



CETECOM ICT Services consulting - testing - certification >>>

TEST REPORT



Deutsche Akkreditierungsstelle D-PL-12076-01-00

Test report no.: 1-9521/15-01-03-A

Testing laboratory

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Accredited Testing Laboratory: The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS) The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-00

Applicant

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Manufacturer

Gemalto M2M GmbH

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Test standard/s

47 CFR Part 24
 Title 47 of the Code of Federal Regulations; Chapter I; Part 24 – Personal communications services
 RSS – 133 Issue 6
 Spectrum Management and Telecommunications Policy – Radio Standards

Specifications, 2 GHz Personal Communication Services

For further applied test standards please refer to section 3 of this test report.

	Test Item	
Kind of test item:	LTE SMT module (data-only)	
Model name:	PLS8-X	
FCC ID:	QIPPLS8-X	
IC:	7830A-PLS8X	CINTERION Mast
Frequency:	LTE Band 2 FDD 1850 MHz to 1910 MHz	
Technology tested:	LTE	not for sale
Antenna:	External antenna	004201 08 1220024 EN
Power supply:	3.8 V DC by external power supply	
Temperature range:	-30°C to +60°C	

This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorised:

Andreas Luckenbill Lab Manager Radio Communications & EMC

Test performed:

p.o.

Tobias Wittenmeier Testing Manager Radio Communications & EMC



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2 General information

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

This test report replaces the test report with the number 1-9521/15-01-03 and dated 2015-06-23

2.2 Application details

Date of receipt of order:	2015-03-12
Date of receipt of test item:	2015-03-16
Start of test:	2015-03-17
End of test:	2015-07-31
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 24	-/-	Title 47 of the Code of Federal Regulations; Chapter I; Part 24 – Personal communications services
RSS – 133 Issue 6	01.01.2013	Spectrum Management and Telecommunications Policy – Radio Standards Specifications, 2 GHz Personal Communication Services

3.1 Measurement guidance

Guidance	Version	Description
ANSI C63.4-2014	-/-	American national standard for methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz



4 Test environment

Temperature:	T _{nom} T _{max} T _{min}	 +22 °C during room temperature tests +60 °C during high temperature tests -30 °C during low temperature tests
Relative humidity content:		55 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V _{nom} V _{max} V _{min}	 3.8 V DC by external power supply 4.2 V 3.3 V

5 Test item

Kind of test item	•	LTE SMT module (data-only)
Type identification	:	PLS8-X
FCC ID	:	QIPPLS8-X
IC	:	7830A-PLS8X
PMN	:	Cinterion PLS8-X
HVIN	•	PLS8-X
FVIN	•	-/-
HMN	:	-/-
S/N serial number	:	No information available
HW hardware status	:	Rev. 2.3
SW software status	:	Rev. 02.502
Frequency band	:	LTE Band 2 FDD 1850 MHz to 1910 MHz
Type of radio transmission	:	OFDM
Use of frequency spectrum Type of modulation		QPSK, 16 – QAM
Antenna	•	External antenna
Power supply	:	3.8 V DC by external power supply
Temperature range	:	-30°C to +60°C

5.1 Additional information

The content of the following annexes is defined in the QA. It may be that not all of the listed annexes are necessary for this report, thus some values in between may be missing.

Test setup- and EUT-photos are included in test report:

1-9521/15-01-01_AnnexA 1-9521/15-01-01_AnnexC

6 Test laboratories sub-contracted

None



7 Description of the test setup, test equipment and ancillaries used for tests

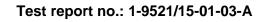
Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

Agenda: Kind of Calibration

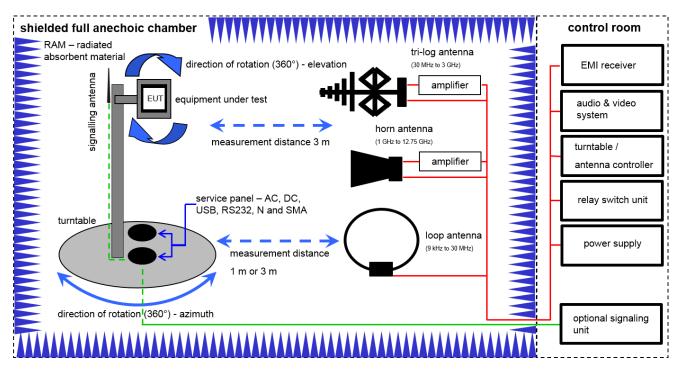
- k calibration / calibrated
- ne not required (k, ev, izw, zw not required)
- ev periodic self verification
- Ve long-term stability recognized
- vlkl! Attention: extended calibration interval
- NK! Attention: not calibrated

- EK limited calibration
- zw cyclical maintenance (external cyclical maintenance)
- izw internal cyclical maintenance
- g blocked for accredited testing
- *) next calibration ordered / currently in progress





7.1 Radiated measurements chamber C



OP = AV + D - G + CA

(OP-output power; AV-analyzer value; D-distance; G-antenna gain+amplifier gain; CA-loss signal path)

Example calculation:

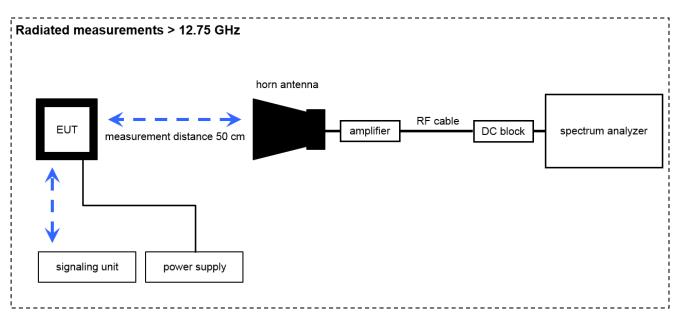
OP [dBm] = -11.0 [dBm] + 47 [dB] - 8 [dB] + 5 [dB] = 33 [dBm] (2 W)

Equipment table:

No.	Lab / Item	Equipment	Туре	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	А	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP	2818A03450	300001040	Ve	20.01.2015	20.01.2018
2	A	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	viKi!	08.05.2013	08.05.2015
3	Α	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
4	А	Switch / Control Unit	3488A	HP	*	300000199	ne		
5	А	Active Loop Antenna 10 kHz to 30 MHz	6502	Kontron Psychotech	8905-2342	300000256	k	13.06.2013	13.06.2015
6	А	Amplifier	js42-00502650-28- 5a	Parzich GMBH	928979	300003143	ne		
7	Α	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
8	A	TRILOG Broadband Test-Antenna 30 MHz – 3 GHz	VULB9163	Schwarzbeck	371	300003854	viKi!	29.10.2014	29.10.2017
9	А	MXE EMI Receiver 20 Hz to 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	06.03.2015	06.03.2016
10	А	4U RF Switch Platform	L4491A	Agilent Technologies	MY50000037	300004509	ne		
11	А	Wideband Radio Communication Tester	CMW500	R&S	102375	300004187	viKi!	28.01.2015	28.01.2017



7.2 Radiated measurements > 12.75 GHz



OP = AV + D - G + CA

(OP-output power; AV-analyzer value; D-distance; G-antenna gain+amplifier gain; CA-loss signal path)

Example calculation:

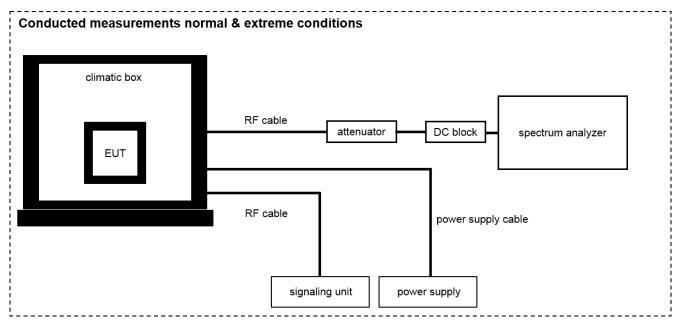
OP [dBm] = -41.0 [dBm] + 26 [dB] - 20 [dB] + 5 [dB] = -30 [dBm] (1 μW)

Next Calibration Lab / INV. No Kind of Last No. Equipment Туре Manufact. Serial No. Calibration Calibration Item Cetecom Std. Gain Horn 8402 Antenna 12.4 to 18.0 639 300000786 Narda 1 Α ne GHz Std. Gain Horn 2 Antenna 18.0 to 26.5 638 Narda 8402 300000486 ne А GHz FSV40 R&S 101042 22.01.2015 22.01.2016 Signal Analyzer 40 300004517 k 3 А GHz JS32-02004000-57-4 А Amplifier 2-40 GHz MITEQ 1777200 300004541 ev 5P ST18/SMAm/SMAm/ Batch no. RF-Cable Huber & Suhner 400001182 5 Α ev 48 600918 ST18/SMAm/SMm/4 Batch no. 6 RF-Cable Huber & Suhner А 400001183 ev 8 127377 DC-Blocker 0.1-40 7 8141A 400001185 А Inmet ev GHz Power Supply 0-8 6632B ΗP US37478366 400000117 А vIKI! 20.01.2015 20.01.2017 20V; 0-5A Wideband Radio CMW500 R&S vlKl! 9 А 102375 300004187 28.01.2015 28.01.2017 Communication Tester

Equipment table:



7.3 Conducted measurements



OP = AV + CA

(OP-output power; AV-analyzer value; CA-loss signal path)

Example calculation:

<u>OP [dBm] = 6.0 [dBm] + (11.7) [dB] = 17.7 [dBm] (58.88 mW)</u>

Equipment table:

No.	Lab / Item	Equipment	Туре	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	A, B	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
2	А	Signal Analyzer 40 GHz	FSV40	R&S	101042	300004517	k	22.01.2015	22.01.2016
3	А, В	Power Supply 0- 20V; 0-5A	6632B	HP	US37478366	400000117	vIKI!	20.01.2015	20.01.2017
4	А, В	Wideband Radio Communication Tester	CMW500	R&S	102375	300004187	vIKI!	28.01.2015	28.01.2017
5	В	Temperature Test Chamber	VT 4002	Heraeus Voetsch	521/83761	300002326	Ve	26.09.2013	26.09.2015
6	А, В	RF-Cable	ST18/SMAm/SMAm/ 72	Huber & Suhner	Batch no. 699714	400001184	ev		
7	А	DC-Blocker 0.1-40 GHz	8141A	Inmet		400001185	ev		
8	А	Coax Attenuator 10 dB 2W 0-40 GHz	MCL BW-K10- 2W44+	Mini Circuits		400001186	ev		



8 Measurement uncertainty

Measurement uncertainty					
Test case	Uncertainty				
RF output power conducted	± 1 dB				
RF output power radiated	± 3 dB				
Frequency stability	± 20 Hz				
Spurious emissions radiated below 30 MHz	± 3 dB				
Spurious emissions radiated 30 MHz to 1 GHz	± 3 dB				
Spurious emissions radiated 1 GHz to 12.75 GHz	± 3.7 dB				
Spurious emissions radiated above 12.75 GHz	± 4.5 dB				
Spurious emissions conducted	± 3 dB				
Block edge compliance	± 3 dB				
Occupied bandwidth	± RBW				



9 Sequence of testing

9.1 Sequence of testing 9 kHz to 30 MHz

Setup

- The equipment was set up to simulate a typical usage like descripted in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter (see ANSI C 63.4) see each test details
- The EUT was set into operation.

Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 1.5 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axces (0° to 360°).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with RMS (RMS / see ANSI C 63.4) detector
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.



9.2 Sequence of testing 30 MHz to 1 GHz

Setup

- The equipment was set up to simulate a typical usage like descripted in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 10 or 3 meter (see ANSI C 63.4) see each test details
- The EUT was set into operation.

Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 3 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions
- ٠

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter.
- The final measurement will be done with RMS (RMS / see ANSI C 63.4) detector with an EMI receiver
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.



9.3 Sequence of testing 1 GHz to 12.75 GHz

Setup

- The equipment was set up to simulate a typical usage like descripted in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter (see ANSI C 63.4) see each test details
- The EUT was set into operation.

Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height is 1.5 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions

- The final measurement will be performed with minimum the six highest peaks according the requirements of the ANSI C63.4.
- According to the maximum found antenna polarization and turntable position of the premeasurement the software maximizes the peaks by rotating the turntable position (0° to 360°). This measurement is repeated for different EUT-table positions (0° to 150° in 30°-steps). This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and RMS (RMS / see ANSI C 63.4) detector
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.



9.4 Sequence of testing above 12.75 GHz

Setup

- The equipment was set up to simulate a typical usage like descripted in the user manual or described by manufacturer.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 0.5 meter
- The EUT was set into operation.

Premeasurement

• The antenna is moved spherical over the EUT in different polarisations of the antenna.

- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and RMS (RMS / see ANSI C 63.4) detector
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.



10 Summary of measurement results

\bowtie	No deviations from the technical specifications were ascertained
	There were deviations from the technical specifications ascertained
	This test report is only a partial test report. The content and verdict of the performed test cases are listed below.

TC identifier	Description	verdict	date	Remark
RF-Testing	CFR Part 24 RSS 133	See table	2015-08-04	-/-

10.1 LTE band II

Test Case	temperature conditions	power source voltages	с	NC	NA	NP	Remark
RF Output Power	Nominal	Nominal					-/-
Frequency Stability	Extreme	Extreme					-/-
Spurious Emissions Radiated	Nominal	Nominal					-/-
Spurious Emissions Conducted	Nominal	Nominal					-/-
Block Edge Compliance	Nominal	Nominal					-/-
Occupied Bandwidth	Nominal	Nominal					-/-

<u>Note:</u> C = Compliant; NC = Not compliant; NA = Not applicable; NP = Not performed



11 **RF** measurements

11.1 Results LTE band II

The EUT was set to transmit the maximum power.

11.1.1 RF output power

Description:

This paragraph contains average power, peak output power, PAPR and ERP measurements for the mobile station.

The plots in this test report represents only an example of the measurements. All plots of this chapter are available on request.

The red line in the measurements indicates the ideal Gaussian distribution for the measured amplitude range.

Measurement:

The mobile was set up for the maximum output power with pseudo random data modulation.

To determine the Peak-To-Average Power Ratio (PAPR) the measurement was performed with the Power Complementary Cumulative Distribution Function (CCDF).

Measurement parameters				
Detector:	Sample			
AQT:	15.6 ms			
Resolution bandwidth:	40 MHz			
Used equipment:	see chapter 7.1 – A and chapter 7.2 – A			
Measurement uncertainty:	see chapter 8			

Limits:

FCC	IC				
CFR Part 24.232 CFR Part 2.1046	RSS 133, Issue 5, Section 6.4				
Nominal Peak Output Power					
+33.00 dBm In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.					



