FCC Part 22/24/27 Compliance Test Report

Test Report no.:	FCC_Cellular_RM-1127_04.docx	**Date of Report:**	08-Oct-2015
Number of pages:	43	**Customer's Contact person:**	Tero Huhtala
Testing laboratory:	TCC Microsoft 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:**	Microsoft P.O. Box 403 Visiokatu 4 FIN-33720 TAMPERE, FINLAND Tel. +358 (0) 7180 46800 Fax. +358 (0) 7180 46880
FCC listing no.: **IC recognition no.:**	975940 661AH-1		
Tested devices/ accessories:	**Phone RM-1127 / Cover CC-3097 / Battery Samsung BL-T5A / AC Charger AC-18U / Headset WH-108**		
FCC ID:	PYARM-1127	**IC:**	
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 4, November 2014), RSS-133 (Issue 6, January 2013), RSS-132 (Issue 3, January 2013), RSS-199 (Issue 2, October 2014), RSS-130 (Issue 1, October 2013). 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 Microsoft.		
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 Timo Raiskio DN: cn=Timo Raiskio, o, ou, email=timo.raiskio@microsoft.com, c=FI Date: 2015.10.08 14:46:21 +03'00'		

Timo Raiskio, System Manager, EMC

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

Date of receipt	15-Jun-2015
Testing completed	08-Oct-2015
The customer's contact person	Tero Huhtala
Test Plan referred to	T:\Projects\RM-1127\TestPlan\RS_testplan_RM-1127_EMC_FCC.xlsm
Notes	-
Document name	FCC_Cellular_RM-1127_04.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-1127	004402742167798	1500	-	01065.00000.15265.37000	500107
Cover	CC-3097	-	-	-	-	500130
Battery	Samsung BL-T5A	5241525213V10202816;0670778	PWB Ver.1.1	-	-	500118
AC-Charger	AC-18U	481871511510010066l;0675735	-	-	-	500124
Headset	WH-108	-	-	-	-	500121
Phone	RM-1127	004402742167863	1500	-	01065.00000.15265.37000	500105
Cover	CC-3097	-	-	-	-	500129
Battery	Samsung BL-T5A	5241525213V10200110;0670778	PWB Ver.1.1	-	-	500114
AC-Charger	AC-18E	4187151141408304;0675735	-	-	-	500125
Headset	WH-108	4471671	-	-	-	500121

1.2. Summary of Test Results

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	NP
§24.232(b)	6.4	Radiated RF output power	NP
N/A	6.4	Peak to average power ratio	PASSED
§2.1049(h)	6.6	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

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	NP
§22.913(a)	4.4	Radiated RF output power	NP
N/A	5.4	Peak to average power ratio	PASSED

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§2.1049(h)	6.6	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

WCDMA5:

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
N/A	5.4	Peak to average power ratio	PASSED
§2.1049(h)	6.6	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

LTE7:

Section in CFR 47	Section in RSS-GEN or RSS-199	Name of the test	Result
§2.1046(a)	4.4	Conducted RF output power	NP
§27.50(h)(2)	4.4	Radiated RF output power	NP
N/A	N/A	Peak to average power ratio	NP
§2.1049(h)	6.6	99 % occupied bandwidth	PASSED
§27.53(l)	4.5(b)	Band edge compliance	PASSED
§2.1051	4.5(b)	Spurious emissions at antenna terminals	NP
§27.53(l), §2.1053	4.5(b)	Spurious radiated emissions	PASSED
§27.54	4.3	Frequency stability, temperature variation	PASSED
§27.54	4.3	Frequency stability, voltage variation	PASSED

PASSED The EUT complies with the essential requirements in the standard.
FAILED The EUT does not comply with the essential requirements in the standard.
NP The test was not performed by the TCC Microsoft Laboratory.

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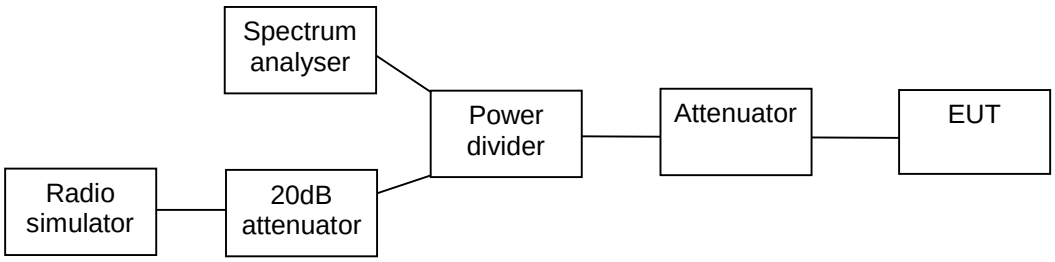
2. Peak to average power ratio
(FCC N/A, RSS-133 6.4, RSS-132 5.4)

EUT with DUT number	RM-1127, DUT 500107
Accessories with DUT numbers	CC-3097, DUT 500130 ; Samsung BL-T5A, DUT 500118; AC-18U, DUT 500124; WH-108, DUT 500121
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 63 / 100.1
Date of measurements	03-Aug-2015
Measured by	Dou Rubo

2.1. Test Setup



2.2. Test method and limit

The measurement is made according to applicable FCC rule parts and IC standards.

Limits for Peak to average power ratio measurements

Peak to average power ratio [dB]
⩽ 13

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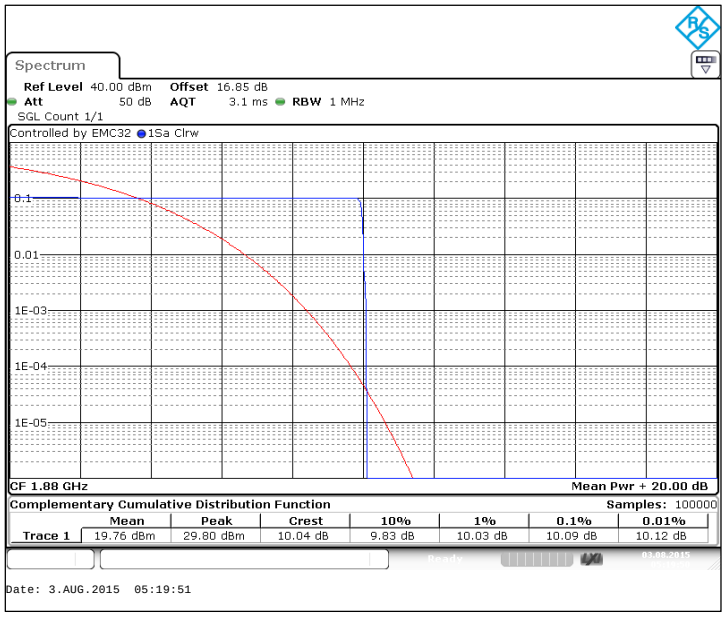
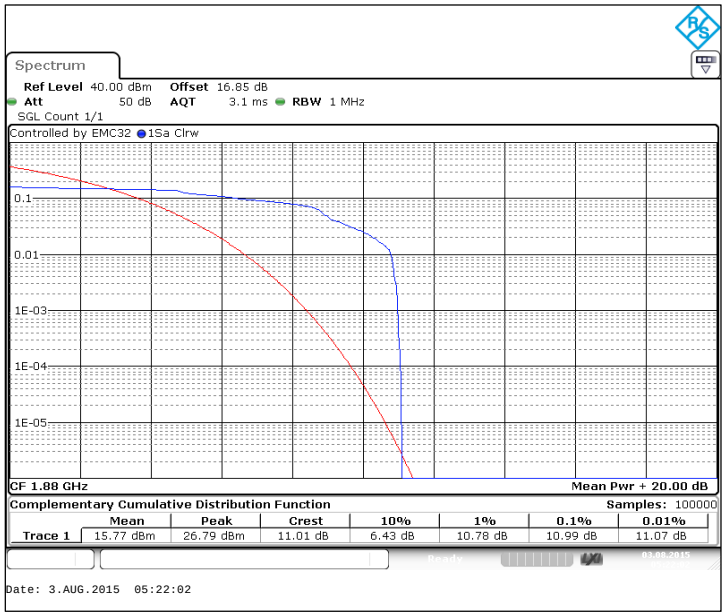
2.3. GSM 1900 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
GSM	661 / 1880.0	10.04	PASSED
EGPRS	661 / 1880.0	11.01	PASSED

GSM



EGPRS



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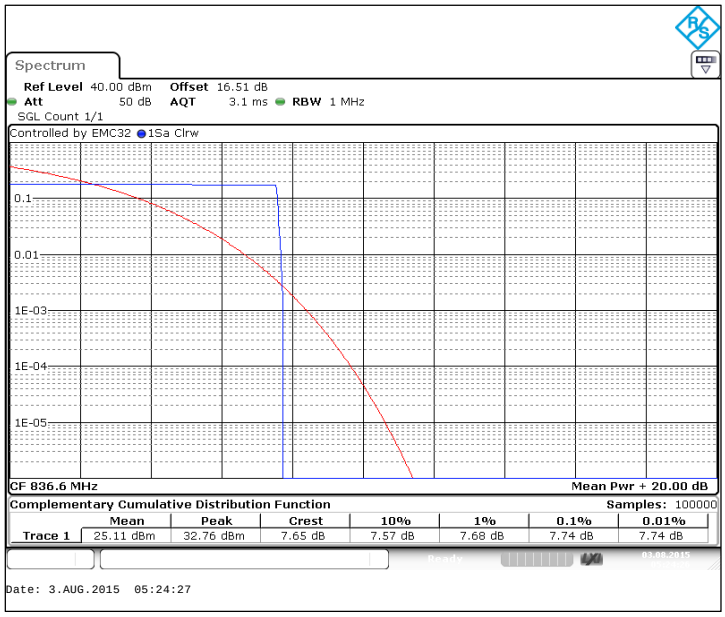
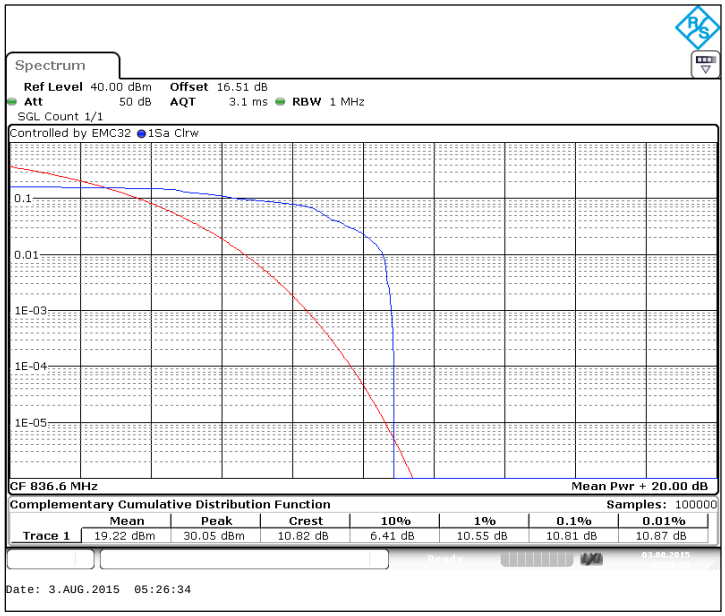
2.4. GSM 850 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
GSM	190 / 836.6	7.65	PASSED
EGPRS	190 / 836.6	10.82	PASSED

