Electromagnetic Compatibility Test Report

Tests Performed on a CTrack, LLC

GPS Tracking Device, Model Recon II

Radiometrics Document RP-7869A

ACCREDITED
TESTING CERT #1495.01

Product Detail: FCC ID: 2ACNR-RECONII Equipment type: Part 15, Low power 2.4 GHz transmitter Equipment Class: DXX
Test Standards: US CFR Title 47, Chapter I, FCC Part 15 Subpart C FCC Part 15 CFR Title 47: 2014 This report concerns: Original Grant for Certification FCC Part 15.249; 2.4 GHz

Tests Performed For:	*Test Facility:*
CTrack, LLC 8361 East Gelding Dr. Scottsdale, AZ 85260	**Radiometrics Midwest Corporation** 12 East Devonwood Romeoville, IL 60446 (815) 293-0772

Test Date(s): (Month-Day-Year)
July 14 thru August 1, 2014

Document RP-7869B Revisions:

Rev.	Issue Date	Affected Sections	Revised By
0	October 13, 2014		

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1 ADMINISTRATIVE DATA

Equipment Under Test: A CTrack, LLC, GPS Tracking Device Model: Recon II Serial Number: none This will be referred to as the EUT in this Report	
Date EUT Received at Radiometrics: (Month-Day-Year) July 8, 2014	*Test Date(s): (Month-Day-Year)* July 14 thru August 1, 2014
Test Report Written By: Joseph Strzelecki Senior EMC Engineer	*Test Witnessed By:* The tests were not witnessed by CTrack, LLC
Radiometrics' Personnel Responsible for Test: Joseph Strzelecki 10/08/2014 Joseph Strzelecki Senior EMC Engineer NARTE EMC-000877-NE	*Test Report Approved By* Chris W. Carlson 10/08/2014 Chris W. Carlson Director of Engineering NARTE EMC-000921-NE

2 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is a GPS Tracking Device, Model Recon II, manufactured by CTrack, LLC. The detailed test results are presented in a separate section. The following is a summary of the test results.

Part 15 Test Results

Environmental Phenomena	Frequency Range	Basic Standard	Test Result
RF Radiated Emissions	30-25,000 MHz	FCC Part 15	Pass
Conducted Emissions, AC Mains	0.15 - 30 MHz	FCC Part 15	Pass
Occupied Bandwidth Test	Fundamental Freq.	FCC Part 15	Pass

2.1 RF Exposure Compliance Requirements

Since the power output is less than 10 mW, the EUT meets the FCC requirement for RF exposure. There are no power level adjustments available to the end user. The antenna is permanently attached. The detailed calculations for RF Exposure are presented in a separate document.

3 EQUIPMENT UNDER TEST (EUT) DETAILS

3.1 EUT Description

The EUT is a GPS Tracking Device, Model Recon II, manufactured by CTrack, LLC. The EUT was in good working condition during the tests, with no known defects.

3.1.1 FCC Section 15.203 Antenna Requirements

The antenna is permanently attached to the printed circuit board. The antenna is internal to the EUT and it is not readily available to be modified by the end user. Therefore, it meets the 15.203 Requirements.

3.2 Related Submittals

CTrack, LLC is not submitting any other products simultaneously for equipment authorization related to the EUT.

4 TESTED SYSTEM DETAILS

4.1 Tested System Configuration

The system was configured for testing in a typical fashion. The EUT was placed on an 80-cm high, nonconductive test stand. The testing was performed in conditions as close as possible to installed conditions. Wiring was consistent with manufacturer's recommendations.

The EUT was tested as a stand-alone device. Power was supplied at 115 VAC, 60 Hz single-phase to its external battery charger.

The identification for all equipment, plus descriptions of all cables used in the tested system, are:

Tested System Configuration List

Item	Description	Type*	Manufacturer	Model Number	Serial Number
	GPS Tracking Device	E	CTrack, LLC	Recon II	none
	USB power Supply (USB PS-01)	P	Apple	A1385	D292034F1QYDHLHAE

* Type: E = EUT, P = Peripheral,

List of System Cables

QTY	Length (m)	Cable Description	Shielded?
1	1.5	USB charging cable Cord from Charger to EUT	Yes
1	3.0	GPS cable	Yes
1	1.0	Interface cable	No
1	1.0	Audio Cable	No

4.2 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

4.3 Equipment Modifications

No modifications were made to the EUT at Radiometrics' test facility in order to comply with the standards listed in this report.

5 TEST SPECIFICATIONS AND RELATED DOCUMENTS

Document	Date	Title
FCC CFR Title 47	2014	Code of Federal Regulations Title 47, Chapter 1, Federal Communications Commission, Part 15 - Radio Frequency Devices
ANSI C63.4-2009	2009	Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10-2009	2009	American National Standard for Testing Unlicensed Wireless Devices

The test procedures used are in accordance with the ANSI document C63.10. Radiated testing was performed at an antenna to EUT distance of 3 meters.

6 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 2005 "General Requirements for the Competence of Calibration and Testing Laboratories". Radiometrics' Lab Code is 121191 and Certification Number is 1495.01. Radiometrics' scope of accreditation includes all of the test methods listed herein. A copy of the accreditation can be accessed on our web site (www.radiomet.com). Radiometrics accreditation status can be verified at A2LA's web site (www.a2la2.org).

The following is a list of shielded enclosures located in Romeoville, Illinois used during the tests:

Chamber E: Is a custom made anechoic chamber that measures 52' L X 30' W X 18' H. The walls and ceiling are fully lined with RF absorber. Pro-shield of Collinsville, Oklahoma manufactured the chamber. The floor has a 9' x 9' section of microwave absorber for testing above 1 GHz.

Test Station F: Is an area that measures 10' D X 12' W X 10' H. The floor and back wall are metal shielded. This area is used for conducted emissions measurements.

A separate ten-foot long, brass plated, steel ground rod attached via a 6 inch copper braid grounds each of the above chambers. Each enclosure is also equipped with low-pass power line filters.

