Compliance Testing, LLC
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Test Report

Prepared for: Taser International, Inc.

Model: T00064

Description: Body Worn Camera

Serial Number: X81002508

FCC ID: X4GS00947

To

FCC Part 15.407

Date of Issue: April 28, 2016

On the behalf of the applicant:	**Taser International, Inc.** **17800 N. 85th St.** **Scottsdale, AZ 85260**
Attention of:	**Bryan Chiles** **Ph: (480)502-6260** **E-mail: bchiles@taser.com**

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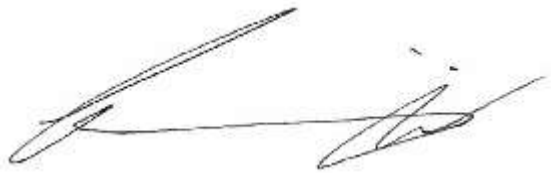

Alex Macon
Project Test Engineer

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	April 14, 2016	Alex Macon	Original Document
2.0	April 19, 2016	Amanda Reed	Updated serial number
3.0	April 28, 2016	Alex Macon	Removed copy and paste error from PSD table. Updated data rates Added Mask plots to Annex A
4.0	April 29, 2016	Alex Macon	Updated Power Spectral Density table

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ILAC / A2LA

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to the joint ISO-ILAC-IAF Communiqué dated January 2009).

The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

Please refer to http://www.compliancetesting.com/labscope.html for current scope of accreditation.

Testing Certificate Number: **2152.01**

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IC Site Reg. #2044A-2

Non-accredited tests contained in this report:

N/A

The applicant has been cautioned as to the following

15.21 - Information to User

The user's manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) - Special Accessories

Equipment marked to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer without an additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

Standard Test Conditions Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with C63.10-2013 and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F) unless the particular equipment requirements specified testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Measurement results, unless otherwise noted, are worst-case measurements.

Environmental Conditions		
Temperature (ºC)	**Humidity (%)**	**Pressure (mbar)**
23.1 – 24.2	27.6 – 34.2	967.2 – 977.4

EUT Operation during Tests

EUT Description
Model: T00064
Description: Body Worn Camera
Firmware: N/A
Software: N/A
Serial Number: X81002508
Additional Information:
The EUT was placed in needed test modes by the manufacturer who was on site during all testing

EUT Specifications

Maximum Output Power	18.8 dBm
Frequency Range	5745 – 5825 MHz
Bandwidths	20 MHz
Data Rates	802.11a 6/9/12/24/36/48/54 Mbps 802.11n20: MCS0 – MCS7

Antenna List

No.	Manufacturer	Part #	Antenna Type	Peak Gain
1	Taser	HP-VTS01-43100GN	PIFA	3.9 dBi

15.203: Antenna Requirement:

X	The antenna is permanently attached to the EUT
	The antenna uses a unique coupling
	The EUT must be professionally installed
	The antenna requirement does not apply

Accessories: None

Cables: None

Modifications: None

Test Results Summary

Specification	Test Name	Pass, Fail, N/A	Comments
§15.203	Antenna Requirements	Pass	
§15.207 §15.407(b)(6)	Line Conducted Emissions	N/A	This is not affected by the C2PC
§15.407(a)(3)	Conducted Output Power	Pass	
§15.407(a)(3),(5)	Power Spectral Density	Pass	
§15.403(i) §15.407(e)	6dB Occupied Bandwidth	Pass	
	99% Occupied Bandwidth		
§15.407(b)(4)	Undesirable Emissions	Pass	
§15.205 §15.407(b)(4),(5),(6)	General Field Strength Limits (Restricted Bands and Radiated Emission limits)	Pass	
§15.407(g)	Frequency Stability	Pass	
§15.407(f)	RF Exposure	Pass	

References	Description
CFR47, Part 15, Subpart B	Unintentional Radiators
CFR47, Part 15, Subpart C	Intentional Radiators
CFR47, Part 15, Subpart E	Unlicensed Nation Information Infrastructure Devices (U-NII)
ANSI C63.10-2009	American National standard for testing Unlicensed Wireless Devices
ANSI C63.4-2009	Method and Measurements of Radio-Noise Emissions from low-Voltage Electrical and Electronic Equipment in the range 9kHz to 40GHz.
ISO/IEC 17025:2005	General requirements for the Competence of Testing and Calibrations Laboratories
KDB 644545 D03	Guidance for IEEE 802 11ac New Rules
KDB 789033 D02	General U-NII Test Procedures New Rules V01
KDB 926956 D01	U-NII Transition Plan

Peak Output Power
Engineer: Alex Macon
Test Date: 4/7/16

Test Requirements

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

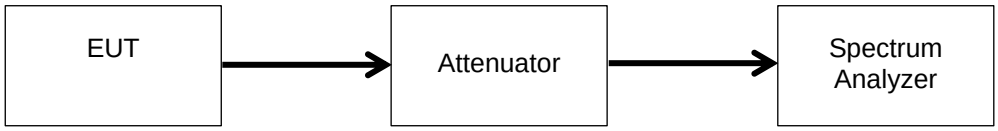
Test Procedure

The RF power was calculated using the spectrum analyzers' band power function per Method SA-1 from KDB 789033 D02 General U-NII Test Procedures New Rules v01. Measurements were made at the low, mid and high channels of the band.

