



www.nemko.com

Report Reference ID:	210165-8TRFWL
-----------------------------	----------------------

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


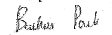
Applicant:	TEKO Telecom S.p.A. Via Meucci, 24/a I-40024 Castel S. Pietro Terme (BO) (Italy)
-------------------	--

Apparatus:	Very High Power Module
-------------------	--

FCC ID:	XM2-VHPA
----------------	--------------------------

Model:	VHPA0001AWS
---------------	-----------------------------


Testing laboratory:	Nemko Italy S.p.A. Via Carroccio, 4 I-20046 Biassono (Italy)
----------------------------	---

	Name and title	Date
Tested by:	 G. Curioni, Wireless/EMC Specialist	2012/06/11
Reviewed by:	 P. Barbieri, Wireless/EMC Specialist	2012/06/11

--

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 (d) Peak output power at RF antenna connector.....	11
8.2 Clause 27.52 RF safety	27
8.3 Clause 27.53 (h) Spurious emissions at RF antenna connector	28
8.4 Clause 27.53 (h) Radiated spurious emissions	93
8.5 Clause 27.53 (f) Radiated spurious emissions within 1559–1610 MHz band.....	95
8.6 Clause 27.54 Frequency stability	96
8.7 Clause 2.1049 Occupied bandwidth.....	97
8.8 Clause 2.1047 Modulation characteristics.....	130
Section 9: Filter Frequency Response.....	131
Section 10: Block diagrams of test set-ups	132
Section 11: EUT photos.....	133

	Section 1: Report summary	Product: VHPA0001AWS

Section 1: Report summary

1.1 Test specification

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

1.2 Statement of compliance

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

1.3 Exclusions

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

1.4 Registration number

Registration number:	481407 (10 m Semi anechoic chamber)
----------------------	-------------------------------------

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.

Nemko Canada Inc. authorizes the applicant to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

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

Nemko 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: VHPA0001AWS


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
§27.52	RF safety	N/A a)
§27.53(h)	Spurious emissions at RF antenna connector	Pass
§27.53(h)	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
§2.1047	Modulation characteristics	N/A c)
§2-11-04/EAB/RF	Filter Frequency Response	Pass

Notes:

- a) NO Antenna provided
- b) AWS band
- c) Modulation & frequency conversion circuitry not in use

	Section 3: Equipment under test (EUT) details	Product: VHPA0001AWS

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

3.1 Applicant details

Applicant complete business name	Name:	Teko Telecom S.p.A.
	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 checked="" type="checkbox"/> No <input 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:	-VHPA
Equipment class	TNB	
Description of product as it is marketed	Digital Donor Front-End	
	Model name/number:	VHPA0001AWS
	Serial number:	na

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

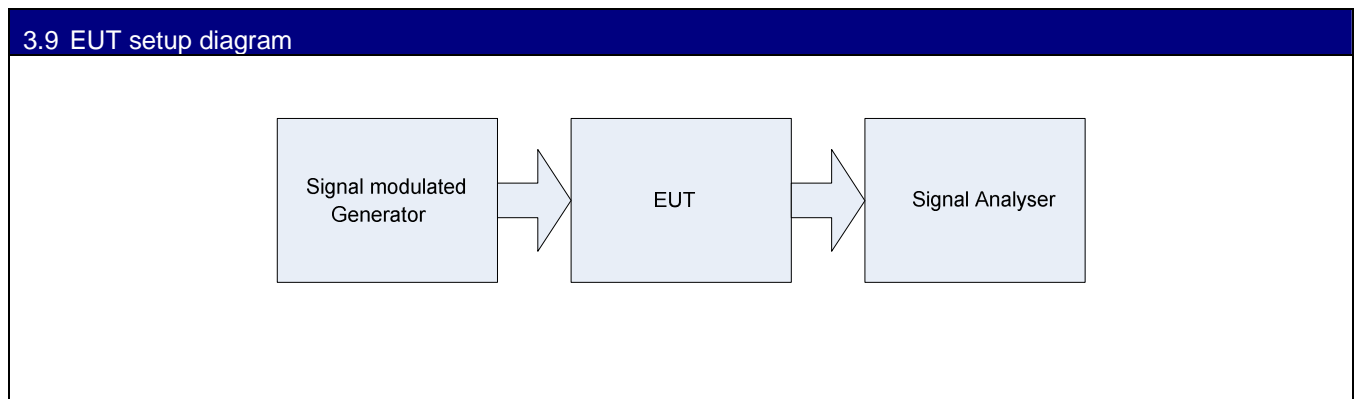
Receipt date:	2012-06-04
----------------------	------------


	Section 3: Equipment under test (EUT) details	Product: VHPA0001AWS

Nemko sample ID number:	-----
-------------------------	-------

3.7 EUT technical specifications	
Operating band:	AWS: Down Link: 2110–2155 MHz, Up Link: 1710-1755 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: 43dBm (20W) Up Link: 4dBm typical (0,0025W typical)
Gain	Down Link: 48dB Up Link: 47dB
Antenna type:	External Antenna is not provided, equipment that has an external 50 Ω RF connector
Power source:	28-30 Vdc

3.8 Operation of the EUT during testing	
Details:	Normal working at max gain with max RF power output (down link and up link)



	Section 4: Engineering considerations	Product: VHPA0001AWS

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:
----------------------	---

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:
-------------------	---

4.3 Technical judgment


Judgment	None
-----------------	------

 Nemko	Section 5: Test conditions	Product: VHPA0001AWS

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: 20–75 % 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: VHPA0001AWS

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: VHPA0001AWS


Section 7: Test equipment

Identification number	Description	Manufacturer model	s/n	Cal. Due
1a	Vector Signal Generator	Agilent N5182A MXG	MY48180714	May 2013
1b	Vector Signal Generator	Agilent E4438C ESG	MY45094485	Ago 2013
2	Spectrum Analyzer	Agilent E4440A	US40420470	Jul 2012
3	Network Analyzer	Agilent E5071B	MY42301133	Jan 2013
4	Climatic chamber	Angelantoni Hygros 600	7237	Nov 2014

Client's property

Identification number	Equipment	Manufacturer	Model	Serial N°	Cal. due
1	Trilog Broadband Antenna	Schwarzbeck	VULB 9163	VULB 9163-286	04/2013
2	Bilog antenna	Schwarzbeck	STLP 9148-123	123	09/2012
3	Double ridge waveguide horn	Spin	DRH40	061106A40	09/2013
4	Broadband preamplifier	Schwarzbeck	BBV 9718	9718-137	05/2013
5	Broadband preamplifier	Miteq	JS44	1648665	05/2013
6	Spectrum Analyzer 9kHz-40GHz	R&S	FSEK	848255/005	09/2012
7	Controller	EMCO	2090	9511-1099	NSC
8	Antenna Tower	EMCO	2071-2	9601-1940	NSC
9	Turning table Controller	EMCO	1061-1.521	9012-1508	NSC
10	Semi-anechoic chamber	Nemko	3m semi-anechoic chamber	70	04/2013
11	Control room	Siemens	3m control room	3	NSC

Property of Nemko Italy

	Section 8: Testing data		Product: VHPA0001AWS
	Test name: Clause 27.52 RF safety		
	Test date 01-10 June 2012		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(d) Peak output power at RF antenna connector


(1) The power of each fixed or base station transmitting in the 2110-2155 MHz band and located in any 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, is limited to a peak equivalent isotropically radiated power (EIRP) of 3280 watts. The power of each fixed or base station transmitting in the 2110-2155 MHz band from any other location is limited to a peak EIRP of 1640 watts. A licensee operating a base or fixed station utilizing a power of more than 1640 watts EIRP must coordinate such operations in advance with all Government and non-Government satellite entities in the 2025-2110 MHz band. Operations above 1640 watts EIRP must also be coordinated in advance with the following licensees within 120 kilometers (75 miles) of the base or fixed station: all Broadband Radio Service (BRS) licensees authorized under Part 27 in the 2155-2160 MHz band and all AWS licensees in the 2110-2155 MHz band.

(2) Fixed, mobile, and portable (handheld) stations operating in the 1710–1755MHz band are limited to a peak EIRP of 1 watt. Fixed stations operating in this band are limited to a maximum antenna height of 10 meters above ground, and mobile and portable stations must employ a means for limiting power to the minimum necessary for successful communications.

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

Special notes

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

	Section 8: Testing data		Product: VHPA0001AWS
	Test name: Clause 27.52 RF safety		
	Test date: 01-10 June 2012		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		

RF Output Power at RF connectors

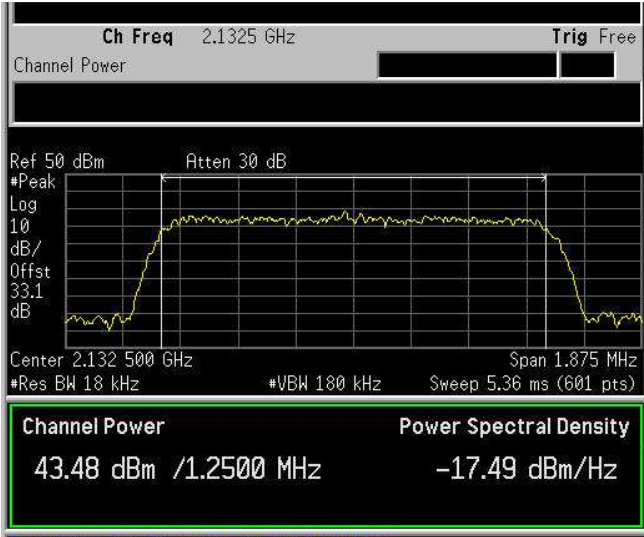
Test data					
Direction	Modulation	Frequency (MHz)	RF output Power (W/MHz)	RF output channel Power (W)	PAR (dB)
Down-link	CDMA (1,25MHz)	2132.5	17.827	22.284	8.89
Down-link	WCDMA (5MHz)	2132.5	4.560	22.803	10.56
Down-link	LTE (QAM, 1,4MHz)	2132.5	14.416	20.183	9.78
Down-link	LTE (QPSK, 1,4MHz)	2132.5	14.450	20.230	9.87
Down-link	LTE (QAM, 3MHz)	2132.5	6.712	20.137	9.76
Down-link	LTE (QPSK, 3MHz)	2132.5	6.697	20.091	9.77
Down-link	LTE (QAM, 5MHz)	2132.5	4.000	19.999	10.71
Down-link	LTE (QPSK, 5MHz)	2132.5	4.000	19.999	10.71
Down-link	LTE (QAM, 10MHz)	2132.5	2.014	20.137	10.50
Down-link	LTE (QPSK, 10MHz)	2132.5	2.014	20.137	10.51
Down-link	LTE (QAM, 15MHz)	2132.5	1.343	20.183	10.39
Down-link	LTE (QPSK, 15MHz)	2132.5	1.336	20.045	10.74
Down-link	LTE (QAM, 20MHz)	2132.5	1.005	20.091	10.77
Down-link	LTE (QPSK, 20MHz)	2132.5	1.000	19.999	10.82
Up-link	CDMA (1,25MHz)	1732.5	2.140×10^{-3}	2.685×10^{-3}	8.81
Up-link	WCDMA (5MHz)	1732.5	0.559×10^{-3}	2.792×10^{-3}	10.26
Up-link	LTE (QAM, 1,4MHz)	1732.5	1.802×10^{-3}	2.523×10^{-3}	10.02
Up-link	LTE (QPSK, 1,4MHz)	1732.5	1.811×10^{-3}	2.535×10^{-3}	10.23
Up-link	LTE (QAM, 3MHz)	1732.5	0.841×10^{-3}	2.523×10^{-3}	10.84
Up-link	LTE (QPSK, 3MHz)	1732.5	0.849×10^{-3}	2.547×10^{-3}	10.95
Up-link	LTE (QAM, 5MHz)	1732.5	0.502×10^{-3}	2.512×10^{-3}	11.03
Up-link	LTE (QPSK, 5MHz)	1732.5	0.507×10^{-3}	2.535×10^{-3}	11.07
Up-link	LTE (QAM, 10MHz)	1732.5	0.252×10^{-3}	2.523×10^{-3}	11.17
Up-link	LTE (QPSK, 10MHz)	1732.5	0.257×10^{-3}	2.564×10^{-3}	11.28
Up-link	LTE (QAM, 15MHz)	1732.5	0.169×10^{-3}	2.529×10^{-3}	11.53
Up-link	LTE (QPSK, 15MHz)	1732.5	0.168×10^{-3}	2.523×10^{-3}	11.61
Up-link	LTE (QAM, 20MHz)	1732.5	0.126×10^{-3}	2.512×10^{-3}	11.50
Up-link	LTE (QPSK, 20MHz)	1732.5	0.128×10^{-3}	2.553×10^{-3}	11.55

