Compliance Testing, LLC
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EMI, EMC, RF Testing Experts Since 1963

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Test Report

Prepared for: Wave-Central

Model: AXTX1-5G

Description: 5.73-5.84GHz RF Microwave Transmitter

Serial Number: 6607

FCC ID: 2AD9D-AXIS5GTX

To

FCC Part 15.407

Date of Issue: March 26, 2015

On the behalf of the applicant:

Wave-Central, LLC
99 Garden Parkway
Suite C
Carlisle, PA 17013

Attention of:

Tom Doyle, General Manager
Ph: (888) 736-9283
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Prepared By
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Project No: p1510015

Alex Macon
Project Test Engineer

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	February 13, 2015	Alex Macon	Original Document
2.0	March 25, 2015	Alex Macon	Updated EUT description, RF exposure status,

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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**

FCC Site Reg. #349717

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)**
22.1 – 23.2	41.2 – 45.6	967.8 – 971.9

EUT Operation during Tests

EUT was placed in Continuous transmit test mode using the LCD display on the device.

EUT Description
Model: AXTX1-5G
Description: 5.73-5.84GHz RF Microwave Transmitter
Firmware: N/A
Software: N/A
Serial Number: 6607
Additional Information: The EUT is a 5.8 GHz transmitter intended to be used on commercial video cameras with a DC battery pack.

EUT Specifications

Equipment Code	NII
Model(s)Tested	AXTX1-5G
Model(s) covered	N/A
Maximum Output Power	73.1 mW
Frequency Range	5730 – 5840 MHz
Bandwidths	6 MHz, 7 MHZ, 8 MHZ
Data Rates	Configurable to .25 to 31mb/s selectable by Bandwidth & DVB-T Modulation
Modulations	16QAM, 64QAM

Antenna List

No.	Manufacturer	Part #	Antenna Type	Peak Gain
1	Wave Central	CO580-6	Omni	6 dBi
2	Gigawave	GA-CLIP01-5.85R	Omni	3.5 dBi

15.203: Antenna Requirement:

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

Accessories:

Qty	Description	Manufacturer	Model	S/N
1	AC/DC Converter	Mean Well	GS90A12	N/A

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	EUT does not connect to the AC Mains
§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 C63.10-2013	American National standard for testing Unlicensed Wireless Devices
ANSI C63.4-2014	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: 2/10/15

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:

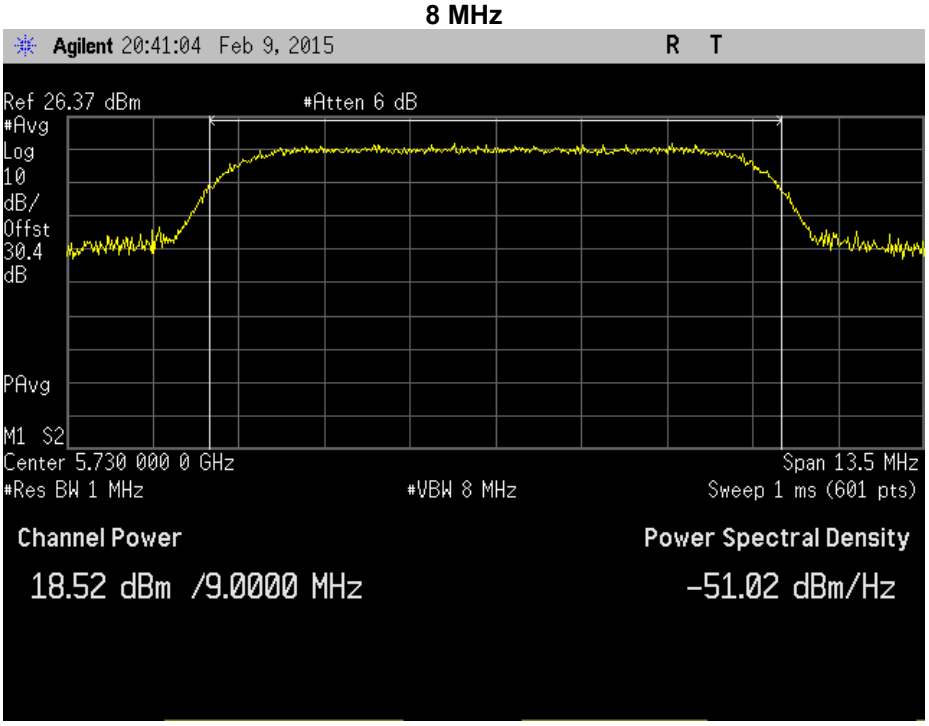
a. RBW = 1 MHz
b. VBW ≥ 3 MHz
c. Sweep time = auto
d. Detector = RMS
e. 100 traces in power averaging mode

