



BEC INCORPORATED

CLASS II PERMISSIVE CHANGE TEST REPORT

TEST STANDARDS:

**FCC Part 15 Subpart C, IC RSS-Gen, IC RSS-247
DTS Intentional Radiator**

EUT:

**Legrand Model WNACB46 and Model WZ3ACB46
adorne 4-Button Scene Controller**

FCC ID: 2AU5D-WACB4

ISED ID: 25764-WACB4

REPORT#: BEC-2272-01

TEST DATES: 09/05/2023 – 09/25/2023

CUSTOMER:

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

PREPARED BY: _____


JR Fanella, Test Engineer

REVIEWED and APPROVED BY: _____


Steve Fanella, Quality Manager

The results described in this report relate only to the item(s) tested. This document shall not be reproduced except in full without prior written permission of BEC Incorporated





TABLE OF CONTENTS

Notice to Customer	4
Revision History	4
1.0 Administrative Information	5
1.1 Project General Information	5
1.2 Preface	6
1.3 Laboratory and Customer Information	6
1.4 Measurement Uncertainty	7
1.5 Test Result Summary Table	8
1.6 Condition of Received Sample	9
1.7 Climatic Environment	9
1.8 Test Equipment	9
2.0 Equipment Under Test	10
2.1 EUT Description	10
2.2 Product Category	10
2.3 Product Classification	10
2.4 Test Configuration	11
2.5 Test Configuration Rationale	11
2.6 Test Configuration Diagrams – Zigbee Radio	11
2.6.1 Zigbee Configuration – Conducted Measurement	11
2.6.2 Zigbee Configuration – Radiated Measurement	12
2.7 EUT Information, Interconnection Cabling and Support Equipment	12
2.8 Test Signals and Test Modulation	13
2.8.1 Zigbee Radio - Test Signals and Modulation	13
2.9 Grounding	13
2.10 EUT Modifications	13
3.0 Applicable Requirements, Methods, and Procedures	14
3.1 Applicable Requirements	14
3.1.1 FCC Requirements	14
3.1.2 Industry Canada Requirements	14
3.1.3 Basic Test Methods and Test Procedures	14
3.2 Deviations or Exclusions from the Requirements	14
4.0 Test Results	15
4.1 Conducted Emissions AC Power Port (47 CFR 15.207)(RSS-Gen 7.2)	15
4.1.1 Conducted Emissions Test Procedure	15
4.1.2 Conducted Emissions Test Information	16
4.1.3 Conducted Emissions 150 kHz to 30 MHz FCC 15.207 and RSS-Gen 7.2 Limits Test Results	17
4.2 Emissions in Non-Restricted and Restricted Frequency Bands 1 GHz - 25 GHz (47 CFR 15.205, 15.209)(RSS-GEN 8.9, 8.10)	29
4.2.1 Radiated Spurious Emissions Test Facility	30
4.2.2 Emissions in Non-Restricted and Restricted Frequency Bands Test Procedure	31
4.2.3 Emissions in Frequency Bands 1 - 18 GHz WNACB46 with Zigbee Radio Test Results (09/25/2023)	32
4.3 Maximum Conducted (Average) Output Power and EIRP (FCC Part 15.247(b)(3), RSS-247 Section 5.4(d))	34



4.3.1	Maximum Conducted (Average) Output Power Test Procedure.....	34
4.3.1.1	Maximum Conducted (Average) Output Power Legrand WNACB46 with Zigbee Radio O-QPSK Modulation Test Results (09/22/2023)	35
4.3.2	EIRP Level WNACB46 with Zigbee Radio Test Results (09/22/2023)	39
4.3.2.1	EIRP Level WNACB46 Zigbee Radio Test Results.....	39
Appendix A – Test Equipment.....		40



Notice to Customer

This report and any recommendations it contain 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. 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.**

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The BEC Decision Rule: Measurement Uncertainty is not applied to any testing measurements or test results provided to the customer by BEC Incorporated at this time.

Revision History

Revision #	Description of Changes	Date of Changes	Date Released
0	Test Report Initial Release	N/A	10/19/2023
1	Added the statement on Page 31 that we scanned the models from 30 MHz to 1000 MHz for spurious emissions.	12/13/2023	12/13/2023



1.0 Administrative Information

1.1 Project General Information

Project Number	BEC-2272	
Manufacturer	Legrand	
Models	WNACB46 and WZ3ACB46	
Description	adorne 4-Button Scene Controller	
EUT Test Sample Model	WNACB46	
EUT Test Types	SMA connector at antenna port and radio test software	Standard antenna and radio test software
EUT Serial Numbers	None	None
EUT Samples	2272-01	2272-02
FCC ID	2AU5D-WACB4	
ISED ID	25764- WACB4	
Zigbee Radio Chip Manufacturer	Atmel	
Zigbee Radio Chip Model	SAMR21E	
Radio Type	Zigbee	
Frequency of Operation	2405 – 2480 MHz	
Modulation Type	O-QPSK	
Antenna Gain	+ 4.28 dBi	
FCC Classification	Digital Transmission System (DTS)	
Samples Received	08/30/2023	
Condition Received	Suitable for test	
Sample Type	Production units	
Firmware Version	TestRadio_WNRL23.bin	
Applicable FCC Rules	FCC Rules Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System	
Applicable ISED Rules	RSS-Gen: General Requirements for Compliance of Radio Apparatus & RSS-247: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices	



1.2 Preface

This report documents product testing conducted to verify compliance of the specified EUT with applicable standards and requirements as identified herein. EUT, test instrument configurations, test procedures, and recorded data are generally described in this report. The reader is referred to the applicable test standards for detailed procedures. The following table summarizes the test results obtained during this evaluation.

1.3 Laboratory and Customer Information

Test Laboratory Location	BEC Incorporated 970 East High Street Pottstown, PA 19464
Test Personnel	Steve Fanella / JR Fanella
BEC Laboratory Number FCC Registration	US1118
BEC Laboratory Number ISED Registration	7342A-1
Test Performed For	Pass & Seymour/Legrand 50 Boyd Avenue Syracuse, NY 13209
Customer Technical Contacts	Fred Duffy
Customer Reference Number	PO # SP319415-802



1.4 Measurement Uncertainty

Measurement	Measurement Distance	Range	Measurement Limit	Expanded Uncertainty
Radiated Disturbance Open Area Test Site	3 Meter	30 MHz – 1 GHz	Class A or B	4.63
Conducted Disturbance AC Mains	N/A	150 kHz – 30 MHz	Class A or B	2.69
Radio Frequency	N/A	1 MHz – 26.5 GHz	N/A	±0.027 ppm
RF power, conducted	N/A	1 MHz – 26.5 GHz	N/A	±1.45 dB
Conducted spurious emission of transmitter, valid up to 6 GHz	N/A	150 kHz – 26.5 GHz	N/A	±0.9 dB
Occupied Bandwidth	N/A	1 MHz – 26.5 GHz	N/A	±2 %
Temperature	N/A	15 – 35° C	N/A	±0.5 °C
Humidity	N/A	20 – 95 %	N/A	±2.5%

No adjustments to measured data presented in this report are required because all values of uncertainty are less than the CISPR 16-4-2:2018 recommendations. These uncertainties have a coverage factor of $k = 2$, which yields approximately a 95% level of confidence for the near-normal distribution typical of most measurement results.



1.5 Test Result Summary Table

The Legrand Model WNACB46 was tested and found to be compliant to the sections of the FCC Part 15 Subpart C and RSS-Gen RSS-247 standards listed below. The testing reflects specific testing to show compliance for a Class II Permissive Change:

Report Section	FCC Part 15, Subpart C	RSS-Gen	RSS-247	Test Description	Result
	15.203(b)	Annex A 10(g)		Antenna Requirement	Previously Reported
	15.204	8.3		External RF power amplifiers and antenna modifications	Previously Reported
4.1	15.207	7.2		Conducted Limits (AC Power) 150 kHz – 30 MHz	PASS
4.2	15.205(a) 15.209	8.9, 8.10	3.3	Radiated Emissions in Non-Restricted and Restricted Frequency Band 1 GHz – 18 GHz	PASS
	15.247(a)(2)		5.2 (a)	6 dB Occupied Bandwidth	Previously Reported
		6.7		99% Occupied Bandwidth	Previously Reported
4.3	15.247(b)(3)		5.4 (d)	Maximum Conducted (Peak) Power Output and EIRP	PASS
	15.247(d)		5.5	Antenna Conducted Emissions in Restricted Frequency Bands 30 MHz – 25 GHz	Previously Reported
	15.247(e)		5.2 (b)	DTS maximum power spectral density level in the fundamental emission	Previously Reported
	15.247(d)		5.5	DTS band-edge emission measurements	Previously Reported

Previously Reported Results: The EUT was previously tested with results are documented in report BEC-2194-01.



1.6 Condition of Received Sample

An evaluation of the EUT was conducted in order to verify test subject identity and condition and to ensure suitability for testing. No evidence of physical damage was noted. The test item condition was deemed acceptable for the performance of the requested test services.

1.7 Climatic Environment

Unless noted elsewhere in this report, the following were the ambient conditions in the laboratory during testing:

Temperature: $22^{\circ} \pm 5^{\circ}$

Humidity: $50\% \pm 20\%$

Barometric Pressure: $1000\text{mb} \pm 20\%$

1.8 Test Equipment

All test equipment is checked to manufacturer's specifications and, when applicable, have current N.I.S.T. traceable, ISO 9002 conforming certificates of calibration. Test equipment used for the tests described herein is listed in Appendix A.



2.0 Equipment Under Test

Unless otherwise noted in the individual test results sections, testing was performed on the EUT as follows.

2.1 EUT Description

The adorne 4-Button Scene Controller is comprised of two identical devices that are identified as the Model WNACB46 which is the adorne 4-Button Netatmo Scene Controller and the Model WZ3ACB46 which is the adorne 4-Button Hospitality Scene Controller.

The adorne 4-Button Scene Controller is a wireless switch from the Adorne collection, manufactured by Legrand. The switch uses 120 VAC / 60 Hz input to power the EUT with Zigbee radio that operates at 2.4 GHz controlled by the Netatmo Smart Lighting System. The scene controller allows for an end user configurable, preset lighting scene that adds four customized scenes to a connected installation.

