

FCC PART 15, SUBPART B and C
TEST REPORT
for
CRANEBOSS REMOTE CONTROL TRANSMITTER
MODEL: CRANEBOSS 300

Prepared for
ROBINSON ENGINEERING COMPANY, INC.
1914 SILVER STREET
GARLAND, TEXAS 75042

Prepared by: _____

KYLE FUJIMOTO

Approved by: _____

JAMES ROSS

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

DATE: AUGUST 14, 2015

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	18	2	2	2	18	66	108

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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: Craneboss Remote Control Transmitter
Model: Cransboss 300
S/N: N/A

Product Description: See Expository Statement.

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

Customer: Robinson Engineering Company, Inc.
1914 Silver Street
Garland, Texas 75042

Test Dates: August 5 and 6, 2015

Test Specifications: Emissions requirements
CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.249

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 – 9,300 MHz (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
2	Conducted RF Emissions, 150 kHz to 30 MHz	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 15.207

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Craneboss Remote Control Transmitter, Model: Craneboss 300. 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, 15.207, 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

Robinson Engineering Company, Inc.

Mahmudul Islam Engineer

Compatible Electronics Inc.

Kyle Fujimoto Test Engineer

James Ross Test Engineer

2.4 Date Test Sample was Received

The test sample was received on August 3, 2015.

2.5 Disposition of the Test Sample

The test sample has not been returned to Robinson Engineering Company, Inc. as of the date of this test report.

2.6 Abbreviations and Acronyms

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

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
N/A	Not Applicable
DNF	Do Not Fit
URC	Universal Remote Control

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 for Testing Unlicensed Wireless Devices
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

Battery Powered Mode: The Craneboss Remote Control Transmitter, Model: Craneboss 300 (EUT) was tested as a stand alone unit and tested in three orthogonal axis. A battery pack was directly connected to the EUT. The EUT was tested for emissions at the low, middle, and high channels. The EUT was continuously transmitting.

AC Powered Mode: The Craneboss Remote Control Transmitter, Model: Craneboss 300 (EUT) was directly connected to a battery pack. The battery pack was also connected to an AC charger via its charging ports and tested in three orthogonal axis. The EUT was tested for emissions at the low, middle, and high channels. The EUT was continuously transmitting while the AC charger was charging the battery pack.

The EUT was tested for emissions at the low, middle, and high channels. The EUT was continuously transmitting.

The antenna is a reverse polarity SMA whip antenna. The modulation used for the device is GFSK.

The final radiated data for the EUT was taken for both modes described above. The final conducted data was taken for the AC powered mode described above. Please see Appendix E for the data sheets.

4.1.1 Cable Constructions and Termination

Cable 1 This is a 1-meter unshielded cable connecting the battery pack to the battery charger. The cable has a 2-pin connector at the battery pack end and is hard wired into the battery charger.

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

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
CRANEBOSS REMOTE CONTROL TRANSMITTER	ROBINSON ENGINEERING COMPANY, INC.	CRANEBOSS 300	N/A	NQHCBNT900TRX
BATTERY PACK	ROBINSON ENGINEERING COMPANY, INC.	12-1471-00	N/A	N/A
BATTERY CHARGER	ROBINSON ENGINEERING COMPANY, INC.	12-1276	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 B					
Computer	Compaq	CQ5210F	CNX9360CF9	N/A	N/A
Monitor	Hewlett Packard	HPs2031a	3CQ046N3MD	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100194	December 4, 2014	1 Year
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	Agilent Technologies	N9038A	MY51100115	April 3, 2015	1 Year
RF RADIATED EMISSIONS TEST EQUIPMENT					
CombiLog Antenna	Com-Power	AC-220	61060	May 20, 2014	2 Year
Preamplifier	Com-Power	PA-118	551024	March 6, 2015	1 Year
Loop Antenna	Com-Power	AL-130	17089	February 6, 2015	2 Year
Horn Antenna	Com-Power	AH-118	071175	February 26, 2014	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
RF CONDUCTED EMISSIONS TEST EQUIPMENT					
Shield Room Test	Compatible Electronics	11CD	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	May 27, 2015	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A14530	May 27, 2015	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	May 27, 2015	1 Year
LISN	Com-Power	LI-215	12076	June 9, 2015	1 Year
LISN	Com-Power	LI-215	12090	June 9, 2015	1 Year
Transient Limiter	Com-Power	252A910	1	October 10, 2014	1 Year

6. TEST SITE DESCRIPTION

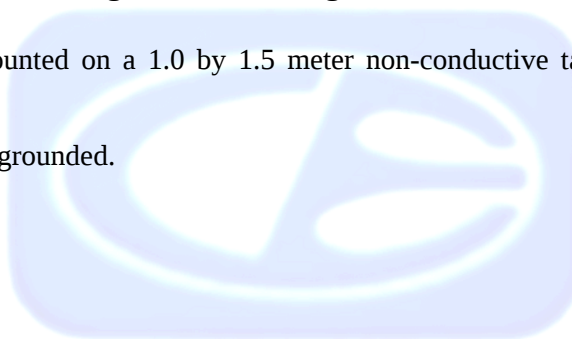
6.1 Test Facility Description

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 B

The EMI Receiver was used as a measuring meter. A preamplifier was used to increase the sensitivity of the instrument. The Com Power Microwave Preamplifier Model: PA-118 was used for frequencies above 1 GHz. The EMI Receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the EMI Receiver records the highest measured reading over all the sweeps.

For frequencies above 1 GHz, the readings were averaged by using an RMS detector function on the EMI Receiver.

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

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
1 GHz to 9.3 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to 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 by the Radiated Emission Manual Test software. 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.

Radiated Emissions (Spurious and Harmonics) Test – Lab B (con't)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance from 1 GHz to 9.3 GHz to obtain the final test data.

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 15.249 for radiated emissions. Please see Appendix E for the data sheets.

7.1.2 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.

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 and CISPR 22. 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 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

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 15.249 for radiated emissions. Please see Appendix E for the data sheets.

7.1.3 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the “Max Hold” feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. 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 C63.4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Shield Room Test software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

The EUT was tested at 120 VAC. The six highest emissions are listed in Table 2.0.

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, Section 15.107 for conducted emissions.

7.1.3 RF Emissions Test Results

Table 1.0 RADIATED EMISSION RESULTS
Craneboss Remote Control Transmitter, Model: Craneboss 300

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
902.62 (V) (Y-Axis) (Battery)	93.58 (QP)	94.00	-0.42
927.62 (V) (Y-Axis) (AC)	93.43 (QP)	94.00	-0.57
927.62 (V) (Y-Axis) (Battery)	93.37 (QP)	94.00	-0.63
928.24 (V) (Y-Axis)(AC)	45.09 (QP)	46.00	-0.91
915.12 (V) (Y-Axis)(Battery)	92.67 (QP)	94.00	-1.33
915.12 (V) (X-Axis) (AC)	92.16 (QP)	94.00	-1.84

Table 2.0 CONDUCTED EMISSION RESULTS
Craneboss Remote Control Transmitter, Model: Craneboss 300

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
0.637 (BL)	37.44	46.00	-8.56
0.637 (WL)	35.73	46.00	-10.27
3.091 (BL)	34.95	46.00	-11.05
3.529 (BL)	34.34	46.00	-11.66
2.226 (WL)	34.25	46.00	-11.75
1.671 (WL)	34.11	46.00	-11.89

Notes:

- (H) Horizontal
(V) Vertical
(QP) Quasi-Peak
* The complete emissions data is given in Appendix E of this report.

8. CONCLUSIONS

The Craneboss Remote Control Transmitter, Model: Craneboss 300, as tested, meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B and Subpart C, sections 15.205, 15.207, 15.209, and 15.249.



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



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
(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

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 MODELS COVERED
UNDER THIS REPORT***

ADDITIONAL MODELS COVERED UNDER THIS REPORT

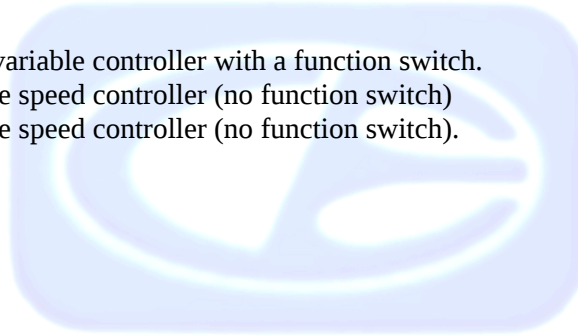
USED FOR THE PRIMARY TEST

Craneboss Remote Control Transmitter
Model: Craneboss 300
S/N: N/A

ADDITIONALS MODELS COVERED UNDER THIS REPORT

Craneboss Remote Control Transmitter
Model: Craneboss 200 and Craneboss 400
S/N: N/A

The Craneboss 300 has a 3 speed variable controller with a function switch.
The Craneboss 200 has a 5 variable speed controller (no function switch)
The Craneboss 400 has a 4 variable speed controller (no function switch).





APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

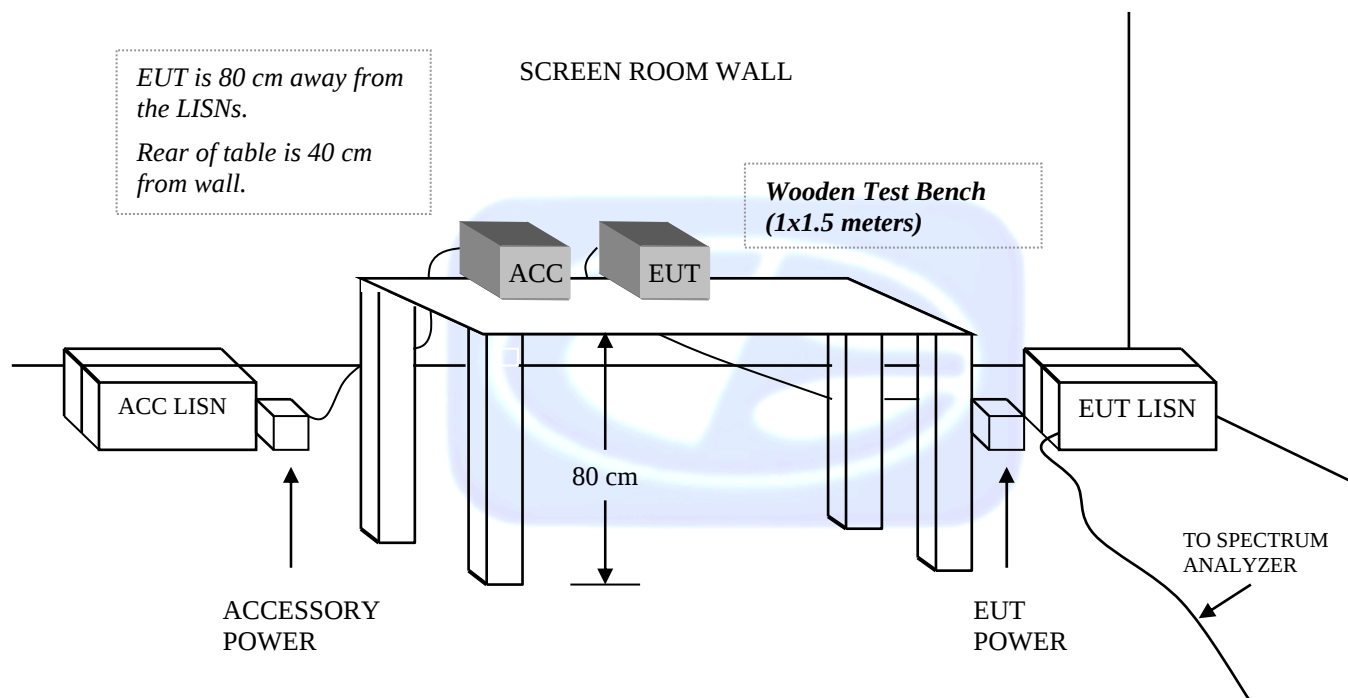
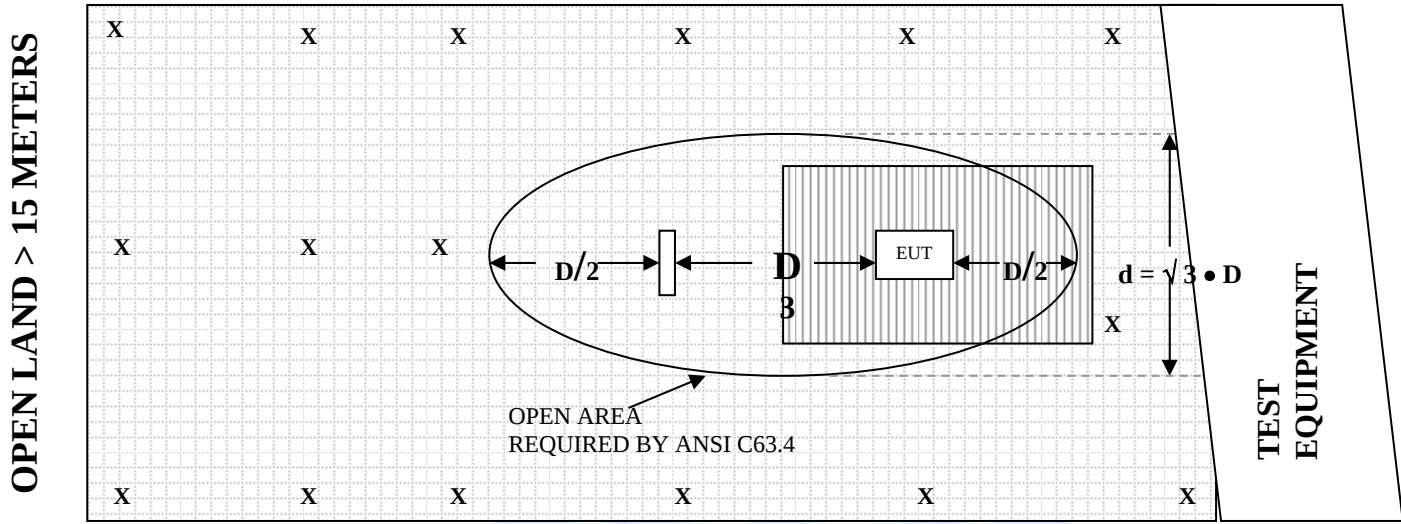


