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**Electromagnetic Emission**  
**FCC MEASUREMENT REPORT**  
**CERTIFICATION OF COMPLIANCE**  
**FCC Part 15 Certification Measurement**

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**PRODUCT** : RADAR DETECTOR  
**MODEL/TYPE NO** : TRAX LRD / NONE  
**FCC ID** : AMWUS207ZRD  
**APPLICANT** : Uniden America Corporation  
181 N. Country Club Road, Lake City, South Carolina,  
29560 United States  
Attn.: James R. Haynes / Engineering V.P.  
**MANUFACTURER** : ATTOWAVE  
1005, 10F Leader's Tower 60-15, Gasan-dong,  
Geumchun-gu, Seoul, 153-801, Korea  
**FCC CLASSIFICATION** : Unintentional Radiators  
Radar Detector – CRD  
**FCC RULE PART(S)** : FCC Part 15 Subpart B  
**FCC PROCEDURE** : ANSI C63.4-2003  
**TEST REPORT No.** : ETLE071203.872  
**DATES OF TEST** : December 04, 2007  
**REPORT ISSUE DATE** : December 10, 2007  
**TEST LABORATORY** : ETL Inc. ( FCC Registration Number : 95422)

This RADAR DETECTOR, Model TRAX LRD has been tested in accordance with the measurement procedures specified in ANSI C63.4-2003 at the ETL Test Laboratory and has been shown to be complied with the electromagnetic radiated emission limits specified in FCC Rule Part15 Subpart B:

I attest to the accuracy of data. All measurement herein was performed by me or was made under my supervision and is correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.



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Chon Sik, Kim / Chief Engineer

**ETL Inc.**  
**#584 Sangwhal-ri, Ganam-myeon, Yoju-gun, Gyeonggi-do, 469-885, Korea**  
**Tel : 82-2-858-0786 Fax : 82-2-858-0788**

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## FCC MEASUREMENT REPORT

**Scope** – Measurement and determination of electromagnetic emission(EME) of radio frequency devices including intentional radiators and/or unintentional radiators for compliance with the technical rules and regulations of the U.S Federal Communications Commission(FCC)

### General Information

**Applicant Name** : Uniden America Corporation

**Address** : 181 N. Country Club Road, Lake City, South Carolina,  
29560 United States

**Attention** : James R. Haynes / Engineering V.P.

- **EUT Type** : RADAR DETECTOR
- **Model Number** : TRAX LRD
- **FCC ID** : AMWUS207ZRD
- **S/N** : NONE
- **FCC Rule Part(s)** : FCC Part 15 Subpart B
- **Test Procedure** : ANSI C63.4-2003
- **FCC Classification** : Unintentional Radiators  
Radar Detector (CRD)
- **Dates of Tests** : December 04, 2007
- **Place of Tests** : ETL Inc. Testing Lab. (FCC Registration Number : 95422)  
  
Radiated Emission test;  
#584, Sangwhal-ri, Ganam-myeon, Yoju-gun,  
Gyeonggi-do, 469-885, Korea  
  
Conducted Emission test;  
ETL Inc. Testing Lab. (FCC Registration Number : 95422)  
371-51, Gasan-donzg, Geumcheon-gu, Seoul, 153-803, Korea
- **Test Report No.** : ETLE071203.872

## 1. INTRODUCTION

The measurement test for radiated and conducted emission test were conducted at the open area test site of ETL Inc. facility located at #584, Sangwhal-ri, Ganam-myeon, Yoju-gun, Gyeonggi-do, 469-885, Korea. The site is constructed in conformance with the requirements of the ANSI C63.4-2003 and CISPR Publication 16. The ETL has site descriptions on file with the FCC for 3 m and 10 m site configurations. Detailed description of test facility was found to be in compliance with the requirements of Section 2.948 FCC Rules according to the ANSI C63.4-2003 and registered to the Federal Communications Commission (Registration Number : 95422).

