



Report Reference ID:	283398-2TRFWL
----------------------	---------------

Test specification:	Title 47 – Telecommunication Chapter I – Federal Communications Commission Subchapter B – Common carrier services Part 27 – Miscellaneous wireless communications services
---------------------	---

Applicant:	TEKO Telecom Srl. Via Meucci, 24/a I-40024 Castel S. Pietro Terme (BO) (Italy)
Apparatus:	Remote Unit
Model:	TRU7S19AWEWE/AC-WS
FCC ID:	XM2-EP7S19AWE

Testing laboratory:	Nemko Italy Spa Via del Carroccio, 4 20853 Biassono (MB) – Italy Telephone: +39 039 2201201 Facsimile: +39 039 2201221
---------------------	--

	Name and title	Date
Tested by:	 G. Curioni, Wireless/EMC Specialist	2015-05-22
Reviewed by:	 P. Barbieri, Wireless/EMC Specialist	2015-05-22

**Nemko Spa, 20853 Biassono (MB) - Italy. All rights reserved.**

This publication may be reproduced in whole for non-commercial purposes as long as Nemko Spa is acknowledged as copyright owner and source of the material. Nemko Spa takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context. Nemko Spa accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This test report may not be partially reproduced, except with the prior written permission of Nemko Spa. The test report merely corresponds to the test sample. The phase of sampling / collection of equipment under test is carried out by the customer.

This Test Report, when bearing the Nemko name and logo is only valid when issued by a Nemko laboratory, or by a laboratory having special agreement with Nemko.

## Table of contents

<b>Section 1: Report summary .....</b>	<b>4</b>
1.1 Test specification.....	4
1.2 Statement of compliance .....	4
1.3 Exclusions .....	4
1.4 Registration number .....	4
1.5 Test report revision history .....	4
1.6 Limits of responsibility.....	4
<b>Section 2: Summary of test results .....</b>	<b>5</b>
2.1 FCC Part 27, test results .....	5
<b>Section 3: Equipment under test (EUT) and application details.....</b>	<b>6</b>
3.1 Applicant details .....	6
3.2 Modular equipment.....	6
3.3 Product details.....	6
3.4 Application purpose .....	6
3.5 Composite/related equipment.....	7
3.6 Sample information.....	7
3.7 EUT technical specifications .....	7
3.8 Operation of the EUT during testing.....	9
3.9 EUT setup diagram.....	9
<b>Section 4: Engineering considerations .....</b>	<b>10</b>
4.1 Modifications incorporated in the EUT .....	10
4.2 Deviations from laboratory tests procedures.....	10
4.3 Technical judgment .....	10
<b>Section 5: Test conditions .....</b>	<b>11</b>
5.1 Deviations from laboratory tests procedures.....	11
5.2 Test conditions, power source and ambient temperatures .....	11
5.3 Measurement uncertainty .....	12
5.4 Test equipment.....	12
<b>Appendix A: Test results.....</b>	<b>13</b>
Clause 27.50(b) Peak output power at RF antenna connector .....	13
Clause 27.53(c) Spurious emissions at RF antenna connector .....	17
Clause 27.53(c) Radiated spurious emissions .....	28
Clause 27.53(f) Radiated spurious emissions within 1559–1610 MHz band .....	34
Clause 2.1049 Occupied bandwidth.....	37
Clause 935210 D02v02r01 (D.3)(l) Out of band rejection.....	42



Appendix B: Block diagrams of test set-ups .....	43
Appendix C: EUT Photos.....	44



## Section 1: Report summary

### 1.1 Test specification

Specifications	Part 27 – Miscellaneous wireless communications services
----------------	--

### 1.2 Statement of compliance

Compliance	In the configuration tested the EUT was found compliant Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> This report contains an assessment of apparatus against specifications based upon tests carried out on samples submitted at Nemko Canada Inc. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 27. Radiated tests were conducted in accordance with ANSI C63.4-2003.
------------	---

### 1.3 Exclusions

Exclusions	None
------------	------

### 1.4 Registration number

Test site FCC ID number	176392 (3 m Semi anechoic chamber)
-------------------------	------------------------------------

### 1.5 Test report revision history

Revision #	Details of changes made to test report
TRF	Original report issued
R1TRF	---

### 1.6 Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. Nemko Spa authorizes the applicant to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties.

Nemko Spa accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



## Section 2: Summary of test results

### 2.1 FCC Part 27, test results

Part	Test description	Verdict
§27.50(b)	Peak output power at RF antenna connector	Pass
§27.53(c)	Spurious emissions at RF antenna connector	Pass
§27.53(c)	Radiated spurious emissions	Pass
§27.53(f)	Radiated spurious emissions within 1559–1610 MHz band	Pass
§27.54	Frequency stability	N/A a)
§2.1049	Occupied bandwidth	Pass
§ 935210 D02v02r01 (D.3)(l)	Filter Frequency Response	Pass

Notes:

- a) NOT APPLICABLE: Modulation/frequency conversion circuitry not in use. No frequency change in EUT (input and output have same frequency)



## Section 3: Equipment under test (EUT) and application details

### 3.1 Applicant details

<b>Applicant complete business name</b>	Name:	Teko Telecom Srl
	Federal Registration Number (FRN):	0018963462
	Grantee code	XM2
<b>Mailing address</b>	Address:	Via Meucci, 24/a
	City:	Castel S. Pietro Terme
	Province/State:	Bologna
	Post code:	40024
	Country:	Italy

### 3.2 Modular equipment

<b>a) Single modular approval</b>	Single modular approval Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>b) Limited single modular approval</b>	Limited single modular approval Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

### 3.3 Product details

FCC Product details		
FCC ID	Grantee code:	XM2
	Product code:	-EP7S19AWE
Equipment class	B2I	
Description of product as it is marketed	Remote Unit for optical system	
	Model name/number:	TRU7S19AWE/AC-WS
	Serial number:	1000980001

### 3.4 Application purpose

Type of application	<input checked="" type="checkbox"/> Original certification <input type="checkbox"/> Change in identification of presently authorized equipment Original FCC ID: _____ Grant date: _____ <input type="checkbox"/> Class II permissive change or modification of presently authorized equipment
---------------------	--



### Section 3: Equipment under test

#### 3.5 Composite/related equipment

<b>a) Composite equipment</b>	The EUT is a composite device subject to an additional equipment authorization Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>b) Related equipment</b>	The EUT is part of a system that operates with, or is marketed with, another device that requires an equipment authorization Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>c) Related FCC ID</b>	If either of the above is "yes": <input type="checkbox"/> has been granted under the FCC ID(s) listed below: <input type="checkbox"/> is in the process of being filled under the FCC ID(s) listed below: <input type="checkbox"/> is pending with the FCC ID(s) listed below: <input type="checkbox"/> has a mix of pending and granted statuses under the FCC ID(s) listed below: i FCC ID: ii FCC ID:

#### 3.6 Sample information

Receipt date:	2015-05-18
Nemko sample ID number:	-----

#### 3.7 EUT technical specifications

<b>Operating band:</b>	Down Link 746–757 MHz, Up Link 776-787 MHz
<b>Operating frequency:</b>	Wideband
<b>Modulation type:</b>	LTE (QAM and QPSK)
<b>Occupied bandwidth:</b>	1,4 MHz – 3 MHz – 5 MHz – 10MHz
<b>Channel spacing:</b>	standard
<b>Emission designator:</b>	D7W
<b>RF Output</b>	Down Link: 31dBm (1,25W) Up Link: N.A. (The EUT does not transmit over the air in the up-link direction)
<b>Gain</b>	Down Link: 36dB Up Link: N.A. (The EUT does not transmit over the air in the up-link direction)
<b>Antenna type:</b>	External Antenna is not provided, equipment that has an external 50 Ω RF connector
<b>Power source:</b>	100-240 Vac



## Section 3: Equipment under test

### 3.8 Accessories and support equipment

The following information identifies accessories used to exercise the EUT during testing:

#### Item # 1

Type of equipment:	Master Unit - Subrack
Brand name:	Teko Telecom srl
Model name or number:	SUB-TRX-PSU
Serial number:	101083001
Nemko sample number:	-----
Connection port:	-----
Cable length and type:	-----

#### Item # 2

Type of equipment:	Master Unit – Management Module
Brand name:	Teko Telecom srl
Model name or number:	TSPV-R
Serial number:	081900043
Nemko sample number:	-----
Connection port:	LAN port
Cable length and type:	-----

#### Item # 3

Type of equipment:	Master Unit – Optical Module
Brand name:	Teko Telecom srl
Model name or number:	TTRU4W-S-M
Serial number:	110679007
Nemko sample number:	-----
Connection port:	DL/UL RF connector (to connect to the base station) Optical port (to connect to remote unit)
Cable length and type:	-----

#### Item # 4

Type of equipment:	Master Unit – Power Supply
Brand name:	Teko Telecom srl
Model name or number:	TPSU/AC
Serial number:	100012286
Nemko sample number:	-----
Connection port:	-----
Cable length and type:	-----

### 3.9 Operation of the EUT during testing

<b>Details:</b>	In down-link direction, normal working at max gain with max RF power output
-----------------	---

### 3.10 EUT setup diagram

In this system, Remote Unit is the EUT. Master Unit includes only management module and optical module (to convert RF signal in optical signal in down link direction and viceversa optical signal in RF signal in up link direction). As described in "Operational description", master unit is connected directly to base station, so the system doesn't use another equipment (under another FCC ID) to exercise the EUT. Signal generator is linked directly to the RF connector of optical module in the Master Unit.

#### Test setup for output power, occupied bandwidth, spurious emissions:



#### Procedure

Connect the signal modulated generator to the input of the EUT, so that the EUT works at the max gain. Raise the input level to the EUT until reach the maximum output power. Connect the spectrum analyzer to the RF output connector of the EUT.



## Section 4: Engineering considerations

### 4.1 Modifications incorporated in the EUT

<b>Modifications</b>	Modifications performed to the EUT during this assessment None <input checked="" type="checkbox"/> Yes <input type="checkbox"/> , performed by Client <input type="checkbox"/> or Nemko <input type="checkbox"/>
Details:	

### 4.2 Deviations from laboratory tests procedures

<b>Deviations</b>	Deviations from laboratory test procedures None <input checked="" type="checkbox"/> Yes <input type="checkbox"/> - details are listed below:

### 4.3 Technical judgment

<b>Judgment</b>	None



## Section 5: Test conditions

### 5.1 Deviations from laboratory tests procedures

No deviations were made from laboratory test procedures.

### 5.2 Test conditions, power source and ambient temperatures

Normal temperature, humidity and air pressure test conditions	Temperature: 15–30 °C Relative humidity: 20–75 % Air pressure: 86–106 kPa  When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.
Power supply range:	The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$ , for which the equipment was designed.



## Section 5: Test conditions, continued

### 5.3 Measurement uncertainty

Nemko S.p.A. measurement uncertainty has been calculated using the standard CISPR 16-4-2 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics and limit modeling – Uncertainty in EMC measurements". All calculations can be found in Nemko S.p.A. document WML1002.

