Nemko Test Report:	5113RUS1
Applicant:	University of Houston 4800 Calhoun Road Houston, TX 77004 USA
Equipment Under Test: (E.U.T.)	U7W400
In Accordance With:	**FCC Part 15, Subpart F, Paragraph 15.509** Ultra Wide Band Operation Ground Pentrating Radar
Tested By:	Nemko USA Inc. 802 N. Kealy Lewisville, TX 75057

TESTED BY: _____ **DATE:** 15 October 2007

David Light, Senior Wireless Engineer

APPROVED BY: _____ **DATE:** 19 October, 2007

Mike Cantwell, Frontline Manager

Total Number of Pages: 25

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Section 1. Summary Of Test Results

Manufacturer: The University of Houston

Model No.: U7W400

Serial No.: Preproduction

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15, Subpart C, Paragraph 15.509 for ultra wide band operation. All tests were conducted using measurement procedure ANSI C63.4-2003. Radiated Emissions were made with the antenna positioned on the ground screen of an open area test site with the EUT positioned on a 4 foot by 4 foot by 4 foot dry sand pit

☒	New Submission	☐	Production Unit
☐	Class II Permissive Change	☒	Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE
See " Summary of Test Data".

NVLAP®
LAB CODE: 100426-0

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
Conducted Emissions	15.207	NA
Pulse Repetition Frequency	15.509	Complies
Definition of UWB	15.203(a)/15.209(a)	Complies
Radiated Emissions	15.509(d)	Complies
Radiated Emissions	15.509(e)	Complies
Peak Emission at f_M	15.509(f)	Complies

Footnotes For N/A's:

The device is battery powered.

Section 2. General Equipment Specification

Frequency Range:	Single	
Operating Frequency(ies) of Sample:	200 MHz to 460 MHz (10 dB BW)	
Tunable Bands:	Single	
20 dB Occupied Bandwidth:	260 MHz	
User Frequency Adjustment:	None	
Integral Antenna	Yes ☒	No ☐

Description of Device Tested

Ground Penetrating Radar System

System Diagram

Refer to separate exhibit.

Section 3. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.509(d)&(e)
TESTED BY: David Light	DATE: 12 October 2007

Minimum Standard: Para no. 15.509

Limits below 960 MHz (15.209 and 15.509):

Frequency (MHz)	Field Strength Limits (microvolts/m)	Measuring RBW	Distance (Meters)
0.009-0.490	2400/F(kHz)	1 kHz	300
0.490-1.705	24000/F(kHz)	10 kHz	30
1.705-30.0	30	10 kHz	30
30-88	100	100 kHz	3
88-216	150	100 kHz	3
216-960	200	100 kHz	3

Limits above 960 MHz (15.509)

Frequency (MHz)	E.I.R.P. (dBm)	Measuring RBW	Distance (Meters)
960-1610	-65.3	1 MHz	3
1610-1990	-53.3	1 MHz	3
1990-3100	-51.3	1 MHz	3
3100-10600	-41.3	1 MHz	3
Above 10600	-51.3	1 MHz	3
1164-1240	-75.3	1 kHz	3
1559-1610	-75.3	1 kHz	3

E.I.R.P limits converted from field strength during measurements per 15.521(g)

Maximizing Emission Levels:
The emissions were scanned from 30 MHz to 4000 MHz.
For measurements below 960 MHz the emissions were made using a CISPR Quasi-peak detector IF BW = 100 kHz
For Frequency above 960 MHz and outside the below frequency bands, the emissions were measured using EMI RMS detector, RBW=1MHz, VBW=10 MHz
For frequencies fall inside 1164-1240 and 1559-1610 MHz, the emissions were measured using EMI RMS Detector, RBW = 1 KHz, VBW = 1 MHz
Note: The above tests were performed with the EUT raised 5 cmfrom the ground as its intended use. The EUT was tested in 8 positions (every 45°)

Test Results: Complies

Measurement Data: See attached table(s).

Test Data – Radiated Emissions

Radiated Emissions Data

Complete X Job # : 5113 Test # : REHE-01
Preliminary Page 1 of 11

Client Name : University of Houston
EUT Name : Ground Coupled Radar
EUT Model # : U7W400
EUT Part # :
EUT Serial # :
EUT Config. : Transmitting over sand pit

Specification : CFR47 Part 15, Subpart B, Class B Reference : 15.209/15.509

Rod. Ant. #:		Temp. (deg. C) :	22	Date :	10/11/07
Bicon Ant.#:	1306	Humidity (%) :	40	Time :	9:00
Log Ant.#:	759	EUT Voltage :	12	Staff :	David Light
Bilog Ant.#:		EUT Frequency :	dc	Photo ID:	
Dipole Ant.#:		Phase:	0	QP Bandwidth:	120 KHz
Cable#:	1522	Location:	Sand Pit		
Preamp#:	762	Distance:	3 Meters		
Limiter#:	na	Barometric pressure:	1016		
Atten #:	na				
Detector#:	1659				