The FCC has accepted these sites as test site number US1065. The FCC test site Registration Number is 732175. Details of the site characteristics are on file with the Industry Canada as site number IC 8727A-1.

A complete list of the test equipment is provided herein. The calibration due dates are indicated on the equipment list. The equipment is calibrated in accordance to ANSI/NCSL Z540-1 with traceability to the National Institute of Standards and Technology (NIST).

7 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS

There were no deviations or exclusions from the test specifications.

8 CERTIFICATION

Radiometrics Midwest Corporation certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specification and the data contained herein was taken with calibrated test equipment. The results relate only to the EUT listed herein.

9 TEST EQUIPMENT TABLE

RMC ID	Manufacturer	Description	Model No.	Serial No.	Frequency Range	Cal Period	Cal Date
AMP-05	RMC/Celeritek	Pre-amplifier	MW110G	1001	1.0-12GHz	12 Mo.	07/01/14
AMP-20	Avantek	Pre-amplifier	SF8-0652	15221	8-18GHz	12 Mo	01/17/14
AMP-22	Anritsu	Pre-amplifier	MH648A	M23969	0.1-1200MHz	12 Mo.	01/15/14
AMP-29	HP / Agilent	Amplifier	11975A	2304A00158	2-8 GHz	12 Mo.	12/20/13
ANT-13	EMCO	Horn Antenna	3115	2502	1.0-18GHz	24 Mo.	12/05/12
ANT-44	ARA	Super Log Antenna	SL-20M2G	1002	20-2000MHz	24 Mo.	12/10/13
ANT-48	RMC	Std Gain Horn	HW2020	1001	18-26 GHz	12 Mo.	08/08/13
LSN-01	Electrometrics	50 uH LISN	FCC/VDE 50/2	1001	0.01-30MHz	24 Mo.	06/21/13
MXR-02	HP / Agilent	Harmonic Mixer	11970K	2332A00489	18-26.5GHz	12 Mo.	12/20/13
REC-08	HP / Agilent	Spectrum Analyzer	8566B	2648A13481 2209A01436	30Hz-22GHz	24 Mo.	11/21/13
REC-10	HP / Agilent	EMI Receiver	8546A	3842A00521 3704A00484	30Hz-6GHz	24 Mo.	01/13/14
REC-11	HP / Agilent	Spectrum Analyzer	E7405A	US39110103	9Hz-26.5GHz	12 Mo	06/17/14
THM-02	Fluke	Temp/Humid Meter	971	93490471	N/A	24 Mo.	06/27/13

Note: All calibrated equipment is subject to periodic checks.

10 TEST SECTIONS

11 PART 15 TEST PROCEDURES AND RESULTS

11.1 AC Conducted Emissions

The tests and limits are in accordance with FCC section 15.207.

A computer-controlled analyzer was used to perform the conducted emissions measurements. The frequency range was divided into 500 subranges equally spaced on a logarithmic scale. The computer recorded the peak of each subrange. This data was then plotted on semi-log graph paper generated by the computer and plotter. Adjusting the positions of the cables and orientation of the test system then maximizes the highest emissions.

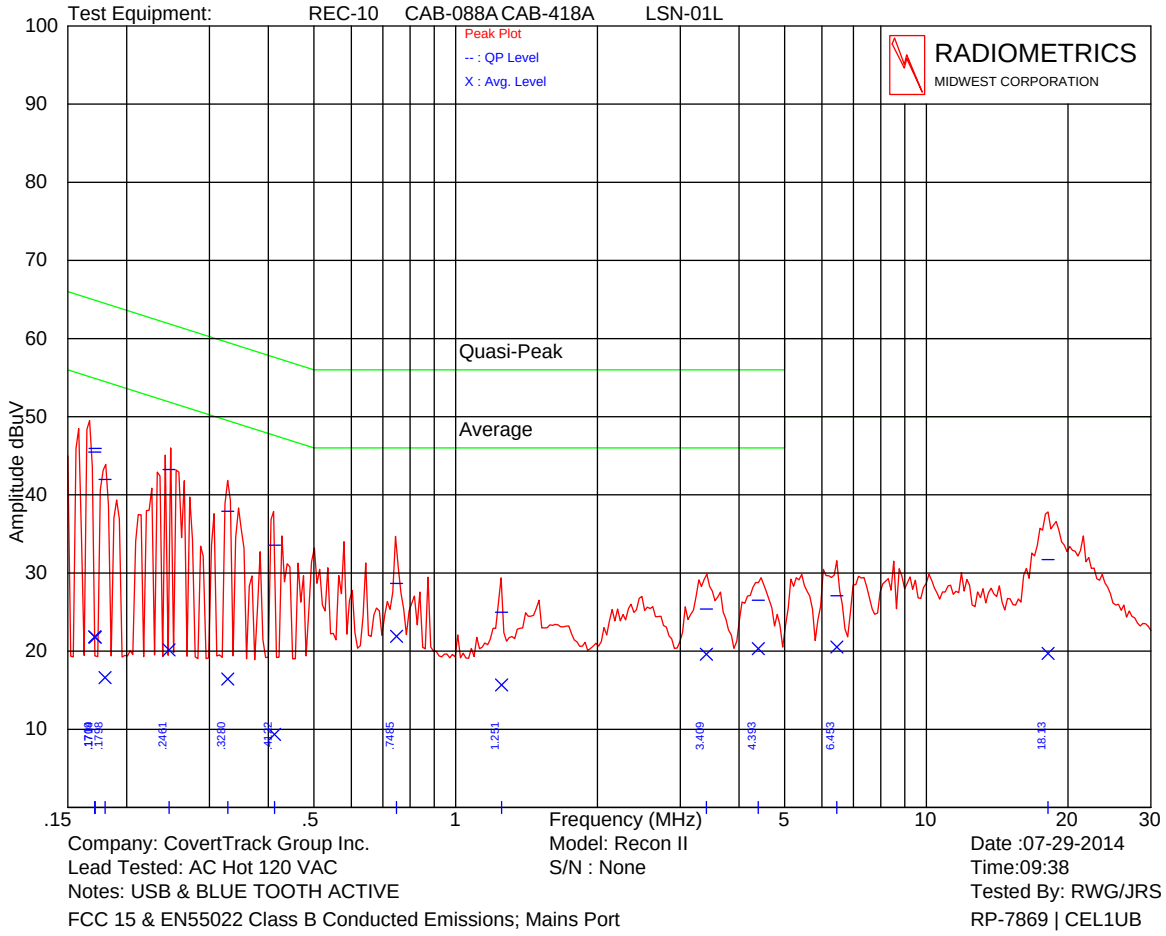
Mains Conducted emission measurements were performed using a 50 Ohm/50 uH Line Impedance Stabilization Network (LISN) as the pick-up device. Measurements were repeated on both leads within the power cord. If the EUT power cord exceeded 80 cm in length, the excess length of the power cord was made into a 30 to 40 cm bundle near the center of the cord. The LISN was placed on the floor at the base of the test platform and electrically bonded to the ground plane.

