

PARTIAL Test Report

20-1-0170701T08a-C4



Deutsche
Akkreditierungsstelle
D-PL-12047-01-01
D-PL-12047-01-03
D-PL-12047-01-04

Number of pages: 63 **Date of Report:** 2021-Oct-29

Testing company: CETECOM GmbH
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45219 Essen Germany
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Fax: + 49 (0) 20 54 / 95 19-150 **Applicant:** AIRBUS OPERATIONS S.A.S

Product: Avionics device
Model: RMAX

FCC ID: 2AZDJ-RMAX01 **IC:** Contains 2417C-EM75

Testing has been carried out in accordance with: Title 47 CFR, Chapter I
FCC Regulations, Subchapter B
Part 22 Subpart H, Part 24 Subpart E, Part 27 Subpart C, Part 90 Subpart S,
Part 15, Subpart C, §15.209
RSS-132, Issue 3; RSS-133, Issue 6; RSS-130, Issue 2, RSS-139, Issue 3, RSS-199, Issue 3,
RSS-Gen, Issue 5

Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".

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 CETECOM_TR20-1-0170701T08a-C4 replaces the test report CETECOM_TR20-1-0170701T08a-C3 dated 2021-Oct-25. The replaced test report is herewith invalid.

Signatures:

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Head of Compliance Testing
Authorization of test report

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Responsible of test report

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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 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 Disclaimer and Notes

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 LTE 2 band	Reference Clause FCC ☒	Reference Clause ISED ☐	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	-	NA	-
Conducted RF output power	§2.1046(a)	RSS-133:4.1/6.4 + SRSP-510:5.1.2	18	-	Passed
Radiated RF output power	§24.232(c), §2.1046(a)	RSS-133:6.4 + SRSP-510:5.1.2	22	-	Passed**
26dB Emission bandwidth	§24.238(b), §2.1049(h)	RSS-Gen, Issue 5:§6.6	-	NP	*1)*2)
Occupied Channel Bandwidth 99%	§24.238(b), §2.1049(h)	RSS-Gen, Issue 5:§6.6	-	NP	*1)*2)
Radiated Band Edge	§24.238(a)(b), §2.1053(a), §2.1057(a)	RSS-133, Issue 6: §6.5.1(i)(ii)	51	-	Passed
Conducted RF Band Edge	§24.238(a)(b), §2.1051	RSS-133, Issue 6: §6.5.1(i)(ii)	-	NP	*1)*2)
Peak to Average ratio (PAPR)	§2.1046(a)	RSS-133:4.1/6.4 + SRSP-510:5.1.2	43	-	Passed
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	44	-	Passed
Spurious emissions at antenna terminals	§24.238(a)(b), §2.1051	RSS-133, Issue 6: §6.5.1(i)(ii)	-	NP	*1)*2)
Radiated spurious emissions	§24.238(a)(b), §2.1053(a)	RSS-133, Issue 6: §6.5.1(i)(ii)	48	-	Passed
Frequency stability, temperature variation	§24.235, §2.1055(a)(1)	RSS-133: 6.3	-	NP	*1)*2)
Frequency stability, voltage variation	§24.235, §2.1055(a)(1)	RSS-133: 6.3	-	NP	*1)*2)

Test case in LTE 4 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	-	NA	-
Conducted RF output power	§27.50(d)(4), §2.1046	RSS-139, Issue 3:§6.5	18	-	Passed
Radiated RF output power	§27.50(d)(4), §2.1046(a)	RSS-139, Issue 3: 6.5 + SRSP-513	22	-	Passed**
26dB Emission bandwidth	§27.53(h)(3), §2.202(a)	RSS-Gen, Issue 5:§6.6	-	NP	*1)*2)*5)
Occupied Channel Bandwidth 99%	§27.53(h)(3), §2.202(a)	RSS-Gen, Issue 5:§6.6	-	NP	*1)*2)*5)
Radiated Band Edge	§27.53(h), §2.1053(a) §2.1057(a)	RSS-139, Issue 3: 6.6 (i)(ii)	51	-	Passed
Conducted RF Band Edge	§27.53(h), §2.1051	RSS-139, Issue 3: §6.6 (i)(ii)	-	NP	*1)*2)*5)

Peak to Average ratio (PAPR)	§27.50(d)(4), §2.1046	RSS-139, Issue 3:§6.5	43	-	Passed
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	44	-	Passed
Spurious emissions at antenna terminals	§27.53(h), §2.1051	RSS-139, Issue 3: §6.6 (i)(ii)	-	NP	*1)*2)*5)
Radiated spurious emissions	§27.53(h), §2.1053(a)	RSS-139, Issue 3: §6.6 (i)(ii)	48	-	Passed
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 3:§6.4	-	NP	*1)*2)*5)
Frequency stability, voltage variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 3:§6.4	-	NP	*1)*2)*5)

Test case in LTE 5 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	-	NA	-
Conducted RF output power	§22.913(a)(5), §2.1046	RSS-132:5.4 + SRSP 503:5.1.3	18	-	Passed
Radiated RF output power	§22.913, §2.1046(a)	RSS-132: 5.4 + SRSP 503:5.1.3	22	-	Passed**
26dB Emission bandwidth	§22.917(b), §2.1049(h)	RSS-Gen, Issue 5:§6.6	-	NP	*1)*2)*6)
Occupied Channel Bandwidth 99%	§22.917(b), §2.1049(h)	RSS-Gen, Issue 5:§6.6	-	NP	*1)*2)*6)
Radiated Band Edge	§22.917(a)(b), §2.1053(a), §2.1057(a)	RSS-132, Issue 3: §5.5(i)(ii)	51	-	Passed
Conducted RF Band Edge	§22.917(a)(b), §2.1051	RSS-132, Issue 3: §5.5(i)(ii)	-	NP	*1)*2)*6)
Peak to Average ratio (PAPR)	§22.913(a)(5), §2.1046	RSS-132:5.4 + SRSP 503:5.1.3	43	-	Passed
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	44	-	Passed
Spurious emissions at antenna terminals	§22.917(a)(b), §2.1051	RSS-132, Issue 3: §5.5(i)(ii)	-	NP	*1)*2)*6)
Radiated spurious emissions	§22.917(a)(b), §2.1053(a)	RSS-132, Issue 3: §5.5(i)(ii)	48	-	Passed
Frequency stability, temperature variation	§22.355, §2.1055(a)(1)	RSS-132: 5.3	-	NP	*1)*2)*6)
Frequency stability, voltage variation	§22.355, §2.1055(a)(1)	RSS-132: 5.3	-	NP	*1)*2)*6)

Test case in LTE 7 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	-	NA	-
Conducted RF output power	§27.50(h)(2), §2.1046	RSS-139, Issue 3:§6.5	18	-	Passed
Radiated RF output power	§27.50(d)(4), §2.1046(a)	RSS-139, Issue 3: 6.5 + SRSP-513	22	-	Passed**
26dB Emission bandwidth	§27.53(h)(3), §2.202(a)	RSS-Gen, Issue 5: §6.6	-	NP	*1)*2)
Occupied Channel Bandwidth 99%	§27.53(h)(3), §2.202(a)	RSS-Gen, Issue 5:§6.6	-	NP	*1)*2)
Radiated Band Edge	§27.53(m)(4), §2.1053(a), §2.1057(a)	RSS-139, Issue 3:§ 6.6 (i)(ii)	51	-	Passed
Conducted RF Band Edge	§27.53(m)(4), §2.1051	RSS-139, Issue 3: §6.6 (i)(ii)	-	NP	*1)*2)
Peak to Average ratio (PAPR)	§27.50(h)(2), §2.1046	RSS-139, Issue 3:§6.5	43	-	Passed
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	44	-	Passed
Spurious emissions at antenna terminals	§27.53(m)(4), §2.1051	RSS-139, Issue 3: §6.6 (i)(ii)	-	NP	*1)*2)
Radiated spurious emissions	§27.53(m)(4), §2.1053(a)	RSS-139, Issue 3: §6.6 (i)(ii)	48	-	Passed
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 3:§6.4	-	NP	*1)*2)
Frequency stability, voltage variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 3:§6.4	-	NP	*1)*2)

Test case in LTE 12 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	-	NA	*1)*2)
Conducted RF output power	§27.50(c)(10), §2.1046	RSS-130, Issue 2: §4.6.1/ §4.6.3	18	-	Passed
Radiated RF output power	§27.50(c)(10), §2.1046(a)	RSS-130, Issue 2: §4.6.1/ §4.6.3	22	-	Passed**
26dB Emission bandwidth	§2.202(a)	RSS-Gen, Issue 5:§6.7	-	NP	*1)*2)
Occupied Channel Bandwidth 99%	§2.202(a)	RSS-130, Issue 1:§4.5 RSS-Gen, Issue 5:§6.7	-	NP	*1)*2)
Radiated Band Edge	§27.53(g), §2.1053(a), §2.1057(a)	RSS-130, Issue 1:§4.7.1	51	-	Passed
Conducted RF Band Edge	§27.53(g), §2.1053(a)	RSS-130, Issue 1:§4.7.1	-	NP	*1)*2)

	§2.1057(a)				
Peak to Average ratio (PAPR)	§27.50(c)(10), §2.1046	RSS-130, Issue 2: §4.6.1	43	-	Passed
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	44	-	Passed
Spurious emissions at antenna terminals	§27.53(g), §2.1051, §2.1057(a)	RSS-130, Issue 2:§4.7.1	-	NP	*1)*2)
Radiated spurious emissions	§27.53(g), §2.1053(a) §2.1057(1)	RSS-130, Issue 2:§4.7.1	48	-	Passed
Frequency stability, temperature variation	§27.54 §2.1055(a)(1)	RSS-130, Issue 2:§4.5	-	NP	*1)*2)
Frequency stability, voltage variation	§27.54 §2.1055(a)(1)	RSS-130, Issue 2:§4.5	-	NP	*1)*2)

Test case in LTE13 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5: §8.8	-	NA	-
Conducted RF output power	§27.50(b)(10)(11), §2.1046(a)	RSS-130, Issue 2, §4.6.3	18	-	Passed
Radiated RF output power	§27.50(b)(10)(11) §2.1046(a)	RSS-130, Issue 2, §4.6.3	22	-	Passed**
26dB Emission bandwidth	§27.53(h)(3)	RSS-Gen, Issue 5:§6.7	-	NP	*1)*2)
Occupied Channel Bandwidth 99%	§2.1049(h) §2.202(a)	RSS-Gen, Issue 5:§6.7	-	NP	*1)*2)
Radiated Band Edge	§27.53(c)(3)(4), §2.1053(a)(b) §2.1057(a)	RSS-130, Issue 2:§4.7.1	51	-	Passed
Conducted RF Band Edge	§27.53(c)(3)(4), §2.1051 §2.1057(a)	RSS-130, Issue 2, §4.7.1	-	NP	*1)*2)
Peak to Average ratio (PAPR)	§2.1046	RSS-130, Issue 2, §4.6.1	43	-	Passed
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	44	-	Passed
Spurious emissions at antenna terminals	§27.53(c)(2)(3)(4) §2.1051 §2.1057(a)(1)	RSS-130, Issue 2, §4.7.1 §4.7.2(a)	-	NP	*1)*2)
Radiated spurious emissions	§27.53(c)(2)(3)(4) §27.53(f) §27.1053(a)(b) §2.1057(a)(1)	RSS-130, Issue 2, §4.7.1 §4.7.2(a)(b)	48	-	Passed
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-130, §4.5	-	NP	*1)*2)
Frequency stability, voltage variation	§27.54, §2.1055(a)(1)	RSS-130, §4.5	-	NP	*1)*2)

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	-	NA	-
Conducted RF output power	§22.913(a)(5), §2.1046, §2.1033, §90.635(b)	RSS-132:5.4 + SRSP 503:5.1.3	18	-	Passed
Radiated RF output power	§22.913, §2.1046(a) §90.635(b)	RSS-132: 5.4 + SRSP 503:5.1.3	22	-	Passed**
26dB Emission bandwidth	§22.917(b), §2.1049(h)	RSS-Gen, Issue 5:§6.7	-	NP	*3)*4)
Occupied Channel Bandwidth 99%	§22.917(b), §2.1049(h)	RSS-Gen, Issue 5:§6.7	-	NP	*3)*4)
Radiated Band Edge	§22.917(a)(b), §2.1053(a), §2.1057(a) §90.691(1)(2)	RSS-132, Issue 3: §5.5(i)(ii)	51	-	Passed
Conducted RF Band Edge	§22.917(a)(b), §2.1051	RSS-132, Issue 3: §5.5(i)(ii)	-	NP	*3)*4)
Peak to Average ratio (PAPR)	§22.913(a)(5), §2.1046	RSS-132:5.4 + SRSP 503:5.1.3	43	-	Passed
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	44	-	Passed
Spurious emissions at antenna terminals	§22.917(a)(b), §2.1051, §90.691	RSS-132, Issue 3: §5.5(i)(ii)	-	NP	*3)*4)
Radiated spurious emissions	§22.917(a)(b), §2.1053(a) §90.691	RSS-132, Issue 3: §5.5(i)(ii)	48	-	Passed
Frequency stability, temperature variation	§22.355, §2.1055(a)(1), §90.213	RSS-132: 5.3	-	NP	*3)*4)
Frequency stability, voltage variation	§22.355, §2.1055(a)(1), §90.213	RSS-132: 5.3	-	NP	*3)*4)

Test case in LTE41 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	-	NA	-
Conducted RF output power	§27.50(h)(2), §2.1046	RSS-139, Issue 3:§6.5	18	-	Passed
Radiated RF output power	§27.50(d)(4), §2.1046(a)	RSS-139, Issue 3: 6.5 + SRSP-513	22	-	Passed**
26dB Emission bandwidth	§27.53(h)(3), §2.202(a)	RSS-Gen, Issue 5:§6.6	-	NP	*1)*2)
Occupied Channel Bandwidth 99%	§27.53(h)(3) §2.202(a)	RSS-Gen, Issue 5:§6.6	-	NP	*1)*2)
Radiated Band Edge	§27.53(m)(4) §2.1053(a) §2.1057(a)	RSS-139, Issue 3: 6.6 (i)(ii)	51	-	Passed
Conducted RF Band Edge	§27.53(m)(4), §2.1051	RSS-139, Issue 3: §6.6 (i)(ii)	-	NP	*1)*2)
Peak to Average ratio (PAPR)	§27.50(h)(2), §2.1046	RSS-139, Issue 3:§6.5	43	-	Passed
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	44	-	Passed
Spurious emissions at antenna terminals	§27.53(m)(4), §2.1051	RSS-139, Issue 3: §6.6 (i)(ii)	-	NP	*1)*2)
Radiated spurious emissions	§27.53(m)(4), §2.1053(a)	RSS-139, Issue 3: §6.6 (i)(ii)	48	-	Passed
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 3:§6.4	-	NP	*1)*2)
Frequency stability, voltage variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 3:§6.4	-	NP	*1)*2)

Test case in LTE66 band	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5: §8.8	-	NA	-
Conducted RF output power	§27.50(d), §2.1046(a)	RSS-139, Issue 3:§6.5++ SRSP-513	18	-	Passed
Radiated RF output power	§27.50(d)(4), §2.1046(a)	RSS-139, Issue 3: 6.5 + SRSP-513	22	-	Passed**
26dB Emission bandwidth	§27.53(h)(3)	RSS-Gen, Issue 5:§6.7	-	NP	*1)*2)
Occupied Channel Bandwidth 99%	§2.1049(h) §2.202(a)	RSS-Gen, Issue 5: §6.7	-	NP	*1)*2)
Radiated Band Edge	§27.53(g), §2.1053(a) §2.1057(a)	RSS-139, Issue 3: §6.6 (i)	51	-	Passed
Conducted RF Band Edge	§27.53(g), §2.1051	RSS-139, Issue 3: §6.6 (i)	-	NP	*1)*2)
Peak to Average ratio (PAPR)	§27.50(d)(4), §2.1046	RSS-139, Issue 3: §6.5	43	-	Passed
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	44	-	Passed

Spurious emissions at antenna terminals	§27.53(h), §2.1051 §2.1057(a)(1)	RSS-139, Issue 3: §6.6 (i)(ii)	-	NP	*1)*2)
Radiated spurious emissions	§27.53(h), §2.1053(a) §2.1057(a)(1)	RSS-139, Issue 3: §6.6 (i)(ii)	48	-	Passed
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 3:§6.4	-	NP	*1)*2)
Frequency stability, voltage variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 3:§6.4	-	NP	*1)*2)

- PASSED The EUT complies with the essential requirements in the standard.
 FAILED The EUT does not comply with the essential requirements in the standard.
 NP The test was not performed by the CETECOM Laboratory.
 Passed** Radiated RF output power has been calculated based upon Conducted Power Verification.
 *1) Please refer to module report FG791919B with FCC ID: N7NEM75 from SPORTON INTERNATIONAL INC.
 *2) Please refer to module report FG791919B with IC ID: 2417C-EM75 from SPORTON INTERNATIONAL INC.
 *3) Please refer to module report FG791919D with FCC ID: N7NEM75 from SPORTON INTERNATIONAL INC.
 *4) Please refer to module report FG791919D with IC ID: 2417C-EM75 from SPORTON INTERNATIONAL INC.
 *5) For results of B4 please refer to B66 results within the referenced report.
 *6) For results of B5 please refer to B26 results within the referenced report.

*The calculation of the measurement uncertainty shows compliance with the "maximum measurement uncertainties" of the tested standard and therefore for result evaluation the stated uncertainties will not be additionally added to the measured results.

Remarks: Another measurements which are not performed (NP) in CETECOM Laboratory, please check initial Module Report.

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
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 GmbH
Address:	Im Teelbruch 116 45219 Essen - Kettwig Germany
Responsible for testing laboratory:	Dipl.-Ing. Ninovic Perez
Accreditation scope:	DAkKS Webpage
Test location:	CETECOM GmbH; Im Teelbruch 116; 45219 Essen - Kettwig

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:	B.Sc. Al-Amin Hossain
Receipt of EUT:	2021-Apr-01
Date(s) of test:	2021-May-04 – 2021-Jun-25
Version of template:	14.7

2.5 Applicant's details

Applicant's name:	AIRBUS OPERATIONS S.A.S
Address:	316 Route de Bayonne, BP M6321 31060 TOULOUSE CEDEX 09 France
Contact Person:	Mr. Grégory ANDRE
Contact Person's Email:	gregory.andre@airbus.com

2.6 Manufacturer's details

Manufacturer's name:	Same as Applicant's details.
Address:	Same as Applicant's details.