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
											0 degrees
73.7	V	0	41.8	8.9	3.1	27.5	26.3	40.0	-13.7	Pass	
86	V	0	32.5	9.6	3.5	27.4	18.2	40.0	-21.8	Pass	
110.6	V	0	48	11.4	3.8	27.6	35.6	43.5	-7.9	Pass	
122.9	V	0	46	11.9	3.8	27.6	34.1	43.5	-9.4	Pass	
135.2	V	0	44.8	12.7	4.2	27.7	34.0	43.5	-9.5	Pass	
147.4	V	0	46.8	13.5	4.2	27.7	36.8	43.5	-6.7	Pass	
196.6	V	0	49	14.7	5.1	27.9	40.9	43.5	-2.6	Pass	
208.9	V	0	46	14.9	5.5	27.9	38.5	43.5	-5.0	Pass	
258.1	V	0	42.4	17.1	6.2	27.9	37.8	46.0	-8.2	Pass	
73.7	H	0	40.9	8.9	3.1	27.5	25.4	40.0	-14.6	Pass	
86	H	0	35	9.6	3.5	27.4	20.7	40.0	-19.3	Pass	
110.6	H	0	35	11.4	3.8	27.6	22.6	43.5	-20.9	Pass	
196.6	H	0	43	14.7	5.1	27.9	34.9	43.5	-8.6	Pass	
208.9	H	0	40.7	14.9	5.5	27.9	33.2	43.5	-10.3	Pass	
245.8	H	0	44.2	16.5	5.9	27.9	38.7	46.0	-7.3	Pass	

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Test Data – Radiated Emissions

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
											0 Degrees
301	V	0	34	19.6	6.8	27.9	32.5	46.0	-13.5	Pass	
326	V	0	35.8	15.9	6.8	27.9	30.6	46.0	-15.4	Pass	
432	V	0	32.2	16	8.0	27.8	28.4	46.0	-17.6	Pass	
459	V	0	33	16.3	8.5	28.1	29.7	46.0	-16.3	Pass	
301	H	0	37.5	19.6	6.8	27.9	36.0	46.0	-10.0	Pass	
321	H	0	39.3	15.9	6.8	27.9	34.1	46.0	-11.9	Pass	
371	H	0	45	15.3	7.4	27.7	40.0	46.0	-6.0	Pass	
431	H	0	45	16	8.0	27.8	41.2	46.0	-4.8	Pass	
460	H	0	37	16.8	8.5	28.1	34.2	46.0	-11.8	Pass	
490	H	0	38.3	17.9	8.5	28.1	36.6	46.0	-9.4	Pass	
536	H	0	36.8	17.6	8.9	28.1	35.2	46.0	-10.8	Pass	
688	H	0	29.5	19.9	10.4	27.8	32.0	46.0	-14.0	Pass	
750	H	0	27	20.8	11.1	27.7	31.2	46.0	-14.8	Pass	
											45 degrees
73.7	V	0	48.1	8.9	3.1	27.5	32.6	40.0	-7.4	Pass	
86	V	0	45.6	9.6	3.5	27.4	31.3	40.0	-8.7	Pass	
110.6	V	0	44.2	11.4	3.8	27.6	31.8	43.5	-11.7	Pass	
122.9	V	0	44.7	11.9	3.8	27.6	32.8	43.5	-10.7	Pass	
135.2	V	0	43.7	12.7	4.2	27.7	32.9	43.5	-10.6	Pass	
147.4	V	0	44.7	13.5	4.2	27.7	34.7	43.5	-8.8	Pass	
196.6	V	0	43.6	14.7	5.1	27.9	35.5	43.5	-8.0	Pass	
208.9	V	0	42.1	14.9	5.5	27.9	34.6	43.5	-8.9	Pass	
258.1	V	0	35.2	17.1	6.2	27.9	30.6	46.0	-15.4	Pass	
73.7	H	0	42.4	8.9	3.1	27.5	26.9	40.0	-13.1	Pass	
86	H	0	45.9	9.6	3.5	27.4	31.6	40.0	-8.4	Pass	
110.6	H	0	40	11.4	3.8	27.6	27.6	43.5	-15.9	Pass	
196.6	H	0	42.5	14.7	5.1	27.9	34.4	43.5	-9.1	Pass	
208.9	H	0	40.4	14.9	5.5	27.9	32.9	43.5	-10.6	Pass	
245.8	H	0	39.4	16.5	5.9	27.9	33.9	46.0	-12.1	Pass	

