Report Reference ID:	283384-6TRFWL

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:	Very Very High Power Module Amplifier
Model:	MWHPA0001UMTS-D
FCC ID:	XM2-WHPAAWE

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

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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 ☒ No ☐ 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.

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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(d)	Peak output power at RF antenna connector	Pass
§27.53(h)	Spurious emissions at RF antenna connector, continued	Pass
§27.53(h)	Radiated spurious emissions	Pass
§27.54	Frequency stability	N/A a)
§2.1049	Occupied bandwidth	Pass
§ 935210 D02v02r01 (D.3)(l)	Out of band rejection	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

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

3.2 Modular equipment

a) Single modular approval	Single modular approval Yes ☐ No ☒
b) Limited single modular approval	Limited single modular approval Yes ☐ No ☒

3.3 Product details

FCC ID	Grantee code:	XM2
	Product code:	-WHPAAWE
Equipment class	B2I	
Description of product as it is marketed	Booster	
	Model name/number:	MWHPA0001UMTS-D
	Serial number:	1001113002

3.4 Application purpose

Type of application	☒ Original certification ☐ Change in identification of presently authorized equipment Original FCC ID: Grant date: ☐ Class II permissive change or modification of presently authorized equipment

Section 3: Equipment under test

3.5 Composite/related equipment

a) Composite equipment	The EUT is a composite device subject to an additional equipment authorization Yes ☐ No ☒
b) Related equipment	The EUT is part of a system that operates with, or is marketed with, another device that requires an equipment authorization Yes ☐ No ☒
c) Related FCC ID	If either of the above is "yes": ☐ has been granted under the FCC ID(s) listed below: ☐ is in the process of being filled under the FCC ID(s) listed below: ☐ is pending with the FCC ID(s) listed below: ☐ has a mix of pending and granted statues 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

Operating band:	Down Link: 2110–2180 MHz, Up Link: 1710-1780 MHz
Operating frequency:	Wideband
Modulation type:	CDMA, WCDMA, LTE (QAM and QPSK)
Occupied bandwidth:	CDMA: 1,25 MHz, WCDMA: 5 MHz LTE: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz
Channel spacing:	standard
Emission designator:	CDMA, WCDMA: F9W, LTE: D7W
RF Output	Down Link: 46dBm (40W) Up Link: N.A. (The EUT does not transmit over the air in the up-link direction)
Gain	Down Link: 51dB Up Link: N.A. (The EUT does not transmit over the air in the up-link direction)
Antenna type:	External Antenna is not provided, equipment that has an external 50 Ω RF connector
Power source:	28-30 Vdc

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:	Power Supply
Brand name:	TDK Lambda
Model name or number:	Z36-24-L-E
Serial number:	LOC-535A218-0001
Nemko sample number:	----------
Description:	To supply amplifier
Cable length and type:	----------
Item # 2	
Type of equipment:	Power supply
Brand name:	DF
Model name or number:	DF1731SB
Serial number:	na
Nemko sample number:	na
Description:	To supply cooling fan of heatsink
Cable length and type:	----------
Item # 3	
Type of equipment:	
Brand name:	
Model name or number:	
Serial number:	
Nemko sample number:	
Connection port:	
Cable length and type:	
Item # 4	
Type of equipment:	
Brand name:	
Model name or number:	
Serial number:	
Nemko sample number:	
Connection port:	
Cable length and type:	

3.9 Operation of the EUT during testing

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

3.10 EUT setup diagram

In this system, Very Very High Power Amplifier is the EUT and it is intended for mounting in Remote Unit and Digital Service Front-End (optical system with Master Unit that 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 input connector.

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

Modifications	Modifications performed to the EUT during this assessment None ☒ Yes ☐, performed by Client ☐ or Nemko ☐ Details:

4.2 Deviations from laboratory tests procedures

Deviations	Deviations from laboratory test procedures None ☒ Yes ☐ - details are listed below:

4.3 Technical judgment

Judgment	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 ±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(d) Peak output power at RF antenna connector

§ 27.50(d) The following power and antenna height requirements apply to stations transmitting in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz and 2180-2200 MHz bands:

(2) The power of each fixed or base station transmitting in the 1995-2000 MHz, the 2110-2155 MHz 2155-2180 MHz band, or 2180-2200 MHz band and situated in any geographic location other than that described in paragraph (d)(1) of this section is limited to:
(i) An equivalent isotropically radiated power (EIRP) of 1640 watts when transmitting with an emission bandwidth of 1 MHz or less;
(ii) An EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

(5) Equipment employed must be authorized in accordance with the provisions of §24.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. 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.

Test date: 2015-05-21

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(d) Peak output power at RF antenna connector

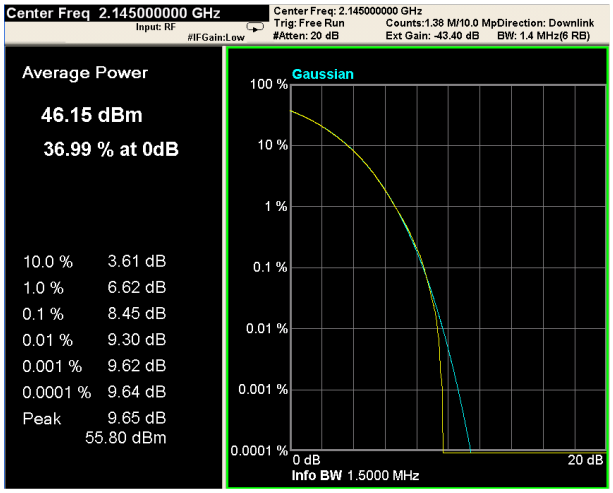
Test data

Conducted measurements

	Test data					
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	RF output Power (W/MHz)	PAR (dB)
Down-link	CDMA (1,25MHz)	2145.0	46.08	40.55	32.44	9.10
Down-link	WCDMA (5MHz)	2145.0	46.07	40.46	8.09	9.92
Down-link	LTE (QAM, 1,4MHz)	2145.0	46.15	41.21	29.44	9.65
Down-link	LTE (QPSK, 1,4MHz)	2145.0	46.25	42.17	30.12	9.31
Down-link	LTE (QAM, 3MHz)	2145.0	46.16	41.30	13.77	9.43
Down-link	LTE (QPSK, 3MHz)	2145.0	46.11	40.83	15.37	9.62
Down-link	LTE (QAM, 5MHz)	2145.0	46.23	41.98	8.4	9.76
Down-link	LTE (QPSK, 5MHz)	2145.0	46.14	41.11	8.22	9.72
Down-link	LTE (QAM, 10MHz)	2145.0	46.14	41.11	4.11	9.54
Down-link	LTE (QPSK, 10MHz)	2145.0	46.23	41.98	4.2	9.42
Down-link	LTE (QAM, 15MHz)	2145.0	46.21	41.78	2.79	9.72
Down-link	LTE (QPSK, 15MHz)	2145.0	46.15	41.21	2.75	9.84
Down-link	LTE (QAM, 20MHz)	2145.0	46.12	40.93	2.05	10.16
Down-link	LTE (QPSK, 20MHz)	2145.0	46.19	41.59	2.08	9.92

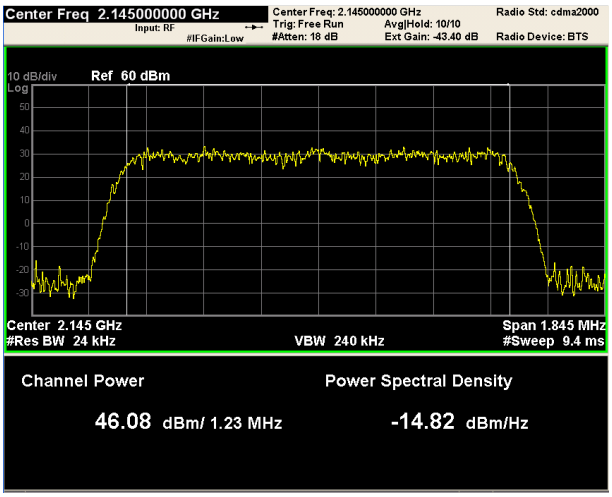
Transmitting these powers by a λ/2 dipole tuned on the carriers' frequency we get: erp.

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:

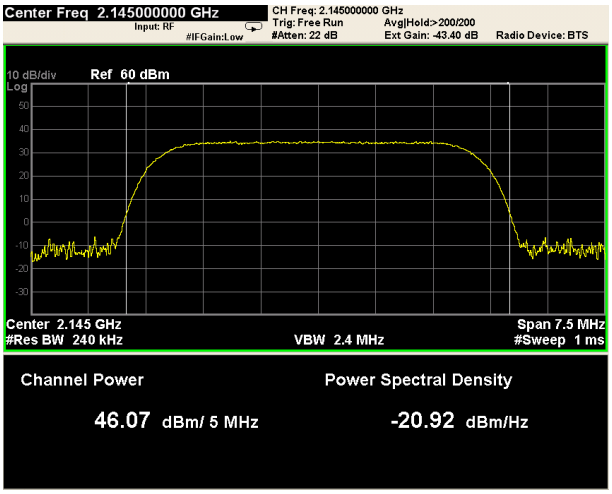


PAR measure example (LTE 1,4MHz QAM)

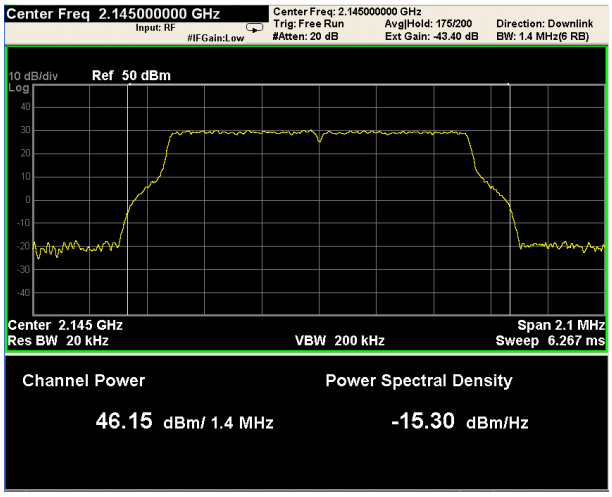
Mod. CDMA



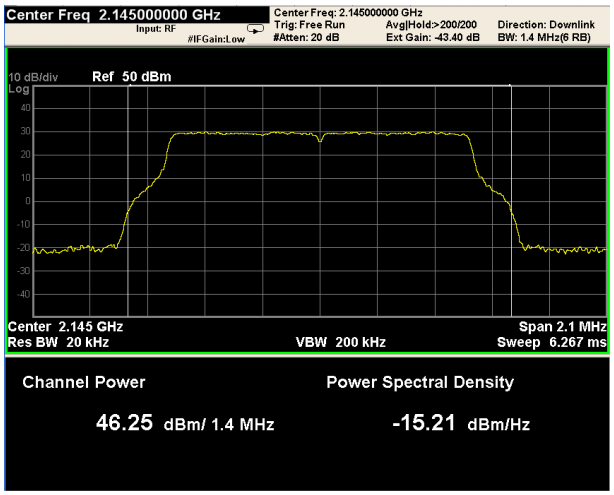
Mod. WCDMA



Mod. LTE 1,4MHz (Down-link)

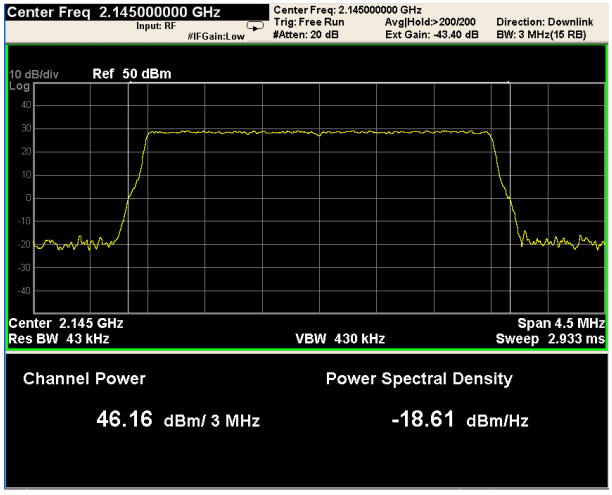


QAM

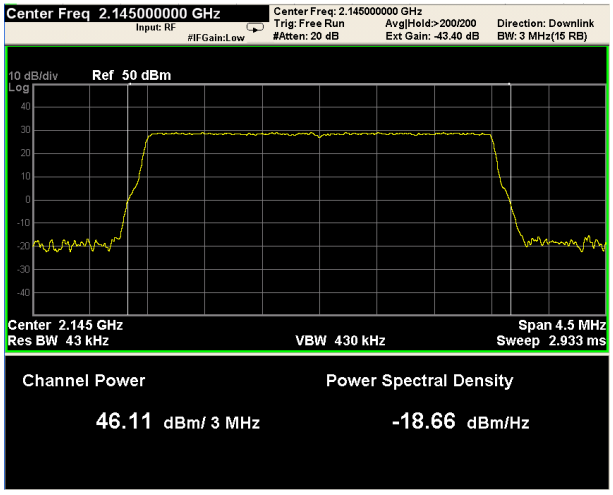


QPSK

Mod. LTE 3MHz (Down-link)

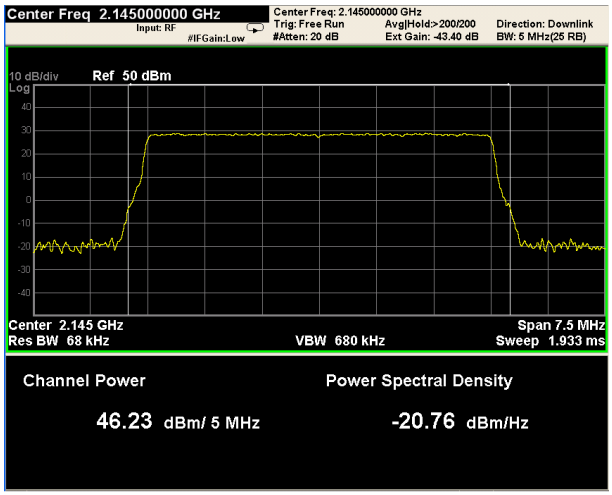


QAM

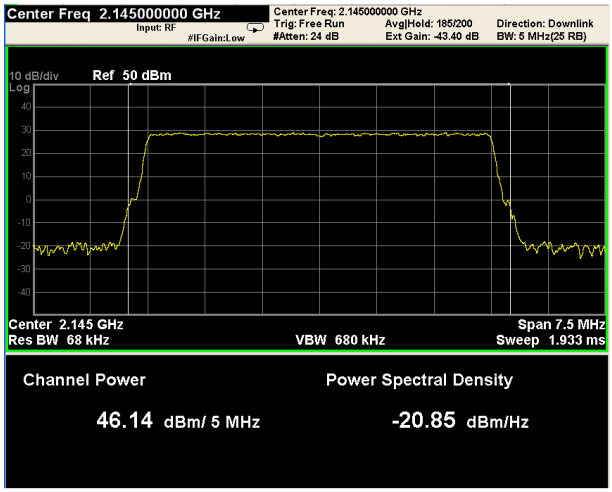


QPSK

Mod. LTE 5MHz (Down-link)

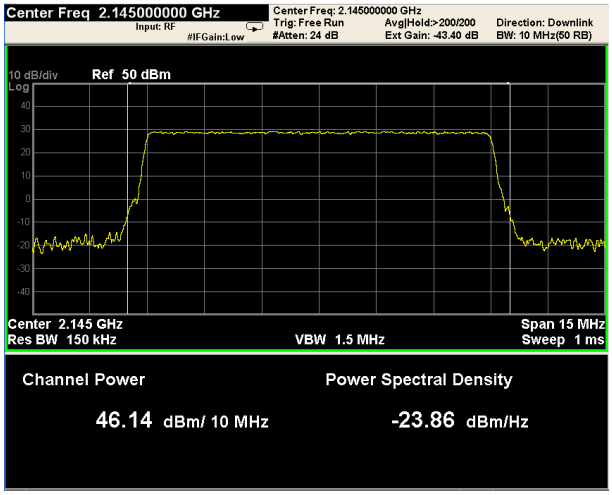


QAM

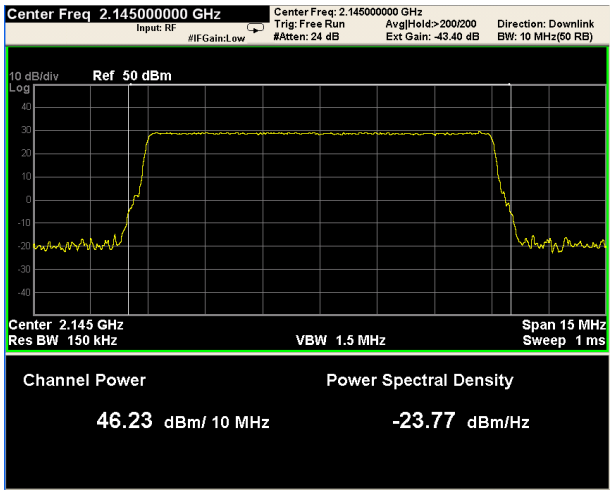


QPSK

Mod. LTE 10MHz (Down-link)