2.7 EUT: Type, S/N etc. and short descriptions used in this test report

Short description*)	PMT Sample No.	Product	Model	Type	S/N	HW status	SW status
EUT 01	20-1-01707S05_C01	Avionics Device	RMAX	199	2103009s	1.XD RDP2_1.11	3.1.0

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

2.8 Auxiliary Equipment (AE): Type, S/N etc. and short descriptions

Short description*)	PMT Sample No.	Auxiliary Equipment	Type	S/N	HW status	SW status
AE 01	20-1-01707S06_C01	Antenna	-	-	-	-
AE 02	20-1-01707S17_C01	Test box with harness	-	-	-	-
AE 03	-	Laptop	DELL	CTC 522013	-	-

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

2.9 Connected cables

Short description*)	PMT Sample No.	Cable type	Connectors	Length
CAB 01	20-1-01707S08_C01	Long bonding wire	-	-
CAB 02	20-1-01707S13_C01	Front face connector	-	RS232
CAB 03	20-1-01707S15_C01	Antenna cables	-	-

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

2.10 Software

Short description*)	PMT Sample No.	Software	Type	S/N	HW status	SW status
-	-	-	-	-	-	-

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

2.11 EUT set-ups

set-up no. *)	Combination of EUT and AE	Description
1	EUT 01 + AE 01 + AE 02 + CAB 01 + CAB 02 + CAB 03	<ul style="list-style-type: none"> ➤ Used for Radiated measurements ➤ AE 03 has been used only before the test to activate the Cellular modem
2	EUT 01 + AE 02 + CAB 01 + CAB 02	<ul style="list-style-type: none"> ➤ Used for Conducted measurements ➤ AE 03 has been used only before the test to activate the Cellular modem

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

2.12 EUT operation modes

EUT operating mode no.*)	Operating modes	Additional information
1	LTE FDD Band 2 Traffic	<p>Frequency / channel range: UL:1850 to 1909.90 MHz, DL: 1930 to 1989.90 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 MHz, RB:1, Start RB:high, BW:20 MHz, Modulation: QPSK, Downlink Frequency: 1940 MHz</p>
2	LTE FDD Band 4 Traffic	<p>Frequency / channel range: UL:1710 to 1754.90 MHz, DL: 2110 to 2154.90 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: 20300, Uplink frequency: 1745 MHz, RB:1, Start RB:Low, BW:20 MHz, Modulation: QPSK, Downlink Frequency: 2145 MHz</p>
3	LTE FDD Band 5 Traffic	<p>Frequency / channel range: UL:824 to 848.90 MHz, DL: 869 to 893.90 MHz / 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: 20625, Uplink frequency: 846.5 MHz, RB:1, Start RB:Low, BW:5 MHz, Modulation: QPSK, Downlink Frequency: 891.5 MHz</p>
4	LTE FDD Band 7 Traffic	<p>Frequency / channel range: UL:2500 to 2569.90 MHz, DL: 2620 to 2689.90 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: 20800, Uplink frequency: 2505 MHz, RB:1, Start RB:Low, BW:10 MHz, Modulation: QPSK, Downlink Frequency: 2625 MHz</p>
5	LTE FDD Band 12 Traffic	<p>Frequency / channel range: UL: 699 to 715.90 MHz, DL: 729 to 745.90 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: 23035, Uplink frequency: 701.5 MHz, RB:1, Start RB:High, BW:5 MHz, Modulation: QPSK, Downlink Frequency: 731.5 MHz</p>

6	LTE FDD Band 13 Traffic	<p>Frequency / channel range: UL: 777 to 786.90 MHz, DL: 746 to 755.90 MHz / Channel: UL: 23180 to 23279, DL: 5080 to 5279.</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink Channel: 23230, Uplink frequency: 782 MHz, RB:1, Start RB:Low, BW:10 MHz, Modulation: QPSK, Downlink Frequency: 751 MHz</p>
7	LTE FDD Band 26 Traffic	<p>Frequency / channel range: UL: 814 to 848.90 MHz, DL: 859 to 893.90 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, Start RB:Low, BW:15 MHz, Modulation: QPSK, Downlink Frequency: 876.5 MHz</p>
8	LTE TDD Band 41 Traffic	<p>Frequency / channel range: UL/DL:2496 to 2689.90 MHz / Channel: UL/DL: 39650 to 41589.</p> <p>A Communication link has been established between Wideband Radio Communication Tester CMW500 and EUT, Uplink Channel: 39750, Uplink frequency: 2506 MHz, RB:1, Start RB:Low, BW:20 MHz, Modulation: QPSK, Downlink Frequency: 2506 MHz</p>
9	LTE FDD Band 66 Traffic	<p>Frequency / channel range: UL:1710 to 1779.90 MHz, DL: 2110 to 2199.90 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: 132072, Uplink frequency: 1720 MHz, RB:1, Start RB:Low, BW:20 MHz, Modulation: QPSK, Downlink Frequency: 2120 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

Product name	Avionics device		
Kind of product	RMAX		
Firmware	<input type="checkbox"/> for normal use	<input checked="" type="checkbox"/> Special version for test execution	
	<input type="checkbox"/> AC Mains		
	<input checked="" type="checkbox"/> DC Mains	28 V DC via	
Operational conditions	T _{nom} =25 °C		
EUT sample type	Pre-Production		
Weight	0.4 kg		
Size [LxWxH]	10 x 6.2 x 8 cm		
Interfaces/Ports	Plesae check the document" RMAX operational description RED_D21009474_v1"		
For further details refer Applicants Declaration & following technical documents			
➤ RMAX operational description RED_D21009474_v1			

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 checked="" type="checkbox"/> LTE 26	814 - 848.9 (UL), 859 - 893.9 (DL)	UARFCN range 26690 - 27039
	<input checked="" type="checkbox"/> LTE 41	2501 - 2685 (UL), 2501 - 2685 (DL)	UARFCN range 39675 - 41490
	<input checked="" type="checkbox"/> LTE 66	1710 - 1779.9 (UL), 2110 - 2199.9 (DL)	UARFCN range 131972 - 132671
Type of modulation	QPSK 16QAM		
Emission designator	Nominal CBW		See initial certification of the module:
	-		FCC ID: N7NEM75, IC ID: 2417C-EM75
Antenna Type	<input type="checkbox"/> Integrated <input type="checkbox"/> External, no RF- connector <input checked="" type="checkbox"/> External, separate RF-connector		
Antenna gain(s)	LTE band 2 3.5 dBi		LTE band 12: 0.4 dBi
	LTE band 4: 3.0 dBi		LTE band 13: 0.8 dBi
	LTE band 5: 1.1 dBi		LTE band 17: -- dBi
	LTE band 7: 5.2 dBi		LTE band 26: 1.1 dBi
	LTE band 41: 5.3 dBi		LTE band 66: 3.0 dBi
FCC label attached	No		
Test firmware / software and storage location	EUT 01		
For further details refer Applicants Declaration & following technical documents			
Description of Reference Document (supplied by applicant)		Version	Total Pages
➤ RMAX operational description RED_D21009474_v1		➤ V1	10
➤ MPE Information Requirements_v4		➤ V3	1

Remark: For more information regarding antenna gain, please check document “MPE Information Requirements_v4”.

3.3 Worst case identification

LTE Band	Channel
LTE FDD Band 2	Check chapter 2.12, EUT Operation modes
LTE FDD Band 4	Check chapter 2.12, EUT Operation modes
LTE FDD Band 5	Check chapter 2.12, EUT Operation modes
LTE FDD Band 7	Check chapter 2.12, EUT Operation modes
LTE FDD Band 12	Check chapter 2.12, EUT Operation modes
LTE FDD Band 13	Check chapter 2.12, EUT Operation modes
LTE FDD Band 26	Check chapter 2.12, EUT Operation modes
LTE FDD Band 41	Check chapter 2.12, EUT Operation modes
LTE FDD Band 66	Check chapter 2.12, EUT Operation modes

Remarks:

- Worst Case configuration has been taken from Initial Certified Module Conducted Power,
- Worst Case configuration has been verified by CETECOM GmbH,
- Please refer to module report FG791919B with FCC ID: N7NEM75 from SPORTON INTERNATIONAL INC.
- Please refer to module report FG791919B with IC ID: 2417C-EM75 from SPORTON INTERNATIONAL INC.
- For B26 please refer to module report FG791919D with FCC ID: N7NEM75 from SPORTON INTERNATIONAL INC.
- For B26 please refer to module report FG791919D with IC ID: 2417C-EM75 from SPORTON INTERNATIONAL INC.

3.4 Modifications on Test sample

Additions/deviations or exclusions	-
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4 Measurements

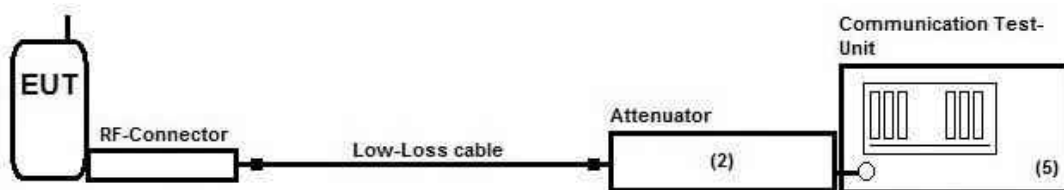
4.1 Conducted RF output power

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	120919 - Conducted Emission
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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 (30 dBm)	1 EIRP (30 dBm)
LTE5	824 - 849	7 ERP (38.5 dBm)	11.5 EIRP (40.6 dBm)
LTE7	2502.5 - 2567.5	1 EIRP (30 dBm)	1 EIRP (30 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 - 849	§22.913(1)(2) 7 ERP (38.5 dBm) §90.635(b): 100Watt	11.5 EIRP (40.6 dBm)
LTE41	2496 - 2690	1 EIRP (30 dBm)	1 EIRP (30 dBm)
LTE66	1710 - 1755	1 EIRP (30 dBm)	1 EIRP (30 dBm)

4.1.4 Result

Conducted Power verification performed by CETECOM GmbH										Certified Module Conducted Power Value								
Band	channel	BW(MHz)	Mod	RB	Start RB	Peak	RMS	Result	PAR	Band	channel	BW(MHz)	Mod	RB	Start RB	Peak	RMS	PAR
2	low_18700	20	QPSK	1	0	26.70	22.19	Passed*	4.51	2	low_18700	20	QPSK	1	0	27	22.6	4.43
7	high_21425	5	QPSK	1	12	25.97	21.60	Passed*	4.37	7	high_21425	5	QPSK	1	12	26.3	22	4.32
12	low_23060	10	QPSK	1	0	26.22	22.69	Passed*	3.53	12	low_23060	10	QPSK	1	0	26.4	22.8	3.68
13	mid_23230	10	QPSK	1	0	26.98	22.78	Passed*	4.20	13	mid_23230	10	QPSK	1	0	27	22.9	4.14
26	low_26865	15	QPSK	1	0	27.24	22.79	Passed*	4.45	26	low_26865	15	QPSK	1	0	27.5	22.8	4.67
41	low_39750	20	QPSK	1	0	26.23	21.81	Passed*	4.42	41	low_39750	20	QPSK	1	0	26.5	22	4.46
66	low_132072	20	QPSK	1	0	27.57	22.90	Passed*	4.67	66	low_132072	20	QPSK	1	0	27.7	23	4.75

Passed*: All Conducted Power verification results are below the Initial module Power Value.

Conclusion conducted power verification:

All measured power values are below the values of the modular report FG791919A with FCC ID N7NEM75.
 Please refer to module report FG791919B with FCC ID: N7NEM75 from SPORTON INTERNATIONAL INC.
 Please refer to module report FG791919B with IC ID: 2417C-EM75 from SPORTON INTERNATIONAL INC.
 For B26 please refer to module report FG791919D with FCC ID: N7NEM75 from SPORTON INTERNATIONAL INC.
 For B26 please refer to module report FG791919D with IC ID: 2417C-EM75 from SPORTON INTERNATIONAL INC.

Remarks:

- LTE FDD Band 4 and 5 have been performed all possible combinations, since there is no worst case configuration found in module Report.
- All Radiated measurements of LTE Band 4 and 5 have been performed in Worst case scenario only.
- Please check below the Conducted Power of LTE Band 4 and 5.

LTE-Band 4				QPSK-Modulation			16-QAM-Modulation			max. modulation QPSK	max. modulation 16-QAM	max. channel	absolutemax. value					
channel bandwidth	ARFCN ch. no.	ARFCN-Frequency [MHz]	Resource block allocation	Peak detektor [dBm]	RMS detektor [dBm]	PAR Faktor [dB]	Peak detektor [dBm]	RMS detektor [dBm]	PAR Faktor [dB]									
1.4 MHz	19957	1710.7	1 RB low	26.55	21.85	4.7	26.63	20.96	5.67	21.85	21.13	22.18						
			1 RB high	26.21	21.58	4.63	26.65	20.95	5.7									
			50%RB mid	26.73	21.59	5.14	26.98	21.13	5.85									
	20175	1732.5	100%RB	26.37	20.62	5.75	26.21	19.95	6.26					22.18	21.58	22.18		
			1 RB low	27.01	22.18	4.83	26.98	21.58	5.4									
			1 RB high	27.02	22.12	4.9	26.94	21.55	5.39									
	20393	1754.3	50%RB mid	27.15	22.09	5.06	27.27	21.22	6.05					22.17	21.52	22.18		
			100%RB	26.95	21.13	5.82	26.98	20.04	6.94									
			1 RB low	27.02	22.17	4.85	27.1	21.52	5.58									
	3 MHz	19965	1711.5	1 RB high	27.06	22.17	4.89	27.13	21.51					5.62	21.92	21.09	22.39	
				50%RB mid	27.43	22.12	5.31	27.33	21.3					6.03				
				100%RB	27.57	21.11	6.46	26.84	20.34					6.5				
20175		1732.5	1 RB low	26.64	21.92	4.72	26.79	21.07	5.72	22.38	21.58	22.39						
			1 RB high	26.6	21.89	4.71	26.8	21.09	5.71									
			50%RB mid	26.14	20.93	5.21	26.23	20.14	6.09									
20385		1753.5	100%RB	26.95	20.98	5.97	26.93	20.04	6.89	22.39	21.79	22.39						
			1 RB low	27.04	22.37	4.67	27.08	21.58	5.5									
			1 RB high	27.05	22.38	4.67	27.05	21.54	5.51									
5 MHz		19975	1712.5	50%RB mid	26.51	21.33	5.18	26.43	20.5	5.93	22.26	21.36	22.47					
				100%RB	27.12	21.26	5.86	26.73	20.35	6.38								
				1 RB low	27.1	22.39	4.71	27.13	21.79	5.34								
	20175	1732.5	1 RB high	27.04	22.34	4.7	27.13	21.76	5.37	22.44					22.01	22.47		
			50%RB mid	26.51	21.33	5.18	26.49	20.52	5.97									
			100%RB	27.12	21.26	5.86	26.73	20.35	6.38									
	20375	1752.5	1 RB low	27.1	22.39	4.71	27.13	21.79	5.34	22.47					21.63	22.47		
			1 RB high	27.04	22.34	4.7	27.13	21.76	5.37									
			50%RB mid	26.51	21.33	5.18	26.49	20.52	5.97									
	10 MHz	20000	1715	100%RB	27.12	21.26	5.86	26.73	20.35	6.38					22.44	22.01	22.47	
				1 RB low	27.11	22.44	4.61	27.15	21.63	5.52								
				1 RB high	27.1	22.47	4.63	27.07	21.49	5.58								
20175		1732.5	50%RB mid	26.63	21.36	5.27	26.83	20.4	6.43	22.48	21.66	22.48						
			100%RB	27.11	21.27	5.84	27.07	20.36	6.71									
			1 RB low	26.98	22.32	4.66	27.08	21.76	5.32									
20350		1750	1 RB high	27.09	22.45	4.64	27.21	21.86	5.35	22.47	21.59	22.48						
			50%RB mid	26.53	21.29	5.24	26.46	20.31	6.15									
			100%RB	27.66	21.33	6.33	27.27	20.41	6.86									
15 MHz		20025	1717.5	1 RB low	27.18	22.48	4.7	27.28	21.66	5.62	22.5	21.59	22.5					
				1 RB high	27.04	22.42	4.62	27.16	21.52	5.64								
				50%RB mid	26.73	21.39	5.34	26.56	20.43	6.13								
	20175	1732.5	100%RB	27.5	21.34	6.16	27.3	20.49	6.81	22.36					22.18	22.5		
			1 RB low	27.05	22.44	4.61	27.15	21.63	5.52									
			1 RB high	27.1	22.47	4.63	27.07	21.49	5.58									
	20325	1747.5	50%RB mid	26.63	21.36	5.27	26.83	20.4	6.43	22.44					21.92	22.5		
			100%RB	27.11	21.27	5.84	27.07	20.36	6.71									
			1 RB low	26.98	22.32	4.66	27.08	21.76	5.32									
	20 MHz	20050	1720	1 RB high	27.09	22.45	4.64	27.21	21.86	5.35					22.38	22.03	22.56	
				50%RB mid	26.53	21.29	5.24	26.46	20.31	6.15								
				100%RB	27.66	21.33	6.33	27.27	20.41	6.86								
20175		1732.5	1 RB low	27.18	22.48	4.7	27.28	21.66	5.62	22.48	21.92	22.56						
			1 RB high	27.04	22.42	4.62	27.16	21.52	5.64									
			50%RB mid	26.73	21.39	5.34	26.56	20.43	6.13									
20300		1745	100%RB	27.5	21.34	6.16	27.3	20.49	6.81	22.56	22.16	22.56						
			1 RB low	27.05	22.44	4.61	27.15	21.63	5.52									
			1 RB high	27.1	22.47	4.63	27.07	21.49	5.58									
20300		1745	50%RB mid	26.63	21.36	5.27	26.83	20.4	6.43	22.56	22.16	22.56						
			100%RB	27.11	21.27	5.84	27.07	20.36	6.71									
			1 RB low	26.98	22.32	4.66	27.08	21.76	5.32									
20300	1745	1 RB high	27.09	22.45	4.64	27.21	21.86	5.35	22.56	22.16	22.56							
		50%RB mid	26.53	21.29	5.24	26.46	20.31	6.15										
		100%RB	27.66	21.33	6.33	27.27	20.41	6.86										

