Testing Tomorrow's Technology

Application

For

Part 2, Subpart J, Paragraph 2.907 Equipment Authorization of Certification for an Intentional Radiator per Part 15, Subpart C, paragraphs 15.207, 15.209 and 15.247

For the

Camero tech

Model: Xaver100

FCC ID: 2AACLX100FW

UST Project: 15-0220
Issue Date: October 19, 2015

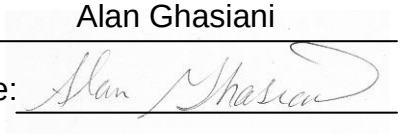
Total Pages in This Report: 46

3505 Francis Circle Alpharetta, GA 30004
PH: 770-740-0717 Fax: 770-740-1508
www.ustech-lab.com

I certify that I am authorized to sign for the Test Agency and that all of the statements in this report and in the Exhibits attached hereto are true and correct to the best of my knowledge and belief:

US TECH (Agent Responsible For Test):

By: Alan Ghasiani

Name: 

Title: Compliance Engineer – President

Date October 19, 2015

NVLAP LAB CODE 200162-0

3505 Francis Circle Alpharetta, GA 30004
PH: 770-740-0717 Fax: 770-740-1508
www.ustech-lab.com

MEASUREMENT TECHNICAL REPORT

COMPANY NAME: Camero tech

MODEL: Xaver100

FCC ID: 2AACLX100FW

DATE: October 19, 2015

This report concerns (check one): Original grant [X]
Class II change

Equipment type: 906 -920 MHz Transmitter Module

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes_____ No X

If yes, defer until: _____N/A_____
date
agrees to notify the Commission by N/A
date
of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

US Tech
3505 Francis Circle
Alpharetta, GA 30004

Phone Number: (770) 740-0717
Fax Number: (770) 740-1508

Table of Contents

List of Figures

Figures **Title** **Page**

List of Tables

Table **Title** **Page**

List of Attachments

Agency Agreement
Application Forms
Letter of Confidentiality
Equipment Label(s)
Block Diagram(s)
Schematic(s)
Test Configuration Photographs
Internal Photographs
External Photographs
Antenna Photographs
Theory of Operation
RF Exposure
User's Manual

1 General Information

1.1 Purpose of this Report

This report is prepared as a means of conveying test results and information concerning the suitability of this exact product for public distribution according to the FCC Rules and Regulations Part 15, Section 247.

This test report covers the ZigBee transmitter portion of the Xaver100 product.

1.2 Characterization of Test Sample

The sample used for testing was received by US Tech on September 30, 2015 in good operating condition.

1.3 Product Description

The Equipment Under Test (EUT) is the Camero tech, Model Xaver100. The Xaver100 is a through wall imaging device designed for rapid deployment in tactical operation. The system is compact, lightweight, and capable of achieving high resolution real-time single dimensional imaging of people behind walls. The EUT also has a Zigbee radio for remote viewing. The UWB has been tested and results are detailed in a separate test report (see US Tech report 15-0219).

Frequency and Operation: 906 MHz to 920 MHz
Antenna Type: Monopole Antenna
Antenna Gain: 0 dBi
Modulation Type: OQPSK-250
Data Rate: 250 Kbps
Packet Type: 90 bytes per packet, 20 packets per second

1.4 Configuration of Tested System

The Test Sample was tested per *ANSI C63.4:2009, Methods of Measurement of Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (2009/2014)*, ANSI C63.10.2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and per FCC KDB Publication number 558074 D01 v03r03 D01 v03r03 for Digital Transmission Systems Operation Under section 15.247.

A list of EUT and Peripherals is found in Table 1 below. A block diagram of the tested system is shown in Figure 1. Test configuration photographs are provided in separate Appendices.

1.5 Test Facility

Testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA 30004. This site has been fully described and registered with the FCC. Its designation number is 186022. Additionally this site has also been fully described and submitted to Industry Canada (IC), and has been approved under file number 9900A-1.

1.6 Related Submittals

The EUT is subject to the following FCC authorizations:

a) Certification under section 15.247 as a transmitter.
b) Certification under section 15.510 as a transmitter
b) Verification under 15.101 as a digital device and receiver.

The Verification requirement shares many common report elements with the Certification report. Therefore, though this report is mostly intended to provide data for the Certification process, the Verification authorization report (part 15.107 and 15.109) for the EUT is included herein.

Table 1. EUT and Peripherals

PERIPHERAL MANUFACTURER.	MODEL NUMBER	SERIAL NUMBER	FCC ID: IC:	CABLES P/D
UWB/Wireless Transmitter Camero tech	Xaver100	500046	FCC ID: 2AACLX100FW (pending)	N/A
Wireless Transmitter Camero tech	XaverNET USB Dongle	08335140020	FCC ID: 2AACLXNETUSB (pending)	N/A
Antenna See antenna details	--	--	--	--

U= Unshielded
S= Shielded
P= Power
D= Data

2 Tests and Measurements

2.1 Test Equipment

The table below lists test equipment used to evaluate this product. Model numbers, serial numbers and their calibration status are indicated.

Table 2. Test Instruments

TEST INSTRUMENT	MODEL NUMBER	MANUFACTURER	SERIAL NUMBER	DATE OF LAST CALIBRATION
SPECTRUM ANALYZER	E4407B	AGILENT	US41442935	1/28/2015
LOOP ANTENNA	SAS-200/562	A.H. Systems	142	9/30/2015 2 yr.
BICONICAL ANTENNA	3110B	EMCO	9306-1708	11/24/2014 2 yr.
LOG PERIODIC ANTENNA	3146	EMCO	9110-3236	11/19/2014 2 yr.
HORN ANTENNA	SAS-571	A.H. Systems	605	8/25/2015 2 yr.
HORN ANTENNA	3116	EMCO	9505-2255	1/27/2015 2 yr.
PRE-AMPLIFIER	8449B	HEWLETT-PACKARD	3008A00480	12/5/2014
PRE-AMPLIFIER	8477E	HEWLETT-PACKARD	1145A00307	11/21/2014
PRE-AMPLIFIER	8447D	HEWLETT-PACKARD	1937A02980	12/4/2014

Note: The calibration interval of the above test instruments are 12 months unless stated otherwise and all calibrations are traceable to NIST/USA.

2.2 Modifications to EUT Hardware

No physical modifications were made by US Tech in order to bring the EUT into compliance with FCC Part 15, Subpart C Intentional Radiator Limits for the transmitter portion of the EUT or the Subpart B Unintentional Radiator Limits (Receiver and Digital Device) Requirements.

2.3 Number of Measurements for Intentional Radiators (15.31(m))

Measurements of intentional radiators or receivers shall be performed and reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in Table 3 below.

Table 3. Number of Test Frequencies for Intentional Radiators

Frequency Range over which the device operates	Number of Frequencies	Location in the Range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near the top 1 near the bottom
Greater than 10 MHz	3	1 near top 1 near middle 1 near bottom

Because the EUT operates at 906 MHz to 920 MHz, 3 test frequencies were used.

2.4 Frequency Range of Radiated Measurements (Part 15.33)

2.4.1 Intentional Radiator

The spectrum shall be investigated for the intentional radiator from the lowest RF signal generated in the EUT, without going below 9 kHz to the 10^{th} harmonic of the highest fundamental frequency generated or 40 GHz, whichever is the lowest.

2.4.2 Unintentional Radiator

For the digital device, an unintentional radiator, the frequency range shall be 30 MHz to 1000 MHz, or to 5 times the highest internal clock frequency.

2.5 Measurement Detector Function and Bandwidth (CFR 15.35)

The radiated and conducted emissions limits shown herein are based on the following:

2.5.1 Detector Function and Associated Bandwidth

On frequencies below 1000 MHz, the limits herein are based upon measurement equipment employing a CISPR Quasi-peak detector function and related measurement bandwidths (i.e. 9 kHz from 150 kHz to 30 MHz and 120 kHz from 30 MHz to 1000 MHz). Alternatively, measurements may be made with equipment employing a peak detector function as long as the same bandwidths specified for the Quasi-peak device are used.

2.5.2 Corresponding Peak and Average Requirements

Above 1000 MHz, radiated limits are based on measuring instrumentation employing an average detector function. When average radiated emissions are specified there is also a corresponding Peak requirement, as measured using a peak detector, of 20 dB greater than the average limit. For all measurements above 1000 MHz the Resolution Bandwidth shall be at least 1 MHz.

2.5.3 Pulsed Transmitter Averaging

When the radiated emissions limit is expressed as an average value, and the transmitter is pulsed, the measured field strength shall be determined by applying a Duty Cycle Correction Factor based upon dividing the total ON time during the first 100 ms period by 100 ms (or by the period if less than 100 ms). The duty cycle may be expressed logarithmically in dB.

NOTE: If the transmitter was programmed to transmit at >98% duty cycle, then, wherever applicable (where the detection mode was AVG) the duty cycle factor calculated will be applied.

2.6 EUT Antenna Requirements (CFR 15.203)

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. Only the antenna(s) listed in Table 4 will be used with this module.

Table 4. Allowed Antenna(s)

REPORT REFERENCE	MANUFACTURER	TYPE OF ANTENNA	MODEL	GAIN dB_i	TYPE OF CONNECTOR
UWB Antenna	Camero tech	UWB Flat Antenna	AN002	N/A	N/A
Zigbee Antenna	SAMWOO	Monopole Antenna	SMAP-900-1	0	SMA

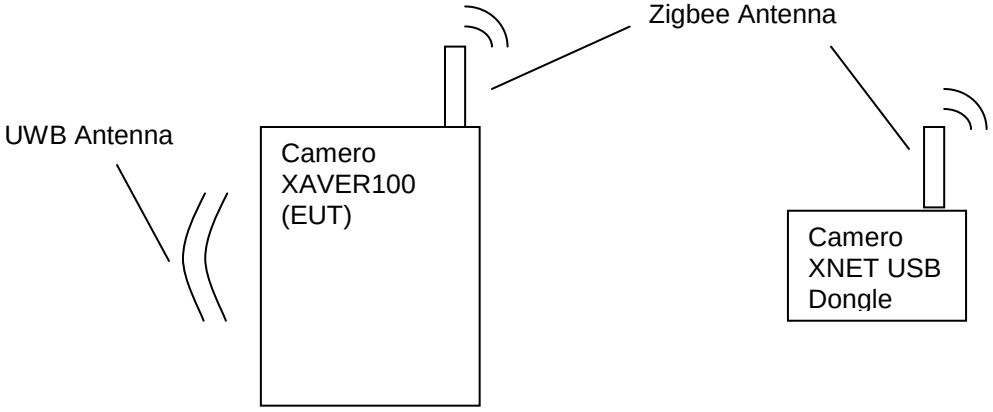


Figure 1. Block Diagram of Test Configuration

2.7 Restricted Bands of Operation (Part 15.205)

Only spurious emissions can fall in the frequency bands of CFR 15.205. The field strength of these spurious cannot exceed the limits of 15.209. Radiated harmonics and other Spurious are examined for this requirement see paragraph 2.1

