

FCC Part 22/24 Compliance Test Report

Test Report no.:	FCC22&24_RM-1045_14.docx	Date of Report:	05-May2014
Number of pages:	32	Customer's Contact person:	Tia Melava
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FCC listing no.:	533467		
IC recognition no.:	661V-1		
Tested devices/ accessories:	Phone RM-1045 / AC-Charger AC-60E / Headset WH-208 / USB-Cable CA-190CD / Dummy Battery -		
FCC ID:	PYARM-1045	IC:	-
Supplement reports:	FCC22_RM-1045_13		
Testing has been carried out in accordance with:	CFR 47, FCC rules Parts 22/24, TIA-603-C-2004 and IC standards, RSS-GEN (Issue 3, December 2010), RSS-132 (Issue 2, September 2005). 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:			
	Sami Lehtonen, Specialist, EMC		

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

Date of receipt	15-Apr-2014
Testing completed	21-Apr-2014
The customer's contact person	Tia Melava
Test Plan referred to	T:\Projects\RM-1045\TestPlan\RS_Testplan_RM-1045.xlsm
Notes	Antenna 1 is in use on the tests
Document name	T:\Projects\RM-1045\EMC\FCC22&24_RM-1045_14.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-1045	004402478600756	1004	-	02061.00037.14145.00001	18216
AC-Charger	AC-60E	40904932616103041250675677	-	-	-	18217
Headset	WH-208	2145W41	-	-	-	18218
USB-Cable	CA-190CD	07304562136C28	-	-	-	18219
Phone	RM-1045	004402478600640	1004	-	02061.00037.14145.00001	18220
Dummy Battery	-	-	-	-	-	18221
Headset	WH-208	2145W41	-	-	-	18198

1.2. Summary of Test Results

GSM 850:

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	PASSED
§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

GSM 1900:

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	PASSED
§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:

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	PASSED
§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 850:

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	PASSED
§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

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.

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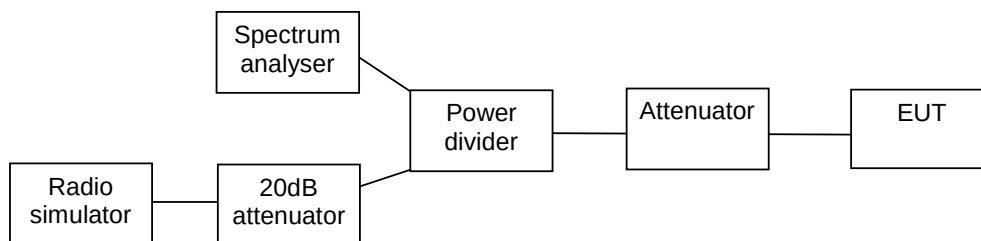
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1. 99% occupied bandwidth (FCC §2.1049(h), 22.913(a), RSS-GEN 4.6.1)

EUT with DUT number	RM-1045, DUT 18220
Accessories with DUT numbers	Dummy Battery, DUT 18221 ; WH-208, DUT 18198
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 39 / 102.9
Date of measurements	18-Apr-2014
Measured by	Jari Keto

1.1. Test Setup



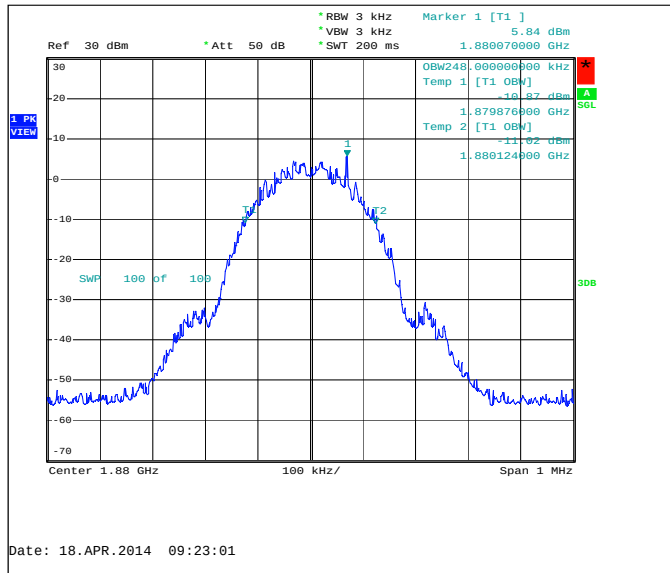
1.2. Test method and limit

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

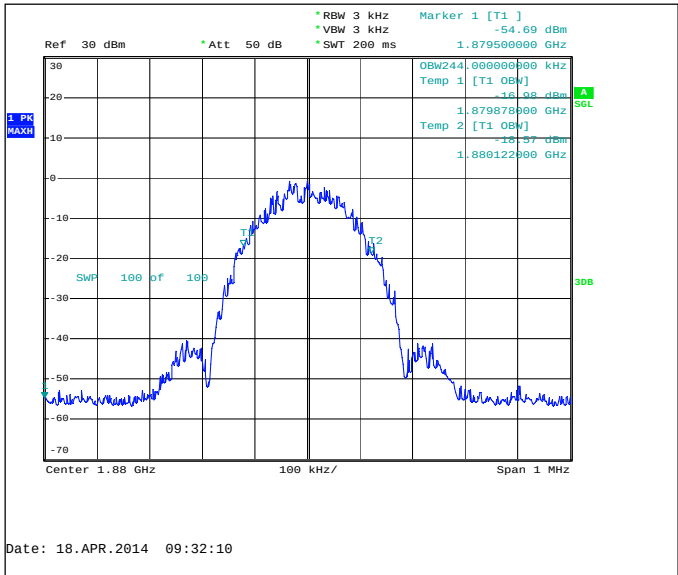
1.3. GSM 1900 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	248
EGPRS	244
GPRS	244

