Exhibit B Test Report
Houston Radar, LLC.
DR500 Doppler Radar

Project Number: 06073-10

Prepared for:

Houston Radar, LLC.

13814 Sherburn Manor Drive
Cypress, TX 77429

By
Professional Testing (EMI), Inc.
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August 2005

CERTIFICATION
Electromagnetic Interference Test Report
Houston Radar, LLC.
DR500 Doppler Radar

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THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF PROFESSIONAL TESTING (EMI), INC.

Certificate Of Compliance

Applicant: Houston Radar, LLC.

Applicant's Address: 13814 Sherburn Manor Drive
Cypress, TX 77429

FCC ID: TIADR500

Project Number: 06073-10

Test Dates:

I, Michael A. Royer, for Professional Testing (EMI), Inc., being familiar with the FCC and IC rules and test procedures have reviewed the test setup, measured data and this report. I believe them to be true and accurate.

The **Houston Radar, LLC., DR500 Doppler Radar** was tested to and found to be in compliance with FCC Part 15 Subpart C for an Intentional Radiator.

The highest emissions generated by the above equipment are listed below:

	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Fundamental	24142	120.7	137.5	-16.8
Spurious	72420	96.4	97.5	-1.1
Occupied Bandwidth	350 (kHz)			

Michael A. Royer, BSEE, NCE
EMC Department Manager

This report has been reviewed and accepted by Houston Radar, LLC.. The undersigned is responsible for ensuring that **Houston Radar, LLC., DR500 Doppler Radar** will continue to comply with the FCC rules.

1.0 EUT Description

The DR-500 is a Doppler speed radar is powered by 12V DC nominal voltage. The microwave Gunn oscillator in the transceiver generates a 24.14GHz signal and sends it continuously out of the horn antenna at the target. The signal also "illuminates" internal (to the microwave transceiver) mixer diodes that act as a receiver mixer. The transmitted radar waves are reflected off the moving target, change the reflected microwave frequency per the well-known "Doppler principle" and are received by the same transmitting horn antenna and mixed in the receiving mixer diodes with the local oscillator. The difference in the transmitted/received frequencies is produced as a low frequency (audio frequency range) out of the mixer diode and into the preamp.

The system tested consisted of the following:

Manufacturer & Model	FCC Number	Description
Houston Radar, LLC., DR500	TIADR500	Doppler Radar

1.1 Applicable Documents

Guidelines	FCC Rule Parts Part 15
Transmitter Characteristics	15.245
Spurious Radiated Power	15.205, 15.209, 15.245
Antenna Requirement	15.203

1.2 EUT Operation

The EUT was operated in continuous transmit mode at max power to measure fundamental, harmonics, and spurious radiation.

2.0 Electromagnetic Emissions Testing

Professional Testing (EMI), Inc. (PTI), follows the guidelines of NIST for all uncertainty calculations, estimates and expressions thereof for EMC testing.

2.1 Radiated Emissions Measurements

Radiated emission measurements were made of the Fundamental and Spurious Emission levels for DR500 Doppler Radar. Measurements of the occupied bandwidth were also made for the EUT.

Measurements of the maximum emission levels for the fundamental and the spurious/harmonic emissions of the DR500 Doppler Radar were made at the Professional Testing "Open Field" Site 3, located in Round Rock, Texas to determine the radio noise radiated from the EUT. A

"Description of Measurement Facilities" has been submitted to the FCC and approved pursuant to Section 2.948 of CFR 47 of the FCC rules.

Tests of the fundamental for the device were performed to determine the worst case polarization of the devices. The fundamental emissions of the device were measured with the antenna of the device in horizontal and vertical polarization.

2.1.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The table was centered on a motorized turntable which allows 360 degree rotation. For measurements of the fundamental signal, a measurement antenna was positioned at a distance of 3 meters as measured from the closest point of the EUT. For spurious/harmonic measurements From 1-24 GHz, the measurement antenna was placed 1 meter from the EUT. From 24-100 GHz the measurement antenna was placed 0.1 meters from the EUT. The radiated emissions were maximized by rotating the EUT.

A Spectrum Analyzer with peak detection was used to find the maximums of the radiated emissions during the variability testing. A drawing showing the test setup is given as Figure 2.

2.1.2 Test Criteria

The table below shows FCC radiated limits for an intentional radiator operating under the provisions of part 15.245. The measurement of the harmonics was performed to 100 GHz. The reference distance for each limit is also shown in this table.

Frequency MHz	Test Distance (Meters)	Field Strength (uV/m)@3m	(dBuV/m)@Test Distance
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
960 to 1000	3	500	54.0
1000 to 24000	1	500	63.5
24000 to 100000	.1	500	83.5
Fundamental	1	2500000	137.5
Harmonics	.1	25000	97.5

Note: Fundamental and Harmonic Limits are expressed in Average field strengths. The spurious limits are expressed in Quasi-Peak.

