



**FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT**

FOR

IC TELE-INTERACTION CARD SENSOR

MODEL NUMBER: 32410-QAB

FCC ID: T4S-32410-QAB

REPORT NUMBER: 06J10511-2B

ISSUE DATE: SEPTEMBER 6, 2006

Prepared for
HONDA R&D CO., LTD.
8-1 HONCHO, WAKO-SHI
SAITAMA-KEN, 351-0114
JAPAN

Prepared by
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NVLAP[®]
LAB CODE:200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	9/5/06	Initial Release	A. Ilarina
B	9/6/06	Add Bandedge Plots to Section 7.2	

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS.....	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION	5
4. CALIBRATION AND UNCERTAINTY.....	5
4.1. <i>MEASURING INSTRUMENT CALIBRATION.....</i>	<i>5</i>
4.2. <i>MEASUREMENT UNCERTAINTY.....</i>	<i>5</i>
5. EQUIPMENT UNDER TEST.....	6
5.1. <i>DESCRIPTION OF EUT</i>	<i>6</i>
5.2. <i>MAXIMUM OUTPUT POWER</i>	<i>6</i>
5.3. <i>DESCRIPTION OF AVAILABLE ANTENNAS.....</i>	<i>6</i>
5.4. <i>SOFTWARE AND FIRMWARE</i>	<i>6</i>
5.5. <i>WORST-CASE CONFIGURATION AND MODE.....</i>	<i>6</i>
5.6. <i>DESCRIPTION OF TEST SETUP</i>	<i>7</i>
6. TEST AND MEASUREMENT EQUIPMENT	9
7. LIMITS AND RESULTS	10
7.1. <i>DUTY CYCLE</i>	<i>10</i>
7.2. <i>RADIATED EMISSIONS.....</i>	<i>13</i>
7.2.1. <i>TRANSMITTER RADIATED EMISSIONS</i>	<i>13</i>
7.3. <i>AC MAINS LINE CONDUCTED EMISSIONS.....</i>	<i>26</i>
8. SETUP PHOTOS	30

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: HONDA R&D CO., LTD.
8-1 HONCHO, WAKO-SHI
SAITAMA-KEN, 351-0114 JAPAN

EUT DESCRIPTION: IC TELE-INTERACTION CARD SENSOR

MODEL: 32410-QAB

SERIAL NUMBER: A4 (RF Conducted test) & A5 (Radiated Emission test)

DATE TESTED: AUGUST 23 TO 26, 2006

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

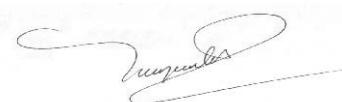
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



ALVIN ILARINA
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES



VIEN TRAN
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an IC Tele-Interaction Card Sensor transceiver, which transmitting in frequency range from 910 MHz to 918 MHz. and manufactured by Circuit Design, Inc.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBuV/m)	Output Power (mV/m)
910.44504 - 918.30936	FSK 19.2kbps	77.54	7.53

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a chip antenna (Embedded) for diversity, with a maximum gain of -4 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was Sensor Tag Setup, rev. 3.1.10.

5.5. WORST-CASE CONFIGURATION AND MODE

All emissions tests were made in the FSK mode, 19.2 kb/s, on the High and Low Channels.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	IBM	ThinkPad X40	KV-GRX61 05/03	Doc
AC Adapter	IBM	X20	02K6808	N/A
DC Power Supply	HP	E3610A	N/A	N/A
DC Power Supply	HP	6235A	N/A	N/A
Battery (12V)	Eagle-Picher Technologies	CF12V7.2	N/A	N/A