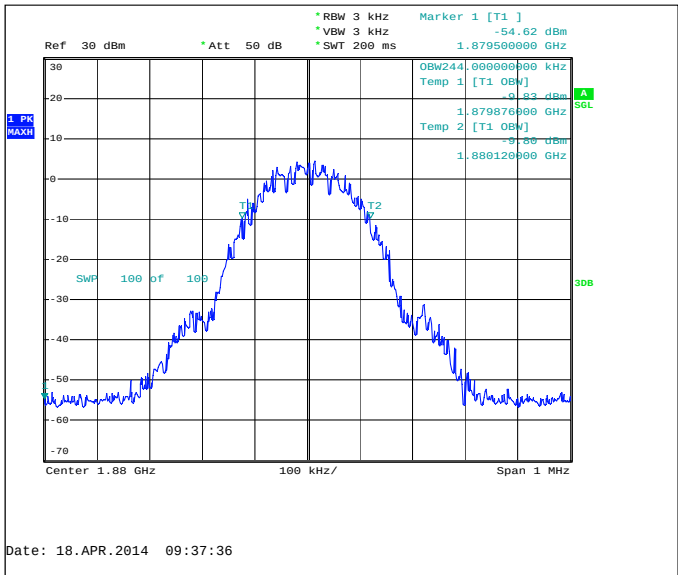
GSM, Channel 661 / 1880.0 MHz



EGPRS, Channel 661 / 1880.0 MHz



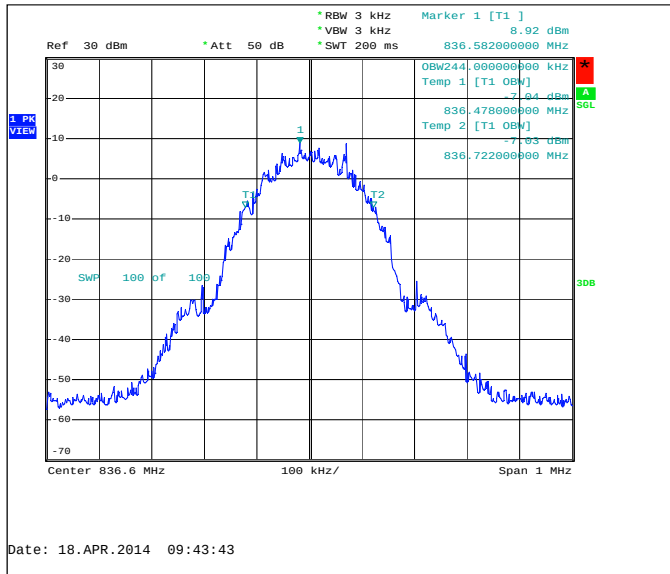
GPRS, Channel 661 / 1880.0 MHz



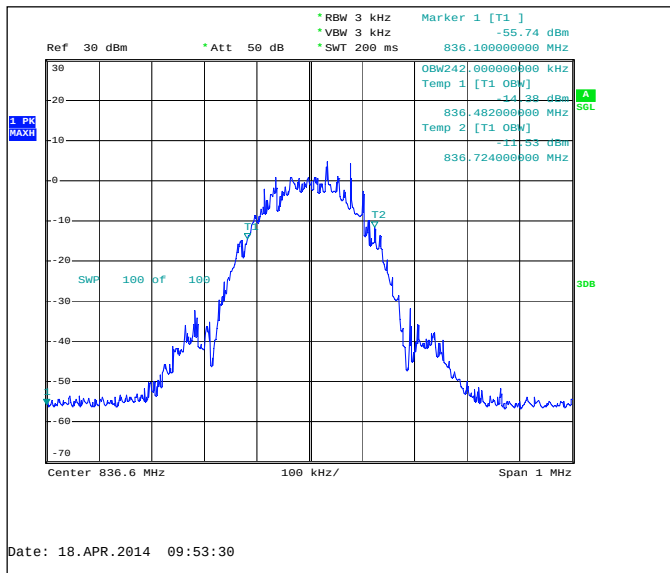
1.4. GSM 850 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	244
EGPRS	242
GPRS	248

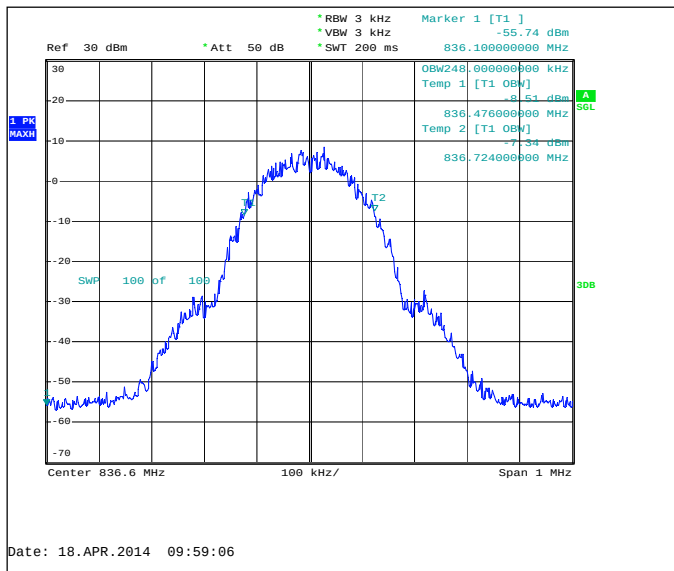
GSM, Channel 190 / 836.6 MHz



EGPRS, Channel 190 / 836.6 MHz



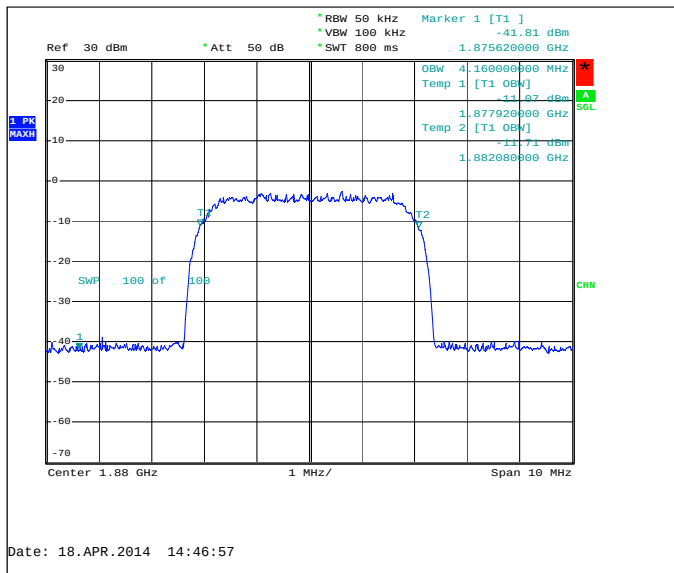
GPRS, Channel 190 / 836.6 MHz



1.5. WCDMA 1900 Test results

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

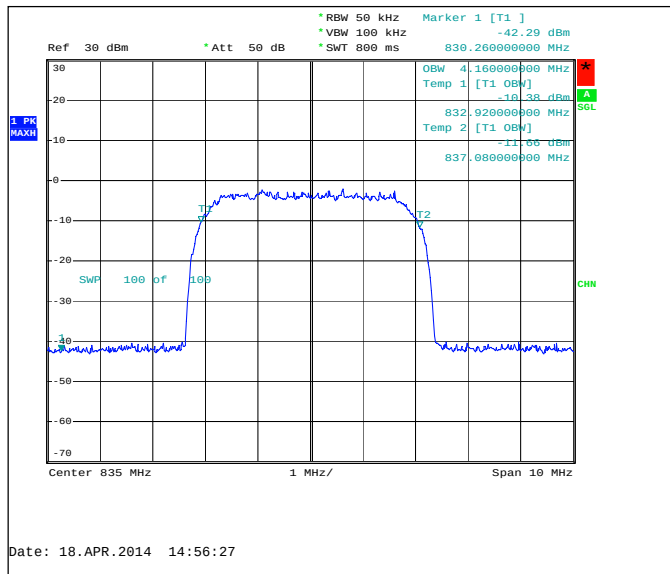
FDD, Channel 9400 / 1880.0 MHz



1.6. WCDMA 850 Test results

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

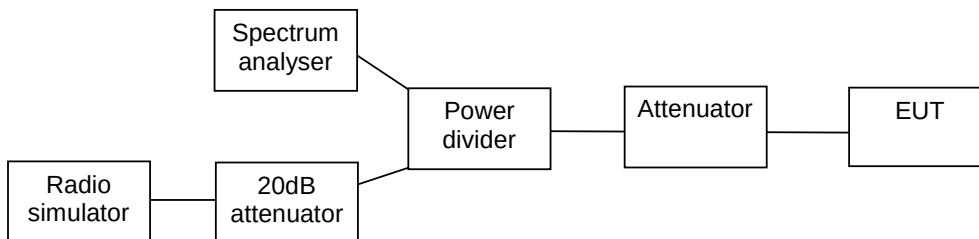
FDD, Channel 4175 / 835.0 MHz



2. Band edge compliance (FCC §22.917(a), §24.238(a), RSS-132 4.5)

EUT with DUT number	RM-1045, DUT 18220
Accessories with DUT numbers	Dummy Battery, DUT 18221 ; WH-208, DUT 18198
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 39 / 102.9
Date of measurements	18-Apr-2014
Measured by	Jari Keto