GSM



EGPRS



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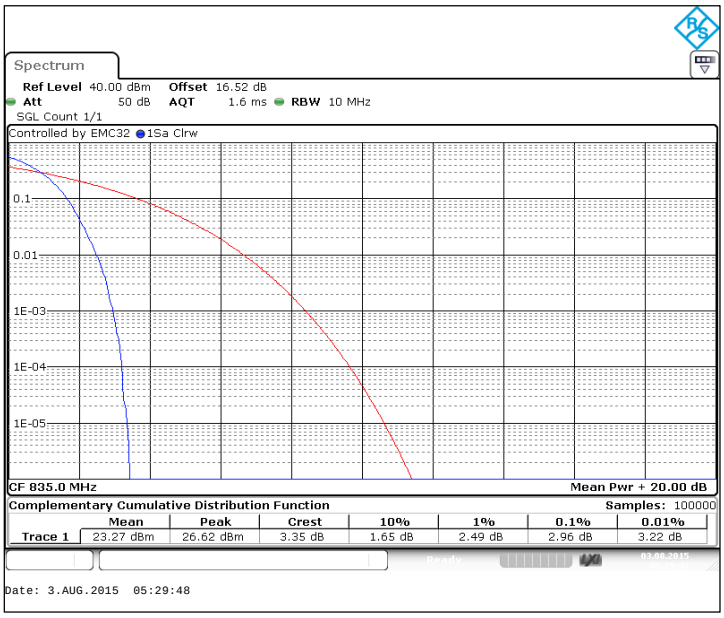
2.5. WCDMA5 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD	4175 / 835.0	3.35	PASSED

FDD



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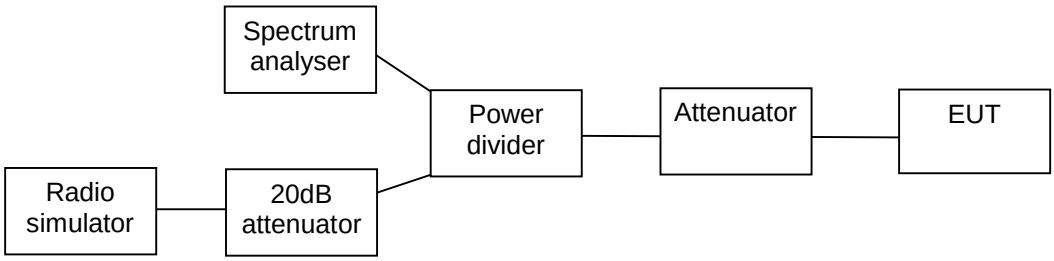
3. 99 % occupied bandwidth

(FCC §2.1049(h), RSS-133 6.6, RSS-132 6.6, RSS-199 6.6)

EUT with DUT number	RM-1127, DUT 500107
Accessories with DUT numbers	CC-3097, DUT 500130 ; Samsung BL-T5A, DUT 500118; AC-18U, DUT 500124; WH-108, DUT 500121
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 63 / 100.1 to 22/65/100.3
Date of measurements	03-Aug-2015 to 09-Aug-2015
Measured by	Gao Sherina

3.1. Test Setup



3.2. Test method and limit

The measurement is made according to applicable FCC rule parts and IC standards.

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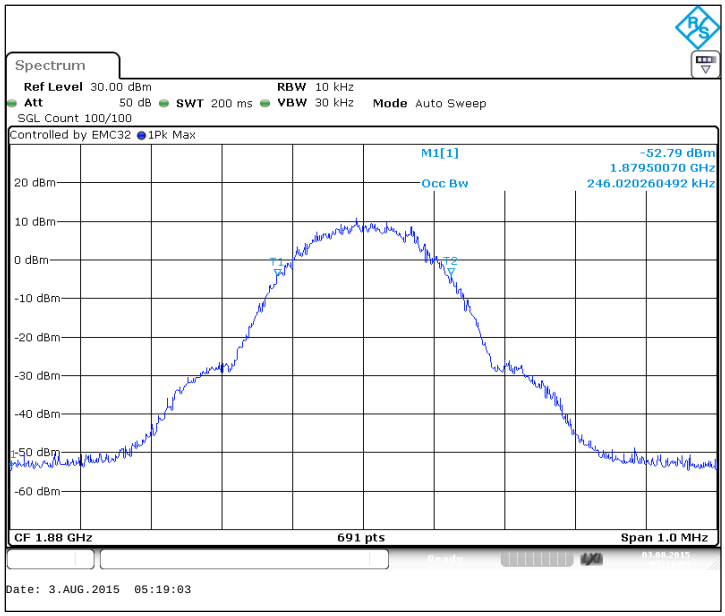
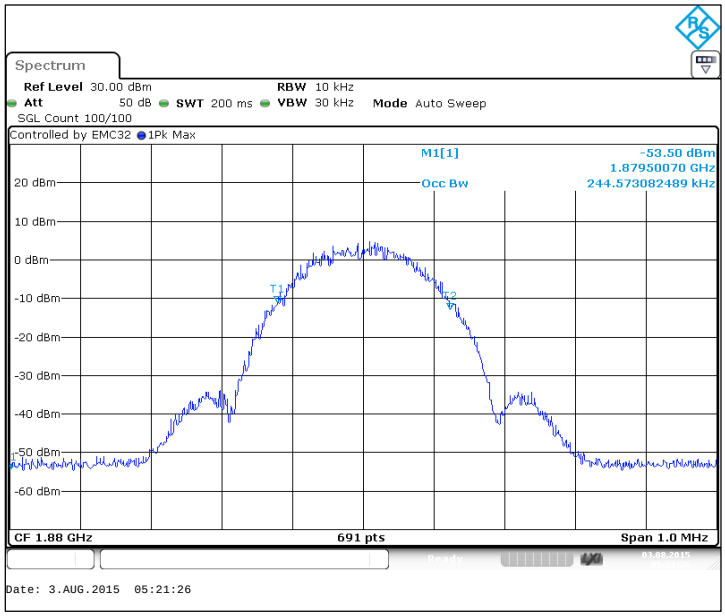
3.3. GSM 1900 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	246
EGPRS	244.6

GSM, Channel 661 / 1880.0 MHz



EGPRS, Channel 661 / 1880.0 MHz



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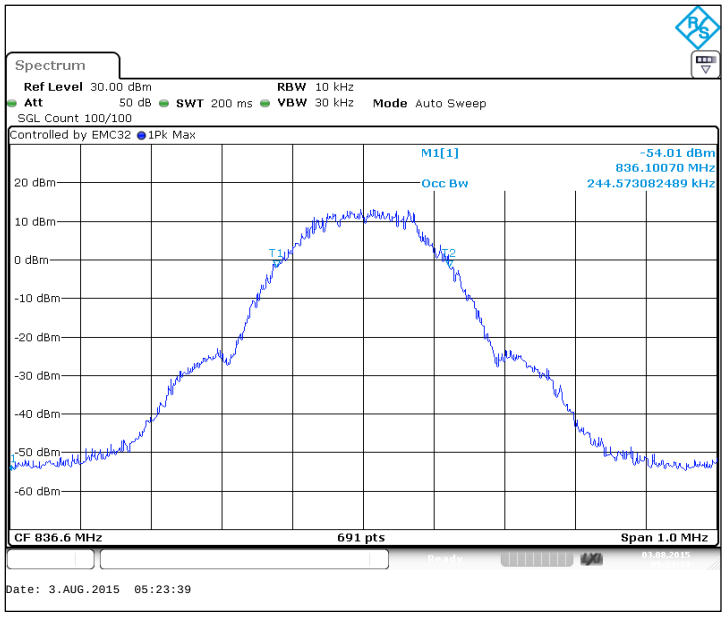
3.4. GSM 850 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	244.6
EGPRS	240.2

GSM, Channel 190 / 836.6 MHz



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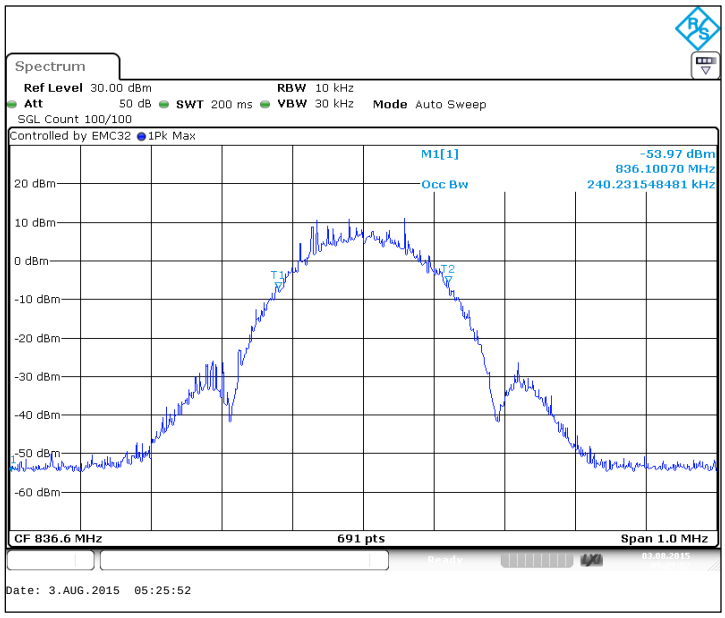
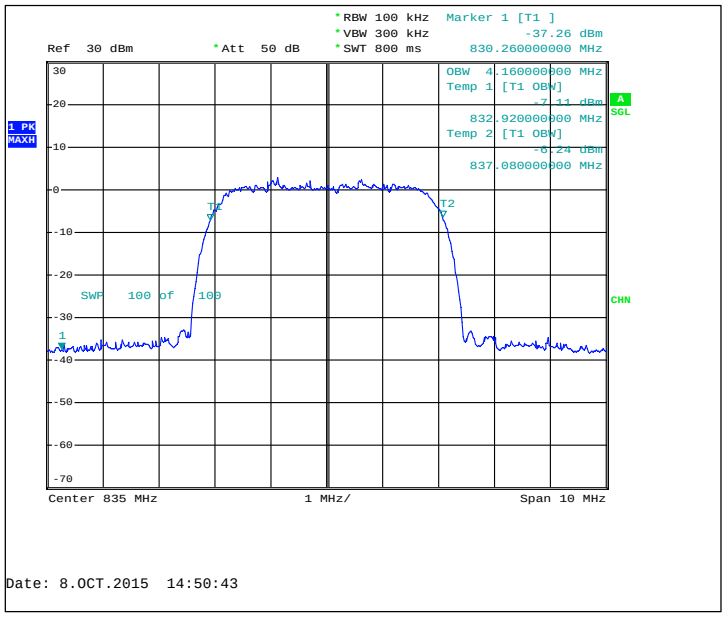
EGPRS, Channel 190 / 836.6 MHz



3.5. WCDMA5 Test results

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

FDD, Channel 4175 / 835.0 MHz



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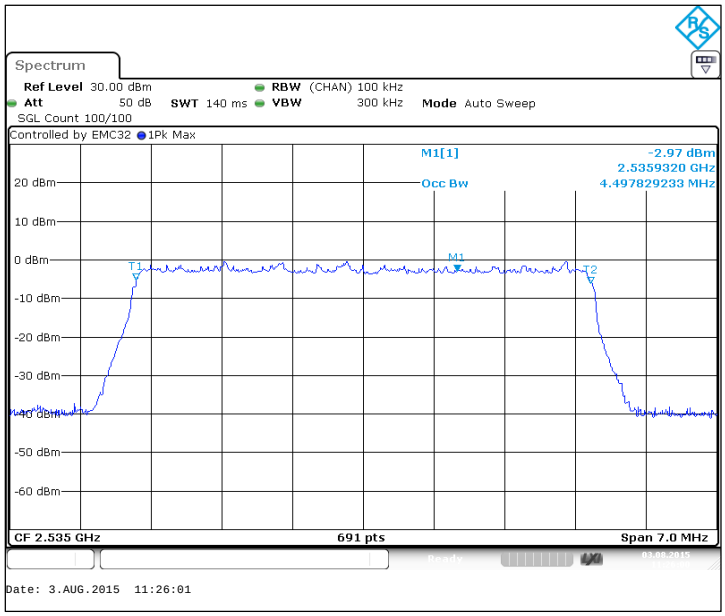
3.6. LTE7 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 5MHz, QPSK, 25 RB	4497.8
FDD, CBW 10MHz, QPSK, 50 RB	8943.6
FDD, CBW 15MHz, QPSK, 75 RB	13429.8
FDD, CBW 20MHz, QPSK, 100 RB	17872.6
FDD, CBW 5MHz, 16QAM, 25 RB	4477.6
FDD, CBW 10MHz, 16QAM, 50 RB	8943.6
FDD, CBW 15MHz, 16QAM, 75 RB	13400.9
FDD, CBW 20MHz, 16QAM, 100 RB	17872.6

