

**FCC PART 15, SUBPART B; FCC Section 15.249; RSS-210 and RSS-Gen  
TEST REPORT**

*for*

**Z-WAVE ELECTRONIC DEADBOLT**

**Model: 450126VHC**

Prepared for

SPECTRUM BRANDS, INC.  
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FOOTHILL RANCH, CALIFORNIA 92610

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DATE: MARCH 29, 2024

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	20	2	2	2	15	34	75

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## GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used by the client to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the United States Government.

Device Tested: Z-Wave Electronic Deadbolt  
Model: 450126VHC  
S/N: Unit 1

Product Description: The EUT is a Z-Wave Electronic Deadbolt.  
The clock oscillator is 39 MHz.

Modifications: The EUT was not modified to meet the specifications.

Customer: Spectrum Brands, Inc.  
19701 DaVinci  
Lake Forest, California 92610

Test Dates: March 11, 12, and 13, 2024

Test Specifications covered by accreditation:

Test Specifications: Emissions requirements  
CFR Title 47, Part 15, Subpart B; RSS-210; and RSS-Gen  
CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.249



Test Procedures: ANSI C63.4 and ANSI C63.10

Test Deviations: The test procedure was not deviated from during the testing.

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## SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Spurious Radiated RF Emissions, 9 kHz – 9300 MHz	Complies with the <b>Class B</b> limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15 Subpart C, section 15.205, 15.209 and 15.249; RSS-Gen and RSS-210  Highest reading in relation to spec limit 91.15 (QP) dBuV/m @ 908.42 MHz (*U = 3.32 dB)
2	99% Bandwidth	This test was performed to obtain the emission designator required by Innovation, Science and Economic Development Canada.



## 1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Z-Wave Electronic Deadbolt, Model: 450126VHC. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4 and ANSI C63.10. The tests were performed to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the Class B specification limits defined by CFR Title 47, Part 15 Subpart B section, 15.109; the specification limits defined by CFR Title 47, Part 15 Subpart C sections 15.205, 15.209 and 15.249; and the specification limits defined by RSS-Gen and RSS-210.



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## 1.1 Decision Rule & Risk

If a measured value exceeds a specification limit it implies non-compliance. If the value is below a specification limit it implies compliance. Measurement uncertainty of the laboratory is reported with all measurement results but generally not taken into consideration unless a standard, rule or law requires it to be considered.

Qualification test reports are only produced for products that are in compliance with the test requirements, therefore results are always in conformity. Otherwise, an engineering report or just the data is provided to the customer.

When performing a measurement and making a statement of conformity, in or out-of-specification to manufacturer's specifications or Pass/Fail against a requirement, there are two possible outcomes:

- The result is reported as conforming with the specification
- The result is reported as not conforming with the specification

The decision rule is defined below.

When the test result is found to be below the limit but within our measurement uncertainty of the limit, it is our policy that the final acceptance decision is left to the customer, after discussing the implications and potential risks of the decision.

When the test result is found to be exactly on the specification, it is our policy, in the case of unwanted emissions measurements to consider the result non-compliant, however, the final decision is left to the customer, after discussing the implications and potential risks of the decision.

When the test result is found to be over the specification limit under any condition, it is our policy to consider the result non-compliant.

In terms of uncertainty of measurement, the laboratory is a calibrated and tightly controlled environment and generally exceptionally stable, the measurement uncertainties are evaluated without the considering of the test sample. When it comes to the test sample however, as most testing is performed on a single sample rather than a sample population, and that sample is often a pre-production representation of the final product, that test sample represents a significantly higher source of measurement uncertainty. We advise our customers of this and that when in doubt (small test to limit margins), they may wish to perform statistical sampling on a population to gain a higher confidence in the results. All lab reported results are that of a single sample in any event.



## 2. ADMINISTRATIVE DATA

### 2.1 Location of Testing

The emissions tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

### 2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

### 2.3 Cognizant Personnel

Spectrum Brands, Inc.

Thuan Nguyen      Associate Principal Engineer

Compatible Electronics Inc.

Kyle Fujimoto      Sr. Test Engineer  
James Ross      Sr. Test Engineer

### 2.4 Date Test Sample was Received

The test sample was received prior to the date of this report.

### 2.5 Disposition of the Test Sample

The test sample has not been returned to Spectrum Brands, Inc. as of the date of this report.

### 2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
FCC	Federal Communications Commission
DoC	Declaration of Conformity
N/A	Not Applicable
Tx	Transmit
Rx	Receive
Inc.	Incorporated
LLC	Limited Liability Company
RF	Radio Frequency
BLE	Bluetooth Low Energy
CFR	Code of Federal Regulations
PCB	Printed Circuit Board
DC	Direct Current
LED	Light Emitting Diode

### 3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this emission Test Report.

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
FCC Title 47, Part 15 Subpart B	FCC Rules – Radio frequency devices (including digital devices) –Unintentional Radiators
ANSI C63.4: 2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10: 2013	American National Standard of procedure for compliance testing of unlicensed wireless devices
RSS-Gen Issue 5: 2018 + Amendment 1: 2019 + Amendment 2: 2021	General Requirements for Compliance of Radio Apparatus
RSS-210 Issue 10 December 2019	Licence-Exempt Radio Apparatus: Category I Equipment

## 4. DESCRIPTION OF TEST CONFIGURATION

### 4.1 Description of Test Configuration – Emissions

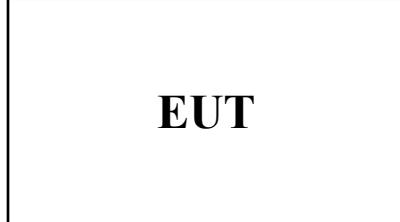
The Z-Wave Electronic Deadbolt, Model: 450126VHC (EUT) was mounted on two different enclosures. The EUT was continuously transmitting Z-Wave at 908.42 MHz or 916 MHz on a continuous basis.

Two different enclosures were tested. One had a keypad enclosure and the other a touchscreen enclosure.

The HVIN of the keypad enclosure is GED2152 and the HVIN of the touchscreen is GED1800.

The final radiated data was taken in the modes described above. All initial investigations were performed with the EMI Receiver in manual mode scanning the frequency range continuously. The cables were bundled and routed as shown in the photographs in Appendix D.

The firmware was stored on the company's servers.

A large empty rectangular box with a thin black border, centered on the page. The word "EUT" is centered inside it.

**EUT**

#### 4.1.1 Cable Construction and Termination

The EUT had no external cables.



## 5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

### 5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	ID
Z-WAVE ELECTRONIC DEADBOLT	SPECTRUM BRANDS, INC.	450126VHC	UNIT 1	FCC ID: NUL450126HCT IC: 3022A-450126HCT
LAPTOP*	LENOVO	THINKPAD	R9-0TN6PG	N/A
SIMPLICITY COMMANDER TEST SOFTWARE*	SILICON LABS, INC.	1v16	N/A	N/A
J-LINK BASE*	SEGGER	P/N: 8.08.00	51024137	N/A

\*The laptop, test software and J-Link base are only used to program the EUT so that it can continuously transmit or receive at the low, middle, or high channel on a continuous basis.



## 5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. DUE DATE
<b>RADIATED EMISSIONS TEST EQUIPMENT</b>					
TDK TestLab	TDK RF Solutions, Inc.	9.22	700145	N/A	N/A
EMI Receiver, 3 Hz – 44 GHz	Keysight Technologies, Inc.	N9038A	MY59050117	July 14, 2023	July 14, 2024
Loop Antenna	Com-Power	AL-130R	121090	February 10, 2022	February 10, 2025
CombiLog Antenna	Com-Power	AC-220	10030004	November 22, 2023	November 22, 2025
Horn Antenna	Com-Power	AH-118	10050192	November 30, 2023	November 30, 2025
Preamplifier	Com-Power	PA-118	181653	March 7, 2022	March 7, 2025
System Controller	Sunol Sciences Corporation	SC110V	112213-1	N/A	N/A
Turntable	Sunol Sciences Corporation	2011VS	N/A	N/A	N/A
Antenna-Mast	Sunol Sciences Corporation	TWR95-4	112213-3	N/A	N/A
Below 1 GHz Radiated Cable	N/A	N/A	Asset #: 0006	October 3, 2022	October 3, 2024
Above 1 GHz Cable	Suhner	Sucoflex 102EA	2291	August 22, 2023	August 2, 2025
Above 1 GHz Cable	Suhner	Sucoflex 102EA	501393	August 22, 2023	August 2, 2025
Above 1 GHz Cable	Suhner	Sucoflex 102EA	501394	August 22, 2023	August 2, 2025
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A

## 6. TEST SITE DESCRIPTION

### 6.1 Test Facility Description

Please refer to section 2.1 of this report for emissions test location.

### 6.2 EUT Mounting, Bonding and Grounding

**For frequencies 1 GHz and below:** The EUT was mounted on a 0.6 by 1.2 meter non-conductive table 0.8 meters above the ground plane.

**For frequencies above 1 GHz:** The EUT was mounted on a 0.6 by 1.2 meter non-conductive table 1.5 meters above the ground plane.

The EUT was not grounded.

### 6.3 Measurement Uncertainty

Compatible Electronics'  $U_{\text{lab}}$  value is less than  $U_{\text{cisp}}$ , thus based on this – compliance is deemed to occur if no measured disturbance exceeds the disturbance limit

$$u_c(y) = \sqrt{\sum_i c_i^2 u^2(x_i)}$$

Measurement		$U_{\text{cisp}}$	$U_{\text{lab}} = 2 u_c(y)$
Conducted disturbance (mains port)	(150 kHz – 30 MHz)	3.4 dB	2.72 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(30 MHz – 1 000 MHz)	6.3 dB	3.32 dB (Vertical) 3.30 dB (Horizontal)
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(1 GHz - 6 GHz)	5.2 dB	3.98 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(6 GHz – 18 GHz)	5.5 dB	3.98 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(18 GHz – 26.5 GHz)	N/A	4.43 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(26.5 GHz – 40 GHz)	N/A	4.57 dB



## 7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

### 7.1 RF Emissions

#### 7.1.1 Conducted Emissions Test

The EMI Receiver was used as a measuring meter. A quasi-peak and/or average reading was taken only where indicated in the data sheets. A 10 dB attenuator was used for the protection of the EMI Receiver input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the EMI Receiver. The output of the second LISN was terminated by a 50-ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding, and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI 63:4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by computer software. The final qualification data is located in Appendix E.

#### Test Results:

This test was not performed because the EUT operates on battery power only and cannot be connected to the AC public mains.

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### 7.1.2 Radiated Emissions Test

The EMI Receiver was used as the measuring meter. An internal preamplifier was used to increase the sensitivity of the instrument during emissions tests up to 1000 MHz, and an external preamplifier was used to increase the sensitivity of the instrument during emissions tests above 1 GHz. The EMI Receiver was initially used with the Analyzer mode feature activated. In this mode, the EMI receiver can then record the actual frequency to be measured. This final reading is then taken accurately in the EMI Receiver mode, which considers the cable loss, amplifier gain and antenna factors, so that a true reading is compared to the true limit. The effective measurement bandwidth used for the radiated emissions test was according to the frequency measured.

The frequencies below 1 GHz were quasi-peaked using the quasi-peak detector of the EMI Receiver.

The frequencies above 1 GHz were averaged using the RMS detector of the EMI Receiver.

The EMI test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna to ensure accurate results.

The EUT was tested at a 3-meter test distance. The six highest emissions are listed in Table 1.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Loop Antenna
150 kHz to 30 MHz	9 kHz	Loop Antenna
30 MHz to 1 GHz	120 kHz	CombiLog Antenna
1 GHz to 9.3 GHz	1 MHz	Horn Antenna

#### Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; the limits of CFR Title 47, Part 15, Subpart C sections 15.205, 15.209 and 15.249; and the limits of RSS-210 and RSS-Gen for radiated emissions.



### 7.1.3 RF Emissions Test Results

Table 1 RADIATED EMISSION RESULTS  
Z-Wave Electronic Deadbolt  
Model: 450126VHC

Frequency (MHz)	QP EMI Reading (dBuV/m)	Specification Limit (dBuV/m)	Delta (Cor. Reading – Spec. Limit) (dB)
908.42 (V) (GED2152)	91.15	93.97	-2.82
916.00 (V) (GED2152)	89.42	93.97	-4.55
908.42 (V) (GED1800)	90.98	93.97	-2.99
916.00 (V) (GED1800)	89.33	93.97	-4.64
956.50 (H) (GED1800)	29.98	46.00	-16.02
785.30 (H) (GED2152)	29.94	46.00	-16.06

Notes:

\* The complete emissions data is given in Appendix E of this report.

(V) Vertical Polarization

(H) Horizontal Polarization

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### 7.1.4

### Sample Calculations

A correction factor for the antenna, cable, and a distance factor (if any) must be applied to the meter reading before a true field strength reading can be obtained. This Corrected Meter Reading is then compared to the specification limit in order to determine compliance with the limits.

Conversion to logarithmic terms: Specification limit ( $\mu$ V/m)  $\log x 20$  = Specification Limit in dBuV/m

To correct for distance when measuring at a distance other than the specification

For measurements below 30 MHz: (Specification distance / test distance)  $\log x 40$  = distance factor

For measurements above 30 MHz: (Specification distance / test distance)  $\log x 20$  = distance factor

Note: When using an Active Antenna, the Antenna factor shall be subtracted due to the combination of the internal amplification and antenna loss.

Corrected Meter Reading = meter reading + F – A + C

where:

F = antenna factor

A = amplifier gain

C = cable loss

The correction factors for the antenna and the amplifier gain are attached in Appendix D of this report. The data sheets are attached in Appendix E.

The distance factor D is 0 when the test is performed at the required specification distance.

When the limit is in terms of magnetic field, the following equation applies:

$$H[\text{dB}(\mu\text{A/m})] = V[\text{dB}(\mu\text{V})] + L_C [\text{dB}] - G_{PA} [\text{dB}] + AF^H [\text{dB}(\text{S/m})]$$

where:

H is the magnetic field strength (to be compared with the limit),

V is the voltage level measured by the receiver or spectrum analyzer,

$L_C$  is the cable loss,

$G_{PA}$  is the gain of the preamplifier (if used), and

$AF^H$  is the magnetic antenna factor.

The  $G_{PA}$  term is only included in the equation when an external preamplifier is used in the measurement chain, in front of the receiver or spectrum analyzer. An external preamplifier is not usually necessary (or even advisable, due to risk of saturating the input mixer of the receiver) when an active loop antenna is used. In that case, the antenna factor of the loop already includes the gain of its built-in preamplifier.