2.1. Test Setup



2.2. Test method and limit

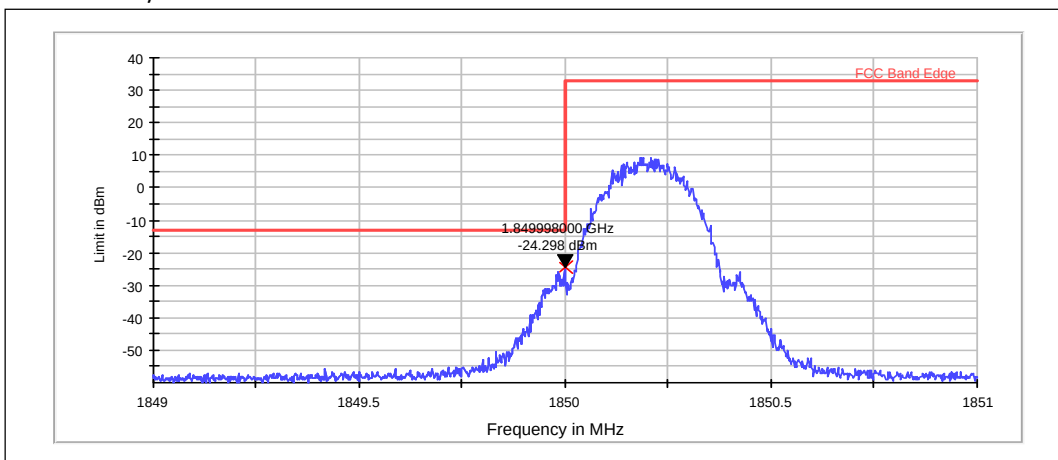
The measurement is made according to FCC rules parts 22 and IC standards , RSS-132.

Limits for band edge compliance measurements

Operation band	Frequency range [MHz]	Limit [dBm]
GSM850	Below 824 and above 849	-13

2.3. GSM 1900 Test results

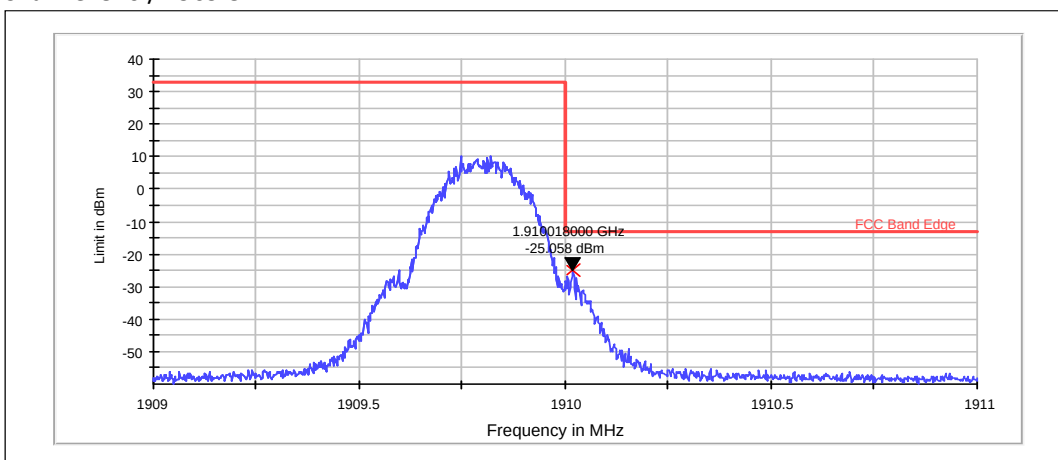
Channel 512 / 1850.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	1849.998	-24.30	PASSED

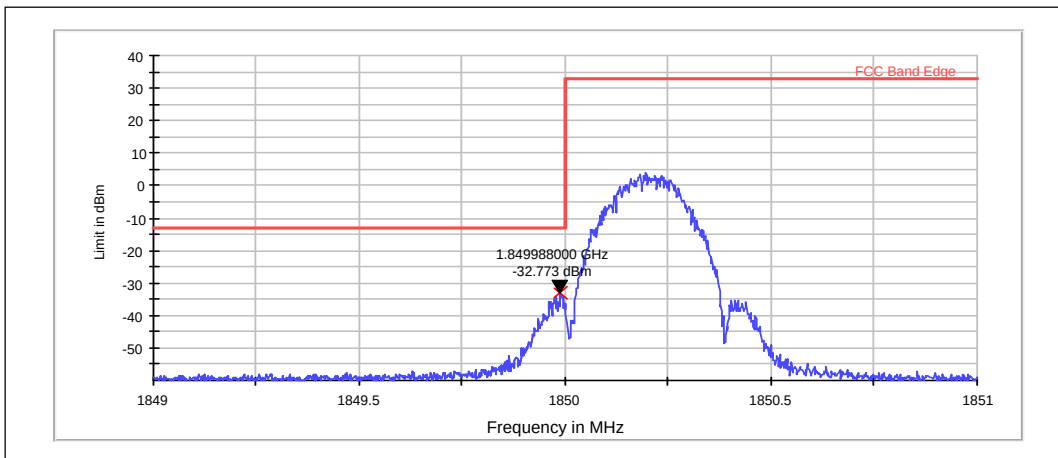
Channel 810 / 1909.8 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	1910.018	-25.06	PASSED

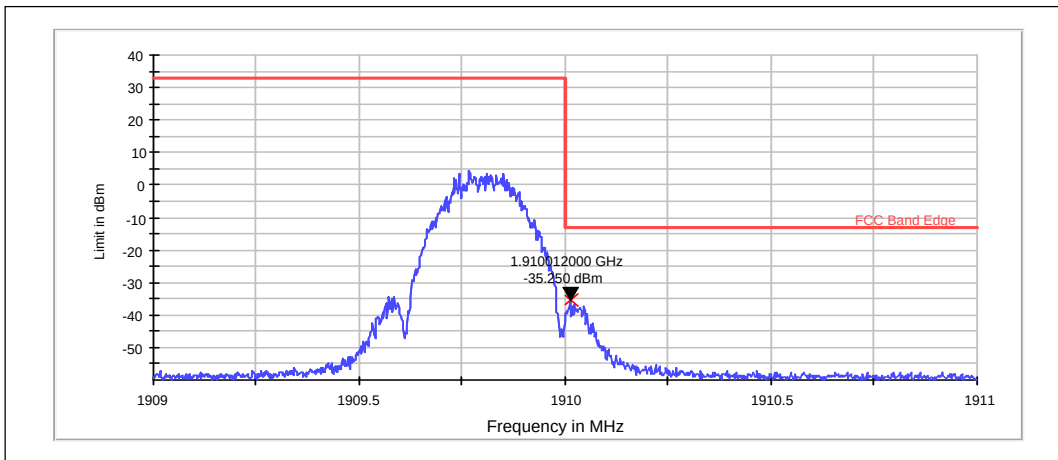
Channel 512 / 1850.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	1849.988	-32.77	PASSED