FDD, CBW 5MHz, QPSK, 25 RB, Channel 21100 / 2535.0 MHz



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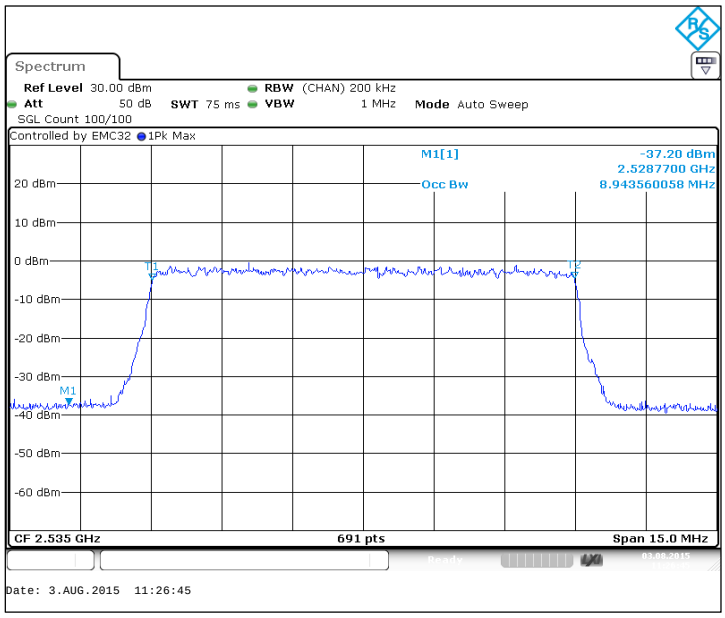
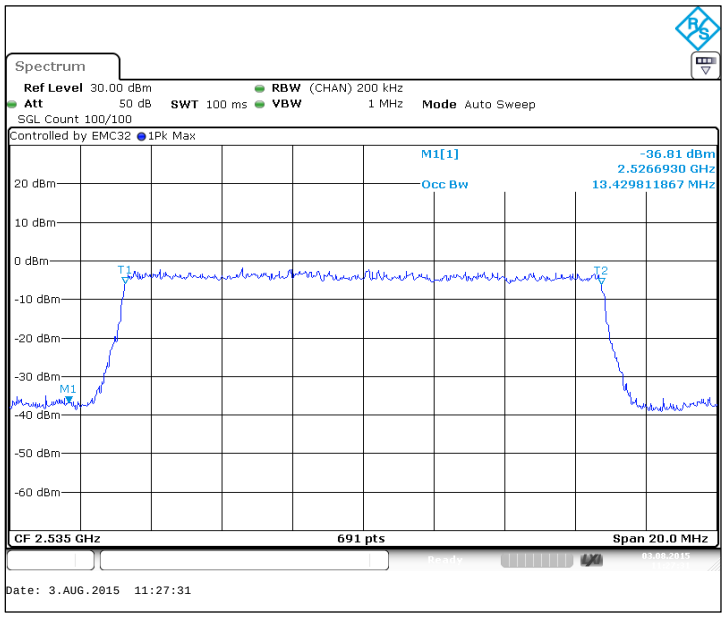
FDD, CBW 10MHz, QPSK, 50 RB, Channel 21100 / 2535.0 MHz



FDD, CBW 15MHz, QPSK, 75 RB, Channel 21100 / 2535.0 MHz



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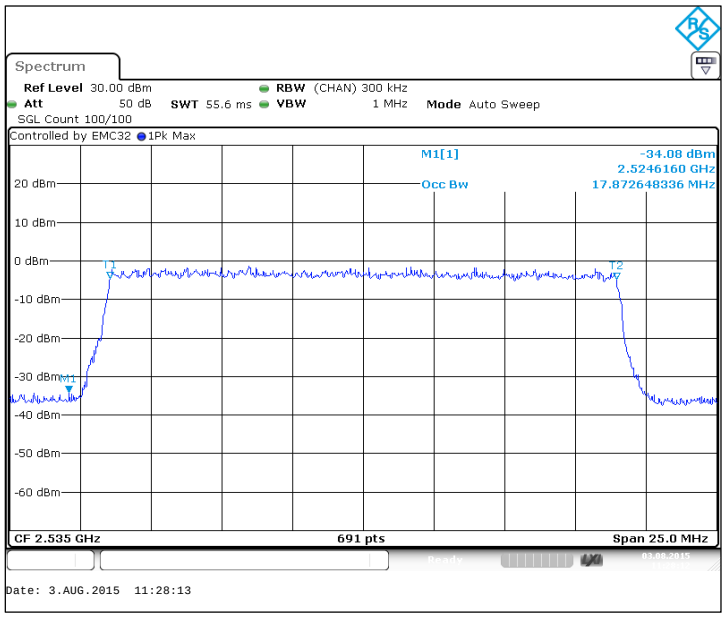
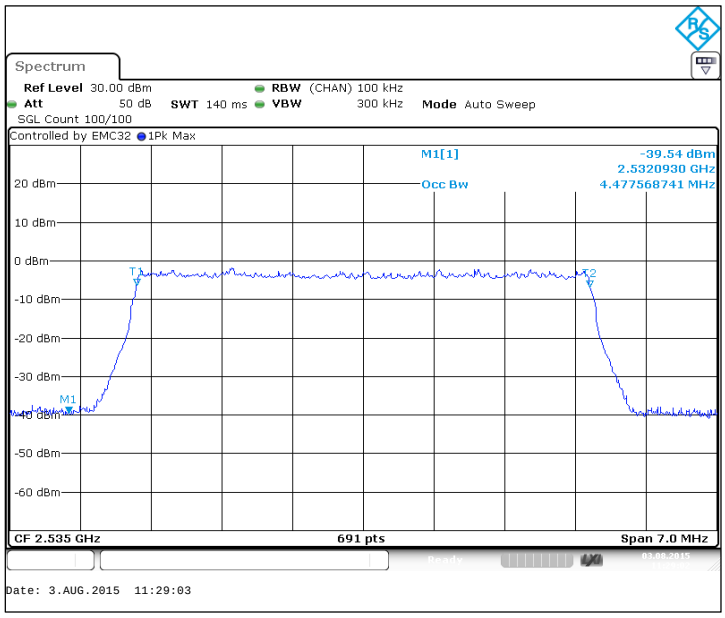
FDD, CBW 20MHz, QPSK, 100 RB, Channel 21100 / 2535.0 MHz



FDD, CBW 5MHz, 16QAM, 25 RB, Channel 21100 / 2535.0 MHz



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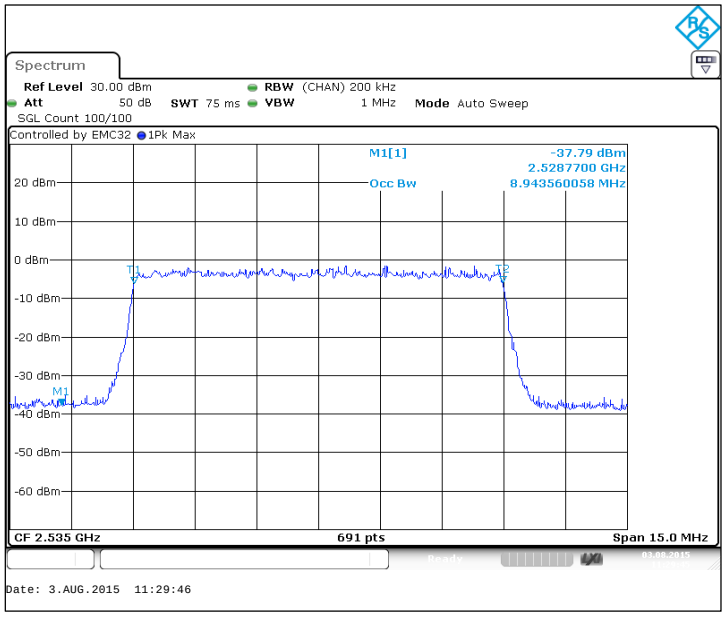
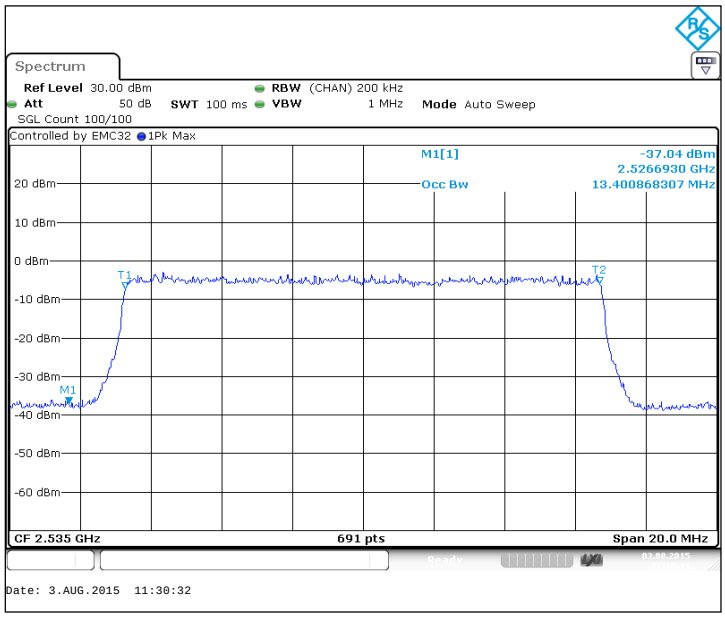
FDD, CBW 10MHz, 16QAM, 50 RB, Channel 21100 / 2535.0 MHz



FDD, CBW 15MHz, 16QAM, 75 RB, Channel 21100 / 2535.0 MHz



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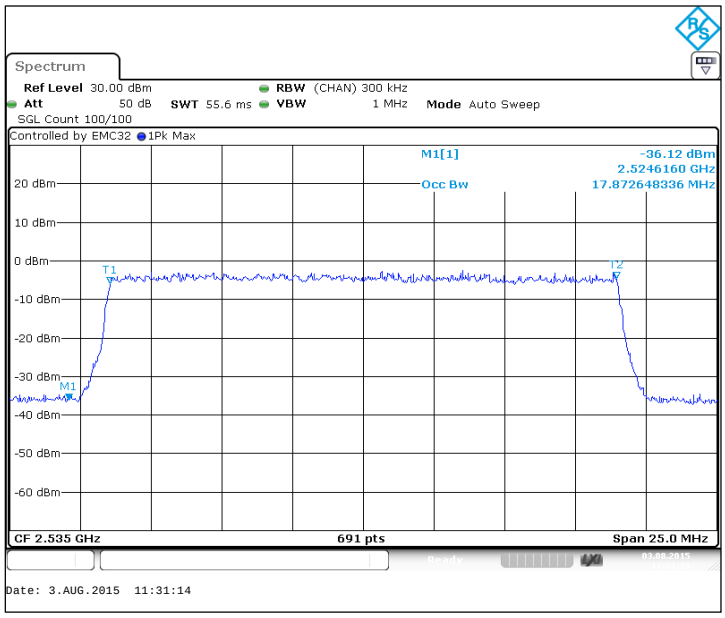
FDD, CBW 20MHz, 16QAM, 100 RB, Channel 21100 / 2535.0 MHz



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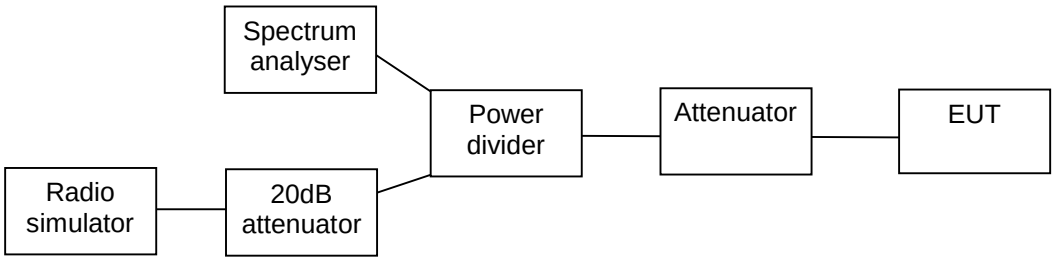
4. Band edge compliance

(FCC §24.238(a), §27.53(l), §22.917(a), RSS-133 6.5, RSS-132 4.5, RSS-199 4.5(b))

EUT with DUT number	RM-1127, DUT 500107
Accessories with DUT numbers	CC-3097, DUT 500130 ; Samsung BL-T5A, DUT 500118; AC-18U, DUT 500124; WH-108, DUT 500121
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 63 / 100.1 to 22/65/100.3
Date of measurements	03-Aug-2015 to 09-Aug-2015
Measured by	RM-1127, DUT 500107

4.1. Test Setup



4.2. Test method and limit

The measurement is made according to applicable FCC rule parts and IC standards.

