FCC PART 15 SUBPART B & SUBPART C SECTION 15.249,
RSS 210, & RSS GEN
TEST REPORT

for

ZWAVE PLUS SERIES SMARTCODE LOCKS
Models: Smartcode 910, Smartcode 912, Smartcode 914, & Smartcode 916

Prepared for

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DATE: SEPTEMBER 15, 2016

	REPORT BODY	APPENDICES					TOTAL
		A	*B*	*C*	*D*	*E*	
PAGES	17	2	2	2	11	36	**70**

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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 in any form unless done so in full with the written permission of Compatible Electronics.

This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Device Tested:	Zwave Plus Series Smartcode Locks Models: Smartcode 910, 912, 914, & 916 S/N: None
Product Description:	The EUTs are Zwave Plus Series Smartcode Locks operating via Zwave technology.
Modifications:	The EUTs were not modified in order to comply with specifications.
Manufacturer:	Spectrum Brands 19701 DaVinci Lake Forest, CA 92610
Test Date:	January 12-14, 2016

Test Specifications Covered by Accreditation:

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EMI requirements

CFR Title 47, Part 15 Subpart B Sections 15.107, 15.109, Subpart C Sections 15.205, 15.207, 15.209, and 15.249

RSS 210 & RSS GEN

Test Procedure: ANSI C63.4 & C63.10

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz.	The EUT is battery powered; therefore this test was not performed.
2	Radiated RF Emissions & Harmonics, 9 kHz – 25,000 MHz.	Complies with the limits of CFR Title 47 Part 15 Subpart B Section 15.109 & Subpart C Sections 15.205, 15.209, & 15.249, RSS 210 & RSS GEN
3	Fundamental Field Strength	Complies with the limits of CFR Title 47 Part 15 Subpart C Section 15.249 & RSS 210
4	Emissions Radiated Outside of the Fundamental Frequency Band	Complies with the limits of CFR Title 47 Part 15 Subpart B Section 15.109 & Subpart C Sections 15.205, 15.209, & 15.249, RSS 210 & RSS GEN
5	Occupied Bandwidth	Complies with the limits of RSS 210 & RSS GEN

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Zwave Plus Series Smartcode Locks Models: Smartcode 910, 912, 914, & 916. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 & C63.10. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT (equipment under test) hereafter, are within the specification limits defined by the Code of Federal Regulations Title 47, Part 15 Subpart B sections 15.109, & Part 15 Subpart C sections 15.205, 15.209, 15.249, RSS GEN, & RSS 210.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The tests described herein were performed at the test facility of Compatible Electronics, 20621 Pascal Way Lake Forest, California 92630.

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

Thuan Nguyen	Senior Electronics Engineer

Compatible Electronics, Inc.

Torey Oliver	Test Engineer
Matt Harrison	Lab Manager

2.4 Date Test Sample was Received

The test sample was received on January 12th, 2016.

2.5 Disposition of the Test Sample

The test sample remains at Compatible Electronics, Inc. as of the date of this test report.

2.6 Abbreviations and Acronyms

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

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
PCB	Printed Circuit Board
TX	Transmit
RX	Receive

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4 2014	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 for Testing Unlicensed Wireless Devices
RSS GEN	General Requirements for Compliance of Radio Apparatus
RSS 210	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

4. DESCRIPTION OF TEST CONFIGURATION

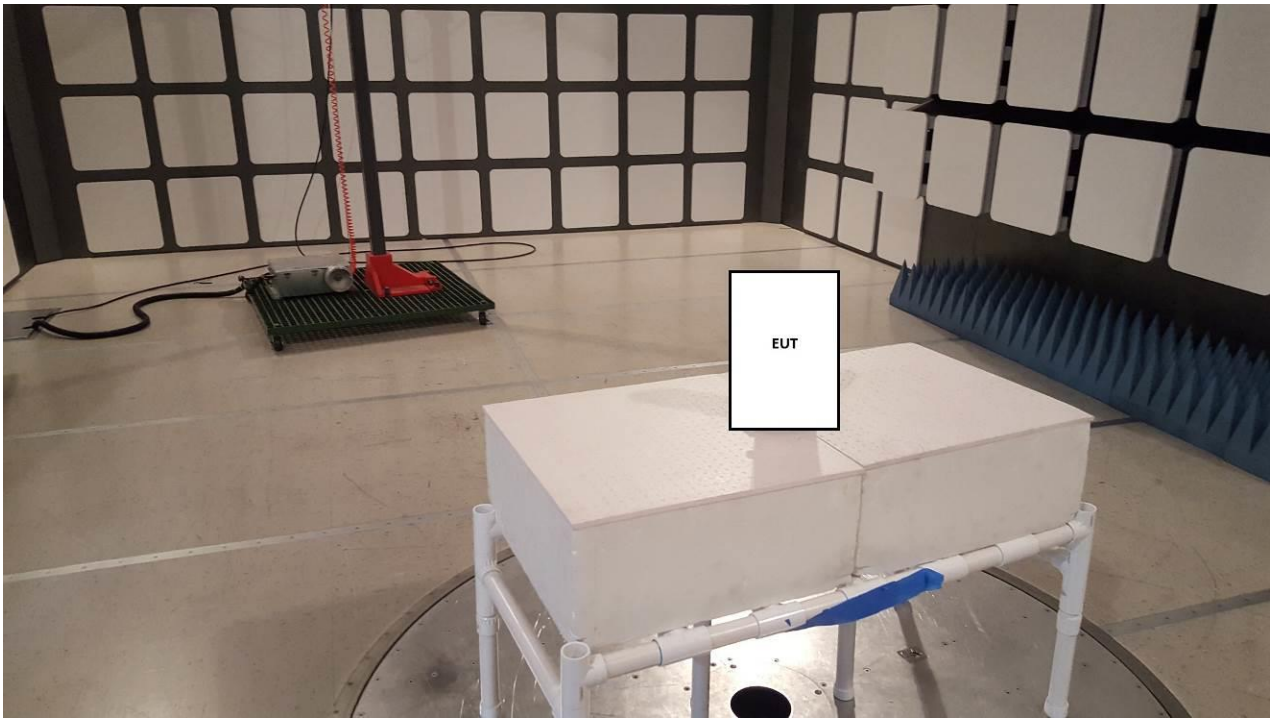
4.1 Description of Test Configuration

The Zwave Plus Series Smartcode Locks Models: Smartcode 910, 912, 914, & 916 (EUT) were setup individually in a tabletop configuration. The EUTs were checked all 3 axis. The worst case was found to be the X-Axis. The EUTs were continuously transmitting a data stream during transmitter tests and continuously receiving during receive tests.

The tests were performed using new batteries.

It was determined that the emissions were at their highest level when the EUTs were transmitting in the configuration described above for Radiated Emissions. The final radiated data was taken in the above configuration. Please see Appendix E for the test data.

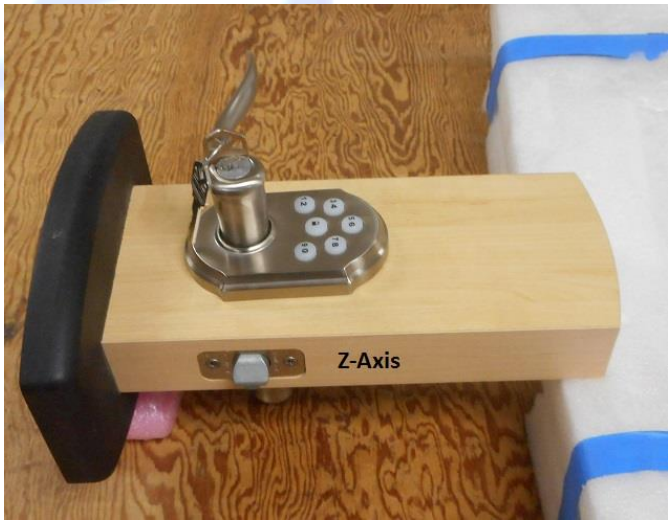
4.1.1 Photograph Test Configuration (X-Axis)



4.1.2 Cable Construction and Termination

There were no interconnecting cables.

4.1.3 Axis Determination



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

#	EQUIPMENT TYPE	MANU-FACTURER	MODEL	SERIAL NUMBER
1	ZWAVE PLUS SERIES SMARTCODE LOCKS (EUT)	SPECTRUM BRANDS	SMARTCODE 910	NONE
2	ZWAVE PLUS SERIES SMARTCODE LOCKS (EUT)	SPECTRUM BRANDS	SMARTCODE 912	NONE
3	ZWAVE PLUS SERIES SMARTCODE LOCKS (EUT)	SPECTRUM BRANDS	SMARTCODE 914	NONE
4	ZWAVE PLUS SERIES SMARTCODE LOCKS (EUT)	SPECTRUM BRANDS	SMARTCODE 916	NONE
5	BATTERIES (4)	RAYOVAC	AA	NONE

5.1.1 Software Used to Exercise the Transmitter:

Version: v4.04, Date: 09/12/2016,
Storage Location: Spectrum Brands, Inc.
Released Notes, Docs & Firmware\Firmware Releases for QA\Z-Wave Daughter Card\Cobra

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Computer	Compatible Electronics	NONE	NONE	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100219	09/03/2015	09/03/2016
EMI Receiver	Agilent	N9038A	MY51100115	12/29/2015	12/29/2016
Antenna, Loop	Com Power	AL-130	121049	12/06/2013	12/06/2016
Antenna, CombiLog	Com Power	AC-220	25857	05/21/2014	05/21/2016
Antenna, Horn 1-18GHz	Com Power	AH-118	071250	07/01/2014	07/01/2016
Antenna, Horn 18-26GHz	Com-Power	AH-826	081033	07/06/2014	07/06/2016
Pre-Amp, 1-18GHz	Com Power	PAM-118A	551034	8/25/2015	8/25/2016
Pre-Amp, 18-40GHz	Com-Power	PA-840	181289	6/16/2015	6/16/2016
High Pass Filter	AMTI Microwave Circuits	H3G020G4	481230	8/26/2015	8/26/2016
Mast, Antenna Positioner	Sunol Science Corporation	TWR 95-4	020808-3	N/A	N/A
Antenna Mast	Sunol Science Corporation	TWR 95-4	020808-3	N/A	N/A
Turntable	Sunol Science Corporation	FM 2001	N/A	N/A	N/A
Mast and Turntable Controller	Sunol Science Corporation	SC104V	020808-1	N/A	N/A

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and the figures in Appendix D of this report for test location.

6.2 EUT Mounting, Bonding and Grounding

The EUTs were mounted on a 1.0 by 1.5 by 0.8-meter-high non-conductive table, which was placed on the ground plane.

For above 1GHz testing the EUTs were placed 1.5 meters above high, above the ground plane.

The EUTs were not grounded.

6.3 Facility Environmental Characteristics

When applicable refer to the data sheets in Appendix E for the relative humidity, air temperature, and barometric pressure.

6.4 Measurement Uncertainty

"Compatible Electronics' U_{lab} value is less than U_{cispr}, 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_{cispr}	$U_{lab} = 2\,uc\,(y)$
Conducted disturbance (mains port)	(150 kHz – 30 MHz)	3,6 dB	2.88
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(30 MHz – 1 000 MHz)	5,2 dB	3.53

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Channel Number and Frequencies

There are a total of 2 channels. The low channel is at 908.4 MHz and the high channel is at 916.0 MHz. The EUT uses FSK & GFSK modulation.

7.2 Antenna

The antenna is a PCB trace located on the PCB.

8. TEST PROCEDURES

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

8.1 RF Emissions

8.1.1 Conducted Emissions Test

Test Results: The EUT is battery powered; therefore this test was not performed.

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. 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 received its power through the LISN, which was bonded to the ground plane. The EUTs were 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 different configurations were investigated to find the worst case as well the worst case channel. The final data was collected under program control by the computer software. The final qualification data is located in Appendix E.

8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The EMI receiver was used as a measuring meter. The receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the receiver records the highest measured reading over all the sweeps. Amplifiers were used to increase the sensitivity of the instrument. There was one Microwave Preamplifier used for frequencies above 1 GHz.

For spurious emissions the quasi-peak detector was used for frequencies below 1GHz and the average detector was used for frequencies above 1 GHz.

For the harmonic and fundamental emissions a linear average was used. For the non-intentional emissions above 1GHz a linear average was used.

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

FREQUENCY RANGE (MHz)	TRANSDUCER	EFFECTIVE MEASUREMENT BANDWIDTH
.009 to .150	Active Loop Antenna	200 Hz
.150 to 30	Active Loop Antenna	9 kHz
30 to 1000	Combilog Antenna	100 kHz (120 kHz for QP Measurements)
1000 to 25000	Horn Antenna	1 MHz

The TDK FAC-3 shielded test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4 & ANSI C63.10. 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 in order 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 EUTs were rotated 360 degrees and the antenna height was varied from 1 to 4 meters in both vertical and horizontal polarizations (for E field radiated field strength).

Test Results:

The EUT complies with the limits of CFR Title 47 Part 15 Subpart B section 15.109, & Part 15 Subpart C sections 15.205, 15.209, 15.249, RSS GEN, & RSS 210. The six highest emissions are listed in table 1.

8.1.3 Fundamental Field Strength

The Peak Transmit Radiated Field Strength was measured at a 3-meter test distance. The EMI Receiver was used to obtain the final test data. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with Part 15 Subpart C, Section 15.249 & RSS 210.

8.1.4 Emissions Radiated Outside of the Fundamental Frequency Band

The Band Edge measurement was measured using the EMI Receiver at a 3-meter test distance to obtain the final test data. The lower and upper channels were tuned during the low and high band edge tests. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with Part 15 Subpart C, Section 15.205, 15.249, RSS GEN, & RSS 210.

9. TEST PROCEDURE DEVIATIONS

The test procedures were not deviated from throughout all tests.

10. CONCLUSIONS

The Zwave Plus Series Smartcode Locks Model: Smartcode 910, 912, 914, & 916 meets all of the relevant specification requirements defined in the Code of Federal Regulations Title 47, Part 15 Subpart B section 15.109, & Subpart C sections 15.205, 15.209, 15.249, RSS GEN, & RSS 210.

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP TESTING
NVLAP LAB CODE 200527-0

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 17025:

"A laboratory's fulfilment of the requirements of ISO/IEC 17025:2005 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 17025:2005 (Section 4) are written in language relevant to laboratory operations and meet the principles of ISO 9001:2008 Quality Management Systems — Requirements."