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE

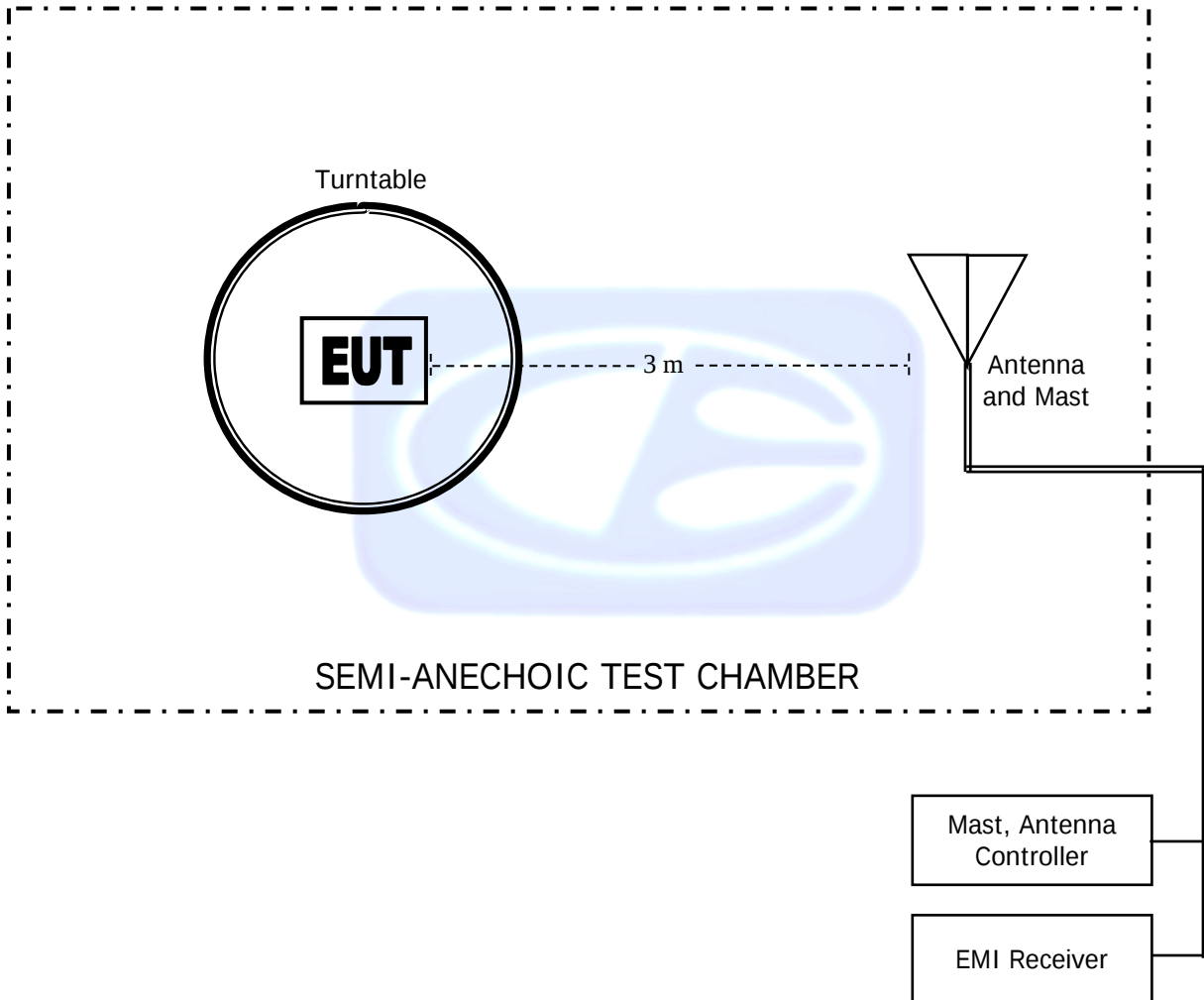
OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

X	= GROUND RODS		= GROUND SCREEN
D	= TEST DISTANCE (meters)		= WOOD COVER

FIGURE 3: LAYOUT OF THE SEMI-ANECHOIC TEST CHAMBER



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

S/N: 17089

CALIBRATION DATE: FEBRUARY 6, 2015

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-33.18	18.32
0.01	-34.10	17.40
0.02	-38.65	12.85
0.03	-39.28	12.22
0.04	-40.09	11.41
0.05	-40.85	10.65
0.06	-40.88	10.62
0.07	-41.07	10.43
0.08	-41.04	10.46
0.09	-41.19	10.31
0.1	-41.20	10.30
0.2	-41.52	9.98
0.3	-41.53	9.97
0.4	-41.42	10.08
0.5	-41.53	9.97
0.6	-41.53	9.97
0.7	-41.43	10.07
0.8	-41.23	10.27
0.9	-41.13	10.37
1	-41.14	10.36
2	-40.80	10.70
3	-40.66	10.84
4	-40.61	10.89
5	-40.33	11.17
6	-40.53	10.97
7	-40.47	11.03
8	-40.48	11.02
9	-39.93	11.57
10	-39.81	11.69
15	-43.35	8.15
20	-39.16	12.34
25	-40.24	11.26
30	-43.18	8.32

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**

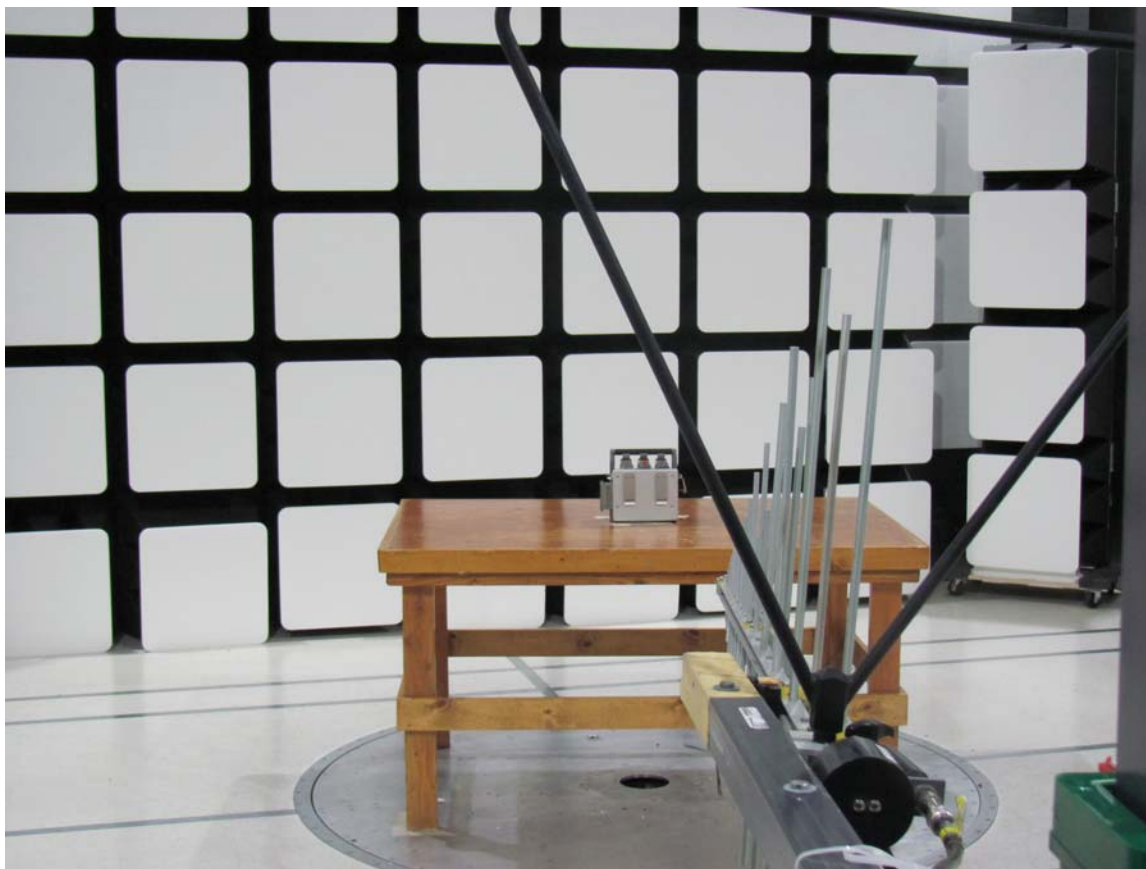
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.23	10.0	38.43
1.5	25.84	10.5	40.19
2.0	28.14	11.0	40.49
2.5	29.51	11.5	41.39
3.0	31.20	12.0	42.02
3.5	32.17	12.5	43.30
4.0	31.40	13.0	42.77
4.5	31.86	13.5	40.18
5.0	34.82	14.0	42.59
5.5	34.38	14.5	41.74
6.0	36.31	15.0	41.84
6.5	34.81	15.5	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		

COM-POWER PA-118**PREAMPLIFIER**

S/N: 551024

CALIBRATION DATE: MARCH 6, 2015

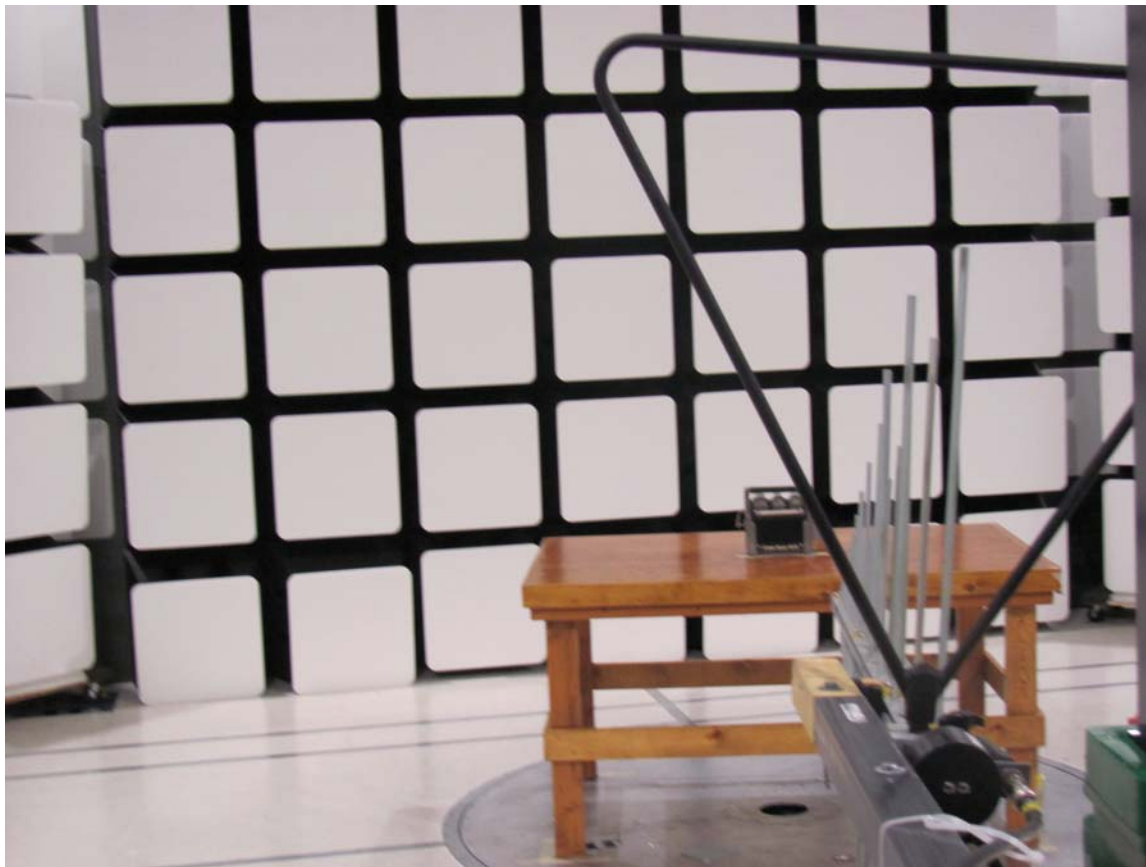
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	39.76	6.0	38.77
1.1	40.46	6.5	38.46
1.2	40.05	7.0	38.27
1.3	40.58	7.5	38.77
1.4	39.50	8.0	39.25
1.5	39.92	8.5	38.63
1.6	40.40	9.0	39.58
1.7	40.10	9.5	42.12
1.8	40.49	10.0	38.53
1.9	38.86	11.0	40.21
2.0	41.53	12.0	41.15
2.5	41.05	13.0	40.51
3.0	40.29	14.0	40.32
3.5	40.82	15.0	39.47
4.0	40.88	16.0	39.88
4.5	41.37	17.0	39.79
5.0	40.73	18.0	40.61
5.5	39.05		



FRONT VIEW

ROBINSON ENGINEERING COMPANY, INC.
CRANEBOS Remote Control Transmitter
MODEL: CRANEBOS 300
FCC SUBPART B AND C – RADIATED EMISSIONS – BATTERY MODE – BELOW 1 GHz