Test Data – Radiated Emissions

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
											45 degrees
301	V	0	25	19.6	6.8	27.9	23.5	46.0	-22.5	Pass	
326	V	0	30	15.9	6.8	27.9	24.8	46.0	-21.2	Pass	
432	V	0	40	16	8.0	27.8	36.2	46.0	-9.8	Pass	
459	V	0	39	16.3	8.5	28.1	35.7	46.0	-10.3	Pass	
301	H	0	41.2	19.6	6.8	27.9	39.7	46.0	-6.3	Pass	
321	H	0	41	15.9	6.8	27.9	35.8	46.0	-10.2	Pass	
340	H	0	39.9	14.9	6.8	27.9	33.7	46.0	-12.3	Pass	
431	H	0	39.7	16	8.0	27.8	35.9	46.0	-10.1	Pass	
460	H	0	43	16.8	8.5	28.1	40.2	46.0	-5.8	Pass	
490	H	0	36.5	17.9	8.5	28.1	34.8	46.0	-11.2	Pass	
536	H	0	37.6	17.6	8.9	28.1	36.0	46.0	-10.0	Pass	
688	H	0	31	19.9	10.4	27.8	33.5	46.0	-12.5	Pass	
750	H	0	30	20.8	11.1	27.7	34.2	46.0	-11.8	Pass	
											90 degrees
73.7	V	0	52	8.9	3.1	27.5	36.5	40.0	-3.5	Pass	
86	V	0	52	9.6	3.5	27.4	37.7	40.0	-2.3	Pass	
110.6	V	0	52.6	11.4	3.8	27.6	40.2	43.5	-3.3	Pass	
122.9	V	0	50.4	11.9	3.8	27.6	38.5	43.5	-5.0	Pass	
135.2	V	0	51	12.7	4.2	27.7	40.2	43.5	-3.3	Pass	
147.4	V	0	50.4	13.5	4.2	27.7	40.4	43.5	-3.1	Pass	
196.6	V	0	50	14.7	5.1	27.9	41.9	43.5	-1.6	Pass	
208.9	V	0	49.3	14.9	5.5	27.9	41.8	43.5	-1.7	Pass	
226.2	V	0	49	16	5.9	27.9	43.0	46.0	-3.0	Pass	
258.1	V	0	45.4	17.1	6.2	27.9	40.8	46.0	-5.2	Pass	
73.7	H	0	40	8.9	3.1	27.5	24.5	40.0	-15.5	Pass	
86	H	0	33	9.6	3.5	27.4	18.7	40.0	-21.3	Pass	
110.6	H	0	34	11.4	3.8	27.6	21.6	43.5	-21.9	Pass	
122.9	H	0	41	11.9	3.8	27.6	29.1	43.5	-14.4	Pass	
196.6	H	0	44.8	14.7	5.1	27.9	36.7	43.5	-6.8	Pass	
208.9	H	0	46	14.9	5.5	27.9	38.5	43.5	-5.0	Pass	
245.8	H	0	45	16.5	5.9	27.9	39.5	46.0	-6.5	Pass	

Test Data – Radiated Emissions

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
											90 Degrees
301	V	0	41	19.6	6.8	27.9	39.5	46.0	-6.5	Pass	
321	V	0	44.6	15.9	6.8	27.9	39.4	46.0	-6.6	Pass	
328	V	0	44	15.9	6.8	27.9	38.8	46.0	-7.2	Pass	
385	V	0	44.2	15.6	7.4	27.7	39.5	46.0	-6.5	Pass	
488	V	0	40.3	19.4	8.5	28.1	40.1	46.0	-5.9	Pass	
554	V	0	38.1	19.5	9.5	27.8	39.3	46.0	-6.7	Pass	
682	V	0	34.6	19.9	10.4	27.8	37.1	46.0	-8.9	Pass	
785	V	0	24	21	11.1	27.7	28.4	46.0	-17.6	Pass	
917	V	0	23	23.2	12.1	27.9	30.4	46.0	-15.6	Pass	
301	H	0	42.3	19.6	6.8	27.9	40.8	46.0	-5.2	Pass	
325	H	0	48.3	15.9	6.8	27.9	43.1	46.0	-2.9	Pass	
350	H	0	46.6	15	7.4	27.7	41.3	46.0	-4.7	Pass	
400	H	0	42.8	16.1	8.0	27.8	39.1	46.0	-6.9	Pass	
450	H	0	37.6	16.3	8.5	28.1	34.3	46.0	-11.7	Pass	
540	H	0	32	17.5	8.9	28.1	30.3	46.0	-15.7	Pass	
											135 degrees
73.7	V	0	53	8.9	3.1	27.5	37.5	40.0	-2.5	Pass	
86	V	0	50.3	9.6	3.5	27.4	36.0	40.0	-4.0	Pass	
110.6	V	0	48.1	11.4	3.8	27.6	35.7	43.5	-7.8	Pass	
122.9	V	0	47	11.9	3.8	27.6	35.1	43.5	-8.4	Pass	
135.2	V	0	50	12.7	4.2	27.7	39.2	43.5	-4.3	Pass	
147.4	V	0	49.5	13.5	4.2	27.7	39.5	43.5	-4.0	Pass	
196.6	V	0	45.5	14.7	5.1	27.9	37.4	43.5	-6.1	Pass	
208.9	V	0	44	14.9	5.5	27.9	36.5	43.5	-7.0	Pass	
226.2	V	0	43.4	16	5.9	27.9	37.4	46.0	-8.6	Pass	
258.1	V	0	40	17.1	6.2	27.9	35.4	46.0	-10.6	Pass	