## Sample Calculations (Continued)

If the “electrical” antenna factor is used instead, the above equation becomes:

$$H[\text{dB}(\mu\text{A}/\text{m})] = V[\text{dB}(\mu\text{V})] + L_c[\text{dB}] - G_{PA}[\text{dB}] + AF^E[\text{dB}(\text{m}^{-1})] - 51.5[\text{dB}\Omega]$$

where:  $AF^E$  is the “electric” antenna factor, as provided by the antenna calibration laboratory.

When the limit is in terms of electric field, the following equation applies:

$$E[\text{dB}(\mu\text{V}/\text{m})] = V[\text{dB}(\mu\text{V})] + L_c[\text{dB}] - G_{PA}[\text{dB}] + AF^E[\text{dB}(\text{m}^{-1})]$$

or, if the magnetic antenna factor is used:

$$E[\text{dB}(\mu\text{V}/\text{m})] = V[\text{dB}(\mu\text{V})] + L_c[\text{dB}] - G_{PA}[\text{dB}] + AF^H[\text{dB}(\text{S}/\text{m})] + 51.5[\text{dB}\Omega]$$

The display of the receiver (or spectrum analyzer) **shall not** be configured in units of current, e.g.  $\mu\text{A}$  or  $\text{dB}(\mu\text{A})$ . That conversion is calculated inside the receiver (or spectrum analyzer) using its input impedance, which is  $50 \Omega$ , while the magnetic field calculation is based on the free-space impedance of  $377 \Omega$ .

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**7.1.5****99 % Bandwidth**

The 99 % bandwidth was measured using an EMI Receiver.

The following steps were performed for measuring the 99 % bandwidth per RSS-GEN, Issue 5, clause 6.7:

1. Set RBW to 1 % to 5 % of the actual occupied bandwidth.
2. Set VBW to greater than 3 times the RBW.
3. Set the EMI Receiver to the occupied bandwidth Function set at 99 %
4. Set the peak detector to max hold.
5. Set the sweep time to auto
6. Allow the trace to stabilize.

Please note that this was only used to determine the emission bandwidth and that there are no limits or pass/fail criteria for this test. Please see the data sheets located in Appendix E.



## 8. CONCLUSIONS

The Z-Wave Electronic Deadbolt, Model: 450126VHC, as tested, meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249; RSS-Gen and RSS-210.



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## APPENDIX A

### ***LABORATORY ACCREDITATIONS AND RECOGNITIONS***

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## LABORATORY ACCREDITATIONS AND RECOGNITIONS



For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025.

For the most up-to-date version of our scopes and certificates please visit

<http://celectronics.com/quality/scope/>

Quote from ISO-ILAC-IAF Communiqué on the Management Systems Requirements of ISO/IEC 17025, General Requirements for the competence of testing and calibration laboratories:

"A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001"

Innovation, Science and Economic Development Canada  
Lab Code 2154A

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## APPENDIX B

### ***MODIFICATIONS TO THE EUT***

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**(949) 587-0400**

## MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B, and FCC 15.249; RSS-Gen and RSS-210.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.



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**(805) 480-4044**

**Lake Forest Division**  
**20621 Pascal Way**  
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**(949) 587-0400**

## APPENDIX C

### **MODELS COVERED UNDER THIS REPORT**

**Brea Division**  
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(949) 587-0400

## MODELS COVERED UNDER THIS REPORT

### USED FOR THE PRIMARY TEST

Z-Wave Electronic Deadbolt  
Model: 450126VHC  
S/N: Unit 1

There are no additional models or part numbers covered under this report.



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**Lake Forest Division**  
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**Lake Forest, CA 92630**  
**(949) 587-0400**

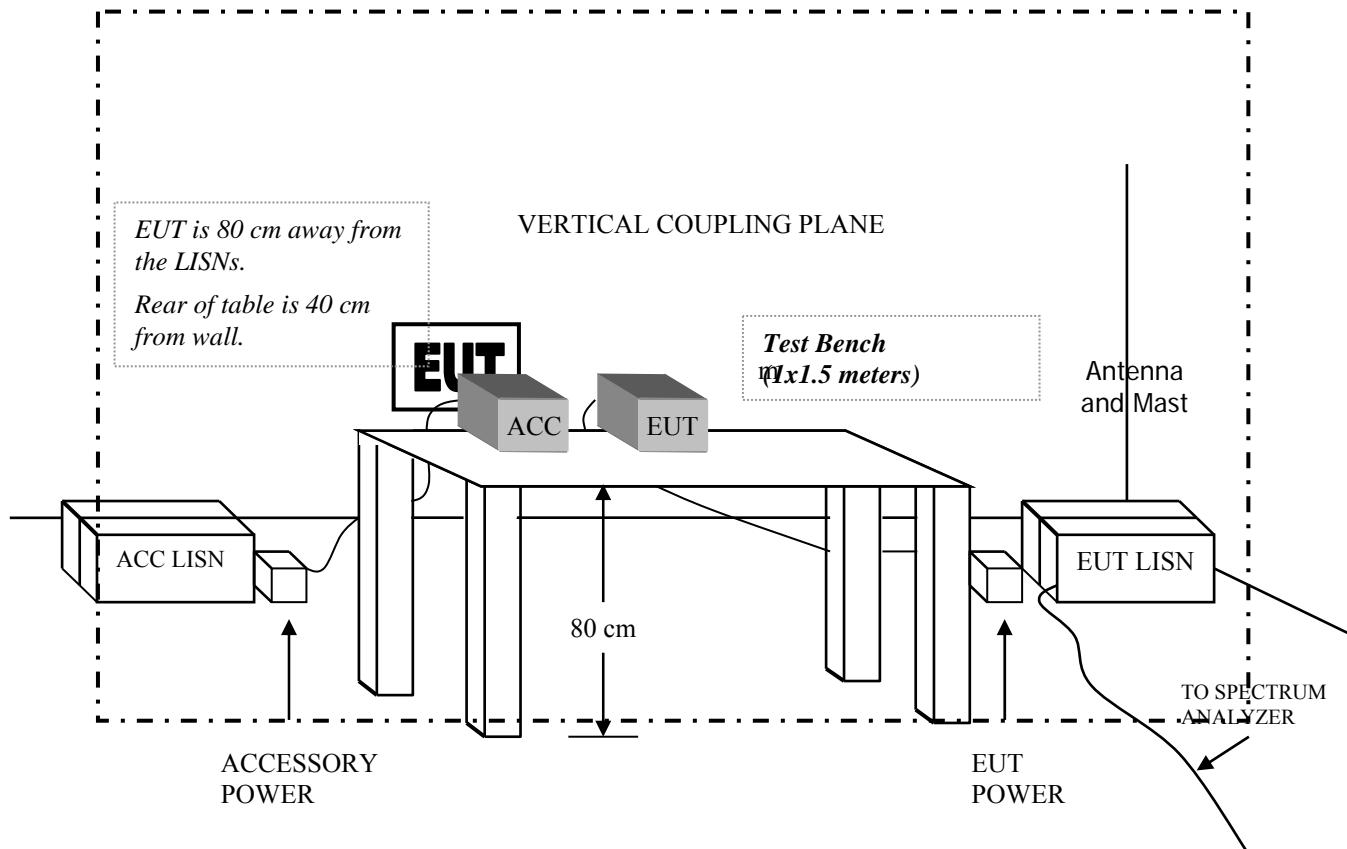
**APPENDIX D*****DIAGRAMS, CHARTS, AND PHOTOS***

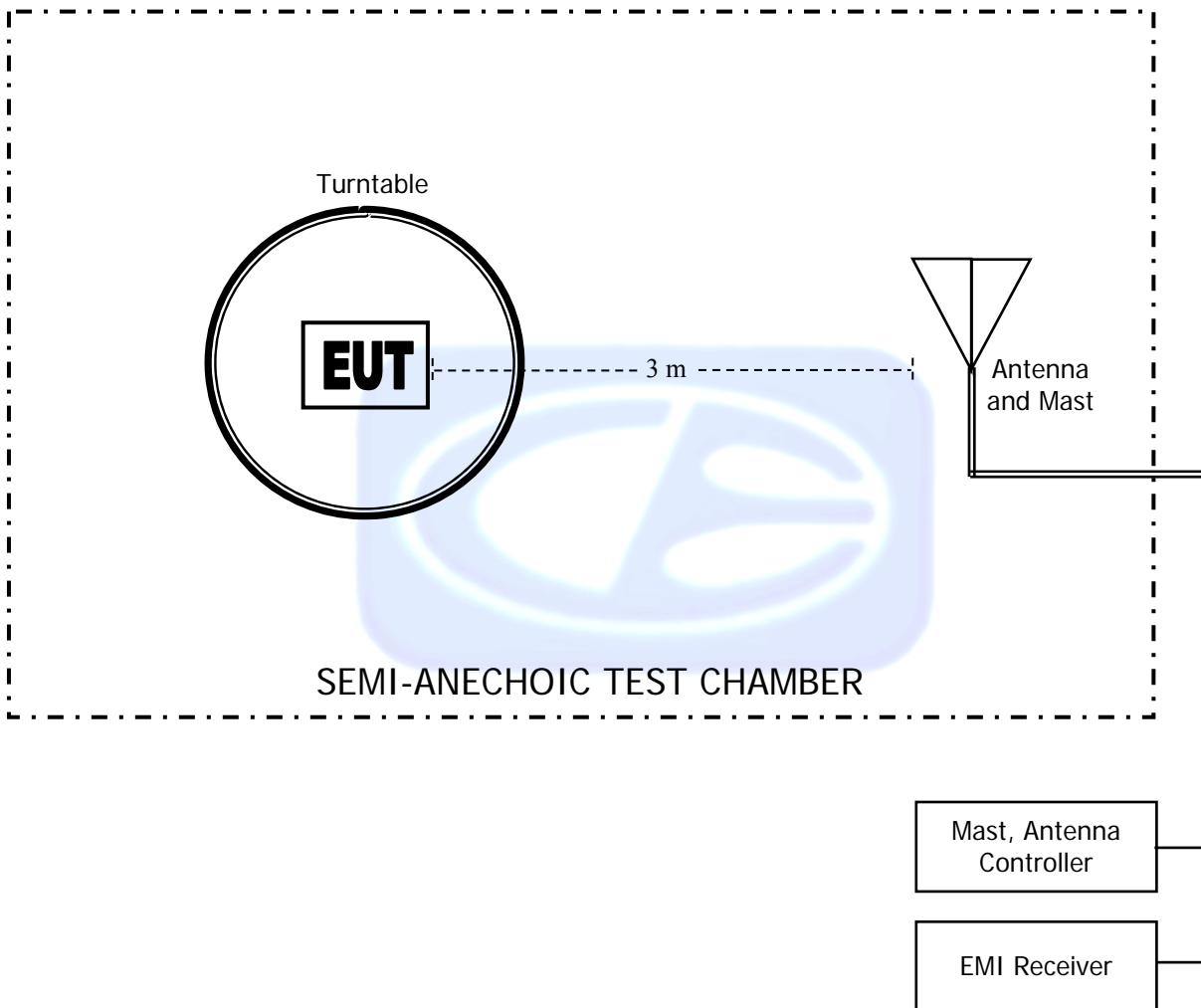
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**(949) 587-0400**

**FIGURE 1: CONDUCTED EMISSIONS TEST SETUP**


**FIGURE 2: LAYOUT OF THE SEMI-ANECHOIC TEST CHAMBER**

**COM-POWER AL-130R**
**LOOP ANTENNA**
**S/N: 121090**
**CALIBRATION DATE: FEBRUARY 10, 2022**

<b>FREQUENCY (MHz)</b>	<b>MAGNETIC (dB/m)</b>	<b>ELECTRIC (dB/m)</b>
0.009	15.6	-35.8
0.01	15.8	-35.6
0.02	14.8	-36.6
0.03	15.6	-35.9
0.04	15.0	-36.5
0.05	14.4	-37.1
0.06	14.6	-36.9
0.07	14.3	-37.2
0.08	14.3	-37.2
0.09	14.4	-37.0
0.10	14.1	-37.4
0.20	14.1	-37.4
0.30	14.0	-37.5
0.40	13.9	-37.6
0.50	14.1	-37.3
0.60	14.1	-37.3
0.70	14.2	-37.3
0.80	14.2	-37.3
0.90	14.2	-37.2
1.00	14.4	-37.0
2.00	14.6	-36.9
3.00	14.6	-36.8
4.00	14.9	-36.6
5.00	14.9	-36.7
6.00	14.8	-36.7
7.00	14.6	-36.8
8.00	14.5	-37.0
9.00	14.3	-37.2
10.00	14.5	-37.0
11.00	14.6	-36.9
12.00	14.7	-36.7
13.00	14.9	-36.6
14.00	15.0	-36.5
15.00	14.9	-36.6
16.00	14.9	-36.6
17.00	14.6	-36.8
18.00	14.4	-37.1
19.00	14.5	-37.0
20.00	14.5	-37.0
21.00	14.2	-37.3
22.00	13.9	-37.5
23.00	13.9	-37.5
24.00	13.8	-37.7
25.00	13.4	-38.0
26.00	13.2	-38.2
27.00	13.2	-38.3
28.00	12.7	-38.7
29.00	12.7	-38.8
30.00	12.4	-39.0

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(949) 587-0400**

COM-POWER AC-220

COMBILOG ANTENNA

S/N: 10030004

CALIBRATION DATE: NOVEMBER 22, 2023

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	23.10	200	16.10
35	22.00	250	17.90
40	41.30	300	19.10
45	20.50	350	20.30
50	19.30	400	21.60
60	15.40	450	22.20
70	12.40	500	23.20
80	12.40	550	23.70
90	14.10	600	25.10
100	15.50	650	25.30
120	15.90	700	25.10
125	15.90	750	26.70
140	14.80	800	26.60
150	14.60	850	27.20
160	14.80	900	28.00
175	15.90	950	29.10
180	15.50	1000	28.90

**COM POWER AH-118****HORN ANTENNA****S/N: 10050192****CALIBRATION DATE: NOVEMBER 30, 2023**

<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>	<b>FREQUENCY (GHz)</b>	<b>FACTOR (dB)</b>
1.0	24.01	10.0	38.78
1.5	25.25	10.5	39.29
2.0	27.21	11.0	39.30
2.5	27.42	11.5	39.87
3.0	28.89	12.0	39.77
3.5	30.58	12.5	40.21
4.0	31.78	13.0	40.01
4.5	32.48	13.5	40.06
5.0	33.13	14.0	40.63
5.5	34.27	14.5	41.41
6.0	34.92	15.0	41.53
6.5	35.58	15.5	40.59
7.0	36.83	16.0	41.63
7.5	37.02	16.5	40.93
8.0	36.93	17.0	41.27
8.5	37.67	17.5	41.69
9.0	37.53	18.0	44.00
9.5	38.76		

