Electromagnetic Compatibility Test Report

Tests Performed on a DCSI

Wireless Meter Reading System, Model HHTR

Radiometrics Document RP-5648B

ACCREDITED
Certification # 1495.01

Product Detail:
FCC ID: PN3Y72160-301
Equipment type: 902 to 928 MHz Transceiver for Meter Reading.

Test Standards:
US CFR Title 47, Chapter I, FCC Part 15 Subpart C
FCC Part 15 CFR Title 47: 2002
Industry Canada RSS-210, Issue 5 as required for Category I Equipment

This report concerns: Original Grant
FCC Part 15.249
RSS-210 6.2.2 (m2)

Tests Performed For:	*Test Facility:*
DCSI 5657 Campus Pkwy. Hazelwood, MO 63042 Phone: (314) 895-6505	**Radiometrics Midwest Corporation** 12 East Devonwood Romeoville, IL 60446 Phone: (815) 293-0772 e-mail: info@radiomet.com

Test Date(s): (Month-Day-Year)
September 12, November 4, 14 and December 9, 2006

Document RP-5648B Revisions:

Rev.	Issue Date	Affected Pages	Revised By
0	June 13, 2006		
1	June 16, 2006	1 and 14	Joseph Strzelecki

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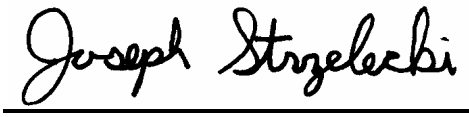
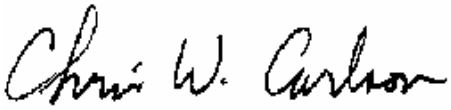
1 ADMINISTRATIVE DATA

Equipment Under Test: A DCSI, Wireless Meter Reading System Model: HHTR The HHTR has a Serial Number: 134 This will be referred to as the EUT in this Report	
Date EUT Received at Radiometrics: (Month-Day-Year) August 25, 2005	*Test Date(s): (Month-Day-Year)* September 2 to November 14, 2005
Test Report Written By: Joseph Strzelecki Senior EMC Engineer	*Test Witnessed By:* Not witnessed by personnel from DCSI
Radiometrics' Personnel Responsible for Test:  Joseph Strzelecki Senior EMC Engineer NARTE EMC-000877-NE	*Test Report Approved By*  Chris W. Carlson Director of Engineering NARTE EMC-000921-NE

2 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is a Wireless Meter Reading System, Models EMTR and HHTR, manufactured by DCSI. The detailed test results are presented in a separate section. The following is a summary of the test results. This report is for a system of three transceivers.

Environmental Phenomena	Frequency Range	FCC Section	RSS-210 Section	Test Result
Radiated Emissions (Spurious & Fundamental)	30-9300 MHz	15.249	6.2.2 (m2)	Pass
AC Conducted Emissions	30-9300 MHz	15.249	6.6	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 and it is exempt from RSS-102.

There are no power level adjustments and the antenna is permanently attached.

3 EQUIPMENT UNDER TEST (EUT) DETAILS

3.1 EUT Description

The EUT is a Wireless Meter Reading System, Models HHTR, manufactured by DCSI. The EUT was in good working condition during the tests, with no known defects.

The Antenna has a gain of less than 3 dBi.

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 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	Assem #	Serial Number
1	Wireless Meter Reading System	E	DCSI	HHTR	Y2160-301	134

* Type: E = EUT, P = Peripheral,

List of System Cables

QTY	Length (m)	Cable Description	Connected to (Item #)	Shielded?
1	1.8	Low voltage power cable from transformer to HHTR	#1	No
1	1.8	DB15 Serial cable	#2	Yes
1	2	6 pin RJ Communication Cable	#2	No

The EUT was tested as a stand-alone device. The EUT was tested in two configurations. First it was tested with no cables connected since meter reader personnel in the field will use it with no cables connected. In the second configuration, power was supplied at 115 VAC, 60 Hz single-phase to its external power supply. Unterminated cables were connected to it. However the EUT will not transmit while connected to a computer. It will not be transmitting with the I/O cables connected.

The Radiated emissions were measured in both configurations. The worst-case emissions were reported. The AC Conducted emissions were tested in the second configuration.

