FCC PART 15 SUBPART B & SUBPART C SECTION 15.249
TEST REPORT

for

Z-WAVE ROLLER SHADES
Models: QMRS-908-8, QMRS-908-6, QMRS-908-4, & QMRS-908-3

Prepared for

Q MOTION
3400 COPTER RD.
PENSACOLA, FL 32514

Prepared by:_____

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DATE: APRIL 27th, 2016

	REPORT BODY	APPENDICES					TOTAL
		A	***B***	***C***	***D***	***E***	
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1	Plot Map And Layout of Test Site Below 1GHz
2	Plot Map And Layout of Test Site Above 1GHz

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.

Devices Tested:	Z-Wave Roller Shades Models: QMRS-908-8, QMRS-908-6, QMRS-908-4, & QMRS-908-3 S/N: None
Product Description:	The QMRS-908 from QMotion Inc is a Z-Wave Controlled Roller Window Shade. This Z-Wave controlled roller window shade allows an end user to install, configure and control their window coverings using their Z-Wave network which may even extend to an app on their smart phone.
Modifications:	The EUTS were not modified in order to comply with specifications.
Manufacturer:	Q Motion 3400 Copter Rd. Pensacola, FL 32514
Test Date:	December 8th and 10th, 2015 February 23rd, 24th, and 25th, 2016
Test Specifications:	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
Test Procedure:	ANSI C63.4 & C63.10

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz.	The EUTs are battery operated devices; therefore this test was deemed unnecessary and thus was not performed.
2	Radiated RF Emissions & Harmonics, 9 kHz – 10,000 MHz.	Complies with the limits of CFR Title 47 Part 15 Subpart B Section 15.109 & Subpart C Section 15.205, 15.209, & 15.249
3	Fundamental Field Strength	Complies with the limits of CFR Title 47 Part 15 Subpart C Section 15.249
4	Emissions Radiated Outside of the Fundamental Frequency Band	Complies with the limits of CFR Title 47 Part 15 Subpart C Section 15.205, 15.209, & 15.249

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Z-Wave Roller Shades Models: QMRS-908-8, QMRS-908-6, QMRS-908-4, & QMRS-908-3. The EMI measurements were performed according to the measurement procedure described in ANSI. 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 15.107, 15.109, & Part 15 Subpart C sections 15.205, 15.207, 15.209 and 15.249.

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

Q Motion

David Ayer

Nortek Security & Control LLC

Josh Hansen	Regulatory Engineer

Compatible Electronics, Inc.

Torey Oliver	Test Technician
Matt Harrison	Lab Manager

2.4 Date Test Sample was Received

The test sample was received on December 8, 2015.

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

4. DESCRIPTION OF TEST CONFIGURATION

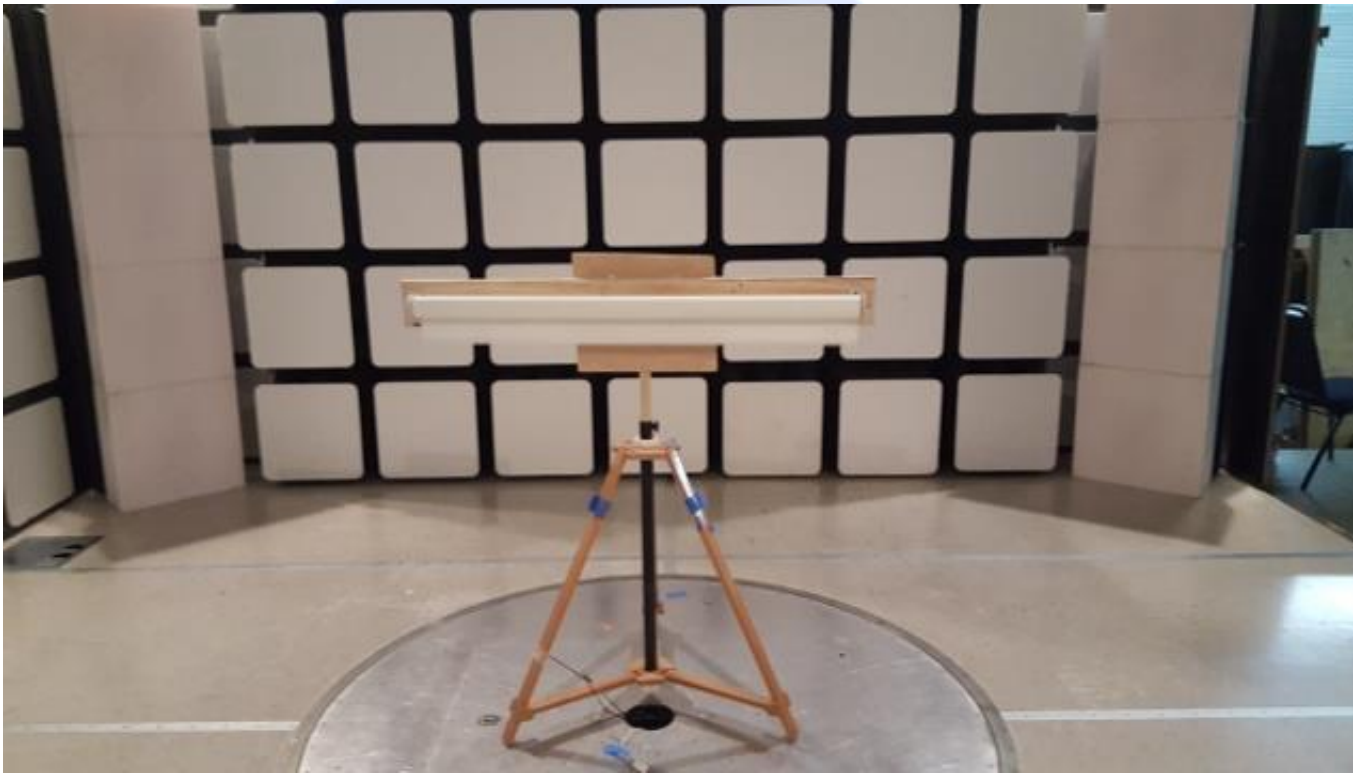
4.1 Description of Test Configuration

The Z-Wave Roller Shades Model: QMRS-908-8, QMRS-908-6, QMRS-908-4, & QMRS-908-3 (EUTs) was setup on a fixture to simulate a real life scenario use. A laptop was use to program the EUTs intermittently for the testing. For the models listed (QMRS-908-X) the X represents the number of batteries the EUT uses. The EUTs were only checked in one axis because this would be the only orientation in a real life scenario. The EUTs were continuously transmitting a data stream during transmit tests. The EUTs were set to constantly receive commands for the receive tests.

The EUTs were tested with 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



4.1.2 Cable Construction and Termination

The EUTs had no interconnecting cables.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUTs and Accessory List

#	EQUIPMENT TYPE	MANU-FACTURER	MODEL	SERIAL NUMBER
1	Z-WAVE ROLLER SHADE (EUT)	Q MOTION	QMRS-908-8	None
2	Z-WAVE ROLLER SHADE (EUT)	Q MOTION	QMRS-908-6	None
3	Z-WAVE ROLLER SHADE (EUT)	Q MOTION	QMRS-908-4	None
4	Z-WAVE ROLLER SHADE (EUT)	Q MOTION	QMRS-908-3	None
5	BATTERIES (X8, X6, X4, & X3)	RAYOVAC	D	None
6	LAPTOP	LENOVO	W530	R9-WRFYR 13/01
7	LAPTOP POWER SUPPLY	LENOVO	45N0113	11S45M0113Z1ZHX82CB1M9

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
Antenna, Loop	Com Power	AL-130	121049	12/06/2014	12/06/2017
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
Pre-Amp, 1-18GHz	Com Power	PAM-118	551034	04/24/2014	04/24/2016
Notch Filter	AMTI Microwave Circuits	N03019-01	3709-01 DC0415	01/06/2015	01/06/2016
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
LISN	Com-Power	LI-150	191935	3/17/2014	3/17/2016

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 tripod, which was placed on the ground plane. The height was adjusted according the testing which was placed 0.8 meters below 1 GHz and 1.5 meter for testing done above 1 GHz.

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.

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Channel Number and Frequencies

There 2 operating channels and the EUT uses 2-key FSK/GFSK modulation schemes. The 908.4MHz channel uses the FSK modulation with a 40kbps or a 9kbps data rate. The 40kbps data rate was used for all testing since it was found to be the worst case. The 916MHz channel uses GFSK at a data rate of 100kbps. The gain settings were preset for all units.

1 == 908.4 MHz
2 == 916.0 MHz

7.2 Antenna

The antenna is made up of a miniature coax cable is then used to transfer the RF signals to and from the antenna board, a circular monopole PCB antenna, assembled at the end of the roller tube.

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

The EUT is a battery operated device; therefore this test was deemed unnecessary and thus was not performed. If this test had been applicable it would have been performed as below.

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 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 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 Preamplifier used for frequencies above 1 GHz.

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

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

FREQUENCY RANGE (MHz)	TRANSDUCER	EFFECTIVE MEASUREMENT BANDWIDTH
0.009 to .150	Active Loop Antenna	200 Hz
0.150 to 30	Active Loop Antenna	9 kHz
30 to 1000	Combilog Antenna	100 kHz (120kHz for Quasi-Peak Measurements)
1000 to 10000	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. 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 EUT was 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 EUTs complies with the limits of CFR Title 47 Part 15 Subpart B section 15.109, & Part 15 Subpart C sections 15.205, 15.209 and 15.249.

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 EUTs complies with Part 15 Subpart C, Section 15.249.

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 EUTs complies with Part 15 Subpart C, Section 15.205 & 15.249.

9. TEST PROCEDURE DEVIATIONS

The test procedures were not deviated from throughout all tests.

10. CONCLUSIONS

The Z-Wave Roller Shades Models: QMRS-908-8, QMRS-908-6, QMRS-908-4, & QMRS-908-3 meets all of the relevant specification requirements defined in the Code of Federal Regulations Title 47, Part 15 Subpart B section 15.107, 15.109, & Subpart C sections 15.205, 15.207, 15.209 and 15.249.

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP LAB CODES 200063-0, 200528-0, 200527-0

For US, Canada, Australia/New Zealand, Taiwan and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025 an ISO 9002 equivalent. Please follow the link to the NIST site for each of our facilities NVLAP certificate and scope of accreditation.

NVLAP listing links
Agoura Division - http://ts.nist.gov/Standards/scopes/2000630.htm
Brea Division - http://ts.nist.gov/Standards/scopes/2005280.htm
Silverado/Lake Forest Division - http://ts.nist.gov/Standards/scopes/2005270.htm

ANSI listing
CETCB
https://www.ansica.org/wwwversion2/outside/ALLdirectoryDetails.asp?menuID=1&prgID=3&orgID=123&status=4

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA).

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA).

We are also certified/listed for IT products by the following country/agency:

VCCI Listing, from VCCI site
Enter "Compatible" in search form http://www.vcci.or.jp/vcci_e/activity/registration/setsubi.html

FCC Listing, from FCC OET site
FCC test lab search https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm

Industry Canada Industrie Canada
Compatible Electronics IC listing can be found at:
http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home

APPENDIX B

MODIFICATIONS TO THE EUTS

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 Z-WAVE ROLLER SHADES
Models: QMRS-908-8, QMRS-908-6, QMRS-908-4, & QMRS-908-3
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

