FCC Part 22/24/27 Compliance Test Report

Test Report no.:	FCC_Cellular_RM-1075_01_ant1.docx	**Date of Report:**	06-Feb-2015
Number of pages:	135	**Customer's Contact person:**	Tero Huhtala
Testing laboratory:	TCC Microsoft Tampere Laboratory P.O. Box 403 Visiokatu 3 FIN-33101 TAMPERE, FINLAND Tel. +358 71 800 8000 Fax. +358 71 804 6880	**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.:**	94436 661AK-1		
Tested devices/ accessories:	**Phone RM-1075 / Dummy Battery SD-131 / Battery BV-T5C / Charger AC-20E / Headset WH-108**		
FCC ID:	PYATAA	**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-139 (Issue 2, February 2009), 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: 2015.02.06 13:26:31 +02'00'		

Timo Raiskio, Engineer, EMC & SAR

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

Date of receipt	14-Jan-2014
Testing completed	20-Jan-2014
The customer's contact person	Tero Huhtala
Test Plan referred to	T:\Projects\RM-1075\TestPlan\RS_testplan_RM-1075.xlsm
Notes	-
Document name	T:\Projects\RM-1075\EMC\FCC_Cellular_RM-1075_01_ant1.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-1075	004402479016903	1690	-	02156.00000.14506.01000	43249
Dummy Battery	SD-131	-	V.1	-	-	43233
Battery	BV-T5C	08689	-	-	-	43251
Charger	AC-20E Phihong	4868673411351126902;0675628	-	-	-	43135
Headset	WH-108	-	-	-	-	43136
Phone	RM-1075	004402479019865	1690	-	02156.00000.14506.01000	43253
Battery	BV-T5C	08407	-	-	-	43256

1.2. Summary of Test Results, Antenna 1

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	-
§24.232(b)	6.4	Radiated RF output power	PASSED
N/A	6.4	Peak to average power ratio	PASSED
§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	-
§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	-
§22.913(a)	4.4	Radiated RF output power	PASSED
N/A	5.4	Peak to average power ratio	PASSED
§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	-
§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

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WCDMA2:

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	-
§24.232(b)	6.4	Radiated RF output power	PASSED
N/A	6.4	Peak to average power ratio	PASSED
§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	-
§24.238(a), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	-
§2.1055(d)	6.3	Frequency stability, voltage variation	-

WCDMA4:

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	-
§27.50(d)(2)	6.4	Radiated RF output power	PASSED
N/A	6.4	Peak to average power ratio	PASSED
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§27.53(g)	6.5	Band edge compliance	PASSED
§27.53(g), §2.1051	6.5	Spurious emissions at antenna terminals	-
§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

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	-
§22.913(a)	4.4	Radiated RF output power	PASSED
N/A	5.4	Peak to average power ratio	PASSED
§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	-
§22.917(a), §2.1053	4.5	Spurious radiated emissions	PASSED
§2.1055(a)	4.3	Frequency stability, temperature variation	-
§2.1055(d)	4.3	Frequency stability, voltage variation	-

LTE2:

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	-
§24.232(b)	6.4	Radiated RF output power	PASSED
N/A	6.4	Peak to average power ratio	PASSED
§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	-
§24.238(a), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	-
§2.1055(d)	6.3	Frequency stability, voltage variation	-

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LTE4:

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	-
§27.50(d)(4)	6.4	Radiated RF output power	PASSED
N/A	6.4	Peak to average power ratio	PASSED
§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	-
§27.53(h), §2.1053	6.5	Spurious radiated emissions	PASSED
§2.1055(a)	6.3	Frequency stability, temperature variation	-
§2.1055(d)	6.3	Frequency stability, voltage variation	-

LTE5:

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	-
§22.913(a)	4.4	Radiated RF output power	PASSED
N/A	5.4	Peak to average power ratio	PASSED
§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	-
§22.917(a), §2.1053	4.5	Spurious radiated emissions	PASSED
§2.1055(a)	4.3	Frequency stability, temperature variation	-
§2.1055(d)	4.3	Frequency stability, voltage variation	-

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	-
§27.50(h)(2)	4.4	Radiated RF output power	PASSED
N/A	N/A	Peak to average power ratio	-
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§27.53(l)	4.5(b)	Band edge compliance	PASSED
§2.1051	4.5(b)	Spurious emissions at antenna terminals	-
§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

LTE12:

Section in CFR 47	Section in RSS-GEN or RSS-130	Name of the test	Result
§2.1046(a)	4.4	Conducted RF output power	-
§27.50(c)10	4.4	Radiated RF output power	PASSED
N/A	N/A	Peak to average power ratio	-
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§27.53(f)	4.6	Band edge compliance	PASSED
§27.53(f)	4.6	Spurious emissions at antenna terminals	-
§27.53(f)	4.6	Spurious radiated emissions	PASSED
§27.54	4.3	Frequency stability, temperature variation	PASSED
§27.54	4.3	Frequency stability, voltage variation	PASSED

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LTE17:

Section in CFR 47	Section in RSS-GEN or RSS-130	Name of the test	Result
§2.1046(a)	4.4	Conducted RF output power	-
§27.50(c)(10)	4.4	Radiated RF output power	PASSED
N/A	N/A	Peak to average power ratio	-
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§27.53(g)	4.6	Band edge compliance	PASSED
§27.53(g), §2.1051	4.6	Spurious emissions at antenna terminals	-
§27.53(g), §2.1051	4.6	Spurious radiated emissions	PASSED
§2.1055(a)	4.3 (a)	Frequency stability, temperature variation	PASSED
§2.1055(d)	4.3 (a)	Frequency stability, voltage variation	PASSED

LTE28:

Section in CFR 47	Section in RSS-GEN or RSS-130	Name of the test	Result
§2.1046(a)	4.4	Conducted RF output power	-
§27.50(c)10	4.4	Radiated RF output power	PASSED
N/A	4.4	Peak to average power ratio	-
§2.1049(h)	4.6.1	99 % occupied bandwidth	PASSED
§27.53(g)	4.6	Band edge compliance	PASSED
§27.53(g)	4.6	Spurious emissions at antenna terminals	-
§27.53(g)	4.6	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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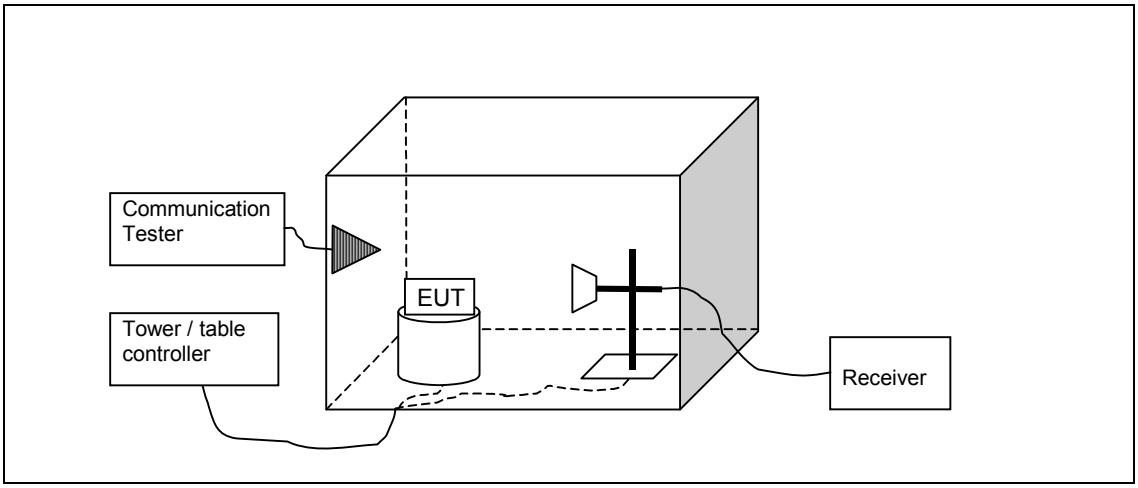
2. Radiated RF output power

(FCC §22.913(a), §27.50(c)(10), §27.50(c)10, §27.50(h)(2), §27.50(d)(4), §27.50(d)(2), §24.232(b), RSS-132 4.4, RSS-133 6.4, RSS-139 6.4, RSS-199 4.4, RSS-130 4.4)

EUT with DUT number	RM-1075, DUT 43253
Accessories with DUT numbers	BV-T5C, DUT 43256
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [ºC] / Humidity [%RH] / Air Pressure [kPa]	20 / 45 / 102.9
Date of measurements	20-Jan-2015
Measured by	Timo Raiskio

2.1.1 Test setup



2.2. Test method and limit

The measurement is made according to TIA-603-C-2004 as follows:

The measurement is performed in the Anechoic Chamber with absorbers on the floor and measuring antenna at fixed height using 2-axis EUT position system. The turntable is rotated 360 degrees and this is repeated for both horizontal and vertical receive antenna polarizations.

The EUT is placed on a nonconductive plate at 170 cm height.

The substitution method is used. The measurement results are obtained as described below:

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

Where $P_{SUBST\ TX}$ is signal generator level. P_{MEAS} is measured power level from the EUT. $P_{SUBST\ RX}$ is measured power level in substitute measurement. $L_{SUBST\ CABLE}$ is the loss of the cable between the signal generator and the substitution antenna and $G_{SUBST\ TX\ ANT}$ is substitution antenna gain.

Limits for radiated RF output power measurements

Frequency range [MHz]	Limit [W]	Limit [dBm]
824 - 849	7 ERP	38.5
1850 - 1910	2 EiRP	33
1710 - 1755	1 EiRP	30

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2502.5 - 2567.5	2 EiRP	33
699 - 712	2 ERP	33
704 - 716	3 ERP	34.8
703 - 748	3 ERP	34.8

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2.3. GSM 850 test results

RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
128 / 824.2	28.83	0.764	-3.5	32.33	VERTICAL	PASSED
190 / 836.6	28.59	0.722	-3.04	31.63	VERTICAL	PASSED
251 / 848.8	27.62	0.578	-3.19	30.81	VERTICAL	PASSED

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

RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
128 / 824.2	25.19	0.33	-7.14	32.33	VERTICAL	PASSED
190 / 836.6	24.4	0.275	-7.23	31.63	VERTICAL	PASSED
251 / 848.8	26.3	0.426	-4.1	30.4	HORIZONTAL	PASSED

2.5. GSM 1900 test results

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
512 / 1850.2	26.24	0.421	-16.53	42.77	HORIZONTAL	PASSED
661 / 1880	26.85	0.484	-15.91	42.76	HORIZONTAL	PASSED
810 / 1909.8	27.08	0.511	-15.83	42.91	HORIZONTAL	PASSED

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

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
512 / 1850.2	25.39	0.346	-17.38	42.77	HORIZONTAL	PASSED
661 / 1880	26.31	0.427	-16.45	42.76	HORIZONTAL	PASSED
810 / 1909.8	26.63	0.46	-16.28	42.91	HORIZONTAL	PASSED

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2.7. WCDMA5 test results

RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
4132 / 826.4	18.02	0.063	-14.46	32.48	VERTICAL	PASSED
4175 / 835	18.52	0.071	-13.41	31.93	VERTICAL	PASSED
4233 / 846.6	18.04	0.064	-12.75	30.79	VERTICAL	PASSED

2.8. WCDMA2 test results

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
9262 / 1852.4	23.85	0.242	-18.94	42.79	HORIZONTAL	PASSED
9400 / 1880	24.1	0.257	-18.66	42.76	HORIZONTAL	PASSED
9538 / 1907.6	23.68	0.233	-19.17	42.85	HORIZONTAL	PASSED

2.9. WCDMA4 test results

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1312 / 1712.4	22.35	0.172	-19.45	41.8	HORIZONTAL	PASSED
1412 / 1732.4	22.96	0.198	-18.93	41.89	HORIZONTAL	PASSED
1513 / 1752.6	22.41	0.174	-19.48	41.89	HORIZONTAL	PASSED

2.10. LTE2 test results

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

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
26065 / 1852.5	24.91	0.309	-17.89	42.8	HORIZONTAL	PASSED
18900 / 1880	25.32	0.341	-17.44	42.76	HORIZONTAL	PASSED
19175 / 1907.5	24.97	0.314	-17.88	42.85	HORIZONTAL	PASSED

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

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
26065 / 1852.5	24.8	0.302	-18	42.8	HORIZONTAL	PASSED
18900 / 1880	25.47	0.352	-17.29	42.76	HORIZONTAL	PASSED
19175 / 1907.5	24.78	0.3	-18.07	42.85	HORIZONTAL	PASSED

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2.11. LTE4 test results

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

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
19975 / 1712.5	24.09	0.257	-17.71	41.8	HORIZONTAL	PASSED
20175 / 1732.5	24.14	0.26	-17.75	41.89	HORIZONTAL	PASSED
20375 / 1752.5	23.99	0.251	-17.9	41.89	HORIZONTAL	PASSED

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

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
19975 / 1712.5	23.68	0.233	-18.12	41.8	HORIZONTAL	PASSED
20175 / 1732.5	24.22	0.264	-17.67	41.89	HORIZONTAL	PASSED
20375 / 1752.5	23.97	0.25	-17.92	41.89	HORIZONTAL	PASSED

2.12. LTE5 test results

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

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
20425 / 826.5	19.53	0.09	-12.84	32.37	HORIZONTAL	PASSED
20525 / 836.5	20.35	0.108	-11.29	31.64	HORIZONTAL	PASSED
20625 / 846.5	19.62	0.092	-11.17	30.79	VERTICAL	PASSED

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

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
20425 / 826.5	19.56	0.09	-12.81	32.37	HORIZONTAL	PASSED
20525 / 836.5	20.1	0.102	-11.54	31.64	HORIZONTAL	PASSED
20625 / 846.5	19.53	0.09	-11.26	30.79	VERTICAL	PASSED

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2.13. LTE7 test results

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

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
20775 / 2502.5	23.66	0.232	-22.79	46.45	HORIZONTAL	PASSED
21100 / 2535	24.6	0.288	-22.35	46.95	HORIZONTAL	PASSED
21425 / 2567.5	25.66	0.368	-21.23	46.89	HORIZONTAL	PASSED

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

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
20775 / 2502.5	23.74	0.236	-22.71	46.45	HORIZONTAL	PASSED
21100 / 2535	24.49	0.281	-22.46	46.95	HORIZONTAL	PASSED
21425 / 2567.5	25.07	0.321	-21.82	46.89	HORIZONTAL	PASSED

2.14. LTE12 test results

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

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
23035 / 701.5	16.9	0.049	-13.63	30.53	VERTICAL	PASSED
23095 / 707.5	18.02	0.063	-12.66	30.68	VERTICAL	PASSED
23155 / 713.5	18.52	0.071	-12.02	30.54	VERTICAL	PASSED

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

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
23035 / 701.5	16.81	0.048	-13.72	30.53	VERTICAL	PASSED
23095 / 707.5	17.57	0.057	-13.11	30.68	VERTICAL	PASSED
23155 / 713.5	18.37	0.069	-12.17	30.54	VERTICAL	PASSED

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2.15. LTE17 test results

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

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
23755 / 706.5	17.48	0.056	-12.61	30.09	HORIZONTAL	PASSED
23790 / 710	18.13	0.065	-12.54	30.67	VERTICAL	PASSED
23825 / 713.5	18.26	0.067	-12.28	30.54	VERTICAL	PASSED

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

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
23755 / 706.5	17.66	0.058	-13.05	30.71	VERTICAL	PASSED
23790 / 710	18.5	0.071	-11.79	30.29	HORIZONTAL	PASSED
23825 / 713.5	18.54	0.071	-12	30.54	VERTICAL	PASSED

2.16. LTE28 test results

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

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
27235 / 705.5	17.32	0.054	-12.71	30.03	HORIZONTAL	PASSED
27435 / 725.5	19.09	0.081	-11.47	30.56	VERTICAL	PASSED
27635 / 745.5	17.42	0.055	-13.5	30.92	VERTICAL	PASSED

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

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
27235 / 705.5	17.17	0.052	-13.57	30.74	VERTICAL	PASSED
27435 / 725.5	18.72	0.074	-11.84	30.56	VERTICAL	PASSED
27635 / 745.5	16.87	0.049	-14.05	30.92	VERTICAL	PASSED

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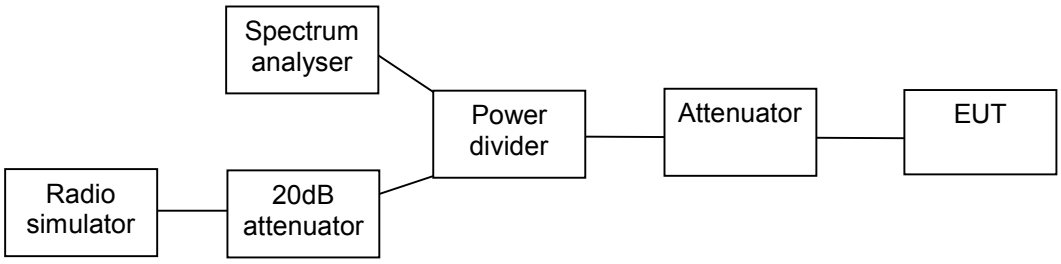
3. Peak to average power ratio
(FCC N/A, RSS-133 6.4, RSS-132 5.4, RSS-139 6.4)

EUT with DUT number	RM-1075, DUT 43249
Accessories with DUT numbers	BV-T5C DUT43251, AC-20 DUT43135, WH-108 DUT 43136
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	25 / 35
Date of measurements	15-Jan-2015
Measured by	Hannu Söderholm

3.1. Test Setup



3.2. 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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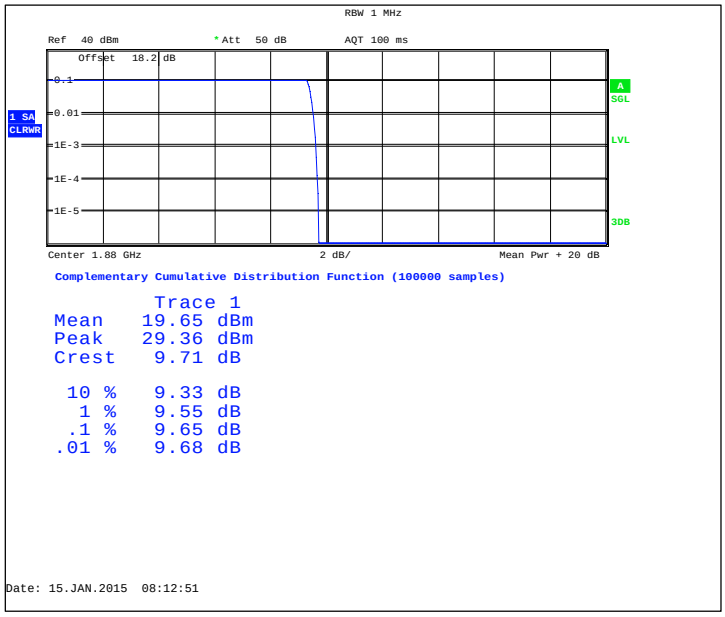
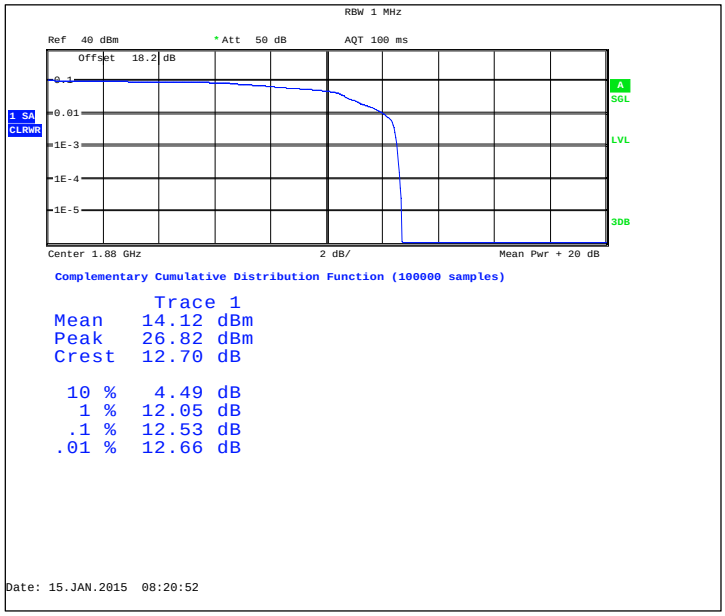
3.3. GSM 1900 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
GSM	661 / 1880.0	9.71	PASSED
EGPRS	661 / 1880.0	12.70	PASSED

GSM



EGPRS



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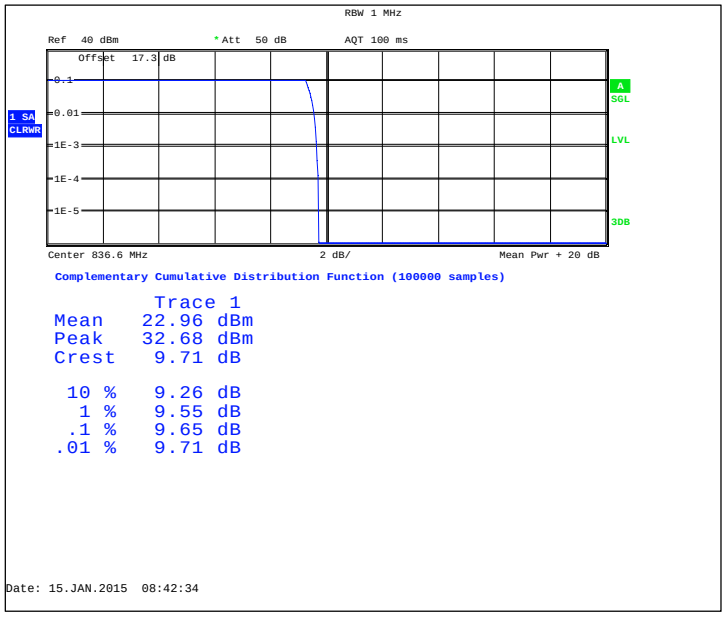
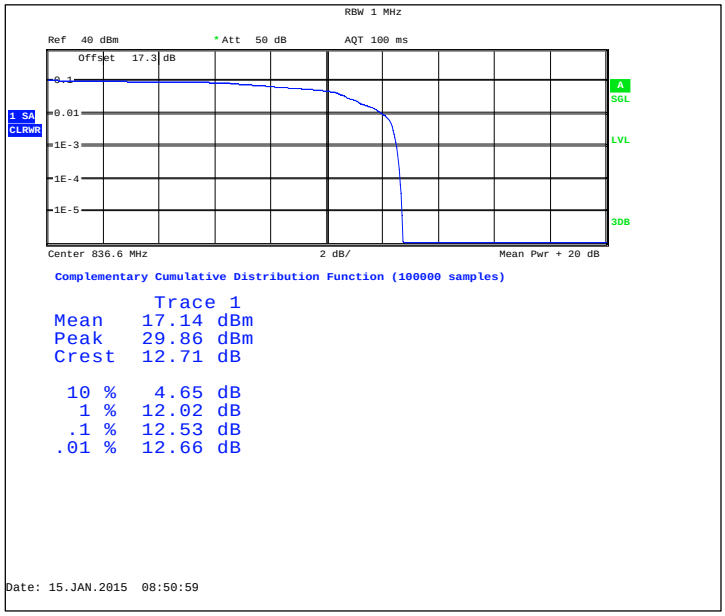
3.4. GSM 850 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
GSM	190 / 836.6	9.71	PASSED
EGPRS	190 / 836.6	12.71	PASSED

GSM



EGPRS



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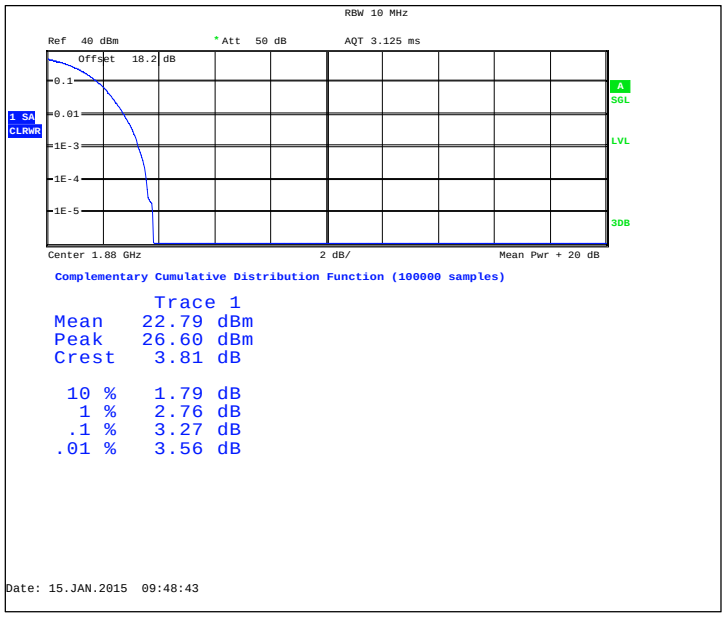
3.5. WCDMA2 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD	9400 / 1880.0	3.81	PASSED

FDD



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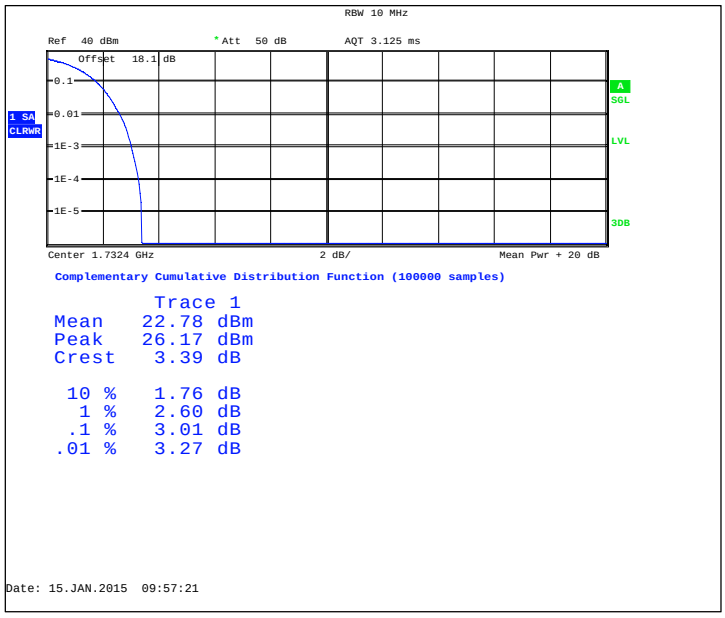
3.6. WCDMA4 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD	1412 / 1732.4	3.39	PASSED

FDD



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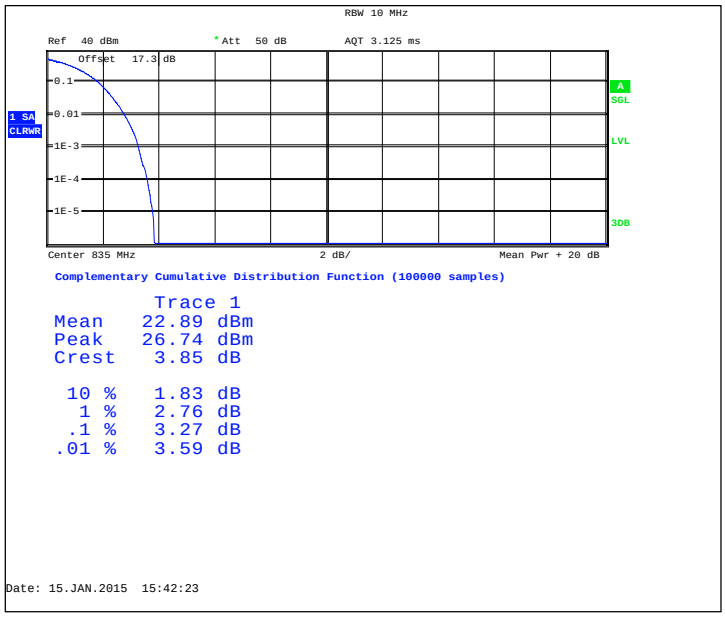
3.7. WCDMA5 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD	4175 / 835.0	3.85	PASSED

FDD



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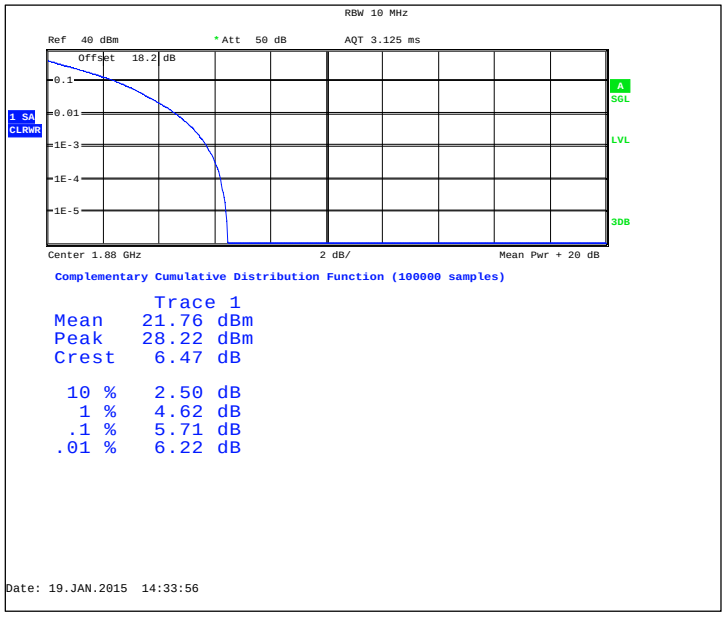
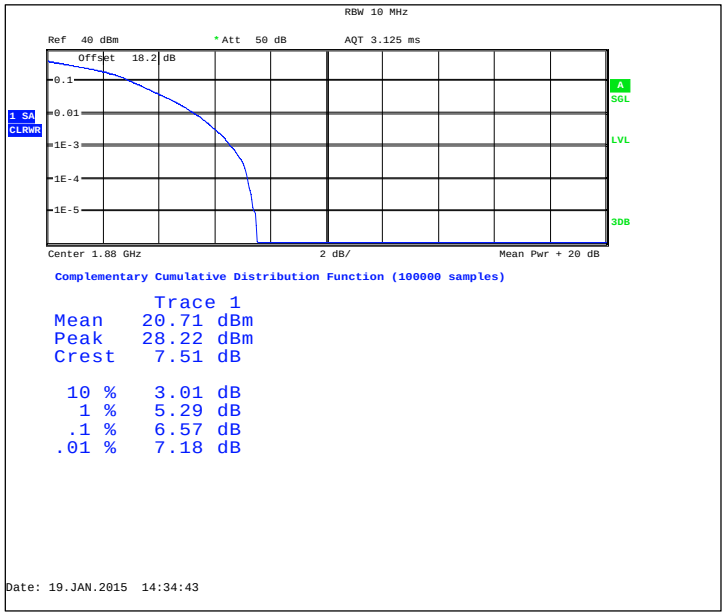
3.8. LTE2 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD, CBW 5MHz, QPSK, 25 RB	18900 / 1880.0	6.47	PASSED
FDD, CBW 5MHz, 16QAM, 25 RB	18900 / 1880.0	7.51	PASSED

FDD, CBW 5MHz, QPSK, 25 RB



FDD, CBW 5MHz, 16QAM, 25 RB



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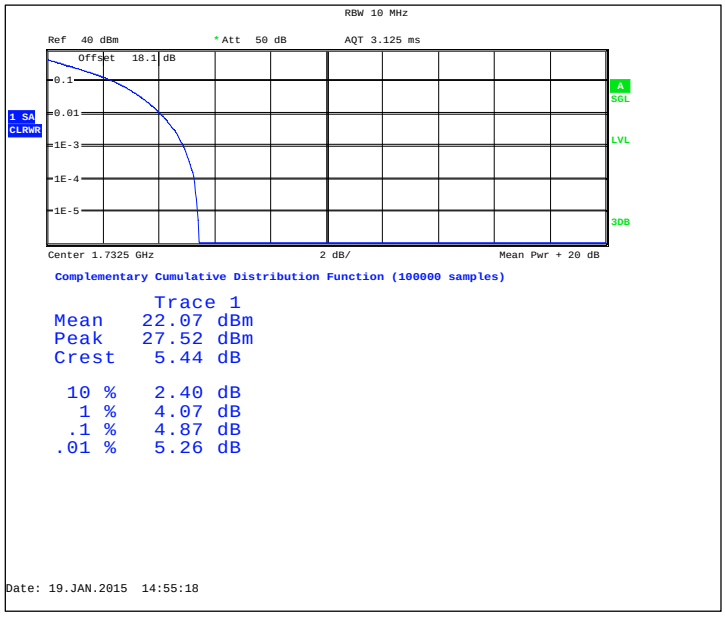
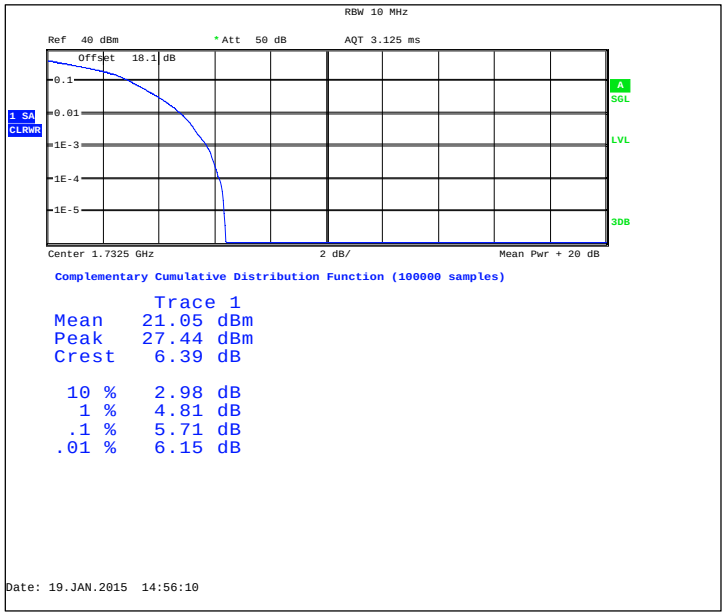
3.9. LTE4 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD, CBW 5MHz, QPSK, 25 RB	20175 / 1732.5	5.44	PASSED
FDD, CBW 5MHz, 16QAM, 25 RB	20175 / 1732.5	6.39	PASSED

FDD, CBW 5MHz, QPSK, 25 RB



FDD, CBW 5MHz, 16QAM, 25 RB



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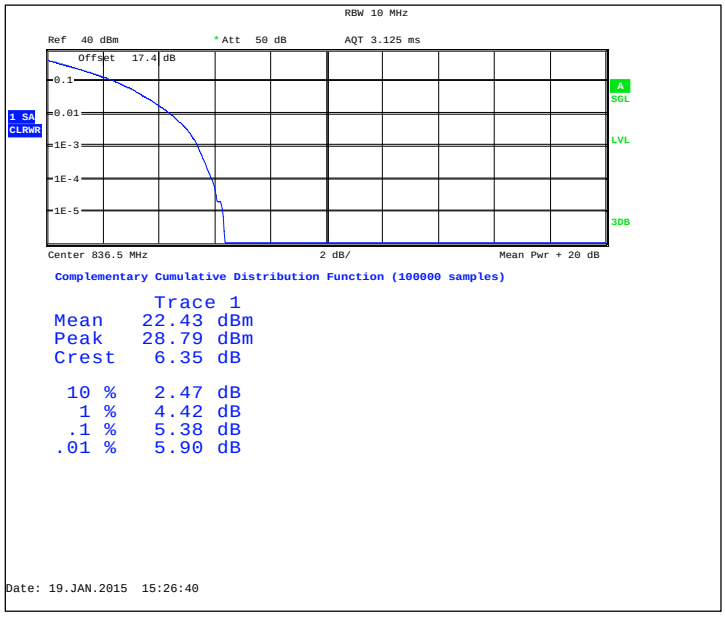
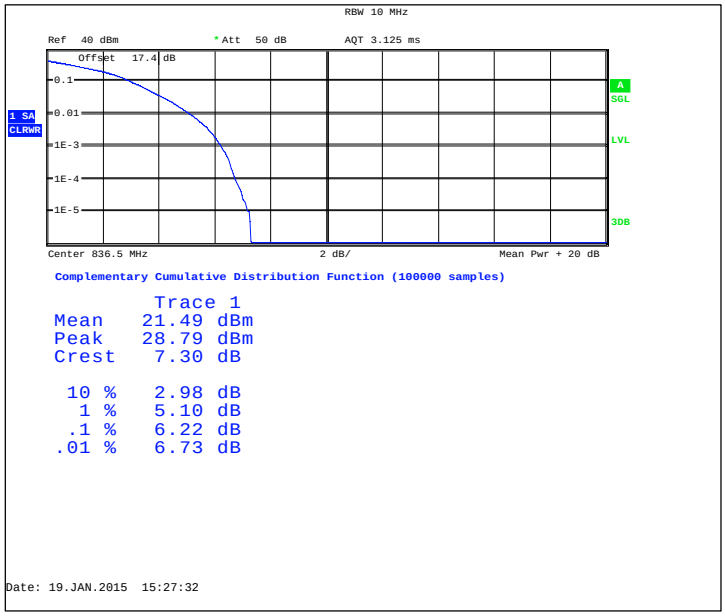
3.10. LTE5 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD, CBW 5MHz, QPSK, 25 RB	20525 / 836.5	6.35	PASSED
FDD, CBW 5MHz, 16QAM, 25 RB	20525 / 836.5	7.30	PASSED

FDD, CBW 5MHz, QPSK, 25 RB



FDD, CBW 5MHz, 16QAM, 25 RB



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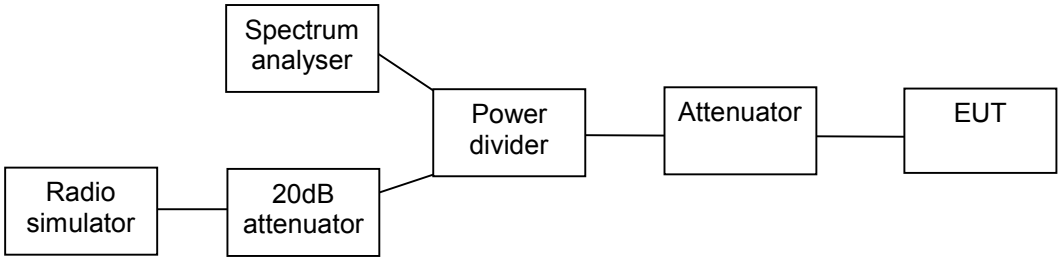
4. 99 % occupied bandwidth

(FCC §2.1049(h), RSS-133 4.6.1, RSS-132 4.6.1, RSS-139 4.6.1, RSS-199 4.6.1, RSS-130 4.6.1)

EUT with DUT number	RM-1075, DUT 43249
Accessories with DUT numbers	BV-T5C DUT43251, AC-20 DUT43135, WH-108 DUT 43136
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	25 / 35
Date of measurements	15-Jan-2015
Measured by	Hannu Söderholm

4.1. Test Setup



4.2. Test method and limit

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

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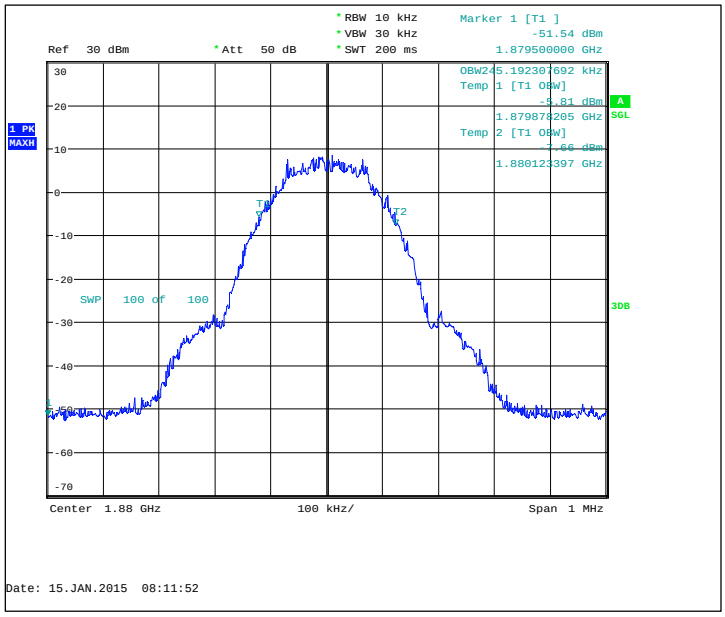
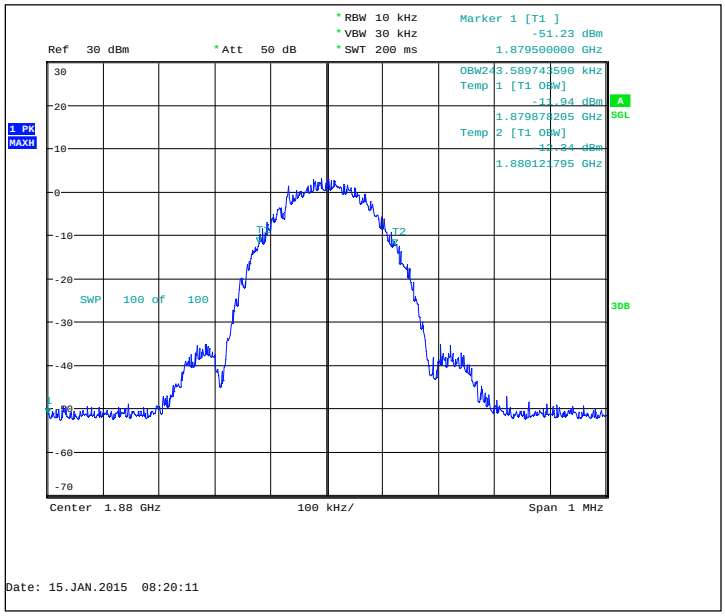
4.3. GSM 1900 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	245.2
EGPRS	243.6

