



Compliance Testing, LLC

Previously Flom Test Lab

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Test Report

Prepared for: Freewave Technologies

Model: WP201

Description: Wireless 802.11ac/b/g/n access point

Serial Number: 163235777

FCC ID: KNYPRW5000AB

IC: 2329B-PRW5000AA

To

FCC Part 15.407

Date of Issue: January 30, 2017

On the behalf of the applicant:

Freewave Technologies

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Attention of:

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Project No: p1660014-TCB

Poona Saber

Project Test Engineer

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All results contained herein relate only to the sample tested.



Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	January 30, 2017	Poona Saber	Original Document



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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 (°C)	Humidity (%)
23.6	47.8

EUT Description

Model: WP201

Description: Wireless 802.11ac/b/g/n access point

15.203: Antenna Requirement:

- ☐ 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



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	Not measured based Class 2 Permissive Change
§15.407(a)(3)	Conducted Output Power	N/A	Not measured based Class 2 Permissive Change
§15.407(a)(3),(5)	Power Spectral Density	N/A	Not measured based Class 2 Permissive Change
§15.403(i) §15.407(e)	6dB Occupied Bandwidth 99% Occupied Bandwidth	N/A	Not measured based Class 2 Permissive Change
§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)	N/A	Not measured based Class 2 Permissive Change
§15.407(g)	Frequency Stability	N/A	Not measured based Class 2 Permissive Change

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



Undesirable Emissions Conducted

Engineer: Poona Saber

Test Date: 11/18/2016

Test Requirements

Per 15.407 b(4)

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

This Device has 33 dBi antenna and hence, tested under 15.247 (d) rule for undesirable emissions.

Test Procedure

The EUT was connected to a spectrum analyzer to verify that the EUT met the requirements for spurious emissions. The frequency range from 30 MHz to the 10th harmonic of the fundamental transmitter was observed. Only detectable spurious emissions were recorded and plotted. The peak output power is added to the recorded measurement to provide the corrected spurious level dBc.

All emissions from 30 MHz to 1 GHz were examined.

Measured Level includes antenna and receiver cable correction factors.

Correction factors were input into the spectrum analyzer before recording "Measured Level".

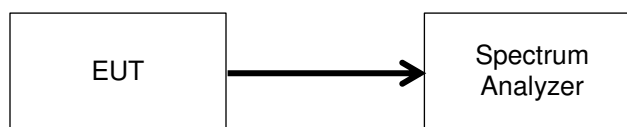
RBW = 100 KHz

VBW = 300 KHz

Detector – Quasi Peak

No other emissions were detectable above 26.5 GHz or in restricted bands. All emissions were more than -20 dBc.

Test Setup



See Annex A for test results



Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Spectrum Analyzer	Agilent	E4407B	i00331	9/18/15	9/18/16

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