# COM-POWER PAM-118

## PREAMPLIFIER

S/N: 181653

CALIBRATION DATE: MARCH 7, 2022

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	40.02	6.0	38.84
1.1	39.72	6.5	39.20
1.2	39.93	7.0	39.46
1.3	39.98	7.5	39.67
1.4	39.99	8.0	39.28
1.5	40.20	8.5	38.63
1.6	40.05	9.0	38.96
1.7	40.15	9.5	39.33
1.8	40.20	10.0	39.58
1.9	40.33	11.0	38.25
2.0	40.33	12.0	40.03
2.5	40.60	13.0	40.55
3.0	40.76	14.0	40.36
3.5	40.87	15.0	39.34
4.0	40.39	16.0	37.34
4.5	39.55	17.0	42.14
5.0	40.34	18.0	42.54
5.5	39.45		

**FRONT VIEW**

SPECTRUM BRANDS, INC.  
Z-WAVE ELECTRONIC DEADBOLT  
MODEL: 450126VHC, HVIN: GED2152

FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – BELOW 1 GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**

Brea Division  
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(714) 579-0500

Newbury Park Division  
1050 Lawrence Drive  
Newbury Park, CA 91320  
(805) 480-4044

Lake Forest Division  
20621 Pascal Way  
Lake Forest, CA 92630  
(949) 587-0400

**REAR VIEW**

SPECTRUM BRANDS, INC.  
Z-WAVE ELECTRONIC DEADBOLT  
MODEL: 450126VHC, HVIN: GED2152

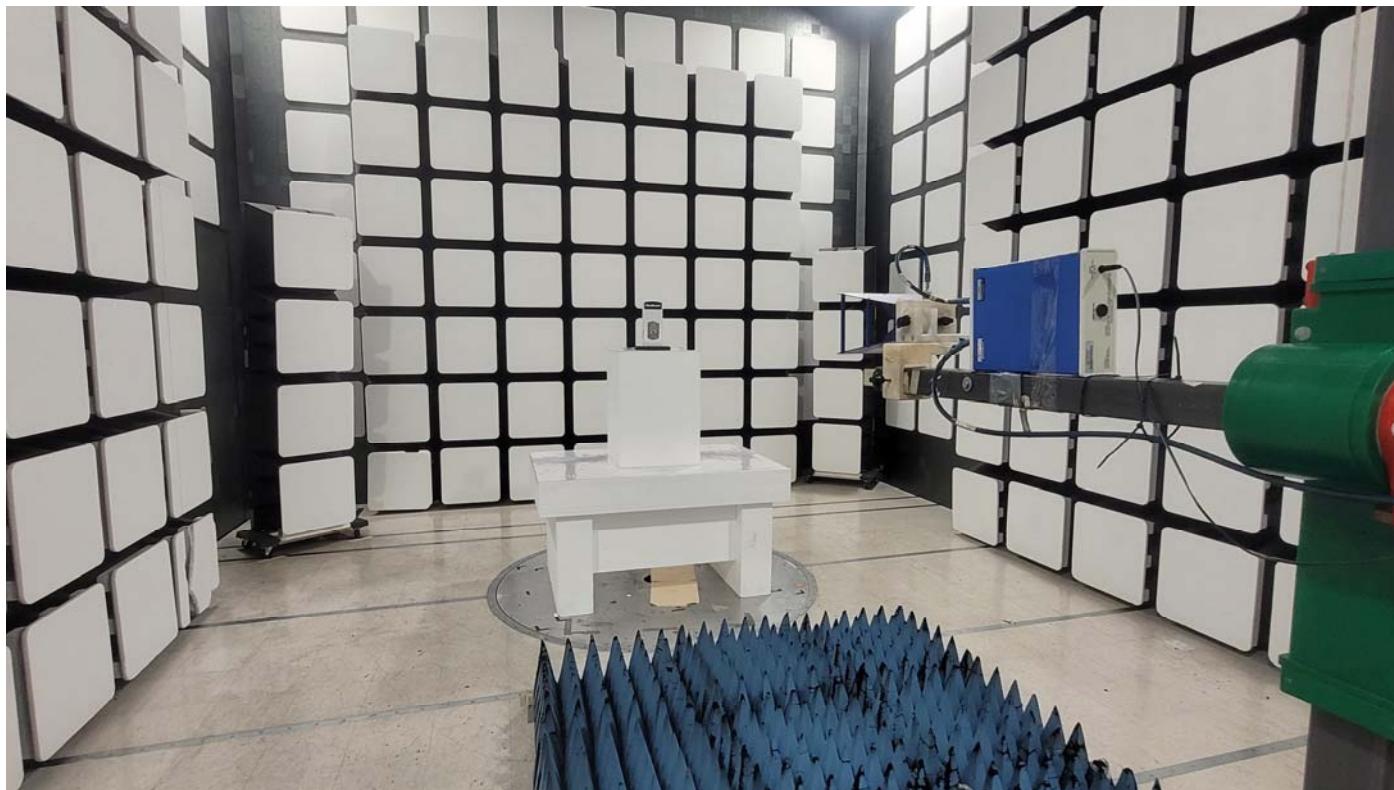
FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – BELOW 1 GHz

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**FRONT VIEW**

SPECTRUM BRANDS, INC.  
Z-WAVE ELECTRONIC DEADBOLT  
MODEL: 450126VHC, HVIN: GED2152

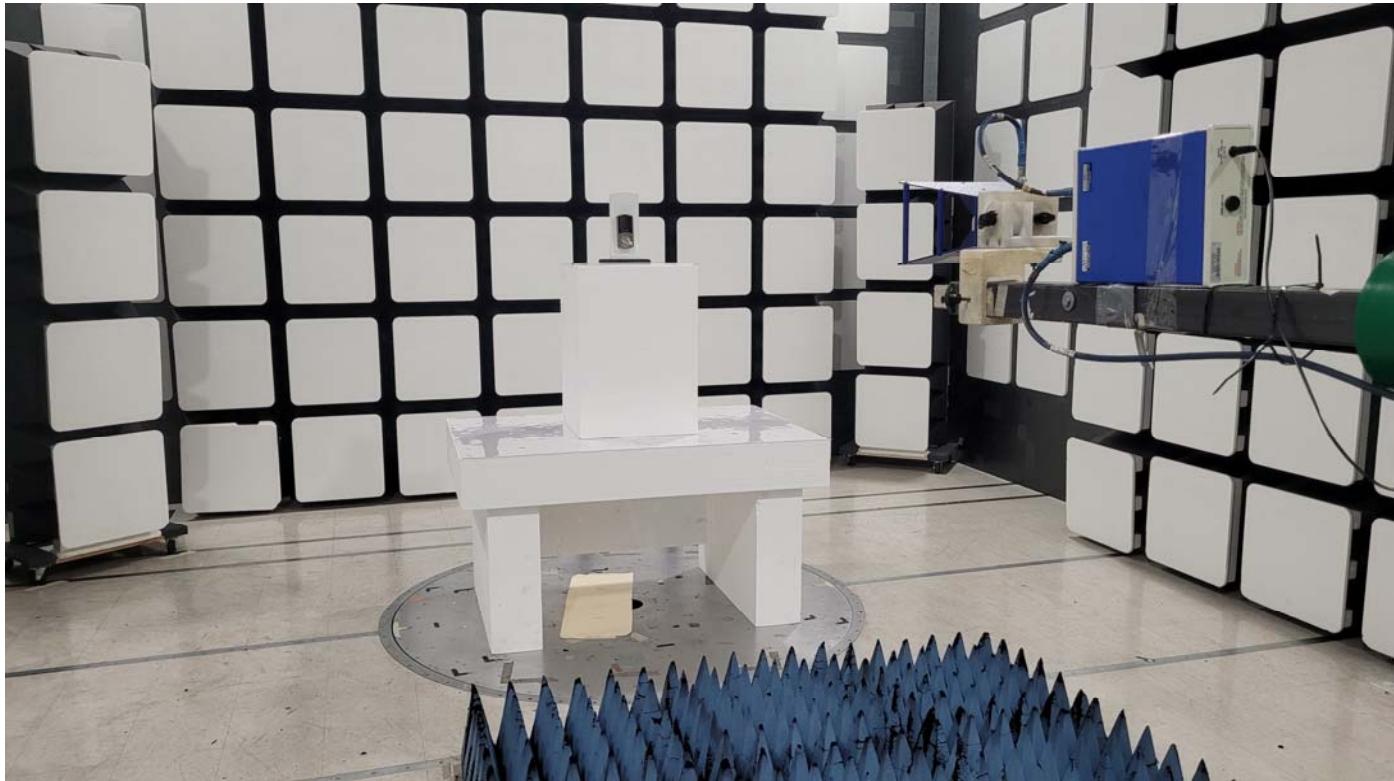
FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – BELOW 1 GHz

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**REAR VIEW**

SPECTRUM BRANDS, INC.  
Z-WAVE ELECTRONIC DEADBOLT  
MODEL: 450126VHC, HVIN: GED2152

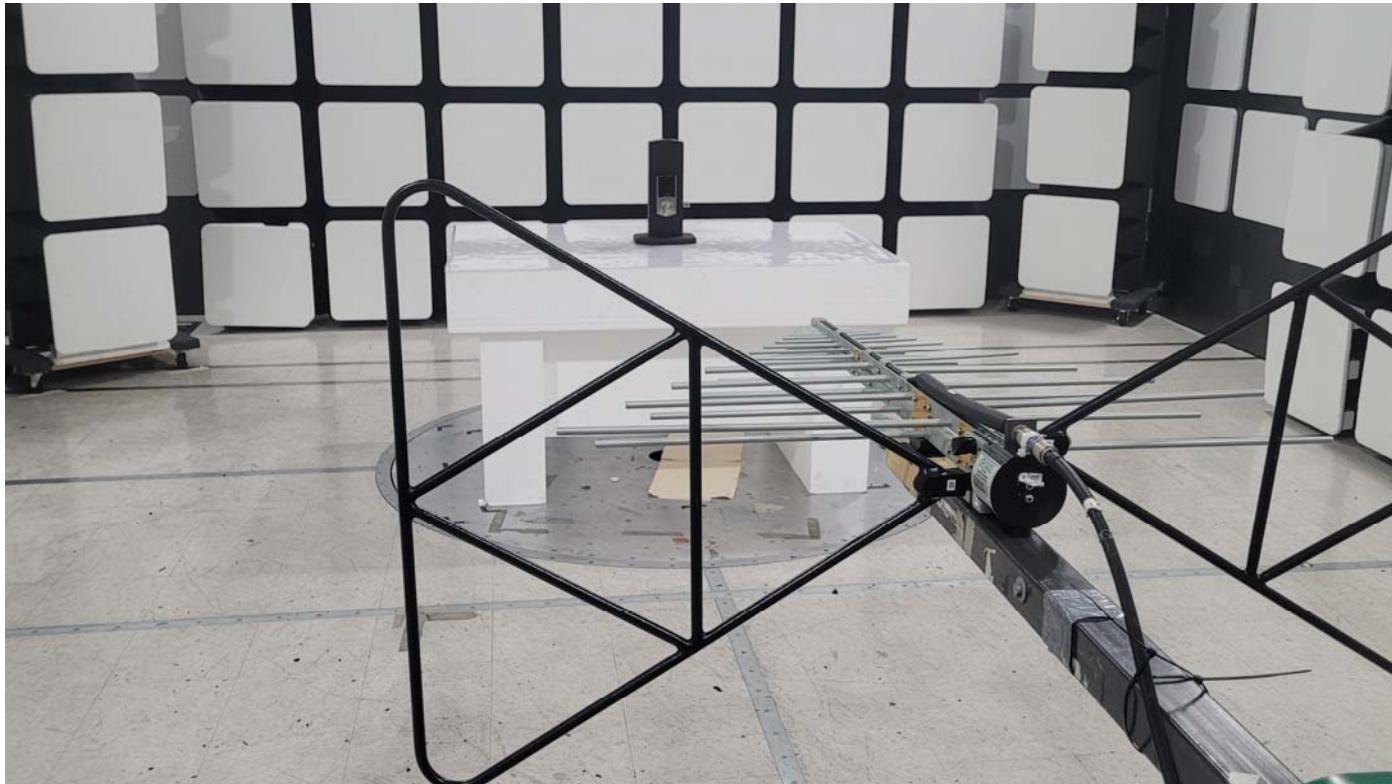
FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – BELOW 1 GHz

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**FRONT VIEW**

SPECTRUM BRANDS, INC.  
Z-WAVE ELECTRONIC DEADBOLT  
MODEL: 450126VHC, HVIN: GED1800

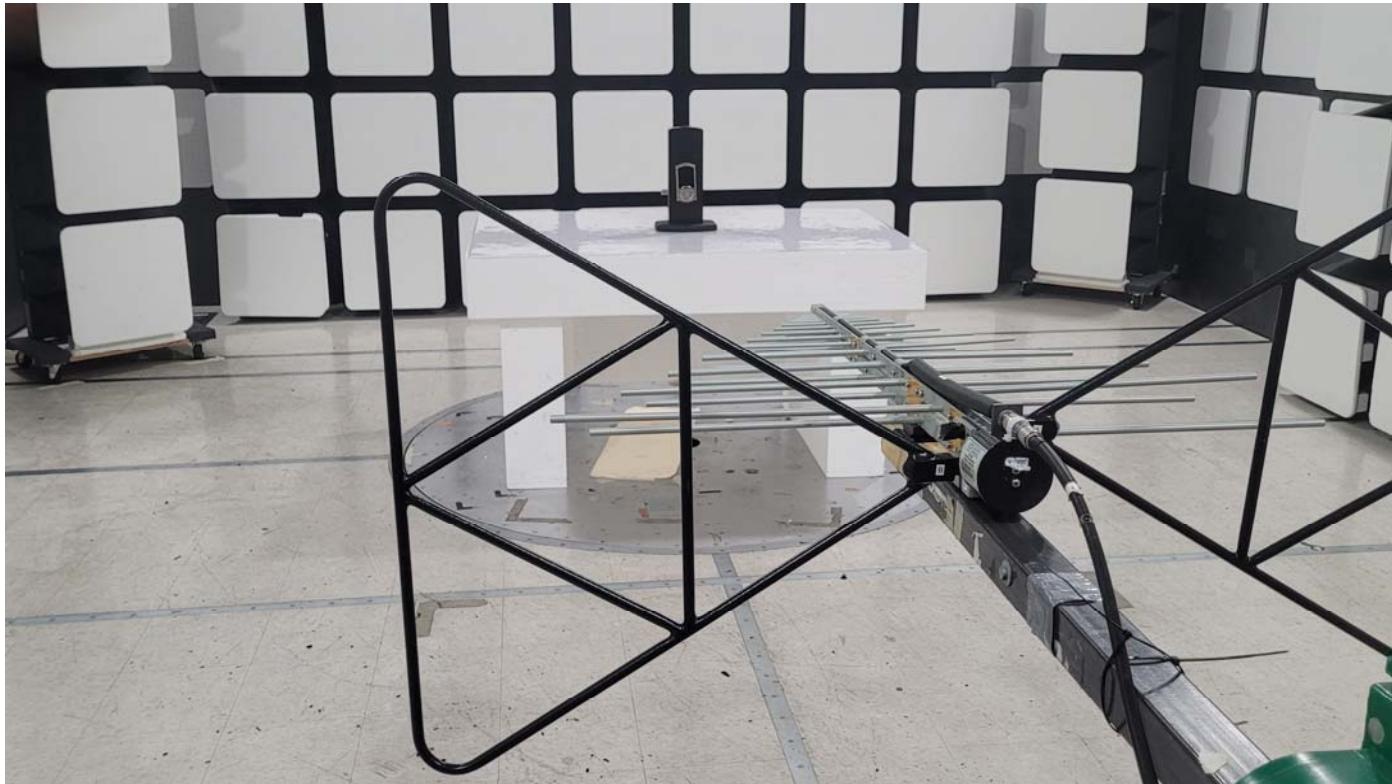
FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – BELOW 1 GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**

