FCC Part 22/24/27 Compliance Test Report

Test Report no.:	FCC22&24&27_RM-940_17.docx	**Date of Report:**	26-Sep-2013
Number of pages:	63	**Customer's Contact person:**	Lasse Vaattovaara
Testing laboratory:	TCC Nokia Salo Laboratory P.O.Box(86) Joensuunkatu 7H / Kiila 1B FIN-24101 SALO, FINLAND Tel. +358 (0) 7180 08000 Fax. +358 (0) 7180 45220	**Customer:**	Nokia Corporation P.O.Box(86) Joensuunkatu 7 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-940 / Headset WH-208 / Ac-Charger AC**		
FCC ID:	PYAB	**IC:**	661V-B
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: 2013.09.26 15:08:34 +03'00'		

Sami Lehtonen, Specialist, EMC

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

Date of receipt	23-Jul-2013
Testing completed	16-Aug-2013
The customer's contact person	Lasse Vaattovaara
Test Plan referred to	T:\Projects\RM-940\TestPlan\RS_Testplan_RM-940.xlsm
Notes	-
Document name	T:\Projects\RM-940\EMC\FCC22&24&27_RM-940_17.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.

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-940	004402473425860	2200	-	1028.0305.1328.0000	17613
Headset	WH-208	2131731	CE	-	-	17586
Phone	RM-940	004402473425910	2100	-	1028.0305.1328.0000	17589
AC-Charger	AC-60E	409049315461030267600675677	-	-	-	17580
Headset	WH-208	2131731	-	-	-	17581
USB-Cable	CA-190CD	07304563083v2f	-	-	-	17608

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	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	NP
§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

LTE 850 (Band V):

Section in CFR 47	Section in RSS-GEN or RSS-132	Name of the test	Result

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§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	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	NP
§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	NP
§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 1700 (Band IV):

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)(2)	6.4	Radiated RF output power	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§27.53(g)	6.5	Band edge compliance	PASSED
§27.53(g), §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	NP
§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

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§24.238(a), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	NP

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	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§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	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	NP

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

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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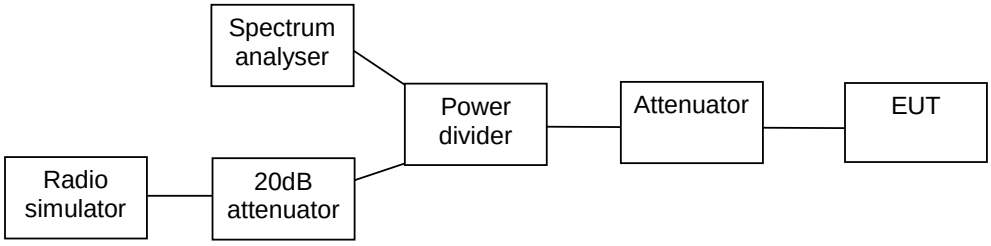
2. 99% occupied bandwidth

(FCC §2.1049(h), RSS-GEN 4.6.1)

EUT with DUT number	RM-940, DUT 17613
Accessories with DUT numbers	WH-208, DUT 17586
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 42 / 100.8
Date of measurements	15-Aug-2013
Measured by	Sami Lehtonen

2.1. Test Setup



2.2. 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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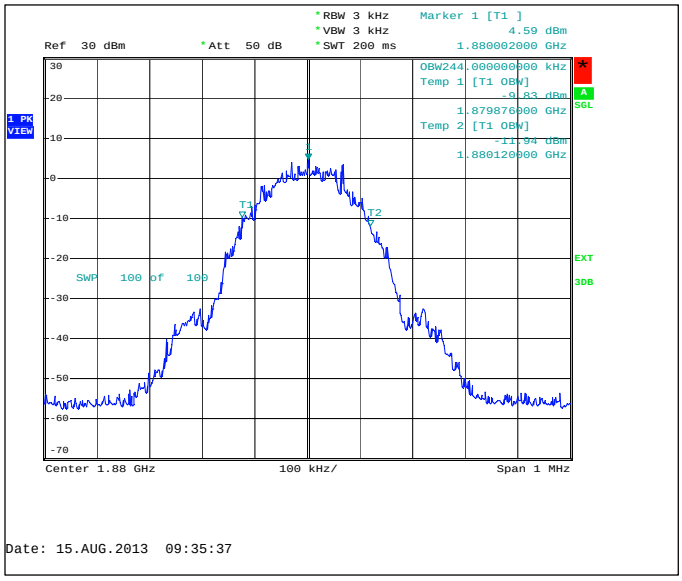
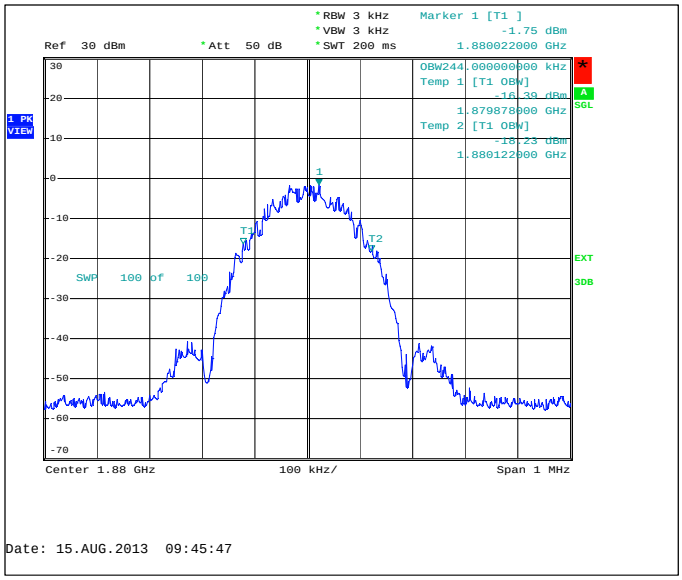
2.3. GSM 1900 Test results

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

GSM, Channel 661 / 1880.0 MHz



EGPRS, Channel 661 / 1880.0 MHz



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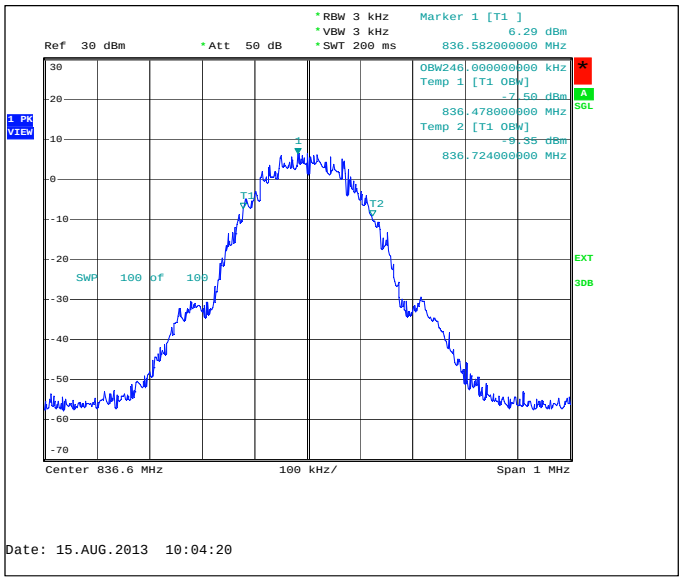
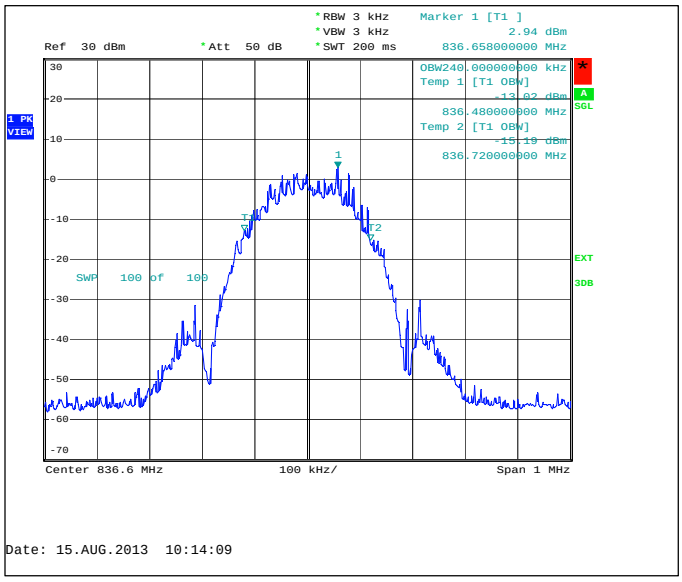
2.4. GSM 850 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	246
EGPRS	240

GSM, Channel 190 / 836.6 MHz



EGPRS, Channel 190 / 836.6 MHz



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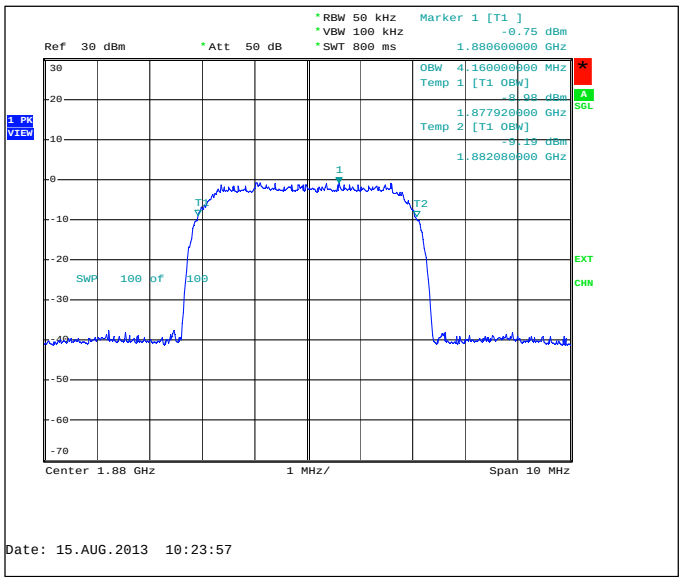
2.5. WCDMA 1900 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD	4160

FDD, Channel 9400 / 1880.0 MHz



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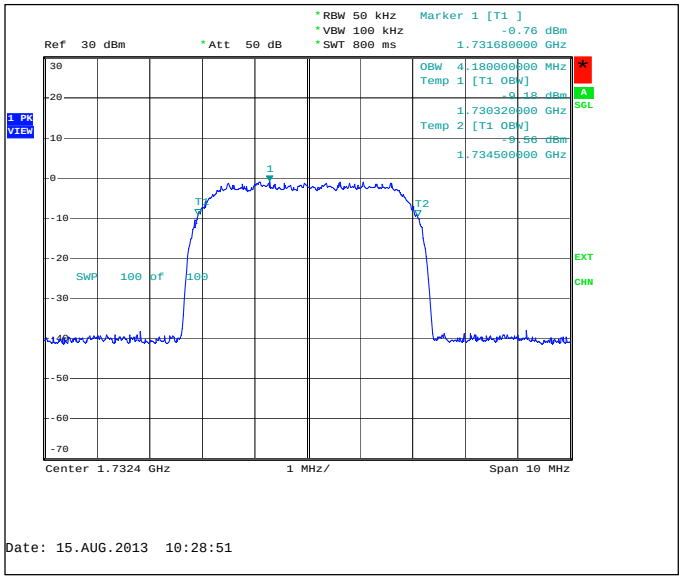
2.6. WCDMA 1700 Test results

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

FDD, Channel 1412 / 1732.4 MHz



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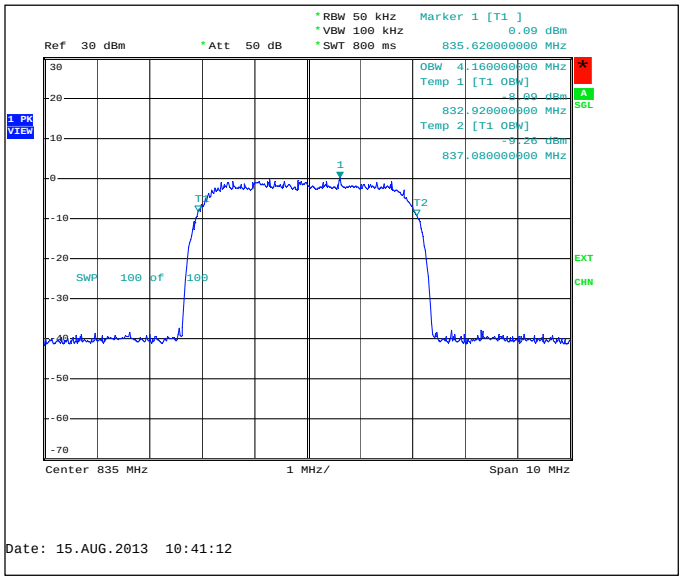
2.7. WCDMA 850 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD	4160

FDD, Channel 4175 / 835.0 MHz



2.8. LTE1900 (Band 2) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, INV RB	1120
FDD, CBW 3MHz, QPSK, INV RB	2720
FDD, CBW 5MHz, QPSK, INV RB	4480
FDD, CBW 10MHz, QPSK, INV RB	8960
FDD, CBW 15MHz, QPSK, INV RB	13440
FDD, CBW 20MHz, QPSK, INV RB	17840
FDD, CBW 1.4MHz, 16QAM, INV RB	1120
FDD, CBW 3MHz, 16QAM, INV RB	2720
FDD, CBW 5MHz, 16QAM, INV RB	4480
FDD, CBW 10MHz, 16QAM, INV RB	8960
FDD, CBW 15MHz, 16QAM, INV RB	13400
FDD, CBW 20MHz, 16QAM, INV RB	17840

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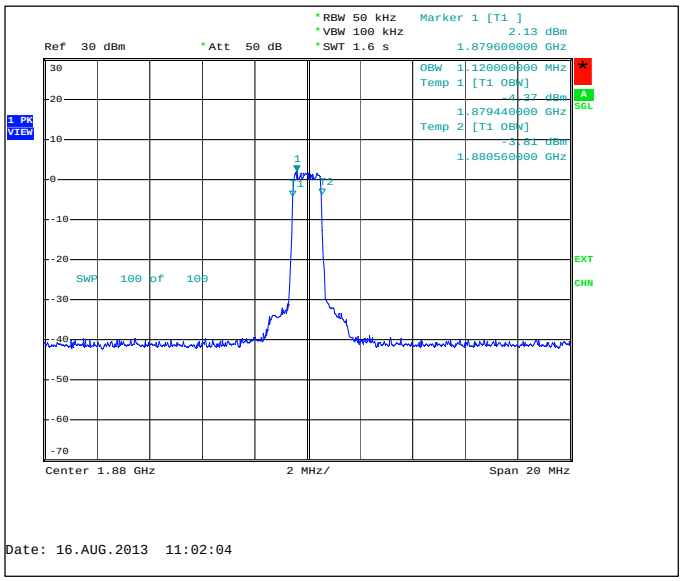
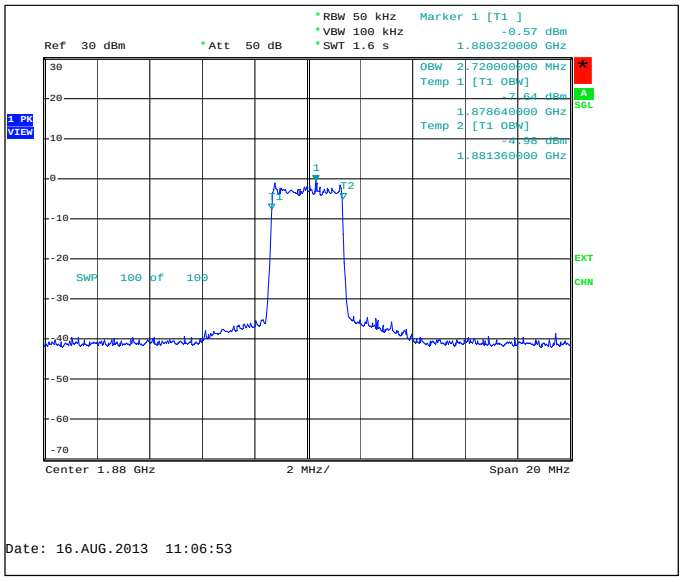
FDD, CBW 1.4MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



FDD, CBW 3MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



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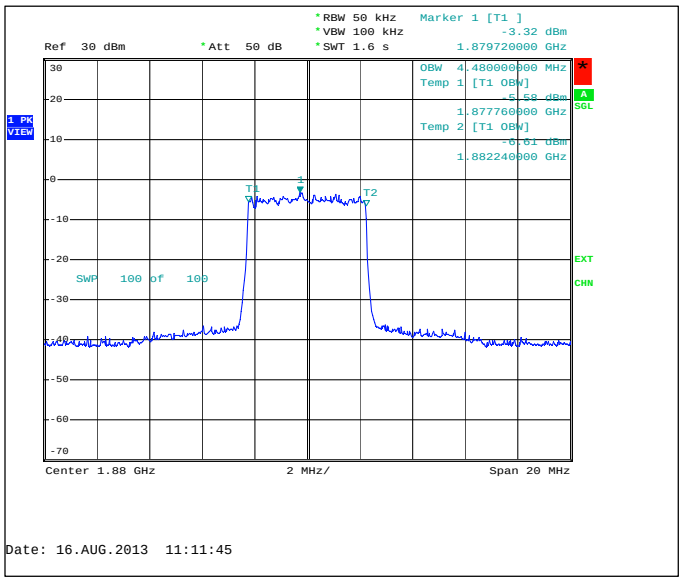
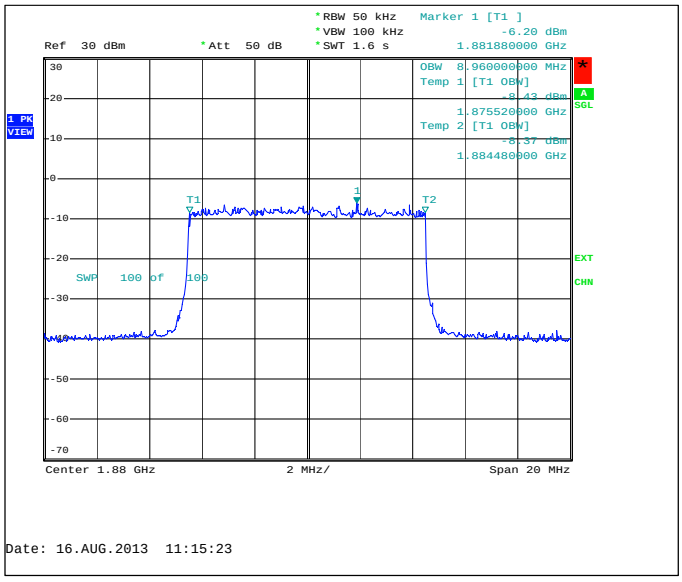
FDD, CBW 5MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



