

FCC Part 22/24/27 Compliance Test Report

Test Report no.:	FCC22&24&27_RM-942_03.docx	Date of Report:	20-Jun-2013
Number of pages:	48	Customer's Contact person:	Wang Jinling (jinliwan)
Testing laboratory:	TCC Nokia Beijing Laboratory Beijing Economic and Technological Development Area No.5 Donghuan Zhonglu Beijing PRC China 100176 Tel. +86 10 8711 8888 Fax. +86 10 8711 4550	Customer:	Nokia Corporation Beijing Economic and Technological Development Area No.5 Donghuan Zhonglu Beijing PRC China 100176 Tel. +86 10 8711 8888 Fax. +86 10 8711 4550
FCC listing no.:	975940		
IC recognition no.:	661AH-1		
Tested devices/ accessories:	Phone RM-942 / Dummy battery - / Battery BP-4GWA / AC-Charger AC-20U / Headset WH-108		
FCC ID:	QTLRM-942	IC:	661AB-RM942
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:			

Gao Sherina, Engineer, EMC

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

Date of receipt	15-May-2013
Testing completed	09-Jun-2013
The customer's contact person	Wang Jinling (jinliwan)
Test Plan referred to	T:\Projects\RM-942\TestPlan\RS_TestPlan_RM-942.xlsm
Notes	-
Document name	FCC22&24&27_RM-942_03.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-942	004402472770498	2001	-	3037.0000.1318.0000	53357
Dummy battery	-	-	-	-	-	53358
Headset	WH-108	122	0.1	0.3	-	53379
Phone	RM-942	004402472774169	2000	-	3037.0000.1318.0000	53365
Battery	BP-4GWA	-	-	-	-	53370
AC-Charger	AC-20U	4868673112340509970;0675629	-	-	-	53340
Headset	WH-108	1253	0.1	0.3	-	53343

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

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	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	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	NP
§2.1049(h)	4.6.1	99 % occupied bandwidth	NP
§24.238(a)	6.5	Band edge compliance	NP
§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	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	NP
§24.238(a)	6.5	Band edge compliance	NP
§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 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	NP
§27.53(g)	6.5	Band edge compliance	NP
§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	NP
§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
§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	NP
§2.1055(a)	6.3	Frequency stability, temperature variation	NP
§2.1055(d)	6.3	Frequency stability, voltage variation	NP
N/A	N/A	Peak to average power ratio	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	PASSED
§2.1055(d)	N/A	Frequency stability, voltage variation	PASSED
N/A	N/A	Peak to average power ratio	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

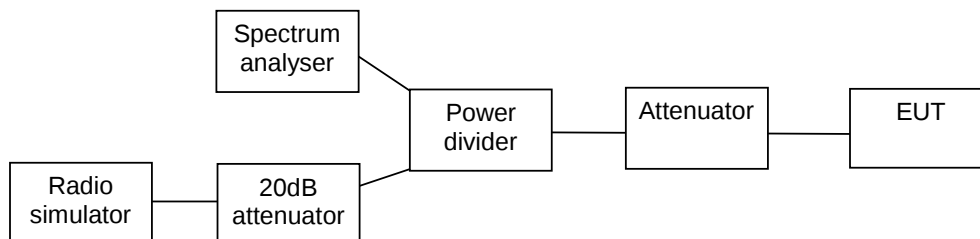
1. Summary for FCC Part 22/24/27 Compliance Test Report	2
1.1. EUT and Accessory Information.....	2
1.2. Summary of Test Results.....	2
2. 99% occupied bandwidth (FCC §2.1049(h), RSS-GEN 4.6.1)	7
2.1. Test Setup.....	7
2.2. Test method and limit.....	7
2.3. LTE1900 (Band 2) Test results	8
2.4. LTE1700 (Band 4) Test results	14
2.5. LTE850 (Band 5) Test results	21
2.6. LTE700 Lower (Band 17) Test results.....	25
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).....	28
3.1. Test Setup.....	28
3.2. Test method and limit.....	28
3.3. LTE1900 (Band 2) Test results	29
3.4. LTE1700 (Band 4) Test results	31
3.5. LTE850 (Band 5) Test results	33
3.6. LTE700 Lower (Band 17) Test results.....	35
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)	37
4.2. Test method and limit.....	37
4.3. GSM850 TX test results	39
4.4. GSM850-E1 TX test results.....	39
4.5. WCDMA 1700 (Band IV) test results.....	39
4.6. WCDMA 850 (Band V) test results.....	40
4.7. LTE 1900 (Band II) test results.....	40
4.8. LTE 850 (Band V) test results	41
4.9. LTE700 Lower (Band 17) test results	41
5. Frequency stability, temperature variation (FCC §2.1055(a), RSS-132 4.3, RSS-133 6.3, RSS-139 6.3).....	43
5.1. Test Setup.....	43
5.2. Test method and limit.....	43
5.3. LTE700 Lower (Band 17) Test results.....	44

6. Frequency stability, voltage variation (FCC §2.1055(d), RSS-132 4.3, RSS-133 6.3, RSS-139 6.3).....	45
6.1. Test Setup.....	45
6.2. Test method and limit.....	45
6.3. LTE700 Lower (Band 17) Test results.....	46
6.4. GSM 850 Test results	46
6.5. GSM 1900 Test results	46
6.6. WCDMA 1700 Test results.....	46
7. Test Equipment.....	47
7.1. Conducted measurements	47
7.2. Radiated measurements	47

2. 99% occupied bandwidth (FCC §2.1049(h), RSS-GEN 4.6.1)

EUT with DUT number	RM-942, DUT 53357
Accessories with DUT numbers	Dummy battery, DUT 53358 ; WH-108, DUT 53379
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24/58/100.7 to 24/60/101
Date of measurements	04-Jun-2013 to 09-Jun-2013
Measured by	Gao Sherina

2.1. Test Setup



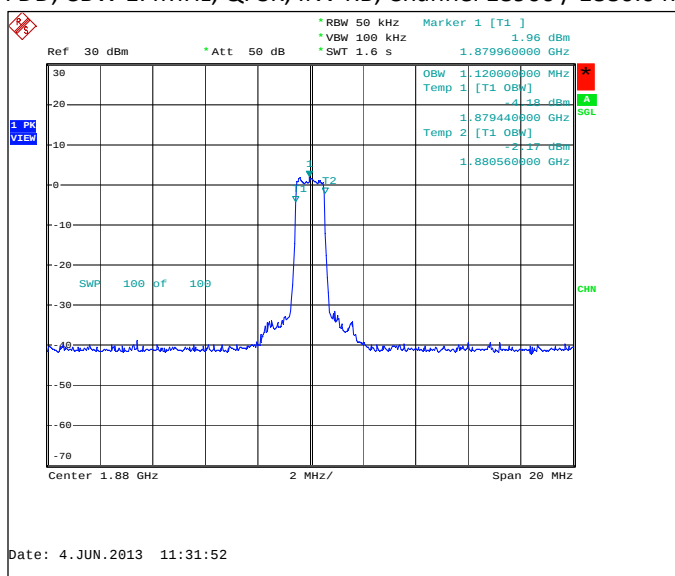
2.2. Test method and limit

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

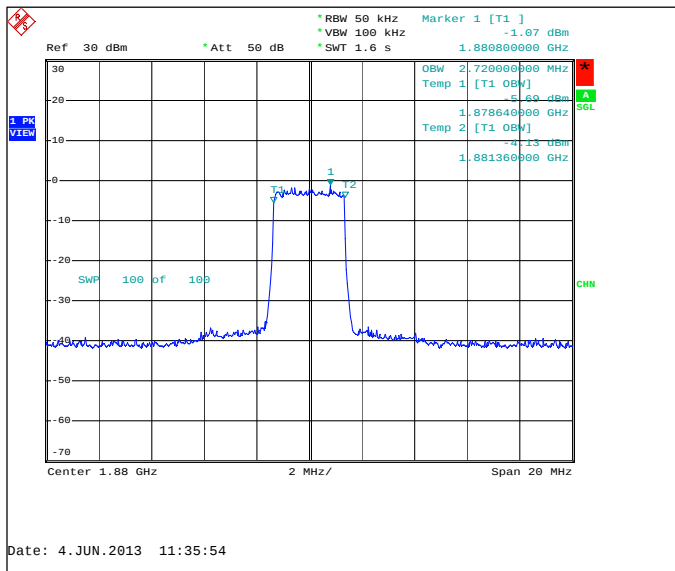
2.3. LTE1900 (Band 2) Test results

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	13400
FDD, CBW 20MHz, QPSK, INV RB	17880
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	17880

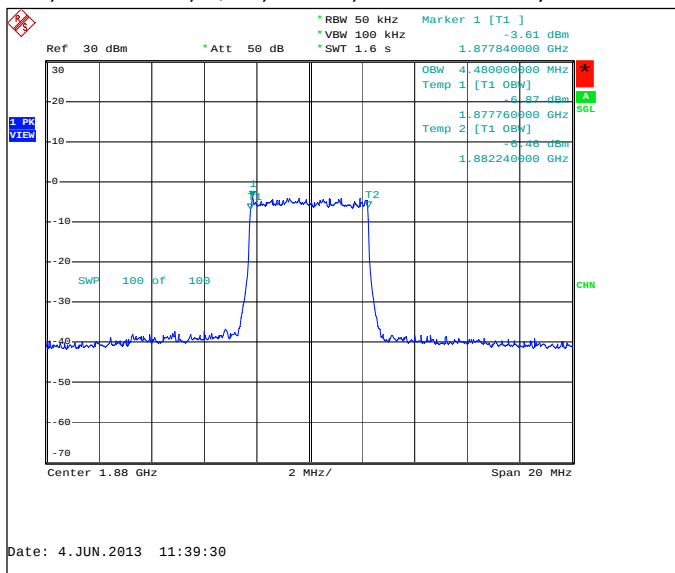
FDD, CBW 1.4MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



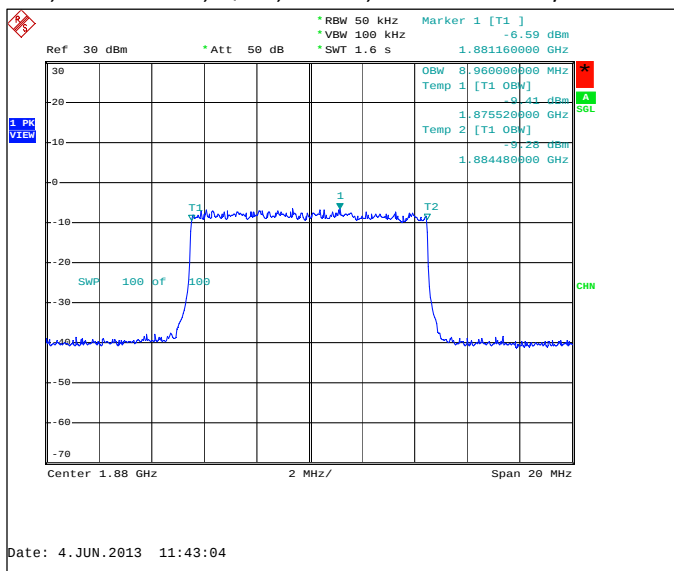
FDD, CBW 3MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



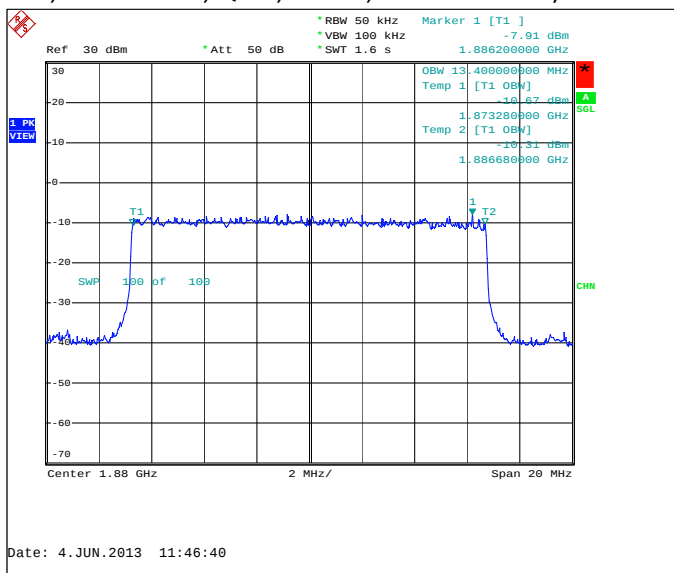
FDD, CBW 5MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



