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MEASUREMENT REPORT FCC Part 27 LTE

Applicant Name:

Harris Corporation
150 Apollo Drive
Chelmsford, MA 01824
USA

Date of Testing:

October 24-28, 2011

Test Site/Location:

PCTEST Lab., Columbia, MD, USA

Test Report Serial No.:

0Y1110271888-R4.BV8

FCC ID:**BV8BBPBM100****APPLICANT:****HARRIS CORPORATION****Application Type:** Certification**FCC Classification:** Licensed Non-Broadcast Transmitter (TNB)**FCC Rule Part(s):** §2; §27**EUT Type:** Wireless Module**Model(s):** PBM-100**Test Device Serial No.:** *identical prototype [S/N: 15563355]*

Mode	BW (MHz)	Emission Designator	Tx Frequency (MHz)	Modulation	Conducted Power		ERP	
					Max. Power (W)	Max. Power (dBm)	Max ERP (dBm)	Max ERP (Watts)
LTE Band 12	5	4M52G7D	700.5 - 713.5	QPSK	0.256	24.08	30.65	1.16
LTE Band 12	5	4M53W7D	700.5 - 713.5	16-QAM	0.269	24.30	30.87	1.22
LTE Band 12	10	8M94G7D	703 - 711	QPSK	0.254	24.04	30.61	1.15
LTE Band 12	10	8M95W7D	703 - 711	16-QAM	0.249	23.96	30.53	1.13
LTE Band 14	5	4M53G7D	790.5	QPSK	0.215	23.33	30.42	1.10
LTE Band 14	5	4M53W7D	790.5	16-QAM	0.222	23.46	30.55	1.14

* This revised test report (S/N: 0Y1110271888-R4.BV8) supersedes and replaces the previously issued test report on the same subject EUT for the same type of testing as indicated. Please discard or destroy the previously issued test report (S/N: 0Y1110271888-R3.BV8) and dispose of it accordingly.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested. I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Grant Conditions: Power output listed is conducted for Part 27.

PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.

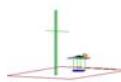
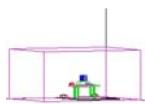
Randy Ortanez
President

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Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		

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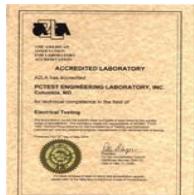
FCC Part 27

§2.1033 General Information

APPLICANT: Harris Corporation
APPLICANT ADDRESS: 150 Apollo Drive
Chelmsford, MA 01824, USA
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 6660-B Dobbin Road, Columbia, MD 21045 USA
FCC RULE PART(S): §2; §27
BASE MODEL: PBM-100
FCC ID: BV8BBPBM100
FCC CLASSIFICATION: Licensed Non-Broadcast Transmitter (TNB)
MODULATIONS: LTE
FREQUENCY TOLERANCE: Frequency must remain in band
Test Device Serial No.: 15563355 Production Pre-Production Engineering
DATE(S) OF TEST: October 24-28, 2011
TEST REPORT S/N: 0Y1110271888-R4.BV8

Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab. located in Columbia, MD 21045, U.S.A.



- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451A-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451A-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.



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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission.

1.2 Testing Facility

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Intert'l (BWI) airport, the city of Baltimore and the Washington, DC area. (See Figure 1-1).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbin Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49'38" W longitude. The facility is 1.5 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2003 on January 28, 2009.

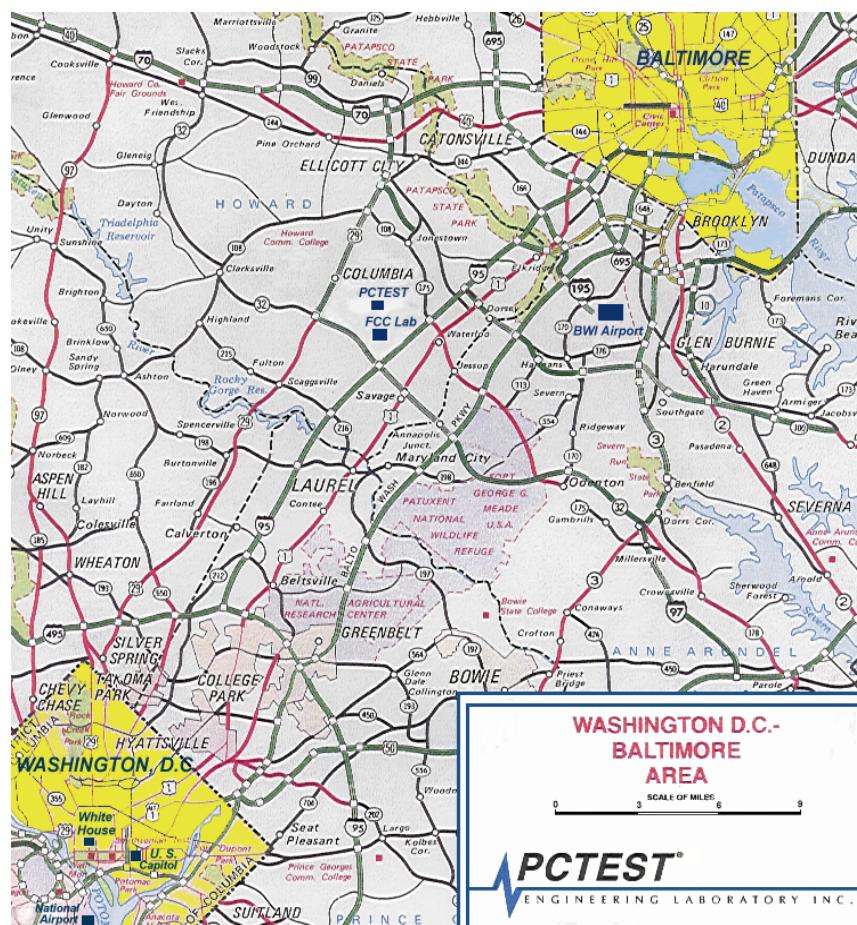


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Harris Wireless Module FCC ID: BV8BBPBM100**. The test data contained in this report pertains only to the emissions due to the EUT's LTE function. The EUT consisted of the following component(s):

Trade Name / Base Model	FCC ID	Description
Harris / Model: PBM-100	BV8BBPBM100	Wireless Module

Table 2-1. EUT Equipment Description

During testing, the EUT was attached to a test PCB (14014-9100-01 Rev1) that housed and powered the EUT. Power was provided via DC Power Supply. The EUT was set to continuous transmission at max power through connection to a CMW500 LTE Call Box. All modulations (QPSK, 16QAM) and RB sizes and RB offsets were investigated. Worst case emissions are reported.

During radiated testing, the EUT was connected to the *Laird* B7603 Mobile Load Coil Antenna. The gain of this antenna is 3 dBi, and the loss of the attached cable is 2.7 dB. This *Laird* antenna is only used to provide a termination to the main antenna port during various radiated measurements. Additionally, it will not be marketed with the EUT.

2.2 EUT Capabilities

The EUT has the following capabilities: LTE operating in Band 12 and Band 14

2.3 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

2.4 Labeling Requirements

Per 2.925

The FCC identifier shall be permanently affixed to the equipment and shall be readily visible to the purchaser at the time of purchase.

Per 15.19; Docket 95-19

In addition to this requirement, a device subject to certification shall be labeled as follows:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2).

Please see attachment for FCC ID label and label location.

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3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The radiated spurious measurements were made outdoors at a 3-meter test range (See Figure 3-1). The equipment under test is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. This power level was recorded using a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This level is recorded with the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.

Deviation from Measurement Procedure.....None

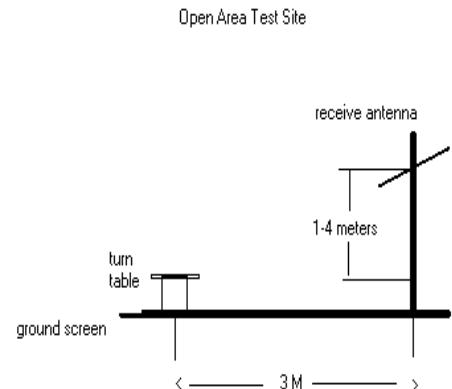


Figure 3-1. Diagram of 3-meter outdoor test range

3.2 Occupied Bandwidth and Emission Limits

§2.1049, §27.53(d)(g)

- On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB.
- Compliance with these 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 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 emission are attenuated at least 26 dB below the transmitter power.

3.3 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051, §27.53(d)(g)

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30kHz bandwidth 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.

Additionally, for operations in the 776-788MHz band, the power of any emission outside the licensee's frequency band of operation shall be attenuated below the transmitted power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

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- (1) On any frequency outside the 776-688MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43+10\log(P)$ dB.
- (2) On all frequencies between 763-775 and 793-805MHz, by a factor not less than $65+10\log(P)$ dB in a 6.25kHz band segment.

For operations in the 788–793 MHz band, the power of any emission outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On all frequencies between 769–775 MHz and 799–805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (2) On any frequency between 775–788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log(P)$ dB

3.4 Radiated Power and Radiated Spurious Emissions

§2.1053, 27.53(d)(2)(3), 27.53(g), §27.53(f)

Radiated power and radiated spurious emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. This level is then measured with a broadband average power meter. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive average power meter reading. This spurious level is recorded with the power meter. For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration. Additionally, all emissions including harmonics in the band 1559-1610MHz shall be limited to -70dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80dBW EIRP for discrete emissions of less than 700Hz bandwidth.

3.5 Frequency Stability / Temperature Variation

§2.1055, §27.54

The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Time Period and Procedure:

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

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4.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	263-10dB	(DC-18GHz) 10 dB Attenuator	N/A		N/A	N/A
-	No. 166	(1000-26500MHz) Microwave RF Cable	N/A		N/A	N/A
-	No. 167	(100kHz - 100MHz) RG58 Coax Cable	N/A		N/A	N/A
Agilent	8449B	(1-26.5GHz) Pre-Amplifier	2/8/2011	Annual	2/8/2012	3008A00985
Agilent	85650A	Quasi-Peak Adapter	4/7/2011	Annual	4/7/2012	3303A01872
Agilent	85650A	Quasi-Peak Adapter	4/7/2011	Annual	4/7/2012	2043A00301
Agilent	8566B	(100Hz-22GHz) Spectrum Analyzer	4/7/2011	Annual	4/7/2012	3638A08713
Agilent	E4407B	ESA Spectrum Analyzer	4/5/2011	Annual	4/5/2012	US39210313
Agilent	E4448A	PSA (3Hz-50GHz) Spectrum Analyzer	11/30/2010	Annual	11/30/2011	US42510244
Agilent	E5515C	Wireless Communications Test Set	7/6/2011	Annual	7/6/2012	GBA1450275
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/8/2011	Annual	4/8/2012	MY45470194
Agilent	E5515C	Wireless Communications Test Set	2/8/2011	Annual	2/8/2012	GB45360985
Agilent	N9038A	MXE EMI Receiver	8/5/2011	Annual	8/5/2012	MY51210133
Compliance Design	Roberts	Dipole Set	4/7/2010	Biennial	4/7/2012	146
Compliance Design	Roberts	Dipole Set	4/7/2010	Biennial	4/7/2012	147
Emco	3115	Horn Antenna (1-18GHz)	4/8/2010	Biennial	4/8/2012	9205-3874
Espec	ESX-2CA	Environmental Chamber	4/21/2011	Annual	4/21/2012	17620
K & L	11SH10	Band Pass Filter	N/A		N/A	1300/4000
K & L	11SH10	Band Pass Filter	N/A		N/A	4000/12000
MiniCircuits	VHF-1300+	High Pass Filter	N/A		N/A	30716
MiniCircuits	VHF-3100+	High Pass Filter	N/A		N/A	30721
Pasternack	PE2208-6	Bidirectional Coupler	N/A		N/A	N/A
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	3/11/2011	Annual	3/11/2012	103962
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	8/5/2011	Annual	8/5/2012	112347
Sunol	DRH-118	Horn Antenna (1 - 18GHz)	7/5/2011	Biennial	7/5/2013	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	12/17/2009	Biennial	12/17/2011	A051107
Sunol	DRH-118	Horn Antenna (1-18 GHz)	6/17/2011	Biennial	6/17/2013	A042511

Table 4-1. Test Equipment

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5.0 SAMPLE CALCULATIONS

The calculations below are examples only and do not necessarily relate to the EUT.

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Amplitude/Angle Modulated

16QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Combination (Audio/Data)

Spurious Radiated Emission – LTE

Example: Middle Channel LTE Mode 2nd Harmonic (1564 MHz)

The spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminal is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1402.0 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was $25.501 \text{ dBm} - (-24.80) = 50.3 \text{ dBc}$.

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6.0 TEST RESULTS

6.1 Summary

Company Name: Harris Corporation
 FCC ID: BV8BBPBM100
 FCC Classification: Licensed Non-Broadcast Transmitter (TNB)
 Mode(s): LTE

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (TX)					
2.1049, 27.53(g)(1)	Occupied Bandwidth	N/A	CONDUCTED	PASS	Section 7.0
2.1051, 27.53(d)(2)(3), 27.53(g)	Band Edge / Conducted Spurious Emissions	< $43 + 10\log_{10}(P[\text{Watts}])$ at Band Edge and for all out-of-band emissions < $65 + 10 \log(P[\text{Watts}])$ in a 6.25kHz bandwidth for emissions in the 776–788 MHz and 788–793 MHz bands		PASS	Section 7.0
2.1046	Transmitter Conducted Output Power	N/A		PASS	Section 6.2
27.50(b)(10), 27.50(c)(10)	Effective Radiated Power	< 3 Watts max. ERP		PASS	Section 6.3
2.1053, 27.53(d), 27.53(g)	Undesirable Emissions	< $43 + 10\log_{10}(P[\text{Watts}])$ for all out-of-band emissions	RADIATED	PASS	Section 6.4
2.1053, 27.53(f)	Undesirable Emissions in the 1559–1610MHz band	< -40dBm/MHz EIRP (wideband) < -50dBm EIRP (narrowband)		PASS	Section 6.5
2.1055, 27.54	Frequency Stability	Fundamental emissions must stay within the allotted band		PASS	Section 6.6

Table 6-1. Summary of Test Results

Notes:

- The measurement data for high channel (795.5 MHz) of Band 14 is contained in the Part 90 FCC Test Report. This report only contains the low channel (790.5 MHz) of Band 14 as it is governed by Part 27.
- Although the ERP limit is, inherently, a radiated limit, the data shown in Section 6.3 is based on conducted measurements. The conducted measurements are converted to equivalent radiated measurements and compared to the radiated power limit in 27.50(b)(10).

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6.2 Conducted Output Power

§2.1046

The **Harris Wireless Module FCC ID: BV8BBPBM100** was powered by a DC Power supply through a test PCB. The Main Antenna port of the EUT was connected to the CMW500 LTE Callbox via RF Cable. Transmit power readings were taken from the CMW500. Results are reported below.