FDD, CBW 10MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



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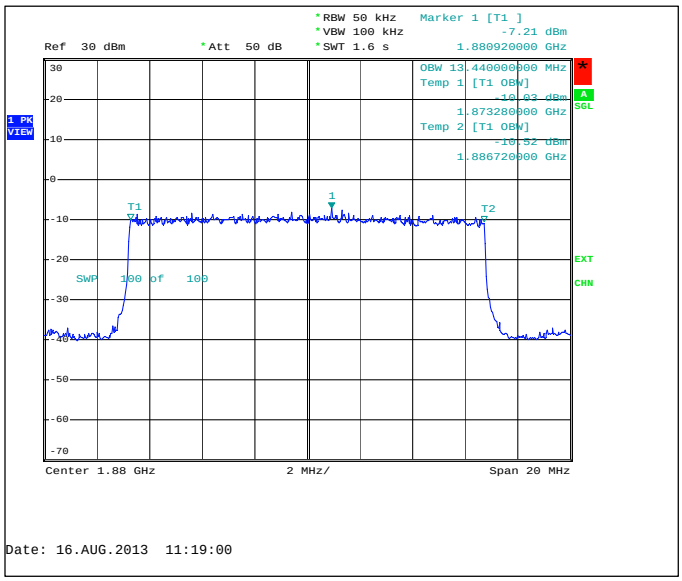
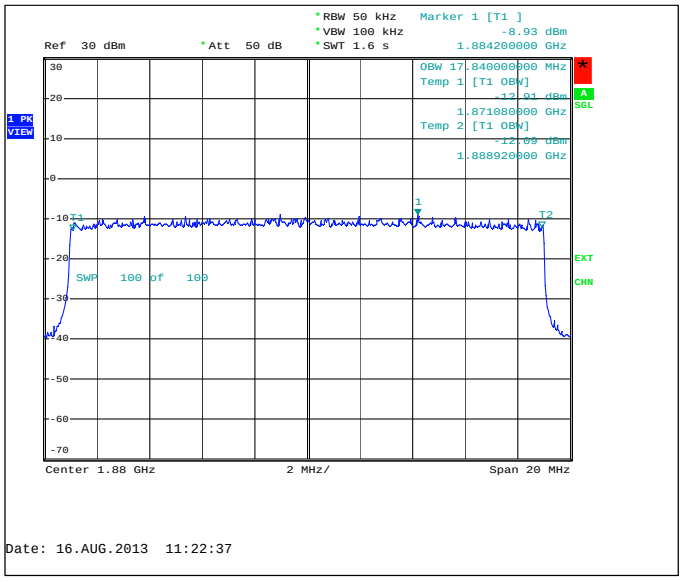
FDD, CBW 15MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



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



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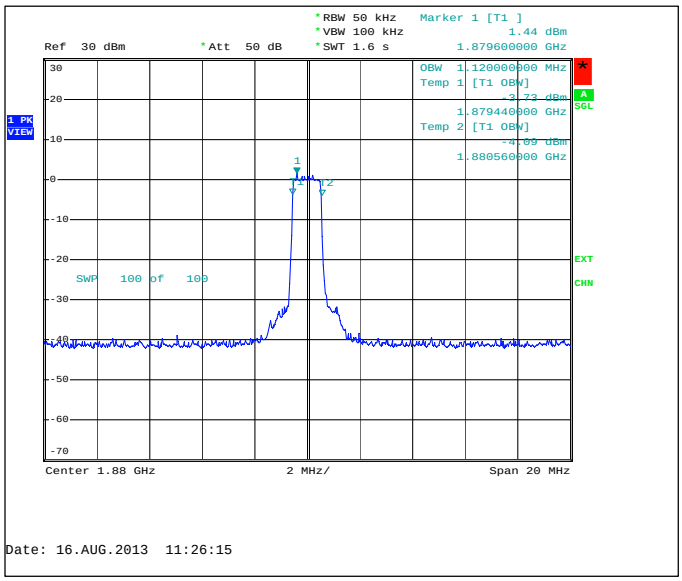
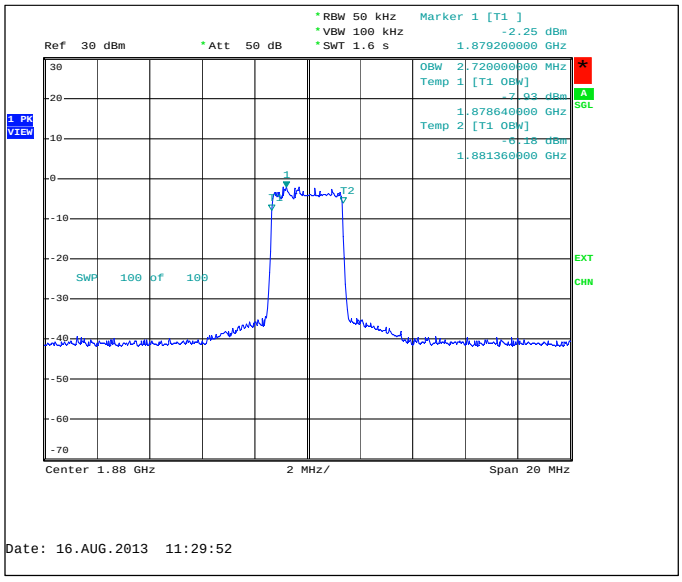
FDD, CBW 1.4MHz, 16QAM, INV RB, Channel 18900 / 1880.0 MHz



FDD, CBW 3MHz, 16QAM, INV RB, Channel 18900 / 1880.0 MHz



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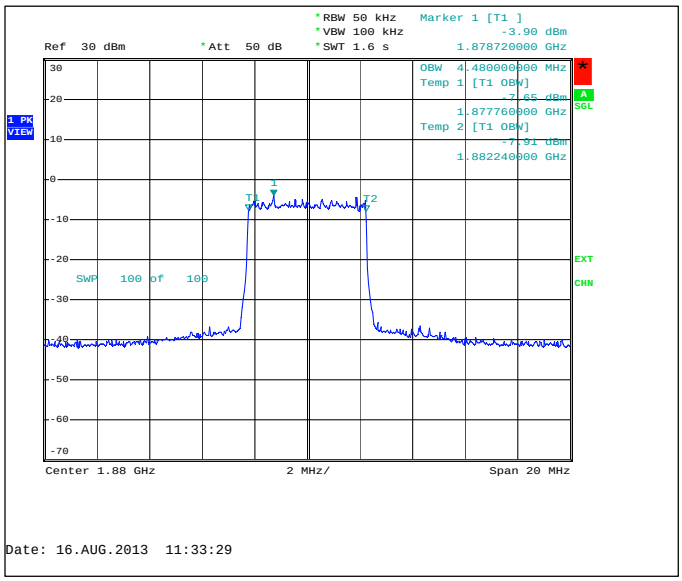
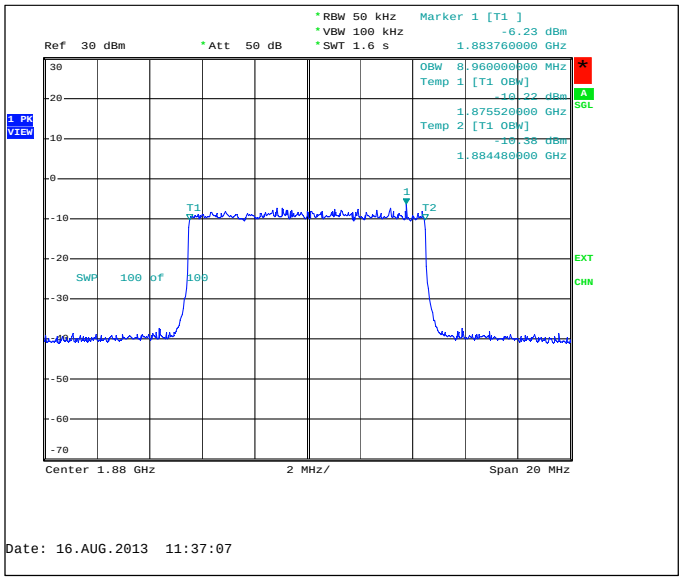
FDD, CBW 5MHz, 16QAM, INV RB, Channel 18900 / 1880.0 MHz



FDD, CBW 10MHz, 16QAM, INV RB, Channel 18900 / 1880.0 MHz



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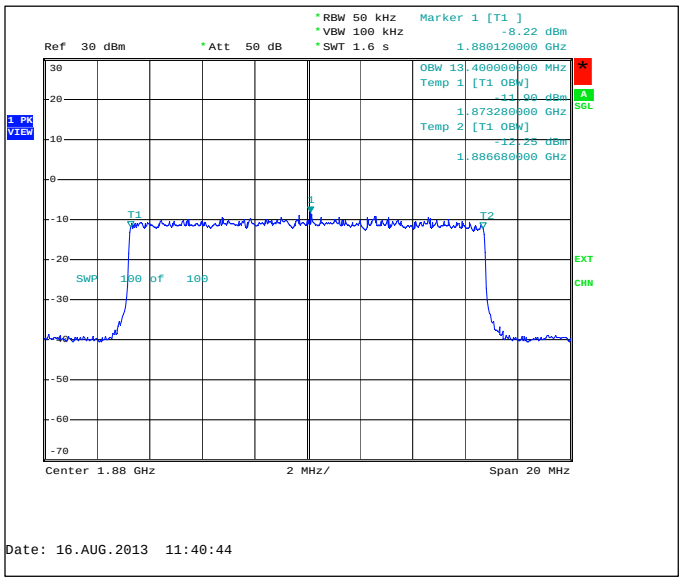
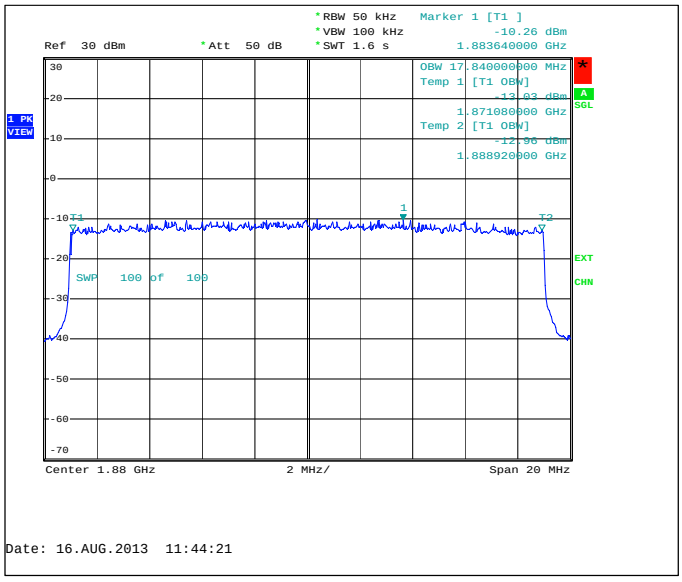
FDD, CBW 15MHz, 16QAM, INV RB, Channel 18900 / 1880.0 MHz



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



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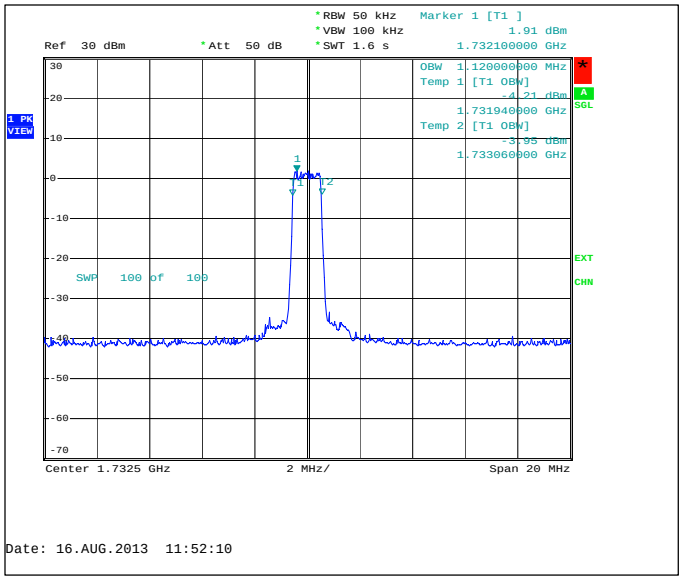
2.9. LTE1700 (Band 4) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, INV RB	1120
FDD, CBW 3MHz, QPSK, INV RB	2720
FDD, CBW 5MHz, QPSK, INV RB	4480
FDD, CBW 10MHz, QPSK, INV RB	8960
FDD, CBW 15MHz, QPSK, INV RB	13400
FDD, CBW 20MHz, QPSK, INV RB	17840
FDD, CBW 1.4MHz, 16QAM, INV RB	1120
FDD, CBW 3MHz, 16QAM, INV RB	2720
FDD, CBW 5MHz, 16QAM, INV RB	4480
FDD, CBW 10MHz, 16QAM, INV RB	8960
FDD, CBW 15MHz, 16QAM, INV RB	13400
FDD, CBW 20MHz, 16QAM, INV RB	17840

FDD, CBW 1.4MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



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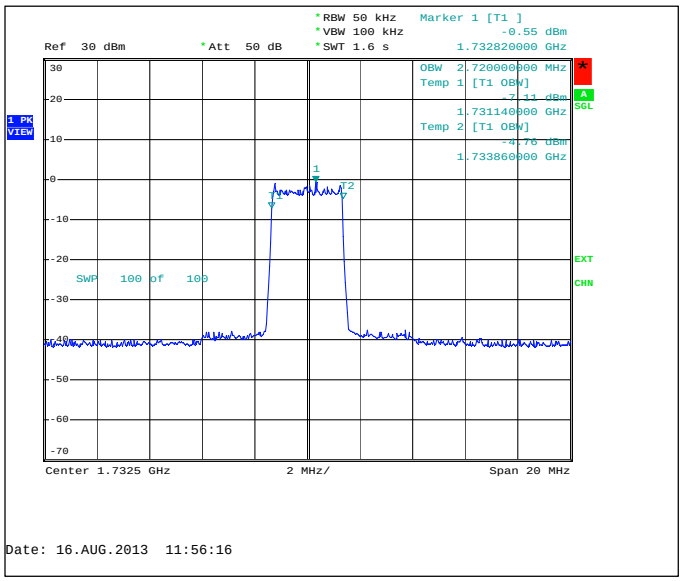
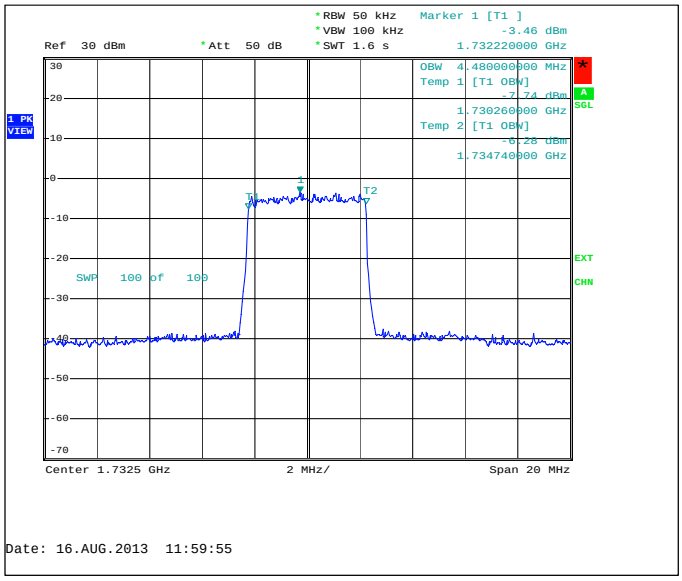
FDD, CBW 3MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