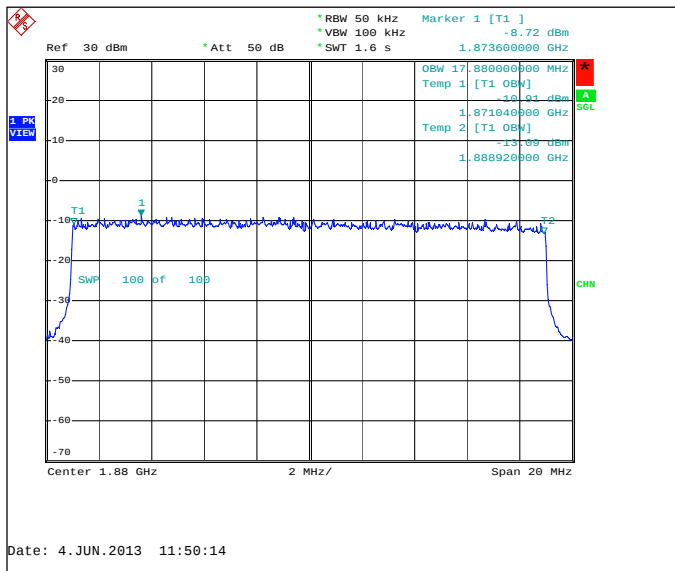
FDD, CBW 10MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



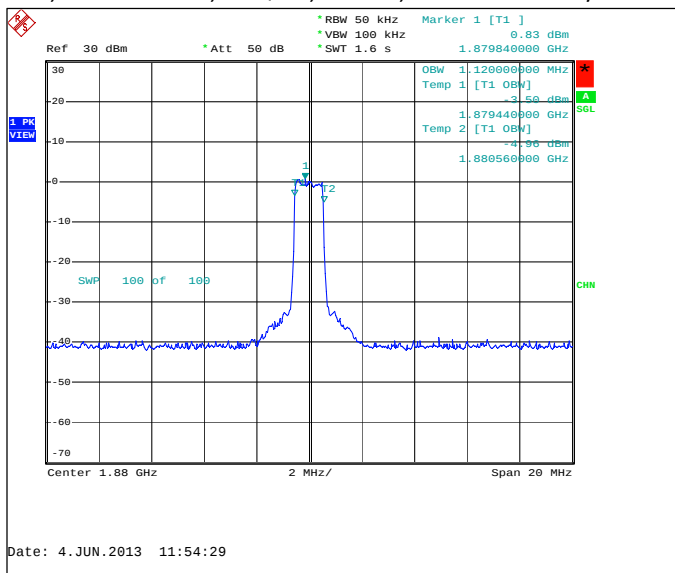
FDD, CBW 15MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



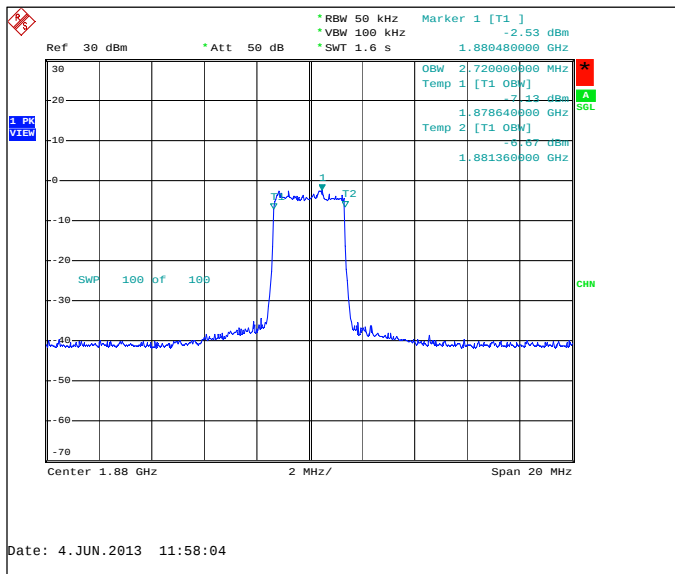
FDD, CBW 20MHz, QPSK, INV RB, Channel 18900 / 1880.0 MHz



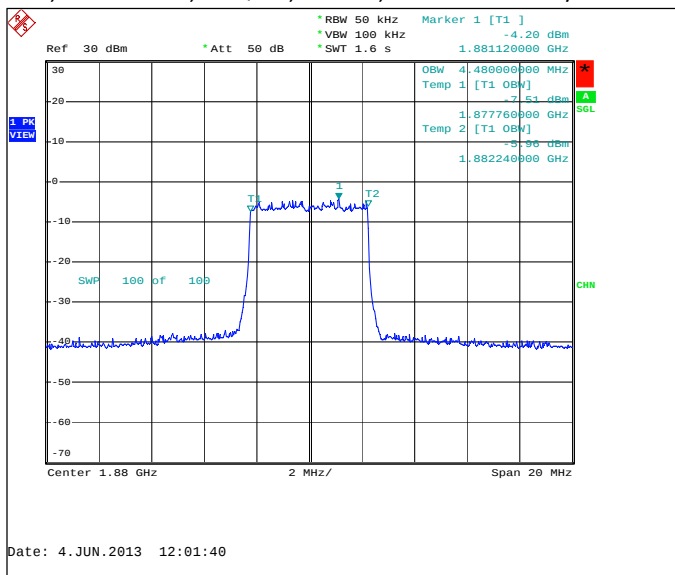
FDD, CBW 1.4MHz, 16QAM, INV RB, Channel 18900 / 1880.0 MHz



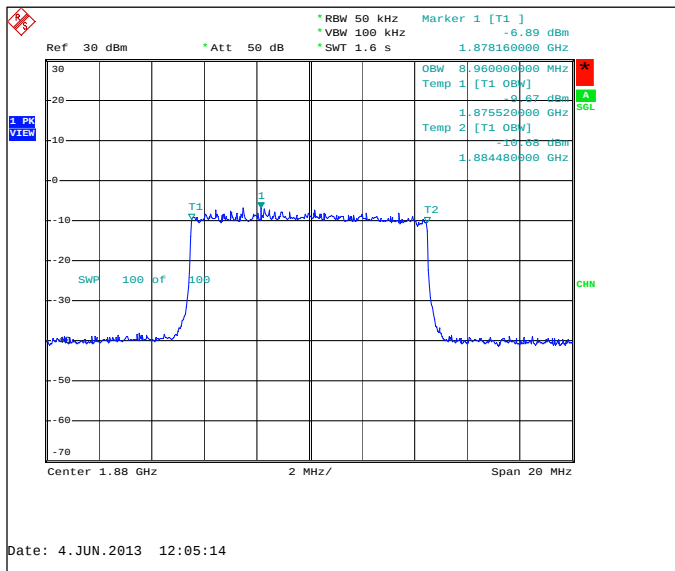
FDD, CBW 3MHz, 16QAM, INV RB, Channel 18900 / 1880.0 MHz



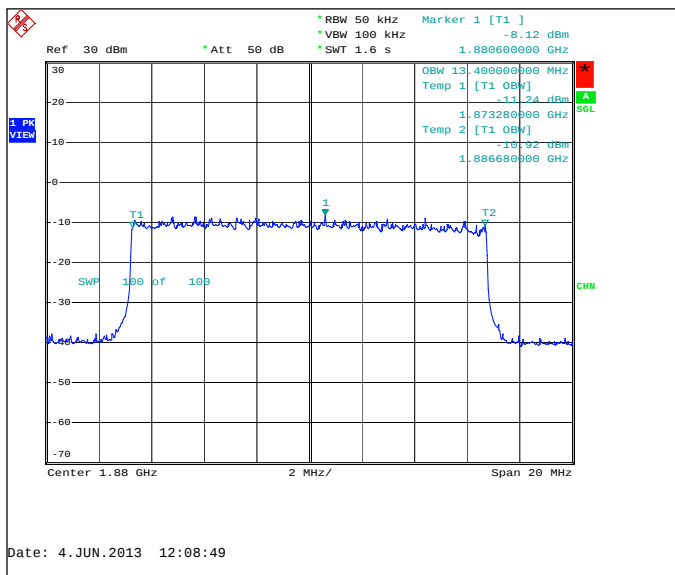
FDD, CBW 5MHz, 16QAM, INV RB, Channel 18900 / 1880.0 MHz



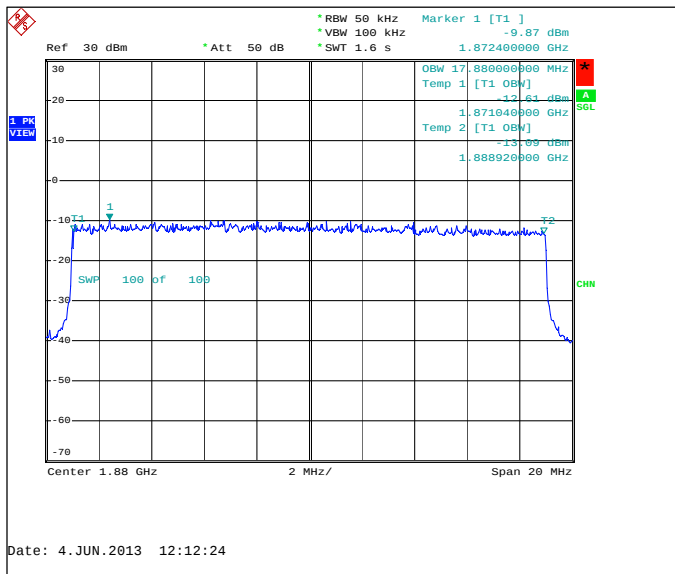
FDD, CBW 10MHz, 16QAM, INV RB, Channel 18900 / 1880.0 MHz



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



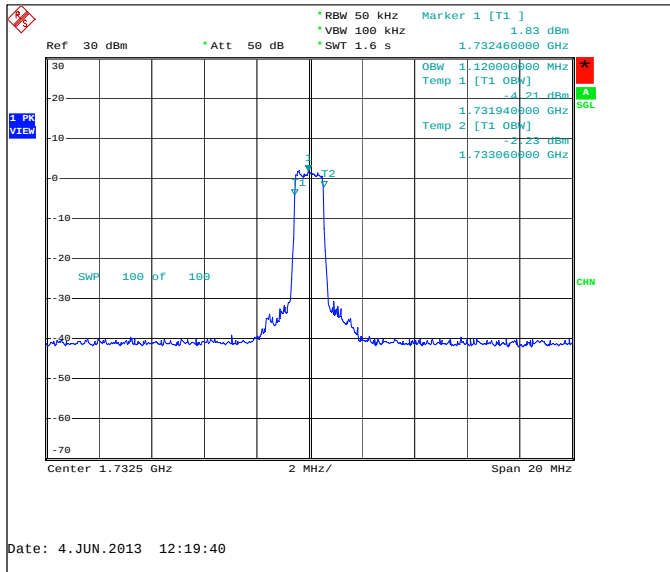
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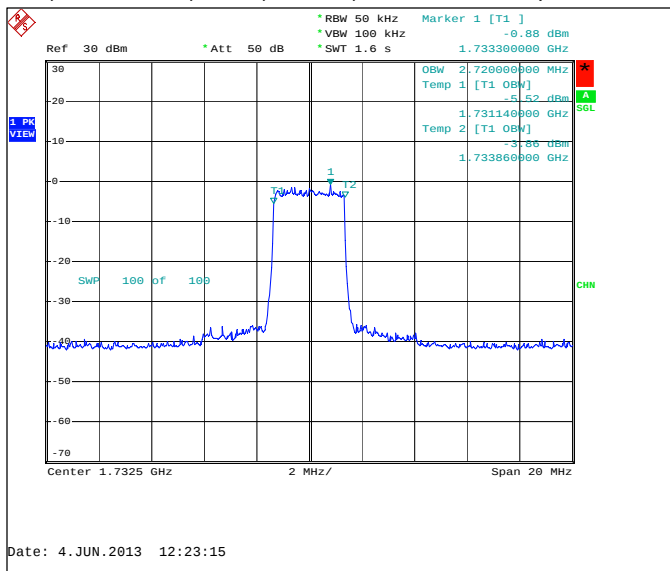
2.4. LTE1700 (Band 4) Test results

