

PARTIAL Test Report

21-1-0178701T018a-C01



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Applicant: Actia Nordic AB

Product: Telematic Device
Model: 104760201

FCC ID: 2AGKK104760201 **IC:** 20839-104760201

Testing has been carried out in accordance with:


FCC Regulations
Title 47 CFR, Chapter I, Subchapter A
 Part 15, Subpart C Intentional Radiators; § 15.209 Radiated emission limits; general requirements
Title 47 CFR, Chapter I, Subchapter B
 Part 22, Subpart H Cellular Radiotelephone Service
 Part 24, Subpart E Paging and Radiotelephone Service
 Part 27, Subpart C Miscellaneous Wireless Communications Services
Title 47 CFR, Chapter I, Subchapter D
 Part 90, Subpart I, General technical standards; Subpart S Private Land Mobile Radio Services

ISED-Regulations, Radio Standards Specification
RSS-Gen, Issue 5
 General Requirements for Compliance of Radio Apparatus
RSS-130, Issue 2
 Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz
RSS-132, Issue 4
 Cellular Telephone Systems Operating in the Bands 824-849 MHz and 869-894 MHz
RSS-133, Issue 6, Amendment 1
 2 GHz Personal Communications Services
RSS-139, Issue 4
 Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz
RSS-199, Issue 3
 Broadband Radio Service (BRS) Equipment Operating in the Band 2500–2690 MHz

Tested Technology: LTE

Test Results: **The EUT complies with the requirements in respect of selected parameters subject to the test.**
 The test results relate only to devices specified in this document
 The current version of Test Report TR21-1-0178701T018a-C01 replaces the test report TR21-1-0178701T018a dated 2023-Mar-24. The replaced test report is herewith invalid.

Signatures:

Dipl.-Ing. Ninovic Perez
 Test Lab Manager
 Authorization of test report

Dipl.-Ing. Christian Lorenz
 (Senior) Test Manager
 Responsible of test report

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The listed attachments are separate documents.			

1 General information

1.1 Disclaimer and Notes

The test results of this test report relate exclusively to the test item specified in this test report as specified in chapter 2.7. cetecom advanced does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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Also we refer on special conditions which the applicant should fulfill according §2.927 to §2.948, special focus regarding modification of the equipment and availability of sample equipment for market surveillance tests.

1.2 Attestation

I declare that all measurements were performed by me or under my supervision and that all measurements have been performed and are correct to my best knowledge and belief to Industry Canada standards. All of the above requirements are met in accordance with enumerated standards.

1.3 Summary of Test Results

Test case in LTE2 band	Reference Clause FCC ☒	Reference Clause ISED ☒	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	--	N/A
Conducted RF output power	§2.1046	RSS-133, Issue 6: §4.1/6.4 + SRSP- 510:5.1.2, RSS-Gen, Issue 5:§6.12	22	--	PASSED
Radiated RF output power	§24.232(c), §2.1046	RSS-133, Issue 6 : §4.1/6.4 + SRSP- 510:5.1.2, RSS-Gen, Issue 5:§6.12	--	--	--
26dB Emission bandwidth	§24.238(b), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Occupied Channel Bandwidth 99%	§24.238(b), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Radiated Band Edge	§24.238(a)(b), §2.1053, §2.1057(a)	RSS-133, Issue 6: §6.5.1(i)(ii), RSS-Gen, Issue 5:§6.13	36	--	PASSED
Conducted RF Band Edge	§24.238(a)(b), §2.1051	RSS-133, Issue 6: §6.5.1(i)(ii), RSS-Gen, Issue 5:§6.13	--	--	--
Peak to Average ratio (PAPR)	§24.232(d), §2.1046	RSS-133, Issue 6: §4.1/6.4 + SRSP- 510:5.1.2	--	--	--
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	30	--	PASSED
Spurious emissions at antenna terminals	§24.238(a)(b), §2.1051, §2.1057(a)	RSS-133, Issue 6: §6.5.1(i)(ii), RSS-Gen, Issue 5:§6.13	--	--	--
Radiated spurious emissions	§24.238(a)(b), §2.1053, §2.1057(a)	RSS-133, Issue 6: §6.5.1(i)(ii), RSS-Gen, Issue 5:§6.13	33	--	PASSED
Frequency stability, temperature variation	§24.235, §2.1055(a)(1)	RSS-133, Issue-6: §6.3, RSS-Gen, Issue 5:§6.11	--	--	--
Frequency stability, voltage variation	§24.235, §2.1055(d)(1)	RSS-133, Issue-6: §6.3, RSS-Gen, Issue 5:§6.11	--	--	--

Test case in LTE4 band	Reference Clause FCC	Reference Clause ISSED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	--	N/A
Conducted RF output power	§27.50(d)(4), §2.1046	RSS-139, Issue 4: §5.5 + + SRSP 513, RSS-Gen, Issue 5:§6.12	22	--	PASSED
Radiated RF output power	§27.50(d)(4), §2.1046	RSS-139, Issue 4: §5.5 + + SRSP 513, RSS-Gen, Issue 5:§6.12	--	--	--
26dB Emission bandwidth	§27.53(h)(3), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Occupied Channel Bandwidth 99%	§27.53(h)(3), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Radiated Band Edge	§27.53(h), §2.1053, §2.1057(a)	RSS-139, Issue 4: 5.6 (i)(ii), RSS-Gen, Issue 5:§6.13	36	--	PASSED
Conducted RF Band Edge	§27.53(h), §2.1051, §2.1057(a)	RSS-139, Issue 4: §5.6 (i)(ii), RSS-Gen, Issue 5:§6.13	--	--	--
Peak to Average ratio (PAPR)	§27.50(d)(4)(5), §2.1046	RSS-139, Issue 4:§5.5	--	--	--
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5:§8.9 Table 6	30	--	PASSED
Spurious emissions at antenna terminals	§27.53(h), §2.1051, §2.1057(a)	RSS-139, Issue 4: §5.6 (i)(ii), RSS-Gen, Issue 5:§6.13	--	--	--
Radiated spurious emissions	§27.53(h), §2.1053, §2.1057(a)	RSS-139, Issue 4: §5.6 (i)(ii), RSS-Gen, Issue 5:§6.13	33	--	PASSED
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 4:§5.4, RSS-Gen, Issue 5:§6.11	--	--	--
Frequency stability, voltage variation	§27.54, §2.1055(d)(1)	RSS-139, Issue 4:§5.4, RSS-Gen, Issue 5:§6.11	--	--	--

Test case in LTE5 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	--	N/A
Conducted RF output power	§22.913(a)(5), §2.1046	RSS-132, Issue 4: §5.4 + SRSP 503:5.1.3, RSS-Gen, Issue 5:§6.12	22	--	PASSED
Radiated RF output power	§22.913, §2.1046	RSS-132, Issue 4: §5.4 + SRSP 503:5.1.3, RSS-Gen, Issue 5:§6.12	--	--	--
26dB Emission bandwidth	§22.917(b), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Occupied Channel Bandwidth 99%	§22.917(b), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Radiated Band Edge	§22.917(a)(b), §2.1053, §2.1057(a)	RSS-132, Issue 4: §5.5(i)(ii), RSS-Gen, Issue 5:§6.13	36	--	PASSED
Conducted RF Band Edge	§22.917(a)(b), §2.1051, §2.1057(a)	RSS-132, Issue 4: §5.5(i)(ii), RSS-Gen, Issue 5:§6.13	--	--	--
Peak to Average ratio (PAPR)	§22.913(d), §2.1046	RSS-132, Issue 4: §5.4 + SRSP 503:5.1.3	--	--	--
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	30	--	PASSED
Spurious emissions at antenna terminals	§22.917(a)(b), §2.1051, §2.1057(a)	RSS-132, Issue 4: §5.5(i)(ii), RSS-Gen, Issue 5:§6.13	--	--	--
Radiated spurious emissions	§22.917(a)(b), §2.1053, §2.1057(a)	RSS-132, Issue 4: §5.5(i)(ii), RSS-Gen, Issue 5:§6.13	33	--	PASSED
Frequency stability, temperature variation	§22.355, §2.1055(a)(1)	RSS-132, Issue 4, §5.3, RSS-Gen, Issue 5:§6.11	--	--	--
Frequency stability, voltage variation	§22.355, §2.1055(d)(1)	RSS-132, Issue 4, §5.3, RSS-Gen, Issue 5:§6.11	--	--	--

Test case in LTE7 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	--	N/A
Conducted RF output power	§27.50(h)(2), §2.1046	RSS-199, Issue 3: §4.4 + SRSP 517, RSS-Gen, Issue 5:§6.12	22	--	PASSED
Radiated RF output power	§27.50(h)(2), §2.1046	RSS-199, Issue 3: §4.4 + SRSP 517, RSS-Gen, Issue 5:§6.12	--	--	--
26dB Emission bandwidth	§27.53(h)(3), §2.202(a), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Occupied Channel Bandwidth 99%	§27.53(h)(3), §2.202(a), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Radiated Band Edge	§27.53(m)(4), §2.1053, §2.1057(a)	RSS-199, Issue 3: §4.5, RSS-Gen, Issue 5:§6.13	36	--	PASSED
Conducted RF Band Edge	§27.53(m)(4), §2.1051, §2.1057(a)	RSS-199, Issue 3: §4.5, RSS-Gen, Issue 5:§6.13	--	--	--
Peak to Average ratio (PAPR)	§27.50(h)(2), §2.1046	RSS-199, Issue 3: §4.5	--	--	--
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	30	--	PASSED
Spurious emissions at antenna terminals	§27.53(m)(4), §2.1051, §2.1057(a)	RSS-199, Issue 3: §4.5, RSS-Gen, Issue 5:§6.13	--	--	--
Radiated spurious emissions	§27.53(m)(4), §2.1053, §2.1057(a)	RSS-199, Issue 3: §4.5, RSS-Gen, Issue 5:§6.13	33	--	PASSED
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-199, Issue 3: §4.3, RSS-Gen, Issue 5:§6.11	--	--	--
Frequency stability, voltage variation	§27.54, §2.1055(d)(1)	RSS-199, Issue 3: §4.3, RSS-Gen, Issue 5:§6.11	--	--	--

Test case in LTE12 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	--	N/A
Conducted RF output power	§27.50(c)(10), §2.1046	RSS-130, Issue 2: §4.6.1/ §4.6.3, RSS-Gen, Issue 5:§6.12	22	--	PASSED
Radiated RF output power	§27.50(c)(10), §2.1046	RSS-130, Issue 2: §4.6.1/ §4.6.3, RSS-Gen, Issue 5:§6.12	--	--	--
26dB Emission bandwidth	§2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Occupied Channel Bandwidth 99%	§2.1049	RSS-130, Issue 2:§4.5, RSS-Gen, Issue 5:§6.7	--	--	--
Radiated Band Edge	§27.53(g), §2.1053, §2.1057(a)	RSS-130, Issue 2:§4.7.1, RSS-Gen, Issue 5:§6.13	36	--	PASSED
Conducted RF Band Edge	§27.53(g), §2.1053(a), §2.1057(a)	RSS-130, Issue 2:§4.7.1, RSS-Gen, Issue 5:§6.13	--	--	--
Peak to Average ratio (PAPR)	§27.50(c)(10), §2.1046	RSS-130, Issue 2: §4.6.1	--	--	--
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	30	--	PASSED
Spurious emissions at antenna terminals	§27.53(g), §2.1051, §2.1057(a)	RSS-130, Issue 2:§4.7.1, RSS-Gen, Issue 5:§6.13	--	--	--
Radiated spurious emissions	§27.53(g), §2.1053, §2.1057(a)	RSS-130, Issue 2:§4.7.1, RSS-Gen, Issue 5:§6.13	33	--	PASSED
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-130, Issue 2:§4.5, RSS-Gen, Issue 5:§6.11	--	--	--
Frequency stability, voltage variation	§27.54, §2.1055(d)(1)	RSS-130, Issue 2:§4.5, RSS-Gen, Issue 5:§6.11	--	--	--

Test case in LTE13 band	Reference Clause FCC	Reference Clause ISCED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	--	N/A
Conducted RF output power	§27.50(b)(10)(11), §2.1046(a)	RSS-130, Issue 2: §4.6.1/ §4.6.3, RSS-Gen, Issue 5:§6.12	22	--	PASSED
Radiated RF output power	§27.50(b)(10)(11), §2.1046(a)	RSS-130, Issue 2: §4.6.1/ §4.6.3, RSS-Gen, Issue 5:§6.12	--	--	--
26dB Emission bandwidth	§2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Occupied Channel Bandwidth 99%	§2.1049	RSS-130, Issue 2:§4.5, RSS-Gen, Issue 5:§6.7	--	--	--
Radiated Band Edge	§27.53(c)(3)(4), §2.1053, §2.1057(a)	RSS-130, Issue 2:§4.7.1, RSS-Gen, Issue 5:§6.13	36	--	PASSED
Conducted RF Band Edge	§27.53(c)(3)(4), §2.1051, §2.1057(a)	RSS-130, Issue 2:§4.7.1, RSS-Gen, Issue 5:§6.13	--	--	--
Peak to Average ratio (PAPR)	§2.1046	RSS-130, Issue 2: §4.6.1	--	--	--
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	30	--	PASSED
Spurious emissions at antenna terminals	§27.53(c)(2)(3)(4), §2.1051, §2.1057(a)	RSS-130, Issue 2:§4.7.1, RSS-Gen, Issue 5:§6.13	--	--	--
Radiated spurious emissions	§27.53(c)(2)(3)(4), §27.53(f), §27.1053(a)(b), §2.1053, §2.1057(a)	RSS-130, Issue 2:§4.7.1, §4.7.2(a)(b), RSS-Gen, Issue 5:§6.13	33	--	PASSED
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-130, Issue 2:§4.5, RSS-Gen, Issue 5:§6.11	--	--	--
Frequency stability, voltage variation	§27.54, §2.1055(d)(1)	RSS-130, Issue 2:§4.5, RSS-Gen, Issue 5:§6.11	--	--	--

Test case in LTE26 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	--	N/A
Conducted RF output power	§22.913(a)(5), §90.635(b), §2.1046	RSS-132, Issue 4: §5.4 + SRSP 503:5.1.3, RSS-Gen, Issue 5:§6.12	22	--	PASSED
Radiated RF output power	§22.913, §90.635(b), §2.1046	RSS-132, Issue 4: §5.4 + SRSP 503:5.1.3, RSS-Gen, Issue 5:§6.12	--	--	--
26dB Emission bandwidth	§22.917(b), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Occupied Channel Bandwidth 99%	§22.917(b), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Radiated Band Edge	§22.917(a)(b), §90.691(1)(2), §2.1053, §2.1057(a)	RSS-132, Issue 4: §5.5(i)(ii), RSS-Gen, Issue 5:§6.13	36	--	PASSED
Conducted RF Band Edge	§22.917(a)(b), §90.691§2.1051, §2.1057(a)	RSS-132, Issue 4: §5.5(i)(ii), RSS-Gen, Issue 5:§6.13	--	--	--
Peak to Average ratio (PAPR)	§22.913(d), §90.635(b), §2.1046	RSS-132, Issue 4: §5.4 + SRSP 503:5.1.3	--	--	--
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	30	--	PASSED
Spurious emissions at antenna terminals	§22.917(a)(b), §90.691, §90.543(e)(3), §2.1051 §2.1057	RSS-132, Issue 4: §5.5(i)(ii), RSS-Gen, Issue 5:§6.13	--	--	--
Radiated spurious emissions	§22.917(a)(b), §90.691, §90.543(e)(3), §2.1053, §2.1057	RSS-132, Issue 4: §5.5(i)(ii), RSS-Gen, Issue 5:§6.13	33	--	PASSED
Frequency stability, temperature variation	§22.355, §90.213, §2.1055(a)(1)	RSS-132, Issue 4, §5.3, RSS-Gen, Issue 5:§6.11	--	--	--
Frequency stability, voltage variation	§22.355, §90.213, §2.1055(d)(1)	RSS-132, Issue 4, §5.3, RSS-Gen, Issue 5:§6.11	--	--	--