FDD, CBW 5MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



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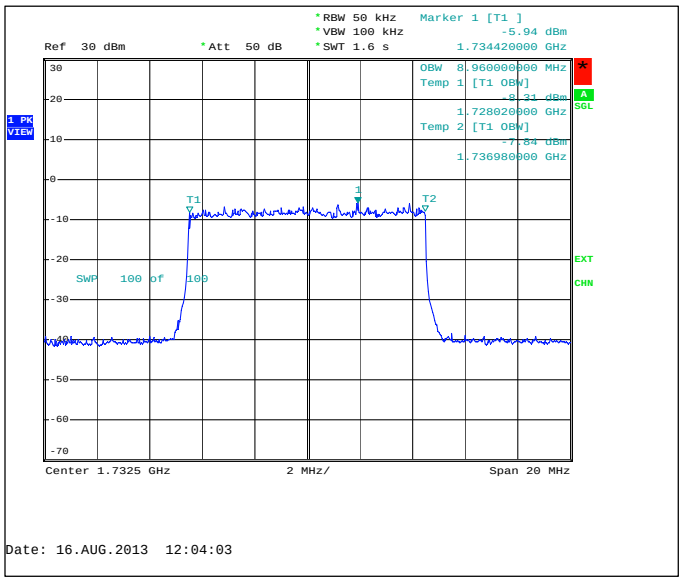
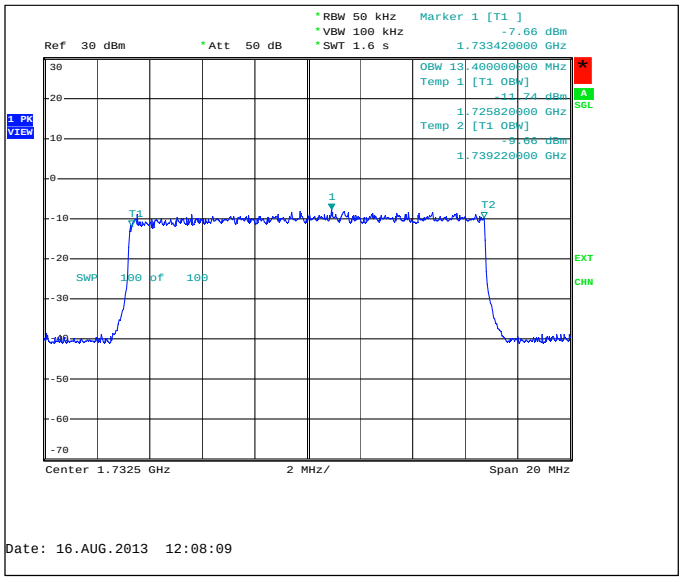
FDD, CBW 10MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



FDD, CBW 15MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



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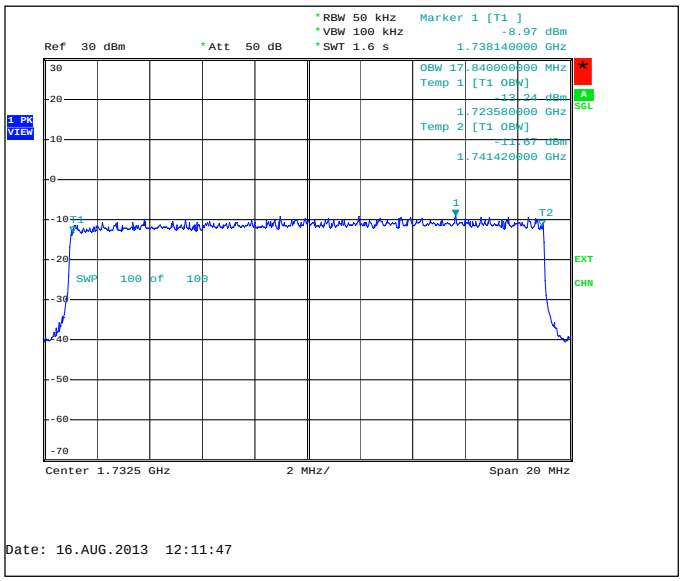
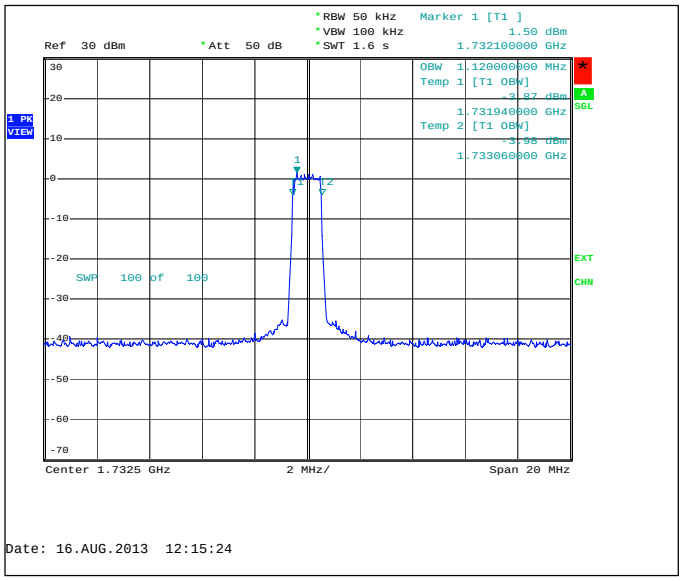
FDD, CBW 20MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



FDD, CBW 1.4MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



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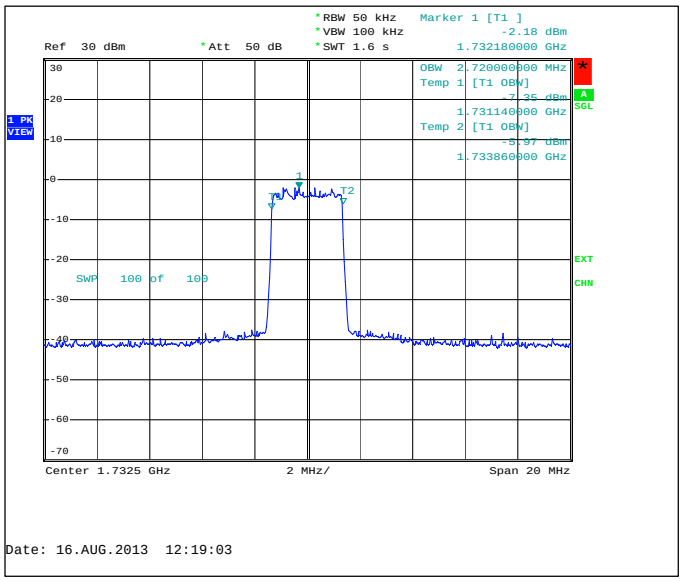
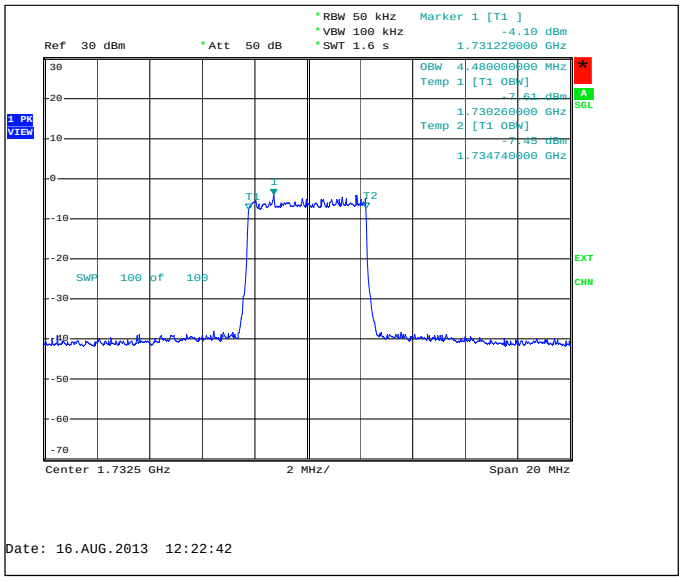
FDD, CBW 3MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



FDD, CBW 5MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



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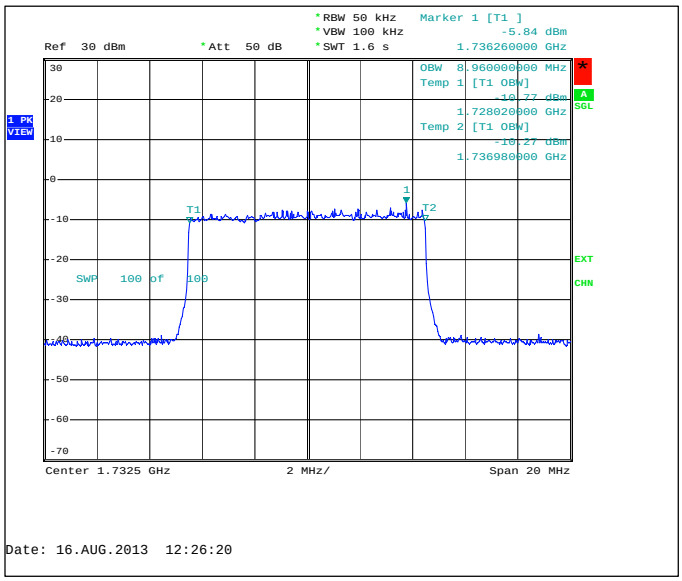
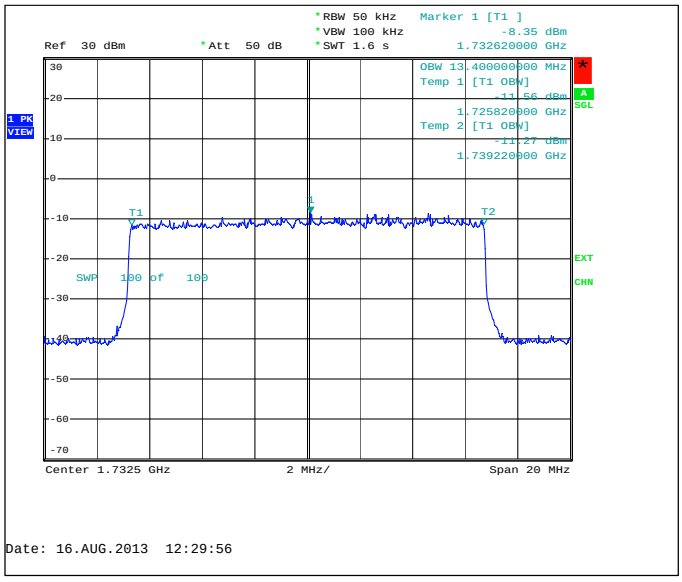
FDD, CBW 10MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



FDD, CBW 15MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



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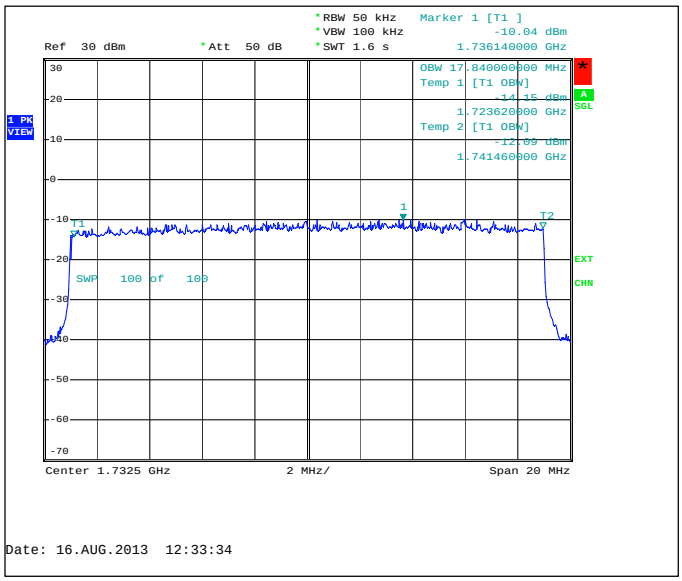
FDD, CBW 20MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



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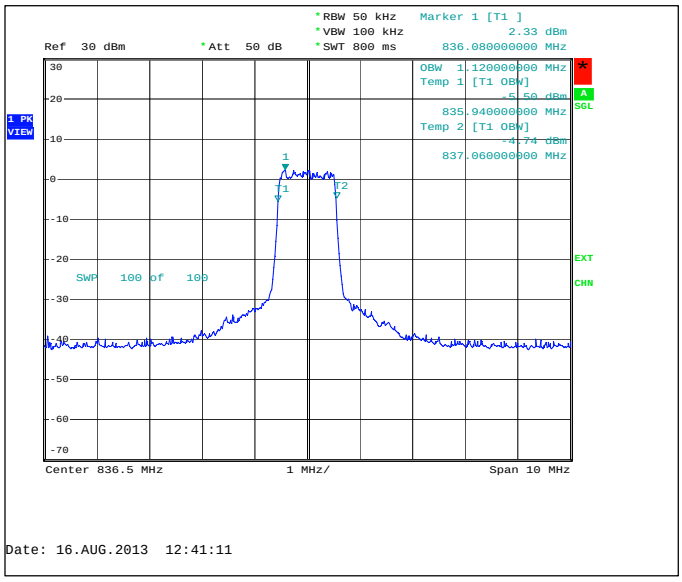
2.10. LTE850 (Band 5) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, INV RB	1120
FDD, CBW 3MHz, QPSK, INV RB	2700
FDD, CBW 5MHz, QPSK, INV RB	4480
FDD, CBW 10MHz, QPSK, INV RB	8960
FDD, CBW 1.4MHz, 16QAM, INV RB	1120
FDD, CBW 3MHz, 16QAM, INV RB	2700
FDD, CBW 5MHz, 16QAM, INV RB	4480
FDD, CBW 10MHz, 16QAM, INV RB	8920

FDD, CBW 1.4MHz, QPSK, INV RB, Channel 20525 / 836.5 MHz



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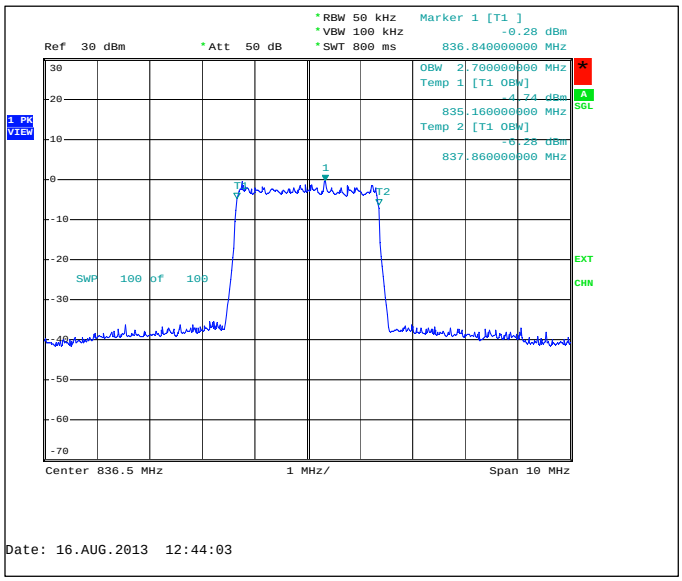
FDD, CBW 3MHz, QPSK, INV RB, Channel 20525 / 836.5 MHz



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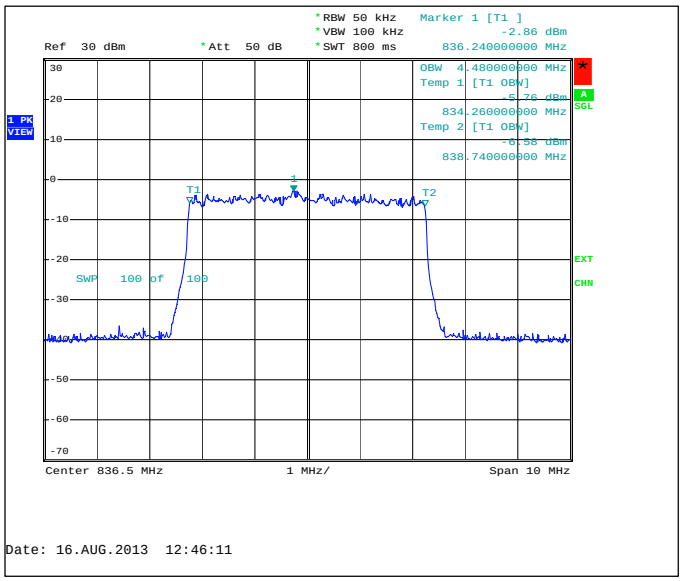
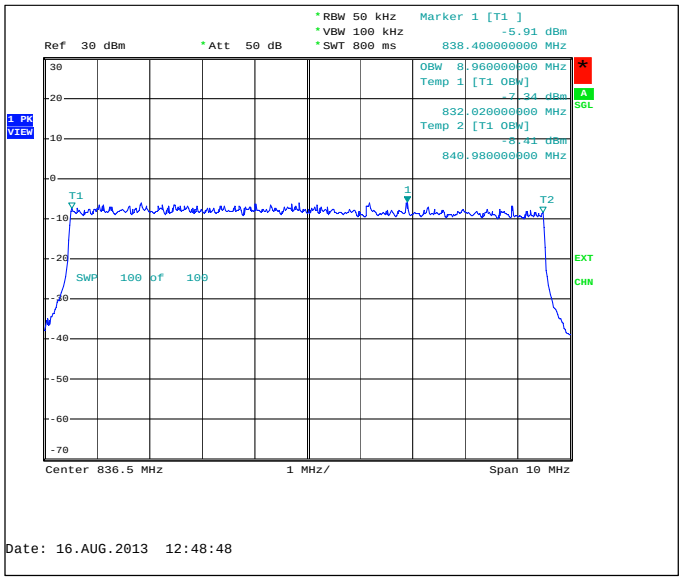
FDD, CBW 5MHz, QPSK, INV RB, Channel 20525 / 836.5 MHz