Limits for band edge compliance measurements

Operation band	Frequency range [MHz]	Limit [dBm]
GSM 1900	Below 1850 and above 1910	-13
GSM 850	Below 824 and above 849	-13
WCDMA5	Below 824 and above 849	-13
LTE7	2496 - 2499 2499 – 2500 2570 – 2571 2571 – 2575	-10 (RBW = 1 MHz, VBW = 3 MHz) -10 (RBW = 500 kHz, VBW = 2 MHz) -10 (RBW = 500 kHz, VBW = 2 MHz) -10 (RBW = 1 MHz, VBW = 3 MHz)

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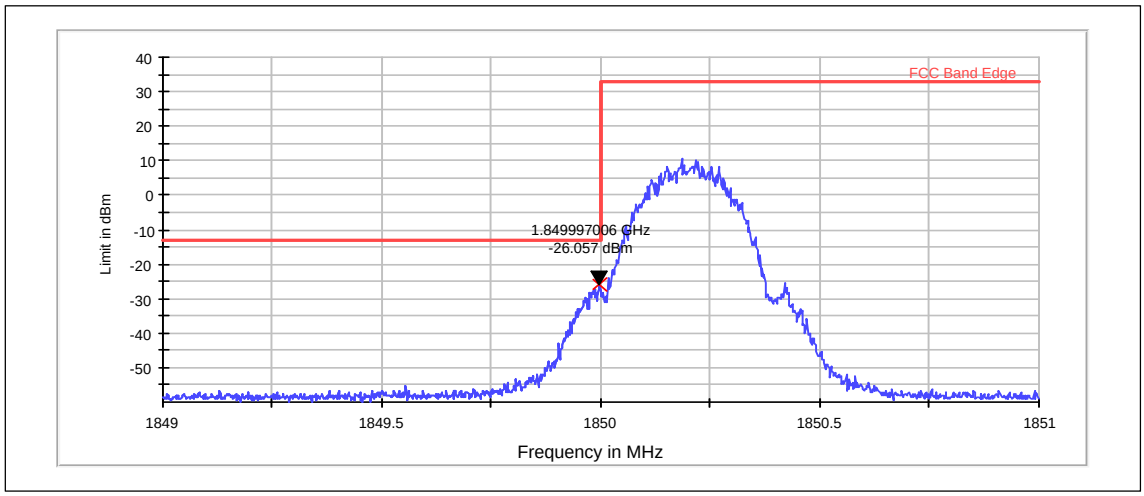
4.3. GSM 1900 Test results

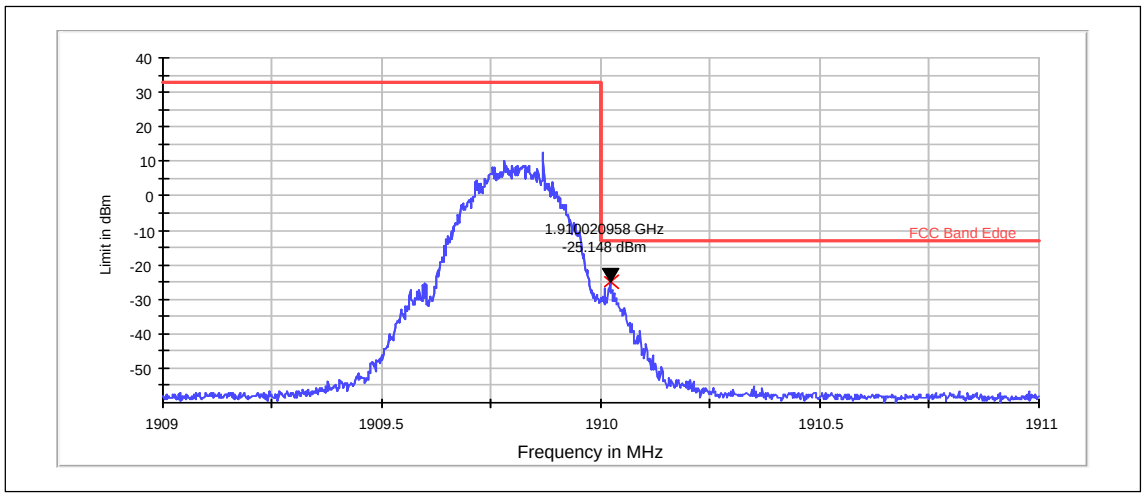
Channel 512 / 1850.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	1849.997	-26.06	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	1910.021	-25.15	PASSED

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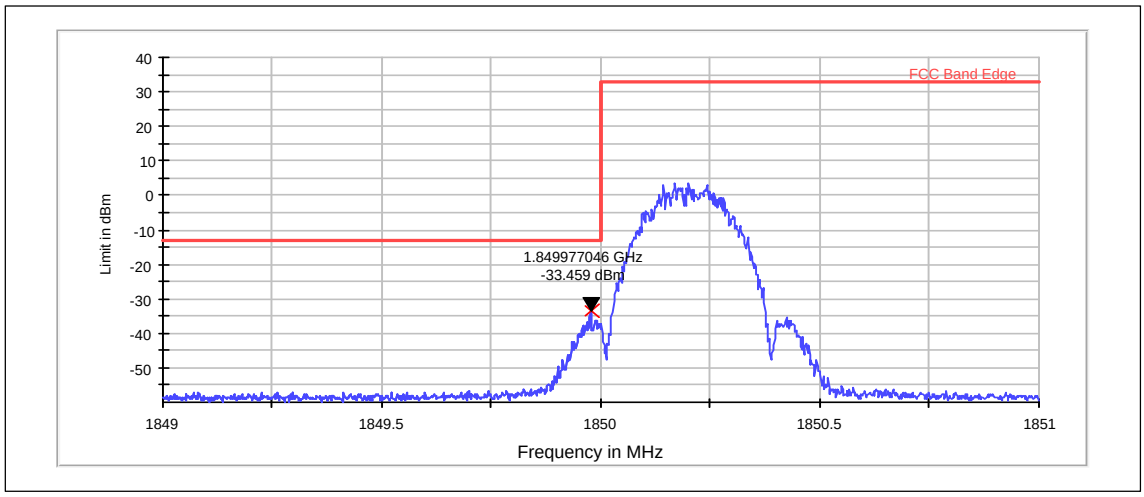
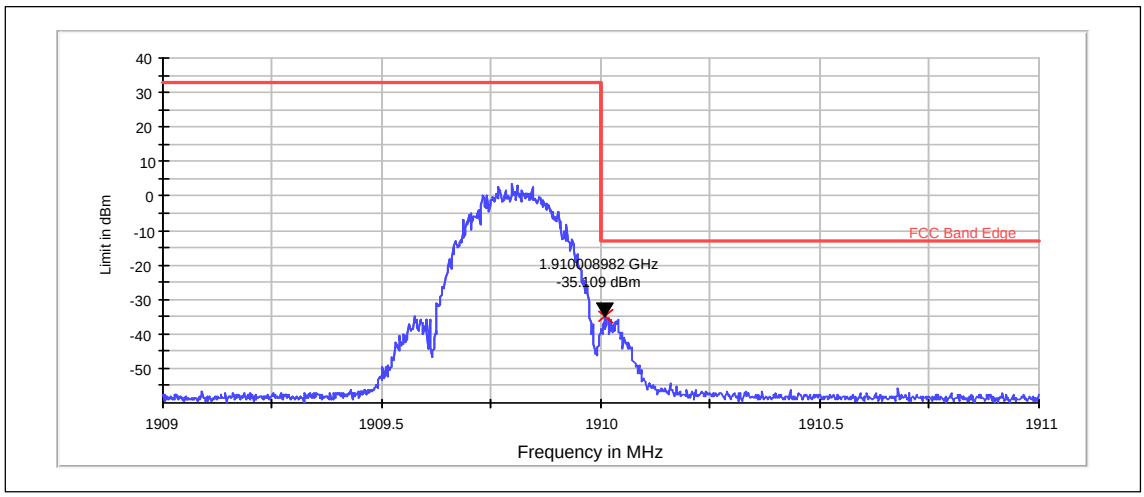
Channel 512 / 1850.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	1849.977	-33.46	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	1910.009	-35.11	PASSED

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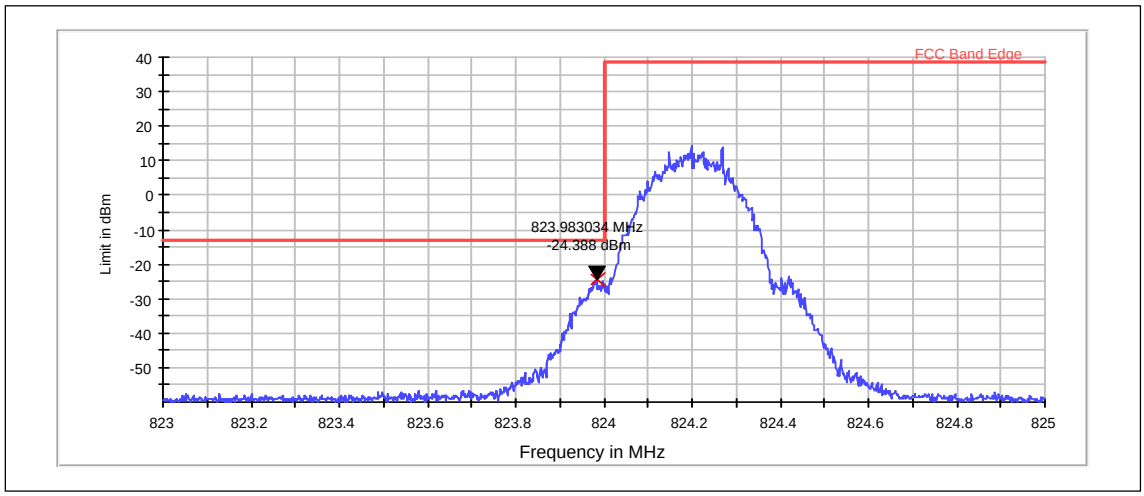
4.4. GSM 850 Test results

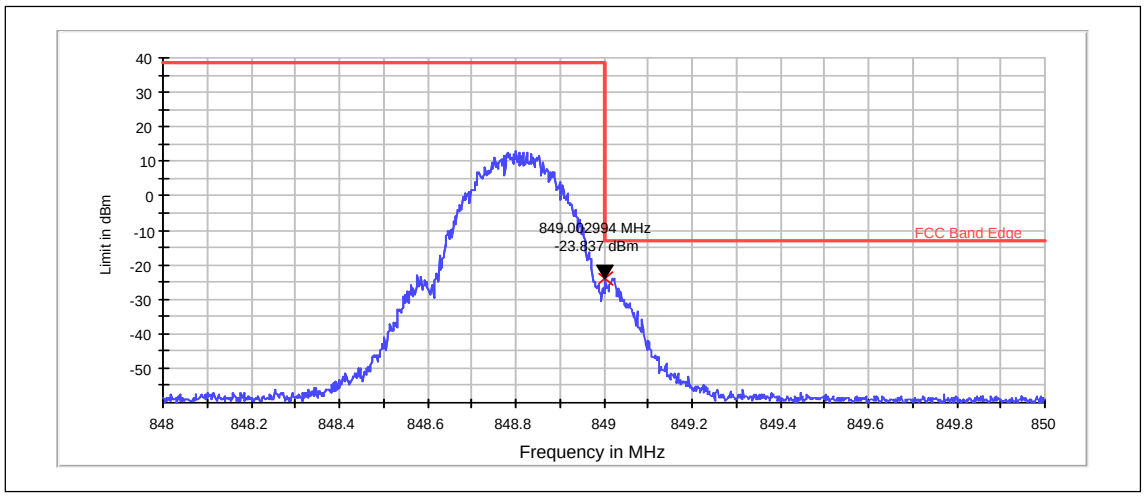
Channel 128 / 824.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	823.983	-24.39	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	849.003	-23.84	PASSED

