FCC Part 22/24/27 Compliance Test Report

Test Report no.:	FCC22&24&27_RM-820_02.docx	**Date of Report:**	29-Sep-2012
Number of pages:	50	**Customer's Contact person:**	Lasse Vaattovaara
Testing laboratory:	TCC Nokia Tampere Laboratory P.O. Box 68 Sinitaival 5 FIN-33720 TAMPERE, FINLAND Tel. +358 (0) 7180 46800 Fax. +358 (0) 7180 46880	**Customer:**	Nokia Corporation P.O.Box(86) Joensuunkatu 7H / Kiila 1B FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 45220
FCC listing no.: **IC recognition no.:**	533467 661V-1		
Tested devices/ accessories:	**Phone RM-820 / AC-Charger AC-50U / Headset WH-208**		
FCC ID:	PYAA	**IC:**	661V-A
Supplement reports:	-		
Testing has been carried out in accordance with:	**CFR 47, FCC rules Parts 22/24/27 , TIA-603-C-2004 and IC standards, RSS-GEN (Issue 3, December 2010), RSS-132 (Issue 2, September 2005), RSS-133 (Issue 5, February 2009), RSS-139 (Issue 2, February 2009). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".**		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.		
Test Results:	**The EUT complies with the requirements in respect of all parameters subject to the test.** The test results relate only to devices specified in this document		
Date and signature for the contents:	Digitally signed by Sami Lehtonen DN: cn=Sami Lehtonen, o=Nokia, ou, email=sami.k.lehtonen@nokia.com, c=FI Date: 2012.09.29 08:41:48 +03'00'		

Sami Lehtonen, System Specialist, EMC

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1. Summary for FCC Part 22/24/27 Compliance Test Report

Date of receipt	28-Aug-2012
Testing completed	05-Jul-2012
The customer's contact person	Lasse Vaattovaara
Test Plan referred to	T:\Projects\RM-820\TestPlan\RS_testplan_RM-820_EMC_FCC_SAR_HAC.xlsm
Notes	-
Document name	T:\Projects\RM-820\EMC\FCC22&24&27_RM-820_02.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:
GSM/WCDMA/WLAN/Bluetooth
The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-820	004402138707215	2003		1123.0005.8325.9680.139	16361
AC-Charger	AC-50U	4090432185270513678;0675620	-	-	-	16341
Headset	WH-208	-	-	-	-	16345
Phone	RM-820	004402138707520	2003		1123.0005.8325.9680.139	16349
Phone	RM-820	004402138707280	2003		1123.0005.8325.9680.139	16350
Phone	RM-820	004402138707488	2003		1123.0005.8325.9680.139	16356
Phone	RM-820	004402138707223	2003		1123.0005.8325.9680.139	16352
Phone	RM-820	004402138707512	2003		1123.0005.8325.9680.139	16351
Phone	RM-820	004402138708825	2003	-	1123.0000.8325.9680.139.	16334
AC-Charger	AC-50U	4090432185270513671;0675620	-	-	-	16340
Headset	WH-208	-	-	-	-	16344
Phone	RM-820	004402138707389	2003	-	1230.0035.9754.12312	42882

1.2. Summary of Test Results

GSM850:

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1046(a), 22.913(a)	4.4	Conducted RF output power	NP
§22.913(a)	4.4	Radiated RF output power	PASSED
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§22.917(a)	4.5	Band edge compliance	PASSED
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	PASSED
§2.1055(a)	4.3	Frequency stability, temperature variation	PASSED
§2.1055(d)	4.3	Frequency stability, voltage variation	PASSED

WCDMA 850 (Band V):

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1046(a), 22.913(a)	4.4	Conducted RF output power	NP
§22.913(a)	4.4	Radiated RF output power	PASSED
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§22.917(a)	4.5	Band edge compliance	PASSED
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	PASSED
§2.1055(a)	4.3	Frequency stability, temperature variation	PASSED
§2.1055(d)	4.3	Frequency stability, voltage variation	PASSED

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LTE 850 (Band V):

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1046(a), 22.913(a)	4.4	Conducted RF output power	NP
§22.913(a)	4.4	Radiated RF output power	PASSED
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§22.917(a)	4.5	Band edge compliance	PASSED
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	PASSED
§2.1055(a)	4.3	Frequency stability, temperature variation	PASSED
§2.1055(d)	4.3	Frequency stability, voltage variation	PASSED

GSM1900:

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§24.232(b)	6.4	Radiated RF output power	PASSED
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§24.238(a)	6.5	Band edge compliance	PASSED
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	PASSED
§2.1055(d)	6.3	Frequency stability, voltage variation	PASSED

WCDMA 1900 (Band II):

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§24.232(b)	6.4	Radiated RF output power	PASSED
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§24.238(a)	6.5	Band edge compliance	PASSED
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	PASSED
§2.1055(d)	6.3	Frequency stability, voltage variation	PASSED

LTE 1900 (Band II):

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§24.232(b)	6.4	Radiated RF output power	PASSED
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§24.238(a)	6.5	Band edge compliance	PASSED
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§24.238(a), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	PASSED
§2.1055(d)	6.3	Frequency stability, voltage variation	PASSED

LTE1700 (Band 4):

Section in CFR 47	Section in RSS-GEN or RSS-139	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	NP
§27.50(d)(4)	6.4	Radiated RF output power	PASSED
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED

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§27.53(h)	6.5	Band edge compliance	PASSED
§27.53(h), §2.1051	6.5	Spurious emissions at antenna terminals	NP
§27.53(h), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	PASSED
§2.1055(d)	6.3	Frequency stability, voltage variation	PASSED

LTE700 Lower (Band 17):

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1046 (a)	N/A	Conducted RF output power	NP
§27.50(c)(10)	N/A	Radiated RF output power	PASSED
§2.1049(h)	N/A	99 % occupied bandwidth	PASSED
§27.53(g)	N/A	Band edge compliance	PASSED
§27.53(g), §2.1051	N/A	Spurious emissions at antenna terminals	NP
§27.53(g), §2.1051	N/A	Spurious radiated emissions	PASSED
§2.1055(a)	N/A	Frequency stability, temperature variation	PASSED
§2.1055(d)	N/A	Frequency stability, voltage variation	PASSED

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 TCC Nokia Laboratory.

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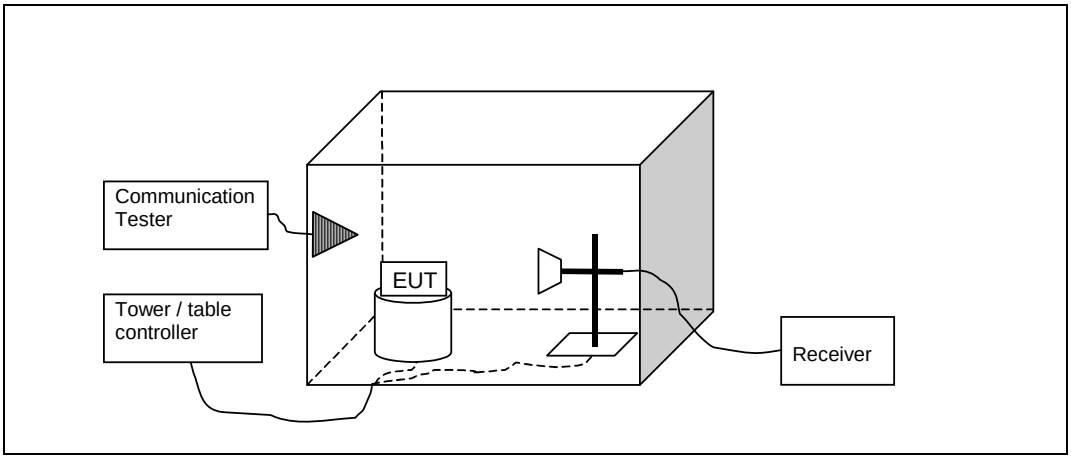
2. Radiated RF output power

(FCC §22.913(a), §24.232(b), §27.53(h), §27.53(g), RSS-132 4.4, RSS-133 6.4)

EUT with DUT number	RM-820, DUT 16349
Accessories with DUT numbers	-
Operation Voltage [V] / [Hz]	-
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 35 / 101.4
Date of measurements	26-Jun-2012
Measured by	Kalle Hannila / Jari Keto

2.1.1 Test Setup



2.2. Test method and limit

The measurement is made according to TIA-603-C-2004 as follows:

The measurement is performed in the Anechoic Chamber with absorbers on the floor and measuring antenna at fixed height using 2-axis EUT position system. The turntable is rotated 360 degrees and this is repeated for both horizontal and vertical receive antenna polarizations.

The EUT is placed on a nonconductive plate at 170 cm height.

The substitution method is used.The measurement results are obtained as described below:

$P[dBm] = P_{SUBST\ TX} + P_{MEAS} - P_{SUBST\ RX} - L_{SUBST\ CABLES} + G_{SUBST\ TX\ ANT}$

Where $P_{SUBST\ TX}$ is signal generator level. P_{MEAS} is measured power level from the EUT. $P_{SUBST\ RX}$ is measured power level in substitute measurement. $L_{SUBST\ CABLE}$ is the loss of the cable between the signal generator and the substitution antenna and $G_{SUBST\ TX\ ANT}$ is substitution antenna gain.

Limits for radiated RF output power measurements

Frequency range [MHz]	Limit [W]	Limit [dBm]
704 - 716	3 ERP	34.8
824 - 849	7 ERP	38.5

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1710 - 1755	1 EIRP	30
1850 - 1910	2 EIRP	33

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2.3. GSM850 TX Test results

GSM mode

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
128 / 824.2	27.88	0.614	-7.03	-10	-51.73	-3.42	3.4	VERTICAL	PASSED
190 / 836.6	28.38	0.689	-5.91	-10	-51.46	-3.77	3.4	VERTICAL	PASSED
251 / 848.8	28.97	0.789	-5.45	-10	-51.31	-3.49	3.4	VERTICAL	PASSED

EGPRS mode, 1 TX Slot

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
128 / 824.2	21.1	0.129	-14.18	-10	-52.1	-3.42	3.4	VERTICAL	PASSED
190 / 836.6	25.2	0.331	-9.16	-10	-51.53	-3.77	3.4	VERTICAL	PASSED
251 / 848.8	24.97	0.314	-8.7	-10	-50.56	-3.49	3.4	VERTICAL	PASSED

2.4. WCDMA 1900 (Band II) TX Test results

Peak Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
9262 / 1852.4	30.05	1.012	-16.05	-10	-50.97	10.13	5	HORIZONTAL	PASSED
9400 / 1880	29.52	0.895	-16.77	-10	-51.11	10.28	5.1	HORIZONTAL	PASSED
9538 / 1907.6	29.65	0.923	-16.84	-10	-51.45	10.14	5.1	HORIZONTAL	PASSED

RMS Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
9262 / 1852.4	26.11	0.408	-19.99	-10	-50.97	10.13	5	HORIZONTAL	PASSED
9400 / 1880	25.69	0.371	-20.6	-10	-51.11	10.28	5.1	HORIZONTAL	PASSED
9538 / 1907.6	25.75	0.376	-20.74	-10	-51.45	10.14	5.1	HORIZONTAL	PASSED

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2.5. WCDMA 850 (Band V) TX Test results

Peak Detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
4132 / 826.4	22.82	0.191	-12.23	-10	-51.87	-3.42	3.4	VERTICAL	PASSED
4183 / 836.6	21.72	0.149	-12.77	-10	-51.66	-3.77	3.4	VERTICAL	PASSED
4233 / 846.6	22.2	0.166	-12.09	-10	-51.18	-3.49	3.4	VERTICAL	PASSED

RMS Detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
4132 / 826.4	18.92	0.078	-16.13	-10	-51.87	-3.42	3.4	VERTICAL	PASSED
4183 / 836.6	17.9	0.062	-16.59	-10	-51.66	-3.77	3.4	VERTICAL	PASSED
4233 / 846.6	18.08	0.064	-16.21	-10	-51.18	-3.49	3.4	VERTICAL	PASSED

2.6. GSM1900 TX Test results

GSM mode

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
512 / 1850.2	31.49	1.409	-14.68	-10	-51.04	10.13	5	HORIZONTAL	PASSED
661 / 1880	32.12	1.629	-14.17	-10	-51.11	10.28	5.1	HORIZONTAL	PASSED
810 / 1909.8	32.31	1.702	-14.24	-10	-51.51	10.14	5.1	HORIZONTAL	PASSED

EGPRS mode, 1 TX Slot

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
512 / 1850.2	28.47	0.703	-17.96	-10	-51.3	10.13	5	HORIZONTAL	PASSED
661 / 1880	29.66	0.925	-16.95	-10	-51.43	10.28	5.1	HORIZONTAL	PASSED
810 / 1909.8	29.97	0.993	-16.61	-10	-51.54	10.14	5.1	HORIZONTAL	PASSED

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2.7. LTE1700 (Band 4) TX Test results

FDD, CBW 5MHz, QPSK, 1 RB mid, Peak Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
19975 / 1712.5	30.4	1.096	-14.59	-11	-50.97	9.82	4.8	HORIZONTAL	PASSED
20175 / 1732.5	29.52	0.895	-15.21	-11	-50.63	10	4.9	HORIZONTAL	PASSED
20375 / 1752.5	28.32	0.679	-16.61	-11	-50.83	10	4.9	VERTICAL	PASSED

FDD, CBW 5MHz, QPSK, 1 RB mid, RMS Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
19975 / 1712.5	27.13	0.516	-18.86	-10	-50.97	9.82	4.8	HORIZONTAL	PASSED
20175 / 1732.5	25.75	0.376	-19.98	-10	-50.63	10	4.9	VERTICAL	PASSED
20375 / 1752.5	25.56	0.360	-20.37	-10	-50.83	10	4.9	VERTICAL	PASSED

FDD, CBW 5MHz, 16QAM, 1 RB mid, Peak Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
19975 / 1712.5	30.47	1.114	-14.52	-11	-50.97	9.82	4.8	HORIZONTAL	PASSED
20175 / 1732.5	29.39	0.869	-15.34	-11	-50.63	10	4.9	HORIZONTAL	PASSED
20375 / 1752.5	27.69	0.587	-17.24	-11	-50.83	10	4.9	HORIZONTAL	PASSED

FDD, CBW 5MHz, 16QAM, 1 RB, RMS Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
19975 / 1712.5	26.47	0.444	-19.52	-10	-50.97	9.82	4.8	HORIZONTAL	PASSED
20175 / 1732.5	25.45	0.351	-20.28	-10	-50.63	10	4.9	HORIZONTAL	PASSED
20375 / 1752.5	25.58	0.361	-20.35	-10	-50.83	10	4.9	VERTICAL	PASSED

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2.8. LTE 1900 (Band II) TX Test results

FDD, CBW 5MHz, QPSK, 1 RB mid, Peak Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
0 / 1850.7	30.44	1.107	-15.66	-10	-50.97	10.13	5	HORIZONTAL	PASSED
18900 / 1880	30.31	1.074	-15.98	-10	-51.11	10.28	5.1	HORIZONTAL	PASSED
18900 / 1909.3	30.36	1.086	-16.13	-10	-51.45	10.14	5.1	HORIZONTAL	PASSED