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**REAR VIEW**

SPECTRUM BRANDS, INC.  
Z-WAVE ELECTRONIC DEADBOLT  
MODEL: 450126VHC, HVIN: GED1800

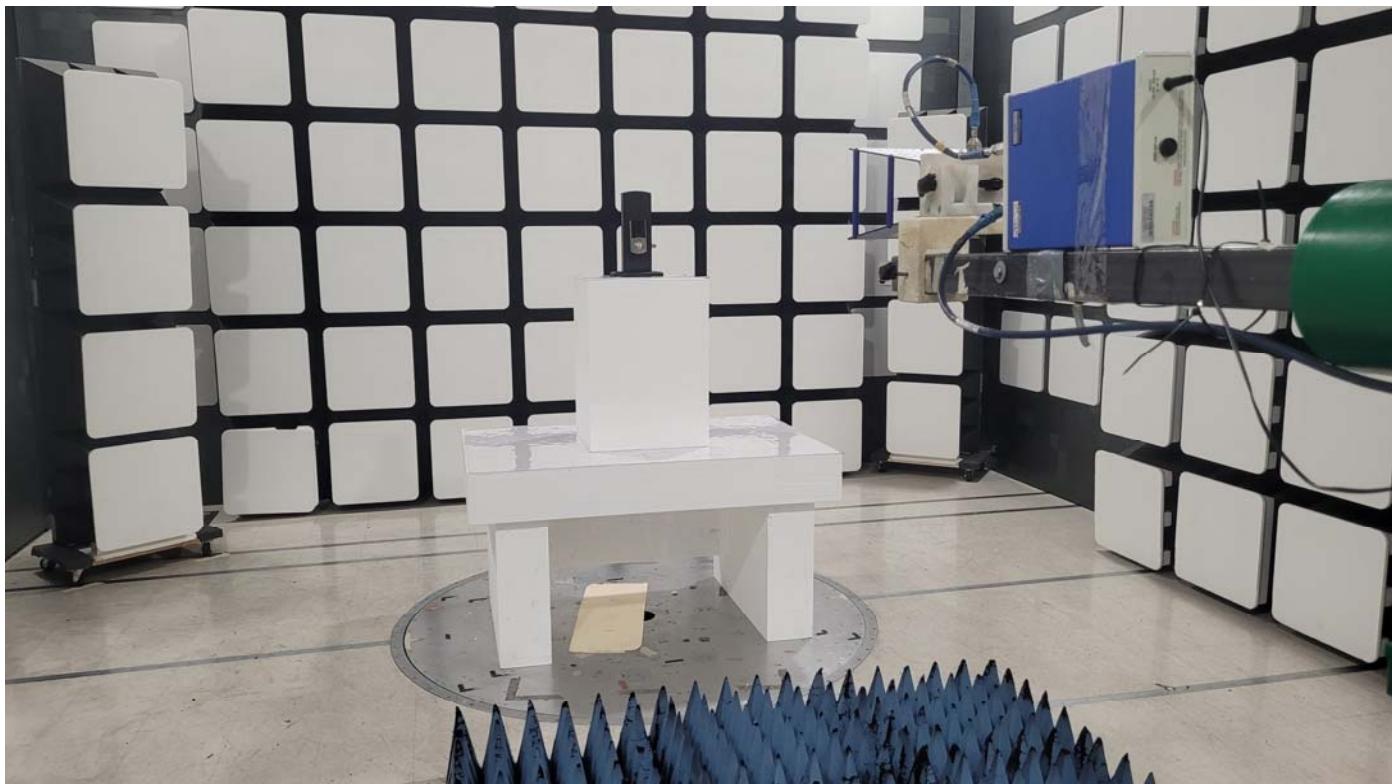
FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – BELOW 1 GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**

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**FRONT VIEW**

SPECTRUM BRANDS, INC.  
Z-WAVE ELECTRONIC DEADBOLT  
MODEL: 450126VHC, HVIN: GED1800

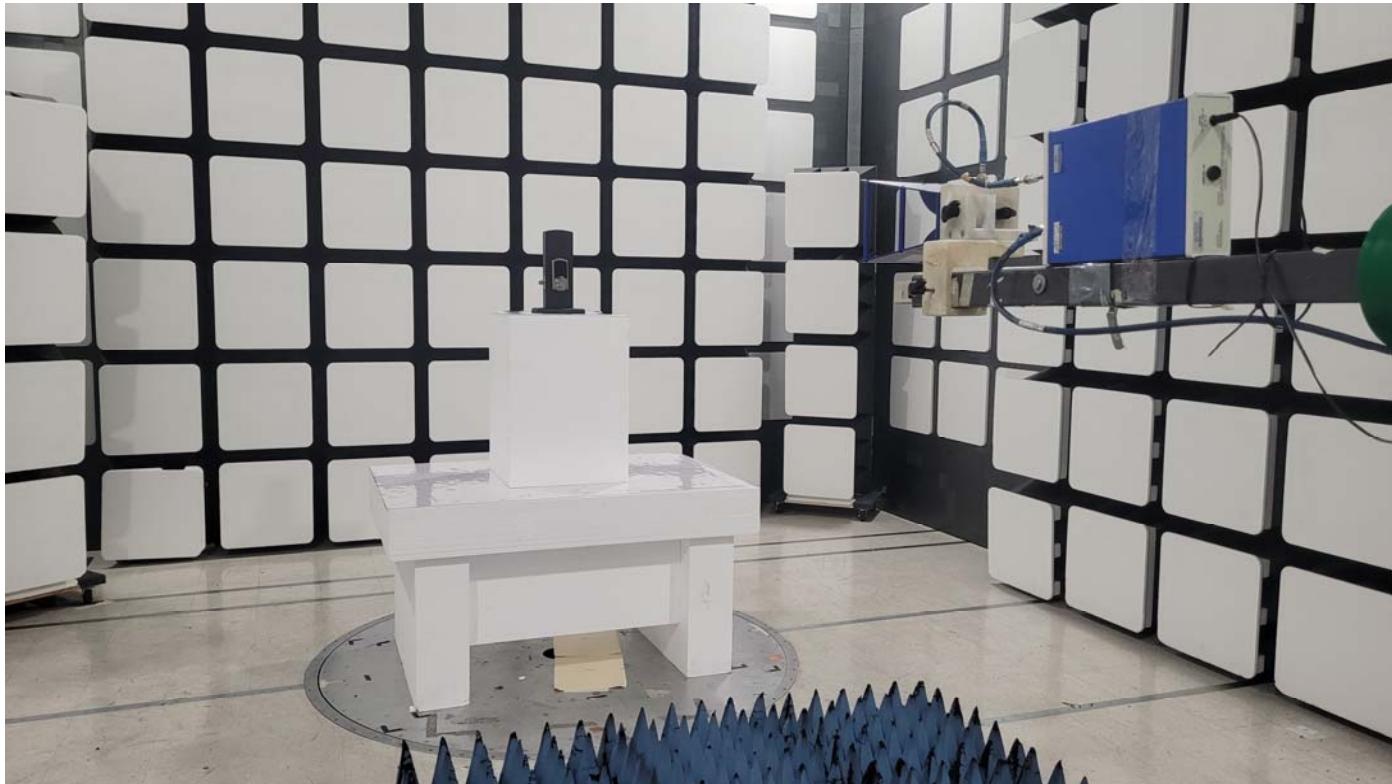
FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – ABOVE 1 GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**

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**REAR VIEW**

SPECTRUM BRANDS, INC.  
Z-WAVE ELECTRONIC DEADBOLT  
MODEL: 450126VHC, HVIN: GED1800

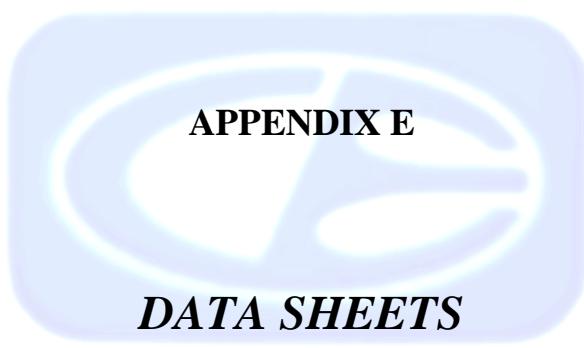
FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – ABOVE 1 GHz

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**

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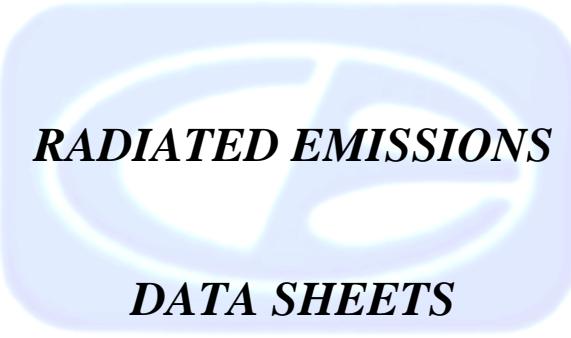


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**RADIATED EMISSIONS**  
**DATA SHEETS**

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**Brea Division**  
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**(949) 587-0400**



Title: Pre-Scan - FCC Class B  
 File: 2 - Keysight - Pre-Scan - FCC Class B - Tx Mode - 908.42 MHz - 30 MHz to 1000 MHz.set  
 Operator: Kyle Fujimoto

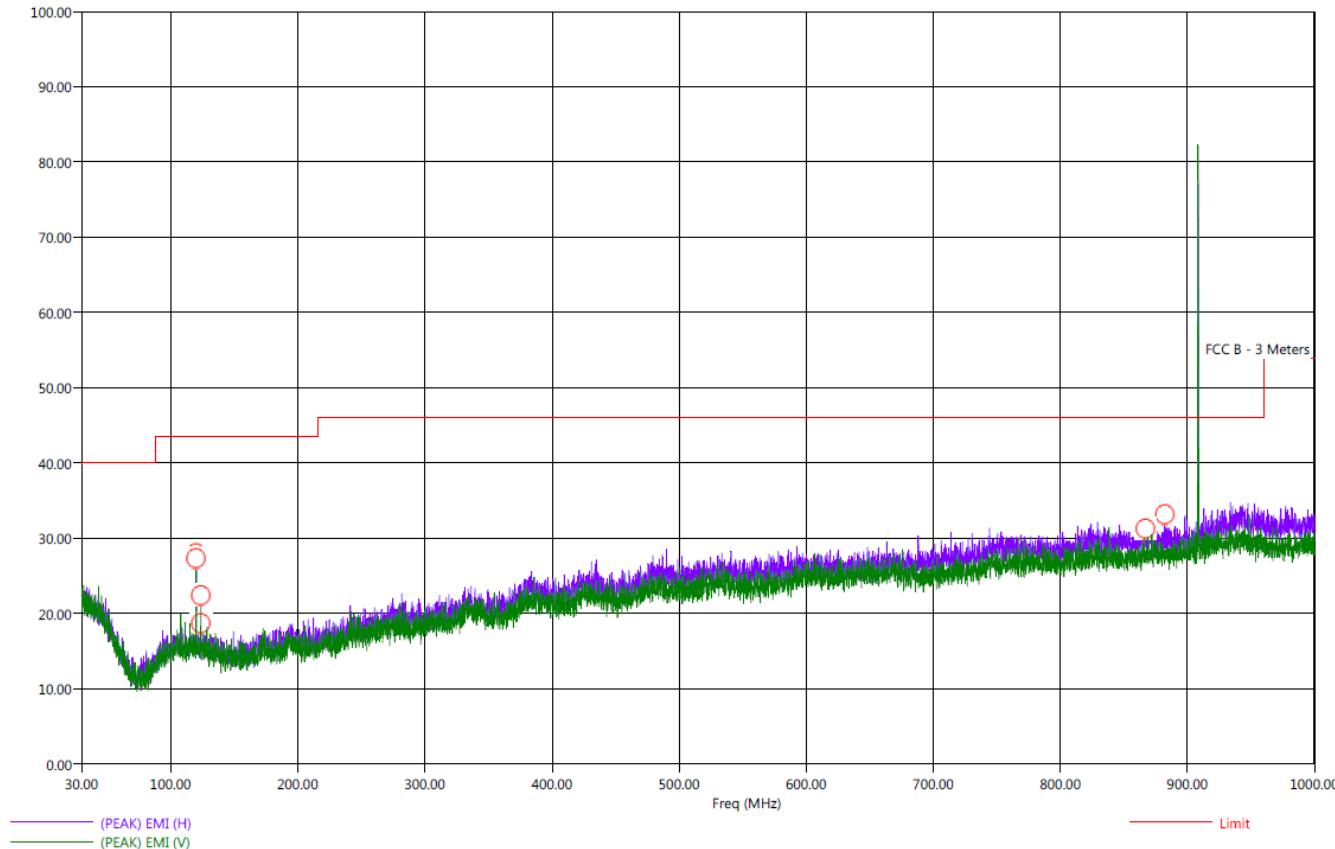
3/11/2024 4:12:44 PM  
 Sequence: Preliminary Scan

EUT Type: Z-Wave Electronic Deadbolt  
 EUT Condition: The EUT is continuously transmitting at 908.42 MHz  
 Company: Spectrum Brands, Inc.  
 Model: 450126VHC, HVIN: GED2152  
 S/N: Unit 1

Note: The emission at 908.42 MHz is from the fundamental and is subject to the limits of FCC 15.249 instead.