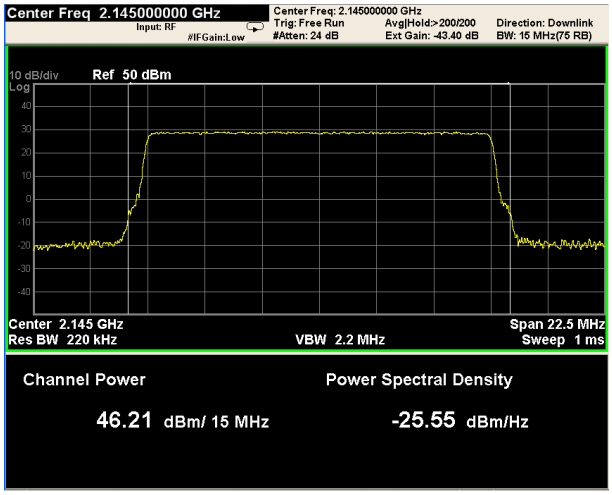


QAM

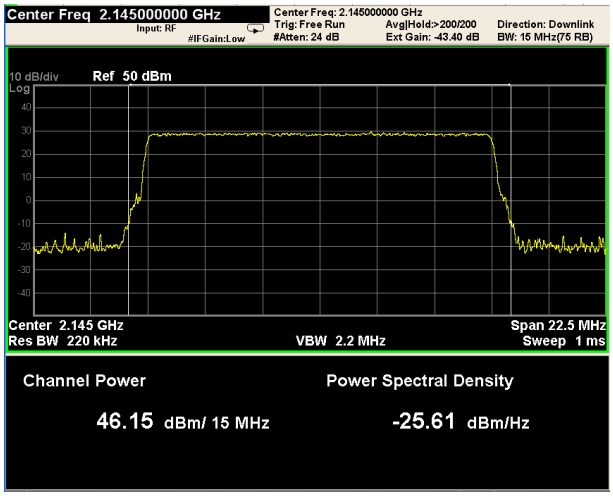


QPSK

Mod. LTE 15MHz (Down-link)

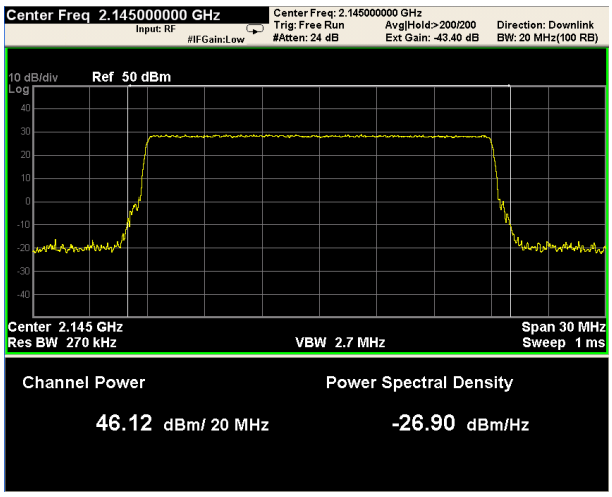


QAM

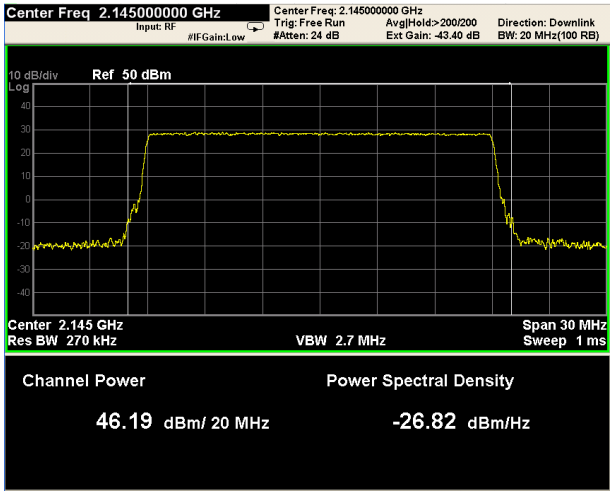


QPSK

Mod. LTE 20MHz (Down-link)



QAM



QPSK

Clause 27.53(h) Spurious emissions at RF antenna connector, continued

(h) AWS emission limits:

(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

(3) Measurement procedure.

(i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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.

(ii) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.

(iii) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

Test date: 2015-05-21

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 (h) Spurious emissions at RF antenna connector, continued

Test data

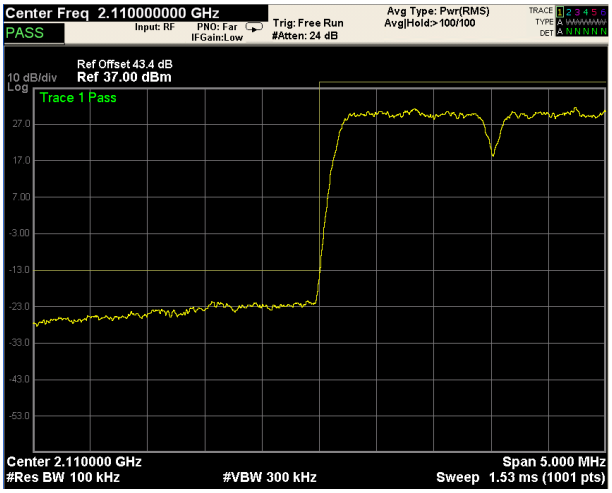
See Plots below

Spurious emissions measurement results:

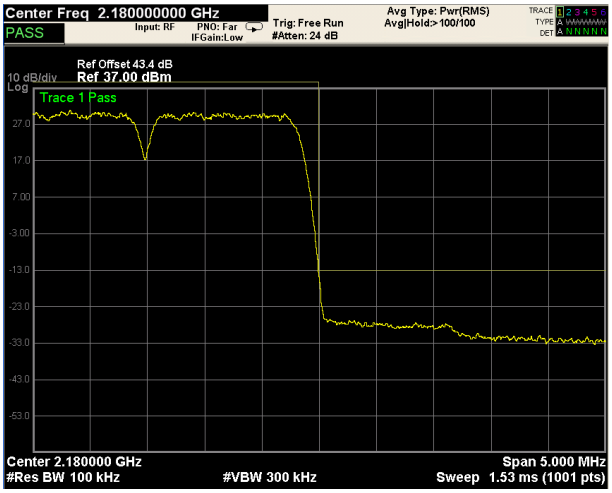
Frequency (MHz)	Spurious emission (dBm)	Limit (dBm)	Margin (dB)
Low channel			
First channel	Negligible	-13	
Mid channel			
2145 MHz	Negligible	-13	
High channel			
Last channel	Negligible	-13	

Test data, continued: band edges Inter modulation:

Mod. CDMA (Down-link)

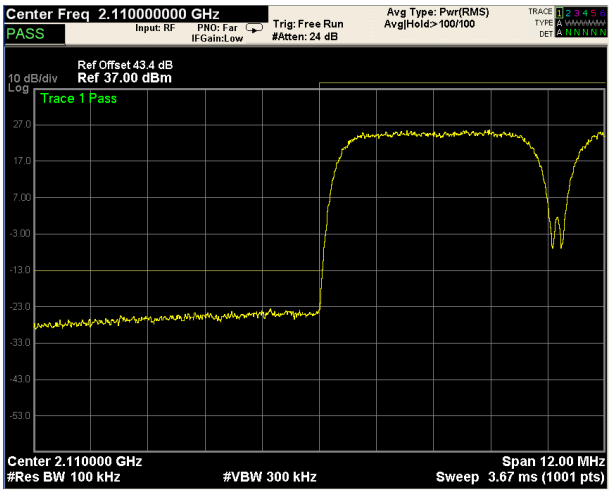


Low Band Edge

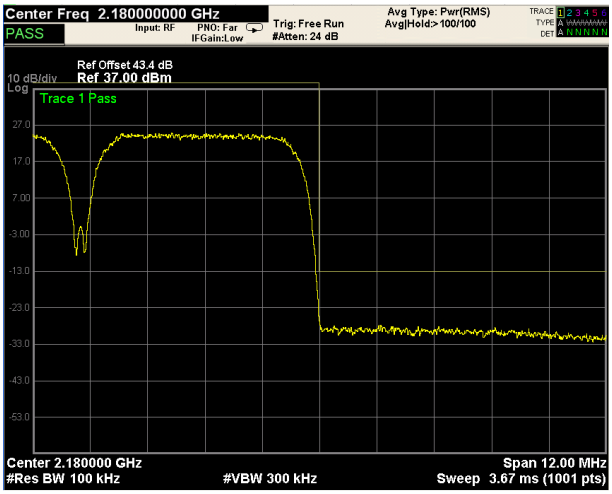


High Band Edge

Mod. WCDMA (Down-link)