Test Setup

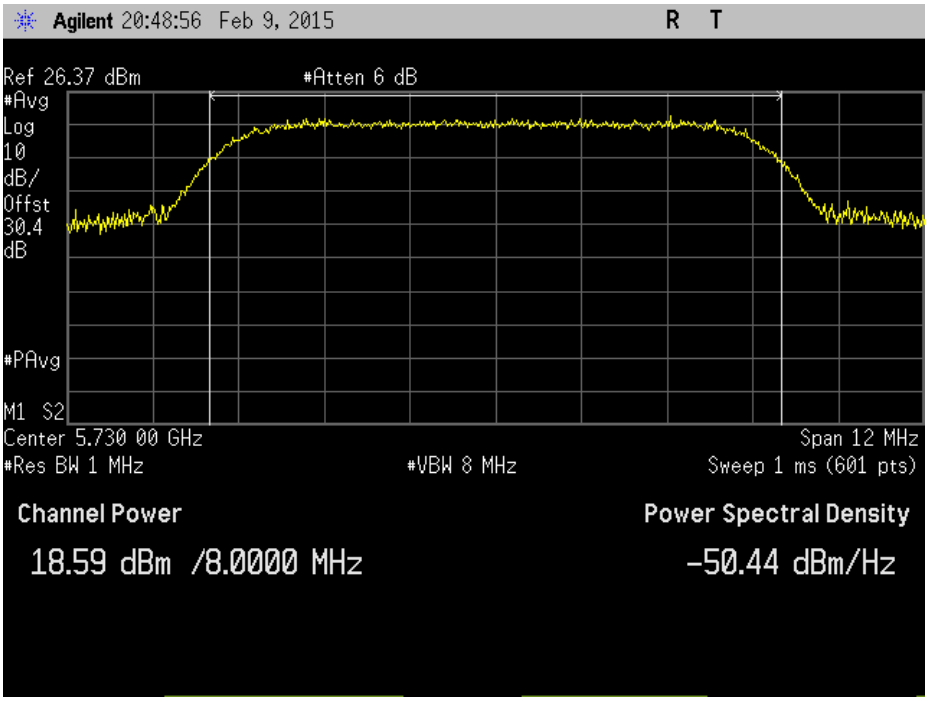
Test Results

Low Channel Power Plots

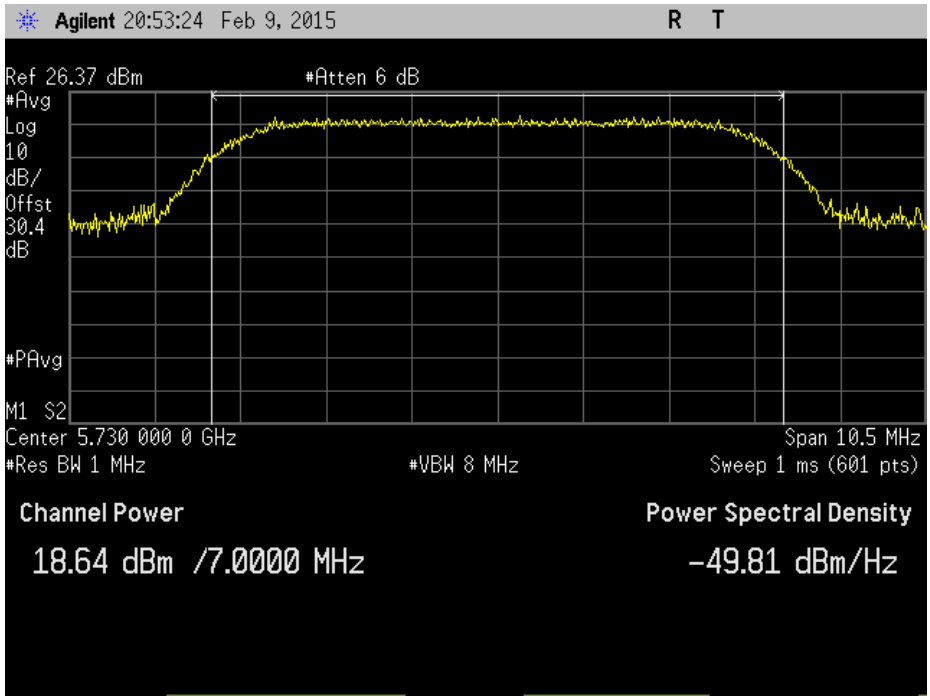
8 MHz



7 MHz



6 MHz



Mid Channel Power Plots

8 MHz