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

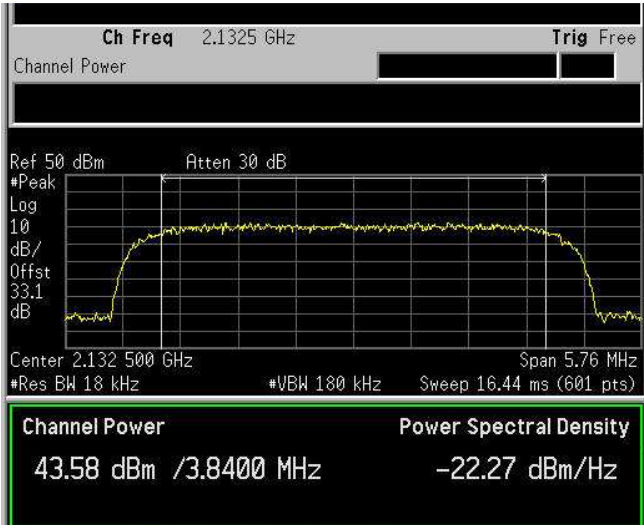


Section 8: Testing data		Product: VHPA0001AWS
Test name: Clause 27.52 RF safety		
Test date 01-10 June 2012		Test engineer: G. Curioni
Verdict: Pass		Supply input: 100-240 Vac
Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27		

RF Power Output D.L. mod. CDMA



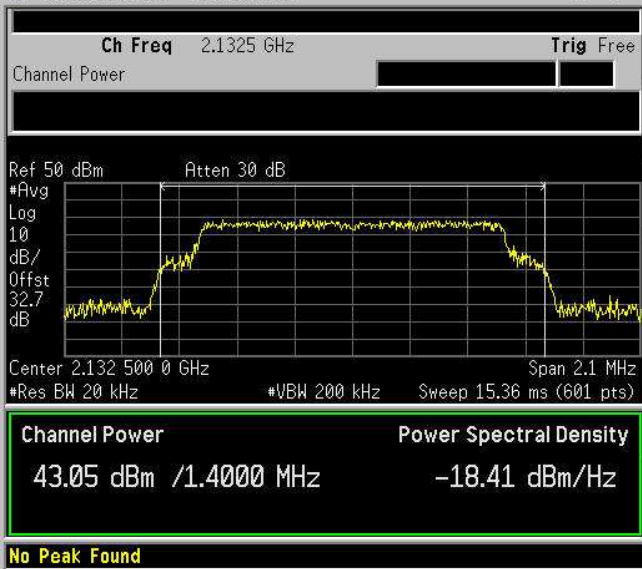
RF Power Output D.L. mod. WCDMA



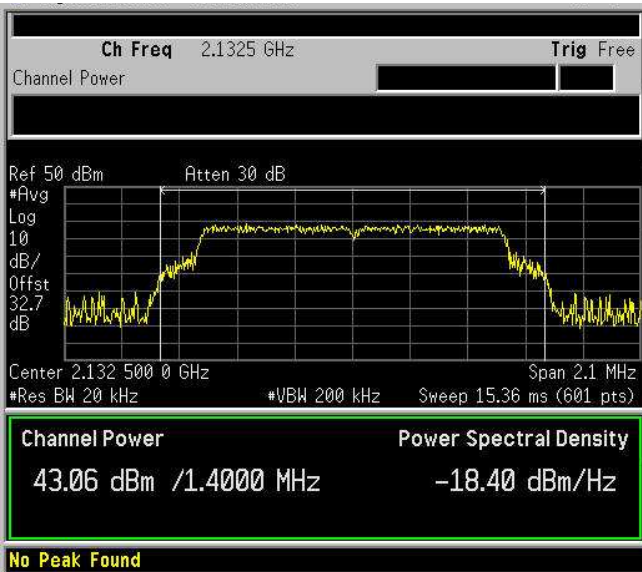


Section 8: Testing data		Product: VHPA0001AWS
Test name: Clause 27.52 RF safety		
Test date 01-10 June 2012		Test engineer: G. Curioni
Verdict: Pass		Supply input: 100-240 Vac
Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27		

RF Power Output D.L. mod. 1.4 QAM



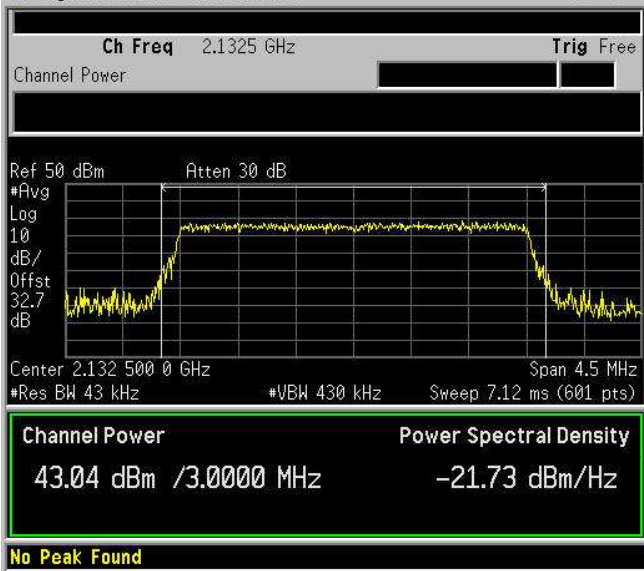
RF Power Output D.L. mod. 1.4 QPSK



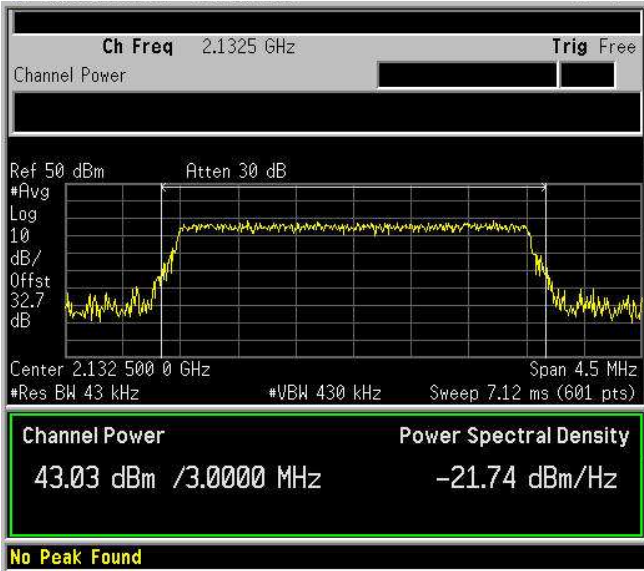


Section 8: Testing data		Product: VHPA0001AWS
Test name: Clause 27.52 RF safety		
Test date 01-10 June 2012		Test engineer: G. Curioni
Verdict: Pass		Supply input: 100-240 Vac
Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27		

RF Power Output D.L. mod. 3 QAM



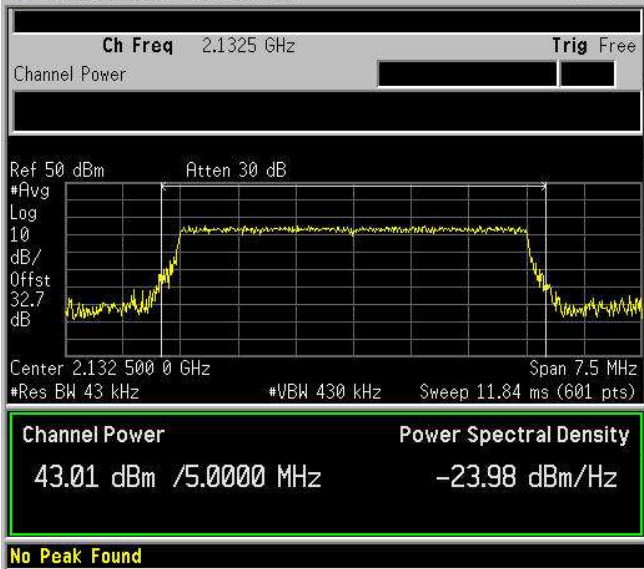
RF Power Output D.L. mod. 3 QPSK



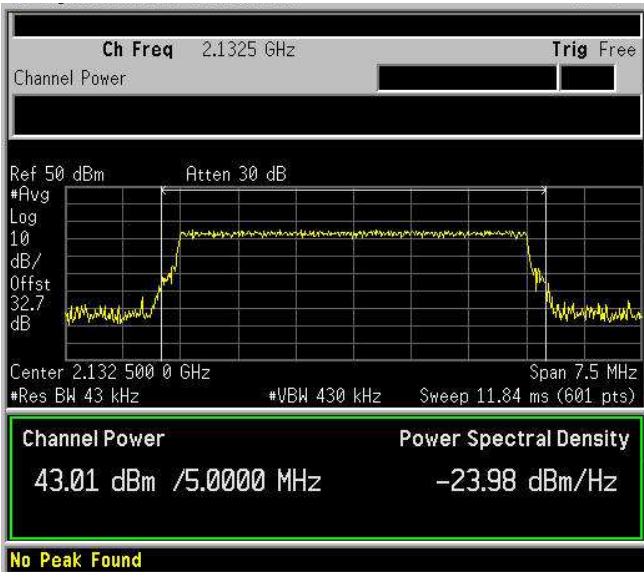


Section 8: Testing data		Product: VHPA0001AWS
Test name: Clause 27.52 RF safety		
Test date 01-10 June 2012		Test engineer: G. Curioni
Verdict: Pass		Supply input: 100-240 Vac
Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27		