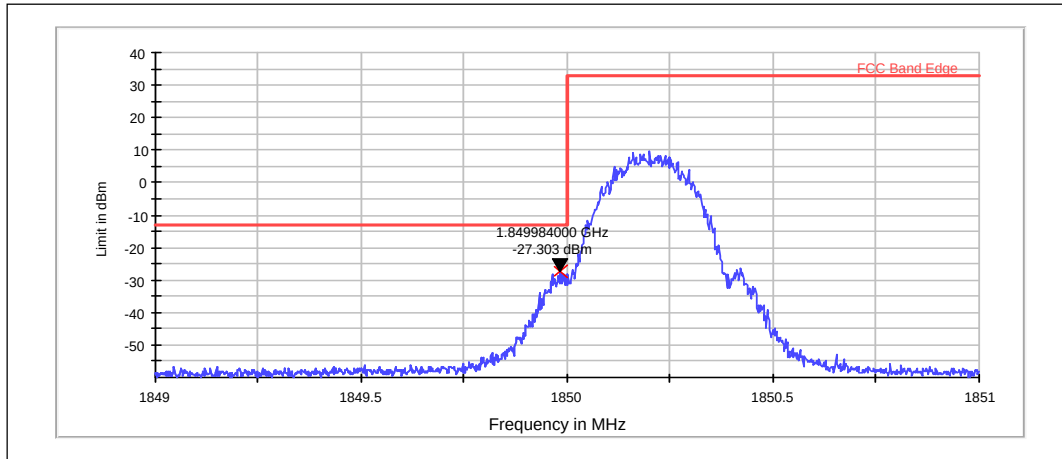
Channel 810 / 1909.8 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	1910.012	-35.25	PASSED

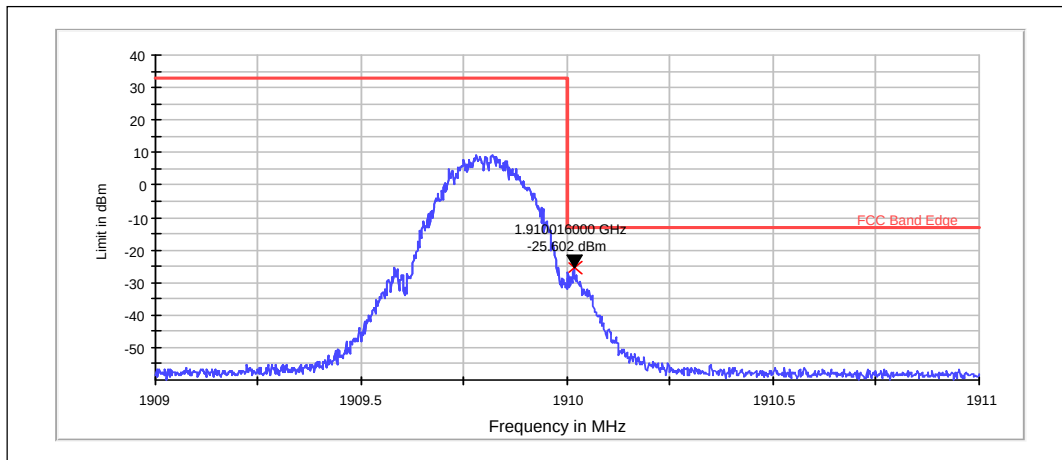
Channel 512 / 1850.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GPRS	1849.984	-27.30	PASSED

Channel 810 / 1909.8 MHz

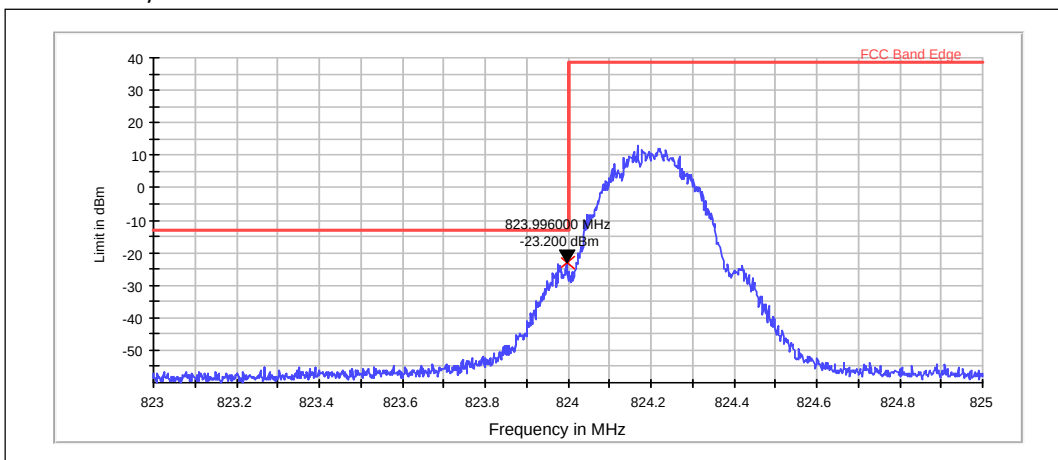


RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GPRS	1910.016	-25.60	PASSED

2.4. GSM 850 Test results

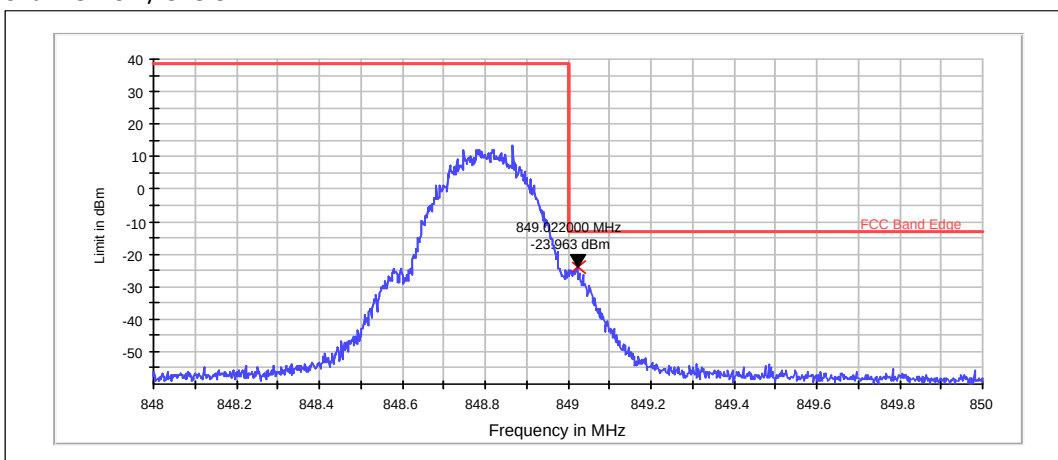
Channel 128 / 824.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	823.996	-23.20	PASSED

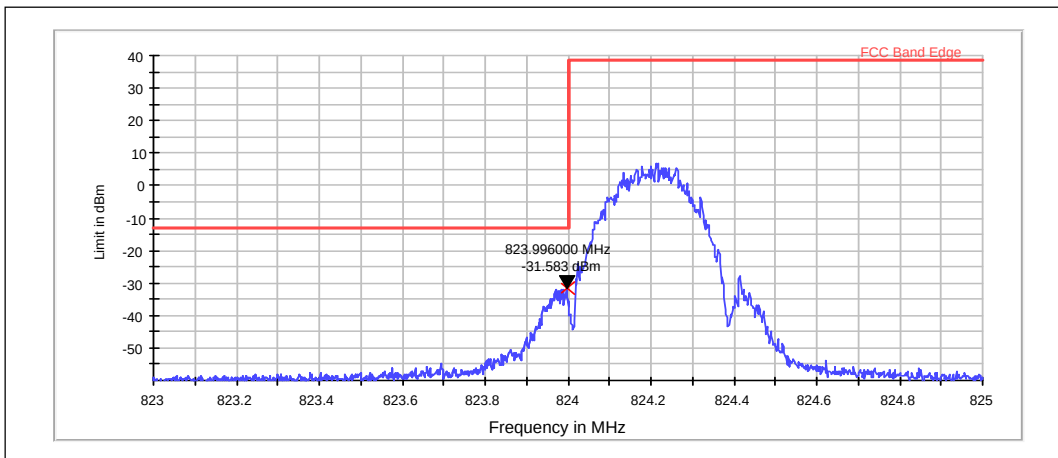
Channel 251 / 848.8 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	849.022	-23.96	PASSED