FDD, CBW 5MHz, QPSK, 1 RB mid, RMS Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
0 / 1850.7	26.46	0.443	-19.64	-10	-50.97	10.13	5	HORIZONTAL	PASSED
18900 / 1880	25.88	0.387	-20.41	-10	-51.11	10.28	5.1	HORIZONTAL	PASSED
18900 / 1909.3	26.61	0.458	-19.88	-10	-51.45	10.14	5.1	HORIZONTAL	PASSED

FDD, CBW 5MHz, 16QAM, 1 RB mid, Peak Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
0 / 1850.7	30.57	1.140	-15.53	-10	-50.97	10.13	5	HORIZONTAL	PASSED
18900 / 1880	30.57	1.140	-15.72	-10	-51.11	10.28	5.1	HORIZONTAL	PASSED
18900 / 1909.3	30.22	1.052	-16.27	-10	-51.45	10.14	5.1	HORIZONTAL	PASSED

FDD, CBW 5MHz, 16QAM, 1 RB mid, RMS Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
0 / 1850.7	23.8	0.240	-22.3	-10	-50.97	10.13	5	HORIZONTAL	PASSED
18900 / 1880	23.92	0.247	-22.37	-10	-51.11	10.28	5.1	HORIZONTAL	PASSED
18900 / 1909.3	24.45	0.279	-22.04	-10	-51.45	10.14	5.1	HORIZONTAL	PASSED

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2.9. LTE700 Lower (Band 17) TX Test results

FDD, CBW 5MHz, QPSK, 1 RB mid, Peak Detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
23755 / 706.5	14.35	0.027	-19.65	-10	-51	-3.4	3.6	VERTICAL	PASSED
23825 / 713.5	16.95	0.050	-17.17	-10	-51.08	-3.36	3.6	VERTICAL	PASSED
23790 / 710	17.22	0.053	-17.11	-10	-51.23	-3.3	3.6	VERTICAL	PASSED

FDD, CBW 5MHz,16QAM, 1 RB mid, Peak Detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
23755 / 706.5	14.41	0.028	-19.59	-10	-51	-3.4	3.6	VERTICAL	PASSED
23825 / 713.5	16.68	0.047	-17.44	-10	-51.08	-3.36	3.6	VERTICAL	PASSED
23790 / 710	16.26	0.042	-18.07	-10	-51.23	-3.3	3.6	VERTICAL	PASSED

FDD, CBW 5MHz, QPSK, 25 RB mid, Peak Detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
23755 / 706.5	14.09	0.026	-19.91	-10	-51	-3.4	3.6	VERTICAL	PASSED
23825 / 713.5	16.61	0.046	-17.51	-10	-51.08	-3.36	3.6	VERTICAL	PASSED
23790 / 710	16.26	0.042	-18.07	-10	-51.23	-3.3	3.6	VERTICAL	PASSED

FDD, CBW 5MHz, 16QAM, 25 RB mid, Peak Detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
23755 / 706.5	18.82	0.076	-15.18	-10	-51	-3.4	3.6	VERTICAL	PASSED
23825 / 713.5	19.49	0.089	-14.63	-10	-51.08	-3.36	3.6	VERTICAL	PASSED
23790 / 710	20.22	0.105	-14.11	-10	-51.23	-3.3	3.6	VERTICAL	PASSED

FDD, CBW 5MHz, 16QAM, 1 RB mid, Peak Detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
23755 / 706.5	18.27	0.067	-15.73	-10	-51	-3.4	3.6	VERTICAL	PASSED
23825 / 713.5	19.96	0.099	-14.16	-10	-51.08	-3.36	3.6	VERTICAL	PASSED
23790 / 710	20.31	0.107	-14.02	-10	-51.23	-3.3	3.6	VERTICAL	PASSED

FDD, CBW 10MHz, QPSK, 50 RB mid, Peak Detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
23755 / 706.5	16.24	0.042	-17.76	-10	-51	-3.4	3.6	VERTICAL	PASSED
23825 / 713.5	16.75	0.047	-17.37	-10	-51.08	-3.36	3.6	VERTICAL	PASSED
23790 / 710	17.03	0.050	-17.3	-10	-51.23	-3.3	3.6	VERTICAL	PASSED

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FDD, CBW 10MHz, QPSK, 50 RB mid, RMS Detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
23755 / 706.5	10.51	0.011	-23.49	-10	-51	-3.4	3.6	VERTICAL	PASSED
23825 / 713.5	10.8	0.012	-23.32	-10	-51.08	-3.36	3.6	VERTICAL	PASSED
23790 / 710	11.43	0.014	-22.9	-10	-51.23	-3.3	3.6	VERTICAL	PASSED

FDD, CBW 5MHz, 16QAM, 1 RB mid, RMS Detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBd]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
23755 / 706.5	13.74	0.024	-20.26	-10	-51	-3.4	3.6	VERTICAL	PASSED
23825 / 713.5	14.77	0.030	-19.35	-10	-51.08	-3.36	3.6	VERTICAL	PASSED
23790 / 710	15.37	0.034	-18.96	-10	-51.23	-3.3	3.6	VERTICAL	PASSED

2.10. LTE 850 (Band V) TX Test results

FDD, CBW 5MHz, QPSK, 1 RB mid, Peak Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
0 / 824.7	20.04	0.101	-15.01	-10	-51.87	-3.42	3.4	VERTICAL	PASSED
20525 / 836.5	19.55	0.090	-14.94	-10	-51.66	-3.77	3.4	VERTICAL	PASSED
20525 / 848.3	19.62	0.092	-14.67	-10	-51.18	-3.49	3.4	VERTICAL	PASSED

FDD, CBW 5MHz, QPSK, 1 RB mid, RMS Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
0 / 824.7	15.38	0.035	-19.67	-10	-51.87	-3.42	3.4	VERTICAL	PASSED
20525 / 836.5	14.72	0.030	-19.77	-10	-51.66	-3.77	3.4	VERTICAL	PASSED
20525 / 848.3	15.24	0.033	-19.05	-10	-51.18	-3.49	3.4	VERTICAL	PASSED

FDD, CBW 5MHz, 16QAM, 1 RB mid, Peak Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
0 / 824.7	20.53	0.113	-14.52	-10	-51.87	-3.42	3.4	VERTICAL	PASSED
20525 / 836.5	19.76	0.095	-14.73	-10	-51.66	-3.77	3.4	VERTICAL	PASSED
20525 / 848.3	19.55	0.090	-14.74	-10	-51.18	-3.49	3.4	VERTICAL	PASSED

FDD, CBW 5MHz, 16QAM, 1 RB mid, RMS Detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	$P_{SUBST\ TX}$ [dBm]	$P_{SUBST\ RX}$ [dBm]	$G_{SUBST\ TX\ ANT}$ [dBi]	$L_{SUBST\ CABLE}$ [dB]	Polarisation	Result
0 / 824.7	15.16	0.033	-19.89	-10	-51.87	-3.42	3.4	VERTICAL	PASSED
20525 / 836.5	15	0.032	-19.49	-10	-51.66	-3.77	3.4	VERTICAL	PASSED
20525 / 848.3	14.99	0.032	-19.3	-10	-51.18	-3.49	3.4	VERTICAL	PASSED

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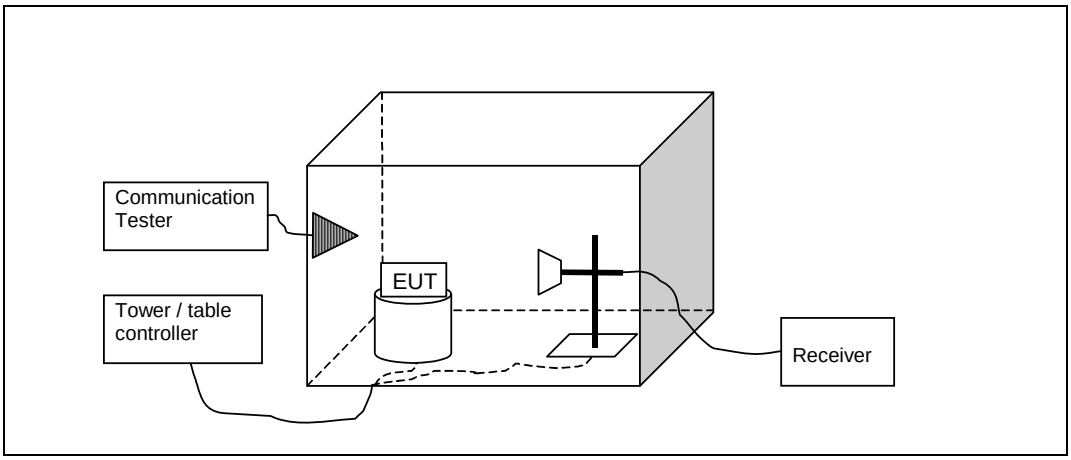
3. Band edge compliance

(FCC §22.917(a), §24.238(a), §27.53(h), §27.53(g), RSS-132 4.5, RSS-133 6.5)

EUT with DUT number	RM-820, DUT 16349
Accessories with DUT numbers	-
Operation Voltage [V] / [Hz]	-
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 35 / 101.4
Date of measurements	26-Jun-2012
Measured by	Kalle Hannila / Jari Keto

3.1.1 Test Setup



3.2. Test method and limit

The measurement is made according to FCC rules parts 22, 24, 27 and IC standards , RSS-132, RSS-133.

Limits for band edge compliance measurements

Operation band	Frequency range [MHz]	Limit [dBm]
LTE 700 Lower	703.9 – 704 and 716 – 716.1 Below 703.9 and above 716.1	-13 (RBW = 30 kHz, ERP) -13 (RBW = 30 kHz, ERP)
GSM 850 / WCDMA 850	Below 824 and above 849	-13
WCDMA 1700 / LTE 1700	Below 1710 and above 1755	-13
GSM 1900 / WCDMA 1900	Below 1850 and above 1910	-13

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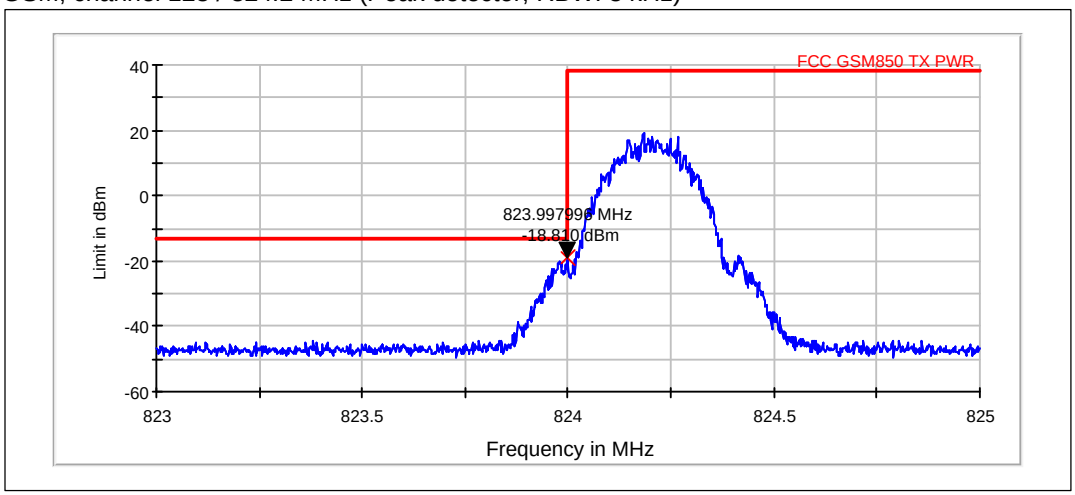
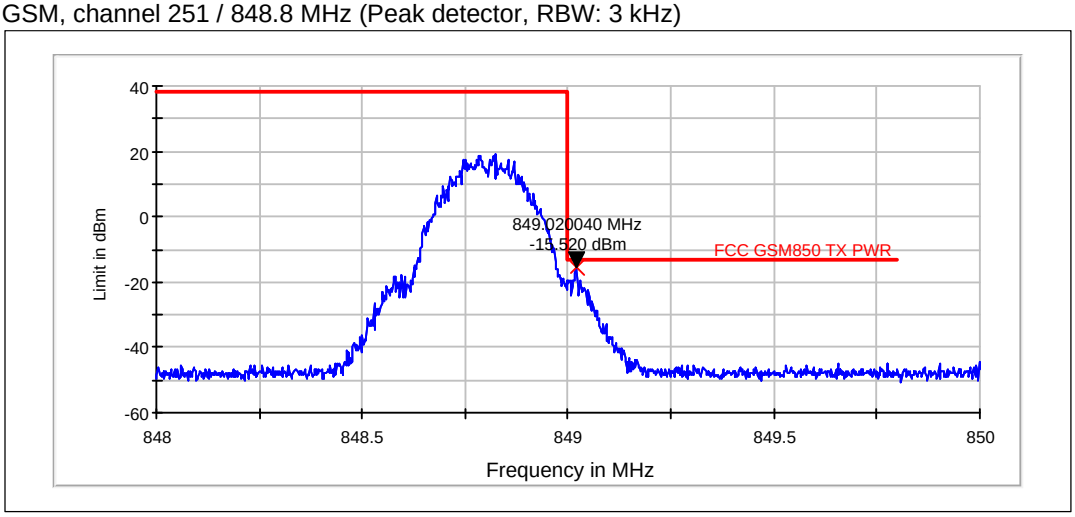
3.3. GSM850 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]	Result
GSM	128 / 824.2	-18.81	PASSED
GSM	251 / 848.8	-15.52	PASSED

GSM, channel 128 / 824.2 MHz (Peak detector, RBW: 3 kHz)



GSM, channel 251 / 848.8 MHz (Peak detector, RBW: 3 kHz)