### 5.4 Test equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next cal.
Vector Signal Generator	Agilent	N5172B EXG	MY53050534	Feb 2017
Vector Signal Generator	Agilent	E4438C ESG	MY45094485	Ago 2016
Spectrum Analyzer	Agilent	N9030A PXA	MY53120882	May 2015
Network Analyzer	Agilent	E5071B ENA	MY46418709	Jan 2016
EMI Receiver	R & S	ESCI	100888	08/2015
V-network	R & S	ESH2-Z5	872 460/041	09/2015
Trilog Broad Band Antenna 25-2000 MHz	Schwarzbeck	VULB 9168	VULB 9168-242	06/2015
Trilog Broad Band Antenna 25-8000 MHz	Schwarzbeck	VULB 9162	VULB 9162-25	05/2015
Antenna 1-18 GHz	Schwarzbeck	STLP 9148	STPL 9148-123	06/2015
Double ridge waveguide horn	RFspin	DRH40	061106A40	08/2016
Preamplifier 18-40 GHz	Miteq	JS44	1648665	11/2015
Broadband preamplifier 1-18 GHz	Schwarzbeck	BBV 9718	9718-137	10/2015
EMI receiver 20 Hz ÷ 8 GHz	R&S	ESU8	100202	04/2016
EMI receiver 20 Hz ÷ 3 GHz	R&S	ESCI	100888	08/2015
Hydraulic revolving platform	Nemko	RTPL 01	4.233	NCR
Turning-table	R&S	HCT	835 803/03	NCR
Antenna mast	R&S	HCM	836 529/05	NCR
Controller	R&S	HCC	836 620/7	NCR
Spectrum Analyzer 9kHz ÷ 40GHz	R&S	FSEK	848255/005	08/2015
Semi-anechoic chamber	Nemko	10m semi-anechoic chamber	530	09/2016
Shielded room	Siemens	10m control room	1947	NCR
Semi-anechoic chamber	Nemko	10m semi-anechoic chamber	70	NCR
Shielded Room	Siemens	3m semi-anechoic chamber	3	NCR
Motor controller	Emco	1051-25	9012-1559	NCR
Motor controller	Emco	1061-1.521	9012-1508	NCR
Antenna Tower	Emco	2071-2	9601-1940	NCR
Controller pole/table	Emco	2090	9511-1099	NCR
V-Network	R & S	ESH2-Z5	872 460/041	09/2015

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use

(\*) Equipment supplied by manufacturer's



## Appendix A: Test results

### Clause 27.50(b) Peak output power at RF antenna connector

#### § 27.50(b) Operation within the bands: 746–758 MHz, 775–788 MHz and 805–806 MHz.

- 4) Fixed and base stations transmitting a signal in the 746–757 MHz and 776–787 MHz bands with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP accordance with Table 3 of this section.
- 12) For transmissions in the 746–757, 776–7873 MHz bands, licensees may employ equipment operating in compliance with either the measurement techniques described in paragraph (b)(11) of this section or a Commission-approved average power technique. In both instances, equipment employed must be authorized in accordance with the provisions of §27.51

Test date: 2015-05-18

Test results: Pass

#### Special notes

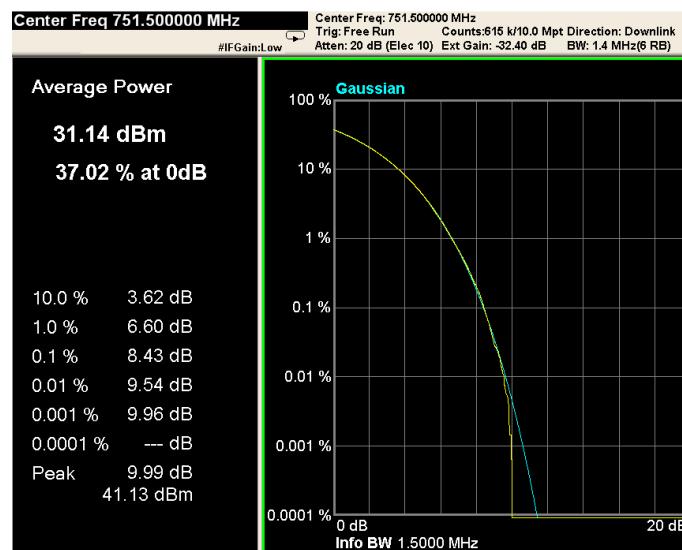
The power was measured using spectrum analyzer with RMS detector / average power meter.

- In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB

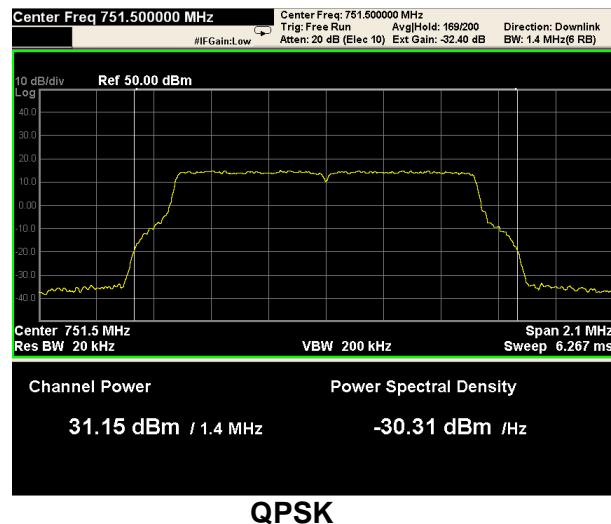
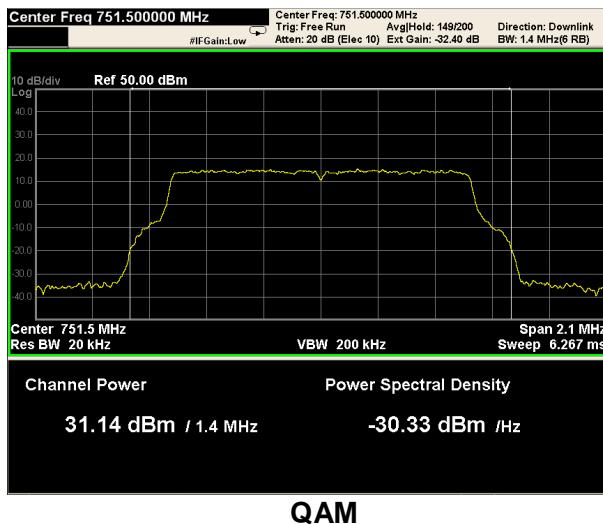
**Clause 27.50(b) Peak output power at RF antenna connector, continued**
**Test data**
**Conducted measurements**
**Test data**

Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	PAR (dB)
Down-link	LTE (QAM, 1,4MHz)	751,5	31.14	1.30	9.99
Down-link	LTE (QPSK, 1,4MHz)	751,5	31.15	1.30	9.59
Down-link	LTE (QAM, 3MHz)	751,5	31.11	1.29	10.37
Down-link	LTE (QPSK, 3MHz)	751,5	31.12	1.29	10.44
Down-link	LTE (QAM, 5MHz)	751,5	31.18	1.31	10.82
Down-link	LTE (QPSK, 5MHz)	751,5	31.11	1.29	10.15
Down-link	LTE (QAM, 10MHz)	751,5	31.11	1.29	10.72
Down-link	LTE (QPSK, 10MHz)	751,5	31.10	1.29	10.75

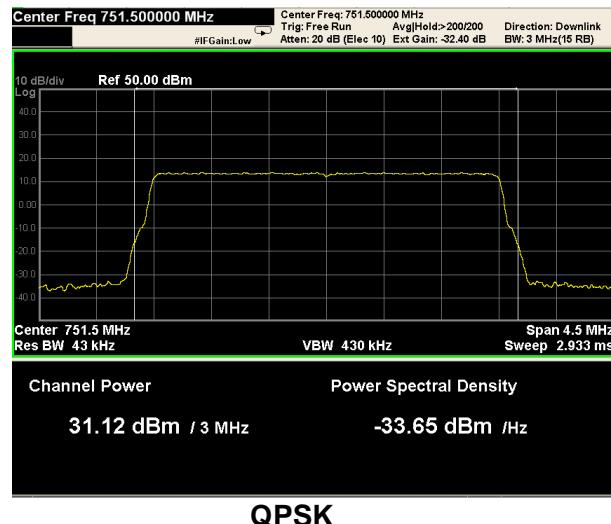
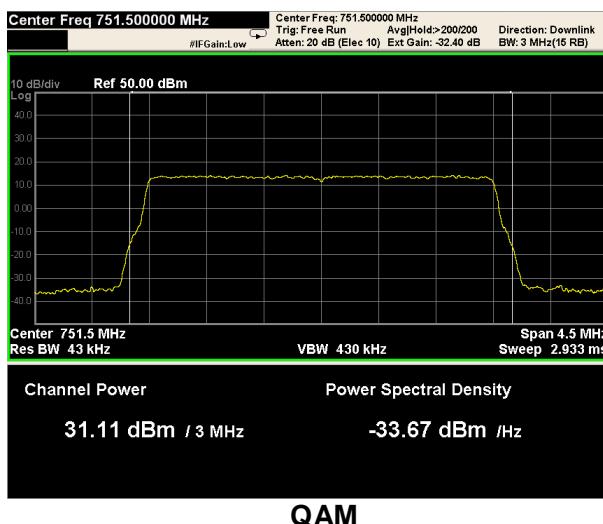
PAR measure is performed by the “CCDF” function installed on Spectrum analyzer that provides average power (the same measured with “Channel power” function), peak power and PAR. Below an example:


**PAR measure example (LTE 1,4MHz QAM)**

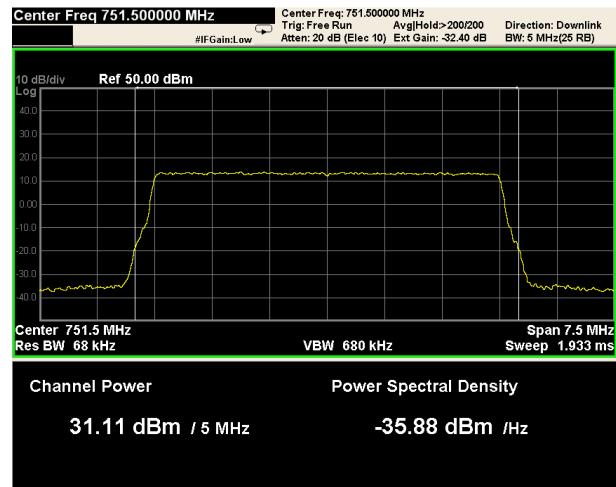
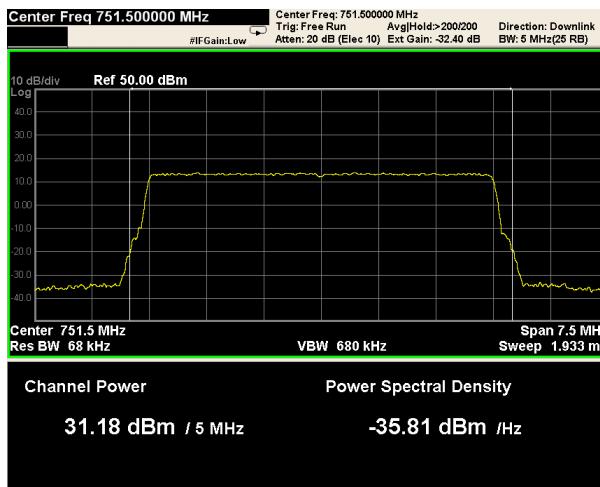
### Mod. LTE 1.4MHz (Down-link)



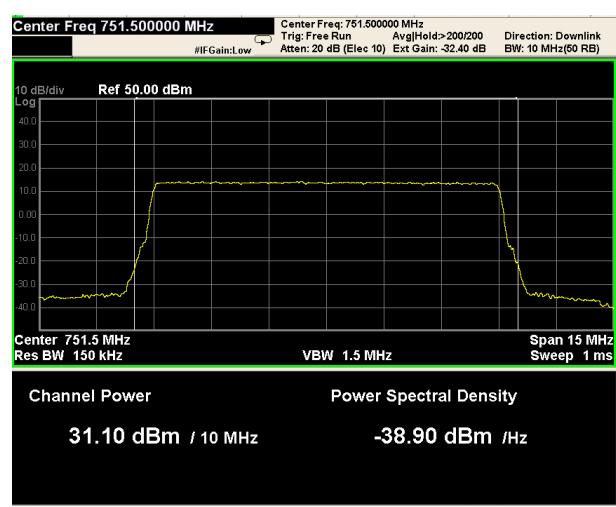
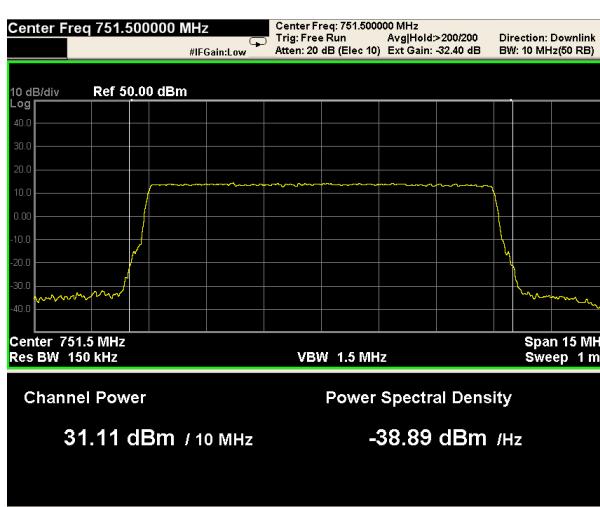
### Mod. LTE 3MHz (Down-link)



### Mod. LTE 5MHz (Down-link)



### Mod. LTE 10MHz (Down-link)





## Clause 27.53(c) Spurious emissions at RF antenna connector

- (c) For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
- (1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB;
  - (3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than  $76 + 10 \log (P)$  dB in a 6.25 kHz band segment, for base and fixed stations;
  - (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
  - (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

Test date: 2015-05-18

Test results: Pass

### Special notes

- The spectrum was searched from 30 MHz to the 10th harmonic.
- All measurements were performed using a peak detector.
- RBW within 30–1000 MHz was 100 kHz and 1 MHz above 1 GHz. VBW was wider than RBW.



