



BEC INCORPORATED

CERTIFICATION APPLICATION TEST REPORT

TEST STANDARDS:

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

EUT:

**Legrand Model WNRF10
Radiant Fan Speed Controller Switch with Zigbee Radio**

FCC ID: 2AU5D-WNRF10

ISED ID: 25764-WNRF10

REPORT#: BEC-2346-03 REV3

REPORT DATE: 05/19/2026

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	04/06/2026
1	Added Emissions Graphs into a new Section 4.4.6	04/27/2026	04/27/2026
2	Edited the Appendix A to show the TESEQ Model NNB 52 current Calibration Cycle of 3.5 years and Due Date of 06/08/26	05/08/2026	05/08/2026
3	Edited the Appendix A to detail the Pre-compliance Radiated Equipment	05/19/2026	05/19/2026



1.0 Administrative Information

1.1 Project General Information

Project Number	BEC-2346	
Manufacturer	Legrand	
EUT Description	Radiant Fan Speed Controller Switch with Zigbee Radio	
EUT Test Models	WNRF10	
EUT Test Types	Antenna Conducted Samples with SMA connector at antenna port and radio test software	Radiated Samples with Standard antenna and radio test software
EUT Serial Numbers	None	None
EUT Samples	2346-26 (Tx Modulated Sample), 2346-27 (Rx Sample) and 2346-28 (CW Tx Sample)	2346-20 (Tx Modulated Sample) and 2346-21 (Rx Sample)
FCC ID	2AU5D-WNRF10	
ISED ID	25764- WNRF10	
Zigbee Radio Chip Manufacturer	Atmel	
Zigbee Radio Chip Model	ATSAMR21G18A-MUT	
Radio Type	Zigbee	
Frequency of Operation	2405 – 2480 MHz	
Modulation Type	O-QPSK	
Antenna Gain	+ 3.3 dBi	
Antenna Type	Inverted F PCB Micro-Strip	
FCC Classification	Digital Transmission System (DTS)	
Samples Received	11/20/2025	
Test Dates	11/24/2025 – 02/03/2026	
Condition Received	Suitable for test	
Sample Type	Production units	
Firmware Version	Production Release v21	
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	Karthikeyan Arunachalam
Customer Reference Number	PO # SP420559-802-1



1.4 Measurement Uncertainty

Measurement	Measurement Distance	Range	Measurement Limit	Expanded Uncertainty (dB)
Radiated Disturbance Open Area Test Site	3 Meter	30 MHz – 1 GHz	Class A or B	3.93
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	±0.086 ppm
RF power, conducted	N/A	1 MHz – 26.5 GHz	N/A	±1.48 dB
Conducted spurious emission of transmitter, valid up to 6 GHz	N/A	150 kHz – 26.5 GHz	N/A	±2.73 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 WNRF10 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:

Report Section	FCC Part 15, Subpart C	RSS-Gen	RSS-247	Test Description	Result
4.1	15.203(b)	Annex A 10(g)		Antenna Requirement	PASS
4.2	15.204	8.3		External RF power amplifiers and antenna modifications	PASS
4.3	15.207	7.2	6.6	Conducted Limits (AC Power) 150 kHz – 30 MHz	PASS
4.4	15.205(a) 15.209	8.9, 8.10	6.6	Radiated Emissions in Non-Restricted and Restricted Frequency Band 30 MHz – 25 GHz	PASS
4.5	15.247(a)(2)		6.3.1	6 dB Occupied Bandwidth	PASS
4.6		6.7	6.3.1	99% Occupied Bandwidth	PASS
4.7	15.247(b)(3)		6.3.2	Maximum Conducted (Peak) Power Output and EIRP	PASS
4.8	15.247(d)		6.6	Antenna Conducted Emissions in Restricted Frequency Bands 30 MHz – 25 GHz	PASS
4.9	15.247(e)		6.3.1	DTS maximum power spectral density level in the fundamental emission	PASS
4.10	15.247(d)		6.6	DTS band-edge emission measurements	PASS
4.11				Duty Cycle Per ANSI C63.10, Section 11.6	Measured

Rationale for EUT operation: The EUT was tested using a Zigbee radio which contained test software that utilized O-QPSK modulation used in normal operation.



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 Legrand Model WNRF10 is a fan motor speed controller switch which can be operated remotely using the Zigbee radio connection. The fan motor speed controller switch is powered by AC Mains at 120 VAC / 60 Hz.

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 WNRF10 radiant fan motor speed controller switch 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.

nlh-tx-test-radio-1.bin: Internal Software with Transmit Frequencies of 2405 MHz, 2440 MHz and 2480 MHz with Max Output Power and O-QPSK Modulation. The transmission was 100% Duty Cycle.

nlh-tx-test-radio-2.bin: Internal Software that places the radio into Rx Mode.

nlh-tx-test-radio-3.bin: Internal Software with Transmit Frequencies of 2405 MHz, 2440 MHz and 2480 MHz with Max Output Power and Unmodulated CW. The transmission was 100% Duty Cycle.

2.5 Test Configuration Rationale

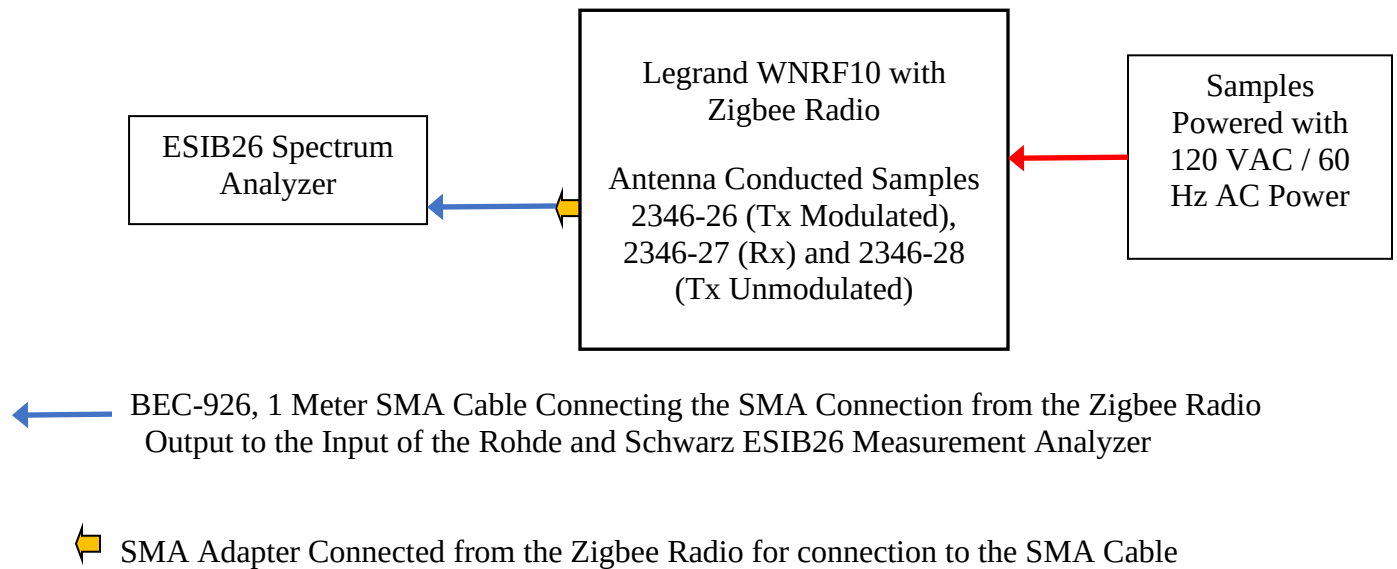
Samples of the Legrand Model WNRF10 with Zigbee radio, were powered at 120 VAC /60 Hz and were supplied with internal radio software which controlled the operation of the Zigbee radio in a manner consistent with normal use.



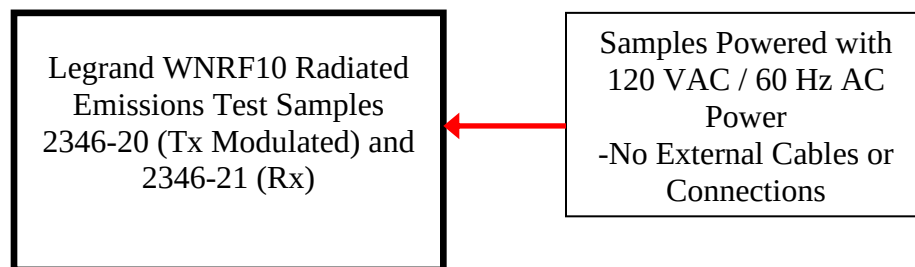
2.6 Test Configuration Diagrams – Zigbee Radio

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



2.6.2 Zigbee Configuration – Radiated Measurement





2.7 EUT Information, Interconnection Cabling and Support Equipment

EUT Hardware

Description	Manufacturer	Model	Serial Number	Sample Number
radiant fan motor speed controller switch with Zigbee - Radiated Test Sample (With O-QPSK Modulation)	Legrand	WNRF10	None	2346-20
radiant fan motor speed controller switch with Zigbee - Radiated Test Sample (Rx)	Legrand	WNRF10	None	2346-21
radiant fan motor speed controller switch with Zigbee - Antenna Conducted Test Sample (With O-QPSK Modulation)	Legrand	WNRF10	None	2346-26
radiant fan motor speed controller switch with Zigbee - Antenna Conducted Test Sample (Rx)	Legrand	WNRF10	None	2346-27
radiant fan motor speed controller switch with Zigbee - Antenna Conducted Test Sample (No Modulation)	Legrand	WNRF10	None	2346-28

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 WNRF10 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 WNRF10, 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 4 July 2024: 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

KDB Document 558074 D01 15.247 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 C63.10-2020+Cor.1-2023+A1-2024, 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 Antenna Requirement (47 CFR 15.203)(RSS-GEN ANNEX A (10)(g))

The antenna used by the Legrand Model WNRF10 is an inverted F PCB micro-strip antenna. There are no detachable parts of the antenna. The antenna is not replaceable, nor changeable, and therefore complies with the requirements of this section.

4.2 External RF power amps/antenna modifications (47 CFR 15.204)(RSS-GEN 8.3)

There are no RF power amplifier kits available to be used with the Legrand Model WNRF10. There are no detachable parts of the antenna. The antenna is not replaceable, nor changeable, and therefore complies with the requirements of this section.

4.3 Conducted Emissions AC Power Port (47 CFR 15.207)(RSS-GEN 7.2)

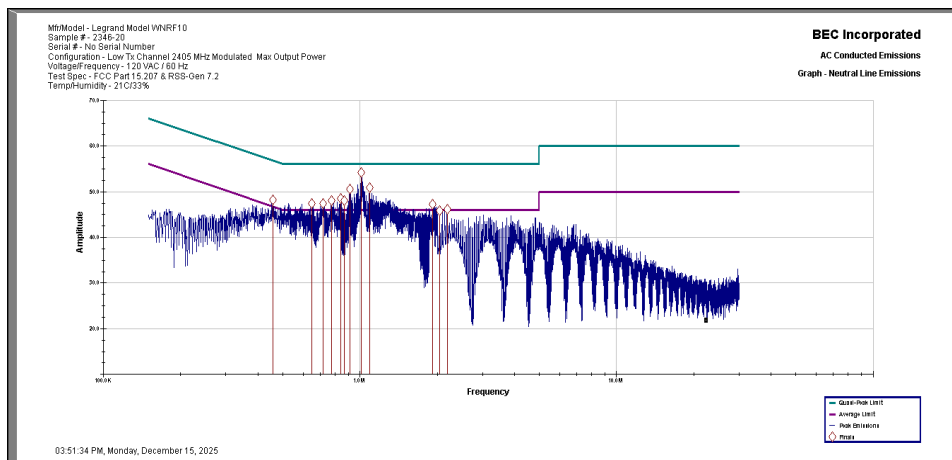
The AC Mains Conducted Emissions from the Legrand Model WNRF10 with Zigbee radio were measured with the unit transmitting at maximum output power with O-QPSK modulation at 2405 MHz (Low Channel), 2440 MHz (Middle Channel), 2480 MHz (High Channel) and when in Rx Mode.



4.3.1 Conducted Emissions AC Power Port Test Results Legrand WNRF10 Tx Sample 2346-20 and Rx Sample 2346-21 (12/15/2025)

Low Tx Channel 2405 MHz Neutral

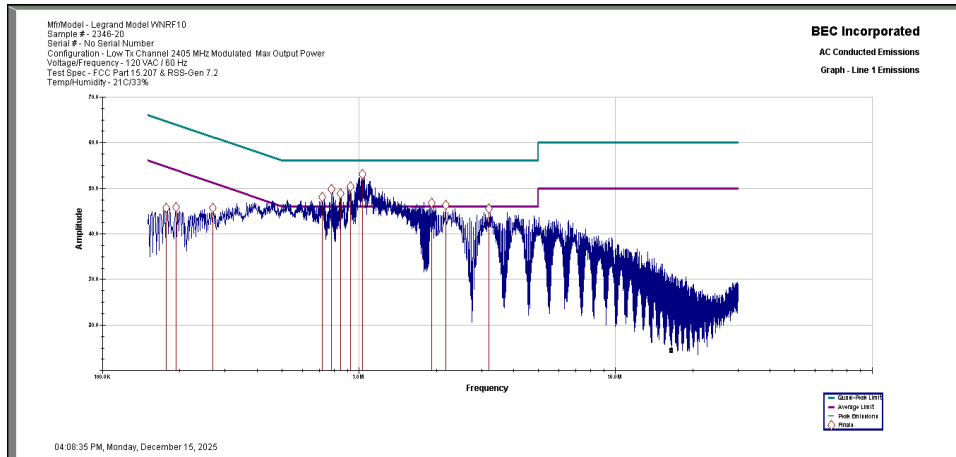
BEC Incorporated							
Neutral Line Conducted Emissions							
03:51:29 PM, Monday, December 15, 2025							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Correction
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
460.280 KHz	35.37	47.13	-11.77	42.51	57.13	-14.62	10.032
648.088 KHz	33.87	46.00	-12.13	41.85	56.00	-14.15	10.045
722.690 KHz	32.00	46.00	-14.00	41.27	56.00	-14.73	10.050
768.730 KHz	32.12	46.00	-13.88	40.67	56.00	-15.33	10.050
848.040 KHz	29.93	46.00	-16.07	42.33	56.00	-13.67	10.050
865.530 KHz	28.41	46.00	-17.59	40.47	56.00	-15.53	10.050
912.340 KHz	32.71	46.00	-13.29	44.18	56.00	-11.82	10.050
1.022 MHz	37.11	46.00	-8.89	46.60	56.00	-9.40	10.051
1.101 MHz	36.22	46.00	-9.78	44.46	56.00	-11.54	10.053
1.903 MHz	26.70	46.00	-19.30	38.92	56.00	-17.08	10.087
2.044 MHz	31.97	46.00	-14.03	40.06	56.00	-15.94	10.092
2.168 MHz	34.76	46.00	-11.24	40.86	56.00	-15.14	10.097
Mfr/Model - Legrand Model WNRF10							
Sample # - 2346-20							
Serial # - No Serial Number							
Configuration - Low Tx Channel 2405 MHz Modulated Max Output Power							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - FCC Part 15.207 & RSS-Gen 7.2							
Temp/Humidity - 21C/33%							





Low Tx Channel 2405 MHz Line 1

BEC Incorporated Line 1 Conducted Emissions 04:08:25 PM, Monday, December 15, 2025							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Correction
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
177.484 KHz	33.68	55.21	-21.53	42.33	65.21	-22.88	10.053
195.328 KHz	32.52	54.70	-22.18	41.81	64.70	-22.89	10.050
272.057 KHz	35.43	52.51	-17.08	41.57	62.51	-20.95	10.046
726.980 KHz	34.38	46.00	-11.62	41.48	56.00	-14.52	10.070
779.920 KHz	35.08	46.00	-10.92	42.40	56.00	-13.60	10.070
844.430 KHz	33.79	46.00	-12.21	42.70	56.00	-13.30	10.070
916.010 KHz	35.22	46.00	-10.78	44.21	56.00	-11.79	10.070
1.027 MHz	40.41	46.00	-5.59	47.45	56.00	-8.55	10.071
1.923 MHz	30.75	46.00	-15.25	39.37	56.00	-16.63	10.108
2.186 MHz	37.40	46.00	-8.60	41.79	56.00	-14.21	10.117
3.189 MHz	37.44	46.00	-8.56	41.39	56.00	-14.61	10.165
Mfr/Model - Legrand Model WNRF10							
Sample # - 2346-20							
Serial # - No Serial Number							
Configuration - Low Tx Channel 2405 MHz Modulated Max Output Power							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - FCC Part 15.207 & RSS-Gen 7.2							
Temp/Humidity - 21C/33%							

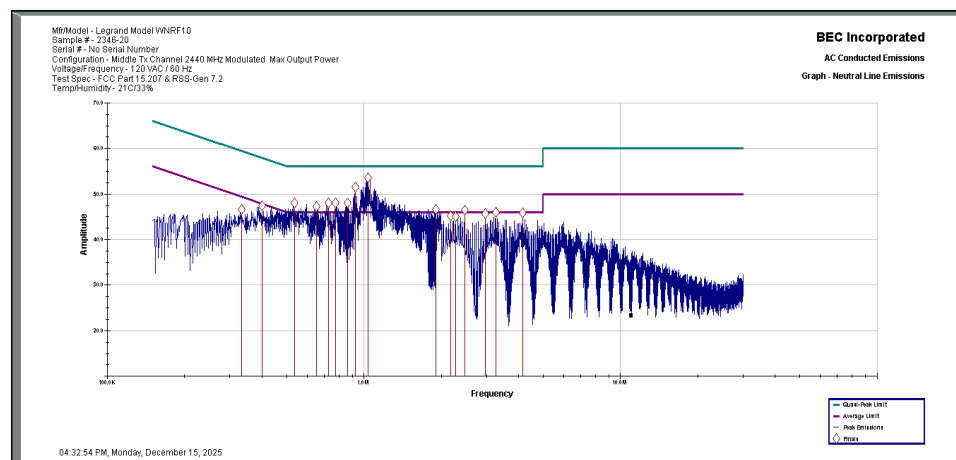


Results: The AC Mains Conducted measurements with the EUT transmitting at Low Channel of 2405 MHz passes by a margin of 5.59 dB.