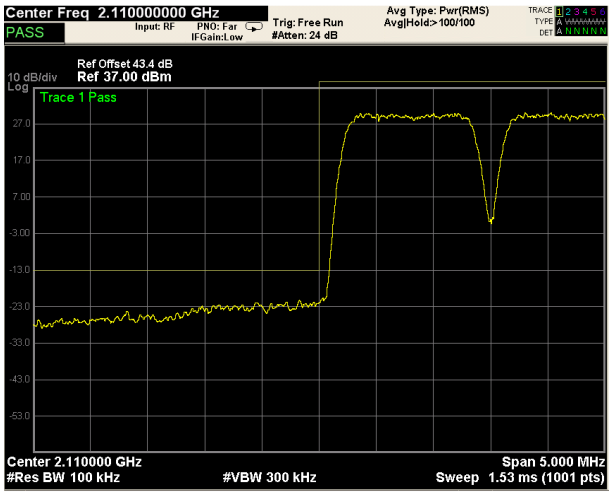


Low Band Edge

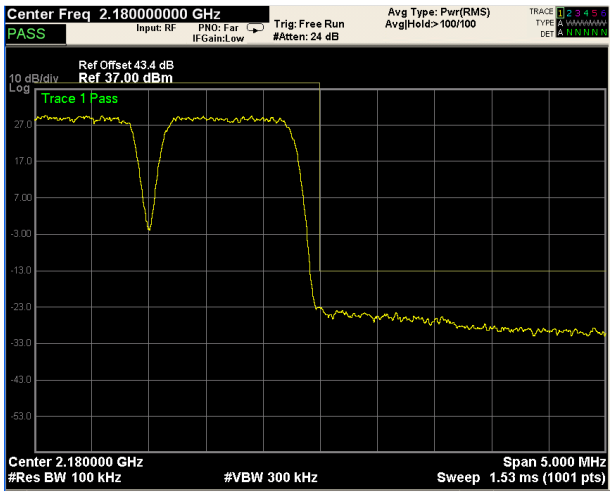


High Band Edge

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

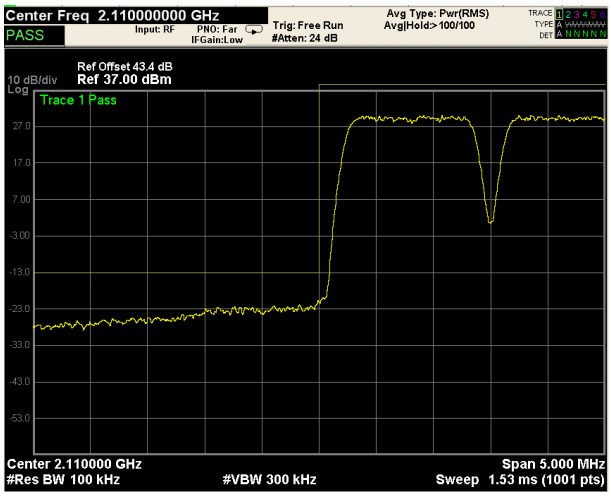


Low Band Edge

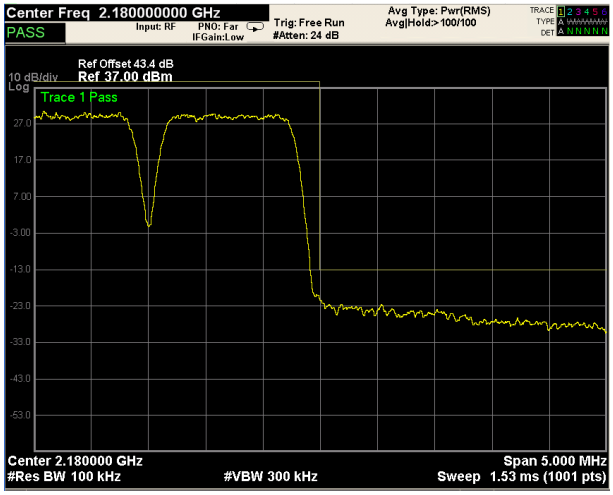


High Band Edge

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

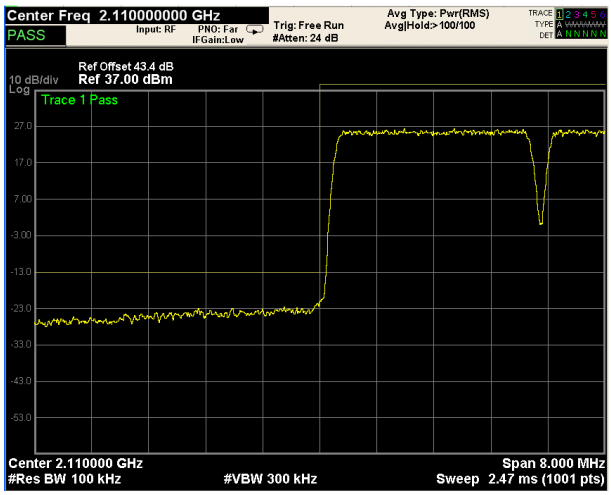


Low Band Edge

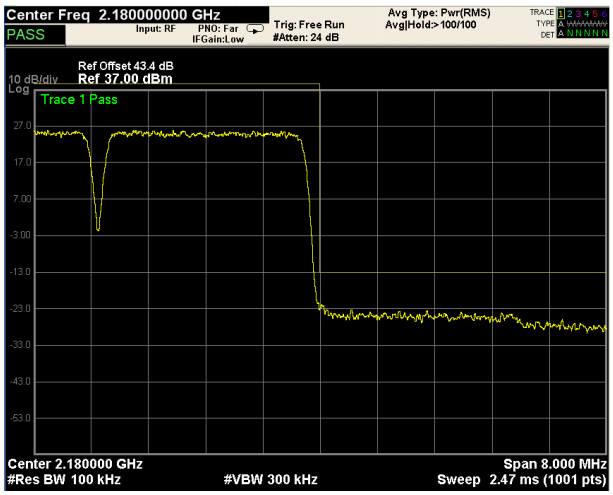


High Band Edge

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

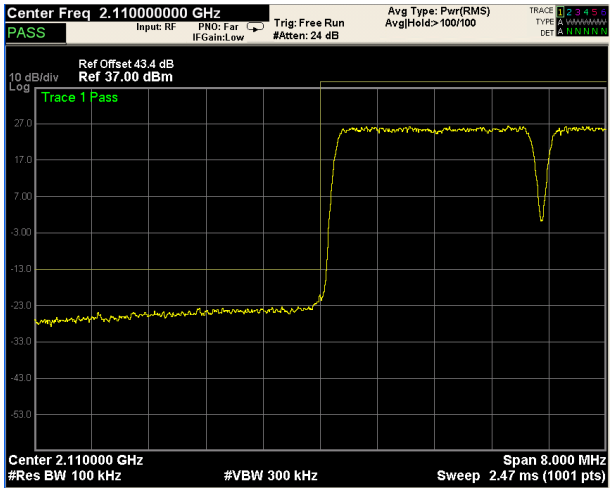


Low Band Edge

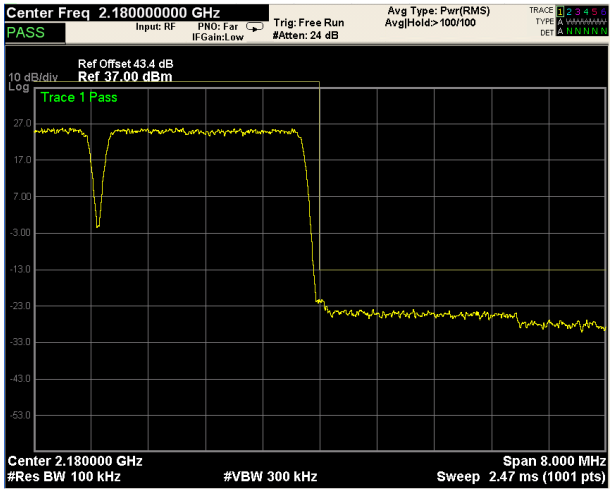


High Band Edge

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

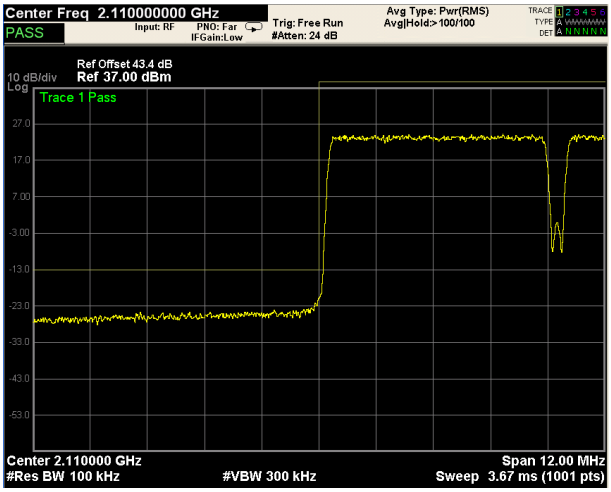


Low Band Edge

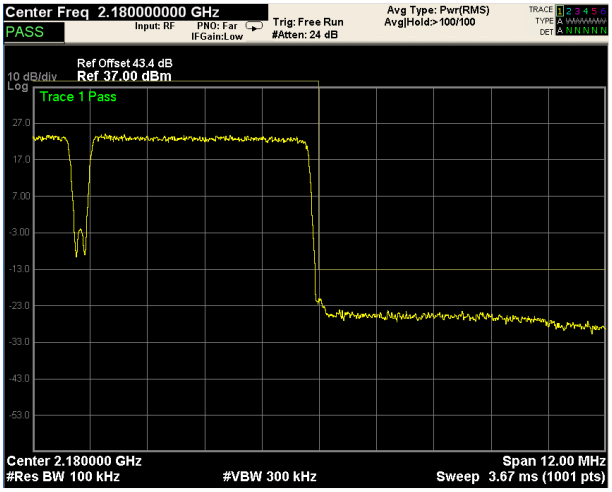


High Band Edge

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

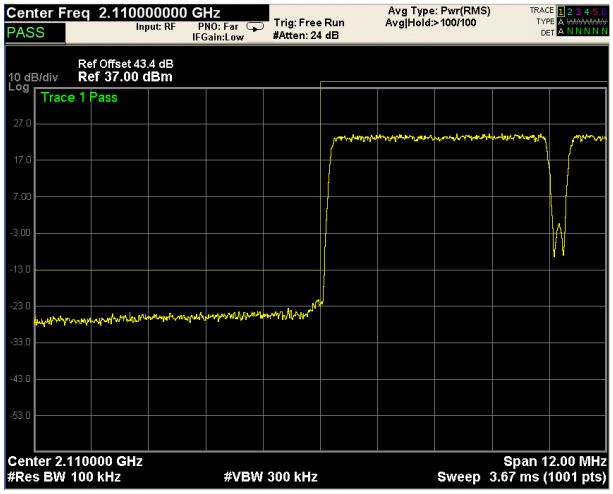


Low Band Edge

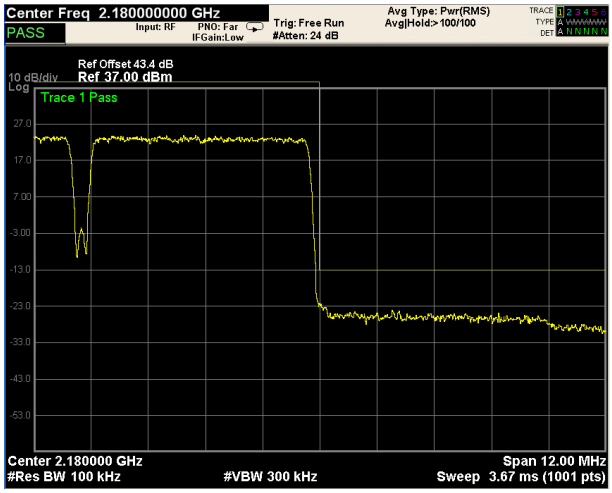


High Band Edge

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

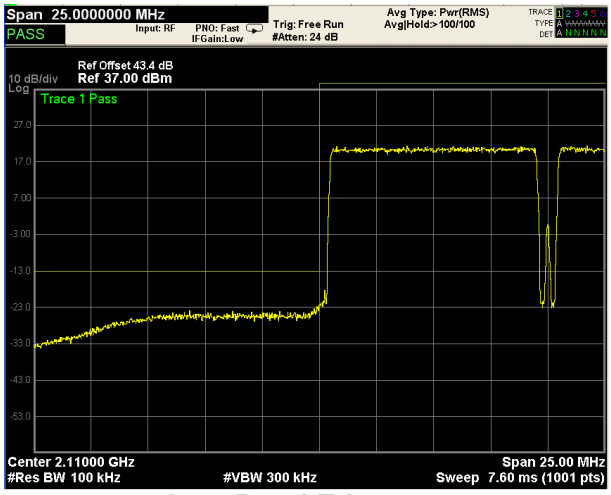


Low Band Edge

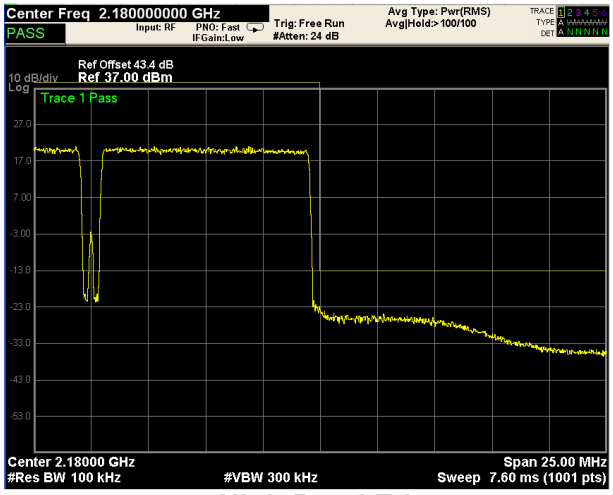


High Band Edge

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

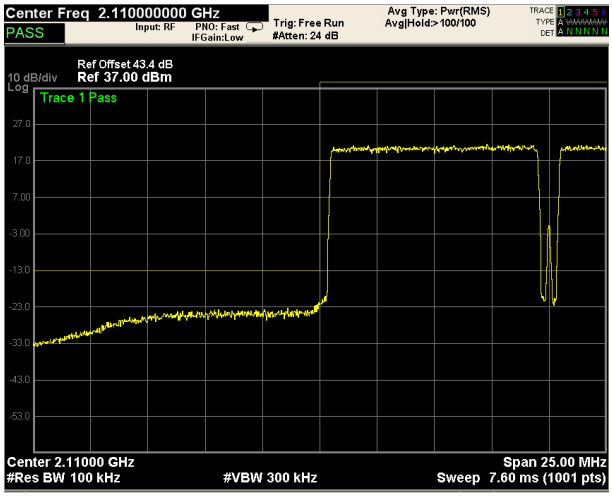


Low Band Edge

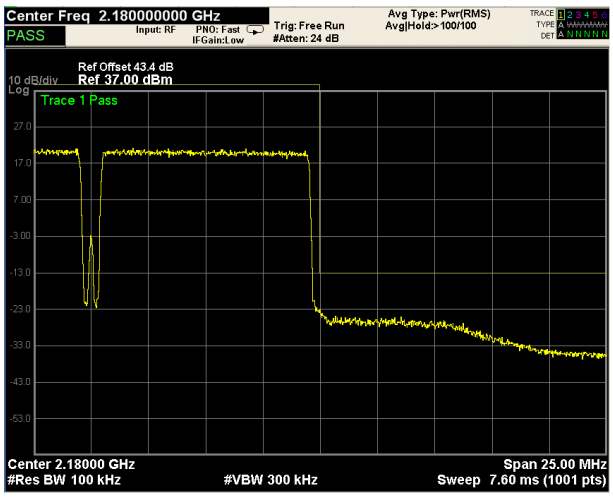


High Band Edge

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

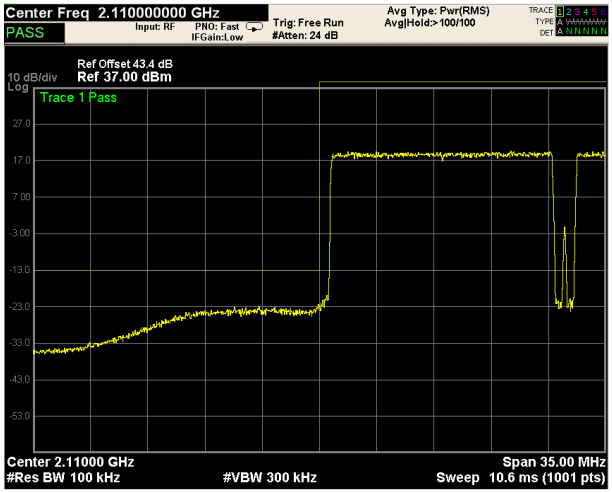


Low Band Edge

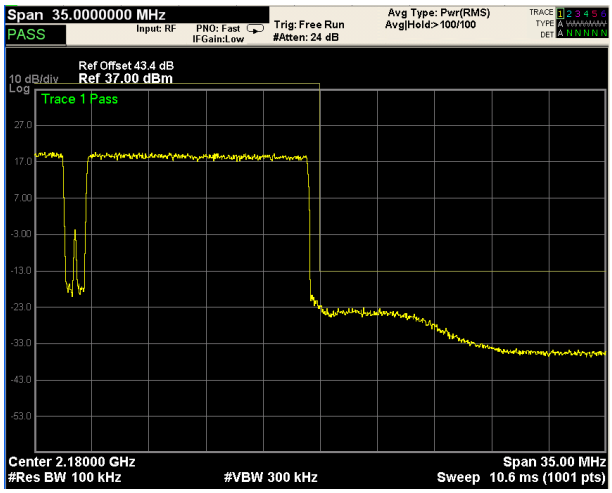


High Band Edge

Mod. LTE 15MHz (QAM) (Down-link)

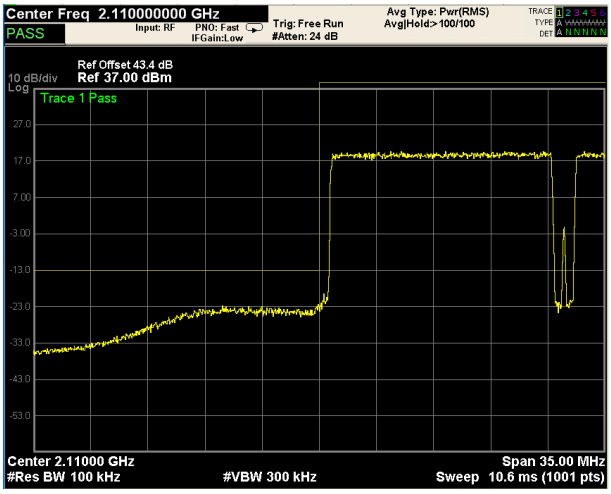


Low Band Edge

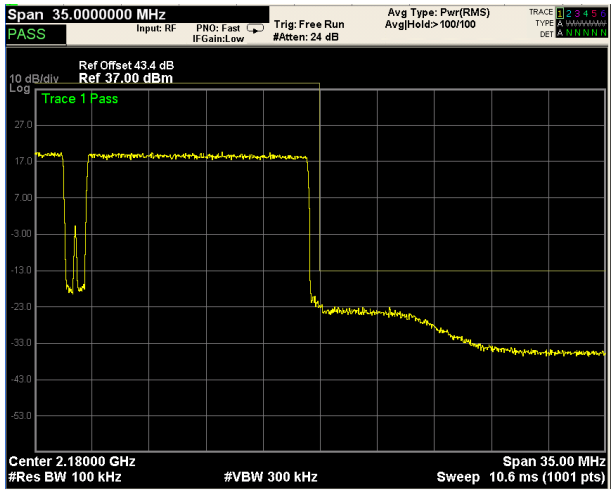


High Band Edge

Mod. LTE 15MHz (QPSK) (Down-link)

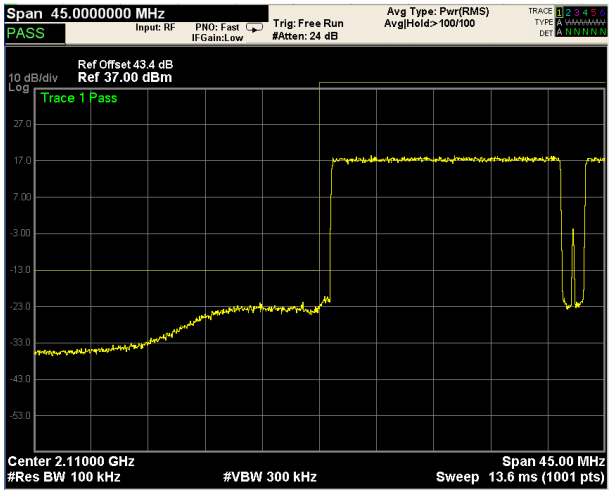


Low Band Edge

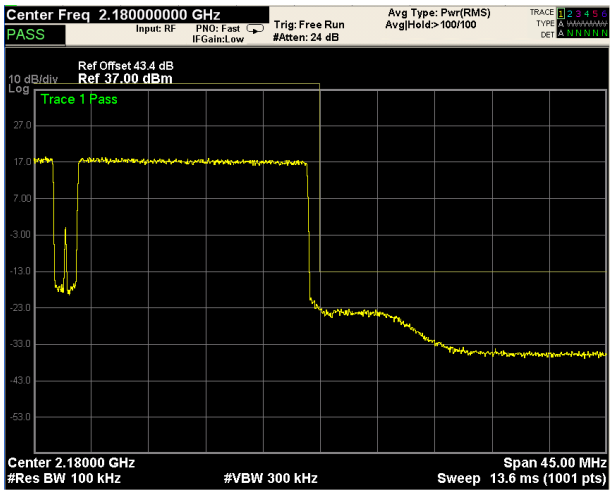


High Band Edge

Mod. LTE 20MHz (QAM) (Down-link)

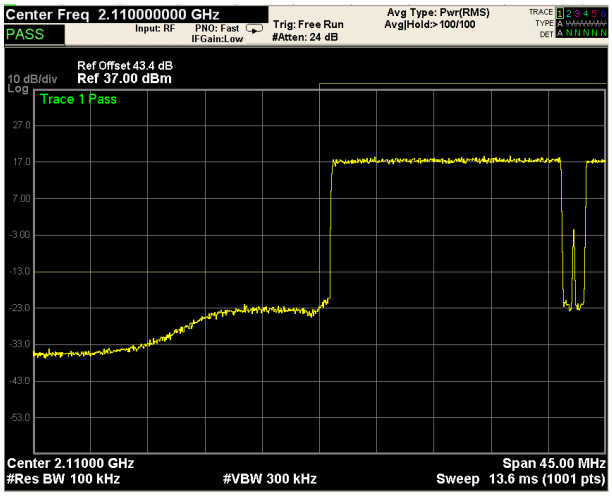


Low Band Edge

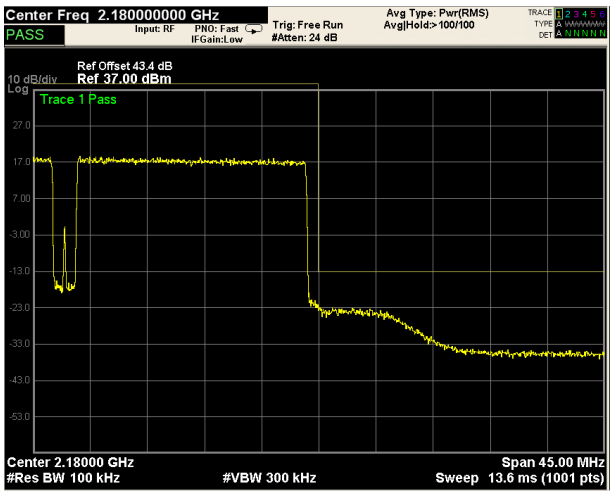


High Band Edge

Mod. LTE 20MHz (QPSK) (Down-link)