RF Power Output D.L. mod. 5 QAM



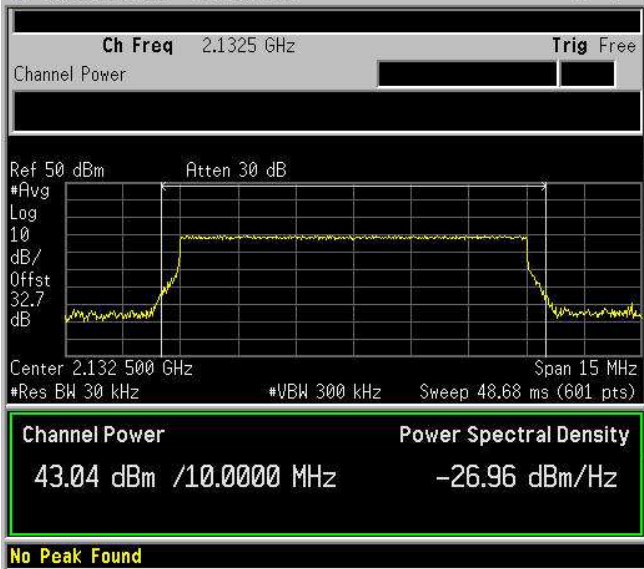
RF Power Output D.L. mod. 5 QPSK



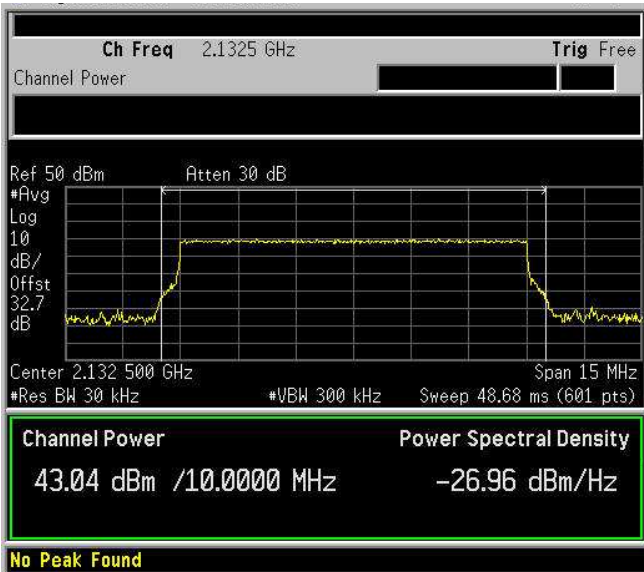


Section 8: Testing data		Product: VHPA0001AWS
Test name: Clause 27.52 RF safety		
Test date 01-10 June 2012		Test engineer: G. Curioni
Verdict: Pass		Supply input: 100-240 Vac
Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27		

RF Power Output D.L. mod. 10 QAM



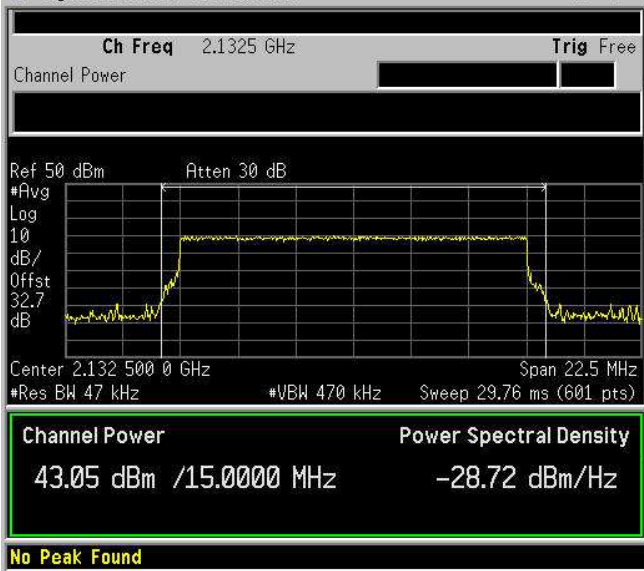
RF Power Output D.L. mod. 10 QPSK



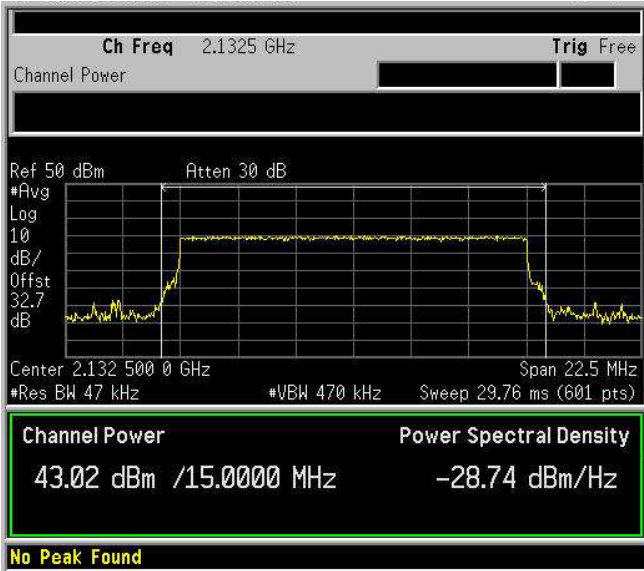


Section 8: Testing data		Product: VHPA0001AWS
Test name: Clause 27.52 RF safety		
Test date 01-10 June 2012		Test engineer: G. Curioni
Verdict: Pass		Supply input: 100-240 Vac
Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27		

RF Power Output D.L. mod. 15 QAM



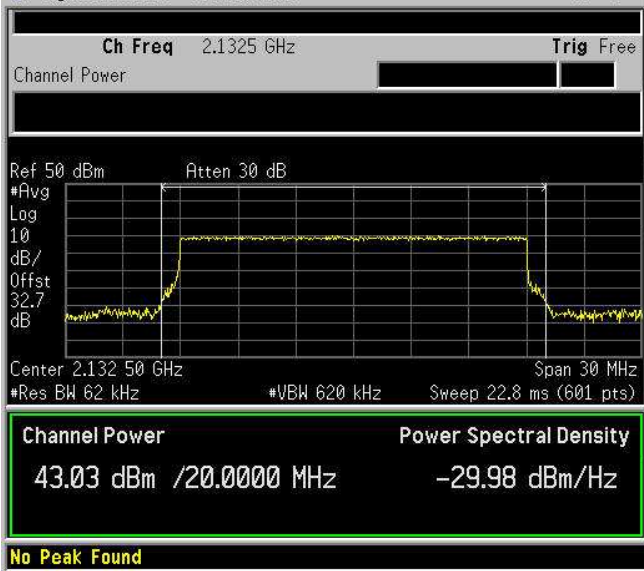
RF Power Output D.L. mod. 15 QPSK



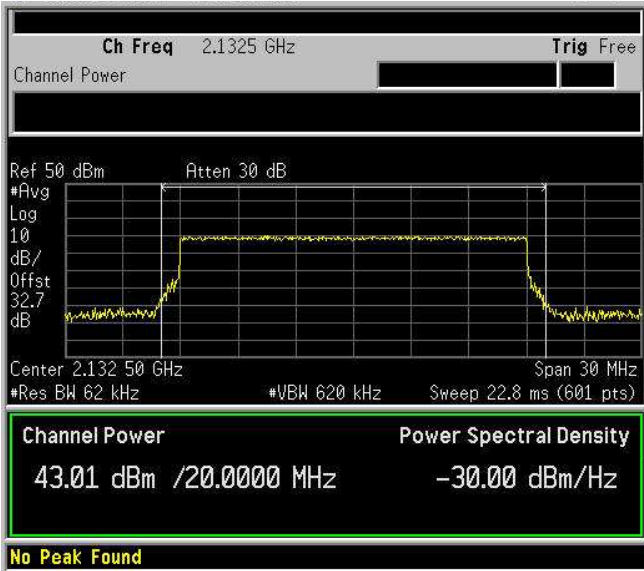



Section 8: Testing data		Product: VHPA0001AWS
Test name: Clause 27.52 RF safety		
Test date 01-10 June 2012		Test engineer: G. Curioni
Verdict: Pass		Supply input: 100-240 Vac
Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27		

RF Power Output D.L. mod. 20 QAM

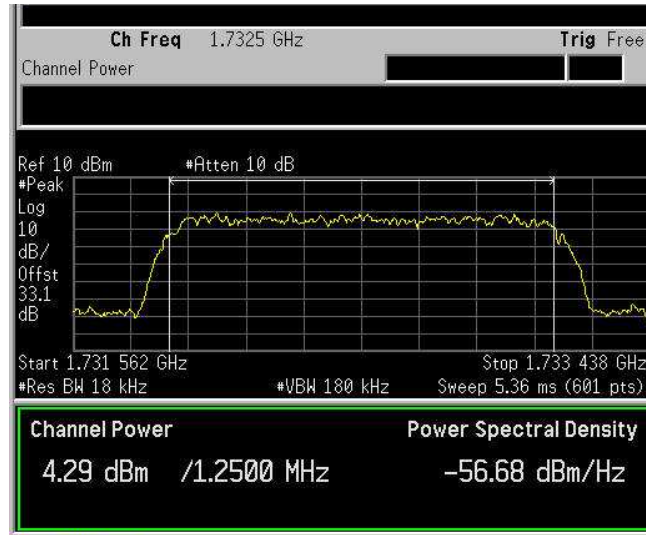


RF Power Output D.L. mod. 20 QPSK

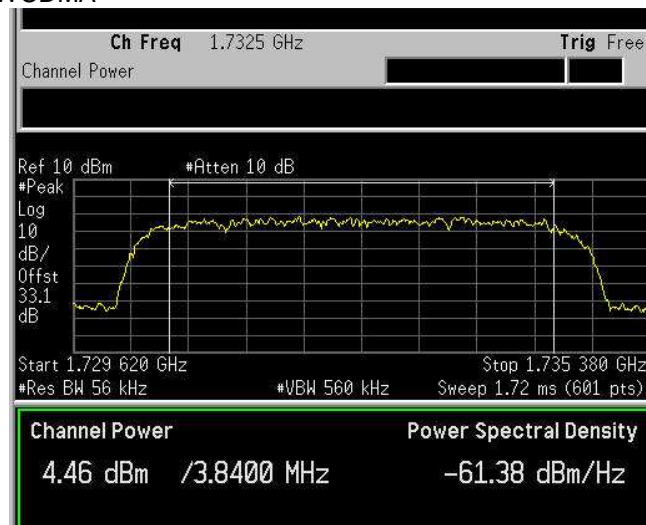



	Section 8: Testing data		Product: VHPA0001AWS
	Test name: Clause 27.52 RF safety		
	Test date 01-10 June 2012		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27			