FCC Limits of Conducted Emissions at the AC Mains Ports

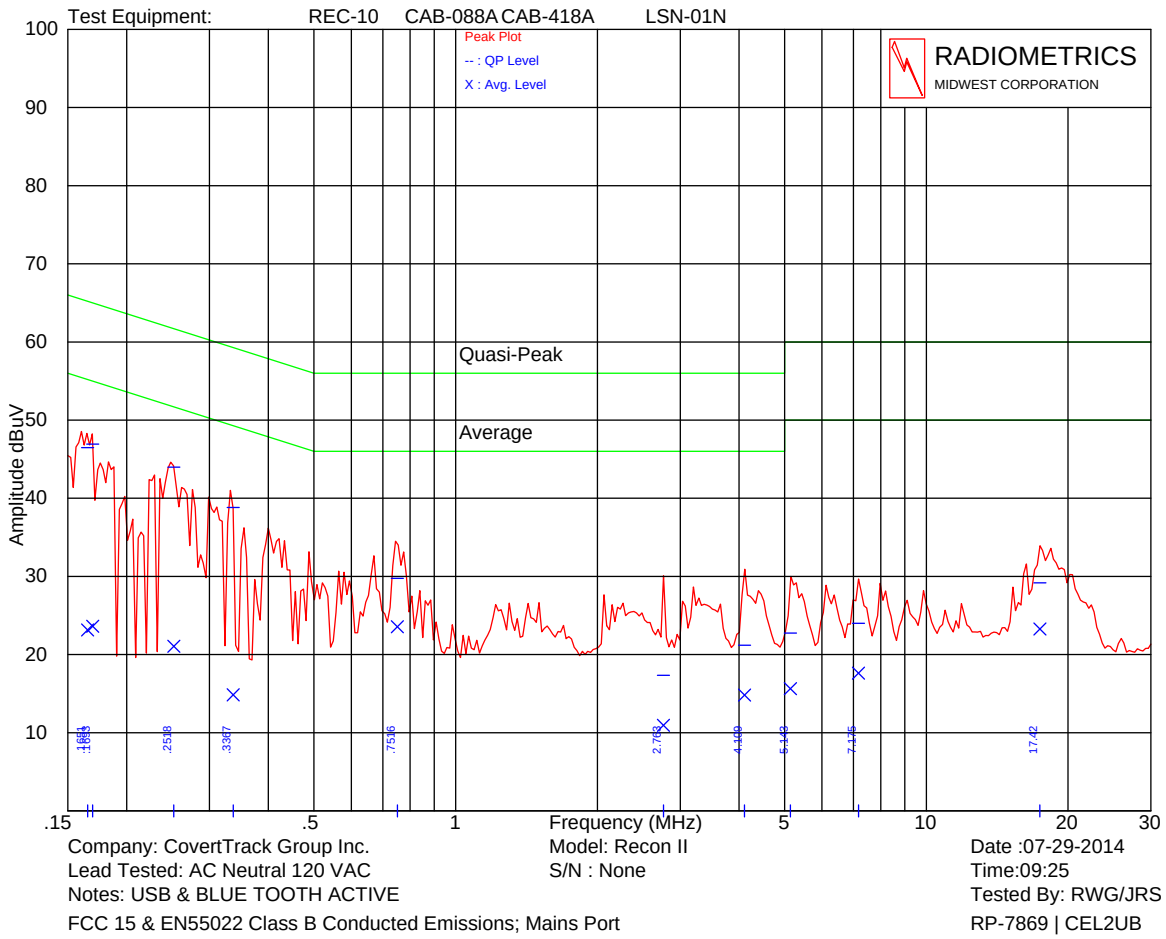
Frequency Range (MHz)	Class B Limits (dBuV)	
	Quasi-Peak	Average
0.150 - 0.50*	66 - 56	56 - 46
0.5 – 5.0	56	46
5.0 - 30	60	50
* The limit decreases linearly with the logarithm of the frequency in this range.		

The initial step in collecting conducted data is a peak detector scan and the plotting of the measurement range. Significant peaks are then marked as shown on the following table, and these signals are then measured with the quasi-peak detector. The following represents the worst case emissions from the host computer (with the EUT connected) power cord, after testing all modes of operation.

Test Date : July 29, 2014
The Amplitude is the final corrected value with cable and LISN Loss.