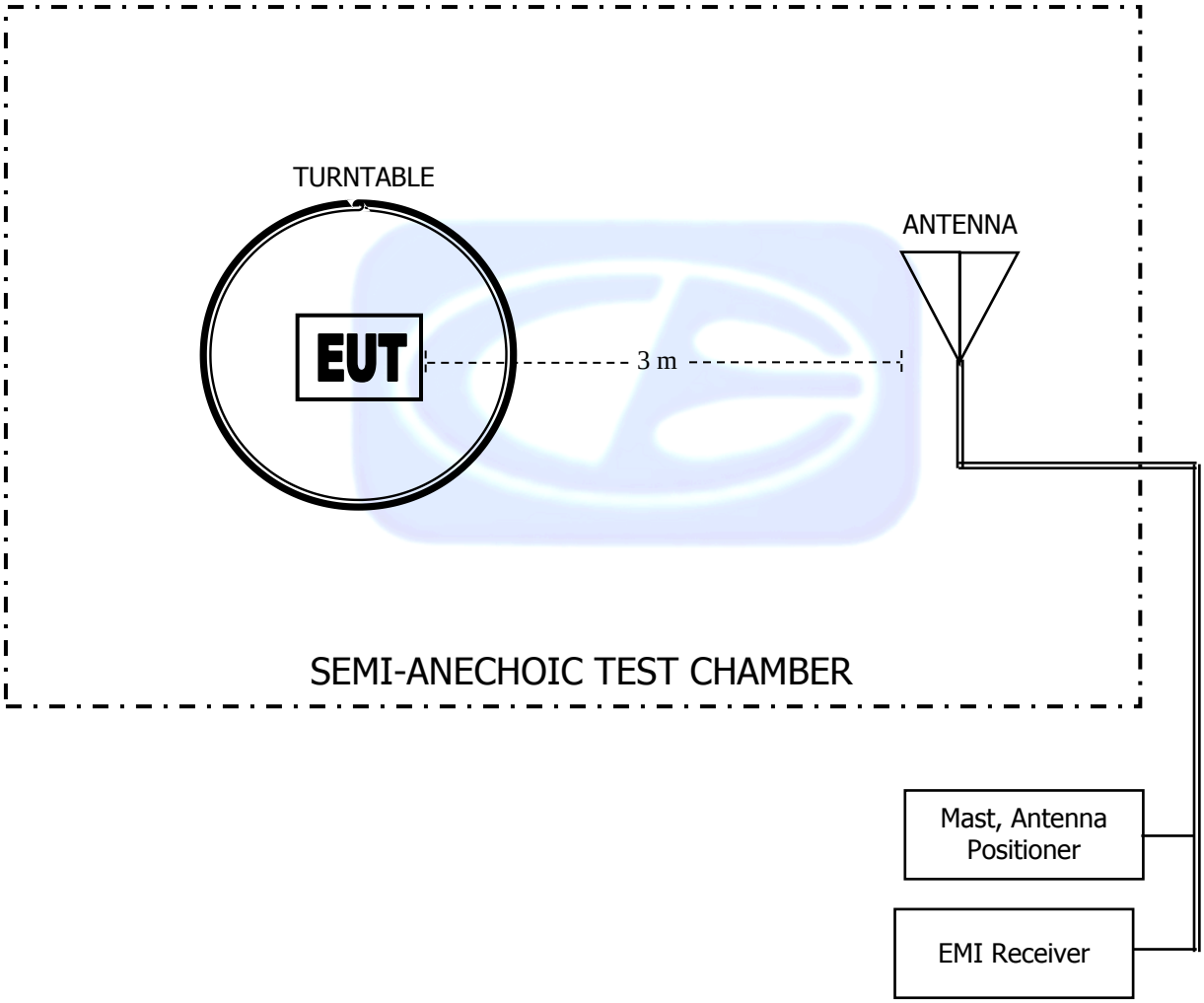
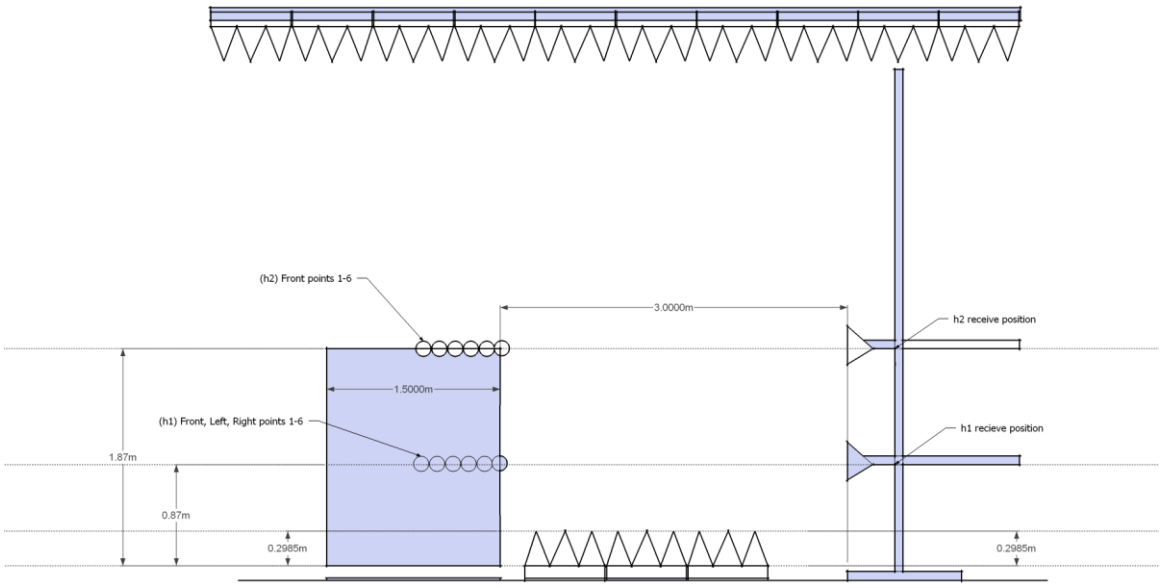


FIGURE 2: PLOT MAP AND LAYOUT OF TEST SITE ABOVE 1GHZ



COM-POWER AL-130

LOOP ANTENNA

S/N: 121049

CALIBRATION DUE: DECEMBER 6, 2017

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

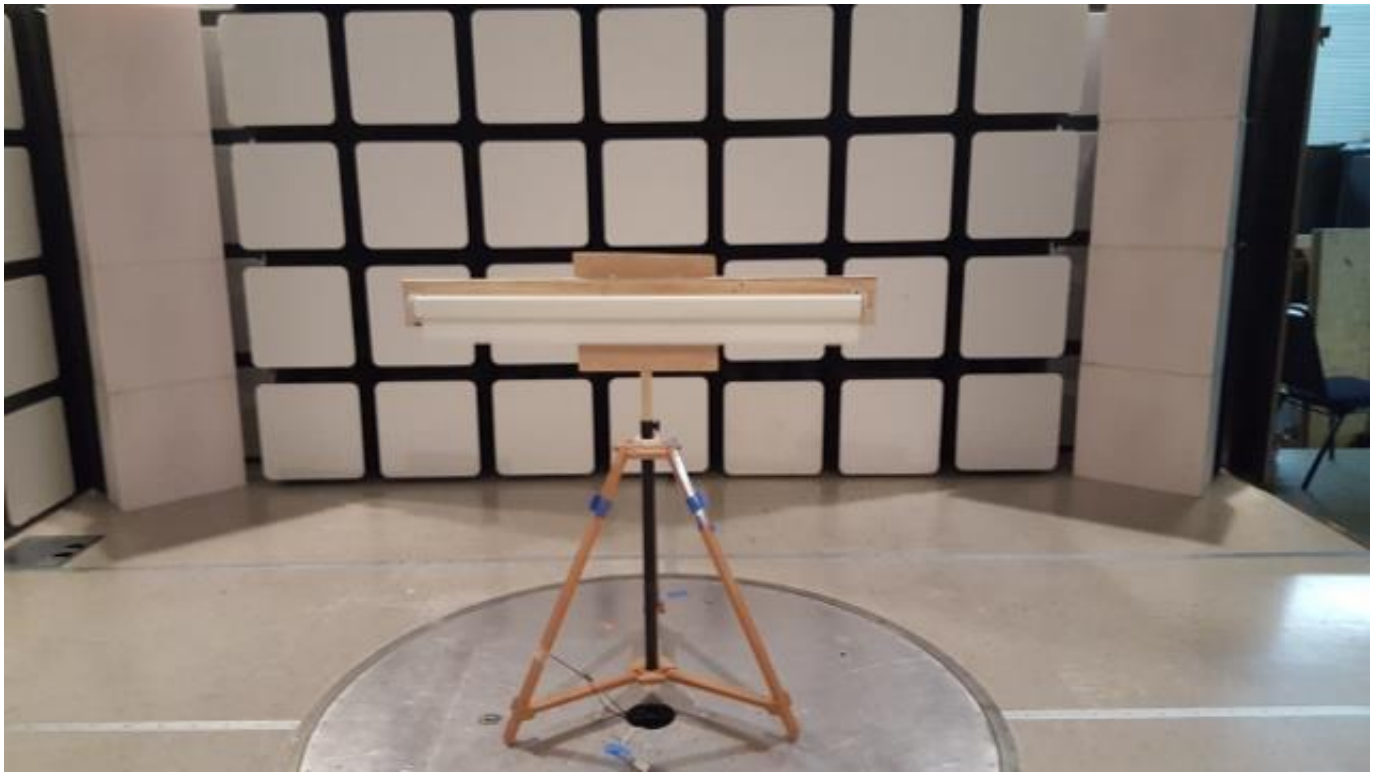
COM-POWER PAM-118

1-18GHz - PREAMPLIFIER

S/N: 553014

CALIBRATION DUE: APRIL 24, 2016

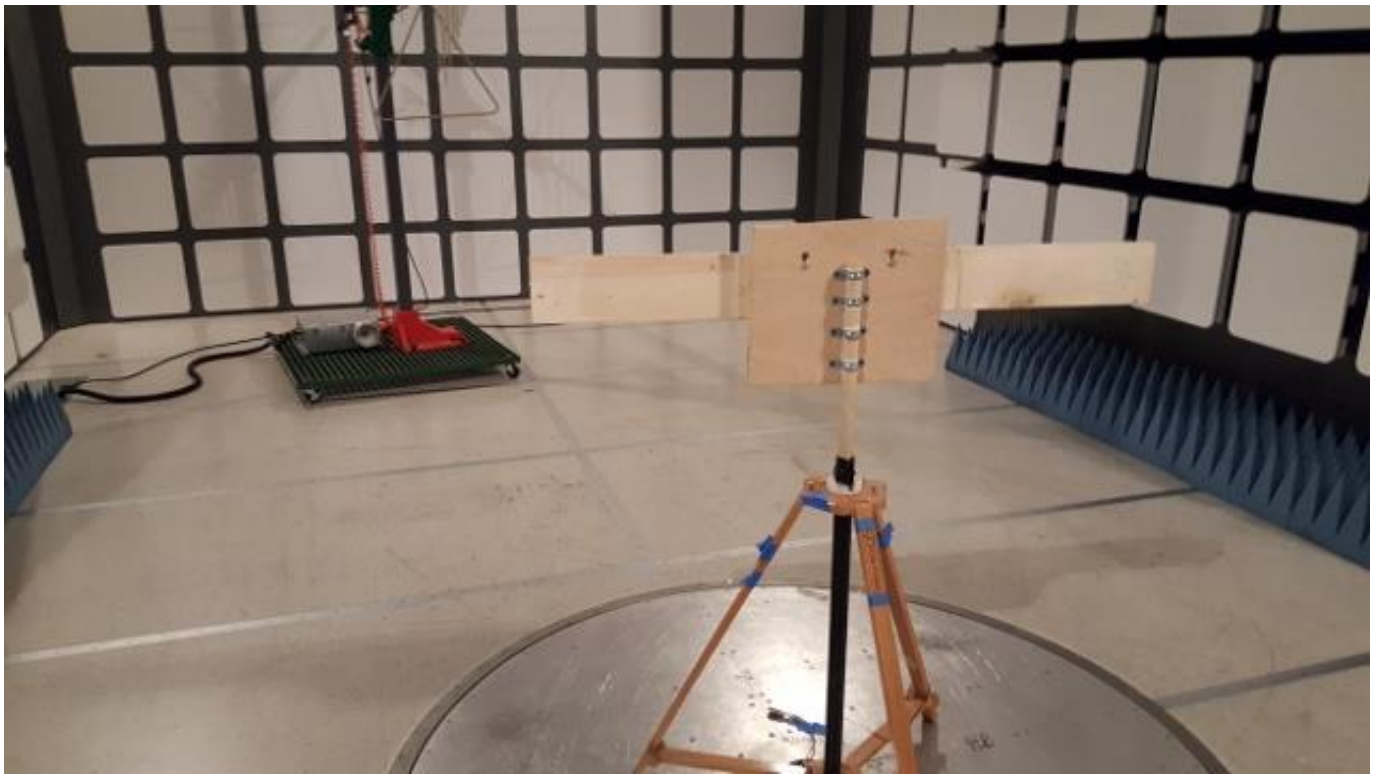
FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
500	26.2	**5500**	25.3
1000	25.6	**6000**	25.0
1100	25.9	**6500**	24.7
1200	25.9	**7000**	23.6
1300	26.3	**7500**	23.3
1400	26.5	**8000**	23.7
1500	26.3	**8500**	24.0
1600	26.1	**9000**	24.3
1700	26.2	**9500**	24.1
1800	26.3	**10000**	23.7
1900	25.8	**11000**	24.2
2000	26.0	**12000**	23.2
2500	26.0	**13000**	22.8
3000	25.8	**14000**	22.6
3500	25.9	**15000**	22.9
4000	26.4	**16000**	22.3
4500	26.0	**17000**	22.6
5000	25.6	**18000**	23.9



FRONT VIEW

Q MOTION
Z-WAVE ROLLER SHADES
MODELS: QMRS-908-8 & QMRS-908-6
FCC SUBPART B & C - RADIATED EMISSIONS < 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

Q MOTION
Z-WAVE ROLLER SHADES
MODELS: QMRS-908-8 & QMRS-908-6
FCC SUBPART B & C - RADIATED EMISSIONS < 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