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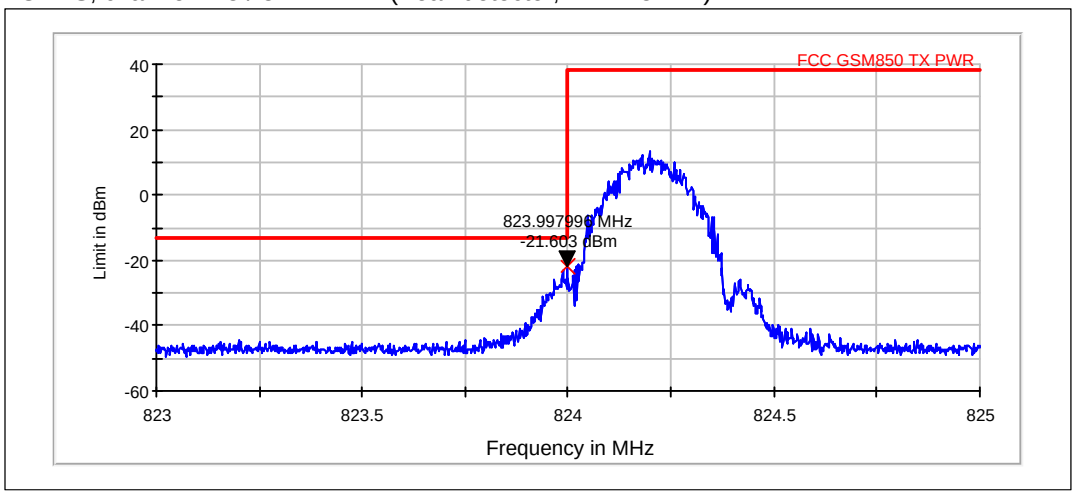
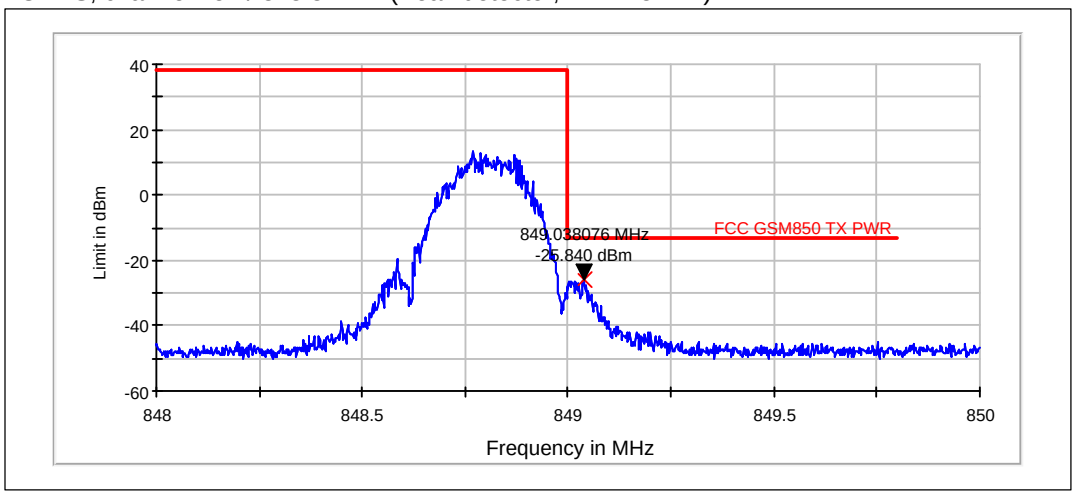
3.4. GSM850-E1 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]	Result
EGPRS	128 / 824.2	-21.6	PASSED
EGPRS	251 / 848.8	-25.84	PASSED

EGPRS, channel 128 / 824.2 MHz (Peak detector, RBW: 3 kHz)



EGPRS, channel 251 / 848.8 MHz (Peak detector, RBW: 3 kHz)



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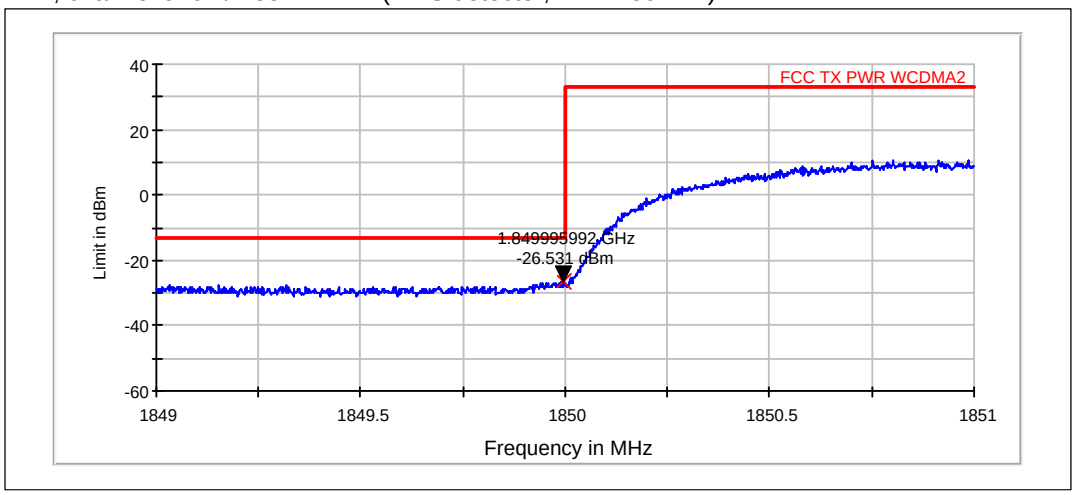
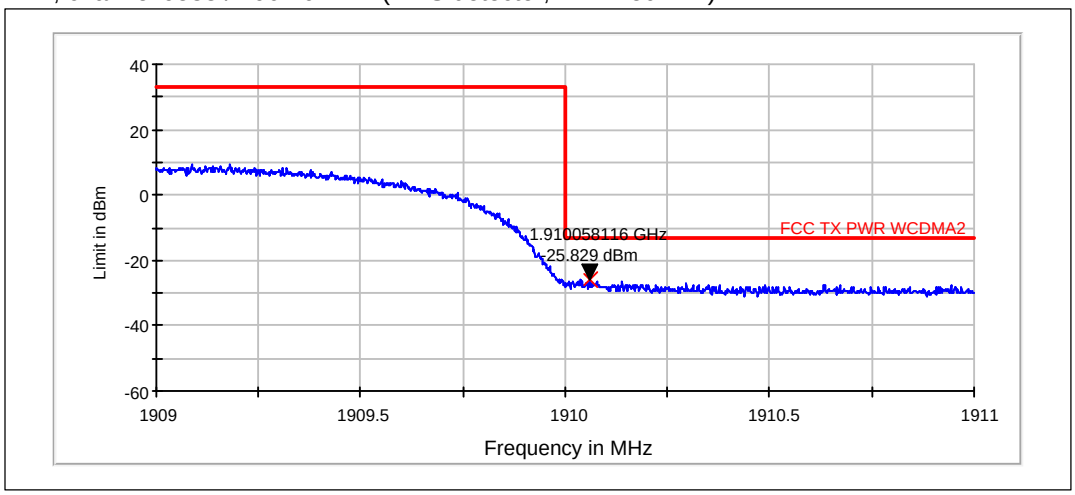
3.5. WCDMA 1900 (Band II) Test results

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]	Result
FDD	9262 / 1852.4	-26.53	PASSED
FDD	9538 / 1907.6	-25.83	PASSED

FDD, channel 9262 / 1852.4 MHz (RMS detector, RBW: 50 kHz)



FDD, channel 9538 / 1907.6 MHz (RMS detector, RBW: 50 kHz)



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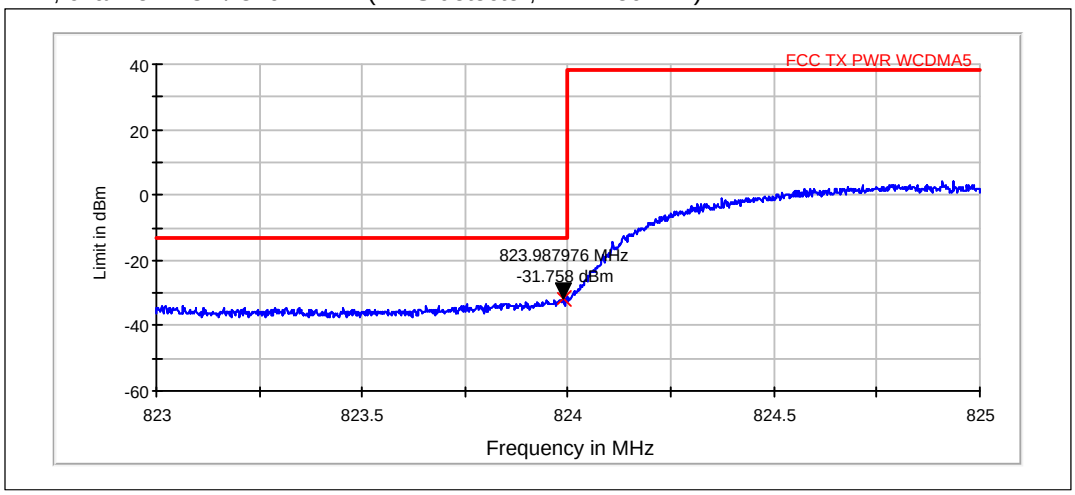
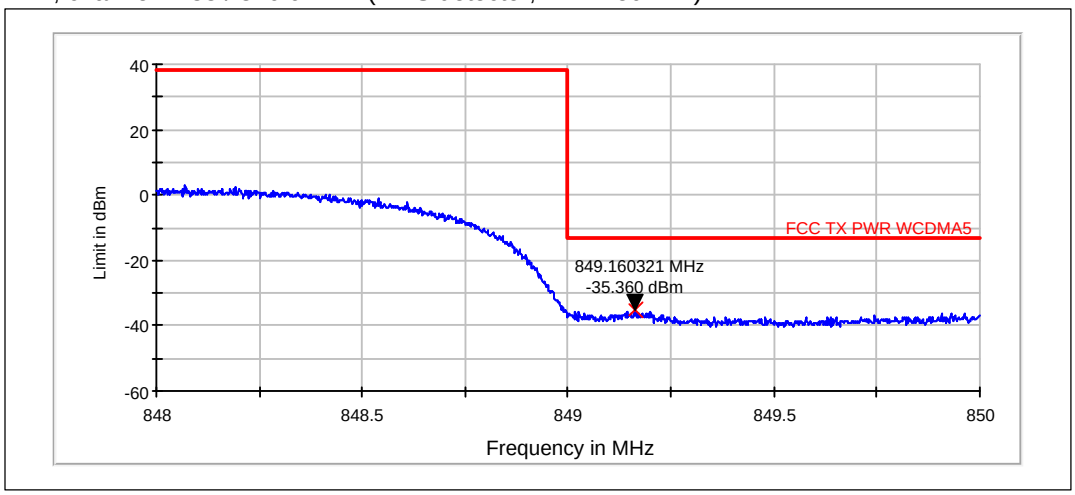
3.6. WCDMA 850 (Band V) Test results

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]	Result
FDD	4132 / 826.4	-31.76	PASSED
FDD	4233 / 846.6	-35.36	PASSED

FDD, channel 4132 / 826.4 MHz (RMS detector, RBW: 50 kHz)



FDD, channel 4233 / 846.6 MHz (RMS detector, RBW: 50 kHz)



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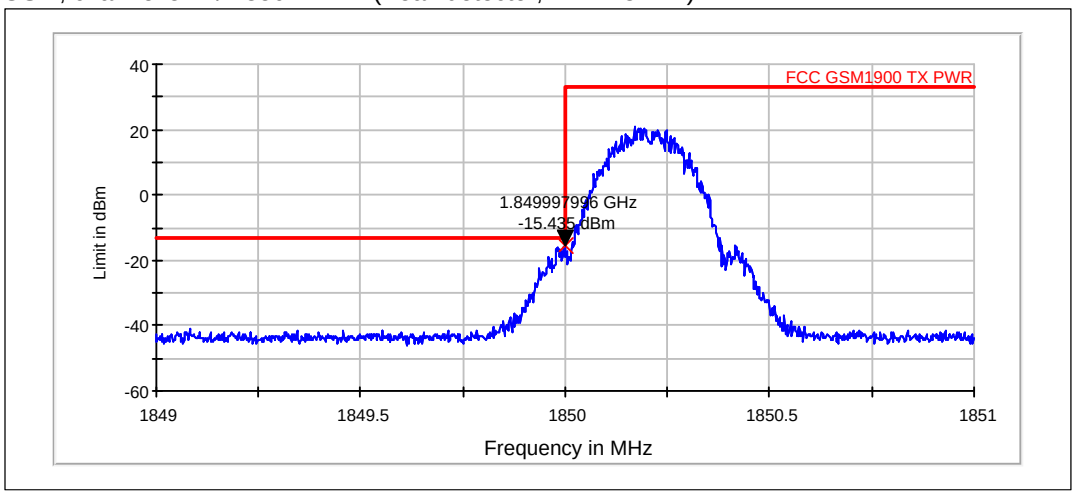
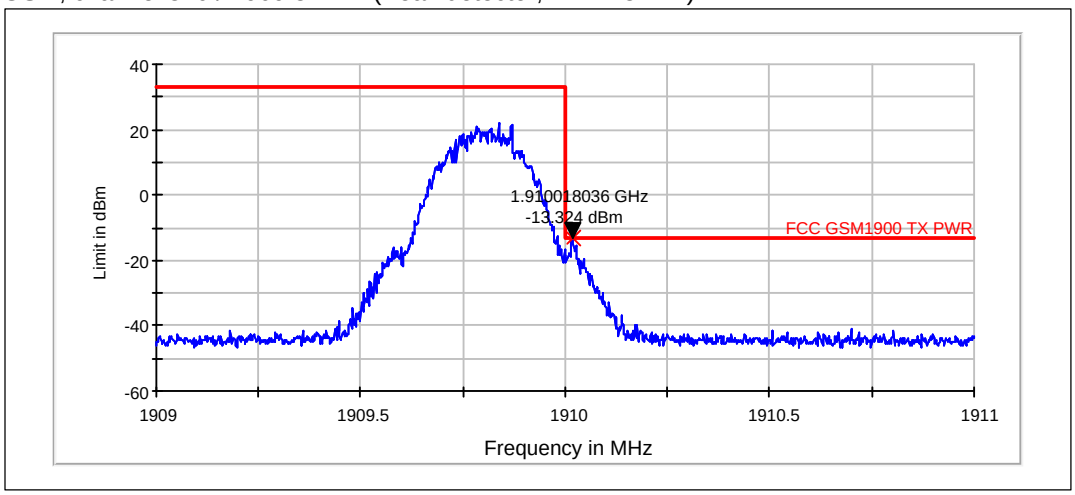
3.7. GSM1900 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]	Result
GSM	512 / 1850.2	-15.44	PASSED
GSM	810 / 1909.8	-13.32	PASSED

GSM, channel 512 / 1850.2 MHz (Peak detector, RBW: 3 kHz)



GSM, channel 810 / 1909.8 MHz (Peak detector, RBW: 3 kHz)