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	2006	Code of Federal Regulations Title 47, Chapter 1, Federal Communications Commission, Part 15 - Radio Frequency Devices
ANSI C63.4-2003	2003	Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
IC RSS-210 Issue 6	2005	Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands)
IC RSS-212 Issue 1	1998	Test Methods For Radio Equipment
ANSI C12.1	2001	Electricity Meters Code For Electricity Metering

The test procedures used are in accordance with the FCC DA 00-75, Industry Canada RSS-212 and ANSI document 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". The specific procedures are described herein. Radiated testing was performed at an antenna to EUT distance of 3 meters. The antenna was raised and lowered from 1 to 4 meters.

6 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics has been accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 1999 "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 "basic standards" 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.a2la.org).

The following is a list of shielded enclosures located in Romeoville, Illinois:

Chamber A: Is an anechoic chamber that measures 24' L X 12' W X 12' H. The walls and ceiling are fully lined with ferrite absorber tiles. The floor has a 10' x 10' section of ferrite absorber tiles in the located in the center. Panashield of Rowayton, Connecticut manufactured the chamber. The enclosure is NAMAS certified.

Chamber B: Is a shielded enclosure that measures 24' L X 12' W X 8' H. Erik A. Lindgren & Associates of Chicago, Illinois manufactured the enclosure.

Chamber C: Is a shielded enclosure that measures 20' L X 10' W X 8' H. Lindgren RF Enclosures Inc. of Addison, Illinois manufactured the enclosure.

Chamber D: Is a fully anechoic chamber that measures 22' L X 10' W X 10' H. The walls, ceiling and floor are fully lined with ferrite absorber tiles. Braden Shielding Systems of Tulsa, Oklahoma manufactured the chamber.

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.

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.

Open Area Test Site (OATS): Is located on 8625 Helmar Road in Newark, Illinois, USA and measures 56' L X 24' W X 17' H. The entire open field test site has a metal ground screen. The FCC has accepted these sites as test site number 31040/SIT 1300F2. The FCC test site Registration Number is 90897. Details of the site characteristics are on file with the Industry Canada as file number IC3124.

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. The results relate only to the EUT listed herein. Any modifications made to the EUT subsequent to the indicated test date will invalidate the data and void this certification.

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.	12/07/04
AMP-16	MITEQ	Pre-amplifier	AM-1300	608852	0.01-1000MHz	12 Mo.	12/29/04
ANT-06	EMCO	Log-Periodic Ant.	3146	1248	200-1000MHz	24 mo	11/17/05
ANT-13	EMCO	Horn Antenna	3115	2502	1.0-18GHz	24 Mo.	10/13/04
ANT-42	EMCO	Bicon Antenna	3104C	9512-4713	25-300MHz	24 Mo.	11/17/05
ANT-44	Impossible Machine	Super Log Antenna	SL-20M2G	1002	20-2000MHz	24 Mo.	06/15/04
LSN-01	Electrometrics	50 uH LISN	FCC/VDE 50/2	1001	0.01-30MHz	24 Mo.	04/25/05
LSN-03	Farnell	50 uH LISN	1EXLSN30B	000314	0.01-30MHz	24 Mo.	04/08/05
PRE-01	Hewlett Packard	Preselector	85685A	2510A00143	20 Hz-2GHz	12 Mo.	01/20/05
REC-07	Anritsu	Spectrum Analyzer	MS2601A	MT53067	0.01-2200MHz	12 Mo.	01/04/05
REC-08	Hewlett Packard	Spectrum Analyzer	8566B	2648A13481 2209A01436	30Hz-22GHz	12 Mo.	06/14/05
THM-01	Extech Inst.	Temp/Humid Meter	4465CF	001106557	N/A	24 Mo.	01/28/04

Note: All calibrated equipment is subject to periodic checks.
NCR – No Calibration Required. Device monitored by calibrated equipment. N/A: Not Applicable.

10 TEST SECTIONS

10.1 AC Conducted Emissions; 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.

Broadband conducted emissions may exceed the following limits by no more than 13 dB. An emission is defined as broadband if the average detector amplitude is 6 dB or more under the quasi-peak detector amplitude.

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 power cord, after testing all modes of operation.

Test Date : December 9, 2005
The Amplitude is the final corrected value with cable and LISN Loss.