Lead Tested	Frequency MHz	QP Amplitude	QP Limit	Average Amplitude	Average Limit	Margin dB
AC Hot	0.171	46.0	64.9	21.8	54.9	19.0
AC Hot	0.180	42.0	64.5	16.6	54.5	22.5
AC Hot	0.246	43.2	61.9	20.2	51.9	18.7
AC Hot	0.328	37.9	59.5	16.4	49.5	21.7
AC Hot	0.412	33.6	57.6	9.4	47.6	25.4
AC Hot	0.749	28.7	56.0	21.9	46.0	27.1
AC Hot	1.252	25.0	56.0	15.7	46.0	33.3
AC Hot	3.409	25.4	56.0	19.6	46.0	29.4
AC Hot	4.394	26.5	56.0	20.3	46.0	28.7
AC Hot	6.454	27.1	60.0	20.5	50.0	33.5
AC Hot	18.137	31.7	60.0	19.7	50.0	32.3

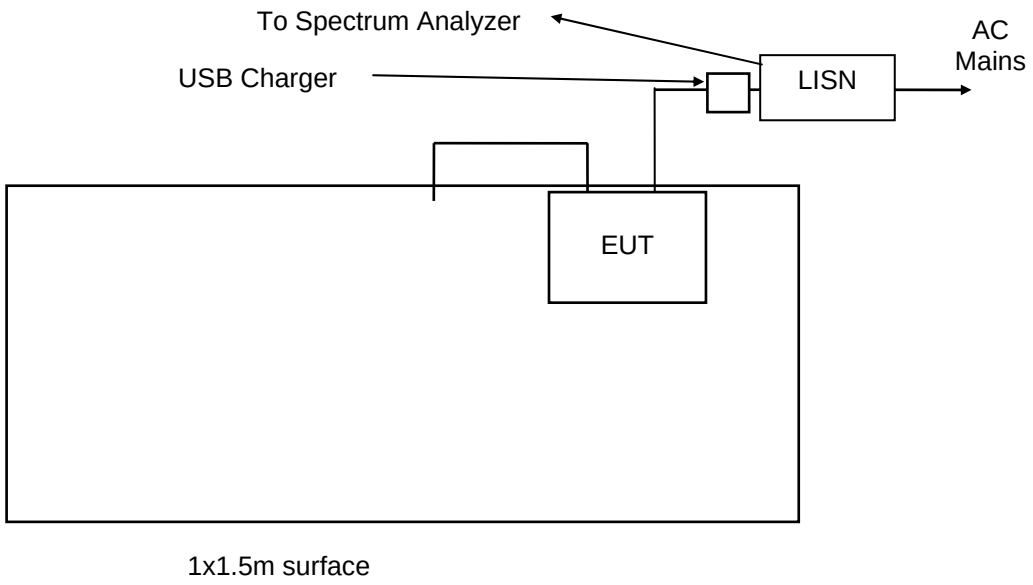


Lead Tested	Frequency MHz	QP Amplitude	QP Limit	Average Amplitude	Average Limit	Margin dB
AC Neutral	0.165	46.5	65.2	23.1	55.2	18.8
AC Neutral	0.169	46.9	65.0	23.6	55.0	18.2
AC Neutral	0.252	44.0	61.7	21.1	51.7	17.7
AC Neutral	0.337	38.8	59.3	14.9	49.3	20.5
AC Neutral	0.752	29.8	56.0	23.6	46.0	25.4
AC Neutral	2.763	17.4	56.0	10.9	46.0	38.1
AC Neutral	4.109	21.2	56.0	14.8	46.0	34.2
AC Neutral	5.143	22.8	60.0	15.6	50.0	38.4
AC Neutral	7.176	24.0	60.0	17.6	50.0	36.4
AC Neutral	17.428	29.2	60.0	23.3	50.0	30.7

The above are the worst case results with three frequencies test for each EUT
* QP readings are quasi-peak with a 9 kHz bandwidth and no video filter.

Judgment: Passed by at least 8 dB

Figure 1. Conducted Emissions Test Setup



Notes:
- LISN's at least 80 cm from EUT chassis
- Vertical conductive plane 40 cm from rear of table top

11.2 Radiated RF Emissions

Radiated emission measurements were performed with linearly polarized broadband antennas. The results obtained with these antennas can be correlated with results obtained with a tuned dipole antenna. The radiated emission measurements were performed with a spectrum analyzer. The bandwidth used from 150 kHz to 30 MHz is 9 or 10 kHz and the bandwidth from 30 MHz to 1000 MHz is 100 or 120 kHz. Above 1 GHz, a 1 MHz bandwidth is used. A 10 dB linearity check is performed prior to start of testing in order to determine if an overload condition exists.

From 30 to 1000 MHz, an Anritsu spectrum analyzer was used. For tests from 1 to 25 GHz, an HP 8566 spectrum analyzer was used. For tests from 1 to 10 GHz, a high pass filter was used to reduce the fundamental emission. A harmonic mixer was used from 18 to 25 GHz. Figure 4 herein lists the details of the test equipment used during radiated emissions tests.

The EUT was rotated through three orthogonal axis as per 13.1.4.1 of ANSI C63.4 during the radiated tests.

Final radiated emissions measurements were performed inside of an anechoic chamber at a test distance of 3 meters. The anechoic chamber is designated as Chamber E. This Chamber meets the Site Attenuation requirements of ANSI C63.4 and CISPR 16-1. Chamber E is located at 12 East Devonwood Ave. Romeoville, Illinois EMI test lab.

The entire frequency range from 30 to 25,000 MHz was slowly scanned. Measurements were performed using two antenna polarizations, (vertical and horizontal). The worst case emissions were recorded. All measurements may be performed using either the peak, average or quasi-peak detector functions. If the peak detector data exceeds or is marginally close to the limits, the measurements are repeated using a quasi-peak detector or average function as required by the specification for final determination of compliance.

The detected emission levels were maximized by rotating the EUT, adjusting the positions of all cables, and by scanning the measurement antenna from 1 to 4 meters above the ground.

11.2.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and by subtracting the Amplifier Gain from the measured reading. The basic equation is as follows:

FS = RA + AF + CF - AG + HPF + PKA

Where: FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor
AG = Amplifier Gain
PKA = Peak to Average Factor (This is zero for non-average measurements)

The Peak to average factor is used when average measurements are required. It is calculated by the highest duty cycle in percent over any 100mS transmission. The factor in dB is 20 * Log(Duty cycle/100).