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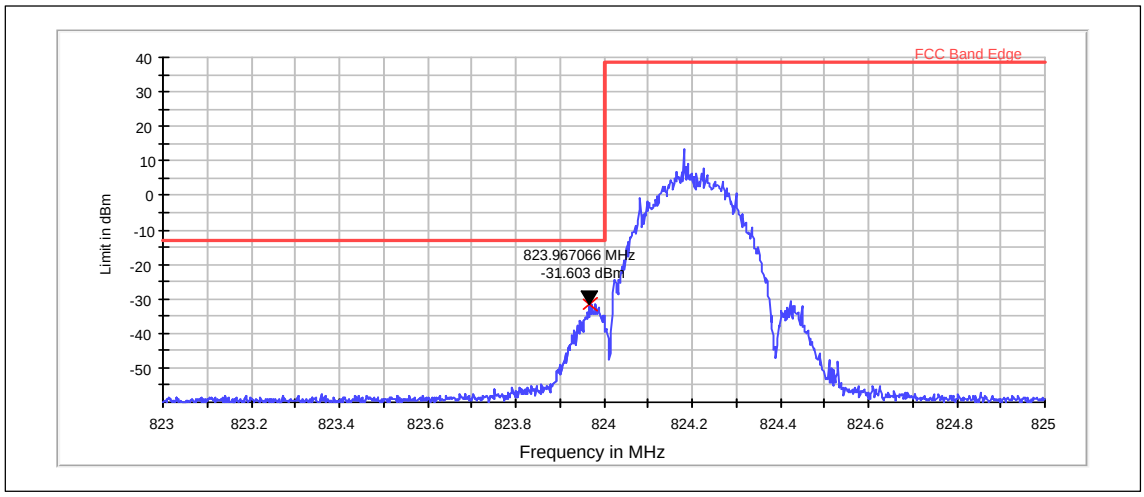
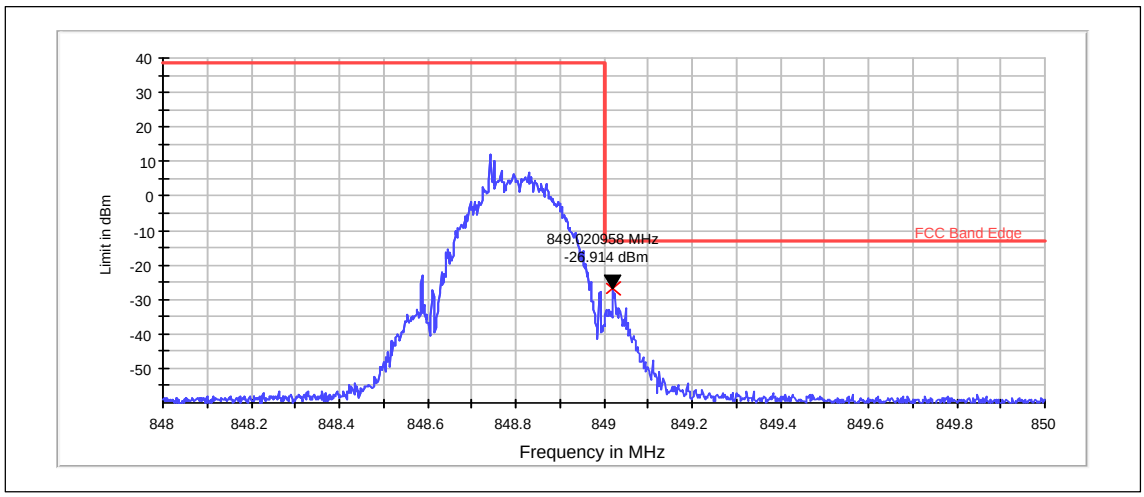
Channel 128 / 824.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	823.967	-31.60	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	849.021	-26.91	PASSED

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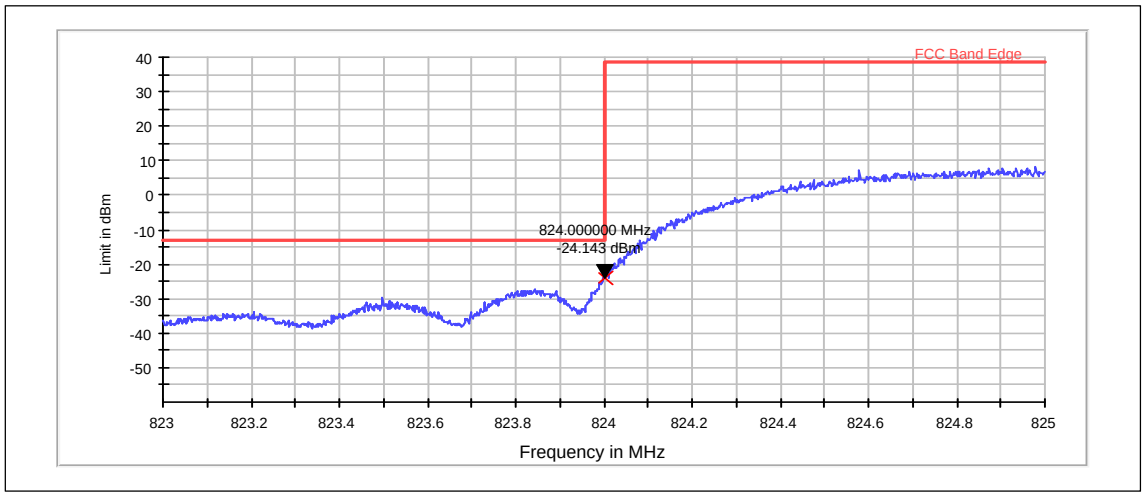
4.5. WCDMA5 Test results

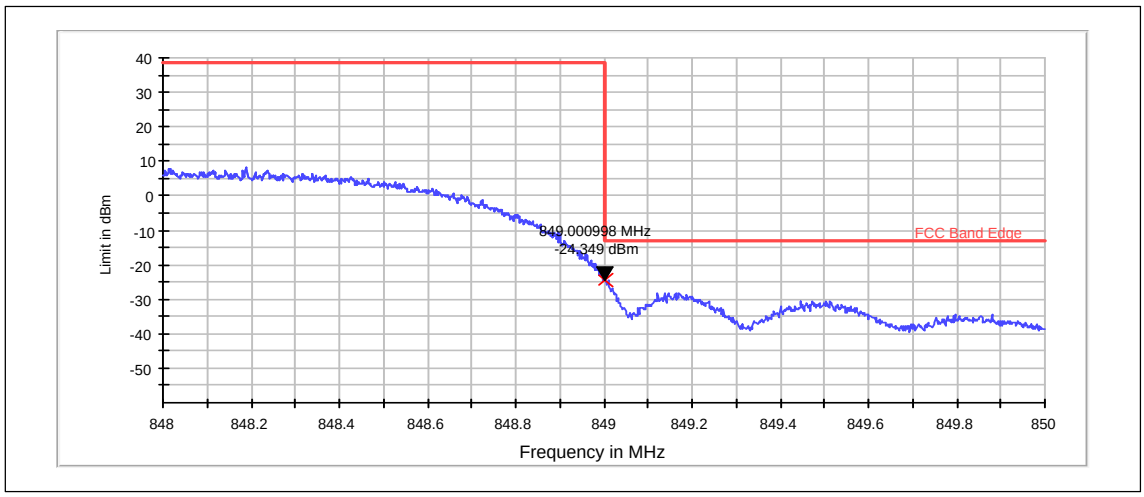
Channel 4132 / 826.4 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	824.000	-24.14	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	849.001	-24.35	PASSED

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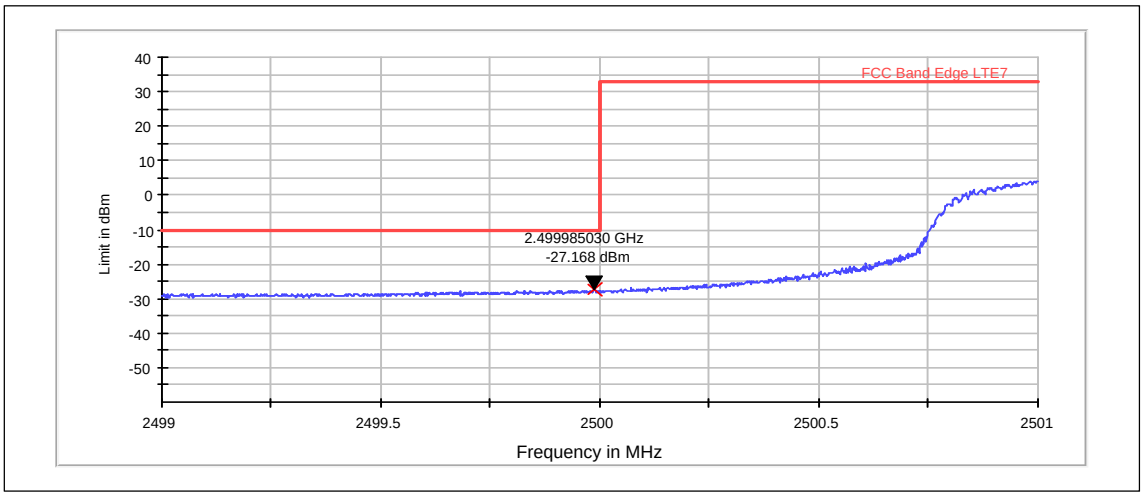
4.6. LTE7 Test results

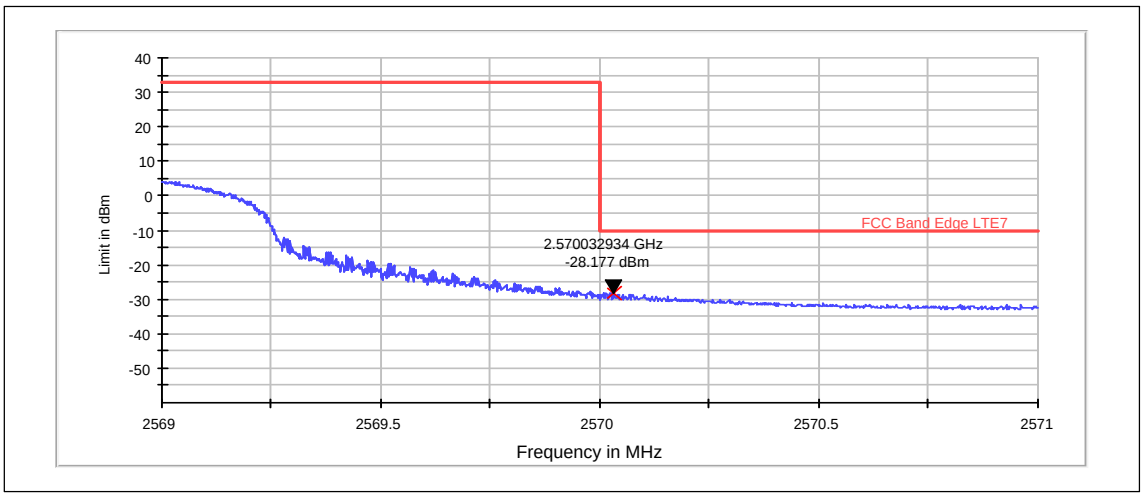
Channel 20850 / 2510 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	2499.985	-27.17	PASSED