IC OAT's Test Site Registration Number: 2154C-1

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

There were no modifications were made during testing.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST	ZWAVE PLUS SERIES SMARTCODE LOCKS Model: Smartcode 910, 912, 914, & 916 S/N: NONE

No additional models were tested.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: PLOT MAP AND LAYOUT OF TEST SITE BELOW 1GHZ

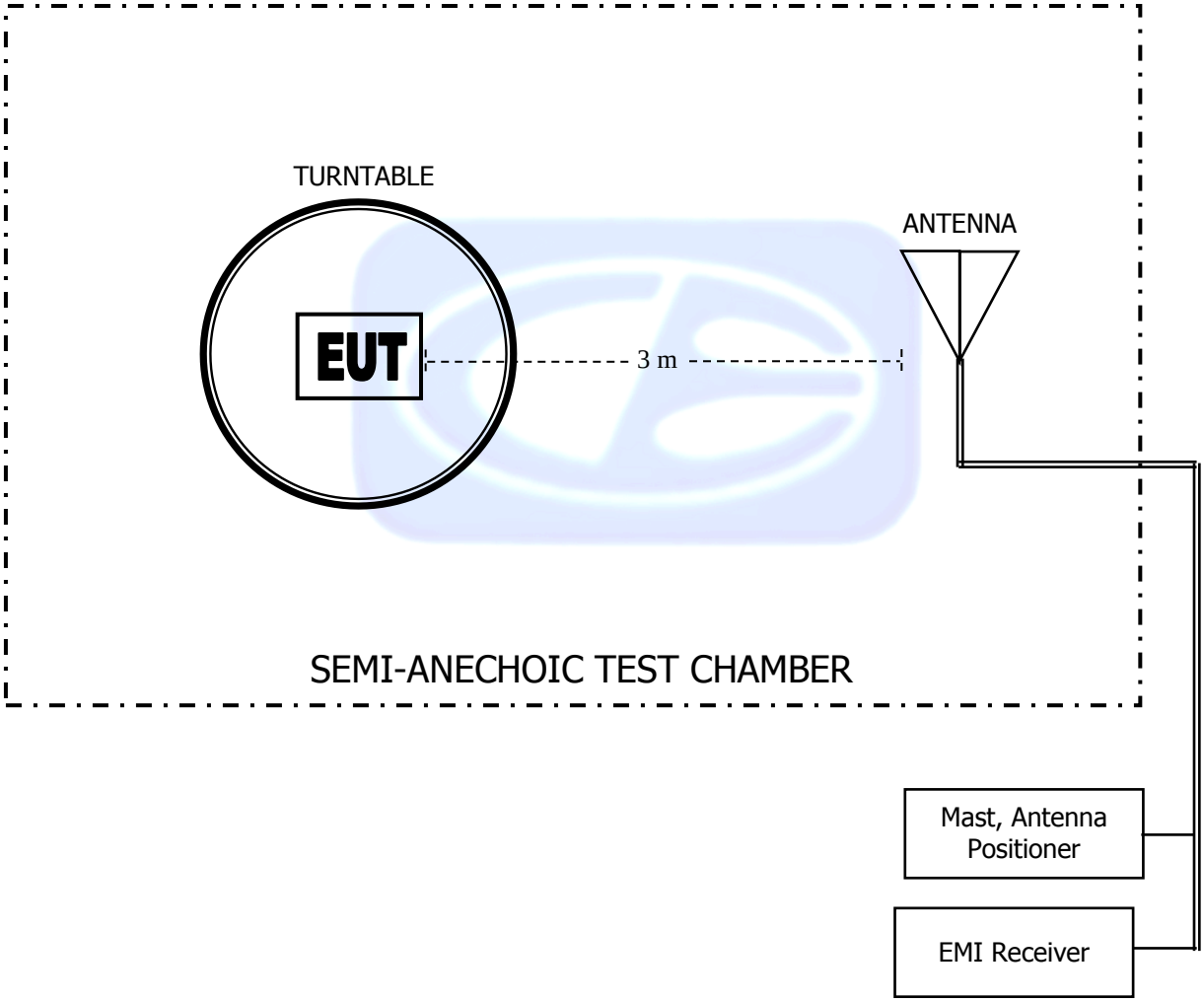
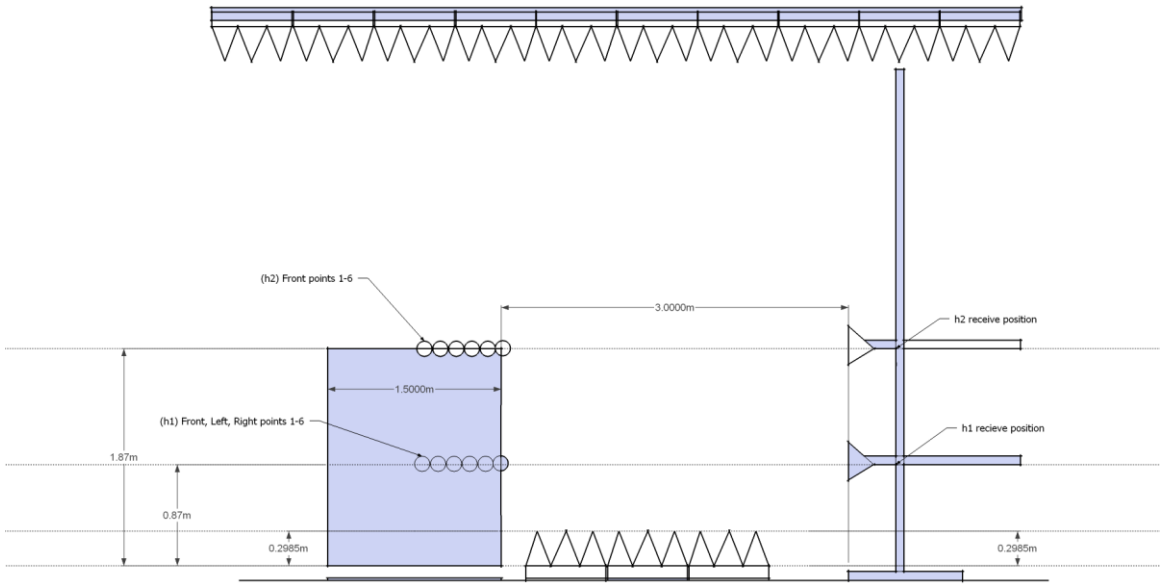


FIGURE 2: PLOT MAP AND LAYOUT OF TEST SITE ABOVE 1GHZ



COM-POWER AL-130

LOOP ANTENNA

S/N: 121049

CALIBRATION DUE: DECEMBER 6, 2016

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)	FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-34.64	16.86	**0.8**	-36.32	15.18
0.01	-34.78	16.72	**0.9**	-36.22	15.28
0.02	-35.91	15.59	**1.0**	-36.22	15.28
0.03	-35.48	16.02	**2.0**	-35.91	15.59
0.04	-35.82	15.68	**3.0**	-35.91	15.59
0.05	-36.49	15.01	**4.0**	-36.01	15.49
0.06	-36.30	15.20	**5.0**	-35.80	15.70
0.07	-36.43	15.07	**6.0**	-36.00	15.50
0.08	-36.30	15.20	**7.0**	-35.90	15.60
0.09	-36.39	15.11	**8.0**	-35.70	15.80
0.1	-36.41	15.09	**9.0**	-35.70	15.80
0.2	-36.61	14.89	**10.0**	-35.60	15.90
0.3	-36.63	14.87	**15.0**	-36.52	14.98
0.4	-36.52	14.99	**20.0**	-35.75	15.75
0.5	-36.63	14.87	**25.0**	-37.78	13.72
0.6	-36.62	14.88	**30.0**	-38.62	12.88
0.7	-36.53	14.97			

COM-POWER AC-220

LAB R - COMBILOG ANTENNA

S/N: 25857

CALIBRATION DUE: MAY 21, 2016

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	22.5	**160**	13.3
35	22.5	**180**	15.0
40	23.0	**200**	14.6
45	21.5	**250**	16.5
50	21.3	**300**	18.1
60	18.2	**400**	19.4
70	13.2	**500**	21.4
80	11.6	**600**	21.6
90	11.9	**700**	23.7
100	12.6	**800**	26.0
120	15.1	**900**	26.6
140	13.6	**1000**	28.5

COM-POWER AH-118

HORN ANTENNA

S/N: 071250

CALIBRATION DUE: JULY 1, 2016

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
1000	30.1	**9500**	44.2
1500	29.2	**10000**	43.4
2000	31.6	**10500**	44.6
2500	35.5	**11000**	45.1
3000	33.7	**11500**	45.7
3500	36.0	**12000**	46.2
4000	35.4	**12500**	45.4
4500	35.5	**13000**	44.8
5000	40.1	**13500**	46.7
5500	37.8	**14000**	47.8
6000	39.0	**14500**	46.4
6500	39.9	**15000**	47.2
7000	40.4	**15500**	45.5
7500	44.4	**16000**	45.0
8000	44.1	**16500**	44.5
8500	43.1	**17000**	47.0
9000	43.0	**17500**	47.8
		18000	44.2

COM-POWER PAM-118A

1-18GHz - PREAMPLIFIER

S/N: 551034

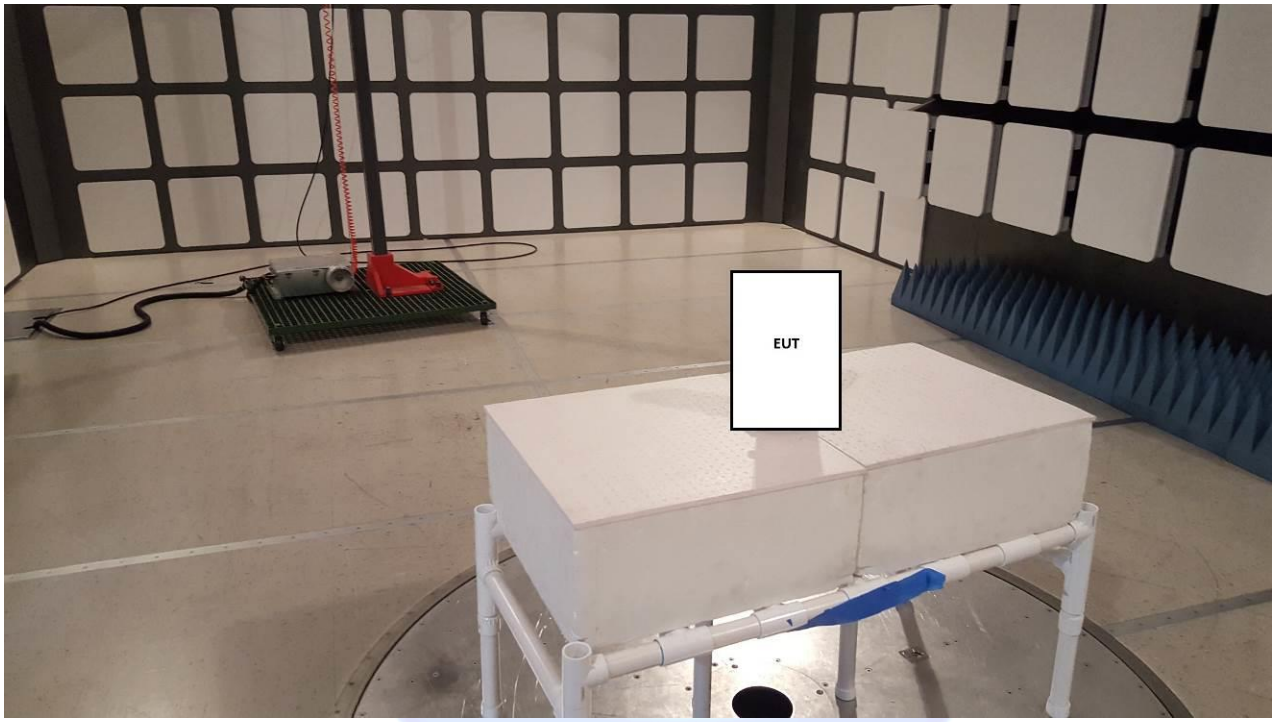
CALIBRATION DUE: AUGUST 25, 2016

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
500	36.77	**5500**	39.82
1000	38.63	**6000**	38.74
1100	38.72	**6500**	39.60
1200	38.97	**7000**	35.52
1300	38.59	**7500**	36.61
1400	39.18	**8000**	36.92
1500	38.71	**8500**	37.13
1600	39.28	**9000**	36.50
1700	39.25	**9500**	38.92
1800	39.06	**10000**	38.74
1900	40.34	**11000**	35.23
2000	40.07	**12000**	35.64
2500	39.69	**13000**	36.73
3000	40.94	**14000**	36.48
3500	40.41	**15000**	37.57
4000	40.44	**16000**	38.10
4500	41.20	**17000**	37.34
5000	39.35	**18000**	36.80

FRONT VIEW

SPECTRUM BRANDS
ZWAVE PLUS SERIES SMARTCODE LOCKS
Model: Smartcode 910, 912, 914, & 916
FCC SUBPART B & C - RADIATED EMISSIONS < 1GHz

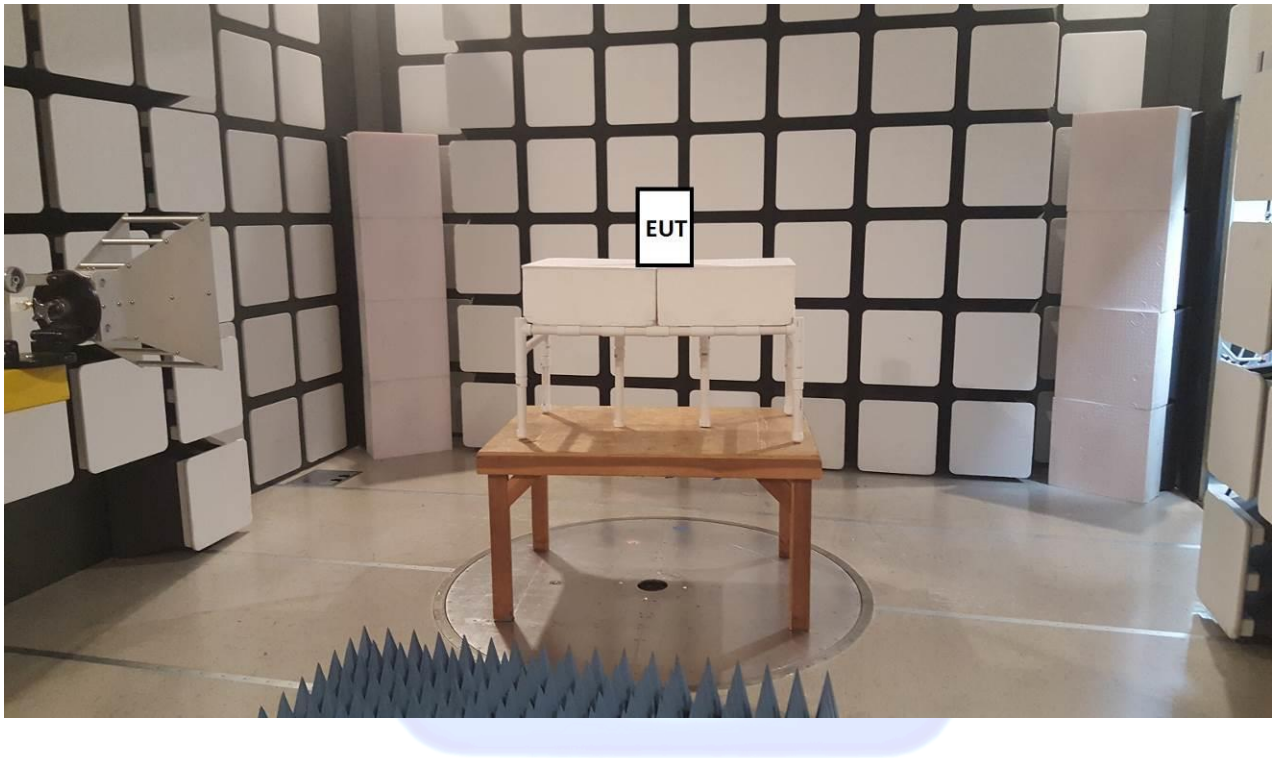
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

