FCC Part 22/24/27 Compliance Test Report

Test Report no.:	FCC_Cellular_RM-1150_03.docx	**Date of Report:**	09-Dec-2015
Number of pages:	116	**Customer's Contact person:**	Juha Paukku
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-1150 / Dummy battery SD-134 / Battery BV-T3G (LG) / Charger AC-18E / Headset WH-108**		
FCC ID:	PYARM-1150	**IC:**	-
Supplement reports:	-		
Testing has been carried out in accordance with:	**47 CFR 2/22/24/27/90, TIA-603-D, RSS-130 (Issue 1), RSS-132 (Issue 3), RSS-133 (Issue 6), RSS-139 (Issue 3), RSS-195 (Issue 2), RSS-199 (Issue 2) and RSS-Gen (Issue 4). 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: 2015.12.09 15:12:48 +02'00'		

Timo Raiskio, System Manager, EMC

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

Date of receipt	11-Nov-2015
Testing completed	01-Dec-2015
The customer's contact person	Juha Paukku
Test Plan referred to	T:\Projects\RM-1150\TestPlan\TP_EMC_FCC_RM-1150.xlsx
Notes	-
Document name	Y:\Projects\RM-1150\EMC\FCC_Cellular_RM-1150_03.docx

1.1. EUT and Accessory Information

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-1150	004402743294716	1520	-	01078.00010.15443.36000	400059
Dummy battery	SD-134	2301637	v.1	-	-	400053
Battery	BV-T3G (LG)	495540534301030409 4;0670783	1.0	-	-	400051
Charger	AC-18E	409049352175050170 1;0675695	-	-	-	400050
Headset	WH-108	-	4.0	4.0	-	42927

1.2. Summary of Test Results

GSM 1900:

Section in CFR 47	Section in RSS-GEN or RSS-133	Name of the test	Result
§2.1046(a)	6.4	Conducted RF output power	-
§24.232(b)	6.4	Radiated RF output power	PASSED
N/A	6.4	Peak to average power ratio	PASSED
§2.1049(h)	6.6	99 % occupied bandwidth	PASSED
§24.238(a)	6.5	Band edge compliance	PASSED
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	-
§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)	6.6	99 % occupied bandwidth	PASSED
§22.917(a)	4.5	Band edge compliance	PASSED
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	-
§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	-
§2.1049(h)	6.6	99 % occupied bandwidth	PASSED
§24.238(a)	6.5	Band edge compliance	PASSED
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	-
§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	-
§2.1049(h)	6.6	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	-
§2.1049(h)	6.6	99 % occupied bandwidth	PASSED
§22.917(a)	4.5	Band edge compliance	PASSED
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	-
§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)	6.6	99 % occupied bandwidth	PASSED
§24.238(a)	6.5	Band edge compliance	PASSED
§24.238(a), §2.1051	6.5	Spurious emissions at antenna terminals	-
§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	-
§2.1049(h)	6.6	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)	6.6	99 % occupied bandwidth	PASSED
§22.917(a)	4.5	Band edge compliance	PASSED
§22.917(a), §2.1051	4.5	Spurious emissions at antenna terminals	-
§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)	6.6	99 % occupied bandwidth	PASSED
§27.53(l)	4.5(b)	Band edge compliance	PASSED
§2.1051	4.5(b)	Spurious emissions at antenna terminals	-
§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	ς esult
§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	PASSED
§2.1049(h)	6.6	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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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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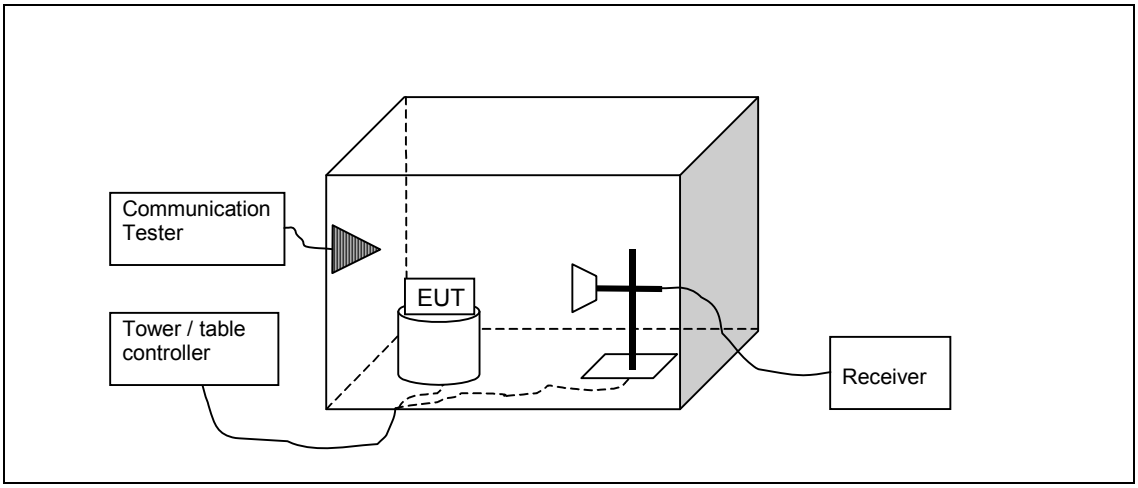
2. Radiated RF output power

EUT with DUT number	RM-1150, DUT 400060
Accessories with DUT numbers	BV-T3G, DUT 400062
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 41 / 99.4
Date of measurements	27-Nov-2015
Measured by	Timo Raiskio

2.1.1 Test setup



2.2. Test method and limit

The measurement was made according to TIA-603-D as follows:

The EUT was tested in an anechoic chamber with absorbers on the floor, measuring antenna at fixed height in horizontal and vertical polarizations and EUT set in three orthogonal orientations on the turn table, which was rotated 360 degrees.

The E(I)RP values were obtained using substitution method 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
1710 - 1755	1 EiRP	30
2502.5 - 2567.5	2 EiRP	33
1850 - 1910	2 EiRP	33
699 - 712	2 ERP	33

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2.3. GSM 850 test results, Antenna 1

RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
128 / 824.2	23.86	0.243	-7.79	31.65	VERTICAL	PASSED
190 / 836.6	25.05	0.32	-6.59	31.64	VERTICAL	PASSED
251 / 848.8	24.67	0.293	-7.28	31.95	VERTICAL	PASSED

2.4. GSM 850 test results, Antenna 2

RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
128 / 824.2	21.78	0.151	-9.87	31.65	VERTICAL	PASSED
190 / 836.6	21.68	0.147	-10.07	31.75	HORIZONTAL	PASSED
251 / 848.8	22.18	0.165	-8.94	31.12	HORIZONTAL	PASSED

2.5. GSM 850 E-GPRS (MSC9) test results, Antenna 1

RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
128 / 824.2	21.08	0.128	-10.94	32.02	HORIZONTAL	PASSED
190 / 836.6	20.14	0.103	-11.5	31.64	VERTICAL	PASSED
251 / 848.8	20.82	0.121	-11.13	31.95	VERTICAL	PASSED

2.6. GSM 850 E-GPRS (MSC9) test results, Antenna 2

RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
128 / 824.2	18.1	0.065	-13.92	32.02	HORIZONTAL	PASSED
190 / 836.6	17.51	0.056	-14.13	31.64	VERTICAL	PASSED
251 / 848.8	20.75	0.119	-11.2	31.95	VERTICAL	PASSED

2.7. GSM 1900 test results, Antenna 1

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
512 / 1850.2	26.72	0.47	-16.16	42.88	HORIZONTAL	PASSED
661 / 1880	27.04	0.506	-15.77	42.81	HORIZONTAL	PASSED
810 / 1909.8	27.54	0.567	-15.58	43.12	HORIZONTAL	PASSED

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2.8. GSM 1900 test results, Antenna 2

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
512 / 1850.2	27.35	0.543	-15.53	42.88	HORIZONTAL	PASSED
661 / 1880	27.05	0.507	-15.76	42.81	HORIZONTAL	PASSED
810 / 1909.8	26.61	0.459	-16.51	43.12	HORIZONTAL	PASSED

2.9. GSM 1900 E-GPRS (MSC9) test results, Antenna 1

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
512 / 1850.2	23.8	0.24	-19.08	42.88	HORIZONTAL	PASSED
661 / 1880	23.97	0.249	-18.84	42.81	HORIZONTAL	PASSED
810 / 1909.8	25.37	0.344	-17.75	43.12	HORIZONTAL	PASSED

2.10. GSM 1900 E-GPRS (MSC9) test results, Antenna 2

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
512 / 1850.2	22.79	0.19	-20.09	42.88	HORIZONTAL	PASSED
661 / 1880	21.85	0.153	-20.96	42.81	HORIZONTAL	PASSED
810 / 1909.8	22.32	0.171	-20.8	43.12	HORIZONTAL	PASSED

2.11. WCDMA2 test results, Antenna 1

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
9262 / 1852.4	19.57	0.091	-23.29	42.86	HORIZONTAL	PASSED
9400 / 1880	20.91	0.123	-21.9	42.81	HORIZONTAL	PASSED
9538 / 1907.6	21.81	0.152	-21.15	42.96	HORIZONTAL	PASSED

2.12. WCDMA2 test results, Antenna 2

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
9262 / 1852.4	21.52	0.142	-21.34	42.86	HORIZONTAL	PASSED
9400 / 1880	21.27	0.134	-21.54	42.81	HORIZONTAL	PASSED
9538 / 1907.6	19.87	0.097	-23.09	42.96	HORIZONTAL	PASSED

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2.13. WCDMA4 test results, Antenna 1

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1312 / 1712.4	22.71	0.187	-19.22	41.93	VERTICAL	PASSED
1412 / 1732.4	22.72	0.187	-19.44	42.16	VERTICAL	PASSED
1513 / 1752.6	21.89	0.154	-20.4	42.29	VERTICAL	PASSED

2.14. WCDMA4 test results, Antenna 2

RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1312 / 1712.4	21.23	0.133	-20.7	41.93	VERTICAL	PASSED
1412 / 1732.4	20.02	0.101	-22.06	42.08	HORIZONTAL	PASSED
1513 / 1752.6	20.37	0.109	-21.92	42.29	VERTICAL	PASSED

2.15. WCDMA5 test results, Antenna 1

RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
4132 / 826.4	14.82	0.03	-16.78	31.6	VERTICAL	PASSED
4175 / 835	14.66	0.029	-17.03	31.69	VERTICAL	PASSED
4233 / 846.6	15.33	0.034	-16.55	31.88	VERTICAL	PASSED

2.16. WCDMA5 test results, Antenna 2

RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
4132 / 826.4	14.79	0.03	-16.81	31.6	VERTICAL	PASSED
4175 / 835	15.26	0.034	-16.43	31.69	VERTICAL	PASSED
4233 / 846.6	15.01	0.032	-16.87	31.88	VERTICAL	PASSED

2.17. LTE2 test results, Antenna 1

FDD, CBW 20MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1860	21.79	0.151	-21.15	42.94	HORIZONTAL	PASSED
18900 / 1880	21.9	0.155	-20.91	42.81	HORIZONTAL	PASSED
18900 / 1900	21.93	0.156	-21.15	43.08	HORIZONTAL	PASSED

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FDD, CBW 10MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1855	21.07	0.128	-21.81	42.88	HORIZONTAL	PASSED
18900 / 1880	22.23	0.167	-20.58	42.81	HORIZONTAL	PASSED
18900 / 1905	22.15	0.164	-20.91	43.06	HORIZONTAL	PASSED

FDD, CBW 20MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1860	21.46	0.14	-21.48	42.94	HORIZONTAL	PASSED
18900 / 1880	21.97	0.157	-20.84	42.81	HORIZONTAL	PASSED
18900 / 1900	21.95	0.157	-21.13	43.08	HORIZONTAL	PASSED

2.18. LTE2 test results, Antenna 2

FDD, CBW 20MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1860	22.12	0.163	-20.82	42.94	HORIZONTAL	PASSED
18900 / 1880	21.71	0.148	-21.1	42.81	HORIZONTAL	PASSED
18900 / 1900	21.52	0.142	-21.56	43.08	HORIZONTAL	PASSED

FDD, CBW 20MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1860	22.12	0.163	-20.82	42.94	HORIZONTAL	PASSED
18900 / 1880	22.16	0.164	-20.65	42.81	HORIZONTAL	PASSED
18900 / 1900	21.38	0.137	-21.7	43.08	HORIZONTAL	PASSED

2.19. LTE4 test results, Antenna 1

FDD, CBW 10MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1715	23.61	0.229	-18.22	41.83	VERTICAL	PASSED
20175 / 1732.5	23.14	0.206	-19.02	42.16	VERTICAL	PASSED
20175 / 1750	22.5	0.178	-19.73	42.23	VERTICAL	PASSED

FDD, CBW 20MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1720	23.54	0.226	-18.32	41.86	VERTICAL	PASSED
20175 / 1732.5	23.21	0.209	-18.95	42.16	VERTICAL	PASSED
20175 / 1745	22.93	0.196	-19.26	42.19	VERTICAL	PASSED

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FDD, CBW 3MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1711.5	23.65	0.232	-18.29	41.94	VERTICAL	PASSED
20175 / 1732.5	22.56	0.18	-19.6	42.16	VERTICAL	PASSED
20175 / 1753.5	22.14	0.164	-20.13	42.27	VERTICAL	PASSED

FDD, CBW 20MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1720	23.61	0.23	-18.25	41.86	VERTICAL	PASSED
20175 / 1732.5	23.07	0.203	-19.09	42.16	VERTICAL	PASSED
20175 / 1745	22.83	0.192	-19.36	42.19	VERTICAL	PASSED

2.20. LTE4 test results, Antenna 2

FDD, CBW 10MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1715	21.21	0.132	-20.62	41.83	HORIZONTAL	PASSED
20175 / 1732.5	21.08	0.128	-21	42.08	HORIZONTAL	PASSED
20175 / 1750	20.8	0.12	-21.43	42.23	HORIZONTAL	PASSED

FDD, CBW 20MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1720	20.71	0.118	-21.16	41.87	HORIZONTAL	PASSED
20175 / 1732.5	20.94	0.124	-21.14	42.08	HORIZONTAL	PASSED
20175 / 1745	20.64	0.116	-21.49	42.13	HORIZONTAL	PASSED

FDD, CBW 10MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1715	20.76	0.119	-21.07	41.83	HORIZONTAL	PASSED
20175 / 1732.5	20.66	0.116	-21.42	42.08	HORIZONTAL	PASSED
20175 / 1750	20.39	0.109	-21.84	42.23	HORIZONTAL	PASSED

FDD, CBW 20MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 1720	20.77	0.12	-21.1	41.87	HORIZONTAL	PASSED
20175 / 1732.5	21.13	0.13	-20.95	42.08	HORIZONTAL	PASSED
20175 / 1745	20.6	0.115	-21.53	42.13	HORIZONTAL	PASSED

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2.21. LTE5 test results, Antenna 1

FDD, CBW 1.4MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 824.7	14.8	0.03	-17.22	32.02	HORIZONTAL	PASSED
20525 / 836.5	15.42	0.035	-16.23	31.65	VERTICAL	PASSED
20525 / 848.3	16.65	0.046	-15.3	31.95	VERTICAL	PASSED

FDD, CBW 10MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 829	15.27	0.034	-16.31	31.58	VERTICAL	PASSED
20525 / 836.5	15.87	0.039	-15.78	31.65	VERTICAL	PASSED
20525 / 844	16.42	0.044	-15.48	31.9	VERTICAL	PASSED

FDD, CBW 1.4MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 824.7	14.73	0.03	-16.91	31.64	VERTICAL	PASSED
20525 / 836.5	15.75	0.038	-15.9	31.65	VERTICAL	PASSED
20525 / 848.3	16.26	0.042	-15.69	31.95	VERTICAL	PASSED

FDD, CBW 10MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 829	14.97	0.031	-16.61	31.58	VERTICAL	PASSED
20525 / 836.5	15.55	0.036	-16.1	31.65	VERTICAL	PASSED
20525 / 844	15.97	0.04	-15.93	31.9	VERTICAL	PASSED

2.22. LTE5 test results, Antenna 2

FDD, CBW 1.4MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 824.7	14.99	0.032	-16.65	31.64	VERTICAL	PASSED
20525 / 836.5	16.68	0.047	-14.97	31.65	VERTICAL	PASSED
20525 / 848.3	15.87	0.039	-16.08	31.95	VERTICAL	PASSED

FDD, CBW 10MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 829	15.31	0.034	-16.27	31.58	VERTICAL	PASSED
20525 / 836.5	16.42	0.044	-15.23	31.65	VERTICAL	PASSED
20525 / 844	16.41	0.044	-15.49	31.9	VERTICAL	PASSED

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FDD, CBW 1.4MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 824.7	15.22	0.033	-16.42	31.64	VERTICAL	PASSED
20525 / 836.5	16.6	0.046	-15.05	31.65	VERTICAL	PASSED
20525 / 848.3	16.55	0.045	-15.4	31.95	VERTICAL	PASSED

FDD, CBW 10MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 829	15.36	0.034	-16.22	31.58	VERTICAL	PASSED
20525 / 836.5	16.17	0.041	-15.48	31.65	VERTICAL	PASSED
20525 / 844	16.14	0.041	-15.76	31.9	VERTICAL	PASSED

2.23. LTE7 test results, Antenna 1

FDD, CBW 20MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 2510	23.82	0.241	-23.53	47.35	VERTICAL	PASSED
21100 / 2535	24.11	0.258	-23.29	47.4	VERTICAL	PASSED
21100 / 2560	23.92	0.247	-23.81	47.73	VERTICAL	PASSED

FDD, CBW 20MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 2510	23.62	0.23	-23.73	47.35	VERTICAL	PASSED
21100 / 2535	23.76	0.238	-23.64	47.4	VERTICAL	PASSED
21100 / 2560	23.72	0.236	-24.01	47.73	VERTICAL	PASSED

2.24. LTE7 test results, Antenna 2

FDD, CBW 20MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 2510	22.34	0.172	-25.01	47.35	VERTICAL	PASSED
21100 / 2535	22.21	0.166	-25.19	47.4	VERTICAL	PASSED
21100 / 2560	22.61	0.182	-25.12	47.73	VERTICAL	PASSED

FDD, CBW 20MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	EIRP [dBm]	EIRP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 2510	22.56	0.18	-24.79	47.35	VERTICAL	PASSED
21100 / 2535	22.1	0.162	-25.3	47.4	VERTICAL	PASSED
21100 / 2560	22.83	0.192	-24.9	47.73	VERTICAL	PASSED

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2.25. LTE12 test results, Antenna 1

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	17.17	0.052	-13.64	30.81	VERTICAL	PASSED
23095 / 707.5	17.91	0.062	-13.24	31.15	VERTICAL	PASSED
23155 / 713.5	17.79	0.06	-13.29	31.08	VERTICAL	PASSED

FDD, CBW 10MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 704	17.28	0.053	-13.71	30.99	VERTICAL	PASSED
23095 / 707.5	17.25	0.053	-13.9	31.15	VERTICAL	PASSED
23095 / 711	17.29	0.054	-13.81	31.1	VERTICAL	PASSED

FDD, CBW 1.4MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 699.7	16.18	0.041	-14.51	30.69	VERTICAL	PASSED
23095 / 707.5	17.87	0.061	-13.28	31.15	VERTICAL	PASSED
23095 / 715.3	17.42	0.055	-13.64	31.06	VERTICAL	PASSED

FDD, CBW 10MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 704	17.27	0.053	-13.72	30.99	VERTICAL	PASSED
23095 / 707.5	17.11	0.051	-14.04	31.15	VERTICAL	PASSED
23095 / 711	16.86	0.048	-14.24	31.1	VERTICAL	PASSED

2.26. LTE12 test results, Antenna 2

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	15.79	0.038	-14.03	29.82	HORIZONTAL	PASSED
23095 / 707.5	16.62	0.046	-13.41	30.03	HORIZONTAL	PASSED
23155 / 713.5	17.68	0.059	-12.67	30.35	HORIZONTAL	PASSED

FDD, CBW 10MHz, QPSK, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 704	16.77	0.048	-13.1	29.87	HORIZONTAL	PASSED
23095 / 707.5	16.76	0.047	-13.27	30.03	HORIZONTAL	PASSED
23095 / 711	17.46	0.056	-12.72	30.18	HORIZONTAL	PASSED

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FDD, CBW 1.4MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 699.7	15.37	0.034	-14.42	29.79	HORIZONTAL	PASSED
23095 / 707.5	16.78	0.048	-13.25	30.03	HORIZONTAL	PASSED
23095 / 715.3	17.9	0.062	-12.57	30.47	HORIZONTAL	PASSED

FDD, CBW 10MHz, 16QAM, 1RB mid, RMS detector

Channel / f_C [MHz]	ERP [dBm]	ERP [W]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
0 / 704	16.11	0.041	-13.76	29.87	HORIZONTAL	PASSED
23095 / 707.5	16.8	0.048	-13.23	30.03	HORIZONTAL	PASSED
23095 / 711	16.89	0.049	-13.29	30.18	HORIZONTAL	PASSED

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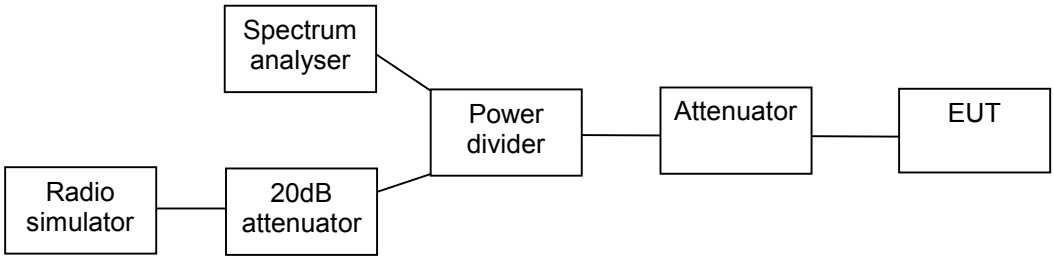
3. Peak to average power ratio

EUT with DUT number	RM-1150, DUT 400059
Accessories with DUT numbers	SD-134, DUT 400053
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	RF Cond 2
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 39 / 99.8
Date of measurements	11-Nov-2015
Measured by	Timo Raiskio

3.1. Test Setup



3.2. Test method and limit

The measurement is made according to applicable RSS -standard.

Limits for Peak to average power ratio measurements

Peak to average power ratio [dB]
≤ 13

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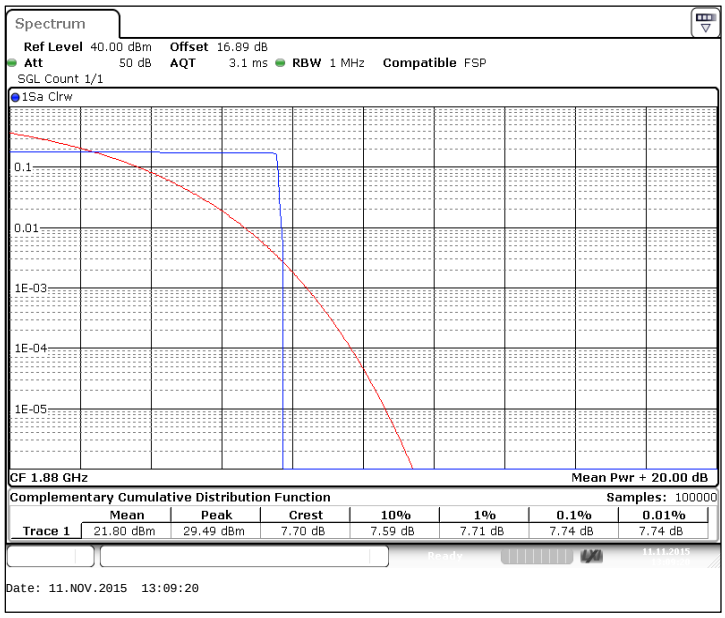
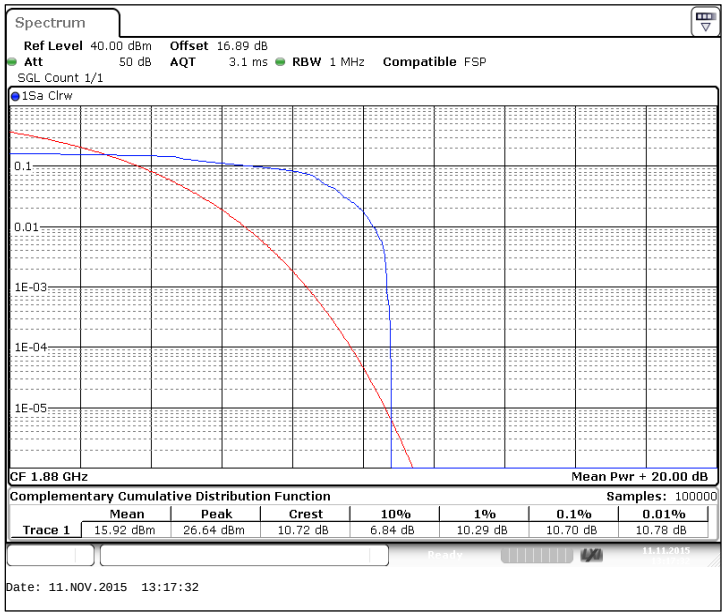
3.3. GSM 1900 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
GSM	661 / 1880.0	7.70	PASSED
EGPRS	661 / 1880.0	10.72	PASSED

GSM



EGPRS



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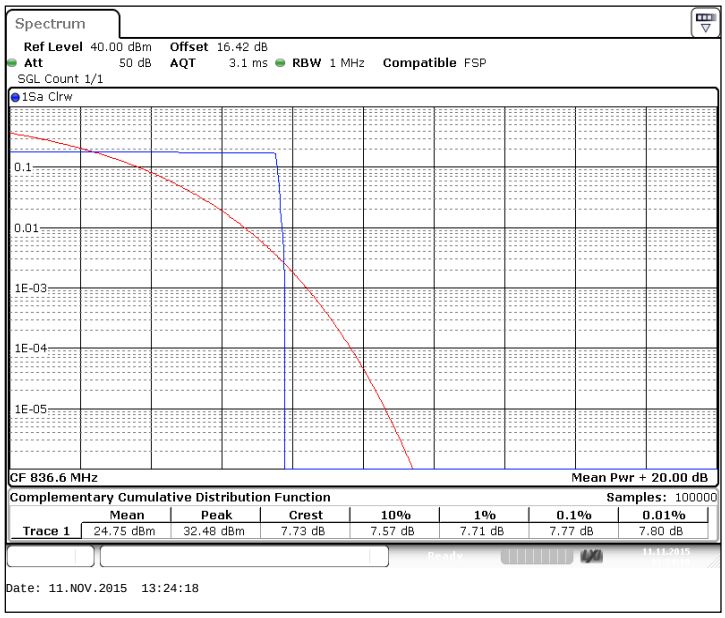
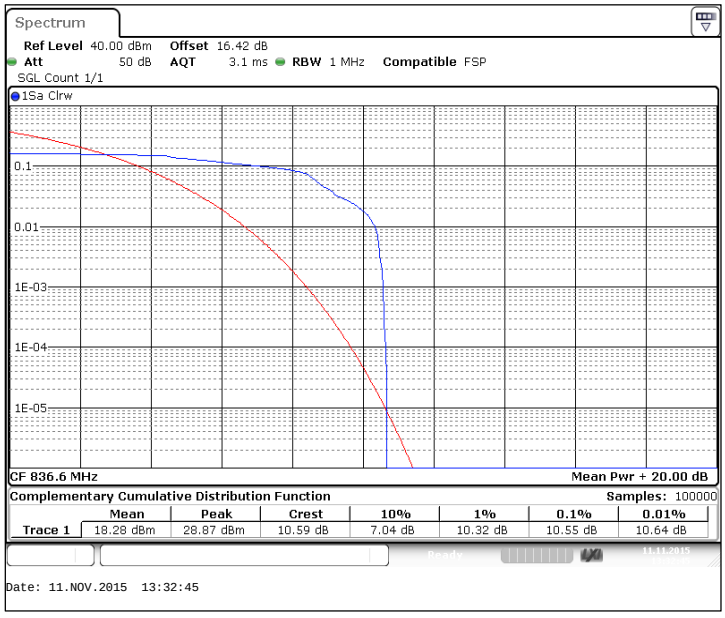
3.4. GSM 850 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
GSM	190 / 836.6	7.73	PASSED
EGPRS	190 / 836.6	10.59	PASSED

GSM



EGPRS



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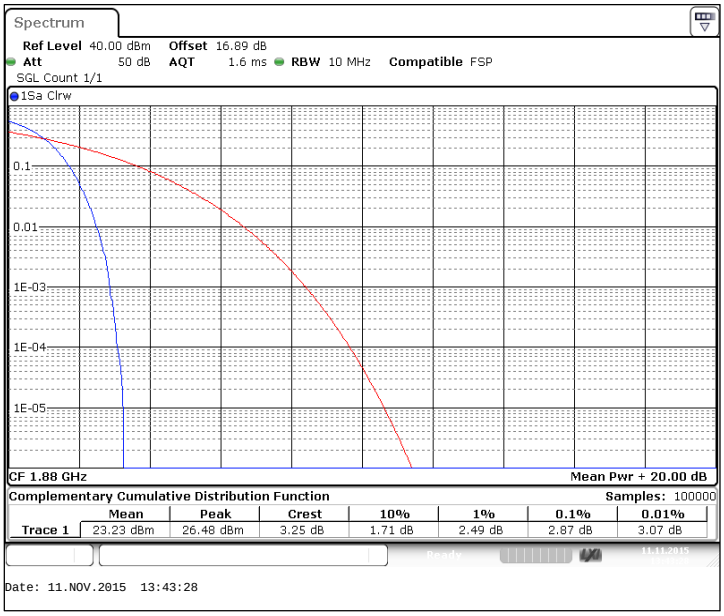
3.5. WCDMA2 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD	9400 / 1880.0	3.25	PASSED

FDD



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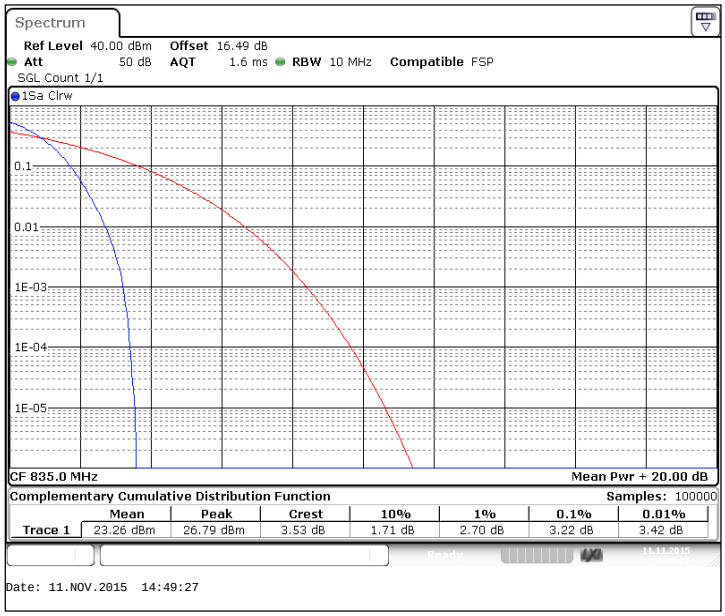
3.6. WCDMA5 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD	4175 / 835.0	3.53	PASSED

FDD



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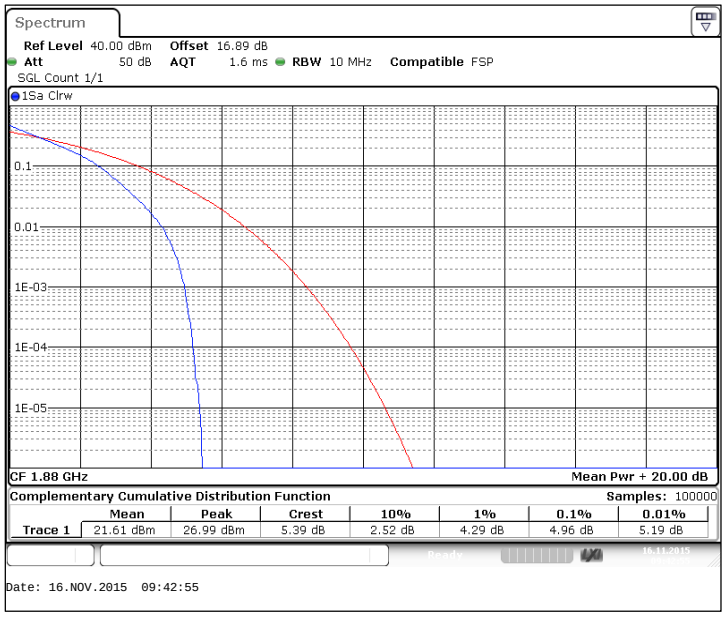
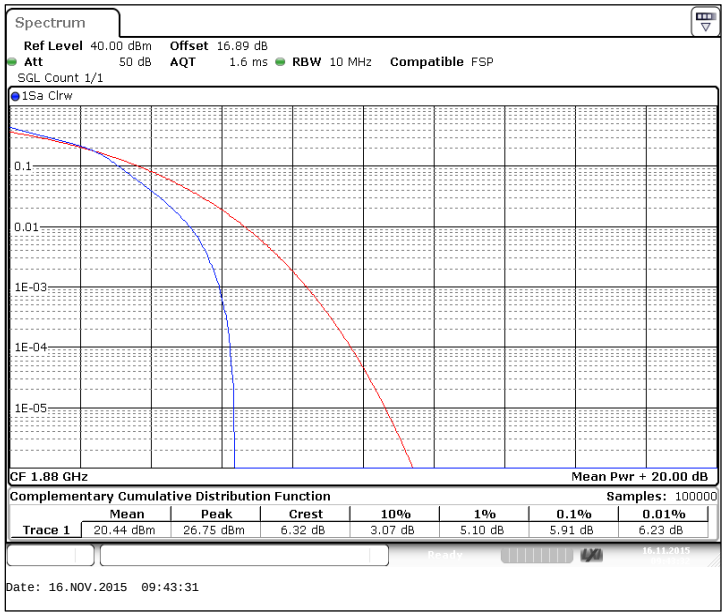
3.7. LTE2 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD, CBW 5MHz, QPSK, 25 RB	18900 / 1880.0	5.39	PASSED
FDD, CBW 5MHz, 16QAM, 25 RB	18900 / 1880.0	6.32	PASSED