Test case in LTE38 band	Reference Clause FCC ☒	Reference Clause ISED ☒	Page	Remark	Result
AC-Power Lines Conducted Emissions			--	--	N/A
Conducted RF output power	§27.50(h)(2), §2.1046	RSS-199, Issue 3:§4.4 + SRSP 517, RSS-Gen, Issue 5:§6.12	21	--	PASSED
Radiated RF output power	§27.50(h)(2), §2.1046	RSS-199, Issue 3:§4.4 + SRSP 517, RSS-Gen, Issue 5: §6.12	--	--	--
26dB Emission bandwidth	§27.53(h)(3), §2.202(a), §2.1049	RSS-Gen, Issue 5:§6.7 RSS-199, Issue 3, §4.2	--	--	--
Occupied Channel Bandwidth 99%	§27.53(h)(3), §2.202(a), §2.1049	RSS-Gen, Issue 5:§6.7 RSS-199, Issue 3, §4.2	--	--	--
Radiated Band Edge	§27.53(m)(4), §2.1053, §2.1057(a)	RSS-199, Issue 3: §4.5, RSS-Gen, Issue 5:§6.13	31	--	PASSED
Conducted RF Band Edge	§27.53(m)(4), §2.1053, §2.1057(a)	RSS-199, Issue 3: §4.5, RSS-Gen, Issue 5:§6.13	--	--	--
Peak to Average ratio (PAPR)	§27.53(m)(4), §2.1053, §2.1057(a)	RSS-199, Issue 3: §4.4, RSS-Gen, Issue 5:§6.13	--	--	--
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	27	--	PASSED
Spurious emissions at antenna terminals	§27.53(m)(4), §2.1051, §2.1057(a)	RSS-199, Issue 3: §4.5, RSS-Gen, Issue 5:§6.13	--	--	--
Radiated spurious emissions	§27.53(m)(4), §2.1051, §2.1057(a)	RSS-199, Issue 3: §4.5, RSS-Gen, Issue 5:§6.13	31	--	PASSED
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-199, Issue 3: §4.3, RSS-Gen, Issue 5:§6.11	--	--	--
Frequency stability, voltage variation	§27.54, §2.1055(a)(1)	RSS-199, Issue 3: §4.3, RSS-Gen, Issue 5:§6.11	--	--	--

Test case in LTE66 band	Reference Clause FCC	Reference Clause ISSED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	--	N/A
Conducted RF output power	§27.50(d)(4), §2.1046	RSS-139, Issue 4: §6.5 + + SRSP 513, RSS-Gen, Issue 5:§6.12	22	--	PASSED
Radiated RF output power	§27.50(d)(4), §2.1046	RSS-139, Issue 4: §6.5 + + SRSP 513, RSS-Gen, Issue 5:§6.12	--	--	--
26dB Emission bandwidth	§27.53(h)(3), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Occupied Channel Bandwidth 99%	§27.53(h)(3), §2.1049	RSS-Gen, Issue 5:§6.7	--	--	--
Radiated Band Edge	§27.53(h), §2.1053, §2.1057(a)	RSS-139, Issue 4: 6.6 (i)(ii), RSS-Gen, Issue 5:§6.13	36	--	PASSED
Conducted RF Band Edge	§27.53(h), §2.1051, §2.1057(a)	RSS-139, Issue 4: §6.6 (i)(ii), RSS-Gen, Issue 5:§6.13	--	--	--
Peak to Average ratio (PAPR)	§27.50(d)(4)(5), §2.1046	RSS-139, Issue 4:§6.5	--	--	--
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	30	--	PASSED
Spurious emissions at antenna terminals	§27.53(h), §2.1051, §2.1057(a)	RSS-139, Issue 4: §6.6 (i)(ii), RSS-Gen, Issue 5:§6.13	--	--	--
Radiated spurious emissions	§27.53(h), §2.1053, §2.1057(a)	RSS-139, Issue 4: §6.6 (i)(ii), RSS-Gen, Issue 5:§6.13	33	--	PASSED
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 4:§6.4, RSS-Gen, Issue 5:§6.11	--	--	--
Frequency stability, voltage variation	§27.54, §2.1055(d)(1)	RSS-139, Issue 4:§6.4, RSS-Gen, Issue 5:§6.11	--	--	--

PASSED The EUT complies with the essential requirements in the standard.
 FAILED The EUT does not comply with the essential requirements in the standard.
 N/A Test case does not apply to the test object.
 NP The test was not performed by the cetecom advanced Laboratory.

Decision Rule: cetecom advanced GmbH follows [ILAC G8:2019 chapter 4.2.1 \(Simple Acceptance Rule\)](#).

Remarks:

- Please check the module report “**200722013RFM-2**” issued on 2021-Jan-06 by Shenzhen UnionTrust Quality and Technology Park, for not performed measurements by the cetecom advanced laboratory.

1.4 Summary of Test Methods

Test case	Test method
AC-Power Lines Conducted Emissions	ANSI C63.4-2014, §7, ANSI C63.10-2013 §6.2
Conducted RF output power	ANSI C63.26:2015, §5.2, KDB 971168 D01 v03r01
Radiated RF output power	ANSI C63.26:2015, §5.2.7, KDB 971168 D01 v03r01
Occupied Channel Bandwidth 99%	ANSI C63.26:2015, §5.4.4, KDB 971168 D01 v03r01
26dB Emission bandwidth	ANSI C63.26:2015, §5.4.3, KDB 971168 D01 v03r01
Modulation characteristics	ANSI C63.26:2015, §5.3
Radiated Band Edge	ANSI C63.26:2015, §5.5, KDB 971168 D01 v03r01
Conducted RF Band Edge	ANSI C63.26:2015, §5.7, KDB 971168 D01 v03r01
Peak to Average ratio (PAPR)	ANSI C63.26:2015, §5.2.6
Result calculated with measured conducted RF-power value and stated/measured antenna gain for band of interest	
Radiated field strength emissions below 30 MHz	ANSI C63.4-2014 §5.3, §8.2.1, §8.3.1.1+§8.3.2.1
Spurious emissions at antenna terminals	ANSI C63.26:2015, §5.7, KDB 971168 D01 v03r01
Radiated spurious emissions	ANSI C63.26:2015, §5.5, KDB 971168 D01 v03r01, ANSI C63.26.1:2018

2 Administrative Data

2.1 Identification of the Testing Laboratory

Company name:	cetecom advanced GmbH
Address:	Im Teelbruch 116 45219 Essen - Kettwig Germany
Responsible for testing laboratory:	Dipl.-Ing. Ninovic Perez
Accreditation scope:	DAkkS Webpage: FCC ISED
IC Lab company No. / CAB ID:	3462D / DE0005
Test location:	Im Teelbruch 116; 45219 Essen

2.2 General limits for environmental conditions

Temperature:	22±2 °C
Relative. humidity:	45±15% rH

2.3 Test Laboratories sub-contracted

Company name:	--
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2.4 Organizational Items

Responsible test manager:	Dipl.-Ing. Christian Lorenz
Receipt of EUT:	2022-Oct-31
Date(s) of test:	2022-Nov-22 to 2023-Feb-21
Version of template:	22.1101

2.5 Applicant's details

Applicant's name:	Actia Nordic AB
Address:	Datalinjen 3b 58330 Linköping Sweden
Contact Person:	Salah Alazawi
Contact Person's Email:	salah.alazawi@actia.se

2.6 Manufacturer's details

Manufacturer's name:	Actia Nordic AB
Address:	Datalinjen 3b 58330 Linköping Sweden

2.7 Equipment under Test (EUT)

EUT No. *)	Sample No.	Product	Model	Type	SN	HW	SW
EUT 1	21-1-01787S50_C01	Telematic Device	104760201	N/A	9100022000000 7	H1	1
EUT 2	21-1-01787S51_C01	Telematic Device	104760201	N/A	9100022000000 8	H1	1
EUT 3	21-1-01787S57_C01	Telematic Device	104760201	N/A	9100001000024 0	H1	1
EUT 4	21-1-01787S31_C01	Cellular, GNSS and WIFI Antenna	SmartDisc II Combi	N/A	N/A	N/A	--

*) EUT short description is used to simplify the identification of the EUT in this test report.

2.8 Untested Variant (VAR)

VAR No. *)	Sample No.	Product	Model	Type	SN	HW	SW
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*) The listed additional untested model variant(s) (VAR) is/are not object of evaluation of compliance. For further information please see Annex 5: Declaration of applicant of model differences.

If the table above does not show any other line than the headline, no untested variants are available.

2.9 Auxiliary Equipment (AE)

AE No. *)	Sample No.	Auxiliary Equipment	Model	SN	HW	SW
AE 1	--	Laptop	DELL	CTC522013	--	WIN 7

*) AE short description is used to simplify the identification of the auxiliary equipment in this test report. If the table above does not show any other line than the headline, no AE was used during testing nor was taken into account for evaluation

2.10 Connected cables (CAB)

CAB No. *)	Sample No.	Cable Type	Connectors / Details	Length
CAB 1	21-1-01787S37_C01	USB/CAN cable	--	< 3 m
CAB 2	21-1-01787S43_C01	Main Harness	--	< 3 m

*) CAB short description is used to simplify the identification of the connected cables in this test report. If the table above does not show any other line than the headline, no cable was used during testing nor was taken into account for evaluation

2.11 Software (SW)

SW No. *)	Sample No.	SW Name	Description	SW Status
SW 1	21-1-01787S63_C01	ACU6	PC software application	V1.1.0.9

*) SW short description is used to simplify the identification of the used software in this test report. If the table above does not show any other line than the headline, no SW was used during testing nor was taken into account for evaluation.

2.12 EUT set-ups

set-up no. *)	Combination of EUT and AE	Description
1	EUT 1 + EUT 4 + AE 1 + CAB 1 + CAB 2	Used for Radiated measurements
2	EUT 2 + EUT 4 + AE 1 + CAB 1 + CAB 2	Used for Radiated measurements
3	EUT 3 + AE 1 + CAB 1 + CAB 2	Used for Conducted measurements

*) EUT set-up no. is used to simplify the identification of the EUT set-up in this test report.

2.13 EUT operation modes

EUT operating mode no. *)	Operating modes	Additional information
Operating mode 1	LTE FDD Band 2 Traffic	<p>Frequency / channel range: UL: 1850.0 to 1910 MHz, DL: 1930.0 to 2170 MHz / Channel: UL: 18600 to 19199, DL: 600 to 1199.</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink Channel: 18700, Uplink frequency: 1860.0 MHz, RB: 1, BW:20 MHz, Downlink Frequency: 1940.0 MHz,</p>
Operating mode 2	LTE FDD Band 4 Traffic	<p>Frequency / channel range: UL: 1710.0 to 1755 MHz, DL: 2110.0 to 2155 MHz / Channel: UL: 19950 to 20399, DL: 1950 to 2399.</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink Channel: 19957, Uplink frequency: 1710.7 MHz, RB: 1, BW:1.4 MHz, Downlink Frequency: 2110.7 MHz,</p>
Operating mode 3	LTE FDD Band 5 Traffic	<p>Frequency / channel range: UL: 824.0 to 849 MHz, DL: 869.0 to 894MHz / Channel: UL: 20400 to 20649, DL: 2400 to 2649.</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink Channel: 20600, Uplink frequency: 844.0 MHz, RB: 1, BW:10 MHz, Downlink Frequency: 889.0 MHz</p>
Operating mode 4	LTE FDD Band 7 Traffic	<p>Frequency / channel range: UL:2500 to 2570 MHz, DL: 2620 to 2690 MHz / Channel: UL: 20750 to 21449, DL: 2750 to 3449.</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink Channel: 20775, Uplink frequency: 2502.5 MHz, RB:1, BW:5 MHz, Downlink Frequency: 2622.5 MHz</p>
Operating mode 5	LTE FDD Band 12 Traffic	<p>Frequency / channel range: UL: 699 to 716 MHz, DL: 729 to 746 MHz / Channel: UL: 23010 to 23179, DL: 5010 to 5179.</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink Channel: 23017, Uplink frequency: 699.7 MHz, RB:1, BW:1.4 MHz, Downlink Frequency: 729.7 MHz</p>
Operating mode 6	LTE FDD Band 13 Traffic	<p>Frequency / channel range: UL: 777.0 to 787 MHz, DL: 746.00 to 756 MHz / Channel: UL: 23180 to 23279, DL: 5180 to 5279.</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink Channel: 23230, Uplink frequency: 782.0 MHz, RB: 1, BW: 10 MHz, Downlink Frequency: 751.0 MHz</p>

<p>Operating mode 7</p>	<p>LTE FDD Band 26 Traffic</p>	<p>Frequency / channel range: UL: 814.0 to 849 MHz, DL: 859.0 to 894 MHz / Channel: UL: 26690 to 27039, DL: 8690 to 9039.</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink Channel: 26865, Uplink frequency: 831.5 MHz, RB: 1, BW: 15 MHz, Downlink Frequency: 876.5 MHz</p>
<p>Operating mode 8</p>	<p>LTE FDD Band 66 Traffic</p>	<p>Frequency / channel range: UL: 1710.0 to 1780 MHz, DL: 2110.0 to 2200 MHz / Channel: UL: 131972 to 132671, DL: 66436 to 67335.</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink Channel: 25865, Uplink frequency: 1715.0 MHz, RB: 1, BW: 15 MHz, Downlink Frequency: 2115.0 MHz,</p>
<p>Operating mode 9</p>	<p>LTE TDD Band 38 Traffic</p>	<p>Frequency / channel range: UL/DL: 2570 to 2620MHz Channel: UL/DL: 37750 to 38249</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink/Downlink Channel: 38000, Uplink/Downlink frequency: 2595.0 MHz, RB: 1@49, BW: 20 MHz</p>

*) EUT operating mode no. is used to simplify the test report.

