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Report Reference ID:	253922-1TRFWL
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Test specification:	Title 47 – Telecommunication Chapter I – Federal Communications Commission Subchapter B – Common carrier services – Part 27 – Miscellaneous wireless communications services
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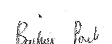
Applicant:	TEKO Telecom Srl. Via Meucci, 24/a I-40024 Castel S. Pietro Terme (BO) (Italy)
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Apparatus:	Remote Unit
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FCC ID:	XM2-EP6B
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Model:	TRE7S8SC8A9S19AWAS
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Testing laboratory:	Nemko Italy S.p.A. Via Carroccio, 4 I-20853 Biassono (Italy)
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	Name and title	Date
Tested by:	 G. Curioni, Wireless/EMC Specialist	2014/03/27
Reviewed by:	 P. Barbieri, Wireless/EMC Specialist	2014/03/27

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Table of contents

Section 1: Report summary	3
1.1 Test specification	3
1.2 Statement of compliance	3
1.3 Exclusions	3
1.4 Registration number	3
1.5 Test report revision history	3
1.6 Limits of responsibility	3
Section 2: Summary of test results	4
2.1 FCC Part 27, test results	4
Section 3: Equipment under test (EUT) and application details.....	5
3.1 Applicant details	5
3.2 Modular equipment	5
3.3 Product details	5
3.4 Application purpose	5
3.5 Composite/related equipment.....	5
3.6 Sample information.....	5
3.7 EUT technical specifications.....	6
3.8 Operation of the EUT during testing	6
3.9 EUT setup diagram.....	6
Section 4: Engineering considerations	7
4.1 Modifications incorporated in the EUT	7
4.2 Deviations from laboratory tests procedures	7
4.3 Technical judgment	7
Section 5: Test conditions	8
5.1 Power source and ambient temperatures.....	8
Section 6: Measurement uncertainty	9
Section 7: Test equipment	10
Section 8: Testing data	11
8.1 Clause 27.50(c) Peak output power at RF antenna connector	11
8.2 Clause 27.52 RF safety	16
8.3 Clause 27.53 (g) Spurious emissions at RF antenna connector	17
8.4 Clause 27.53 (g) Radiated spurious emissions	27
8.5 Clause 27.53(f) Radiated spurious emissions within 1559–1610 MHz band.....	30
8.6 Clause 27.54 Frequency stability	32
8.7 Clause 2.1049 Occupied bandwidth	34
Section 9: Filter Frequency Response.....	39
Section 10: Block diagrams of test set-ups	40
Section 11: EUT photos.....	41

	Section 1: Report summary	Product: TRE7S8SC8A9A19AWAS

Section 1: Report summary

1.1 Test specification

Specifications	Part 27 – Miscellaneous wireless communications services
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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
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1.4 Registration number

Registration number:	481407 (10 m Semi anechoic chamber)
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1.5 Test report revision history

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

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. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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Nemko Canada Inc. 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	Product: TRE7S8SC8A9A19AWAS


Section 2: Summary of test results

2.1 FCC Part 27, test results

Part	Test description	Verdict
§27.50(c)	Peak output power at RF antenna connector	Pass
§27.52	RF safety	N/A a)
§27.53(g)	Spurious emissions at RF antenna connector	Pass
§27.53(g)	Radiated spurious emissions	Pass
§27.53(f)	Radiated spurious emissions within 1559–1610 MHz band	N/A b)
§27.54	Frequency stability	N/A c)
§2.1049	Occupied bandwidth	Pass
§2-11-04/EAB/RF	Filter Frequency Response	Pass

Notes:

- a) NO Antenna provided
- b) NOT APPLICABLE: 728-746MHz working band
- c) 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) details	Product: TRE7S8SC8A9A19AWAS

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:	Via Meucci, 24/a
	City:	Castel S. Pietro Terme
	Province/State:	Bologna
	Post code:	40024
	Country:	Italy

3.2 Modular equipment

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

3.3 Product details

FCC ID	Grantee code:	XM2
	Product code:	-EP6B
Equipment class	B2I	
Description of product as it is marketed	Remote Unit for optical system	
	Model name/number:	TRE7S8SC8A9S19AWAS
	Serial number:	132059001

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

3.5 Composite/related equipment

a) Composite equipment	The EUT is a composite device subject to an additional equipment authorization Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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 <input type="checkbox"/> No <input checked="" type="checkbox"/>
c) Related FCC ID	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 statues under the FCC ID(s) listed below: i FCC ID: ii FCC ID:

3.6 Sample information

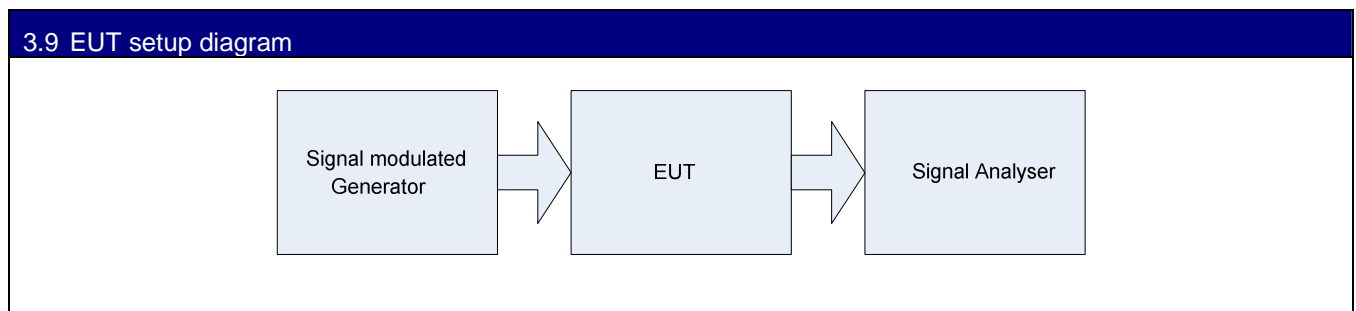
Receipt date:	2014-03-03
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	Section 3: Equipment under test (EUT) details	Product: TRE7S8SC8A9A19AWAS

Nemko sample ID number:	-----
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3.7 EUT technical specifications	
Operating band:	Down Link: 728–746 MHz, Up Link: 698-716 MHz
Operating frequency:	Wideband
Modulation type:	LTE (QAM and QPSK)
Occupied bandwidth:	1,4 MHz – 3 MHz – 5 MHz – 10MHz
Channel spacing:	standard
Emission designator:	D7W
RF Output	Down Link: 31dBm (1,25W) Up Link: N.A. (The EUT does not transmit over the air in the up-link direction)
Gain	Down Link: 36dB 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:	100-240 Vac

3.8 Operation of the EUT during testing	
Details:	In down-link direction, normal working at max gain with max RF power output



 Nemko	Section 4: Engineering considerations	Product: TRE7S8SC8A9A19AWAS

Section 4: Engineering considerations

4.1 Modifications incorporated in the EUT


Modifications	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:
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4.2 Deviations from laboratory tests procedures

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


Judgment	None
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 Nemko	Section 5: Test conditions	Product: TRE7S8SC8A9A19AWAS

Section 5: Test conditions


5.1 Power source and ambient temperatures

Normal temperature, humidity and air pressure test conditions	<p>Temperature: 15–30 °C Relative humidity: 30–60 % Air pressure: 860–1060 hPa</p> <p>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.</p>
Power supply range:	<p>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.</p>

	Section 6: Measurement uncertainty	Product: TRE7S8SC8A9A19AWAS

Section 6: 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 have been performed to provide a confidence level of 95 % and can be found in Nemko S.p.A. document WML1002.

	Section 7: Test equipment	Product: TRE7S8SC8A9A19AWAS
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Section 7: Test equipment

Client's property:

Identification number	Description	Manufacturer model	s/n	Cal. Due
1a	Vector Signal Generator	Agilent N5182A MXG	MY48180714	May 2015
1b	Vector Signal Generator	Agilent E4438C ESG	MY45094485	Ago 2016
2a	Spectrum Analyzer	Agilent E4440A	US40420470	May 2015
2b	Spectrum Analyzer	Agilent E9020A MXA	MY48011812	Ago 2015
3	Network Analyzer	Agilent E5071B	MY42301133	Ago 2016
4	Climatic chamber	Angelantoni Hygros 600	7237	Nov 2014

Property of Nemko Italy:

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle months	Next cal.
Trilog Broad Band Antenna 25-2000 MHz	Schwarzbeck	VULB 9168	VULB 9168-242	36	02/2015
Trilog Broad Band Antenna 25-8000 MHz	Schwarzbeck	VULB 9162	VULB 9162-25	36	05/2015
Antenna 1-18 GHz	Schwarzbeck	STLP 9148	STPL 9148-123	36	02/2015
Double ridge waveguide horn	RFspin	DRH40	061106A40		08/2016
Preamplifier 18-40 GHz	Miteq	JS44	1648665		09/2014
Broadband preamplifier 1-18 GHz	Schwarzbeck	BBV 9718	9718-137	36	09/2014
EMI receiver 20 Hz ÷ 8 GHz	R&S	ESU8	100202	12	02/2015
EMI receiver 20 Hz ÷ 3 GHz	R&S	ESCI	100888	12	08/2014
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		08/2014
Semi-anechoic chamber	Nemko	10m semi-anechoic chamber	530		08/2014
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	Rohde & Schwarz	ESH2-Z5	872 460/041	12	09/2014
Note: N/A = Not applicable, NCR = No cal required, COU = Cal on use					


	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS
	Test name: Clause 27.50(C) Peak output power at RF antenna connector		
	Test date: 03-27 March 2014		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
	Specification: FCC Part 27		

Section 8: Testing data

8.1 Clause 27.50(c) Peak output power at RF antenna connector

§ 27.50(c) Operation within the bands: 698-746 MHz.

- (1) Fixed and base stations transmitting a signal with an emission bandwidth of 1 MHz or less must not exceed an effective radiated power (ERP) of 1000 watts and an antenna height of 305 m height above average terrain (HAAT), except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts ERP in accordance with Table 1 of this section;
- (2) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal with an emission bandwidth of 1 MHz or less must not exceed an ERP of 2000 watts 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 2000 watts ERP in accordance with Table 2 of this section;
- (3) Fixed and base stations transmitting a signal 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 in accordance with Table 3 of this section;
- (4) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal with an emission bandwidth greater than 1MHz must not exceed an ERP of 2000 watts/MHz and an antenna height of 305m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts/MHz ERP in accordance with Table 4 of this section;
- (5) Licensees seeking to operate a fixed or base station located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal at an ERP greater than 1000 watts must:
 - (i) coordinate in advance with all licensees authorized to operate in the 698–763 MHz, 775–793, and 805–806 MHz bands within 120 kilometers (75 miles) of the base or fixed station;
 - (ii) coordinate in advance with all regional planning committees, as identified in §§ 90.527 of this chapter, with jurisdiction within 120 kilometers (75 miles) of the base or fixed station.
- (6) Licensees of fixed or base stations transmitting a signal at an ERP greater than 1000 watts and greater than 1000 watts/MHz must comply with the provisions of paragraph (c)(8) of this section and § 27.55(b), except that licensees of fixed or base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, must comply with the provisions of paragraph (c)(8) of this section and § 27.55(b) only if transmitting a signal at an ERP greater than 2000 watts and greater than 2000 watts/MHz;
- (7) A licensee authorized to operate in the 710–716, 716–722, or 740–746 MHz bands, or in any unpaired spectrum blocks within the 698–746 MHz band, may operate a fixed or base station at an ERP up to a total of 50 kW within its authorized, 6 MHz spectrum block if the licensee complies with the provisions of § 27.55(b). The antenna height for such stations is limited only to the extent required to satisfy the requirements of § 27.55(b).

	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS
	Test name: Clause 27.50(C) Peak output power at RF antenna connector		
	Test date: 03-27 March 2014		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27			

(8) Licensees intending to operate a base or fixed station at a power level permitted under the provisions of paragraph (c)(6) of this section must provide advanced notice of such operation. to the Commission and to licensees authorized in their area of operation. Licensees who must be notified are all licensees authorized under this part to operate on an adjacent spectrum block within 75 km of the base or fixed station. Notifications must provide the location and operating parameters of the base or fixed station, including the station's ERP, antenna coordinates, antenna height above ground, and vertical antenna pattern, and such notifications must be provided at least 90 days prior to the commencement of station operation.


