FCC PART 15, SUBPART B and C
TEST REPORT

for

OPERATOR TRANSCEIVER

MODEL: 148454

Prepared for

CROWN EQUIPMENT CORPORATION
44 SOUTH WASHINGTON STREET
NEW BREMEN, OHIO 45869

Prepared by:_____

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DATE: OCTOBER 7, 2009

	REPORT BODY	APPENDICES					TOTAL
		A	***B***	***C***	***D***	***E***	
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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 endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested:	Operator Transceiver Model: 148454 S/N: N/A
Product Description:	See Expository Statement
Modifications:	The EUT was not modified in order to meet the specifications.
Customer:	Crown Equipment Corporation 44 South Washington Street New Bremen, Ohio 45869
Test Date(s):	May 17, 2010
Test Specifications:	EMI requirements CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249
Test Procedure:	ANSI C63.4: 2003
Test Deviations:	The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	This test was not performed because the EUT is battery powered only and cannot be plugged into the AC public mains.
2	Radiated RF Emissions 10 kHz – 25000 MHz (Transmitter Portion)	Complies with the limits of CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.249 Highest reading in relation to spec limit: 84.20 (Avg) dBuV @ 2480 MHz (*Uc = 5.34 dB)
3	Radiated RF Emissions 10 kHz – 25000 MHz (Digital and Receiver Portion)	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Operator Transceiver, Model: 148454. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2003. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the Class B specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.

Note: For the unintentional portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI 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

Crown Equipment Corporation

Richard E Spencer	Group Leader – Test Engineering
Vern Siefring	Engineering Department
Timothy Quellhorst	Vice President Engineering

Compatible Electronics Inc.

Kyle Fujimoto	Test Engineer
James Ross	Test Engineer

2.4 Date Test Sample was Received

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

2.5 Disposition of the Test Sample

The test sample has not been returned to Crown Equipment Corporation as of the date of this 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

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
ANSI C63.4 2003	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

The Operator Transceiver, Model: 148454 (EUT) was mounted on a glove and tested as a stand alone unit in three orthogonal axis. The EUT was continuously transmitting and receiving.

The EUT has separate antenna ports and both ports were tested..

It was determined that the emissions were at their highest level when the EUT was operating in the above configurations. The final emissions data was taken in these modes of operation and any cables were maximized. All initial investigations were performed with the measurement receiver in manual mode scanning the frequency range continuously. Photographs of the test setup are in Appendix D of this report.

4.1.1 Cable Construction and Termination

The EUT has no external cables.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
OPERATOR TRANSCEIVER (EUT)	CROWN EQUIPMENT CORPORATION	148454	N/A	YGP148454

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
GENERAL TEST EQUIPMENT USED FOR ALL RF EMISSIONS TESTS					
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	May 29, 2009	May 29, 2010
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A14530	May 29, 2009	May 29, 2010
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	May 29, 2009	May 29, 2010
EMI Receiver	Rohde & Schwarz	ESIB40	100194	September 17, 2008	Sept. 17, 2010
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Biconical Antenna	Com Power	AB-900	15250	February 16, 2010	Feb. 16, 2011
Log Periodic Antenna	Com Power	AL-100	16060	June 15, 2009	June 15, 2010
Preamplifier	Com-Power	PA-102	1017	January 6, 2010	Jan. 6, 2011
Loop Antenna	Com-Power	AL-130	17089	September 29, 2008	Sept. 29, 2010
Horn Antenna	Com-Power	AH-118	071175	March 18, 2010	March 18, 2012
Microwave Preamplifier	Com-Power	PA-122	181921	March 10, 2010	March 10, 2011
Horn Antenna	Com-Power	AH826	71957	N/A	N/A
Microwave Preamplifier	Com-Power	PA-840	711013	March 11, 2010	March 11, 2011
Antenna Mast	Com Power	AM-100	N/A	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 EMI 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 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: 2003. 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 Compatible Electronics conducted emissions 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.

Test Results:

This test was not performed because the EUT is battery powered only and cannot be plugged into the AC public mains.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer and EMI Receiver were used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, the Com Power Microwave Preamplifier Model: PA-122 was used for frequencies from 1 GHz to 18 GHz, and the Com Power Microwave Amplifier Model: PA-840 was used for frequencies above 18 GHz. The spectrum analyzer and EMI Receiver were used in the peak detect mode with the "Max Hold" feature activated. In this mode, the measuring receiver records the highest measured reading over all the sweeps.

The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets.

The frequencies above 1 GHz were averaged manually by narrowing the video filter down to 10 Hz and putting the sweep time on AUTO on the spectrum analyzer to keep the amplitude reading calibrated.

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 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 25 GHz	1 MHz	Horn Antenna

Radiated Emissions (Spurious and Harmonics) Test (con't)

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: 2003. 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. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.

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 to obtain the final test data.

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.

8. CONCLUSIONS

The Operator Transceiver Model: 148454, as tested, meets all of the specification limits defined in CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.

APPENDIX A

LABORATORY RECOGNITIONS

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

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	Operator Transceiver Model: 148454 S/N: N/A

No additional models were covered under this report.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

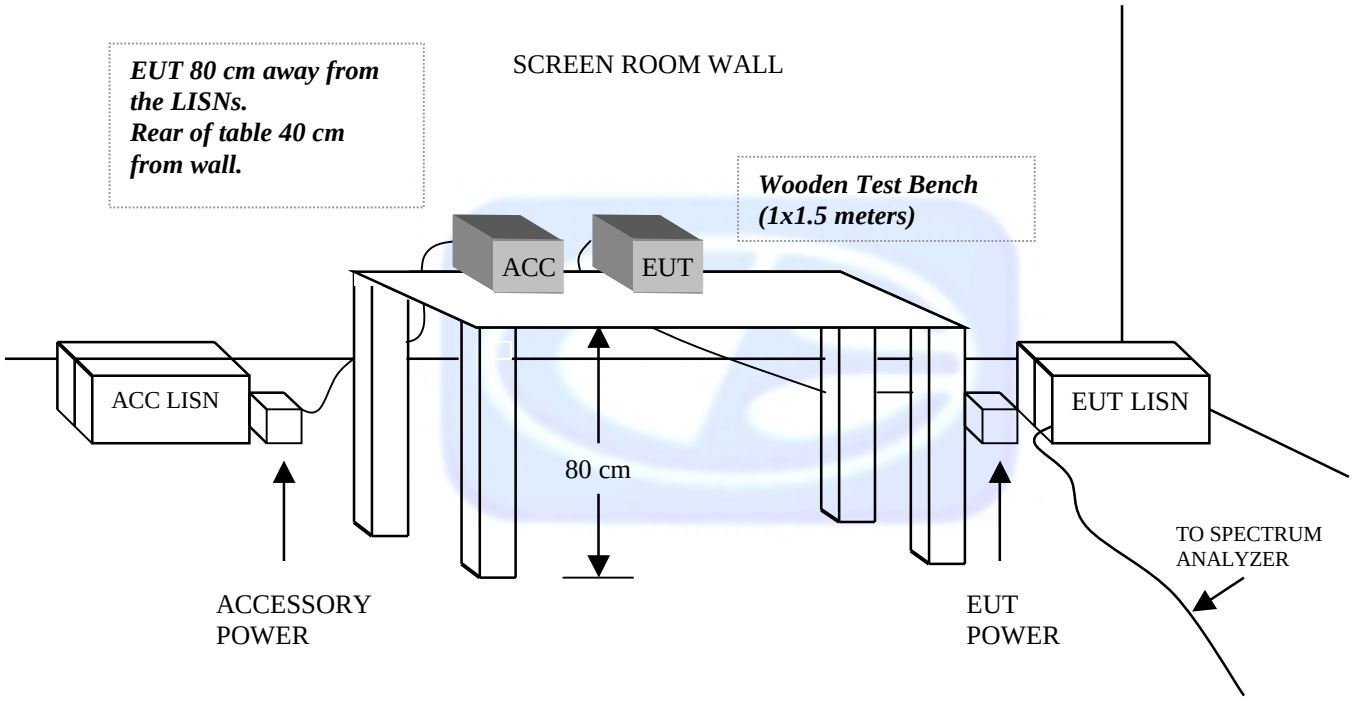
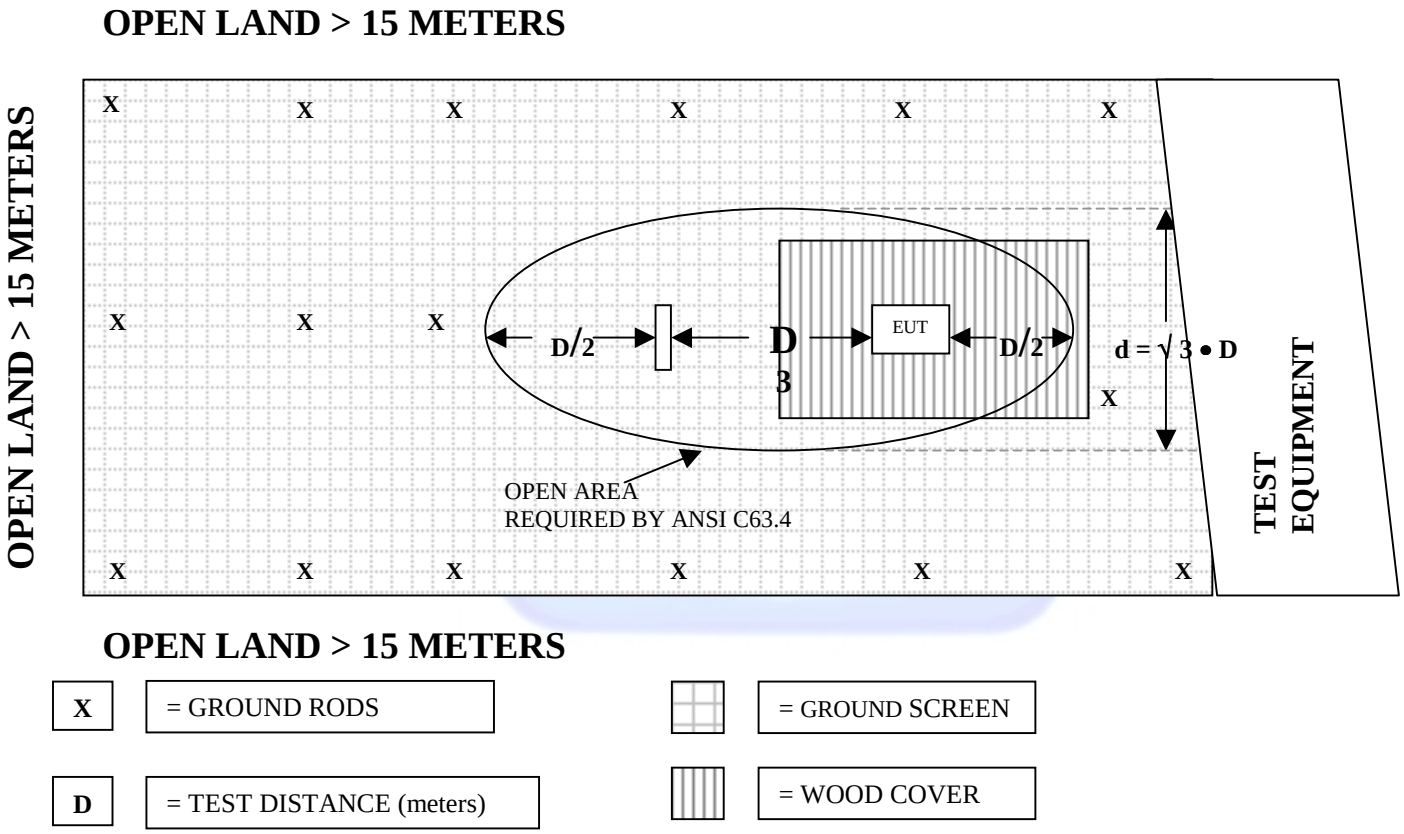


