FCC PART 15, SUBPART B and C
TEST REPORT

for

RING CONTACT SENSOR

Model: 4SD1S70EN0

Prepared for

ECOLINK INTELLIGENT TECHNOLOGY INC.
2055 CORTE DEL NOGAL
CARLSBAD, CALIFORNIA 92011

Prepared by:_____

KYLE FUJIMOTO

Approved by:_____

JAMES ROSS

COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500

DATE: JULY 24, 2017

	REPORT BODY	APPENDICES					TOTAL
		A	***B***	***C***	***D***	***E***	
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NVLAP® TESTING
NVLAP LAB CODE 200528-0

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GENERAL REPORT SUMMARY

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

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

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

Device Tested:	Ring Contact Sensor Model: 4SD1S70EN0 S/N: N/A
Product Description:	The EUT is a Ring Contact Sensor
Modifications:	The EUT was not modified in order to meet the specifications.
Customer:	Ecolink Intelligent Technology Inc. 2055 Corte Del Nogal Carlsbad, California 92011
Test Dates:	June 28 and 29; July 14, 15, 17, and 18, 2017

Test Specifications covered by accreditation:

CFR Title 47, Part 15, Subpart B; and Subpart C sections 15.205, 15.209, and 15.249

NVLAP TESTING
NVLAP LAB CODE 200528-0

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Test Procedures: ANSI C63.4: 2014 and ANSI C63.10: 2013

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Spurious Radiated RF Emissions, 9 kHz – 9.3 GHz (Transmitter and Digital portion)	Complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15 Subpart C, section 15.205, 15.209 and 15.249 Highest reading in relation to spec limit 91.93dBuV/m @ 916MHz (*U = 4.54 dB)
2	Conducted RF Emissions, 150 kHz to 30 MHz	This test was not performed because the EUT does not connect to the AC mains

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Ring Contact Sensor, Model: 4SD1S70EN0. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4 and ANSI C63.10. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

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

2.2 Traceability Statement

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

2.3 Cognizant Personnel

Ecolink Intelligent Technology Inc.

Anna Poltoratska	Program Manager

Compatible Electronics Inc.

Kyle Haag	Test Technician
James Ross	Test Engineer
Kyle Fujimoto	Test Engineer

2.4 Date Test Sample was Received

The test sample was received on prior to the intial date of testing.

2.5 Disposition of the Test Sample

The test sample has not been returned to Ecolink Intelligent Technology 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
ITE	Information Technology Equipment
LISN	Line Impedance Stabilization Network
N/A	Not Applicable
Tx	Transmit
Rx	Receive
Inc.	Incorporated

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
FCC Title 47, Part 15 Subpart B	FCC Rules – Radio frequency devices (including digital devices) – Unintentional Radiators
ANSI C63.4 2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10 2013	American National Standard of procedure for compliance testing of unlicensed wireless devices

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – Emissions

The Ring Contact Sensor, Model: 4SD1S70EN0 (EUT) was setup in a stand-alone configuration. The EUT was investigated in all three orthogonal axis. During the testing, the EUT was continuously transmitting or receiving at the low channel of 908.42 MHz and high channel of 916 MHz.

The X orientation is when the EUT is parallel to the ground. The Y orientation is when the EUT is perpendicular to the ground mounted vertically. The Z orientation is when the EUT is perpendicular to the ground mounted horizontally.

The EUT was programmed to be able to continuously transmit or receive at the low and high channels. Fresh batteries were installed inside the EUT prior to the testing.

The final radiated data for the EUT as was taken in the mode described above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

The EUT had no external cables.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
RING CONTACT SENSOR (EUT)	ECOLINK INTELLIGENT TECHNOLOGY INC.	4SD1S70EN0	N/A	XQC-BHADW001
FIRMWARE FOR EUT	ECOLINK INTELLIGENT TECHNOLOGY INC.	1.11	N/A	N/A

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
GENERAL TEST EQUIPMENT USED IN LAB D					
TDK TestLab	TDK RF Solutions, Inc.	9.22	700145	N/A	N/A
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A
EMI Receiver, 20 Hz – 26.5 GHz	Keysight	N9038A	MY51210150	December 29, 2015	2 Year
RF RADIATED EMISSIONS TEST EQUIPMENT					
CombiLog Antenna	Com-Power	AC-220	61060	September 3, 2015	2 Year
Preamplifier	Com-Power	PAM-118A	551024	May 12, 2016	2 Year
Loop Antenna	Com-Power	AL-130R	121090	February 9, 2017	2 Year
Horn Antenna	Com-Power	AH-118	071175	February 26, 2016	2 Year
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
System Controller	Sunol Sciences Corporation	SC110V	112213-1	N/A	N/A
Turntable	Sunol Sciences Corporation	2011VS	N/A	N/A	N/A
Antenna-Mast	Sunol Sciences Corporation	TWR95-4	112213-3	N/A	N/A

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for emissions test location.

6.2 EUT Mounting, Bonding and Grounding

For frequencies 1 GHz and below: The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

For frequencies above 1 GHz: The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 1.5 meters above the ground plane.

The EUT was not grounded.

7. Test Procedures

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

7.1 RF Emissions

7.1.1 Conducted Emissions Test

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

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

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

Test Results:

This device is battery powered and does not connect to the AC public mains, thus this test was not performed.

7.1.2 Radiated Emissions Test

The EMI Receiver was used as the measuring meter. Preamplifiers were used to increase the sensitivity of the instrument. The EMI Receiver was initially used with the Analyzer mode feature activated. In this mode, the EMI receiver can then record the actual frequency to be measured. This final reading is then taken accurately in the EMI Receiver mode, which takes into account the cable loss, amplifier gain and antenna factors, so that a true reading is compared to the true limit. The effective measurement bandwidth used for the radiated emissions test was according to the frequency measured (200 Hz for 9 kHz to 150 kHz, 9 kHz for 150 kHz to 30 MHz, 120 kHz for 30 MHz to 1 GHz and 1 MHz for 1 GHz to 9.3 GHz).

The frequencies above 1 GHz were averaged using a duty cycle correction factor as explained in section 7.1.4 of this test report. The frequencies below 1 GHz were quasi-peaked using a quasi-peak detector.

The EMI test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees 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 (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

The EUT was tested at a 3-meter test distance. The six highest emissions are listed in Table 1.0.

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

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

Test Results:

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

7.1.3 RF Emissions Test Results

Table 1.0 RADIATED EMISSION RESULTS
Ring Contact Sensor
Model: 4SD1S70EN0

Frequency MHz	EMI Reading (dBuV/m)	Specification Limit (dBuV/m)	Delta (Cor. Reading – Spec. Limit) dB)
916 (H) X-Axis	91.93 (QP)	93.97	-2.04
916 (V) Y-Axis	91.22 (QP)	93.97	-2.75
908.42 (H) X-Axis	90.38 (QP)	93.97	-3.59
902 (H) X-Axis	42.36 (QP)	46.00	-3.64
902 (V) Y-Axis	42.44 (QP)	46.00	-3.56
908.42 (V) Y-Axis	90.17 (QP)	93.97	-3.80

Notes:

* The complete emissions data is given in Appendix E of this report.
(BL) Black Lead
(WL) White Lead
(V) Vertical
(H) Horizontal
(A) Average
(QP) Quasi-Peak

7.1.4 Duty Cycle Calculation

The fundamental and harmonics were 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.

Where

$$\delta(\mathrm{dB}) = 20\log\left[\sum(nt_1 + mt_2 + \ldots + \xi t_x)/T\right]$$

n is the number of pulses of duration *t*1
m is the number of pulses of duration *t*2
ξ is the number of pulses of duration *tx*
T is the period of the pulse train or 100 ms if the pulse train length is greater than 100 ms

The worst case 100 ms period had a total of 2 pulses.

Pulse #1 = 10 ms
Pulse #2 = 12 ms

Total On Time = 22 ms

Duty Cycle Percentage: 22.0 ms / 100 mS = 22%

20 log (0.220) = -13.15 dB correction factor

8. CONCLUSIONS

The Ring Contact Sensor, Model: 4SD1S70EN0, as tested, meets all of the **Class B** specification limits defined in FCC Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209 and 15.249.

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP TESTING
NVLAP LAB CODE 200528-0

ilac-MRA

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."

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B and FCC 15.249 specifications.

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

No modifications were made to the EUT during the testing.

APPENDIX C

ADDITIONAL MODEL COVERED UNDER THIS REPORT

ADDITIONAL MODEL COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Ring Contact Sensor
Model: 4SD1S70EN0
S/N: N/A

There are no additional Models covered under this report.

APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

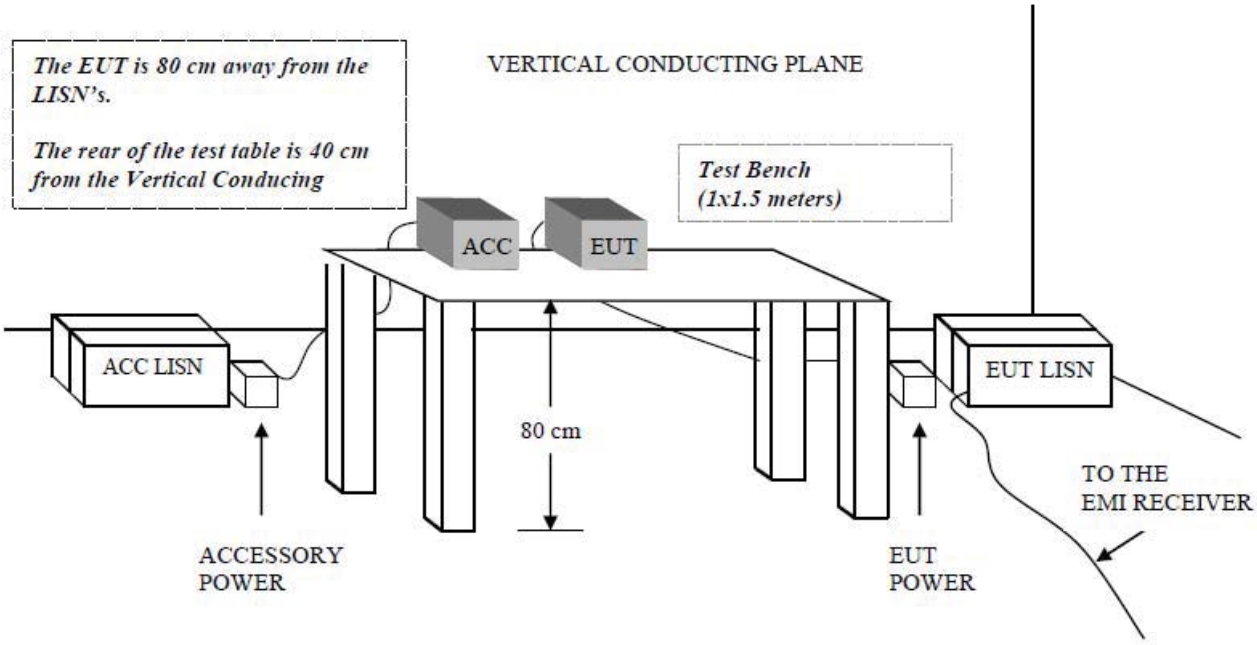
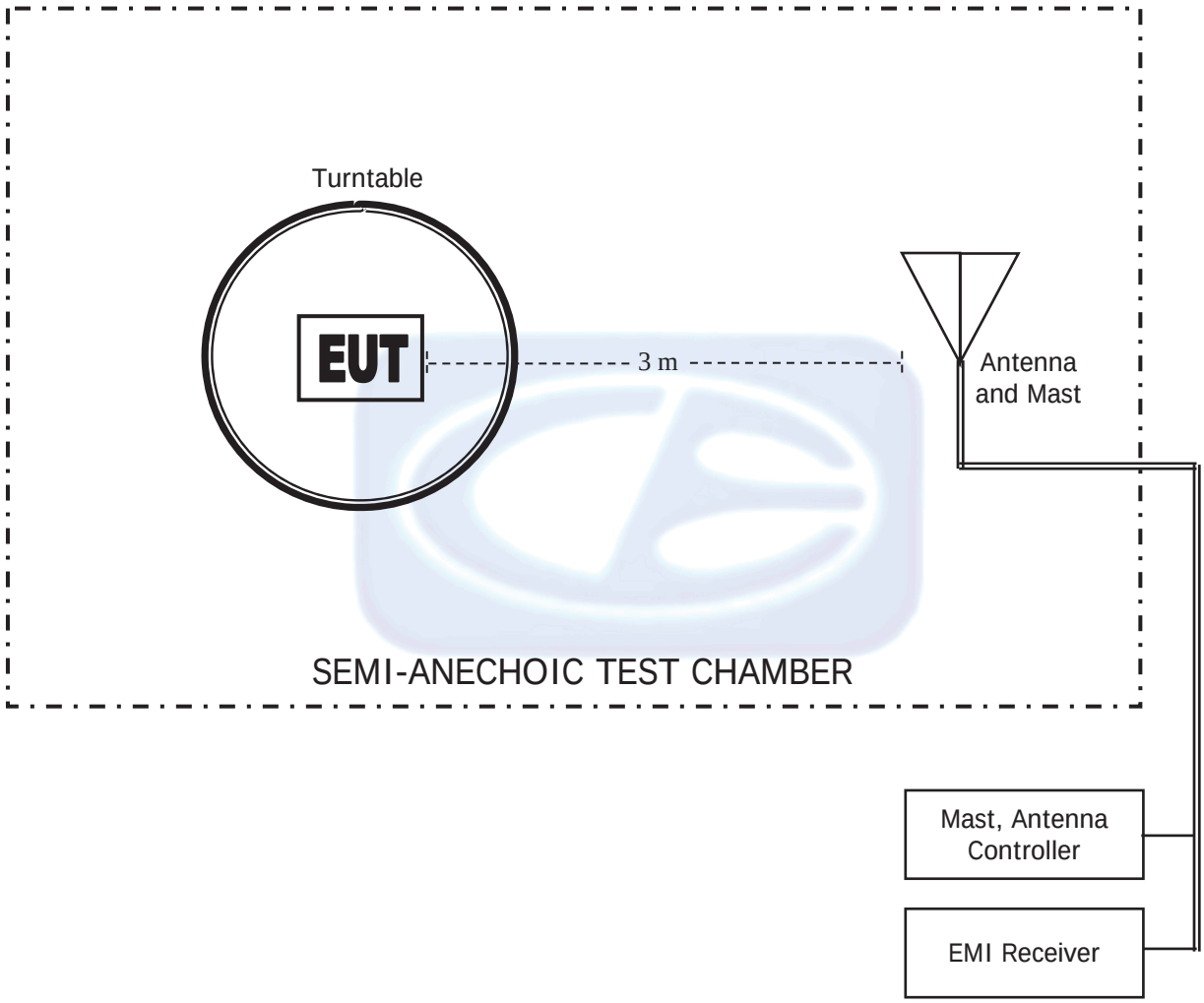


FIGURE 2: LAYOUT OF THE SEMI -ANECHOIC TEST CHAMBER



COM-POWER AL-130R

LOOP ANTENNA

S/N: 121090

CALIBRATION DATE: FEBRUARY 9, 2017

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-36.17	15.33
0.01	-35.86	15.64
0.02	-37.30	14.20
0.03	-36.58	14.92
0.04	-36.99	14.51
0.05	-37.66	13.84
0.06	-37.53	13.97
0.07	-37.64	13.86
0.08	-37.52	13.98
0.09	-37.62	13.88
0.1	-37.59	13.91
0.2	-37.79	13.71
0.3	-37.80	13.70
0.4	-37.70	13.80
0.5	-37.79	13.71
0.6	-37.79	13.71
0.7	-37.69	13.81
0.8	-37.49	14.01
0.9	-37.39	14.11
1	-37.39	14.11
2	-37.09	14.41
3	-37.09	14.41
4	-37.19	14.31
5	-36.98	14.52
6	-37.17	14.33
7	-37.05	14.45
8	-36.85	14.65
9	-36.84	14.66
10	-36.75	14.75
15	-37.16	14.34
20	-36.44	15.06
25	-37.88	13.62
30	-39.14	12.36

COM-POWER AC-220

COMBILOG ANTENNA

S/N: 61060

CALIBRATION DATE: SEPTEMBER 3, 2015

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	24.00	200	13.00
35	24.30	250	15.30
40	25.40	300	18.20
45	21.50	350	17.90
50	22.50	400	18.60
60	15.40	450	19.80
70	12.70	500	21.60
80	11.10	550	22.40
90	13.40	600	23.70
100	13.80	650	24.30
120	15.40	700	24.00
125	15.40	750	24.50
140	13.10	800	24.30
150	17.20	850	26.30
160	13.20	900	26.90
175	14.20	950	26.00
180	14.30	1000	25.60

COM POWER AH-118

HORN ANTENNA

S/N: 071175

CALIBRATION DATE: FEBRUARY 26, 2016

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.93	10.0	39.33
1.5	25.54	10.5	39.64
2.0	28.09	11.0	41.04
2.5	30.21	11.5	44.29
3.0	30.15	12.0	41.22
3.5	30.17	12.5	41.50
4.0	31.90	13.0	41.62
4.5	33.51	13.5	40.63
5.0	33.87	14.0	39.94
5.5	35.08	14.5	41.84
6.0	34.81	15.0	42.69
6.5	34.26	15.5	39.03
7.0	36.33	16.0	39.07
7.5	37.03	16.5	41.40
8.0	37.56	17.0	43.18
8.5	40.07	17.5	47.01
9.0	38.92	18.0	46.48
9.5	38.21		

COM-POWER PAM-118A

PREAMPLIFIER

S/N: 551024

CALIBRATION DATE: MAY 12, 2016

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	39.84	6.0	39.05
1.1	39.40	6.5	38.94
1.2	39.58	7.0	39.25
1.3	39.68	7.5	39.09
1.4	39.91	8.0	39.01
1.5	39.78	8.5	38.60
1.6	39.50	9.0	38.64
1.7	39.81	9.5	39.67
1.8	39.89	10.0	39.30
1.9	39.94	11.0	39.15
2.0	39.57	12.0	39.24
2.5	40.39	13.0	39.49
3.0	40.63	14.0	39.44
3.5	40.80	15.0	39.94
4.0	40.86	16.0	40.09
4.5	39.94	17.0	40.06
5.0	34.47	18.0	39.76
5.5	39.32		

FRONT VIEW

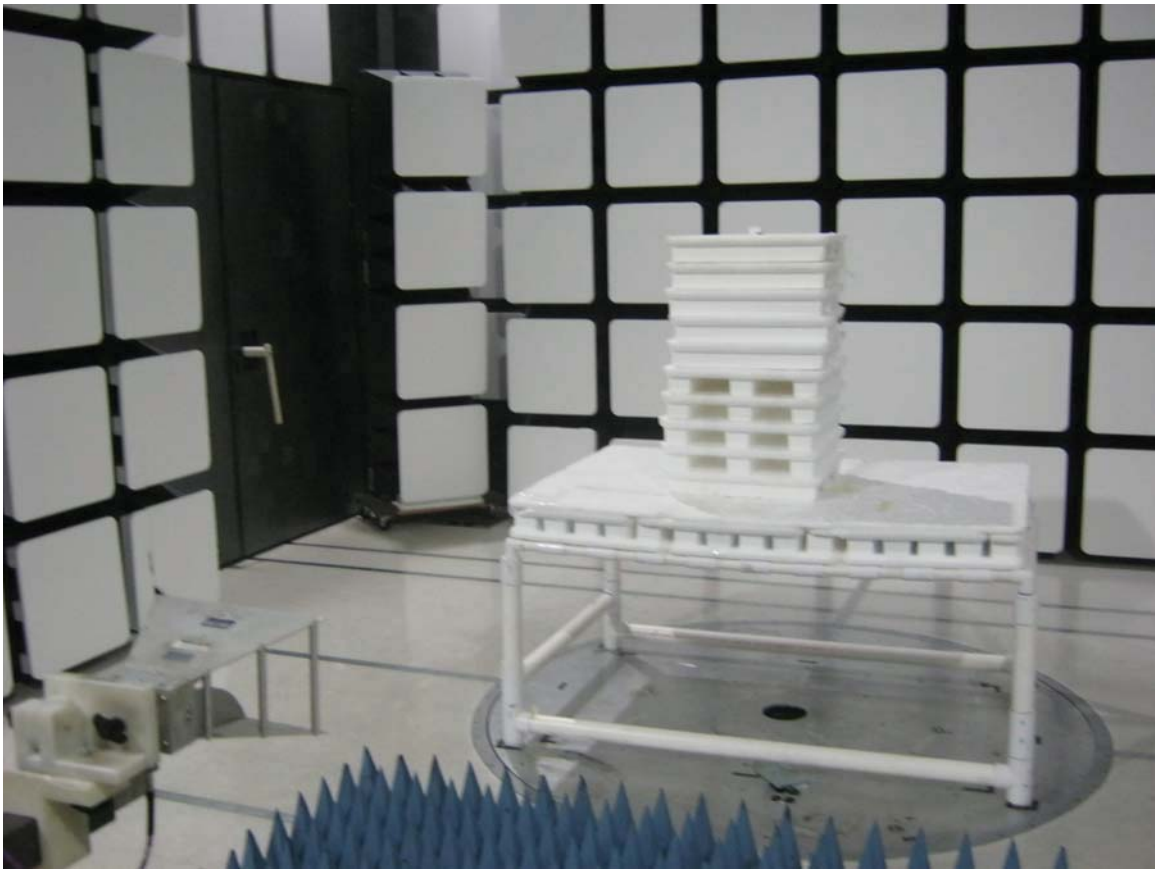
ECOLINK INTELLIGENT TECHNOLOGY INC.
RING CONTACT SENSOR
MODEL: 4SD1S70EN0
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

ECOLINK INTELLIGENT TECHNOLOGY INC.
RING CONTACT SENSOR
MODEL: 4SD1S70EN0
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