The Spectrum analyzer was set to the following:

a. RBW = 1 MHz
b. VBW ≥ 3 MHz
c. Sweep time = auto
d. Detector = RMS
e. 100 traces in power averaging mode

Test Setup



Test Results

Bandwidth (MHz)	Frequency (MHz)	TP	Level (dBm)	Limit (dBm)	Margin (dB)	Mode
20	5745	20	18.5	30	-11.5	A
20	5785	20	18.8	30	-11.2	A
20	5825	20	18.3	30	-11.7	A
20	5745	20	18.8	30	-11.3	N
20	5785	20	18.5	30	-11.5	N
20	5825	20	18.1	30	-11.9	N

Transmitter Power Spectral Density

Engineer: Alex Macon

Test Date: 4/7/16

Test Requirements

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in power spectral density.

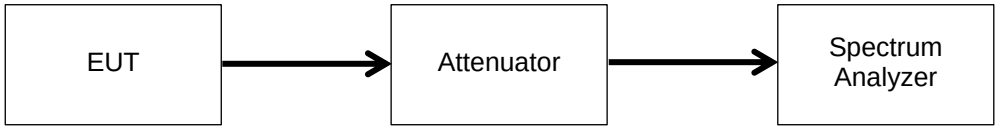
Test Procedure

The Power Spectral Density was measured using the method per SA-1 from KDB 789033 D02 General U-NII Test Procedures New Rules v01. Measurements were made at the low, mid and high channels of the band. The maximum PSD was determine by finding the peak value across the carrier bandwidth.

The Spectrum Analyzer was set to the following:

a. RBW = 500 KHz.
b. VBW ≥ 1500 MHz
c. Span 1.5 * BW
d. Sweep time = auto
e. Detector = RMS
f. 100 traces in power averaging mode

Test Setup



Test Results

Bandwidth (MHz)	Frequency (MHz)	TP	J3 Level (dBm)	Limit/500KHz (dBm)	Margin (dB)	Mode
20	5745	20	9.7	30	-20.3	A
20	5785	20	9.6	30	-20.4	A
20	5825	20	9.3	30	-20.7	A
20	5745	20	9.6	30	-20.4	N
20	5785	20	9.6	30	-20.4	N
20	5825	20	9.0	30	-21.0	N

Undesirable Emissions Conducted
Engineer: Alex Macon
Test Date: 4/7/16

Test Requirements

Unwanted Emissions that fall Outside Restricted Bands

For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz. The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz
The provisions of §15.205 apply to intentional radiators operating under this section.
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

For Conducted Unwanted Emissions in the Restricted Bands

For conducted measurements above 1000 MHz, EIRP was determined and then the field strength computed by the following:
E[dBµV/m] = EIRP[dBm] - 20 log(d[meters]) + 104.77, where E = field strength and d = 3m
E[dBµV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

Test Procedure

Per KDB 789033 D02 General U-NII Test Procedures New Rules v01 conducted RF port measurements were made in lieu of radiated. In addition, Cabinet Emissions measurements were performed in a semi-anechoic chamber with the antenna port terminated by a matching load. See additional section for Radiated Emissions.

The following criteria were addressed:

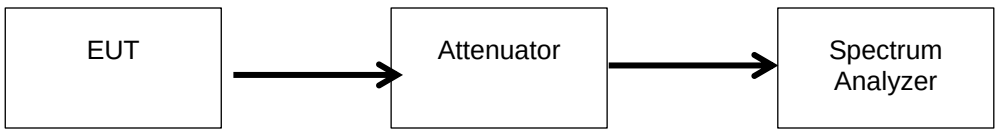
The Spectrum Analyzer was set to the following for emissions > 1000MHz:

a. RBW = 1 MHz
b. VBW ≥ 3 MHz
c. Detector = Peak.
d. Sweep time = auto.
e. Trace mode = max hold.
    1. Note: For emissions where the peak exceeded that of the average 15.209 emission limit the following was performed.
f. RBW = 1 MHz
g. VBW ≤ RBW/100 (i.e., 10 kHz) but not less than 10 Hz.

For emissions below 1000MHz the Spectrum Analyzer settings were as follows:

a. RBW = 100 kHz
b. VBW ≥ 300 kHz
c. Detector = Peak.
d. Sweep time = auto.
e. Trace mode = max hold.

Test Setup



Test Results: **See Annex A: Undesirable Emissions Conducted**

Undesirable Emissions Radiated
Engineer: Alex Macon
Test Date: 4/8/16

Test Requirements

The provision of §15.209 were applied. In addition the requirements of §15.205 were also applied.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits

Frequency (MHz)	Frequency (microvolts/meter)	Frequency (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dBµV/m) = 20 log E field strength (uV/m)

Test Procedure

The EUT was setup in accordance with ANSI C63.10. 2013 and tested per KDB 789033. The antenna was replaced with non-radiating matched load. The EUT is placed on non-conductive platform at a height of 0.8 meters above the ground plane of the semi-anechoic chambers. The EUT was rotated 360 degrees and the receive antenna raised and lowered to find the maximum emissions from 30MHz to the 10th harmonic of the fundamental. The EUT was set to the maximum power level allowed and the low, mid, and high channels were investigated for emissions.