FDD, CBW 5MHz, QPSK, 25 RB



FDD, CBW 5MHz, 16QAM, 25 RB



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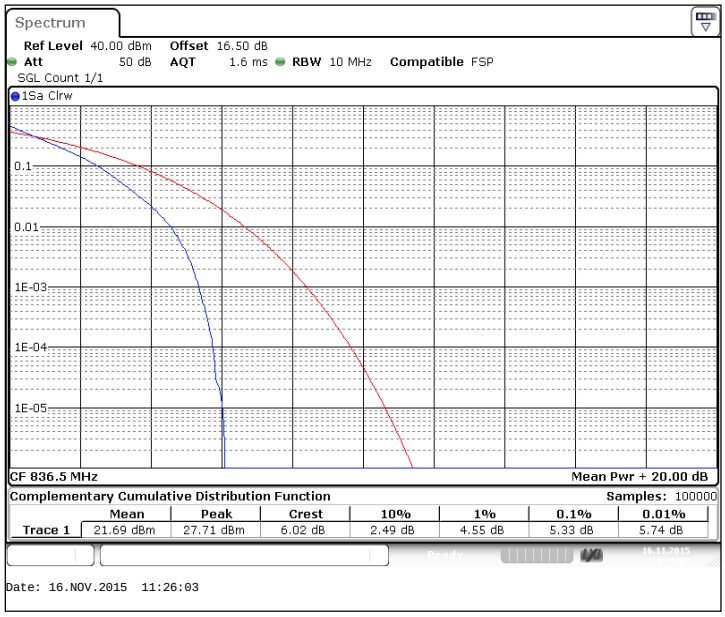
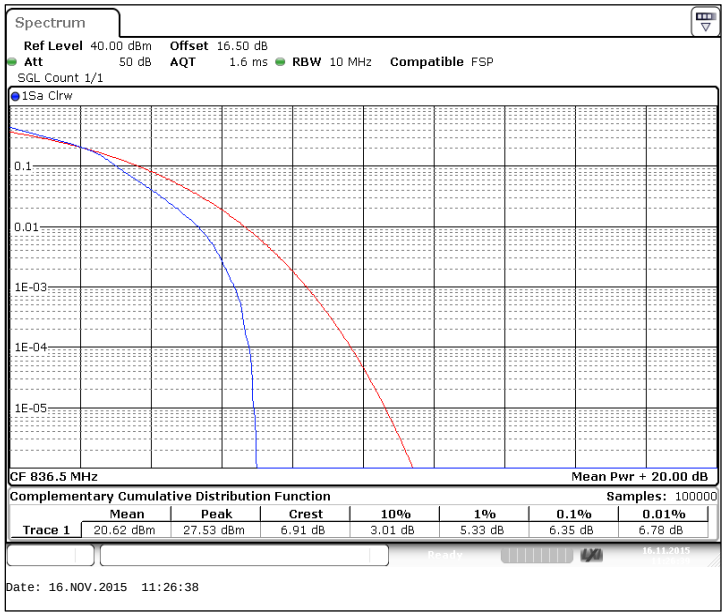
3.8. LTE5 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD, CBW 5MHz, QPSK, 25 RB	20525 / 836.5	6.02	PASSED
FDD, CBW 5MHz, 16QAM, 25 RB	20525 / 836.5	6.91	PASSED

FDD, CBW 5MHz, QPSK, 25 RB



FDD, CBW 5MHz, 16QAM, 25 RB



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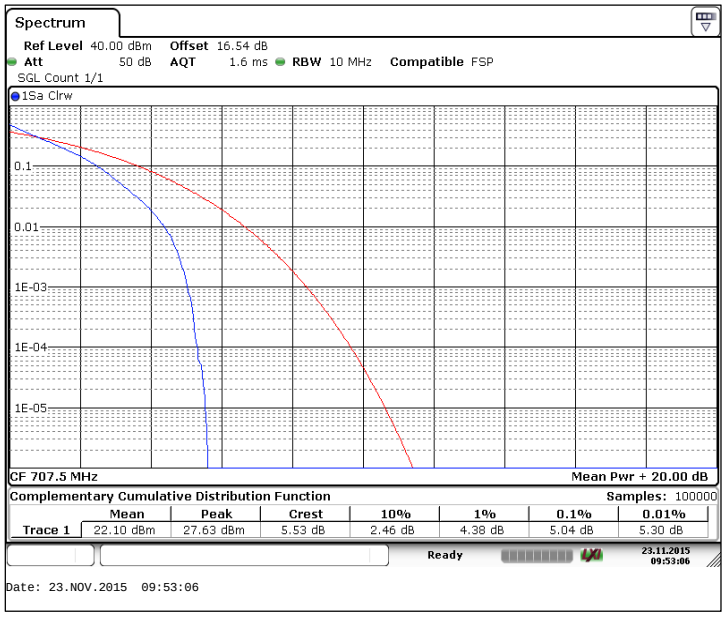
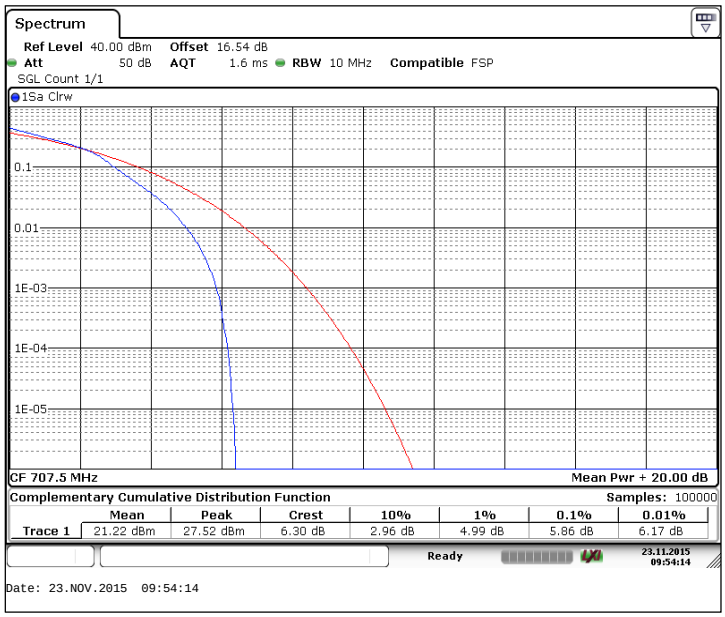
3.9. LTE12 Test results

Operation mode (TX on)	Channel / f_C [MHz]	Peak to average power ratio [dB]	Result
FDD, CBW 5MHz, QPSK, 25 RB	23095 / 707.5	5.53	PASSED
FDD, CBW 5MHz, 16QAM, 25 RB	23095 / 707.5	6.30	PASSED

FDD, CBW 5MHz, QPSK, 25 RB



FDD, CBW 5MHz, 16QAM, 25 RB



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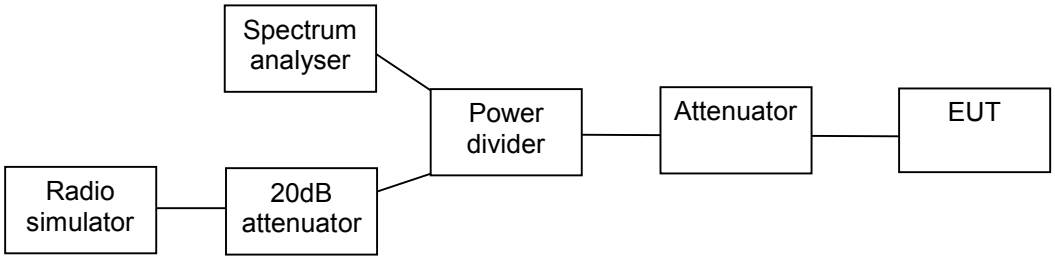
4. 99 % occupied bandwidth

EUT with DUT number	RM-1150, DUT 400059
Accessories with DUT numbers	SD-134, DUT 400053
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	RF Cond 2
Temp [ºC] / Humidity [%RH] / Air Pressure [kPa]	23 / 41 / 98.5
Date of measurements	01-Dec-2015
Measured by	Timo Raiskio

4.1. Test Setup



4.2. Test method and limit

The measurement is made according to TIA-603-D and RSS-Gen.

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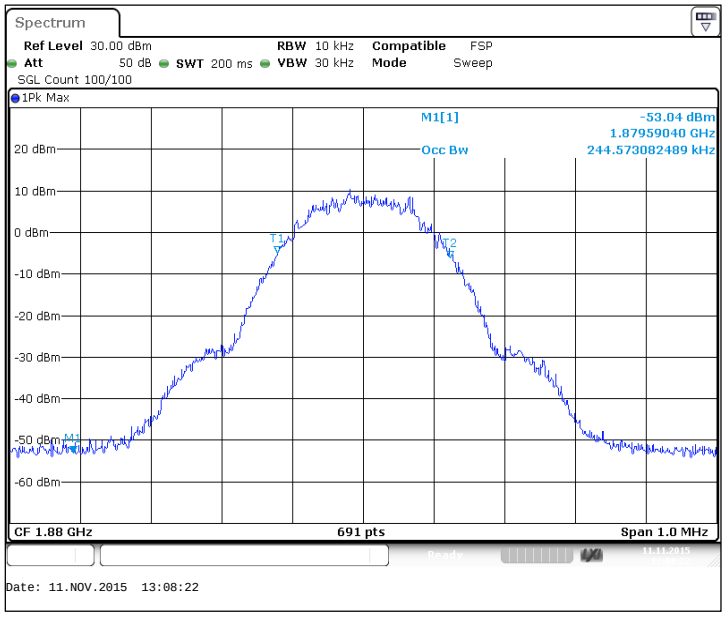
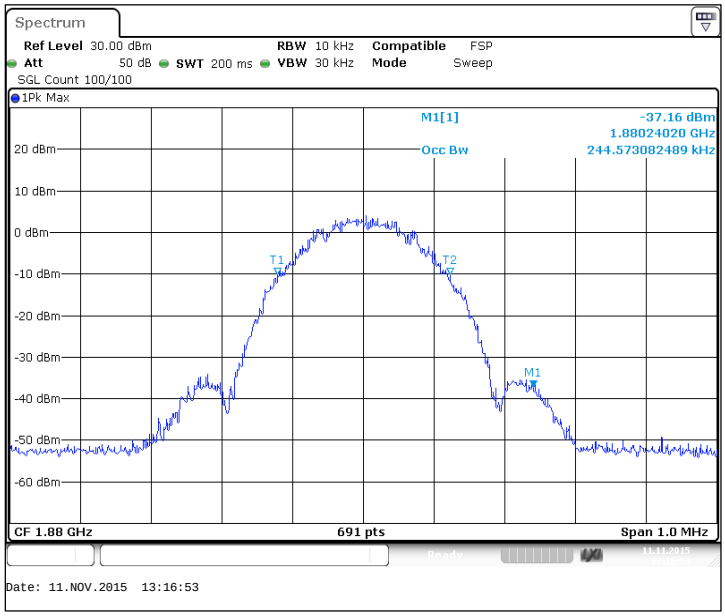
4.3. GSM 1900 Test results

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

GSM, Channel 661 / 1880.0 MHz



EGPRS, Channel 661 / 1880.0 MHz



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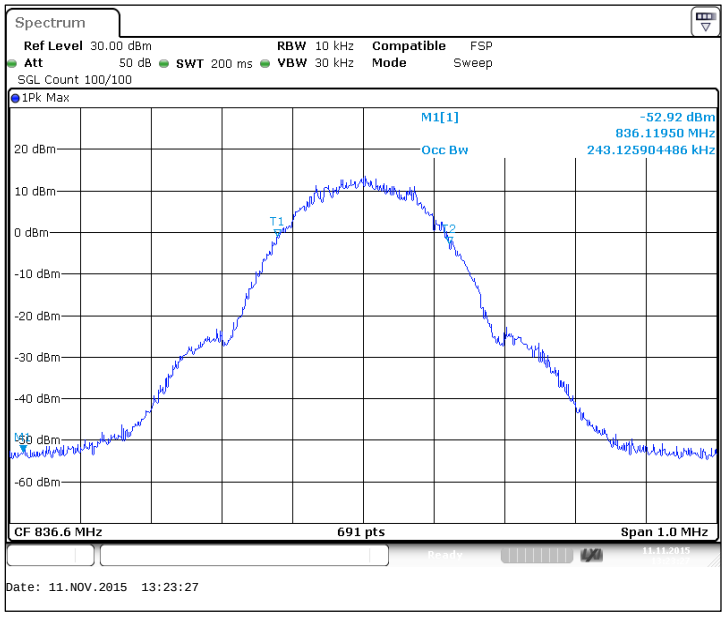
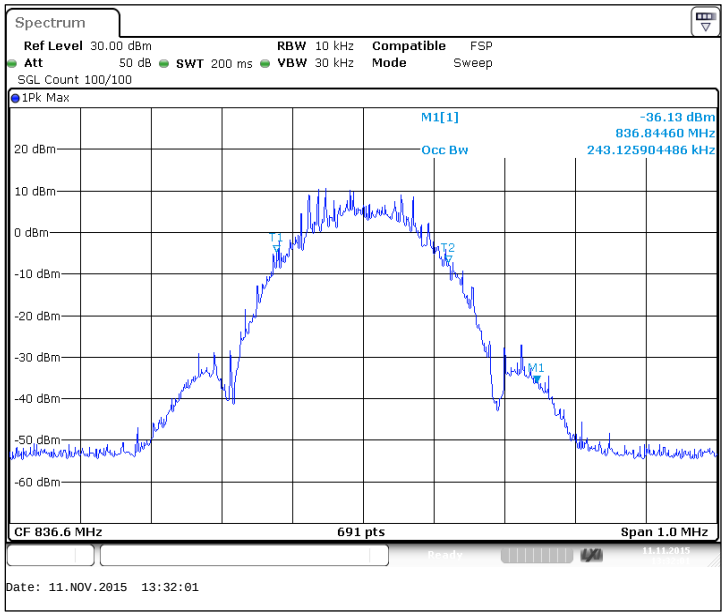
4.4. GSM 850 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
GSM	243.1
EGPRS	243.1

GSM, Channel 190 / 836.6 MHz



EGPRS, Channel 190 / 836.6 MHz



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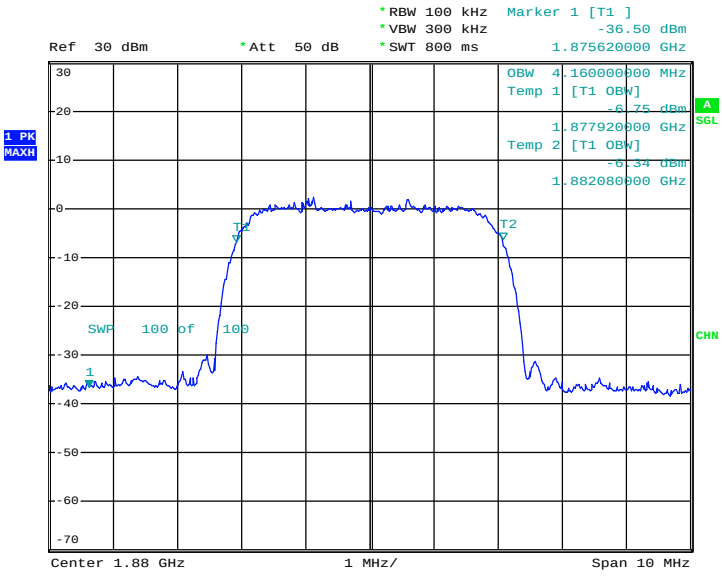
4.5. WCDMA2 Test results

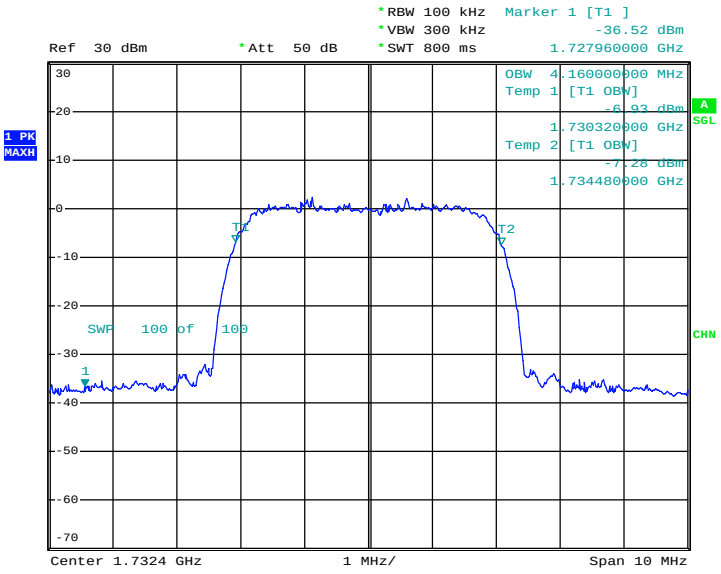
Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD	4160



Date: 1.DEC.2015 10:47:10

4.6. WCDMA4 Test results

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



Date: 1.DEC.2015 10:49:24

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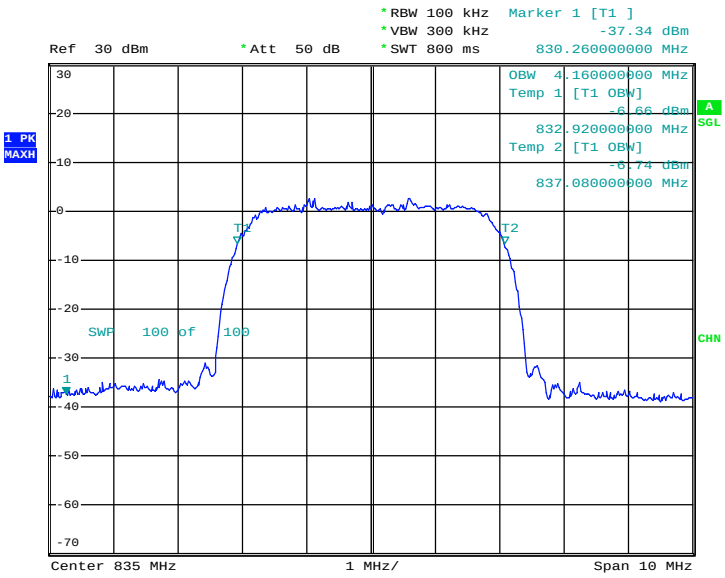
4.7. WCDMA5 Test results

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



Date: 1.DEC.2015 10:51:30

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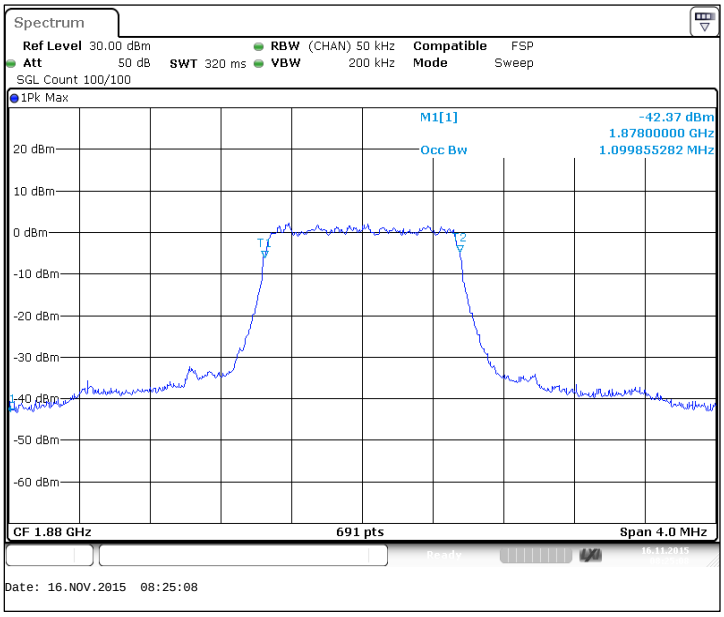
4.8. LTE2 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, 6 RB	1099.9
FDD, CBW 3MHz, QPSK, 15 RB	2691.8
FDD, CBW 5MHz, QPSK, 25 RB	4497.8
FDD, CBW 10MHz, QPSK, 50 RB	8943.6
FDD, CBW 15MHz, QPSK, 75 RB	13429.8
FDD, CBW 20MHz, QPSK, 100 RB	17872.6
FDD, CBW 1.4MHz, 16QAM, 6 RB	1111.4
FDD, CBW 3MHz, 16QAM, 15 RB	2680.2
FDD, CBW 5MHz, 16QAM, 25 RB	4477.6
FDD, CBW 10MHz, 16QAM, 50 RB	8943.6
FDD, CBW 15MHz, 16QAM, 75 RB	13400.9
FDD, CBW 20MHz, 16QAM, 100 RB	17872.6

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



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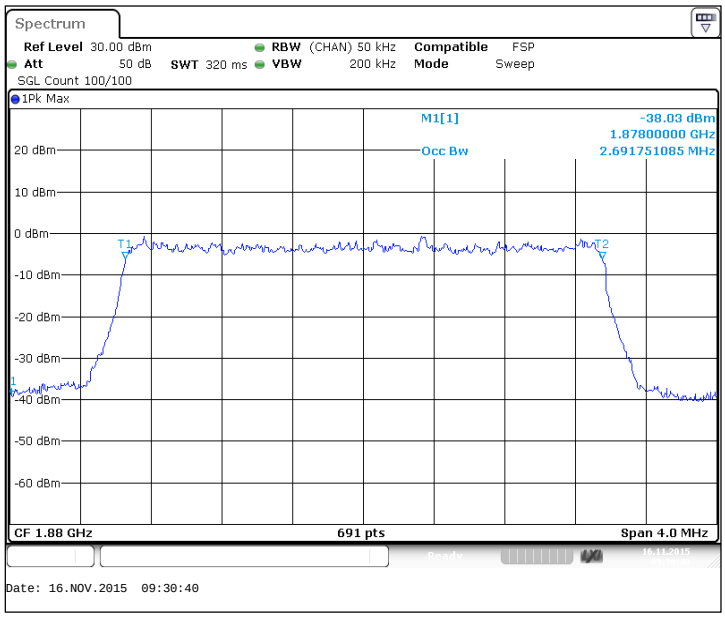
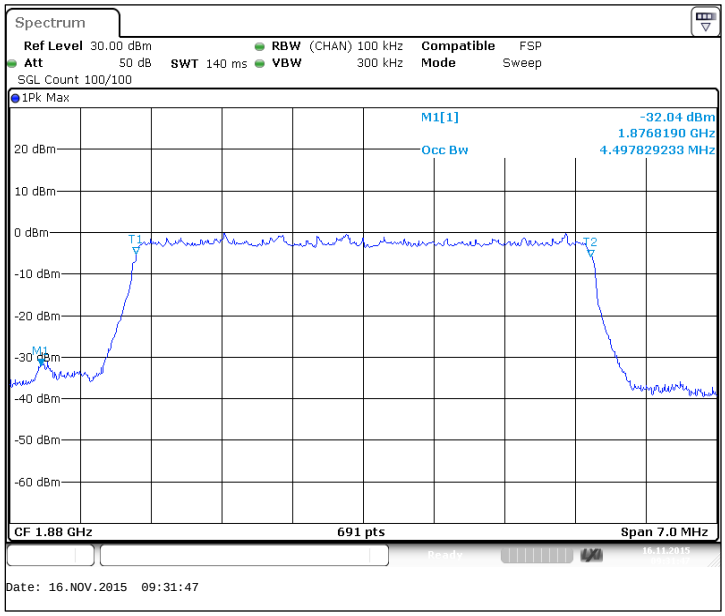
FDD, CBW 3MHz, QPSK, 15 RB, Channel 18900 / 1880.0 MHz



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



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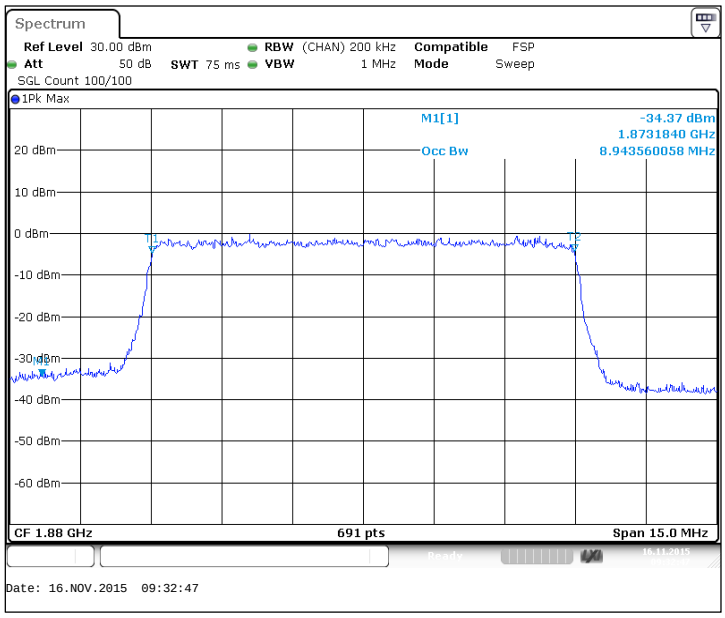
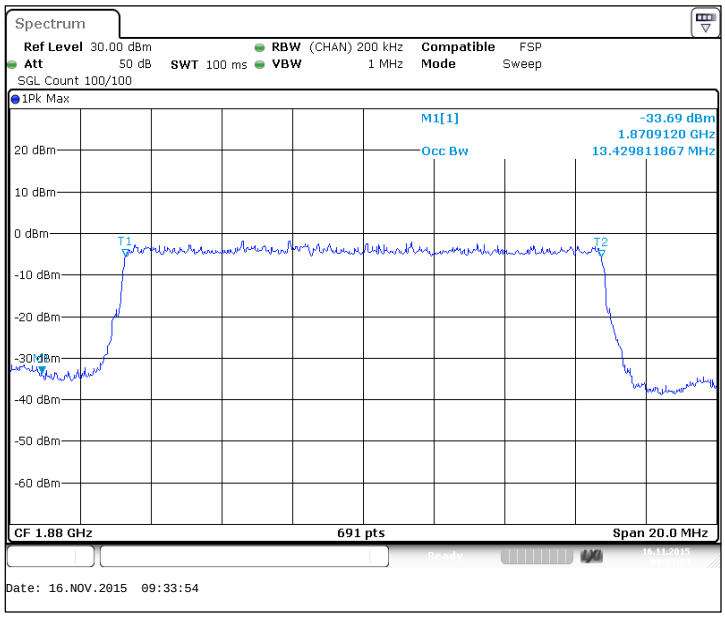
FDD, CBW 10MHz, QPSK, 50 RB, Channel 18900 / 1880.0 MHz



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



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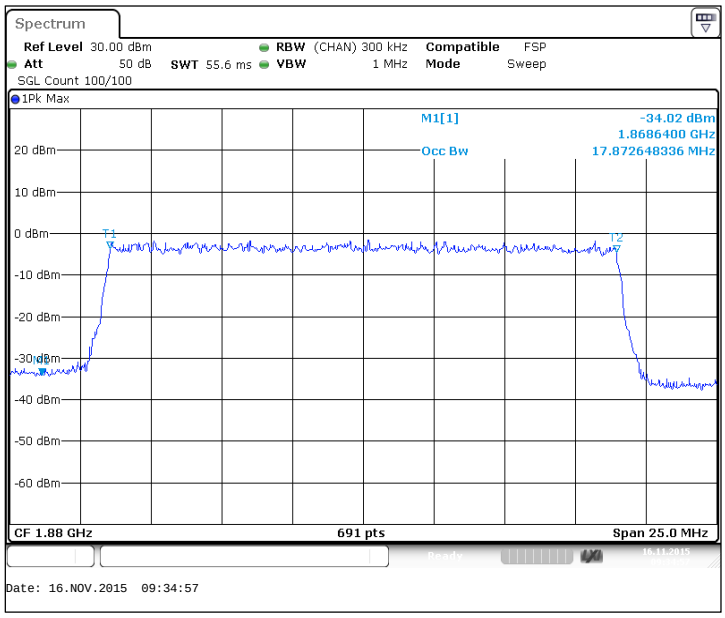
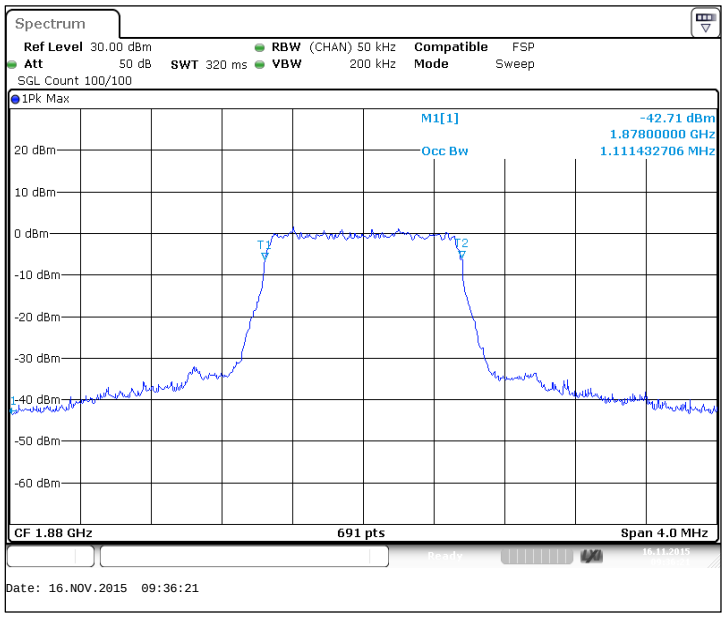
FDD, CBW 20MHz, QPSK, 100 RB, Channel 18900 / 1880.0 MHz



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



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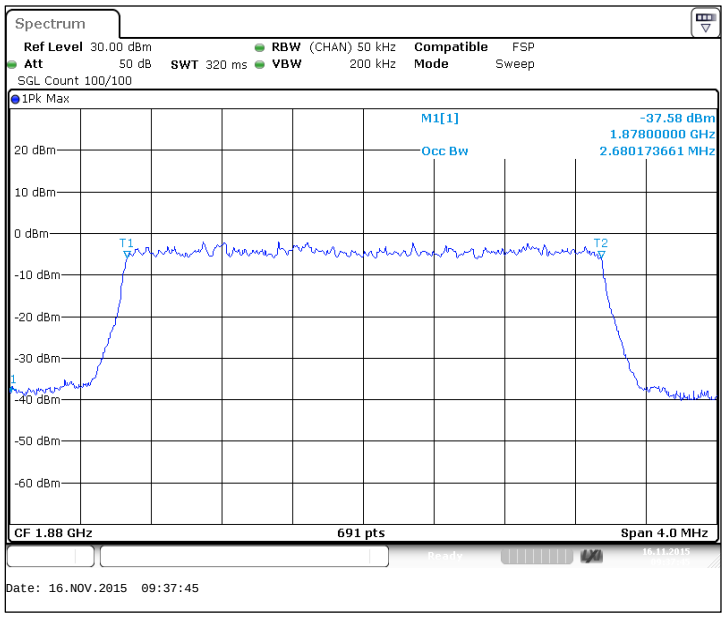
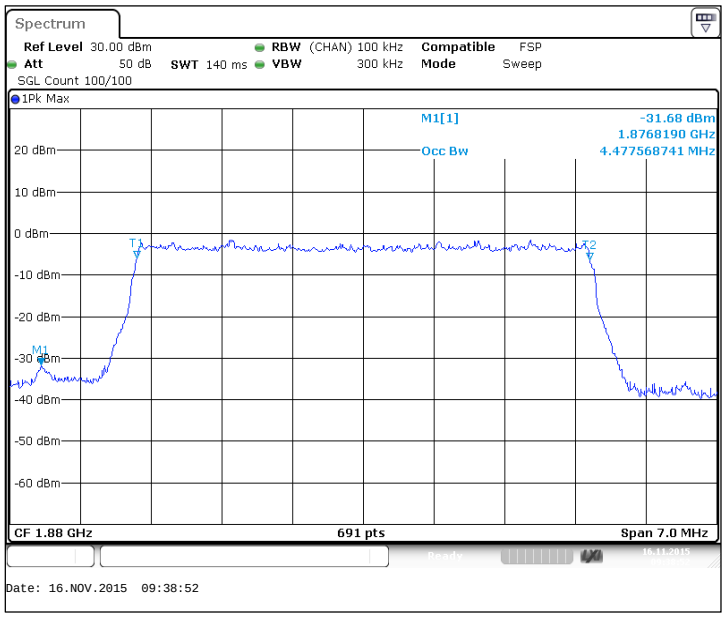
FDD, CBW 3MHz, 16QAM, 15 RB, Channel 18900 / 1880.0 MHz



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



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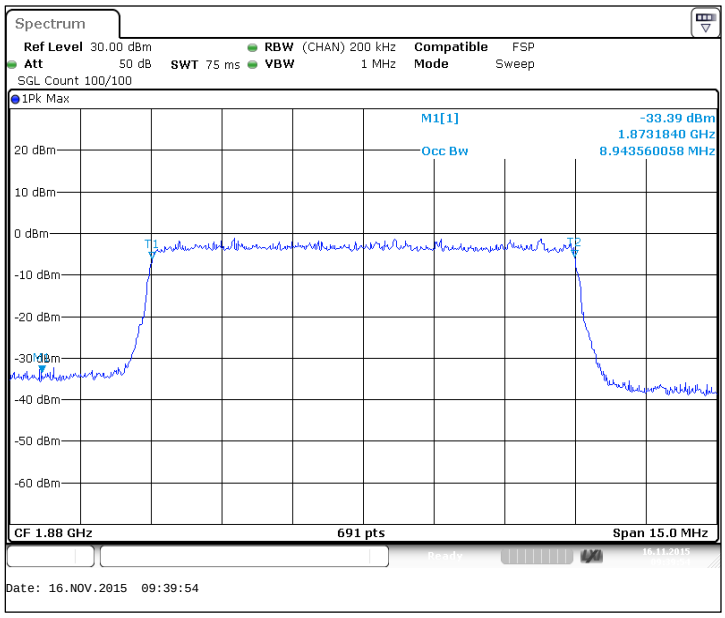
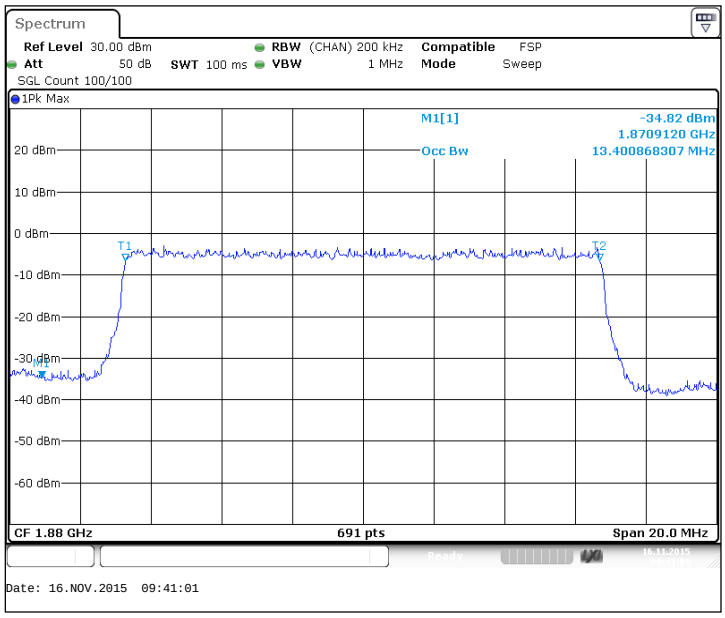
FDD, CBW 10MHz, 16QAM, 50 RB, Channel 18900 / 1880.0 MHz



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



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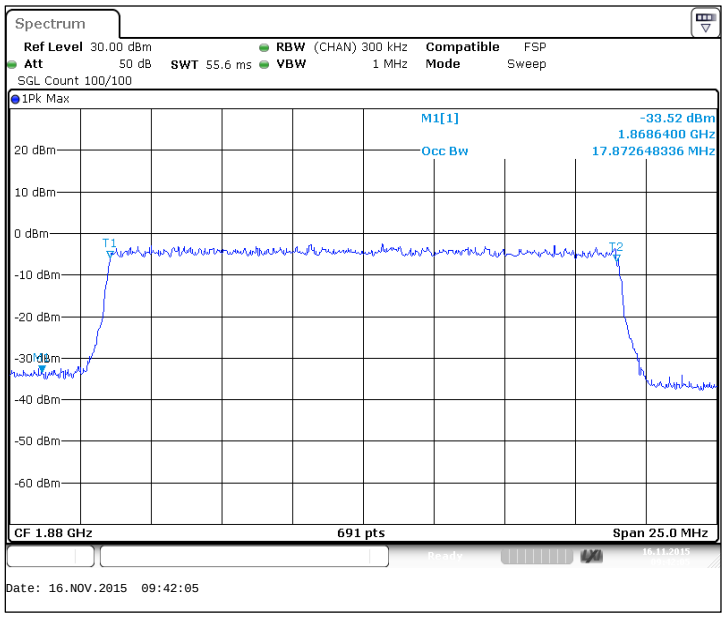
FDD, CBW 20MHz, 16QAM, 100 RB, Channel 18900 / 1880.0 MHz