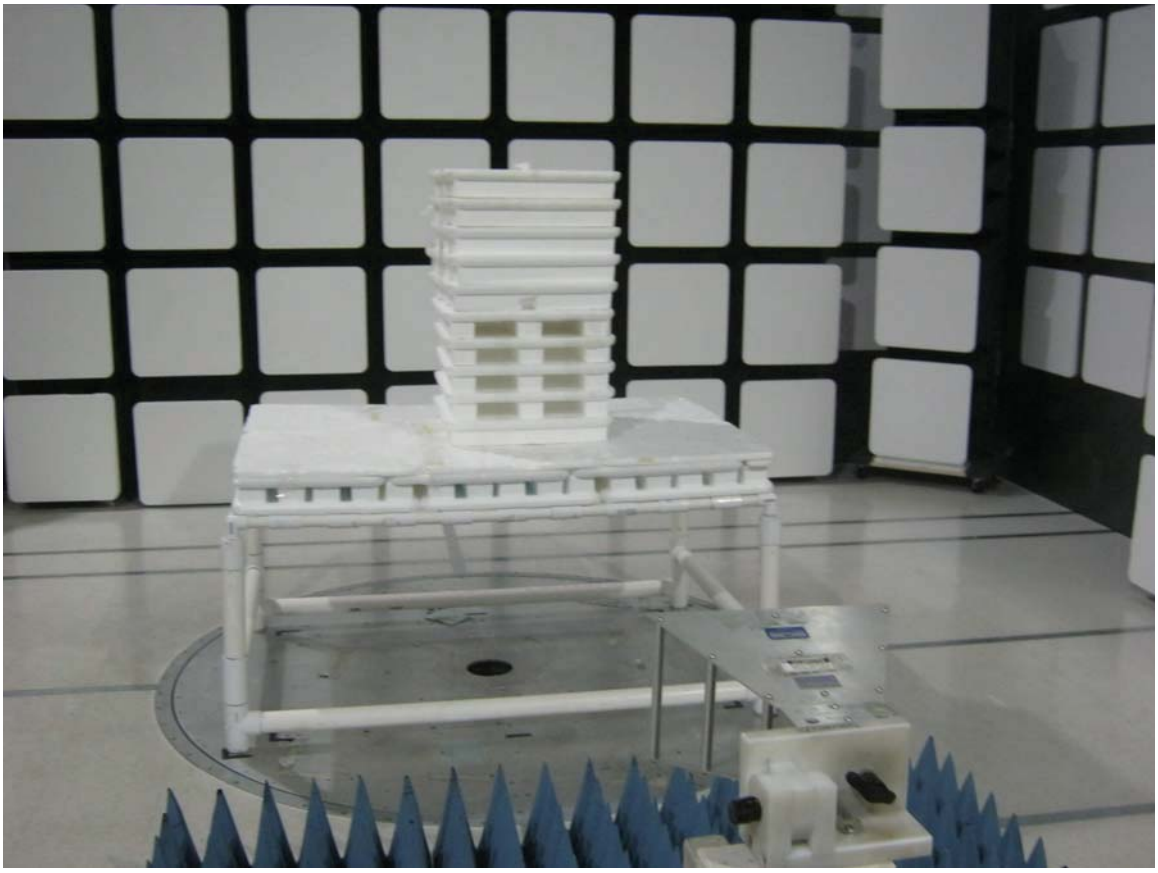
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

ECOLINK INTELLIGENT TECHNOLOGY INC.
RING CONTACT SENSOR
MODEL: 4SD1S70EN0
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONs



FRONT VIEW

ECOLINK INTELLIGENT TECHNOLOGY INC.
RING CONTACT SENSOR
MODEL: 4SD1S70EN0
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

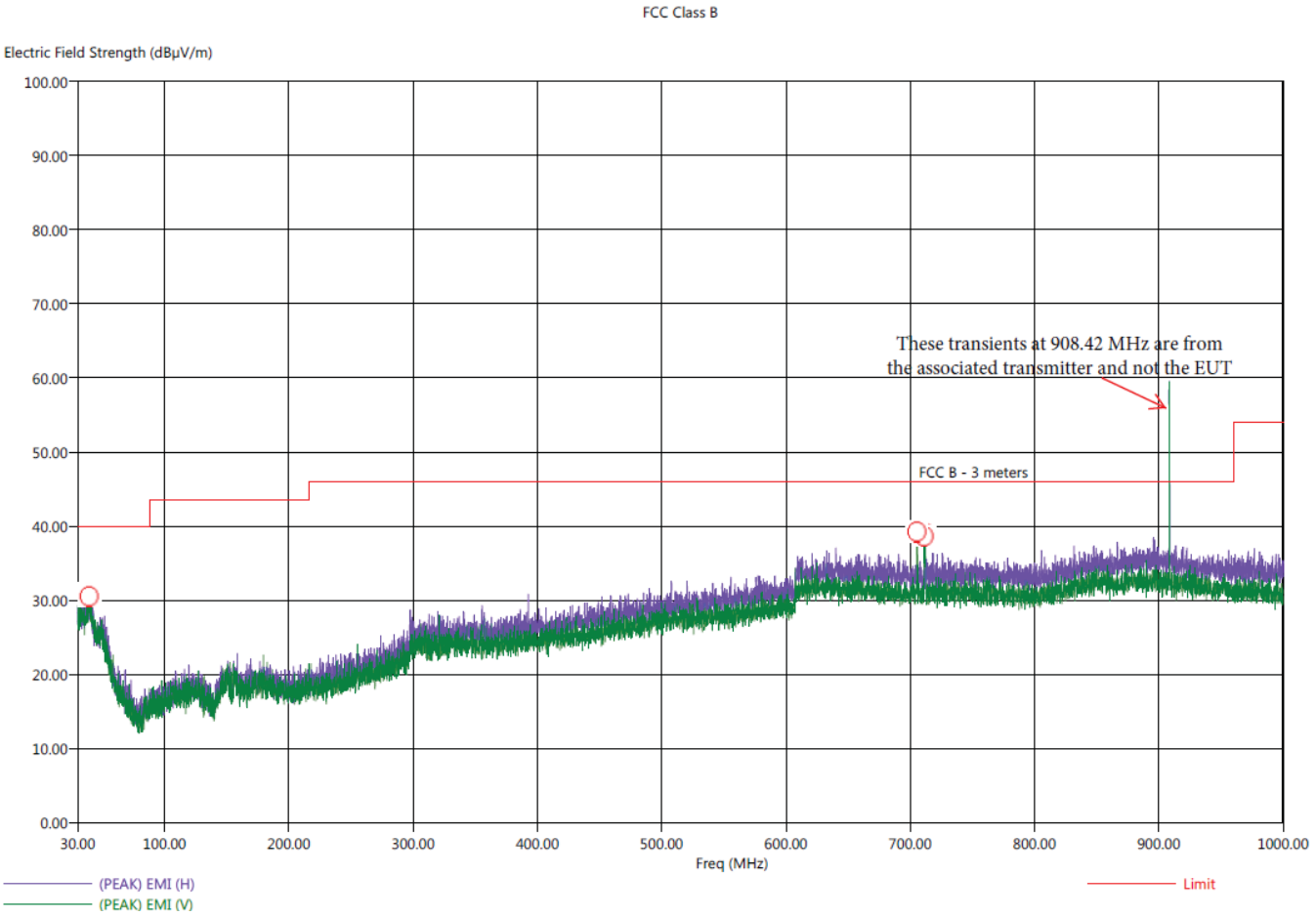
DATA SHEETS

RADIATED EMISSIONS DATA SHEETS

Title: Pre-Scan - FCC Class B
File: 1 - Agilent - Pre-Scan- FCC Class B - 30 MHz to 1000 MHz - 908.42 MHz - X-Axis - 6-28-2017.set
Operator: Kyle Haag
EUT Type: Ring Contact Sensor
EUT Condition: Continuously Receiving Signals From its Associated Transmitter - 908.42 MHz

6/28/2017 10:44:08 AM
Sequence: Preliminary Scan

Coompany: Ecolink Intelligent Technology, Inc.
Model: 4SD1S70EN0
EUT Orientation: X-Axis (worst case)



Title: Radiated Final - FCC Class B
File: 1 - Agilent - Final Scan - FCC Class B - 30 MHz to 1000 MHz - 908.42MHz - X-Axis - 6-28-2017.set
Operator: Kyle Haag
EUT Type: Ring Contact Sensor
EUT Condition: Continuously Reciving Signals From its Associated Transmitter - 908.42 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: 4SD1S70EN0
EUT Orientation: X-Axis (worst case)

6/28/2017 11:24:25 AM
Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
39.30	V	31.78	27.19	-8.22	-12.81	40.00	25.29	0.40	152.75	207.59
39.50	H	32.11	27.19	-7.89	-12.81	40.00	25.28	0.39	126.00	255.95
40.60	H	31.68	26.66	-8.32	-13.34	40.00	24.75	0.40	100.50	112.97
705.50	V	36.57	30.63	-9.43	-15.37	46.00	24.06	2.33	303.50	287.89
711.30	V	36.24	30.68	-9.76	-15.32	46.00	24.11	2.37	154.00	319.89
712.10	V	35.71	30.71	-10.29	-15.29	46.00	24.13	2.38	158.75	111.41

The EUT was also tested in the HF range of 1 GHz to 5 GHz for radiated emissions on 6/29/17 with no emissions being discovered

Title: Pre-Scan - FCC Class B
File: 1 - Agilent - Pre-Scan- FCC Class B - 30 MHz to 1000 MHz - 916 MHz - Y -Axis - 6-28-2017.set
Operator: Kyle Haag
EUT Type: Ring Contact Sensor
EUT Condition: Continuously Receiving Signals From its Associated Transmitter - 916MHz
Company: Eocolink Intelligent Technology, Inc.
Model: 4SD1S70EN0
EUT Orientation: Y-Axis (worst case)