GSM, Channel 661 / 1880.0 MHz



EGPRS, Channel 661 / 1880.0 MHz



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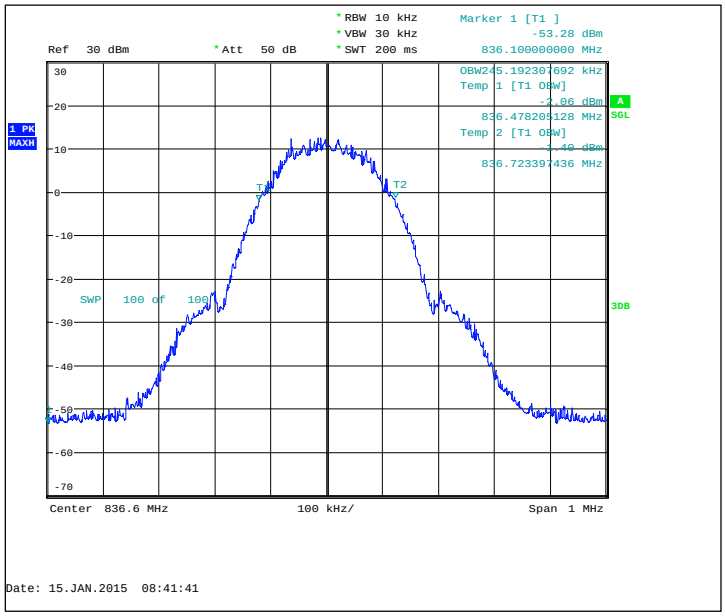
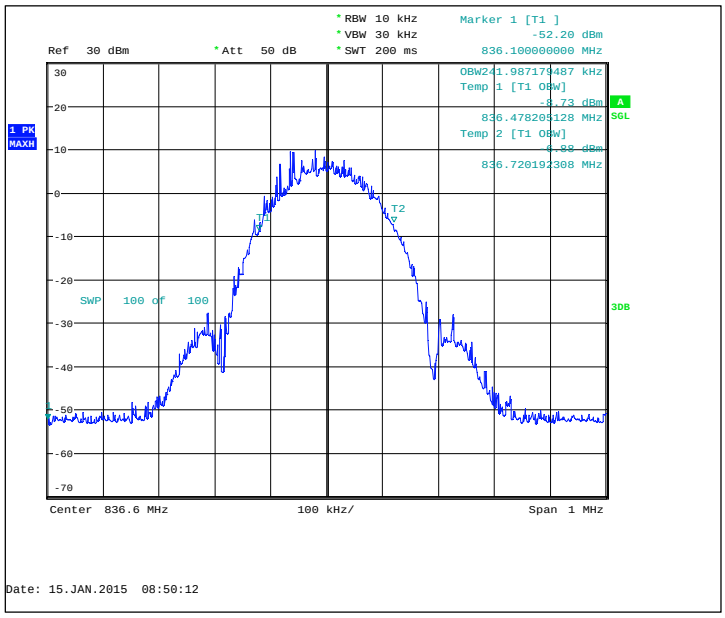
4.4. GSM 850 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	245.2
EGPRS	242

GSM, Channel 190 / 836.6 MHz



EGPRS, Channel 190 / 836.6 MHz



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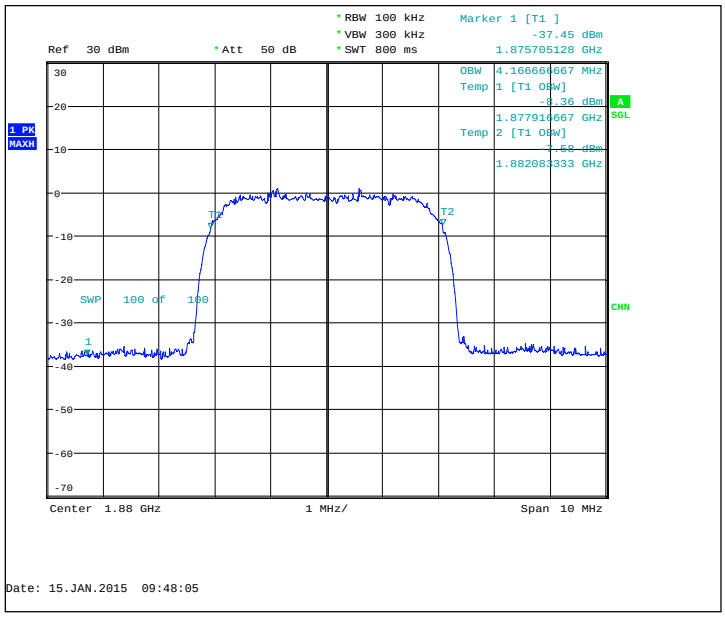
4.5. WCDMA2 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD	4166.7

FDD, Channel 9400 / 1880.0 MHz



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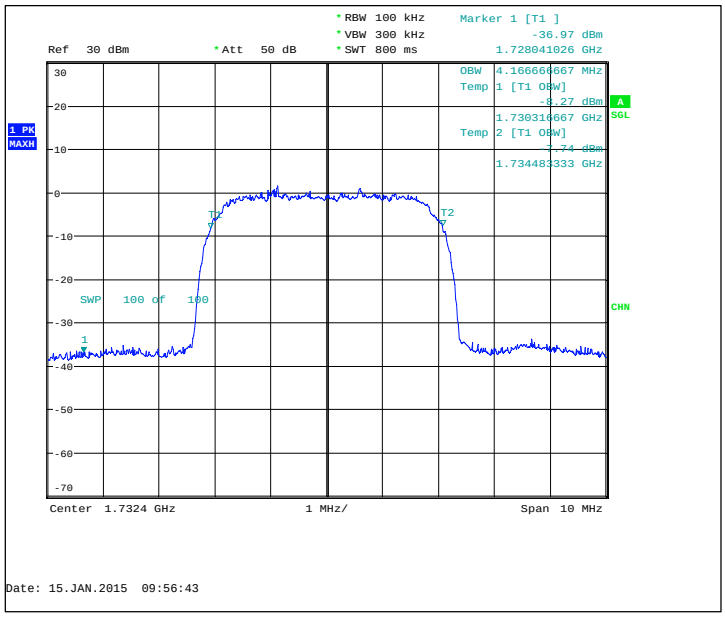
4.6. WCDMA4 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD	4166.7

FDD, Channel 1412 / 1732.4 MHz



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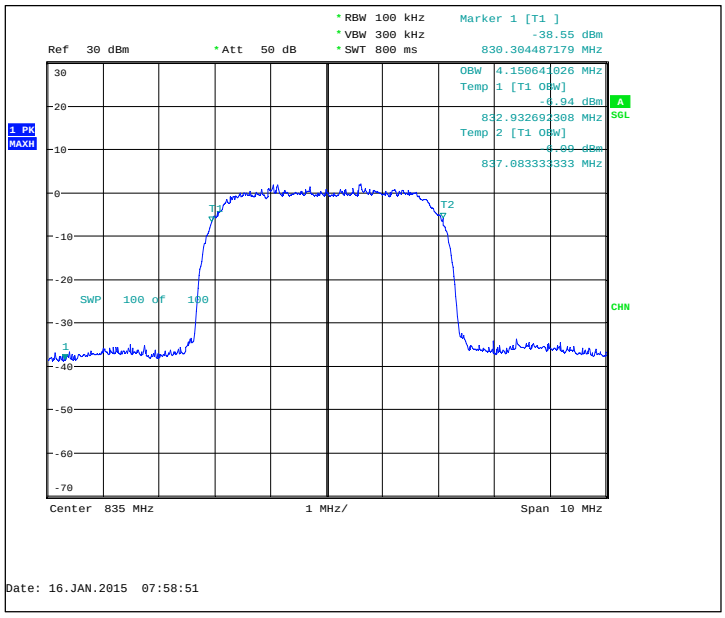
4.7. WCDMA5 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD	4150.6

FDD, Channel 4175 / 835.0 MHz



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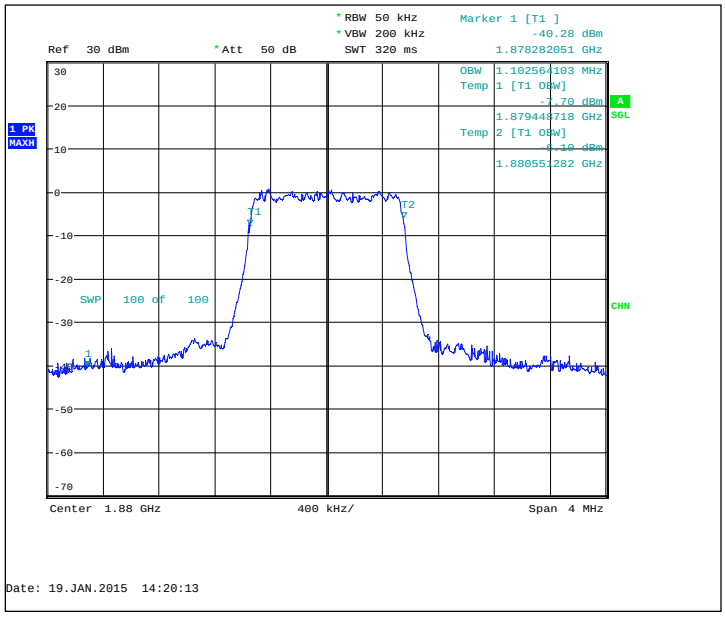
4.8. LTE2 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, 6 RB	1102.6
FDD, CBW 3MHz, QPSK, 15 RB	2692.3
FDD, CBW 5MHz, QPSK, 25 RB	4498.4
FDD, CBW 10MHz, QPSK, 50 RB	8990.4
FDD, CBW 15MHz, QPSK, 75 RB	13461.5
FDD, CBW 20MHz, QPSK, 100 RB	17908.7
FDD, CBW 1.4MHz, 16QAM, 6 RB	1115.4
FDD, CBW 3MHz, 16QAM, 15 RB	2685.9
FDD, CBW 5MHz, 16QAM, 25 RB	4476
FDD, CBW 10MHz, 16QAM, 50 RB	8966.3
FDD, CBW 15MHz, 16QAM, 75 RB	13397.4
FDD, CBW 20MHz, 16QAM, 100 RB	17908.7

FDD, CBW 1.4MHz, QPSK, 6 RB, Channel 18900 / 1880.0 MHz



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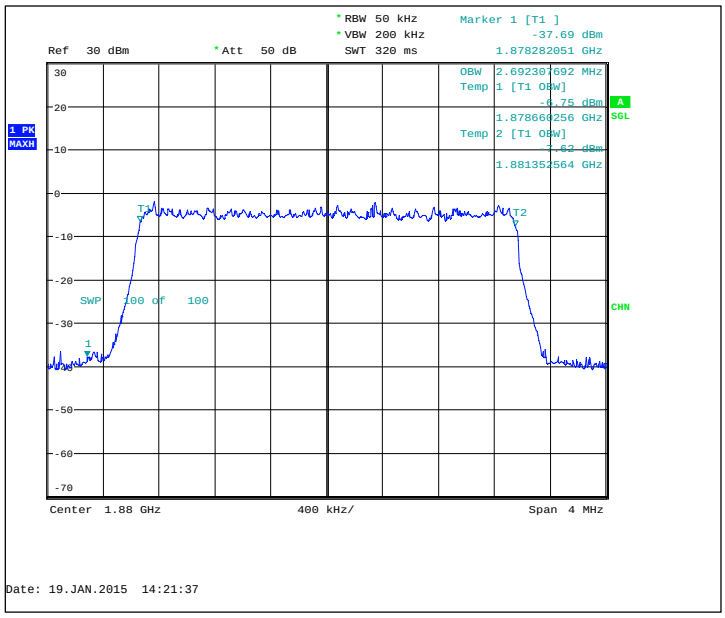
FDD, CBW 3MHz, QPSK, 15 RB, Channel 18900 / 1880.0 MHz



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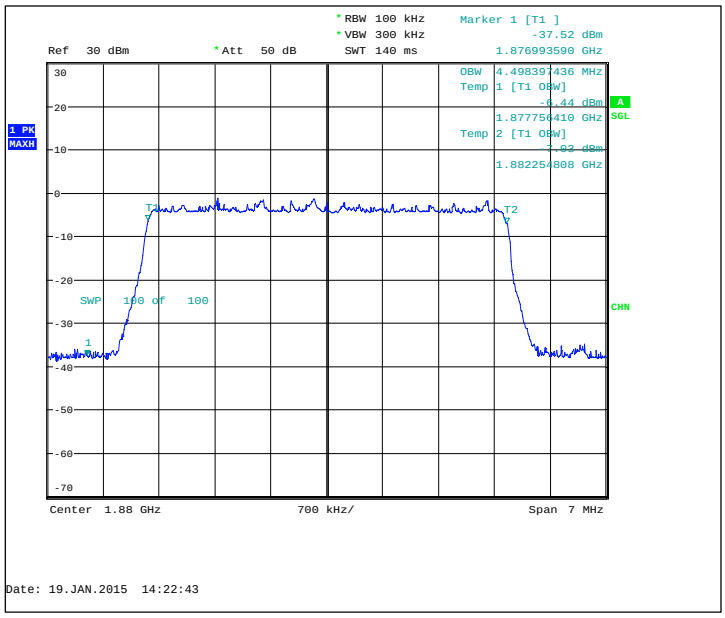
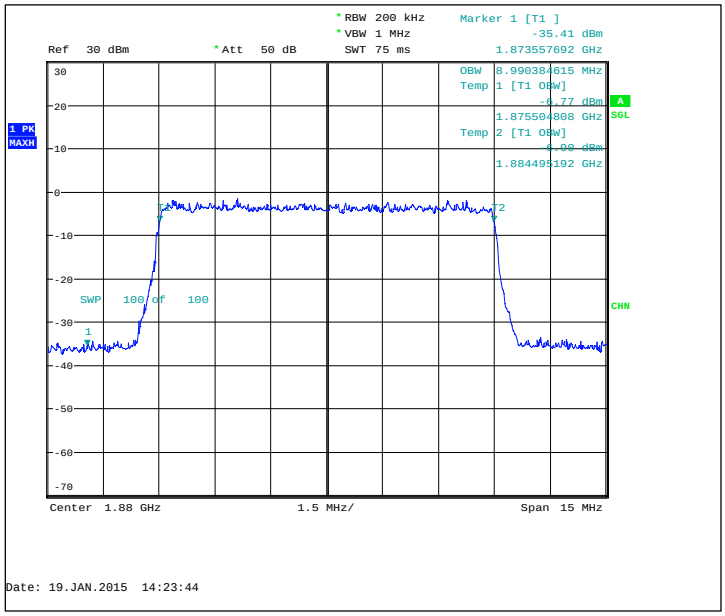
FDD, CBW 5MHz, QPSK, 25 RB, Channel 18900 / 1880.0 MHz



FDD, CBW 10MHz, QPSK, 50 RB, Channel 18900 / 1880.0 MHz



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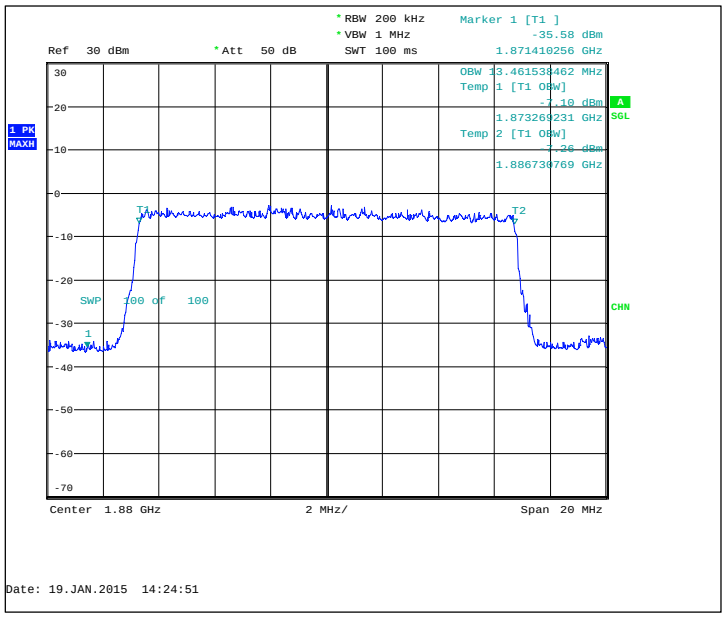
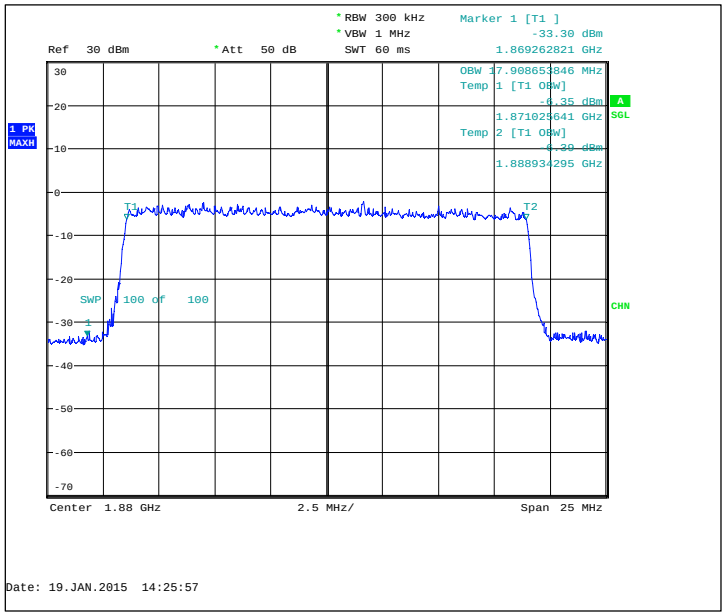
FDD, CBW 15MHz, QPSK, 75 RB, Channel 18900 / 1880.0 MHz



FDD, CBW 20MHz, QPSK, 100 RB, Channel 18900 / 1880.0 MHz



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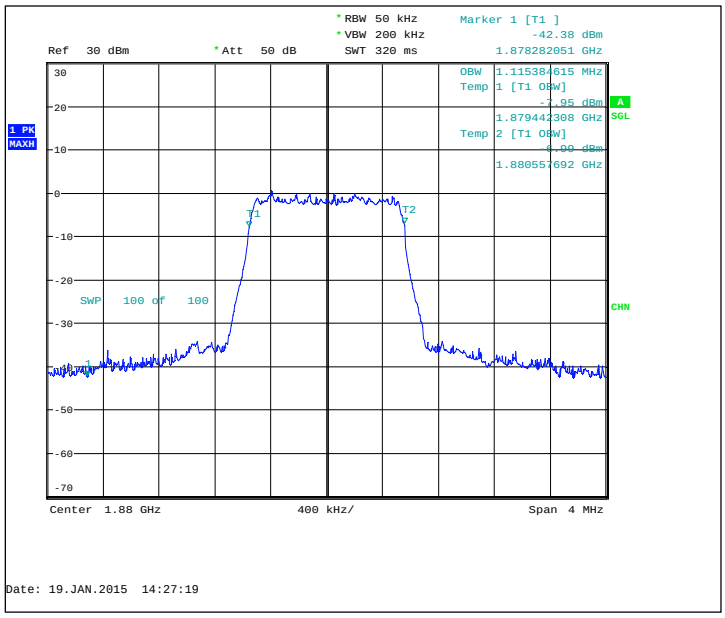
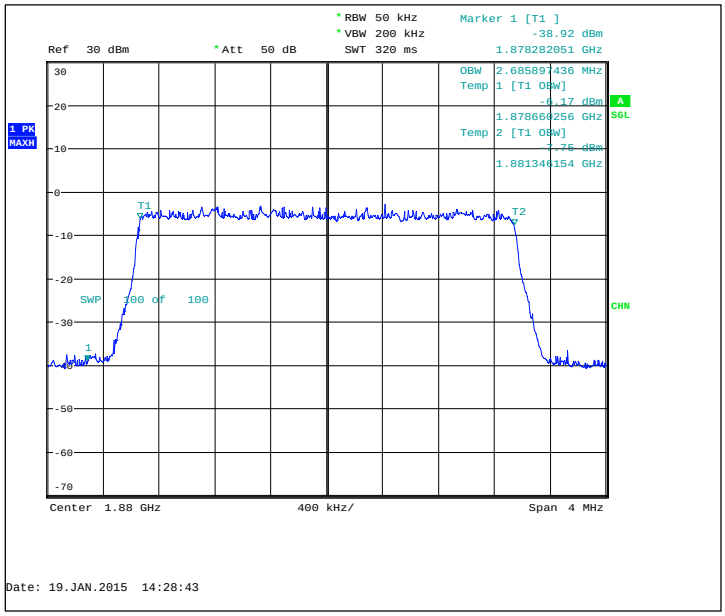
FDD, CBW 1.4MHz, 16QAM, 6 RB, Channel 18900 / 1880.0 MHz



FDD, CBW 3MHz, 16QAM, 15 RB, Channel 18900 / 1880.0 MHz



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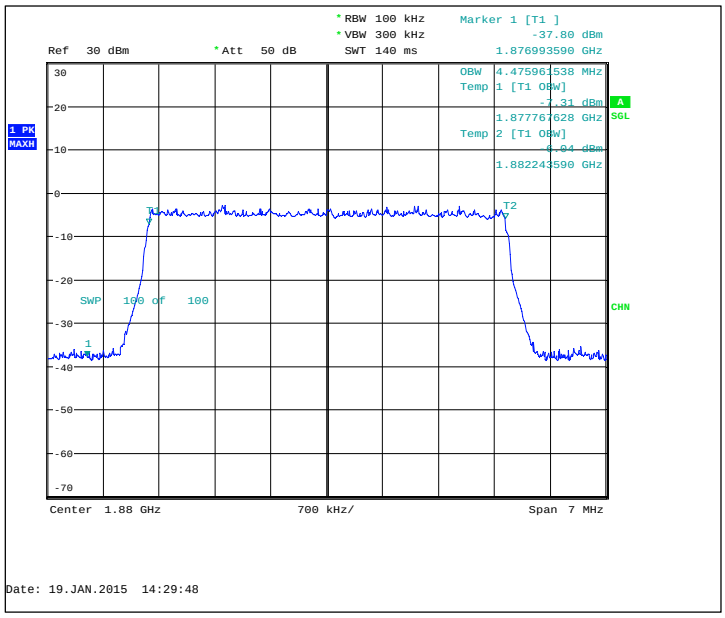
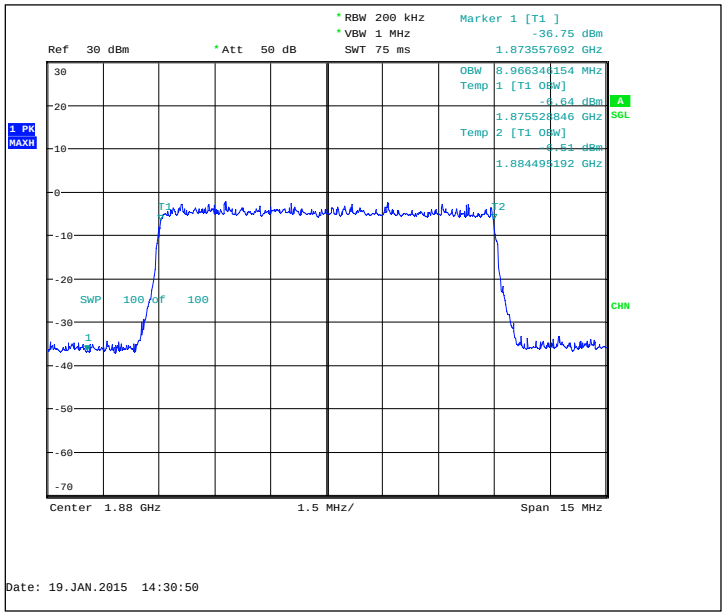
FDD, CBW 5MHz, 16QAM, 25 RB, Channel 18900 / 1880.0 MHz



FDD, CBW 10MHz, 16QAM, 50 RB, Channel 18900 / 1880.0 MHz



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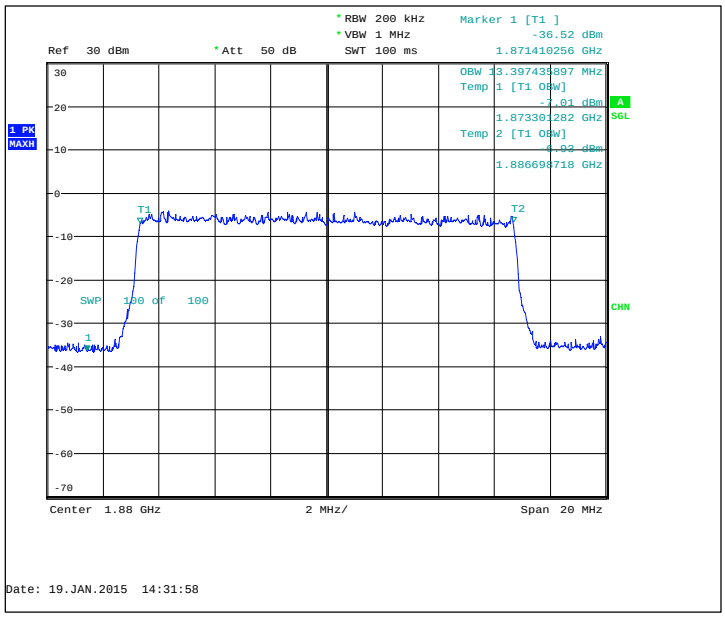
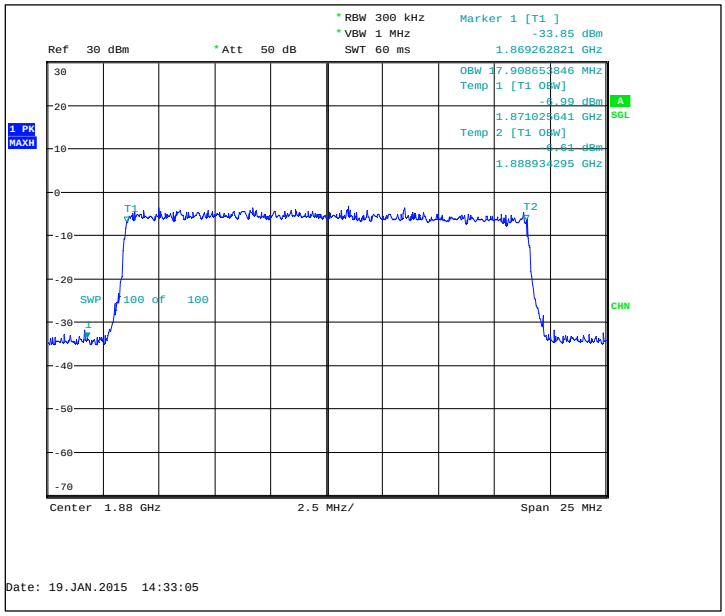
FDD, CBW 15MHz, 16QAM, 75 RB, Channel 18900 / 1880.0 MHz



FDD, CBW 20MHz, 16QAM, 100 RB, Channel 18900 / 1880.0 MHz



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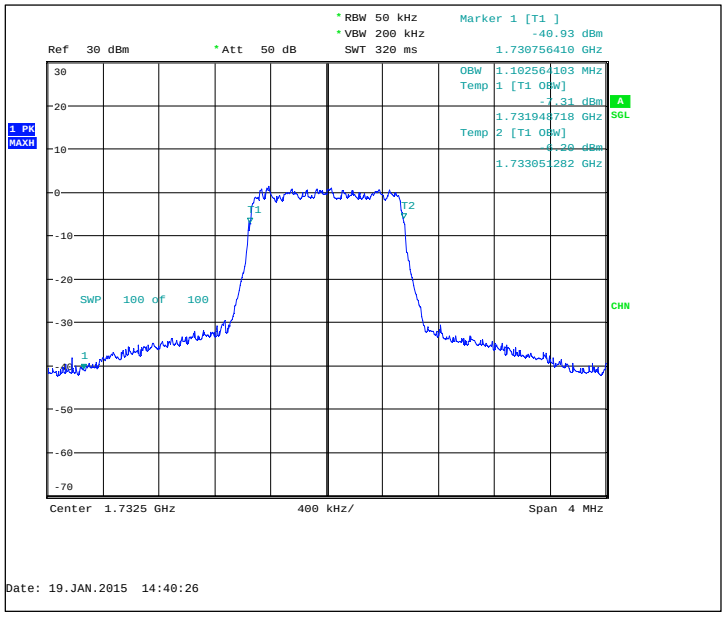
4.9. LTE4 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, 6 RB	1102.6
FDD, CBW 3MHz, QPSK, 15 RB	2692.3
FDD, CBW 5MHz, QPSK, 25 RB	4498.4
FDD, CBW 10MHz, QPSK, 50 RB	8966.3
FDD, CBW 15MHz, QPSK, 75 RB	13397.4
FDD, CBW 20MHz, QPSK, 100 RB	17828.5
FDD, CBW 1.4MHz, 16QAM, 6 RB	1109
FDD, CBW 3MHz, 16QAM, 15 RB	2685.9
FDD, CBW 5MHz, 16QAM, 25 RB	4476
FDD, CBW 10MHz, 16QAM, 50 RB	8966.3
FDD, CBW 15MHz, 16QAM, 75 RB	13397.4
FDD, CBW 20MHz, 16QAM, 100 RB	17868.6

FDD, CBW 1.4MHz, QPSK, 6 RB, Channel 20175 / 1732.5 MHz



FDD, CBW 3MHz, QPSK, 15 RB, Channel 20175 / 1732.5 MHz

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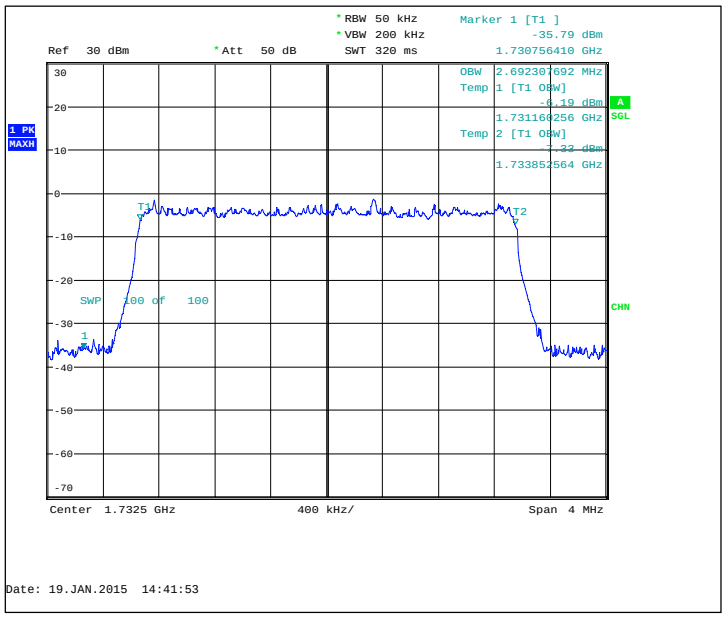

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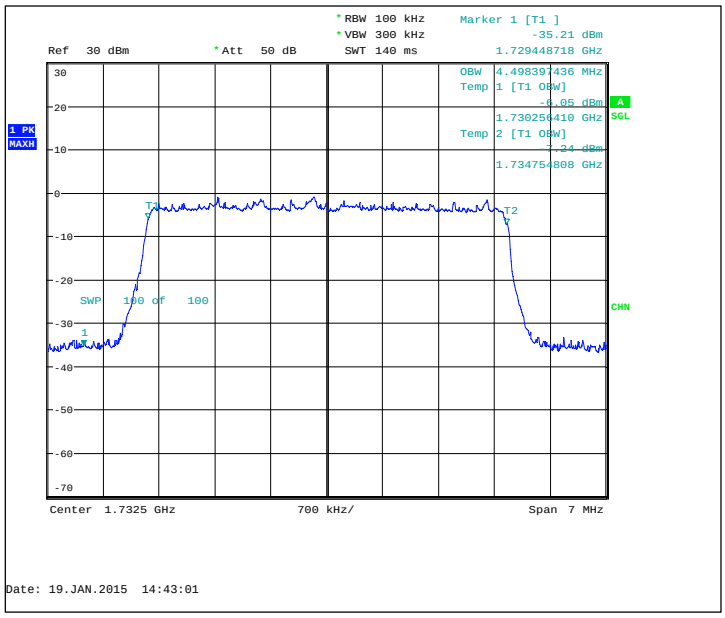
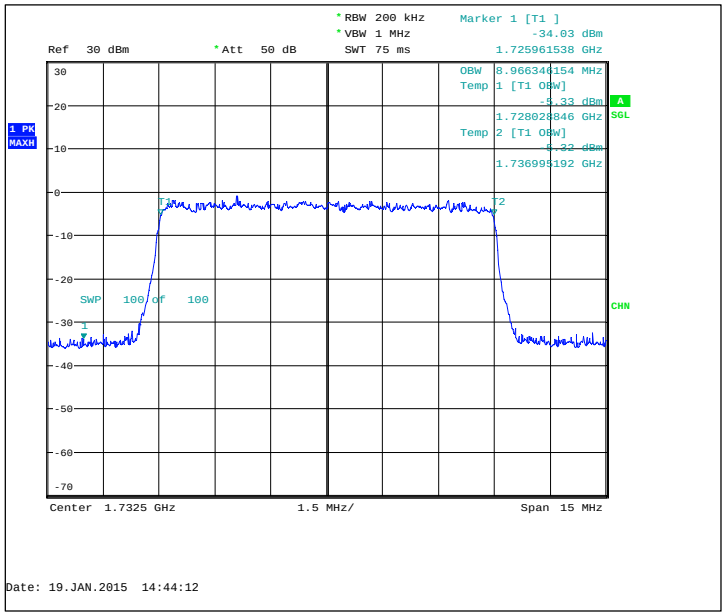
FDD, CBW 5MHz, QPSK, 25 RB, Channel 20175 / 1732.5 MHz



FDD, CBW 10MHz, QPSK, 50 RB, Channel 20175 / 1732.5 MHz



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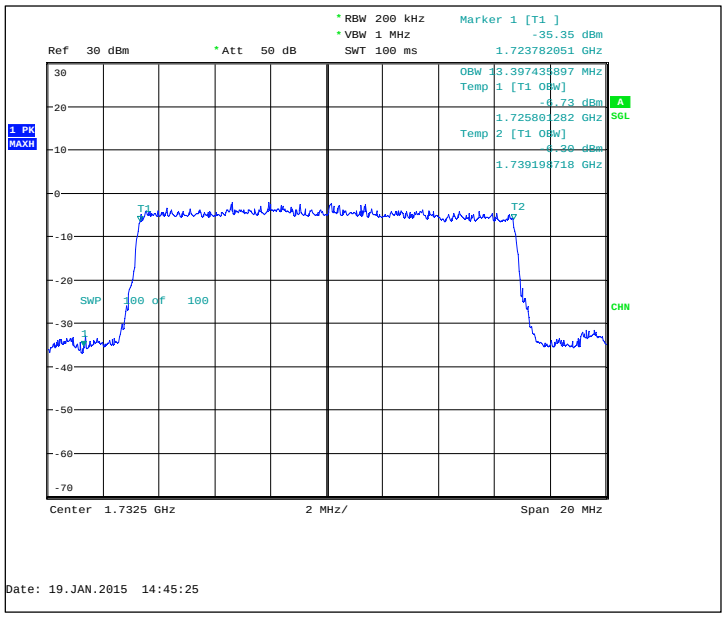
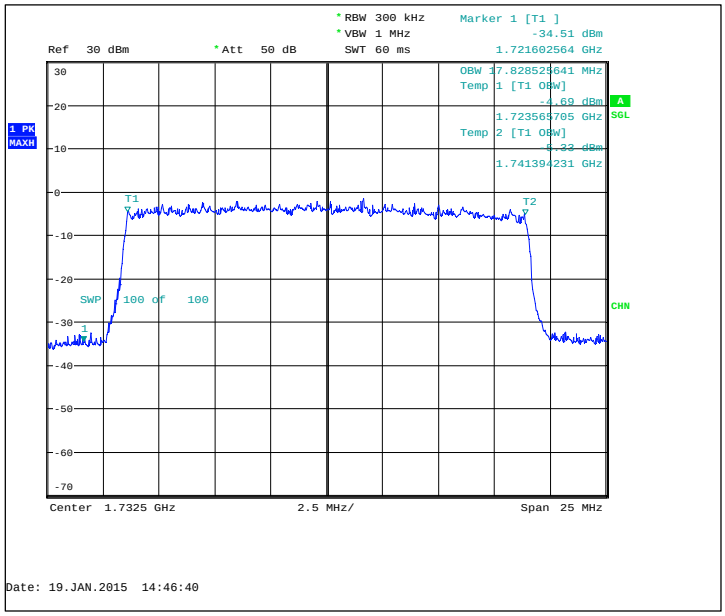
FDD, CBW 15MHz, QPSK, 75 RB, Channel 20175 / 1732.5 MHz



FDD, CBW 20MHz, QPSK, 100 RB, Channel 20175 / 1732.5 MHz



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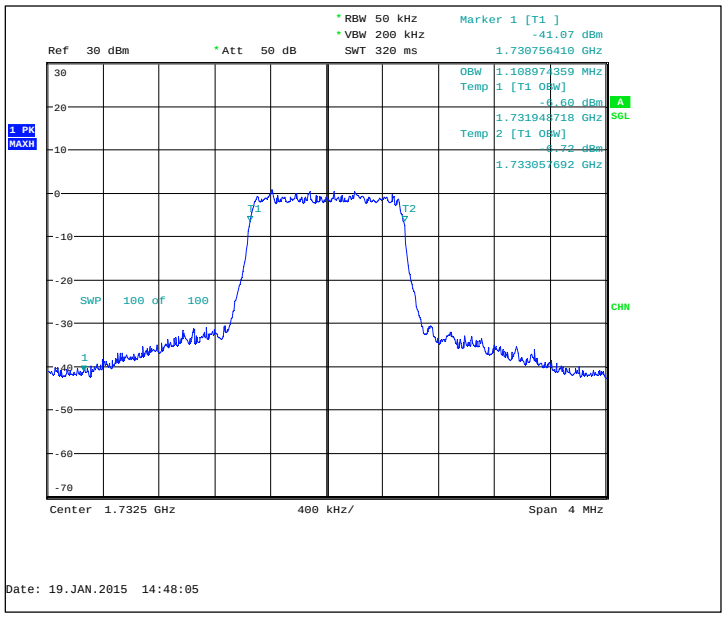
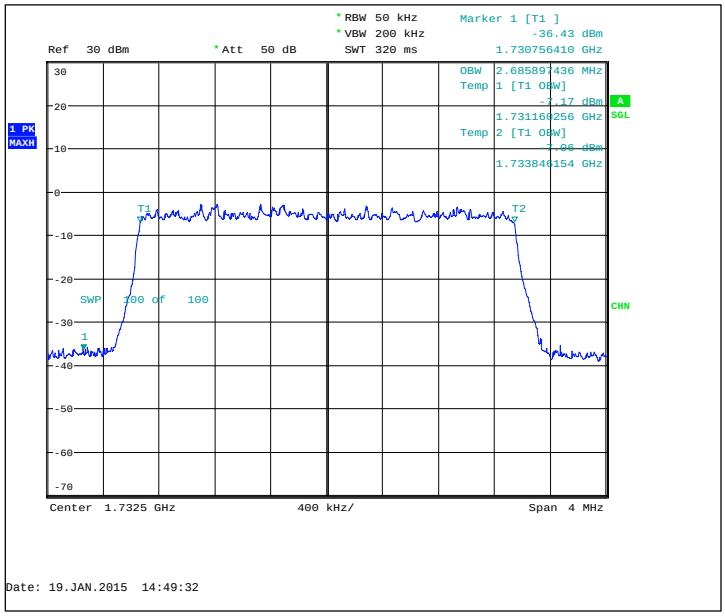
FDD, CBW 1.4MHz, 16QAM, 6 RB, Channel 20175 / 1732.5 MHz



