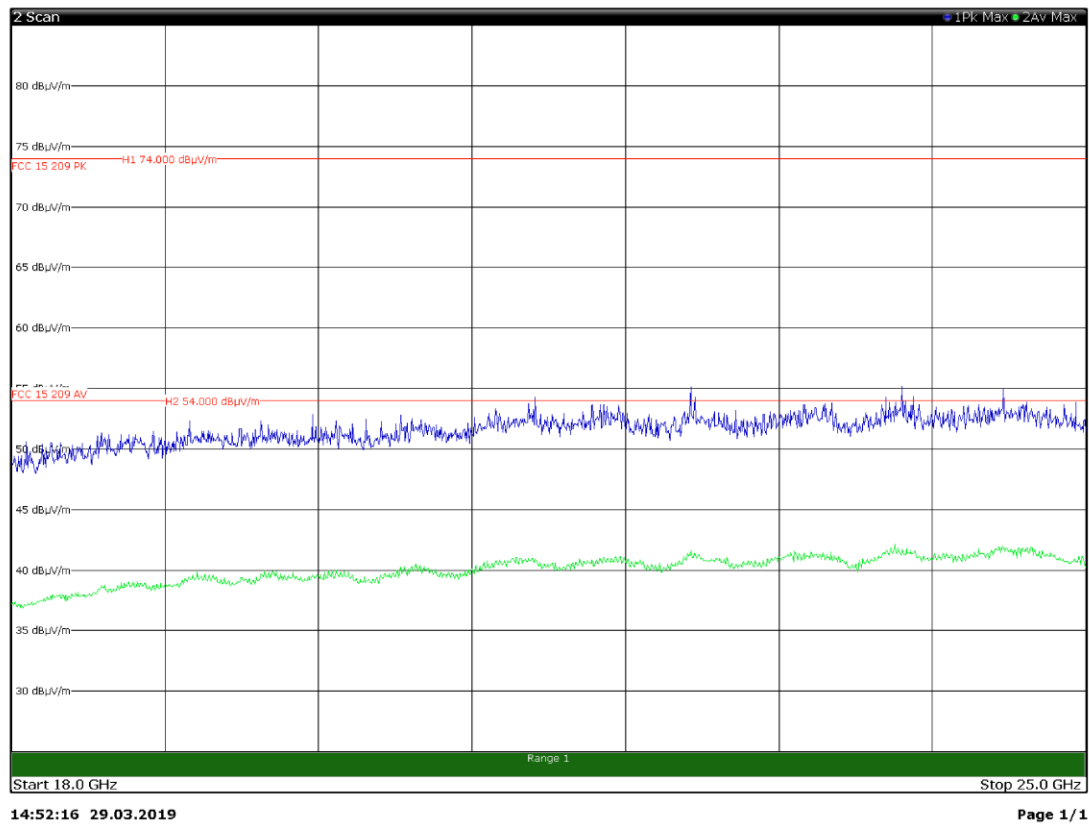


8.1.4 Test data, continued



Radiated spurious emissions with antenna in horizontal polarization and with
LTE Tx at 1732.5 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz (configuration 2)