2.8 Transmitter Duty Cycle (CFR 35 (c))

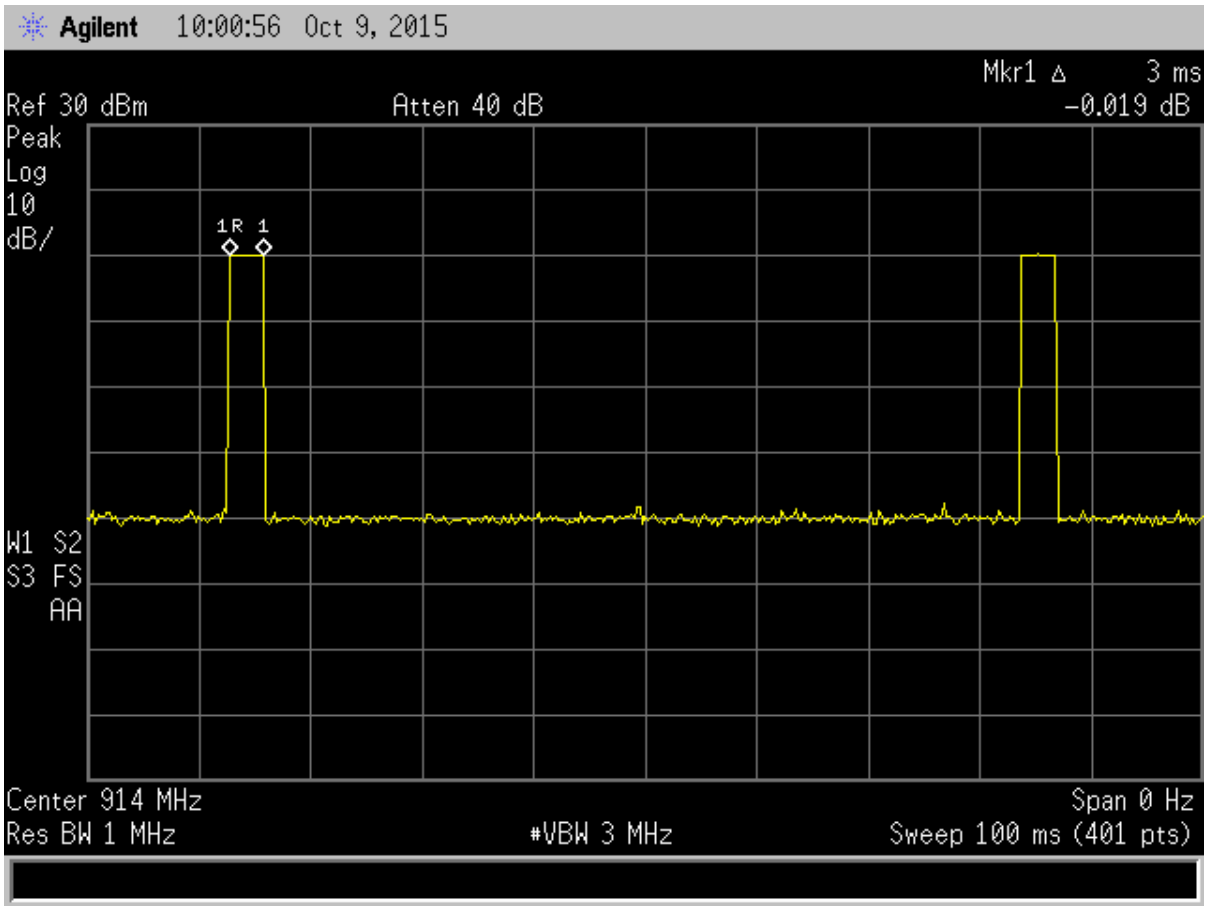


Figure 2. Pulse Width

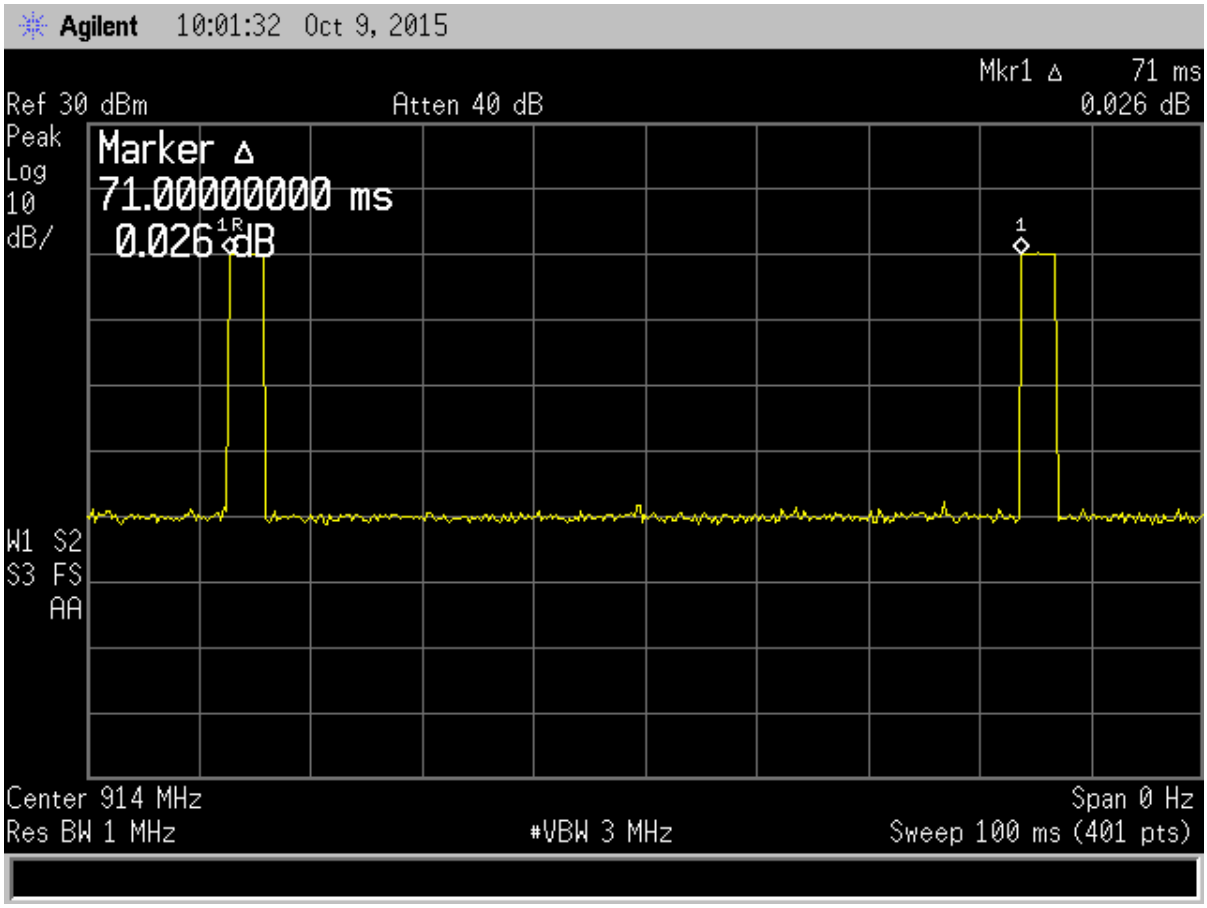


Figure 3. Pulse Train

TOTAL Time On from Figure 3 = 3 ms
TOTAL Pulse Train from Figure 3 = 71 ms

(3 ms Total Time On)/(71 ms Total Pulse Train) = 0.042 Numeric Duty cycle
Duty Cycle = 20 Log (0.66) = -27.48 dB

NOTE: The transmitter was programmed to transmit at >98% duty cycle, therefore wherever applicable (where the detection mode was AVG) the duty cycle factor calculated above will be applied.

2.9 Intentional Radiator, Power Line Conducted Emissions (CFR 15.207)

The EUT is battery powered. During normal operation the EUT is battery powered and will not be operated while directly or indirectly connected to the AC mains. The EUT can be operated with either four CR123 or two AA. There is no significant difference in the EUT's operation or emissions with the EUT operating with either type of battery. This test was not applicable.

2.10 Intentional Radiator, Radiated Emissions (CFR 15.209, 15.247(d)) (IC RSS 247, 5.4)

Radiated Spurious measurements: the EUT was placed into a transmit mode of operation and tested per FCC KDB Publication 558074 D01 v03r03 and ANSI C63.10:2013. A preliminary scan was performed on the EUT to find signal frequencies that were caused by the transmitter part of the device. To obtain worse case results the EUT was tested in X, Y, and Z axes or in the orientation of normal operation if the device is designed to operation in a fixed position.

Radiated measurements were then conducted between the frequency range of 9KHz (or lowest frequency used/generated by the device) up to the tenth harmonic of the device (no greater than 40 GHz). In the band below 30 MHz a resolution bandwidth (RBW) of 9 kHz was used, emissions below 1 GHz were tested with a RBW of 120 KHz and emissions above 1 GHz were tested with a RBW of 1 MHz. All video bandwidth settings were at least three times the RBW value.

The EUT was investigated to CFR 15.209, General requirements for unwanted spurious emissions. The conducted spurious method as described below was use to investigate all other emissions emanating from the antenna port.

Conducted Spurious measurements: the EUT was put into a mode of operation and tested per FCC KDB Publication 558074 D01 v03r03 for conducted out of band emissions emanating from the antenna port over the frequency range of 30 MHz to 25 GHz. A conducted scan was performed on the EUT to identify and record spurious signals that were related to the transmitter. All spurious emission found must comply with the requirements of 15.247(d).

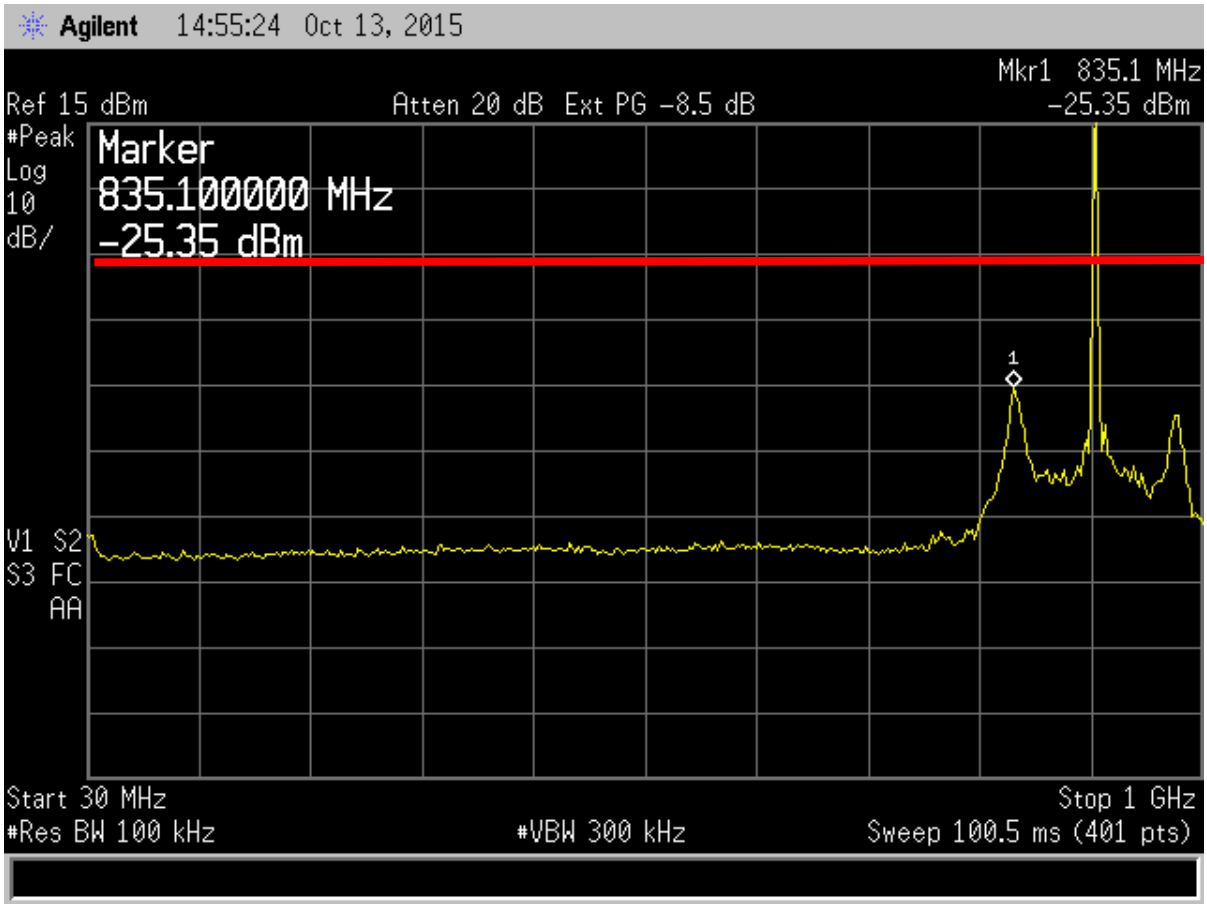


Figure 4. Antenna Conducted Emissions Low Channel, Part 1

Note: The Ext PG is used to correct for cable loss and attenuator used. The reference level was set to the PSD value of the fundamental with a 100 kHz RBW. The red line is 20 dB down from the measured fundamental. The large emission seen is the fundamental carrier.