The Model WNACB46 adorne 4-Button Netatmo Scene Controller and the Model WZ3ACB46 adorne 4-Button Hospitality Scene Controller are identical in construction and functionality. There are no differences except cosmetics and the differences in model numbers are for marketing purposes.

2.2 Product Category

FCC Part 15, Subpart C (Section 15.247), IC RSS-Gen, IC RSS-247

2.3 Product Classification

47 CFR Part 15, Subpart C, Section 15.247 “DTS Operation within the band of 900 – 928 MHz, 2400 – 2483.5 MHz, and 5725 – 5850 MHz.”



2.4 Test Configuration

Samples of the Legrand Model WNACB46 and WZ3ACB46 adorne 4-Button Scene Controller with Zigbee, were tested at the Low Channel 11 at 2405 MHz, Middle Channel 18 at 2440 MHz and High Channel 26 at 2480 MHz. The Legrand models with Zigbee radio samples contained control software that can utilize the O-QPSK modulation used in normal operation. The control software sets the EUT with the maximum output power when in Transmit Mode (With and Without Modulation). The control software also allowed the tester to select an un-modulated transmit signal for the radio of the unit under test or to place the radio in a receive mode. The highest amplitude was determined to be when the radio transmitted with modulation.

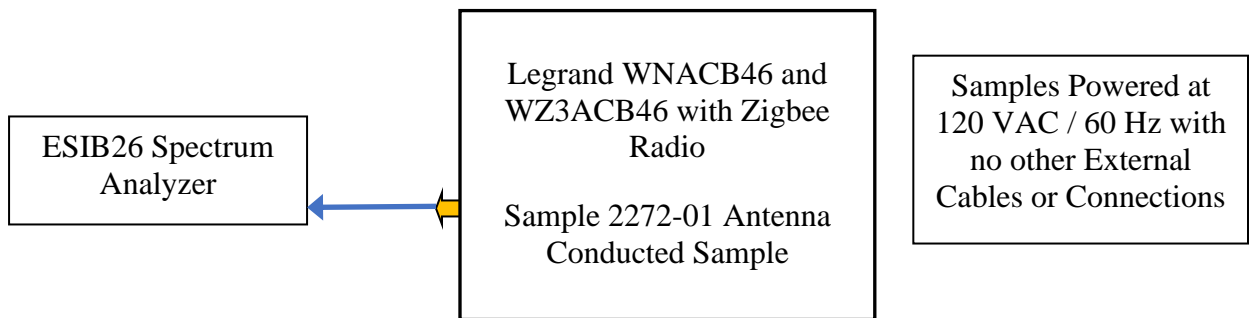
2.5 Test Configuration Rationale

Samples of the Legrand Models WNACB46 and WZ3ACB46 with Zigbee radio, were powered externally at 120 VAC / 60 Hz and were supplied with software which controlled the operation of the Zigbee radio in a manner consistent with normal use.

2.6 Test Configuration Diagrams – Zigbee Radio

Block diagrams of the EUT configuration showing interconnection cables are illustrated below. The drawing shows the physical hardware layout used for the tests along with I/O cables and AC power distribution. Diagrams show the Conducted Measurement configuration connection and Radiated Measurement configuration connection when testing the Zigbee Radio.

2.6.1 Zigbee Configuration – Conducted Measurement



← BEC-926, 1 Meter SMA Cable Connecting the SMA Connection from the Zigbee Radio Output to the Input of the Rohde and Schwarz ESIB26 Measurement Analyzer

↪ SMA Adapter Connected from the Zigbee Radio for connection to the SMA Cable



2.6.2 Zigbee Configuration – Radiated Measurement

Legrand WNACB46 and WZ3ACB46 Radiated Emissions Test Sample 2272-02	Samples Powered at 120 VAC / 60 Hz with no other External Cables or Connections
--	--

2.7 EUT Information, Interconnection Cabling and Support Equipment

EUT Hardware

Description	Manufacturer	Model	Serial Number	Sample Number
adorne 4-Button Scene Controller - Antenna Conducted Test Sample	Legrand	WNACB46 and WZ3ACB46	None	2272-01
adorne 4-Button Scene Controller - Radiated Test Sample				2272-02

Interconnection Cable List (Conducted Measurement Test Setup)

Manufacturer	Model	Type	Shielding	Length	Description
Suhner	S04272B	High Frequency RF Cable 1 to 40 GHz	Double Braid	1 Meter	Measurement Cable from the Antenna SMA Connector to the R&S ESIB26 Receiver. Asset # BEC-962



2.8 Test Signals and Test Modulation

By design this product does not have an external modulation input connector, therefore, normal internally generated modulation was used. When evaluating the type of signal that would generate the highest output amplitude there was no difference between the un-modulated carrier and the modulated carrier. The testing was performed using modulated signals.

2.8.1 Zigbee Radio - Test Signals and Modulation

The EUT transmits to a discrete frequency on a specific channel. The Legrand WNACB46 and WZ3ACB46 with Zigbee radio has 16 Channels available. The 16 Channels and frequencies that can be transmitted by the EUT are as follows:

Zigbee Channel	Frequency (MHz)	Zigbee Channel	Frequency (MHz)
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440	26	2480

For the required testing, the EUT was configured to transmit at low Channel 11 (2405 MHz), middle Channel 18 (2440 MHz) and high Channel 26 (2480 MHz). The Zigbee radio utilizes one modulation, O-QPSK.

2.9 Grounding

There was no ground connection to the EUT during test. This presents the worst-case scenario of an ungrounded device; either by failing to attach ground at installation or breakage of ground wire.

2.10 EUT Modifications

With the exception for the attachment of an SMA connector directly to the antenna output on the main board of the Legrand Model WNACB46 and Model WZ3ACB46, no modifications were made to the test samples.



3.0 Applicable Requirements, Methods, and Procedures

3.1 Applicable Requirements

The results of the measurement of the radio disturbance characteristics of the EUT described herein may be applied and where appropriate, provide a presumption of compliance to one or more of the following requirements or to other requirements at the discretion of the customer, regulatory agencies, or other entities.

3.1.1 FCC Requirements

Code of Federal Regulations: Title 47 – Telecommunication

Chapter I - Federal Communications Commission

Sub-chapter A – General

Part 15 – Radio Frequency Devices

Subpart C - Intentional Radiators

3.1.2 Industry Canada Requirements

RSS-Gen Issue 5: General Requirements for Compliance of Radio Apparatus

RSS-247 Issue 2: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

3.1.3 Basic Test Methods and Test Procedures

558074 D01 DTS Meas Guidance v05r02, Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating under Section 15.247 of the FCC Rules.

ANSI C63.10-2013, American National Standard for Compliance Testing of Unlicensed Wireless Devices.

3.2 Deviations or Exclusions from the Requirements

No deviations or exclusions were made.



4.0 Test Results

4.1 Conducted Emissions AC Power Port (47 CFR 15.207)(RSS-Gen 7.2)

The Legrand Model WNACB46 with Zigbee radio is powered externally at 120 VAC / 60 Hz and therefore requires the Conducted Emissions AC Power Port testing.

4.1.1 Conducted Emissions Test Procedure

AC Power Line

Conducted emissions at the power line input of the EUT were measured with an EMI receiver set to the appropriate detector and CISPR bandwidth, which was connected to the RF output of a 50 Ω , 50 μ H Line Impedance Stabilization Network (LISN) installed in each power line.

Measurements were made over the frequency range of 150 kHz to 30 MHz while the EUT was operating as described in the EUT section of this report. The significant amplitudes of emissions measured on the AC power lines of the EUT were recorded as follows:

Emission (dB μ V) = Meter Reading (dB μ v) + Cable Loss (dB) + LISN Factor (dB) + Limiter Loss (dB)

Note: An EMI receiver set to peak mode was used to measure and record the spectrum for expediency. To determine compliance, the peak detector sweep is graphed against the appropriate average limit. This type of measurement is valid because the peak reading will always be greater than or equal to the average or quasi-peak reading. Peak emissions that are greater than or equal to 1 dB below the average limit are remeasured using either a manually tuned receiver with the detector function set to quasi-peak and then to average, or a receiver under remote control with quasi-peak and average detector functions.



4.1.2 Conducted Emissions Test Information

The following information is related to the testing performed for AC Conducted Emissions in the frequency range of 150 kHz to 30 MHz.

Frequency Range	150 kHz to 30 MHz
Test Standards	FCC Part 15.207 and RSS-Gen 7.2
Class Limits	Class B Device
BEC Test Area	Screen Room 1
Manufacturer	Legrand
Model	WNACB46
Serial Number	No Serial Number
Sample Number	2272-02
Sample Type	Radiated Emissions Sample Type
Test Configuration	During testing of the Transmitter, the EUT was tested at Maximum Output Power with typical modulation. The Transmitter Low Channel, Middle Channel and High Channel were tested along with the Transmitter in Rx Mode.
Port Tested	AC Mains Port of the EUT
EUT Power	120 VAC / 60 Hz
Test Date	09/05/2023
Temperature	24°C
Humidity	51 %
Test Date	09/22/2023
Temperature	23°C
Humidity	52 %



4.1.3 Conducted Emissions 150 kHz to 30 MHz FCC 15.207 and RSS-Gen 7.2 Limits Test Results

The following graphs and tables show the conducted emissions recorded on the AC Power Port of the EUT displayed against the FCC Part 15.207 and RSS-Gen 7.2 Limits. EUT was powered at 120 Vac / 60 Hz.