## Clause 27.53 Spurious emissions at RF antenna connector, continued

## Test data

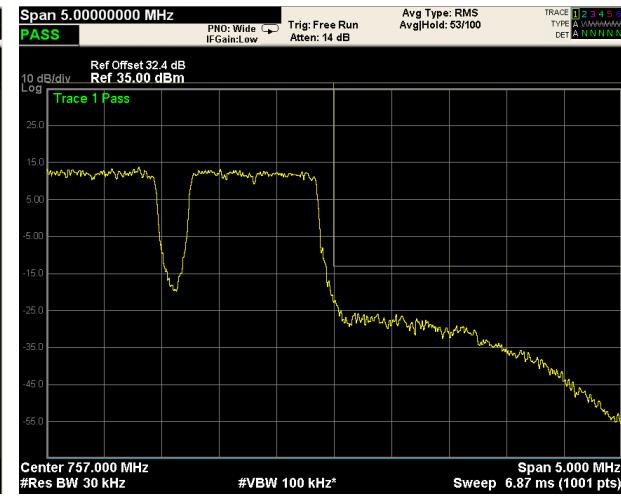
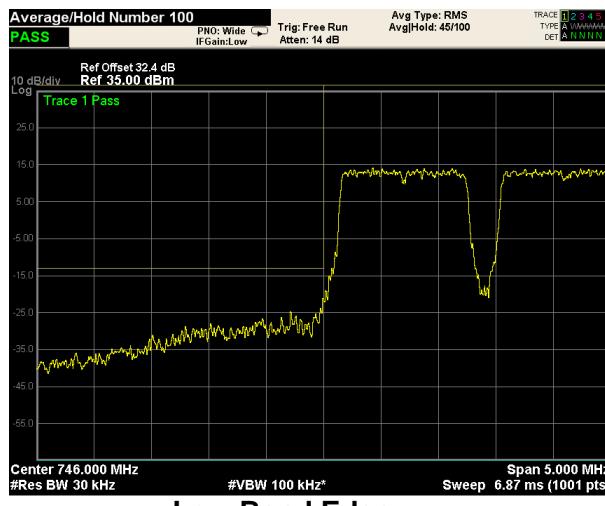
Insert plots here

## Spurious emissions measurement results:

Frequency (MHz)	Spurious emission (dBm)	Limit (dBm)	Margin (dB)
Low channel			
First channel	Negligible	-13	
Mid channel			
751,5 MHz	Negligible	-13	
High channel			
Last channel	Negligible	-13	

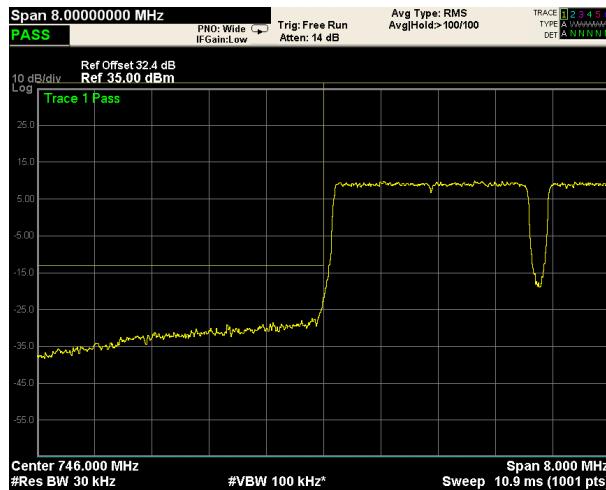
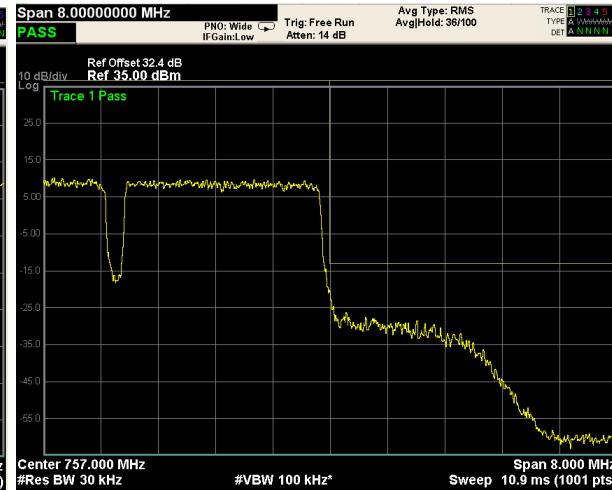
See Plots below

**Test data, continued: band edges Inter modulation:**
**Mod. LTE 1.4MHz (QAM) (Down-link)**

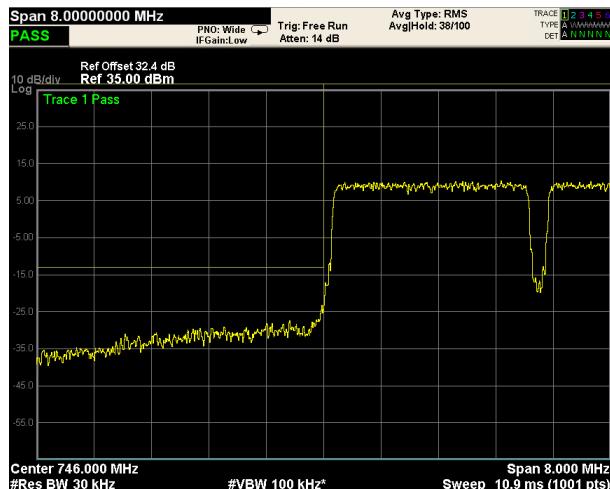
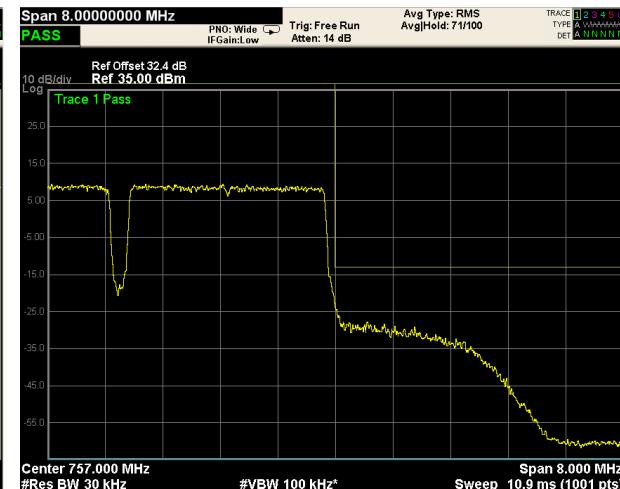
**Low Band Edge**

**High Band Edge**
**Mod. LTE 1.4MHz (QPSK) (Down-link)**

**Low Band Edge**

**High Band Edge**

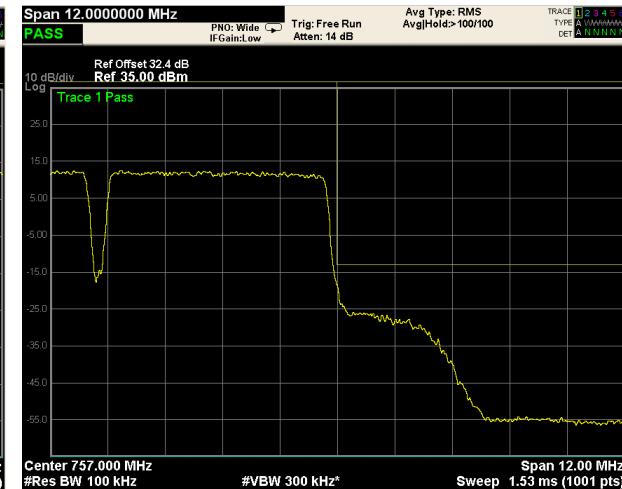
### Mod. LTE 3MHz (QAM) (Down-link)


**Low Band Edge**

**High Band Edge**

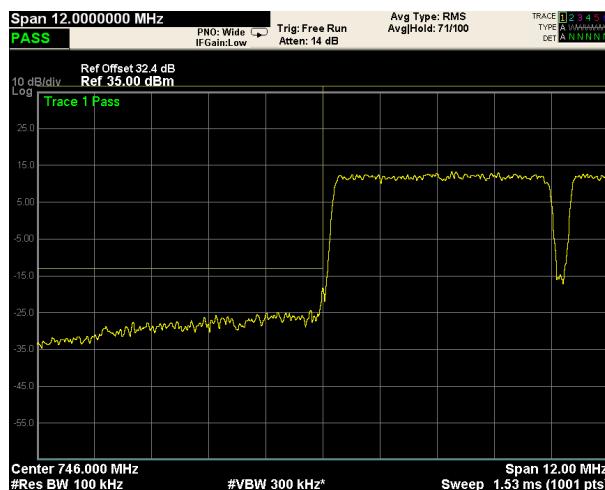
### Mod. LTE 3MHz (QPSK) (Down-link)


**Low Band Edge**

**High Band Edge**

### Mod. LTE 5MHz (QAM) (Down-link)

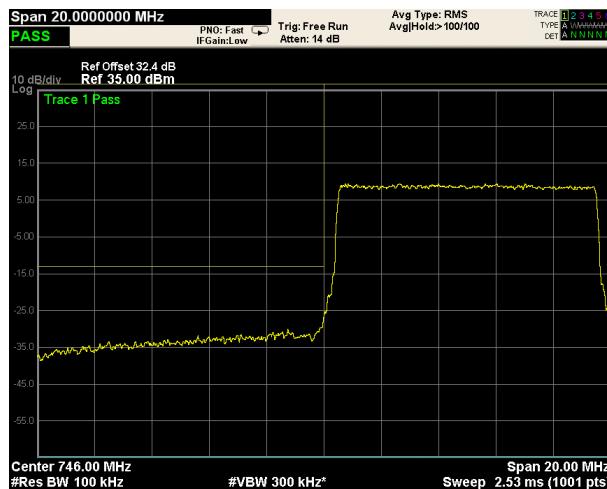
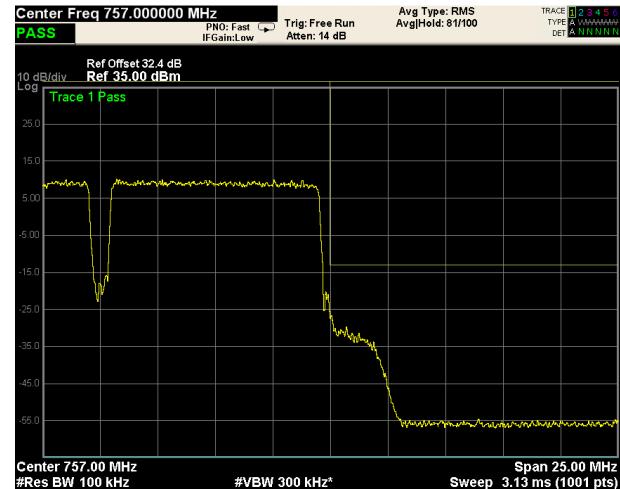