11.2.2 Radiated Emissions Test Results

11.2.2.1 Emissions Below 2 GHz

Test Date	7/25/2014
Test Distance	3 Meters
Specification	FCC Part 15 Subpart C & RSS-210
Notes	Transmitting at 216 MHz and 2.4 GHz
Abbreviations	Pol = Antenna Polarization; V = Vertical; H = Horizontal; P = peak; Q = QP

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB	Note
32.8	31.0	P	H	16.8	-18.3	0.0	29.4	40.0	10.6	
61.3	33.4	P	H	10.2	-18.1	0.0	25.5	40.0	14.5	
181.3	36.6	P	H	9.3	-17.5	0.0	28.4	43.5	15.1	
195.6	36.1	P	H	9.9	-17.4	0.0	28.6	43.5	14.9	
204.4	37.1	P	H	10.2	-17.4	0.0	29.9	43.5	13.6	
207.6	36.3	P	H	10.6	-17.4	0.0	29.5	43.5	14.0	
222.5	34.2	P	H	12.1	-17.4	0.0	29.0	46.0	17.0	
258.1	31.3	P	H	12.9	-17.4	0.0	26.8	46.0	19.2	
297.5	35.9	P	H	13.1	-17.3	0.0	31.7	46.0	14.3	
340.6	32.6	P	H	15.0	-17.2	0.0	30.3	46.0	15.7	
388.8	33.0	P	H	15.5	-17.3	0.0	31.2	46.0	14.8	
426.3	31.7	P	H	17.2	-17.2	0.0	31.7	46.0	14.3	
441.9	31.1	P	H	16.5	-17.1	0.0	30.5	46.0	15.5	

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB	Note
492.5	32.6	P	H	17.6	-16.9	0.0	33.3	46.0	12.7	
518.8	31.2	P	H	19.0	-16.7	0.0	33.4	46.0	12.6	
643.8	32.1	P	H	19.3	-16.1	0.0	35.3	46.0	10.7	
652.5	31.5	P	H	19.1	-16.1	0.0	34.5	46.0	11.5	
860.0	33.2	P	H	21.5	-15.3	0.0	39.3	46.0	6.7	
1000.0	31.4	P	H	23.0	-14.5	0.0	39.9	54.0	14.1	
1035.0	36.0	P	H	24.4	-27.0	0.0	33.4	74.0	40.6	1
1125.0	42.8	P	H	25.1	-26.8	0.0	41.1	74.0	32.9	1
1175.0	44.6	P	H	25.3	-26.6	0.0	43.2	74.0	30.8	1
1235.0	41.5	P	H	25.4	-26.6	0.0	40.2	74.0	33.8	1
1440.0	41.1	P	H	25.4	-26.8	0.0	39.7	74.0	34.3	1
1842.5	39.8	P	H	27.2	-26.5	0.0	40.5	74.0	33.5	1
36.0	31.5	P	V	16.5	-18.3	0.0	29.7	40.0	10.3	
52.5	33.8	P	V	13.4	-18.1	0.0	29.1	40.0	10.9	
104.8	36.1	P	V	11.5	-17.8	0.0	29.7	43.5	13.8	
147.7	34.1	P	V	10.1	-17.7	0.0	26.6	43.5	16.9	
211.5	34.2	P	V	11.1	-17.4	0.0	27.9	43.5	15.6	
226.4	32.0	P	V	12.2	-17.4	0.0	26.9	46.0	19.1	
243.4	31.5	P	V	12.4	-17.3	0.0	26.5	46.0	19.5	
257.5	30.4	P	V	12.9	-17.4	0.0	25.9	46.0	20.1	
345.6	32.6	P	V	15.4	-17.3	0.0	30.8	46.0	15.2	
428.1	30.7	P	V	17.2	-17.2	0.0	30.7	46.0	15.3	
433.8	31.6	P	V	17.0	-17.2	0.0	31.4	46.0	14.6	
493.8	31.7	P	V	17.6	-16.9	0.0	32.3	46.0	13.7	
510.0	32.4	P	V	18.1	-16.8	0.0	33.7	46.0	12.3	
591.3	33.6	P	V	21.0	-16.5	0.0	38.1	46.0	7.9	
777.5	30.8	P	V	21.2	-15.6	0.0	36.3	46.0	9.7	
922.5	30.5	P	V	22.9	-15.0	0.0	38.4	46.0	7.6	
1000.0	31.1	P	V	23.0	-14.5	0.0	39.6	54.0	14.4	
1052.5	35.8	P	V	24.6	-27.0	0.0	33.4	74.0	40.6	1
1497.5	36.8	P	V	25.5	-26.8	0.0	35.5	74.0	38.5	1
1852.5	37.8	P	V	27.3	-26.5	0.0	38.6	74.0	35.4	1

Note 1: The Peak data is under the Average limit, therefore Average measurement not performed.
Judgment: Passed by at least 6 dB