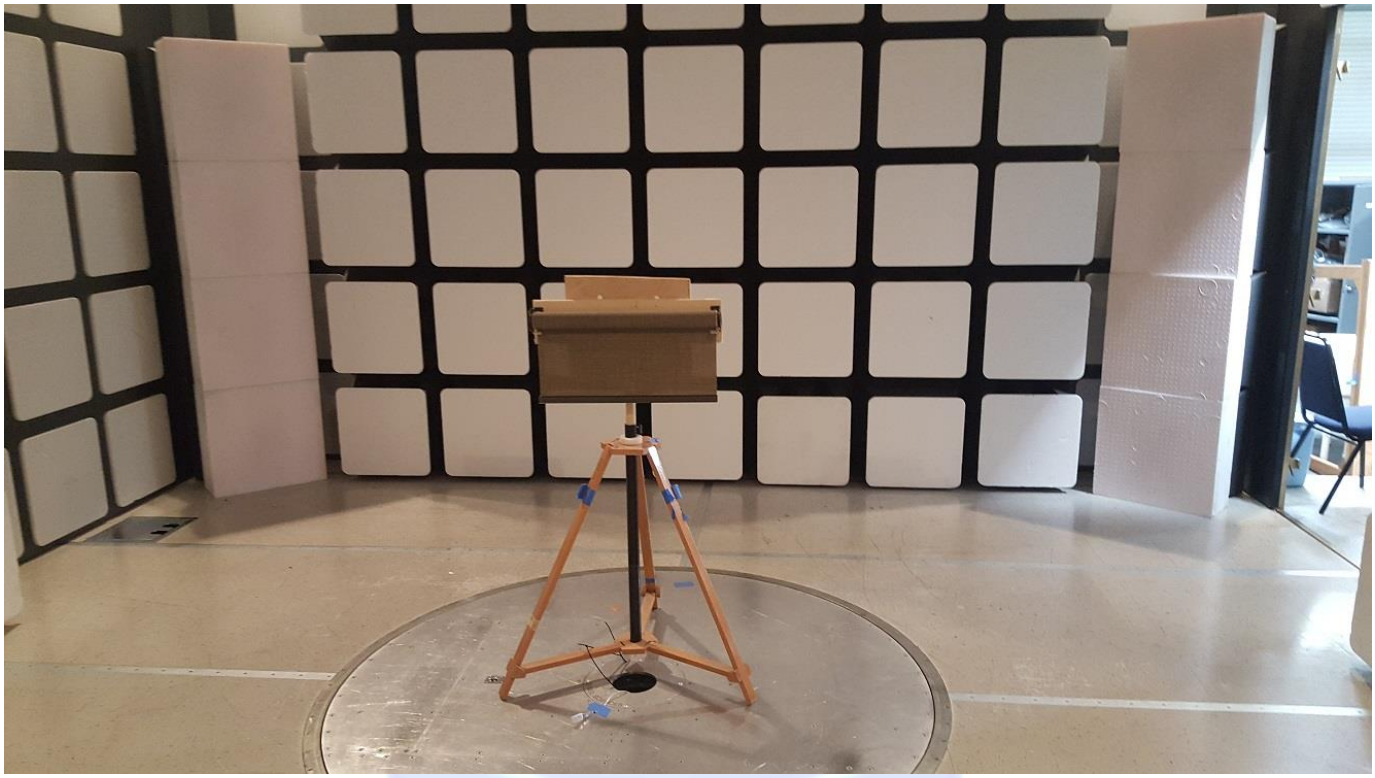
Q MOTION
Z-WAVE ROLLER SHADES
MODELS: QMRS-908-8 & QMRS-908-6
FCC SUBPART B & C - RADIATED EMISSIONS > 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

Q MOTION
Z-WAVE ROLLER SHADES
MODELS: QMRS-908-8 & QMRS-908-6
FCC SUBPART B & C - RADIATED EMISSIONS > 1GHz

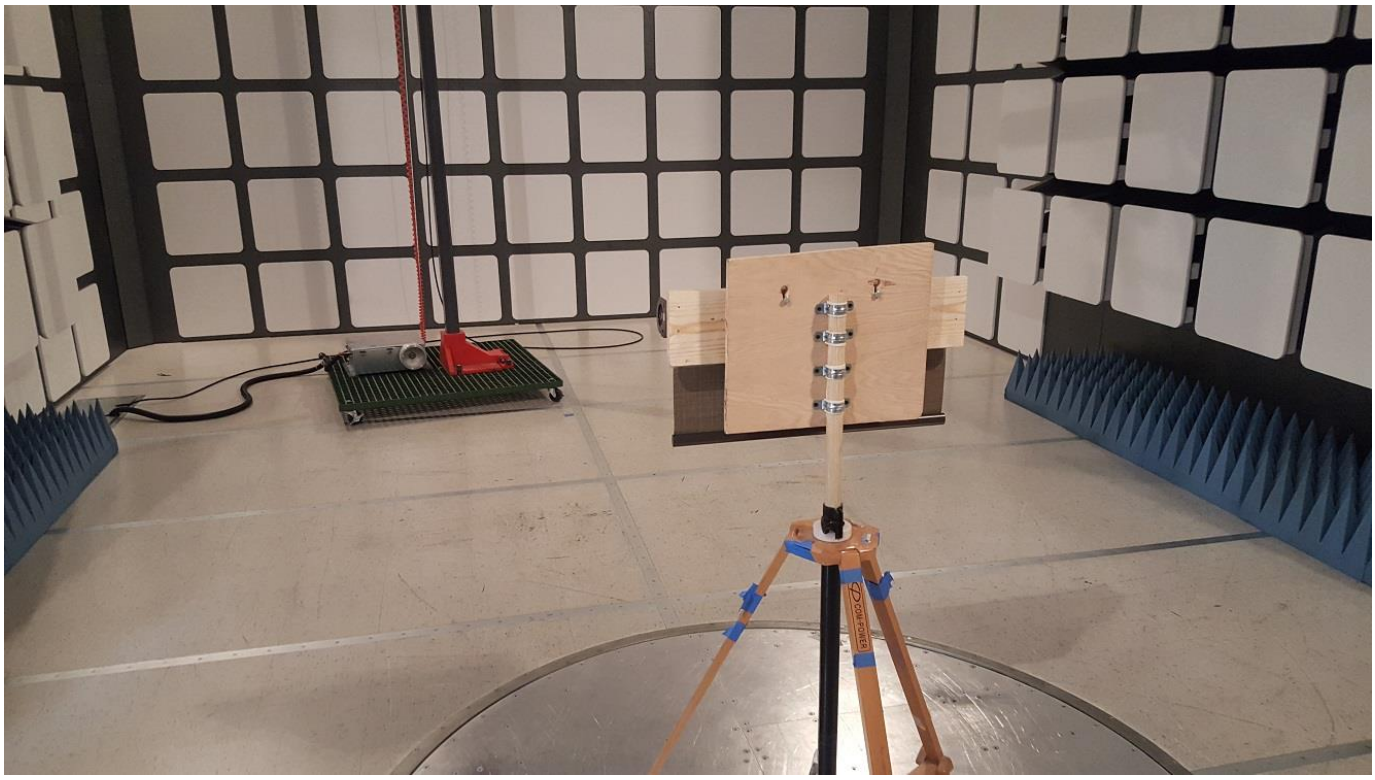
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

Q MOTION
Z-WAVE ROLLER SHADES
MODELS: QMRS-908-4 & QMRS-908-3
FCC SUBPART B & C - RADIATED EMISSIONS < 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

Q MOTION
Z-WAVE ROLLER SHADES
MODELS: QMRS-908-4 & QMRS-908-3
FCC SUBPART B & C - RADIATED EMISSIONS < 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

Q MOTION
Z-WAVE ROLLER SHADES
MODELS: QMRS-908-4 & QMRS-908-3
FCC SUBPART B & C - RADIATED EMISSIONS > 1GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

Q MOTION
Z-WAVE ROLLER SHADES
MODELS: QMRS-908-4 & QMRS-908-3
FCC SUBPART B & C - RADIATED EMISSIONS > 1GHz

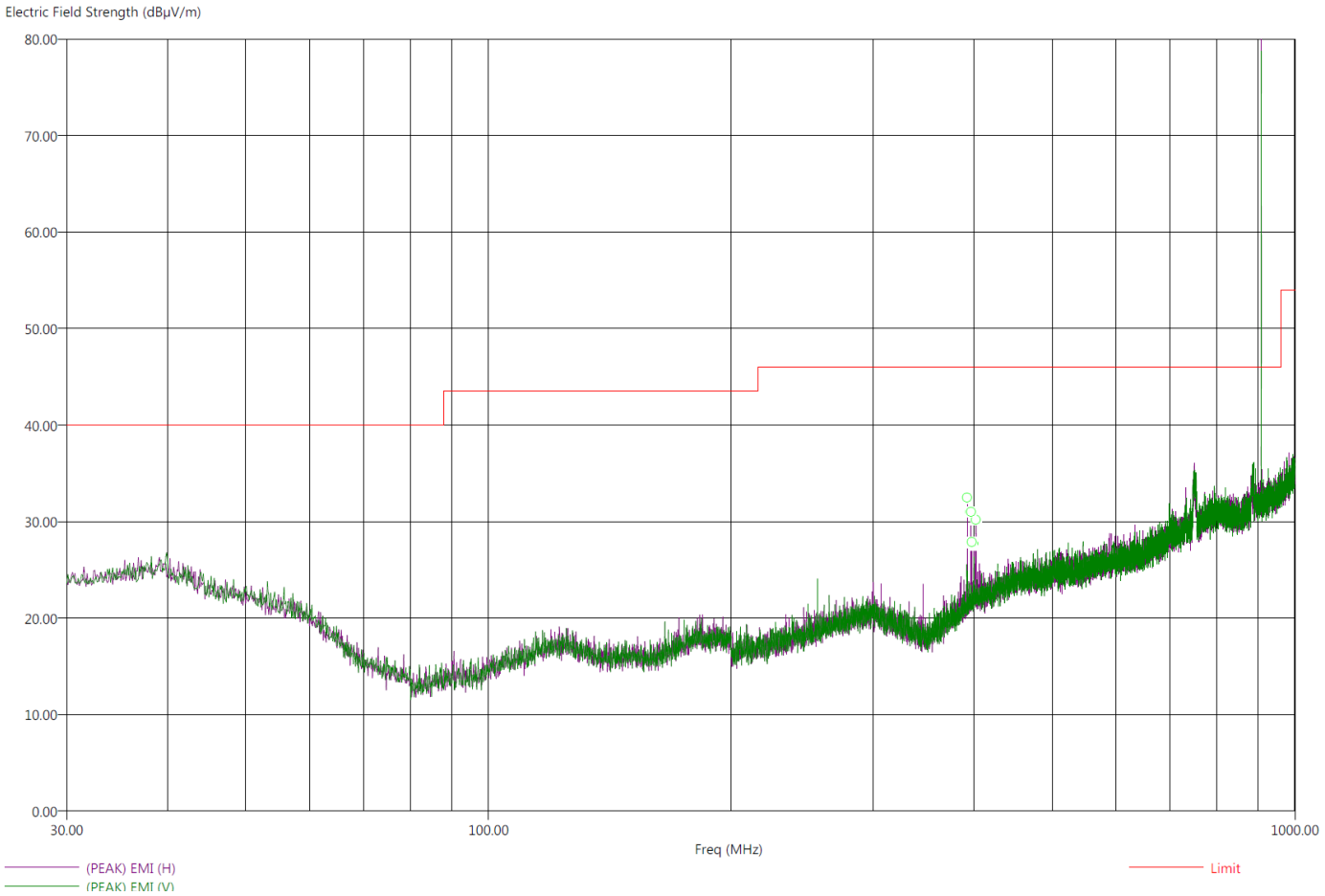
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

RADIATED EMISSIONS DATA SHEETS
QMRS-908-8 & QMRS-908-6

Title: FCC 15.209 2/24/2016 6:59:18 PM
File: Radiated Pre-Scan 30-1000Mhz.set Sequence: Preliminary Scan
Operator: Torey Oliver
EUT Type: Roller Shade / QMRS-908-8
EUT Condition: The EUT is continously receiving set commands.
Comments: Temp: 74f
Hum: 33%
120V 60Hz

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



There were no spurious emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case operating mode.