RF Power Output U.L. mod. CDMA

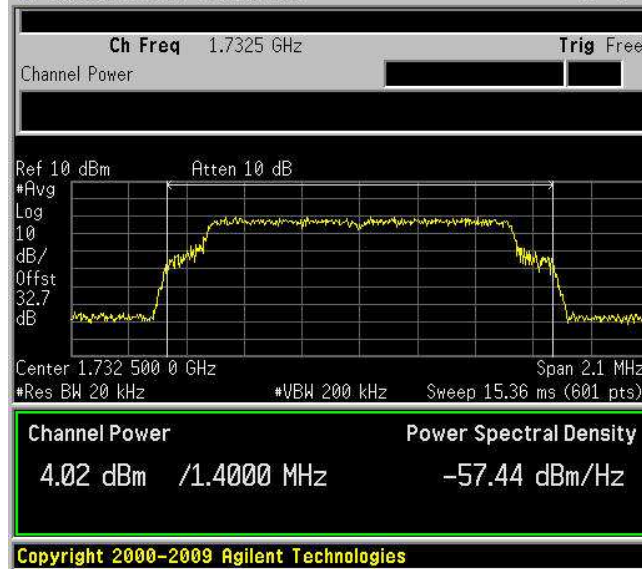


RF Power Output U.L. mod. WCDMA

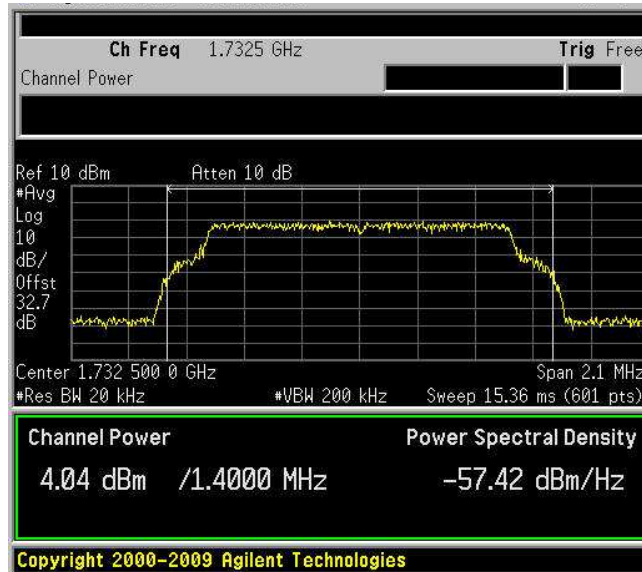


	Section 8: Testing data		Product: VHPA0001AWS
	Test name: Clause 27.52 RF safety		
	Test date: 01-10 June 2012		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27			

RF Power Output U.L. mod. 1.4 QAM



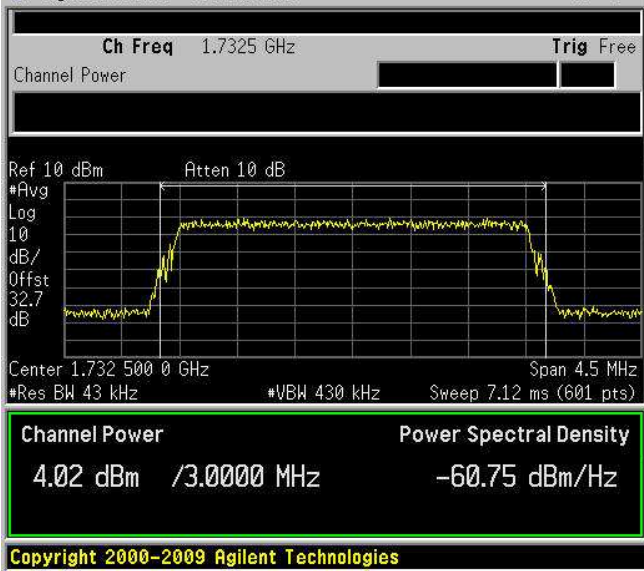
RF Power Output U.L. mod. 1.4 QPSK



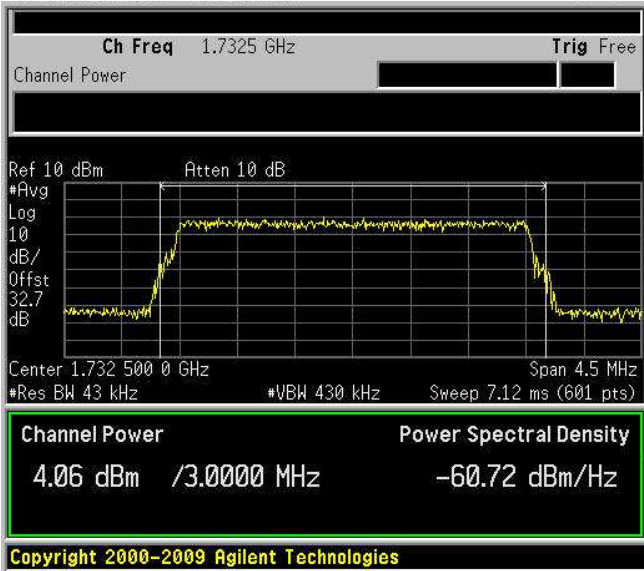



Section 8: Testing data		Product: VHPA0001AWS
Test name: Clause 27.52 RF safety		
Test date 01-10 June 2012		Test engineer: G. Curioni
Verdict: Pass		Supply input: 100-240 Vac
Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27		

RF Power Output U.L. mod. 3 QAM

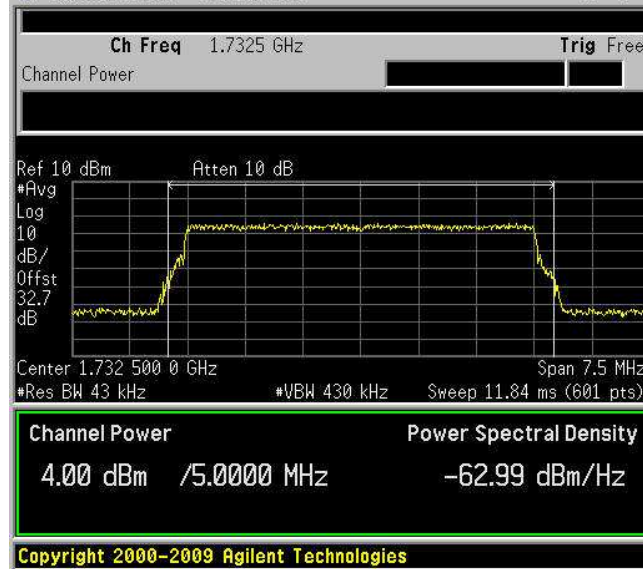


RF Power Output U.L. mod. 3 QPSK

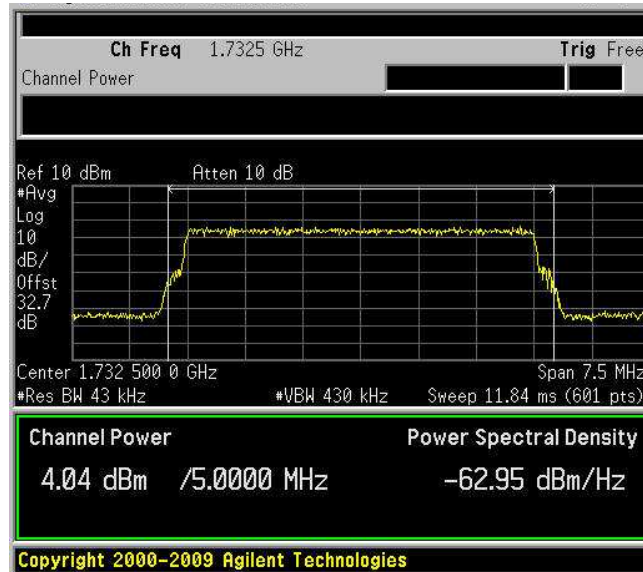



	Section 8: Testing data		Product: VHPA0001AWS	
	Test name: Clause 27.52 RF safety			
	Test date 01-10 June 2012		Test engineer: G. Curioni	
	Verdict: Pass		Supply input: 100-240 Vac	
	Temperature: 25 °C	Air pressure: 860-1060 hPa		Relative humidity: 50 %
	Specification: FCC Part 27			

RF Power Output U.L. mod. 5 QAM

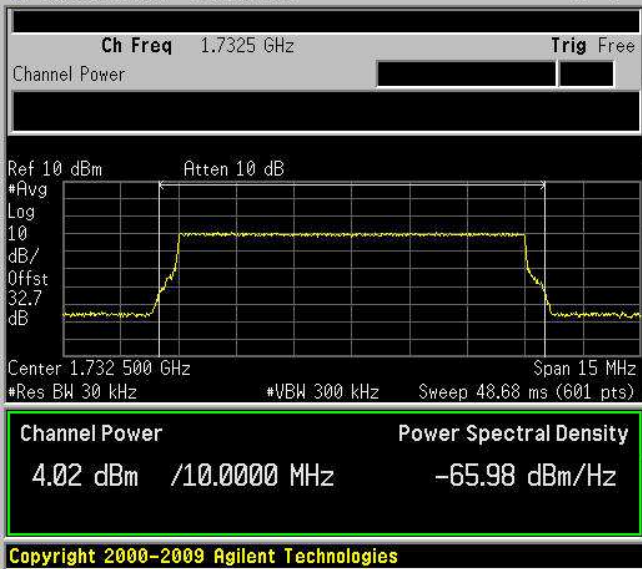


RF Power Output U.L. mod. 5 QPSK



	Section 8: Testing data		Product: VHPA0001AWS	
	Test name: Clause 27.52 RF safety			
	Test date 01-10 June 2012		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			

RF Power Output U.L. mod. 10 QAM



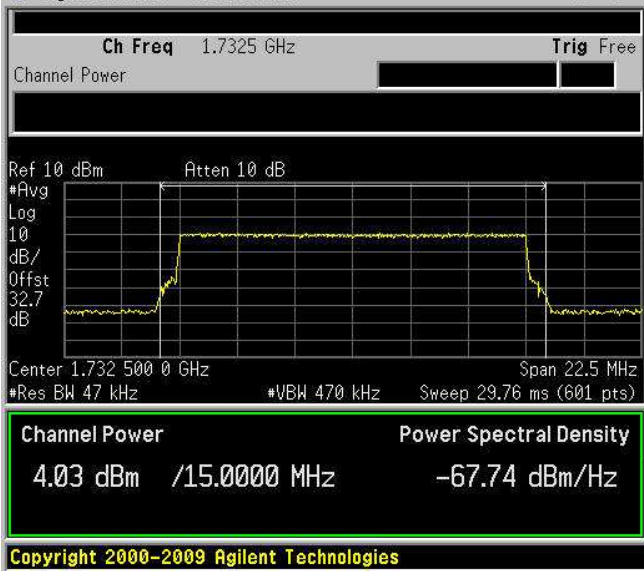
RF Power Output U.L. mod. 10 QPSK



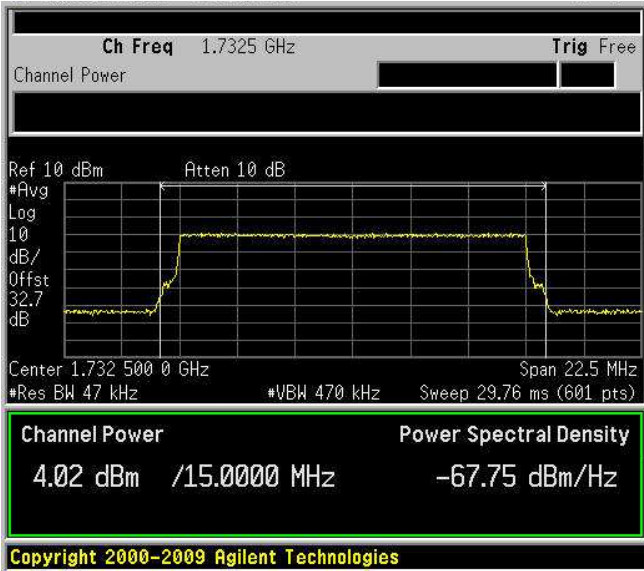



Section 8: Testing data		Product: VHPA0001AWS
Test name: Clause 27.52 RF safety		
Test date 01-10 June 2012		Test engineer: G. Curioni
Verdict: Pass		Supply input: 100-240 Vac
Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27		