11.2.2.2 Emissions Above 2 GHz

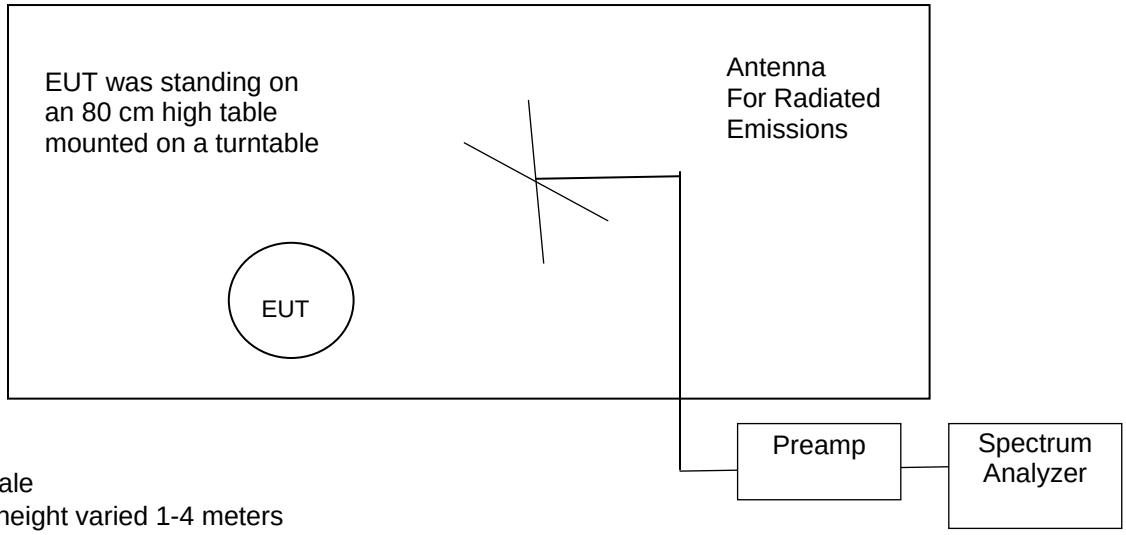
		Spectrum Analyzer Readings									EUT	Peak	Ave	Peak	Ave	Margin
hrm	Tx	Peak			Ave	Peak			Ave	Corr	Emission	Tot. FS		Limit		Under
		Vertical Polarization				Horizontal Polarization					Freq					
#	Freq	X	Y	Z	Max	X	Y	Z	Max	Fact.	MHz	dBuV/m		dBuV/m		Limit
1	2402	97.8	101.8	99.8	81.8	101.5	99.3	90.5	81.5	2.9	2402.0	104.7	84.7	114	94	9.3
BE	2402	65.7	69.7	67.7	49.7	69.4	67.2	58.4	49.4	2.9	2400.0	72.6	52.6	74	54	1.4
2	2402	43.3	50.0	44.3	30.0	45.9	44.8	47.0	27.0	10.9	4804.0	60.9	40.9	74	54	13.1
3	2402	37.0	36.8	36.9	17.0	37.5	37.7	36.8	17.7	12.7	7206.0	50.4	30.4	74	54	23.6
1	2426	97.9	99.7	100.1	80.1	102.7	97.9	94.9	82.7	3.2	2426.0	105.9	85.9	114	94	8.1
2	2426	44.5	45.9	43.3	25.9	47.5	44.6	43.8	27.5	10.6	4852.0	58.1	38.1	74	54	15.9
3	2426	38.0	37.2	36.9	18.0	38.1	37.2	36.8	18.1	13.0	7278.0	51.1	31.1	74	54	22.9
1	2480	95.1	98.5	96.3	78.5	96.8	90.9	89.2	76.8	3.3	2480.0	101.8	81.8	114	94	12.2
BE	2480	54.7	58.1	55.9	38.1	56.4	50.5	48.8	36.4	3.3	2483.5	61.4	41.4	74	54	12.7
2	2480	42.7	40.7	38.9	22.7	42.1	39.4	38.0	22.1	10.7	4960.0	53.4	33.4	74	54	20.6
3	2480	38.0	37.8	36.7	18.0	37.8	37.9	36.7	17.9	13.4	7440.0	51.4	31.4	74	54	22.6
Column numbers (see below for explanations)																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Judgment: Passed by 1.4 dB
No Emissions were detected from 8 to 25 GHz within 10 dB of the limits.

Column #1. hrm = Harmonic; BE = Band Edge emissions
Column #2. Frequency of Transmitter.
Column #3. Uncorrected readings from the spectrum analyzer with First Axis Rotation.
Column #4. Uncorrected readings from the spectrum analyzer with Second Axis Rotation.
Column #5. Uncorrected readings from the spectrum analyzer with Third Axis Rotation.
Column #6. Average Reading based on peak reading reduced by the Duty cylce correction
Column #7. Uncorrected readings from the spectrum analyzer with First Axis Rotation.
Column #8. Uncorrected readings from the spectrum analyzer with Second Axis Rotation.
Column #9. Uncorrected readings from the spectrum analyzer with Third Axis Rotation.
Column #10. Average Reading based on peak reading reduced by the Duty cylce correction
Column #11. Corr. Factors = Cable Loss – Preamp Gain + Antenna Factor
Column #12. Frequency of Tested Emission
Column #13. Highest peak field strength at listed frequency.
Column #14. Highest Average field strength at listed frequency.
Column #15. Peak Limit.
Column #16. Average Limit.
Column #17. The margin (last column) is the worst case margin under the peak or average limits for that row.

Figure 2. Drawing of Radiated Emissions Setup

Chamber E, anechoic



Notes:
- Not to Scale
- Antenna height varied 1-4 meters
- Distance from antenna to tested system is 3 meters
- AC cords not shown. They are connected to AC outlet with low-pass filter on turntable

Frequency Range	Receive Antenna	Pre-Amplifier	Spectrum Analyzer
30 to 1000 MHz	ANT-44	AMP-22	REC-11
1 to 10 GHz	ANT-13	AMP-05	REC-11
10 to 18 GHz	ANT-13	AMP-20	REC-11
18 to 25 GHz	ANT-48	AMP-29	REC-08; MXR-01