SPECTRUM BRANDS
ZWAVE PLUS SERIES SMARTCODE LOCKS
Model: Smartcode 910, 912, 914, & 916
FCC SUBPART B & C - RADIATED EMISSIONS < 1GHz

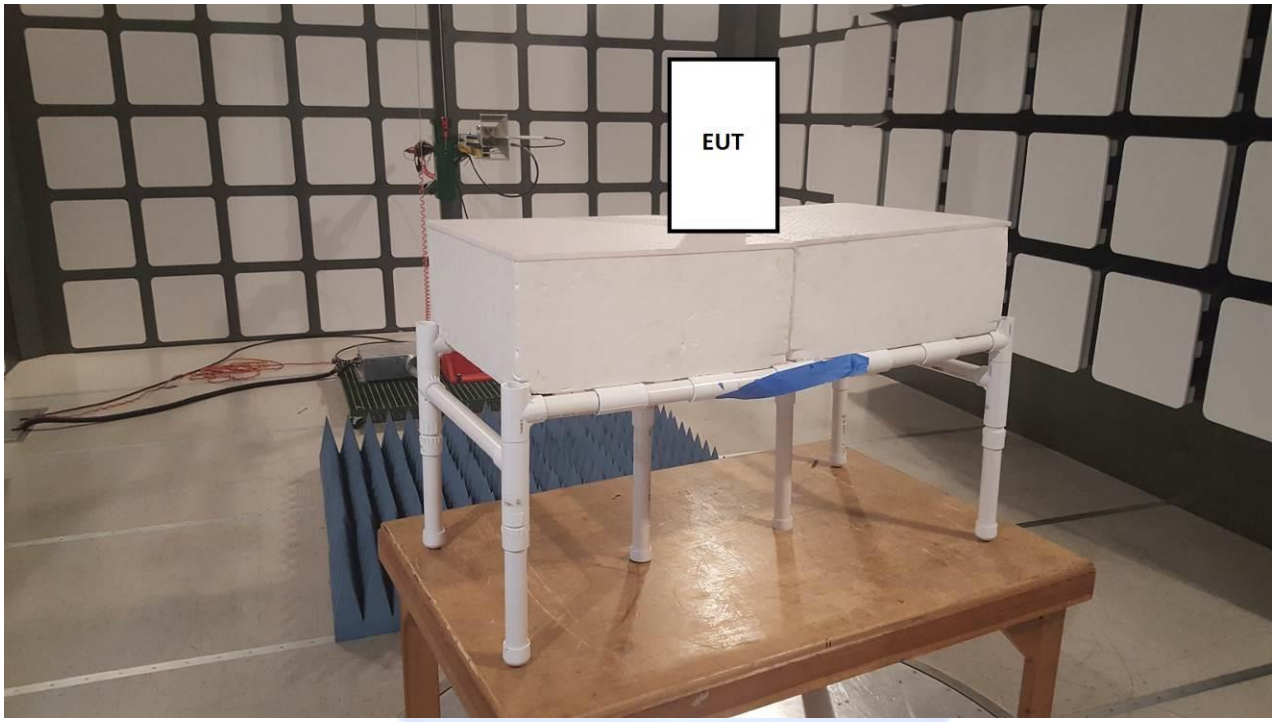
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

SPECTRUM BRANDS
ZWAVE PLUS SERIES SMARTCODE LOCKS
Model: Smartcode 910, 912, 914, & 916
FCC SUBPART B & C - RADIATED EMISSIONS > 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

SPECTRUM BRANDS
ZWAVE PLUS SERIES SMARTCODE LOCKS
Model: Smartcode 910, 912, 914, & 916
FCC SUBPART B & C - RADIATED EMISSIONS > 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION

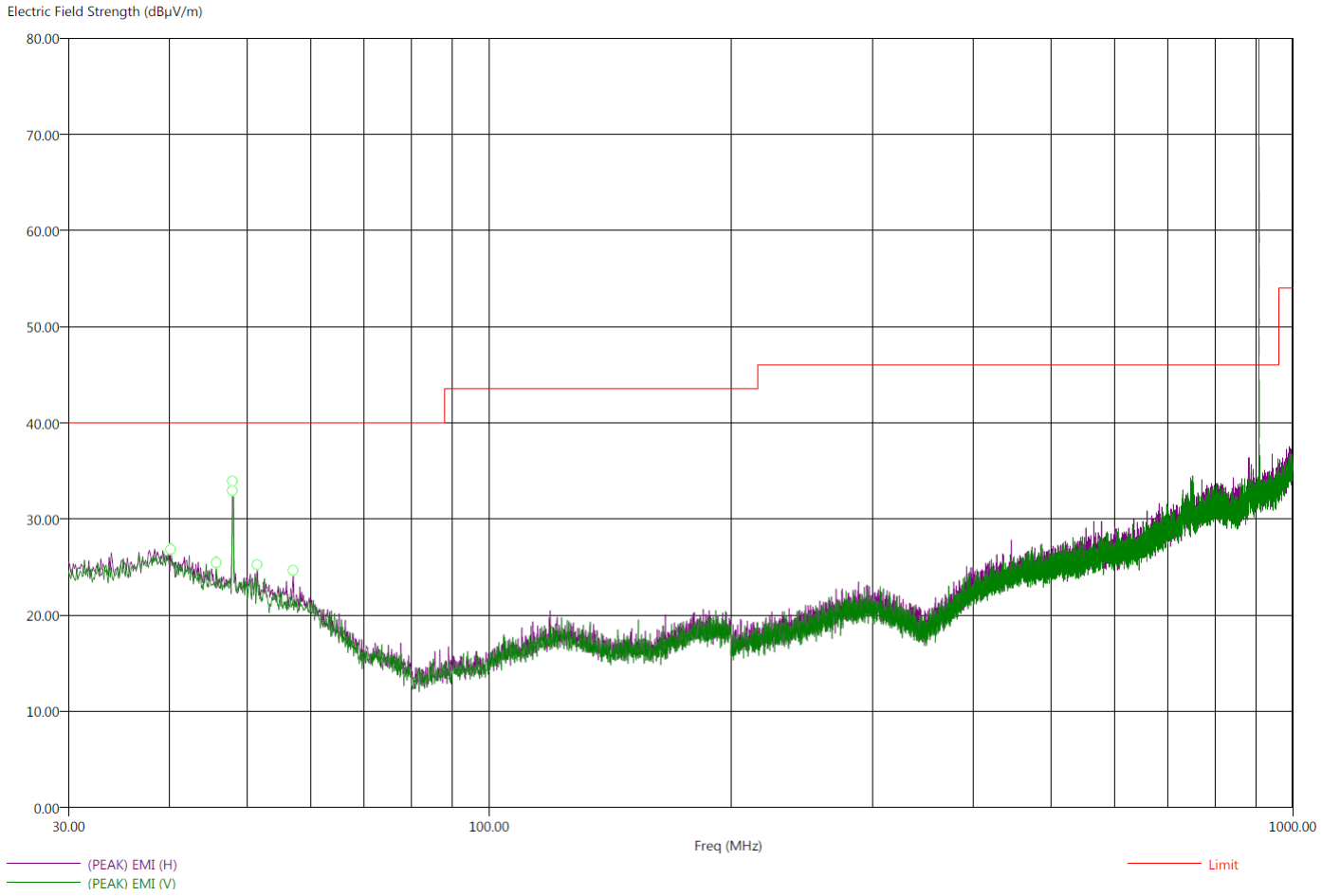
FOR MAXIMUM EMISSIONS

APPENDIX E

RADIATED EMISSIONS DATA SHEETS

Title: FCC 15.209 1/13/2016 8:03:04 AM
File: Radiated Pre-Scan 30-1000Mhz.set Sequence: Preliminary Scan
Operator: Torey Oliver
EUT Type: Electronic Lock / 914ZW-C
EUT Condition: The EUT is constantly transmitting 908.40 MHz.
Comments: Temp: 71f
Hum: 39%
Battery Powered

Compatible Electronics, Inc. FAC-3 (Lab R)



There were no radiated emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case spurious emissions from all locks, channels, and modes.

Title: FCC 15.209 1/13/2016 8:24:21 AM
File: Radiated Final 30-1000Mhz.set Sequence: Final Measurements
Operator: Torey Oliver
EUT Type: Electronic Lock / 914ZW-C
EUT Condition: The EUT is constantly transmitting 908.40 MHz.
Comments: Temp: 71f
Hum: 39%
Battery Powered

Compatible Electronics, Inc. FAC-3 (Lab R)

Freq (MHz)	(QP) Margin (dB)	(QP) EMI (dBµV/m)	(PEAK) EMI (dBµV/m)	Limit (dBµV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer (dB)	Cable (dB)
40.20	-18.94	21.06	26.43	40.00	H	74.75	400.29	22.94	1.27
45.80	-20.91	19.09	24.78	40.00	V	0.00	287.82	21.47	0.58
48.00	-9.64	30.36	32.67	40.00	H	16.00	316.05	21.38	0.32
48.00	-9.20	30.80	33.00	40.00	V	201.00	142.56	21.38	0.32
51.50	-21.71	18.29	23.27	40.00	H	349.75	185.85	20.81	0.24
57.10	-22.93	17.07	22.18	40.00	H	4.50	139.22	19.01	0.76

There were no radiated emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case spurious emissions from all locks, channels, and modes.

FUNDAMENTAL & HARMONICS

DATA SHEETS

FUNDAMENTAL FIELD STRENGTH
Smartcode 910

FCC 15.249 RSS210

Company: Spectrum Brands
EUT: Zwave Plus Series Smartcode Locks
Model: Smartcode 910

Date: 1/12/2016
Lab: R
Tested By: Torey Oliver

Compatible Electronics, Inc. FAC-3

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table	Tower	Comments
908.40	88.62	H	93.97	-5.35	Peak	70	1.50	
908.40	92.94	V	93.97	-1.03	Peak	360	1.12	
916.00	87.73	H	93.97	-6.24	Peak	237	1.47	
916.00	90.03	V	93.97	-3.94	Peak	160	1.00	

Test distance
3 meter

FUNDAMENTAL FIELD STRENGTH
Smartcode 912

FCC 15.249 RSS210

Company: Spectrum Brands
EUT: Zwave Plus Series Smartcode Locks
Model: Smartcode 912

Date: 1/13/2016
Lab: R
Tested By: Torey Oliver

Compatible Electronics, Inc. FAC-3

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table	Tower	Comments
908.40	82.33	H	93.97	-11.64	Peak	360	1.42	908.40
908.40	82.78	V	93.97	-11.19	Peak	186	1.13	908.40
916.00	78.97	H	93.97	-15.00	Peak	360	1.46	916.00
916.00	78.78	V	93.97	-15.19	Peak	360	1.09	916.00

Test distance
3 meter

FUNDAMENTAL FIELD STRENGTH
Smartcode 914

FCC 15.249 RSS210

Company: Spectrum Brands
EUT: Zwave Plus Series Smartcode Locks
Model: Smartcode 914

Date: 1/13/2016
Lab: R
Tested By: Torey Oliver

Compatible Electronics, Inc. FAC-3

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table	Tower	Comments
908.40	88.63	H	93.97	-5.34	Peak	150	1.50	
908.40	90.04	V	93.97	-3.93	Peak	0	1.07	
916.00	81.70	H	93.97	-12.27	Peak	129	1.39	
916.00	87.55	V	93.97	-6.42	Peak	360	1.09	

Test distance
3 meter

FUNDAMENTAL FIELD STRENGTH
Smartcode 916

FCC 15.249 RSS210

Company: Spectrum Brands
EUT: Zwave Plus Series Smartcode Locks
Model: Smartcode 916

Date: 1/13/2016
Lab: R
Tested By: Torey Oliver

Compatible Electronics, Inc. FAC-3

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table	Tower	Comments
908.40	82.80	H	93.97	-11.17	Peak	281	1.34	
908.40	86.7	V	93.97	-7.27	Peak	360	1.00	
916.00	79.74	H	93.97	-14.23	Peak	135	1.49	
916.00	86.58	V	93.97	-7.39	Peak	11	1.58	

Test distance
3 meter

HARMONICS LOW CHANNEL HORIZONTAL, SMARTCODE 910

FCC 15.249, RSS 210

Company:	Kwikset	Date:	1/12/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 910	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1816.8	42.76	H	73.98	-31.22	Peak	2.47	160	
1816.8	35.78	H	53.98	-18.20	Avg	2.47	160	
2725.2		H	73.98		Peak			No Emissions Found
2725.2		H	53.98		Avg			No Emissions Found
3633.6		H	73.98		Peak			No Emissions Found
3633.6		H	53.98		Avg			No Emissions Found
4542.0	49.84	H	73.98	-24.14	Peak	1.44	355	
4542.0	45.50	H	53.98	-8.48	Avg	1.44	355	
5450.4		H	73.98		Peak			No Emissions Found
5450.4		H	53.98		Avg			No Emissions Found
6358.8	53.01	H	73.98	-20.97	Peak	1.83	346	
6358.8	44.63	H	53.98	-9.35	Avg	1.83	346	
7267.2		H	73.98		Peak			No Emissions Found
7267.2		H	53.98		Avg			No Emissions Found
8175.6	54.35	H	73.98	-19.63	Peak	1.05	360	
8175.6	41.93	H	53.98	-12.05	Avg	1.05	360	
9084.0	53.98	H	73.98	-20.00	Peak	1.76	326	
9084.0	41.05	H	53.98	-12.93	Avg	1.76	326	