6/28/2017 12:04:44 PM
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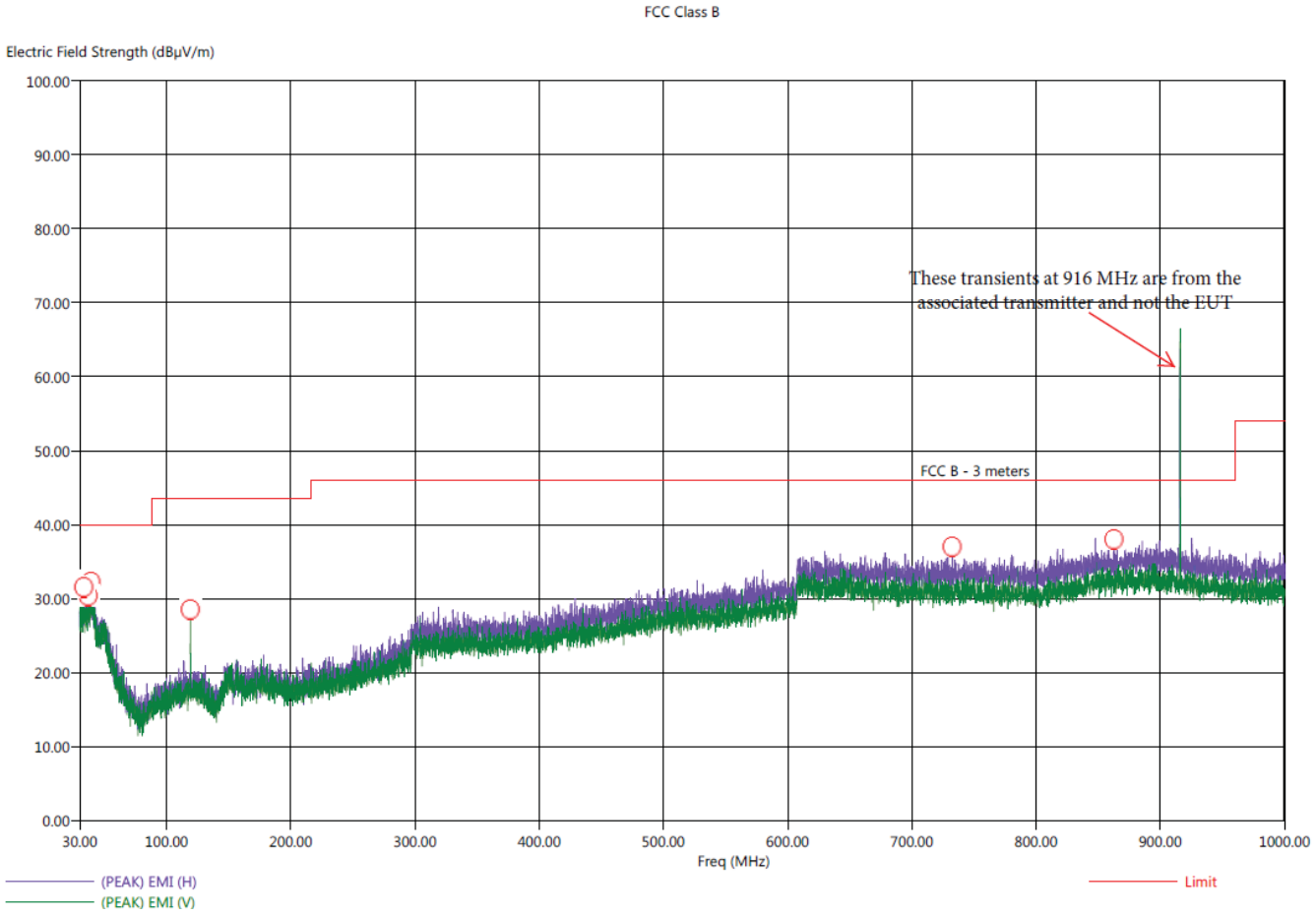

Title: Radiated Final - FCC Class B
File: 1 - Agilent - Final Scan - FCC Class B - 30 MHz to 1000 MHz - 916MHz - Y-Axis - 6-28-2017.set
Operator: Kyle Haag
EUT Type: Ring Contact Sensor
EUT Condition: Continuously Reciving Signals From its Associated Transmitter - 916 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: 4SD1S70EN0
EUT Orientation: Y-Axis (worst case)

6/28/2017 1:22:47 PM
Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
33.30	V	31.18	27.00	-8.82	-13.00	40.00	24.20	0.34	235.00	320.19
36.80	V	32.02	26.56	-7.98	-13.44	40.00	24.69	0.37	121.75	175.53
39.10	H	32.54	27.18	-7.46	-12.82	40.00	25.22	0.39	225.75	352.43
119.10	V	21.46	16.16	-22.04	-27.34	43.50	15.33	0.70	190.50	223.65
732.50	H	36.08	30.97	-9.92	-15.03	46.00	24.33	2.50	197.25	111.59
862.80	H	37.84	32.34	-8.16	-13.66	46.00	26.45	2.60	129.75	239.89

The EUT was also tested in the HF range of 1 GHz to 5 GHz for radiated emissions on 6/29/17 with no emissions being discovered

FCC 15.249
Ecolink Intelligent Technology Inc.
Ring Contact Sensor
Model: 4SD1S70EN0

Date: 07/14/2017
Lab: D
Tested By: Kyle Haag

Fundamental
Low Channel

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
908.42	82.82	V	113.97	-31.15	Peak	25.75	157.76	X-Axis
908.42	82.21	V	93.97	-11.76	QP	25.75	157.76	Vertical Polarization
908.42	90.36	V	113.97	-23.61	Peak	281.00	108.44	Y-Axis
908.42	90.17	V	93.97	-3.80	QP	281.00	108.44	Vertical Polarization
908.42	84.32	V	113.97	-29.65	Peak	174.50	163.73	Z-Axis
908.42	84.13	V	93.97	-9.84	QP	174.50	163.73	Vertical Polarization
908.42	91.13	H	113.97	-22.84	Peak	89.75	153.22	X-Axis
908.42	90.38	H	93.97	-3.59	QP	89.75	153.22	Horizontal Polarization
908.42	81.07	H	113.97	-32.90	Peak	254.75	213.22	Y-Axis
908.42	80.47	H	93.97	-13.50	QP	254.75	213.22	Horizontal Polarization
908.42	88.54	H	113.97	-25.43	Peak	269.50	151.61	Z-Axis
908.42	88.39	H	93.97	-5.58	QP	269.50	151.61	Horizontal Polarization

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Fundamental
High Channel

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
916.00	84.19	V	113.97	-29.78	Peak	358.12	163.85	X-Axis
916.00	84.06	V	93.97	-9.91	Avg	358.12	163.85	Vertical Polarization
916.00	91.41	V	113.97	-22.56	Peak	277.50	109.04	Y-Axis
916.00	91.22	V	93.97	-2.75	QP	277.50	109.04	Vertical Polarization
916.00	85.95	V	113.97	-28.02	Peak	341.75	164.26	Z-Axis
916.00	85.61	V	93.97	-8.36	QP	341.75	164.26	Vertical Polarization
916.00	92.15	H	113.97	-21.82	Peak	91.00	146.65	X-Axis
916.00	91.93	H	93.97	-2.04	QP	91.00	146.65	Horizontal Polarization
916.00	84.06	H	113.97	-29.91	Peak	334.00	159.01	Y-Axis
916.00	83.97	H	93.97	-10.00	QP	334.00	159.01	Horizontal Polarization
916.00	88.99	H	113.97	-24.98	Peak	271.50	149.46	Z-Axis
916.00	88.95	H	93.97	-5.02	QP	271.50	149.46	Horizontal Polarization

FCC 15.249
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Ring Contact Sensor
Model: 4SD1S70EN0

Date: 07/14/2017
Lab: D
Tested By: Kyle Haag

Harmonics - Low Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1816.84	33.55	V	73.97	-40.42	Peak	360.00	172.26	
1816.84	20.40	V	53.97	-33.57	Avg	360.00	172.26	
2725.26	46.24	V	73.97	-27.73	Peak	283.25	137.76	
2725.26	33.09	V	53.97	-20.88	Avg	283.25	137.76	
3633.68	39.63	V	73.97	-34.34	Peak	319.25	203.85	
3633.68	26.48	V	53.97	-27.49	Avg	319.25	203.85	
4542.10	45.90	V	73.97	-28.07	Peak	106.50	221.88	
4542.10	32.75	V	53.97	-21.22	Avg	106.50	221.88	
5450.52	42.78	V	73.97	-31.19	Peak	345.12	184.98	
5450.52	29.63	V	53.97	-24.34	Avg	345.12	184.98	
6358.94	48.78	V	73.97	-25.19	Peak	76.00	163.37	
6358.94	35.63	V	53.97	-18.34	Avg	76.00	163.37	
7267.36	45.82	V	73.97	-28.15	Peak	144.25	200.98	
7267.36	32.67	V	53.97	-21.30	Avg	144.25	200.98	
8175.78	49.90	V	73.97	-24.07	Peak	237.00	125.16	
8175.78	36.75	V	53.97	-17.22	Avg	237.00	125.16	
9084.20	48.00	V	73.97	-25.97	Peak	115.23	154.89	
9084.20	34.85	V	53.97	-19.12	Avg	115.23	154.89	

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Lab: D
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Harmonics - Low Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1816.84	34.06	V	73.97	-39.91	Peak	225.00	148.02	
1816.84	20.91	V	53.97	-33.06	Avg	225.00	148.02	
2725.26	49.14	V	73.97	-24.83	Peak	49.75	126.47	
2725.26	35.99	V	53.97	-17.98	Avg	49.75	126.47	
3633.68	39.90	V	73.97	-34.07	Peak	338.25	174.89	
3633.68	26.75	V	53.97	-27.22	Avg	338.25	174.89	
4542.10	47.13	V	73.97	-26.84	Peak	44.25	129.34	
4542.10	33.98	V	53.97	-19.99	Avg	44.25	129.34	
5450.52	44.22	V	73.97	-29.75	Peak	275.75	181.10	
5450.52	31.07	V	53.97	-22.90	Avg	275.75	181.10	
6358.94	48.29	V	73.97	-25.68	Peak	109.25	167.97	
6358.94	35.14	V	53.97	-18.83	Avg	109.25	167.97	
7267.36	45.76	V	73.97	-28.21	Peak	216.25	178.47	
7267.36	32.61	V	53.97	-21.36	Avg	216.25	178.47	
8175.78	49.25	V	73.97	-24.72	Peak	192.25	112.62	
8175.78	36.10	V	53.97	-17.87	Avg	192.25	112.62	
9084.20	48.20	V	73.97	-25.77	Peak	93.75	154.35	
9084.20	35.05	V	53.97	-18.92	Avg	93.75	154.35	

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Harmonics - Low Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1816.84	33.57	V	73.97	-40.40	Peak	133.50	155.25	
1816.84	20.42	V	53.97	-33.55	Avg	133.50	155.25	
2725.26	50.42	V	73.97	-23.55	Peak	136.00	127.61	
2725.26	37.27	V	53.97	-16.70	Avg	136.00	127.61	
3633.68	39.92	V	73.97	-34.05	Peak	205.50	154.59	
3633.68	26.77	V	53.97	-27.20	Avg	205.50	154.59	
4542.10	47.35	V	73.97	-26.62	Peak	100.75	177.40	
4542.10	34.20	V	53.97	-19.77	Avg	100.75	177.40	
5450.52	43.08	V	73.97	-30.89	Peak	127.00	150.95	
5450.52	29.93	V	53.97	-24.04	Avg	127.00	150.95	
6358.94	49.62	V	73.97	-24.35	Peak	82.00	159.01	
6358.94	36.47	V	53.97	-17.50	Avg	82.00	159.01	
7267.36	46.32	V	73.97	-27.65	Peak	135.75	164.08	
7267.36	33.17	V	53.97	-20.80	Avg	135.75	164.08	
8175.78	52.77	V	73.97	-21.20	Peak	138.00	150.00	
8175.78	39.62	V	53.97	-14.35	Avg	138.00	150.00	
9084.20	48.54	V	73.97	-25.43	Peak	127.50	190.23	
9084.20	35.39	V	53.97	-18.58	Avg	127.50	190.23	

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Ring Contact Sensor
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Date: 07/14/2017
Lab: D
Tested By: Kyle Haag

Harmonics - Low Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1816.84	33.93	H	73.97	-40.04	Peak	141.25	171.19	
1816.84	20.78	H	53.97	-33.19	Avg	141.25	171.19	
2725.26	53.30	H	73.97	-20.67	Peak	210.00	135.13	
2725.26	40.15	H	53.97	-13.82	Avg	210.00	135.13	
3633.68	41.52	H	73.97	-32.45	Peak	224.25	153.40	
3633.68	28.37	H	53.97	-25.60	Avg	224.25	153.40	
4542.10	46.41	H	73.97	-27.56	Peak	328.25	174.23	
4542.10	33.26	H	53.97	-20.71	Avg	328.25	174.23	
5450.52	44.80	H	73.97	-29.17	Peak	140.25	181.79	
5450.52	31.65	H	53.97	-22.32	Avg	140.25	181.79	
6358.94	48.80	H	73.97	-25.17	Peak	284.25	154.17	
6358.94	35.65	H	53.97	-18.32	Avg	284.25	154.17	
7267.36	46.50	H	73.97	-27.47	Peak	217.50	180.68	
7267.36	33.35	H	53.97	-20.62	Avg	217.50	180.68	
8175.78	50.69	H	73.97	-23.28	Peak	192.75	123.49	
8175.78	37.54	H	53.97	-16.43	Avg	192.75	123.49	
9084.20	49.49	H	73.97	-24.48	Peak	244.25	151.43	
9084.20	36.34	H	53.97	-17.63	Avg	244.25	151.43	

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Harmonics - Low Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1816.84	33.54	H	73.97	-40.43	Peak	120.25	165.40	
1816.84	20.39	H	53.97	-33.58	Avg	120.25	165.40	
2725.26	50.71	H	73.97	-23.26	Peak	189.50	164.80	
2725.26	37.56	H	53.97	-16.41	Avg	189.50	164.80	
3633.68	39.43	H	73.97	-34.54	Peak	125.00	186.00	
3633.68	26.28	H	53.97	-27.69	Avg	125.00	186.00	
4542.10	47.86	H	73.97	-26.11	Peak	220.25	174.05	
4542.10	34.71	H	53.97	-19.26	Avg	220.25	174.05	
5450.52	43.78	H	73.97	-30.19	Peak	154.50	146.29	
5450.52	30.63	H	53.97	-23.34	Avg	154.50	146.29	
6358.94	49.03	H	73.97	-24.94	Peak	221.75	151.85	
6358.94	35.88	H	53.97	-18.09	Avg	221.75	151.85	
7267.36	46.87	H	73.97	-27.10	Peak	153.25	184.20	
7267.36	33.72	H	53.97	-20.25	Avg	153.25	184.20	
8175.78	51.15	H	73.97	-22.82	Peak	194.25	192.50	
8175.78	38.00	H	53.97	-15.97	Avg	194.25	192.50	
9084.20	48.59	H	73.97	-25.38	Peak	84.75	160.08	
9084.20	35.44	H	53.97	-18.53	Avg	84.75	160.08	

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Harmonics - Low Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1816.84	34.52	H	73.97	-39.45	Peak	161.25	187.31	
1816.84	21.37	H	53.97	-32.60	Avg	161.25	187.31	
2725.26	49.58	H	73.97	-24.39	Peak	113.50	142.35	
2725.26	36.43	H	53.97	-17.54	Avg	113.50	142.35	
3633.68	40.31	H	73.97	-33.66	Peak	222.75	173.46	
3633.68	27.16	H	53.97	-26.81	Avg	222.75	173.46	
4542.10	45.50	H	73.97	-28.47	Peak	37.00	166.05	
4542.10	32.35	H	53.97	-21.62	Avg	37.00	166.05	
5450.52	43.15	H	73.97	-30.82	Peak	108.75	181.16	
5450.52	30.00	H	53.97	-23.97	Avg	108.75	181.16	
6358.94	49.26	H	73.97	-24.71	Peak	272.75	136.98	
6358.94	36.11	H	53.97	-17.86	Avg	272.75	136.98	
7267.36	45.97	H	73.97	-28.00	Peak	140.25	154.89	
7267.36	32.82	H	53.97	-21.15	Avg	140.25	154.89	
8175.78	49.74	H	73.97	-24.23	Peak	155.50	193.00	
8175.78	36.59	H	53.97	-17.38	Avg	155.50	193.00	
9084.20	48.69	H	73.97	-25.28	Peak	142.75	170.35	
9084.20	35.54	H	53.97	-18.43	Avg	142.75	170.35	

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Harmonics - High Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1832.00	32.14	V	73.97	-41.83	Peak	271.25	184.80	
1832.00	18.99	V	53.97	-34.98	Avg	271.25	184.80	
2748.00	48.77	V	73.97	-25.20	Peak	286.75	115.43	
2748.00	35.62	V	53.97	-18.35	Avg	286.75	115.43	
3664.00	41.25	V	73.97	-32.72	Peak	277.25	172.00	
3664.00	28.10	V	53.97	-25.87	Avg	277.25	172.00	
4580.00	54.61	V	73.97	-19.36	Peak	64.25	172.08	
4580.00	41.46	V	53.97	-12.51	Avg	64.25	172.08	
5496.00	44.22	V	73.97	-29.75	Peak	188.00	151.07	
5496.00	31.07	V	53.97	-22.90	Avg	188.00	151.07	
6412.00	48.06	V	73.97	-25.91	Peak	93.75	145.34	
6412.00	34.91	V	53.97	-19.06	Avg	93.75	145.34	
7328.00	45.96	V	73.97	-28.01	Peak	240.25	140.50	
7328.00	32.81	V	53.97	-21.16	Avg	240.25	140.50	
8244.00	50.37	V	73.97	-23.60	Peak	220.75	146.71	
8244.00	37.22	V	53.97	-16.75	Avg	220.75	146.71	
9160.00	48.18	V	73.97	-25.79	Peak	239.75	157.04	
9160.00	35.03	V	53.97	-18.94	Avg	239.75	157.04	

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Harmonics - High Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1832.00	32.98	V	73.97	-40.99	Peak	210.75	178.29	
1832.00	19.83	V	53.97	-34.14	Avg	210.75	178.29	
2748.00	53.67	V	73.97	-20.30	Peak	314.25	100.50	
2748.00	40.52	V	53.97	-13.45	Avg	314.25	100.50	
3664.00	41.54	V	73.97	-32.43	Peak	31.25	161.58	
3664.00	28.39	V	53.97	-25.58	Avg	31.25	161.58	
4580.00	46.04	V	73.97	-27.93	Peak	360.00	146.89	
4580.00	32.89	V	53.97	-21.08	Avg	360.00	146.89	
5496.00	44.52	V	73.97	-29.45	Peak	240.50	147.13	
5496.00	31.37	V	53.97	-22.60	Avg	240.50	147.13	
6412.00	47.72	V	73.97	-26.25	Peak	162.00	152.92	
6412.00	34.57	V	53.97	-19.40	Avg	162.00	152.92	
7328.00	47.53	V	73.97	-26.44	Peak	344.25	130.00	
7328.00	34.38	V	53.97	-19.59	Avg	344.25	130.00	
8244.00	46.04	V	73.97	-27.93	Peak	235.25	160.80	
8244.00	32.89	V	53.97	-21.08	Avg	235.25	160.80	
9160.00	49.25	V	73.97	-24.72	Peak	126.75	136.68	
9160.00	36.10	V	53.97	-17.87	Avg	126.75	136.68	

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Harmonics - High Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1832.00	32.72	V	73.97	-41.25	Peak	164.50	172.86	
1832.00	19.57	V	53.97	-34.40	Avg	164.50	172.86	
2748.00	52.43	V	73.97	-21.54	Peak	147.00	124.56	
2748.00	39.28	V	53.97	-14.69	Avg	147.00	124.56	
3664.00	40.03	V	73.97	-33.94	Peak	182.25	137.88	
3664.00	26.88	V	53.97	-27.09	Avg	182.25	137.88	
4580.00	47.06	V	73.97	-26.91	Peak	237.75	139.43	
4580.00	33.91	V	53.97	-20.06	Avg	237.75	139.43	
5496.00	44.06	V	73.97	-29.91	Peak	228.50	135.37	
5496.00	30.91	V	53.97	-23.06	Avg	228.50	135.37	
6412.00	46.76	V	73.97	-27.21	Peak	204.50	175.85	
6412.00	33.61	V	53.97	-20.36	Avg	204.50	175.85	
7328.00	45.78	V	73.97	-28.19	Peak	266.25	151.01	
7328.00	32.63	V	53.97	-21.34	Avg	266.25	151.01	
8244.00	52.06	V	73.97	-21.91	Peak	103.50	158.77	
8244.00	38.91	V	53.97	-15.06	Avg	103.50	158.77	
9160.00	48.19	V	73.97	-25.78	Peak	147.50	153.28	
9160.00	35.04	V	53.97	-18.93	Avg	147.50	153.28	

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Harmonics - High Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1832.00	34.73	H	73.97	-39.24	Peak	263.00	150.53	
1832.00	21.58	H	53.97	-32.39	Avg	263.00	150.53	
2748.00	55.23	H	73.97	-18.74	Peak	228.75	146.41	
2748.00	42.08	H	53.97	-11.89	Avg	228.75	146.41	
3664.00	43.52	H	73.97	-30.45	Peak	224.25	194.71	
3664.00	30.37	H	53.97	-23.60	Avg	224.25	194.71	
4580.00	45.62	H	73.97	-28.35	Peak	360.00	119.61	
4580.00	32.47	H	53.97	-21.50	Avg	360.00	119.61	
5496.00	43.56	H	73.97	-30.41	Peak	214.00	162.59	
5496.00	30.41	H	53.97	-23.56	Avg	214.00	162.59	
6412.00	49.34	H	73.97	-24.63	Peak	293.00	156.20	
6412.00	36.19	H	53.97	-17.78	Avg	293.00	156.20	
7328.00	45.83	H	73.97	-28.14	Peak	147.50	148.80	
7328.00	32.68	H	53.97	-21.29	Avg	147.50	148.80	
8244.00	49.50	H	73.97	-24.47	Peak	321.25	180.50	
8244.00	36.35	H	53.97	-17.62	Avg	321.25	180.50	
9160.00	47.93	H	73.97	-26.04	Peak	177.50	146.23	
9160.00	34.78	H	53.97	-19.19	Avg	177.50	146.23	

FCC 15.249
Ecolink Intelligent Technology Inc.
Ring Contact Sensor
Model: 4SD1S70EN0

Date: 07/14/2017
Lab: D
Tested By: Kyle Haag

Harmonics - High Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1832.00	33.60	H	73.97	-40.37	Peak	272.25	162.71	
1832.00	20.45	H	53.97	-33.52	Avg	272.25	162.71	
2748.00	51.91	H	73.97	-22.06	Peak	178.00	112.32	
2748.00	38.76	H	53.97	-15.21	Avg	178.00	112.32	
3664.00	40.44	H	73.97	-33.53	Peak	359.00	168.74	
3664.00	27.29	H	53.97	-26.68	Avg	359.00	168.74	
4580.00	45.00	H	73.97	-28.97	Peak	167.25	134.11	
4580.00	31.85	H	53.97	-22.12	Avg	167.25	134.11	
5496.00	44.23	H	73.97	-29.74	Peak	115.75	135.73	
5496.00	31.08	H	53.97	-22.89	Avg	115.75	135.73	
6412.00	47.84	H	73.97	-26.13	Peak	234.00	151.61	
6412.00	34.69	H	53.97	-19.28	Avg	234.00	151.61	
7328.00	45.92	H	73.97	-28.05	Peak	118.75	150.47	
7328.00	32.77	H	53.97	-21.20	Avg	118.75	150.47	
8244.00	50.43	H	73.97	-23.54	Peak	197.75	116.42	
8244.00	37.28	H	53.97	-16.69	Avg	197.75	116.42	
9160.00	48.17	H	73.97	-25.80	Peak	158.05	173.22	
9160.00	35.02	H	53.97	-18.95	Avg	158.50	173.22	

FCC 15.249
Ecolink Intelligent Technology Inc.
Ring Contact Sensor
Model: 4SD1S70EN0

Date: 07/14/2017
Lab: D
Tested By: Kyle Haag

Harmonics - High Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
1832.00	34.06	H	73.97	-39.91	Peak	263.00	150.95	
1832.00	20.91	H	53.97	-33.06	Avg	263.00	150.95	
2748.00	54.48	H	73.97	-19.49	Peak	250.75	158.55	
2748.00	41.33	H	53.97	-12.64	Avg	250.75	158.55	
3664.00	40.90	H	73.97	-33.07	Peak	112.75	212.74	
3664.00	27.75	H	53.97	-26.22	Avg	112.75	212.74	
4580.00	45.45	H	73.97	-28.52	Peak	261.25	177.46	
4580.00	32.30	H	53.97	-21.67	Avg	261.25	177.46	
5496.00	43.83	H	73.97	-30.14	Peak	154.50	155.79	
5496.00	30.68	H	53.97	-23.29	Avg	154.50	155.79	
6412.00	48.20	H	73.97	-25.77	Peak	270.50	179.37	
6412.00	35.05	H	53.97	-18.92	Avg	270.50	179.37	
7328.00	45.77	H	73.97	-28.20	Peak	214.25	138.35	
7328.00	32.62	H	53.97	-21.35	Avg	214.25	138.35	
8244.00	49.46	H	73.97	-24.51	Peak	190.50	147.67	
8244.00	36.31	H	53.97	-17.66	Avg	190.50	147.67	
9160.00	47.84	H	73.97	-26.13	Peak	163.50	156.62	
9160.00	34.69	H	53.97	-19.28	Avg	163.50	156.62	

FCC Class B and FCC 15.249
Ecolink Intelligent Technology Inc.
Ring Contact Sensor
Model: 4SD1S70EN0

Date: 06/28/2017
Lab: D
Tested By: Kyle Haag

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

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

BAND EDGES DATA SHEETS

FCC 15.249
Ecolink Intelligent Technology Inc.
Ring Contact Sensor
Model: 4SD1S70EN0

Date: 07/15/2017
Lab: D
Tested By: Kyle Haag

Band Edges

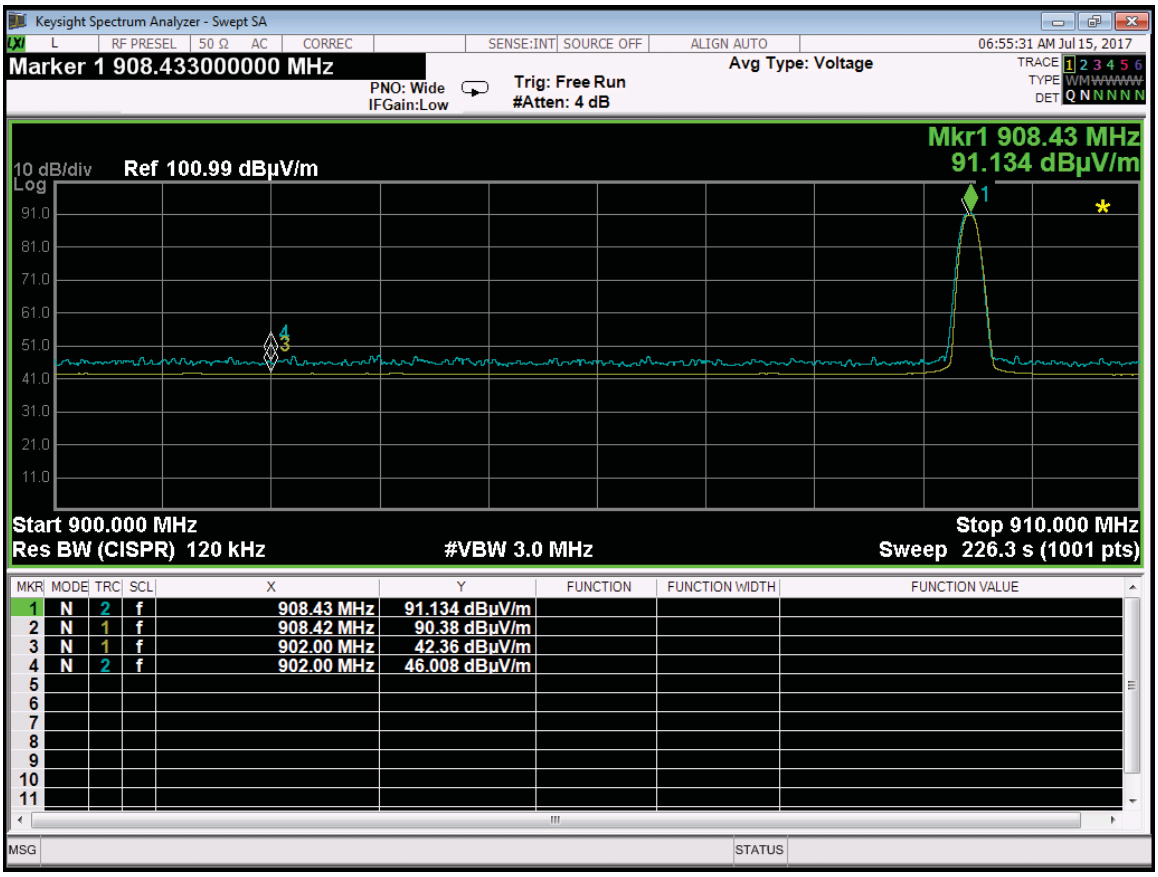
Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
908.42	90.36	V	113.97	-23.61	Peak	281.00	108.44	Fundamental - Low Ch.
908.42	90.17	V	93.97	-3.80	QP	281.00	108.44	Y-Axis - Worst Case
902.00	45.91	V	66.00	-20.09	Peak	281.00	108.44	Band Edge
902.00	42.44	V	46.00	-3.56	QP	281.00	108.44	Y-Axis - Worst Case
908.42	91.13	H	113.97	-22.84	Peak	89.75	153.22	Fundamental - Low Ch.
908.42	90.38	H	93.97	-3.59	QP	89.75	153.22	X-Axis - Worst Case
902.00	46.00	H	66.00	-20.00	Peak	89.75	153.22	Band Edge
902.00	42.36	H	46.00	-3.64	QP	89.75	153.22	X-Axis - Worst Case

FCC 15.249
Ecolink Intelligent Technology Inc.
Ring Contact Sensor
Model: 4SD1S70EN0

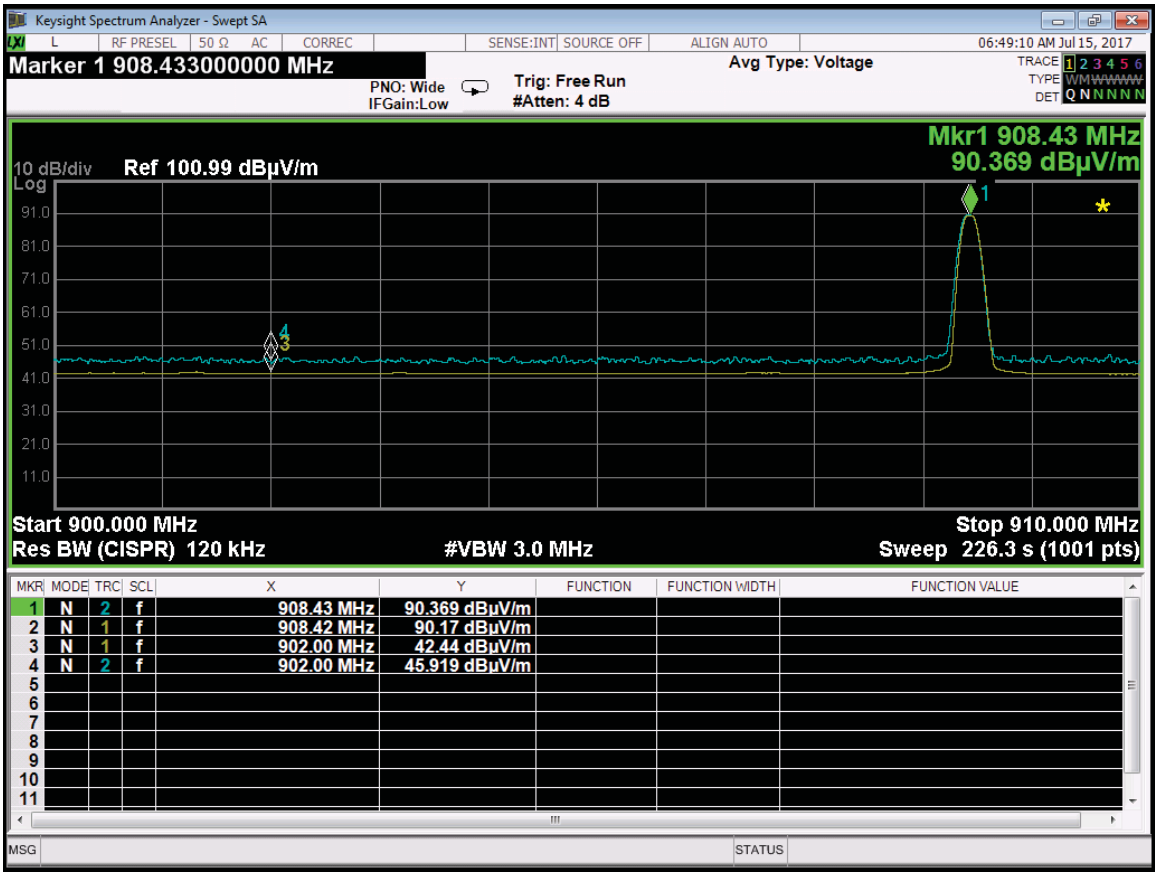
Date: 07/15/2017
Lab: D
Tested By: Kyle Haag

Band Edges

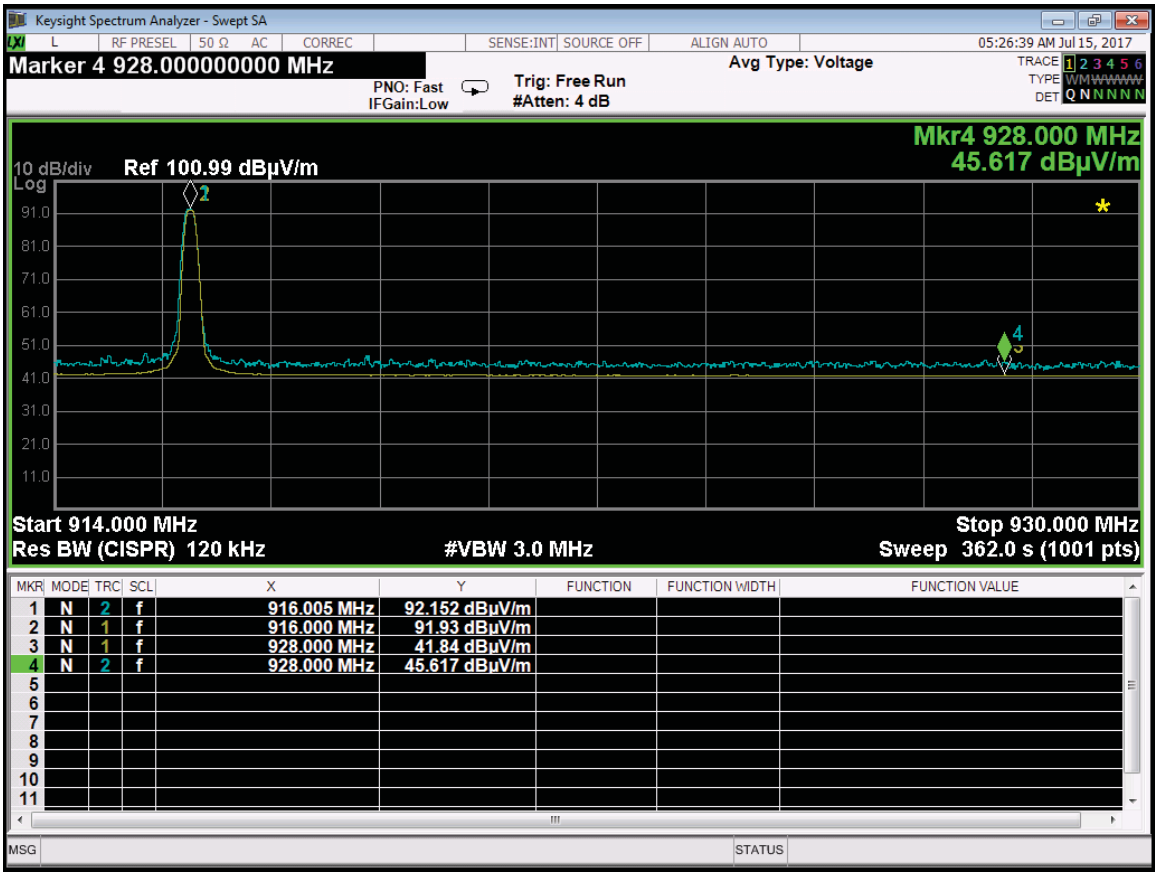
Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
916.00	92.15	H	113.97	-21.82	Peak	91.00	146.65	X-Axis
916.00	91.93	H	93.97	-2.04	QP	91.00	146.65	Horizontal Polarization
928.00	45.61	H	66.00	-20.39	Peak	91.00	146.65	Band Edge
928.00	41.84	H	46.00	-4.16	QP	91.00	146.65	X-Axis - Worst Case
916.00	91.41	V	113.97	-22.56	Peak	277.50	109.04	Y-Axis
916.00	91.22	V	93.97	-2.75	QP	277.50	109.04	Vertical Polarization
928.00	45.56	V	66.00	-20.44	Peak	277.50	109.04	Band Edge
928.00	41.81	V	46.00	-4.19	QP	277.50	109.04	Y-Axis - Worst Case



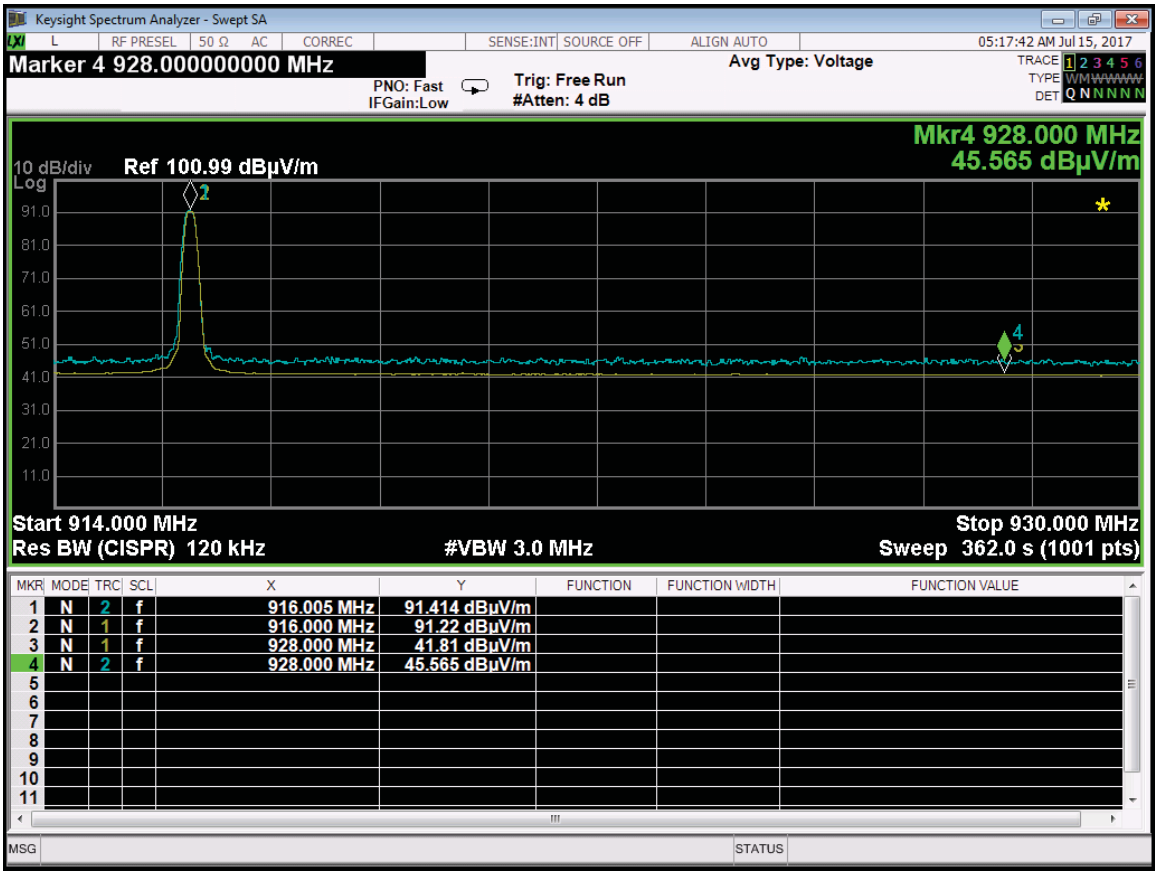
Band Edge Low Channel 908.42 MHz- Horizontal - X-Axis-Worst-Case



Band Edge Low Channel 908.42 MHz - Vertical - Y-Axis - Worst Case

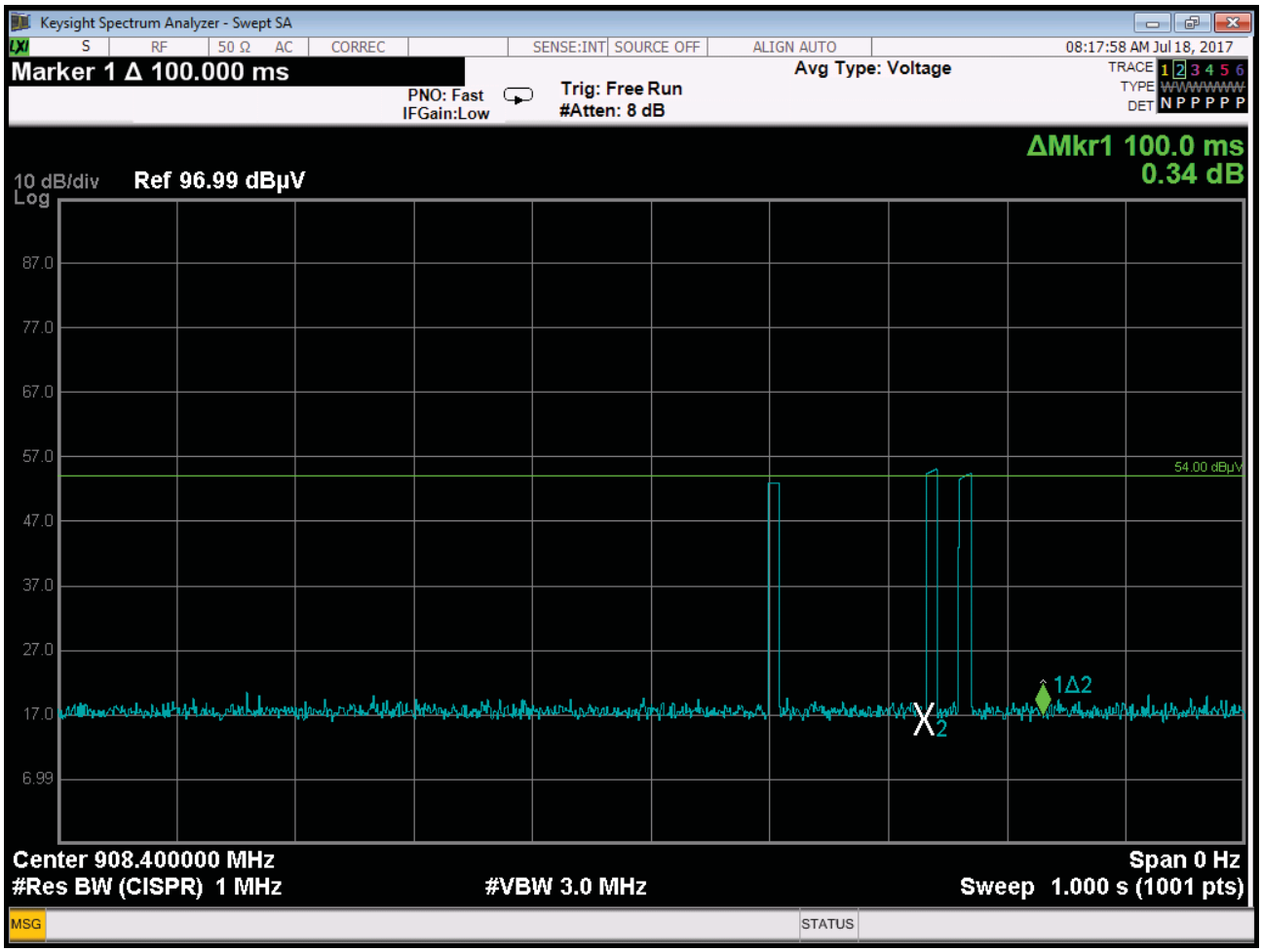


Band Edge High Channel 916 MHz - Horizontal - X-Axis - Worst Case



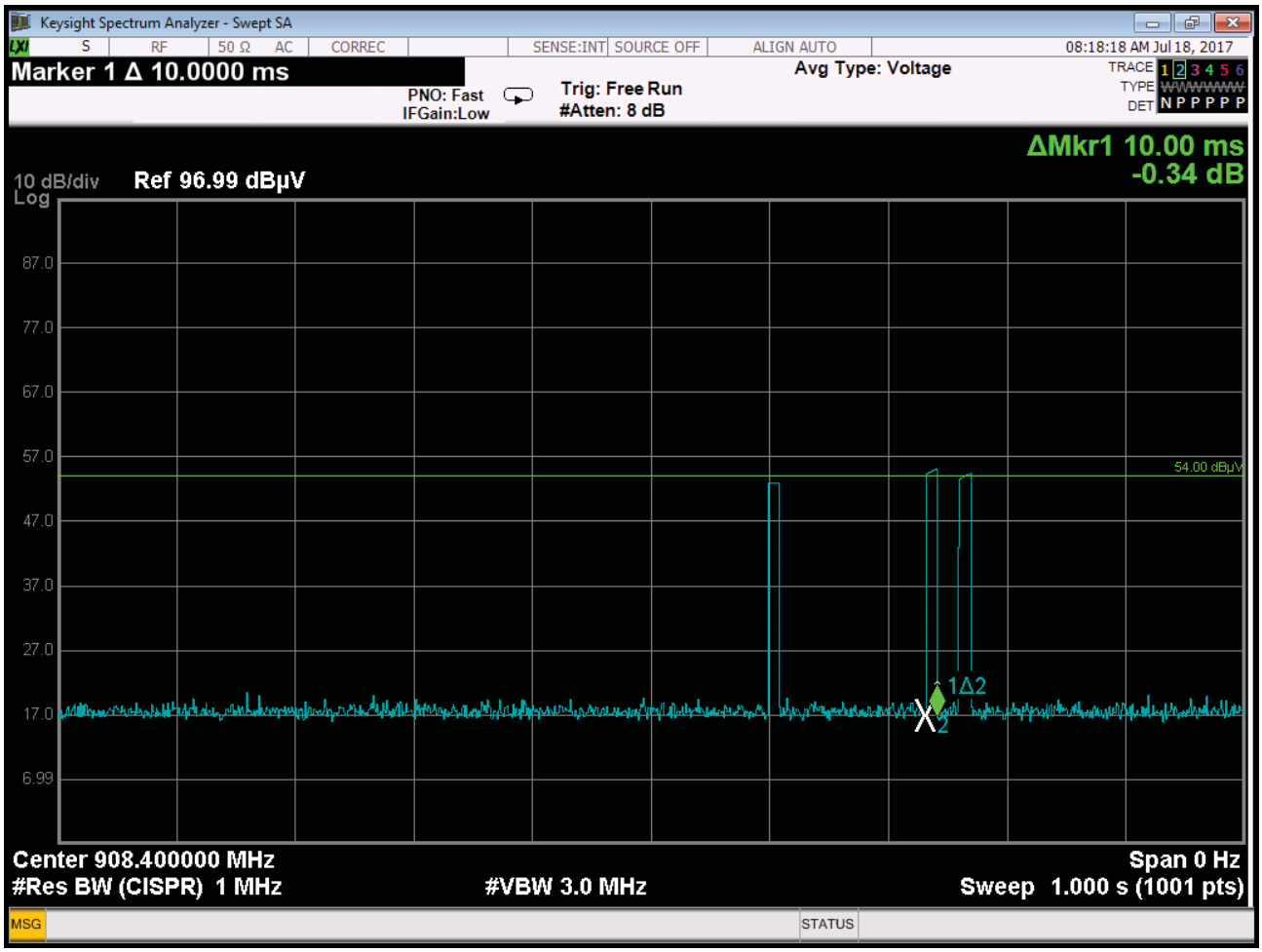
Band Edge High Channel- 916 MHz - Vertical - Y-Axis - Worst Case

DUTY CYCLE DATA SHEETS



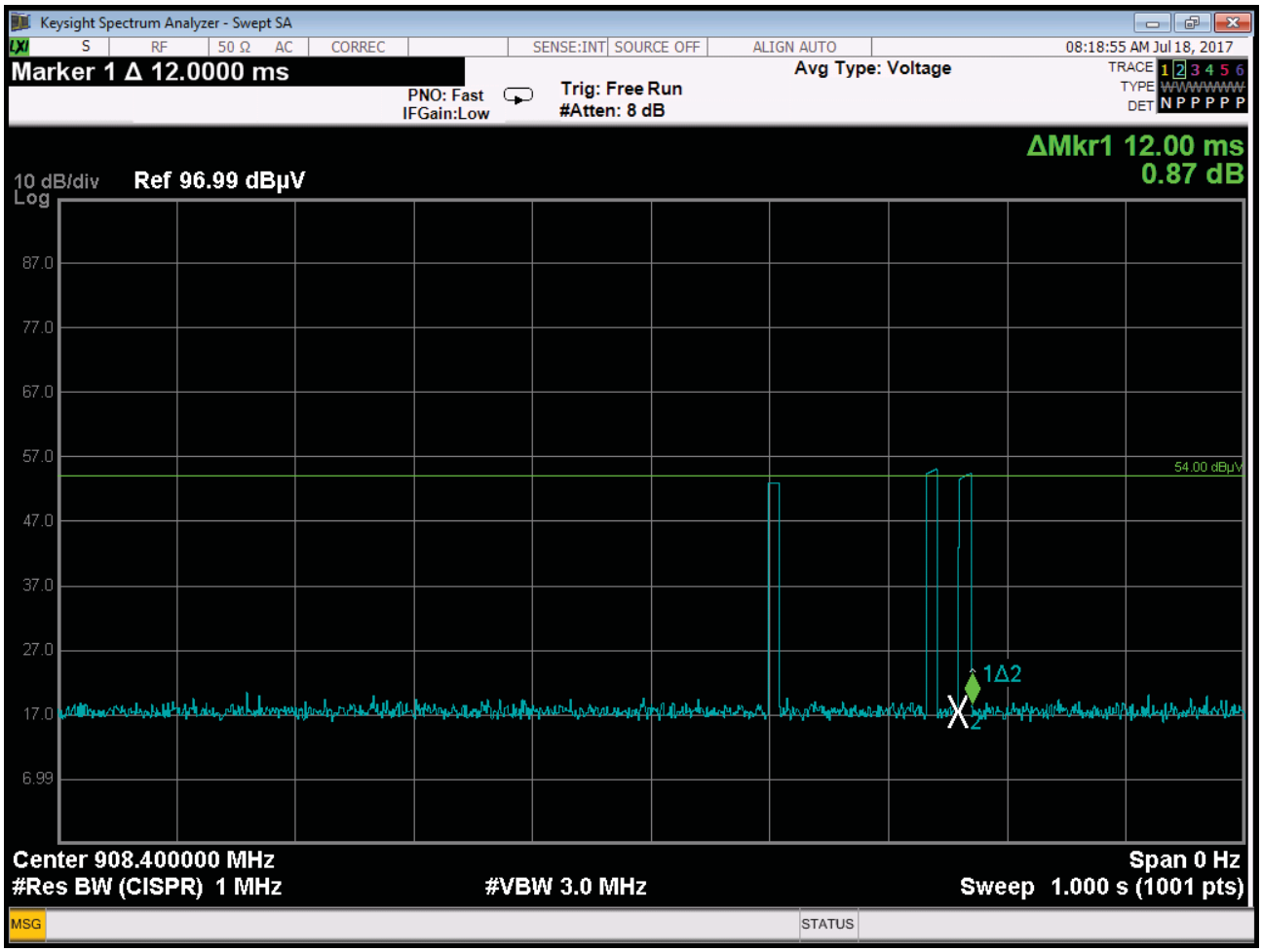
Number of Pulses in Worst Case in 100 ms is 2.

The EUT was attempting to operate an endpoint device that has been learned into a controller that is not currently accessible. This is the worst case configuration duty cycle for the EUT.



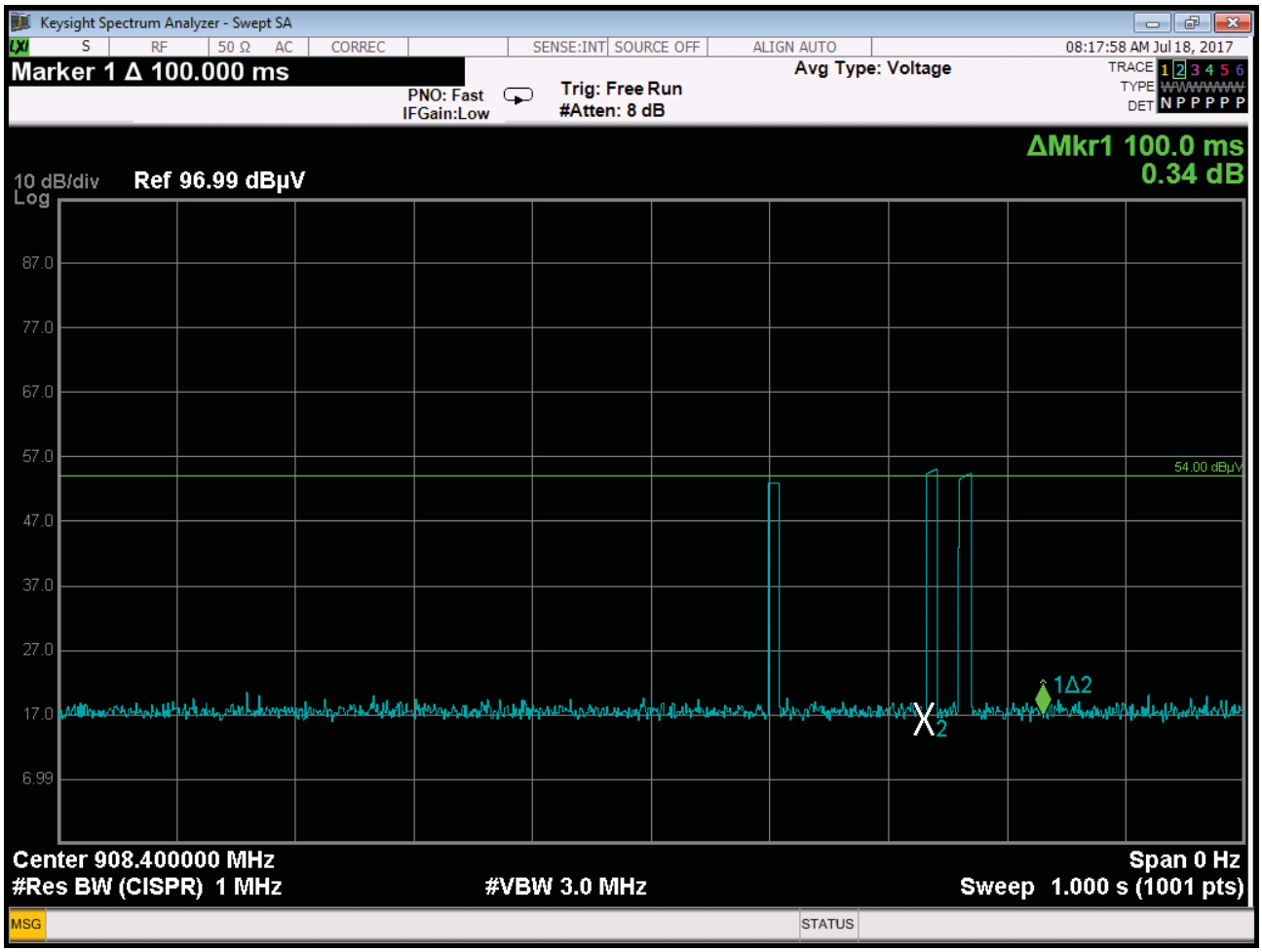
Time of first pulse = 10 ms

The EUT was attempting to operate an endpoint device that has been learned into a controller that is not currently accessible. This is the worst case configuration duty cycle for the EUT.



Time of second pulse = 12 ms

The EUT was attempting to operate an endpoint device that has been learned into a controller that is not currently accessible. This is the worst case configuration duty cycle for the EUT.



Total On Time = 22 ms

Total Duty Cycle = 22% (22 ms /100 ms)

Peak to Average Ratio = -13.15 dB

The EUT was attempting to operate an endpoint device that has been learned into a controller that is not currently accessible. This is the worst case configuration duty cycle for the EUT.