Title: FCC 15.209 2/24/2016 7:47:36 PM
File: Radiated Final 30-1000Mhz.set Sequence: Final Measurements
Operator: Torey Oliver
EUT Type: Roller Shade / QMRS-908-8
EUT Condition: The EUT is continously receiving set commands.
Comments: Temp: 74f
Hum: 33%
120V 60Hz

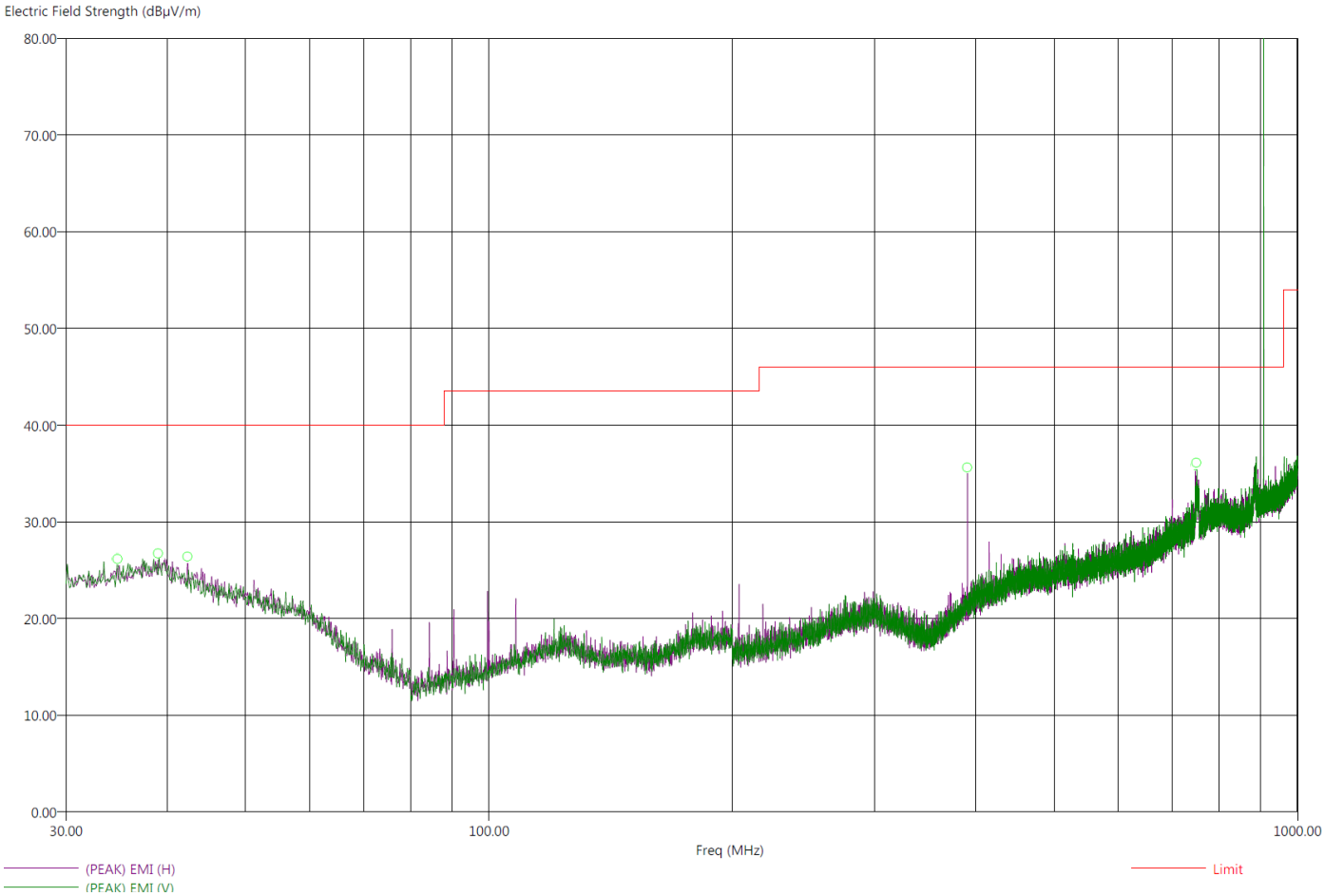
Compatible Electronics, Inc. FAC-3 (Lab R)

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)
392.60	-27.70	18.30	24.09	46.00	H	201.00	110.80	18.87	2.07
396.60	-27.27	18.73	32.88	46.00	H	282.25	217.73	19.16	2.09
397.60	-27.09	18.91	34.51	46.00	H	27.50	204.83	19.22	2.09
399.70	-25.63	20.37	35.27	46.00	H	113.75	184.35	19.38	2.10
401.50	-26.15	19.85	36.79	46.00	H	103.25	219.22	19.44	2.11
402.30	-26.47	19.53	35.36	46.00	H	16.50	357.97	19.45	2.12

There were no spurious emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case operating mode.

Title: FCC 15.209 2/24/2016 6:00:26 PM
File: Radiated Pre-Scan 30-1000Mhz.set Sequence: Preliminary Scan
Operator: Torey Oliver
EUT Type: Roller Shade / QMRS-908-6
EUT Condition: The EUT is continously receiving set commands.
Comments: Temp: 74f
Hum: 33%
120V 60Hz

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



There were no spurious emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case operating mode.

Title: FCC 15.209 2/24/2016 6:26:29 PM
File: Radiated Final 30-1000Mhz.set Sequence: Final Measurements
Operator: Torey Oliver
EUT Type: Roller Shade / QMRS-908-6
EUT Condition: The EUT is continously receiving set commands.
Comments: Temp: 74f
Hum: 33%
120V 60Hz

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

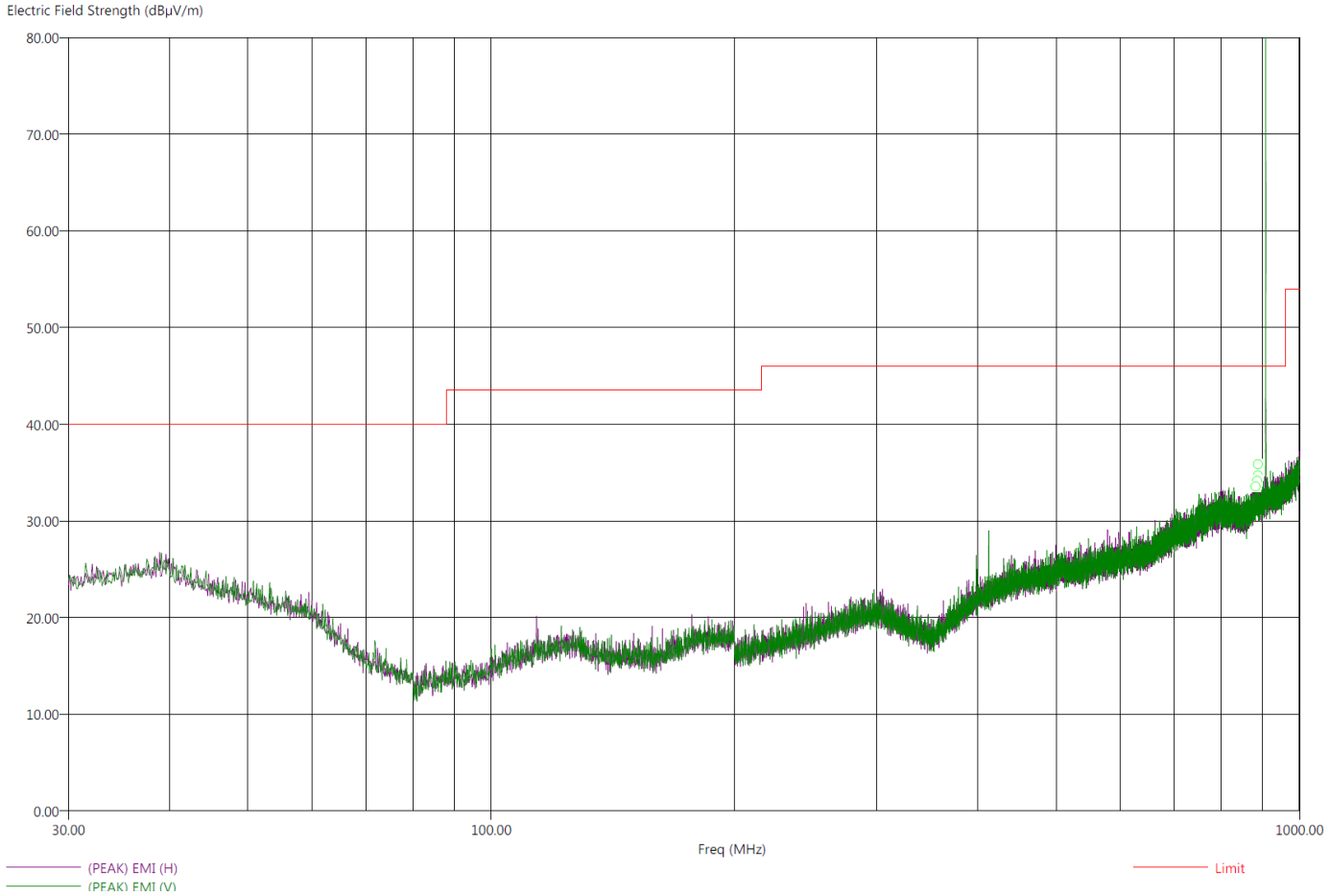
Freq (MHz)	(QP) Margin (dB)	(QP) EMI (dBµV/m)	(PEAK) EMI (dBµV/m)	Limit (dBµV/m)	Pol	Ttbl Agl (deg)	Twr Ht (cm)	Transducer(dB)	Cable(dB)
34.70	-20.13	19.87	25.36	40.00	V	127.25	393.19	22.50	1.00
39.00	-19.34	20.66	26.28	40.00	H	125.25	102.08	22.90	1.24
42.40	-20.02	19.98	25.71	40.00	H	0.00	128.47	22.27	0.99
390.70	-27.78	18.22	23.91	46.00	H	39.25	383.04	18.74	2.07
748.00	-16.42	29.58	34.36	46.00	H	49.50	359.10	24.85	3.02
750.50	-13.85	32.15	38.63	46.00	V	0.00	213.73	24.91	3.00

There were no spurious emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case operating mode.

RADIATED EMISSIONS DATA SHEETS
QMRS-908-4 & QMRS-908-3

Title: FCC 15.209 2/24/2016 3:41:07 PM
File: Radiated Pre-Scan 30-1000Mhz.set Sequence: Preliminary Scan
Operator: Torey Oliver
EUT Type: Roller Shade / QMRS-908-4
EUT Condition: The EUT is continously receiving set commands.
Comments: Temp: 74f
Hum: 33%
120V 60Hz

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



There were no spurious emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case operating mode.

Title: FCC 15.209 2/24/2016 4:02:58 PM
File: Radiated Final 30-1000Mhz.set Sequence: Final Measurements
Operator: Torey Oliver
EUT Type: Roller Shade / QMRS-908-4
EUT Condition: The EUT is continously receiving set commands.
Comments: Temp: 74f
Hum: 33%
120V 60Hz

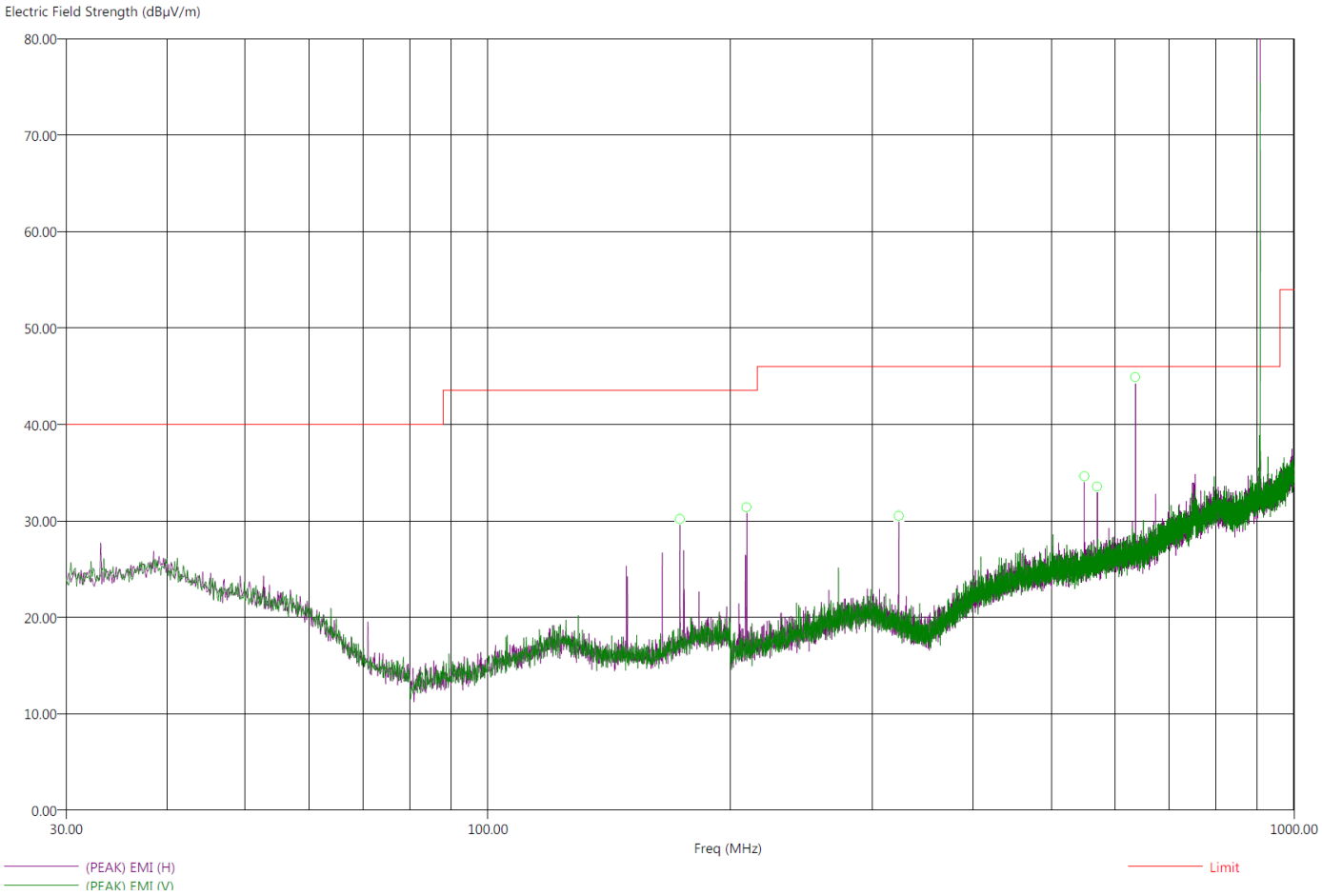
Compatible Electronics, Inc. FAC-3 (Lab R)