FCC Class B

Electric Field Strength (dB $\mu$ V/m)



**Brea Division**  
**114 Olinda Drive**  
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**Lake Forest Division**  
**20621 Pascal Way**  
**Lake Forest, CA 92630**  
**(949) 587-0400**



Title: Radiated Final - FCC Class B  
 File: 2 - Keysight - Final Scan - FCC Class B - Tx Mode - 908.42 MHz - 30 MHz to 1000 MHz.set  
 Operator: Kyle Fujimoto  
 EUT Type: Z-Wave Electronic Deadbolt  
 EUT Condition: The EUT is continuously transmitting at 908.42 MHz  
 Comments: Company: Spectrum Brands, Inc.  
 Model: 450126VHC, HVIN: GED2152  
 S/N: Unit 1

3/11/2024 4:22:33 PM  
 Sequence: Final Measurements

## FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dB $\mu$ V/m)	(OP) EMI (dB $\mu$ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB $\mu$ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
120.00	H	28.02	25.69	-15.48	-17.81	43.50	15.90	0.70	256.25	270.53
120.00	V	28.37	26.63	-15.13	-16.87	43.50	15.90	0.70	206.50	190.89
123.70	V	19.10	13.89	-24.40	-29.61	43.50	15.89	0.72	209.75	238.53
123.80	H	21.07	15.15	-22.43	-28.35	43.50	15.86	0.71	108.00	159.19
867.10	H	32.41	27.17	-13.59	-18.83	46.00	27.40	1.97	110.50	254.59
882.30	H	32.21	27.22	-13.79	-18.78	46.00	27.52	1.76	283.25	222.47



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**Lake Forest Division**  
**20621 Pascal Way**  
**Lake Forest, CA 92630**  
**(949) 587-0400**



Title: Pre-Scan - FCC Class B

3/12/2024 9:40:08 AM

File: 3 - Keysight - Pre-Scan - FCC Class B - Tx Mode - 916.00 MHz - 30 MHz to 1000 MHz.set

Sequence: Preliminary Scan

Operator: Kyle Fujimoto

EUT Type: Z-Wave Electronic Deadbolt

EUT Condition: The EUT is continuously transmitting at 916.00 MHz

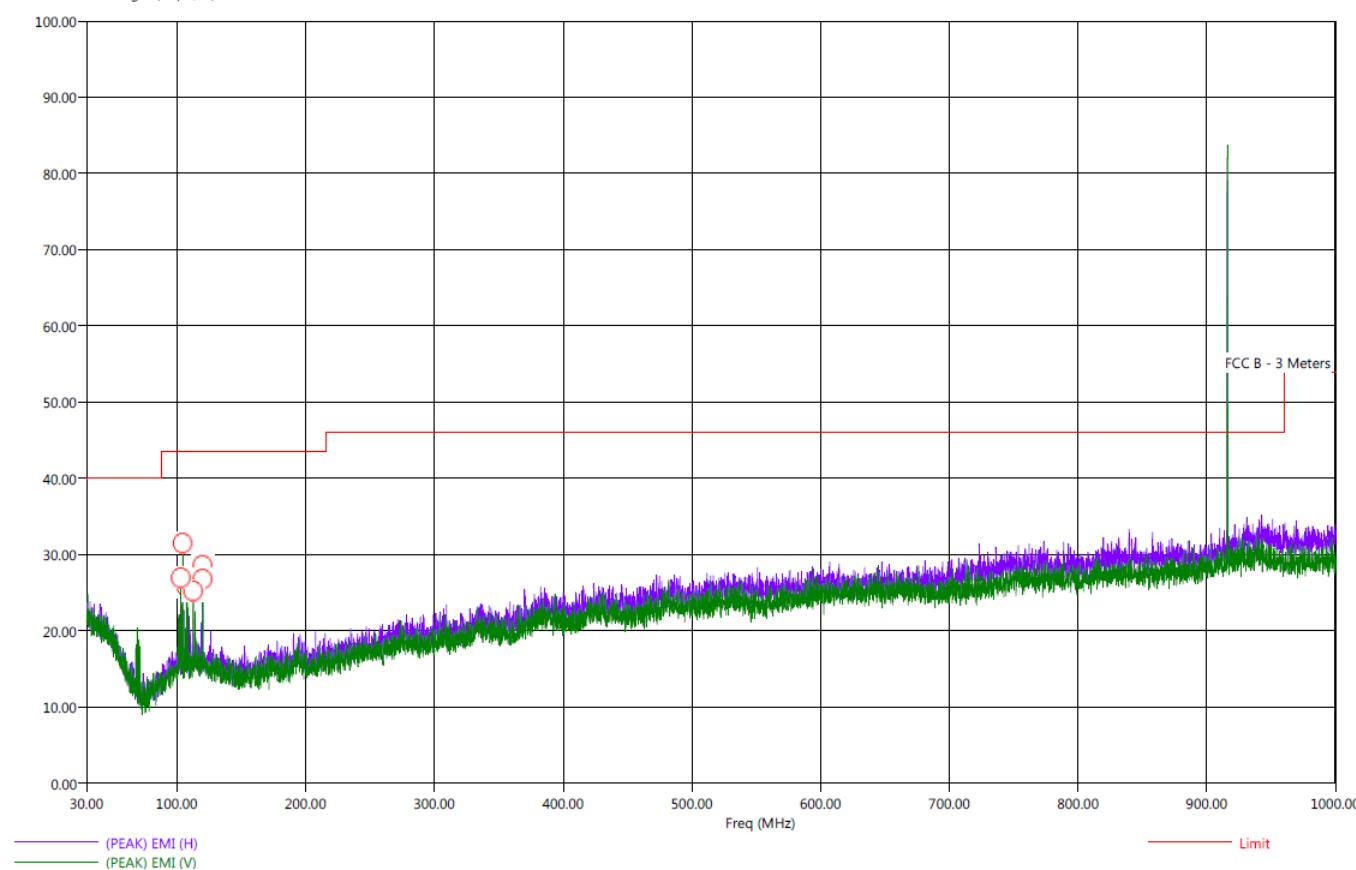
Comments: Company: Spectrum Brands, Inc.

Model: 450126VHC, HVIN: GED2152

S/N: Unit 1

Note: The emission at 916.00 MHz is from the fundamental and is subject to the limits of FCC 15.249 instead.

## FCC Class B

Electric Field Strength (dB $\mu$ V/m)

**Brea Division**  
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**Lake Forest Division**  
**20621 Pascal Way**  
**Lake Forest, CA 92630**  
**(949) 587-0400**



Title: Radiated Final - FCC Class B  
 File: 3 - Keysight - Final Scan - FCC Class B - Tx Mode - 916.00 MHz - 30 MHz to 1000 MHz.set  
 Operator: Kyle Fujimoto  
 EUT Type: Z-Wave Electronic Deadbolt  
 EUT Condition: The EUT is continuously transmitting at 916.00 MHz  
 Comments: Company: Spectrum Brands, Inc.  
 Model: 918  
 S/N: Unit 1

3/12/2024 9:48:30 AM  
 Sequence: Final Measurements

## FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dB $\mu$ V/m)	(OP) EMI (dB $\mu$ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB $\mu$ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
103.10	V	18.85	13.69	-24.65	-29.81	43.50	15.79	0.62	155.75	159.19
104.50	V	19.66	13.48	-23.84	-30.02	43.50	15.80	0.62	305.25	334.47
107.40	H	18.73	13.91	-24.77	-29.59	43.50	15.80	0.64	299.00	366.23
112.70	V	19.37	13.69	-24.13	-29.81	43.50	15.85	0.66	92.75	127.01
119.90	H	30.14	28.39	-13.36	-15.11	43.50	15.90	0.70	263.75	302.65
120.00	V	29.19	27.03	-14.31	-16.47	43.50	15.90	0.70	354.50	239.07



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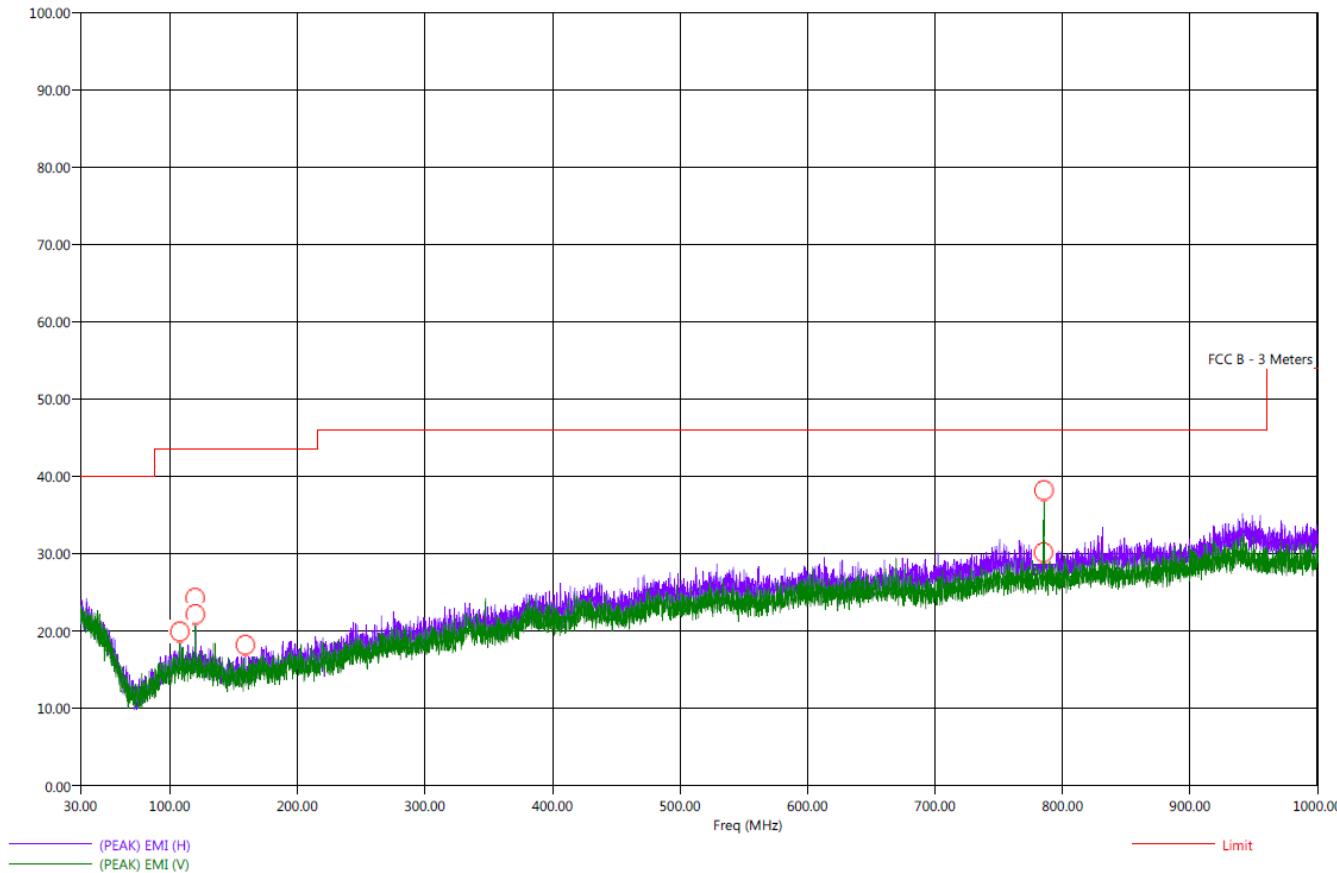


Title: Pre-Scan - FCC Class B  
File: 1 - Keysight - Pre-Scan - FCC Class B - Rx Mode - 30 MHz to 1000 MHz.set  
Operator: Kyle Fujimoto  
EUT Type: Z-Wave Electronic Deadbolt  
EUT Condition: The EUT is continuously receiving  
Comments: Company: Spectrum Brands, Inc.  
Model: 450126VHC, HVIN: GED2152  
S/N: Unit 1  
Note: 908.42 MHz is the worst case for the Receive Mode

3/11/2024 3:28:29 PM  
Sequence: Preliminary Scan

FCC Class B

Electric Field Strength (dB $\mu$ V/m)



Brea Division  
114 Olinda Drive  
Brea, CA 92823  
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Lake Forest Division  
20621 Pascal Way  
Lake Forest, CA 92630  
(949) 587-0400



Title: Radiated Final - FCC Class B  
 File: 1 - Keysight - Final Scan - FCC Class B - Rx Mode - 30 MHz to 1000 MHz.set  
 Operator: Kyle Fujimoto  
 EUT Type: Z-Wave Electronic Deadbolt  
 EUT Condition: The EUT is continuously receiving  
 Comments: Company: Spectrum Brands, Inc.  
 Model: 450126VHC, HVIN: GED2152  
 S/N: Unit 1  
 Note: 908.42 MHz is the worst case for the Receive Mode

3/11/2024 3:51:22 PM  
 Sequence: Final Measurements

## FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dB $\mu$ V/m)	(OP) EMI (dB $\mu$ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB $\mu$ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
108.00	V	21.43	14.35	-22.07	-29.15	43.50	15.81	0.64	328.75	190.89
120.00	H	24.72	21.80	-18.78	-21.70	43.50	15.90	0.70	31.25	350.23
120.10	V	29.86	28.21	-13.64	-15.29	43.50	15.90	0.70	149.25	238.83
159.30	H	18.99	12.39	-24.51	-31.11	43.50	14.88	0.75	360.25	238.89
785.30	H	31.41	29.94	-14.59	-16.06	46.00	26.60	1.79	116.75	222.71
785.60	V	30.85	27.56	-15.15	-18.44	46.00	26.60	1.79	270.25	382.35



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**(805) 480-4044**

**Lake Forest Division**  
**20621 Pascal Way**  
**Lake Forest, CA 92630**  
**(949) 587-0400**



Title: Pre-Scan - FCC Class B  
 File: 4 - Keysight - Pre-Scan - FCC Class B - Tx Mode - 908.42 MHz - 30 MHz to 1000 MHz.set

3/11/2024 6:49:55 PM  
 Sequence: Preliminary Scan

Operator: Kyle Fujimoto

EUT Type: Z-Wave Electronic Deadbolt

EUT Condition: The EUT is continuously transmitting at 908.42 MHz

Comments: Company: Spectrum Brands, Inc.

