



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 WNAL34 and WZ3AL34 adorne Wireless Home/Away Scene
Controller Switch with Netatmo
Legrand Model WNAL44 and WZ3AL44 adorne Wireless Wake/Sleep Scene
Controller Switch with Netatmo**

FCC ID: 2AU5D-AHAW5

ISED ID: 25764-AHAW5

REPORT#: BEC-2272-10

TEST DATES: 08/31/2023 – 09/20/2023

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





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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	Clarified Model Numbers on Page 5. Page 10 Added details of the differences/similarities of the WZ3ALX variants. Added the statement on Page 43 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	WNAL34, WZ3AL34, WNAL44 and WZ3AL44		
Descriptions	adorne Home/Away Wireless Smart Switch and adorne Wake/Sleep Wireless Smart Switch		
EUT Model	WNAL34	WNAL34	WNAL44
EUT Test Types	SMA connector at antenna port and radio test software	Standard antenna and radio test software	Standard antenna and radio test software
EUT Serial Numbers	None	None	None
EUT Samples	2272-09	2272-10	2272-12
FCC ID	2AU5D-AHAW5		
ISED ID	25764- AHAW5		
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	+ 1.1 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 WNLA34 and WNAL44 were 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-2141-01.



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

Legrand Model WNALX4 Family Product Description-

The Legrand Model WNRLX4 is a family of wireless switches and dimmers with Netatmo. The Legrand Model WNRLX4 devices serve as an endpoint receiver for a nearby gateway device in an IOT network for smart lighting/electrical device control.

WNAL34/WZ3AL34- Home/Away is a wireless switch from the adorne collection, manufactured by Legrand. The WNAL33 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 WNAL23 wireless switch with Netatmo serves as an endpoint receiver to a nearby gateway device in an IOT network for smart lighting/electric device control.

WNAL44/WZ3AL44- Wake/Sleep is a wireless switch from the adorne collection, manufactured by Legrand. The WNAL43 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 WNAL63 wireless dimmer with Netatmo serves as an endpoint receiver to a nearby gateway device in an IOT network for smart lighting/electric device control.

The WZ3ALXX products are the exact same device, parts and firmware as the WNALXX items. The only difference in the part numbers relate to specific marketing channels which can be handled by using different part numbers.

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 WNAL33 Home/Away and Model WNAL43 Wake/Sleep Wireless Smart Switches 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.

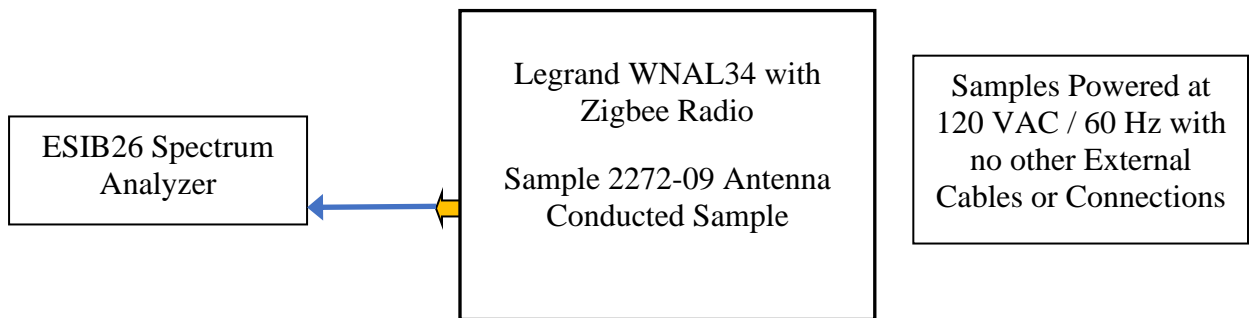
2.5 Test Configuration Rationale

Samples of the Legrand Model WNAL33 Home/Away and Model WNAL43 Wake/Sleep Wireless Smart Switches 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 WNAL34 Sample 2272-10 or Legrand WNAL44 Sample 2272-12 Radiated Emissions Test Samples	Samples Powered at 120 VAC / 60 Hz with no other External Cables or Connections
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2.7 EUT Information, Interconnection Cabling and Support Equipment

EUT Hardware

Description	Manufacturer	Model	Serial Number	Sample Number
adorne Wireless Home Away Switch - Antenna Conducted Test Sample	Legrand	WNAL34	None	2272-09
adorne Wireless Home Away Switch - Radiated Test Sample				2272-10
adorne Wireless Daytime Nighttime Switch - Radiated Test Sample	Legrand	WNAL34	None	2272-12

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 Model WNAL33 Home/Away and Model WNAL43 Wake/Sleep Wireless Smart Switches with Zigbee radios have 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 WNAL34 Sample 2272-09, 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 WNAL33 Home/Away and Model WNAL43 Wake/Sleep Wireless Smart Switches with Zigbee radios are 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	WNAL34
Serial Number	No Serial Number
Sample Number	2272-10
Sample Type	Radiated Emissions Sample Type
Manufacturer	Legrand
Model	WNAL44
Serial Number	No Serial Number
Sample Number	2272-12
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	09/18/2023
Temperature	24°C
Humidity	55 %



4.1.3 Conducted Emissions 150 kHz to 30 MHz FCC 15.207 and RSS-Gen 7.2 Limits Test Results WNAL34 Sample 2272-10

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

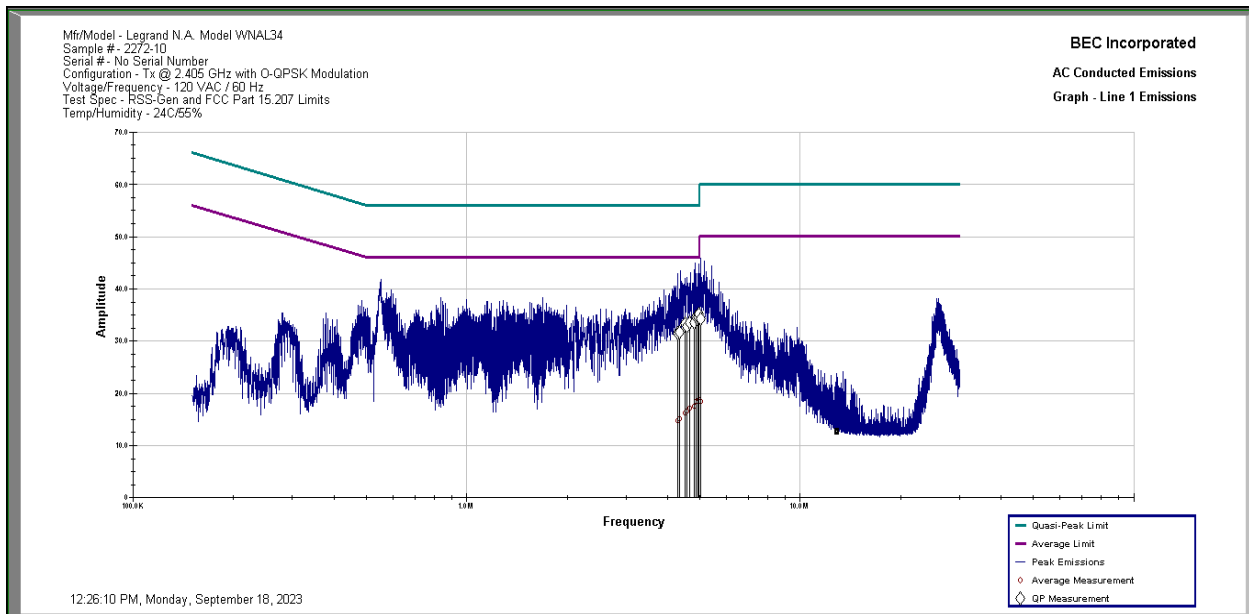
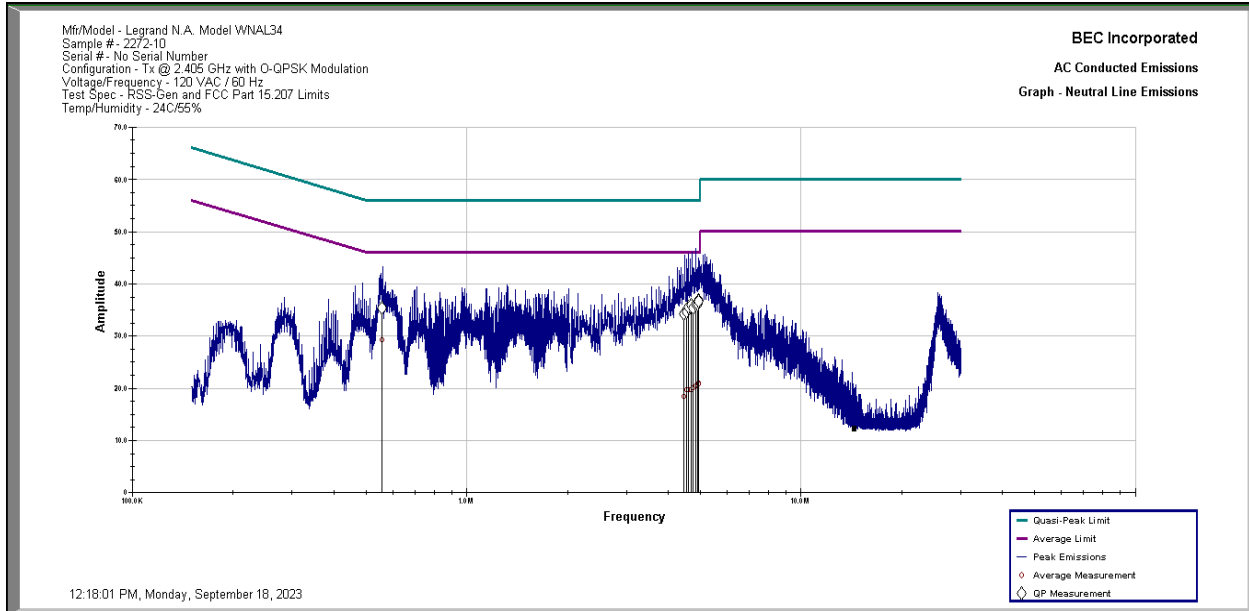
BEC Incorporated							
Neutral Line Conducted Emissions							
12:18:01 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
555.352 KHz	29.27	46.00	-16.73	35.44	56.00	-20.56	10.13
4.451 MHz	18.40	46.00	-27.60	34.21	56.00	-21.79	10.27
4.544 MHz	19.70	46.00	-26.30	34.57	56.00	-21.43	10.27
4.593 MHz	19.81	46.00	-26.19	35.59	56.00	-20.41	10.27
4.685 MHz	19.74	46.00	-26.26	35.86	56.00	-20.14	10.27
4.740 MHz	20.03	46.00	-25.97	35.31	56.00	-20.69	10.27
4.840 MHz	20.39	46.00	-25.61	36.12	56.00	-19.88	10.28
4.888 MHz	20.67	46.00	-25.33	36.13	56.00	-19.87	10.28
4.934 MHz	20.94	46.00	-25.06	36.80	56.00	-19.20	10.28
4.937 MHz	20.75	46.00	-25.25	36.56	56.00	-19.44	10.28
Mfr/Model - Legrand N.A. Model WNAL34							
Sample # - 2272-10							
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 - 24C/55%							



BEC Incorporated							
Line 1 Conducted Emissions							
12:26:10 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
4.289 MHz	14.82	46.00	-31.18	31.55	56.00	-24.45	10.29
4.355 MHz	15.04	46.00	-30.96	31.72	56.00	-24.28	10.29
4.502 MHz	16.14	46.00	-29.86	33.26	56.00	-22.74	10.29
4.559 MHz	16.65	46.00	-29.35	32.80	56.00	-23.20	10.29
4.657 MHz	17.19	46.00	-28.81	33.45	56.00	-22.55	10.29
4.813 MHz	17.45	46.00	-28.55	33.43	56.00	-22.57	10.30
4.864 MHz	18.46	46.00	-27.54	34.54	56.00	-21.46	10.30
4.934 MHz	18.36	46.00	-27.64	34.53	56.00	-21.47	10.30
4.966 MHz	18.76	46.00	-27.24	35.21	56.00	-20.79	10.30
5.008 MHz	18.46	50.00	-31.54	34.17	60.00	-25.83	10.30
Mfr/Model - Legrand N.A. Model WNAL34							
Sample # - 2272-10							
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 - 24C/55%							



EUT Transmitting at 2.405 GHz Low Channel Graphs



Results: All conducted emissions measured on the AC Power Port of the Legrand Model WNAL34 Sample 2272-10 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 16.73 dB.