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)
881.80	-15.89	30.11	35.50	46.00	V	104.75	131.28	26.38	3.01
883.10	-17.57	28.43	34.19	46.00	H	0.00	220.17	26.40	3.03
885.60	-15.70	30.30	36.13	46.00	H	163.75	233.97	26.43	3.07
886.00	-17.34	28.66	34.01	46.00	V	0.00	352.95	26.44	3.08
888.70	-15.61	30.39	35.92	46.00	H	69.25	280.17	26.47	3.12
889.00	-16.53	29.47	35.01	46.00	V	359.50	313.97	26.47	3.13

There were no spurious emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case operating mode.

Title: FCC 15.209 2/24/2016 9:31:32 AM
File: Radiated Pre-Scan 30-1000Mhz.set Sequence: Preliminary Scan
Operator: Torey Oliver
EUT Type: Roller Shade / QMRS-908-3
EUT Condition: The EUT is continously receiving set commands.
Comments: Temp: 74f
Hum: 33%
120V 60Hz

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



There were no spurious emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case operating mode.

Title: FCC 15.209 2/24/2016 9:59:05 AM
File: Radiated Final 30-1000Mhz.set Sequence: Final Measurements
Operator: Torey Oliver
EUT Type: Roller Shade / QMRS-908-3
EUT Condition: The EUT is continously receiving set commands.
Comments: Temp: 74f
Hum: 33%
120V 60Hz

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)
173.10	-29.10	14.42	20.77	43.52	H	356.50	290.26	14.36	1.17
209.60	-24.24	19.28	35.19	43.52	H	162.25	110.86	15.00	1.54
323.50	-29.45	16.55	32.59	46.00	H	146.75	217.25	16.88	1.95
549.10	-21.64	24.36	38.69	46.00	H	142.25	117.55	21.60	2.39
569.90	-22.66	23.34	39.49	46.00	H	46.25	187.76	21.60	2.64
635.60	-22.34	23.66	29.49	46.00	H	14.25	347.70	22.82	2.42

There were no spurious emissions other than harmonics found below 30 MHz or above 1GHz.
This is the worst case operating mode.

FUNDAMENTAL DATA SHEETS

QMRS-908-8 & QMRS 908-6

FUNDAMENTAL FIELD STRENGTH

FCC 15.249

Company:	Q Motion	Date:	12/8/2015
EUT:	Z-Wave Roller Shade	Lab:	R
Model:	QMRS-908-8	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
908.42	93.72	H	113.97	-20.25	Peak	130.00	2.21	
908.42	93.35	H	93.97	-0.62	QP	130.00	2.21	
908.42	84.14	V	113.97	-29.83	Peak	268.00	1.14	
908.42	83.70	V	93.97	-10.27	QP	268.00	1.14	
916.00	94.63	H	113.97	-19.34	Peak	132.00	1.48	
916.00	93.63	H	93.97	-0.34	QP	132.00	1.48	
916.00	83.48	V	113.97	-30.49	Peak	266.00	1.37	
916.00	82.82	V	93.97	-11.15	QP	266.00	1.37	

Test Distance 3 Meters

FUNDAMENTAL FIELD STRENGTH

FCC 15.249

Company:	Q Motion	Date:	12/8/2015
EUT:	Z-Wave Roller Shade	Lab:	R
Model:	QMRS-908-6	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
908.42	88.19	H	113.97	-25.78	Peak	152.00	1.00	
908.42	87.57	H	93.97	-6.40	QP	152.00	1.00	
908.42	87.10	V	113.97	-26.87	Peak	87.00	2.18	
908.42	86.73	V	93.97	-7.24	QP	87.00	2.18	
916.00	94.08	H	113.97	-19.89	Peak	137.00	1.50	
916.00	93.55	H	93.97	-0.42	QP	137.00	1.50	
916.00	83.88	V	113.97	-30.09	Peak	264.00	1.41	
916.00	82.94	V	93.97	-11.03	QP	264.00	1.41	

Test Distance 3 Meters

FUNDAMENTAL DATA SHEETS

QMRS-908-4 & QMRS 908-3

FUNDAMENTAL FIELD STRENGTH

FCC 15.249

Company:	Q Motion	Date:	12/9/2015
EUT:	Z-Wave Roller Shade	Lab:	R
Model:	QMRS-908-4	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
908.42	93.25	H	113.97	-20.72	Peak	125.00	1.31	
908.42	92.66	H	93.97	-1.31	QP	125.00	1.31	
908.42	83.53	V	113.97	-30.44	Peak	233.00	3.02	
908.42	83.11	V	93.97	-10.86	QP	233.00	3.02	
916.00	93.61	H	113.97	-20.36	Peak	125.00	2.66	
916.00	92.64	H	93.97	-1.33	QP	125.00	2.66	
916.00	84.93	V	113.97	-29.04	Peak	222.00	3.06	
916.00	84.27	V	93.97	-9.70	QP	222.00	3.06	

Test Distance 3 Meters

FUNDAMENTAL FIELD STRENGTH

FCC 15.249

Company:	Q Motion	Date:	12/9/2015
EUT:	Z-Wave Roller Shade	Lab:	R
Model:	QMRS-908-3	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
908.42	94.13	H	113.97	-19.84	Peak	120.00	1.36	
908.42	93.45	H	93.97	-0.52	QP	120.00	1.36	
908.42	87.49	V	113.97	-26.48	Peak	107.00	1.10	
908.42	87.16	V	93.97	-6.81	QP	107.00	1.10	
916.00	93.94	H	113.97	-20.03	Peak	116.00	1.26	
916.00	93.07	H	93.97	-0.90	QP	116.00	1.26	
916.00	88.47	V	113.97	-25.50	Peak	104.00	2.75	
916.00	87.93	V	93.97	-6.04	QP	104.00	2.75	

Test Distance 3 Meters

HARMONIC
DATA SHEETS

QMRS-908-8 & QMRS 908-6

HARMONIC EMISSIONS LOW CHANNEL HORIZONTAL

FCC 15.249

Company:	Q Motion	Date:	12/10/2015
EUT:	Roller Shade	Lab:	R
Model:	QMRS-908-8	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			
1816.8		H	53.98		Avg			No emissions found
2725.3		H	73.98		Peak			
2725.3		H	53.98		Avg			No emissions found
3633.7		H	73.98		Peak			
3633.7		H	53.98		Avg			No emissions found
4542.1		H	73.98		Peak			
4542.1		H	53.98		Avg			No emissions found
5450.5		H	73.98		Peak			
5450.5		H	53.98		Avg			No emissions found
6358.9		H	73.98		Peak			
6358.9		H	53.98		Avg			No emissions found
7267.4		H	73.98		Peak			
7267.4		H	53.98		Avg			No emissions found
8175.8		H	73.98		Peak			
8175.8		H	53.98		Avg			No emissions found
9084.2		H	73.98		Peak			
9084.2		H	53.98		Avg			No emissions found

Test distance
3 meter

HARMONIC EMISSIONS LOW CHANNEL VERTICAL

FCC 15.249

Company:	Q Motion	Date:	12/10/2015
EUT:	Roller Shade	Lab:	R
Model:	QMRS-908-8	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			
1816.8		V	53.98		Avg			No emissions found
2725.3		V	73.98		Peak			
2725.3		V	53.98		Avg			No emissions found
3633.7		V	73.98		Peak			
3633.7		V	53.98		Avg			No emissions found
4542.1		V	73.98		Peak			
4542.1		V	53.98		Avg			No emissions found
5450.5		V	73.98		Peak			
5450.5		V	53.98		Avg			No emissions found
6358.9		V	73.98		Peak			
6358.9		V	53.98		Avg			No emissions found
7267.4		V	73.98		Peak			
7267.4		V	53.98		Avg			No emissions found
8175.8		V	73.98		Peak			
8175.8		V	53.98		Avg			No emissions found
9084.2		V	73.98		Peak			
9084.2		V	53.98		Avg			No emissions found

Test distance
3 meter

HARMONIC EMISSIONS HIGH CHANNEL HORIZONTAL

FCC 15.249

Company: Q Motion
EUT: Roller Shade
Model: QMRS-908-8

Date: 12/11/2015
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		H	73.98		Peak			
1832.0		H	53.98		Avg			No Emissions Found
2748.0		H	73.98		Peak			
2748.0		H	53.98		Avg			No Emissions Found
3664.0		H	73.98		Peak			
3664.0		H	53.98		Avg			No Emissions Found
4580.0		H	73.98		Peak			
4580.0		H	53.98		Avg			No Emissions Found
5496.0		H	73.98		Peak			
5496.0		H	53.98		Avg			No Emissions Found
6412.0		H	73.98		Peak			
6412.0		H	53.98		Avg			No Emissions Found
7328.0		H	73.98		Peak			
7328.0		H	53.98		Avg			No Emissions Found
8244.0		H	73.98		Peak			
8244.0		H	53.98		Avg			No Emissions Found
9160.0		H	73.98		Peak			
9160.0		H	53.98		Avg			No Emissions Found

Test distance
3 meter

HARMONIC EMISSIONS HIGH CHANNEL VERTICAL

FCC 15.249

Company: Q Motion
EUT: Roller Shade
Model: QMRS-908-8

Date: 12/11/2015
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		V	73.98		Peak			
1832.0		V	53.98		Avg			No Emissions Found
2748.0		V	73.98		Peak			
2748.0		V	53.98		Avg			No Emissions Found
3664.0		V	73.98		Peak			
3664.0		V	53.98		Avg			No Emissions Found
4580.0		V	73.98		Peak			
4580.0		V	53.98		Avg			No Emissions Found
5496.0		V	73.98		Peak			
5496.0		V	53.98		Avg			No Emissions Found
6412.0		V	73.98		Peak			
6412.0		V	53.98		Avg			No Emissions Found
7328.0		V	73.98		Peak			
7328.0		V	53.98		Avg			No Emissions Found
8244.0		V	73.98		Peak			
8244.0		V	53.98		Avg			No Emissions Found
9160.0		V	73.98		Peak			
9160.0		V	53.98		Avg			No Emissions Found

Test distance
3 meter

HARMONIC EMISSIONS LOW CHANNEL HORIZONTAL

FCC 15.249

Company:	Q Motion	Date:	12/10/2015
EUT:	Roller Shade	Lab:	R
Model:	QMRS-908-6	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			
1816.8		H	53.98		Avg			No emissions found
2725.3	41.60	H	73.98	-32.38	Peak	1.50	94	
2725.3	28.84	H	53.98	-25.14	Avg	1.50	94	
3633.7		H	73.98		Peak			
3633.7		H	53.98		Avg			No emissions found
4542.1		H	73.98		Peak			
4542.1		H	53.98		Avg			No emissions found
5450.5		H	73.98		Peak			
5450.5		H	53.98		Avg			No emissions found
6358.9		H	73.98		Peak			
6358.9		H	53.98		Avg			No emissions found
7267.4		H	73.98		Peak			
7267.4		H	53.98		Avg			No emissions found
8175.8		H	73.98		Peak			
8175.8		H	53.98		Avg			No emissions found
9084.2		H	73.98		Peak			
9084.2		H	53.98		Avg			No emissions found