3 Equipment under test (EUT)

3.1 General Data of Main EUT as Declared by Applicant

Firmware	<input type="checkbox"/> for normal use	<input checked="" type="checkbox"/> Special version for test execution	
Power supply	<input type="checkbox"/> AC Mains	-	
	<input checked="" type="checkbox"/> DC Mains	12 V DC	
	<input type="checkbox"/> Battery	-	
Operational conditions	T _{nom} = +21 °C	T _{min} = -40 °C	T _{max} = +85 °C
EUT sample type	Pre-Production		
Weight	0.540 kg		
Size [LxWxH]	15.4 cm x 15.1 cm x 4.0 cm		
Interfaces/Ports	--		
For further details refer Applicants Declaration & following technical documents			

3.2 Detailed Technical data of Main EUT as Declared by Applicant

TX Frequency range [MHz] and Number of channels	<input checked="" type="checkbox"/> LTE 2	1850 - 1910 (UL), 1930 - 1990 (DL)	UARFCN range 18600 - 19199
	<input checked="" type="checkbox"/> LTE 4	1710 - 1755 (UL), 2110 - 2155 (DL)	UARFCN range 19950 - 20399
	<input checked="" type="checkbox"/> LTE 5	824 - 849 (UL), 869 - 894 (DL)	UARFCN range 20400 - 20649
	<input checked="" type="checkbox"/> LTE 7	2505 - 2565 (UL), 2625 - 2685 (DL)	UARFCN range 20775 - 21350
	<input checked="" type="checkbox"/> LTE 12	699 - 716 (UL), 2625 - 2685 (DL)	UARFCN range 23010 - 23179
	<input checked="" type="checkbox"/> LTE 13	782 - 782 (UL), 751 - 751 (DL)	UARFCN range 23205 - 23230
	<input type="checkbox"/> LTE 17	704 - 716 (UL), 734 - 746 (DL)	UARFCN range 23755 - 23800
	<input type="checkbox"/> LTE 25	1850 - 1915 (UL), 1930 - 1995 (DL)	UARFCN range 26040 - 26689
	<input checked="" type="checkbox"/> LTE 26	814 - 848.9 (UL), 859 - 893.9 (DL)	UARFCN range 26690 - 27039
	<input type="checkbox"/> LTE 28	708 - 743 (UL), 763 - 798 (DL)	UARFCN range 27225 - 27645
	<input checked="" type="checkbox"/> LTE 38	2570 - 2620 (UL), 2570 - 2620 (DL)	UARFCN range 37750 - 38249
	<input type="checkbox"/> LTE 41	2501 - 2685 (UL), 2501 - 2685 (DL)	UARFCN range 39675 - 41490
	<input checked="" type="checkbox"/> LTE 66	1710 - 1780 (UL), 2110 - 2200 (DL)	UARFCN range 131972 - 132671
Antenna Type	<input type="checkbox"/> Integrated <input type="checkbox"/> External, no RF- connector <input checked="" type="checkbox"/> External, separate RF-connector		
Antenna gain	LTE band 2: 5.9 dBi		LTE band 17: -- dBi
	LTE band 4: 6.0 dBi		LTE band 25: -- dBi
	LTE band 5: 1.4 dBi (-0.75dBd)		LTE band 26: 1.3 dBi (-0.85dBd)
	LTE band 7: 3.4 dBi		LTE band 38: 2.9 dBi
	LTE band 12: -0.9 dBi (-3.05dBd)		LTE band 41: -- dBi
	LTE band 13: 0 dBi (-2.15dBd)		LTE band 66: 5.9 dBi
FCC label attached	Yes		
Test firmware / software and storage location	EUT 1, EUT 2, EUT 3		
For further details refer Applicants Declaration & following technical documents			
Description of Reference Document (supplied by applicant)		Version	Total Pages
Antenna gain and external attenuation for cables: "MPE Information Requirements_104760201_US_CANADA_Ver1.6		1.6	--

3.3 Worst case identification

LTE mode	Data rate
LTE B02	BW 20 MHz QPSK 1RB high ch18700
LTE B04	BW 1.4 MHz QPSK 1RB low ch19957
LTE B05	BW 10 MHz QPSK 1RB low ch20600
LTE B07	BW 5 MHz QPSK 1RB low ch20775
LTE B12	BW 1.4 MHz QPSK 1RB low ch23017
LTE B13	BW 10 MHz QPSK 1RB mid ch23230
LTE B26	BW 15 MHz QPSK 1RB mid ch26865
LTE B38	BW 20 MHz 16QAM 1RB mid ch38000
LTE B66	BW 10 MHz QPSK 1RB low ch132022

3.4 Modifications on Test sample

Additions/deviations or exclusions	
	--

4 Measurements

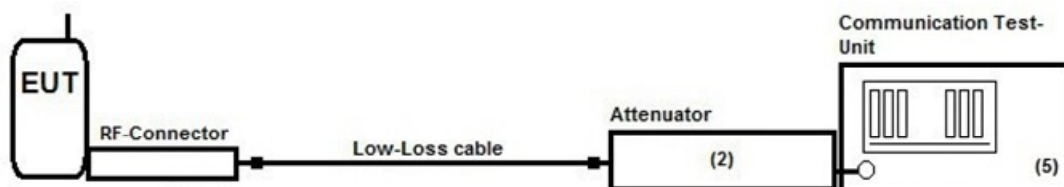
4.1 Conducted RF output power

4.1.1 Description of the general test setup and methodology, see below example:

Following modified test set-up apply for tests performed inside the climatic chamber (frequency stability) or conducted RF-carrier power-measurement. The EUT RF-Signal is directly connected over suitable RF-connector over low-loss cable and an attenuator (2) to the cellular radio communication test-unit. (5).

The measurements were performed with the integrated power measurement function of the communication test-unit. (5).

Schematic:



Testing method:

The measurement is made according to relevant reference clauses:
(See Tables *Summary of Test Results* and *Summary of Test Methods* on page 5)

EUT settings

The EUT was instructed to send with maximum power (if adjustable) according applicants instructions.
The measurements were made at the low, middle and high carrier frequencies of each of the supported operating band within the designated range within the allowed channel bandwidths. Choosing three TX-carrier frequencies of the mobile phone, should be sufficient to demonstrate compliance

4.1.2 Measurement Location

Test site	120910 - Radio Laboratory 1 (TS 8997)
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4.1.3 Limit

Operation band	Frequency Range [MHz]	FCC Limit [W] ☒	ISED Limit [W] ☒
LTE2	1850 - 1910	2 EIRP (33 dBm)	2 EIRP (33 dBm)
LTE4	1710 - 1755	1 EIRP (30dBm)	1 EIRP (30dBm)
LTE5	824 - 849	7 ERP (38.45 dBm)	7 ERP (38.45 dBm)
LTE7	2502.5 - 2567.5	2 EIRP (33 dBm)	2 EIRP (33 dBm)
LTE12	699 - 712	3 ERP (34.8 dBm)	3 ERP (34.8 dBm)
LTE13	777 - 787	3 ERP (34.8 dBm)	3 ERP (34.8 dBm)
LTE26	814 - 848.90	7 ERP (38.5 dBm)	7 ERP (38.5 dBm)
LTE 38	2570 - 2620	2 EIRP (33dBm)	2 EIRP (33dBm)
LTE66	1710 - 1780	1 EIRP (30dBm)	1 EIRP (30dBm)

4.1.4 Result

LTE FDD Band 2																		
	Channel Nr.	ARFCN-Frequency (MHz)	Modulation	RB	Start RB	RMS Power at Antenna Port (dBm)	Maximum declared Antenna Gain(dBi)	Path loss to Antenna Connector	Path loss in Antenna Cable	EIRP in dBm	EIRP in Watt	ERP in dBm	ERP in Watt	FCC Limit(W), EIRP	FCC Limit (dBm), EIRP	ISED Limit(W), EIRP	ISED Limit (dBm), EIRP	Verdict
BW 1.4 MHz	18607	1850.70	QPSK	1	0	23.05	5.90	1.25	0.75	26.95	0.49545	24.80	0.30200	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.53	5.90	1.25	0.75	27.43	0.55335	25.28	0.33729	2.00	33.01	2.00	33.01	Passed
	18900	1880.00	QPSK	1	0	23.56	5.90	1.25	0.75	27.46	0.55719	25.31	0.33963	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.27	5.90	1.25	0.75	27.17	0.52119	25.02	0.31769	2.00	33.01	2.00	33.01	Passed
	19193	1909.30	QPSK	1	0	22.67	5.90	1.25	0.75	26.57	0.45394	24.42	0.27669	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.58	5.90	1.25	0.75	27.48	0.55976	25.33	0.34119	2.00	33.01	2.00	33.01	Passed
BW 3 MHz	18615	1851.50	QPSK	1	0	23.13	5.90	1.25	0.75	27.03	0.50466	24.88	0.30761	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.42	5.90	1.25	0.75	27.32	0.53951	25.17	0.32885	2.00	33.01	2.00	33.01	Passed
	18900	1880.00	QPSK	1	0	23.49	5.90	1.25	0.75	27.39	0.54828	25.24	0.33420	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.17	5.90	1.25	0.75	27.07	0.50933	24.92	0.31046	2.00	33.01	2.00	33.01	Passed
	19185	1908.50	QPSK	1	0	22.59	5.90	1.25	0.75	26.49	0.44566	24.34	0.27164	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.49	5.90	1.25	0.75	27.39	0.54828	25.24	0.33420	2.00	33.01	2.00	33.01	Passed
BW 5 MHz	18625	1852.50	QPSK	1	0	22.98	5.90	1.25	0.75	26.88	0.48753	24.73	0.29717	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.58	5.90	1.25	0.75	27.48	0.55976	25.33	0.34119	2.00	33.01	2.00	33.01	Passed
	18900	1880.00	QPSK	1	0	23.55	5.90	1.25	0.75	27.45	0.55590	25.30	0.33884	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.34	5.90	1.25	0.75	27.24	0.52966	25.09	0.32285	2.00	33.01	2.00	33.01	Passed
	19175	1907.50	QPSK	1	0	22.60	5.90	1.25	0.75	26.50	0.44668	24.35	0.27227	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.51	5.90	1.25	0.75	27.41	0.55081	25.26	0.33574	2.00	33.01	2.00	33.01	Passed
BW 10 MHz	18650	1855.00	QPSK	1	0	23.09	5.90	1.25	0.75	26.99	0.50003	24.84	0.30479	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.49	5.90	1.25	0.75	27.39	0.54828	25.24	0.33420	2.00	33.01	2.00	33.01	Passed
	18900	1880.00	QPSK	1	0	23.66	5.90	1.25	0.75	27.56	0.57016	25.41	0.34754	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.15	5.90	1.25	0.75	27.05	0.50699	24.90	0.30903	2.00	33.01	2.00	33.01	Passed
	19150	1905.00	QPSK	1	0	22.68	5.90	1.25	0.75	26.58	0.45499	24.43	0.27733	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.46	5.90	1.25	0.75	27.36	0.54450	25.21	0.33189	2.00	33.01	2.00	33.01	Passed
BW 15 MHz	18675	1857.50	QPSK	1	0	22.95	5.90	1.25	0.75	26.85	0.48417	24.70	0.29512	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.57	5.90	1.25	0.75	27.47	0.55847	25.32	0.34041	2.00	33.01	2.00	33.01	Passed
	18900	1880.00	QPSK	1	0	23.62	5.90	1.25	0.75	27.52	0.56494	25.37	0.34435	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.34	5.90	1.25	0.75	27.24	0.52966	25.09	0.32285	2.00	33.01	2.00	33.01	Passed
	19125	1902.50	QPSK	1	0	22.51	5.90	1.25	0.75	26.41	0.43752	24.26	0.26669	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.52	5.90	1.25	0.75	27.42	0.55208	25.27	0.33651	2.00	33.01	2.00	33.01	Passed
BW 20 MHz	18700	1860.00	QPSK	1	0	21.96	5.90	1.25	0.75	25.86	0.38548	23.71	0.23496	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.58	5.90	1.25	0.75	27.48	0.55976	25.33	0.34119	2.00	33.01	2.00	33.01	Passed
	18900	1800.00	QPSK	1	0	22.38	5.90	1.25	0.75	26.28	0.42462	24.13	0.25882	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.35	5.90	1.25	0.75	27.25	0.53088	25.10	0.32359	2.00	33.01	2.00	33.01	Passed
	19100	1900.00	QPSK	1	0	22.46	5.90	1.25	0.75	26.36	0.43251	24.21	0.26363	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.64	5.90	1.25	0.75	27.54	0.56754	25.39	0.34594	2.00	33.01	2.00	33.01	Passed

EIRP= RMS Power at Antenna Port + Maximum declared Antenna Gain - Path loss to Antenna Connector - Path loss in Antenna Cable

ERP | dBm = EIRP | dBm - 2.15 | dB

Measured by CETECOM

Other values please refer to modular report 200722013RFM-2

LTE FDD Band 4																		
	Channel Nr.	ARFCN-Frequency (MHz)	Modulation	RB	Start RB	RMS Power at Antenna Port (dBm)	Maximum declared Antenna Gain(dBi)	Path loss to Antenna Connector	Path loss in Antenna Cable	EIRP in dBm	EIRP in Watt	ERP in dBm	ERP in Watt	FCC Limit(W), EIRP	FCC Limit (dBm); EIRP	ISED Limit(W), EIRP	ISED Limit (dBm), EIRP	Verdict
BW 1.4 MHz	19957	1710.70	QPSK	1	0	22.79	6.00	0.96	0.44	27.39	0.54828	25.24	0.33420	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.03	6.00	0.96	0.44	26.63	0.46026	24.48	0.28054	1.00	30.00	1.00	30.00	Passed
	20175	1732.50	QPSK	1	0	22.51	6.00	0.96	0.44	27.11	0.51404	24.96	0.31333	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.33	6.00	0.96	0.44	26.93	0.49317	24.78	0.30061	1.00	30.00	1.00	30.00	Passed
	20393	1754.30	QPSK	1	0	22.45	6.00	0.96	0.44	27.05	0.50699	24.90	0.30903	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	21.76	6.00	0.96	0.44	26.36	0.43251	24.21	0.26363	1.00	30.00	1.00	30.00	Passed
BW 3 MHz	19965	1711.50	QPSK	1	0	22.50	6.00	0.96	0.44	27.10	0.51286	24.95	0.31261	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	21.97	6.00	0.96	0.44	26.57	0.45394	24.42	0.27669	1.00	30.00	1.00	30.00	Passed
	20175	1732.50	QPSK	1	0	22.70	6.00	0.96	0.44	27.30	0.53703	25.15	0.32734	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.36	6.00	0.96	0.44	26.96	0.49659	24.81	0.30269	1.00	30.00	1.00	30.00	Passed
	20385	1753.50	QPSK	1	0	22.98	6.00	0.96	0.44	27.58	0.57280	25.43	0.34914	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	21.88	6.00	0.96	0.44	26.48	0.44463	24.33	0.27102	1.00	30.00	1.00	30.00	Passed
BW 5 MHz	19975	1712.50	QPSK	1	0	22.54	6.00	0.96	0.44	27.14	0.51761	24.99	0.31550	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	21.99	6.00	0.96	0.44	26.59	0.45604	24.44	0.27797	1.00	30.00	1.00	30.00	Passed
	20175	1732.50	QPSK	1	0	22.65	6.00	0.96	0.44	27.25	0.53088	25.10	0.32359	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.38	6.00	0.96	0.44	26.98	0.49888	24.83	0.30409	1.00	30.00	1.00	30.00	Passed
	20375	1752.50	QPSK	1	0	22.90	6.00	0.96	0.44	27.50	0.56234	25.35	0.34277	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	21.77	6.00	0.96	0.44	26.37	0.43351	24.22	0.26424	1.00	30.00	1.00	30.00	Passed
BW 10 MHz	20000	1715.00	QPSK	1	0	22.54	6.00	0.96	0.44	27.14	0.51761	24.99	0.31550	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	21.99	6.00	0.96	0.44	26.59	0.45604	24.44	0.27797	1.00	30.00	1.00	30.00	Passed
	20175	1732.50	QPSK	1	0	22.65	6.00	0.96	0.44	27.25	0.53088	25.10	0.32359	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.31	6.00	0.96	0.44	26.91	0.49091	24.76	0.29923	1.00	30.00	1.00	30.00	Passed
	20350	1750.00	QPSK	1	0	22.87	6.00	0.96	0.44	27.47	0.55847	25.32	0.34041	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	21.92	6.00	0.96	0.44	26.52	0.44875	24.37	0.27353	1.00	30.00	1.00	30.00	Passed
BW 15 MHz	20025	1717.50	QPSK	1	0	22.58	6.00	0.96	0.44	27.18	0.52240	25.03	0.31842	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	21.89	6.00	0.96	0.44	26.49	0.44566	24.34	0.27164	1.00	30.00	1.00	30.00	Passed
	20175	1732.50	QPSK	1	0	22.76	6.00	0.96	0.44	27.36	0.54450	25.21	0.33189	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.33	6.00	0.96	0.44	26.93	0.49317	24.78	0.30061	1.00	30.00	1.00	30.00	Passed
	20325	1747.50	QPSK	1	0	22.84	6.00	0.96	0.44	27.44	0.55463	25.29	0.33806	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	21.88	6.00	0.96	0.44	26.48	0.44463	24.33	0.27102	1.00	30.00	1.00	30.00	Passed
BW 20 MHz	20050	1720.00	QPSK	1	0	22.62	6.00	0.96	0.44	27.22	0.52723	25.07	0.32137	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.17	6.00	0.96	0.44	26.77	0.47534	24.62	0.28973	1.00	30.00	1.00	30.00	Passed
	20175	1732.50	QPSK	1	0	22.81	6.00	0.96	0.44	27.41	0.55081	25.26	0.33574	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.38	6.00	0.96	0.44	26.98	0.49888	24.83	0.30409	1.00	30.00	1.00	30.00	Passed
	20300	1745.00	QPSK	1	0	23.01	6.00	0.96	0.44	27.61	0.57677	25.46	0.35156	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	21.94	6.00	0.96	0.44	26.54	0.45082	24.39	0.27479	1.00	30.00	1.00	30.00	Passed