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



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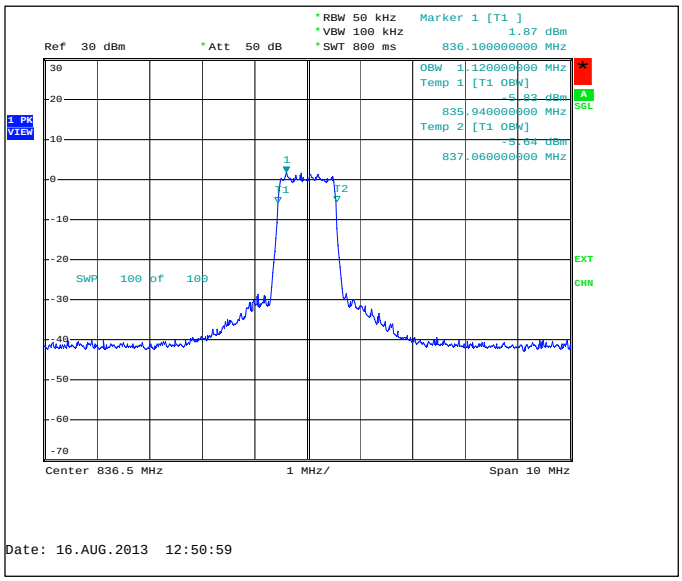
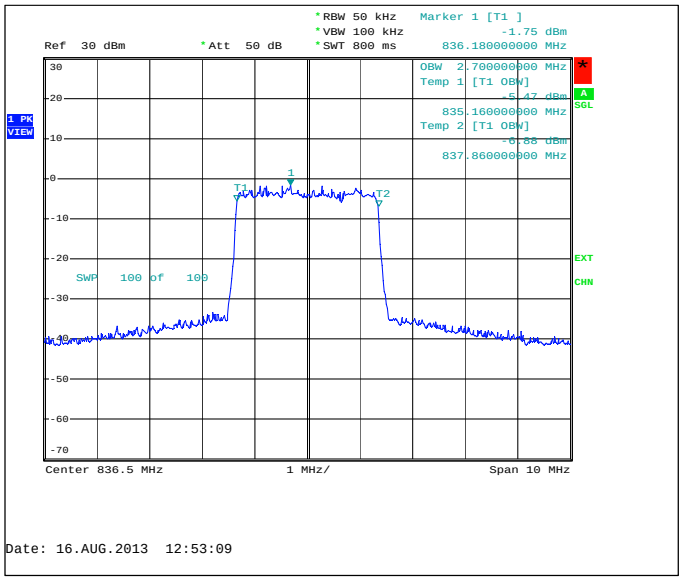
FDD, CBW 1.4MHz, 16QAM, INV RB, Channel 20525 / 836.5 MHz



FDD, CBW 3MHz, 16QAM, INV RB, Channel 20525 / 836.5 MHz



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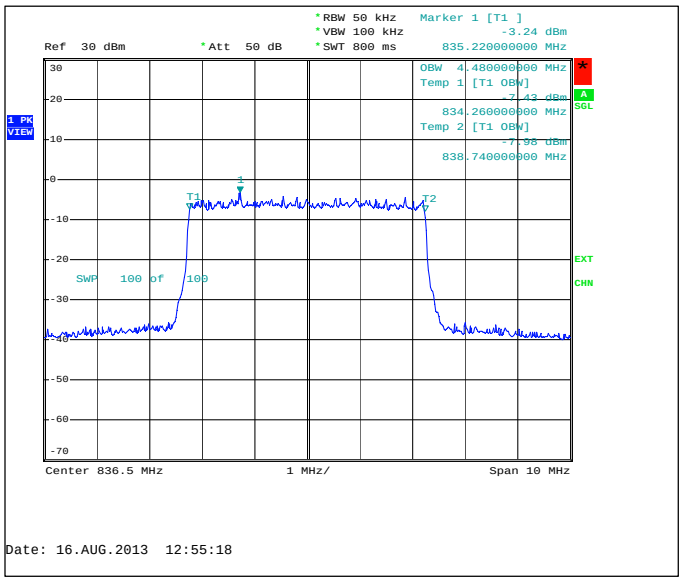
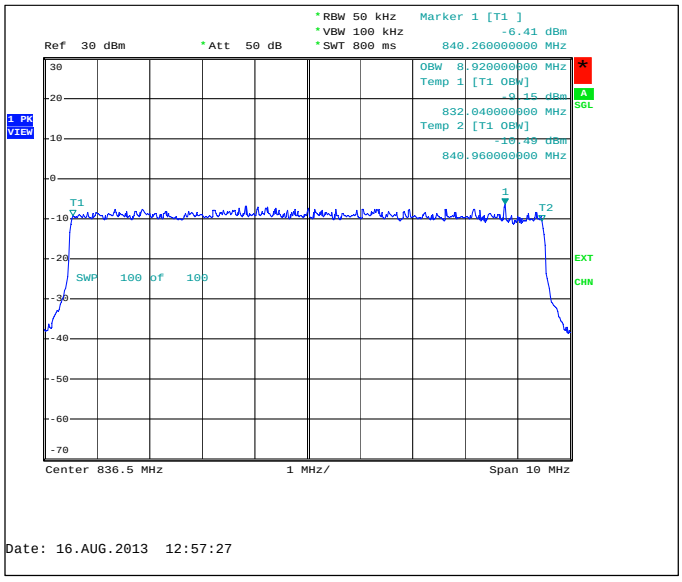
FDD, CBW 5MHz, 16QAM, INV RB, Channel 20525 / 836.5 MHz



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



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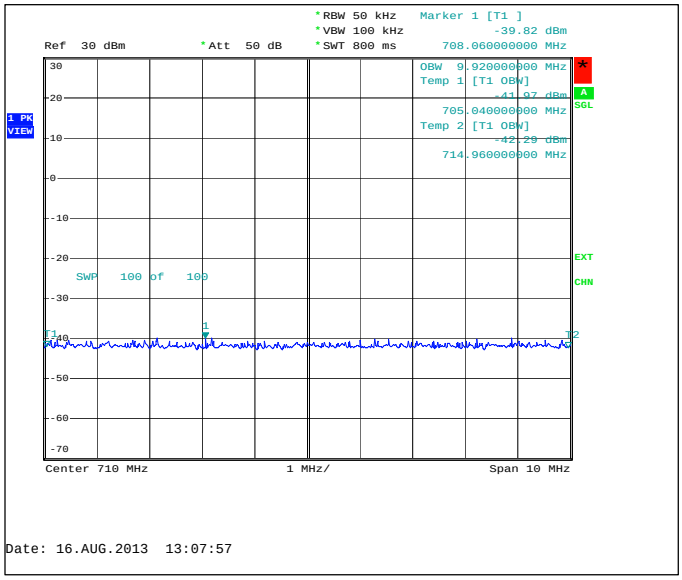
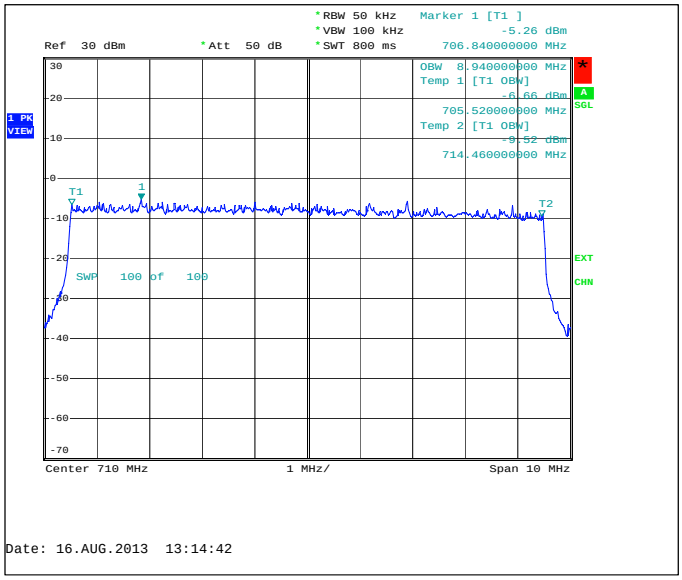
2.11. LTE700 Lower (Band 17) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 5MHz, QPSK, 25 RB	999
FDD, CBW 10MHz, QPSK, 50 RB	999
FDD, CBW 5MHz, 16QAM, INV RB	4480
FDD, CBW 10MHz, 16QAM, INV RB	8940

FDD, CBW 5MHz, QPSK, 25 RB, Channel 23790 / 710.0 MHz



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



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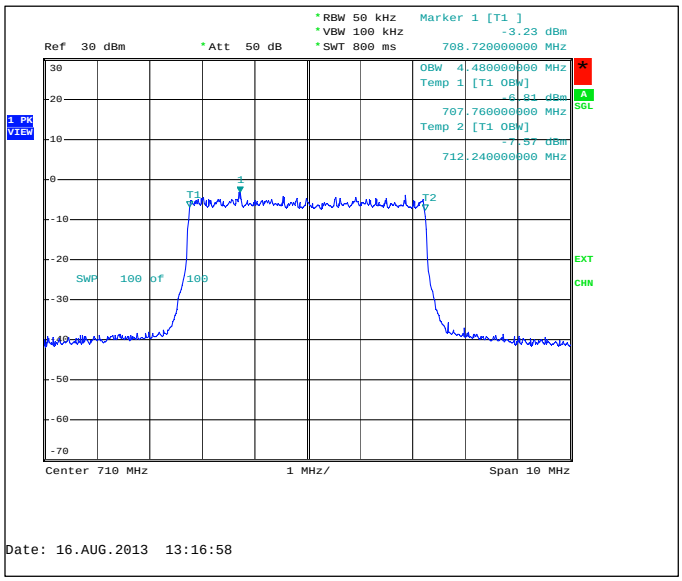
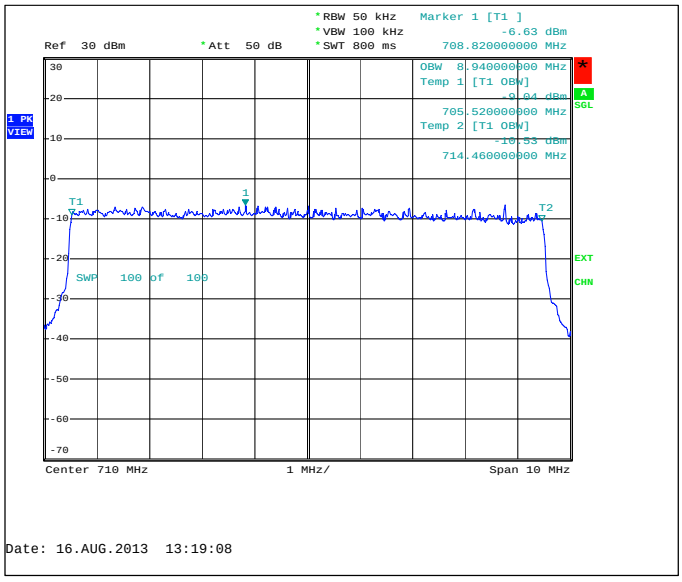
FDD, CBW 5MHz, 16QAM, INV RB, Channel 23790 / 710.0 MHz



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



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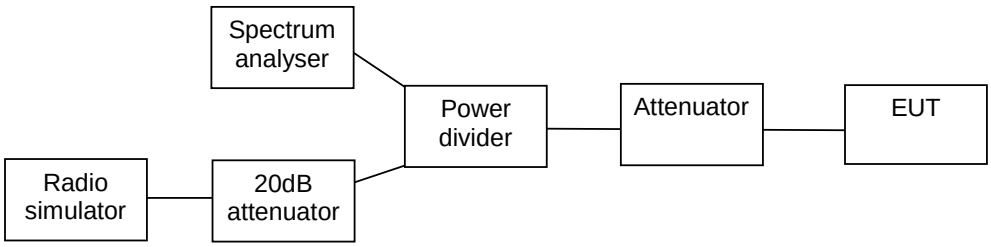
3. Band edge compliance

(FCC §22.917(a), §24.238(a), §27.53(g), §27.53(h), §27.53(c)(2)(4), §27.53(g), RSS-132 4.5, RSS-133 6.5, RSS-139 6.5)

EUT with DUT number	RM-940, DUT 17613
Accessories with DUT numbers	WH-208, DUT 17586
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 42 / 100.8
Date of measurements	15-Aug-2013
Measured by	Sami Lehtonen

3.1. 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, RSS-139.

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)
GSM850 / WCDMA850 / LTE850	Below 824 and above 849	-13
WCDMA1700 / LTE1700	Below 1710 and above 1755	-13
GSM1900 / LTE1900 / WCDMA1900	Below 1850 and above 1910	-13

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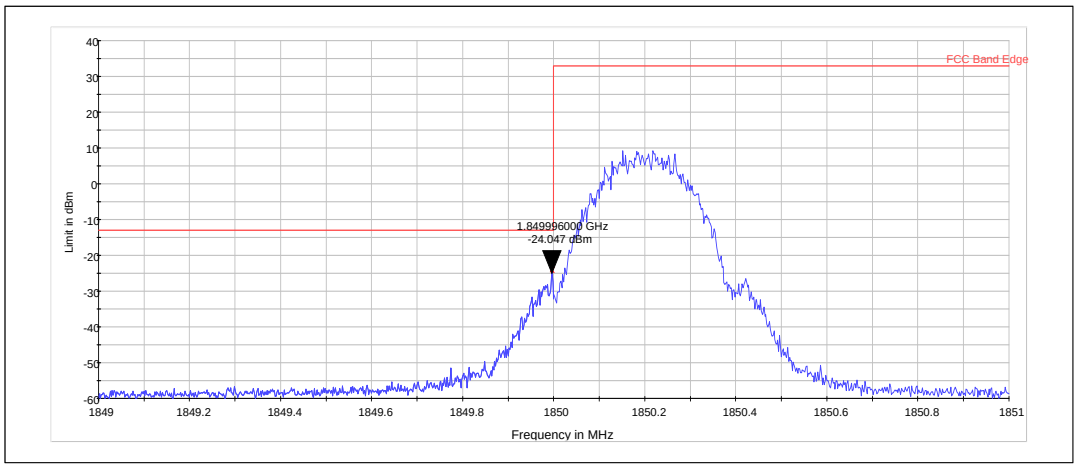
3.3. GSM 1900 Test results

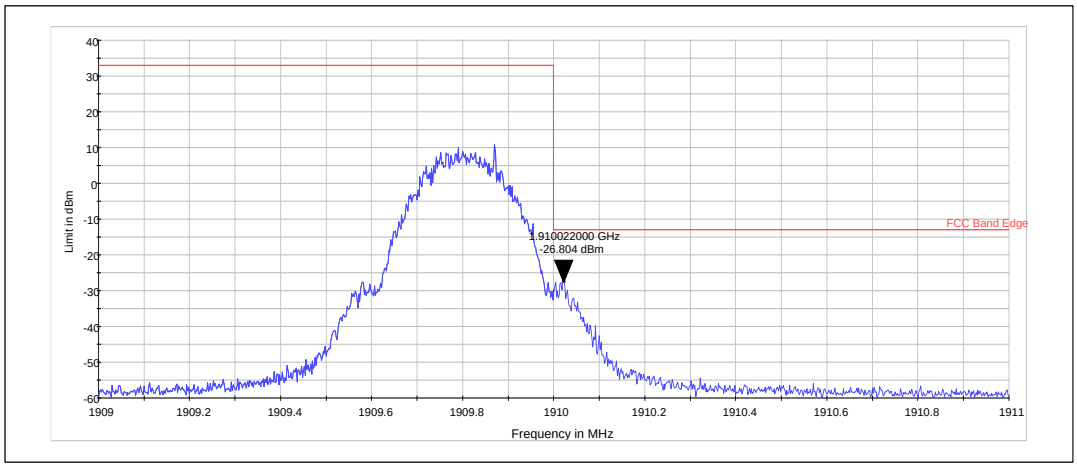
Channel 512 / 1850.2 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	1849.996	-24.05	PASSED

Channel 810 / 1909.8 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	1910.022	-26.80	PASSED

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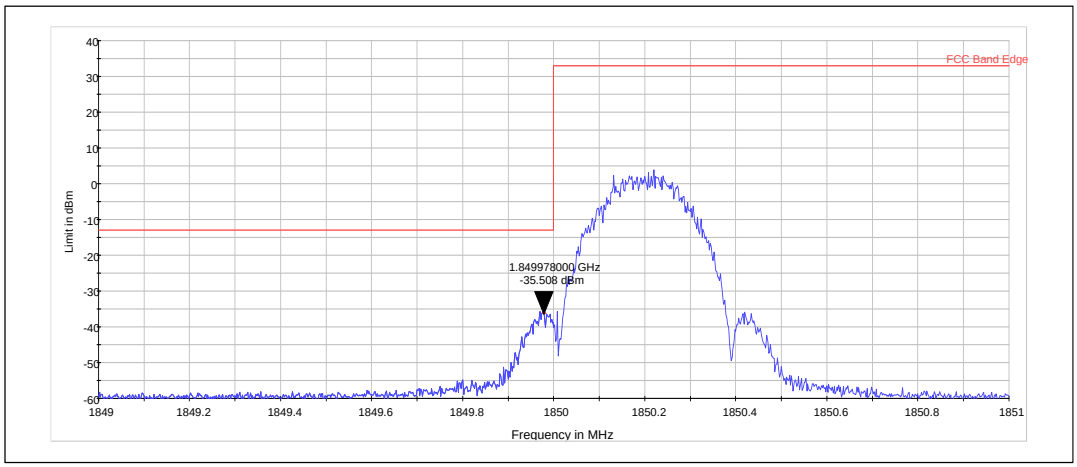
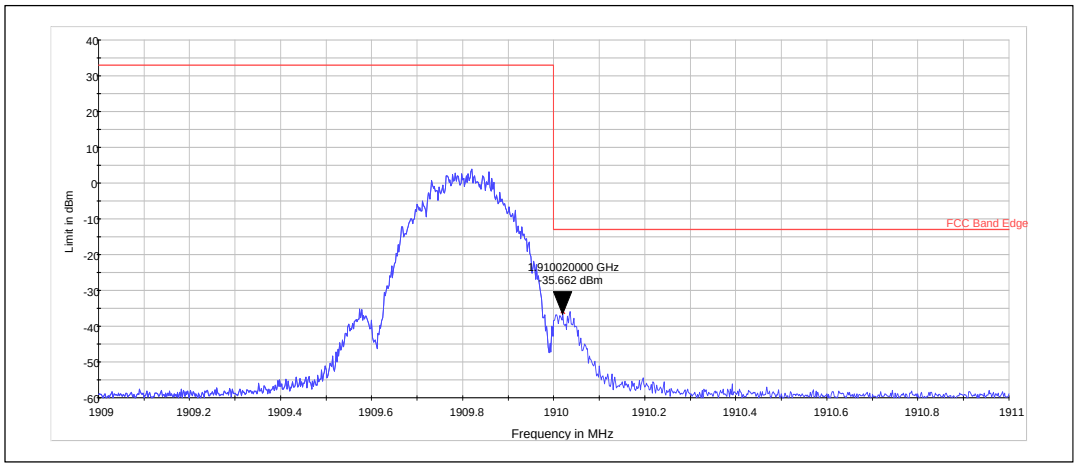
Channel 512 / 1850.2 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	1849.978	-35.51	PASSED