EUT Transmitting at 2.405 GHz Low Channel Tables

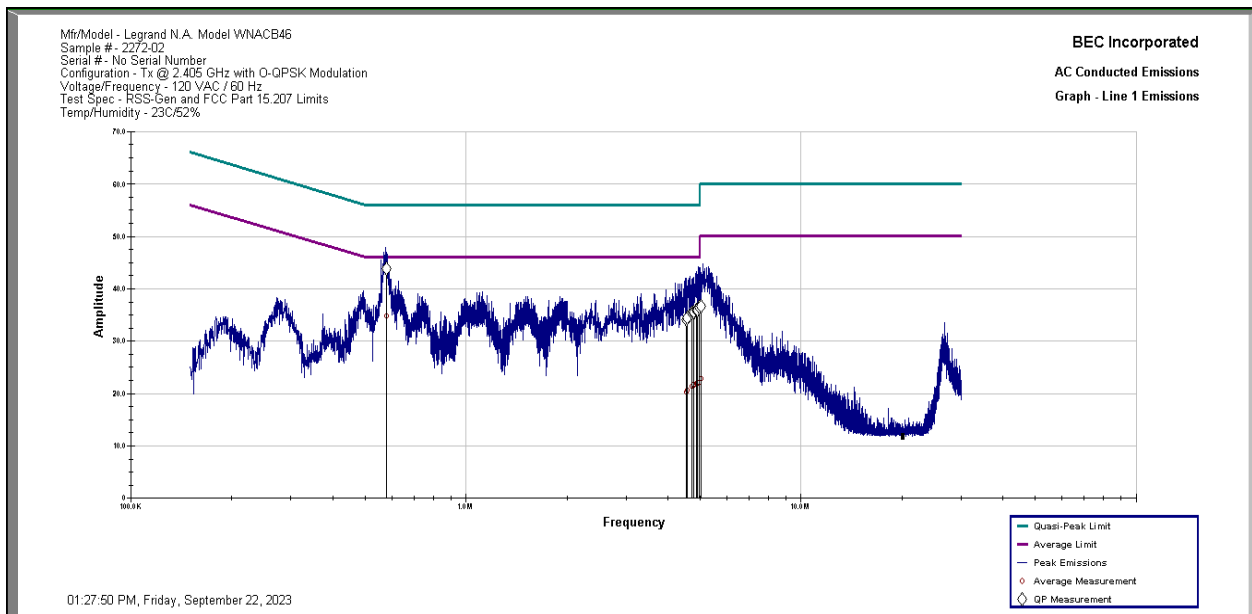
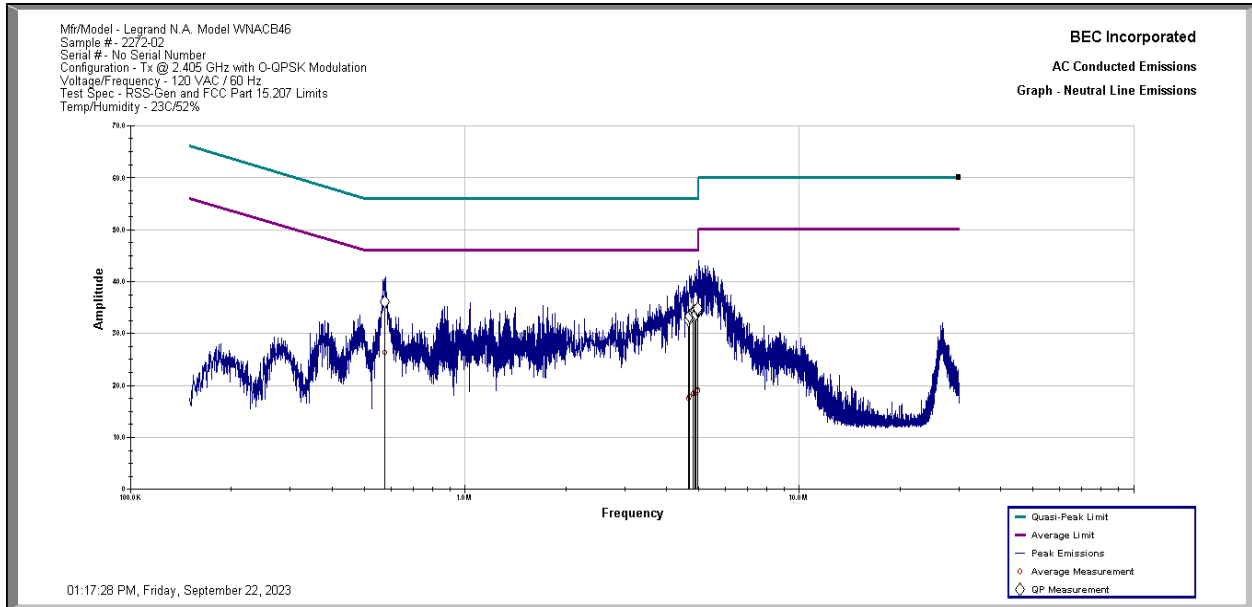
BEC Incorporated							
Neutral Line Conducted Emissions							
01:13:29 PM, Friday, September 22, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
576.241 KHz	26.37	46.00	-19.63	36.10	56.00	-19.90	10.13
4.646 MHz	17.49	46.00	-28.51	32.53	56.00	-23.47	10.27
4.681 MHz	17.97	46.00	-28.03	33.27	56.00	-22.73	10.27
4.801 MHz	18.38	46.00	-27.62	34.04	56.00	-21.96	10.28
4.862 MHz	18.65	46.00	-27.35	34.32	56.00	-21.68	10.28
4.884 MHz	18.56	46.00	-27.44	33.70	56.00	-22.30	10.28
4.948 MHz	19.03	46.00	-26.97	34.84	56.00	-21.16	10.28
4.953 MHz	19.15	46.00	-26.85	34.87	56.00	-21.13	10.28
4.966 MHz	19.10	46.00	-26.90	34.51	56.00	-21.49	10.28
4.973 MHz	19.04	46.00	-26.96	34.78	56.00	-21.22	10.28
Mfr/Model - Legrand N.A. Model WNACB46							
Sample # - 2272-02							
Serial # - No Serial Number							
Configuration - Tx @ 2.405 GHz with O-QPSK Modulation							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - RSS-Gen and FCC Part 15.207 Limits							
Temp/Humidity - 23C/52%							



BEC Incorporated							
Line 1 Conducted Emissions							
01:23:50 PM, Friday, September 22, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
577.182 KHz	34.80	46.00	-11.20	43.79	56.00	-12.21	10.15
4.549 MHz	20.25	46.00	-25.75	33.98	56.00	-22.02	10.29
4.583 MHz	20.69	46.00	-25.31	34.47	56.00	-21.53	10.29
4.717 MHz	21.39	46.00	-24.61	35.29	56.00	-20.71	10.29
4.767 MHz	21.52	46.00	-24.48	35.40	56.00	-20.60	10.30
4.780 MHz	21.72	46.00	-24.28	35.53	56.00	-20.47	10.30
4.873 MHz	21.86	46.00	-24.14	35.90	56.00	-20.10	10.30
4.887 MHz	21.88	46.00	-24.12	35.95	56.00	-20.05	10.30
4.955 MHz	22.04	46.00	-23.96	36.45	56.00	-19.55	10.30
5.025 MHz	22.76	50.00	-27.24	36.62	60.00	-23.38	10.30
Mfr/Model - Legrand N.A. Model WNACB46							
Sample # - 2272-02							
Serial # - No Serial Number							
Configuration - Tx @ 2.405 GHz with O-QPSK Modulation							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - RSS-Gen and FCC Part 15.207 Limits							
Temp/Humidity - 23C/52%							



EUT Transmitting at 2.405 GHz Low Channel Graphs



Results: All conducted emissions measured on the AC Power Port of the Legrand Model WNACB46 Sample 2272-02 in Tx Mode Low Channel at 2.405 GHz are below the limit specified by FCC Part 15.207 and RSS-Gen 7.2 Limits by a margin of 11.20 dB.