LTE-Band 5				QPSK-Modulation			16-QAM-Modulation			max. modulation QPSK	max. modulation 16-QAM	max. channel	absolute max. value
channel bandwidth	ARFCN ch. no.	ARFCN-Frequency [MHz]	Resource block allocation	Peak detektor [dBm]	RMS detektor [dBm]	PAR Faktor [dB]	Peak detektor [dBm]	RMS detektor [dBm]	PAR Faktor [dB]				
14 MHz	20407	824.7	1RB low	26.4	22.44	3.96	26.92	2191	5.01	22.44	2191	22.57	22.74
			1RB high	26.85	22.36	4.49	26.82	2186	4.96				
			50%RB mid	26.98	22.37	4.61	27.02	2162	5.4				
			100%RB	27.06	2139	5.67	27.05	2034	6.71				
	20525	836.5	1RB low	27.1	22.56	4.54	27.17	2176	5.41	22.57	22.01		
			1RB high	27.04	22.48	4.56	27.17	2171	5.46				
			50%RB mid	27.42	22.57	4.85	27.34	22.01	5.33				
			100%RB	27.12	2152	5.6	26.83	20.73	6.1				
	20643	848.3	1RB low	26.79	22.49	4.3	26.97	2195	5.02	22.52	0.00		
			1RB high	26.64	22.52	4.12	26.75	2187	4.88				
			50%RB mid	26.97	22.5	4.47	27.04	2173	5.31				
			100%RB	27.48	2147	6.01	26.91	20.65	6.26				
3 MHz	20415	825.5	1RB low	26.85	22.5	4.35	26.86	2151	5.35	22.50	2151		
			1RB high	26.7	22.45	4.25	26.76	2148	5.28				
			50%RB mid	26.43	2145	4.98	26.36	20.53	5.83				
			100%RB	27.14	214	5.74	26.92	20.43	6.49				
	20525	836.5	1RB low	27.05	22.65	4.4	27.14	22.14	5	22.65	22.14		
			1RB high	27.1	22.61	4.49	27.2	22.11	5.09				
			50%RB mid	26.56	2153	5.03	26.61	20.81	5.8				
			100%RB	27.02	2158	5.44	26.86	20.65	6.21				
	20635	847.5	1RB low	26.64	22.61	4.03	26.66	2178	4.88	22.61	2178		
			1RB high	26.63	22.49	4.14	26.7	2173	4.97				
			50%RB mid	26.47	2154	4.93	26.29	20.65	5.64				
			100%RB	27.36	2155	5.81	27.14	20.57	6.57				
5 MHz	20425	826.5	1RB low	26.86	22.54	4.32	26.84	22.07	4.77	22.54	22.07		
			1RB high	26.74	22.47	4.27	26.78	22.04	4.74				
			50%RB mid	26.46	2139	5.07	26.31	20.55	5.76				
			100%RB	27.55	2139	6.16	27.1	20.49	6.61				
	20525	836.5	1RB low	27.04	22.71	4.33	22.16	2183	0.33	22.71	2183		
			1RB high	27	22.55	4.45	27.15	218	5.35				
			50%RB mid	26.66	216	5.06	26.65	20.72	5.93				
			100%RB	27.41	2153	5.88	27.49	20.61	6.88				
	20625	846.5	1RB low	26.5	22.74	3.76	26.52	2177	4.75	22.74	2182		
			1RB high	26.71	22.65	4.06	26.85	2182	5.03				
			50%RB mid	26.49	2161	4.88	26.37	20.7	5.67				
			100%RB	27.06	2161	5.45	27	20.61	6.39				
10 MHz	20450	829	1RB low	26.8	22.56	4.24	26.94	22.07	4.87	22.56	22.07		
			1RB high	26.92	22.45	4.47	27.02	2193	5.09				
			50%RB mid	26.59	2165	4.94	26.63	20.63	6				
			100%RB	27.71	2159	6.12	27.31	20.61	6.7				
	20525	836.5	1RB low	26.99	22.58	4.41	26.98	2166	5.32	22.58	2166		
			1RB high	26.79	22.42	4.37	26.84	2159	5.25				
			50%RB mid	26.63	2156	5.07	26.51	20.74	5.77				
			100%RB	28.21	2151	6.7	27.64	20.64	7				
	20600	844	1RB low	26.99	22.57	4.42	27.08	2171	5.37	22.57	2171		
			1RB high	26.86	22.55	4.31	26.84	2161	5.23				
			50%RB mid	26.28	215	4.78	26.31	20.53	5.78				
			100%RB	27.58	2146	6.12	27.52	20.47	7.05				

4.2 Radiated RF output power(Calculated)

All measured power values are below the values of the modular report FG791919A with FCC ID N7NEM75. ERP/ EIRP has been calculated based upon Conducted Power Verification (Chapter 4.1.4).

LTE Band 2 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	18700	18900	19100
	Frequency	1860	1880	1900
15	Channel	18675	18900	19125
	Frequency	1857.5	1880	1902.5
10	Channel	18650	18900	19150
	Frequency	1855	1880	1905
5	Channel	18625	18900	19175
	Frequency	1852.5	1880	1907.5
3	Channel	18615	18900	19185
	Frequency	1851.5	1880	1908.5
1.4	Channel	18607	18900	19193
	Frequency	1850.7	1880	1909.3

LTE Band 2 Radiated Power [dBm]											
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest
20	1	0	QPSK	22.55	22.24	22.26	3.50	2.60	23.45	23.14	23.16
20	1	49		22.07	21.90	22.09	3.50	2.60	22.97	22.80	22.99
20	1	99		22.08	21.91	22.06	3.50	2.60	22.98	22.81	22.96
20	50	0		21.36	21.08	21.27	3.50	2.60	22.26	21.98	22.17
20	50	24		21.18	21.00	21.23	3.50	2.60	22.08	21.90	22.13
20	50	50		21.12	20.86	21.17	3.50	2.60	22.02	21.76	22.07
20	100	0		21.19	21.03	21.23	3.50	2.60	22.09	21.93	22.13
20	1	0	16-QAM	21.89	21.64	21.57	3.50	2.60	22.79	22.54	22.47
20	1	49		21.44	21.23	21.42	3.50	2.60	22.34	22.13	22.32
20	1	99		21.48	21.24	21.38	3.50	2.60	22.38	22.14	22.28
20	50	0		20.39	20.11	20.29	3.50	2.60	21.29	21.01	21.19
20	50	24		20.18	20.03	20.21	3.50	2.60	21.08	20.93	21.11
20	50	50		20.11	19.91	20.19	3.50	2.60	21.01	20.81	21.09
20	100	0		20.19	20.02	20.23	3.50	2.60	21.09	20.92	21.13
20	1	0	64-QAM	20.71	20.39	20.44	3.50	2.60	21.61	21.29	21.34
20	1	49		20.26	20.09	20.28	3.50	2.60	21.16	20.99	21.18
20	1	99		20.27	20.09	20.29	3.50	2.60	21.17	20.99	21.19
20	50	0		19.38	19.09	19.29	3.50	2.60	20.28	19.99	20.19
20	50	24		19.20	19.03	19.24	3.50	2.60	20.10	19.93	20.14
20	50	50		19.13	18.89	19.16	3.50	2.60	20.03	19.79	20.06
20	100	0		19.23	19.02	19.26	3.50	2.60	20.13	19.92	20.16
15	1	0	QPSK	22.35	22.08	22.26	3.50	2.60	23.25	22.98	23.16
15	1	37		22.09	21.91	22.12	3.50	2.60	22.99	22.81	23.02
15	1	74		22.06	21.81	22.09	3.50	2.60	22.96	22.71	22.99
15	36	0		21.31	21.03	21.25	3.50	2.60	22.21	21.93	22.15
15	36	20		21.17	21.01	21.22	3.50	2.60	22.07	21.91	22.12
15	36	39		21.12	20.85	21.19	3.50	2.60	22.02	21.75	22.09
15	75	0		21.18	21.00	21.20	3.50	2.60	22.08	21.90	22.10
15	1	0	16-QAM	21.67	21.41	21.56	3.50	2.60	22.57	22.31	22.46
15	1	37		21.43	21.25	21.43	3.50	2.60	22.33	22.15	22.33
15	1	74		21.38	21.12	21.44	3.50	2.60	22.28	22.02	22.34
15	36	0		20.32	20.08	20.26	3.50	2.60	21.22	20.98	21.16
15	36	20		20.19	20.03	20.21	3.50	2.60	21.09	20.93	21.11
15	36	39		20.10	19.88	20.18	3.50	2.60	21.00	20.78	21.08
15	75	0		20.17	19.98	20.20	3.50	2.60	21.07	20.88	21.10
15	1	0	64-QAM	20.57	20.27	20.44	3.50	2.60	21.47	21.17	21.34
15	1	37		20.29	20.08	20.28	3.50	2.60	21.19	20.98	21.18
15	1	74		20.27	20.01	20.27	3.50	2.60	21.17	20.91	21.17
15	36	0		19.35	19.08	19.28	3.50	2.60	20.25	19.98	20.18
15	36	20		19.20	19.04	19.24	3.50	2.60	20.10	19.94	20.14
15	36	39		19.14	18.90	19.18	3.50	2.60	20.04	19.80	20.08
15	75	0		19.16	19.01	19.19	3.50	2.60	20.06	19.91	20.09



LTE Band 2 Radiated Power [dBm]											
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest
10	1	0	QPSK	22.42	22.21	22.21	3.50	2.60	23.32	23.11	23.11
10	1	25		22.11	21.91	22.12	3.50	2.60	23.01	22.81	23.02
10	1	49		22.18	21.99	22.10	3.50	2.60	23.08	22.89	23.00
10	25	0		21.21	21.02	21.23	3.50	2.60	22.11	21.92	22.13
10	25	12		21.17	21.01	21.20	3.50	2.60	22.07	21.91	22.10
10	25	25		21.03	20.88	21.18	3.50	2.60	21.93	21.78	22.08
10	50	0		21.19	21.02	21.21	3.50	2.60	22.09	21.92	22.11
10	1	0	16-QAM	21.72	21.58	21.51	3.50	2.60	22.62	22.48	22.41
10	1	25		21.45	21.28	21.48	3.50	2.60	22.35	22.18	22.38
10	1	49		21.50	21.36	21.38	3.50	2.60	22.40	22.26	22.28
10	25	0		20.22	20.03	20.22	3.50	2.60	21.12	20.93	21.12
10	25	12		20.18	20.03	20.22	3.50	2.60	21.08	20.93	21.12
10	25	25		20.05	19.90	20.19	3.50	2.60	20.95	20.80	21.09
10	50	0		20.19	20.02	20.24	3.50	2.60	21.09	20.92	21.14
10	1	0	64-QAM	20.59	20.42	20.39	3.50	2.60	21.49	21.32	21.29
10	1	25		20.31	20.11	20.32	3.50	2.60	21.21	21.01	21.22
10	1	49		20.33	20.16	20.27	3.50	2.60	21.23	21.06	21.17
10	25	0		19.23	19.05	19.24	3.50	2.60	20.13	19.95	20.14
10	25	12		19.19	19.04	19.24	3.50	2.60	20.09	19.94	20.14
10	25	25		19.03	18.91	19.18	3.50	2.60	19.93	19.81	20.08
10	50	0		19.19	19.00	19.21	3.50	2.60	20.09	19.90	20.11
5	1	0	QPSK	22.15	21.96	22.18	3.50	2.60	23.05	22.86	23.08
5	1	12		22.08	21.89	22.08	3.50	2.60	22.98	22.79	22.98
5	1	24		22.09	21.79	22.10	3.50	2.60	22.99	22.69	23.00
5	12	0		21.14	21.00	21.20	3.50	2.60	22.04	21.90	22.10
5	12	7		21.15	21.00	21.22	3.50	2.60	22.05	21.90	22.12
5	12	13		21.09	20.94	21.15	3.50	2.60	21.99	21.84	22.05
5	25	0		21.13	20.98	21.17	3.50	2.60	22.03	21.88	22.07
5	1	0	16-QAM	21.52	21.31	21.51	3.50	2.60	22.42	22.21	22.41
5	1	12		21.43	21.26	21.49	3.50	2.60	22.33	22.16	22.39
5	1	24		21.44	21.16	21.40	3.50	2.60	22.34	22.06	22.30
5	12	0		20.19	20.02	20.23	3.50	2.60	21.09	20.92	21.13
5	12	7		20.16	20.01	20.24	3.50	2.60	21.06	20.91	21.14
5	12	13		20.14	20.00	20.19	3.50	2.60	21.04	20.90	21.09
5	25	0		20.15	20.01	20.21	3.50	2.60	21.05	20.91	21.11
5	1	0	64-QAM	20.36	20.19	20.27	3.50	2.60	21.26	21.09	21.17
5	1	12		20.29	20.15	20.30	3.50	2.60	21.19	21.05	21.20
5	1	24		20.25	19.97	20.29	3.50	2.60	21.15	20.87	21.19
5	12	0		19.21	19.05	19.25	3.50	2.60	20.11	19.95	20.15
5	12	7		19.21	19.06	19.27	3.50	2.60	20.11	19.96	20.17
5	12	13		19.18	19.02	19.25	3.50	2.60	20.08	19.92	20.15
5	25	0		19.14	19.02	19.18	3.50	2.60	20.04	19.92	20.08



LTE Band 2 Radiated Power [dBm]											
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest
3	1	0	QPSK	22.07	21.89	22.08	3.50	2.60	22.97	22.79	22.98
3	1	8		22.07	21.88	22.07	3.50	2.60	22.97	22.78	22.97
3	1	14		22.04	21.85	22.07	3.50	2.60	22.94	22.75	22.97
3	8	0		21.14	20.97	21.14	3.50	2.60	22.04	21.87	22.04
3	8	4		21.11	20.95	21.19	3.50	2.60	22.01	21.85	22.09
3	8	7		21.09	20.93	21.13	3.50	2.60	21.99	21.83	22.03
3	15	0		21.13	20.95	21.15	3.50	2.60	22.03	21.85	22.05
3	1	0	16-QAM	21.4	21.28	21.49	3.50	2.60	22.30	22.18	22.39
3	1	8		21.42	21.25	21.44	3.50	2.60	22.32	22.15	22.34
3	1	14		21.37	21.27	21.38	3.50	2.60	22.27	22.17	22.28
3	8	0		20.19	20.02	20.23	3.50	2.60	21.09	20.92	21.13
3	8	4		20.2	20.04	20.25	3.50	2.60	21.10	20.94	21.15
3	8	7		20.17	19.98	20.2	3.50	2.60	21.07	20.88	21.10
3	15	0		20.12	19.98	20.2	3.50	2.60	21.02	20.88	21.10
3	1	0	64-QAM	20.27	20.15	20.24	3.50	2.60	21.17	21.05	21.14
3	1	8		20.25	20.08	20.25	3.50	2.60	21.15	20.98	21.15
3	1	14		20.25	20.05	20.23	3.50	2.60	21.15	20.95	21.13
3	8	0		19.16	18.98	19.21	3.50	2.60	20.06	19.88	20.11
3	8	4		19.18	19.02	19.22	3.50	2.60	20.08	19.92	20.12
3	8	7		19.14	18.99	19.19	3.50	2.60	20.04	19.89	20.09
3	15	0		19.12	18.96	19.18	3.50	2.60	20.02	19.86	20.08
1.4	1	0	QPSK	22.03	21.87	22.03	3.50	2.60	22.93	22.77	22.93
1.4	1	3		22.11	21.92	22.11	3.50	2.60	23.01	22.82	23.01
1.4	1	5		22.01	21.84	22.01	3.50	2.60	22.91	22.74	22.91
1.4	3	0		22.06	21.89	22.08	3.50	2.60	22.96	22.79	22.98
1.4	3	1		22.11	21.93	22.12	3.50	2.60	23.01	22.83	23.02
1.4	3	3		22.06	21.88	22.09	3.50	2.60	22.96	22.78	22.99
1.4	6	0		21.06	20.89	21.1	3.50	2.60	21.96	21.79	22.00
1.4	1	0	16-QAM	21.35	21.15	21.38	3.50	2.60	22.25	22.05	22.28
1.4	1	3		21.43	21.25	21.43	3.50	2.60	22.33	22.15	22.33
1.4	1	5		21.33	21.16	21.32	3.50	2.60	22.23	22.06	22.22
1.4	3	0		21.11	20.95	21.12	3.50	2.60	22.01	21.85	22.02
1.4	3	1		21.13	20.95	21.14	3.50	2.60	22.03	21.85	22.04
1.4	3	3		21.09	20.9	21.07	3.50	2.60	21.99	21.80	21.97
1.4	6	0		20.12	19.97	20.18	3.50	2.60	21.02	20.87	21.08
1.4	1	0	64-QAM	20.18	19.98	20.18	3.50	2.60	21.08	20.88	21.08
1.4	1	3		20.23	20.06	20.27	3.50	2.60	21.13	20.96	21.17
1.4	1	5		20.14	19.99	20.2	3.50	2.60	21.04	20.89	21.10
1.4	3	0		20.2	20.02	20.24	3.50	2.60	21.10	20.92	21.14
1.4	3	1		20.25	20.06	20.29	3.50	2.60	21.15	20.96	21.19
1.4	3	3		20.2	20.02	20.22	3.50	2.60	21.10	20.92	21.12
1.4	6	0		19.06	18.92	19.13	3.50	2.60	19.96	19.82	20.03

LTE-Band 4				QPSK	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables)	EIRP	16QAM	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables)	EIRP
channel bandwidth	ARFCN ch. no.	ARFCN-Frequency [MHz]	Resource block allocation	RMS detektor [dBm]				RMS detektor [dBm]			
1.4 MHz	19957	1710.7	1RB low	21.85	3	2.01	22.84	20.96	3	2.01	21.95
			1RB high	21.58	3	2.01	22.57	20.95	3	2.01	21.94
			50%RB mid	21.59	3	2.01	22.58	21.13	3	2.01	22.12
			100%RB	20.62	3	2.01	21.61	19.95	3	2.01	20.94
	20175	1732.5	1RB low	22.18	3	2.01	23.17	21.58	3	2.01	22.57
			1RB high	22.12	3	2.01	23.11	21.55	3	2.01	22.54
			50%RB mid	22.09	3	2.01	23.08	21.22	3	2.01	22.21
			100%RB	21.13	3	2.01	22.12	20.04	3	2.01	21.03
	20393	1754.3	1RB low	22.17	3	2.01	23.16	21.52	3	2.01	22.51
			1RB high	22.17	3	2.01	23.16	21.51	3	2.01	22.5
			50%RB mid	22.12	3	2.01	23.11	21.3	3	2.01	22.29
			100%RB	21.11	3	2.01	22.1	20.34	3	2.01	21.33
3 MHz	19965	1711.5	1RB low	21.92	3	2.01	22.91	21.07	3	2.01	22.06
			1RB high	21.89	3	2.01	22.88	21.09	3	2.01	22.08
			50%RB mid	20.93	3	2.01	21.92	20.14	3	2.01	21.13
			100%RB	20.98	3	2.01	21.97	20.04	3	2.01	21.03
	20175	1732.5	1RB low	22.37	3	2.01	23.36	21.58	3	2.01	22.57
			1RB high	22.38	3	2.01	23.37	21.54	3	2.01	22.53
			50%RB mid	21.33	3	2.01	22.32	20.5	3	2.01	21.49
			100%RB	21.34	3	2.01	22.33	20.34	3	2.01	21.33
	20385	1753.5	1RB low	22.39	3	2.01	23.38	21.79	3	2.01	22.78
			1RB high	22.34	3	2.01	23.33	21.76	3	2.01	22.75
			50%RB mid	21.33	3	2.01	22.32	20.52	3	2.01	21.51
			100%RB	21.26	3	2.01	22.25	20.35	3	2.01	21.34
5 MHz	19975	1712.5	1RB low	22.11	3	2.01	23.1	21.36	3	2.01	22.35
			1RB high	22.26	3	2.01	23.25	21.36	3	2.01	22.35
			50%RB mid	21.16	3	2.01	22.15	20.27	3	2.01	21.26
			100%RB	21.01	3	2.01	22	20.13	3	2.01	21.12
	20175	1732.5	1RB low	22.44	3	2.01	23.43	22.01	3	2.01	23
			1RB high	22.38	3	2.01	23.37	21.95	3	2.01	22.94
			50%RB mid	21.39	3	2.01	22.38	20.43	3	2.01	21.42
			100%RB	21.34	3	2.01	22.33	20.49	3	2.01	21.48
	20375	1752.5	1RB low	22.44	3	2.01	23.43	21.63	3	2.01	22.62
			1RB high	22.47	3	2.01	23.46	21.49	3	2.01	22.48
			50%RB mid	21.36	3	2.01	22.35	20.4	3	2.01	21.39
			100%RB	21.27	3	2.01	22.26	20.36	3	2.01	21.35