Test distance
3 meter

HARMONIC EMISSIONS LOW CHANNEL VERTICAL

FCC 15.249

Company:	Q Motion	Date:	12/10/2015
EUT:	Roller Shade	Lab:	R
Model:	QMRS-908-6	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			
1816.8		V	53.98		Avg			No emissions found
2725.3	45.81	V	73.98	-28.17	Peak	1.24	89	
2725.3	32.67	V	53.98	-21.31	Avg	1.24	89	
3633.7		V	73.98		Peak			
3633.7		V	53.98		Avg			No emissions found
4542.1		V	73.98		Peak			
4542.1		V	53.98		Avg			No emissions found
5450.5		V	73.98		Peak			
5450.5		V	53.98		Avg			No emissions found
6358.9		V	73.98		Peak			
6358.9		V	53.98		Avg			No emissions found
7267.4		V	73.98		Peak			
7267.4		V	53.98		Avg			No emissions found
8175.8		V	73.98		Peak			
8175.8		V	53.98		Avg			No emissions found
9084.2		V	73.98		Peak			
9084.2		V	53.98		Avg			No emissions found

Test distance
3 meter

HARMONIC EMISSIONS HIGH CHANNEL HORIZONTAL

FCC 15.249

Company: Q Motion
EUT: Roller Shade
Model: QMRS-908-6

Date: 12/10/2015
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		H	73.98		Peak			
1832.0		H	53.98		Avg			No Emissions Found
2748.0	40.72	H	73.98	-33.26	Peak	1.51	89	
2748.0	28.27	H	53.98	-25.71	Avg	1.51	89	
3664.0		H	73.98		Peak			
3664.0		H	53.98		Avg			No Emissions Found
4580.0		H	73.98		Peak			
4580.0		H	53.98		Avg			No Emissions Found
5496.0		H	73.98		Peak			
5496.0		H	53.98		Avg			No Emissions Found
6412.0		H	73.98		Peak			
6412.0		H	53.98		Avg			No Emissions Found
7328.0		H	73.98		Peak			
7328.0		H	53.98		Avg			No Emissions Found
8244.0		H	73.98		Peak			
8244.0		H	53.98		Avg			No Emissions Found
9160.0		H	73.98		Peak			
9160.0		H	53.98		Avg			No Emissions Found

Test distance
3 meter

HARMONIC EMISSIONS HIGH CHANNEL VERTICAL

FCC 15.249

Company: Q Motion
EUT: Roller Shade
Model: QMRS-908-6

Date: 12/10/2015
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		V	73.98		Peak			
1832.0		V	53.98		Avg			No Emissions Found
2748.0		V	73.98		Peak			
2748.0		V	53.98		Avg			No Emissions Found
3664.0		V	73.98		Peak			
3664.0		V	53.98		Avg			No Emissions Found
4580.0		V	73.98		Peak			
4580.0		V	53.98		Avg			No Emissions Found
5496.0		V	73.98		Peak			
5496.0		V	53.98		Avg			No Emissions Found
6412.0		V	73.98		Peak			
6412.0		V	53.98		Avg			No Emissions Found
7328.0		V	73.98		Peak			
7328.0		V	53.98		Avg			No Emissions Found
8244.0		V	73.98		Peak			
8244.0		V	53.98		Avg			No Emissions Found
9160.0		V	73.98		Peak			
9160.0		V	53.98		Avg			No Emissions Found

Test distance
3 meter

HARMONIC
DATA SHEETS

QMRS-908-4 & QMRS 908-3

HARMONIC EMISSIONS LOW CHANNEL HORIZONTAL

FCC 15.249

Company:	Q Motion	Date:	12/10/2015
EUT:	Roller Shade	Lab:	R
Model:	QMRS-908-4	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			
1816.8		H	53.98		Avg			No emissions found
2725.3		H	73.98		Peak			
2725.3		H	53.98		Avg			No emissions found
3633.7		H	73.98		Peak			
3633.7		H	53.98		Avg			No emissions found
4542.1		H	73.98		Peak			
4542.1		H	53.98		Avg			No emissions found
5450.5		H	73.98		Peak			
5450.5		H	53.98		Avg			No emissions found
6358.9		H	73.98		Peak			
6358.9		H	53.98		Avg			No emissions found
7267.4		H	73.98		Peak			
7267.4		H	53.98		Avg			No emissions found
8175.8		H	73.98		Peak			
8175.8		H	53.98		Avg			No emissions found
9084.2		H	73.98		Peak			
9084.2		H	53.98		Avg			No emissions found

Test distance
3 meter

HARMONIC EMISSIONS LOW CHANNEL VERTICAL

FCC 15.249

Company:	Q Motion	Date:	12/10/2015
EUT:	Roller Shade	Lab:	R
Model:	QMRS-908-4	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			
1816.8		V	53.98		Avg			No emissions found
2725.3		V	73.98		Peak			
2725.3		V	53.98		Avg			No emissions found
3633.7		V	73.98		Peak			
3633.7		V	53.98		Avg			No emissions found
4542.1		V	73.98		Peak			
4542.1		V	53.98		Avg			No emissions found
5450.5		V	73.98		Peak			
5450.5		V	53.98		Avg			No emissions found
6358.9		V	73.98		Peak			
6358.9		V	53.98		Avg			No emissions found
7267.4		V	73.98		Peak			
7267.4		V	53.98		Avg			No emissions found
8175.8		V	73.98		Peak			
8175.8		V	53.98		Avg			No emissions found
9084.2		V	73.98		Peak			
9084.2		V	53.98		Avg			No emissions found

Test distance
3 meter

HARMONIC EMISSIONS HIGH CHANNEL HORIZONTAL

FCC 15.249

Company: Q Motion
EUT: Roller Shade
Model: QMRS-908-4

Date: 12/10/2015
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		H	73.98		Peak			
1832.0		H	53.98		Avg			No Emissions Found
2748.0		H	73.98		Peak			
2748.0		H	53.98		Avg			No Emissions Found
3664.0		H	73.98		Peak			
3664.0		H	53.98		Avg			No Emissions Found
4580.0		H	73.98		Peak			
4580.0		H	53.98		Avg			No Emissions Found
5496.0		H	73.98		Peak			
5496.0		H	53.98		Avg			No Emissions Found
6412.0		H	73.98		Peak			
6412.0		H	53.98		Avg			No Emissions Found
7328.0		H	73.98		Peak			
7328.0		H	53.98		Avg			No Emissions Found
8244.0		H	73.98		Peak			
8244.0		H	53.98		Avg			No Emissions Found
9160.0		H	73.98		Peak			
9160.0		H	53.98		Avg			No Emissions Found

Test distance
3 meter

HARMONIC EMISSIONS HIGH CHANNEL VERTICAL

FCC 15.249

Company: Q Motion
EUT: Roller Shade
Model: QMRS-908-4

Date: 12/10/2015
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		V	73.98		Peak			
1832.0		V	53.98		Avg			No Emissions Found
2748.0		V	73.98		Peak			
2748.0		V	53.98		Avg			No Emissions Found
3664.0		V	73.98		Peak			
3664.0		V	53.98		Avg			No Emissions Found
4580.0		V	73.98		Peak			
4580.0		V	53.98		Avg			No Emissions Found
5496.0		V	73.98		Peak			
5496.0		V	53.98		Avg			No Emissions Found
6412.0		V	73.98		Peak			
6412.0		V	53.98		Avg			No Emissions Found
7328.0		V	73.98		Peak			
7328.0		V	53.98		Avg			No Emissions Found
8244.0		V	73.98		Peak			
8244.0		V	53.98		Avg			No Emissions Found
9160.0		V	73.98		Peak			
9160.0		V	53.98		Avg			No Emissions Found

Test distance
3 meter

HARMONIC EMISSIONS LOW CHANNEL HORIZONTAL

FCC 15.249

Company:	Q Motion	Date:	12/10/2015
EUT:	Roller Shade	Lab:	R
Model:	QMRS-908-3	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			
1816.8		H	53.98		Avg			No emissions found
2725.3		H	73.98		Peak			
2725.3		H	53.98		Avg			No emissions found
3633.7		H	73.98		Peak			
3633.7		H	53.98		Avg			No emissions found
4542.1		H	73.98		Peak			
4542.1		H	53.98		Avg			No emissions found
5450.5		H	73.98		Peak			
5450.5		H	53.98		Avg			No emissions found
6358.9		H	73.98		Peak			
6358.9		H	53.98		Avg			No emissions found
7267.4		H	73.98		Peak			
7267.4		H	53.98		Avg			No emissions found
8175.8		H	73.98		Peak			
8175.8		H	53.98		Avg			No emissions found
9084.2		H	73.98		Peak			
9084.2		H	53.98		Avg			No emissions found

Test distance
3 meter

HARMONIC EMISSIONS LOW CHANNEL VERTICAL

FCC 15.249

Company:	Q Motion	Date:	12/10/2015
EUT:	Roller Shade	Lab:	R
Model:	QMRS-908-3	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			
1816.8		V	53.98		Avg			No emissions found
2725.3		V	73.98		Peak			
2725.3		V	53.98		Avg			No emissions found
3633.7		V	73.98		Peak			
3633.7		V	53.98		Avg			No emissions found
4542.1		V	73.98		Peak			
4542.1		V	53.98		Avg			No emissions found
5450.5		V	73.98		Peak			
5450.5		V	53.98		Avg			No emissions found
6358.9		V	73.98		Peak			
6358.9		V	53.98		Avg			No emissions found
7267.4		V	73.98		Peak			
7267.4		V	53.98		Avg			No emissions found
8175.8		V	73.98		Peak			
8175.8		V	53.98		Avg			No emissions found
9084.2		V	73.98		Peak			
9084.2		V	53.98		Avg			No emissions found

Test distance
3 meter

HARMONIC EMISSIONS HIGH CHANNEL HORIZONTAL

FCC 15.249

Company: Q Motion
EUT: Roller Shade
Model: QMRS-908-3

Date: 12/10/2015
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		H	73.98		Peak			
1832.0		H	53.98		Avg			No Emissions Found
2748.0		H	73.98		Peak			
2748.0		H	53.98		Avg			No Emissions Found
3664.0		H	73.98		Peak			
3664.0		H	53.98		Avg			No Emissions Found
4580.0		H	73.98		Peak			
4580.0		H	53.98		Avg			No Emissions Found
5496.0		H	73.98		Peak			
5496.0		H	53.98		Avg			No Emissions Found
6412.0		H	73.98		Peak			
6412.0		H	53.98		Avg			No Emissions Found
7328.0		H	73.98		Peak			
7328.0		H	53.98		Avg			No Emissions Found
8244.0		H	73.98		Peak			
8244.0		H	53.98		Avg			No Emissions Found
9160.0		H	73.98		Peak			
9160.0		H	53.98		Avg			No Emissions Found

Test distance
3 meter

HARMONIC EMISSIONS HIGH CHANNEL VERTICAL

FCC 15.249

Company: Q Motion
EUT: Roller Shade
Model: QMRS-908-3

Date: 12/10/2015
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		V	73.98		Peak			
1832.0		V	53.98		Avg			No Emissions Found
2748.0		V	73.98		Peak			
2748.0		V	53.98		Avg			No Emissions Found
3664.0		V	73.98		Peak			
3664.0		V	53.98		Avg			No Emissions Found
4580.0		V	73.98		Peak			
4580.0		V	53.98		Avg			No Emissions Found
5496.0		V	73.98		Peak			
5496.0		V	53.98		Avg			No Emissions Found
6412.0		V	73.98		Peak			
6412.0		V	53.98		Avg			No Emissions Found
7328.0		V	73.98		Peak			
7328.0		V	53.98		Avg			No Emissions Found
8244.0		V	73.98		Peak			
8244.0		V	53.98		Avg			No Emissions Found
9160.0		V	73.98		Peak			
9160.0		V	53.98		Avg			No Emissions Found

Test distance
3 meter

EMISSIONS RADIATED OUTSIDE OF THE FUNDAMENTAL FREQUENCY BAND

QMRS-908-8 & QMRS-908-6

DATA SHEETS

BAND EDGES LOW CHANNEL

FCC 15.249

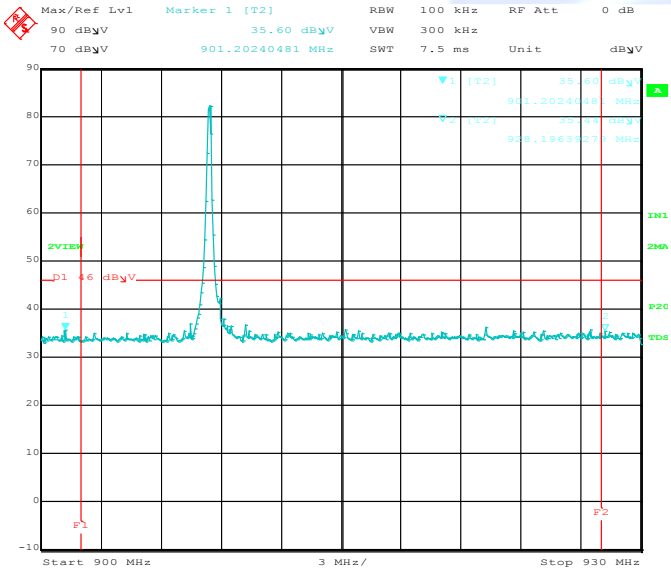
Company: Q Motion
EUT: Z-Wave Roller Shade
Model: QMRS-908-8