2.1.3 Test Results

The radiated test data for the fundamental is included in Appendix A. Peak detection was used during the test for the fundamental and harmonics. Quasi-Peak detection was used for spurious emissions below 1 GHz. The radiated emission test data is included in Appendix A. The radiated emissions generated by the DR500 Doppler Radar are below the FCC Part 15.245 limits.

3.0 Occupied Bandwidth Measurements

Measurements of the occupied bandwidth for the fundamental signals were made at Professional Testing Round Rock, Texas site. All measurements were made in a controlled indoor environment in a configuration which did not present measurement distortion or ambient interference.

3.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the floor. The table was rotated to an angle which presented the highest signal level. The occupied bandwidth was based on a 20 dB criteria (20 dB down either side of the emission from the peak emission). A drawing showing the test setup is given as Figure 1.

3.2 Test Criteria

According to FCC Part 15.245, the bandwidth of the emission shall not be outside of the specified band of 24075-24175 MHz.

3.3 Test Results

The occupied bandwidth test data is included in Appendix B. The occupied bandwidth for the fundamental frequency 24142 MHz is 350 kHz. This occupied bandwidth complies with the FCC requirement.

4.0 Antenna Requirement

An analysis of the DR500 Doppler Radar was performed to determine compliance with FCC Section 15.203. This section requires specific handling and control of antennas used for devices subject to regulations.

4.1 Evaluation Procedure

The structure and application of the DR500 Doppler Radar was analyzed with respect to the rules. The antenna is an internal antenna, and is not accessible to the user An auxiliary antenna port is not present.

4.2 Evaluation Criteria

Section 15.203 of the rules states that the subject device must meet at least one of the following criteria:

(a) Antenna must be permanently attached to the unit.

(b) Antenna must use a unique type of connector to attach to the EUT.

(c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

4.3 Evaluation Results

The DR500 Doppler Radar meets the criteria of this rule by virtue of having an internal antenna inaccessible to the user. The EUT is therefore compliant.

5.0 Modifications to Equipment

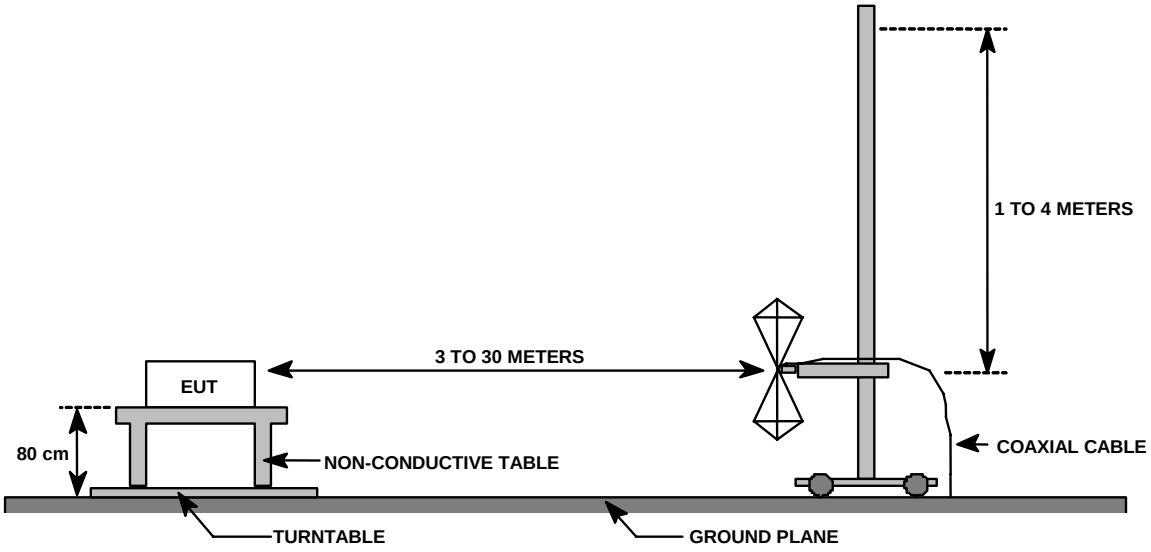
No modifications were made to the EUT.

6.0 List of Test Equipment

A list of the test equipment utilized to perform the testing is given below. The date of calibration is given for each.