The measurement procedure described in American National Standard for Method of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ANSI C63.4-2003) was used in determining radiated and conducted emissions from the Uniden America Corporation, Model: TRAX LRD.

## 2. PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the Uniden America Corporation, Model: TRAX LRD.

### 2.2 General Specification

General	
Dimensions	105,73 (D) x 87,80 (W) x 18,19 (H) mm
Weight	115 g
Power requirement	12 V DC
Temperature Range	-10 to 75 degree (Operation)

Laser Detector	
Receiver Type	Pulse Laser Signal Receiver
Sensor Front End	Convex Condenser Lens
Detector Type	Pulse Width Discriminator
Spectral Response	800 – 1 100 nm

Radar Detector	
Receiver Type	Dual Conversion Superheterodyne Self-Contained Antenna
Detector Type	Scanning Frequency Discriminator
Frequency of Operation	X Band: 10,525 GHz K Band: 24,150 GHz Ka Band: 33,800 GHz – 36,00 GHz

## 3. DESCRIPTION OF TESTS

### 3.1 Radiated Emission Measurement

Radiated emission measurements were made in accordance with section 11, "Measurement of Information Technology Equipment" of ANSI C63.4-2003. The measurements were performed over the frequency ranges of 30 MHz to 1 GHz and 11,7 GHz to 12,2 GHz using antenna as the input transducer to a spectrum analyzer or a field intensity meter. The measurements were made with the detector set for "Quasi-peak" within a bandwidth of 120 kHz or 1 MHz.

Preliminary measurements were made at 3 m using broadband antennas, and spectrum analyzer to determine the frequency producing the max emission in shielded room. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 MHz to 1 000 MHz using SchwarzBeck Log-Bicon antenna. Above 1 GHz, linearly polarized double Schwarz Beck broad-band horn antennas were used. Final measurements were made open site at 3 m. A search was made of spectrum from 30 MHz to 1 000 MHz and from 11,7 GHz to 12,2 GHz the measurements indicate that the unit meets the FCC requirements. Measurements in the 11,7 GHz to 12,2 GHz band were made with a Standard Gain Horn. The measurements in the 11,7 GHz to 12,2 GHz band represent the ambient noise levels. The attached plots were made with peak detector with the analyzer in a maximum hold for 2 minutes. The test equipment was placed on a wooden turn-table. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The detector function was set to CISPR Quasi-peak mode and the bandwidth of the receiver was set to 120 kHz or 1 MHz depending on the frequency of type of signal. The EUT, support equipment and interconnecting cables were re-configured to the set-up producing the max. Emission for the frequency and were placed on top of a 0,8 m high nonmetallic 1 m x 1,5 m table. The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 m to 4 m and stopped at the azimuth or height producing the max emission. Each emission was maximized by: varying the mode of operation to the EUT and/or support equipment and changing the polarity of the antenna, whichever determined the worst-case emission.

Photographs of the worst-case emission can be seen in Photographs of the worst-case emission test setup can be seen in Appendix B.

## 4. TEST CONDITION

### 4.1 Test Configuration

The device was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the EUT and the supported equipments were installed to meet FCC requirement and operated in a manner and which tends to maximize its emission level in a typical application.

### 4.2 EUT operation

The EUT was connected as user`s guide. And during the test executed EUT is operating on the following Bands: 10,525 GHz  $\pm$  50 MHz (X-Band); 24,150 GHz  $\pm$  100 MHz (K-Band); 34,700 GHz  $\pm$  1 300 MHz (Ka-Band(super-wide))

Operating Mode
Stand-by mode
10,525 GHz $\pm$ 50 MHz (X-Band),
24,150 GHz $\pm$ 100 MHz (K-Band)
34,700 GHz $\pm$ 1 300 MHz (Ka-Band(super-wide))

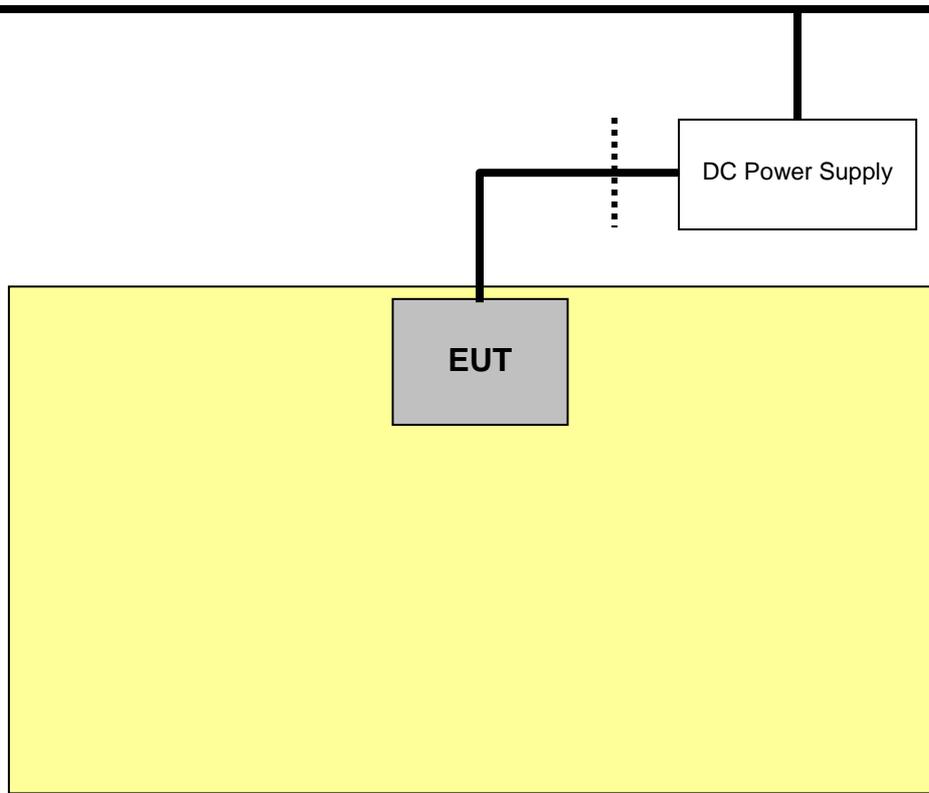
### 4.3 Support Equipment Used

Description	Model Name	Serial No.	Manufacturer	FCC ID
-	-	-	-	-

### 4.4 Type of Cables Used

Device from	Device to	Type of Cable	Length(m)	Type of shield
EUT	DC Power Supply	DC Input	0,8	Shielded
DC Power Supply	Power socket	AC Input	1,2	Unshielded

## 4.5 The setup drawing(s)



———— : Data Line    ————— : Power Line    ..... : Outside table

## 5. TEST RESULTS

### 5.1 Summary of Test Results

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum emission of the EUT are reported.

FCC Rule	Measurement Required	Result
15.109(h)	Radiated Emission Measurement	<b>No Signal Detected</b>

The data collected shows that the **Uniden America Corporation / RADAR DETECTOR / TRAX LRD** complied with technical requirements of above rules part 15.109(h).

The equipment is not modified anything, mechanical or circuits to improve EMI status during a measurement. No EMI suppression device(s) was added and/or modified during testing.

## 5.2. Radiated Emissions Measurement

<b>EUT</b>	RADAR DETECTOR / TRAX LRD (SN :N/A)
<b>Limit apply to</b>	FCC Part 15.109(h)
<b>Test Date</b>	December 04, 2007
<b>Operating Condition</b>	Operating on the following Bands (X, K, Ka bands)
<b>Result</b>	Passed

### Radiated Emission Test Data

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Detector mode: Peak mode (Bandwidth: 1 MHz)