Test Data – Radiated Emissions

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
											135 degrees
73.7	H	0	40.6	8.9	3.1	27.5	25.1	40.0	-14.9	Pass	
86	H	0	39	9.6	3.5	27.4	24.7	40.0	-15.3	Pass	
110.6	H	0	38.2	11.4	3.8	27.6	25.8	43.5	-17.7	Pass	
122.9	H	0	37	11.9	3.8	27.6	25.1	43.5	-18.4	Pass	
196.6	H	0	37.4	14.7	5.1	27.9	29.3	43.5	-14.2	Pass	
208.9	H	0	37.6	14.9	5.5	27.9	30.1	43.5	-13.4	Pass	
245.8	H	0	42.5	16.5	5.9	27.9	37.0	46.0	-9.0	Pass	
301	V	0	45	19.6	6.8	27.9	43.5	46.0	-2.5	Pass	
321	V	0	46	15.9	6.8	27.9	40.8	46.0	-5.2	Pass	
328	V	0	46.5	15.9	6.8	27.9	41.3	46.0	-4.7	Pass	
385	V	0	46	15.6	7.4	27.7	41.3	46.0	-4.7	Pass	
488	V	0	38.6	19.4	8.5	28.1	38.4	46.0	-7.6	Pass	
554	V	0	35.4	19.5	9.5	27.8	36.6	46.0	-9.4	Pass	
682	V	0	34	19.9	10.4	27.8	36.5	46.0	-9.5	Pass	
785	V	0	26	21	11.1	27.7	30.4	46.0	-15.6	Pass	
917	V	0	31	23.2	12.1	27.9	38.4	46.0	-7.6	Pass	
301	H	0	44	19.6	6.8	27.9	42.5	46.0	-3.5	Pass	
325	H	0	48.3	15.9	6.8	27.9	43.1	46.0	-2.9	Pass	
350	H	0	46.8	15	7.4	27.7	41.5	46.0	-4.5	Pass	
400	H	0	46.7	16.1	8.0	27.8	43.0	46.0	-3.0	Pass	
450	H	0	40.6	16.3	8.5	28.1	37.3	46.0	-8.7	Pass	
540	H	0	36.6	17.5	8.9	28.1	34.9	46.0	-11.1	Pass	

Test Data – Radiated Emissions

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
											180 Degrees
73.7	V	0	43.4	8.9	3.1	27.5	27.9	40.0	-12.1	Pass	
86	V	0	36	9.6	3.5	27.4	21.7	40.0	-18.3	Pass	
110.6	V	0	39.4	11.4	3.8	27.6	27.0	43.5	-16.5	Pass	
122.9	V	0	39.5	11.9	3.8	27.6	27.6	43.5	-15.9	Pass	
135.2	V	0	42	12.7	4.2	27.7	31.2	43.5	-12.3	Pass	
147.4	V	0	47	13.5	4.2	27.7	37.0	43.5	-6.5	Pass	
196.6	V	0	44.1	14.7	5.1	27.9	36.0	43.5	-7.5	Pass	
208.9	V	0	45	14.9	5.5	27.9	37.5	43.5	-6.0	Pass	
258.1	V	0	39.8	17.1	6.2	27.9	35.2	46.0	-10.8	Pass	
73.7	H	0	38.5	8.9	3.1	27.5	23.0	40.0	-17.0	Pass	
86	H	0	33.9	9.6	3.5	27.4	19.6	40.0	-20.4	Pass	
110.6	H	0	37.4	11.4	3.8	27.6	25.0	43.5	-18.5	Pass	
122.9	H	0	34.8	11.9	3.8	27.6	22.9	43.5	-20.6	Pass	
135.2	H	0	33.7	12.7	4.2	27.7	22.9	43.5	-20.6	Pass	
172	H	0	32.1	14.3	4.7	27.8	23.3	43.5	-20.2	Pass	
196.6	H	0	40.1	14.7	5.1	27.9	32.0	43.5	-11.5	Pass	
208.9	H	0	39.4	14.9	5.5	27.9	31.9	43.5	-11.6	Pass	
245.8	H	0	44.2	16.5	5.9	27.9	38.7	46.0	-7.3	Pass	
258	H	0	47.8	17.1	6.2	27.9	43.2	46.0	-2.8	Pass	
270.6	H	0	46	18.1	6.2	27.9	42.4	46.0	-3.6	Pass	
282.9	H	0	46	18.7	6.4	27.8	43.3	46.0	-2.7	Pass	
295.2	H	0	44	18.8	6.4	27.8	41.4	46.0	-4.6	Pass	
301	V	0	35.2	19.6	6.8	27.9	33.7	46.0	-12.3	Pass	
325	V	0	33.7	15.9	6.8	27.9	28.5	46.0	-17.5	Pass	
368	V	0	33.1	15.1	7.4	27.7	27.9	46.0	-18.1	Pass	
490	V	0	32.7	17.9	8.5	28.1	31.0	46.0	-15.0	Pass	
301	H	0	39.1	19.6	6.8	27.9	37.6	46.0	-8.4	Pass	
330	H	0	46	15.3	6.8	27.9	40.2	46.0	-5.8	Pass	
392	H	0	44.5	15.9	7.4	27.7	40.1	46.0	-5.9	Pass	
460	H	0	45.6	16.8	8.5	28.1	42.8	46.0	-3.2	Pass	
544	H	0	42.6	17.5	8.9	28.1	40.9	46.0	-5.1	Pass	