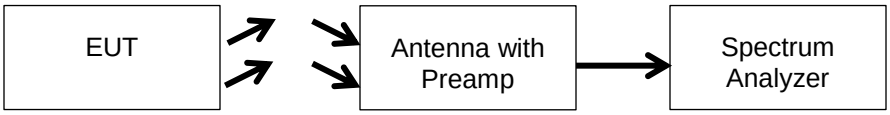
The Spectrum Analyzer was set to the following for emissions > 1000MHz:

a. (RBW = 1 MHz
b. VBW ≥ 3 MHz
c. Detector = Peak.
d. Sweep time = auto.
e. Trace mode = max hold.
    1. Note: For emissions where the peak exceeded that of the average 15.209 emission limit the following was performed.
f. RBW = 1 MHz
g. VBW ≤ RBW/100 (i.e., 10 kHz) but not less than 10Hz

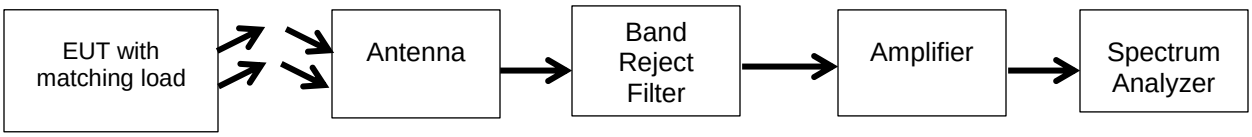
For emissions below 1000MHz the Spectrum Analyzer settings were as follows:

a. RBW = 100 kHz
b. VBW ≥ 300 kHz
c. Detector = Peak.
d. Sweep time = auto.
e. Trace mode = max hold.
    1. Note: A quasi peak detector was used for emissions where the peak exceeded that of the average 15.209 emission limits

Test Setup below 1000MHz



Test Setup above 1000MHz



Test Results: **See Annex B: Undesirable Emission Radiated**

Occupied Bandwidth

Engineer: Alex Macon

Test Date: 4/7/16

Test Requirement

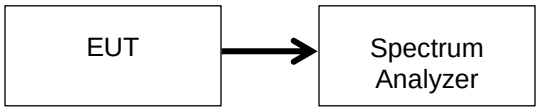
Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz. For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 6 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement

Test Procedure

The Spectrum analyzer was set to the following parameters

a. RBW = 100 kHz.
b. VBW ≥ 300 kHz
c. Detector = Peak.
d. Trace mode = max hold.

Test Setup



Test Results: **See Annex C: Occupied Bandwidth**

Frequency Stability
Engineer: Alex Macon
Test Date: 4/8/16

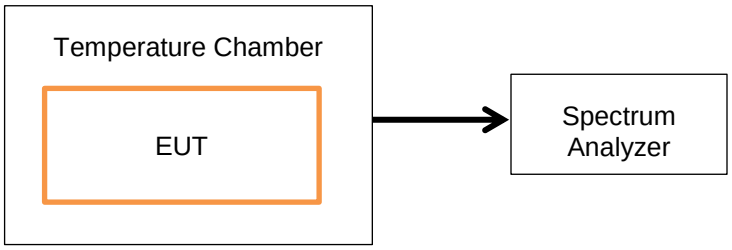
Test Requirement

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

Test Procedure

a. The EUT was placed into a temperature chamber and the temperature ranges were set to the manufacturers' specifications.
b. The RF output of the EUT was connected to a spectrum analyzer
c. The lowest and highest channels of the band were set to transmit
d. The carrier plots were measured to insure that the 6dB band width remained within the band over the prescribed temperature extremes.

Test Setup



Test Results: **See Annex D: Frequency Stability**

Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Temperature Chamber	Tenney	Tenney Jr	i00027	Verified on: 4/7/16	
Horn Antenna, Amplified	ARA	DRG-118/A	i00271	5/8/14	5/8/16
Horn Antenna, Amplified	ARA	MWH-1826/B	i00273	4/22/15	4/22/18
Humidity / Temp Meter	Newport	IBTHX-W-5	i00282	4/1/15	4/1/16
Spectrum Analyzer	Agilent	E4407B	i00331	9/18/15	9/18/16
Data Logger	Fluke	Hydra Data Bucket	i00343	4/5/16	4/5/17
Bi-Log Antenna	Schaffner	CBL 6111D	i00349	10/19/15	10/19/17
EMI Analyzer	Agilent	E7405A	i00379	2/11/16	2/11/17
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	7/27/14	7/27/16
PSA Spectrum Analyzer	Agilent	E4445A	i00471	8/26/15	8/26/16

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT