

FCC Part 22/24/27 Compliance Test Report

Test Report no.:	FCC22&24&27_RM-845_11.docx	Date of Report:	02-Aug-2012
Number of pages:	16	Customer's Contact person:	Victoria Abadilla
Testing laboratory:	TCC Nokia San Diego Laboratory 16620 West Bernardo Drive San Diego, CA 92127 USA Tel. +1 858 831 5000 Fax. +1 858 831 6500	Customer:	Nokia, Inc. 16620 West Bernardo Drive San Diego, CA 92127 USA Tel. +1 858 831 5000 Fax. +1 858 385 1598
FCC listing no.:	586140		
IC recognition no.:	10162A-1		
Tested devices/ accessories:	RM-845 / Battery BP-4W		
FCC ID:	QMNRM-845	IC:	661X-RM845
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-129 (Issue 2, September 1999) . 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:			

Feng You, Senior Specialist

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

Date of receipt	05-Mar-2012
Testing completed	01-Aug-2012
The customer's contact person	Victoria Abadilla
Test Plan referred to	T:\Projects\RM-845\TestPlan\RS_testplan_RM-845.xlsm
Notes	-
Document name	T:\Projects\RM-845\EMC\FCC22&24&27_RM-845_11.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:

GSM/CDMA/WCDMA/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-845	C1A138245	0209		1525.0003.8422.9710.1271	30613
Battery	BP-4W	3932132274140101601;0670672	-	-	-	30588
Battery	BP-4W	3932132155140101183;0670671	-	-	-	30616
Phone	RM-845	C1A138211	0209		1525.0003.8422.9710.12271	30597
Phone	RM-845	C1A138294	0209		1525.0003.8422.9710.12271	30598
Phone	RM-845	C1A138226	0209	NA	1525.0003.8422.9710.12271	30614

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	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	NP
§22.917(a)	4.5	Band edge compliance	NP
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	NP
§2.1055(a)	4.3	Frequency stability, temperature variation	NP
§2.1055(d)	4.3	Frequency stability, voltage variation	NP

CDMA800:

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	NP
§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	NP
§2.1055(a)	4.3	Frequency stability, temperature variation	NP
§2.1055(d)	4.3	Frequency stability, voltage variation	NP

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	Pass

§2.1049(h)	4.6.1	99 % occupied bandwidth	NP
§22.917(a)	4.5	Band edge compliance	Pass
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	NP
§22.917(a), §2.1053	4.5	Spurious radiated emissions	NP
§2.1055(a)	4.3	Frequency stability, temperature variation	NP
§2.1055(d)	4.3	Frequency stability, voltage variation	NP

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	NP
§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	NP
§2.1055(a)	6.3	Frequency stability, temperature variation	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	NP

CDMA1900:

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	NP
§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	NP
§2.1055(a)	6.3	Frequency stability, temperature variation	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	NP

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	NP
§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	NP
§2.1055(a)	6.3	Frequency stability, temperature variation	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	NP

LTE700 Upper (Band 13):

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result
§2.1046 (a)	N/A	Conducted RF output power	NP
§27.50(b)(10)	N/A	Radiated RF output power	NP
§2.1049(h)	N/A	99 % occupied bandwidth	NP
§27.53(c)(2)(4)	N/A	Band edge compliance	NP
§27.53(c)(2)(4),(f), §2.1051	N/A	Spurious emissions at antenna terminals	NP
§27.53(c)(2)(4),(f), §2.1053	N/A	Spurious radiated emissions	NP
§2.1055(a)	N/A	Frequency stability, temperature variation	NP

§2.1055(d)	N/A	Frequency stability, voltage variation	NP
------------	-----	--	----

PASSED
FAILED
NP

The EUT complies with the essential requirements in the standard.
The EUT does not comply with the essential requirements in the standard.
The test was not performed by the TCC Nokia Laboratory.

CONTENTS

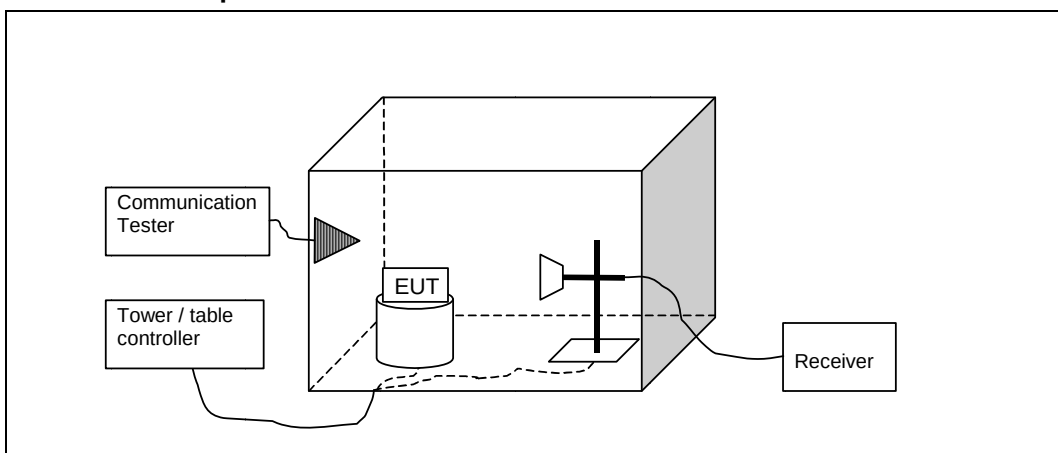
1. Summary for FCC Part 22/24/27 Compliance Test Report	2
1.1. EUT and Accessory Information.....	2
1.2. Summary of Test Results.....	2
2. Radiated RF output power	
(FCC §22.913(a), §24.232(b), §27.53(c)(2)(4), RSS-132 4.4, RSS-133 6.4)	6
2.2. Test method and limit.....	6
2.3. WCDMA 850 (Band V) TX Test results	7
2.4. GSM1900 TX Test results	7
2.5. GSM1900-E1 TX Test results	7
2.6. WCDMA 1900 (Band II) TX Test results.....	7
2.7. CDMA800 TX Test results	8
2.8. CDMA1900 TX Test results.....	8
3. Band edge compliance	
(FCC §22.917(a), §24.238(a), §27.53(c)(2)(4), RSS-132 4.5, RSS-133 6.5)	9
3.2. Test method and limit.....	9
3.3. WCDMA 850 (Band V) Test results.....	10
3.4. GSM1900 Test results	11
3.5. GSM1900-E1 Test results	12
3.6. WCDMA 1900 (Band II) Test results	13
3.7. CDMA800 Test results	14
3.8. CDMA1900 Test results	15
4. Test Equipment.....	16
4.1. Radiated measurements	16

2. Radiated RF output power

(FCC §22.913(a), §24.232(b), §27.53(c)(2)(4), RSS-132 4.4, RSS-133 6.4)

EUT with DUT number	RM-845, DUT 30613, DUT 30597, DUT 30598, DUT 30614
Accessories with DUT numbers	BP-4W, DUT 30588, DUT 30616
Operation Voltage [V] / [Hz]	N/A
Results	Passed
Remarks	
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	18.6 / 47.7
Date of measurements	01-Aug-2012
Measured by	Feng You

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]
777 - 787	3 ERP	34.8
824 - 849	7 ERP	38.5
1850 - 1910	2 EIRP	33

2.3. WCDMA 850 (Band V) TX Test results

Peak Detector

Channel / f _c [MHz]	ERP [dBm]	ERP [W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
4132 / 826.4	23.52	0.225	-9.27	32.79	VERTICAL	Pass
4183 / 836.6	23.97	0.249	-8.7	32.67	VERTICAL	Pass
4233 / 846.6	23.56	0.227	-8.87	32.43	VERTICAL	Pass

RMS Detector

Channel / f _c [MHz]	ERP [dBm]	ERP [W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
4132 / 826.4	20.23	0.105	-12.56	32.79	VERTICAL	Pass
4183 / 836.6	20.6	0.115	-12.07	32.67	VERTICAL	Pass
4233 / 846.6	20.36	0.109	-12.07	32.43	VERTICAL	Pass

2.4. GSM1900 TX Test results

GSM mode

Channel / f _c [MHz]	EIRP [dBm]	EIRP [W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
512 / 1850.2	31.59	1.442	-13.83	45.42	VERTICAL	Passed
661 / 1880	31.22	1.324	-14.41	45.63	HORIZONTAL	Passed
810 / 1909.8	30.64	1.159	-15.19	45.83	HORIZONTAL	Passed

2.5. GSM1900-E1 TX Test results

EGPRS mode, 1 TX Slot

Channel / f _c [MHz]	EIRP [dBm]	EIRP [W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
512 / 1850.2	28.97	0.789	-16.45	45.42	VERTICAL	Passed
661 / 1880	28.46	0.701	-17.17	45.63	HORIZONTAL	Passed
810 / 1909.8	28.46	0.701	-17.37	45.83	HORIZONTAL	Passed

2.6. WCDMA 1900 (Band II) TX Test results

Peak Detector

Channel / f _c [MHz]	EIRP [dBm]	EIRP [W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
9262 / 1852.4	25.28	0.337	-20.13	45.41	VERTICAL	Passed
9400 / 1880	26.23	0.42	-19.4	45.63	HORIZONTAL	Passed
9538 / 1907.6	25.45	0.351	-20.27	45.72	HORIZONTAL	Passed

RMS Detector

Channel / f _c [MHz]	EIRP [dBm]	EIRP [W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Result
9262 / 1852.4	21.83	0.152	-23.58	45.41	VERTICAL	Passed
9400 / 1880	22.65	0.184	-22.98	45.63	HORIZONTAL	Passed
9538 / 1907.6	22.28	0.169	-23.44	45.72	HORIZONTAL	Passed

2.7. CDMA800 TX Test results

Peak Detector

Channel / f_c [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
1013 / 824.7	25.66	0.368	-7.12	32.78	HORIZONTAL	Passed
384 / 836.52	25.84	0.384	-6.84	32.68	VERTICAL	Passed
777 / 848.31	25.06	0.321	-7.3	32.36	VERTICAL	Passed

RMS Detector

Channel / f_c [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
1013 / 824.7	21.47	0.14	-11.31	32.78	HORIZONTAL	Passed
384 / 836.52	21.71	0.148	-10.97	32.68	VERTICAL	Passed
777 / 848.31	21.11	0.129	-11.25	32.36	VERTICAL	Passed

2.8. CDMA1900 TX Test results

Peak Detector

Channel / f_c [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
25 / 1851.25	27.5	0.562	-17.91	45.41	VERTICAL	Passed
600 / 1880	28.09	0.644	-17.54	45.63	VERTICAL	Passed
1175 / 1908.75	27.2	0.525	-18.58	45.78	HORIZONTAL	Passed

RMS Detector

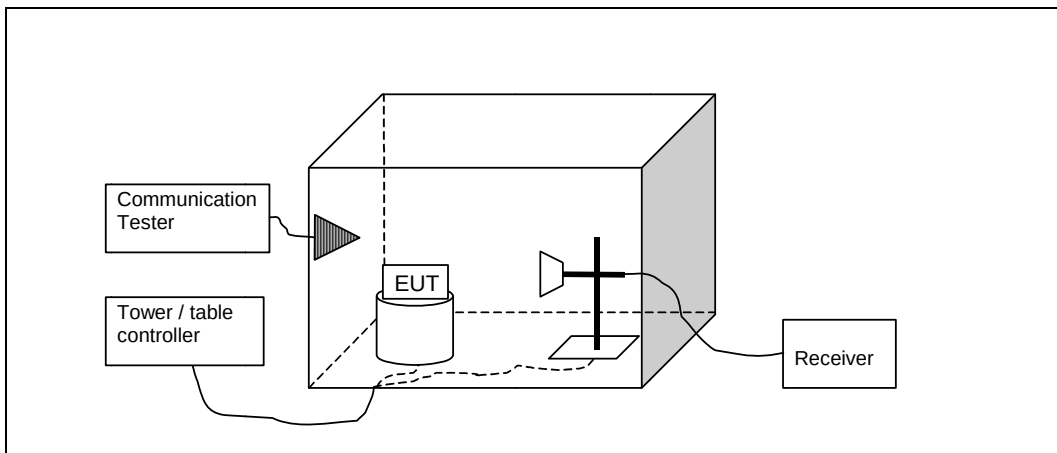
Channel / f_c [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Result
25 / 1851.25	24.35	0.272	-21.06	45.41	VERTICAL	Passed
600 / 1880	24.34	0.272	-21.29	45.63	VERTICAL	Passed
1175 / 1908.75	23.47	0.222	-22.31	45.78	HORIZONTAL	Passed

3. Band edge compliance

(FCC §22.917(a), §24.238(a), §27.53(c)(2)(4), RSS-132 4.5, RSS-133 6.5)

EUT with DUT number	RM-845, DUT 30613, DUT 30597, DUT 30598, DUT 30614
Accessories with DUT numbers	BP-4W, DUT 30588, DUT 30616
Operation Voltage [V] / [Hz]	N/A
Results	Passed
Remarks	
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	18.6 / 47.7
Date of measurements	01-Aug-2012
Measured by	Feng You

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.

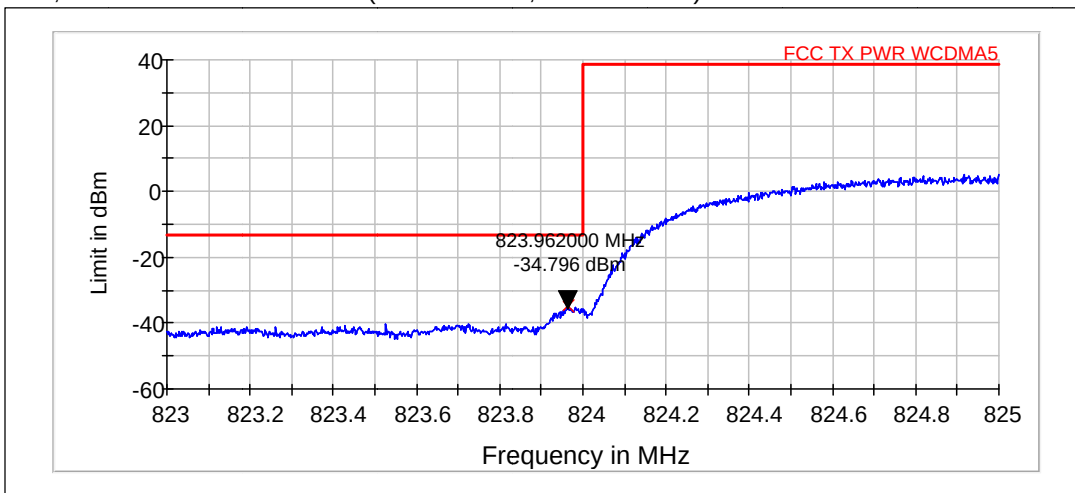
Limits for band edge compliance measurements