RF Power Output U.L. mod. 15 QAM

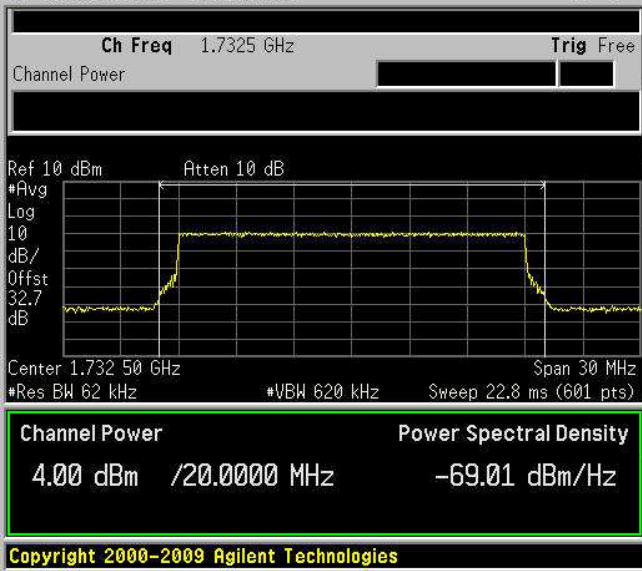


RF Power Output U.L. mod. 15 QPSK

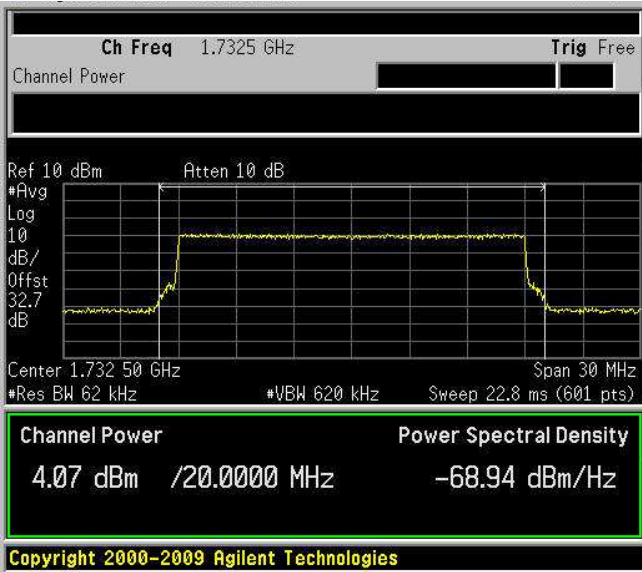



	Section 8: Testing data		Product: VHPA0001AWS
	Test name: Clause 27.52 RF safety		
	Test date 01-10 June 2012		Test engineer: G. Curioni
	Verdict: Pass		Supply input: 100-240 Vac
	Temperature: 25 °C	Air pressure: 860-1060 hPa	Relative humidity: 50 %
Specification: FCC Part 27			

RF Power Output U.L. mod. 20 QAM



RF Power Output U.L. mod. 20 QPSK



	Section 8: Testing data		Product: VHPA0001AWS
	Test name: Clause 27.52 RF safety		
	Test date: 01-10 June 2012		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

Licenseses 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 not provided

	Section 11: EUT photos	Product: VHPA0001AWS

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

For operations in the 1710-1755 MHz and 2110-2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

(1) Compliance with the provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz 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.

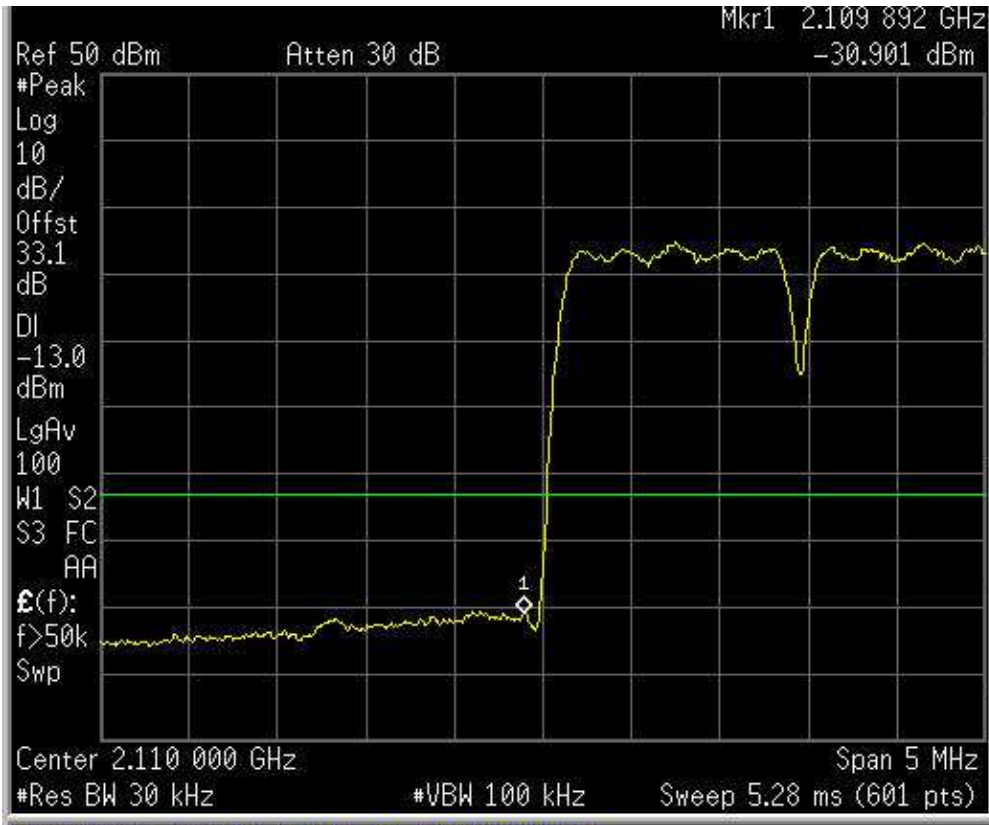
(2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.

(3) 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.

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 1 MHz above 1 GHz. VBW was wider than RBW.

CDMA/
LOW BANDEDGE
Downlink

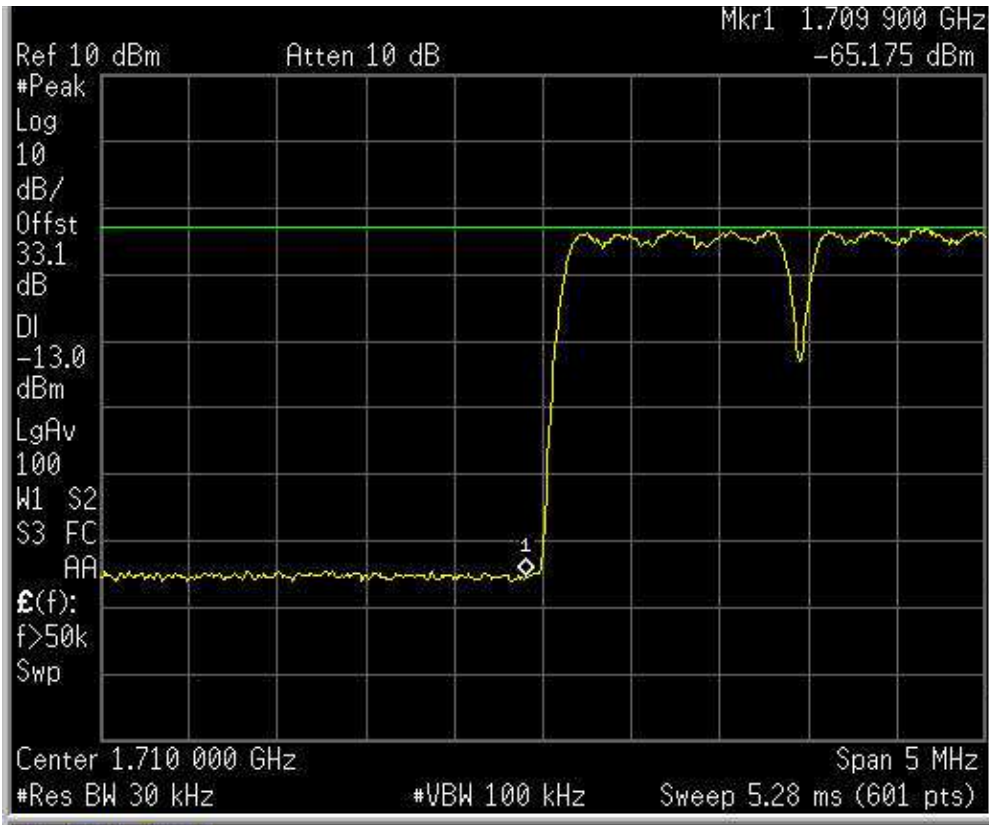


Test Data – Spurious Emissions at Antenna Terminals
 CDMA/
 HIGH BAND EDGE
 Downlink