Test distance
3 meter

HARMONICS LOW CHANNEL VERTICAL, SMARTCODE 910

FCC 15.249, RSS 210

Company:	Kwikset	Date:	1/12/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 910	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1816.8	42.89	V	73.98	-31.09	Peak	1.05	319	
1816.8	37.03	V	53.98	-16.95	Avg	1.05	319	
2725.2		V	73.98		Peak			No Emissions Found
2725.2		V	53.98		Avg			No Emissions Found
3633.6		V	73.98		Peak			No Emissions Found
3633.6		V	53.98		Avg			No Emissions Found
4542.0	50.13	V	73.98	-23.85	Peak	1.76	22	
4542.0	46.18	V	53.98	-7.80	Avg	1.76	22	
5450.4		V	73.98		Peak			No Emissions Found
5450.4		V	53.98		Avg			No Emissions Found
6358.8	52.60	V	73.98	-21.38	Peak	2.77	334	
6358.8	43.81	V	53.98	-10.17	Avg	2.77	334	
7267.2		V	73.98		Peak			No Emissions Found
7267.2		V	53.98		Avg			No Emissions Found
8175.6	54.74	V	73.98	-19.24	Peak	1.55	0	
8175.6	41.85	V	53.98	-12.13	Avg	1.55	0	
9084.0	54.11	V	73.98	-19.87	Peak	1.59	29	
9084.0	41.02	V	53.98	-12.96	Avg	1.59	29	

Test distance
3 meter

HARMONICS HIGH CHANNEL HORIZONTAL, SMARTCODE 910

FCC 15.249, RSS 210

Company: Kwikset
EUT: Zwave Plus Series Smartcode Lock
Model: Smartcode 910

Date: 1/12/2016
Lab: R
Tested By: Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1832.0	37.29	H	73.98	-36.69	Peak	3.38	155	
1832.0	24.57	H	53.98	-29.41	Avg	3.38	155	
2748.0		H	73.98		Peak			No emissions found
2748.0		H	53.98		Avg			No emissions found
3664.0		H	73.98		Peak			No emissions found
3664.0		H	53.98		Avg			No emissions found
4580.0	51.95	H	73.98	-22.03	Peak	1.76	175	
4580.0	47.54	H	53.98	-6.44	Avg	1.76	175	
5496.0		H	73.98		Peak			No Emissions Found
5496.0		H	53.98		Avg			No Emissions Found
6412.0		H	73.98		Peak			No Emissions Found
6412.0		H	53.98		Avg			No Emissions Found
7328.0		H	73.98		Peak			No Emissions Found
7328.0		H	53.98		Avg			No Emissions Found
8244.0	55.12	H	73.98	-18.86	Peak	1.20	192	
8244.0	42.26	H	53.98	-11.72	Avg	1.20	192	
9160.0	54.16	H	73.98	-19.82	Peak	1.70	141	
9160.0	41.23	H	53.98	-12.75	Avg	1.70	141	

Test distance
3 meter

HARMONICS HIGH CHANNEL VERTICAL, SMARTCODE 910

FCC 15.249, RSS 210

Company: Kwikset
EUT: Zwave Plus Series Smartcode Lock
Model: Smartcode 910

Date: 1/12/2016
Lab: R
Tested By: Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1832.0	41.51	V	73.98	-32.47	Peak	2.20	155	
1832.0	32.02	V	53.98	-21.96	Avg	2.20	155	
2748.0		V	73.98		Peak			No Emissions Found
2748.0		V	53.98		Avg			No Emissions Found
3664.0		V	73.98		Peak			No Emissions Found
3664.0		V	53.98		Avg			No Emissions Found
4580.0	50.33	V	73.98	-23.65	Peak	3.00	219	
4580.0	45.28	V	53.98	-8.70	Avg	3.00	219	
5496.0		V	73.98		Peak			No Emissions Found
5496.0		V	53.98		Avg			No Emissions Found
6412.0		V	73.98		Peak			No Emissions Found
6412.0		V	53.98		Avg			No Emissions Found
7328.0		V	73.98		Peak			No Emissions Found
7328.0		V	53.98		Avg			No Emissions Found
8244.0	54.60	V	73.98	-19.38	Peak	1.45	188	
8244.0	42.19	V	53.98	-11.79	Avg	1.45	188	
9160.0	53.77	V	73.98	-20.21	Peak	2.64	360	
9160.0	41.13	V	53.98	-12.85	Avg	2.64	360	

Test distance 3 meter

HARMONICS LOW CHANNEL HORZONTAL, SMARTCODE 912

FCC 15.249, RSS210

Company:	Kwikset	Date:	1/14/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 912	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1816.8		H	73.98		Peak			No Emissions Found
1816.8		H	53.98		Avg			No Emissions Found
2725.2		H	73.98		Peak			No Emissions Found
2725.2		H	53.98		Avg			No Emissions Found
3633.6		H	73.98		Peak			No Emissions Found
3633.6		H	53.98		Avg			No Emissions Found
4542.0	48.86	H	73.98	-25.12	Peak	1.13	354	
4542.0	43.79	H	53.98	-10.19	Avg	1.13	354	
5450.4		H	73.98		Peak			No Emissions Found
5450.4		H	53.98		Avg			No Emissions Found
6358.8	53.36	H	73.98	-20.62	Peak	1.94	60	
6358.8	45.72	H	53.98	-8.26	Avg	1.94	60	
7267.2		H	73.98		Peak			No Emissions Found
7267.2		H	53.98		Avg			No Emissions Found
8175.6	54.23	H	73.98	-19.75	Peak	1.08	319	
8175.6	41.77	H	53.98	-12.21	Avg	1.08	319	
9084.0		H	73.98		Peak			No Emissions Found
9084.0		H	53.98		Avg			No Emissions Found

Test distance
3 meter

HARMONICS LOW CHANNEL VERTICAL, SMARTCODE 912

FCC 15.249, RSS210

Company:	Kwikset	Date:	1/14/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 912	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1816.8		V	73.98		Peak			No Emissions Found
1816.8		V	53.98		Avg			No Emissions Found
2725.2		V	73.98		Peak			No Emissions Found
2725.2		V	53.98		Avg			No Emissions Found
3633.6		V	73.98		Peak			No Emissions Found
3633.6		V	53.98		Avg			No Emissions Found
4542.0	46.00	V	73.98	-27.98	Peak	1.37	0	
4542.0	38.43	V	53.98	-15.55	Avg	1.37	0	
5450.4		V	73.98		Peak			No Emissions Found
5450.4		V	53.98		Avg			No Emissions Found
6358.8	49.04	V	73.98	-24.94	Peak	1.94	1	
6358.8	36.26	V	53.98	-17.72	Avg	1.94	1	
7267.2		V	73.98		Peak			No Emissions Found
7267.2		V	53.98		Avg			No Emissions Found
8175.6	54.87	V	73.98	-19.11	Peak	1.62	0	
8175.6	41.78	V	53.98	-12.20	Avg	1.62	0	
9084.0		V	73.98		Peak			No Emissions Found
9084.0		V	53.98		Avg			No Emissions Found

Test distance
3 meter

HARMONICS HIGH CHANNEL HORZONTAL, SMARTCODE 912

FCC 15.249, RSS210

Company:	Kwikset	Date:	1/15/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 912	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1832.0		H	73.98		Peak			No emissions found
1832.0		H	53.98		Avg			No emissions found
2748.0	42.70	H	73.98	-31.28	Peak	1.05	115	
2748.0	32.82	H	53.98	-21.16	Avg	1.05	115	
3664.0	45.57	H	73.98	-28.41	Peak	1.80	195	
3664.0	35.38	H	53.98	-18.60	Avg	1.80	195	
4580.0	48.22	H	73.98	-25.76	Peak	1.50	183	
4580.0	30.79	H	53.98	-23.19	Avg	1.50	183	
5496.0		H	73.98		Peak			No Emissions Found
5496.0		H	53.98		Avg			No Emissions Found
6412.0	49.69	H	73.98	-24.29	Peak	2.03	232	
6412.0	35.78	H	53.98	-18.20	Avg	2.03	232	
7328.0	53.79	H	73.98	-20.19	Peak	3.99	189	
7328.0	41.39	H	53.98	-12.59	Avg	3.99	189	
8244.0	54.73	H	73.98	-19.25	Peak	2.52	126	
8244.0	42.11	H	53.98	-11.87	Avg	2.52	126	
9160.0		H	73.98		Peak			No Emissions Found
9160.0		H	53.98		Avg			No Emissions Found

Test distance
3 meter

HARMONICS HIGH CHANNEL VERTICAL, SMARTCODE 912

FCC 15.249, RSS210

Company:	Kwikset	Date:	1/15/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 912	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1832.0		V	73.98		Peak			No Emissions Found
1832.0		V	53.98		Avg			No Emissions Found
2748.0	43.97	V	73.98	-30.01	Peak	2.02	175	
2748.0	35.55	V	53.98	-18.43	Avg	2.02	175	
3664.0	45.34	V	73.98	-28.64	Peak	1.82	167	
3664.0	34.47	V	53.98	-19.51	Avg	1.82	167	
4580.0	45.39	V	73.98	-28.59	Peak	1.84	360	
4580.0	30.93	V	53.98	-23.05	Avg	1.84	360	
5496.0		V	73.98		Peak			No Emissions Found
5496.0		V	53.98		Avg			No Emissions Found
6412.0	48.17	V	73.98	-25.81	Peak	2.76	74	
6412.0	35.44	V	53.98	-18.54	Avg	2.76	74	
7328.0	53.92	V	73.98	-20.06	Peak	1.61	205	
7328.0	41.32	V	53.98	-12.66	Avg	1.61	205	
8244.0	54.48	V	73.98	-19.50	Peak	4.00	247	
8244.0	42.04	V	53.98	-11.94	Avg	4.00	247	
9160.0	53.38	V	73.98	-20.60	Peak	3.50	146	
9160.0	41.07	V	53.98	-12.91	Avg	3.50	146	

Test distance
3 meter

HARMONICS LOW CHANNEL HORZONTAL, SMARTCODE 914

FCC 15.249, RSS210

Company:	Kwikset	Date:	1/14/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 914	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1816.8	51.23	H	73.98	-22.75	Peak	2.01	177	
1816.8	49.32	H	53.98	-4.66	Avg	2.01	177	
2725.2	41.08	H	73.98	-32.90	Peak	2.20	160	
2725.2	28.34	H	53.98	-25.64	Avg	2.20	160	
3633.6		H	73.98		Peak			No Emissions Found
3633.6		H	53.98		Avg			No Emissions Found
4542.0	49.64	H	73.98	-24.34	Peak	1.32	138	
4542.0	45.19	H	53.98	-8.79	Avg	1.32	138	
5450.4		H	73.98		Peak			No Emissions Found
5450.4		H	53.98		Avg			No Emissions Found
6358.8	55.31	H	73.98	-18.67	Peak	1.92	182	
6358.8	49.46	H	53.98	-4.52	Avg	1.92	182	
7267.2		H	73.98		Peak			No Emissions Found
7267.2		H	53.98		Avg			No Emissions Found
8175.6	55.00	H	73.98	-18.98	Peak	1.18	137	
8175.6	41.80	H	53.98	-12.18	Avg	1.18	137	
9084.0	54.37	H	73.98	-19.61	Peak	2.15	141	
9084.0	40.96	H	53.98	-13.02	Avg	2.15	141	

Test distance
3 meter

HARMONICS LOW CHANNEL VERTICAL, SMARTCODE 914

FCC 15.249, RSS210

Company:	Kwikset	Date:	1/14/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 914	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1816.8	43.62	V	73.98	-30.36	Peak	2.48	33	
1816.8	38.41	V	53.98	-15.57	Avg	2.48	33	
2725.2	46.25	V	73.98	-27.73	Peak	2.29	198	
2725.2	39.88	V	53.98	-14.10	Avg	2.29	198	
3633.6		V	73.98		Peak			No Emissions Found
3633.6		V	53.98		Avg			No Emissions Found
4542.0	51.60	V	73.98	-22.38	Peak	1.78	163	
4542.0	47.80	V	53.98	-6.18	Avg	1.78	163	
5450.4		V	73.98		Peak			No Emissions Found
5450.4		V	53.98		Avg			No Emissions Found
6358.8	50.65	V	73.98	-23.33	Peak	2.38	360	
6358.8	39.36	V	53.98	-14.62	Avg	2.38	360	
7267.2		V	73.98		Peak			No Emissions Found
7267.2		V	53.98		Avg			No Emissions Found
8175.6	54.35	V	73.98	-19.63	Peak	1.25	214	
8175.6	41.80	V	53.98	-12.18	Avg	1.25	214	
9084.0	53.34	V	73.98	-20.64	Peak	1.18	195	
9084.0	40.93	V	53.98	-13.05	Avg	1.18	195	

Test distance
3 meter

HARMONICS HIGH CHANNEL HORZONTAL, SMARTCODE 914

FCC 15.249, RSS210

Company: Kwikset
EUT: Zwave Plus Series Smartcode Lock
Model: Smartcode 914

Date: 1/15/2016
Lab: R
Tested By: Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1832.0	48.91	H	73.98	-25.07	Peak	1.93	164	
1832.0	46.29	H	53.98	-7.69	Avg	1.93	164	
2748.0	45.63	H	73.98	-28.35	Peak	2.34	181	
2748.0	39.91	H	53.98	-14.07	Avg	2.34	181	
3664.0		H	73.98		Peak			No emissions found
3664.0		H	53.98		Avg			No emissions found
4580.0	52.75	H	73.98	-21.23	Peak	1.41	165	
4580.0	48.74	H	53.98	-5.24	Avg	1.41	165	
5496.0		H	73.98		Peak			No Emissions Found
5496.0		H	53.98		Avg			No Emissions Found
6412.0	53.99	H	73.98	-19.99	Peak	1.82	178	
6412.0	46.87	H	53.98	-7.11	Avg	1.82	178	
7328.0	54.05	H	73.98	-19.93	Peak	2.15	159	
7328.0	41.37	H	53.98	-12.61	Avg	2.15	159	
8244.0	55.12	H	73.98	-18.86	Peak	2.72	0	
8244.0	42.11	H	53.98	-11.87	Avg	2.72	0	
9160.0	54.41	H	73.98	-19.57	Peak	2.16	145	
9160.0	41.13	H	53.98	-12.85	Avg	2.16	145	