Operation band	Frequency range [MHz]	Limit [dBm]
LTE 700 Upper	776.9 - 777 and 787 - 787.1 Below 776.9 and above 787.1 763-775 and 793-805	-13 (RBW = 30 kHz, ERP) -13 (RBW = 100 kHz, ERP) -35 (RBW = 6.25 kHz, ERP)
GSM 850 / WCDMA 850 / CDMA 800	Below 824 and above 849	-13
GSM 1900 / WCDMA 1900 / CDMA 1900	Below 1850 and above 1910	-13

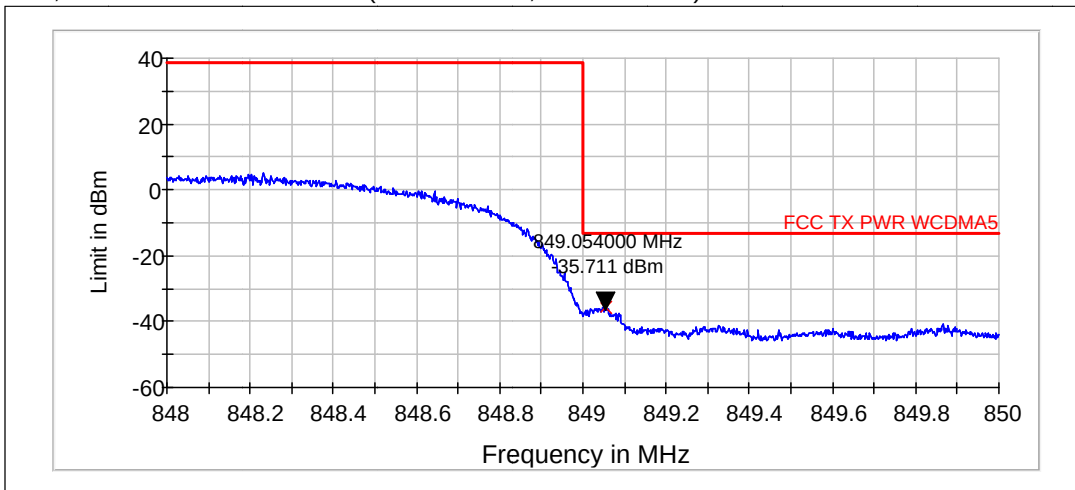
3.3. WCDMA 850 (Band V) Test results

Operation mode (TX on)	Channel / f_c [MHz]	Level [dBm]	Result
FDD	4132 / 826.4	-34.8	Pass
FDD	4233 / 846.6	-35.71	Pass

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



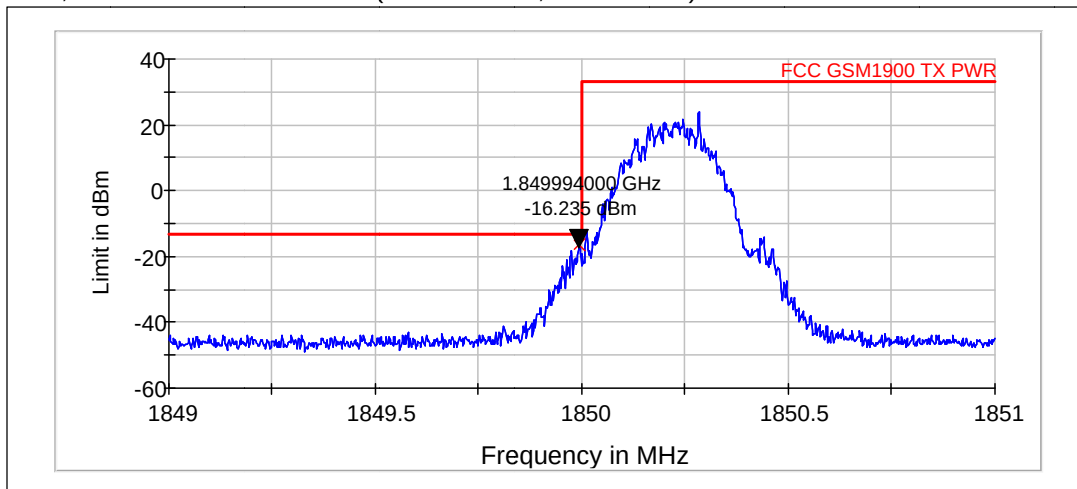
FDD, channel 4233 / 846.6 MHz (RMS detector, RBW: 50 kHz)