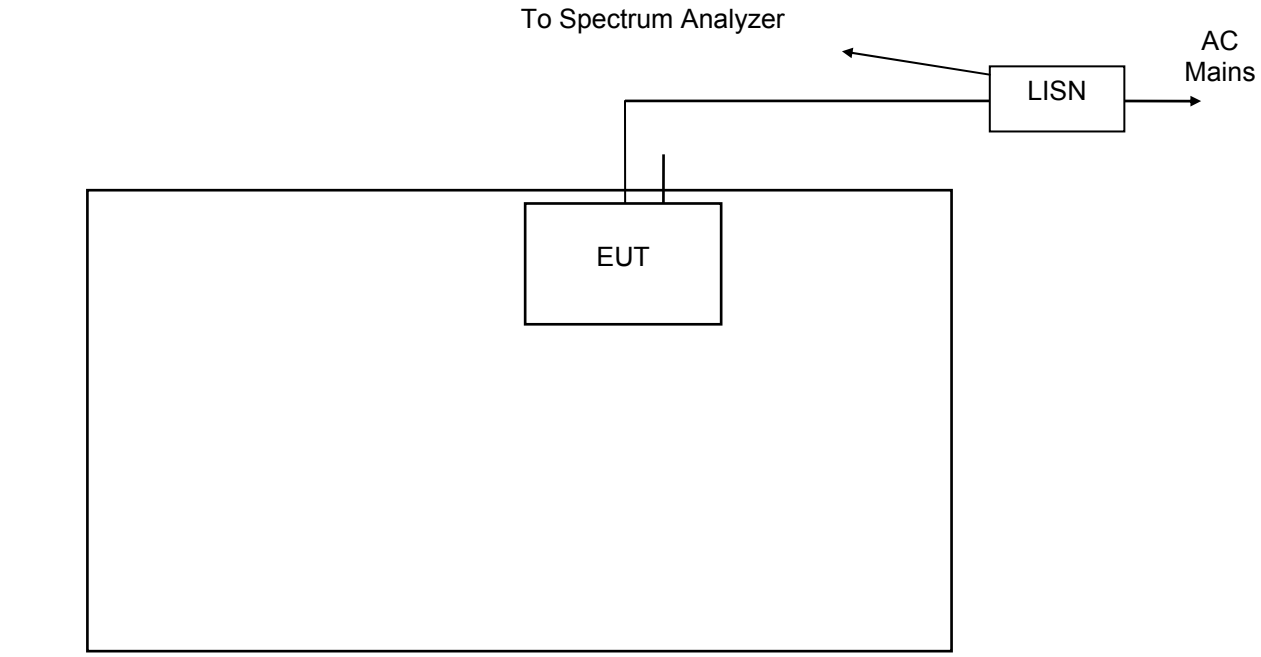
Lead Tested	Frequency MHz	QP Amplitude	QP Limit	Average Amplitude	Average Limit	Margin Under Limit dB
AC Neutral	0.15	46.3	65.9	28.2	55.9	19.6
AC Neutral	0.19	44.8	64.1	25.2	54.1	19.3
AC Neutral	0.23	43.2	62.3	22.5	52.3	19.1
AC Neutral	0.34	39.6	59.2	20.6	49.2	19.6
AC Neutral	0.51	34.4	56.0	18.6	46.0	21.6
AC Neutral	27.54	25.3	60.0	17.3	50.0	32.7
AC Hot	0.15	47.3	66.0	28.7	56.0	18.7
AC Hot	0.21	43.8	63.2	23.7	53.2	19.5
AC Hot	0.28	41.4	60.8	22.1	50.8	19.4
AC Hot	0.39	38.5	58.1	20.4	48.1	19.6

Lead Tested	Frequency MHz	QP Amplitude	QP Limit	Average Amplitude	Average Limit	Margin Under Limit dB
AC Hot	0.58	35.9	56.0	15.8	46.0	20.1
AC Hot	29.53	31.8	60.0	27.2	50.0	22.8
					Worst Case Margin	18.7

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.
# Peak Reading; QP not performed at this frequency since peak is under QP Limit.

Judgment: Passed by 18.7 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
- EUT power cord bundled

10.2 Radiated 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. Below 1 GHz, when a radiated emission is detected approaching the specification limit, the measurement of the emission is repeated using a tuned dipole antenna with a Roberts Balun. 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 and a MITEQ AM-1431 amplifier with a 10 dB attenuator connected to the input were used. The out of band emissions and the ambient emissions were below the level of input overload (80 dBuV).