Middle Tx Channel 2440 MHz Neutral

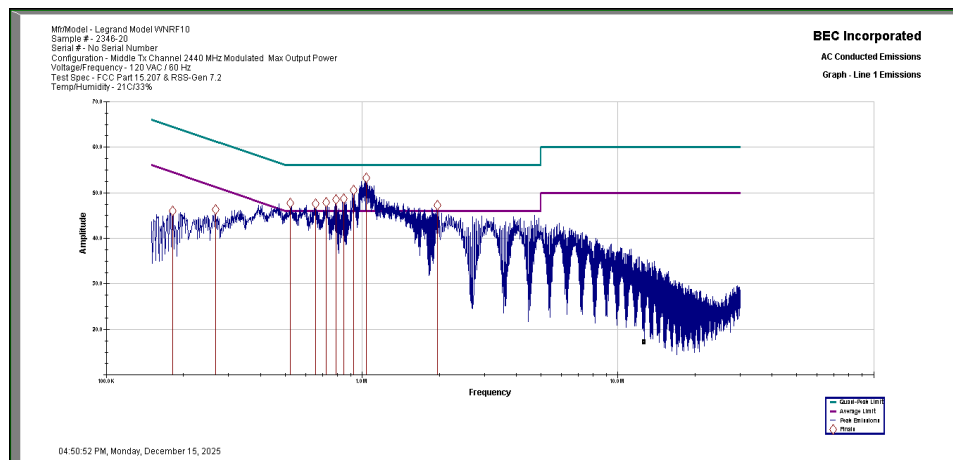
BEC Incorporated							
Neutral Line Conducted Emissions							
04:32:51 PM, Monday, December 15, 2025							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Correction
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
336.376 KHz	33.82	50.67	-16.85	41.63	60.67	-19.05	10.027
399.344 KHz	33.79	48.88	-15.09	42.10	58.88	-16.78	10.030
533.225 KHz	33.07	46.00	-12.93	41.56	56.00	-14.44	10.040
649.877 KHz	34.32	46.00	-11.68	42.17	56.00	-13.83	10.045
723.680 KHz	32.30	46.00	-13.70	42.07	56.00	-13.93	10.050
781.180 KHz	31.97	46.00	-14.03	42.04	56.00	-13.96	10.050
856.490 KHz	28.99	46.00	-17.01	41.95	56.00	-14.05	10.050
915.920 KHz	32.20	46.00	-13.80	44.00	56.00	-12.00	10.050
1.030 MHz	37.66	46.00	-8.34	47.18	56.00	-8.82	10.051
1.897 MHz	26.43	46.00	-19.57	39.18	56.00	-16.82	10.087
2.158 MHz	34.64	46.00	-11.36	40.94	56.00	-15.06	10.096
2.293 MHz	35.16	46.00	-10.84	41.11	56.00	-14.89	10.102
2.441 MHz	32.87	46.00	-13.13	39.39	56.00	-16.61	10.108
2.989 MHz	33.10	46.00	-12.90	40.09	56.00	-15.91	10.140
3.291 MHz	32.87	46.00	-13.13	38.99	56.00	-17.01	10.147
4.144 MHz	33.19	46.00	-12.81	38.84	56.00	-17.16	10.179
Mfr/Model - Legrand Model WNRF10							
Sample # - 2346-20							
Serial # - No Serial Number							
Configuration - Middle Tx Channel 2440 MHz Modulated Max Output Power							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - FCC Part 15.207 & RSS-Gen 7.2							
Temp/Humidity - 21C/33%							





Middle Tx Channel 2440 MHz Line 1

BEC Incorporated							
Line 1 Conducted Emissions							
04:50:48 PM, Monday, December 15, 2025							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Correction
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
182.388 KHz	32.51	55.07	-22.56	42.05	65.07	-23.02	10.050
267.324 KHz	36.34	52.65	-16.31	41.81	62.65	-20.84	10.047
520.427 KHz	39.36	46.00	-6.64	44.23	56.00	-11.77	10.054
656.022 KHz	37.20	46.00	-8.80	43.15	56.00	-12.85	10.066
720.450 KHz	35.84	46.00	-10.16	42.67	56.00	-13.33	10.070
785.680 KHz	34.11	46.00	-11.89	42.20	56.00	-13.80	10.070
849.240 KHz	32.83	46.00	-13.17	42.39	56.00	-13.61	10.070
923.610 KHz	35.10	46.00	-10.90	44.05	56.00	-11.95	10.070
1.033 MHz	40.47	46.00	-5.53	48.10	56.00	-7.90	10.071
1.955 MHz	31.21	46.00	-14.79	39.47	56.00	-16.53	10.109
Mfr/Model - Legrand Model WNRF10							
Sample # - 2346-20							
Serial # - No Serial Number							
Configuration - Middle Tx Channel 2440 MHz Modulated Max Output Power							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - FCC Part 15.207 & RSS-Gen 7.2							
Temp/Humidity - 21C/33%							



Results: The AC Mains Conducted measurements with the EUT transmitting at Middle Channel of 2440 MHz passes by a margin of 5.53 dB.



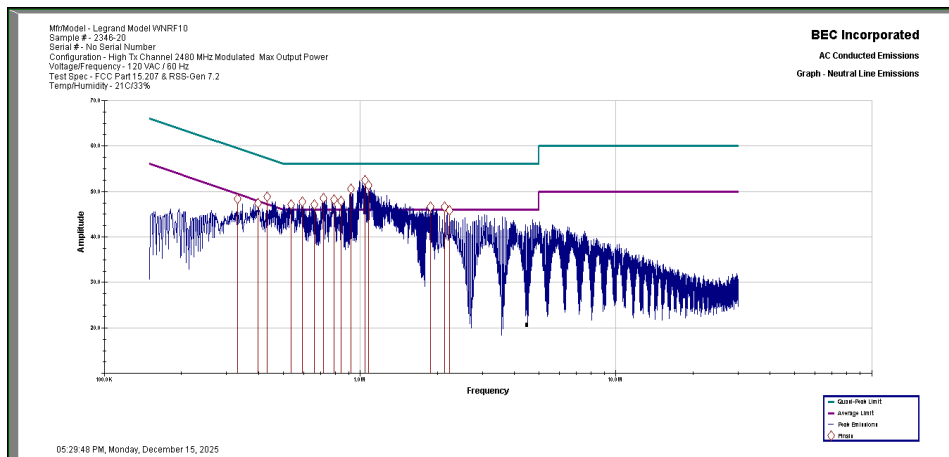
High Tx Channel 2480 MHz Neutral

BEC Incorporated

Neutral Line Conducted Emissions

05:29:45 PM, Monday, December 15, 2025

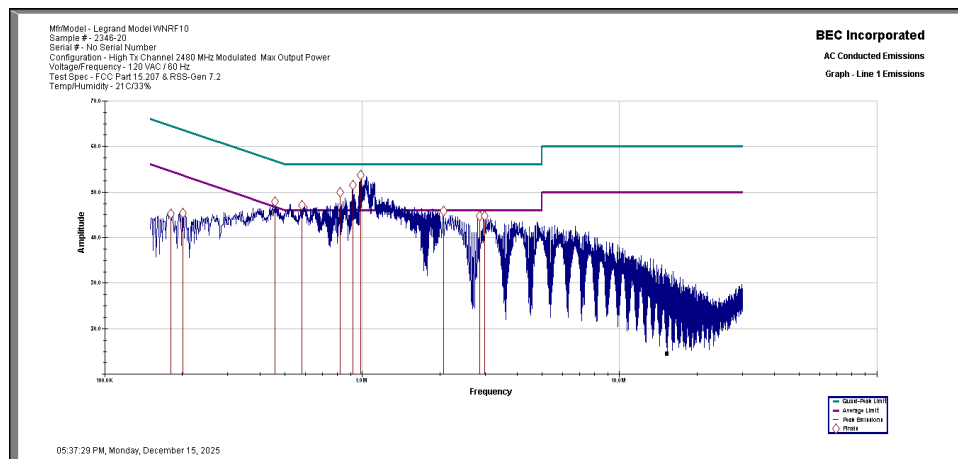
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Correction
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
331.004 KHz	34.00	50.83	-16.83	41.96	60.83	-18.87	10.026
398.425 KHz	33.92	48.90	-14.98	42.14	58.90	-16.76	10.030
434.859 KHz	35.83	47.86	-12.03	42.09	57.86	-15.77	10.030
537.918 KHz	33.22	46.00	-12.78	41.26	56.00	-14.74	10.040
594.442 KHz	34.24	46.00	-11.76	42.09	56.00	-13.91	10.040
663.435 KHz	32.17	46.00	-13.83	41.23	56.00	-14.77	10.046
721.010 KHz	32.66	46.00	-13.34	41.95	56.00	-14.05	10.050
796.790 KHz	28.78	46.00	-17.22	41.19	56.00	-14.81	10.050
843.250 KHz	30.96	46.00	-15.04	42.03	56.00	-13.97	10.050
919.850 KHz	32.31	46.00	-13.69	44.30	56.00	-11.70	10.050
1.027 MHz	36.88	46.00	-9.12	46.54	56.00	-9.46	10.051
1.078 MHz	34.66	46.00	-11.34	43.58	56.00	-12.42	10.052
1.881 MHz	26.18	46.00	-19.82	39.42	56.00	-16.58	10.086
2.142 MHz	34.49	46.00	-11.51	40.97	56.00	-15.03	10.096
2.232 MHz	35.06	46.00	-10.94	40.90	56.00	-15.10	10.099
Mfr/Model - Legrand Model WNRF10							
Sample # - 2346-20							
Serial # - No Serial Number							
Configuration - High Tx Channel 2480 MHz Modulated Max Output Power							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - FCC Part 15.207 & RSS-Gen 7.2							
Temp/Humidity - 21C/33%							





High Tx Channel 2480 MHz Line 1

BEC Incorporated							
Line 1 Conducted Emissions							
05:37:25 PM, Monday, December 15, 2025							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Correction
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
180.149 KHz	33.73	55.14	-21.41	42.46	65.14	-22.68	10.050
198.927 KHz	34.94	54.60	-19.66	42.26	64.60	-22.34	10.050
456.222 KHz	39.38	47.25	-7.87	44.37	57.25	-12.88	10.050
591.013 KHz	38.26	46.00	-7.74	43.60	56.00	-12.40	10.060
822.020 KHz	31.95	46.00	-14.05	39.62	56.00	-16.38	10.070
917.460 KHz	34.85	46.00	-11.15	44.64	56.00	-11.36	10.070
991.000 KHz	39.64	46.00	-6.36	46.81	56.00	-9.19	10.070
2.055 MHz	36.22	46.00	-9.78	41.03	56.00	-14.97	10.112
2.878 MHz	32.21	46.00	-13.79	39.38	56.00	-16.62	10.155
2.985 MHz	35.20	46.00	-10.80	40.36	56.00	-15.64	10.159
Mfr/Model - Legrand Model WNRF10							
Sample # - 2346-20							
Serial # - No Serial Number							
Configuration - High Tx Channel 2480 MHz Modulated Max Output Power							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - FCC Part 15.207 & RSS-Gen 7.2							
Temp/Humidity - 21C/33%							

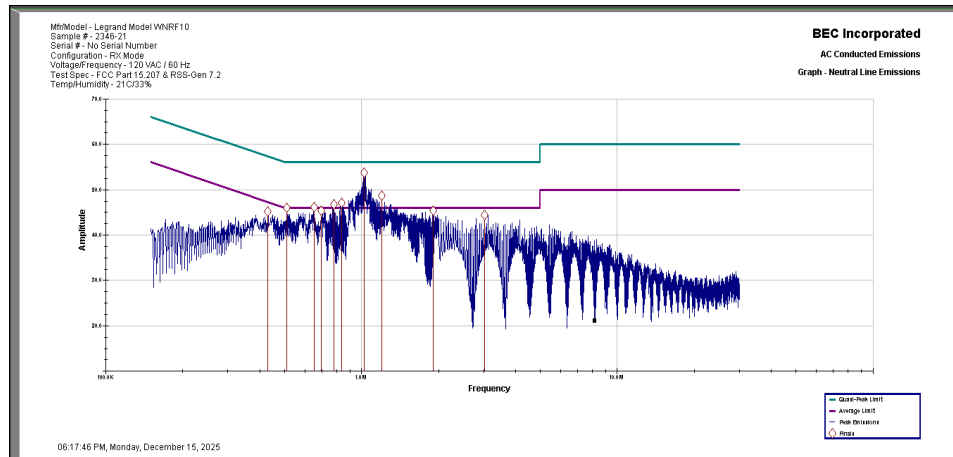


Results: The AC Mains Conducted measurements with the EUT transmitting at High Channel of 2480 MHz passes by a margin of 6.36 dB.