**Low Band Edge**

**High Band Edge**

### Mod. LTE 5MHz (QPSK) (Down-link)

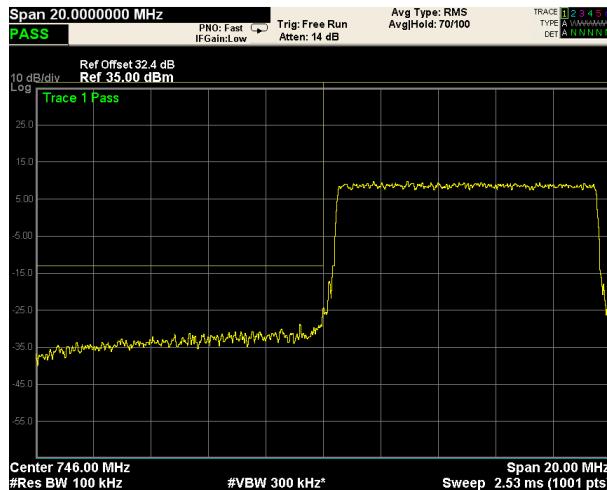

**Low Band Edge**

**High Band Edge**

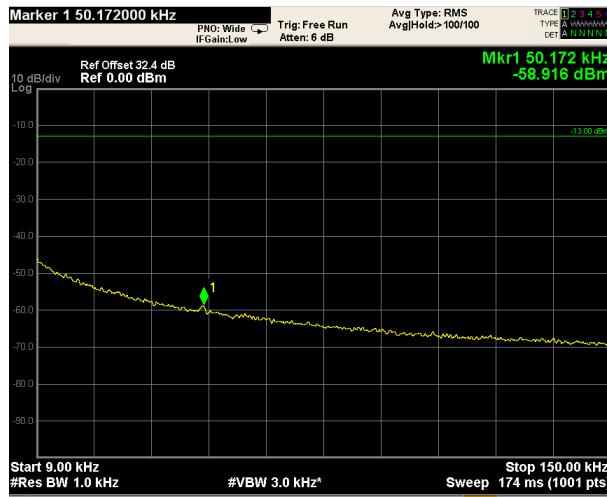
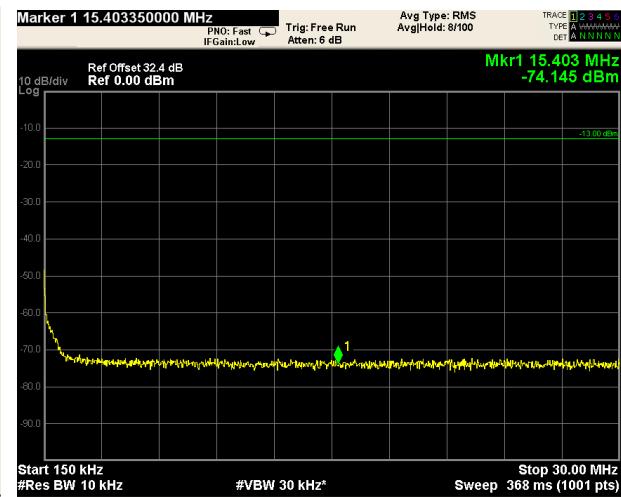
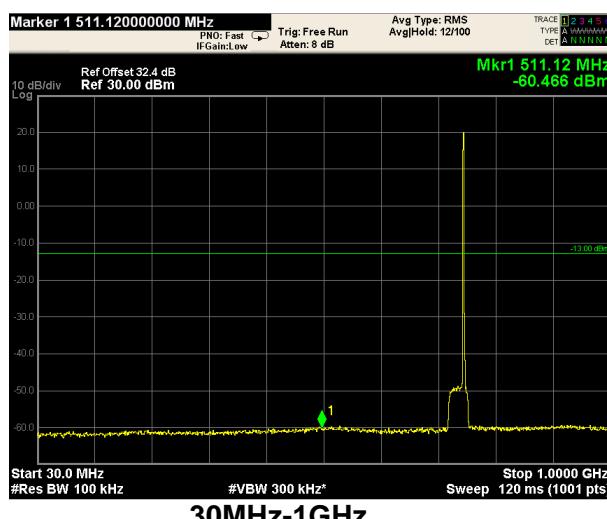
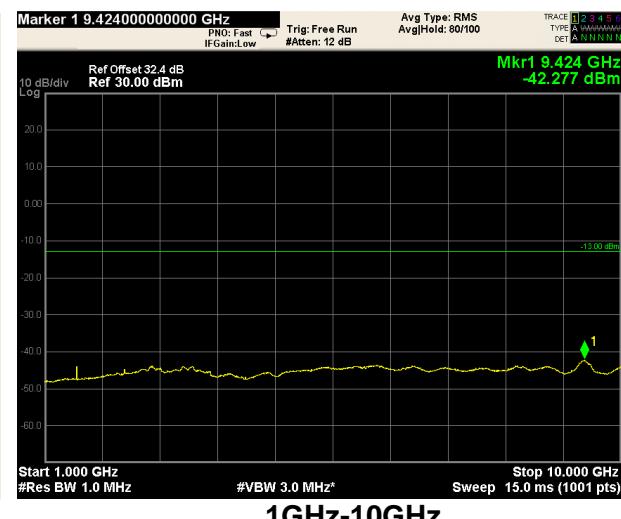
### Mod. LTE 10MHz (QAM) (Down-link)


**Low Band Edge**

**High Band Edge**

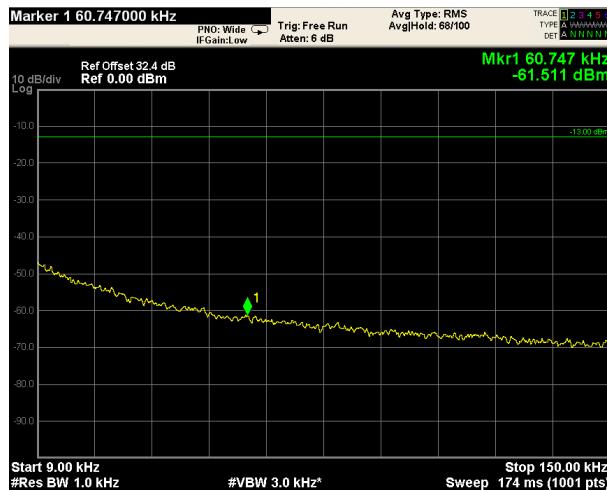
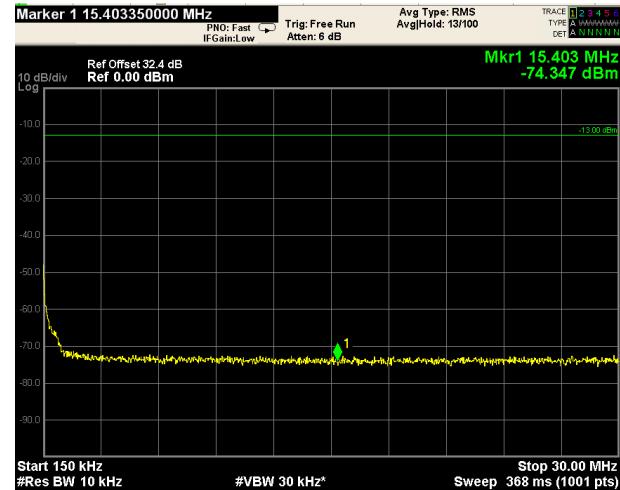
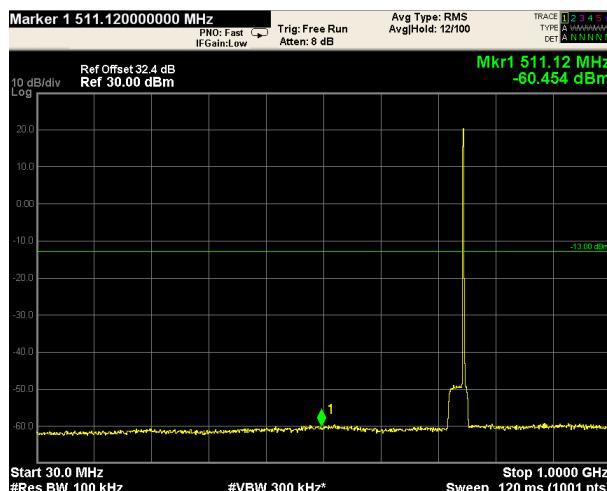
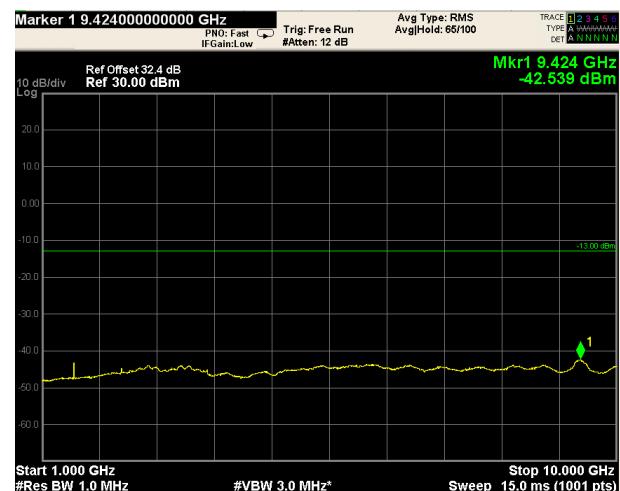
### Mod. LTE 10MHz (QPSK) (Down-link)

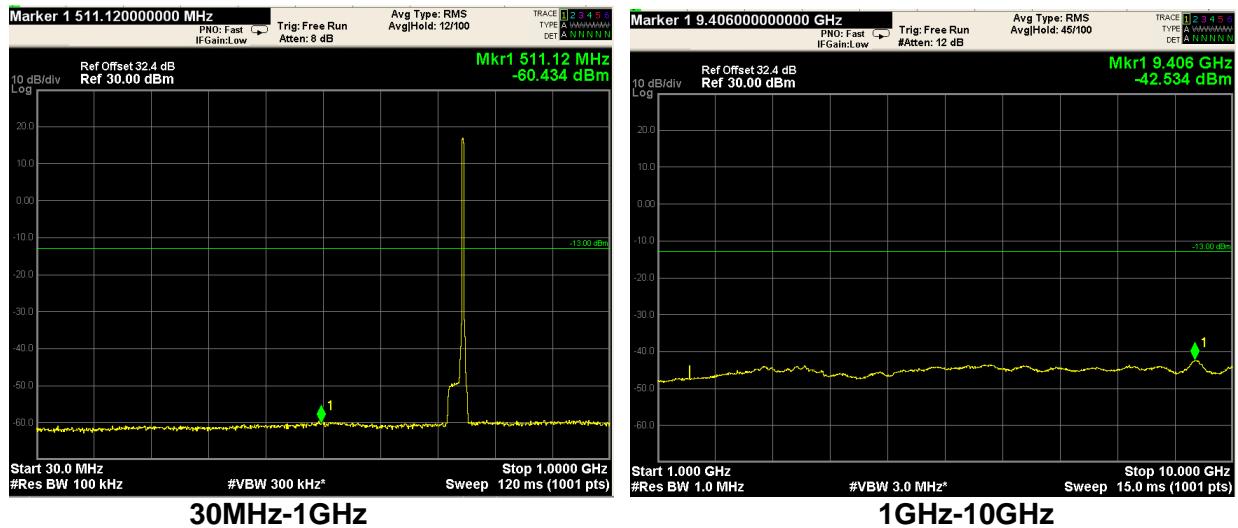
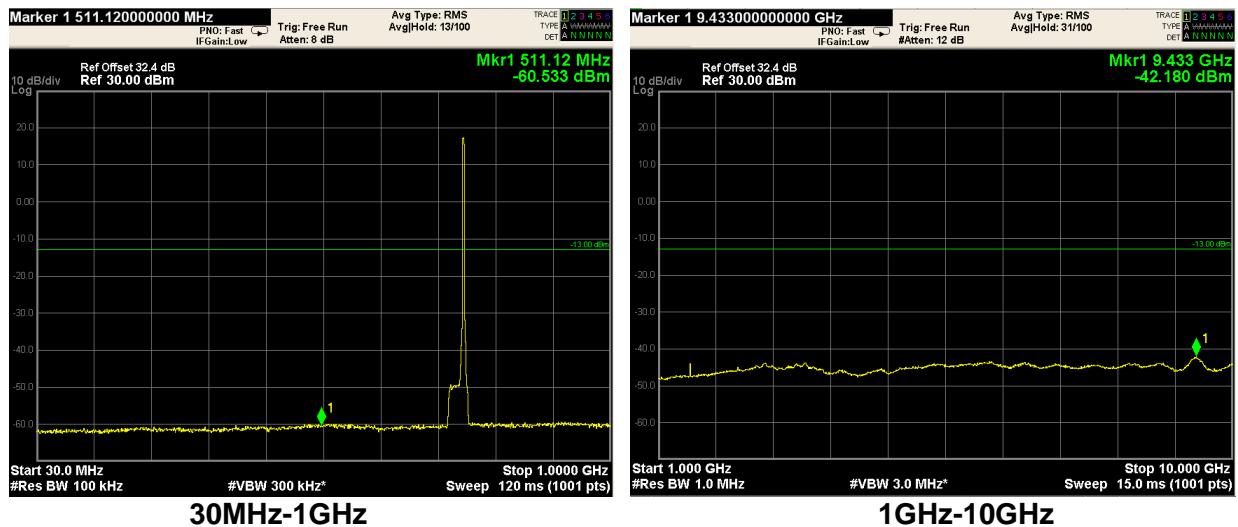