4.9. LTE4 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, 6 RB	1099.9
FDD, CBW 3MHz, QPSK, 15 RB	2691.8
FDD, CBW 5MHz, QPSK, 25 RB	4497.8
FDD, CBW 10MHz, QPSK, 50 RB	8943.6
FDD, CBW 15MHz, QPSK, 75 RB	13429.8
FDD, CBW 20MHz, QPSK, 100 RB	17836.5
FDD, CBW 1.4MHz, 16QAM, 6 RB	1105.6
FDD, CBW 3MHz, 16QAM, 15 RB	2680.2
FDD, CBW 5MHz, 16QAM, 25 RB	4477.6
FDD, CBW 10MHz, 16QAM, 50 RB	8943.6
FDD, CBW 15MHz, 16QAM, 75 RB	13400.9
FDD, CBW 20MHz, 16QAM, 100 RB	17872.6

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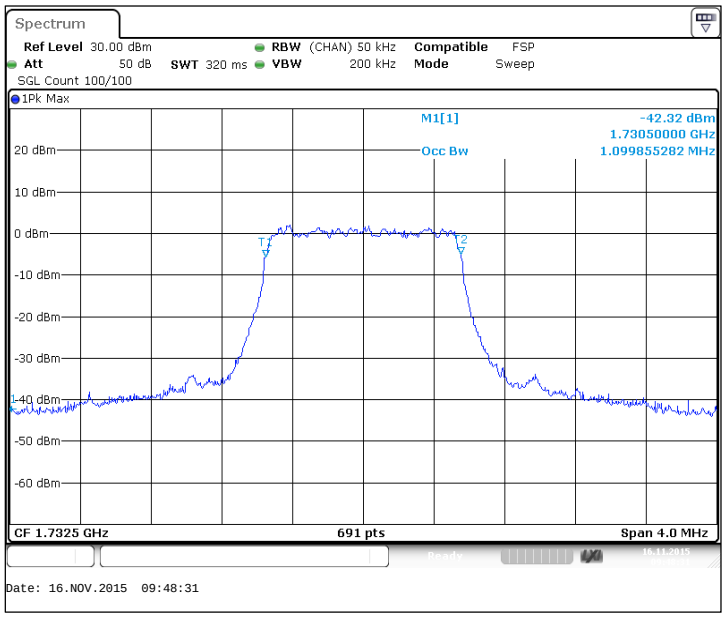
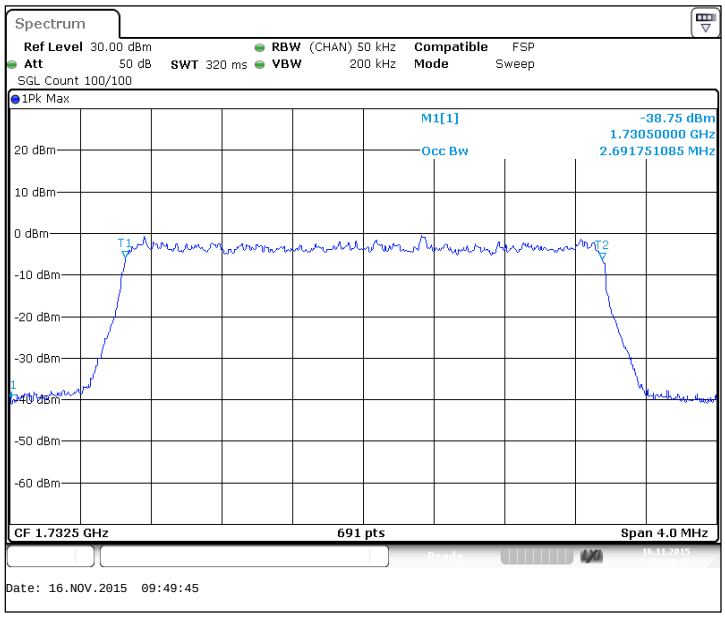
FDD, CBW 1.4MHz, QPSK, 6 RB, Channel 20175 / 1732.5 MHz



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



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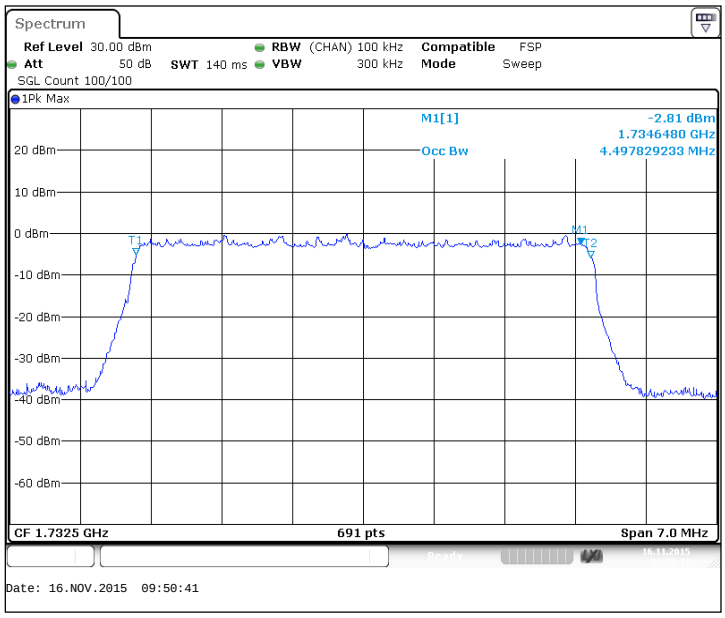
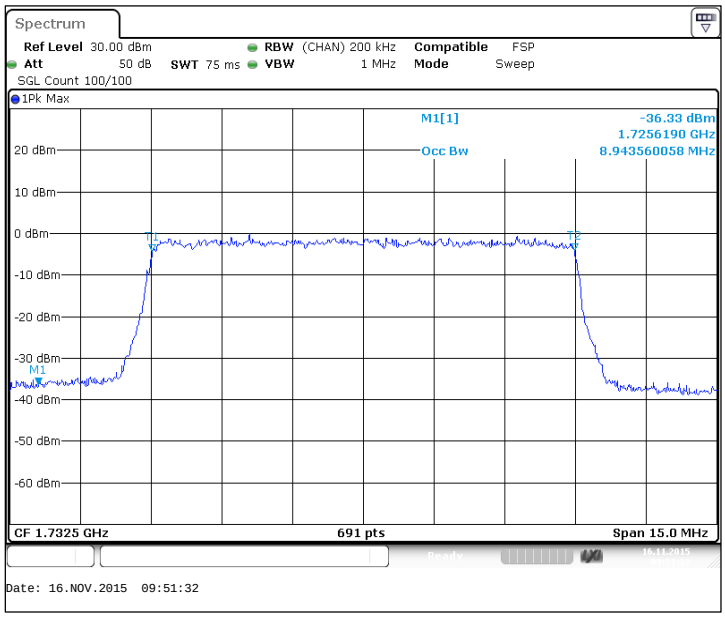
FDD, CBW 5MHz, QPSK, 25 RB, Channel 20175 / 1732.5 MHz



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



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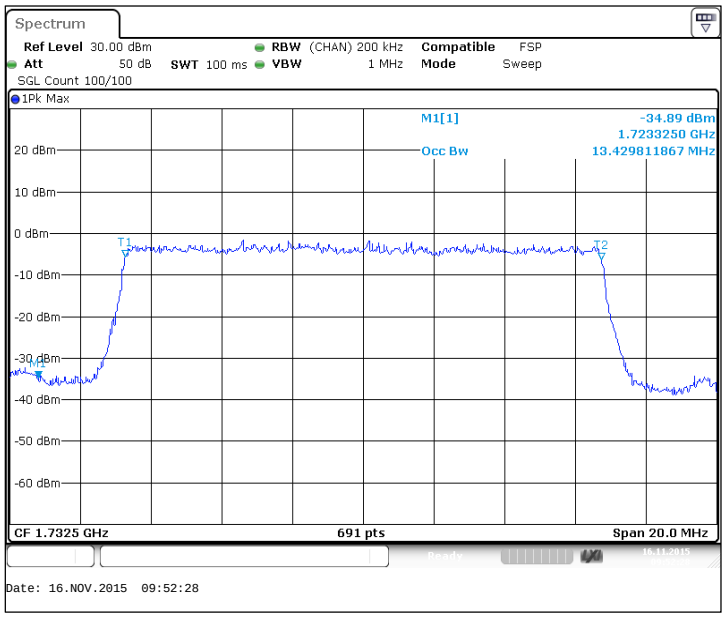
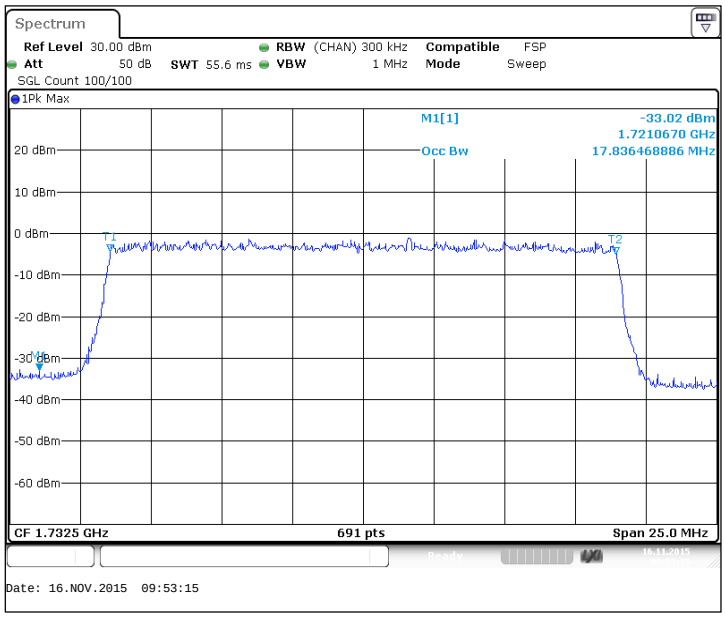
FDD, CBW 15MHz, QPSK, 75 RB, Channel 20175 / 1732.5 MHz



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



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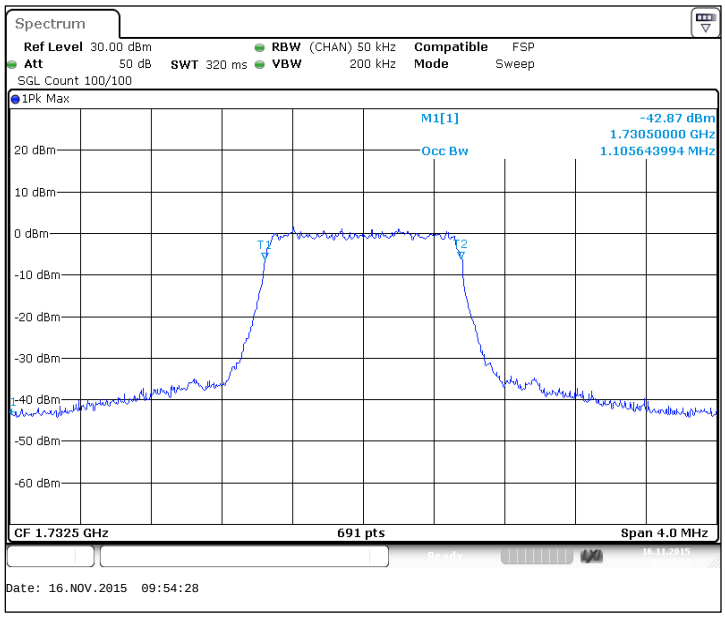
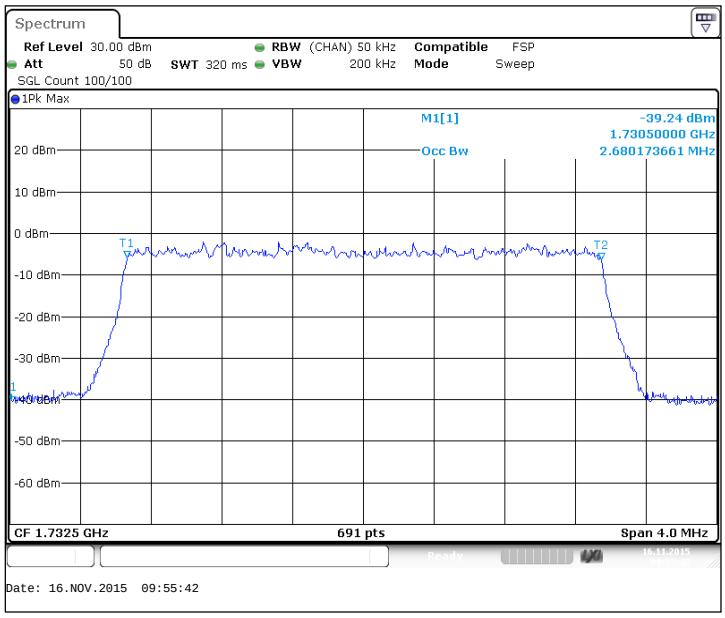
FDD, CBW 1.4MHz, 16QAM, 6 RB, Channel 20175 / 1732.5 MHz



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



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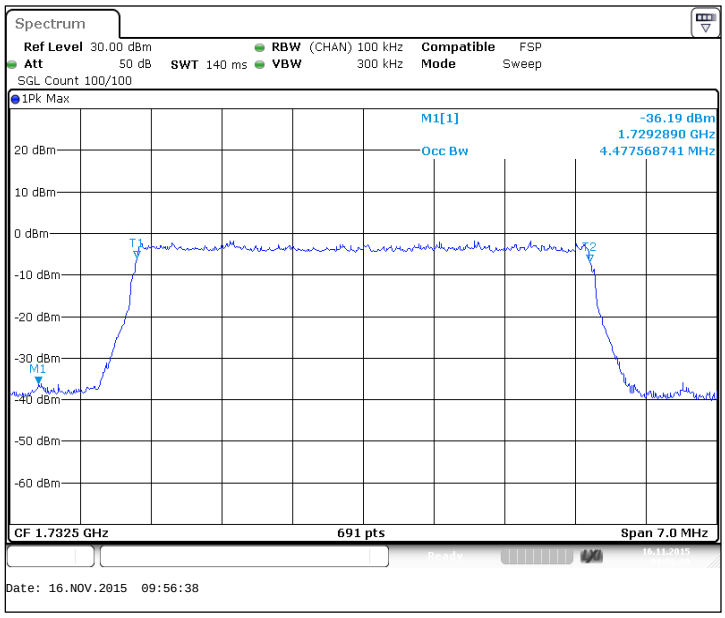
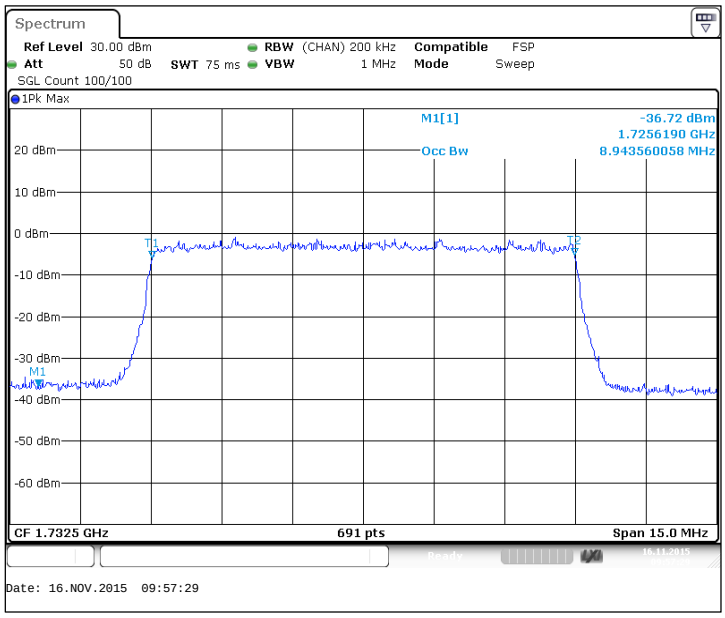
FDD, CBW 5MHz, 16QAM, 25 RB, Channel 20175 / 1732.5 MHz



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



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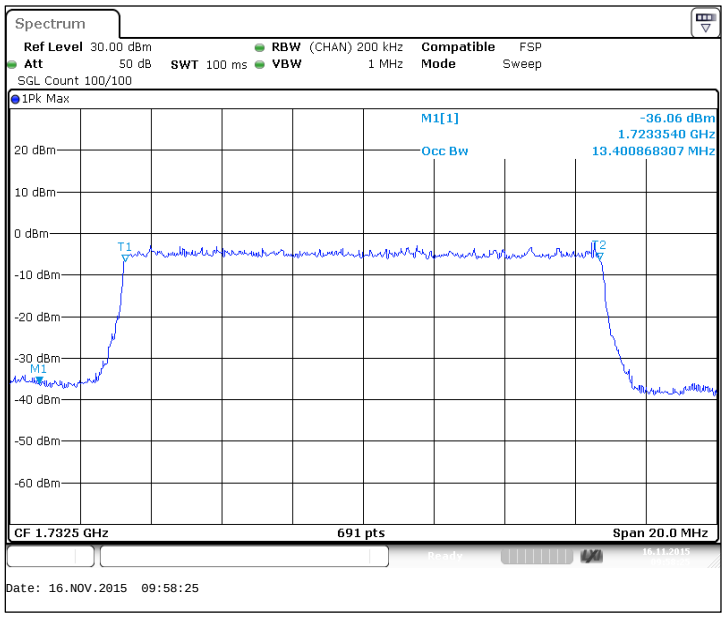
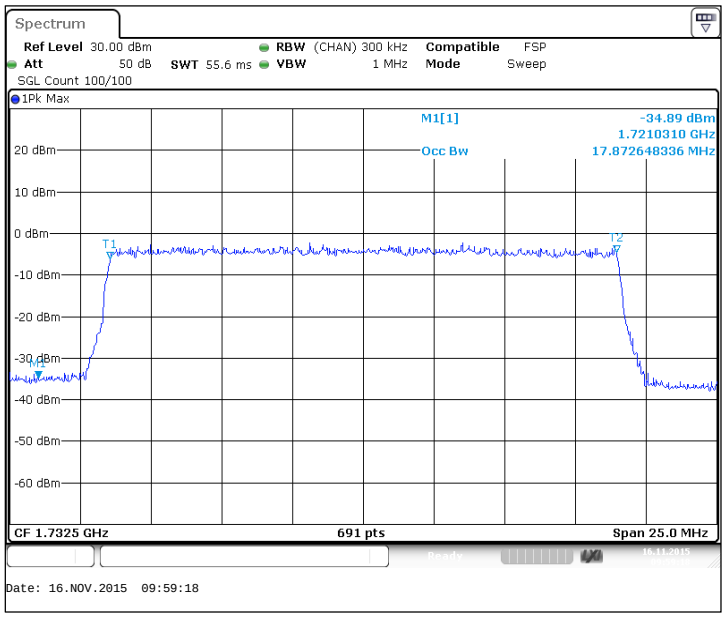
FDD, CBW 15MHz, 16QAM, 75 RB, Channel 20175 / 1732.5 MHz



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



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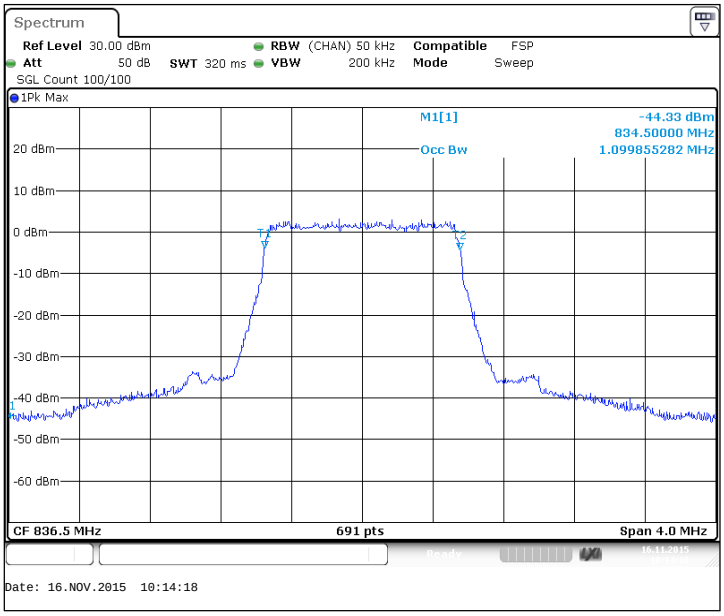
4.10. LTE5 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, 6 RB	1099.9
FDD, CBW 3MHz, QPSK, 15 RB	2691.8
FDD, CBW 5MHz, QPSK, 25 RB	4487.7
FDD, CBW 10MHz, QPSK, 50 RB	8943.6
FDD, CBW 1.4MHz, 16QAM, 6 RB	1105.6
FDD, CBW 3MHz, 16QAM, 15 RB	2680.2
FDD, CBW 5MHz, 16QAM, 25 RB	4477.6
FDD, CBW 10MHz, 16QAM, 50 RB	8943.6

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



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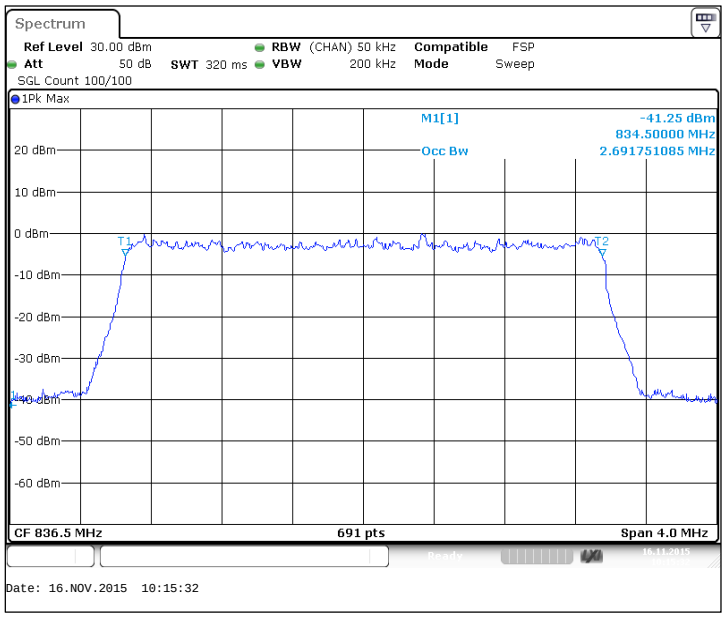
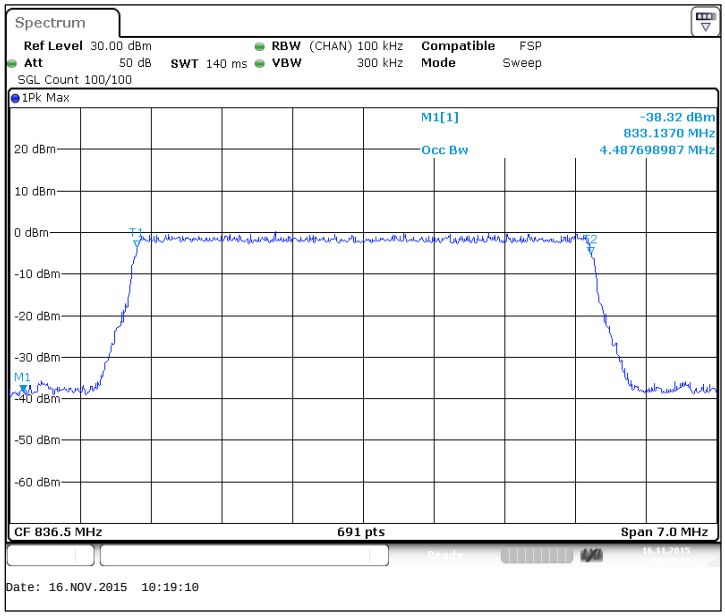
FDD, CBW 3MHz, QPSK, 15 RB, Channel 20525 / 836.5 MHz



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



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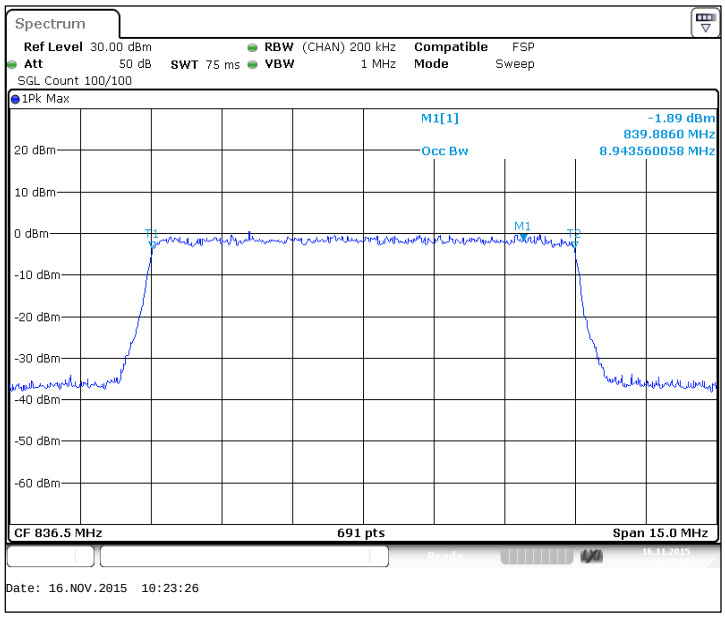
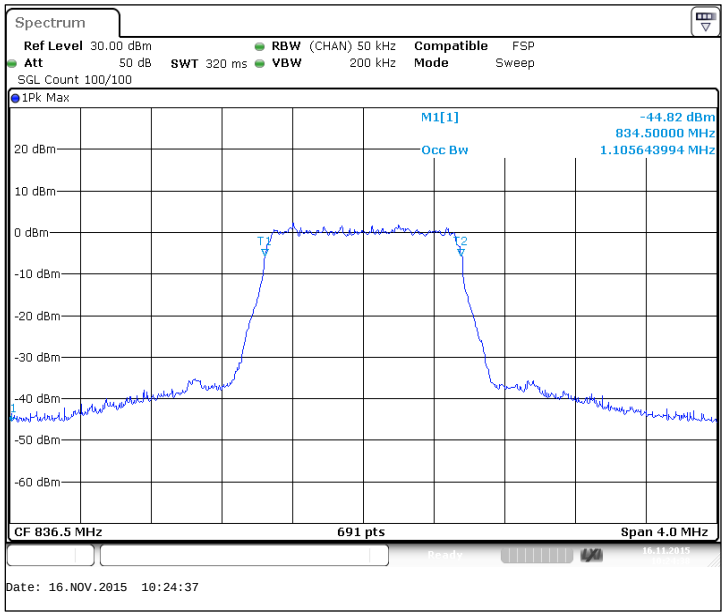
FDD, CBW 10MHz, QPSK, 50 RB, Channel 20525 / 836.5 MHz



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



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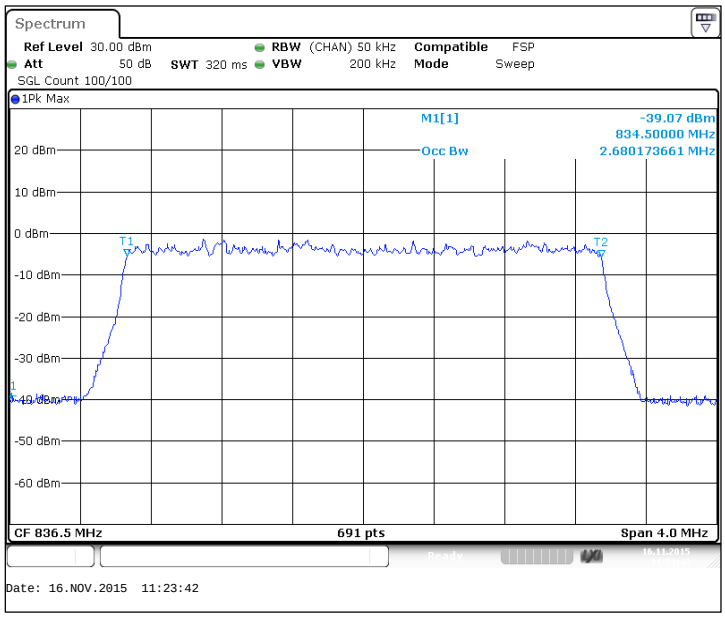
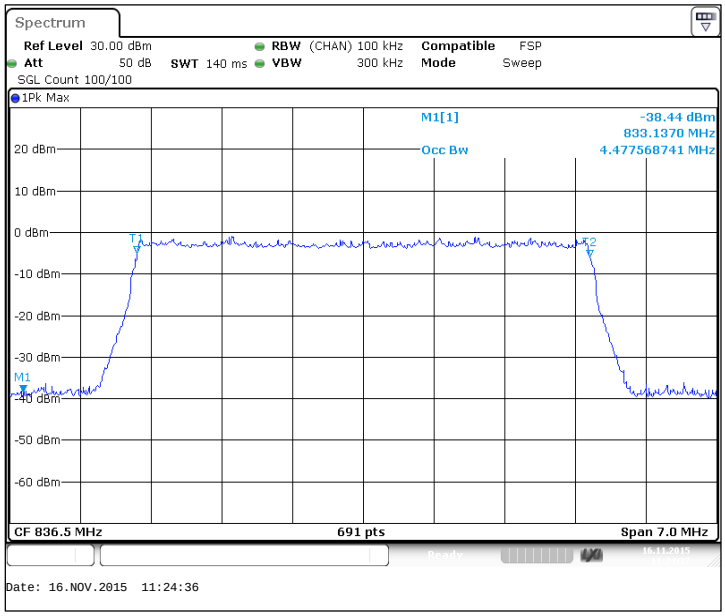
FDD, CBW 3MHz, 16QAM, 15 RB, Channel 20525 / 836.5 MHz



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



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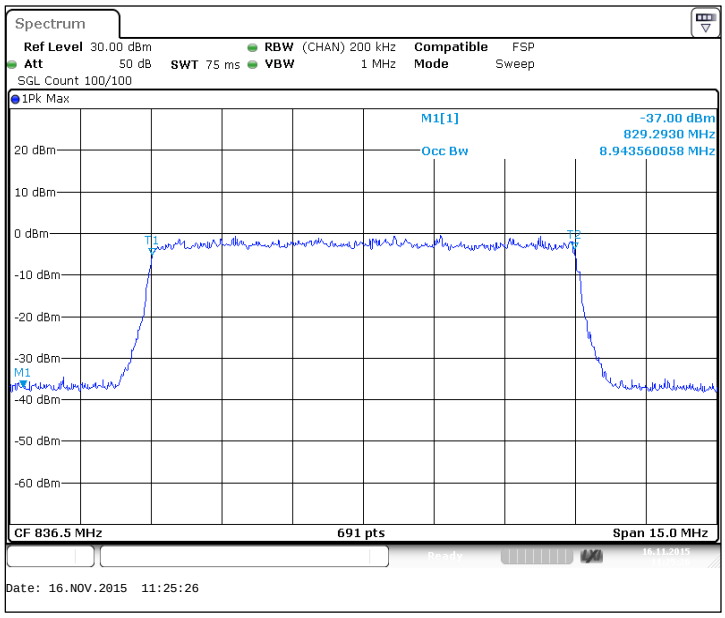
FDD, CBW 10MHz, 16QAM, 50 RB, Channel 20525 / 836.5 MHz



4.11. LTE7 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 5MHz, QPSK, 25 RB	4497.8
FDD, CBW 10MHz, QPSK, 50 RB	8965.3
FDD, CBW 15MHz, QPSK, 75 RB	13400.9
FDD, CBW 20MHz, QPSK, 100 RB	17836.5
FDD, CBW 5MHz, 16QAM, 25 RB	4477.6
FDD, CBW 10MHz, 16QAM, 50 RB	8943.6
FDD, CBW 15MHz, 16QAM, 75 RB	13400.9
FDD, CBW 20MHz, 16QAM, 100 RB	17836.5

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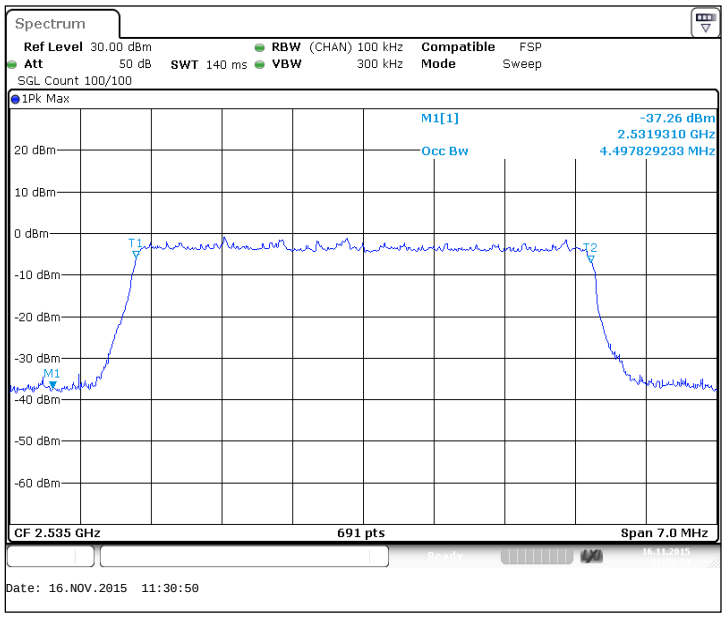
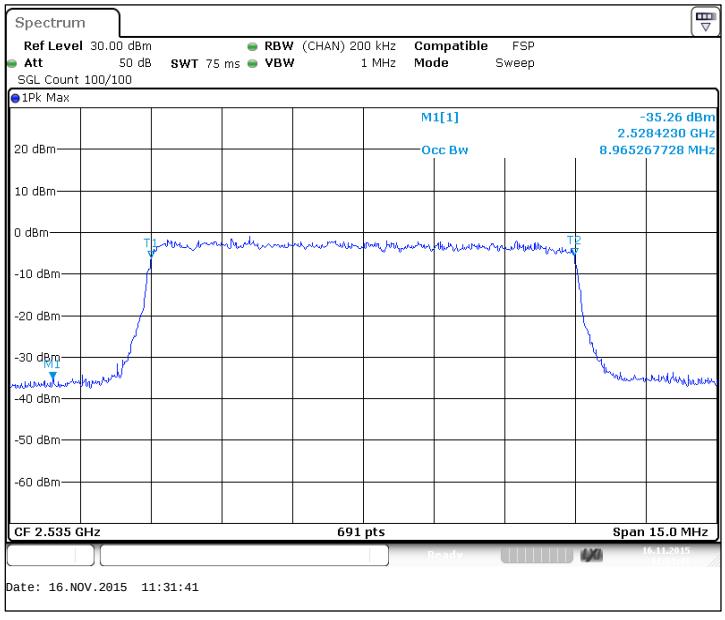
FDD, CBW 5MHz, QPSK, 25 RB, Channel 21100 / 2535.0 MHz