(9) Control and mobile stations are limited to 30 watts ERP.

(10) Portable stations (hand-held devices) are limited to 3 watts ERP; and


(11) 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..

Special notes

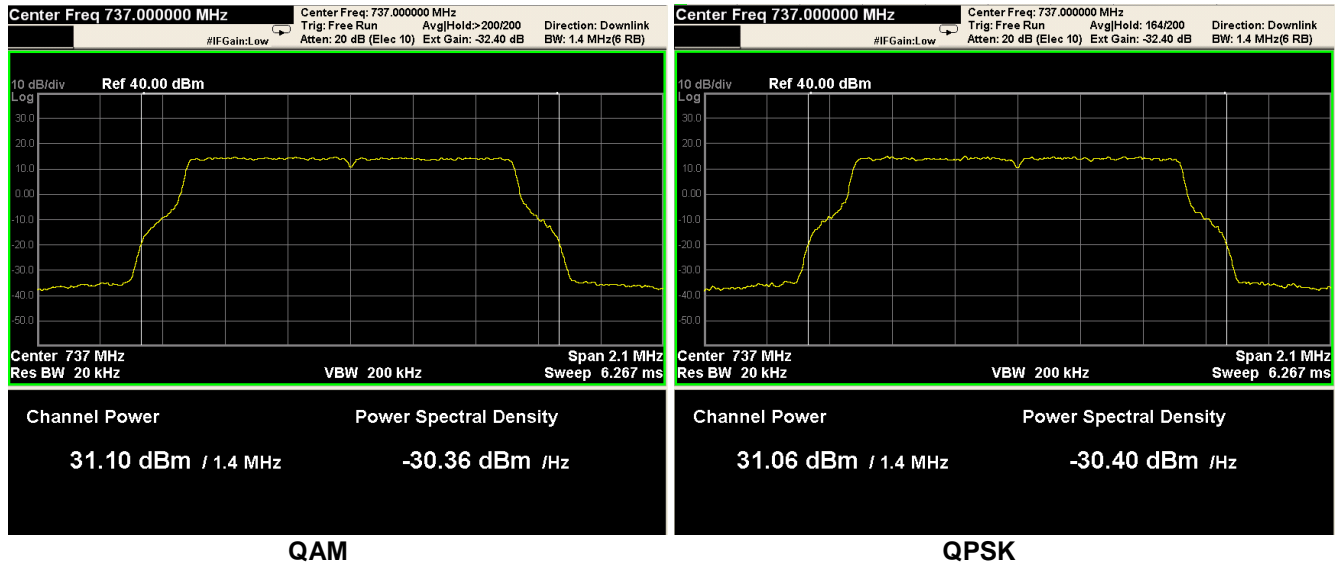
- The power was measured using spectrum analyzer with RMS detector / average power meter.
- In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB

	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS
	Test name: Clause 27.50(C) Peak output power at RF antenna connector		
	Test date: 03-27 March 2014		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27			

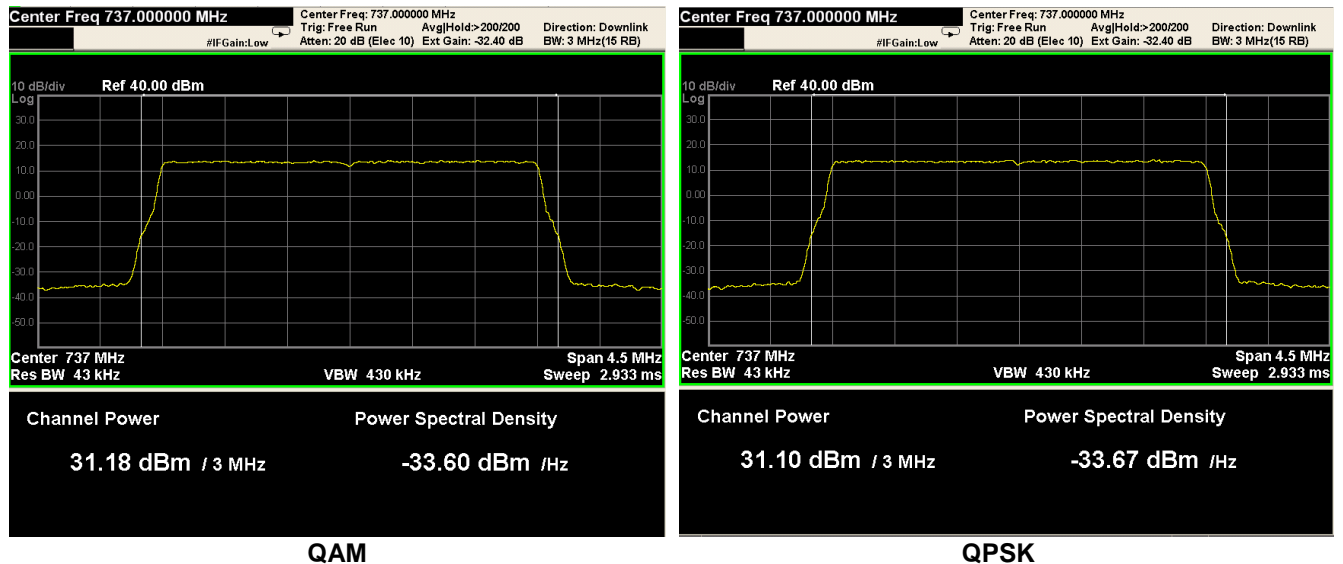
Test data					
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	PAR (dB)
Down-link	LTE (QAM, 1,4MHz)	737	31,10	1.29	10,39
Down-link	LTE (QPSK, 1,4MHz)	737	31,06	1.28	9,76
Down-link	LTE (QAM, 3MHz)	737	31,18	1.31	10,62
Down-link	LTE (QPSK, 3MHz)	737	31,10	1.29	10,82
Down-link	LTE (QAM, 5MHz)	737	31,14	1.30	11,18
Down-link	LTE (QPSK, 5MHz)	737	31,11	1.29	10,58
Down-link	LTE (QAM, 10MHz)	737	31,12	1.29	11,59
Down-link	LTE (QPSK, 10MHz)	737	31,13	1.30	11,21


	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS	
	Test name: Clause 27.50(C) Peak output power at RF antenna connector			
	Test date: 03-27 March 2014		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			

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

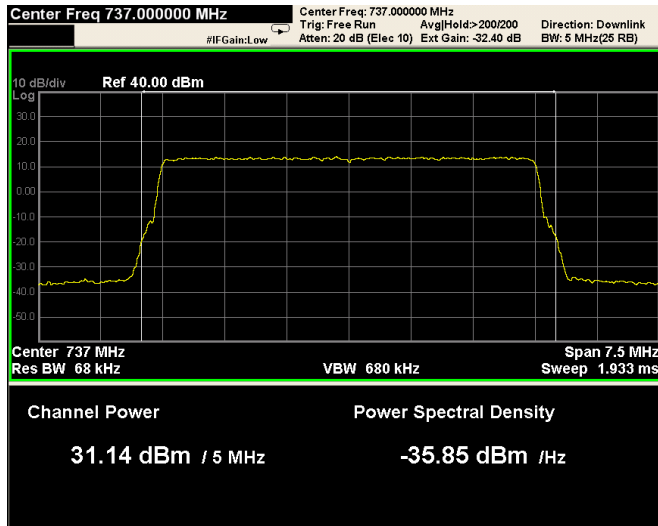


Mod. LTE 3MHz (Down-link)

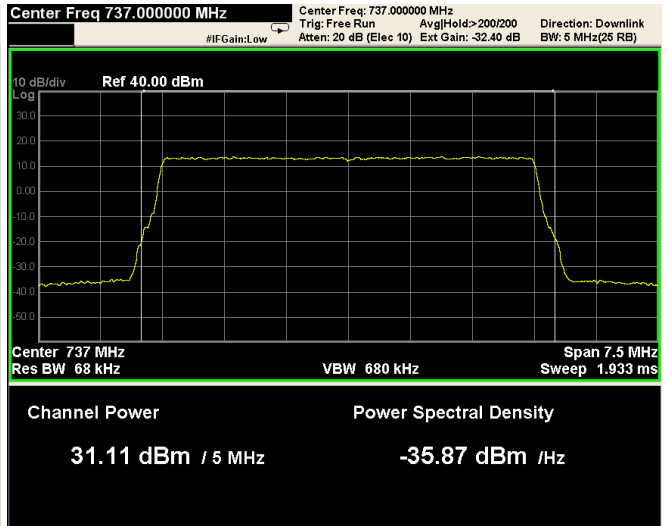


	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS	
	Test name: Clause 27.50(C) Peak output power at RF antenna connector			
	Test date: 03-27 March 2014		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			

Mod. LTE 5MHz (Down-link)

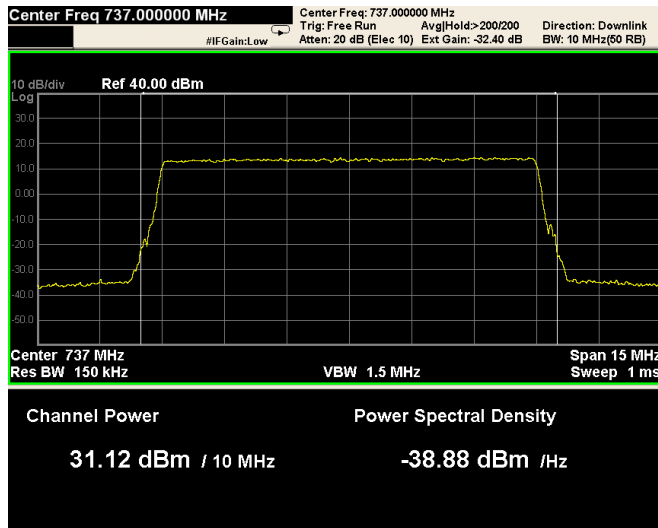


QAM

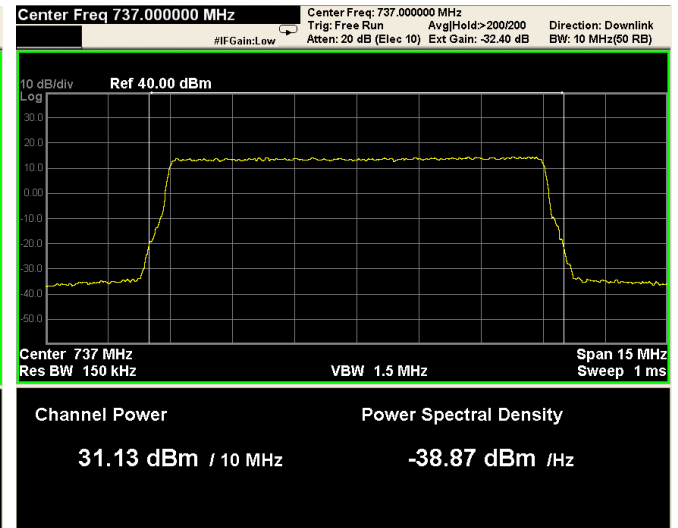


QPSK


Mod. LTE 10MHz (Down-link)



QAM



QPSK

	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS	
	Test name: Clause 27.52 RF safety			
	Test date: 03-27 March 2014		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			

8.2 Clause 27.52 RF safety

Licensees and manufacturers are subject to the radio frequency radiation exposure requirements specified in sections 1.1307(b), 2.1091, and 2.1093 of this chapter, as appropriate. Applications for equipment authorization of mobile or portable devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

Special notes

The test was performed using E-field probe slowly moving towards the EUT until E-field equivalent to the maximum permitted power density was measured


Equivalent power density was calculated from electric field strength as follows:

$$S_{[mW/cm^2]} = \frac{0.1 \times E^2_{[V/m]}}{120 \times \pi} \quad S[W/m^2] = E^2[V/m]/377[\Omega]$$

where S is power density and E is electric field strength.

Test data				
Test distance (cm)	Field strength (V/m)	Equivalent power density (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
300				
250				
200				
150				
100				
50				
30				
20				
10				
5				

NOT APPLICABLE; External Antenna is not provided

	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS
	Test name: Clause 27. 53 (g) Spurious emissions at RF antenna connector		
	Test date: 03-27 March 2014		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27			


8.3 Clause 27.53 (g) Spurious emissions at RF antenna connector

(g) For operations in the 698–746 MHz band and the 776–788 MHz band, the power of any emission outside a 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, by at least $43 + 10 \log (P)$ dB.