Device	Description	Calibration Due
EMCO 3115	Horn Antenna	July 2006
MITEQ AFS4-00101800-40-10P	Preamp	July 2006
HP8566B	Spectrum Analyzer	March 2006
HP85650	Quasi-peak Adapter	March 2006
HP 85685	Preselector	March 2006
Compliance Design B-100	Biconical Antenna	June 2006
EMCO 3146	Log Periodic Antenna	June 2006
HP8447D	Preamplifier	November 2005
Tektronix 492 AP	Spectrum Analyzer	March 2006
Tektronix	Diplexer/Mixer	CNR
Millitech/Pacific Microwave 40-60 GHz	Horn/Mixer	CNR
Millitech/Pacific Microwave 60-90 GHz	Horn/Mixer	CNR
Millitech/Pacific Microwave 90-140 GHz	Horn/Mixer	CNR

FIGURE 1: Radiated Emissions Test Setup



APPENDIX A EMISSIONS DATA SHEET

Radiated Data Sheet
Fundamental/Harmonics
Houston Radar, LLC.
DR500 Doppler Radar
Peak Detection RBW =1 MHz

Test Date: July 26, 2005
Measurement Distance (Meters): 1, 0.1

Vertical

Frequency (GHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Test Distance (Meters)	Antenna Factor (dB/m)	Conversion Loss (dB)	Corrected Level (dBuV/m)	Corrected Limit (dBuV/m)	Margin (dB)	Detector Function
24.142	max	1	86.8	1.0	33.9	0.0	120.7	137.5	-16.8	Peak
48.3	max	1	54.0	0.1	39.9	0.0	93.9	97.5	-3.6	Peak
72.42	max	1	53.0	0.1	43.4	0.0	96.4	97.5	-1.1	Peak
96.56	max	1	44.0	0.1	45.9	0.0	89.9	97.5	-7.6	Peak

Horizontal

Frequency (GHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Test Distance (Meters)	Antenna Factor (dB/m)	Conversion Loss (dB)	Corrected Level (dBuV/m)	Corrected Limit (dBuV/m)	Margin (dB)	Detector Function
24.142	max	1	86.5	1.0	33.9	0.0	120.4	137.5	-17.1	Peak
48.3	max	1	54.0	0.1	39.9	0.0	93.9	97.5	-3.6	Peak
72.42	max	1	53.0	1.0	43.4	0.0	96.4	97.5	-1.1	Peak
96.56	max	1	44.0	1.0	45.9	0.0	89.9	97.5	-7.6	Peak

TEST ENGINEER: Jason Anderson

Radiated Data Sheet
Spurious
Houston Radar, LLC.
DR500 Doppler Radar
Quasi-Peak Detection
RBW=120kHz

Test Date: July 25, 2005
Measurement Distance (Meters): 3

Vertical

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
48.6	noise	floor	37	26.7	11.7	1.9	23.9	40	-16.1	Quasi-Peak
72	noise	floor	36.5	26.7	6.8	2.3	18.9	40	-21.1	Quasi-Peak
179.65	noise	floor	36.1	26.8	16.2	3.7	29.2	43.5	-14.3	Quasi-Peak
232	noise	floor	44.1	26.9	11.6	4.3	33.0	46	-13.0	Quasi-Peak
298.15	noise	floor	40	27.1	15.3	5.0	33.2	46	-12.8	Quasi-Peak
436	noise	floor	36.3	27.4	16.3	6.3	31.5	46	-14.5	Quasi-Peak
550	noise	floor	37.3	27.2	18.2	7.3	35.6	46	-10.4	Quasi-Peak
840	noise	floor	33.4	26.1	22.0	9.7	39.0	46	-7.0	Quasi-Peak
985.5	noise	floor	34	26.7	24.4	11.8	43.6	54	-10.4	Quasi-Peak

Horizontal

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
48.6	noise	floor	37	26.7	11.7	1.9	23.9	40	-16.1	Quasi-peak
72	noise	floor	36.5	26.7	6.8	2.3	18.9	40	-21.1	Quasi-peak
179.65	noise	floor	36.1	26.8	16.2	3.7	29.2	43.5	-14.3	Quasi-peak
232	noise	floor	44.1	26.9	11.6	4.3	33.0	46	-13.0	Quasi-peak
298.15	noise	floor	40	27.1	15.3	5.0	33.2	46	-12.8	Quasi-peak
436	noise	floor	36.3	27.4	16.3	6.3	31.5	46	-14.5	Quasi-

										peak
550	noise	floor	37.3	27.2	18.2	7.3	35.6	46	-10.4	Quasi-peak
840	noise	floor	33.4	26.1	22.0	9.7	39.0	46	-7.0	Quasi-peak
985.5	noise	floor	34	26.7	24.4	11.8	43.6	54	-10.4	Quasi-peak

TEST ENGINEER: Jason Anderson

Radiated Data Sheet
Spurious
Houston Radar, LLC.
DR500 Doppler Radar
Peak Detection
RBW=1MHz