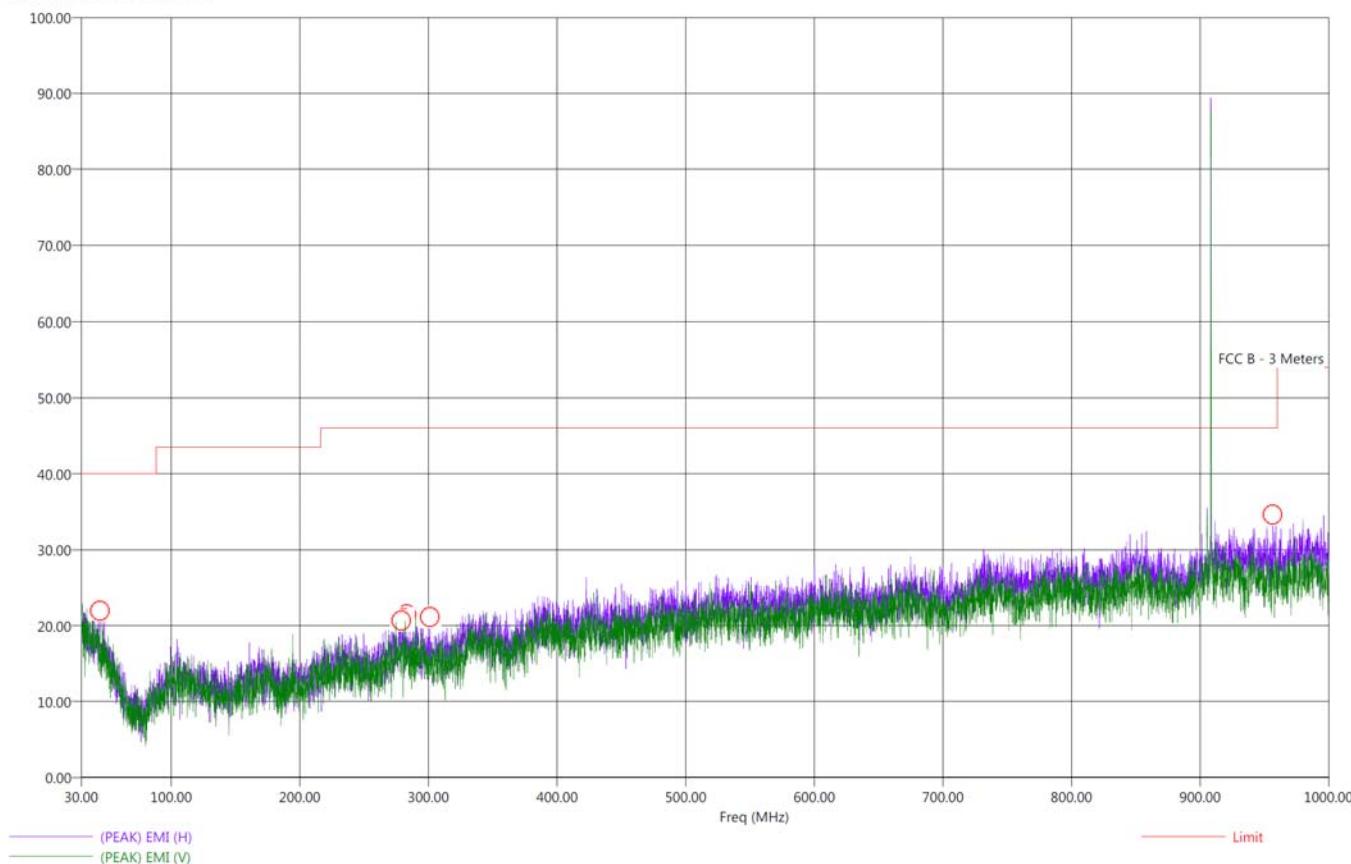
Model: 450126VHC, HVIN: GED1800

S/N: Unit 1

Note: The emission at 908.42 MHz is from the fundamental and is subject to the limits of FCC 15.249 instead.

FCC Class B

Electric Field Strength (dB $\mu$ V/m)



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**(949) 587-0400**



Title: Radiated Final - FCC Class B

File: 4 - Keysight - Final Scan - FCC Class B - Tx Mode - 908.42 MHz - 30 MHz to 1000 MHz.set

Operator: Kyle Fujimoto

EUT Type: Z-Wave Electronic Deadbolt

EUT Condition: The EUT is continuously transmitting at 908.42 MHz

Comments: Company: Spectrum Brands, Inc.

Model: 450126VHC, HVIN: GED1800

S/N: Unit 1

3/11/2024 7:05:37 PM

Sequence: Final Measurements

## FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dB $\mu$ V/m)	(QP) EMI (dB $\mu$ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB $\mu$ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
44.60	H	23.82	17.88	-16.18	-22.12	40.00	20.61	0.35	178.50	191.22
278.90	H	22.65	17.85	-23.35	-28.15	46.00	19.10	1.14	223.00	111.22
280.70	H	23.07	17.81	-22.93	-28.19	46.00	19.00	1.14	300.50	222.98
283.10	H	22.84	17.73	-23.16	-28.27	46.00	18.88	1.13	93.50	110.56
301.10	H	22.05	16.97	-23.95	-29.03	46.00	19.10	1.12	120.50	175.16
956.50	H	35.01	29.98	-10.99	-16.02	46.00	28.80	2.82	172.00	239.34



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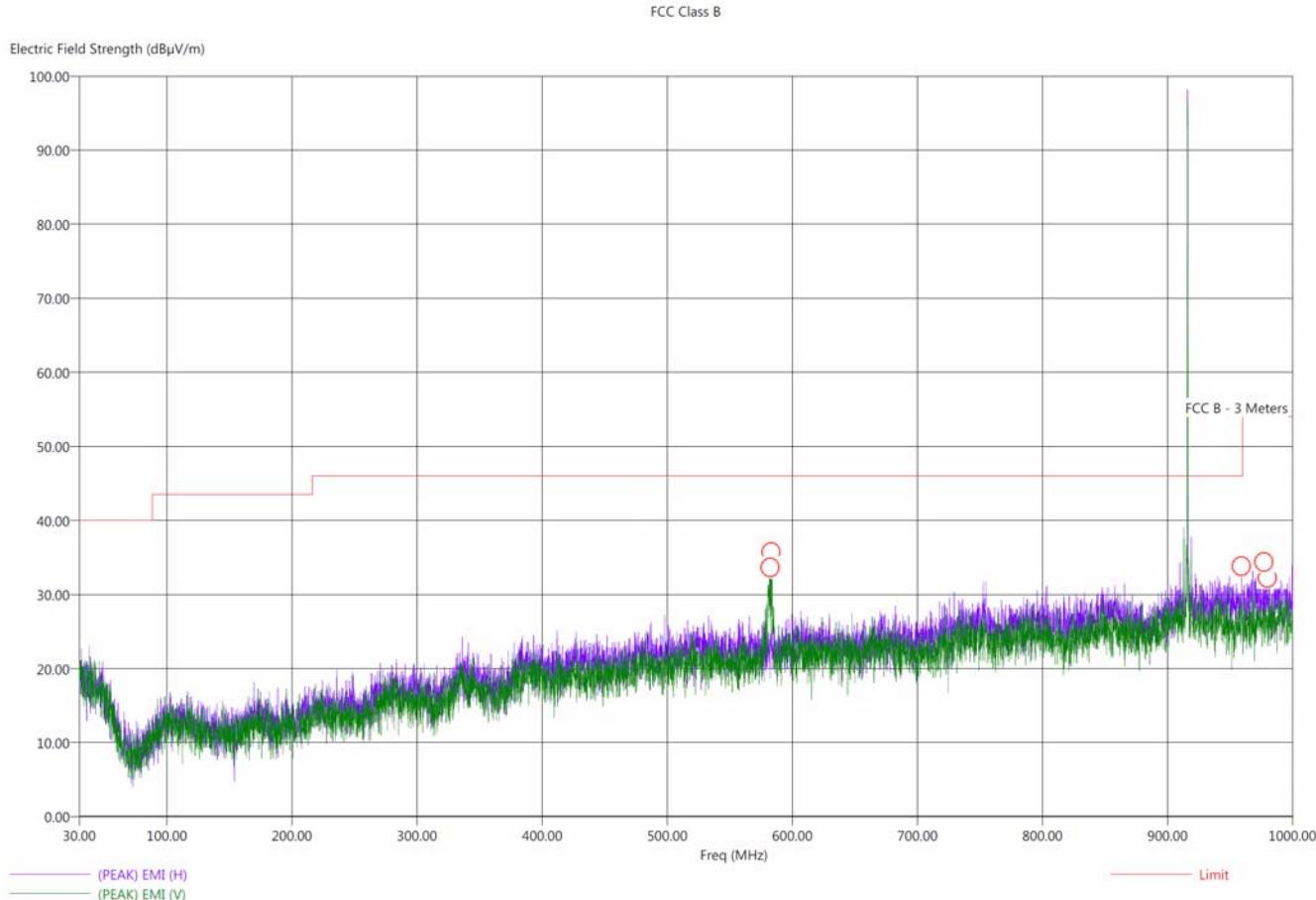
**Newbury Park Division**  
**1050 Lawrence Drive**  
**Newbury Park, CA 91320**  
**(805) 480-4044**

**Lake Forest Division**  
**20621 Pascal Way**  
**Lake Forest, CA 92630**  
**(949) 587-0400**



Title: Pre-Scan - FCC Class B  
File: 5 - Keysight - Pre-Scan - FCC Class B - Tx Mode - 916.00 MHz - 30 MHz to 1000 MHz.set  
Operator: Kyle Fujimoto  
EUT Type: Z-Wave Electronic Deadbolt  
EUT Condition: The EUT is continuously transmitting at 916.00 MHz  
Comments: Company: Spectrum Brands, Inc.  
Model: 450126VHC, HVIN: GED1800  
S/N: Unit 1  
Note: The emission at 916.00 MHz is from the fundamental and is subject to the limits of FCC 15.249 instead.

3/11/2024 7:25:21 PM  
Sequence: Preliminary Scan



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**Lake Forest Division**  
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**(949) 587-0400**



Title: Radiated Final - FCC Class B  
 File: 5 - Keysight - Final Scan - FCC Class B - Tx Mode - 916.00 MHz - 30 MHz to 1000 MHz.set  
 Operator: Kyle Fujimoto  
 EUT Type: Z-Wave Electronic Deadbolt  
 EUT Condition: The EUT is continuously transmitting at 916.00 MHz  
 Comments: Company: Spectrum Brands, Inc.  
 Model: 450126VHC, HVIN: GED1800  
 S/N: Unit 1

3/11/2024 7:41:29 PM  
 Sequence: Final Measurements

## FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dB $\mu$ V/m)	(QP) EMI (dB $\mu$ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB $\mu$ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
582.30	V	28.61	23.24	-17.39	-22.76	46.00	24.20	1.55	117.00	207.40
583.00	V	28.92	23.22	-17.08	-22.78	46.00	24.21	1.55	106.50	286.92
583.20	V	28.27	23.23	-17.73	-22.77	46.00	24.22	1.55	168.50	238.86
959.00	H	34.99	29.53	-11.01	-16.47	46.00	28.70	2.81	217.50	143.04
977.00	H	34.75	29.51	-19.22	-24.46	53.97	28.70	2.71	157.00	159.58
979.80	H	35.01	29.50	-18.96	-24.47	53.97	28.70	2.69	147.00	175.34



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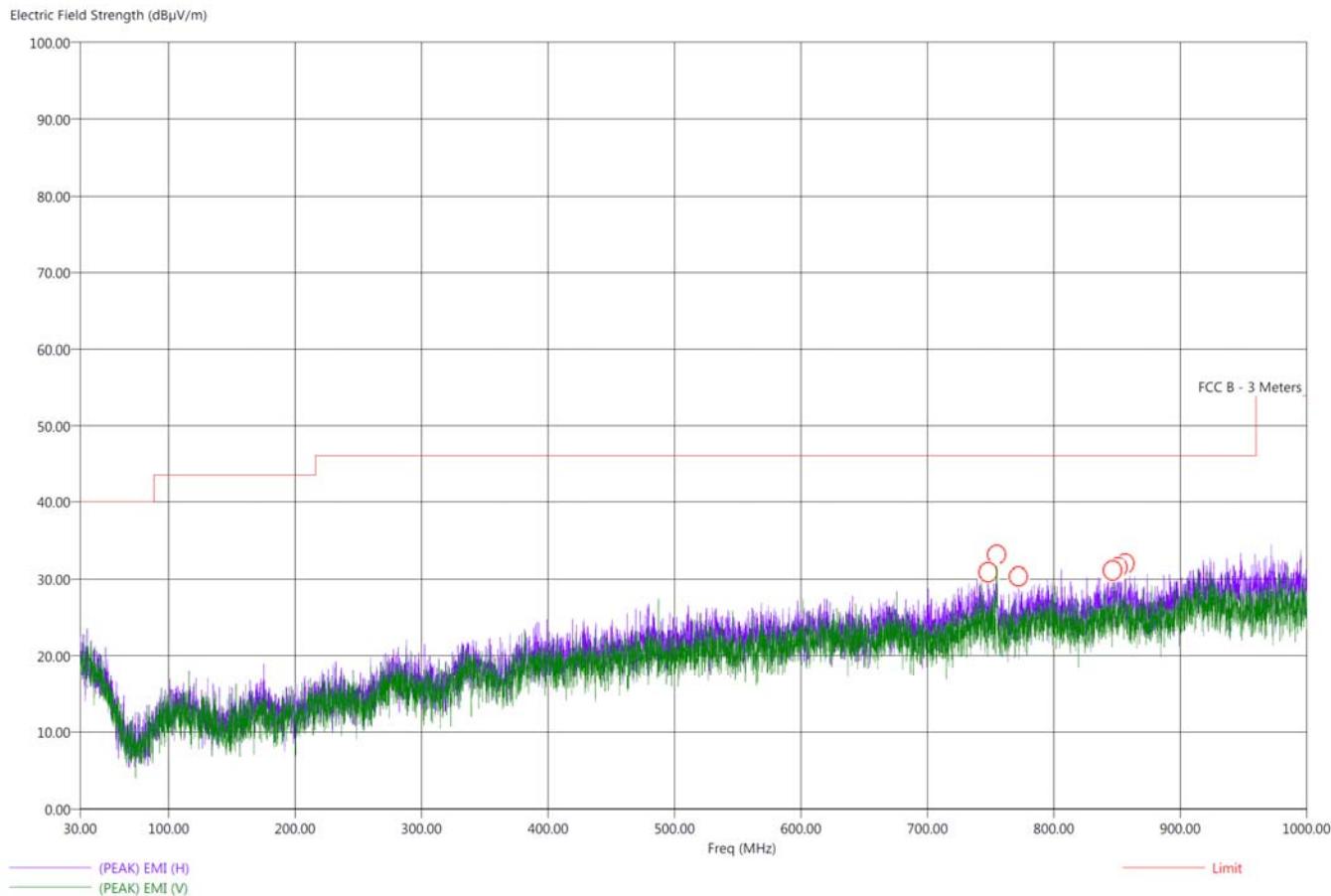
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**20621 Pascal Way**  
**Lake Forest, CA 92630**  
**(949) 587-0400**