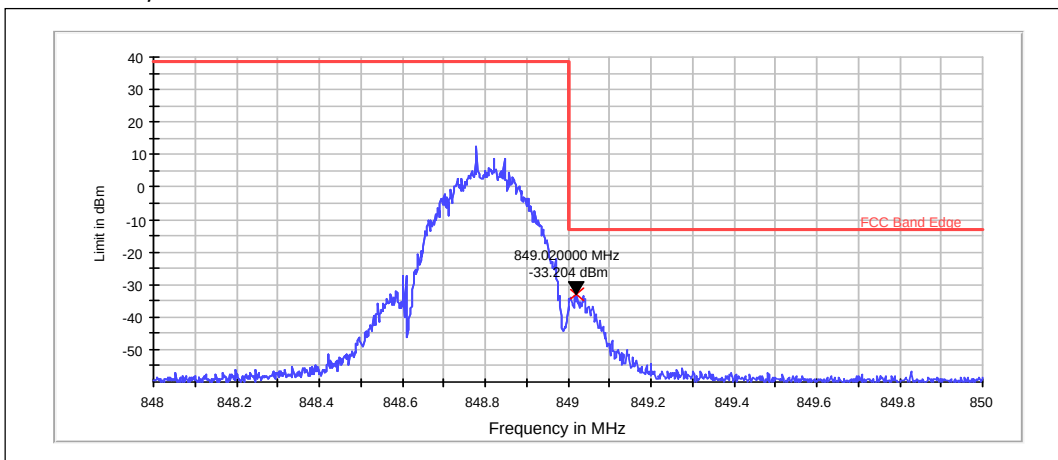
Channel 128 / 824.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	823.996	-31.58	PASSED

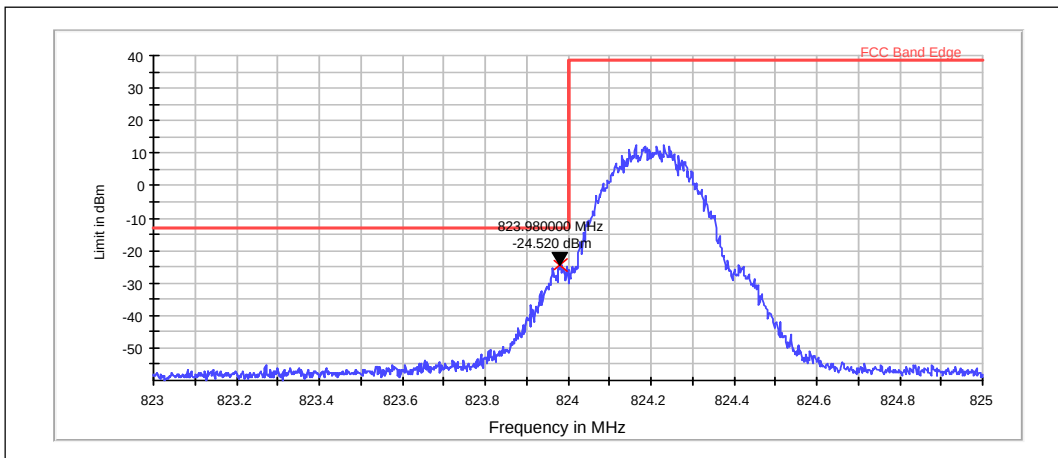
Channel 251 / 848.8 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	849.020	-33.20	PASSED

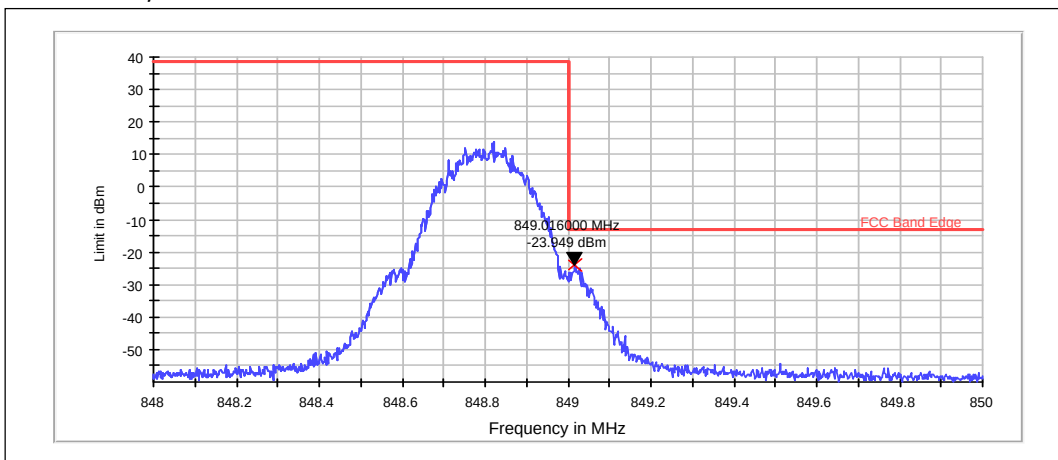
Channel 128 / 824.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GPRS	823.980	-24.52	PASSED

Channel 251 / 848.8 MHz

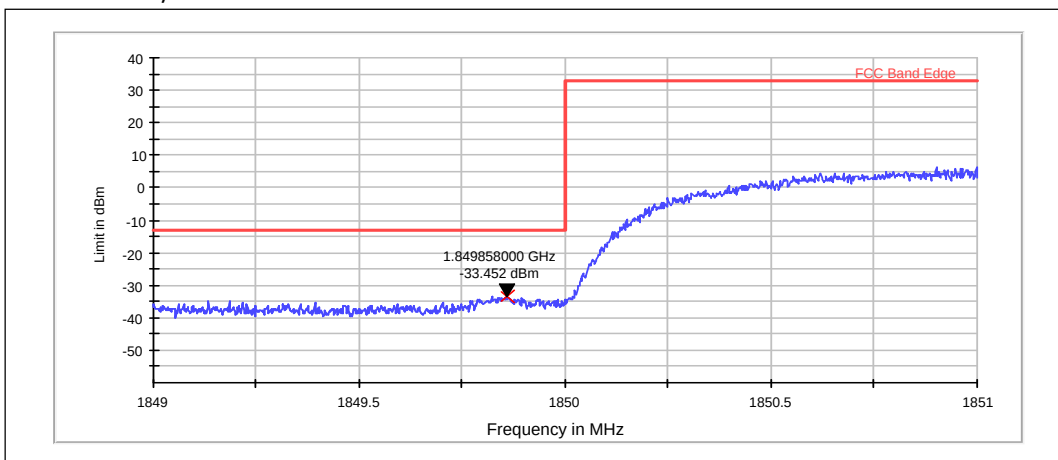


RMS (RBW: 3 kHz, VBW: 3 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GPRS	849.016	-23.95	PASSED