10 MHz	20000	1715	1RB low	22.32	3	2.01	23.31	21.76	3	2.01	22.75
			1RB high	22.45	3	2.01	23.44	21.86	3	2.01	22.85
			50%RB mid	21.29	3	2.01	22.28	20.31	3	2.01	21.3
			100%RB	21.33	3	2.01	22.32	20.41	3	2.01	21.4
	20175	1732.5	1RB low	22.48	3	2.01	23.47	21.66	3	2.01	22.65
			1RB high	22.42	3	2.01	23.41	21.52	3	2.01	22.51
			50%RB mid	21.39	3	2.01	22.38	20.49	3	2.01	21.48
			100%RB	21.41	3	2.01	22.4	20.5	3	2.01	21.49
	20350	1750	1RB low	22.47	3	2.01	23.46	21.59	3	2.01	22.58
			1RB high	22.45	3	2.01	23.44	21.5	3	2.01	22.49
			50%RB mid	21.47	3	2.01	22.46	20.52	3	2.01	21.51
			100%RB	21.36	3	2.01	22.35	20.45	3	2.01	21.44
15 MHz	20025	1717.5	1RB low	22.32	3	2.01	23.31	21.54	3	2.01	22.53
			1RB high	22.5	3	2.01	23.49	21.59	3	2.01	22.58
			50%RB mid	21.37	3	2.01	22.36	20.37	3	2.01	21.36
			100%RB	21.31	3	2.01	22.3	20.32	3	2.01	21.31
	20175	1732.5	1RB low	22.36	3	2.01	23.35	22.18	3	2.01	23.17
			1RB high	22.27	3	2.01	23.26	22.12	3	2.01	23.11
			50%RB mid	21.31	3	2.01	22.3	20.3	3	2.01	21.29
			100%RB	21.27	3	2.01	22.26	20.34	3	2.01	21.33
	20325	1747.5	1RB low	22.44	3	2.01	23.43	21.92	3	2.01	22.91
			1RB high	22.34	3	2.01	23.33	21.78	3	2.01	22.77
			50%RB mid	21.3	3	2.01	22.29	20.36	3	2.01	21.35
			100%RB	21.27	3	2.01	22.26	20.36	3	2.01	21.35
20 MHz	20050	1720	1RB low	22.29	3	2.01	23.28	21.94	3	2.01	22.93
			1RB high	22.38	3	2.01	23.37	22.03	3	2.01	23.02
			50%RB mid	21.31	3	2.01	22.3	20.39	3	2.01	21.38
			100%RB	21.41	3	2.01	22.4	20.49	3	2.01	21.48
	20175	1732.5	1RB low	22.48	3	2.01	23.47	21.92	3	2.01	22.91
			1RB high	22.37	3	2.01	23.36	21.86	3	2.01	22.85
			50%RB mid	21.45	3	2.01	22.44	20.45	3	2.01	21.44
			100%RB	21.49	3	2.01	22.48	20.46	3	2.01	21.45
	20300	1745	1RB low	22.56	3	2.01	23.55	22.16	3	2.01	23.15
			1RB high	22.37	3	2.01	23.36	21.95	3	2.01	22.94
			50%RB mid	21.38	3	2.01	22.37	20.48	3	2.01	21.47
			100%RB	21.47	3	2.01	22.46	20.43	3	2.01	21.42

LTE-Band 5				QPSK	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables)	EIRP	ERP	16QAM	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables)	EIRP	ERP
channel bandwidth	ARFCN ch. no.	ARFCN-Frequency	Resource block allocation	RMS detektor [dBm]					RMS detektor [dBm]				
14 MHz	20407	824.7	1RB low	22.44	1.1	1.15	22.39	20.24	21.91	1.1	1.15	21.86	19.71
			1RB high	22.36	1.1	1.15	22.31	20.16	21.86	1.1	1.15	21.81	19.66
			50%RB mid	22.37	1.1	1.15	22.32	20.17	21.62	1.1	1.15	21.57	19.42
			100%RB	21.39	1.1	1.15	21.34	19.19	20.34	1.1	1.15	20.29	18.14
	20525	836.5	1RB low	22.56	1.1	1.15	22.51	20.36	21.76	1.1	1.15	21.71	19.56
			1RB high	22.48	1.1	1.15	22.43	20.28	21.71	1.1	1.15	21.66	19.51
			50%RB mid	22.57	1.1	1.15	22.52	20.37	22.01	1.1	1.15	21.96	19.81
			100%RB	21.52	1.1	1.15	21.47	19.32	20.73	1.1	1.15	20.68	18.53
	20643	848.3	1RB low	22.49	1.1	1.15	22.44	20.29	21.95	1.1	1.15	21.9	19.75
			1RB high	22.52	1.1	1.15	22.47	20.32	21.87	1.1	1.15	21.82	19.67
			50%RB mid	22.5	1.1	1.15	22.45	20.3	21.73	1.1	1.15	21.68	19.53
			100%RB	21.47	1.1	1.15	21.42	19.27	20.65	1.1	1.15	20.6	18.45
3 MHz	20415	825.5	1RB low	22.5	1.1	1.15	22.45	20.3	21.51	1.1	1.15	21.46	19.31
			1RB high	22.45	1.1	1.15	22.4	20.25	21.48	1.1	1.15	21.43	19.28
			50%RB mid	21.45	1.1	1.15	21.4	19.25	20.53	1.1	1.15	20.48	18.33
			100%RB	21.4	1.1	1.15	21.35	19.2	20.43	1.1	1.15	20.38	18.23
	20525	836.5	1RB low	22.65	1.1	1.15	22.6	20.45	22.14	1.1	1.15	22.09	19.94
			1RB high	22.61	1.1	1.15	22.56	20.41	22.11	1.1	1.15	22.06	19.91
			50%RB mid	21.53	1.1	1.15	21.48	19.33	20.81	1.1	1.15	20.76	18.61
			100%RB	21.58	1.1	1.15	21.53	19.38	20.65	1.1	1.15	20.6	18.45
	20635	847.5	1RB low	22.61	1.1	1.15	22.56	20.41	21.78	1.1	1.15	21.73	19.58
			1RB high	22.49	1.1	1.15	22.44	20.29	21.73	1.1	1.15	21.68	19.53
			50%RB mid	21.54	1.1	1.15	21.49	19.34	20.65	1.1	1.15	20.6	18.45
			100%RB	21.55	1.1	1.15	21.5	19.35	20.57	1.1	1.15	20.52	18.37



5 MHz	20425	826.5	1RB low	22.54	1.1	1.15	22.49	20.34	22.07	1.1	1.15	22.02	19.87
			1RB high	22.47	1.1	1.15	22.42	20.27	22.04	1.1	1.15	21.99	19.84
			50%RB mid	21.39	1.1	1.15	21.34	19.19	20.55	1.1	1.15	20.5	18.35
			100%RB	21.39	1.1	1.15	21.34	19.19	20.49	1.1	1.15	20.44	18.29
	20525	836.5	1RB low	22.71	1.1	1.15	22.66	20.51	21.83	1.1	1.15	21.78	19.63
			1RB high	22.55	1.1	1.15	22.5	20.35	21.8	1.1	1.15	21.75	19.6
			50%RB mid	21.6	1.1	1.15	21.55	19.4	20.72	1.1	1.15	20.67	18.52
			100%RB	21.53	1.1	1.15	21.48	19.33	20.61	1.1	1.15	20.56	18.41
	20625	846.5	1RB low	22.74	1.1	1.15	22.69	20.54	21.77	1.1	1.15	21.72	19.57
			1RB high	22.65	1.1	1.15	22.6	20.45	21.82	1.1	1.15	21.77	19.62
			50%RB mid	21.61	1.1	1.15	21.56	19.41	20.7	1.1	1.15	20.65	18.5
			100%RB	21.61	1.1	1.15	21.56	19.41	20.61	1.1	1.15	20.56	18.41
10 MHz	20450	829	1RB low	22.56	1.1	1.15	22.51	20.36	22.07	1.1	1.15	22.02	19.87
			1RB high	22.45	1.1	1.15	22.4	20.25	21.93	1.1	1.15	21.88	19.73
			50%RB mid	21.65	1.1	1.15	21.6	19.45	20.63	1.1	1.15	20.58	18.43
			100%RB	21.59	1.1	1.15	21.54	19.39	20.61	1.1	1.15	20.56	18.41
	20525	836.5	1RB low	22.58	1.1	1.15	22.53	20.38	21.66	1.1	1.15	21.61	19.46
			1RB high	22.42	1.1	1.15	22.37	20.22	21.59	1.1	1.15	21.54	19.39
			50%RB mid	21.56	1.1	1.15	21.51	19.36	20.74	1.1	1.15	20.69	18.54
			100%RB	21.51	1.1	1.15	21.46	19.31	20.64	1.1	1.15	20.59	18.44
	20600	844	1RB low	22.57	1.1	1.15	22.52	20.37	21.71	1.1	1.15	21.66	19.51
			1RB high	22.55	1.1	1.15	22.5	20.35	21.61	1.1	1.15	21.56	19.41
			50%RB mid	21.5	1.1	1.15	21.45	19.3	20.53	1.1	1.15	20.48	18.33
			100%RB	21.46	1.1	1.15	21.41	19.26	20.47	1.1	1.15	20.42	18.27

LTE Band 7 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	20850	21100	21350
	Frequency	2510	2535	2560
15	Channel	20825	21100	21375
	Frequency	2507.5	2535	2562.5
10	Channel	20800	21100	21400
	Frequency	2505	2535	2565
5	Channel	20775	21100	21425
	Frequency	2502.5	2535	2567.5

LTE Band 7 RF Radiated Power [dBm]												
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest	
20.00	1.00	0.00	QPSK	21.65	21.78	21.82	5.20	2.70	24.15	24.28	24.32	
20.00	1.00	49.00		21.59	21.65	21.74	5.20	2.70	24.09	24.15	24.24	
20.00	1.00	99.00		21.58	21.65	21.81	5.20	2.70	24.08	24.15	24.31	
20.00	50.00	0.00		20.60	20.81	20.79	5.20	2.70	23.10	23.31	23.29	
20.00	50.00	24.00		20.69	20.72	20.83	5.20	2.70	23.19	23.22	23.33	
20.00	50.00	50.00		20.66	20.72	20.82	5.20	2.70	23.16	23.22	23.32	
20.00	100.00	0.00		20.70	20.74	20.80	5.20	2.70	23.20	23.24	23.30	
20.00	1.00	0.00	16-QAM	20.96	21.09	21.10	5.20	2.70	23.46	23.59	23.60	
20.00	1.00	49.00		20.91	20.95	21.05	5.20	2.70	23.41	23.45	23.55	
20.00	1.00	99.00		20.90	20.93	21.12	5.20	2.70	23.40	23.43	23.62	
20.00	50.00	0.00		19.66	19.85	19.81	5.20	2.70	22.16	22.35	22.31	
20.00	50.00	24.00		19.72	19.76	19.84	5.20	2.70	22.22	22.26	22.34	
20.00	50.00	50.00		19.69	19.73	19.84	5.20	2.70	22.19	22.23	22.34	
20.00	100.00	0.00		19.70	19.73	19.82	5.20	2.70	22.20	22.23	22.32	
20.00	1.00	0.00	64-QAM	19.90	20.01	20.02	5.20	2.70	22.40	22.51	22.52	
20.00	1.00	49.00		19.86	19.87	19.98	5.20	2.70	22.36	22.37	22.48	
20.00	1.00	99.00		19.84	19.84	20.06	5.20	2.70	22.34	22.34	22.56	
20.00	50.00	0.00		18.66	18.86	18.81	5.20	2.70	21.16	21.36	21.31	
20.00	50.00	24.00		18.73	18.76	18.85	5.20	2.70	21.23	21.26	21.35	
20.00	50.00	50.00		18.70	18.76	18.87	5.20	2.70	21.20	21.26	21.37	
20.00	100.00	0.00		18.73	18.74	18.86	5.20	2.70	21.23	21.24	21.36	
15.00	1.00	0.00	QPSK	21.78	21.80	21.79	5.20	2.70	24.28	24.30	24.29	
15.00	1.00	37.00		21.67	21.67	21.80	5.20	2.70	24.17	24.17	24.30	
15.00	1.00	74.00		21.77	21.63	21.84	5.20	2.70	24.27	24.13	24.34	
15.00	36.00	0.00		20.77	20.81	20.83	5.20	2.70	23.27	23.31	23.33	
15.00	36.00	20.00		20.73	20.75	20.88	5.20	2.70	23.23	23.25	23.38	
15.00	36.00	39.00		20.79	20.74	20.85	5.20	2.70	23.29	23.24	23.35	
15.00	75.00	0.00		20.75	20.71	20.88	5.20	2.70	23.25	23.21	23.38	
15.00	1.00	0.00	16-QAM	21.07	21.09	21.10	5.20	2.70	23.57	23.59	23.60	
15.00	1.00	37.00		20.95	20.98	21.12	5.20	2.70	23.45	23.48	23.62	
15.00	1.00	74.00		21.06	20.93	21.14	5.20	2.70	23.56	23.43	23.64	
15.00	36.00	0.00		19.79	19.84	19.88	5.20	2.70	22.29	22.34	22.38	
15.00	36.00	20.00		19.77	19.79	19.91	5.20	2.70	22.27	22.29	22.41	
15.00	36.00	39.00		19.84	19.75	19.88	5.20	2.70	22.34	22.25	22.38	
15.00	75.00	0.00		19.78	19.74	19.85	5.20	2.70	22.28	22.24	22.35	
15.00	1.00	0.00	64-QAM	20.05	20.04	20.02	5.20	2.70	22.55	22.54	22.52	
15.00	1.00	37.00		19.89	19.90	20.01	5.20	2.70	22.39	22.40	22.51	
15.00	1.00	74.00		19.98	19.86	20.07	5.20	2.70	22.48	22.36	22.57	
15.00	36.00	0.00		18.80	18.85	18.88	5.20	2.70	21.30	21.35	21.38	
15.00	36.00	20.00		18.79	18.79	18.94	5.20	2.70	21.29	21.29	21.44	
15.00	36.00	39.00		18.86	18.77	18.93	5.20	2.70	21.36	21.27	21.43	
15.00	75.00	0.00		18.76	18.77	18.88	5.20	2.70	21.26	21.27	21.38	

LTE Band 7 Radiated Power [dBm]											
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest
10.00	1.00	0.00	QPSK	21.75	21.82	21.83	5.20	2.70	24.25	24.32	24.33
10.00	1.00	25.00		21.73	21.68	21.86	5.20	2.70	24.23	24.18	24.36
10.00	1.00	49.00		21.78	21.69	21.83	5.20	2.70	24.28	24.19	24.33
10.00	25.00	0.00		20.75	20.71	20.87	5.20	2.70	23.25	23.21	23.37
10.00	25.00	12.00		20.75	20.75	20.92	5.20	2.70	23.25	23.25	23.42
10.00	25.00	25.00		20.70	20.71	20.86	5.20	2.70	23.20	23.21	23.36
10.00	50.00	0.00		20.74	20.73	20.85	5.20	2.70	23.24	23.23	23.35
10.00	1.00	0.00	16-QAM	21.07	21.10	21.13	5.20	2.70	23.57	23.60	23.63
10.00	1.00	25.00		21.03	21.02	21.15	5.20	2.70	23.53	23.52	23.65
10.00	1.00	49.00		21.08	21.04	21.15	5.20	2.70	23.58	23.54	23.65
10.00	25.00	0.00		19.78	19.74	19.90	5.20	2.70	22.28	22.24	22.40
10.00	25.00	12.00		19.79	19.77	19.91	5.20	2.70	22.29	22.27	22.41
10.00	25.00	25.00		19.74	19.74	19.89	5.20	2.70	22.24	22.24	22.39
10.00	50.00	0.00		19.77	19.77	19.91	5.20	2.70	22.27	22.27	22.41
10.00	1.00	0.00	64-QAM	19.96	20.02	20.04	5.20	2.70	22.46	22.52	22.54
10.00	1.00	25.00		19.91	19.94	20.06	5.20	2.70	22.41	22.44	22.56
10.00	1.00	49.00		19.96	19.92	20.06	5.20	2.70	22.46	22.42	22.56
10.00	25.00	0.00		18.80	18.77	18.92	5.20	2.70	21.30	21.27	21.42
10.00	25.00	12.00		18.80	18.80	18.96	5.20	2.70	21.30	21.30	21.46
10.00	25.00	25.00		18.76	18.77	18.92	5.20	2.70	21.26	21.27	21.42
10.00	50.00	0.00		18.79	18.78	18.94	5.20	2.70	21.29	21.28	21.44
5.00	1.00	0.00	QPSK	21.64	21.71	21.96	5.20	2.70	24.14	24.21	24.46
5.00	1.00	12.00		21.65	21.71	21.97	5.20	2.70	24.15	24.21	24.47
5.00	1.00	24.00		21.58	21.72	21.96	5.20	2.70	24.08	24.22	24.46
5.00	12.00	0.00		20.70	20.77	21.01	5.20	2.70	23.20	23.27	23.51
5.00	12.00	7.00		20.73	20.81	21.06	5.20	2.70	23.23	23.31	23.56
5.00	12.00	13.00		20.63	20.73	21.05	5.20	2.70	23.13	23.23	23.55
5.00	25.00	0.00		20.66	20.76	21.02	5.20	2.70	23.16	23.26	23.52
5.00	1.00	0.00	16-QAM	20.97	21.02	21.24	5.20	2.70	23.47	23.52	23.74
5.00	1.00	12.00		20.98	21.03	21.28	5.20	2.70	23.48	23.53	23.78
5.00	1.00	24.00		20.90	21.02	21.26	5.20	2.70	23.40	23.52	23.76
5.00	12.00	0.00		19.71	19.78	20.06	5.20	2.70	22.21	22.28	22.56
5.00	12.00	7.00		19.75	19.81	20.08	5.20	2.70	22.25	22.31	22.58
5.00	12.00	13.00		19.67	19.77	20.04	5.20	2.70	22.17	22.27	22.54
5.00	25.00	0.00		19.68	19.78	20.02	5.20	2.70	22.18	22.28	22.52
5.00	1.00	0.00	64-QAM	19.88	19.91	20.16	5.20	2.70	22.38	22.41	22.66
5.00	1.00	12.00		19.85	19.95	20.18	5.20	2.70	22.35	22.45	22.68
5.00	1.00	24.00		19.81	19.91	20.15	5.20	2.70	22.31	22.41	22.65
5.00	12.00	0.00		18.75	18.80	19.06	5.20	2.70	21.25	21.30	21.56
5.00	12.00	7.00		18.78	18.83	19.10	5.20	2.70	21.28	21.33	21.60
5.00	12.00	13.00		18.72	18.82	19.06	5.20	2.70	21.22	21.32	21.56
5.00	25.00	0.00		18.69	18.76	19.02	5.20	2.70	21.19	21.26	21.52