EUT Transmitting at 2.440 GHz Middle Channel Tables

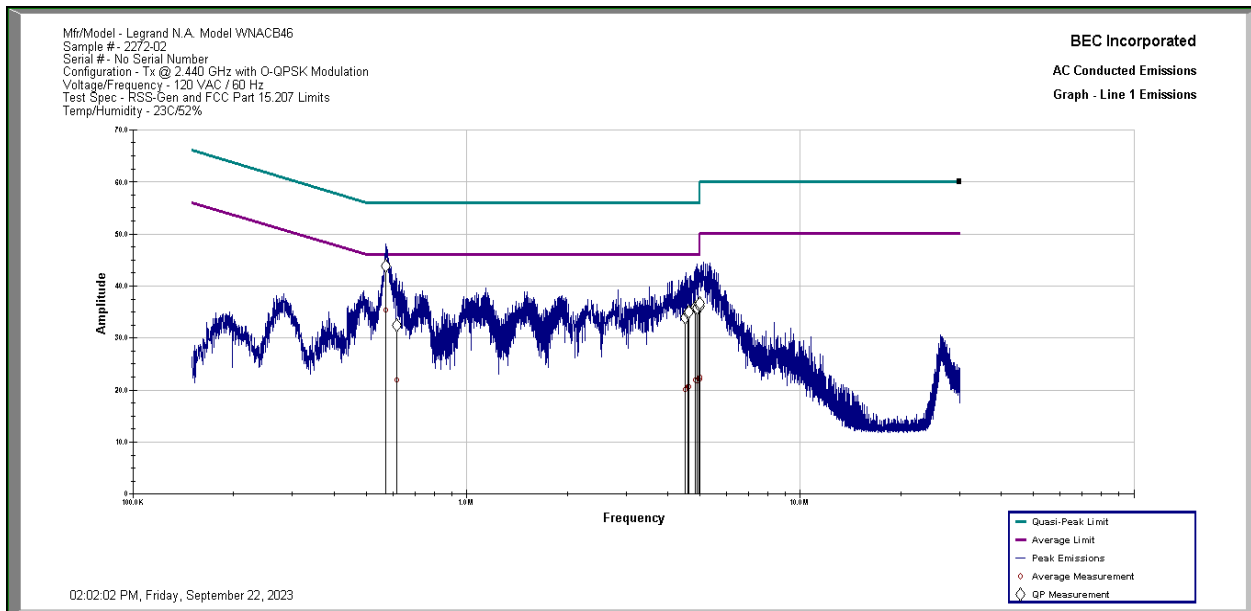
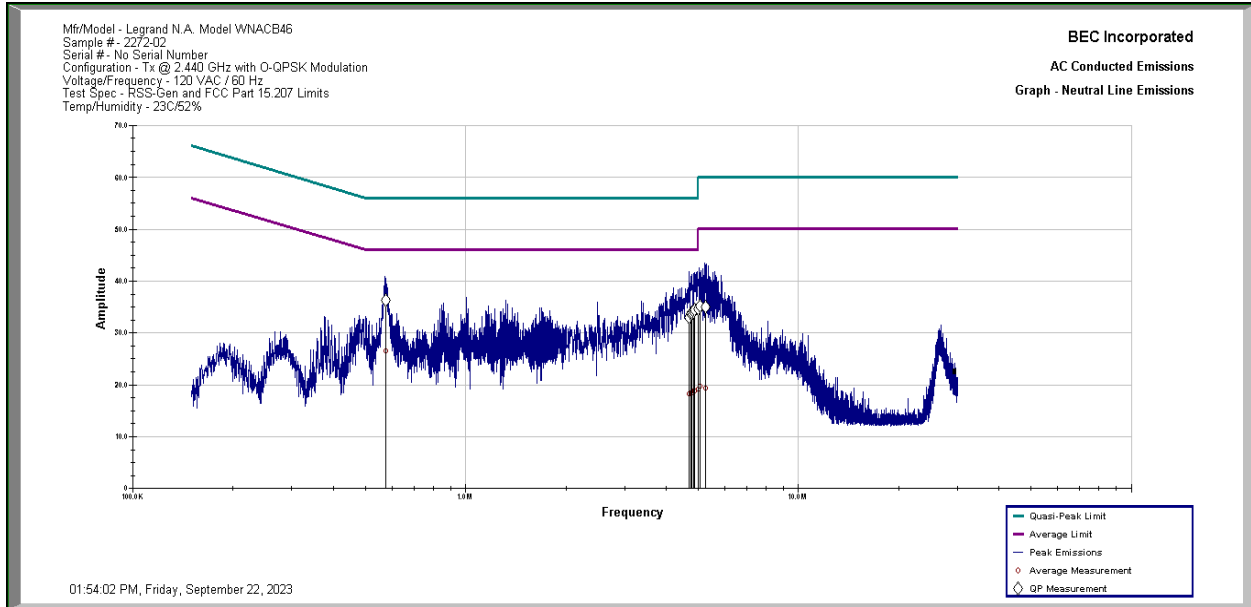
BEC Incorporated Neutral Line Conducted Emissions 01:50:03 PM, Friday, September 22, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
575.094 KHz	26.52	46.00	-19.48	36.29	56.00	-19.71	10.13
4.694 MHz	18.21	46.00	-27.79	32.92	56.00	-23.08	10.27
4.758 MHz	18.45	46.00	-27.55	33.61	56.00	-22.39	10.28
4.769 MHz	18.50	46.00	-27.50	33.82	56.00	-22.18	10.28
4.844 MHz	18.85	46.00	-27.15	34.06	56.00	-21.94	10.28
4.864 MHz	18.71	46.00	-27.29	34.34	56.00	-21.66	10.28
4.992 MHz	19.11	46.00	-26.89	34.69	56.00	-21.31	10.28
4.993 MHz	19.18	46.00	-26.82	34.54	56.00	-21.46	10.28
5.055 MHz	19.76	50.00	-30.24	35.25	60.00	-24.75	10.28
5.269 MHz	19.39	50.00	-30.61	34.94	60.00	-25.06	10.30
Mfr/Model - Legrand N.A. Model WNACB46							
Sample # - 2272-02							
Serial # - No Serial Number							
Configuration - Tx @ 2.440 GHz with O-QPSK Modulation							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - RSS-Gen and FCC Part 15.207 Limits							
Temp/Humidity - 23C/52%							



BEC Incorporated Line 1 Conducted Emissions 01:58:02 PM, Friday, September 22, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
572.394 KHz	35.39	46.00	-10.61	43.91	56.00	-12.09	10.15
617.062 KHz	21.85	46.00	-24.15	32.40	56.00	-23.60	10.15
4.519 MHz	20.09	46.00	-25.91	33.93	56.00	-22.07	10.29
4.593 MHz	20.62	46.00	-25.38	34.74	56.00	-21.26	10.29
4.641 MHz	20.70	46.00	-25.30	34.95	56.00	-21.05	10.29
4.849 MHz	21.89	46.00	-24.11	35.98	56.00	-20.02	10.30
4.889 MHz	21.76	46.00	-24.24	35.80	56.00	-20.20	10.30
4.961 MHz	22.11	46.00	-23.89	36.55	56.00	-19.45	10.30
5.001 MHz	22.21	50.00	-27.79	36.06	60.00	-23.94	10.30
5.004 MHz	22.40	50.00	-27.60	36.63	60.00	-23.37	10.30
Mfr/Model - Legrand N.A. Model WNACB46							
Sample # - 2272-02							
Serial # - No Serial Number							
Configuration - Tx @ 2.440 GHz with O-QPSK Modulation							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - RSS-Gen and FCC Part 15.207 Limits							
Temp/Humidity - 23C/52%							



EUT Transmitting at 2.440 GHz Middle Channel Graphs



Results: All conducted emissions measured on the AC Power Port of the Legrand Model WNACB46 Sample 2272-02 in Tx Mode Middle Channel at 2.440 GHz are below the limit specified by FCC Part 15.207 and RSS-Gen 7.2 Limits by a margin of 10.61 dB.



EUT Transmitting at 2.480 GHz High Channel Tables

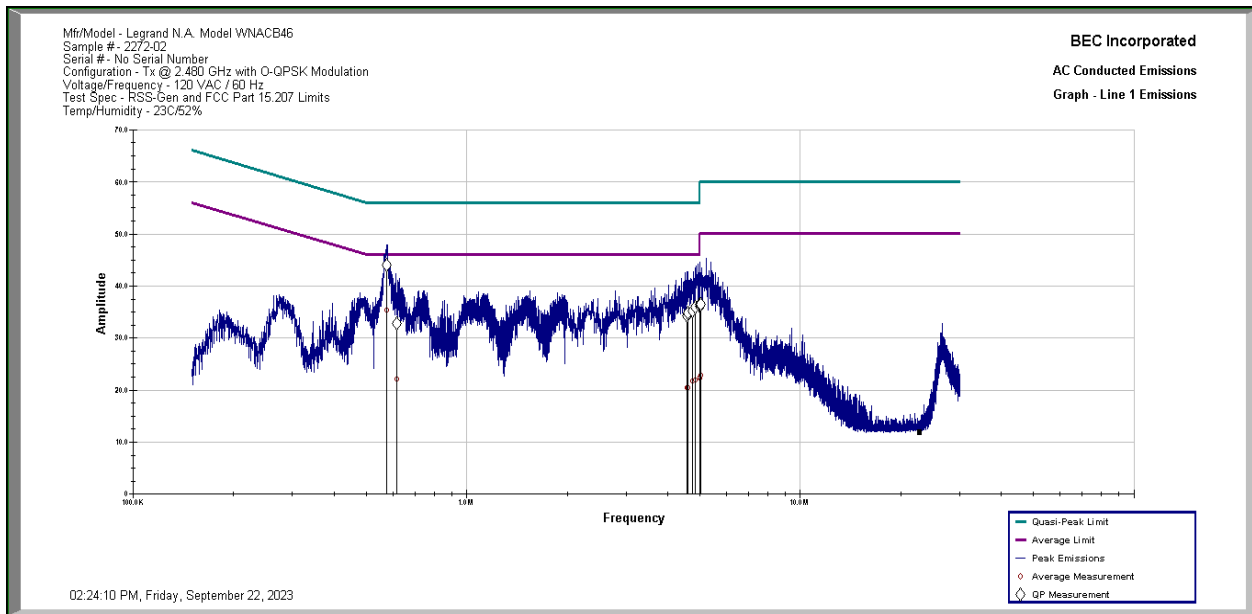
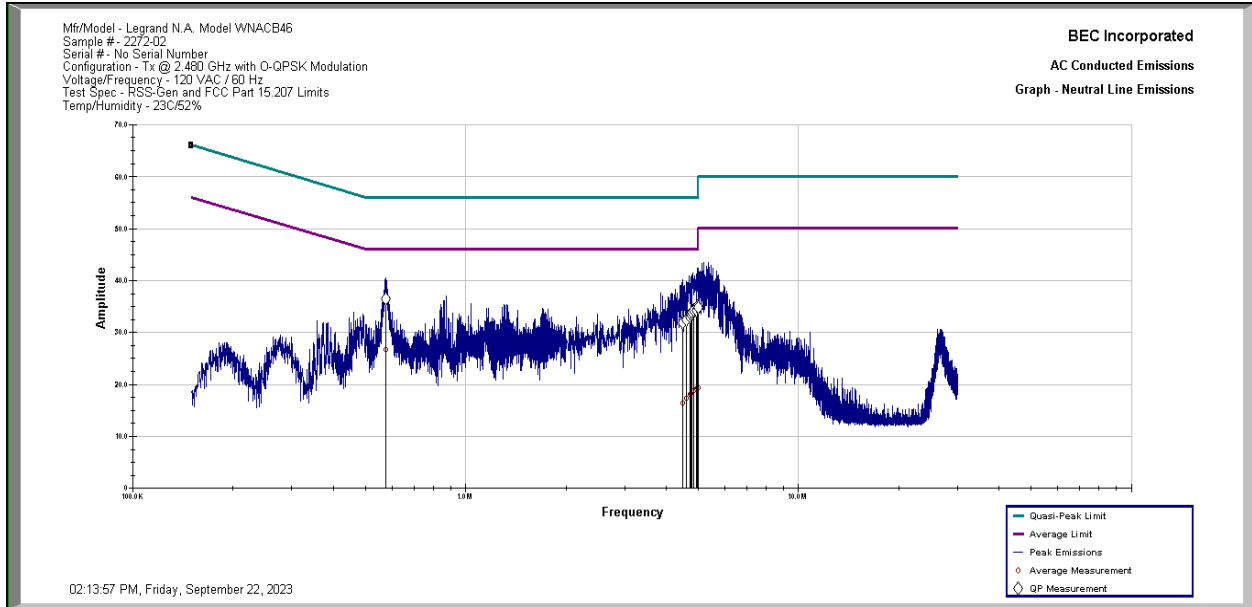
BEC Incorporated Neutral Line Conducted Emissions 02:13:57 PM, Friday, September 22, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
573.972 KHz	26.70	46.00	-19.30	36.53	56.00	-19.47	10.13
4.474 MHz	16.43	46.00	-29.57	31.86	56.00	-24.14	10.27
4.595 MHz	17.30	46.00	-28.70	32.38	56.00	-23.62	10.27
4.706 MHz	18.07	46.00	-27.93	32.88	56.00	-23.12	10.27
4.736 MHz	18.24	46.00	-27.76	33.43	56.00	-22.57	10.27
4.786 MHz	18.82	46.00	-27.18	33.94	56.00	-22.06	10.28
4.842 MHz	18.72	46.00	-27.28	34.18	56.00	-21.82	10.28
4.936 MHz	19.13	46.00	-26.87	34.28	56.00	-21.72	10.28
4.957 MHz	19.26	46.00	-26.74	34.98	56.00	-21.02	10.28
4.986 MHz	19.30	46.00	-26.70	34.84	56.00	-21.16	10.28
Mfr/Model - Legrand N.A. Model WNACB46							
Sample # - 2272-02							
Serial # - No Serial Number							
Configuration - Tx @ 2.480 GHz with O-QPSK Modulation							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - RSS-Gen and FCC Part 15.207 Limits							
Temp/Humidity - 23C/52%							