For tests from 1 to 9.3 GHz, an HP8566A spectrum analyzer was used with a Celeritek uWave amplifier. The out of band emissions and the ambient emissions were below the level of input overload (72 dBuV).

Radiated emission measurements are performed with linearly polarized broadband antennas. Measurements were performed using two antenna polarizations, (vertical and horizontal). The worst case emissions were recorded.

Final radiated emissions measurements were performed in the open area test site at a test distance of 3 meters. The entire frequency range from 30 to 9300 MHz was slowly scanned and the emissions in the restricted frequency bands were recorded. Measurements were performed using the peak detector function. 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. The open area test site used to collect the radiated data is located on 8625 Helmar Road in Newark, Illinois. The open field test site has a metal ground screen. All other tests are performed at 12 East Devonwood Ave. Romeoville, Illinois EMI test lab.

10.2.1 Radiated Emissions Field Strength Sample 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 with a sample calculation is as follows:

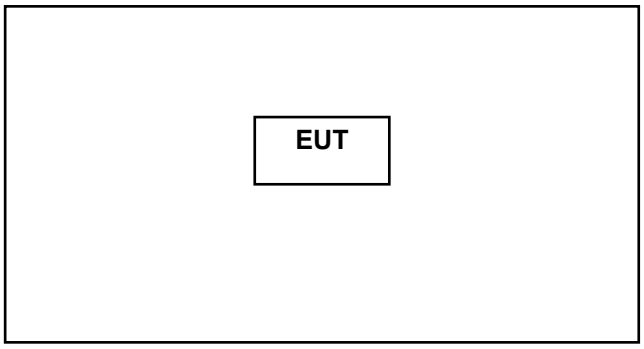
FS = RA + AF + CF - AG

Where: FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor
AG = Amplifier Gain

Assume a receiver reading of 49.5 dBuV is obtained. The Antenna Factor of 8.1 and a Cable Factor of 1.7 is added. The Amplifier Gain of 23.3 dB is subtracted, giving a field strength of 36 dBuV/m. The 36 dBuV/m can be mathematically converted to its corresponding level in uV/m.

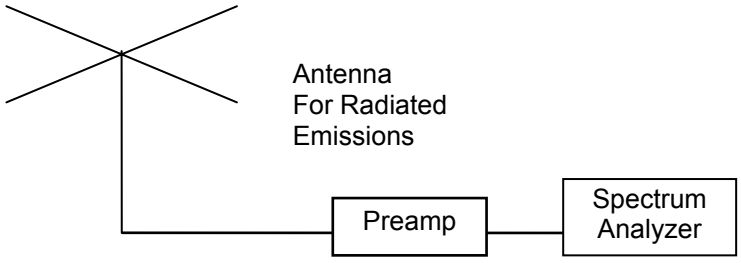
FS = 49.5 + 8.1 + 1.7 - 23.3 = 36.0 dBuV/m
Level in uV/m = Common Antilogarithm [(36 dBuV/m)/20] = 63.1 uV/m

Figure 2. Drawing of Radiated Emissions Setup



1x1.5m surface 80 cm above
Flush-mount Turntable

Notes:
- AC outlet with low-pass filter at the base of the turntable
- Antenna height varied from 1 to 4 meters
- Distance from antenna to tested system is 3 meters
- Not to Scale



10.2.2 Spurious Radiated Emissions Test Results

The following spectrum analyzer settings were used:
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 120 kHz for f < 1 GHz
VBW = 1 kHz for Average Measurements
VBW = 3 MHz for Peak Measurements
Sweep = auto

Manufacturer	DCSI	Specification	FCC Part 15 Subpart C & RSS-210
Model	HHTR	Test Date	September 14, November 4, and 14, 2005
Serial Number	None	Test Distance	3 Meters
Abbreviations	Pol = Antenna Polarization; Vert = Vertical; Horz = Horizontal; QP = Quasi-Peak		
Antennas used	30 to 200 MHz Biconical (ANT-42); 200 to 1000 MHz Log-Periodic (ANT-6) 1 to 18 GHz Double Ridged Guide Horn (ANT-13)		
Notes	The Amplitude is the final corrected value with cable and the preamp gain subtracted.		