LTE Band 7 CA RF Radiated Power [dBm]													
BW [MHz]	PCC RB Size	PCC RB Offset	SCC RB Size	SCC RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest
20+20	0	0	1	99	QPSK	24.37	24.37	24.47	5.20	2.70	26.87	26.87	26.97
20+20	1	0	0	0		24.96	24.90	24.99	5.20	2.70	27.46	27.40	27.49
20+20	100	0	0	0		23.85	23.75	23.87	5.20	2.70	26.35	26.25	26.37
20+20	100	0	100	0		22.79	23.21	24.15	5.20	2.70	25.29	25.71	26.65
20+20	1	0	1	99		19.41	19.58	19.44	5.20	2.70	21.91	22.08	21.94
20+20	1	0	1	0		19.96	20.00	19.94	5.20	2.70	22.46	22.50	22.44
20+20	1	99	1	0		24.23	24.41	24.18	5.20	2.70	26.73	26.91	26.68
20+20	100	0	1	99		20.95	20.98	20.88	5.20	2.70	23.45	23.48	23.38
20+20	0	0	1	99	16-QAM	23.85	23.80	23.85	5.20	2.70	26.35	26.30	26.35
20+20	1	0	0	0		24.36	24.42	24.29	5.20	2.70	26.86	26.92	26.79
20+20	100	0	0	0		22.83	22.92	22.90	5.20	2.70	25.33	25.42	25.40
20+20	100	0	100	0		22.34	22.40	23.65	5.20	2.70	24.84	24.90	26.15
20+20	1	0	1	99		19.61	19.58	19.42	5.20	2.70	22.11	22.08	21.92
20+20	1	0	1	0		19.99	19.97	19.89	5.20	2.70	22.49	22.47	22.39
20+20	1	99	1	0		23.94	23.76	23.68	5.20	2.70	26.44	26.26	26.18
20+20	100	0	1	99		20.77	20.85	20.70	5.20	2.70	23.27	23.35	23.20
20+20	0	0	1	99	64-QAM	22.79	22.70	22.77	5.20	2.70	25.29	25.20	25.27
20+20	1	0	0	0		23.27	23.22	23.28	5.20	2.70	25.77	25.72	25.78
20+20	100	0	0	0		21.91	21.88	21.94	5.20	2.70	24.41	24.38	24.44
20+20	100	0	100	0		21.20	21.37	20.30	5.20	2.70	23.70	23.87	22.80
20+20	1	0	1	99		18.16	18.27	18.34	5.20	2.70	20.66	20.77	20.84
20+20	1	0	1	0		18.68	18.69	18.59	5.20	2.70	21.18	21.19	21.09
20+20	1	99	1	0		20.21	20.52	20.32	5.20	2.70	22.71	23.02	22.82
20+20	100	0	1	99		20.90	20.97	20.97	5.20	2.70	23.40	23.47	23.47
20+15	100	0	75	0	QPSK	22.75	22.66	22.67	5.20	2.70	25.25	25.16	25.17
20+15	1	0	1	74		19.45	19.35	19.44	5.20	2.70	21.95	21.85	21.94
20+15	1	99	1	0		24.30	24.26	24.28	5.20	2.70	26.80	26.76	26.78
20+15	100	0	75	0		22.30	22.22	22.23	5.20	2.70	24.80	24.72	24.73
20+15	1	0	1	74	16-QAM	19.60	19.55	19.56	5.20	2.70	22.10	22.05	22.06
20+15	1	99	1	0		23.90	23.88	23.80	5.20	2.70	26.40	26.38	26.30
20+15	100	0	75	0	64-QAM	21.20	21.15	21.15	5.20	2.70	23.70	23.65	23.65
20+15	1	0	1	74		18.26	18.25	18.16	5.20	2.70	20.76	20.75	20.66
20+15	1	99	1	0		20.21	20.50	20.31	5.20	2.70	22.71	23.00	22.81
20+15	100	0	100	0		22.72	22.59	22.58	5.20	2.70	25.22	25.09	25.08
15+20	75	0	100	0	QPSK	19.41	19.28	19.36	5.20	2.70	21.91	21.78	21.86
15+20	1	0	1	99		24.27	24.20	24.19	5.20	2.70	26.77	26.70	26.69
15+20	1	74	1	0		22.25	22.13	22.23	5.20	2.70	24.75	24.63	24.73
15+20	75	0	100	0		16-QAM	19.54	19.46	19.50	5.20	2.70	22.04	21.96
15+20	1	0	1	99	23.80		23.80	23.71	5.20	2.70	26.30	26.30	26.21
15+20	1	74	1	0	64-QAM	21.20	21.15	21.09	5.20	2.70	23.70	23.65	23.59
15+20	75	0	100	0		18.19	18.24	18.09	5.20	2.70	20.69	20.74	20.59
15+20	1	0	1	99		20.22	20.45	20.36	5.20	2.70	22.72	22.95	22.86
15+20	1	74	1	0		20.22	20.45	20.36	5.20	2.70	22.72	22.95	22.86
20+10	100	0	50	0	QPSK	22.69	22.65	22.61	5.20	2.70	25.19	25.15	25.11
20+10	1	0	1	49		19.41	19.35	19.35	5.20	2.70	21.91	21.85	21.85
20+10	1	99	1	0		24.29	24.21	24.28	5.20	2.70	26.79	26.71	26.78
20+10	100	0	50	0	16-QAM	22.29	22.19	22.16	5.20	2.70	24.79	24.69	24.66
20+10	1	0	1	49		19.54	19.46	19.47	5.20	2.70	22.04	21.96	21.97
20+10	1	99	1	0		23.87	23.87	23.70	5.20	2.70	26.37	26.37	26.20
20+10	100	0	50	0		64-QAM	21.14	21.14	21.08	5.20	2.70	23.64	23.64
20+10	1	0	1	49	18.26		18.21	18.12	5.20	2.70	20.76	20.71	20.62
20+10	1	99	1	0	20.19		20.43	20.33	5.20	2.70	22.69	22.93	22.83

LTE Band 7 CA Radiated Power [dBm]													
BW [MHz]	PCC RB Size	PCC RB Offset	SCC RB Size	SCC RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest
10+20	50	0	100	0	QPSK	22.65	22.58	22.64	5.20	2.70	25.15	25.08	25.14
10+20	1	0	1	99		19.45	19.29	19.44	5.20	2.70	21.95	21.79	21.94
10+20	1	49	1	0		24.24	24.18	24.24	5.20	2.70	26.74	26.68	26.74
10+20	50	0	100	0	16-QAM	22.28	22.22	22.13	5.20	2.70	24.78	24.72	24.63
10+20	1	0	1	99		19.55	19.52	19.54	5.20	2.70	22.05	22.02	22.04
10+20	1	49	1	0		23.86	23.79	23.72	5.20	2.70	26.36	26.29	26.22
10+20	50	0	100	0	64-QAM	21.14	21.07	21.13	5.20	2.70	23.64	23.57	23.63
10+20	1	0	1	99		18.23	18.23	18.16	5.20	2.70	20.73	20.73	20.66
10+20	1	49	1	0		20.22	20.49	20.29	5.20	2.70	22.72	22.99	22.79
15+15	75	0	75	0	QPSK	22.66	22.62	22.62	5.20	2.70	25.16	25.12	25.12
15+15	1	0	1	74		19.41	19.29	19.44	5.20	2.70	21.91	21.79	21.94
15+15	1	74	1	0		24.28	24.23	24.23	5.20	2.70	26.78	26.73	26.73
15+15	75	0	75	0	16-QAM	22.27	22.16	22.14	5.20	2.70	24.77	24.66	24.64
15+15	1	0	1	74		19.58	19.53	19.51	5.20	2.70	22.08	22.03	22.01
15+15	1	74	1	0		23.90	23.83	23.74	5.20	2.70	26.40	26.33	26.24
15+15	75	0	75	0	64-QAM	21.15	21.11	21.10	5.20	2.70	23.65	23.61	23.60
15+15	1	0	1	74		18.17	18.15	18.12	5.20	2.70	20.67	20.65	20.62
15+15	1	74	1	0		20.23	20.31	20.36	5.20	2.70	22.73	22.81	22.86
15+10	75	0	50	0	QPSK	22.69	22.60	22.63	5.20	2.70	25.19	25.10	25.13
15+10	1	0	1	49		19.37	19.27	19.42	5.20	2.70	21.87	21.77	21.92
15+10	1	74	1	0		24.23	24.19	24.20	5.20	2.70	26.73	26.69	26.70
15+10	75	0	50	0	16-QAM	22.24	22.22	22.20	5.20	2.70	24.74	24.72	24.70
15+10	1	0	1	49		19.57	19.55	19.55	5.20	2.70	22.07	22.05	22.05
15+10	1	74	1	0		23.88	23.84	23.77	5.20	2.70	26.38	26.34	26.27
15+10	75	0	50	0	64-QAM	21.10	21.14	21.11	5.20	2.70	23.60	23.64	23.61
15+10	1	0	1	49		18.21	18.15	18.15	5.20	2.70	20.71	20.65	20.65
15+10	1	74	1	0		20.36	20.33	20.26	5.20	2.70	22.86	22.83	22.76

LTE Band 12 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
10	Channel	23060	23095	23130
	Frequency	704	707.5	711
5	Channel	23035	23095	23155
	Frequency	701.5	707.5	713.5
3	Channel	23025	23095	23165
	Frequency	700.5	707.5	714.5
1.4	Channel	23017	23095	23173
	Frequency	699.7	707.5	715.3



LTE Band 12 RF Radiated Power [dBm]															
BW [MHz]	RB Size	RB Offset	Mod	Low est	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest	ERP [dBm], Lowest	ERP [dBm], Middle	ERP [dBm], Highest	
10	1	0	QPSK	22.75	22.7	22.76	0.4	1.05	22.10	22.05	22.11	19.95	19.90	19.96	
10	1	25		22.69	22.7	22.67	0.4	1.05	22.04	22.05	22.02	19.89	19.90	19.87	
10	1	49		22.67	22.73	22.7	0.4	1.05	22.02	22.08	22.05	19.87	19.93	19.90	
10	25	0		21.67	21.78	21.7	0.4	1.05	21.02	21.13	21.05	18.87	18.98	18.90	
10	25	12		21.8	21.78	21.78	0.4	1.05	21.15	21.13	21.13	19.00	18.98	18.98	
10	25	25		21.8	21.82	21.76	0.4	1.05	21.15	21.17	21.11	19.00	19.02	18.96	
10	50	0		21.78	21.72	21.81	0.4	1.05	21.13	21.07	21.16	18.98	18.92	19.01	
10	1	0	16-QAM	21.9	21.98	21.99	0.4	1.05	21.25	21.33	21.34	19.10	19.18	19.19	
10	1	25		22.04	22.01	22.04	0.4	1.05	21.39	21.36	21.39	19.24	19.21	19.24	
10	1	49		22.01	21.99	21.98	0.4	1.05	21.36	21.34	21.33	19.21	19.19	19.18	
10	25	0		20.74	20.76	20.69	0.4	1.05	20.09	20.11	20.04	17.94	17.96	17.89	
10	25	12		20.84	20.77	20.83	0.4	1.05	20.19	20.12	20.18	18.04	17.97	18.03	
10	25	25		20.74	20.84	20.79	0.4	1.05	20.09	20.19	20.14	17.94	18.04	17.99	
10	50	0		20.82	20.75	20.82	0.4	1.05	20.17	20.10	20.17	18.02	17.95	18.02	
10	1	0	64-QAM	20.93	20.94	20.89	0.4	1.05	20.28	20.29	20.24	18.13	18.14	18.09	
10	1	25		20.94	20.94	20.98	0.4	1.05	20.29	20.29	20.33	18.14	18.14	18.18	
10	1	49		20.9	20.98	20.88	0.4	1.05	20.25	20.33	20.23	18.10	18.18	18.08	
10	25	0		19.71	19.76	19.69	0.4	1.05	19.06	19.11	19.04	16.91	16.96	16.89	
10	25	12		19.83	19.78	19.85	0.4	1.05	19.18	19.13	19.20	17.03	16.98	17.05	
10	25	25		19.74	19.83	19.79	0.4	1.05	19.09	19.18	19.14	16.94	17.03	16.99	
10	50	0		19.84	19.76	19.81	0.4	1.05	19.19	19.11	19.16	17.04	16.96	17.01	
5	1	0	QPSK	22.72	22.71	22.75	0.4	1.05	22.07	22.06	22.10	19.92	19.91	19.95	
5	1	12		22.62	22.65	22.72	0.4	1.05	21.97	22.00	22.07	19.82	19.85	19.92	
5	1	24		22.72	22.75	22.71	0.4	1.05	22.07	22.10	22.06	19.92	19.95	19.91	
5	12	0		21.71	21.73	21.76	0.4	1.05	21.06	21.08	21.11	18.91	18.93	18.96	
5	12	7		21.73	21.71	21.79	0.4	1.05	21.08	21.06	21.14	18.93	18.91	18.99	
5	12	13		21.79	21.69	21.74	0.4	1.05	21.14	21.04	21.09	18.99	18.89	18.94	
5	25	0		21.68	21.74	21.73	0.4	1.05	21.03	21.09	21.08	18.88	18.94	18.93	
5	1	0	16-QAM	21.93	22.01	21.97	0.4	1.05	21.28	21.36	21.32	19.13	19.21	19.17	
5	1	12		21.92	21.99	21.95	0.4	1.05	21.27	21.34	21.30	19.12	19.19	19.15	
5	1	24		22.02	22.06	21.96	0.4	1.05	21.37	21.41	21.31	19.22	19.26	19.16	
5	12	0		20.76	20.74	20.83	0.4	1.05	20.11	20.09	20.18	17.96	17.94	18.03	
5	12	7		20.77	20.75	20.84	0.4	1.05	20.12	20.10	20.19	17.97	17.95	18.04	
5	12	13		20.81	20.71	20.74	0.4	1.05	20.16	20.06	20.09	18.01	17.91	17.94	
5	25	0		20.71	20.74	20.77	0.4	1.05	20.06	20.09	20.12	17.91	17.94	17.97	
5	1	0	64-QAM	20.85	20.89	20.8	0.4	1.05	20.20	20.24	20.15	18.05	18.09	18.00	
5	1	12		20.86	20.89	20.89	0.4	1.05	20.21	20.24	20.24	18.06	18.09	18.09	
5	1	24		20.82	20.93	20.79	0.4	1.05	20.17	20.28	20.14	18.02	18.13	17.99	
5	12	0		19.63	19.71	19.6	0.4	1.05	18.98	19.06	18.95	16.83	16.91	16.80	
5	12	7		19.75	19.73	19.76	0.4	1.05	19.10	19.08	19.11	16.95	16.93	16.96	
5	12	13		19.66	19.78	19.7	0.4	1.05	19.01	19.13	19.05	16.86	16.98	16.90	
5	25	0		19.76	19.71	19.72	0.4	1.05	19.11	19.06	19.07	16.96	16.91	16.92	

LTE Band 12 RF Radiated Power [dBm]															
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest	ERP [dBm], Lowest	ERP [dBm], Middle	ERP [dBm], Highest	
3	1	0	QPSK	22.66	22.67	22.69	0.4	1.05	22.01	22.02	22.04	19.86	19.87	19.89	
3	1	8		22.67	22.65	22.68	0.4	1.05	22.02	22.00	22.03	19.87	19.85	19.88	
3	1	14		22.61	22.63	22.67	0.4	1.05	21.96	21.98	22.02	19.81	19.83	19.87	
3	8	0		21.68	21.71	21.82	0.4	1.05	21.03	21.06	21.17	18.88	18.91	19.02	
3	8	4		21.68	21.74	21.87	0.4	1.05	21.03	21.09	21.22	18.88	18.94	19.07	
3	8	7		21.66	21.7	21.85	0.4	1.05	21.01	21.05	21.20	18.86	18.90	19.05	
3	15	0		21.67	21.7	21.81	0.4	1.05	21.02	21.05	21.16	18.87	18.90	19.01	
3	1	0	16-QAM	21.88	21.97	22.02	0.4	1.05	21.23	21.32	21.37	19.08	19.17	19.22	
3	1	8		21.9	21.96	22.05	0.4	1.05	21.25	21.31	21.40	19.10	19.16	19.25	
3	1	14		21.88	21.94	22.07	0.4	1.05	21.23	21.29	21.42	19.08	19.14	19.27	
3	8	0		20.78	20.75	20.88	0.4	1.05	20.13	20.10	20.23	17.98	17.95	18.08	
3	8	4		20.79	20.78	20.91	0.4	1.05	20.14	20.13	20.26	17.99	17.98	18.11	
3	8	7		20.73	20.74	20.89	0.4	1.05	20.08	20.09	20.24	17.93	17.94	18.09	
3	15	0		20.74	20.75	20.85	0.4	1.05	20.09	20.10	20.20	17.94	17.95	18.05	
3	1	0	64-QAM	20.86	20.88	21.01	0.4	1.05	20.21	20.23	20.36	18.06	18.08	18.21	
3	1	8		20.89	20.86	20.99	0.4	1.05	20.24	20.21	20.34	18.09	18.06	18.19	
3	1	14		20.86	20.87	20.97	0.4	1.05	20.21	20.22	20.32	18.06	18.07	18.17	
3	8	0		19.75	19.75	19.87	0.4	1.05	19.10	19.10	19.22	16.95	16.95	17.07	
3	8	4		19.74	19.77	19.9	0.4	1.05	19.09	19.12	19.25	16.94	16.97	17.10	
3	8	7		19.71	19.73	19.87	0.4	1.05	19.06	19.08	19.22	16.91	16.93	17.07	
3	15	0		19.69	19.74	19.85	0.4	1.05	19.04	19.09	19.20	16.89	16.94	17.05	
1.4	1	0	QPSK	22.4	22.41	22.5	0.4	1.05	21.75	21.76	21.85	19.60	19.61	19.70	
1.4	1	3		22.47	22.47	22.6	0.4	1.05	21.82	21.82	21.95	19.67	19.67	19.80	
1.4	1	5		22.4	22.39	22.49	0.4	1.05	21.75	21.74	21.84	19.60	19.59	19.69	
1.4	3	0		22.49	22.45	22.56	0.4	1.05	21.84	21.80	21.91	19.69	19.65	19.76	
1.4	3	1		22.54	22.5	22.59	0.4	1.05	21.89	21.85	21.94	19.74	19.70	19.79	
1.4	3	3		22.49	22.44	22.55	0.4	1.05	21.84	21.79	21.90	19.69	19.64	19.75	
1.4	6	0		21.44	21.45	21.56	0.4	1.05	20.79	20.80	20.91	18.64	18.65	18.76	
1.4	1	0	16-QAM	21.67	21.72	21.8	0.4	1.05	21.02	21.07	21.15	18.87	18.92	19.00	
1.4	1	3		21.72	21.77	21.88	0.4	1.05	21.07	21.12	21.23	18.92	18.97	19.08	
1.4	1	5		21.63	21.69	21.81	0.4	1.05	20.98	21.04	21.16	18.83	18.89	19.01	
1.4	3	0		21.46	21.49	21.61	0.4	1.05	20.81	20.84	20.96	18.66	18.69	18.81	
1.4	3	1		21.51	21.53	21.65	0.4	1.05	20.86	20.88	21.00	18.71	18.73	18.85	
1.4	3	3		21.45	21.48	21.6	0.4	1.05	20.80	20.83	20.95	18.65	18.68	18.80	
1.4	6	0		20.49	20.53	20.65	0.4	1.05	19.84	19.88	20.00	17.69	17.73	17.85	
1.4	1	0	64-QAM	20.66	20.62	20.75	0.4	1.05	20.01	19.97	20.10	17.86	17.82	17.95	
1.4	1	3		20.71	20.65	20.79	0.4	1.05	20.06	20.00	20.14	17.91	17.85	17.99	
1.4	1	5		20.65	20.62	20.71	0.4	1.05	20.00	19.97	20.06	17.85	17.82	17.91	
1.4	3	0		20.6	20.63	20.72	0.4	1.05	19.95	19.98	20.07	17.80	17.83	17.92	
1.4	3	1		20.64	20.66	20.75	0.4	1.05	19.99	20.01	20.10	17.84	17.86	17.95	
1.4	3	3		20.58	20.59	20.71	0.4	1.05	19.93	19.94	20.06	17.78	17.79	17.91	
1.4	6	0		19.47	19.44	19.56	0.4	1.05	18.82	18.79	18.91	16.67	16.64	16.76	