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

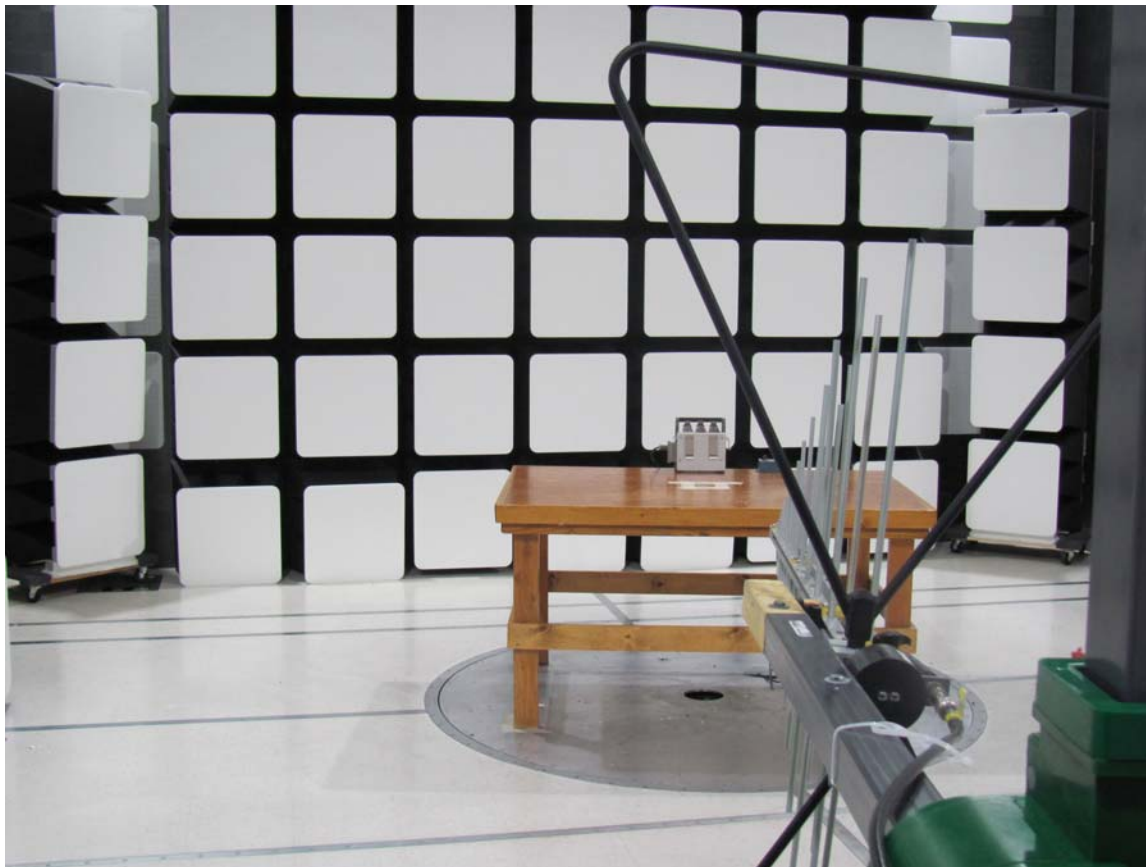


REAR VIEW

ROBINSON ENGINEERING COMPANY, INC.
CRANEBOSS REMOTE CONTROL TRANSMITTER
MODEL: CRANEBOSS 300

FCC SUBPART B AND C – RADIATED EMISSIONS – BATTERY MODE – BELOW 1 GHz

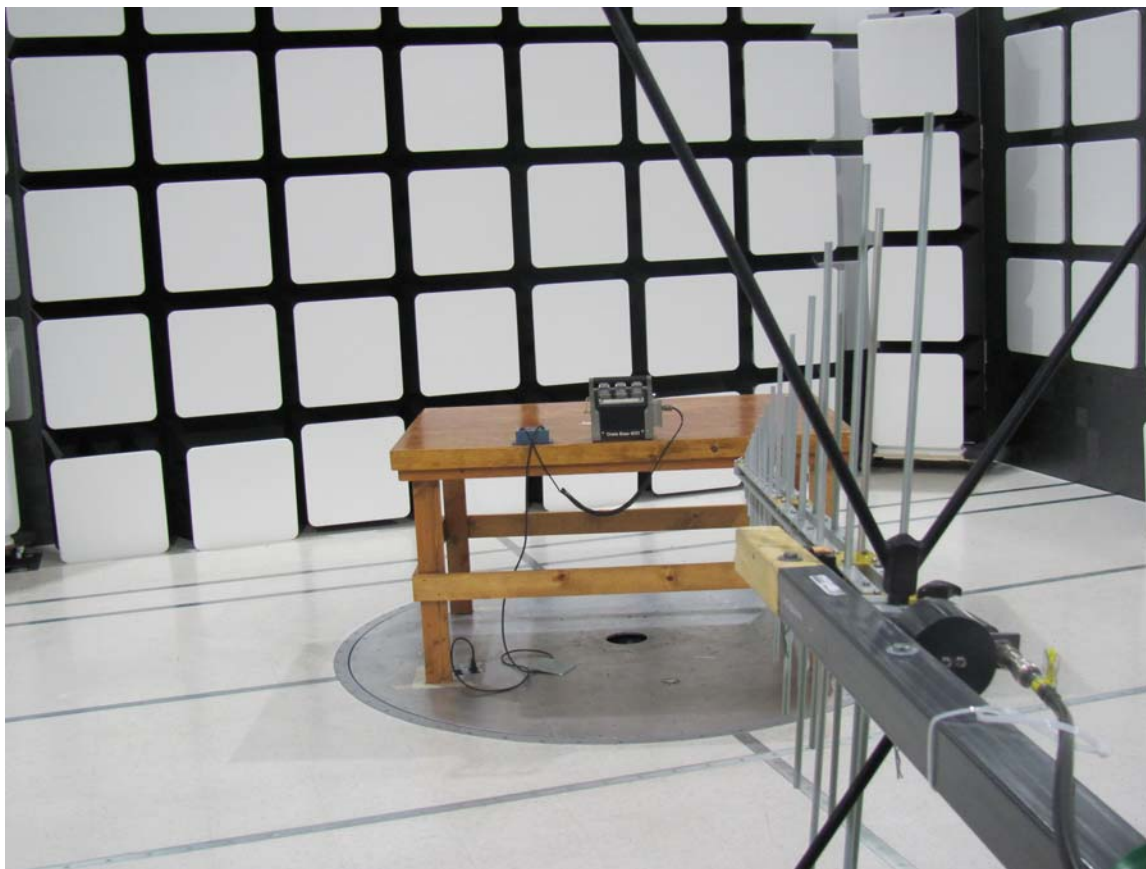
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

ROBINSON ENGINEERING COMPANY, INC.
CRANEBOSS REMOTE CONTROL TRANSMITTER
MODEL: CRANEBOSS 300
FCC SUBPART B AND C – RADIATED EMISSIONS – AC MODE – BELOW 1 GHz

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



REAR VIEW

ROBINSON ENGINEERING COMPANY, INC.
CRANEBOSS REMOTE CONTROL TRANSMITTER
MODEL: CRANEBOSS 300
FCC SUBPART B AND C – RADIATED EMISSIONS – AC MODE – BELOW 1 GHz

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



FRONT VIEW

ROBINSON ENGINEERING COMPANY, INC.
CRANEBOSS REMOTE CONTROL TRANSMITTER
MODEL: CRANEBOSS 300
FCC SUBPART B AND C – RADIATED EMISSIONS – BATTERY MODE – ABOVE 1 GHz

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



REAR VIEW

ROBINSON ENGINEERING COMPANY, INC.
CRANEBOSS REMOTE CONTROL TRANSMITTER
MODEL: CRANEBOSS 300

FCC SUBPART B AND C – RADIATED EMISSIONS – BATTERY MODE – ABOVE 1 GHz

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



FRONT VIEW

ROBINSON ENGINEERING COMPANY, INC.
CRANEBOSS REMOTE CONTROL TRANSMITTER
MODEL: CRANEBOSS 300
FCC SUBPART B AND C – RADIATED EMISSIONS – AC MODE – ABOVE 1 GHz

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



REAR VIEW

ROBINSON ENGINEERING COMPANY, INC.
CRANEBOSS REMOTE CONTROL TRANSMITTER
MODEL: CRANEBOSS 300
FCC SUBPART B AND C – RADIATED EMISSIONS – AC MODE – ABOVE 1 GHz

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



FRONT VIEW

ROBINSON ENGINEERING COMPANY, INC.
CRANEBOSS REMOTE CONTROL TRANSMITTER
MODEL: CRANEBOSS 300
FCC SUBPART B AND C – CONDUCTED EMISSIONS – AC MODE

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



REAR VIEW

ROBINSON ENGINEERING COMPANY, INC.
CRANEBOSS REMOTE CONTROL TRANSMITTER
MODEL: CRANEBOSS 300
FCC SUBPART B AND C – CONDUCTED EMISSIONS – AC MODE

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

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.249Robinson Engineering Company, Inc.
Craneboss Remote Control Transmitter
Model: Craneboss 300Date: 08/05/2015
Lab: D
Tested By: Kyle Fujimoto**Fundamental Readings - Battery Mode
Transmit Mode**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (cm)	Table Angle (deg)	Comments
902.62	88.61	H	114	-25.39	Peak	300.50	65.50	Fundamental
902.62	88.58	H	94	-5.42	QP	300.50	65.50	X-Axis
902.62	87.54	V	114	-26.46	Peak	142.47	267.50	Fundamental
902.62	86.92	V	94	-7.08	QP	142.47	267.50	X-Axis
902.62	88.51	H	114	-25.49	Peak	143.37	277.50	Fundamental
902.62	88.41	H	94	-5.59	QP	143.37	277.50	Y-Axis
902.62	93.68	V	114	-20.32	Peak	111.13	20.25	Fundamental
902.62	93.58	V	94	-0.42	QP	111.13	20.25	Y-Axis
902.62	90.27	H	114	-23.73	Peak	175.55	359.50	Fundamental
902.62	90.22	H	94	-3.78	QP	175.55	359.50	Z-Axis
902.62	87.62	V	114	-26.38	Peak	158.23	303.75	Fundamental
902.62	87.53	V	94	-6.47	QP	158.23	303.75	Z-Axis

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Low Channel - Battery Mode
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	35.82	V	74	-38.18	Peak	1.25	155	
1805.24	25.51	V	54	-28.49	Avg	1.25	155	
2707.86	37.71	V	74	-36.29	Peak	1.35	165	
2707.86	30.29	V	54	-23.71	Avg	1.35	165	
3610.48	41.68	V	74	-32.32	Peak	1.25	185	
3610.48	31.97	V	54	-22.03	Avg	1.25	185	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Low Channel - Battery Mode
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	35.55	V	74	-38.45	Peak	1.25	155	
1805.24	25.44	V	54	-28.56	Avg	1.25	155	
2707.86	39.01	V	74	-34.99	Peak	1.25	155	
2707.86	30.83	V	54	-23.17	Avg	1.25	155	
3610.48	40.67	V	74	-33.33	Peak	1.35	145	
3610.48	32.31	V	54	-21.69	Avg	1.35	145	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Low Channel - Battery Mode
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	35.39	V	74	-38.61	Peak	1.25	155	
1805.24	29.16	V	54	-24.84	Avg	1.25	155	
2707.86	39.05	V	74	-34.95	Peak	1.35	145	
2707.86	29.12	V	54	-24.88	Avg	1.35	145	
3610.48	41.79	V	74	-32.21	Peak	1.25	155	
3610.48	31.63	V	54	-22.37	Avg	1.25	155	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Low Channel - Battery Mode
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	36.75	H	74	-37.25	Peak	1.25	155	
1805.24	29.92	H	54	-24.08	Avg	1.25	155	
2707.86	38.41	H	74	-35.59	Peak	1.35	225	
2707.86	31.81	H	54	-22.19	Avg	1.35	225	
3610.48	41.45	H	74	-32.55	Peak	1.25	155	
3610.48	32.22	H	54	-21.78	Avg	1.25	155	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Low Channel - Battery Mode
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	36.05	H	74	-37.95	Peak	1.25	155	
1805.24	29.11	H	54	-24.89	Avg	1.25	155	
2707.86	37.55	H	74	-36.45	Peak	1.35	145	
2707.86	30.22	H	54	-23.78	Avg	1.35	145	
3610.48	40.04	H	74	-33.96	Peak	1.25	155	
3610.48	31.89	H	54	-22.11	Avg	1.25	155	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249Robinson Engineering Company, Inc.
Craneboss Remote Control Transmitter
Model: Craneboss 300Date: 08/06/2015
Lab: B
Tested By: Kyle Fujimoto**Low Channel - Battery Mode****Transmit Mode - Z-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	35.01	H	74	-38.99	Peak	1.25	155	
1805.24	24.99	H	54	-29.01	Avg	1.25	155	
2707.86	37.62	H	74	-36.38	Peak	1.35	145	
2707.86	30.91	H	54	-23.09	Avg	1.35	145	
3610.48	41.48	H	74	-32.52	Peak	1.25	195	
3610.48	31.21	H	54	-22.79	Avg	1.25	195	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Middle Channel - Battery Mode
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	36.96	V	74	-37.04	Peak	1.25	155	
1830.24	28.85	V	54	-25.15	Avg	1.25	155	
2745.36	39.58	V	74	-34.42	Peak	1.25	165	
2745.36	30.66	V	54	-23.34	Avg	1.25	165	
3660.48	40.87	V	74	-33.13	Peak	1.35	175	
3660.48	34.16	V	54	-19.84	Avg	1.35	175	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249Robinson Engineering Company, Inc.
Craneboss Remote Control Transmitter
Model: Craneboss 300Date: 08/06/2015
Lab: B
Tested By: Kyle Fujimoto**Middle Channel - Battery Mode**
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	36.91	V	74	-37.09	Peak	1.25	155	
1830.24	26.92	V	54	-27.08	Avg	1.25	155	
2745.36	39.51	V	74	-34.49	Peak	1.35	165	
2745.36	32.59	V	54	-21.41	Avg	1.35	165	
3660.48	39.97	V	74	-34.03	Peak	1.25	175	
3660.48	32.41	V	54	-21.59	Avg	1.25	175	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Middle Channel - Battery Mode
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	38.35	V	74	-35.65	Peak	1.25	155	
1830.24	31.36	V	54	-22.64	Avg	1.25	155	
2745.36	40.13	V	74	-33.87	Peak	1.35	165	
2745.36	31.41	V	54	-22.59	Avg	1.35	165	
3660.48	40.83	V	74	-33.17	Peak	1.25	175	
3660.48	32.41	V	54	-21.59	Avg	1.25	175	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
Craneboss Remote Control Transmitter
Model: Craneboss 300

Date: 08/06/2015
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Battery Mode
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	37.78	H	74	-36.22	Peak	1.25	155	
1830.24	28.97	H	54	-25.03	Avg	1.25	155	
2745.36	37.97	H	74	-36.03	Peak	1.35	165	
2745.36	30.11	H	54	-23.89	Avg	1.35	165	
3660.48	40.07	H	74	-33.93	Peak	1.25	155	
3660.48	32.01	H	54	-21.99	Avg	1.25	155	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Middle Channel - Battery Mode
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	37.81	H	74	-36.19	Peak	1.25	175	
1830.24	33.15	H	54	-20.85	Avg	1.25	175	
2745.36	39.85	H	74	-34.15	Peak	1.35	165	
2745.36	33.12	H	54	-20.88	Avg	1.35	165	
3660.48	41.73	H	74	-32.27	Peak	1.25	155	
3660.48	33.91	H	54	-20.09	Avg	1.25	155	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Middle Channel - Battery Mode
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	36.21	H	74	-37.79	Peak	1.25	155	
1830.24	28.51	H	54	-25.49	Avg	1.25	155	
2745.36	38.06	H	74	-35.94	Peak	1.35	145	
2745.36	32.59	H	54	-21.41	Avg	1.35	145	
3660.48	40.57	H	74	-33.43	Peak	1.25	155	
3660.48	34.16	H	54	-19.84	Avg	1.25	155	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
Craneboss Remote Control Transmitter
Model: Craneboss 300