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



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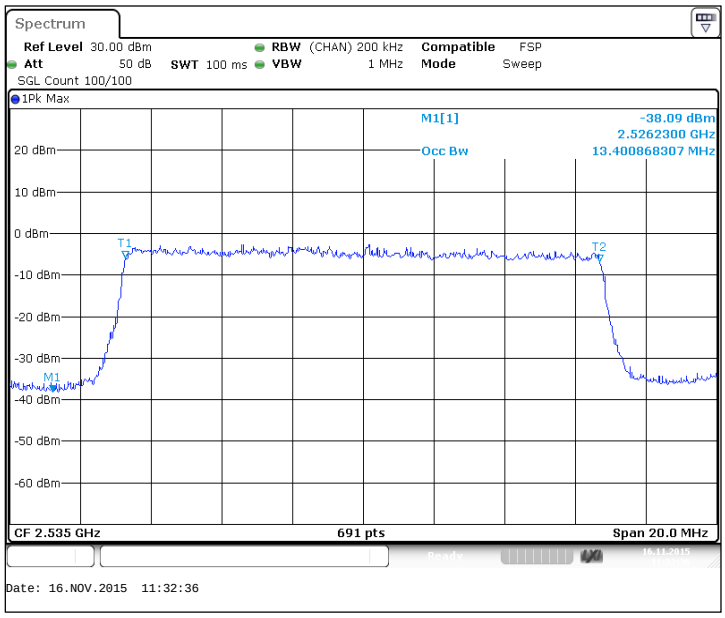
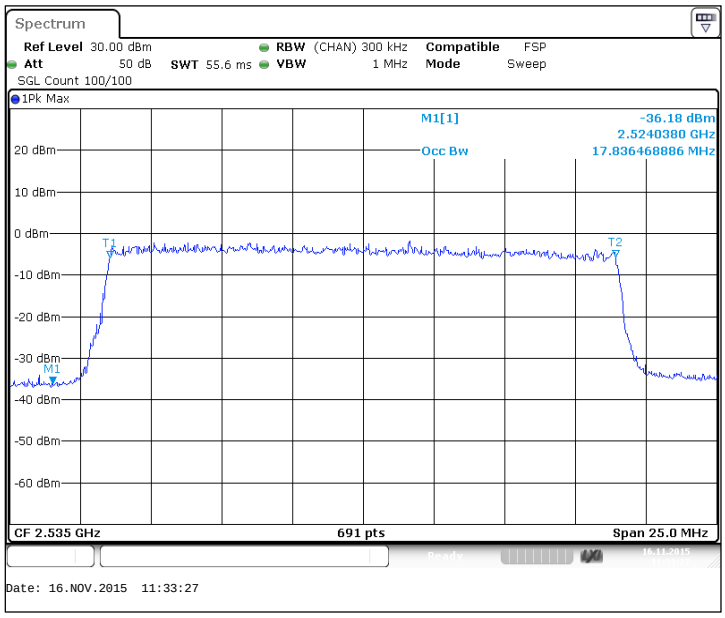
FDD, CBW 15MHz, QPSK, 75 RB, Channel 21100 / 2535.0 MHz



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



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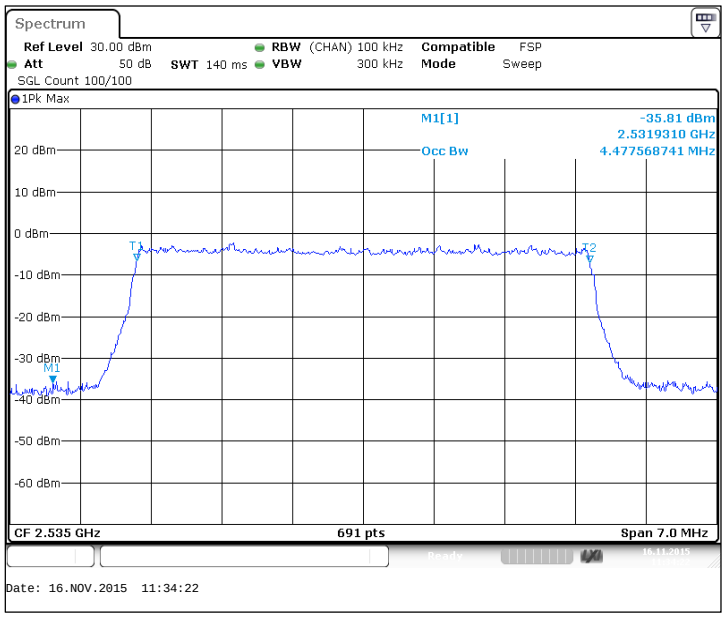
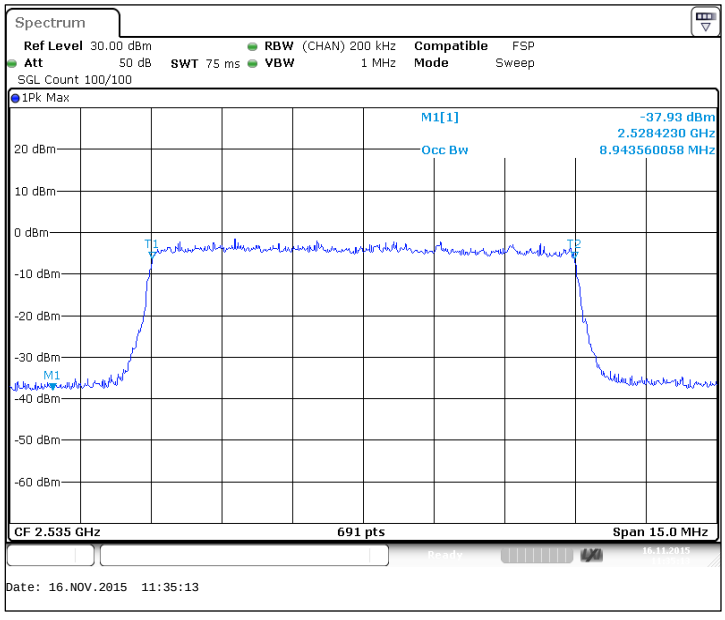
FDD, CBW 5MHz, 16QAM, 25 RB, Channel 21100 / 2535.0 MHz



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



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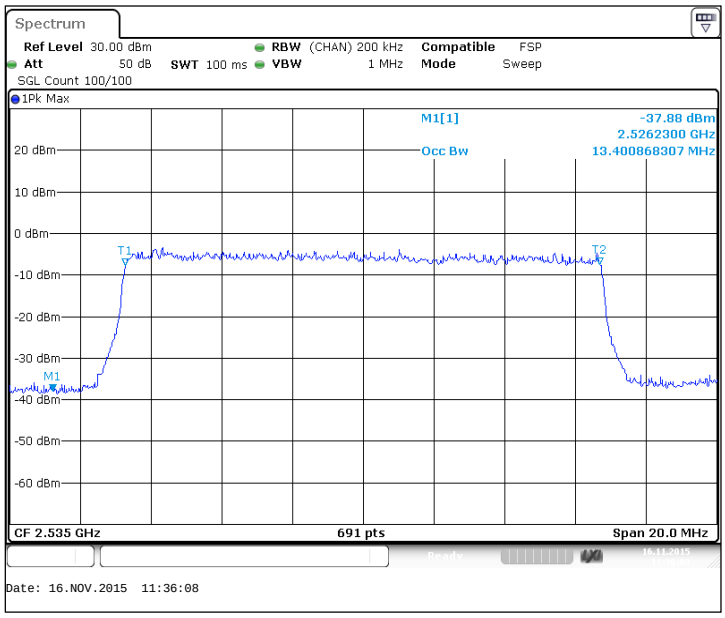
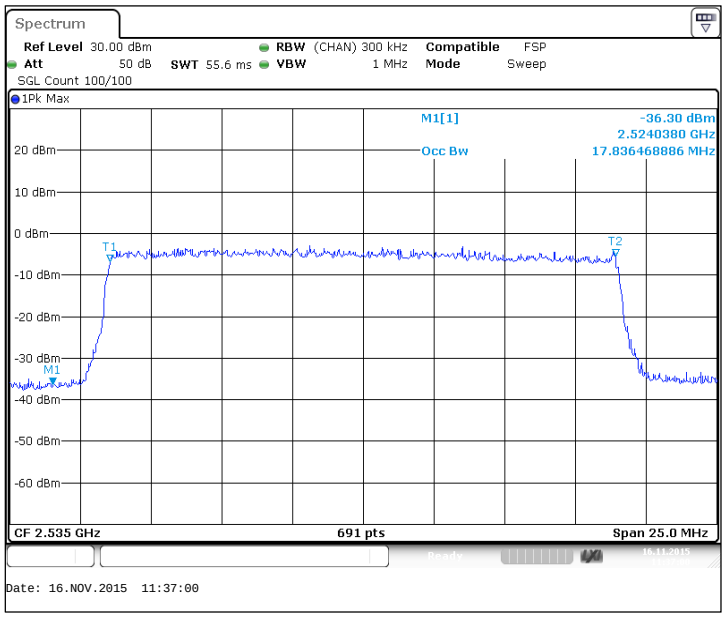
FDD, CBW 15MHz, 16QAM, 75 RB, Channel 21100 / 2535.0 MHz



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



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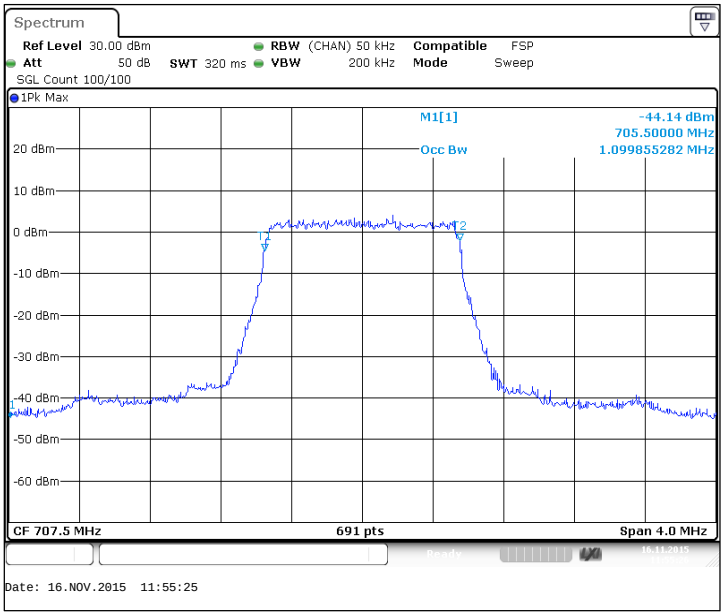
4.12. LTE12 Test results

Operation mode (TX on)	99% Occupied bandwidth [kHz]
FDD, CBW 1.4MHz, QPSK, 6 RB	1099.9
FDD, CBW 3MHz, QPSK, 15 RB	2691.8
FDD, CBW 5MHz, QPSK, 25 RB	4497.8
FDD, CBW 10MHz, QPSK, 50 RB	8943.6
FDD, CBW 1.4MHz, 16QAM, 6 RB	1099.9
FDD, CBW 3MHz, 16QAM, 15 RB	2686
FDD, CBW 5MHz, 16QAM, 25 RB	4477.6
FDD, CBW 10MHz, 16QAM, 50 RB	8943.6

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



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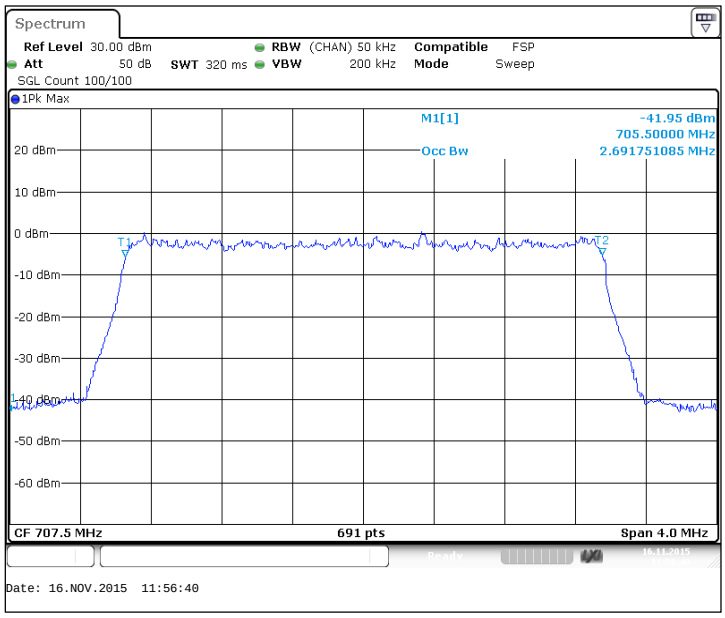
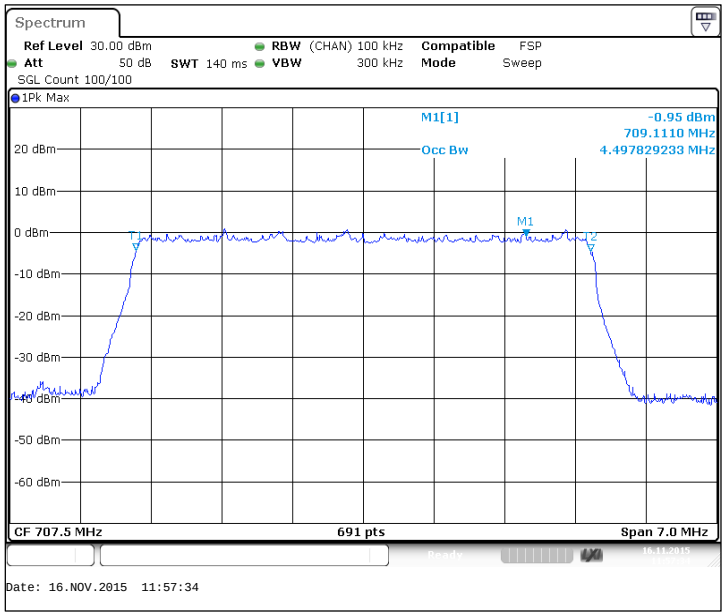
FDD, CBW 3MHz, QPSK, 15 RB, Channel 23095 / 707.5 MHz



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



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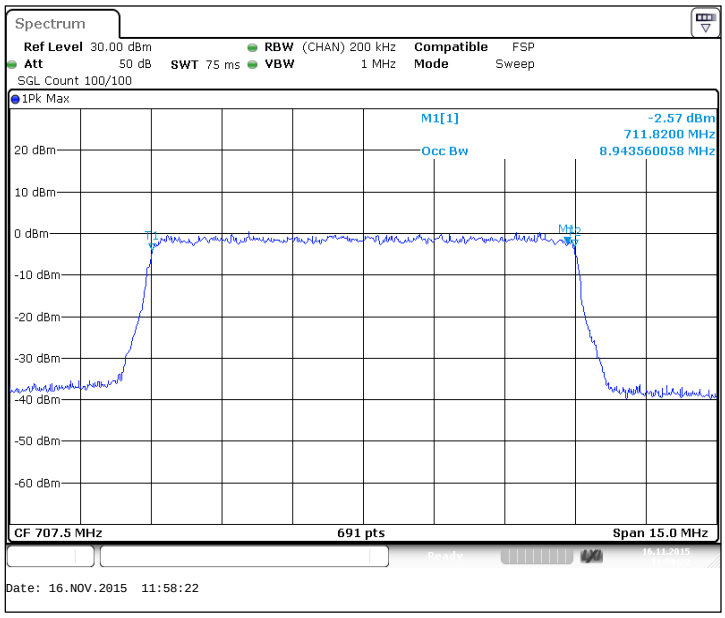
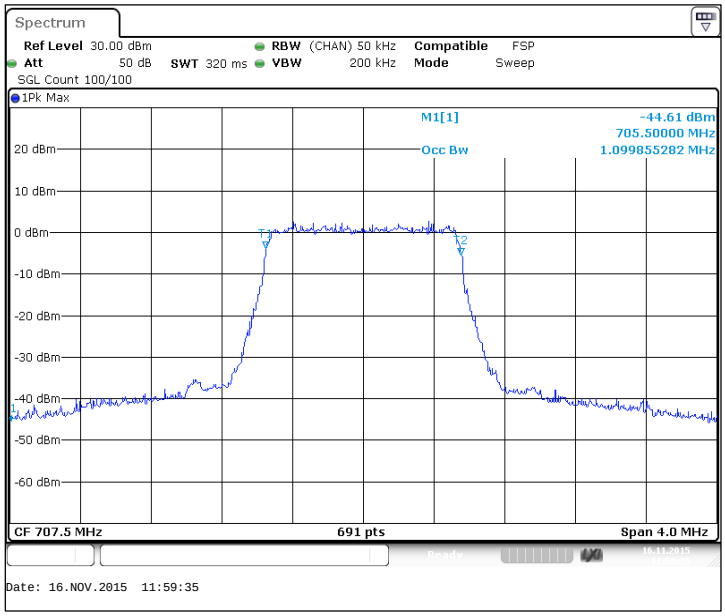
FDD, CBW 10MHz, QPSK, 50 RB, Channel 23095 / 707.5 MHz



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



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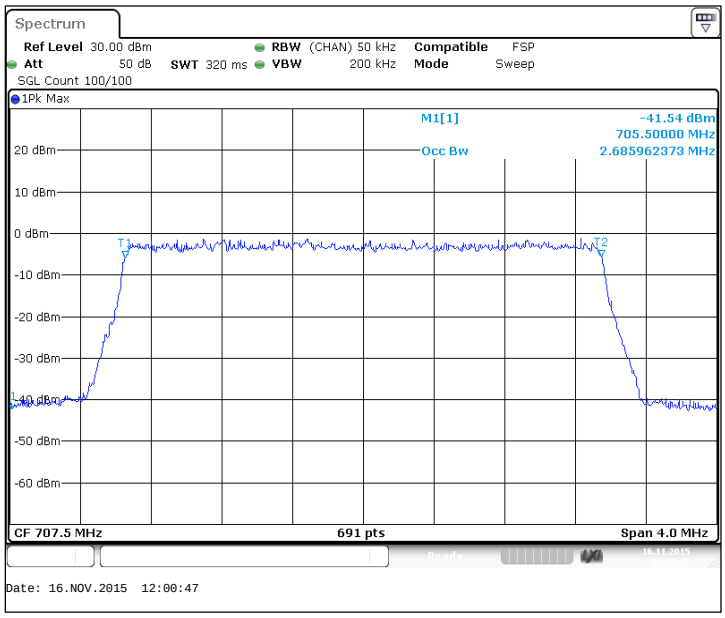
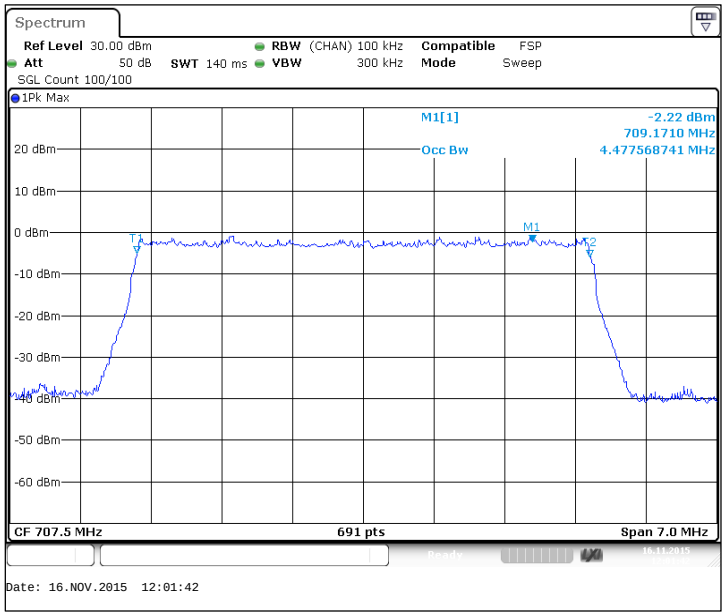
FDD, CBW 3MHz, 16QAM, 15 RB, Channel 23095 / 707.5 MHz



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



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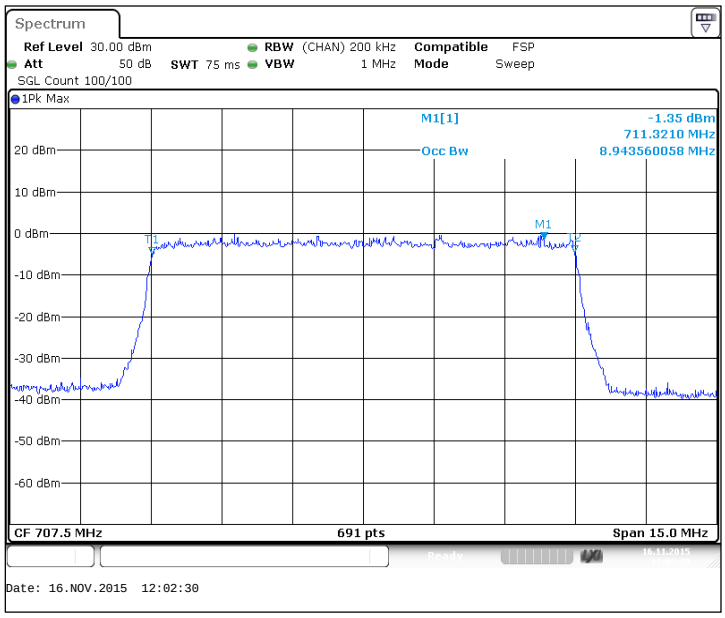
FDD, CBW 10MHz, 16QAM, 50 RB, Channel 23095 / 707.5 MHz



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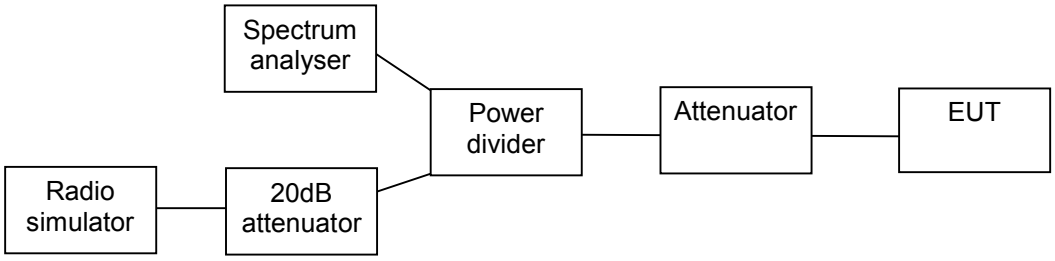
5. Band edge compliance

EUT with DUT number	RM-1150, DUT 400059
Accessories with DUT numbers	SD-134, DUT 400053
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	RF Cond2
Temp [ºC] / Humidity [%RH] / Air Pressure [kPa]	22 / 39 / 99.8
Date of measurements	11-Nov-2015
Measured by	Timo Raiskio

5.1. Test Setup



5.2. Test method and limit

The measurement is made according to TIA-603-D and applicable RSS standard.

LTE bands:
Previous evaluations have shown, that the currently selected CBW/RB configurations represent the worst case for this test. The evaluations are repeated every now and then to ensure, that the selections remain valid.

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)
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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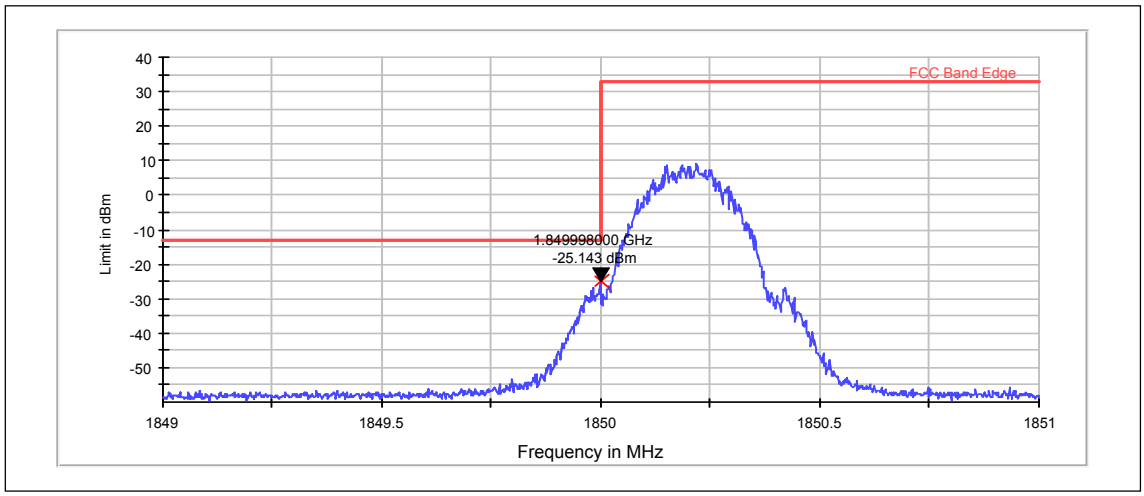
5.3. GSM 1900 Test results

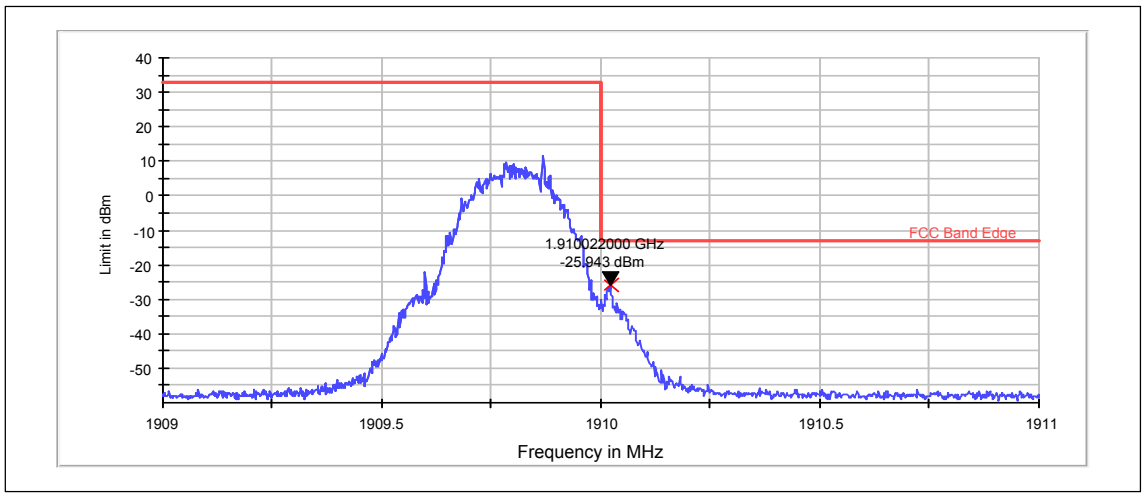
Channel 512 / 1850.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	1849.998	-25.14	PASSED

Channel 810 / 1909.8 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	1910.022	-25.94	PASSED

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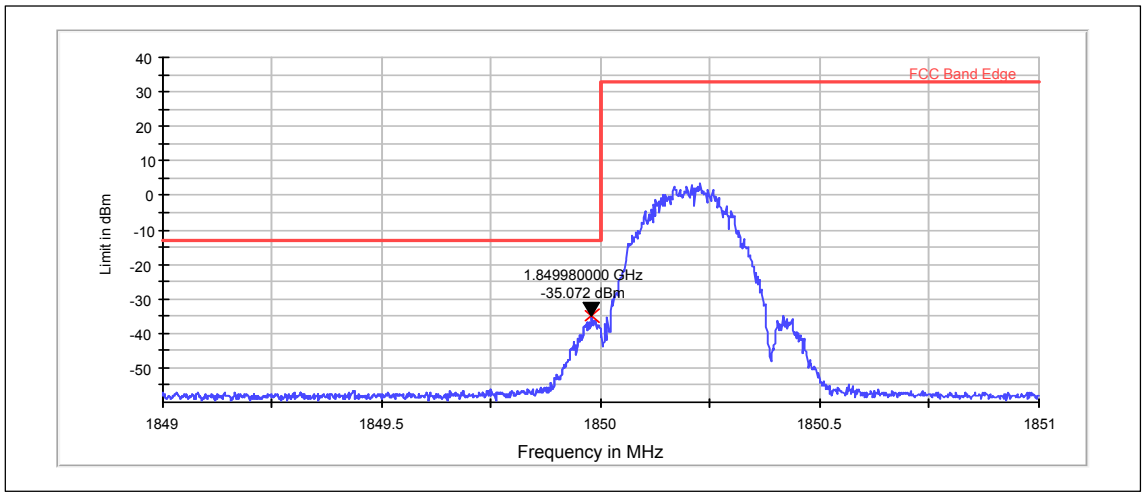
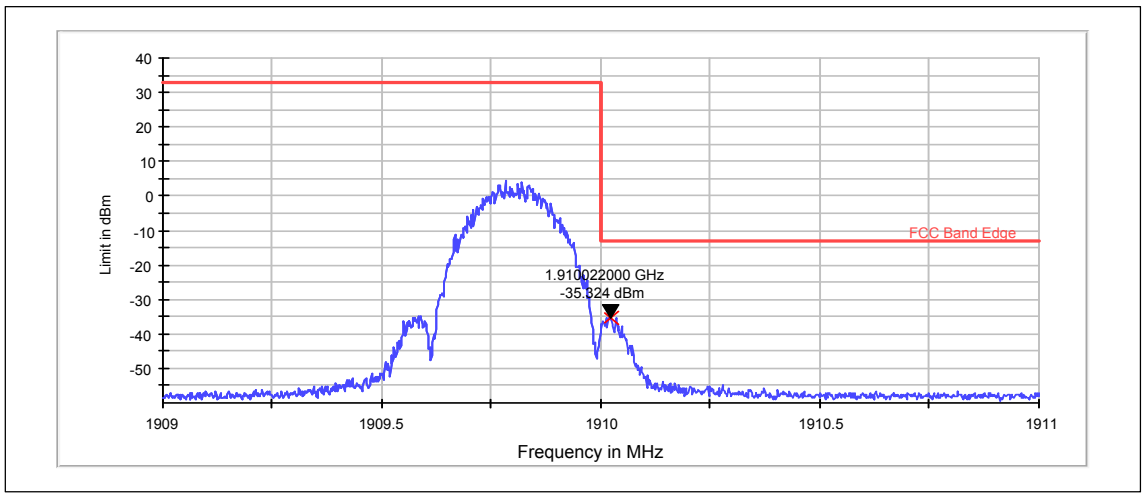
Channel 512 / 1850.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	1849.980	-35.07	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	1910.022	-35.32	PASSED

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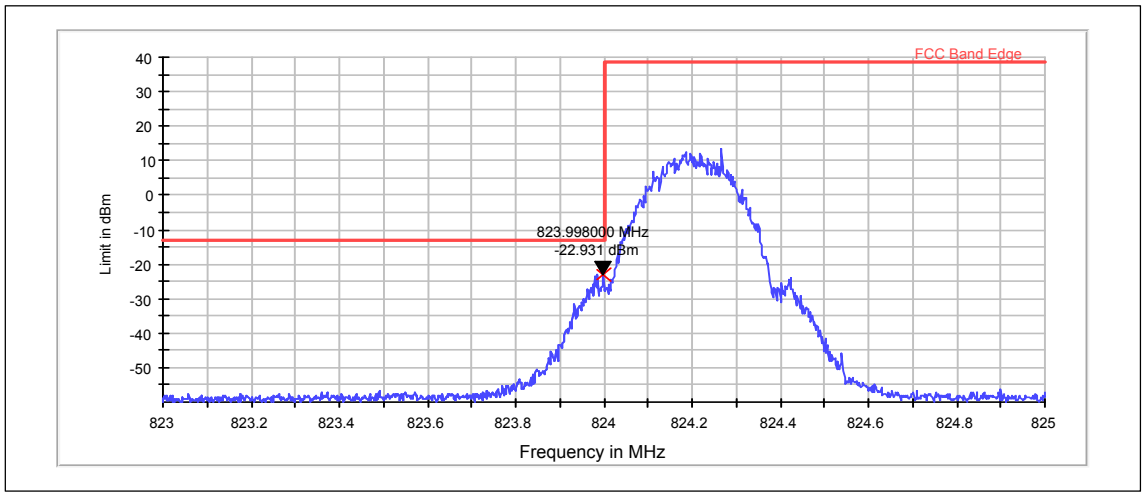
5.4. GSM 850 Test results

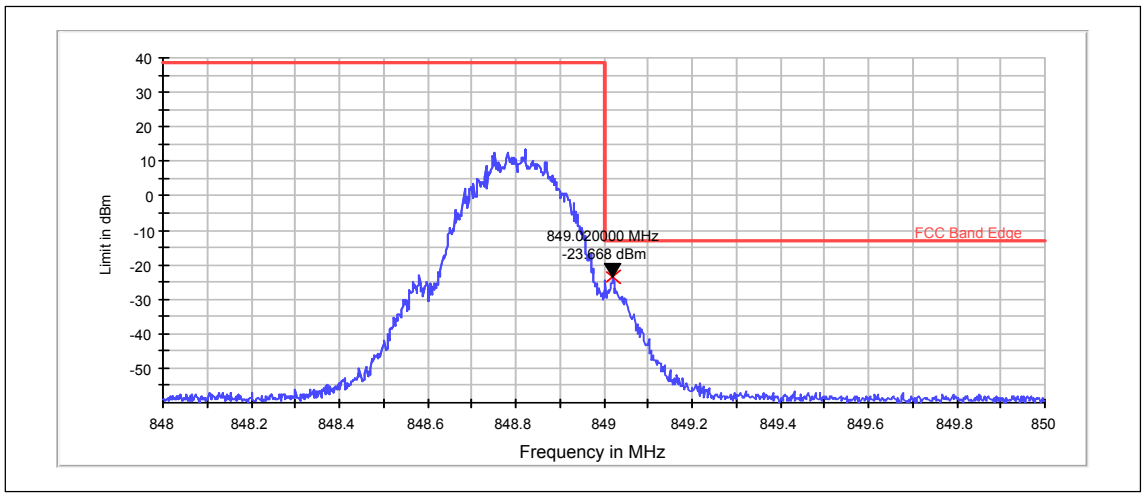
Channel 128 / 824.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
GSM	823.998	-22.93	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	849.020	-23.67	PASSED

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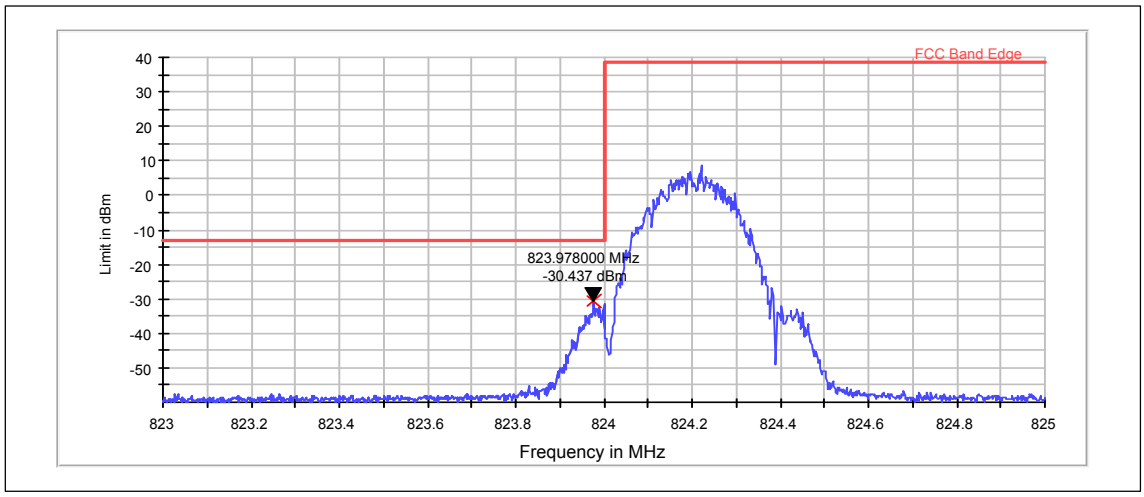
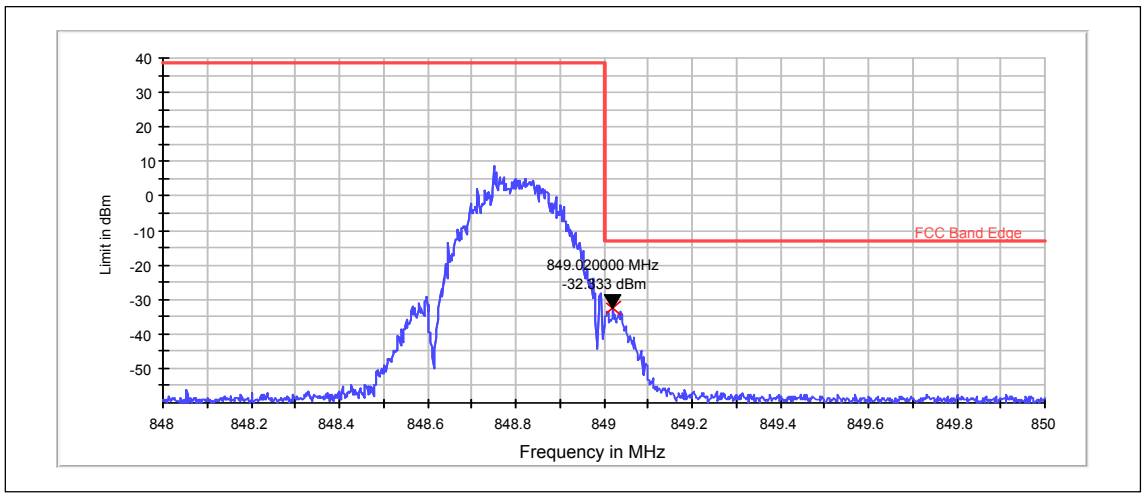
Channel 128 / 824.2 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	823.978	-30.44	PASSED