Results:

	Output Power (conducted)							
Bandwidth (MHz)	Frequency (MHz)	Resource block allocation	Peak Output Power (dBm) QPSK	Average Output Power (dBm) QPSK	Peak to Average Ratio (dB) CCDF	Peak Output Power (dBm) 16-QAM	Average Output Power (dBm) 16-QAM	Peak to Average Ratio (dB) CCDF
		1 RB low	26.9	22.1	4.6	26.9	21.1	5.6
	4050 7	1 RB high	26.9	22.1	4.7	26.9	21.1	5.7
	1850.7	50% RB	27.1	22.3	4.5	26.9	21.0	5.7
		100% RB	26.8	21.2	5.3	26.6	20.2	6.1
		1 RB low	27.1	22.5	4.5	27.1	21.1	5.8
	1000.0	1 RB high	27.0	22.3	4.6	27.0	21.0	5.7
1.4	1880.0	50% RB	27.1	22.4	4.6	27.2	21.5	5.5
		100% RB	27.0	21.4	5.3	26.8	20.4	6.0
		1 RB low	26.4	22.0	4.3	26.4	21.0	5.3
	1909.3	1 RB high	26.3	22.0	4.2	26.3	20.8	5.4
	1909.3	50% RB	26.5	22.0	4.3	26.4	21.2	5.1
		100% RB	26.4	21.2	5.0	26.1	20.1	5.7
		1 RB low	26.9	22.0	4.7	27.0	21.4	5.4
	1051 E	1 RB high	27.0	22.2	4.6	26.8	21.3	5.4
	1851.5	50% RB	26.8	21.2	5.3	26.6	20.2	6.0
		100% RB	26.9	21.2	5.2	26.6	20.2	6.0
	0 4000 0	1 RB low	27.2	22.5	4.6	27.2	21.3	5.7
3		1 RB high	26.9	22.3	4.5	26.8	21.0	5.6
3	1880.0	50% RB	27.0	21.4	5.2	26.8	20.4	6.0
		100% RB	27.1	21.4	5.2	26.9	20.4	6.0
		1 RB low	26.5	22.1	4.2	26.5	21.2	5.1
	1908.5	1 RB high	26.4	21.8	4.4	26.4	21.1	5.1
	1906.5	50% RB	26.3	21.1	5.0	26.1	20.2	5.7
		100% RB	26.4	21.1	5.0	26.1	20.2	5.7
		1 RB low	26.9	21.9	4.7	26.7	21.1	5.4
	1852.5	1 RB high	27.1	22.3	4.6	26.8	21.2	5.5
	1652.5	50% RB	26.8	21.2	5.2	26.6	20.3	5.9
		100% RB	26.9	21.2	5.3	26.7	20.2	6.0
		1 RB low	27.5	22.6	4.7	27.4	21.5	5.8
5	1880.0	1 RB high	27.0	22.4	4.4	27.0	21.3	5.5
5	1000.0	50% RB	27.1	21.4	5.2	26.8	20.4	5.9
		100% RB	27.2	21.4	5.3	27.0	20.4	5.9
		1 RB low	26.7	22.3	4.2	26.5	21.3	5.0
	1907.5	1 RB high	26.4	22.1	4.1	26.1	21.3	4.7
	1907.0	50% RB	26.4	21.0	5.1	26.2	20.1	5.7
		100% RB	26.6	21.0	5.1	26.3	20.2	5.7



		1 RB low	27.4	21.7	5.4	27.3	21.1	6.0
1855	1 RB high	27.2	21.2	5.5	27.2	20.4	6.3	
	1000	50% RB	27.3	20.9	5.6	27.4	20.0	6.5
		100% RB	27.3	22.2	5.0	27.3	20.9	5.9
		1 RB low	26.7	22.3	4.3	26.7	21.1	5.3
10	1880	1 RB high	27.1	21.4	5.2	26.9	20.4	6.0
10	1000	50% RB	27.2	21.3	5.3	26.9	20.3	6.0
		100% RB	27.1	22.1	4.7	26.8	21.0	5.6
		1 RB low	26.4	22.1	4.1	26.1	21.1	4.8
	1905	1 RB high	26.7	21.2	5.1	26.4	20.2	5.9
	1905	50% RB	26.9	21.1	5.3	26.7	20.2	5.9
		100% RB	26.4	21.7	4.5	26.4	20.7	5.4
		1 RB low	27.4	22.1	5.2	27.5	21.3	6.0
	1857.5	1 RB high	27.4	21.2	5.6	27.3	20.3	6.4
	1057.5	50% RB	27.6	21.0	5.9	27.4	20.2	6.6
		100% RB	27.2	22.0	5.0	27.3	20.7	6.3
		1 RB low	26.9	22.2	4.3	26.7	21.1	5.5
15	1990.0	1 RB high	27.2	21.3	5.3	26.9	20.3	6.0
15 1880.0	50% RB	27.1	21.2	5.5	27.0	20.1	6.1	
	100% RB	26.9	21.8	4.8	26.6	20.4	6.0	
		1 RB low	26.2	21.9	4.0	25.8	20.8	4.9
	1902.5	1 RB high	27.0	21.0	5.4	26.7	20.1	6.1
	1902.5	50% RB	27.1	20.9	5.6	26.8	19.9	6.2
		100% RB	26.2	21.5	4.4	26.1	20.5	5.5
		1 RB low	27.4	22.2	5.0	27.5	21.1	6.2
	1860	1 RB high	27.8	21.0	5.9	27.5	20.3	6.5
	1000	50% RB	27.8	21.1	5.8	27.8	20.1	6.6
		100% RB	27.1	22.0	4.9	27.2	21.0	6.0
		1 RB low	26.6	22.1	4.3	26.5	20.9	5.5
20	1000	1 RB high	27.2	21.2	5.3	26.8	20.3	6.0
20	1880	50% RB	27.3	21.1	5.4	27.0	20.2	6.0
		100% RB	26.5	21.7	4.6	26.2	20.3	5.7
		1 RB low	26.0	21.7	4.0	25.7	20.6	4.9
	1000	1 RB high	27.2	21.1	5.5	26.9	20.1	6.2
	1900	50% RB	27.3	20.9	5.5	26.9	19.8	6.2
		100% RB	27.4	21.7	5.4	27.3	21.1	6.0



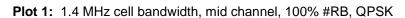
Output Power (radiated)					
Bandwidth (MHz)	Frequency (MHz)	Average Output Power (dBm) QPSK	Average Output Power (dBm) 16-QAM		
	1850.7	21.00	19.80		
1.4	1880.0	21.89	20.89		
	1909.3	21.37	20.27		
	1851.5	20.90	20.00		
3	1880.0	21.79	20.69		
	1908.5	21.27	20.37		
	1852.5	20.90	19.90		
5	1880.0	21.79	20.79		
	1907.5	21.27	20.37		
	1855.0	20.40	19.70		
10	1880.0	21.60	20.69		
	1905.0	21.27	20.37		
	1857.5	20.60	19.90		
15	1880.0	21.49	20.49		
	1902.5	21.07	20.17		
	1860.0	20.90	19.90		
20	1880.0	21.59	20.49		
	1900.0	21.27	20.27		

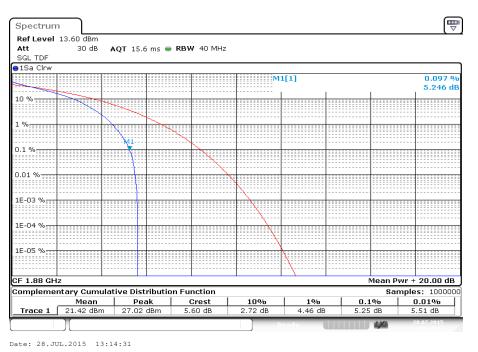
The values are meausured with configuration of highest conducted power.

Verdict: compliant

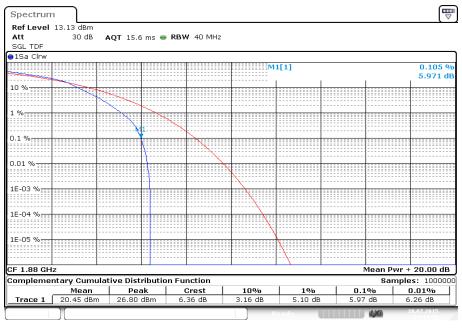


Plots:





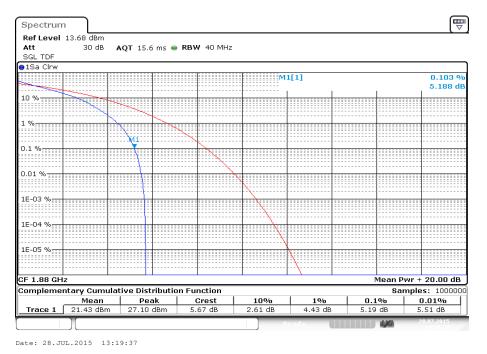
Plot 2: 1.4 MHz cell bandwidth, mid channel, 100% #RB, 16-QAM



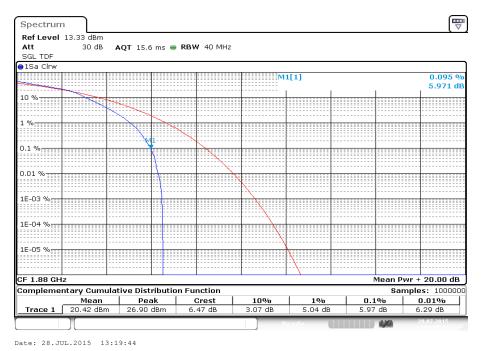
Date: 28.JUL.2015 13:14:38





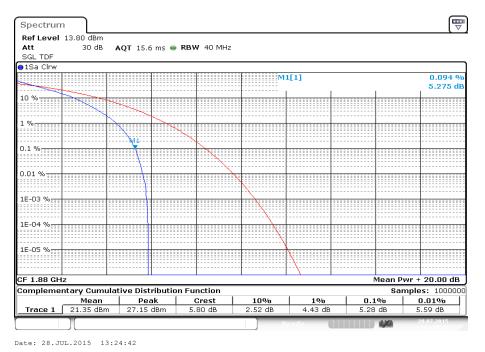


Plot 4: 3 MHz cell bandwidth, mid channel, 100% #RB, 16-QAM

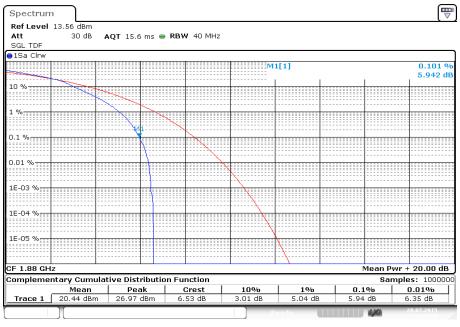






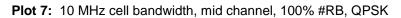


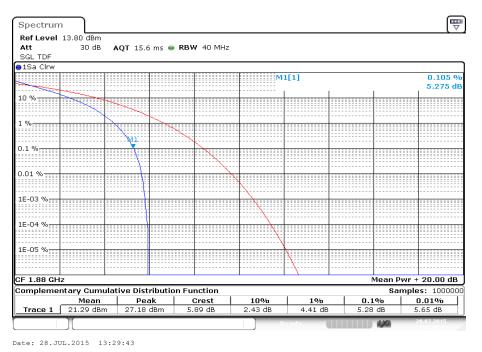
Plot 6: 5 MHz cell bandwidth, mid channel, 100% #RB, 16-QAM



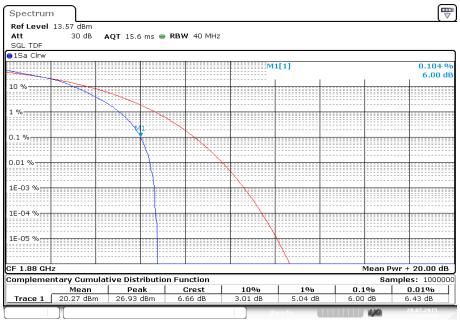
Date: 28.JUL.2015 13:24:49





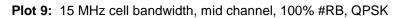


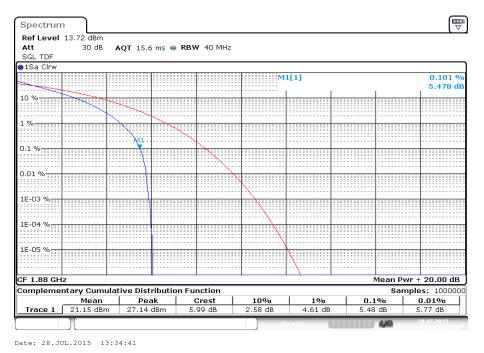
Plot 8: 10 MHz cell bandwidth, mid channel, 100% #RB, 16-QAM



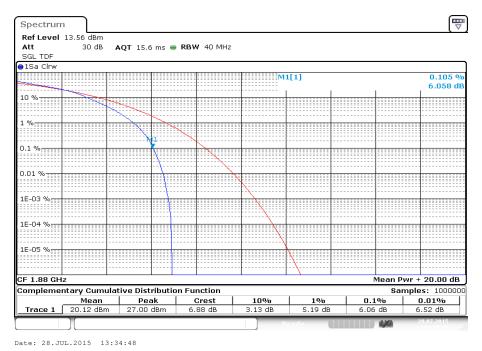
Date: 28.JUL.2015 13:29:50



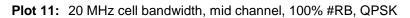


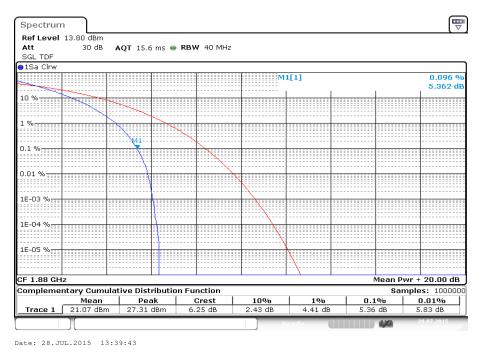


Plot 10: 15 MHz cell bandwidth, mid channel, 100% #RB, 16-QAM

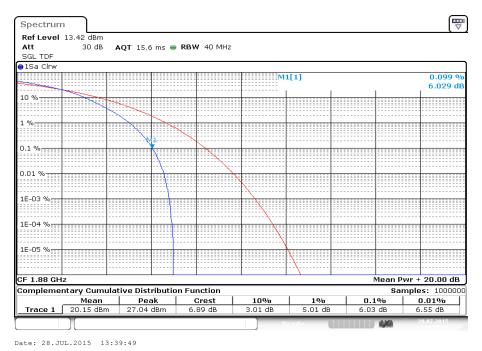








Plot 12: 20 MHz cell bandwidth, mid channel, 100% #RB, 16-QAM





11.1.2 Frequency stability

Description:

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the mobile station connected to CMW. This is accomplished with the use of a R&S CMW500 DIGITAL RADIOCOMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.

2. Subject the mobile station to overnight soak at -30 C.

3. With the mobile station, powered with V_{nom}, connected to the CMW500 and a connection on centre channel, measure the carrier frequency. These measurements should be made within two minutes of powering up the mobile station, to prevent significant self warming.

4. Repeat the above measurements at 10°C increments from -30°C to +60°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.

5. Remeasure carrier frequency at room temperature with V_{nom} . Vary supply voltage from V_{min} to V_{max} . Pause at V_{nom} for 1.5 hours unpowered, to allow any self heating to stabilize, before continuing.

6. At all temperature levels hold the temperature to +/-0.5°C during the measurement procedure.

Measurement:

Measurement parameters					
Detector:					
Sweep time:					
Video bandwidth:	Measured with CMW500				
Resolution bandwidth:	Measured with CMW500				
Span:					
Trace-Mode:					
Used equipment:	see chapter chapter 7.2 – B				
Measurement uncertainty:	see chapter 8				

Limits:

FCC	IC				
CFR Part 24.235 CFR Part 2.1055	RSS 133				
Frequency Stability					
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.					



Results:

AFC FREQ ERROR versus VOLTAGE

Voltage (V)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
13.8	-22	-0.000030	-0.031
12.0	-17	-0.000009	-0.009
10.2	-18	-0.000010	-0.010

AFC FREQ ERROR versus TEMPERATURE

Temperature (°C)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
-30	-19	-0.0000011	-0.011
-20	-13	-0.000007	-0.007
-10	-23	-0.0000012	-0.012
± 0	-21	-0.0000011	-0.011
10	-14	-0.000007	-0.007
20	-17	-0.000009	-0.009
30	-13	-0.000007	-0.007
40	-17	-0.000009	-0.009
50	-16	-0.000009	-0.009
60	-22	-0.000030	-0.031

Verdict: compliant



11.1.3 Spurious emissions radiated

Description:

The following steps outline the procedure used to measure the radiated emissions from the mobile station. The site is constructed in accordance with ANSI C63.4:2014 requirements and is recognized by the FCC to be in compliance for a 3 and a 10 meter site. The spectrum was scanned from 9 kHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1909.3 MHz. Measurement made up to 26 GHz. The resolution bandwidth is set as outlined in Part 24.238. The spectrum was scanned with the mobile station transmitting at the middle carrier frequency of the LTE band II.

Measurement:

Measurement parameters			
Detector:	Peak / RMS		
Sweep time:	5 ms/MHz		
Resolution bandwidth:	1 MHz		
Video bandwidth:	3 MHz		
Span:	different steps		
Trace-Mode:	Max Hold		
Used equipment:	see chapter 7.1 - A & 7.2 - A		
Measurement uncertainty:	see chapter 8		

Limits:

FCC	IC				
CFR Part 24.238 CFR Part 2.1053	RSS 133				
Spurious Emissions Radiated					
Attenuation ≥ 43 + 10log(P) (P, Power in Watts)					
-13 dBm					



Results:

Radiated emissions measurements were made only at the center carrier frequency of the LTE band II (1880 MHz). It was decided that measurements at this carrier frequency would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the LTE band II into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

The final open field radiated levels are presented on the next pages.

All measurements were done in horizontal and vertical polarization; the plots show the worst case. The plots show only the middle channel. If spurious were detected, the lowest and highest channel were checked too. The found values are stated in the table below.

As can be seen from this data, the emissions from the test item were within the specification limit.