Test Data – Spurious Emissions at Antenna Terminals
CDMA/
LOW BANDEDGE
Uplink

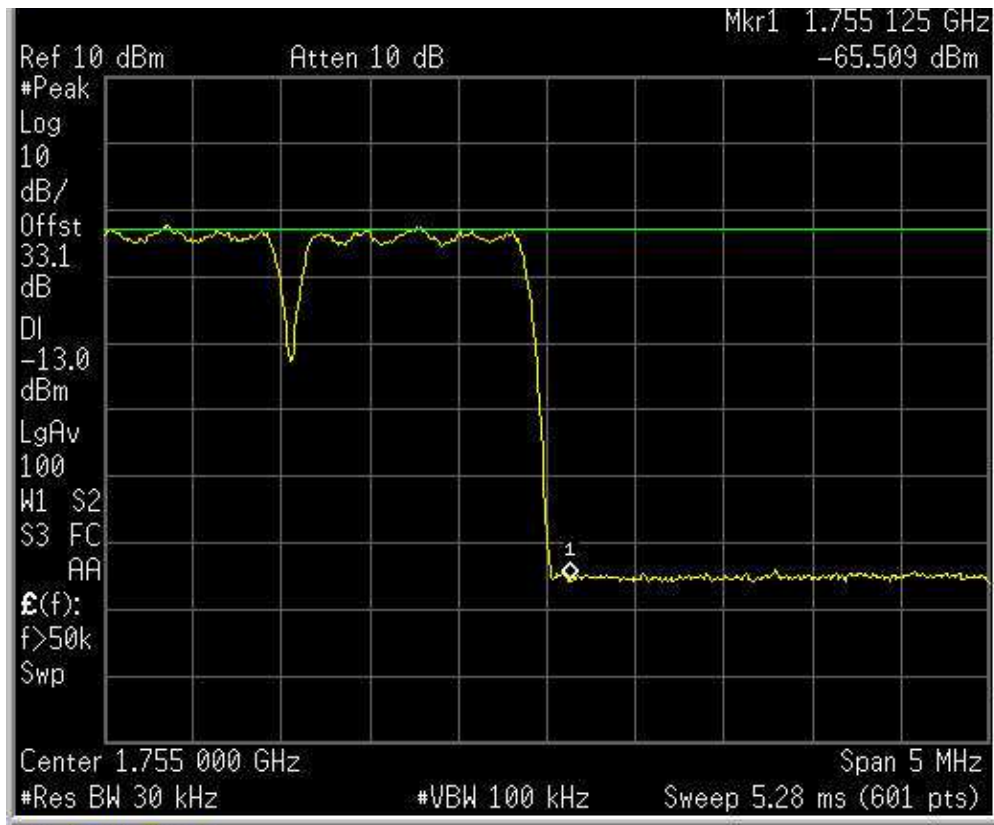


Test Data – Spurious Emissions at Antenna Terminals

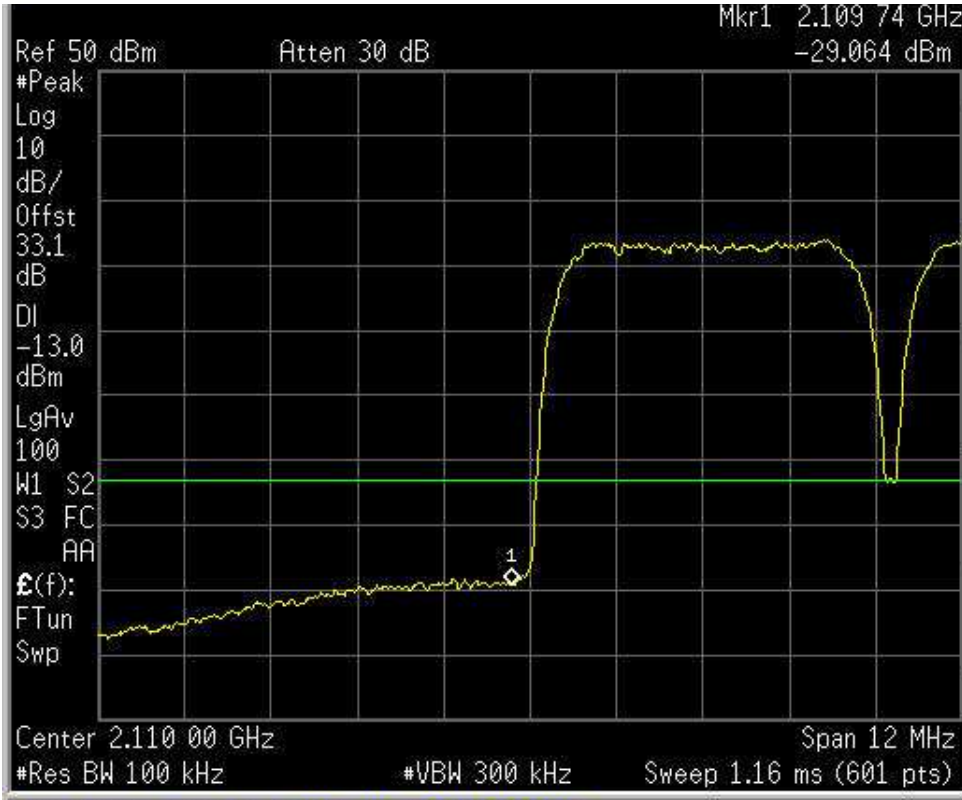
CDMA/

HIGH BAND EDGE

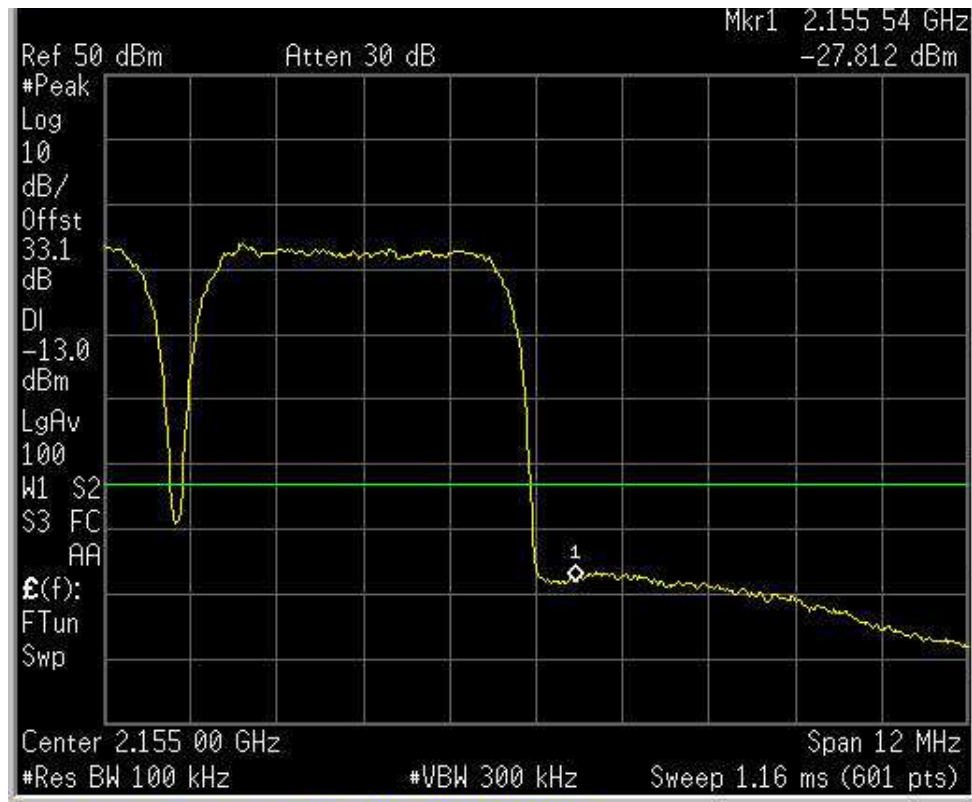
Uplink



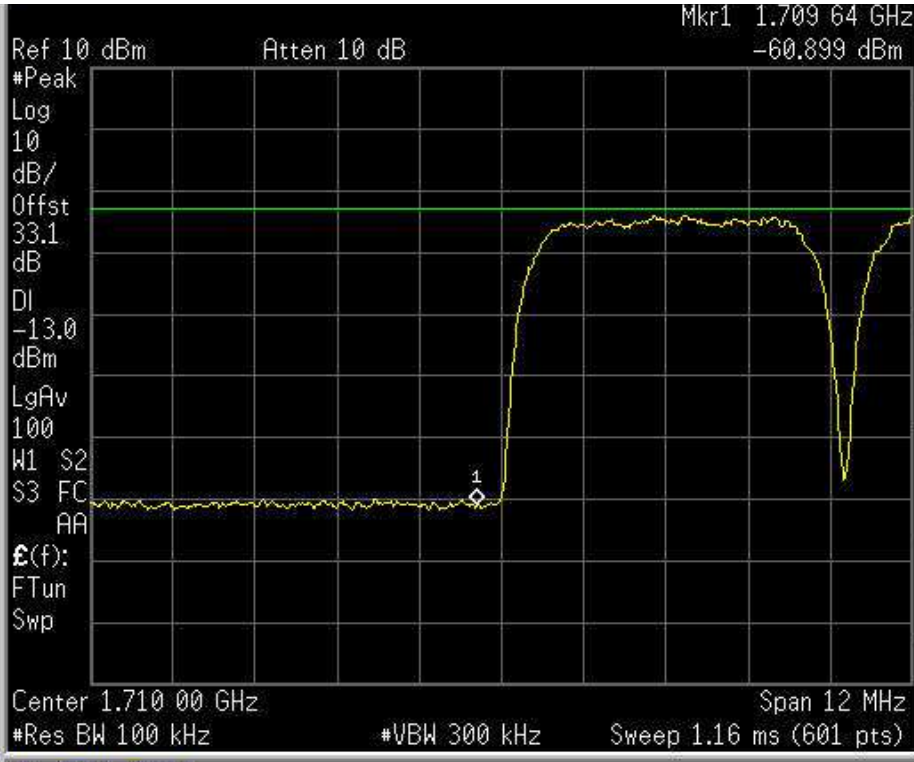
Test Data – Spurious Emissions at Antenna Terminals
WCDMA
LOW BANDEDGE
Downlink



Test Data – Spurious Emissions at Antenna Terminals
WCDMA
HIGH BAND EDGE
Downlink