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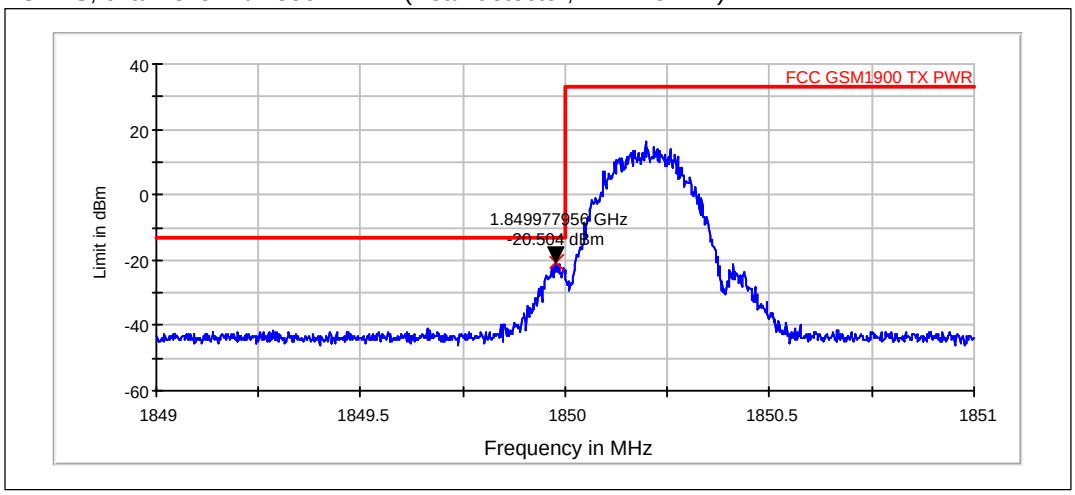
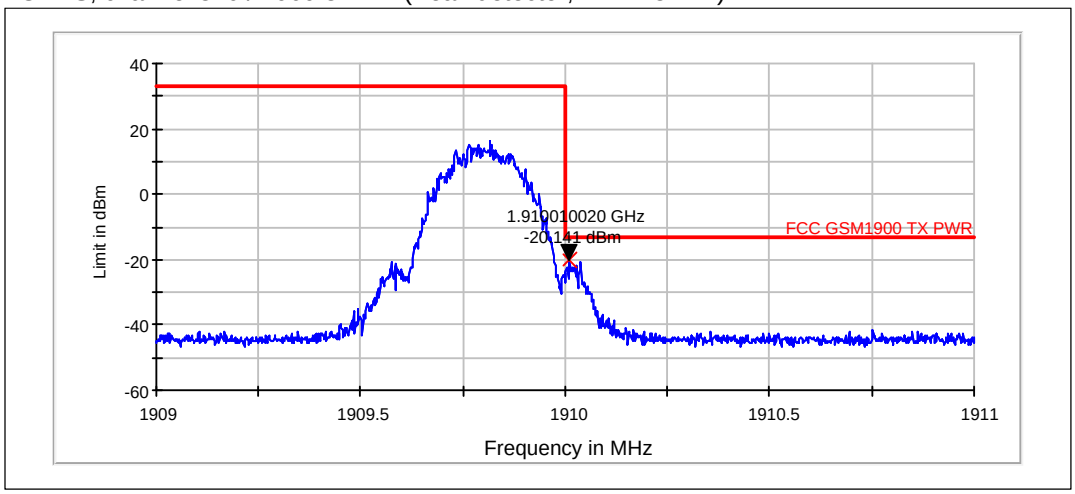
3.8. GSM1900-E1 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]	Result
EGPRS	512 / 1850.2	-20.5	PASSED
EGPRS	810 / 1909.8	-20.14	PASSED

EGPRS, channel 512 / 1850.2 MHz (Peak detector, RBW: 3 kHz)



EGPRS, channel 810 / 1909.8 MHz (Peak detector, RBW: 3 kHz)



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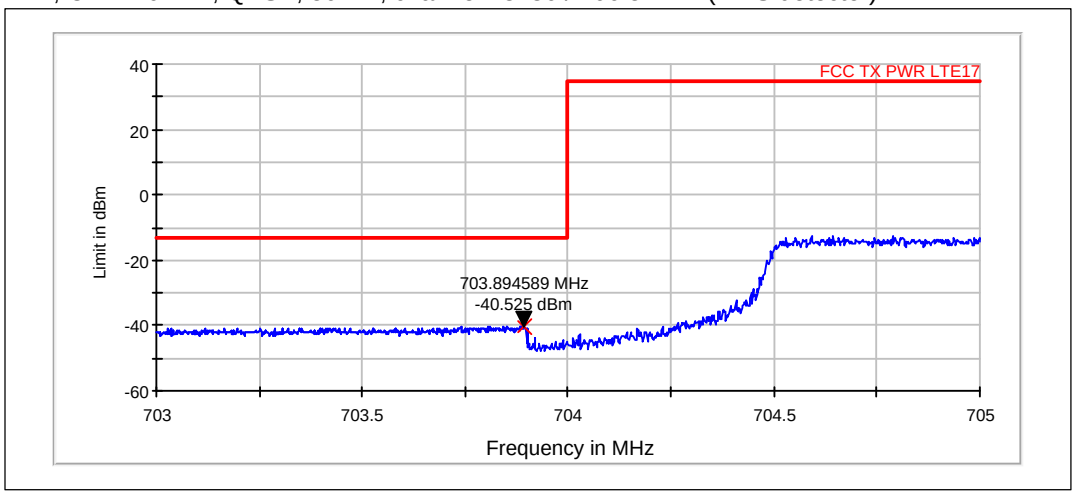
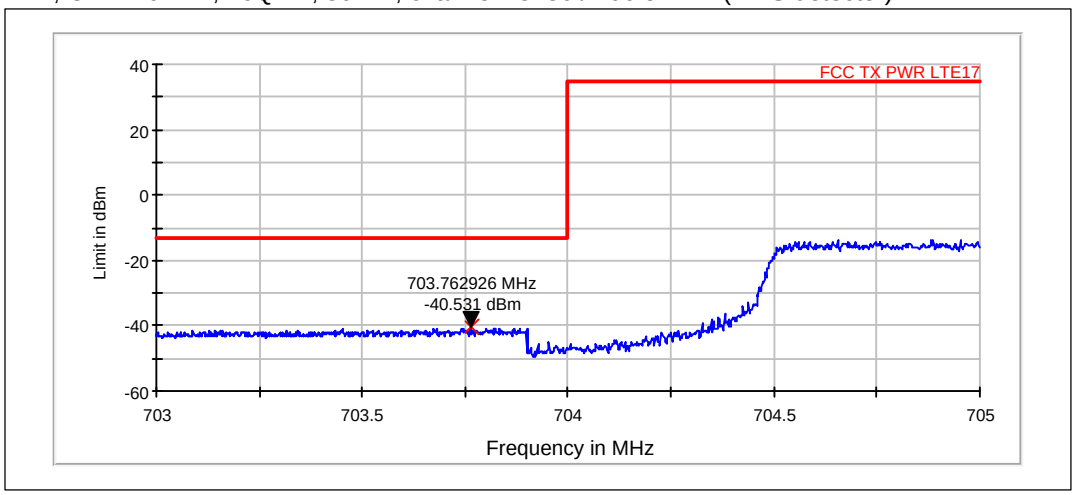
3.9. LTE700 Lower (Band 17) Test results

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	23780 / 706.5	-40.53	PASSED
FDD, CBW 10MHz, 16QAM, 50 RB	23780 / 706.5	-40.53	PASSED
FDD, CBW 10MHz, QPSK, 50 RB	23800 / 713.5	-35.48	PASSED
FDD, CBW 10MHz, 16QAM, 50 RB	23800 / 713.5	-36.46	PASSED

FDD, CBW 10MHz, QPSK, 50 RB, channel 23780 / 706.5 MHz (RMS detector)



FDD, CBW 10MHz, 16QAM, 50 RB, channel 23780 / 706.5 MHz (RMS detector)



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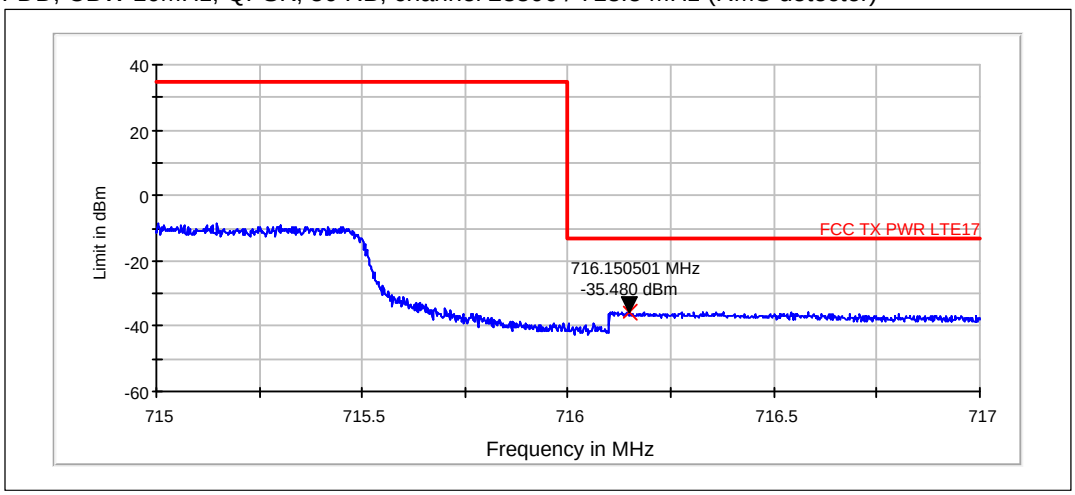
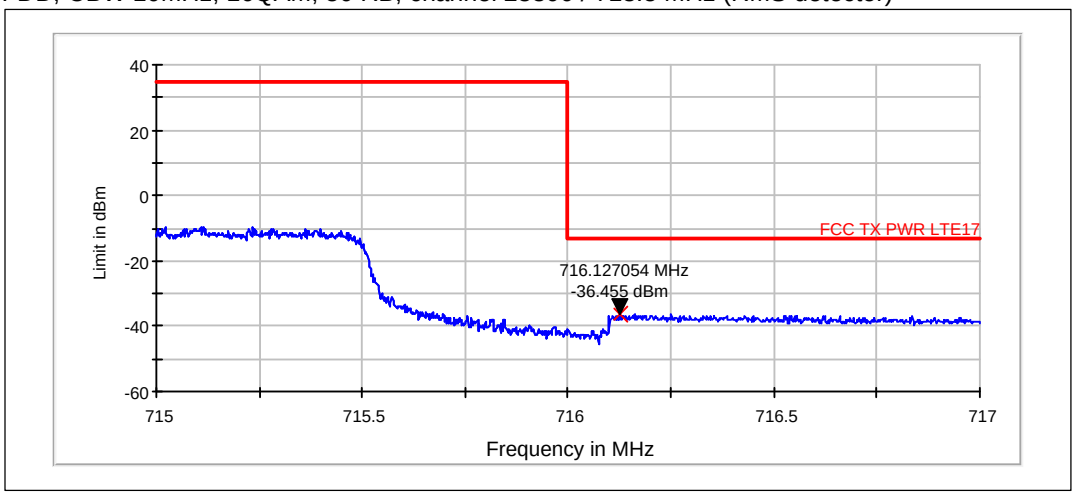
FDD, CBW 10MHz, QPSK, 50 RB, channel 23800 / 713.5 MHz (RMS detector)



FDD, CBW 10MHz, 16QAM, 50 RB, channel 23800 / 713.5 MHz (RMS detector)



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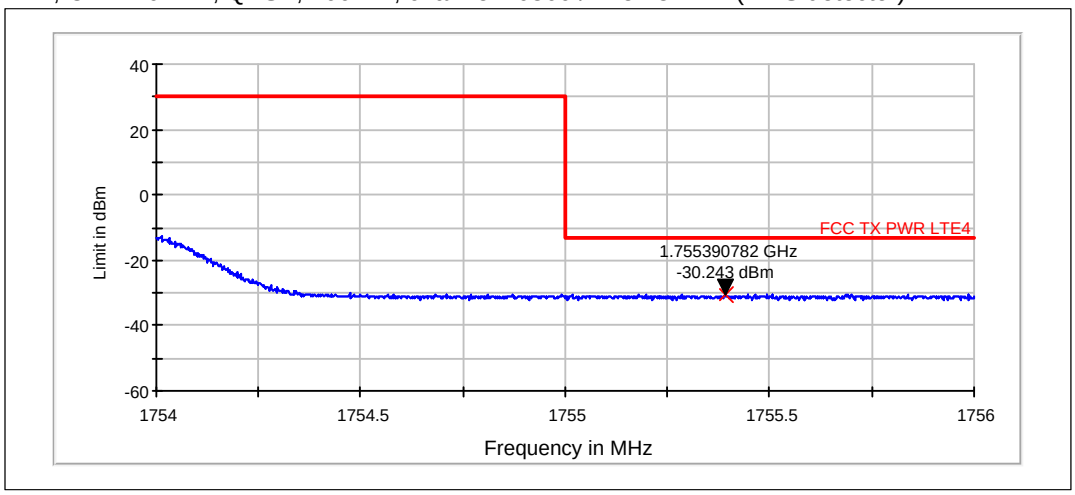
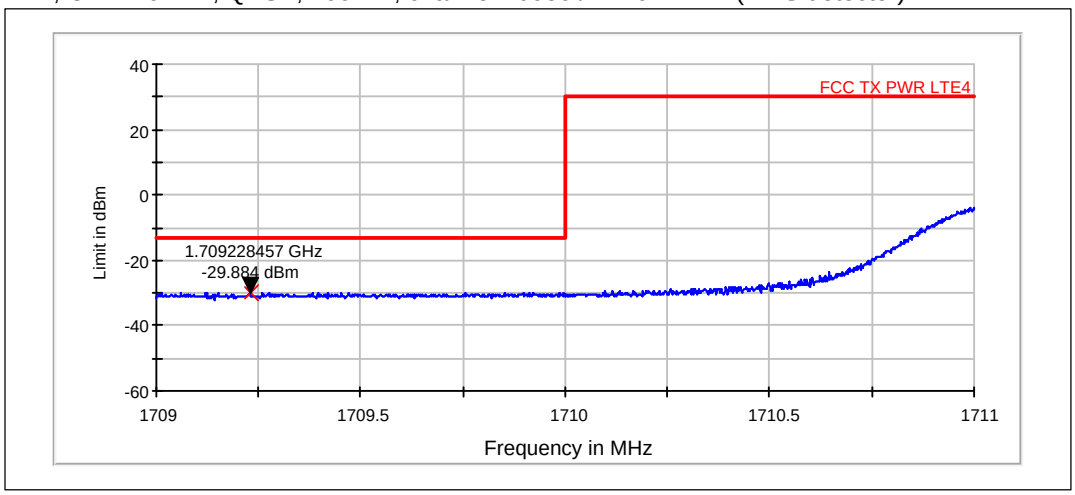
3.10. LTE1700 (Band 4) Test results

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	20300 / 1754.3	-30.24	PASSED
FDD, CBW 20MHz, QPSK, 100 RB	20050 / 1710.7	-29.88	PASSED
FDD, CBW 20MHz, 16QAM, 100 RB	20050 / 1710.7	-29.57	PASSED
FDD, CBW 20MHz, 16QAM, 100 RB	20300 / 1754.3	-30.24	PASSED

FDD, CBW 20MHz, QPSK, 100 RB, channel 20300 / 1754.3 MHz (RMS detector)



FDD, CBW 20MHz, QPSK, 100 RB, channel 20050 / 1710.7 MHz (RMS detector)