EUT	Tx Freq	Ant Pol.	Detector Function	Emission Freq. MHz	dBuV/m	Limit	Margin under limit
HHTR	902.7	Horz	QP	902.7	87.2	94.0	6.8
HHTR	902.7	Horz	Ave	1805.4	39.9	54.0	14.1
HHTR	902.7	Horz	Ave	2708.0	42.7	54.0	11.3
HHTR	902.7	Horz	Ave	3610.7	42.2	54.0	11.8
HHTR	902.7	Horz	Ave	4513.4	47.8	54.0	6.2
HHTR	902.7	Horz	Ave	5416.1	44.0	54.0	10.0
HHTR	902.7	Horz	QP	901.9	41.9	46.0	4.1
HHTR	902.7	Vert	QP	901.9	41.1	46.0	4.9
HHTR	902.7	Vert	QP	902.7	85.0	94.0	9.0
HHTR	902.7	Vert	Ave	1805.4	38.5	54.0	15.5
HHTR	902.7	Vert	Ave	2708.0	43.2	54.0	10.8
HHTR	902.7	Vert	Ave	3610.7	42.0	54.0	12.0
HHTR	902.7	Vert	Ave	4513.4	46.2	54.0	7.8
HHTR	902.7	Vert	Ave	5416.1	44.1	54.0	9.9
HHTR	914.9	Horz	QP	914.9	89.0	94.0	5.0
HHTR	914.9	Horz	Ave	1829.8	40.1	54.0	13.9
HHTR	914.9	Horz	Ave	2744.7	42.9	54.0	11.1
HHTR	914.9	Horz	Ave	3659.5	43.6	54.0	10.4
HHTR	914.9	Horz	Ave	4574.4	46.7	54.0	7.3
HHTR	914.9	Vert	QP	914.9	86.4	94.0	7.6
HHTR	914.9	Vert	Ave	1829.8	39.2	54.0	14.8
HHTR	914.9	Vert	Ave	2744.7	42.7	54.0	11.3
HHTR	914.9	Vert	Ave	3659.5	43.6	54.0	10.4
HHTR	914.9	Vert	Ave	4574.4	42.6	54.0	11.4
HHTR	927.8	Horz	QP	927.8	83.7	94.0	10.3
HHTR	927.8	Horz	Ave	1855.6	37.5	54.0	16.5

HHTR	927.8	Horz	Ave	2783.4	47.2	54.0	6.8
HHTR	927.8	Horz	Ave	3711.2	43.5	54.0	10.5
HHTR	927.8	Horz	Ave	4638.9	48.1	54.0	5.9
HHTR	927.8	Horz	QP	928.1	43.5	46.0	2.5
HHTR	927.8	Vert	QP	928.1	42.8	46.0	3.2
HHTR	927.8	Vert	QP	927.8	84.2	94.0	9.8
HHTR	927.8	Vert	Ave	1855.6	36.9	54.0	17.1
HHTR	927.8	Vert	Ave	2783.4	42.8	54.0	11.2
HHTR	927.8	Vert	Ave	3711.2	42.5	54.0	11.5
HHTR	927.8	Vert	Ave	4638.9	47.0	54.0	7.0
HHTR	902.7	Horz	Peak	1805.4	42.2	74.0	31.8
HHTR	902.7	Horz	Peak	2708.0	44.6	74.0	29.4
HHTR	902.7	Horz	Peak	3610.7	44.4	74.0	29.6
HHTR	902.7	Horz	Peak	4513.4	49.8	74.0	24.2
HHTR	902.7	Horz	Peak	5416.1	45.7	74.0	28.3
HHTR	902.7	Vert	Peak	1805.4	40.5	74.0	33.5
HHTR	902.7	Vert	Peak	2708.0	45.5	74.0	28.5
HHTR	902.7	Vert	Peak	3610.7	43.3	74.0	30.7
HHTR	902.7	Vert	Peak	4513.4	49.1	74.0	24.9
HHTR	902.7	Vert	Peak	5416.1	46.5	74.0	27.5
HHTR	914.9	Horz	Peak	1829.8	40.2	74.0	33.8
HHTR	914.9	Horz	Peak	2744.7	45.0	74.0	29.0
HHTR	914.9	Horz	Peak	3659.5	44.7	74.0	29.3
HHTR	914.9	Horz	Peak	4574.4	48.4	74.0	25.6
HHTR	914.9	Vert	Peak	1829.8	40.6	74.0	33.4
HHTR	914.9	Vert	Peak	2744.7	45.1	74.0	28.9
HHTR	914.9	Vert	Peak	3659.5	45.6	74.0	28.4
HHTR	914.9	Vert	Peak	4574.4	44.7	74.0	29.3
HHTR	927.8	Horz	Peak	1855.6	41.3	74.0	32.7
HHTR	927.8	Horz	Peak	2783.4	49.1	74.0	24.9
HHTR	927.8	Horz	Peak	3711.2	44.6	74.0	29.4
HHTR	927.8	Horz	Peak	4638.9	50.1	74.0	23.9
HHTR	927.8	Vert	Peak	1855.6	40.8	74.0	33.2
HHTR	927.8	Vert	Peak	2783.4	44.7	74.0	29.3
HHTR	927.8	Vert	Peak	3711.2	44.3	74.0	29.7
HHTR	927.8	Vert	Peak	4638.9	48.4	74.0	25.6
HHTR	927.8	Horz	QP	36.8	33.3	40.0	6.7
						Worst Case Margin	2.5