EIRP= RMS Power at Antenna Port + Maximum declared Antenna Gain - Path loss to Antenna Connector - Path loss in Antenna Cable
 ERP | dBm = EIRP | dBm - 2.15 | dB
 Measured by CETECOM
 Other values please refer to modular report 200722013RFM-2

LTE FDD Band 5																	
	Channel Nr.	ARFCN-Frequency (MHz)	Modulation	RB	Start RB	RMS Power at Antenna Port (dBm)	Maximum declared Antenna Gain(dBd)	Path loss to Antenna Connector	Path loss in Antenna Cable	ERP in dBm	ERP in Watt	FCC Limit (W), ERP	FCC Limit (dBm); ERP	ISED Limit (W), ERP	ISED Limit (dBm), ERP	Verdict	
BW 1.4 MHz	20407	824.70	QPSK	1	0	20.82	-0.75	0.64	0.44	18.99	0.07925	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	20.64	-0.75	0.64	0.44	18.81	0.07603	7.00	38.45	7.00	38.45	Passed	
	20525	836.50	QPSK	1	0	21.20	-0.75	0.64	0.44	19.37	0.08650	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	20.34	-0.75	0.64	0.44	18.51	0.07096	7.00	38.45	7.00	38.45	Passed	
	20643	848.30	QPSK	1	0	21.25	-0.75	0.64	0.44	19.42	0.08750	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	19.92	-0.75	0.64	0.44	18.09	0.06442	7.00	38.45	7.00	38.45	Passed	
BW 3 MHz	20415	825.50	QPSK	1	0	21.12	-0.75	0.64	0.44	19.29	0.08492	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	20.75	-0.75	0.64	0.44	18.92	0.07798	7.00	38.45	7.00	38.45	Passed	
	20525	836.50	QPSK	1	0	21.38	-0.75	0.64	0.44	19.55	0.09016	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	20.26	-0.75	0.64	0.44	18.43	0.06966	7.00	38.45	7.00	38.45	Passed	
	20635	847.50	QPSK	1	0	21.17	-0.75	0.64	0.44	19.34	0.08590	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	19.84	-0.75	0.64	0.44	18.01	0.06324	7.00	38.45	7.00	38.45	Passed	
BW 5 MHz	20425	826.50	QPSK	1	0	21.11	-0.75	0.64	0.44	19.28	0.08472	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	20.57	-0.75	0.64	0.44	18.74	0.07482	7.00	38.45	7.00	38.45	Passed	
	20525	836.50	QPSK	1	0	21.42	-0.75	0.64	0.44	19.59	0.09099	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	20.20	-0.75	0.64	0.44	18.37	0.06871	7.00	38.45	7.00	38.45	Passed	
	20625	846.50	QPSK	1	0	21.25	-0.75	0.64	0.44	19.42	0.08750	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	19.91	-0.75	0.64	0.44	18.08	0.06427	7.00	38.45	7.00	38.45	Passed	
BW 10 MHz	20450	829.00	QPSK	1	0	22.34	-0.75	0.64	0.44	20.51	0.11246	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	20.75	-0.75	0.64	0.44	18.92	0.07798	7.00	38.45	7.00	38.45	Passed	
	20525	836.50	QPSK	1	0	23.03	-0.75	0.64	0.44	21.20	0.13183	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	20.35	-0.75	0.64	0.44	18.52	0.07112	7.00	38.45	7.00	38.45	Passed	
	20600	844.00	QPSK	1	0	22.33	-0.75	0.64	0.44	20.50	0.11220	7.00	38.45	7.00	38.45	Passed	
			16QAM	1	0	19.96	-0.75	0.64	0.44	18.13	0.06501	7.00	38.45	7.00	38.45	Passed	

EIRP= RMS Power at Antenna Port + Maximum declared Antenna Gain - Path loss to Antenna Connector - Path loss in Antenna Cable
 ERP | dBm = EIRP | dBm - 2.15 | dB
 Measured by CETECOM
 Other values please refer to modular report 200722013RFM-2

LTE FDD Band 7																		
	Channel Nr.	ARFCN-Frequency (MHz)	Modulation	RB	Start RB	RMS Power at Antenna Port (dBm)	Maximum declared Antenna Gain(dBi)	Path loss to Antenna Connector	Path loss in Antenna Cable	EIRP in dBm	EIRP in Watt	ERP in dBm	ERP in Watt	FCC Limit(W), EIRP	FCC Limit (dBm); EIRP	ISED Limit(W), EIRP	ISED Limit (dBm), EIRP	Verdict
BW 5 MHz	20775	2502.50	QPSK	1	0	22.79	3.40	1.13	0.44	24.62	0.28973	22.47	0.17660	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.39	3.40	1.13	0.44	24.22	0.26424	22.07	0.16106	2.00	33.01	2.00	33.01	Passed
	21100	2535.00	QPSK	1	0	22.49	3.40	1.13	0.44	24.32	0.27040	22.17	0.16482	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.15	3.40	1.13	0.44	24.98	0.31477	22.83	0.19187	2.00	33.01	2.00	33.01	Passed
	21425	2567.50	QPSK	1	0	22.84	3.40	1.13	0.44	24.67	0.29309	22.52	0.17865	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.46	3.40	1.13	0.44	24.29	0.26853	22.14	0.16368	2.00	33.01	2.00	33.01	Passed
BW 10 MHz	20800	2505.00	QPSK	1	0	22.78	3.40	1.13	0.44	24.61	0.28907	22.46	0.17620	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.41	3.40	1.13	0.44	24.24	0.26546	22.09	0.16181	2.00	33.01	2.00	33.01	Passed
	21100	2535.00	QPSK	1	0	22.36	3.40	1.13	0.44	24.19	0.26242	22.04	0.15996	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.11	3.40	1.13	0.44	24.94	0.31189	22.79	0.19011	2.00	33.01	2.00	33.01	Passed
	21400	2565.00	QPSK	1	0	22.90	3.40	1.13	0.44	24.73	0.29717	22.58	0.18113	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.51	3.40	1.13	0.44	24.34	0.27164	22.19	0.16558	2.00	33.01	2.00	33.01	Passed
BW 15 MHz	20825	2507.50	QPSK	1	0	22.59	3.40	1.13	0.44	24.42	0.27669	22.27	0.16866	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.48	3.40	1.13	0.44	24.31	0.26977	22.16	0.16444	2.00	33.01	2.00	33.01	Passed
	21100	2535.00	QPSK	1	0	22.94	3.40	1.13	0.44	24.77	0.29992	22.62	0.18281	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.06	3.40	1.13	0.44	24.89	0.30832	22.74	0.18793	2.00	33.01	2.00	33.01	Passed
	21375	2562.50	QPSK	1	0	22.81	3.40	1.13	0.44	24.64	0.29107	22.49	0.17742	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.62	3.40	1.13	0.44	24.45	0.27861	22.30	0.16982	2.00	33.01	2.00	33.01	Passed
BW 20 MHz	20850	2510.00	QPSK	1	0	20.96	3.40	1.13	0.44	22.79	0.19011	20.64	0.11588	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.68	3.40	1.13	0.44	24.51	0.28249	22.36	0.17219	2.00	33.01	2.00	33.01	Passed
	21100	2535.00	QPSK	1	0	20.99	3.40	1.13	0.44	22.82	0.19143	20.67	0.11668	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.54	3.40	1.13	0.44	24.37	0.27353	22.22	0.16672	2.00	33.01	2.00	33.01	Passed
	21350	2560.00	QPSK	1	0	20.98	3.40	1.13	0.44	22.81	0.19099	20.66	0.11641	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.58	3.40	1.13	0.44	24.41	0.27606	22.26	0.16827	2.00	33.01	2.00	33.01	Passed

EIRP= RMS Power at Antenna Port + Maximum declared Antenna Gain - Path loss to Antenna Connector - Path loss in Antenna Cable
 ERP [dBm] = EIRP [dBm] - 2.15 [dB]
 Measured by CETECOM
 Other values please refer to modular report 200722013RFM-2

LTE FDD Band 12																	
	Channel Nr.	ARFCN-Frequency (MHz)	Modulation	RB	Start RB	RMS Power at Antenna Port (dBm)	Maximum declared Antenna Gain(dBd)	Path loss to Antenna Connector	Path loss in Antenna Cable	ERP in dBm	ERP in Watt	FCC Limit (W), ERP	FCC Limit (dBm); ERP	ISED Limit (W), ERP	ISED Limit (dBm), ERP	Verdict	
BW 1.4 MHz	23017	699.70	QPSK	1	0	22.63	-3.05	0.59	0.44	18.55	0.07161	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	20.94	-3.05	0.59	0.44	16.86	0.04853	3.00	34.77	3.00	34.77	Passed	
	23095	707.50	QPSK	1	0	22.63	-3.05	0.59	0.44	18.55	0.07161	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	21.23	-3.05	0.59	0.44	17.15	0.05188	3.00	34.77	3.00	34.77	Passed	
	23173	715.30	QPSK	1	0	22.50	-3.05	0.59	0.44	18.42	0.06950	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	21.43	-3.05	0.59	0.44	17.35	0.05433	3.00	34.77	3.00	34.77	Passed	
BW 3 MHz	23025	700.50	QPSK	1	0	21.53	-3.05	0.59	0.44	17.45	0.05559	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	21.33	-3.05	0.59	0.44	17.25	0.05309	3.00	34.77	3.00	34.77	Passed	
	23095	707.50	QPSK	1	0	21.43	-3.05	0.59	0.44	17.35	0.05433	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	21.16	-3.05	0.59	0.44	17.08	0.05105	3.00	34.77	3.00	34.77	Passed	
	Channel 23165	714.50	QPSK	1	0	21.15	-3.05	0.59	0.44	17.07	0.05093	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	20.96	-3.05	0.59	0.44	16.88	0.04875	3.00	34.77	3.00	34.77	Passed	
BW 5 MHz	23035	701.50	QPSK	1	0	21.56	-3.05	0.59	0.44	17.48	0.05598	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	21.33	-3.05	0.59	0.44	17.25	0.05309	3.00	34.77	3.00	34.77	Passed	
	23095	707.50	QPSK	1	0	21.44	-3.05	0.59	0.44	17.36	0.05445	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	21.08	-3.05	0.59	0.44	17.00	0.05012	3.00	34.77	3.00	34.77	Passed	
	23155	713.50	QPSK	1	0	21.24	-3.05	0.59	0.44	17.16	0.05200	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	20.96	-3.05	0.59	0.44	16.88	0.04875	3.00	34.77	3.00	34.77	Passed	
BW 10 MHz	23060	704.00	QPSK	1	0	21.68	-3.05	0.59	0.44	17.60	0.05754	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	21.39	-3.05	0.59	0.44	17.31	0.05383	3.00	34.77	3.00	34.77	Passed	
	23095	707.50	QPSK	1	0	21.49	-3.05	0.59	0.44	17.41	0.05508	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	21.18	-3.05	0.59	0.44	17.10	0.05129	3.00	34.77	3.00	34.77	Passed	
	23130	711.00	QPSK	1	0	21.32	-3.05	0.59	0.44	17.24	0.05297	3.00	34.77	3.00	34.77	Passed	
			16QAM	1	0	21.00	-3.05	0.59	0.44	16.92	0.04920	3.00	34.77	3.00	34.77	Passed	

EIRP= RMS Power at Antenna Port + Maximum declared Antenna Gain - Path loss to Antenna Connector - Path loss in Antenna Cable
 ERP [dBm] = EIRP [dBm] - 2.15 [dB]
 Measured by CETECOM
 Other values please refer to modular report 200722013RFM-2

LTE FDD Band 13																
	Channel Nr.	ARFCN-Frequency (MHz)	Modulation	RB	Start RB	RMS Power at Antenna Port (dBm)	Maximum declared Antenna Gain(dBd)	Path loss to Antenna Connector	Path loss in Antenna Cable	ERP in dBm	ERP in Watt	FCC Limit (W), ERP	FCC Limit (dBm); ERP	ISED Limit (W), ERP	ISED Limit (dBm), ERP	Verdict
BW 5 MHz	23205	779.50	QPSK	1	0	21.19	-2.15	0.59	0.44	18.01	0.06324	3.00	34.77	3.00	34.77	Passed
			16QAM	1	0	20.80	-2.15	0.59	0.44	17.62	0.05781	3.00	34.77	3.00	34.77	Passed
	23230	782.00	QPSK	1	0	21.15	-2.15	0.59	0.44	17.97	0.06266	3.00	34.77	3.00	34.77	Passed
			16QAM	1	0	20.96	-2.15	0.59	0.44	17.78	0.05998	3.00	34.77	3.00	34.77	Passed
	23255	784.50	QPSK	1	0	21.17	-2.15	0.59	0.44	17.99	0.06295	3.00	34.77	3.00	34.77	Passed
			16QAM	1	0	20.91	-2.15	0.59	0.44	17.73	0.05929	3.00	34.77	3.00	34.77	Passed
BW 10 MHz	23230	782.00	QPSK	1	0	22.70	-2.15	0.59	0.44	19.52	0.08954	3.00	34.77	3.00	34.77	Passed
			16QAM	1	0	--	--	--	--	--	--	--	--	--	--	--
	23230	782.00	QPSK	1	0	22.79	-2.15	0.59	0.44	19.61	0.09141	3.00	34.77	3.00	34.77	Passed
			16QAM	1	0	20.96	-2.15	0.59	0.44	17.78	0.05998	3.00	34.77	3.00	34.77	Passed
	23230	782.00	QPSK	1	0	22.55	-2.15	0.59	0.44	19.37	0.08650	3.00	34.77	3.00	34.77	Passed
			16QAM	1	0	--	--	--	--	--	--	--	--	--	--	--