Date: 08/06/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - Battery Mode
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	35.42	V	74	-38.58	Peak	1.25	135	
1855.24	28.48	V	54	-25.52	Avg	1.25	135	
2782.86	40.27	V	74	-33.73	Peak	1.25	155	
2782.86	33.05	V	54	-20.95	Avg	1.25	155	
3710.48	42.53	V	74	-31.47	Peak	1.35	165	
3710.48	31.92	V	54	-22.08	Avg	1.35	165	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

High Channel - Battery Mode
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	35.77	V	74	-38.23	Peak	1.25	155	
1855.24	28.77	V	54	-25.23	Avg	1.25	155	
2782.86	40.85	V	74	-33.15	Peak	1.35	165	
2782.86	31.91	V	54	-22.09	Avg	1.35	165	
3710.48	40.76	V	74	-33.24	Peak	1.25	175	
3710.48	32.25	V	54	-21.75	Avg	1.25	175	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

FCC 15.249Robinson Engineering Company, Inc.
Craneboss Remote Control Transmitter
Model: Craneboss 300Date: 08/06/2015
Lab: B
Tested By: Kyle Fujimoto**High Channel - Battery Mode**
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	38.31	V	74	-35.69	Peak	1.25	155	
1855.24	33.38	V	54	-20.62	Avg	1.25	155	
2782.86	39.27	V	74	-34.73	Peak	1.15	135	
2782.86	34.88	V	54	-19.12	Avg	1.15	135	
3710.48	41.61	V	74	-32.39	Peak	1.25	145	
3710.48	31.93	V	54	-22.07	Avg	1.25	145	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

FCC 15.249Robinson Engineering Company, Inc.
Craneboss Remote Control Transmitter
Model: Craneboss 300Date: 08/06/2015
Lab: B
Tested By: Kyle Fujimoto**High Channel - Battery Mode****Transmit Mode - X-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	38.08	H	74	-35.92	Peak	1.25	155	
1855.24	33.34	H	54	-20.66	Avg	1.25	155	
2782.86	40.09	H	74	-33.91	Peak	1.25	135	
2782.86	31.55	H	54	-22.45	Avg	1.25	135	
3710.48	43.08	H	74	-30.92	Peak	1.35	145	
3710.48	32.48	H	54	-21.52	Avg	1.35	145	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

FCC 15.249Robinson Engineering Company, Inc.
Craneboss Remote Control Transmitter
Model: Craneboss 300Date: 08/06/2015
Lab: B
Tested By: Kyle Fujimoto**High Channel - Battery Mode**
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	37.02	H	74	-36.98	Peak	1.25	155	
1855.24	31.81	H	54	-22.19	Avg	1.25	155	
2782.86	40.23	H	74	-33.77	Peak	1.35	165	
2782.86	33.63	H	54	-20.37	Avg	1.35	165	
3710.48	41.68	H	74	-32.32	Peak	1.25	155	
3710.48	32.17	H	54	-21.83	Avg	1.25	155	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

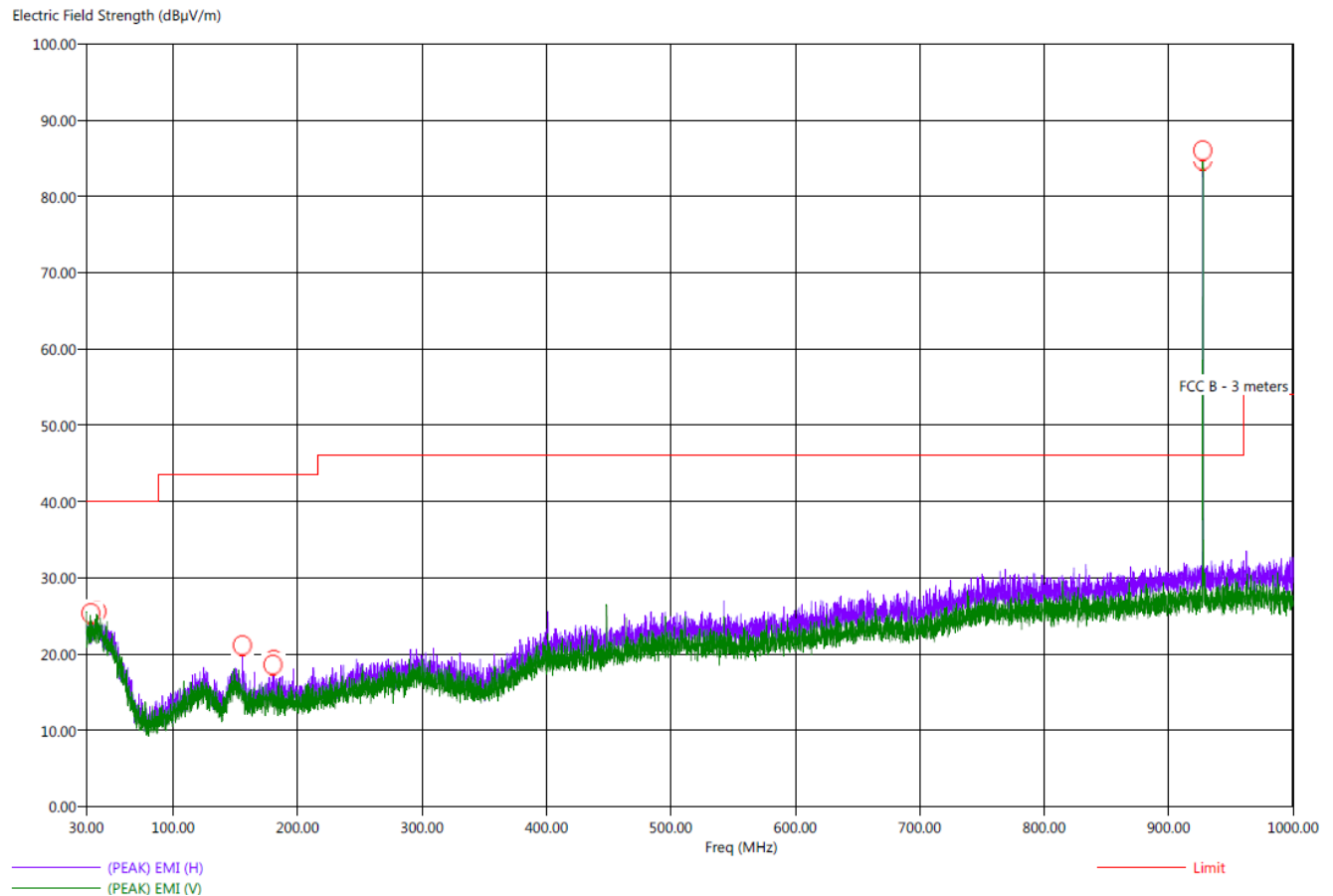
High Channel - Battery Mode
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	35.72	H	74	-38.28	Peak	1.25	155	
1855.24	26.08	H	54	-27.92	Avg	1.25	155	
2782.86	40.29	H	74	-33.71	Peak	1.25	165	
2782.86	29.64	H	54	-24.36	Avg	1.25	165	
3710.48	40.69	H	74	-33.31	Peak	1.35	175	
3710.48	33.22	H	54	-20.78	Avg	1.35	175	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

Title: Pre-Scan - FCC Class B
File: Agilent - Radiated Pre-Scan 30-1000Mhz - 08-05-2015 - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: Craneboss Remote Control Transmitter
EUT Condition: Battery Mode - Continuously Transmitting - Y-Axis Worst Case
Company: Robinson Engineering Company, Inc.
Model: Craneboss 300
Note: The frequency over the limit line is the transmit frequency and was tested per FCC 15.249 Limits

8/5/2015 10:11:51 AM
Sequence: Preliminary Scan

Pre-Scan - FCC Class B



Title: Radiated Final - 30-1000 MHz - Fundamental
 File: Agilent - Radiated Final Scan - Fundamental.set
 Operator: Kyle Fujimoto
 EUT Type: Craneboss Remote Control Transmitter
 EUT Condition: Battery Mode - Continuously Transmitting - Y-Axis Worst Case
 Customer: Robinson Engineering Company, Inc.
 Model: Craneboss 300

8/5/2015 10:23:00 AM
 Sequence: Final Measurements

Table21

Freq (MHz)	Pol	(PEAK) EMI (dBμV/m)	(OP) EMI (dBμV/m)	Limit (dBμV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Cable (dB)	Transducer (dB)	Twr Ht (cm)	Ttbl Aql (deg)
33.90	H	35.88	31.65	50.00	-14.12	-18.35	0.39	23.68	351.61	243.50
38.70	H	37.56	32.12	50.00	-12.44	-17.88	0.42	24.10	239.43	288.50
40.40	H	36.80	32.05	50.00	-13.20	-17.95	0.43	24.11	284.68	120.25
155.60	H	28.61	23.91	50.00	-21.39	-26.09	0.91	15.41	189.82	109.75
180.20	H	27.48	23.53	50.00	-22.52	-26.47	0.97	15.00	318.77	83.50
180.90	H	27.97	23.52	50.00	-22.03	-26.48	0.97	14.98	207.37	250.75



FCC 15.249 and FCC Class B

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Dates: 08/05/2015 and 08/06/2015

Labs: B and D

Tested By: Kyle Fujimoto

Battery Mode

Non Harmonic Emissions from the Tx and Digital Portion - 10 kHz to 30 MHz

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

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found for the
								Digital Portion
								from 10 kHz to 30 MHz
								for both Vertical and Horizontal
								Polarizations
								No Non Harmonic Emissions Found
								for the Tx Mode
								from 10 kHz to 30 MHz
								for both Vertical and Horizontal
								Polarizations
								Investigated in the X-Axis, Y-Axis,
								and Z-Axis
								No Emissions Found for the
								Digital Portion
								from 1 GHz to 9.3 GHz
								for both Vertical and Horizontal
								Polarizations
								No Non Harmonic Emissions Found
								for the Tx Mode
								from 1 GHz to 9.3 GHz
								for both Vertical and Horizontal
								Polarizations
								Investigated in the X-Axis, Y-Axis,
								and Z-Axis

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Low Channel - X-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	37.08	V	74	-36.92	Peak	1.25	155	
1805.24	23.61	V	54	-30.39	Avg	1.25	155	
2707.86	39.06	V	74	-34.94	Peak	1.35	165	
2707.86	28.95	V	54	-25.05	Avg	1.35	165	
3610.48	43.13	V	74	-30.87	Peak	1.25	175	
3610.48	32.38	V	54	-21.62	Avg	1.25	175	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Low Channel - Y-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	35.89	V	74	-38.11	Peak	1.25	255	
1805.24	23.62	V	54	-30.38	Avg	1.25	255	
2707.86	40.15	V	74	-33.85	Peak	1.25	135	
2707.86	29.99	V	54	-24.01	Avg	1.25	135	
3610.48	41.09	V	74	-32.91	Peak	1.35	145	
3610.48	28.34	V	54	-25.66	Avg	1.35	145	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Low Channel - Z-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	37.03	V	74	-36.97	Peak	1.35	145	
1805.24	27.37	V	54	-26.63	Avg	1.35	145	
2707.86	39.01	V	74	-34.99	Peak	1.25	155	
2707.86	28.87	V	54	-25.13	Avg	1.25	155	
3610.48	40.57	V	74	-33.43	Peak	1.35	165	
3610.48	27.78	V	54	-26.22	Avg	1.35	165	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Low Channel - X-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	35.85	H	74	-38.15	Peak	1.25	155	
1805.24	22.11	H	54	-31.89	Avg	1.25	155	
2707.86	38.25	H	74	-35.75	Peak	1.35	165	
2707.86	27.57	H	54	-26.43	Avg	1.35	165	
3610.48	39.97	H	74	-34.03	Peak	1.25	175	
3610.48	31.72	H	54	-22.28	Avg	1.25	175	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Low Channel - Y-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	33.48	H	74	-40.52	Peak	1.25	155	
1805.24	25.26	H	54	-28.74	Avg	1.25	155	
2707.86	36.53	H	74	-37.47	Peak	1.35	165	
2707.86	28.31	H	54	-25.69	Avg	1.35	165	
3610.48	39.84	H	74	-34.16	Peak	1.25	175	
3610.48	30.25	H	54	-23.75	Avg	1.25	175	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249Robinson Engineering Company, Inc.
Craneboss Remote Control Transmitter
Model: Craneboss 300Date: 08/06/2015
Lab: B
Tested By: Kyle Fujimoto**Low Channel - Z-Axis****AC Mode****Transmit Mode**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1805.24	34.18	H	74	-39.82	Peak	1.25	155	
1805.24	21.34	H	54	-32.66	Avg	1.25	155	
2707.86	37.24	H	74	-36.76	Peak	1.35	165	
2707.86	32.22	H	54	-21.78	Avg	1.35	165	
3610.48	40.21	H	74	-33.79	Peak	1.25	155	
3610.48	30.57	H	54	-23.43	Avg	1.25	155	
4513.1								No Emission
4513.1								Detected
5415.72								No Emission
5415.72								Detected
6318.34								No Emission
6318.34								Detected
7220.96								No Emission
7220.96								Detected
8123.58								No Emission
8123.58								Detected
9026.2								No Emission
9026.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Middle Channel - X-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	38.67	V	74	-35.33	Peak	2	180	
1830.24	28.44	V	54	-25.56	Avg	2	180	
2745.36	38.04	V	74	-35.96	Peak	2.25	225	
2745.36	31.19	V	54	-22.81	Avg	2.25	225	
3660.48	40.57	V	74	-33.43	Peak	1.35	235	
3660.48	32.71	V	54	-21.29	Avg	1.35	235	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Middle Channel - Y-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	36.27	V	74	-37.73	Peak	1.25	155	
1830.24	26.07	V	54	-27.93	Avg	1.25	155	
2745.36	40.16	V	74	-33.84	Peak	1.25	155	
2745.36	30.97	V	54	-23.03	Avg	1.25	155	
3660.48	40.13	V	74	-33.87	Peak	1.35	165	
3660.48	32.24	V	54	-21.76	Avg	1.35	165	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Middle Channel - Z-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	39.39	V	74	-34.61	Peak	2	1.25	
1830.24	33.54	V	54	-20.46	Avg	2	1.25	
2745.36	37.89	V	74	-36.11	Peak	1.35	155	
2745.36	30.82	V	54	-23.18	Avg	1.35	155	
3660.48	42.73	V	74	-31.27	Peak	1.25	155	
3660.48	32.78	V	54	-21.22	Avg	1.25	155	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Middle Channel - X-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	36.41	H	74	-37.59	Peak	1.25	155	
1830.24	29.66	H	54	-24.34	Avg	1.25	155	
2745.36	39.44	H	74	-34.56	Peak	1.35	165	
2745.36	33.74	H	54	-20.26	Avg	1.35	165	
3660.48	40.83	H	74	-33.17	Peak	1.25	175	
3660.48	32.16	H	54	-21.84	Avg	1.25	175	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Middle Channel - Y-Axis