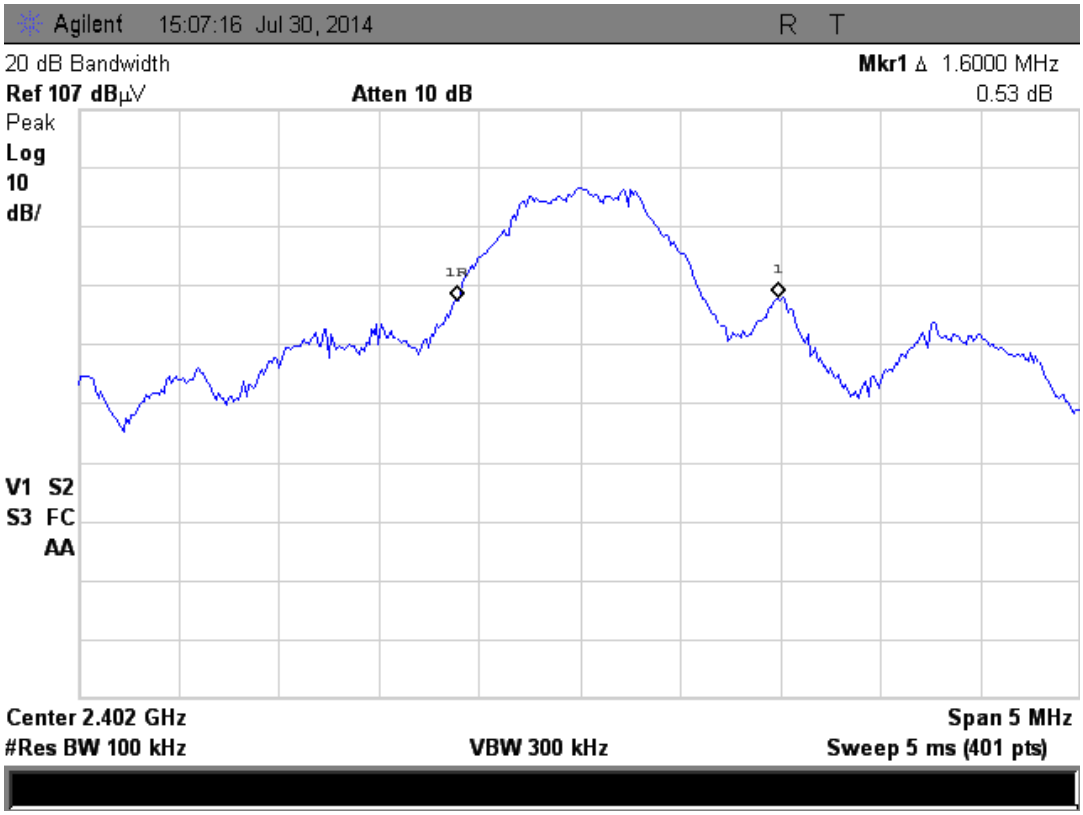
11.3 Occupied Bandwidth Data

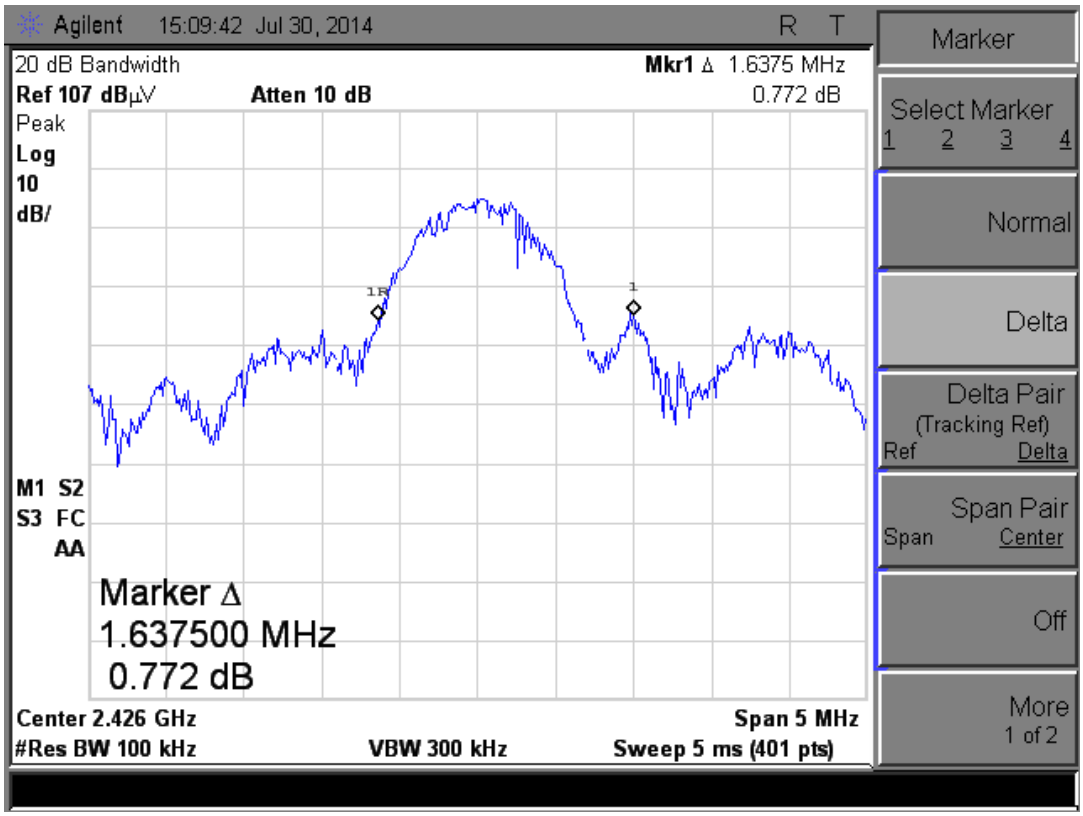
The occupied bandwidth of the RF output was measured using a spectrum analyzer. The bandwidth was measured using the peak detector function and a narrow resolution bandwidth.