EIRP= RMS Power at Antenna Port + Maximum declared Antenna Gain - Path loss to Antenna Connector - Path loss in Antenna Cable
 ERP | dBm = EIRP | dBm - 2.15 | dB
 Measured by CETECOM
 Other values please refer to modular report 200722013RFM-2

LTE FDD Band 26																
	Channel No.	ARFCN-Frequency (MHz)	Modulation	RB	Start RB	RMS Power at Antenna Port (dBm)	Maximum declared Antenna Gain(dBd)	Path loss to Antenna Connector	Path loss in Antenna Cable	ERP in dBm	ERP in Watt	FCC Limit (W), ERP	FCC Limit (dBm); ERP	ISED Limit (W), ERP	ISED Limit (dBm), ERP	Verdict
BW 1.4 MHz	26697	814.70	QPSK	1	0	20.63	-0.85	0.64	0.44	18.70	0.07413	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	21.26	-0.85	0.64	0.44	19.33	0.08570	7.00	38.45	3.00	34.77	Passed
	26865	831.50	QPSK	1	0	21.09	-0.85	0.64	0.44	19.16	0.08241	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	21.12	-0.85	0.64	0.44	19.19	0.08299	7.00	38.45	3.00	34.77	Passed
	27033	848.30	QPSK	1	0	20.48	-0.85	0.64	0.44	18.55	0.07161	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	20.70	-0.85	0.64	0.44	18.77	0.07534	7.00	38.45	3.00	34.77	Passed
BW 3 MHz	26705	815.50	QPSK	1	0	20.89	-0.85	0.64	0.44	18.96	0.07870	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	21.28	-0.85	0.64	0.44	19.35	0.08610	7.00	38.45	3.00	34.77	Passed
	26865	831.50	QPSK	1	0	21.01	-0.85	0.64	0.44	19.08	0.08091	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	21.22	-0.85	0.64	0.44	19.29	0.08492	7.00	38.45	3.00	34.77	Passed
	27025	847.50	QPSK	1	0	20.86	-0.85	0.64	0.44	18.93	0.07816	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	20.64	-0.85	0.64	0.44	18.71	0.07430	7.00	38.45	3.00	34.77	Passed
BW 5 MHz	26715	816.50	QPSK	1	0	20.72	-0.85	0.64	0.44	18.79	0.07568	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	21.28	-0.85	0.64	0.44	19.35	0.08610	7.00	38.45	3.00	34.77	Passed
	26865	831.50	QPSK	1	0	20.97	-0.85	0.64	0.44	19.04	0.08017	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	21.14	-0.85	0.64	0.44	19.21	0.08337	7.00	38.45	3.00	34.77	Passed
	27015	846.50	QPSK	1	0	20.59	-0.85	0.64	0.44	18.66	0.07345	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	20.85	-0.85	0.64	0.44	18.92	0.07798	7.00	38.45	3.00	34.77	Passed
BW 10 MHz	26740	819.00	QPSK	1	0	20.57	-0.85	0.64	0.44	18.64	0.07311	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	21.08	-0.85	0.64	0.44	19.15	0.08222	7.00	38.45	3.00	34.77	Passed
	26865	831.50	QPSK	1	0	21.05	-0.85	0.64	0.44	19.12	0.08166	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	21.18	-0.85	0.64	0.44	19.25	0.08414	7.00	38.45	3.00	34.77	Passed
	26990	844.00	QPSK	1	0	20.47	-0.85	0.64	0.44	18.54	0.07145	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	19.95	-0.85	0.64	0.44	18.02	0.06339	7.00	38.45	3.00	34.77	Passed
BW 15 MHz	26765	821.50	QPSK	1	0	22.09	-0.85	0.64	0.44	20.16	0.10375	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	21.29	-0.85	0.64	0.44	19.36	0.08630	7.00	38.45	3.00	34.77	Passed
	26865	831.50	QPSK	1	0	22.38	-0.85	0.64	0.44	20.45	0.11092	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	21.26	-0.85	0.64	0.44	19.33	0.08570	7.00	38.45	3.00	34.77	Passed
	26965	841.50	QPSK	1	0	21.87	-0.85	0.64	0.44	19.94	0.09863	7.00	38.45	3.00	34.77	Passed
			16QAM	1	0	20.86	-0.85	0.64	0.44	18.93	0.07816	7.00	38.45	3.00	34.77	Passed

EIRP= RMS Power at Antenna Port + Maximum declared Antenna Gain - Path loss to Antenna Connector - Path loss in Antenna Cable
 ERP | dBm = EIRP | dBm - 2.15 | dB
 Measured by CETECOM
 Other values please refer to modular report 200722013RFM-2

LTE FDD Band 38																
	Channel Nr.	ARFCN-Frequency (MHz)	Modulation	RB	Start RB	RMS Power at Antenna Port (dBm)	Maximum declared Antenna Gain(dBi)	Path loss to Antenna Connector	Path loss in Antenna Cable	EIRP in dBm	EIRP in Watt	FCC Limit(W), EIRP	FCC Limit (dBm); EIRP	ISED Limit(W), EIRP	ISED Limit (dBm), EIRP	Verdict
BW 5 MHz	37775	2572.50	QPSK	1	0	22.79	2.90	1.30	0.88	23.52	0.22465	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.39	2.90	1.30	0.88	23.12	0.20488	2.00	33.01	2.00	33.01	Passed
	38000	2595.00	QPSK	1	0	22.49	2.90	1.30	0.88	23.22	0.20965	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.15	2.90	1.30	0.88	23.88	0.24406	2.00	33.01	2.00	33.01	Passed
	38225	2617.50	QPSK	1	0	22.84	2.90	1.30	0.88	23.57	0.22725	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.46	2.90	1.30	0.88	23.19	0.20821	2.00	33.01	2.00	33.01	Passed
BW 10 MHz	37800	2575.00	QPSK	1	0	22.78	2.90	1.30	0.88	23.51	0.22413	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.41	2.90	1.30	0.88	23.14	0.20583	2.00	33.01	2.00	33.01	Passed
	38000	2595.00	QPSK	1	0	22.36	2.90	1.30	0.88	23.09	0.20347	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.11	2.90	1.30	0.88	23.84	0.24182	2.00	33.01	2.00	33.01	Passed
	38200	2615.00	QPSK	1	0	22.90	2.90	1.30	0.88	23.63	0.23041	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.51	2.90	1.30	0.88	23.24	0.21062	2.00	33.01	2.00	33.01	Passed
BW 15 MHz	37825	2577.50	QPSK	1	0	22.59	2.90	1.30	0.88	23.32	0.21454	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.48	2.90	1.30	0.88	23.21	0.20917	2.00	33.01	2.00	33.01	Passed
	38000	2595.00	QPSK	1	0	22.91	2.90	1.30	0.88	23.64	0.23094	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	23.06	2.90	1.30	0.88	23.79	0.23906	2.00	33.01	2.00	33.01	Passed
	38175	2612.50	QPSK	1	0	22.81	2.90	1.30	0.88	23.54	0.22568	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	22.62	2.90	1.30	0.88	23.35	0.21602	2.00	33.01	2.00	33.01	Passed
BW 20 MHz	37850	2580.00	QPSK	1	0	22.89	2.90	1.30	0.88	23.62	0.22988	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	21.17	2.90	1.30	0.88	21.90	0.15470	2.00	33.01	2.00	33.01	Passed
	38000	2595.00	QPSK	1	0	22.54	2.90	1.30	0.88	23.27	0.21208	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	21.90	2.90	1.30	0.88	22.63	0.18302	2.00	33.01	2.00	33.01	Passed
	38150	2610.00	QPSK	1	0	22.95	2.90	1.30	0.88	23.68	0.23308	2.00	33.01	2.00	33.01	Passed
			16QAM	1	0	21.34	2.90	1.30	0.88	22.07	0.16088	2.00	33.01	2.00	33.01	Passed

EIRP= RMS Power at Antenna Port + Maximum declared Antenna Gain - Path loss to Antenna Connector - Path loss in Antenna Cable

ERP|dBm = EIRP|dBm - 2.15|dB

Measured by CETECOM

Other values please refer to modular report 200722013RFM-2

LTE FDD Band 66																
	Channel No.	ARFCN-Frequency (MHz)	Modulation	RB	Start RB	RMS Power at Antenna Port (dBm)	Maximum declared Antenna Gain(dBi)	Path loss to Antenna Connector	Path loss in Antenna Cable	EIRP in dBm	EIRP in Watt	FCC Limit (W), EIRP	FCC Limit (dBm); EIRP	ISED Limit(W), EIRP	ISED Limit (dBm), EIRP	Verdict
BW 1.4 MHz	131979	1710.70	QPSK	1	0	23.50	5.90	0.96	0.29	28.15	0.65313	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.53	5.90	0.96	0.29	28.18	0.65766	1.00	30.00	1.00	30.00	Passed
	132322	1745.00	QPSK	1	0	23.56	5.90	0.96	0.29	28.21	0.66222	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.27	5.90	0.96	0.29	27.92	0.61944	1.00	30.00	1.00	30.00	Passed
	132665	1779.30	QPSK	1	0	22.67	5.90	0.96	0.29	27.32	0.53951	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.58	5.90	0.96	0.29	28.23	0.66527	1.00	30.00	1.00	30.00	Passed
BW 3 MHz	131987	1711.50	QPSK	1	0	23.13	5.90	0.96	0.29	27.78	0.59979	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.42	5.90	0.96	0.29	28.07	0.64121	1.00	30.00	1.00	30.00	Passed
	132322	1745.00	QPSK	1	0	23.49	5.90	0.96	0.29	28.14	0.65163	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.17	5.90	0.96	0.29	27.82	0.60534	1.00	30.00	1.00	30.00	Passed
	132657	1778.50	QPSK	1	0	22.59	5.90	0.96	0.29	27.24	0.52966	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.49	5.90	0.96	0.29	28.14	0.65163	1.00	30.00	1.00	30.00	Passed
BW 5 MHz	131997	1712.50	QPSK	1	0	22.98	5.90	0.96	0.29	27.63	0.57943	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.58	5.90	0.96	0.29	28.23	0.66527	1.00	30.00	1.00	30.00	Passed
	132322	1745.00	QPSK	1	0	23.55	5.90	0.96	0.29	28.20	0.66069	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.34	5.90	0.96	0.29	27.99	0.62951	1.00	30.00	1.00	30.00	Passed
	132647	1777.50	QPSK	1	0	22.60	5.90	0.96	0.29	27.25	0.53088	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.51	5.90	0.96	0.29	28.16	0.65464	1.00	30.00	1.00	30.00	Passed
BW 10 MHz	132022	1715.00	QPSK	1	0	21.73	5.90	0.96	0.29	26.38	0.43451	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.49	5.90	0.96	0.29	28.14	0.65163	1.00	30.00	1.00	30.00	Passed
	132322	1745.00	QPSK	1	0	22.17	5.90	0.96	0.29	26.82	0.48084	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.15	5.90	0.96	0.29	27.80	0.60256	1.00	30.00	1.00	30.00	Passed
	132622	1775.00	QPSK	1	0	21.68	5.90	0.96	0.29	26.33	0.42954	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.46	5.90	0.96	0.29	28.11	0.64714	1.00	30.00	1.00	30.00	Passed
BW 15 MHz	132047	1717.50	QPSK	1	0	22.95	5.90	0.96	0.29	27.60	0.57544	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.57	5.90	0.96	0.29	28.22	0.66374	1.00	30.00	1.00	30.00	Passed
	132322	1745.00	QPSK	1	0	23.62	5.90	0.96	0.29	28.27	0.67143	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.34	5.90	0.96	0.29	27.99	0.62951	1.00	30.00	1.00	30.00	Passed
	132597	1772.50	QPSK	1	0	22.51	5.90	0.96	0.29	27.16	0.52000	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	23.52	5.90	0.96	0.29	28.17	0.65615	1.00	30.00	1.00	30.00	Passed
BW 20 MHz	132072	1720.00	QPSK	1	0	22.71	5.90	0.96	0.29	27.36	0.54450	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.38	5.90	0.96	0.29	27.03	0.50466	1.00	30.00	1.00	30.00	Passed
	132322	1745.00	QPSK	1	0	23.05	5.90	0.96	0.29	27.70	0.58884	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.45	5.90	0.96	0.29	27.10	0.51286	1.00	30.00	1.00	30.00	Passed
	132572	1770.00	QPSK	1	0	22.94	5.90	0.96	0.29	27.59	0.57412	1.00	30.00	1.00	30.00	Passed
			16QAM	1	0	22.79	5.90	0.96	0.29	27.44	0.55463	1.00	30.00	1.00	30.00	Passed

EIRP= RMS Power at Antenna Port + Maximum declared Antenna Gain - Path loss to Antenna Connector - Path loss in Antenna Cable

ERP|dBm = EIRP|dBm - 2.15|dB

Measured by CETECOM

Other values please refer to modular report 200722013RFM-2

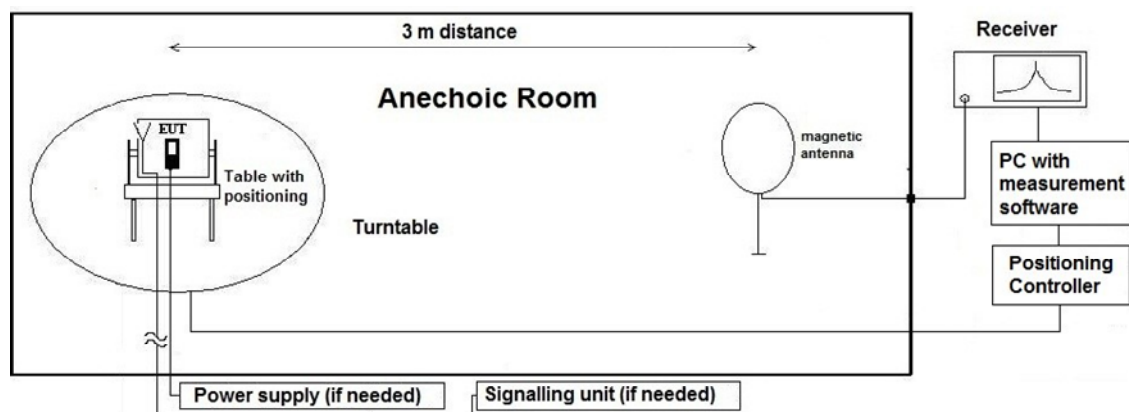
4.2 Radiated field strength emissions below 30 MHz

4.2.1 Description of the general test setup and methodology, see below example:

Evaluating the radiated field emissions are done first by an exploratory emission measurement and a final measurement for most critical frequencies determined.

The loop antenna was placed at 1 m height above ground plane and 3 m measurement distance from set-up for investigations. Because of reduced measurement distance, correction data were applied, as stated in chapter "General Limit - Radiated field strength emissions below 30 MHz". The tests are performed in the semi anechoic room recognized by the regulatory commission.