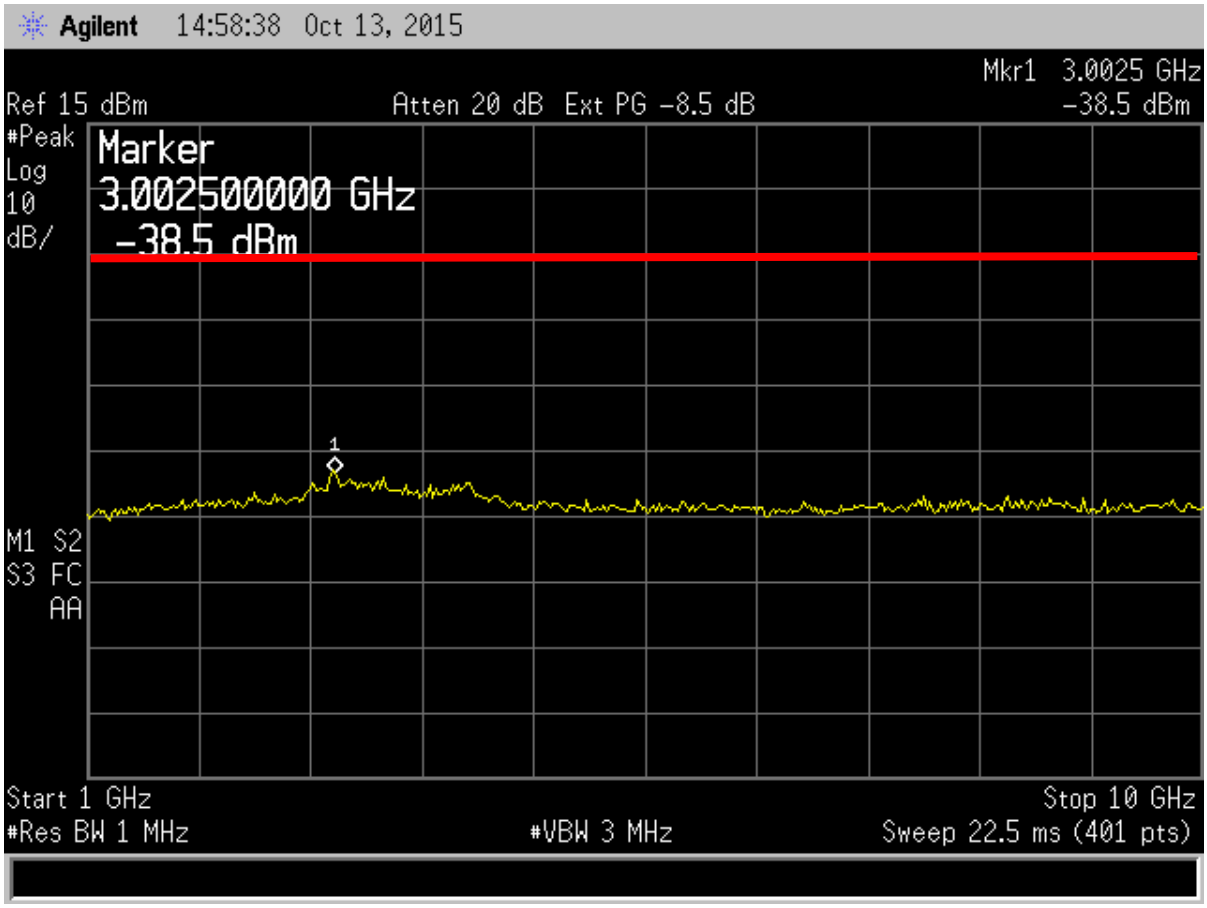


Figure 5. Antenna Conducted Emissions Low, Part 2

Note: The Ext PG is used to correct for cable loss and attenuator used. The reference level was set to the PSD value of the fundamental with a 100 kHz RBW. The red line is 20 dB down from the measured fundamental.

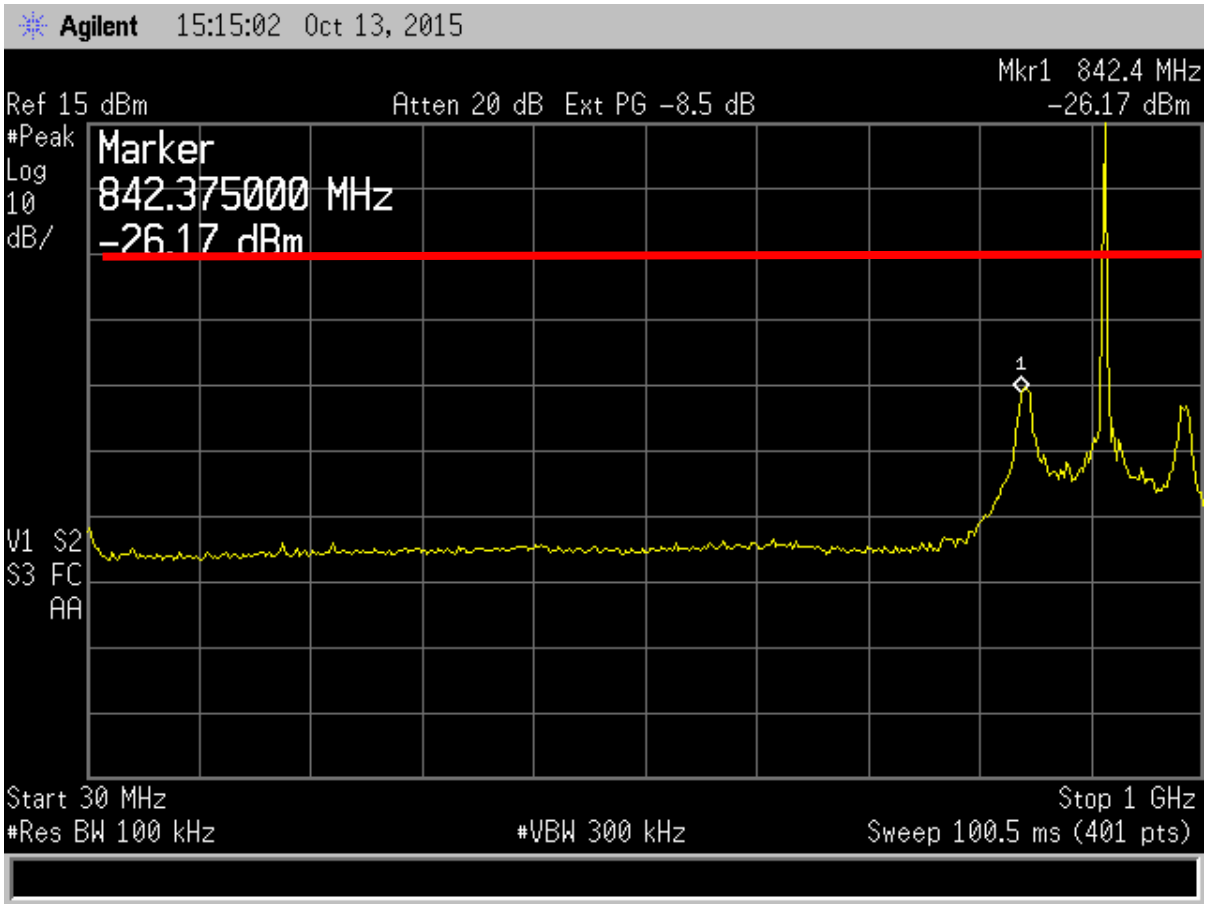


Figure 6. Antenna Conducted Emissions Mid, Part 1

Note: The Ext PG is used to correct for cable loss and attenuator used. The reference level was set to the PSD value of the fundamental with a 100 kHz RBW. The red line is 20 dB down from the measured fundamental. The large emission seen is the fundamental carrier.

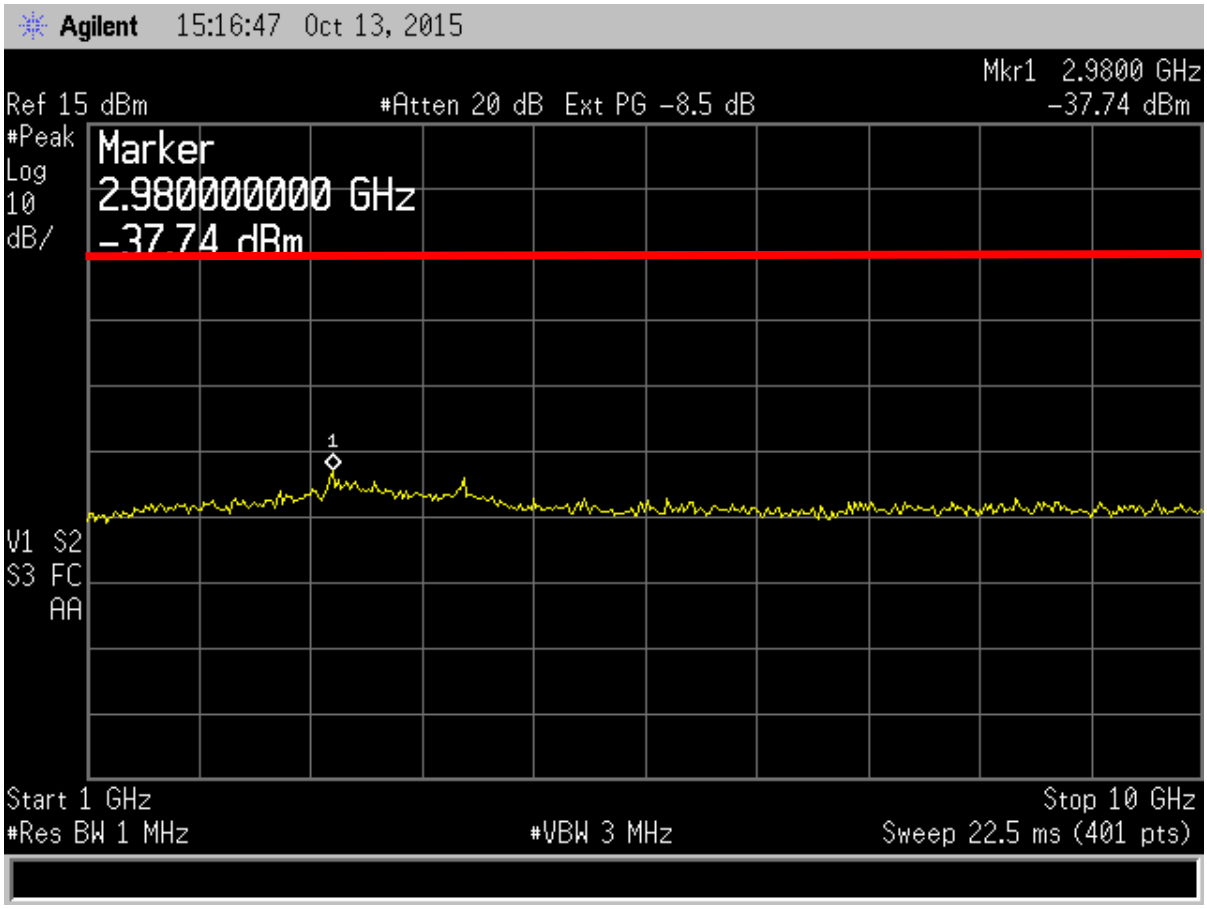


Figure 7. Antenna Conducted Emissions Mid, Part 2

Note: The Ext PG is used to correct for cable loss and attenuator used. The reference level was set to the PSD value of the fundamental with a 100 kHz RBW. The red line is 20 dB down from the measured fundamental.