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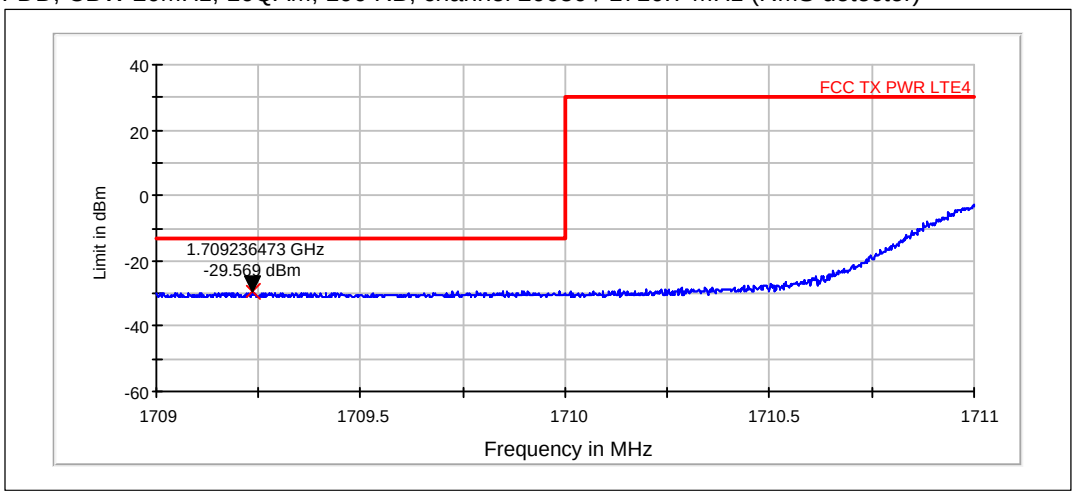
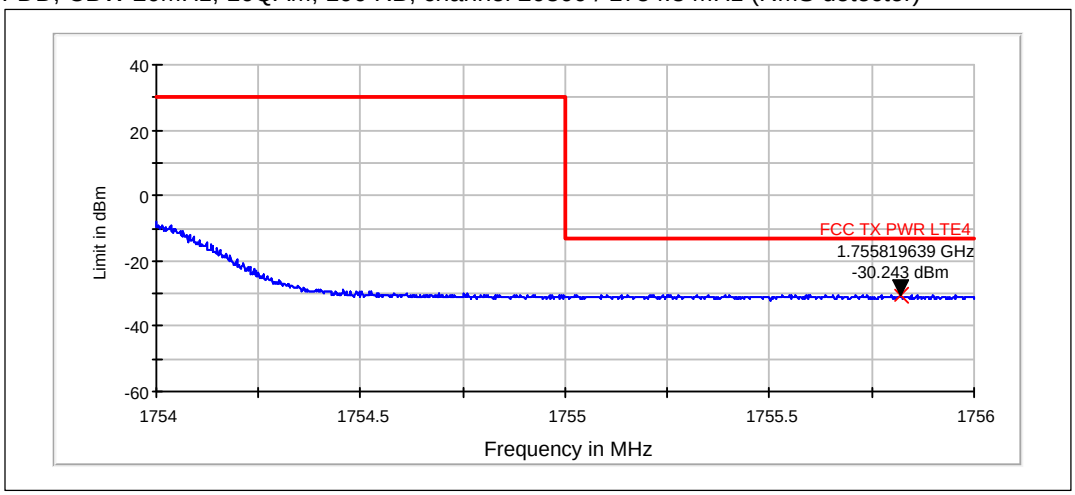
FDD, CBW 20MHz, 16QAM, 100 RB, channel 20050 / 1710.7 MHz (RMS detector)



FDD, CBW 20MHz, 16QAM, 100 RB, channel 20300 / 1754.3 MHz (RMS detector)



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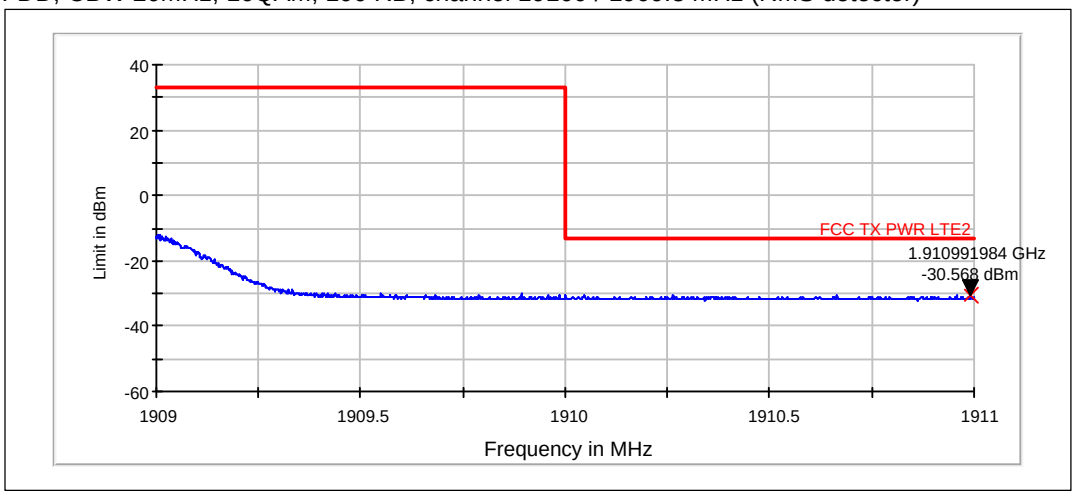
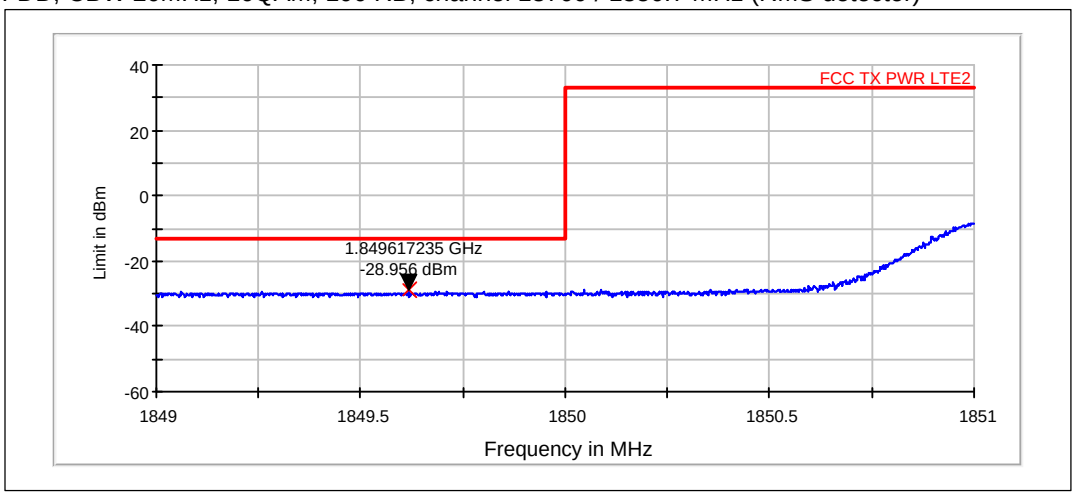
3.11. LTE 1900 (Band II) Test results

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	19100 / 1909.3	-30.57	PASSED
FDD, CBW 20MHz, 16QAM, 100 RB	18700 / 1850.7	-28.96	PASSED
FDD, CBW 20MHz, QPSK, 100 RB	19100 / 1909.3	-30.18	PASSED
FDD, CBW 20MHz, QPSK, 100 RB	18700 / 1850.7	-27.66	PASSED

FDD, CBW 20MHz, 16QAM, 100 RB, channel 19100 / 1909.3 MHz (RMS detector)



FDD, CBW 20MHz, 16QAM, 100 RB, channel 18700 / 1850.7 MHz (RMS detector)



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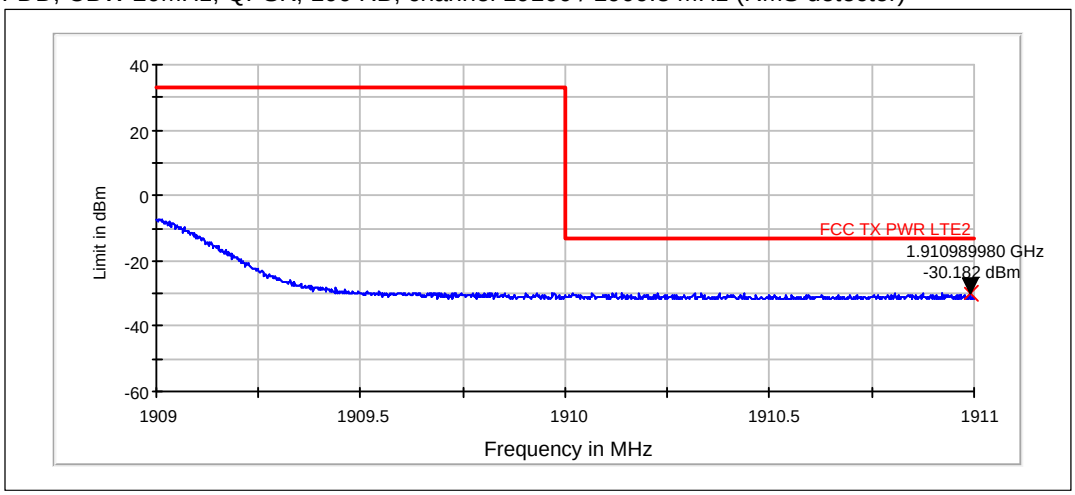
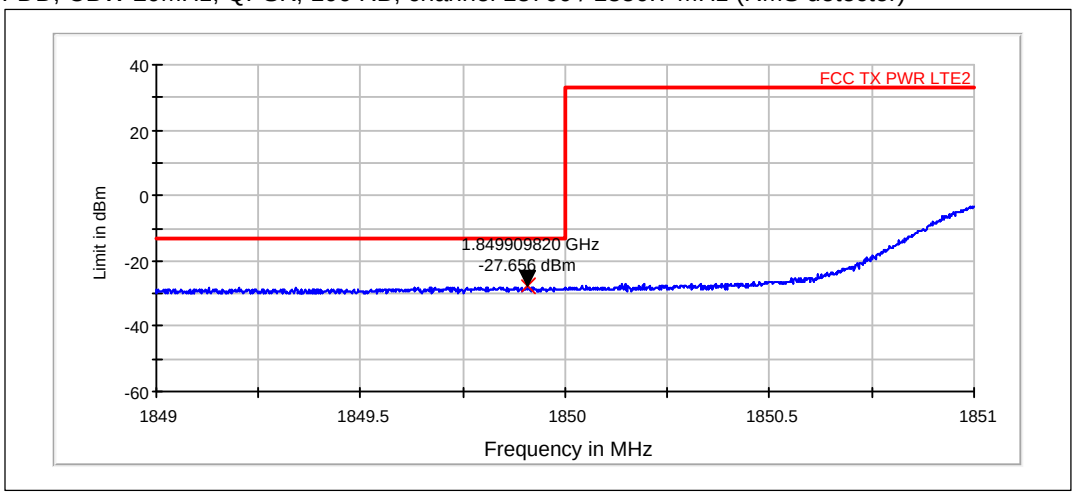
FDD, CBW 20MHz, QPSK, 100 RB, channel 19100 / 1909.3 MHz (RMS detector)



FDD, CBW 20MHz, QPSK, 100 RB, channel 18700 / 1850.7 MHz (RMS detector)



3.12. LTE 850 (Band V) Test results

Operation mode (TX on)	Channel / f_C [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	20600 / 848.3	-37.79	PASSED
FDD, CBW 10MHz, 16QAM, 50 RB	20450 / 824.7	-39.79	PASSED
FDD, CBW 10MHz, QPSK, 50 RB	20600 / 848.3	-37.8	PASSED
FDD, CBW 10MHz, QPSK, 50 RB	20450 / 824.7	-40.14	PASSED

FDD, CBW 10MHz, 16QAM, 50 RB, channel 20600 / 848.3 MHz (RMS detector)

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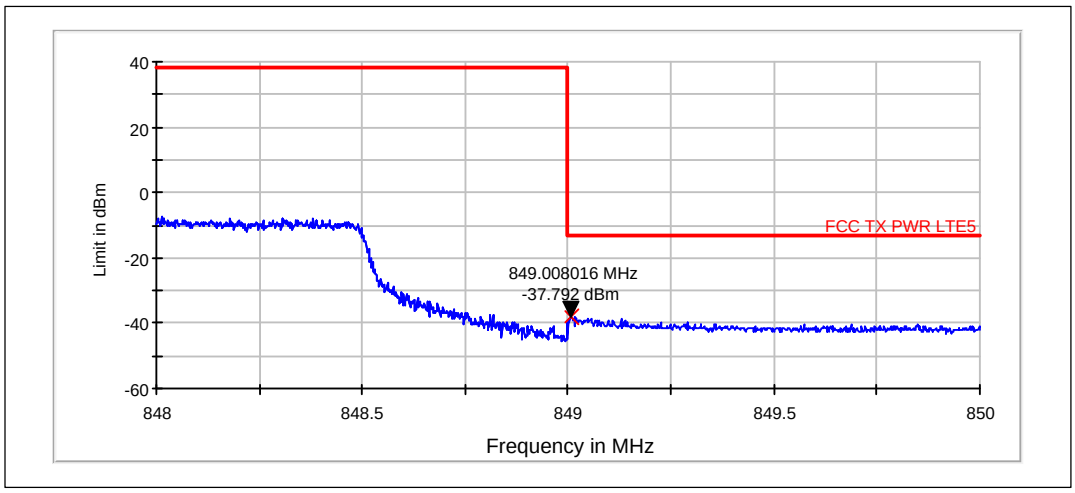
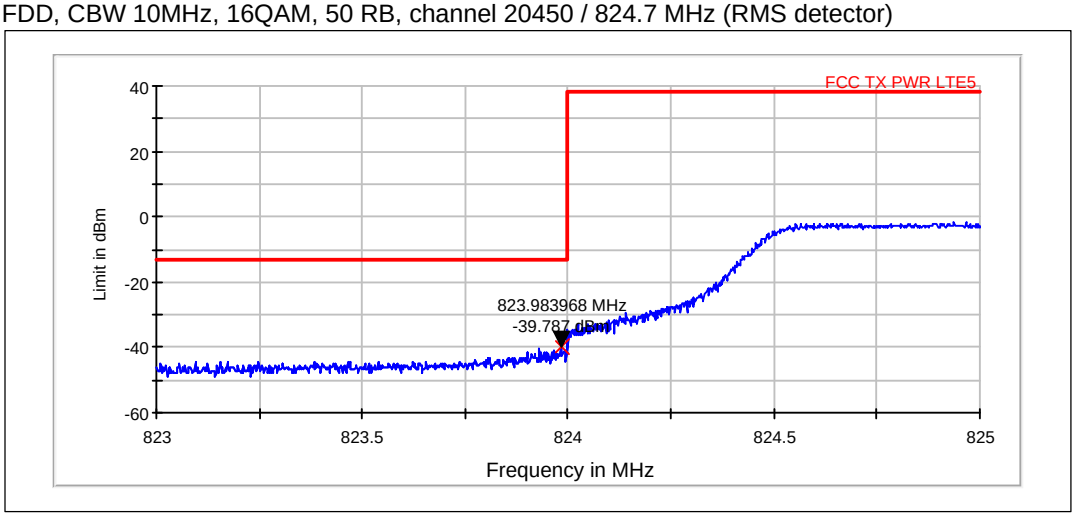


FDD, CBW 10MHz, 16QAM, 50 RB, channel 20450 / 824.7 MHz (RMS detector)