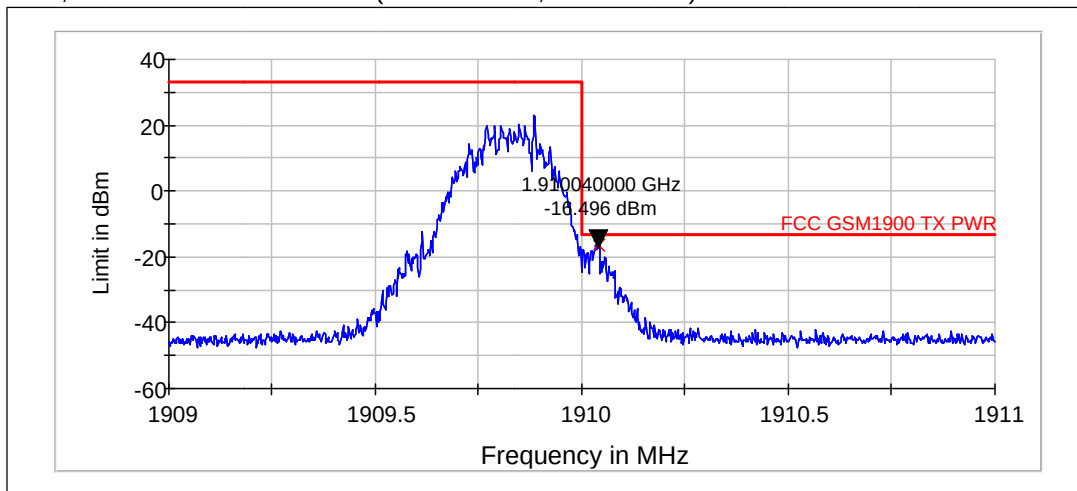
3.4. GSM1900 Test results

Operation mode (TX on)	Channel / f_c [MHz]	Level [dBm]	Result
GSM	512 / 1850.2	-16.23	Passed
GSM	810 / 1909.8	-16.5	Passed

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



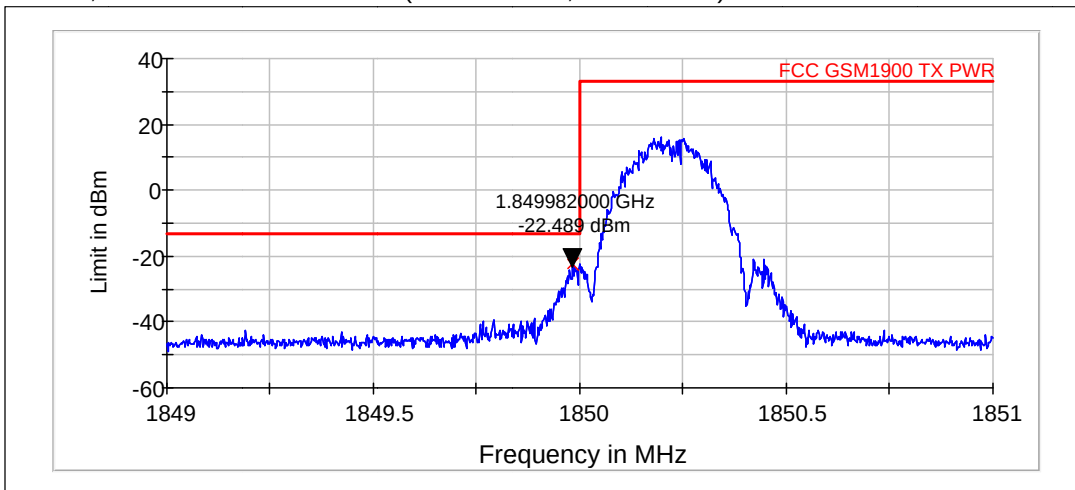
GSM, channel 810 / 1909.8 MHz (Peak detector, RBW: 3 kHz)