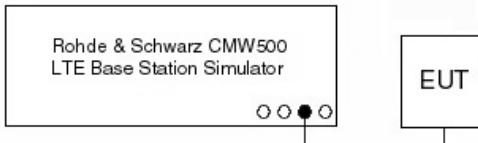


Figure 6-1. Conducted Output Power Test Setup Diagram

	Freq. (MHz)	MCS Level	Mod.	BW	RB Size	RB Offset	Maximum Average Power [dBm]
Low Channel	700.5	0	QPSK	5 MHz	1	0	23.60
	700.5	11	16QAM	5 MHz	1	0	24.21
	700.5	0	QPSK	5 MHz	1	24	23.55
	700.5	11	16QAM	5 MHz	1	24	24.28
	700.5	0	QPSK	5 MHz	12	6	23.32
	700.5	11	16QAM	5 MHz	12	6	23.54
	700.5	0	QPSK	5 MHz	25	0	23.40
	700.5	11	16QAM	5 MHz	25	0	23.57
	703	0	QPSK	10 MHz	1	0	23.42
	703	11	16QAM	10 MHz	1	0	23.48
	703	0	QPSK	10 MHz	1	49	23.87
	703	11	16QAM	10 MHz	1	49	23.91
	703	0	QPSK	10 MHz	25	12	23.18
	703	11	16QAM	10 MHz	25	12	23.59
	703	0	QPSK	10 MHz	50	0	23.16
	703	11	16QAM	10 MHz	50	0	23.25
Mid Channel	707	0	QPSK	5 MHz	1	0	23.50
	707	11	16QAM	5 MHz	1	0	23.88
	707	0	QPSK	5 MHz	1	24	23.98
	707	11	16QAM	5 MHz	1	24	24.30
	707	0	QPSK	5 MHz	12	6	23.66
	707	11	16QAM	5 MHz	12	6	24.06
	707	0	QPSK	5 MHz	25	0	23.52
	707	11	16QAM	5 MHz	25	0	23.91
	707	0	QPSK	10 MHz	1	0	23.75
	707	11	16QAM	10 MHz	1	0	23.60
	707	0	QPSK	10 MHz	1	49	24.04
	707	11	16QAM	10 MHz	1	49	23.96
	707	0	QPSK	10 MHz	25	12	23.45
	707	11	16QAM	10 MHz	25	12	23.75
	707	0	QPSK	10 MHz	50	0	23.60
	707	11	16QAM	10 MHz	50	0	23.87

Table 6-2. Band 12 Maximum Average Conducted Output Power (Low and Mid Channel)

FCC ID: BV8BBPBM100	 PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			 HARRIS	Reviewed by: Quality Manager
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	Freq. (MHz)	MCS Level	Mod.	BW	RB Size	RB Offset	Maximum Average Power [dBm]
High Channel	713.5	0	QPSK	5 MHz	1	0	24.08
	713.5	11	16QAM	5 MHz	1	0	23.89
	713.5	0	QSPK	5 MHz	1	24	23.18
	713.5	11	16QAM	5 MHz	1	24	22.92
	713.5	0	QPSK	5 MHz	12	6	23.34
	713.5	11	16QAM	5 MHz	12	6	23.21
	713.5	0	QSPK	5 MHz	25	0	23.10
	713.5	11	16QAM	5 MHz	25	0	23.35
	711	0	QPSK	10 MHz	1	0	23.77
	711	11	16QAM	10 MHz	1	0	23.95
	711	0	QPSK	10 MHz	1	49	22.98
	711	11	16QAM	10 MHz	1	49	23.15
	711	0	QPSK	10 MHz	25	12	23.48
	711	11	16QAM	10 MHz	25	12	23.81
	711	0	QPSK	10 MHz	50	0	23.66
	711	11	16QAM	10 MHz	50	0	23.64

Table 6-3. Band 12 Maximum Average Conducted Output Power (High Channel)

	Freq. (MHz)	MCS Level	Mod.	BW	RB Size	RB Offset	Maximum Average Power [dBm]
Low Channel	790.5	0	QPSK	5 MHz	1	0	22.91
	790.5	11	16QAM	5 MHz	1	0	23.04
	790.5	0	QSPK	5 MHz	1	24	23.33
	790.5	11	16QAM	5 MHz	1	24	23.46
	790.5	0	QPSK	5 MHz	12	6	22.69
	790.5	11	16QAM	5 MHz	12	6	22.95
	790.5	0	QSPK	5 MHz	25	0	22.85
	790.5	11	16QAM	5 MHz	25	0	23.12

Table 6-4. Band 14 Maximum Average Conducted Output Power (Low Channel)

FCC ID: BV8BBPBM100	 PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	 HARRIS	Reviewed by: Quality Manager
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6.3 Effective Radiated Power

§27.50(b)(10), §27.50(c)(10):

Table 6-5 shows the ERP for this device as based on the measured conducted output power and the maximum gain antennas that may be supplied with the device. Table 6-6 shows the EPR for this device based on the theoretical maximum conducted output power and the maximum gain antennas that may be supplied with the device.

Tx Frequency (MHz)	Mode	Modulation	Max Conducted Power (dBm)	Max Antenna Gain (dBi)	EIRP	ERP	
					Max EIRP (dBm)	Max ERP (dBm)	Max ERP (Watts)
700.7 - 713.5	LTE Band 12	QPSK	24.08	8.71	32.79	30.65	1.161
700.7 - 713.5	LTE Band 12	16-QAM	24.30	8.71	33.01	30.87	1.222
703 - 711	LTE Band 12	QPSK	24.04	8.71	32.75	30.61	1.151
703 - 711	LTE Band 12	16-QAM	23.96	8.71	32.67	30.53	1.130
790.5	LTE Band 14	QPSK	23.33	9.23	32.56	30.42	1.102
790.5	LTE Band 14	16-QAM	23.46	9.23	32.69	30.55	1.135

Table 6-5. Effective Radiated Power Output Data (Using Measured Conducted Power)

Tx Frequency (MHz)	Mode	Modulation	Max Conducted Power (dBm)	Max Antenna Gain (dBi)	EIRP	ERP	
					Max EIRP (dBm)	Max ERP (dBm)	Max ERP (Watts)
700.7 - 713.5	LTE Band 12	QPSK	25.00	8.71	33.71	31.57	1.435
700.7 - 713.5	LTE Band 12	16-QAM	25.00	8.71	33.71	31.57	1.435
703 - 711	LTE Band 12	QPSK	25.00	8.71	33.71	31.57	1.435
703 - 711	LTE Band 12	16-QAM	25.00	8.71	33.71	31.57	1.435
790.5	LTE Band 14	QPSK	25.00	9.23	34.23	32.09	1.618
790.5	LTE Band 14	16-QAM	25.00	9.23	34.23	32.09	1.618

Table 6-6. Effective Radiated Power Output Data (Using Maximum Conducted Power)

FCC ID: BV8BBPBM100		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.4 Radiated Spurious Emissions

§2.1053, §27.53(d)(2)(3), §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 703.000 MHz
 MEASURED OUTPUT POWER: 24.300 dBm = 0.269 W
 BW / MODULATION SIGNAL: 10MHz QPSK
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 37.30 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1406.00	-43.94	7.92	-36.02	V	60.3
2109.00	-38.88	8.63	-30.24	V	54.5
2812.00	-49.24	9.86	-39.37	V	63.7
3515.00	-38.42	9.59	-28.83	V	53.1
4218.00	-48.28	10.14	-38.14	V	62.4

Table 6-7. Radiated Spurious Data (10MHz Band 12)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This unit was tested while powered by a DC power supply. The EUT was tested in three orthogonal planes and in all test configurations and positioning. The worst case emissions were found while testing in QPSK modulation, 1RB size, and 0 RB Offset. The worst case emissions were found with the EUT in the horizontally flat position, with the antenna sitting vertical. The data reported in the table above was measured in this test setup.

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Radiated Spurious Emissions (Cont'd)

§2.1053, §27.53(d)(2)(3), §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 707.00 MHz
 MEASURED OUTPUT POWER: 24.300 dBm = 0.269 W
 BW / MODULATION SIGNAL: 10MHz QPSK
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 37.30 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1414.00	-44.05	7.96	-36.10	V	60.4
2129.00	-35.00	8.63	-26.37	V	50.7
2836.00	-48.05	9.85	-38.20	V	62.5
3543.00	-37.81	9.63	-28.18	V	52.5
4250.00	-47.94	10.24	-37.70	V	62.0

Table 6-8. Radiated Spurious Data (10MHz Band 12)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This unit was tested while powered by a DC power supply. The EUT was tested in three orthogonal planes and in all test configurations and positioning. The worst case emissions were found while testing in QPSK modulation, 1RB size, and 0 RB Offset. The worst case emissions were found with the EUT in the horizontally flat position, with the antenna sitting vertical. The data reported in the table above was measured in this test setup.

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Radiated Spurious Emissions (Cont'd)

§2.1053, §27.53(d)(2)(3), §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	711.00	MHz			
MEASURED OUTPUT POWER:	24.300	dBm	=	0.269	W
BW / MODULATION SIGNAL:	10MHz QPSK				
DISTANCE:	3	meters			
LIMIT:	43 + 10 log ₁₀ (W)	37.30	dBc		

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1422.00	-39.96	7.99	-31.96	V	56.3
2133.00	-38.49	8.63	-29.86	V	54.2
3863.00	-49.66	9.83	-39.83	V	64.1
5593.00	-38.50	9.66	-28.83	V	53.1
7323.00	-50.08	10.35	-39.74	V	64.0

Table 6-9. Radiated Spurious Data (10MHz Band 12)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to [ANSI/TIA/EIA-603-C-2004](#), Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This unit was tested while powered by a DC power supply. The EUT was tested in three orthogonal planes and in all test configurations and positioning. The worst case emissions were found while testing in QPSK modulation, 1RB size, and 0 RB Offset. The worst case emissions were found with the EUT in the horizontally flat position, with the antenna sitting vertical. The data reported in the table above was measured in this test setup.

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Radiated Spurious Emissions (Cont'd)

§2.1053, §27.53(d)(2)(3), §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 700.50 MHz
 MEASURED OUTPUT POWER: 24.600 dBm = 0.288 W
 BW / MODULATION SIGNAL: 5MHz QPSK
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 37.60 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1401.00	-44.58	7.90	-36.67	V	61.3
2101.50	-46.82	8.63	-38.19	V	62.8
2802.00	-96.07	9.87	-86.20	V	110.8
3502.50	-41.53	9.57	-31.95	V	56.6
4203.00	-91.08	10.07	-81.00	V	105.6

Table 6-10. Radiated Spurious Data (5MHz Band 12)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This unit was tested while powered by a DC power supply. The EUT was tested in three orthogonal planes and in all test configurations and positioning. The worst case emissions were found while testing in QPSK modulation, 1RB size, and 0 RB Offset. The worst case emissions were found with the EUT in the horizontally flat position, with the antenna sitting vertical. The data reported in the table above was measured in this test setup.

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Radiated Spurious Emissions (Cont'd)

§2.1053, §27.53(d)(2)(3), §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 707.00 MHz
 MEASURED OUTPUT POWER: 24.600 dBm = 0.288 W
 BW / MODULATION SIGNAL: 5MHz QPSK
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 37.60 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1414.00	-31.64	9.70	-21.94	V	46.5
2134.00	-38.07	10.93	-27.15	V	51.7
2841.00	-53.36	11.09	-42.27	V	66.9
3548.00	-39.19	11.74	-27.44	V	52.0
4255.00	-52.45	12.82	-39.63	V	64.2

Table 6-11. Radiated Spurious Data (5MHz Band 12)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to [ANSI/TIA/EIA-603-C-2004](#), Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This unit was tested while powered by a DC power supply. The EUT was tested in three orthogonal planes and in all test configurations and positioning. The worst case emissions were found while testing in QPSK modulation, 1RB size, and 0 RB Offset. The worst case emissions were found with the EUT in the horizontally flat position, with the antenna sitting vertical. The data reported in the table above was measured in this test setup.

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Radiated Spurious Emissions (Cont'd)

§2.1053, §27.53(d)(2)(3), §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 713.50 MHz
 MEASURED OUTPUT POWER: 24.600 dBm = 0.288 W
 BW / MODULATION SIGNAL: 5MHz QPSK
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W)$ 37.60 dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
1427.00	-47.12	8.02	-39.10	V	63.7
2140.50	-39.94	8.63	-31.32	V	55.9
3870.50	-53.61	9.82	-43.78	V	68.4
5600.50	-34.19	9.68	-24.51	V	49.1
7330.50	-51.77	10.41	-41.35	V	66.0

Table 6-12. Radiated Spurious Data (5MHz Band 12)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to [ANSI/TIA/EIA-603-C-2004](#), Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This unit was tested while powered by a DC power supply. The EUT was tested in three orthogonal planes and in all test configurations and positioning. The worst case emissions were found while testing in QPSK modulation, 1RB size, and 0 RB Offset. The worst case emissions were found with the EUT in the horizontally flat position, with the antenna sitting vertical. The data reported in the table above was measured in this test setup.

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Radiated Spurious Emissions (Cont'd)

§2.1053, §27.53(d)(2)(3), §27.53(g)

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 790.50 MHz
 MEASURED OUTPUT POWER: 22.200 dBm = 0.166 W
 BW / MODULATION SIGNAL: 5MHz QPSK
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) = 35.20$ dBc

FREQUENCY (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	(dBc)
2371.50	-43.30	8.57	-34.73	V	56.9
3162.00	-51.64	8.68	-42.95	V	65.2
3952.50	-91.30	8.95	-82.35	V	104.6
4743.00	-91.00	11.20	-79.80	V	102.0

Table 6-13. Radiated Spurious Data (5MHz Band 14)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004.

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This unit was tested while powered by a DC power supply. The EUT was tested in three orthogonal planes and in all test configurations and positioning. The worst case emissions were found while testing in QPSK modulation, 1RB size, and 0 RB Offset. The worst case emissions were found with the EUT in the horizontally flat position, with the antenna sitting vertical. The data reported in the table above was measured in this test setup.

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6.5 Radiated Spurious Emissions in 1559 – 1610MHz Band

§2.1053, §27.53(f)

All spurious emissions found in the 1559-1610 MHz band were wideband emissions and the limit of -70dBW/MHz (-40dBm/MHz) was applied. Measurements in table below utilized resolution bandwidth of 1MHz.

Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY:	790.50	MHz			
MEASURED OUTPUT POWER:	22.200	dBm	=	0.166	W
BW / MODULATION:	5 MHz QPSK				
DISTANCE:	3	meters			
NARROWBAND EMISSION LIMIT:	-50 dBm				
WIDEBAND EMISSION LIMIT:	-40 dBm/MHz				

FREQUE NCY (MHz)	EMISSION TYPE	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBi)	SPURIOUS EMISSION LEVEL (dBm)	POL (H/V)	MARGIN (dB)
1576.80	WIDEBAND	-54.56	8.44	-46.12	V	-6.12
1585.20	WIDEBAND	-53.70	8.45	-44.56	V	-4.56

Table 6-14. Radiated Spurious Data (5MHz Band 14)

NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 80cm above the ground plane and 3 meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. Final power measurements are made with a broadband average power meter. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. This spurious level is recorded using the power meter. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This unit was tested while powered by a DC power supply. The EUT was tested in three orthogonal planes and in all test configurations and positioning. The worst case emissions were found while testing in QPSK modulation, 1RB size, and 49 RB Offset. The worst case emissions were found with the EUT in the horizontally flat position, with the antenna sitting vertical. The data reported in the table above was measured in this test setup.

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6.6 Frequency Stability

§2.1055, §27.54

The following frequency stability measurements utilized QPSK Modulation, 25 RB size, and 0 RB Offset.