Channel 251 / 848.8 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
EGPRS	849.020	-32.33	PASSED

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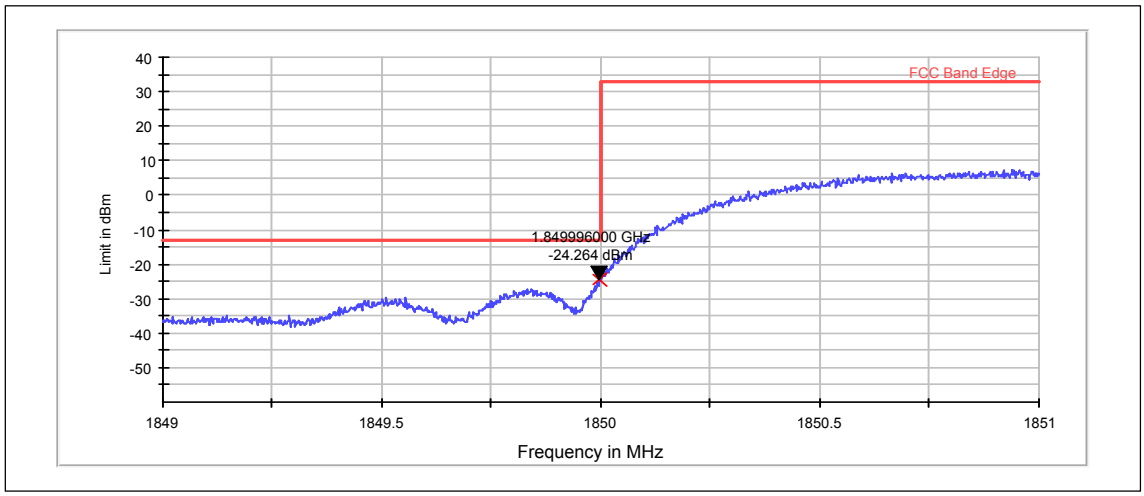
5.5. WCDMA2 Test results

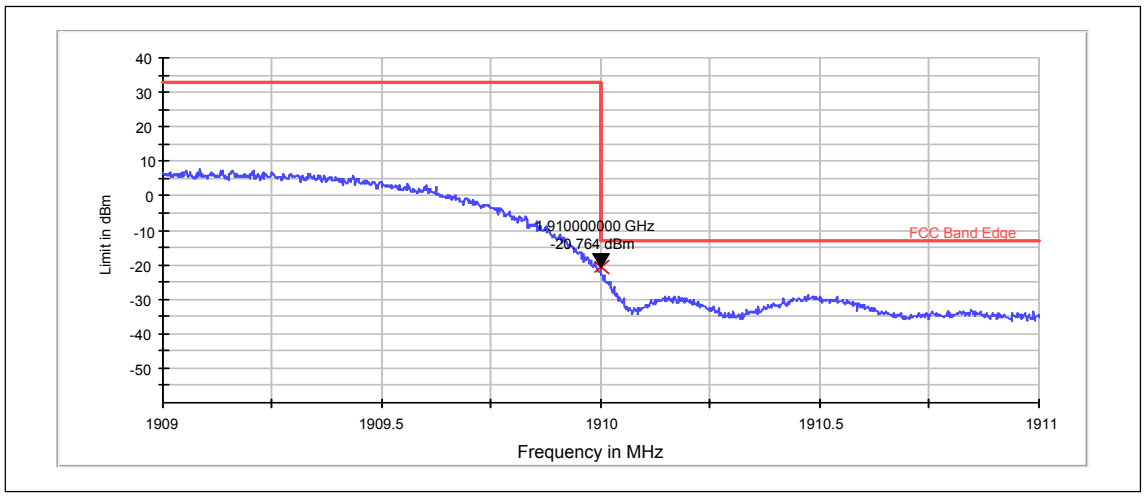
Channel 9262 / 1852.4 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1849.996	-24.26	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	1910.000	-20.76	PASSED

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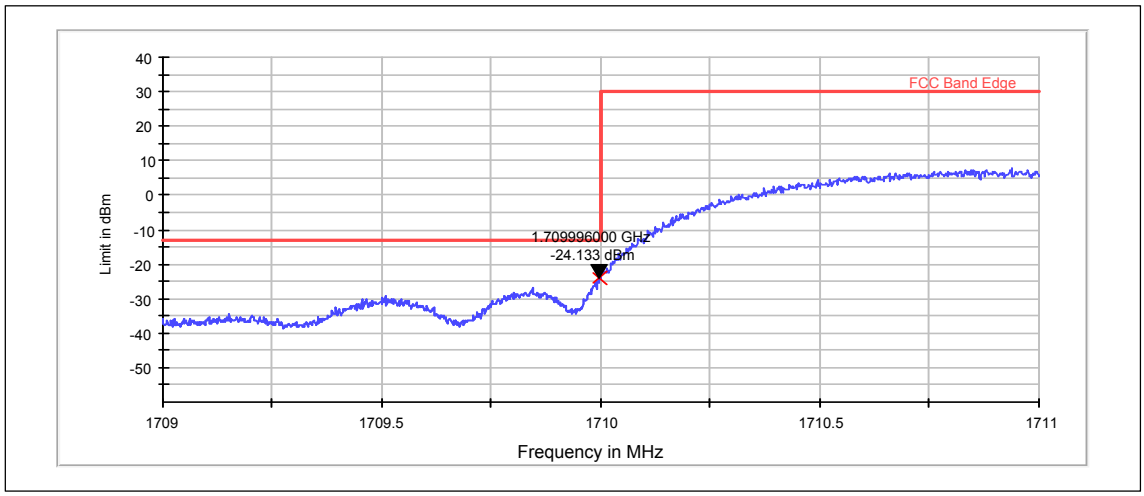
5.6. WCDMA4 Test results

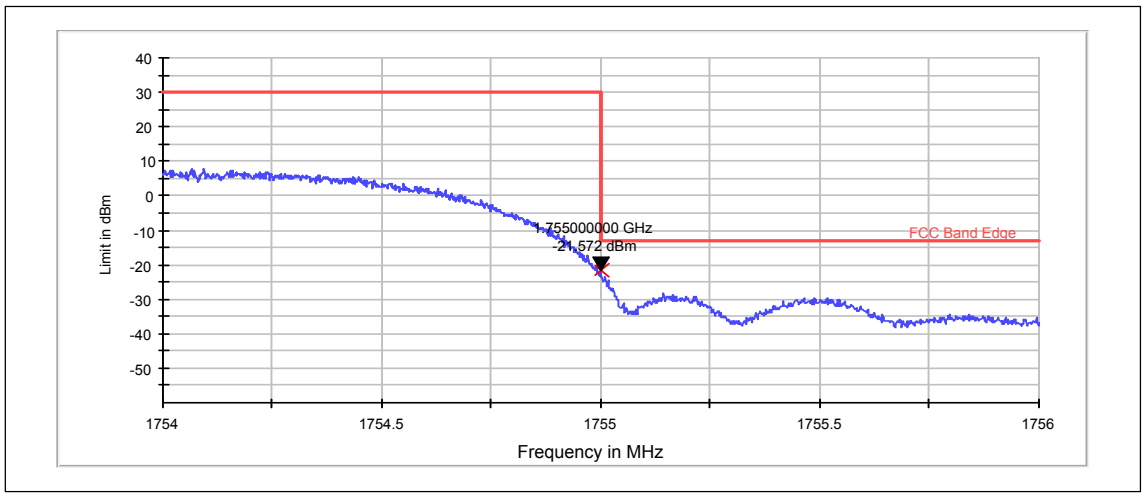
Channel 1312 / 1712.4 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	1709.996	-24.13	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	1755.000	-21.57	PASSED

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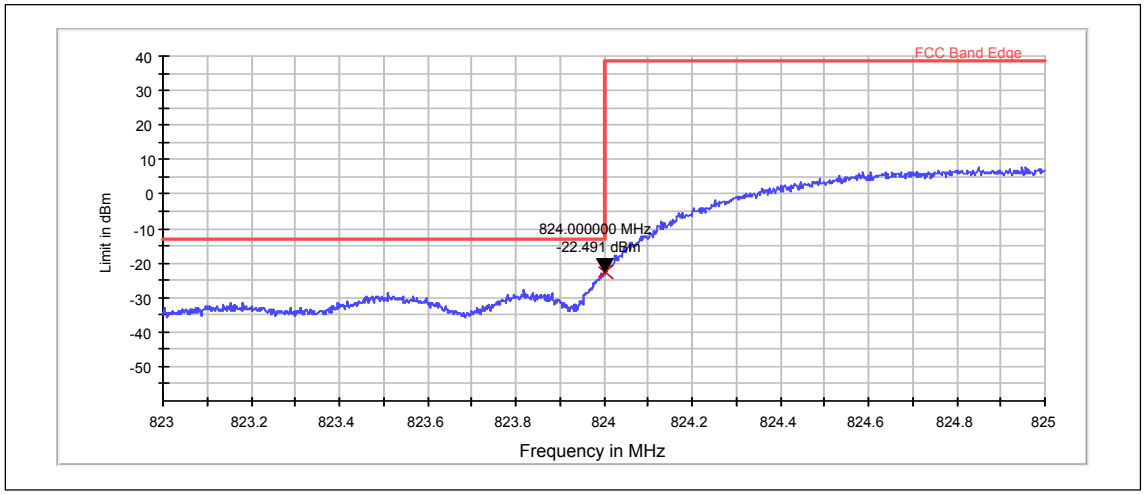
5.7. WCDMA5 Test results

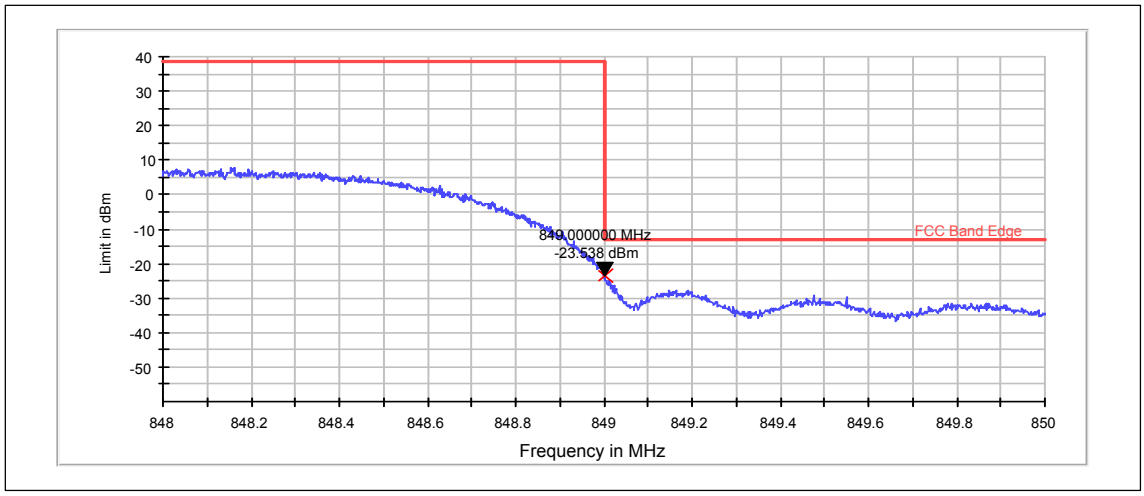
Channel 4132 / 826.4 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD	824.000	-22.49	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	849.000	-23.54	PASSED

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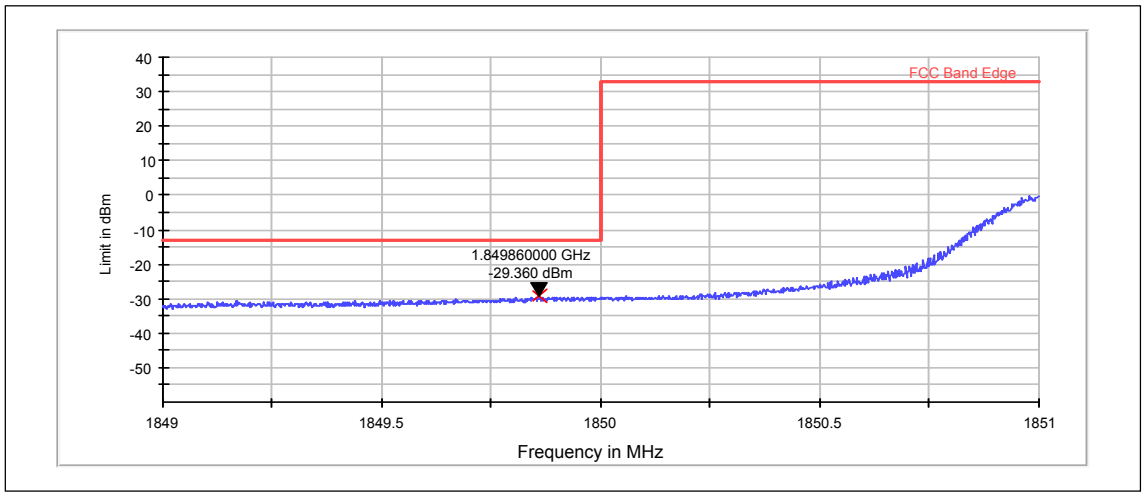
5.8. LTE2 Test results

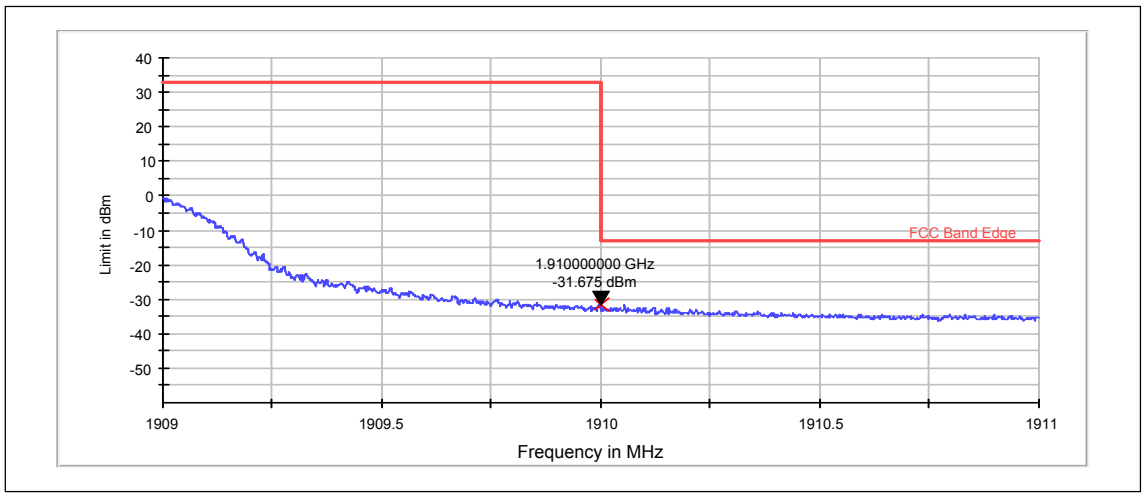
Channel 18700 / 1860 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1849.860	-29.36	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	1910.000	-31.67	PASSED

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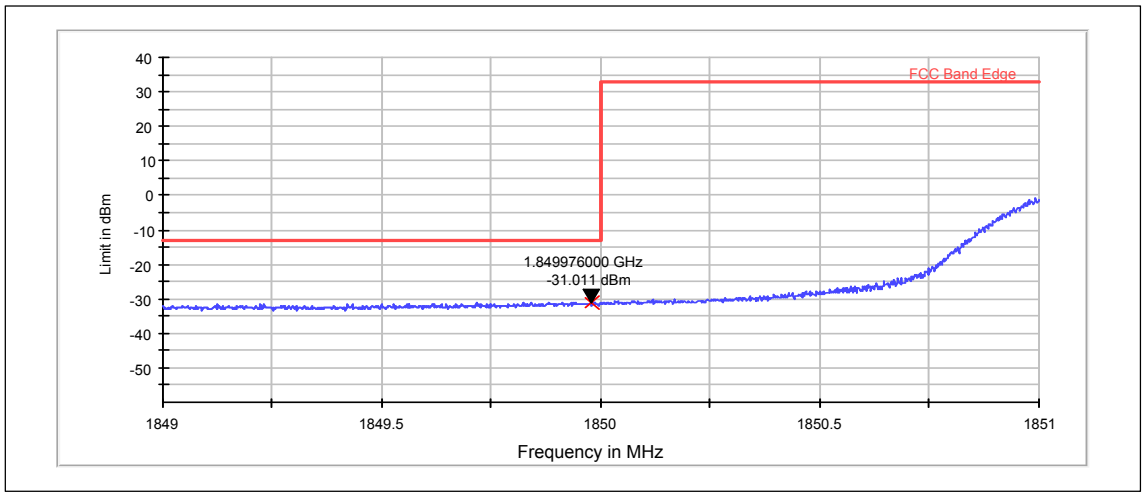
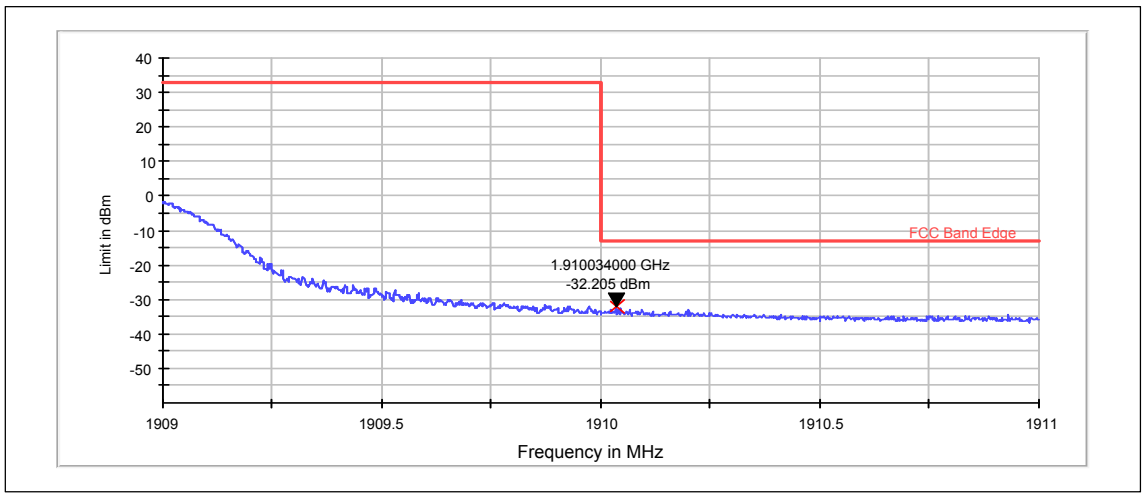
Channel 18700 / 1860 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1849.976	-31.01	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	1910.034	-32.20	PASSED

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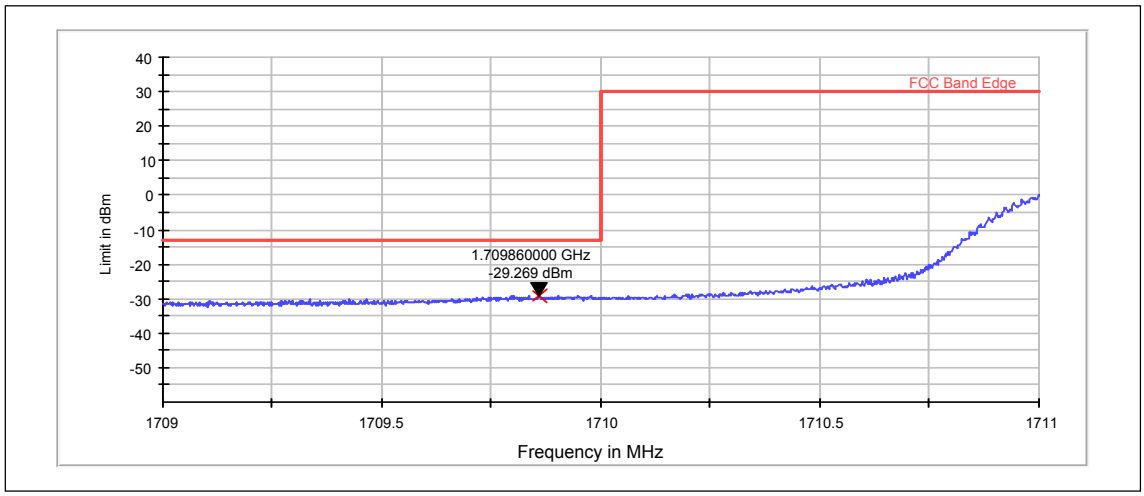
5.9. LTE4 Test results

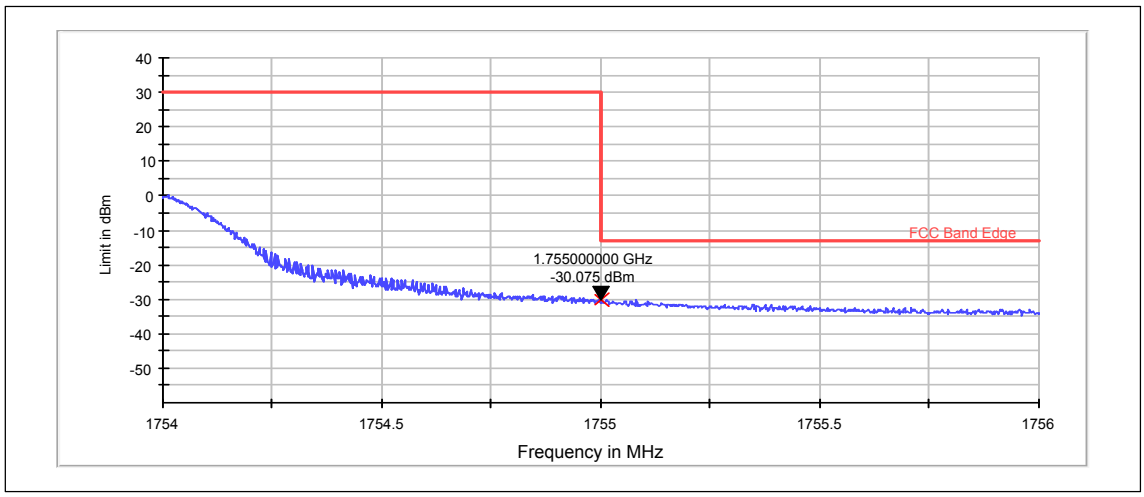
Channel 20050 / 1720 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	1709.860	-29.27	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	1755.000	-30.07	PASSED

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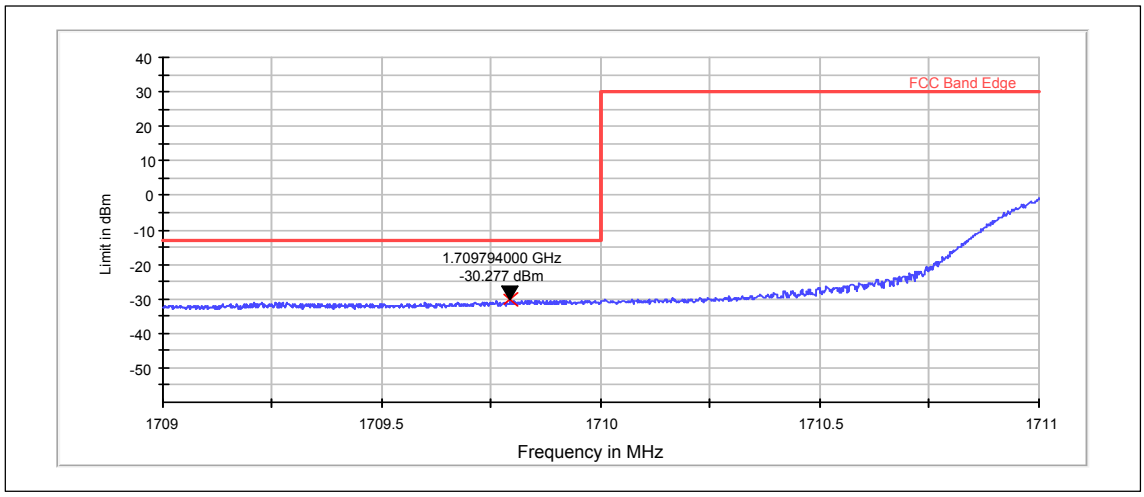
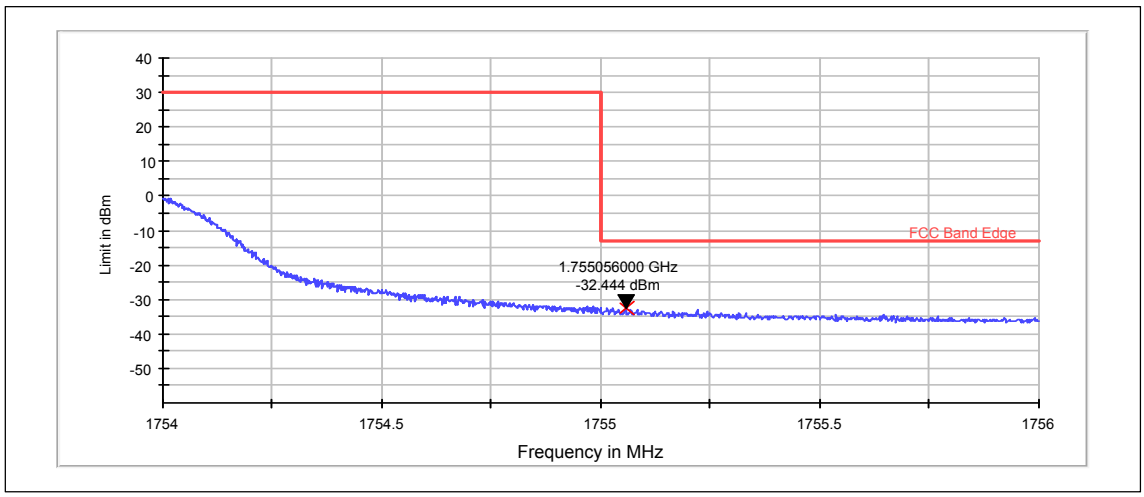
Channel 20050 / 1720 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	1709.794	-30.28	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	1755.056	-32.44	PASSED

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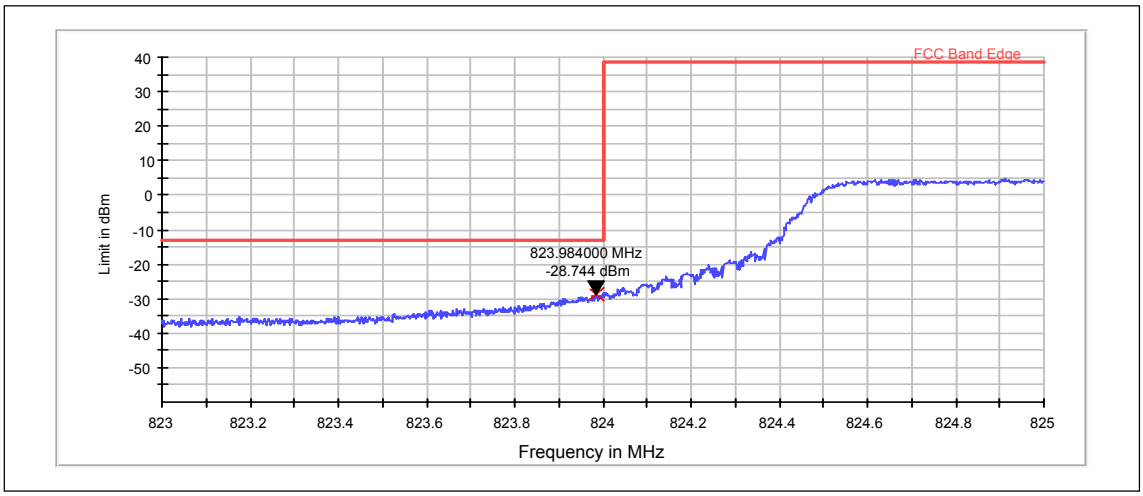
5.10. LTE5 Test results

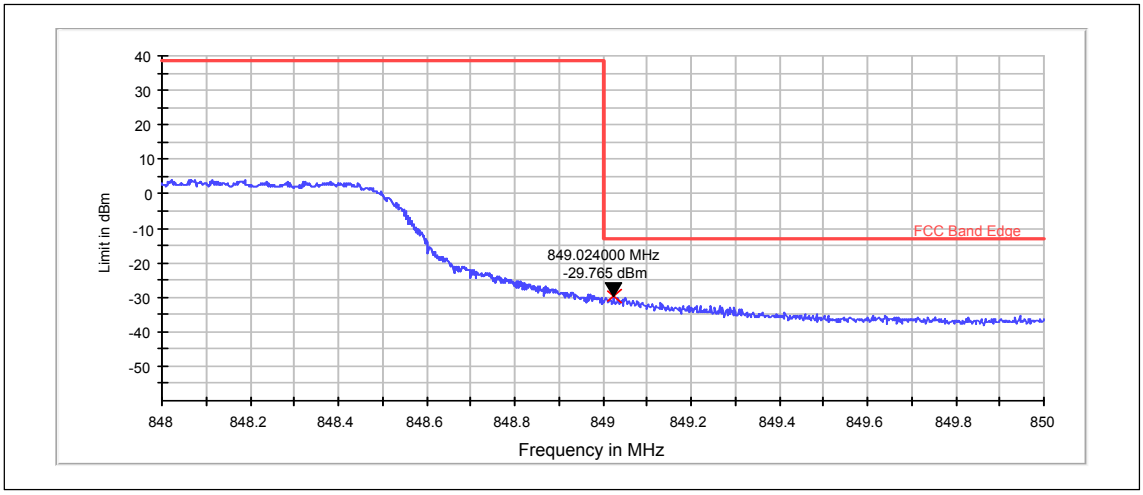
Channel 20450 / 829 MHz



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

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	823.984	-28.74	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	849.024	-29.77	PASSED

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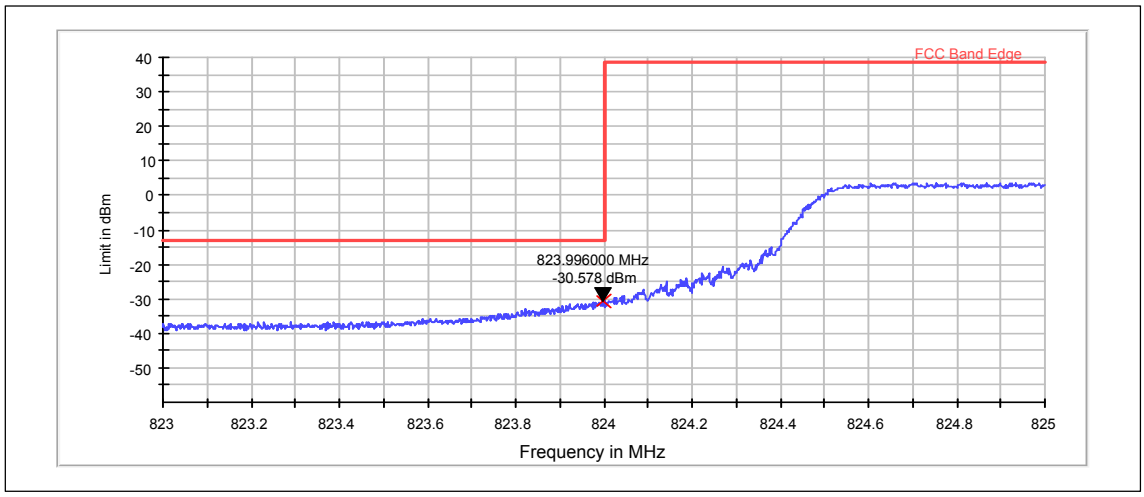
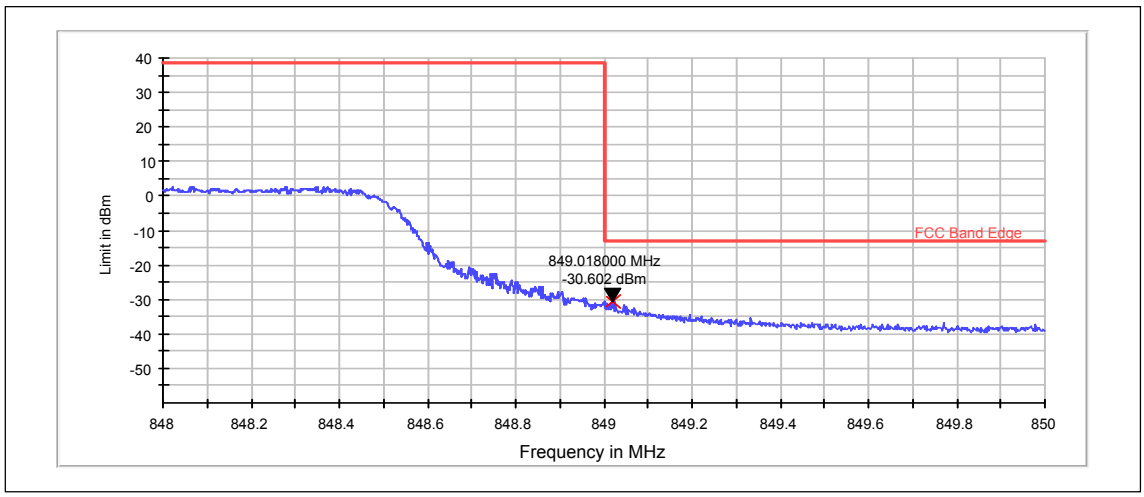
Channel 20450 / 829 MHz



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	-30.58	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	-30.60	PASSED