Channel 810 / 1909.8 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	1910.020	-35.66	PASSED

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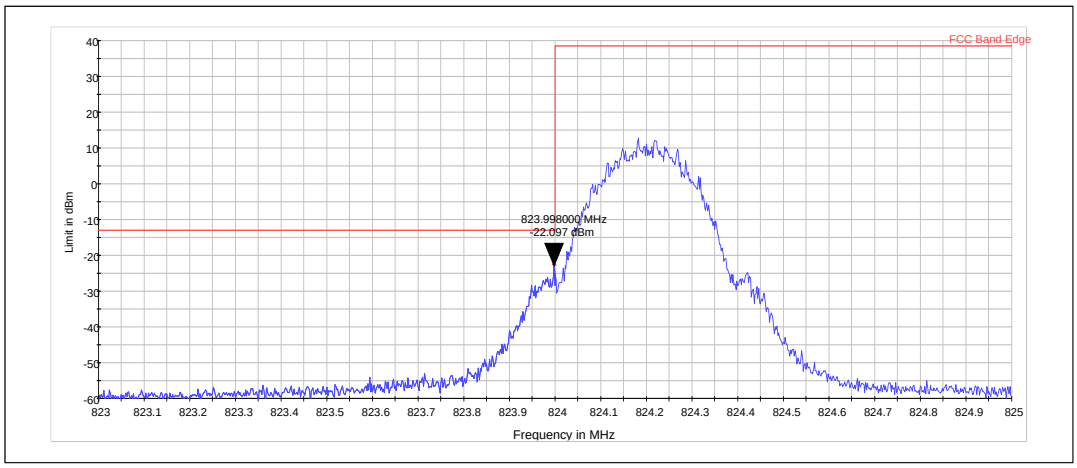
3.4. GSM 850 Test results

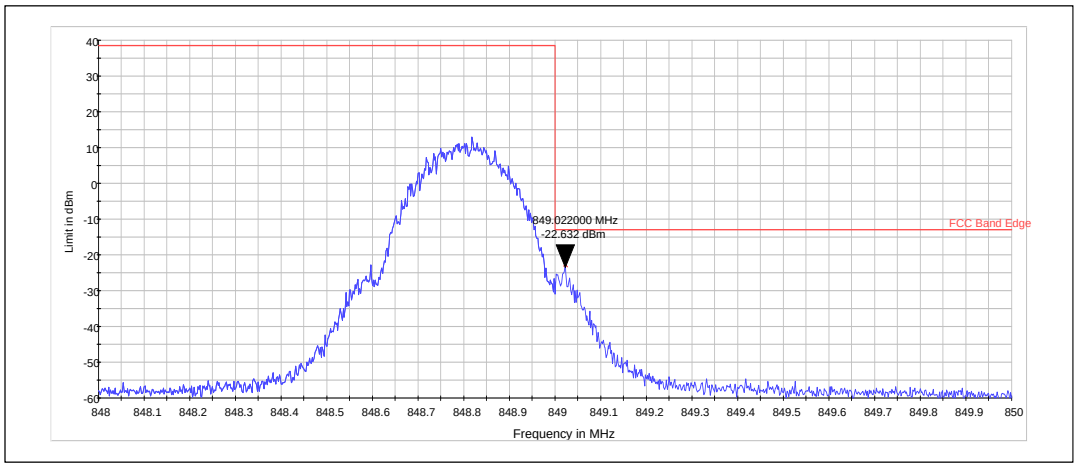
Channel 128 / 824.2 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	823.998	-22.10	PASSED

Channel 251 / 848.8 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	849.022	-22.63	PASSED

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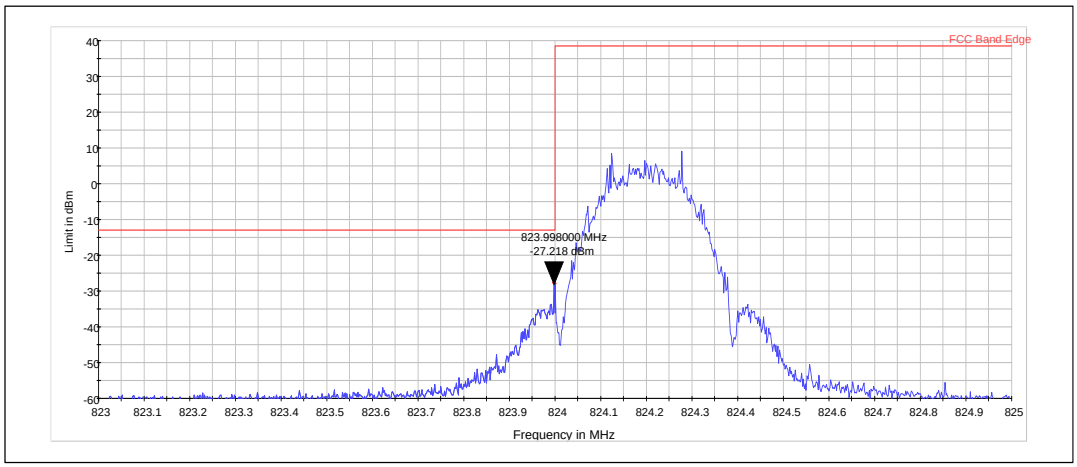
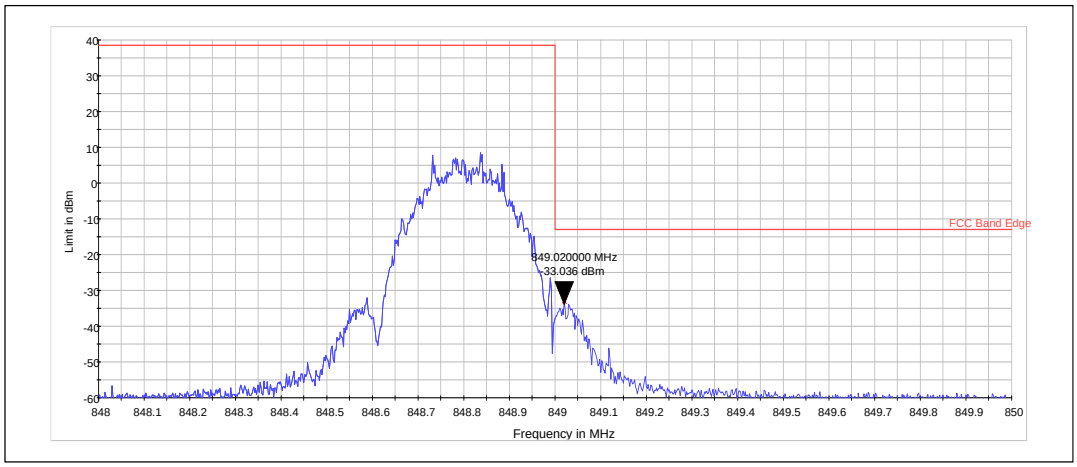
Channel 128 / 824.2 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	823.998	-27.22	PASSED

Channel 251 / 848.8 MHz



RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	849.020	-33.04	PASSED

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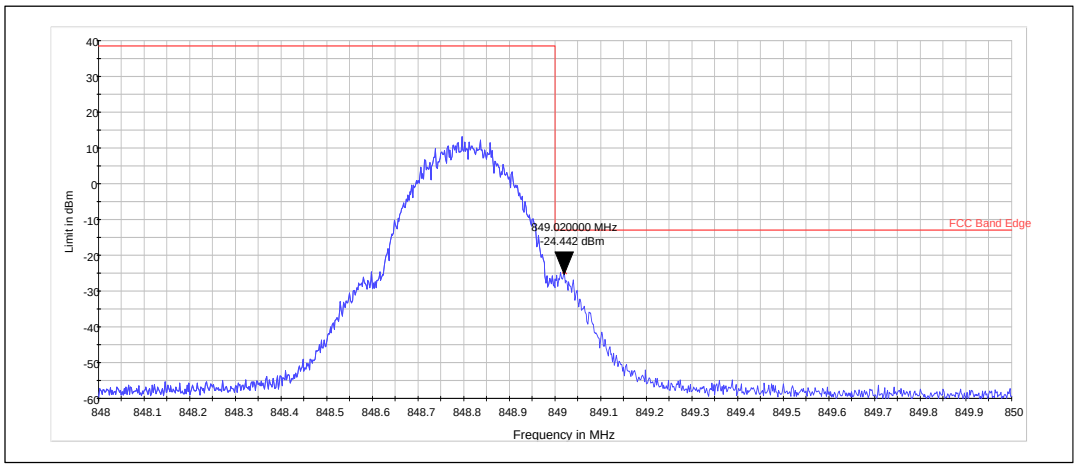
Channel 251 / 848.8 MHz

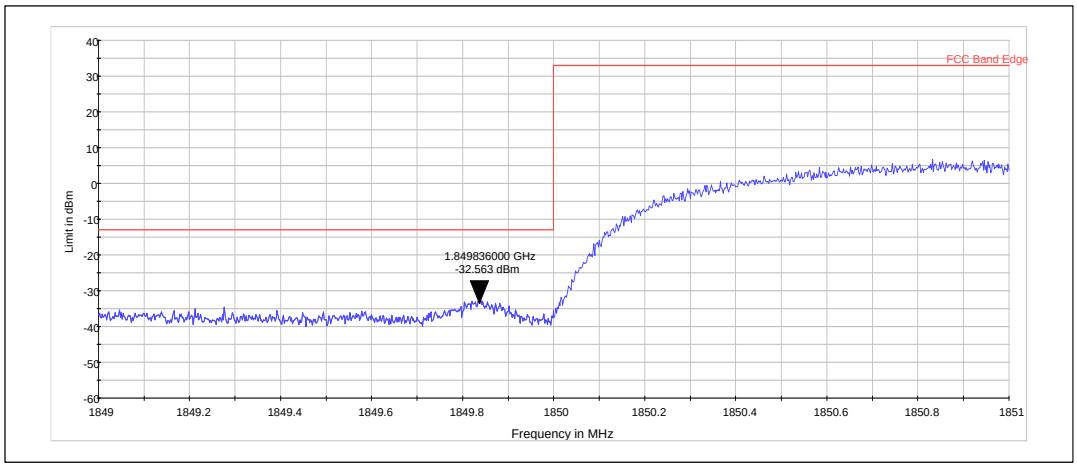


RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GPRS	849.020	-24.44	PASSED

3.5. WCDMA 1900 Test results

Channel 9262 / 1852.4 MHz



RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1849.836	-32.56	PASSED

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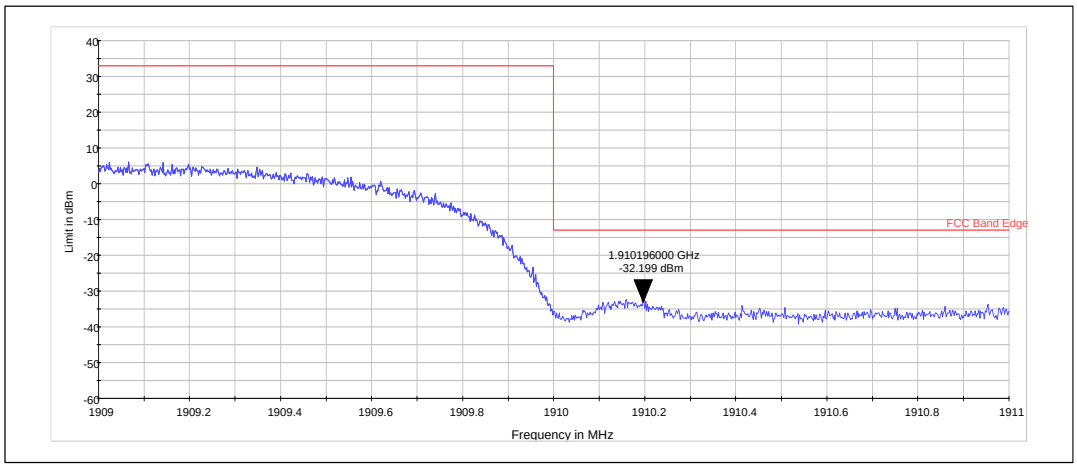
Channel 9538 / 1907.6 MHz

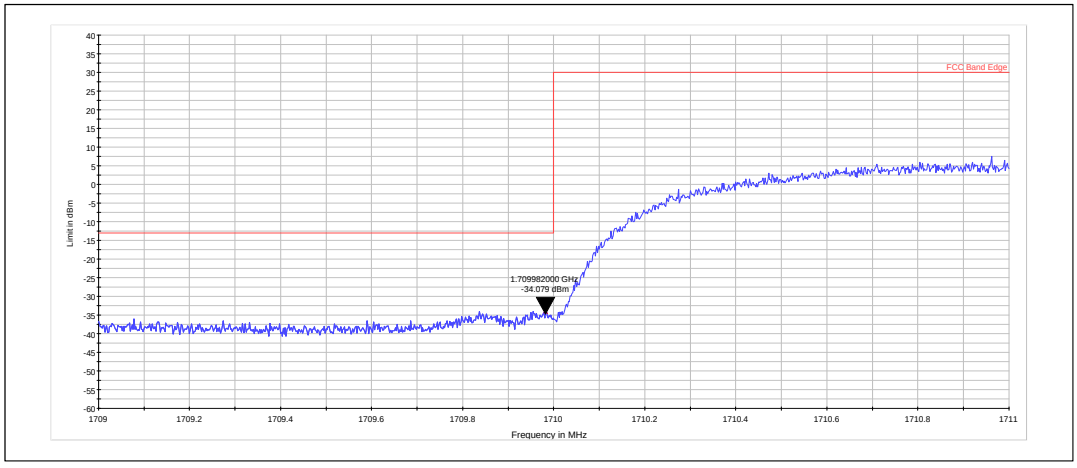


RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1910.196	-32.20	PASSED

3.6. WCDMA 1700 Test results

Channel 1312 / 1712.4 MHz



RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1709.982	-34.08	PASSED

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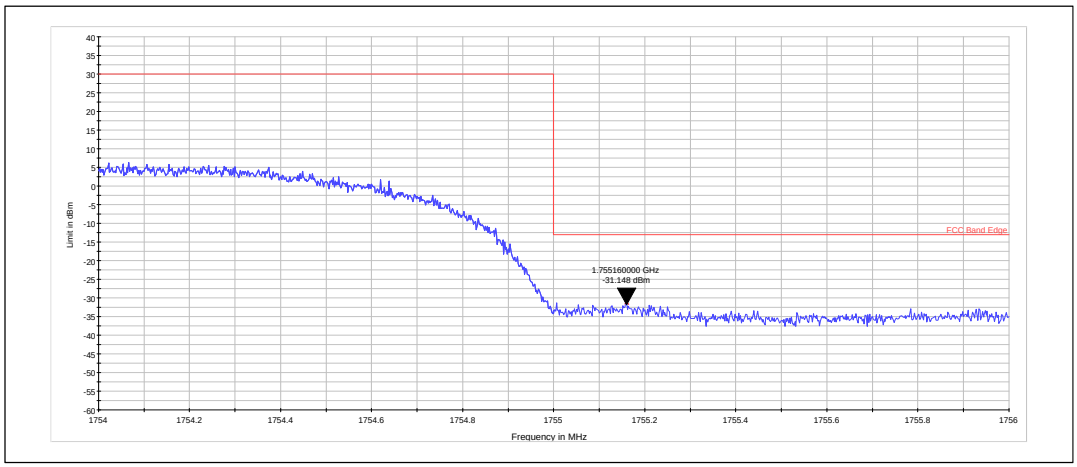
Channel 1513 / 1752.6 MHz