OPERATING FREQUENCY: 707,000,000 Hz

REFERENCE VOLTAGE: 3.3 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.30	+ 20 (Ref)	707,000,009	9	0.000001
100 %		- 30	707,000,015	15	0.000002
100 %		- 20	707,000,002	2	0.000000
100 %		- 10	707,000,012	12	0.000002
100 %		0	707,000,010	10	0.000001
100 %		+ 10	707,000,012	12	0.000002
100 %		+ 20	707,000,006	6	0.000001
100 %		+ 30	707,000,007	7	0.000001
100 %		+ 40	707,000,007	7	0.000001
100 %		+ 50	707,000,007	7	0.000001
115 %		+ 20	707,000,002	2	0.000000
85 %	2.80	+ 20	707,000,003	3	0.000000

Table 6-15. Frequency Stability Data (5MHz Band 12)

FCC ID: BV8BBPBM100		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Frequency Stability (Cont'd)

§2.1055, §27.54

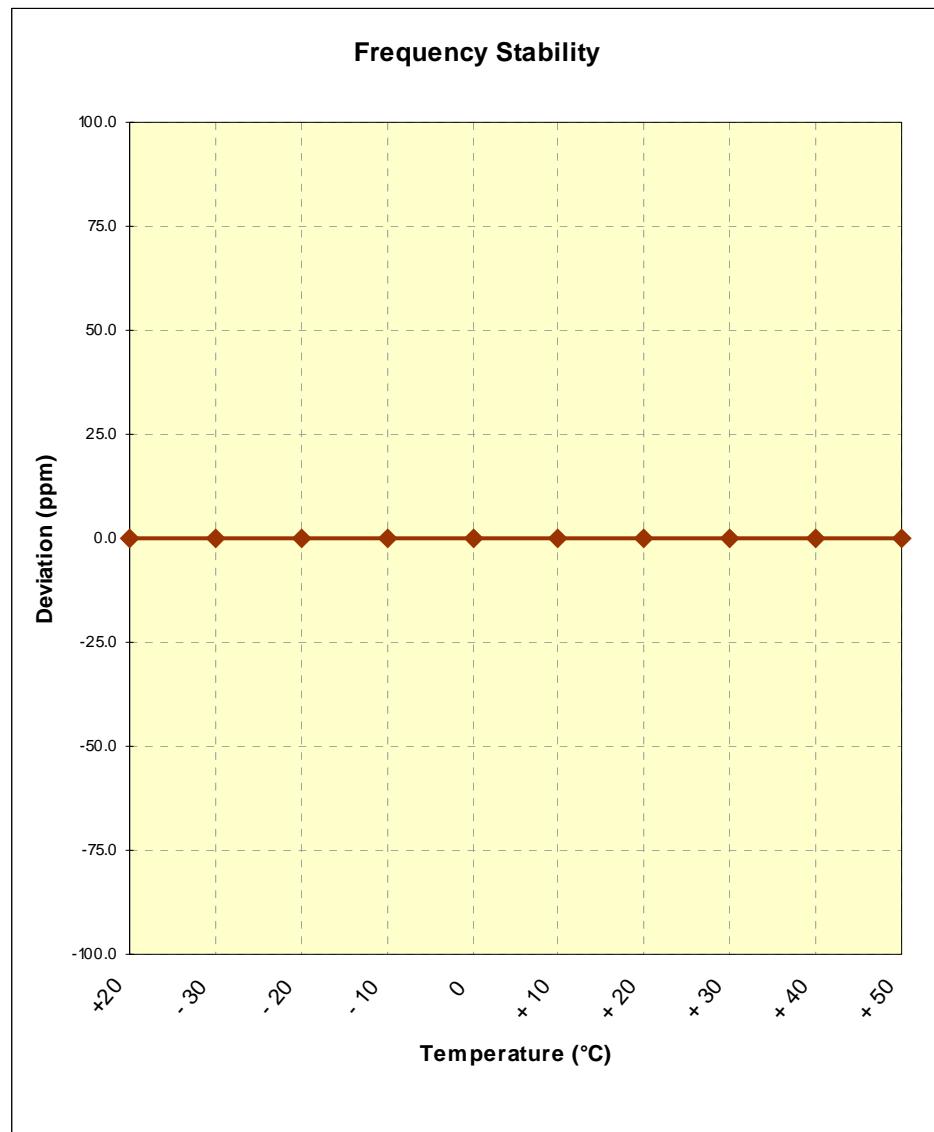


Figure 6-2. Frequency Stability Graph (5MHz Band 12)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		Page 23 of 49

Frequency Stability (Cont'd)

§2.1055, §27.54

OPERATING FREQUENCY: 790,500,000 Hz

REFERENCE VOLTAGE: 3.3 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.30	+ 20 (Ref)	790,500,008	8	0.000001
100 %		- 30	790,500,009	9	0.000001
100 %		- 20	790,500,009	9	0.000001
100 %		- 10	790,500,001	1	0.000000
100 %		0	790,500,006	6	0.000001
100 %		+ 10	790,500,003	3	0.000000
100 %		+ 20	790,500,010	10	0.000001
100 %		+ 30	790,500,013	13	0.000002
100 %		+ 40	790,500,008	8	0.000001
100 %		+ 50	790,500,004	4	0.000001
115 %		+ 20	790,500,013	13	0.000002
85 %	2.80	+ 20	790,500,002	2	0.000000

Table 6-16. Frequency Stability Data (5MHz Band 14)

FCC ID: BV8BBPBM100		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		Page 24 of 49

Frequency Stability (Cont'd)

§2.1055, §27.54

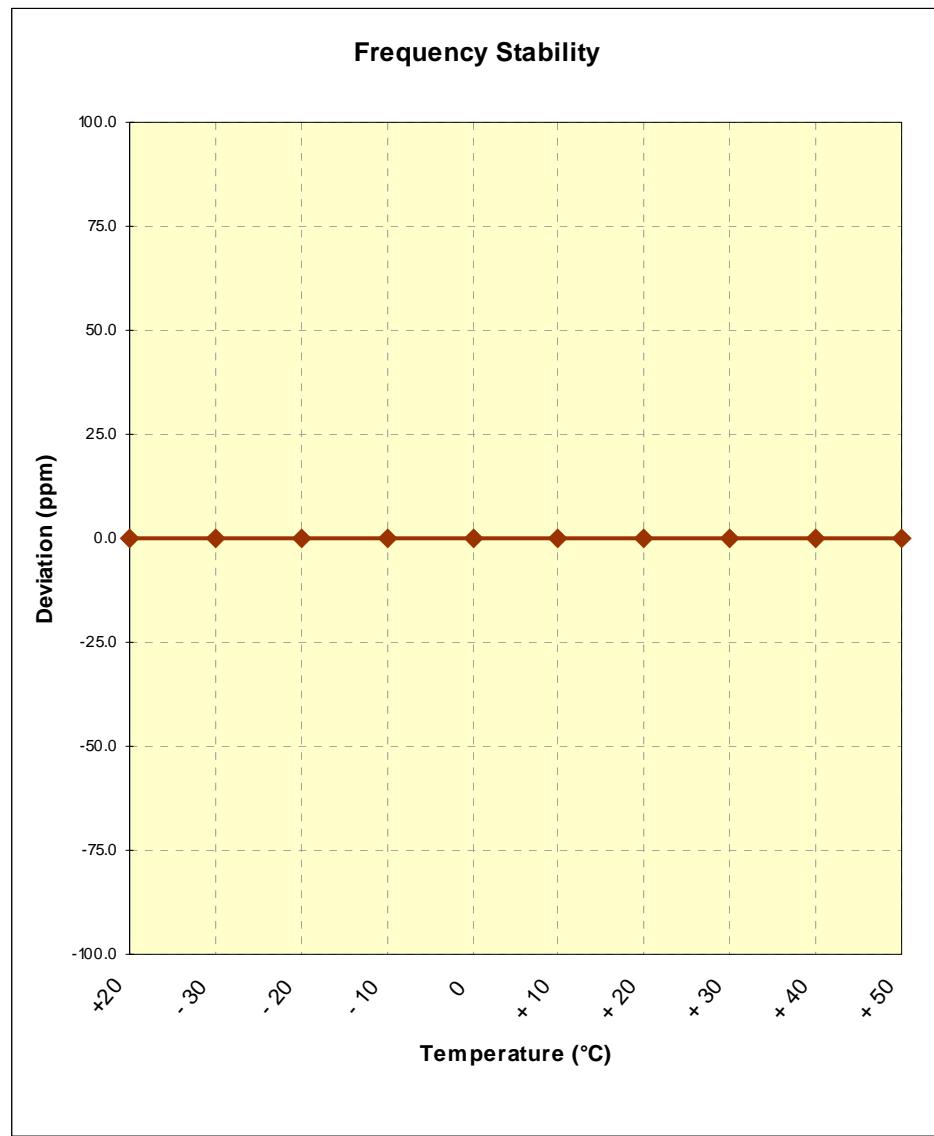
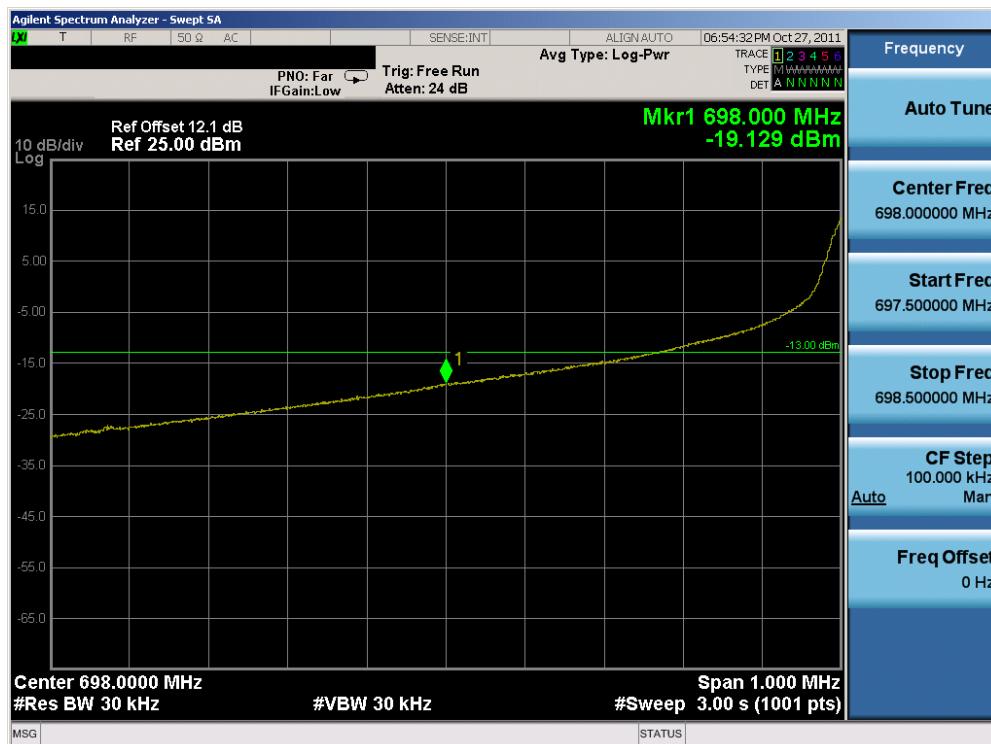


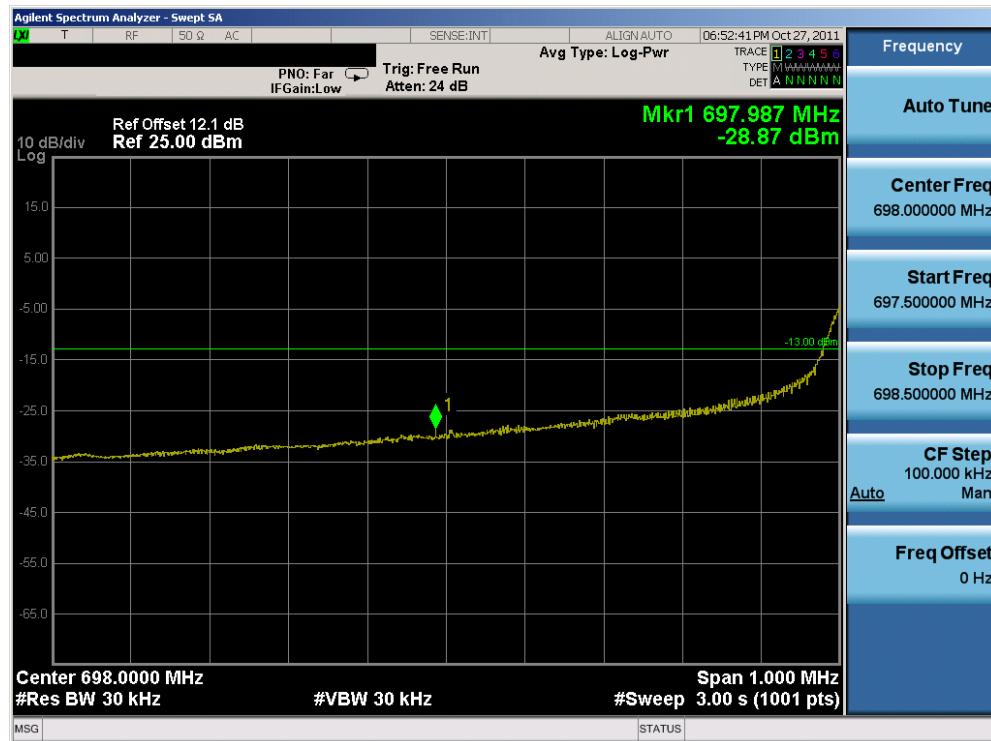
Figure 6-3. Frequency Stability Graph (5MHz Band 14)

FCC ID: BV8BBPBM100	PCTEST® ENGINEERING LABORATORY, INC.		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module			Page 25 of 49

7.0 PLOTS OF EMISSIONS 10MHZ BAND 12



Plot 7-1. Lower Band Edge Plot (QPSK, 1RB, Offset 0)



Plot 7-2. Lower Band Edge Plot (QPSK, 50RB)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module			Page 26 of 49