FDD, CBW 3MHz, 16QAM, 15 RB, Channel 20175 / 1732.5 MHz



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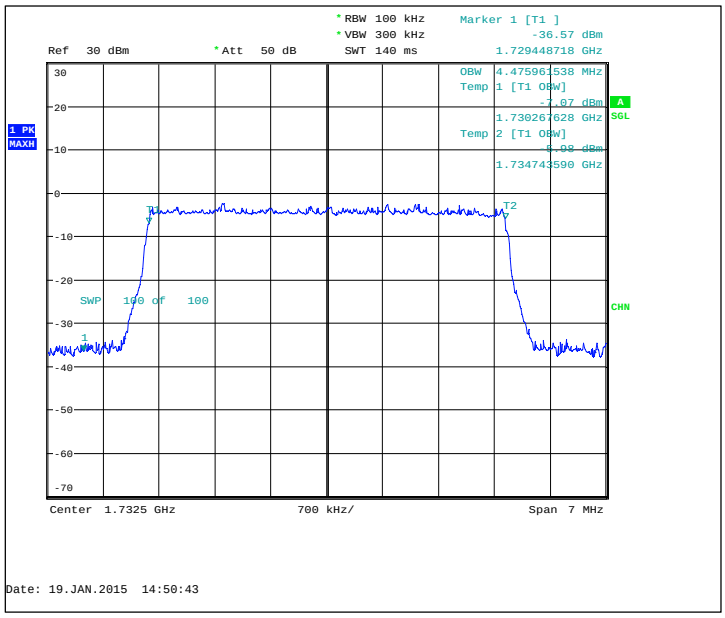
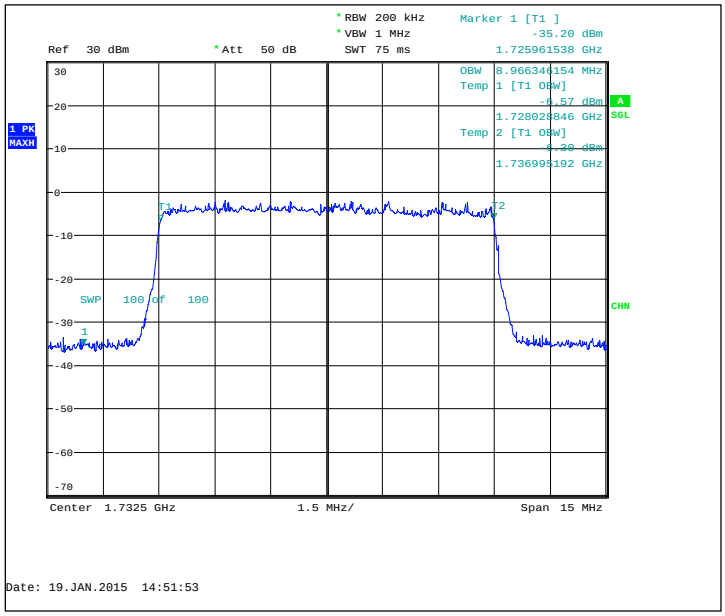
FDD, CBW 5MHz, 16QAM, 25 RB, Channel 20175 / 1732.5 MHz



FDD, CBW 10MHz, 16QAM, 50 RB, Channel 20175 / 1732.5 MHz



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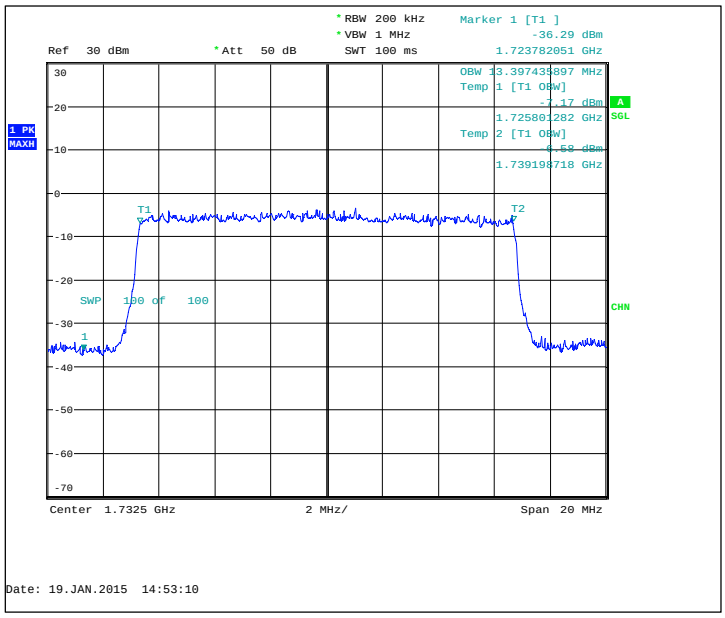
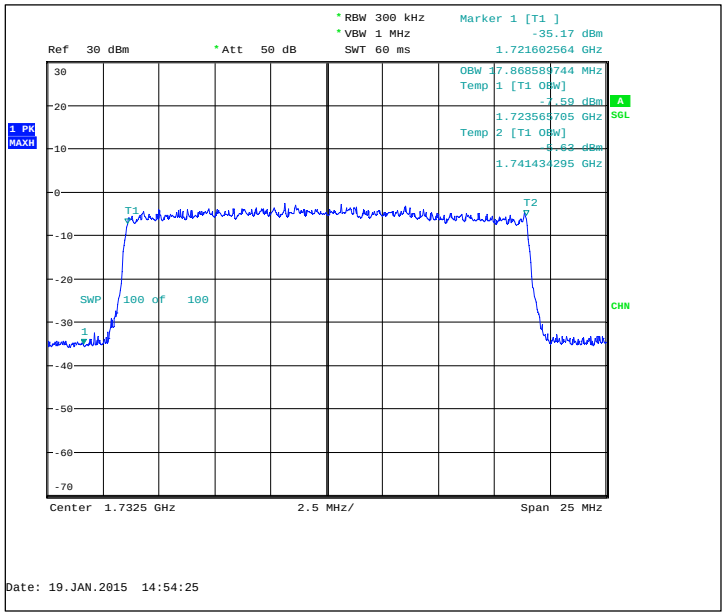
FDD, CBW 15MHz, 16QAM, 75 RB, Channel 20175 / 1732.5 MHz



FDD, CBW 20MHz, 16QAM, 100 RB, Channel 20175 / 1732.5 MHz



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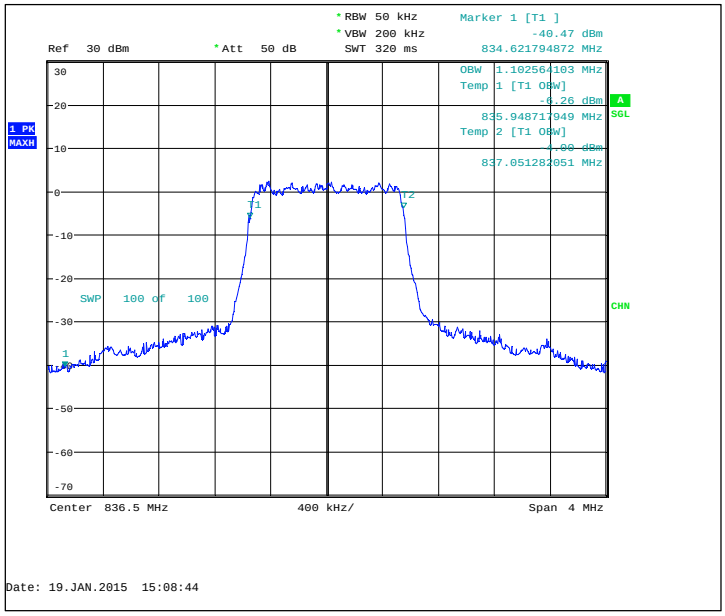
4.10. LTE5 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, 6 RB	1102.6
FDD, CBW 3MHz, QPSK, 15 RB	2692.3
FDD, CBW 5MHz, QPSK, 25 RB	4487.2
FDD, CBW 10MHz, QPSK, 50 RB	8966.3
FDD, CBW 1.4MHz, 16QAM, 6 RB	1109
FDD, CBW 3MHz, 16QAM, 15 RB	2685.9
FDD, CBW 5MHz, 16QAM, 25 RB	4487.2
FDD, CBW 10MHz, 16QAM, 50 RB	8966.3

FDD, CBW 1.4MHz, QPSK, 6 RB, Channel 20525 / 836.5 MHz



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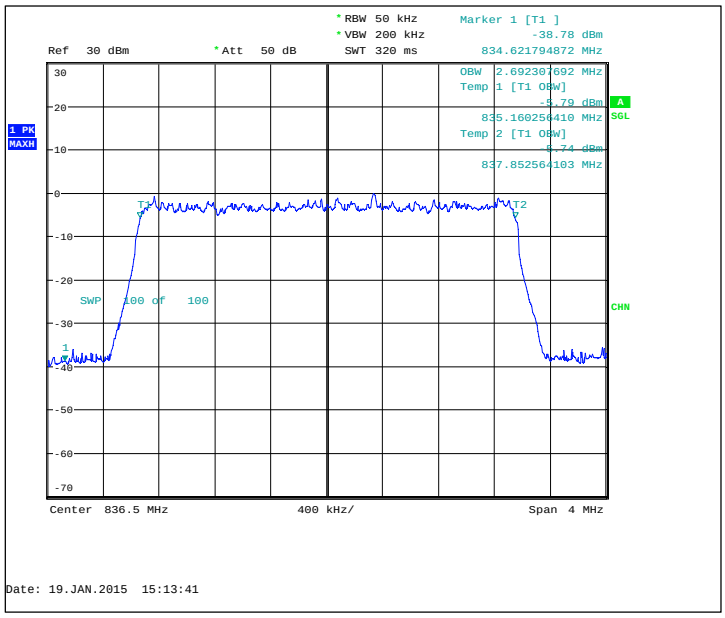
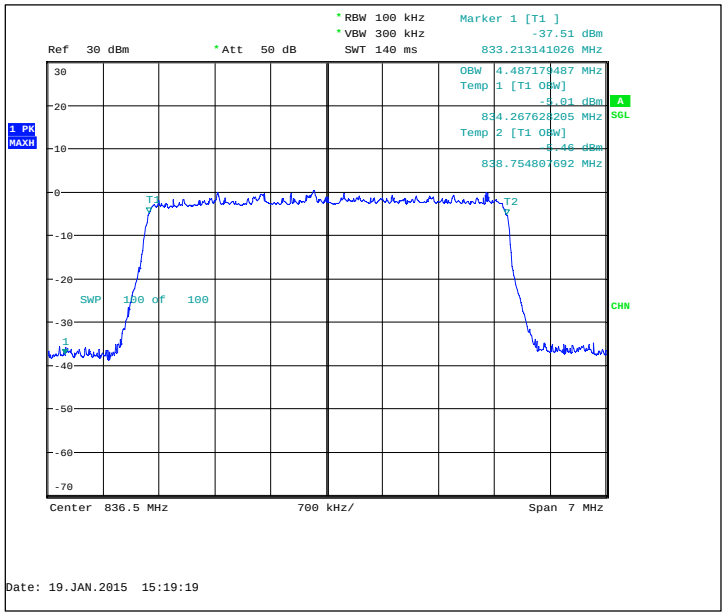
FDD, CBW 3MHz, QPSK, 15 RB, Channel 20525 / 836.5 MHz



FDD, CBW 5MHz, QPSK, 25 RB, Channel 20525 / 836.5 MHz



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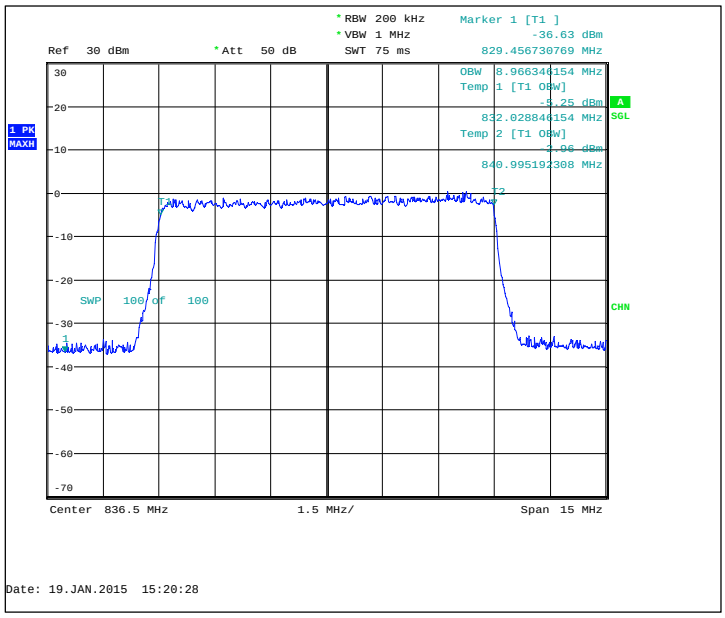
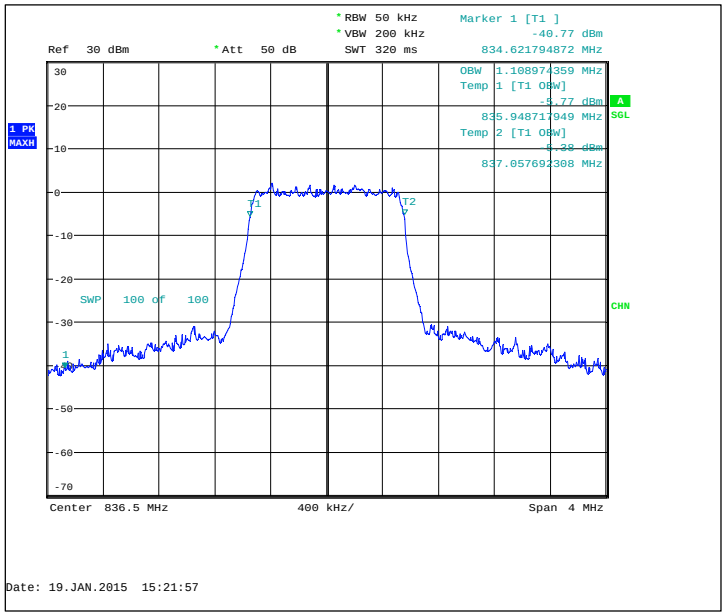
FDD, CBW 10MHz, QPSK, 50 RB, Channel 20525 / 836.5 MHz



FDD, CBW 1.4MHz, 16QAM, 6 RB, Channel 20525 / 836.5 MHz



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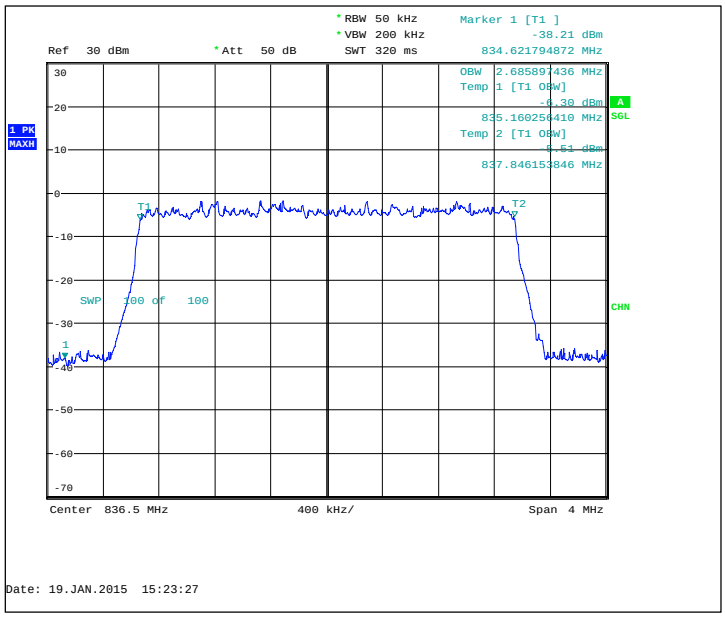
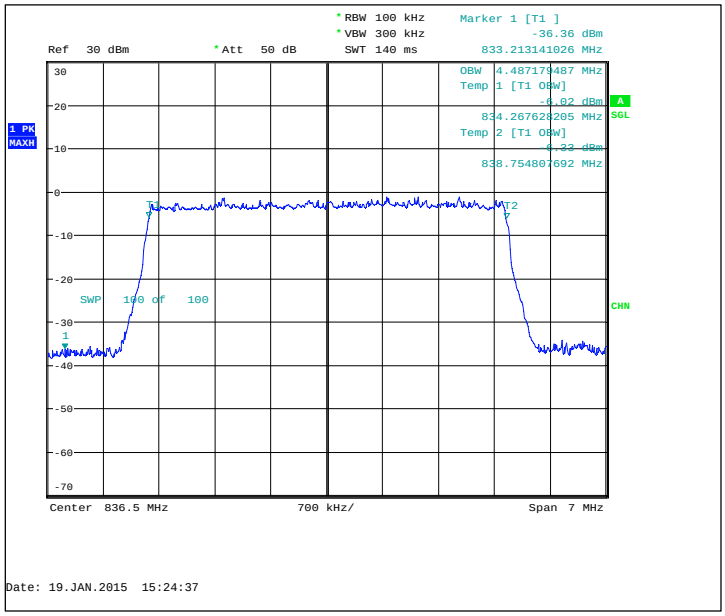
FDD, CBW 3MHz, 16QAM, 15 RB, Channel 20525 / 836.5 MHz



FDD, CBW 5MHz, 16QAM, 25 RB, Channel 20525 / 836.5 MHz



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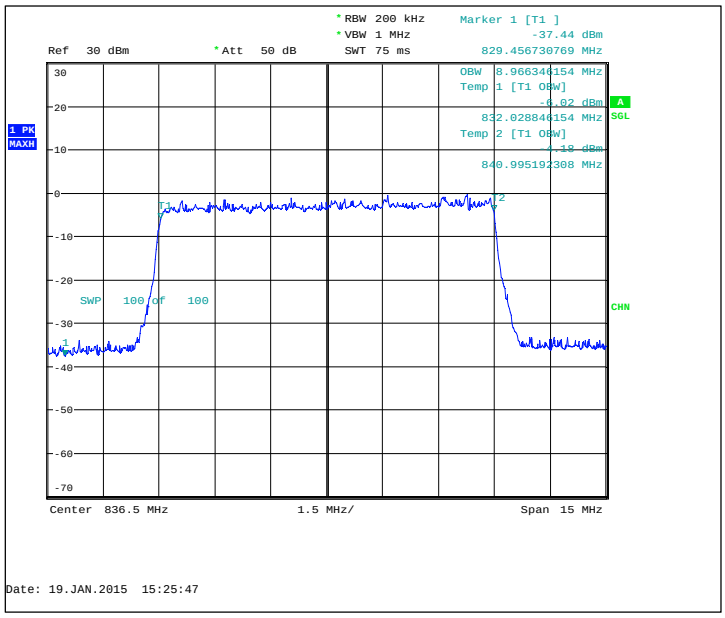
FDD, CBW 10MHz, 16QAM, 50 RB, Channel 20525 / 836.5 MHz



4.11. LTE7 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 5MHz, QPSK, 25 RB	4498.4
FDD, CBW 10MHz, QPSK, 50 RB	8990.4
FDD, CBW 15MHz, QPSK, 75 RB	13461.5
FDD, CBW 20MHz, QPSK, 100 RB	17868.6
FDD, CBW 5MHz, 16QAM, 25 RB	4487.2
FDD, CBW 10MHz, 16QAM, 50 RB	8966.3
FDD, CBW 15MHz, 16QAM, 75 RB	13397.4
FDD, CBW 20MHz, 16QAM, 100 RB	17908.7

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

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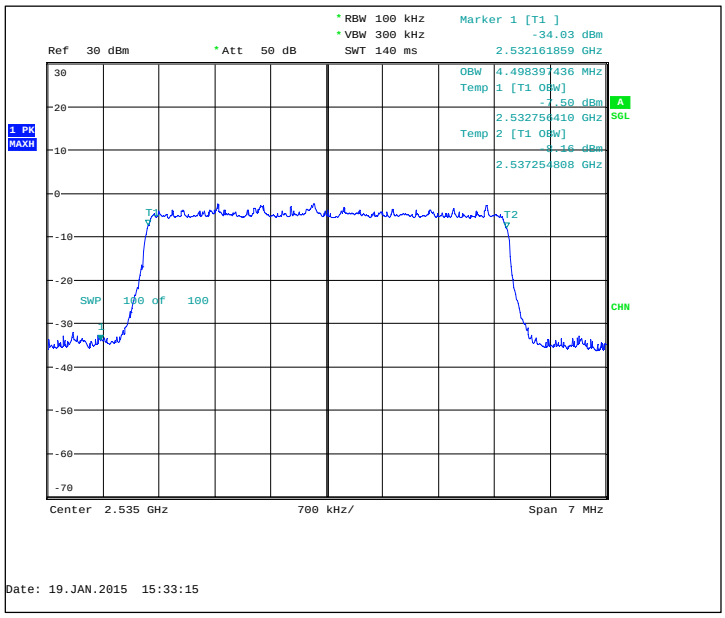

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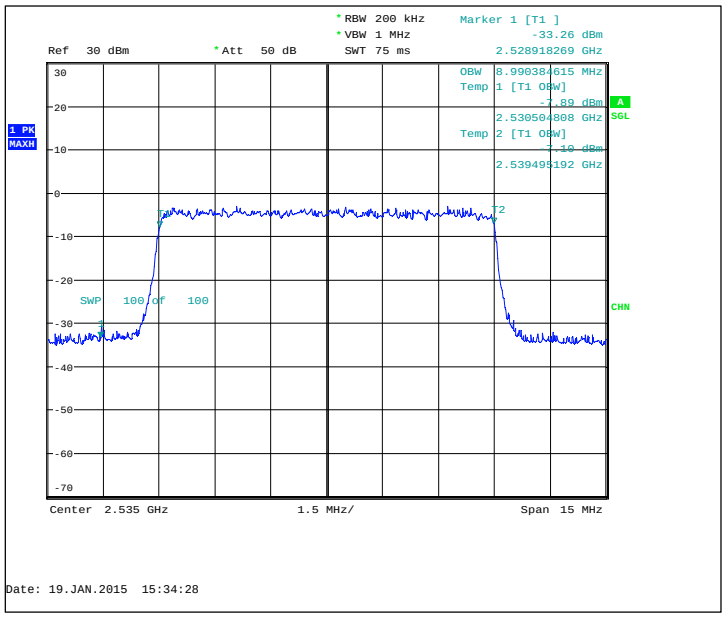
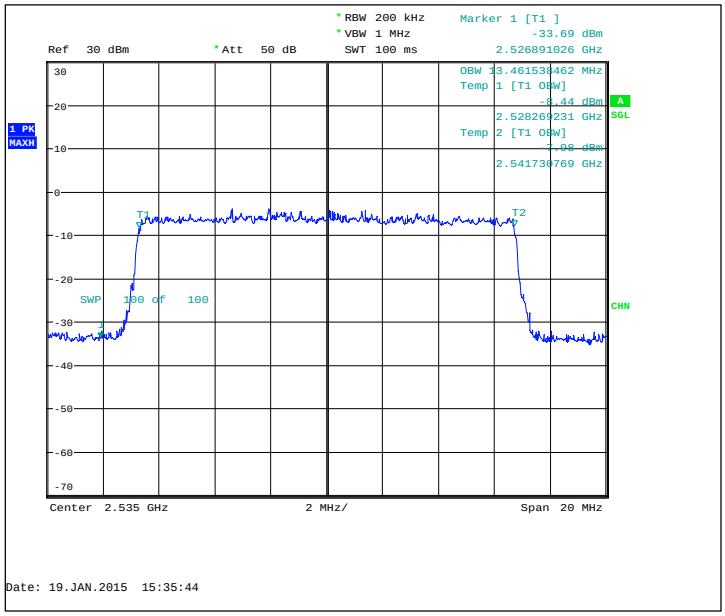
FDD, CBW 10MHz, QPSK, 50 RB, Channel 21100 / 2535.0 MHz



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



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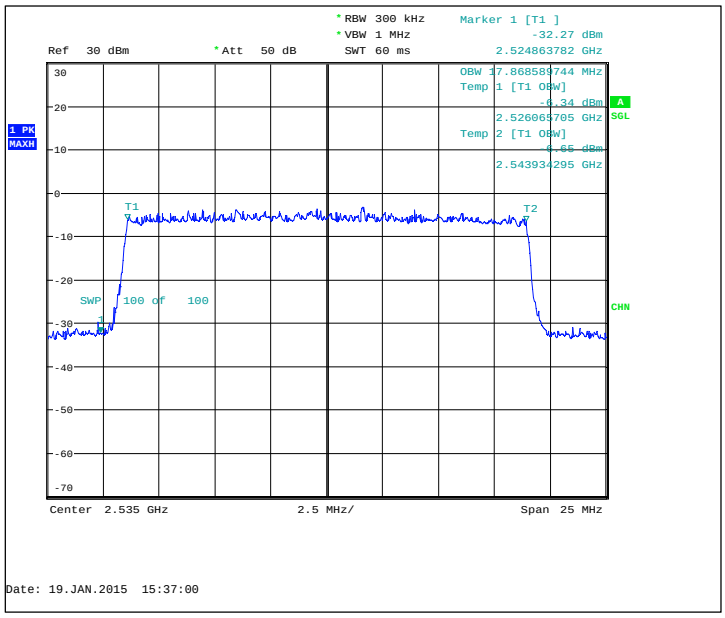
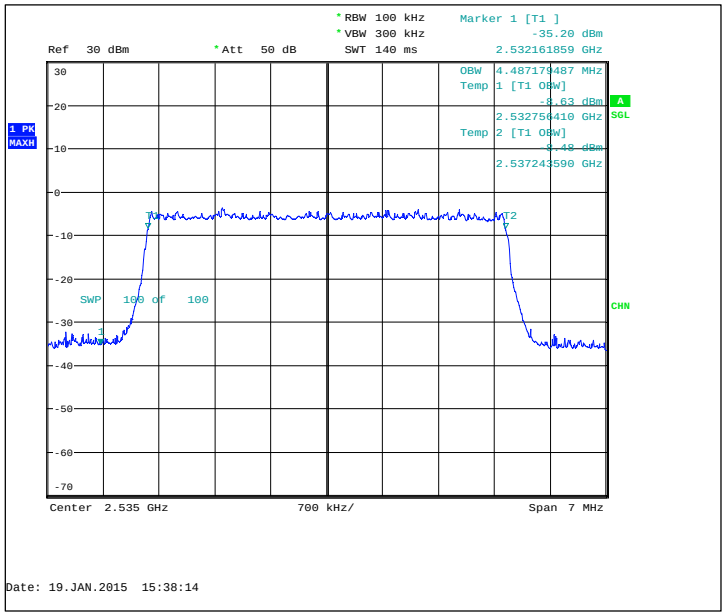
FDD, CBW 20MHz, QPSK, 100 RB, Channel 21100 / 2535.0 MHz



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



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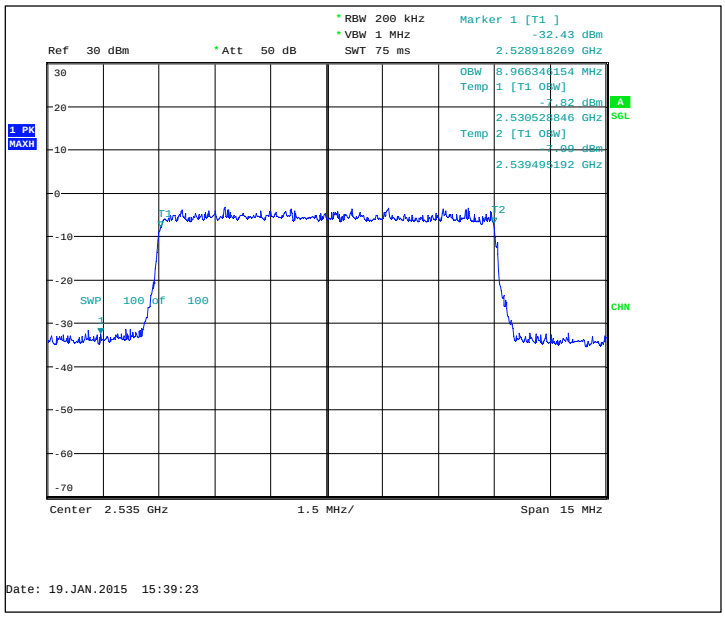
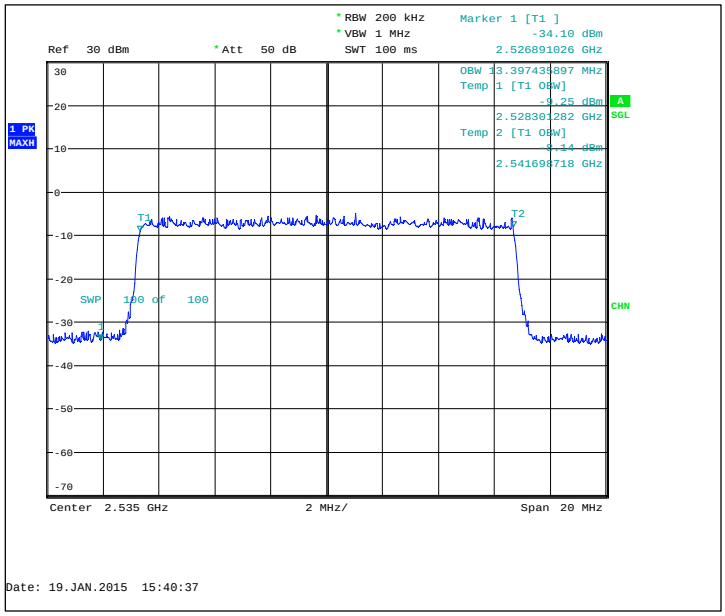
FDD, CBW 10MHz, 16QAM, 50 RB, Channel 21100 / 2535.0 MHz



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



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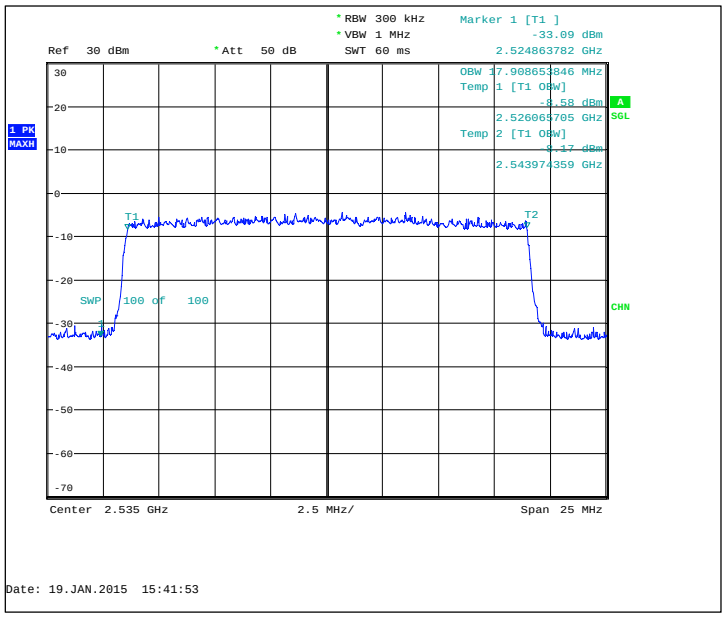
FDD, CBW 20MHz, 16QAM, 100 RB, Channel 21100 / 2535.0 MHz



4.12. LTE12 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, 6 RB	1102.6
FDD, CBW 3MHz, QPSK, 15 RB	2692.3
FDD, CBW 5MHz, QPSK, 25 RB	4498.4
FDD, CBW 10MHz, QPSK, 50 RB	8942.3
FDD, CBW 1.4MHz, 16QAM, 6 RB	1102.6
FDD, CBW 3MHz, 16QAM, 15 RB	2685.9
FDD, CBW 5MHz, 16QAM, 25 RB	4476
FDD, CBW 10MHz, 16QAM, 50 RB	8966.3

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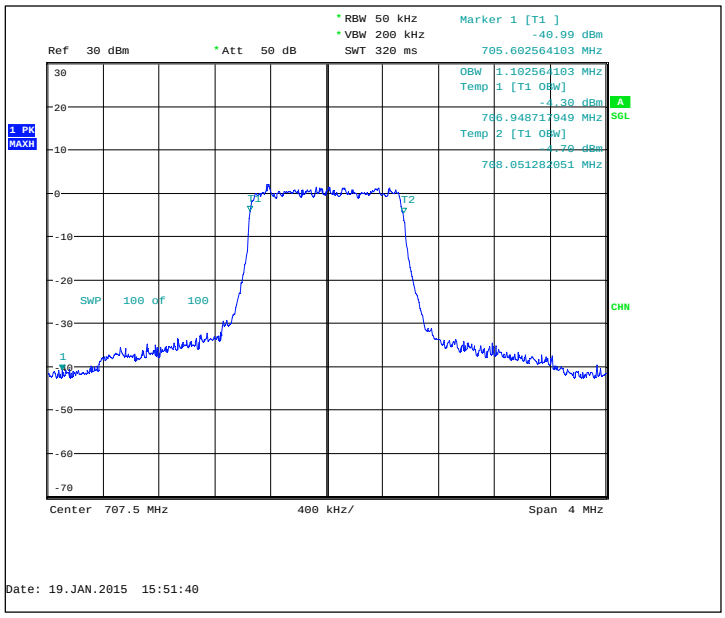
FDD, CBW 1.4MHz, QPSK, 6 RB, Channel 23095 / 707.5 MHz



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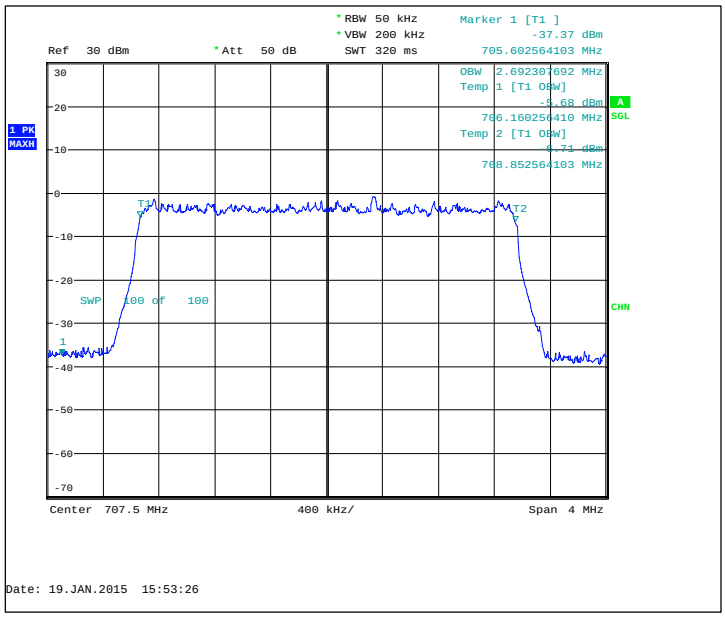
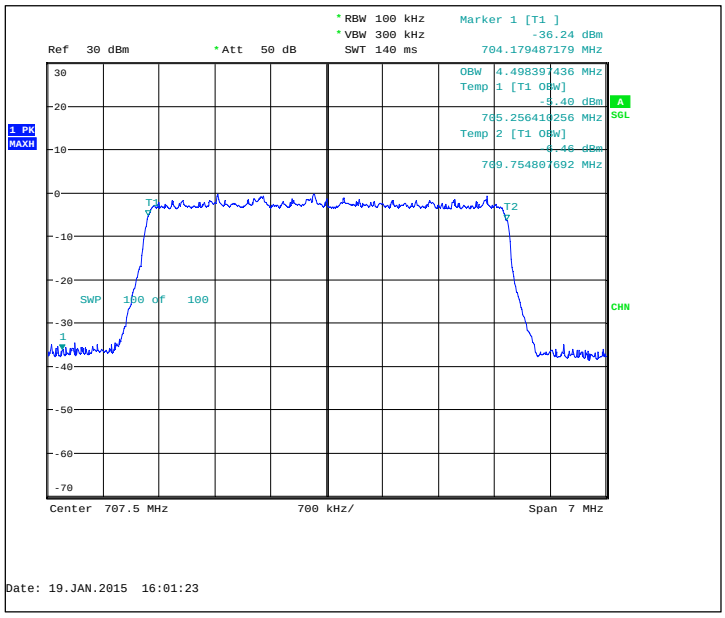
FDD, CBW 3MHz, QPSK, 15 RB, Channel 23095 / 707.5 MHz



FDD, CBW 5MHz, QPSK, 25 RB, Channel 23095 / 707.5 MHz



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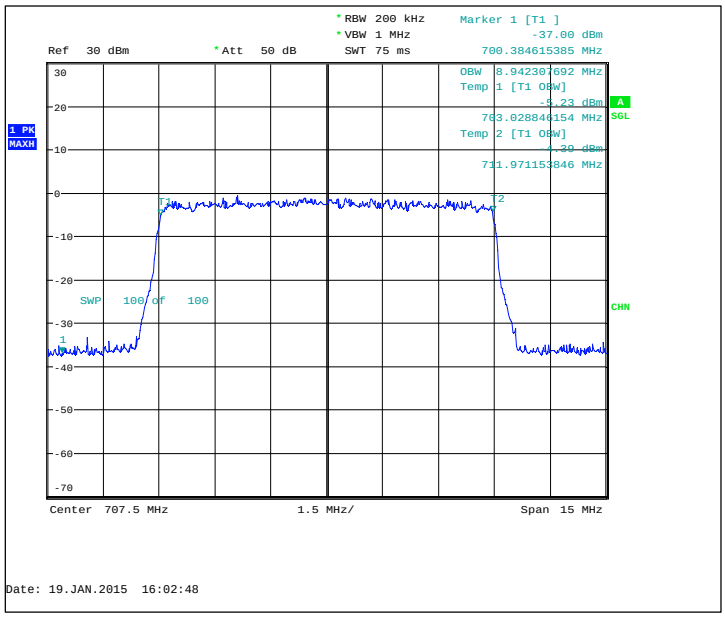
FDD, CBW 10MHz, QPSK, 50 RB, Channel 23095 / 707.5 MHz



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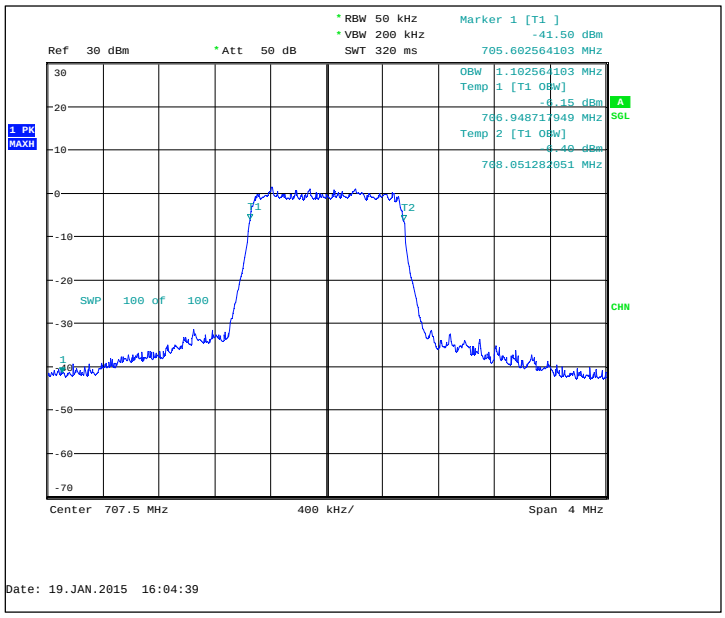
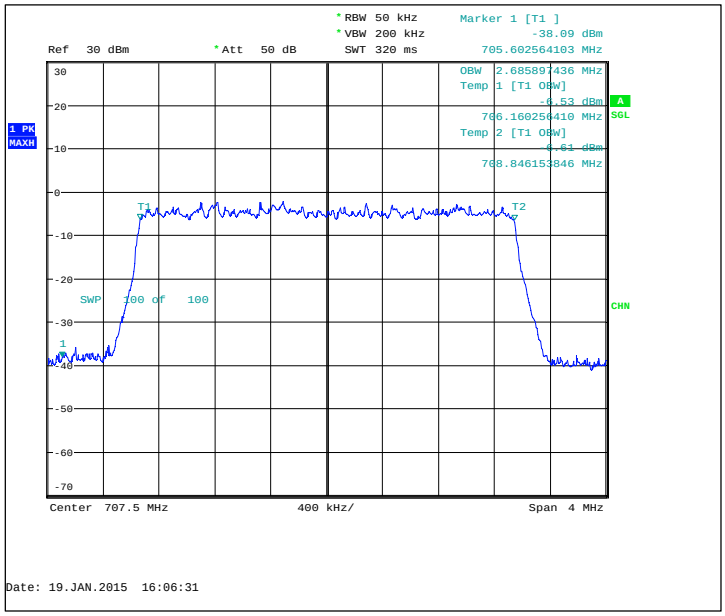
FDD, CBW 1.4MHz, 16QAM, 6 RB, Channel 23095 / 707.5 MHz