Compliance with the provisions 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.


Special notes

- The spectrum was searched from 30 MHz to the 10th harmonic.
- RBW within 30–1000 MHz was 100 kHz and 30 kHz for bandedge; 1 MHz above 1 GHz. VBW was wider than RBW.

	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS
	Test name: Clause 27. 53 (g) Spurious emissions at RF antenna connector		
	Test date: 03-27 March 2014		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27			

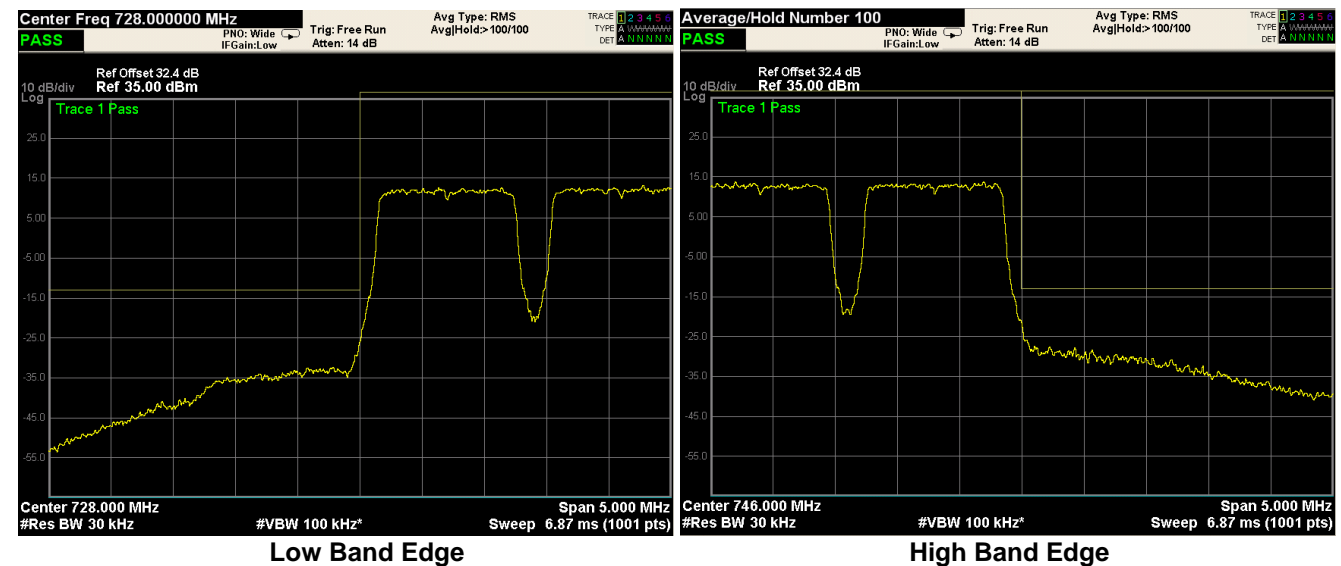
Test data			
Insert plots here			
Spurious emissions measurement results:			
Frequency (MHz)	Spurious emission (dBm)	Limit (dBm)	Margin (dB)
Low channel			
First channel Down-link	Negligible	-13	
First channel Up-link	Negligible	-13	
Mid channel			
737 MHz Down-link	Negligible	-13	
707 MHz Down-link	Negligible	-13	
High channel			
Last channel Down-link	Negligible	-13	
Last channel Up-link	Negligible	-13	

See Plots below

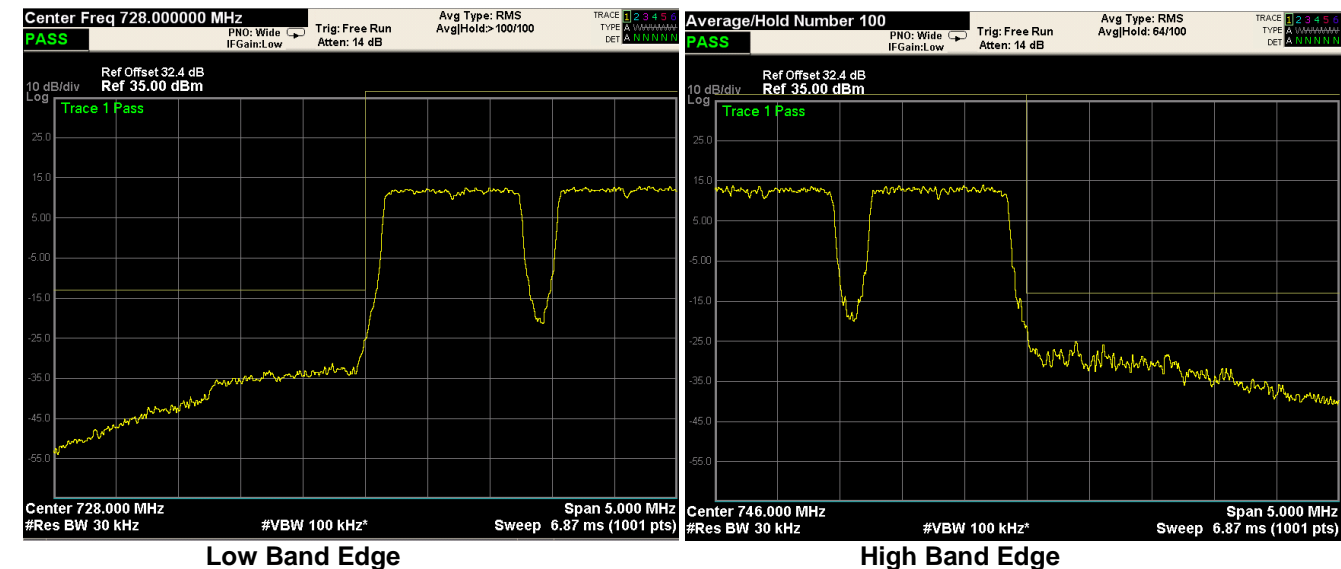
	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS	
	Test name: Clause 27. 53 (g) Spurious emissions at RF antenna connector			
	Test date: 03-27 March 2014		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			


Test data, continued band edges Inter modulation:

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

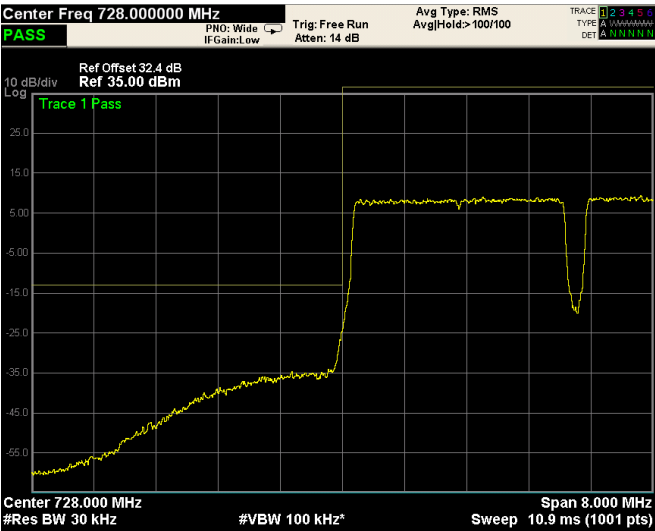


Mod. LTE 1.4MHz (QPSK) (Down-link)

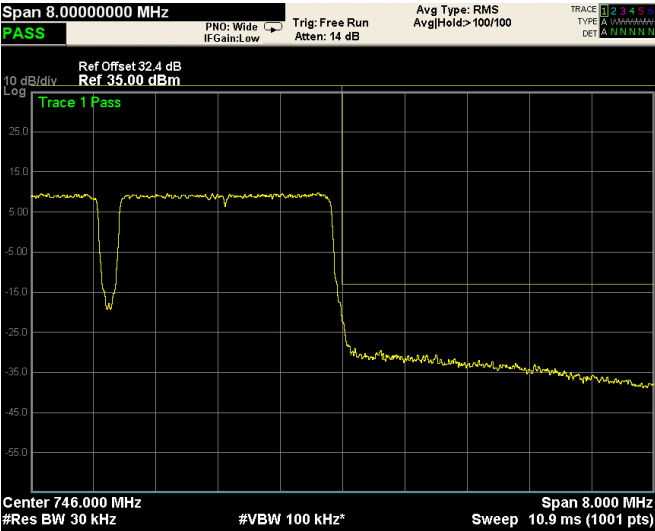


	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS	
	Test name: Clause 27. 53 (g) Spurious emissions at RF antenna connector			
	Test date: 03-27 March 2014		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			

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

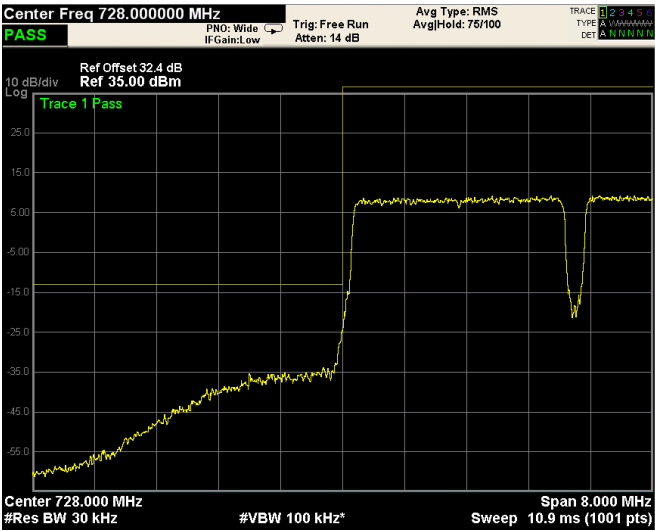


Low Band Edge

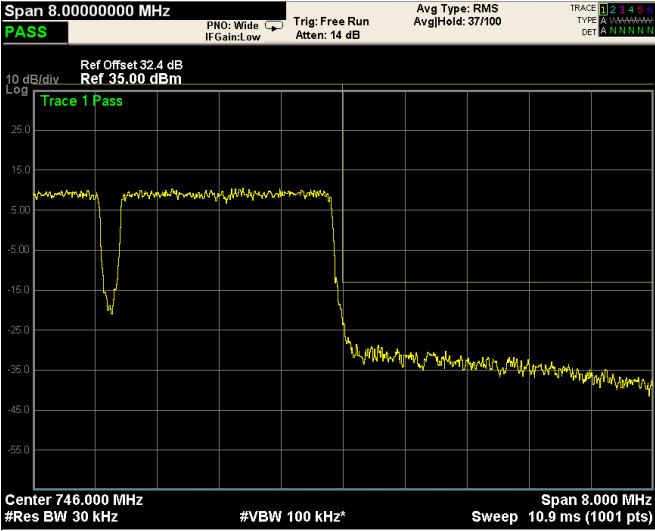


High Band Edge


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



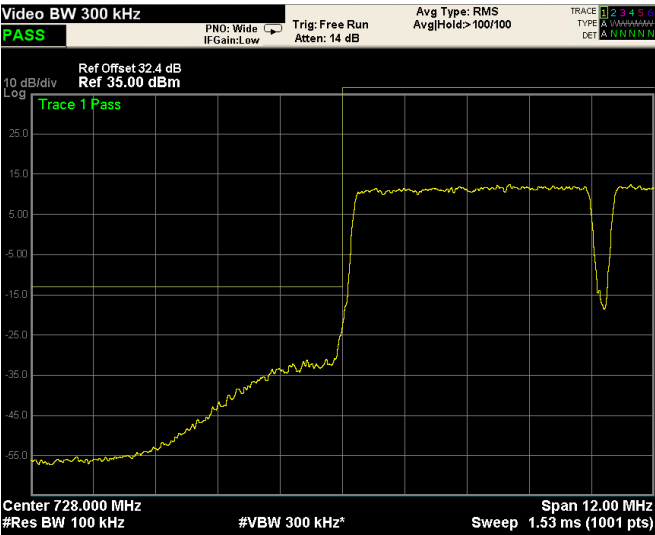
Low Band Edge



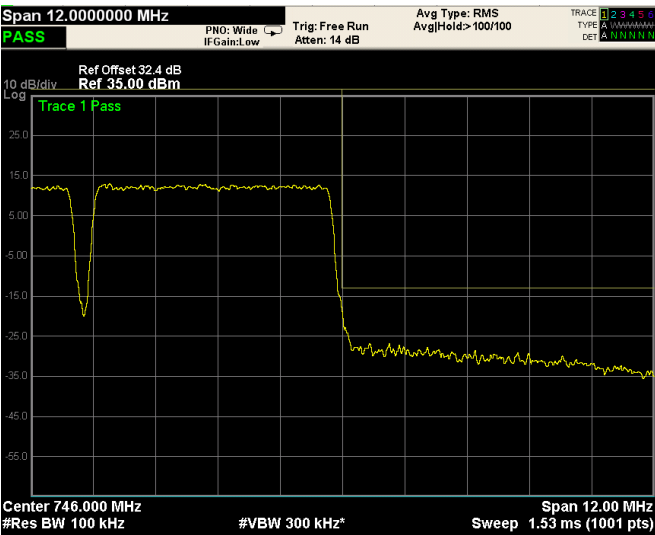
High Band Edge

	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS	
	Test name: Clause 27. 53 (g) Spurious emissions at RF antenna connector			
	Test date: 03-27 March 2014		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			