Rx Neutral

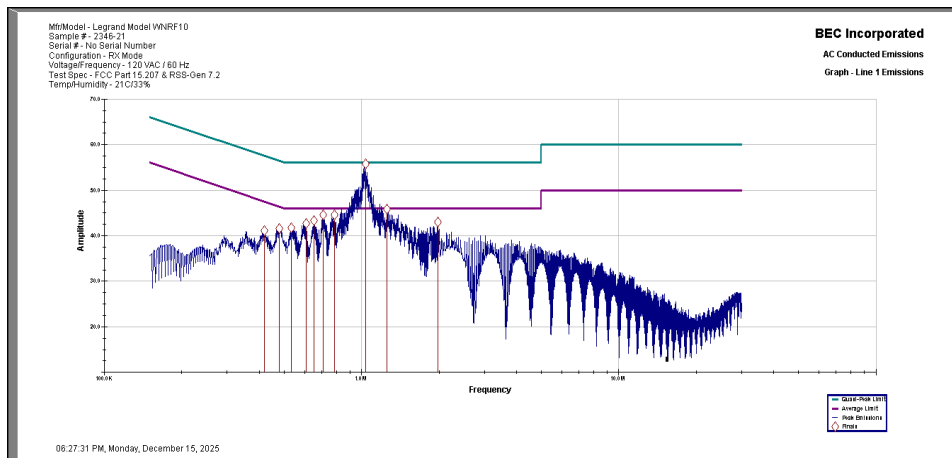
BEC Incorporated							
Neutral Line Conducted Emissions							
06:17:42 PM, Monday, December 15, 2025							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Correction
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
431.132 KHz	33.81	47.97	-14.16	39.60	57.97	-18.37	10.030
515.952 KHz	33.62	46.00	-12.38	40.11	56.00	-15.89	10.040
654.754 KHz	31.27	46.00	-14.73	39.47	56.00	-16.53	10.045
695.160 KHz	32.16	46.00	-13.84	39.19	56.00	-16.81	10.050
779.340 KHz	29.66	46.00	-16.34	40.20	56.00	-15.80	10.050
839.910 KHz	29.81	46.00	-16.19	40.71	56.00	-15.29	10.050
1.015 MHz	39.35	46.00	-6.65	47.54	56.00	-8.46	10.050
1.201 MHz	30.75	46.00	-15.25	38.75	56.00	-17.25	10.056
1.904 MHz	23.11	46.00	-22.89	33.94	56.00	-22.06	10.087
3.041 MHz	25.88	46.00	-20.12	34.66	56.00	-21.34	10.141
Mfr/Model - Legrand Model WNRF10							
Sample # - 2346-21							
Serial # - No Serial Number							
Configuration - RX Mode							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - FCC Part 15.207 & RSS-Gen 7.2							
Temp/Humidity - 21C/33%							





Rx Line 1

BEC Incorporated							
Line 1 Conducted Emissions							
06:27:28 PM, Monday, December 15, 2025							
	1	2	3	4	5	6	7
Frequency	AVG	AVG	AVG	QP	QP	QP	Correction
MHz	dBuV	Limit	Margin	dBuV	Limit	Margin	Factor
417.914 KHz	31.84	48.35	-16.50	37.50	58.35	-20.85	10.050
477.861 KHz	32.13	46.63	-14.50	37.98	56.63	-18.65	10.050
532.419 KHz	32.38	46.00	-13.62	38.28	56.00	-17.72	10.056
599.358 KHz	31.71	46.00	-14.29	37.90	56.00	-18.10	10.060
651.970 KHz	32.28	46.00	-13.72	38.42	56.00	-17.58	10.065
709.270 KHz	32.39	46.00	-13.61	38.57	56.00	-17.43	10.070
779.510 KHz	31.49	46.00	-14.51	38.74	56.00	-17.26	10.070
1.023 MHz	43.36	46.00	-2.64	49.86	56.00	-6.14	10.071
1.251 MHz	33.08	46.00	-12.92	39.16	56.00	-16.84	10.083
1.968 MHz	27.18	46.00	-18.82	35.47	56.00	-20.53	10.109
Mfr/Model - Legrand Model WNRF10							
Sample # - 2346-21							
Serial # - No Serial Number							
Configuration - RX Mode							
Voltage/Frequency - 120 VAC / 60 Hz							
Test Spec - FCC Part 15.207 & RSS-Gen 7.2							
Temp/Humidity - 21C/33%							



Results: The AC Mains Conducted measurements with the EUT in Rx Mode passes by a margin of 2.64 dB.



4.4 Emissions in Non-Restricted and Restricted Frequency Bands, 30 MHz - 25 GHz (47 CFR 15.205, 15.209)(RSS-GEN 8.9, 8.10)

The emissions from the Legrand Model WNRF10 with Zigbee Radio, which fall in the restricted bands of operation, detailed in this section, comply with the limits of 15.209. The Radiated Emissions from the Legrand Model WNRF10 with Zigbee radio were measured with the unit transmitting at maximum output power with O-QPSK modulation at 2405 MHz (Low Channel), 2440 MHz (Middle Channel), 2480 MHz (High Channel) and when in Rx Mode.

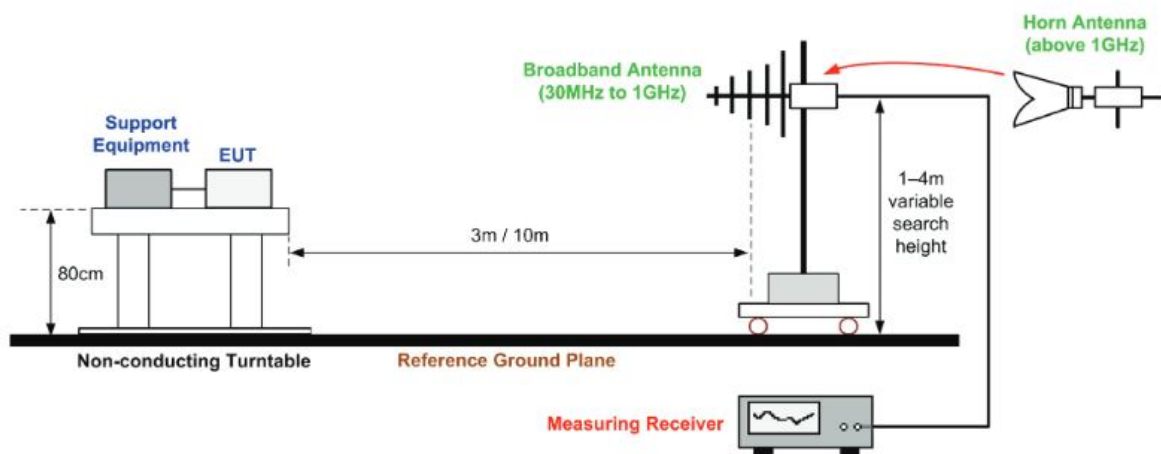
Measurements of suspect signals were performed with the EUT on a turntable and a variable height antenna mast at 3 meters distance. The signals residing in restricted bands of operation are designated in the results tables in this section of the report.

4.4.1 Radiated Spurious Emissions Test Facility

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 C63.4:2014.





4.4.2 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 30MHz to 1GHz and the appropriate CISPR bandwidths were employed. The receiver was set to average mode for frequencies above 1GHz 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 WNRF10.

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 WNRF10 with Zigbee radio was tested in the 30 to 1000 MHz, 1 to 18 GHz and then 18 to 25 GHz frequency ranges. The Radiated Emissions from the Legrand Model WNRF10 with Zigbee radio were measured with the unit transmitting at maximum output power with O-QPSK modulation at 2405 MHz (Low Channel), 2440 MHz (Middle Channel), 2480 MHz (High Channel) and when in Rx Mode.

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.



4.4.3 Emissions in Frequency Bands 30 MHz – 1000 MHz Legrand WNRF10 with Zigbee Radio (11/24/2025)

Radiated emissions scans in the frequency range of 30 MHz to 1000 MHz 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 Quasi-Peak levels shown in the table are corrected values.

EUT	2346-20 Legrand Model WNRF10 Radiated Sample								
Configuration	EUT Tx @ 2.405 GHz Modulated Channel 11 Max Output Power								
EUT Orientation	EUT Laying on Side With Face towards Antenna								
Frequency	Corrected		Antenna Polarity	Turntable Angle	Antenna Height	Correction Factor	FCC Part15.205/209 RSS-GEN/247		Result
	Peak Level	QP Level					QP Limit	QP Margin	
MHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	
35.605	16.32	15.87	V	209	104	-3.94	40.00	-24.13	PASS
51.186	28.17	25.97	V	160	101	-13.03	40.00	-14.03	PASS
58.814	23.16	19.91	V	246	106	-13.28	40.00	-20.09	PASS
97.416	19.59	16.36	V	333	199	-10.62	43.52	-27.16	PASS
* 129.015	16.07	13.93	H	257	131	-6.56	43.52	-29.59	PASS
200.753	13.99	12.90	H	244	177	-6.98	43.52	-30.62	PASS
* 258.11	26.44	23.85	H	258	126	-6.90	46.02	-22.17	PASS
*Restricted Band Signal									

EUT	2346-20 Legrand Model WNRF10 Radiated Sample								
Configuration	EUT Tx @ 2.440 GHz Modulated Channel 18 Max Output Power								
EUT Orientation	EUT Laying on Side With Face towards Antenna								
Frequency	Corrected		Antenna Polarity	Turntable Angle	Antenna Height	Correction Factor	FCC Part15.205/209 RSS-GEN/247		Result
	Peak Level	QP Level					QP Limit	QP Margin	
MHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	
30.777	19.23	19.92	V	153	220	-0.72	40.00	-20.08	PASS
51.197	26.00	23.18	V	257	111	-13.03	40.00	-16.82	PASS
65.023	26.62	24.13	V	349	111	-12.81	40.00	-15.87	PASS
92.231	21.51	18.16	V	359	124	-11.93	43.52	-25.36	PASS
* 125.19	13.90	14.40	H	240	131	-6.49	43.52	-29.12	PASS
219.247	12.23	13.31	H	215	178	-8.52	46.02	-32.71	PASS
* 259.244	26.22	23.12	H	264	127	-6.70	46.02	-22.90	PASS
*Restricted Band Signal									



EUT	2346-20 Legrand Model WNRF10 Radiated Sample								
Configuration	EUT Tx @ 2.480 GHz Modulated Channel 26 Max Output Power								
EUT Orientation	EUT Laying on Side With Face towards Antenna								
Frequency	Corrected		Antenna Polarity	Turntable Angle	Antenna Height	Correction Factor	FCC Part15.205/209 RSS-GEN/247		Result
	Peak Level	QP Level					QP Limit	QP Margin	
MHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	
32.004	19.80	18.36	V	139	216	-1.48	40.00	-21.64	PASS
50.911	27.04	24.90	V	217	110	-12.96	40.00	-15.10	PASS
67.524	24.83	22.52	V	341	110	-12.66	40.00	-17.48	PASS
98.547	17.65	16.01	V	349	126	-10.27	43.52	-27.51	PASS
120.445	16.70	14.09	H	107	230	-6.54	43.52	-29.43	PASS
* 126.468	15.81	14.09	H	253	137	-6.48	43.52	-29.43	PASS
* 257.248	25.37	23.25	H	252	115	-7.00	46.02	-22.77	PASS
*Restricted Band Signal									

EUT	2346-21 Legrand Model WNRF10 Radiated Sample								
Configuration	EUT in RX Mode								
EUT Orientation	EUT Laying on Side With Face towards Antenna								
Frequency	Corrected		Antenna Polarity	Turntable Angle	Antenna Height	Correction Factor	FCC Part15.205/209 RSS-GEN/247		Result
	Peak Level	QP Level					QP Limit	QP Margin	
MHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	
51.066	6.32	21.90	V	151	104	-13.01	40.00	-18.10	PASS
68.200	20.21	16.29	V	046	114	-12.66	40.00	-23.71	PASS
90.330	18.19	15.77	V	006	104	-12.43	43.52	-27.75	PASS
* 117.329	14.04	12.66	H	116	141	-6.77	43.52	-30.86	PASS
* 127.118	12.71	12.49	H	043	127	-6.48	43.52	-31.03	PASS
* 259.399	15.04	17.11	H	091	141	-6.68	46.02	-28.91	PASS
*Restricted Band Signal									

Test Results: The Legrand Model WNRF10 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 30 MHz – 1 GHz, with a margin of 14.03 dB.



4.4.4 Emissions in Frequency Bands 1 - 18 GHz Legrand WNRF10 with Zigbee Radio Test Results (11/26/2025 and 12/01/2025)

Radiated emissions scans in the frequency range of 1 GHz to 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.

EUT	2346-20 Legrand Model WNRF10 Radiated Sample										
Configuration	EUT Tx @ 2.405 GHz Modulated Channel 11 Max Output Power										
EUT Orientation	EUT Laying on Side With Face towards Antenna (Z Axis)										
Frequency	Corrected		Antenna Polarity	Azimuth	Antenna Height	Correction Factor	FCC 15.205/209 RSS-GEN/247				Result
	Peak Corrected	Average Corrected					Avg Limit	Avg Margin	Peak Limit	Peak Margin	
GHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	dBuV/m	dB	
* 4.81073	45.23	37.78	H	337	222	1.81	53.98	-16.20	73.98	-28.75	PASS
* 4.81106	51.60	43.71	V	030	228	1.81	53.98	-10.27	73.98	-22.38	PASS
7.214	45.62	36.76	V	022	100	4.31	53.98	-17.22	73.98	-28.36	PASS
7.216	47.99	40.19	H	005	182	4.33	53.98	-13.79	73.98	-26.00	PASS
9.623	46.87	37.85	H	003	150	6.52	53.98	-16.13	73.98	-27.12	PASS
9.628	46.15	37.33	V	000	215	6.51	53.98	-16.65	73.98	-27.83	PASS
*Restricted Band Signal											

EUT	2346-20 Legrand Model WNRF10 Radiated Sample										
Configuration	EUT Tx @ 2.440 GHz Modulated Channel 18 Max Output Power										
EUT Orientation	EUT Laying on Side With Face towards Antenna (Z Axis)										
Frequency	Corrected		Antenna Polarity	Azimuth	Antenna Height	Correction Factor	FCC 15.205/209 RSS-GEN/247				Result
	Peak Corrected	Average Corrected					Avg Limit	Avg Margin	Peak Limit	Peak Margin	
GHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	dBuV/m	dB	
4.881	53.13	45.76	V	031	231	2.04	53.98	-8.22	73.98	-20.85	PASS
4.891	38.07	29.13	H	068	104	2.08	53.98	-24.85	73.98	-35.92	PASS
7.321	46.51	37.45	V	354	154	4.76	53.98	-16.53	73.98	-27.47	PASS
7.324	46.05	34.90	H	066	114	4.76	53.98	-19.08	73.98	-27.93	PASS
9.758	48.75	37.78	V	251	178	6.37	53.98	-16.20	73.98	-25.23	PASS
9.769	46.49	37.52	H	230	224	6.35	53.98	-16.46	73.98	-27.49	PASS
*Restricted Band Signal											



EUT	2346-20 Legrand Model WNRF10 Radiated Sample										
Configuration	EUT Tx @ 2.480 GHz Modulated Channel 26 Max Output Power										
EUT Orientation	EUT Laying on Side With Face towards Antenna (Z Axis)										
Frequency	Corrected		Antenna Polarity	Azimuth	Antenna Height	Correction Factor	FCC 15.205/209 RSS-GEN/247				Result
	Peak Corrected	Average Corrected					Avg Limit	Avg Margin	Peak Limit	Peak Margin	
GHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	dBuV/m	dB	
* 4.95899	55.55	51.03	V	033	249	2.03	53.98	-2.95	73.98	-18.44	PASS
* 4.95921	48.83	43.60	H	330	239	2.03	53.98	-10.38	73.98	-25.15	PASS
* 7.43883	46.94	36.30	V	281	203	4.82	53.98	-17.68	73.98	-27.04	PASS
* 7.4389	48.78	40.79	H	006	188	4.82	53.98	-13.19	73.98	-25.20	PASS
9.918	48.29	38.28	H	204	120	6.49	53.98	-15.70	73.98	-25.69	PASS
9.923	48.75	37.64	V	305	162	6.49	53.98	-16.34	73.98	-25.23	PASS
*Restricted Band Signal											

EUT	2346-21 Legrand Model WNRF10 Radiated Sample										
Configuration	EUT in RX Mode										
EUT Orientation	EUT Laying on Side With Face towards Antenna (Z Axis)										
Frequency	Corrected		Antenna Polarity	Azimuth	Antenna Height	Correction Factor	FCC 15.205/209 RSS-GEN/247				Result
	Peak Corrected	Average Corrected					Avg Limit	Avg Margin	Peak Limit	Peak Margin	
GHz	dBuV/m	dBuV/m	H/V	degrees	cm	dB	dBuV/m	dB	dBuV/m	dB	
2.980	34.52	25.55	V	359	130	-2.86	53.98	-28.43	73.98	-39.46	PASS
3.376	36.52	27.14	H	260	237	-1.65	53.98	-26.84	73.98	-37.46	PASS
* 8.09204	46.80	37.48	V	018	201	5.34	53.98	-16.50	73.98	-27.18	PASS
* 8.20222	48.25	37.96	H	271	246	5.50	53.98	-16.02	73.98	-25.73	PASS
8.642	46.95	37.72	V	060	152	6.36	53.98	-16.26	73.98	-27.03	PASS
* 11.2637	48.26	39.70	H	119	190	6.70	53.98	-14.28	73.98	-25.72	PASS
*Restricted Band Signal											

Test Results: The Legrand Model WNRF10 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 2.95 dB.