FDD, CBW 3MHz, 16QAM, 15 RB, Channel 23095 / 707.5 MHz



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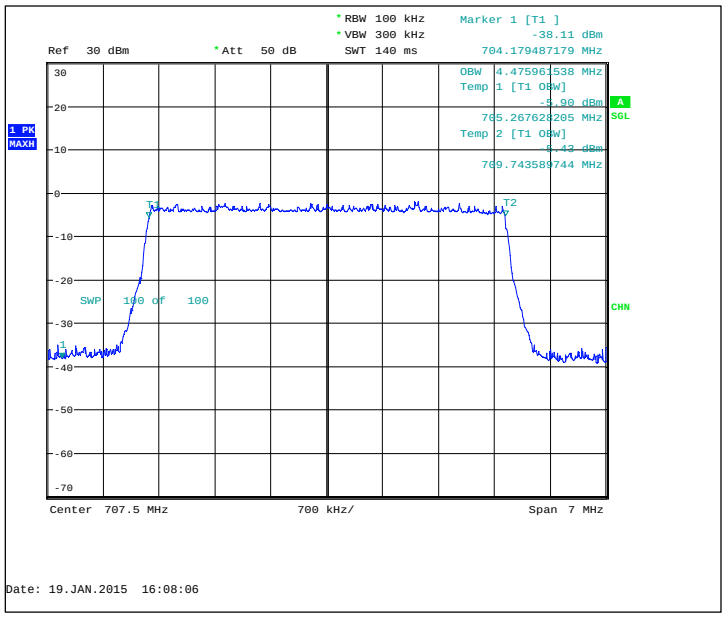
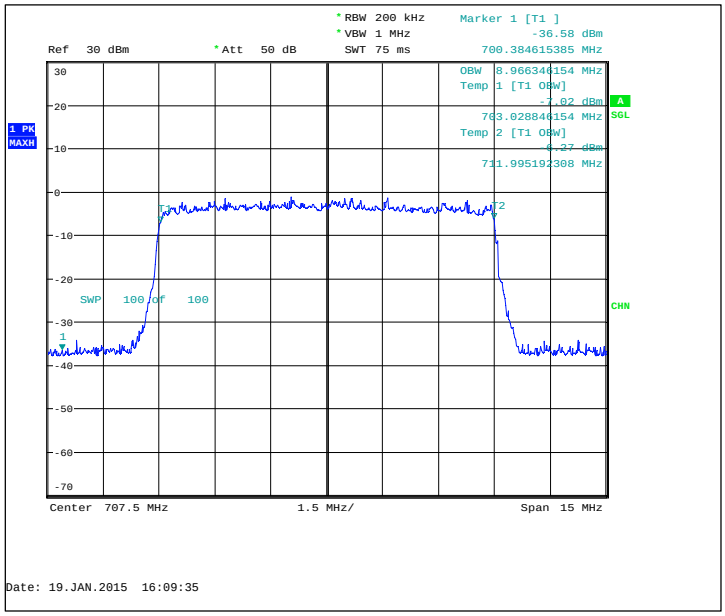
FDD, CBW 5MHz, 16QAM, 25 RB, Channel 23095 / 707.5 MHz



FDD, CBW 10MHz, 16QAM, 50 RB, Channel 23095 / 707.5 MHz



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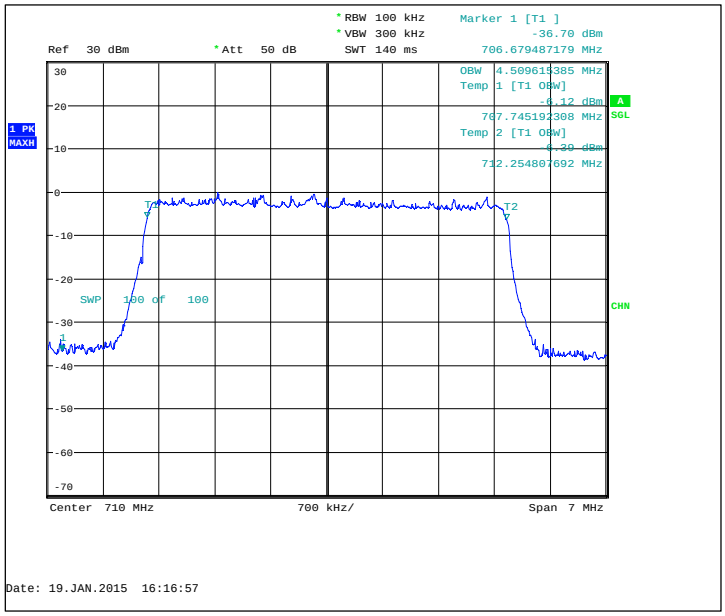
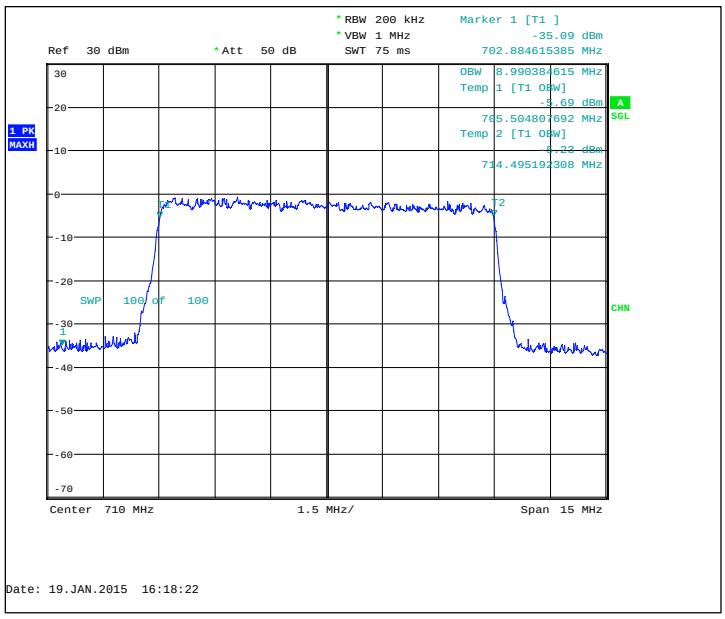
4.13. LTE17 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 5MHz, QPSK, 25 RB	4509.6
FDD, CBW 10MHz, QPSK, 50 RB	8990.4
FDD, CBW 5MHz, 16QAM, 25 RB	4487.2
FDD, CBW 10MHz, 16QAM, 50 RB	8990.4

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



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



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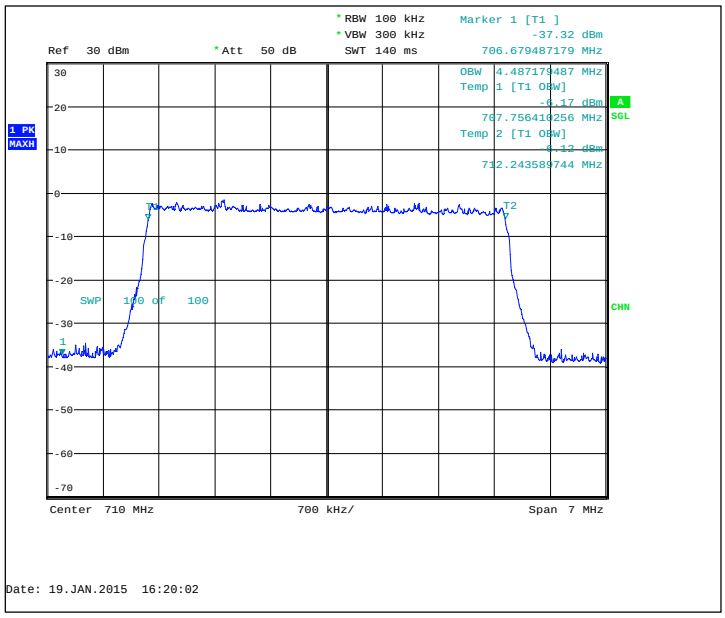
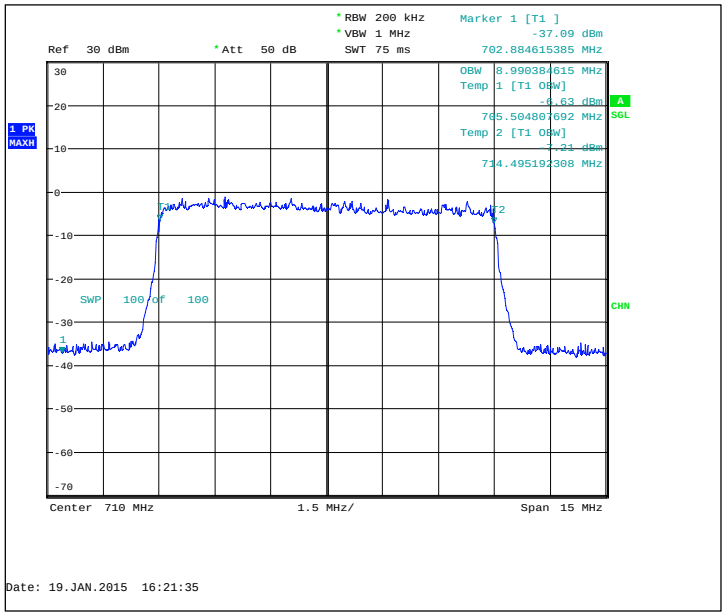
FDD, CBW 5MHz, 16QAM, 25 RB, Channel 23790 / 710.0 MHz



FDD, CBW 10MHz, 16QAM, 50 RB, Channel 23790 / 710.0 MHz



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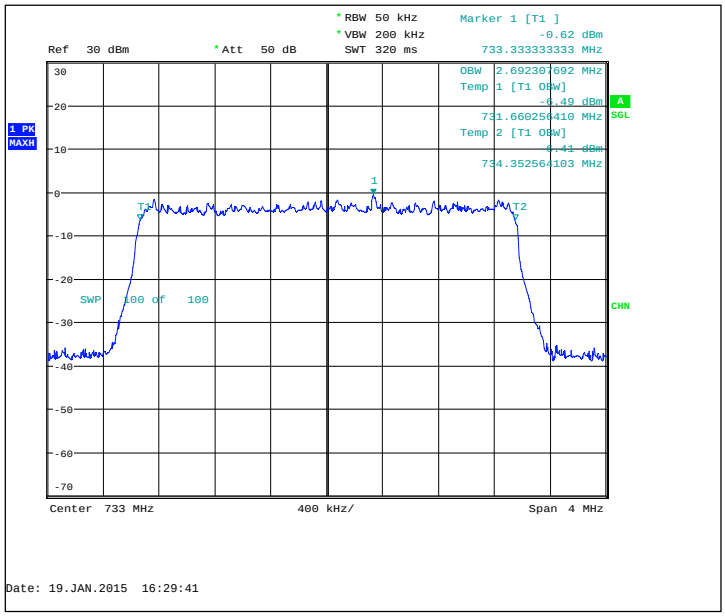
4.14. LTE28 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 3MHz, QPSK, 15 RB	2692.3
FDD, CBW 5MHz, QPSK, 25 RB	4498.4
FDD, CBW 10MHz, QPSK, 50 RB	8942.3
FDD, CBW 15MHz, QPSK, 75 RB	13429.5
FDD, CBW 20MHz, QPSK, 100 RB	17868.6
FDD, CBW 3MHz, 16QAM, 15 RB	2685.9
FDD, CBW 5MHz, 16QAM, 25 RB	4476
FDD, CBW 10MHz, 16QAM, 50 RB	8942.3
FDD, CBW 15MHz, 16QAM, 75 RB	13365.4
FDD, CBW 20MHz, 16QAM, 100 RB	17868.6

FDD, CBW 3MHz, QPSK, 15 RB, Channel 27435 / 725.5 MHz



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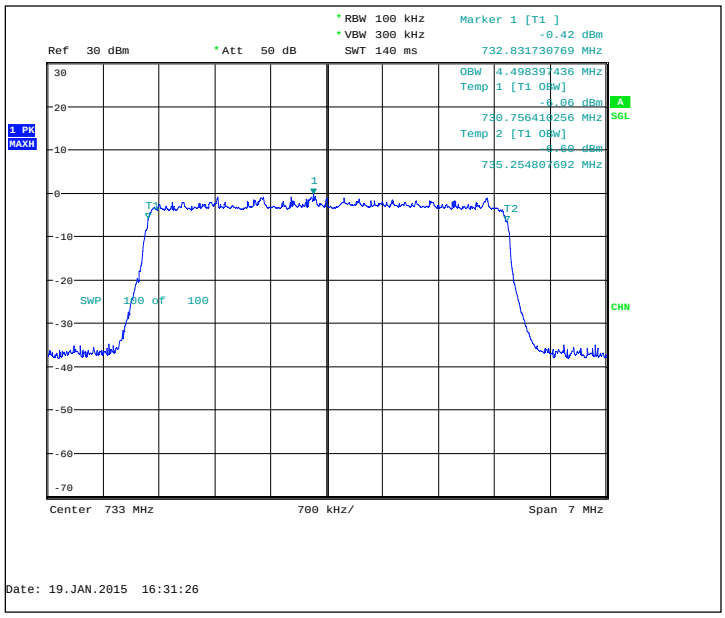
FDD, CBW 5MHz, QPSK, 25 RB, Channel 27435 / 725.5 MHz



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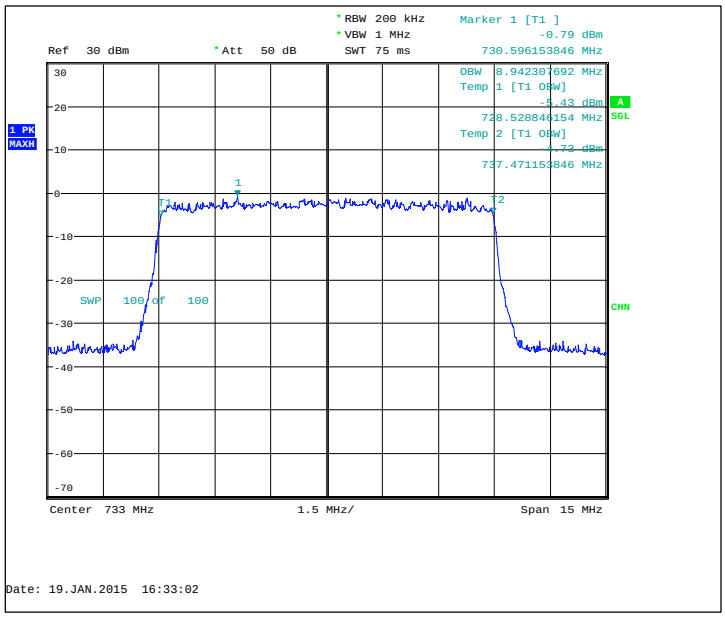
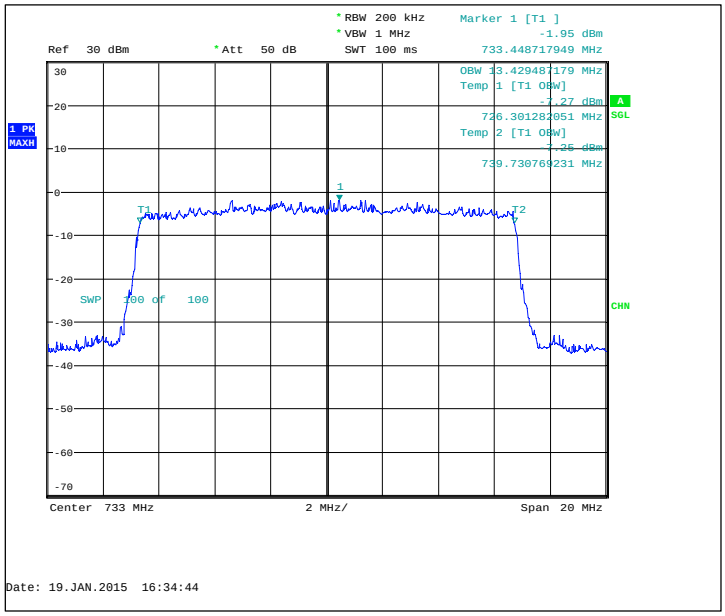
FDD, CBW 10MHz, QPSK, 50 RB, Channel 27435 / 725.5 MHz



FDD, CBW 15MHz, QPSK, 75 RB, Channel 27435 / 725.5 MHz



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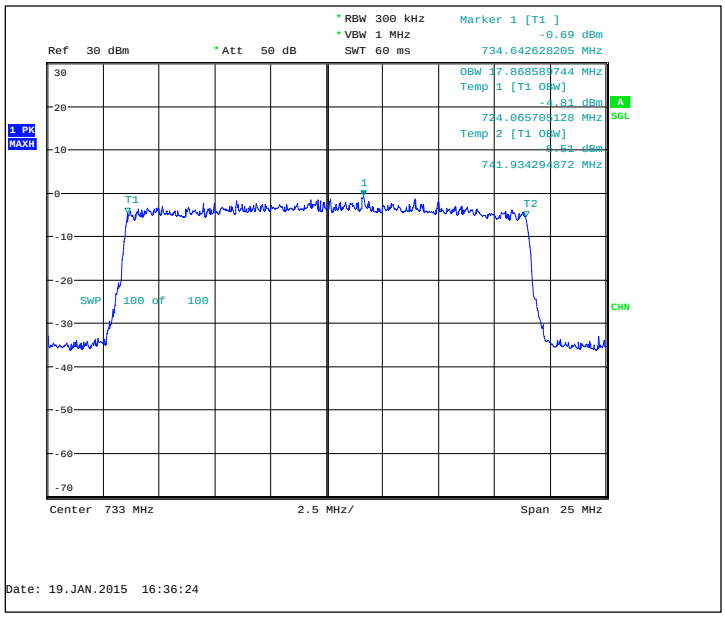
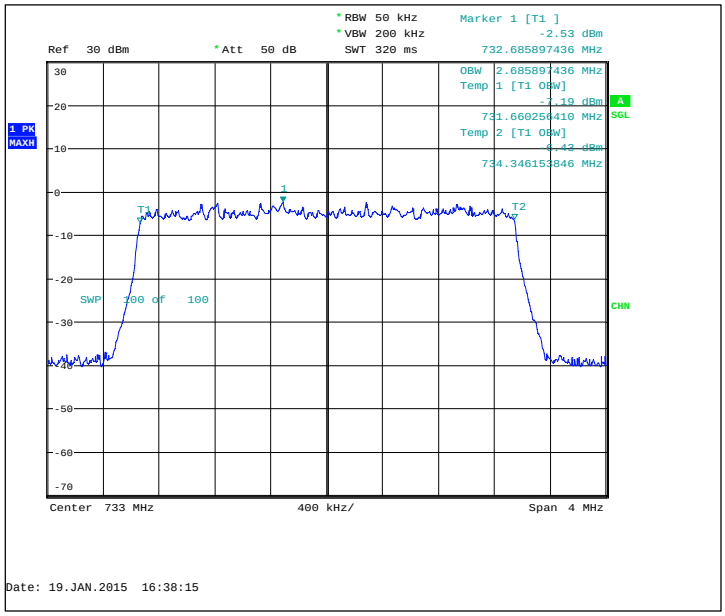
FDD, CBW 20MHz, QPSK, 100 RB, Channel 27435 / 725.5 MHz



FDD, CBW 3MHz, 16QAM, 15 RB, Channel 27435 / 725.5 MHz



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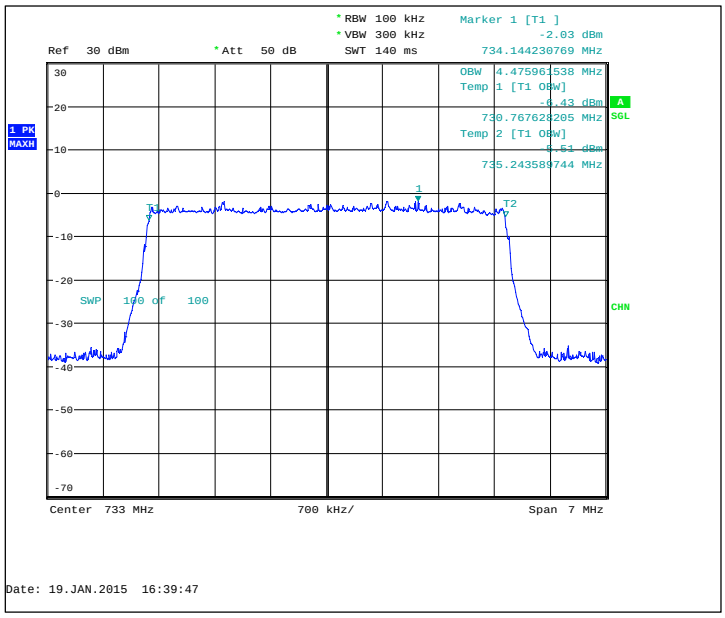
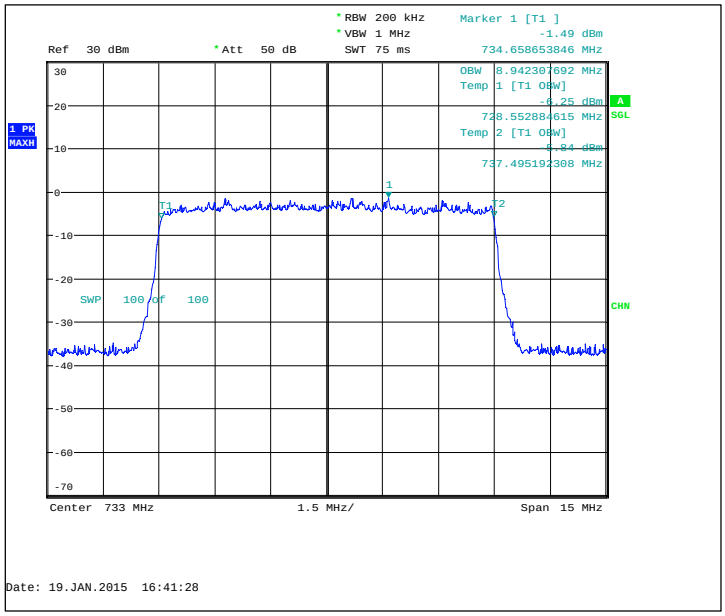
FDD, CBW 5MHz, 16QAM, 25 RB, Channel 27435 / 725.5 MHz



FDD, CBW 10MHz, 16QAM, 50 RB, Channel 27435 / 725.5 MHz



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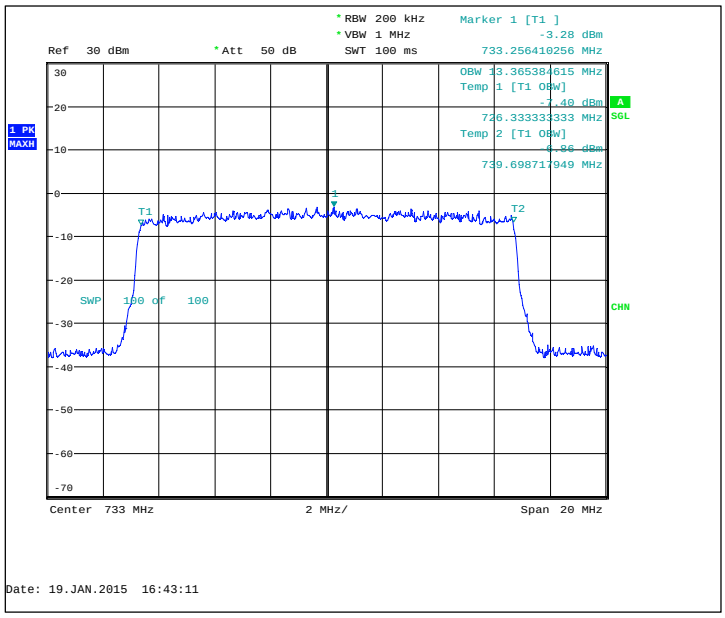
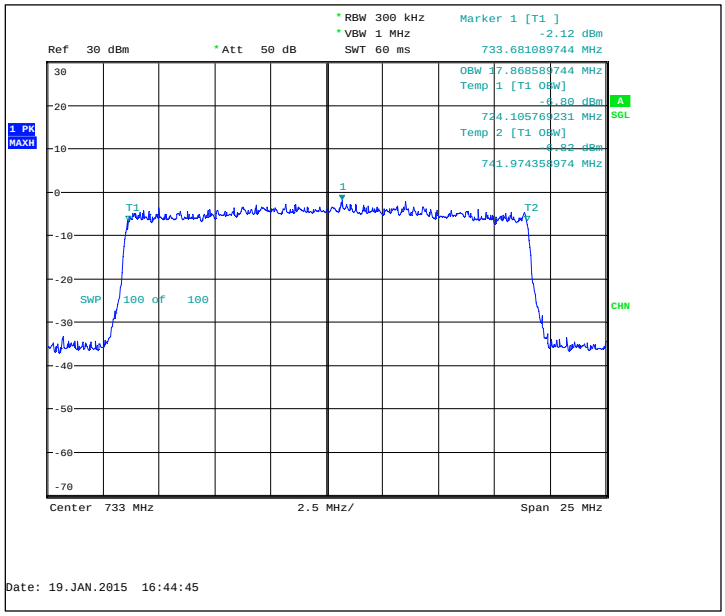
FDD, CBW 15MHz, 16QAM, 75 RB, Channel 27435 / 725.5 MHz



FDD, CBW 20MHz, 16QAM, 100 RB, Channel 27435 / 725.5 MHz



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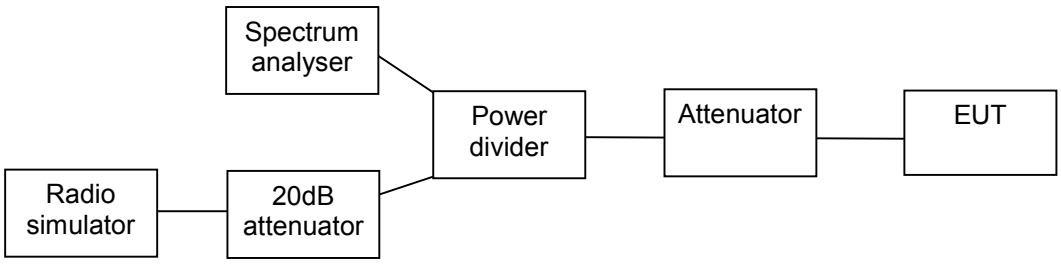
5. Band edge compliance

(FCC §24.238(a), §27.53(f), §27.53(l), §27.53(h), §27.53(g), §22.917(a), RSS-133 6.5, RSS-132 4.5, RSS-139 6.5, RSS-199 4.5(b), RSS-130 4.6)

EUT with DUT number	RM-1075, DUT 43249
Accessories with DUT numbers	BV-T5C DUT43251, AC-20 DUT43135, WH-108 DUT 43136
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	25 / 35
Date of measurements	15-Jan-2015
Measured by	Hannu Söderholm

5.1. Test Setup



5.2. 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
WCDMA2	Below 1850 and above 1910	-13
WCDMA4	Below 1710 and above 1755	-13
WCDMA5	Below 824 and above 849	-13
LTE2	Below 1850 and above 1910	-13
LTE4	Below 1710 and above 1755	-13
LTE5	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)
LTE12	698.9 – 699.0 and 716.0 – 716.1 Below 698.9 and above 716.1	-13 (RBW = 30 kHz, VBW = 100 kHz) -13 (RBW = 100 kHz, VBW = 300 kHz)
LTE17	703.9 – 704 and 716 – 716.1 Below 703.9 and above 716.1	-13 (RBW = 30 kHz, VBW = 100 kHz) -13 (RBW = 100 kHz, VBW = 300 kHz)
LTE28	702.9 -703 and 748 - 748.1 Below 702.9 and above 748.1	-13 (RBW = 30 kHz, VBW = 100 kHz) -13 (RBW = 100 kHz, VBW = 300 kHz)

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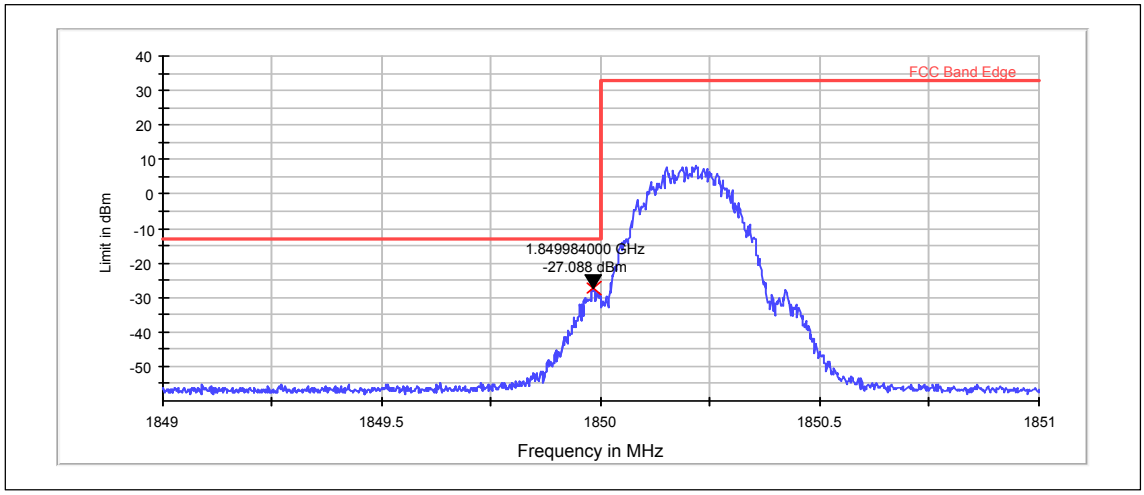
5.3. GSM 1900 Test results

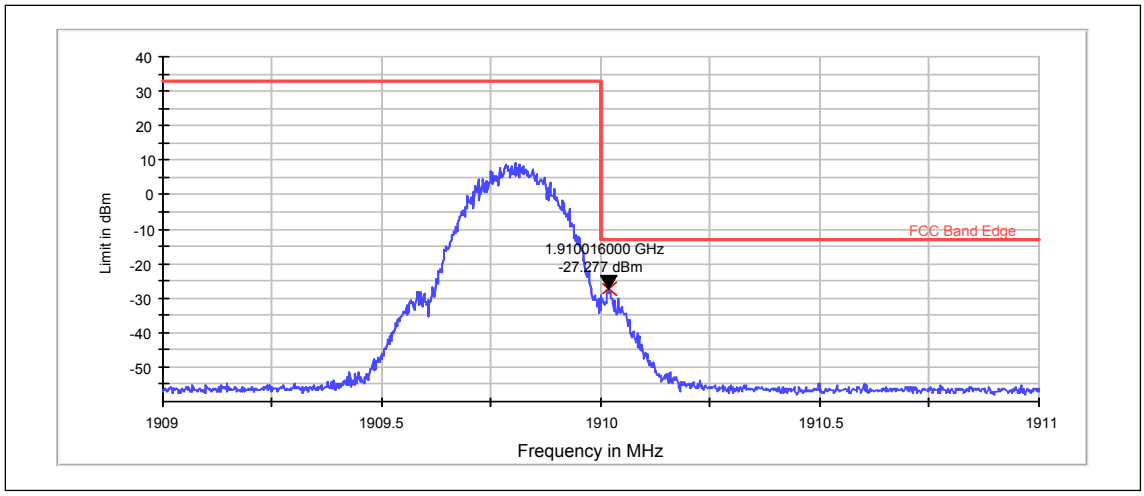
Channel 512 / 1850.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	1849.984	-27.09	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	1910.016	-27.28	PASSED

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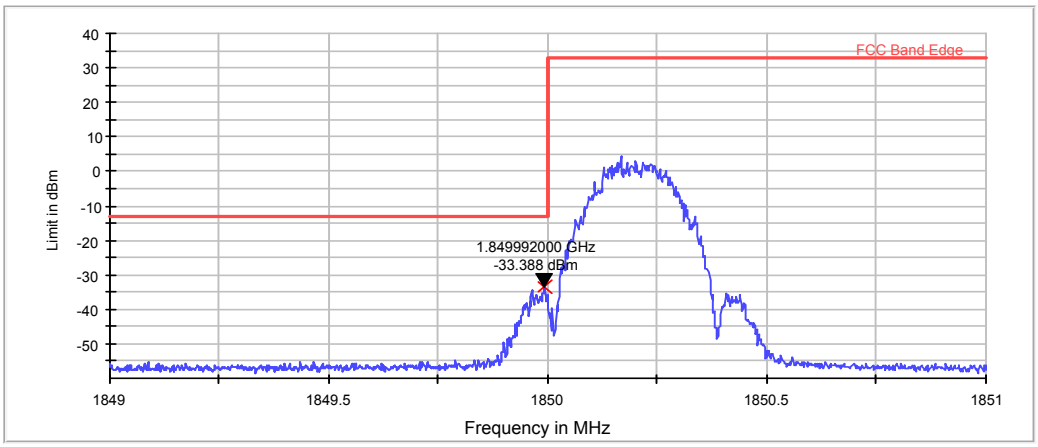
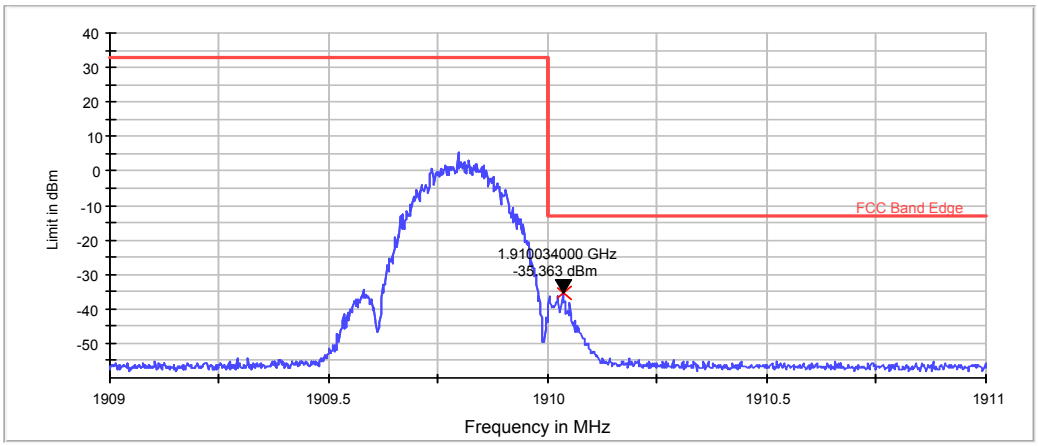
Channel 512 / 1850.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	1849.992	-33.39	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	1910.034	-35.36	PASSED

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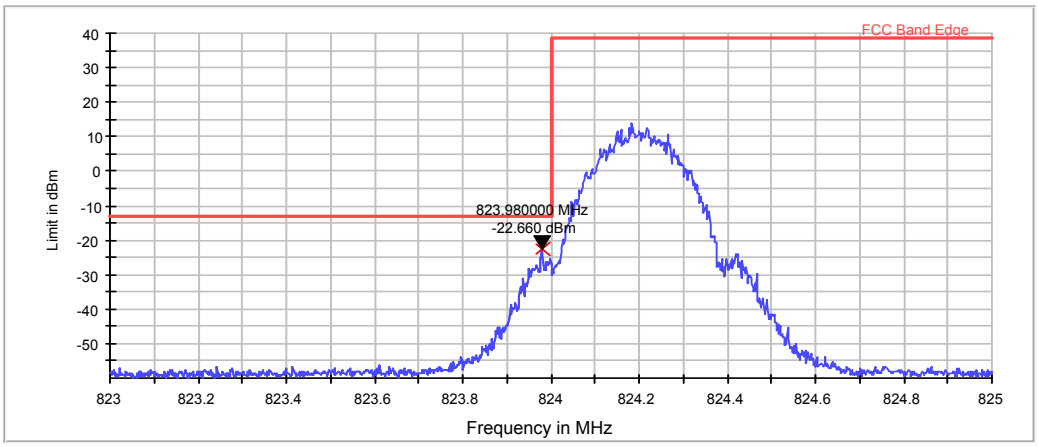
5.4. GSM 850 Test results

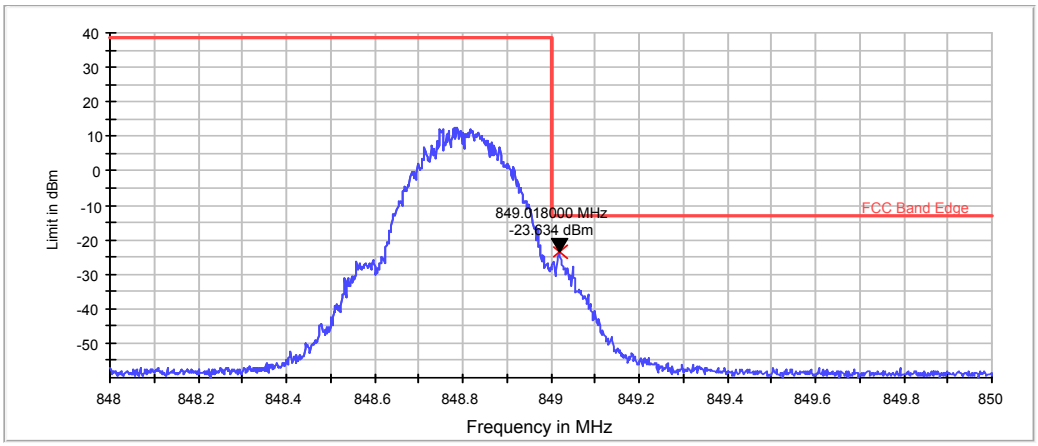
Channel 128 / 824.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	823.980	-22.66	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	849.018	-23.63	PASSED

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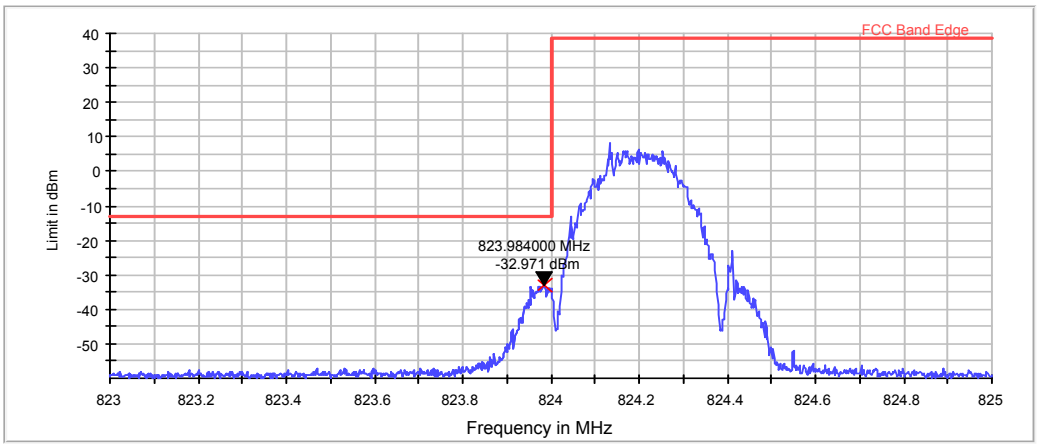
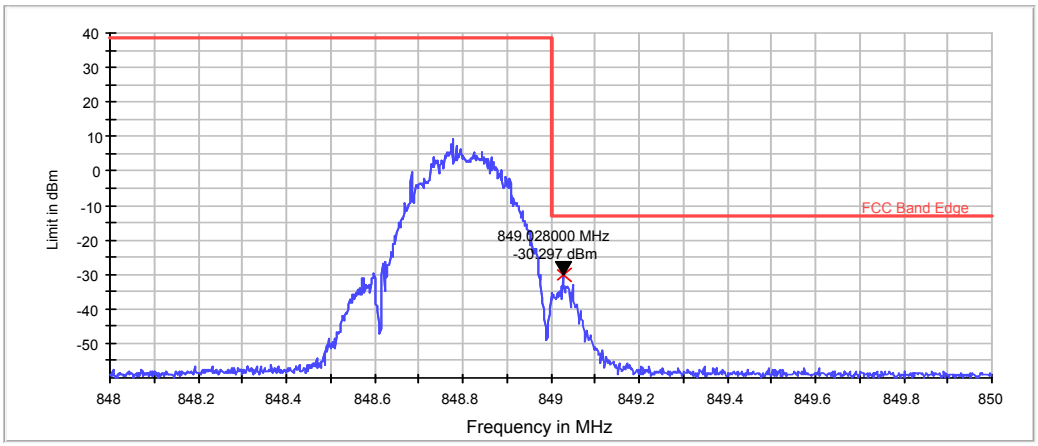
Channel 128 / 824.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	823.984	-32.97	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	849.028	-30.30	PASSED