BEC Incorporated							
Line 1 Conducted Emissions							
02:24:10 PM, Friday, September 22, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
575.424 KHz	35.35	46.00	-10.65	44.06	56.00	-11.94	10.15
616.736 KHz	22.08	46.00	-23.92	32.80	56.00	-23.20	10.15
4.566 MHz	20.43	46.00	-25.57	34.17	56.00	-21.83	10.29
4.601 MHz	20.47	46.00	-25.53	34.76	56.00	-21.24	10.29
4.757 MHz	21.74	46.00	-24.26	35.26	56.00	-20.74	10.30
4.825 MHz	21.98	46.00	-24.02	35.92	56.00	-20.08	10.30
4.831 MHz	21.90	46.00	-24.10	35.88	56.00	-20.12	10.30
4.991 MHz	22.27	46.00	-23.73	36.17	56.00	-19.83	10.30
5.006 MHz	22.41	50.00	-27.59	36.46	60.00	-23.54	10.30
5.037 MHz	22.75	50.00	-27.25	36.44	60.00	-23.56	10.30
Mfr/Model - Legrand N.A. Model WNACB46							
Sample # - 2272-02							
Serial # - No Serial Number							
Configuration - Tx @ 2.480 GHz with 0-QPSK Modulation							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - RSS-Gen and FCC Part 15.207 Limits							
Temp/Humidity - 23C/52%							



EUT Transmitting at 2.480 GHz High Channel Graphs



Results: All conducted emissions measured on the AC Power Port of the Legrand Model WNACB46 Sample 2272-02 in Tx Mode High Channel at 2.480 GHz are below the limit specified by FCC Part 15.207 and RSS-Gen 7.2 Limits by a margin of 10.65 dB.

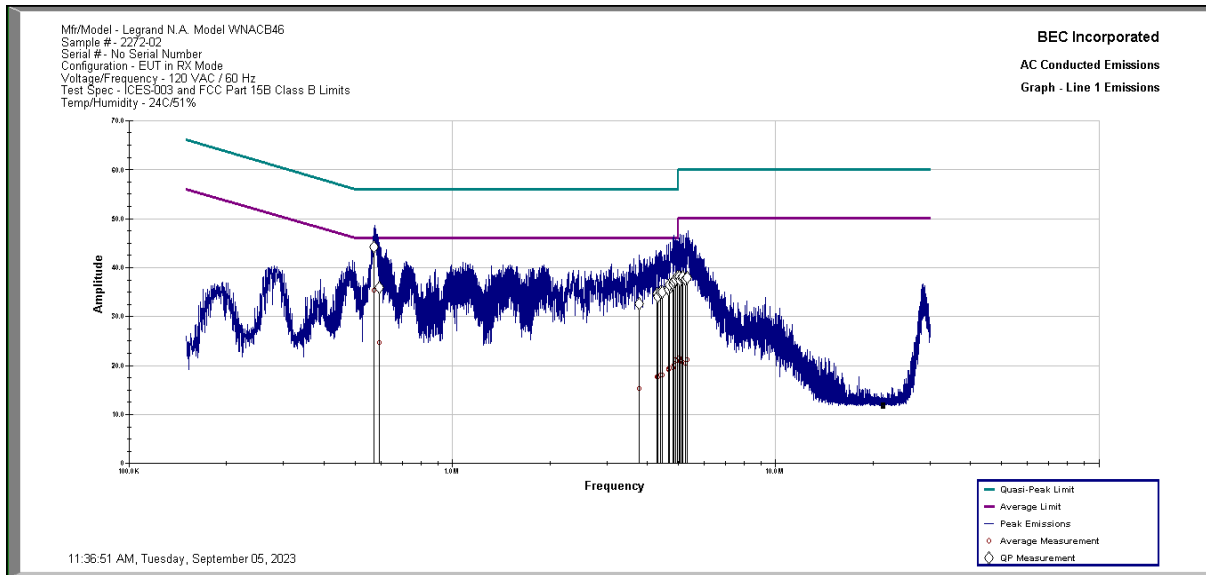
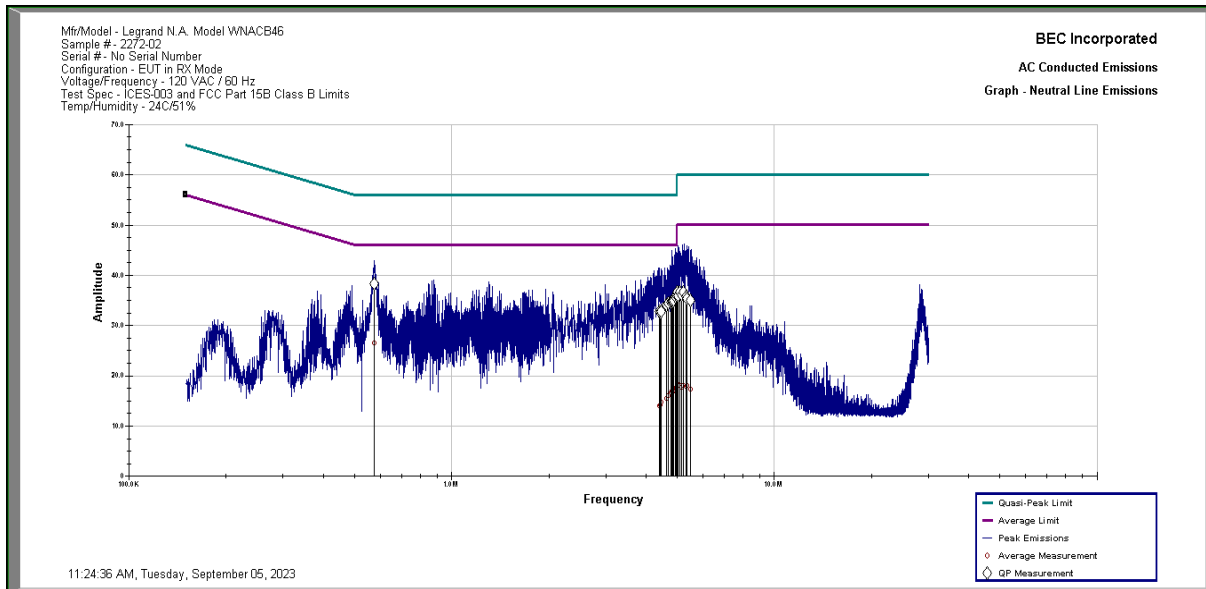


EUT Configured in Rx Mode Tables

BEC Incorporated Neutral Line Conducted Emissions 11:24:36 AM, Tuesday, September 05, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
574.962 KHz	26.52	46.00	-19.48	38.31	56.00	-17.69	10.13
4.398 MHz	14.05	46.00	-31.95	32.87	56.00	-23.13	10.27
4.435 MHz	14.22	46.00	-31.78	32.52	56.00	-23.48	10.27
4.467 MHz	14.76	46.00	-31.24	32.82	56.00	-23.18	10.27
4.618 MHz	15.48	46.00	-30.52	34.04	56.00	-21.96	10.27
4.677 MHz	16.04	46.00	-29.96	34.36	56.00	-21.64	10.27
4.787 MHz	16.62	46.00	-29.38	34.58	56.00	-21.42	10.28
4.818 MHz	16.88	46.00	-29.12	34.86	56.00	-21.14	10.28
4.850 MHz	16.81	46.00	-29.19	34.84	56.00	-21.16	10.28
4.869 MHz	17.14	46.00	-28.86	34.91	56.00	-21.09	10.28
4.921 MHz	17.46	46.00	-28.54	35.71	56.00	-20.29	10.28
4.967 MHz	17.49	46.00	-28.51	36.16	56.00	-19.84	10.28
5.007 MHz	18.43	50.00	-31.57	36.64	60.00	-23.36	10.28
5.013 MHz	18.25	50.00	-31.75	35.99	60.00	-24.01	10.28
5.083 MHz	18.08	50.00	-31.92	36.67	60.00	-23.33	10.28
5.155 MHz	17.70	50.00	-32.30	36.11	60.00	-23.89	10.29
5.214 MHz	17.96	50.00	-32.04	36.60	60.00	-23.40	10.29
5.309 MHz	17.88	50.00	-32.12	35.66	60.00	-24.34	10.30
5.346 MHz	18.00	50.00	-32.00	35.36	60.00	-24.64	10.30
5.506 MHz	17.25	50.00	-32.75	35.05	60.00	-24.95	10.31
Mfr/Model - Legrand N.A. Model WNACB46							
Sample # - 2272-02							
Serial # - No Serial Number							
Configuration - EUT in RX Mode							
Voltage/Frequency - 120 VAC / 60 Hz							



EUT Configured in Rx Mode Graphs



Results: All conducted emissions measured on the AC Power Port of the Legrand Model WNACB46 Sample 2272-02 in Rx Mode are below the limit specified by FCC Part 15.207 and RSS-Gen 7.2 Limits by a margin of 10.59 dB.



4.2 Emissions in Non-Restricted and Restricted Frequency Bands 1 GHz - 25 GHz (47 CFR 15.205, 15.209)(RSS-GEN 8.9, 8.10)

The emissions from the Legrand Model WNACB46 with Zigbee Radio, which fall in the restricted bands of operation, detailed in this section, comply with the limits of 15.209. The Legrand Model WNACB46 was tested at three frequencies: Low (2.405 GHz), Middle (2.440 GHz) and High (2.480 GHz). The modulation was O-QPSK.