Test distance
3 meter

HARMONICS HIGH CHANNEL VERTICAL, SMARTCODE 914

FCC 15.249, RSS210

Company:	Kwikset	Date:	1/15/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 914	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1832.0	42.45	V	73.98	-31.53	Peak	2.41	186	
1832.0	36.78	V	53.98	-17.20	Avg	2.41	186	
2748.0	44.66	V	73.98	-29.32	Peak	1.94	193	
2748.0	37.51	V	53.98	-16.47	Avg	1.94	193	
3664.0		V	73.98		Peak			No Emissions Found
3664.0		V	53.98		Avg			No Emissions Found
4580.0	53.43	V	73.98	-20.55	Peak	1.80	165	
4580.0	49.57	V	53.98	-4.41	Avg	1.80	165	
5496.0		V	73.98		Peak			No Emissions Found
5496.0		V	53.98		Avg			No Emissions Found
6412.0	53.04	V	73.98	-20.94	Peak	1.97	207	
6412.0	52.94	V	53.98	-1.04	Avg	1.97	207	
7328.0	54.30	V	73.98	-19.68	Peak	1.48	0	
7328.0	41.32	V	53.98	-12.66	Avg	1.48	0	
8244.0	54.73	V	73.98	-19.25	Peak	1.25	140	
8244.0	42.02	V	53.98	-11.96	Avg	1.25	140	
9160.0	54.55	V	73.98	-19.43	Peak	1.36	209	
9160.0	41.06	V	53.98	-12.92	Avg	1.36	209	

Test distance
3 meter

HARMONICS LOW CHANNEL HORZONTAL, SMARTCODE 916

FCC 15.249, RSS210

Company:	Kwikset	Date:	1/14/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 916	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1816.8	44.39	H	73.98	-29.59	Peak	1.48	119	
1816.8	27.04	H	53.98	-26.94	Avg	1.49	119	
2725.2	46.61	H	73.98	-27.37	Peak	1.75	171	
2725.2	29.75	H	53.98	-24.23	Avg	1.75	171	
3633.6		H	73.98		Peak			No Emissions Found
3633.6		H	53.98		Avg			No Emissions Found
4542.0	50.05	H	73.98	-23.93	Peak	1.40	155	
4542.0	30.86	H	53.98	-23.12	Avg	1.40	155	
5450.4		H	73.98		Peak			No Emissions Found
5450.4		H	53.98		Avg			No Emissions Found
6358.8	49.16	H	73.98	-24.82	Peak	3.68	0	
6358.8	36.36	H	53.98	-17.62	Avg	3.68	0	
7267.2	54.01	H	73.98	-19.97	Peak	2.87	285	
7267.2	40.99	H	53.98	-12.99	Avg	2.87	285	
8175.6	54.87	H	73.98	-19.11	Peak	3.56	87	
8175.6	41.92	H	53.98	-12.06	Avg	3.56	87	
9084.0	53.34	H	73.98	-20.64	Peak	2.77	342	
9084.0	41.04	H	53.98	-12.94	Avg	2.77	342	

Test distance
3 meter

HARMONICS LOW CHANNEL VERTICAL, SMARTCODE 916

FCC 15.249, RSS210

Company: Kwikset
EUT: Zwave Plus Series Smartcode Lock
Model: Smartcode 916

Date: 1/14/2016
Lab: R
Tested By: Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1816.8	37.72	V	73.98	-36.26	Peak	2.63	212	
1816.8	24.56	V	53.98	-29.42	Avg	2.63	212	
2725.2	40.79	V	73.98	-33.19	Peak	1.46	189	
2725.2	28.32	V	53.98	-25.66	Avg	1.46	189	
3633.6		V	73.98		Peak			No Emissions Found
3633.6		V	53.98		Avg			No Emissions Found
4542.0	50.05	V	73.98	-23.93	Peak	1.83	163	
4542.0	31.12	V	53.98	-22.86	Avg	1.83	163	
5450.4		V	73.98		Peak			No Emissions Found
5450.4		V	53.98		Avg			No Emissions Found
6358.8	48.78	V	73.98	-25.20	Peak	2.78	180	
6358.8	36.45	V	53.98	-17.53	Avg	2.78	180	
7267.2	53.48	V	73.98	-20.50	Peak	1.51	42	
7267.2	40.97	V	53.98	-13.01	Avg	1.51	42	
8175.6	54.23	V	73.98	-19.75	Peak	2.66	98	
8175.6	41.89	V	53.98	-12.09	Avg	2.66	98	
9084.0	53.72	V	73.98	-20.26	Peak	3.87	83	
9084.0	41.04	V	53.98	-12.94	Avg	3.87	83	

Test distance
3 meter

HARMONICS HIGH CHANNEL HORZONTAL, SMARTCODE 916

FCC 15.249, RSS210

Company:	Kwikset	Date:	1/15/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 916	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1832.0	45.60	H	73.98	-28.38	Peak	2.25	232	
1832.0	41.41	H	53.98	-12.57	Avg	2.25	232	
2748.0	40.92	H	73.98	-33.06	Peak	1.90	172	
2748.0	27.88	H	53.98	-26.10	Avg	1.90	172	
3664.0		H	73.98		Peak			No emissions found
3664.0		H	53.98		Avg			No emissions found
4580.0	50.20	H	73.98	-23.78	Peak	1.59	160	
4580.0	31.15	H	53.98	-22.83	Avg	1.59	160	
5496.0		H	73.98		Peak			No Emissions Found
5496.0		H	53.98		Avg			No Emissions Found
6412.0	53.64	H	73.98	-20.34	Peak	1.83	191	
6412.0	36.13	H	53.98	-17.85	Avg	1.83	191	
7328.0	54.16	H	73.98	-19.82	Peak	2.51	188	
7328.0	41.31	H	53.98	-12.67	Avg	2.51	188	
8244.0	54.61	H	73.98	-19.37	Peak	2.16	235	
8244.0	42.06	H	53.98	-11.92	Avg	2.16	235	
9160.0	53.90	H	73.98	-20.08	Peak	2.92	228	
9160.0	41.09	H	53.98	-12.89	Avg	2.92	228	

Test distance
3 meter

HARMONICS HIGH CHANNEL VERTICAL, SMARTCODE 916

FCC 15.249, RSS210

Company:	Kwikset	Date:	1/15/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 916	Tested By:	Torey Oliver

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1832.0	42.45	V	73.98	-31.53	Peak	2.46	35	
1832.0	36.01	V	53.98	-17.97	Avg	2.46	35	
2748.0	41.78	V	73.98	-32.20	Peak	1.67	172	
2748.0	28.07	V	53.98	-25.91	Avg	1.67	172	
3664.0		V	73.98		Peak			No Emissions Found
3664.0		V	53.98		Avg			No Emissions Found
4580.0	51.31	V	73.98	-22.67	Peak	1.70	177	
4580.0	31.92	V	53.98	-22.06	Avg	1.70	177	
5496.0		V	73.98		Peak			No Emissions Found
5496.0		V	53.98		Avg			No Emissions Found
6412.0	47.92	V	73.98	-26.06	Peak	2.48	182	
6412.0	35.43	V	53.98	-18.55	Avg	2.48	182	
7328.0	53.41	V	73.98	-20.57	Peak	1.98	360	
7328.0	41.28	V	53.98	-12.70	Avg	1.98	360	
8244.0	54.73	V	73.98	-19.25	Peak	2.08	257	
8244.0	42.00	V	53.98	-11.98	Avg	2.08	257	
9160.0	53.64	V	73.98	-20.34	Peak	1.18	11	
9160.0	41.05	V	53.98	-12.93	Avg	1.18	11	

Test distance
3 meter

EMISSIONS RADIATED OUTSIDE OF THE FUNDAMENTAL FREQUENCY BAND

DATA SHEETS

BAND EDGES, LOW CHANNEL, *SMARTCODE 910*

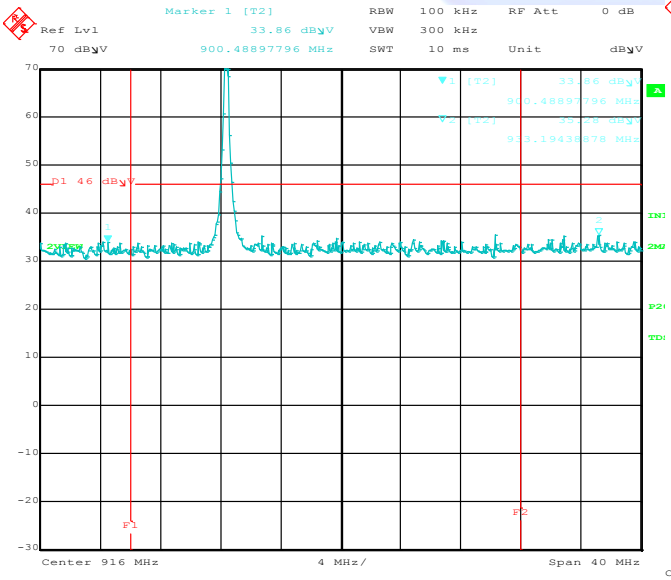
FCC 15.249, RSS210

Company:	Kwikset	Date:	1/12/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 910	Test ENG:	Torey Oliver

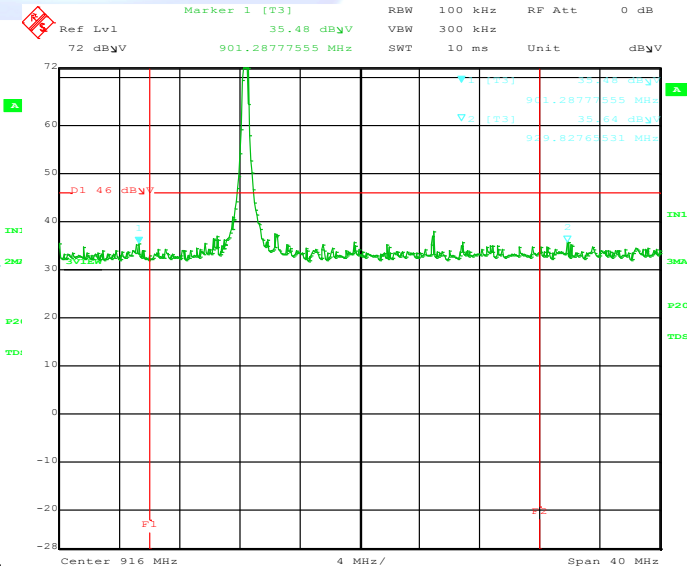
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
900.49	33.86	H	46.00	-12.14	Peak	1.50	70	No Marker Delta
900.49	--	H	--	--	QP	--	--	Method Used
933.19	35.28	H	46.00	-10.72	Peak	1.50	70	No Marker Delta
933.19	--	H	--	--	QP	--	--	Method Used
901.29	35.48	V	46.00	-10.52	Peak	1.12	360	No Marker Delta
901.29	--	V	--	--	QP	--	--	Method Used
929.83	35.64	V	46.00	-10.36	Peak	1.12	360	No Marker Delta
929.83	--	V	--	--	QP	--	--	Method Used

Test distance
3 meter



Comment A: Band Edge 908.40 Horizontal
Date: 12.JAN.2016 16:05:19



Comment A: Band Edge 908.40 MHz Vertical
Date: 12.JAN.2016 14:11:31

BAND EDGES, HIGH CHANNEL, *SMARTCODE 910*

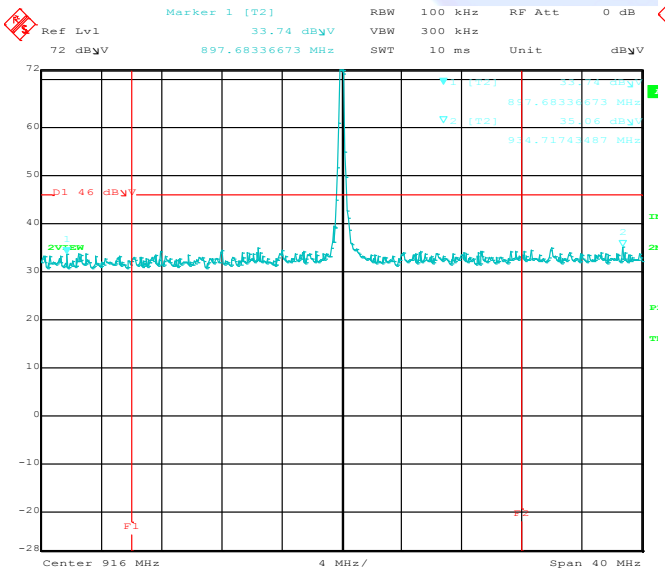
FCC 15.249, RSS210

Company:	Kwikset	Date:	1/12/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 910	Test ENG:	Torey Oliver

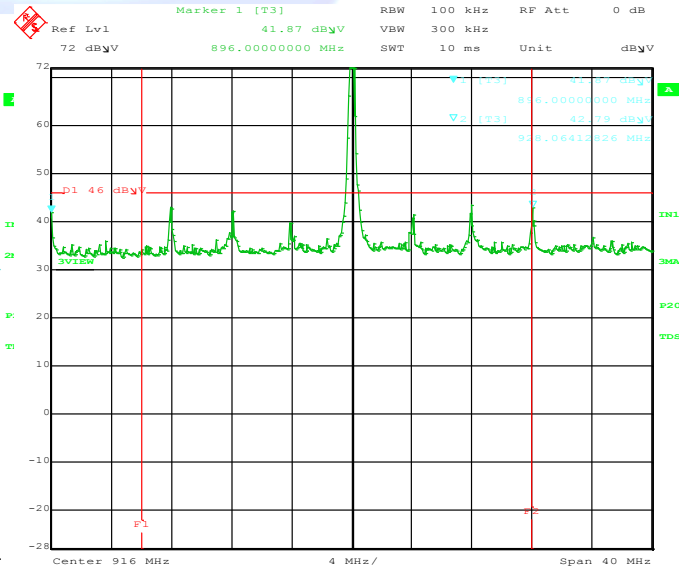
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
897.68	33.74	H	46.00	-12.26	Peak	1.47	237	No Marker Delta
897.68	--	H	--	--	QP	--	--	Method Used
934.72	35.06	H	46.00	-10.94	Peak	1.47	237	No Marker Delta
934.72	--	H	--	--	QP	--	--	Method Used
896.00	41.87	V	46.00	-4.13	Peak	1	160	No Marker Delta
896.00	--	V	--	--	QP	--	--	Method Used
928.06	42.79	V	46.00	-3.21	Peak	1	160	No Marker Delta
928.06	--	V	--	--	QP	--	--	Method Used