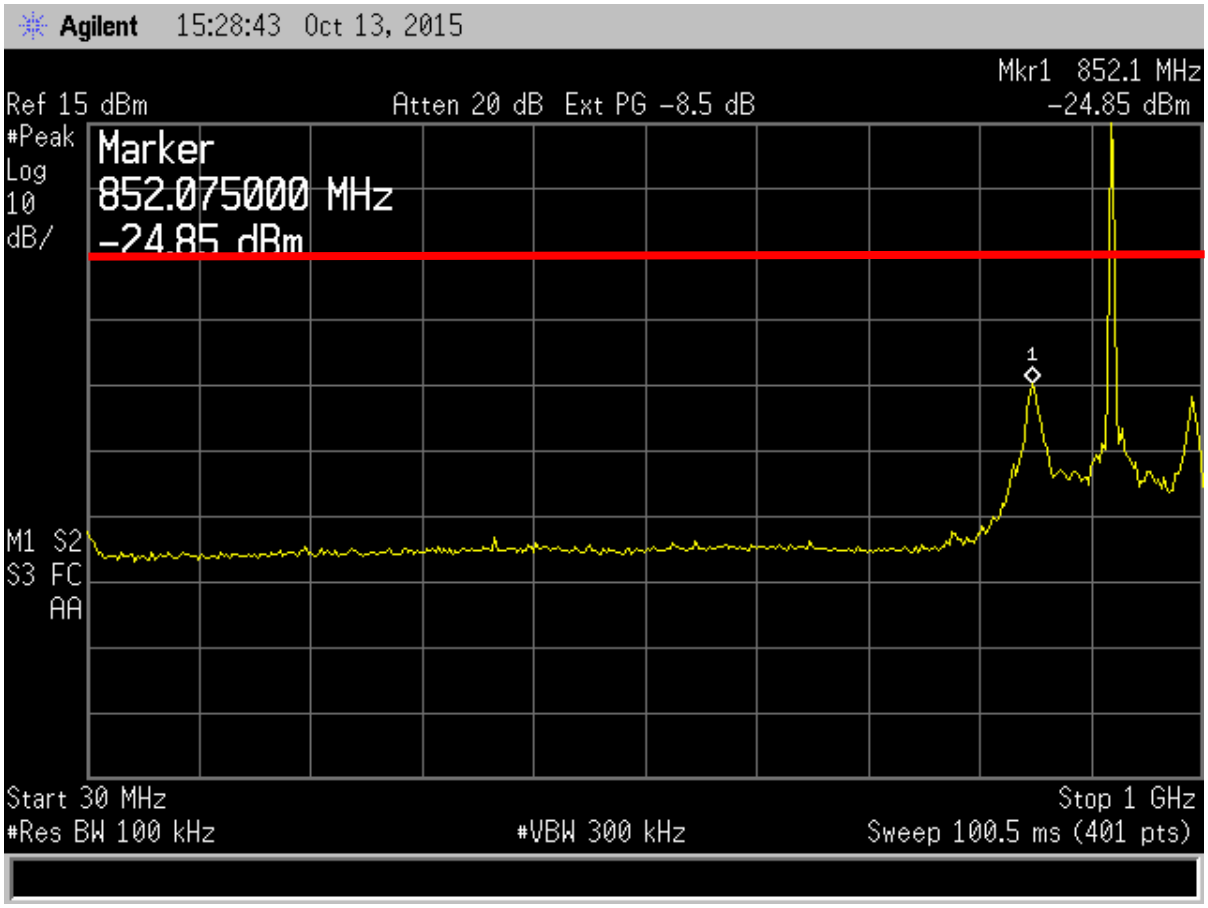


Figure 8. Antenna Conducted Emissions High, Part 1

Note: The Ext PG is used to correct for cable loss and attenuator used. The reference level was set to the PSD value of the fundamental with a 100 kHz RBW. The red line is 20 dB down from the measured fundamental. The large emission seen is the fundamental carrier.

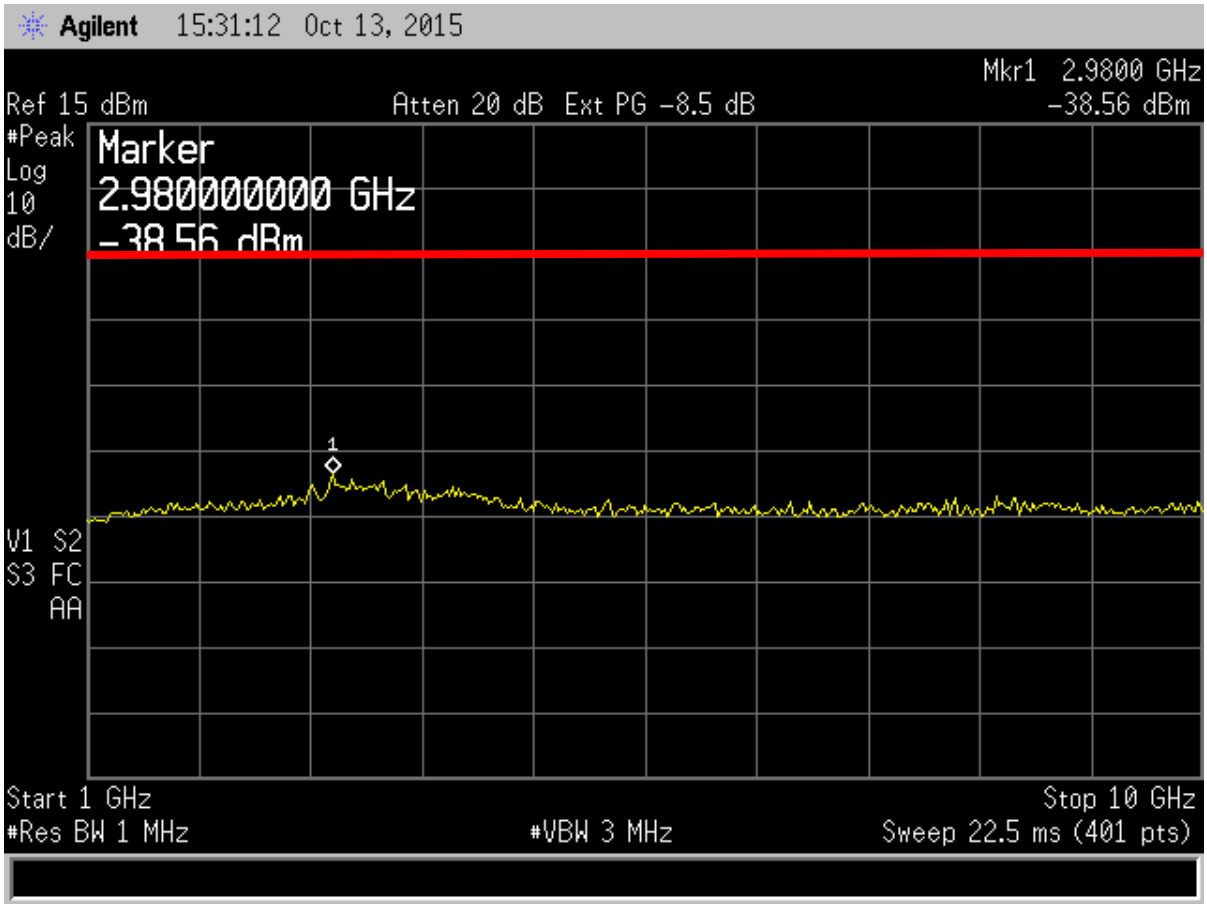


Figure 9. Antenna Conducted Emissions High, Part 2

Note: The Ext PG is used to correct for cable loss and attenuator used. The reference level was set to the PSD value of the fundamental with a 100 kHz RBW. The red line is 20 dB down from the measured fundamental.

Table 5. Spurious Radiated Emissions below 30 MHz

9 kHz to 30 MHz, 15.209 limits							
Test: Radiated Emissions				**Client:** Camero tech			
Project: 15-0220				**Model:** Xaver100			
Frequency (MHz)	**Test Data (dBuv)**	**AF+CA-AMP (dB/m)**	**Results (dBuV/m)**	**AVG Limits (dBuV/m)**	**Antenna Distance/ Polarization**	**Margin (dB)**	**Detector PK, or AVG**
No emissions higher than 20 dB from the applicable limit between the lowest clock frequency and 30 MHz were detected.							

SAMPLE CALCULATION: N/A

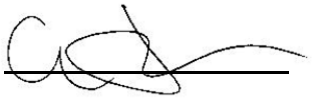
Test Date: October 14, 2015
Tested By
Signature:  Name: Carrie Ingram

Table 6. Spurious Radiated Emissions

30 MHz to 1000 MHz, 15.247 limits							
Test: Radiated Emissions				**Client:** Camero tech			
Project: 15-0220				**Model:** Xaver100			
Frequency (MHz)	**Test Data (dBuv)**	**AF+CA-AMP (dB/m)**	**Results (dBuV/m)**	**AVG Limits (dBuV/m)**	**Antenna Distance/ Polarization**	**Margin (dB)**	**Detector PK, or AVG**
Low Channel							
834.00	57.22	6.13	63.35	65.04	3m./VERT	1.69	PK
980.00	33.63	9.96	43.59	54.0	3m./VERT	10.40	QP
Mid Channel							
844.40	54.91	7.00	61.91	67.14	3m./VERT	5.23	PK
986.018	27.93	11.22	39.15	54.0	3m./VERT	14.90	QP
High Channel							
850.00	54.01	6.72	60.73	66.84	3m./VERT	6.11	PK
992.00	34.47	10.30	44.77	54.0	3m./VERT	9.20	PK

Note: Limits were determined by 20 dB from the Fundamental carrier see Table 8. Below. If emissions fell into a restricted band, then restricted band limits were used.

Sample Calculation at 834.00 MHz:

Magnitude of Measured Frequency	57.22	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	6.13	dB/m
Corrected Result	63.35	dBuV/m

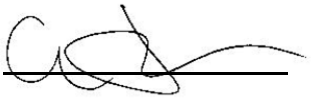
Test Date: October 9, 2015
Tested By
Signature:  Name: Carrie Ingram

Table 7. Peak Radiated Fundamental & Harmonic Emissions

Test: FCC Part 15, Para 15.209, 15.247(d)					**Client:** Camero tech			
Project: 15-0220					**Model:** Xaver100			
Frequency (MHz)	**Test Data (dBuV)**	**Factor (dB)**	**AF+CA -AMP (dB/m)**	**Results (dBuV/m)**	**Limits (dBuV/m)**	**Antenna Distance/ Polarization**	**Margin (dB)**	**Detector Mode**
Low Channel								
906	82.14	-	24.60	106.74	-	3m./VERT	-	**PK**
1812	69.86	-	-8.33	61.53	86.7	3.0m./VERT	25.2	**PK**
2718	64.15	-	-3.12	61.03	74.0	3.0m./VERT	12.9	**PK**
Mid Channel								
914.00	82.64	-	24.50	107.14	-	3m./VERT	-	**PK**
1828.00	68.97	-	-8.33	60.64	87.1	3.0m./VERT	26.5	**PK**
2742.00	60.59	-	-3.12	57.47	74.0	3.0m./VERT	16.5	**PK**
High Channel								
920.00	82.34	-	24.50	106.84	-	3m./VERT	-	**PK**
1840.50	68.48	-	-8.09	60.39	86.8	3.0m./VERT	26.5	**PK**
2760.00	59.84	-	-3.22	56.62	74.0	3.0m./VERT	17.4	**PK**

1. (*) Falls within the restricted bands of CFR 15.205. Limits based on CFR15.209 & 20 dB relaxation for peak measurements of CFR 15.35.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10th harmonic
3. (~)Measurements taken at 1 meter were extrapolated to 3 meter using a factor of (-9.5 dB).
4. The EUT was placed in three orthogonal positions and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 906.00 MHz:

Magnitude of Measured Frequency	82.14	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	24.60	dB/m
Corrected Result	106.74	dBuV/m

Test Date: October 7, 2015
Tested By
Signature: _____ Name: Carrie Ingram

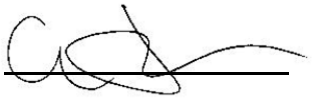
Table 8. Average Radiated Fundamental & Harmonic Emissions

Test: FCC Part 15, Para 15.209, 15.247(d)					**Client:** Camero tech			
Project: 15-0220					**Model:** Xaver100			
Frequency (MHz)	**Test Data (dBuV)**	**Factor (dB)**	**AF+CA -AMP (dB/m)**	**Results (dBuV/m)**	**Limits (dBuV/m)**	**Antenna Distance/ Polarization**	**Margin (dB)**	**Detector Mode**
Low Channel								
906	82.14	-20.00	24.60	86.74	-	3m./VERT	-	**PK**
1812	69.86	-20.00	-8.33	41.53	65.04	3.0m./VERT	25.2	**PK**
2718	64.15	-20.00	-3.12	41.03	54.0	3.0m./VERT	12.9	**PK**
Mid Channel								
914.00	82.64	-20.00	24.50	87.14	-	3m./VERT	-	**PK**
1828.00	68.97	-20.00	-8.33	40.64	67.14	3.0m./VERT	26.5	**PK**
2742.00	60.59	-20.00	-3.12	37.47	54.0	3.0m./VERT	16.5	**PK**
High Channel								
920.00	82.34	-20.00	24.50	86.84	-	3m./VERT	-	**PK**
1840.50	68.48	-20.00	-8.09	40.39	66.84	3.0m./VERT	26.5	**PK**
2760.00	59.84	-20.00	-3.22	36.62	54.0	3.0m./VERT	17.4	**PK**

1. (*) Falls within the restricted bands of CFR 15.205. Limits based on CFR15.209 & 20 dB relaxation for peak measurements of CFR 15.35.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10th harmonic
3. (~)Measurements taken at 1 meter were extrapolated to 3 meter using a factor of (-9.5 dB).
4. The EUT was placed in three orthogonal positions and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98%. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 906.00MHz:

Magnitude of Measured Frequency	82.14	dBuV
-Duty Cycle Correction Factor	-20.00	dB
+Antenna Factor + Cable Loss+ Amplifier Gain	24.60	dB/m
Corrected Result	86.74	dBuV/m

Test Date: October 7, 2015
Tested By
Signature:  Name: Carrie Ingram

2.11 Band Edge Measurements – (CFR 15.247 (d))

Band Edge measurements are made following the guidelines in FCC KDB Publication No. 558074 D01 v03r03 with the EUT initially operating on the Lowest Channel and then operating on the Highest Channel within its band of operation. Radiated measurements are performed to demonstrate compliance with the requirement of 15.247(d) that all emissions outside of the band edges be attenuated by at least 20 dB when compared to its highest in-band value (contained in a 100 kHz band).