AC Mode

Transmit Mode

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	37.59	H	74	-36.41	Peak	1.25	225	
1830.24	31.71	H	54	-22.29	Avg	1.25	225	
2745.36	40.78	H	74	-33.22	Peak	1.35	225	
2745.36	32.08	H	54	-21.92	Avg	1.35	225	
3660.48	40.51	H	74	-33.49	Peak	1.25	135	
3660.48	31.83	H	54	-22.17	Avg	1.25	135	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Middle Channel - Z-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1830.24	36.83	H	74	-37.17	Peak	1.25	155	
1830.24	27.71	H	54	-26.29	Avg	1.25	155	
2745.36	40.13	H	74	-33.87	Peak	1.35	165	
2745.36	33.31	H	54	-20.69	Avg	1.35	165	
3660.48	40.51	H	74	-33.49	Peak	1.25	175	
3660.48	33.07	H	54	-20.93	Avg	1.25	175	
4575.6								No Emission
4575.6								Detected
5490.72								No Emission
5490.72								Detected
6405.84								No Emission
6405.84								Detected
7320.96								No Emission
7320.96								Detected
8236.08								No Emission
8236.08								Detected
9151.2								No Emission
9151.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

High Channel - X-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	36.71	V	74	-37.29	Peak	1.25	155	
1855.24	26.27	V	54	-27.73	Avg	1.25	155	
2782.86	39.11	V	74	-34.89	Peak	1.25	155	
2782.86	30.49	V	54	-23.51	Avg	1.25	155	
3710.48	39.51	V	74	-34.49	Peak	1.35	165	
3710.48	33.96	V	54	-20.04	Avg	1.35	165	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

High Channel - Y-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	35.72	V	74	-38.28	Peak	1.25	155	
1855.24	29.54	V	54	-24.46	Avg	1.25	155	
2782.86	40.35	V	74	-33.65	Peak	1.35	165	
2782.86	32.36	V	54	-21.64	Avg	1.35	165	
3710.48	40.34	V	74	-33.66	Peak	1.25	175	
3710.48	32.48	V	54	-21.52	Avg	1.25	175	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

High Channel - Z-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	37.53	V	74	-36.47	Peak	1.25	155	
1855.24	29.92	V	54	-24.08	Avg	1.25	155	
2782.86	40.23	V	74	-33.77	Peak	1.35	185	
2782.86	32.74	V	54	-21.26	Avg	1.35	185	
3710.48	42.32	V	74	-31.68	Peak	1.25	195	
3710.48	32.48	V	54	-21.52	Avg	1.25	195	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

High Channel - X-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	36.19	H	74	-37.81	Peak	1.25	155	
1855.24	30.42	H	54	-23.58	Avg	1.25	155	
2782.86	40.01	H	74	-33.99	Peak	1.35	165	
2782.86	31.33	H	54	-22.67	Avg	1.35	165	
3710.48	41.39	H	74	-32.61	Peak	1.25	175	
3710.48	31.84	H	54	-22.16	Avg	1.25	175	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: D
 Tested By: Kyle Fujimoto

High Channel - Y-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	37.38	H	74	-36.62	Peak	1.25	155	
1855.24	31.17	H	54	-22.83	Avg	1.25	155	
2782.86	39.95	H	74	-34.05	Peak	1.35	165	
2782.86	30.96	H	54	-23.04	Avg	1.35	165	
3710.48	40.36	H	74	-33.64	Peak	1.25	175	
3710.48	31.93	H	54	-22.07	Avg	1.25	175	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

High Channel - Z-Axis
AC Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1855.24	35.09	H	74	-38.91	Peak	1.25	155	
1855.24	27.94	H	54	-26.06	Avg	1.25	155	
2782.86	39.16	H	74	-34.84	Peak	1.35	165	
2782.86	31.96	H	54	-22.04	Avg	1.35	165	
3710.48	40.61	H	74	-33.39	Peak	1.25	175	
3710.48	33.56	H	54	-20.44	Avg	1.25	175	
4638.1								No Emission
4638.1								Detected
5565.72								No Emission
5565.72								Detected
6493.34								No Emission
6493.34								Detected
7420.96								No Emission
7420.96								Detected
8348.58								No Emission
8348.58								Detected
9276.2								No Emission
9276.2								Detected

Title: Pre-Scan - FCC Class B

File: Agilent - Radiated Pre-Scan 30-1000Mhz - AC Power Mode - 08-05-2015.set

Operator: Kyle Fujimoto

EUT Type: Craneboss Remote Control Transmitter

EUT Condition: AC Power Mode - Continuously Transmitting - Y-Axis Worst Case

Company: Robinson Engineering Company, Inc.

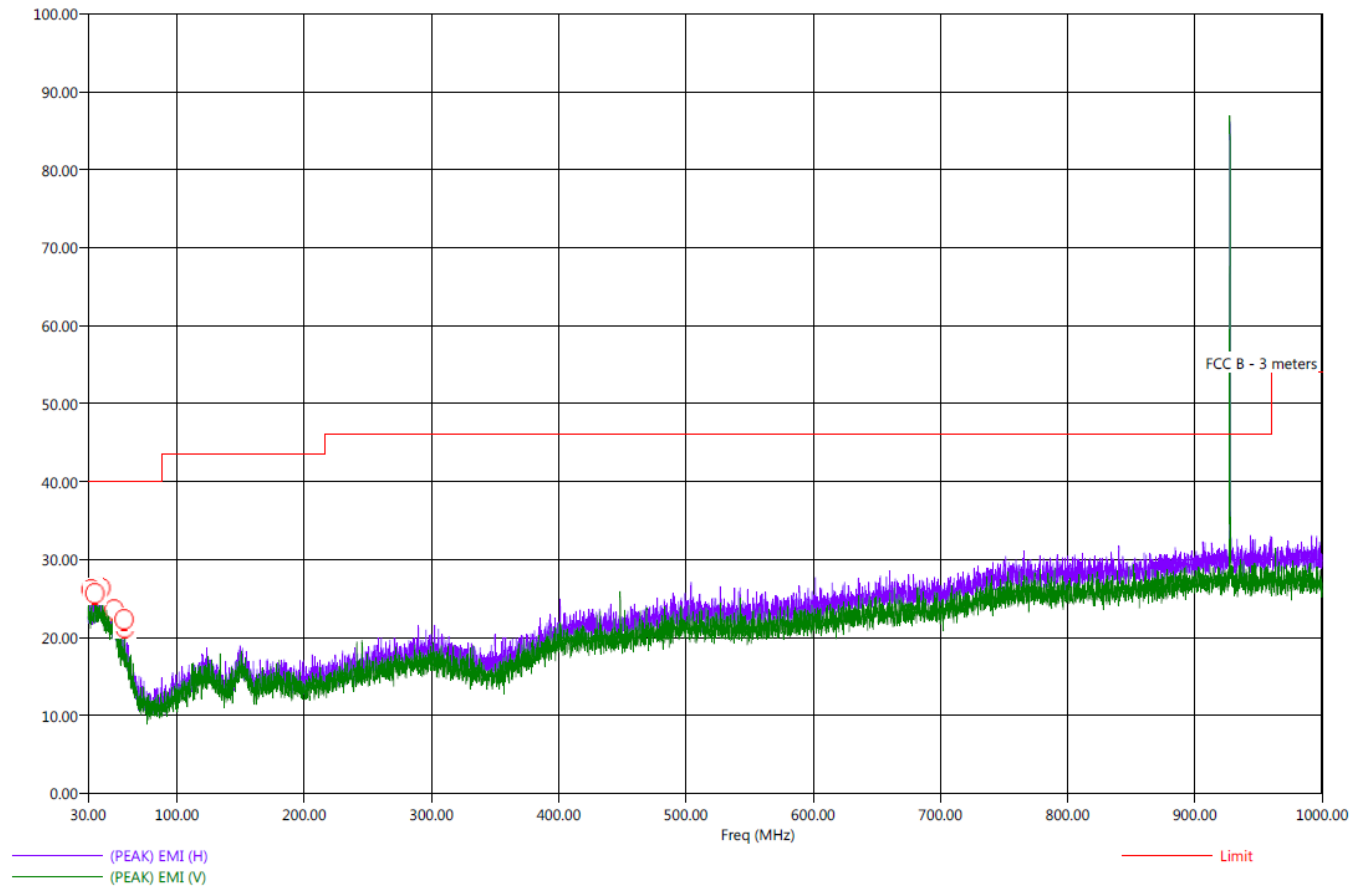
Model: Craneboss 300

Note: The frequency over the limit line is the transmit frequency and was tested per FCC 15.249 Limits

8/5/2015 10:46:47 AM

Sequence: Preliminary Scan

Pre-Scan - FCC Class B

Electric Field Strength (dB μ V/m)

Title: Radiated Final - 30-1000 MHz - Fundamental
File: Agilent - Radiated Final Scan - AC Power Mode - 08-05-2015.set
Operator: Kyle Fujimoto
EUT Type: Craneboss Remote Control Transmitter
EUT Condition: AC Battery Mode - Continuously Transmitting - Y-Axis Worst Case
Customer: Robinson Engineering Company, Inc.
Model: Craneboss 300

8/5/2015 10:58:04 AM
Sequence: Final Measurements

Table21

Freq (MHz)	Pol	(PEAK) EMI (dBμV/m)	(QP) EMI (dBμV/m)	Limit (dBμV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Cable (dB)	Transducer (dB)	Twr Ht (cm)	Ttbl Aql (deg)
32.50	H	36.13	31.66	50.00	-13.87	-18.34	0.37	23.64	158.00	33.50
35.50	V	36.08	31.74	50.00	-13.92	-18.26	0.40	23.76	159.31	275.50
40.20	H	36.12	32.16	50.00	-13.88	-17.84	0.43	24.13	399.49	176.00
50.50	H	34.86	29.91	50.00	-15.14	-20.09	0.50	21.80	222.71	200.50
58.40	V	31.66	26.75	50.00	-18.34	-23.25	0.54	18.55	335.79	227.25
58.90	V	30.96	26.40	50.00	-19.04	-23.60	0.55	18.25	158.47	184.25



FCC 15.249

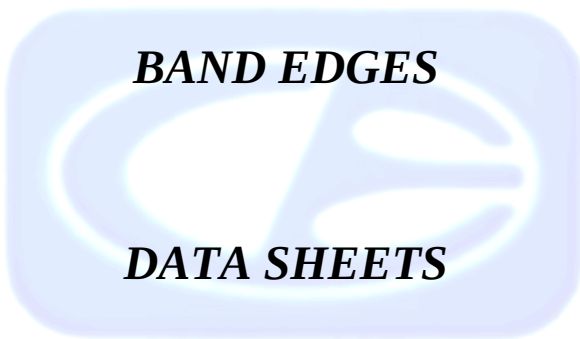
Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx and Digital Portion - 10 kHz to 30 MHz - AC Mode

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

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found for the
								Digital Portion
								from 10 kHz to 30 MHz
								for both Vertical and Horizontal
								Polarizations
								No Non Harmonic Emissions Found
								for the Tx Mode
								from 10 kHz to 30 MHz
								for both Vertical and Horizontal
								Polarizations
								Investigated in the X-Axis, Y-Axis,
								and Z-Axis
								No Emissions Found for the
								Digital Portion
								from 1 GHz to 9.3 GHz
								for both Vertical and Horizontal
								Polarizations
								No Non Harmonic Emissions Found
								for the Tx Mode
								from 1 GHz to 9.3 GHz
								for both Vertical and Horizontal
								Polarizations
								Investigated in the X-Axis, Y-Axis,
								and Z-Axis



BAND EDGES

DATA SHEETS

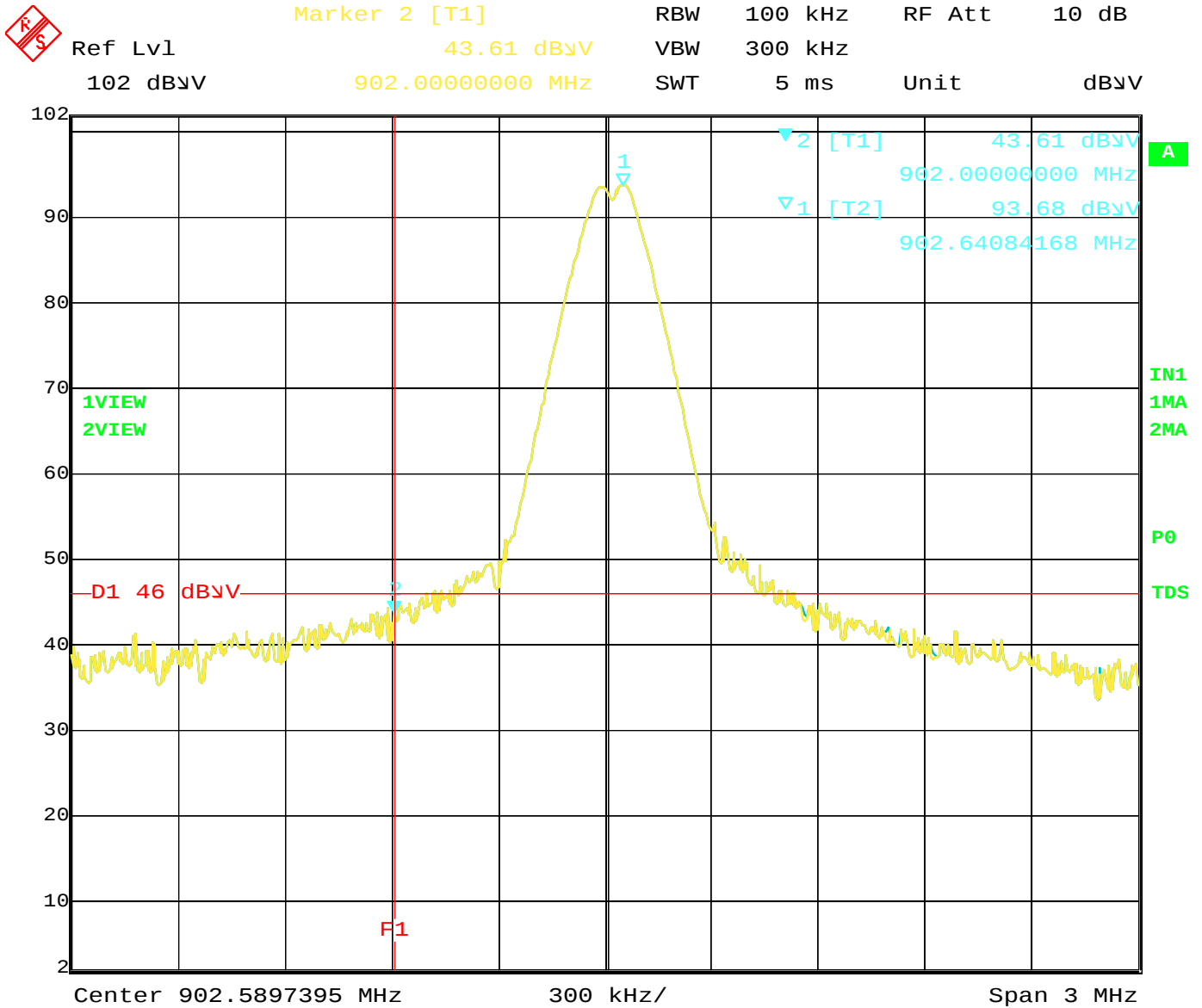
FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

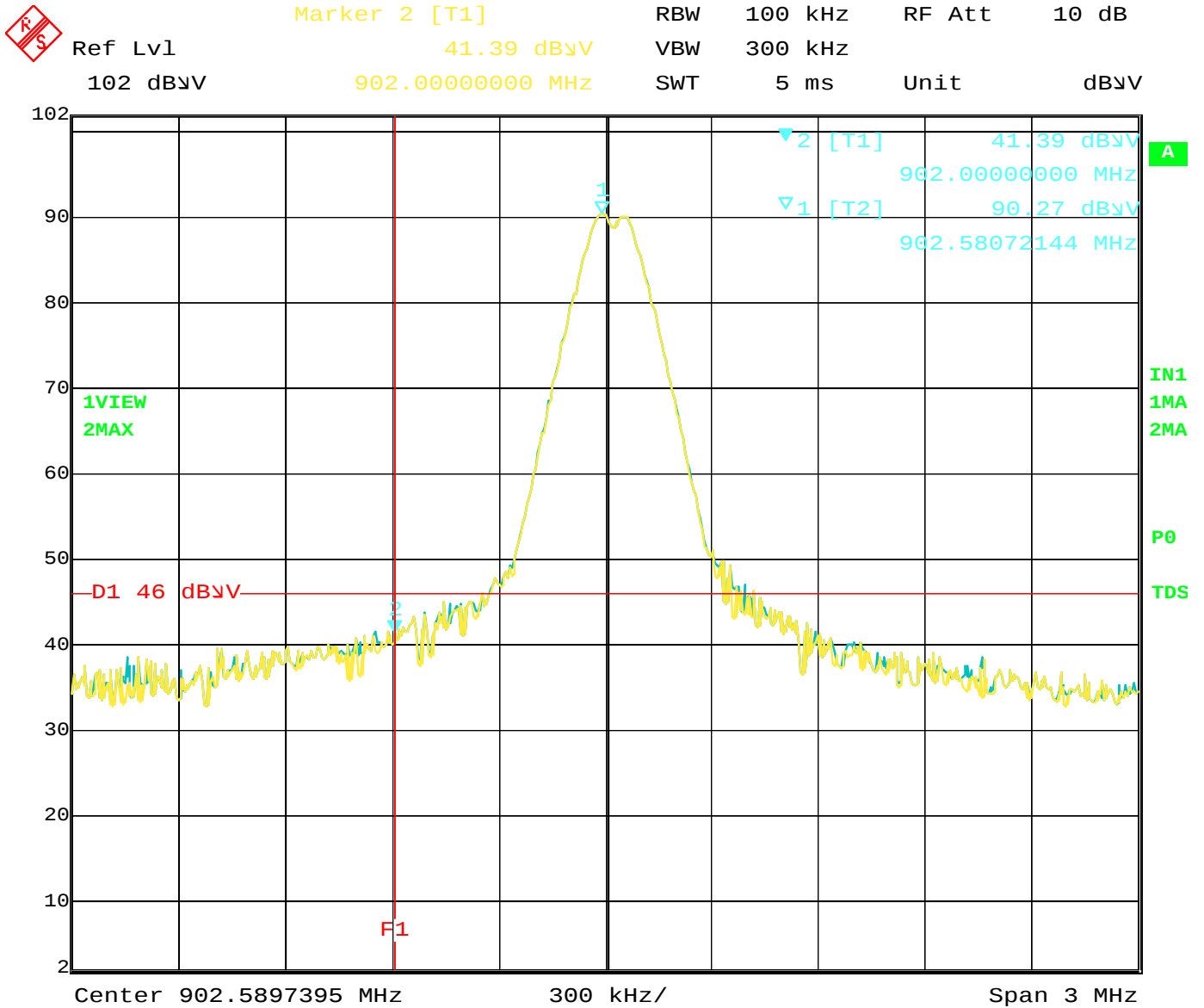
**Band Edges - Battery Mode
 Transmit Mode**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
902.62	93.68	V	114	-20.32	Peak	142.47	267.50	Fundamental
902.62	93.58	V	94	-0.42	QP	142.47	267.50	Y-Axis - Worst Case
902	43.61	V	66	-22.39	Peak	142.47	267.50	Band Edge
902	43.55	V	46	-2.45	QP	142.47	267.50	Y-Axis - Worst Case
902.62	90.27	H	114	-23.73	Peak	175.55	359.50	Fundamental
902.62	90.22	H	94	-3.78	QP	175.55	359.50	Z-Axis - Worst Case
902	41.39	H	66	-24.61	Peak	175.55	359.50	Band Edge
902	41.31	H	46	-4.69	QP	175.55	359.50	Z-Axis - Worst Case
927.62	93.43	V	114	-20.57	Peak	159.07	203.25	Fundamental
927.62	93.37	V	94	-0.63	QP	159.07	203.25	Y-Axis - Worst Case
928	45.09	V	66	-20.91	Peak	159.07	203.25	Band Edge
928	45.02	V	46	-0.98	QP	159.07	203.25	Y-Axis - Worst Case
927.62	91.28	H	114	-22.72	Peak	127.25	156.75	Fundamental
927.62	91.21	H	94	-2.79	QP	127.25	156.75	X-Axis - Worst Case
928	41.5	H	66	-24.5	Peak	127.25	156.75	Band Edge
928	41.43	H	46	-4.57	QP	127.25	156.75	X-Axis - Worst Case



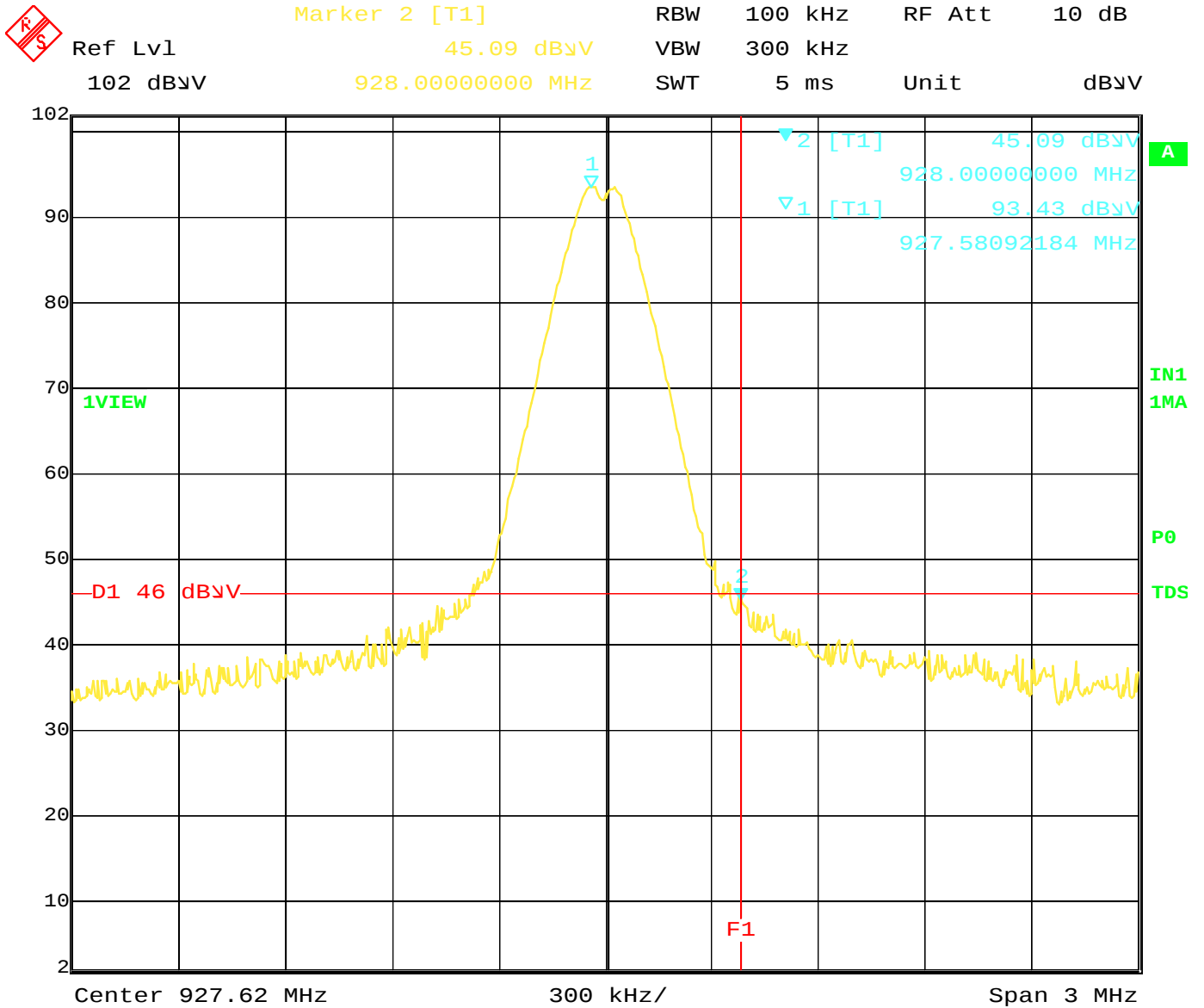
Date: 6.AUG.2015 13:59:51

Band Edge – Low Channel – Vertical Polarization – Battery Mode – Y-Axis Worst Case



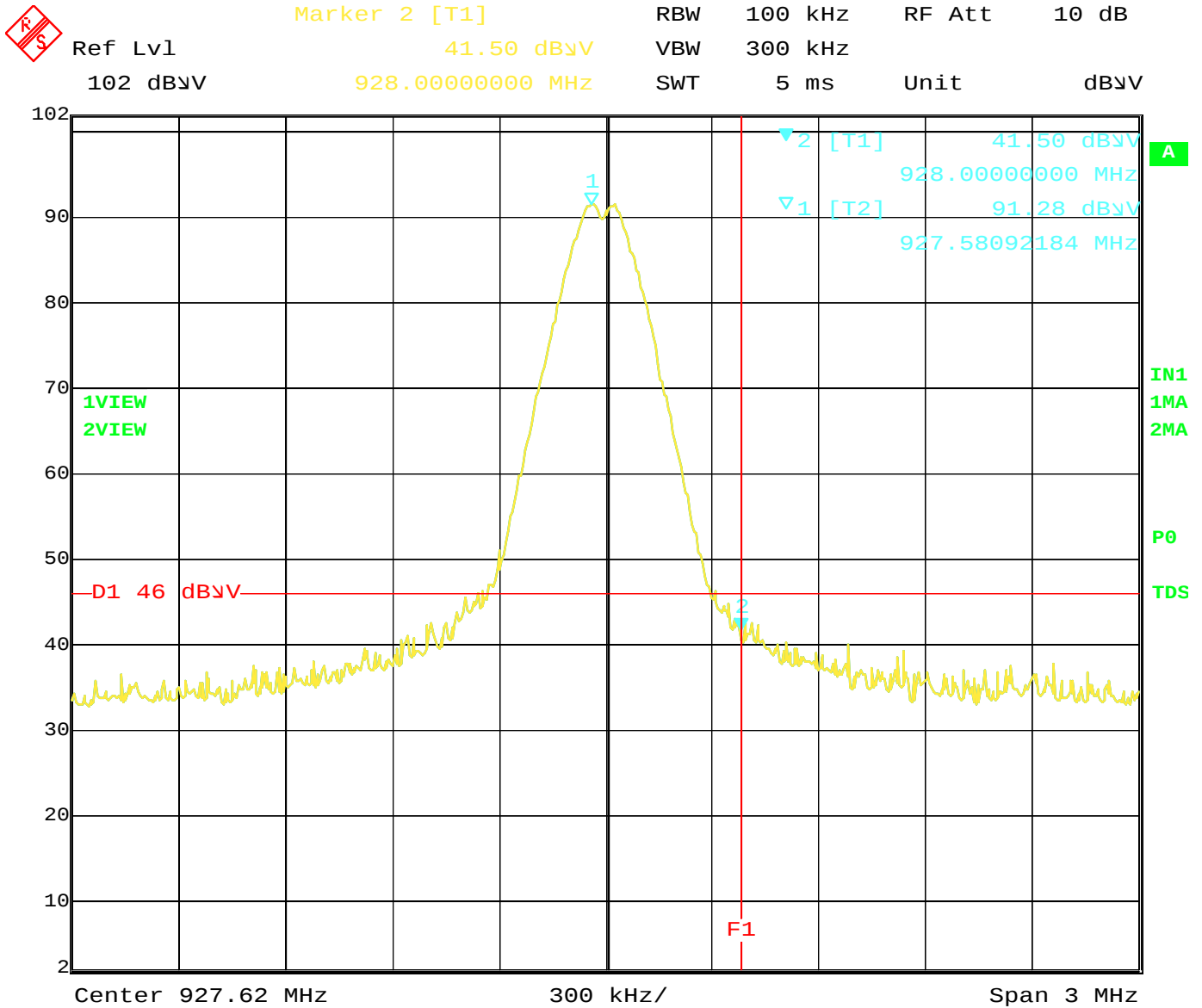
Date: 6.AUG.2015 14:07:02

Band Edge – Low Channel – Horizontal Polarization – Battery Mode – Z-Axis Worst Case



Date: 6.AUG.2015 14:37:40

Band Edge – High Channel – Vertical Polarization – Battery Mode – Y-Axis Worst Case



Date: 6.AUG.2015 14:43:20

Band Edge – High Channel – Horizontal Polarization – Battery Mode – X-Axis Worst Case