EUT Transmitting at 2.440 GHz Middle Channel Tables

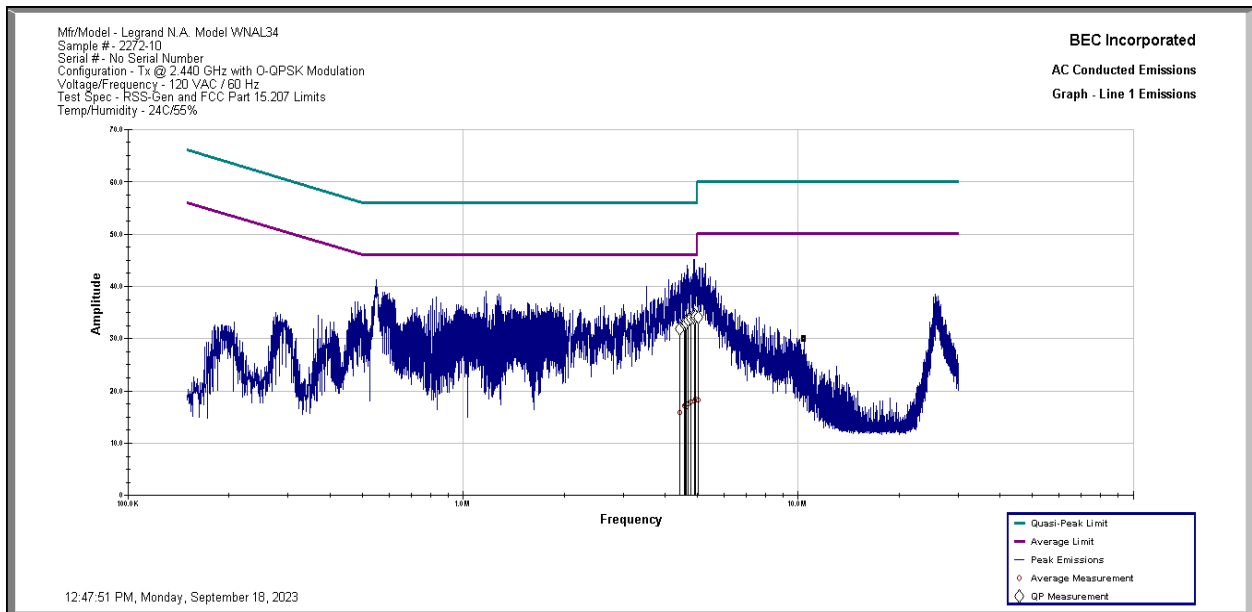
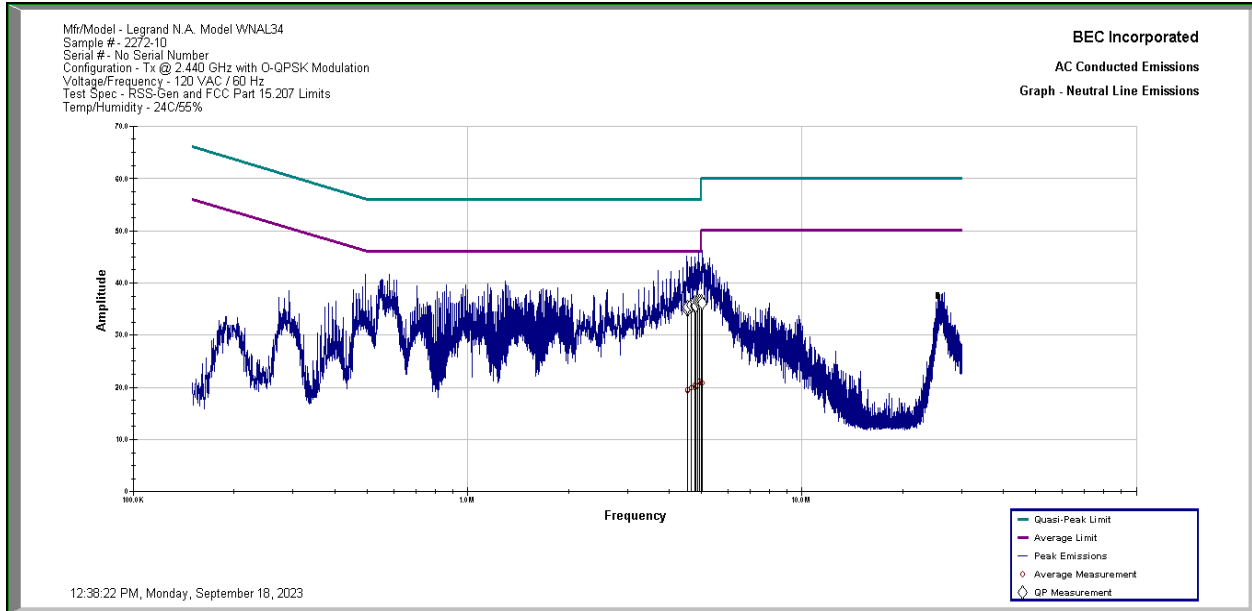
BEC Incorporated Neutral Line Conducted Emissions 12:38:22 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
4.544 MHz	19.32	46.00	-26.68	34.88	56.00	-21.12	10.27
4.549 MHz	19.55	46.00	-26.45	35.32	56.00	-20.68	10.27
4.658 MHz	19.94	46.00	-26.06	35.74	56.00	-20.26	10.27
4.761 MHz	19.85	46.00	-26.15	35.52	56.00	-20.48	10.28
4.785 MHz	20.45	46.00	-25.55	36.18	56.00	-19.82	10.28
4.796 MHz	20.16	46.00	-25.84	35.53	56.00	-20.47	10.28
4.858 MHz	20.32	46.00	-25.68	36.41	56.00	-19.59	10.28
4.935 MHz	21.22	46.00	-24.78	36.52	56.00	-19.48	10.28
4.979 MHz	20.76	46.00	-25.24	36.51	56.00	-19.49	10.28
5.029 MHz	20.90	50.00	-29.10	36.13	60.00	-23.87	10.28
Mfr/Model - Legrand N.A. Model WNAL34							
Sample # - 2272-10							
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 - 24C/55%							



BEC Incorporated							
Line 1 Conducted Emissions							
12:47:51 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
4.422 MHz	15.84	46.00	-30.16	31.77	56.00	-24.23	10.29
4.571 MHz	17.19	46.00	-28.81	32.85	56.00	-23.15	10.29
4.595 MHz	17.26	46.00	-28.74	33.21	56.00	-22.79	10.29
4.621 MHz	16.99	46.00	-29.01	32.88	56.00	-23.12	10.29
4.680 MHz	17.53	46.00	-28.47	33.46	56.00	-22.54	10.29
4.787 MHz	17.85	46.00	-28.15	33.94	56.00	-22.06	10.30
4.883 MHz	18.02	46.00	-27.98	34.40	56.00	-21.60	10.30
4.909 MHz	18.13	46.00	-27.87	33.96	56.00	-22.04	10.30
4.927 MHz	18.34	46.00	-27.66	34.17	56.00	-21.83	10.30
5.025 MHz	18.25	50.00	-31.75	34.09	60.00	-25.91	10.30
Mfr/Model - Legrand N.A. Model WNAL34							
Sample # - 2272-10							
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 - 24C/55%							



EUT Transmitting at 2.440 GHz Middle Channel Graphs



Results: All conducted emissions measured on the AC Power Port of the Legrand Model WNAL34 Sample 2272-10 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 19.48 dB.



EUT Transmitting at 2.480 GHz High Channel Tables

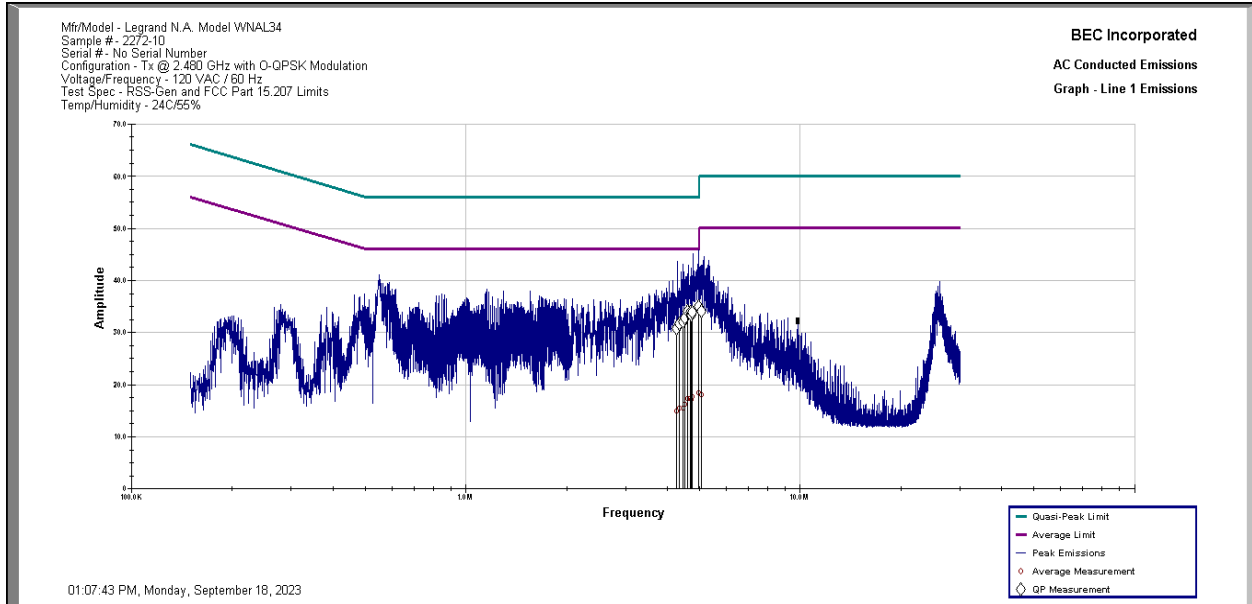
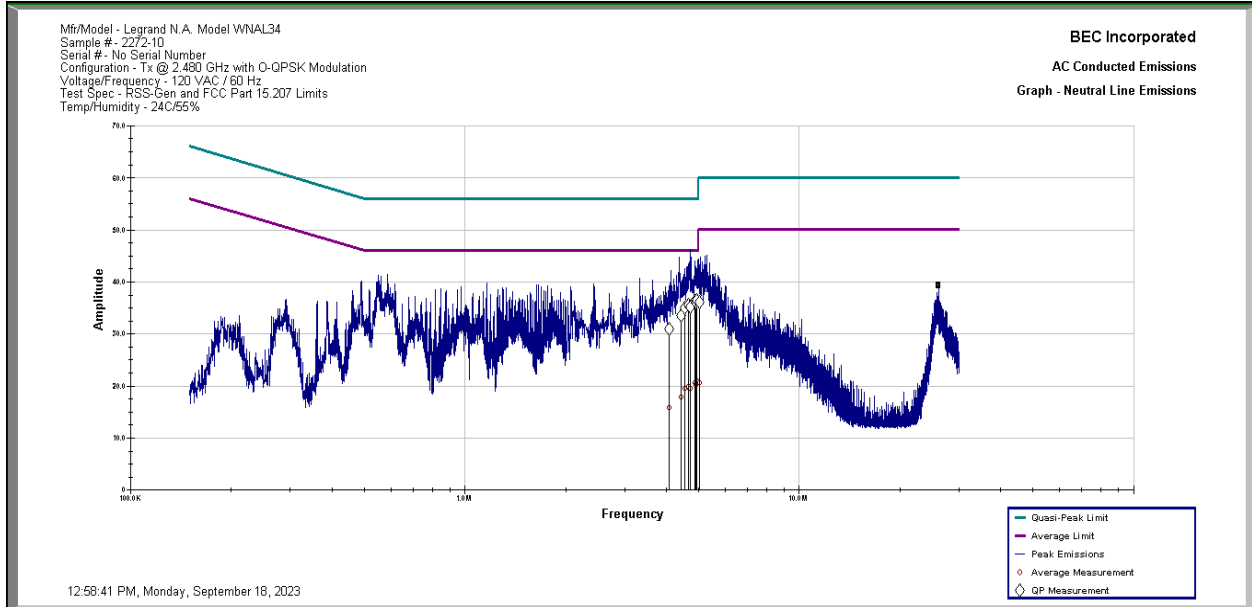
BEC Incorporated Neutral Line Conducted Emissions 12:58:41 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
4.075 MHz	15.92	46.00	-30.08	30.94	56.00	-25.06	10.26
4.418 MHz	17.89	46.00	-28.11	33.43	56.00	-22.57	10.27
4.550 MHz	19.61	46.00	-26.39	34.90	56.00	-21.10	10.27
4.648 MHz	19.76	46.00	-26.24	35.47	56.00	-20.53	10.27
4.670 MHz	19.82	46.00	-26.18	35.56	56.00	-20.44	10.27
4.722 MHz	19.51	46.00	-26.49	35.20	56.00	-20.80	10.27
4.867 MHz	20.61	46.00	-25.39	36.36	56.00	-19.64	10.28
4.902 MHz	20.22	46.00	-25.78	36.05	56.00	-19.95	10.28
4.931 MHz	20.96	46.00	-25.04	36.55	56.00	-19.45	10.28
5.030 MHz	20.62	50.00	-29.38	36.16	60.00	-23.84	10.28
Mfr/Model - Legrand N.A. Model WNAL34							
Sample # - 2272-10							
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 - 24C/55%							



BEC Incorporated							
Line 1 Conducted Emissions							
01:07:43 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
4.268 MHz	14.93	46.00	-31.07	30.77	56.00	-25.23	10.29
4.348 MHz	15.48	46.00	-30.52	31.76	56.00	-24.24	10.29
4.444 MHz	15.45	46.00	-30.55	32.09	56.00	-23.91	10.29
4.504 MHz	16.28	46.00	-29.72	32.79	56.00	-23.21	10.29
4.605 MHz	17.33	46.00	-28.67	33.99	56.00	-22.01	10.29
4.694 MHz	17.26	46.00	-28.74	33.83	56.00	-22.17	10.29
4.726 MHz	17.19	46.00	-28.81	33.39	56.00	-22.61	10.29
4.739 MHz	17.64	46.00	-28.36	33.95	56.00	-22.05	10.29
4.967 MHz	18.37	46.00	-27.63	34.91	56.00	-21.09	10.30
5.051 MHz	18.14	50.00	-31.86	34.00	60.00	-26.00	10.30
Mfr/Model - Legrand N.A. Model WNAL34							
Sample # - 2272-10							
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 - 24C/55%							



EUT Transmitting at 2.480 GHz High Channel Graphs



Results: All conducted emissions measured on the AC Power Port of the Legrand Model WNAL34 Sample 2272-10 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 19.45 dB.



EUT Configured in Rx Mode Tables

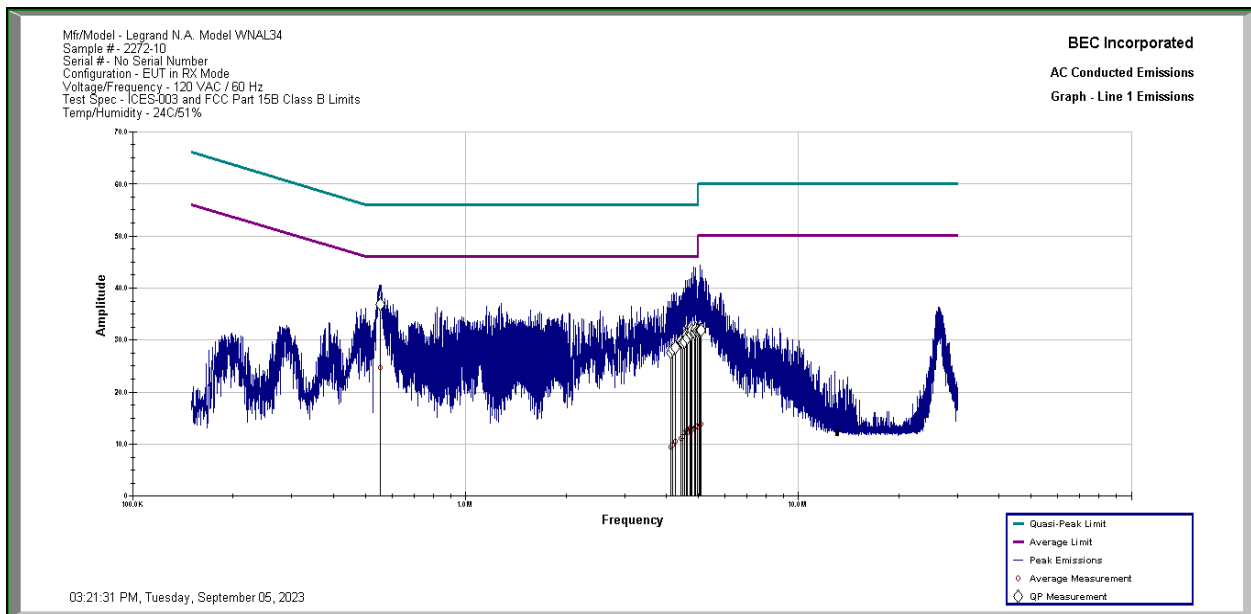
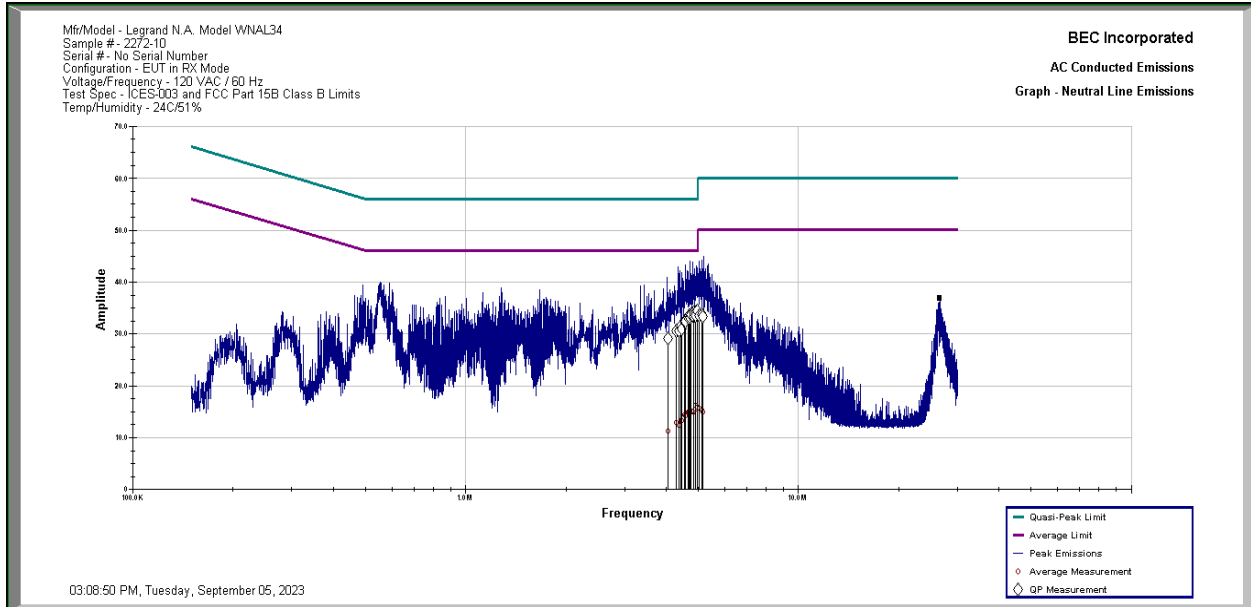
BEC Incorporated Neutral Line Conducted Emissions 03:08:50 PM, Tuesday, September 05, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
4.058 MHz	11.24	46.00	-34.76	29.12	56.00	-26.88	10.26
4.285 MHz	12.87	46.00	-33.13	30.61	56.00	-25.39	10.27
4.363 MHz	12.29	46.00	-33.71	30.61	56.00	-25.39	10.27
4.431 MHz	13.34	46.00	-32.66	31.55	56.00	-24.45	10.27
4.451 MHz	13.19	46.00	-32.81	30.98	56.00	-25.02	10.27
4.535 MHz	14.45	46.00	-31.55	32.43	56.00	-23.57	10.27
4.556 MHz	14.13	46.00	-31.87	32.37	56.00	-23.63	10.27
4.656 MHz	14.90	46.00	-31.10	33.23	56.00	-22.77	10.27
4.678 MHz	14.93	46.00	-31.07	33.45	56.00	-22.55	10.27
4.707 MHz	14.79	46.00	-31.21	33.14	56.00	-22.86	10.27
4.738 MHz	15.15	46.00	-30.85	33.79	56.00	-22.21	10.27
4.832 MHz	14.83	46.00	-31.17	33.42	56.00	-22.58	10.28
4.845 MHz	15.18	46.00	-30.82	34.03	56.00	-21.97	10.28
4.885 MHz	16.20	46.00	-29.80	34.02	56.00	-21.98	10.28
4.915 MHz	15.55	46.00	-30.45	33.54	56.00	-22.46	10.28
4.947 MHz	15.76	46.00	-30.24	34.40	56.00	-21.60	10.28
4.949 MHz	15.92	46.00	-30.08	34.40	56.00	-21.60	10.28
5.011 MHz	15.69	50.00	-34.31	33.53	60.00	-26.47	10.28
5.136 MHz	15.29	50.00	-34.71	33.71	60.00	-26.29	10.29
5.165 MHz	14.91	50.00	-35.09	33.38	60.00	-26.62	10.29
Mfr/Model - Legrand N.A. Model WNAL34							
Sample # - 2272-10							
Serial # - No Serial Number							
Configuration - EUT in RX Mode							
Voltage/Frequency - 120 VAC / 60 Hz							



BEC Incorporated							
Line 1 Conducted Emissions							
03:21:31 PM, 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
553.895 KHz	24.66	46.00	-21.34	36.89	56.00	-19.11	10.15
4.139 MHz	9.45	46.00	-36.55	27.57	56.00	-28.43	10.28
4.193 MHz	9.87	46.00	-36.13	28.13	56.00	-27.87	10.28
4.268 MHz	10.46	46.00	-35.54	28.51	56.00	-27.49	10.29
4.434 MHz	11.07	46.00	-34.93	29.83	56.00	-26.17	10.29
4.476 MHz	11.41	46.00	-34.59	29.54	56.00	-26.46	10.29
4.534 MHz	12.08	46.00	-33.92	29.64	56.00	-26.36	10.29
4.605 MHz	12.54	46.00	-33.46	31.26	56.00	-24.74	10.29
4.609 MHz	12.16	46.00	-33.84	30.94	56.00	-25.06	10.29
4.642 MHz	12.20	46.00	-33.80	30.30	56.00	-25.70	10.29
4.704 MHz	13.01	46.00	-32.99	31.34	56.00	-24.66	10.29
4.734 MHz	12.62	46.00	-33.38	31.07	56.00	-24.93	10.29
4.743 MHz	12.90	46.00	-33.10	31.19	56.00	-24.81	10.29
4.774 MHz	12.79	46.00	-33.21	31.82	56.00	-24.18	10.30
4.860 MHz	13.00	46.00	-33.00	31.43	56.00	-24.57	10.30
4.892 MHz	13.37	46.00	-32.63	32.02	56.00	-23.98	10.30
4.959 MHz	13.41	46.00	-32.59	31.59	56.00	-24.41	10.30
5.027 MHz	13.33	50.00	-36.67	31.71	60.00	-28.29	10.30
5.071 MHz	13.61	50.00	-36.39	31.78	60.00	-28.22	10.30
5.094 MHz	13.75	50.00	-36.25	31.86	60.00	-28.14	10.30
Mfr/Model - Legrand N.A. Model WNAL34							
Sample # - 2272-10							
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 WNAL34 Sample 2272-10 in Rx Mode are below the limit specified by FCC Part 15.207 and RSS-Gen 7.2 Limits by a margin of 19.11 dB.



4.1.4 Conducted Emissions 150 kHz to 30 MHz FCC 15.207 and RSS-Gen 7.2 Limits Test Results WNAL44 Sample 2272-12

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

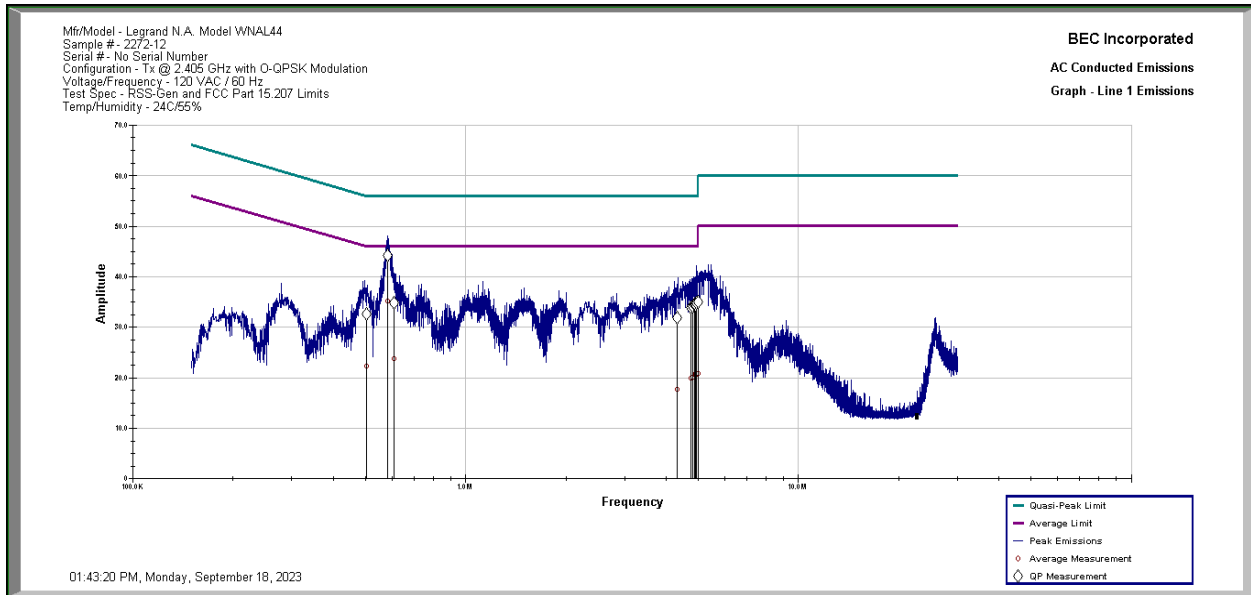
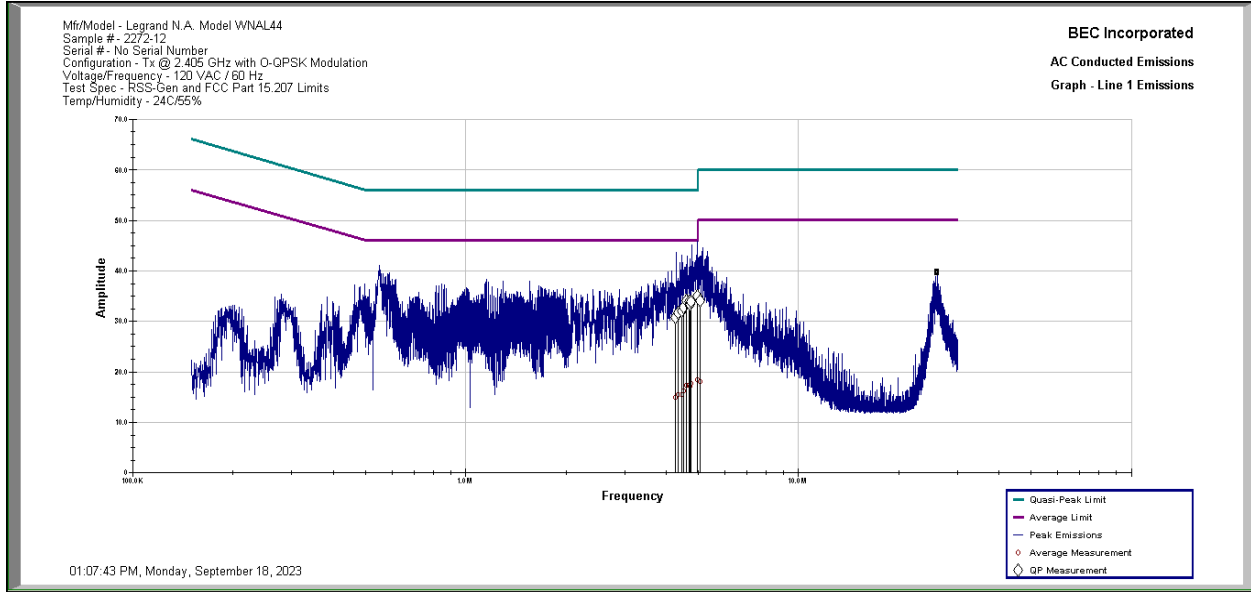
BEC Incorporated							
Neutral Line Conducted Emissions							
01:28:31 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
497.452 KHz	17.04	46.07	-29.03	26.59	56.07	-29.48	10.12
512.438 KHz	13.23	46.00	-32.77	23.70	56.00	-32.30	10.12
582.883 KHz	27.59	46.00	-18.41	37.07	56.00	-18.93	10.13
4.680 MHz	16.22	46.00	-29.78	31.72	56.00	-24.28	10.27
4.799 MHz	16.95	46.00	-29.05	32.33	56.00	-23.67	10.28
4.803 MHz	17.03	46.00	-28.97	32.51	56.00	-23.49	10.28
4.914 MHz	17.66	46.00	-28.34	33.40	56.00	-22.60	10.28
4.945 MHz	17.81	46.00	-28.19	33.49	56.00	-22.51	10.28
4.988 MHz	17.70	46.00	-28.30	33.65	56.00	-22.35	10.28
5.004 MHz	17.90	50.00	-32.10	33.79	60.00	-26.21	10.28
Mfr/Model - Legrand N.A. Model WNAL44							
Sample # - 2272-12							
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 - 24C/55%							



BEC Incorporated							
Line 1 Conducted Emissions							
01:43:20 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
503.324 KHz	22.25	46.00	-23.75	32.53	56.00	-23.47	10.13
583.207 KHz	35.22	46.00	-10.78	44.21	56.00	-11.79	10.15
608.350 KHz	23.79	46.00	-22.21	34.82	56.00	-21.18	10.15
4.315 MHz	17.79	46.00	-28.21	31.83	56.00	-24.17	10.29
4.738 MHz	19.97	46.00	-26.03	33.89	56.00	-22.11	10.29
4.800 MHz	20.03	46.00	-25.97	34.13	56.00	-21.87	10.30
4.855 MHz	20.60	46.00	-25.40	34.38	56.00	-21.62	10.30
4.913 MHz	20.66	46.00	-25.34	34.50	56.00	-21.50	10.30
4.925 MHz	20.62	46.00	-25.38	34.77	56.00	-21.23	10.30
4.998 MHz	20.78	46.00	-25.22	34.94	56.00	-21.06	10.30
Mfr/Model - Legrand N.A. Model WNAL44							
Sample # - 2272-12							
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 - 24C/55%							



EUT Transmitting at 2.405 GHz Low Channel Graphs



Results: All conducted emissions measured on the AC Power Port of the Legrand Model WNAL44 Sample 2272-12 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 10.78 dB.



EUT Transmitting at 2.440 GHz Middle Channel Tables

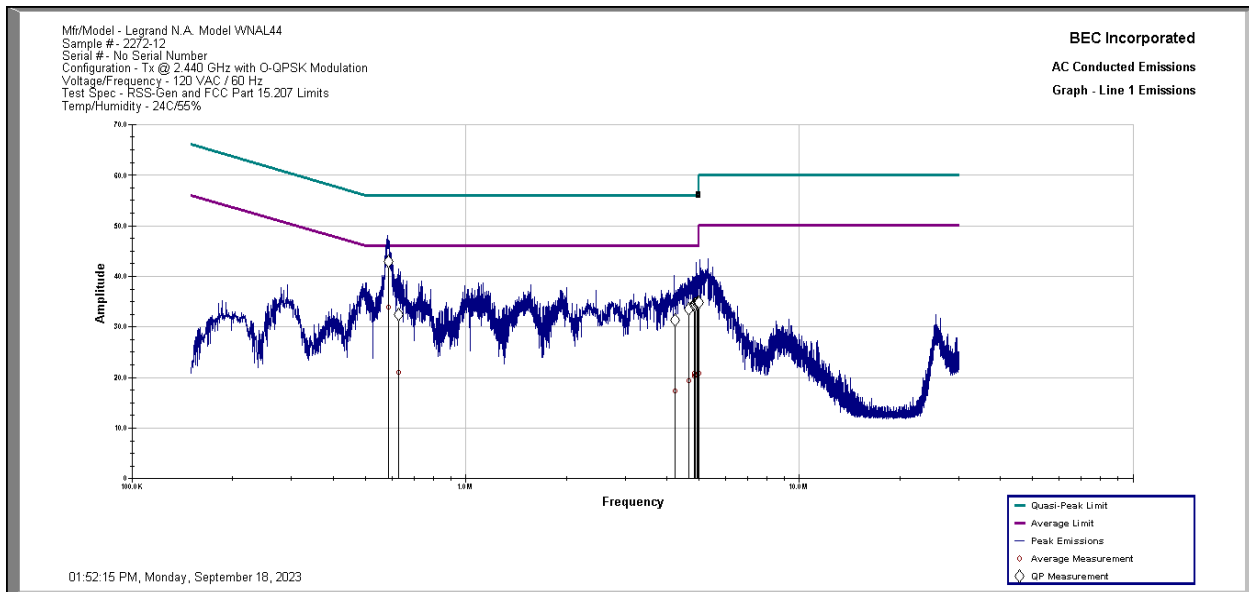
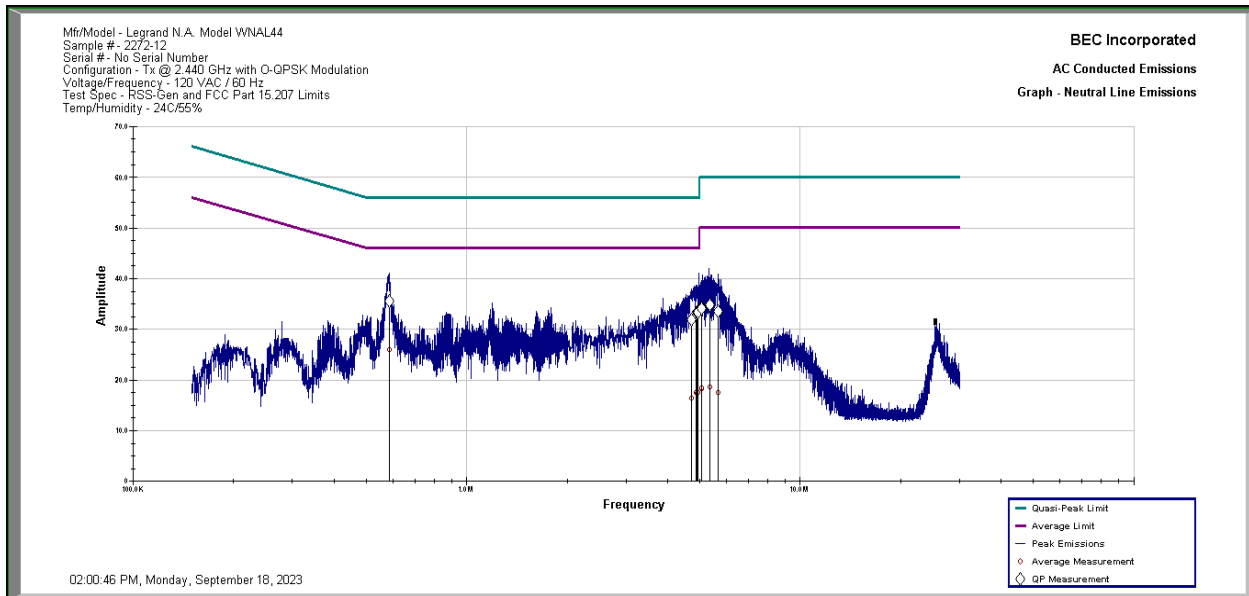
BEC Incorporated Neutral Line Conducted Emissions 02:00:46 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
586.267 KHz	26.04	46.00	-19.96	35.51	56.00	-20.49	10.13
4.711 MHz	16.36	46.00	-29.64	31.93	56.00	-24.07	10.27
4.859 MHz	17.42	46.00	-28.58	33.22	56.00	-22.78	10.28
4.867 MHz	17.48	46.00	-28.52	33.19	56.00	-22.81	10.28
4.898 MHz	17.24	46.00	-28.76	33.30	56.00	-22.70	10.28
4.921 MHz	17.57	46.00	-28.43	33.41	56.00	-22.59	10.28
5.047 MHz	18.24	50.00	-31.76	34.27	60.00	-25.73	10.28
5.055 MHz	18.44	50.00	-31.56	34.01	60.00	-25.99	10.28
5.338 MHz	18.52	50.00	-31.48	34.78	60.00	-25.22	10.30
5.663 MHz	17.42	50.00	-32.58	33.52	60.00	-26.48	10.31
Mfr/Model - Legrand N.A. Model WNAL44							
Sample # - 2272-12							
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 - 24C/55%							



BEC Incorporated							
Line 1 Conducted Emissions							
01:52:15 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
586.237 KHz	33.94	46.00	-12.06	42.83	56.00	-13.17	10.15
629.315 KHz	20.92	46.00	-25.08	32.39	56.00	-23.61	10.15
4.247 MHz	17.29	46.00	-28.71	31.39	56.00	-24.61	10.28
4.660 MHz	19.31	46.00	-26.69	33.46	56.00	-22.54	10.29
4.826 MHz	20.33	46.00	-25.67	34.46	56.00	-21.54	10.30
4.852 MHz	20.75	46.00	-25.25	34.27	56.00	-21.73	10.30
4.875 MHz	20.35	46.00	-25.65	34.45	56.00	-21.55	10.30
4.928 MHz	20.66	46.00	-25.34	34.71	56.00	-21.29	10.30
4.946 MHz	20.74	46.00	-25.26	34.78	56.00	-21.22	10.30
5.005 MHz	20.77	50.00	-29.23	34.76	60.00	-25.24	10.30
Mfr/Model - Legrand N.A. Model WNAL44							
Sample # - 2272-12							
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 - 24C/55%							



EUT Transmitting at 2.440 GHz Middle Channel Graphs



Results: All conducted emissions measured on the AC Power Port of the Legrand Model WNAL44 Sample 2272-12 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 12.06 dB.



EUT Transmitting at 2.480 GHz High Channel Tables

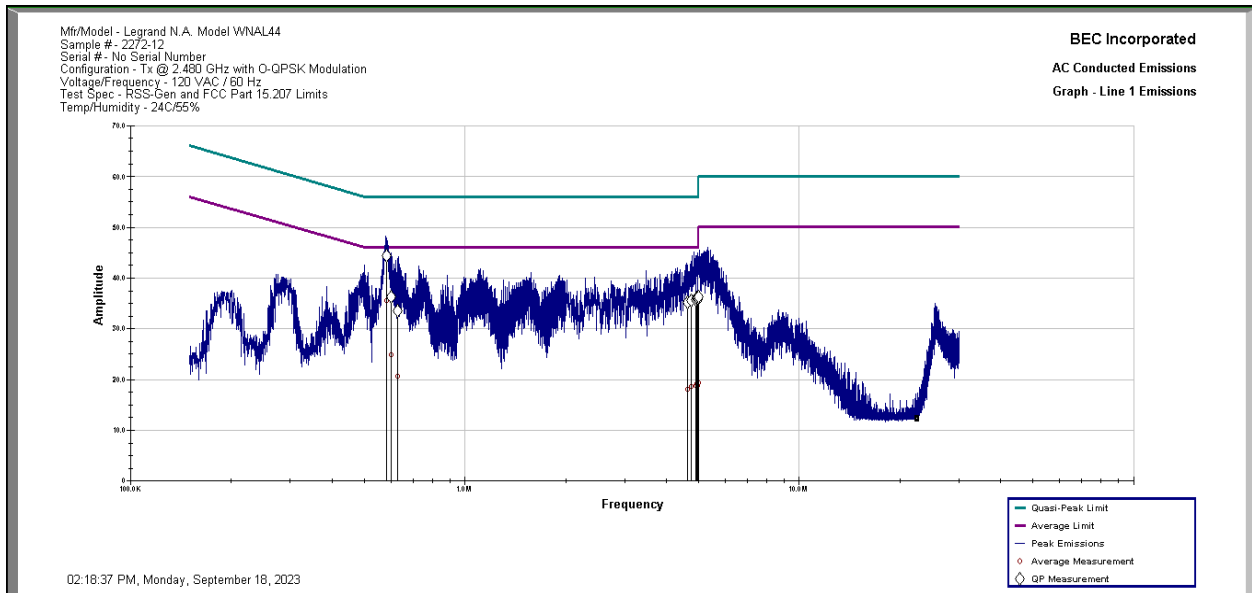
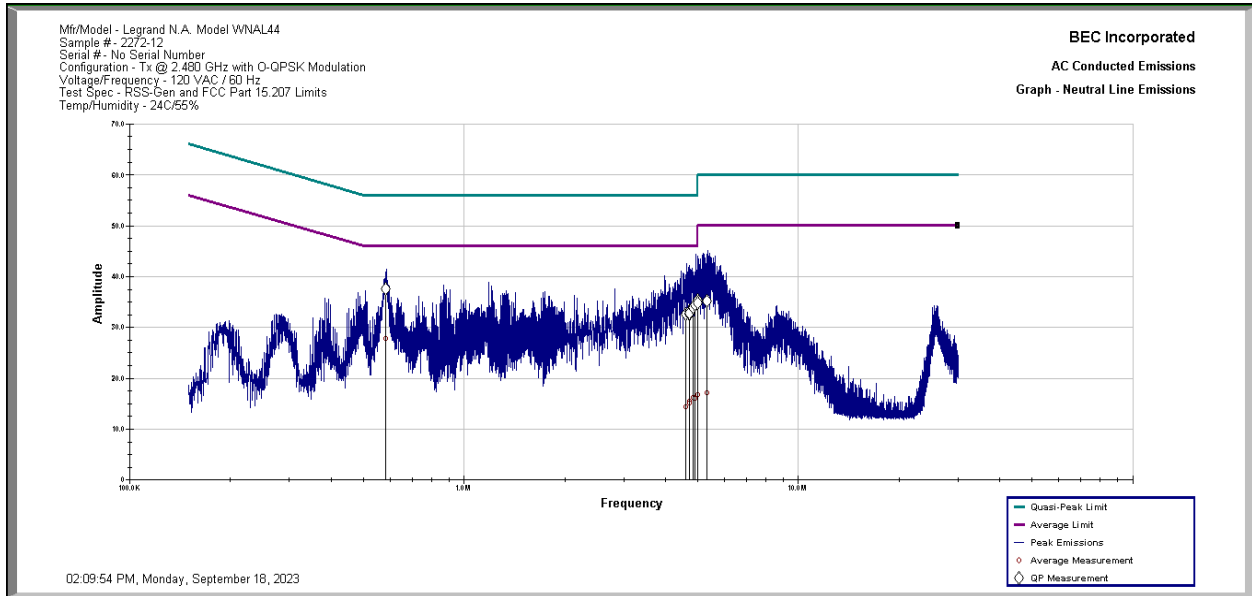
BEC Incorporated Neutral Line Conducted Emissions 02:09:54 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
582.247 KHz	27.74	46.00	-18.26	37.61	56.00	-18.39	10.13
4.601 MHz	14.47	46.00	-31.53	32.57	56.00	-23.43	10.27
4.703 MHz	15.41	46.00	-30.59	33.16	56.00	-22.84	10.27
4.721 MHz	15.10	46.00	-30.90	32.67	56.00	-23.33	10.27
4.722 MHz	15.11	46.00	-30.89	32.73	56.00	-23.27	10.27
4.825 MHz	16.17	46.00	-29.83	33.87	56.00	-22.13	10.28
4.903 MHz	15.96	46.00	-30.04	34.50	56.00	-21.50	10.28
4.981 MHz	16.81	46.00	-29.19	35.32	56.00	-20.68	10.28
5.007 MHz	16.79	50.00	-33.21	34.82	60.00	-25.18	10.28
5.326 MHz	17.18	50.00	-32.82	35.10	60.00	-24.90	10.30
Mfr/Model - Legrand N.A. Model WNAL44							
Sample # - 2272-12							
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 - 24C/55%							



BEC Incorporated Line 1 Conducted Emissions 02:18:37 PM, Monday, September 18, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
580.871 KHz	35.48	46.00	-10.52	44.32	56.00	-11.68	10.15
602.065 KHz	24.81	46.00	-21.19	36.24	56.00	-19.76	10.15
627.440 KHz	20.59	46.00	-25.41	33.58	56.00	-22.42	10.15
4.637 MHz	18.06	46.00	-27.94	35.09	56.00	-20.91	10.29
4.751 MHz	18.51	46.00	-27.49	35.49	56.00	-20.51	10.30
4.907 MHz	18.89	46.00	-27.11	35.65	56.00	-20.35	10.30
4.928 MHz	19.22	46.00	-26.78	36.07	56.00	-19.93	10.30
4.963 MHz	18.76	46.00	-27.24	35.78	56.00	-20.22	10.30
4.973 MHz	19.20	46.00	-26.80	36.04	56.00	-19.96	10.30
5.002 MHz	19.33	50.00	-30.67	36.23	60.00	-23.77	10.30
Mfr/Model - Legrand N.A. Model WNAL44							
Sample # - 2272-12							
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 - 24C/55%							



EUT Transmitting at 2.480 GHz High Channel Graphs



Results: All conducted emissions measured on the AC Power Port of the Legrand Model WNAL44 Sample 2272-12 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 10.52 dB.



EUT Configured in Rx Mode Tables

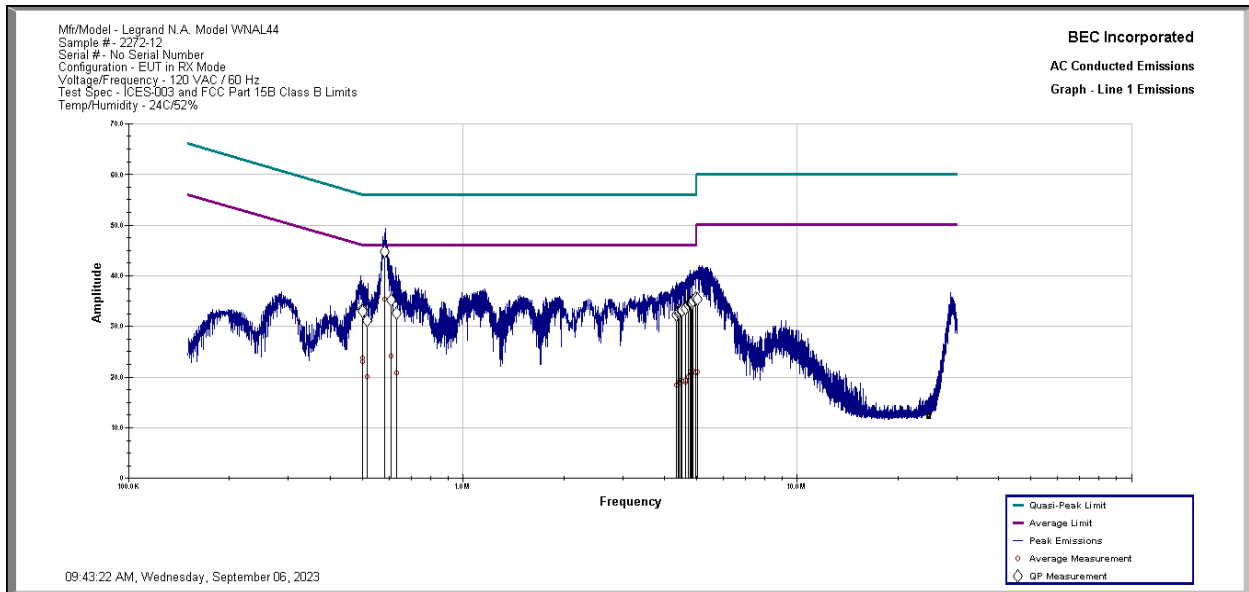
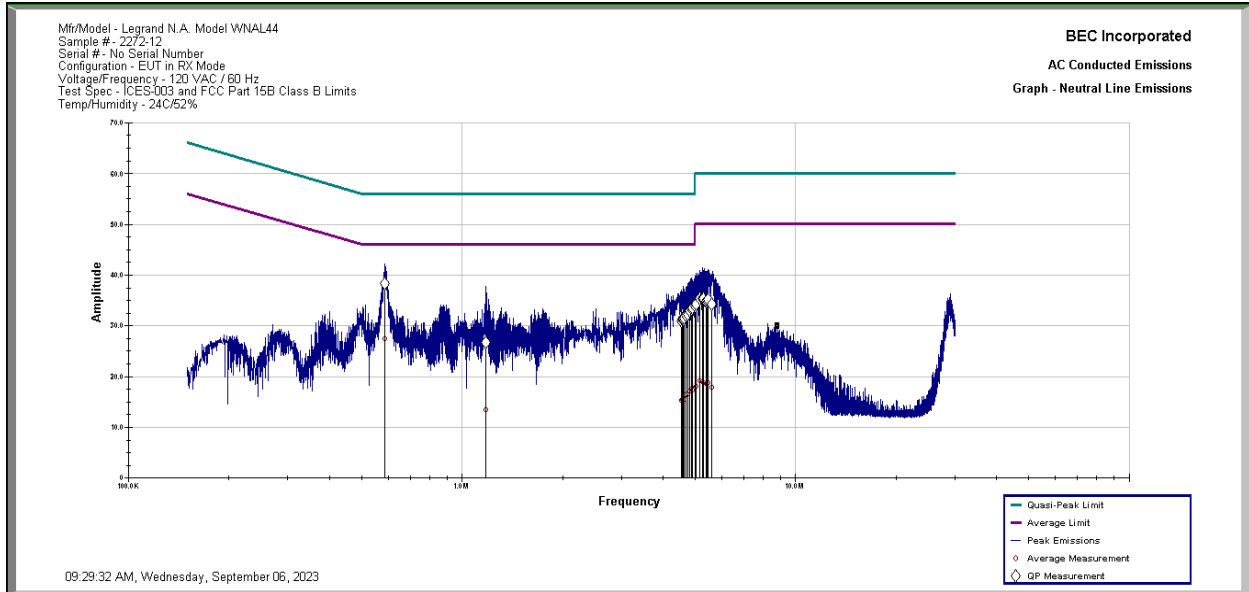
BEC Incorporated							
Neutral Line Conducted Emissions							
09:21:37 AM, Wednesday, September 06, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
584.666 KHz	27.43	46.00	-18.57	38.31	56.00	-17.69	10.13
1.179 MHz	13.48	46.00	-32.52	26.72	56.00	-29.28	10.14
4.544 MHz	15.37	46.00	-30.63	31.01	56.00	-24.99	10.27
4.579 MHz	15.51	46.00	-30.49	31.30	56.00	-24.70	10.27
4.585 MHz	15.46	46.00	-30.54	31.34	56.00	-24.66	10.27
4.630 MHz	15.50	46.00	-30.50	31.53	56.00	-24.47	10.27
4.697 MHz	16.43	46.00	-29.57	32.09	56.00	-23.91	10.27
4.744 MHz	16.65	46.00	-29.35	32.31	56.00	-23.69	10.27
4.793 MHz	17.10	46.00	-28.90	32.98	56.00	-23.02	10.28
4.861 MHz	17.45	46.00	-28.55	33.25	56.00	-22.75	10.28
4.908 MHz	17.31	46.00	-28.69	33.52	56.00	-22.48	10.28
4.983 MHz	17.82	46.00	-28.18	33.88	56.00	-22.12	10.28
5.026 MHz	18.09	50.00	-31.91	34.30	60.00	-25.70	10.28
5.163 MHz	19.23	50.00	-30.77	35.27	60.00	-24.73	10.29
5.240 MHz	18.90	50.00	-31.10	35.27	60.00	-24.73	10.29
5.272 MHz	18.73	50.00	-31.27	35.27	60.00	-24.73	10.30
5.379 MHz	18.63	50.00	-31.37	34.72	60.00	-25.28	10.30
5.441 MHz	18.60	50.00	-31.40	34.98	60.00	-25.02	10.30
5.450 MHz	18.88	50.00	-31.12	35.11	60.00	-24.89	10.31
5.596 MHz	17.85	50.00	-32.15	34.27	60.00	-25.73	10.31
Mfr/Model - Legrand N.A. Model WNAL44							
Sample # - 2272-12							
Serial # - No Serial Number							
Configuration - EUT in RX Mode							
Voltage/Frequency - 120 VAC / 60 Hz							



BEC Incorporated Line 1 Conducted Emissions 09:35:16 AM, Wednesday, September 06, 2023							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Corr
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
498.312 KHz	23.83	46.05	-22.22	33.38	56.05	-22.67	10.13
501.229 KHz	23.07	46.00	-22.93	33.04	56.00	-22.96	10.13
514.869 KHz	20.02	46.00	-25.98	31.21	56.00	-24.79	10.13
583.299 KHz	35.34	46.00	-10.66	44.66	56.00	-11.34	10.15
607.695 KHz	24.11	46.00	-21.89	35.11	56.00	-20.89	10.15
631.635 KHz	20.79	46.00	-25.21	32.50	56.00	-23.50	10.15
4.346 MHz	18.39	46.00	-27.61	32.29	56.00	-23.71	10.29
4.388 MHz	19.02	46.00	-26.98	32.87	56.00	-23.13	10.29
4.431 MHz	18.84	46.00	-27.16	32.93	56.00	-23.07	10.29
4.492 MHz	19.37	46.00	-26.63	33.23	56.00	-22.77	10.29
4.526 MHz	19.07	46.00	-26.93	33.09	56.00	-22.91	10.29
4.613 MHz	19.02	46.00	-26.98	33.45	56.00	-22.55	10.29
4.641 MHz	19.33	46.00	-26.67	33.58	56.00	-22.42	10.29
4.731 MHz	20.01	46.00	-25.99	34.30	56.00	-21.70	10.29
4.785 MHz	20.92	46.00	-25.08	34.63	56.00	-21.37	10.30
4.797 MHz	20.69	46.00	-25.31	34.62	56.00	-21.38	10.30
4.845 MHz	20.84	46.00	-25.16	34.70	56.00	-21.30	10.30
4.877 MHz	21.25	46.00	-24.75	35.03	56.00	-20.97	10.30
4.952 MHz	20.84	46.00	-25.16	35.48	56.00	-20.52	10.30
5.023 MHz	21.09	50.00	-28.91	35.29	60.00	-24.71	10.30
Mfr/Model - Legrand N.A. Model WNAL44							
Sample # - 2272-12							
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 WNAL44 Sample 2272-12 in Rx Mode are below the limit specified by FCC Part 15.207 and RSS-Gen 7.2 Limits by a margin of 11.34 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 WNRCB46 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 WNRCB46 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	WNAL34
Serial Number	No Serial Number
Sample Number	2272-10
Sample Type	Radiated Emissions Sample Type
Manufacturer	Legrand
Model	WNAL44
Serial Number	No Serial Number
Sample Number	2272-12
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 %
Test Date	09/26/2023
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 Models WNAL34 and WNAL44.

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:

$$\text{Field Strength (dB}\mu\text{V/m)} = \text{Meter Reading (dB}\mu\text{V)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Amplifier Gain (dB)}$$

The Legrand Models WNAL34 and WNAL44 were 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 dBuV
Attenuation	10 dB
Detectors	Peak and Average
Frequency Range	1 GHz to 18 GHz



4.2.3 Emissions in Frequency Bands 1 - 18 GHz WNAL34 with Zigbee Radio Test Results (09/19/2023 and 09/20/2023)

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 WNAL34 with 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	
* 4.84222	36.78	27.68	H	165	101	1.80	53.98	-26.30	73.98	-37.20	PASS
* 4.84223	39.23	28.19	V	137	213	1.80	53.98	-25.80	73.98	-34.75	PASS
* 7.25131	43.29	33.33	H	001	105	4.41	53.98	-20.65	73.98	-30.69	PASS
* 7.27878	45.09	33.28	V	056	101	4.57	53.98	-20.70	73.98	-28.89	PASS
8.009	44.16	35.70	H	212	104	5.15	53.98	-18.28	73.98	-29.82	PASS
* 8.11451	45.21	36.13	V	005	105	5.32	53.98	-17.85	73.98	-28.77	PASS
9.619	46.39	35.66	V	091	191	6.29	53.98	-18.32	73.98	-27.59	PASS
9.652	45.78	35.91	H	104	162	6.24	53.98	-18.07	73.98	-28.20	PASS
* 12.0151	47.71	38.29	V	053	238	7.74	53.98	-15.69	73.98	-26.27	PASS
* 12.1404	47.63	38.16	H	179	109	7.75	53.98	-15.82	73.98	-26.35	PASS
*Restricted Band Signal											

Legrand Model WNAL34 with 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	
* 4.71425	36.93	27.23	V	092	101	1.33	53.98	-26.75	73.98	-37.05	PASS
* 4.85189	37.41	28.07	H	132	218	1.83	53.98	-25.91	73.98	-36.57	PASS
5.206	39.22	28.51	H	274	131	2.81	53.98	-25.47	73.98	-34.76	PASS
6.760	43.11	32.81	V	087	160	3.62	53.98	-21.17	73.98	-30.87	PASS
* 7.39606	42.97	33.51	H	037	172	4.75	53.98	-20.48	73.98	-31.01	PASS
* 7.4018	44.39	33.61	V	135	240	4.75	53.98	-20.37	73.98	-29.60	PASS
9.686	46.36	36.12	V	025	149	6.25	53.98	-17.86	73.98	-27.62	PASS
9.773	46.88	35.94	H	284	185	6.13	53.98	-18.04	73.98	-27.10	PASS
* 11.1005	47.51	37.38	V	017	175	6.40	53.98	-16.60	73.98	-26.47	PASS
* 12.271	49.03	38.32	V	023	236	7.77	53.98	-15.66	73.98	-24.95	PASS
* 12.29	48.75	38.37	H	320	234	7.74	53.98	-15.61	73.98	-25.23	PASS
*Restricted Band Signal											



Legrand Model WNAL34 with 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	
* 4.93376	37.13	27.23	H	256	167	1.86	53.98	-26.75	73.98	-36.86	PASS
* 4.99924	36.11	27.35	V	120	214	1.86	53.98	-26.63	73.98	-37.87	PASS
* 7.31154	43.37	33.78	H	027	137	4.72	53.98	-20.20	73.98	-30.61	PASS
* 7.50253	43.99	34.02	V	260	177	4.70	53.98	-19.96	73.98	-29.99	PASS
* 7.65376	43.68	34.35	V	195	120	4.65	53.98	-19.63	73.98	-30.30	PASS
* 9.39181	45.81	36.50	H	043	215	6.76	53.98	-17.48	73.98	-28.17	PASS
9.923	46.43	36.41	V	292	146	6.31	53.98	-17.57	73.98	-27.55	PASS
9.937	45.70	36.23	H	005	187	6.32	53.98	-17.75	73.98	-28.28	PASS
* 12.4278	48.85	38.39	V	067	207	7.74	53.98	-15.59	73.98	-25.13	PASS
*Restricted Band Signal											

Legrand Model WNAL34 with 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	
* 4.47385	35.89	26.55	H	180	102	0.69	53.98	-27.43	73.98	-38.09	PASS
* 4.83427	36.83	27.57	H	166	203	1.77	53.98	-26.41	73.98	-37.15	PASS
* 4.86963	37.36	28.04	V	159	104	1.87	53.98	-25.94	73.98	-36.62	PASS
7.157	42.48	32.87	H	306	152	3.88	53.98	-21.11	73.98	-31.50	PASS
7.194	42.27	32.99	V	001	146	4.08	53.98	-20.99	73.98	-31.71	PASS
9.592	45.47	35.83	H	354	197	6.35	53.98	-18.15	73.98	-28.51	PASS
9.668	45.48	36.08	V	024	192	6.24	53.98	-17.90	73.98	-28.50	PASS
* 12.0555	47.80	37.88	H	211	194	7.72	53.98	-16.10	73.98	-26.18	PASS
* 12.1133	47.47	38.42	V	060	157	7.73	53.98	-15.56	73.98	-26.51	PASS
*Restricted Band Signal											

Test Results: The Legrand Model WNAL34 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 15.56 dB.



4.2.4 Emissions in Frequency Bands 1 - 18 GHz WNAL44 with Zigbee Radio Test Results (09/20/2023)

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 WNAL44 with 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	
* 4.47385	35.89	26.55	H	180	102	0.69	53.98	-27.43	73.98	-38.09	PASS
* 4.83427	36.83	27.57	H	166	203	1.77	53.98	-26.41	73.98	-37.15	PASS
* 4.86963	37.36	28.04	V	159	104	1.87	53.98	-25.94	73.98	-36.62	PASS
7.157	42.48	32.87	H	306	152	3.88	53.98	-21.11	73.98	-31.50	PASS
7.194	42.27	32.99	V	001	146	4.08	53.98	-20.99	73.98	-31.71	PASS
9.592	45.47	35.83	H	354	197	6.35	53.98	-18.15	73.98	-28.51	PASS
9.668	45.48	36.08	V	024	192	6.24	53.98	-17.90	73.98	-28.50	PASS
* 12.0555	47.80	37.88	H	211	194	7.72	53.98	-16.10	73.98	-26.18	PASS
* 12.1133	47.47	38.42	V	060	157	7.73	53.98	-15.56	73.98	-26.51	PASS
*Restricted Band Signal											

Legrand Model WNAL44 with 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	
* 4.40183	35.09	25.33	H	158	102	0.43	53.98	-28.65	73.98	-38.89	PASS
* 4.87479	38.38	27.96	H	287	181	1.88	53.98	-26.02	73.98	-35.61	PASS
* 4.8968	37.01	27.51	V	016	111	1.92	53.98	-26.47	73.98	-36.98	PASS
6.625	42.29	32.33	V	094	173	3.30	53.98	-21.65	73.98	-31.69	PASS
* 7.31539	43.15	33.52	V	002	101	4.73	53.98	-20.46	73.98	-30.83	PASS
* 7.34935	43.05	33.77	H	323	145	4.81	53.98	-20.22	73.98	-30.93	PASS
9.739	46.35	36.15	H	360	207	6.21	53.98	-17.83	73.98	-27.63	PASS
9.811	45.86	35.87	V	205	105	6.09	53.98	-18.11	73.98	-28.12	PASS
* 12.2307	48.04	38.53	V	321	244	7.81	53.98	-15.45	73.98	-25.94	PASS
* 12.285	47.56	38.51	H	120	125	7.75	53.98	-15.47	73.98	-26.42	PASS
*Restricted Band Signal											



Legrand Model WNAL44 with 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	
* 4.88733	38.20	27.86	V	155	208	1.90	53.98	-26.12	73.98	-35.78	PASS
* 4.99259	35.95	27.13	H	352	143	1.85	53.98	-26.85	73.98	-38.03	PASS
* 7.48589	43.48	33.53	H	260	116	4.72	53.98	-20.46	73.98	-30.50	PASS
* 7.54558	43.47	34.08	V	131	101	4.72	53.98	-19.90	73.98	-30.51	PASS
9.968	45.44	36.49	H	246	242	6.33	53.98	-17.49	73.98	-28.54	PASS
10.030	46.48	36.55	V	041	138	6.33	53.98	-17.43	73.98	-27.50	PASS
* 12.3552	49.02	38.40	H	151	208	7.68	53.98	-15.58	73.98	-24.96	PASS
* 12.4787	48.89	38.48	V	098	186	7.92	53.98	-15.50	73.98	-25.09	PASS
*Restricted Band Signal											

Legrand Model WNAL44 with 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	
7.122	43.24	32.83	V	189	131	3.73	53.98	-21.15	73.98	-30.74	PASS
8.202	46.20	36.32	V	126	237	5.46	53.98	-17.66	73.98	-27.78	PASS
8.705	45.25	36.28	H	216	120	6.37	53.98	-17.70	73.98	-28.73	PASS
* 9.08704	47.12	36.74	H	060	163	6.70	53.98	-17.24	73.98	-26.86	PASS
* 11.1428	46.95	37.62	H	001	186	6.45	53.98	-16.36	73.98	-27.04	PASS
* 11.1664	47.01	37.58	V	133	176	6.47	53.98	-16.40	73.98	-26.98	PASS
* 11.7154	47.86	38.46	V	272	151	7.68	53.98	-15.52	73.98	-26.12	PASS
12.934	51.63	41.75	H	069	179	8.69	53.98	-12.23	73.98	-22.35	PASS
12.974	51.28	41.31	V	090	135	8.89	53.98	-12.67	73.98	-22.70	PASS
*Restricted Band Signal											

Test Results: The Legrand Model WNAL44 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 12.23 dB.



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

4.3.1 Maximum Output Power Conducted 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. Spectrum analyzer parameters are listed for the Zigbee radio maximum conducted (peak) output power. The un-modulated carrier was also measured for comparison.

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

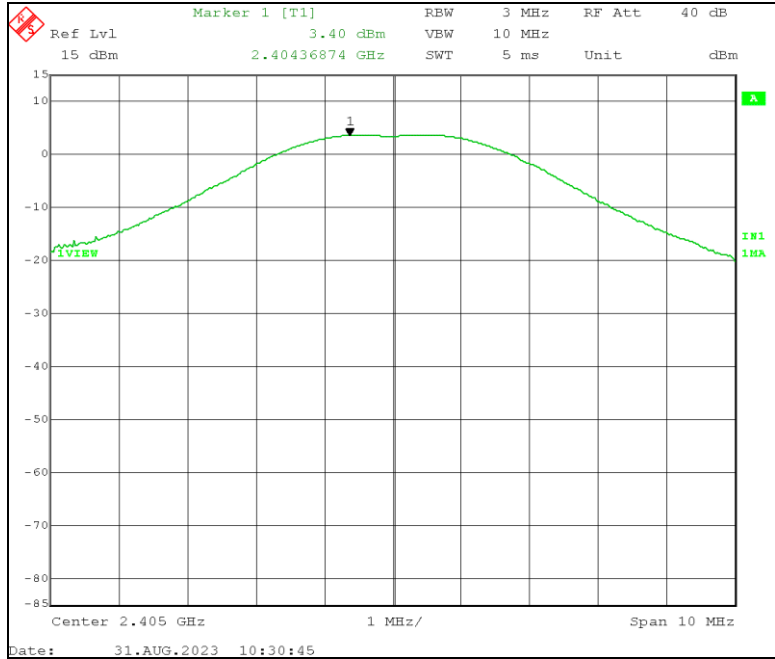
Zigbee Radio, O-QPSK modulation			
Spectrum Analyzer Settings			ANSI C63.10 requirement
Span	10	MHz	$\geq 3 \times \text{RBW}$
RBW	3	MHz	$\text{RBW} \geq \text{DTS BW}$
VBW	10	MHz	$\geq 3 \times \text{RBW}$
Sweep	5	ms	Auto