Spurious Emission Level (dBm)							
Harmonic	Middle channel Freq. (MHz)	Level [dBm]					
2	3760.0	-					
3	5640.0	-					
4	7520.0	-					
5	9400.0	-					
6	11280.0	-					
7	13160.0	-					
8	15040.0	-					
9	16920.0	-					
10	18800.0	-					

QPSK:



<u> 16-QAM:</u>

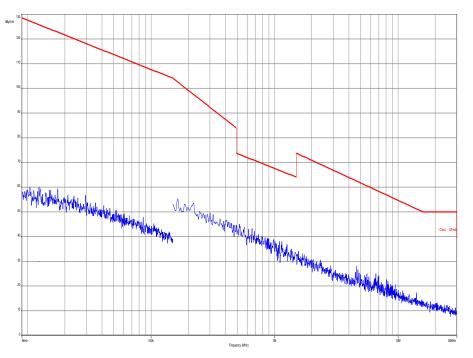
Spurious Emission Level (dBm)							
Harmonic	Middle channel Freq. (MHz)	Level [dBm]					
2	3760.0	-					
3	5640.0	-					
4	7520.0	-					
5	9400.0	-					
6	11280.0	-					
7	13160.0	-					
8	15040.0	-					
9	16920.0	-					
10	18800.0	-					

Verdict: compliant

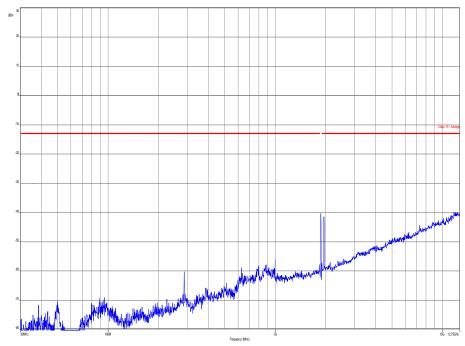


QPSK with 10 MHz channel bandwidth

Plot 1: Channel 18900 (Traffic mode up to 30 MHz)



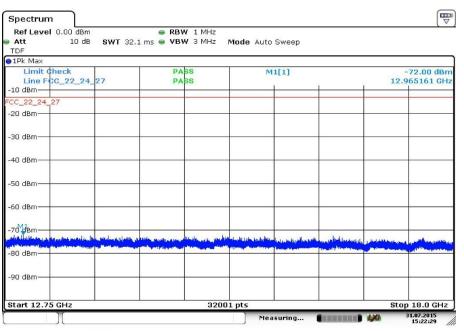
Plot 2: Channel 18900 (30 MHz - 12.75 GHz)



Carrier notched with 1.9 GHz rejection filter

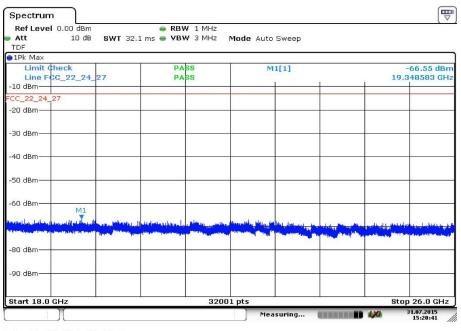


Plot 3: Channel 18900 (12.75 GHz - 18 GHz)



Date: 31.JUL.2015 15:22:29

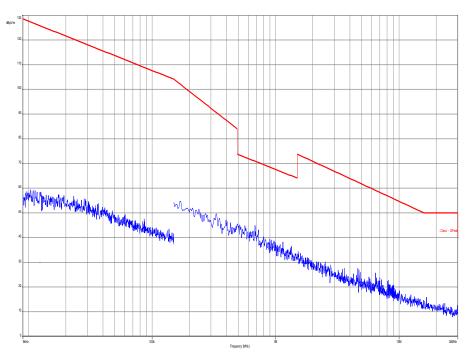
Plot 4: Channel 18900 (18 GHz - 26 GHz)



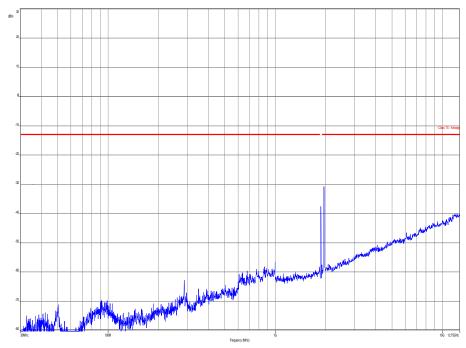


16-QAM with 10 MHz channel bandwidth

Plot 5: Channel 18900 (Traffic mode up to 30 MHz)



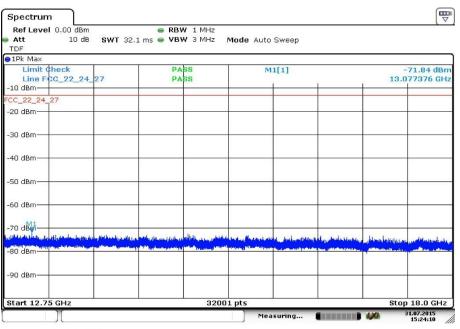
Plot 6: Channel 18900 (30 MHz - 12.75 GHz)



Carrier notched with 1.9 GHz rejection filter

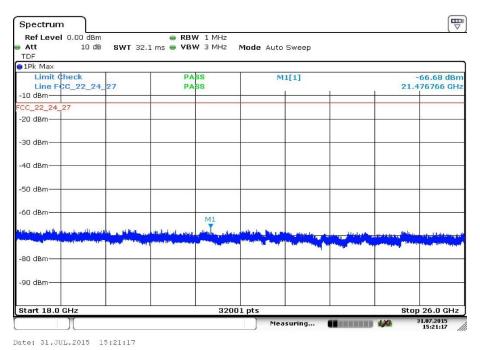


Plot 7: Channel 18900 (12 GHz - 18 GHz)



Date: 31.JUL.2015 15:24:11

Plot 8: Channel 18900 (18 GHz - 26 GHz)





11.1.4 Spurious emissions conducted

Description:

The following steps outline the procedure used to measure the conducted emissions from the mobile station. 1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the mobile station equipment tested, this equates to a frequency range of 13 MHz to 19.1 GHz, data taken from 10 MHz to 26 GHz.

2. Determine mobile station transmits frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

Measurement:

Measurement parameters						
Detector:	Peak					
Sweep time:	Auto					
Resolution bandwidth:	1 MHz					
Video bandwidth:	Pre-measurement with 1 MHz On spurious detection re-measurement 3 MHz					
Span:	30 MHz – 26 GHz					
Trace-Mode:	Max Hold					
Used equipment:	see chapter 7.3 - A					
Measurement uncertainty:	see chapter 8					

Limits:

FCC	IC				
CFR Part 24.238 CFR Part 2.1051	RSS 133				
Spurious Emissions Conducted					
Attenuation ≥ 43 + 10log(P) (P, Power in Watts)					
-13 dBm					



Results: for 1.4 MHz channel bandwidth

QPSK:

Spurious Emission Level (dBm)								
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]
2	3701.4	-	2	3760.0	-	2	3818.6	-
3	5552.1	-	3	5640.0	-	3	5727.9	-
4	7402.8	-	4	7520.0	-	4	7637.2	-
5	9253.5	-	5	9400.0	-	5	9546.5	-
6	11104.2	-	6	11280.0	-	6	11455.8	-
7	12954.9	-	7	13160.0	-	7	13365.1	-
8	14805.6	-	8	15040.0	-	8	15274.4	-
9	16656.3	-	9	16920.0	-	9	17183.7	-
10	18507.0	-	10	18800.0	-	10	19093.0	-

<u> 16-QAM:</u>

Spurious Emission Level (dBm)								
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]
2	3701.4	-	2	3760.0	-	2	3818.6	-
3	5552.1	-	3	5640.0	-	3	5727.9	-
4	7402.8	-	4	7520.0	-	4	7637.2	-
5	9253.5	-	5	9400.0	-	5	9546.5	-
6	11104.2	-	6	11280.0	-	6	11455.8	-
7	12954.9	-	7	13160.0	-	7	13365.1	-
8	14805.6	-	8	15040.0	-	8	15274.4	-
9	16656.3	-	9	16920.0	-	9	17183.7	-
10	18507.0	-	10	18800.0	-	10	19093.0	-



Results: for 3 MHz channel bandwidth

QPSK:

Spurious Emission Level (dBm)								
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]
2	3703.0	-	2	3760.0	-	2	3817.0	-
3	5554.5	-	3	5640.0	-	3	5725.5	-
4	7406.0	-	4	7520.0	-	4	7634.0	-
5	9257.5	-	5	9400.0	-	5	9542.5	-
6	11109.0	-	6	11280.0	-	6	11451.0	-
7	12960.5	-	7	13160.0	-	7	13359.5	-
8	14812.0	-	8	15040.0	-	8	15268.0	-
9	16663.5	-	9	16920.0	-	9	17176.5	-
10	18515.0	-	10	18800.0	-	10	19085.0	-

<u> 16-QAM:</u>

	Spurious Emission Level (dBm)								
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]	
2	3703.0	-	2	3760.0	-	2	3817.0	-	
3	5554.5	-	3	5640.0	-	3	5725.5	-	
4	7406.0	-	4	7520.0	-	4	7634.0	-	
5	9257.5	-	5	9400.0	-	5	9542.5	-	
6	11109.0	-	6	11280.0	-	6	11451.0	-	
7	12960.5	-	7	13160.0	-	7	13359.5	-	
8	14812.0	-	8	15040.0	-	8	15268.0	-	
9	16663.5	-	9	16920.0	-	9	17176.5	-	
10	18515.0	-	10	18800.0	-	10	19085.0	-	



Results: for 5 MHz channel bandwidth

QPSK:

	Spurious Emission Level (dBm)										
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]			
2	3705.0	-	2	3760.0	-	2	3815.0	-			
3	5557.5	-	3	5640.0	-	3	5722.5	-			
4	7410.0	-	4	7520.0	-	4	7630.0	-			
5	9262.5	-	5	9400.0	-	5	9537.5	-			
6	11115.0	-	6	11280.0	-	6	11445.0	-			
7	12967.5	-	7	13160.0	-	7	13352.5	-			
8	14820.0	-	8	15040.0	-	8	15260.0	-			
9	16672.5	-	9	16920.0	-	9	17167.5	-			
10	18525.0	-	10	18800.0	-	10	19075.0	-			

<u> 16-QAM:</u>

			Spurious E	Emission L	evel (dBm)			
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]
2	3705.0	-	2	3760.0	-	2	3815.0	-
3	5557.5	-	3	5640.0	-	3	5722.5	-
4	7410.0	-	4	7520.0	-	4	7630.0	-
5	9262.5	-	5	9400.0	-	5	9537.5	-
6	11115.0	-	6	11280.0	-	6	11445.0	-
7	12967.5	-	7	13160.0	-	7	13352.5	-
8	14820.0	-	8	15040.0	-	8	15260.0	-
9	16672.5	-	9	16920.0	-	9	17167.5	-
10	18525.0	-	10	18800.0	-	10	19075.0	-



Results: for 10 MHz channel bandwidth

QPSK:

	Spurious Emission Level (dBm)										
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]			
2	3710.0	-	2	3760.0	-	2	3810.0	-			
3	5565.0	-	3	5640.0	-	3	5715.0	-			
4	7420.0	-	4	7520.0	-	4	7620.0	-			
5	9275.0	-	5	9400.0	-	5	9525.0	-			
6	11130.0	-	6	11280.0	-	6	11430.0	-			
7	12985.0	-	7	13160.0	-	7	13335.0	-			
8	14840.0	-	8	15040.0	-	8	15240.0	-			
9	16695.0	-	9	16920.0	-	9	17145.0	-			
10	18550.0	-	10	18800.0	-	10	19050.0	-			

<u> 16-QAM:</u>

			Spurious E	Emission L	evel (dBm)	I		
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]
2	3710.0	-	2	3760.0	-	2	3810.0	-
3	5565.0	-	3	5640.0	-	3	5715.0	-
4	7420.0	-	4	7520.0	-	4	7620.0	-
5	9275.0	-	5	9400.0	-	5	9525.0	-
6	11130.0	-	6	11280.0	-	6	11430.0	-
7	12985.0	-	7	13160.0	-	7	13335.0	-
8	14840.0	-	8	15040.0	-	8	15240.0	-
9	16695.0	-	9	16920.0	-	9	17145.0	-
10	18550.0	-	10	18800.0	-	10	19050.0	-



Results: for 15 MHz channel bandwidth

QPSK:

	Spurious Emission Level (dBm)										
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]			
2	3715.0	-	2	3760.0	-	2	3805.0	-			
3	5572.5	-	3	5640.0	-	3	5707.5	-			
4	7430.0	-	4	7520.0	-	4	7610.0	-			
5	9287.5	-	5	9400.0	-	5	9512.5	-			
6	11145.0	-	6	11280.0	-	6	11415.0	-			
7	13002.5	-	7	13160.0	-	7	13317.5	-			
8	14860.0	-	8	15040.0	-	8	15220.0	-			
9	16717.5	-	9	16920.0	-	9	17122.5	-			
10	18575.0	-	10	18800.0	-	10	19025.0	-			

<u> 16-QAM:</u>

			Spurious E	Emission L	evel (dBm)			
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]
2	3715.0	-	2	3760.0	-	2	3805.0	-
3	5572.5	-	3	5640.0	-	3	5707.5	-
4	7430.0	-	4	7520.0	-	4	7610.0	-
5	9287.5	-	5	9400.0	-	5	9512.5	-
6	11145.0	-	6	11280.0	-	6	11415.0	-
7	13002.5	-	7	13160.0	-	7	13317.5	-
8	14860.0	-	8	15040.0	-	8	15220.0	-
9	16717.5	-	9	16920.0	-	9	17122.5	-
10	18575.0	-	10	18800.0	-	10	19025.0	-



Results: for 20 MHz channel bandwidth

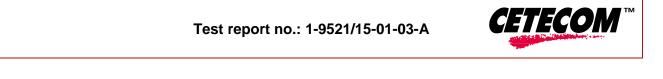
QPSK:

Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]
2	3720.0	-	2	3760.0	-	2	3800.0	-
3	5580.0	-	3	5640.0	-	3	5700.0	-
4	7440.0	-	4	7520.0	-	4	7600.0	-
5	9300.0	-	5	9400.0	-	5	9500.0	-
6	11160.0	-	6	11280.0	-	6	11400.0	-
7	13020.0	-	7	13160.0	-	7	13300.0	-
8	14880.0	-	8	15040.0	-	8	15200.0	-
9	16740.0	-	9	16920.0	-	9	17100.0	-
10	18600.0	-	10	18800.0	-	10	19000.0	-

<u> 16-QAM:</u>

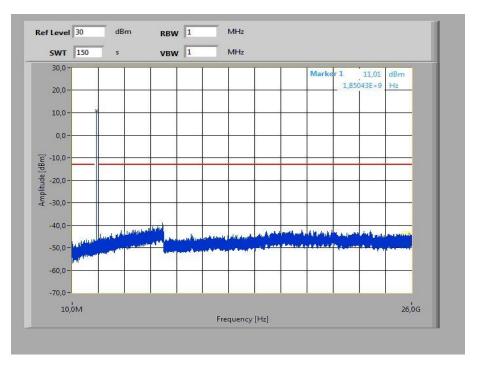
Spurious Emission Level (dBm)										
Harmonic	Lowest channel Freq. (MHz)	Level [dBm]	Harmonic	Middle channel Freq. (MHz)	Level [dBm]	Harmonic	Highest channel Freq. (MHz)	Level [dBm]		
2	3720.0	-	2	3760.0	-	2	3800.0	-		
3	5580.0	-	3	5640.0	-	3	5700.0	-		
4	7440.0	-	4	7520.0	-	4	7600.0	-		
5	9300.0	-	5	9400.0	-	5	9500.0	-		
6	11160.0	-	6	11280.0	-	6	11400.0	-		
7	13020.0	-	7	13160.0	-	7	13300.0	-		
8	14880.0	-	8	15040.0	-	8	15200.0	-		
9	16740.0	-	9	16920.0	-	9	17100.0	-		
10	18600.0	-	10	18800.0	-	10	19000.0	-		

Verdict: compliant

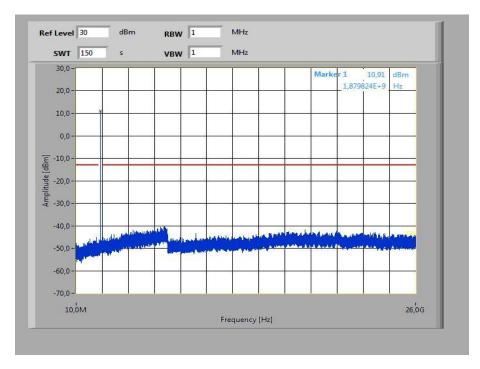


Plots: QPSK with 1.4 MHz channel bandwidth

Plot 1: Lowest Channel (10 MHz - 26 GHz)

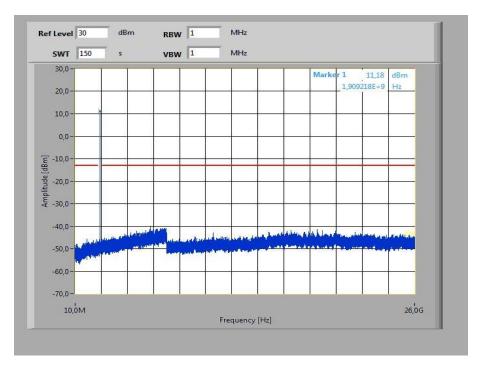


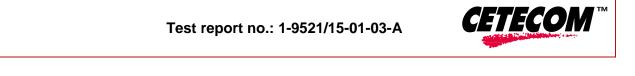
Plot 2: Middle Channel (10 MHz – 26 GHz)





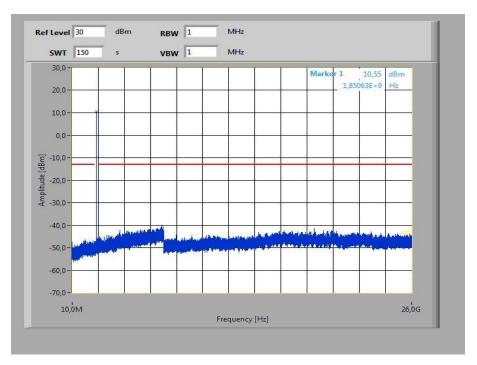
Plot 3: Highest Channel (10 MHz – 26 GHz)