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	13360
FDD, CBW 20MHz, QPSK, INV RB	17880
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	17880

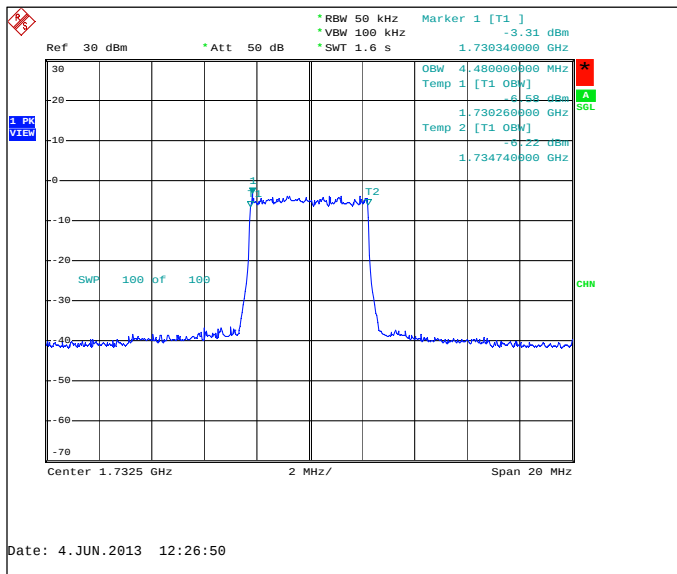
FDD, CBW 1.4MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



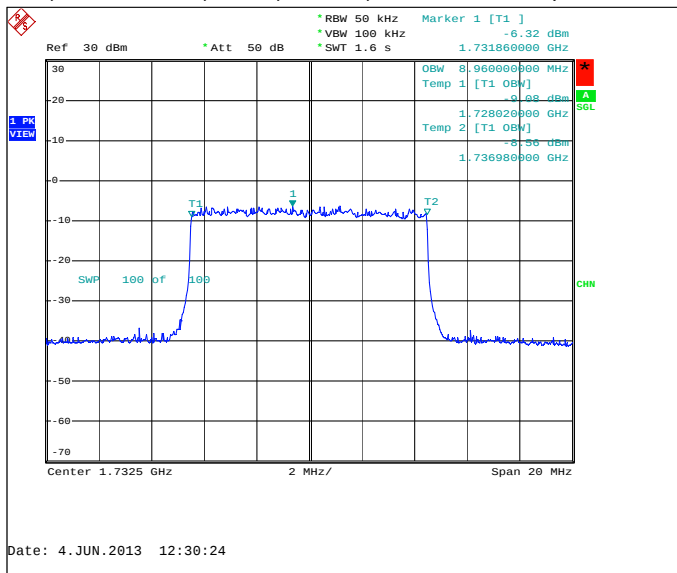
FDD, CBW 3MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



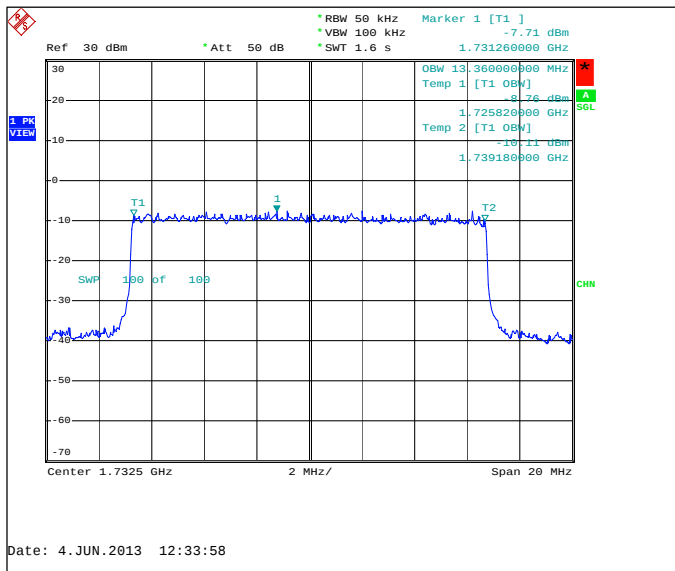
FDD, CBW 5MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



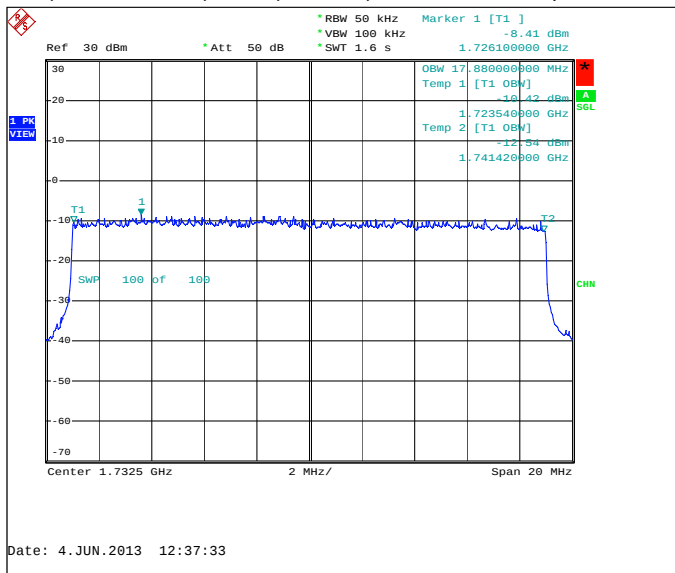
FDD, CBW 10MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



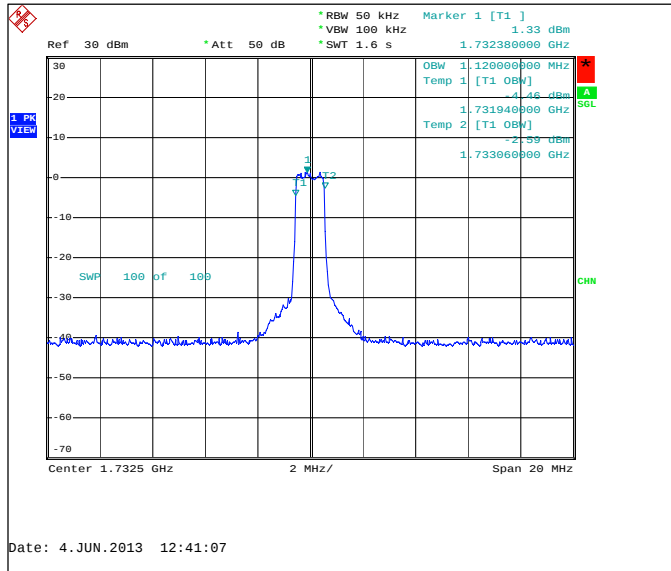
FDD, CBW 15MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



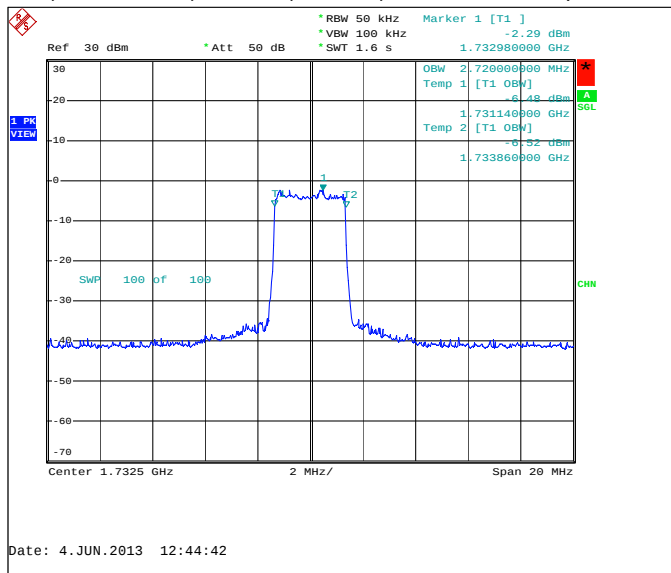
FDD, CBW 20MHz, QPSK, INV RB, Channel 20175 / 1732.5 MHz



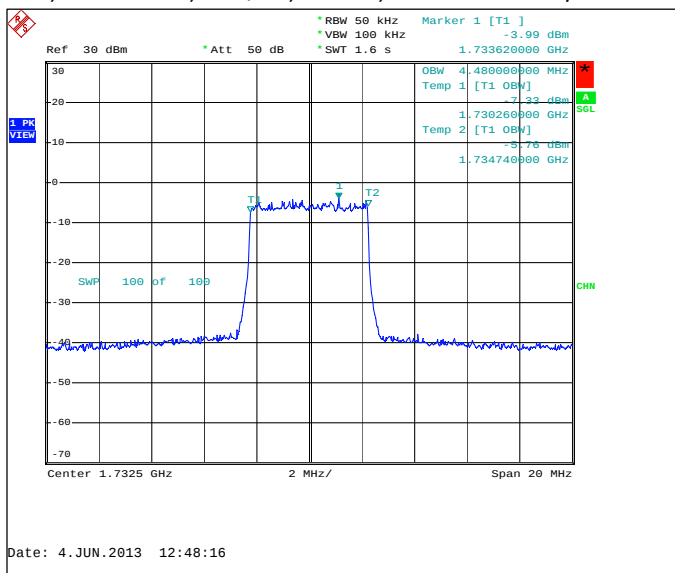
FDD, CBW 1.4MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



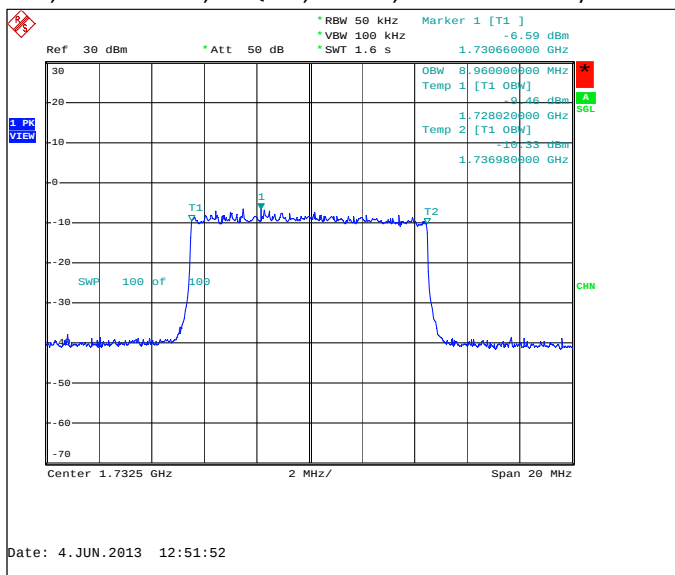
FDD, CBW 3MHz, 16QAM, INV RB, Channel 20175 / 1732.5 MHz



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



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



[illegible]

1 PK VIEW

Ref 30 dBm * Att 50 dB * RBW 50 kHz * VBW 100 kHz * SWT 1.6 s

Marker 1 [T1] -9.96 dBm 1.72926000 GHz

OBW 17.88000000 MHz Temp 1 [T1 OBW] -12.84 dBm 1.72354000 GHz Temp 2 [T1 OBW] -12.92 dBm 1.74142000 GHz