**Low Band Edge**

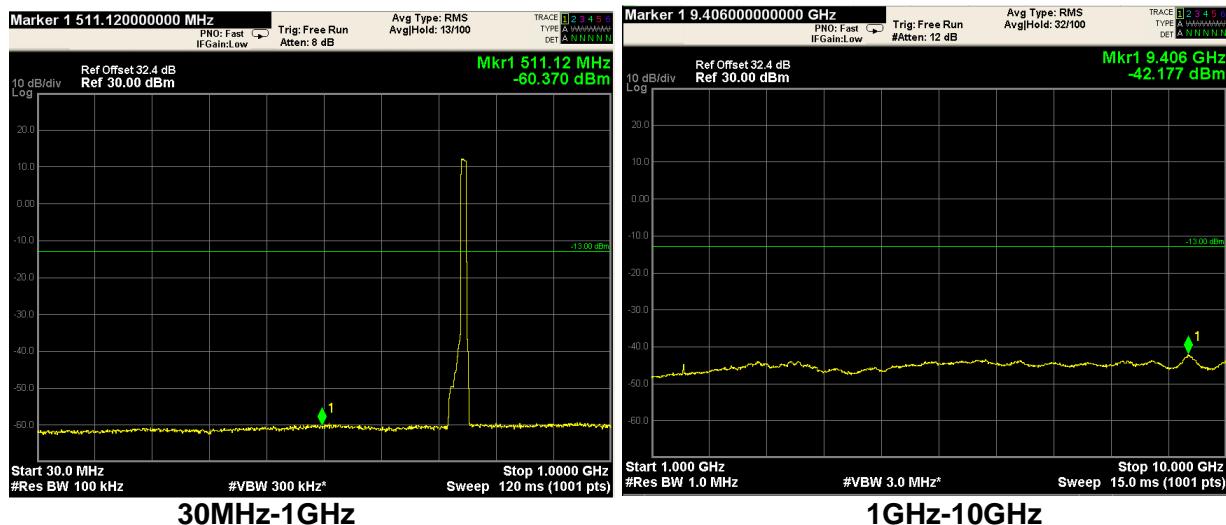
**High Band Edge**

**Test data, continued: spurious emissions at antenna terminal**
**Mod. LTE 1.4MHz (QAM) (Down-link)**

**9kHz-150kHz**

**150kHz-30MHz**

**30MHz-1GHz**

**1GHz-10GHz**

### Mod. LTE 1.4MHz (QPSK) (Down-link)


**9kHz-150kHz**

**150kHz-30MHz**

**30MHz-1GHz**

**1GHz-10GHz**

**Mod. LTE 3MHz, only 30M-10G plot (Down-link)**

**Mod. LTE 5MHz, only 30M-10G plot (Down-link)**


**Mod. LTE 10MHz, only 30M-10G plot (Down-link)**


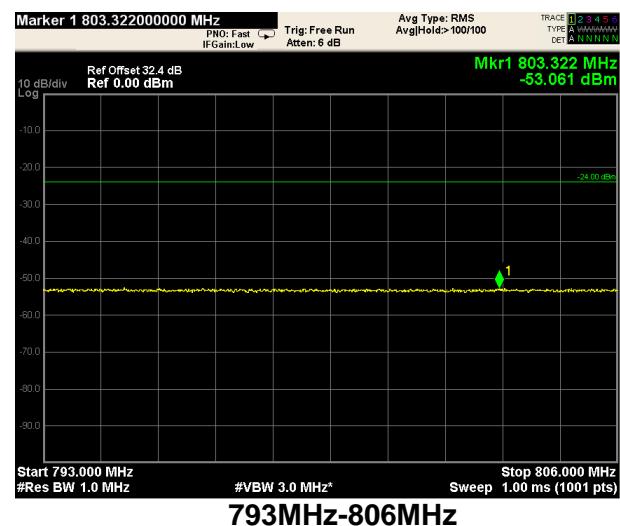
**Spurious emissions at antenna terminal, band 763-775MHz and 793-805MHz**
**Special notes**

On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than  $76 + 10 \log (P)$  dB in a 6.25 kHz band segment, for base and fixed stations

$$76 + 10 \log P (W) = 76 + 10 \log 1,25W = 77$$

$$P (W) = 1,25W = 31 \text{ dBm}$$

$$\rightarrow \text{limit: } 31 - 77 = -46 \text{ dBm}/6,25\text{kHz} = -24\text{dBm}/1\text{MHz}$$



## Clause 27.53(c) Radiated spurious emissions

- (c) For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
- (1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB;
  - (3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than  $76 + 10 \log (P)$  dB in a 6.25 kHz band segment, for base and fixed stations;
  - (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
  - (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

Test date: 2015-05-20

Test results: Pass

### Special notes

- The spectrum was searched from 30 MHz to the 10th harmonic.
- All measurements were performed using a peak detector.
- The measurements were performed at the distance of 3 m.
- RBW within 30–1000 MHz was 100 kHz and 1 MHz above 1 GHz. VBW was wider than RBW.



## Clause 27.53 Radiated spurious emissions, continued

## Test data

The D.U.T. was positioned according to the radiated emissions set-up

The D.U.T. antenna connector was terminated by a  $50 \Omega$  shielded dummy load.

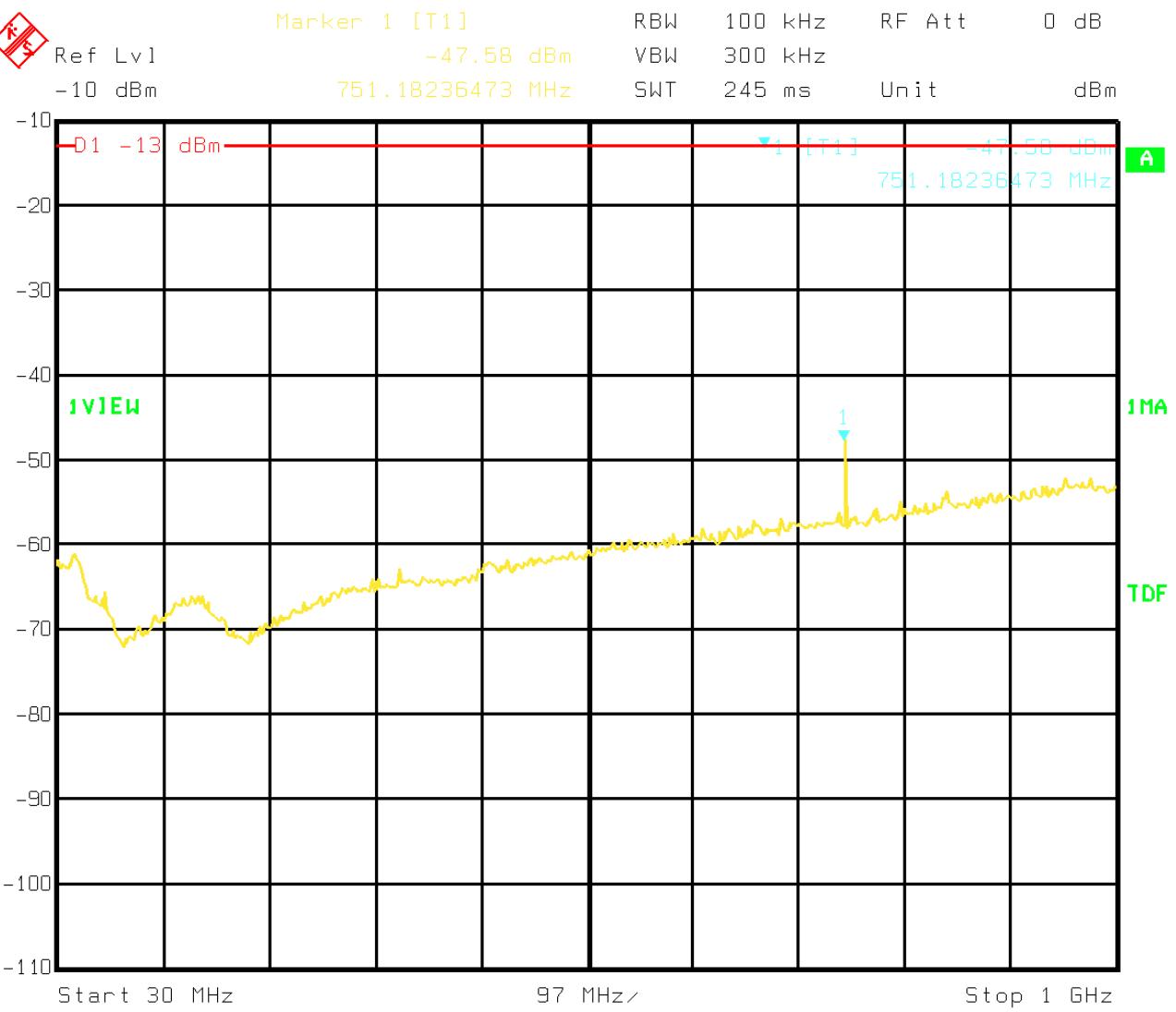
The spectrum was searched from 30 MHz to 1 GHz (RBW 100 kHz) & 1 GHz (RBW 1 MHz) to the tenth harmonic of the carrier.

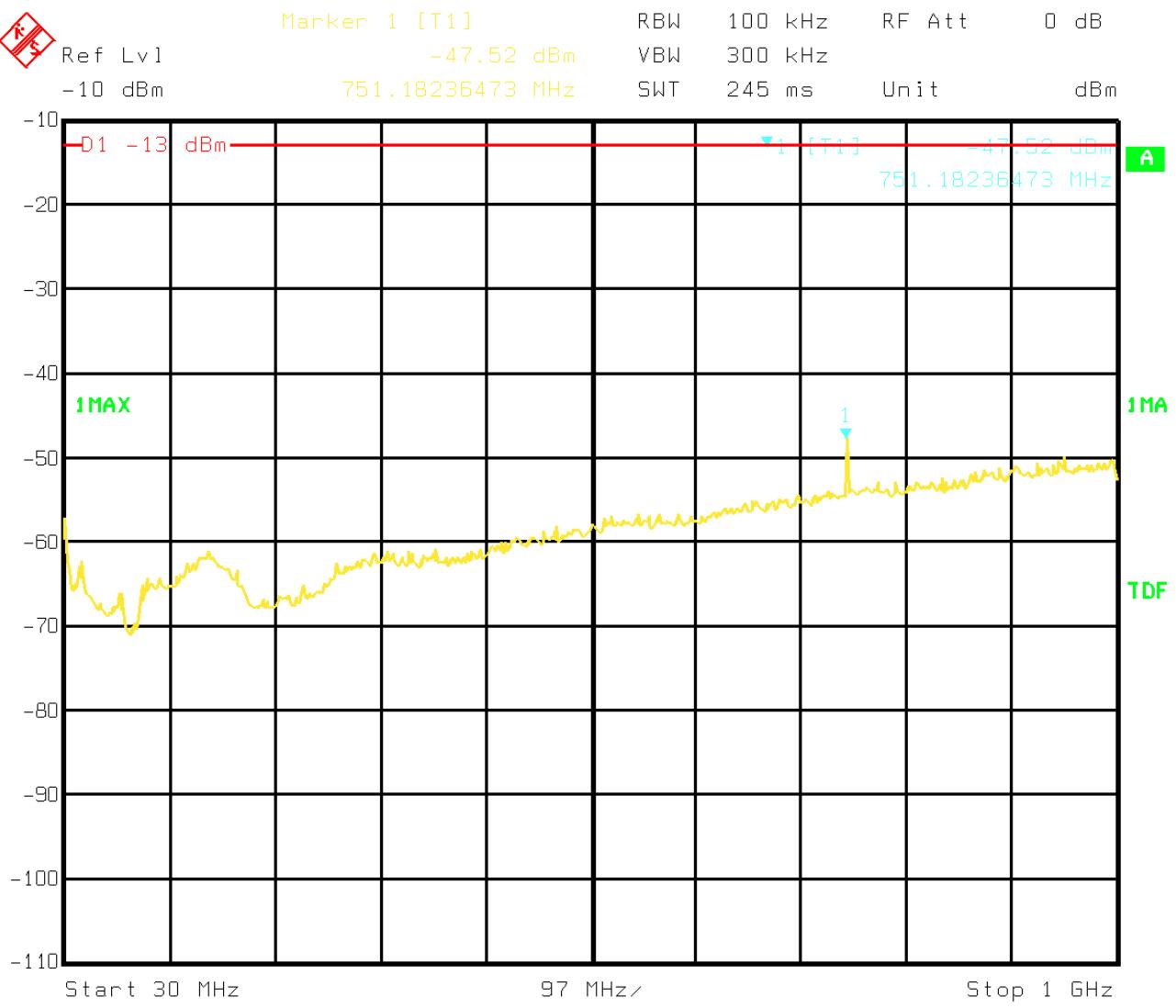
There were no emissions detected above the noise floor which was at least 20 dB below the specification limit.