Test Data – Radiated Emissions

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
73.7	V	0	51.8	8.9	3.1	27.5	36.3	40.0	-3.7	Pass	225 degrees
86	V	0	49.3	9.6	3.5	27.4	35.0	40.0	-5.0	Pass	
110.6	V	0	50.8	11.4	3.8	27.6	38.4	43.5	-5.1	Pass	
122.9	V	0	49.9	11.9	3.8	27.6	38.0	43.5	-5.5	Pass	
135.2	V	0	48.2	12.7	4.2	27.7	37.4	43.5	-6.1	Pass	
147.4	V	0	46.3	13.5	4.2	27.7	36.3	43.5	-7.2	Pass	
196.6	V	0	46.7	14.7	5.1	27.9	38.6	43.5	-4.9	Pass	
208.9	V	0	44	14.9	5.5	27.9	36.5	43.5	-7.0	Pass	
258.1	V	0	37.8	17.1	6.2	27.9	33.2	46.0	-12.8	Pass	
73.7	H	0	42.3	8.9	3.1	27.5	26.8	40.0	-13.2	Pass	
86	H	0	32.3	9.6	3.5	27.4	18.0	40.0	-22.0	Pass	
110.6	H	0	36	11.4	3.8	27.6	23.6	43.5	-19.9	Pass	
122.9	H	0	37	11.9	3.8	27.6	25.1	43.5	-18.4	Pass	
135.2	H	0	36.2	12.7	4.2	27.7	25.4	43.5	-18.1	Pass	
172	H	0	37	14.3	4.7	27.8	28.2	43.5	-15.3	Pass	
196.6	H	0	38.5	14.7	5.1	27.9	30.4	43.5	-13.1	Pass	
208.9	H	0	36	14.9	5.5	27.9	28.5	43.5	-15.0	Pass	
245.8	H	0	39.8	16.5	5.9	27.9	34.3	46.0	-11.7	Pass	
258	H	0	42.2	17.1	6.2	27.9	37.6	46.0	-8.4	Pass	
270.6	H	0	42	18.1	6.2	27.9	38.4	46.0	-7.6	Pass	
282.9	H	0	42.6	18.7	6.4	27.8	39.9	46.0	-6.1	Pass	
295.2	H	0	43.8	18.8	6.4	27.8	41.2	46.0	-4.8	Pass	

Test Data – Radiated Emissions

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
											225 degrees
301	V	0	35.2	19.6	6.8	27.9	33.7	46.0	-12.3	Pass	
325	V	0	42.5	15.9	6.8	27.9	37.3	46.0	-8.7	Pass	
368	V	0	40.6	15.1	7.4	27.7	35.4	46.0	-10.6	Pass	
490	V	0	38.3	17.9	8.5	28.1	36.6	46.0	-9.4	Pass	
301	H	0	41.3	19.6	6.8	27.9	39.8	46.0	-6.2	Pass	
330	H	0	45	15.3	6.8	27.9	39.2	46.0	-6.8	Pass	
392	H	0	46.2	15.9	7.4	27.7	41.8	46.0	-4.2	Pass	
460	H	0	43.9	16.8	8.5	28.1	41.1	46.0	-4.9	Pass	
544	H	0	41.5	17.5	8.9	28.1	39.8	46.0	-6.2	Pass	
730	H	0	34.5	20.8	10.7	27.6	38.4	46.0	-7.6	Pass	
830	H	0	22	22.5	11.8	27.5	28.8	46.0	-17.2	Pass	
											270 degrees
73.7	V	0	39.6	8.9	3.1	27.5	24.1	40.0	-15.9	Pass	
86	V	0	36	9.6	3.5	27.4	21.7	40.0	-18.3	Pass	
110.6	V	0	42	11.4	3.8	27.6	29.6	43.5	-13.9	Pass	
122.9	V	0	46	11.9	3.8	27.6	34.1	43.5	-9.4	Pass	
135.2	V	0	44	12.7	4.2	27.7	33.2	43.5	-10.3	Pass	
147.4	V	0	45.8	13.5	4.2	27.7	35.8	43.5	-7.7	Pass	
159.8	V	0	42.6	14.3	4.7	27.8	33.8	43.5	-9.7	Pass	
172.1	V	0	43.4	14.3	4.7	27.8	34.6	43.5	-8.9	Pass	
184.4	V	0	40	14.6	5.1	27.9	31.8	43.5	-11.7	Pass	
196.6	V	0	44.5	14.7	5.1	27.9	36.4	43.5	-7.1	Pass	
208.9	V	0	43.4	14.9	5.5	27.9	35.9	43.5	-7.6	Pass	
221.4	V	0	40	15.7	5.5	27.9	33.3	46.0	-12.7	Pass	
233.7	V	0	39.2	16.2	5.9	27.9	33.4	46.0	-12.6	Pass	
258.1	V	0	37.5	17.1	6.2	27.9	32.9	46.0	-13.1	Pass	
270.6	V	0	37.5	18.1	6.2	27.9	33.9	46.0	-12.1	Pass	
282.9	V	0	38.4	18.7	6.4	27.8	35.7	46.0	-10.3	Pass	