Test Data – Spurious Emissions at Antenna Terminals
WCDMA
LOW BANDEDGE
Uplink

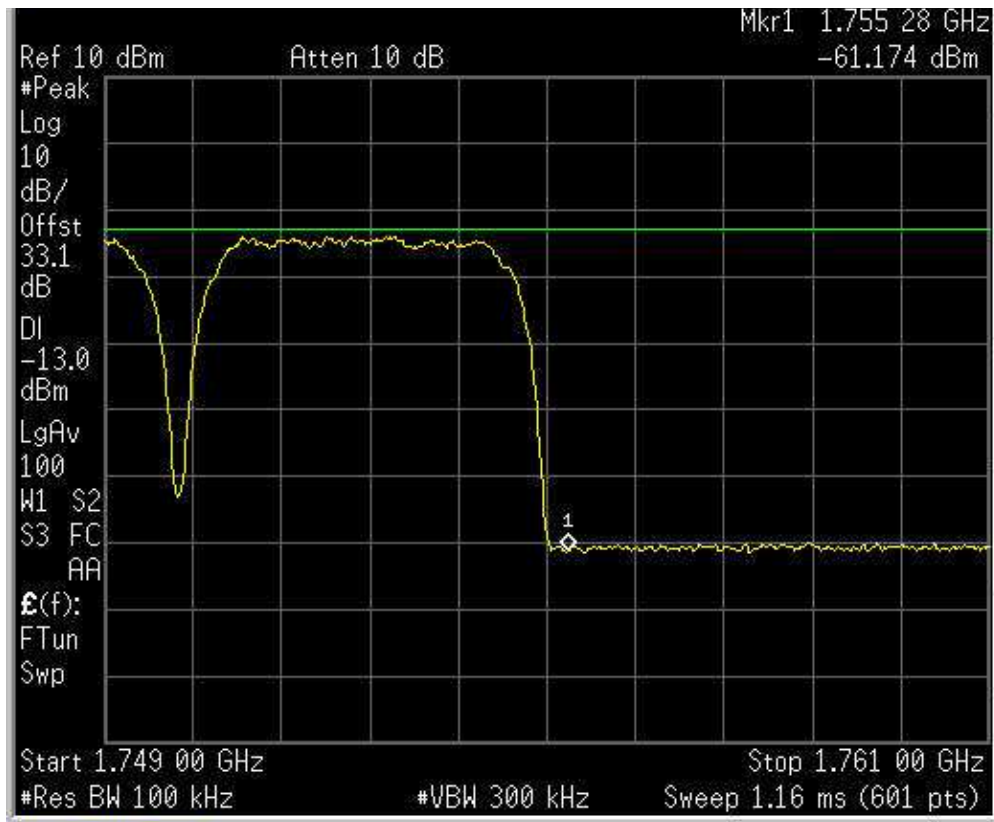


Test Data – Spurious Emissions at Antenna Terminals

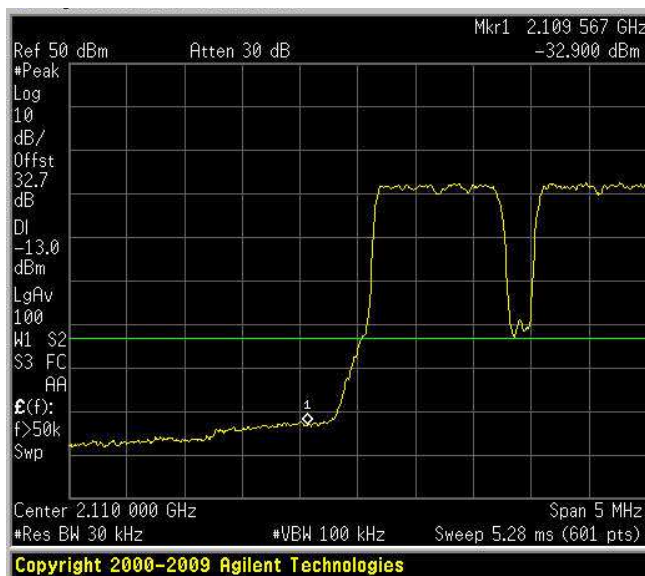
WCDMA

HIGH BAND EDGE

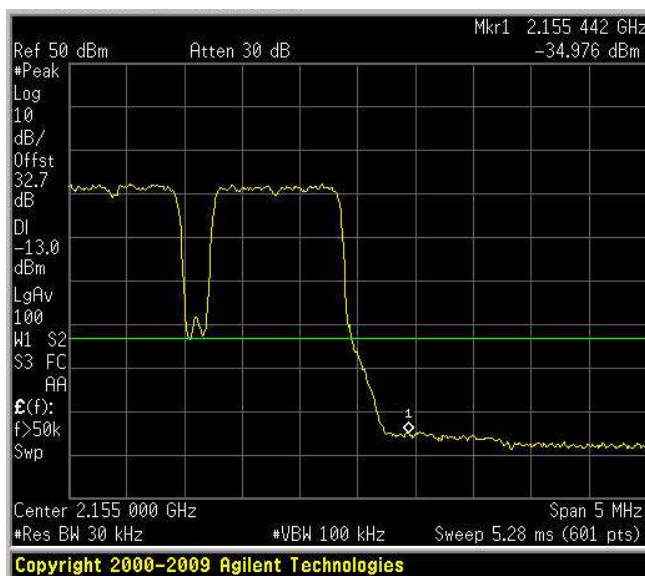
Uplink



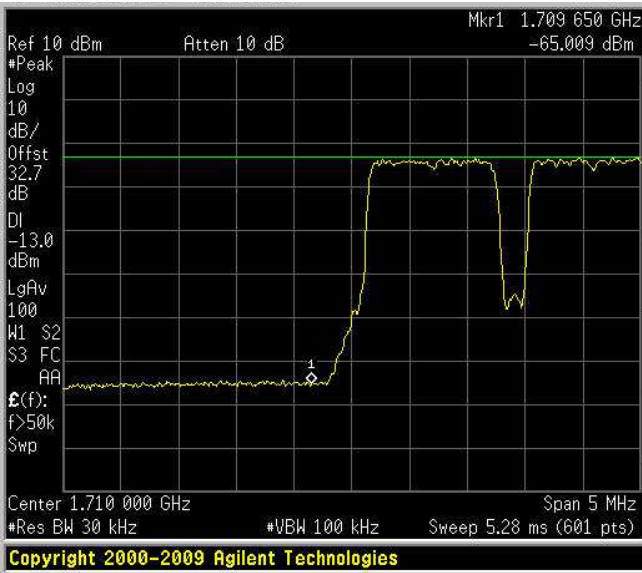
Spurious Emissions at Antenna Terminals
Downlink – 1.4 QAM
LOW BAND EDGE



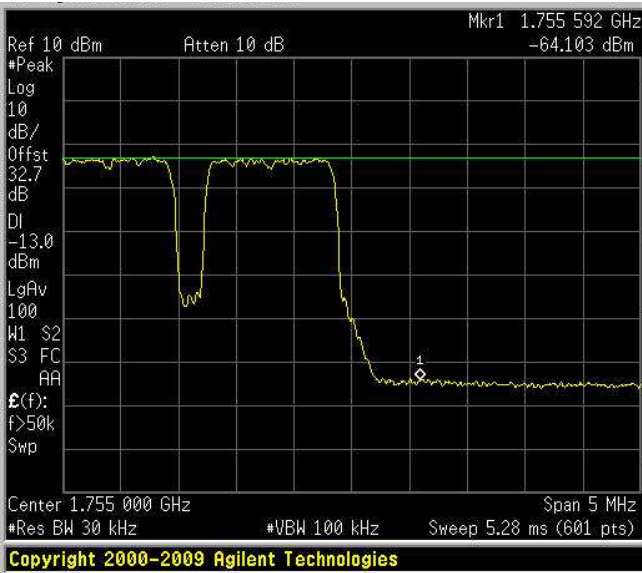
Spurious Emissions at Antenna Terminals
Downlink – 1.4 QAM
HIGH BAND EDGE



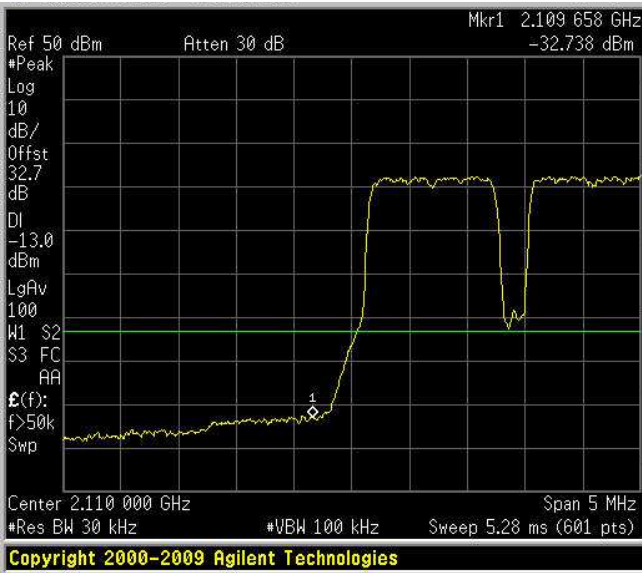
Spurious Emissions at Antenna Terminals
 Uplink – 1.4 QAM
 LOW BAND EDGE



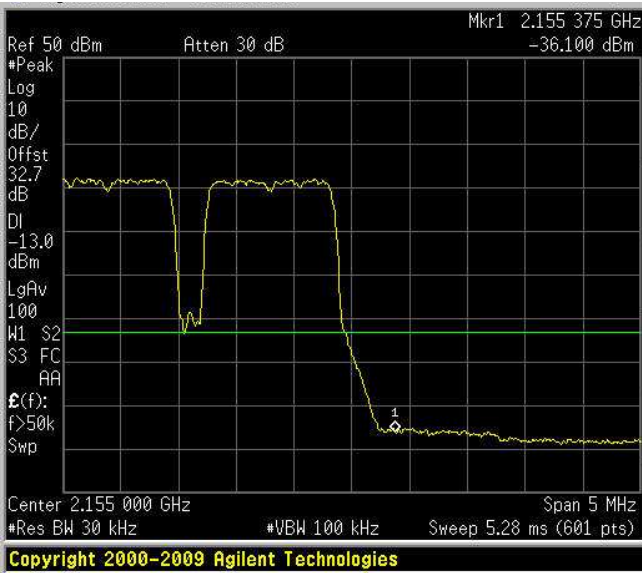
Spurious Emissions at Antenna Terminals
 Uplink – 1.4 QAM
 HIGH BAND EDGE



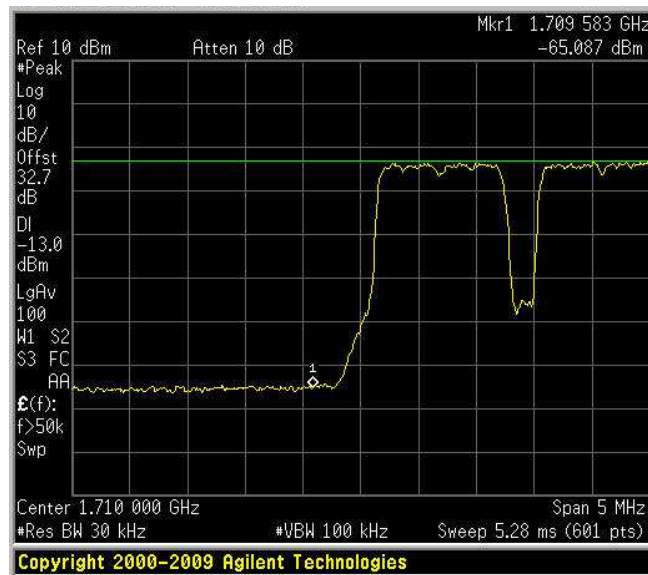
Spurious Emissions at Antenna Terminals
Downlink – 1.4 QPSK
LOW BAND EDGE



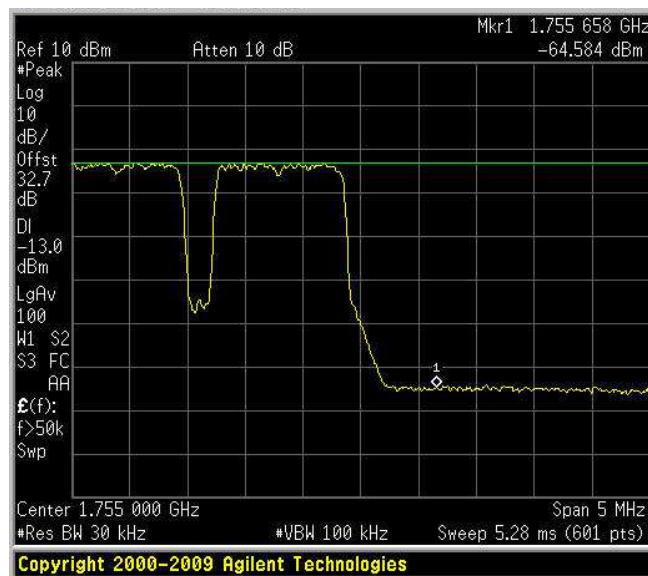
Spurious Emissions at Antenna Terminals
Downlink – 1.4 QPSK
HIGH BAND EDGE



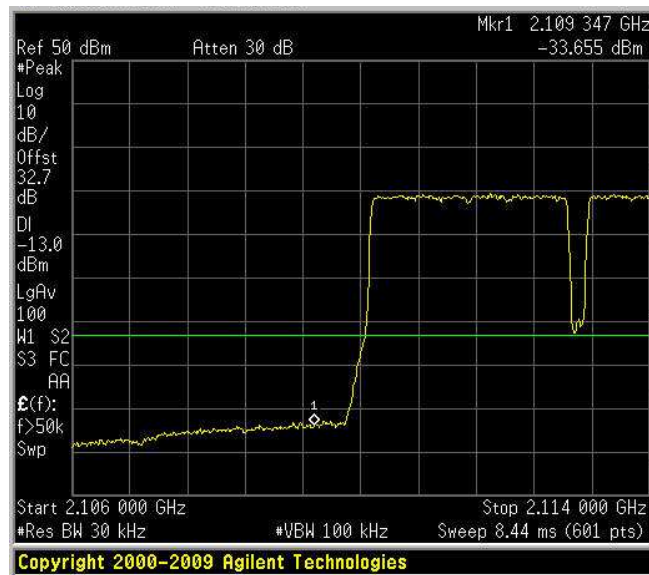
Spurious Emissions at Antenna Terminals
Uplink – 1.4 QPSK
LOW BAND EDGE