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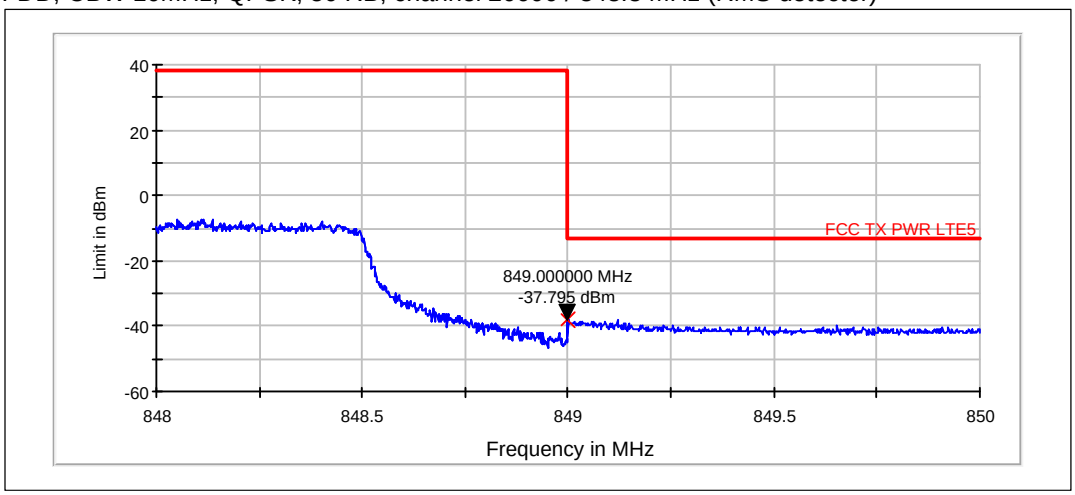
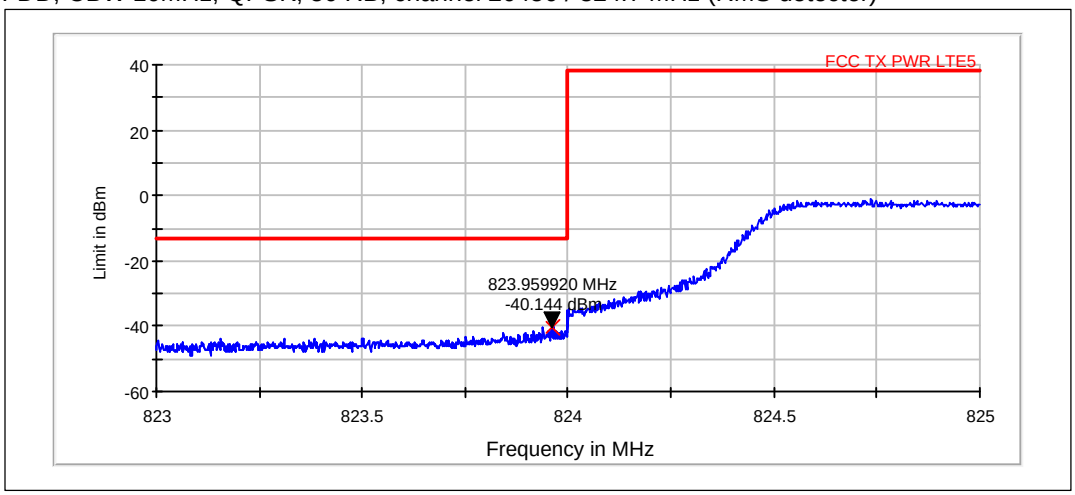
FDD, CBW 10MHz, QPSK, 50 RB, channel 20600 / 848.3 MHz (RMS detector)



FDD, CBW 10MHz, QPSK, 50 RB, channel 20450 / 824.7 MHz (RMS detector)



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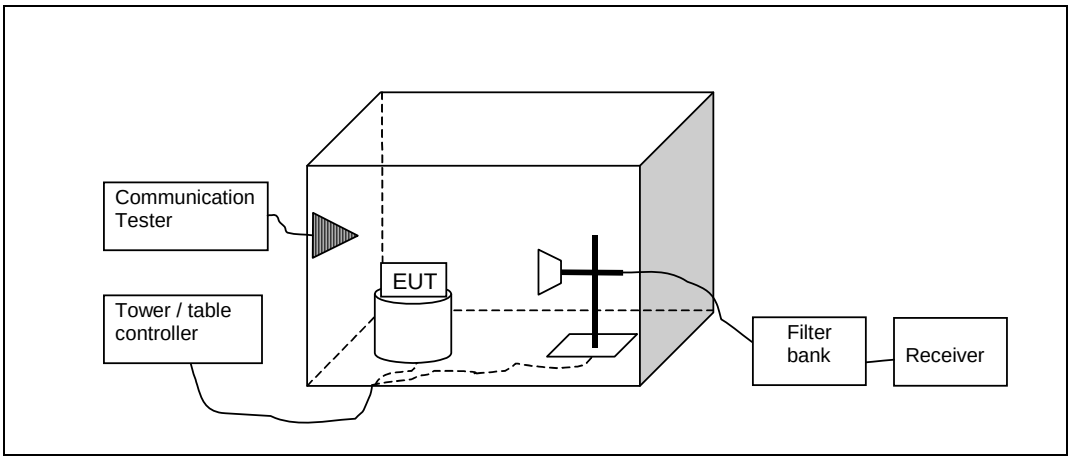
4. Spurious radiated emissions

(FCC §22.917(a), §2.1053, §24.238(a), §2.1053, §27.53(h), §27.53(g), RSS-132 4.5, RSS-133 6.5)

EUT with DUT number	RM-820, DUT 16361
Accessories with DUT numbers	AC-50U , DUT 16341 ; WH-208, DUT 16345
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 37 / 101
Date of measurements	18-Jun-2012
Measured by	Kalle Hannila / Jari Keto

4.1.1 Test Setup



4.2. Test method and limit

The measurement is made according to TIA-603-C-2004 as follows:

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with absorbers on floor and measuring antenna at fixed height using 2-axis EUT position system.

The Final Measurement is performed in the Semi-Anechoic Chamber with conducting metal floor, if the Preliminary Measurement results are closer than 20 dB to the permissible value.

The EUT is placed at nonconductive plate at the turntable center.

For each suspected frequency, the turntable is rotated 360 degrees and antenna is scanned from 1 to 4 m. This is repeated for both horizontal and vertical receive antenna polarizations.

The emissions less than 20 dB below the permissible value are reported.

The substitution method is used.

The measurement results are obtained as described below:

$$P\ [dBm] = P_{SUBST\ TX} + G_{SUBST\ TX\ ANT} - L_{SUBST\ CABLE}$$

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Where $P_{SUBST\ TX}$ is signal generator level, which produces the same receiver reading P_{MEAS} in dBm as EUT. $G_{SUBST\ TX\ ANT}$ is substitution antenna gain and $L_{SUBST\ CABLE}$ is the loss of the cable between the signal generator and the substitution antenna.

Limits for spurious radiated emissions measurements

Operation band	Frequency range [MHz]	Limit [dBm]
LTE 700 Lower	30 - 7200	-13 (RBW = 100 kHz, ERP)
GSM 850 / WCDMA 850	30 - 8500	-13
GSM 1900 / WCDMA 1900 WCDMA 1700 / LTE 1700	30 - 18000	-13

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4.3. GSM850 TX Test results

GSM mode, Channel 190 / 836.6 MHz

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
1692.745	-57.69	0.0017	-63.17	5.48	VERTICAL	PASSED
1701.523	-57.33	0.00185	-62.59	5.26	VERTICAL	PASSED
1717.475	-57.74	0.00168	-63.05	5.31	VERTICAL	PASSED
2509.699	-45.84	0.02606	-56.38	10.54	HORIZONTAL	PASSED
2509.98	-43.57	0.04395	-54.13	10.56	HORIZONTAL	PASSED
3323.687	-60.43	0.00091	-61.57	1.14	VERTICAL	PASSED

4.4. GSM1900 TX Test results

GSM mode, Channel 661 / 1880.0 MHz

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
9329.86	-44.34	0.03681	-63.3	18.96	VERTICAL	PASSED
9801.603	-44.61	0.03459	-64.06	19.45	VERTICAL	PASSED
9833.667	-44.88	0.03251	-64.57	19.69	VERTICAL	PASSED
9996.972	-44.52	0.03532	-63.83	19.31	VERTICAL	PASSED
10722.285	-42.58	0.05521	-63.4	20.82	VERTICAL	PASSED
12140.942	-42.27	0.05929	-62.88	20.61	HORIZONTAL	PASSED

4.5. GSM850-E1 TX Test results

EGPRS mode, Channel 190 / 836.6 MHz

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
1653.487	-57.8	0.00166	-63.41	5.61	VERTICAL	PASSED
1673.046	-49.9	0.01023	-55.5	5.6	VERTICAL	PASSED
1673.246	-51.7	0.00676	-57.3	5.6	VERTICAL	PASSED
2509.559	-45.69	0.02698	-56.24	10.55	HORIZONTAL	PASSED
2509.84	-43.97	0.04009	-54.51	10.54	HORIZONTAL	PASSED
3343.427	-59.92	0.00102	-61.08	1.16	VERTICAL	PASSED

4.6. GSM1900-E1 TX Test results

EGPRS mode, Channel 661 / 1880.0 MHz

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
9357.735	-44.57	0.03491	-63.32	18.75	VERTICAL	PASSED
9804.068	-43.49	0.04477	-62.99	19.5	VERTICAL	PASSED
9818.216	-45.1	0.0309	-64.86	19.76	VERTICAL	PASSED
9980.942	-44.43	0.03606	-64.1	19.67	VERTICAL	PASSED
10752.164	-43.45	0.04519	-63.86	20.41	VERTICAL	PASSED
12136.032	-42.94	0.05082	-63.52	20.58	HORIZONTAL	PASSED

4.7. WCDMA 1900 (Band II) TX Test results

FDD mode, Channel 9400 / 1880.0 MHz

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
9334.208	-44.35	0.03673	-62.93	18.58	HORIZONTAL	PASSED
9651.683	-44.23	0.03776	-63.37	19.14	VERTICAL	PASSED
9946.874	-44.1	0.0389	-63.41	19.31	HORIZONTAL	PASSED
10635.932	-42.59	0.05508	-63.05	20.46	VERTICAL	PASSED
10924.99	-41.37	0.07295	-62.48	21.11	VERTICAL	PASSED

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11475.09	-40.91	0.0811	-61.49	20.58	VERTICAL	PASSED

4.8. WCDMA 850 (Band V) TX Test results

FDD mode, Channel 4175 / 835.0 MHz

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
848.883	-46.57	0.02203	-80.33	33.76	HORIZONTAL	PASSED
849.243	-46.52	0.02228	-80.4	33.88	HORIZONTAL	PASSED
850.503	-46.27	0.0236	-80.37	34.1	HORIZONTAL	PASSED
862.999	-45.51	0.02812	-79.99	34.48	HORIZONTAL	PASSED
1000.541	-59.61	0.00109	-62.07	2.46	HORIZONTAL	PASSED
1668.597	-36.8	0.20893	-41.51	4.71	HORIZONTAL	PASSED

4.9. LTE 1900 (Band II) TX Test results

FDD, CBW 5MHz, , 1 RB, 18900 / 1880.0 MHz, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
1958.532	-39.64	0.10864	-48.25	8.61	VERTICAL	PASSED
3760.461	-48.15	0.01531	-52.8	4.65	VERTICAL	PASSED
5640.621	-44.09	0.03899	-52.36	8.27	HORIZONTAL	PASSED
7527.635	-58.71	0.00135	-72.74	14.03	VERTICAL	PASSED

4.10. LTE1700 (Band 4) TX Test results

FDD, CBW 5MHz, , 1 RB, 20175 / 1732.5 MHz, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
3465.381	-51.2	0.00759	-54.75	3.55	HORIZONTAL	PASSED
5198.081	-48.18	0.01521	-56	7.82	HORIZONTAL	PASSED
6928.938	-59.18	0.00121	-70.97	11.79	VERTICAL	PASSED
8671.939	-57.23	0.00189	-74.26	17.03	VERTICAL	PASSED
10405	-53.73	0.00424	-74.27	20.54	VERTICAL	PASSED

4.11. LTE 850 (Band V) TX Test results

FDD, CBW 5MHz, , 1 RB, 20525 / 836.5 MHz, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
851.787	-56.21	0.00239	-90.53	34.32	VERTICAL	PASSED
882.982	-49.88	0.01028	-84.5	34.62	HORIZONTAL	PASSED
883.155	-43.13	0.04864	-78.48	35.35	VERTICAL	PASSED
1673.381	-45.16	0.03048	-49.85	4.69	HORIZONTAL	PASSED
2510.001	-55.49	0.00282	-66.05	10.56	HORIZONTAL	PASSED
3346.741	-67	0.0002	-68.08	1.08	VERTICAL	PASSED

4.12. LTE700 Lower (Band 17) TX Test results

FDD, CBW 5MHz, , 1 RB, 23790 / 710.0 MHz, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
1420.381	-64.9	0.00032	-68.42	3.52	VERTICAL	PASSED
2130.541	-62.19	0.0006	-70.97	8.78	HORIZONTAL	PASSED
2846.152	-69.17	0.00012	-82.57	13.4	HORIZONTAL	PASSED

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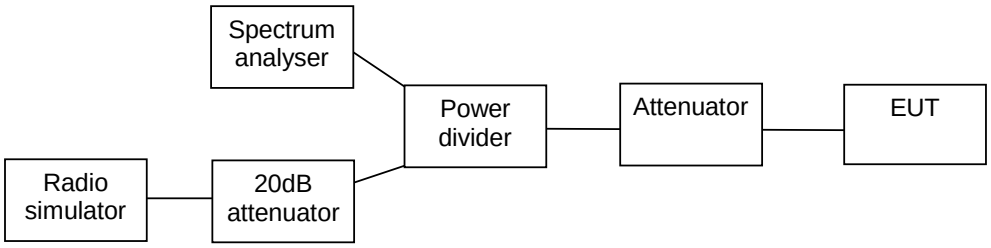
5. 99% occupied bandwidth

(FCC §2.1049(h), RSS-GEN 4.6.1)

EUT with DUT number	RM-820, DUT 16334
Accessories with DUT numbers	AC-50U , DUT 16340 ; WH-208, DUT 16344
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 /43 / 100
Date of measurements	05-Jun-2012
Measured by	Tomi Lipponen

5.1. Test Setup



5.2. Test method and limit

The measurement is made according to FCC rules parts 22, 24, 27 and IC standard RSS-GEN.