SWP 100 of 100

Center 1.7325 GHz 2 MHz/ Span 20 MHz

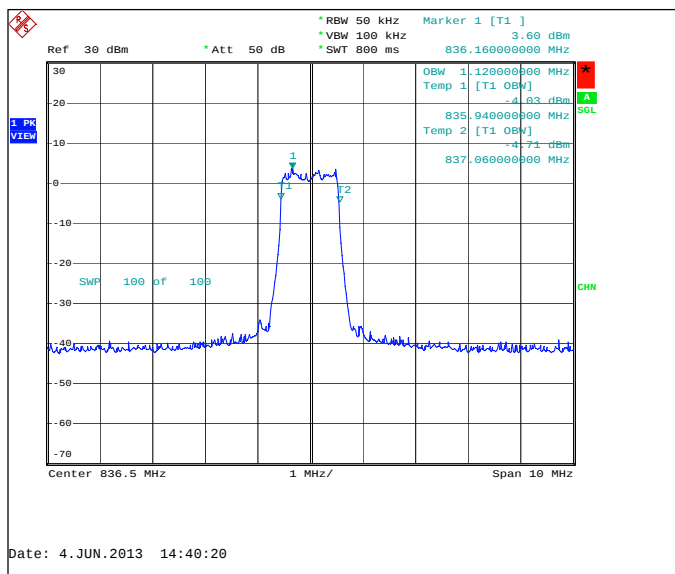
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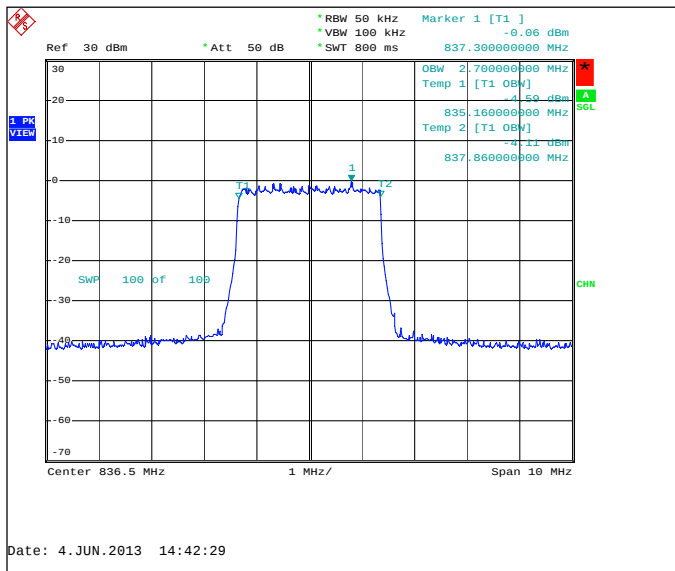
2.5. LTE850 (Band 5) Test results

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	8920
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, 50 RB	8920

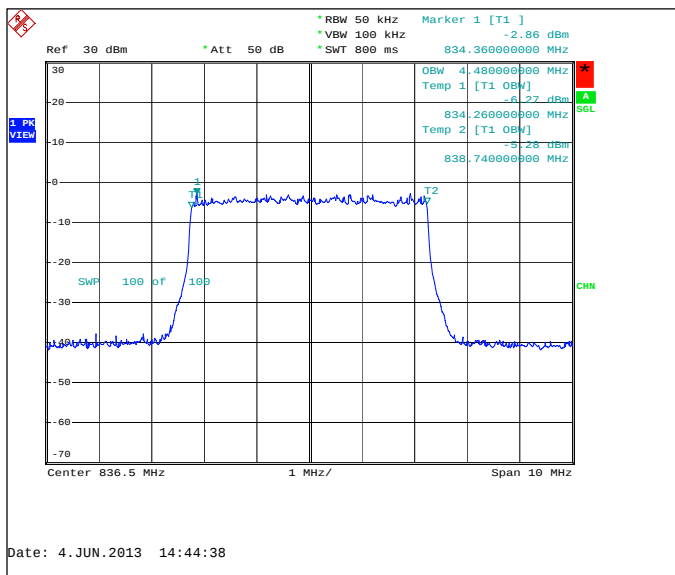
FDD, CBW 1.4MHz, QPSK, INV RB, Channel 20525 / 836.5 MHz



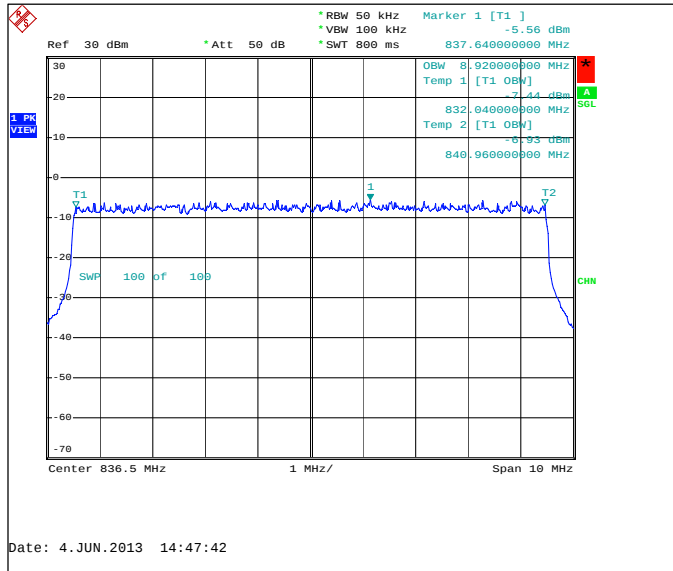
FDD, CBW 3MHz, QPSK, INV RB, Channel 20525 / 836.5 MHz



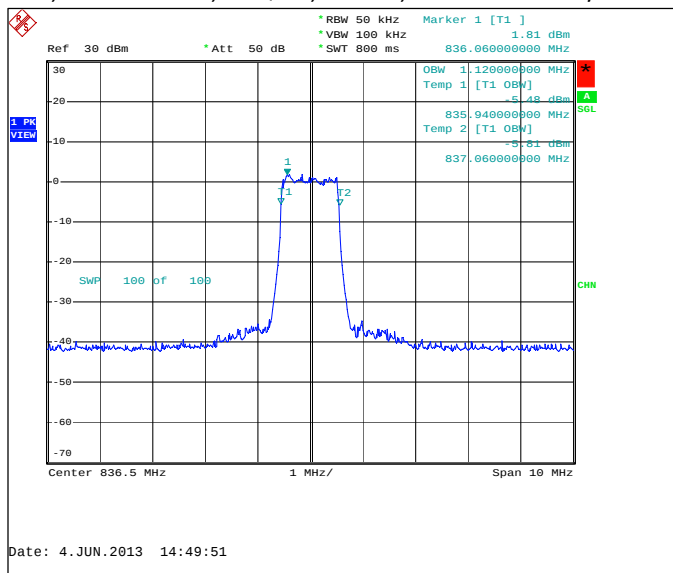
FDD, CBW 5MHz, QPSK, INV RB, Channel 20525 / 836.5 MHz



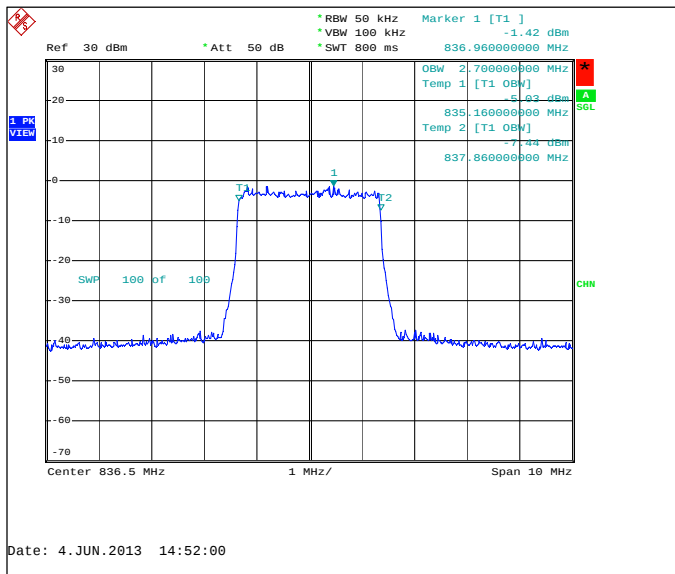
FDD, CBW 10MHz, QPSK, INV RB, Channel 20525 / 836.5 MHz



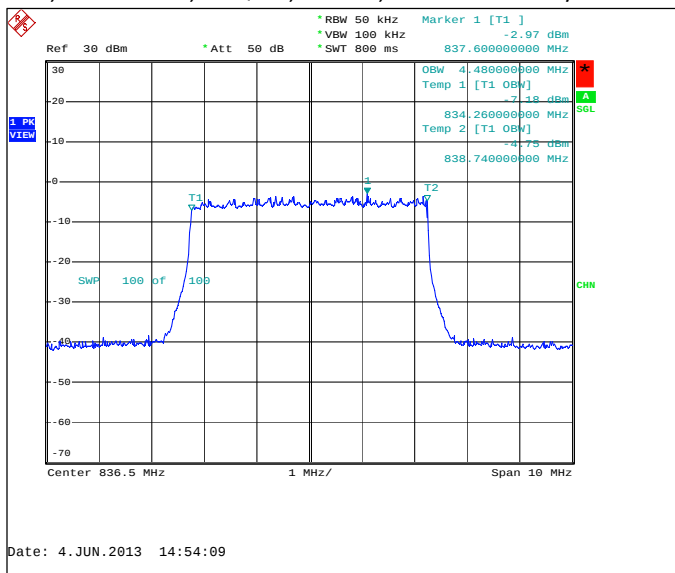
FDD, CBW 1.4MHz, 16QAM, INV RB, Channel 20525 / 836.5 MHz



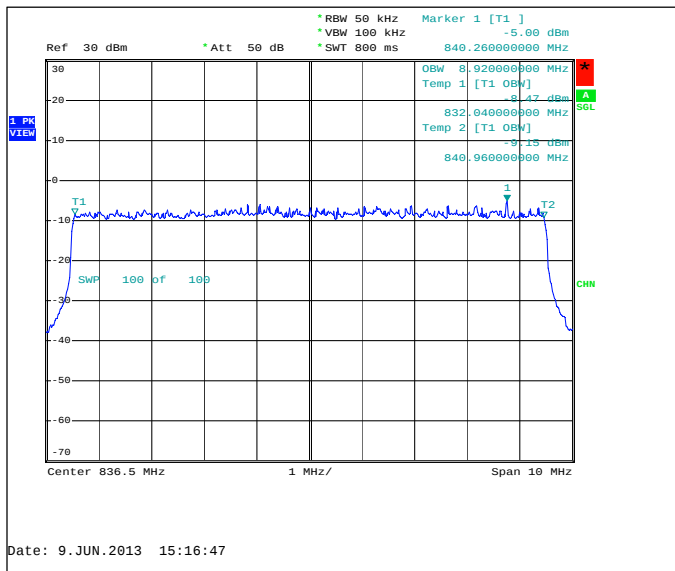
FDD, CBW 3MHz, 16QAM, INV RB, Channel 20525 / 836.5 MHz



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



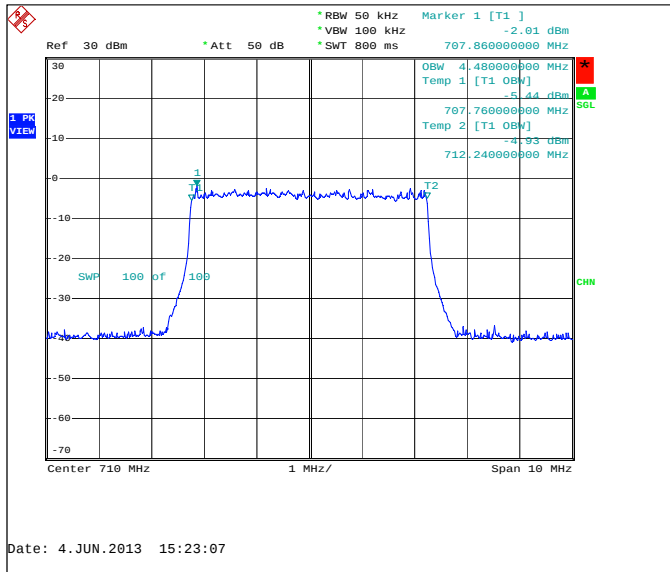
FDD, CBW 10MHz, 16QAM, 50 RB, Channel 20525 / 836.5 MHz



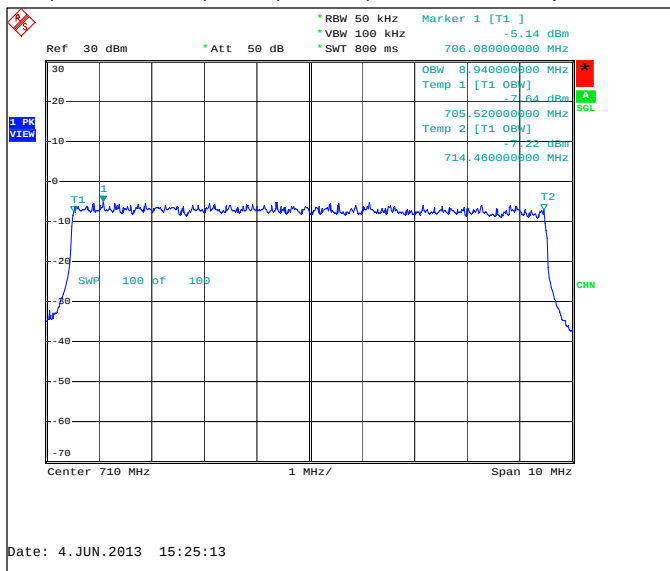
2.6. LTE700 Lower (Band 17) Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 5MHz, QPSK, INV RB	4480
FDD, CBW 10MHz, QPSK, INV RB	8940
FDD, CBW 5MHz, 16QAM, INV RB	4480
FDD, CBW 10MHz, 16QAM, INV RB	8920