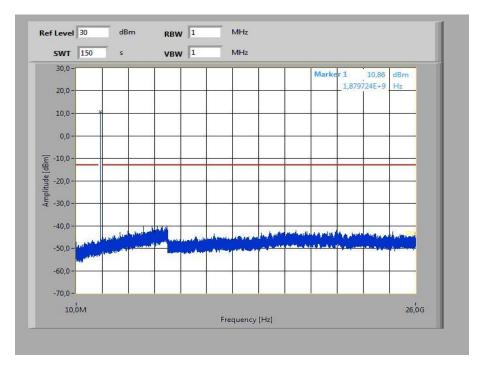


Plots: 16-QAM with 1.4 MHz channel bandwidth

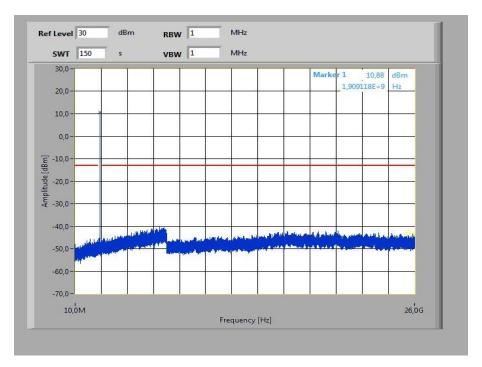
Plot 4: Lowest Channel (10 MHz - 26 GHz)

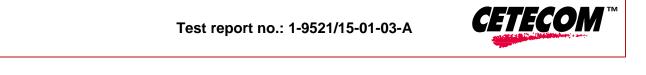


Plot 5: Middle Channel (10 MHz – 26 GHz)



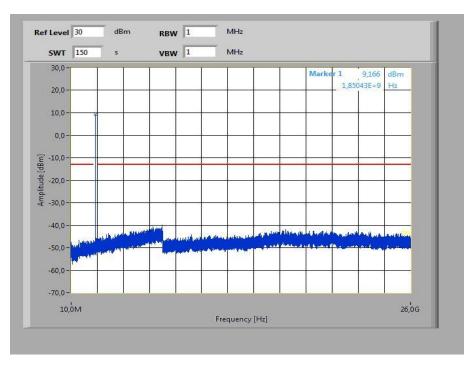




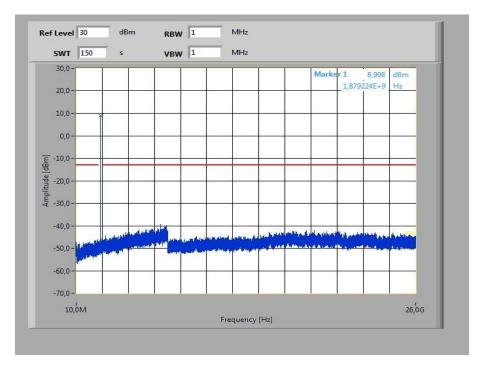


Plots: QPSK with 3 MHz channel bandwidth

Plot 1: Lowest Channel (10 MHz - 26 GHz)

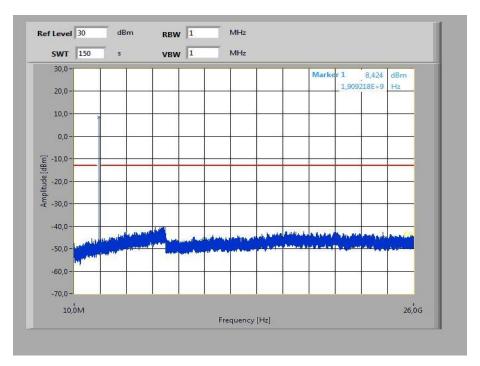


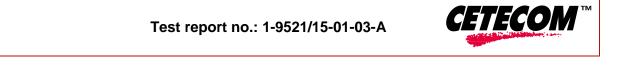
Plot 2: Middle Channel (10 MHz - 26 GHz)





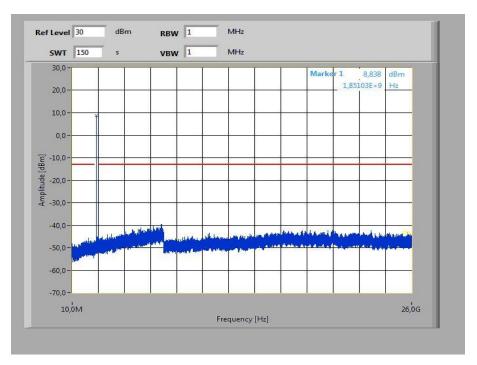
Plot 3: Highest Channel (10 MHz – 26 GHz)



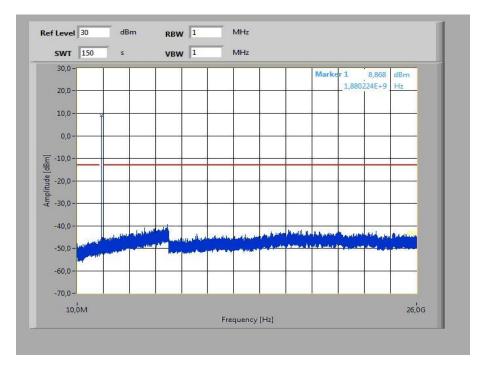


Plots: 16-QAM with 3 MHz channel bandwidth

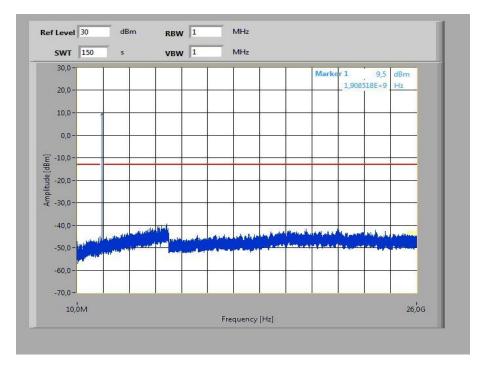
Plot 4: Lowest Channel (10 MHz - 26 GHz)

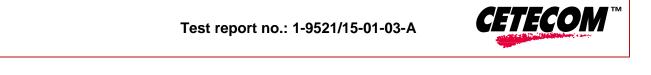


Plot 5: Middle Channel (10 MHz – 26 GHz)



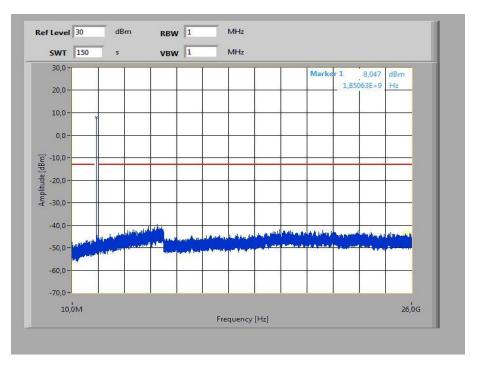




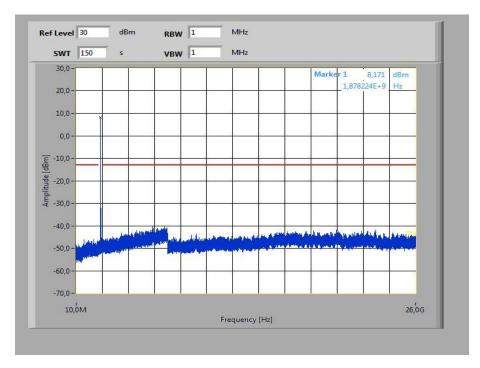


Plots: QPSK with 5 MHz channel bandwidth

Plot 1: Lowest Channel (10 MHz - 26 GHz)

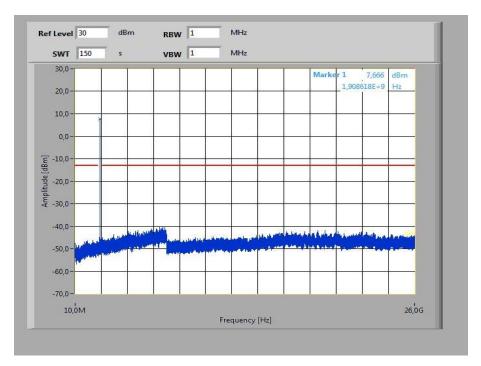


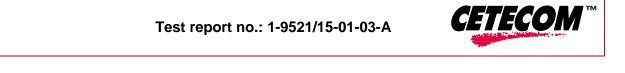
Plot 2: Middle Channel (10 MHz – 26 GHz)





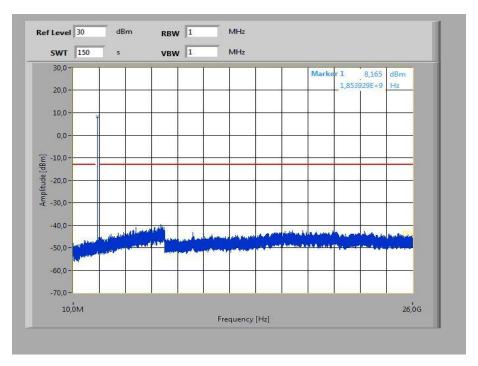
Plot 3: Highest Channel (10 MHz – 26 GHz)



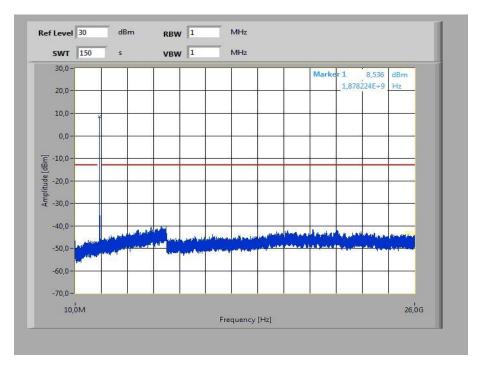


Plots: 16-QAM with 5 MHz channel bandwidth

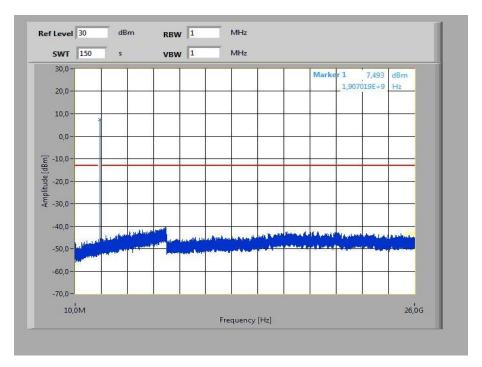
Plot 4: Lowest Channel (10 MHz – 26 GHz)

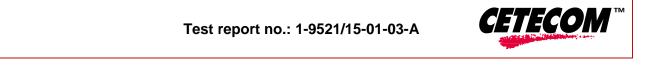


Plot 5: Middle Channel (10 MHz – 26 GHz)



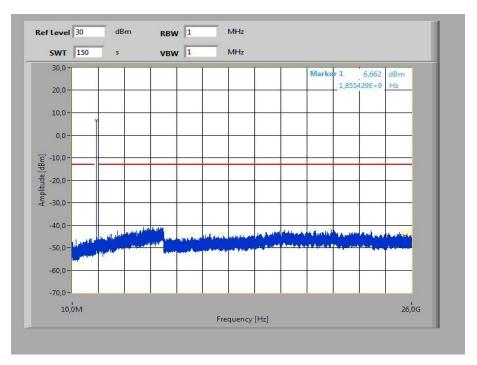




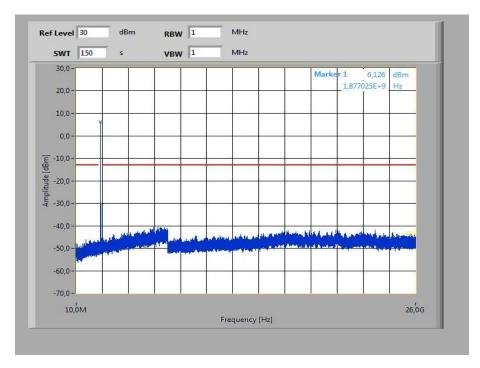


Plots: QPSK with 10 MHz channel bandwidth

Plot 1: Lowest Channel (10 MHz - 26 GHz)

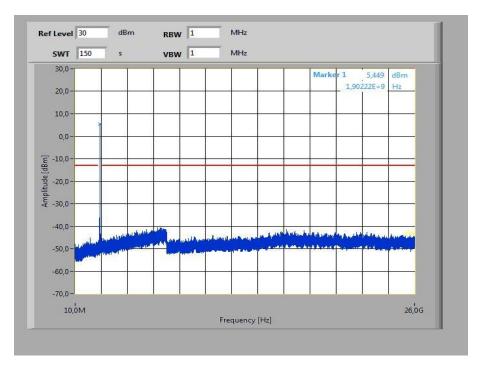


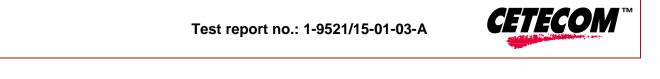
Plot 2: Middle Channel (10 MHz – 26 GHz)





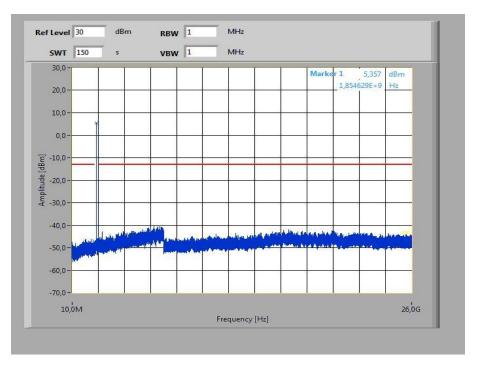
Plot 3: Highest Channel (10 MHz – 26 GHz)



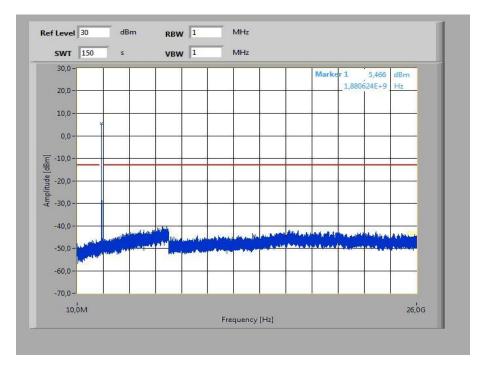


Plots: 16-QAM with 10 MHz channel bandwidth

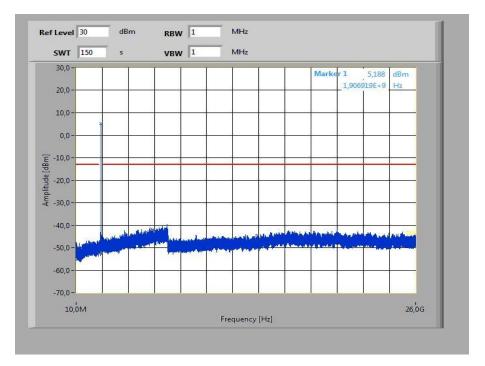
Plot 4: Lowest Channel (10 MHz - 26 GHz)

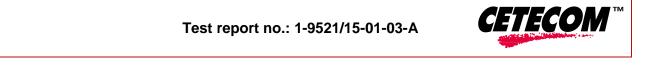


Plot 5: Middle Channel (10 MHz – 26 GHz)



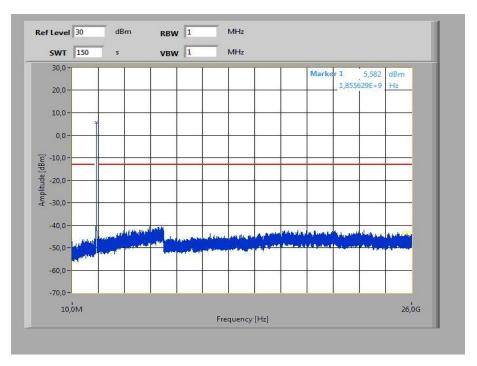




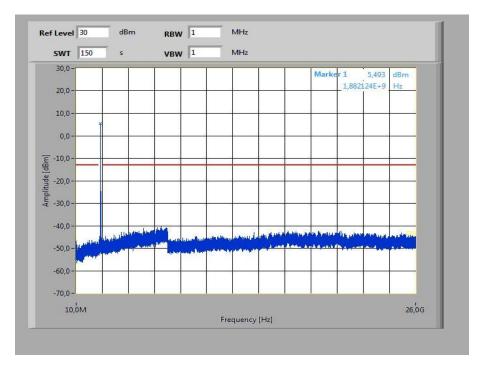


Plots: QPSK with 15 MHz channel bandwidth

Plot 1: Lowest Channel (10 MHz - 26 GHz)

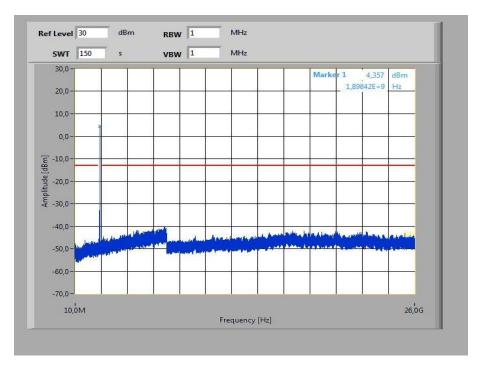


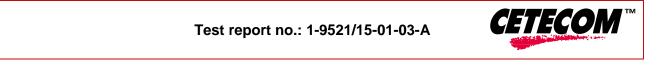
Plot 2: Middle Channel (10 MHz – 26 GHz)