Test distance
3 meter



Comment A: Band Edge Horizontal
Date: 12.JAN.2016 08:14:38



Comment A: Band Edge Vertical
Date: 12.JAN.2016 08:11:29

BAND EDGES, LOW CHANNEL, *SMARTCODE 912*

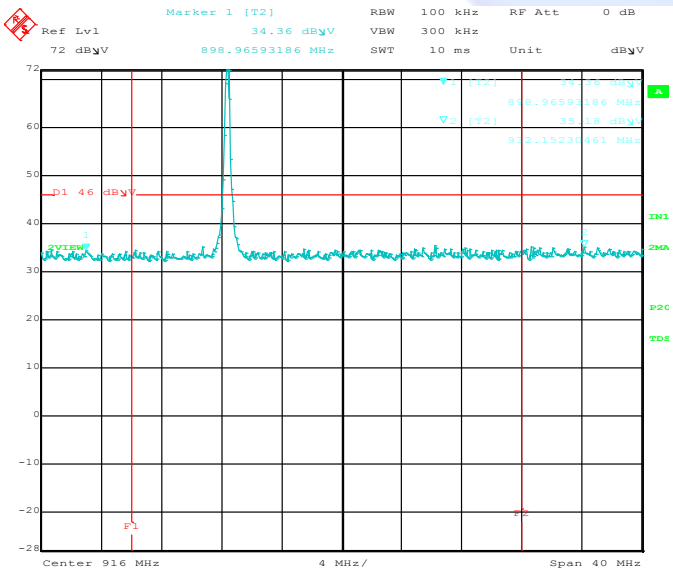
FCC 15.249, RSS210

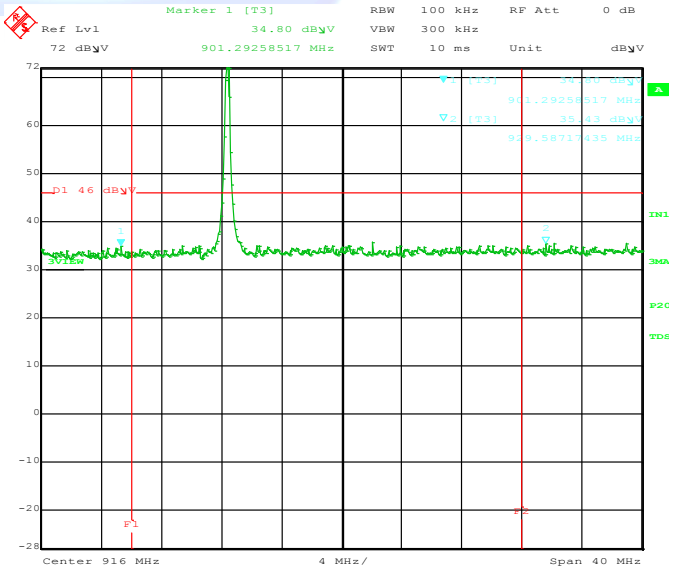
Company:	Kwikset	Date:	1/13/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 912	Test ENG:	Torey Oliver

Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
898.97	34.36	H	46.00	-11.64	Peak	1.42	360	No Marker Delta
898.97	--	H	--	--	QP	--	--	Method Used
932.15	35.18	H	46.00	-10.82	Peak	1.42	360	No Marker Delta
932.15	--	H	--	--	QP	--	--	Method Used
901.29	34.80	V	46.00	-11.20	Peak	1.13	186	No Marker Delta
901.29	--	V	--	--	QP	--	--	Method Used
929.59	35.43	V	46.00	-10.57	Peak	1.13	186	No Marker Delta
929.59	--	V	--	--	QP	--	--	Method Used

Test distance
3 meter





BAND EDGES, HIGH CHANNEL, *SMARTCODE 912*

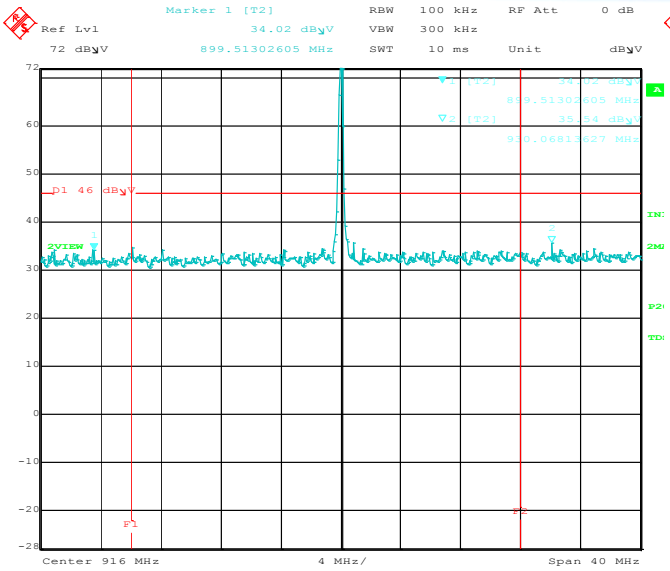
FCC 15.249, RSS210

Company:	Kwikset	Date:	1/13/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 912	Test ENG:	Torey Oliver

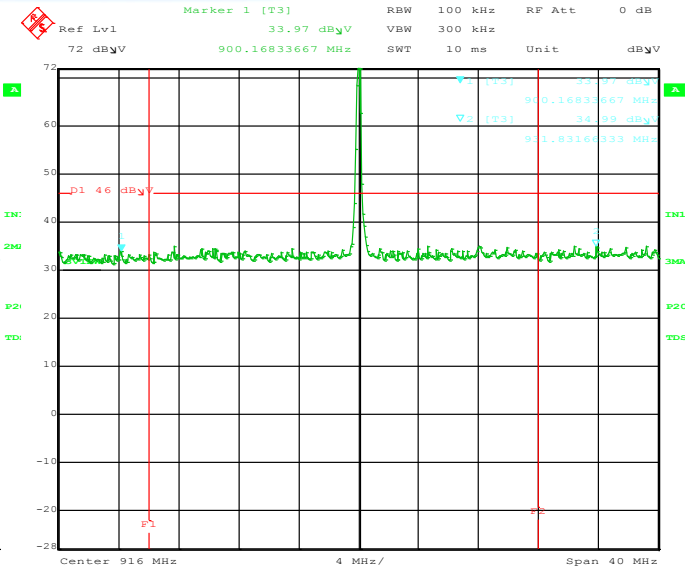
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
899.51	34.02	H	46.00	-11.98	Peak	1.46	360	No Marker Delta
899.51	--	H	--	--	QP	--	--	Method Used
930.07	35.54	H	46.00	-10.46	Peak	1.46	360	No Marker Delta
930.07	--	H	--	--	QP	--	--	Method Used
900.17	33.97	V	46.00	-12.03	Peak	1.08	360	No Marker Delta
900.17	--	V	--	--	QP	--	--	Method Used
931.83	34.99	V	46.00	-11.01	Peak	1.08	360	No Marker Delta
931.83	--	V	--	--	QP	--	--	Method Used

Test distance
3 meter



Comment A: Band Edge 916 MHz Horizontal
Date: 13.JAN.2016 16:19:35



Comment A: Band Edge 916 MHz Vertical
Date: 13.JAN.2016 16:14:48

BAND EDGES, LOW CHANNEL, *SMARTCODE 914*

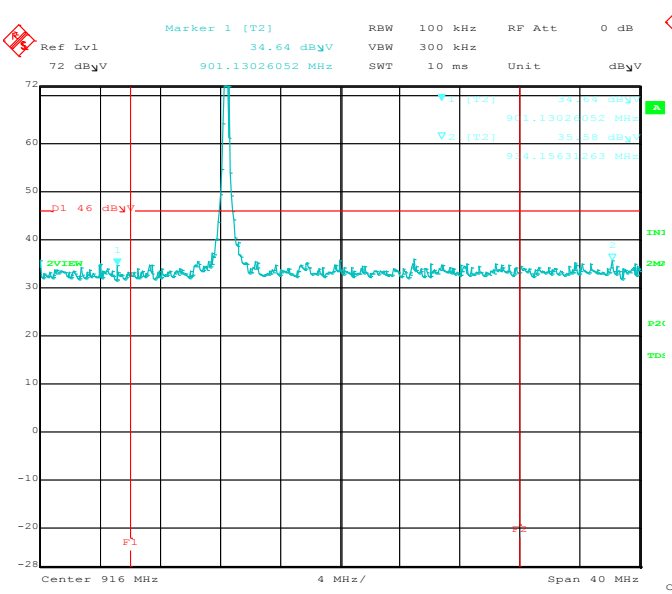
FCC 15.249, RSS210

Company:	Kwikset	Date:	1/13/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 914	Test ENG:	Torey Oliver

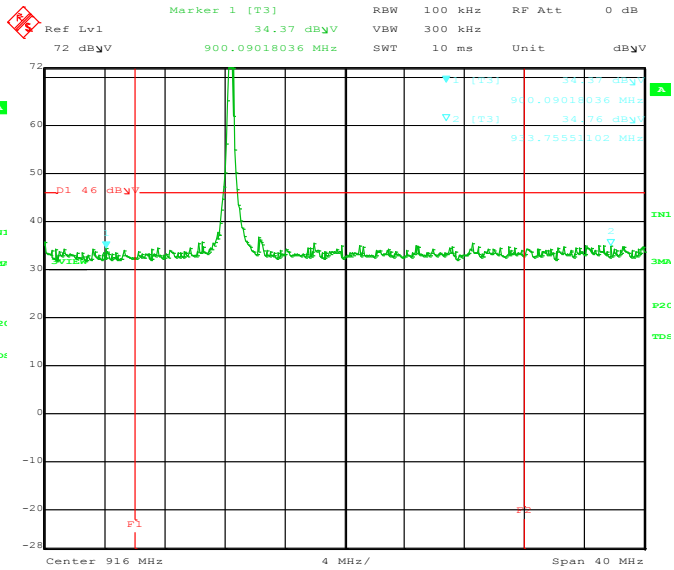
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
901.13	34.64	H	46.00	-11.36	Peak	1.50	150	No Marker Delta
901.13	--	H	--	--	QP	--	--	Method Used
934.16	35.58	H	46.00	-10.42	Peak	1.50	150	No Marker Delta
934.16	--	H	--	--	QP	--	--	Method Used
900.09	34.37	V	46.00	-11.63	Peak	1.07	0	No Marker Delta
900.09	--	V	--	--	QP	--	--	Method Used
933.76	34.76	V	46.00	-11.24	Peak	1.07	0	No Marker Delta
933.76	--	V	--	--	QP	--	--	Method Used

Test distance
3 meter



Comment A: Band Edge 908 MHz Horizontal
Date: 13.JAN.2016 08:09:58



Comment A: Band Edge 908 MHz Vertical
Date: 13.JAN.2016 08:08:38

BAND EDGES, HIGH CHANNEL, *SMARTCODE 914*

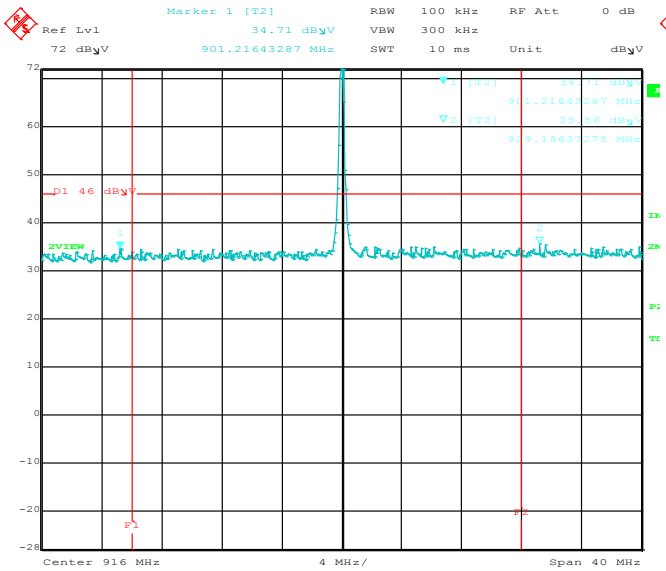
FCC 15.249, RSS210

Company:	Kwikset	Date:	1/13/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 914	Test ENG:	Torey Oliver

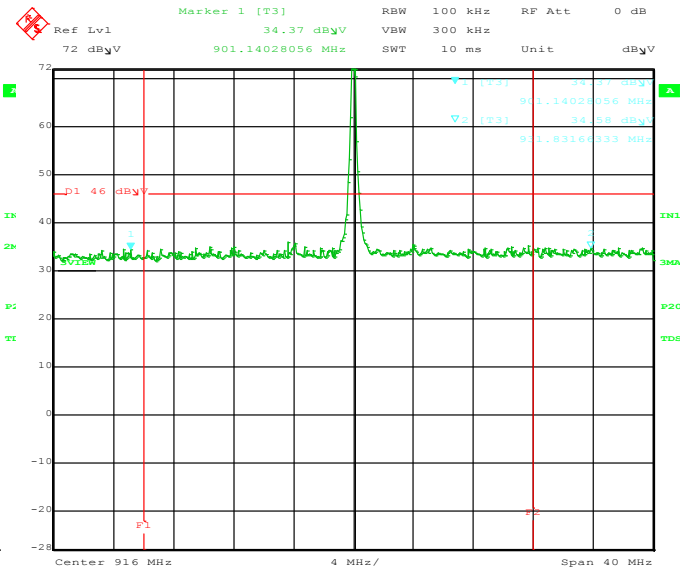
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
901.13	34.64	H	46.00	-11.36	Peak	1.50	150	No Marker Delta
901.13	--	H	--	--	QP	--	--	Method Used
934.16	35.58	H	46.00	-10.42	Peak	1.50	150	No Marker Delta
934.16	--	H	--	--	QP	--	--	Method Used
900.09	34.37	V	46.00	-11.63	Peak	1.07	0	No Marker Delta
900.09	--	V	--	--	QP	--	--	Method Used
933.76	34.76	V	46.00	-11.24	Peak	1.07	0	No Marker Delta
933.76	--	V	--	--	QP	--	--	Method Used

Test distance
3 meter



Comment A: Band Edge 916MHz Horizontal
Date: 13.JAN.2016 14:20:37



Comment A: Band Edge 916MHz Vertical
Date: 13.JAN.2016 14:24:40

BAND EDGES, LOW CHANNEL, *SMARTCODE 916*

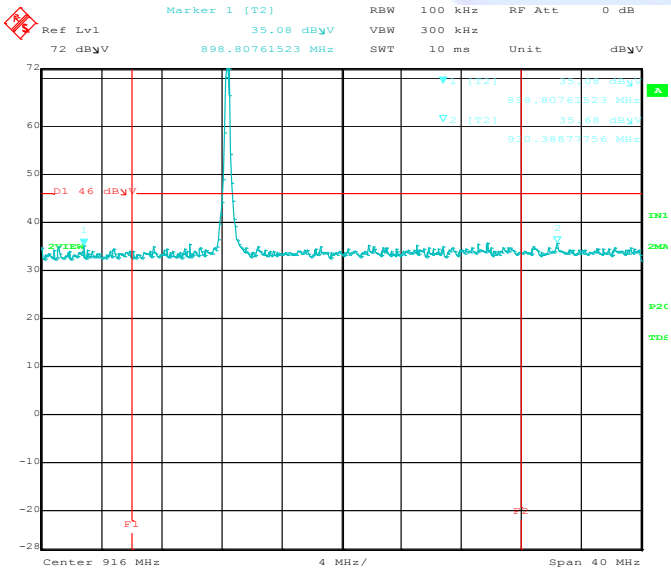
FCC 15.249, RSS210

Company:	Kwikset	Date:	1/13/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 916	Test ENG:	Torey Oliver