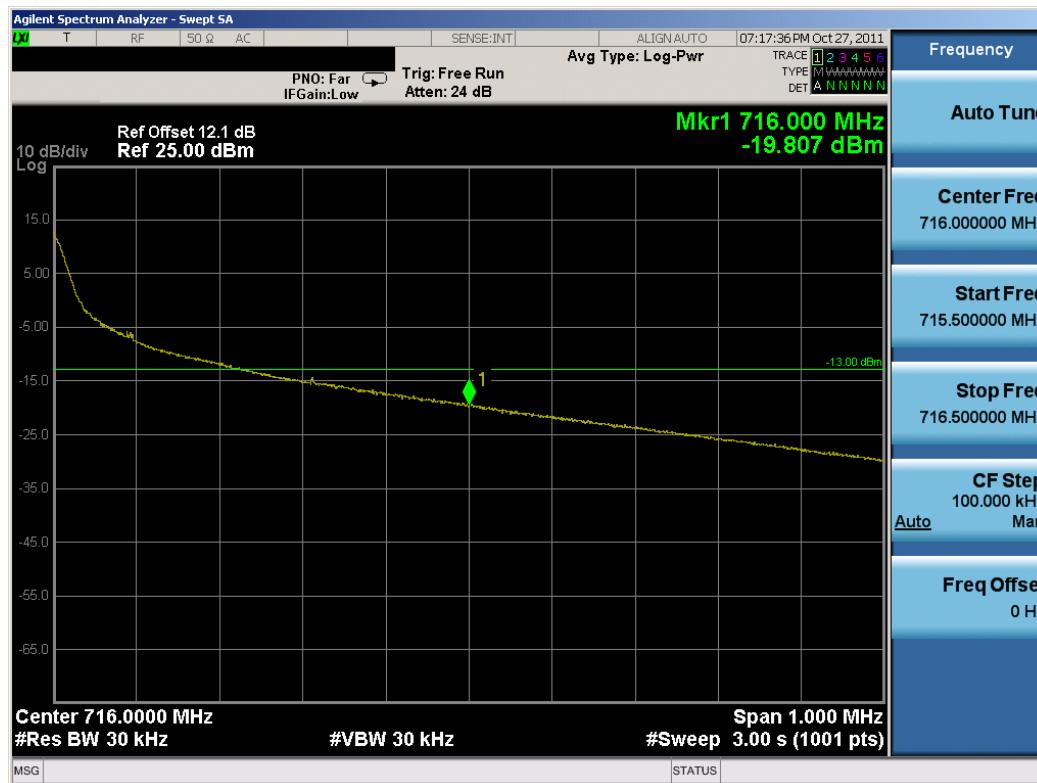


Plot 7-3. Lower Extended Band Edge Plot (QPSK, 1RB, Offset 0)

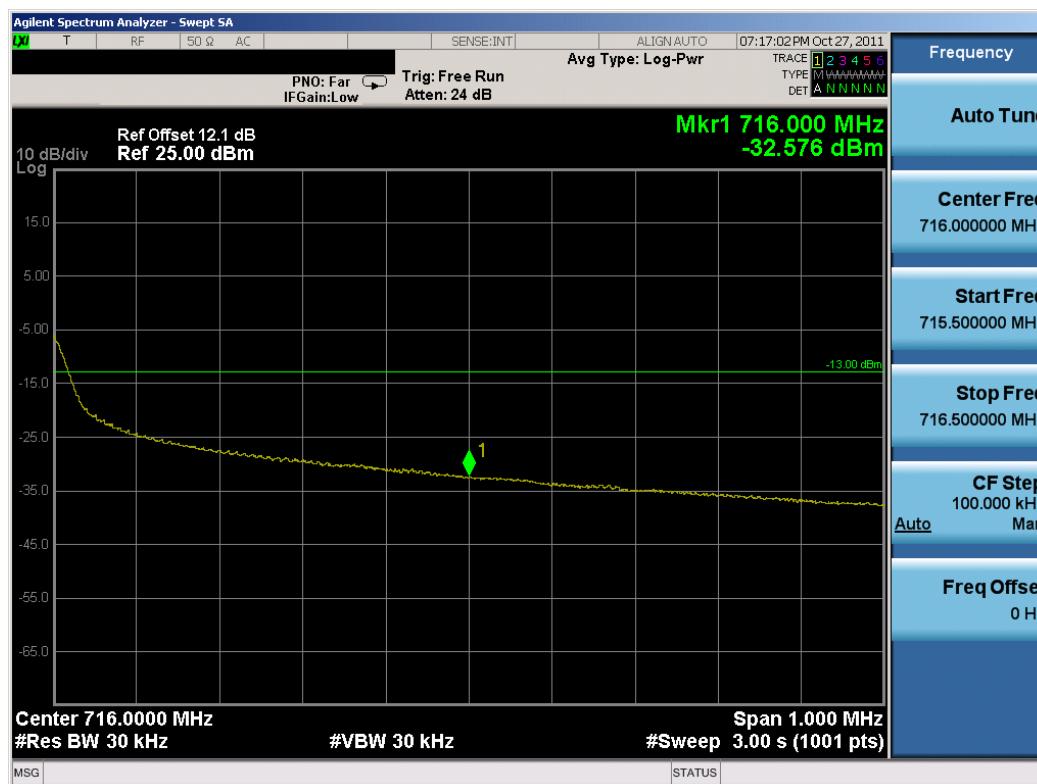


Plot 7-4. Lower Extended Band Edge Plot (QPSK, 50RB)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		Page 27 of 49



Plot 7-5. Upper Band Edge Plot (QPSK, 1RB, Offset49)



Plot 7-6. Upper Band Edge Plot (QPSK, 50RB)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		

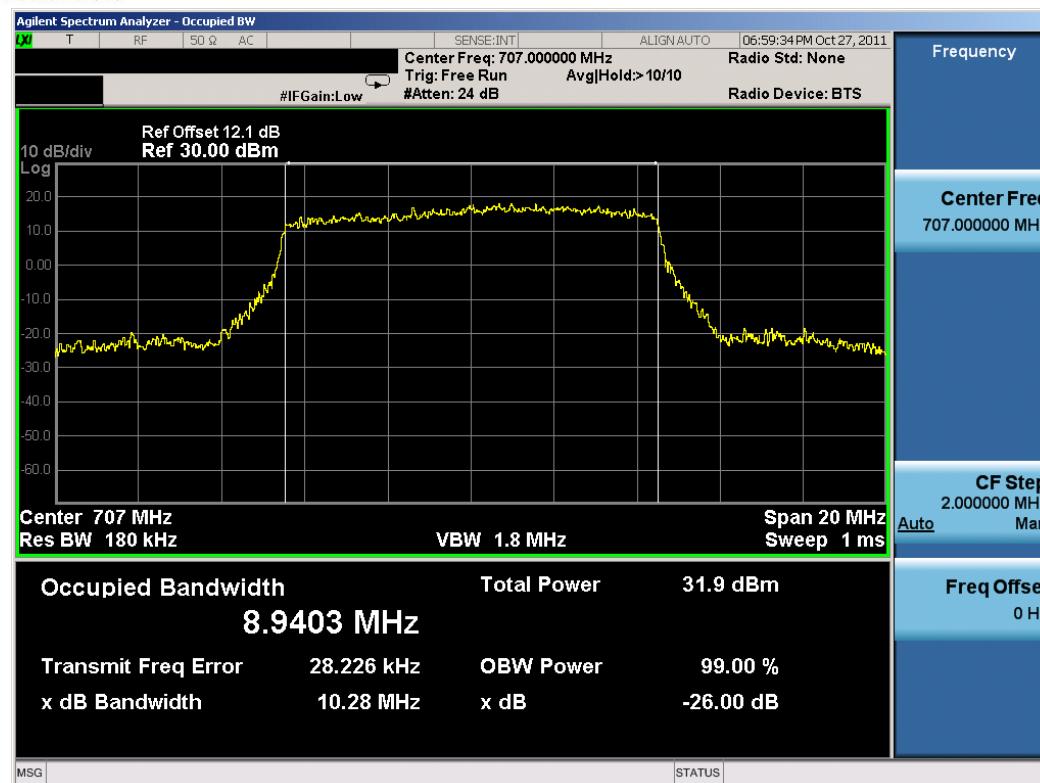


Plot 7-7. Upper Extended Band Edge (QPSK, 1RB Offset 49)

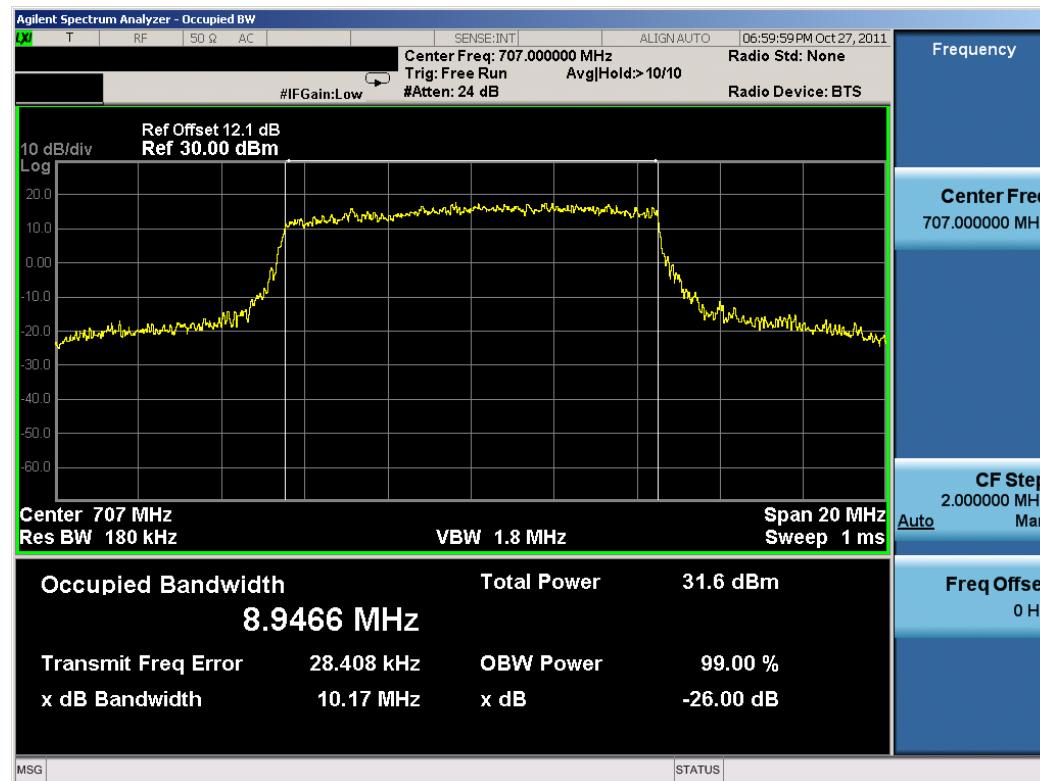


Plot 7-8. Upper Extended Band Edge Plot (QPSK, 50RB)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		



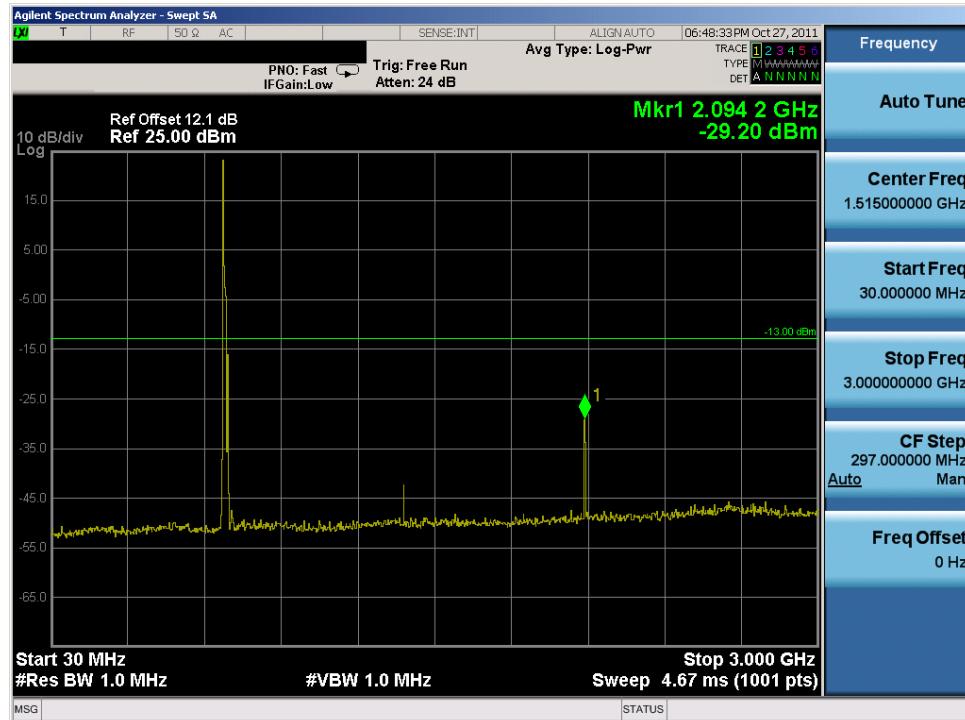
Plot 7-9. Occupied Bandwidth Plot (QPSK, 50RB)



Plot 7-10. Occupied Bandwidth Plot (16-QAM, 50RB)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module			

Out-of-Band Spurious Emissions Note: For the following conducted spurious emission plots, all modulations and RB configurations were tested. Worst case emissions were found in QPSK modulation, 1RB, and 0 RB Offset. Worst case plots are reported below:

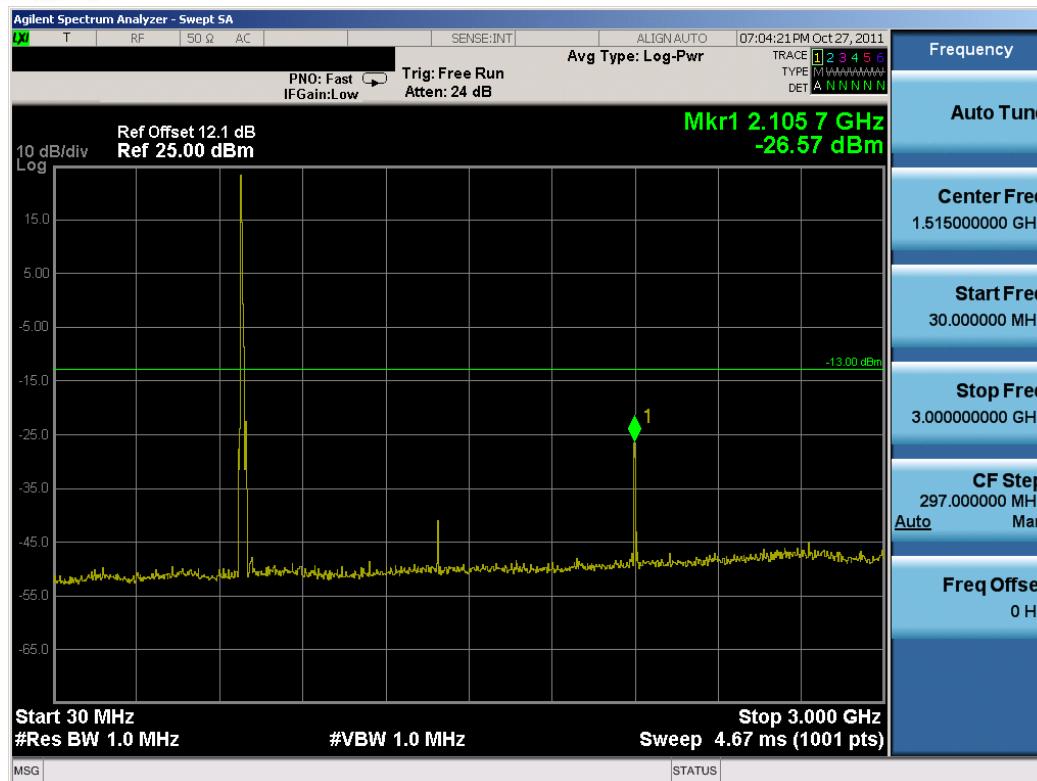


Plot 7-11. Conducted Spurious Plot (Low Channel)