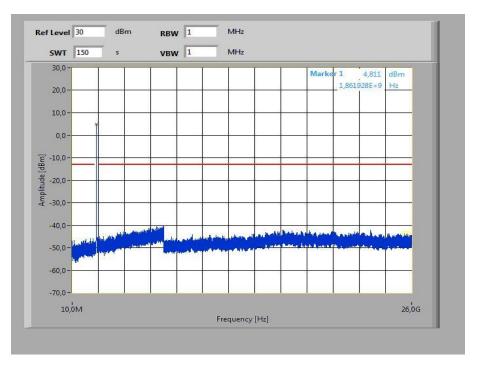
Plot 3: Highest Channel (10 MHz – 26 GHz)



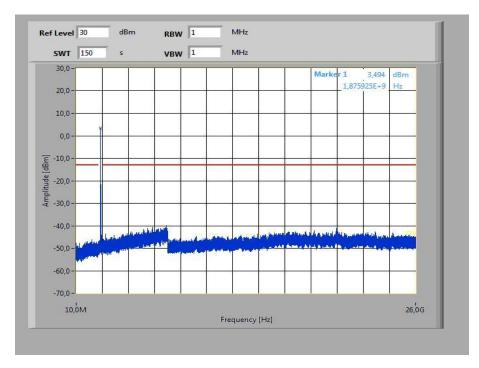


Plots: 16-QAM with 15 MHz channel bandwidth

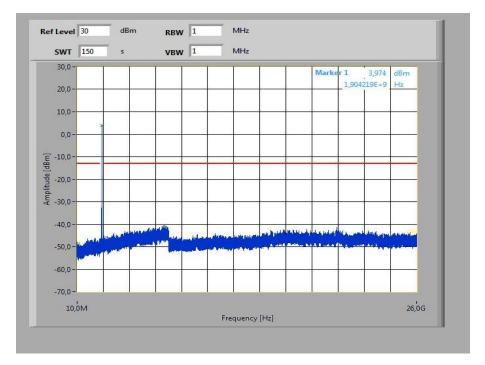
Plot 4: Lowest Channel (10 MHz – 26 GHz)

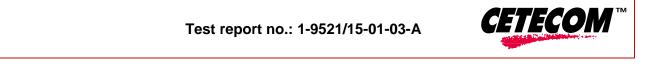


Plot 5: Middle Channel (10 MHz - 26 GHz)



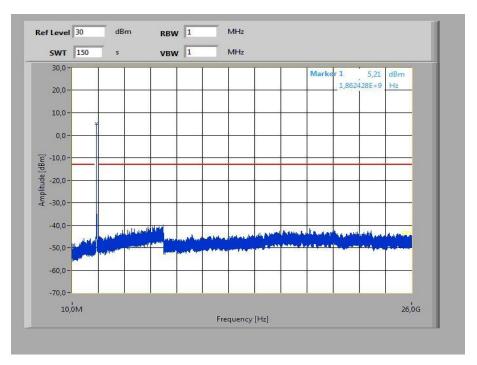




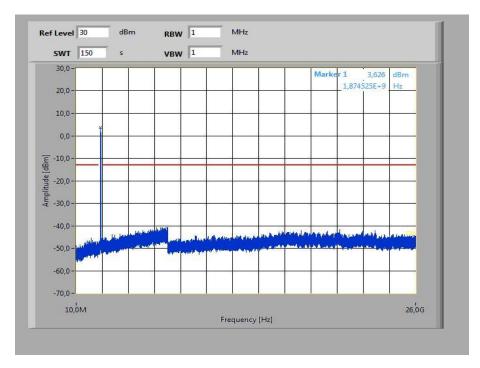


Plots: QPSK with 20 MHz channel bandwidth

Plot 1: Lowest Channel (10 MHz - 26 GHz)

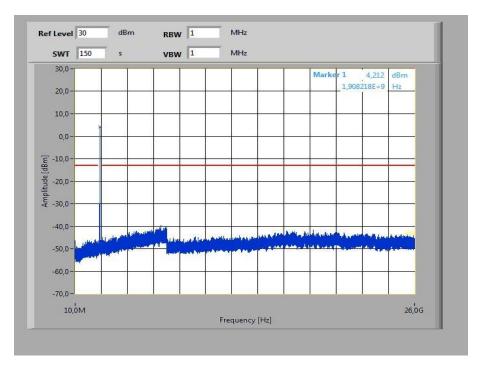


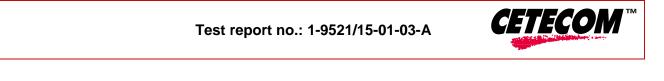
Plot 2: Middle Channel (10 MHz – 26 GHz)





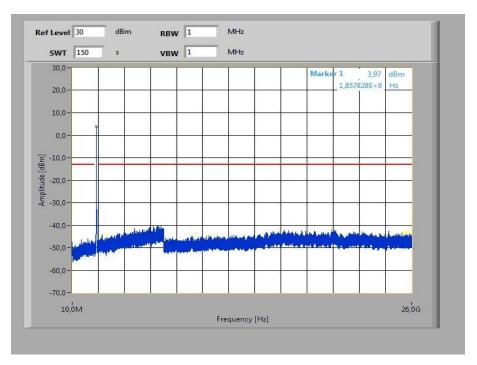
Plot 3: Highest Channel (10 MHz – 26 GHz)



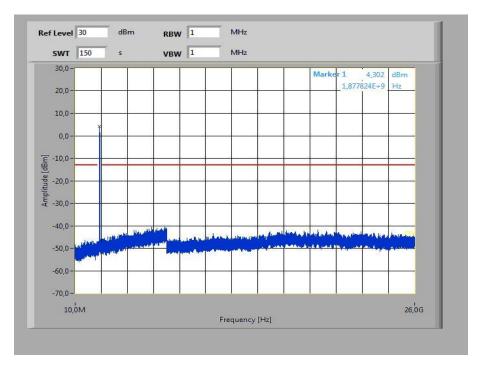


Plots: 16-QAM with 20 MHz channel bandwidth

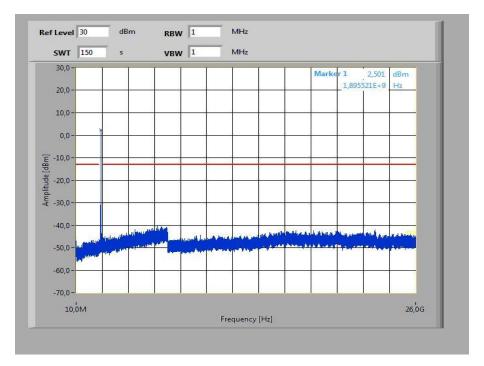
Plot 4: Lowest Channel (10 MHz - 26 GHz)



Plot 5: Middle Channel (10 MHz – 26 GHz)









11.1.5 Block edge compliance

Description:

The spectrum at the band edges must comply with the spurious emissions limits.

Measurement:

Measuremen	t parameters
Detector:	RMS
Sweep time:	30 s
Resolution bandwidth:	1% - 5% of the OBW
Video bandwidth:	≥ 3xRBW
Span:	5 MHz
Trace-Mode:	Max Hold
Used equipment:	see chapter 7.3 - A
Measurement uncertainty:	see chapter 8

Limits:

FCC	IC						
CFR Part 24.238 CFR Part 2.1051 RSS 133							
Block Edge Compliance							
Attenuation ≥ 43 + 10log(P) (P, Power in Watts)							
-13 dBm							



Results: 1.4 MHz channel bandwidth

Plot 1: Lowest channel – QPSK

Spectrum						
Ref Level Att SGL Count 1	30	Bm PR dB - SWT 30 s - VI TDF		de Auto Sweep		('
ontrolled by	CETECC	M LTE Tester, Test Cas	se Verdict:PASS 😑			
0 dBm				M1[1]		-25.58 dBn 1.849994001 GH
-10 dBm				M2[1]		-32.17 dBn 1.849500000 GH
-20 dBm						
-30 dBm						M2
-40 dBm					M3	
-50 dBm			M4			_
-60 dBm <u>- M6</u>		M5	-			
-70 dBm						
-80 dBm						
Start 1.845	GHz		10001 pt	s		Stop 1.85 GHz
1arker						
	Trc	X-value	Y-value	Function	Fun	ction Result
M1	1	1.849994001 GHz	-25.58 dBm			
M2 M3	1	1.8495 GHz 1.8485 GHz	-32.17 dBm -46.91 dBm	Band Power Band Power		-14.55 dBm -27.34 dBm
M3 M4	1	1.8485 GHZ 1.8475 GHZ	-46.91 dBm -54.57 dBm	Band Power		-27.34 dBm -39.86 dBm
M5	1	1.8465 GHz	-62.33 dBm	Band Power		-44.97 dBm
M6	1	1.8455 GHz	-63.74 dBm	Band Power		-46.40 dBm

Date: 31.JUL.2015 11:56:30

Spectrum Ref Level 10.00 dBm RBW 20 kHz 30 dB 🖷 SWT 30 s 🖷 VBW 100 kHz Att Mode Auto Sweep SGL Count 1/1 TDF Controlled by CETECOM LTE Tester, Test Case Verdict: PASS 🔵 1Rm Max -27.05 dBr M1[1] 1.910001000 GH 0 dBm-M2[1] -33.87 dBm -10 dBm-1.910500000 GH 20 dBmon dan 🕂 -40 dBm -50 dBm--60 dBm -70 dBm -80 dBm-10001 pts Stop 1.915 GHz Start 1.91 GHz Marker Mathematical System Type Ref Trc M1 1 M2 1 M3 1 M4 1 M5 1 M6 1 Y-value -27.05 dBm -33.87 dBm -47.63 dBm -57.19 dBm -62.78 dBm X-value Function Function Result X-value 1.910001 GHz 1.9105 GHz 1.9115 GHz 1.9125 GHz 1.9135 GHz 1.9145 GHz Band Power -15.65 dBm Band Power Band Power Band Power Band Power -26.84 dBm -40.11 dBm -45.07 dBm -46.25 dBm -62.86 dBm £1

Plot 2: Highest channel – QPSK

Date: 31.JUL.2015 11:57:54



Plot 3: Lowest channel - 16-QAM

Specti	um						
	evel	10.00 d		RBW 20 kHz			
Att			dB 👄 SWT 30 s 👄 🛛	/BW 100 kHz Mo	de Auto Sweep		
SGL Co			TDF				
ontrolle	dby	CETECO	OM LTE Tester, Test Ca	ise Verdict: PASS 🧲			
					M1[1]		-27.29 dBn
) dBm—	-						1.849999000 GH
-10 dBm					M2[1]		-33.09 dBn 1.849500000 GH
TO UBII						1	1.849500000 GH
-20 dBm	+						
-30 dBm	\square						M2
-40 dBm							
·+o ubiii						MB	
-50 dBm	+			M4	-		
-60 dBm	Me		MS		and the second s		
-60 UBIII	-		Card and the second				
70 dBm	+						
-80 dBm							
Start 1	045	011-2		10001 p	+ <i>c</i>		Stop 1.85 GHz
larker	.040	GHZ		10001 p			3000 1.83 6Hz
Type	Pof	Trc	X-value	Y-value	Function	Eur	iction Result
M1	Kei	1	1.849999 GHz	-27.29 dBm	Function	Fui	iction Result
M2		1	1.8495 GHz	-33.09 dBm	Band Power		-15.35 dBm
MЗ		1	1.8485 GHz	-47.56 dBm	Band Power		-29.06 dBm
M4		1	1.8475 GHz	-56.91 dBm	Band Power		-41.43 dBm
M5		1	1.8465 GHz	-62.73 dBm	Band Power		-45.52 dBm
M6		1	1.8455 GHz	-64.15 dBm	Band Power		-47.13 dBm

Date: 31.JUL.2015 11:57:07

Pofis	aval	10.00 c	iBm — D	BW 20 kHz			
Att	ever		idB 🖷 SWT 30 s 🖷 V		de Auto Sweep		
SGL Co	unt 1		TDF	DW IOU KHZ WO	ue Auto Sweep		
			OM LTE Tester, Test Ca	sa Vardict: BASS 🗛	1Dm May		
Soncione	50 Dy	CETEC			M1[1]		-27.34 dBr
o -10					(TIT)		1.910007499 GH
0 dBm—					M2[1]		-34.17 dBr
-10 dBm)						1.910500000 GH
<mark>1</mark> 20 dBm							
SO dAn	M2						
			<u> </u>				
-40 dBm	∩		MB				
-50 dBm	ד ו			M4			
-60 dBm	n——			The second se		M5	M6
-70 dBm	-+-						
-80 dBm							
-00 001	'						
Start 1	.91 G	Hz		10001 pt	s		Stop 1.915 GHz
Marker							
Type	Ref	Trc	X-value	Y-value	Function	Fund	tion Result
M1		1	1.910007499 GHz	-27.34 dBm			
M2		1	1.9105 GHz	-34.17 dBm	Band Power		-16.25 dBm
MЗ		1	1.9115 GHz	-47.27 dBm	Band Power		-28.29 dBm
M4		1	1.9125 GHz	-58.48 dBm	Band Power		-41.54 dBm
M5		1	1.9135 GHz	-62.40 dBm	Band Power		-45.35 dBm
M6		1	1.9145 GHz	-63.73 dBm	Band Power		-46.79 dBm

Plot 4: Highest channel – 16-QAM

Date: 31.JUL.2015 11:58:31



Results: 3 MHz channel bandwidth

Plot 1: Lowest channel - QPSK

Spectrum						
Ref Level Att SGL Count :	30	Bm e R dB e SWT 30 s e V TDF		de Auto Sweep		, , , , , , , , , , , , , , , , , , ,
Controlled by	CETECO	OM LTE Tester, Test Ca	se Verdict: PASS 🔵	1Rm Max		
0 dBm				M1[1]		-26.60 dBm 1.849995500 GHa
-10 dBm				M2[1]		-32.66 dBm 1.849500000 GHa
-20 dBm						n n
-30 dBm					M3	M2
-40 dBm		M5				
-50 dBm		-				
-60 dBm						
-70 dBm						
-80 dBm						
Start 1.845	GHz		10001 p	ts		Stop 1.85 GHz
1arker						
	Trc	X-value	Y-value	Function	Fund	ction Result
M1	1	1.8499955 GHz	-26.60 dBm			
M2	1	1.8495 GHz	-32.66 dBm	Band Power		-16.75 dBm
M3 M4	1	1.8485 GHz 1.8475 GHz	-35.69 dBm -36.26 dBm	Band Power Band Power		-20.57 dBm -23.56 dBm
M4 M5	1	1.8475 GHz	-36.26 UBm	Band Power		-23.56 uBm
M6	1	1.8455 GHz	-53.02 dBm	Band Power		-38.01 dBm
	Π			Ready		31.07.2015

Date: 31.JUL.2015 11:59:22

Spectrum Ref Level 10.00 dBm RBW 30 kHz 30 dB 🖷 SWT 30 s 🖷 VBW 100 kHz Att Mode Auto Sweep SGL Count 1/1 TDF Controlled by CETECOM LTE Tester, Test Case Verdict: PASS 🔵 1Rm Max -26.04 dBm 1.910003000 GHa M1[1] 0 dBm-M2[1] -34.78 dBm -10 dBm-1.910500000 GH -20 dBm 30 dBm— -40 dBm--50 dBm--60 dBm -70 dBm -80 dBm-10001 pts Stop 1.915 GHz Start 1.91 GHz Marker Mathematical System Type Ref Trc M1 1 M2 1 M3 1 M4 1 M5 1 M6 1 Y-value -26.04 dBm -34.78 dBm -36.70 dBm -36.56 dBm -46.68 dBm X-value Function Function Result X-value 1.910003 GHz 1.9105 GHz 1.9115 GHz 1.9125 GHz 1.9135 GHz 1.9145 GHz Band Power -18.86 dBm Band Power Band Power Band Power Band Power -21.80 dBm -23.13 dBm -31.34 dBm -39.45 dBm -54.78 dBm 100

Plot 2: Highest channel – QPSK

Date: 31.JUL.2015 12:00:46



Plot 3: Lowest channel - 16-QAM

Spectr	um						
	vel	10.00 d		BW 30 kHz			· · · · ·
Att			dB 👄 SWT 30 s 👄 ۷	/BW 100 kHz Mc	de Auto Sweep		
SGL Co			TDF DM LTE Tester, Test Ca	an Undint: DACC a	1Dec Marc		
ontrolle	<u>а ву</u>	CETEC	JM LIE Tester, Test Ca	ise verdict: PASS 🤅			
					M1[1]		-25.80 dBr 1.849998000 GH
0 dBm—					M2[1]		-33.56 dBr
-10 dBm							1.849500000 GH
-20 dBm	_						
-30 dBm							M2
-30 ubiii				M4		IN D	
-40 dBm	_		MS				
-50 dBm	MO						
-60 dBm	_						
-70 dBm							
-80 dBm							
Start 1	845	GHz		10001 p	ts		Stop 1.85 GHz
/larker							
Туре	Ref	Trc	X-value	Y-value	Function	Fu	nction Result
M1		1	1.849998 GHz	-25.80 dBm			
M2		1	1.8495 GHz	-33.56 dBm	Band Power		-16.98 dBm
MЗ		1	1.8485 GHz	-35.94 dBm	Band Power		-20.76 dBm
M4		1	1.8475 GHz	-39.28 dBm	Band Power		-25.50 dBm
M5 M6		1	1.8465 GHz 1.8455 GHz	-47.90 dBm -55.52 dBm	Band Power Band Power		-32.58 dBm -39.70 dBm
INID		1	1.8455 GH2	-55.52 UBM	banu POwer		-39.70 UBM