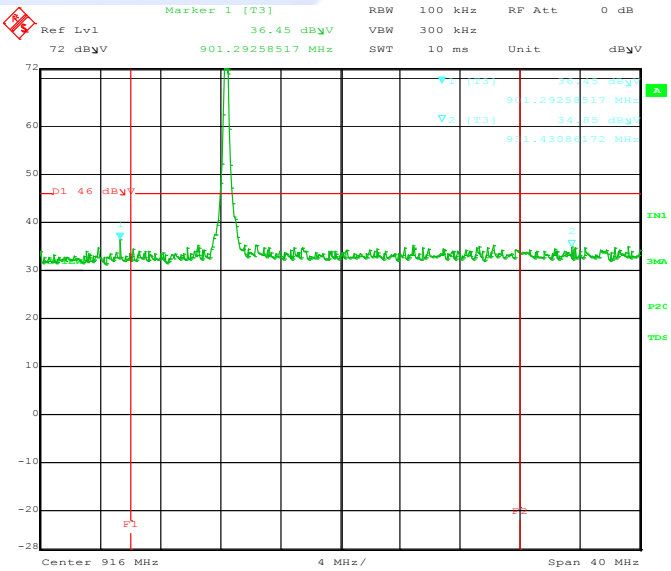
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
898.81	35.08	H	46.00	-10.92	Peak	1.34	281	No Marker Delta
898.81	--	H	--	--	QP	--	--	Method Used
930.39	35.68	H	46.00	-10.32	Peak	1.34	281	No Marker Delta
930.39	--	H	--	--	QP	--	--	Method Used
901.29	36.45	V	46.00	-9.55	Peak	1.00	360	No Marker Delta
901.29	--	V	--	--	QP	--	--	Method Used
931.43	34.85	V	46.00	-11.15	Peak	1.00	360	No Marker Delta
931.43	--	V	--	--	QP	--	--	Method Used

Test distance
3 meter



Comment A: Band Edge 908 MHz Horizontal
Date: 13.JAN.2016 10:42:18



Comment A: Band Edge 908 MHz Vertical
Date: 13.JAN.2016 10:48:35

BAND EDGES, HIGH CHANNEL, *SMARTCODE 916*

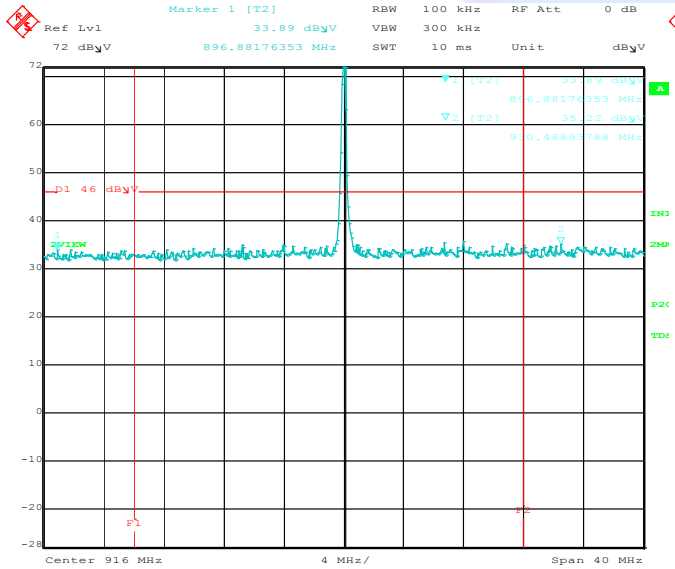
FCC 15.249, RSS210

Company:	Kwikset	Date:	1/13/2016
EUT:	Zwave Plus Series Smartcode Lock	Lab:	R
Model:	Smartcode 916	Test ENG:	Torey Oliver

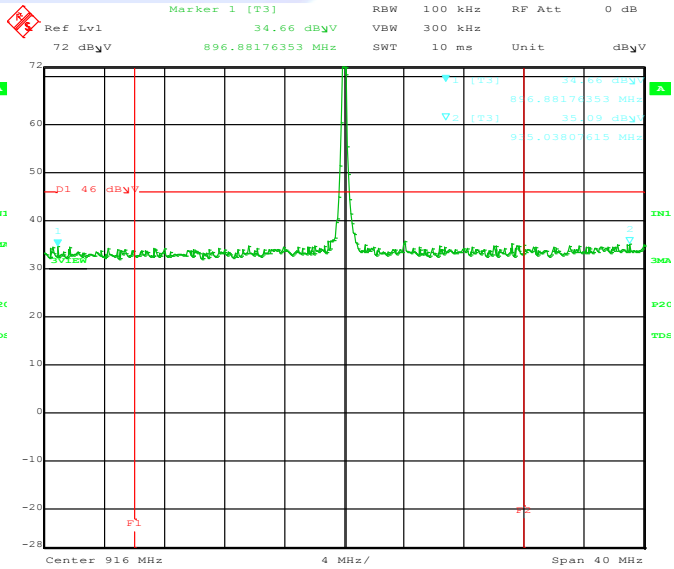
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
896.88	33.89	H	46.00	-12.11	Peak	1.46	135	No Marker Delta
896.88	--	H	--	--	QP	--	--	Method Used
930.47	35.22	H	46.00	-10.78	Peak	1.46	135	No Marker Delta
930.47	--	H	--	--	QP	--	--	Method Used
896.88	34.66	V	46.00	-11.34	Peak	1.58	11	No Marker Delta
896.88	--	V	--	--	QP	--	--	Method Used
935.04	35.09	V	46.00	-10.91	Peak	1.58	11	No Marker Delta
935.04	--	V	--	--	QP	--	--	Method Used

Test distance
3 meter



Comment A: Band Edge 916MHz Horizontal
Date: 13.JAN.2016 14:08:29



Comment A: Band Edge 916MHz Vertical
Date: 13.JAN.2016 14:05:34

99% OCCUPIED BANDWIDTH

DATA SHEETS

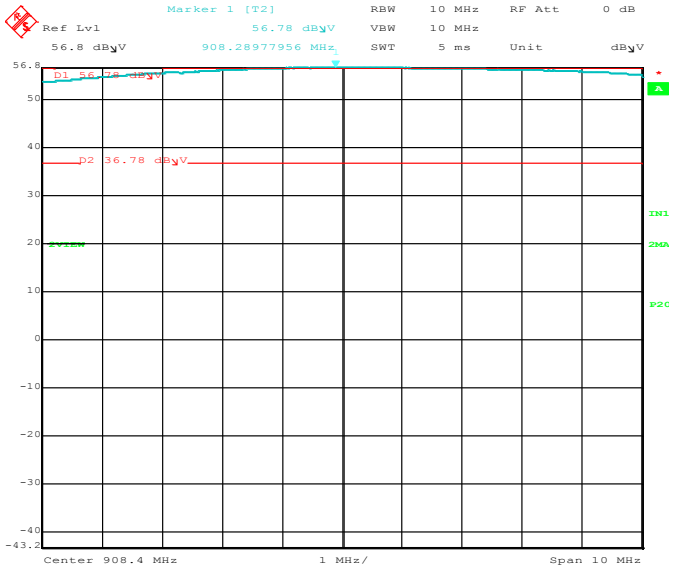
RSS GEN

Company:	Spectrum Brands	Date:	1/12/2016
EUT:	Zwave Plus Series Smartcode Locks	Lab:	R
Model:	Smartcode 910	Test ENG:	Torey Oliver

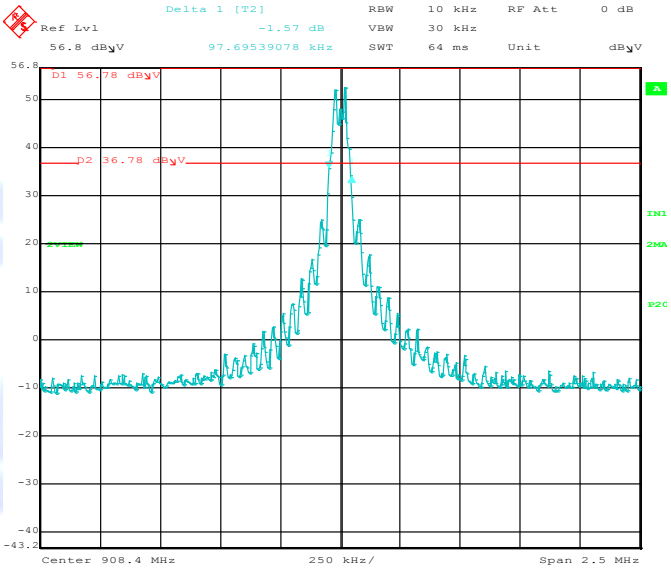
Compatible Electronics, Inc. FAC-3 (Lab R)

99% Occupied Bandwidth

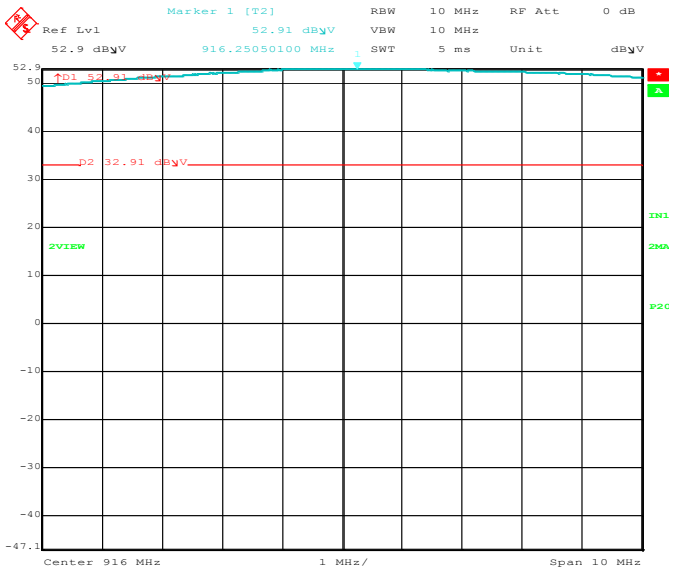
Freq. (MHz)	Measured BW (kHz)	Peak / QP / Avg	Comments
908.40	97.70	Peak	
916.00	132.77	Peak	



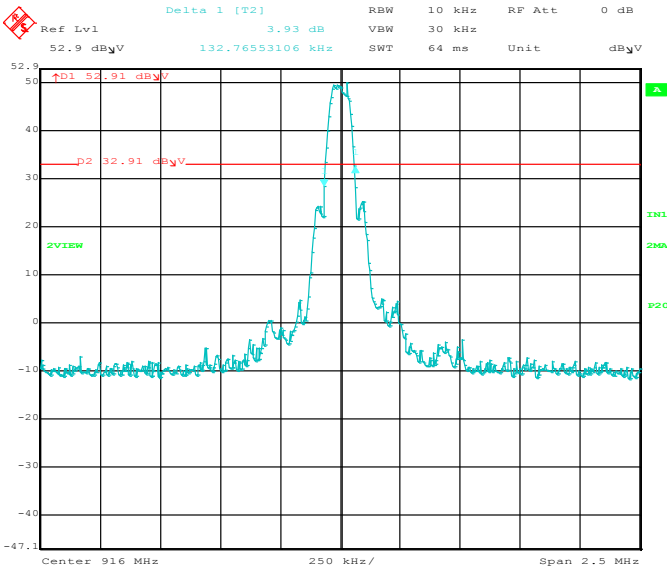
Comment A: IC Bandwidth
Date: 12.JAN.2016 15:59:38



Comment A: IC Bandwidth
Date: 12.JAN.2016 16:01:56



Comment A: IC Bandwidth
Date: 12.JAN.2016 16:09:27



Comment A: IC Bandwidth
Date: 12.JAN.2016 16:10:44

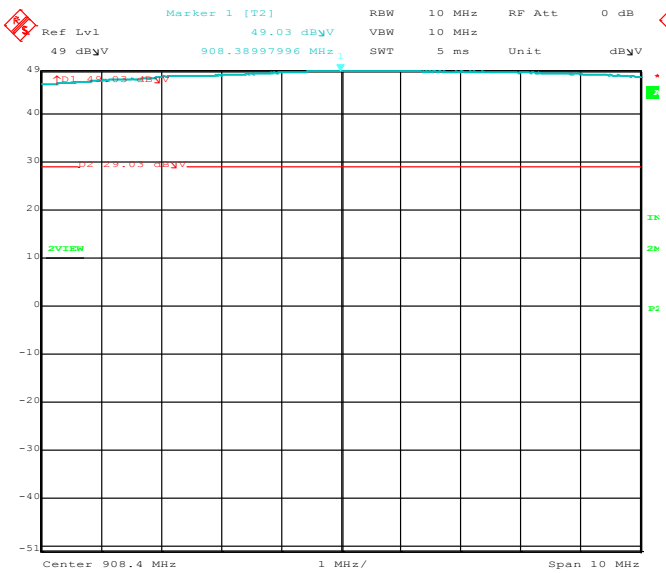
RSS GEN

Company:	Spectrum Brands	Date:	1/12/2016
EUT:	Zwave Plus Series Smartcode Locks	Lab:	R
Model:	Smartcode 912	Test ENG:	Torey Oliver

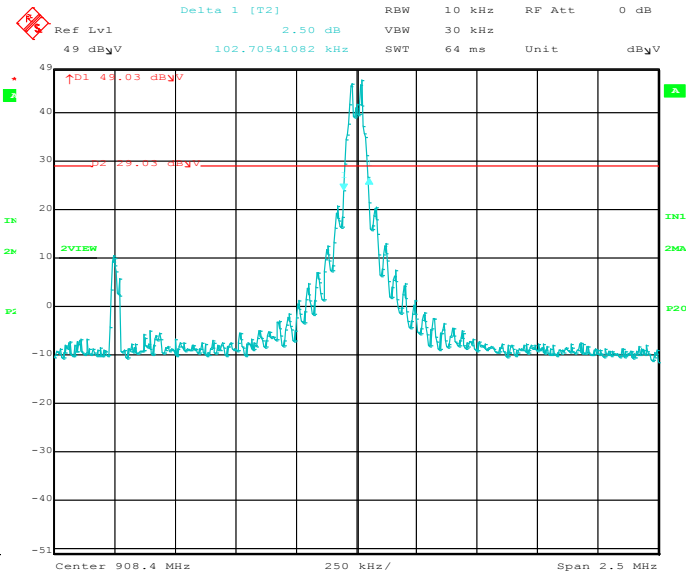
Compatible Electronics, Inc. FAC-3 (Lab R)