Measurement of the signals was performed with the EUT on a turntable and a variable height antenna mast at 3 meters distance. The signals residing in restricted bands of operation are designated in the tables in the results section.

Frequency Range	1 GHz to 18 GHz
Test Standards	FCC Part 15.205 and 15.209 and RSS-Gen 8.9 and 8.10
Limits	FCC Part 15.205 and 15.209 and RSS-Gen 8.9 and 8.10 Limits
Manufacturer	Legrand
Model	WNACB46
Serial Number	No Serial Number
Sample Number	2272-02
Sample Type	Radiated Emissions Sample Type
Test Configuration	During testing of the Transmitter, the EUT was tested at Maximum Output Power with typical modulation. The Transmitter Low Channel, Middle Channel and High Channel were tested along with the Transmitter in Rx Mode.
Port Tested	Enclosure Port of the EUT
EUT Power	120 VAC / 60 Hz
Test Date	09/25/2023
Temperature	21°C
Humidity	61 %



4.2.1 Radiated Spurious Emissions Test Facility

OATS

The Open Area Test Site (OATS) is an all-weather facility with a wooden enclosure that contains a ground level 4-foot diameter turntable capable of rotating equipment 360 degrees. The enclosure is free of reflective metallic objects and extraneous electromagnetic signals. This non-metallic enclosure and the 3 and 10 meter test range existing outside the enclosure rest upon a protective insulating material, which in turn covers a flat, metal, continuous ground plane.

Instrumentation for remote control of the antenna mast, turntable, and other equipment are controlled by personnel indoors. The EUT and support peripherals required for EUT operation were placed on a table 80 cm high for tabletop equipment or directly on the turntable surface for floor standing equipment.

The test site complies with the attenuation measurements specified in ANSI C63.4.

SR#1

The Semi-Anechoic Shielded Room (SR#1) is a ferrite and absorber lined chamber which houses a 5-foot diameter turntable capable of rotating equipment 360 degrees and antenna mast for Horizontal and Vertical polarity measurements. The enclosure is free of reflective metallic objects and extraneous electromagnetic signals. This 3-meter shielded enclosure has a raised computer floor with metal tile bottoms providing a continuous ground plane.

Instrumentation for remote control of the antenna mast, turntable, and other equipment are controlled by personnel outside the chamber. The EUT and support peripherals required for EUT operation were placed on a table 80 cm high for tabletop equipment or directly on the turntable surface for floor standing equipment.



4.2.2 Emissions in Non-Restricted and Restricted Frequency Bands Test Procedure

Radiated Emissions 30 MHz – 40 GHz

The EMI receiver was set to quasi-peak mode for frequencies from 30 MHz to 1 GHz and the appropriate CISPR bandwidths were employed. The receiver was set to average mode for frequencies above 1 GHz with the appropriate CISPR bandwidths were employed.

Three orthogonal positions of the EUTs were evaluated for maximum emissions. The position of the EUTs placed in an upright position horizontal with buttons facing the measurement antenna on the horizontal surface of the 80-cm table was determined to be the axis that produced the highest emissions for the Legrand Model WNACB46.

Significant emissions found during the preliminary scans were maximized by rotating the turntable and varying the antenna height. Both horizontal and vertical antenna polarities were also investigated for suspect emissions. The signals are maximized and measured using the in house generated RADE or off the shelf TILE software. The support equipment and test item(s) were powered off in turn to determine the source of the emissions where appropriate.

Field strengths were calculated as follows:

Field Strength (dB μ V/m) = Meter Reading (dB μ V) + Antenna Factor (dB/m) + Cable Loss (dB) – Amplifier Gain (dB)

The Legrand Model WNACB46 EUT was tested in the 30 MHz to 1000 MHz frequency range and 1 to 18 GHz frequency range with the radio transmitting at low, middle and high frequencies and while in receive mode (non-transmission). The Zigbee radio was tested with O-QPSK modulated transmission signals at maximum output.

The following tables are the highest emissions recorded and summarized. The use of the 15.209 limit table for restricted band emissions is not required but ensures compliance to 15.205 and 15.209. The signals in the tables that fall into the restricted bands, described in 15.205, are marked with an asterisk.

Spectrum Analyzer Settings

RBW	1 MHz
VBW	3 MHz
Sweep	Auto
Reference Level	80 dB μ V
Attenuation	10 dB
Detectors	Peak and Average
Frequency Range	1 GHz to 18 GHz



4.2.3 Emissions in Frequency Bands 1 - 18 GHz WNACB46 with Zigbee Radio Test Results (09/25/2023)

Radiated emissions scans, 1 – 18 GHz, were made for the EUT configured for the low, middle and high transmission frequencies and in Rx mode. The Transmit Frequencies were measured with O-QPSK Modulation at maximum output. Peak and Average levels shown in the table are corrected values.

Legrand Model WNACB46 Zigbee Radio, Low Channel 11, 2.405 GHz, Modulated

Frequency	Peak Measured	Average Measured	Antenna Polarity	Turntable Angle	Antenna Height	Correction Factors	FCC 15.205/209: RSS-GEN/RSS-247 Average Limit	FCC 15.205/209: RSS-GEN/RSS-247 Average Margin	FCC 15.205/209: RSS-GEN/RSS-247 Peak Limit	FCC 15.205/209: RSS-GEN/RSS-247 Peak Margin	Result
GHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	dBuV/m	dB	
* 4.811	38.46	28.19	H	112	242	1.68	53.98	-25.79	73.98	-35.52	PASS
* 4.81556	38.23	27.56	V	187	102	1.70	53.98	-26.42	73.98	-35.75	PASS
* 7.50762	44.91	33.80	V	296	244	4.71	53.98	-20.18	73.98	-29.07	PASS
8.8468	45.55	36.50	V	314	140	6.73	53.98	-17.48	73.98	-28.43	PASS
8.9818	46.63	36.47	H	128	176	6.63	53.98	-17.51	73.98	-27.35	PASS
* 9.40831	45.31	36.33	H	215	145	6.78	53.98	-17.65	73.98	-28.67	PASS
9.6134	44.90	35.66	H	077	185	6.31	53.98	-18.32	73.98	-29.08	PASS
9.6853	47.55	35.83	V	141	145	6.25	53.98	-18.15	73.98	-26.43	PASS
* 11.0749	48.09	37.31	V	074	156	6.41	53.98	-16.67	73.98	-25.89	PASS
* 11.1299	47.30	37.71	H	252	245	6.43	53.98	-16.27	73.98	-26.68	PASS
* 12.023	48.26	38.19	V	340	148	7.74	53.98	-15.79	73.98	-25.72	PASS
14.4258	55.89	45.99	H	115	221	12.23	53.98	-7.99	73.98	-18.09	PASS
*Restricted Band Signal											

Legrand Model WNACB46 Zigbee Radio, Middle Channel 18, 2.440 GHz, Modulated

Frequency	Peak Measured	Average Measured	Antenna Polarity	Turntable Angle	Antenna Height	Correction Factors	FCC 15.205/209: RSS-GEN/RSS-247 Average Limit	FCC 15.205/209: RSS-GEN/RSS-247 Average Margin	FCC 15.205/209: RSS-GEN/RSS-247 Peak Limit	FCC 15.205/209: RSS-GEN/RSS-247 Peak Margin	Result
GHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	dBuV/m	dB	
* 4.81745	37.50	27.54	H	294	178	1.71	53.98	-26.44	73.98	-36.49	PASS
* 4.87962	39.18	29.64	V	318	183	1.88	53.98	-24.34	73.98	-34.80	PASS
* 7.31363	43.33	33.62	V	203	155	4.73	53.98	-20.36	73.98	-30.65	PASS
8.9758	45.88	36.46	H	015	233	6.65	53.98	-17.52	73.98	-28.10	PASS
* 9.40249	46.24	36.32	H	350	196	6.79	53.98	-17.66	73.98	-27.74	PASS
9.6206	46.06	35.87	H	090	227	6.29	53.98	-18.11	73.98	-27.92	PASS
9.7707	45.70	35.46	V	019	237	6.14	53.98	-18.52	73.98	-28.28	PASS
* 11.1246	45.79	37.62	H	084	172	6.43	53.98	-16.36	73.98	-28.20	PASS
* 12.2219	48.21	38.10	V	022	100	7.81	53.98	-15.88	73.98	-25.77	PASS
14.4273	54.33	45.95	H	077	135	12.23	53.98	-8.04	73.98	-19.66	PASS
*Restricted Band Signal											



Legrand Model WNACB46 Zigbee Radio, High Channel 26, 2.480 GHz, Modulated

Frequency	Peak Measured	Average Measured	Antenna Polarity	Turntable Angle	Antenna Height	Correction Factors	FCC 15.205/209: RSS-GEN/RSS-247 Average Limit	FCC 15.205/209: RSS-GEN/RSS-247 Average Margin	FCC 15.205/209: RSS-GEN/RSS-247 Peak Limit	FCC 15.205/209: RSS-GEN/RSS-247 Peak Margin	Result
GHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	dBuV/m	dB	
* 4.95628	36.48	26.30	V	063	100	1.83	53.98	-27.68	73.98	-37.50	PASS
* 4.95759	36.61	26.74	H	282	140	1.83	53.98	-27.24	73.98	-37.37	PASS
* 7.43416	41.71	33.38	H	060	125	4.75	53.98	-20.60	73.98	-32.27	PASS
* 7.45146	42.94	33.41	V	160	103	4.75	53.98	-20.57	73.98	-31.04	PASS
* 8.118	45.40	36.07	V	189	138	5.32	53.98	-17.91	73.98	-28.58	PASS
* 8.18552	46.67	35.68	H	001	108	5.42	53.98	-18.30	73.98	-27.31	PASS
9.9094	46.40	35.85	H	002	238	6.31	53.98	-18.13	73.98	-27.58	PASS
9.9174	45.54	36.32	V	066	234	6.31	53.98	-17.66	73.98	-28.44	PASS
* 11.1046	46.37	37.15	V	250	201	6.40	53.98	-16.83	73.98	-27.61	PASS
* 12.4094	47.19	38.32	V	094	249	7.67	53.98	-15.66	73.98	-26.79	PASS
* 12.4446	50.22	38.38	H	249	217	7.80	53.98	-15.61	73.98	-23.77	PASS
14.7328	55.47	45.70	H	360	136	12.03	53.98	-8.28	73.98	-18.51	PASS
*Restricted Band Signal											