## Spurious emissions measurement results:

Frequency (MHz)	Polarization. V/H	Field strength (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
Low channel				
Mid channel				
High channel				

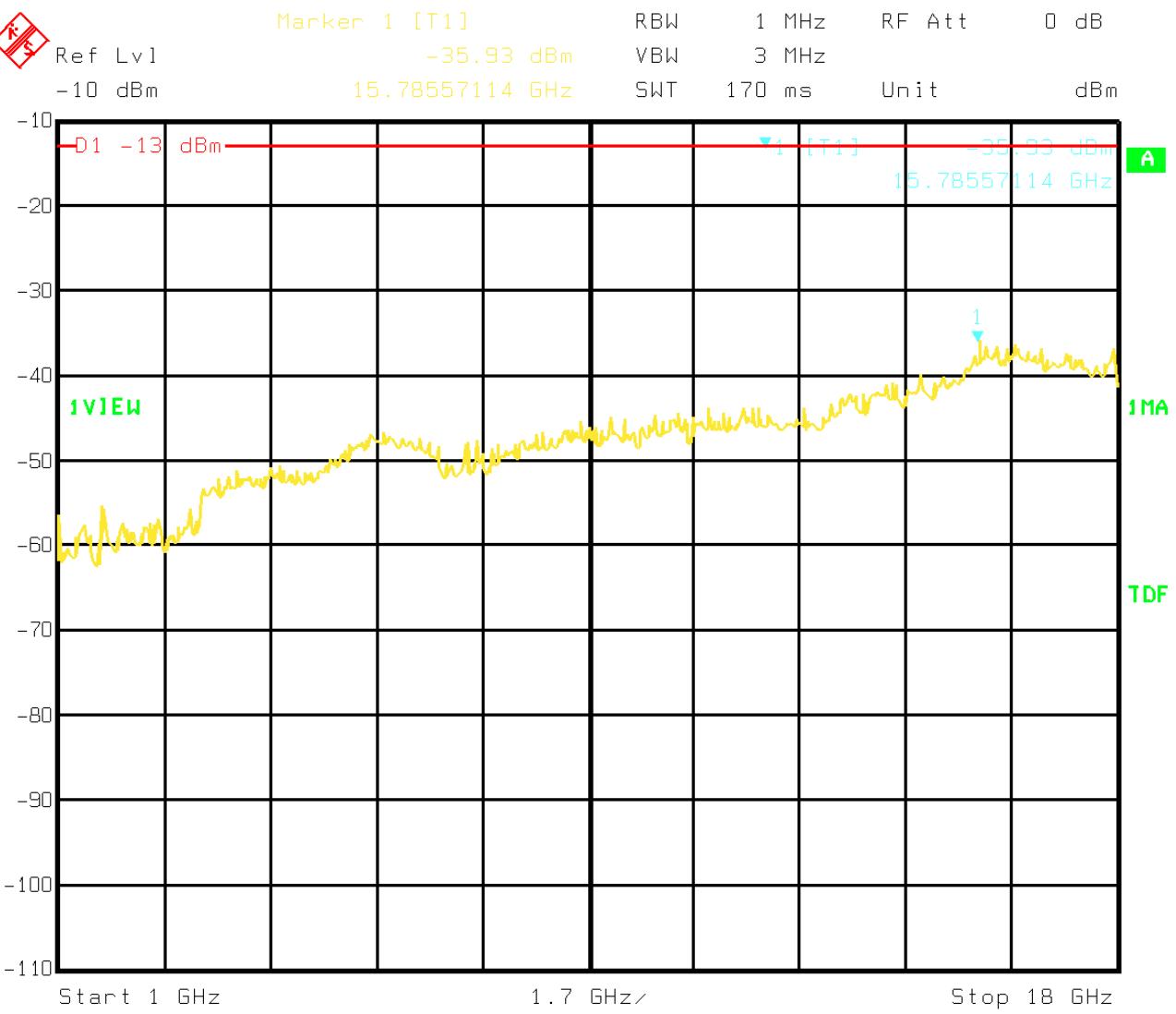
Note: Field strength includes correction factor of antenna, cable loss, amplifier, and attenuators where applicable.





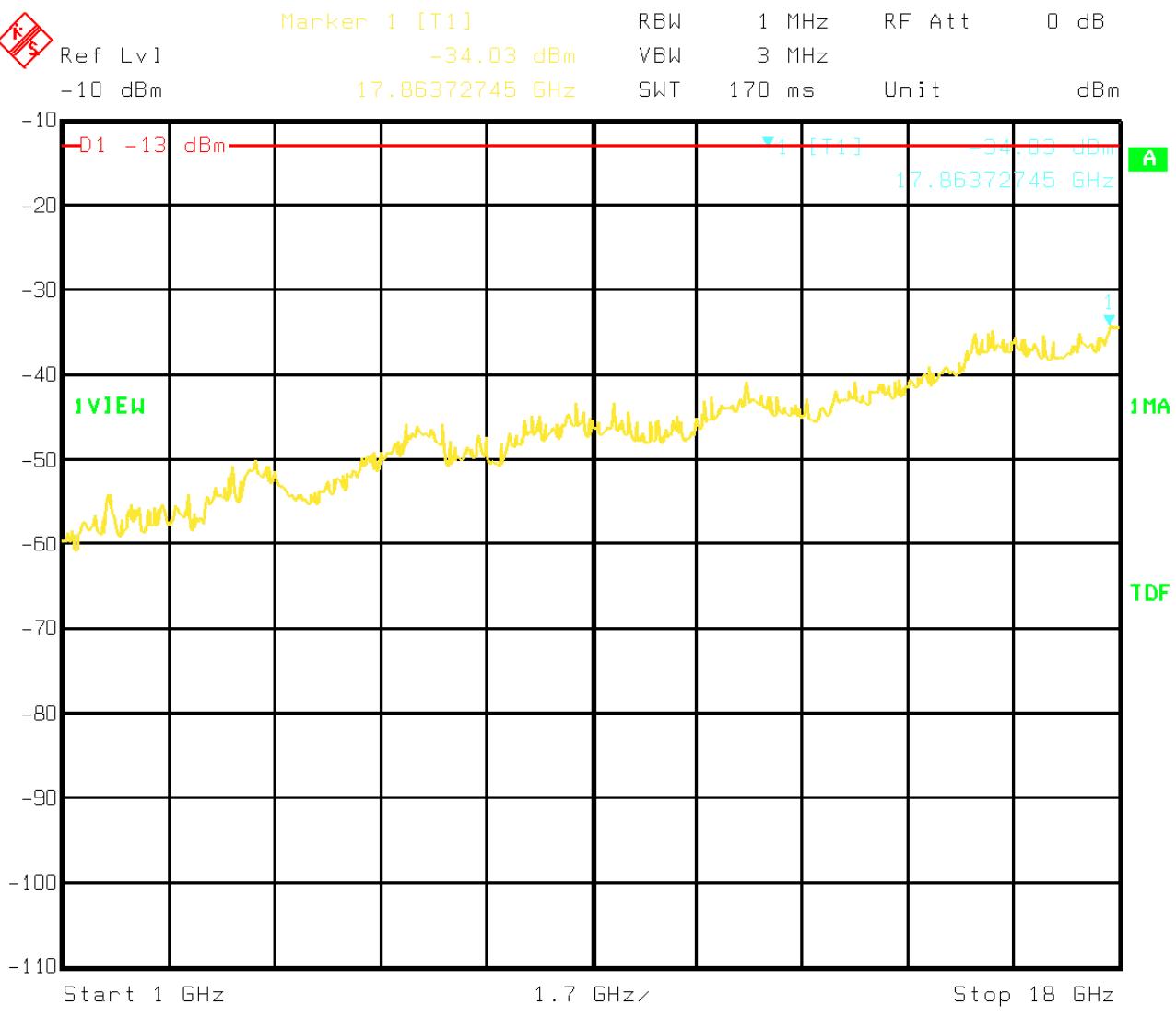
Date: 20.MAY 2015 06:26:39

**30MHz-1GHz – V Pol**



Date: 20.MAY.2015 11:08:02

**1GHz-8GHz – H Pol**



Date: 20.MAY.2015 11:04:55

**1GHz-8GHz – V Pol**



## Clause 27.53(f) Radiated spurious emissions within 1559–1610 MHz band

(f) For operations in the 746–763 MHz, 775–793 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to –70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and –80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Test date: [2015-05-18](#)

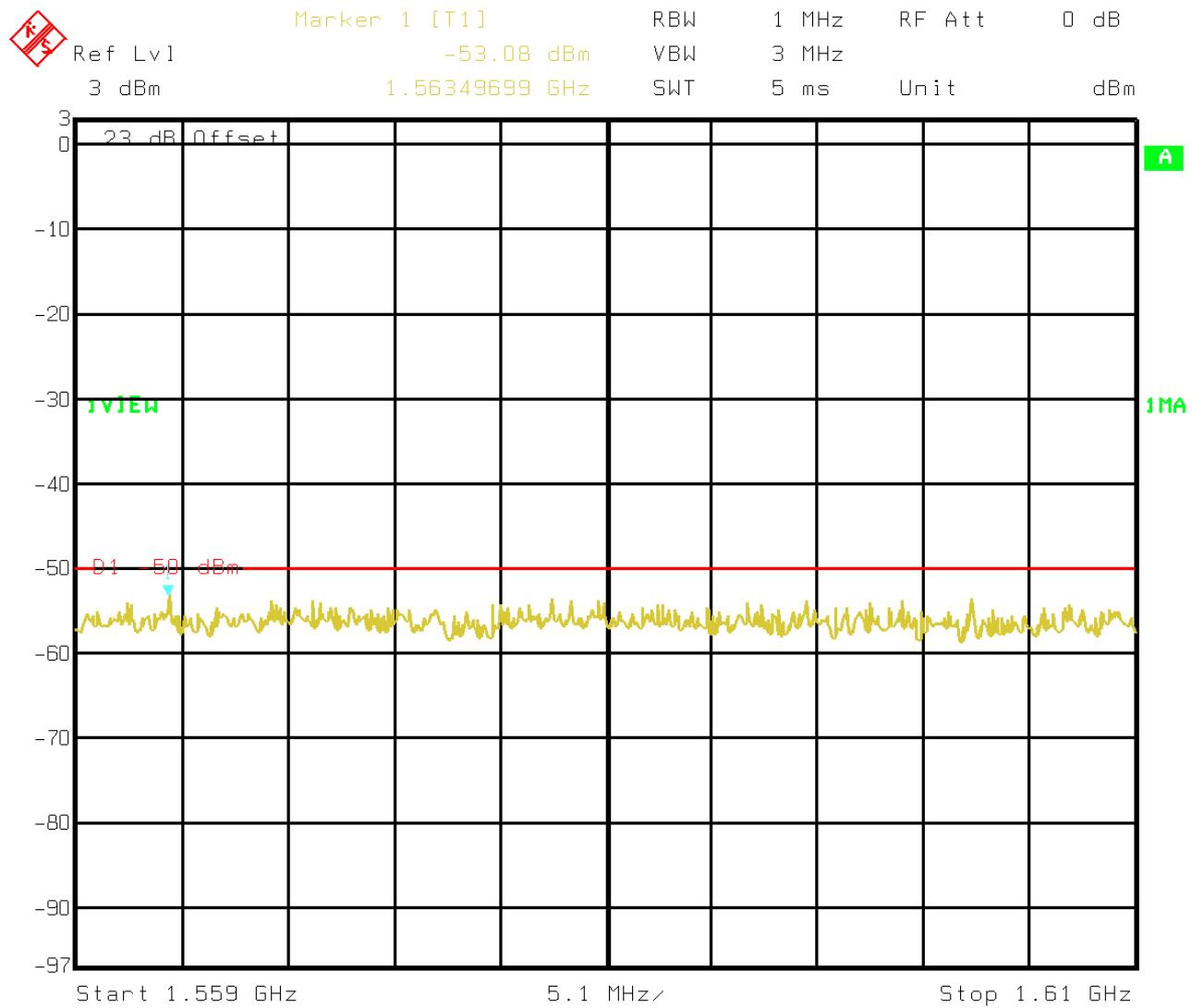
Test results: [Pass](#)

### Special notes

- The spectrum was searched from 1559–1610 MHz.
- All measurements were performed using a peak detector.
- The measurements were performed at the distance of 3 m.
- RBW was set to 1 MHz and VBW was wider than RBW.

**Clause 27.53(f) Radiated spurious emissions within 1559–1610 MHz band, continued**
**Test data**

Result of D.L. 31 dBm, 751.5 MHz, "1.4" QAM occupied bandwidth 1.2 MHz





## Spurious emissions measurement results:

Frequency (MHz)	Polarization. V/H	Result Eirp (dBm)	Limit eirp (dBm)	Margin (dB)
1563.49	V(max. eirp)	-53.08	-50	-3.08

## Note:

. Method of measurement according to TIA-603-C (EIRP in GNSS band: 1.556 to 1.610 GHz) .

Δ Band = 51 MHz, Correction Factor calculated at central band 1604.5 MHz. in Fraunhofer Region.