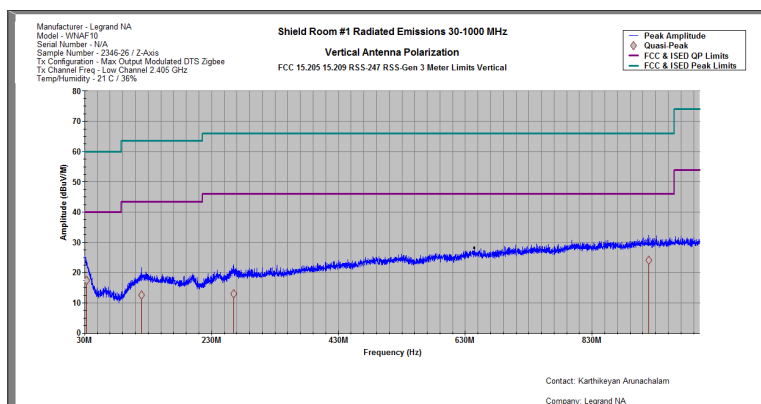
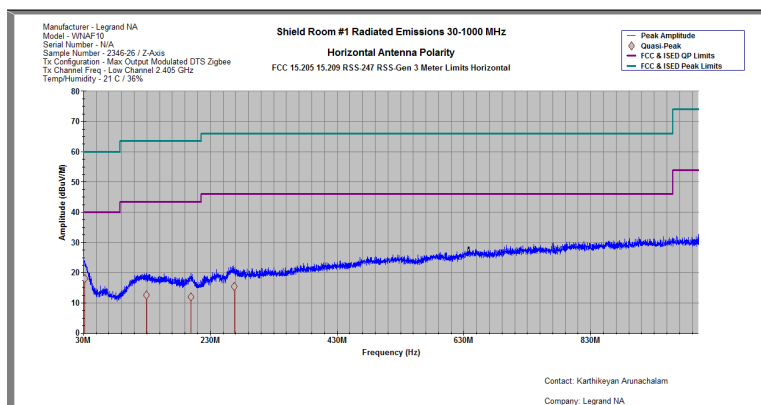
4.4.5 Emissions in Frequency Bands 18 – 25 GHz Legrand WNRF10 with Zigbee Radio (12/01/2025)

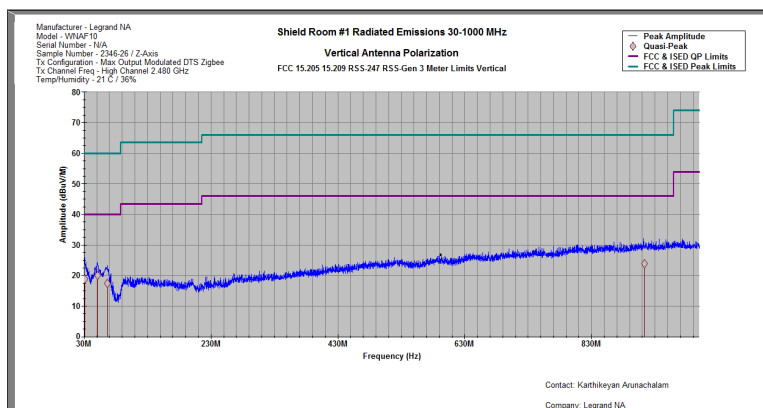
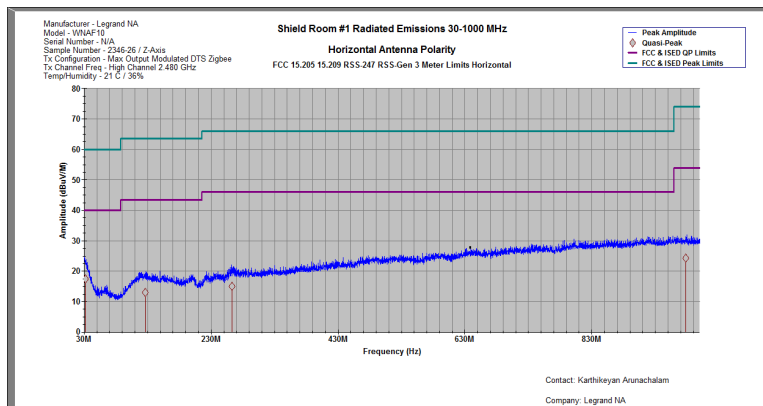
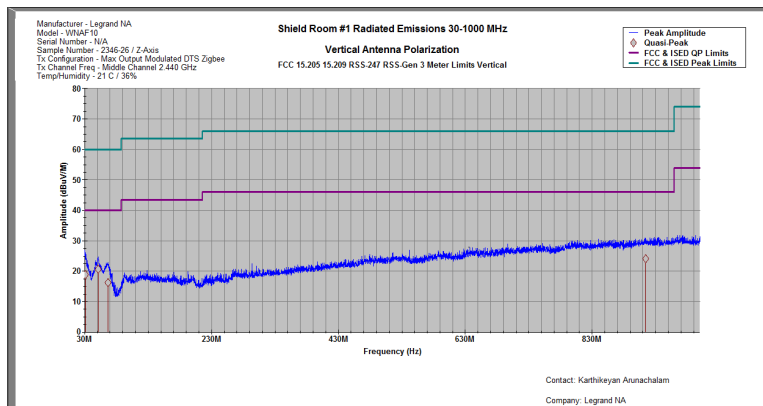
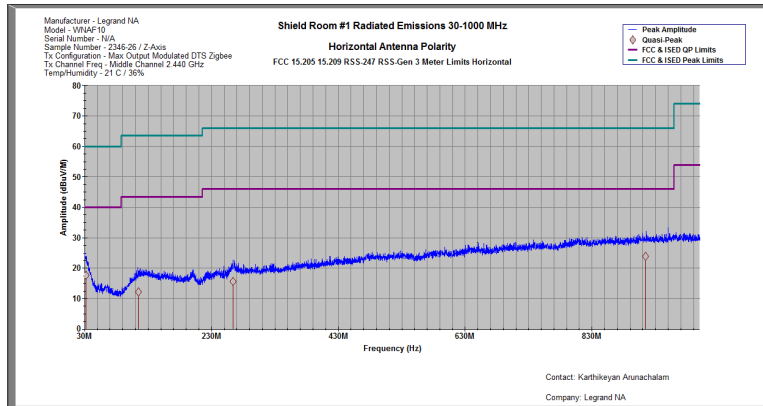
Radiated emissions scans in the frequency range of 18 GHz to 25 GHz were made for the EUT configured for the low, middle and high transmission frequencies and in Rx mode. The Transmit Frequencies were measured with O-QPSK Modulation at maximum output.

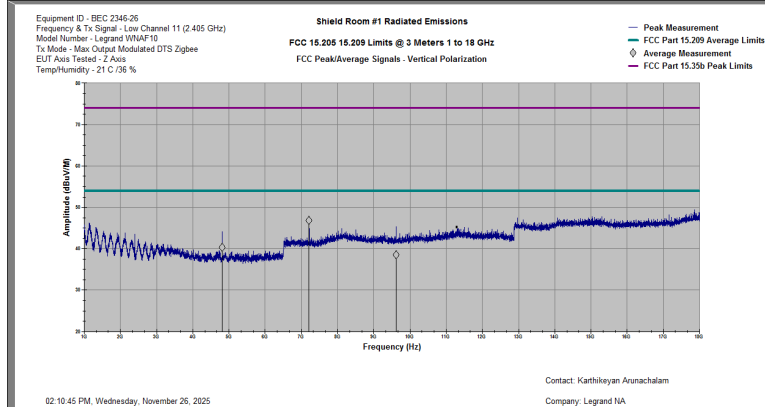
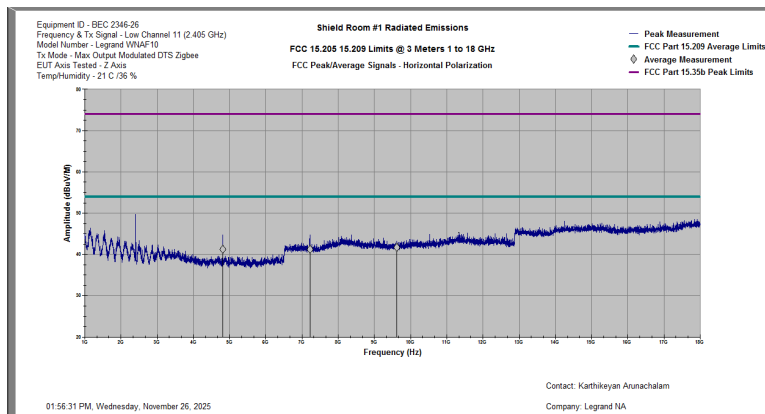
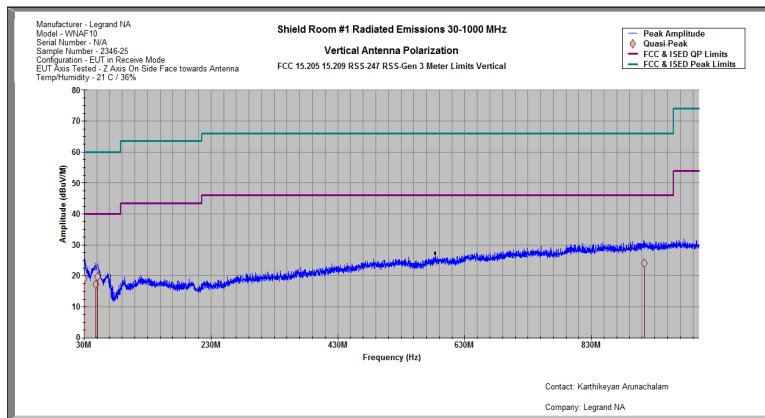
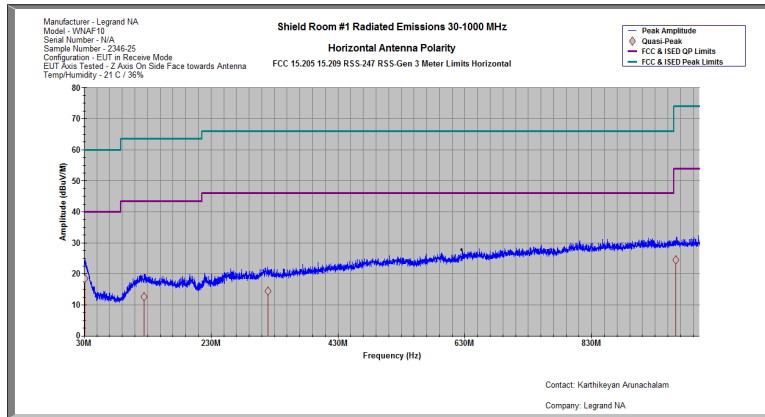
The result of the emissions scans showed no measurable signals between 18 and 25 GHz while the Legrand Model WNRF10 Transmitted low, middle, high channels and in Receive Mode.

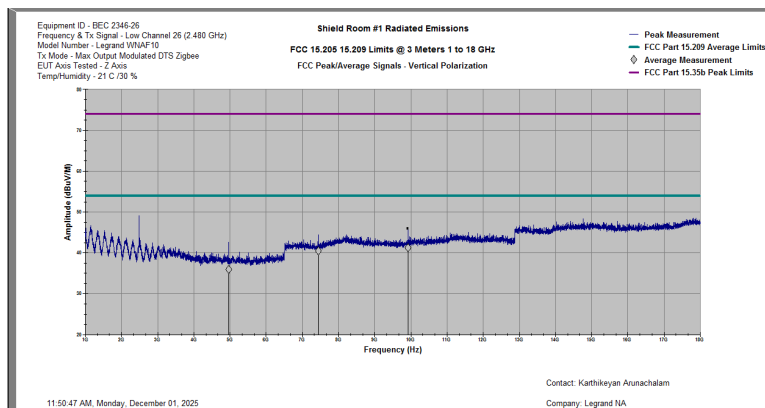
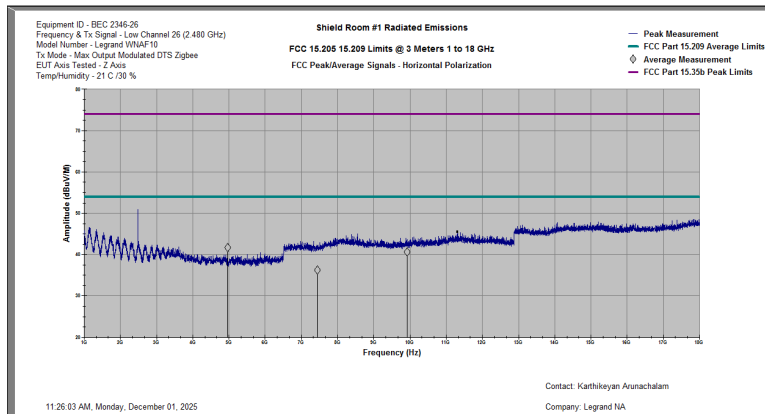
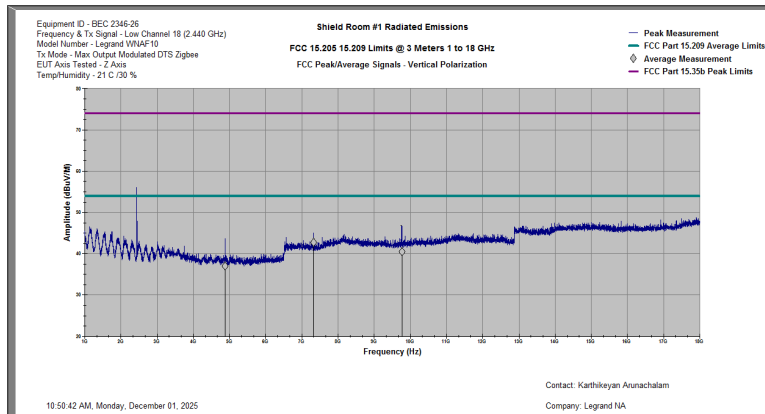
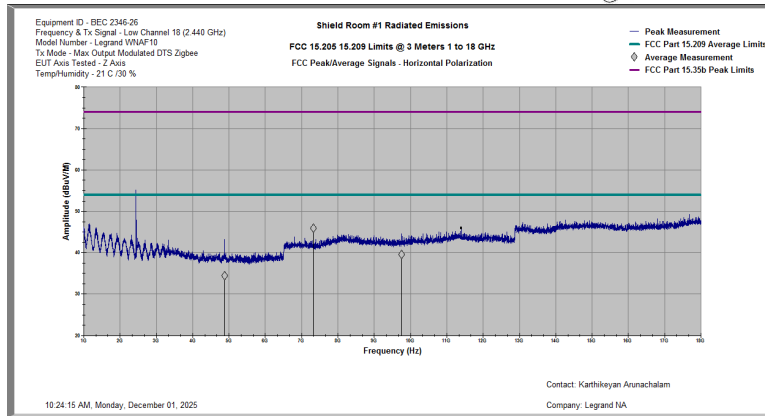
Test Results: The Legrand Model WNRF10 with Zigbee Radio complies with the requirements of 47 CFR Part 15.205 and RSS-Gen Section 8.10 for non-restricted and restricted bands of operation between 18 GHz and 25 GHz.