To capture the band edge set the Spectrum Analyzer frequency span set to 2 MHz to capture the peak level of the emission operating on the channel closest to the band edge as well as any modulation products falling outside of the authorized band of operation. Conducted measurements are performed with RBW = 100 kHz. In all cases, the VBW is set ≥ RBW. See figure and calculations below for more detail.

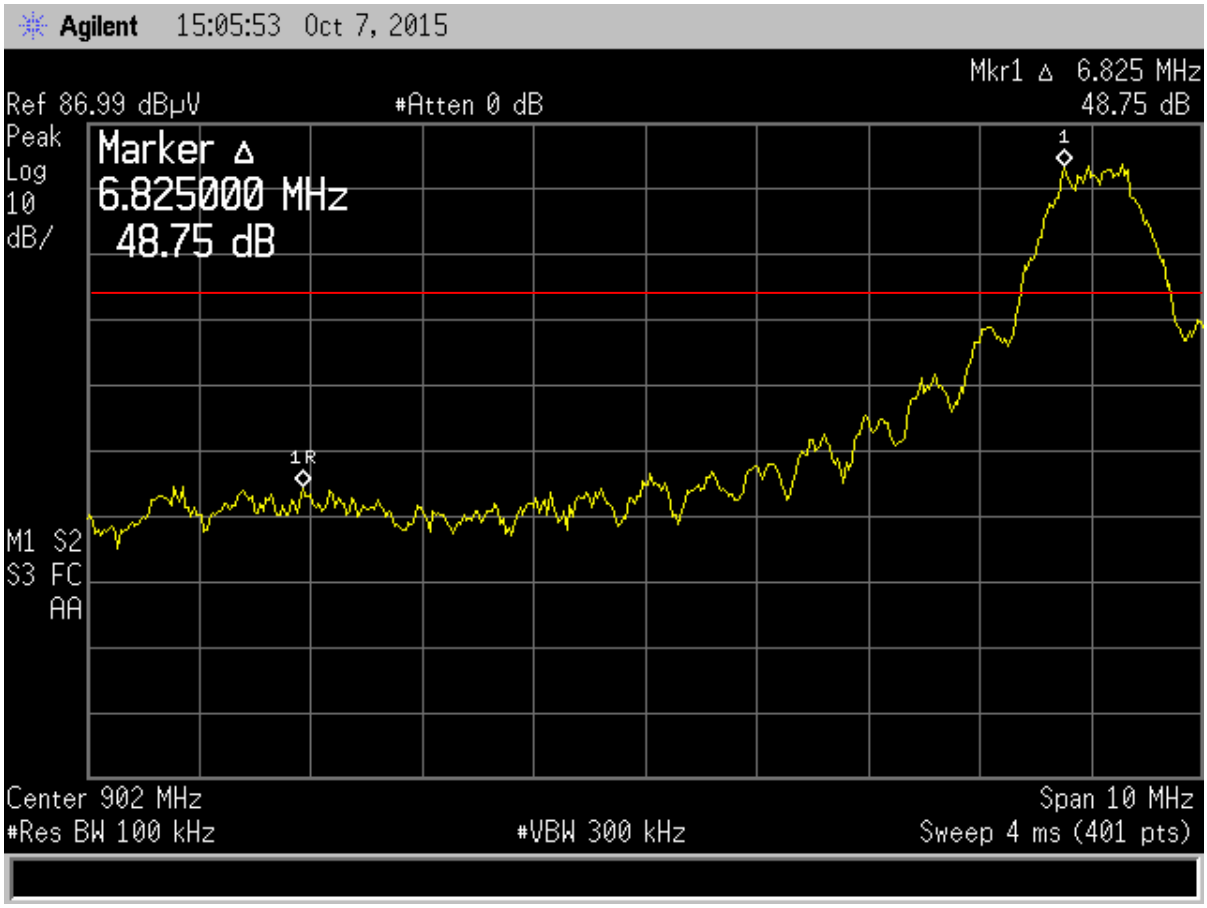


Figure 10. Band Edge Compliance, Low Channel Delta - Peak

Calculation of worst case lower band edge measurement:

Band Edge Calculated Results	48.75	dB
Band Edge Limit (20 dB form Fundamental)	20.00	dB
Band Edge Margin	28.75	dB

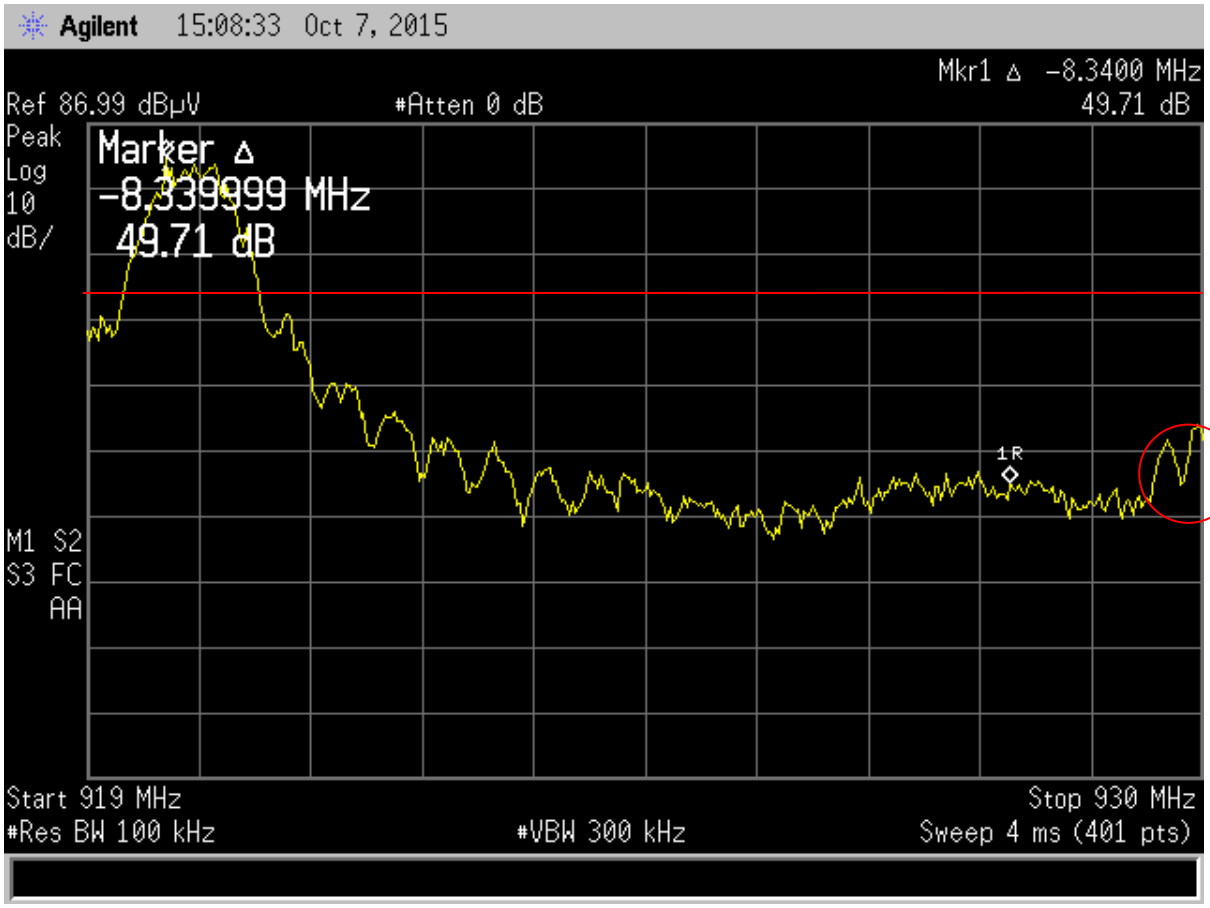


Figure 11. Band Edge Compliance, High Channel Delta – Peak

Note: Circled Emission is ambient emission, and is not from the radio.

Calculation of worst case lower band edge measurement:

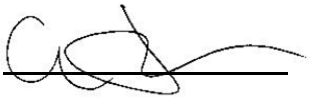
Band Edge Calculated Results	49.71	dB
Band Edge Limit (20 dB form Fundmental)	20.00	dB
Band Edge Margin	29.71	dB

2.12 Six (6) dB Bandwidth per CFR 15.247(a)(2)

The EUT antenna port was connected to a spectrum analyzer having a 50 Ω input impedance. Measurements were performed similar to the method of FCC, KDB Publication No. 558074 D01 v03r03 for a bandwidth of 6 dB. The RBW was set to 100 kHz and with the VBW ≥ 3* RBW. The results of this test are given in the table 11 below and Figures 12 -14 below.

Table 9. Six (6) dB Bandwidth

Frequency (MHz)	99 % Bandwidth (MHz)	6 dB Bandwidth (MHz)	Minimum FCC Bandwidth (MHz)
906	1.230	0.740	0.500
914	1.220	0.790	0.500
920	1.220	0.780	0.500