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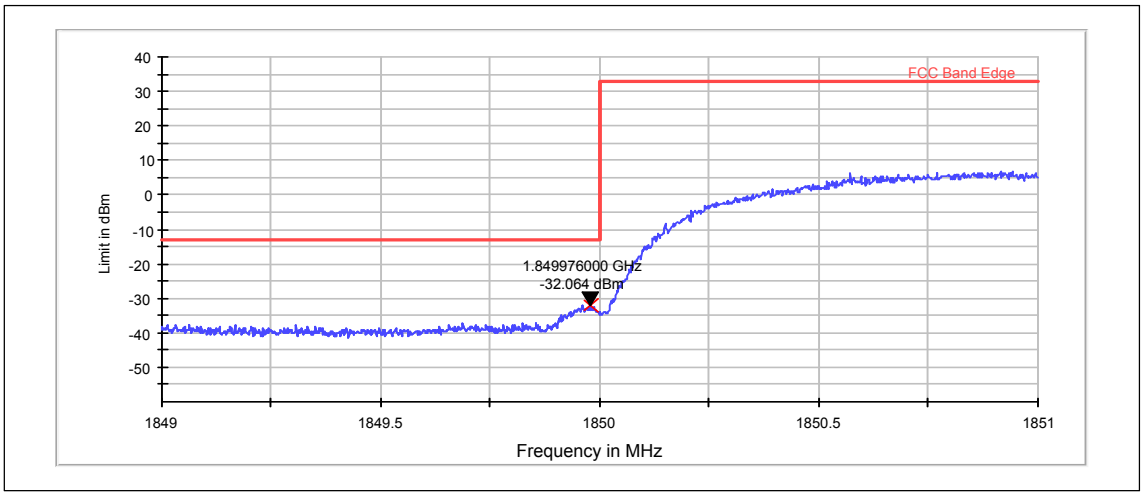
5.5. WCDMA2 Test results

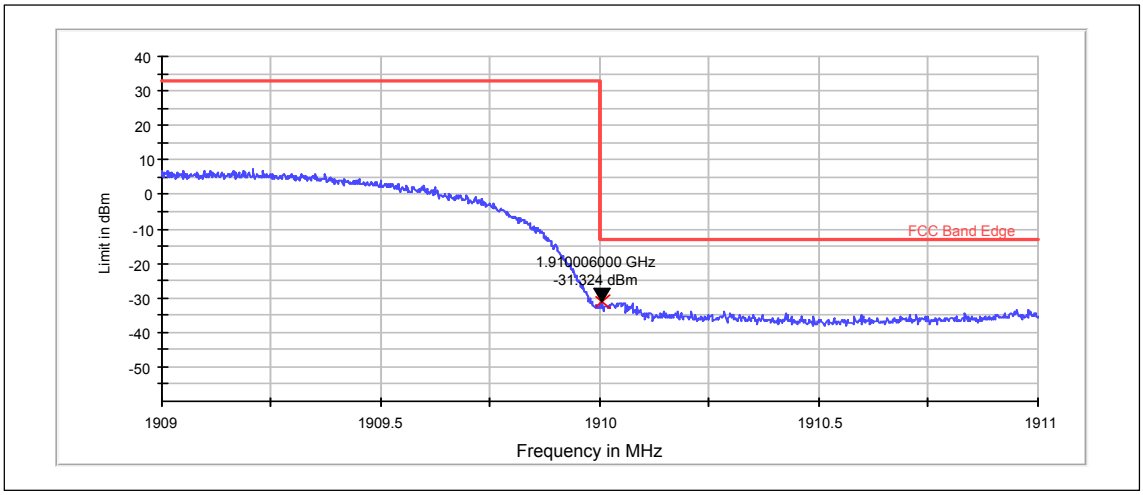
Channel 9262 / 1852.4 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1849.976	-32.06	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	1910.006	-31.32	PASSED

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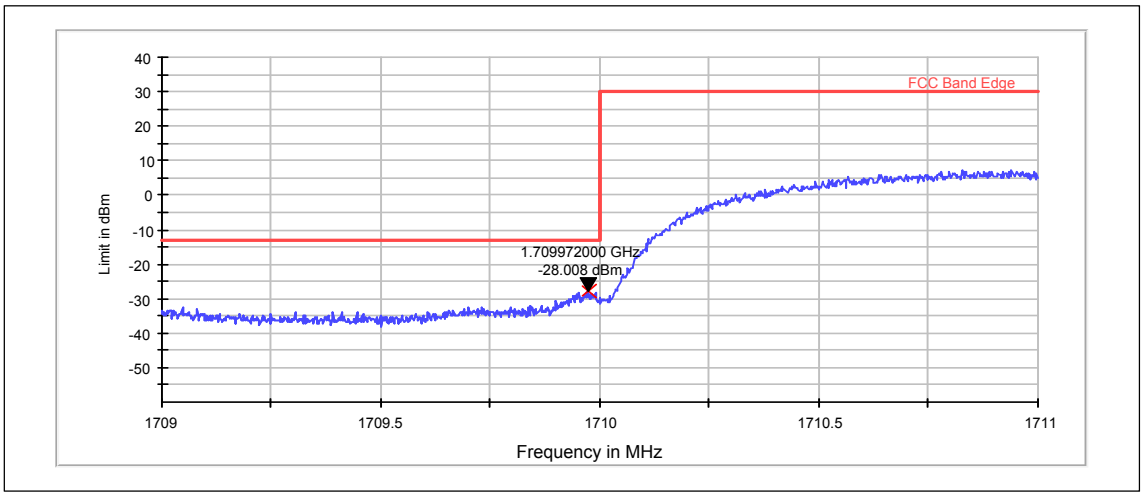
5.6. WCDMA4 Test results

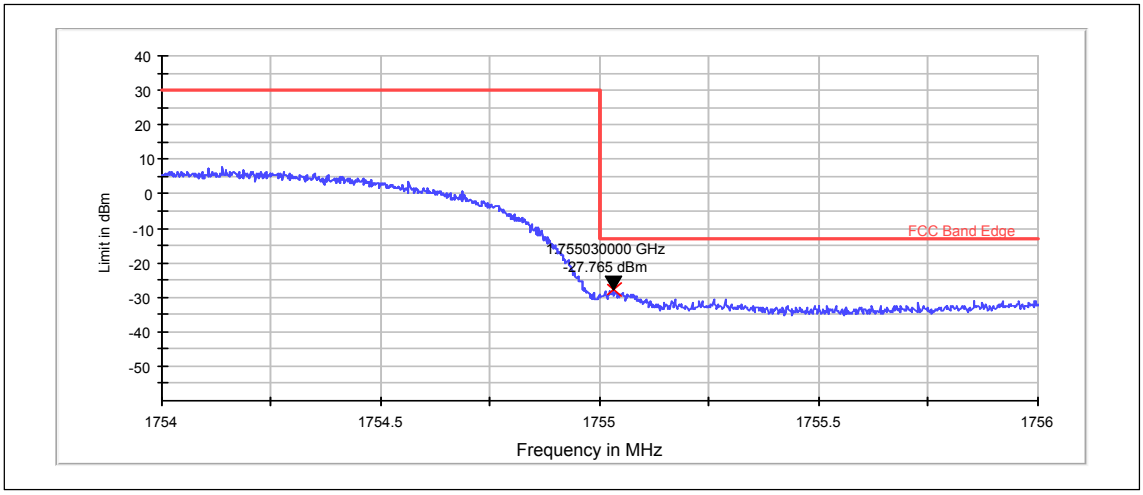
Channel 1312 / 1712.4 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1709.972	-28.01	PASSED

Channel 1513 / 1752.6 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1755.030	-27.77	PASSED

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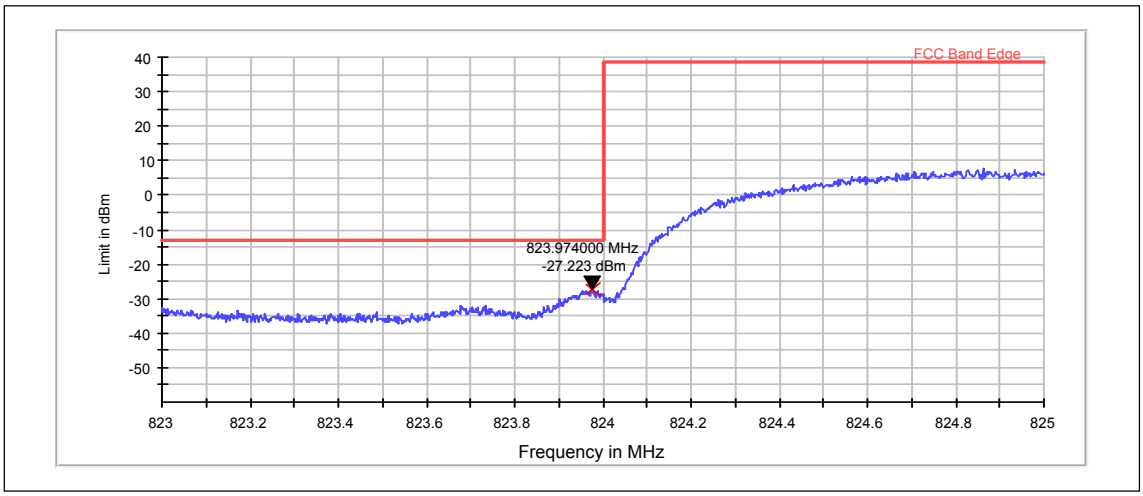
5.7. WCDMA5 Test results

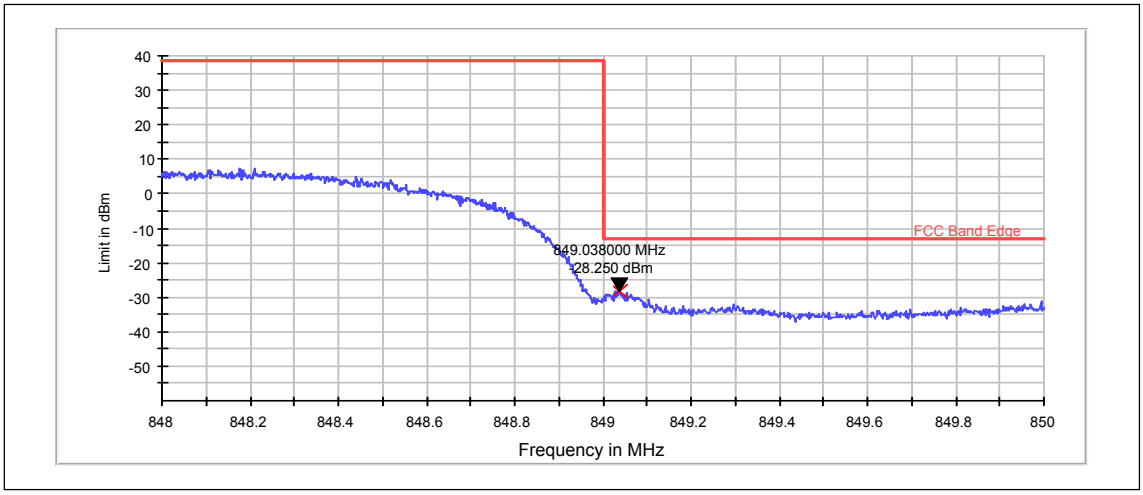
Channel 4132 / 826.4 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	823.974	-27.22	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	849.038	-28.25	PASSED

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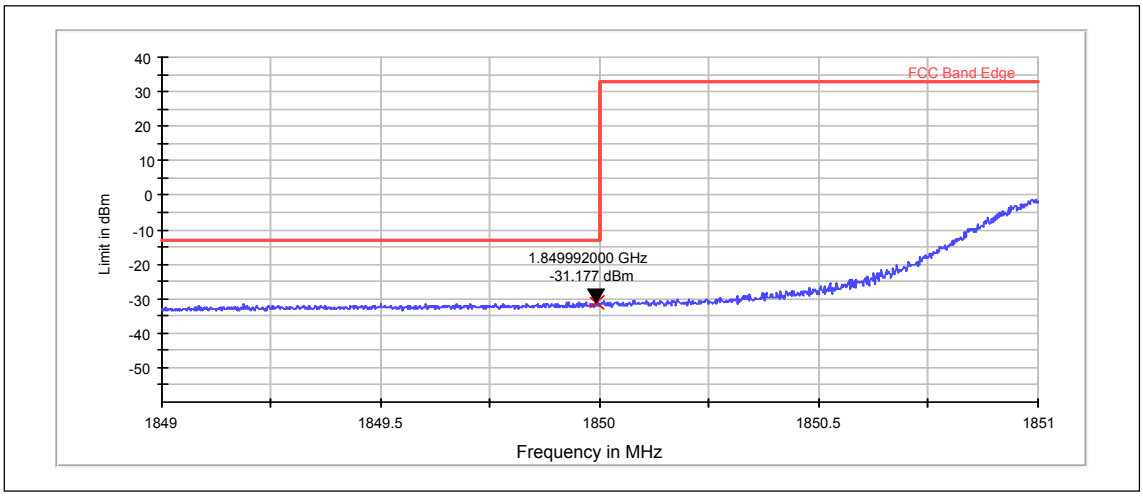
5.8. LTE2 Test results

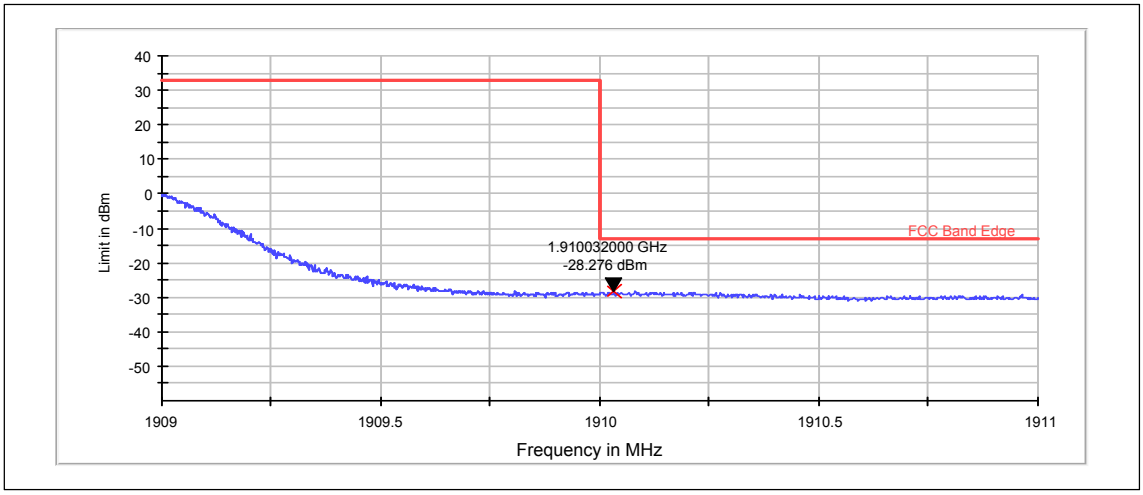
Channel 18700 / 1860 MHz



RMS (RBW: 200 kHz, VBW: 1 MHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1849.992	-31.18	PASSED

Channel 19100 / 1900 MHz



RMS (RBW: 200 kHz, VBW: 1 MHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1910.032	-28.28	PASSED

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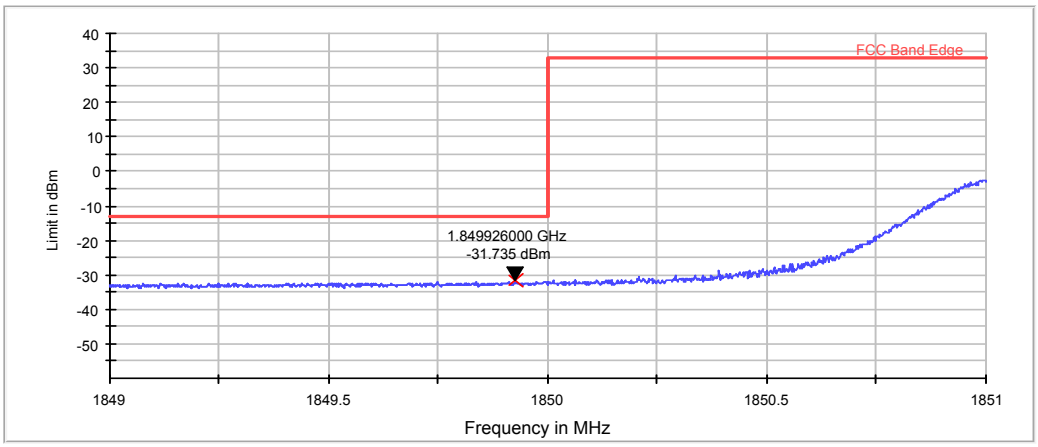
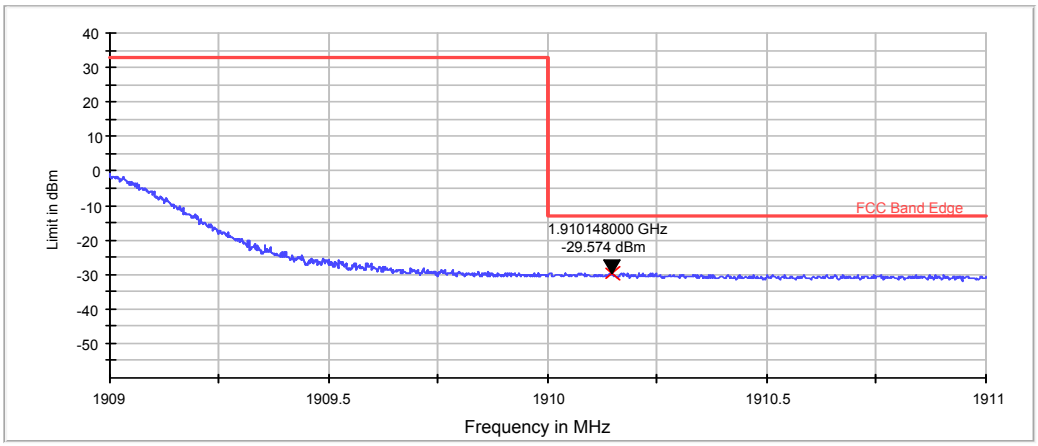
Channel 18700 / 1860 MHz



RMS (RBW: 200 kHz, VBW: 1 MHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1849.926	-31.73	PASSED

Channel 19100 / 1900 MHz



RMS (RBW: 200 kHz, VBW: 1 MHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1910.148	-29.57	PASSED

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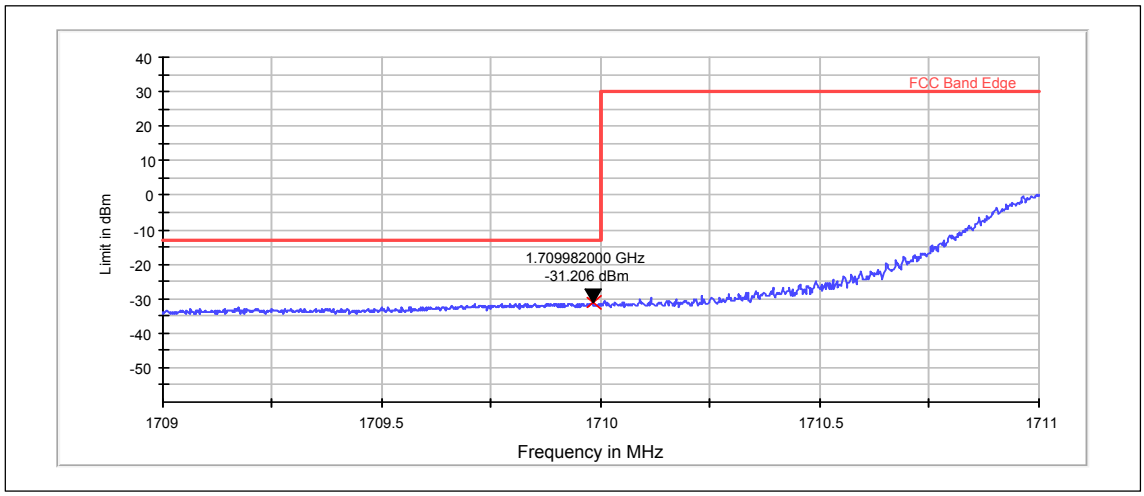
5.9. LTE4 Test results

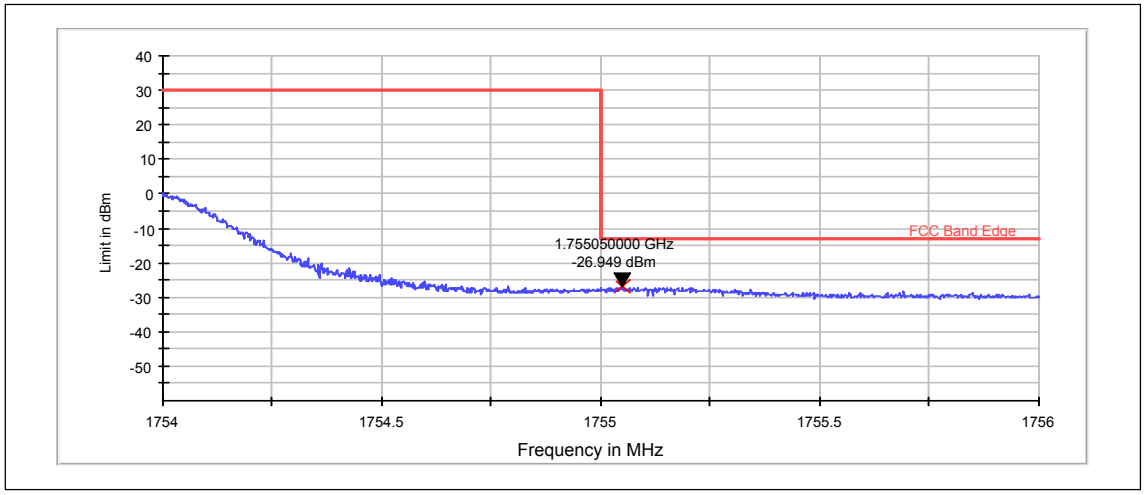
Channel 20050 / 1720 MHz



RMS (RBW: 200 kHz, VBW: 1 MHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1709.982	-31.21	PASSED

Channel 20300 / 1745 MHz



RMS (RBW: 200 kHz, VBW: 1 MHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1755.050	-26.95	PASSED

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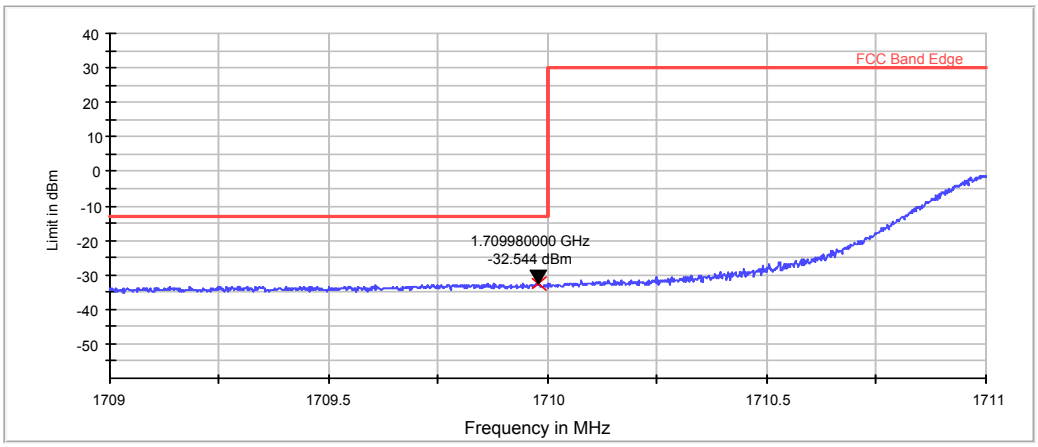
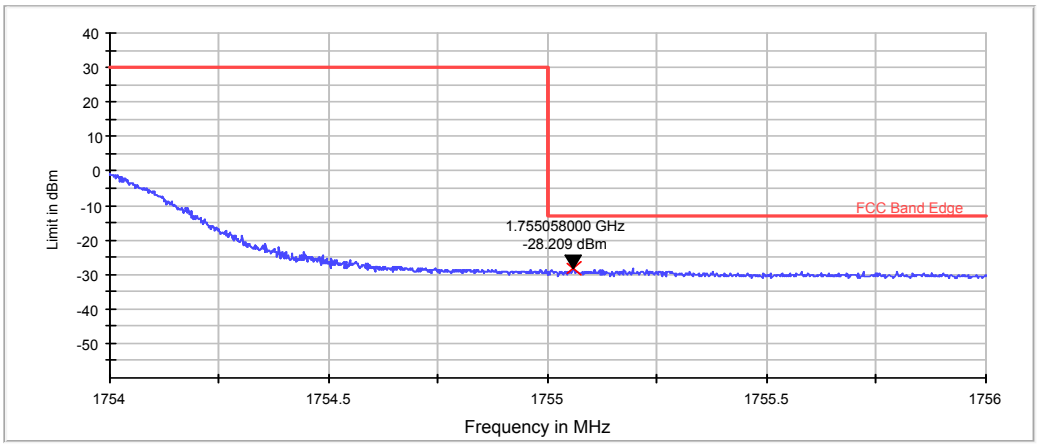
Channel 20050 / 1720 MHz



RMS (RBW: 200 kHz, VBW: 1 MHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1709.980	-32.54	PASSED

Channel 20300 / 1745 MHz



RMS (RBW: 200 kHz, VBW: 1 MHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1755.058	-28.21	PASSED

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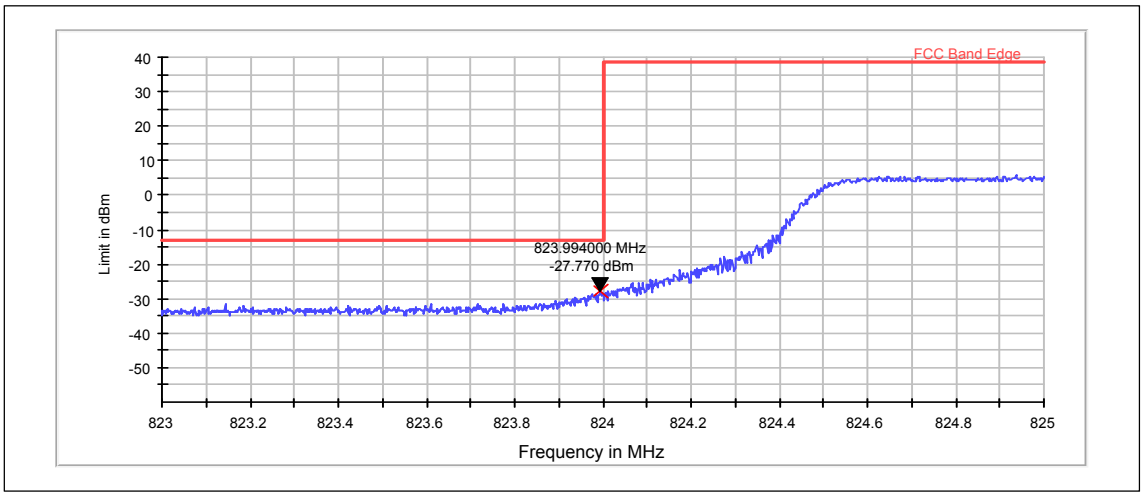
5.10. LTE5 Test results

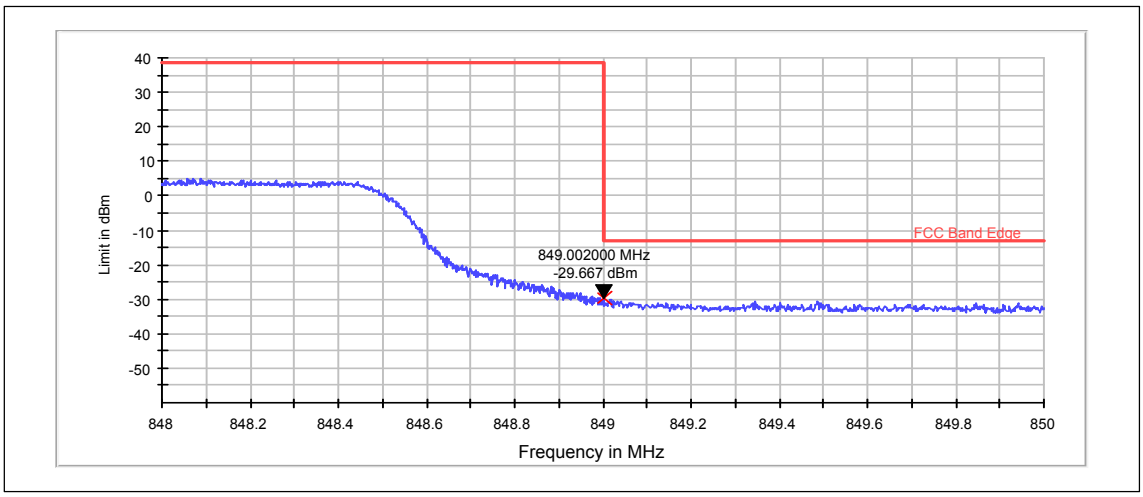
Channel 20450 / 829 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	823.994	-27.77	PASSED

Channel 20600 / 844 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	849.002	-29.67	PASSED

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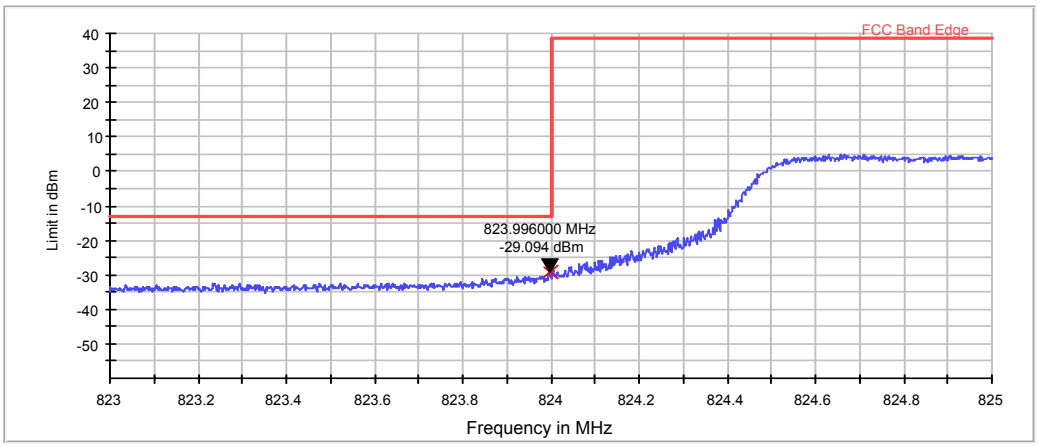
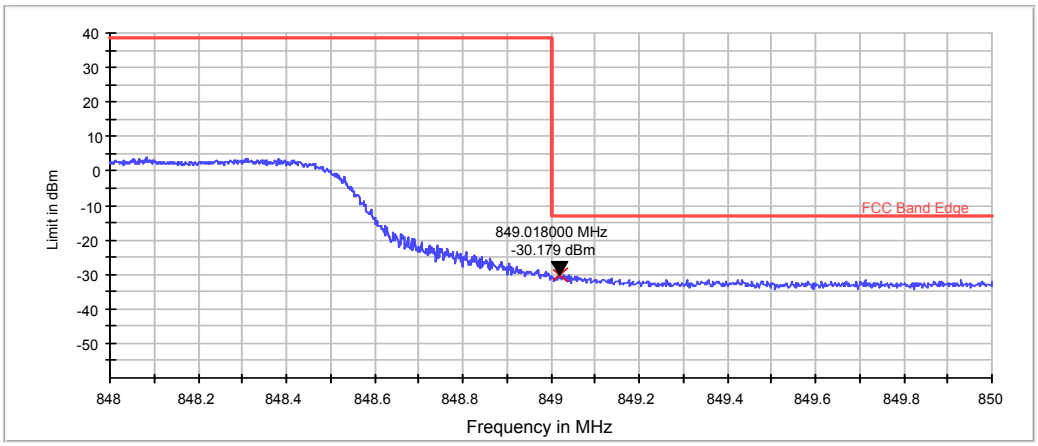
Channel 20450 / 829 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	823.996	-29.09	PASSED

Channel 20600 / 844 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz, Max hold)

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	849.018	-30.18	PASSED

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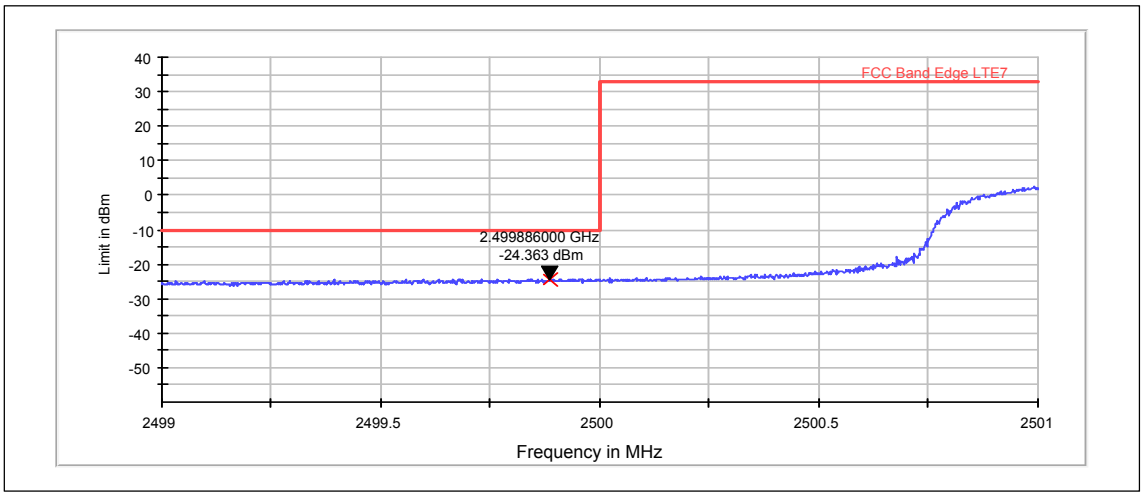
5.11. LTE7 Test results

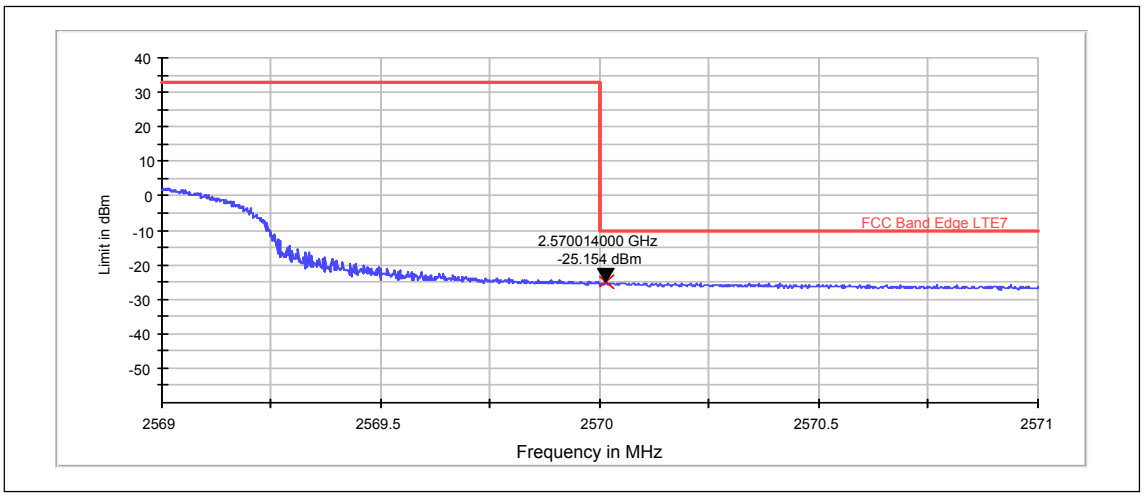
Channel 20850 / 2510 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	2499.886	-24.36	PASSED

Channel 21350 / 2560 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	2570.014	-25.15	PASSED

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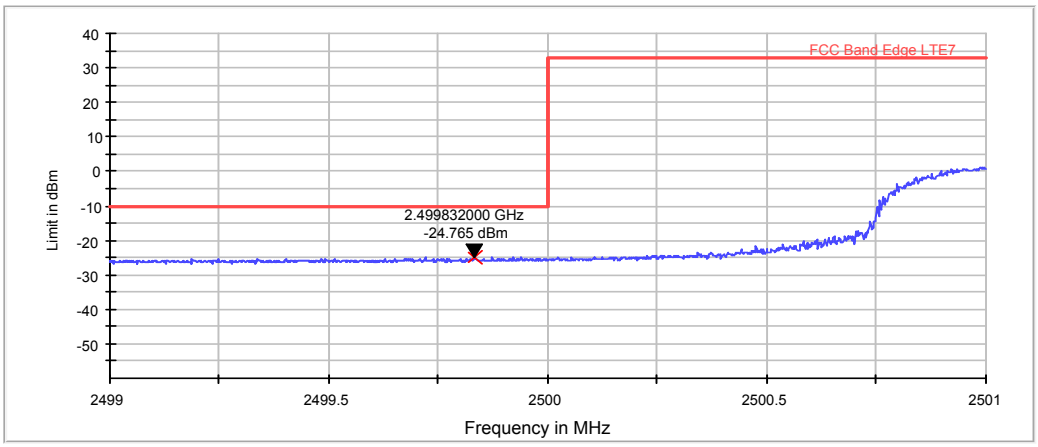
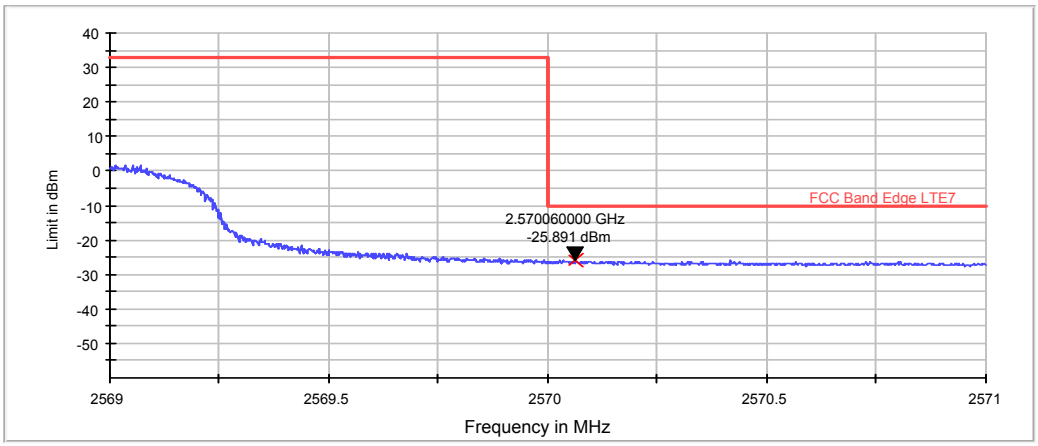
Channel 20850 / 2510 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	2499.832	-24.76	PASSED

Channel 21350 / 2560 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	2570.060	-25.89	PASSED