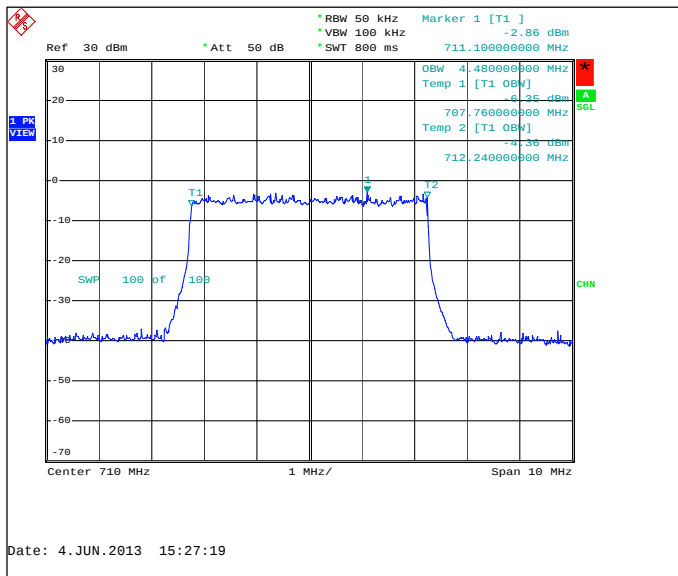
FDD, CBW 5MHz, QPSK, INV RB, Channel 23790 / 710.0 MHz



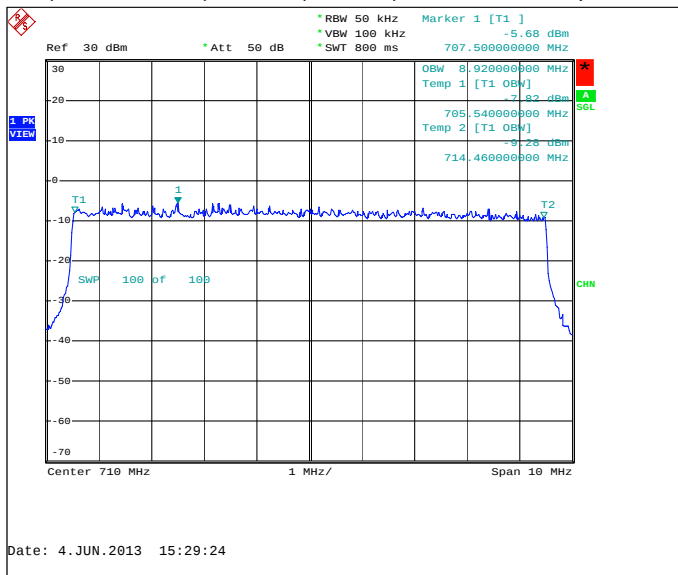
FDD, CBW 10MHz, QPSK, INV RB, Channel 23790 / 710.0 MHz



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



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

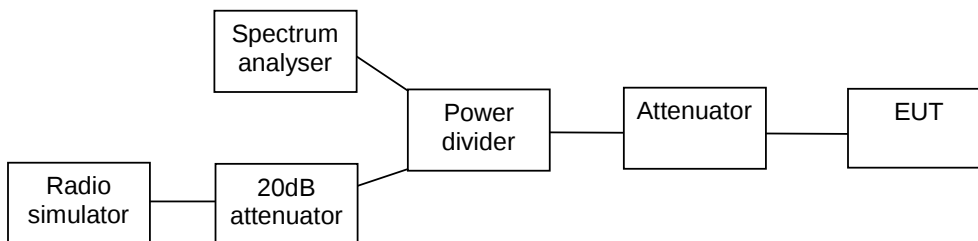


3. Band edge compliance

(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-942, DUT 53357
Accessories with DUT numbers	Dummy battery, DUT 53358 ; WH-108, DUT 53379
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24/58/100.7
Date of measurements	04-Jun-2013
Measured by	Gao Sherina

3.1. Test Setup



3.2. Test method and limit

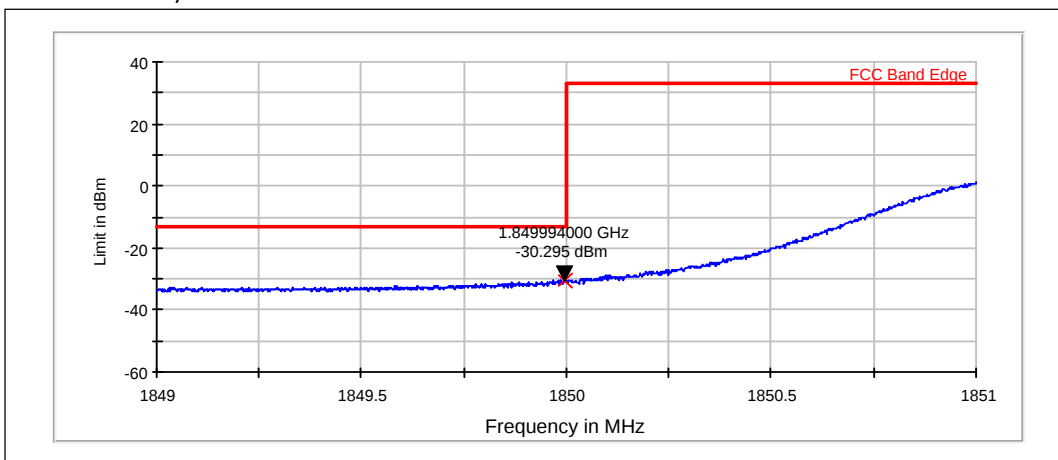
The measurement is made according to FCC rules parts 22, 24, 27 and IC standards , RSS-132, RSS-133, RSS-139.

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

3.3. LTE1900 (Band 2) Test results

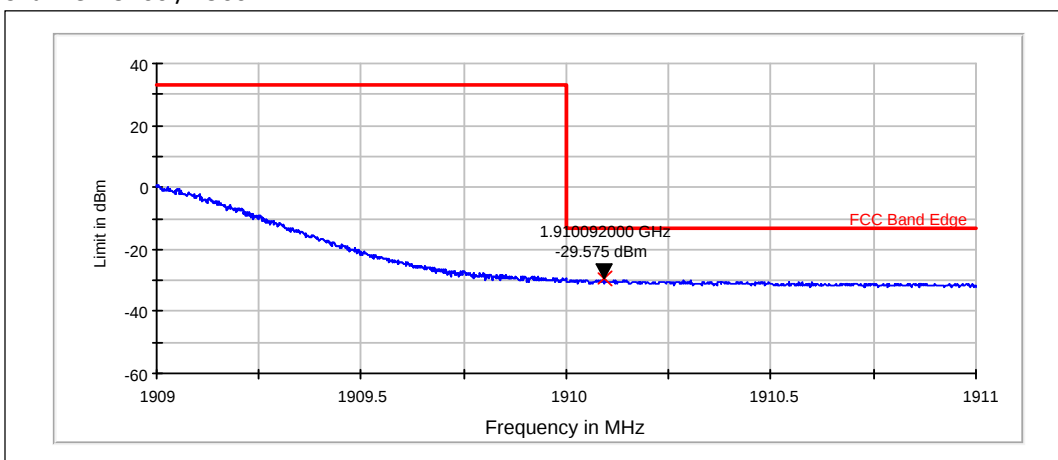
Channel 18700 / 1860 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1849.994	-30.30	PASSED

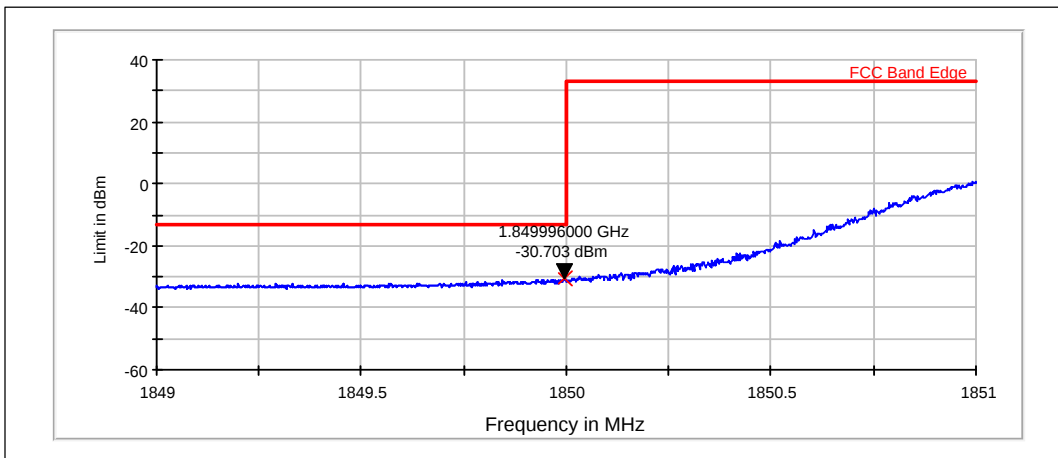
Channel 19100 / 1900 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1910.092	-29.57	PASSED

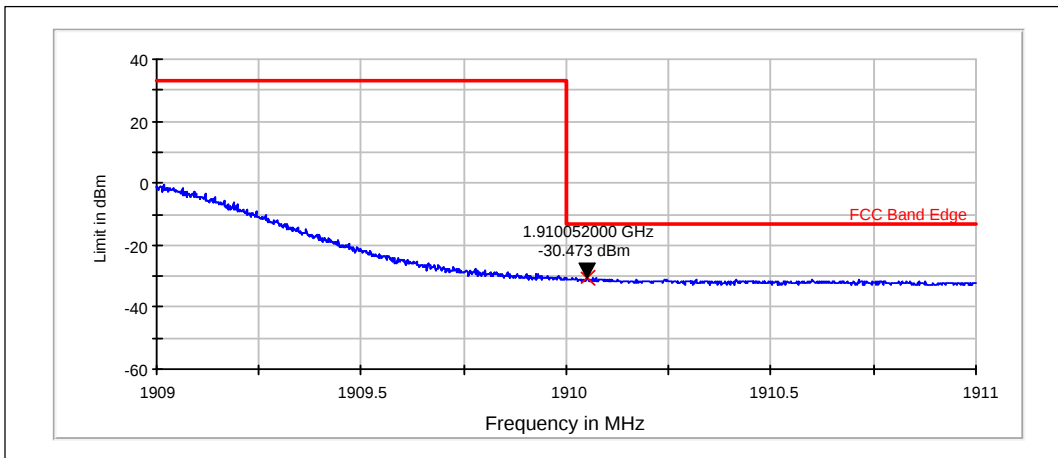
Channel 18700 / 1860 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1849.996	-30.70	PASSED

Channel 19100 / 1900 MHz

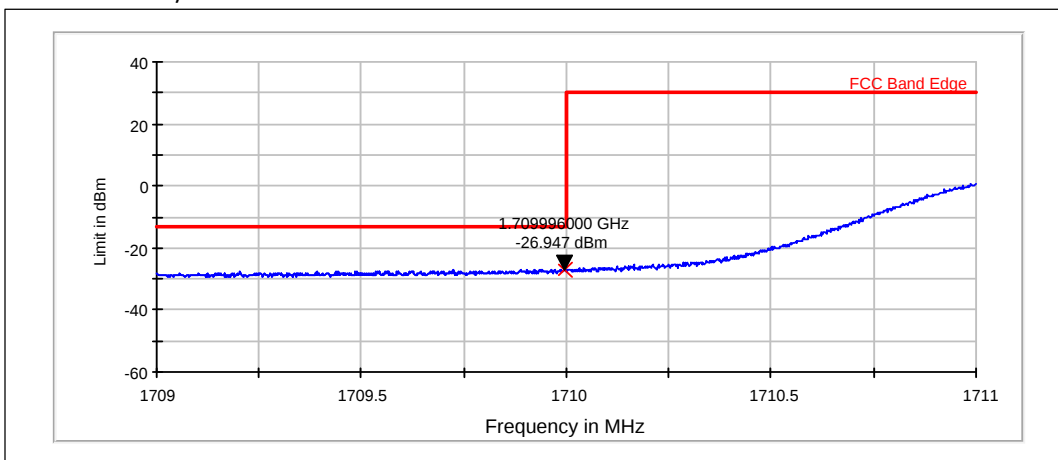


RMS (RBW: 200 kHz, VBW: 200 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1910.052	-30.47	PASSED