2.5. WCDMA 1900 Test results

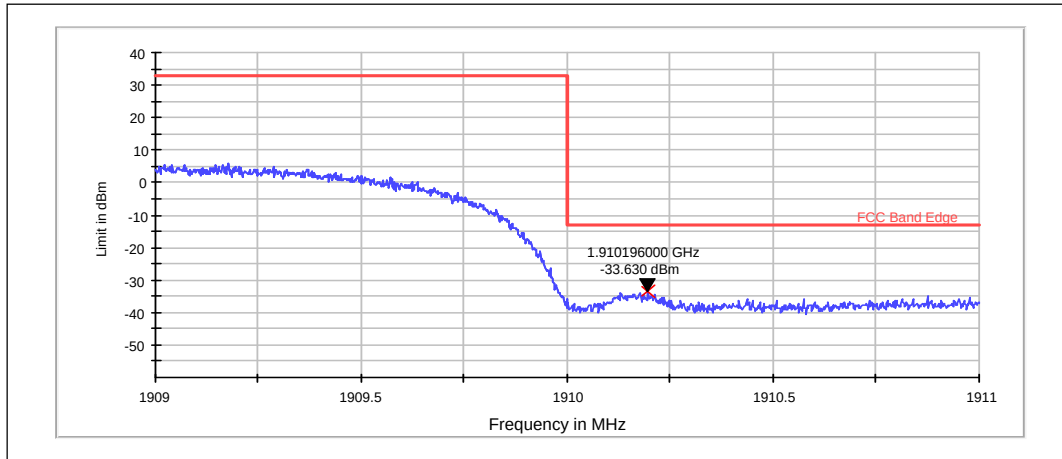
Channel 9262 / 1852.4 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1849.858	-33.45	PASSED

Channel 9538 / 1907.6 MHz

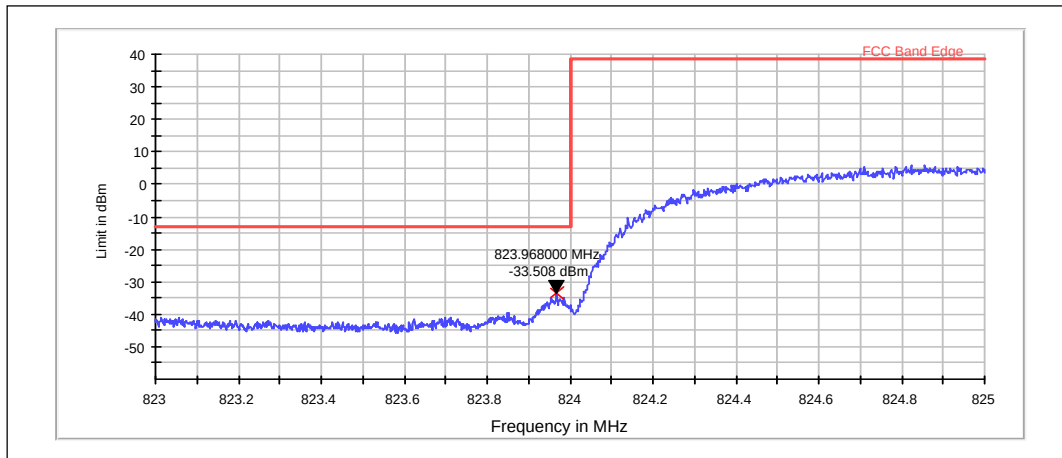


RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1910.196	-33.63	PASSED

2.6. WCDMA 850 Test results

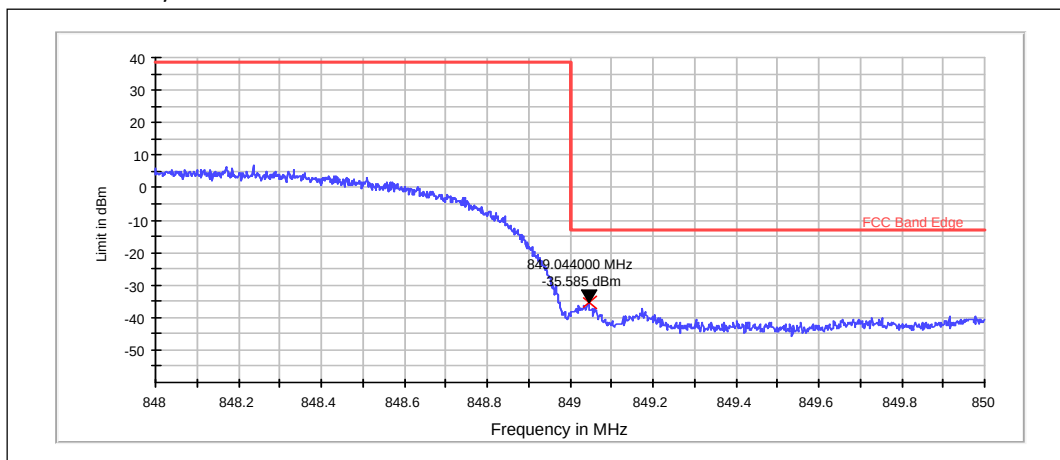
Channel 4132 / 826.4 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	823.968	-33.51	PASSED

Channel 4233 / 846.6 MHz



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

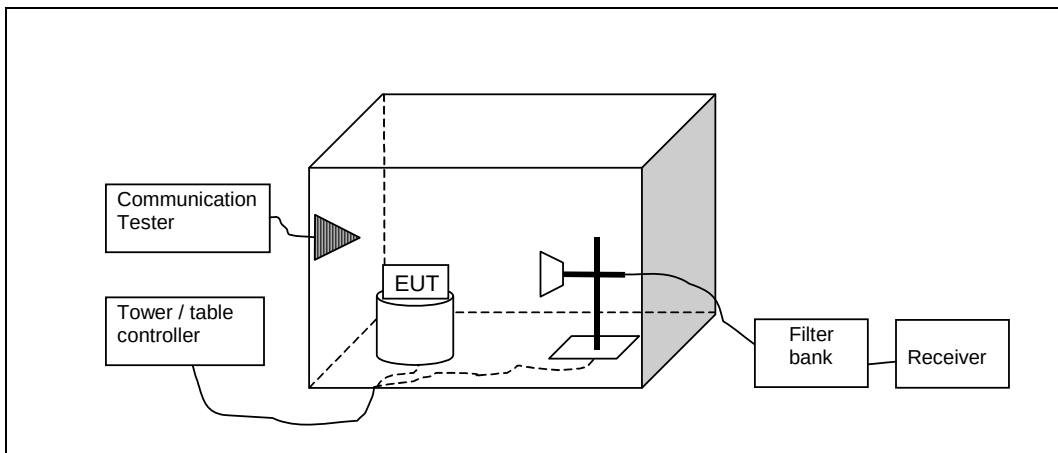
Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	849.044	-35.58	PASSED

3. Spurious radiated emissions

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

EUT with DUT number	RM-1045, DUT 18216
Accessories with DUT numbers	AC-60E, DUT 18217 ; WH-208, DUT 18218 ; CA-190CD, DUT 18219
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 41 / 102.0
Date of measurements	21-Apr-2014
Measured by	Sami Lehtonen

3.1.1 Test setup



3.2. 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.

The substitution method is used.