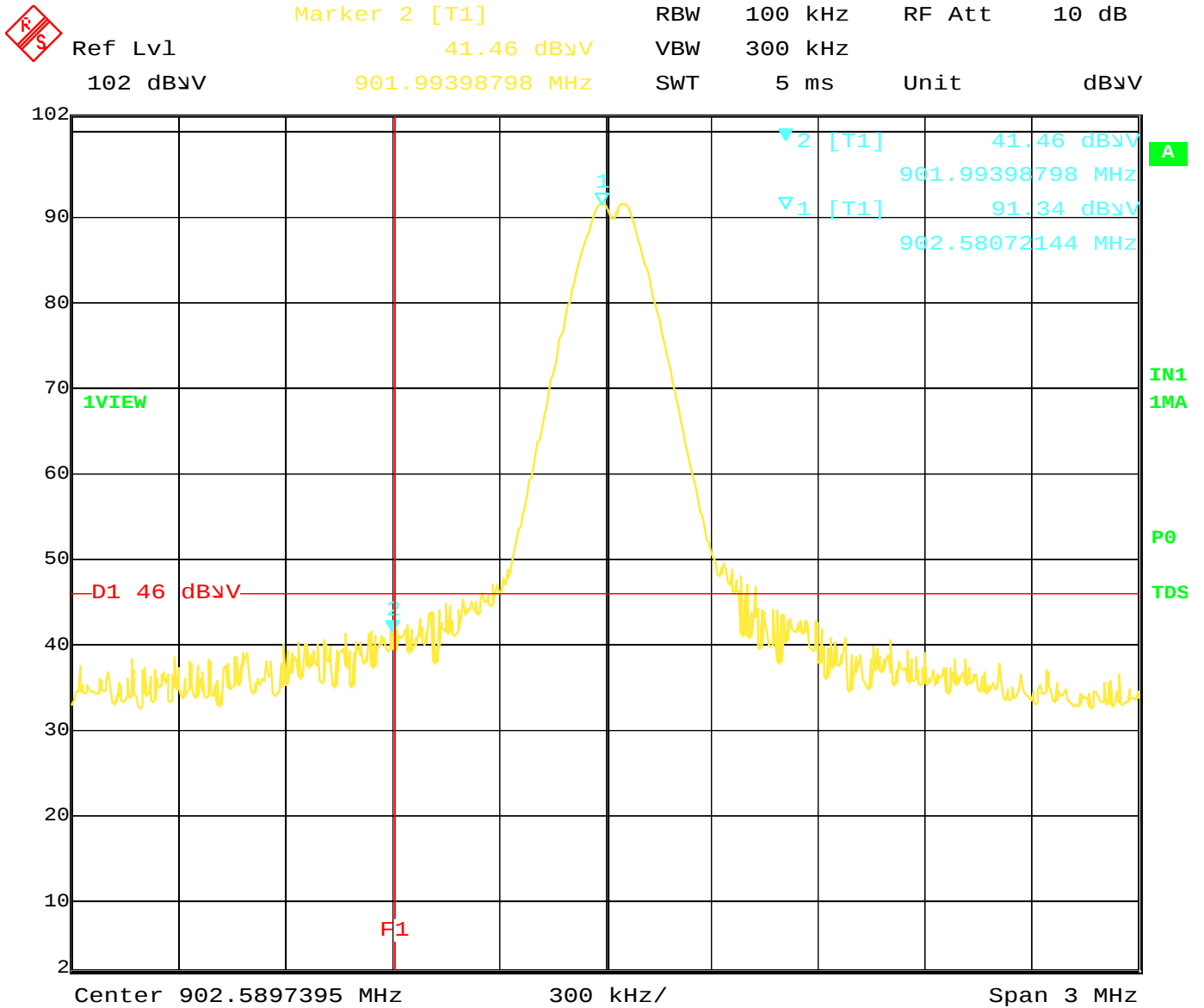
FCC 15.249

Robinson Engineering Company, Inc.
 Craneboss Remote Control Transmitter
 Model: Craneboss 300

Date: 08/06/2015
 Lab: B
 Tested By: Kyle Fujimoto

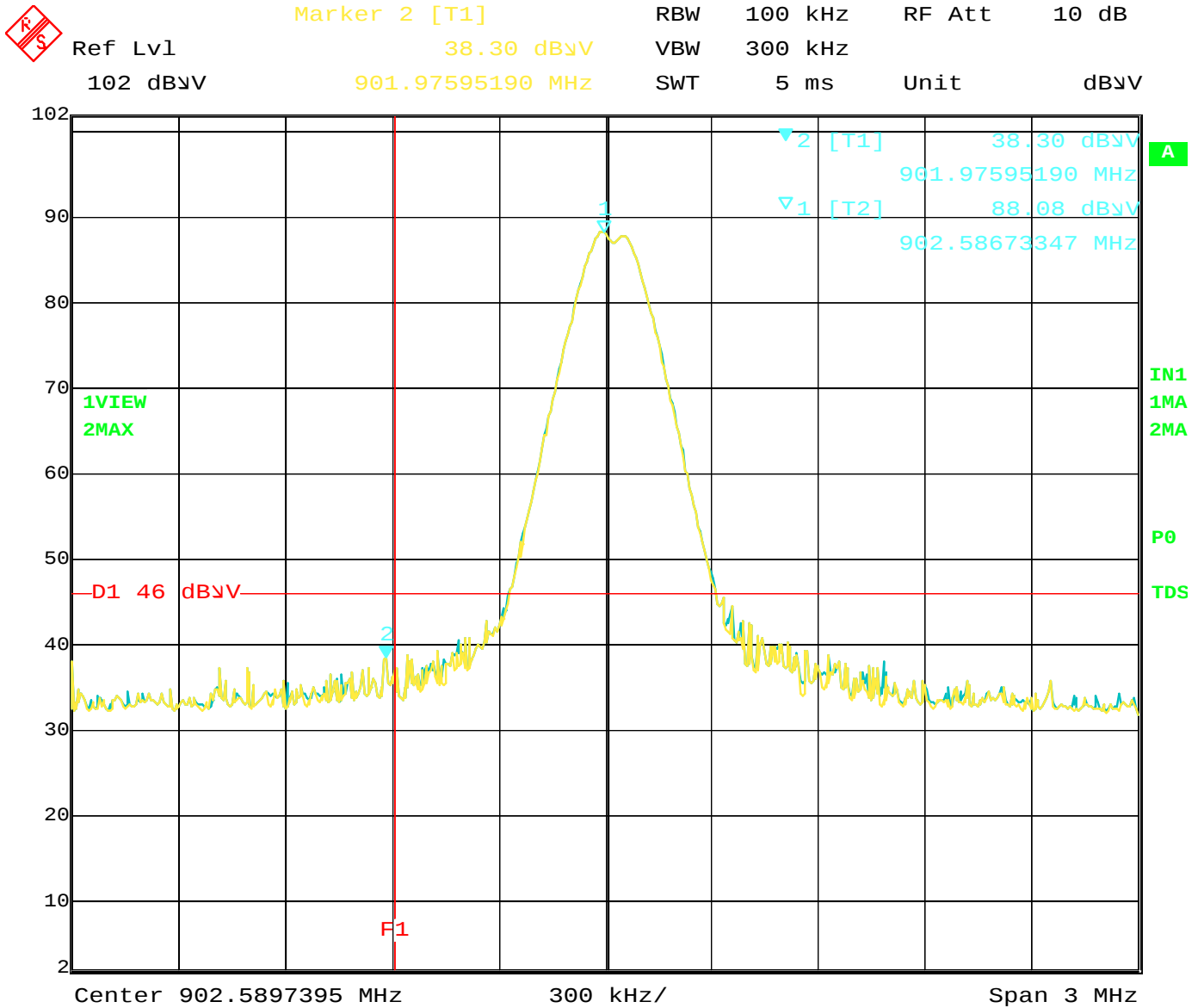
Band Edges - AC Mode
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
902.62	91.34	V	114	-22.66	Peak	126.41	58.75	Fundamental
902.62	91.28	V	94	-2.72	QP	126.41	58.75	Y-Axis - Worst Case
902	41.46	V	66	-24.54	Peak	126.41	58.75	Band Edge
902	41.41	V	46	-4.59	QP	126.41	58.75	Y-Axis Worst Case
902.62	88.08	H	114	-25.92	Peak	255.43	263.75	Fundamental
902.62	88.01	H	94	-5.99	QP	255.43	263.75	Z-Axis Worst Case
902	38.3	H	66	-27.7	Peak	255.43	263.75	Band Edge
902	38.21	H	46	-7.79	QP	255.43	263.75	Z-Axis Worst Case
927.62	93.5	V	114	-20.5	Peak	110.95	58.25	Fundamental
927.62	93.43	V	94	-0.57	QP	110.95	58.25	Y-Axis - Worst Case
928.24	45.14	V	66	-0.86	Peak	110.95	58.25	Band Edge
928.24	45.09	V	46	-0.91	QP	110.95	58.25	Y-Axis Worst Case
927.62	87.85	H	114	-26.15	Peak	111.37	359.5	Fundamental
927.62	87.81	H	94	-6.19	QP	111.37	359.5	Z-Axis Worst Case
928	43.2	H	66	-22.8	Peak	111.37	359.5	Band Edge
928	43.12	H	46	-2.88	QP	111.37	359.5	Z-Axis Worst Case



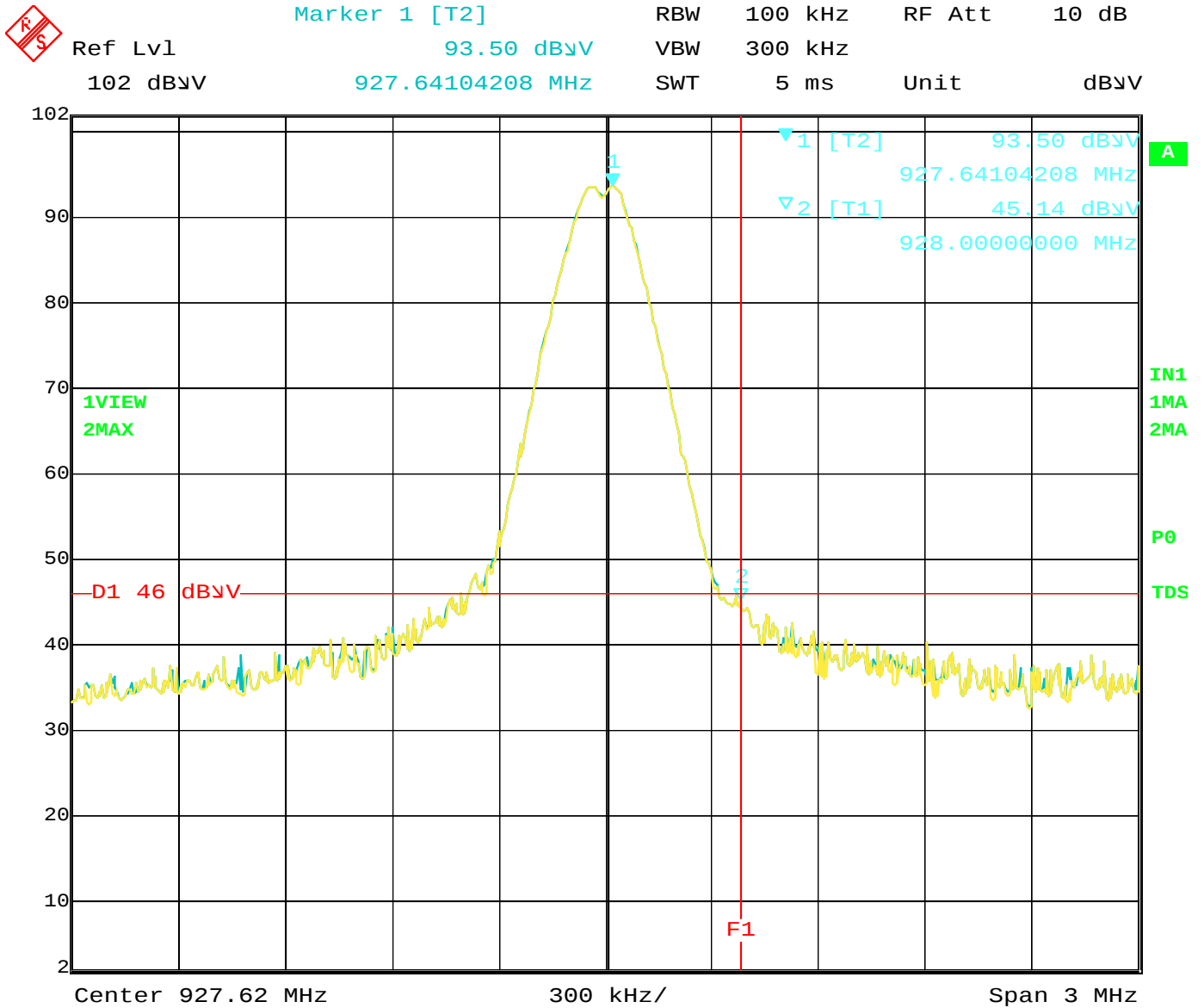
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Band Edge – Low Channel – Vertical Polarization – AC Mode – Y-Axis Worst Case