Test Data – Radiated Emissions

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
											270 degrees
73.7	H	0	39.3	8.9	3.1	27.5	23.8	40.0	-16.2	Pass	
86	H	0	35	9.6	3.5	27.4	20.7	40.0	-19.3	Pass	
110.6	H	0	34.6	11.4	3.8	27.6	22.2	43.5	-21.3	Pass	
122.9	H	0	34.5	11.9	3.8	27.6	22.6	43.5	-20.9	Pass	
196.6	H	0	41.5	14.7	5.1	27.9	33.4	43.5	-10.1	Pass	
208.9	H	0	37.3	14.9	5.5	27.9	29.8	43.5	-13.7	Pass	
245.8	H	0	33.9	16.5	5.9	27.9	28.4	46.0	-17.6	Pass	
258	H	0	35.2	17.1	6.2	27.9	30.6	46.0	-15.4	Pass	
295.2	H	0	43.1	18.8	6.4	27.8	40.5	46.0	-5.5	Pass	
301	V	0	33.3	19.6	6.8	27.9	31.8	46.0	-14.2	Pass	
333	V	0	40.4	15.3	6.8	27.9	34.6	46.0	-11.4	Pass	
350	V	0	42.9	15	7.4	27.7	37.6	46.0	-8.4	Pass	
400	V	0	40.2	16.1	8.0	27.8	36.5	46.0	-9.5	Pass	
488	V	0	38.9	19.4	8.5	28.1	38.7	46.0	-7.3	Pass	
616	V	0	38	18.9	9.7	27.9	38.7	46.0	-7.3	Pass	
730	V	0	34	20.8	10.7	27.6	37.9	46.0	-8.1	Pass	
950	V	0	28	23.6	12.9	27.5	37.0	46.0	-9.0	Pass	
301	H	0	35	19.6	6.8	27.9	33.5	46.0	-12.5	Pass	
325	H	0	42	15.9	6.8	27.9	36.8	46.0	-9.2	Pass	
350	H	0	41.3	15	7.4	27.7	36.0	46.0	-10.0	Pass	
400	H	0	44.8	16.1	8.0	27.8	41.1	46.0	-4.9	Pass	
480	H	0	42	19.4	8.5	28.1	41.8	46.0	-4.2	Pass	
516	H	0	37.5	17.3	8.9	28.1	35.6	46.0	-10.4	Pass	
616	H	0	37	18.9	9.7	27.9	37.7	46.0	-8.3	Pass	
750	H	0	29	20.8	11.1	27.7	33.2	46.0	-12.8	Pass	

Test Data – Radiated Emissions

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
											315 degrees
73.7	V	0	52	8.9	3.1	27.5	36.5	40.0	-3.5	Pass	
86	V	0	51	9.6	3.5	27.4	36.7	40.0	-3.3	Pass	
110.6	V	0	47	11.4	3.8	27.6	34.6	43.5	-8.9	Pass	
122.9	V	0	49.6	11.9	3.8	27.6	37.7	43.5	-5.8	Pass	
135.2	V	0	45	12.7	4.2	27.7	34.2	43.5	-9.3	Pass	
147.4	V	0	45.6	13.5	4.2	27.7	35.6	43.5	-7.9	Pass	
159.8	V	0	39	14.3	4.7	27.8	30.2	43.5	-13.3	Pass	
172.1	V	0	40.6	14.3	4.7	27.8	31.8	43.5	-11.7	Pass	
184.4	V	0	43.6	14.6	5.1	27.9	35.4	43.5	-8.1	Pass	
196.6	V	0	48	14.7	5.1	27.9	39.9	43.5	-3.6	Pass	
208.9	V	0	45.8	14.9	5.5	27.9	38.3	43.5	-5.2	Pass	
221.4	V	0	41.2	15.7	5.5	27.9	34.5	46.0	-11.5	Pass	
233.7	V	0	39.9	16.2	5.9	27.9	34.1	46.0	-11.9	Pass	
258.1	V	0	35.5	17.1	6.2	27.9	30.9	46.0	-15.1	Pass	
270.6	V	0	31.2	18.1	6.2	27.9	27.6	46.0	-18.4	Pass	
282.9	V	0	26.9	18.7	6.4	27.8	24.2	46.0	-21.8	Pass	
73.7	H	0	40	8.9	3.1	27.5	24.5	40.0	-15.5	Pass	
86	H	0	36	9.6	3.5	27.4	21.7	40.0	-18.3	Pass	
110.6	H	0	32	11.4	3.8	27.6	19.6	43.5	-23.9	Pass	
122.9	H	0	34	11.9	3.8	27.6	22.1	43.5	-21.4	Pass	
196.6	H	0	37.8	14.7	5.1	27.9	29.7	43.5	-13.8	Pass	
208.9	H	0	40.5	14.9	5.5	27.9	33.0	43.5	-10.5	Pass	
245.8	H	0	42.4	16.5	5.9	27.9	36.9	46.0	-9.1	Pass	
258	H	0	41.6	17.1	6.2	27.9	37.0	46.0	-9.0	Pass	
295.2	H	0	41.8	18.8	6.4	27.8	39.2	46.0	-6.8	Pass	