Schematic:



Testing method:

The measurement is made according to relevant reference clauses:
(See Tables *Summary of Test Results* and *Summary of Test Methods* on page 5)

Exploratory, preliminary measurements

The EUT and its associated accessories are placed on a non-conductive position manipulator (tipping device) of 0.8 m height which is placed on the turntable. By rotating the turntable (step 90°, range 0° to 360°) and the EUT itself either on 3-orthogonal axis (portable equipment) or 2-orthogonal axis (defined operational position of EUT), the emission spectrum was recorded.

The loop antenna was moved at least to 2-perpendicular axes (antenna vector in direction of EUT and parallel to EUT) in order to maximize the emissions. The results are documented in a diagram. Critical frequencies (low margin to limit) are saved within a data reduction table for further investigations. If various operating modes are supported, further investigations are made to find the worst-case. Also the interconnection cables and equipment position were varied in order to maximize the emissions.

Final measurement on critical frequencies

Based on the exploratory measurements, the most critical frequencies are re-measured by main-taining the EUT's worst-case operation mode, cable position, etc.

First a frequency zoom around the critical frequency is done to locate the frequency more precisely. After this step, for all identified critical frequencies, the maximum peak was determined.

Following parameters were varied: the turntable angle continuously in the range 0 to 360 degree, the EUT itself either over 3-orthogonal axis (not defined usage position) or 2-orthogonal axis (defined usage position).

On the determined worst-case position, a final measurement with necessary bandwidth and detector according standard has been carried out.

Formula:

$$E_C = E_R + AF + C_L + D_F - G_A$$

$$M = L_T - E_C$$

AF = Antenna factor

C_L = Cable loss

D_F = Distance correction factor (if used)

E_C = Electrical field – corrected value

E_R = Receiver reading

G_A = Gain of pre-amplifier (if used)

L_T = Limit

M = Margin

All units are dB-units, positive margin means value is below limit.

4.2.2 Sample calculation

Raw-Value [dBuV/m]	Antenna factor	Distance Correction [dB]	Cable Loss	Preamplifier	Resulting correction value [dB]	Final result [dBuV/m]	Remarks
19.83	18.9	-70.75	0.18	--	-51.67	-31.83	30 to 3 m correction used according ANSI C63.10-2013

Remark: This calculation is based on an example value at 458 kHz

4.2.3 Correction factors due to reduced meas. distance (f < 30 MHz):

The used correction factors when the measurement distance is reduced compared to regulatory measurement distance, are calculated according to Extrapolation formulas valid for EUT's with maximum dimension of 0.625xLambda. Formula 2+3+4 as presented in ANSI C63.10, Chapter 6.4.4 are used for the calculations of proper extrapolation factors

Frequency Range	f [kHz/MHz]	Lambda [m]	Far-Field Point [m]	Distance Limit accord. 15.209 [m]	1st Condition (dmeas < Dnear-field)	2nd Condition (Limit distance bigger dnear-field)	Distance Correction accord. Formula
kHz	9	33333.33	5305.17	300	fulfilled	not fulfilled	-80.00
	10	30000.00	4774.65		fulfilled	not fulfilled	-80.00
	20	15000.00	2387.33		fulfilled	not fulfilled	-80.00
	30	10000.00	1591.55		fulfilled	not fulfilled	-80.00
	40	7500.00	1193.66		fulfilled	not fulfilled	-80.00
	50	6000.00	954.93		fulfilled	not fulfilled	-80.00
	60	5000.00	795.78		fulfilled	not fulfilled	-80.00
	70	4285.71	682.09		fulfilled	not fulfilled	-80.00
	80	3750.00	596.83		fulfilled	not fulfilled	-80.00
	90	3333.33	530.52		fulfilled	not fulfilled	-80.00
	100	3000.00	477.47		fulfilled	not fulfilled	-80.00
	125	2400.00	381.97		fulfilled	not fulfilled	-80.00
	200	1500.00	238.73		fulfilled	fulfilled	-78.02
	300	1000.00	159.16		fulfilled	fulfilled	-74.49
	400	750.00	119.37		fulfilled	fulfilled	-72.00
	490	612.24	97.44		fulfilled	fulfilled	-70.23
	500	600.00	95.49		fulfilled	not fulfilled	-40.00
	600	500.00	79.58		fulfilled	not fulfilled	-40.00
	700	428.57	68.21		fulfilled	not fulfilled	-40.00
	800	375.00	59.68		fulfilled	not fulfilled	-40.00
900	333.33	53.05	fulfilled	not fulfilled	-40.00		
MHz	1.00	300.00	47.75	30	fulfilled	not fulfilled	-40.00
	1.59	188.50	30.00		fulfilled	not fulfilled	-40.00
	2.00	150.00	23.87		fulfilled	fulfilled	-38.02
	3.00	100.00	15.92		fulfilled	fulfilled	-34.49
	4.00	75.00	11.94		fulfilled	fulfilled	-32.00
	5.00	60.00	9.55		fulfilled	fulfilled	-30.06
	6.00	50.00	7.96		fulfilled	fulfilled	-28.47
	7.00	42.86	6.82		fulfilled	fulfilled	-27.13
	8.00	37.50	5.97		fulfilled	fulfilled	-25.97
	9.00	33.33	5.31		fulfilled	fulfilled	-24.95
	10.00	30.00	4.77		fulfilled	fulfilled	-24.04
	10.60	28.30	4.50		fulfilled	fulfilled	-23.53
	11.00	27.27	4.34		fulfilled	fulfilled	-23.21
	12.00	25.00	3.98		fulfilled	fulfilled	-22.45
	13.56	22.12	3.52		fulfilled	fulfilled	-21.39
	15.00	20.00	3.18		fulfilled	fulfilled	-20.51
	15.92	18.85	3.00		fulfilled	fulfilled	-20.00
	17.00	17.65	2.81		not fulfilled	fulfilled	-20.00
	18.00	16.67	2.65		not fulfilled	fulfilled	-20.00
	20.00	15.00	2.39		not fulfilled	fulfilled	-20.00
21.00	14.29	2.27	not fulfilled	fulfilled	-20.00		
23.00	13.04	2.08	not fulfilled	fulfilled	-20.00		
25.00	12.00	1.91	not fulfilled	fulfilled	-20.00		
27.00	11.11	1.77	not fulfilled	fulfilled	-20.00		
29.00	10.34	1.65	not fulfilled	fulfilled	-20.00		
30.00	10.00	1.59	not fulfilled	fulfilled	-20.00		

4.2.4 Measurement Location

Test site	120901 - SAC - Radiated Emission <1GHz
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4.2.5 Limit

Radiated emissions limits (3 meters)					
Frequency Range [MHz]	Limit [$\mu\text{V}/\text{m}$]	Limit [$\text{dB}\mu\text{V}/\text{m}$]	Distance [m]	Detector	RBW [kHz]
0.009 – 0.09	2400 / f [kHz]	67.6 – 20Log(f) (kHz)	300	Pk & Avg	0.2
0.09 – 0.11	2400 / f [kHz]	67.6 – 20Log(f) (kHz)	300	Quasi peak	0.2
0.11 – 0.15	2400 / f [kHz]	67.6 – 20Log(f) (kHz)	300	Pk & Avg	0.2
0.15 – 0.49	2400 / f [kHz]	67.6 – 20Log(f) (kHz)	300	Pk & Avg	9
0.49 – 1.705	24000 / f [kHz]	87.6 – 20Log(f) (kHz)	30	Quasi peak	9
1.705 - 30	30	29.5	30	Quasi peak	9

*Remark: In Canada same limits apply, just unit reference is different

4.2.6 Result

Diagram	Band	Mode	Maximum Level [$\text{dB}\mu\text{V}/\text{m}$] Frequency Range 0.009 – 30 MHz	Result
2.201	LTE2	1	No peaks found	Passed
2.401	LTE4	2	No peaks found	Passed
2.501	LTE5	3	No peaks found	Passed
2.701	LTE7	4	No peaks found	Passed
2.1201	LTE12	5	No peaks found	Passed
2.1301	LTE13	6	No peaks found	Passed
2.2601	LTE26	7	No peaks found	Passed
2.3801	LTE38	9	7.42@598kHz	Passed
2.3802	LTE38	9	4.907@610kHz	Passed
2.6601	LTE66	8	No peaks found	Passed

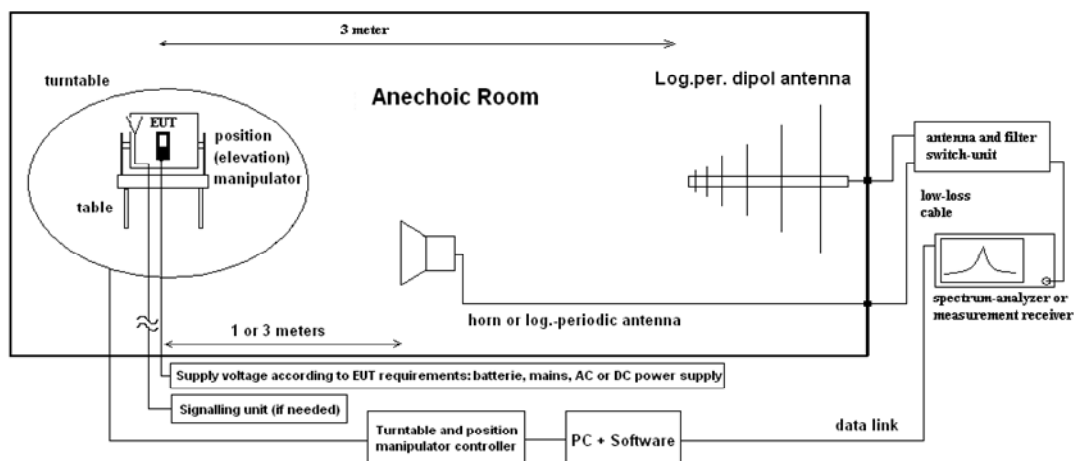
Remark: for more information and graphical plot see annex A1 **TR21-1-0178701T018a-C01-A1**

4.3 Radiated spurious emissions

4.3.1 Description of the general test setup and methodology, see below example:

Evaluating the emissions have to be done first by an exploratory emissions measurement and a final measurement for most critical frequencies. The tests are performed in a CISPR 16-1-4:2010 compliant fully anechoic room (FAR) recognized by the regulatory commission. The measurement distance was set to 3 meter for frequencies up to 18 GHz and 2 meter above 18 GHz. A logarithmic periodic antenna is used for the frequency range 30 MHz to 1 GHz. Horn antennas are used for frequency range 1 GHz to 40 GHz. The EUT is aligned within 3 dB beam width of the measurement antenna with three orthogonal axis measurements on the EUT.

Schematic:



Testing method:

The measurement is made according to relevant reference clauses:
(See Tables *Summary of Test Results* and *Summary of Test Methods* on page 5)

Exploratory, preliminary measurements

The EUT and its associated accessories are placed on a non-conductive position manipulator (tipping device) of 1.50 m height which is placed on the turntable. By rotating the turntable (range 0° to 360°, step 45°) and the EUT itself on 3-orthogonal axis (the emission spectrum and it's characteristics was recorded with an EMI-receiver, broadband antenna and software.

The measurements are performed in horizontal and vertical polarization of the measurement antennas. The results are documented in a diagram. Critical frequencies (low margin to limit) are saved within a table for further investigations. If various operating modes are supported, further investigations are made to find the worst-case of them. Also the interconnection cables and equipment position were varied in order to maximize the emissions.

Final measurement on critical frequencies

Based on the exploratory measurements, the most critical frequencies are re-measured by main-taining the EUT's worst-case operation mode, cable position, etc.

First a frequency zoom around the critical frequency is done to locate the frequency more precisely. After this step, for all identified critical frequencies, the maximum peak was determined.

Following parameters were varied: the turntable angle continuously in the range 0 to 360 degree, the EUT itself over 3-orthogonal axis and the height for EUT with large dimensions.

On the determined worst-case position, a final measurement with necessary bandwidth and detector according standard has been carried out.

The readings on the spectrum analyzer are corrected with conversion value between field strength and E(I)RP, so the readings shown are equivalent to ERP/EIRP values. Critical measurements near the limit are re-measured with a substitution method accord. ANSI/TIA/EIA 603 C/D

Formula:

$$P_{EIRP} = P_{MEAS} + C_L + FSL - G_{PreA} - G_{ANT} \quad (1)$$

P_{MEAS} = measured power at instrument

M = Margin

L_T = Limit

FSL = Free Space loss = Function(frequency, measurement distance)

$$M = L_T - P_{EIRP}$$

C_L = cable loss

G_{PreA} = Gain of pre-amplifier (if used)

G_{ANT} = Gain of antenna in [dBi]

All units are dB-units, positive margin means value is below limit.

4.3.2 Measurement Location

Test site	120904 - FAC1 - Radiated Emissions
Test site	120907 - FAC2 - Radiated Emissions

4.3.3 Limit

Operation band	Frequency Range [MHz]	Limit [dBm]	Detector [MaxHold]	RBW / VBW [MHz]
LTE2	30 - 19100	-13	Peak	1 / 3
LTE4	30 - 17500	-13	Peak	1 / 3
LTE5	30 - 8500	-13	Peak	1 / 3
LTE7	30 - 25700	-13	Peak	1 / 3
LTE12	30 - 7200	-13	Peak	1 / 3
LTE13	30 - 8000 763-775 and 793-805 1559 – 1610 1559 – 1610	-13 -35 (RBW = 6.25 kHz, ERP) -40 (RBW = 1 MHz) -50 (RBW = 700 Hz)	Peak	1 / 3
LTE26	30 - 18000	-13	Peak	1 / 3
LTE38	30 - 27000	-25/-13 / -10	RMS	1 / 3
LTE66	30 - 17700	-13	Peak	1 / 3

4.3.4 Result

Diagram	Band	Mode	30 MHz to 1000 MHz	1 GHz to 18 GHz	18 to 10 th Harmonics	Stop Freq [MHz]	Result
8.02a	LTE2	1, EUT laying	No peaks found	--	--	1000	Passed
8.02b	LTE2	1, EUT standing	No peaks found	--	--	1000	Passed
8.03a	LTE2	1, EUT laying	--	No peaks found	--	18000	Passed
8.03b	LTE2	1, EUT standing	--	No peaks found	--	18000	Passed
8.04a_c	LTE2	1, EUT laying	--	--	No peaks found	19500	Passed
8.04b_d	LTE2	1, EUT standing	--	--	No peaks found	19500	Passed

Diagram	Band	Mode	30 MHz to 15 GHz	15 to 10 th Harmonics	Stop Freq [MHz]	Result
8.04a	LTE4	2, EUT laying	No peaks found	--	15000	Passed
8.04b	LTE4	2, EUT standing	No peaks found	--	15000	Passed
8.05a_c	LTE4	2, EUT laying	--	No peaks found	18000	Passed
8.05b_d	LTE4	2, EUT standing	--	No peaks found	18000	Passed

Diagram	Band	Mode	30 MHz to 10 th Harmonics	Stop Freq [MHz]	Result
8.05a	LTE5	3, EUT standing	No peaks found	9000	Passed
8.05b	LTE5	3, EUT laying	No peaks found	9000	Passed