Test Date: October 13, 2015
Tested By
Signature:  Name: Carrie Ingram

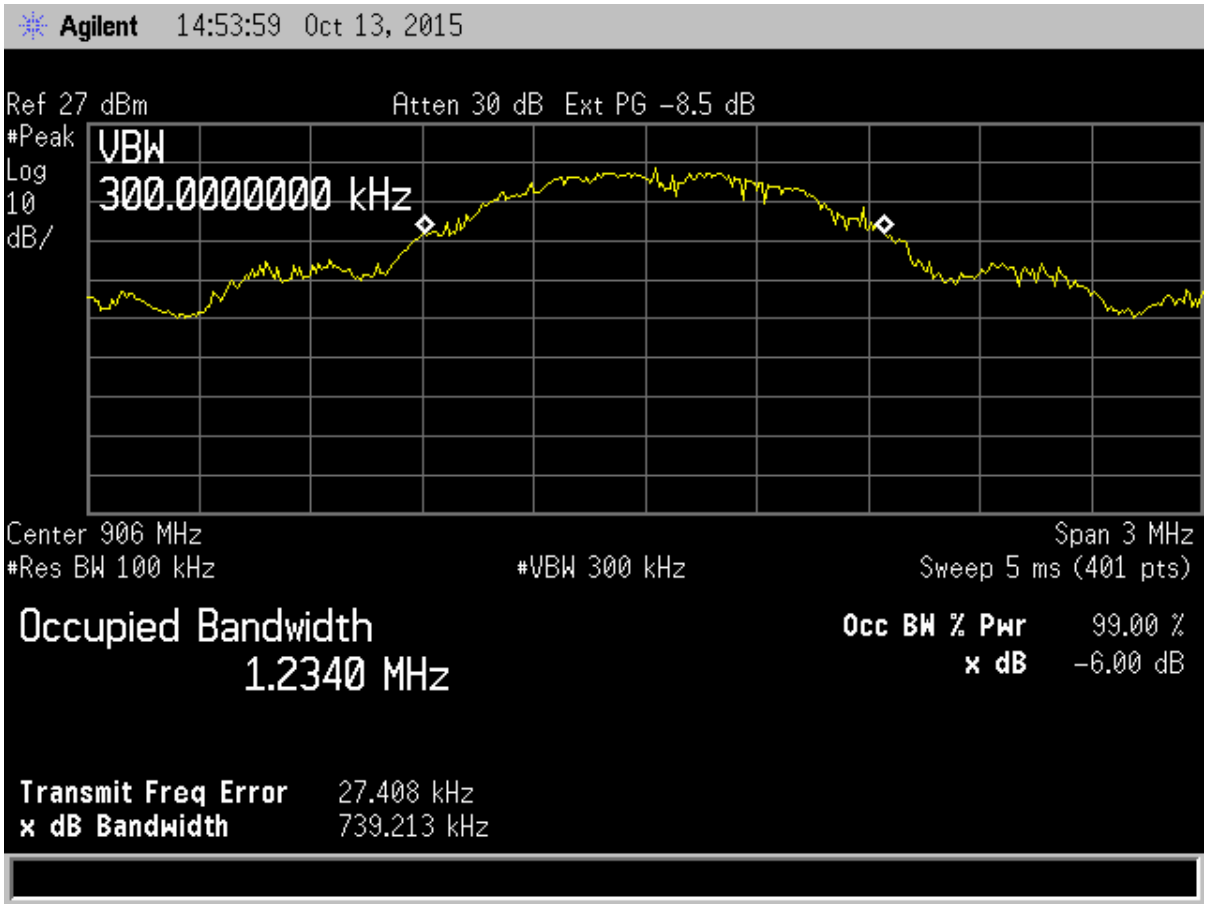


Figure 12. Six dB Bandwidth - 15.247 - Low Channel

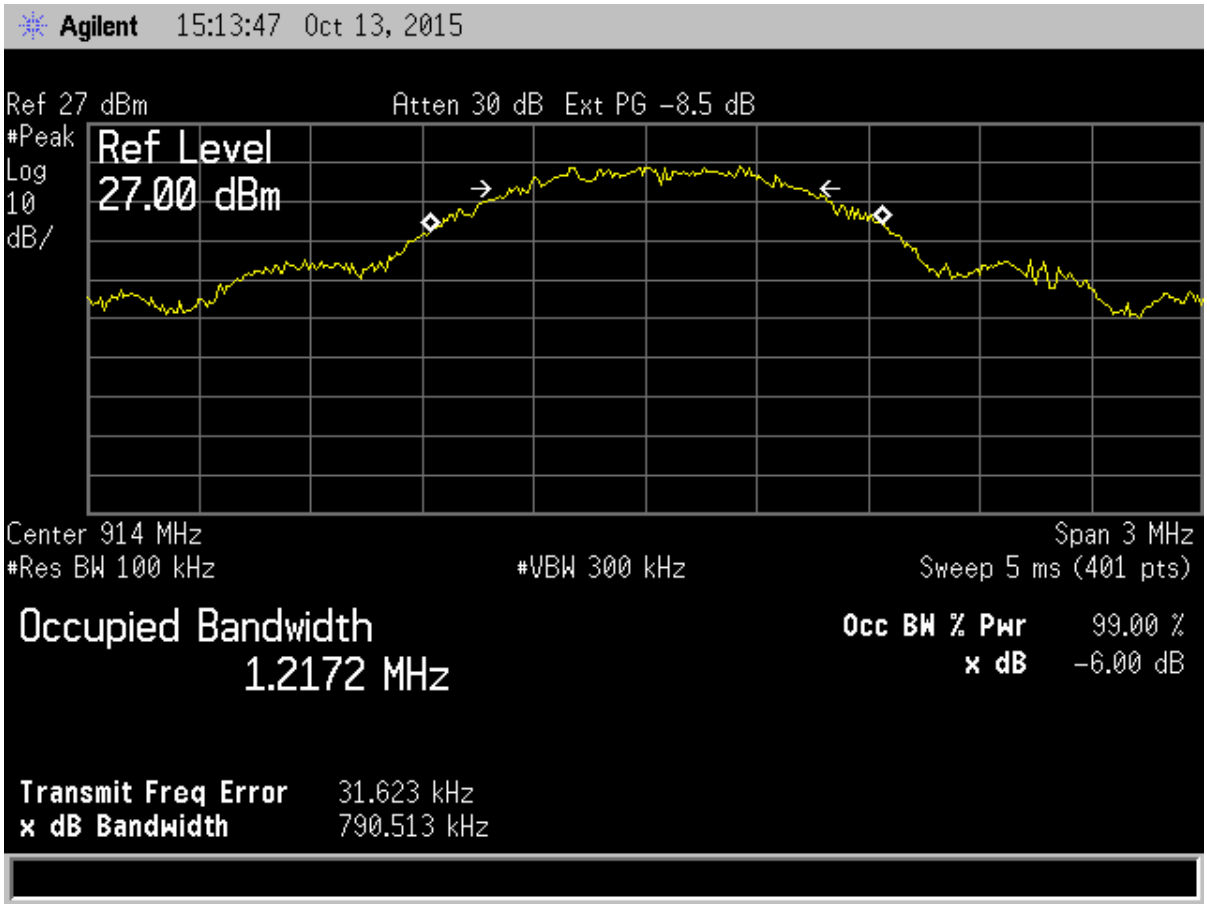


Figure 13. Six dB Bandwidth - 15.247 - Mid Channel

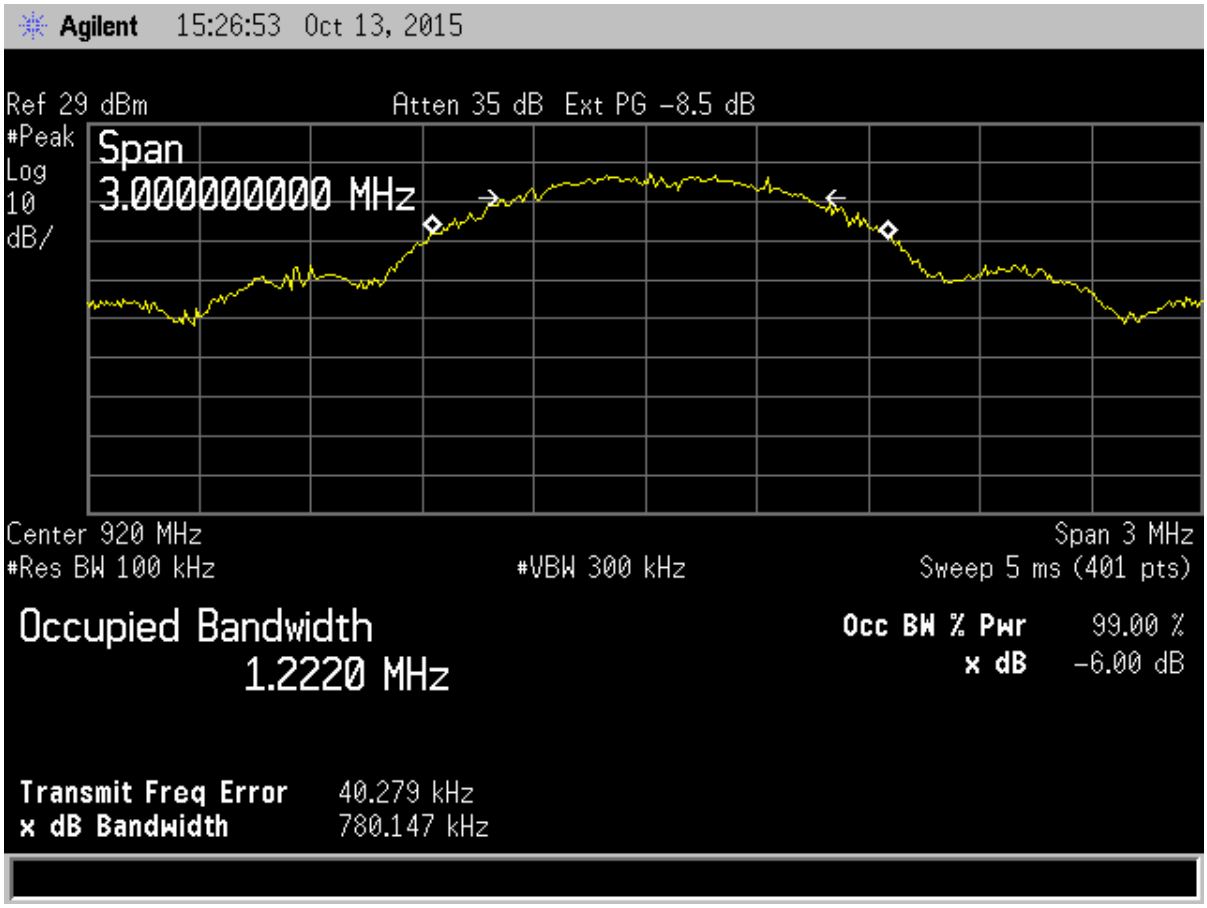


Figure 14. Six dB Bandwidth - 15.247 - High Channel

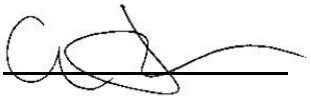
2.13 Maximum Peak Conducted Output Power (CFR 15.247 (b) (3))

The transmitter was programmed to operate at a maximum output power across the bandwidth.

Peak power within the band 906 MHz to 920 MHz was measured per FCC KDB Publication 558074 D01 v03r03 as an Antenna Conducted test with a spectrum analyzer by connecting the spectrum analyzer directly, via a short RF cable, and attenuators to the antenna output terminals on the EUT. The spectrum analyzer was set for an impedance of 50 Ω with the RBW set greater than the 6 dB bandwidth of the EUT, and the VBW ≥ RBW. Peak antenna conducted output power is tabulated in the table below.

Table 10. Peak Antenna Conducted Output Power per Part 15.247 (b) (3)

Frequency of Fundamental (MHz)	Raw Test Data dBm	Converted Data (W)	FCC Limit (W Maximum)
906	18.27	0.067	1.0
914	18.49	0.071	1.0
920	18.34	0.068	1.0