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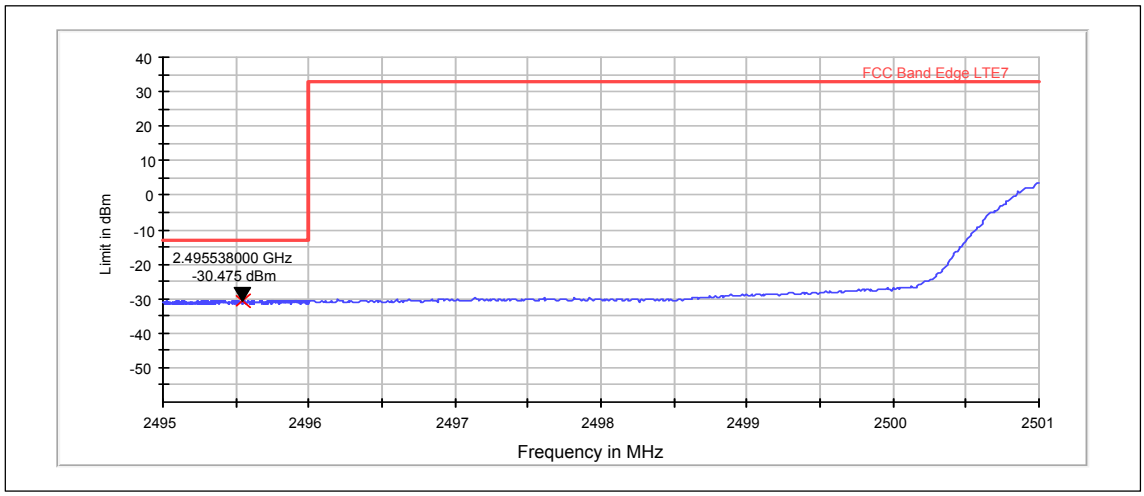
5.11. LTE7 Test results

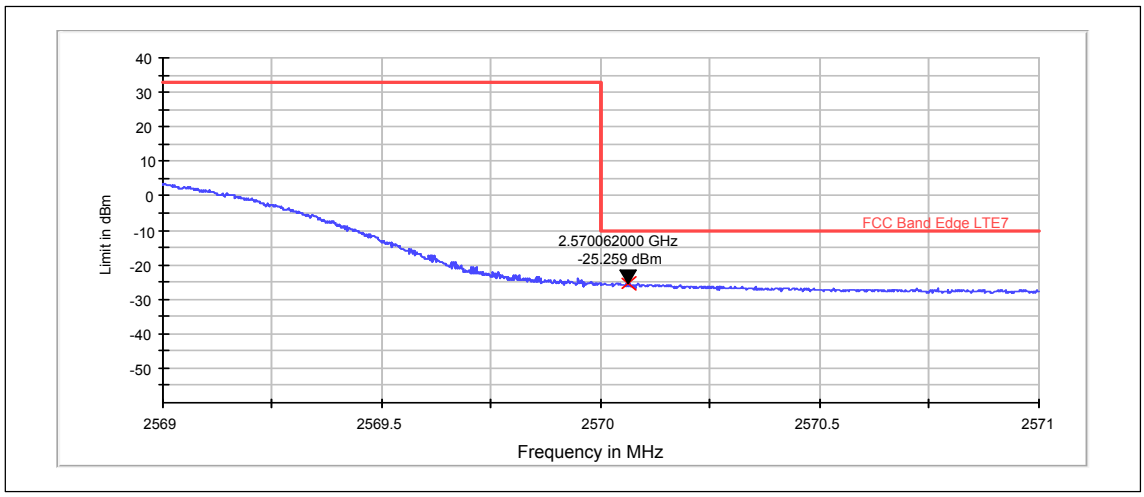
Channel 20850 / 2510 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	2495.538	-30.47	PASSED

Channel 21350 / 2560 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, QPSK, 100 RB	2570.062	-25.26	PASSED

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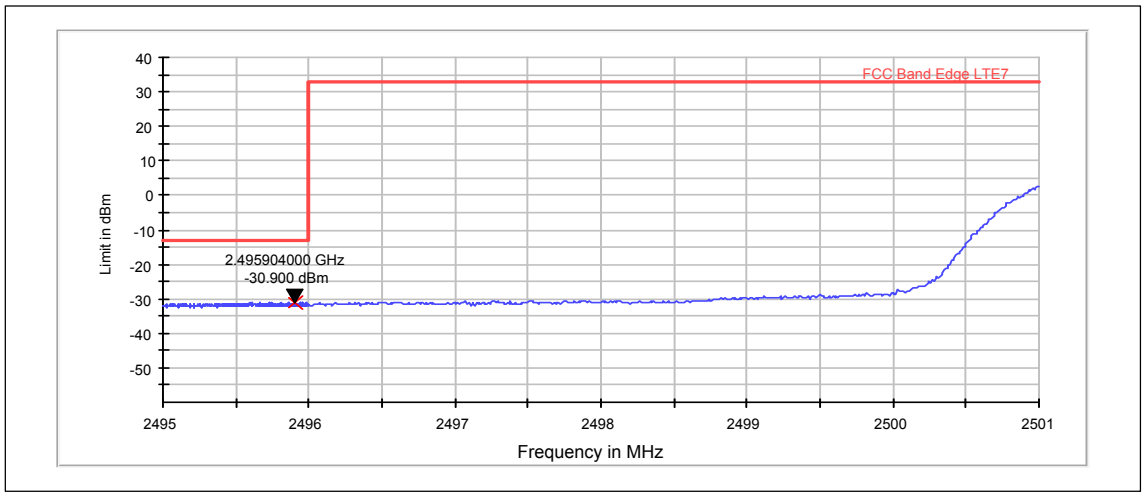
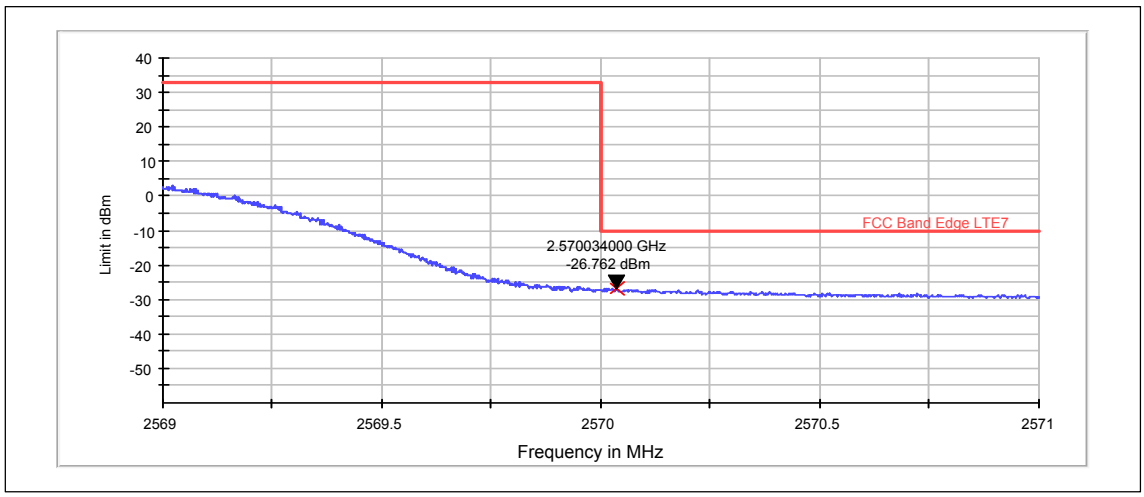
Channel 20850 / 2510 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	2495.904	-30.90	PASSED

Channel 21350 / 2560 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 20MHz, 16QAM, 100 RB	2570.034	-26.76	PASSED

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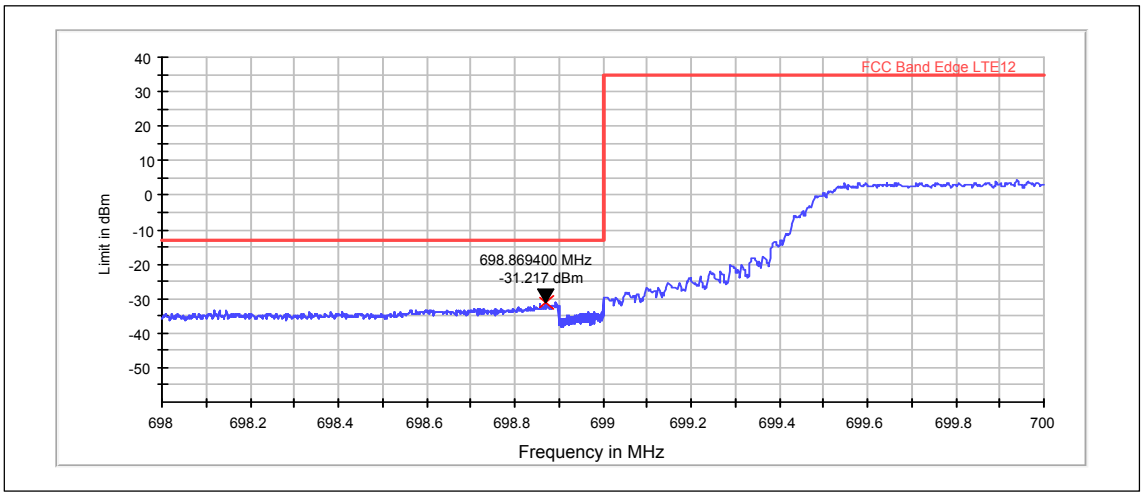
5.12. LTE12 Test results

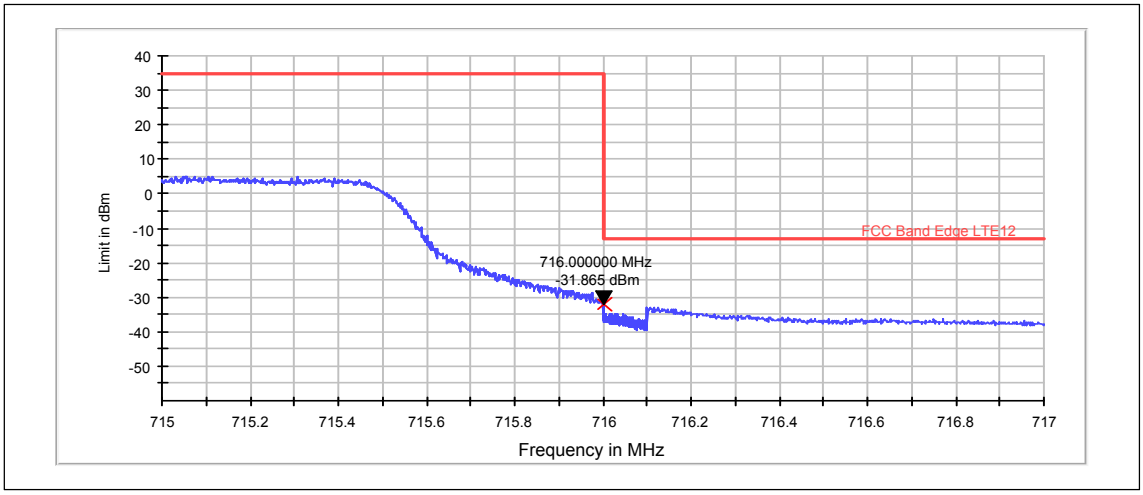
Channel 23060 / 704 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, QPSK, 50 RB	698.869	-31.22	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	-31.87	PASSED

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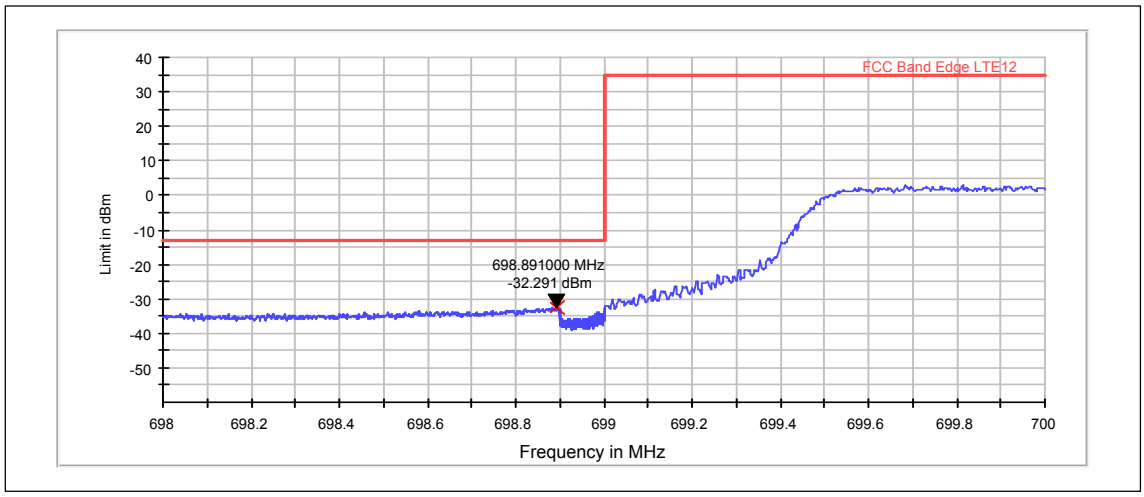
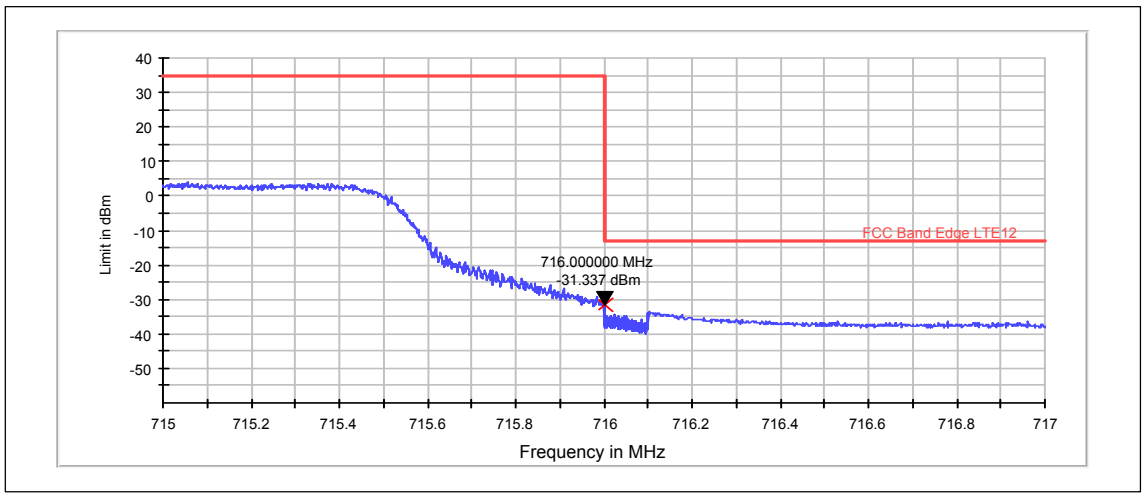
Channel 23060 / 704 MHz



RMS detector, Max hold

Operation mode (TX on)	Frequency [MHz]	Level [dBm]	Result
FDD, CBW 10MHz, 16QAM, 50 RB	698.891	-32.29	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	-31.34	PASSED

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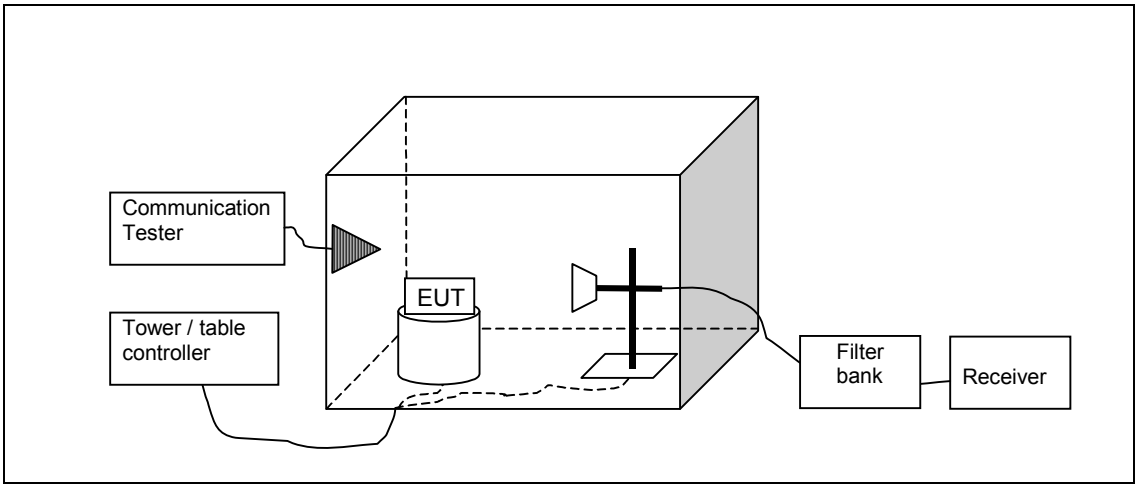
6. Spurious radiated emissions

EUT with DUT number	RM-1150, DUT 400060
Accessories with DUT numbers	BV-T3G (LG), DUT 400051 ; AC-18E, DUT 400050 ; WH-108, DUT 42927
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	21 / 44 / 100
Date of measurements	16-Nov-2015
Measured by	Hannu Söderholm

6.1.1 Test setup



6.2. Test method and limit

The measurement is made according to TIA-603-D 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, measuring antenna at fixed height and EUT set in three orthogonal positions on the turn table.

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.

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.

The results were obtained using substitution method 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.

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LTE bands:
Previous evaluations have shown, that the currently selected CBW/RB configurations represent the worst case for this test. The evaluations are repeated every now and then to ensure, that the selections remain valid.

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
LTE12	30 - 7200	-13
LTE17	30 - 7200	-13 (RBW = 100 kHz, ERP)

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6.3. GSM 850 test results, Antenna 1

Channel 190 / 836.6 MHz
Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
2824.609	-53.5	0.00447	-56.5	3	VERTICAL	PASSED
2873.146	-51.02	0.00791	-54.72	3.7	VERTICAL	PASSED
2883.527	-52.7	0.00537	-56.6	3.9	VERTICAL	PASSED
2932.986	-51.6	0.00692	-55.5	3.9	VERTICAL	PASSED
2962.244	-52.38	0.00578	-55.98	3.6	HORIZONTAL	PASSED
2985.892	-50.99	0.00796	-54.69	3.7	VERTICAL	PASSED

6.4. GSM 850 test results, Antenna 2

Channel 190 / 836.6 MHz
Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
848.62	-69.29	0.00012	-54.89	-14.4	VERTICAL	PASSED
1619.078	-59.85	0.00104	-53.45	-6.4	HORIZONTAL	PASSED
1647.415	-59.17	0.00121	-52.87	-6.3	VERTICAL	PASSED
1673.186	-48.48	0.01419	-42.28	-6.2	VERTICAL	PASSED
2509.94	-42.81	0.05236	-43.61	0.8	HORIZONTAL	PASSED
2526.733	-54.48	0.00356	-55.78	1.3	VERTICAL	PASSED

6.5. GSM 850 E-GPRS (MSC9) test results, Antenna 1

Channel 190 / 836.6 MHz
Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1672.939	-50.57	0.00877	-44.37	-6.2	VERTICAL	PASSED
2509.98	-50.2	0.00955	-51	0.8	HORIZONTAL	PASSED

6.6. GSM 850 E-GPRS (MSC9) test results, Antenna 2

Channel 190 / 836.6 MHz
Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
1673.501	-51.96	0.00637	-45.56	-6.4	HORIZONTAL	PASSED
2509.66	-48.79	0.01321	-49.69	0.9	HORIZONTAL	PASSED

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6.7. GSM 1900 test results, Antenna 1

Channel 661 / 1880.0 MHz
Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3735.591	-56.84	0.00207	-60.94	4.1	HORIZONTAL	PASSED
3759.84	-51.81	0.00659	-56.41	4.6	HORIZONTAL	PASSED
5647.856	-52.17	0.00607	-60.77	8.6	VERTICAL	PASSED

6.1. GSM 1900 test results, Antenna 2

Channel 661 / 1880.0 MHz
Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3731.543	-56.09	0.00246	-60.59	4.5	VERTICAL	PASSED
3760.12	-47.53	0.01766	-52.13	4.6	HORIZONTAL	PASSED
5595.15	-52.76	0.0053	-61.16	8.4	HORIZONTAL	PASSED
5639.84	-45.53	0.02799	-53.93	8.4	HORIZONTAL	PASSED
7555.391	-48.66	0.01361	-62.86	14.2	VERTICAL	PASSED

6.2. GSM 1900 E-GPRS (MSC9) test results, Antenna 1

Channel 661 / 1880.0 MHz
Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3760.782	-56.05	0.00248	-60.65	4.6	HORIZONTAL	PASSED
5640.02	-47.51	0.01774	-55.91	8.4	HORIZONTAL	PASSED

6.3. GSM 1900 E-GPRS (MSC9) test results, Antenna 2

Channel 661 / 1880.0 MHz
Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3760.1	-50.63	0.00865	-55.53	4.9	VERTICAL	PASSED
5640.06	-49.63	0.01089	-58.03	8.4	HORIZONTAL	PASSED

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6.4. WCDMA2 test results, Antenna 1

Channel 9400 / 1880.0 MHz
FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3758.457	-55.6	0.00275	-60.1	4.5	HORIZONTAL	PASSED
3769.078	-55.55	0.00279	-60.55	5	VERTICAL	PASSED
3776.052	-55.61	0.00275	-60.71	5.1	VERTICAL	PASSED
5635.411	-51.27	0.00746	-59.67	8.4	VERTICAL	PASSED
5636.493	-50.83	0.00826	-59.23	8.4	HORIZONTAL	PASSED
5653.727	-51.31	0.0074	-59.81	8.5	VERTICAL	PASSED
7505.511	-48.48	0.01419	-62.48	14	HORIZONTAL	PASSED
7517.214	-47.59	0.01742	-61.89	14.3	VERTICAL	PASSED
9399.739	-46.36	0.02312	-62.96	16.6	VERTICAL	PASSED
11271.122	-44.47	0.03573	-63.17	18.7	HORIZONTAL	PASSED
13155.932	-51.89	0.00647	-63.89	12	VERTICAL	PASSED
15043.186	-52.27	0.00593	-66.17	13.9	VERTICAL	PASSED
16911.603	-50.63	0.00865	-67.13	16.5	HORIZONTAL	PASSED

6.5. WCDMA2 test results, Antenna 2

Channel 9400 / 1880.0 MHz
FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3757.976	-55.03	0.00314	-59.93	4.9	VERTICAL	PASSED
3761.222	-55.43	0.00286	-60.03	4.6	HORIZONTAL	PASSED
5630.561	-51.54	0.00701	-59.94	8.4	VERTICAL	PASSED
5634.97	-51.77	0.00665	-60.17	8.4	VERTICAL	PASSED
5651.844	-51.37	0.00729	-59.97	8.6	VERTICAL	PASSED
7527.555	-48.13	0.01538	-62.43	14.3	VERTICAL	PASSED
7538.497	-48.7	0.01349	-63.1	14.4	HORIZONTAL	PASSED
7540.22	-48.15	0.01531	-62.45	14.3	HORIZONTAL	PASSED
9392.004	-45.93	0.02553	-62.53	16.6	VERTICAL	PASSED
11279.259	-44.63	0.03443	-63.23	18.6	HORIZONTAL	PASSED
13169.038	-52.51	0.00561	-64.31	11.8	VERTICAL	PASSED
15039.499	-51.77	0.00665	-65.67	13.9	HORIZONTAL	PASSED
16928.798	-49.95	0.01012	-66.85	16.9	HORIZONTAL	PASSED

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6.6. WCDMA4 test results, Antenna 1

Channel 1412 / 1732.4 MHz
FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3472.996	-56.57	0.0022	-60.77	4.2	HORIZONTAL	PASSED
3769.479	-55.03	0.00314	-60.03	5	VERTICAL	PASSED
5198.778	-50.99	0.00796	-59.39	8.4	HORIZONTAL	PASSED
5199.585	-51.6	0.00692	-59.9	8.3	HORIZONTAL	PASSED
5646.673	-51.12	0.00773	-59.62	8.5	VERTICAL	PASSED
6937.476	-48.06	0.01563	-59.26	11.2	HORIZONTAL	PASSED
7534.649	-48.44	0.01432	-62.74	14.3	HORIZONTAL	PASSED
8652.681	-46.86	0.02061	-63.06	16.2	VERTICAL	PASSED
10387.927	-46.3	0.02344	-63.4	17.1	HORIZONTAL	PASSED
12133.994	-45.56	0.0278	-64.06	18.5	HORIZONTAL	PASSED
13859.741	-52.42	0.00573	-64.02	11.6	HORIZONTAL	PASSED
15589.977	-50.97	0.008	-66.07	15.1	HORIZONTAL	PASSED
17315.764	-48.79	0.01321	-66.89	18.1	HORIZONTAL	PASSED

6.7. WCDMA4 test results, Antenna 2

Channel 1412 / 1732.4 MHz
FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
3474.72	-56.23	0.00238	-60.53	4.3	VERTICAL	PASSED
3756.653	-56.16	0.00242	-61.06	4.9	VERTICAL	PASSED
3779.379	-54.88	0.00325	-59.98	5.1	VERTICAL	PASSED
5200.266	-51.26	0.00748	-59.56	8.3	HORIZONTAL	PASSED
5637.615	-51.45	0.00716	-59.85	8.4	HORIZONTAL	PASSED
6924.891	-48.32	0.01472	-59.52	11.2	HORIZONTAL	PASSED
7530.361	-48.44	0.01432	-62.64	14.2	HORIZONTAL	PASSED
8666.389	-47.05	0.01972	-63.35	16.3	VERTICAL	PASSED
10387.085	-46.09	0.0246	-62.99	16.9	VERTICAL	PASSED
12136.8	-45.21	0.03013	-63.81	18.6	VERTICAL	PASSED
13854.811	-52.25	0.00596	-63.85	11.6	HORIZONTAL	PASSED
15584.606	-51.79	0.00662	-66.89	15.1	HORIZONTAL	PASSED
17332.677	-48.93	0.01279	-66.93	18	HORIZONTAL	PASSED

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6.8. WCDMA5 test results, Antenna 1

Channel 4175 / 835.0 MHz
FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
849.856	-49.96	0.01009	-81.96	32	VERTICAL	PASSED
851.288	-48.9	0.01288	-81	32.1	VERTICAL	PASSED
853.337	-48.42	0.01439	-80.62	32.2	VERTICAL	PASSED
1668.497	-54.72	0.00337	-48.32	-6.4	HORIZONTAL	PASSED
2513.798	-54.19	0.00381	-55.29	1.1	VERTICAL	PASSED
2855.21	-51.7	0.00676	-54.8	3.1	HORIZONTAL	PASSED
2943.707	-51.81	0.00659	-55.61	3.8	VERTICAL	PASSED
2948.277	-51.94	0.0064	-55.54	3.6	HORIZONTAL	PASSED
3343.347	-58.87	0.0013	-59.87	1	HORIZONTAL	PASSED
4184.559	-56.39	0.0023	-60.59	4.2	HORIZONTAL	PASSED
5016.513	-54.58	0.00348	-60.48	5.9	HORIZONTAL	PASSED
5850.551	-53.46	0.00451	-59.86	6.4	HORIZONTAL	PASSED
6684.509	-50.45	0.00902	-59.15	8.7	VERTICAL	PASSED
7523.116	-50.97	0.008	-63.27	12.3	VERTICAL	PASSED
8355.872	-49.23	0.01194	-62.33	13.1	VERTICAL	PASSED

6.9. WCDMA5 test results, Antenna 2

Channel 4175 / 835.0 MHz
FDD mode, Peak detector

Frequency [MHz]	P [dBm]	P [µW]	P_{MEAS} [dBm]	A_{TOT} [dB]	Polarisation	Results
855.586	-49.47	0.0113	-81.87	32.4	VERTICAL	PASSED
856.398	-48.97	0.01268	-81.47	32.5	VERTICAL	PASSED
1009.058	-61.72	0.00067	-51.62	-10.1	VERTICAL	PASSED
1667.635	-57.03	0.00198	-50.53	-6.5	HORIZONTAL	PASSED
1668.257	-56.78	0.0021	-50.28	-6.5	HORIZONTAL	PASSED
2498.778	-53.8	0.00417	-54.6	0.8	VERTICAL	PASSED
2508.868	-53.1	0.0049	-54	0.9	VERTICAL	PASSED
2524.349	-54.17	0.00383	-55.47	1.3	VERTICAL	PASSED
3332.966	-58.34	0.00147	-59.64	1.3	VERTICAL	PASSED
4179.749	-57.34	0.00185	-61.54	4.2	VERTICAL	PASSED
5012.425	-54.54	0.00352	-60.34	5.8	HORIZONTAL	PASSED
5848.868	-53.88	0.00409	-59.98	6.1	VERTICAL	PASSED
6684.068	-49.8	0.01047	-58.4	8.6	VERTICAL	PASSED
7516.423	-50.41	0.0091	-62.51	12.1	VERTICAL	PASSED
8341.363	-49.97	0.01007	-63.17	13.2	VERTICAL	PASSED

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6.10. LTE2 test results, Antenna 1

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
1960.386	-32.24	0.59704	-29.74	-2.5	HORIZONTAL	PASSED
3765.872	-66.27	0.00024	-70.97	4.7	HORIZONTAL	PASSED
5640.421	-61.13	0.00077	-69.53	8.4	HORIZONTAL	PASSED
7516.613	-59.88	0.00103	-73.58	13.7	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
1960.386	-32.67	0.54075	-30.17	-2.5	HORIZONTAL	PASSED
3768.357	-66.46	0.00023	-71.16	4.7	HORIZONTAL	PASSED
5649.479	-62.58	0.00055	-70.78	8.2	HORIZONTAL	PASSED
7528.076	-59.55	0.00111	-73.65	14.1	HORIZONTAL	PASSED

6.11. LTE2 test results, Antenna 2

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
1961.683	-32.08	0.61944	-29.68	-2.4	HORIZONTAL	PASSED
3760.261	-63.31	0.00047	-67.91	4.6	HORIZONTAL	PASSED
5640.661	-61.53	0.0007	-69.93	8.4	HORIZONTAL	PASSED
7527.515	-59.58	0.0011	-73.58	14	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
1960.947	-31.74	0.66988	-29.34	-2.4	HORIZONTAL	PASSED
3760.301	-63.64	0.00043	-68.24	4.6	HORIZONTAL	PASSED
5640.862	-61.54	0.0007	-69.94	8.4	HORIZONTAL	PASSED
7528.277	-59.54	0.00111	-73.64	14.1	HORIZONTAL	PASSED

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6.12. LTE4 test results, Antenna 1

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	-63.93	0.0004	-67.93	4	HORIZONTAL	PASSED
5197.961	-61.08	0.00078	-69.48	8.4	HORIZONTAL	PASSED
6929.379	-58.49	0.00142	-69.89	11.4	HORIZONTAL	PASSED
8662.039	-58.34	0.00147	-74.64	16.3	VERTICAL	PASSED
10385	-57.19	0.00191	-74.29	17.1	HORIZONTAL	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
3465.421	-64.09	0.00039	-68.09	4	HORIZONTAL	PASSED
5197.921	-60.89	0.00081	-69.29	8.4	HORIZONTAL	PASSED
6929.659	-58.09	0.00155	-69.49	11.4	HORIZONTAL	PASSED
8672.34	-57.9	0.00162	-74.3	16.4	HORIZONTAL	PASSED
10387.645	-57.19	0.00191	-74.29	17.1	HORIZONTAL	PASSED

6.13. LTE4 test results, Antenna 2

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
3465.461	-64.09	0.00039	-68.09	4	HORIZONTAL	PASSED
5198.081	-61.49	0.00071	-69.89	8.4	HORIZONTAL	PASSED
6929.9	-58.29	0.00148	-69.69	11.4	HORIZONTAL	PASSED
8659.714	-58.02	0.00158	-74.22	16.2	VERTICAL	PASSED
10385.08	-57.19	0.00191	-74.29	17.1	HORIZONTAL	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
3465.421	-64.09	0.00039	-68.09	4	HORIZONTAL	PASSED
5197.881	-61.08	0.00078	-69.48	8.4	HORIZONTAL	PASSED
6934.709	-58.39	0.00145	-69.69	11.3	HORIZONTAL	PASSED
8662.079	-58.34	0.00147	-74.64	16.3	VERTICAL	PASSED
10385	-57.19	0.00191	-74.29	17.1	HORIZONTAL	PASSED

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6.14. LTE5 test results, Antenna 1

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
856.956	-61.1	0.00078	-93	31.9	HORIZONTAL	PASSED
879.483	-36.75	0.21135	-70.75	34	HORIZONTAL	PASSED
881.156	-37.11	0.19454	-71.01	33.9	HORIZONTAL	PASSED
1673.381	-66.31	0.00023	-59.91	-6.4	HORIZONTAL	PASSED
2515.492	-72.88	5E-05	-73.98	1.1	HORIZONTAL	PASSED
3345.78	-78.11	2E-05	-79.01	0.9	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
854.251	-61.44	0.00072	-93.04	31.6	HORIZONTAL	PASSED
860.098	-60.66	0.00086	-93.06	32.4	HORIZONTAL	PASSED
866.543	-59.97	0.00101	-93.07	33.1	HORIZONTAL	PASSED
879.723	-36.96	0.20137	-70.96	34	HORIZONTAL	PASSED
880.583	-37.29	0.18664	-71.19	33.9	HORIZONTAL	PASSED
1673.22	-71.03	8E-05	-64.63	-6.4	HORIZONTAL	PASSED
2511.083	-73.06	5E-05	-73.96	0.9	HORIZONTAL	PASSED
3346.741	-75.63	3E-05	-76.53	0.9	HORIZONTAL	PASSED

6.15. LTE5 test results, Antenna 2

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
858.419	-60.89	0.00081	-92.99	32.1	HORIZONTAL	PASSED
880.12	-33.78	0.41879	-67.78	34	HORIZONTAL	PASSED
880.463	-34.32	0.36983	-68.22	33.9	HORIZONTAL	PASSED
1673.381	-64.95	0.00032	-58.55	-6.4	HORIZONTAL	PASSED
2509.921	-68.85	0.00013	-69.65	0.8	HORIZONTAL	PASSED
3350.389	-78.14	2E-05	-79.04	0.9	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
858.599	-60.87	0.00082	-93.07	32.2	HORIZONTAL	PASSED
881.567	-35.09	0.30974	-68.99	33.9	HORIZONTAL	PASSED
882.311	-33.97	0.40087	-67.87	33.9	HORIZONTAL	PASSED
1673.341	-65.34	0.00029	-58.94	-6.4	HORIZONTAL	PASSED
2510.081	-70.14	0.0001	-70.94	0.8	HORIZONTAL	PASSED
3346.862	-78.13	2E-05	-79.03	0.9	HORIZONTAL	PASSED

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6.16. LTE7 test results, Antenna 1

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
2550.105	-62.48	0.00056	-64.38	1.9	HORIZONTAL	PASSED
2654.158	-35.83	0.26122	-37.83	2	HORIZONTAL	PASSED
5070.381	-47.87	0.01633	-56.17	8.3	HORIZONTAL	PASSED
7596.884	-59.88	0.00103	-73.58	13.7	HORIZONTAL	PASSED
10130.12	-56.93	0.00203	-73.03	16.1	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
2547.68	-61.15	0.00077	-63.05	1.9	HORIZONTAL	PASSED
2653.717	-36.24	0.23768	-38.24	2	HORIZONTAL	PASSED
5070.461	-48.84	0.01306	-57.14	8.3	HORIZONTAL	PASSED
7609.469	-59.9	0.00102	-73.6	13.7	HORIZONTAL	PASSED
10132.244	-57.24	0.00189	-73.34	16.1	HORIZONTAL	PASSED