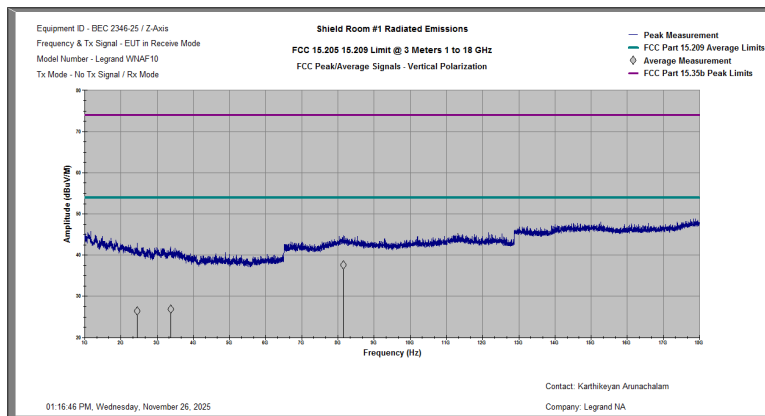
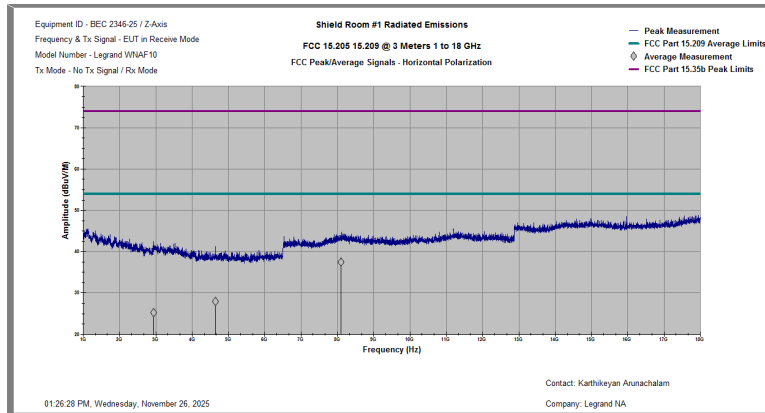
4.4.6 Emissions Legrand WNRF10 with Zigbee Radio Graphs













4.5 DTS Bandwidth (FCC Section 15.247(a)(2) RSS-247 5.2(a))

4.5.1 DTS Bandwidth – Test Procedure

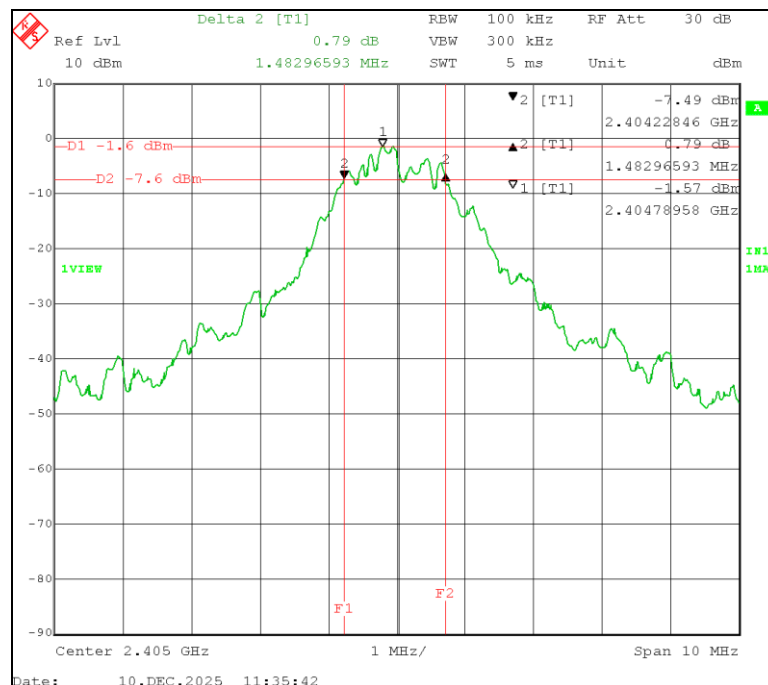
The procedure of KDB 558074 D01 Section 8.2, references ANSI C63.10, Section 11.8.1, Option 1. DTS Bandwidth measurements were made for the EUT configured for the low, middle and high transmission frequencies. The Transmit Frequencies were measured with O-QPSK Modulation at maximum output.

The SA settings are listed in the table below were used during DTS Bandwidth measurement.

Measurement Analyzer Settings		
Span	10 MHz	
RBW	100 kHz	
VBW	300 kHz	
Sweep Time	5 ms	

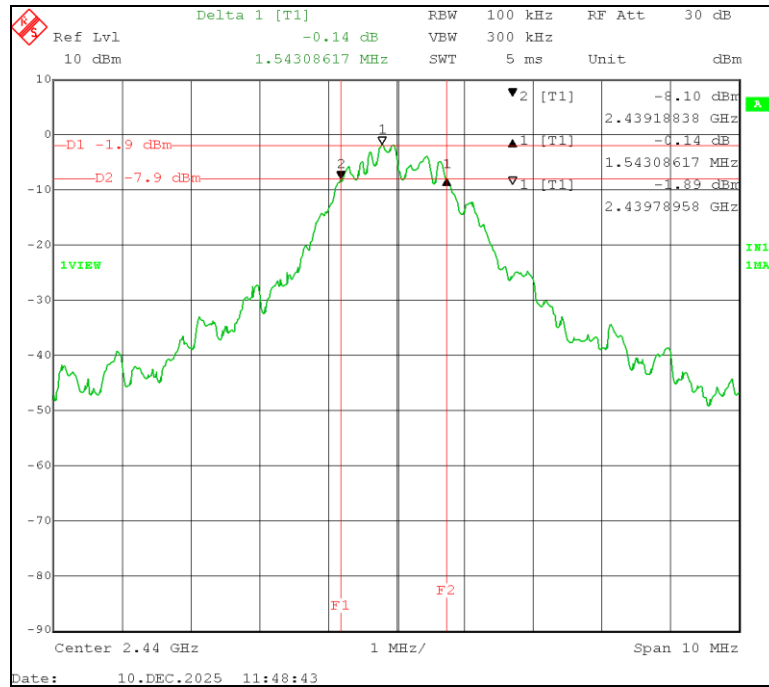
4.5.1.1 DTS Bandwidth Test Results Model WNRF10 with Zigbee Radio (12/10/2025)

Legrand Model WNRF10 Zigbee Radio Low Channel 11 at 2405 MHz with O-QPSK Modulation

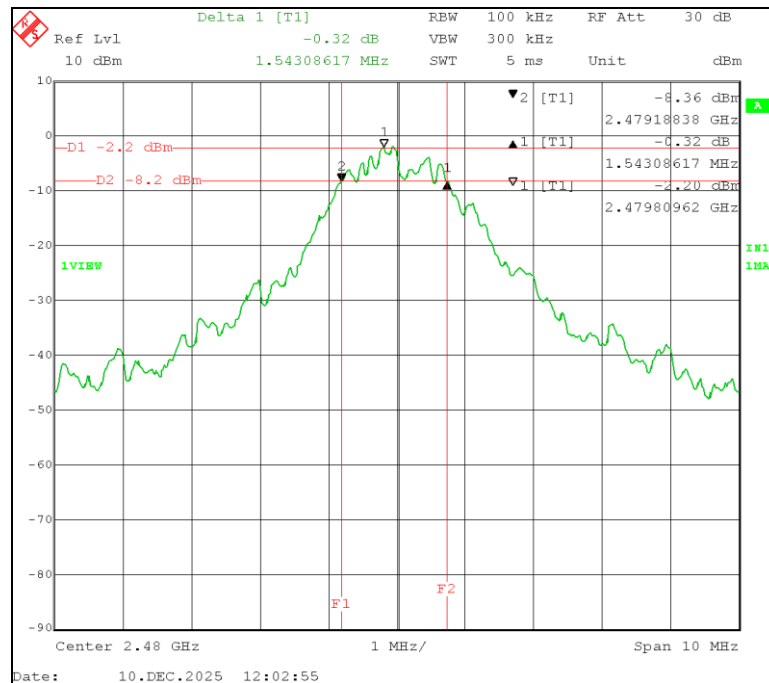




Legrand Model WNRF10 Zigbee Radio Middle Channel 18 at 2440 MHz with O-QPSK Modulation



Legrand Model WNRF10 Zigbee Radio Low Channel 26 at 2480 MHz with O-QPSK Modulation





DTS Bandwidth Measurement Summary Table

Tx Channel With O-QPSK Modulation	Frequency	Measured 6 dB BW	47 CFR 15.247(a)(2) & RSS- 247 5.2 Minimum Limit	Margin	Result
	MHz	kHz	kHz	kHz	
11	2405.0	1483.0	500.00	983.00	PASS
18	2440.0	1543.0	500.00	1043.00	PASS
26	2480.0	1543.0	500.00	1043.00	PASS

Test Results: The 6 dB, DTS Bandwidth measurements for the Legrand Model WNRF10 with Zigbee Radio were measured and are compliant to the minimum bandwidth requirements. The results are also used to select bandwidths and frequency spans for other radio measurements.

4.6 99% Occupied Bandwidth (RSS-247 5.2(a))

4.6.1 99% Occupied Bandwidth Test Procedure

KDB 558074, Section 2.1 describes the use of maximum conducted (average) output power using 99% occupied bandwidth of the transmitter. RSS-247 also requires the 99% OBW measurement. ANSI C63.10, Section 6.9.3 permits the use of the automated, bandwidth measurement utility of the spectrum analyzer was used to measure the 99% bandwidth at each of the low, middle and high operating frequencies. 99% Bandwidth 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.

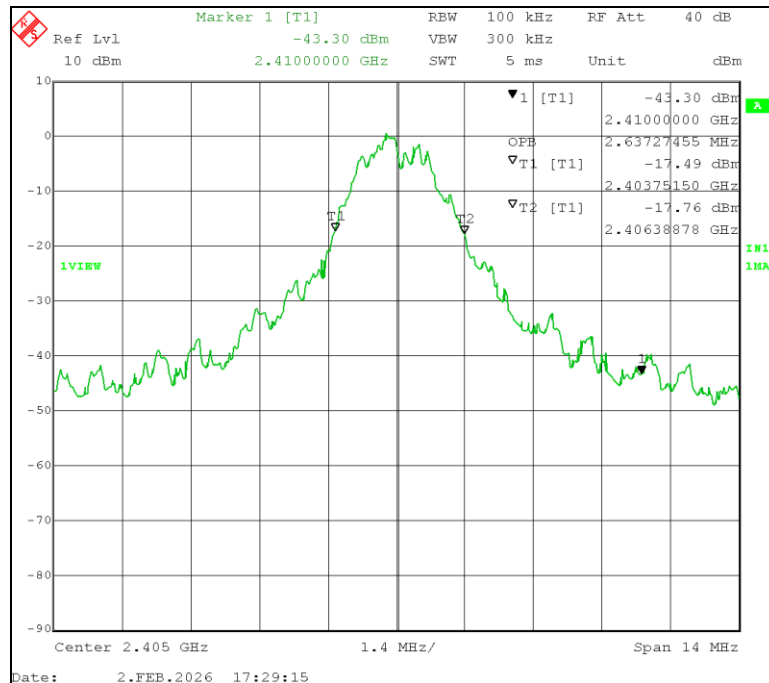
The SA settings are listed in the table below were used during 99% Occupied Bandwidth measurement.

Measurement Analyzer Settings	
Span	14 MHz
RBW	100 kHz
VBW	300 kHz
Sweep Time	5 ms

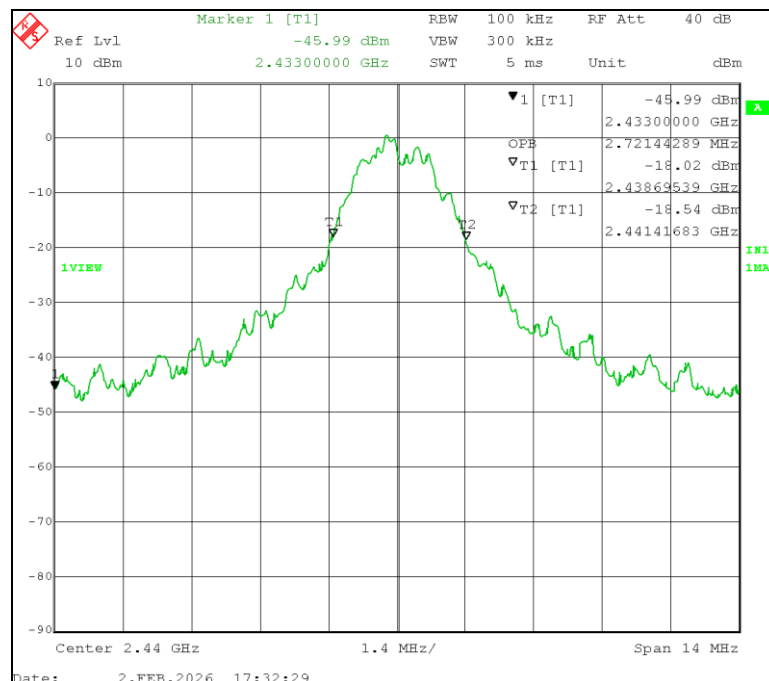


4.6.1.1 99% OBW Legrand Model WNRF10 with Zigbee Radio Test Results (02/02/2026)

Legrand WNRF10 with Zigbee Radio Low channel 11 @ 2405 MHz with O-QPSK Modulation

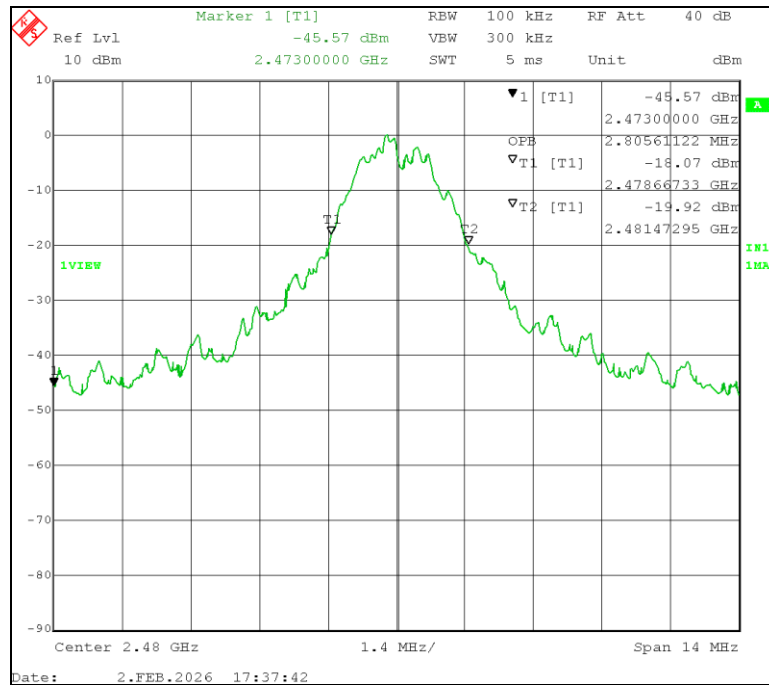


Legrand WNRF10 with Zigbee Radio Low channel 18 @ 2440 MHz with O-QPSK Modulation





Legrand WNRF10 with Zigbee Radio Low channel 26 @ 2480 MHz with O-QPSK Modulation



99% Occupied Bandwidth Measurement Summary Table

Tx Channel With O-QPSK Modulation	Frequency (MHz)	99% Occupied BW (MHz)
11	2405.0	2.637
18	2440.0	2.722
26	2480.0	2.806

Test Results: The 99% Occupied Bandwidth measurements for the Legrand Model WNRF10 with Zigbee Radio are displayed above. The bandwidths will be used when measuring maximum conducted (average) output power and be included in the ISSED Un-licensed Radio application.



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

4.7.1 Maximum Conducted 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. The 99% Occupied Bandwidth is used to determine Spectrum Analyzer settings. The SA parameters are listed for the Zigbee radio maximum conducted output power peak. 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 unmodulated carrier at maximum output was also measured for comparison.

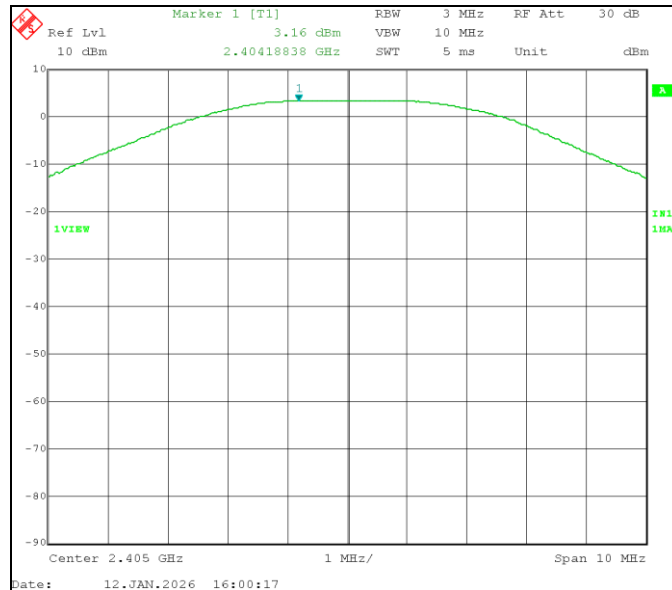
Spectrum Analyzer Settings for Zigbee Radio Measurements for Maximum Output Power and EIRP.

