

*FCC PART 15, SUBPART B and C
TEST REPORT**for***KEYFOB TRANSMITTER****MODEL: OTX-400-HH-KF#**

Prepared for

LINX TECHNOLOGIES
159 ORT LANE
MERLIN, OREGON 97532

Prepared by: _____

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DATE: SEPTEMBER 29, 2014

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	15	2	2	2	13	37	71

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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: Keyfob Transmitter
 Model: OTX-400-HH-KF#
 S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was modified during the test. Please see the list located in Appendix B.

Customer: Linx Technologies
 159 Ort Lane
 Merlin, Oregon 97532

Test Dates: September 9, 10, 11, 12, 16, and 18, 2014

Test Specifications: Emissions requirements
 CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231

Test Procedure: ANSI C63.4

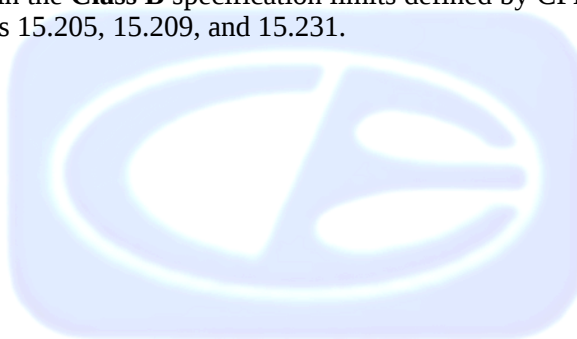
Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Spurious Radiated RF Emissions, 10 kHz – 4400 MHz (Transmitter and Digital portion)	The EUT 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 15.231
2	Conducted RF Emissions, 150 kHz to 30 MHz	This test was not performed because the EUT operates on battery power and does not connect to the AC mains.
3	-20 dB Bandwidth of the Fundamental	The EUT complies with the limits of CFR Title 47, Part 15, Subpart C, section 15.231 [c].

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Keyfob Transmitter, Model: OTX-400-HH-KF#. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4. 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 15.231.



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

Linx Technologies

Shawn Hogan

VP of Engineering

Compatible Electronics Inc.

Kyle Fujimoto

Test Engineer

James Ross

Test Engineer

2.4 Date Test Sample was Received

The test sample was received on September 8, 2014.

2.5 Disposition of the Test Sample

The test sample has not been returned to Linx Technologies 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
N/A	Not Applicable
ASK	Amplitude Shift Keying
FSK	Frequency Shift Keying

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 2009	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
EN 50147-2: 1997	Anechoic chambers. Alternative test site suitability with respect to site attenuation

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – Emissions

The Keyfob Transmitter, Model: OTX-400-HH-KF# (EUT) was tested as a stand alone unit in three orthogonal axis. The EUT was continuously transmitting.

The EUT was tested in both ASK and 2FSK modes at both 418 MHz and 433.92 MHz. The ASK mode was investigated for the worst case protocol (DS Serial, MS, and Holtek). The MS was determined to be the worst case protocol for the ASK mode.

The final radiated data for the EUT as was taken in both the 2FSK mode and ASK mode with MS protocol as described above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

The EUT has no cables connected.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
KEYFOB TRANSMITTER	LINX TECHNOLOGIES	OTX-400-HH-KF#	N/A	OJMOTX400HHKF

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
GENERAL TEST EQUIPMENT USED IN LAB D					
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	Agilent Technologies	N9038A	MY51100115	March 6, 2014	2 Year
RF RADIATED EMISSIONS TEST EQUIPMENT					
CombiLog Antenna	Com-Power	AC-220	61060	May 20, 2014	1 Year
Loop Antenna	Com-Power	AL-130	17089	January 29, 2013	2 Year
Horn Antenna	Com-Power	AH-118	071175	February 26, 2014	2 Year
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

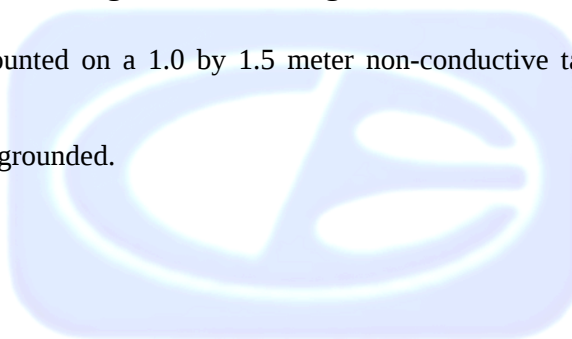
6.1 Test Facility Description

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

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 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 Radiated Emissions (Spurious and Harmonics) Test – Lab D

The EMI Receiver was used as the measuring meter. A built-in, internal preamplifier was 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. A quasi-peak reading was taken only for those readings, which are marked accordingly on the data sheets.

For ASK Modulation: For the fundamental, 2nd harmonic, and frequencies above 1 GHz, the readings were averaged by a “duty cycle correction factor”, derived from $20 \log(\text{dwell time} / \text{one pulse train including blanking interval})$. This duty cycle correction factor was then subtracted from the peak reading.

For FSK Modulation: For the fundamental, 2nd harmonic, and frequencies above 1 GHz, by narrowing the video filter down to 10 Hz and putting the sweep time on AUTO on the EMI receiver to keep the amplitude reading calibrated.

The EMI test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is set up according to ANSI C63.4, EN 50147-2. 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).

Radiated Emissions (Spurious and Harmonics) Test – Lab D (Continued)

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

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 1 GHz	120 kHz	CombiLog Antenna
1 GHz to 4.4 GHz	1 MHz	Horn Antenna

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

Test Results:

The EUT 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, Sections 15.209 and 15.231 (b) for radiated emissions. Please see Appendix E for the data sheets.

7.1.2 RF Emissions Test Results

Table 1.0 RADIATED EMISSION RESULTS
Keyfob Transmitter, Model: OTX-400-HH-KF#

Frequency MHz	Average Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
418 (V) (Y-Axis) MS Protocol	79.59	80.28	-0.69
433.92 (V) (Z-Axis) 2FSK Protocol	79.40	80.82	-1.42
418 (V) (Z-Axis) MS Protocol	78.81	80.28	-1.47
433.92 (V) (Z-Axis) MS Protocol	79.02	80.82	-1.80
433.92 (V) (Z-Axis) MS Protocol	78.94	80.82	-1.88
418 (V) (Z-Axis) 2FSK Protocol	78.15	80.28	-2.13

Notes:

(H) Horizontal

(V) Vertical

*

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

7.1.3 Bandwidth of the Fundamental

The -20 dB bandwidth was checked to see that it was within 0.25% of the fundamental frequency for the EUT. Plots of the -20 dB bandwidth are located in Appendix E.

Test Results:

The EUT complies with the limits CFR Title 47, Part 15, Subpart C, section 15.231[c].

8. CONCLUSIONS

The Keyfob Transmitter, Model: OTX-400-HH-KF#, as tested, meets all of the specification limits defined in FCC Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.231.



APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

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

LABORATORY ACCREDITATIONS AND RECOGNITIONS

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

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

NVLAP listing links

[Agoura Division](#) / [Brea Division](#) / [Silverado/Lake Forest Division](#)

.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."

ANSI listing [CETCB](#)

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

US/EU MRA list [NIST MRA site](#)

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).

APEC MRA list [NIST MRA site](#)

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

VCCI Support member: Please visit http://www.vcci.jp/vcci_e/

FCC Listing, from FCC OET site

[FCC test lab search](#) <https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm>

Compatible Electronics IC listing can be found at:

<http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home>

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
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Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

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 15.231 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.

Modifications:

1. Change the power output of U1 to 8 dBm.





APPENDIX C

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

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

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Keyfob Transmitter
Model: OTX-400-HH-KF#
S/N: N/A

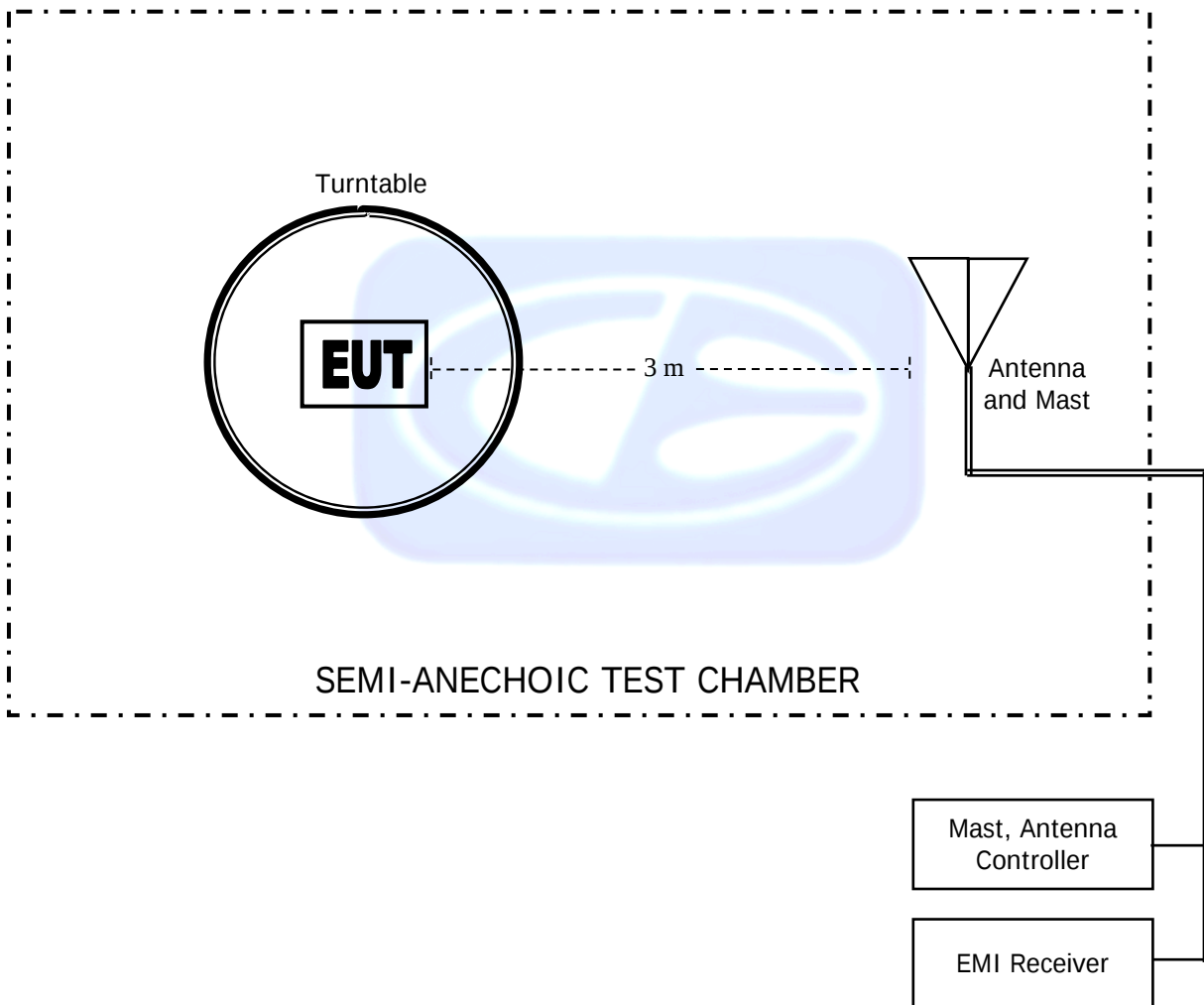
There were no additional models covered under this report.



APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: LAYOUT OF THE SEMI-ANECHOIC TEST CHAMBER



COM-POWER AL-130**LOOP ANTENNA**

S/N: 17089

CALIBRATION DATE: JANUARY 29, 2013

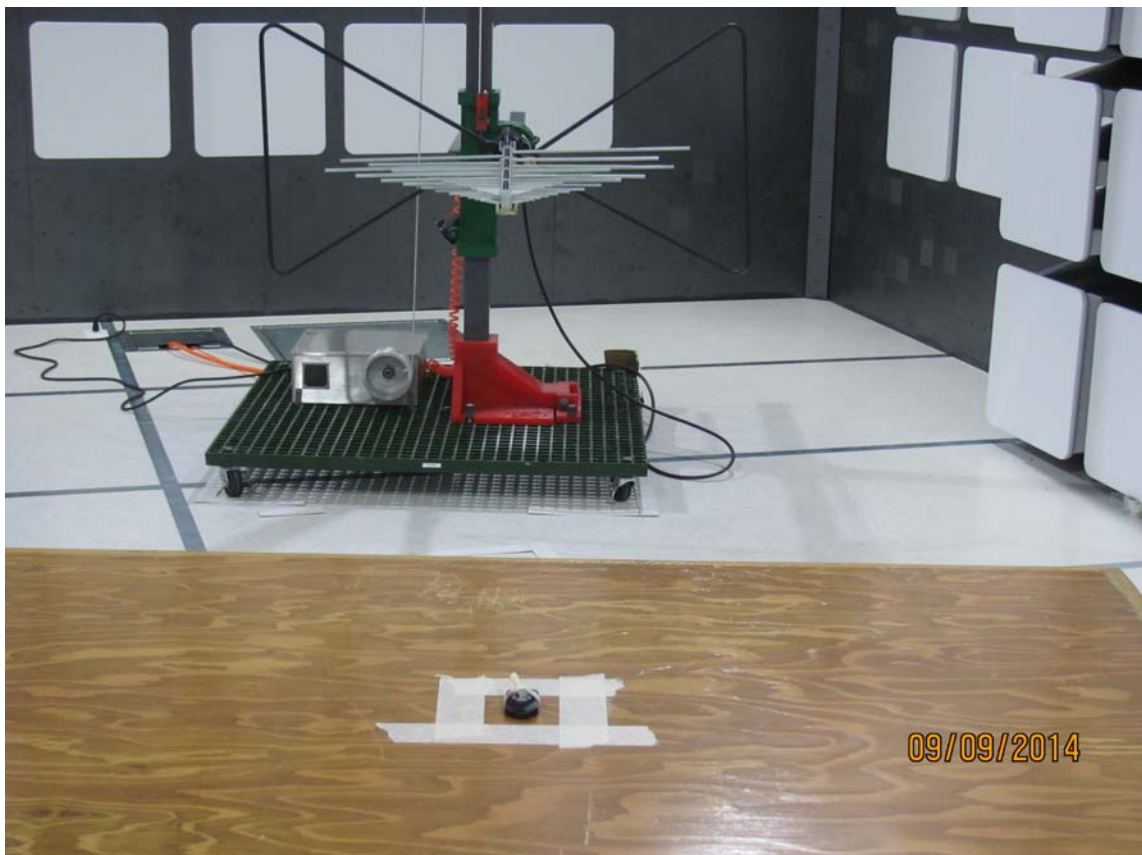
FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-42.5	9
0.01	-42.3	9.2
0.02	-42.1	9.4
0.03	-41.4	10.1
0.04	-41.8	9.7
0.05	-42.4	9.1
0.06	-42.3	9.2
0.07	-42.5	9
0.08	-42.4	9.1
0.09	-42.5	9
0.1	-42.5	9
0.2	-42.7	8.8
0.3	-42.6	8.9
0.4	-42.5	9
0.5	-42.7	8.8
0.6	-42.7	8.8
0.7	-42.5	9
0.8	-42.3	9.2
0.9	-42.2	9.3
1	-42.2	9.3
2	-41.8	9.7
3	-41.7	9.8
4	-41.7	9.8
5	-41.5	10
6	-41.6	9.9
7	-41.4	10.1
8	-41	10.5
9	-40.8	10.7
10	-41.3	10.2
15	-41.4	10.1
20	-41.2	10.3
25	-42.6	8.9
30	-41.7	9.8

COM-POWER AC-220**COMBILOG ANTENNA****S/N: 61060****CALIBRATION DATE: MAY 20, 2014**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	23.40	200	14.40
35	23.70	250	16.40
40	24.20	300	17.90
45	22.60	350	15.60
50	22.10	400	19.90
60	17.90	450	20.40
70	12.70	500	21.60
80	11.60	550	21.50
90	12.20	600	22.30
100	13.20	650	23.50
120	15.70	700	23.70
125	15.80	750	25.90
140	13.60	800	25.90
150	16.90	850	26.40
160	14.20	900	27.00
175	14.90	950	27.70
180	15.00	1000	27.50

COM POWER AH-118**HORN ANTENNA****S/N: 071175****CALIBRATION DATE: FEBRUARY 26, 2014**

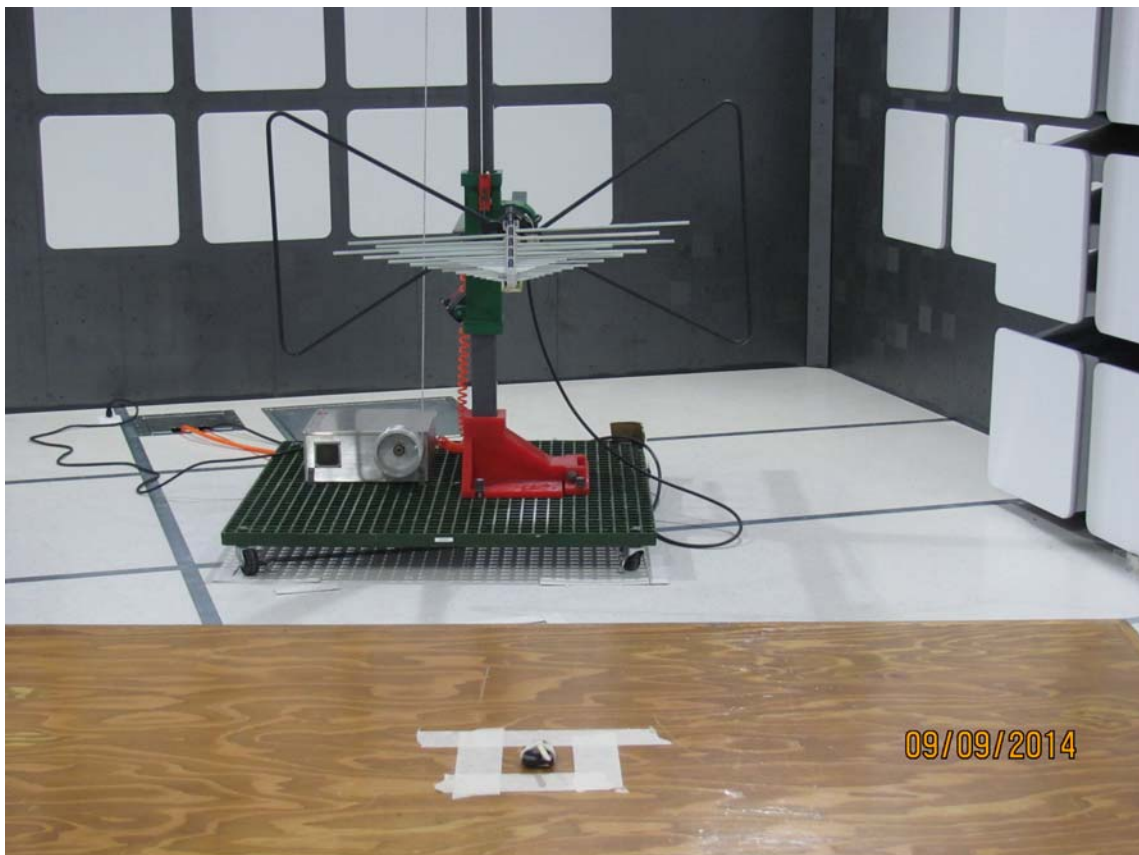
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.23	10.0	38.43
1.5	25.84	10.5	40.19
2.0	28.14	11.0	40.49
2.5	29.51	11.5	41.39
3.0	31.20	12.0	42.02
3.5	32.17	12.5	43.30
4.0	31.40	13.0	42.77
4.5	31.86	13.5	40.18
5.0	34.82	14.0	42.59
5.5	34.38	14.5	41.74
6.0	36.31	15.0	41.84
6.5	34.81	15.5	38.48
7.0	37.48	16.0	39.52
7.5	36.98	16.5	37.85
8.0	36.66	17.0	41.33
8.5	38.47	17.5	44.96
9.0	37.22	18.0	48.50
9.5	37.86		



FRONT VIEW

LINX TECHNOLOGIES
KEYFOB TRANSMITTER
MODEL: OTX-400-HH-KF#
FCC SUBPART B AND C – RADIATED EMISSIONS – 418 MHz VERSION – BELOW 1 GHz

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



REAR VIEW

LINX TECHNOLOGIES
KEYFOB TRANSMITTER
MODEL: OTX-400-HH-KF#
FCC SUBPART B AND C – RADIATED EMISSIONS – 418 MHz VERSION – BELOW 1 GHz

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

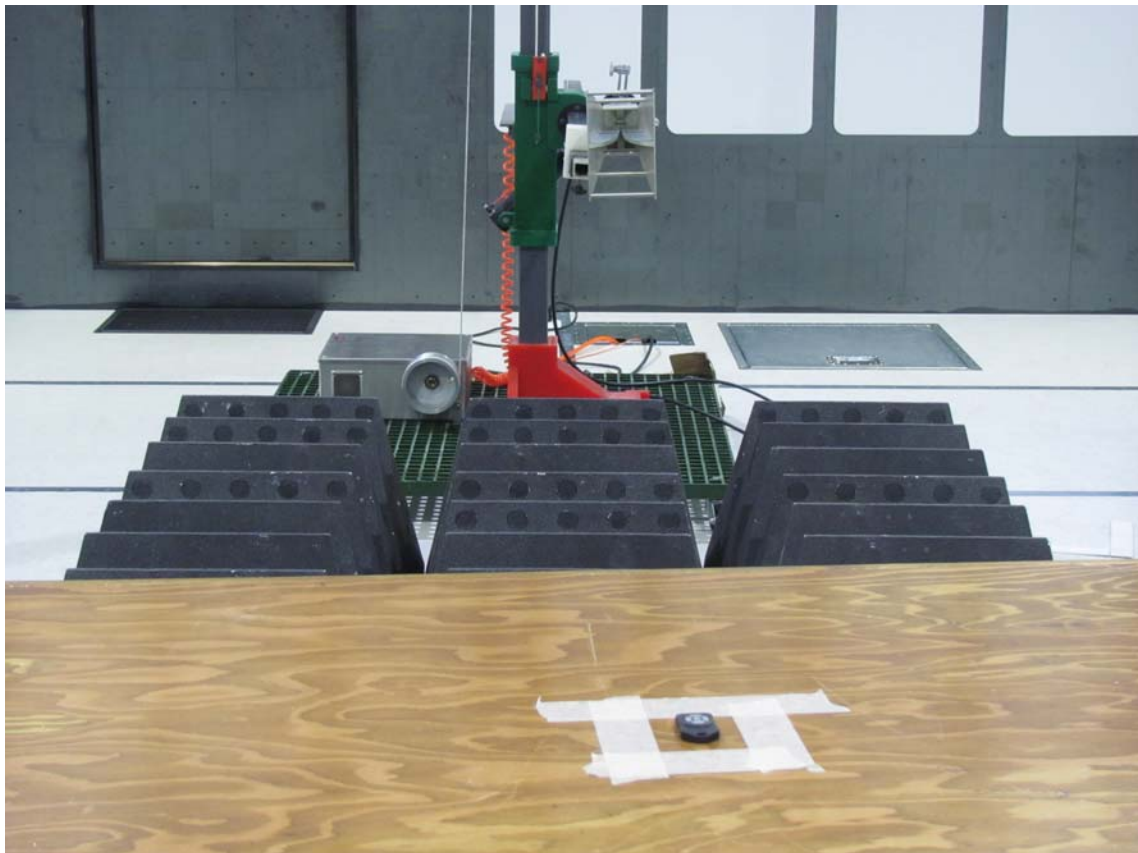


FRONT VIEW

LINX TECHNOLOGIES
KEYFOB TRANSMITTER
MODEL: OTX-400-HH-KF#

FCC SUBPART B AND C – RADIATED EMISSIONS – 418 MHz VERSION – ABOVE 1 GHz

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



REAR VIEW

LINX TECHNOLOGIES
KEYFOB TRANSMITTER
MODEL: OTX-400-HH-KF#

FCC SUBPART B AND C – RADIATED EMISSIONS – 418 MHz VERSION – ABOVE 1 GHz

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

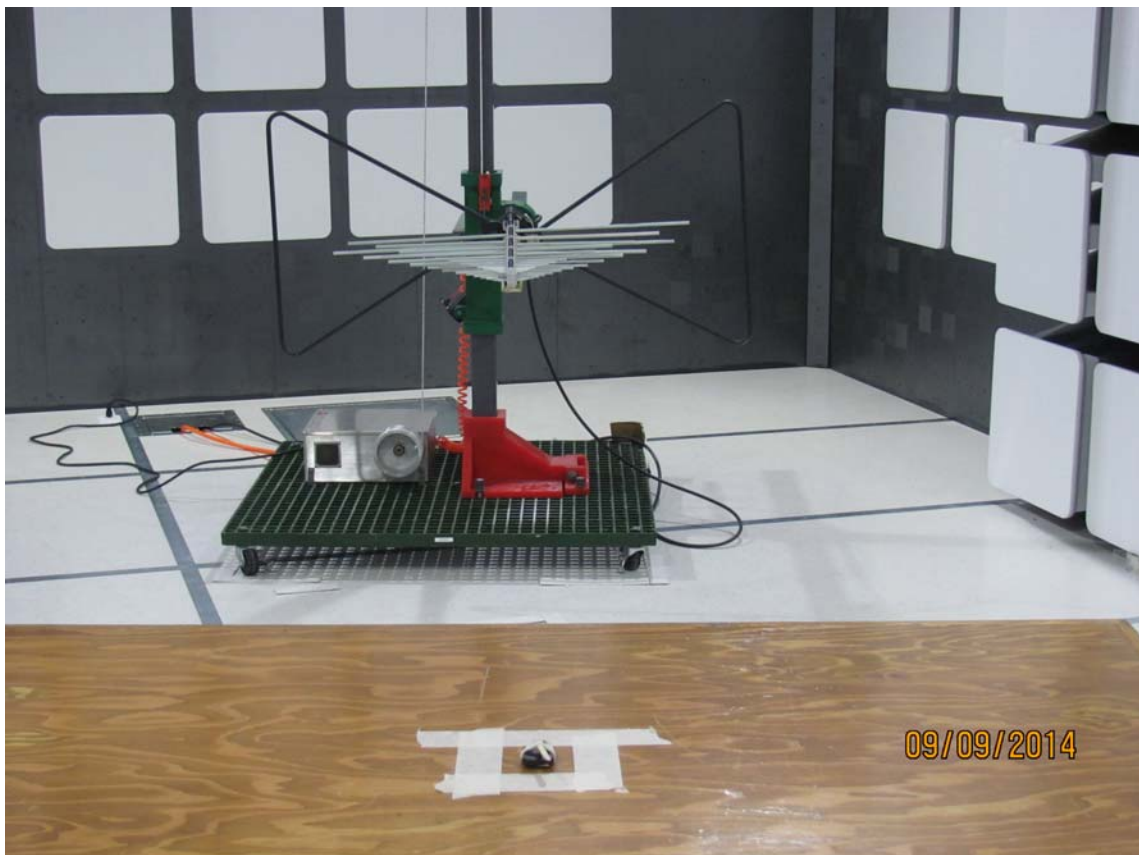


FRONT VIEW

LINX TECHNOLOGIES
KEYFOB TRANSMITTER
MODEL: OTX-400-HH-KF#

FCC SUBPART B AND C – RADIATED EMISSIONS – 433.92 MHz VERSION – BELOW 1 GHz

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

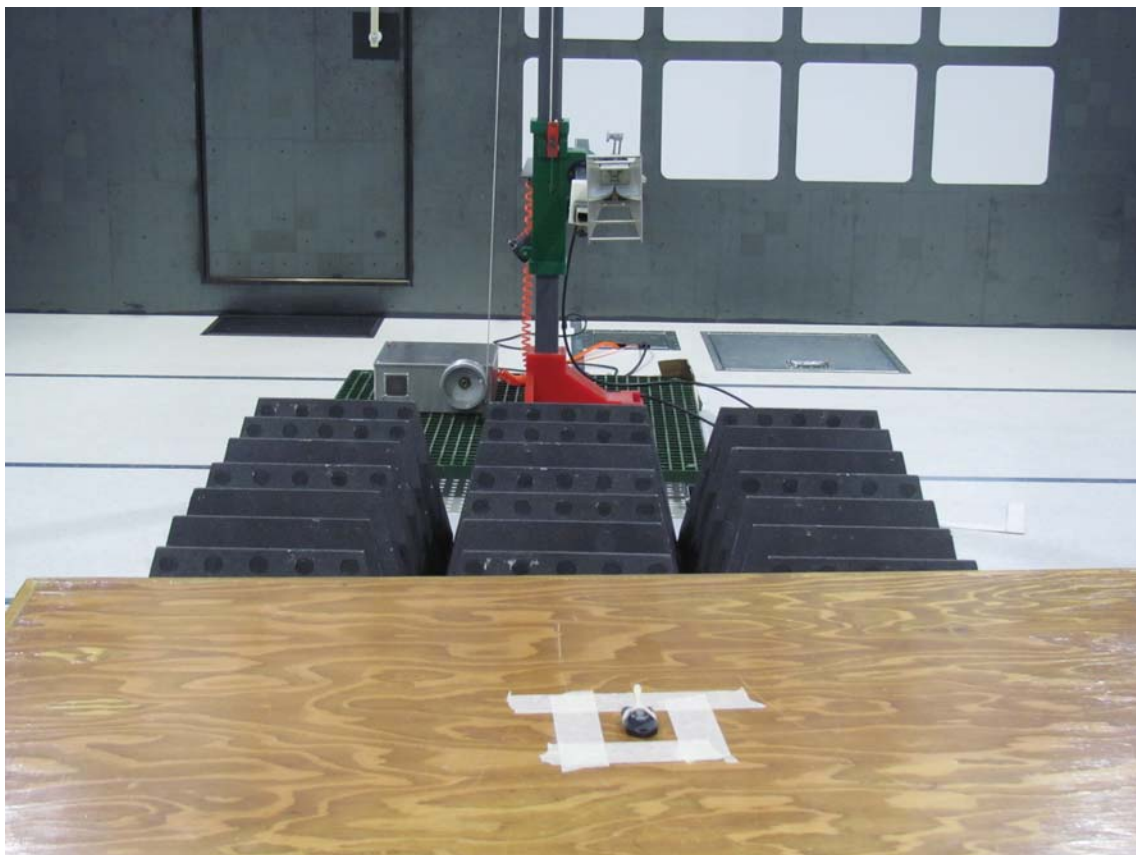


REAR VIEW

LINX TECHNOLOGIES
KEYFOB TRANSMITTER
MODEL: OTX-400-HH-KF#

FCC SUBPART B AND C – RADIATED EMISSIONS – 433.92 MHz VERSION – BELOW 1 GHz

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

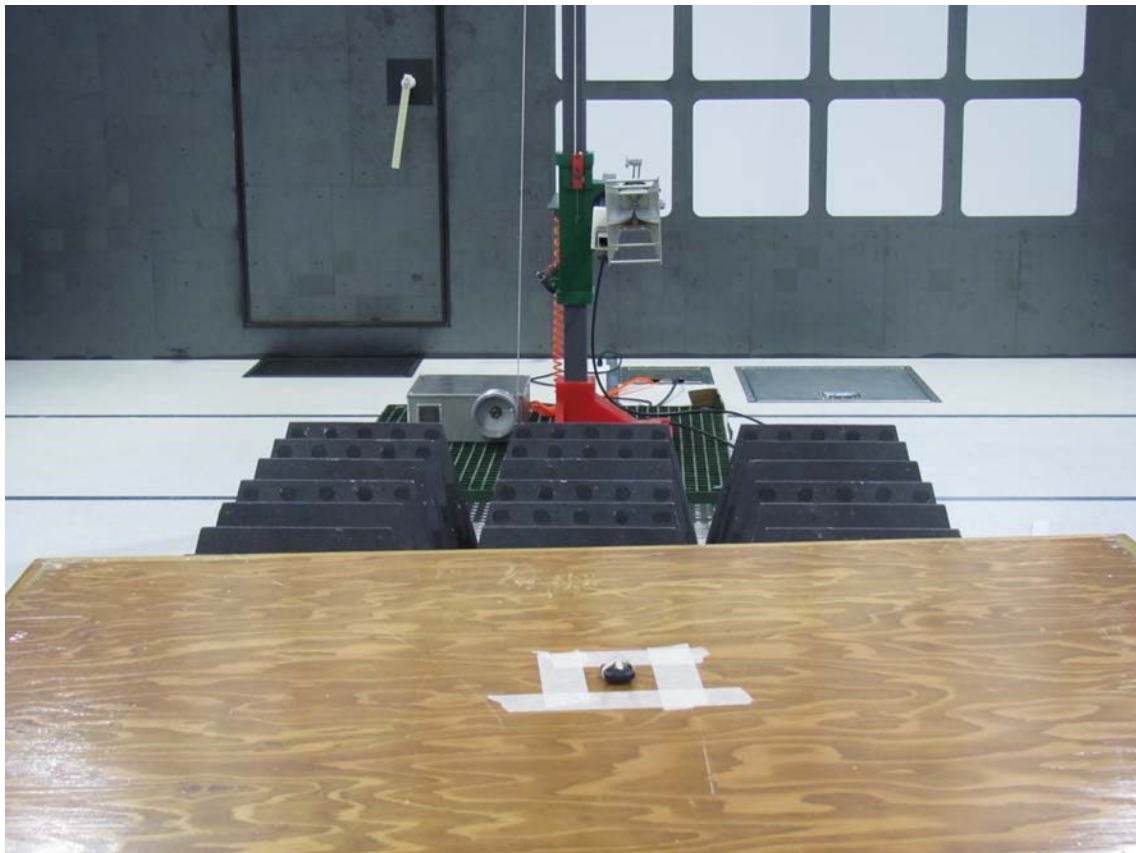


FRONT VIEW

LINX TECHNOLOGIES
KEYFOB TRANSMITTER
MODEL: OTX-400-HH-KF#

FCC SUBPART B AND C – RADIATED EMISSIONS – 433.92 MHz VERSION – ABOVE 1 GHz

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



REAR VIEW

LINX TECHNOLOGIES
KEYFOB TRANSMITTER
MODEL: OTX-400-HH-KF#

FCC SUBPART B AND C – RADIATED EMISSIONS – 433.92 MHz VERSION – ABOVE 1 GHz

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

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/12/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 61.16% Duty Cycle
X-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	67.05	V	100.28	-33.23	Peak	223.22	179.00	
418	62.78	V	80.28	-17.50	Avg	223.22	179.00	
836	45.24	V	80.28	-35.04	Peak	191.28	336.50	
836	40.97	V	60.28	-19.31	Avg	191.28	336.50	
1254	42.43	V	74.00	-31.57	Peak	383.16	264.25	
1254	38.16	V	54.00	-15.84	Avg	383.16	264.25	
1672	46.06	V	74.00	-27.94	Peak	271.04	354.75	
1672	41.79	V	54.00	-12.21	Avg	271.04	354.75	
2090	48.02	V	80.28	-32.26	Peak	127.04	233.25	
2090	43.75	V	60.28	-16.53	Avg	127.04	233.25	
2508	50.49	V	80.28	-29.79	Peak	191.04	346.75	
2508	46.22	V	60.28	-14.06	Avg	191.04	346.75	
2926								No Emission Detected
3344								No Emission Detected
3762								No Emission Detected
4180								No Emission Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/12/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 61.16% Duty Cycle
X-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	81.64	H	100.28	-18.64	Peak	223.46	204.50	
418	77.37	H	80.28	-2.91	Avg	223.46	204.50	
836	51.47	H	80.28	-28.81	Peak	175.22	138.75	
836	47.20	H	60.28	-13.08	Avg	175.22	138.75	
1254	50.24	H	74.00	-23.76	Peak	100.00	240.50	
1254	45.97	H	54.00	-8.03	Avg	100.00	240.50	
1672	48.02	H	74.00	-25.98	Peak	124.00	102.75	
1672	43.75	H	54.00	-10.25	Avg	124.00	102.75	
2090	48.31	H	80.28	-31.97	Peak	159.28	146.00	
2090	44.04	H	60.28	-16.24	Avg	159.28	146.00	
2508	50.21	H	80.28	-30.07	Peak	222.98	259.25	
2508	45.94	H	60.28	-14.34	Avg	222.98	259.25	
2926								No Emission
2926								Detected
3344								No Emission
3344								Detected
3762								No Emission
3762								Detected
4180								No Emission
4180								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/12/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 61.16% Duty Cycle
Y-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	83.86	V	100.28	-16.42	Peak	127.46	71.75	
418	79.59	V	80.28	-0.69	Avg	127.46	71.75	
836	53.43	V	80.28	-26.85	Peak	127.40	231.50	
836	49.16	V	60.28	-11.12	Avg	127.40	231.50	
1254	52.76	V	74.00	-21.24	Peak	125.49	90.50	
1254	48.49	V	54.00	-5.51	Avg	125.49	90.50	
1672	52.95	V	74.00	-21.06	Peak	100.00	141.75	
1672	48.68	V	54.00	-5.33	Avg	100.00	141.75	
2090	50.62	V	80.28	-29.66	Peak	178.56	324.00	
2090	46.35	V	60.28	-13.93	Avg	178.56	324.00	
2508	52.57	V	80.28	-27.71	Peak	100.00	177.25	
2508	48.30	V	60.28	-11.98	Avg	100.00	177.25	
2926								No Emission Detected
3344								No Emission Detected
3762								No Emission Detected
4180								No Emission Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/12/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 61.16% Duty Cycle
Y-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	76.96	H	100.28	-23.32	Peak	399.28	325.25	
418	72.69	H	80.28	-7.59	Avg	399.28	325.25	
836	43.64	H	80.28	-36.64	Peak	207.70	144.75	
836	39.37	H	60.28	-20.91	Avg	207.70	144.75	
1254	49.71	H	74.00	-24.29	Peak	111.16	175.00	
1254	45.44	H	54.00	-8.56	Avg	111.16	175.00	
1672	43.83	H	74.00	-30.17	Peak	159.16	151.50	
1672	39.56	H	54.00	-14.44	Avg	159.16	151.50	
2090	47.04	H	80.28	-33.24	Peak	286.74	43.50	
2090	42.77	H	60.28	-17.51	Avg	286.74	43.50	
2508	50.61	H	80.28	-29.67	Peak	143.16	320.50	
2508	46.34	H	60.28	-13.94	Avg	143.16	320.50	
2926								No Emission Detected
3344								No Emission Detected
3762								No Emission Detected
4180								No Emission Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/12/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 61.16% Duty Cycle
Z-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	83.08	V	100.28	-17.20	Peak	159.28	175.00	
418	78.81	V	80.28	-1.47	Avg	159.28	175.00	
836	58.91	V	80.28	-21.37	Peak	155.52	211.84	
836	54.64	V	60.28	-5.64	Avg	155.52	211.84	
1254	52.03	V	74.00	-21.97	Peak	288.59	174.75	
1254	47.76	V	54.00	-6.24	Avg	288.59	174.75	
1672	50.34	V	74.00	-23.66	Peak	159.16	301.00	
1672	46.07	V	54.00	-7.93	Avg	159.16	301.00	
2090	48.09	V	80.28	-32.19	Peak	254.80	126.50	
2090	43.82	V	60.28	-16.46	Avg	254.80	126.50	
2508	50.18	V	80.28	-30.10	Peak	142.92	316.25	
2508	45.91	V	60.28	-14.37	Avg	142.92	316.25	
2926								No Emission Detected
3344								No Emission Detected
3762								No Emission Detected
4180								No Emission Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/12/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 61.16% Duty Cycle
Z-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	77.21	H	100.28	-23.07	Peak	398.86	85.75	
418	72.94	H	80.28	-7.34	Avg	398.86	85.75	
836	59.68	H	80.28	-20.60	Peak	102.59	318.26	
836	55.41	H	60.28	-4.87	Avg	102.59	318.26	
1254	49.08	H	74.00	-24.92	Peak	254.92	270.00	
1254	44.81	H	54.00	-9.19	Avg	254.92	270.00	
1672	48.91	H	74.00	-25.09	Peak	207.04	223.00	
1672	44.64	H	54.00	-9.36	Avg	207.04	223.00	
2090	46.75	H	80.28	-33.53	Peak	318.98	2.00	
2090	42.48	H	60.28	-17.80	Avg	318.98	2.00	
2508	50.00	H	80.28	-30.28	Peak	238.92	63.25	
2508	45.73	H	60.28	-14.55	Avg	238.92	63.25	
2926								No Emission Detected
3344								No Emission Detected
3762								No Emission Detected
4180								No Emission Detected

FCC 15.231 and FCC Class BLinx Technologies
Keyfob Transmitter
Model: OTX-400-HH-KF#Date: 09/10/2014
Lab: D
Tested By: Kyle Fujimoto**Digital Portion and Non-Harmonic Emissions of the Transmitter**
Vertical and Horizontal Polarizations - MS Protocol - 418 MHz Version

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Detected
								from 10 kHz to 30 MHz
								for the Digital Portion
								for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 10 kHz to 30 MHz
								for the Non-Harmonic
								Emissions from the Tx for the
								EUT for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 30 MHz to 4.18 GHz
								for the Digital Portion
								for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 30 MHz to 4.18 GHz
								for the Non-Harmonic
								Emissions from the Tx for the
								EUT for both the Vertical and
								Horizontal Polarizations.
								Investigated in the
								X, Y, and Z-Axis

FCC 15.231

Linx Technologies
Keyfob Transmitter
Model: OTX-400-HH-KF#

Date: 09/11/2014
Lab: D
Tested By: Kyle Fujimoto

2FSK Protocol
X-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	69.83	V	100.28	-30.45	Peak	133.61	273.25	
418	64.37	V	80.28	-15.91	Avg	133.61	273.25	
836	43.96	V	80.28	-36.32	Peak	171.28	175.25	
836	35.02	V	60.28	-25.26	Avg	171.28	175.25	
1254	47.67	V	74.00	-26.34	Peak	100.00	94.75	
1254	41.41	V	54.00	-12.60	Avg	100.00	94.75	
1672	50.51	V	74.00	-23.49	Peak	100.65	297.75	
1672	43.60	V	54.00	-10.40	Avg	100.65	297.75	
2090	48.61	V	80.28	-31.67	Peak	100.71	250.00	
2090	38.07	V	60.28	-22.21	Avg	100.71	250.00	
2508	52.74	V	80.28	-27.54	Peak	156.05	132.25	
2508	42.93	V	60.28	-17.35	Avg	156.05	132.25	
2926	51.97	V	80.28	-28.31	Peak	121.91	215.75	
2926	39.95	V	60.28	-20.33	Avg	121.91	215.75	
3344								No Emission
3344								Detected
3762								No Emission
3762								Detected
4180								No Emission
4180								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/11/2014
 Lab: D
 Tested By: Kyle Fujimoto

2FSK Protocol

X-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	82.67	H	100.28	-17.61	Peak	191.82	206.00	
418	77.76	H	80.28	-2.53	Avg	191.82	206.00	
836	57.02	H	80.28	-23.26	Peak	270.98	125.00	
836	49.63	H	60.28	-10.65	Avg	270.98	125.00	
1254	55.41	H	74.00	-18.59	Peak	114.14	236.50	
1254	50.83	H	54.00	-3.17	Avg	114.14	236.50	
1672	52.53	H	74.00	-21.47	Peak	123.94	243.75	
1672	45.88	H	54.00	-8.12	Avg	123.94	243.75	
2090	49.37	H	80.28	-30.91	Peak	100.00	220.25	
2090	40.12	H	60.28	-20.16	Avg	100.00	220.25	
2508	51.92	H	80.28	-28.36	Peak	162.50	239.25	
2508	43.25	H	60.28	-17.03	Avg	162.50	239.25	
2926								No Emission Detected
3344								No Emission Detected
3762								No Emission Detected
4180								No Emission Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/11/2014
 Lab: D
 Tested By: Kyle Fujimoto

2FSK Protocol
Y-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	82.75	V	100.28	-17.53	Peak	191.22	84.25	
418	77.25	V	80.28	-3.03	Avg	191.22	84.25	
836	56.51	V	80.28	-23.77	Peak	141.91	252.75	
836	47.57	V	60.28	-12.71	Avg	141.91	252.75	
1254	57.14	V	74.00	-16.86	Peak	132.00	40.25	
1254	49.68	V	54.00	-4.32	Avg	132.00	40.25	
1672	55.09	V	74.00	-18.92	Peak	100.00	120.25	
1672	49.72	V	54.00	-4.28	Avg	100.00	120.25	
2090	51.72	V	80.28	-28.56	Peak	100.00	42.50	
2090	42.85	V	60.28	-17.43	Avg	100.00	42.50	
2508	55.26	V	80.28	-25.02	Peak	100.00	64.25	
2508	47.25	V	60.28	-13.03	Avg	100.00	64.25	
2926	54.11	V	80.28	-26.17	Peak	100.00	129.25	
2926	43.09	V	60.28	-17.19	Avg	100.00	129.25	
3344								No Emission Detected
3762								No Emission Detected
4180								No Emission Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/11/2014
 Lab: D
 Tested By: Kyle Fujimoto

2FSK Protocol

Y-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	76.91	H	100.28	-23.37	Peak	159.34	32.00	
418	71.30	H	80.28	-8.98	Avg	159.34	32.00	
836	53.59	H	80.28	-26.69	Peak	216.00	325.75	
836	44.26	H	60.28	-16.02	Avg	216.00	325.75	
1254	48.82	H	74.00	-25.18	Peak	129.55	128.25	
1254	43.15	H	54.00	-10.85	Avg	129.55	128.25	
1672	47.01	H	74.00	-26.99	Peak	163.34	148.25	
1672	39.31	H	54.00	-14.69	Avg	163.34	148.25	
2090	45.05	H	80.28	-35.23	Peak	132.00	331.50	
2090	33.82	H	60.28	-26.46	Avg	132.00	331.50	
2508	50.25	H	80.28	-30.03	Peak	100.00	335.00	
2508	38.27	H	60.28	-22.01	Avg	100.00	335.00	
2926	52.97	H	80.28	-27.31	Peak	171.22	307.75	
2926	40.98	H	60.28	-19.30	Avg	171.22	307.75	
3344								No Emission
3344								Detected
3762								No Emission
3762								Detected
4180								No Emission
4180								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/11/2014
 Lab: D
 Tested By: Kyle Fujimoto

2FSK Protocol
Z-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	83.58	V	100.28	-16.70	Peak	125.91	175.75	
418	78.15	V	80.28	-2.13	Avg	125.91	175.75	
836	56.30	V	80.28	-23.98	Peak	150.56	206.75	
836	47.79	V	60.28	-12.49	Avg	150.56	206.75	
1254	52.37	V	74.00	-21.63	Peak	123.28	133.00	
1254	46.49	V	54.00	-7.51	Avg	123.28	133.00	
1672	52.42	V	74.00	-21.58	Peak	192.17	345.00	
1672	46.69	V	54.00	-7.31	Avg	192.17	345.00	
2090	49.08	V	80.28	-31.20	Peak	107.16	340.00	
2090	38.02	V	60.28	-22.26	Avg	107.16	340.00	
2508	52.68	V	80.28	-27.60	Peak	182.98	302.50	
2508	42.39	V	60.28	-17.89	Avg	182.98	302.50	
2926	53.35	V	80.28	-26.93	Peak	100.11	106.25	
2926	42.59	V	60.28	-17.69	Avg	100.11	106.25	
3344								No Emission
3344								Detected
3762								No Emission
3762								Detected
4180								No Emission
4180								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Date: 09/11/2014
 Lab: D
 Tested By: Kyle Fujimoto

2FSK Protocol

Z-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
418	77.81	H	100.28	-22.48	Peak	399.10	266.75	
418	72.71	H	80.28	-7.57	Avg	399.10	266.75	
836	55.00	H	80.28	-25.28	Peak	100.00	276.50	
836	45.88	H	60.28	-14.40	Avg	100.00	276.50	
1254	50.69	H	74.00	-23.31	Peak	192.83	221.00	
1254	45.26	H	54.00	-8.74	Avg	192.83	221.00	
1672	51.56	H	74.00	-22.44	Peak	103.28	230.00	
1672	45.98	H	54.00	-8.02	Avg	103.28	230.00	
2090	48.09	H	80.28	-32.19	Peak	207.70	55.50	
2090	37.65	H	60.28	-22.63	Avg	207.70	55.50	
2508	50.32	H	80.28	-29.96	Peak	186.74	278.75	
2508	39.58	H	60.28	-20.70	Avg	186.74	278.75	
2926								No Emission
2926								Detected
3344								No Emission
3344								Detected
3762								No Emission
3762								Detected
4180								No Emission
4180								Detected

FCC 15.231 and FCC Class BLinx Technologies
Keyfob Transmitter
Model: OTX-400-HH-KF#Date: 09/11/2014
Lab: D
Tested By: Kyle Fujimoto**Digital Portion and Non-Harmonic Emissions of the Transmitter
Vertical and Horizontal Polarizations - 2FSK Protocol**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Detected
								from 10 kHz to 30 MHz
								for the Digital Portion
								for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 10 kHz to 30 MHz
								for the Non-Harmonic
								Emissions from the Tx for the
								EUT for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 30 MHz to 4.18 GHz
								for the Digital Portion
								for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 30 MHz to 4.18 GHz
								for the Non-Harmonic
								Emissions from the Tx for the
								EUT for both the Vertical and
								Horizontal Polarizations.
								Investigated in the
								X, Y, and Z-Axis

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/18/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 60.16% Duty Cycle

X-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	72.12	V	100.82	-28.70	Peak	191.22	100.00	
433.92	67.71	V	80.82	-13.11	Avg	191.22	100.00	
867.84	50.92	V	80.82	-29.90	Peak	159.16	193.25	
867.84	46.51	V	60.82	-14.31	Avg	159.16	193.25	
1301.76	48.07	V	74.00	-25.93	Peak	162.80	111.00	
1301.76	43.66	V	54.00	-10.34	Avg	162.80	111.00	
1735.68	50.96	V	80.82	-29.86	Peak	202.80	345.00	
1735.68	46.55	V	60.82	-14.27	Avg	202.80	345.00	
2169.6	48.48	V	80.82	-32.34	Peak	366.35	313.00	
2169.6	44.07	V	60.82	-16.75	Avg	366.35	313.00	
2603.52	49.90	V	80.82	-30.92	Peak	223.01	176.00	
2603.52	45.49	V	60.82	-15.33	Avg	223.01	176.00	
3037.44	53.50	V	80.82	-27.32	Peak	206.89	261.00	
3037.44	49.09	V	60.82	-11.73	Avg	206.89	261.00	
3471.36								No Emission
3471.36								Detected
3905.28								No Emission
3905.28								Detected
4339.2								No Emission
4339.2								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/18/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 60.16% Duty Cycle

X-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	80.29	H	100.82	-20.53	Peak	190.98	26.75	
433.92	75.88	H	80.82	-4.94	Avg	190.98	26.75	
867.84	60.83	H	80.82	-19.99	Peak	111.22	119.00	
867.84	56.42	H	60.82	-4.40	Avg	111.22	119.00	
1301.76	56.26	H	74.00	-17.74	Peak	100.00	44.75	
1301.76	51.85	H	54.00	-2.15	Avg	100.00	44.75	
1735.68	54.41	H	80.82	-26.41	Peak	120.29	65.75	
1735.68	50.00	H	60.82	-10.82	Avg	120.29	65.75	
2169.6	48.81	H	80.82	-32.01	Peak	238.71	261.00	
2169.6	44.40	H	60.82	-16.42	Avg	238.71	261.00	
2603.52	50.59	H	80.82	-30.23	Peak	174.83	256.00	
2603.52	46.18	H	60.82	-14.64	Avg	174.83	256.00	
3037.44								No Emission
3037.44								Detected
3471.36								No Emission
3471.36								Detected
3905.28								No Emission
3905.28								Detected
4339.2								No Emission
4339.2								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/18/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 60.16% Duty Cycle

Y-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	83.35	V	100.82	-17.47	Peak	111.10	278.00	
433.92	78.94	V	80.82	-1.88	Avg	111.10	278.00	
867.84	59.83	V	80.82	-20.99	Peak	142.92	295.75	
867.84	55.42	V	60.82	-5.40	Avg	142.92	295.75	
1301.76	54.23	V	74.00	-19.77	Peak	136.23	57.25	
1301.76	49.82	V	54.00	-4.18	Avg	136.23	57.25	
1735.68	51.64	V	80.82	-29.18	Peak	110.95	314.75	
1735.68	47.23	V	60.82	-13.59	Avg	110.95	314.75	
2169.6	50.42	V	80.82	-30.40	Peak	245.35	286.25	
2169.6	46.01	V	60.82	-14.81	Avg	245.35	286.25	
2603.52	52.03	V	80.82	-28.79	Peak	286.71	199.00	
2603.52	47.62	V	60.82	-13.20	Avg	286.71	199.00	
3037.44	53.77	V	80.82	-27.05	Peak	238.53	201.00	
3037.44	49.36	V	60.82	-11.46	Avg	238.53	201.00	
3471.36								No Emission
3471.36								Detected
3905.28								No Emission
3905.28								Detected
4339.2								No Emission
4339.2								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/18/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 60.16% Duty Cycle

Y-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	77.59	H	100.82	-23.23	Peak	334.80	205.75	
433.92	73.18	H	80.82	-7.64	Avg	334.80	205.75	
867.84	50.30	H	80.82	-30.52	Peak	351.16	230.50	
867.84	45.89	H	60.82	-14.93	Avg	351.16	230.50	
1301.76	46.92	H	74.00	-27.08	Peak	270.59	141.50	
1301.76	42.51	H	54.00	-11.49	Avg	270.59	141.50	
1735.68	50.07	H	80.82	-30.75	Peak	206.71	148.75	
1735.68	45.66	H	60.82	-15.16	Avg	206.71	148.75	
2169.6	47.36	H	80.82	-33.46	Peak	190.65	115.00	
2169.6	42.95	H	60.82	-17.87	Avg	190.65	115.00	
2603.52	49.95	H	80.82	-30.87	Peak	222.71	200.25	
2603.52	45.54	H	60.82	-15.28	Avg	222.71	200.25	
3037.44								No Emission
3037.44								Detected
3471.36								No Emission
3471.36								Detected
3905.28								No Emission
3905.28								Detected
4339.2								No Emission
4339.2								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/18/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 60.16% Duty Cycle
Z-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	83.43	V	100.82	-17.39	Peak	111.22	346.25	
433.92	79.02	V	80.82	-1.80	Avg	111.22	346.25	
867.84	51.60	V	80.82	-29.22	Peak	350.80	199.25	
867.84	47.19	V	60.82	-13.63	Avg	350.80	199.25	
1301.76	51.71	V	74.00	-22.29	Peak	126.08	123.00	
1301.76	47.30	V	54.00	-6.70	Avg	126.08	123.00	
1735.68	54.71	V	80.82	-26.11	Peak	181.37	292.50	
1735.68	50.30	V	60.82	-10.52	Avg	181.37	292.50	
2169.6	48.97	V	80.82	-31.85	Peak	350.71	204.00	
2169.6	44.56	V	60.82	-16.26	Avg	350.71	204.00	
2603.52	50.24	V	80.82	-30.58	Peak	366.35	201.75	
2603.52	45.83	V	60.82	-14.99	Avg	366.35	201.75	
3037.44								No Emission
3037.44								Detected
3471.36								No Emission
3471.36								Detected
3905.28								No Emission
3905.28								Detected
4339.2								No Emission
4339.2								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/18/2014
 Lab: D
 Tested By: Kyle Fujimoto

MS Protocol - 60.16% Duty Cycle
Z-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	77.30	H	100.82	-23.52	Peak	287.22	84.50	
433.92	72.89	H	80.82	-7.93	Avg	287.22	84.50	
867.84	58.85	H	80.82	-21.97	Peak	175.22	257.50	
867.84	54.44	H	60.82	-6.38	Avg	175.22	257.50	
1301.76	52.33	H	74.00	-21.68	Peak	100.00	236.75	
1301.76	47.92	H	54.00	-6.08	Avg	100.00	236.75	
1735.68	54.61	H	80.82	-26.21	Peak	113.79	235.25	
1735.68	50.50	H	60.82	-10.32	Avg	113.79	235.25	
2169.6	48.02	H	80.82	-32.80	Peak	238.83	103.50	
2169.6	43.61	H	60.82	-17.21	Avg	238.83	103.50	
2603.52	50.17	H	80.82	-30.65	Peak	223.07	255.00	
2603.52	45.76	H	60.82	-15.06	Avg	223.07	255.00	
3037.44								No Emission Detected
3471.36								No Emission Detected
3905.28								No Emission Detected
4339.2								No Emission Detected

FCC 15.249 and FCC Class B

Linx Technologies
Keyfob Transmitter
Model: OTX-400-HH-KF#

Date: 09/11/2014
Lab: D
Tested By: Kyle Fujimoto

Digital Portion and Non-Harmonic Emissions of the Transmitter
Vertical and Horizontal Polarizations - 433.92 MHz Version - MS Protocol

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Detected
								from 10 kHz to 30 MHz
								for the Digital Portion
								for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 10 kHz to 30 MHz
								for the Non-Harmonic
								Emissions from the Tx for the
								EUT for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 30 MHz to 4.4 GHz
								for the Digital Portion
								for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 30 MHz to 4.4 GHz
								for the Non-Harmonic
								Emissions from the Tx for the
								EUT for both the Vertical and
								Horizontal Polarizations.
								Investigated in the
								X, Y, and Z-Axis

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/12/2014

Lab: D

Tested By: Kyle Fujimoto

2FSK Protocol

X-Axis - Vertical

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	62.99	V	100.82	-37.83	Peak	177.85	214.50	
433.92	51.53	V	80.82	-29.29	Avg	177.85	214.50	
867.84	54.33	V	80.82	-26.49	Peak	185.26	364.75	
867.84	48.31	V	60.82	-12.51	Avg	185.26	364.75	
1301.76	52.47	V	74.00	-21.53	Peak	212.71	82.75	
1301.76	48.06	V	54.00	-5.94	Avg	212.71	82.75	
1735.68	52.70	V	80.82	-28.12	Peak	207.52	328.50	
1735.68	46.99	V	60.82	-13.83	Avg	207.52	328.50	
2169.6	49.12	V	80.82	-31.70	Peak	149.19	138.75	
2169.6	39.79	V	60.82	-21.04	Avg	149.18	138.75	
2603.52	50.16	V	80.82	-30.66	Peak	172.17	152.50	
2603.52	37.57	V	60.82	-23.26	Avg	172.17	152.50	
3037.44	54.28	V	80.82	-26.54	Peak	185.13	105.50	
3037.44	44.07	V	60.82	-16.75	Avg	185.13	105.50	
3471.36								No Emission
3471.36								Detected
3905.28								No Emission
3905.28								Detected
4339.2								No Emission
4339.2								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/12/2014
 Lab: D
 Tested By: Kyle Fujimoto

2FSK Protocol

X-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	83.41	H	100.82	-17.41	Peak	100.00	37.00	
433.92	77.90	H	80.82	-2.92	Avg	100.00	37.00	
867.84	62.25	H	80.82	-18.57	Peak	100.00	255.50	
867.84	57.62	H	60.82	-3.20	Avg	100.00	255.50	
1301.76	52.78	H	74.00	-21.22	Peak	222.68	199.25	
1301.76	45.77	H	54.00	-8.24	Avg	222.68	199.25	
1735.68	49.82	H	80.82	-31.00	Peak	266.00	250.92	
1735.68	43.06	H	60.82	-17.76	Avg	266.00	250.92	
2169.6	51.85	H	80.82	-28.97	Peak	100.00	292.00	
2169.6	41.38	H	60.82	-19.44	Avg	100.00	292.00	
2603.52	47.32	H	80.82	-33.50	Peak	100.00	340.00	
2603.52	38.83	H	60.82	-22.00	Avg	100.00	340.00	
3037.44	51.14	H	80.82	-29.68	Peak	140.05	175.00	
3037.44	39.33	H	60.82	-21.49	Avg	140.05	175.00	
3471.36								No Emission
3471.36								Detected
3905.28								No Emission
3905.28								Detected
4339.2								No Emission
4339.2								Detected

FCC 15.231

Linx Technologies
Keyfob Transmitter
Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/12/2014
Lab: D
Tested By: Kyle Fujimoto

2FSK Protocol **Y-Axis - Vertical**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	83.53	V	100.82	-17.29	Peak	110.86	261.25	
433.92	78.13	V	80.82	-2.69	Avg	110.86	261.25	
867.84	59.28	V	80.82	-21.54	Peak	132.41	245.00	
867.84	54.43	V	60.82	-6.39	Avg	132.41	245.00	
1301.76	56.08	V	74.00	-17.92	Peak	135.58	55.25	
1301.76	51.54	V	54.00	-2.46	Avg	135.58	55.25	
1735.68	55.26	V	80.82	-25.56	Peak	130.20	314.25	
1735.68	50.35	V	60.82	-10.47	Avg	130.20	314.25	
2169.6	53.48	V	80.82	-27.34	Peak	100.65	4.00	
2169.6	46.54	V	60.82	-14.28	Avg	100.65	4.00	
2603.52	54.45	V	80.82	-26.37	Peak	100.00	289.50	
2603.52	46.05	V	60.82	-14.77	Avg	100.00	289.50	
3037.44	49.15	V	80.82	-31.67	Peak	100.00	337.50	
3037.44	37.26	V	60.82	-23.56	Avg	100.00	337.50	
3471.36								No Emission
3471.36								Detected
3905.28	53.49	V	74.00	-20.51	Peak	183.46	82.00	
3905.28	42.43	V	54.00	-11.57	Avg	183.46	82.00	
4339.2								No Emission
4339.2								Detected

FCC 15.231

Linx Technologies
Keyfob Transmitter
Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/12/2014
Lab: D
Tested By: Kyle Fujimoto

2FSK Protocol

Y-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	75.75	H	100.82	-25.07	Peak	159.82	319.25	
433.92	71.66	H	80.82	-9.16	Avg	159.82	319.25	
867.84	57.45	H	80.82	-23.37	Peak	104.89	198.00	
867.84	53.33	H	60.82	-7.49	Avg	104.89	198.00	
1301.76	49.61	H	74.00	-24.39	Peak	114.08	94.25	
1301.76	44.60	H	54.00	-9.40	Avg	114.06	94.25	
1735.68	51.44	H	80.82	-29.38	Peak	123.22	349.00	
1735.68	45.75	H	60.82	-15.07	Avg	123.22	349.00	
2169.6	48.08	H	80.82	-32.74	Peak	123.70	309.00	
2169.6	35.25	H	60.82	-25.58	Avg	123.70	309.00	
2603.52	51.42	H	80.82	-29.40	Peak	170.62	150.62	
2603.52	41.44	H	60.82	-19.38	Avg	170.62	150.62	
3037.44	54.00	H	80.82	-26.82	Peak	134.74	327.25	
3037.44	42.77	H	60.82	-18.05	Avg	134.74	327.25	
3471.36	54.58	H	80.82	-26.24	Peak	135.10	275.25	
3471.36	41.47	H	60.82	-19.35	Avg	135.10	275.25	
3905.28	56.98	H	74.00	-17.02	Peak	209.19	347.25	
3905.28	46.02	H	54.00	-7.99	Avg	209.19	347.25	
4339.2								No Emission
4339.2								Detected

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/12/2014
 Lab: D
 Tested By: Kyle Fujimoto

2FSK Protocol **Z-Axis - Vertical**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	83.53	V	100.82	-17.29	Peak	152.41	158.00	
433.92	79.40	V	80.82	-1.42	Avg	152.41	158.00	
867.84	58.58	V	80.82	-22.24	Peak	156.05	330.50	
867.84	51.16	V	60.82	-9.66	Avg	156.05	330.50	
1301.76	52.22	V	74.00	-21.79	Peak	139.64	180.75	
1301.76	47.25	V	54.00	-6.75	Avg	139.64	180.75	
1735.68	55.28	V	80.82	-25.54	Peak	189.91	355.75	
1735.68	49.87	V	60.82	-10.96	Avg	189.91	355.75	
2169.6	47.91	V	80.82	-32.91	Peak	151.58	193.25	
2169.6	36.46	V	60.82	-24.36	Avg	151.58	193.25	
2603.52	51.24	V	80.82	-29.58	Peak	100.00	226.75	
2603.52	39.75	V	60.82	-21.07	Avg	100.00	226.75	
3037.44	54.77	V	80.82	-26.05	Peak	100.00	160.75	
3037.44	43.05	V	60.82	-17.77	Avg	100.00	160.75	
3471.36	55.12	V	80.82	-25.70	Peak	103.40	118.75	
3471.36	41.91	V	60.82	-18.91	Avg	103.40	118.75	
3905.28	53.75	V	74.00	-20.25	Peak	130.08	229.00	
3905.28	42.42	V	54.00	-11.58	Avg	130.08	229.00	
4339.2	56.31	V	74.00	-17.69	Peak	132.59	259.25	
4339.2	43.92	V	54.00	-10.08	Avg	132.59	259.25	

FCC 15.231

Linx Technologies
 Keyfob Transmitter
 Model: OTX-400-HH-KF#

Dates: 09/11/2014 and 09/12/2014
 Lab: D
 Tested By: Kyle Fujimoto

2FSK Protocol

Z-Axis - Horizontal

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
433.92	76.05	H	100.82	-24.77	Peak	154.14	74.50	
433.92	71.03	H	80.82	-9.79	Avg	154.14	74.50	
867.84	61.35	H	80.82	-19.47	Peak	159.40	265.25	
867.84	53.68	H	60.82	-7.14	Avg	159.40	265.25	
1301.76	55.31	H	74.00	-18.69	Peak	101.01	268.00	
1301.76	46.99	H	54.00	-7.01	Avg	101.01	268.00	
1735.68	51.48	H	80.82	-29.34	Peak	117.97	60.25	
1735.68	44.96	H	60.82	-15.86	Avg	117.97	60.25	
2169.6	51.72	H	80.82	-29.10	Peak	187.94	239.25	
2169.6	42.01	H	60.82	-18.81	Avg	187.94	239.25	
2603.52	53.35	H	80.82	-27.47	Peak	231.64	60.50	
2603.52	42.95	H	60.82	-17.87	Avg	231.64	60.50	
3037.44	53.95	H	80.82	-26.87	Peak	150.38	14.00	
3037.44	40.03	H	60.82	-20.79	Avg	150.38	14.00	
3471.36								No Emission
3471.36								Detected
3905.28	52.91	H	74.00	-21.09	Peak	140.83	173.00	
3905.28	40.20	H	54.00	-13.80	Avg	140.83	173.00	
4339.2								No Emission
4339.2								Detected

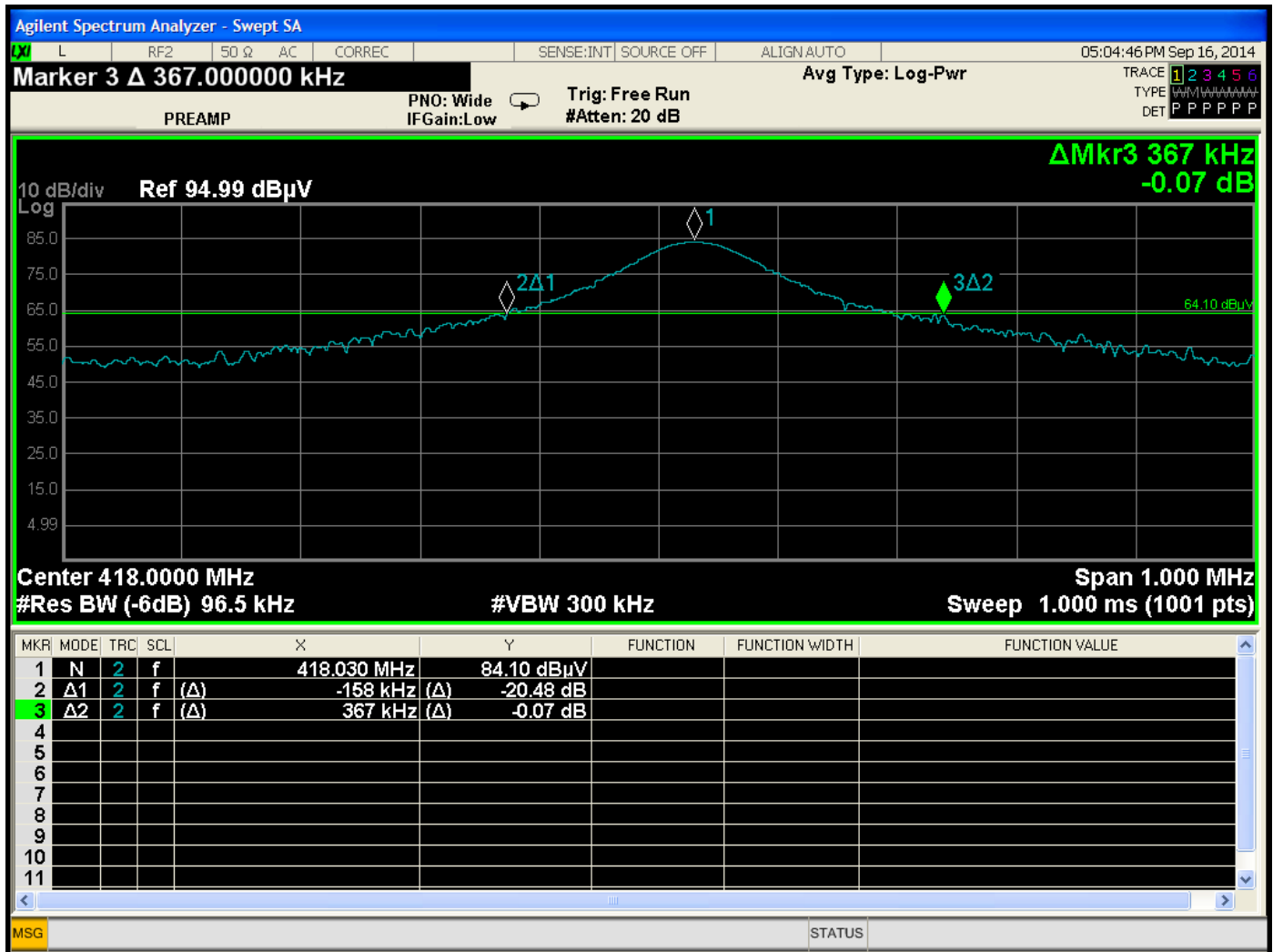
FCC 15.231 and FCC Class BLinx Technologies
Keyfob Transmitter
Model: OTX-400-HH-KF#Date: 09/12/2014
Lab: D
Tested By: Kyle Fujimoto**Digital Portion and Non-Harmonic Emissions of the Transmitter**
Vertical and Horizontal Polarizations - 433.92 MHz Version - 2FSK Protocol

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Detected
								from 10 kHz to 30 MHz
								for the Digital Portion
								for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 10 kHz to 30 MHz
								for the Non-Harmonic
								Emissions from the Tx for the
								EUT for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 30 MHz to 4.4 GHz
								for the Digital Portion
								for both the Vertical and
								Horizontal Polarizations.
								No Emissions Detected
								from 30 MHz to 4.4 GHz
								for the Non-Harmonic
								Emissions from the Tx for the
								EUT for both the Vertical and
								Horizontal Polarizations.
								Investigated in the
								X, Y, and Z-Axis

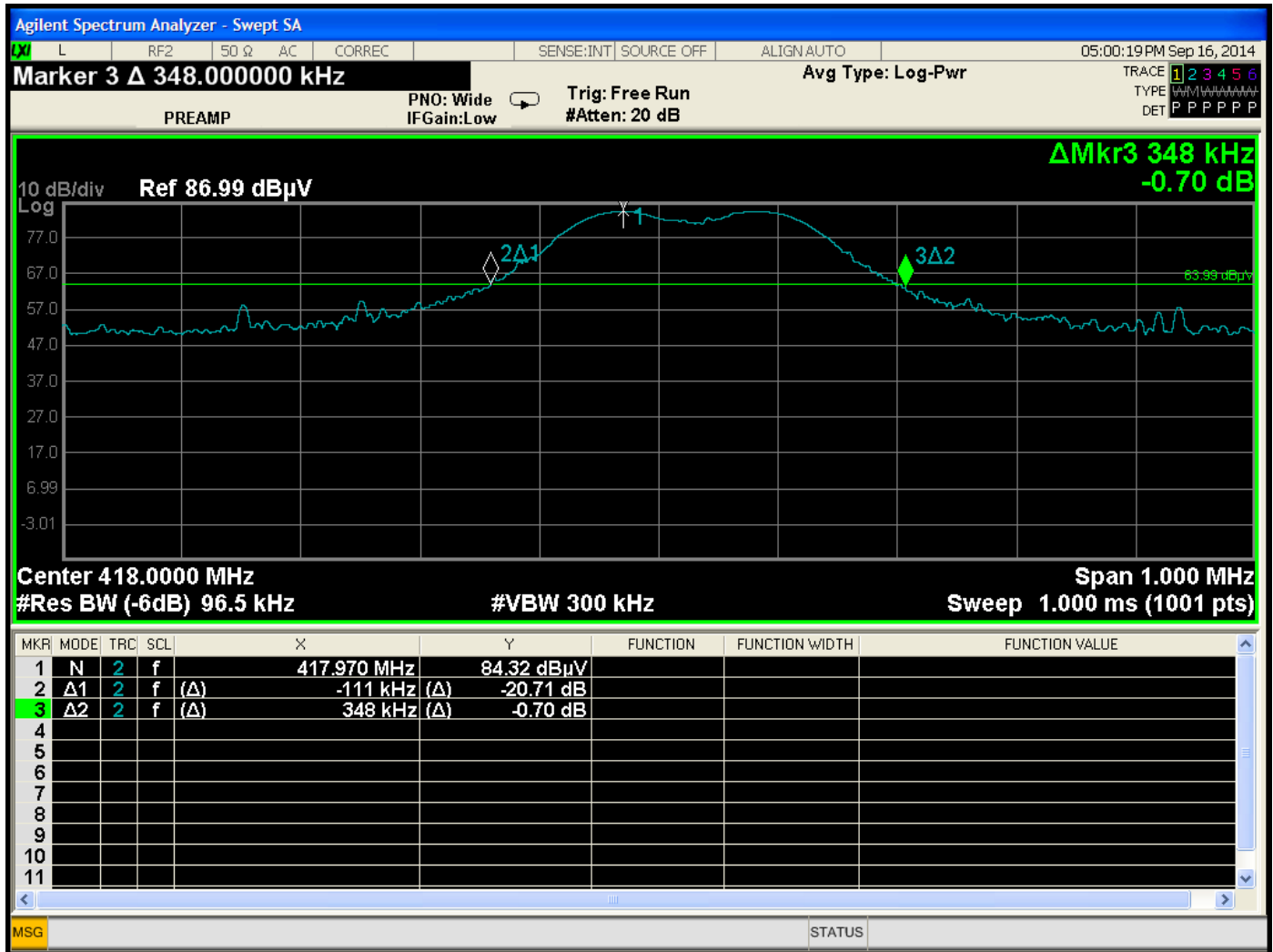


-20 dB BANDWIDTH

DATA SHEET



-20 dB of the Fundamental – 418 MHz Version – MS Protocol



-20 dB of the Fundamental – 418 MHz Version – 2FSK Protocol



-20 dB of the Fundamental – 433.92 MHz Version – MS Protocol



-20 dB of the Fundamental – 433.92 MHz Version – 2FSK Protocol