3.4. LTE1700 (Band 4) Test results

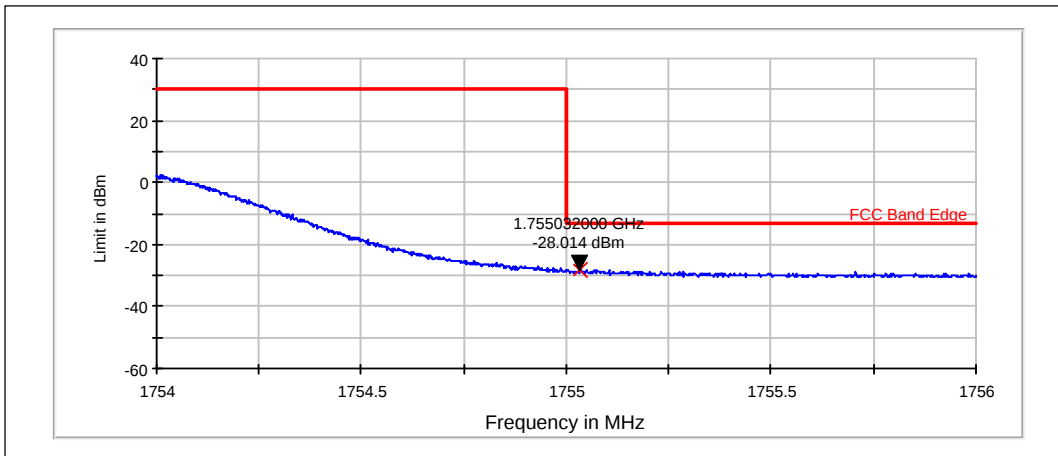
Channel 20050 / 1720 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1709.996	-26.95	PASSED

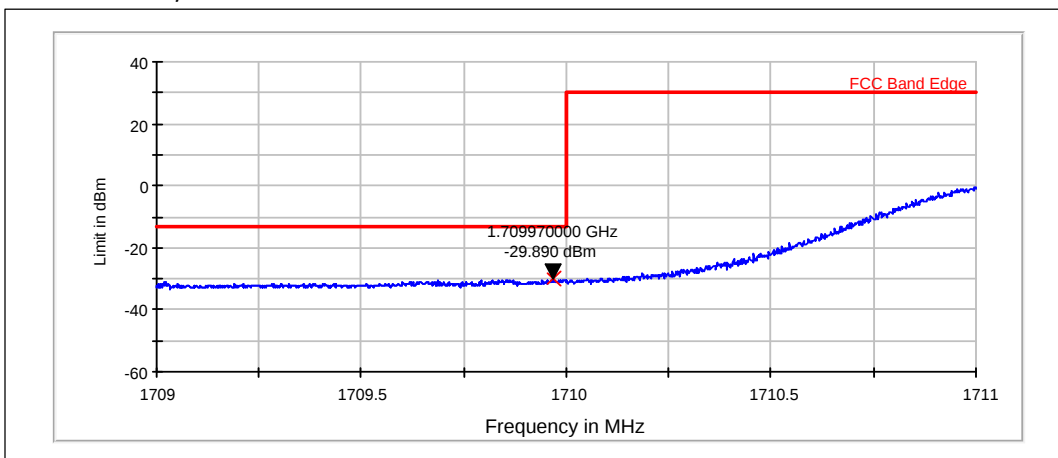
Channel 20300 / 1745 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1755.032	-28.01	PASSED

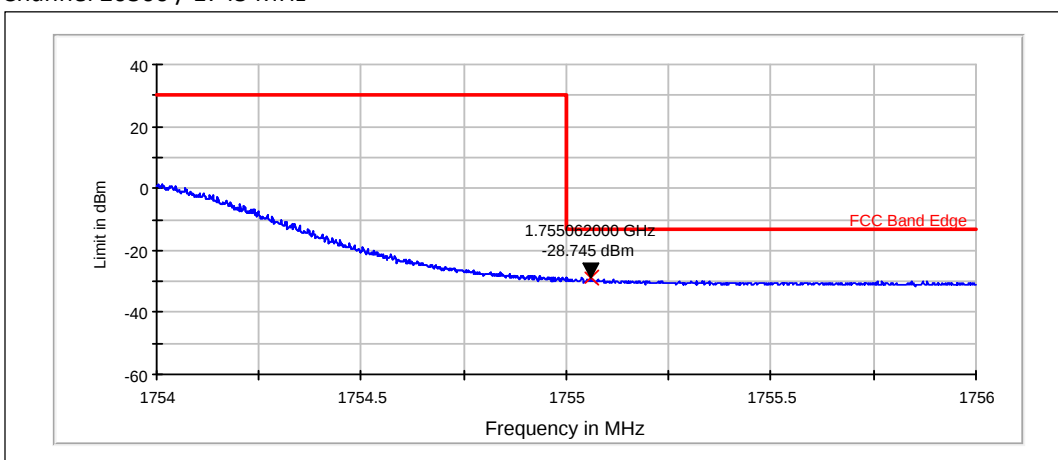
Channel 20050 / 1720 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1709.970	-29.89	PASSED

Channel 20300 / 1745 MHz

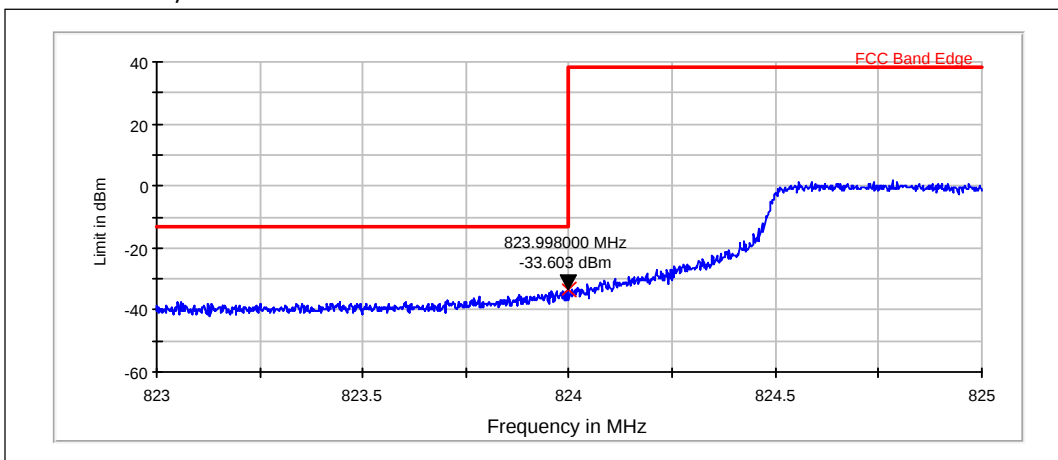


RMS (RBW: 200 kHz, VBW: 200 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1755.062	-28.74	PASSED

3.5. LTE850 (Band 5) Test results

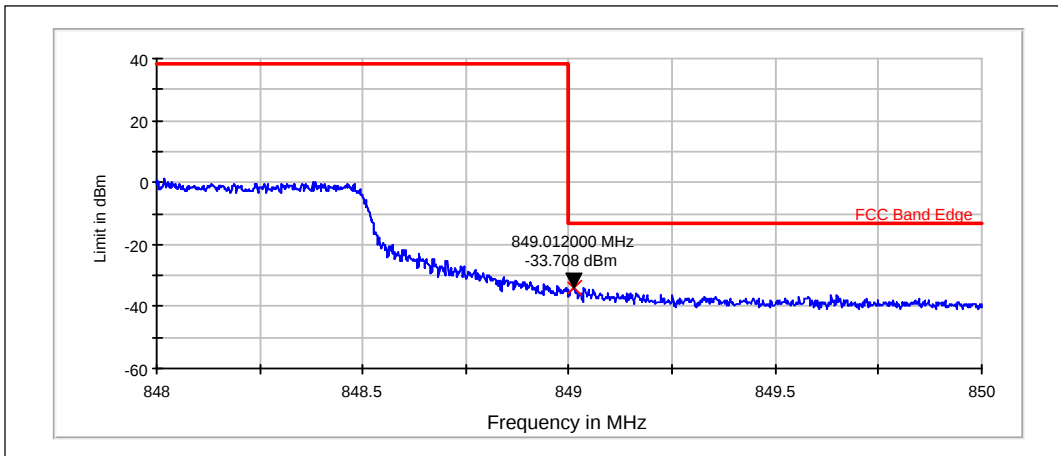
Channel 20450 / 829 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	823.998	-33.60	PASSED

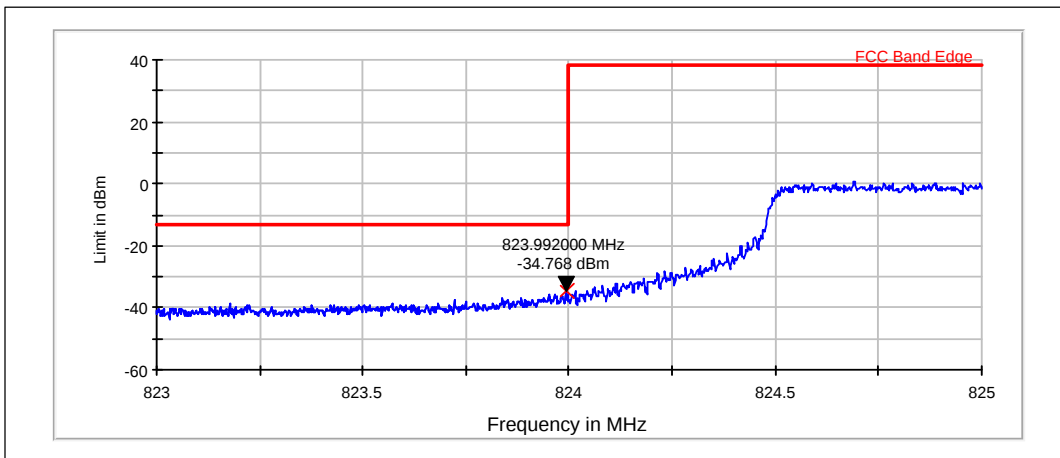
Channel 20600 / 844 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	849.012	-33.71	PASSED

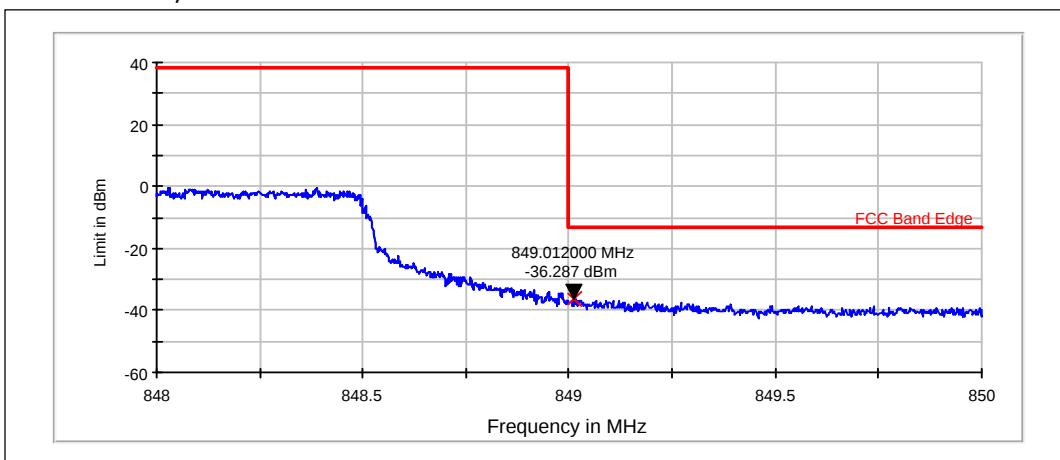
Channel 20450 / 829 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	823.992	-34.77	PASSED