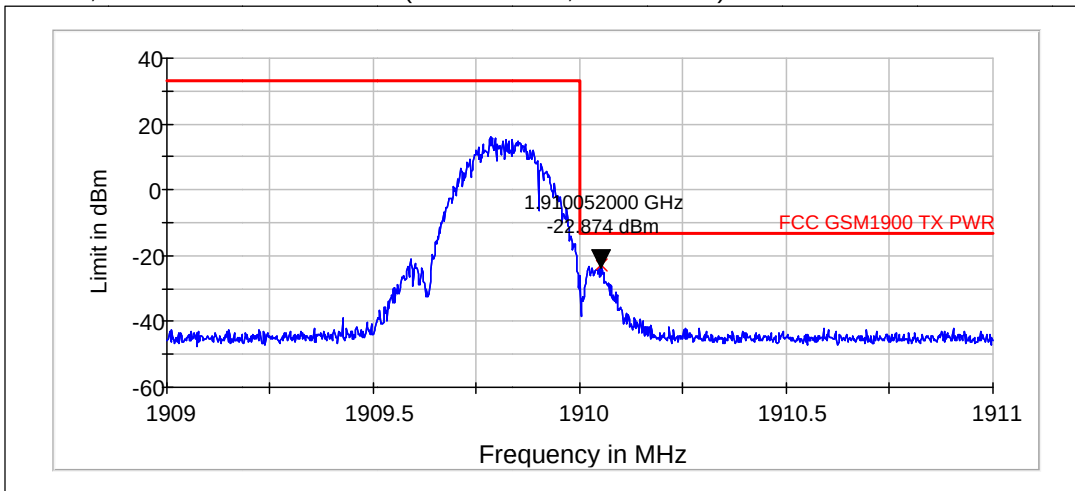
3.5. GSM1900-E1 Test results

Operation mode (TX on)	Channel / f_c [MHz]	Level [dBm]	Result
EGPRS	512 / 1850.2	-22.49	Passed
EGPRS	810 / 1909.8	-22.87	Passed

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



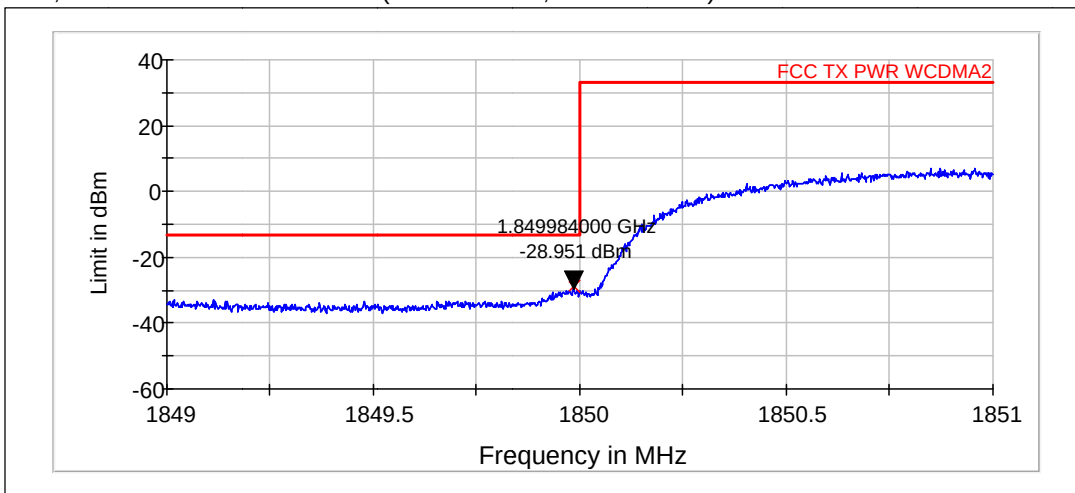
EGPRS, channel 810 / 1909.8 MHz (Peak detector, RBW: 3 kHz)



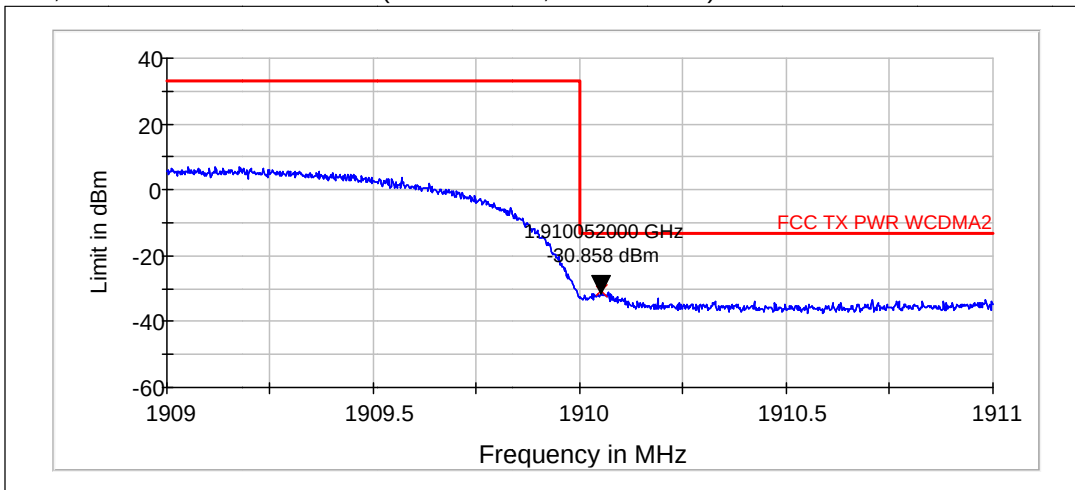
3.6. WCDMA 1900 (Band II) Test results

Operation mode (TX on)	Channel / f_c [MHz]	Level [dBm]	Result
FDD	9262 / 1852.4	-28.95	
FDD	9538 / 1907.6	-30.86	