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE – 3 METERS



COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15250

CALIBRATION DATE: FEBRUARY 16, 2010

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	13.5	100	11.1
35	10.4	120	13.1
40	10.3	140	12.2
45	9.8	160	13.6
50	10.6	180	15.9
60	9.5	200	16.4
70	8.4	250	15.1
80	5.5	275	17.7
90	7.3	300	19.5

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16060

CALIBRATION DATE: JUNE 15, 2009

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	14.2	700	20.1
400	15.9	800	21.2
500	17.1	900	21.3
600	18.8	1000	22.3

COM POWER AH-118

HORN ANTENNA

S/N: 071175

CALIBRATION DATE: MARCH 18, 2010

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	22.2	10.0	39.8
1.5	24.2	10.5	40.2
2.0	27.2	11.0	39.7
2.5	27.8	11.5	39.9
3.0	30.5	12.0	41.7
3.5	30.9	12.5	42.7
4.0	31.9	13.0	42.3
4.5	33.2	13.5	40.3
5.0	33.6	14.0	42.6
5.5	36.2	14.5	43.4
6.0	35.8	15.0	41.9
6.5	36.1	15.5	40.8
7.0	37.9	16.0	41.0
7.5	37.4	16.5	41.5
8.0	38.0	17.0	44.5
8.5	38.8	17.5	47.6
9.0	38.0	18.0	50.8
9.5	39.2		

COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: JANUARY 6, 2010

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
20	38.0	300	38.2
30	38.3	350	38.1
40	38.4	400	38.5
50	38.2	450	38.0
60	38.2	500	37.9
70	38.3	550	38.2
80	38.1	600	38.2
90	38.2	650	37.7
100	38.3	700	38.3
125	38.2	750	38.3
150	38.3	800	37.4
175	38.3	850	37.5
200	38.1	900	37.6
225	38.2	950	37.4
250	38.3	1000	37.3
275	38.2		

COM-POWER PA-122

PREAMPLIFIER

S/N: 181921

CALIBRATION DATE: MARCH 10, 2010

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	35.53	10.0	34.78
1.5	34.92	10.5	34.36
2.0	34.63	11.0	33.14
2.5	34.42	11.5	34.42
3.0	34.40	12.0	34.24
3.5	34.36	12.5	34.95
4.0	34.11	13.0	34.62
4.5	33.61	13.5	35.24
5.0	33.83	14.0	35.40
5.5	34.53	14.5	36.66
6.0	35.09	15.0	35.98
6.5	35.58	15.5	35.94
7.0	36.50	16.0	35.80
7.5	34.83	16.5	34.98
8.0	34.08	17.0	35.00
8.5	33.57	17.5	34.25
9.0	34.68	18.0	33.51
9.5	35.84	18.5	32.88

COM-POWER AL-130

LOOP ANTENNA

S/N: 17089

CALIBRATION DATE: SEPTEMBER 29, 2008

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-41.57	9.93
0.01	-42.06	9.44
0.02	-42.43	9.07
0.05	-42.50	9.00
0.07	-42.10	9.40
0.1	-42.03	9.47
0.2	-44.50	7.00
0.3	-41.93	9.57
0.5	-41.90	9.60
0.7	-41.73	9.77
1	-41.23	10.27
2	-40.90	10.60
3	-41.20	10.30
4	-41.30	10.20
5	-40.70	10.80
10	-41.10	10.40
15	-42.17	9.33
20	-42.00	9.50
25	-42.20	9.30
30	-43.10	8.40

COM-POWER PA-840

PREAMPLIFIER-MICROWAVE

S/N: 711013

CALIBRATION DATE: MARCH 11, 2010

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	24.36	29.0	24.83
18.5	24.54	29.5	23.52
19.0	24.06	30.0	21.73
19.5	23.71	30.5	22.34
20.0	23.42	31.0	20.06
20.5	22.87	31.5	20.02
21.0	22.60	32.0	18.11
21.5	21.08	32.5	19.35
22.0	22.13	33.0	17.50
22.5	22.42	33.5	17.49
23.0	22.85	34.0	17.48
23.5	22.85	34.5	18.57
24.0	23.82	35.0	18.64
24.5	22.33	35.5	18.82
25.0	24.09	36.0	19.14
25.5	23.20	36.5	18.58
26.0	23.18	37.0	15.07
26.5	23.50	37.5	17.29
27.0	24.25	38.0	20.82
27.5	23.58	38.5	19.96
28.0	23.81	39.0	20.06
28.5	23.76	39.5	21.41

COM-POWER AH826

HORN ANTENNA

S/N: 71957

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	33.5	22.5	35.5
18.5	33.5	23.0	35.9
19.0	34.0	23.5	35.7
19.5	34.0	24.0	35.6
20.0	34.3	24.5	36.0
20.5	34.9	25.0	36.2
21.0	34.7	25.5	36.1
21.5	35.0	26.0	36.2
22.0	35.0	26.5	35.7

FRONT VIEW

CROWN EQUIPMENT CORPORATION
OPERATOR TRANSCEIVER
MODEL: 148454
FCC SUBPART B AND C – RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

CROWN EQUIPMENT CORPORATION
OPERATOR TRANSCEIVER
MODEL: 148454
FCC SUBPART B AND C – RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

RADIATED EMISISONS

DATA SHEETS

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #1
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	76.16	V	94	-17.84	Peak	2.5	135	
2405	71.79	V	94	-22.21	Avg	2.5	135	
4810	44.11	V	74	-29.89	Peak	1.25	135	
4810	33.96	V	54	-20.04	Avg	1.25	135	
7215	43.81	V	74	-30.19	Peak	1.25	225	
7215	33.28	V	54	-20.72	Avg	1.25	225	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #1
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	78.61	H	94	-15.39	Peak	2.25	135	
2405	73.95	H	94	-20.05	Avg	2.25	135	
4810	45.76	H	74	-28.24	Peak	1.25	155	
4810	37.71	H	54	-16.29	Avg	1.25	155	
7215	47.71	H	74	-26.29	Peak	1.25	135	
7215	35.28	H	54	-18.72	Avg	1.25	135	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #1
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	82.72	V	94	-11.28	Peak	1.25	135	
2445	78.18	V	94	-15.82	Avg	1.25	135	
4890	43.81	V	74	-30.19	Peak	1.35	145	
4890	31.53	V	54	-22.47	Avg	1.35	145	
7335	45.68	V	74	-28.32	Peak	1.25	165	
7335	33.53	V	54	-20.47	Avg	1.25	165	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #1
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	84.68	H	94	-9.32	Peak	2.25	135	
2445	80.27	H	94	-13.73	Avg	2.25	135	
4890	46.82	H	74	-27.18	Peak	2.75	135	
4890	38.91	H	54	-15.09	Avg	2.75	135	
7335	45.51	H	74	-28.49	Peak	1.25	155	
7335	35.41	H	54	-18.59	Avg	1.25	155	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #1
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	81.52	V	94	-12.48	Peak	1.25	135	
2480	77.31	V	94	-16.69	Avg	1.25	135	
4960	46.35	V	74	-27.65	Peak	1.55	165	
4960	35.94	V	54	-18.06	Avg	1.55	165	
7440	45.72	V	74	-28.28	Peak	1.25	135	
7440	33.73	V	54	-20.27	Avg	1.25	135	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #1
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	86.65	H	94	-7.35	Peak	1.25	225	
2480	82.16	H	94	-11.84	Avg	1.25	225	
4960	45.92	H	74	-28.08	Peak	1.25	135	
4960	37.17	H	54	-16.83	Avg	1.25	135	
7440	47.27	H	74	-26.73	Peak	1.35	165	
7440	35.31	H	54	-18.69	Avg	1.35	165	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC Class B and RSS-210

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - X-Axis - Antenna #1
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Receiver Mode
								from 1 GHz to 25 GHz

FCC 15.249 and FCC Class B

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/17/2010
Lab: B
Tested By: Kyle Fujimoto

Digital Portion of the EUT and Non-Harmonic Emissions from the EUT
X-Axis - Antenna #1

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Non-Harmonic
								Emissions from the Transmitter
								from 10 kHz to 25 GHz
								No Emissions Found
								from the Digital Portion
								from 10 kHz to 25 GHz
								Tested in Both Vertical
								and Horizontal Polarizations

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #2
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	82.59	V	94	-11.41	Peak	2	225	
2405	78.29	V	94	-15.71	Avg	2	225	
4810	44.68	V	74	-29.32	Peak	1.25	135	
4810	33.72	V	54	-20.28	Avg	1.25	135	
7215	45.83	V	74	-28.17	Peak	1.35	155	
7215	33.64	V	54	-20.36	Avg	1.35	155	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #2
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	82.06	H	94	-11.94	Peak	1.25	135	
2405	77.68	H	94	-16.32	Avg	1.25	135	
4810	45.79	H	74	-28.21	Peak	1.25	225	
4810	36.77	H	54	-17.23	Avg	1.25	225	
7215	47.71	H	74	-26.29	Peak	1.35	225	
7215	35.49	H	54	-18.51	Avg	1.35	225	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #2
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	79.01	V	94	-14.99	Peak	1.25	135	
2445	74.59	V	94	-19.41	Avg	1.25	135	
4890	44.98	V	74	-29.02	Peak	1.25	135	
4890	33.81	V	54	-20.19	Avg	1.25	135	
7335	45.47	V	74	-28.53	Peak	1.25	135	
7335	35.29	V	54	-18.71	Avg	1.25	135	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #2
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	84.47	H	94	-9.53	Peak	2.75	225	
2445	79.89	H	94	-14.11	Avg	2.75	225	
4890	47.04	H	74	-26.96	Peak	1.25	135	
4890	38.44	H	54	-15.56	Avg	1.25	135	
7335	48.02	H	74	-25.98	Peak	1.25	155	
7335	35.24	H	54	-18.76	Avg	1.25	155	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #2
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	84.43	V	94	-9.57	Peak	1.25	90	
2480	80.07	V	94	-13.93	Avg	1.25	90	
4960	45.06	V	74	-28.94	Peak	1.35	225	
4960	34.95	V	54	-19.05	Avg	1.35	225	
7440	45.18	V	74	-28.82	Peak	1.25	135	
7440	33.66	V	54	-20.34	Avg	1.25	135	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #2
X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	86.3	H	94	-7.7	Peak	1.25	135	
2480	81.86	H	94	-12.14	Avg	1.25	135	
4960	46.84	H	74	-27.16	Peak	1.35	155	
4960	38.37	H	54	-15.63	Avg	1.35	155	
7440	44.11	H	74	-29.89	Peak	1.25	135	
7440	33.35	H	54	-20.65	Avg	1.25	135	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC Class B and RSS-210

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - X-Axis - Antenna #2
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Receiver Mode
								from 1 GHz to 25 GHz

FCC 15.249 and FCC Class B

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/17/2010
Lab: B
Tested By: Kyle Fujimoto

Digital Portion of the EUT and Non-Harmonic Emissions from the EUT
X-Axis - Antenna #2

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Non-Harmonic
								Emissions from the Transmitter
								from 10 kHz to 25 GHz
								No Emissions Found
								from the Digital Portion
								from 10 kHz to 25 GHz
								Tested in Both Vertical
								and Horizontal Polarizations

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #1
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	83.27	V	94	-10.73	Peak	1.25	315	
2405	78.74	V	94	-15.26	Avg	1.25	315	
4810	44.48	V	74	-29.52	Peak	1.25	135	
4810	33.57	V	54	-20.43	Avg	1.25	135	
7215	45.36	V	74	-28.64	Peak	1.35	155	
7215	33.28	V	54	-20.72	Avg	1.35	155	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #1
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	81.39	H	94	-12.61	Peak	2.25	135	
2405	76.61	H	94	-17.39	Avg	2.25	135	
4810	45.41	H	74	-28.59	Peak	1.25	135	
4810	36.89	H	54	-17.11	Avg	1.25	135	
7215	47.09	H	74	-26.91	Peak	1.35	155	
7215	35.25	H	54	-18.75	Avg	1.35	155	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #1
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	86.31	V	94	-7.69	Peak	1.25	135	
2445	81.76	V	94	-12.24	Avg	1.25	135	
4890	47.58	V	74	-26.42	Peak	1.25	135	
4890	40.01	V	54	-13.99	Avg	1.25	135	
7335	45.54	V	74	-28.46	Peak	1.35	165	
7335	33.58	V	54	-20.42	Avg	1.35	165	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #1
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	83.83	H	94	-10.17	Peak	2.25	225	
2445	78.81	H	94	-15.19	Avg	2.25	225	
4890	47.05	H	74	-26.95	Peak	1.25	135	
4890	39.88	H	54	-14.12	Avg	1.25	135	
7335	47.36	H	74	-26.64	Peak	1.35	165	
7335	35.47	H	54	-18.53	Avg	1.35	165	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #1
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	87.21	V	94	-6.79	Peak	2.25	135	
2480	82.69	V	94	-11.31	Avg	2.25	135	
4960	45.28	V	74	-28.72	Peak	1.25	135	
4960	36.81	V	54	-17.19	Avg	1.25	135	
7440	45.21	V	74	-28.79	Peak	1.35	165	
7440	33.79	V	54	-20.21	Avg	1.35	165	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #1
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	87.9	H	94	-6.1	Peak	2	180	
2480	83.4	H	94	-10.6	Avg	2	180	
4960	49.01	H	74	-24.99	Peak	1.25	135	
4960	42.76	H	54	-11.24	Avg	1.25	135	
7440	47.87	H	74	-26.13	Peak	1.25	135	
7440	35.37	H	54	-18.63	Avg	1.25	135	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC Class B and RSS-210

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Y-Axis - Antenna #1
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Receiver Mode
								from 1 GHz to 25 GHz

FCC 15.249 and FCC Class B

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/17/2010
Lab: B
Tested By: Kyle Fujimoto

Digital Portion of the EUT and Non-Harmonic Emissions from the EUT
Y-Axis - Antenna #1

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Non-Harmonic
								Emissions from the Transmitter
								from 10 kHz to 25 GHz
								No Emissions Found
								from the Digital Portion
								from 10 kHz to 25 GHz
								Tested in Both Vertical
								and Horizontal Polarizations

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #2
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	83.43	V	94	-10.57	Peak	1.25	315	
2405	79.23	V	94	-14.77	Avg	1.25	315	
4810	49.18	V	74	-24.82	Peak	1.25	225	
4810	37.43	V	54	-16.57	Avg	1.25	225	
7215	45.84	V	74	-28.16	Peak	1.35	315	
7215	33.56	V	54	-20.44	Avg	1.35	315	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #2
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	82.42	H	94	-11.58	Peak	2.25	225	
2405	78.08	H	94	-15.92	Avg	2.25	225	
4810	47.69	H	74	-26.31	Peak	2.25	225	
4810	38.99	H	54	-15.01	Avg	2.25	225	
7215	47.25	H	74	-26.75	Peak	1.25	135	
7215	35.51	H	54	-18.49	Avg	1.25	135	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #2
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	83.64	V	94	-10.36	Peak	1.25	135	
2445	79.32	V	94	-14.68	Avg	1.25	135	
4890	49.16	V	74	-24.84	Peak	1.25	155	
4890	41.23	V	54	-12.77	Avg	1.25	155	
7335	47.52	V	74	-26.48	Peak	1.25	135	
7335	35.22	V	54	-18.78	Avg	1.25	135	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #2
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	85.55	H	94	-8.45	Peak	1.25	135	
2445	81.17	H	94	-12.83	Avg	1.25	135	
4890	47.51	H	74	-26.49	Peak	1.35	155	
4890	39.58	H	54	-14.42	Avg	1.35	155	
7335	46.87	H	74	-27.13	Peak	1.25	165	
7335	35.21	H	54	-18.79	Avg	1.25	165	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #2
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	88.6	V	94	-5.4	Peak	2.25	135	
2480	84.2	V	94	-9.8	Avg	2.25	135	
4960	48.86	V	74	-25.14	Peak	2	225	
4960	41.55	V	54	-12.45	Avg	2	225	
7440	43.87	V	74	-30.13	Peak	2.25	225	
7440	33.31	V	54	-20.69	Avg	2.25	225	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #2
Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	86.37	H	94	-7.63	Peak	1.25	180	
2480	81.64	H	94	-12.36	Avg	1.25	180	
4960	48.82	H	74	-25.18	Peak	1.25	135	
4960	43.16	H	54	-10.84	Avg	1.25	135	
7440	46.71	H	74	-27.29	Peak	1.25	155	
7440	35.21	H	54	-18.79	Avg	1.25	155	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC Class B and RSS-210

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Y-Axis - Antenna #2
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Receiver Mode
								from 1 GHz to 25 GHz

FCC 15.249 and FCC Class B

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/17/2010
Lab: B
Tested By: Kyle Fujimoto

Digital Portion of the EUT and Non-Harmonic Emissions from the EUT
Y-Axis - Antenna #2

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Non-Harmonic
								Emissions from the Transmitter
								from 10 kHz to 25 GHz
								No Emissions Found
								from the Digital Portion
								from 10 kHz to 25 GHz
								Tested in Both Vertical
								and Horizontal Polarizations

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #1
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	82.57	V	94	-11.43	Peak	2.25	0	
2405	78.17	V	94	-15.83	Avg	2.25	0	
4810	45.59	V	74	-28.41	Peak	1.25	135	
4810	35.79	V	54	-18.21	Avg	1.25	135	
7215	45.29	V	74	-28.71	Peak	1.25	155	
7215	33.23	V	54	-20.77	Avg	1.25	155	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #1
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	80.54	H	94	-13.46	Peak	2.25	135	
2405	76	H	94	-18	Avg	2.25	135	
4810	46.14	H	74	-27.86	Peak	1.25	135	
4810	37.32	H	54	-16.68	Avg	1.25	135	
7215	47.54	H	74	-26.46	Peak	1.35	165	
7215	35.72	H	54	-18.28	Avg	1.35	165	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #1
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	87.21	V	94	-6.79	Peak	1.25	135	
2445	83.21	V	94	-10.79	Avg	1.25	135	
4890	43.53	V	74	-30.47	Peak	1.25	165	
4890	35.04	V	54	-18.96	Avg	1.25	165	
7335	45.71	V	74	-28.29	Peak	1.35	175	
7335	33.59	V	54	-20.41	Avg	1.35	175	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #1
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	86.22	H	94	-7.78	Peak	1.25	135	
2445	81.67	H	94	-12.33	Avg	1.25	135	
4890	46.09	H	74	-27.91	Peak	1.25	165	
4890	36.79	H	54	-17.21	Avg	1.25	165	
7335	45.68	H	74	-28.32	Peak	1.35	175	
7335	35.52	H	54	-18.48	Avg	1.35	175	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #1
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	86.41	V	94	-7.59	Peak	2.25	135	
2480	82.04	V	94	-11.96	Avg	2.25	135	
4960	48.31	V	74	-25.69	Peak	1.25	180	
4960	42.72	V	54	-11.28	Avg	1.25	180	
7440	44.61	V	74	-29.39	Peak	1.25	135	
7440	33.77	V	54	-20.23	Avg	1.25	135	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #1
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	87.2	H	94	-6.8	Peak	2	180	
2480	82.35	H	94	-11.65	Avg	2	180	
4960	47.12	H	74	-26.88	Peak	1.25	135	
4960	40.33	H	54	-13.67	Avg	1.25	135	
7440	49.33	H	74	-24.67	Peak	1.25	135	
7440	35.51	H	54	-18.49	Avg	1.25	135	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC Class B and RSS-210

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Z-Axis - Antenna #1
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Receiver Mode
								from 1 GHz to 25 GHz

FCC 15.249 and FCC Class B

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/17/2010
Lab: B
Tested By: Kyle Fujimoto

Digital Portion of the EUT and Non-Harmonic Emissions from the EUT
Z-Axis - Antenna #1

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Non-Harmonic
								Emissions from the Transmitter
								from 10 kHz to 25 GHz
								No Emissions Found
								from the Digital Portion
								from 10 kHz to 25 GHz
								Tested in Both Vertical
								and Horizontal Polarizations

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #2
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	83.08	V	94	-10.92	Peak	2.25	0	
2405	78.86	V	94	-15.14	Avg	2.25	0	
4810	43.86	V	74	-30.14	Peak	1.25	135	
4810	34.06	V	54	-19.94	Avg	1.25	135	
7215	44.77	V	74	-29.23	Peak	1.25	135	
7215	33.41	V	54	-20.59	Avg	1.25	135	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Antenna #2
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	82.56	H	94	-11.44	Peak	1.25	180	
2405	78.24	H	94	-15.76	Avg	1.25	180	
4810	46.71	H	74	-27.29	Peak	1.25	135	
4810	38.65	H	54	-15.35	Avg	1.25	135	
7215	47.03	H	74	-26.97	Peak	1.35	165	
7215	35.26	H	54	-18.74	Avg	1.35	165	
9620								**No Emission**
9620								**Detected**
12025								**No Emission**
12025								**Detected**
14430								**No Emission**
14430								**Detected**
16835								**No Emission**
16835								**Detected**
19240								**No Emission**
19240								**Detected**
21645								**No Emission**
21645								**Detected**
24050								**No Emission**
24050								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #2
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	84.33	V	94	-9.67	Peak	1.25	135	
2445	80.16	V	94	-13.84	Avg	1.25	135	
4890	47.15	V	74	-26.85	Peak	1.25	135	
4890	40.02	V	54	-13.98	Avg	1.25	135	
7335	47.02	V	74	-26.98	Peak	1.25	135	
7335	35.23	V	54	-18.77	Avg	1.25	135	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Antenna #2
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2445	83.05	H	94	-10.95	Peak	1.25	135	
2445	78.68	H	94	-15.32	Avg	1.25	135	
4890	46.71	H	74	-27.29	Peak	1.25	135	
4890	37.93	H	54	-16.07	Avg	1.25	135	
7335	46.92	H	74	-27.08	Peak	1.35	180	
7335	35.34	H	54	-18.66	Avg	1.35	180	
9780								**No Emission**
9780								**Detected**
12225								**No Emission**
12225								**Detected**
14670								**No Emission**
14670								**Detected**
17115								**No Emission**
17115								**Detected**
19560								**No Emission**
19560								**Detected**
22005								**No Emission**
22005								**Detected**
24450								**No Emission**
24450								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #2
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	87.06	V	94	-6.94	Peak	2.25	135	
2480	82.74	V	94	-11.26	Avg	2.25	135	
4960	47.24	V	74	-26.76	Peak	1.25	180	
4960	41.59	V	54	-12.41	Avg	1.25	180	
7440	44.61	V	74	-29.39	Peak	1.35	135	
7440	33.41	V	54	-20.59	Avg	1.35	135	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

High Channel - Antenna #2
Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	88.25	H	94	-5.75	Peak	1.25	180	
2480	83.81	H	94	-10.19	Avg	1.25	180	
4960	46.71	H	74	-27.29	Peak	1.25	180	
4960	38.16	H	54	-15.84	Avg	1.25	180	
7440	46.91	H	74	-27.09	Peak	1.35	180	
7440	35.25	H	54	-18.75	Avg	1.35	180	
9920								**No Emission**
9920								**Detected**
12400								**No Emission**
12400								**Detected**
14880								**No Emission**
14880								**Detected**
17360								**No Emission**
17360								**Detected**
19840								**No Emission**
19840								**Detected**
22320								**No Emission**
22320								**Detected**
24800								**No Emission**
24800								**Detected**

FCC Class B and RSS-210

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Z-Axis - Antenna #2
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Receiver Mode
								from 1 GHz to 25 GHz

FCC 15.249 and FCC Class B

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/17/2010
Lab: B
Tested By: Kyle Fujimoto

Digital Portion of the EUT and Non-Harmonic Emissions from the EUT
Z-Axis - Antenna #2

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found
								from the Non-Harmonic
								Emissions from the Transmitter
								from 10 kHz to 25 GHz
								No Emissions Found
								from the Digital Portion
								from 10 kHz to 25 GHz
								Tested in Both Vertical
								and Horizontal Polarizations

BAND EDGES

DATA SHEETS

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Band Edges - Antenna #1
Y-Axis (Worst Case)

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	83.27	V	94	-10.73	Peak	1.25	315	Fundamental of Channel 1
2405	78.74	V	94	-15.26	Avg	1.25	315	@ 3 meters
2400	44.35	V	74	-29.65	Peak	1.25	315	**No** Marker Delta Method
2400	34.16	V	54	-19.84	Avg	1.25	315	Method Used
2480	87.21	V	94	-6.79	Peak	2.25	135	Fundamental of Channel 11
2480	82.69	V	94	-11.31	Avg	2.25	135	@ 3 meters
2483.5	56.9	V	74	-17.1	Peak	2.25	135	**No** Marker Delta Method
2483.5	46.83	V	54	-7.17	Avg	2.25	135	Method Used

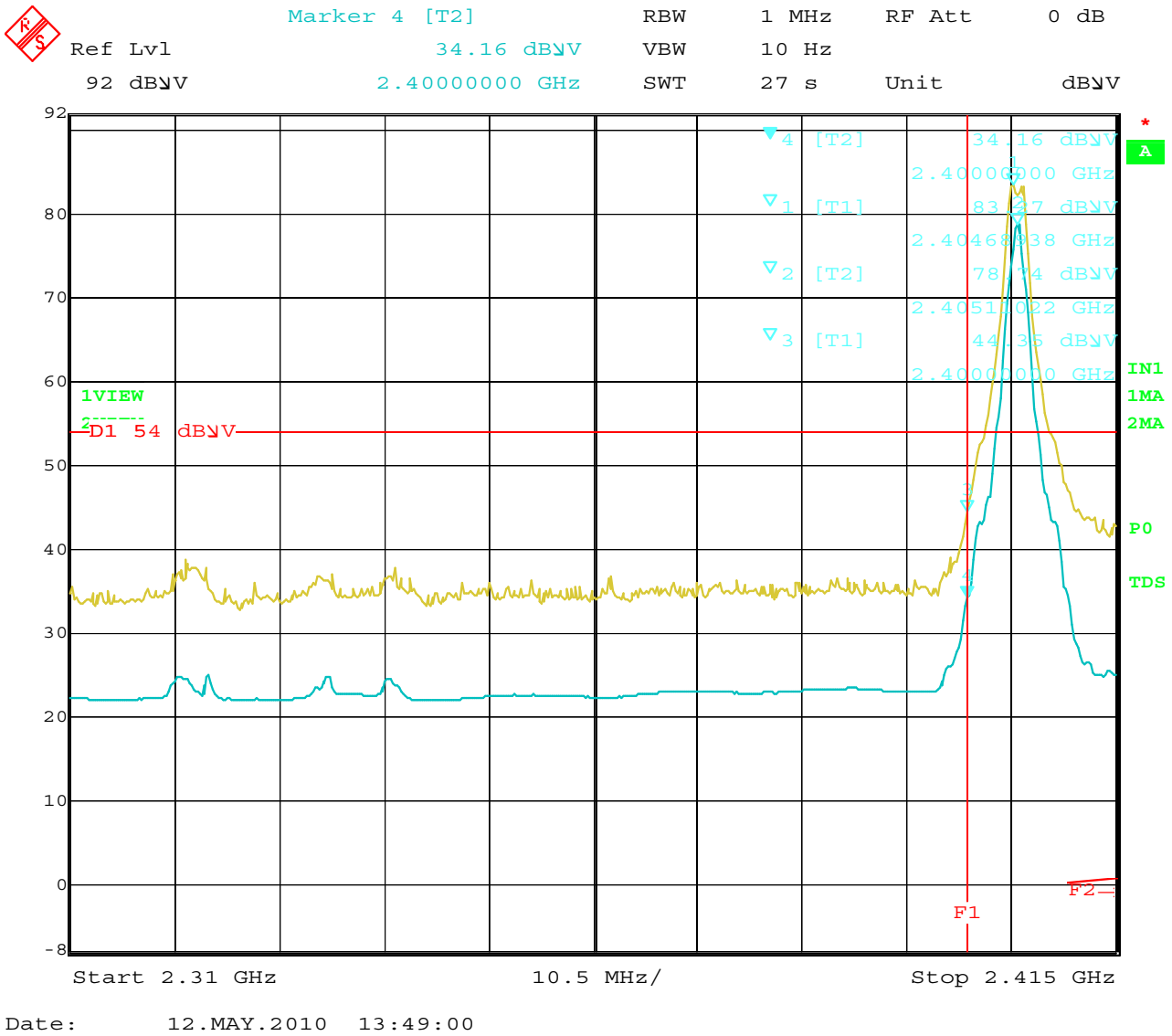
FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

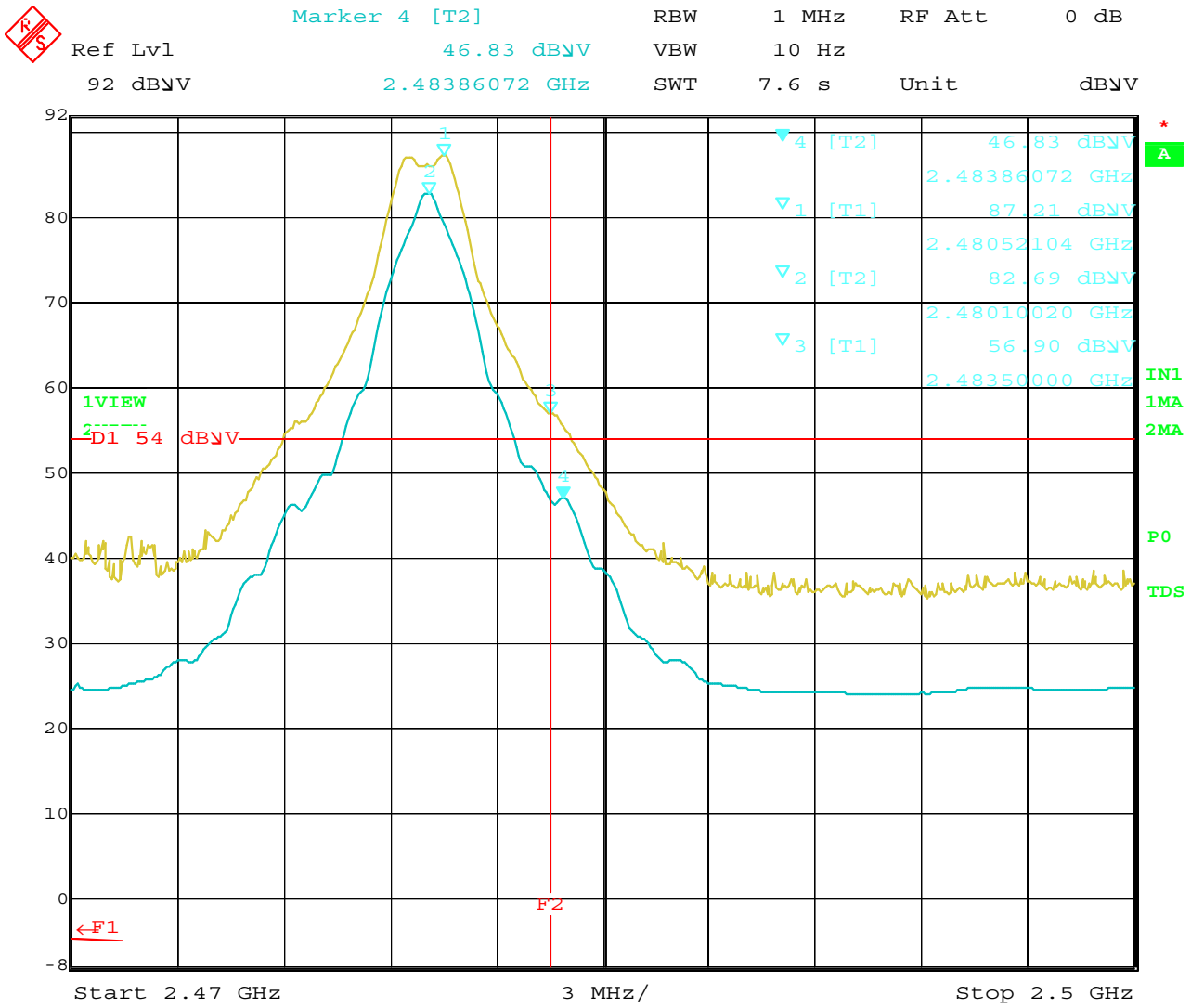
Date: 05/12/2010
Lab: B
Tested By: Kyle Fujimoto

Band Edges - Antenna #1
Y-Axis (Worst Case)

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	81.39	H	94	-12.61	Peak	2.25	135	Fundamental of Channel 1
2405	76.61	H	94	-17.39	Avg	2.25	135	@ 3 meters
2400	43.41	H	74	-30.59	Peak	2.25	135	**No** Marker Delta Method
2400	32.54	H	54	-21.46	Avg	2.25	135	Method Used
2480	87.9	H	94	-6.1	Peak	2	180	Fundamental of Channel 11
2480	83.4	H	94	-10.6	Avg	2	180	@ 3 meters
2483.5	57.63	H	74	-16.37	Peak	2	180	**No** Marker Delta Method
2483.5	47.64	H	54	-6.36	Avg	2	180	Method Used

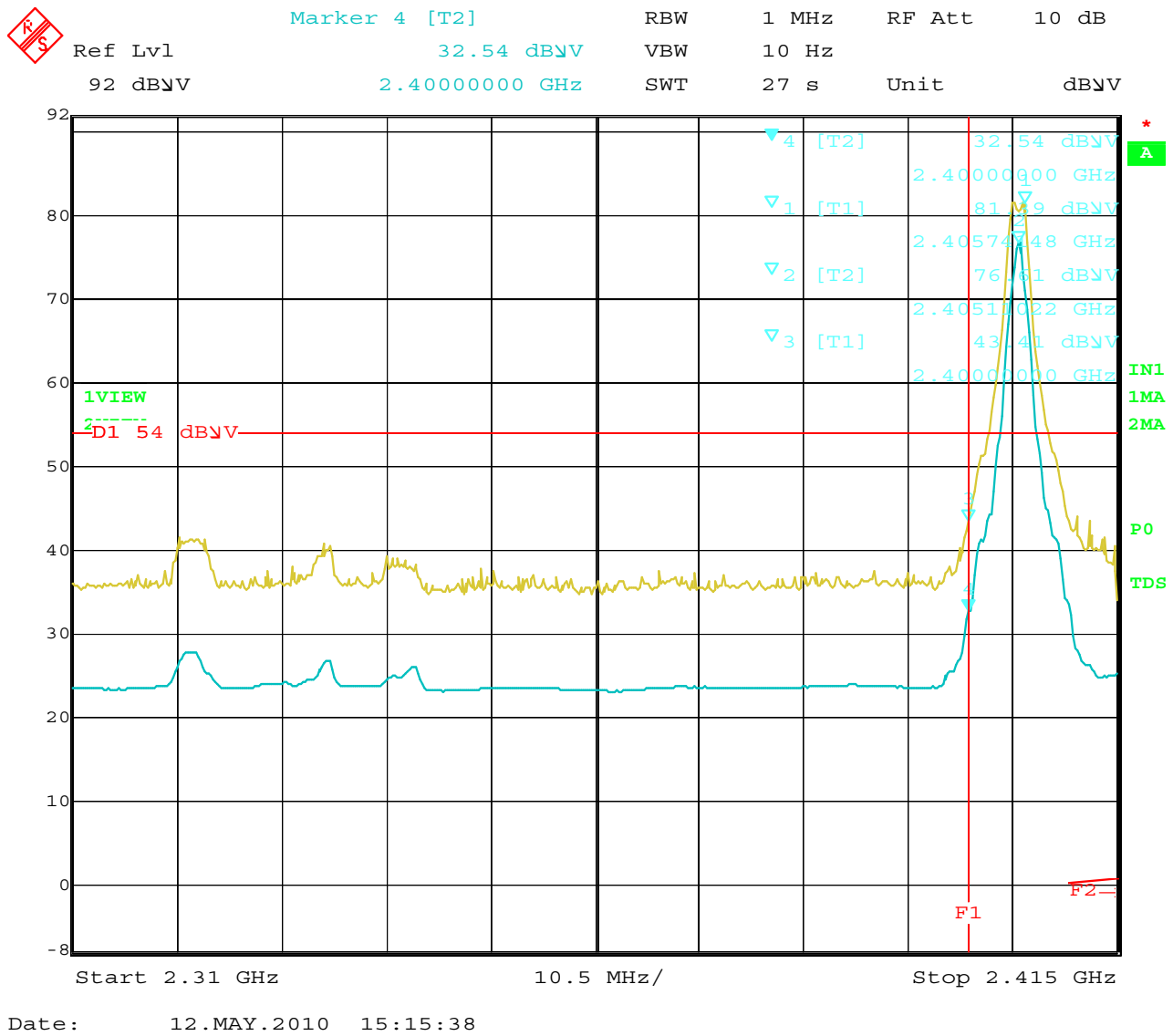


Band Edge – Low Channel – Vertical Polarization – Y-Axis (Worst Case) – Antenna 1

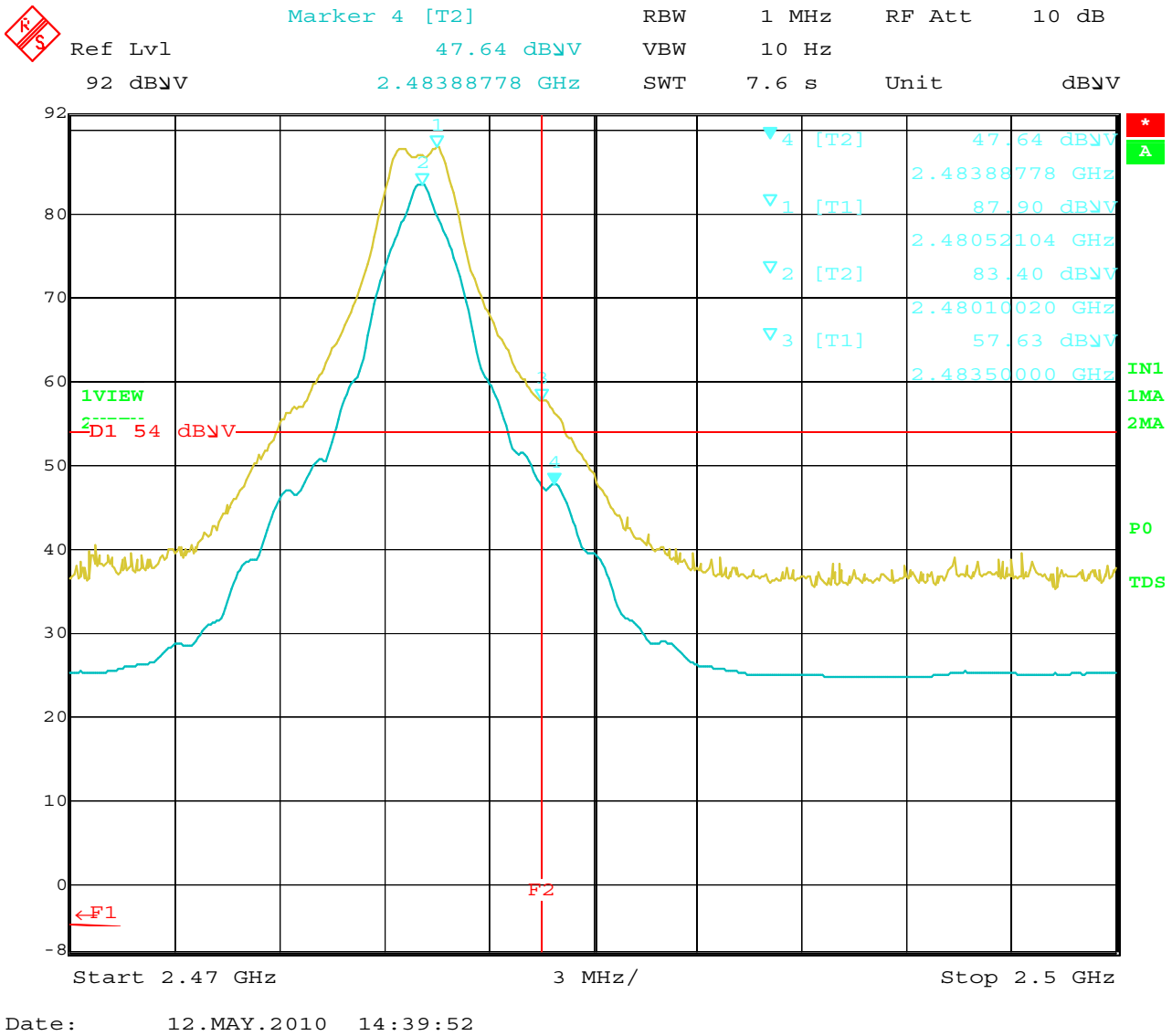


Date: 12.MAY.2010 14:14:33

Band Edge – High Channel – Vertical Polarization – Y-Axis (Worst Case) – Antenna 1