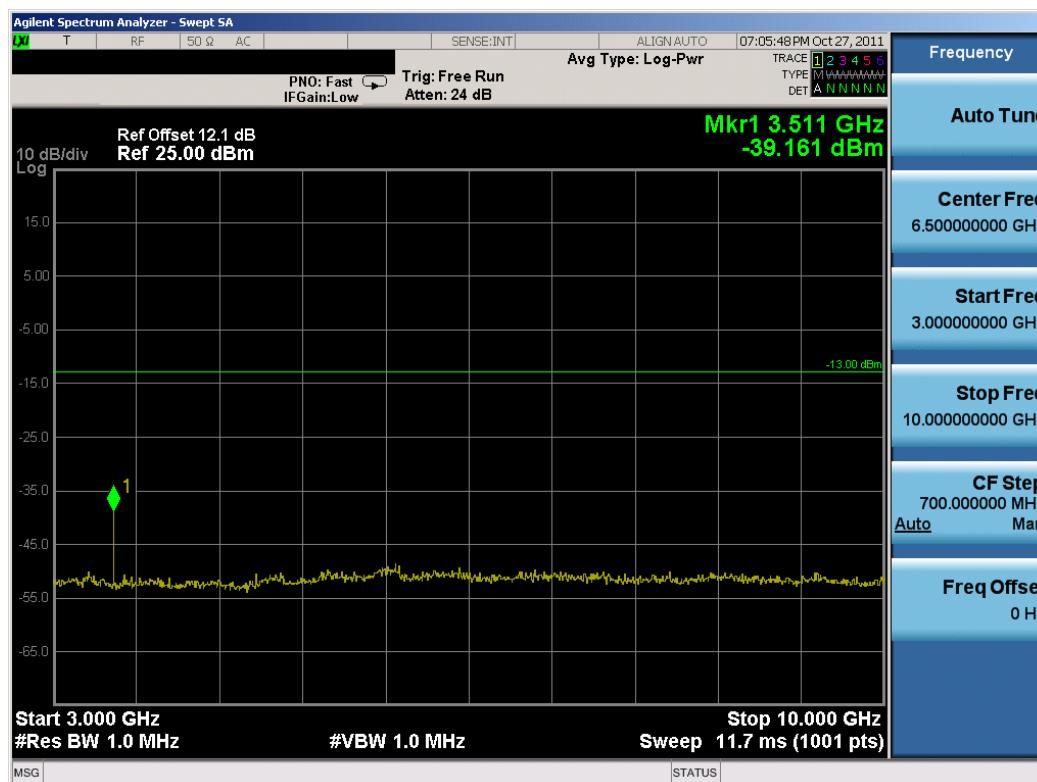


Plot 7-12. Conducted Spurious Plot (Low Channel)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		

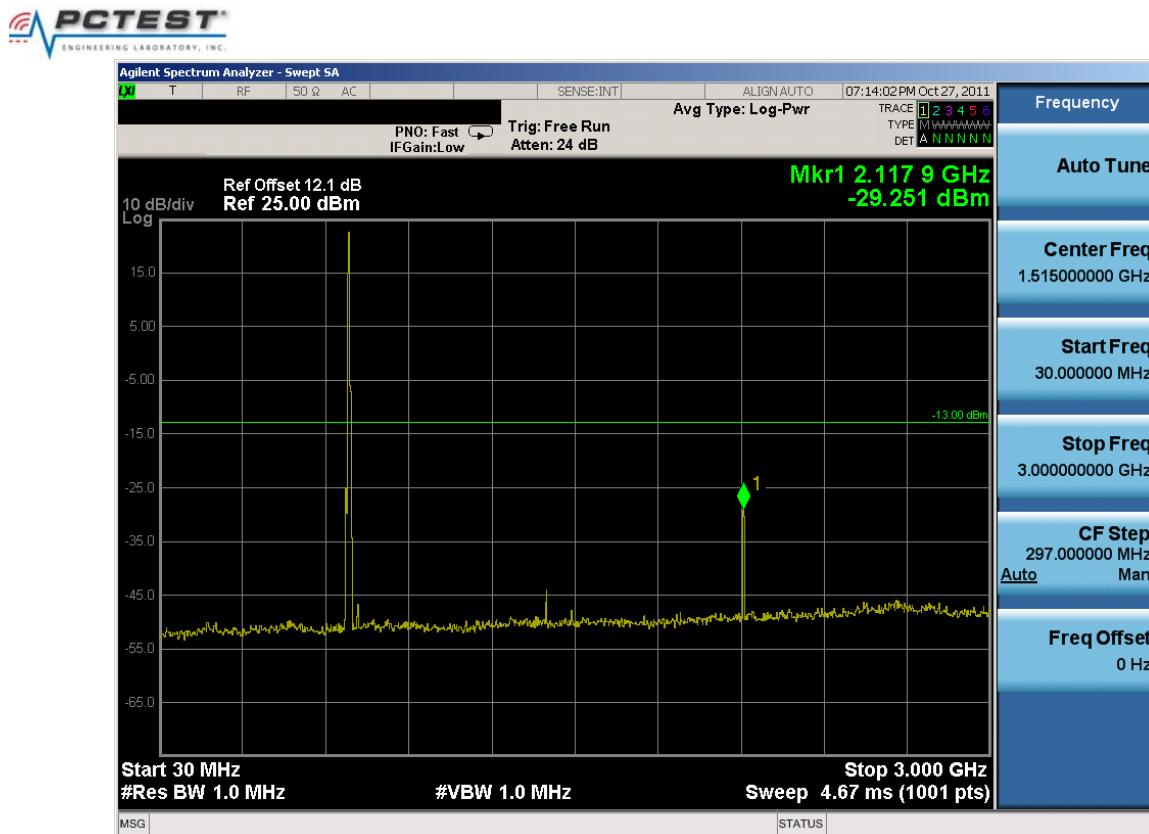


Plot 7-13. Conducted Spurious Plot (Mid Channel)

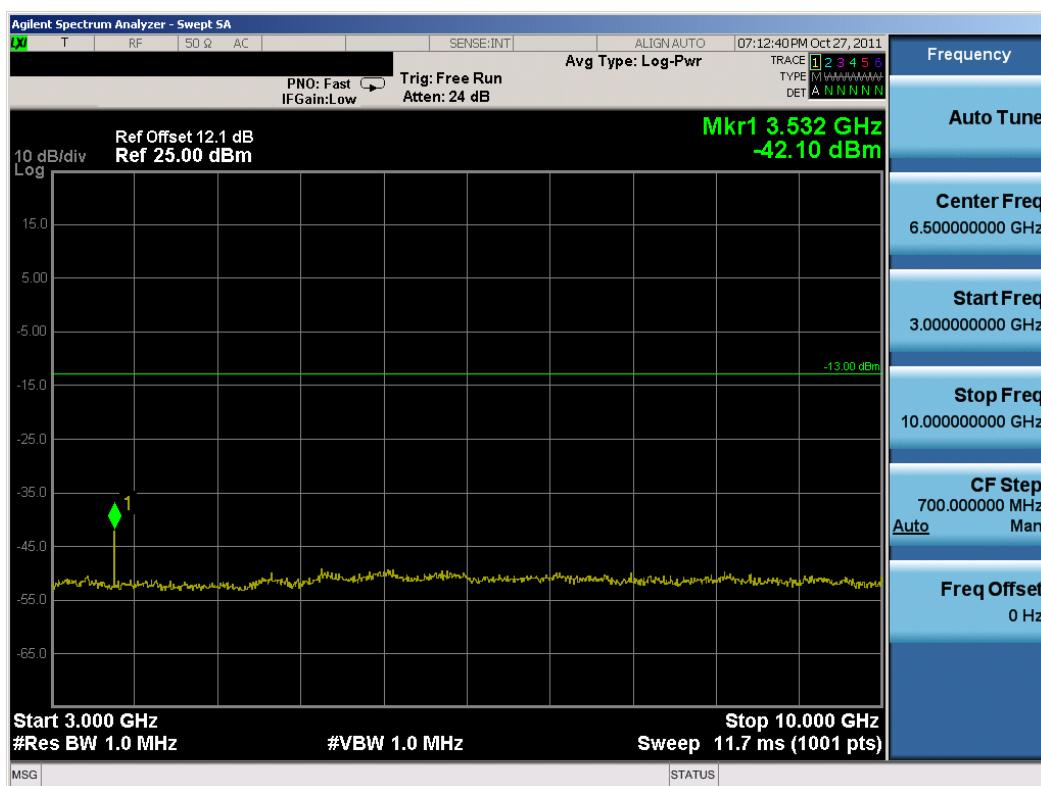


Plot 7-14. Conducted Spurious Plot (Mid Channel)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		



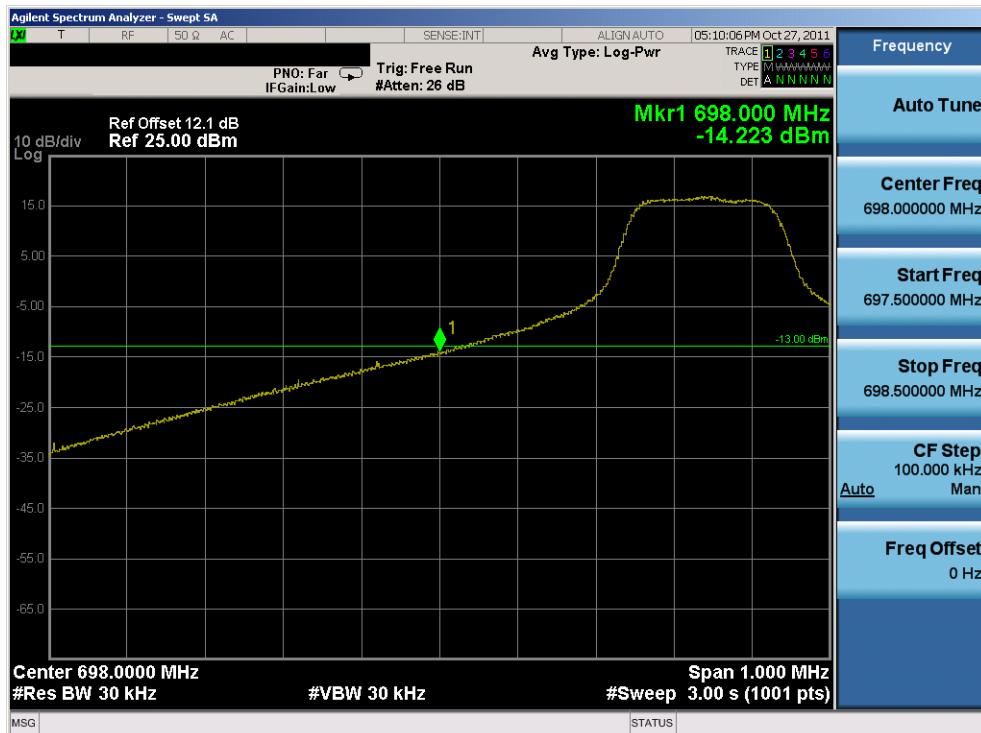
Plot 7-15. Conducted Spurious Plot (High Channel)



Plot 7-16. Conducted Spurious Plot (High Channel)

FCC ID: BV8BBPBM100		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		Page 33 of 49

8.0 PLOTS OF EMISSIONS 5MHZ BAND 12



Plot 8-1. Lower Band Edge Plot (QPSK, 1RB, Offset 0)

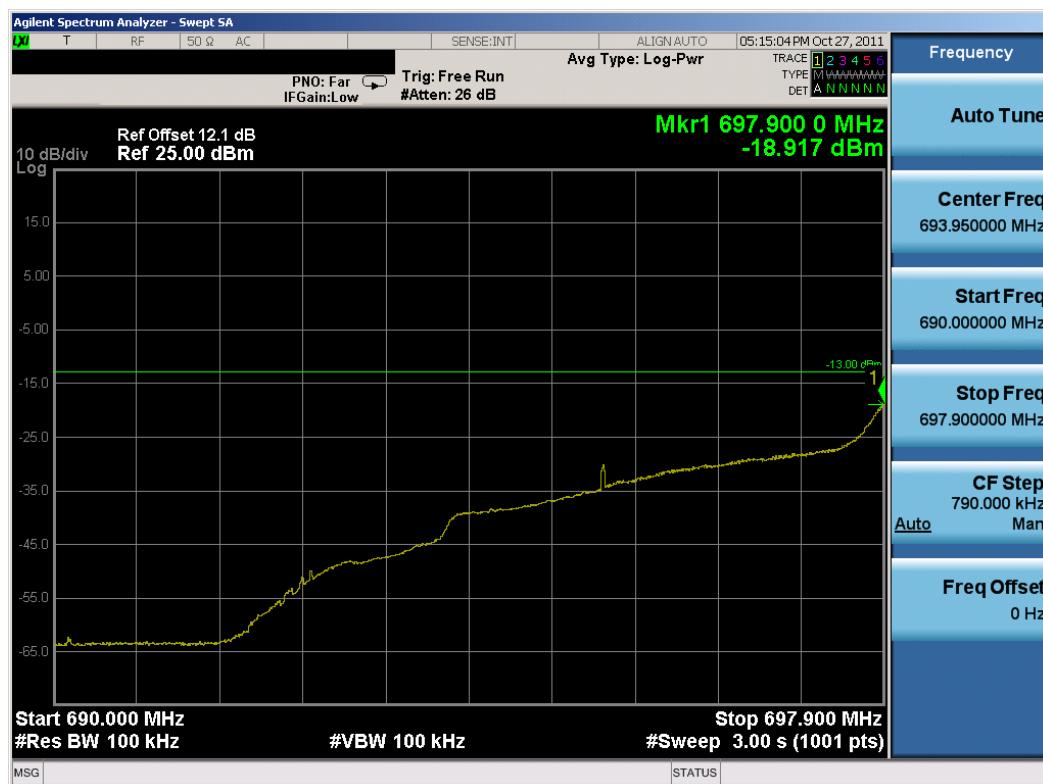


Plot 8-2. Lower Band Edge Plot (QPSK, 25RB)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		Page 34 of 49

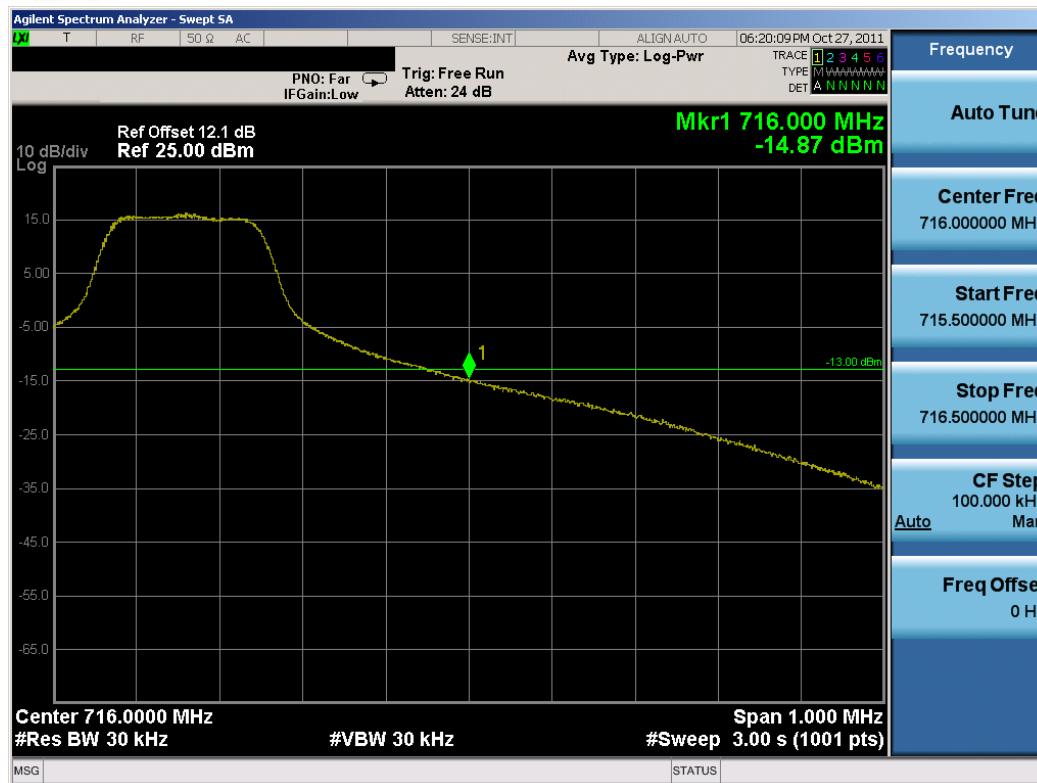


Plot 8-3. Lower Extended Band Edge Plot (QPSK, 1RB, Offset 0)