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



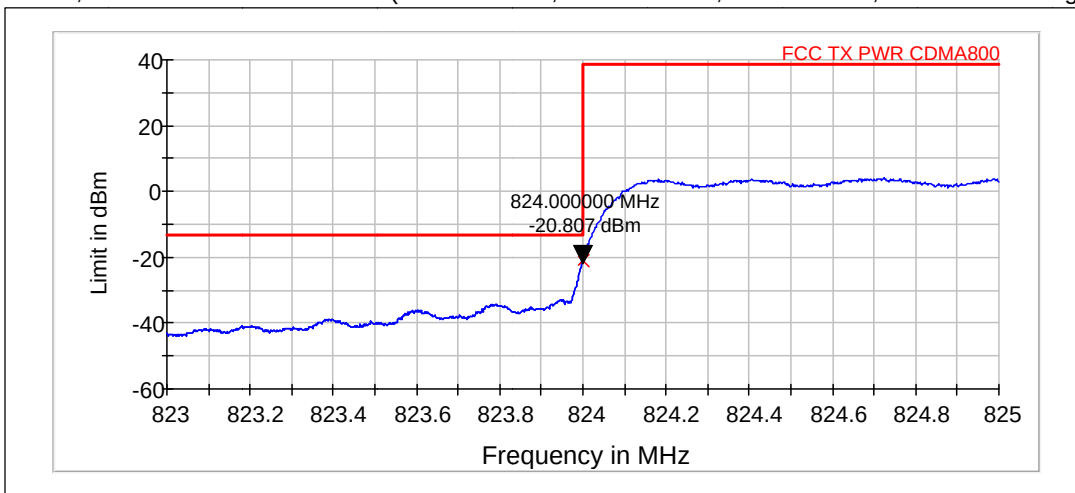
FDD, channel 9538 / 1907.6 MHz (RMS detector, RBW: 50 kHz)



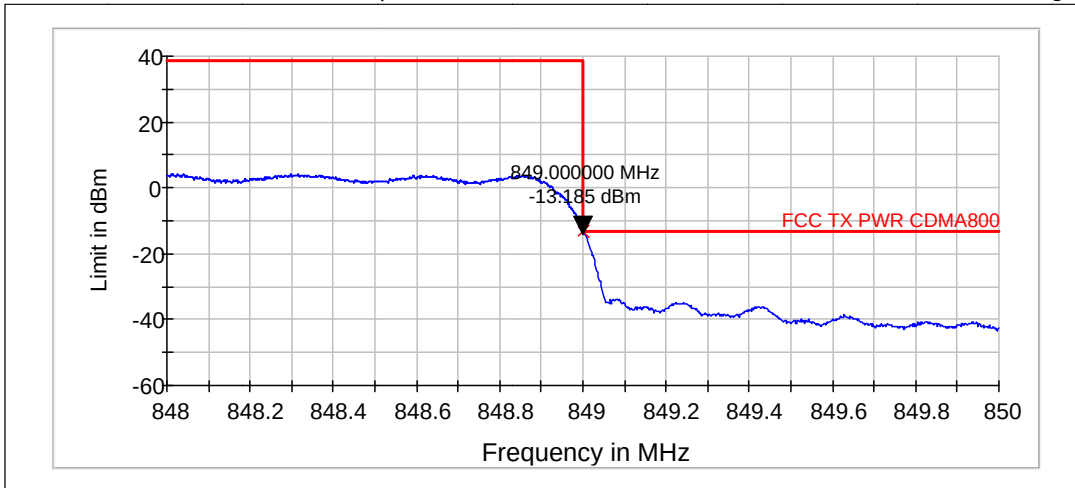
3.7. CDMA800 Test results

Operation mode (TX on)	Channel / f_c [MHz]	Level [dBm]	Result
CDMA	1013 / 824.7	-20.81	Passed
CDMA	777 / 848.31	-13.19	Passed

CDMA, channel 1013 / 824.7 MHz (RMS detector, RBW: 20 kHz, VBW 20 kHz, and video averaging)