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

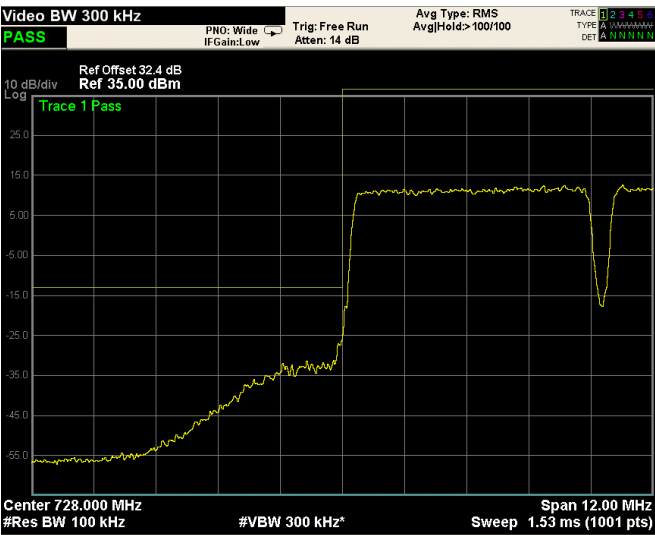


Low Band Edge

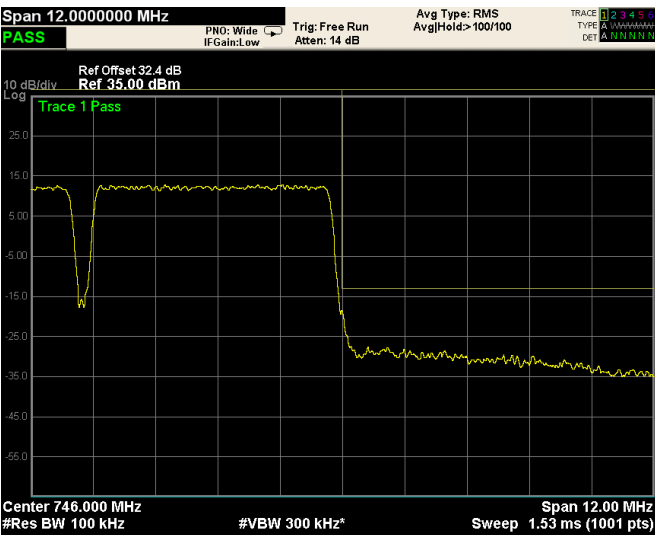


High Band Edge


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



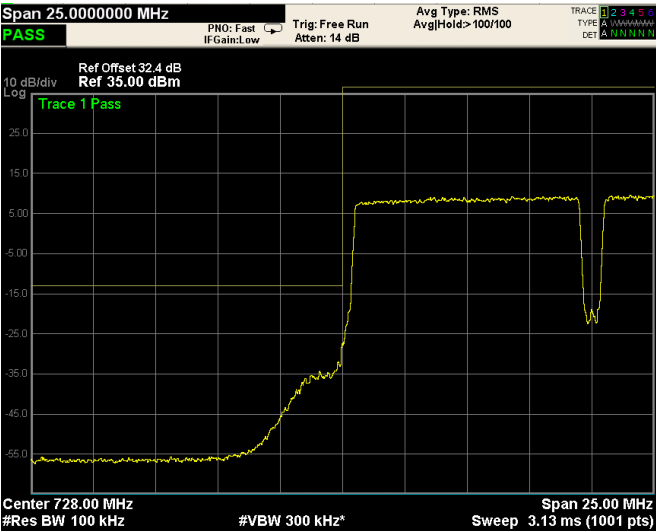
Low Band Edge



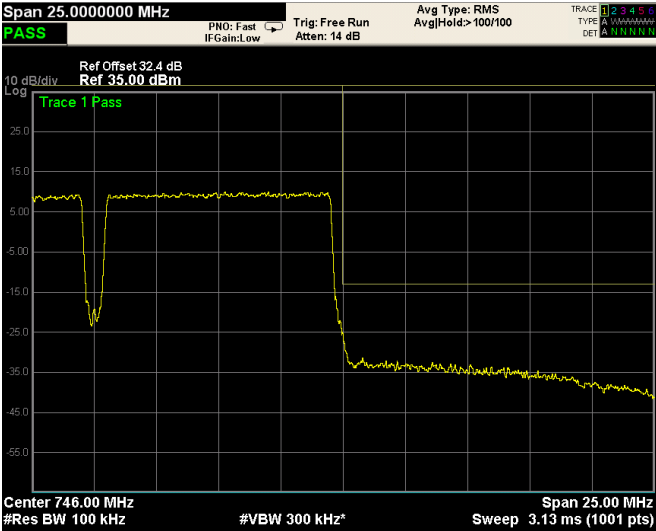
High Band Edge

	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS	
	Test name: Clause 27. 53 (g) Spurious emissions at RF antenna connector			
	Test date: 03-27 March 2014		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			

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

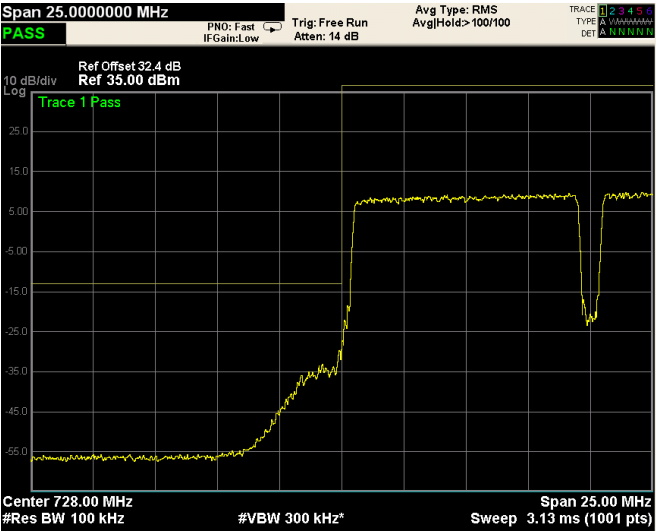


Low Band Edge

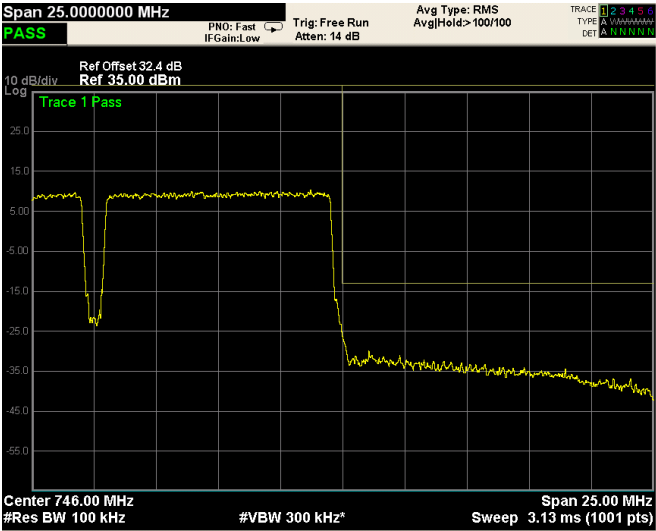


High Band Edge


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



Low Band Edge

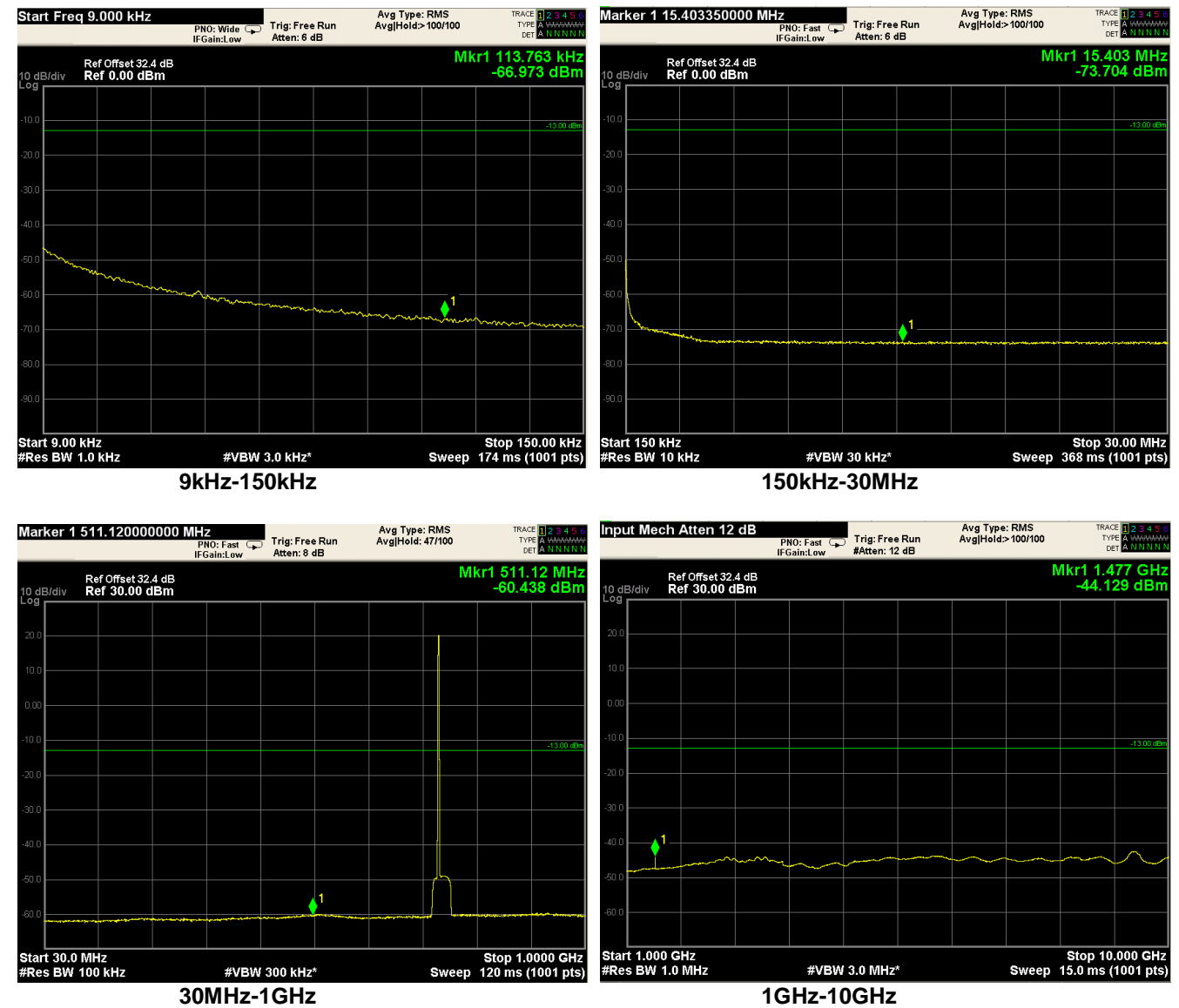



High Band Edge

	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS	
	Test name: Clause 27. 53 (g) Spurious emissions at RF antenna connector			
	Test date: 03-27 March 2014		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			