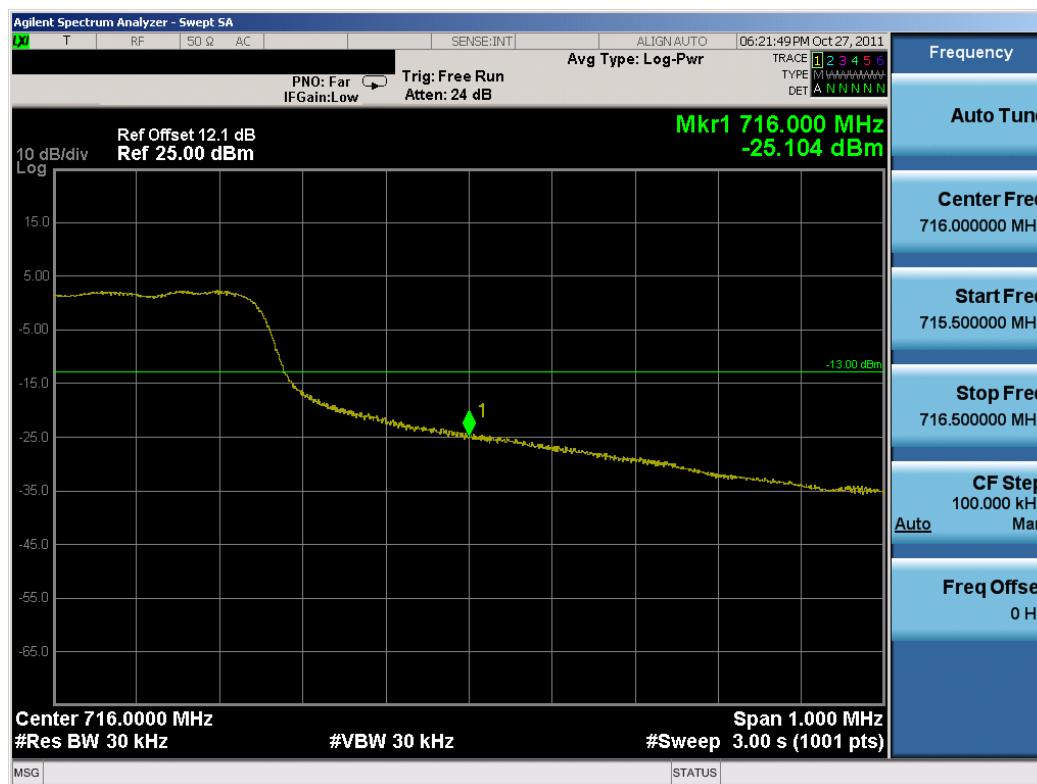


Plot 8-4. Lower Extended Band Edge Plot (QPSK, 25RB)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		



Plot 8-5. Upper Band Edge Plot (QPSK, 1RB, Offset 24)

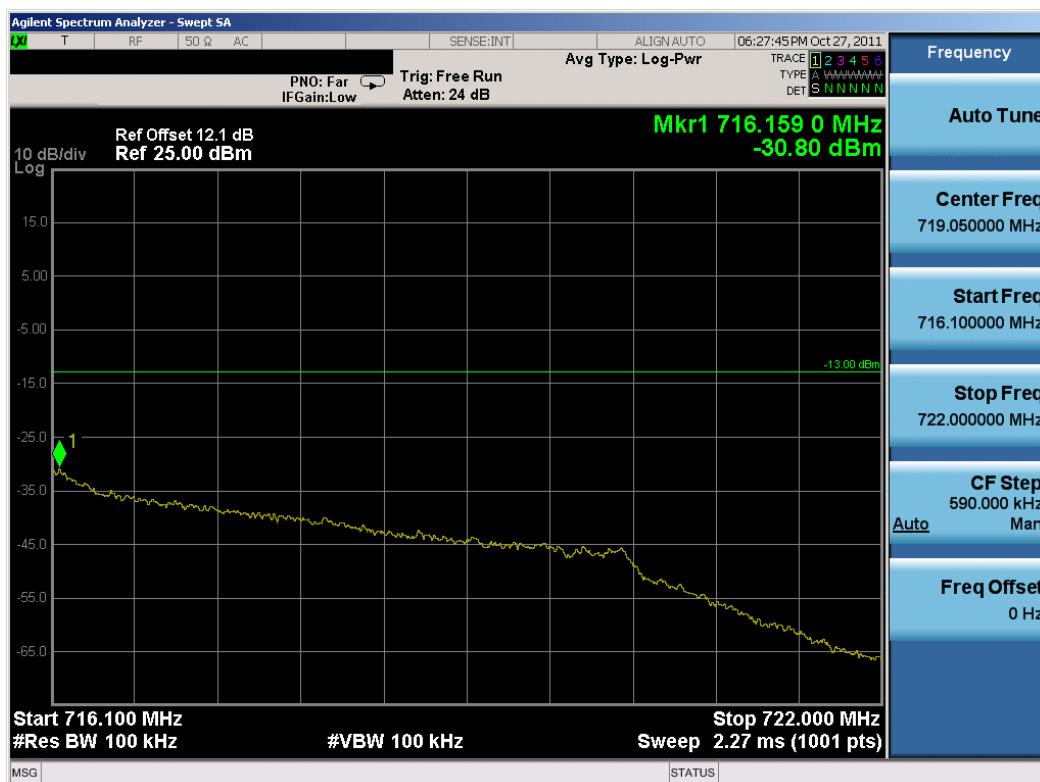


Plot 8-6. Upper Band Edge Plot (QPSK, 25RB)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module	Page 36 of 49	

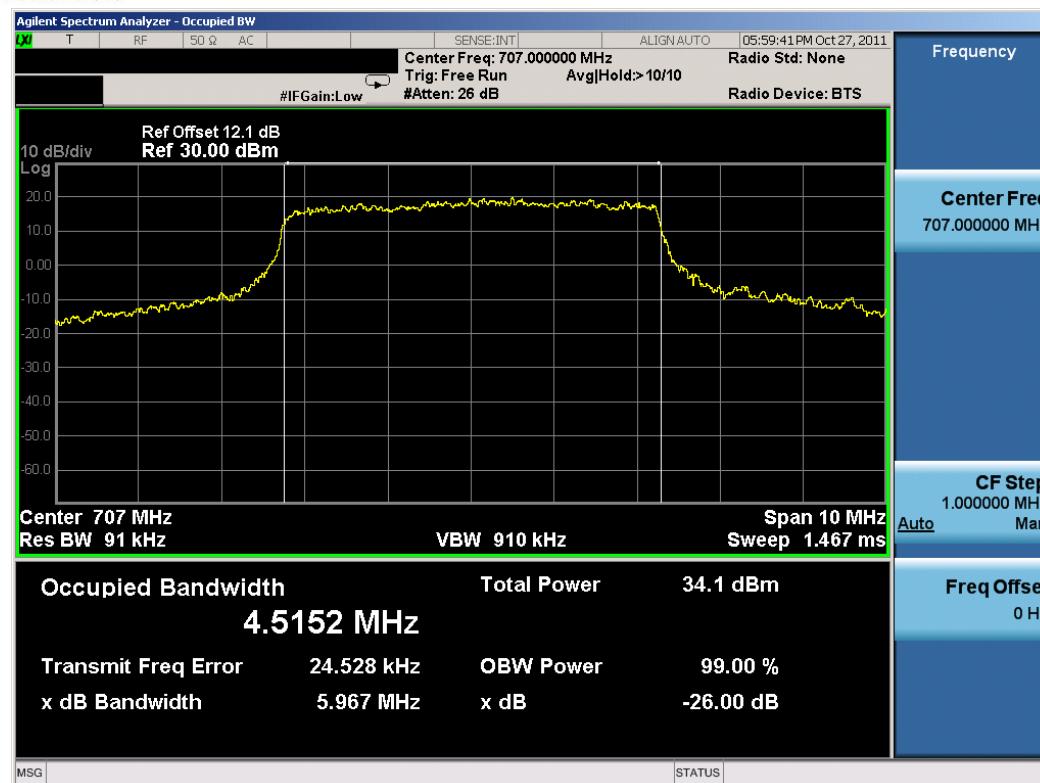


Plot 8-7. Upper Extended Band Edge Plot (QPSK, 1RB, Offset 24)



Plot 8-8. Upper Extended Band Edge Plot (QPSK, 25RB)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		Page 37 of 49



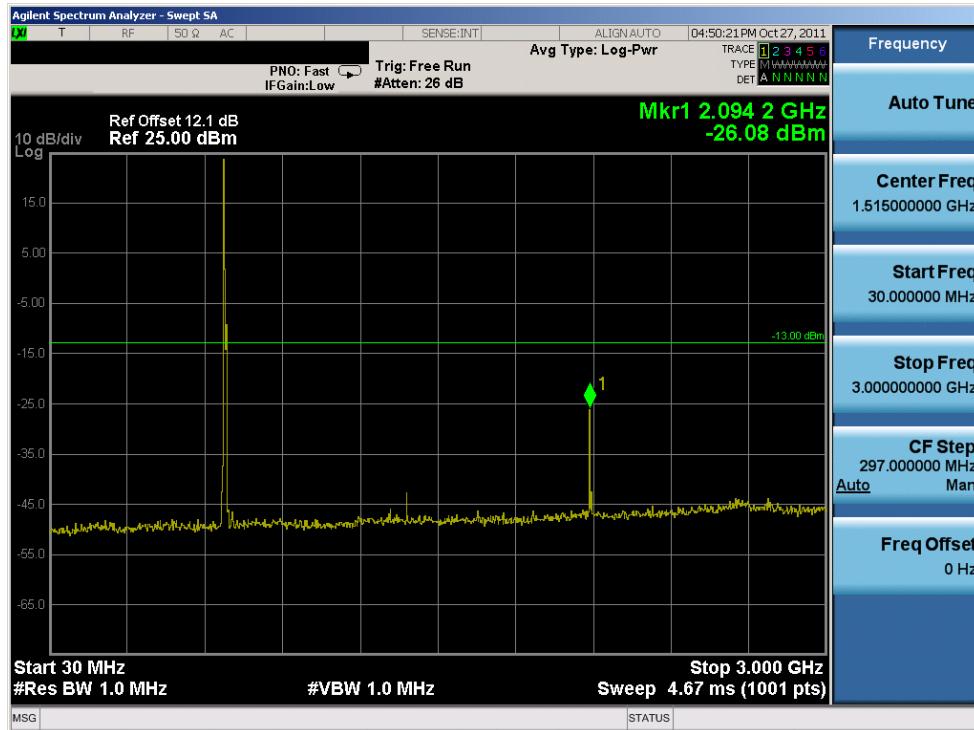
Plot 8-9. Occupied Bandwidth Plot (QPSK, 25RB)



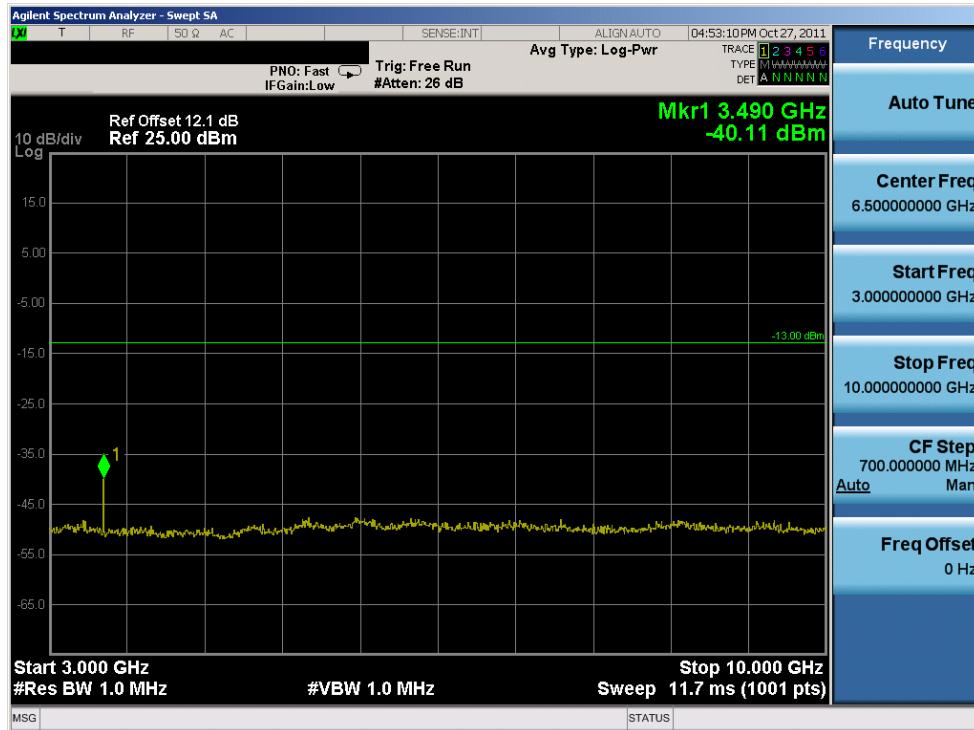
Plot 8-10. Occupied Bandwidth Plot (16-QAM, 25RB)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		

Out-of-Band Spurious Emissions Note: For the following conducted spurious emission plots, all modulations and RB configurations were tested. Worst case emissions were found in 16-QAM modulation, 1RB, and 0 RB Offset. Worst case plots are reported below:

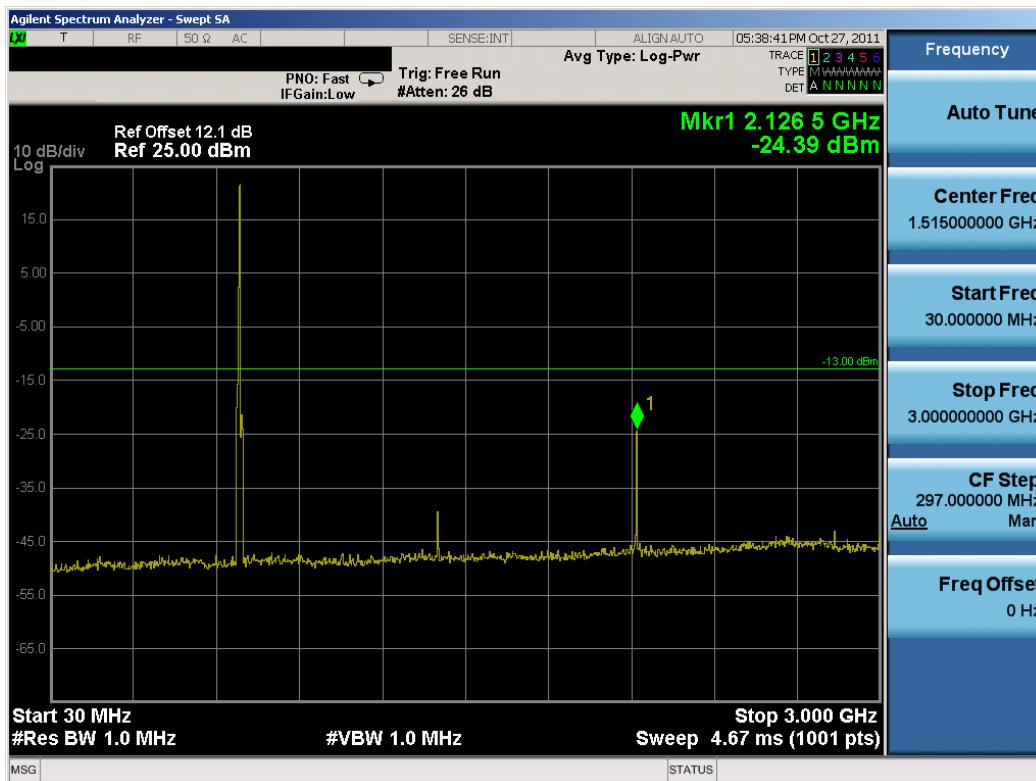


Plot 8-11. Conducted Spurious Plot (Low Channel)

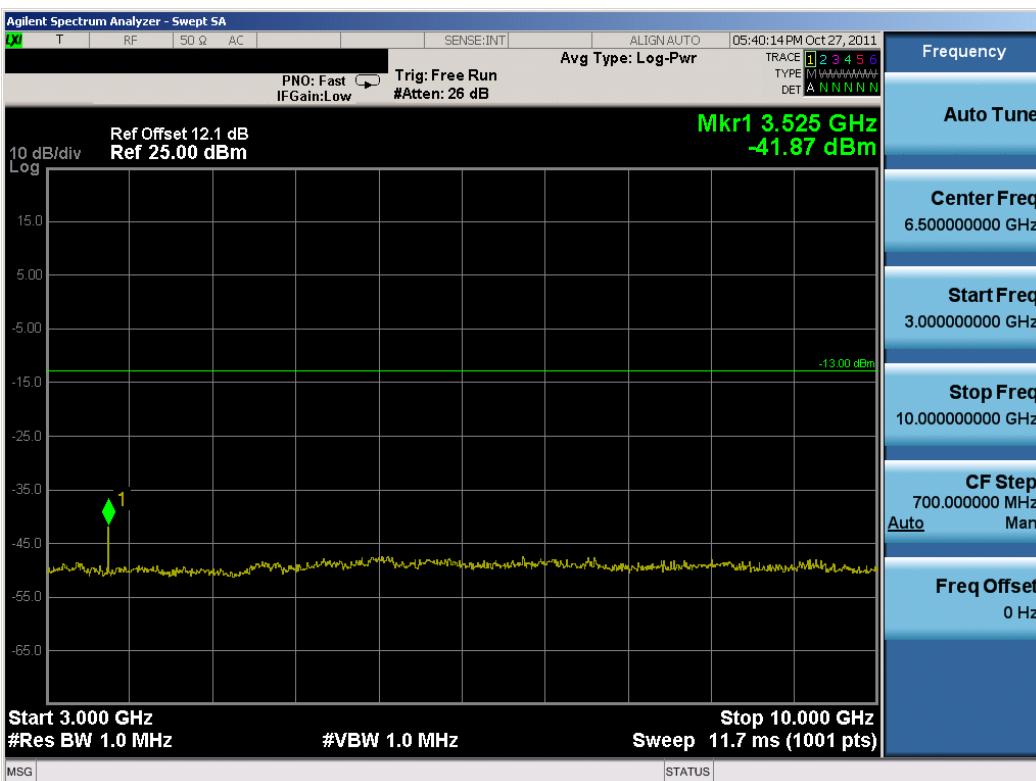


Plot 8-12. Conducted Spurious Plot (Low Channel)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module	Page 39 of 49

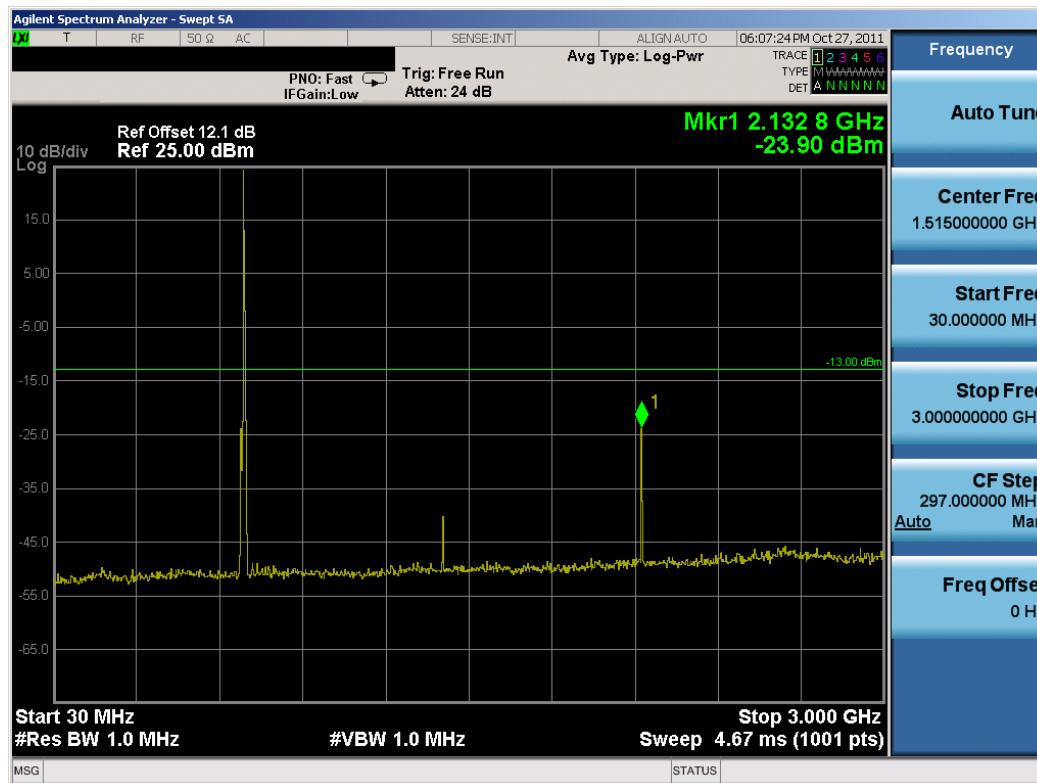


Plot 8-13. Conducted Spurious Plot (Mid Channel)

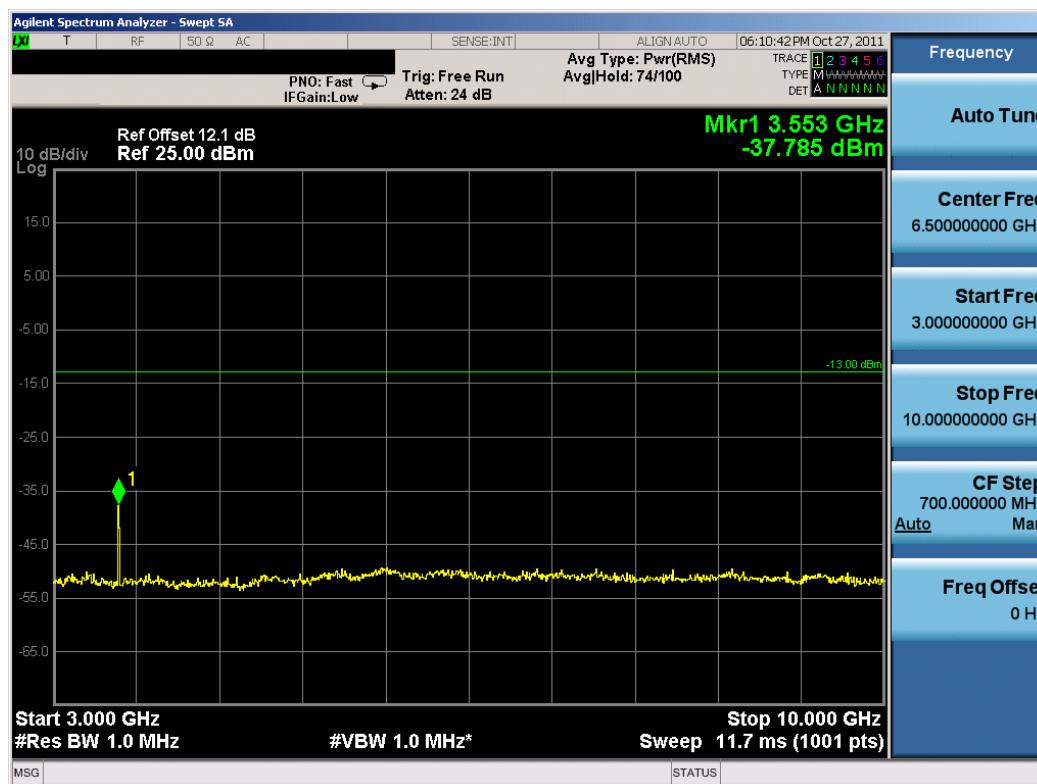


Plot 8-14. Conducted Spurious Plot (Mid Channel)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module			Page 40 of 49



Plot 8-15. Conducted Spurious Plot (High Channel)



Plot 8-16. Conducted Spurious Plot (High Channel)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module			Page 41 of 49

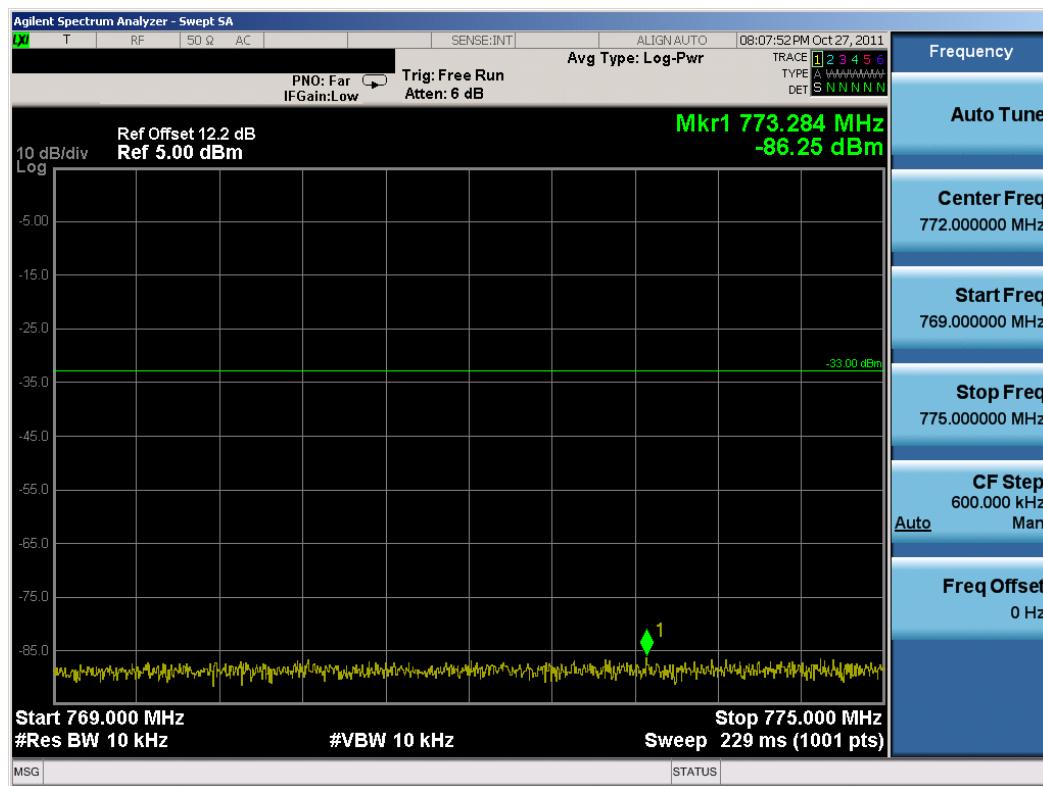
9.0 PLOTS OF EMISSIONS 5MHZ BAND 14

Note:

Transmit Frequency for the following plots is 790.5 MHz with 5MHz Bandwidth.

Emission Mask Note:

For the emission mask plots showing emissions in the 769 – 775MHz and 799 – 805MHz band, the FCC limit is $65 + 10\log_{10}(P_{[\text{Watts}]}) = -35\text{dBm}$ in a 6.25kHz bandwidth. Since it was not possible to set the resolution bandwidth to 6.25kHz with the available equipment, a bandwidth of 10kHz was used instead to show compliance. By using a 10kHz bandwidth, the limit was adjusted by $10\log_{10}(10\text{kHz}/6.25\text{kHz}) = 2.04\text{dB}$. Thus, the limit shown in all plots in the 769 – 775MHz and 799 – 805MHz bands for all available modulation types was $-35\text{dBm} + 2.04\text{dB} = -32.96\text{dBm}$.