Channel 21350 / 2560 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	2570.033	-28.18	PASSED

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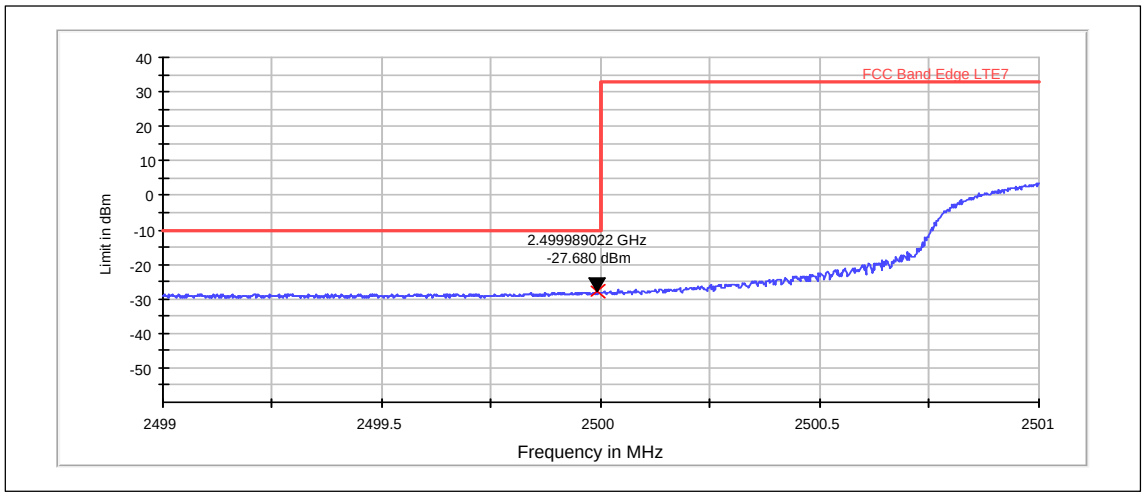
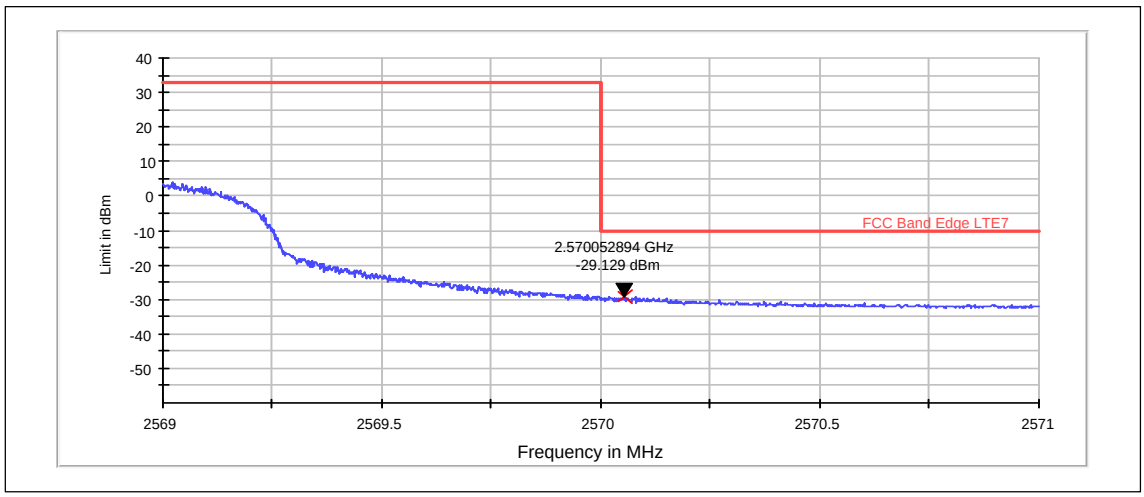
Channel 20850 / 2510 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	2499.989	-27.68	PASSED

Channel 21350 / 2560 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	2570.053	-29.13	PASSED

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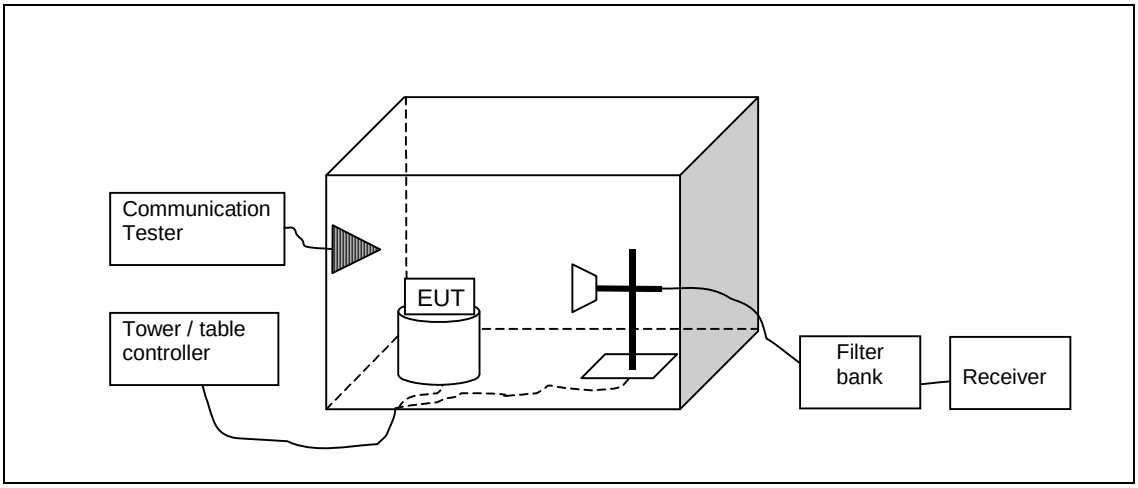
5. Spurious radiated emissions

(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-1127, DUT 500105
Accessories with DUT numbers	CC-3097, DUT 500129 ;Samsung BL-T5A, DUT 500114 ; AC-18E, DUT 500125 ; WH-108, DUT 500121
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	Test was done in lab1.
Temp [ºC] / Humidity [%RH] / Air Pressure [kPa]	21/64/100.1 to
Date of measurements	27-Jul-2015
Measured by	Gao Sherina

5.1.1 Test setup



5.2. 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. 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

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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 [dBm] = PMEAS + ATOT

Where PMEAS is receiver reading in dBm and ATOT is total correction factor including cable loss, preamplifier gain and substitution correction (ATOT = LCABLES - GPREAMP + ASUBST).

Limits for spurious radiated emissions measurements

Operation band	Frequency range [MHz]	Limit [dBm]
GSM 850	30 - 8500	-13
GSM 1900	30 - 19100	-13
WCDMA5	30 - 8500	-13

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5.3. GSM 850 test results

Channel 190 / 836.6 MHz
Peak detector; antenna1

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
850.764	-72.84	5E-05	-71.34	-1.5	VERTICAL	PASSED
1673.267	-46.84	0.0207	-52.24	5.4	HORIZONTAL	PASSED
1673.307	-49.16	0.01213	-54.56	5.4	HORIZONTAL	PASSED
2486.212	-52.67	0.00541	-64.77	12.1	VERTICAL	PASSED
2509.82	-49.62	0.01091	-61.62	12	VERTICAL	PASSED
3353.507	-56.18	0.00241	-63.98	7.8	HORIZONTAL	PASSED

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

Channel 190 / 836.6 MHz
Peak detector; antenna2

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
848.7	-69.93	0.0001	-68.33	-1.6	HORIZONTAL	PASSED
1642.725	-58.23	0.0015	-63.73	5.5	VERTICAL	PASSED
1673.347	-50.03	0.00993	-55.23	5.2	VERTICAL	PASSED
2509.659	-41.9	0.06457	-53.9	12	VERTICAL	PASSED
2510.06	-42.68	0.05395	-54.68	12	VERTICAL	PASSED
3361.363	-55.88	0.00258	-63.68	7.8	HORIZONTAL	PASSED

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

5.4. GSM 1900 E-GPRS (MSC9) test results

Channel 661 / 1880.0 MHz
Peak detector; antenna1

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3760.18	-48.19	0.01517	-59.29	11.1	HORIZONTAL	PASSED
5630.16	-47.9	0.01622	-62.2	14.3	VERTICAL	PASSED

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

Channel 661 / 1880.0 MHz
Peak detector; antenna2

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3759.9	-48.04	0.0157	-58.94	10.9	VERTICAL	PASSED
5640.14	-46.59	0.02193	-60.89	14.3	VERTICAL	PASSED

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

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5.5. GSM 850 E-GPRS (MSC9) test results

Channel 190 / 836.6 MHz
Peak detector; antenna1

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1673.14	-55.94	0.00255	-61.34	5.4	HORIZONTAL	PASSED
2509.78	-48.31	0.01476	-60.11	11.8	HORIZONTAL	PASSED

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

Channel 190 / 836.6 MHz
Peak detector; antenna2

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1673.02	-56.22	0.00239	-61.42	5.2	VERTICAL	PASSED
2509.78	-47.09	0.01954	-59.09	12	VERTICAL	PASSED

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

5.6. GSM 1900 test results

Channel 661 / 1880.0 MHz
Peak detector; antenna2

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
7908.697	-44.9	0.03236	-67.6	22.7	HORIZONTAL	PASSED
8849.299	-42.16	0.06081	-65.86	23.7	HORIZONTAL	PASSED
9647.134	-41.42	0.07211	-67.02	25.6	VERTICAL	PASSED
9760.601	-40.96	0.08017	-66.46	25.5	HORIZONTAL	PASSED
9870.581	-42.18	0.06053	-68.08	25.9	HORIZONTAL	PASSED
9898.397	-41.83	0.06561	-67.53	25.7	HORIZONTAL	PASSED

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

Channel 661 / 1880.0 MHz

Peak detector; antenna1

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
9309.138	-40.75	0.08414	-65.95	25.2	HORIZONTAL	PASSED
9344.008	-41.77	0.06653	-66.57	24.8	HORIZONTAL	PASSED
9677.515	-42.12	0.06138	-67.82	25.7	VERTICAL	PASSED
9709.018	-42.76	0.05297	-68.26	25.5	VERTICAL	PASSED
9842.565	-41.46	0.07145	-67.06	25.6	HORIZONTAL	PASSED
9899.519	-42.39	0.05768	-67.99	25.6	VERTICAL	PASSED

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

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5.7. WCDMA5 test results

Channel 4175 / 835.0 MHz
FDD mode, Peak detector; antenna1

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
821.919	-44.06	0.03926	-76.76	32.7	VERTICAL	PASSED
848.041	-46.39	0.02296	-78.89	32.5	VERTICAL	PASSED
848.078	-46.33	0.02328	-78.83	32.5	VERTICAL	PASSED
848.52	-45.61	0.02748	-78.11	32.5	VERTICAL	PASSED
880.431	-45.33	0.02931	-80.03	34.7	VERTICAL	PASSED
998.621	-42.51	0.0561	-80.01	37.5	HORIZONTAL	PASSED
1677.194	-57.39	0.00182	-62.89	5.5	HORIZONTAL	PASSED
2507.585	-51.52	0.00705	-63.32	11.8	VERTICAL	PASSED
3344.87	-54.78	0.00333	-62.38	7.6	HORIZONTAL	PASSED
4169.409	-55.91	0.00256	-65.81	9.9	HORIZONTAL	PASSED
5018.156	-50.74	0.00843	-62.54	11.8	HORIZONTAL	PASSED
5848.226	-49.73	0.01064	-62.53	12.8	VERTICAL	PASSED
6673.968	-43.36	0.04613	-60.46	17.1	VERTICAL	PASSED
7512.375	-45.7	0.02692	-65.7	20	HORIZONTAL	PASSED
8348.096	-47.61	0.01734	-67.71	20.1	HORIZONTAL	PASSED