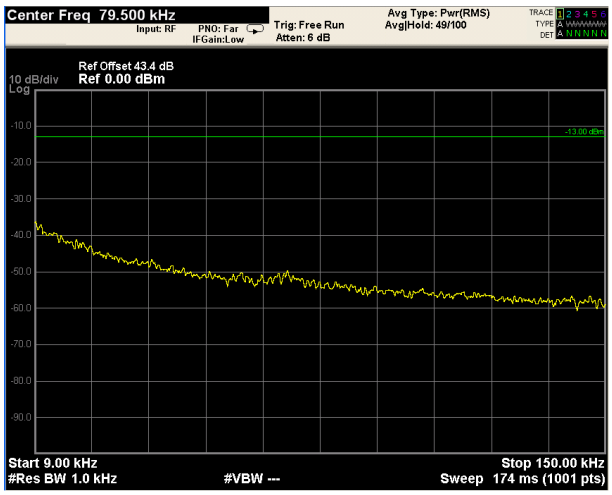
Low Band Edge



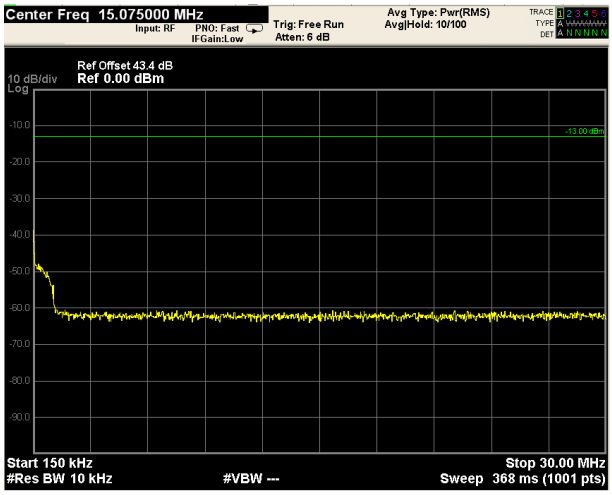
High Band Edge

Test data, continued: spurious emissions at antenna terminal

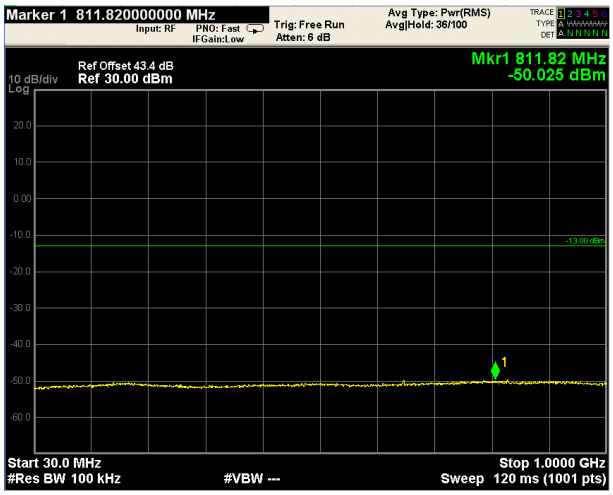
Mod. CDMA (Down-link)



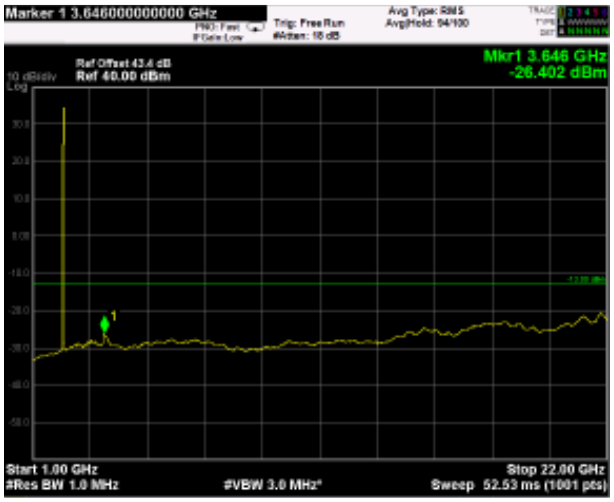
9kHz-150kHz



150kHz-30MHz

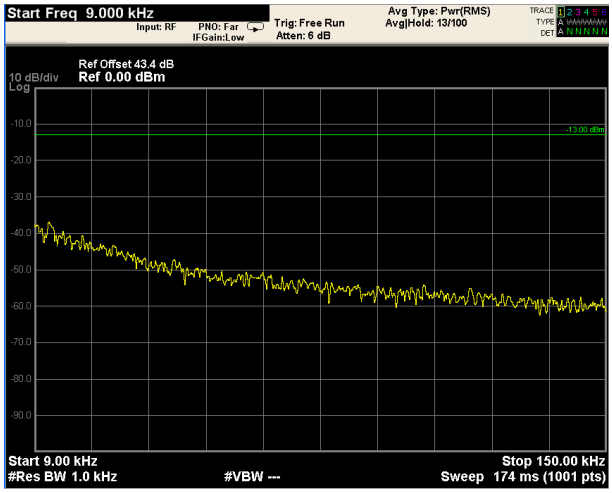


30MHz-1GHz

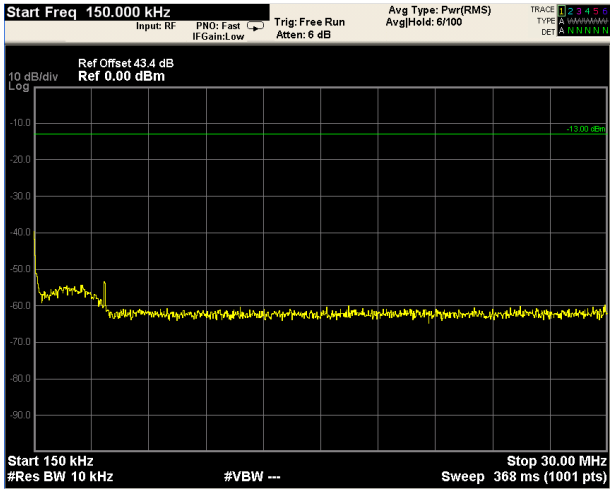


1GHz-22GHz

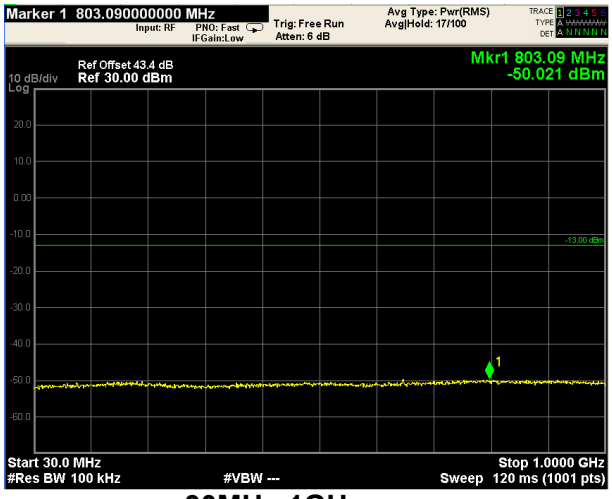
Mod. WCDMA (Down-link)



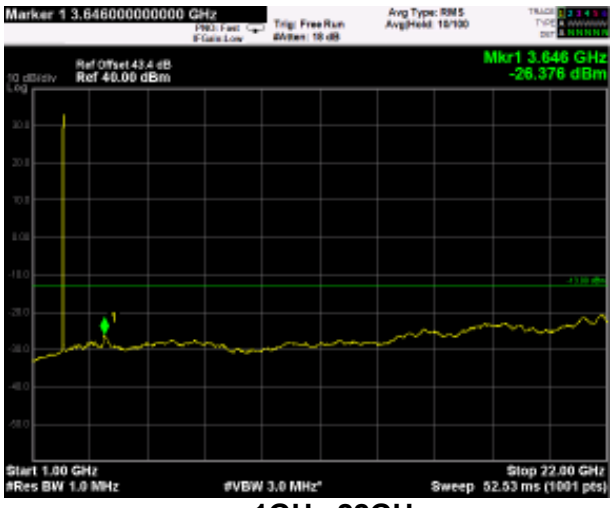
9kHz-150kHz



150kHz-30MHz

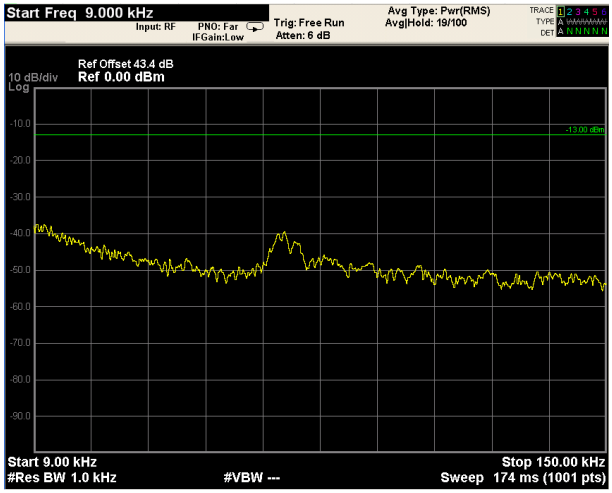


30MHz-1GHz

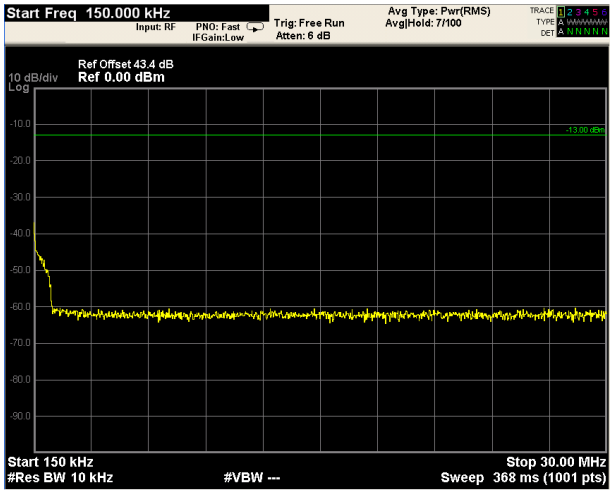


1GHz-22GHz

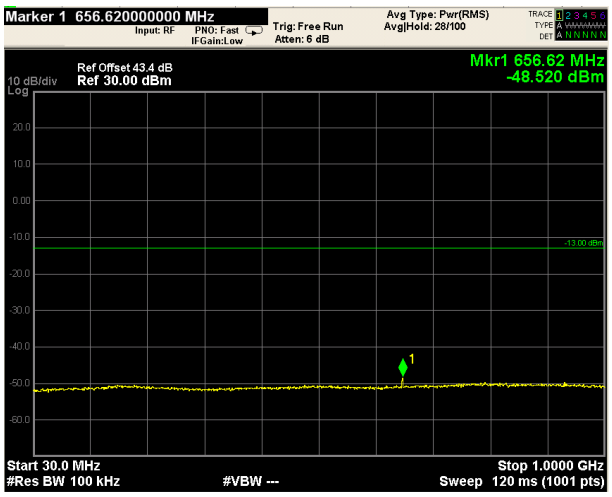
Mod. LTE 1.4MHz (QAM) (Down-link)



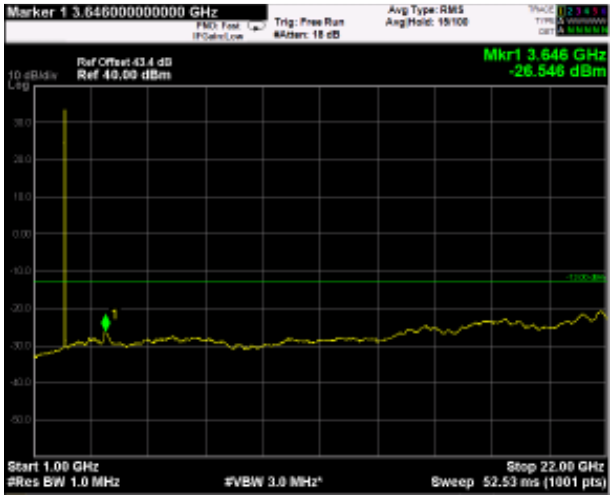
9kHz-150kHz



150kHz-30MHz

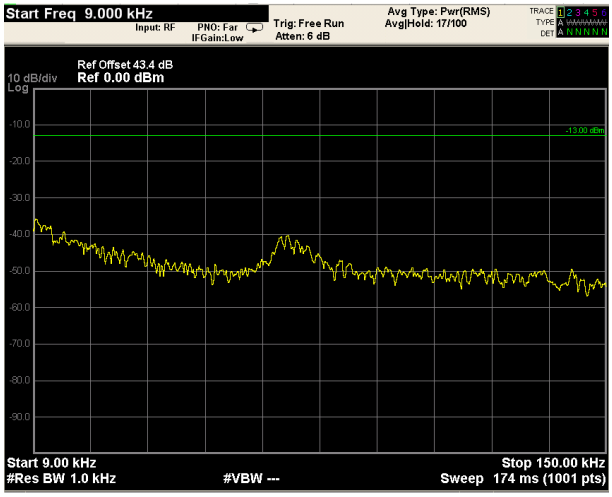


30MHz-1GHz

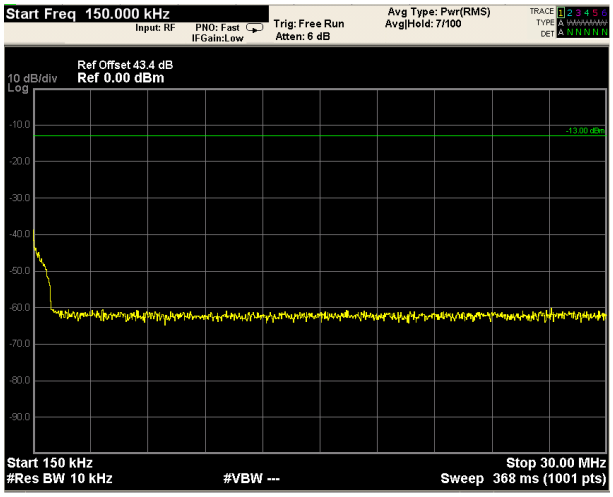


1GHz-22GHz

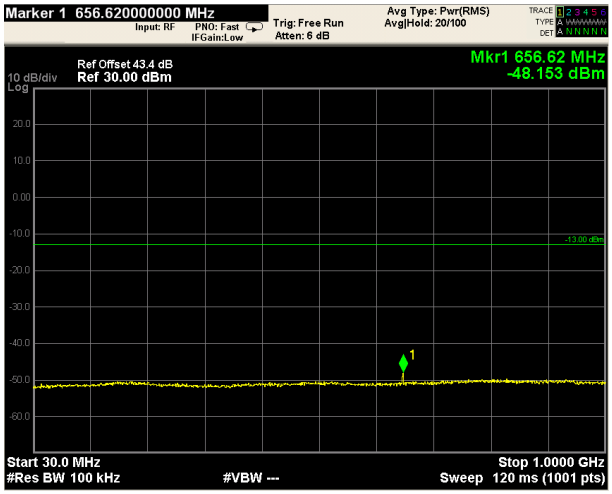
Mod. LTE 1.4MHz (QPSK) (Down-link)



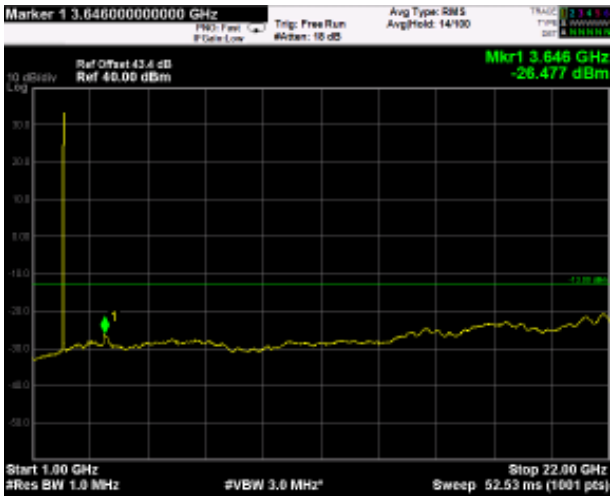
9kHz-150kHz



150kHz-30MHz

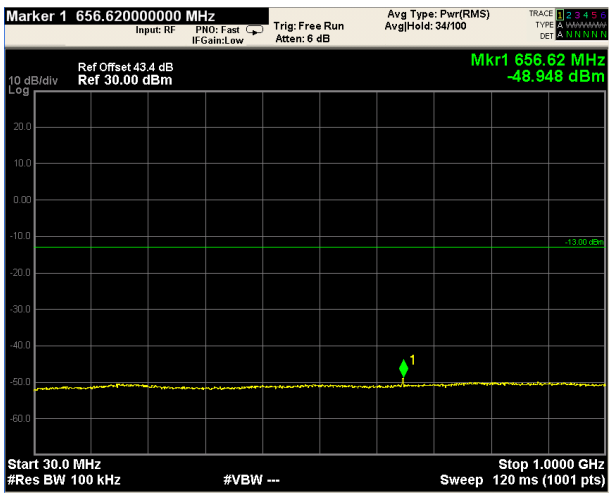


30MHz-1GHz

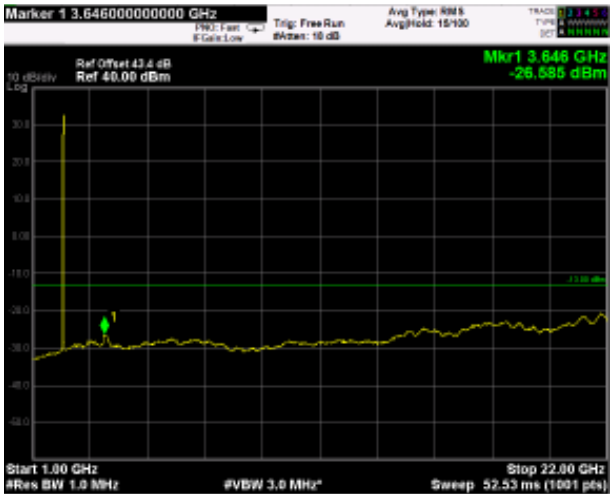


1GHz-22GHz

Mod. LTE 3MHz, only 30M-22G plot (Down-link)