The measurement results are obtained as described below:

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

Where $P_{\text{SUBST TX}}$ is signal generator level, which produces the same receiver reading P_{MEAS} in dBm as EUT. $G_{\text{SUBST TX ANT}}$ is substitution antenna gain and $L_{\text{SUBST CABLE}}$ 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]
GSM 850	30 - 8500	-13
GSM 1900	30 - 19100	-13
WCDMA 1900	30 - 19100	-13
WCDMA 850	30 - 8500	-13

3.3. GSM 1900 test results

Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Results
3760.02	-41.17	0.07638	-47.67	6.5	HORIZONTAL	PASSED
5640.06	-50.04	0.00991	-60.14	10.1	HORIZONTAL	PASSED

3.4. GSM 850 test results

Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Results
1673.461	-55.96	0.00254	-62.36	6.4	VERTICAL	PASSED
2509.62	-51.88	0.00649	-63.38	11.5	VERTICAL	PASSED

3.5. GSM 850 test results

Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Results
1673.106	-49.96	0.01009	-56.36	6.4	VERTICAL	PASSED
1673.146	-46.88	0.02051	-53.28	6.4	VERTICAL	PASSED
2491.784	-52.35	0.00582	-64.15	11.8	HORIZONTAL	PASSED
2509.9	-44.93	0.03214	-56.83	11.9	HORIZONTAL	PASSED
3328.377	-60.21	0.00095	-63.51	3.3	VERTICAL	PASSED
3354.469	-60.06	0.00099	-63.56	3.5	VERTICAL	PASSED

3.6. GSM 1900 test results

Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Results
1909.993	-42.18	0.06053	-52.18	10	HORIZONTAL	PASSED
1910.903	-43.96	0.04018	-53.96	10	HORIZONTAL	PASSED
9371.303	-44.29	0.03724	-65.89	21.6	VERTICAL	PASSED
9636.834	-44.12	0.03873	-65.42	21.3	HORIZONTAL	PASSED
9934.589	-43.29	0.04688	-65.59	22.3	VERTICAL	PASSED
9943.696	-44.14	0.03855	-65.74	21.6	HORIZONTAL	PASSED

3.7. WCDMA 1900 test results

Channel 9400 / 1880.0 MHz

FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [μW]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Results
3757.455	-54.4	0.00363	-61	6.6	HORIZONTAL	PASSED
5636.533	-50.33	0.00927	-60.63	10.3	VERTICAL	PASSED
7529.92	-48.92	0.01282	-64.62	15.7	HORIZONTAL	PASSED
9292.004	-43.51	0.04457	-65.11	21.6	HORIZONTAL	PASSED
9337.535	-43.15	0.04842	-65.55	22.4	VERTICAL	PASSED
9391.884	-43.64	0.04325	-65.04	21.4	HORIZONTAL	PASSED
9528.397	-42.02	0.06281	-64.02	22	VERTICAL	PASSED
9733.727	-42.91	0.05117	-65.21	22.3	VERTICAL	PASSED
9792.164	-43.48	0.04487	-65.18	21.7	VERTICAL	PASSED
9918.016	-42.22	0.05998	-64.82	22.6	VERTICAL	PASSED
11282.826	-40.91	0.0811	-64.31	23.4	VERTICAL	PASSED
13165.07	-51.35	0.00733	-68.35	17	VERTICAL	PASSED
15047.475	-49.63	0.01089	-71.73	22.1	VERTICAL	PASSED
16911.002	-46.85	0.02065	-72.35	25.5	VERTICAL	PASSED

3.8. WCDMA 850 test results

Channel 4175 / 835.0 MHz

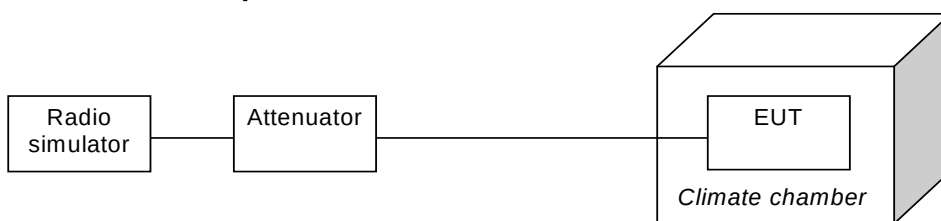
FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [μ W]	P _{MEAS} [dBm]	A _{TOT} [dB]	Polarisation	Results
848.502	-45.92	0.02559	-80.42	34.5	HORIZONTAL	PASSED
857.827	-45.66	0.02716	-80.46	34.8	VERTICAL	PASSED
960.661	-39.6	0.10965	-79.8	40.2	HORIZONTAL	PASSED
960.982	-39.67	0.10789	-79.87	40.2	HORIZONTAL	PASSED
963.768	-40.7	0.08511	-80.5	39.8	HORIZONTAL	PASSED
964.168	-40.69	0.08531	-80.49	39.8	HORIZONTAL	PASSED
1671.423	-53.68	0.00429	-60.08	6.4	VERTICAL	PASSED
2501.653	-49.78	0.01052	-61.28	11.5	VERTICAL	PASSED
3341.824	-59.57	0.0011	-63.17	3.6	HORIZONTAL	PASSED
4181.593	-58.52	0.00141	-64.02	5.5	VERTICAL	PASSED
5005.972	-54.44	0.0036	-63.34	8.9	HORIZONTAL	PASSED
5843.016	-53.35	0.00462	-62.25	8.9	HORIZONTAL	PASSED
6673.727	-50.09	0.00979	-60.49	10.4	HORIZONTAL	PASSED
7524.319	-49.11	0.01227	-63.11	14	VERTICAL	PASSED
8358.156	-48.39	0.01449	-64.49	16.1	VERTICAL	PASSED

4. Frequency stability, temperature variation (FCC §2.1055(a), RSS-132 4.3, RSS-130 4.3 (a))

EUT with DUT number	RM-1045, DUT 18220
Accessories with DUT numbers	Dummy Battery, DUT 18221 ; WH-208, DUT 18198
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 39 / 102.9
Date of measurements	18-Apr-2014
Measured by	Jari Keto

4.1. Test Setup



4.2. Test method and limit

The measurement is made according to FCC rules parts 22 and IC standard RSS-132 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

4.3. GSM 1900 Test results

GSM, Channel 661 / 1880.0 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1880.00	-1.81000	-0.001	PASSED
40	1880.00	-12.27000	-0.0065	PASSED
30	1880.00	-7.04000	-0.0037	PASSED
20	1880.00	-15.82000	-0.0084	PASSED
10	1880.00	-14.21000	-0.0076	PASSED
0	1880.00	-16.14000	-0.0086	PASSED
-10	1880.00	-9.43000	-0.005	PASSED
-20	1880.00	-14.66000	-0.0078	PASSED
-30	1880.00	-9.81000	-0.0052	PASSED

4.4. GSM 850 Test results

GSM, Channel 190 / 836.6 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	836.60	-3.75000	-0.0045	PASSED
40	836.60	-5.04000	-0.006	PASSED
30	836.60	-15.82000	-0.0189	PASSED
20	836.60	-14.92000	-0.0178	PASSED
10	836.60	-10.33000	-0.0123	PASSED
0	836.60	-17.69000	-0.0211	PASSED
-10	836.60	-14.92000	-0.0178	PASSED
-20	836.60	-20.21000	-0.0242	PASSED
-30	836.60	-20.66000	-0.0247	PASSED

4.5. WCDMA 1900 Test results

FDD, Channel 9400 / 1880.0 MHz

Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1880.00	-7.15637	-0.0038	PASSED
40	1880.00	-8.72803	-0.0046	PASSED
30	1880.00	-7.43103	-0.004	PASSED
20	1880.00	-11.90186	-0.0063	PASSED
10	1880.00	-6.13403	-0.0033	PASSED
0	1880.00	-11.53564	-0.0061	PASSED
-10	1880.00	-6.57654	-0.0035	PASSED
-20	1880.00	-7.73621	-0.0041	PASSED
-30	1880.00	-3.61633	-0.0019	PASSED

4.6. WCDMA 850 Test results

FDD, Channel 4175 / 835.0 MHz

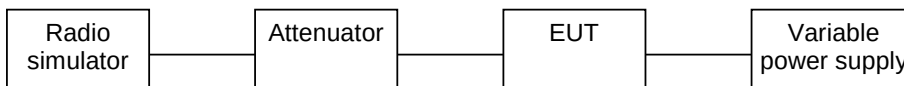
Temperature [°C]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	835.00	1.51062	0.0018	PASSED
40	835.00	1.81580	0.0022	PASSED