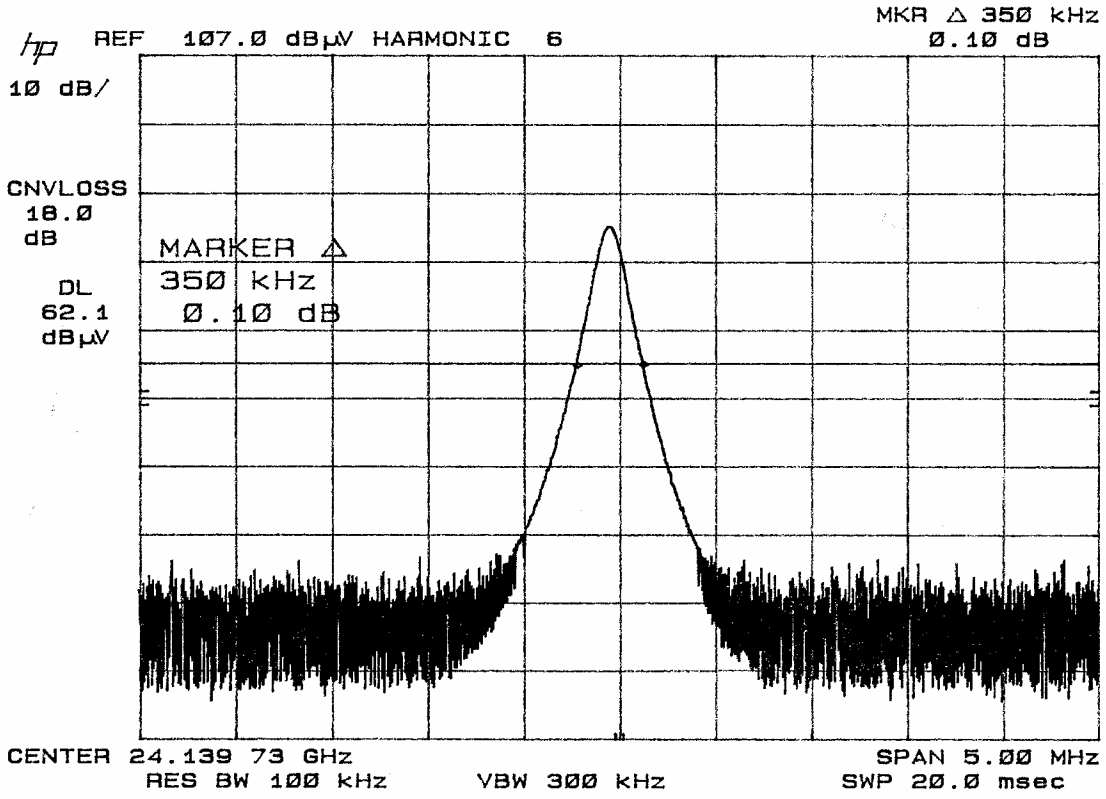
Test Date: July 25, 2005
Measurement Distance (Meters): 1

Vertical

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
1196	270	1	63.5	28.7	24.2	0.5	59.5	63.5	-4.0	Peak
1592	230	1	59.5	32.3	25.6	0.5	53.3	63.5	-10.2	Peak
1751	230	1	59.6	33.0	26.4	0.6	53.6	63.5	-9.9	Peak
2221	270	1	58.9	34.3	27.9	0.6	53.1	63.5	-10.4	Peak
2396	0	1	59.8	34.7	28.2	0.6	53.9	63.5	-9.6	Peak
2591	0	1	54.6	34.9	28.7	0.6	49.1	63.5	-14.4	Peak
2712	0	1	51	34.9	29.3	0.6	46.1	63.5	-17.4	Peak
3028	30	1	58.9	34.8	30.7	0.7	55.6	63.5	-7.9	Peak

Horizontal

Frequency (MHz)	EUT Direction (degrees)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Function
1196	270	1	62.4	28.7	24.2	0.5	58.4	63.5	-5.1	peak
1434	270	1	65.5	31.3	25.0	0.5	59.7	63.5	-3.8	peak
1597	270	1	60.6	32.4	25.7	0.5	54.4	63.5	-9.1	peak
1737	200	1	56	32.9	26.3	0.5	50.0	63.5	-13.5	peak
1788	200	1	66	33.1	26.6	0.6	60.0	63.5	-3.5	peak
1827	90	1	54.8	33.2	26.8	0.6	48.9	63.5	-14.6	peak
2071	300	1	51.8	34.0	27.7	0.6	46.1	63.5	-17.4	peak
2390	100	1	50.7	34.7	28.1	0.6	44.8	63.5	-18.7	peak
3029	56.1	1	56.1	34.8	30.7	0.7	52.8	63.5	-10.7	peak

TEST ENGINEER: Jason Anderson

Occupied Bandwidth Datasheet
Houston Radar, LLC.
DR500 Doppler Radar