Channel 20600 / 844 MHz

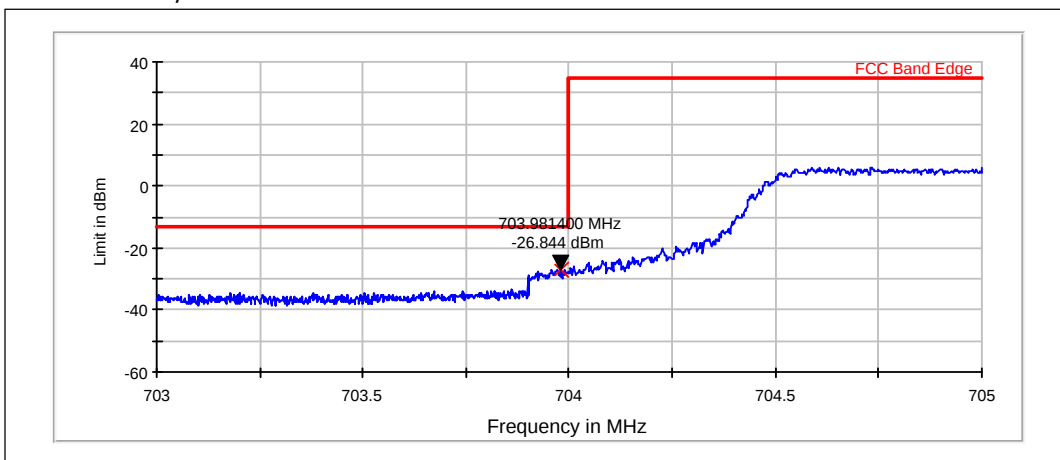


RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	849.012	-36.29	PASSED

3.6. LTE700 Lower (Band 17) Test results

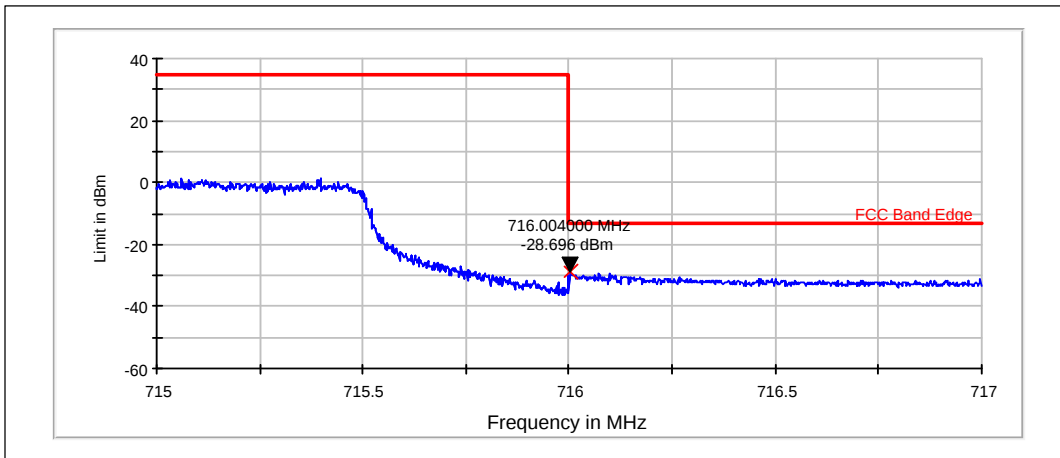
Channel 23780 / 709 MHz



RMS detector

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	703.981	-26.84	PASSED

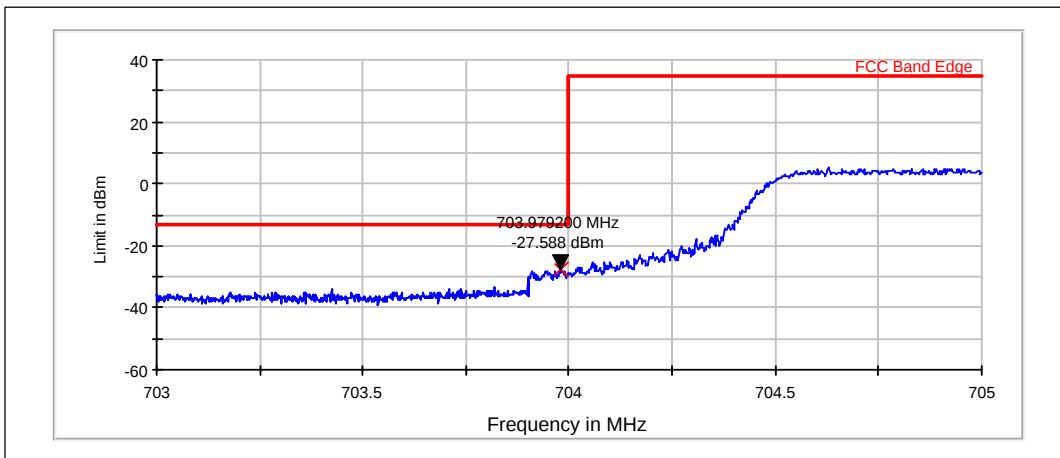
Channel 23800 / 711 MHz



RMS detector

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	716.004	-28.70	PASSED

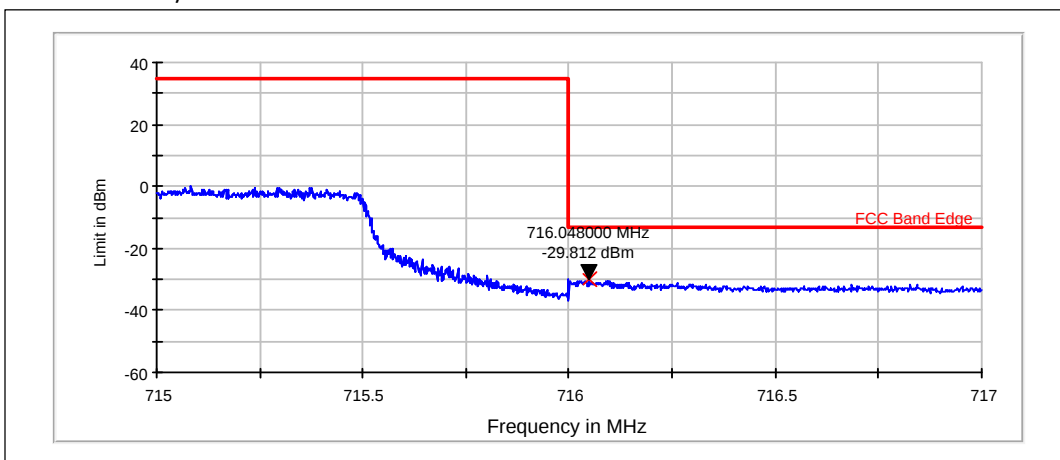
Channel 23780 / 709 MHz



RMS detector

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	703.979	-27.59	PASSED

Channel 23800 / 711 MHz



RMS detector

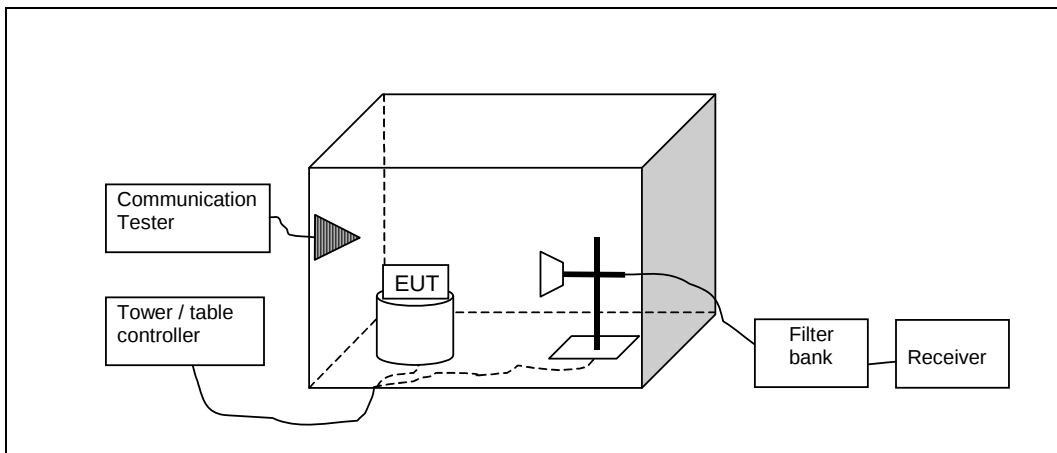
Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	716.048	-29.81	PASSED

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-942, DUT 53365
Accessories with DUT numbers	BP-4GWA, DUT 53370 ; AC-20U, DUT 53340 ; WH-108, DUT 53343
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24/55/100.7
Date of measurements	23-May-2013
Measured by	Zou Ming

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. Substitution values at each frequencies are measured beforehand and saved to the test software. The substitution corrections are obtained as described below:

$$ASUBST = PSUBST\ TX - PSUBST\ RX - LSUBST\ CABLES + GSUBST\ TX\ ANT$$

Where ASUBST is the final substitution correction including receive antenna gain. PSUBST TX is

signal generator level, PSUBST RX is receiver level, LSUBST CABLES is cable losses including both TX and RX cables and GSUBST TX ANT is substitution antenna gain.

The measurement results are obtained as described below:

$$P[\text{dBm}] = \text{PMEAS} + \text{ATOT}$$

Where PMEAS is receiver reading in dBm and ATOT is total correction factor including cable loss and substitution correction ($\text{ATOT} = \text{LCABLES} - \text{GPREAMP} + \text{ASUBST}$).

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

4.3. GSM850 TX test results

Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
849.9	-71.22	8E-05	-67.45	-3.77	VERTICAL	PASSED
1673.267	-57.62	0.00173	-61.41	3.79	VERTICAL	PASSED
1698.798	-59.07	0.00124	-62.7	3.63	VERTICAL	PASSED
1710.982	-55.95	0.00254	-60.95	5	HORIZONTAL	PASSED
2486.814	-52.96	0.00506	-63.72	10.76	VERTICAL	PASSED
2529.94	-52.69	0.00539	-63.21	10.52	VERTICAL	PASSED

*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

4.4. GSM850-E1 TX test results

Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
850.384	-76.09	2E-05	-72.37	-3.72	VERTICAL	PASSED
1671.723	-58.17	0.00153	-61.95	3.78	VERTICAL	PASSED
1677.335	-57.85	0.00164	-61.61	3.76	HORIZONTAL	PASSED
1682.986	-58.95	0.00127	-62.76	3.81	VERTICAL	PASSED
2509.519	-52.45	0.00569	-63.12	10.67	VERTICAL	PASSED
2512.365	-53.02	0.00499	-63.69	10.67	VERTICAL	PASSED

*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

4.5. 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
1707.756	-51.94	0.0064	-58.27	6.33	VERTICAL	PASSED
1755.922	-52.94	0.00508	-59.28	6.34	VERTICAL	PASSED
9813.086	-41.85	0.06533	-66.83	24.98	VERTICAL	PASSED
9876.413	-41.74	0.06696	-66.65	24.91	HORIZONTAL	PASSED
9983.387	-42.14	0.06112	-67.02	24.88	HORIZONTAL	PASSED
9989.315	-41.75	0.06683	-66.71	24.96	VERTICAL	PASSED

*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

4.6. WCDMA 850 (Band V) test results

Channel 4175 / 835.0 MHz

FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [μ W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
847.5	-48.65	0.01366	-81.5	32.85	HORIZONTAL	PASSED
849.348	-49.29	0.01177	-81.99	32.7	HORIZONTAL	PASSED
1001.964	-60.76	0.00084	-62.68	1.92	HORIZONTAL	PASSED
1671.483	-53.27	0.00471	-57.05	3.78	VERTICAL	PASSED
2499.739	-52.83	0.00522	-63.36	10.53	VERTICAL	PASSED
2510.922	-52.74	0.00532	-63.4	10.66	VERTICAL	PASSED