RBW	3	MHz
VBW	10	MHz
Span	10	MHz
Sweep	5	ms

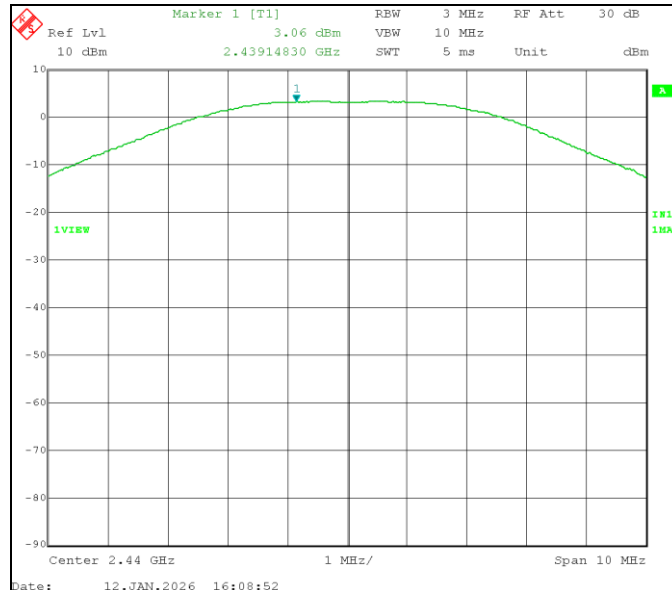


4.7.1.1 Maximum Conducted Output Power Peak Legrand WNRF10 with Zigbee Radio O-QPSK Modulation Test Results (01/12/2026)

Legrand Model WNRF10 Zigbee Radio Low Channel 11, 2405 MHz, O-QPSK Modulation

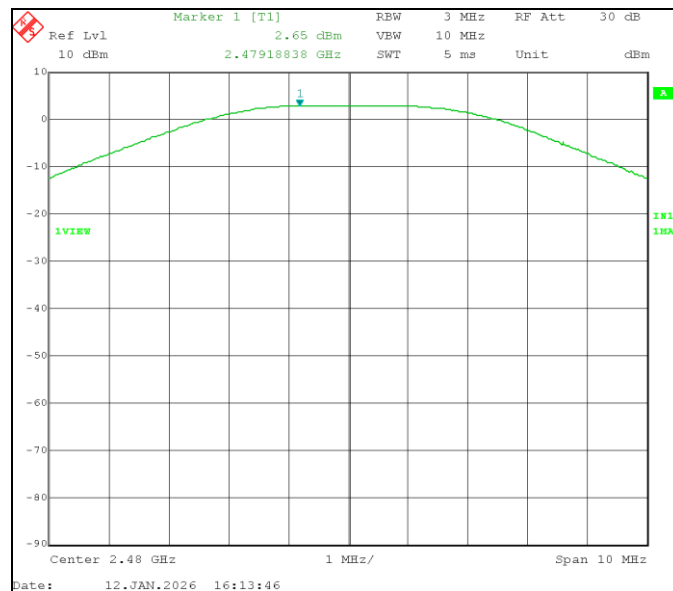


Legrand Model WNRF10 Zigbee Radio Middle Channel 18, 2440 MHz, O-QPSK Modulation

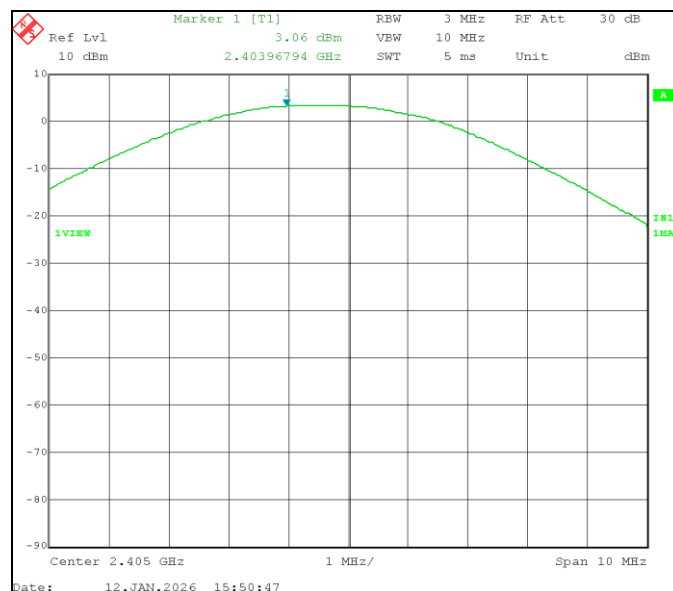




Legrand Model WNRF10 Zigbee Radio High Channel 26, 2480 MHz, O-QPSK Modulation

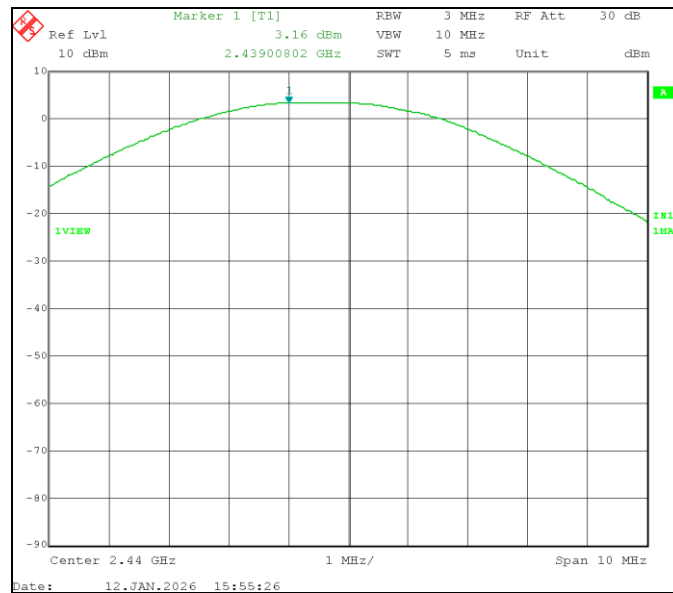


Legrand Model WNRF10 Zigbee Radio Low Channel 11, 2405 MHz, No modulation

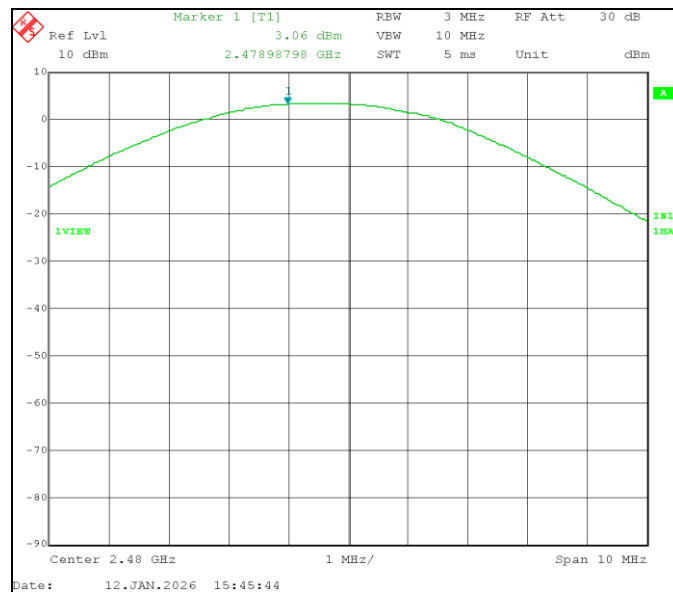




Legrand Model WNRF10 Zigbee Radio Middle Channel 18, 2440 MHz, No modulation



Legrand Model WNRF10 Zigbee Radio High Channel 26, 2480 MHz, No modulation





Maximum Conducted Output Power Measurement Summary Tables

Radio Transmit Channel	Modulation	Tx Frequency (MHz)	Measured Peak Output Power Level (dBm)	Cable # 962 Loss (dB)	Corrected Peak Output Power		Limit		Margin	
					dBm	Watts	dBm	Watts	dBm	Watts
11	O-QPSK Modulation	2405.0	3.16	0.377	3.54	0.002	30.00	1.000	-26.46	-0.998
18		2440.0	3.06	0.375	3.44	0.002	30.00	1.000	-26.57	-0.998
26		2480.0	2.65	0.377	3.03	0.002	30.00	1.000	-26.97	-0.998
Radio Transmit Channel	Modulation	Tx Frequency (MHz)	Measured Peak Output Power Level (dBm)	Cable # 962 Loss (dB)	Corrected Peak Output Power		Limit		Margin	
					dBm	Watts	dBm	Watts	dBm	Watts
11	None (Constant Wave)	2405.0	3.06	0.377	3.44	0.002	30.00	1.000	-26.56	-0.998
18		2440.0	3.16	0.375	3.54	0.002	30.00	1.000	-26.47	-0.998
26		2480.0	3.06	0.377	3.44	0.002	30.00	1.000	-26.56	-0.998

Test Results: The Maximum Conducted Output Power measurements for the Legrand Model WNRF10 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).



4.7.2 EIRP Level Legrand WNRF10 with Zigbee Radio Test Results (01/12/2026)

The Innovation, Science and Economic Development Canada (ISED), RSS-247 requires the calculation of the Effective Isotropic Radiated Power (EIRP) for the Legrand Model WNRF10 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.

4.7.2.1 EIRP Level Legrand WNRF10 with Zigbee Radio Test Results

Channel	Modulation	Frequency (MHz)	Corrected Measured Level		Antenna Gain		EIRP				Result
							Total		Limit	Margin	
			dBm	Watts	Isotropic (dBi)	Numeric	dBm	Watts	Watts	Watts	
11	None	2405.0	3.44	0.0022	3.30	2.138	6.74	0.005	4.00	-3.995	Pass
18		2440.0	3.54	0.0023			6.84	0.005		-3.995	Pass
26		2480.0	3.44	0.0022			6.74	0.005		-3.995	Pass
11	O-QPSK Modulation	2405.0	3.54	0.0023			6.84	0.005		-3.995	Pass
18		2440.0	3.44	0.0022			6.74	0.005		-3.995	Pass
26		2480.0	3.03	0.0020			6.33	0.004		-3.996	Pass

Test Results: The Effective Isotropic Radiated Power measurements for the Legrand Model WNRF10 with Zigbee Radio, modulated with O-QPSK and un-modulated, are compliant to the requirements of ISED, RSS-247 Section 5.4(d).



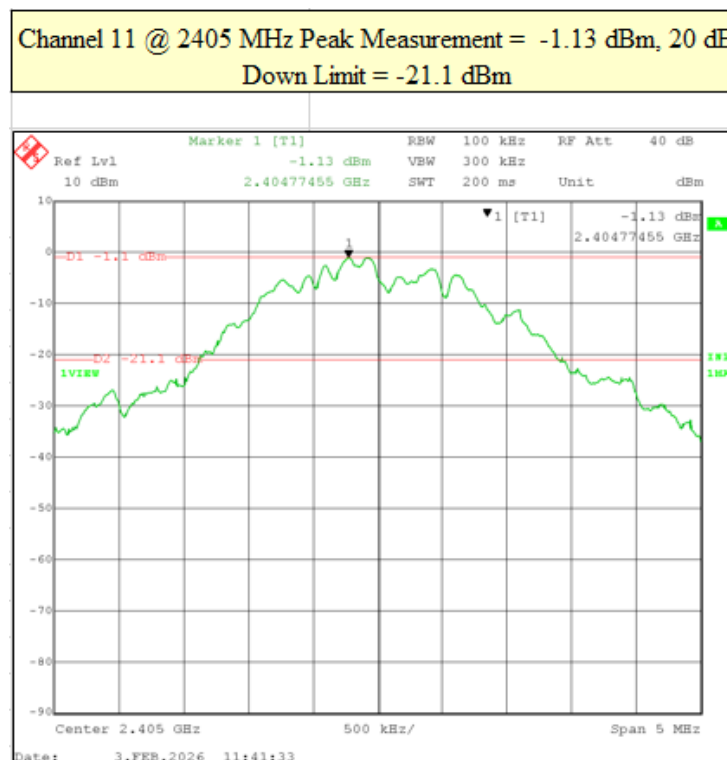
4.8 Emissions in Non-restricted Frequency Bands 5 MHz – 25 GHz (FCC Section 15.247(d), RSS-247 Sec.5)

4.8.1 Emissions in Non-restricted Frequency Bands 5 MHz – 25 GHz Test Procedure

The results in this section, for the Legrand WNRF10 depict the highest emissions, while transmitting with modulation on Channels 11, 18, 26 and Rx modes. Spectrum Analyzer RBW was 100 kHz, VBW was 300 kHz and the SA Span varied. Emissions 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.

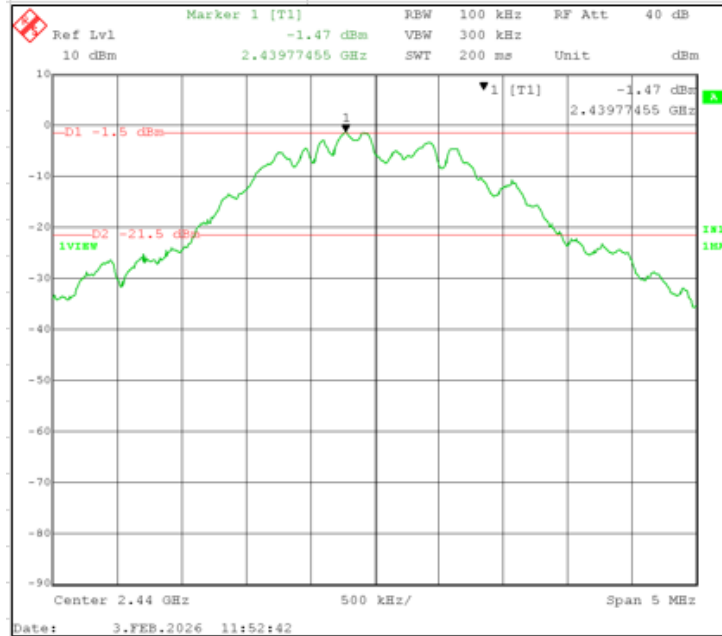
4.8.2 Emissions in Non-restricted Frequency Bands 5 MHz – 25 GHz 20 dBc Reference Measurement.

4.8.2.1 Legrand WNRF10 with Zigbee Radio Reference Measurement of Low Channel 11 at 2405 MHz, Middle Channel at 2440 MHz and High Channel at 2480 MHz (02/03/2026)

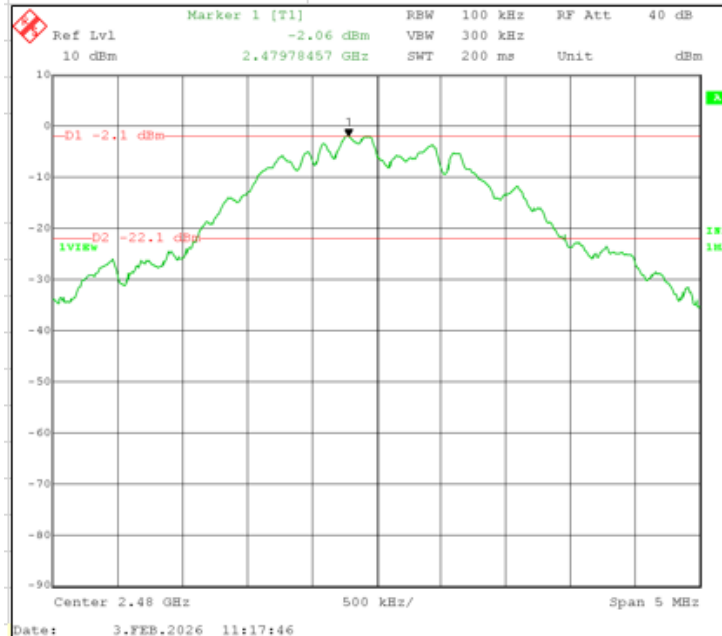




Channel 18 @ 2440 MHz Peak Measurement = -1.47 dBm, 20 dB
Down Limit = -21.5 dBm



Channel 26 @ 2480 MHz Peak Measurement = -2.06 dBm, 20 dB
Down Limit = -22.1 dBm

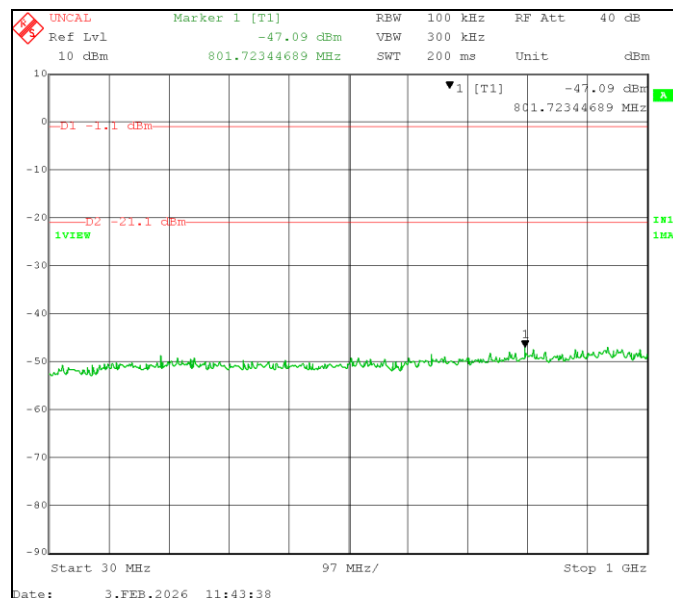




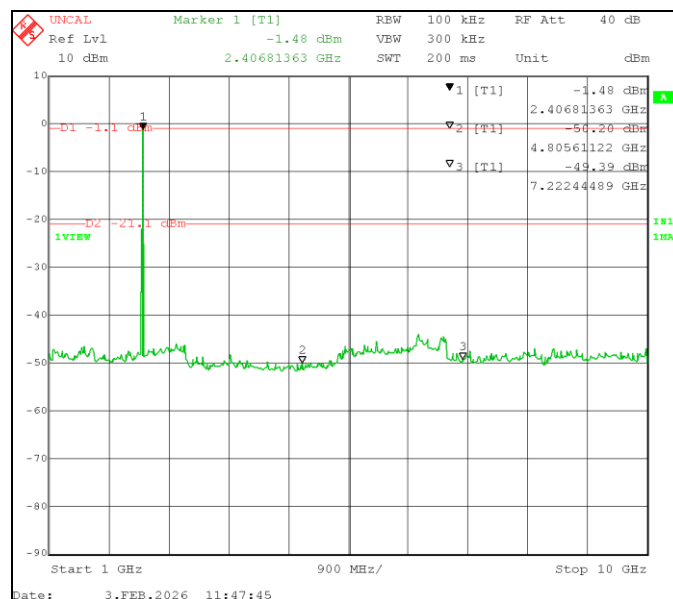
4.8.2.2 Emissions in Non-restricted Frequency Bands Legrand WNR10 with Zigbee Radio Test Results Low Channel 11 at 2405 MHz, Middle Channel at 2440 MHz, High Channel at 2480 MHz and Rx Mode (02/03/2026)