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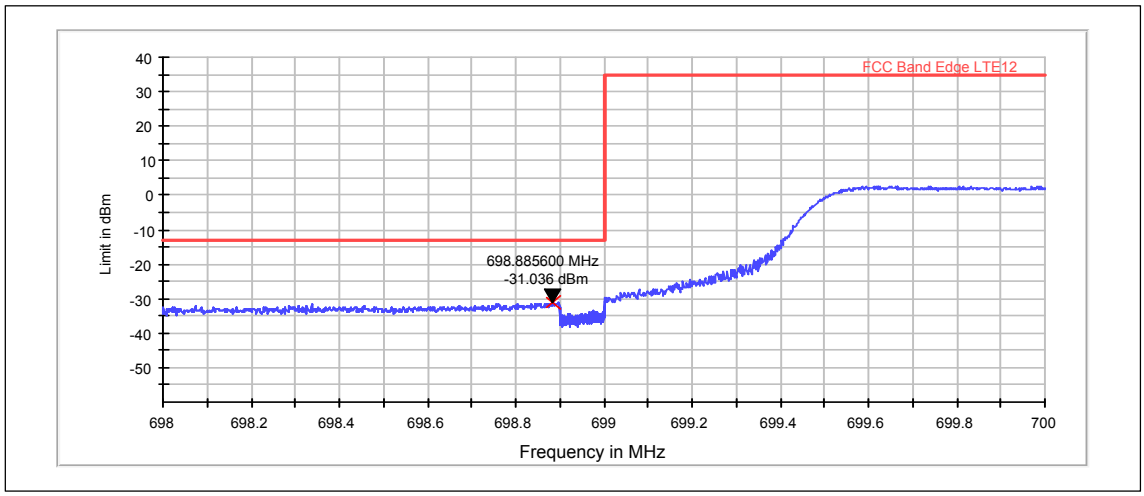
5.12. LTE12 Test results

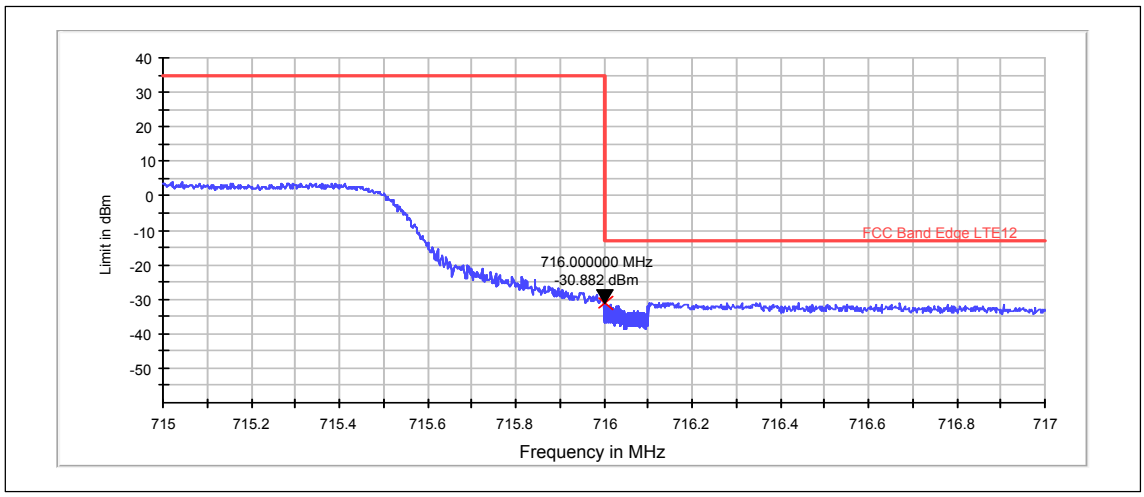
Channel 23060 / 704 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	698.886	-31.04	PASSED

Channel 23130 / 711 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	716.000	-30.88	PASSED

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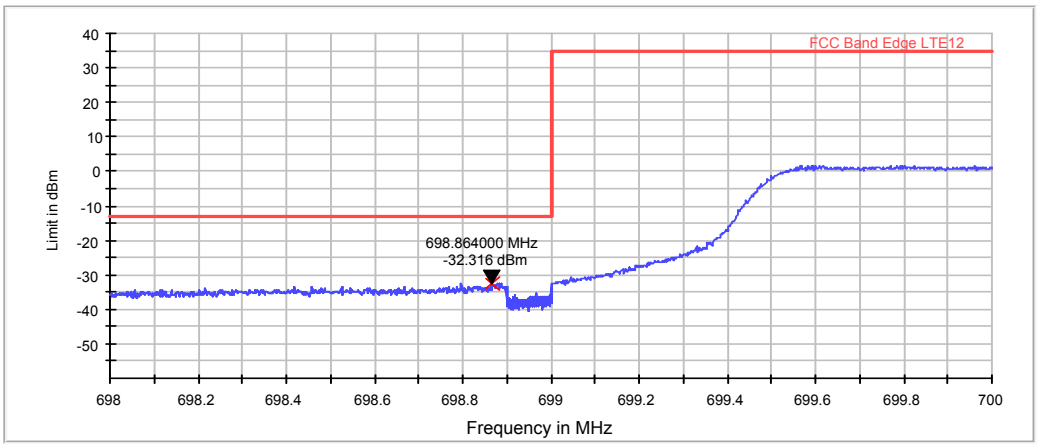
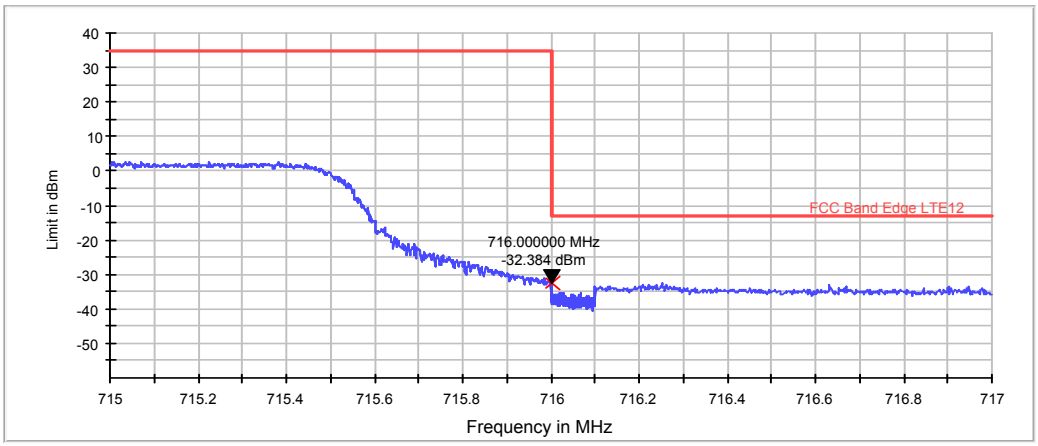
Channel 23060 / 704 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	698.864	-32.32	PASSED

Channel 23130 / 711 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	716.000	-32.38	PASSED

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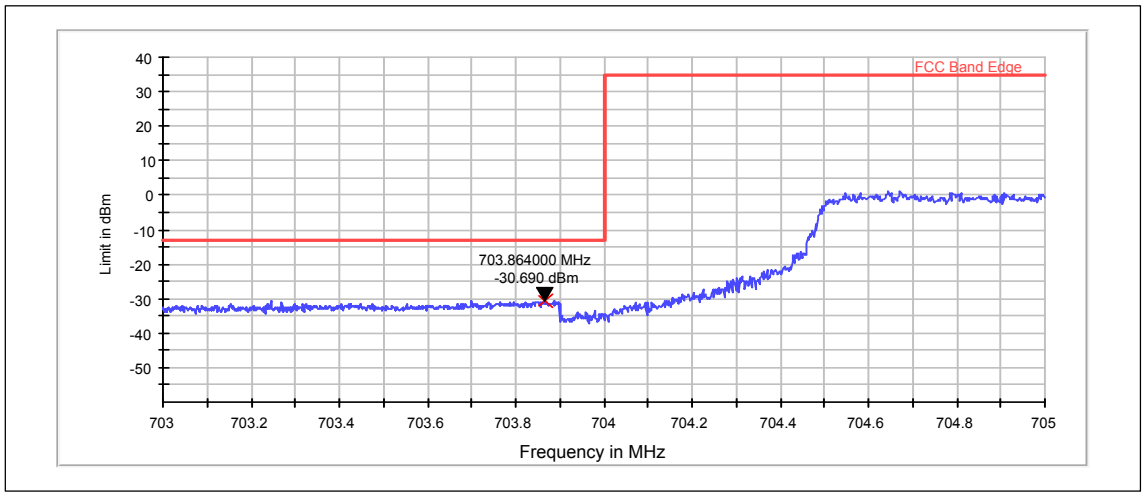
5.13. LTE17 Test results

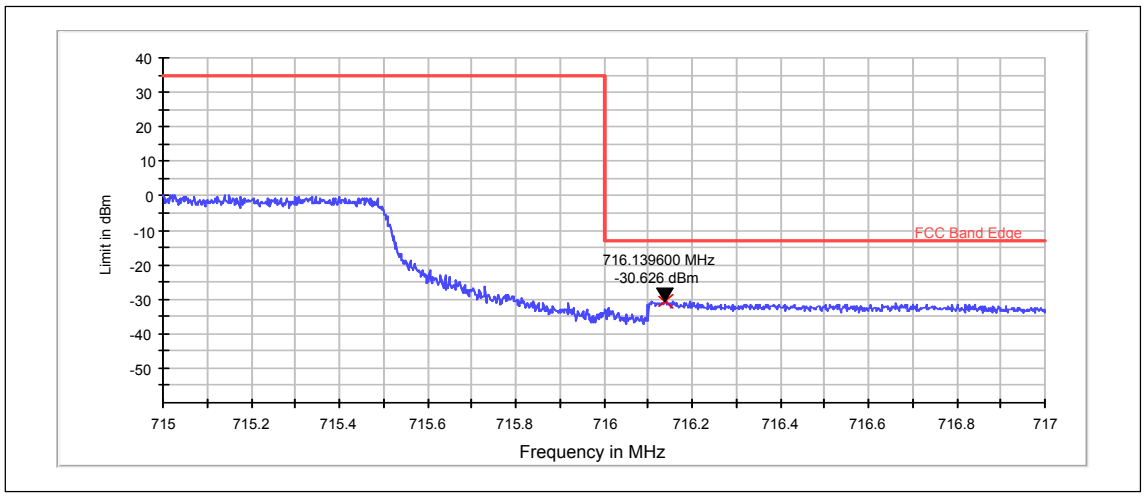
Channel 23780 / 709 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	703.864	-30.69	PASSED

Channel 23800 / 711 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	716.140	-30.63	PASSED

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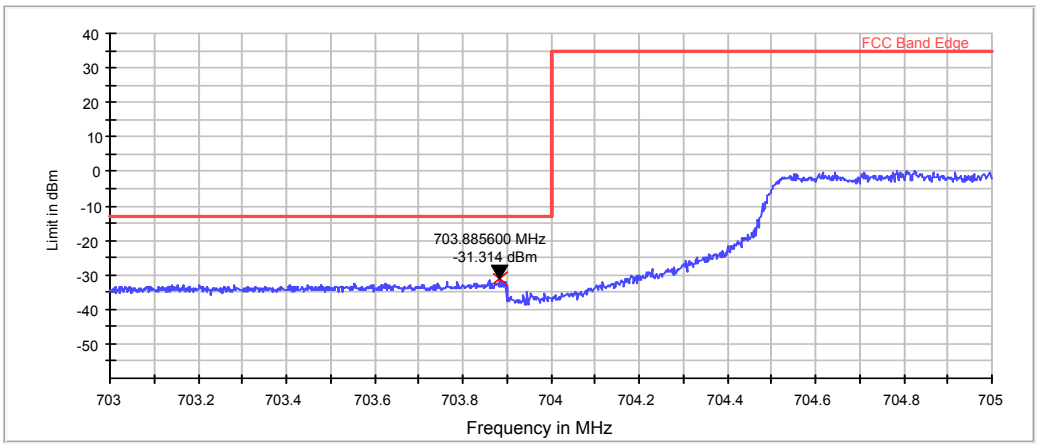
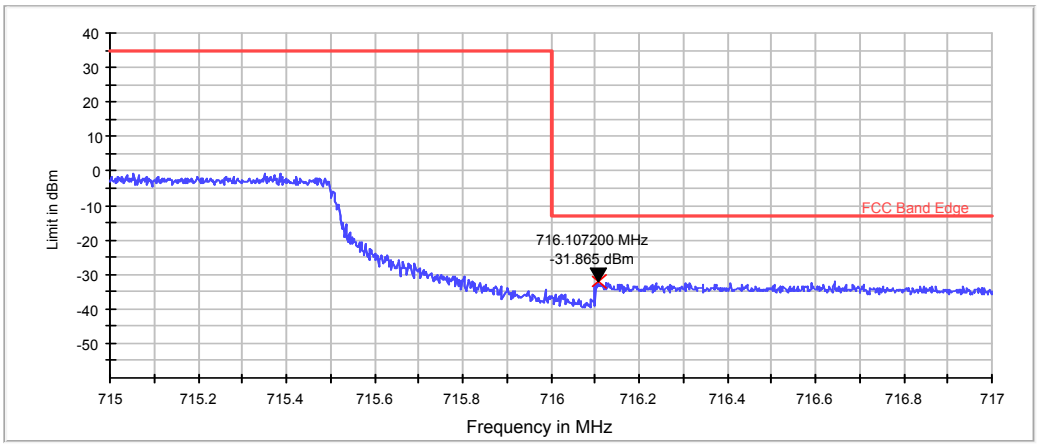
Channel 23780 / 709 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	703.886	-31.31	PASSED

Channel 23800 / 711 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	716.107	-31.87	PASSED

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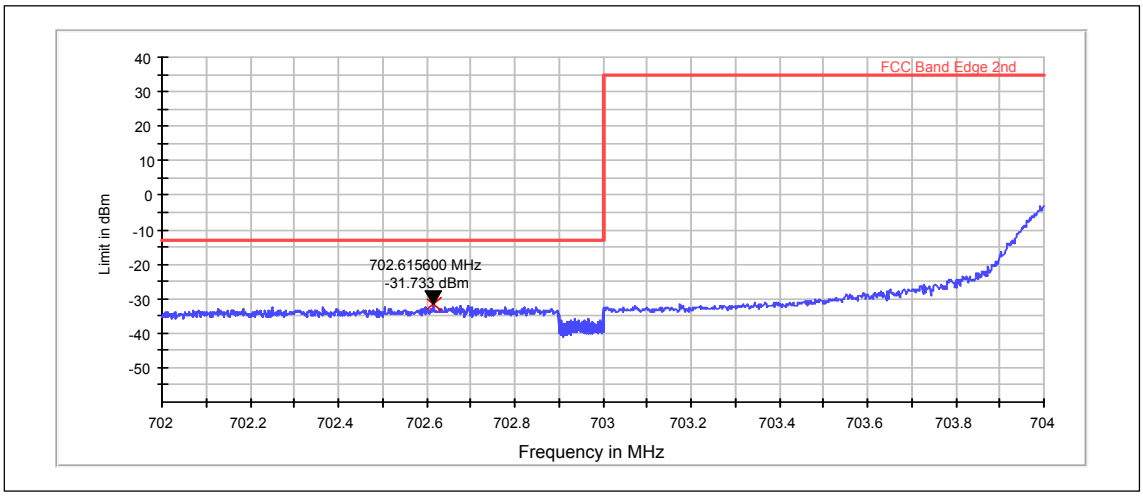
5.14. LTE28 Test results

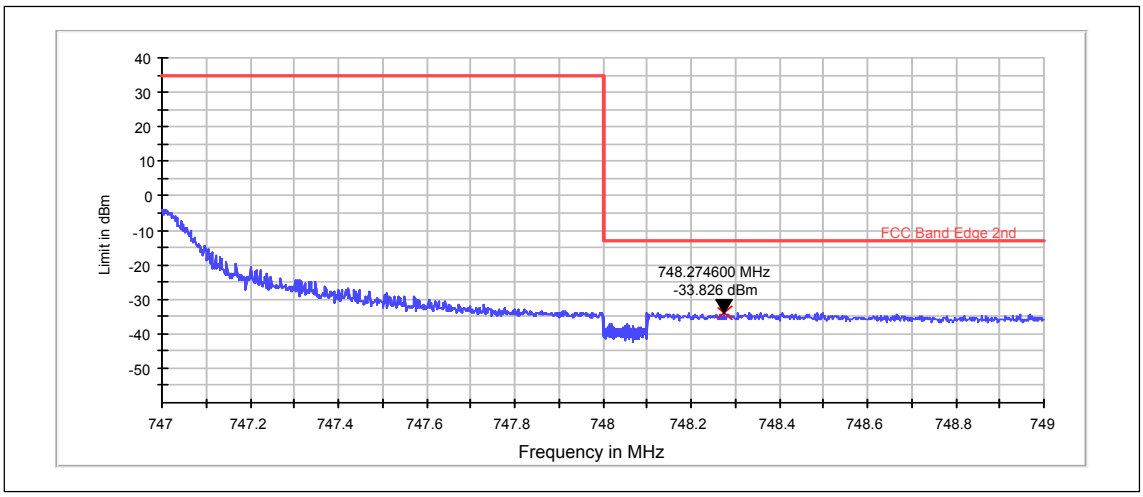
Channel 27310 / 713 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	702.616	-31.73	PASSED

Channel 27560 / 738 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	748.275	-33.83	PASSED

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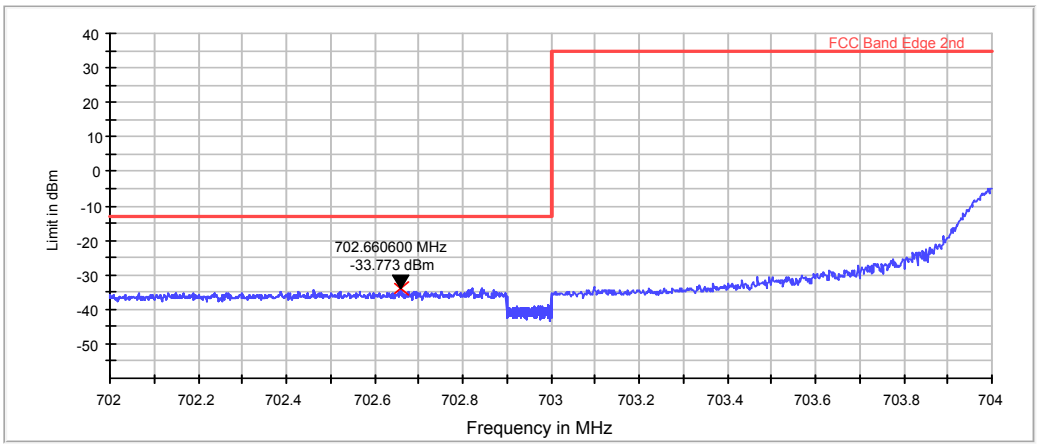
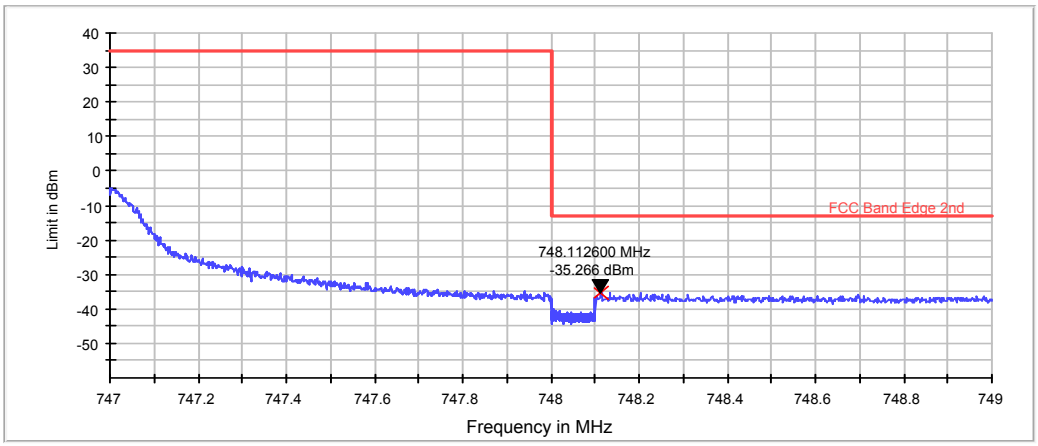
Channel 27310 / 713 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	702.661	-33.77	PASSED

Channel 27560 / 738 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	748.113	-35.27	PASSED

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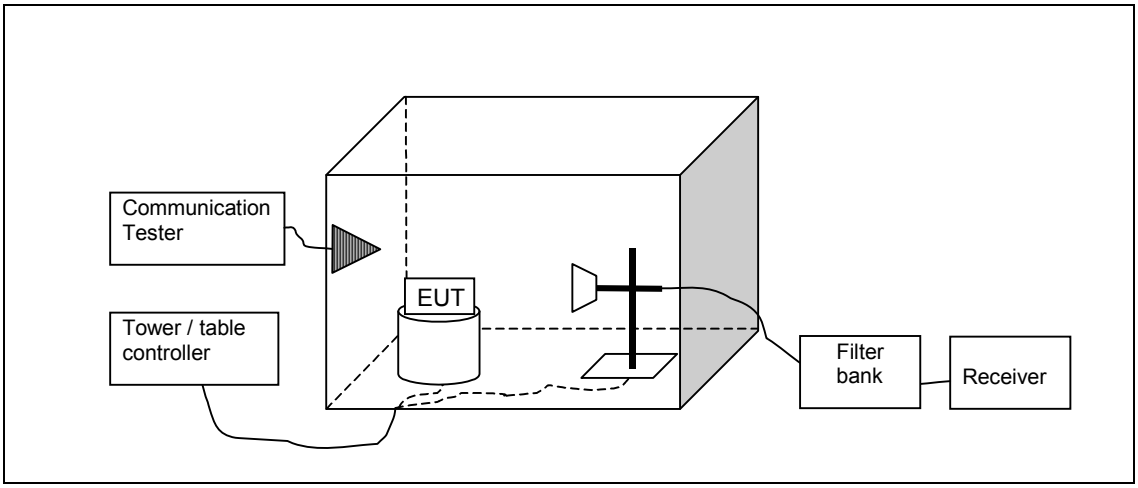
6. Spurious radiated emissions

(FCC §22.917(a), §27.53(f), §27.53(g), §2.1051, §27.53(l), §2.1053, §27.53(h), §2.1053, §22.917(a), §2.1053, §24.238(a), §2.1053, §2.1053, RSS-132 4.5, RSS-133 6.5, RSS-139 6.5, RSS-199 4.5(b), RSS-130 4.6)

EUT with DUT number	RM-1075, DUT 43253
Accessories with DUT numbers	BV-T5C, DUT 43256 ; AC-20E Phihong, DUT 43135 ; WH-108, DUT 43136
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 45 / 99.3
Date of measurements	17-Jan-2015
Measured by	Timo Raiskio

6.1.1 Test setup



6.2. 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 measurement is made up to 10th harmonic of the EUT highest TX channel.

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The substitution method is used.

The measurement results are obtained as described below:

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

Where $P_{SUBST\ TX}$ is signal generator level, which produces the same receiver reading P_{MEAS} in dBm as EUT. $G_{SUBST\ TX\ ANT}$ is substitution antenna gain and $L_{SUBST\ CABLE}$ is the loss of the cable between the signal generator and the substitution antenna.

Limits for spurious radiated emissions measurements

Operation band	Frequency range [MHz]	Limit [dBm]
GSM 850	30 - 8500	-13
GSM 1900	30 - 19100	-13
WCDMA2	30 - 19100	-13
WCDMA4	30 - 17500	-13
WCDMA5	30 - 8500	-13
LTE2	30 - 19100	-13
LTE4	30 - 17500	-13
LTE5	30 - 8500	-13
LTE7	30 - 25700	-13
LTE17	30 - 7200	-13 (RBW = 100 kHz, ERP)
LTE28	30 – 8000 763-775 and 793-805 1559 – 1610 1559 – 1610	-13 (RBW = 100 kHz, ERP) -35 (RBW = 6.25 kHz, ERP) -40 (RBW = 1 MHz) -50 (RBW = 700 Hz)
LTE12	30 - 7200	-13

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6.3. GSM 850 test results

Channel 190 / 836.6 MHz

Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1673.186	-48.48	0.01419	-41.88	-6.6	VERTICAL	PASSED
1673.307	-48.63	0.01371	-41.93	-6.7	HORIZONTAL	PASSED
1673.427	-54.1	0.00389	-47.4	-6.7	HORIZONTAL	PASSED
2509.619	-44.15	0.03846	-44.35	0.2	HORIZONTAL	PASSED
2509.82	-42.23	0.05984	-42.53	0.3	VERTICAL	PASSED
3370.501	-59.8	0.00105	-60.6	0.8	HORIZONTAL	PASSED

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

Channel 190 / 836.6 MHz

Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1673.26	-48.16	0.01528	-41.56	-6.6	VERTICAL	PASSED
2509.78	-46.29	0.0235	-46.59	0.3	VERTICAL	PASSED

6.5. GSM 1900 test results

Channel 661 / 1880.0 MHz

Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1910.573	-43.6	0.04365	-40.9	-2.7	VERTICAL	PASSED
1910.693	-39.71	0.10691	-36.91	-2.8	HORIZONTAL	PASSED
1911.668	-39.77	0.10544	-36.97	-2.8	HORIZONTAL	PASSED
1918.894	-44.34	0.03681	-41.54	-2.8	VERTICAL	PASSED
9322.164	-43.66	0.04305	-62.76	19.1	VERTICAL	PASSED
11158.657	-44.79	0.03319	-64.79	20	VERTICAL	PASSED

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

Channel 661 / 1880.0 MHz

Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3759.86	-54.99	0.00317	-59.49	4.5	VERTICAL	PASSED
5640.06	-48.52	0.01406	-56.72	8.2	HORIZONTAL	PASSED

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6.7. WCDMA2 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
1911.941	-50.72	0.00847	-47.52	-3.2	HORIZONTAL	PASSED
1912.906	-49.73	0.01064	-46.53	-3.2	HORIZONTAL	PASSED
1931.008	-56.35	0.00232	-53.25	-3.1	HORIZONTAL	PASSED
3762.184	-51.96	0.00637	-56.46	4.5	VERTICAL	PASSED
5636.413	-51.42	0.00721	-59.62	8.2	HORIZONTAL	PASSED
7523.547	-46.3	0.02344	-60.5	14.2	VERTICAL	PASSED
9236.774	-44.15	0.03846	-63.35	19.2	VERTICAL	PASSED
9339.499	-43.84	0.0413	-62.54	18.7	HORIZONTAL	PASSED
9407.675	-45.23	0.02999	-63.63	18.4	VERTICAL	PASSED
10522.946	-44.39	0.03639	-62.79	18.4	HORIZONTAL	PASSED
11278.056	-44.2	0.03802	-63	18.8	HORIZONTAL	PASSED
13167.355	-52.39	0.00577	-64.09	11.7	HORIZONTAL	PASSED
15039.459	-51.57	0.00697	-65.77	14.2	HORIZONTAL	PASSED
16921.984	-50.91	0.00811	-67.21	16.3	HORIZONTAL	PASSED

6.8. WCDMA4 test results

Channel 1412 / 1732.4 MHz

FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1757.525	-47.42	0.01811	-43.02	-4.4	VERTICAL	PASSED
1758.317	-49.67	0.01079	-45.27	-4.4	HORIZONTAL	PASSED
1772.585	-49.42	0.01143	-45.22	-4.2	VERTICAL	PASSED
3463.898	-55.29	0.00296	-59.29	4	HORIZONTAL	PASSED
5199.424	-51.86	0.00652	-59.56	7.7	HORIZONTAL	PASSED
6936.955	-48.12	0.01542	-58.92	10.8	VERTICAL	PASSED
8666.068	-46.8	0.02089	-63.7	16.9	VERTICAL	PASSED
10391.093	-45.49	0.02825	-63.49	18	VERTICAL	PASSED
10794.77	-44.36	0.03664	-62.66	18.3	HORIZONTAL	PASSED
10900.942	-43.64	0.04325	-62.84	19.2	VERTICAL	PASSED
11348.156	-43.63	0.04335	-63.23	19.6	VERTICAL	PASSED
12133.273	-45.9	0.0257	-64.4	18.5	HORIZONTAL	PASSED
13854.651	-51.93	0.00641	-63.83	11.9	HORIZONTAL	PASSED
15582.081	-50.83	0.00826	-66.43	15.6	VERTICAL	PASSED
17319.812	-48.45	0.01429	-66.25	17.8	VERTICAL	PASSED

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6.9. WCDMA5 test results

Channel 4175 / 835.0 MHz

FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
821.759	-49.29	0.01178	-81.49	32.2	HORIZONTAL	PASSED
852.45	-50.28	0.00938	-81.28	31	VERTICAL	PASSED
857.365	-50.31	0.00931	-81.41	31.1	HORIZONTAL	PASSED
861.957	-49.15	0.01216	-81.05	31.9	VERTICAL	PASSED
864.256	-49.55	0.01109	-81.15	31.6	HORIZONTAL	PASSED
865.456	-49.84	0.01038	-81.84	32	VERTICAL	PASSED
1672.465	-48.73	0.0134	-42.13	-6.6	VERTICAL	PASSED
2512.355	-54.53	0.00352	-55.03	0.5	HORIZONTAL	PASSED
3341.303	-59.51	0.00112	-60.11	0.6	HORIZONTAL	PASSED
4181.553	-57.13	0.00194	-60.73	3.6	HORIZONTAL	PASSED
5000.721	-54.69	0.0034	-60.49	5.8	VERTICAL	PASSED
5845.741	-54.15	0.00385	-60.25	6.1	VERTICAL	PASSED
6684.349	-50.89	0.00815	-58.79	7.9	VERTICAL	PASSED
7505.922	-49.97	0.01007	-61.97	12	HORIZONTAL	PASSED
8358.317	-50.1	0.00977	-63.6	13.5	VERTICAL	PASSED

6.10. LTE2 test results

Channel 18900 / 1880.0 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1866.117	-62.85	0.00052	-59.75	-3.1	HORIZONTAL	PASSED
1899.347	-49.87	0.0103	-46.57	-3.3	HORIZONTAL	PASSED
1899.494	-61.79	0.00066	-58.49	-3.3	HORIZONTAL	PASSED
1904.128	-55.31	0.00294	-52.01	-3.3	HORIZONTAL	PASSED
1912.074	-47.02	0.01986	-43.82	-3.2	HORIZONTAL	PASSED
3760.341	-55.39	0.00289	-59.89	4.5	HORIZONTAL	PASSED
5640.461	-58.52	0.00141	-66.72	8.2	HORIZONTAL	PASSED
7520.782	-51.99	0.00632	-65.89	13.9	HORIZONTAL	PASSED

Channel 18900 / 1880.0 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1866.212	-44.1	0.0389	-41	-3.1	HORIZONTAL	PASSED
1867.4	-44.14	0.03855	-41.04	-3.1	HORIZONTAL	PASSED
1894.875	-48.33	0.01469	-45.03	-3.3	HORIZONTAL	PASSED
1901.413	-59.17	0.00121	-55.87	-3.3	HORIZONTAL	PASSED
1908.357	-47.65	0.01718	-44.45	-3.2	HORIZONTAL	PASSED

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1909.955	-46.84	0.0207	-43.64	-3.2	HORIZONTAL	PASSED
3760.18	-57.39	0.00182	-61.89	4.5	HORIZONTAL	PASSED
5640.421	-58.66	0.00136	-66.86	8.2	HORIZONTAL	PASSED
7520.661	-51.61	0.0069	-65.51	13.9	HORIZONTAL	PASSED

6.11. LTE4 test results

Channel 20175 / 1732.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3465.421	-62.86	0.00052	-66.86	4	HORIZONTAL	PASSED
5198.081	-56.27	0.00236	-63.77	7.5	VERTICAL	PASSED
6930.661	-56.89	0.00205	-67.89	11	VERTICAL	PASSED
8672.3	-57.22	0.0019	-74.22	17	VERTICAL	PASSED
10389.649	-56.57	0.0022	-74.57	18	VERTICAL	PASSED

Channel 20175 / 1732.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3465.541	-65.89	0.00026	-69.89	4	HORIZONTAL	PASSED
5198.001	-56.07	0.00247	-63.57	7.5	VERTICAL	PASSED
6930.621	-57.21	0.0019	-68.21	11	VERTICAL	PASSED
8672.42	-57.21	0.0019	-74.31	17.1	VERTICAL	PASSED
10388.687	-56.23	0.00238	-74.23	18	VERTICAL	PASSED

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LTE5 test results

Channel 20525 / 836.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
855.132	-62.17	0.00061	-93.07	30.9	HORIZONTAL	PASSED
883.068	-47.17	0.01919	-80.27	33.1	HORIZONTAL	PASSED
883.413	-47.14	0.01932	-80.24	33.1	HORIZONTAL	PASSED
1673.421	-52.24	0.00597	-45.54	-6.7	HORIZONTAL	PASSED
2510.001	-68.55	0.00014	-68.75	0.2	HORIZONTAL	PASSED
3342.974	-78.51	1E-05	-79.01	0.5	HORIZONTAL	PASSED

Channel 20525 / 836.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
856.615	-62	0.00063	-93	31	HORIZONTAL	PASSED
879.894	-47.16	0.01923	-80.26	33.1	HORIZONTAL	PASSED
883.09	-47.86	0.01637	-80.96	33.1	HORIZONTAL	PASSED
1673.421	-53.03	0.00498	-46.33	-6.7	HORIZONTAL	PASSED
2509.841	-72.26	6E-05	-72.46	0.2	HORIZONTAL	PASSED
3355.88	-78.41	1E-05	-79.01	0.6	HORIZONTAL	PASSED

6.12. LTE7 test results

Channel 21100 / 2535.0 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
2553.953	-63.61	0.00044	-64.81	1.2	HORIZONTAL	PASSED
2655.686	-40.29	0.09354	-41.49	1.2	HORIZONTAL	PASSED
5065.01	-62.77	0.00053	-71.17	8.4	HORIZONTAL	PASSED
7605.501	-50.18	0.00959	-64.18	14	HORIZONTAL	PASSED
10139.579	-56.5	0.00224	-73	16.5	HORIZONTAL	PASSED

Channel 21100 / 2535.0 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
2552.891	-63.6	0.00044	-64.8	1.2	HORIZONTAL	PASSED
5065.812	-62.76	0.00053	-71.16	8.4	HORIZONTAL	PASSED
7605.541	-50.83	0.00826	-64.83	14	HORIZONTAL	PASSED
10149.599	-56.93	0.00203	-73.33	16.4	HORIZONTAL	PASSED

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6.13. LTE12 test results

Channel 23095 / 707.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1415.421	-73.12	5E-05	-64.42	-8.7	HORIZONTAL	PASSED
2123.081	-66.17	0.00024	-62.87	-3.3	VERTICAL	PASSED
2839.719	-71.75	7E-05	-74.65	2.9	VERTICAL	PASSED

Channel 23095 / 707.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1415.301	-76.47	2E-05	-67.77	-8.7	VERTICAL	PASSED
2123.041	-61.74	0.00067	-58.44	-3.3	VERTICAL	PASSED
2838.798	-71.44	7E-05	-74.24	2.8	VERTICAL	PASSED

6.14. LTE17 test results

Channel 23790 / 710 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1429.84	-79.43	1E-05	-71.23	-8.2	HORIZONTAL	PASSED
2140	-74.94	3E-05	-71.94	-3	HORIZONTAL	PASSED
2844.83	-71.63	7E-05	-74.63	3	VERTICAL	PASSED

Channel 23790 / 710 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1420.381	-71.31	7E-05	-62.61	-8.7	HORIZONTAL	PASSED
2130.581	-66.56	0.00022	-63.56	-3	VERTICAL	PASSED
2846.433	-71.96	6E-05	-74.56	2.6	HORIZONTAL	PASSED

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6.15. LTE28 test results

Channel 27435 / 725.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
764.994	-74.43	4E-05	-107.03	32.6	HORIZONTAL	PASSED
770.04	-75.47	3E-05	-106.97	31.5	VERTICAL	PASSED
795.01	-75.23	3E-05	-107.03	31.8	HORIZONTAL	PASSED
1451.421	-76.67	2E-05	-68.27	-8.4	HORIZONTAL	PASSED
1609.84	-69.2	0.00012	-62.9	-6.3	VERTICAL	PASSED
2177.001	-67.39	0.00018	-64.69	-2.7	VERTICAL	PASSED
2906.228	-71.32	7E-05	-74.22	2.9	VERTICAL	PASSED
2965.992	-70.92	8E-05	-73.92	3	VERTICAL	PASSED
7995.691	-68.27	0.00015	-81.77	13.5	VERTICAL	PASSED

Channel 27435 / 725.5 MHz

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

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
765.571	-74.47	4E-05	-106.97	32.5	HORIZONTAL	PASSED
770.401	-75.48	3E-05	-106.98	31.5	VERTICAL	PASSED
795.01	-75.23	3E-05	-107.03	31.8	HORIZONTAL	PASSED
1441.08	-79.77	1E-05	-71.47	-8.3	VERTICAL	PASSED
1609.96	-69.28	0.00012	-62.98	-6.3	VERTICAL	PASSED
2176.961	-71.79	7E-05	-69.09	-2.7	VERTICAL	PASSED
2908.112	-71.34	7E-05	-74.24	2.9	HORIZONTAL	PASSED
2966.473	-71.1	8E-05	-74.3	3.2	HORIZONTAL	PASSED
8000	-68.25	0.00015	-81.75	13.5	VERTICAL	PASSED

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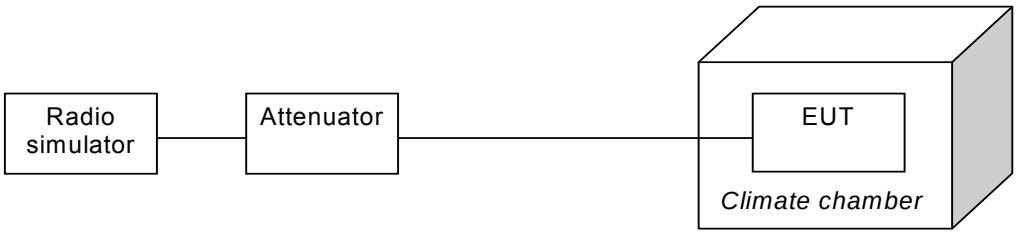
7. Frequency stability, temperature variation

(FCC §2.1055(a), §27.54, RSS-133 6.3, RSS-132 4.3, RSS-139 6.3, RSS-199 4.3, RSS-130 4.3, RSS-130 4.3 (a))

EUT with DUT number	RM-1075, DUT 43249
Accessories with DUT numbers	BV-T5C DUT43251, AC-20 DUT43135, WH-108 DUT 43136
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	-30 to 50
Date of measurements	16-Jan-2015
Measured by	Hannu Söderholm

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 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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7.3. GSM 850 Test results

GSM, Channel 190 / 836.6 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	836.60	5.17000	0.0062	PASSED
40	836.60	5.29000	0.0063	PASSED
30	836.60	12.46000	0.0149	PASSED
20	836.60	5.42000	0.0065	PASSED
10	836.60	8.59000	0.0103	PASSED
0	836.60	9.62000	0.0115	PASSED
-10	836.60	11.11000	0.0133	PASSED
-20	836.60	11.17000	0.0134	PASSED
-30	836.60	14.66000	0.0175	PASSED

7.4. GSM 1900 Test results

GSM, Channel 661 / 1880.0 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1880.00	42.62000	0.0227	PASSED
40	1880.00	49.53000	0.0263	PASSED
30	1880.00	44.62000	0.0237	PASSED
20	1880.00	46.81000	0.0249	PASSED
10	1880.00	45.78000	0.0244	PASSED
0	1880.00	48.88000	0.026	PASSED
-10	1880.00	49.27000	0.0262	PASSED
-20	1880.00	53.72000	0.0286	PASSED
-30	1880.00	53.08000	0.0282	PASSED

7.5. WCDMA4 Test results

FDD, Channel 1412 / 1732.4 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1732.40	1.17493	0.0007	PASSED
40	1732.40	-2.34985	-0.0014	PASSED
30	1732.40	-1.00000	-0.0006	PASSED
20	1732.40	-1.00000	-0.0006	PASSED
10	1732.40	-1.00000	-0.0006	PASSED
0	1732.40	1.60217	0.0009	PASSED
-10	1732.40	3.06702	0.0018	PASSED
-20	1732.40	4.53186	0.0026	PASSED
-30	1732.40	5.64575	0.0033	PASSED

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7.6. 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	-3.14713	-0.0012	PASSED
40	2535.00	-6.09398	-0.0024	PASSED
30	2535.00	1.07288	0.0004	PASSED
20	2535.00	5.62191	0.0022	PASSED
10	2535.00	0.60081	0.0002	PASSED
0	2535.00	2.36034	0.0009	PASSED
-10	2535.00	1.75953	0.0007	PASSED
-20	2535.00	1.01566	0.0004	PASSED
-30	2535.00	2.47479	0.001	PASSED