Diagram	Band	Mode	30 MHz to 2.8 GHz	2.8 GHz to 15 GHz	15 GHz to 18 GHz	18 to 10 th Harmonics	Stop Freq [MHz]	Result
8.07a	LTE7	4, EUT laying	No peaks found	--	--		28000	Passed
8.07b	LTE7	4, EUT standing	No peaks found	--	--		28000	Passed
8.08a	LTE7	4, EUT laying	--	No peaks found	--	--	15000	Passed
8.08b	LTE7	4, EUT standing	--	No peaks found	--	--	15000	Passed
8.09a_c	LTE7	4, EUT laying	--	--	No peaks found	--	18000	Passed
8.09b_d	LTE7	4, EUT standing	--	--	No peaks found	--	18000	Passed
8.10a_c	LTE7	4, EUT laying	--	--	--	No peaks found	27000	Passed
8.10b_d	LTE7	4, EUT standing	--	--	--	No peaks found	27000	Passed

Diagram	Band	Mode	30 MHz to 10 th Harmonics	Stop Freq [MHz]	Result
8.12a	LTE12	5, EUT standing	No peaks found	8000	Passed
8.12b	LTE12	5, EUT laying	No peaks found	8000	Passed

Diagram	Band	Mode	30 MHz to 10 th Harmonics	763 MHz to 806 GHz	1559 MHz to 1610 GHz	Stop Freq [MHz]	Result
8.13a	LTE13	6, EUT standing	No peaks found	--	--	9000	Passed
8.13b	LTE13	6, EUT laying	No peaks found	--	--	--	Passed
8.13c	LTE13	6, EUT standing	--	No peaks found	--	--	Passed
8.13d	LTE13	6, EUT laying	--	No peaks found	--	--	Passed
8.13e	LTE13	6, EUT laying	--	--	No peaks found	--	Passed
8.13f	LTE13	6, EUT standing	--	--	No peaks found	--	Passed

Diagram	Band	Mode	30 MHz to 10 th Harmonics	Stop Freq [MHz]	Result
8.26a	LTE26	7, EUT standing	No peaks found	9000	Passed
8.26b	LTE26	7, EUT laying	No peaks found	9000	Passed

Diagram	Band	Mode	30 MHz to 10 th Harmonics	Stop Freq [MHz]	Result
8.38a	LTE38	9, EUT laying	No peaks found	2800	Passed
8.38b	LTE38	9, EUT standing	No peaks found	2800	Passed
8.38c	LTE38	9	-50.95@5190MHz	15000	Passed
8.38d	LTE38	9	No peaks found	18000	Passed
8.38e	LTE38	9	No peaks found	27000	Passed

Diagram	Band	Mode	30 MHz to 15 GHz	15 to 10 th Harmonics	Stop Freq [MHz]	Result
8.66a	LTE66	8, EUT standing	No peaks found	--	15000	Passed
8.66b	LTE66	8, EUT laying	--	No peaks found	18000	Passed
8.66c	LTE66	8, EUT standing	No peaks found	--	15000	Passed
8.66d	LTE66	8, EUT laying	--	No peaks found	18000	Passed

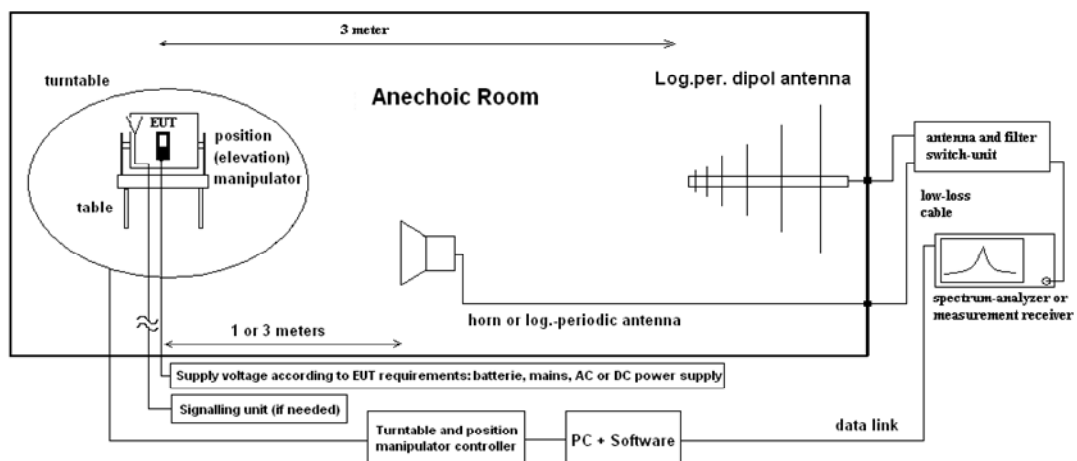
Remark: for more information and graphical plot see annex A1 TR21-1-0178701T018a-C01-A1

4.4 Radiated Band Edge

4.4.1 Description of the general test setup and methodology, see below example:

Evaluating the emissions have to be done first by an exploratory emissions measurement and a final measurement for most critical frequencies. The tests are performed in a CISPR 16-1-4:2010 compliant fully anechoic room (FAR) recognized by the regulatory commission. The measurement distance was set to 3 meter for frequencies up to 18 GHz and 2 meter above 18 GHz. A logarithmic periodic antenna is used for the frequency range 30 MHz to 1 GHz. Horn antennas are used for frequency range 1 GHz to 40 GHz. The EUT is aligned within 3 dB beam width of the measurement antenna with three orthogonal axis measurements on the EUT

Schematic:



Testing method:

The measurement is made according to relevant reference clauses:
(See Tables *Summary of Test Results* and *Summary of Test Methods* on page 5)

See chapter Radiated Spurious Emission for Test method.

4.4.2 Measurement Location

Test site	120904 - FAC1 - Radiated Emissions
Test site	120907 - FAC2 - Radiated Emissions

4.4.3 Limit

Operation band	Frequency Range [MHz]	Limit [dBm]	Detector [MaxHold]	RBW / VBW [MHz]
LTE2	Below 1850 and above 1910	-13	Peak	0.03 / 0.3
LTE4	Below 1710 and above 1755	-13	Peak	0.03 / 0.3
LTE5	Below 824 and above 849	-13	Peak	0.02 / 0.2
LTE7	2496 - 2499 2499 - 2500 2570 - 2571 2571 - 2575	-10 (RBW = 1 MHz, VBW = 3 MHz) -10 (RBW = 500 kHz, VBW = 2 MHz) -10 (RBW = 500 kHz, VBW = 2 MHz) -10 (RBW = 1 MHz, VBW = 3 MHz)	Peak	0.02 / 1
LTE12	698.9 - 699.0 and 716.0 - 716.1 Below 698.9 and above 716.1	-13 (RBW = 30 kHz, VBW = 100 kHz) -13 (RBW = 100 kHz, VBW = 300 kHz)	Peak	0.03 / 0.3
LTE13	776.9 - 777 and 787 - 787.1 Below 776.9 and above 787.1 763-775 and 793-805	-13 (RBW = 30 kHz, VBW = 100 kHz) -13 (RBW = 100 kHz, VBW = 300 kHz) -35 (RBW = 10 kHz, VBW = 30 kHz)	Peak	0.03 / 0.3
LTE26	Below 824 and above 849	-13	Peak	0.03 / 0.3
LTE38	2548.5 - 2570 2620 - 2642.5	-25/-13/-10	RMS	0.02 / 1
LTE66	Below 1710 and above 1780	-13	Peak	0.03 / 0.3

4.4.4 Result

Diagram	Band	Mode	Edge [Low / High]	Value [dBm]	Result
9.07a	FDD 2	Ch18607 QPSK BW1.4 1RBlow EUT_laying	Low	-22.17	Passed
9.07b	FDD 2	Ch18607 QPSK BW1.4 1RBlow EUT_standing	Low	-21.83	Passed
9.07c	FDD 2	Ch18607 QPSK BW1.4 FullRB EUT_laying	Low	-23.17	Passed
9.07d	FDD 2	Ch18607 QPSK BW1.4 FullRB EUT_standing	Low	-26.45	Passed
9.203a	FDD 2	Ch19193 BW1.4 1RBhigh EUT_laying	High	-22.95	Passed
9.203b	FDD 2	Ch19193 BW1.4 1RBhigh EUT_standing	High	-22.28	Passed
9.204a	FDD 2	Ch19193 BW1.4 FullRB EUT_laying	High	-29.22	Passed
9.204b	FDD 2	Ch19193 BW1.4 FullRB EUT_standing	High	-30.25	Passed

Remark: for more information and graphical plot see annex A1 **TR21-1-0178701T018a-C01-A1**

Diagram	Band	Mode	Edge [Low / High]	Value [dBm]	Result
9.401a	FDD 4	Ch19957 BW1.4 1RBlow EUT_standing	low	-23.80	Passed
9.401b	FDD 4	Ch19957 BW1.4 1RBlow EUT_laying	Low	-21.70	Passed
9.402a	FDD 4	Ch19957 BW1.4 FullRB EUT_standing	Low	-26.49	Passed
9.402b	FDD 4	Ch19957 BW1.4 FullRB EUT_laying	Low	-25.54	Passed
9.403a	FDD 4	Ch20393 BW1.4 1RBhigh EUT_standing	High	-22.58	Passed
9.403b	FDD 4	Ch20393 BW1.4 1RBhigh EUT_laying	High	-21.53	Passed
9.404a	FDD 4	Ch20393 BW1.4 FullRB EUT_standing	High	-26.61	Passed
9.404b	FDD 4	Ch20393 BW1.4 FullRB EUT_laying	High	-25.61	Passed

Remark: for more information and graphical plot see annex A1 **TR21-1-0178701T018a-C01-A1**

Diagram	Band	Mode	Edge [Low / High]	Value [dBm]	Result
9.501a	FDD 5	Ch20407 BW1.4 1RBlow EUT_standing	Low	-26.31	Passed
9.501b	FDD 5	Ch20407 BW1.4 1RBlow EUT_laying	Low	-27.62	Passed
9.502a	FDD 5	Ch20407 BW1.4 FullRB EUT_standing	Low	-29.64	Passed
9.502b	FDD 5	Ch20407 BW1.4 FullRB EUT_laying	Low	-30.40	Passed
9.503a	FDD 5	Ch20643 BW1.4 1RBhigh EUT_standing	High	-27.17	Passed
9.503b	FDD 5	Ch20643 BW1.4 1RBhigh EUT_laying	High	-28.55	Passed
9.504a	FDD 5	Ch20643 BW1.4 FullRB EUT_standing	High	-35.98	Passed
9.504b	FDD 5	Ch20643 BW1.4 FullRB EUT_laying	High	-36.39	Passed

Remark: for more information and graphical plot see annex A1 **TR21-1-0178701T018a-C01-A1**

Diagram	Band	Mode	Edge [Low / High]	Value [dBm]	Result
9.701	FDD 7	Ch20775 BW5 1RB low sweep 1	low	-48.61	Passed
9.702	FDD 7	Ch20775 BW5 1RB low sweep 2	low	-26.47	Passed
9.703	FDD 7	Ch20775 BW5 25RB low sweep 1	low	-35.38	Passed
9.704	FDD 7	Ch20775 BW5 25RB low sweep 2	low	-31.66	Passed
9.705	FDD 7	Ch21425 BW5 1RB high sweep 1	high	-28.87	Passed
9.706	FDD 7	Ch21425 BW5 25RB high sweep 1	high	-33.94	Passed

Remark: for more information and graphical plot see annex A1 **TR21-1-0178701T018a-C01-A1**

Diagram	Band	Mode	Edge [Low / High]	Value [dBm]	Result
9.1201a	FDD 12	Ch23017 BW1.4 1RBlow EUT_laying	Low	-55.49	Passed
9.1201b	FDD 12	Ch23017 BW1.4 1RBlow EUT_standing	Low	-55.26	Passed
9.1202a	FDD 12	Ch23017 BW1.4 FullRB EUT_laying	Low	-52.44	Passed
9.1202b	FDD 12	Ch23017 BW1.4 FullRB EUT_standing	Low	-49.93	Passed
9.1203a	FDD 12	Ch23173 BW1.4 1RBhigh EUT_laying	High	-30.68	Passed
9.1203b	FDD 12	Ch23173 BW1.4 1RBhigh EUT_standing	High	-25.82	Passed
9.1204a	FDD 12	Ch23173 BW1.4 FullRB EUT_laying	High	-37.44	Passed
9.1204b	FDD 12	Ch23173 BW1.4 FullRB EUT_standing	High	-33.14	Passed

Remark: for more information and graphical plot see annex A1 **TR21-1-0178701T018a-C01-A1**

Diagram	Band	Mode	Edge [Low / High]	Value [dBm]	Result
9.1301a	FDD 13	Ch23205 BW5 1RBlow EUT_standing	Low	-54.20	Passed
9.1301b	FDD 13	Ch23205 BW5 1RBlow EUT_laying	Low	-55.31	Passed
9.1302a	FDD 13	Ch23205 BW5 FullRB EUT_standing	Low	-42.84	Passed
9.1302b	FDD 13	Ch23205 BW5 FullRB EUT_laying	Low	-45.13	Passed
9.1303a	FDD 13	Ch23255 BW5 1RBhigh EUT_standing	High	-24.54	Passed
9.1303b	FDD 13	Ch23255 BW5 1RBhigh EUT_laying	High	-23.95	Passed
9.1304a	FDD 13	Ch23255 BW5 FullRB EUT_standing	High	-31.17	Passed
9.1304b	FDD 13	Ch23255 BW5 FullRB EUT_laying	High	-32.52	Passed

Remark: for more information and graphical plot see annex A1 **TR21-1-0178701T018a-C01-A1**

Diagram	Band	Mode	Edge [Low / High]	Value [dBm]	Result
9.3801	TDD 38	9	low	See diagram, Integrated Bandwidth method used for compliance check	Passed
9.3802	TDD 38	9	low		Passed
9.3803	TDD 38	9	high		Passed
9.3804	TDD 38	9	high		Passed

Remark: for more information and graphical plot see annex A1 **TR21-1-0178701T018a-C01-A1**

Diagram	Band	Mode	Edge [Low / High]	Value [dBm]	Result
9.2601	FDD 26	Ch20775 BW1.4 1RB low sweep 1	low	-30.20	Passed
9.2602	FDD 26	Ch20775 BW1.4 1RB full sweep 1	low	-38.30	Passed
9.2603	FDD 26	Ch21425 BW1.4 1RB high sweep 1	high	-27.05	Passed
9.2604	FDD 26	Ch21425 BW1.4 1RB full sweep 1	high	-33.18	Passed

Remark: for more information and graphical plot see annex A1 **TR21-1-0178701T018a-C01-A1**

Diagram	Band	Mode	Edge [Low / High]	Value [dBm]	Result
9.6601a	FDD 66	Ch131979 BW1.4 1RBlow EUT_standing	Low	-27.64	Passed
9.6601b	FDD 66	Ch131979 BW1.4 1RBlow EUT_laying	Low	-25.19	Passed
9.6602a	FDD 66	Ch131979 BW1.4 FullRB EUT_standing	Low	-30.58	Passed
9.6602b	FDD 66	Ch131979 BW1.4 FullRB EUT_laying	Low	-27.80	Passed
9.6603a	FDD 66	Ch132665 BW1.4 1RBhigh EUT_standing	High	-29.14	Passed
9.6603b	FDD 66	Ch132665 BW1.4 1RBhigh EUT_laying	High	-25.27	Passed
9.6604a	FDD 66	Ch132665 BW1.4 FullRB EUT_standing	High	-30.99	Passed
9.6604b	FDD 66	Ch132665 BW1.4 FullRB EUT_laying	High	-29.28	Passed