Low Channel 11 at 2405 MHz Zigbee Radio 30 MHz to 25 GHz

Legrand WNR10 Ch 11 2405 MHz Zigbee Radio 30 MHz to 1000 MHz

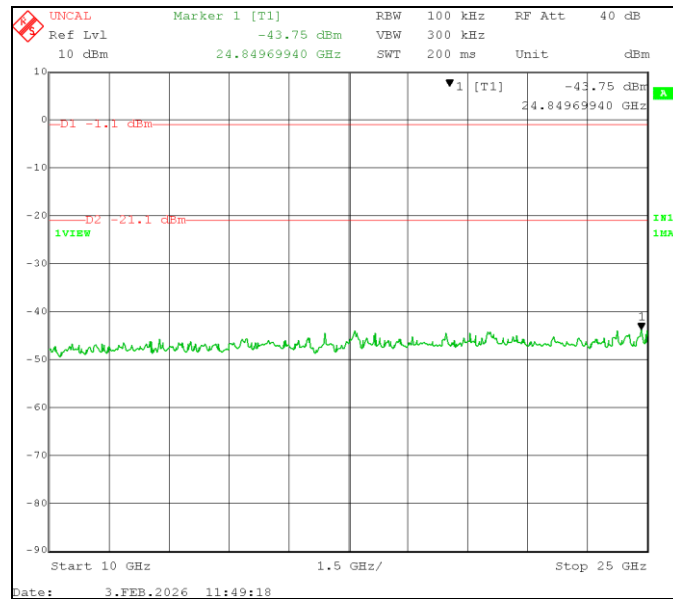


Legrand WNR10 Ch 11 2405 MHz Zigbee Radio 1 GHz to 10 GHz



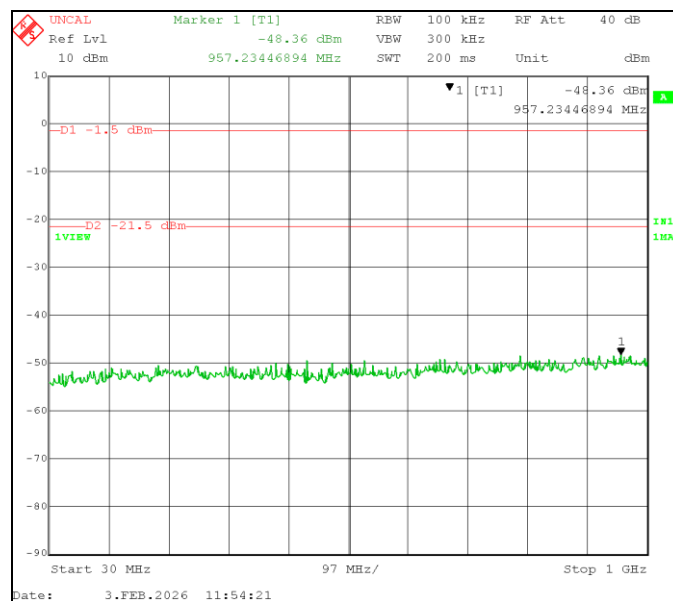


Legrand WNRF10 Ch 11 2405 MHz Zigbee Radio 10 GHz to 25 GHz



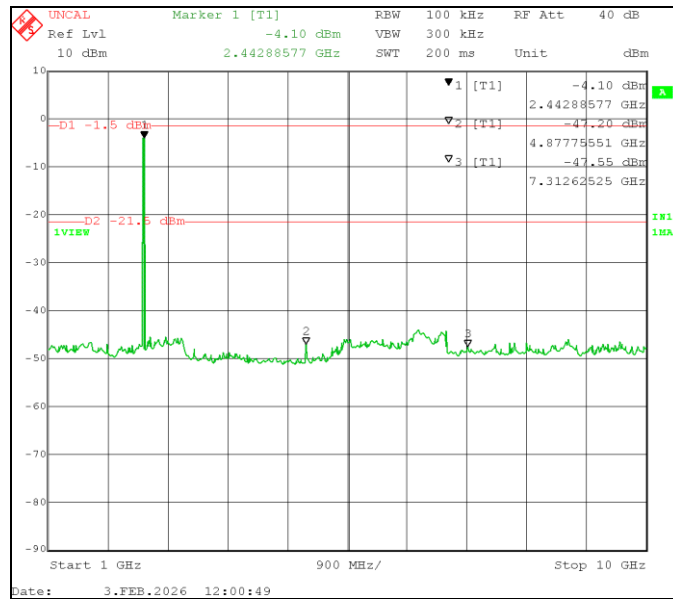
Middle Channel 18 at 2440 MHz Zigbee Radio 30 MHz to 25 GHz

Legrand WNRF10 Ch 18 2440 MHz Zigbee Radio 30 MHz to 1000 MHz

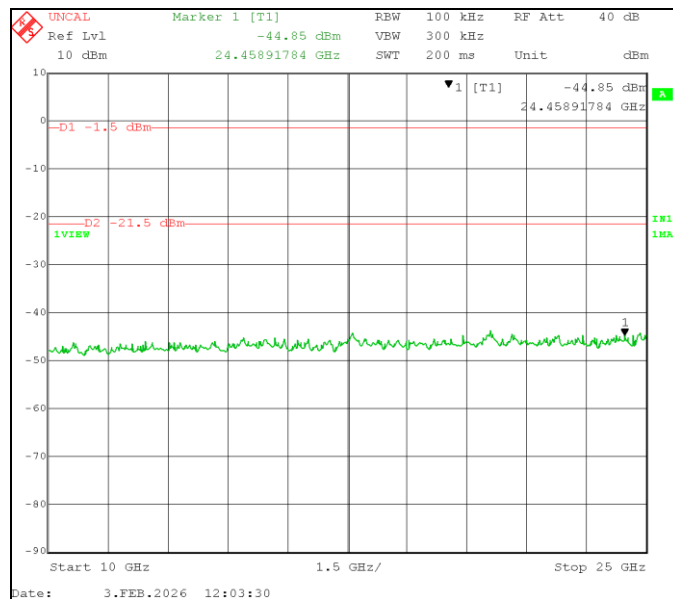




Legrand WNRF10 Ch 18 2440 MHz Zigbee Radio 1 GHz to 10 GHz



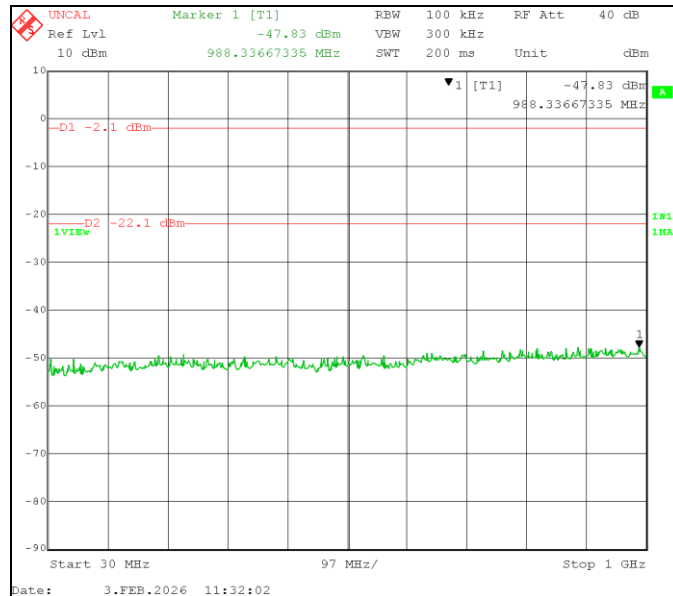
Legrand WNRF10 Ch 18 2440 MHz Zigbee Radio 10 GHz to 25 GHz



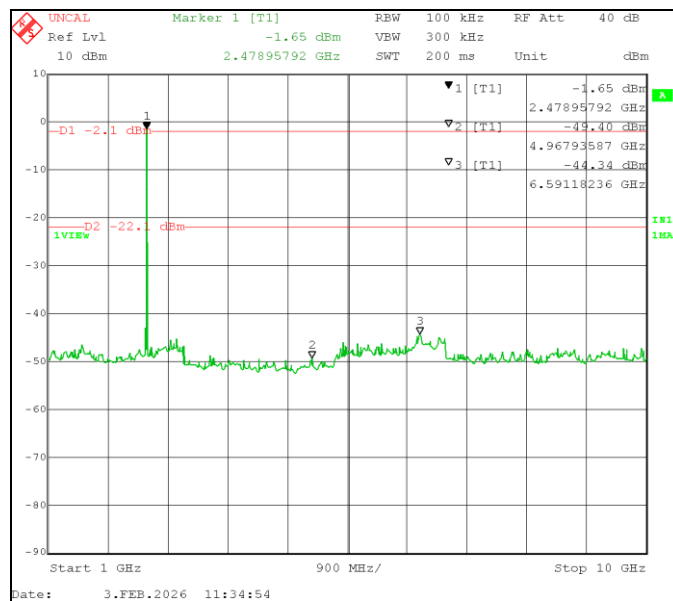


High Channel 26 at 2480 MHz Zigbee Radio 30 MHz to 25 GHz

Legrand WNR10 Ch 26 2480 MHz Zigbee Radio 30 MHz to 1000 MHz

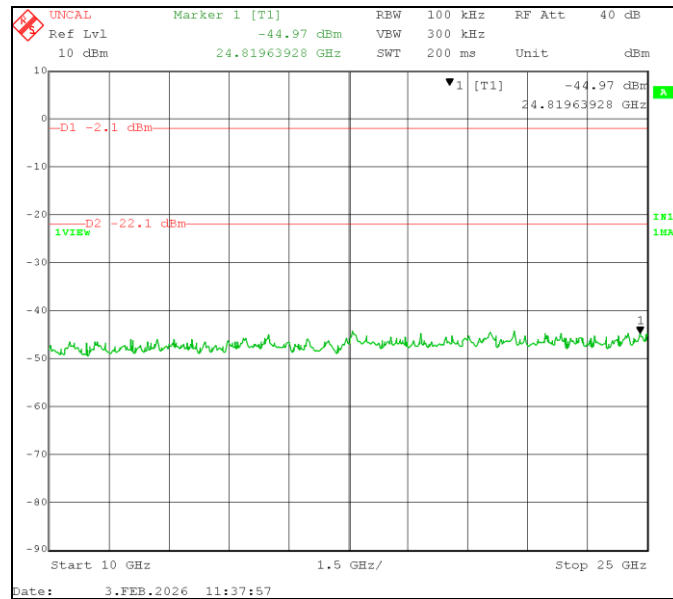


Legrand WNR10 Ch 26 2480 MHz Zigbee Radio 1 GHz to 10 GHz



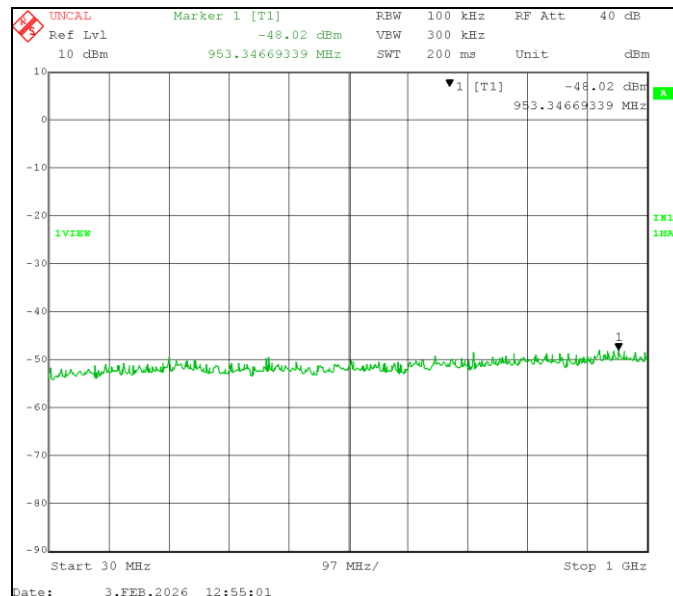


Legrand WNRF10 Ch 26 2480 MHz Zigbee Radio 10 GHz to 25 GHz



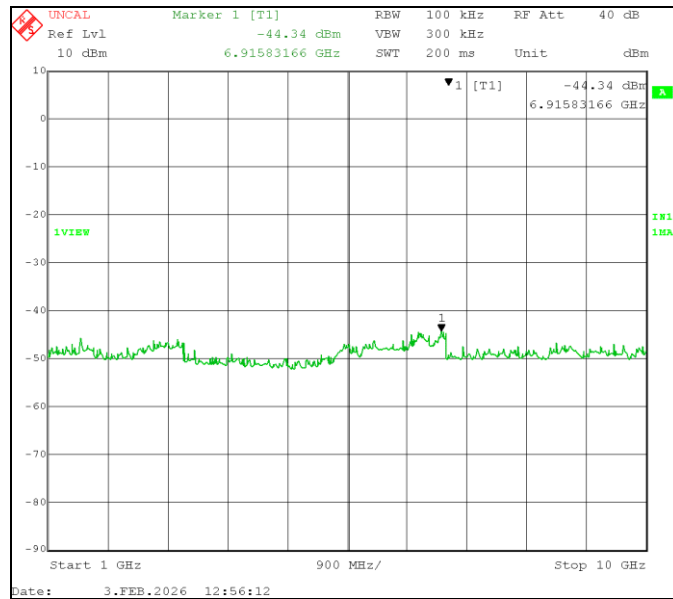
Rx Mode 30 MHz to 25 GHz

Legrand WNRF10 Rx Mode 30 MHz to 1000 MHz

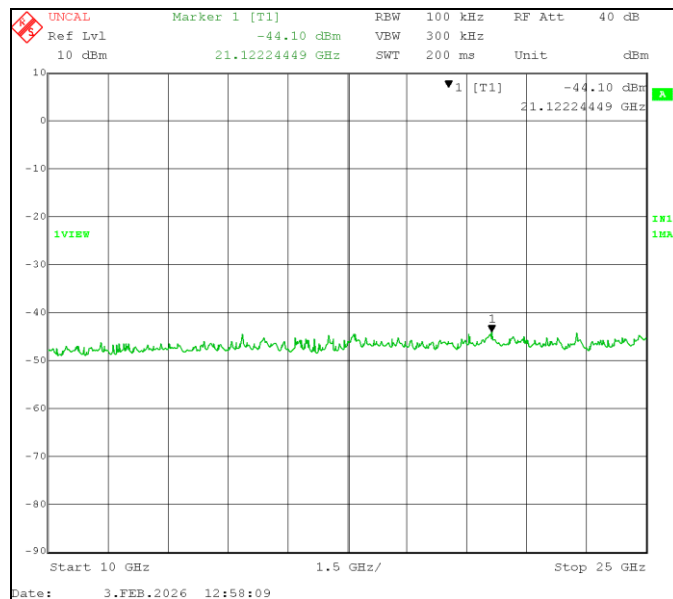




Legrand WNRF10 Rx Mode 1 GHz to 10 GHz



Legrand WNRF10 Rx Mode 10 GHz to 25 GHz



Test Results: Emissions in Non-Restricted Frequency Bands, measured from the Legrand Model WNRF10 with Zigbee Radio comply with the requirements of 47 CFR Part 15.247 (d).