7.7. LTE12 Test results

FDD, CBW 10MHz, QPSK, 50 RB, Channel 23095 / 707.5 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	707.50	-2.27451	-0.0032	PASSED
40	707.50	-1.11580	-0.0016	PASSED
30	707.50	-2.07424	-0.0029	PASSED
20	707.50	-2.90394	-0.0041	PASSED
10	707.50	-2.17438	-0.0031	PASSED
0	707.50	-0.32902	-0.0005	PASSED
-10	707.50	-0.50068	-0.0007	PASSED
-20	707.50	-0.65804	-0.0009	PASSED
-30	707.50	-2.14577	-0.003	PASSED

7.8. LTE17 Test results

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

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	710.00	0.64373	0.0009	PASSED
40	710.00	0.40054	0.0006	PASSED
30	710.00	-0.24319	-0.0003	PASSED
20	710.00	0.32902	0.0005	PASSED
10	710.00	0.07153	0.0001	PASSED
0	710.00	1.57356	0.0022	PASSED
-10	710.00	0.61512	0.0009	PASSED
-20	710.00	0.44346	0.0006	PASSED
-30	710.00	1.14441	0.0016	PASSED

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7.9. LTE28 Test results

FDD, CBW 10MHz, QPSK, 50 RB, Channel 27435 / 725.5 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	725.50	-1.18733	-0.0016	PASSED
40	725.50	-0.52929	-0.0007	PASSED
30	725.50	-0.05722	-0.0001	PASSED
20	725.50	-0.32902	-0.0005	PASSED
10	725.50	1.70231	0.0023	PASSED
0	725.50	0.50068	0.0007	PASSED
-10	725.50	1.18733	0.0016	PASSED
-20	725.50	1.01566	0.0014	PASSED
-30	725.50	1.57356	0.0022	PASSED
-30	725.50	1.57356	0.0022	PASSED

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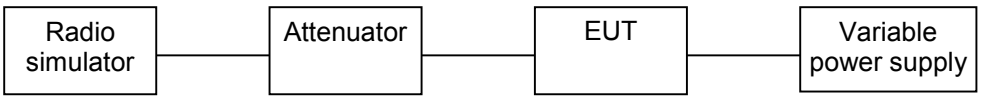
8. Frequency stability, voltage variation

(FCC §2.1055(d), §27.54, RSS-133 6.3, RSS-132 4.3, RSS-139 6.3, RSS-199 4.3, RSS-130 4.3, RSS-130 4.3 (a))

EUT with DUT number	RM-1075, DUT 43249
Accessories with DUT numbers	SD-131, DUT 43233
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	25 / 35 / 100
Date of measurements	15-Jan-2015
Measured by	Timo Raiskio

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 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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8.3. GSM 1900 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.3	1880.00	46.56000	0.0248	PASSED
Battery cut-off point / 3.4	1880.00	50.95000	0.0271	PASSED
Nominal / 3.8	1880.00	52.82000	0.0281	PASSED

8.4. GSM 850 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.3	836.60	9.81000	0.0117	PASSED
Battery cut-off point / 3.4	836.60	5.23000	0.0063	PASSED
Nominal / 3.8	836.60	6.46000	0.0077	PASSED

8.5. WCDMA4 Test results

FDD,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.3	1732.40	0.71716	0.0004	PASSED
Battery cut-off point / 3.4	1732.40	-1.90735	-0.0011	PASSED
Nominal / 3.8	1732.40	3.12805	0.0018	PASSED

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8.6. 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 / 4.3	2535.00	-4.39167	-0.0017	PASSED
Battery cut-off point / 3.4	2535.00	-3.10421	-0.0012	PASSED
Nominal / 3.8	2535.00	-4.24862	-0.0017	PASSED

8.7. LTE12 Test results

FDD, CBW 5MHz, QPSK, 25 RB, Channel 23095 / 707.5 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.3	707.50	-2.04563	-0.0029	PASSED
Battery cut-off point / 3.4	707.50	-1.05858	-0.0015	PASSED
Nominal / 3.8	707.50	-1.60217	-0.0023	PASSED

8.8. LTE17 Test results

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

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.3	710.00	-1.10149	-0.0015	PASSED
Battery cut-off point / 3.4	710.00	-0.50068	-0.0007	PASSED
Nominal / 3.8	710.00	0.84400	0.0012	PASSED

8.9. LTE28 Test results

FDD, CBW 20MHz, QPSK, 100 RB, Channel 27435 / 725.5 MHz

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.3	725.50	-0.24319	-0.0003	PASSED
Battery cut-off point / 3.4	725.50	0.98705	0.0014	PASSED
Nominal / 3.8	725.50	-0.08583	-0.0001	PASSED

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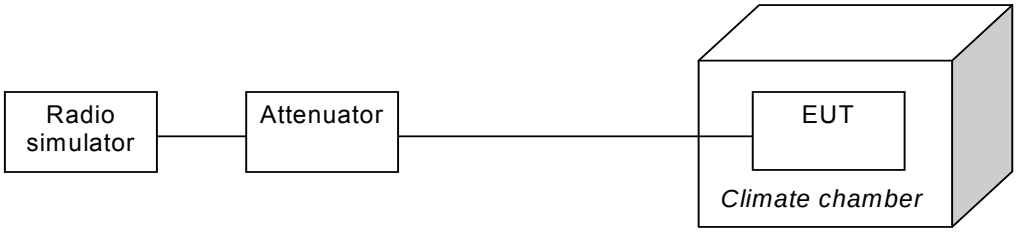
9. Frequency stability, temperature variation, (Band edge method)
(RSS-139 6.3, RSS-199 4.3, RSS-130 4.3, RSS-130 4.3 (a))

EUT with DUT number	RM-1075, DUT 43249
Accessories with DUT numbers	BV-T5C DUT43251, AC-20 DUT43135, WH-108 DUT 43136
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	-30 to 50
Date of measurements	16-Jan-2015
Measured by	Hannu Söderholm

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 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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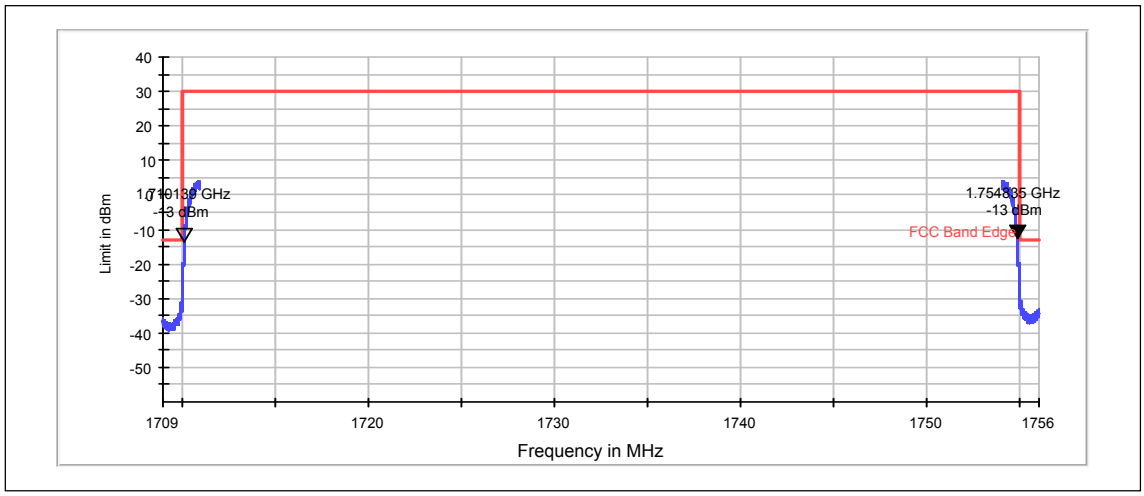
9.3. WCDMA4 Test results

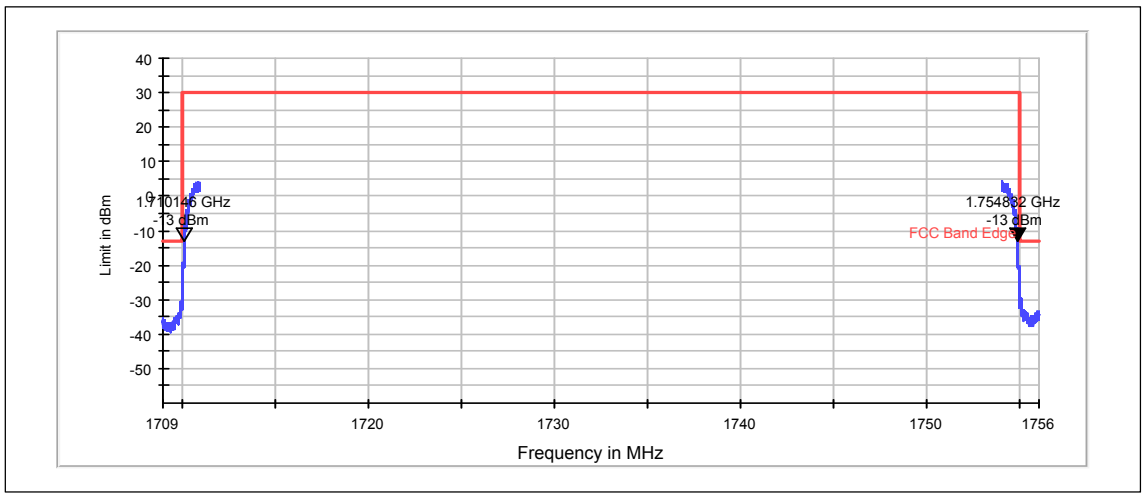
Channel 1412 / 1732.4 MHz



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

Temperature [°C]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
50	18.60046	1710.139000	1710.138981	1754.835000	1754.835018	PASSED

Channel 1412 / 1732.4 MHz



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

Temperature [°C]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
20	-1.00000	1710.145800	1710.145799	1754.831800	1754.831801	PASSED

Channel 1412 / 1732.4 MHz

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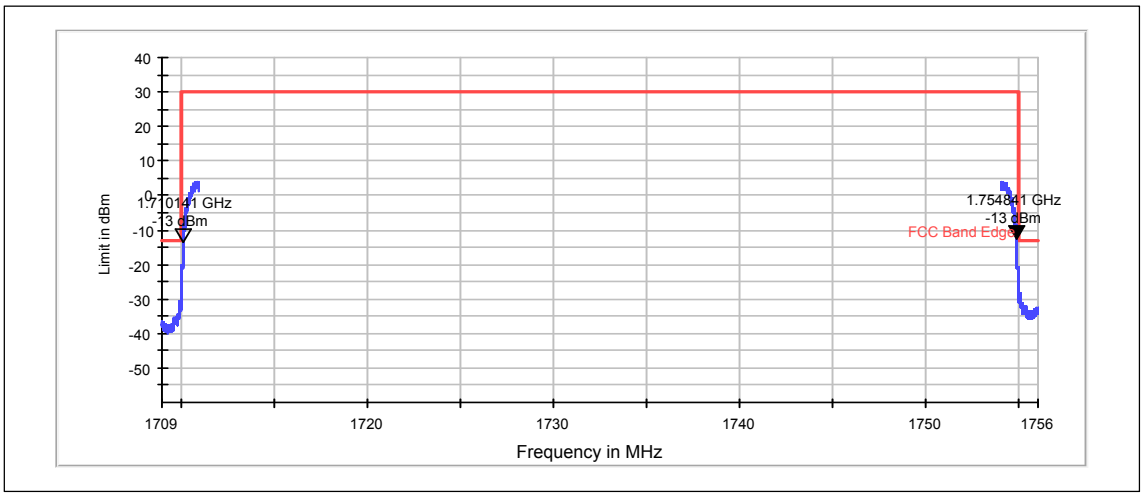

RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Temperature [°C]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
-30	13.29041	1710.140600	1710.140586	1754.840600	1754.840613	PASSED

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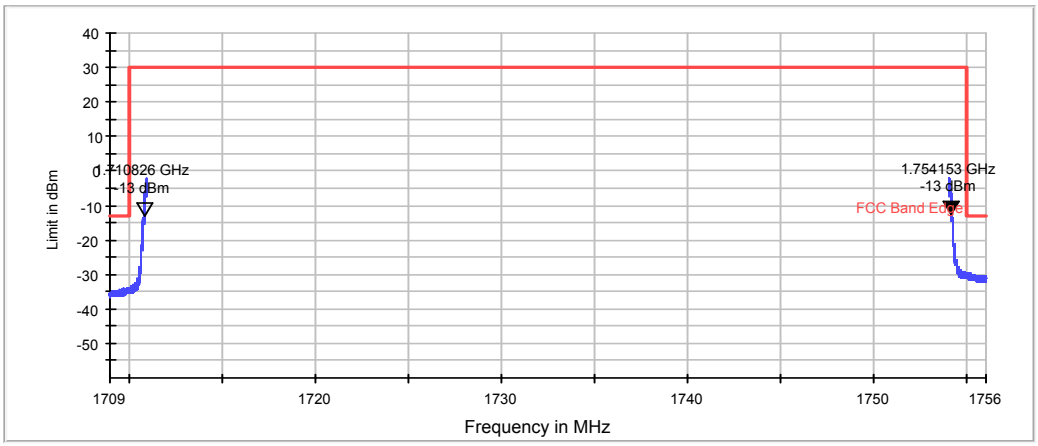
9.4. LTE4 Test results

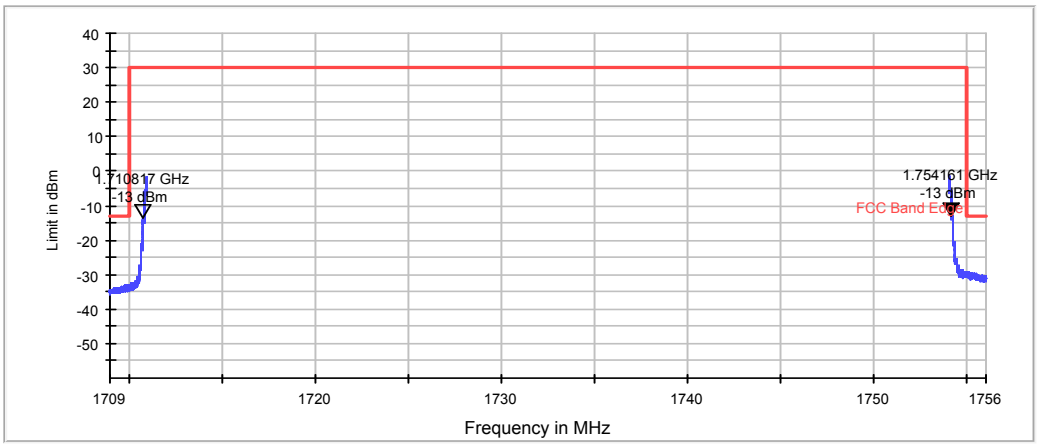
Channel 20175 / 1732.5 MHz



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	-2.66075	1710.825600	1710.825597	1754.153000	1754.153002	PASSED

Channel 20175 / 1732.5 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	0.14305	1710.816600	1710.816599	1754.161000	1754.161000	PASSED

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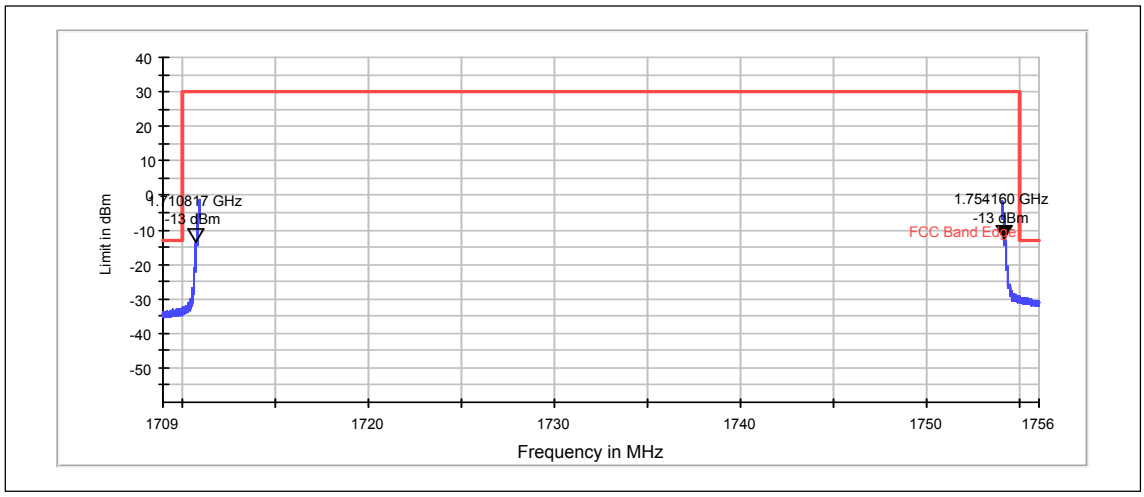
Channel 20175 / 1732.5 MHz



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	-0.52929	1710.816600	1710.816599	1754.160400	1754.160400	PASSED

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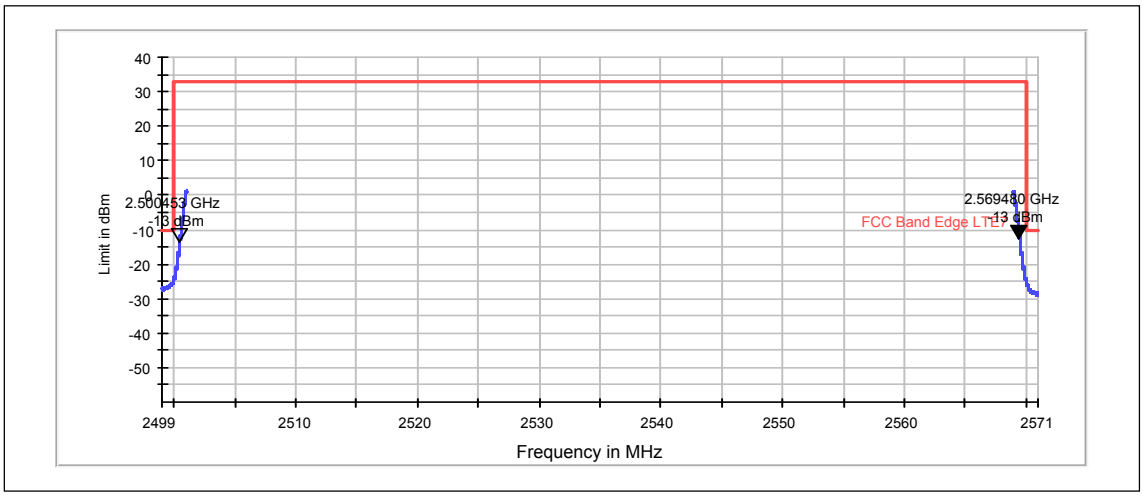
9.5. LTE7 Test results

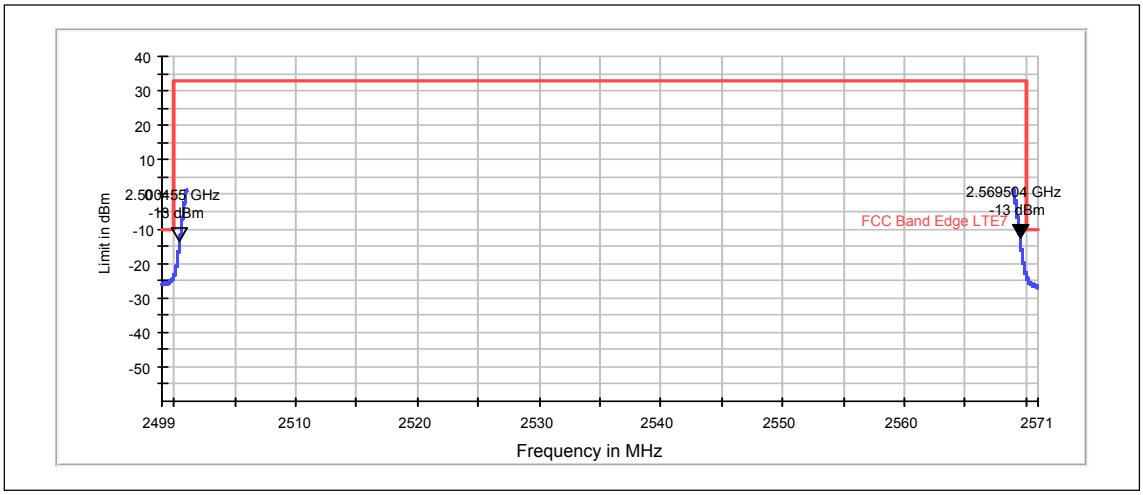
Channel 21100 / 2535.0 MHz



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	-7.19547	2500.452800	2500.452792	2569.480200	2569.480207	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	-2.94685	2500.455400	2500.455397	2569.503600	2569.503602	PASSED

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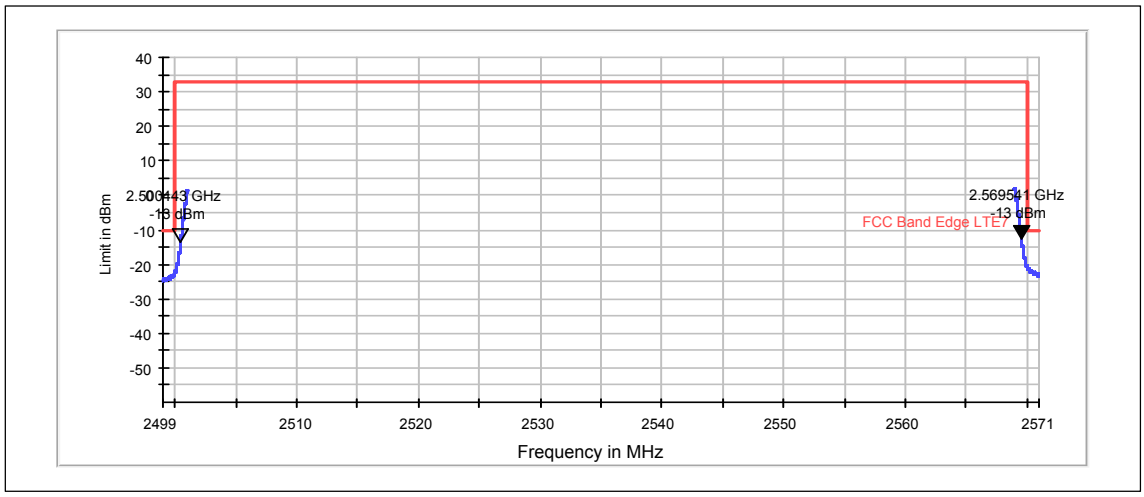
Channel 21100 / 2535.0 MHz



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	-1.17302	2500.443200	2500.443198	2569.541200	2569.541201	PASSED

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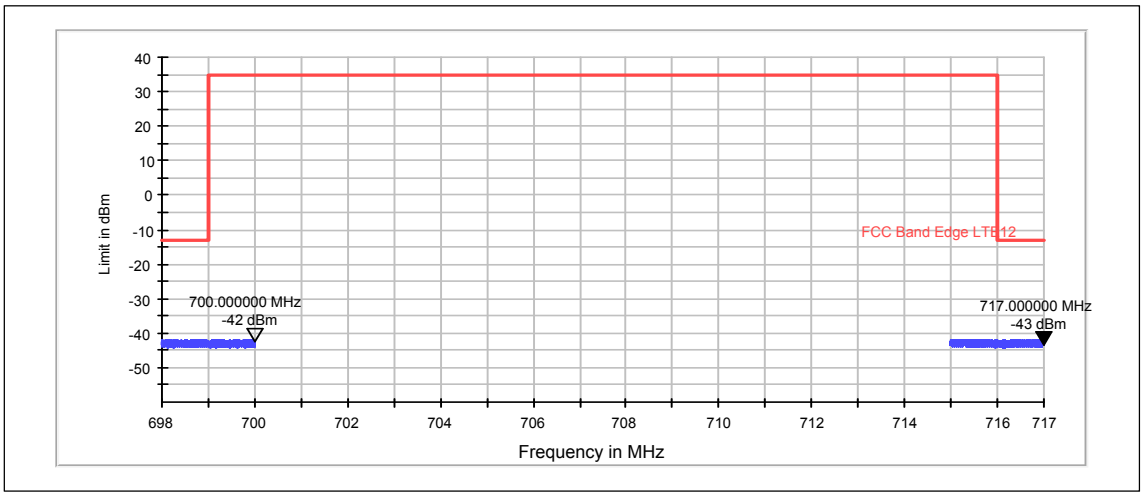
9.6. LTE12 Test results

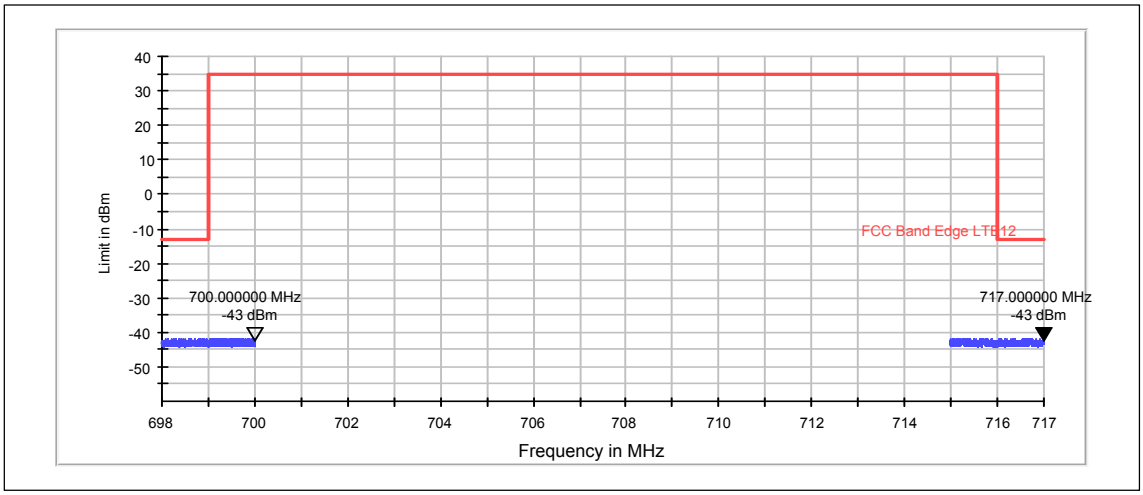
Channel 23095 / 707.5 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
50	0.31471	700.000000	699.999999	717.000000	717.000000	PASSED

Channel 23095 / 707.5 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
20	-0.60081	700.000000	699.999999	717.000000	717.000000	PASSED

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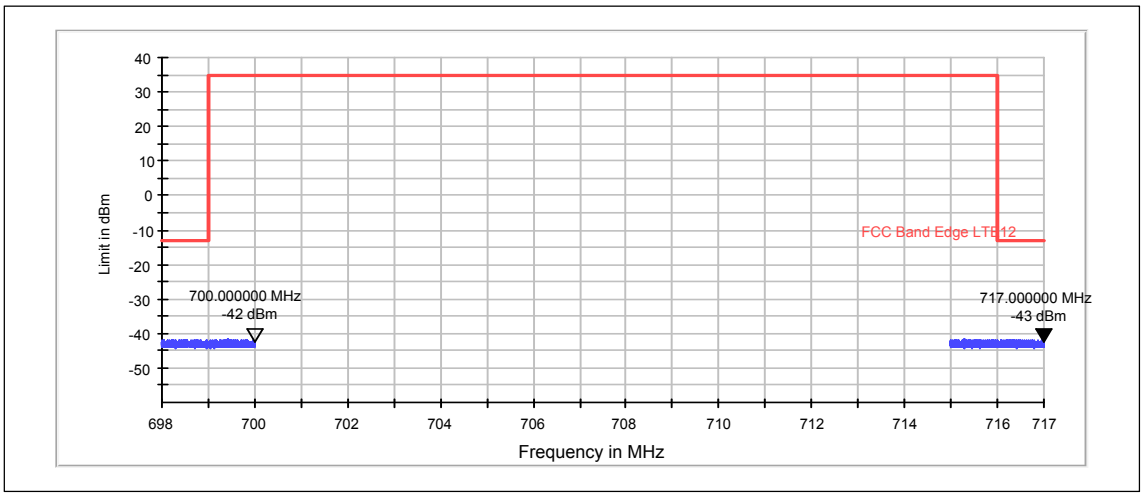
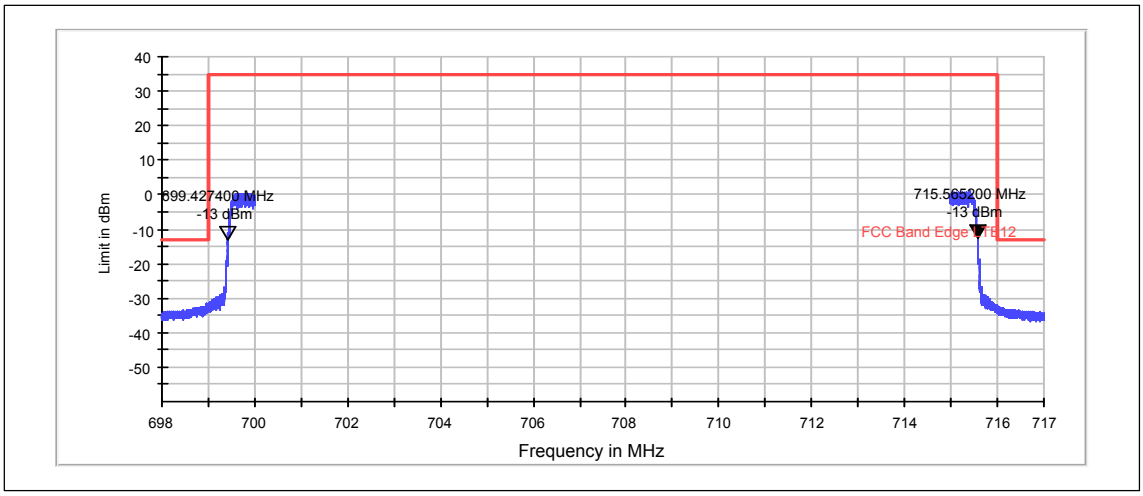


RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
-30	0.64373	700.000000	699.999999	717.000000	717.000000	PASSED

Channel 23095 / 707.5 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
50	0.17166	699.427400	699.427399	715.565200	715.565200	PASSED

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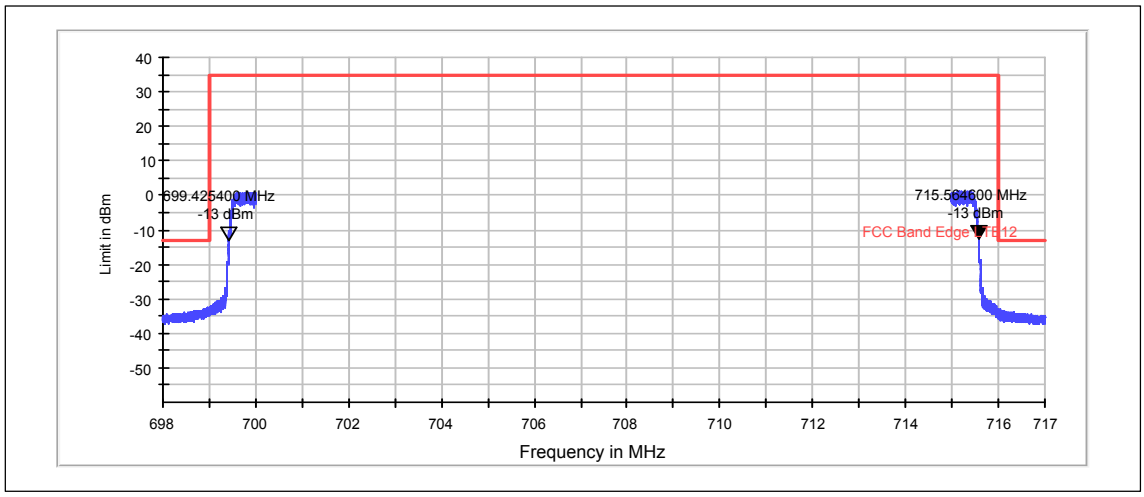
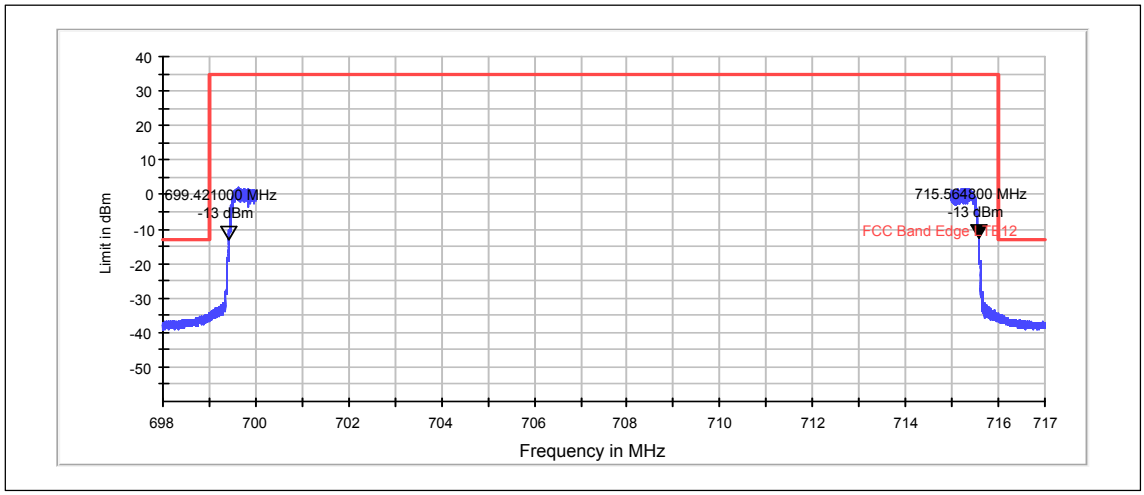
Channel 23095 / 707.5 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
20	1.11580	699.425400	699.425398	715.564600	715.564601	PASSED

Channel 23095 / 707.5 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
-30	0.04292	699.421000	699.420999	715.564800	715.564800	PASSED

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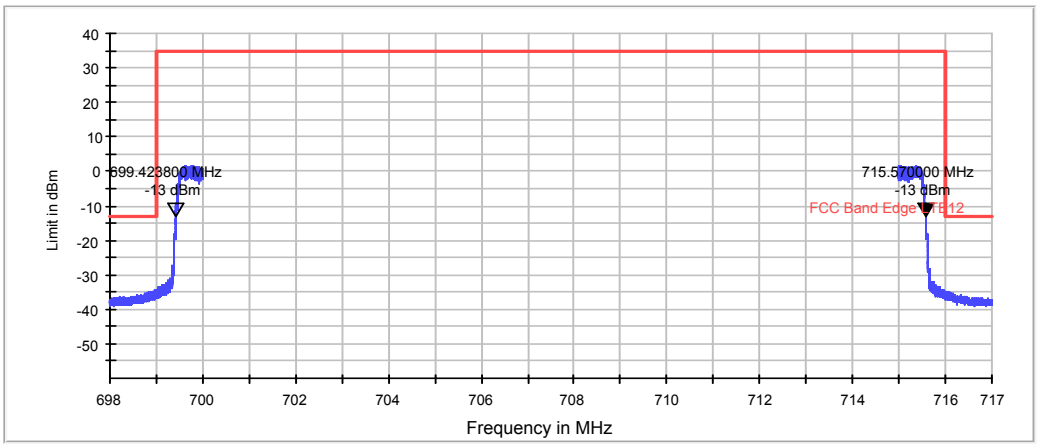
Channel 23095 / 707.5 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
-30	0.38624	699.423800	699.423799	715.570000	715.570000	PASSED

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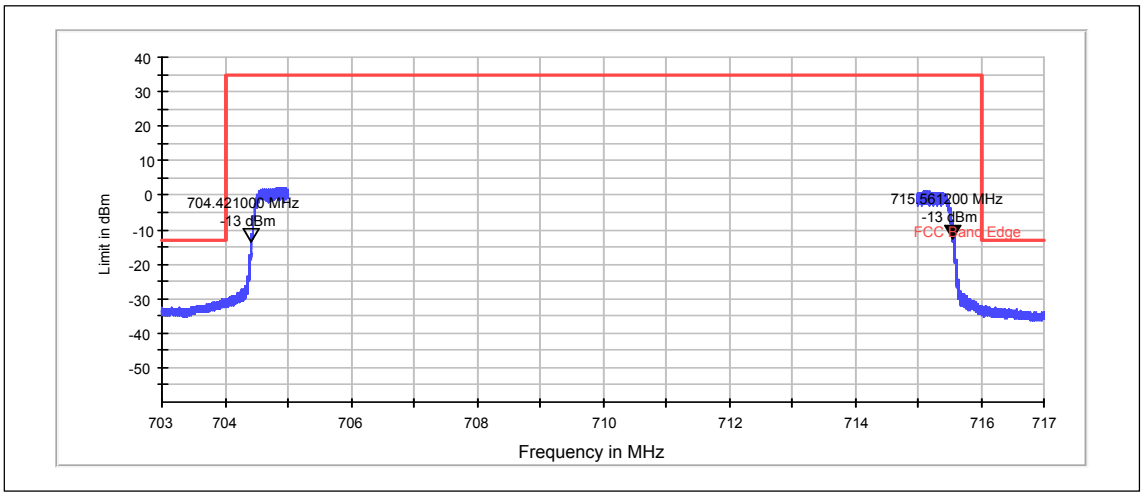
9.7. LTE17 Test results

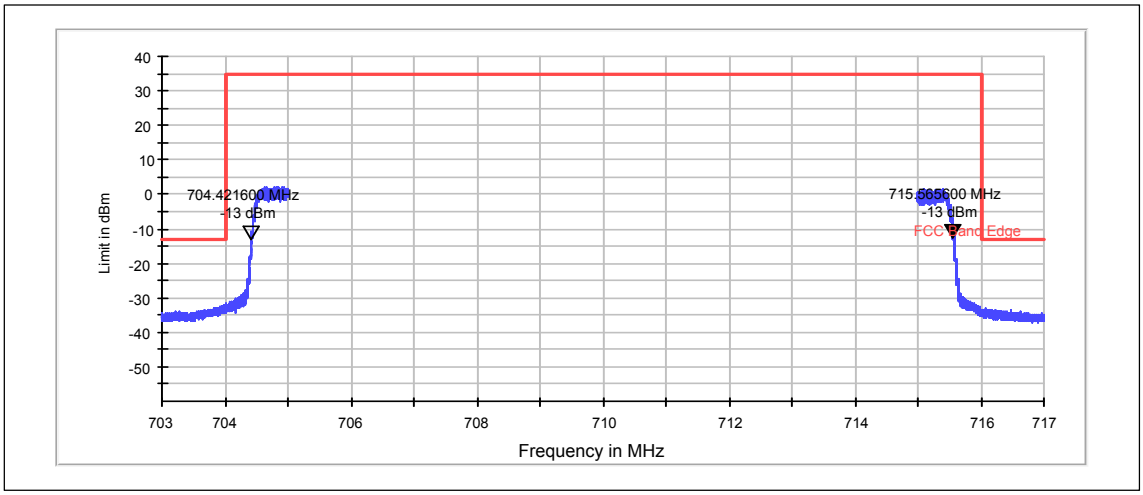
Channel 23790 / 710.0 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
50	-3.21865	704.421000	704.420996	715.561200	715.561203	PASSED

Channel 23790 / 710.0 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
20	-0.24319	704.421600	704.421599	715.565600	715.565600	PASSED

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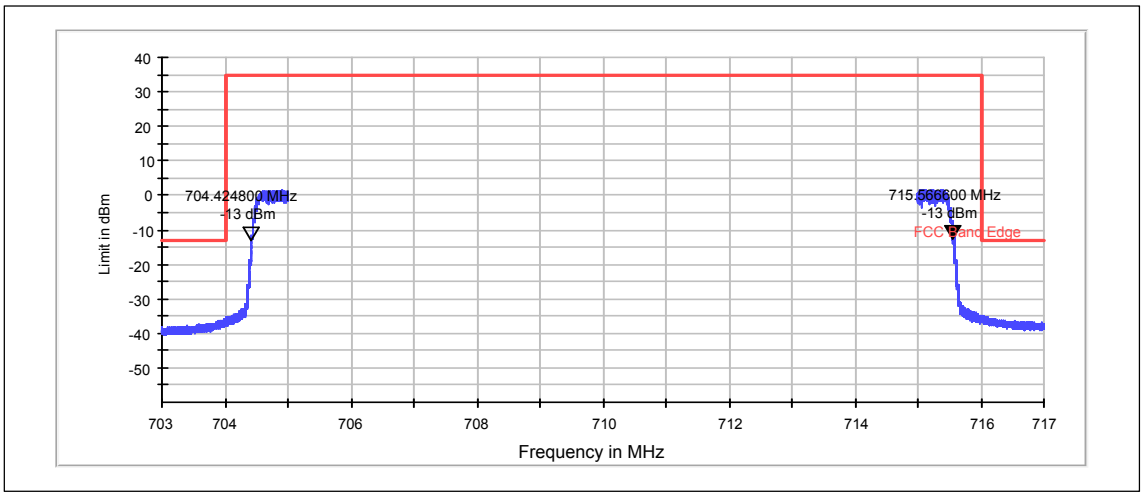
Channel 23790 / 710.0 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
-30	-0.44346	704.424800	704.424799	715.566600	715.566600	PASSED