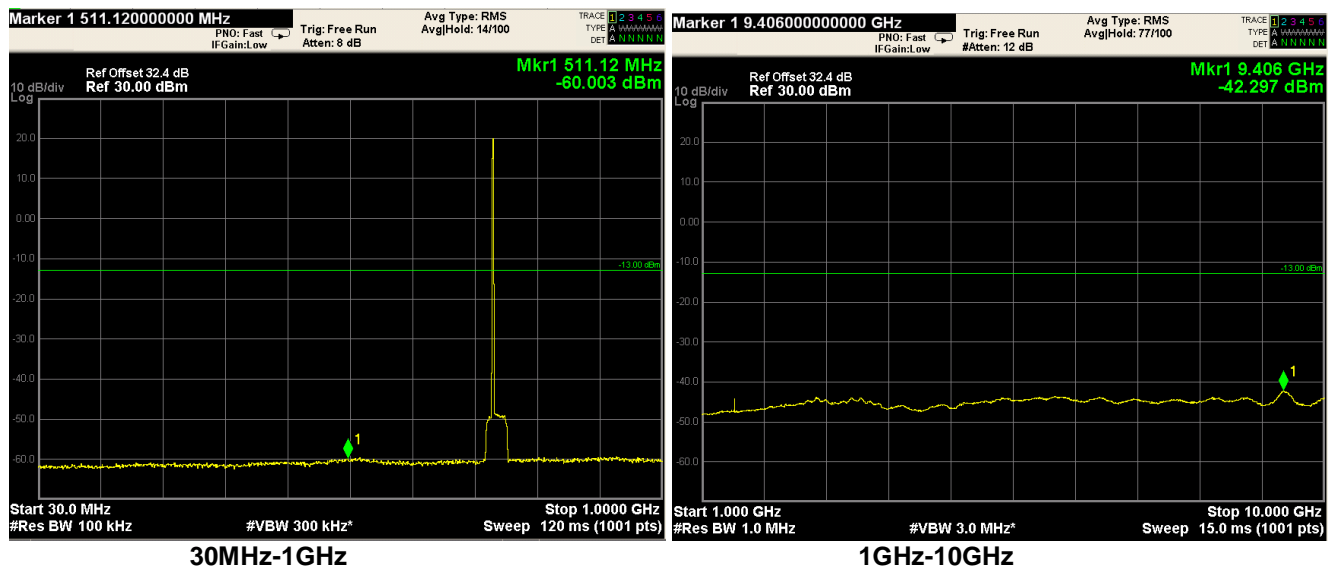
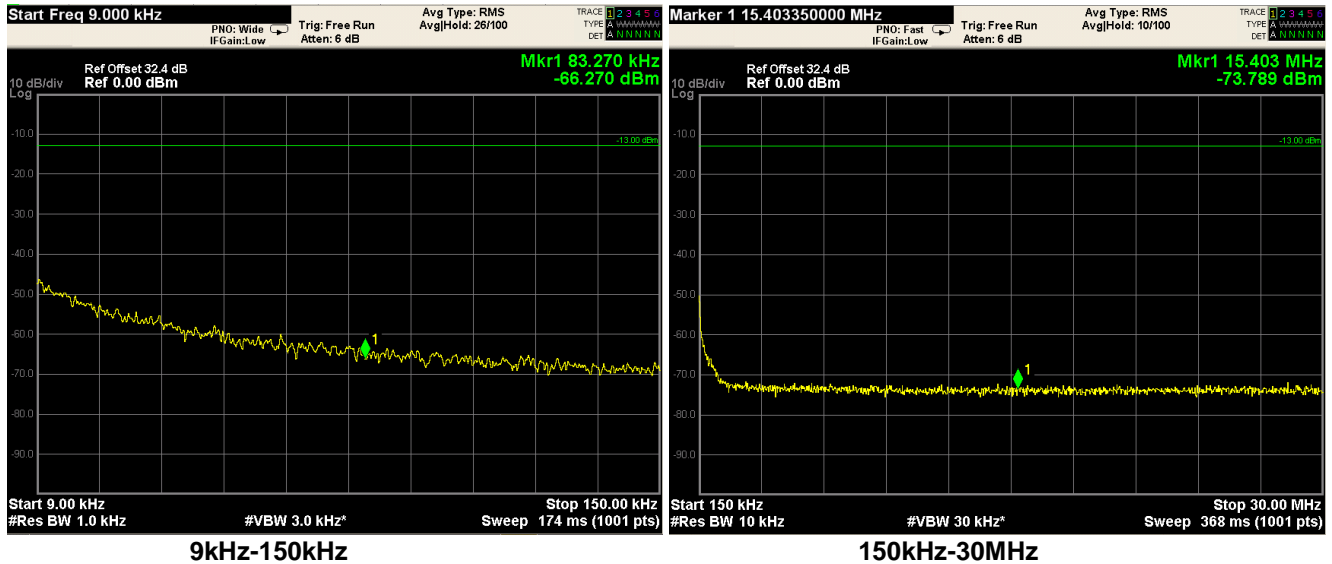
Clause 24.238 Spurious emissions at antenna terminal,


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



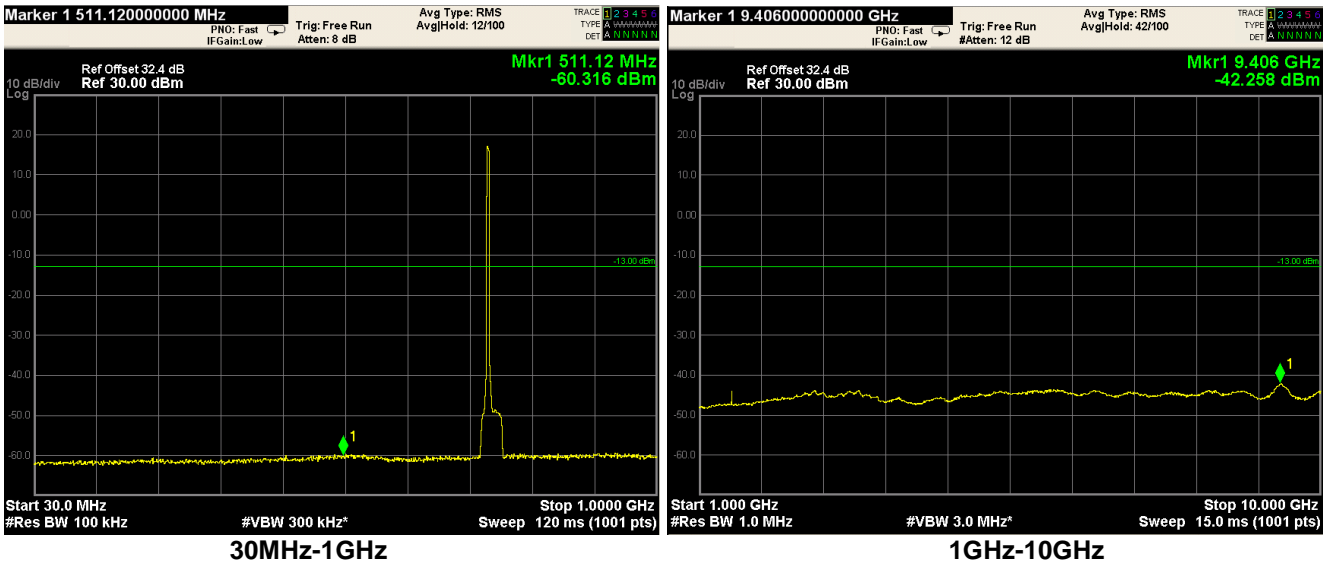
	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS	
	Test name: Clause 27. 53 (g) Spurious emissions at RF antenna connector			
	Test date: 03-27 March 2014		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			

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

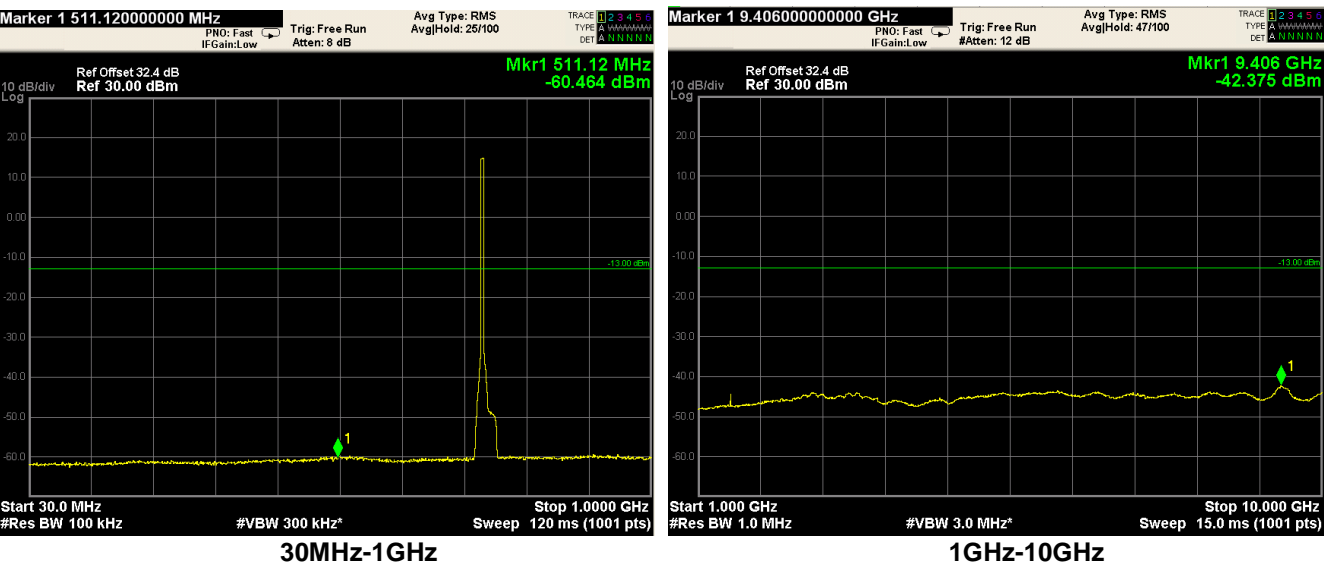


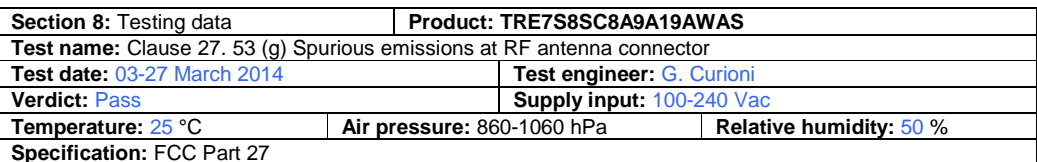
	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS	
	Test name: Clause 27. 53 (g) Spurious emissions at RF antenna connector			
	Test date: 03-27 March 2014		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			

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



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



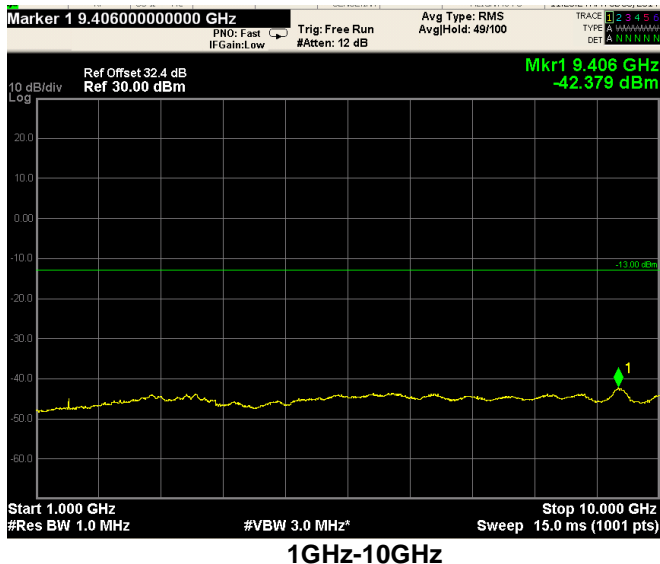



Marker 1 511.12000000 MHz

PNO: Fast Trig: Free Run Avg Type: RMS

IF Gain: Low Atten: 8 dB AvgHld: 137/100

TRAC 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995



	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS
	Test name: Clause 27.53 (g) Radiated spurious emissions		
	Test date: 03-27 March 2014		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27			

8.4 Clause 27.53 (g) Radiated spurious emissions

(g) For operations in the 698–746 MHz band and the 776–788 MHz band, the power of any emission outside a 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, by at least $43 + 10 \log (P)$ dB.

Compliance with the provisions 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.

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.