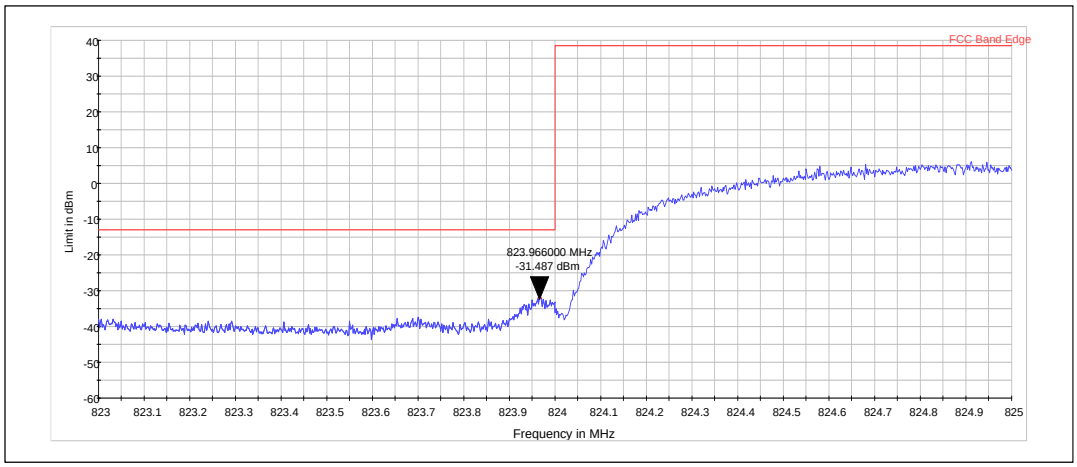


RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1755.160	-31.15	PASSED

3.7. WCDMA 850 Test results

Channel 4132 / 826.4 MHz



RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	823.966	-31.49	PASSED

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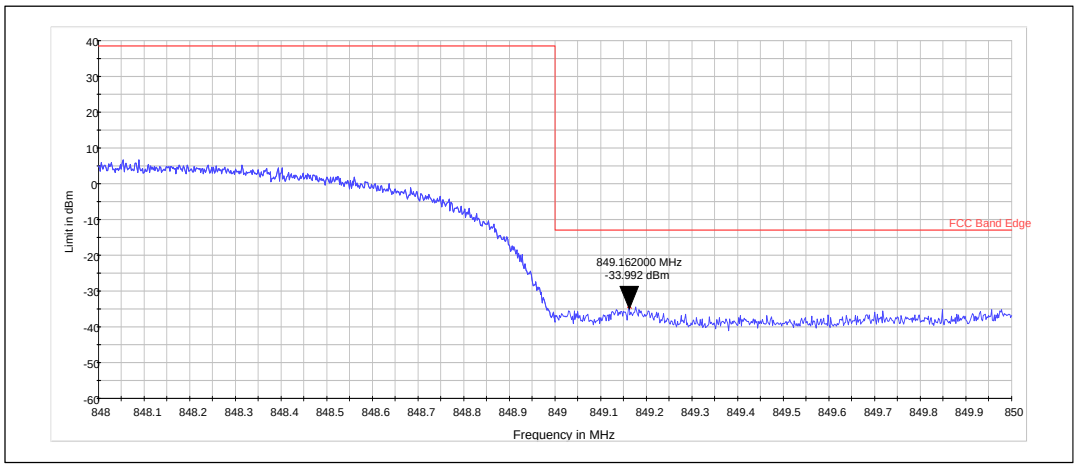
Channel 4233 / 846.6 MHz

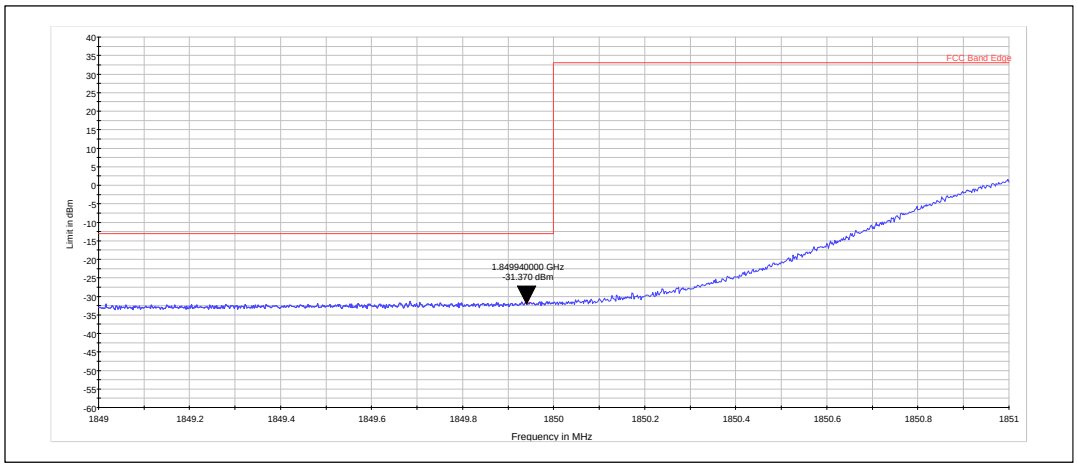


RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	849.162	-33.99	PASSED

3.8. LTE1900 (Band 2) Test results

Channel 18700 / 1860 MHz



RMS (RBW: 200 kHz, VBW: 200 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1849.940	-31.37	PASSED

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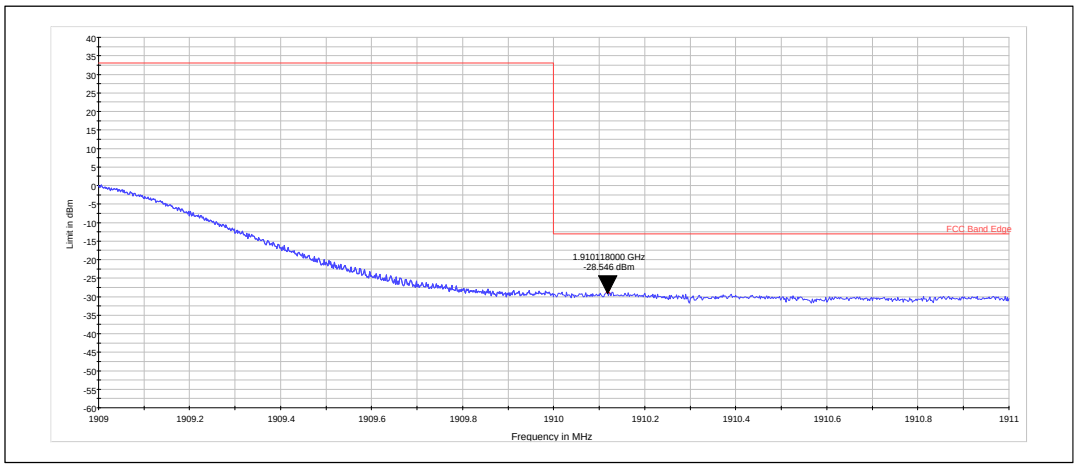
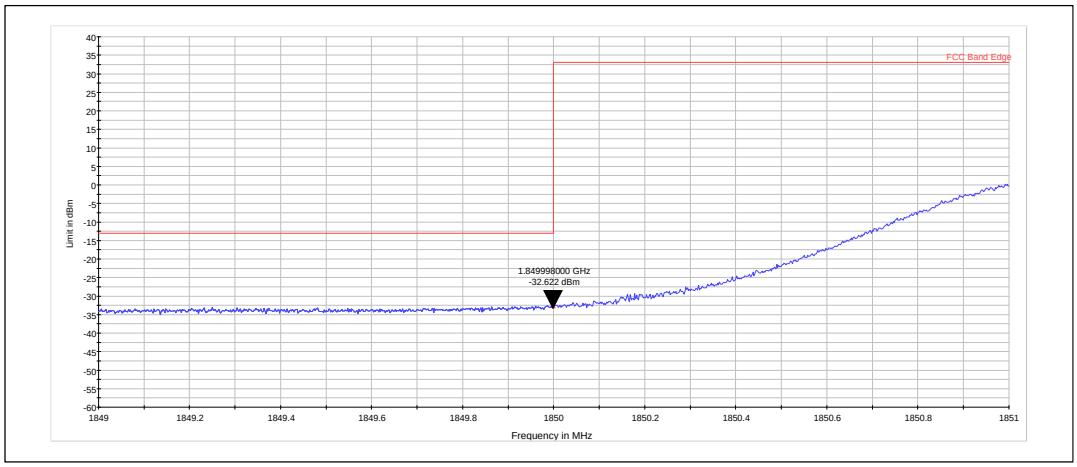
Channel 19100 / 1900 MHz



RMS (RBW: 200 kHz, VBW: 200 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1910.118	-28.55	PASSED

Channel 18700 / 1860 MHz



RMS (RBW: 200 kHz, VBW: 200 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1849.998	-32.62	PASSED

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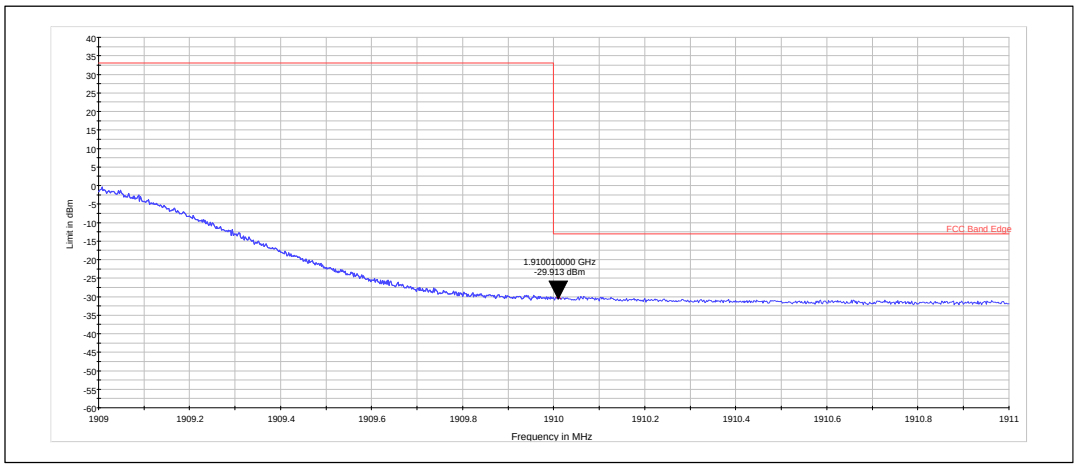
Channel 19100 / 1900 MHz

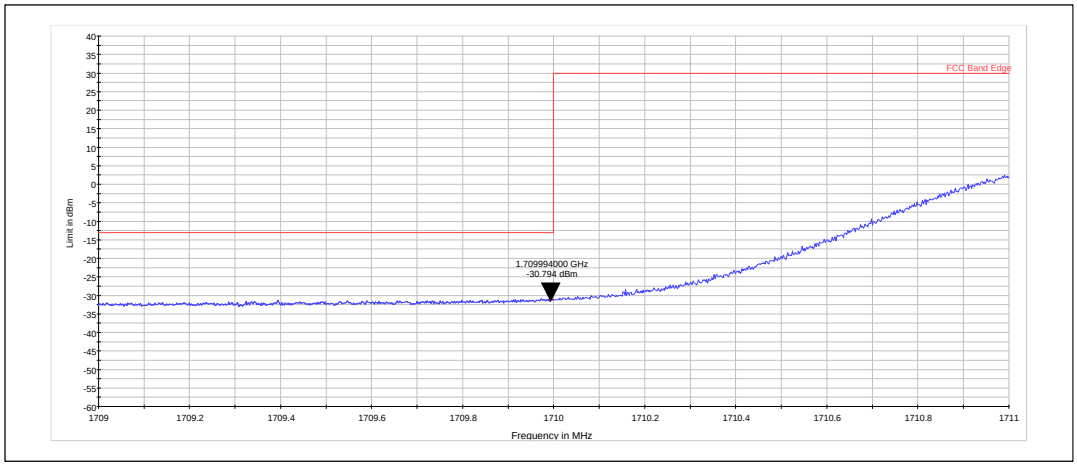


RMS (RBW: 200 kHz, VBW: 200 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1910.010	-29.91	PASSED

3.9. LTE1700 (Band 4) Test results

Channel 20050 / 1720 MHz



RMS (RBW: 200 kHz, VBW: 200 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1709.994	-30.79	PASSED

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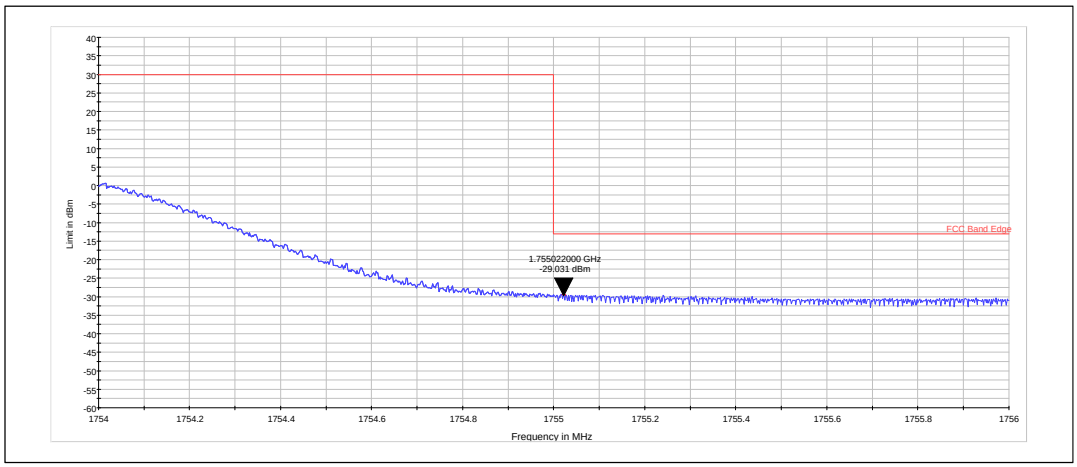
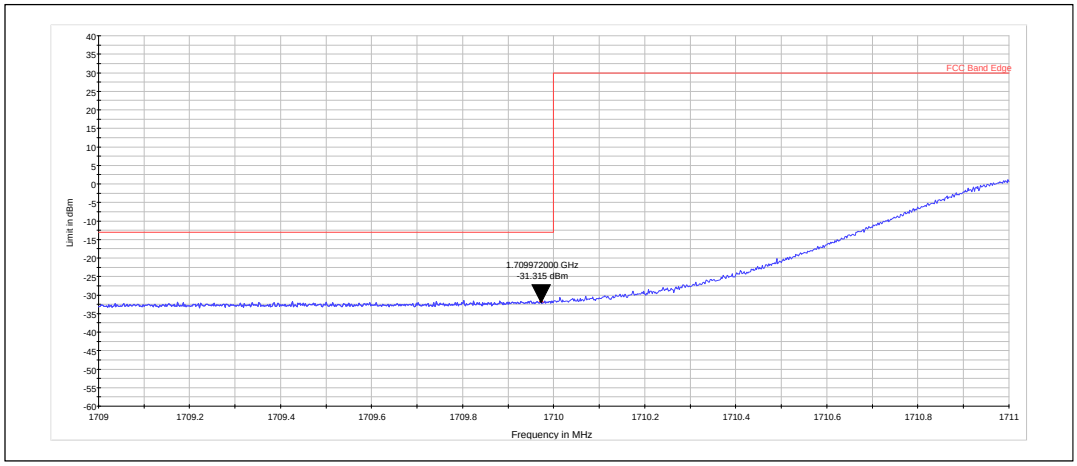
Channel 20300 / 1745 MHz



RMS (RBW: 200 kHz, VBW: 200 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1755.022	-29.03	PASSED

Channel 20050 / 1720 MHz



RMS (RBW: 200 kHz, VBW: 200 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1709.972	-31.32	PASSED

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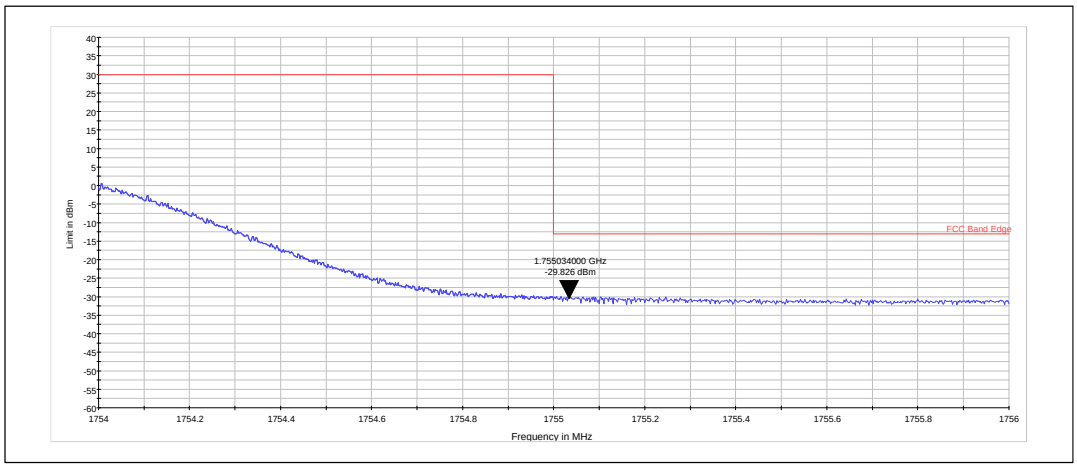
Channel 20300 / 1745 MHz