Date: 31.JUL.2015 11:59:59

Ref Le	vel	10.00	dBm 🖷 🛚	BW 30 kHz			
Att	5961		0 dB 🖷 SWT 30 s 🖷 V		de Auto Sweep		
SGL Co	unt 1			DW 100 KH2 140	ue Auto Sweep		
			OM LTE Tester, Test Ca:	se Verdict: BASS	1Pm May		
oontrone		02120			M1[1]		-26.05 dBr
0 dBm—							1.910000000 GH
U UBIII-					M2[1]		-34.22 dBr
-10 dBm							1.910500000 GH
1-20 dBm							
Q dBm	<u>_M2</u>		1713				
		-		M4			
-40 dBm					And the second sec	M5	
-50 dBm	<u> </u>						M6
							Statistics of the local division of the loca
-60 dBm							
-70 dBm							
-70 001	'						
-80 dBm							
Start 1	.91 G	Hz		10001 pt	ts		Stop 1.915 GHz
Marker							
Туре	Ref	Trc	X-value	Y-value	Function	Fund	ction Result
M1		1	1.91 GHz	-26.05 dBm			
M2		1	1.9105 GHz	-34.22 dBm	Band Power		-18.17 dBm
M3 M4		1	1.9115 GHz	-36.37 dBm	Band Power		-21.43 dBm
M4 M5		1	1.9125 GHz 1.9135 GHz	-38.72 dBm -47.28 dBm	Band Power Band Power		-25.03 dBm -32.33 dBm
M6		1	1.9135 GHz	-53.96 dBm	Band Power		-39.18 dBm

Plot 4: Highest channel – 16-QAM

Date: 31.JUL.2015 12:01:23



Results: 5 MHz channel bandwidth

Plot 1: Lowest channel – QPSK

0 dBm Image: constraint of the second seco	
M1[1] -2' 0 dBm M2[1] -10 dBm M2[1] -20 dBm 1.849500 -30 dBm M3 -30 dBm M5 -40 dBm M3 -50 dBm -60 dBm -60 dBm -60 dBm -70 dBm -70 dBm -80 dBm -70 dBm -70 dBm -70 dBm -80 dBm -70 dBm -80 dBm -70 dBm -70 dBm -70 dBm -70 dBm -70 dBm -70 dBm -70 dBm -80 dBm -70 dBm -80 dBm -70 dBm -70	
0 dBm	
-10 dBm 1.849500 -20 dBm 1.849500 -20 dBm 1.849500 -30 dBm 1.849500 -30 dBm 1.849500 -30 dBm 1.849500 -30 dBm 1.849500 -50 dBm 1.84990 -50 dBm 1.849900 -50 dBm 1.849900 -50 dBm 1.849900 -50 dBm 1.849900 -50 dBm 1.849000 -50 dBm	
-30 dBm	1.47 dBr 0000 GH
40 dBm MS V -50 dBm -50 dBm -50 dBm -60 dBm -60 dBm -70 dBm -70 dBm -70 dBm -70 dBm -80 dBm -70 dBm -70 dBm -80 dBm -70 dBm -70 dBm -70 dBm -70 dBm -70 dBm -70 dBm -70 dBm -70 dBm -80 dBm -70 dBm -70 dBm	
-50 dBm	
-60 dBm	
TO dBm To dBm<	
B0 dBm Image: Constraint of the second	
Start 1.845 GHz 10001 pts Stop 1 Jarker Type Ref Trc X-value Y-value Function Function Result M1 1 1.849999 GHz -27.12 dBm	
Marker Type Ref Trc X-value Y-value Function Function Result M1 1 1.849999 GHz -27.12 dBm	
Type Ref Trc X-value Y-value Function Function Result M1 1 1.849999 GHz -27.12 dBm	1.85 GHz
M1 1 1.849999 GHz -27.12 dBm	
M2 1 1 8495 GHz -31 47 dBm Band Power -18	
	8.19 dBm
	1.26 dBm
	3.18 dBm
	5.01 dBm
M6 1 1.8455 GHz -43.56 dBm Band Power -28	

Date: 31.JUL.2015 12:02:14

Pofle	lovel	10.00 di	3m 🖷 RE	3W 50 kHz			(
Att	sver		dB 🖷 SWT 30 s 🖷 VI		de Auto Sweep		
SGL Co	unt 1		TDF	377 200 KHZ 910	ue Auto Sweep		
			M LTE Tester, Test Cas	o Vordict: DACC	1Dm Mov		
, on thome	u by	CETECC	IN LIE IESTEI, IEST Cas	e veruict. PASS U	M1[1]		-27.70 dB
					MILI		1.910001000 GF
0 dBm—	-						
-10 dBm					M2[1]		-33.86 dB
-10 aBir						1	1.910500000 GF
-20 dBm							
-20 dBm	<u>_M2</u>			M4		M5	
					-	MP.	M6
-40 dBm							Statement of the local division of the local
-50 dBm							
-60 dBm							-
70 10							
-70 dBm							
-80 dBm	-						
Start 1	91.6	Hz		10001 pt	<u>ج</u>		Stop 1.915 GH:
/larker							
Type	Ref	Tre	X-value	Y-value	Function	Fur	nction Result
M1	Ker	1	1.910001 GHz	-27.70 dBm	ranction	1 41	iction Result
M2		1	1.9105 GHz	-33.86 dBm	Band Power		-20.56 dBm
M3		1	1.9115 GHz	-36.27 dBm	Band Power		-23.39 dBm
M4		1	1.9125 GHz	-38.28 dBm	Band Power		-24.66 dBm
M5		1	1.9135 GHz	-38.60 dBm	Band Power		-25.58 dBm
M6		1	1.9145 GHz	-41.29 dBm	Band Power		-27.79 dBm

Plot 2: Highest channel – QPSK

Date: 31.JUL.2015 12:03:38



Plot 3: Lowest channel - 16-QAM

Spectr	um							
Ref Le Att SGL Cou		30			W 50 kHz W 200 kHz Mc	de Auto Swee	2	, , , , , , , , , , , , , , , , , , ,
			. = .	Test Casi	e Verdict: PASS 🤇	1Rm Max		
0 dBm—						M1[1]		-27.12 dBm 1.849998500 GHz
-10 dBm						M2[1]	I	-32.16 dBm 1.849500000 GHz
-20 dBm-	_							M
-30 dBm·			MS	-			MB	M2
-40 dBm·	MG	_						
-50 dBm·								
-60 dBm-								
-70 dBm								
-80 dBm-								
Start 1.	845	GHz			10001 p	ts		Stop 1.85 GHz
Marker					· · ·			•
Type	Ref	Trc	X-value		Y-value	Function	Fun	ction Result
M1		1	1.849998		-27.12 dBm			
M2		1		5 GHz	-32.16 dBm	Band Power		-18.39 dBm
MЗ		1		5 GHz	-33.22 dBm	Band Power		-20.78 dBm
M4		1		5 GHz	-36.55 dBm -39.73 dBm	Band Power		-23.23 dBm
M5 M6		1		5 GHz 5 GHz	-39.73 dBm -44.72 dBm	Band Power Band Power		-26.74 dBm -31.27 dBm
		Υ				Ready		31.07.2015

Date: 31.JUL.2015 12:02:51

Doft		 10.00 c	ID see	- 004	/ 50 kHz				(2
Att	ever		dB 👄 SWT 30 s						
SGL Co			TDF	• • • • •	200 KH2	ioae A	Auto Sweep		
			DF DM LTE Tester, Tes	Casa	Verdiet, DACC	10m	Mau		
JUNITONE	su by	CETEC	JM LIE Tester, Tes	t Case	Veruict: PASS	1 Km			-29.36 dBr
							M1[1]		-29.36 dBr 1.910004000 GH
0 dBm—							-		-34.57 dBr
-10 dBm							M2[1]		-34.57 dBr 1.910500000 GH
-10 050							_	1	1.910300000 GH
-20 dBm	∩—								
1									
30 dBm) — M2	_	- MP		M4			MS	
-40 dBm				_	×	-		IV 5	M6
10 001	'								
-50 dBm	1— -								
-60 dBm									
-00 UBII									
-70 dBm	ι <u> </u>								
-80 dBm) 								
Start 1	.91 G	Hz			10001	pts			Stop 1.915 GHz
Marker									
Туре	Ref	Trc	X-value		Y-value		unction	Fι	Inction Result
M1		1	1.910004 0		-29.36 dBm				
M2		1	1.9105 @		-34.57 dBn		and Power		-20.83 dBm
MЗ		1	1.9115 G		-35.50 dBm		and Power		-23.05 dBm
M4		1	1.9125 G		-37.62 dBm		and Power		-24.76 dBm
M5 M6		1	1.9135 G 1.9145 G		-40.46 dBn -44.21 dBn		and Power and Power		-27.01 dBm -30.48 dBm
IMP			1.9145 0	HZ	-44.21 aBn	I Ba	anu Power		-30.48 aBm

Plot 4: Highest channel – 16-QAM

Date: 31.JUL.2015 12:04:15



Results: 10 MHz channel bandwidth

Plot 1: Lowest channel – QPSK

Spectrum						
Ref Level Att SGL Count 1	30	Bm • F dB • SWT 30 s • V TDF	RBW 100 kHz /BW 300 kHz Mo	de Auto Sweep		
Controlled by	CETEC	OM LTE Tester, Test Ca	ise Verdict: PASS 🧲	1Rm Max		
0 dBm				M1[1]		-28.63 dBm 1.849999500 GHz
-10 dBm				M2[1]	I	-30.52 dBm 1.849500000 GHz
-20 dBm						
-30 dBm6			M4		МЗ	M2 1
-40 dBm		-				
-50 dBm						
-60 dBm						
-70 dBm						
-80 dBm						
Start 1.845	GHz		10001 p	ts		Stop 1.85 GHz
1arker						
Type Ref	Trc	X-value	Y-value	Function	Fund	ction Result
M1	1	1.8499995 GHz	-28.63 dBm			
M2	1	1.8495 GHz	-30.52 dBm	Band Power		-20.56 dBm
M3	1	1.8485 GHz	-31.92 dBm	Band Power		-22.32 dBm
M4 M5	1	1.8475 GHz 1.8465 GHz	-34.30 dBm -35.55 dBm	Band Power Band Power		-24.08 dBm -25.82 dBm
M6	1	1.8465 GHz 1.8455 GHz	-35.55 UBM -37.46 dBm	Band Power		-25.82 uBm
][Ready		31.07.2015

Date: 31.JUL.2015 12:05:06

Ref Le	vel	10.00 c	iBm 😑	RBW 100 kHz			
Att			dB 👄 SWT 30 s 👄 '		de Auto Sweep		
SGL Co	unt 1	/1	TDF		····		
Controlle	d by	CETEC	OM LTE Tester, Test C	ase Verdict: PASS 🤇	1Rm Max		
	Í				M1[1]		-30.66 dB
0 dBm—							1.910001000 GF
					M2[1]		-33.03 dB
-10 dBm	-						1.910500000 GF
-20 dBm							
1							
<u>-30 dBm</u>	11/2		M	M4		M5	M6
-40 dBm						*	
-40 0511							
-50 dBm							
-60 dBm							
-70 dBm							
-80 dBm							
00 00111							
Start 1.	91 G	Hz		10001 p	its		Stop 1.915 GHz
Marker							
	Ref	Trc	X-value	Y-value	Function	Fur	nction Result
M1		1	1.910001 GHz	-30.66 dBm			
M2		1	1.9105 GHz	-33.03 dBm	Band Power		-23.12 dBm
MЗ		1	1.9115 GHz	-35.02 dBm	Band Power		-24.79 dBm
M4		1	1.9125 GHz	-36.23 dBm	Band Power		-26.39 dBm
M5 M6		1	1.9135 GHz 1.9145 GHz	-37.31 dBm -38.53 dBm	Band Power Band Power		-27.57 dBm -28.57 dBm

Plot 2: Highest channel – QPSK

Date: 31.JUL.2015 12:06:30



Plot 3: Lowest channel - 16-QAM

Spectr	um							
Ref Le Att SGL Co			dBm) dB e SWT 30 TDF		W 100 kHz W 300 kHz M	ode Auto Swee	ep	
			. = .	Test Cas	e Verdict: PASS	1Rm Max		
0 dBm—						M1[1]		-28.44 dBm 1.849993501 GHz
-10 dBm	_					M2[1]	I	-31.18 dBm 1.849500000 GHz
-20 dBm								M
-30 dBm	M6			5	M4		MЗ	M2
-40 dBm	-							
-50 dBm	_							
-60 dBm					_			
-70 dBm	_							
-80 dBm	-							
Start 1	.845	GHz			10001	pts		Stop 1.85 GHz
Marker								
Туре	Ref	Trc	X-value		Y-value	Function	Fu	Inction Result
M1		1	1.84999350		-28.44 dBm			
M2		1		95 GHz	-31.18 dBm			-21.03 dBm
M3 M4		1		35 GHz 75 GHz	-31.49 dBm -33.04 dBm			-22.40 dBm -23.92 dBm
M4		1		5 GHz	-35.53 dBm			-25.30 dBm
M6		1		55 GHz	-37.35 dBm			-26.96 dBm
][Ready		31.07.2015

Date: 31.JUL.2015 12:05:43

Ref Le	lovel	10.00	dBm 🚍 P	BW 100 kHz			()
Att	sver		0 dB 👄 SWT 30 s 👄 V		de Auto Sweep		
SGL Co	unt 1		TDF	DW 300 KH2 140	ue Auto Sweep		
			OM LTE Tester, Test Ca:	se Verdict: BASS	1Pm May		
oonti one					M1[1]		-31.90 dBr
0 dBm—							1.910005499 GH
o ubiii					M2[1]		-33.51 dBr
-10 dBm							1.910500000 GH
00 JP							
-20 dBm							
- 30 dBm	<u>M2</u>		M3	17		MC	M6
						1415	MO
-40 dBm							
-50 dBm							
-60 dBm							
-70 dBm							
70 abiii	·						
-80 dBm							
Start 1	.91 G	Hz		10001 pt	ts		Stop 1.915 GHz
Marker							
Туре	Ref	Trc	X-value	Y-value	Function	Fu	Inction Result
M1		1	1.910005499 GHz	-31.90 dBm			
M2		1	1.9105 GHz	-33.51 dBm	Band Power		-23.74 dBm
M3		1	1.9115 GHz	-34.90 dBm	Band Power		-25.11 dBm
M4 M5		1	1.9125 GHz 1.9135 GHz	-36.11 dBm -37.19 dBm	Band Power Band Power		-26.32 dBm -27.45 dBm
M6		1	1.9135 GHz	-37.89 dBm	Band Power		-28.52 dBm

Plot 4: Highest channel – 16-QAM

Date: 31.JUL.2015 12:07:07



Results: 15 MHz channel bandwidth

Plot 1: Lowest channel – QPSK

Spectru	m)									
Ref Lev Att SGL Cour			SWT 30 TDF		BW 200 kHz BW 1 MHz	Mod	de Auto Swe	ер			
Controlled	by CET	ECOM L	.TE Tester,	Test Cas	e Verdict: PAS	5 😐	1Rm Max				
0 dBm	<u> </u>						M1[1] M2[1]			1.8499	-28.12 dBm 999500 GHz -29.21 dBm
-10 dBm—											500000 GHz
-20 dBm—				-	M	4		м	3	P	12 N
-30 dBm—	МБ		14	-							1
-40 dBm—											
-50 dBm—											
-60 dBm—											
-70 dBm—											
-80 dBm—											
Start 1.8	45 GHz				1000	1 pt	s			Sto	p 1.85 GHz
Marker						•					
Type R	ef Tro	:	X-value	1	Y-value	- 1	Function		Fun	ction Resul	t
M1		1	1.849999		-28.12 dB						
M2		1		95 GHz	-29.21 dB		Band Powe				-22.29 dBm
MЗ		1		35 GHz	-29.09 dB		Band Powe				-22.23 dBm
M4		1		75 GHz	-30.00 dB		Band Powe				-22.92 dBm
M5 M6		1		55 GHz 55 GHz	-32.34 dB -33.17 dB		Band Powe Band Powe				-25.42 dBm -27.03 dBm
							Ready	(4,40	31.07.2015

Date: 31.JUL.2015 12:07:58

Refle	vel	10.00 d	iBm 🖷 RI	3W 200 kHz			×
Att			dB 🖷 SWT 30 s 🖷 VI		de Auto Sweep		
SGL Co	unt 1		TDF		ue Auto Sweep		
			OM LTE Tester, Test Cas	e Verdict: BASS	1Pm May		
		02120			M1[1]		-30.01 dB
0 dBm—							1.910014999 G
u ubiii—					M2[1]		-30.49 dB
-10 dBm							1.910500000 GF
-20 dBm 1	- 10						
- 90 dBm	17 2		M3	M4		M5	M6
00 000							
-40 dBm							
-50 dBm							
-30 000	'						
-60 dBm							
-70 dBm							
-70 uBn							
-80 dBm							
Start 1	.91 G	Hz		10001 pt	ts		Stop 1.915 GH:
larker							
Type	Ref	Trc	X-value	Y-value	Function	Fu	Inction Result
M1		1	1.910014999 GHz	-30.01 dBm			
M2		1	1.9105 GHz	-30.49 dBm	Band Power		-23.99 dBn
MЗ		1	1.9115 GHz	-31.40 dBm	Band Power		-24.34 dBm
M4		1	1.9125 GHz	-32.15 dBm	Band Power		-25.40 dBm
M5		1	1.9135 GHz	-33.83 dBm	Band Power		-27.51 dBm
M6		1	1.9145 GHz	-35.23 dBm	Band Power		-28.71 dBm