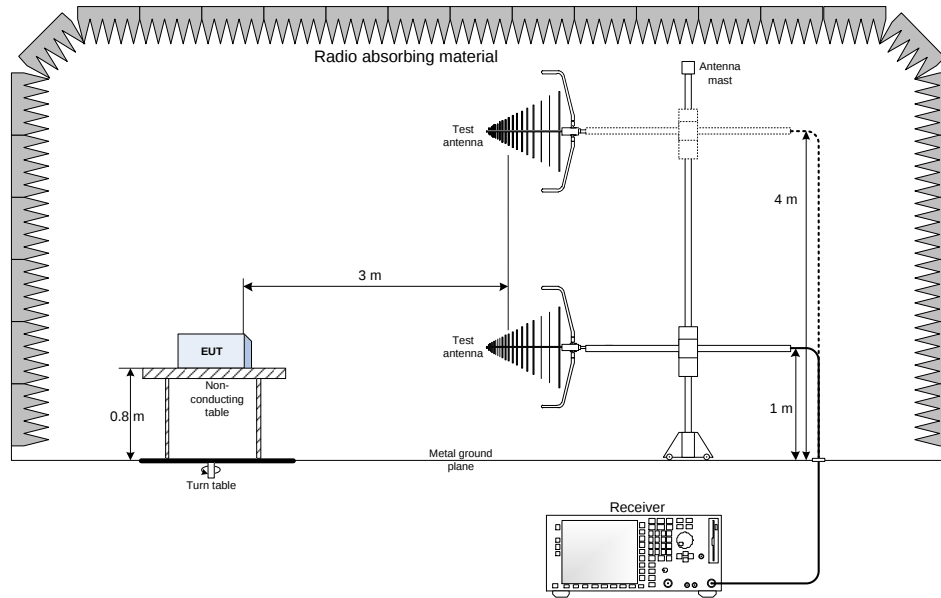
8.1.4 Test data, continued



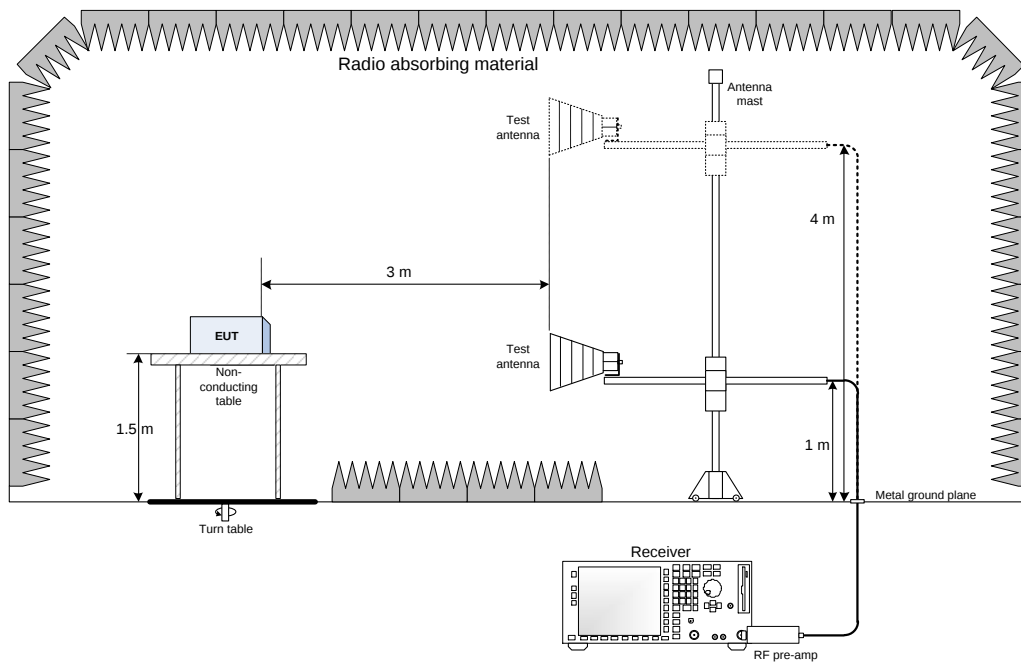
Radiated spurious emissions with antenna in vertical polarization and with
LTE Tx at 1732.5 MHz, WIFI Tx at 2437 MHz and BT Tx at 2440 MHz (configuration 2)

Section 9. Block diagrams of test set-ups

9.1 Radiated emissions set-up for frequencies below 1 GHz

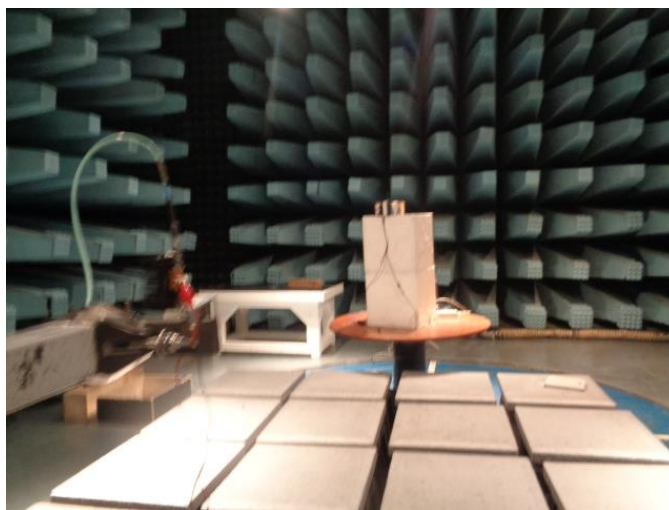
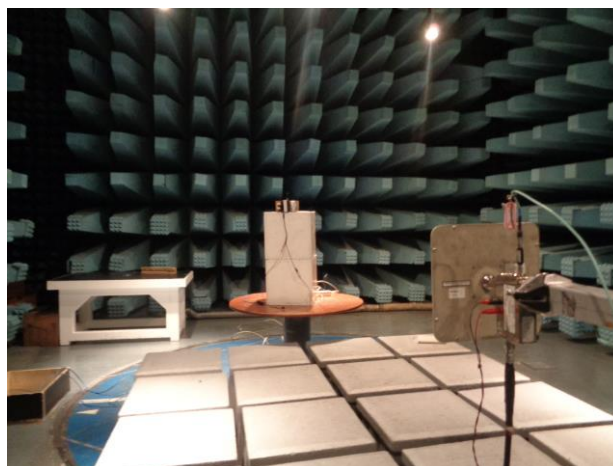
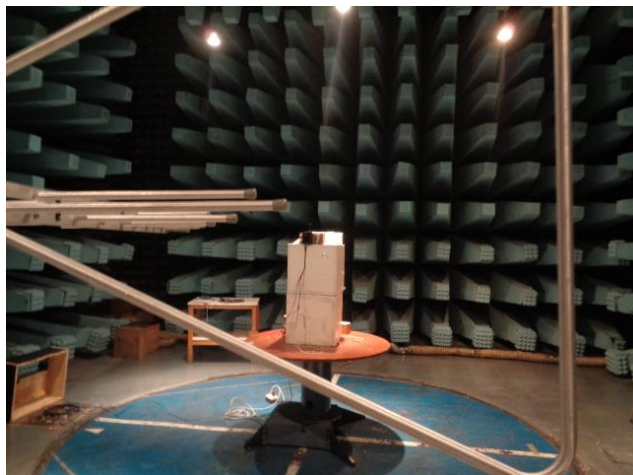


9.2 Radiated emissions set-up for frequencies above 1 GHz



Section 10. Photos

10.1 Photos of the test set-up



10.2 Photos of the EUT



front



Side (with LTE rx Antenna model WL-4GE50 WAVELINK)



rear
(End of report)