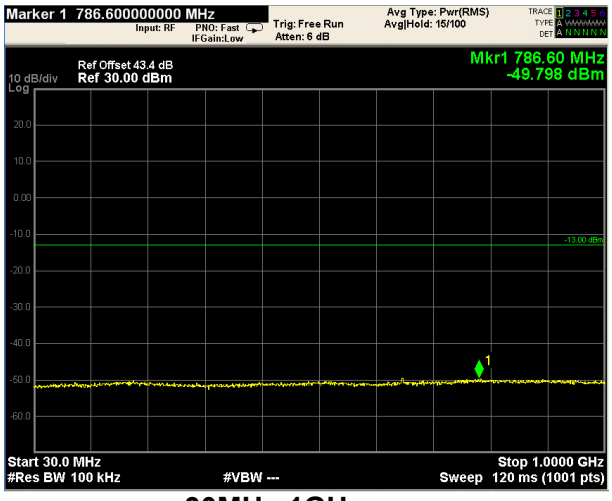


30MHz-1GHz

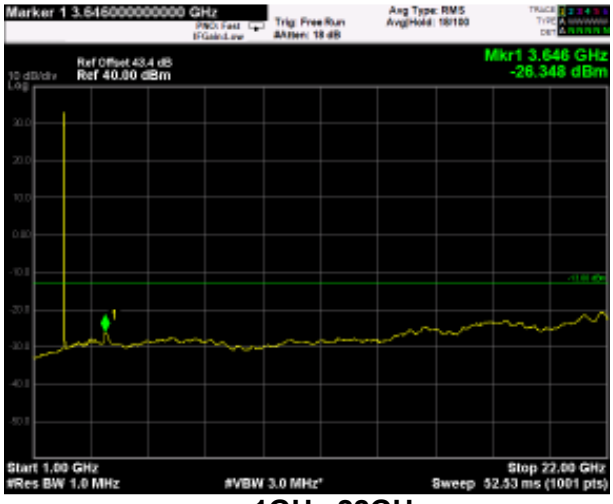


1GHz-22GHz

Mod. LTE 5MHz, only 30M-22G plot (Down-link)

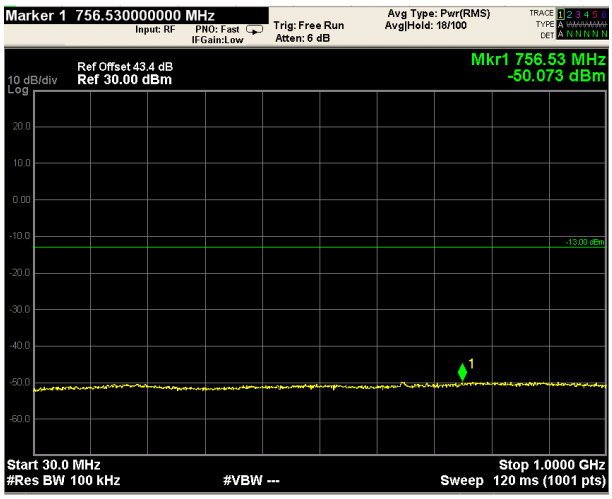


30MHz-1GHz

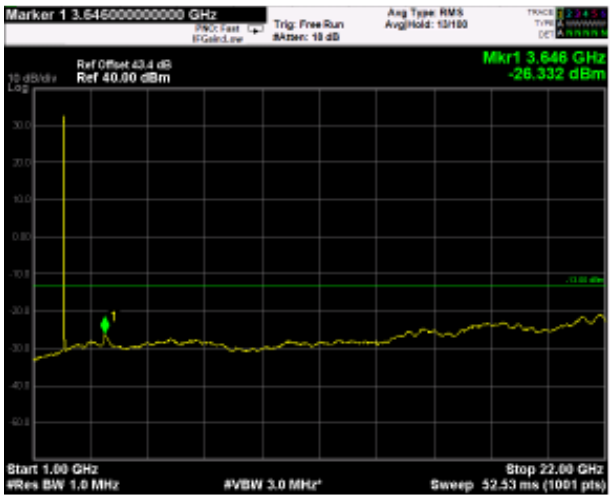


1GHz-22GHz

Mod. LTE 10MHz, only 30M-22G plot (Down-link)

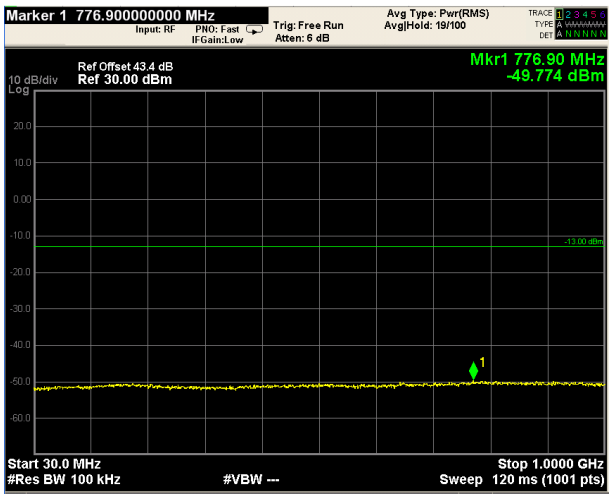


30MHz-1GHz

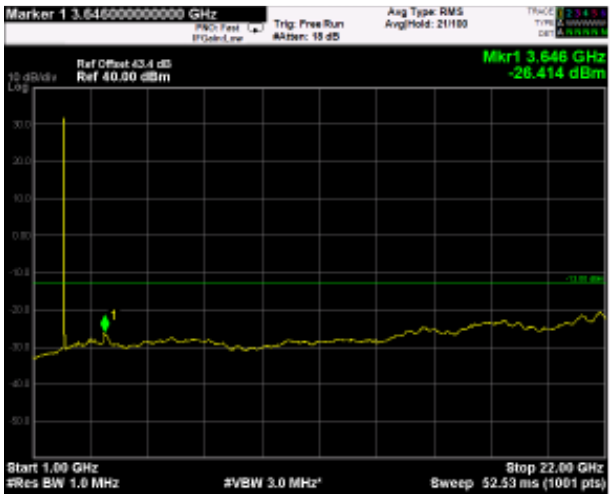


1GHz-22GHz

Mod. LTE 15MHz, only 30M-22G plot (Down-link)

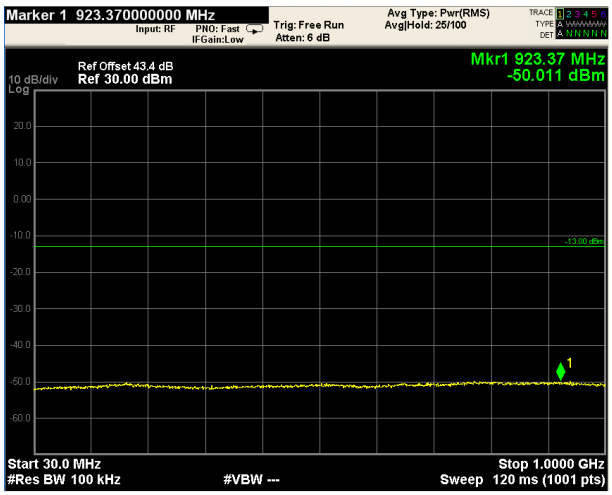


30MHz-1GHz

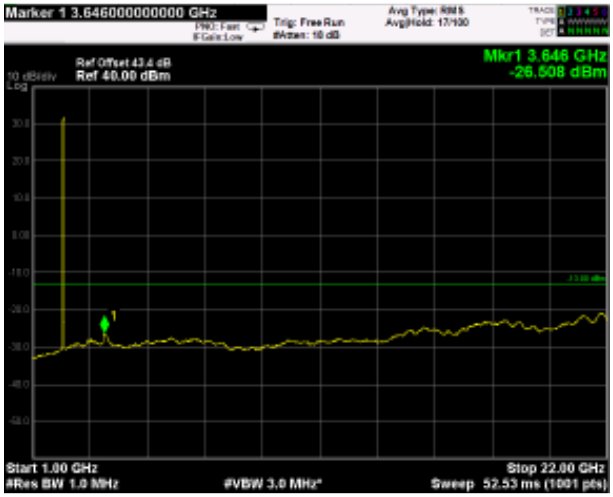


1GHz-22GHz

Mod. LTE 20MHz, only 30M-22G plot (Down-link)



30MHz-1GHz



1GHz-22GHz

Clause 27.53(h) Radiated spurious emissions

(h) AWS emission limits:

(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

(3) Measurement procedure.
(i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. 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.
(ii) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.
(iii) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

Test date: 2015-05-19

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(h) 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 Ω shielded dummy load.

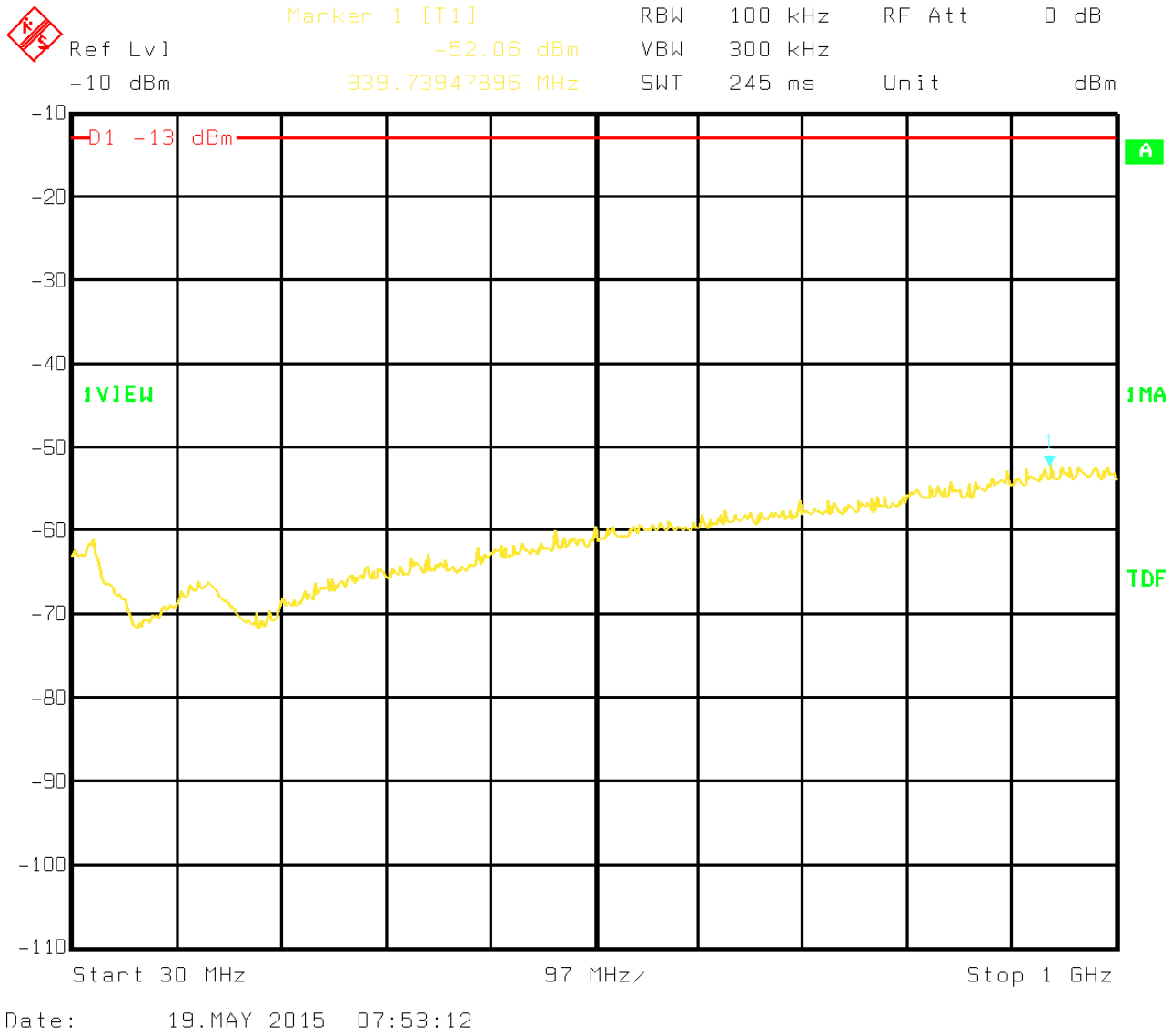
The spectrum was searched from 30 MHz to 1 GHz (RBW 100 kHz) & 1 GHz (RBW 1 MHz) to the tenth harmonic of the carrier.

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

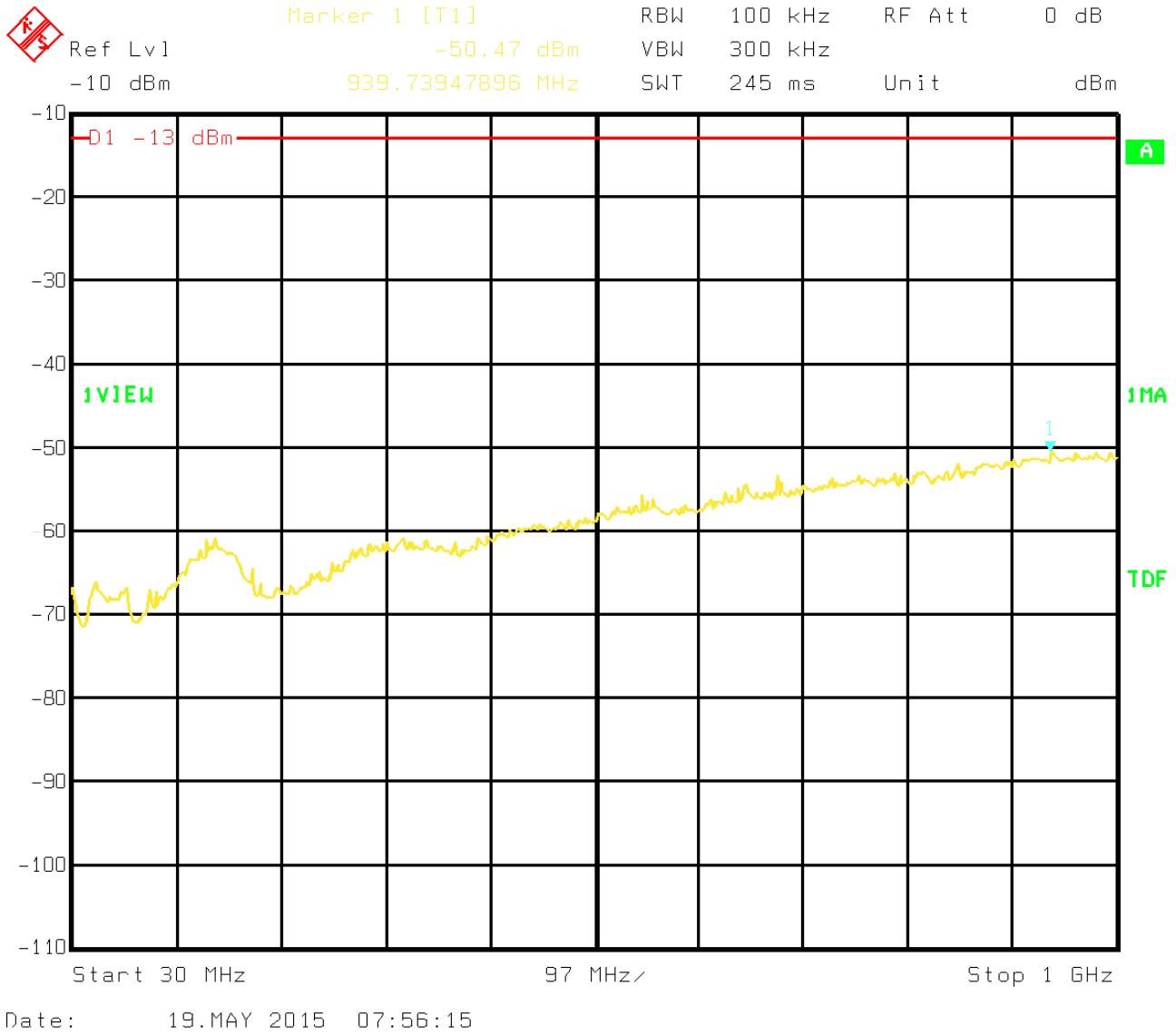
Spurious emissions measurement results:

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

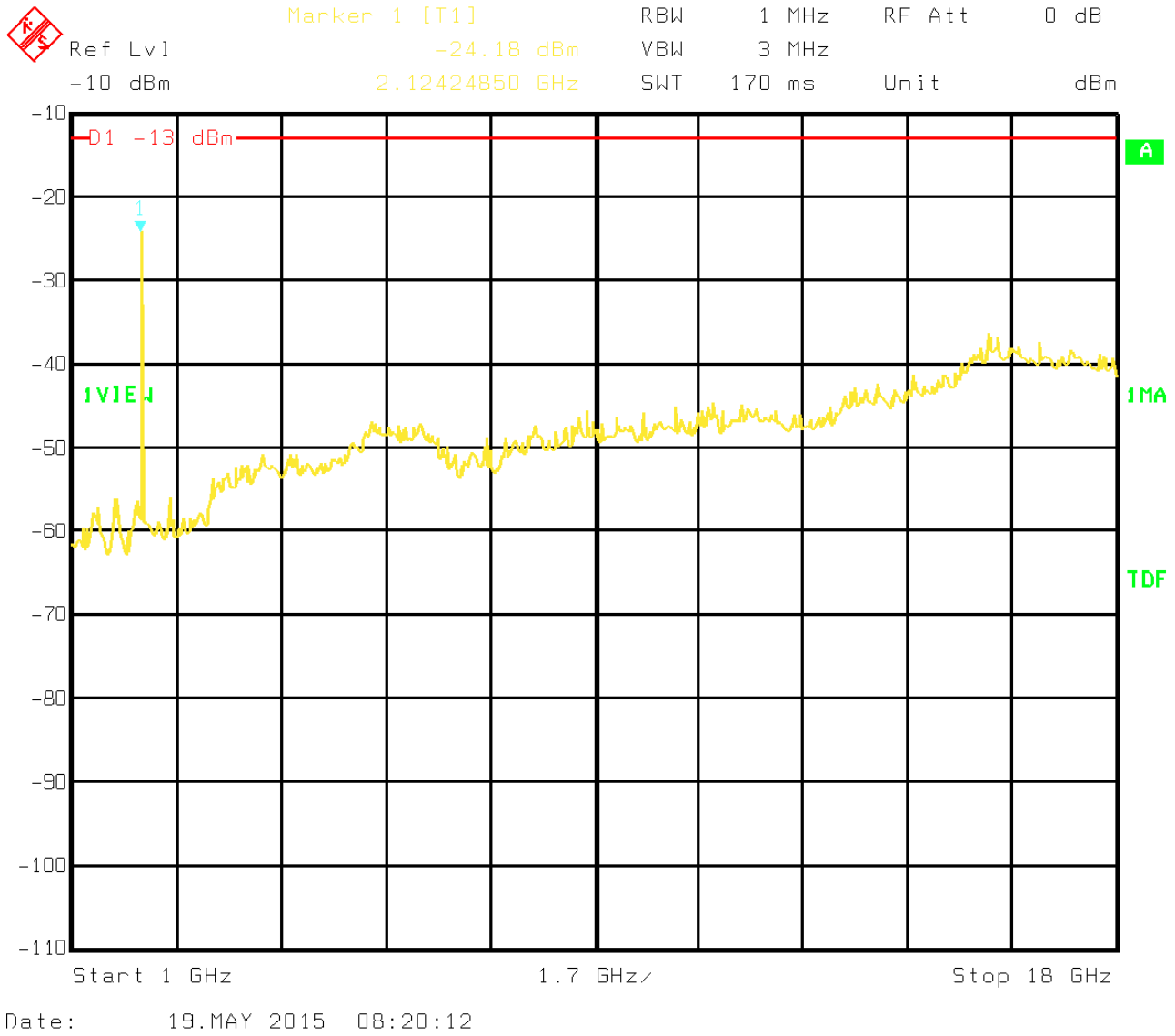
Note: Field strength includes correction factor of antenna, cable loss, amplifier, and attenuators where applicable.



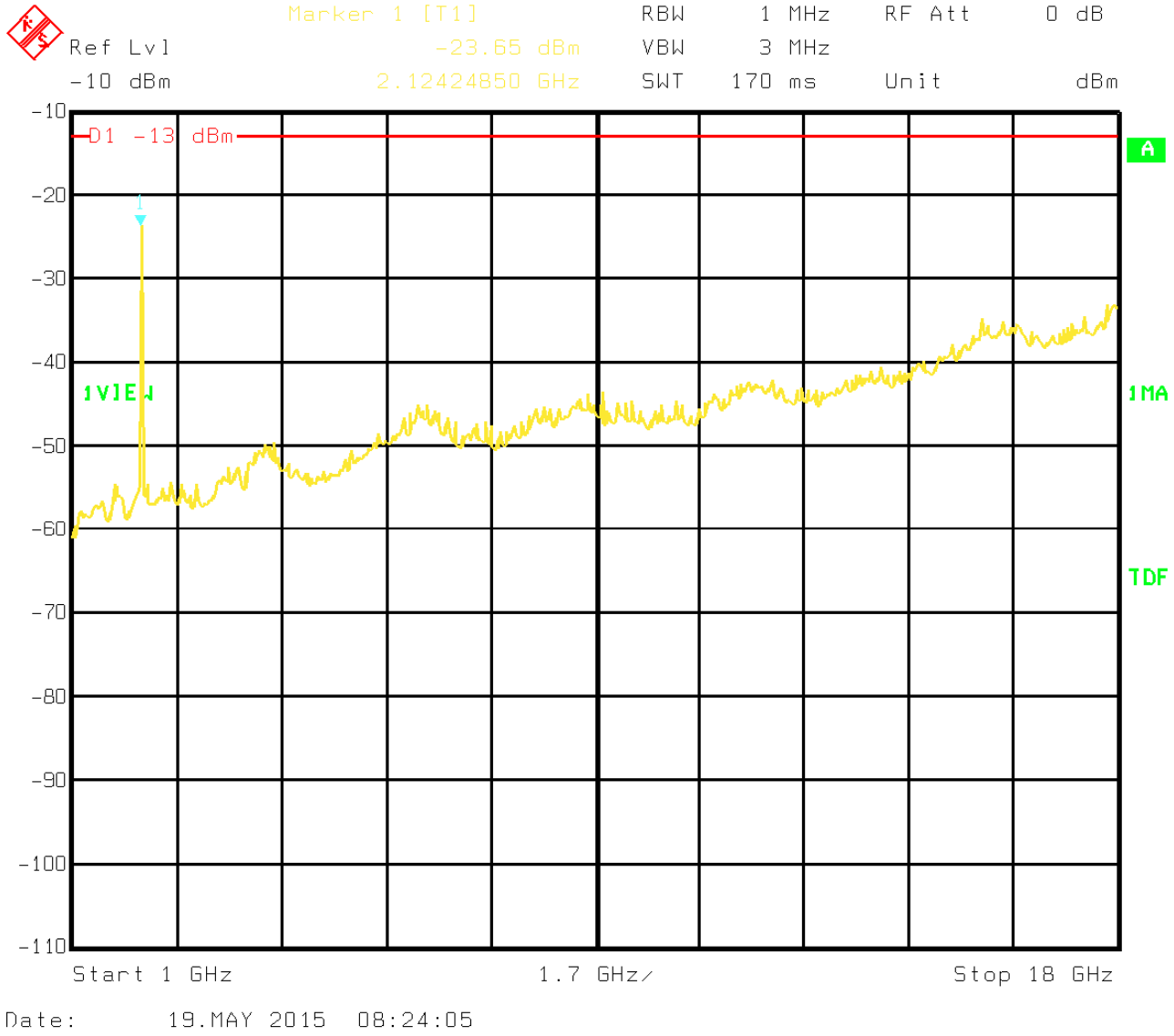
30MHz-1GHz – H Pol



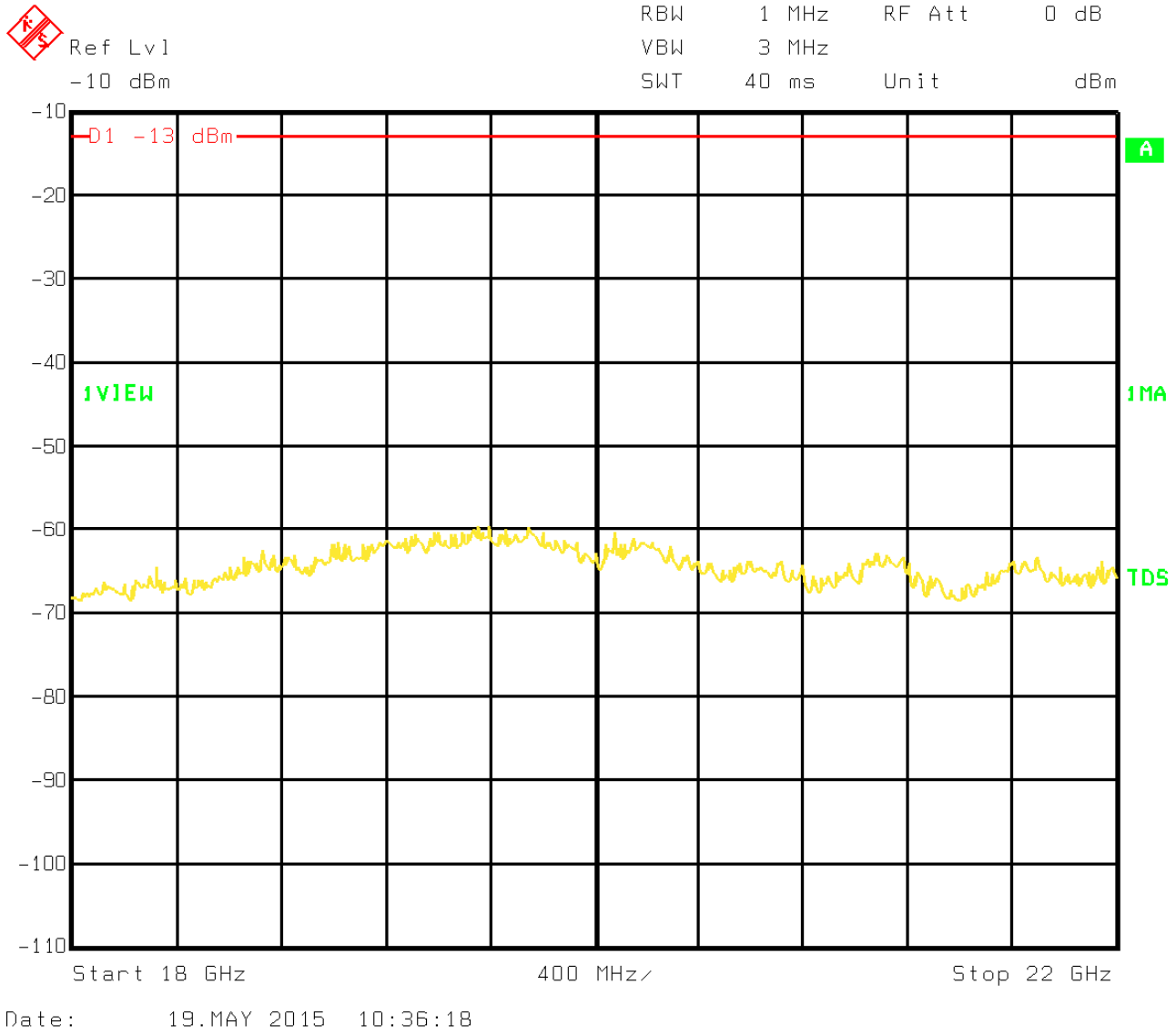
30MHz-1GHz – V Pol



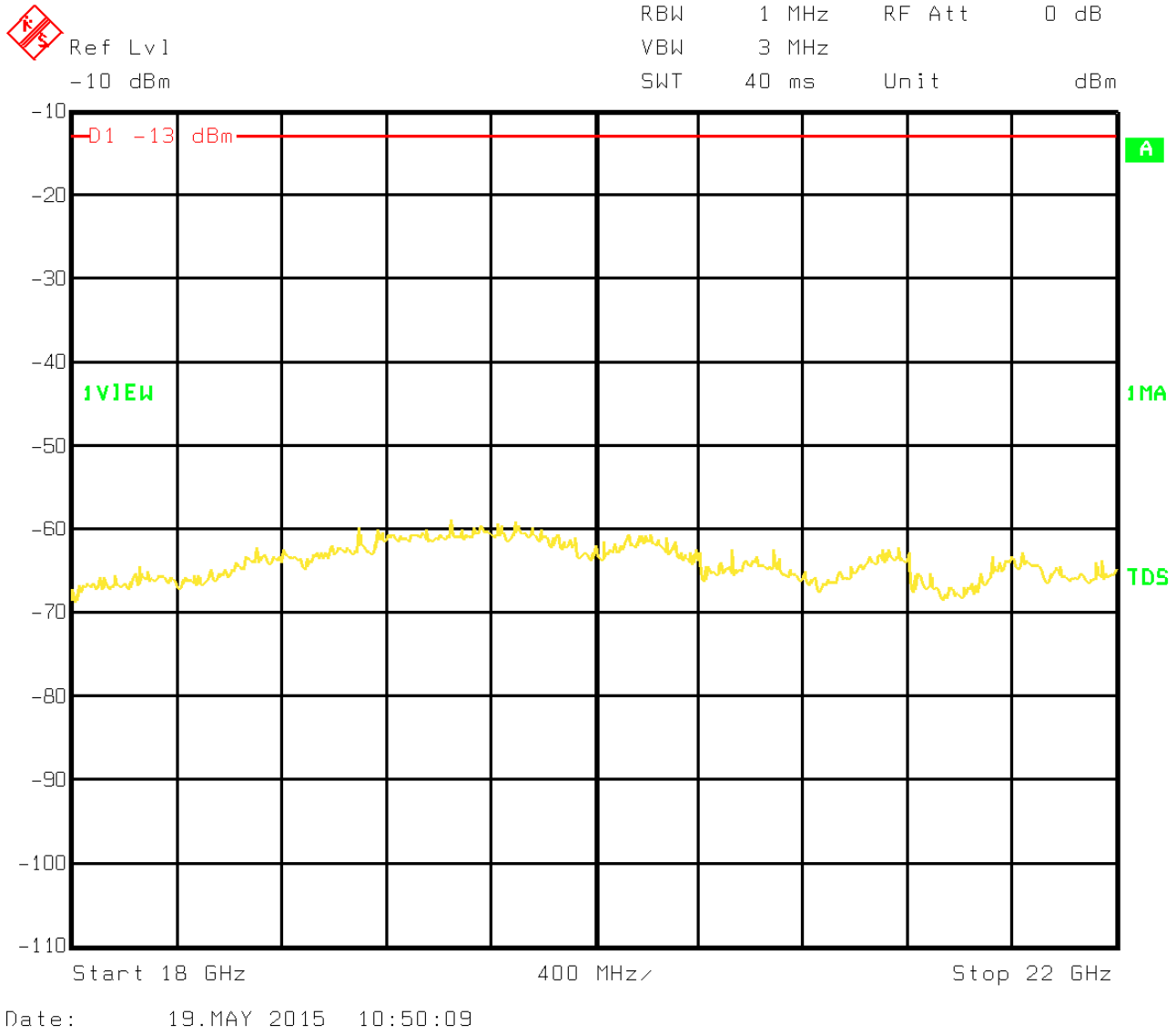
1GHz-18GHz – H Pol



1GHz-18GHz – V Pol



18GHz-22GHz – H Pol



18GHz-22GHz – V Pol

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: 2015-05-21

Test results: Pass

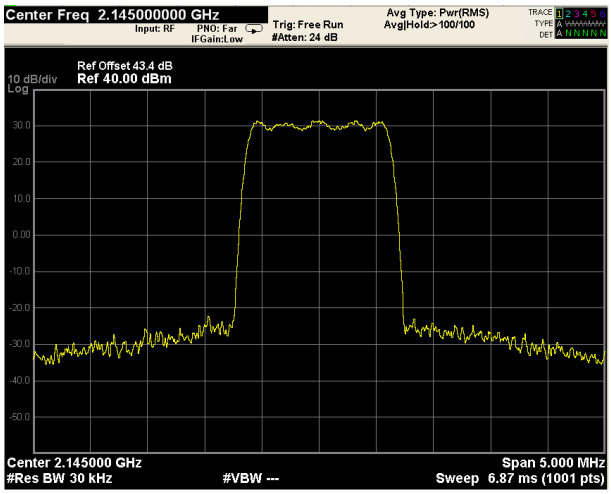
Special notes

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

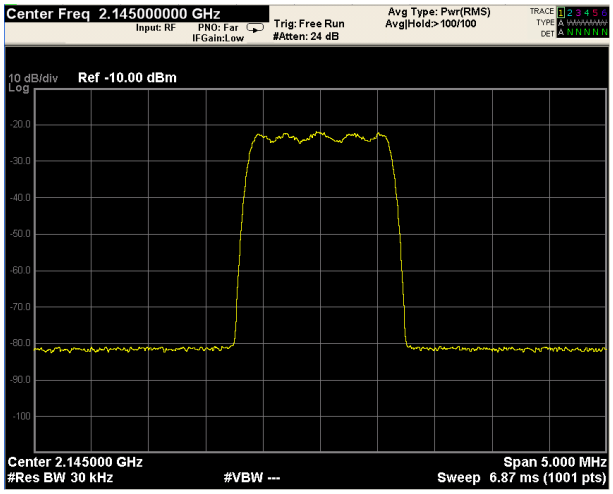
Clause 2.1049 Occupied bandwidth, continued

Test data

Mod. CDMA (Down-link)