LTE Band 13 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
10	Channel	-	23230	-
	Frequency	-	782	-
5	Channel	23205	23230	23255
	Frequency	779.5	782	784.5

LTE Band 13 RF Radiated Power [dBm]																
BW [MHz]	RB Size	RB Offset	Mod	Low est	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest	ERP [dBm], Lowest	ERP [dBm], Middle	ERP [dBm], Highest		
10.00	1.00	0.00	QPSK		22.85		0.80	1.13		22.52				20.37		
10.00	1.00	25.00				22.79		0.80	1.13		22.46				20.31	
10.00	1.00	49.00				22.77		0.80	1.13		22.44				20.29	
10.00	25.00	0.00				21.77		0.80	1.13		21.44				19.29	
10.00	25.00	12.00				21.90		0.80	1.13		21.57				19.42	
10.00	25.00	25.00				21.89		0.80	1.13		21.56				19.41	
10.00	50.00	0.00	16-QAM		21.90		0.80	1.13		21.57				19.42		
10.00	1.00	0.00				22.05		0.80	1.13		21.72				19.57	
10.00	1.00	25.00				22.17		0.80	1.13		21.84				19.69	
10.00	1.00	49.00				22.09		0.80	1.13		21.76				19.61	
10.00	25.00	0.00				20.79		0.80	1.13		20.46				18.31	
10.00	25.00	12.00				20.92		0.80	1.13		20.59				18.44	
10.00	25.00	25.00				20.86		0.80	1.13		20.53				18.38	
10.00	50.00	0.00				20.92		0.80	1.13		20.59				18.44	
10.00	1.00	0.00		64-QAM		21.00		0.80	1.13		20.67				18.52	
10.00	1.00	25.00					21.02		0.80	1.13		20.69				18.54
10.00	1.00	49.00				21.00		0.80	1.13		20.67				18.52	
10.00	25.00	0.00				19.82		0.80	1.13		19.49				17.34	
10.00	25.00	12.00				19.96		0.80	1.13		19.63				17.48	
10.00	25.00	25.00				19.88		0.80	1.13		19.55				17.40	
10.00	50.00	0.00			19.94		0.80	1.13		19.61				17.46		
5.00	1.00	0.00	QPSK		22.77	22.75	22.84	0.80	1.13	22.44	22.42	22.51	20.29	20.27	20.36	
5.00	1.00	12.00				22.74	22.80	22.78	0.80	1.13	22.41	22.47	22.45	20.26	20.32	20.30
5.00	1.00	24.00				22.82	22.80	22.77	0.80	1.13	22.49	22.47	22.44	20.34	20.32	20.29
5.00	12.00	0.00				21.79	21.76	21.82	0.80	1.13	21.46	21.43	21.49	19.31	19.28	19.34
5.00	12.00	7.00				21.81	21.89	21.86	0.80	1.13	21.48	21.56	21.53	19.33	19.41	19.38
5.00	12.00	13.00				21.77	21.84	21.84	0.80	1.13	21.44	21.51	21.51	19.29	19.36	19.36
5.00	25.00	0.00	16-QAM		21.76	21.85	21.87	0.80	1.13	21.43	21.52	21.54	19.28	19.37	19.39	
5.00	1.00	0.00				22.04	22.05	22.15	0.80	1.13	21.71	21.72	21.82	19.56	19.57	19.67
5.00	1.00	12.00				22.08	22.13	22.12	0.80	1.13	21.75	21.80	21.79	19.60	19.65	19.64
5.00	1.00	24.00				22.14	22.08	22.09	0.80	1.13	21.81	21.75	21.76	19.66	19.60	19.61
5.00	12.00	0.00				20.81	20.81	20.85	0.80	1.13	20.48	20.48	20.52	18.33	18.33	18.37
5.00	12.00	7.00				20.87	20.90	20.86	0.80	1.13	20.54	20.57	20.53	18.39	18.42	18.38
5.00	12.00	13.00				20.80	20.83	20.86	0.80	1.13	20.47	20.50	20.53	18.32	18.35	18.38
5.00	25.00	0.00				20.78	20.88	20.85	0.80	1.13	20.45	20.55	20.52	18.30	18.40	18.37
5.00	1.00	0.00		64-QAM		20.83	20.84	20.78	0.80	1.13	20.50	20.51	20.45	18.35	18.36	18.30
5.00	1.00	12.00					20.83	20.83	20.86	0.80	1.13	20.50	20.50	20.53	18.35	18.35
5.00	1.00	24.00				20.79	20.85	20.79	0.80	1.13	20.46	20.52	20.46	18.31	18.37	18.31
5.00	12.00	0.00				19.62	19.65	19.57	0.80	1.13	19.29	19.32	19.24	17.14	17.17	17.09
5.00	12.00	7.00				19.72	19.69	19.73	0.80	1.13	19.39	19.36	19.40	17.24	17.21	17.25
5.00	12.00	13.00				19.65	19.71	19.67	0.80	1.13	19.32	19.38	19.34	17.17	17.23	17.19
5.00	25.00	0.00			19.72	19.69	19.69	0.80	1.13	19.39	19.36	19.36	17.24	17.21	17.21	

LTE Band 26 Channel and Frequency List				
BW [MHz]	Channel/Freq uency(MHz)	Lowest	Middle	Highest
15	Channel	26765	-	-
	Frequency	821.5	-	-
10	Channel	-	26740	-
	Frequency	-	819	-
5	Channel	26715	26740	26765
	Frequency	816.5	819	821.5
3	Channel	26705	26740	26775
	Frequency	815.5	819	822.5
1.4	Channel	26697	26740	26783
	Frequency	814.7	819	823.3

LTE Band 26 Radiated Power [dBm]										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm]	ERP [dBm]
15	1	0	QPSK	22.79	-	-	1.10	1.14	22.75	20.60
15	1	37		22.65	-	-	1.10	1.14	22.61	20.46
15	1	74		22.58	-	-	1.10	1.14	22.54	20.39
15	36	0		21.73	-	-	1.10	1.14	21.69	19.54
15	36	20		21.69	-	-	1.10	1.14	21.65	19.50
15	36	39		21.69	-	-	1.10	1.14	21.65	19.50
15	75	0	21.76	-	-	1.10	1.14	21.72	19.57	
15	1	0	16-QAM	21.97	-	-	1.10	1.14	21.93	19.78
15	1	37		21.95	-	-	1.10	1.14	21.91	19.76
15	1	74		21.88	-	-	1.10	1.14	21.84	19.69
15	36	0		20.74	-	-	1.10	1.14	20.70	18.55
15	36	20		20.71	-	-	1.10	1.14	20.67	18.52
15	36	39		20.68	-	-	1.10	1.14	20.64	18.49
15	75	0	20.74	-	-	1.10	1.14	20.70	18.55	
15	1	0	64-QAM	20.97	-	-	1.10	1.14	20.93	18.78
15	1	37		20.90	-	-	1.10	1.14	20.86	18.71
15	1	74		20.81	-	-	1.10	1.14	20.77	18.62
15	36	0		19.72	-	-	1.10	1.14	19.68	17.53
15	36	20		19.74	-	-	1.10	1.14	19.70	17.55
15	36	39		19.71	-	-	1.10	1.14	19.67	17.52
15	75	0	19.75	-	-	1.10	1.14	19.71	17.56	
10	1	0	QPSK	-	22.66	-	1.10	1.14	22.62	20.47
10	1	25		-	22.61	-	1.10	1.14	22.57	20.42
10	1	49		-	22.58	-	1.10	1.14	22.54	20.39
10	25	0		-	21.66	-	1.10	1.14	21.62	19.47
10	25	12		-	21.63	-	1.10	1.14	21.59	19.44
10	25	25		-	21.57	-	1.10	1.14	21.53	19.38
10	50	0	-	21.59	-	1.10	1.14	21.55	19.40	
10	1	0	16-QAM	-	21.95	-	1.10	1.14	21.91	19.76
10	1	25		-	21.90	-	1.10	1.14	21.86	19.71
10	1	49		-	21.93	-	1.10	1.14	21.89	19.74
10	25	0		-	20.65	-	1.10	1.14	20.61	18.46
10	25	12		-	20.63	-	1.10	1.14	20.59	18.44
10	25	25		-	20.58	-	1.10	1.14	20.54	18.39
10	50	0	-	20.64	-	1.10	1.14	20.60	18.45	
10	1	0	-	20.82	-	1.10	1.14	20.78	18.63	
10	1	25	-	20.76	-	1.10	1.14	20.72	18.57	
10	1	49	-	20.80	-	1.10	1.14	20.76	18.61	
10	25	0	64-QAM	-	19.67	-	1.10	1.14	19.63	17.48
10	25	12	-	19.66	-	1.10	1.14	19.62	17.47	
10	25	25	-	19.57	-	1.10	1.14	19.53	17.38	
10	50	0	-	19.64	-	1.10	1.14	19.60	17.45	



LTE Band 26 Radiated Power [dBm]															
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest	ERP [dBm], Lowest	ERP [dBm], Middle	ERP [dBm], Highest	
5	1	0	QPSK	22.63	22.58	22.68	1.10	1.14	22.59	22.54	22.64	20.44	20.39	20.49	
5	1	12		22.67	22.55	22.60	1.10	1.14	22.63	22.51	22.56	20.48	20.36	20.41	
5	1	24		22.54	22.51	22.59	1.10	1.14	22.50	22.47	22.55	20.35	20.32	20.40	
5	12	0		21.68	21.61	21.71	1.10	1.14	21.64	21.57	21.67	19.49	19.42	19.52	
5	12	7		21.74	21.62	21.71	1.10	1.14	21.70	21.58	21.67	19.55	19.43	19.52	
5	12	13		21.73	21.57	21.64	1.10	1.14	21.69	21.53	21.60	19.54	19.38	19.45	
5	25	0		21.73	21.63	21.69	1.10	1.14	21.69	21.59	21.65	19.54	19.44	19.50	
5	1	0	16-QAM	21.95	21.92	21.94	1.10	1.14	21.91	21.88	21.90	19.76	19.73	19.75	
5	1	12		22.02	21.86	21.92	1.10	1.14	21.98	21.82	21.88	19.83	19.67	19.73	
5	1	24		21.87	21.85	21.88	1.10	1.14	21.83	21.81	21.84	19.68	19.66	19.69	
5	12	0		20.67	20.63	20.72	1.10	1.14	20.63	20.59	20.68	18.48	18.44	18.53	
5	12	7		20.78	20.64	20.71	1.10	1.14	20.74	20.60	20.67	18.59	18.45	18.52	
5	12	13		20.72	20.59	20.66	1.10	1.14	20.68	20.55	20.62	18.53	18.40	18.47	
5	25	0		20.73	20.61	20.67	1.10	1.14	20.69	20.57	20.63	18.54	18.42	18.48	
5	1	0	64-QAM	20.87	20.76	20.89	1.10	1.14	20.83	20.72	20.85	18.68	18.57	18.70	
5	1	12		20.88	20.70	20.94	1.10	1.14	20.84	20.66	20.90	18.69	18.51	18.75	
5	1	24		20.86	20.74	20.82	1.10	1.14	20.82	20.70	20.78	18.67	18.55	18.63	
5	12	0		19.80	19.61	19.71	1.10	1.14	19.76	19.57	19.67	17.61	17.42	17.52	
5	12	7		19.71	19.60	19.81	1.10	1.14	19.67	19.56	19.77	17.52	17.41	17.62	
5	12	13		19.62	19.51	19.74	1.10	1.14	19.58	19.47	19.70	17.43	17.32	17.55	
5	25	0		19.67	19.58	19.80	1.10	1.14	19.63	19.54	19.76	17.48	17.39	17.61	
3	1	0	QPSK	22.60	22.58	22.72	1.10	1.14	22.56	22.54	22.68	20.41	20.39	20.53	
3	1	8		22.58	22.54	22.70	1.10	1.14	22.54	22.50	22.66	20.39	20.35	20.51	
3	1	14		22.65	22.52	22.69	1.10	1.14	22.61	22.48	22.65	20.46	20.33	20.50	
3	8	0		21.66	21.60	21.80	1.10	1.14	21.62	21.56	21.76	19.47	19.41	19.61	
3	8	4		21.68	21.61	21.81	1.10	1.14	21.64	21.57	21.77	19.49	19.42	19.62	
3	8	7		21.72	21.55	21.78	1.10	1.14	21.68	21.51	21.74	19.53	19.36	19.59	
3	15	0		21.64	21.59	21.78	1.10	1.14	21.60	21.55	21.74	19.45	19.40	19.59	
3	1	0	16-QAM	21.92	21.89	22.03	1.10	1.14	21.88	21.85	21.99	19.73	19.70	19.84	
3	1	8		21.93	21.91	22.05	1.10	1.14	21.89	21.87	22.01	19.74	19.72	19.86	
3	1	14		22.00	21.83	21.98	1.10	1.14	21.96	21.79	21.94	19.81	19.64	19.79	
3	8	0		20.70	20.64	20.83	1.10	1.14	20.66	20.60	20.79	18.51	18.45	18.64	
3	8	4		20.72	20.65	20.86	1.10	1.14	20.68	20.61	20.82	18.53	18.46	18.67	
3	8	7		20.78	20.62	20.83	1.10	1.14	20.74	20.58	20.79	18.59	18.43	18.64	
3	15	0		20.65	20.59	20.81	1.10	1.14	20.61	20.55	20.77	18.46	18.40	18.62	
3	1	0		20.85	20.71	20.95	1.10	1.14	20.81	20.67	20.91	18.66	18.52	18.76	
3	1	8		20.76	20.76	20.92	1.10	1.14	20.72	20.72	20.88	18.57	18.57	18.73	
3	1	14		20.86	20.68	20.92	1.10	1.14	20.82	20.64	20.88	18.67	18.49	18.73	
3	8	0	64-QAM	19.68	19.64	19.79	1.10	1.14	19.64	19.60	19.75	17.49	17.45	17.60	
3	8	4		19.70	19.64	19.82	1.10	1.14	19.66	19.60	19.78	17.51	17.45	17.63	
3	8	7		19.75	19.61	19.78	1.10	1.14	19.71	19.57	19.74	17.56	17.42	17.59	
3	15	0		19.66	19.63	19.81	1.10	1.14	19.62	19.59	19.77	17.47	17.44	17.62	

LTE Band 26 Radiated Power [dBm]														
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest	ERP [dBm], Lowest	ERP [dBm], Middle	ERP [dBm], Highest
1.4	1	0	QPSK	22.54	22.51	22.65	1.10	1.14	22.50	22.47	22.61	20.35	20.32	20.46
1.4	1	3		22.63	22.57	22.72	1.10	1.14	22.59	22.53	22.68	20.44	20.38	20.53
1.4	1	5		22.54	22.49	22.65	1.10	1.14	22.50	22.45	22.61	20.35	20.30	20.46
1.4	3	0		22.60	22.54	22.70	1.10	1.14	22.56	22.50	22.66	20.41	20.35	20.51
1.4	3	1		22.65	22.60	22.75	1.10	1.14	22.61	22.56	22.71	20.46	20.41	20.56
1.4	3	3		22.61	22.56	22.71	1.10	1.14	22.57	22.52	22.67	20.42	20.37	20.52
1.4	6	0		21.58	21.54	21.69	1.10	1.14	21.54	21.50	21.65	19.39	19.35	19.50
1.4	1	0	16-QAM	21.88	21.81	21.93	1.10	1.14	21.84	21.77	21.89	19.69	19.62	19.74
1.4	1	3		21.96	21.88	22.02	1.10	1.14	21.92	21.84	21.98	19.77	19.69	19.83
1.4	1	5		21.88	21.79	21.95	1.10	1.14	21.84	21.75	21.91	19.69	19.60	19.76
1.4	3	0		21.63	21.60	21.76	1.10	1.14	21.59	21.56	21.72	19.44	19.41	19.57
1.4	3	1		21.68	21.63	21.79	1.10	1.14	21.64	21.59	21.75	19.49	19.44	19.60
1.4	3	3		21.64	21.55	21.72	1.10	1.14	21.60	21.51	21.68	19.45	19.36	19.53
1.4	6	0		20.68	20.62	20.80	1.10	1.14	20.64	20.58	20.76	18.49	18.43	18.61
1.4	1	0	64-QAM	20.74	20.69	20.88	1.10	1.14	20.70	20.65	20.84	18.55	18.50	18.69
1.4	1	3		20.79	20.72	20.93	1.10	1.14	20.75	20.68	20.89	18.60	18.53	18.74
1.4	1	5		20.70	20.69	20.85	1.10	1.14	20.66	20.65	20.81	18.51	18.50	18.66
1.4	3	0		20.75	20.70	20.87	1.10	1.14	20.71	20.66	20.83	18.56	18.51	18.68
1.4	3	1		20.81	20.75	20.91	1.10	1.14	20.77	20.71	20.87	18.62	18.56	18.72
1.4	3	3		20.78	20.70	20.86	1.10	1.14	20.74	20.66	20.82	18.59	18.51	18.67
1.4	6	0		19.62	19.56	19.71	1.10	1.14	19.58	19.52	19.67	17.43	17.37	17.52