Test Data – Radiated Emissions

Meas. Freq. (MHz)	Ant. Pol. (H/V)	Det. Atten. (dB)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	Corrected Reading (dBuV/m)	Spec. limit (dBuV/m)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
											315 degrees
301	V	0	37.5	19.6	6.8	27.9	36.0	46.0	-10.0	Pass	
333	V	0	36	15.3	6.8	27.9	30.2	46.0	-15.8	Pass	
350	V	0	36.3	15	7.4	27.7	31.0	46.0	-15.0	Pass	
400	V	0	38.4	16.1	8.0	27.8	34.7	46.0	-11.3	Pass	
488	V	0	39.5	19.4	8.5	28.1	39.3	46.0	-6.7	Pass	
616	V	0	39	18.9	9.7	27.9	39.7	46.0	-6.3	Pass	
730	V	0	35.3	20.8	10.7	27.6	39.2	46.0	-6.8	Pass	
950	V	0	25.5	23.6	12.9	27.5	34.5	46.0	-11.5	Pass	
301	H	0	38.4	19.6	6.8	27.9	36.9	46.0	-9.1	Pass	
325	H	0	44.3	15.9	6.8	27.9	39.1	46.0	-6.9	Pass	
350	H	0	45.8	15	7.4	27.7	40.5	46.0	-5.5	Pass	
400	H	0	41	16.1	8.0	27.8	37.3	46.0	-8.7	Pass	
480	H	0	40	19.4	8.5	28.1	39.8	46.0	-6.2	Pass	
516	H	0	43.3	17.3	8.9	28.1	41.4	46.0	-4.6	Pass	
616	H	0	37	18.9	9.7	27.9	37.7	46.0	-8.3	Pass	
750	H	0	30	20.8	11.1	27.7	34.2	46.0	-11.8	Pass	

Test Data – Radiated Emissions

Radiated Emissions Data

Complete X Job # : 5113 Test # : REHE-01
Preliminary Page 1 of 1

Client Name : University of Houston
EUT Name : Ground Coupled Radar
EUT Model # : U7W400
EUT Part # :
EUT Serial # :
EUT Config. : Transmitting over sand pit

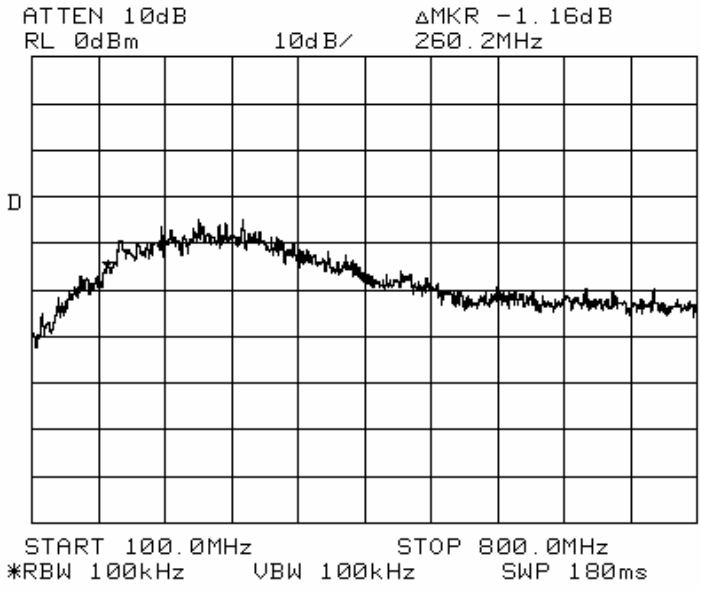
Specification : CFR 47, Paragraph 15.509 Reference : 15.209/15.509

Rod. Ant. #:		Temp. (deg. C) :	22	Date :	09/20/07
Bicon Ant.#:		Humidity (%) :	40	Time :	9:00
Log Ant.#:		EUT Voltage :	12	Staff :	David Light
Bilog Ant.#:		EUT Frequency :	dc	Photo ID:	
Horn Ant.#:	993	Phase:	0		
Cable#:	1019	Location:	Sand Pit		
Preamp#:	1016	Distance:	3 Meters		
Limiter#:		Barometric pressure:	1016		
Atten #:					
Detector#:	1036				