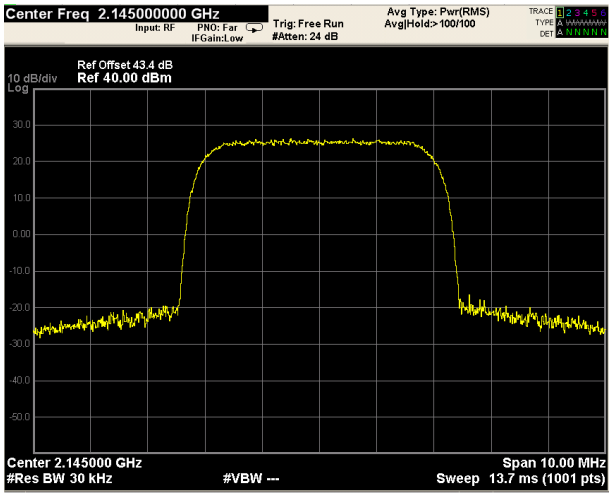


Output

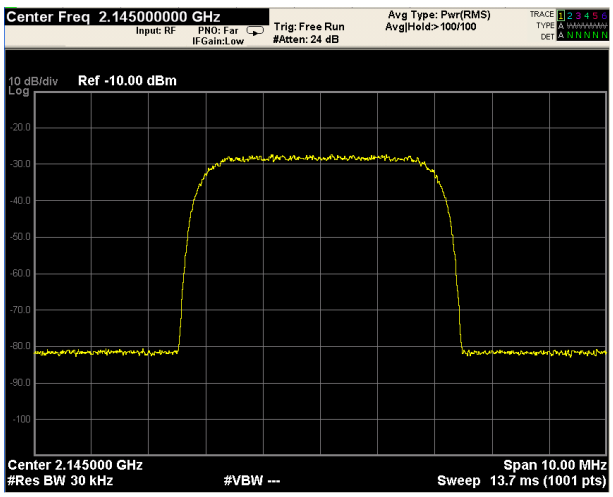


Input

Mod. WCDMA (Down-link)