Plot 2: Highest channel – QPSK

Date: 31.JUL.2015 12:09:22



Plot 3: Lowest channel - 16-QAM

Ref Level 10.00 dBm RBW 200 kHz Att 30 dB SWT 30 s VBW 1 MHz Mode Auto Sweep SGL Count 1/1 TDF Controlled by CETECOM LTE Tester, Test Case Verdict: PASS IRm Max 0 dBm M1[1] -28.07 dE 1.849995000 G -10 dBm M2[1] -29.02 dE -20 dBm M5 M4 M3 M2 -30 dBm M5 M4 M3 M2 -30 dBm M5 M4 M3 M2 -50 dBm M5 M4 M3 M2 -70 dBm -80 dBm -80 dBm -80 dBm -80 dBm -728.07 dBm M1 1 1.849995 GHz -28.07 dBm -28.07 dBm -29.02 dBm M2 1 1.8495 GHz -29.02 dBm Band Power -22.15 dB M1 1 1.849995 GHz -28.07 dBm -28.07 dBm -28.07 dBm -80 dBm -1 1.0001 pts Stop 1.85 GH -22.15 dB M3 <td< th=""><th>Spectr</th><th>um</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>	Spectr	um									
0 dBm	Att		30) dB 👄 SWT 30 s			lode Auto	Sweep			
0 dBm Image: state of the	Controlle	ed by	CETEC	OM LTE Tester, Te	est Case \	/erdict: PASS	⊖1Rm Ma	(
-10 dBm -10 dBm 1.84950000 G -20 dBm MS M4 M3 M2 -30 dBm MS M4 M3 M2 -40 dBm - - - - -40 dBm - - - - -50 dBm - - - - -60 dBm - - - - -60 dBm - - - - -70 dBm - - - - -80 dBm - - - - -70 dBm - - - - -80 dBm - - - - -70 dBm - - - - -80 dBm - - - - -80 dBm - - - - -70 dBm - - - - -80 dBm - - - - -80 dBm - - - - -81 dBm - - - - M1 1 1 - - - M2 1 1 - M3 1 1	0 dBm—									1.84999	
-30 dBm / 6 / 15 / 1.849995 GHz -29.02 dBm / 6 / 22.15 dBm / 7 / 22.15 dBm /	-10 dBm	-					M	2[1]	1		
-40 dBm				ME		M4			мз	Ma	2 M
-50 dBm -50 dBm -60 dBm -70 dBm -70 dBm -80 dBm -70 dBm -80 dBm -70 dBm -70 dBm -70 dBm -80 dBm -70 dBm -80	-30 dBm	<u>M6</u>		113	_					1	
-60 dBm -70 dBm -72 dBm	-40 dBm	-									
-70 dBm -70 dBm -80 dBm -20	-50 dBm	·+									
Bit Bard Stop 1.85 GHz 10001 pts Stop 1.85 GH Arker	-60 dBm										-
Start 1.845 GHz 10001 pts Stop 1.85 GH Type Ref Trc X-value Y-value Function Function Result M1 1 1.849995 GHz -28.07 dBm -22.15 dBi M2 1 1.8495 GHz -29.09 dBm Band Power -22.15 dBi M3 1 1.8495 GHz -29.09 dBm Band Power -22.42 dBi M4 1 1.8475 GHz -29.50 dBm Band Power -22.86 dBi M5 1 1.8455 GHz -32.10 dBm Band Power -24.81 dBi	-70 dBm	-									
Marker Type Ref Trc X-value Y-value Function Function Result M1 1 1.849995 GHz -28.07 dBm -	-80 dBm	·+									
Marker Type Ref Trc X-value Y-value Function Function Result M1 1 1.849995 GHz -28.07 dBm	Start 1	.845	GHz			10001	nts			Ston	1.85 GHz
Type Ref Trc X-value Y-value Function Function Result M1 1 1.849995 GHz -28.07 dBm - <td></td> <td>10 10</td> <td><u></u></td> <td></td> <td></td> <td>10001</td> <td></td> <td></td> <td></td> <td>0100</td> <td>1100 0112</td>		10 10	<u></u>			10001				0100	1100 0112
M1 1 1.8499995 GHz -28.07 dBm M2 1 1.8495 GHz -29.02 dBm Band Power -22.15 dB M3 1 1.8495 GHz -29.09 dBm Band Power -22.42 dB M4 1 1.8475 GHz -29.09 dBm Band Power -22.66 dB M5 1 1.8465 GHz -29.00 dBm Band Power -22.66 dB		Ref	Trc	X-value	1	Y-value	Func	tion	Fun	ction Result	
M3 1 1.8485 GHz 29.09 dBm Band Power 22.42 dB M4 1 1.8475 GHz 29.50 dBm Band Power 22.86 dB M5 1 1.8465 GHz -32.10 dBm Band Power -24.81 dB					GHz	-28.07 dBm	1				
M4 1 1.8475 GHz -29.50 dBm Band Power -22.86 dB M5 1 1.8465 GHz -32.10 dBm Band Power -24.81 dB	M2		1	1.8495	GHz	-29.02 dBm				-2	2.15 dBm
M5 1 1.8465 GHz -32.10 dBm Band Power -24.81 dB			-								
Ready 31.07.2015	IND			1.0400		55.70 UDII	, bailu	. Jwci			

Date: 31.JUL.2015 12:08:35

Pofle		10.00 (HBm 😑	RBW 200 kHz			(:
Att	sver .) dB 👄 SWT 30 s 👄		de Auto Sweep		
SGL Co	unt 1		TDF		ide Auto Sweep		
			OM LTE Tester, Test C	ase Verdict: DASS d	1Pm May		
sonreione	, u b ;	02120			M1[1]		-30.74 dBr
0 dBm—					(IIII)		1.910007999 GH
u asm—					M2[1]		-31.75 dBr
-10 dBm							1.910500000 GH
						1	
-20 dBm							
1 - 30 dBm	M2		MB	M4		MS	
20111811							
-40 dBm	ı—————————————————————————————————————						
-50 dBm							
-60 dBm							
-70 dBm							
-80 dBm							
-00 001	'						
Start 1	01.0			10001 p	+ -		Stop 1.915 GHz
Marker	.91 0	12		10001			3(0) 1.913 312
	Ref	Trc	X-value	Y-value	Function	г.	nction Result
Type M1	Rei	1	1.910007999 GHz	-30,74 dBm	Function	Fu	nction Result
M1 M2		1	1.910007999 GHz		Band Power		-24.86 dBm
M3		1	1.9115 GHz	-32.04 dBm	Band Power		-25.20 dBm
M4		1	1.9125 GHz				-25.77 dBm
M5		1	1.9135 GHz	-34.33 dBm	Band Power		-27.56 dBm
M6		1	1.9145 GHz	-35.84 dBm	Band Power		-29.11 dBm

Plot 4: Highest channel – 16-QAM

Date: 31.JUL.2015 12:09:59



Results: 20 MHz channel bandwidth

Plot 1: Lowest channel – QPSK

Spectrum						
Ref Level Att		8m 🛛 🖷 RE dB 🖷 SWT 30 s 🖷 VE	3W 200 kHz 3W 1 MHz Mo	de Auto Sweep		
SGL Count 1		TDF				
Controlled by	CETECO	M LTE Tester, Test Cas	e Verdict: PASS 🔵			
				M1[1]		-28.21 dBn
0 dBm				M2[1]		1.849994501 GH: -29.59 dBn
-10 dBm						1.849500000 GH
-20 dBm						M2 1
-30 dBm-46		M5	M4		M3	
-40 dBm						
50 db						
-50 dBm						
-60 dBm						
-70 dBm						
, o abiii						
-80 dBm						
Start 1.845	0112		10001 pt			Stop 1.85 GHz
larker	GHZ		10001 p			Stup 1.65 GH2
	Trc	X-value	Y-value	Function	Funr	ction Result
M1	1	1.849994501 GHz	-28.21 dBm	. anotion		, and the state
M2	1	1.8495 GHz	-29.59 dBm	Band Power		-22.61 dBm
MЗ	1	1.8485 GHz	-30.78 dBm	Band Power		-23.85 dBm
M4	1	1.8475 GHz	-31.78 dBm	Band Power		-25.16 dBm
M5	1	1.8465 GHz	-33.34 dBm	Band Power		-26.28 dBm
M6	1	1.8455 GHz	-34.54 dBm	Band Power		-27.50 dBm

Date: 31.JUL.2015 12:10:50

Ref Level	10.00.49	m – D	3W 200 kHz			
Att		dB 👄 SWT 30 s 👄 VI		de Auto Cuison		
SGL Count		TDF		de Auto Sweep		
		M LTE Tester, Test Cas	o Vordict: DACC	1Dm May		
Controlled D	y CETECO	MILIE IEStel, IESt Cas	se veruict, PASS 😈	M1[1]		-29.70 dBi
				MILI		1.910012999 GF
0 dBm				M2[1]		-30.71 dB
-10 dBm						1.910500000 GF
10 0.0.11					1	1.910000000
-20 dBm		-				
1 M	2	M3	M4		ME	
						Mo
-40 dBm-						
-50 dBm						
-60 dBm						
-70 dBm						
-80 dBm						
-00 UBIII						
Start 1.91	<u>сп</u> 2		10001 pt			Stop 1.915 GHz
Marker			10001 pt	.3		3(0) 1.913 012
	f Trc	X-value	Y-value	Function	Eur	nction Result
M1	1	1.910012999 GHz	-29.70 dBm	runction	1 41	iccion Result
M2	1	1.9105 GHz	-30.71 dBm	Band Power		-23.80 dBm
M3	1	1.9115 GHz	-32.58 dBm	Band Power		-25.43 dBm
M4	1	1.9125 GHz	-33.69 dBm	Band Power		-27.02 dBm
M5	1	1.9135 GHz	-34.72 dBm	Band Power		-28.04 dBm
M6	1	1.9145 GHz	-36.11 dBm	Band Power		-29.04 dBm

Plot 2: Highest channel – QPSK

Date: 31.JUL.2015 12:12:14



Plot 3: Lowest channel - 16-QAM

Ref Lev Att SGL Cour Controlled	nt 1/:		iBm	- 65						
Controlled		1	I dB 👄 SWT 30 TDF		3W 200 kHz 3W 1 MHz N	1ode Auto	Sweep			
	by C	ETEC	OM LTE Tester,	Test Cas	e Verdict: PASS	●1Rm Max	<			
0 dBm						M	1[1]		-28 1.849985	3.61 dBn 5501 GH:
-10 dBm—	_					M	2[1]		-29 1.849500	9.58 dBn)000 GH;
-20 dBm—	-			_	M4			мз	M2	N
-30 dBm—	M6		M	5					-	
-40 dBm—	-									
-50 dBm—	_									
-60 dBm—	_								_	
-70 dBm—	_									
-80 dBm—	_									
Start 1.8	 45 G	Hz			10001	pts			Stop 1	.85 GHz
larker										
	Ref		X-value		Y-value	Func	tion	Fu	nction Result	
M1 M2		1	1.84998550	95 GHz	-28.61 dBn -29.58 dBn		Power		^>	.07 dBm
M3		1		35 GHZ	-29.58 dBr -31.18 dBr		Power			.25 dBm
M4		1		75 GHz	-31.78 dBr		Power			.37 dBm
M5		1	1.846	55 GHz	-32.93 dBr	n Band	Power		-26	.27 dBm
M6		1	1.845	55 GHz	-33.93 dBr	n Band	Power		-27	.50 dBm

Date: 31.JUL.2015 12:11:27

Ref Le	evel	10.00	dBm 🖷 RE	3W 200 kHz			
Att) dB 🖷 SWT 30 s 🖷 VB	3W 1 MHz Mo	de Auto Sweep		
SGL Co	unt 1		TDF				
			OM LTE Tester, Test Cas	e Verdict: PASS 🙃	1Rm Max		
					M1[1]		-30.65 dBr
0 dBm—							1.910010999 GH
o ubiii—					M2[1]		-31.92 dBr
-10 dBm							1.910500000 GH
-20 dBm							
1 -30 dBm	M2		M3	M4		ME	
-40 dBm							-
-50 dBm							
-SU UBII							
-60 dBm							
-70 dBm							
-80 dBm							
00 001	'						
Start 1	91.6	Hz		10001 pt	<u></u>		Stop 1.915 GHz
Marker				10001 pt			0000 11010 0112
Type	Ref	Trc	X-value	Y-value	Function	Eur	nction Result
M1	Ker	1	1.910010999 GHz	-30.65 dBm	runction	1 41	iction Result
M2		1	1.9105 GHz	-31.92 dBm	Band Power		-24.91 dBm
MЗ		1	1.9115 GHz	-33.53 dBm	Band Power		-26.37 dBm
M4		1	1.9125 GHz	-34.28 dBm	Band Power		-27.56 dBm
M5		1	1.9135 GHz	-35.11 dBm	Band Power		-28.47 dBm
M6		1	1.9145 GHz	-35.86 dBm	Band Power		-29.27 dBm

Plot 4: Highest channel – 16-QAM

Date: 31.JUL.2015 12:12:51

Verdict: compliant



11.1.6 Occupied bandwidth

Description:

Measurement of the occupied bandwidth of the transmitted signal.

Measurement:

Similar to conducted emissions, occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the LTE band II frequency band. The table below lists the measured 99% power and -26dBc occupied bandwidths. Spectrum analyzer plots are included on the following pages.

Measureme	nt parameters
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1% - 5% of the OBW
Video bandwidth:	≥ 3xRBW
Span:	2 x nominal BW
Trace-Mode:	Max Hold
Used equipment:	see chapter 7.2
Measurement uncertainty:	see chapter 8

Limits:

FCC	IC
CFR Part 24.238 CFR Part 2.1049	RSS 133
Occupied	Bandwidth
Spectrum must fall compl	etely in the specified band





Results:

Occupied Bandwidth – QPSK				
Bandwidth (MHz)	99% OBW (kHz)	-26 dBc BW (kHz)		
1.4	1093	1306		
3.0	2739	3114		
5.0	4533	5130		
10.0	9053	10169		
15.0	13427	14852		
20.0	17902	19754		

Occupied Bandwidth – 16-QAM				
Bandwidth (MHz)	99% OBW (kHz)	-26 dBc BW (kHz)		
1.4	1098	1315		
3.0	2736	3132		
5.0	4510	5156		
10.0	9047	10067		
15.0	13433	14934		
20.0	17902	19890		

Verdict: compliant



P

14.02 dBr

12.82 dBn

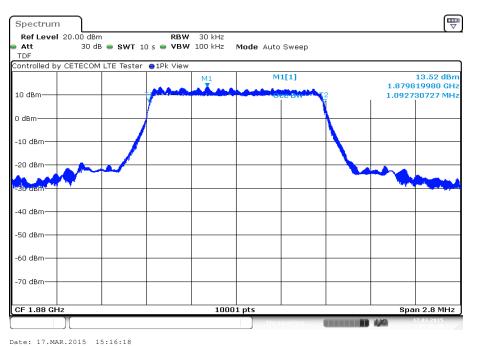
Span 2.8 MHz

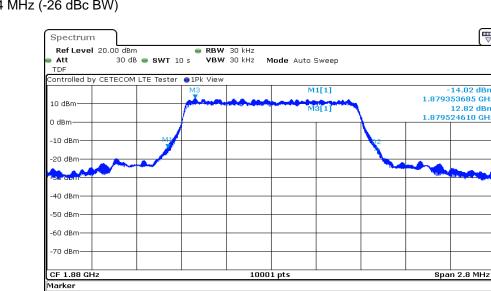
Function Result

100

Plots: QPSK

Plot 1: 1.4 MHz (99% - OBW)





X-value 1.879353685 GHz 1.305789 MHz 1.87952461 GHz

Plot 2: 1.4 MHz (-26 dBc BW)

Date: 17.MAR.2015 15:16:53

 Type
 Ref
 Trc

 M1
 1
 1

 D2
 M1
 1

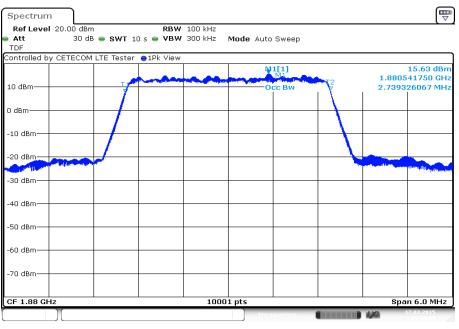
 M3
 1

Y-value -14.02 dBm 0.99 dB 12.82 dBm

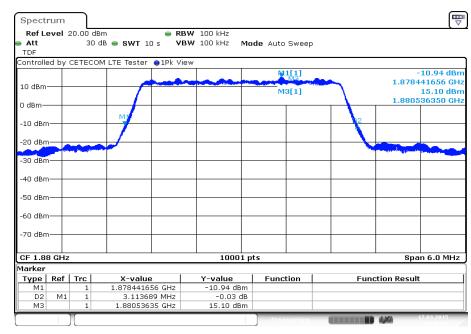
Function



Plot 3: 3 MHz (99% - OBW)