Date: 2/23/2016
Lab: R
Test ENG: Torey Oliver

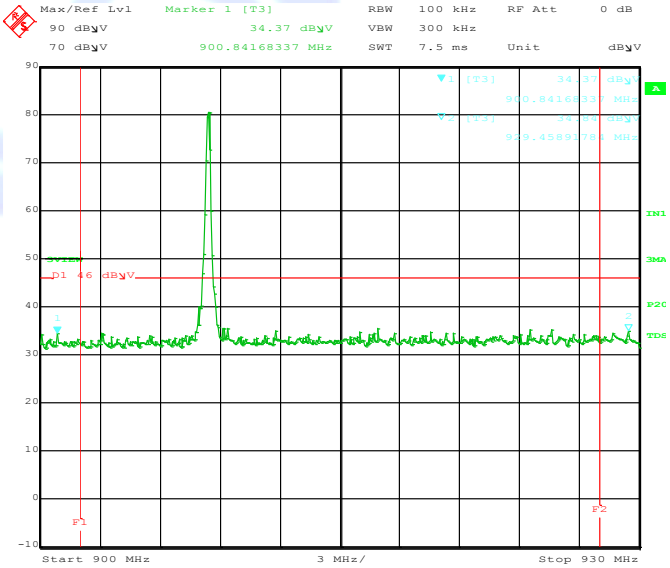
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Table Angle (Deg)	Tower Height (m)	Comments
901.20	35.60	H	46.00	-10.40	Peak	130	2.20	
928.20	35.44	H	46.00	-10.56	Peak	130	2.20	
900.84	34.37	V	46.00	-11.63	Peak	268	1.13	
929.46	34.84	V	46.00	-11.16	Peak	268	1.13	

Test Distance
3 meters



Comment A: Band Edge 908.42MHz Horizontal
Date: 23.FEB.2016 09:43:38



Comment A: Band Edge 908.42MHz Vertical
Date: 23.FEB.2016 09:46:21

BAND EDGES HIGH CHANNEL

FCC 15.249

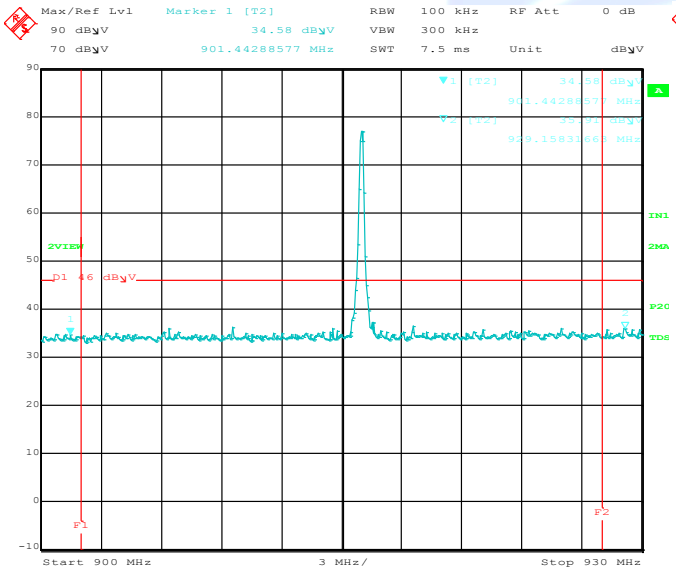
Company: Q Motion
EUT: Z-Wave Roller Shade
Model: QMRS-908-8

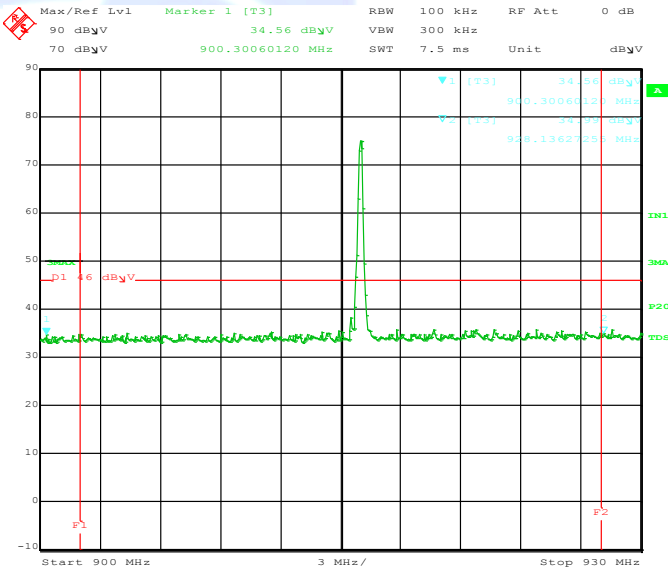
Date: 2/23/2016
Lab: R
Test ENG: Torey Oliver

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

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Table Angle (Deg)	Tower Height (m)	Comments
901.44	34.58	H	46.00	-11.42	Peak	132	1.48	
929.16	35.91	H	46.00	-10.09	Peak	132	1.48	
900.30	34.56	V	46.00	-11.44	Peak	266	1.34	
928.14	34.99	V	46.00	-11.01	Peak	266	1.34	

Test distance
3 meter





BAND EDGES LOW CHANNEL

FCC 15.249

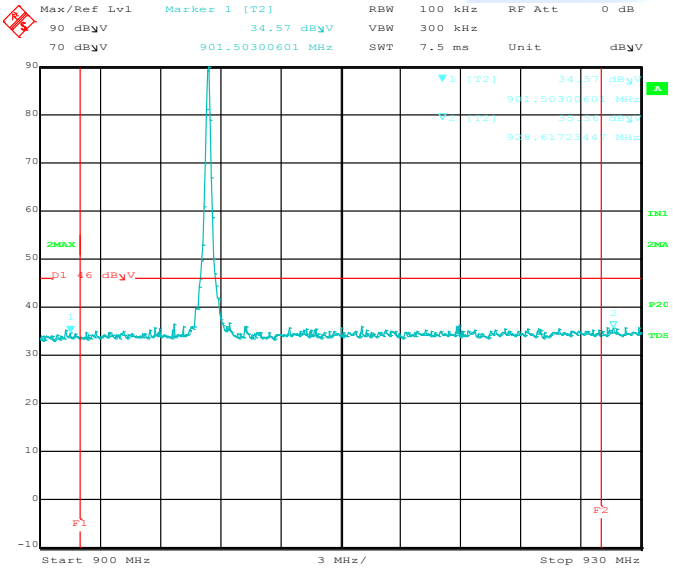
Company: Q Motion
EUT: Z-Wave Roller Shade
Model: QMRS-908-6

Date: 2/23/2016
Lab: R
Test ENG: Torey Oliver

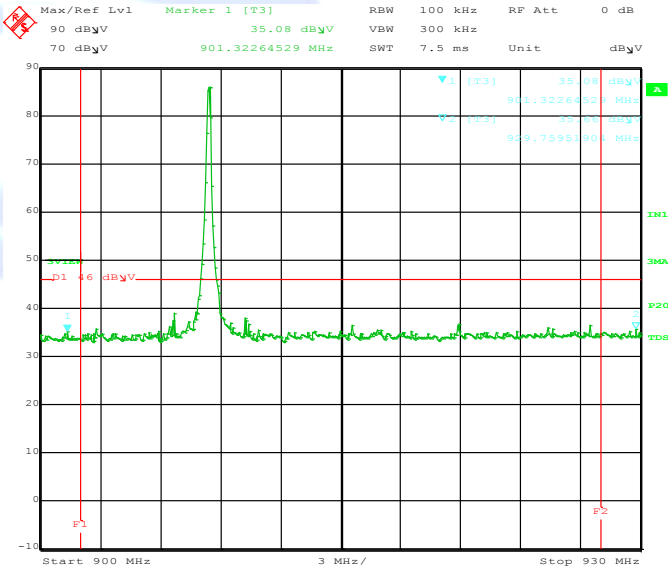
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Table Angle (Deg)	Tower Height (m)	Comments
901.50	34.57	H	46.00	-11.43	Peak	152	1.00	
928.62	35.56	H	46.00	-10.44	Peak	152	1.00	
901.32	35.08	V	46.00	-10.92	Peak	87	2.18	
929.76	35.66	V	46.00	-10.34	Peak	87	2.18	

Test distance
3 meter



Comment A: Band Edge 908,42MHz Horizontal
Date: 23.FEB.2016 11:07:55



Comment A: Band Edge 908,42MHz Vertical
Date: 23.FEB.2016 11:18:19

BAND EDGES HIGH CHANNEL

FCC 15.249

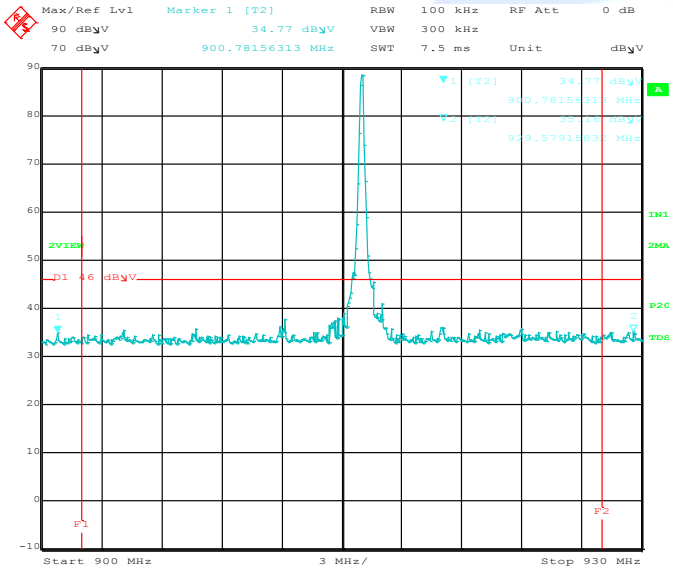
Company: Q Motion
EUT: Z-Wave Roller Shade
Model: QMRS-908-6

Date: 2/23/2016
Lab: R
Test ENG: Torey Oliver

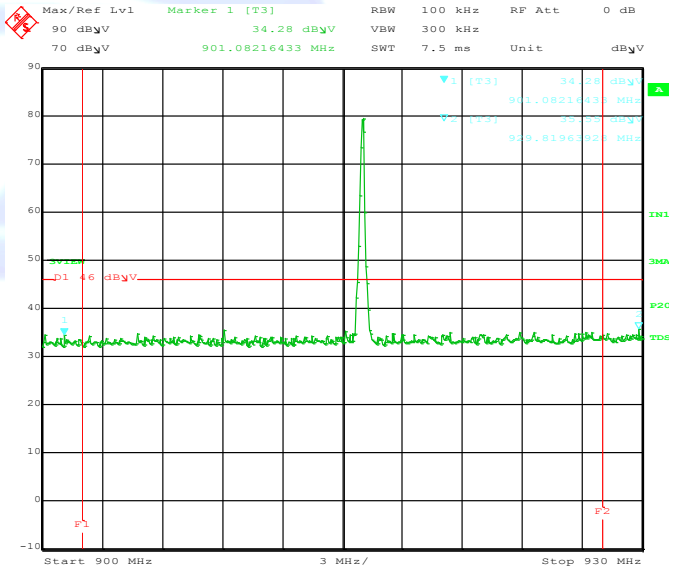
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Table Angle (Deg)	Tower Height (m)	Comments
900.78	34.77	H	46.00	-11.23	Peak	137	1.50	
929.58	35.16	H	46.00	-10.84	Peak	137	1.50	
901.08	34.28	V	46.00	-11.72	Peak	156	1.40	
929.82	35.55	V	46.00	-10.45	Peak	156	1.40	

Test distance
3 meter



Comment A: Band Edge 916MHz Horizontal
Date: 23.FEB.2016 13:30:23



Comment A: Band Edge 916MHz Vertical
Date: 23.FEB.2016 13:36:29

EMISSIONS RADIATED OUTSIDE OF THE FUNDAMENTAL FREQUENCY BAND

QMRS-908-4 & QMRS-908-3

DATA SHEETS

BAND EDGES LOW CHANNEL

FCC 15.249

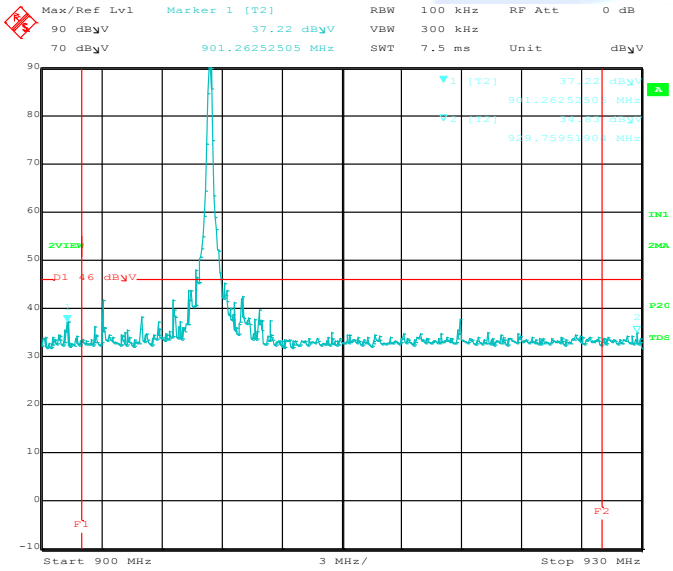
Company: Q Motion
EUT: Z-Wave Roller Shade
Model: QMRS-908-4