6.17. LTE7 test results, Antenna 2

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
2552.751	-63.1	0.00049	-64.9	1.8	HORIZONTAL	PASSED
2653.828	-34.61	0.34594	-36.61	2	HORIZONTAL	PASSED
5070.421	-54.5	0.00355	-62.8	8.3	HORIZONTAL	PASSED
7605.621	-58.3	0.00148	-71.9	13.6	HORIZONTAL	PASSED
10139.098	-57.28	0.00187	-73.28	16	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
2547.54	-59.97	0.00101	-61.77	1.8	HORIZONTAL	PASSED
2549.81	-61.28	0.00074	-63.18	1.9	HORIZONTAL	PASSED
2655.521	-33.6	0.43652	-35.5	1.9	HORIZONTAL	PASSED
5060.601	-63.07	0.00049	-71.47	8.4	HORIZONTAL	PASSED
7603.377	-59.99	0.001	-73.59	13.6	HORIZONTAL	PASSED
10141.182	-56.98	0.002	-72.98	16	HORIZONTAL	PASSED

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6.18. LTE12 test results, Antenna 1

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
1415.261	-72.48	6E-05	-63.88	-8.6	VERTICAL	PASSED
2123.121	-72.81	5E-05	-70.11	-2.7	VERTICAL	PASSED
2834.95	-71.61	7E-05	-74.61	3	HORIZONTAL	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
1415.381	-69.73	0.00011	-61.13	-8.6	HORIZONTAL	PASSED
2122.961	-70.79	8E-05	-67.89	-2.9	HORIZONTAL	PASSED
2833.908	-70.95	8E-05	-74.25	3.3	VERTICAL	PASSED

6.19. LTE12 test results, Antenna 2

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
1415.341	-55.1	0.00309	-46.5	-8.6	HORIZONTAL	PASSED
2123.041	-52.43	0.00571	-49.53	-2.9	HORIZONTAL	PASSED
2835.23	-71.31	7E-05	-74.61	3.3	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
1415.381	-54.91	0.00323	-46.31	-8.6	HORIZONTAL	PASSED
2123.041	-52.34	0.00583	-49.44	-2.9	HORIZONTAL	PASSED
2834.709	-71.31	7E-05	-74.61	3.3	VERTICAL	PASSED

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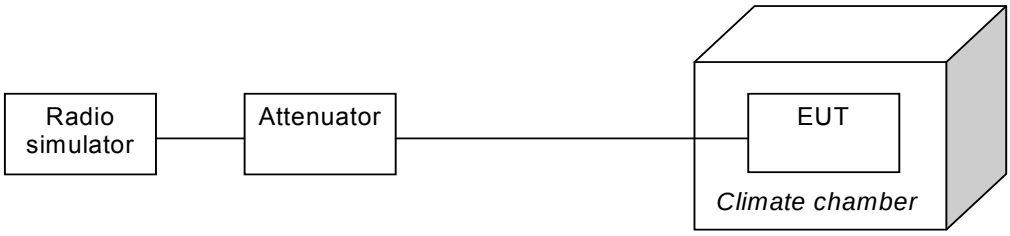
7. Frequency stability, temperature variation

EUT with DUT number	RM-1150, DUT 400059
Accessories with DUT numbers	SD-134, DUT 400053
Operation Voltage [V] / [Hz]	3.5 / 3.8 / 4.4
Results	PASSED
Remarks	RF Cond 2
Temp [ºC] / Humidity [%RH] / Air Pressure [kPa]	22 / 39 / 99.8
Date of measurements	11-Nov-2015
Measured by	Timo Raiskio

7.1. Test Setup



7.2. Test method and limit

The measurement is made according to TIA-603-D and applicable RSS standard 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 1900 Test results

GSM, Channel 661 / 1880.0 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1880.00	-6.97000	-0.0037	PASSED
40	1880.00	-6.20000	-0.0033	PASSED
30	1880.00	-11.62000	-0.0062	PASSED
20	1880.00	-4.07000	-0.0022	PASSED
10	1880.00	-4.84000	-0.0026	PASSED
0	1880.00	4.97000	0.0026	PASSED
-10	1880.00	7.55000	0.004	PASSED
-20	1880.00	9.62000	0.0051	PASSED
-30	1880.00	14.98000	0.008	PASSED

7.4. GSM 850 Test results

GSM, Channel 190 / 836.6 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	836.60	-1.81000	-0.0022	PASSED
40	836.60	-3.36000	-0.004	PASSED
30	836.60	-2.20000	-0.0026	PASSED
20	836.60	-0.90000	-0.0011	PASSED
10	836.60	-2.00000	-0.0024	PASSED
0	836.60	2.07000	0.0025	PASSED
-10	836.60	2.78000	0.0033	PASSED
-20	836.60	3.49000	0.0042	PASSED
-30	836.60	10.40000	0.0124	PASSED

7.5. WCDMA4 Test results

FDD, Channel 1412 / 1732.4 MHz

Temperature [ºC]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
50	1732.40	-2.05994	-0.0012	PASSED
40	1732.40	-3.50952	-0.002	PASSED
30	1732.40	-3.58582	-0.0021	PASSED
20	1732.40	-4.63867	-0.0027	PASSED
10	1732.40	-0.86975	-0.0005	PASSED
0	1732.40	-1.66321	-0.001	PASSED
-10	1732.40	-0.06104	0	PASSED
-20	1732.40	1.89209	0.0011	PASSED
-30	1732.40	4.77600	0.0028	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	-2.94685	-0.0012	PASSED
40	2535.00	-5.67913	-0.0022	PASSED
30	2535.00	-3.36170	-0.0013	PASSED
20	2535.00	-2.78950	-0.0011	PASSED
10	2535.00	-3.70503	-0.0015	PASSED
0	2535.00	-2.11716	-0.0008	PASSED
-10	2535.00	-1.74522	-0.0007	PASSED
-20	2535.00	-2.57492	-0.001	PASSED
-30	2535.00	-3.03268	-0.0012	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	-2.07424	-0.0029	PASSED
40	707.50	-0.24319	-0.0003	PASSED
30	707.50	-0.71526	-0.001	PASSED
20	707.50	-1.81675	-0.0026	PASSED
10	707.50	0.17166	0.0002	PASSED
0	707.50	0.38624	0.0006	PASSED
-10	707.50	0.61512	0.0009	PASSED
-20	707.50	0.71526	0.001	PASSED
-30	707.50	0.35763	0.0005	PASSED

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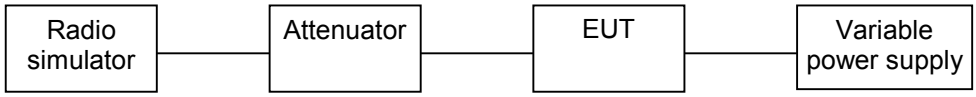
8. Frequency stability, voltage variation

EUT with DUT number	RM-1150, DUT 400059
Accessories with DUT numbers	SD-134, DUT 400053
Operation Voltage [V] / [Hz]	3.5 / 3.8 / 4.4
Results	PASSED
Remarks	RF Cond 2
Temp [ºC] / Humidity [%RH] / Air Pressure [kPa]	22 / 39 / 99.8
Date of measurements	11-Nov-2015
Measured by	Timo Raiskio

8.1. Test Setup



8.2. Test method and limit

The measurement is made according to TIA-603-D and applicable RSS standard 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	0.71000	0.0004	PASSED
Battery cut-off point / 3.5	1880.00	-0.52000	-0.0003	PASSED
Nominal / 3.8	1880.00	-0.65000	-0.0003	PASSED

8.4. GSM 850 Test results

GSM,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.4	836.60	-1.87000	-0.0022	PASSED
Battery cut-off point / 3.5	836.60	-0.39000	-0.0005	PASSED
Nominal / 3.8	836.60	0.97000	0.0012	PASSED

8.5. WCDMA4 Test results

FDD,

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.4	1732.40	-1.51062	-0.0009	PASSED
Nominal / 3.8	1732.40	0.67139	0.0004	PASSED
Battery cut-off point / 3.5	1732.40	0.07629	0.0000	PASSED

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 / 4.4	2535.00	-5.07832	-0.002	PASSED
Battery cut-off point / 3.5	2535.00	-2.23160	-0.0009	PASSED
Nominal / 3.8	2535.00	-2.28882	-0.0009	PASSED

8.7. LTE12 Test results

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

Voltage level [V]	Frequency [MHz]	Deviation [Hz]	Deviation [ppm]	Result
Max / 4.4	707.50	-2.27451	-0.0032	PASSED
Battery cut-off point / 3.5	707.50	-1.10149	-0.0016	PASSED
Nominal / 3.8	707.50	-0.25749	-0.0004	PASSED

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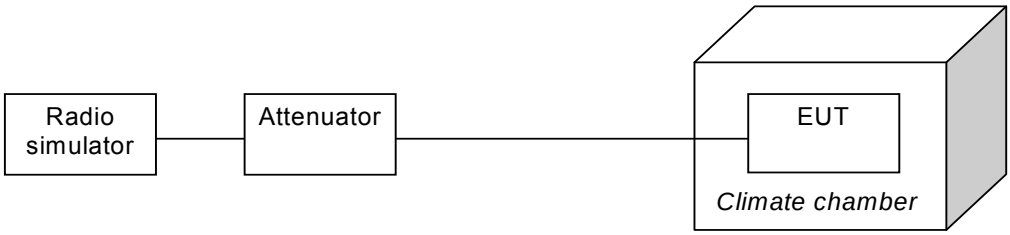
9. Frequency stability, temperature variation, (Band edge method)

EUT with DUT number	RM-1150, DUT 400059
Accessories with DUT numbers	SD-134, DUT 400053
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	RF Cond 2
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 39 / 99.8
Date of measurements	11-Nov-2015
Measured by	Timo Raiskio

9.1. Test Setup



9.2. Test method and limit

The measurement is made according to applicable RSS standard 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-199.

Limits for frequency stability, temperature variation measurements

Limit
The results must be within the operating band.

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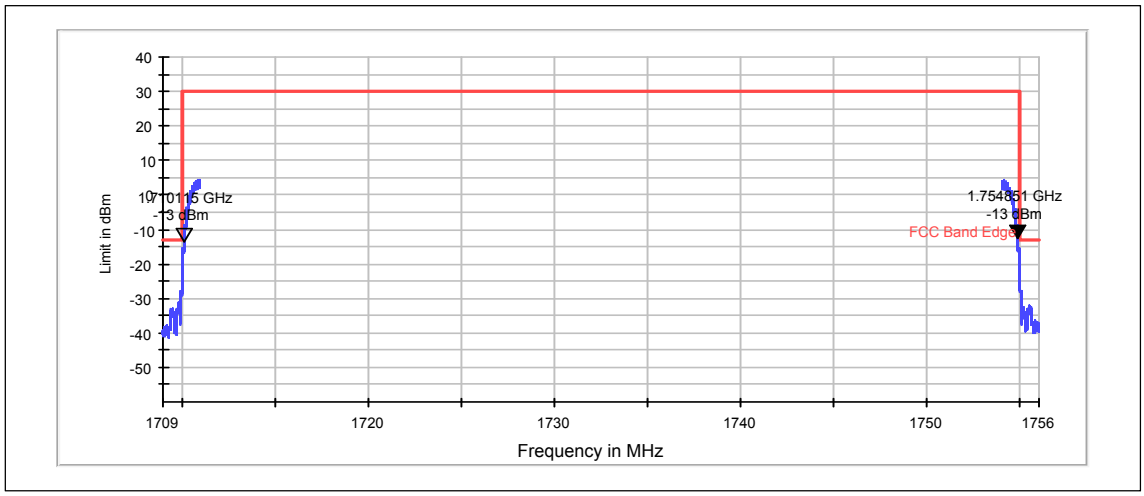
9.3. WCDMA4 Test results

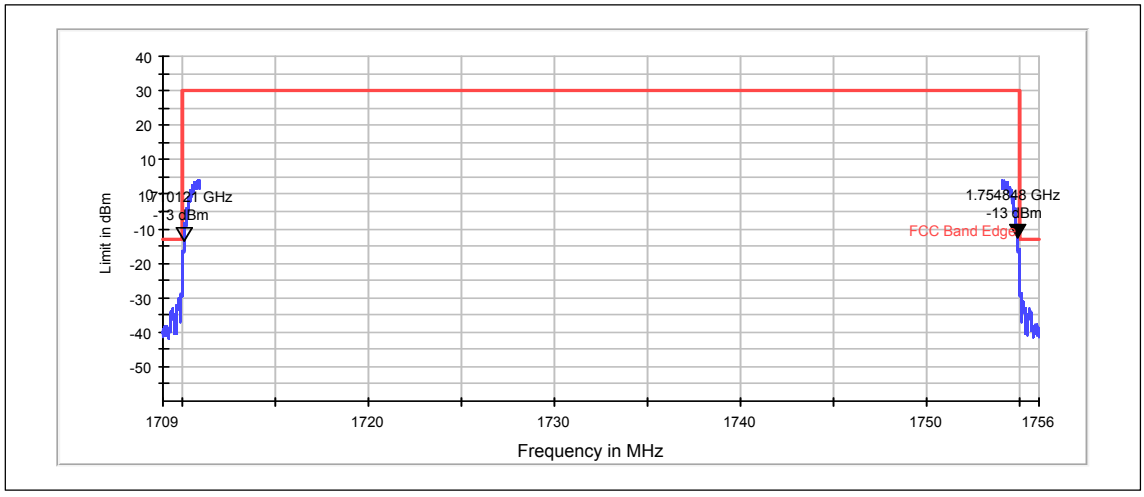
Channel 1412 / 1732.4 MHz



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

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
50	21.56067	1710.115400	1710.115378	1754.851400	1754.851422	PASSED

Channel 1412 / 1732.4 MHz



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

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
20	3.00598	1710.120600	1710.120597	1754.848400	1754.848403	PASSED

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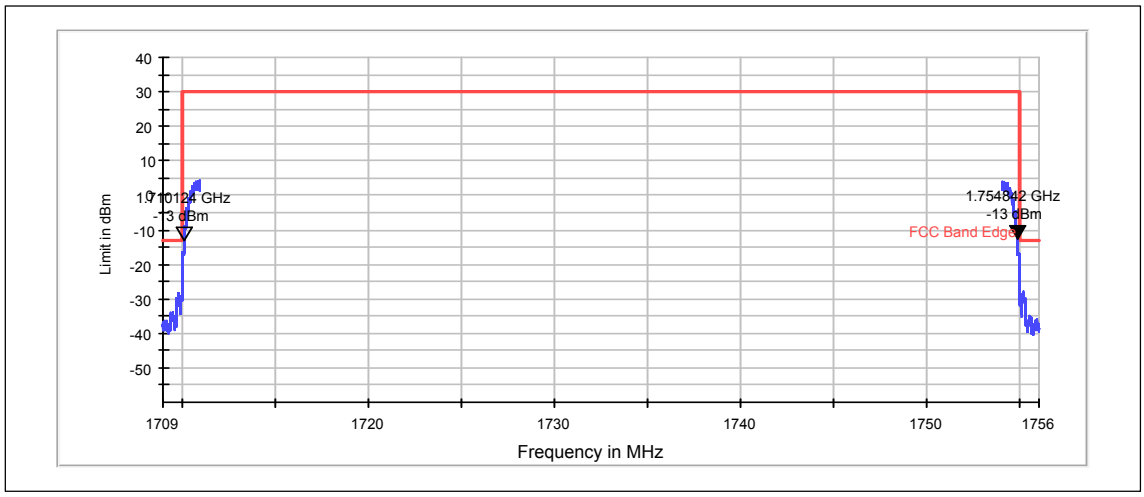
Channel 1412 / 1732.4 MHz

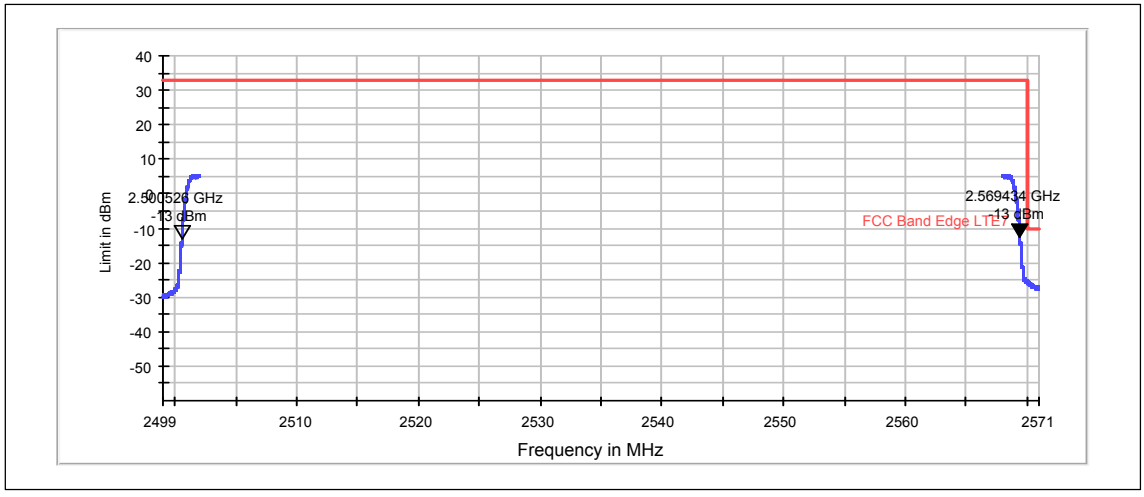


RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
-30	9.73511	1710.124400	1710.124390	1754.841800	1754.841810	PASSED

9.4. LTE7 Test results

Channel 21100 / 2535.0 MHz



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

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
50	-0.07153	2500.526100	2500.526100	2569.434000	2569.434000	PASSED

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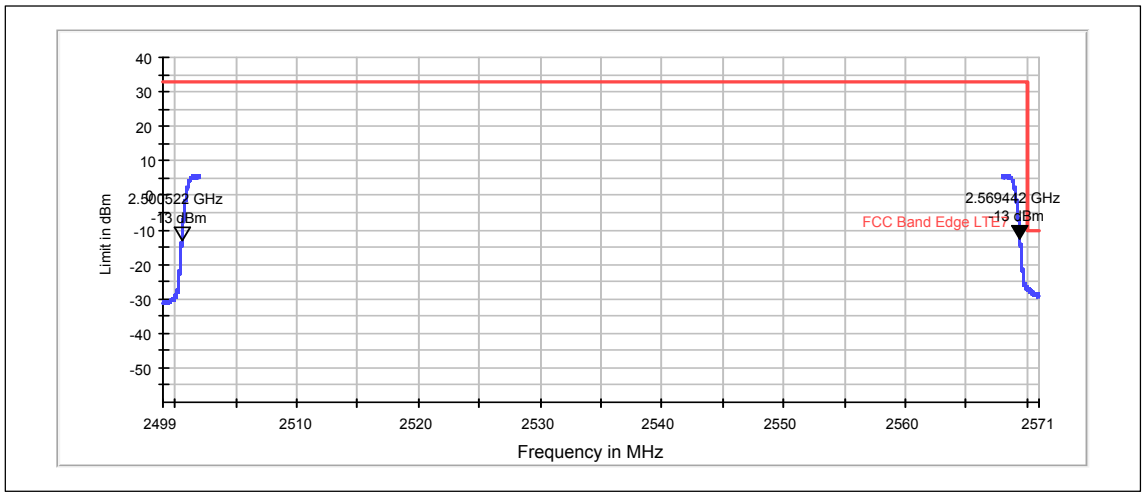
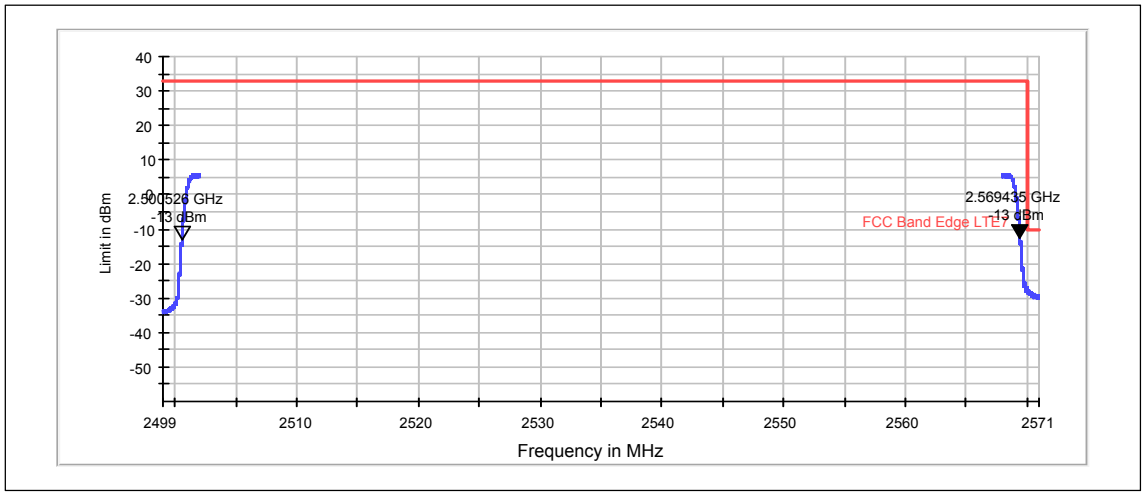
Channel 21100 / 2535.0 MHz



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

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
20	1.70231	2500.521600	2500.521598	2569.441800	2569.441802	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
-30	3.97682	2500.525800	2500.525796	2569.435200	2569.435204	PASSED

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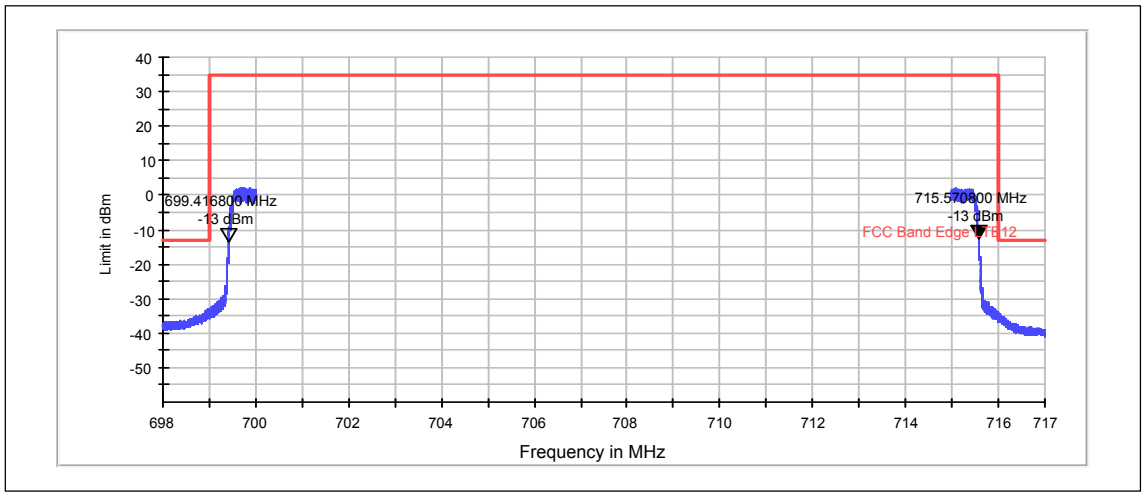
9.5. LTE12 Test results

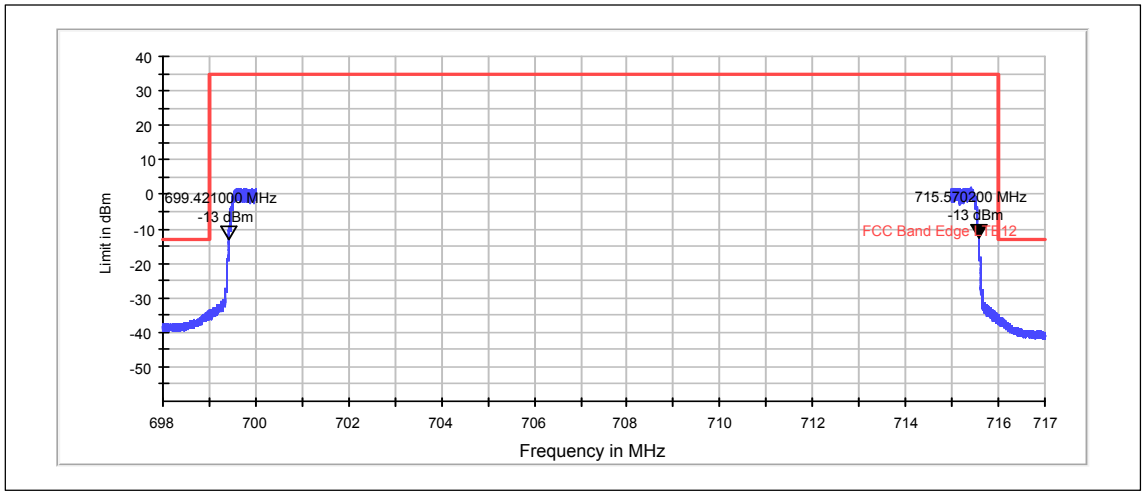
Channel 23095 / 707.5 MHz



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	-0.85831	699.416800	699.416799	715.570800	715.570801	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	0.04292	699.421000	699.421000	715.570200	715.570200	PASSED

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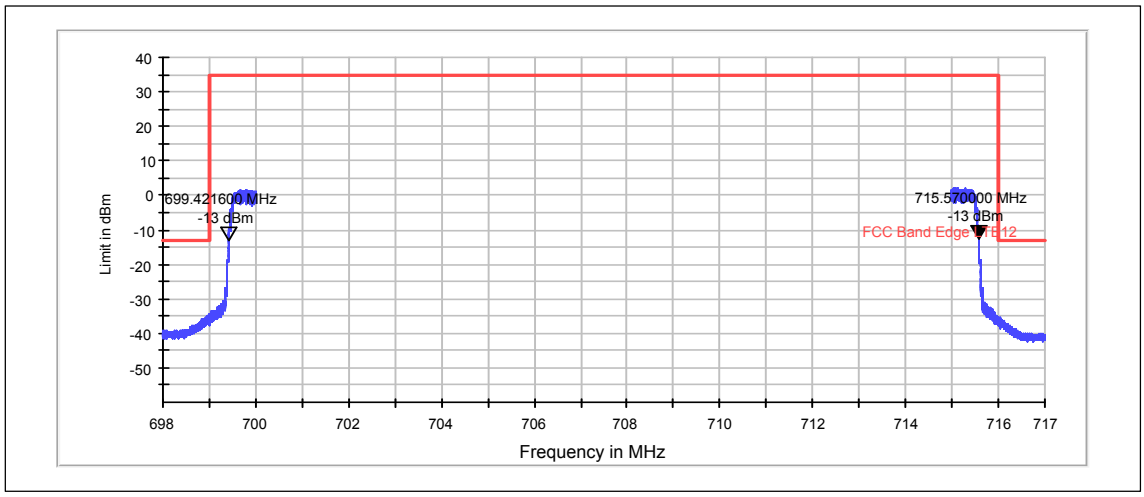
Channel 23095 / 707.5 MHz

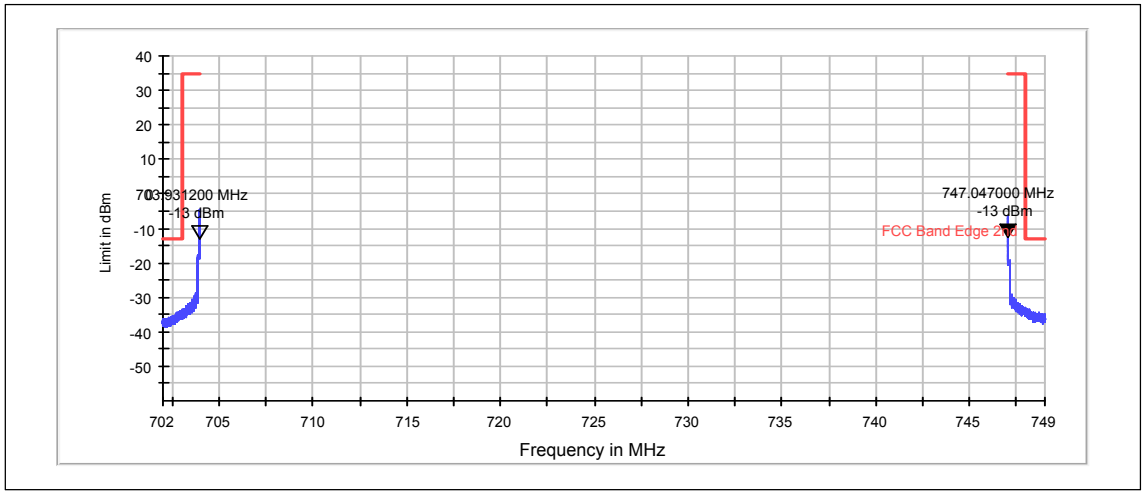


RMS (RBW: 100 kHz, VBW: 300 kHz)

Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
-30	1.14441	699.421600	699.421599	715.570000	715.570001	PASSED

9.6. 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	-1.71661	703.931200	703.931198	747.047000	747.047002	PASSED

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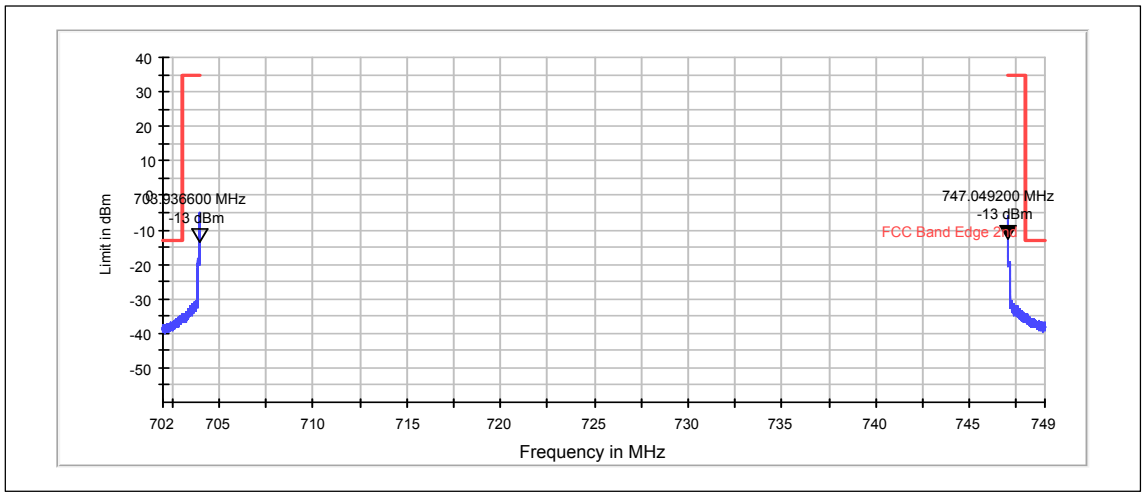
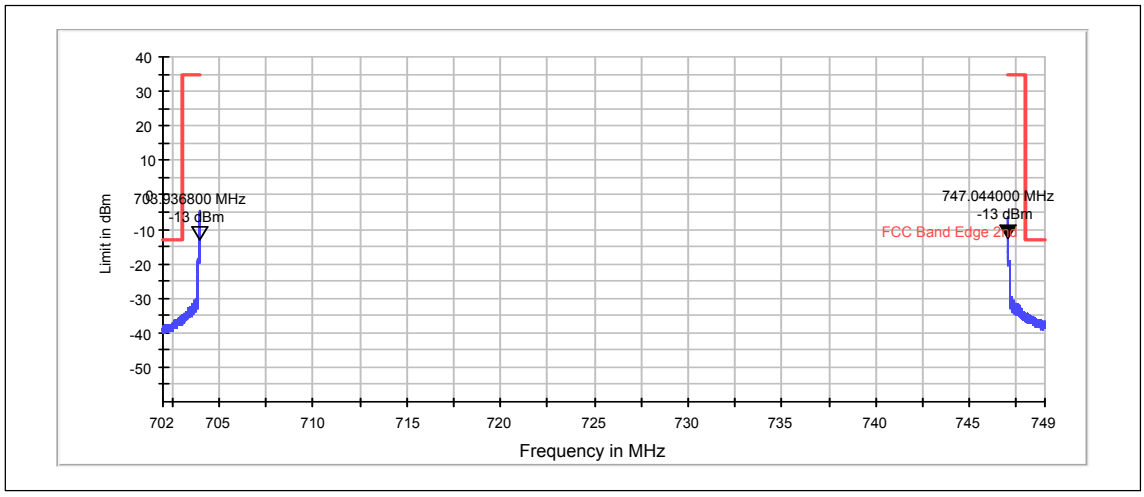
Channel 27435 / 725.5 MHz



Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
20	-0.88692	703.936600	703.936599	747.049200	747.049201	PASSED

Channel 27435 / 725.5 MHz



Temperature [ºC]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
-30	-0.64373	703.936800	703.936799	747.044000	747.044001	PASSED

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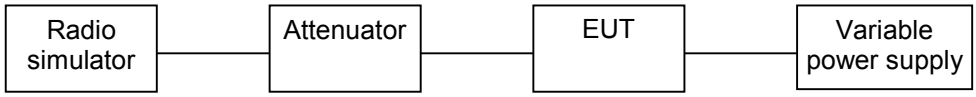
10. Frequency stability, voltage variation, (Band edge method)

EUT with DUT number	RM-1150, DUT 400059
Accessories with DUT numbers	SD-134, DUT 400053
Operation Voltage [V] / [Hz]	3.5 / 3.8 / 4.4
Results	PASSED
Remarks	RF Cond 2
Temp [ºC] / Humidity [%RH] / Air Pressure [kPa]	22 / 39 / 99.8
Date of measurements	11-Nov-2015
Measured by	Timo Raiskio

10.1. Test Setup



10.2. Test method and limit

The measurement is made according to applicable RSS standard 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-199.

Limits for frequency stability, voltage variation measurements

Limit
The results must be within the operating band.