Limit used for discrete emissions: -80 dBw = -50 dBm



## Clause 2.1049 Occupied bandwidth

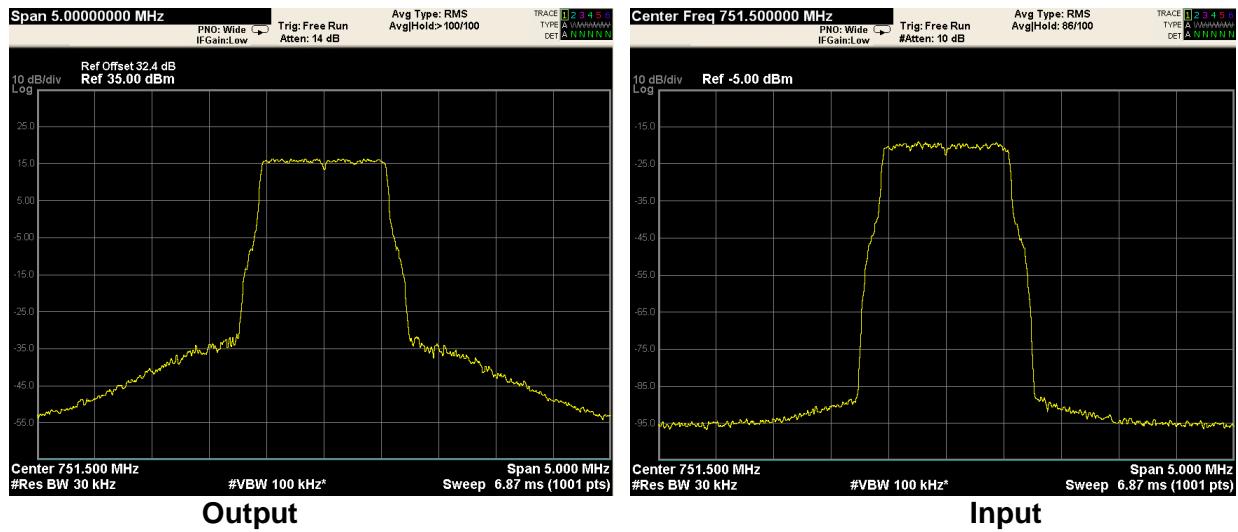
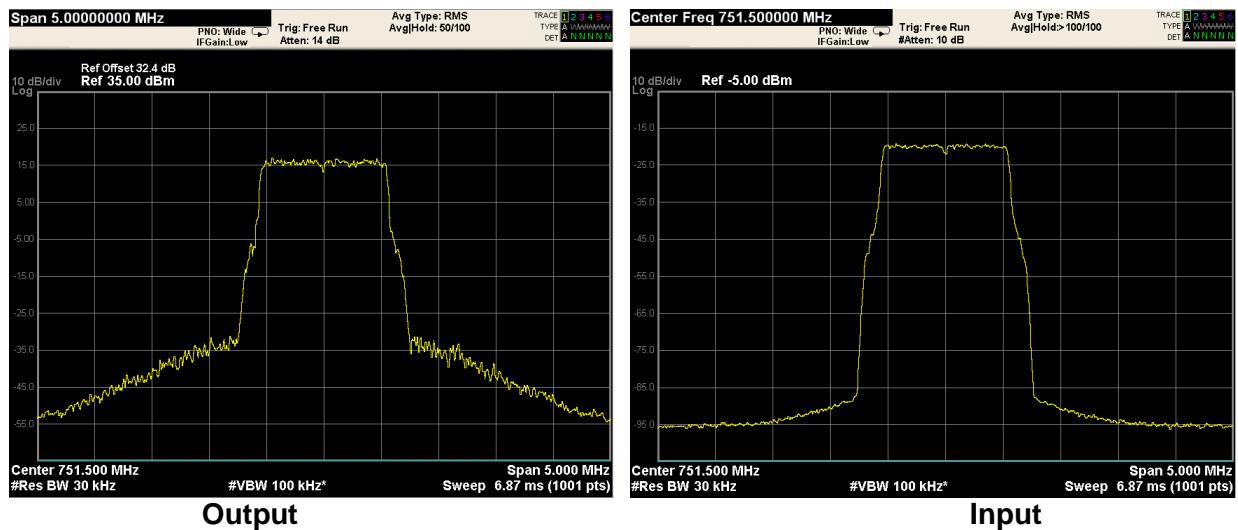
The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

Test date: [2015-05-18](#)

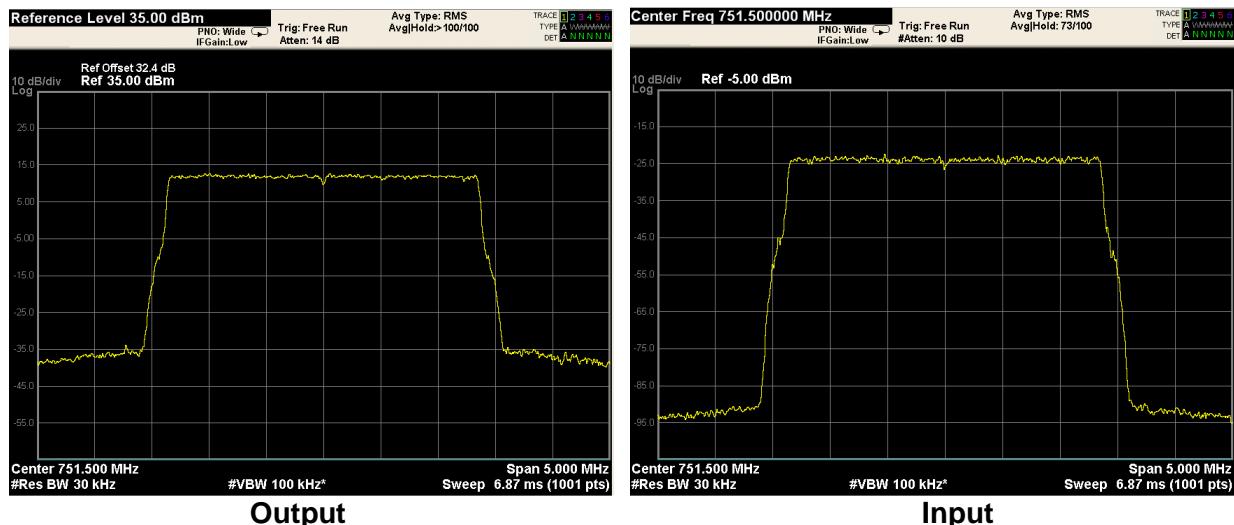
Test results: [Pass](#)

### Special notes

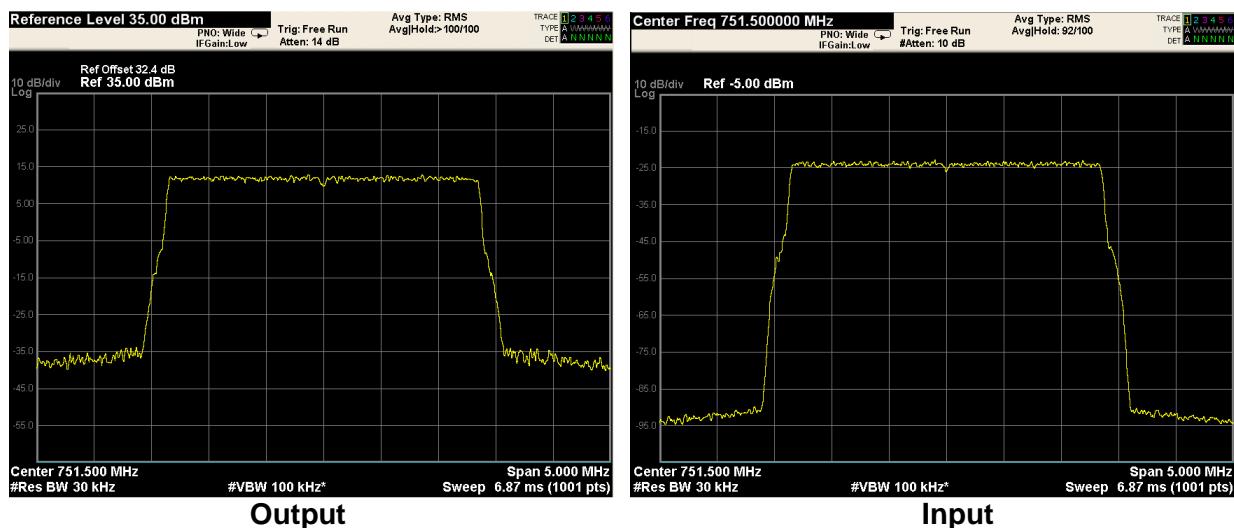
- 26 dBc points provided in terms of attenuation below unmodulated carrier.
- RBW was set to 1 % of emissions bandwidth.

**Clause 2.1049 Occupied bandwidth, continued**
**Test data**
**Mod. LTE 1.4MHz (QAM) (Down-link)**

**Mod. LTE 1.4MHz (QPSK) (Down-link)**


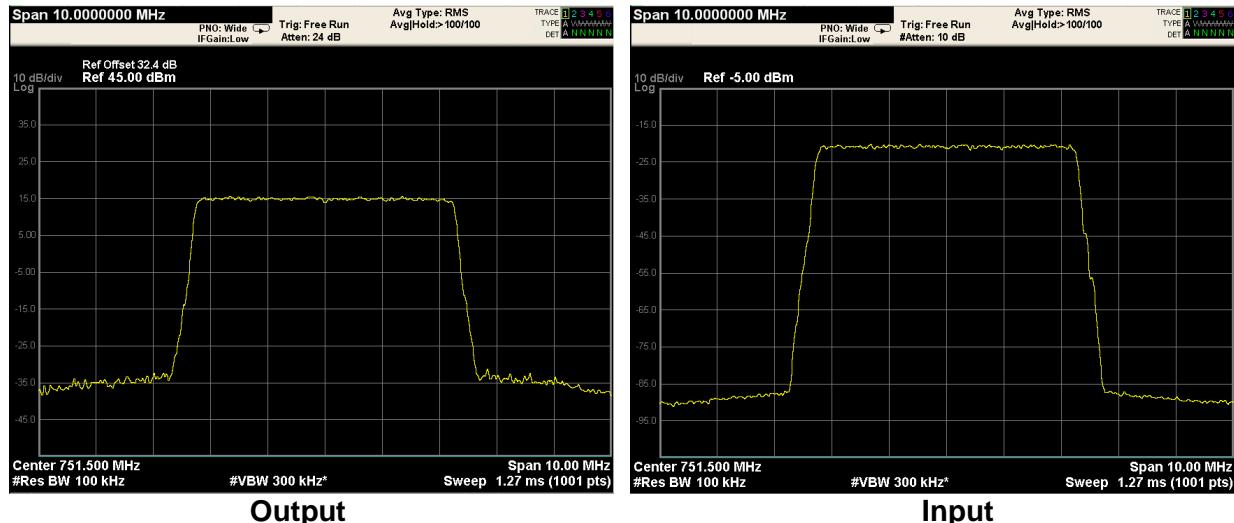
### Mod. LTE 3MHz (QAM) (Down-link)



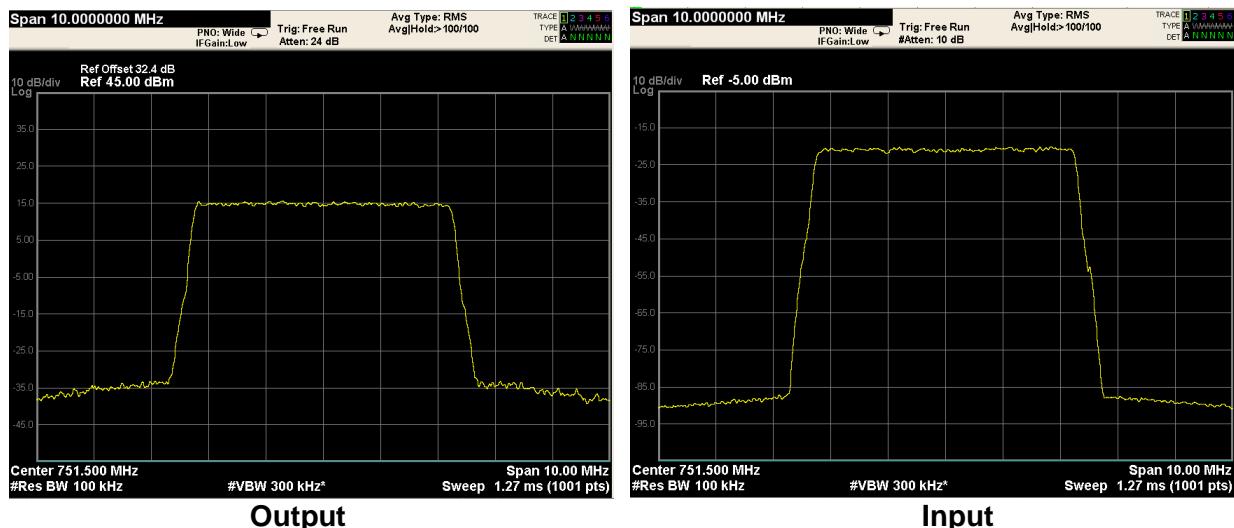
### Mod. LTE 3MHz (QPSK) (Down-link)