Band Edge – Low Channel – Horizontal Polarization – Y-Axis (Worst Case) – Antenna 1



Date: 12.MAY.2010 14:39:52

Band Edge – High Channel – Horizontal Polarization – Y-Axis (Worst Case) – Antenna 1

FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

Band Edges - Antenna #2
Y-Axis (Worst Case)

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	83.43	V	94	-10.57	Peak	1.25	315	Fundamental of Channel 1
2405	79.23	V	94	-14.77	Avg	1.25	315	@ 3 meters
2400	44.48	V	74	-29.52	Peak	1.25	315	**No** Marker Delta Method
2400	34.86	V	54	-19.14	Avg	1.25	315	Method Used
2480	88.6	V	94	-5.4	Peak	2.25	135	Fundamental of Channel 11
2480	84.2	V	94	-9.8	Avg	2.25	135	@ 3 meters
2483.5	58.61	V	74	-15.39	Peak	2.25	135	**No** Marker Delta Method
2483.5	48.82	V	54	-5.18	Avg	2.25	135	Method Used

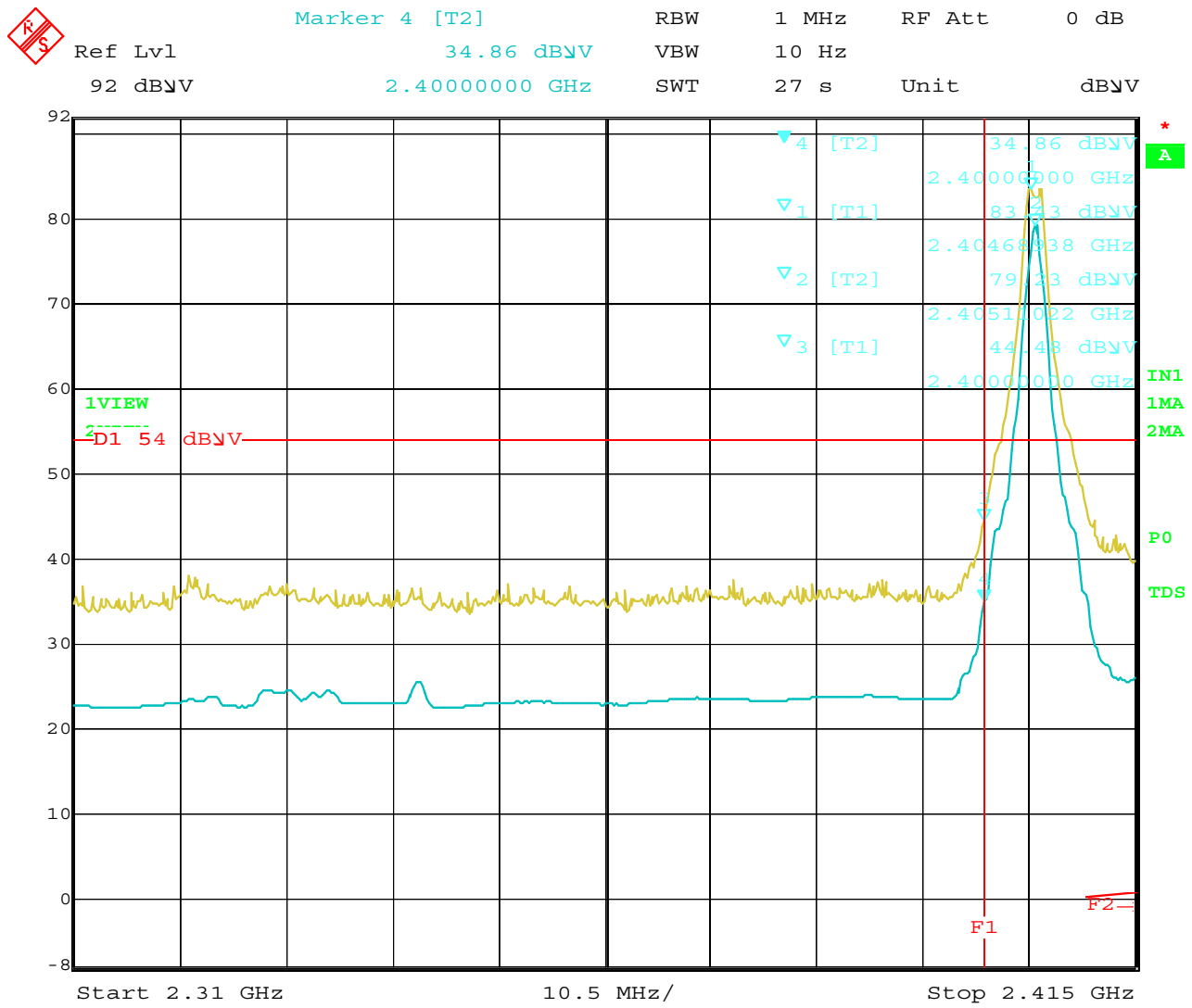
FCC 15.249

Crown Equipment Corporation
Operator Transceiver
Model: 148454

Date: 05/13/2010
Lab: B
Tested By: Kyle Fujimoto

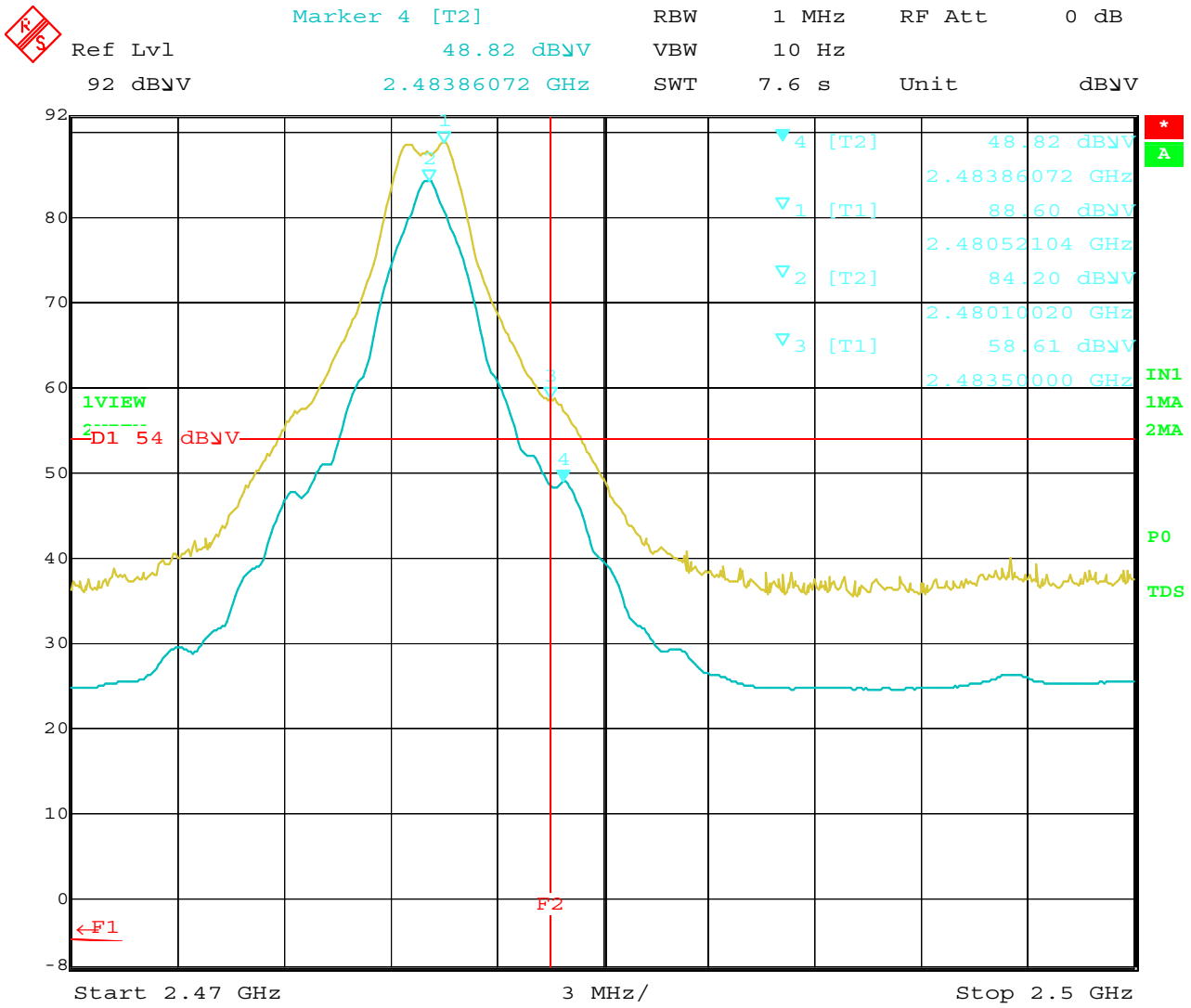
Band Edges - Antenna #2
Z-Axis (Worst Case)