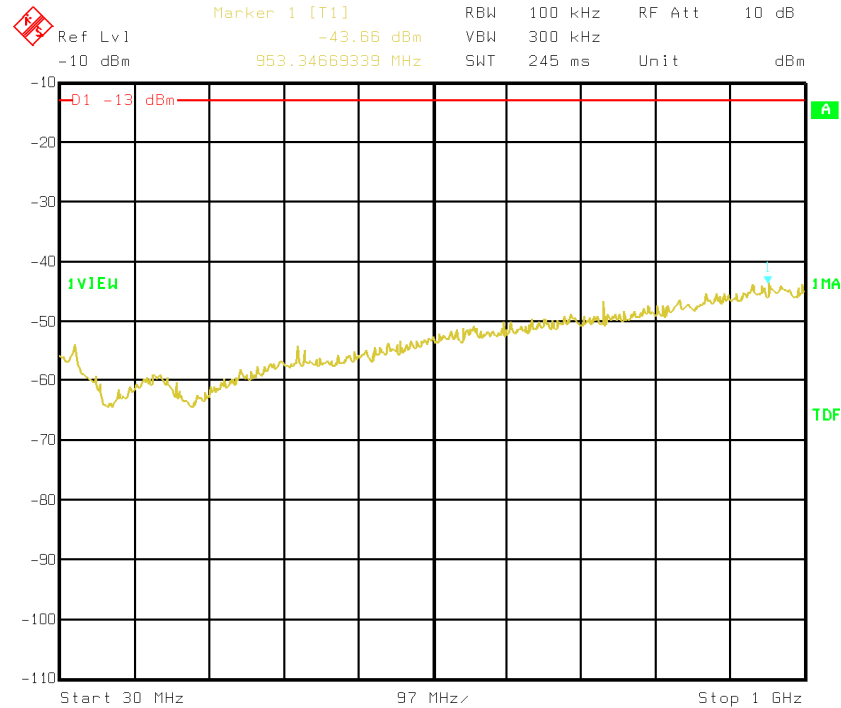
Test Data

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

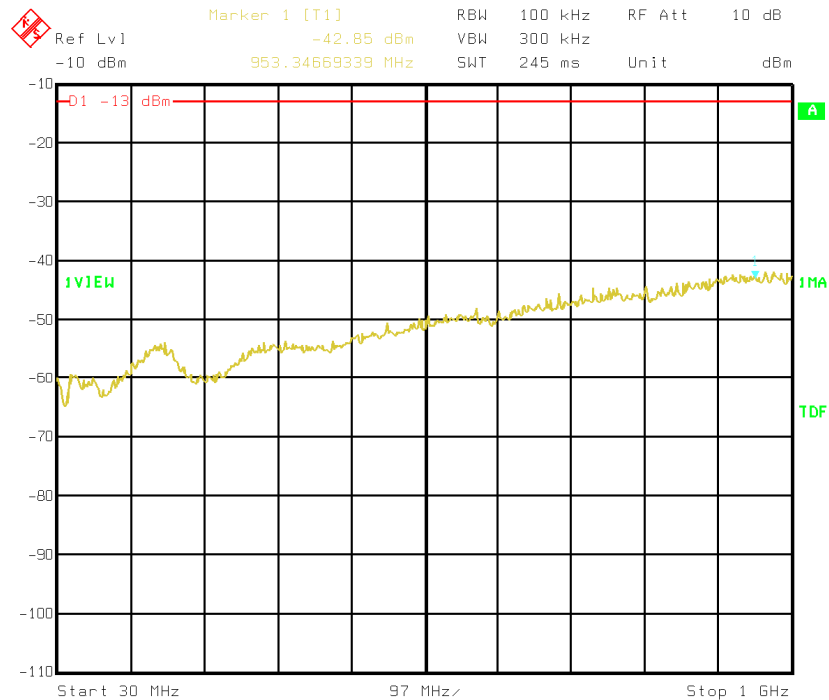
The D.U.T. antenna connector was terminated by a 50 Ω shielded dummy load.

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.

**Section 8: Testing data****Product: TRE7S8SC8A9A19AWAS****Test name:** Clause 27.53 (g) Radiated spurious emissions**Test date:** 03-27 March 2014**Test engineer:** G. Curioni**Verdict:** Pass**Supply input:** 100-240 Vac**Temperature:** 25 °C**Air pressure:** 860-1060 hPa**Relative humidity:** 50 %**Specification:** FCC Part 27

Date: 26.MAR.2014 13:43:15

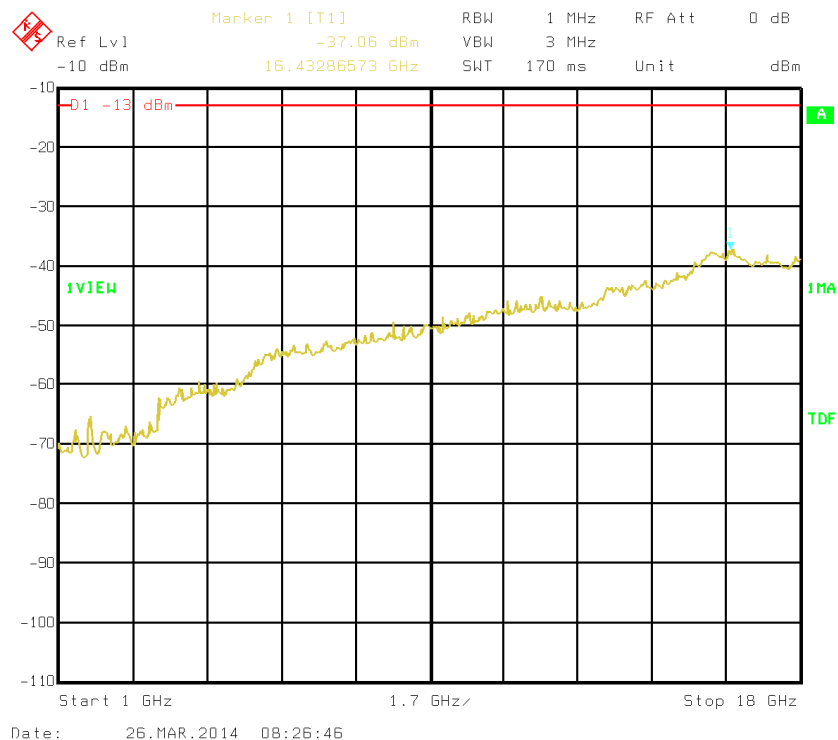
30MHz-1GHz – H Pol

Date: 26.MAR.2014 13:47:42

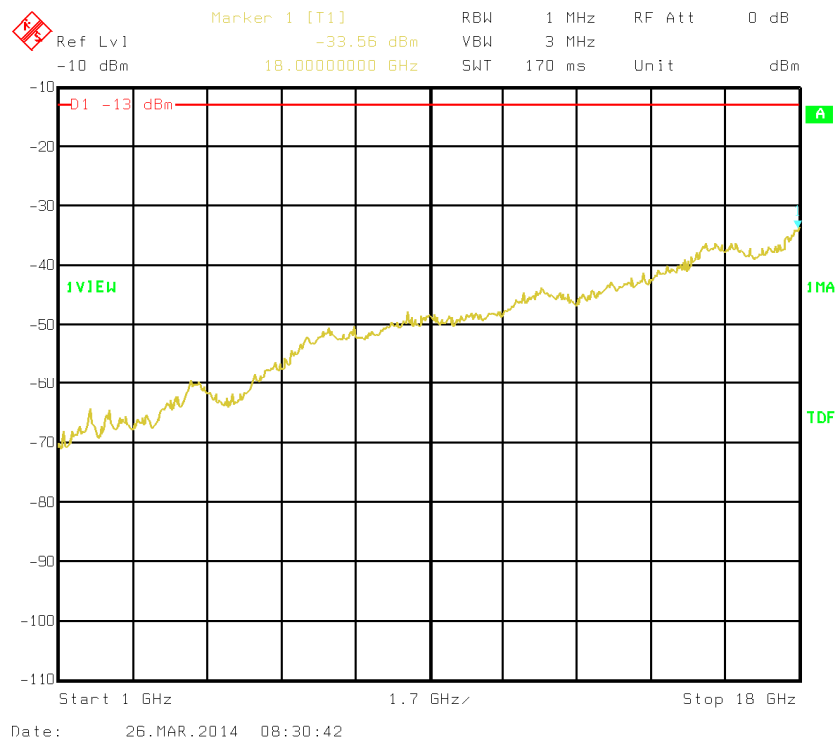
30MHz-1GHz – V Pol




Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS
Test name: Clause 27.53 (g) Radiated spurious emissions		
Test date: 03-27 March 2014		Test engineer: G. Curioni
Verdict: Pass		Supply input: 100-240 Vac
Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27		



1GHz-18GHz – H Pol



1GHz-18GHz – V Pol


	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS
	Test name: Clause 27.53 (f) Radiated spurious emissions within 1559-1610MHz band		
	Test date: 03-27 March 2014		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27			

8.5 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.


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.

	Section 8: Testing data		Product: TRE7S8SC8A9A19AWAS
	Test name: Clause 27.53 (f) Radiated spurious emissions within 1559-1610MHz band		
	Test date: 03-27 March 2014		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27			

Test data				
Insert plots here				
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.				

NOT APPLICABLE: the EUT doesn't work in these bands.

	Section 8: Testing data	Product: TRE7S8SC8A9A19AWAS

8.6 Clause 27.54 Frequency stability

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Special notes

- 26 dBc points including frequency tolerance were assessed to remain within assigned band.
- The resolution bandwidth was set to 100 kHz, video bandwidth was set to 100 kHz

**Test data**


26 dBc points measurement:

Frequency tolerance measurements:

Test conditions	Δ Frequency (Hz)	Offset (Hz)
+50 °C, Nominal		
+40 °C, Nominal		
+30 °C, Nominal		
+20 °C, +15 %		
+20 °C, Nominal		
+20 °C, -15 %		
+10 °C, Nominal		
0 °C, Nominal		
-10 °C, Nominal		
-20 °C, Nominal		
-30 °C, Nominal		

:

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

	Section 8: Testing data	Product: TRE7S8SC8A9A19AWAS

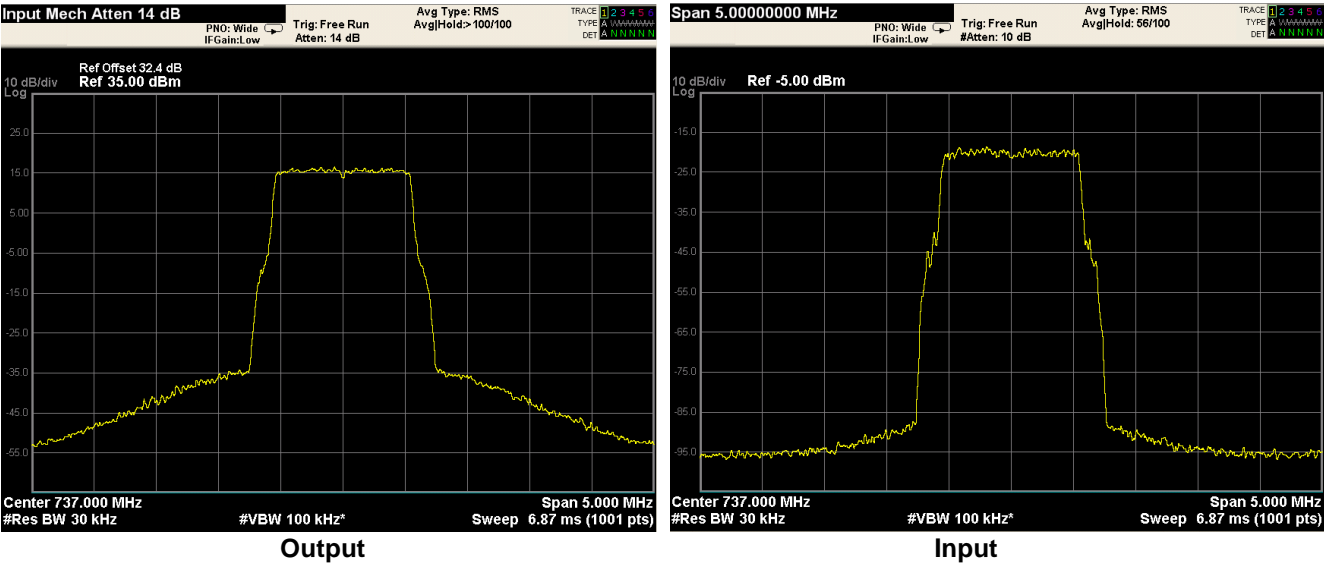
8.7 Clause 2.1049 Occupied bandwidth

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.