Legrand Model WNACB46 Zigbee Radio, Rx Mode

Frequency	Peak Measured	Average Measured	Antenna Polarity	Turntable Angle	Antenna Height	Correction Factors	FCC 15.205/209: RSS-GEN/RSS-247 Average Limit	FCC 15.205/209: RSS-GEN/RSS-247 Average Margin	FCC 15.205/209: RSS-GEN/RSS-247 Peak Limit	FCC 15.205/209: RSS-GEN/RSS-247 Peak Margin	Result
GHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	dBuV/m	dB	
* 4.71463	36.50	27.07	H	297	116	1.33	53.98	-26.91	73.98	-37.48	PASS
* 4.50083	36.23	26.13	V	307	104	0.74	53.98	-27.85	73.98	-37.75	PASS
6.6769	41.18	32.01	H	086	100	3.49	53.98	-21.97	73.98	-32.80	PASS
* 7.60525	44.66	34.01	V	005	172	4.74	53.98	-19.97	73.98	-29.32	PASS
* 8.03528	46.68	35.65	H	288	102	5.23	53.98	-18.33	73.98	-27.30	PASS
* 8.29965	44.92	35.85	V	221	175	5.49	53.98	-18.13	73.98	-29.06	PASS
*10.7536	46.28	36.35	V	018	186	6.09	53.98	-17.63	73.98	-27.70	PASS
* 11.2694	46.65	37.55	H	308	198	6.51	53.98	-16.43	73.98	-27.33	PASS
* 12.0399	47.56	38.13	V	084	176	7.73	53.98	-15.85	73.98	-26.42	PASS
*Restricted Band Signal											

Test Results: The Legrand Model WNACB46 with Zigbee Radio complies with the requirements of 47 CFR Part 15.205, 15.209 and RSS-Gen Section 8.10 for non-restricted and restricted bands of operation between 1 – 18 GHz with an Average Margin of 7.99 dB.



4.3 Maximum Conducted (Average) Output Power and EIRP (FCC Part 15.247(b)(3), RSS-247 Section 5.4(d))

4.3.1 Maximum Conducted (Average) Output Power Test Procedure

A conducted power measurement of the output frequency of the Zigbee radio was measured according to the guidance of KDB 550874 D01, Section 8.3.1.2. The modulated, transmitter output signal is wide-band and noise-like. Further guidance from the KDB document identified ANSI C63.10, Section 11.9.2.2.2., (Method AVGSA-1), as the measurement procedure. The 99% Occupied Bandwidth is used to determine Spectrum Analyzer settings. The SA parameters are listed for the Zigbee radio maximum conducted (average) output power. Maximum Conducted Output Power measurements were made for the EUT configured for the low, middle and high transmission frequencies. The Transmit Frequencies were measured with O-QPSK Modulation at maximum output. The un-modulated carrier at maximum output was also measured for comparison.

Spectrum Analyzer Settings for Zigbee Radio Measurements for Maximum Output Power and EIRP.

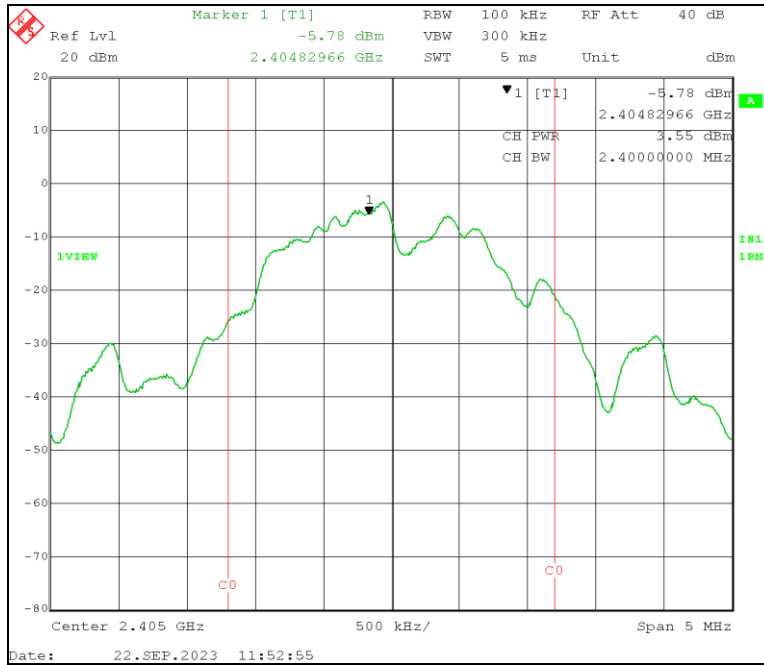
Spectrum Analyzer Settings			ANSI C63.10, 11.9.2.2 requirement
Span	5	MHz	$\geq 1.5 \times \text{OBW}$
RBW	100	kHz	1% - 5% of the OBW (not to exceed 1 MHz)
VBW	300	kHz	$\geq 3 \times \text{RBW}$
Sweep Time	5	ms	Auto

The spectrum analyzer utilized RMS Detection, averaged 100 traces, for measurement.

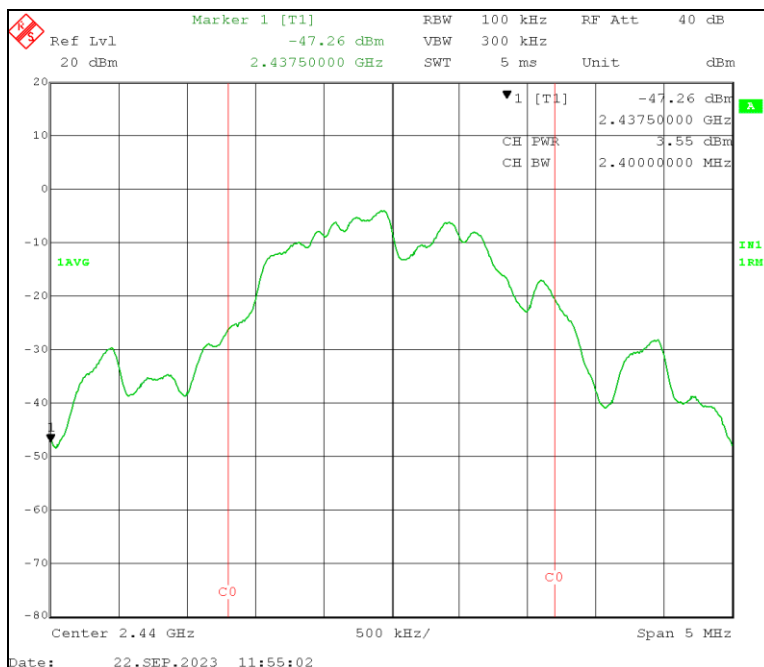


4.3.1.1 Maximum Conducted (Average) Output Power Legrand WNACB46 with Zigbee Radio O-QPSK Modulation Test Results (09/22/2023)

Legrand Model WNACB46 Zigbee Radio Low Channel 11, 2.405 GHz, O-QPSK Modulation

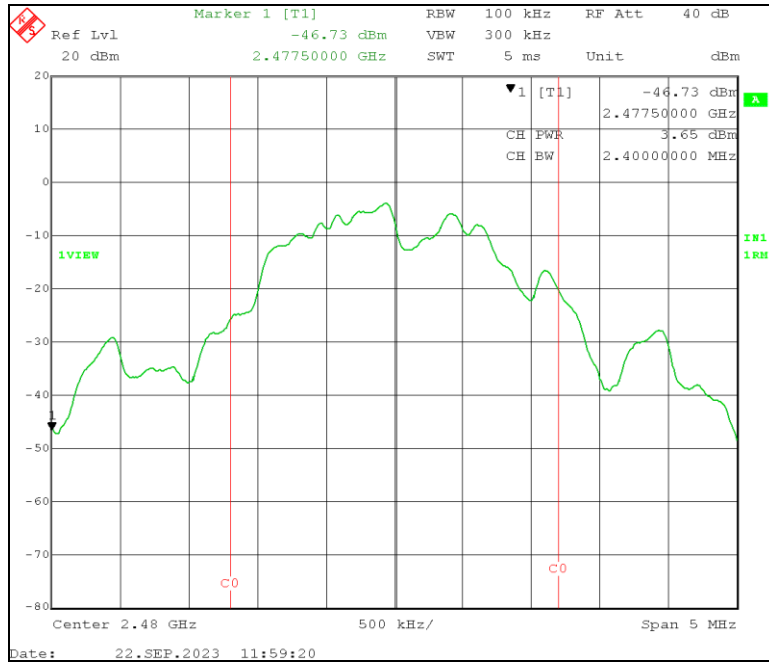


Legrand Model WNACB46 Zigbee Radio Middle Channel 18, 2.440 GHz, O-QPSK Modulation