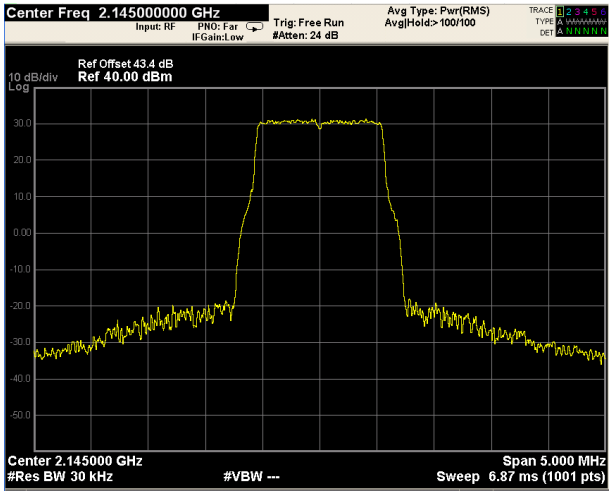


Output

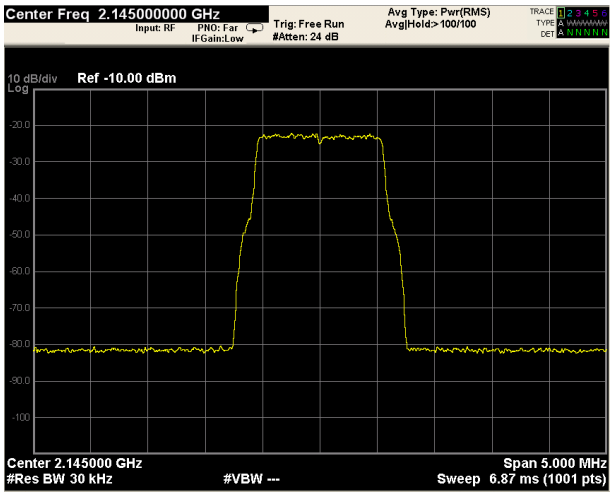


Input

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

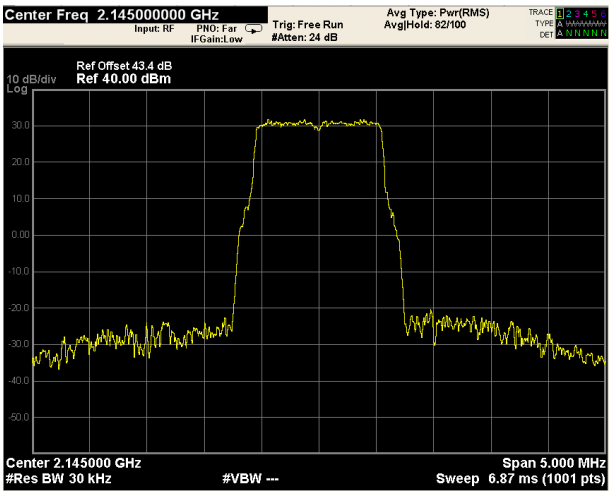


Output

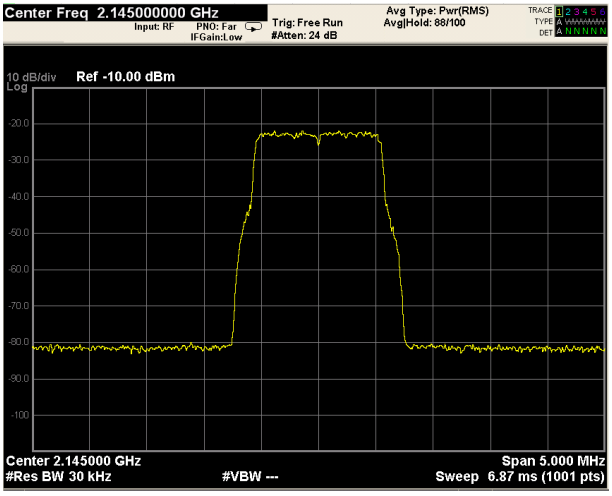


Input

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

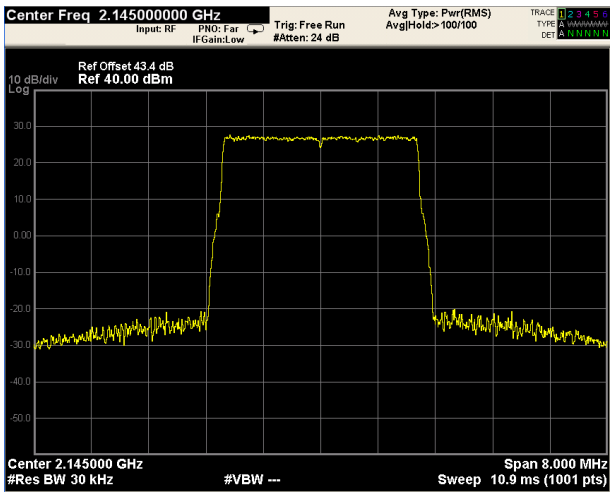


Output

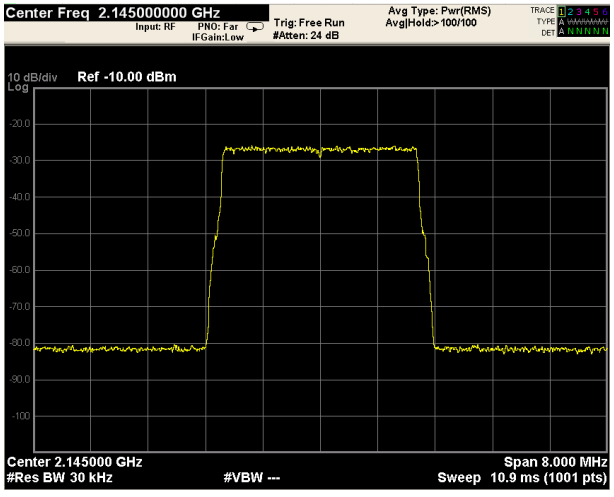


Input

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

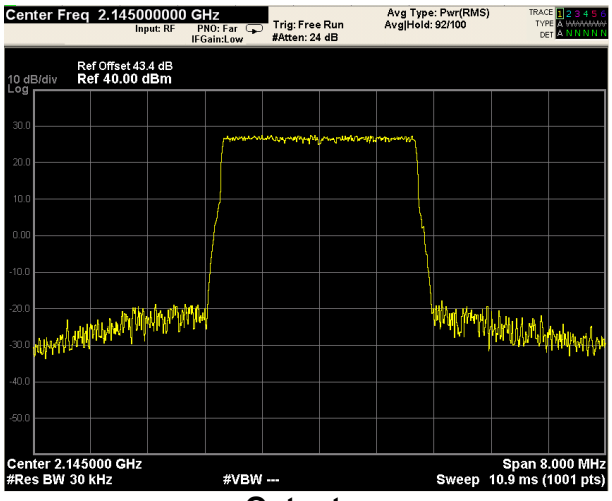


Output

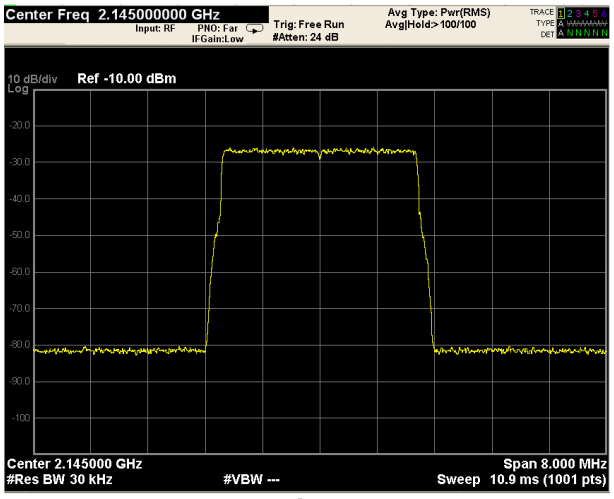


Input

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

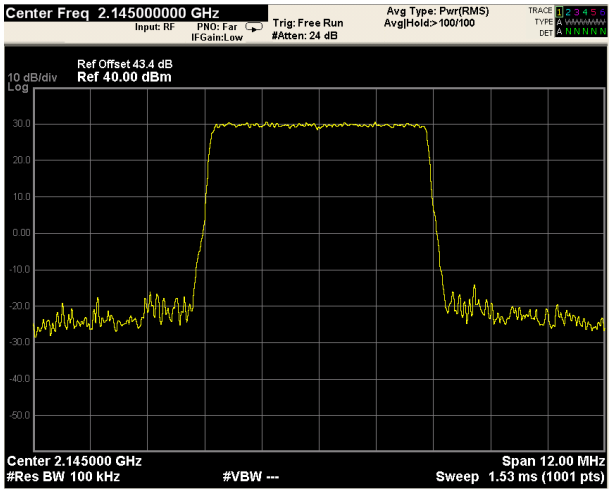


Output

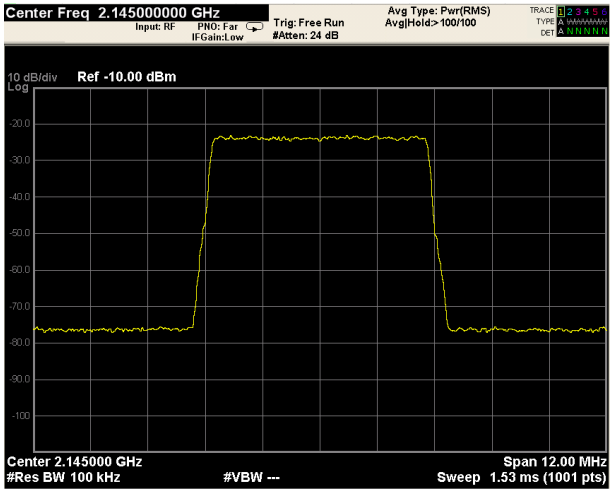


Input

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

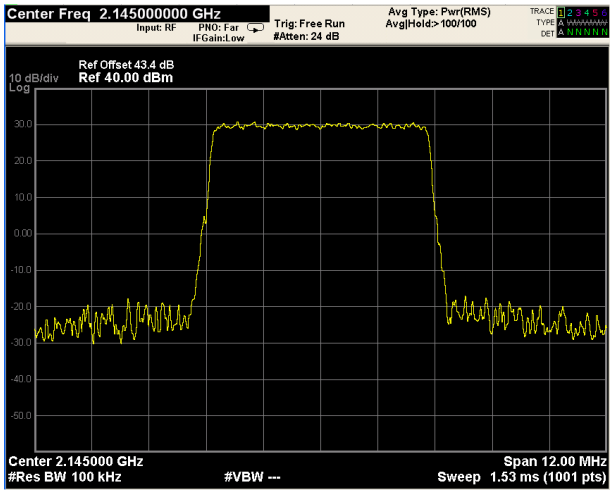


Output

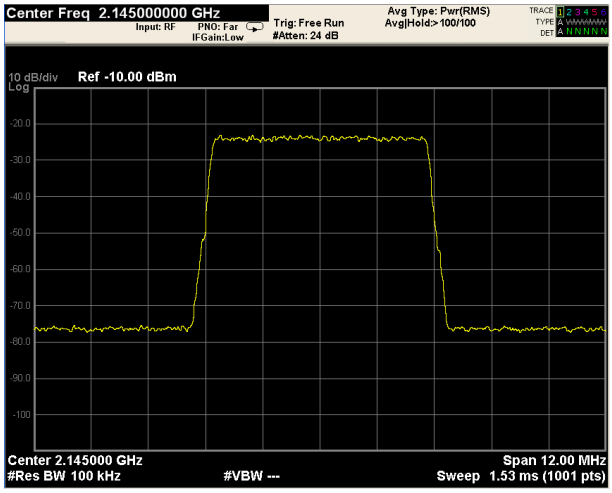


Input

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

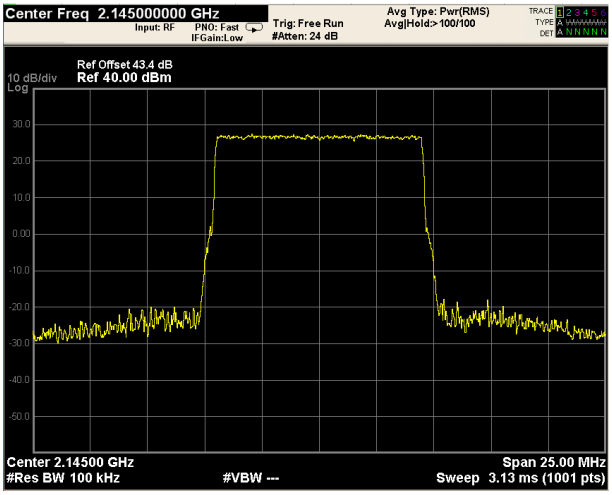


Output

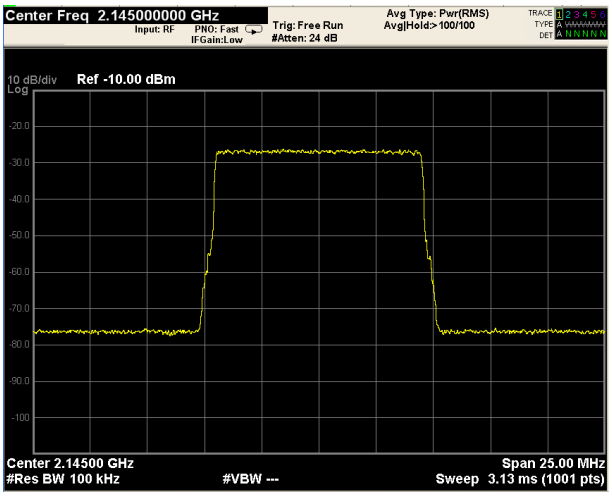


Input

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

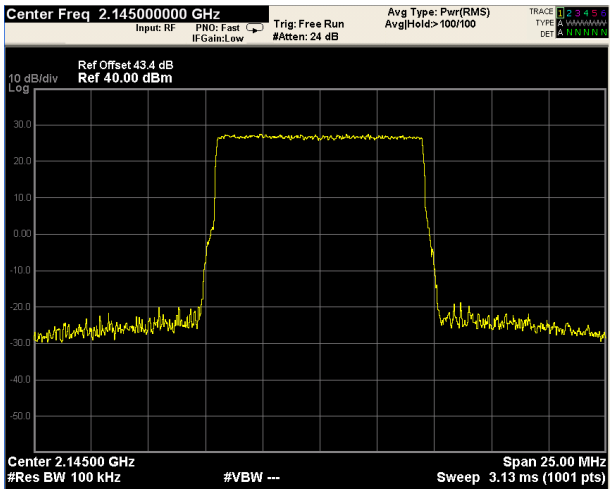


Output

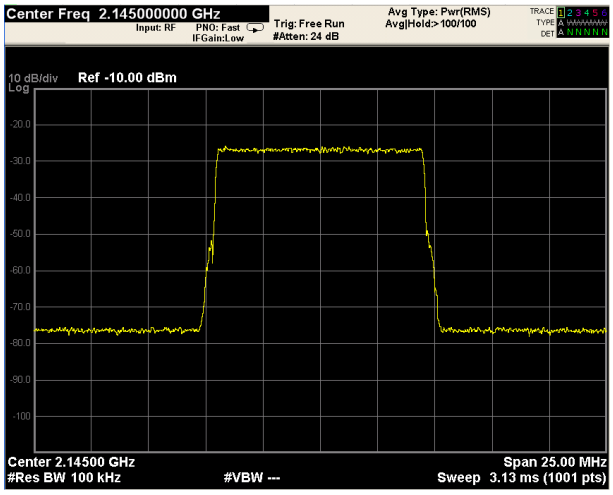


Input

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

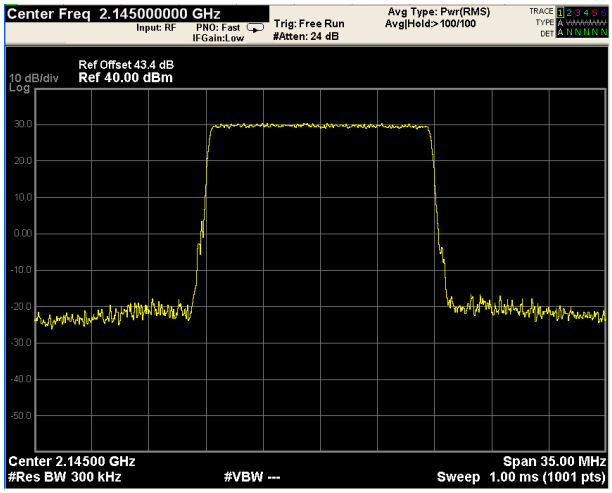


Output

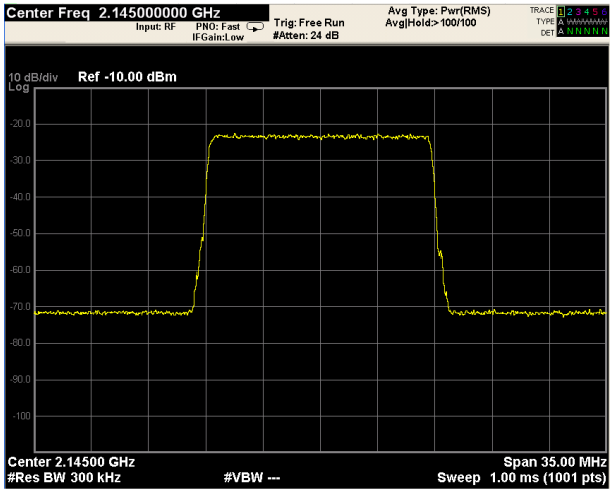


Input

Mod. LTE 15MHz (QAM) (Down-link)

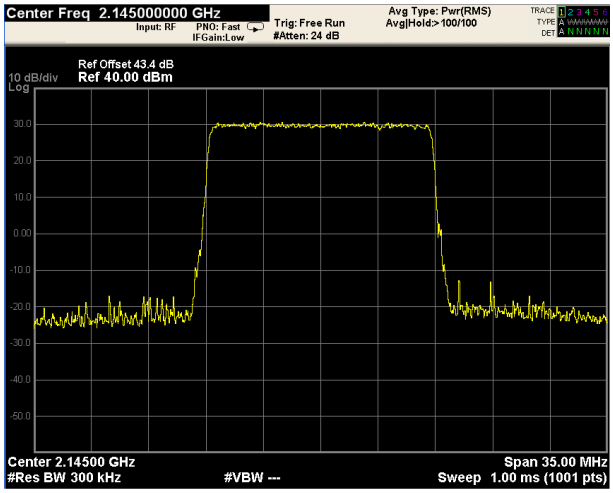


Output

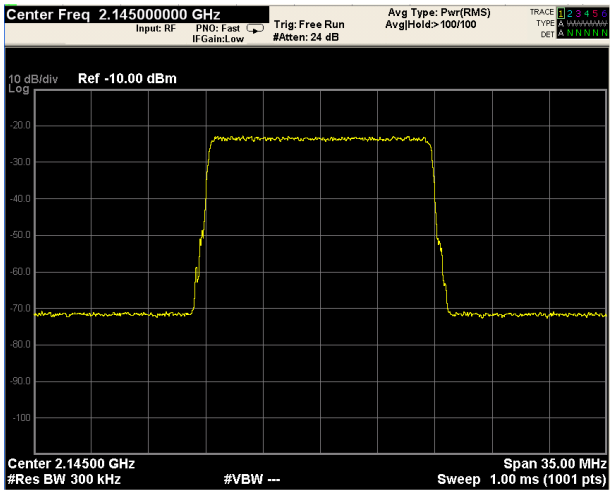


Input

Mod. LTE 15MHz (QPSK) (Down-link)

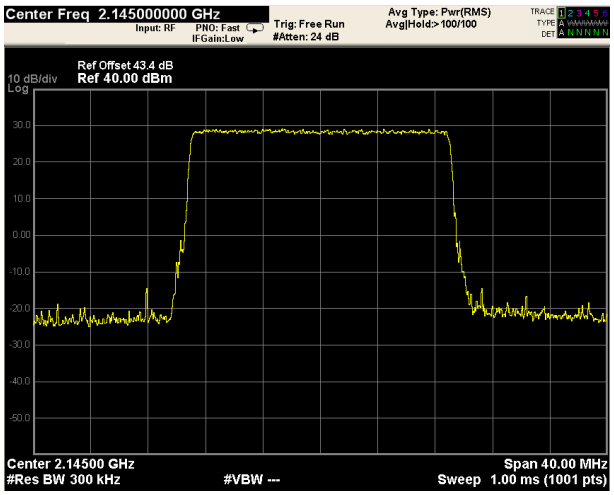


Output

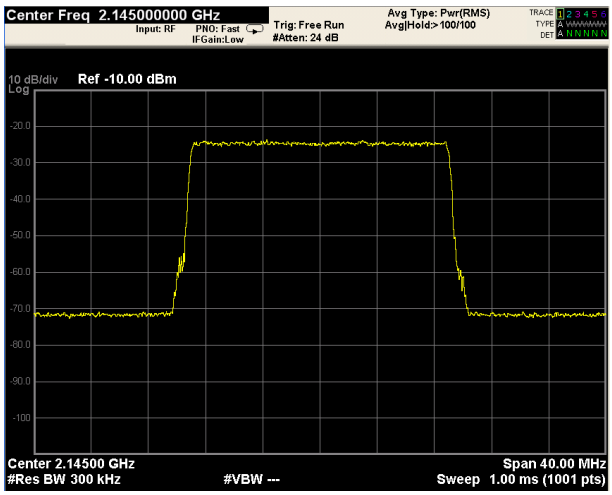


Input

Mod. LTE 20MHz (QAM) (Down-link)

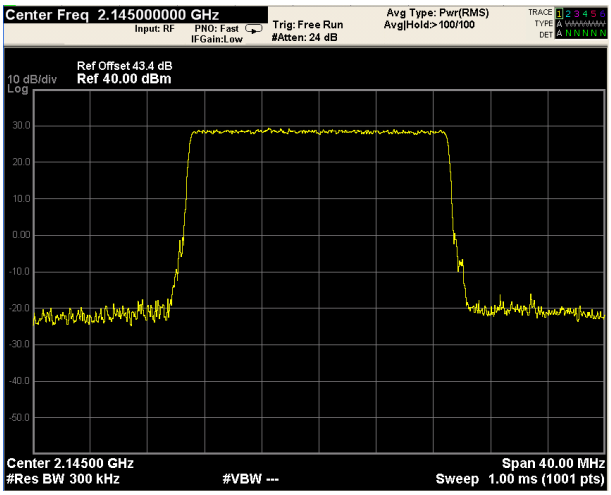


Output

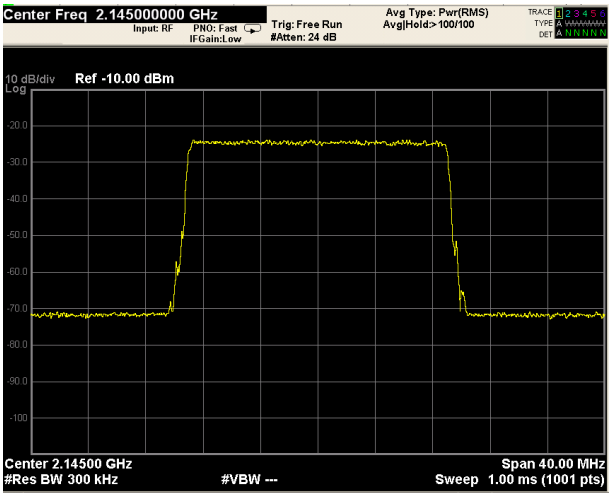


Input

Mod. LTE 20MHz (QPSK) (Down-link)



Output



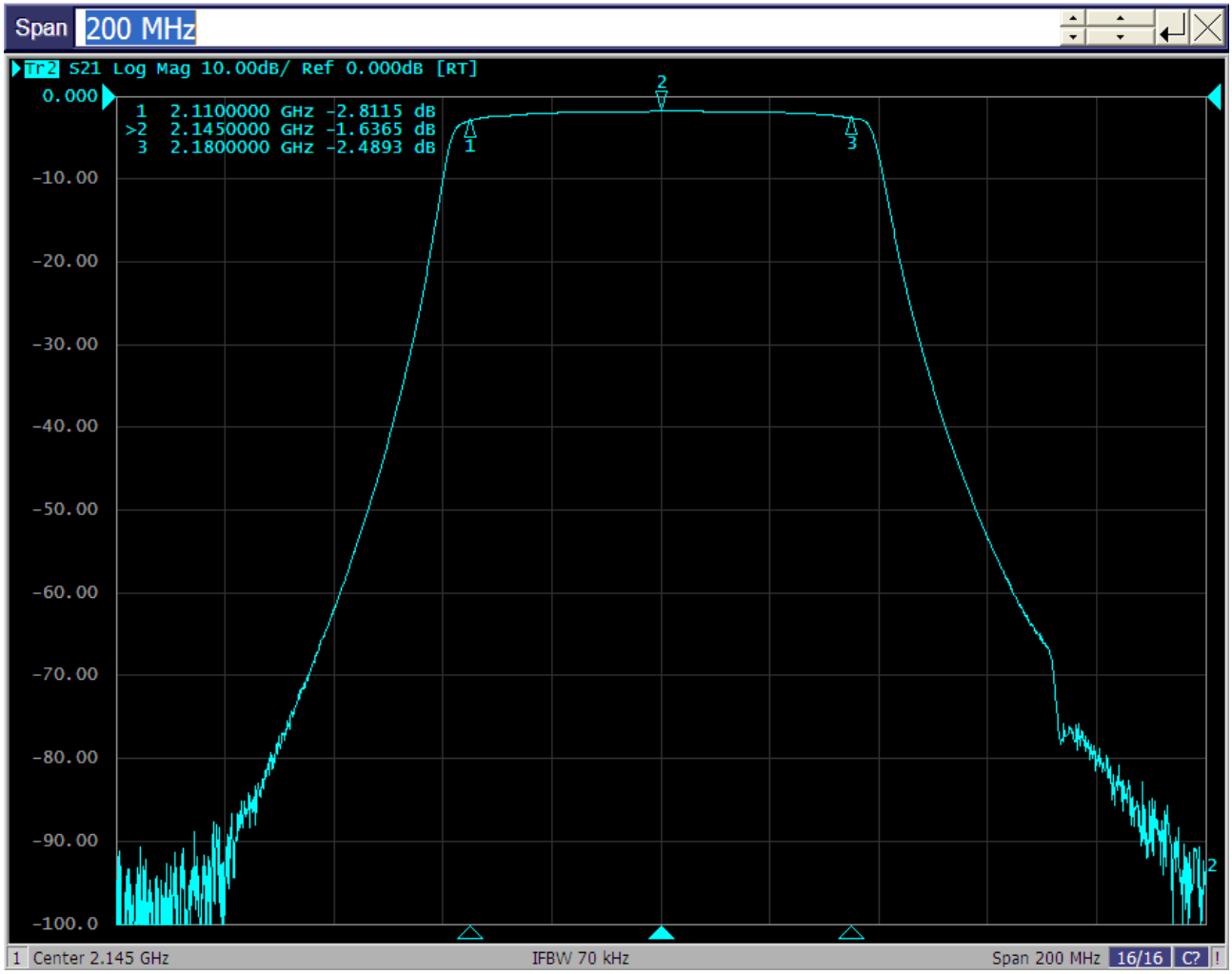
Input

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

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

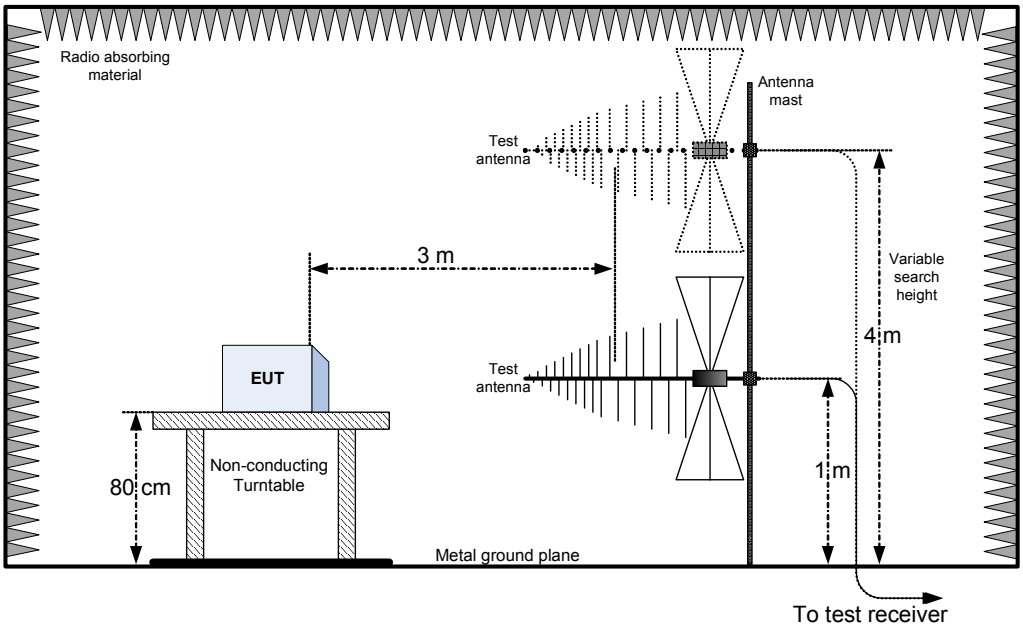
Test date: 2015-05-21

Test results: Pass

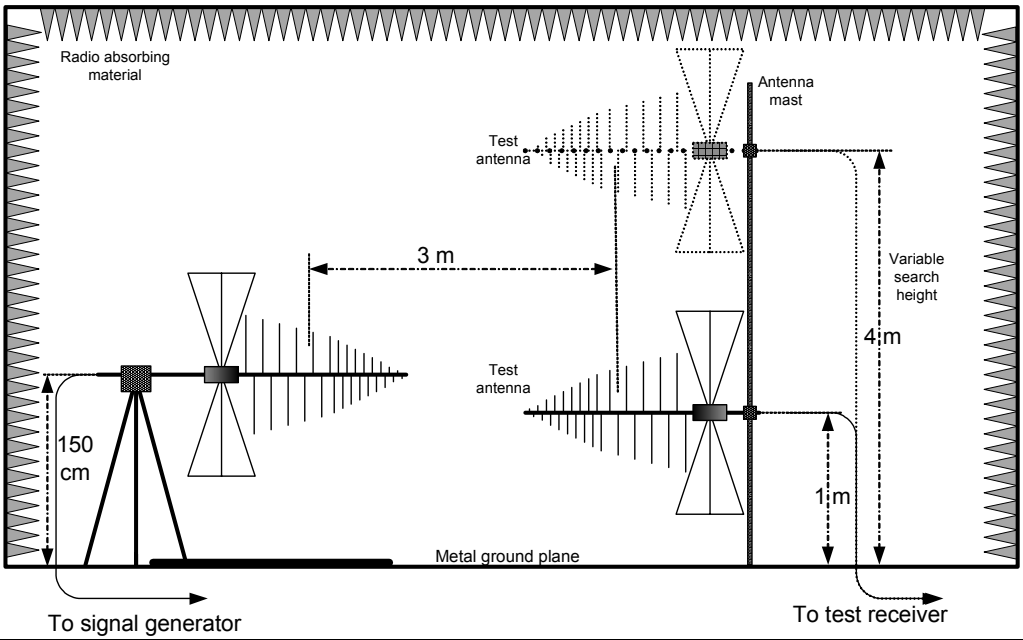


Appendix B: Block diagrams of test set-ups

Radiated emissions set-up



Substitution method set-up



Appendix C: EUT Photos

Photo Set up

Photo EUT


RF OUT
Vdc
20A
FUSE
RS 485
PRG
RF IN
P.N.
MWHPA0001UMTS-D
CHKSUM
393A
TEKO TELECOM
MODEL: MWHPA0001UMTS-D
FCC ID: XM2-WHPAAWE