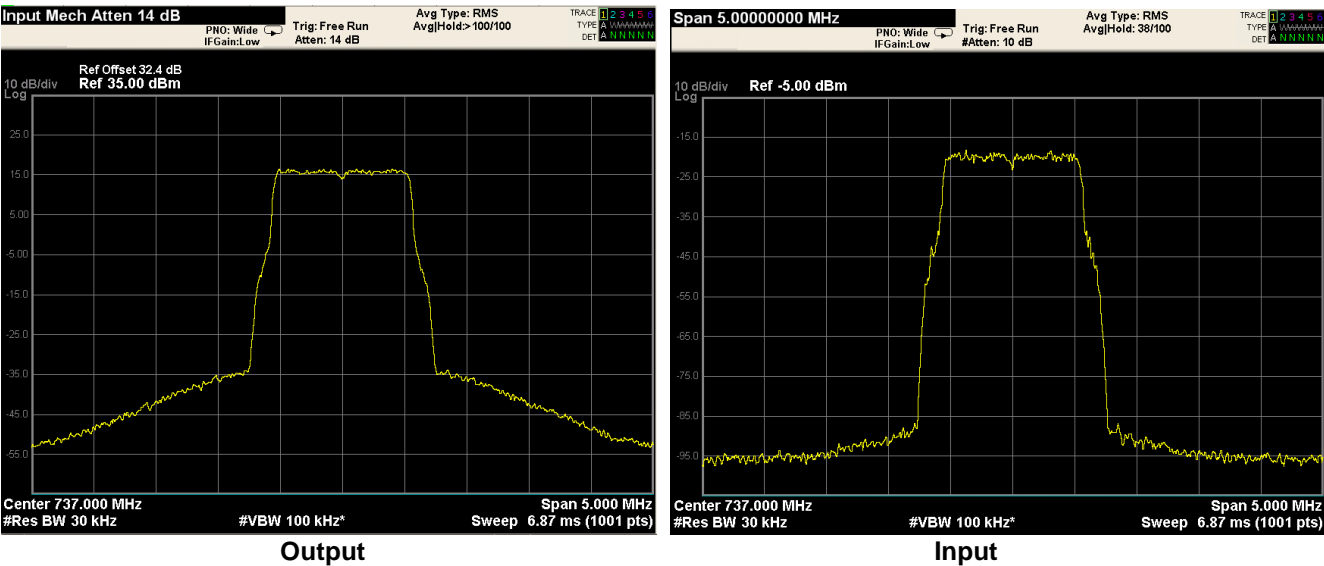
Special notes

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

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

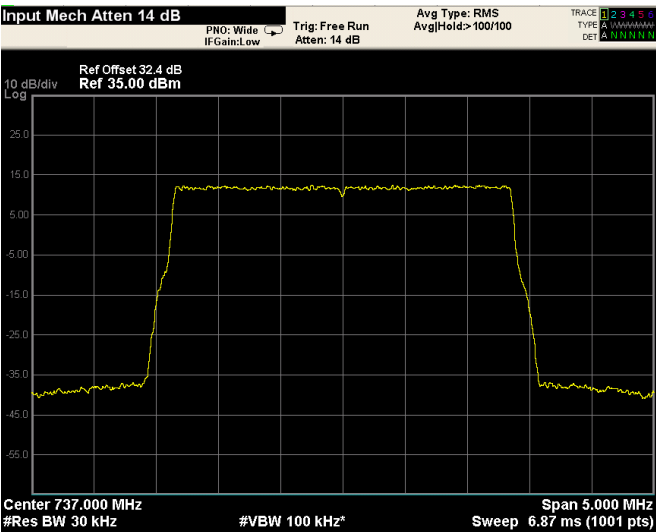


Mod. LTE 1.4MHz (QPSK) (Down-link)

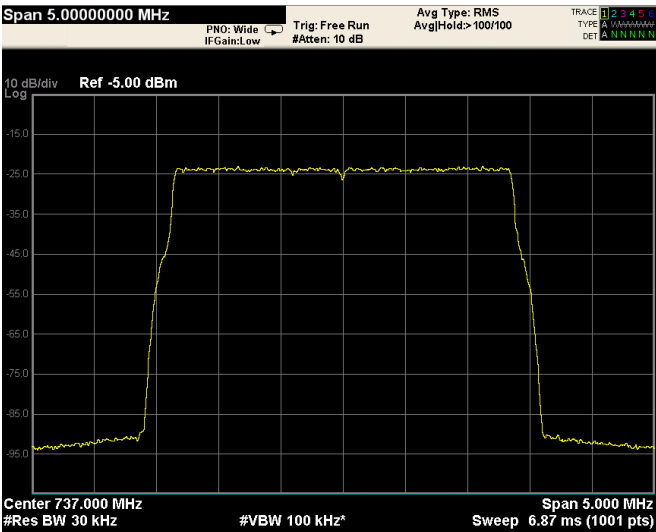




Mod. LTE 3MHz (QAM) (Down-link)

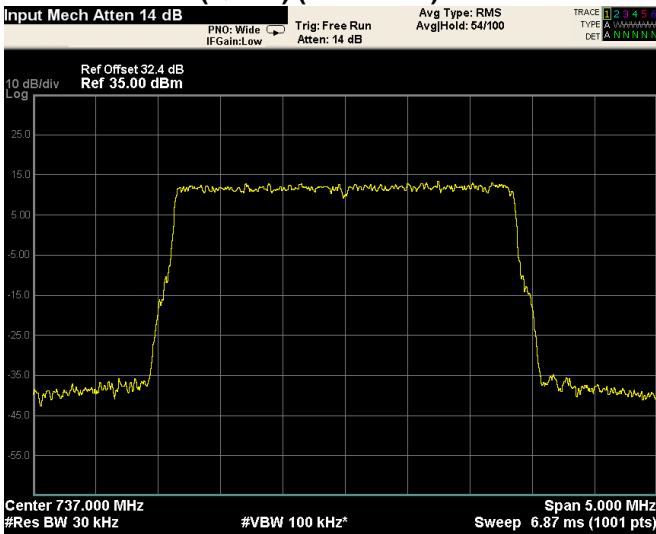


Output

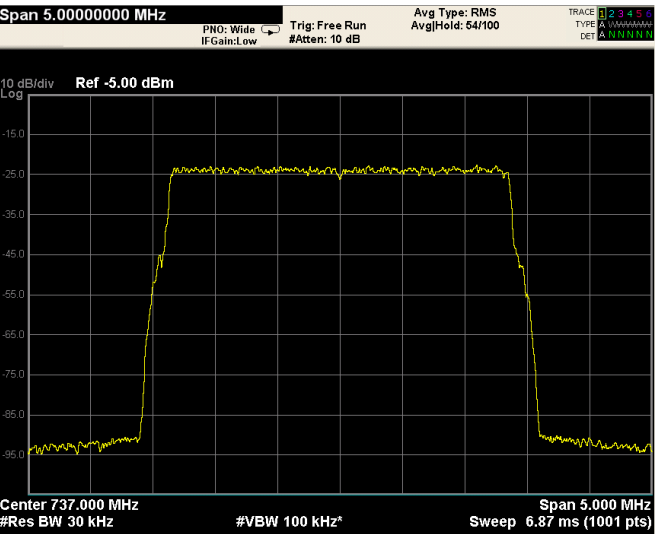


Input

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

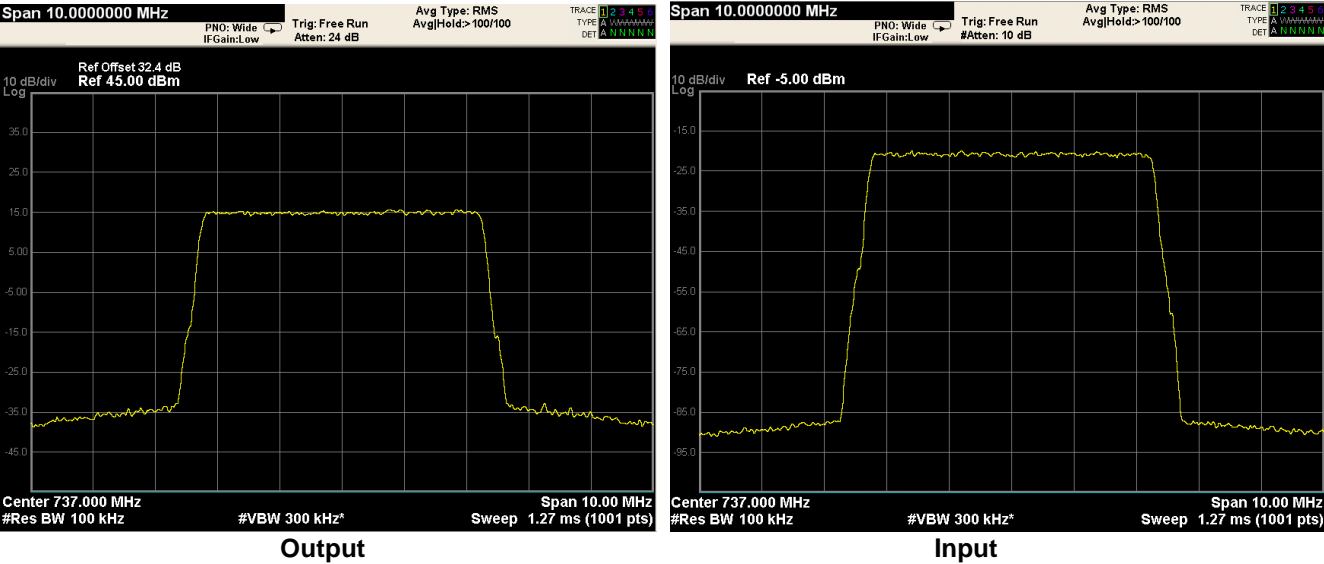


Output

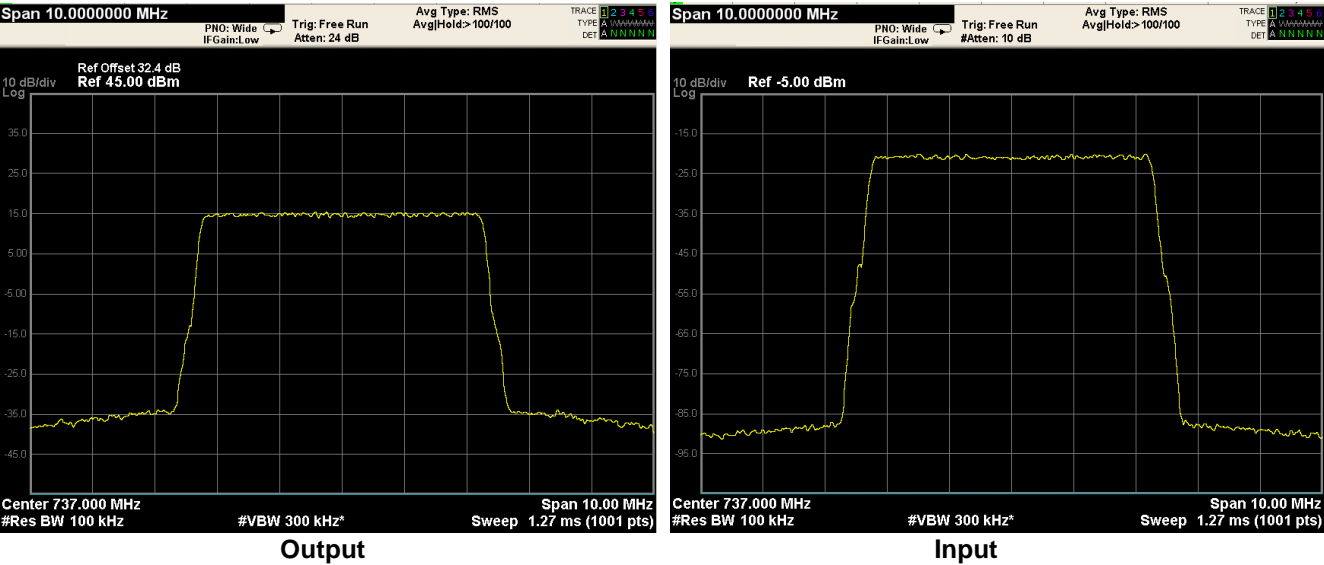


Input

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

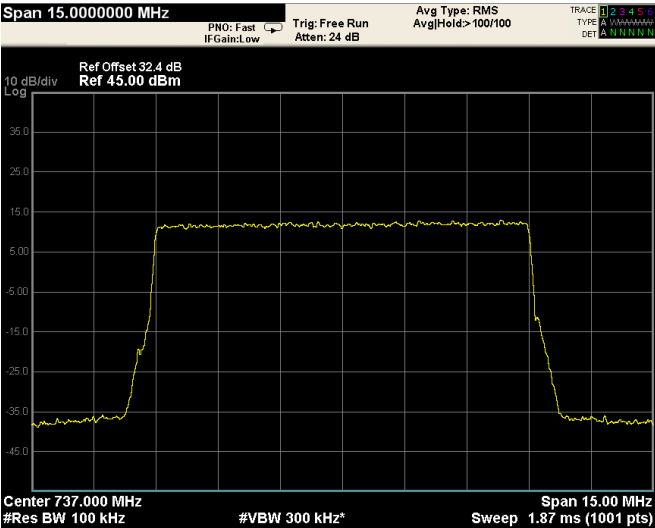


Mod. LTE 5 MHz (QPSK) (Down-link)