Title: Pre-Scan - FCC Class B  
File: 6 - Keysight - Pre-Scan - FCC Class B - Rx Mode - 30 MHz to 1000 MHz.set  
Operator: Kyle Fujimoto  
EUT Type: Z-Wave Electronic Deadbolt  
EUT Condition: The EUT is continuously receiving  
Comments: Company: Spectrum Brands, Inc.  
Model: 450126VHC, HVIN: GED1800  
S/N: Unit 1  
Note: 908.42 MHz is the worst case for the Receive Mode

3/11/2024 7:58:14 PM  
Sequence: Preliminary Scan

FCC Class B



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**Lake Forest Division**  
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**Lake Forest, CA 92630**  
**(949) 587-0400**



Title: Radiated Final - FCC Class B  
 File: 6 - Keysight - Final Scan - FCC Class B - Rx Mode - 30 MHz to 1000 MHz.set  
 Operator: Kyle Fujimoto  
 EUT Type: Z-Wave Electronic Deadbolt  
 EUT Condition: The EUT is continuously receiving  
 Comments: Company: Spectrum Brands, Inc.  
 Model: 450126VHC, HVIN: GED1800  
 S/N: Unit 1  
 Note: 908.42 MHz is the worst case for the Receive Mode

3/11/2024 8:12:53 PM  
 Sequence: Final Measurements

## FCC Class B

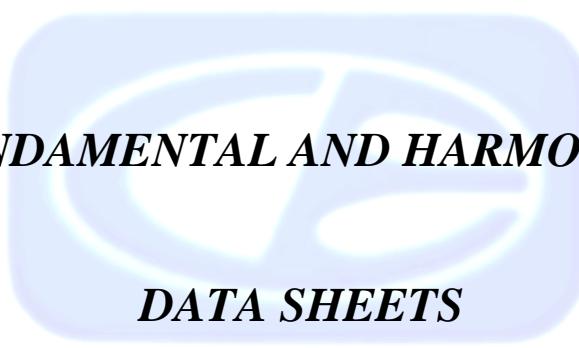
Freq (MHz)	Pol	(PEAK) EMI (dB $\mu$ V/m)	(QP) EMI (dB $\mu$ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB $\mu$ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
748.10	H	32.61	26.43	-13.39	-19.57	46.00	26.69	2.13	59.25	255.52
754.90	H	30.90	25.94	-15.10	-20.06	46.00	26.60	2.09	80.50	191.10
772.10	H	31.57	25.89	-14.43	-20.11	46.00	26.70	1.92	133.00	223.22
846.60	H	33.45	28.11	-12.55	-17.89	46.00	27.20	2.17	54.25	127.10
850.90	H	33.94	28.06	-12.06	-17.94	46.00	27.27	2.19	293.50	287.04
856.50	H	32.58	27.92	-13.42	-18.08	46.00	27.20	2.11	201.00	383.34



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**FUNDAMENTAL AND HARMONICS**

**DATA SHEETS**

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**Brea Division**  
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FCC 15.249 and RSS-210

Spectrum Brands, Inc.  
Z-Wave Electronic Deadbolt  
Model: 450126VHC  
HVIN: GED2152

Date: 03/12/2024  
Lab: D  
Tested By: Kyle Fujimoto

## Fundamental Low Channel



FCC 15.249 and RSS-210

Spectrum Brands, Inc.  
Z-Wave Electronic Deadbolt  
Model: 450126VHC  
HVIN: GED2152

Date: 03/12/2024  
Lab: D  
Tested By: Kyle Fujimoto

## Fundamental High Channel



**FCC 15.249 and RSS-210**

Spectrum Brands, Inc.  
 Z-Wave Electronic Deadbolt  
 Model: 450126VHC  
 HVIN: GED2152

Date: 03/12/2024  
 Lab: D  
 Tested By: Kyle Fujimoto

**Harmonics - Low Channel**  
**Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1816.84	32.74	V	73.97	-41.23	Peak	175.00	159.61	
1816.84	20.65	V	53.97	-33.32	Avg	175.00	159.61	
2725.26	36.07	V	73.97	-37.90	Peak	329.00	206.95	
2725.26	24.27	V	53.97	-29.70	Avg	329.00	206.95	
3633.68	37.31	V	73.97	-36.66	Peak	217.50	143.61	
3633.68	23.93	V	53.97	-30.04	Avg	217.50	143.61	
4542.10	38.99	V	73.97	-34.98	Peak	289.75	223.01	
4542.10	27.01	V	53.97	-26.96	Avg	289.75	223.01	
5450.52	40.93	V	73.97	-33.04	Peak	126.75	249.94	
5450.52	29.27	V	53.97	-24.70	Avg	126.75	249.94	
6358.94	42.30	V	73.97	-31.67	Peak	276.25	239.31	
6358.94	30.18	V	53.97	-23.79	Avg	276.25	239.31	
7267.36	45.14	V	73.97	-28.83	Peak	19.00	158.89	
7267.36	33.33	V	53.97	-20.64	Avg	19.00	158.89	
8175.78	43.95	V	73.97	-30.02	Peak	116.50	249.99	
8175.78	32.13	V	53.97	-21.84	Avg	116.50	249.99	
9084.20	45.91	V	73.97	-28.06	Peak	111.50	207.07	
9084.20	33.53	V	53.97	-20.44	Avg	111.50	207.07	

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 (949) 587-0400



**FCC 15.249 and RSS-210**

Spectrum Brands, Inc.  
 Z-Wave Electronic Deadbolt  
 Model: 450126VHC  
 HVIN: GED2152

Date: 03/12/2024  
 Lab: D  
 Tested By: Kyle Fujimoto

**Harmonics - Low Channel**  
**Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1816.84	32.53	H	73.97	-41.44	Peak	166.50	126.71	
1816.84	20.58	H	53.97	-33.39	Avg	166.50	126.71	
2725.26	33.51	H	73.97	-40.46	Peak	89.25	125.88	
2725.26	24.16	H	53.97	-29.81	Avg	89.25	125.88	
3633.68	38.51	H	73.97	-35.46	Peak	127.50	143.55	
3633.68	28.56	H	53.97	-25.41	Avg	127.50	143.55	
4542.10	38.72	H	73.97	-35.25	Peak	165.00	111.13	
4542.10	27.11	H	53.97	-26.86	Avg	165.00	111.13	
5450.52	40.26	H	73.97	-33.71	Peak	64.75	143.61	
5450.52	28.64	H	53.97	-25.33	Avg	64.75	143.61	
6358.94	42.71	H	73.97	-31.26	Peak	153.25	175.49	
6358.94	30.18	H	53.97	-23.79	Avg	153.25	175.49	
7267.36	44.97	H	73.97	-29.00	Peak	277.50	174.89	
7267.36	33.26	H	53.97	-20.71	Avg	277.50	174.89	
8175.78	43.72	H	73.97	-30.25	Peak	261.25	250.00	
8175.78	32.13	H	53.97	-21.84	Avg	261.25	250.00	
9084.20	45.31	H	73.97	-28.66	Peak	70.50	127.13	
9084.20	33.52	H	53.97	-20.45	Avg	70.50	127.13	

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**FCC 15.249 and RSS-210**

Spectrum Brands, Inc.  
 Z-Wave Electronic Deadbolt  
 Model: 450126VHC  
 HVIN: GED2152

Date: 03/12/2024  
 Lab: D  
 Tested By: Kyle Fujimoto

**Harmonics - High Channel  
 Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1832.00	32.62	V	73.97	-41.35	Peak	38.00	175.01	
1832.00	20.70	V	53.97	-33.27	Avg	38.00	175.01	
2748.00	36.75	V	73.97	-37.22	Peak	70.25	190.95	
2748.00	24.71	V	53.97	-29.26	Avg	70.25	190.95	
3664.00	35.84	V	73.97	-38.13	Peak	354.50	239.07	
3664.00	24.36	V	53.97	-29.61	Avg	354.50	239.07	
4580.00	38.61	V	73.97	-35.36	Peak	35.00	191.07	
4580.00	26.54	V	53.97	-27.43	Avg	35.00	191.07	
5496.00	44.42	V	73.97	-29.55	Peak	200.25	207.01	
5496.00	29.61	V	53.97	-24.36	Avg	200.25	207.01	
6412.00	42.25	V	73.97	-31.72	Peak	140.25	127.61	
6412.00	30.18	V	53.97	-23.79	Avg	140.25	127.61	
7328.00	44.40	V	73.97	-29.57	Peak	27.50	175.25	
7328.00	32.93	V	53.97	-21.04	Avg	27.50	175.25	
8244.00	44.23	V	73.97	-29.74	Peak	84.00	174.89	
8244.00	31.90	V	53.97	-22.07	Avg	84.00	174.89	
9160.00	44.94	V	73.97	-29.03	Peak	100.50	142.59	
9160.00	33.05	V	53.97	-20.92	Avg	100.50	142.89	

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**FCC 15.249 and RSS-210**

Spectrum Brands, Inc.  
 Z-Wave Electronic Deadbolt  
 Model: 450126VHC  
 HVIN: GED2152

Date: 03/12/2024  
 Lab: D  
 Tested By: Kyle Fujimoto

**Harmonics - High Channel  
 Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1832.00	32.84	H	73.97	-41.13	Peak	236.25	192.44	
1832.00	20.65	H	53.97	-33.32	Avg	236.25	192.44	
2748.00	36.60	H	73.97	-37.37	Peak	188.50	249.05	
2748.00	24.79	H	53.97	-29.18	Avg	188.50	249.05	
3664.00	35.85	H	73.97	-38.12	Peak	14.50	191.25	
3664.00	24.19	H	53.97	-29.78	Avg	14.50	191.25	
4580.00	38.28	H	73.97	-35.69	Peak	274.00	223.07	
4580.00	26.61	H	53.97	-27.36	Avg	274.00	223.07	
5496.00	41.09	H	73.97	-32.88	Peak	150.75	158.89	
5496.00	29.17	H	53.97	-24.80	Avg	150.75	158.89	
6412.00	42.02	H	73.97	-31.95	Peak	138.00	207.43	
6412.00	30.20	H	53.97	-23.77	Avg	138.00	207.43	
7328.00	44.80	H	73.97	-29.17	Peak	311.00	159.07	
7328.00	33.02	H	53.97	-20.95	Avg	311.00	159.07	
8244.00	44.31	H	73.97	-29.66	Peak	208.25	238.83	
8244.00	31.98	H	53.97	-21.99	Avg	208.25	238.83	
9160.00	45.20	H	73.97	-28.77	Peak	75.25	159.01	
9160.00	33.19	H	53.97	-20.78	Avg	75.25	159.01	



FCC 15.249 and RSS-210

Spectrum Brands, Inc.  
Z-Wave Electronic Deadbolt  
Model: 450126VHC  
HVIN: GED2152

Date: 03/12/2024  
Lab: D  
Tested By: Kyle Fujimoto

## Non Harmonic Emissions from the Tx and Digital Portion - 9 kHz to 30 MHz

## Non Harmonic Emissions from the Tx and Digital Portion - 1 GHz to 9.3 GHz



## FCC 15.249 and RSS-210

Spectrum Brands, Inc.  
Z-Wave Electronic Deadbolt  
Model: 450126VHC  
HVIN: GED2152

Date: 03/12/2024  
Lab: D  
Tested By: Kyle Fujimoto

## Emissions from the Receiver Portion - 1 GHz to 9.3 GHz



FCC 15.249 and RSS-210

Spectrum Brands, Inc.  
Z-Wave Electronic Deadbolt  
Model: 450126VHC  
HVIN: GED1800

Date: 03/12/2024  
Lab: D  
Tested By: Kyle Fujimoto

## Fundamental Low Channel



FCC 15.249 and RSS-210

Spectrum Brands, Inc.  
Z-Wave Electronic Deadbolt  
Model: 450126VHC  
HVIN: GED1800

Date: 03/12/2024  
Lab: D  
Tested By: Kyle Fujimoto

## Fundamental High Channel

**FCC 15.249 and RSS-210**

Spectrum Brands, Inc.