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

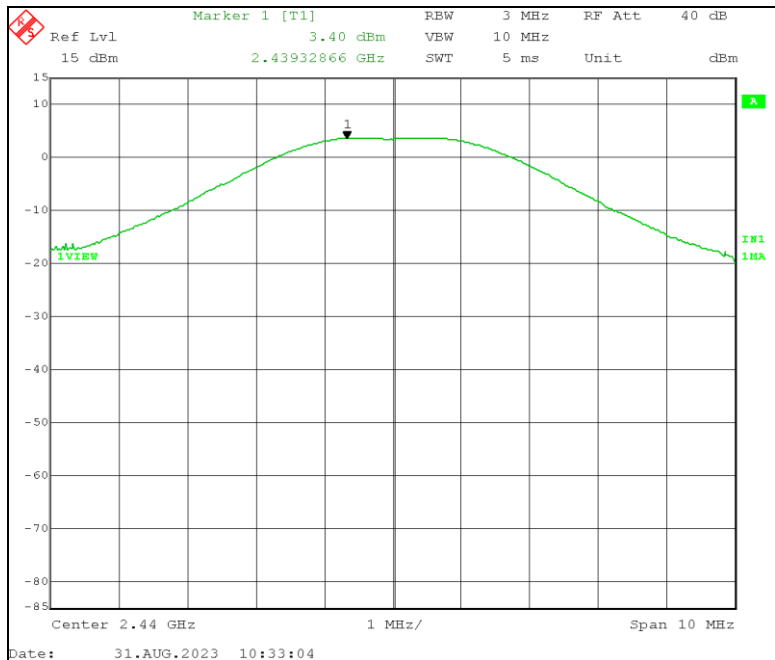


4.3.1.1 Maximum Output Power Conducted Legrand WNAL34 with Zigbee Radio O-QPSK Modulation Test Results (08/31/2023)

Legrand Model WNAL34 with Zigbee Radio Low Channel 11, 2.405 GHz, O-QPSK Modulation

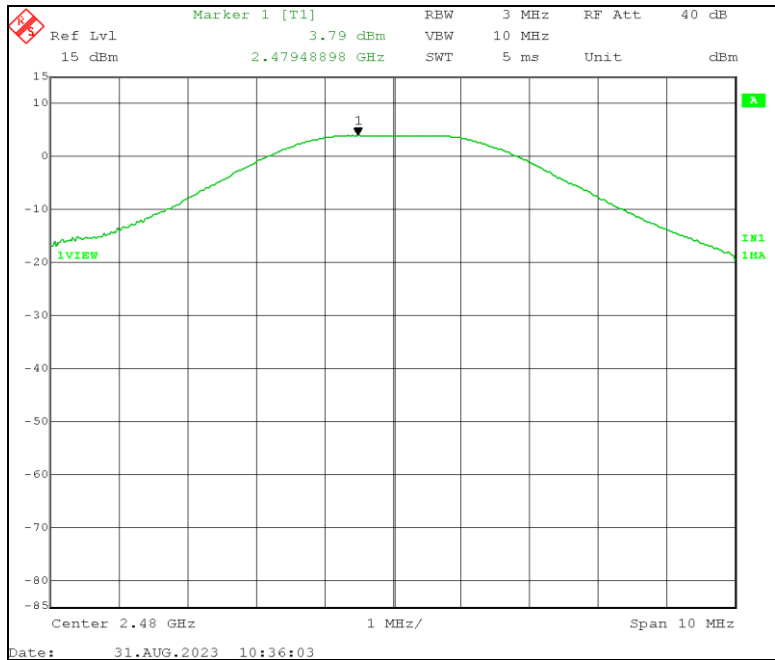


Legrand Model WNAL34 with Zigbee Radio Middle Channel 18, 2.440 GHz, O-QPSK Modulation

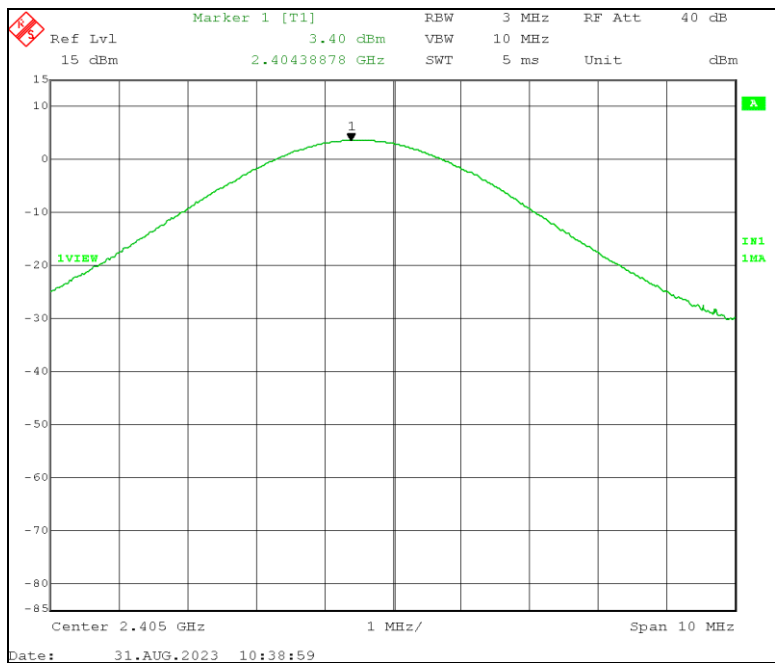




Legrand Model WNAL34 with Zigbee Radio High Channel 26, 2.480 GHz, O-QPSK Modulation

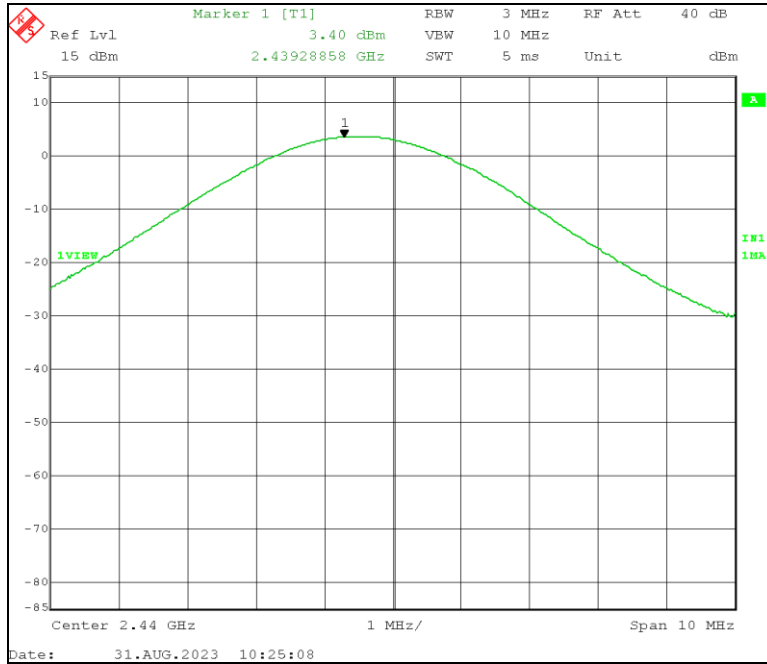


Legrand Model WNAL34 with Zigbee Radio Low Channel 11, 2.405 GHz, No modulation

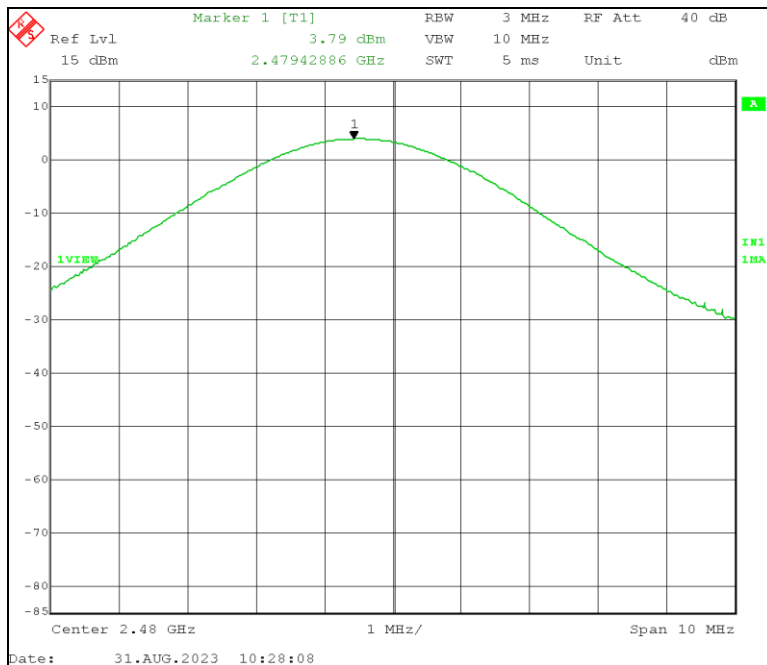




Legrand Model WNAL34 with Zigbee Radio Middle Channel 18, 2.440 GHz, No modulation



Legrand Model WNAL34 with Zigbee Radio High Channel 26, 2.480 GHz, No modulation





Maximum Conducted Output Power Measurement Summary Tables

EUT Tested	Legrand WNAL34 Adorne Zigbee Radio EUT-Conducted EUT										
Sample #	2272-09										
Test Configuration	EUT Tested With O-QPSK Modulation and Without Modulation (CW)										
Channel	Modulation	Frequency (GHz)	Measured Level	Cable # 962	Total		Limit		Margin		Result
					dBm	Watts	dBm	Watts	dBm	Watts	
11	O-QPSK	2405.0	3.40	0.47	3.87	0.0024	30.00	1.000	-26.13	-0.998	Pass
18		2440.0	3.40	0.47	3.87	0.0024	30.00	1.000	-26.13	-0.998	Pass
26		2480.0	3.79	0.47	4.26	0.0027	30.00	1.000	-25.74	-0.997	Pass
Channel	Modulation	Frequency (GHz)	Measured Level	Cable # 962	Total		Limit		Margin		Result
					dBm	Watts	dBm	Watts	dBm	Watts	
11	None	2405.0	3.40	0.47	3.87	0.0024	30.00	1.000	-26.13	-0.998	Pass
18		2440.0	3.40	0.47	3.87	0.0024	30.00	1.000	-26.13	-0.998	Pass
26		2480.0	3.79	0.47	4.26	0.0027	30.00	1.000	-25.74	-0.997	Pass

Test Results: The Maximum Power Output Conducted measurements for the Legrand Model WNAL34 with Zigbee Radio, modulated with O-QPSK and un-modulated, are compliant to the requirements of 47 CFR Part 15.247(b)(3) and ISED, RSS-247 Section 5.4(d).



4.3.2 EIRP Level WNAL34 with Zigbee Radio Test Results (08/31/2023)

The Innovation, Science and Economic Development Canada (ISED), RSS-247 requires the calculation of the Effective Isotropic Radiated Power (EIRP) for the Legrand Model WNAL34 with 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 WNAL34 with Zigbee Radio Test Results

Antenna Gain of Legrand WNAL34/WNAL44 is + 1.1 dBi.											
Channel	Modulation	Frequency (GHz)	Transmitter Output Total		Antenna Gain		EIRP				Result
			dBm	Watts	Isotropic	Numeric	Total		Limit	Margin	
							dBm	Watts			
11	O-QPSK	2405.0	3.87	0.0024	1.10	1.288	4.97	0.0031	4.00	-3.9969	Pass
18		2440.0	3.87	0.0024	1.10	1.288	4.97	0.0031	4.00	-3.9969	Pass
26		2480.0	4.26	0.0027	1.10	1.288	5.36	0.0034	4.00	-3.9966	Pass
Channel	Modulation	Frequency (GHz)	Transmitter Output Total		Antenna Gain		EIRP				Result
			dBm	Watts	Isotropic	Numeric	Total		Limit	Margin	
							dBm	Watts			
11	None	2405.0	3.87	0.0024	1.10	1.288	4.97	0.0031	4.00	-3.9969	Pass
18		2440.0	3.87	0.0024	1.10	1.288	4.97	0.0031	4.00	-3.9969	Pass
26		2480.0	4.26	0.0027	1.10	1.288	5.36	0.0034	4.00	-3.9966	Pass

Test Results: The Effective Isotropic Radiated Power measurements for the Legrand Model WNAL34 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