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

Channel 4175 / 835.0 MHz
FDD mode, Peak detector; antenna2

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
854.734	-48.19	0.01517	-81.19	33	HORIZONTAL	PASSED
858.335	-48.39	0.01449	-81.49	33.1	HORIZONTAL	PASSED
984.8	-43.62	0.04345	-80.62	37	HORIZONTAL	PASSED
994.823	-42.33	0.05848	-79.93	37.6	HORIZONTAL	PASSED
995.085	-41.13	0.07709	-78.73	37.6	HORIZONTAL	PASSED
996.416	-42.31	0.05875	-79.91	37.6	HORIZONTAL	PASSED
1668.457	-54.25	0.00376	-59.45	5.2	VERTICAL	PASSED
2514.158	-51.22	0.00755	-63.42	12.2	VERTICAL	PASSED
3347.074	-56.54	0.00222	-64.24	7.7	HORIZONTAL	PASSED
4166.563	-56.28	0.00236	-66.18	9.9	HORIZONTAL	PASSED
5003.327	-51.25	0.0075	-63.15	11.9	HORIZONTAL	PASSED
5841.293	-49.01	0.01256	-62.01	13	HORIZONTAL	PASSED
6688.437	-45.18	0.03034	-62.08	16.9	HORIZONTAL	PASSED
7512.896	-45.58	0.02767	-65.58	20	HORIZONTAL	PASSED
8352.144	-47.82	0.01652	-67.82	20	VERTICAL	PASSED

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

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5.8. LTE7 test results

Channel 21100 / 2535.0 MHz
Antenna1; FDD, CBW 5MHz, QPSK, 1 RB, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
2554.895	-62.2	0.0006	-74.6	12.4	HORIZONTAL	PASSED
2654.83	-41.81	0.06592	-54.91	13.1	HORIZONTAL	PASSED
5070.22	-56.79	0.00209	-71.19	14.4	HORIZONTAL	PASSED
7605.501	-51.91	0.00644	-74.31	22.4	HORIZONTAL	PASSED
10140.822	-51.81	0.00659	-77.41	25.6	HORIZONTAL	PASSED

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

Channel 21100 / 2535.0 MHz
Antenna1; FDD, CBW 5MHz, 16QAM, 1 RB, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
2522.46	-58.51	0.00141	-70.71	12.2	HORIZONTAL	PASSED
2547.646	-58.19	0.00152	-70.49	12.3	HORIZONTAL	PASSED
2547.821	-58.64	0.00137	-70.94	12.3	HORIZONTAL	PASSED
2548.422	-58.87	0.0013	-71.17	12.3	HORIZONTAL	PASSED
2558.362	-61.29	0.00074	-73.59	12.3	HORIZONTAL	PASSED
2656.112	-41.39	0.07261	-54.39	13	HORIZONTAL	PASSED
5061.643	-58.48	0.00142	-72.78	14.3	HORIZONTAL	PASSED
7605.741	-52.98	0.00504	-75.38	22.4	HORIZONTAL	PASSED
10133.808	-52.35	0.00582	-77.95	25.6	HORIZONTAL	PASSED

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

Channel 21100 / 2535.0 MHz
Antenna2; FDD, CBW 5MHz, QPSK, 1 RB, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
2548.502	-60.41	0.00091	-72.71	12.3	HORIZONTAL	PASSED
2656.688	-42.27	0.05929	-55.27	13	HORIZONTAL	PASSED
5070.621	-57.79	0.00166	-72.19	14.4	HORIZONTAL	PASSED
7605.661	-52.26	0.00594	-74.66	22.4	HORIZONTAL	PASSED
10140.421	-52.31	0.00587	-77.91	25.6	HORIZONTAL	PASSED

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

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Channel 21100 / 2535.0 MHz

Antenna2; FDD, CBW 5MHz, 16QAM, 1 RB, RMS detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
2550.446	-60.95	0.0008	-73.35	12.4	HORIZONTAL	PASSED
2655.446	-41.68	0.06792	-54.78	13.1	HORIZONTAL	PASSED
5073.707	-58.38	0.00145	-72.78	14.4	HORIZONTAL	PASSED
7605.621	-52.61	0.00548	-75.01	22.4	HORIZONTAL	PASSED
10146.313	-52.27	0.00593	-77.97	25.7	HORIZONTAL	PASSED

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

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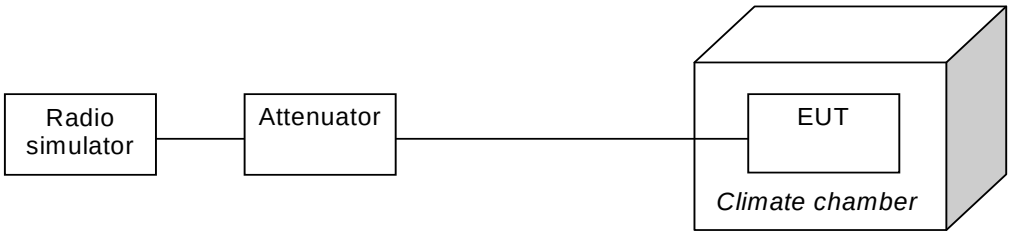
6. Frequency stability, temperature variation

(FCC §2.1055(a), §27.54, RSS-133 6.3, RSS-132 4.3, RSS-199 4.3, RSS-130 4.3)

EUT with DUT number	RM-1127, DUT 500107
Accessories with DUT numbers	CC-3097, DUT 500130 ; Samsung BL-T5A, DUT 500118; AC-18U, DUT 500124; WH-108, DUT 500121
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 63 / 100.1
Date of measurements	03-Aug-2015
Measured by	Gao Sherina

6.1. Test Setup



6.2. Test method and limit

The measurement is made according to applicable FCC rule parts and IC standards as follows:

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

Frequency deviation [ppm]
+\- 2.5

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6.3. GSM 1900 Test results

GSM, Channel 661 / 1880.0 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1880.00	-5.04000	-0.0027	PASSED
40	1880.00	-4.26000	-0.0023	PASSED
30	1880.00	-5.17000	-0.0028	PASSED
20	1880.00	-4.26000	-0.0023	PASSED
10	1880.00	3.49000	0.0019	PASSED
0	1880.00	-2.52000	-0.0013	PASSED
-10	1880.00	10.78000	0.0057	PASSED
-20	1880.00	14.01000	0.0075	PASSED
-30	1880.00	16.01000	0.0085	PASSED

6.4. GSM 850 Test results

GSM, Channel 190 / 836.6 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	836.60	-1.81000	-0.0022	PASSED
40	836.60	-3.55000	-0.0042	PASSED
30	836.60	-0.45000	-0.0005	PASSED
20	836.60	-3.49000	-0.0042	PASSED
10	836.60	-7.23000	-0.0086	PASSED
0	836.60	-3.36000	-0.004	PASSED
-10	836.60	-2.13000	-0.0025	PASSED
-20	836.60	2.32000	0.0028	PASSED
-30	836.60	14.85000	0.0178	PASSED

6.5. LTE7 Test results

FDD, CBW 20MHz, QPSK, 100 RB, Channel 21100 / 2535.0 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	2535.00	0.07153	0	PASSED
40	2535.00	0.25749	0.0001	PASSED
30	2535.00	1.28746	0.0005	PASSED
20	2535.00	0.21458	0.0001	PASSED
10	2535.00	-1.31607	-0.0005	PASSED
0	2535.00	1.31607	0.0005	PASSED
-10	2535.00	4.23431	0.0017	PASSED
-20	2535.00	2.63214	0.001	PASSED
-30	2535.00	-0.95844	-0.0004	PASSED

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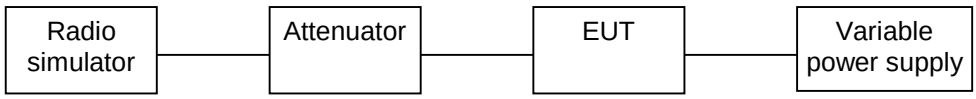
7. Frequency stability, voltage variation
(FCC §27.54, §2.1055(d), RSS-199 4.3, RSS-133 6.3, RSS-132 4.3)

EUT with DUT number	RM-1127, DUT 500107
Accessories with DUT numbers	SD-133; DUT 500120
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 64 / 100.2
Date of measurements	04-Aug-2015
Measured by	Gao Sherina

7.1. Test Setup



7.2. Test method and limit

The measurement is made according to applicable FCC rule parts and IC standards as follows:

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

Frequency deviation [ppm]
+\- 2.5

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7.3. GSM 1900 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	1880.00	5.23000	0.0028	PASSED
Battery cut-off point / 3.4	1880.00	16.47000	0.0088	PASSED
Nominal / 3.7	1880.00	7.81000	0.0042	PASSED

7.4. GSM 850 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	836.60	-4.71000	-0.0056	PASSED
Battery cut-off point / 3.4	836.60	0.06000	0.0001	PASSED
Nominal / 3.7	836.60	-0.77000	-0.0009	PASSED

7.5. LTE7 Test results

FDD, CBW 20MHz, QPSK, 100 RB, Channel 21100 / 2535.0 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.2	2535.00	2.11716	0.0008	PASSED
Battery cut-off point / 3.4	2535.00	1.84536	0.0007	PASSED
Nominal / 3.7	2535.00	3.16143	0.0012	PASSED

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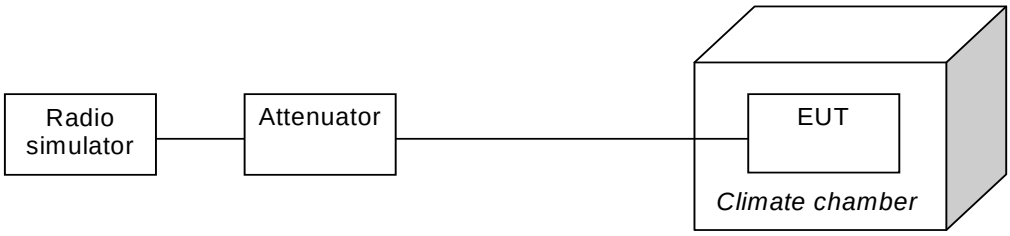
8. Frequency stability, temperature variation, (Band edge method)
(RSS-199 4.3)

EUT with DUT number	RM-1127, DUT 500107
Accessories with DUT numbers	CC-3097, DUT 500130 ; Samsung BL-T5A, DUT 500118; AC-18U, DUT 500124; WH-108, DUT 500121
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 63 / 100.1
Date of measurements	03-Aug-2015
Measured by	Dou Rubo

8.1. Test Setup



8.2. Test method and limit

The measurement is made according to applicable FCC rule parts and IC standards 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.
The results were then calculated as per section 4.3 of RSS-130.

Limits for frequency stability, temperature variation measurements

Limit
The results must be within the operating band.