4.9 Power Spectral Density (FCC Section 15.247(e), RSS-247 Section 5.2(b))

4.9.1 Power Spectral Density Test Procedure

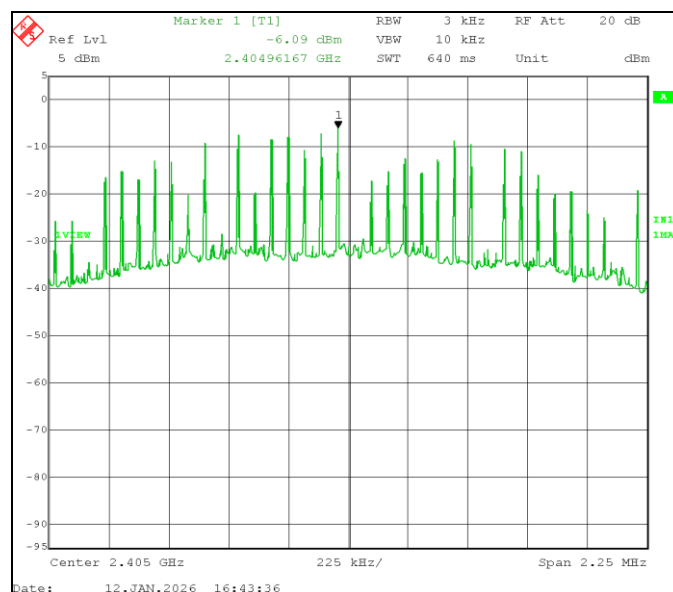
A conducted, peak, power measurement of the output frequency was measured for the Legrand WNRF10 with Zigbee Radio for each of the low, middle and high operating frequencies with modulation. The Transmit Frequencies were measured with O-QPSK Modulation at maximum output. Peak conducted output power, as directed by ANSI C63.10, Section 11.9.1.1. Therefore, method PKPSD of Section 11.10.2, with 3 kHz bandwidth, was used to measure Power Spectral Density.

Spectrum Analyzer Settings for Zigbee Radio Measurements for Power Spectral Density

Measurement Analyzer Settings		
RBW (Between 3 kHz and 100 kHz)	3	kHz
VBW (3 X RBW)	10	kHz
Span (1.5 X the Measured DTS Bandwidth: 1.5 MHz)	2.25	MHz
Sweep (Auto)	640	ms
Attenuation	20	dB
Ref Level	5	dBm

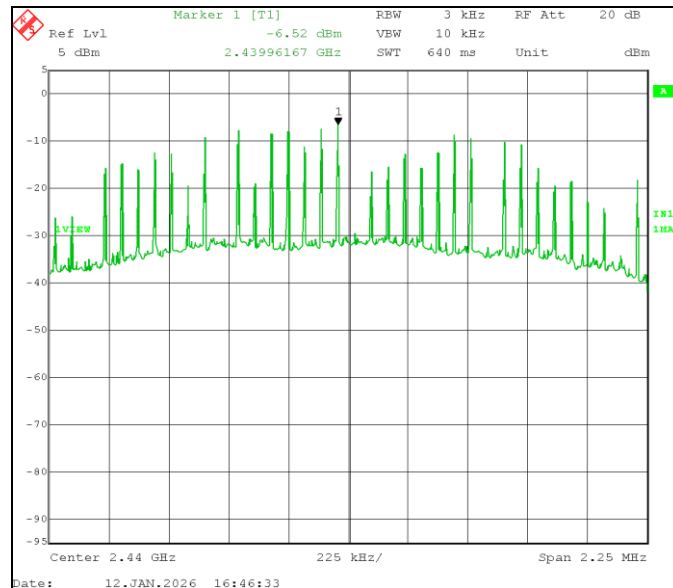
4.9.1.1 Power Spectral Density Legrand WNRF10 with Zigbee Radio Test Results (01/12/2026)

Legrand WNRF10 with Zigbee Radio Channel 11 2405 MHz PSD

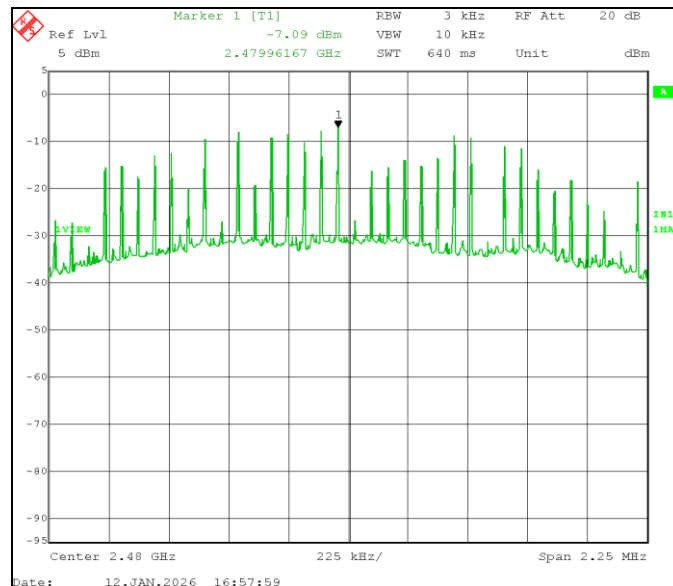




Legrand WNRF10 with Zigbee Radio Channel 18 2440 MHz PSD



Legrand WNRF10 with Zigbee Radio Channel 26 2480 MHz PSD



Channel	Modulation Information	Frequency (MHz)	Measured Level	Cable #BEC-962 Correction Factor	Corrected Level	Limit	Margin
			dBm				
11	O-QPSK Modulation	2405.0	-6.09	0.377	-5.71	8.00	-13.71
18		2440.0	-6.52	0.375	-6.15	8.00	-14.15
26		2480.0	-7.09	0.377	-6.71	8.00	-14.71

Test Results: The Power Spectral Density measurements of the Legrand Model WNRF10 with Zigbee Radio are compliant with the limits specified in FCC Section 15.247(e) with margin of 13.71 dB.



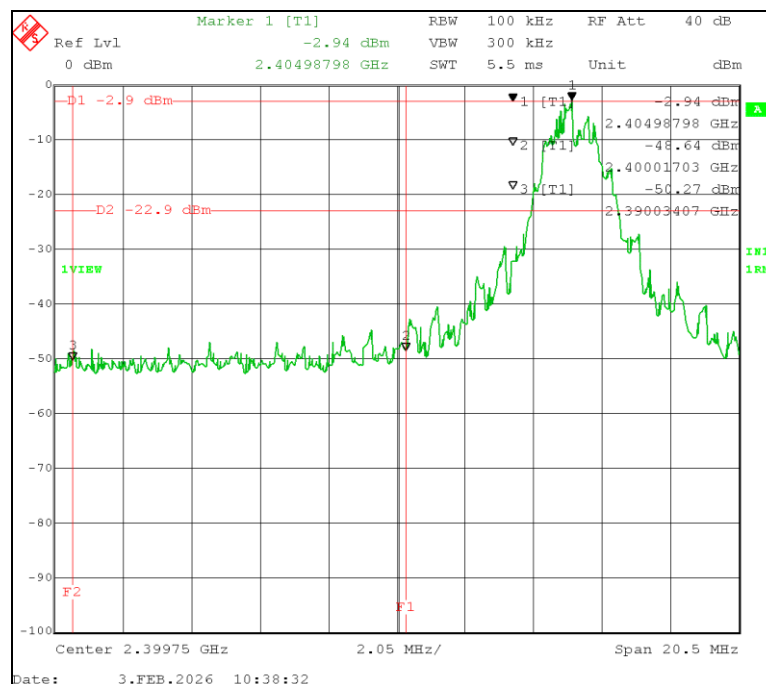
4.10 Band Edge Measurement (FCC Part 15.247(d), RSS-247 5.5)

4.10.1 Band Edge Measurement Test Procedure

The measurements of the authorized band edge for the Legrand Model WNRF10 with Zigbee radio were made using the radiated emissions in Section 11.13.1 of ANSI C63.10. The Emission Bandwidth (EBW) of the EUT, does not fall within 2 MHz of any band edge. Therefore, measurements were made using standard methods. The EUT transmitted with modulation on the low and high channels. The Transmit Frequencies were measured with O-QPSK Modulation at maximum output.

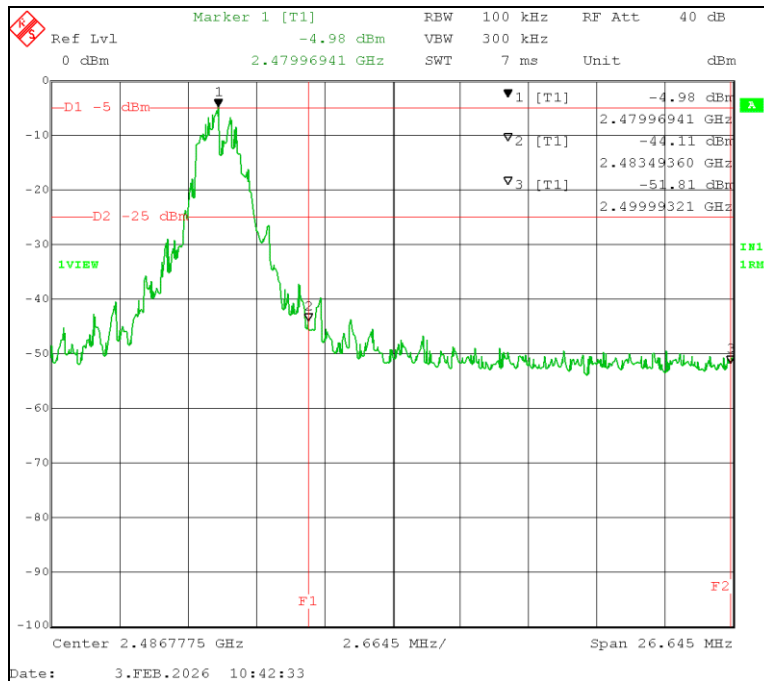
4.10.1.1 Band Edge Test Results Legrand Model WNRF10 with Zigbee Radio (02/03/2026)

Legrand WNRF10 with Zigbee Radio Zigbee Radio transmitting Ch 11 2405 MHz O-QPSK





Legrand WNRF10 with Zigbee Radio Zigbee Radio transmitting Ch 26 2480 MHz O-QPSK



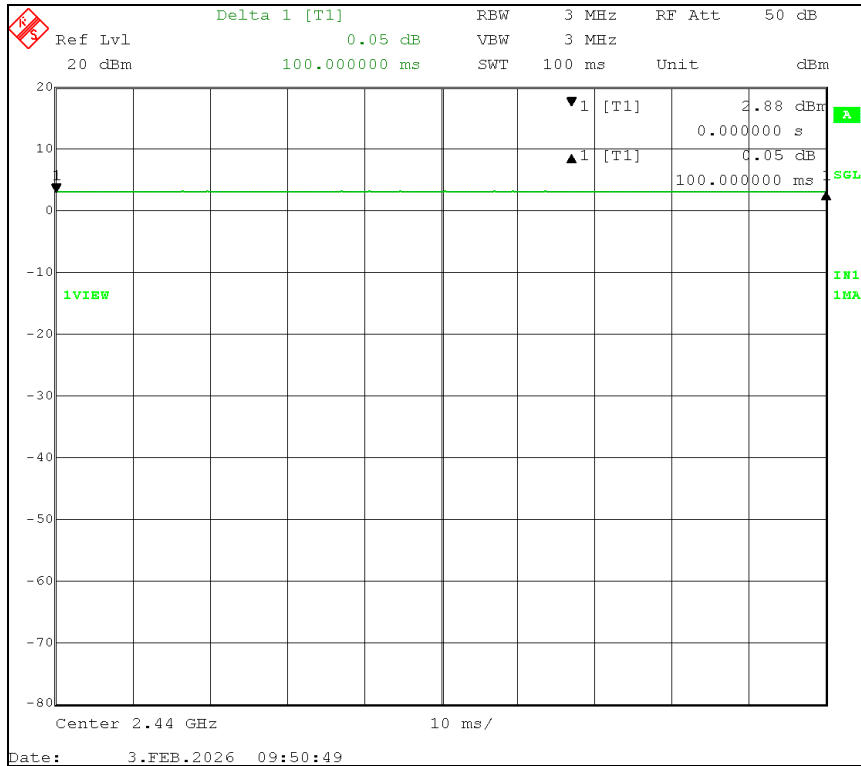
Test Mode With RBW @ 100 kHz / VBW @ 300 kHz	Frequency (MHz)	Peak Transmit Measurement	Band Edge Measurement
			Peak Level @ Lower Band 2.4 GHz Lower Band & Peak Level @ 2.4835 GHz Higher Band
Tx at Maximum Output Power with O-QPSK Modulation	2405.0	-2.94	-50.27
Tx at Maximum Output Power with O-QPSK Modulation	2480.0	-4.96	-44.11

Test Results: Band-edge measurements of the Legrand Model WNRF10 with Zigbee Radio, transmitting with O-QPSK modulation, is compliant to the FCC and ISSED limits.



4.11 Duty Cycle Measurement Results (02/03/2026)

BEC Incorporated tested the duty cycle of the Legrand Model WNRF10 with Zigbee Radio. Transmission was set to maximum output at middle channel of 2440 MHz with O-QPSK modulation using the radio control test software. The Duty Cycle of the transmitter was measured to be 100% and no duty cycle correction factor was required to be calculated.





Appendix A – Test Equipment

Equipment Description	Mfg.	Model	Serial	BEC	Calibration		
		Number			Date	Cycle	Due Date
Radiated Emissions Test Equipment 3 Meter OATS							
Antenna (30 MHz – 6 GHz)	Sunol Sciences	JB6	A022108	712	06/27/24	3 Years	06/27/27
EMI Receiver (20 Hz – 26.5 GHz)	Rohde & Schwarz	ESIB 26	836119/006	1010	12/09/22	3.5 Years	06/09/26
OATS Site (30 MHz – 1 GHz)	BEC	N/A	N/A	705	10/08/25	1 Year	10/08/26
Radiated Emissions Test Software	BEC	RADE	2.2	N/A	No Cal. Required	No Cal. Required	No Cal. Required
Radiated Emissions Test Equipment Shielded Room							
Pre-Compliance EMC Analyzer (9 kHz – 3 GHz)	Agilent	E7402A	US39440162	883	06/21/21	5 Years	06/21/26
Antenna (30 MHz - 6 GHz)	Sunol Sciences	JB6	A020714	882	05/16/24	3 Years	05/16/27
Pre-Compliance Amplifier (.09 – 1300 MHz)	Hewlett Packard	8447F	3313A06658	807	01/13/26	5 Years	01/13/31
EMC Analyzer (9 kHz - 26.5 GHz)	Hewlett Packard	8593EM	3710A00214	1026	04/16/25	3 Years	04/16/28
Amplifier System (0.5 – 50 GHz)	Hewlett Packard	83015A 83017A	3123A00360 & 3332A00219	1027	06/16/24	3 Years	06/16/27
Double Ridged Horn Antenna (1 - 18 GHz)	EMCO	3115	9705-5225	1028	12/05/24	3 Years	12/05/27
Antenna (18 - 26.5 GHz)	Hewlett Packard	84125-80008	N/A	1056	01/21/25	3 Years	01/21/28
Software (Tile Instrument Control System)	Quantum Change/EMC Systems	Version 3.4.K.21	N/A	N/A	No Cal. Required	No Cal. Required	No Cal. Required



Conducted Emissions Test Equipment							
Conducted Emissions Test Equipment	Hewlett Packard	8546A	3325A00158	761	03/15/23	3 Years	03/15/26
Four Line V-LISN	TESEQ	NNB 52	253551	950	12/08/22	3.5 Years	06/08/26
Conducted Emissions Cable	Pasternack	CE-01	N/A	802	10/30/23	3 Years	10/30/26
Support Equipment							
Temp/Humidity Meter	Control Company	4096	250064603	780	02/04/25	2 Years	02/04/27
SMA RF Cable-Antenna Conducted Test Setup	Suhner	04272	None	962	07/14/23	3 Years	07/14/26