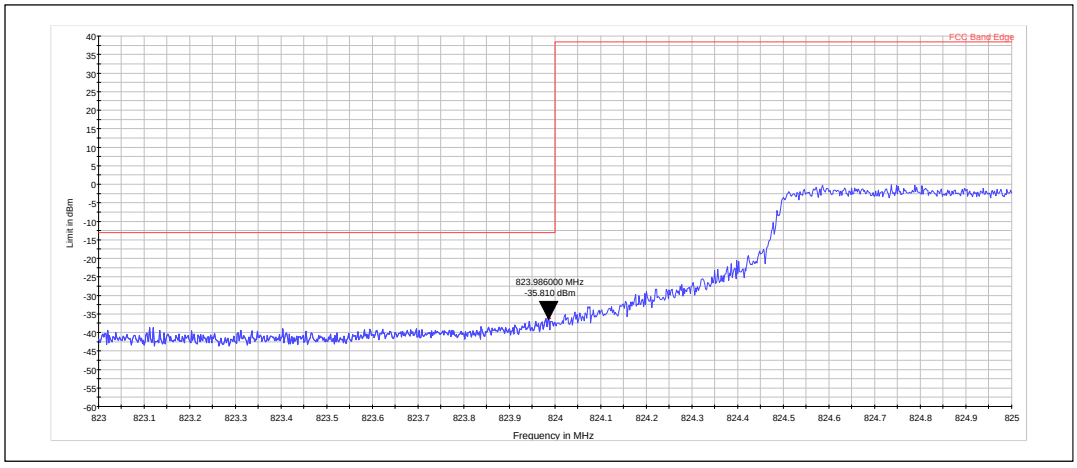


RMS (RBW: 200 kHz, VBW: 200 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1755.034	-29.83	PASSED

3.10. LTE850 (Band 5) Test results

Channel 20450 / 829 MHz



RMS (RBW: 100 kHz, VBW: 100 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	823.986	-35.81	PASSED

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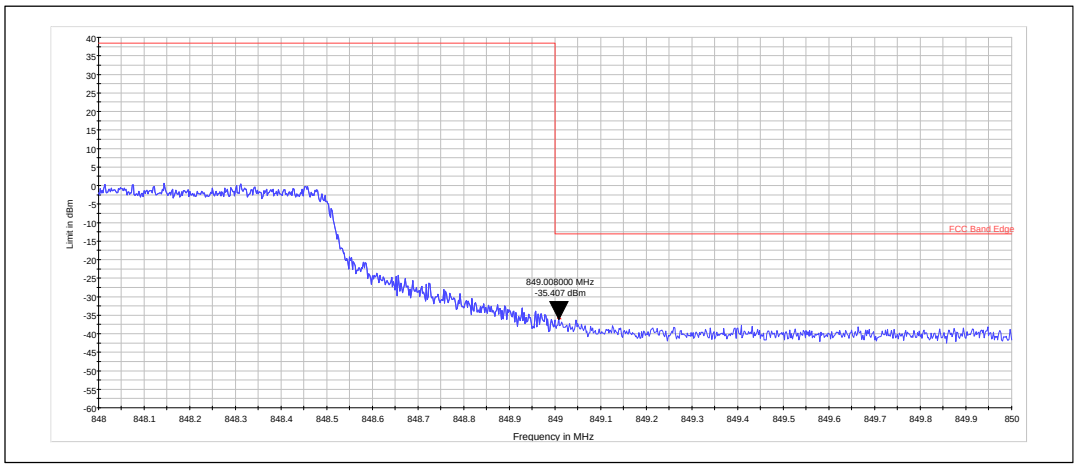
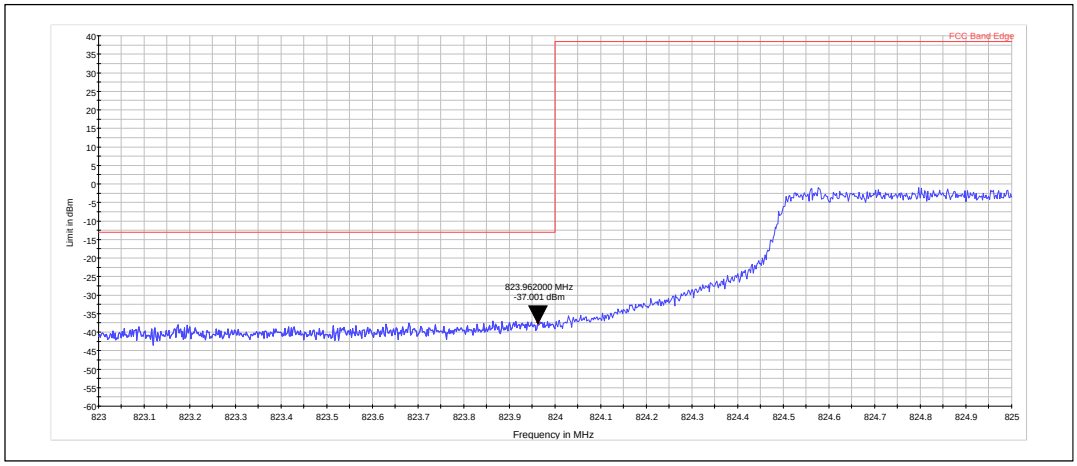
Channel 20600 / 844 MHz



RMS (RBW: 100 kHz, VBW: 100 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	849.008	-35.41	PASSED

Channel 20450 / 829 MHz



RMS (RBW: 100 kHz, VBW: 100 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	823.962	-37.00	PASSED

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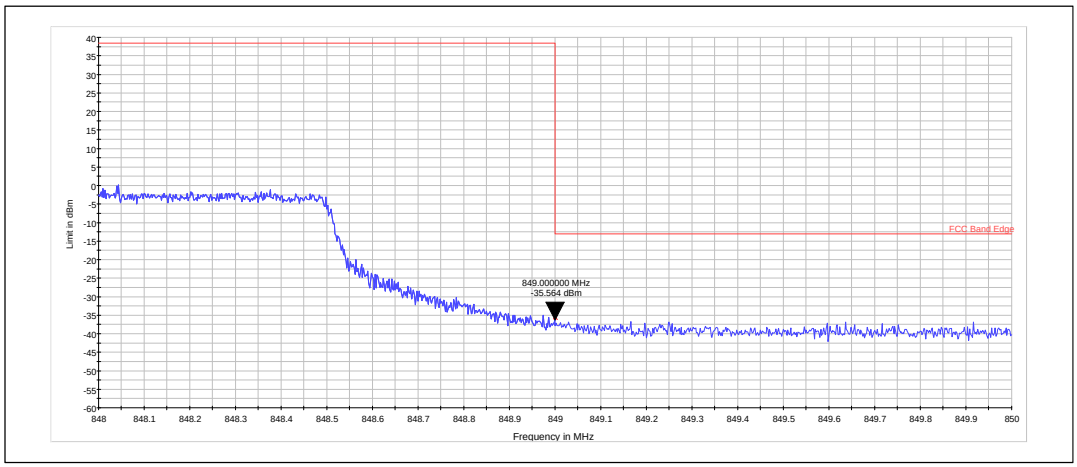
Channel 20600 / 844 MHz

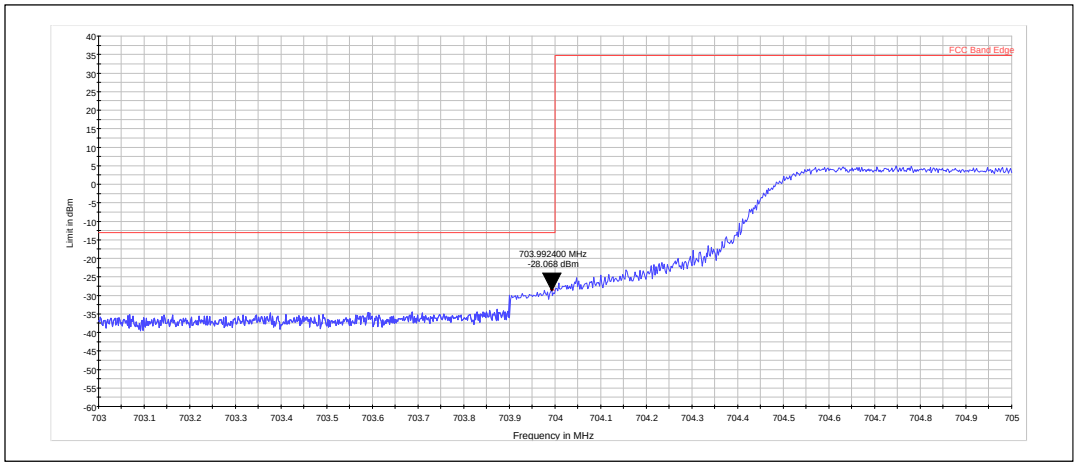


RMS (RBW: 100 kHz, VBW: 100 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	849.000	-35.56	PASSED

3.11. LTE700 Lower (Band 17) Test results

Channel 23780 / 709 MHz



RMS detector

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	703.992	-28.07	PASSED

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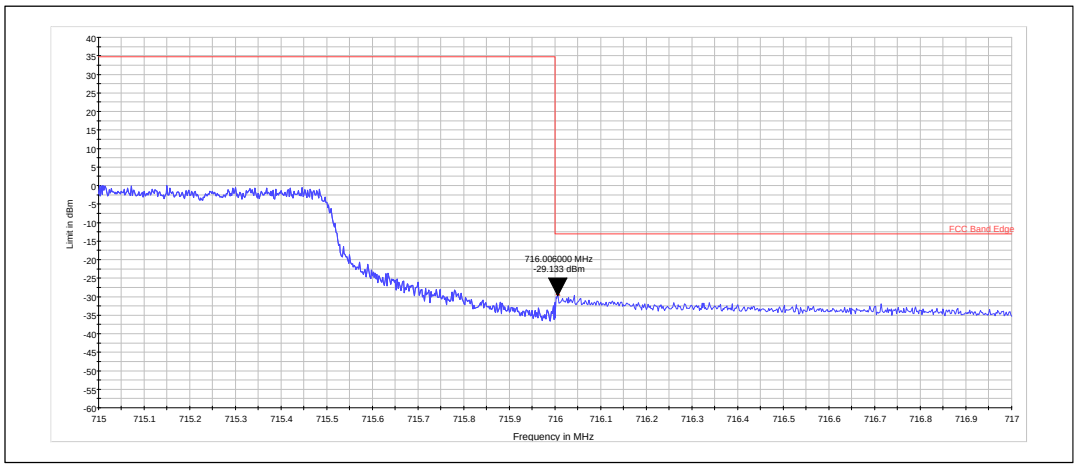
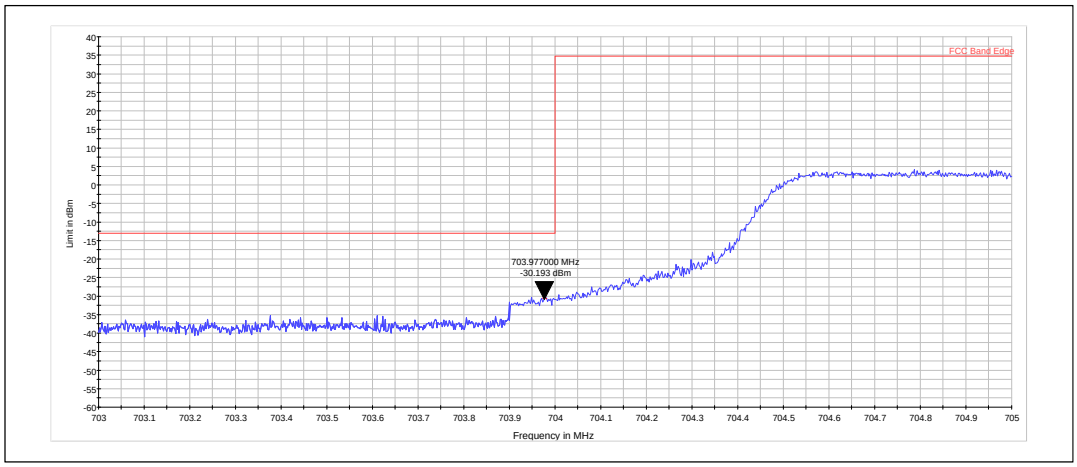
Channel 23800 / 711 MHz



RMS detector

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	716.006	-29.13	PASSED

Channel 23780 / 709 MHz



RMS detector

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	703.977	-30.19	PASSED

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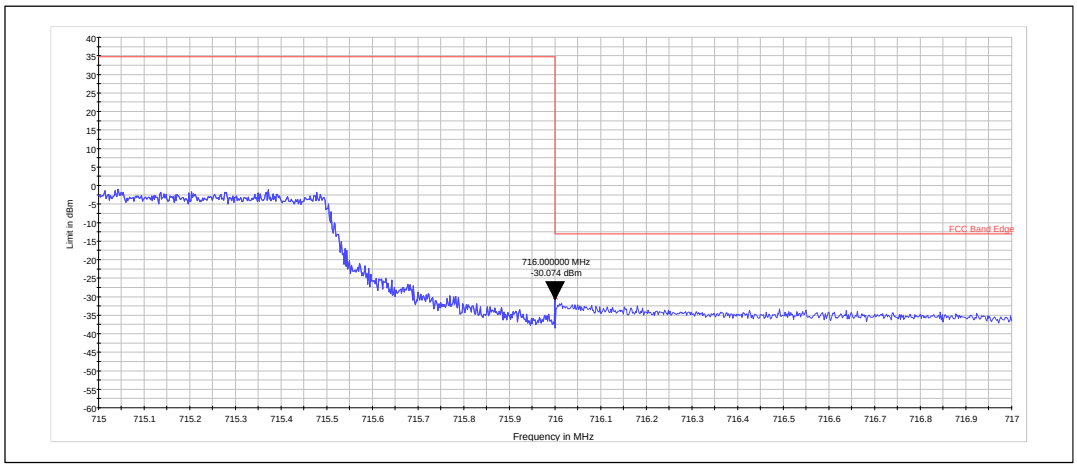
Channel 23800 / 711 MHz



RMS detector

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	716.000	-30.07	PASSED

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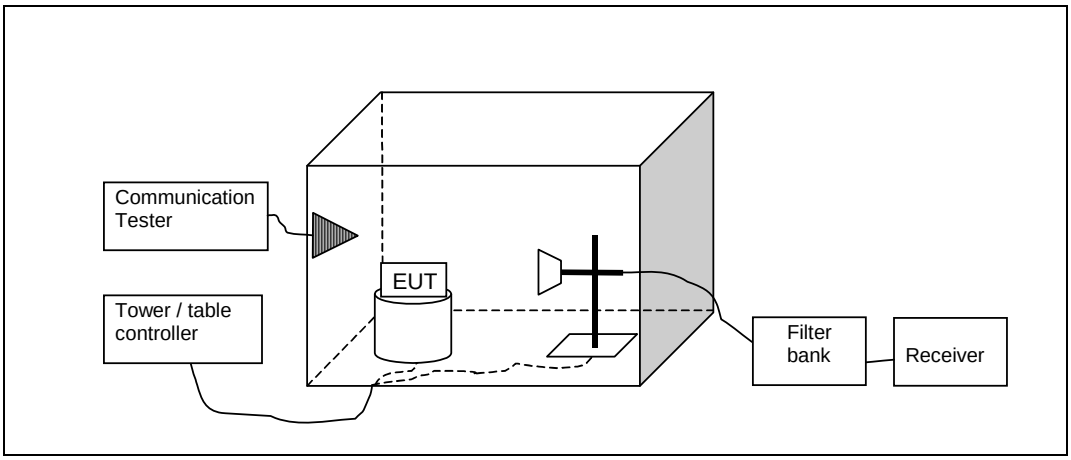
4. Spurious radiated emissions

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

EUT with DUT number	RM-940, DUT 17589
Accessories with DUT numbers	AC-60E, DUT 17580 ; WH-208, DUT 17581 ; CA-190CD, 17608
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	19 / 57 / 101.7
Date of measurements	23-Jul-2013
Measured by	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 the 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.

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The substitution method is used.