99% Occupied Bandwidth

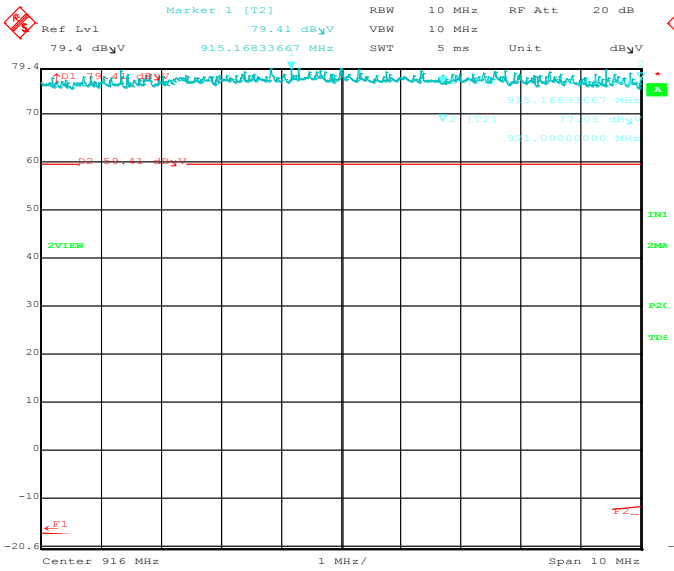
Freq. (MHz)	Measured BW (kHz)	Peak / QP / Avg	Comments
908.40	102.71	Peak	
916.00	117.74	Peak	



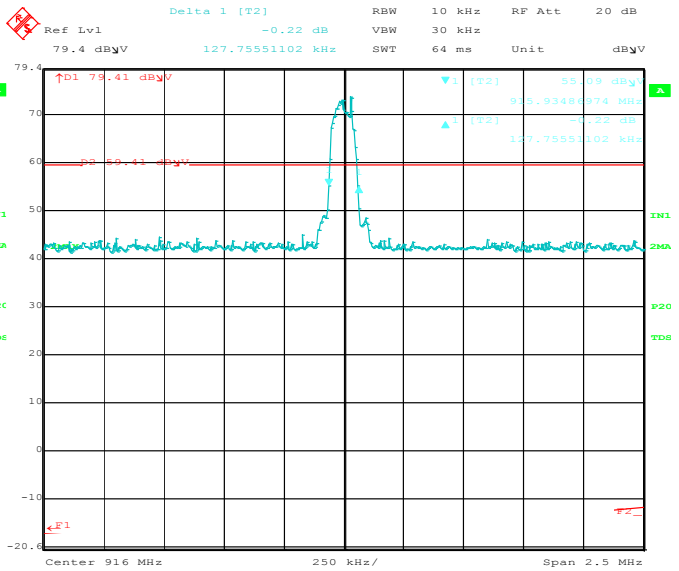
Comment A: IC Bandwidth
Date: 13.JAN.2016 09:01:15



Comment A: IC Bandwidth
Date: 13.JAN.2016 09:02:07



Comment A: IC Bandwidth 916 MHz
Date: 13.JAN.2016 16:21:57



Comment A: IC Bandwidth 916 MHz
Date: 13.JAN.2016 16:26:23

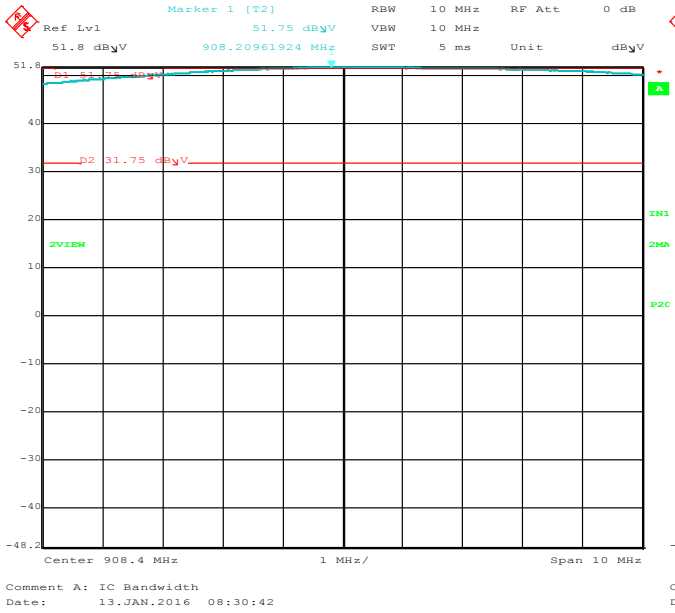
RSS GEN

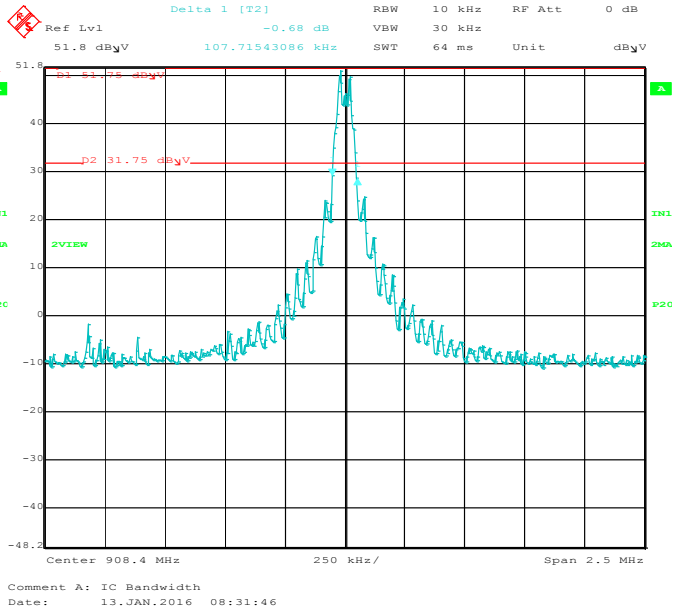
Company:	Spectrum Brands	Date:	1/12/2016
EUT:	Zwave Plus Series Smartcode Locks	Lab:	R
Model:	Smartcode 914	Test ENG:	Torey Oliver

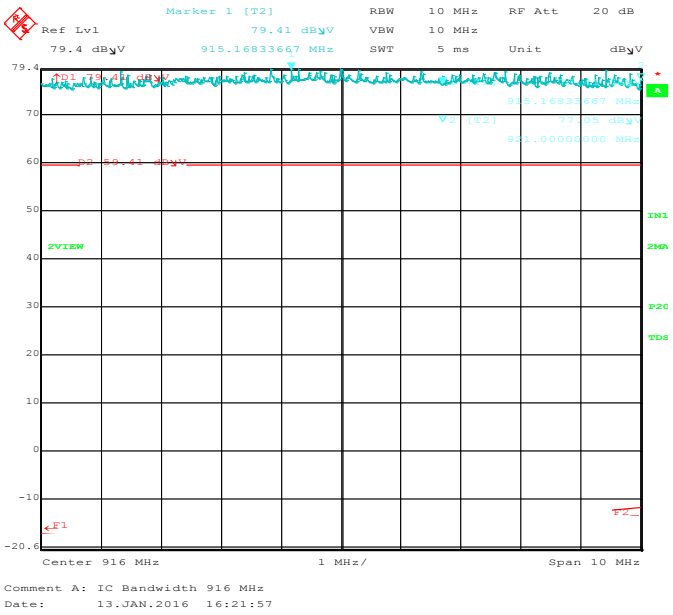
Compatible Electronics, Inc. FAC-3 (Lab R)

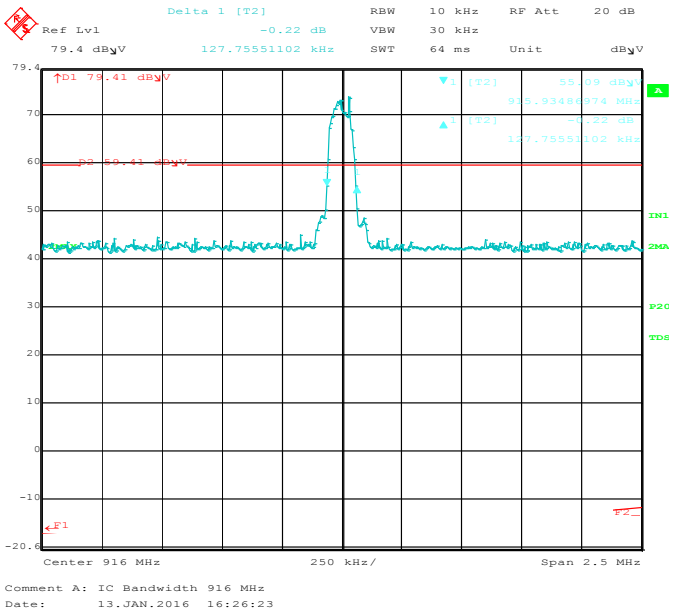
99% Occupied Bandwidth

Freq. (MHz)	Measured BW (kHz)	Peak / QP / Avg	Comments
908.40	107.72	Peak	
916.00	122.75	Peak	









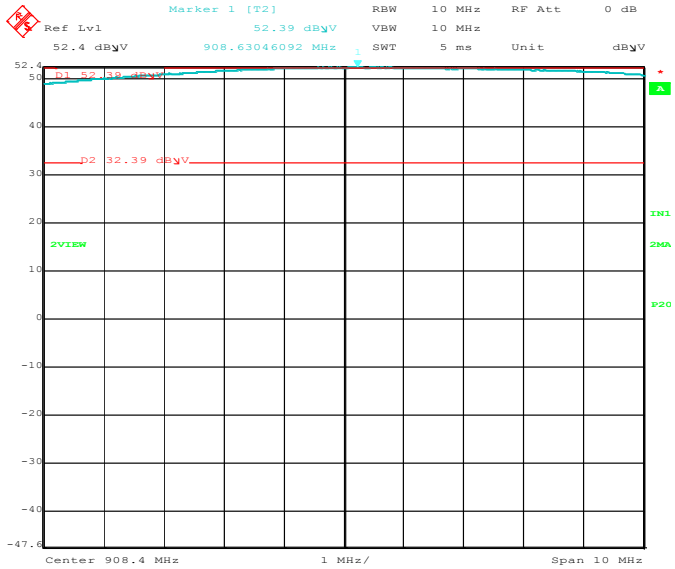
RSS GEN

Company:	Spectrum Brands	Date:	1/12/2016
EUT:	Zwave Plus Series Smartcode Locks	Lab:	R
Model:	Smartcode 916	Test ENG:	Torey Oliver

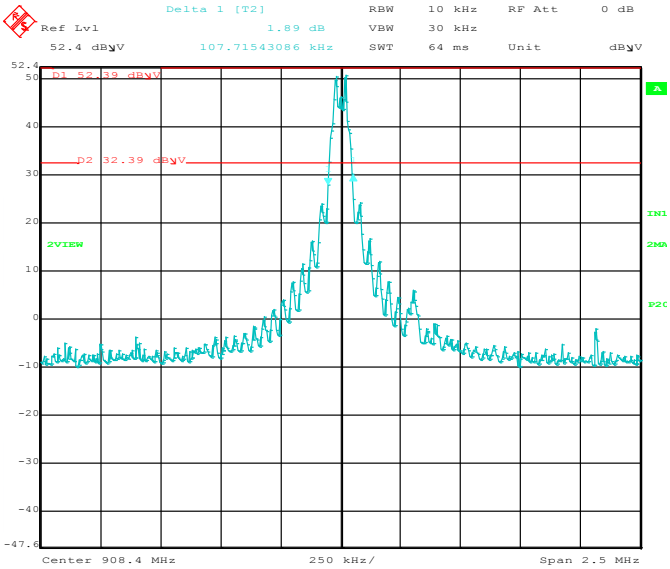
Compatible Electronics, Inc. FAC-3 (Lab R)

99% Occupied Bandwidth

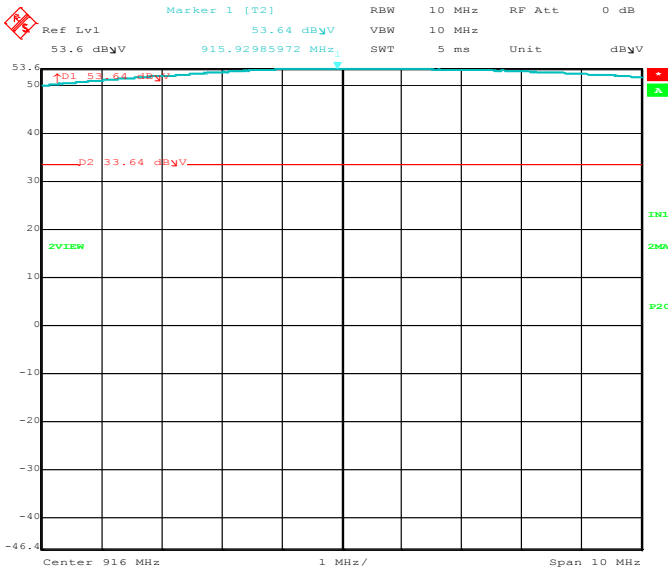
Freq. (MHz)	Measured BW (kHz)	Peak / QP / Avg	Comments
908.40	107.71	Peak	
916.00	132.77	Peak	



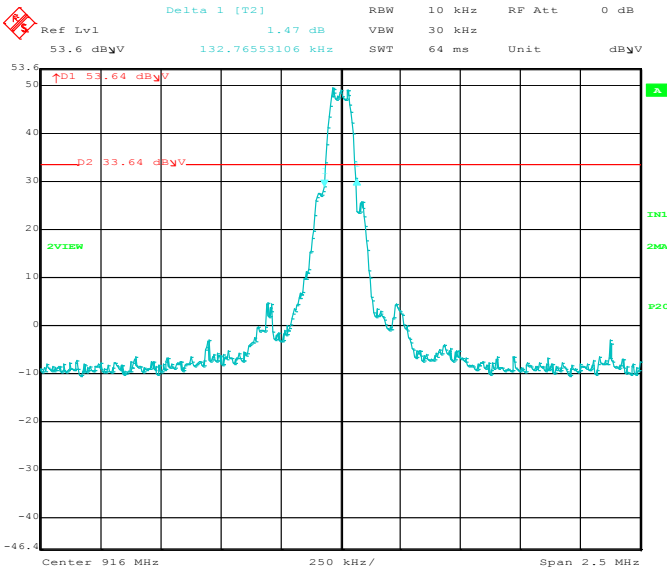
Comment A: IC Bandwidth
Date: 13.JAN.2016 12:38:55



Comment A: IC Bandwidth
Date: 13.JAN.2016 12:39:57



Comment A: IC Bandwidth
Date: 13.JAN.2016 12:51:16



Comment A: IC Bandwidth
Date: 13.JAN.2016 12:53:46