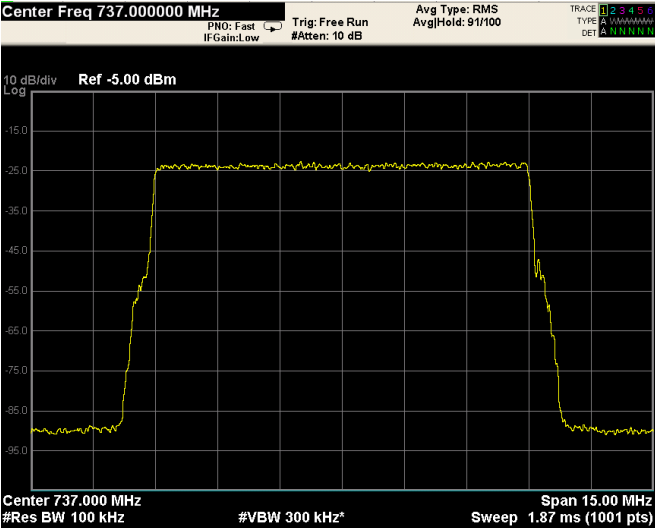




Mod. LTE 10MHz (QAM) (Down-link)

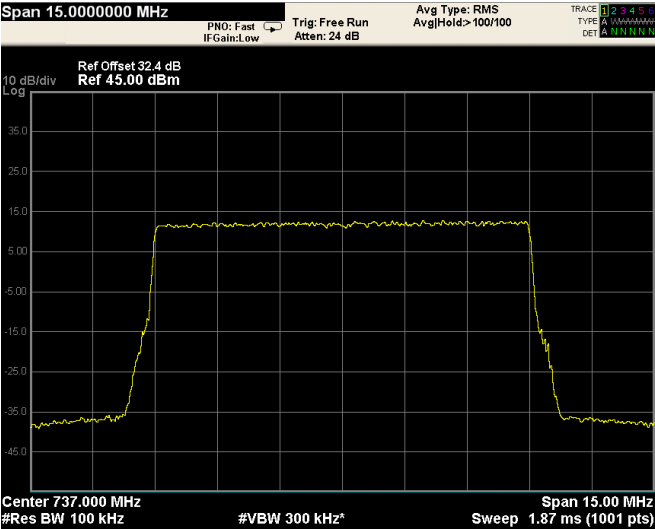


Output

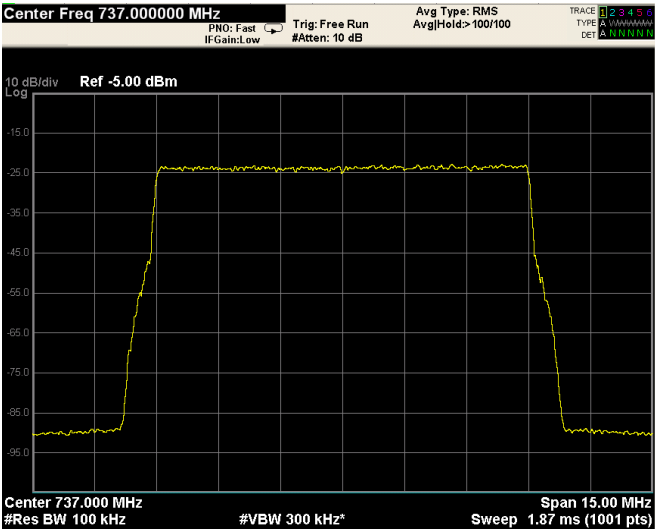


Input

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

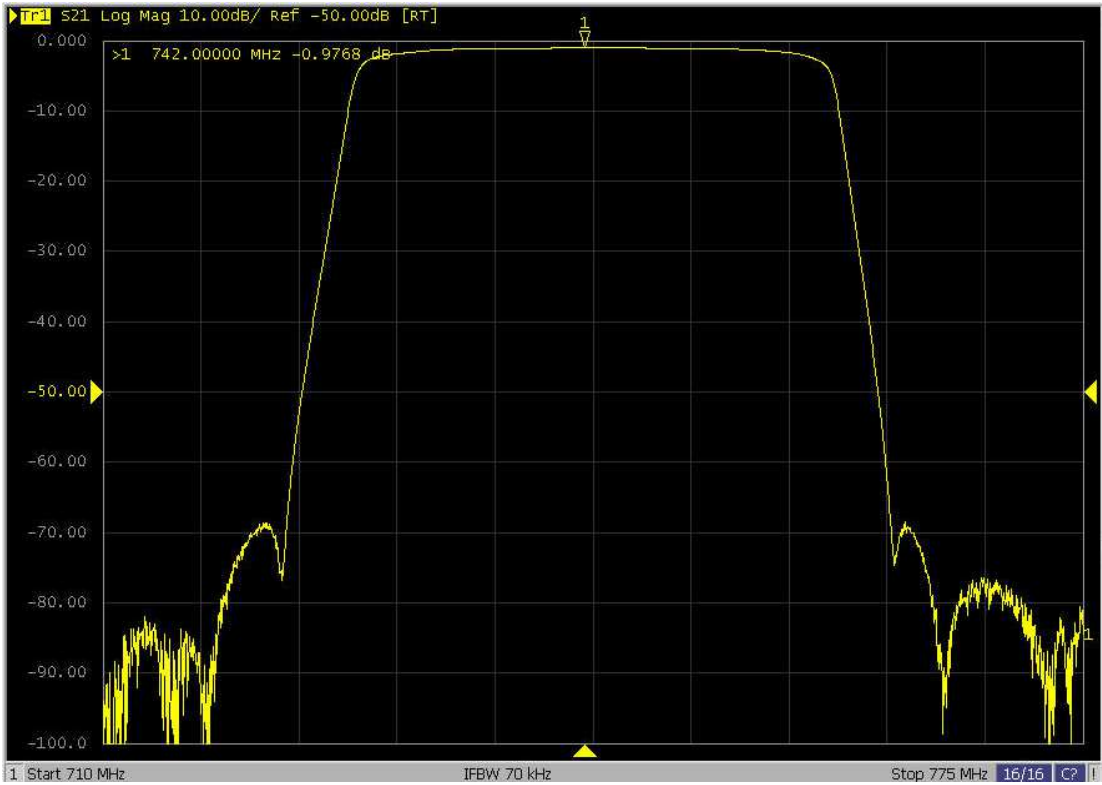


Output



Input

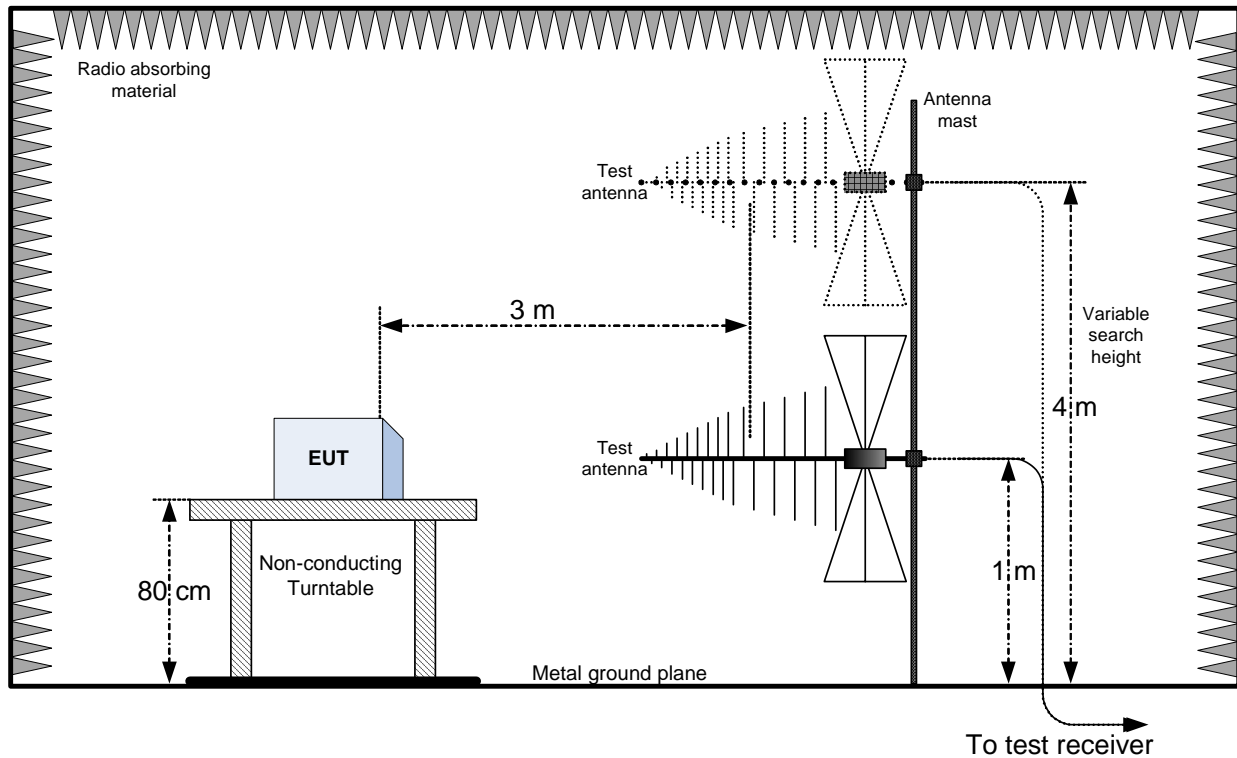
Section 9: Filter Frequency Response



Down-link

Section 10: Block diagrams of test set-ups

Radiated emissions set-up



Section 11: EUT photos

Photo Set up



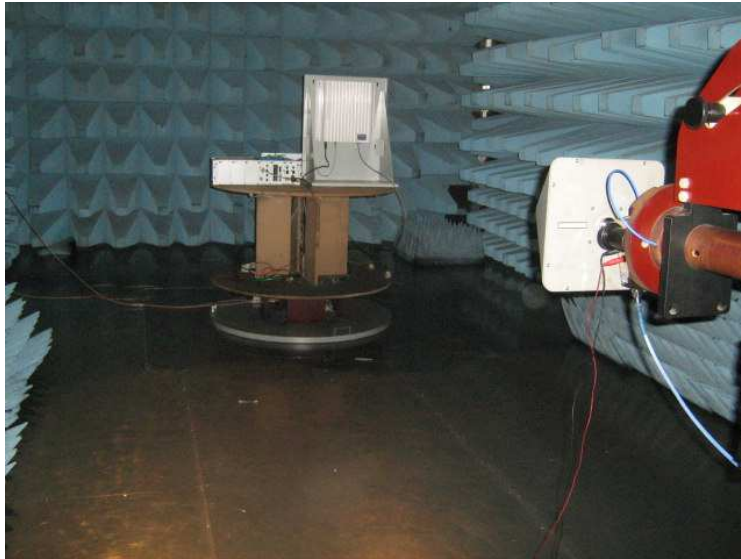


Photo EUT





Section 11: EUT photos

Product: TRE7S8SC8A9A19AWAS