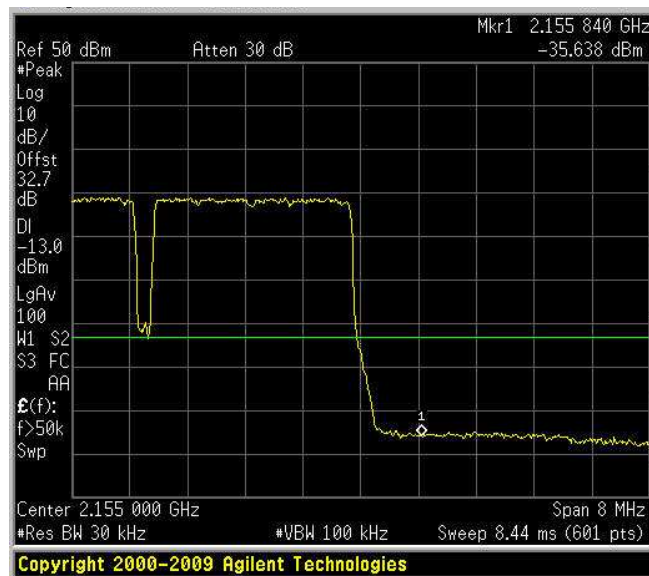
Spurious Emissions at Antenna Terminals
Uplink – 1.4 QPSK
HIGH BAND EDGE



Spurious Emissions at Antenna Terminals
Downlink – 3 QAM
LOW BAND EDGE



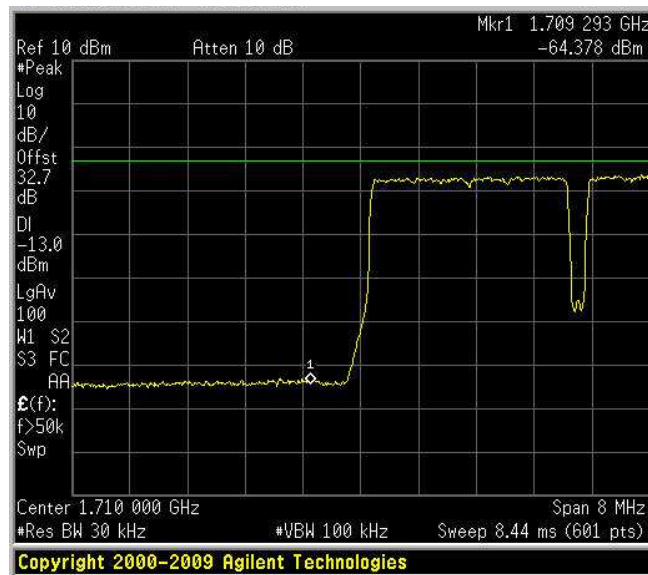
Spurious Emissions at Antenna Terminals
Downlink – 3 QAM
HIGH BAND EDGE



Spurious Emissions at Antenna Terminals

Uplink – 3 QAM

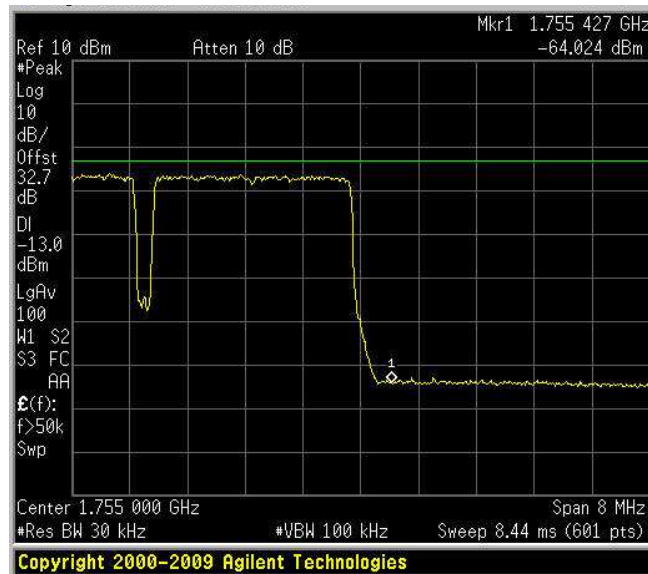
LOW BAND EDGE



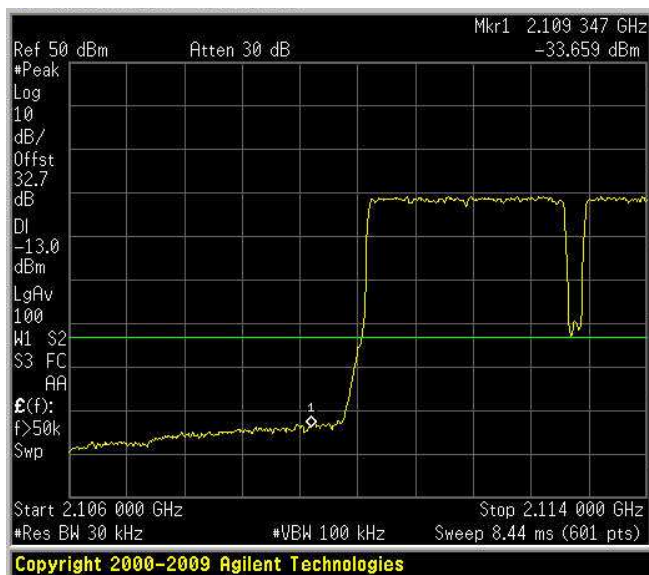
Spurious Emissions at Antenna Terminals

Uplink – 3 QAM

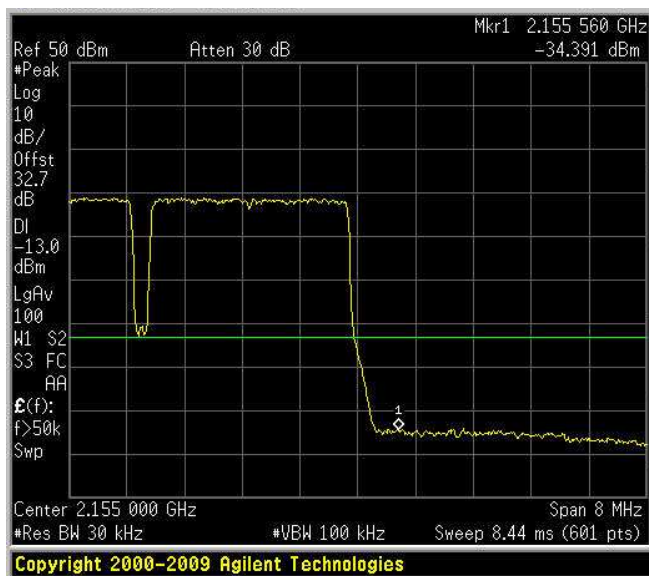
HIGH BAND EDGE



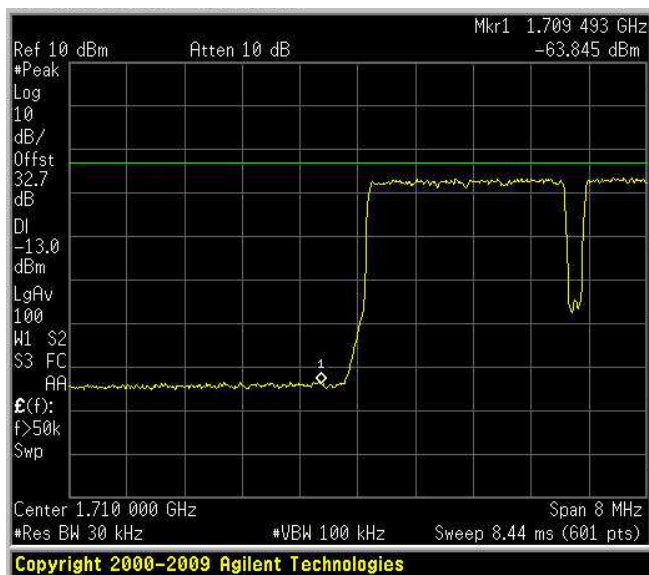
Spurious Emissions at Antenna Terminals
Downlink – 3 QPSK
LOW BAND EDGE



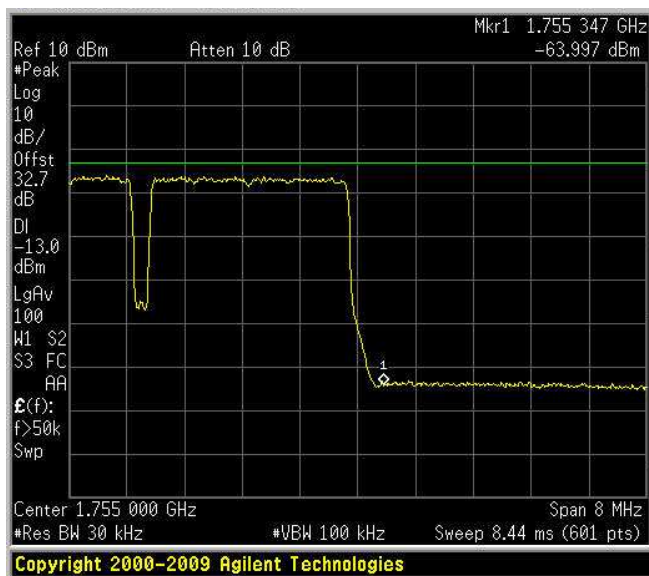
Spurious Emissions at Antenna Terminals
Downlink – 3 QPSK
HIGH BAND EDGE



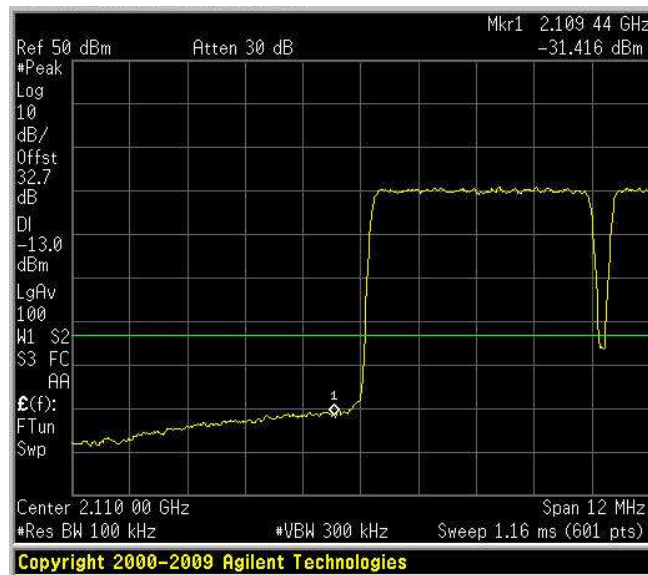
Spurious Emissions at Antenna Terminals
Uplink – 3 QPSK
LOW BAND EDGE



Spurious Emissions at Antenna Terminals
Uplink – 3 QPSK
HIGH BAND EDGE



Spurious Emissions at Antenna Terminals
Downlink – 5 QAM
LOW BAND EDGE



Spurious Emissions at Antenna Terminals
Downlink – 5 QAM
HIGH BAND EDGE