Test Date: October 13, 2015
Tested By
Signature:  Name: Carrie Ingram

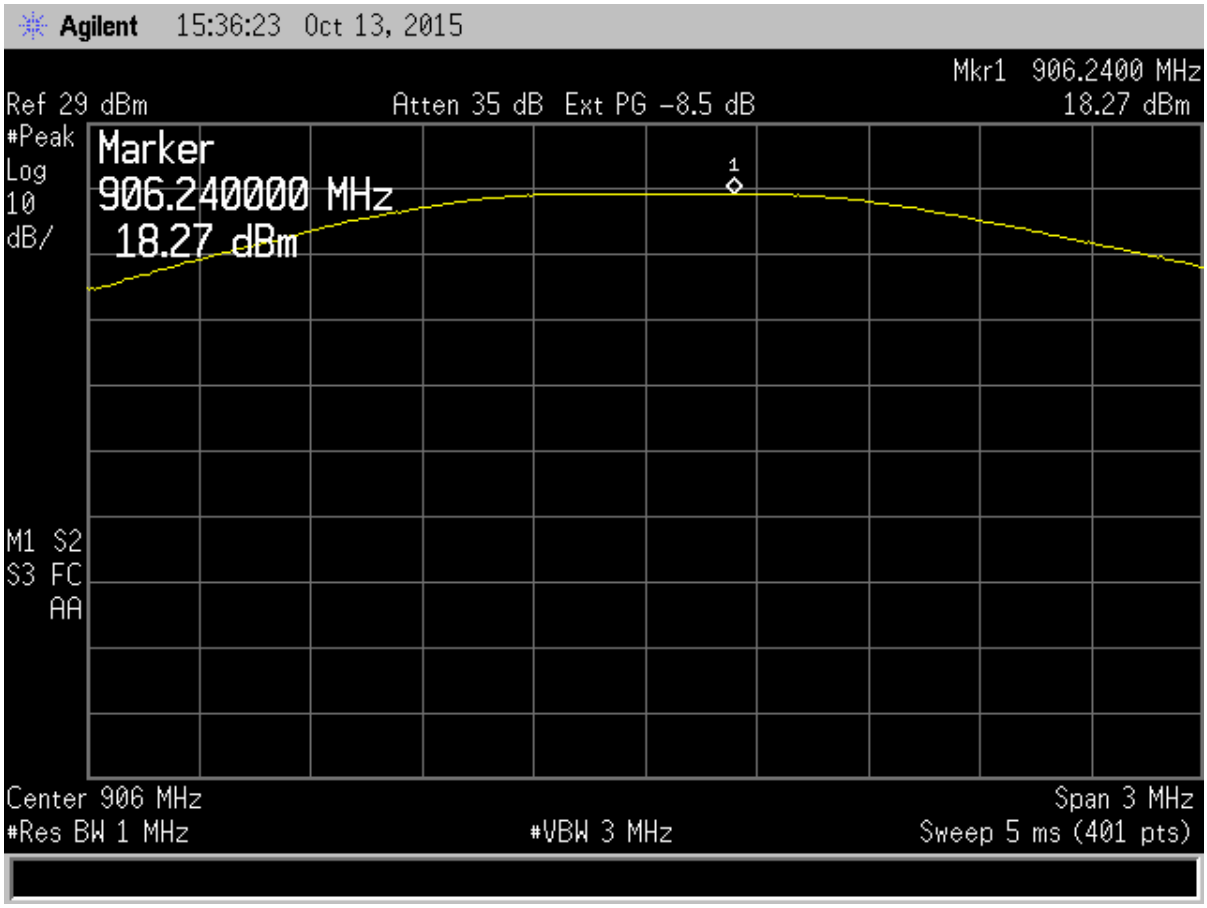


Figure 15. Peak Antenna Conducted Output Power, Low Channel

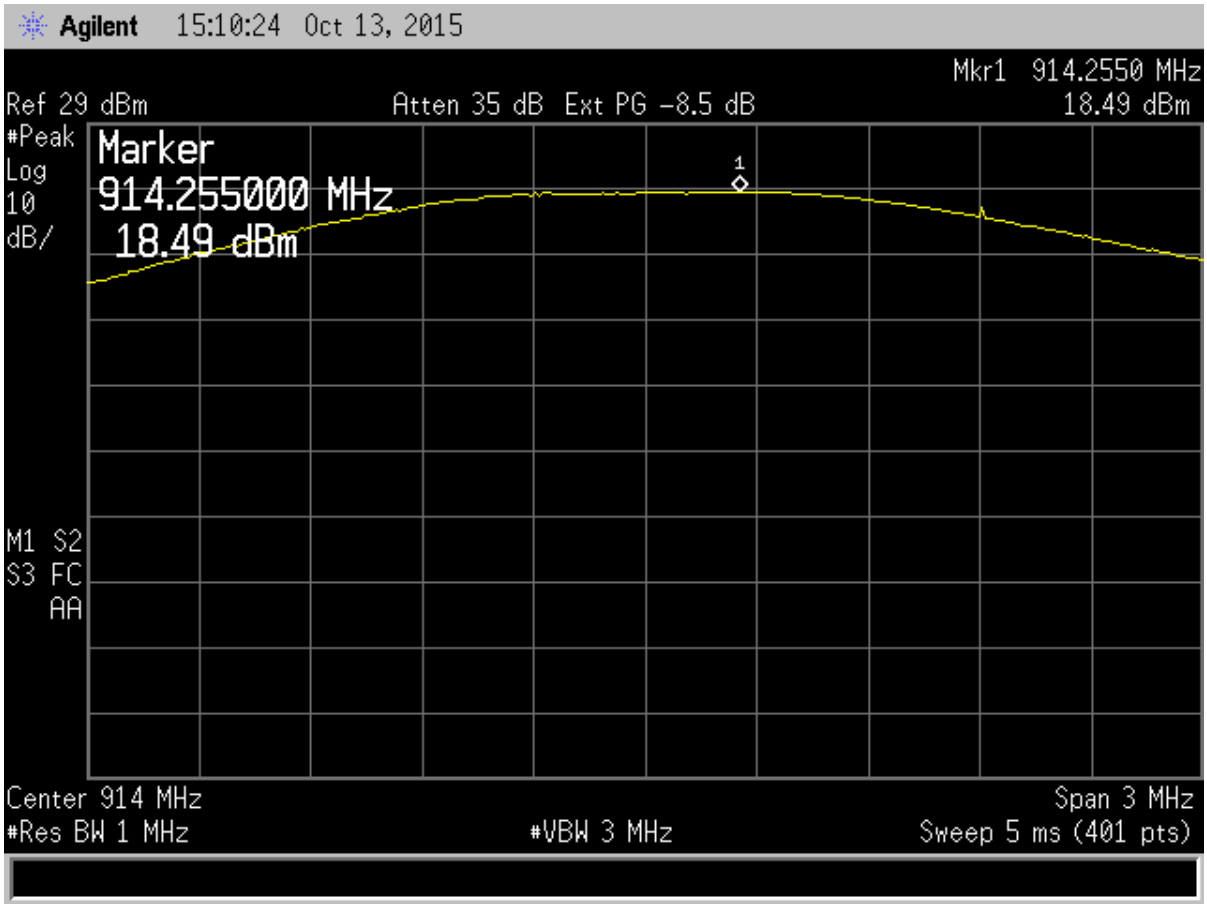


Figure 16. Peak Antenna Conducted Output Power, Mid Channel

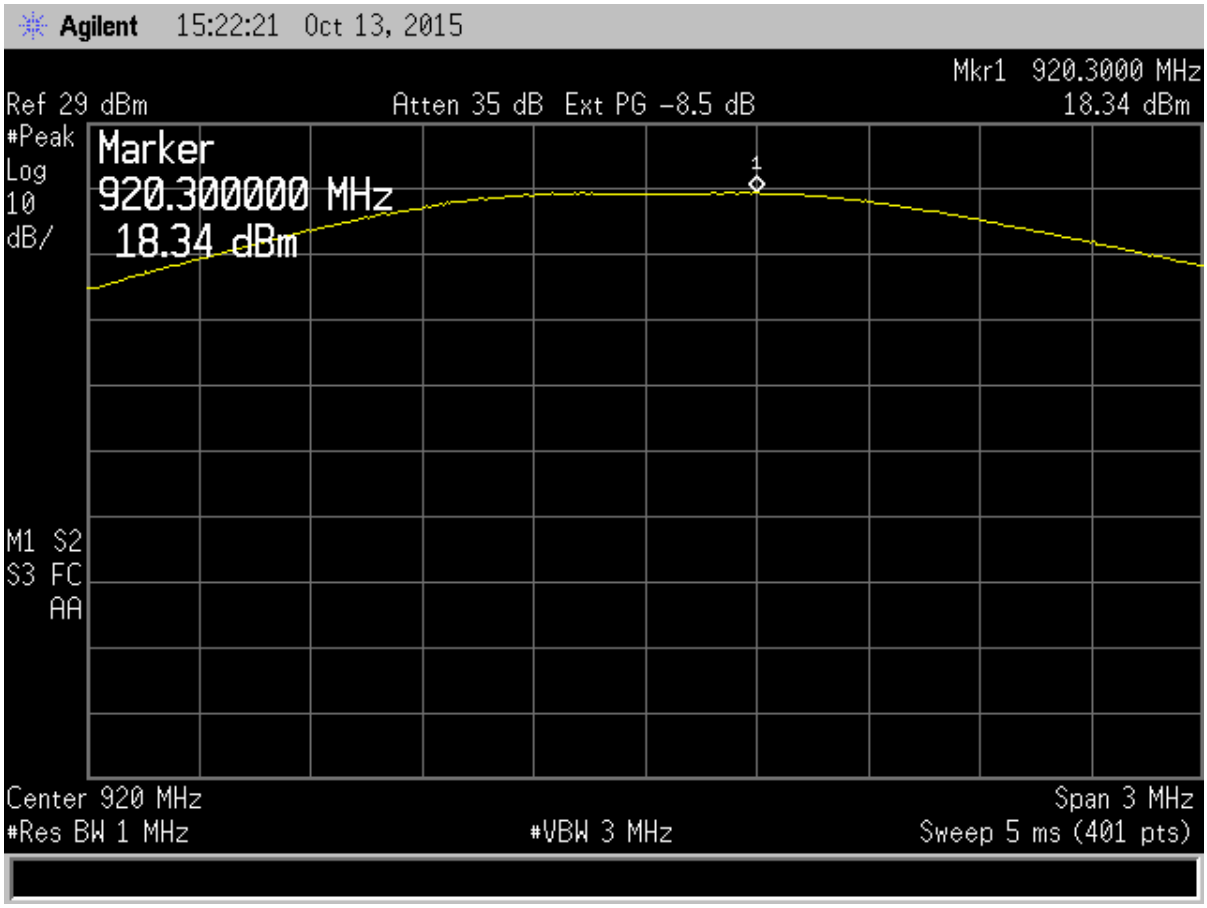


Figure 17. Peak Antenna Conducted Output Power, High Channel

2.14 Power Spectral Density (CFR 15.247(e)) (IC RSS 247 5.1 & 5.2)

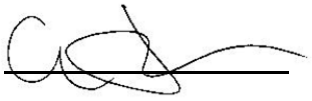
The measurements were performed per the procedures of FCC KDB Procedure 558074 D01 v03r03. The RBW was set to 100 kHz and the Video Bandwidth was set to ≥ 3 x RBW. The span was set to 1.5 times the DTS OBW. Since the EUT was not able to transmit continuously, the Duty Cycle correction factor of 27.48 dB was added to the raw PSD measured value.

In accordance with 15.247 (e), the power spectral density shall be no greater than +8 dBm per any 3 kHz band.

The following results show that all are less than +8 dBm per 3 kHz band.

Table 11. Power Spectral Density for Low, Mid and High Bands

Frequency (MHz)	Raw Test Data (dBm/3 kHz)	Corrected Test Data (dBm/3 kHz)	FCC Limit (dBm/3 kHz)
906	-58.83	-31.35	+8.0
914	-56.97	-29.49	+8.0
920	-56.47	-28.99	+8.0