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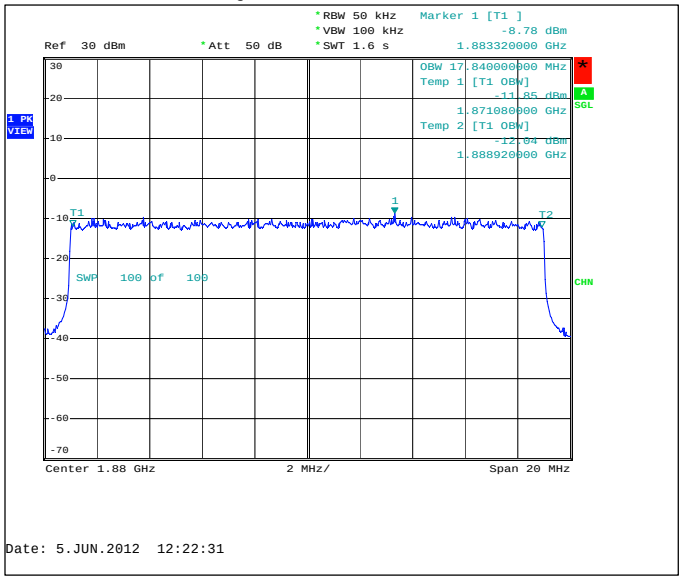
5.3. LTE1900 (Band 2) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 20MHz, QPSK, 100 RB	17840

FDD, CBW 20MHz, QPSK, 100 RB, Channel 18900 / 1880.0 MHz



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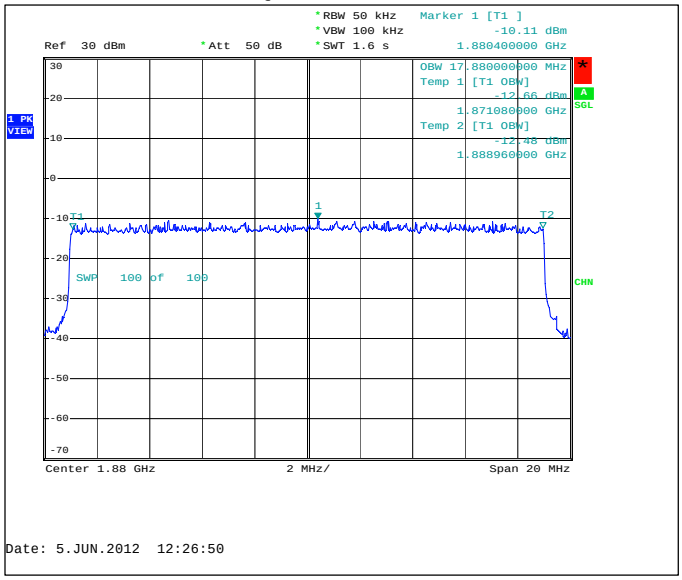
5.4. LTE1900 (Band 2) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 20MHz, 16QAM, 100 RB	17880

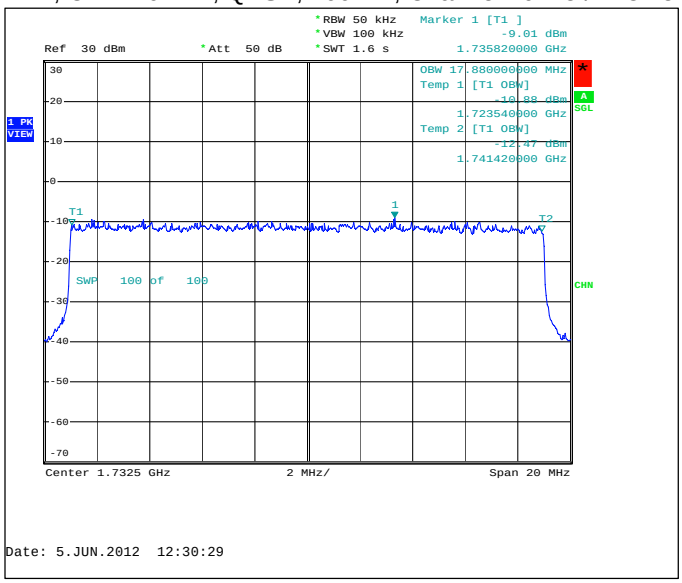
FDD, CBW 20MHz, 16QAM, 100 RB, Channel 18900 / 1880.0 MHz



5.5. LTE1700 (Band 4) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 20MHz, QPSK, 100 RB	17880

FDD, CBW 20MHz, QPSK, 100 RB, Channel 20175 / 1732.5 MHz



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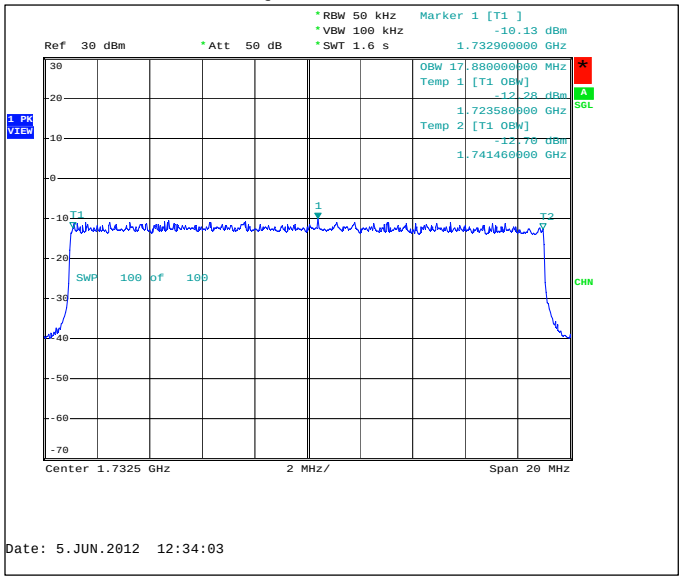
5.6. LTE1700 (Band 4) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 20MHz, 16QAM, 100 RB	17880

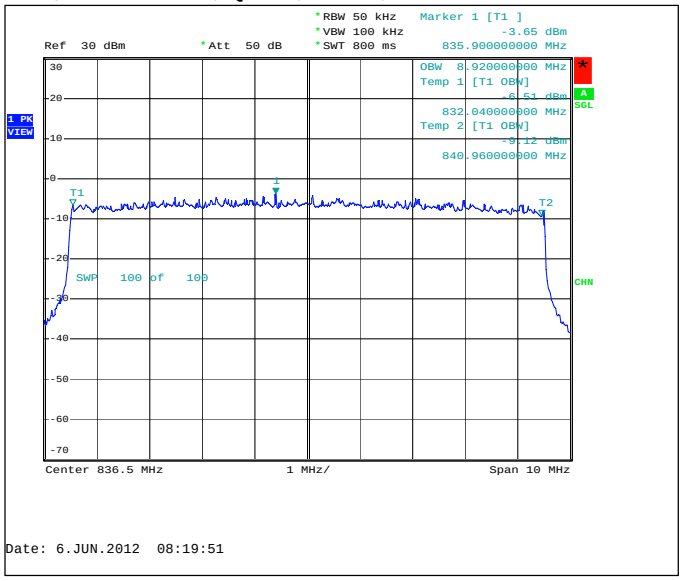
FDD, CBW 20MHz, 16QAM, 100 RB, Channel 20175 / 1732.5 MHz



5.7. LTE850 (Band 5) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 10MHz, QPSK, 50 RB	8920

FDD, CBW 10MHz, QPSK, 50 RB, Channel 20525 / 836.5 MHz



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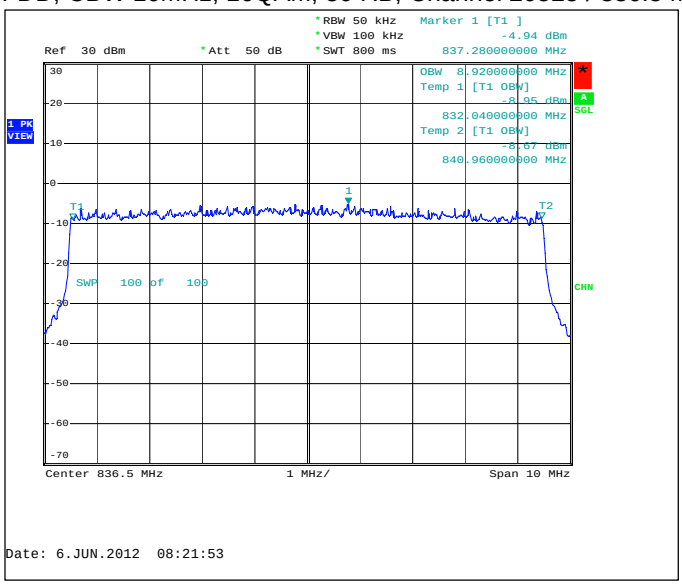
5.8. LTE850 (Band 5) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 10MHz, 16QAM, 50 RB	8920

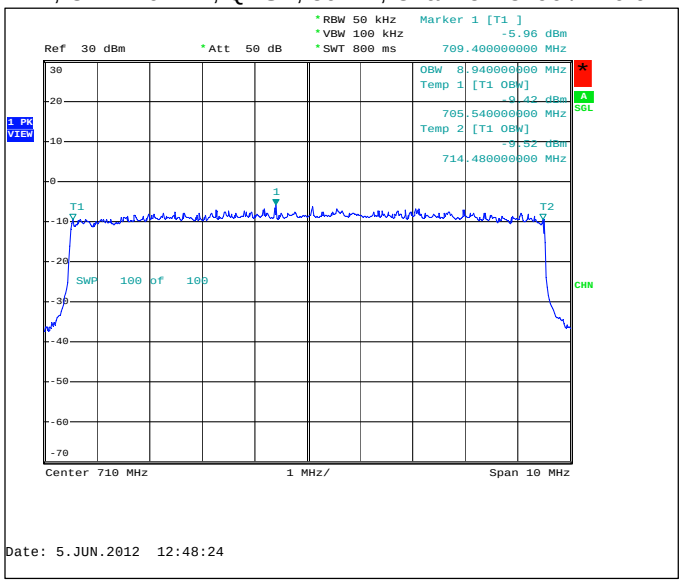
FDD, CBW 10MHz, 16QAM, 50 RB, Channel 20525 / 836.5 MHz



5.9. LTE700 Lower (Band 17) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 10MHz, QPSK, 50 RB	8940

FDD, CBW 10MHz, QPSK, 50 RB, Channel 23790 / 710.0 MHz



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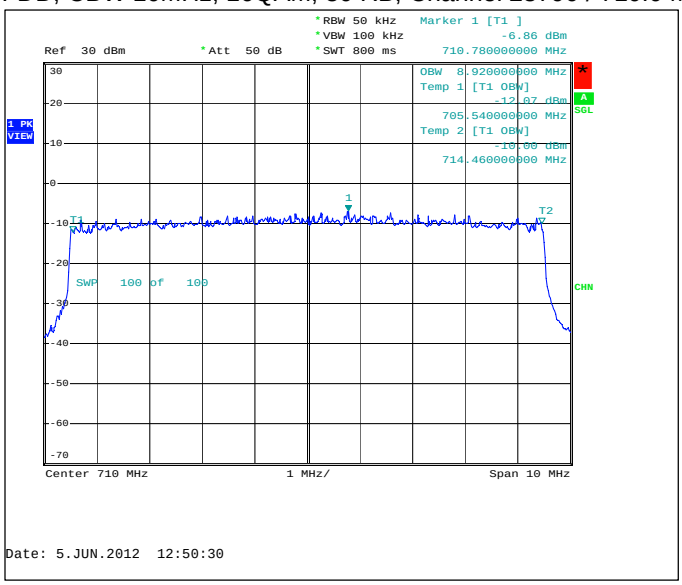
5.10. LTE700 Lower (Band 17) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 10MHz, 16QAM, 50 RB	8920

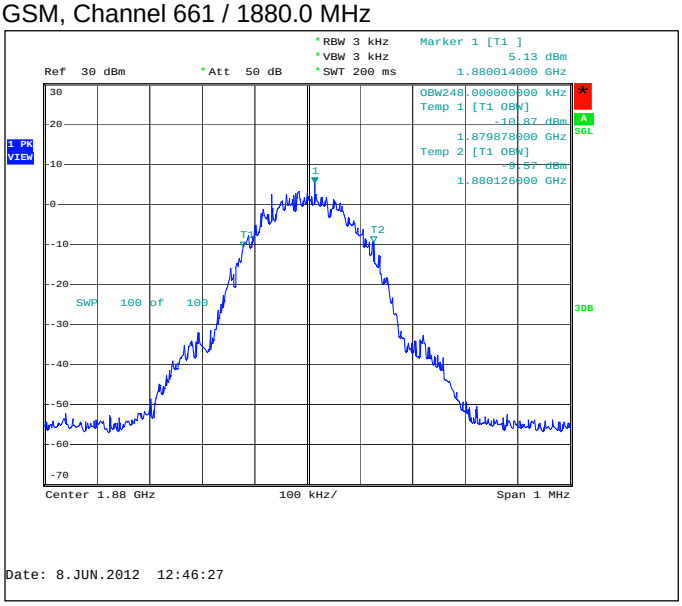
FDD, CBW 10MHz, 16QAM, 50 RB, Channel 23790 / 710.0 MHz



5.11. GSM 1900 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	248
EGPRS	248

GSM, Channel 661 / 1880.0 MHz



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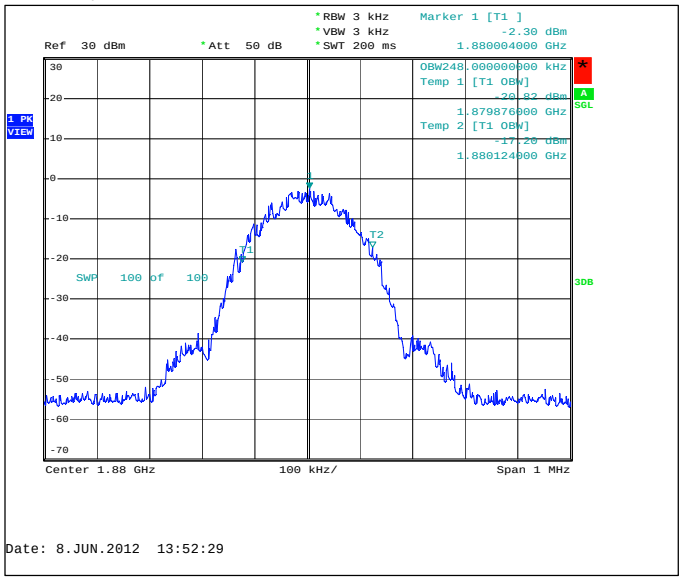
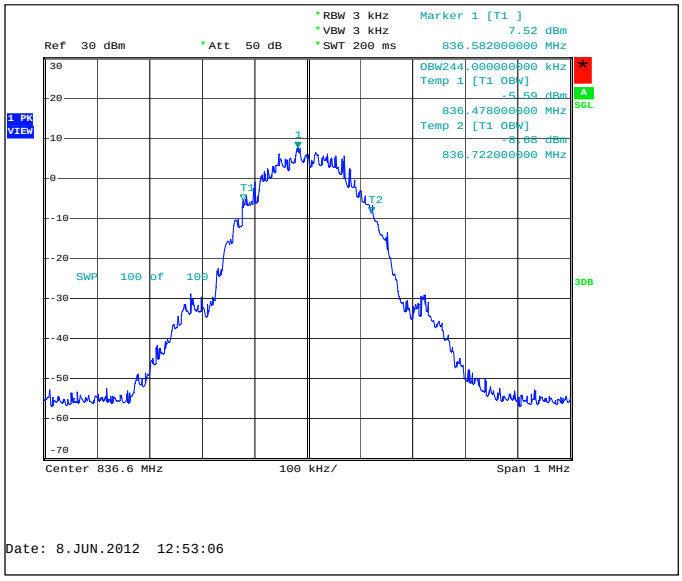
EGPRS, Channel 661 / 1880.0 MHz