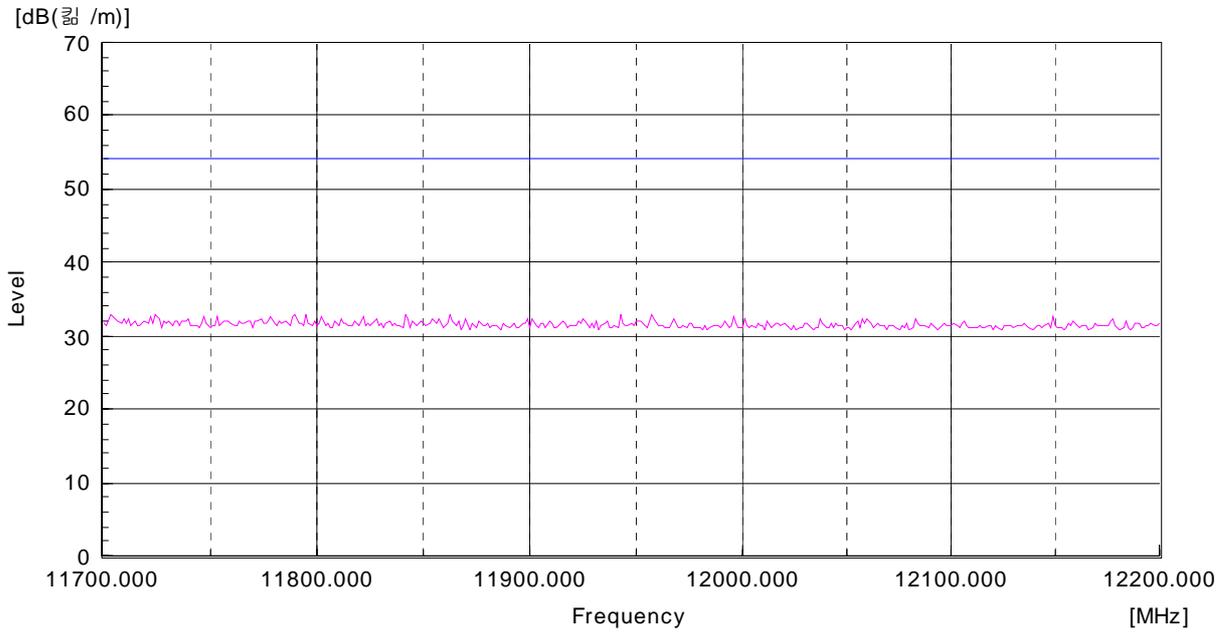
Frequency [MHz]	Reading [dB $\mu$ V]	Polarization (*H/**V)	Ant. Factor [dB/m]	Cable Loss [dB $\mu$ V]	Emission Level [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]
		<b>No signal detected</b>					

- NOTES :
- \* H : Horizontal polarization , \*\* V : Vertical polarization
  - 1. Result = Reading + Antenna factor + Cable loss
  - 2. Margin value = Limit - Result level
  - 3. The measurement was performed for the frequency range 11,7 GHz – 12,2 GHz according to the FCC Part 15.109(h)
  - 4. No signal detected of 11,7 GHz – 12,2 GHz, Refer to plot data



Test Engineer: Jae Young, Kwon

## Plot data (Radiated Emissions Measurement of 11,7 GHz ~ 12,2 GHz)



## 6. SAMPLE CALCULATION

### Sample Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor.  
The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

$$dB(\mu V) = 20 \log_{10} (\mu V)$$

$$dB\mu V = dBm + 107$$

Example: @                      MHz

Class A Limit

Reading

Antenna Factor + Cable Loss

Total

Margin

## 7. List of test equipments used for measurements

	Test Equipment	Model	Mfg.	Serial No.	Cal. Due Date
<input checked="" type="checkbox"/>	EMI TEST Receiver	ESVS 10	R & S	835165/001	08-05-03
<input checked="" type="checkbox"/>	HORN ANTENNA	BBHA 9120D	Schwarzbeck	227	08-03-15
<input checked="" type="checkbox"/>	Turn-Table	DETT-03	Daeil EMC	-	N/A
<input checked="" type="checkbox"/>	Antenna Master	DEAM-03	Daeil EMC	-	N/A