Date: 2/22/2016
Lab: R
Test ENG: Torey Oliver

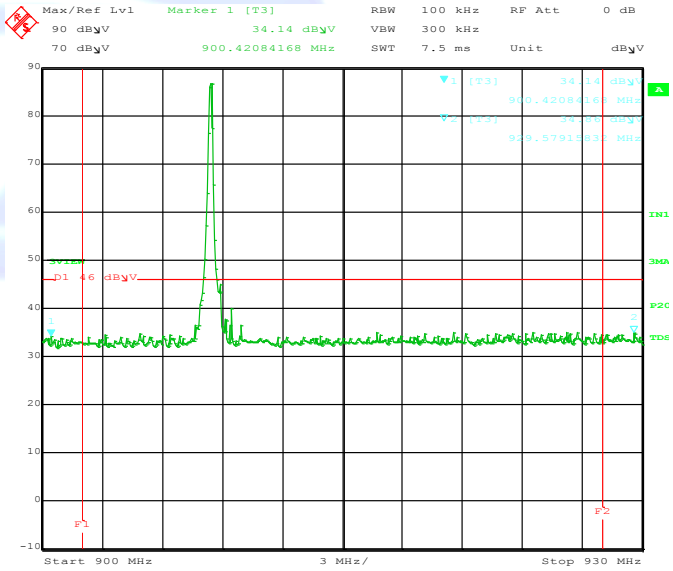
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Table Angle (Deg)	Tower Height (m)	Comments
901.26	37.22	H	46.00	-8.78	Peak	125	1.31	
929.76	34.83	H	46.00	-11.17	Peak	125	1.31	
900.42	34.14	V	46.00	-11.86	Peak	233	3.02	
929.58	34.86	V	46.00	-11.14	Peak	233	3.02	

Test distance
3 meter



Comment A: Band Edge 908 MHz Horizontal
Date: 22.FEB.2016 14:45:11



Comment A: Band Edge 908 MHz Vertical
Date: 22.FEB.2016 14:49:13

BAND EDGES HIGH CHANNEL

FCC 15.249

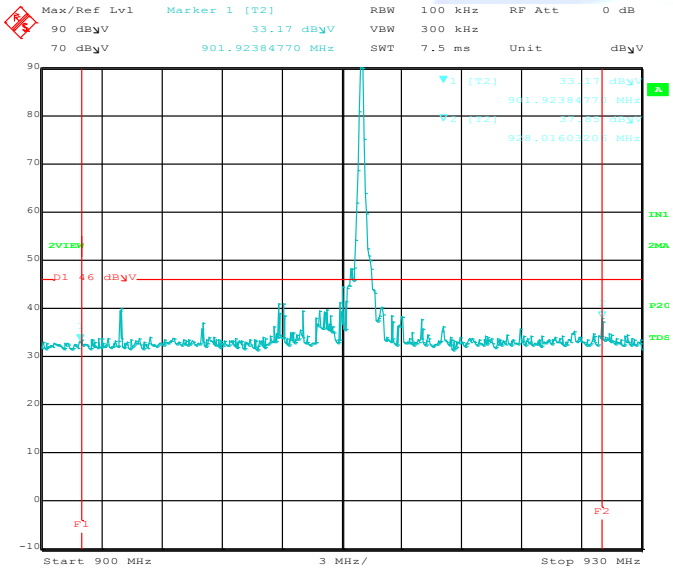
Company: Q Motion
EUT: Z-Wave Roller Shade
Model: QMRS-908-4

Date: 2/22/2016
Lab: R
Test ENG: Torey Oliver

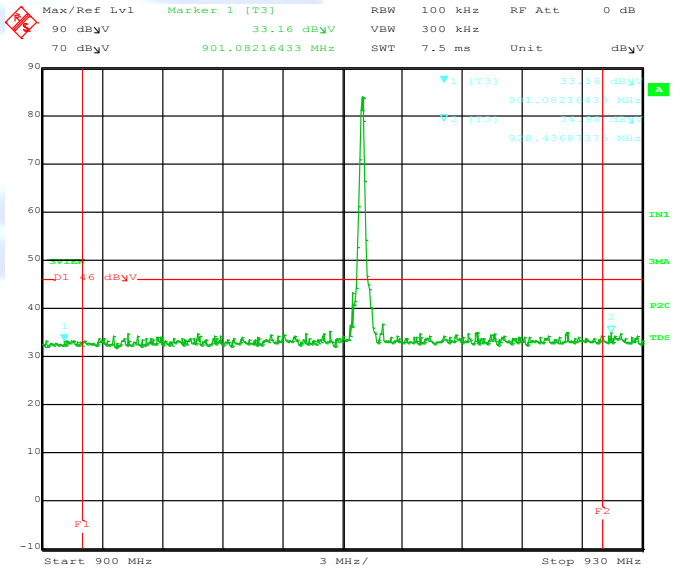
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Table Angle (Deg)	Tower Height (m)	Comments
901.92	33.17	H	46.00	-12.83	Peak	125	2.66	
928.02	37.85	H	46.00	-8.15	Peak	125	2.66	
901.08	33.16	V	46.00	-12.84	Peak	222	3.06	
928.44	34.98	V	46.00	-11.02	Peak	222	3.06	

Test distance
3 meter



Comment A: Band Edge 916 MHz Horizontal
Date: 22.FEB.2016 15:30:40



Comment A: Band Edge 916 MHz Vertical
Date: 22.FEB.2016 15:33:16

BAND EDGES LOW CHANNEL

FCC 15.249

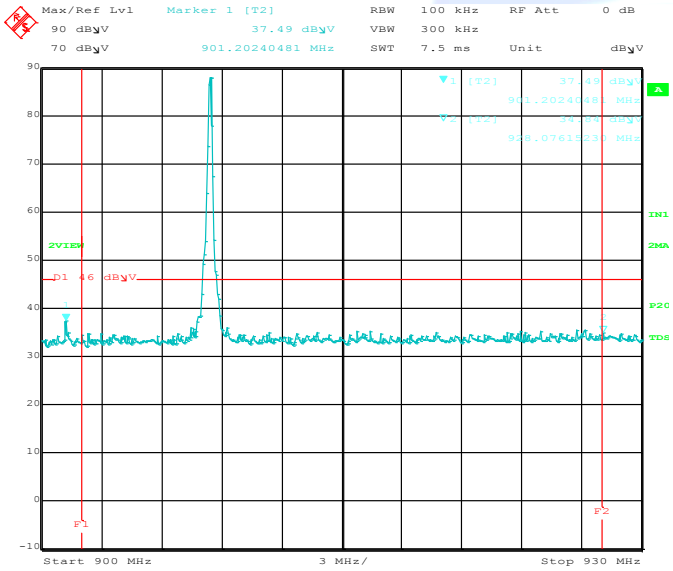
Company: Q Motion
EUT: Z-Wave Roller Shade
Model: QMRS-908-3

Date: 2/23/2016
Lab: R
Test ENG: Torey Oliver

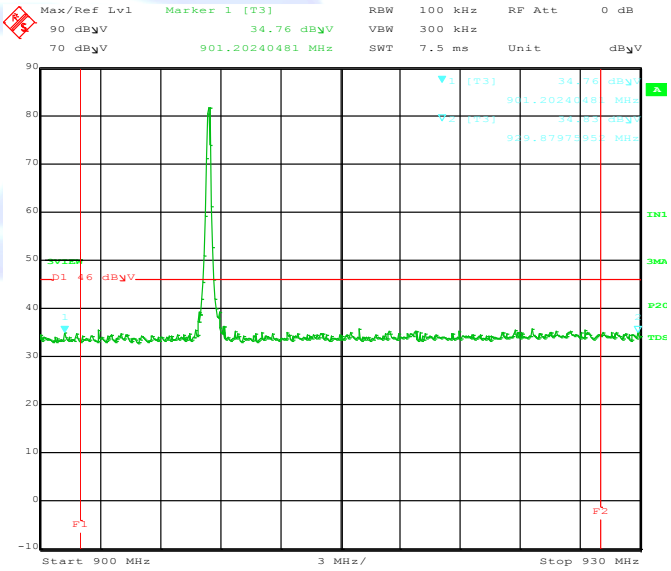
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Table Angle (Deg)	Tower Height (m)	Comments
901.20	37.49	H	46.00	-8.51	Peak	120	1.36	
928.08	34.84	H	46.00	-11.16	Peak	120	1.36	
901.20	34.76	V	46.00	-11.24	Peak	106	1.10	
929.88	34.83	V	46.00	-11.17	Peak	106	1.10	

Test distance
3 meter



Comment A: Band Edge 908.42MHz Horizontal
Date: 23.FEB.2016 08:56:19



Comment A: Band Edge 908.42MHz Vertical
Date: 23.FEB.2016 09:01:38

BAND EDGES HIGH CHANNEL

FCC 15.249

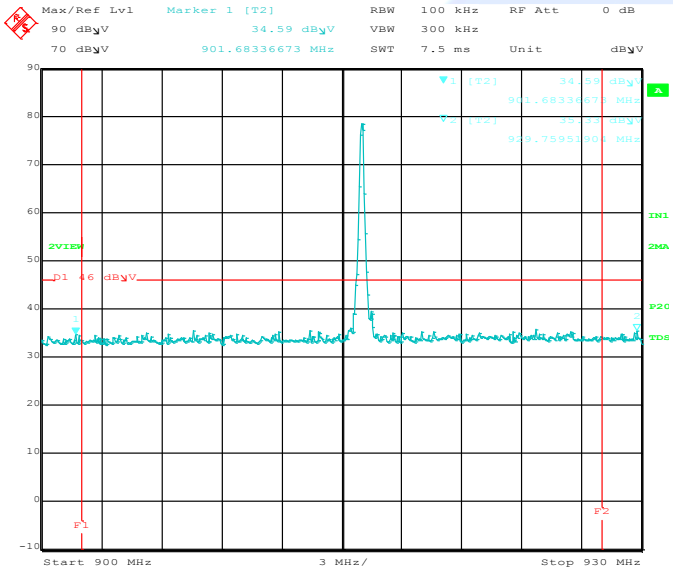
Company: Q Motion
EUT: Z-Wave Roller Shade
Model: QMRS-908-3

Date: 2/23/2016
Lab: R
Test ENG: Torey Oliver

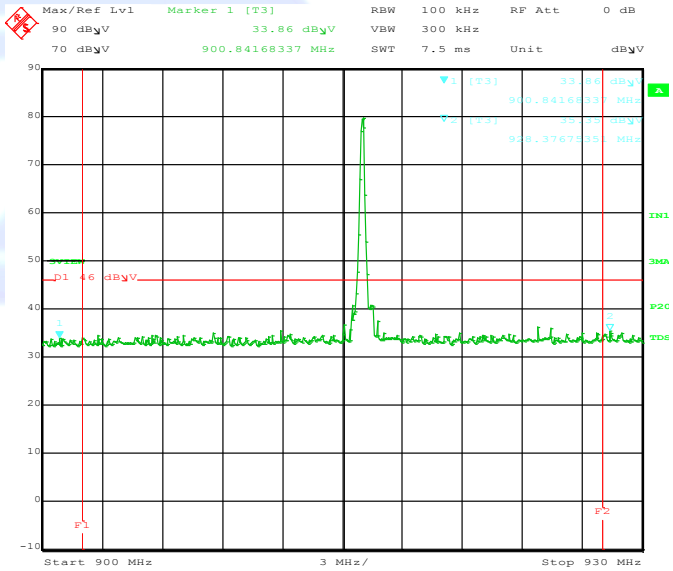
Compatible Electronics, Inc. FAC-3 (Lab R)

Freq. (MHz)	Level (dBµV/m)	Pol	Limit (dBµV)	Margin (dB)	Peak / QP / Avg	Table Angle (Deg)	Tower Height (m)	Comments
901.68	34.59	H	46.00	-11.41	Peak	116	1.25	
929.76	35.33	H	46.00	-10.67	Peak	116	1.25	
900.84	33.86	V	46.00	-12.14	Peak	103	2.75	
928.38	35.35	V	46.00	-10.65	Peak	103	2.75	

Test distance
3 meter



Comment A: Band Edge 916MHz Horizontal
Date: 23.FEB.2016 09:18:20



Comment A: Band Edge 916MHz Vertical
Date: 23.FEB.2016 09:34:05