Remark: for more information and graphical plot see annex A1 **TR21-1-0178701T018a-C01-A1**

4.5 Equipment lists

ID	Description	Manufacturer	SerNo	CheckType	Last Check	Interval	Next Check
	120901 - SAC - Radiated Emission <1GHz			calchk	cal: 2015-Jul-21 chk: 2021-Jul-27	cal: 10Y chk: 12M	cal: 2025-Jul-21 chk: 2022-Jul-27
20442	Semi Anechoic Chamber	ETS-Lindgren GmbH / Taufkirchen	-	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20482	filter matrix Filter matrix SAR 1	CETECOM GmbH	-	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20574	Biconilog Hybrid Antenna BTA-L	Frankonia GmbH / Heideck	980026L	cal	cal: 2022-Jun-15	cal: 36M	cal: 2025-Jun-15
20620	Test Receiver ESU26	Rohde & Schwarz Messgerätebau GmbH / Memmingen	100362	cal	cal: 2022-Jun-08	cal: 12M	cal: 2023-Jun-08
20885	Power Supply EA3632A	Agilent Technologies Deutschland GmbH	75305850	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
25038	Loop Antenna FH42-Z2	Rohde & Schwarz Messgerätebau GmbH / Memmingen	879824/13	cal	cal: 2022-Jul-04	cal: 24M	cal: 2024-Jul-04
	120904 - FAC1 - Radiated Emissions			chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20020	Horn Antenna 3115 (Subst 1)	EMCO Elektronik GmbH	9107-3699	calchk	cal: 2021-Aug-17 chk: 2013-Apr-20	cal: 36M chk: 12M	cal: 2024-Aug-17
20066	Notch Filter WRCT 1900/2200-5/40-10EEK	Wainwright Instruments GmbH	5	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20121	Notch Filter WRCB 1879,5/1880,5EE	Wainwright Instruments GmbH	15	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20122	Notch Filter WRCB 1747/1748	Wainwright Instruments GmbH	12	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20254	High Pass Filter 5HC 2600/12750-1.5KK	Trilithic	23042	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20287	Pre-Amplifier 25MHz - 4GHz AMF-2D-100M4G-3S-10P	Miteq Inc.	379418	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20290	Notch Filter WRCA 901,9/903,1SS	Wainwright Instruments GmbH	3RR	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20291	High Pass Filter WHJ 2200-4EE	Wainwright Instruments GmbH	14	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20302	Horn Antenna BBHA9170 (Meas 1)	Schwarzbeck Mess-Elektronik OHG / Schönaun	155	cpu	chk: 2020-Apr-15	chk: 12M	
20338	Pre-Amplifier 100MHz - 26GHz JS4-00102600-38-5P	Miteq Inc.	838697	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20341	Digital Multimeter Fluke 112	Fluke Deutschland GmbH / Glottertal	81650455	cal	cal: 2022-May-18	cal: 24M	cal: 2024-May-18
20439	Ultrabroadband-Antenna HL562	Rohde & Schwarz Messgerätebau GmbH	100248	calchk	cal: 2017-Mar-10	cal: 72M chk: 12M	cal: 2023-Mar-10
20448	Notch Filter WRCT 1850.0/2170.0-5/40-10SSK	Wainwright Instruments GmbH	5	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20449	Notch Filter WRCT 824.0/894.0-5/40-8SSK	Wainwright Instruments GmbH	1	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20484	Pre-Amplifier 2,5GHz - 18GHz AMF-5D-02501800-25-10P	Miteq Inc.	1244554	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20489	Test Receiver ESU40	Rohde & Schwarz Messgerätebau GmbH / Memmingen	100030	cal	cal: 2022-Jul-20	cal: 12M	cal: 2023-Jul-20
20512	Notch Filter WRCA 800/960-02/40-6EEK (GSM 850)	Wainwright Instruments GmbH	24	chk	chk: 2022-Jun-30	chk: 12M	chk: 2023-Jun-30
20549	Log. Per. Antenna HL025	Rohde & Schwarz Messgerätebau GmbH	1000060	calchk	cal: 2021-Aug-18	cal: 36M chk: 12M	cal: 2024-Aug-18
20558	Fully Anechoic Chamber 1	ETS-Lindgren GmbH / Taufkirchen	-	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20611	Power Supply E3632A	Agilent Technologies Deutschland GmbH	KR 75305854	cpu			
20670	Radio Communication Tester CMU200	Rohde & Schwarz Messgerätebau GmbH / Memmingen	106833	cal	cal: 2022-May-10	cal: 24M	cal: 2024-May-10
20690	Spectrum Analyzer FSU	Rohde & Schwarz Messgerätebau GmbH	100302/026	cal	cal: 2021-May-20	cal: 24M	cal: 2023-May-20
20720	Measurement Software EMC32 [FAC]	Rohde & Schwarz Messgerätebau GmbH	V10.xx	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20868	High Pass Filter AFH-07000	AtlanTecRF	16071300004	chk	chk: 2021-Jun-11	chk: 12M	chk: 2022-Jun-11
	120907 - FAC2 - Radiated Emissions			chk	chk: 2023-Feb-21	chk: 12M	chk: 2024-Feb-21
20005	AC - LISN 50 Ohm/50µH ESH2-Z5	Rohde & Schwarz Messgerätebau GmbH / Memmingen	861741/005	cal	cal: 2022-May-19	cal: 12M	cal: 2023-May-19
20133	Horn Antenna 3115 (Meas 1)	EMCO Elektronik GmbH	9012-3629	cal	cal: 2020-Apr-08	cal: 36M	cal: 2023-Apr-08
20412	Fully Anechoic Chamber 2	ETS-Lindgren GmbH / Taufkirchen	without	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20729	FS-Z140	Rohde & Schwarz Messgerätebau GmbH	101004	cal	cal: 2020-May-26	cal: 36M	cal: 2023-May-26
20730	FS-Z110	Rohde & Schwarz Messgerätebau GmbH	101468	cal	cal: 2020-Jun-19	cal: 36M	cal: 2023-Jun-19
20731	FS-Z75	Rohde & Schwarz Messgerätebau GmbH / Memmingen	101022	cal	cal: 2022-May-18	cal: 36M	cal: 2025-May-18
20732	Signal- and Spectrum Analyzer FSW67	Rohde & Schwarz Messgerätebau GmbH / Memmingen	104023	cal	cal: 2022-Jun-08	cal: 12M	cal: 2023-Jun-08
20733	Harmonic Mixer FS-Z220	RPG-Radiometer Physics GmbH	101009	cal	cal: 2021-May-27	cal: 36M	cal: 2024-May-27
20734	Harmonic Mixer FS-Z325	RPG-Radiometer Physics GmbH	101005	cal	cal: 2021-May-27	cal: 36M	cal: 2024-May-27
20765	Pickett-Potter Horn Antenna FH-PP 40-60	RPG-Radiometer Physics GmbH / Meckenheim	010001	cal	cal: 2020-Sep-15	cal: 36M	cal: 2023-Sep-15
20767	Pickett-Potter Horn Antenna FH-PP 140-220	RPG-Radiometer Physics GmbH / Meckenheim	010011	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20811	Horn Antenna ASY-SGH-124-SMA	Antenna Systems Solutions S.L	29F14182337	cal	cal: 2021-Oct-20	cal: 36M	cal: 2024-Oct-20
20812	Pickett-Potter Horn Antenna FH-PP-325	RPG-Radiometer Physics GmbH	10024	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20813	Pickett-Potter Horn Antenna FH-PP 075	RPG-Radiometer Physics GmbH / Meckenheim	10006	cal	cal: 2020-Sep-09	cal: 36M	cal: 2023-Sep-09
20814	Pickett-Potter Horn Antenna FH-PP 140	RPG-Radiometer Physics GmbH	10008	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20815	Pickett-Potter Horn Antenna FH-PP 110	RPG-Radiometer Physics GmbH	10014	cal	cal: 2020-Sep-04	cal: 36M	cal: 2023-Sep-04
20816	SGH Antenna SGH-26-WR10	Anteral S.L.	1144	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -

ID	Description	Manufacturer	SerNo	CheckType	Last Check	Interval	Next Check
20817	Waveguide Rectangular Horn Antenna SAR-2309-22-S2	ERAVAN	13254-01	cal	cal: 2020-Jul-29	cal: 36M	cal: 2023-Jul-29
20836	1-18 GHz Amplifier	Wright Technologies, Inc., Inc. / Roseville	0001	chk		chk: 36M	
20877	JS42-08001800-16-8P Verstärker	Miteq Inc.	2079991 / 2079992	chk	chk: 2020-Feb-27	chk: 36M	chk: 2020-May-27
20907	Waveguide WR-15 attenuator STA-30-15-M2	SAGE Millimeter Inc.	13256-01	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20908	Waveguide WR 10 attenuator STA-30-10-M2	SAGE Millimeter Inc.	13256-01	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20909	Waveguide Horn Antenna PE9881-24	Pasternack Enterprises, Inc.	37/2016	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20910	Frequency Multiplier 936VF-10/385	MI-Wave, Millimeter Wave Products Inc.	142	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20911	Frequency Multiplier 938WF-10/387	MI-Wave, Millimeter Wave Products Inc.	141	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20912	Low noise Amplifier Module 0.5-4GHz	RF-Lambda Europe GmbH	19041200083	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20913	Phase Amplitude Stable Cable Assembly DC-40GHz	RF-Lambda Europe GmbH	AC19040001	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
25457	DRG Horn Antenna SAS-574	A.H. Systems, Inc. / Chatsworth	383	cal	cal: 2022-Mar-28	cal: 36M	cal: 2025-Mar-28
	120910 - Radio Laboratory 1 (TS 8997)			chk	chk: 2022-Mar-16	chk: 12M	chk: 2023-Mar-16
20559	Vector Signal Generator SMU200A	Rohde & Schwarz Messgerätebau GmbH / Memmingen	103736	cal	cal: 2021-May-20	cal: 24M	cal: 2023-May-20
20687	Signal Generator SMF 100A	Rohde & Schwarz Messgerätebau GmbH / Memmingen	102073	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20691	Open Switch and control Platform OSP120	Rohde & Schwarz Messgerätebau GmbH	101056	cal	cal: 2020-May-13	cal: 36M	cal: 2023-May-13
20805	Open Switch and control Platform OSP B15/WX 40GHz 8Port Switch	Rohde & Schwarz Messgerätebau GmbH	101264	cal	cal: 2020-May-13	cal: 36M	cal: 2023-May-13
20866	Signal Analyzer FSV3030	Rohde & Schwarz Messgerätebau GmbH / Memmingen	101247	cal	cal: 2022-Jun-20	cal: 12M	cal: 2023-Jun-20
20871	NRP-281	Rohde & Schwarz Messgerätebau GmbH / Memmingen	104631	cal	cal: 2022-May-16	cal: 12M	cal: 2023-May-16
20872	NRX Power Meter	Rohde & Schwarz Messgerätebau GmbH / Memmingen	101831	cal	cal: 2022-May-17	cal: 24M	cal: 2024-May-17
20873	WTS-80 Schirmbox	CETECOM GmbH	P3101	cnn	cal: - chk: -	cal: - chk: -	cal: - chk: -
20904	Climatic Chamber ClimeEvent C/1000/70a/5	Weiss Umwelttechnik GmbH / Reiskirchen-Lindenstruth	58226223240010	cal	cal: 2022-Nov-29	cal: 24M	cal: 2024-Nov-29

Tools used in 'P1M1'

4.5.1 Legend

Note / remarks	Interval of calibration & Verification
12M	12 months
24M	24 months
36M	36 months
10Y	10 Years

Abbreviation Check Type	Description
cnn	Calibration and verification not necessary
cal	Calibration
calchk	Calibration plus intermediate Verification
chk	Verification
cpu	Verification before usage

5 Results from external laboratory

None

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6 Opinions and interpretations

None

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7 List of abbreviations

None

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8 Measurement Uncertainty valid for conducted/radiated measurements

The reported uncertainties are calculated based on the standard uncertainty multiplied with the appropriate coverage factor **k**, such that a confidence level of approximately 95% is achieved. For uncertainty determination, each component used in the concrete measurement set-up was taken in account and its contribution to the overall uncertainty according its statistical distribution calculated.

Measurement type	Frequency range of measurement		Calculated Uncertainty based on confidence level of 95.54%	Remarks
	Start [MHz]	Stop [MHz]		
Magnetic field strength	0.009	30	4.86	Magnetic loop antenna, Pre-amp on
RF-Output power (eirp) Unwanted emissions (eirp) [dB]	30	100	4.57	without Pre-Amp
	30	100	4.91	with PreAmp
	100	1000	4.02	without Pre-Amp
	100	1000	4.26	with PreAmp
	1000	18000	4.36	without Pre-Amp
	1000	18000	5.23	with PreAmp
	18000	33000	4.92	Schwarzbeck BBHA9170 (#20302) Antenna set-up non-waveguide antenna)
	33000	50000	4.17	Set-up for Q-Band (WR-22), non-wave guide antenna
	40000	60000	4.69	Set-up U-Band (WR-19), non-waveguide antenna
	50000	75000	4.06	External Mixer set-up V-Band (WR-15)
	75000	110000	4.17	External Mixer set-up W-Band (WR-6)
	90000	140000	5.49	External Mixer set-up F-Band (WR-8)
	140000	225000	6.22	External Mixer set-up G-Band (WR-5)
	225000	325000	7.04	External Mixer set-up (WR-3)
325000	500000	8.84	External Mixer set-up (WR-2.2)	
Radiated Blocking [dB]	1000	18000	2.85	Typical set-up with microwave generator and antenna, value for 7GHz calculated
	18000	33000	4.66	Typical set-up with microwave generator and antenna
	33000	50000	3.48	WR-22 set-up
	50000	75000	3.73	WR-15 set-up
	75000	110000	4.26	WR-6 set-up
Frequency Error [kHz]	40000	77000	276.19	calculated for 77 GHz (FMCW) carrier
	6000	7000	33.92	calculated for 6.5GHz UWB Ch.5
TS 8997 conducted Parameters	30	6000	1.11	1. Power measurement with Fast-sampling-detector
	30	6000	1.20	2. Power measurement with Spectrum-Analyzer
	30	6000	1.20	3. Power Spectrum-Density measurement
	30	7500	1.20	4. Conducted Spurious emissions:
	0.009	30	2.56	5. Conducted Spurious emissions:
	2.4	2.48	1.95 ppm	6a. Bandwidth / 2-Marker Method for 2.4GHz ISM
	5.18	5.825	7.180 ppm	6b. Bandwidth / 2-Marker Method for 5GHz WLAN
	5.18	5.825	1.099 ppm	7 Frequency (Marker method) for 5GHz WLAN
	30	6000	0.11561µs	8 Medium-Utilization factor / Timing
	30	6000	1.85	9 Blocking-Level of companion device
30	6000	1.62	9 Blocking Generator level	
Conducted emissions	0.009	30	3.57	

9 Versions of test reports (change history)

Version	Applied changes	Date of release
--	Initial release	2023-03-24
C01	Updated issue to RSS-132 from 3 to 4. Reference to additional applicants document. Updated pathloss to antenna connector and in antenna cable for LTE FDD 2 at chapter 4.1.4. Updated results for LTE TDD Band 38.	2023-May-11
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End Of Test Report