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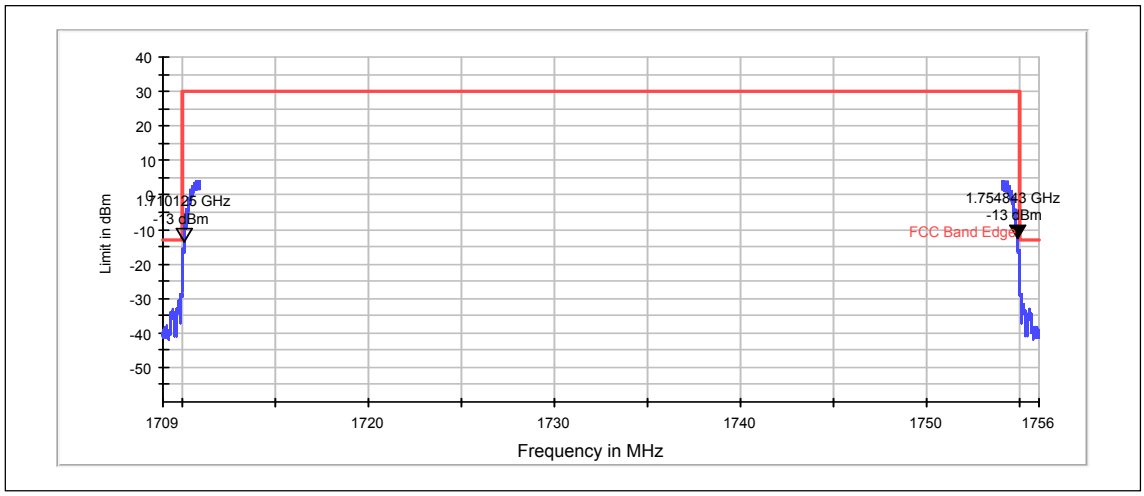
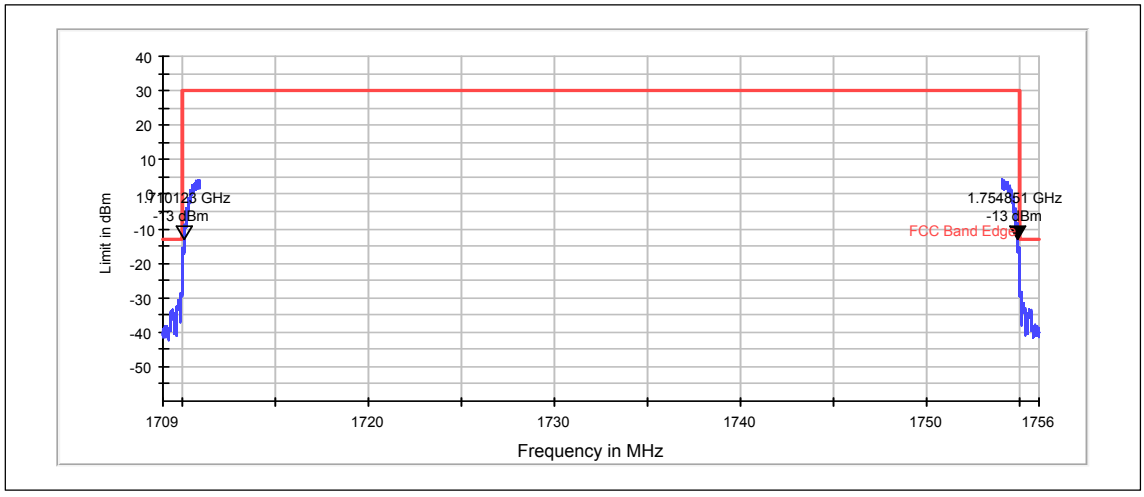
10.3. WCDMA4 Test results



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 / 4.4	5.87463	1710.125400	1710.125394	1754.843200	1754.843206	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 / 3.5	14.54163	1710.123000	1710.122986	1754.851000	1754.851015	PASSED

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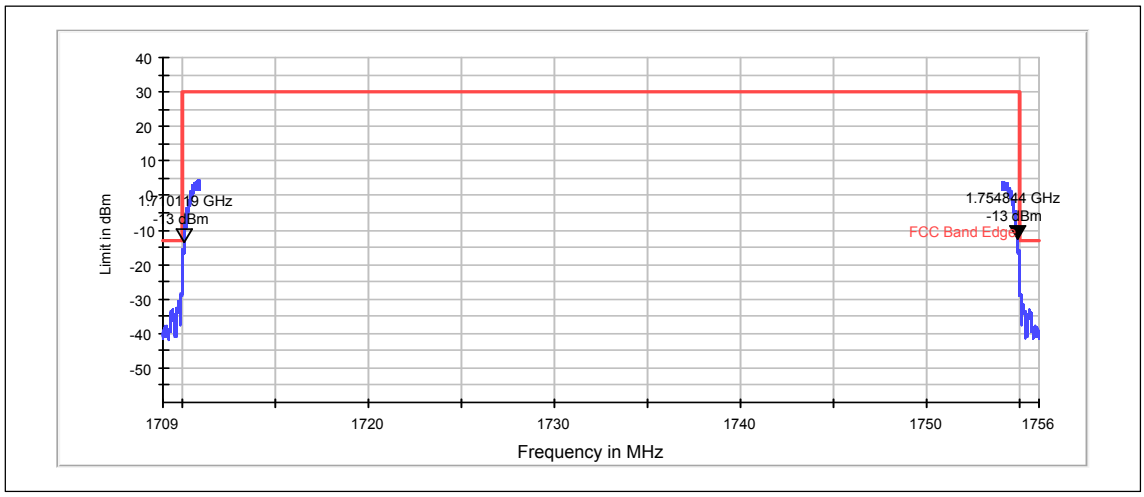
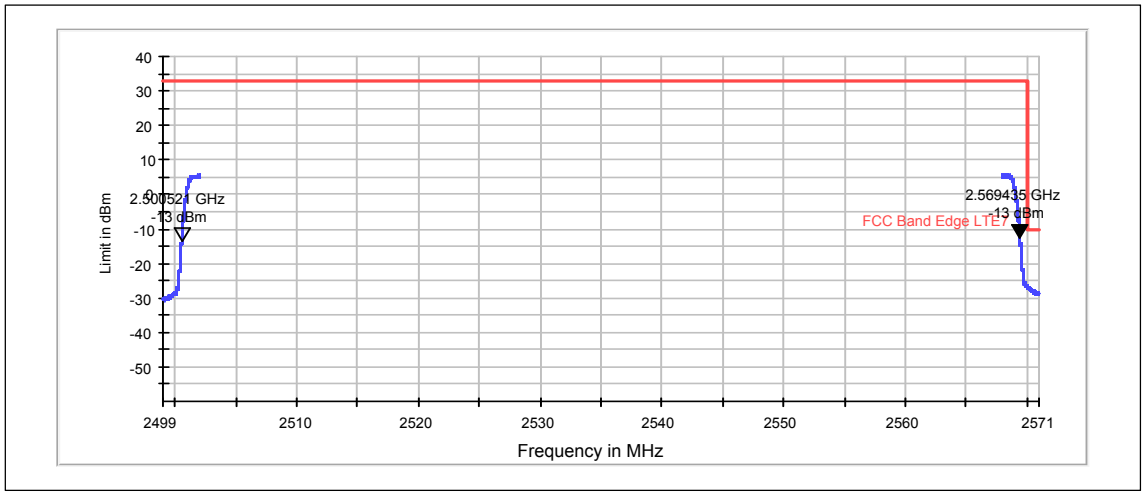


RMS (RBW: 50 kHz, VBW: 50 kHz, Max hold)

Voltage level [V]	Deviation [Hz]	Low marker [MHz]	Marker – Dev [MHz]	High marker [MHz]	Marker + Dev [MHz]	Result
Nominal / 3.8	12.26807	1710.119200	1710.119188	1754.843800	1754.843812	PASSED

10.4. 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 / 4.4	0.40054	2500.520700	2500.520700	2569.435200	2569.435200	PASSED

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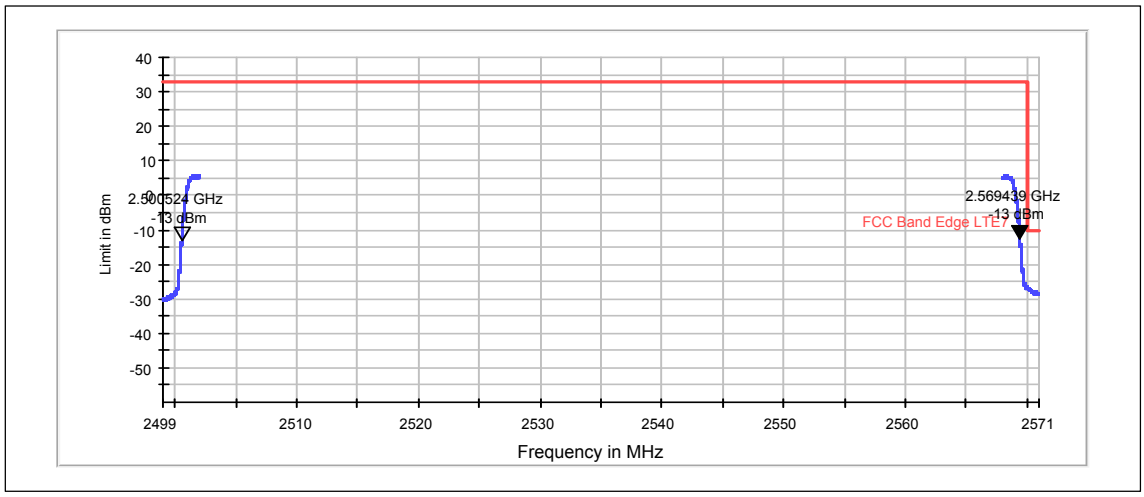
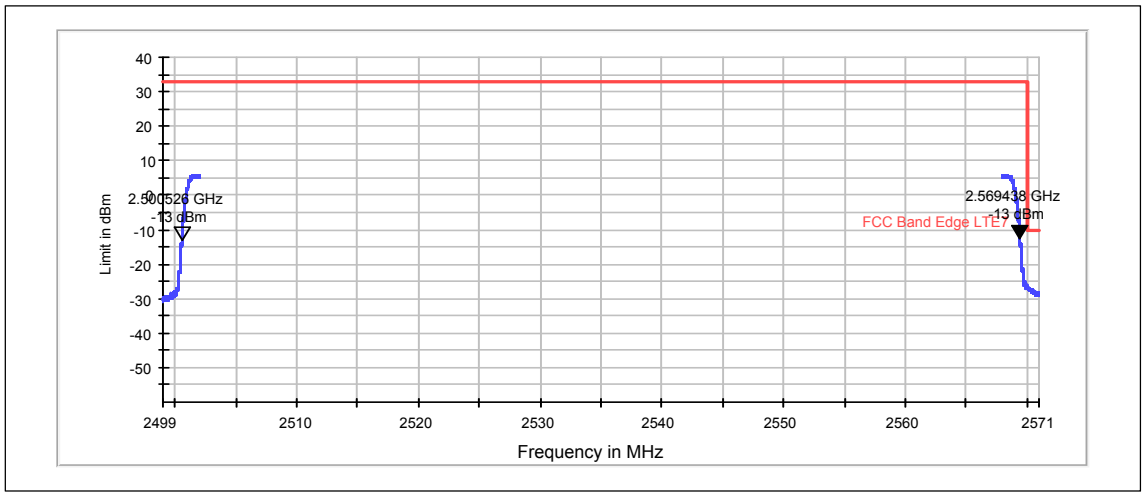
Channel 21100 / 2535.0 MHz



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
Battery cut-off point / 3.5	3.53336	2500.523700	2500.523697	2569.438800	2569.438804	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
Nominal / 3.8	2.28882	2500.526100	2500.526098	2569.437900	2569.437902	PASSED

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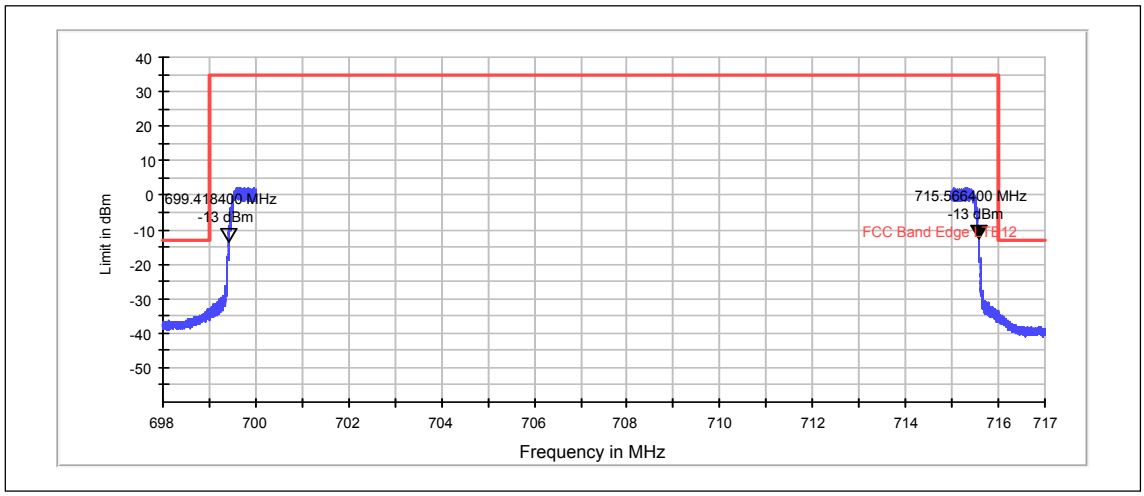
10.5. LTE12 Test results

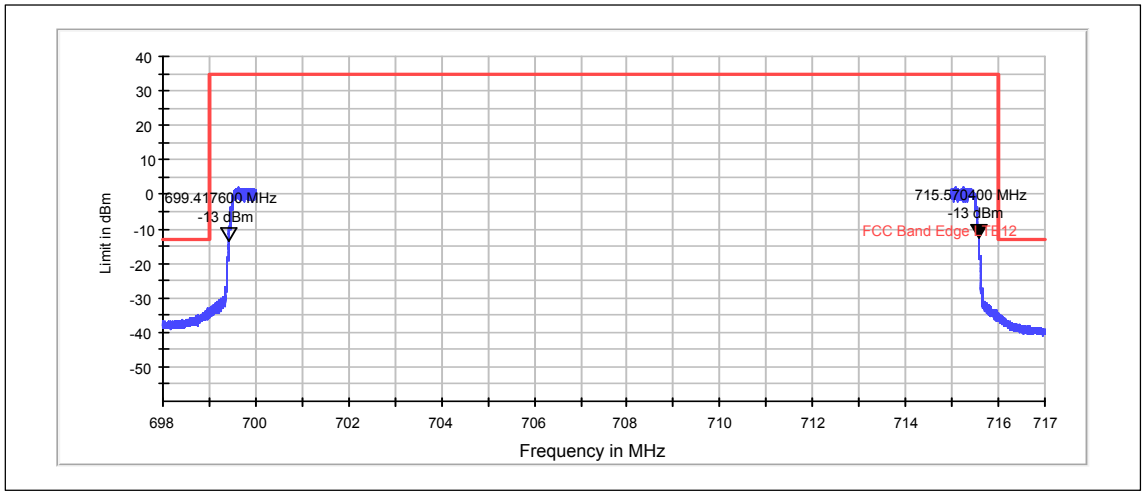
Channel 23095 / 707.5 MHz



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 / 4.4	0.02861	699.418400	699.418400	715.566400	715.566400	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 / 3.5	0.17166	699.417600	699.417600	715.570400	715.570400	PASSED

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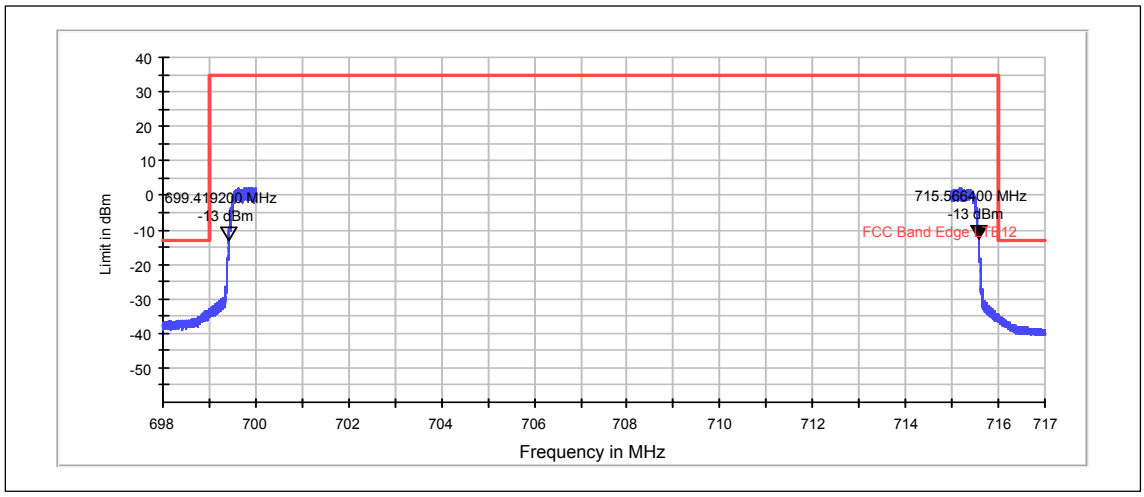
Channel 23095 / 707.5 MHz



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	0.27180	699.419200	699.419200	715.566400	715.566400	PASSED

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11. Test Equipment

11.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM350089	Power supply	6632A	Agilent	22/24/27, 15C, 15E
TM350090	Power supply	6632A	Agilent	22/24/27, 15C, 15E
TM30600	Impulse limiter	ESH3-Z2	R&S	15C, 15B
TM490017	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM490018	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM150128	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
TM210166	Communication Tester	CMW500	R&S	22/24/27
TM210205	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
TM110070	Signal Generator	SMF 100A	R&S	22/24/27, 15C, 15E, 15B
TM220065	Bluetooth tester	CBT	R&S	15C, 15B
TM210246	Communication Tester	CMU200	R&S	22/24/27, 15B
TM150131	Spectrum Analyzer	FSP30	R&S	22/24/27, 15C, 15E
TM210049	Communication Tester	CMU200	R&S	22/24/27

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
TM210203	Communication Tester	CMU200	R&S	22/24/27, 15B
6023	Antenna	VUBA 9117	Schwarzbeck	22/24/27
TM210166	Communication Tester	CMW500	R&S	22/24/27
2025	Antenna	HFH2-Z2	R&S	15C
TM110070	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
TM220065	Bluetooth tester	CBT	R&S	15C, 15B

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12. Appendix

12.1. Conducted LTE RF output power values measured by the customer

12.1.1 Tolerance

Tolerance [dB]	
Low	-0.5
High	0.4

LTE 2, Antenna 1

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18607 / 1850.7 MHz	Ch18900 / 1880 MHz	Ch19193 / 1909.3 MHz	Ch18607 / 1850.7 MHz	Ch18900 / 1880 MHz	Ch19193 / 1909.3 MHz
LTE2	QPSK	1	2	22.9	22.8	23.2			
1.4 MHz	16QAM	1	2	21.8	22.3	22.5			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18615 / 1851.5 MHz	Ch18900 / 1880 MHz	Ch19185 / 1908.5 MHz	Ch18615 / 1851.5 MHz	Ch18900 / 1880 MHz	Ch19185 / 1908.5 MHz
LTE2	QPSK	1	7	22.8	23.1	23.0	22.9	23.0	22.7
3 MHz	16QAM	1	7	22.2	22.4	22.2	22.1	22.4	22.3

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18625 / 1852.5 MHz	Ch18900 / 1880 MHz	Ch19175 / 1907.5 MHz	Ch18625 / 1852.5 MHz	Ch18900 / 1880 MHz	Ch19175 / 1907.5 MHz
LTE2	QPSK	1	12	22.9	22.8	22.9	23.0	23.2	22.9
5 MHz	16QAM	1	12	22.5	22.6	22.4	22.3	22.4	22.2

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18650 / 1855 MHz	Ch18900 / 1880 MHz	Ch19150 / 1905 MHz	Ch18650 / 1855 MHz	Ch18900 / 1880 MHz	Ch19150 / 1905 MHz
LTE2	QPSK	1	24	23.2	23.1	23.2	23.1	23.1	23.1
10 MHz	16QAM	1	24	22.4	22.8	22.9	22.3	22.6	22.6

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18675 / 1857.5 MHz	Ch18900 / 1880 MHz	Ch19125 / 1902.5 MHz	Ch18675 / 1857.5 MHz	Ch18900 / 1880 MHz	Ch19125 / 1902.5 MHz
LTE2	QPSK	1	36	23.0	23.0	23.0	23.0	23.1	23.1
15 MHz	16QAM	1	36	22.6	22.6	22.4	22.0	22.4	22.2

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18700 / 1860 MHz	Ch18900 / 1880 MHz	Ch19100 / 1900 MHz	Ch18700 / 1860 MHz	Ch18900 / 1880 MHz	Ch19100 / 1900 MHz
LTE2	QPSK	1	49	22.9	23.1	23.2	23.1	23.2	23.2
20 MHz	16QAM	1	49	22.6	22.8	23.0	22.3	22.6	22.7

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LTE 2, Antenna 2

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18607 / 1850.7 MHz	Ch18900 / 1880 MHz	Ch19193 / 1909.3 MHz	Ch18607 / 1850.7 MHz	Ch18900 / 1880 MHz	Ch19193 / 1909.3 MHz
LTE2	QPSK	1	2	22.7	22.6	23.0			
1.4 MHz	16QAM	1	2	21.6	22.1	22.3			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18615 / 1851.5 MHz	Ch18900 / 1880 MHz	Ch19185 / 1908.5 MHz	Ch18615 / 1851.5 MHz	Ch18900 / 1880 MHz	Ch19185 / 1908.5 MHz
LTE2	QPSK	1	7	22.6	22.9	22.8	22.7	22.8	22.5
3 MHz	16QAM	1	7	22.0	22.2	22.0	21.9	22.2	22.1

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18625 / 1852.5 MHz	Ch18900 / 1880 MHz	Ch19175 / 1907.5 MHz	Ch18625 / 1852.5 MHz	Ch18900 / 1880 MHz	Ch19175 / 1907.5 MHz
LTE2	QPSK	1	12	22.7	22.6	22.7	22.8	23.0	22.7
5 MHz	16QAM	1	12	22.3	22.4	22.2	22.1	22.2	22.0

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18650 / 1855 MHz	Ch18900 / 1880 MHz	Ch19150 / 1905 MHz	Ch18650 / 1855 MHz	Ch18900 / 1880 MHz	Ch19150 / 1905 MHz
LTE2	QPSK	1	24	23.0	22.9	23.0	22.9	22.9	22.9
10 MHz	16QAM	1	24	22.2	22.6	22.7	22.1	22.4	22.4

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18675 / 1857.5 MHz	Ch18900 / 1880 MHz	Ch19125 / 1902.5 MHz	Ch18675 / 1857.5 MHz	Ch18900 / 1880 MHz	Ch19125 / 1902.5 MHz
LTE2	QPSK	1	36	22.8	22.8	22.8	22.8	22.9	22.9
15 MHz	16QAM	1	36	22.4	22.4	22.2	21.8	22.2	22.0

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch18700 / 1860 MHz	Ch18900 / 1880 MHz	Ch19100 / 1900 MHz	Ch18700 / 1860 MHz	Ch18900 / 1880 MHz	Ch19100 / 1900 MHz
LTE2	QPSK	1	49	22.7	22.9	23.0	22.9	23.0	23.0
20MHz	16QAM	1	49	22.4	22.6	22.8	22.1	22.4	22.5

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LTE 4, Antenna 1

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch19957 / 1710.7 MHz	Ch20175 / 1732.5 MHz	Ch20393 / 1754.3 MHz	Ch19957 / 1710.7 MHz	Ch20175 / 1732.5 MHz	Ch20393 / 1754.3 MHz
LTE4	QPSK	1	2	23.0	23.3	23.0			
1.4 MHz	16QAM	1	2	22.5	22.7	22.5			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch19965 / 1711.5 MHz	Ch20175 / 1732.5 MHz	Ch20385 / 1753.5 MHz	Ch19965 / 1711.5 MHz	Ch20175 / 1732.5 MHz	Ch20385 / 1753.5 MHz
LTE4	QPSK	1	7	23.1	23.1	23.1	23.0	23.2	23.2
3 MHz	16QAM	1	7	22.8	22.6	22.6	22.4	22.3	22.3

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch19975 / 1712.5 MHz	Ch20175 / 1732.5 MHz	Ch20375 / 1752.5 MHz	Ch19975 / 1712.5 MHz	Ch20175 / 1732.5 MHz	Ch20375 / 1752.5 MHz
LTE4	QPSK	1	12	23.2	23.2	23.2	23.0	23.3	23.1
5 MHz	16QAM	1	12	22.7	22.5	22.3	22.4	22.2	22.3

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20000 / 1715 MHz	Ch20175 / 1732.5 MHz	Ch20350 / 1750 MHz	Ch20000 / 1715 MHz	Ch20175 / 1732.5 MHz	Ch20350 / 1750 MHz
LTE4	QPSK	1	24	23.2	23.3	23.2	23.0	23.3	23.3
10 MHz	16QAM	1	24	22.5	22.6	22.7	22.2	22.5	22.8

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20025 / 1717.5 MHz	Ch20175 / 1732.5 MHz	Ch20325 / 1747.5 MHz	Ch20025 / 1717.5 MHz	Ch20175 / 1732.5 MHz	Ch20325 / 1747.5 MHz
LTE4	QPSK	1	36	23.1	23.0	23.1	23.1	23.2	22.9
15 MHz	16QAM	1	36	22.3	22.2	22.1	22.4	22.6	22.4

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20050 / 1720 MHz	Ch20175 / 1732.5 MHz	Ch20300 / 1745 MHz	Ch20050 / 1720 MHz	Ch20175 / 1732.5 MHz	Ch20300 / 1745 MHz
LTE4	QPSK	1	49	23.2	23.2	23.0	23.2	23.3	23.2
20 MHz	16QAM	1	49	22.2	22.3	21.8	22.7	22.8	22.3

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LTE 4, Antenna 2

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch19957 / 1710.7 MHz	Ch20175 / 1732.5 MHz	Ch20393 / 1754.3 MHz	Ch19957 / 1710.7 MHz	Ch20175 / 1732.5 MHz	Ch20393 / 1754.3 MHz
LTE4	QPSK	1	2	22.8	23.1	22.8			
1.4 MHz	16QAM	1	2	22.3	22.5	22.3			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch19965 / 1711.5 MHz	Ch20175 / 1732.5 MHz	Ch20385 / 1753.5 MHz	Ch19965 / 1711.5 MHz	Ch20175 / 1732.5 MHz	Ch20385 / 1753.5 MHz
LTE4	QPSK	1	7	22.9	22.9	22.9	22.8	23.0	23.0
3 MHz	16QAM	1	7	22.6	22.4	22.4	22.2	22.1	22.1

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch19975 / 1712.5 MHz	Ch20175 / 1732.5 MHz	Ch20375 / 1752.5 MHz	Ch19975 / 1712.5 MHz	Ch20175 / 1732.5 MHz	Ch20375 / 1752.5 MHz
LTE4	QPSK	1	12	23.0	23.0	23.0	22.8	23.1	22.9
5 MHz	16QAM	1	12	22.5	22.3	22.1	22.2	22.0	22.1

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20000 / 1715 MHz	Ch20175 / 1732.5 MHz	Ch20350 / 1750 MHz	Ch20000 / 1715 MHz	Ch20175 / 1732.5 MHz	Ch20350 / 1750 MHz
LTE4	QPSK	1	24	23.0	23.1	23.0	22.8	23.1	23.1
10 MHz	16QAM	1	24	22.3	22.4	22.5	22.0	22.3	22.6

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20025 / 1717.5 MHz	Ch20175 / 1732.5 MHz	Ch20325 / 1747.5 MHz	Ch20025 / 1717.5 MHz	Ch20175 / 1732.5 MHz	Ch20325 / 1747.5 MHz
LTE4	QPSK	1	36	22.9	22.8	22.9	22.9	23.0	22.7
15 MHz	16QAM	1	36	22.1	22.0	21.9	22.2	22.4	22.2

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20050 / 1720 MHz	Ch20175 / 1732.5 MHz	Ch20300 / 1745 MHz	Ch20050 / 1720 MHz	Ch20175 / 1732.5 MHz	Ch20300 / 1745 MHz
LTE4	QPSK	1	49	23.0	23.0	22.8	23.0	23.1	23.0
20 MHz	16QAM	1	49	22.0	22.1	21.6	22.5	22.6	22.1

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LTE 5, Antenna 1

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20407 / 824.7 MHz	Ch20525 / 836.5 MHz	Ch20643 / 848.3 MHz	Ch20407 / 824.7 MHz	Ch20525 / 836.5 MHz	Ch20643 / 848.3 MHz
LTE 5	QPSK	1	2	23.1	23.2	23.3			
1.4 MHz	16QAM	1	2	22.6	22.7	22.9			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20415 / 825.5 MHz	Ch20525 / 836.5 MHz	Ch20635 / 847.5 MHz	Ch20415 / 825.5 MHz	Ch20525 / 836.5 MHz	Ch20635 / 847.5 MHz
LTE 5	QPSK	1	7	23.0	23.1	23.2			
3 MHz	16QAM	1	7	22.6	22.5	22.5			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20425 / 826.5 MHz	Ch20525 / 836.5 MHz	Ch20625 / 846.5 MHz	Ch20425 / 826.5 MHz	Ch20525 / 836.5 MHz	Ch20625 / 846.5 MHz
LTE 5	QPSK	1	12	22.9	23.1	23.1			
5 MHz	16QAM	1	12	22.2	21.9	22.3			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20450 / 829 MHz	Ch20525 / 836.5 MHz	Ch20600 / 844 MHz	Ch20450 / 829 MHz	Ch20525 / 836.5 MHz	Ch20600 / 844 MHz
LTE 5	QPSK	1	24	23.1	23.0	23.1			
10 MHz	16QAM	1	24	22.4	22.7	22.4			

LTE 5, Antenna 2

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20407 / 824.7 MHz	Ch20525 / 836.5 MHz	Ch20643 / 848.3 MHz	Ch20407 / 824.7 MHz	Ch20525 / 836.5 MHz	Ch20643 / 848.3 MHz
LTE5	QPSK	1	2	23.0	23.1	23.2			
1.4 MHz	16QAM	1	2	22.5	22.6	22.8			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20415 / 825.5 MHz	Ch20525 / 836.5 MHz	Ch20635 / 847.5 MHz	Ch20415 / 825.5 MHz	Ch20525 / 836.5 MHz	Ch20635 / 847.5 MHz
LTE5	QPSK	1	7	22.9	23.0	23.1			
3 MHz	16QAM	1	7	22.5	22.4	22.4			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20425 / 826.5 MHz	Ch20525 / 836.5 MHz	Ch20625 / 846.5 MHz	Ch20425 / 826.5 MHz	Ch20525 / 836.5 MHz	Ch20625 / 846.5 MHz
LTE5	QPSK	1	12	22.8	23.0	23.0			
5 MHz	16QAM	1	12	22.1	21.8	22.2			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20450 / 829 MHz	Ch20525 / 836.5 MHz	Ch20600 / 844 MHz	Ch20450 / 829 MHz	Ch20525 / 836.5 MHz	Ch20600 / 844 MHz
LTE5	QPSK	1	24	23.0	22.9	23.0			
10 MHz	16QAM	1	24	22.3	22.6	22.3			

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LTE 7, Antenna 1

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20775 / 2502.5 MHz	Ch21100 / 2535 MHz	Ch21425 / 2567.5 MHz	Ch20775 / 2502.5 MHz	Ch21100 / 2535 MHz	Ch21425 / 2567.5 MHz
LTE 7 5 MHz	QPSK	1	12	22.5	22.4	22.3			
	16QAM	1	12	21.8	21.8	21.5			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20800 / 2505 MHz	Ch21100 / 2535 MHz	Ch21400 / 2565 MHz	Ch20800 / 2505 MHz	Ch21100 / 2535 MHz	Ch21400 / 2565 MHz
LTE 7 10 MHz	QPSK	1	24	22.3	22.4	22.4			
	16QAM	1	24	21.5	21.7	21.9			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20825 / 2507.5 MHz	Ch21100 / 2535 MHz	Ch21375 / 2562.5 MHz	Ch20825 / 2507.5 MHz	Ch21100 / 2535 MHz	Ch21375 / 2562.5 MHz
LTE 7 15 MHz	QPSK	1	36	22.5	22.5	22.5			
	16QAM	1	36	22.0	21.7	21.9			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20850 / 2510 MHz	Ch21100 / 2535 MHz	Ch21350 / 2560 MHz	Ch20850 / 2510 MHz	Ch21100 / 2535 MHz	Ch21350 / 2560 MHz
LTE 7 20 MHz	QPSK	1	49	22.7	22.5	22.6			
	16QAM	1	49	22.1	22.0	22.0			

LTE 7, Antenna 2

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20775 / 2502.5 MHz	Ch21100 / 2535 MHz	Ch21425 / 2567.5 MHz	Ch20775 / 2502.5 MHz	Ch21100 / 2535 MHz	Ch21425 / 2567.5 MHz
LTE 7 5 MHz	QPSK	1	12	22.2	22.1	22.0			
	16QAM	1	12	21.5	21.5	21.2			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20800 / 2505 MHz	Ch21100 / 2535 MHz	Ch21400 / 2565 MHz	Ch20800 / 2505 MHz	Ch21100 / 2535 MHz	Ch21400 / 2565 MHz
LTE 7 10 MHz	QPSK	1	24	22.0	22.1	22.1			
	16QAM	1	24	21.2	21.4	21.6			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20825 / 2507.5 MHz	Ch21100 / 2535 MHz	Ch21375 / 2562.5 MHz	Ch20825 / 2507.5 MHz	Ch21100 / 2535 MHz	Ch21375 / 2562.5 MHz
LTE 7 15 MHz	QPSK	1	36	22.2	22.2	22.2			
	16QAM	1	36	21.7	21.4	21.6			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch20850 / 2510 MHz	Ch21100 / 2535 MHz	Ch21350 / 2560 MHz	Ch20850 / 2510 MHz	Ch21100 / 2535 MHz	Ch21350 / 2560 MHz
LTE 7 20 MHz	QPSK	1	49	22.4	22.2	22.3			
	16QAM	1	49	21.8	21.7	21.7			

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LTE 12, Antenna 1

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch23017 / 699.7 MHz	Ch23095 / 707.5 MHz	Ch23173 / 715.3 MHz	Ch23017 / 699.7 MHz	Ch23095 / 707.5 MHz	Ch23173 / 715.3 MHz
LTE 12	QPSK	1	2	23.5	23.7	23.4			
1.4 MHz	16QAM	1	2	23.2	23.2	23.3			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch23025 / 700.5 MHz	Ch23095 / 707.5 MHz	Ch23165 / 714.5 MHz	Ch23025 / 700.5 MHz	Ch23095 / 707.5 MHz	Ch23165 / 714.5 MHz
LTE 12	QPSK	1	7	23.5	23.7	23.6			
3 MHz	16QAM	1	7	23.0	23.1	22.8			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch23035 / 701.5 MHz	Ch23095 / 707.5 MHz	Ch23155 / 713.5 MHz	Ch23035 / 701.5 MHz	Ch23095 / 707.5 MHz	Ch23155 / 713.5 MHz
LTE 12	QPSK	1	12	23.5	23.7	23.6			
5 MHz	16QAM	1	12	22.7	22.4	22.6			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch23060 / 704 MHz	Ch23095 / 707.5 MHz	Ch23130 / 711 MHz	Ch23060 / 704 MHz	Ch23095 / 707.5 MHz	Ch23130 / 711 MHz
LTE 12	QPSK	1	24	23.5	23.5	23.4			
10 MHz	16QAM	1	24	22.8	22.6	22.4			

LTE 12, Antenna 2

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch23017 / 699.7 MHz	Ch23095 / 707.5 MHz	Ch23173 / 715.3 MHz	Ch23017 / 699.7 MHz	Ch23095 / 707.5 MHz	Ch23173 / 715.3 MHz
LTE 12		1	2	23.4	23.6	23.3			
1.4 MHz		1	2	23.1	23.1	23.2			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch23025 / 700.5 MHz	Ch23095 / 707.5 MHz	Ch23165 / 714.5 MHz	Ch23025 / 700.5 MHz	Ch23095 / 707.5 MHz	Ch23165 / 714.5 MHz
LTE 12		1	7	23.4	23.6	23.5			
3MHz		1	7	22.9	23.0	22.7			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch23035 / 701.5 MHz	Ch23095 / 707.5 MHz	Ch23155 / 713.5 MHz	Ch23035 / 701.5 MHz	Ch23095 / 707.5 MHz	Ch23155 / 713.5 MHz
LTE 12		1	12	23.4	23.6	23.5			
5 MHz		1	12	22.6	22.3	22.5			

SN: 004402743292843				Nominal			A-MPR active		
Band / BW	Modulation	RB Allocation	RB Offset	Ch23060 / 704 MHz	Ch23095 / 707.5 MHz	Ch23130 / 711 MHz	Ch23060 / 704 MHz	Ch23095 / 707.5 MHz	Ch23130 / 711 MHz
LTE 12		1	24	23.4	23.4	23.3			
10 MHz		1	24	22.7	22.5	22.3			

END OF REPORT

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