Z-Wave Electronic Deadbolt

Model: 450126VHC

HVIN: GED1800

Date: 03/12/2024

Lab: D

Tested By: Kyle Fujimoto

**Harmonics - Low Channel****Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1816.84	32.56	V	73.97	-41.41	Peak	178.25	158.51	
1816.84	20.47	V	53.97	-33.50	Avg	178.25	158.51	
2725.26	35.59	V	73.97	-38.38	Peak	336.75	204.28	
2725.26	23.65	V	53.97	-30.32	Avg	336.75	204.28	
3633.68	37.25	V	73.97	-36.72	Peak	214.75	139.96	
3633.68	23.88	V	53.97	-30.09	Avg	214.75	139.96	
4542.10	39.06	V	73.97	-34.91	Peak	295.25	221.05	
4542.10	27.12	V	53.97	-26.85	Avg	295.25	221.05	
5450.52	41.11	V	73.97	-32.86	Peak	130.25	248.56	
5450.52	29.46	V	53.97	-24.51	Avg	130.25	248.56	
6358.94	42.02	V	73.97	-31.95	Peak	282.50	235.31	
6358.94	29.94	V	53.97	-24.03	Avg	282.50	235.31	
7267.36	44.96	V	73.97	-29.01	Peak	29.50	156.21	
7267.36	33.14	V	53.97	-20.83	Avg	29.50	156.21	
8175.78	43.71	V	73.97	-30.26	Peak	112.75	249.03	
8175.78	31.85	V	53.97	-22.12	Avg	112.75	249.03	
9084.20	45.68	V	73.97	-28.29	Peak	112.50	215.36	
9084.20	33.23	V	53.97	-20.74	Avg	112.50	215.36	

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Lake Forest Division  
20621 Pascal Way  
Lake Forest, CA 92630  
(949) 587-0400



**FCC 15.249 and RSS-210**

Spectrum Brands, Inc.  
 Z-Wave Electronic Deadbolt  
 Model: 450126VHC  
 HVIN: GED1800

Date: 03/12/2024  
 Lab: D  
 Tested By: Kyle Fujimoto

**Harmonics - Low Channel  
 Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1816.84	32.46	H	73.97	-41.51	Peak	172.25	118.54	
1816.84	20.51	H	53.97	-33.46	Avg	172.25	118.54	
2725.26	33.12	H	73.97	-40.85	Peak	91.25	126.14	
2725.26	23.59	H	53.97	-30.38	Avg	91.25	126.14	
3633.68	38.69	H	73.97	-35.28	Peak	129.75	145.26	
3633.68	28.76	H	53.97	-25.21	Avg	129.75	145.26	
4542.10	38.61	H	73.97	-35.36	Peak	159.25	112.26	
4542.10	26.98	H	53.97	-26.99	Avg	159.25	112.26	
5450.52	39.26	H	73.97	-34.71	Peak	70.50	142.52	
5450.52	29.18	H	53.97	-24.79	Avg	70.50	142.52	
6358.94	42.53	H	73.97	-31.44	Peak	151.26	174.22	
6358.94	29.93	H	53.97	-24.04	Avg	151.26	174.22	
7267.36	44.63	H	73.97	-29.34	Peak	282.25	175.26	
7267.36	32.95	H	53.97	-21.02	Avg	282.25	175.26	
8175.78	43.56	H	73.97	-30.41	Peak	263.00	248.26	
8175.78	32.08	H	53.97	-21.89	Avg	263.00	248.26	
9084.20	45.46	H	73.97	-28.51	Peak	72.00	136.29	
9084.20	33.69	H	53.97	-20.28	Avg	72.00	136.29	

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Spectrum Brands, Inc.

Z-Wave Electronic Deadbolt

Model: 450126VHC

HVIN: GED1800

Date: 03/12/2024

Lab: D

Tested By: Kyle Fujimoto

**Harmonics - High Channel****Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1832.00	32.51	V	73.97	-41.46	Peak	46.25	155.26	
1832.00	20.58	V	53.97	-33.39	Avg	46.25	155.26	
2748.00	36.52	V	73.97	-37.45	Peak	60.75	189.36	
2748.00	24.59	V	53.97	-29.38	Avg	60.75	189.36	
3664.00	35.74	V	73.97	-38.23	Peak	359.25	238.06	
3664.00	24.21	V	53.97	-29.76	Avg	359.25	238.06	
4580.00	38.79	V	73.97	-35.18	Peak	37.50	192.01	
4580.00	26.72	V	53.97	-27.25	Avg	37.50	192.01	
5496.00	44.23	V	73.97	-29.74	Peak	201.75	199.23	
5496.00	29.48	V	53.97	-24.49	Avg	201.75	199.23	
6412.00	42.11	V	73.97	-31.86	Peak	141.50	128.69	
6412.00	30.01	V	53.97	-23.96	Avg	141.50	128.69	
7328.00	44.21	V	73.97	-29.76	Peak	28.50	182.85	
7328.00	32.73	V	53.97	-21.24	Avg	28.50	182.85	
8244.00	44.39	V	73.97	-29.58	Peak	101.25	176.28	
8244.00	32.09	V	53.97	-21.88	Avg	101.25	176.28	
9160.00	44.86	V	73.97	-29.11	Peak	106.25	143.21	
9160.00	32.96	V	53.97	-21.01	Avg	106.25	143.21	

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**FCC 15.249 and RSS-210**

Spectrum Brands, Inc.

Z-Wave Electronic Deadbolt

Model: 450126VHC

HVIN: GED1800

Date: 03/12/2024

Lab: D

Tested By: Kyle Fujimoto

**Harmonics - High Channel****Transmit Mode - Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1832.00	32.69	H	73.97	-41.28	Peak	232.00	196.58	
1832.00	20.48	H	53.97	-33.49	Avg	232.00	196.58	
2748.00	36.72	H	73.97	-37.25	Peak	189.75	248.37	
2748.00	24.98	H	53.97	-28.99	Avg	189.75	248.37	
3664.00	35.69	H	73.97	-38.28	Peak	15.50	189.75	
3664.00	23.86	H	53.97	-30.11	Avg	15.50	189.75	
4580.00	37.98	H	73.97	-35.99	Peak	272.00	221.26	
4580.00	26.59	H	53.97	-27.38	Avg	272.00	221.26	
5496.00	40.59	H	73.97	-33.38	Peak	151.25	163.58	
5496.00	28.59	H	53.97	-25.38	Avg	151.25	163.58	
6412.00	41.59	H	73.97	-32.38	Peak	135.00	202.69	
6412.00	29.57	H	53.97	-24.40	Avg	135.00	202.69	
7328.00	44.68	H	73.97	-29.29	Peak	309.25	157.26	
7328.00	32.86	H	53.97	-21.11	Avg	309.25	157.26	
8244.00	44.59	H	73.97	-29.38	Peak	213.25	245.48	
8244.00	32.27	H	53.97	-21.70	Avg	213.25	245.48	
9160.00	44.26	H	73.97	-29.71	Peak	72.25	160.29	
9160.00	32.29	H	53.97	-21.68	Avg	72.25	160.29	

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**FCC 15.249 and RSS-210**

Spectrum Brands, Inc.  
Z-Wave Electronic Deadbolt  
Model: 450126VHC  
HVIN: GED1800

Date: 03/12/2024  
Lab: D  
Tested By: Kyle Fujimoto

**Non Harmonic Emissions from the Tx and Digital Portion - 9 kHz to 30 MHz**  
**Non Harmonic Emissions from the Tx and Digital Portion - 1 GHz to 9.3 GHz**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
								No Emissions Detected from 9 kHz to 30 MHz for the digital portion of the EUT
								No Emissions Detected from 1 GHz to 9.3 GHz for the digital portion of the EUT
								No Emissions Detected from 9 kHz to 30 MHz for the Non-Harmonic Emissions of the Transmitter for the EUT
								No Emissions Detected from 1 GHz to 9.3 GHz for the Non-Harmonic Emissions of the Transmitter for the EUT
								Investigated in the X-Axis, Y-Axis, and Z-Axis
								Investigated at both Low channel and High channel



FCC Class B and RSS-GEN

## Spectrum Brands, Inc.

## Z-Wave Electronic Deadbolt

Model: 450126VHC

HVIN: GED1800

Date: 03/12/2024

## Lab: D

Tested By: Kyle Fujimoto

### Receive Mode - 1 GHz to 9.3 GHz

**99% BANDWIDTH**

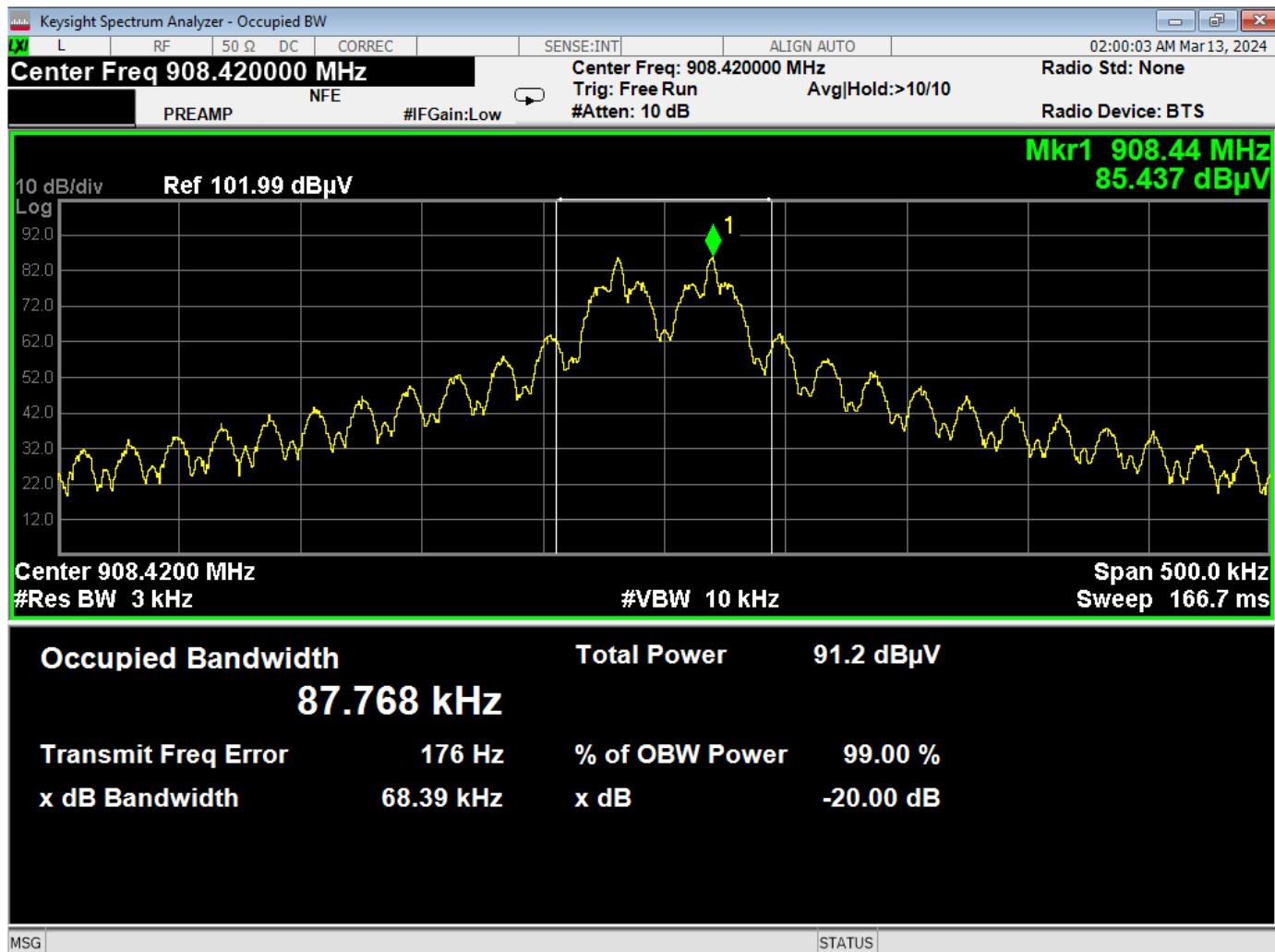
**DATA SHEETS**

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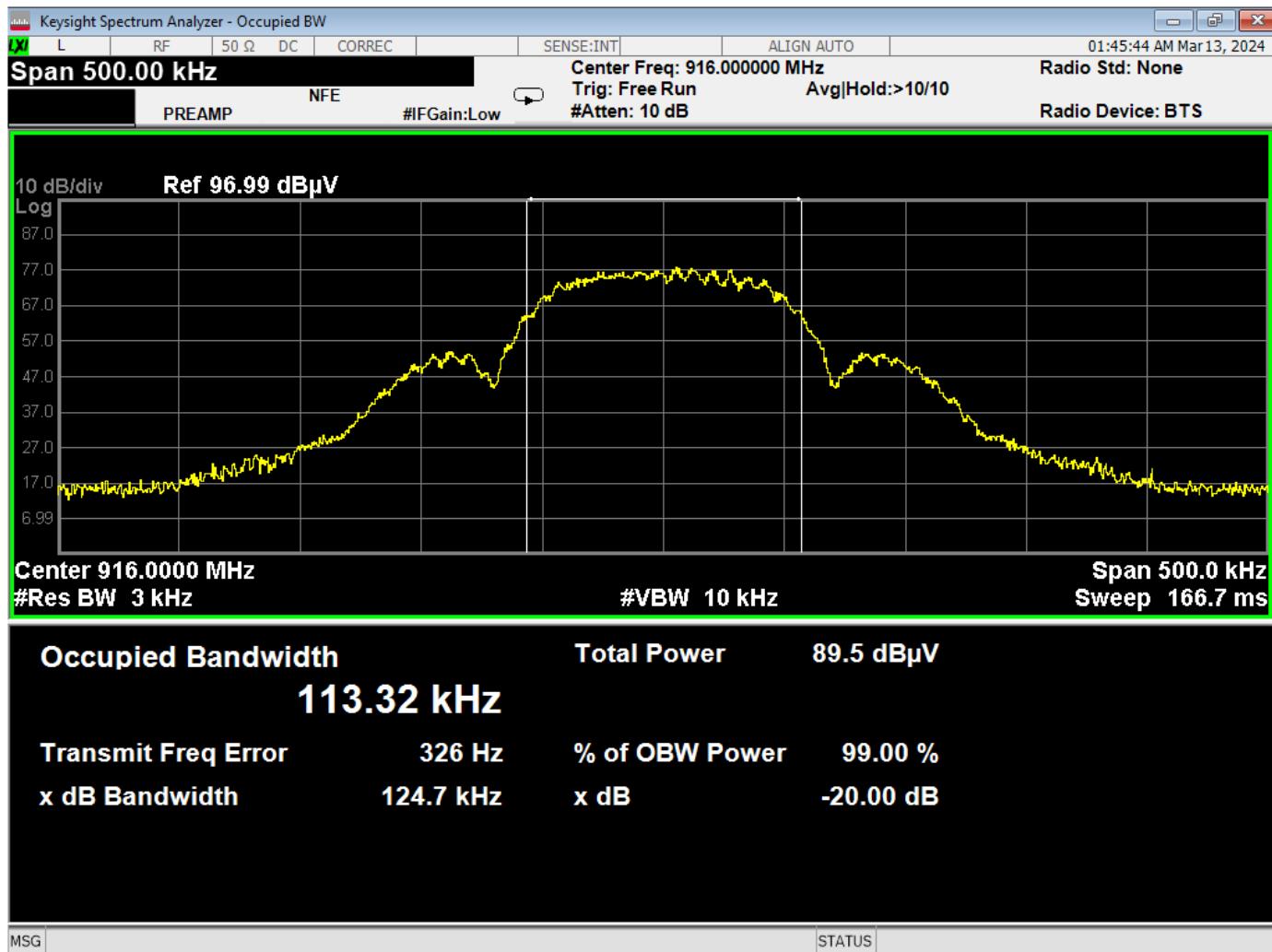
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99% Bandwidth – Low Channel



99% Bandwidth – High Channel

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