Date: 17.MAR.2015 15:44:58

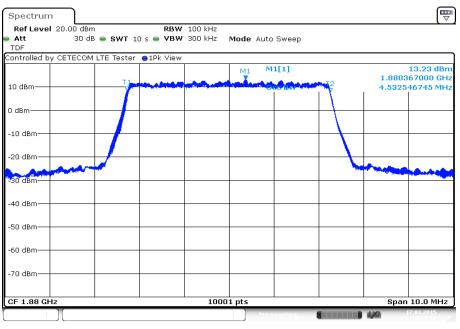


Plot 4: 3 MHz (-26 dBc BW)

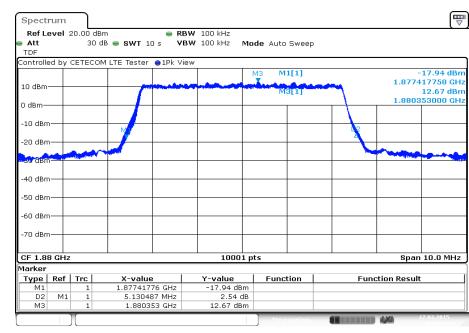
Date: 17.MAR.2015 15:45:33



Plot 5: 5 MHz (99% - OBW)



Date: 17.MAR.2015 16:15:19

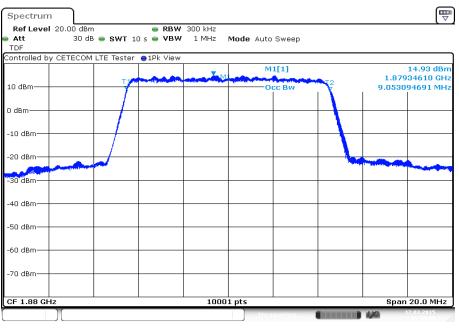


Plot 6: 5 MHz (-26 dBc BW)

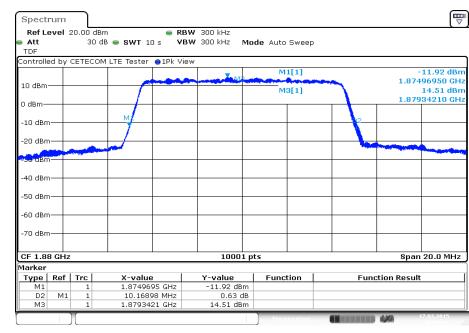
Date: 17.MAR.2015 16:15:53



Plot 7: 10 MHz (99% - OBW)



Date: 17.MAR.2015 16:44:09

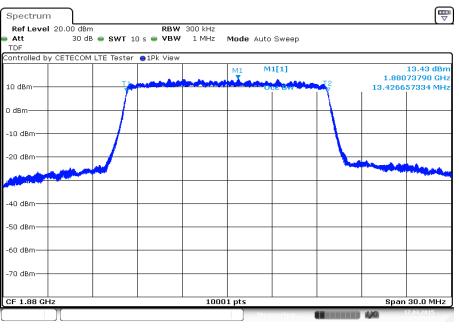


Plot 8: 10 MHz (-26 dBc BW)

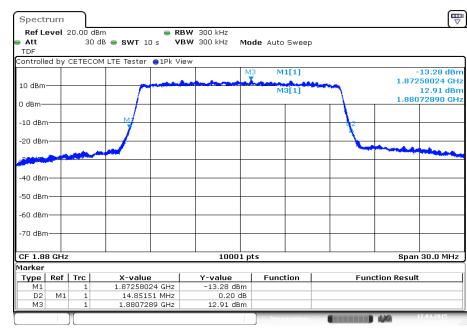
Date: 17.MAR.2015 16:44:44



Plot 9: 15 MHz (99% - OBW)



Date: 17.MAR.2015 17:15:18

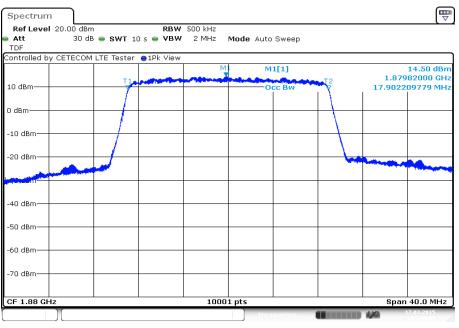


Plot 10: 15 MHz (-26 dBc BW)

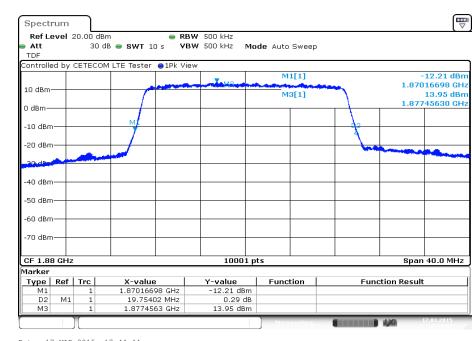
Date: 17.MAR.2015 17:15:52



Plot 11: 20 MHz (99% - OBW)



Date: 17.MAR.2015 17:44:09



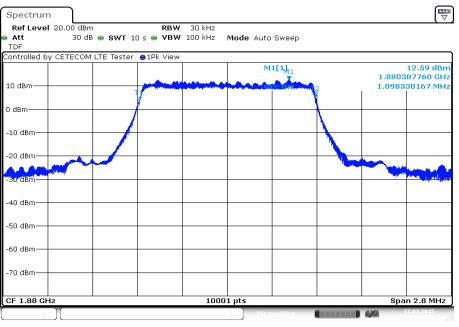
Plot 12: 20 MHz (-26 dBc BW)

Date: 17.MAR.2015 17:44:44

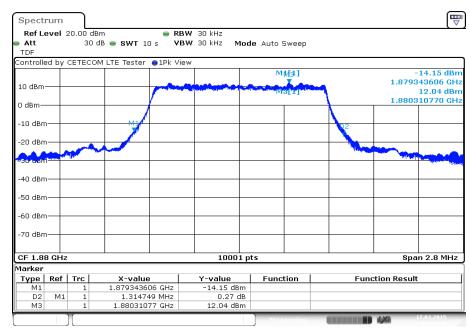


Plots: 16-QAM

Plot 1: 1.4 MHz (99% - OBW)



Date: 17.MAR.2015 15:21:13

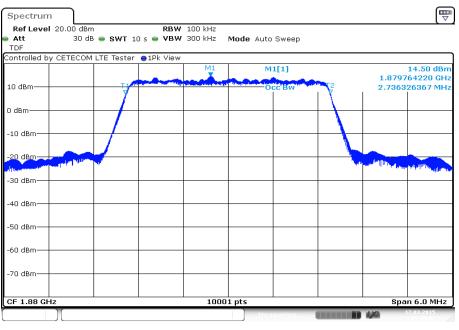


Plot 2: 1.4 MHz (-26 dBc BW)

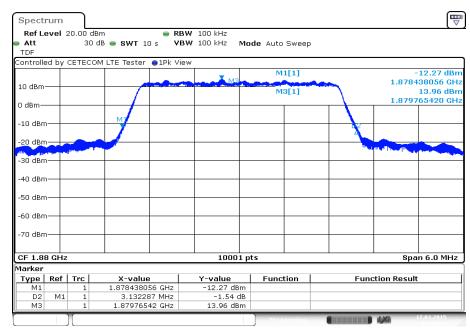
Date: 17.MAR.2015 15:21:48



Plot 3: 3 MHz (99% - OBW)



Date: 17.MAR.2015 15:49:53

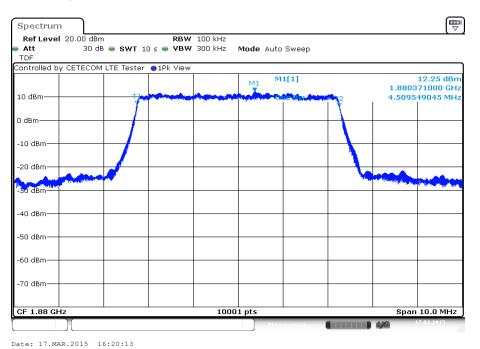


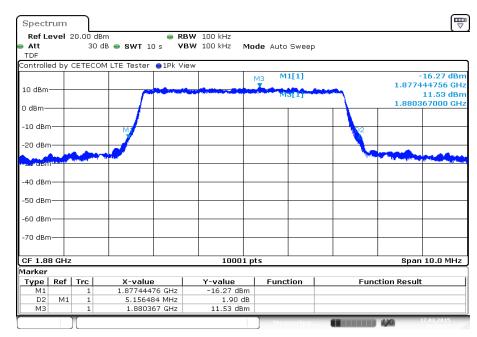
Plot 4: 3 MHz (-26 dBc BW)

Date: 17.MAR.2015 15:50:28



Plot 5: 5 MHz (99% - OBW)



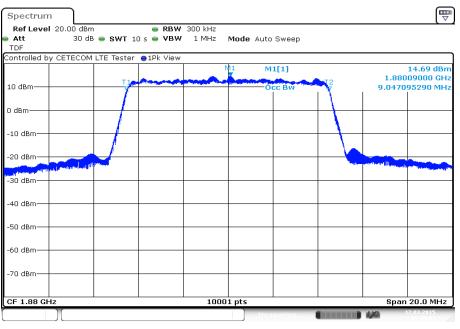


Plot 6: 5 MHz (-26 dBc BW)

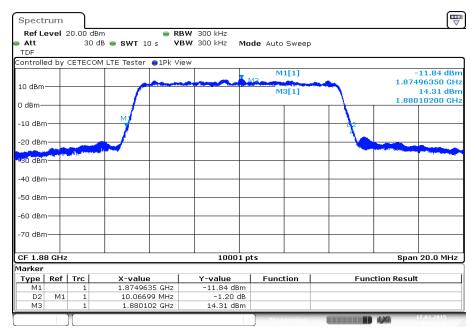
Date: 17.MAR.2015 16:20:48



Plot 7: 10 MHz (99% - OBW)



Date: 17.MAR.2015 16:49:04



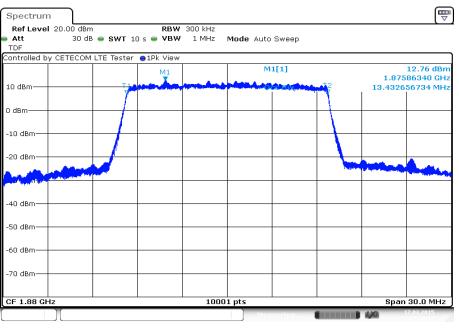
Plot 8: 10 MHz (-26 dBc BW)

Date: 17.MAR.2015 16:49:39

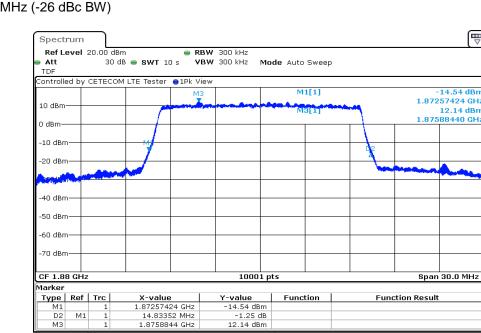


﹐

Plot 9: 15 MHz (99% - OBW)



Date: 17.MAR.2015 17:20:13



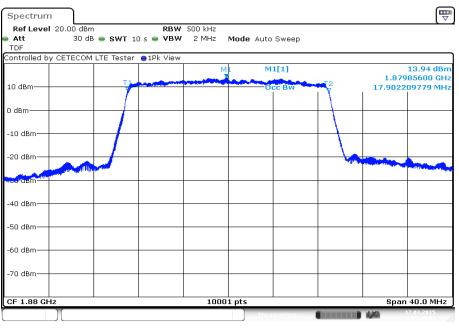
Plot 10: 15 MHz (-26 dBc BW)

Date: 17.MAR.2015 17:20:47

1.8758844 GHz

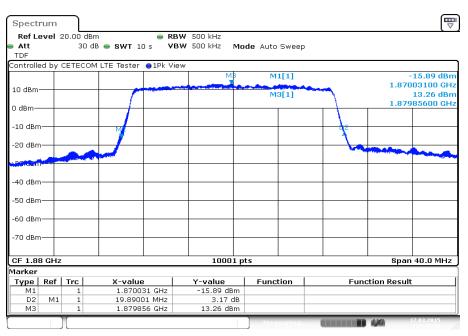


Plot 11: 20 MHz (99% - OBW)



Date: 17.MAR.2015 17:49:04

Plot 12: 20 MHz (-26 dBc BW)



Date: 17.MAR.2015 17:49:39



12 Observations

No observations except those reported with the single test cases have been made.

Annex A Document history

Version	Applied changes	Date of release	
	Initial release	2015-06-23	
А	Editorial changes	2015-08-04	

Annex B Further information

<u>Glossary</u>

AVG	-	Average
DUT	-	Device under test
EMC	-	Electromagnetic Compatibility
EN	-	European Standard
EUT	-	Equipment under test
ETSI	-	European Telecommunications Standard Institute
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	Not applicable
PP	-	Positive peak
QP	-	Quasi peak
S/N	-	Serial number
SW	-	Software



Annex C Accreditation Certificate

Front side of certificate	Back side of certificate
DAKKS Doutsche Aktred überungsselle	
Deutsche Akkreditierungsstelle GmbH	Deutsche Akkreditierungsstelle GmbH
Bellehene gemäß § § Absatz 1 AkkStelle G I.V.m. § 1 Absatz 1 AkkStelle GBV Unterzeichnerin der Multilateralen Abkommen von EA, ILAC und IAF zur gegenseitigen Anerkennung	Standort Berlin Standort Frankfurt am Main Standort Brounochweig Spittelmarkt 10 Gartenstraße 6 Bundesalice 100 10117 Serlin 60594 Frankfurt am Main 38116 Braunschweig
Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium	
CETECOM ICT Services GmbH Untertürkheimer Straße 6-10, 66117 Saarbrücken	
die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen Jurchzuführen:	
Drahtgebundene Kommunikation einschließlich xDSL VaP und DECT Akustik Funk einschließlich WLAN Short Range Devices (SRO) Wilhau und Richtfunk Wollau und Richtfunk Mobilitum (SDN / DCS, Over the Air (OTA) Performance) Elektromagnetische Vertraglichkeit (EMV) einschließlich Automotive Produktischerheit SAR und Hearing Aid Compatibility (HAC) Umweltsimulation Smart Card Terminials Bloetooth Wir-FI- Services	Die auszugsweise Veröffentlichung der Akkreditierungserkunde bestaff der verherigen schriftlichen Zustimmung der Deutsche Akkreditierungsstelle Grobi (DAMS), Angemennenen dwon ist die sepande Weitzreverontum geto Decks tates durch die unsongeling genemen Kunformalikalewarkungsstelle in unweiß derter Form. Bis der in die Andele DAMS bestätigten Akkreditierungskernich in nausgehan. Die Aktreditierung erfolgte gemößt des Gesterten über die Akkreditierungstelle in Statestelle 1 Juli 2008 (DBMI 15, 2626) sonder der Verondung (16) Nr. 765/2008 des Zuogstelle (MAStateließt vem 31, Juli 2008 (DBMI 15, 2626) sonder der Verondung (16) Nr. 765/2008 des Zuogstelle (MAStateließt vem 31, Juli 2008 (DBMI 15, 2626) sonder der Verondung (16) Nr. 765/2008 des Zuogstelles (MAStateließt vem 31, Juli 2008 (DBMI 15, 2626) sonder der Verondung (16) Nr. 765/2008 des Zuogstelles (MAStateließt vem 31, Juli 2008 (DBMI 15, 2626) sonder der Verondung (16) Nr. 765/2008 des Zuogstelles (MAStateließt vem 31, Juli 2008 (DBMI 15, 2626) sonder der Verondung (16) Nr. 765/2008 des Zuogstelles Andersbare 31, Juli 2008 (DBMI 15, 2626) sonder der Verondung (16) Nr. 765/2008 des Zuogstelles Andersbare 31, Juli 2008 (DBMI 15, 2626) sonder der Verondung (16) Nr. 765/2008 des Zuogstelles Andersbare 31, Juli 2008 (DBMI 15, 2626) sonder der Verondung (16) Nr. 765/2008 des Zuogstelles Andersbare 31, Juli 2008 (DBMI 15, 2627) sonder der Verondung (16) XII 21, 2008 sonder Juli 2008, 200, Die (DAKK) ist Unterweitenverteilten Astatestichen Astatestichen Astatestichen Andersbare 40, 2008 des Zuogensbare (16) sonder 2008 des Zuogensbilten (16). 2008 des Zuogensbilten (16), 2008 des Zuogensbilten 40, 2008 des Zuogensbilten (2008 des Zuogensbilten) (16), 2008 unterweichter eileser Abkommen erkennen in Fester Weitensbilten zuogensbilten an folgenden Websatten ertnommen werden: ER- www.european isoten Italien. Aug
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