BEC INCORPORATED

SAR REPORT

TEST STANDARDS:
FCC Part 15 Subpart C Intentional Radiator

Legrand Models WNAL23 Adorne Wireless Smart Switch with Netatmo and WNAL63 Adorne Wireless Smart Dimmer with Netatmo

FCC ID: 2AU5D-ASWDM

REPORT# BEC-2150-05

CUSTOMER:
Pass & Seymour/Legrand
50 Boyd Avenue
Syracuse, NY 13209

PREPARED BY: _____
Paul Banker**,** Test Engineer

REVIEWED and APPROVED BY: _____
Steve Fanella**,** Quality Manager

ACCREDITED
Testing Cert #2557.01

TABLE OF CONTENTS

Notice To Customer

This report and any recommendations it contains represent the result of BEC's testing and assessment on behalf of your company. Testing has been conducted according to accepted engineering standards and practices. This report reflects testing and assessment of product samples provided by your company and may not reflect the characteristics of other samples, especially those produced at different times. Therefore this report and its findings and recommendations, if implemented, should not be construed as an assurance or implied warranty for the continuing electromagnetic compatibility (EMC) of the product. **BEC shall not be liable for incidental or consequential damages, even if advised of the possibility thereof.**

BEC will not disseminate this report to other parties without your express permission. You may reproduce this report in its entirety including this notice and the entireties of any supplemental test reports on the same product (e.g. reports on additional testing following modification). However 'you may not reproduce portions of the report (except for the entirety of the summary section) or quote from it for any purpose without specific prior written permission from BEC'.

Revision History

Revision #	Description of Changes	Date of Changes	Date Released
0	Test Report Initial Release	N/A	07/19/2021

1.0 Administrative Information

1.1 General Information Table

Project Number	BEC-2150
Manufacturer	Legrand
Model Numbers	WNAL23 and WNAL63
EUT Radios	Zigbee
EUT Serial Numbers	None
EUT Sample Numbers	2150-01 and 2150-03
Frequency of Operation	2405 – 2480 MHz
Antenna Gain	+ 3.3 dBi
Zigbee Radio Chip Manufacturer	Atmel
Zigbee Radio Chip Model	SAMR21E
Firmware Versions	WNAL23: BNLT_v42.bin and WNAL63: BNLD_v22.bin
FCC ID	2AU5D-ASWDM
FCC Classification	DTS, Mobile Device
Date Samples Received	06/07/2021
Condition of Samples Received	Suitable for test
Sample Types	Production unit
EUT Descriptions	Legrand WNAL23 adorne Wireless Smart Switch Legrand WNAL63 adorne Wireless Smart Dimmer
Applicable FCC Rules	47 CFR Part 2.1091, OET Bulletin 65

1.2 Maximum Permissible Exposure Calculation

§15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

(i) Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. *See* §1.1307(b)(1) of this chapter.

§1.1307 Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.

(b)(1) *Requirements.* (i) With respect to the limits on human exposure to RF provided in §1.1310 of this chapter, applicants to the Commission for the grant or modification of construction permits, licenses or renewals thereof, temporary authorities, equipment authorizations, or any other authorizations for radiofrequency sources must either:

(A) Determine that they qualify for an exemption pursuant to §1.1307(b)(3);

(B) Prepare an evaluation of the human exposure to RF radiation pursuant to §1.1310 and include in the application a statement confirming compliance with the limits in §1.1310; or

(C) Prepare an Environmental Assessment if those RF sources would cause human exposure to levels of RF radiation in excess of the limits in §1.1310

§1.1310 Radiofrequency radiation exposure limits.

(2) At operating frequencies less than or equal to 6 GHz, the limits for maximum permissible exposure (MPE), derived from whole-body Specific Absorption Rate (SAR) limits and listed in Table 1 of paragraph (e) of this section, may be used instead of whole-body SAR limits as set forth in paragraph (a) through (c) of this section to evaluate the environmental impact of human exposure to RF radiation as specified in §1.1307(b), except for portable devices as defined in §2.1093 as these evaluations shall be performed according to the SAR provisions in §2.1093 of this chapter.

(4) Both the MPE limits listed in Table 1 of paragraph (e) of this section and the SAR limits as set forth in paragraph (a) through (c) of this section and in §2.1093 of this chapter are for continuous exposure, that is, for indefinite time periods. Exposure levels higher than the limits are permitted for shorter exposure times, as long as the average exposure over the specified averaging time in Table 1 is less than the limits. Detailed information on our policies regarding procedures for evaluating compliance with all of these exposure limits can be found in the FCC's *OET Bulletin 65,* "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields," and in supplements to *Bulletin 65,* all available at the FCC's Internet Web site: *http://www.fcc.gov/oet/rfsafety*.

§2.1091 Radiofrequency radiation exposure evaluation: mobile devices.

(b) For purposes of this section, the definitions in §1.1307(b)(2) of this chapter shall apply. A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the RF source's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location while transmitting. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal desktop computer, are considered to be mobile devices if they meet the 20-centimeter separation requirement.

The Legrand Models WNAL23 and WNAL63 are categorized as mobile devices as defined by 47 CFR Part 2.1091. Therefore, the limits of Section 1.1310, Table 1 "Limits for Maximum Permissible Exposure (MPE)" Section (ii) "Limits for General Population / Uncontrolled Exposure are applicable.

The use of OET Bulletin 65 was used to calculate the Power Density based upon EIRP levels of the WNAL23 and WNAL63 devices measured and reported by this laboratory during testing for compliance to 47 CFR Part 15C.

From: OET Bulletin 65 Edition 97-02, page 19.

$$S = \frac{PG}{4\pi R^2} \qquad (3)$$

where: S = Power Density (in appropriate units, e.g., mW/cm^2)
P = Power input to the antenna (in appropriate units, e.g., mW)
G = Power Gain of the antenna in the direction of interest to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

or:
$$S = \frac{EIRP}{4\pi R^2} \qquad (4)$$

where: EIRP = equivalent (or effective) isotropically radiated power (mw)

1.3 Maximum Permissible Exposure Calculation Results

Calculation

Effective Isotropic Radiated Power (EIRP) =

Antenna Power Output (dBm) + antenna gain (dBi)

Formula (4) above: S or Power Density = $\frac{EIRP}{4\pi R^2}$

EUT	Antenna Power	Antenna Gain	EIRP	Power Density @	47 CFR 1.1310, Table 1 (ii) Limit	Margin
	dBm	dBi	dBm	mW/cm^2	mW/cm^2	
WNAL23	5.09	3.3	8.39	0.00137	1.00	-0.99863
WNAL63	5.09	3.3	8.39	0.00137	1.00	-0.99863

Antenna power is the highest measured level among the low, middle and high frequencies of the Zigbee transmitter contained in each model identified above.

Results: The calculated Power Density of the measurements for the Zigbee radio, contained in the Legrand WNALX3, is 0.00137 mW/cm^2. This complies with the limit of 1 mW/cm^2 from Table 1(B) of 47 CFR Part 1.1310. Therefore, exposure evaluation is not required.