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	82.56	H	94	-11.44	Peak	1.25	180	Fundamental of Channel 1
2405	78.24	H	94	-15.76	Avg	1.25	180	@ 3 meters
2400	43.51	H	74	-30.49	Peak	1.25	180	**No** Marker Delta Method
2400	33.42	H	54	-20.58	Avg	1.25	180	Method Used
2480	88.25	H	94	-5.75	Peak	1.25	180	Fundamental of Channel 11
2480	83.81	H	94	-10.19	Avg	1.25	180	@ 3 meters
2483.5	58.09	H	74	-15.91	Peak	1.25	180	**No** Marker Delta Method
2483.89	47.94	H	54	-6.06	Avg	1.25	180	Method Used



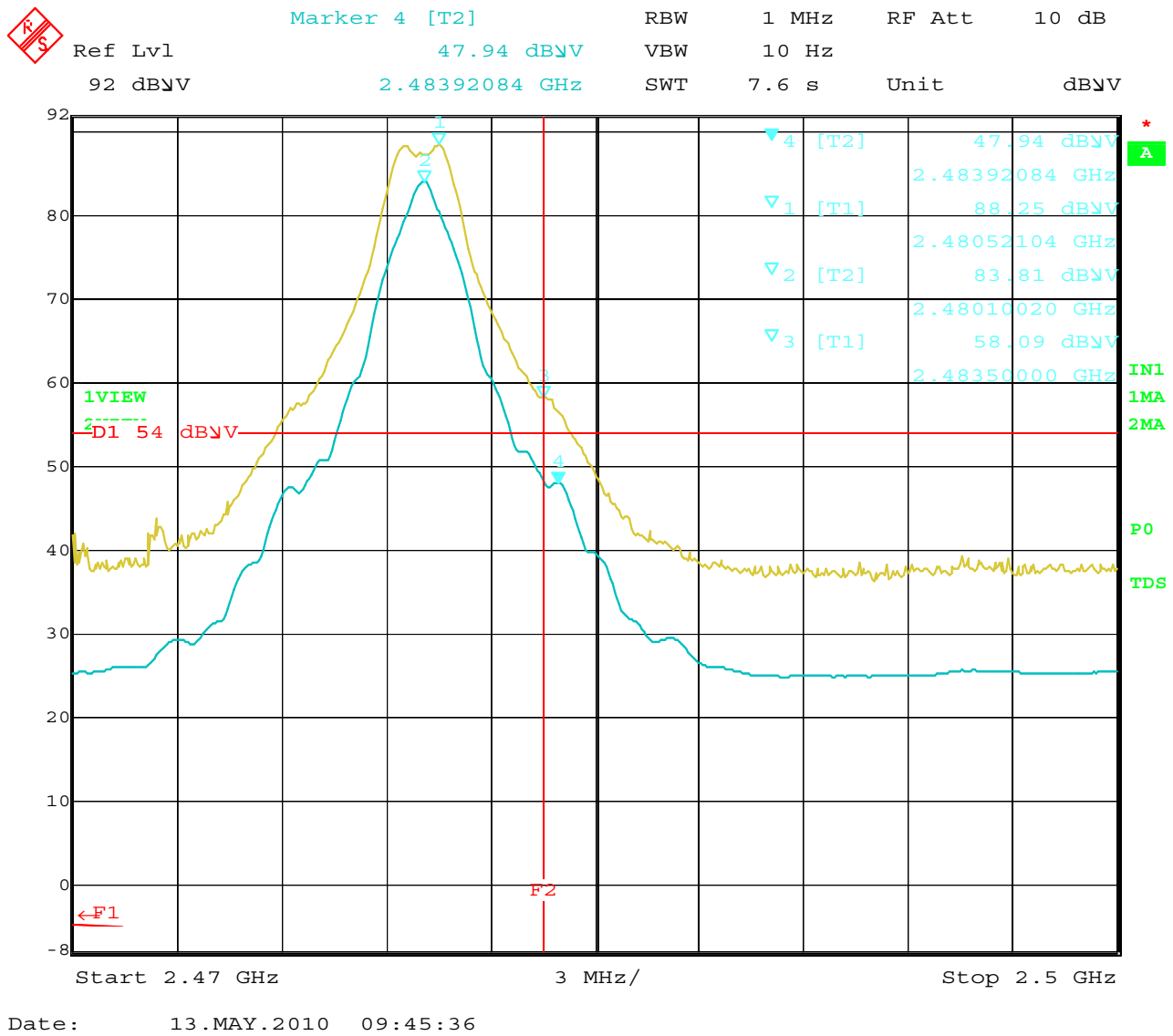
Date: 13.MAY.2010 08:32:07

Band Edge – Low Channel – Vertical Polarization – Y-Axis (Worst Case) – Antenna 2

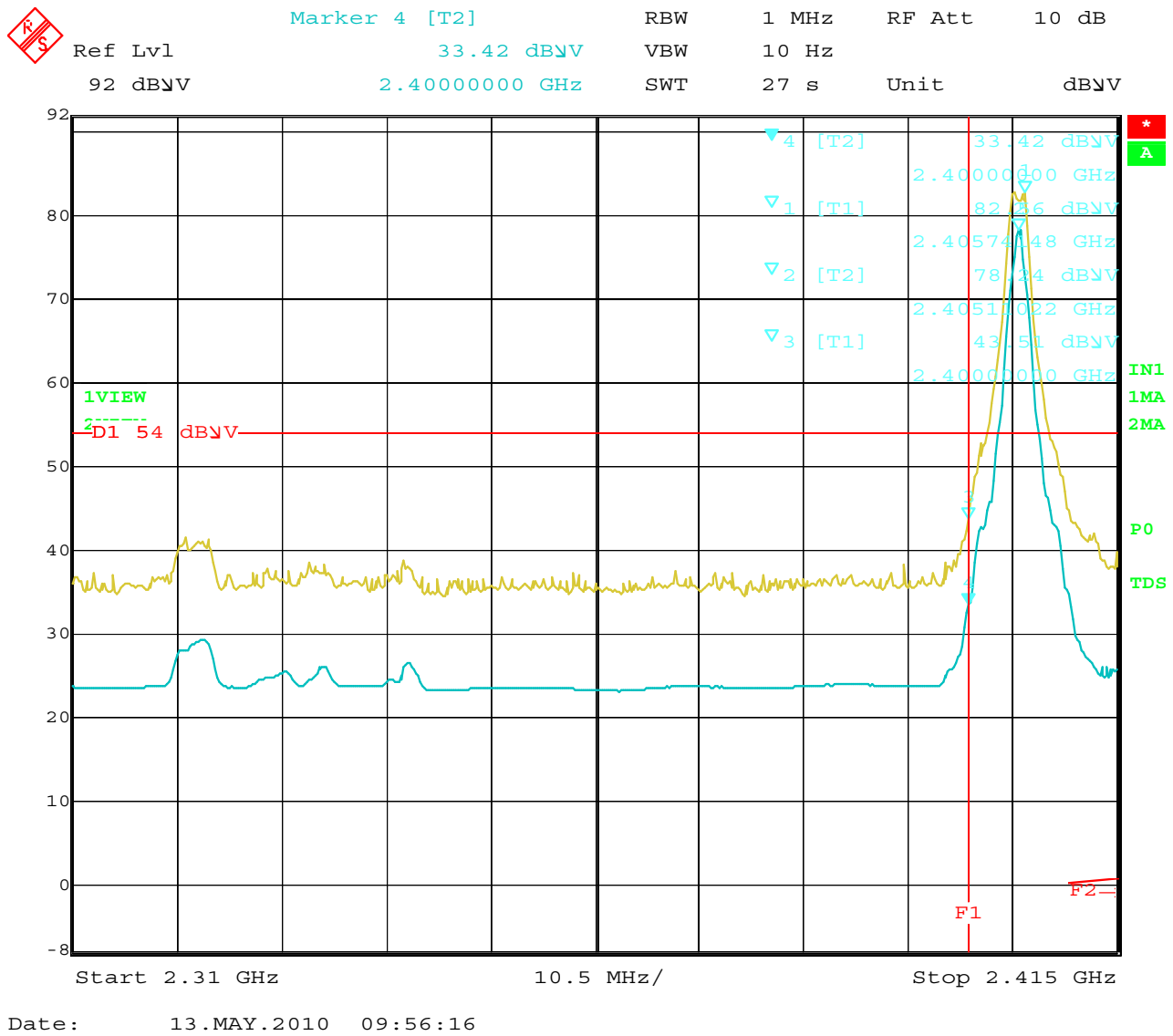


Date: 13.MAY.2010 09:00:32

Band Edge – High Channel – Vertical Polarization – Y-Axis (Worst Case) – Antenna 2



Band Edge – Low Channel – Horizontal Polarization – Z-Axis (Worst Case) – Antenna 2



Band Edge – High Channel – Horizontal Polarization – Z-Axis (Worst Case) – Antenna 2