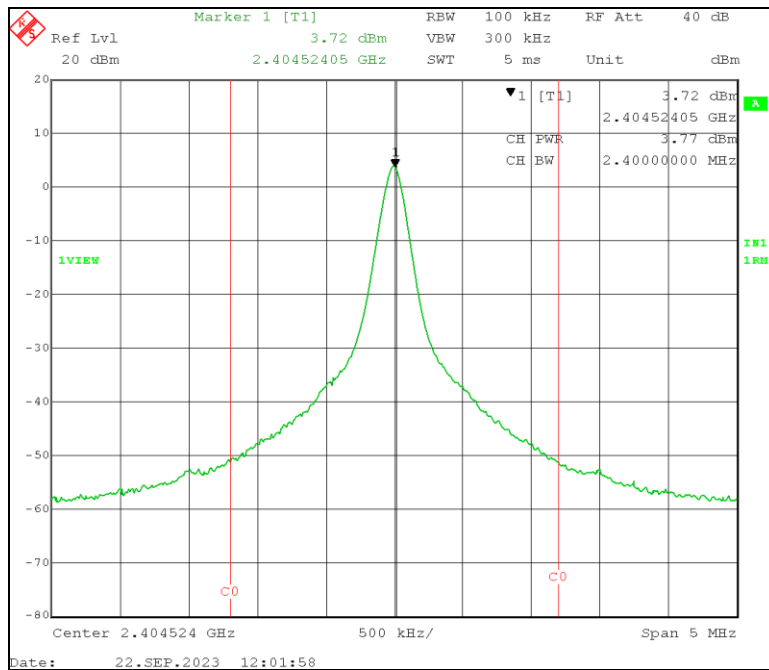




Legrand Model WNACB46 Zigbee Radio High Channel 26, 2.480 GHz, O-QPSK Modulation

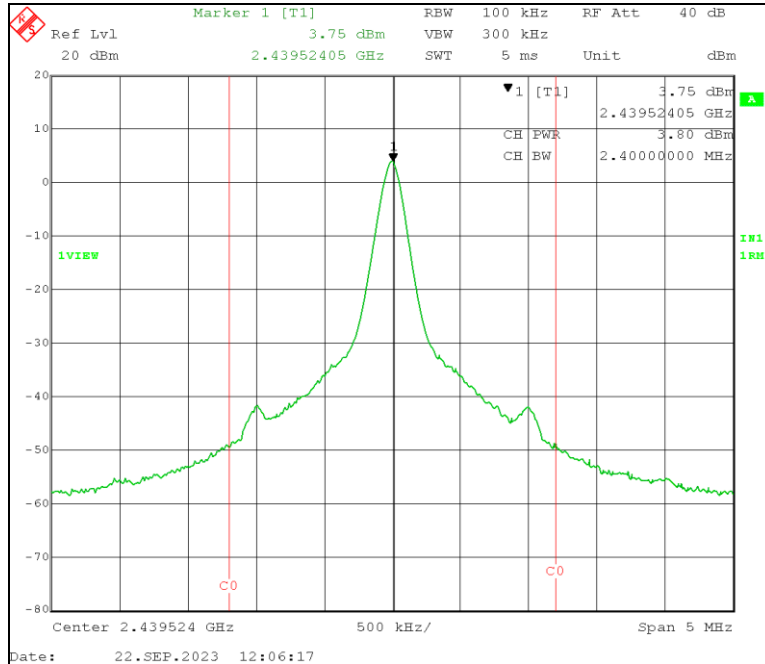


Legrand Model WNACB46 Zigbee Radio Low Channel 11, 2.405 GHz, No modulation

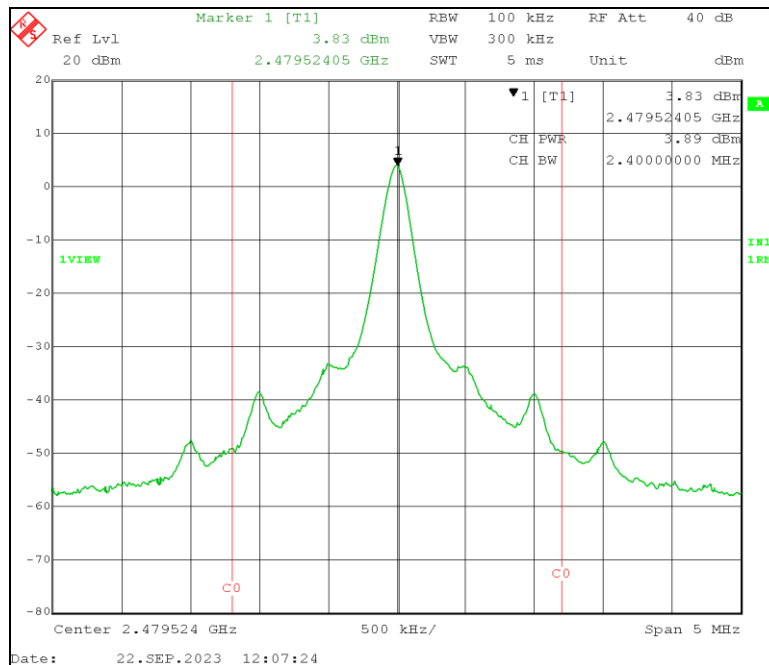




Legrand Model WNACB46 Zigbee Radio Middle Channel 18, 2.440 GHz, No modulation



Legrand Model WNACB46 Zigbee Radio High Channel 26, 2.480 GHz, No modulation





Maximum Conducted Output Power Measurement Summary Tables

EUT Tested	Legrand WNACB46 Adorne Zigbee Radio EUT-Antenna Conducted EUT											
Sample #	2272-01											
Test Configuration	EUT Tested With O-QPSK Modulation and Without Modulation (CW)											
Channel	Modulation	Frequency (MHz)	Measured Level (dBm)	Cable # 962 Loss (dB)	Total Corrected		Limit		Margin		Result	
					dBm	Watts	dBm	Watts	dBm	Watts		
11	O-QPSK	2405.0	3.55	0.47	4.02	0.0025	30.00	1.000	-25.98	-0.997	Pass	
18		2440.0	3.55	0.47	4.02	0.0025	30.00	1.000	-25.98	-0.997	Pass	
26		2480.0	3.65	0.47	4.12	0.0026	30.00	1.000	-25.88	-0.997	Pass	
Channel	Modulation	Frequency (MHz)	Measured Level (dBm)	Cable # 962 Loss (dB)	Total Corrected		Limit		Margin		Result	
					dBm	Watts	dBm	Watts	dBm	Watts		
11	None	2405.0	3.77	0.47	4.24	0.0027	30.00	1.000	-25.76	-0.997	Pass	
18		2440.0	3.80	0.47	4.27	0.0027	30.00	1.000	-25.73	-0.997	Pass	
26		2480.0	3.89	0.47	4.36	0.0027	30.00	1.000	-25.64	-0.997	Pass	

Test Results: The Maximum Conducted (Average) Power Output measurements for the Legrand Model WNACB46 with Zigbee Radio, modulated with O-QPSK and un-modulated, are compliant to the requirements of 47 CFR Part 15.247(b)(3) and ISSED, RSS-247 Section 5.4(d).



4.3.2 EIRP Level WNACB46 with Zigbee Radio Test Results (09/22/2023)

The Innovation, Science and Economic Development Canada (ISED), RSS-247 requires the calculation of the Effective Isotropic Radiated Power (EIRP) for the Legrand Model WNACB46 Zigbee Radio. Below is the tabular data, using measured power levels from the previous section in which measurements were made for the EUT configured for the low, middle and high transmission frequencies. The Transmit Frequencies were measured with O-QPSK Modulation at maximum output. The un-modulated carrier at maximum output was also measured for comparison.

4.3.2.1 EIRP Level WNACB46 Zigbee Radio Test Results

Antenna Gain of Legrand WNACB46 is +4.28 dBi.													
Channel	Modulation	Frequency (MHz)	Transmitter Output Total		Antenna Gain		RSS-247, Section 5.4 (d) EIRP						Result
							Total		Limit		Margin		
			dBm	Watts	Isotropic	Numeric	dBm	Watts	dBm	Watts	dBm	Watts	
11	O-QPSK	2405.0	4.02	0.0025	4.28	2.679	8.30	0.0068	36.00	4.00	-27.70	-3.9932	Pass
18		2440.0	4.02	0.0025	4.28	2.679	8.30	0.0068	36.00	4.00	-27.70	-3.9932	Pass
26		2480.0	4.12	0.0026	4.28	2.679	8.40	0.0069	36.00	4.00	-27.60	-3.9931	Pass
Channel	Modulation	Frequency (MHz)	Transmitter Output Total		Antenna Gain		RSS-247, Section 5.4 (d) EIRP						Result
							Total		Limit		Margin		
			dBm	Watts	Isotropic	Numeric	dBm	Watts	dBm	Watts	dBm	Watts	
11	None	2405.0	4.24	0.0027	4.28	2.679	8.52	0.0071	36.00	4.00	-27.48	-3.9929	Pass
18		2440.0	4.27	0.0027	4.28	2.679	8.55	0.0072	36.00	4.00	-27.45	-3.9928	Pass
26		2480.0	4.36	0.0027	4.28	2.679	8.64	0.0073	36.00	4.00	-27.36	-3.9927	Pass

Test Results: The Effective Isotropic Radiated Power measurements for the Legrand Model WNACB46 with Zigbee Radio, modulated with O-QPSK and un-modulated, are compliant to the requirements of ISED, RSS-247 Section 5.4(d).



Appendix A – Test Equipment

Equipment	Manufacturer	Model #	Serial #	BEC #	Calibration Date	Calibration Cycle	Calibration Due Date
EMI Receiver (20 Hz – 26.5 GHz)	Rohde & Schwarz	ESIB 26	836119/006	1010	12/09/22	3 Years	12/09/25
Antenna (30 MHz - 6 GHz)	Sunol Sciences	JB6	A022108	712	06/21/21	3 Years	06/21/24
OATS Site (30 MHz – 1 GHz)	BEC	N/A	N/A	705	10/07/22	1 Year	10/07/23
EMC Analyzer (9 kHz - 3 GHz)	Agilent	E7402A	US39440162	883	06/21/21	3 Years	06/21/24
Antenna (30 MHz - 6 GHz)	Sunol Sciences	JB6	A020714	882	05/24/21	3 Years	05/24/24
Amplifier (.09 – 1300 MHz)	Hewlett Packard	8447F	3313A06658	807	01/13/21	3 Years	01/13/24
EMC Analyzer (9 kHz - 1.8 GHz)	Hewlett Packard	8593EM	3710A00214	1026	03/23/20	5 Years	03/23/25
Amplifier System (0.5 – 50 GHz)	Hewlett Packard	83015A 83017A	3123A00360 & 3332A00219	1027	06/16/21	3 Years	06/16/24
Double Ridged Horn Antenna (1 - 18 GHz)	EMCO	3115	9705-5225	1028	11/24/21	3 Years	11/21/24
Intentional Radiator Testing High Frequency RF Test Cable	Suhner	S04272B	N/A	962	07/16/23	3 Years	07/16/26
Temp/Humidity Meter	Control Company	4096	221672460	780	07/21/22	3 Years	07/21/25
Software (Tile Instrument Control System)	Quantum Change/EMC Systems	Version 3	N/A	N/A	No Cal. Required	No Cal. Required	No Cal. Required
Radiated Emissions Test Software	BEC	RADE	2.2	N/A	No Cal. Required	No Cal. Required	No Cal. Required