5.12. GSM 850 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	244
EGPRS	244

GSM, Channel 190 / 836.6 MHz



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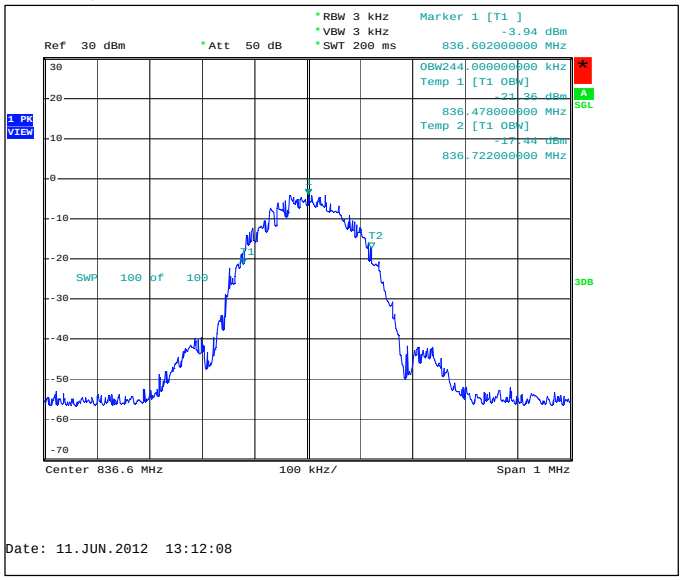
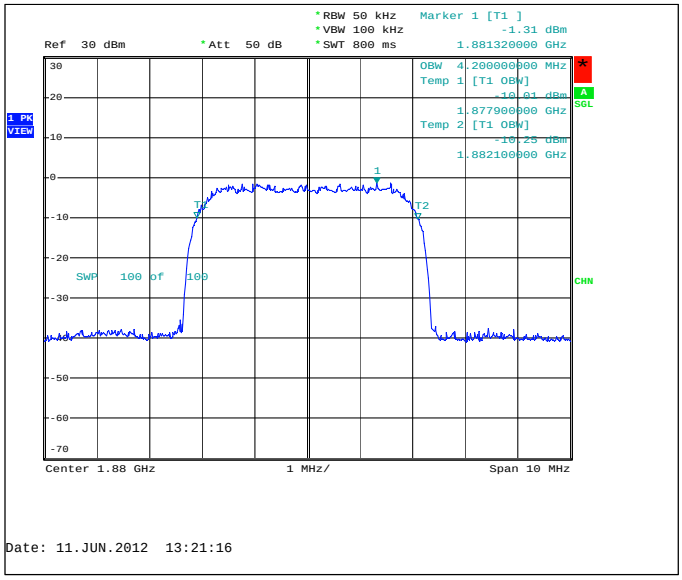
EGPRS, Channel 190 / 836.6 MHz



5.13. WCDMA 1900 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD	4200

FDD, Channel 9400 / 1880.0 MHz



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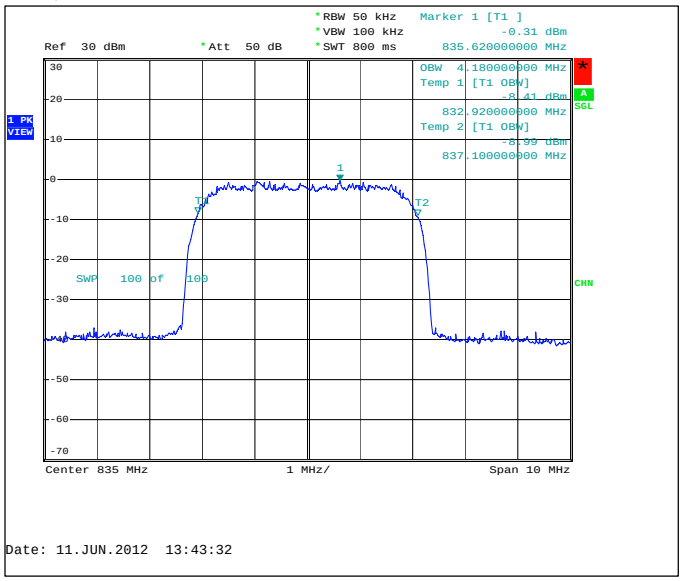
5.14. WCDMA 850 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD	4180

FDD, Channel 4175 / 835.0 MHz



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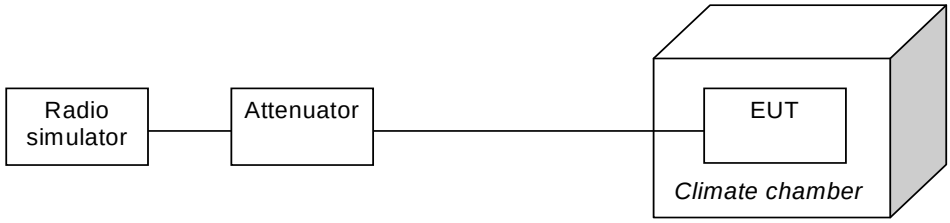
6. Frequency stability, temperature variation

(FCC §2.1055(a), RSS-132 4.3, RSS-133 6.3, RSS-139 6.3)

EUT with DUT number	RM-820, DUT 16334
Accessories with DUT numbers	AC-50U , DUT 16340 ; WH-208, DUT 16344
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 /43 / 100
Date of measurements	05-Jun-2012
Measured by	Tomi Lipponen

6.1. Test Setup



6.2. Test method and limit

The measurement is made according to FCC rules parts 22, 24, 27 and IC standard RSS-132, RSS-133 and RSS-139
as follows:

The climate chamber temperature is set to the maximum value and the temperature is allowed to stabilize.
The EUT is placed in the chamber.
The EUT is set in idle mode for 15 minutes.
The EUT is set to transmit.
The transmit frequency error was measured immediately.
The steps c - e were repeated for each temperature.Limits for frequency stability, temperature variation measurements

Frequency deviation [ppm]
+\- 2.5

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6.3. LTE1700 (Band 4) Test results

Channel 20175 / 1732.5 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1732.5	-0.31471	-0.0002	PASSED
41	1732.5	0.08583	0.0001	PASSED
30	1732.5	0.44346	0.0003	PASSED
20	1732.5	-0.47207	-0.0003	PASSED
10	1732.5	-0.62943	-0.0004	PASSED
0	1732.5	-0.17166	-0.0001	PASSED
-10	1732.5	0.98705	0.0006	PASSED
-20	1732.5	1.80244	0.001	PASSED
-30	1732.5	0.22888	0.0001	PASSED

6.4. LTE700 Lower (Band 17) Test results

Channel 23790 / 710.0 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	710	0.18451	0.0003	PASSED
40	710	0.17166	0.0002	PASSED
30	710	0.32902	0.0005	PASSED
20	710	0.48637	0.0007	PASSED
10	710	0.45776	0.0006	PASSED
0	710	0.94414	0.0013	PASSED
-10	710	0.30041	0.0004	PASSED
-20	710	0.70095	0.001	PASSED
-30	710	0.18597	0.0003	PASSED

6.5. GSM 850 Test results

GSM, Channel 190 / 836.6 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	836.6	-13.75	-0.0164	PASSED
40	836.6	-21.95	-0.0262	PASSED
30	836.6	-9.62	-0.0115	PASSED
20	836.6	-18.6	-0.0222	PASSED
10	836.6	-12.72	-0.0152	PASSED
0	836.6	-2.97	-0.0036	PASSED
-10	836.6	8.2	0.0098	PASSED
-20	836.6	-2.39	-0.0029	PASSED
-30	836.6	-15.24	-0.0182	PASSED

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6.6. GSM 1900 Test results

GSM, Channel 661 / 1880.0 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1880	0.84	0.0004	PASSED
40	1880	-4.78	-0.0025	PASSED
30	1880	2.84	0.0015	PASSED
20	1880	7.1	0.0038	PASSED
10	1880	5.75	0.0031	PASSED
0	1880	32.09	0.0171	PASSED
-10	1880	44.81	0.0238	PASSED
-20	1880	19.37	0.0103	PASSED
-30	1880	-8.65	-0.0046	PASSED

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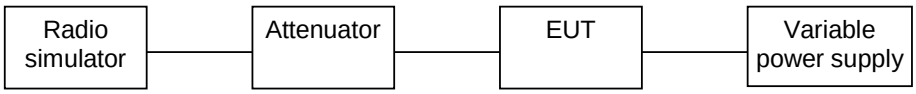
7. Frequency stability, voltage variation

(FCC §2.1055(d), RSS-132 4.3, RSS-133 6.3, RSS-139 6.3)

EUT with DUT number	RM-820, DUT 16334
Accessories with DUT numbers	AC-50U , DUT 16340 ; WH-208, DUT 16344
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [^{o}C] / Humidity [%RH] / Air Pressure [kPa]	21 /43 / 100
Date of measurements	19-Jun-2012
Measured by	Tomi Lipponen

7.1. Test Setup



7.2. Test method and limit

The measurement is made according to FCC rules parts 22, 24, 27 and IC standard RSS-132, RSS-133 and RSS-139
as follows:

The EUT battery was replaced with an adjustable power supply. The frequency stability was measured at nominal voltage and at the battery cut-off point.
Limits for frequency stability, voltage variation measurements

Frequency deviation [ppm]
+\- 2.5

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7.3. GSM 850 Test results

GSM, Channel 190 / 836.6 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.1	836.6	-6.65	-0.0079	PASSED
Nominal / 3.7	836.6	-23.7	-0.0283	PASSED
Battery cut-off point / 3.5	836.6	1.94	0.0023	PASSED

7.4. GSM 1900 Test results

GSM, Channel 661 / 1880.0 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.1	1880	24.54	0.0131	PASSED
Nominal / 3.7	1880	6.01	0.0032	PASSED
Battery cut-off point / 3.52	1880	5.75	0.0031	PASSED

7.5. LTE1700 (Band 4) Test results

Channel 20175 / 1732.5 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.1	1732.5	0.74387	0.0004	PASSED
Nominal / 3.7	1732.5	0.04292	0	PASSED
Battery cut-off point / 3.5	1732.5	-0.24319	-0.0001	PASSED

7.6. LTE700 Lower (Band 17) Test results

Channel 23790 / 710.0 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.08	710	-0.15322	-0.0002	PASSED
Nominal / 3.7	710	-0.21458	-0.0003	PASSED
Battery cut-off point / 3.5	710	-0.08583	-0.0001	PASSED

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8. Test Equipment

8.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
6038	Data Logger	Testo 580	Testo	-
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	-
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	-
2389	Signal Generator	SMJ 100A	R&S	-
6009	GPS Antenna	SA-700	Chronos	-
6010	GPS Network amplifier	NLA20FPDC	GPS Networking, Inc	-
6011	GPS signal Splitter	LDCBS1x4	GPS Networking, Inc	-
6015	Receiver	ESI	R&S	-
2059	V-network	ESH3-Z6	R&S	-
6044	V-network	ESH3-Z6	R&S	-
1759	LISN 50 µH	ESH3-Z5	R&S	-
2390	Directional Coupler	DC2600	AR	-
1916	Communication Tester	CMTA84	R&S	-
6012	CDN	CDN USB/c	Teseq	-
2388	Bluetooth Tester	CBT	R&S	-
6046	Attenuator 10dB	8493C	Agilent	-
6047	Attenuator 20dB	8493C	Agilent	-
6036	Data Logger	175-H2	Testo	-
6045	Power splitter	11667B	Agilent	-
6039	USB Interface	5541765	Testo	-
10479	Communication Tester	CMW500	R&S	-
6094	Communication Tester	CMW500	R&S	-
6096	EMC Analyzer	E7405A	HP	-
6098	Signal Generator	8648C	Agilent	-
6103	Bluetooth tester	CBT	R&S	-
6113	Signal Generator	SMF100A	R&S	-
6120	Thermal Chamber	WT 20/40	Weiss	-
6121	Power Splitter	HP11667B	Agilent	-
6122	Power Splitter	HP11667B	Agilent	-
6134	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	-
6136	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	-
2359	Temperature Test Chamber	VT4002	Vötsch	-
2347	Communication Tester	CMU200	R&S	-
2180	Communication Tester	CMU200	R&S	-
2156	Communication Tester	CMU200	R&S	-
1999	Receiver	ESIB26	R&S	-
2352	Spectrum Analyzer	FSP-30	R&S	-
2097	Pulse Limiter	ESH3-Z2	R&S	-
2039	Power Supply	PL330QMD	Thurlby	-
1992	Signal Generator	83630B	Agilent	-
2206	Signal Generator	SMX	R&S	-

8.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
2391	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
6038	Data Logger	Testo 580	Testo	-
6014	Substitute Calibration Cable	Sucoflex 104PB	Suhner	-
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	-
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	-
2389	Signal Generator	SMJ 100A	R&S	-
6009	GPS Antenna	SA-700	Chronos	-

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Eq. No	Equipment	Type	Manufacturer	Used in
6010	GPS Network amplifier	NLA20FPDC	GPS Networking, Inc	-
6011	GPS signal Splitter	LDCBS1x4	GPS Networking, Inc	-
1988	Antenna	HL562	R&S	-
-	RF immunity / Emission Software	EMC32	R&S	-
1917	Communication Tester	CMTA84	R&S	-
2388	Bluetooth Tester	CBT	R&S	-
6037	Data Logger	175-H2	Testo	-
6039	USB Interface	5541765	Testo	-
6087	Antenna	BBHA 9120D	Scharzbeck	-
6088	Antenna	VUBA 9117	Scharzbeck	-
6089	Antenna	HFH2-Z2	R&S	-
10479	Communication Tester	CMW500	R&S	-
6094	Communication Tester	CMW500	R&S	-
6103	Bluetooth tester	CBT	R&S	-
6113	Signal Generator	SMF100A	R&S	-
6115	Open switch and control unit	OSP 130	R&S	-
6116	Open switch and control unit	OSP 150	R&S	-
6130	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	-
6131	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	-
6135	Notch Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	-
2140	Antenna	EMCO93110B	EMCO	-
2142	Antenna	3146	EMCO	-
2357	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	-
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
2043	Band Reject Filter	WRCA824/849-0,2-6SS	Wainwright	22
2347	Communication Tester	CMU200	R&S	-
2180	Communication Tester	CMU200	R&S	-
2156	Communication Tester	CMU200	R&S	-
2176	CDN	CDN 801-M3	Lüthi	-
2027	CDN	M2 (modified) DC1	MEB	-
2028	CDN	M3 (modified) DC2	MEB	-
1984	Antenna	BBHA 9120 D	Schwarzbeck	-
6017	Antenna	SBA 9113	Schwarzbeck	-
2009	Signal Generator	SMP 22	R&S	-
2029	Power Supply	PL330	Thurlby	-
2361	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	Euroshield	-
2353	Receiver	ESIB26	R&S	-
2135	CDN	CDN 801-M3	Lüthi	-

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