The measurement results are obtained as described below:

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

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)
GSM850 / WCDMA850 / LTE850	30 - 8500	-13
WCDMA1700 / LTE1700 / / GSM1900 / WCDMA1900 / LTE1900	30 - 18000	-13

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4.3. GSM850 TX test results

Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
1619.88	-57.31	0.00186	-63.29	5.98	VERTICAL	PASSED
1673.186	-44.23	0.03777	-50.34	6.11	VERTICAL	PASSED
1673.226	-44.99	0.0317	-51.1	6.11	VERTICAL	PASSED
1673.267	-46.37	0.02305	-52.48	6.11	VERTICAL	PASSED
2509.98	-40.48	0.08954	-52.11	11.63	HORIZONTAL	PASSED
2510.06	-41.06	0.07831	-52.69	11.63	HORIZONTAL	PASSED

4.4. GSM1900 TX test results

Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
1912.539	-47.21	0.019	-56.16	8.95	VERTICAL	PASSED
9373.707	-44.26	0.03749	-66.38	22.12	HORIZONTAL	PASSED
9795.551	-42.13	0.06119	-65.23	23.1	HORIZONTAL	PASSED
9882.565	-43.46	0.04506	-66.26	22.8	VERTICAL	PASSED
9907.816	-43.5	0.04465	-66.12	22.62	VERTICAL	PASSED
9924.329	-42.79	0.05261	-65.85	23.06	HORIZONTAL	PASSED

4.5. GSM850-E1 TX test results

Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
1663.186	-57.27	0.00187	-63.26	5.99	VERTICAL	PASSED
1671.643	-57.3	0.00186	-63.36	6.06	VERTICAL	PASSED
1672.244	-56.8	0.00209	-62.88	6.08	VERTICAL	PASSED
1680.741	-57.36	0.00184	-63.36	6	VERTICAL	PASSED
2508.397	-52.69	0.00538	-64.33	11.64	HORIZONTAL	PASSED
2519.579	-52.6	0.0055	-64.21	11.61	HORIZONTAL	PASSED

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4.6. GSM1900-E1 TX test results

Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
1914.249	-54.31	0.00371	-63.27	8.96	VERTICAL	PASSED
9380.541	-43.65	0.04315	-65.84	22.19	HORIZONTAL	PASSED
9783.146	-44.32	0.03695	-67.35	23.03	HORIZONTAL	PASSED
9849.599	-43.64	0.04326	-66.61	22.97	VERTICAL	PASSED
9926.633	-43.83	0.04141	-66.45	22.62	VERTICAL	PASSED
9934.128	-42.88	0.0515	-65.67	22.79	HORIZONTAL	PASSED

4.7. WCDMA 1900 (Band II) test results

Channel 9400 / 1880.0 MHz

FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
1961.132	-33.81	0.41581	-43.08	9.27	HORIZONTAL	PASSED
9216.453	-43.66	0.04308	-65.73	22.07	HORIZONTAL	PASSED
9374.529	-42.77	0.05291	-64.9	22.13	HORIZONTAL	PASSED
9563.788	-42.74	0.05316	-65.41	22.67	HORIZONTAL	PASSED
9843.387	-43.3	0.04675	-66.08	22.78	HORIZONTAL	PASSED
9876.413	-41.93	0.06414	-64.79	22.86	VERTICAL	PASSED

4.8. WCDMA 850 (Band V) test results

Channel 4175 / 835.0 MHz

FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
847.625	-44.47	0.03575	-79.43	34.96	VERTICAL	PASSED
848.061	-44.26	0.03754	-79.21	34.95	VERTICAL	PASSED
878.702	-33.6	0.43621	-69.36	35.76	VERTICAL	PASSED
879.87	-35.58	0.27695	-71.46	35.88	VERTICAL	PASSED
880.1	-34.13	0.38663	-70.01	35.88	VERTICAL	PASSED
960.115	-39.77	0.10546	-80.14	40.37	HORIZONTAL	PASSED

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4.9. LTE 1900 (Band II) test results

Channel 18900 / 1880.0 MHz

FDD, CBW 5MHz, QPSK, 1 RB, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
1958.39	-45.33	0.02932	-54.33	9	VERTICAL	PASSED
3760.501	-66.13	0.00024	-73.62	7.49	HORIZONTAL	PASSED
5640.581	-59.1	0.00123	-70.32	11.22	VERTICAL	PASSED
7518.377	-58.33	0.00147	-74.97	16.64	HORIZONTAL	PASSED

Channel 18900 / 1880.0 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
1958.35	-44.47	0.03576	-53.47	9	VERTICAL	PASSED
3760.421	-63.95	0.0004	-71.44	7.49	HORIZONTAL	PASSED
5640.421	-59.75	0.00106	-70.97	11.22	VERTICAL	PASSED
7514.248	-58.8	0.00132	-75.33	16.53	HORIZONTAL	PASSED

4.10. LTE 850 (Band V) test results

Channel 20525 / 836.5 MHz

FDD, CBW 5MHz, QPSK, 1 RB, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
848.621	-58.46	0.00143	-93.03	34.57	HORIZONTAL	PASSED
880.943	-43.21	0.04773	-79.04	35.83	VERTICAL	PASSED
890.814	-54.66	0.00342	-90.53	35.87	HORIZONTAL	PASSED
951.287	-51.34	0.00734	-90.52	39.18	HORIZONTAL	PASSED
1670.936	-75.7	3E-05	-81.74	6.04	VERTICAL	PASSED
2509.68	-71.35	7E-05	-82.57	11.22	VERTICAL	PASSED
3345.9	-77.89	2E-05	-82.56	4.67	HORIZONTAL	PASSED

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Channel 20525 / 836.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
850.745	-55.85	0.0026	-90.52	34.67	VERTICAL	PASSED
881.708	-43.26	0.04724	-79.05	35.79	VERTICAL	PASSED
891.295	-54.68	0.00341	-90.53	35.85	HORIZONTAL	PASSED
960.968	-50.26	0.00942	-90.52	40.26	HORIZONTAL	PASSED
1678.471	-75.75	3E-05	-81.74	5.99	VERTICAL	PASSED
2516.775	-71.99	6E-05	-83.49	11.5	HORIZONTAL	PASSED
3348.986	-77.95	2E-05	-82.57	4.62	VERTICAL	PASSED

Channel 20525 / 836.5 MHz

FDD, CBW 5MHz, QPSK, 1 RB, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
856.536	-55.67	0.00271	-90.53	34.86	VERTICAL	PASSED
882.246	-43.29	0.04692	-79.05	35.76	VERTICAL	PASSED
884.481	-54.67	0.00341	-90.52	35.85	HORIZONTAL	PASSED
957.923	-50.35	0.00922	-90.52	40.17	HORIZONTAL	PASSED
1664.002	-76.59	2E-05	-82.57	5.98	VERTICAL	PASSED
2516.294	-71.31	7E-05	-82.56	11.25	VERTICAL	PASSED
3345.699	-77.89	2E-05	-82.56	4.67	HORIZONTAL	PASSED

Channel 20525 / 836.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
855.374	-58.21	0.00151	-93.03	34.82	VERTICAL	PASSED
879.752	-43.18	0.04813	-79.05	35.87	VERTICAL	PASSED
881.781	-42.7	0.0537	-78.48	35.78	VERTICAL	PASSED
959.815	-50.15	0.00965	-90.52	40.37	HORIZONTAL	PASSED
1678.832	-75.75	3E-05	-81.73	5.98	VERTICAL	PASSED
2519.139	-71.89	6E-05	-83.48	11.59	HORIZONTAL	PASSED
3343.816	-77.9	2E-05	-82.57	4.67	HORIZONTAL	PASSED

4.11. LTE 1700 (Band IV) test results

Channel 20175 / 1732.5 MHz

FDD, CBW 5MHz, QPSK, 1 RB, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
3465.261	-66.07	0.00025	-72.74	6.67	HORIZONTAL	PASSED
5197.921	-60.79	0.00083	-71.93	11.14	VERTICAL	PASSED
6930.381	-57.72	0.00169	-71.93	14.21	HORIZONTAL	PASSED
8661.999	-55.95	0.00254	-76.12	20.17	HORIZONTAL	PASSED

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10394.379	-52.61	0.00548	-76.54	23.93	VERTICAL	PASSED

Channel 20175 / 1732.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
3465.341	-66.07	0.00025	-72.74	6.67	HORIZONTAL	PASSED
5197.881	-60.29	0.00093	-71.44	11.15	VERTICAL	PASSED
6930.461	-57.72	0.00169	-71.93	14.21	HORIZONTAL	PASSED
8662.32	-55.95	0.00254	-76.12	20.17	HORIZONTAL	PASSED
10394.459	-52.61	0.00548	-76.54	23.93	VERTICAL	PASSED

4.12. LTE700 Lower (Band 17) test results

Channel 23790 / 710 MHz

FDD, CBW 5MHz, QPSK, 1 RB, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
1420.501	-75.54	3E-05	-79.65	4.11	HORIZONTAL	PASSED
2130.14	-73.38	5E-05	-82.56	9.18	HORIZONTAL	PASSED
2845.391	-68.97	0.00013	-82.57	13.6	VERTICAL	PASSED

Channel 23790 / 710 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
1420.581	-76.87	2E-05	-80.98	4.11	HORIZONTAL	PASSED
2120.641	-72.36	6E-05	-80.98	8.62	VERTICAL	PASSED
2846.152	-68.96	0.00013	-82.57	13.61	VERTICAL	PASSED

4.13. WCDMA 1700 (Band IV) test results

Channel 1412 / 1732.4 MHz

FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarization	Results
1755.581	-48.58	0.01387	-56.55	7.97	HORIZONTAL	PASSED
9382.064	-42.65	0.05431	-64.85	22.2	HORIZONTAL	PASSED
9805.19	-42.96	0.05059	-65.95	22.99	VERTICAL	PASSED
9837.375	-42.99	0.05019	-65.96	22.97	VERTICAL	PASSED
9929.158	-41.78	0.06637	-64.56	22.78	HORIZONTAL	PASSED
10900.281	-39.38	0.11524	-64.31	24.93	HORIZONTAL	PASSED

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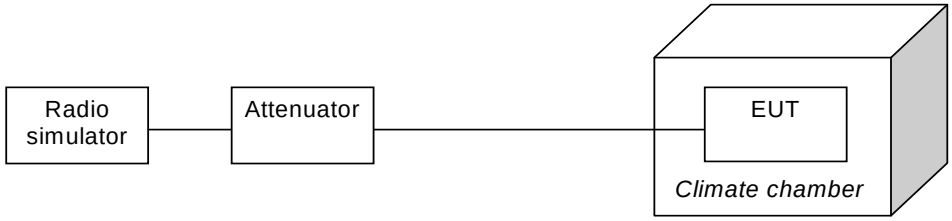
5. Frequency stability, temperature variation
(FCC §2.1055(a), RSS-132 4.3, RSS-133 6.3, RSS-139 6.3)

EUT with DUT number	RM-940, DUT 17613
Accessories with DUT numbers	WH-208, DUT 17586
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 42 / 100.8
Date of measurements	15-Aug-2013
Measured by	Sami Lehtonen

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-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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5.3. GSM 1900 Test results

GSM, Channel 661 / 1880.0 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1880.00	-14.01000	-0.0075	PASSED
40	1880.00	-12.46000	-0.0066	PASSED
30	1880.00	-10.98000	-0.0058	PASSED
20	1880.00	-14.46000	-0.0077	PASSED
10	1880.00	-10.53000	-0.0056	PASSED
0	1880.00	-9.23000	-0.0049	PASSED
-10	1880.00	-12.85000	-0.0068	PASSED
-20	1880.00	-11.75000	-0.0063	PASSED
-30	1880.00	-21.89000	-0.0116	PASSED

5.4. GSM 850 Test results

GSM, Channel 190 / 836.6 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	836.60	-12.91000	-0.0154	PASSED
40	836.60	-8.27000	-0.0099	PASSED
30	836.60	-13.62000	-0.0163	PASSED
20	836.60	-9.17000	-0.011	PASSED
10	836.60	-16.79000	-0.0201	PASSED
0	836.60	-16.98000	-0.0203	PASSED
-10	836.60	-18.14000	-0.0217	PASSED
-20	836.60	-19.95000	-0.0238	PASSED
-30	836.60	-21.18000	-0.0253	PASSED

5.5. WCDMA 1700 Test results

FDD, Channel 1412 / 1732.4 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1732.40	-3.49426	-0.002	PASSED
40	1732.40	-6.07300	-0.0035	PASSED
30	1732.40	-4.66919	-0.0027	PASSED
20	1732.40	-3.82996	-0.0022	PASSED
10	1732.40	-3.89099	-0.0022	PASSED
0	1732.40	-4.68445	-0.0027	PASSED
-10	1732.40	-5.31006	-0.0031	PASSED
-20	1732.40	-1.31226	-0.0008	PASSED
-30	1732.40	-3.66211	-0.0021	PASSED

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5.6. LTE700 Lower (Band 17) Test results

FDD, CBW 10MHz, ,INV, INV RB, Channel 23790 / 710.0 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
51	710.00	-1.00000	-0.0014	PASSED
40	710.00	-1.00000	-0.0014	PASSED
30	710.00	-1.00000	-0.0014	PASSED
20	710.00	-1.00000	-0.0014	PASSED
10	710.00	-1.00000	-0.0014	PASSED
0	710.00	-1.00000	-0.0014	PASSED
-10	710.00	-1.00000	-0.0014	PASSED
-20	710.00	-1.00000	-0.0014	PASSED
-30	710.00	-1.00000	-0.0014	PASSED

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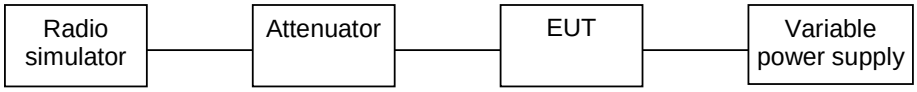
6. Frequency stability, voltage variation

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

EUT with DUT number	RM-940, DUT 17613
Accessories with DUT numbers	WH-208, DUT 17586
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 42 / 100.8
Date of measurements	15-Aug-2013
Measured by	Sami Lehtonen

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 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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6.3. GSM 1900 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	1880.00	-7.88000	-0.0042	PASSED
Nominal / 3.8	1880.00	-14.72000	-0.0078	PASSED
Battery cut-off point / 3.6	1880.00	-5.94000	-0.0032	PASSED

6.4. GSM 850 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	836.60	-14.85000	-0.0178	PASSED
Nominal / 3.8	836.60	-15.17000	-0.0181	PASSED
Battery cut-off point / 3.6	836.60	-12.01000	-0.0144	PASSED

6.5. LTE700 Lower (Band 17) Test results

FDD, CBW 10MHz, ,INV, INV RB, Channel 23790 / 710.0 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	710.00	-1.00000	-0.0014	PASSED
Nominal / 3.8	710.00	-1.00000	-0.0014	PASSED
Battery cut-off point / 3.6	710.00	-1.00000	-0.0014	PASSED

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7. Test Equipment

7.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
1759	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
1916	Communication Tester	CMTA84	R&S	15B
1992	Signal Generator	83630B	Agilent	15C, 15B
1999	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
2039	Power Supply	PL330QMD	Thurlby	15C, 15B
2059	V-network	ESH3-Z6	R&S	-
2097	Pulse Limiter	ESH3-Z2	R&S	15C, 15B
2156	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2180	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2206	Signal Generator	SMX	R&S	15C, 15B
2347	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2352	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C
2359	Temperature Test Chamber	VT4002	Vötsch	22/24/27
2388	Bluetooth Tester	CBT	R&S	15B
2389	Signal Generator	SMJ 100A	R&S	15B
2390	Directional Coupler	DC2600	AR	-
6009	GPS Antenna	SA-700	Chronos	15C
6010	GPS Network amplifier	NLA20FPDC	GPS Networking, Inc	15C
6011	GPS signal Splitter	LDCBS1x4	GPS Networking, Inc	15C
6012	CDN	CDN USB/c	Teseq	-
6015	Receiver	ESI	R&S	22/24, 15C, 15B
6036	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
6038	Data Logger	Testo 580	Testo	22/24/27, 15C, 15B
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B
6044	V-network	ESH3-Z6	R&S	-
6045	Power splitter	11667B	Agilent	22/24/27, 15C
6046	Attenuator 10dB	8493C	Agilent	22/24/27, 15C
6047	Attenuator 20dB	8493C	Agilent	22/24/27, 15C
6094	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
6096	EMC Analyzer	E7405A	HP	-
6098	Signal Generator	8648C	Agilent	-
6103	Bluetooth tester	CBT	R&S	15B
6113	Signal Generator	SMF100A	R&S	22/24/27, 15C 15B
6120	Thermal Chamber	WT 20/40	Weiss	22/24/27, 15C 15B
6121	Power Splitter	HP11667B	Agilent	22/24/27, 15C 15B
6122	Power Splitter	HP11667B	Agilent	22/24/27, 15C 15B
6134	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	22/24/27, 15C
6136	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	22/24/27, 15C
10479	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B

7.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
1917	Communication Tester	CMTA84	R&S	15B
1984	Antenna	BBHA 9120 D	Schwarzbeck	22/24/27, 15C, 15B
2009	Signal Generator	SMP 22	R&S	22/24/27, 15C, 15B
2027	CDN	M2 (modified) DC1	MEB	22/24/27, 15C, 15B
2028	CDN	M3 (modified) DC2	MEB	22/24/27, 15C, 15B
2029	Power Supply	PL330	Thurlby	22/24/27, 15C
2043	Band Reject Filter	WRCA824/849-0,2-6SS	Wainwright	22
2135	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B

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Eq. No	Equipment	Type	Manufacturer	Used in
2140	Antenna	EMCO93110B	EMCO	22/24/27, 15C
2142	Antenna	3146	EMCO	22/24/27, 15C
2156	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2176	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2180	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2347	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2353	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
2357	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	15C
2361	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	Euroshield	22/24/27, 15C, 15B
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
2384	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	22
2388	Bluetooth Tester	CBT	R&S	15B
2389	Signal Generator	SMJ 100A	R&S	15B
2391	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
6009	GPS Antenna	SA-700	Chronos	15C
6010	GPS Network amplifier	NLA20FPDC	GPS Networking, Inc	15C
6011	GPS signal Splitter	LDCBS1x4	GPS Networking, Inc	15C
6014	Substitute Calibration Cable	Sucoflex 104PB	Suhner	-
6017	Antenna	SBA 9113	Schwarzbeck	22 / 24 / 27
6037	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
6038	Data Logger	Testo 580	Testo	22/24/27, 15C, 15B
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B
6087	Antenna	BBHA 9120D	Scharzbeck	22/24/27, 15C
6088	Antenna	VUBA 9117	Scharzbeck	22/24/27, 15C
6089	Antenna	HFH2-Z2	R&S	15C, 15B
6094	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
6103	Bluetooth tester	CBT	R&S	15B
6113	Signal Generator	SMF100A	R&S	22/24/27, 15C 15B
6115	Open switch and control unit	OSP 130	R&S	22/24/27, 15C 15B
6116	Open switch and control unit	OSP 150	R&S	22/24/27, 15C 15B
6130	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	22/24/27
6131	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	-
6135	Notch Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	22/24/27
10479	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	BT / WLAN Antenna	SPA 2400/75/9/0/V	Huber-Suhner	15C, 15B
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B

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