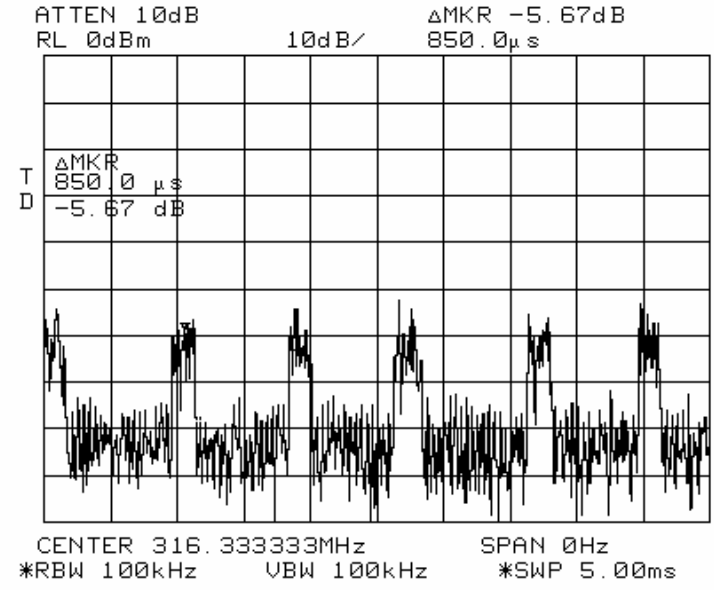
Meas. Freq. (MHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Path Loss (dB)	RF Gain (dB)	EIRP Correction	EIRP (dBm)		Spec. limit (dBm)	CR/SL Diff. (dB)	Pass Fail Unc.	Comment
1050	33	22.7	0.2	29.8	95.2	-69.1		-65.3	-3.8	Pass	
1540	37	24.3	0.2	32.9	95.2	-66.6		-65.3	-1.3	Pass	
1620	33.4	24.3	1	32.9	95.2	-69.4		-53.3	-16.1	Pass	
1920	33.2	28.5	1	33.1	95.2	-65.6		-53.3	-12.3	Pass	
2060	32.7	28.5	1	33.1	95.2	-66.1		-51.3	-14.8	Pass	
2940	32.6	29.7	1.2	33.3	95.2	-65.0		-51.3	-13.7	Pass	
3120	32.1	29.7	1.2	33.3	95.2	-65.5		-41.3	-24.2	Pass	
3910	31.8	31.6	1.3	33.6	95.2	-64.1		-41.3	-22.8	Pass	
1167	15.4	22.7	0.2	29.8	95.2	-86.7		-75.3	-11.4	Pass	
1230	1	22.7	0.2	29.8	95.2	-101.1		-75.3	-25.8	Pass	
1560	20	24.3	1	32.9	95.2	-82.8		-75.3	-7.5	Pass	
1608	3.5	24.3	1	32.9	95.2	-99.3		-75.3	-24.0	Pass	
The spectrum was searched to 4 GHz											
The EUT was rotated and a reading taken at every 45 degrees											
Worst case data is presented											

..\EMCShare\AUTOMATE\DATASHTS\RADEMEV Rev C.xls Document Control #EMC DS EM RAD HFE

10 dB Bandwidth



Pulse Repetition



Test Setup Photographs

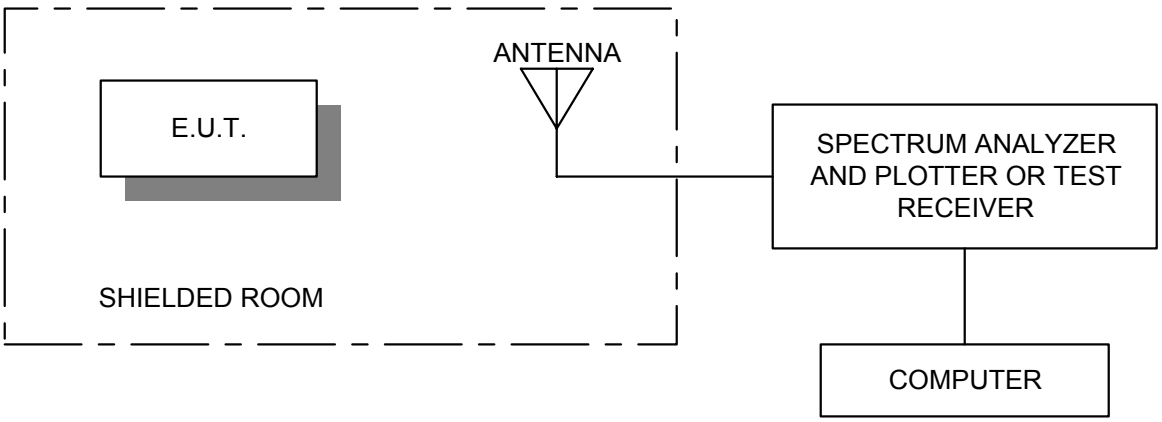
Section 4. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1306	Antenna biconical	Nemko USA, Inc. BCON 30300	212	03/30/07	03/29/08
759	ANTENNA, LOG PERIODIC	A.H. SYSTEMS SAS-200/510	556	03/30/07	03/29/08
1522	Cable Assy, LAB 5 - D OATS	Nemko USA, Inc. Site D OATS	N/A	11/01/06	11/01/07
762	27dB GAIN PREAMP	Nemko USA, Inc. 27dB LNA	946	10/15/06	10/15/07
1629	CABLE, 6 ft	MEGAPHASE 10311 1GVT4	N/A	03/05/07	03/04/08
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	05/26/06	05/26/08
1659	Spectrum Analyzer	Rhode & Schwarz FSP	973353	01/24/07	01/24/09
993	Horn antenna	A.H. Systems SAS-200/571	XXX	08/31/07	08/31/09
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/01/07	04/30/08

ANNEX A

TEST DIAGRAMS

Radiated Prescan



Test Site For Radiated Emissions