30	835.00	-3.90625	-0.0047	PASSED
20	835.00	1.38855	0.0017	PASSED
10	835.00	4.25720	0.0051	PASSED
0	835.00	1.78528	0.0021	PASSED
-10	835.00	-0.88501	-0.0011	PASSED
-20	835.00	5.44739	0.0065	PASSED
-30	835.00	4.22669	0.0051	PASSED

5. Frequency stability, voltage variation (FCC §2.1055(d), RSS-132 4.3, RSS-130 4.3 (a))

EUT with DUT number	RM-1045, DUT 18220
Accessories with DUT numbers	Dummy Battery, DUT 18221 ; WH-208, DUT 18198
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 39 / 102.9
Date of measurements	18-Apr-2014
Measured by	Jari Keto

5.1. Test Setup



5.2. Test method and limit

The measurement is made according to FCC rules parts 22 and IC standard RSS-132 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

5.3. GSM 1900 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	1880.00	-8.20000	-0.0044	PASSED
Battery cut-off point / 3.6	1880.00	-14.59000	-0.0078	PASSED
Nominal / 3.8	1880.00	-5.88000	-0.0031	PASSED

5.4. GSM 850 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	836.60	-10.40000	-0.0124	PASSED
Battery cut-off point / 3.6	836.60	-15.88000	-0.019	PASSED
Nominal / 3.8	836.60	-16.79000	-0.0201	PASSED

5.5. WCDMA 1900 Test results

FDD,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	1880.00	-11.04736	-0.0059	PASSED
Battery cut-off point / 3.6	1880.00	-10.62012	-0.0056	PASSED
Nominal / 3.8	1880.00	-7.44629	-0.004	PASSED

5.6. WCDMA 850 Test results

FDD,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	835.00	7.33948	0.0088	PASSED
Battery cut-off point / 3.6	835.00	-0.28992	-0.0003	PASSED
Nominal / 3.8	835.00	4.15039	0.005	PASSED

6. Test Equipment

6.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B
6044	V-network	ESH3-Z6	R&S	-
2059	V-network	ESH3-Z6	R&S	-
1759	LISN 50 µH	ESH3-Z5	R&S	22/24/27, 15C, 15B
2097	Pulse Limiter	ESH3-Z2	R&S	22/24/27, 15C, 15B
1999	Receiver	ESIB26	R&S	22/24/27, 15C, 15B
2180	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2390	Directional Coupler	DC2600	AR	-
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B
2060	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
1759	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
2039	Power Supply	PL330QMD	Thurlby	15C, 15B
6036	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
2359	Temperature Test Chamber	VT4002	Vötsch	22/24/27
2352	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C
6109	Communication Tester	CMU200	R&S	22/24/27, 15C
6246	Power Supply	66332A	HP	22/24/27, 15C
1992	Signal Generator	83630B	Agilent	15C, 15B
6098	Signal Generator	8648C	Agilent	-
6046	Attenuator 10dB	8493C	Agilent	22/24/27, 15C
6047	Attenuator 20dB	8493C	Agilent	22/24/27, 15C
6045	Power splitter	11667B	Agilent	22/24/27, 15C
6247	Communication Tester	CBT	R&S	22/24/27, 15C 15B
6052	Communication Tester	CMU200	R&S	22/24/27, 15C 15B
6248	Power Supply	6632B	-	22/24/27, 15C 15B
6106	Spectrum Analyzer	FSP-30	R&S	22/24/27, 15C 15B
6113	Signal Generator	SMF100A	R&S	22/24/27, 15C 15B
6202	Temperature Test Chamber	VT4002	Vötsch	22/24/27, 15C 15B
6122	Power Splitter	11667B	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
6103	Bluetooth tester	CBT	R&S	22/24/27, 15C 15B
6250	Power Supply	6651A	Agilent	22/24/27, 15C 15B
6108	Communication Tester	CMU200	R&S	22/24/27, 15C 15B
6105	Spectrum Analyzer	FSV-30	R&S	22/24/27, 15C 15B
6251	Temperature Test Chamber	VT4002	Vötsch	22/24/27, 15C 15B
6243	Power Splitter	1167B	Agilent	22/24/27, 15C 15B
6245	Attenuator 10dB	BW-S10-2W263+	Mini-Circuits	22/24/27, 15C 15B
6244	Attenuator 20dB	BW-S20-2W263+	Mini-Circuits	22/24/27, 15C 15B

6.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
2388	Bluetooth Tester	CBT	R&S	15B
10479	Communication Tester	CMW500	R&S	22/24/27, 15C, 15B
2347	Communication Tester	CMU200	R&S	22/24/27, 15C, 15B
2009	Signal Generator	SMP 22	R&S	22/24/27, 15C, 15B
2348	Controller	G-1000DXC	Yaesu	22/24/27, 15C, 15B
2349	Computer Controller	g-1000DXC	Yaesu	22/24/27, 15C, 15B
2116	Controller	EMCO 2090	ETS	22/24/27, 15C, 15B
2109	Power Supply	PL330QMD	Thurlby	22/24/27, 15C, 15B
2353	Receiver	ESIB26	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

Eq. No	Equipment	Type	Manufacturer	Used in
6117	Open switch and control unit	OSP 150	R&S	22/24/27, 15C, 15B
6131	Notch Filter	WRCT902.4-0.4/40-8SS	Wainwright	22/24/27, 15C, 15B
6130	Notch Filter	WRCD1880-1.1.25/50-10SS	Wainwright	22/24/27
6159	Band Reject Filter	WRCD1747.8-0.4/40-5SS	Wainwright	22/24/27, 15C, 15B
6158	Band Reject Filter	WRCT836.6-0.4/40-8SS	Wainwright	22/24/27, 15C, 15B
6197	Band Reject Filter	WRCJV2531/2539-2523/2547-60/12SS	Wainwright	22/24/27, 15C, 15B
2231	Band Reject Filter	WRCG1947/1953-1940/1960-40/6SS	Wainwright	22/24/27, 15C, 15B
2391	Band Reject Filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
2386	Band Reject Filter	WRCG1764.4/1770.4-1760.4/1774.4-40/6SS	Wainwright	22/24/27, 15C, 15B
2385	Band Reject Filter	WRCG1744.4/1750.4-1740.4/1754.4-40/6SS	Wainwright	22/24/27, 15C, 15B
2357	Band Reject Filter	WRCG2400/2483-2390/2493-35/10SS	Wainwright	15C
2188	Preamplifier	AFS4-00100300-20-23P-6	Miteq	22/24/27, 15C, 15B
6195	High Pass Filter	-	Wainwright	22/24/27, 15C, 15B
2364	Band Reject Filter	WRCG1877/1883 - 1870/1890-40/6SS	Wainwright	24
2361	Anechoic Chamber	3 m Semi / Full Anechoic Chamber	Euroshield	22/24/27, 15C, 15B
6212	Antenna Array system	-	TCC	22/24/27, 15C, 15B
-	RF immunity / Emission Software	EMC32	R&S	22/24/27, 15C, 15B
6089	Antenna	HFH2-Z2	R&S	15C, 15B
2027	CDN	M2 (modified) DC1	MEB	22/24/27, 15C, 15B
2028	CDN	M3 (modified) DC2	MEB	22/24/27, 15C, 15B
2176	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2135	CDN	CDN 801-M3	Lüthi	22/24/27, 15C, 15B
2029	Power Supply	PL330	Thurlby	22/24/27, 15C
6038	Data Logger	Testo 580	Testo	22/24/27, 15C, 15B
6037	Data Logger	175-H2	Testo	22/24/27, 15C, 15B
6039	USB Interface	5541765	Testo	22/24/27, 15C, 15B