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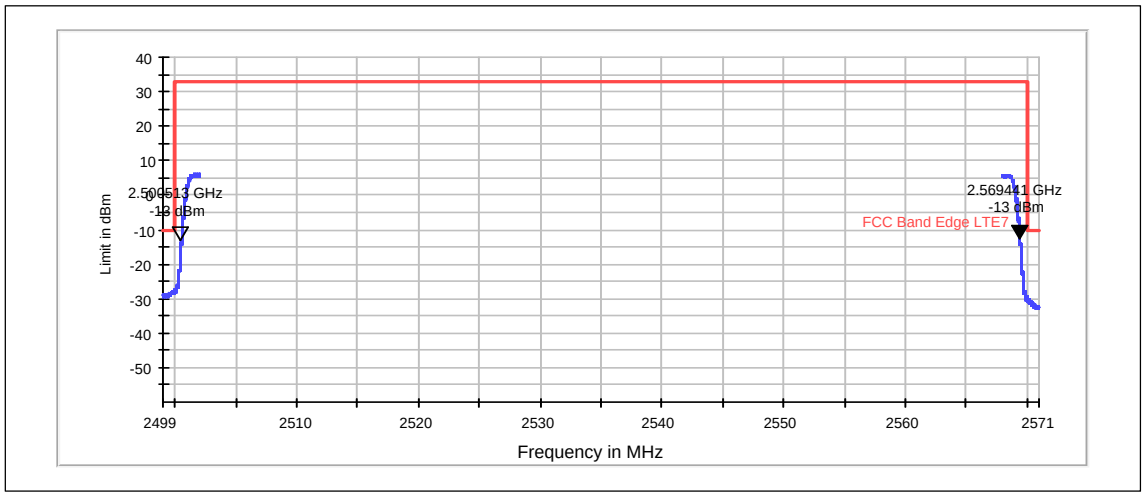
8.3. LTE7 Test results

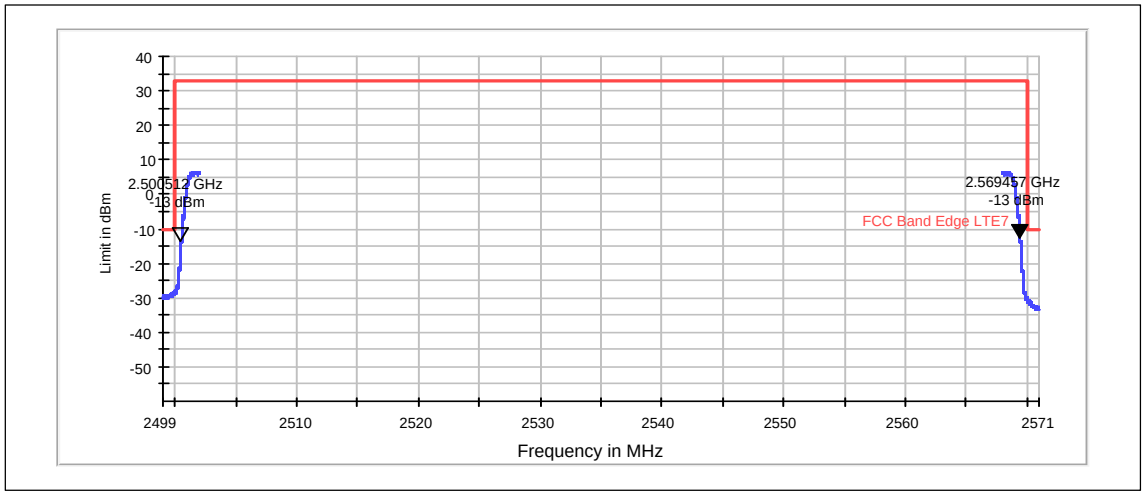
Channel 21100 / 2535.0 MHz



RMS (RBW: 500 kHz, VBW: 2 MHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
50	0.20027	2500.513198	2500.513198	2569.441205	2569.441206	PASSED

Channel 21100 / 2535.0 MHz



RMS (RBW: 500 kHz, VBW: 2 MHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
20	3.07560	2500.511998	2500.511995	2569.456804	2569.456807	PASSED

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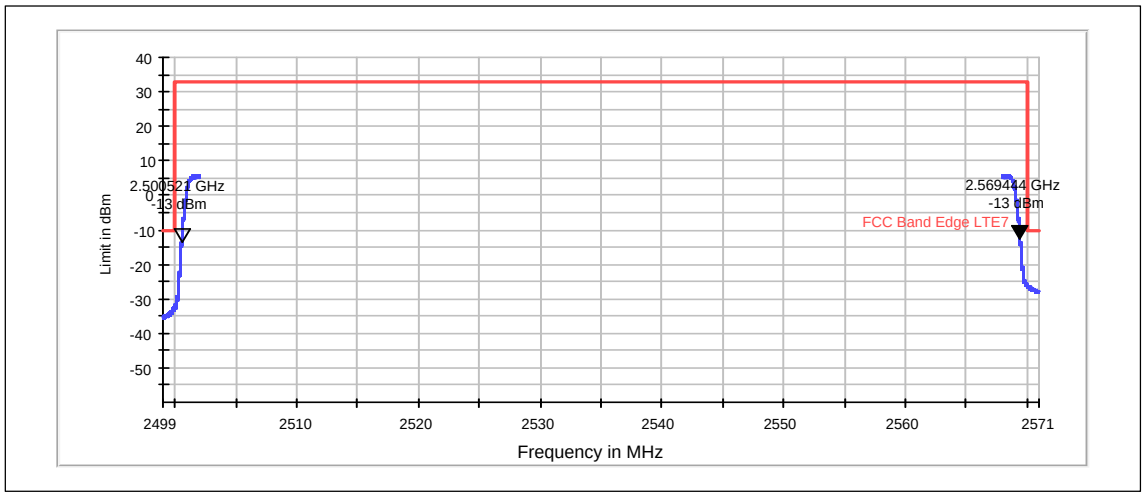
Channel 21100 / 2535.0 MHz



RMS (RBW: 500 kHz, VBW: 2 MHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
-30	2.94685	2500.521297	2500.521294	2569.443905	2569.443908	PASSED

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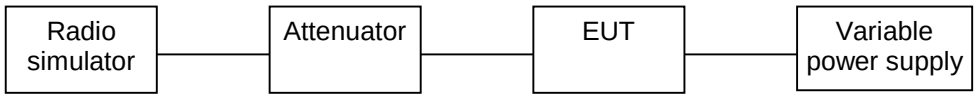
9. Frequency stability, voltage variation, (Band edge method)
(RSS-199 4.3)

EUT with DUT number	RM-1127, DUT 500107
Accessories with DUT numbers	CC-3097, DUT 500130 ; Samsung BL-T5A, DUT 500118; AC-18U, DUT 500124; WH-108, DUT 500121
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 64 / 100.2
Date of measurements	04-Aug-2015
Measured by	Gao Sherina

9.1. Test Setup



9.2. Test method and limit

The measurement is made according to applicable FCC rule parts and IC standards 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.
The results were then calculated as per section 4.3 of RSS-130.

Limits for frequency stability, voltage variation measurements

Limit
The results must be within the operating band.

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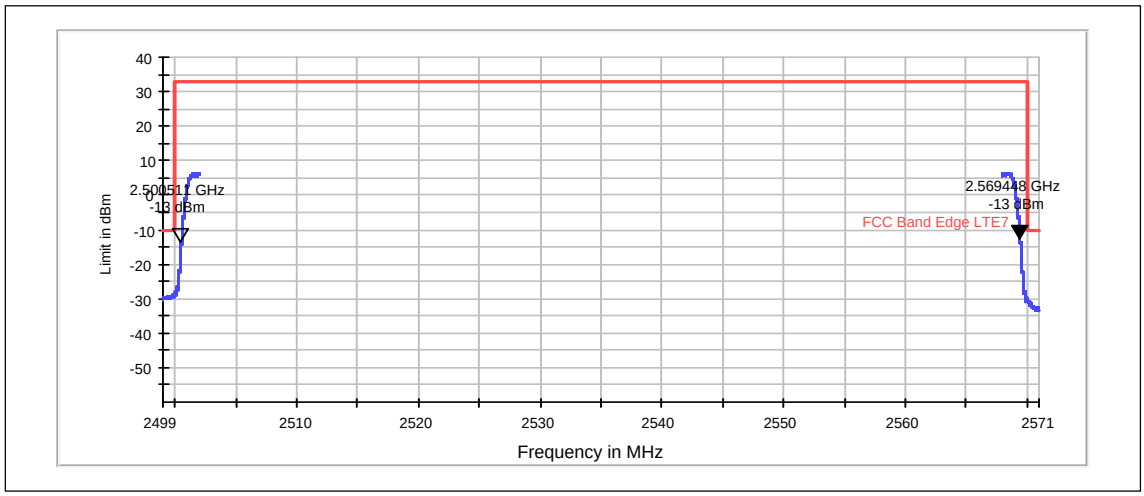
9.3. LTE7 Test results

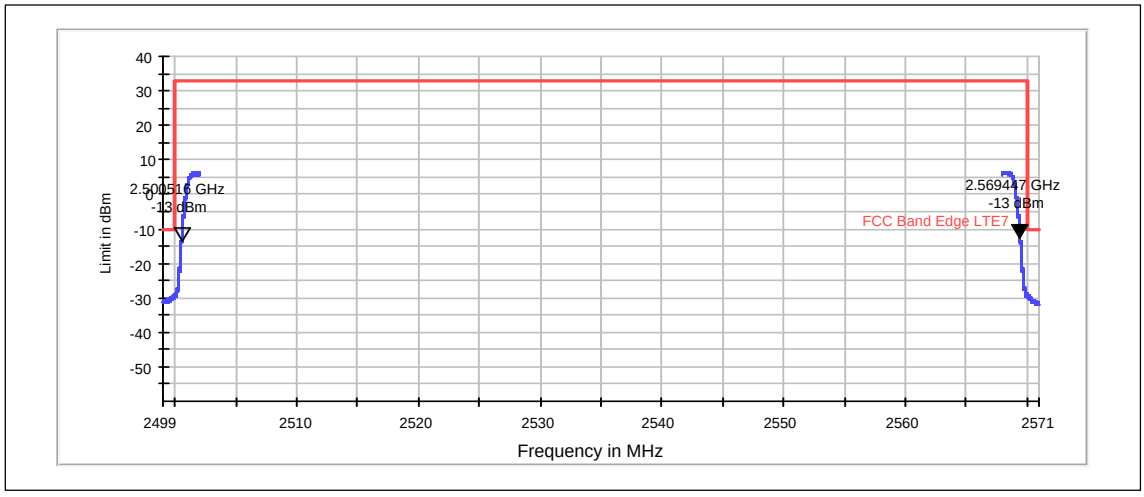
Channel 21100 / 2535.0 MHz



RMS (RBW: 500 kHz, VBW: 2 MHz)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Max / 4.2	5.16415	2500.511398	2500.511393	2569.448405	2569.448410	PASSED

Channel 21100 / 2535.0 MHz



RMS (RBW: 500 kHz, VBW: 2 MHz)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Battery cut-off point / 3.4	2.76089	2500.516498	2500.516495	2569.446905	2569.446908	PASSED

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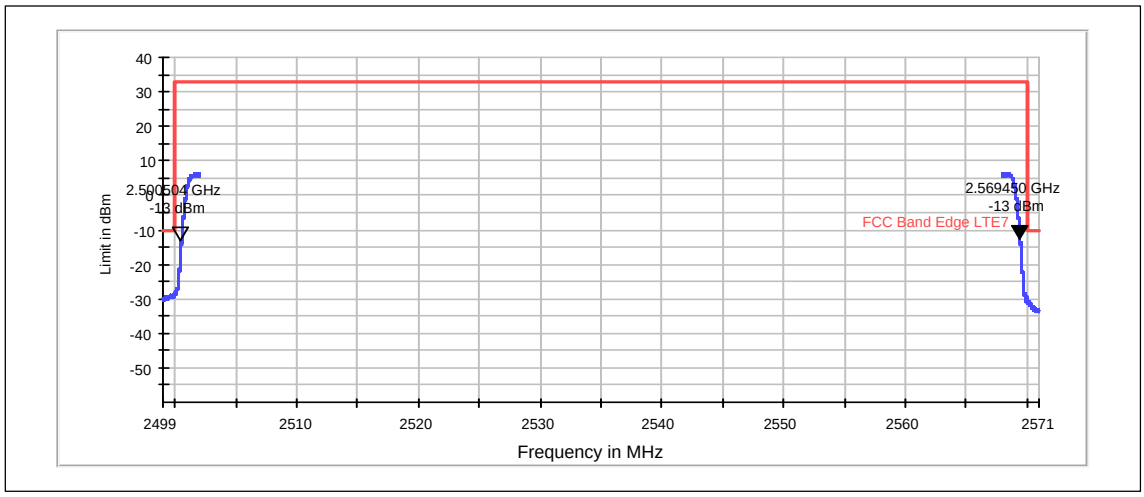
Channel 21100 / 2535.0 MHz



RMS (RBW: 500 kHz, VBW: 2 MHz)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Nominal / 3.7	1.48773	2500.503899	2500.503898	2569.449605	2569.449606	PASSED

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