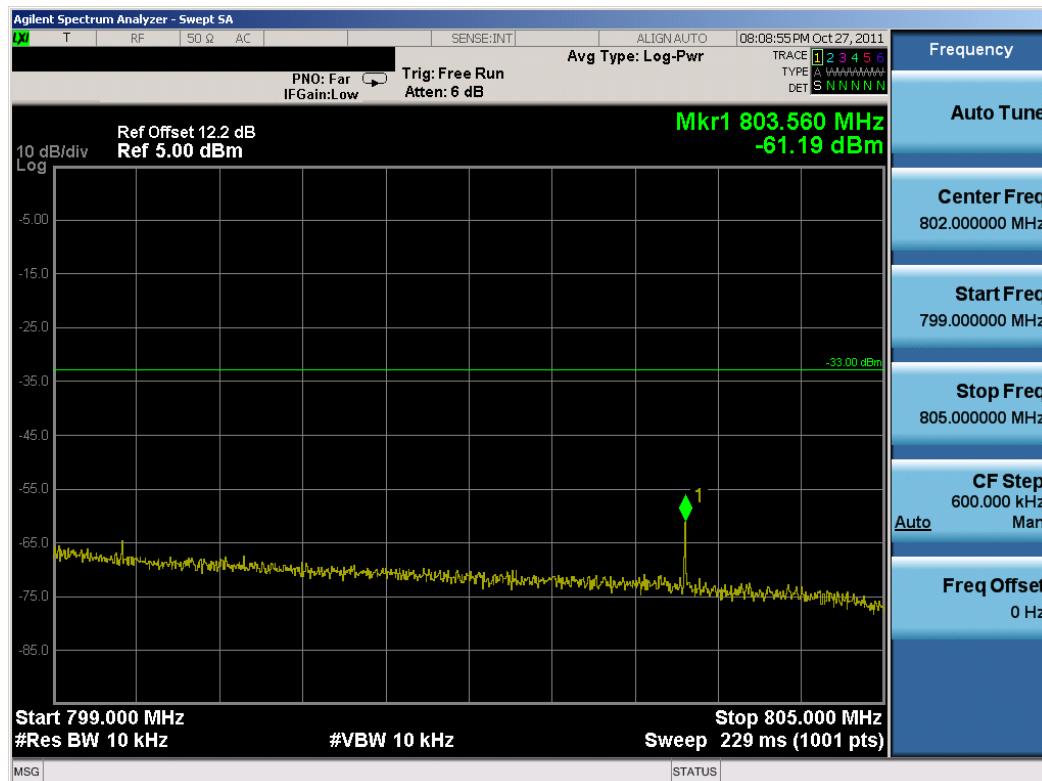


Plot 9-1. Lower Emission Mask 769-775MHz Plot (QPSK, 1RB, Offset 0)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module	Page 42 of 49	

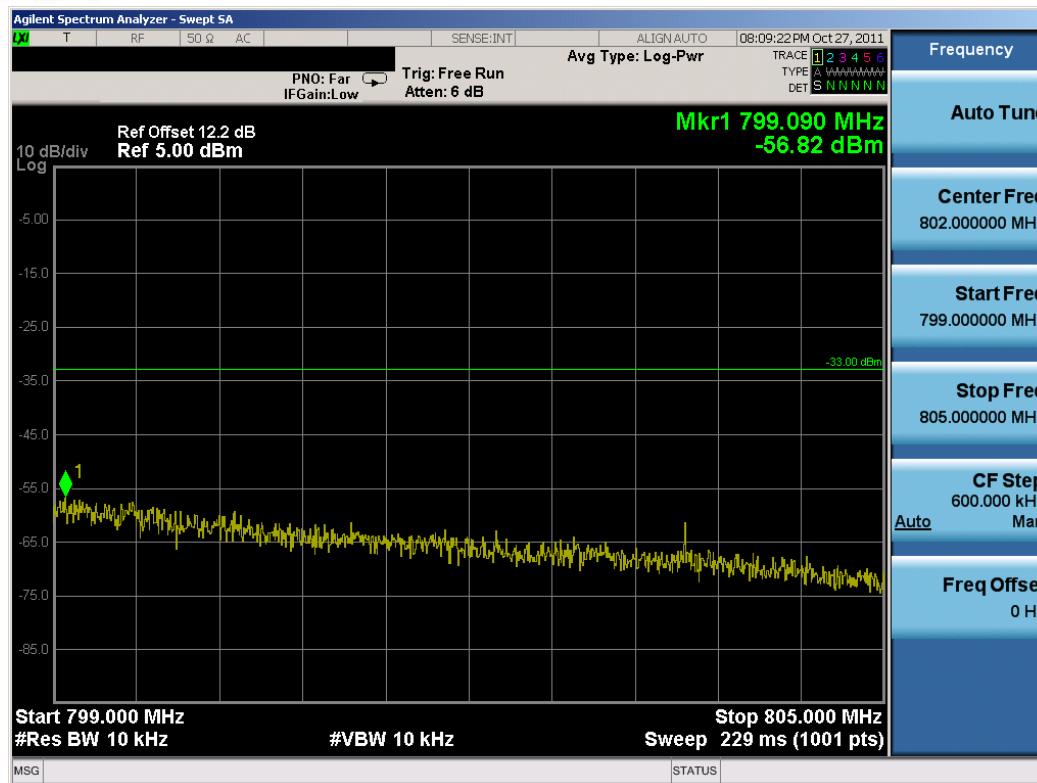


Plot 9-2. Lower Emission Mask 769-775MHz Plot (QPSK, 25RB)



Plot 9-3. Upper Emission Mask 799-805MHz Plot (QPSK, 1RB, Offset 24)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		Page 43 of 49



Plot 9-4. Upper Emission Mask 799-805 MHz Plot (QPSK, 25RB)



Plot 9-5. Lower Band Edge Plot (QPSK, 1RB, Offset 0)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		Page 44 of 49



Plot 9-6. Lower Band Edge Plot (QPSK, 25RB)

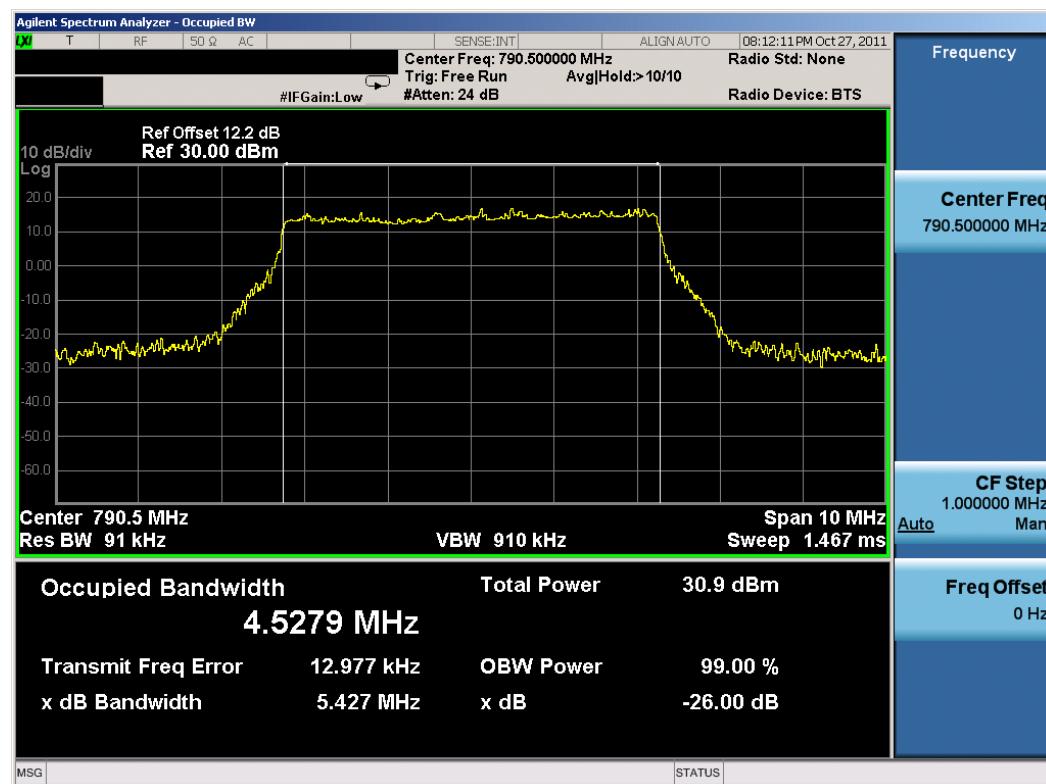


Plot 9-7. Upper Band Edge Plot (QPSK, 1RB, Offset 24)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module			

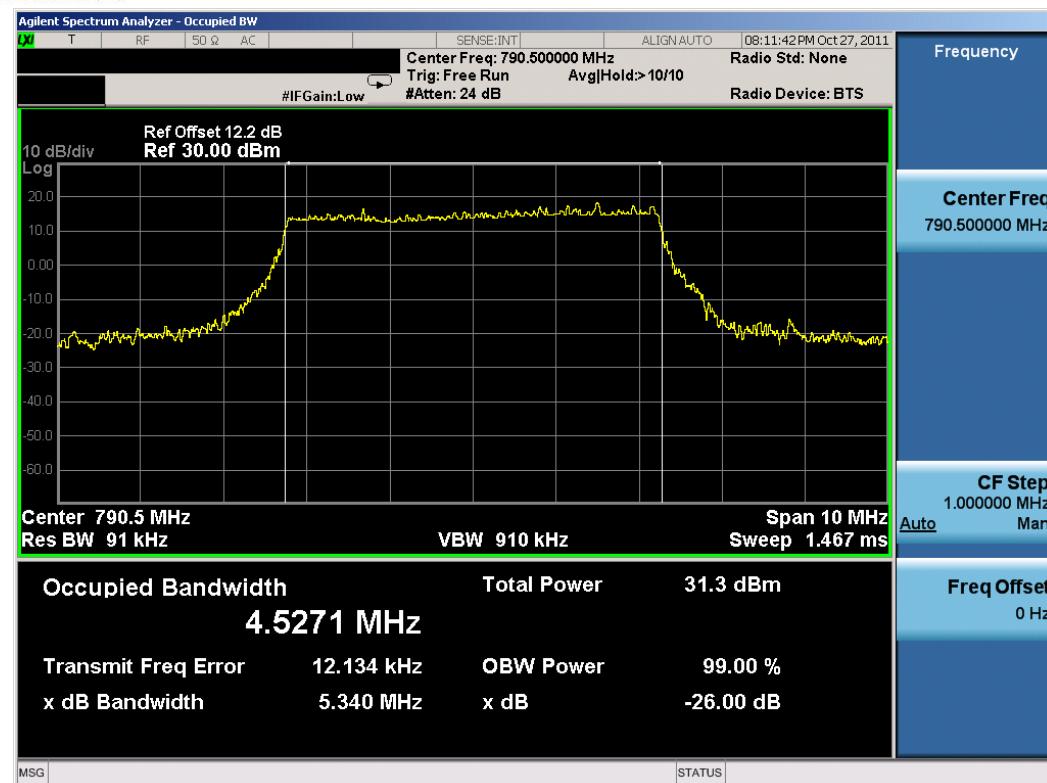


Plot 9-8. Upper Band Edge Plot (QPSK, 25RB)



Plot 9-9. Occupied Bandwidth Plot (QPSK, 25RB)

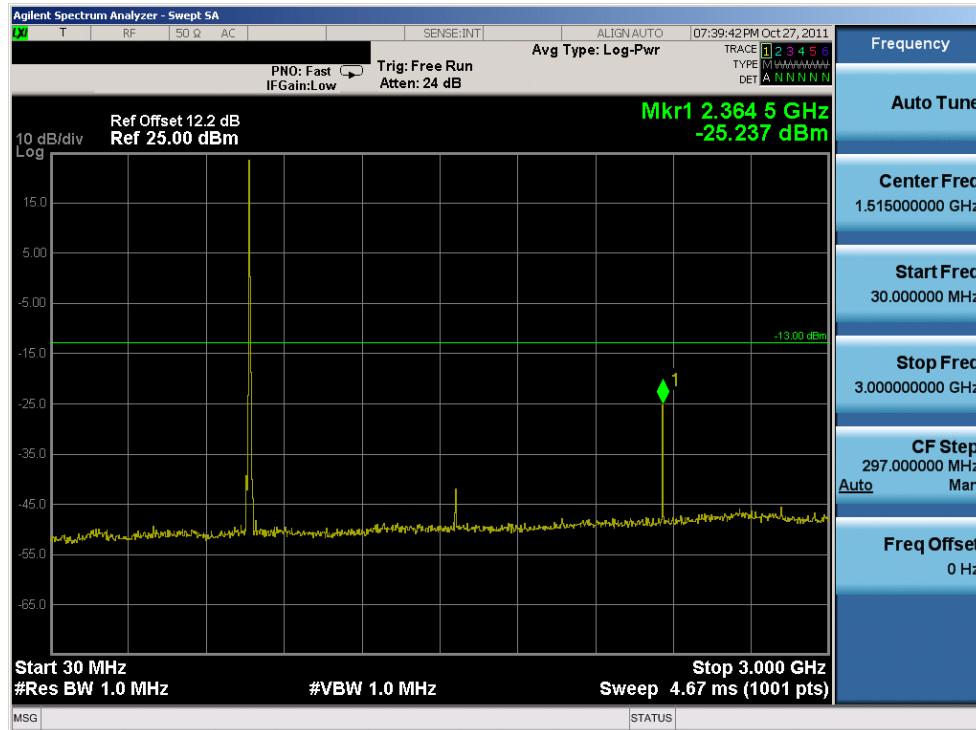
FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)			HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module			Page 46 of 49



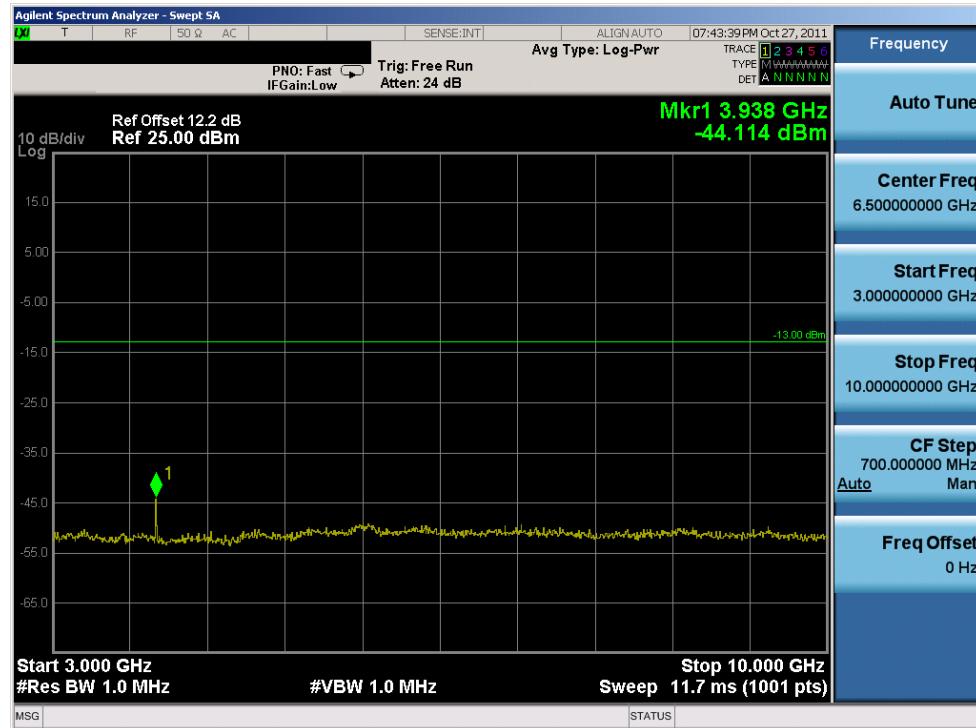
Plot 9-10. Occupied Bandwidth Plot (16QAM, 25RB)

FCC ID: BV8BBPBM100	PCTEST® ENGINEERING LABORATORY, INC.		FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module			Page 47 of 49

Out-of-Band Spurious Emissions Note: For the following conducted spurious emission plots, all modulations and RB configurations were tested. Worst case emissions were found in QPSK modulation, 1RB, and 0 RB Offset. Worst case plots are reported below:



Plot 9-11. Conducted Spurious Plot (790.5MHz)



Plot 9-12. Conducted Spurious Plot (790.5 MHz)

FCC ID: BV8BBPBM100	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)		HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		Page 48 of 49

10.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Harris Wireless Module** **FCC ID: BV8BBPBM100** complies with all the requirements of Parts 2 and 27 of the FCC rules.

FCC ID: BV8BBPBM100	 PCTEST [®] ENGINEERING LABORATORY, INC.	FCC Pt. 27 LTE MEASUREMENT REPORT (CERTIFICATION)	 HARRIS	Reviewed by: Quality Manager
Test Report S/N: 0Y1110271888-R4.BV8	Test Dates: October 24-28, 2011	EUT Type: Wireless Module		Page 49 of 49