Judgment: HHTR Passed by 2.5 dB

10.3 Spurious Emissions below 900 MHz

Company	DCSI	Specification	FCC Part 15; Subpart B; Class B
Model	HHTR	Test Date	11-21-2005
Serial Number	134	Test Distance	3 Meters
Test Personnel	Joseph Strzelecki	Test Location	Chamber E
Notes	Corr. Factors = cable loss - preamp gain - distance factor.		
Abbreviations	Pol = Antenna Polarization; V = Vertical; H = Horizontal; BC = Biconical; LP = Log-Periodic; BL = Bilog; P = peak; Q = QP		
Notes	Charging		

Freq. MHz	Meter Reading dBuV	Antenna Factor dB	Antenna Pol/ Type	Corr. Factors dB	Field Strength dBuV/m EUT	Field Strength dBuV/m Limit	Margin Under Limit dB
36.8	32.1 Q	17.7	H/44	-17.6	32.2	40.0	7.8
37.9	27.7 P	17.7	H/44	-17.6	27.8	40.0	12.2
93.6	30.8 P	9.0	H/44	-16.7	23.1	43.5	20.4
32.6	32.3 P	16.2	V/44	-17.7	30.8	40.0	9.2
35.1	34.4 P	15.8	V/44	-17.7	32.6	40.0	7.4
36.6	32.9 P	15.7	V/44	-17.6	31.0	40.0	9.0
36.6	33.6 P	15.7	V/44	-17.6	31.7	40.0	8.3
37.9	36.0 P	15.6	V/44	-17.6	34.0	40.0	6.0
38.4	31.2 P	15.5	V/44	-17.6	29.1	40.0	10.9
73.6	31.5 P	7.4	V/44	-17.0	21.9	40.0	18.1
96.2	34.1 P	9.7	V/44	-16.7	27.1	43.5	16.4
104.1	35.7 P	11.9	V/44	-16.6	31.0	43.5	12.5
104.1	37.0 P	11.9	V/44	-16.6	32.3	43.5	11.2
107.9	34.1 P	12.2	V/44	-16.5	29.8	43.5	13.7
109.9	31.6 P	12.3	V/44	-16.5	27.4	43.5	16.1
151.7	31.9 P	8.6	V/44	-16.1	24.4	43.5	19.1
164.0	35.7 P	12.5	V/44	-16.0	32.2	43.5	11.3
168.2	39.6 P	11.2	V/44	-15.9	34.9	43.5	8.6
168.4	36.5 P	11.2	V/44	-15.9	31.7	43.5	11.8
174.2	38.5 P	10.5	V/44	-15.9	33.1	43.5	10.4
176.1	36.4 P	10.4	V/44	-15.9	31.0	43.5	12.5
180.1	35.4 P	10.0	V/44	-15.9	29.5	43.5	14.0
185.4	31.2 P	9.8	V/44	-15.8	25.2	43.5	18.3
206.1	30.0 P	10.6	V/44	-15.7	25.0	43.5	18.5
						Worst Case Margin	6.0

Judgment: HHTR Passed by 6.0 dB