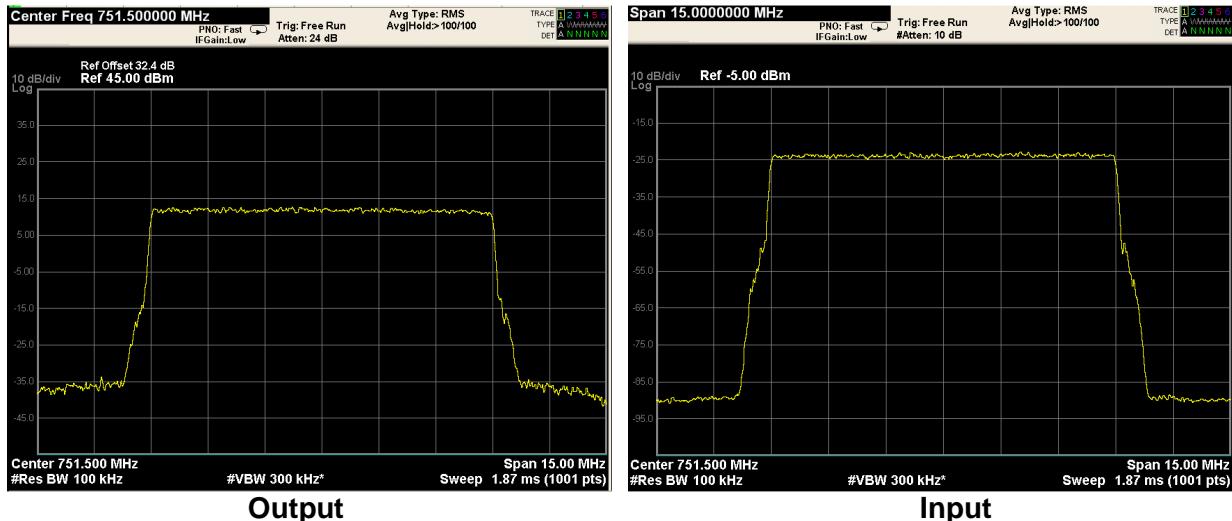
### Mod. LTE 5MHz (QAM) (Down-link)



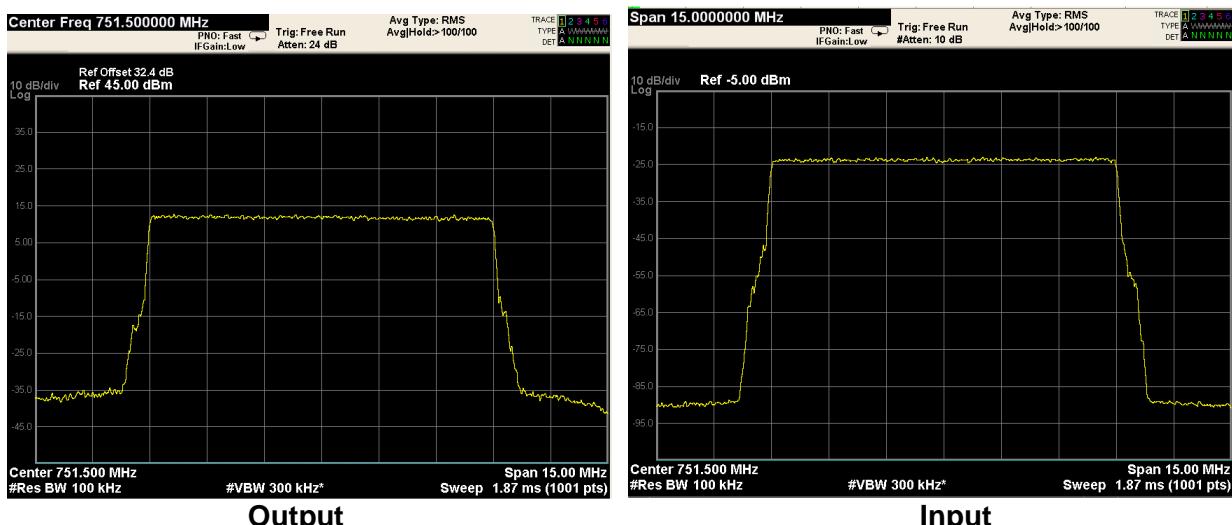
### Mod. LTE 5 MHz (QPSK) (Down-link)



### Mod. LTE 10MHz (QAM) (Down-link)



### Mod. LTE 10MHz (QPSK) (Down-link)

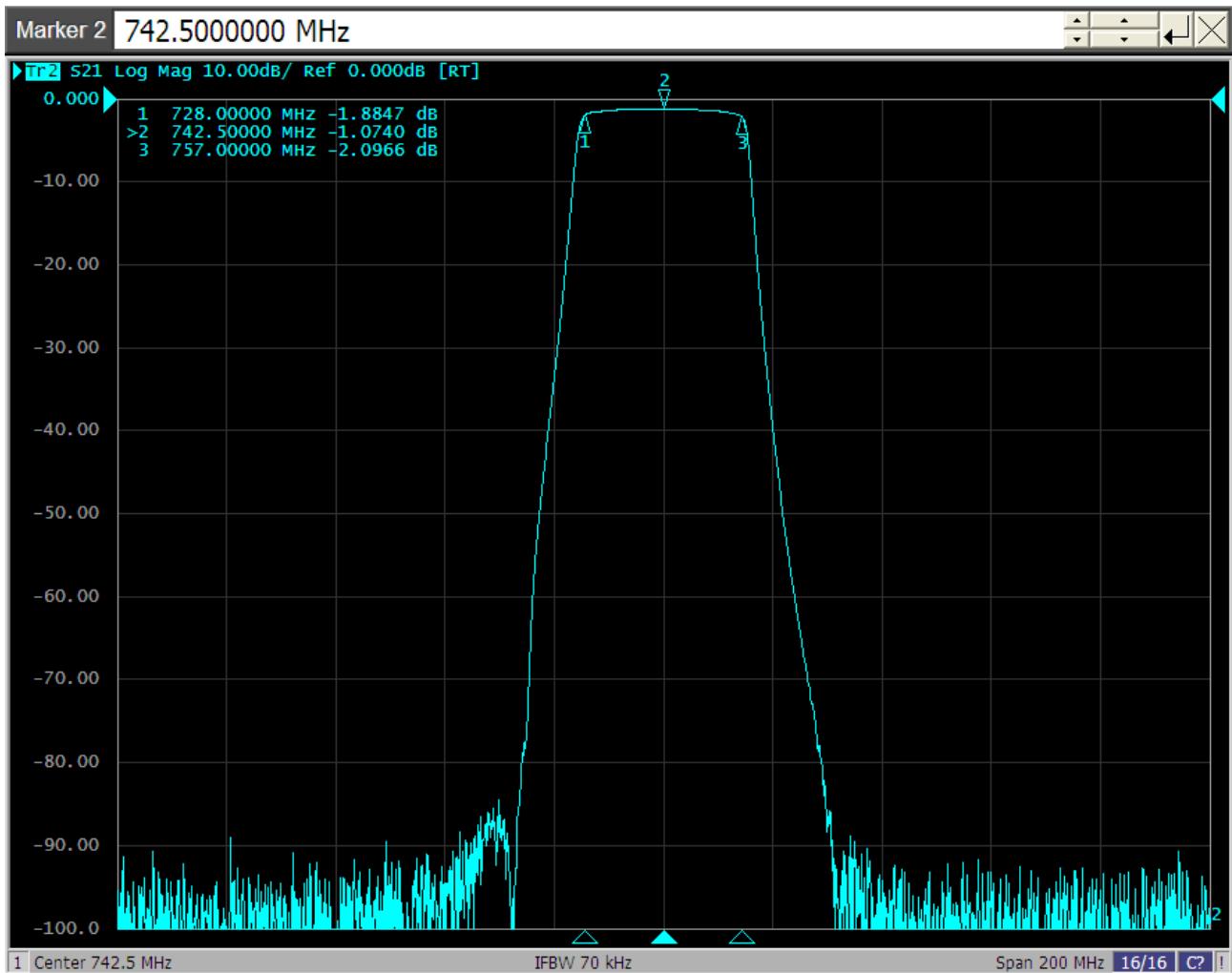


## Clause 935210 D02v02r01 (D.3)(l) Out of band rejection

Out of Band Rejection – Test for rejection of out of band signals.  
Filter frequency response plots are acceptable.

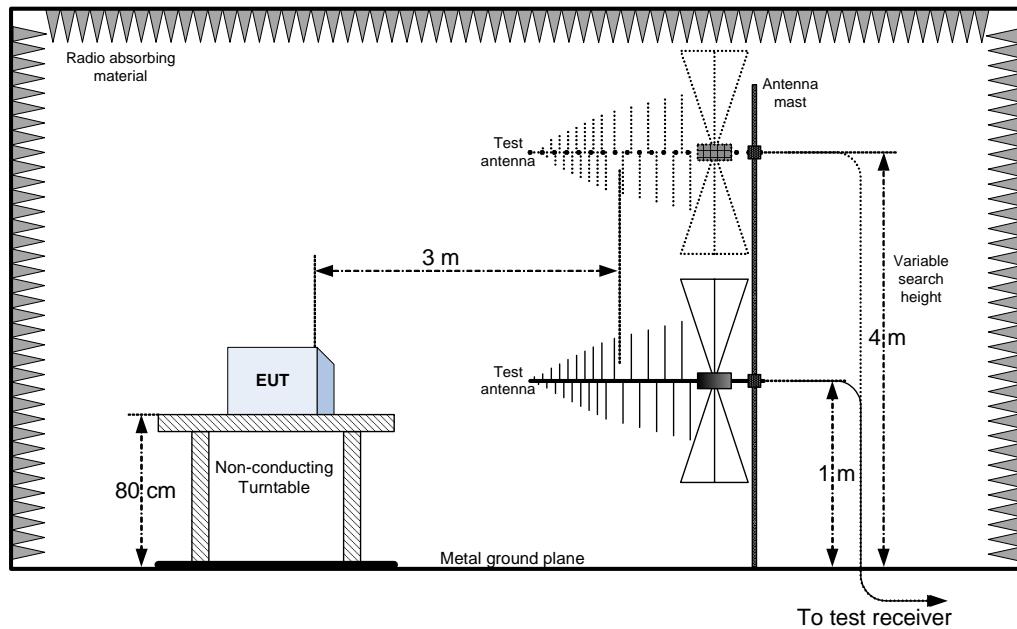
Test date: 2015-05-19

Test results: Pass

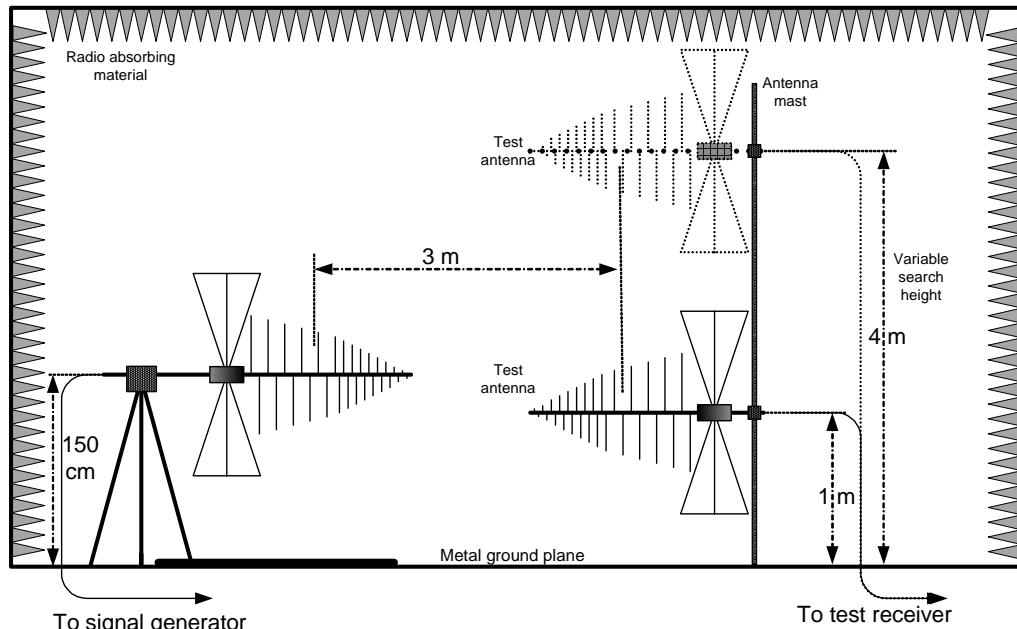


## Appendix B: Block diagrams of test set-ups

### Radiated emissions set-up



### Substitution method set-up



## Appendix C: EUT Photos

## Photo Set up





## Photo EUT