LTE Band 41 Channel and Frequency List				
BW [MHz]	Channel/Frequency (MHz)	Lowest	Middle	Highest
20	Channel	39750	40620	41490
	Frequency	2506	2593	2680
15	Channel	39725	40620	41515
	Frequency	2503.5	2593	2682.5
10	Channel	39700	40620	41540
	Frequency	2501	2593	2685
5	Channel	39675	40620	41565
	Frequency	2498.5	2593	2687.5

LTE Band 41 RF Radiated Power [dBm]											
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest
20.00	1.00	0.00	QPSK	21.93	21.89	21.99	5.30	2.30	24.93	24.89	24.99
20.00	1.00	49.00		21.86	21.80	21.82	5.30	2.30	24.86	24.80	24.82
20.00	1.00	99.00		21.73	21.70	21.83	5.30	2.30	24.73	24.70	24.83
20.00	50.00	0.00		20.94	20.91	20.96	5.30	2.30	23.94	23.91	23.96
20.00	50.00	24.00		20.91	20.91	20.87	5.30	2.30	23.91	23.91	23.87
20.00	50.00	50.00		20.87	20.72	20.84	5.30	2.30	23.87	23.72	23.84
20.00	100.00	0.00		20.92	20.88	20.85	5.30	2.30	23.92	23.88	23.85
20.00	1.00	0.00	16-QAM	21.03	21.05	21.10	5.30	2.30	24.03	24.05	24.10
20.00	1.00	49.00		20.93	20.95	20.88	5.30	2.30	23.93	23.95	23.88
20.00	1.00	99.00		20.93	20.80	20.90	5.30	2.30	23.93	23.80	23.90
20.00	50.00	0.00		20.06	19.94	19.96	5.30	2.30	23.06	22.94	22.96
20.00	50.00	24.00		19.97	19.92	19.88	5.30	2.30	22.97	22.92	22.88
20.00	50.00	50.00		20.05	19.78	19.85	5.30	2.30	23.05	22.78	22.85
20.00	100.00	0.00		20.05	19.91	19.86	5.30	2.30	23.05	22.91	22.86
20.00	1.00	0.00	64-QAM	19.81	19.65	19.76	5.30	2.30	22.81	22.65	22.76
20.00	1.00	49.00		19.69	19.56	19.52	5.30	2.30	22.69	22.56	22.52
20.00	1.00	99.00		19.63	19.45	19.56	5.30	2.30	22.63	22.45	22.56
20.00	50.00	0.00		19.05	18.91	18.94	5.30	2.30	22.05	21.91	21.94
20.00	50.00	24.00		19.04	18.91	18.85	5.30	2.30	22.04	21.91	21.85
20.00	50.00	50.00		19.02	18.75	18.86	5.30	2.30	22.02	21.75	21.86
20.00	100.00	0.00		19.05	18.90	18.89	5.30	2.30	22.05	21.90	21.89
15.00	1.00	0.00	QPSK	21.98	21.88	21.95	5.30	2.30	24.98	24.88	24.95
15.00	1.00	37.00		21.95	21.83	21.82	5.30	2.30	24.95	24.83	24.82
15.00	1.00	74.00		21.95	21.70	21.81	5.30	2.30	24.95	24.70	24.81
15.00	36.00	0.00		20.98	20.85	20.84	5.30	2.30	23.98	23.85	23.84
15.00	36.00	20.00		20.98	20.85	20.88	5.30	2.30	23.98	23.85	23.88
15.00	36.00	39.00		20.96	20.81	20.86	5.30	2.30	23.96	23.81	23.86
15.00	75.00	0.00		20.98	20.84	20.86	5.30	2.30	23.98	23.84	23.86
15.00	1.00	0.00	16-QAM	21.14	21.02	21.06	5.30	2.30	24.14	24.02	24.06
15.00	1.00	37.00		21.06	21.00	20.92	5.30	2.30	24.06	24.00	23.92
15.00	1.00	74.00		21.02	20.71	20.93	5.30	2.30	24.02	23.71	23.93
15.00	36.00	0.00		19.98	19.85	19.83	5.30	2.30	22.98	22.85	22.83
15.00	36.00	20.00		19.96	19.86	19.84	5.30	2.30	22.96	22.86	22.84
15.00	36.00	39.00		19.94	19.79	19.79	5.30	2.30	22.94	22.79	22.79
15.00	75.00	0.00		20.00	19.87	19.87	5.30	2.30	23.00	22.87	22.87
15.00	1.00	0.00	64-QAM	19.75	19.66	19.74	5.30	2.30	22.75	22.66	22.74
15.00	1.00	37.00		19.68	19.57	19.58	5.30	2.30	22.68	22.57	22.58
15.00	1.00	74.00		19.75	19.48	19.61	5.30	2.30	22.75	22.48	22.61
15.00	36.00	0.00		18.98	18.88	18.84	5.30	2.30	21.98	21.88	21.84
15.00	36.00	20.00		18.97	18.87	18.88	5.30	2.30	21.97	21.87	21.88
15.00	36.00	39.00		18.93	18.83	18.84	5.30	2.30	21.93	21.83	21.84
15.00	75.00	0.00		18.99	18.89	18.88	5.30	2.30	21.99	21.89	21.88

LTE Band 41 RF Radiated Power [dBm]											
BW [MHz]	RB Size	RB Offset	Mod	Low est	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest
10.00	1.00	0.00	QPSK	21.99	21.84	21.85	5.30	2.30	24.99	24.84	24.85
10.00	1.00	25.00		21.99	21.83	21.84	5.30	2.30	24.99	24.83	24.84
10.00	1.00	49.00		21.94	21.72	21.85	5.30	2.30	24.94	24.72	24.85
10.00	25.00	0.00		20.99	20.86	20.90	5.30	2.30	23.99	23.86	23.90
10.00	25.00	12.00		21.01	20.90	20.91	5.30	2.30	24.01	23.90	23.91
10.00	25.00	25.00		20.98	20.86	20.88	5.30	2.30	23.98	23.86	23.88
10.00	50.00	0.00		20.98	20.86	20.88	5.30	2.30	23.98	23.86	23.88
10.00	1.00	0.00	16-QAM	21.08	20.98	20.95	5.30	2.30	24.08	23.98	23.95
10.00	1.00	25.00		21.08	20.99	20.96	5.30	2.30	24.08	23.99	23.96
10.00	1.00	49.00		21.05	20.78	20.90	5.30	2.30	24.05	23.78	23.90
10.00	25.00	0.00		20.03	19.91	19.90	5.30	2.30	23.03	22.91	22.90
10.00	25.00	12.00		20.03	19.92	19.93	5.30	2.30	23.03	22.92	22.93
10.00	25.00	25.00		19.97	19.86	19.85	5.30	2.30	22.97	22.86	22.85
10.00	50.00	0.00		20.04	19.94	19.90	5.30	2.30	23.04	22.94	22.90
10.00	1.00	0.00	64-QAM	19.76	19.53	19.72	5.30	2.30	22.76	22.53	22.72
10.00	1.00	25.00		19.64	19.48	19.33	5.30	2.30	22.64	22.48	22.33
10.00	1.00	49.00		19.62	19.28	19.40	5.30	2.30	22.62	22.28	22.40
10.00	25.00	0.00		19.02	18.80	18.78	5.30	2.30	22.02	21.80	21.78
10.00	25.00	12.00		19.04	18.82	18.78	5.30	2.30	22.04	21.82	21.78
10.00	25.00	25.00		19.02	18.75	18.75	5.30	2.30	22.02	21.75	21.75
10.00	50.00	0.00		18.85	18.89	18.89	5.30	2.30	21.85	21.89	21.89
5.00	1.00	0.00	QPSK	21.87	21.84	21.88	5.30	2.30	24.87	24.84	24.88
5.00	1.00	12.00		21.86	21.83	21.88	5.30	2.30	24.86	24.83	24.88
5.00	1.00	24.00		21.80	21.82	21.82	5.30	2.30	24.80	24.82	24.82
5.00	12.00	0.00		20.88	20.89	20.90	5.30	2.30	23.88	23.89	23.90
5.00	12.00	7.00		20.90	20.91	20.94	5.30	2.30	23.90	23.91	23.94
5.00	12.00	13.00		20.89	20.85	20.90	5.30	2.30	23.89	23.85	23.90
5.00	25.00	0.00		20.88	20.89	20.91	5.30	2.30	23.88	23.89	23.91
5.00	1.00	0.00	16-QAM	20.97	20.91	20.92	5.30	2.30	23.97	23.91	23.92
5.00	1.00	12.00		20.97	20.85	20.96	5.30	2.30	23.97	23.85	23.96
5.00	1.00	24.00		20.98	20.94	20.98	5.30	2.30	23.98	23.94	23.98
5.00	12.00	0.00		19.91	19.91	19.89	5.30	2.30	22.91	22.91	22.89
5.00	12.00	7.00		19.90	19.89	19.93	5.30	2.30	22.90	22.89	22.93
5.00	12.00	13.00		19.89	19.89	19.88	5.30	2.30	22.89	22.89	22.88
5.00	25.00	0.00		19.93	19.89	19.94	5.30	2.30	22.93	22.89	22.94
5.00	1.00	0.00	64-QAM	19.68	19.45	19.71	5.30	2.30	22.68	22.45	22.71
5.00	1.00	12.00		19.58	19.47	19.52	5.30	2.30	22.58	22.47	22.52
5.00	1.00	24.00		19.48	19.36	19.49	5.30	2.30	22.48	22.36	22.49
5.00	12.00	0.00		19.00	18.75	18.84	5.30	2.30	22.00	21.75	21.84
5.00	12.00	7.00		18.84	18.83	18.66	5.30	2.30	21.84	21.83	21.66
5.00	12.00	13.00		19.00	18.61	18.68	5.30	2.30	22.00	21.61	21.68
5.00	25.00	0.00		18.88	18.83	18.80	5.30	2.30	21.88	21.83	21.80

LTE Band 41 CA RF Radiated Power [dBm]													
BW [MHz]	PCC RB Size	PCC RB Offset	SCC RB Size	SCC RB Offset	Mod	Low est	Middle	Highest	Antenna Gain [dBi]	Ext. Path Loss to antenna (external cables) [dB]	EIRP [dBm], Lowest	EIRP [dBm], Middle	EIRP [dBm], Highest
20+20	0	0	1	99	QPSK	25.48	25.54	25.38	5.30	2.30	28.48	28.54	28.38
20+20	1	0	0	0		25.70	25.70	25.75	5.30	2.30	28.70	28.70	28.75
20+20	100	0	0	0		24.84	24.78	24.92	5.30	2.30	27.84	27.78	27.92
20+20	100	0	100	0		23.83	23.80	23.81	5.30	2.30	26.83	26.80	26.81
20+20	1	0	1	99		20.98	20.81	20.70	5.30	2.30	23.98	23.81	23.70
20+20	1	0	1	0		21.22	21.32	21.12	5.30	2.30	24.22	24.32	24.12
20+20	1	99	1	0		25.50	25.40	25.39	5.30	2.30	28.50	28.40	28.39
20+20	100	0	1	99		21.86	21.82	21.81	5.30	2.30	24.86	24.82	24.81
20+20	0	0	1	99	16-QAM	25.03	25.06	25.04	5.30	2.30	28.03	28.06	28.04
20+20	1	0	0	0		25.48	25.53	25.45	5.30	2.30	28.48	28.53	28.45
20+20	100	0	0	0		23.84	23.78	23.82	5.30	2.30	26.84	26.78	26.82
20+20	100	0	100	0		23.28	23.21	23.05	5.30	2.30	26.28	26.21	26.05
20+20	1	0	1	99		20.99	20.85	20.80	5.30	2.30	23.99	23.85	23.80
20+20	1	0	1	0		21.27	21.37	21.24	5.30	2.30	24.27	24.37	24.24
20+20	1	99	1	0		25.49	25.50	25.46	5.30	2.30	28.49	28.50	28.46
20+20	100	0	1	99		22.04	22.12	22.02	5.30	2.30	25.04	25.12	25.02
20+20	0	0	1	99	64-QAM	23.78	23.68	23.83	5.30	2.30	26.78	26.68	26.83
20+20	1	0	0	0		24.28	24.27	24.33	5.30	2.30	27.28	27.27	27.33
20+20	100	0	0	0		22.84	22.94	22.94	5.30	2.30	25.84	25.94	25.94
20+20	100	0	100	0		22.44	22.31	22.22	5.30	2.30	25.44	25.31	25.22
20+20	1	0	1	99		19.63	19.41	19.38	5.30	2.30	22.63	22.41	22.38
20+20	1	0	1	0		19.90	19.81	19.85	5.30	2.30	22.90	22.81	22.85
20+20	1	99	1	0		21.00	21.00	21.01	5.30	2.30	24.00	24.00	24.01
20+20	100	0	1	99		21.98	22.04	21.92	5.30	2.30	24.98	25.04	24.92

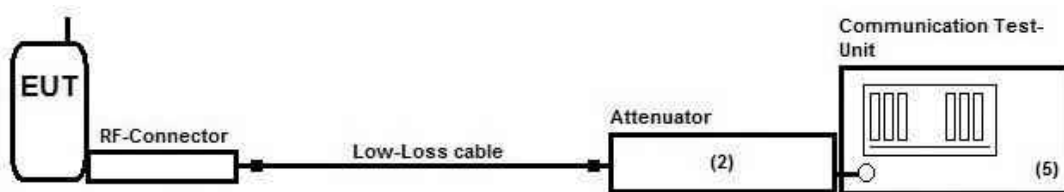
4.3 Peak to Average ratio (PAPR)

4.3.1 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 set to highest transmit power condition.

4.3.2 Measurement Location

Test site	120919 - Conducted Emission
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4.3.3 Limit

Peak to average power ratio [dB]
≤ 13

4.3.4 Result

Band	Operation Mode	PAPR [dB]	Result
LTE Band 2	1	4.43	Passed
LTE Band 4	2	4.56	Passed
LTE Band 5	3	3.76	Passed
LTE Band 7	4	4.32	Passed
LTE Band 12	5	3.68	Passed
LTE Band 13	6	4.14	Passed
LTE Band 26	7	4.67	Passed
LTE Band 41	8	4.46	Passed
LTE Band 66	9	4.75	Passed

Remark: for more information and graphical plot see annex A1 **CETECOM_TR20-1-0170701T08a-C2-A1**

According KDB 971168D01 v03r01 two method are allowed.

Chapter 5.7.2 Sub clause 5.2.3.4 of ANSI C63.26-2015 CCDF-Method (0.1% probability)

Chapter 5.7.3: Sub clause 5.2.6 of ANSI C63.26-2015 [PAPR (dB)= P_{PK} (dBm or dBW) – P_{Avg} (dBm or dBW)]

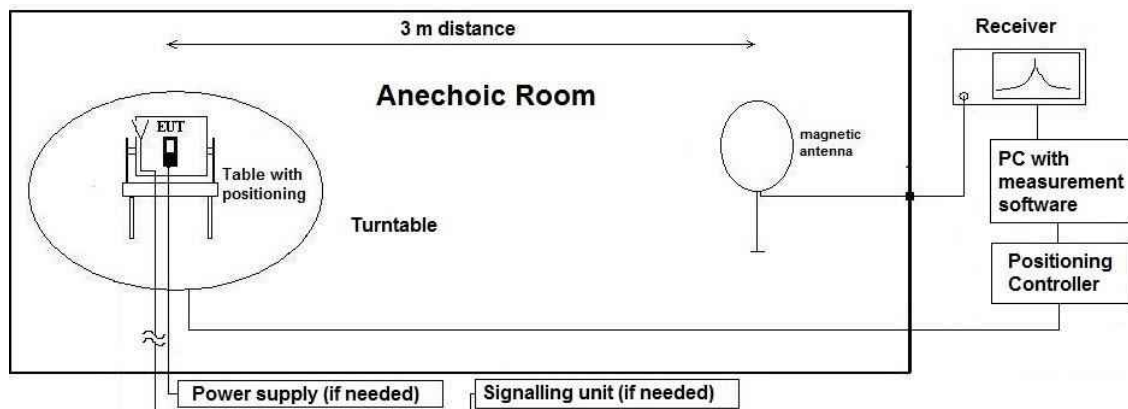
4.4 Radiated field strength emissions below 30 MHz

4.4.1 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 maintaining 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.

4.4.2 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		

4.4.3 Measurement Location

Test site	120901 - SAC - Radiated Emission <1GHz
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4.4.4 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

4.4.5 Result

Diagram	Band	Operation Mode	Maximum Level [$\text{dB}\mu\text{V}/\text{m}$] Frequency Range 0.009 – 30 MHz	Result
2.201	LTE FDD 2	1	No critical Level found	Passed
2.202	LTE FDD 2	1	No critical Level found	Passed
2.401	LTE FDD 4	2	No critical Level found	Passed
2.501	LTE FDD 5	3	No critical Level found	Passed
2.701	LTE FDD 7	4	No critical Level found	Passed
2.1201	LTE FDD 12	5	No critical Level found	Passed
2.1301	LTE FDD 13	6	No critical Level found	Passed
2.2601	LTE FDD 26	7	No critical Level found	Passed
2.4101	LTE FDD 41	8	No critical Level found	Passed
2.6601	LTE FDD 66	9	No critical Level found	Passed

Remark: for more information and graphical plot see annex A1 **CETECOM_TR20-1-0170701T08a-C2-A1**

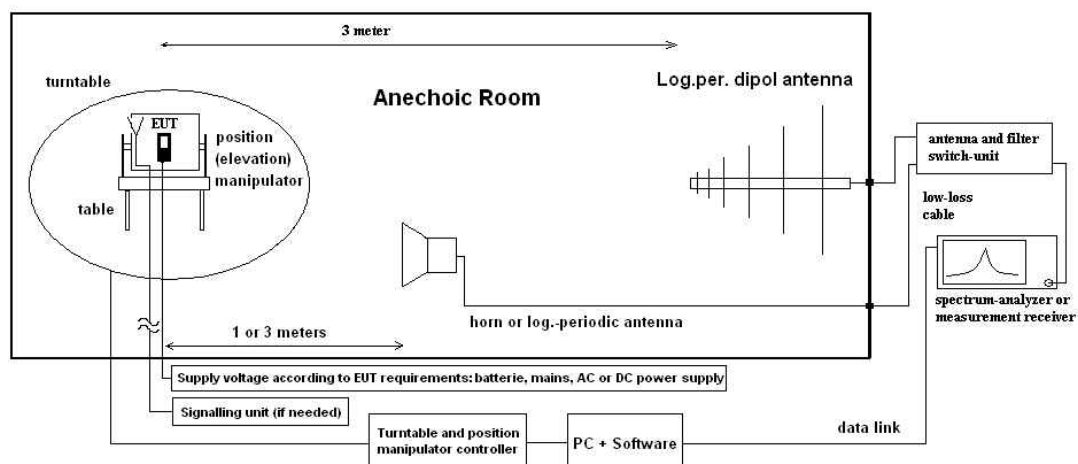
- EUT Elevation has been performed 0° and 90° with the Operation mode 1,
- worst case position has been found by EUT Elevation 0°,
- Rest Operation mode has been carried out with worst case position.