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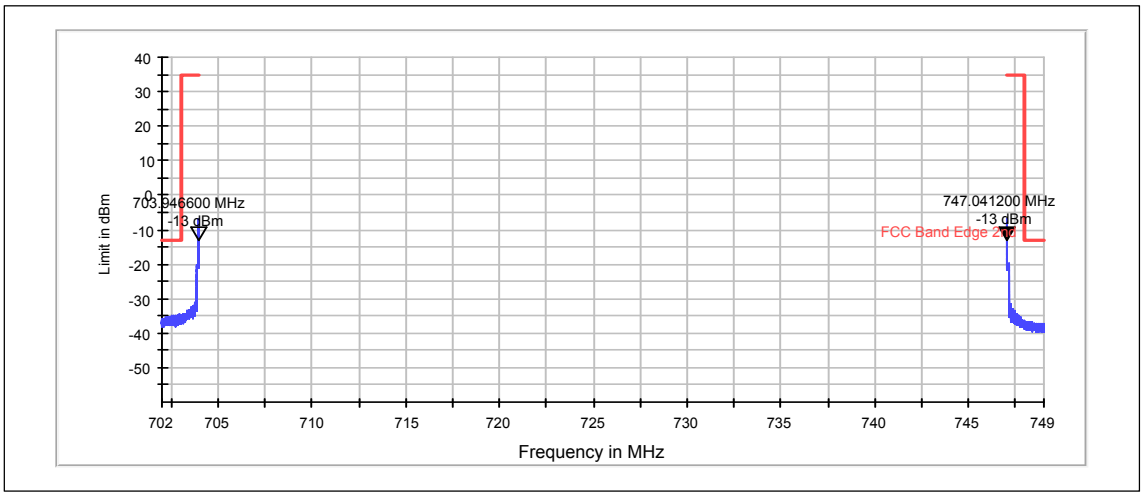
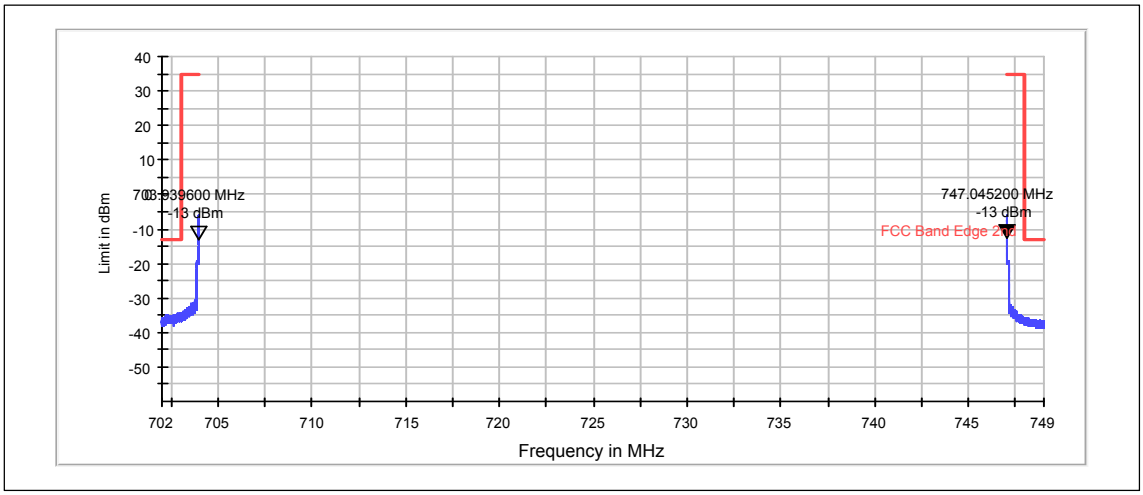
9.8. LTE28 Test results

Channel 27435 / 725.5 MHz



Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
50	-2.01702	703.946600	703.946597	747.041200	747.041202	PASSED

Channel 27435 / 725.5 MHz



Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
20	-1.98841	703.939600	703.939598	747.045200	747.045201	PASSED

Channel 27435 / 725.5 MHz

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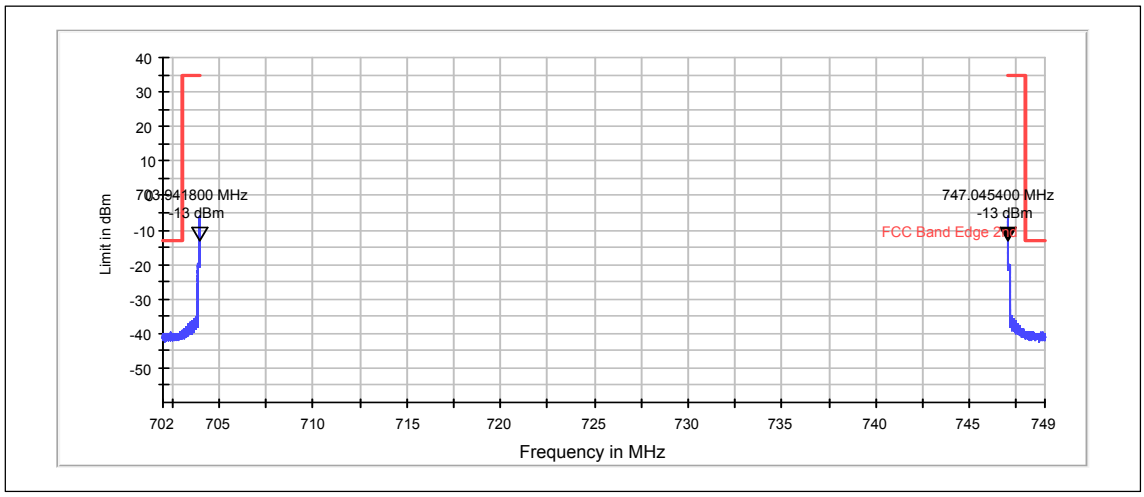

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
-30	-1.51634	703.941800	703.941798	747.045400	747.045401	PASSED

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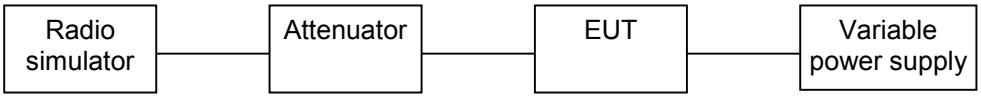
10. Frequency stability, voltage variation, (Band edge method)

§2.1055(d), §27.54,(RSS-139 6.3, RSS-130 4.3, RSS-199 4.3, RSS-130 4.3 (a))

EUT with DUT number	RM-1075, DUT 43249
Accessories with DUT numbers	SD-131, DUT 43233
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	25 / 35 / 100
Date of measurements	15-Jan-2015
Measured by	Hannu Söderholm

10.1. Test Setup



10.2. 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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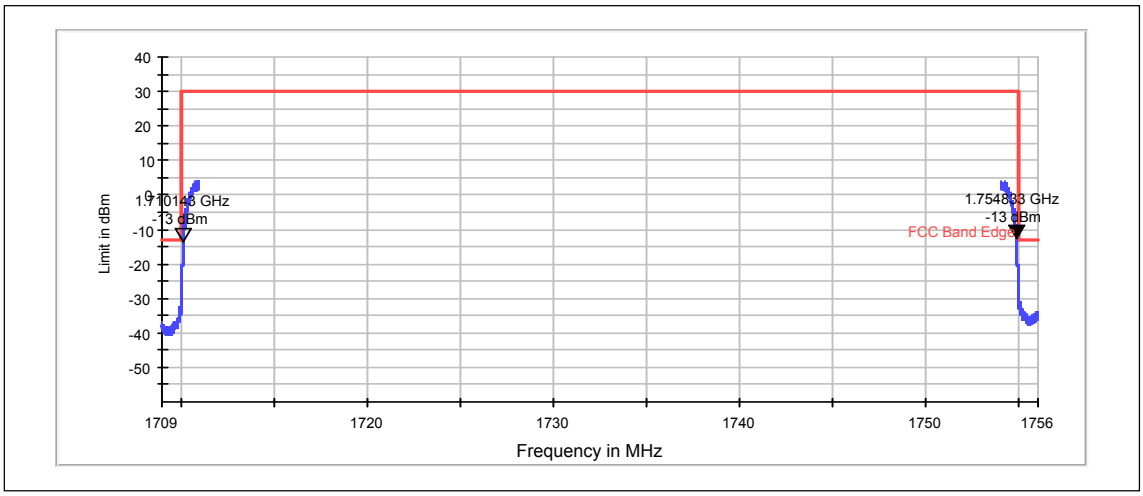
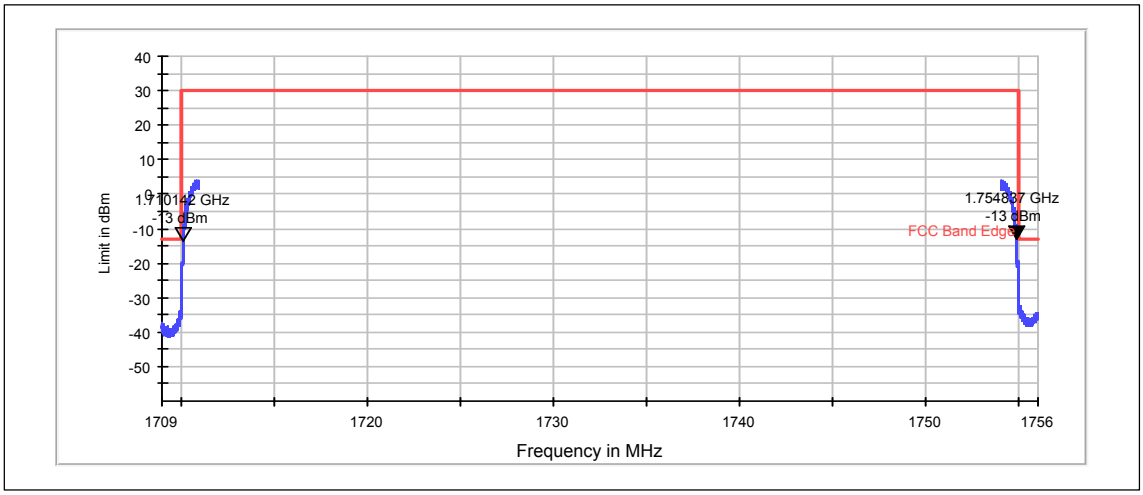
10.3. WCDMA4 Test results



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

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Max / 4.3	12.64954	1710.143400	1710.143387	1754.833200	1754.833212	PASSED



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

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Battery cut-off point / 3.4	16.22009	1710.142200	1710.142183	1754.837200	1754.837216	PASSED

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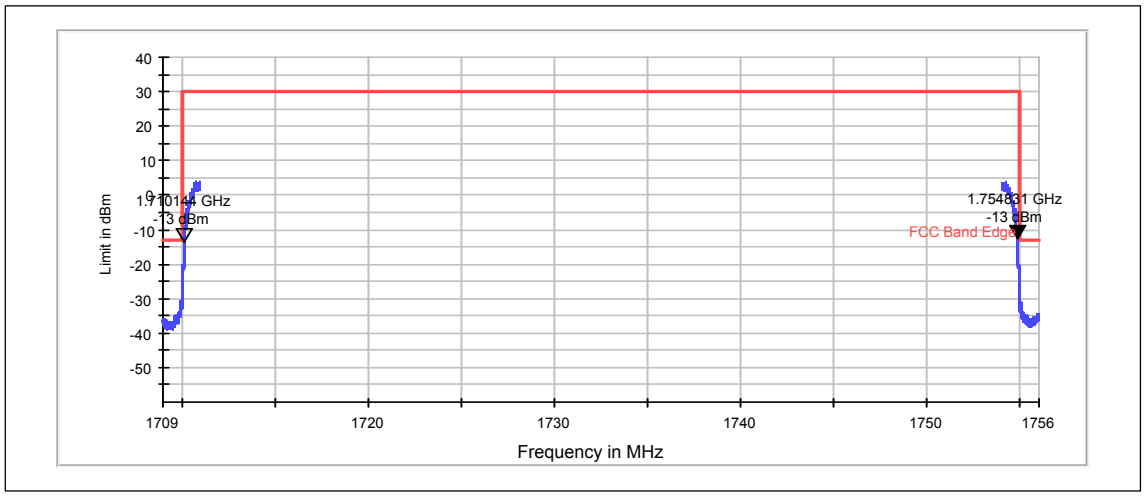

RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Nominal / 3.8	-1.03760	1710.144400	1710.144398	1754.831400	1754.831401	PASSED

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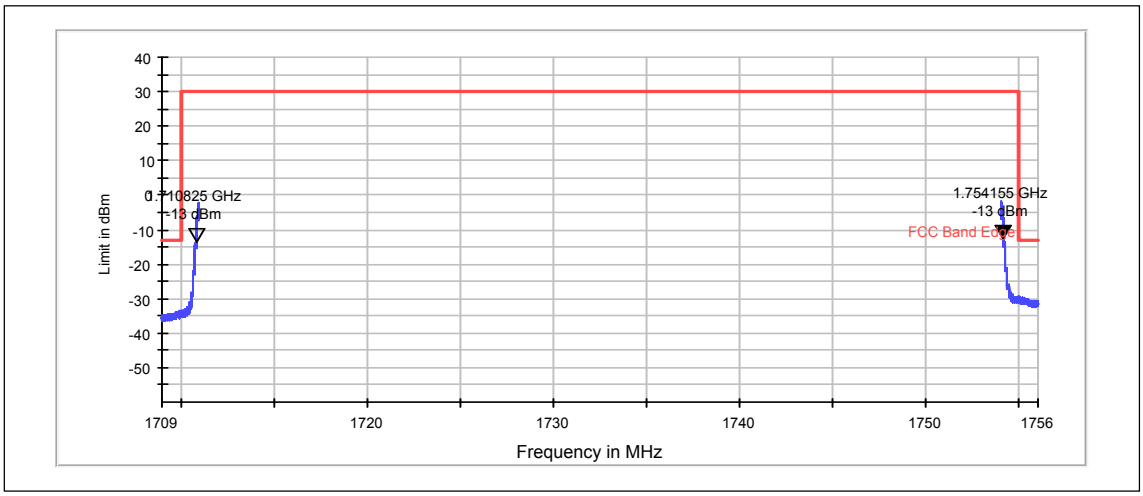
10.4. LTE4 Test results

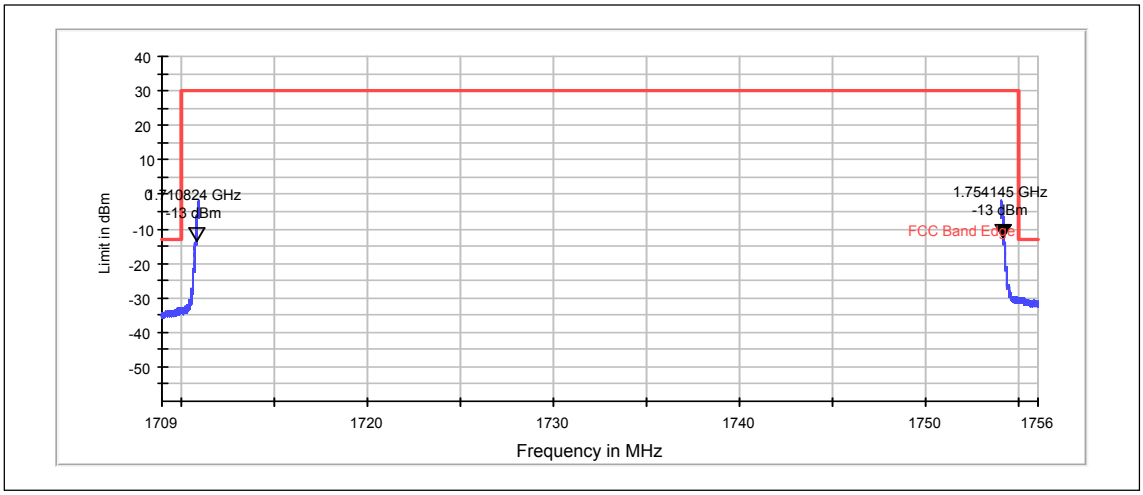
Channel 20175 / 1732.5 MHz



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 / 4.3	-1.95980	1710.825200	1710.825198	1754.154800	1754.154801	PASSED

Channel 20175 / 1732.5 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	-2.27451	1710.824000	1710.823997	1754.145000	1754.145002	PASSED

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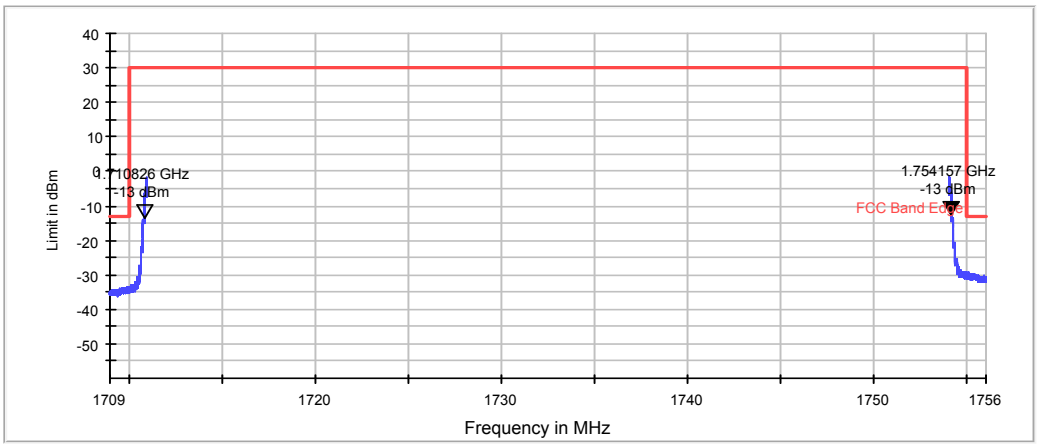
Channel 20175 / 1732.5 MHz



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 / 3.8	-1.97411	1710.825800	1710.825798	1754.156600	1754.156601	PASSED

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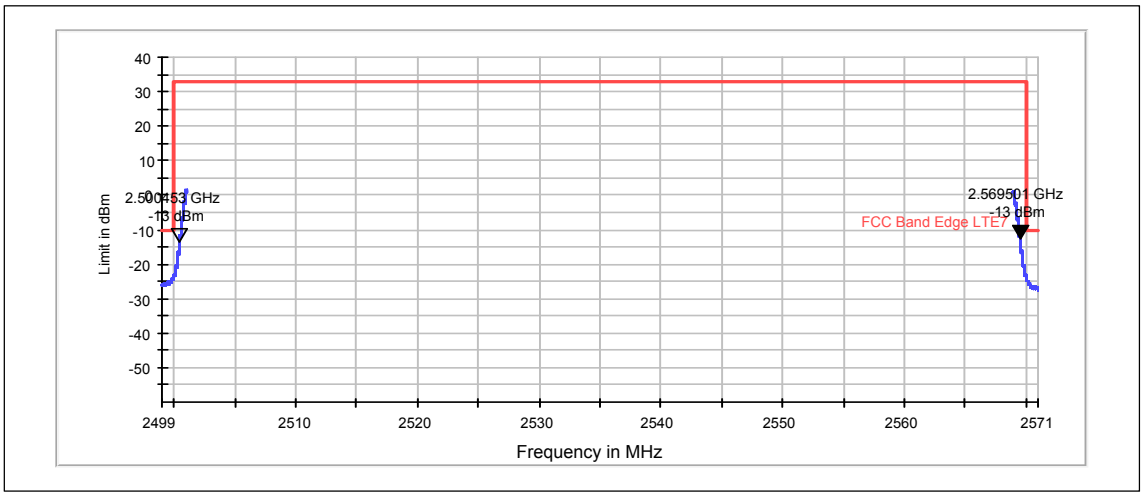
10.5. LTE7 Test results

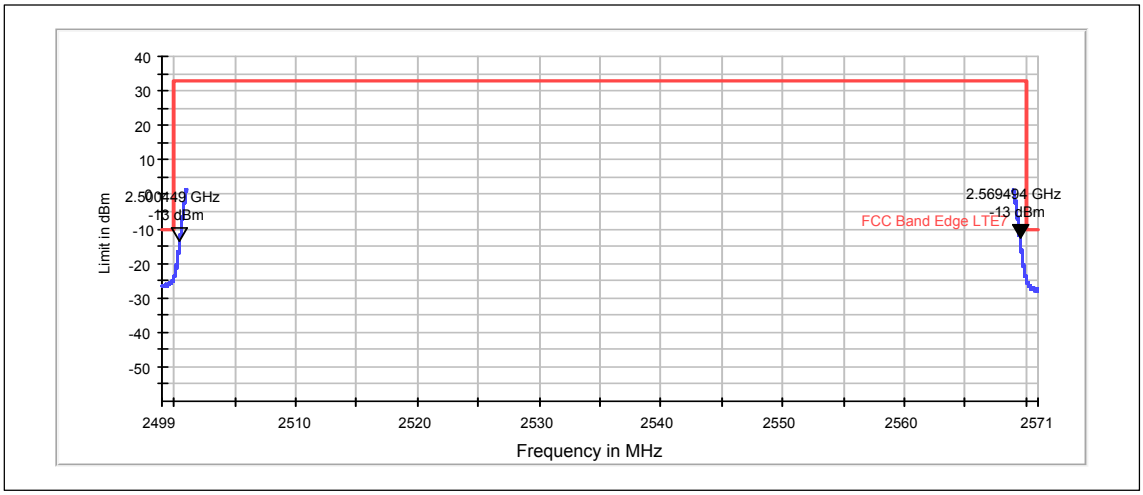
Channel 21100 / 2535.0 MHz



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 / 4.3	-5.97954	2500.453400	2500.453394	2569.501000	2569.501005	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	-11.91616	2500.449200	2500.449188	2569.494200	2569.494211	PASSED

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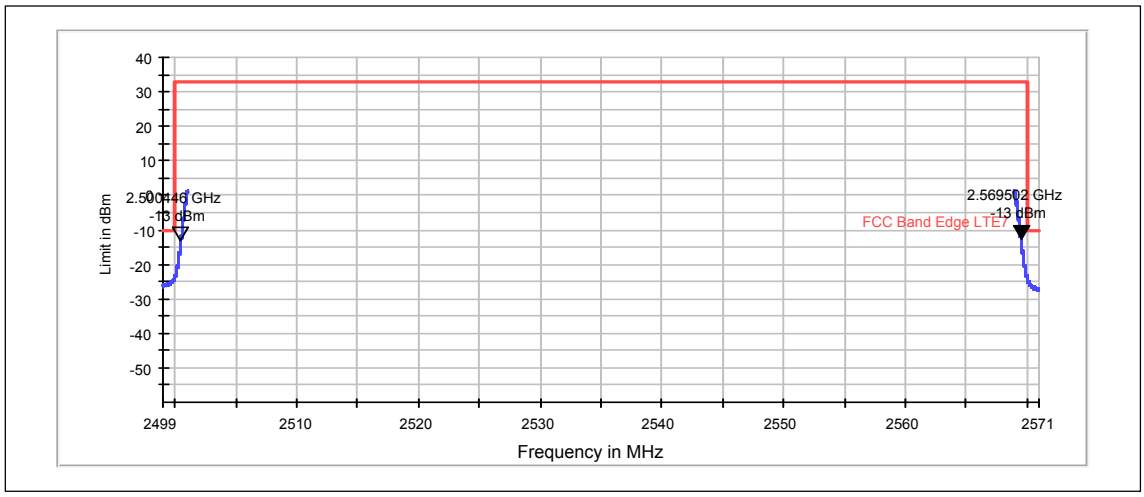
Channel 21100 / 2535.0 MHz



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 / 3.8	-12.81738	2500.445800	2500.445787	2569.502400	2569.502412	PASSED

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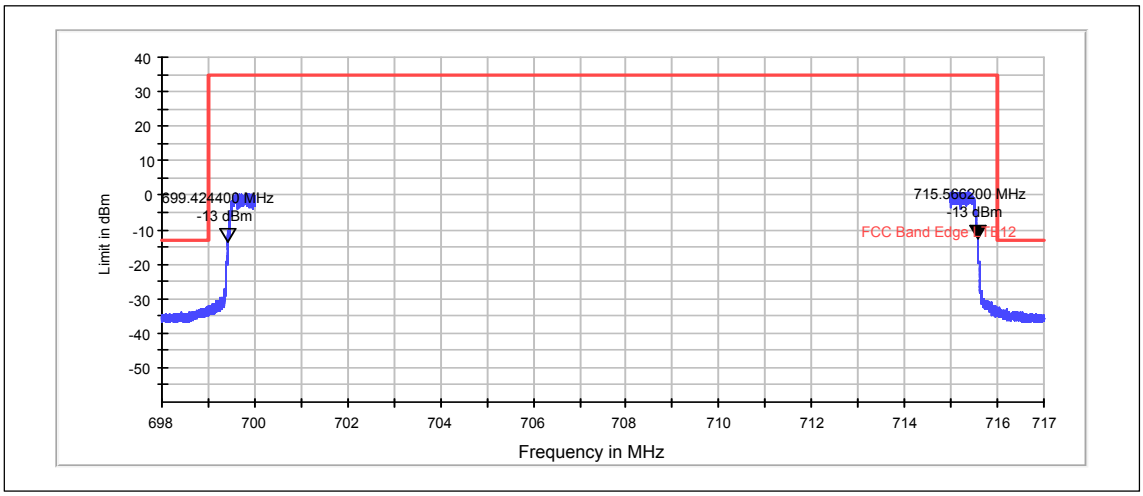
10.6. LTE12 Test results

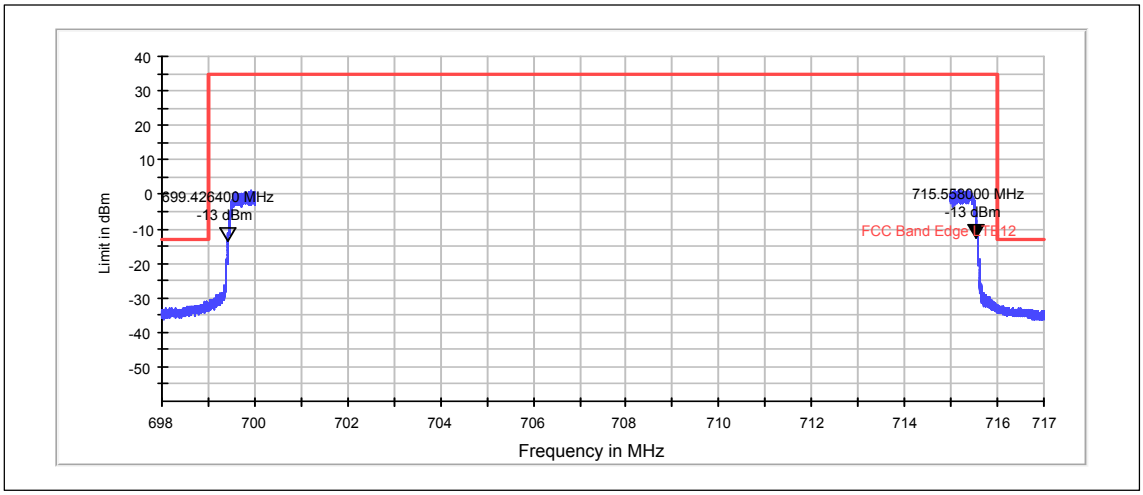
Channel 23095 / 707.5 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Max / 4.3	-0.62943	699.424400	699.424399	715.566200	715.566200	PASSED

Channel 23095 / 707.5 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Battery cut-off point / 3.4	0.45776	699.426400	699.426399	715.558000	715.558000	PASSED

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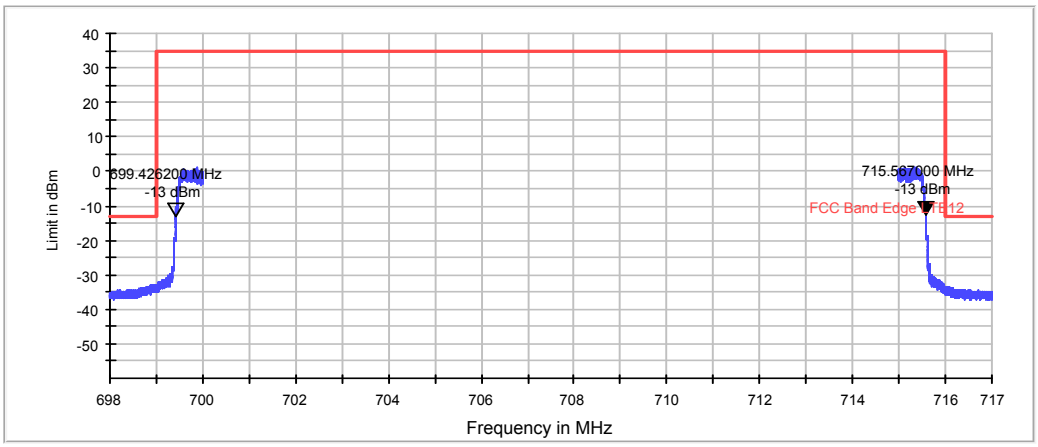
Channel 23095 / 707.5 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Nominal / 3.8	-0.22888	699.426200	699.426199	715.567000	715.567000	PASSED

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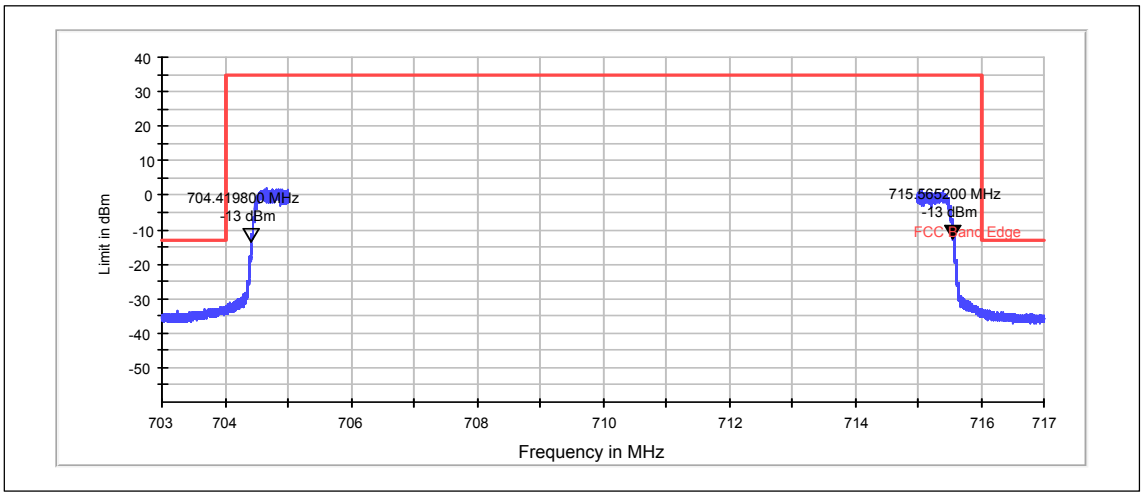
10.7. LTE17 Test results

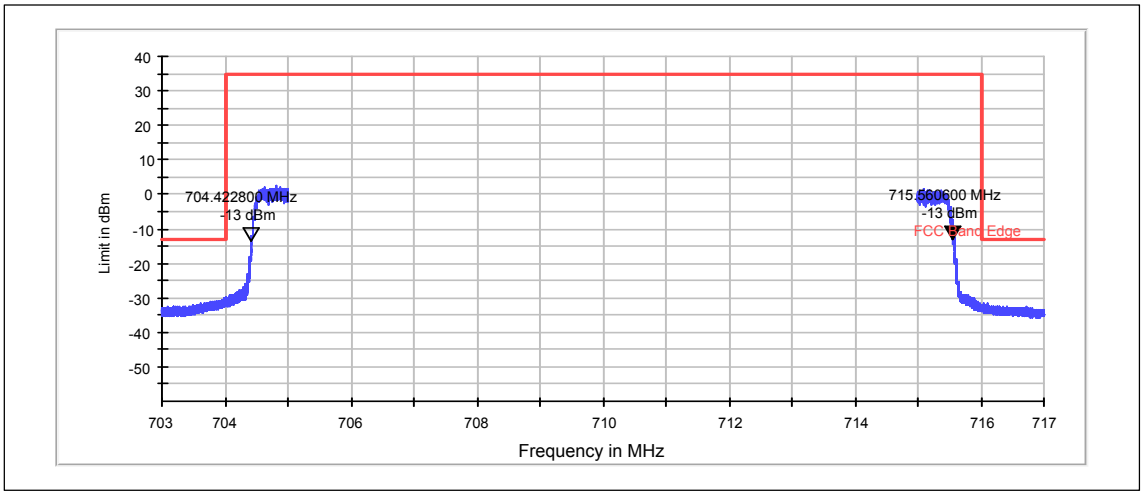
Channel 23790 / 710.0 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Max / 4.3	-3.20435	704.419800	704.419796	715.565200	715.565203	PASSED

Channel 23790 / 710.0 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Battery cut-off point / 3.4	-1.28746	704.422800	704.422798	715.560600	715.560601	PASSED

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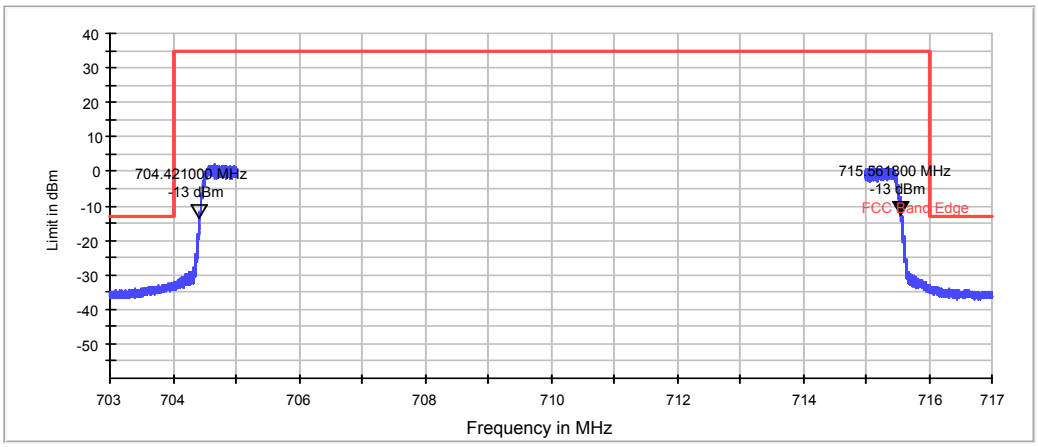
Channel 23790 / 710.0 MHz



RMS (RBW: 100 kHz, VBW: 300 kHz)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Nominal / 3.8	-2.14577	704.421000	704.420997	715.561800	715.561802	PASSED

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11. Test Equipment

11.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM38112	Power supply	6632A	Agilent	22/24/27, 15C, 15E
TM38114	Power supply	6632A	Agilent	22/24/27, 15C, 15E
TM210233	Communication Tester	CMU200	R&S	22/24/27
TM30600	Impulse limiter	ESH3-Z2	R&S	15C, 15B
TM26490	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM26491	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM37610	Spectrum Analyzer	FSU26	R&S	22/24/27, 15C, 15E
TM23007	Oscilloscope	TDS684B	Tektronix	15E
TM22806	Battery	BAT 20/E	Fiskars	15C, 15B
TM22805	UPS	PS 20/1.2	Fiskars	15C, 15B
-	Temperature and humidity logger	175-H2	Testo	15C, 15B
-	Temperature and humidity logger	175-H2	Testo	22/24/27, 15C
-	Air pressure and temperature logger	635-2	Testo	22/24/27, 15C, 15B
-	Air pressure sensor	0638-1835	Testo	22/24/27, 15C, 15B
-	Temperature test chamber	VT 4002	Vötsch	22/24/27
2001	Bluetooth tester	CBT	R&S	15C, 15B
2009	LISN 50 µH	ENV216	R&S	15C, 15B
2010	LISN 50 µH	ENV216	R&S	15C, 15B
2012	Power splitter	11667B	Agilent	22/24/27, 15C
2013	Attenuator	8493C	Agilent	22/24/27, 15C
2014	Attenuator	8493C	Agilent	22/24/27, 15C
2019	Power splitter	ZN2PD-9G-S+	Mini-Circuits	15E
2020	Power splitter	ZN2PD-9G-S+	Mini-Circuits	15E
2021	Communication Tester	CMW500	R&S	22/24/27
2022	Communication Tester	CMU200	R&S	22/24/27
2023	Spectrum Analyzer	ESMI-RF	R&S	15B/15C
2024	Analyzer display unit	ESAI-D	R&S	15B/15C
2026	Signal Generator	SMF 100A	R&S	22/24/27, 15C, 15E, 15B
-	Bluetooth tester	CBT	R&S	15C, 15B
-	Communication Tester	CMU200	R&S	22/24/27, 15B

11.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	Antenna	BBHA 9120 D	Schwarzbeck	22/24/27, 15C
TM38845	Receiver	ESIB 26	R&S	22/24/27, 15C, 15E, 15B
-	Antenna	HL562	R&S	22/24/27, 15C, 15E, 15B
-	Turntable	2188	EMCO	22/24/27, 15C, 15E, 15B
-	Turntable controller	2090	EMCO	22/24/27, 15C, 15E, 15B
-	RF system panel	OSP130	R&S	22/24/27, 15C, 15E, 15B
-	Mini mast	2075-2	ETS Lindgren	22/24/27, 15C, 15B
TM38843	Mini mast	2075	Emco	22/24/27, 15C, 15B
TM38842	Antenna mast controller	2090	Emco	22/24/27, 15C, 15B
TM30643	LISN 50 µH	LISN-5-20-2	FCC	22/24/27, 15C, 15B
TM30644	LISN 50 µH	LISN-5-20-2	FCC	22/24/27, 15C, 15B

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Eq. No	Equipment	Type	Manufacturer	Used in
-	Temperature and humidity logger	175-H2	Testo	22/24/27, 15C, 15B
-	Air pressure and temperature logger	635-2	Testo	22/24/27, 15C, 15B
-	Air pressure sensor	0638-1835	Testo	22/24/27, 15C, 15B
TM37523	Preamplifier	AMF-4D-10M-3G-25-20P	Miteq	22/24/27, 15C, 15B
TM37498	Preamplifier	AMF-5D-020180-26-10P	Miteq	22/24/27, 15C, 15B
TM30599	Semi anechoic chamber	UNKNOWN	TDK	22/24/27, 15C, 15B
TM22638	Power supply	OL63743-901	-	22/24/27, 15C, 15E, 15B
TM38066	High pass filter	WHKX3.0/18G-12SS	Wainwright	22/24/27, 15C, 15E, 15B
2028	High pass filter	WHKX 1.0/15G-12SS	Wainwright	22/24/27, 15C,15E, 15B
TM37545	Tunable notch filter	800.0/960.0-0.2/40-8SSK	Wainwright	22
TM26512	Tunable notch filter	WRCD1850/1910-0.2/40-10SSK	Wainwright	24
-	Band reject filter	WRCG1877/1883-1870/1890-40/6EE	Wainwright	24
-	Band reject filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
TM23892	Controller	G-1000SDX	Yaesu	22/24/27, 15C, 15E
2001	Bluetooth tester	CBT	R&S	15C, 15B
2002	Communication Tester	CMU200	R&S	22/24/27, 15B
6023	Antenna	VUBA 9117	Schwarzbeck	22/24/27
2021	Communication Tester	CMW500	R&S	22/24/27
2025	Antenna	HFH2-Z2	R&S	15C
2026	Signal Generator	SMF 100A	R&S	22/24/27, 15C, 15E, 15B
2052	Antenna	BBHA 9120 D	Schwarzbeck	22/24/27, 15C, 15B, 15E
-	Antenna	QSH18S20	Q-Par	22/24/27, 15C, 15B, 15E
-	Antenna	QSH20S20	Q-Par	22/24/27, 15C, 15B, 15E
-	Antenna	QSH20S20	Q-Par	22/24/27, 15C, 15B, 15E
-	Bluetooth tester	CBT	R&S	15C, 15B

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