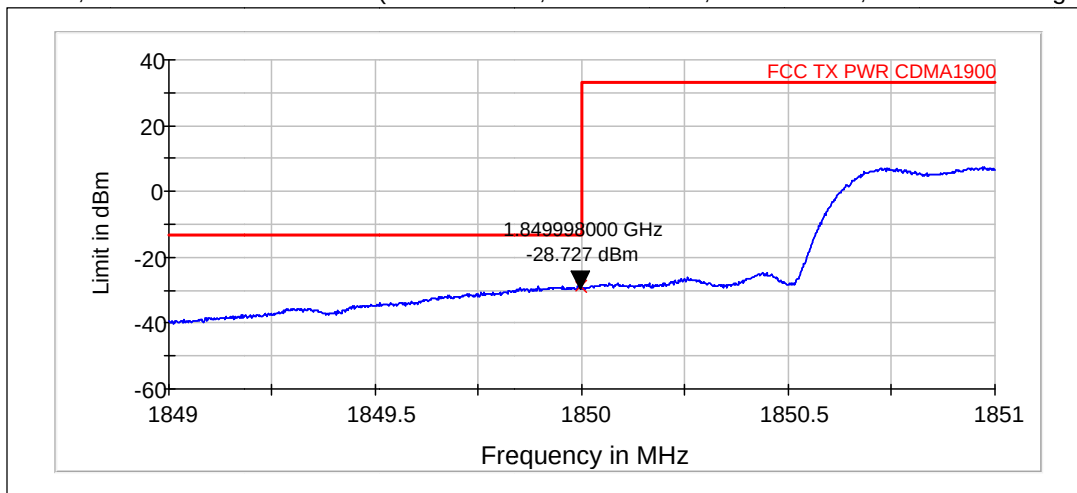
CDMA, channel 777 / 848.3 MHz (RMS detector, RBW: 20 kHz, VBW 20 kHz, and video averaging)



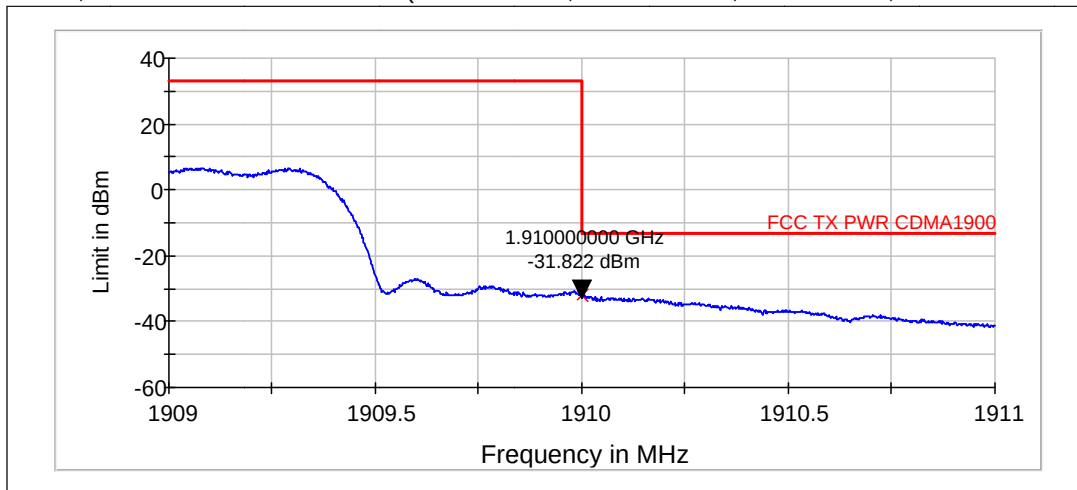
3.8. CDMA1900 Test results

Operation mode (TX on)	Channel / f_c [MHz]	Level [dBm]	Result
CDMA	25 / 1851.25	-28.73	Passed
CDMA	1175 / 1908.75	-31.82	Passed

CDMA, channel 25 / 1851.3 MHz (RMS detector, RBW: 20 kHz, VBW 20 kHz, and video averaging)



CDMA, channel 1175 / 1908.8 MHz (RMS detector, RBW: 20 kHz, VBW 20 kHz, and video averaging)



4. Test Equipment

4.1. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
N/A	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
7984	Data Logger	Testo175H1	Testo	-
3397	Signal Generator	83630B	Agilent	-
7591	Antenna	HL562	R&S	-
N/A	RF immunity / Emission Software	EMC32	R&S	-
7459	Open switch and control unit	TS-RSP	R&S	-
5729	Open switch and control unit	TS-RSP	R&S	-
N/A	Notch Filter	GSM1900	TTE	24
N/A	Notch Filter	GSM850	Trilithic	22
7572	Antenna	3117	EMCO	-
5730	Preamplifier/Switch Box	TS-ANA	R&S	-
N/A	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	-
N/A	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
N/A	Band Reject Filter	WRC824/849-0,2-6SS	Wainwright	22
4406	Communication Tester	CMU200	R&S	-
7646	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	ETS-Lindgren	-
7451	EMI Receiver	ESU-26	R&S	-
3406	Mast/Turntable Controller	SC99V	Sunol	-