Test Date: October 13, 2015
Tested By
Signature:  Name: Carrie Ingram

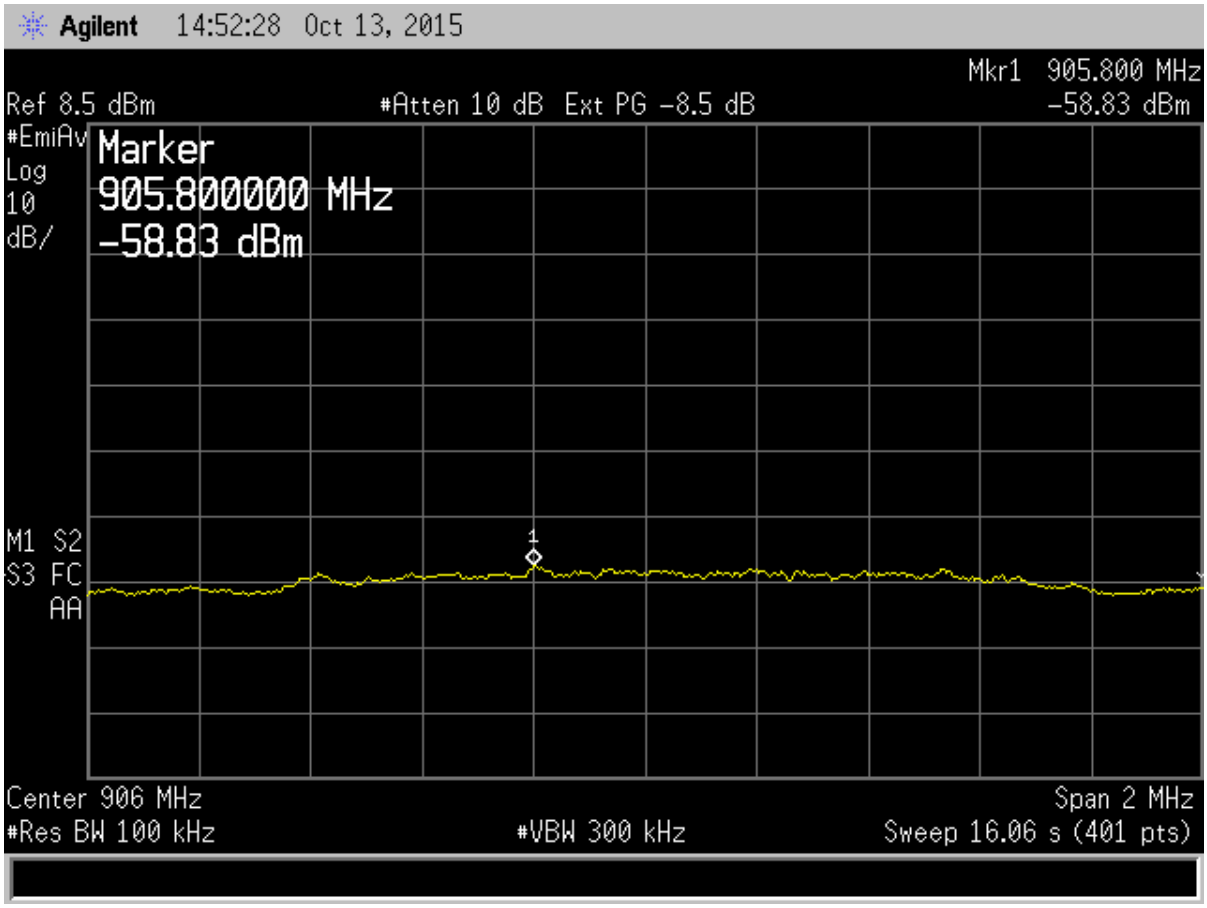


Figure 18. Peak Power Spectral Density, Low Channel

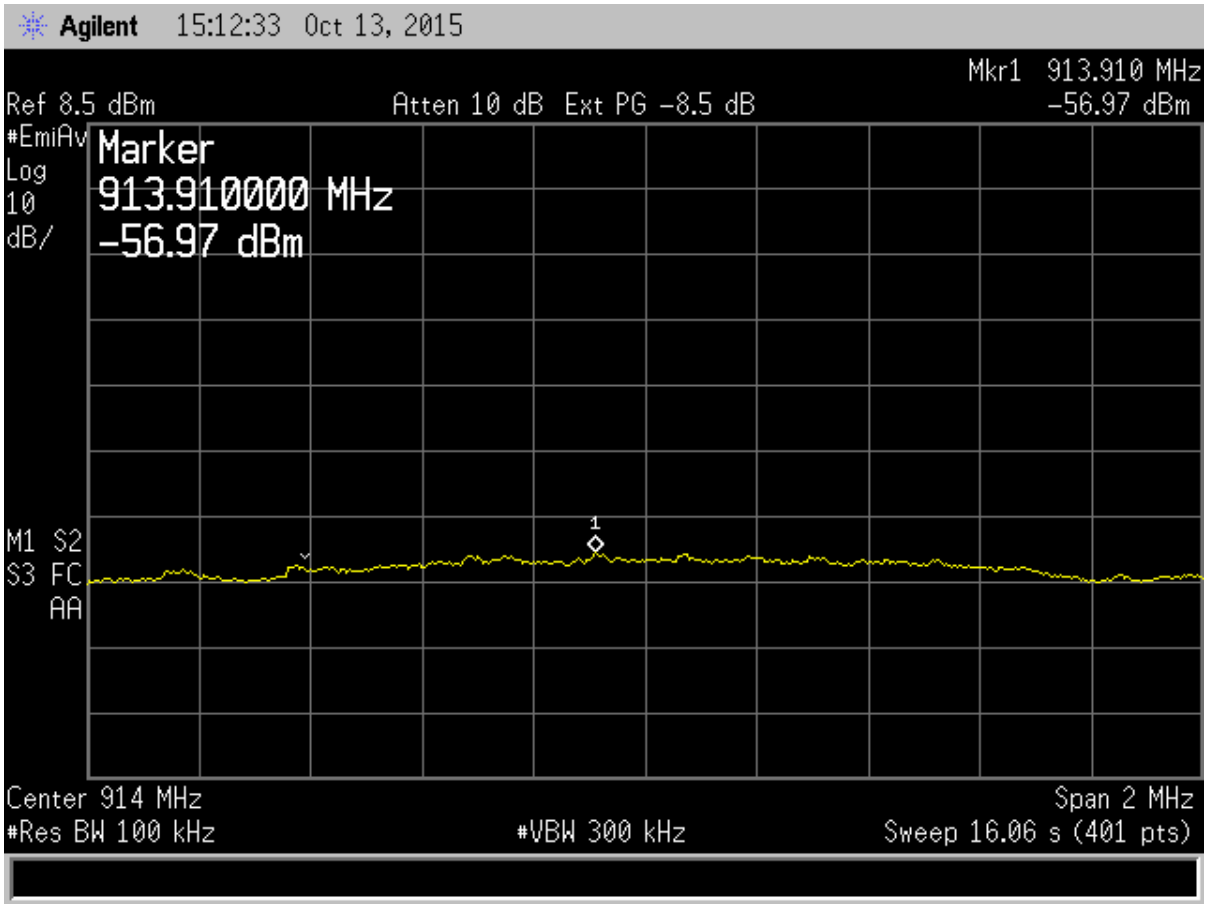


Figure 19. Peak Power Spectral Density, Mid Channel

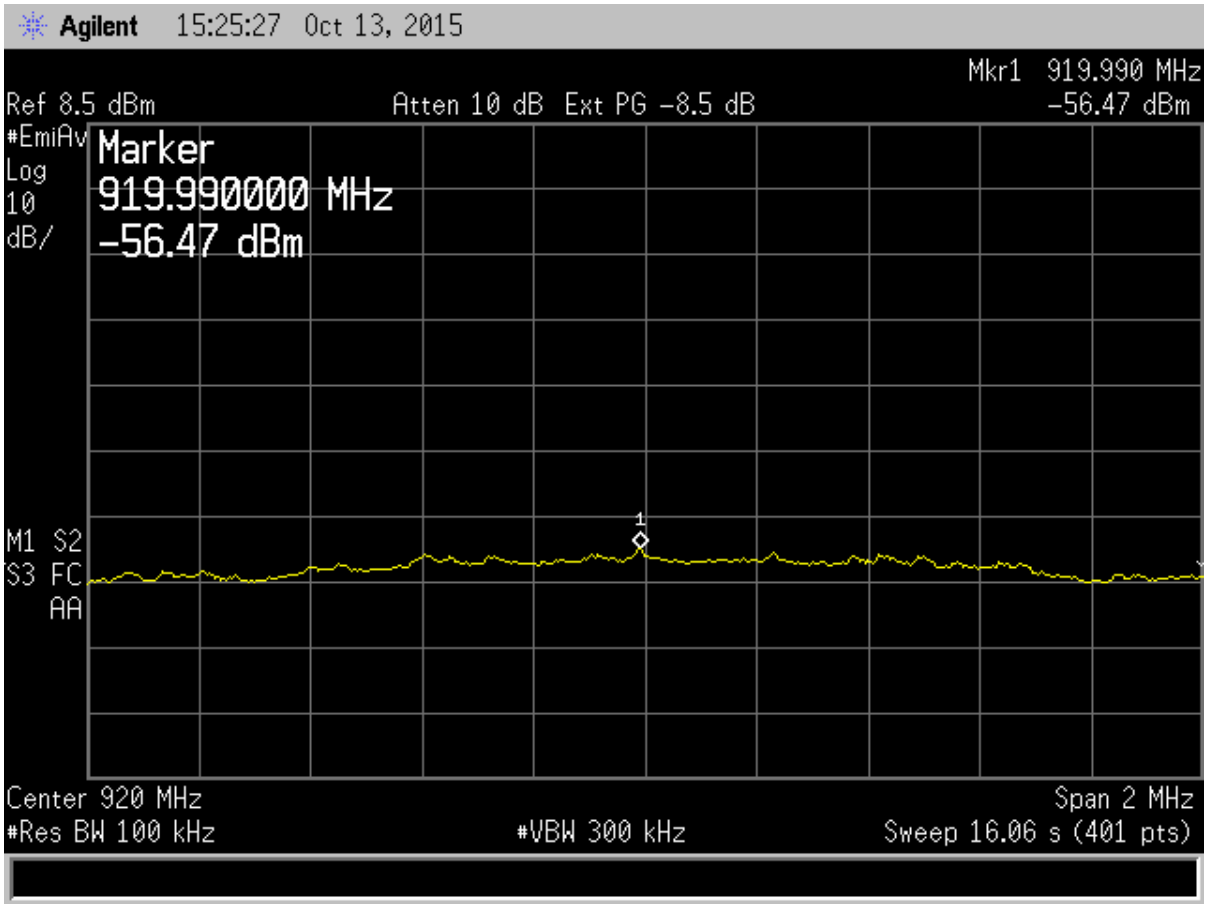


Figure 20. Peak Power Spectral Density, High Channel

2.15 Unintentional Radiator, Powerline Emissions (CFR 15.107, 15.209)

The EUT is battery powered. During normal operation the EUT is battery powered and will not be operated while directly or indirectly connected to the AC mains. The EUT can be operated with either four CR123 or two AA. There is no significant difference in the EUT's operation or emissions with the EUT operating with either type of battery. This test was not applicable.

NOTE: The test data provided in this section is to support the Verification requirement for the digital apparatus and the radios within.

2.16 Unintentional Radiator, Radiated Emissions (CFR 15.109, 15.209)

Radiated emissions disturbance Measurements were performed with an instrument having both peak and quasi-peak detectors over the frequency range of 30 MHz to 30 GHz. Measurements of the radiated emissions were made with the receiver antenna at a distance of 3 m from the boundary of the test unit.

The test antenna was varied from 1 m to 4 m in height while watching the analyzers' display for the maximum magnitude of the signal at the test frequency. The antenna polarization (horizontal or vertical) and test sample azimuth were varied during the measurements to find the maximum field strength readings to record.

The worst-case radiated emission in the range of 30 MHz to 30 GHz was 6.0 dB below the limit at 24937.50 MHz. This signal is found in Table 13. All other radiated emissions were 6.6 dB or more below the limit.

NOTE: The test data provided in this section is to support the Verification requirement for the digital apparatus and the radios within.

Table 12. Unintentional Radiator, Peak Radiated Emissions (CFR 15.109, 15.209),
30 MHz to 1000 MHz

30 MHz to 1000 MHz with Class B Limits							
Test: Radiated Emissions				**Client:** Camero tech			
Project: 15-0220				**Model:** Xaver100			
Frequency (MHz)	**Test Data (dBuv)**	**AF+CA-AMP (dB/m)**	**Results (dBuV/m)**	**QP Limits (dBuV/m)**	**Antenna Distance/ Polarization**	**Margin (dB)**	**Detector PK, or QP**
62.73	29.18	-10.84	18.34	40.00	3m./VERT	21.7	**QP**
146.87	40.05	-6.59	33.46	43.5	3m./HORZ	10.0	**QP**
204.31	34.12	-6.99	27.13	43.5	3m./HORZ	16.4	**QP**
668.34	35.93	3.51	39.44	46.0	3m./HORZ	6.6	**QP**

Tested from 30 MHz to 1 GHz

Sample Calculation at 62.73 MHz:

Magnitude of Measured Frequency	29.18	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	-10.84	dB/m
Corrected Result	18.34	dBuV/m

Test Date: October 9, 2015
Tested by
Signature: _____ Name: Carrie Ingram

Table 13. Unintentional Radiator, Peak Radiated Emissions (CFR 15.109, 15.209),
1 GHz to 30 GHz

1 GHz to 30 GHz with Class B Limits							
Test: Radiated Emissions				**Client:** Camero tech			
Project: 15-0220				**Model:** Xaver100			
Frequency (MHz)	**Test Data (dBuv)**	**AF+CA-AMP (dB/m)**	**Results (dBuV/m)**	**AVG Limits (dBuV/m)**	**Antenna Distance/ Polarization**	**Margin (dB)**	**Detector PK, or AVG**
7562.50	29.08	9.64	38.72	54.0	3.0m./VERT	15.3	**AVG**
8972.50	29.95	10.66	40.61	54.0	3.0m./VERT	13.4	**AVG**
16920.00	29.60	8.60	38.20	54.0	1.0m./VERT	15.8	**AVG**
17896.00	29.52	12.25	41.77	54.0	1.0m./VERT	12.2	**AVG**
20152.50	31.27	13.84	45.11	54.0	1.0m./VERT	8.9	**AVG**
21412.50	31.24	13.84	45.08	54.0	1.0m./VERT	8.9	**AVG**
24937.50	34.17	13.84	48.01	54.0	1.0m./VERT	6.0	**AVG**
9725.00	30.88	10.83	41.71	54.0	3.0m./HORZ	12.3	**AVG**
20025.00	31.13	13.82	44.95	54.0	1.0m./HORZ	9.1	**AVG**
23610.00	32.02	13.82	45.84	54.0	1.0m./HORZ	8.2	**AVG**
24577.50	32.92	13.82	46.74	54.0	1.0m./HORZ	7.3	**AVG**

Tested from 1 GHz to 30 GHz

SAMPLE CALCULATION at 7562.50MHz:

Magnitude of Measured Frequency	29.08	dBuV
+ Antenna Factor+Cable Loss – Amp Gain	9.64	dB
=Corrected Result	38.72	dBuV
Limit	54.00	dBuV
-Corrected Result	38.72	dBuV
Margin	15.30	dB

Test Date: October 7, 2015
Tested By
Signature: _____ Name: Carrie Ingram

2.17 Measurement Uncertainty

The measurement uncertainties given were calculated using the method detailed in CISPR 16-4. A coverage factor of k=2 was used to give a level of confidence of approximately 95%.

2.17.1 Conducted Emissions Measurement Uncertainty

Measurement Uncertainty (within a 95% confidence level) for this test is ± 2.78 dB.

This test was deemed inapplicable.

2.17.2 Radiated Emissions Measurement Uncertainty

For a measurement distance of 3 m the measurement uncertainty (with a 95% confidence level) for this test using a Biconical Antenna (30 MHz to 200 MHz) is ± 5.39 dB. This value includes all elements of measurement.

The measurement uncertainty (with a 95% confidence level) for this test using a Log Periodic Antenna (200 MHz to 1000 MHz) is ± 5.18 dB.

The measurement uncertainty (with a 95% confidence level) for this test using a Horn Antenna is ± 5.21dB.

The data listed in this test report does have sufficient margin to negate the effects of uncertainty. Therefore, the EUT unconditionally meets this requirement.