4.5 Radiated spurious emissions

4.5.1 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.

4.5.2 Measurement Location

Test site	120904 - FAC1 - Radiated Emissions
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4.5.3 Limit

Operation band	Frequency Range [MHz]	Limit [dBm]	Detector [MaxHold]	RBW / VBW [MHz]
LTE2	30 - 19100	-13	Peak	0.1/0.3
LTE4	30 - 18000	-13	Peak	0.1/0.3
LTE5	30 - 9000	-13	Peak	0.1/0.3
LTE7	30 - 2496	-25	Peak	0.1/0.3
	2496 - 2499	-10		
	2572 - 2577	-10		
	2577 - 2592	-13		
	2592 - 26000	-25		
LTE12	30 - 8000	-13	Peak	0.1/0.3
LTE13	30 - 9000	-13	RMS	0.1 / 1
	763-775 and 793-805	-35 (RBW = 6.25 kHz, ERP)		
	1559 - 1610	-40 (RBW = 1 MHz)		
LTE26	30 - 9000	-13	Peak	0.1/0.3
LTE41	30 - 2496	-25	Peak	0.1/0.3
	2496 - 2499	-10		
	2572 - 2577	-10		
	2577 - 2592	-13		
	2592 - 27000	-25		
LTE66	30 - 18000	-13	Peak	0.1/0.3

4.5.4 Result

Diagram	Operation Mode	30 to 1000 MHz	1 to 2.8 GHz	2.8 to 10 th Harmonics	18 to 26 GHz	Stop Freq [GHz]	Result
8.02	1	No critical peak found	No critical peak found	No critical peak found	-	18	Passed
8.04	2	No critical peak found	No critical peak found	No critical peak found	-	18	Passed
8.05	3	No critical peak found	No critical peak found	No critical peak found	-	9	Passed
8.07a	4	No critical peak found	No critical peak found	-	-	2.8	Passed
8.07b	4	-	-	No critical peak found	-	18	Passed
8.07c	4	-	-	-	No critical peak found	26	Passed
8.12	5	No critical peak found	No critical peak found	No critical peak found	-	8	Passed
8.13	6	No critical peak found	-24.09 dBm	No critical peak found	-	9	Passed
8.13a	6	No critical peak found	-	-	-	0.763 - 0.806	Passed
8.13b	6	-	No critical peak found	-	-	1.559 – 1.610	Passed
8.26	7	No critical peak found	No critical peak found	No critical peak found	-	9	Passed
8.41a	8	No critical peak found	No critical peak found	-	-	2.8	Passed
8.41b	8	-	-	-36.82 dBm	-	18	Passed
8.41c	8	-	-	-	No critical peak found	27	Passed
8.66	9	No critical peak found	No critical peak found	No critical peak found	-	20	Passed

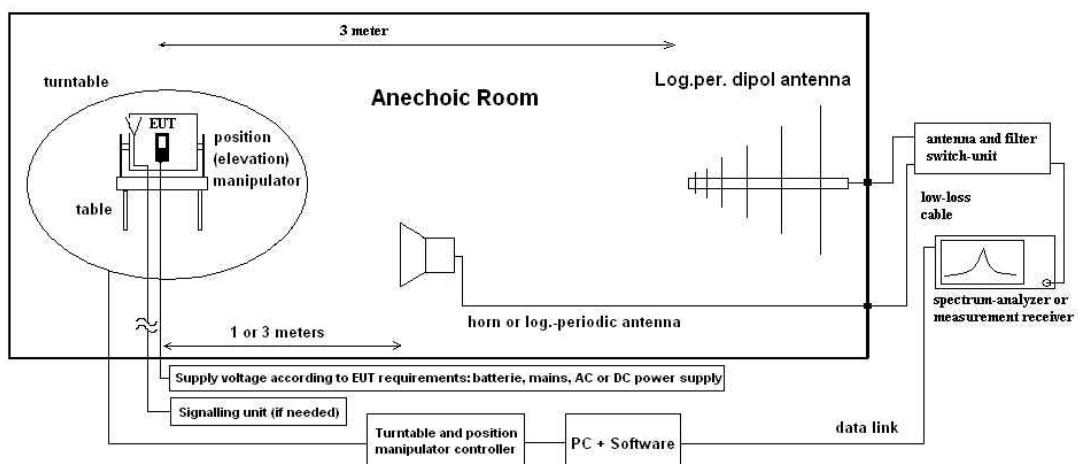
Remark: for more information and graphical plot see annex A1 **CETECOM_TR20-1-0170701T08a-C2-A1**

4.6 Radiated Band Edge

4.6.1 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.

4.6.2 Measurement Location

Test site 1	120904 - FAC1 - Radiated Emissions
Test site 2	120907 – FAC2 Radiated emissions
Test site 3	120901 – SA Radiated emissions (f<1GHz)

4.6.3 Limit

Operation band	Frequency Range [MHz]	Limit [dBm]	Detector [MaxHold]	RBW / VBW [MHz]
LTE 2	Below 1850 and above 1910	-13	Peak	0.1 / 1
LTE 4	Below 1710 and above 1755	-13	Peak	0.1 / 1
LTE 5	Below 824 and above 849	-13	Peak	0.1 / 0.5
LTE 7 LTE 41	Below 2490.5 2490.5 – 2496 2496 - 2500	-25 (RBW = 1 MHz, VBW = 3 MHz) -13 (RBW = 1 MHz, VBW = 3 MHz) -10 (RBW = 1 MHz, VBW = 3 MHz)	RMS	See diagrams
	40 + 10 log (P) 43 + 10 log (P) 55 + 10 log (P)	-10 (RBW = 1 MHz, VBW = 3 MHz) -13 (RBW = 1 MHz, VBW = 3 MHz) -25 (RBW = 1 MHz, VBW = 3 MHz)		
LTE12	697 – 698 MHz 716 - 717 MHz	-13 (RBW = 30 kHz, VBW = 100 kHz) -13 (RBW = 100 kHz, VBW = 300 kHz)	Peak	0.03 / 0.3
LTE13	775 – 776 MHz 787 - 788 MHz	-13 (RBW = 30 kHz, VBW = 100 kHz) -13 (RBW = 100 kHz, VBW = 300 kHz)	Peak	0.03 / 0.3
LTE26	50+10 log (P) 43+10 log(P)	-20 -13	RMS	See diagrams
LTE66	Below 1710 and above 1780	-13	Peak	0.1 / 1

4.6.4 Result

Diagram	LTE Band	Edge [Low / High]	Value [dBm]	Result
9.201	2	Low	No critical peak found	Passed
9.202	2	Low	No critical peak found	Passed
9.203	2	High	No critical peak found	Passed
9.204	2	High	No critical peak found	Passed
9.401	4	Low	No critical peak found	Passed
9.402	4	Low	No critical peak found	Passed
9.403	4	High	No critical peak found	Passed
9.404	4	High	No critical peak found	Passed
9.501	5	Low	-19.70	Passed
9.502	5	Low	-25.71	Passed
9.503	5	High	-20.67	Passed
9.504	5	High	No critical peak found	Passed
9.1201	12	Low	No critical peak found	Passed
9.1202	12	Low	No critical peak found	Passed
9.1203	12	High	No critical peak found	Passed
9.1204	12	High	No critical peak found	Passed
9.1301	13	Low	No critical peak found	Passed
9.1302	13	Low	No critical peak found	Passed
9.1303	13	High	No critical peak found	Passed
9.1304	13	High	No critical peak found	Passed
9.6601	66	Low	-25.95	Passed
9.6602	66	Low	-27.87	Passed
9.6603	66	High	-27.61	Passed
9.6604	66	High	-29.11	Passed

Remark: for more information and graphical plot see annex A1 **CETECOM_TR20-1-0170701T08a-C2-A1**

D003a_Sweep1 D003b_Sweep2	Band 41	Low, Ch 39675	-17.87. max. value	Passed
D004a_Sweep1 D004b_Sweep2	Band 41	Low, Ch 39675	-17.61 max. value	Passed
D007a_Sweep1 D007b_Sweep2	Band 41	Low, Ch 39750	-26.15 max. value	Passed
D008a_Sweep1 D008b_Sweep2	Band 41	Low, Ch 39750	-30.71 max. value	Passed
D20_BEHigh	Band 41	High, Ch 41565	-18.82 max. value	Passed
D21_BEHigh	Band 41	High, Ch 41565	-15.20 max. value	Passed
D22_BEHigh	Band 41	High, Ch 41490	-30.72 max. value	Passed
D23_BEHigh	Band 41	High, Ch 41490	-20.19 max. value	Passed

Remarks:

1. Bandwidth integrated method used of used spectrum-analyzer. A lower measurement bandwidth was used and the result re-calculated to the reference measurement bandwidth of 1MHz.
2. Radiated measurement on worst-case max. radiated power position performed
3. LTE Nominal bandwidth of 10MHz and 20MHz measured
4. for more information and graphical plot see annex A1 **CETECOM_TR20-1-0170701T08a-C2-A1**

D265_BE_low	26	Ch26765	-34.52. max. value	Passed, remark 4
D266_BE_Low	26	Ch26765	-33.78 max. value	Passed, remark 4
D267_BE_Low	26	Ch26697	-25.59 max. value	Passed, remark 4
D268_BE_low	26	Ch26697	-24.88 max. value	Passed, remark 4
9.260_BE_high	26	Ch26965	-36.40 max. value	Passed, remark 5
9.262_BE_High	26	Ch26965	-37.24 max. value	Passed, remark 5
9.263_BE_High	26	Ch27033	-23.34 max. value	Passed, remark 5
9.264_BE_High	26	Ch27033	-25.57 max. value	Passed, remark 5

Remarks:

1. Bandwidth integrated method used of used spectrum-analyzer. A lower measurement bandwidth was used and the results re-calculated to the reference measurement bandwidth of 1MHz.
2. Radiated measurement on worst-case max. radiated power position performed
3. LTE Nominal bandwidth of 1.4MHz and 15MHz measured
4. NS12 value activated according 3GPP TS36.101 V17.1.0, Chapter 6.2.4, Table 6.2.4-6 for low band-edge channels
5. NS15 value activated according 3GPP TS36.101 V17.1.0, Chapter 6.2.4, Table 6.2.4-9 for high band-edge channels
6. for more information and graphical plot see annex A1 **CETECOM_TR20-1-0170701T08a-C2-A1**

9.7_05_BE_High_Sweep1 9.7_08_BE_High_Sweep2	7	Ch21400	-29.57 -32.21	Passed (AntV)
9.7_06_BE_high_Sweep1 9.7_07_BE_high_Sweep2	7	Ch21400	-19.66 -23.36	Passed (AntH)
9.7_03_BE_high_Sweep1 9.07_02_BE_high_Sweep2	7	Ch21400	-33.11 -26.95	Passed (Ant V)
9.07_04_BEhigh_Sweep1 9.07_01_BEHigh_Sweep2	7	Ch21400	-25.85 -17.27	Passed (AntH)
9.7_09_BElow_Sweep1 9.7_09_BElow_Sweep2	7	Ch20800	-28.41 -35.13	Passed (AntH)
9.7_12_BElow_Sweep1 9.7_11_BElow_Sweep2	7	Ch20800	-24.56 -34.21	Passed (AntH)
9.7_15_BElow_Sweep1 9.7_16_BElow_Sweep2	7	Ch20800	-26.89 -35.03	Passed (AntV)
9.7_17_BElow_Sweep1 9.7_18_BElow_Sweep2	7	Ch20800	-30.31 -34.57	Passed (AntV)

Remarks:

1. For sweep2, low band-edge: bandwidth integrated method used of used spectrum-analyzer. A lower measurement bandwidth was used and the results re-calculated to the reference measurement bandwidth of 1MHz.
2. Radiated measurement on worst-case max. radiated power position performed
3. LTE Nominal bandwidth of 10MHz measured
4. for more information and graphical plot see annex A1 **CETECOM_TR20-1-0170701T08a-C2-A1**

4.7 Results from external laboratory

None

-

4.8 Opinions and interpretations

None

-

4.9 List of abbreviations

None

-

5 Equipment lists

ID	Description	Manufacturer	SerNo	Cal due date
	120901 - SAC - Radiated Emission <1GHz			2025-Jul-21
20487	CETECOM Semi Anechoic Chamber < 1GHz	ETS-Lindgren GmbH	-	2025-Jul-15
20620	EMI Test Receiver ESU26	Rohde & Schwarz Messgerätebau GmbH	100362	2022-May-21
25038	Loop Antenna HFH2-ZZ	Rohde & Schwarz Messgerätebau GmbH	879824/13	2022-Apr-07
20885	Power Supply EA3632A	Agilent Technologies Deutschland GmbH	75305850	-
20866	Signal Analyzer FSV3030	Rohde & Schwarz Messgerätebau GmbH	101247	2021-Sept-09
20574	Biconilog Hybrid Antenna BTA-L	Frankonia GmbH	980026L	2022-Mai-03
20482	filter matrix Filter matrix SAR 1	CETECOM GmbH	-	-
	120904 - FAC1 - Radiated Emissions			
20341	Digital Multimeter Fluke 112	Fluke Deutschland GmbH	81650455	2022-May-25
20254	High Pass Filter 5HC 2600/12750-1.5KK (GSM1800/1900/DECT)	Trilithic	23042	2022-Apr-15
20868	High Pass Filter AFH-07000	AtlanTecRF	16071300004	2022-Apr-15
20291	High Pass Filter WHJ 2200-4EE (GSM 850/900)	Wainwright Instruments GmbH	14	2022-Apr-15
20020	Horn Antenna 3115 (Subst 1)	EMCO Elektronik GmbH	9107-3699	2022-Jul-19
20302	Horn Antenna BBHA9170 (Meas 1)	Schwarzbeck Mess-Elektronik OHG	155	2023-Apr-15
20549	Log. Per. Antenna HL025	Rohde & Schwarz Messgerätebau GmbH	1000060	2021-Jul-31
20720	Measurement Software EMC32 [FAC]	Rohde & Schwarz Messgerätebau GmbH	V10.xx	-
20611	Power Supply E3632A	Agilent Technologies Deutschland GmbH	KR 75305854	-
20338	Pre-Amplifier 100MHz - 26GHz JS4-00102600-38-5P	Miteq Inc.	838697	2022-Apr-15
20484	Pre-Amplifier 2,5GHz - 18GHz AMF-5D-02501800-25-10P	Miteq Inc.	1244554	2022-Apr-15

ID	Description	Manufacturer	SerNo	Cal due date
20287	Pre-Amplifier 25MHz - 4GHz AMF-2D-100M4G-35-10P	Miteq Inc.	379418	2022-Apr-15
20594	Wideband Radio Communication Tester CMW500	Rohde & Schwarz Messgerätebau GmbH	101757	2022-May-25
20690	Spectrum Analyzer FSU	Rohde & Schwarz Messgerätebau GmbH	100302/026	2023-May-23
20439	Ultrabroadband-Antenna HL562	Rohde & Schwarz Messgerätebau GmbH	100248	2023-Mar-10
120919 - Conducted Emission				
20457	DC-Power supply, 0-5A EA-3013 S	EA Elektro-Automatik GmbH & Co. KG	9624680	-
20468	Digital Multimeter Fluke 112	Fluke Deutschland GmbH	90090455	2024-Jun-16
20546	Radio Communication Tester CMU200	Rohde & Schwarz Messgerätebau GmbH	106436	2022-May-23
120907 - FAC2				
20732	Signal- and Spectrum Analyzer FSW67	Rohde & Schwarz Messgerätebau GmbH	104023	2022-Mai-27
20302	Horn Antenna BBHA9170 (Meas 1)	Schwarzbeck Mess-Elektronik OHG	155	2023-Apr-15
20133	Horn Antenna 3115 (Meas1)	EMCO Elektronik GmbH	9012-3629	2023-April-07

6 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.

RF-Measurement	Reference	Frequency range	Calculated uncertainty based on a confidence level of 95%						Remarks
Conducted emissions (U _{CISPR})	-	9 kHz - 150 kHz	4.0 dB						-
		150 kHz - 30 MHz	3.6 dB						
Power Output radiated	-	30 MHz - 4 GHz	3.17 dB						Substitution method
Power Output conducted	-	Set-up No.	Cel-C1	Cel-C2	BT1	W1	W2	--	-
		9 kHz - 12.75 GHz	N/A	0.60	0.7	0.25	N/A	--	
		12.75 GHz - 26.5 GHz	N/A	0.82	--	N/A	N/A	--	
Conducted emissions on RF-port	-	9 kHz - 2.8 GHz	0.70	N/A	0.70	N/A	0.69	--	N/A - not applicable
		2.8 GHz - 12.75 GHz	1.48	N/A	1.51	N/A	1.43	--	
		12.75 GHz - 18 GHz	1.81	N/A	1.83	N/A	1.77	--	
		18 GHz - 26.5 GHz	1.83	N/A	1.85	N/A	1.79	--	
Occupied bandwidth	-	9 kHz - 4 GHz	0.1272 ppm (Delta Marker)						Frequency error
			1.0 dB						Power
Emission bandwidth	-	9 kHz - 4 GHz	0.1272 ppm (Delta Marker)						Frequency error
	-		See above: 0.70 dB						Power
Frequency stability	-	9 kHz - 20 GHz	0.0636 ppm						-
Radiated emissions Enclosure	-	150 kHz - 30 MHz	5.01dB						Magnetic field strength
		30 MHz - 1 GHz	5.83 dB						Electrical Field strength
		1 GHz - 18 GHz	4.91 dB						
		18-26.5 GHz	5.06 dB						

7 Versions of test reports (change history)

Version	Applied changes	Date of release
--	Initial release	2021-Jul-15
C1	Added remark to chapter 1.3 regarding to initial module report and 3.2. regarding to antenna gain.	2021-Sep-29
C2	1.3 Remarks of NP tests added to results of modular approval and module report name, issue date and test lab added as reference 3.2 Antenna gain corrected to the latest tune-up document "MPE Information Requirements_v4" 3.3 Module report name, issue date and test lab added as reference 4.1.4 Module report name, issue date and test lab added as reference 4.2 Calculation corrected to the latest tune-up document "MPE Information Requirements_v4"	2021-Oct-15
C3	Gain for EIRP calculation table for LTE B04 and B05 QAM corrected	2021-Oct-25
C4	References to modular reports corrected EIRP calculations for LTE B07 CA und LTE B41 CA added	2021-Oct-29

End Of Test Report