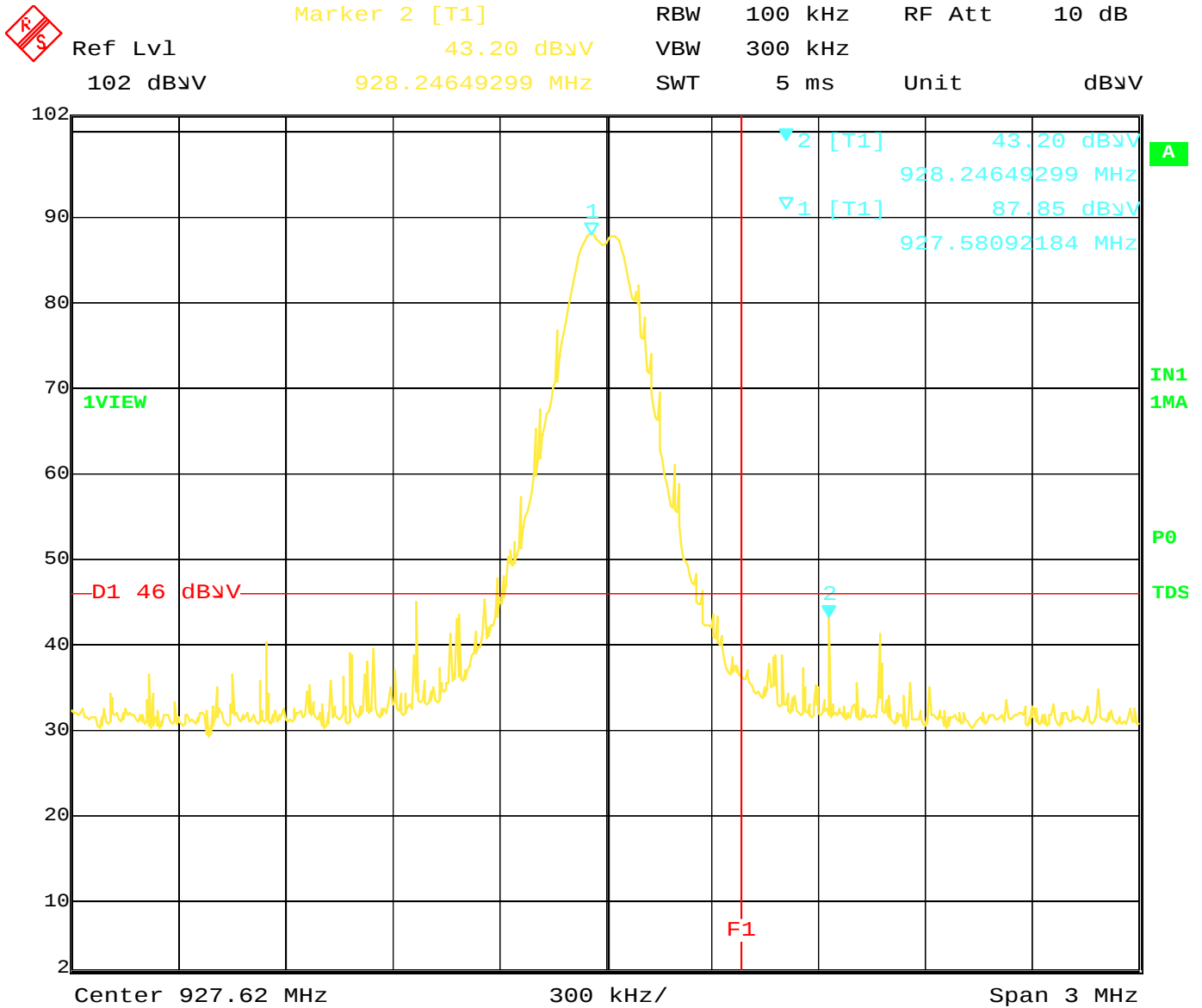
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Band Edge – Low Channel – Horizontal Polarization – AC Mode – Z-Axis Worst Case



Date: 6.AUG.2015 14:45:59

Band Edge – High Channel – Vertical Polarization – AC Mode – Y-Axis Worst Case

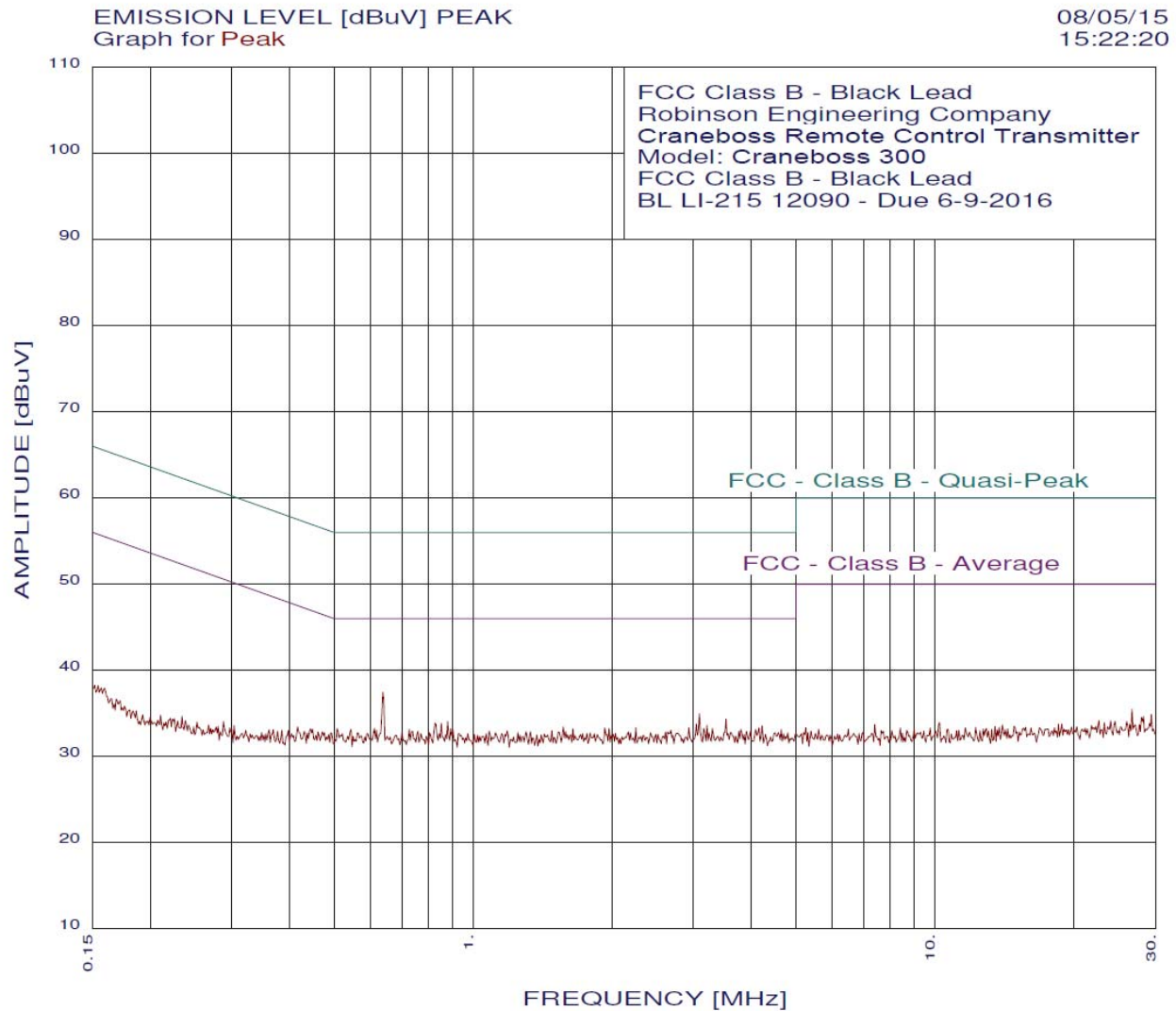


Date: 6.AUG.2015 15:57:38

Band Edge – High Channel – Horizontal Polarization – AC Mode – Z-Axis Worst Case

CONDUCTED EMISSIONS

DATA SHEETS



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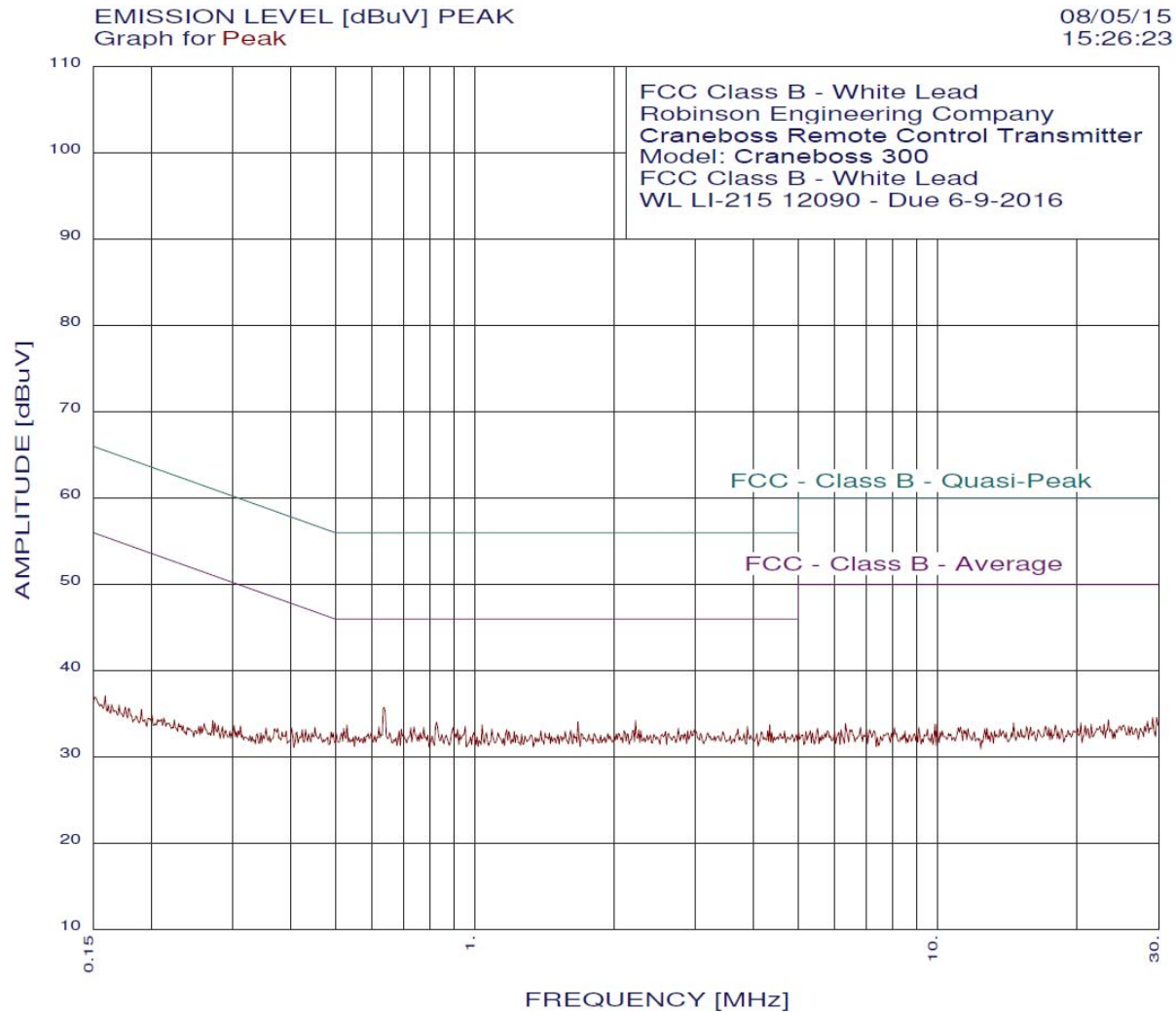
08/05/15 15:22:20

FCC Class B - Black Lead
Robinson Engineering Company
Craneboss Remote Control Transmitter
Model: Craneboss 300
FCC Class B - Black Lead
BL LI-215 12090 - Due 6-9-2016
Test Engineer : Kyle Fujimoto

39 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.637	37.44	46.00	-8.56
2	3.091	34.95	46.00	-11.05
3	3.529	34.34	46.00	-11.66
4	0.881	34.03	46.00	-11.97
5	0.826	33.83	46.00	-12.17
6	0.853	33.83	46.00	-12.17
7	3.043	33.75	46.00	-12.25
8	3.209	33.65	46.00	-12.35
9	4.227	33.54	46.00	-12.46
10	1.569	33.40	46.00	-12.60
11	2.250	33.35	46.00	-12.65
12	2.932	33.35	46.00	-12.65
13	1.929	33.34	46.00	-12.66
14	4.159	33.34	46.00	-12.66
15	0.508	33.25	46.00	-12.75
16	1.971	33.25	46.00	-12.75
17	3.158	33.25	46.00	-12.75
18	3.294	33.25	46.00	-12.75
19	0.611	33.24	46.00	-12.76
20	0.895	33.23	46.00	-12.77
21	1.646	33.21	46.00	-12.79
22	0.544	33.15	46.00	-12.85
23	4.648	33.14	46.00	-12.86
24	3.800	33.14	46.00	-12.86
25	0.728	33.14	46.00	-12.86
26	2.679	33.05	46.00	-12.95
27	1.480	32.99	46.00	-13.01
28	1.184	32.95	46.00	-13.05
29	1.083	32.94	46.00	-13.06
30	3.903	32.94	46.00	-13.06
31	0.739	32.94	46.00	-13.06
32	0.759	32.94	46.00	-13.06
33	1.331	32.87	46.00	-13.13
34	1.304	32.87	46.00	-13.13
35	2.168	32.85	46.00	-13.15
36	2.610	32.85	46.00	-13.15
37	1.536	32.80	46.00	-13.20
38	1.249	32.76	46.00	-13.24
39	2.423	32.75	46.00	-13.25



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08/05/15 15:26:23

FCC Class B - White Lead
Robinson Engineering Company
Craneboss Remote Control Transmitter
Model: Craneboss 300
FCC Class B - White Lead
WL LI-215 12090 - Due 6-9-2016
Test Engineer : Kyle Fujimoto

39 highest peaks above -50.00 dB of FCC - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.637	35.73	46.00	-10.27
2	2.226	34.25	46.00	-11.75
3	1.671	34.11	46.00	-11.89
4	0.826	34.03	46.00	-11.97
5	4.339	33.74	46.00	-12.26
6	1.038	33.74	46.00	-12.26
7	0.530	33.72	46.00	-12.28
8	3.882	33.55	46.00	-12.45
9	0.953	33.53	46.00	-12.47
10	0.739	33.53	46.00	-12.47
11	0.621	33.52	46.00	-12.48
12	0.899	33.43	46.00	-12.57
13	0.775	33.43	46.00	-12.57
14	0.728	33.43	46.00	-12.57
15	2.751	33.35	46.00	-12.65
16	0.521	33.32	46.00	-12.68
17	3.702	33.25	46.00	-12.75
18	1.089	33.24	46.00	-12.76
19	0.919	33.23	46.00	-12.77
20	0.694	33.23	46.00	-12.77
21	1.172	33.15	46.00	-12.85
22	2.979	33.14	46.00	-12.86
23	1.611	33.10	46.00	-12.90
24	1.389	33.08	46.00	-12.92
25	2.100	33.05	46.00	-12.95
26	2.190	33.05	46.00	-12.95
27	2.286	33.05	46.00	-12.95
28	2.885	33.04	46.00	-12.96
29	4.294	33.04	46.00	-12.96
30	4.672	33.04	46.00	-12.96
31	0.686	33.03	46.00	-12.97
32	1.569	33.00	46.00	-13.00
33	1.217	32.96	46.00	-13.04
34	1.184	32.95	46.00	-13.05
35	2.582	32.95	46.00	-13.05
36	3.438	32.94	46.00	-13.06
37	4.159	32.94	46.00	-13.06
38	0.598	32.92	46.00	-13.08
39	1.124	32.85	46.00	-13.15