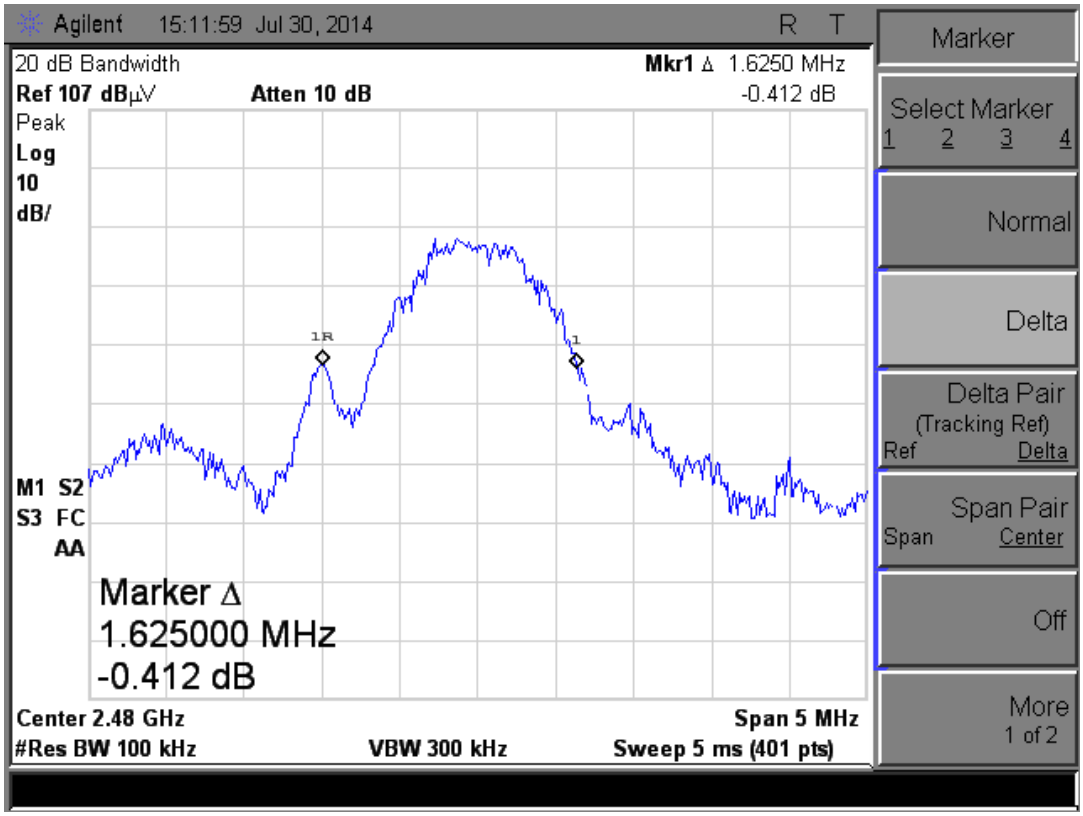
A broadband antenna was used to receive the modulated signal. The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation. The spectrum analyzer display was digitized and plotted. A limit was drawn on the plots based on the level of the modulated carrier. The plots of the occupied bandwidth for the EUT are supplied on the following page.

Channel	20 dB EBW kHz
2402	1600
2440	1637
2480	1625

Figure 3. Occupied Bandwidth Plots







11.4 Unintentional Emissions

Manufacturer	CTrack, LLC	Specification	FCC Part 15.249
Model	Recon II	Test Date	07/25/2014
Serial Number	none	Test Distance	3 Meters
Abbreviations	Pol = Antenna Polarization; V = Vertical; H = Horizontal; P = peak; Q = QP		
Notes	Corr. Factors = Cable Loss – Preamp Gain		
Configuration	Receive mode; 216 MHz		

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB	Note
33.8	30.7	P	H	16.6	-18.3	0.0	29.0	40.0	11.0	
137.3	31.3	P	H	12.3	-17.7	0.0	25.8	43.5	17.7	
209.9	31.0	P	H	10.9	-17.4	0.0	24.5	43.5	19.0	
256.9	30.5	P	H	12.9	-17.4	0.0	25.9	46.0	20.1	
383.1	31.4	P	H	15.4	-17.3	0.0	29.5	46.0	16.5	
479.4	30.7	P	H	17.5	-17.0	0.0	31.2	46.0	14.8	
568.8	31.9	P	H	19.6	-16.6	0.0	34.9	46.0	11.1	
671.3	33.7	P	H	20.2	-16.0	0.0	37.9	46.0	8.1	
848.8	31.9	P	H	22.3	-15.4	0.0	38.8	46.0	7.2	
978.8	30.8	P	H	21.9	-14.7	0.0	38.0	54.0	16.0	
35.5	31.6	P	V	16.5	-18.3	0.0	29.8	40.0	10.2	
51.5	32.8	P	V	13.7	-18.2	0.0	28.4	40.0	11.6	
100.9	33.8	P	V	9.5	-17.8	0.0	25.4	43.5	18.1	

Freq. MHz	Meter Reading dBuV	Dect.	Ant. Pol.	Ant Factor	Cbl/amp Factors	Dist Fact dB	EUT dBuV/m	Limit dBuV/m	Margin Under Limit dB	Note
146.6	35.2	P	V	10.2	-17.7	0.0	27.7	43.5	15.8	
209.9	35.4	P	V	10.9	-17.4	0.0	29.0	43.5	14.5	
243.4	31.4	P	V	12.4	-17.3	0.0	26.5	46.0	19.5	
265.0	30.6	P	V	12.9	-17.4	0.0	26.1	46.0	19.9	
346.9	31.7	P	V	15.6	-17.3	0.0	30.0	46.0	16.0	
466.3	33.0	P	V	17.1	-17.0	0.0	33.1	46.0	12.9	
530.0	31.3	P	V	18.9	-16.7	0.0	33.5	46.0	12.5	
650.9	36.2	P	V	19.0	-16.1	0.0	39.1	46.0	6.9	
708.8	30.7	P	V	20.4	-15.8	0.0	35.3	46.0	10.7	
872.5	33.4	P	V	21.0	-15.3	0.0	39.1	46.0	6.9	
931.3	30.1	P	V	22.2	-15.0	0.0	37.3	46.0	8.7	
993.8	31.1	P	V	22.6	-14.6	0.0	39.2	54.0	14.8	

Judgment: Pass by at least 6 dB

No Emissions were detected from 1 to 5 GHz within 10 dB of the limits.