*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

4.7. LTE 1900 (Band II) test results

Channel 18900 / 1880.0 MHz

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

Frequency [MHz]	P [dBm]	P [μ W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
3764.068	-65.95	0.00025	-76.54	10.59	VERTICAL	PASSED
5645.19	-58.93	0.00128	-72.74	13.81	VERTICAL	PASSED
7529.76	-56.25	0.00237	-77.95	21.7	VERTICAL	PASSED

*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

Channel 18900 / 1880.0 MHz

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

Frequency [MHz]	P [dBm]	P [μ W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
1909.732	-64.13	0.00039	-72.74	8.61	HORIZONTAL	PASSED
3761.503	-65.86	0.00026	-76.55	10.69	HORIZONTAL	PASSED
5647.114	-59.22	0.0012	-73.02	13.8	VERTICAL	PASSED
7528.637	-56.8	0.00209	-78.48	21.68	VERTICAL	PASSED

*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

4.8. LTE 850 (Band V) test results

Channel 20525 / 836.5 MHz

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

Frequency [MHz]	P [dBm]	P [μ W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
815.341	-57.71	0.0017	-93.03	35.32	HORIZONTAL	PASSED
857.819	-58.53	0.0014	-93.03	34.5	VERTICAL	PASSED
860.307	-58.19	0.00152	-93.03	34.84	VERTICAL	PASSED
861.284	-58.1	0.00155	-93.02	34.92	VERTICAL	PASSED
861.749	-58.06	0.00156	-93.02	34.96	VERTICAL	PASSED
863.347	-57.91	0.00162	-93.02	35.11	VERTICAL	PASSED
1673.501	-60.82	0.00083	-64.61	3.79	VERTICAL	PASSED
2510.322	-71.91	6E-05	-82.56	10.65	VERTICAL	PASSED
3353.635	-77.02	2E-05	-84.5	7.48	HORIZONTAL	PASSED

*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

Channel 20525 / 836.5 MHz

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

Frequency [MHz]	P [dBm]	P [μ W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
856.697	-58.69	0.00135	-93.02	34.33	VERTICAL	PASSED
999.637	-52.4	0.00576	-90.53	38.13	HORIZONTAL	PASSED
1673.261	-62	0.00063	-65.79	3.79	VERTICAL	PASSED
2508.518	-71.07	8E-05	-81.74	10.67	VERTICAL	PASSED
3351.351	-77.02	2E-05	-84.5	7.48	HORIZONTAL	PASSED

*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

4.9. LTE700 Lower (Band 17) test results

Channel 23790 / 710 MHz

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

Frequency [MHz]	P [dBm]	P [μ W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
1420.541	-79.5	1E-05	-81.73	2.23	VERTICAL	PASSED
2130.581	-71.25	7E-05	-78.48	7.23	VERTICAL	PASSED
2850	-70.39	9E-05	-83.48	13.09	VERTICAL	PASSED

*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

Channel 23790 / 710 MHz

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

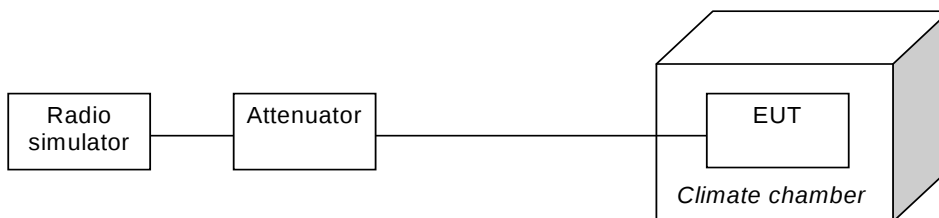
Frequency [MHz]	P [dBm]	P [μ W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarization	Results
1420.661	-79.5	1E-05	-81.74	2.24	VERTICAL	PASSED
2130.581	-66.71	0.00021	-73.94	7.23	VERTICAL	PASSED
2849.84	-70.97	8E-05	-83.49	12.52	HORIZONTAL	PASSED

*Substitution method could not be utilized as no emissions above noise floor were found during measurements.

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-942, DUT 53357
Accessories with DUT numbers	Dummy battery, DUT 53358 ; WH-108, DUT 53379
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24/58/100.7
Date of measurements	04-Jun-2013
Measured by	Gao Sherina

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

5.3. LTE700 Lower (Band 17) Test results

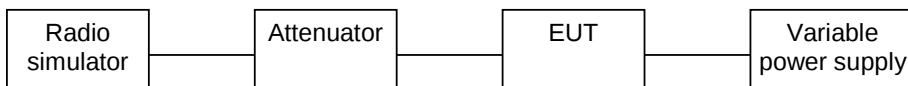
FDD, CBW 10MHz, INV, INV RB, Channel 23790 / 710.0 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	710.00	-2.07424	-0.0029	PASSED
40	710.00	-0.97275	-0.0014	PASSED
30	710.00	-0.11444	-0.0002	PASSED
20	710.00	0.38624	0.0005	PASSED
10	710.00	-1.43051	-0.002	PASSED
0	710.00	-2.20299	-0.0031	PASSED
-10	710.00	-1.90258	-0.0027	PASSED
-20	710.00	-1.04427	-0.0015	PASSED
-30	710.00	-2.60353	-0.0037	PASSED

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-942, DUT 53357
Accessories with DUT numbers	Dummy battery, DUT 53358 ; WH-108, DUT 53379
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	24/58/100.7
Date of measurements	05-Jun-2013
Measured by	Gao Sherina

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

6.3. 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	-0.37193	-0.0005	PASSED
Nominal / 3.7	710.00	-2.74658	-0.0039	PASSED
Battery cut-off point / 3.3	710.00	-1.00000	-0.0014	PASSED

6.4. GSM 850 Test results

GSM, Channel 190 / 836.6 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	836.60	-13.43000	-0.0161	PASSED
Nominal / 3.7	836.60	0.39000	0.0005	PASSED
Battery cut-off point / 3.3	836.60	-3.03000	-0.0036	PASSED

6.5. GSM 1900 Test results

GSM, Channel 661 / 1880.0 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	1880.00	-7.94000	-0.0042	PASSED
Nominal / 3.7	1880.00	-18.34000	-0.0098	PASSED
Battery cut-off point / 3.3	1880.00	-16.92000	-0.009	PASSED

6.6. WCDMA 1700 Test results

FDD, Channel 1412 / 1732.4 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	1732.40	-5.14221	-0.003	PASSED
Nominal / 3.7	1732.40	-5.59998	-0.0032	PASSED
Battery cut-off point / 3.3	1732.40	-5.41687	-0.0031	PASSED

7. Test Equipment

7.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	RF Emission Software	EMC32 Test Software	R&S	22/24/27, 15C, 15B
BJPCHW0020	DC Power supply	HP6632B	HP	22/24/27, 15C
BJPCPT0040	Receiver	ESCS30	R&S	15C,15B
BJPCPT0069	LISN 50 μ H	ESH3-Z5	R&S	15C,15B
BJPCPT0073	Signal Generator	SMR 20	R&S	22/24/27, 15C, 15B
BJPCPT0191	Pulse Limiter	ESH3-Z2	R&S	15C,15B
BJPCPT0208	UPS	PULSAR RX10	Merlin gerin	15C,15B
BJPCTC0001	DIGITAL CAMERA	PC1015	CANON	15C,15R
BJPCTC0017	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
BJPCTC0062	AC Power source	6812B	Hp	15C,15B
BJPCTC0067	Bluetooth Tester	CBT	R&S	22/24/27, 15C
BJPCTC0082	Humidity and Temperature Sensor	175-H2	Testo	15B,15C
BJPCTC0088	Absolut pressure meter	testo 511	Testo	22/24/27, 15B,15C
BJPCTC0089	Tempreture Test chamber	VT4002	Votsch industrietechnik	22/24/27, 15C
BJPCTC0090	FSP spectrum analyzer	FSP30	R&S	22/24/27, 15C
BJPCTC0094	GPB-RS232 convertor	GPB-RS232	NI	22/24/27, 15C
BJPCTC0112	Power Splitter	11667B	Agilent	22/24/27, 15C
BJPCTC0114	Signal Generator	E8257C	Agilent	22/24/27, 15C
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C
BJPCTC0127	AC Power source	SOYI-500VA	SOYI	15B 15C
BJPCTC0128	Communication antenna	JXTXLB-10180	A-INFOMW	22/24/27 15B 15C
BJPCTC0129	Communication antenna	JXTXLB-10180	A-INFOMW	22/24/27 15B 15C
BJPCTC0131	Communication tester	CMW500	R&S	22/24/27 15B 15C
BJPCTC0136	Communication antenna	JXTXLB-880-NF	A-INFOMW	15B 15C
BJPCTC0306	Power Splitter	11667B	Agilent	22/24/27, 15C
BJPCTC0305	GPB converter	GPB-RS232	NI	22/24/27, 15C
BJPCTC0304	Spectrum Analyser	FSV30	R&S	22/24/27, 15C

7.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	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 Emission Software	EMC32 Test Software	R&S	22/24/27, 15C, 15B
BJPCPT0072	Receiver	ESI B26	R&S	22/24/27, 15C, 15B
BJPCPT0130	Relay Switch Unit	TS-RSP	R&S	22/24/27, 15C, 15B
BJPCPT0150	High Pass Filter	WHKS1200-10SS	Wainwright	22/24/27, 15C, 15B
BJPCPT0151	Band Reject Filter	WRCD1880/2000-0.2/40-5SSK	Wainwright	24, 15B
BJPCPT0154	Band Reject Filter	WRCT2402/2480-2400/2483.5-30-20SS	Wainwright	15C, 15B
BJPCPT0208	UPS	PULSAR RX10	Merlin gerin	15C,15B
BJPCTC0001	DIGITAL CAMERA	PC1015	CANON	15C,15R
BJPCTC0007	Antenna	HL562	R&S	22/24/27, 15C, 15B
BJPCTC0029	Antenna	HF906	R&S	22/24/27, 15C, 15B
BJPCTC0034	Band Reject Filter	WRCT 800/880-0.2/40-5SSK	Wainwright	22, 15B
BJPCTC0049	Preamplifier	Blma 0118-1A-Bt	Bonn	22/24/27, 15C, 15B
BJPCTC0055	Communication Tester	CMU200	R&S	22/24/27,15C,15B
BJPCTC0058	Bluetooth Tester	CBT	R&S	15C, 15B
BJPCTC0062	AC Power source	6812B	Hp	15C,15B
BJPCTC0064	Band Reject Filter	WRCG1877/1883-1870/1890-40/6SS	Wainwright	24, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
BJPCTC0065	Band Reject Filter	WRCG832/838-825/845-40/5SS	Wainwright	27, 15B
BJPCTC0071	Multi-Device Controller	2090	EMCO	22/24/27, 15C, 15B
BJPCTC0072	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	ETS	22/24/27, 15C, 15B
BJPCTC0073	MAST	Model-TR/POL	ETS	22/24/27, 15C, 15B
BJPCTC0074	MAST	Model 2070-2	ETS	22/24/27, 15C, 15B
BJPCTC0075	Turntable	Model 2188	ETS-EMCO	22/24/27, 15C, 15B
BJPCTC0081	Humidity and Temperature Sensor	175-H2	Testo	15B, 15C
BJPCTC0088	Absolut pressure meter	testo 511	Testo	22/24/27, 15B,15C
BJPCTC0096	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B
BJPCTC0113	Receiver	ESI B26	R&S	22/24/27, 15B, 15C
BJPCTC0115	Communication Tester	CMU200	R&S	22/24/27, 15B, 15C
BJPCTC0124	Attenuator	SA18N200W-40	Fairview Microwave	-
BJPCTC0125	Loop Antenna	HFH2-Z2	R&S	15C
BJPCTC0126	Tripod	FHU-Z	R&S	15C
BJPCTC0128	Communication antenna	JXTXLB-10180	A-INFOMW	22/24/27 15B 15C
BJPCTC0129	Communication antenna	JXTXLB-10180	A-INFOMW	22/24/27 15B 15C
BJPCTC0131	Communication tester	CMW500	R&S	22/24/27 15B 15C
BJPCTC0133	Open Swith and contril unit	OSP 150	R&S	15B,15C
BJPCTC0134	Open Swith and contril unit	OSP 150	R&S	15B,15C
BJPCTC0135	Open Swith and contril unit	OSP 130	R&S	15B,15C
BJPCTC0136	Communication antenna	JXTXLB-880-NF	A-INFOMW	15B 15C