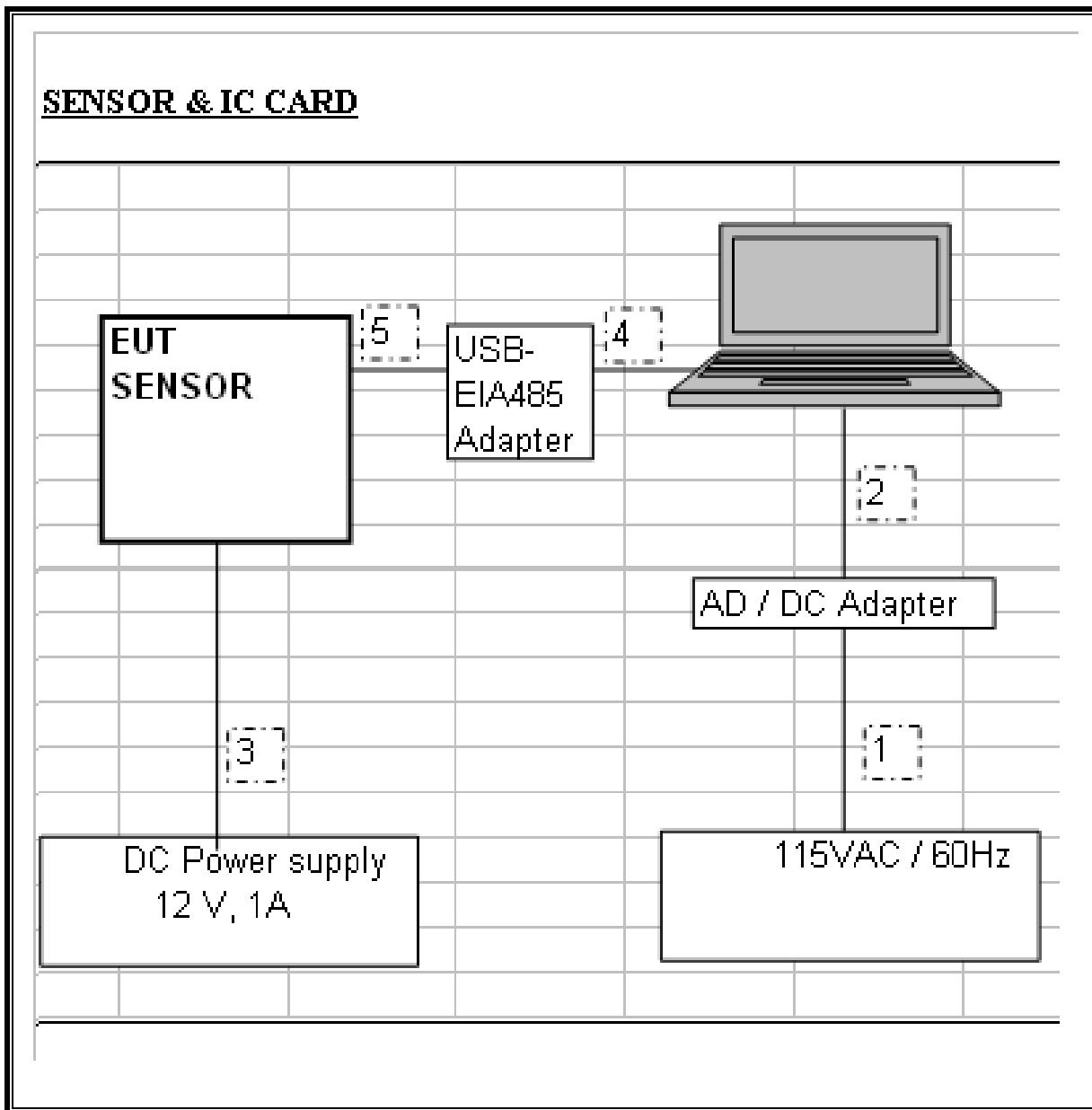
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US115	Shielded	.5m	No
2	DC	1	DC	Unshielded	1m	No
3	DC	2	DC	Unshielded	1m	No
4	USB	1	USB	Unshielded	3m	Yes
5	Serial	1	Serial	Unshielded	3m	No

TEST SETUP

The EUT is operated by test software in host laptop computer.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Cal Due
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY43360112	5/3/2007
Peak Power Meter	Agilent / HP	E4416A	GB41291160	12/2/2007
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/2007
Antenna, Horn 1 ~ 18 GHz	ETS	3117	29310	4/22/2007
Preamplifier, 1 ~ 26 GHz	Miteq	NSP2600-SP	924342	9/2/2006
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00931	6/24/2006
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	2/4/2007
RF Filter Section	Agilent / HP	85420E	3705A00256	2/4/2007
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/3/2006
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/2006
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	8/30/2006
EMI Test Receiver	R & S	ESHS 20	827129/006	11/3/2006

7. LIMITS AND RESULTS

7.1. DUTY CYCLE

LIMITS

None; for reporting purposes only.

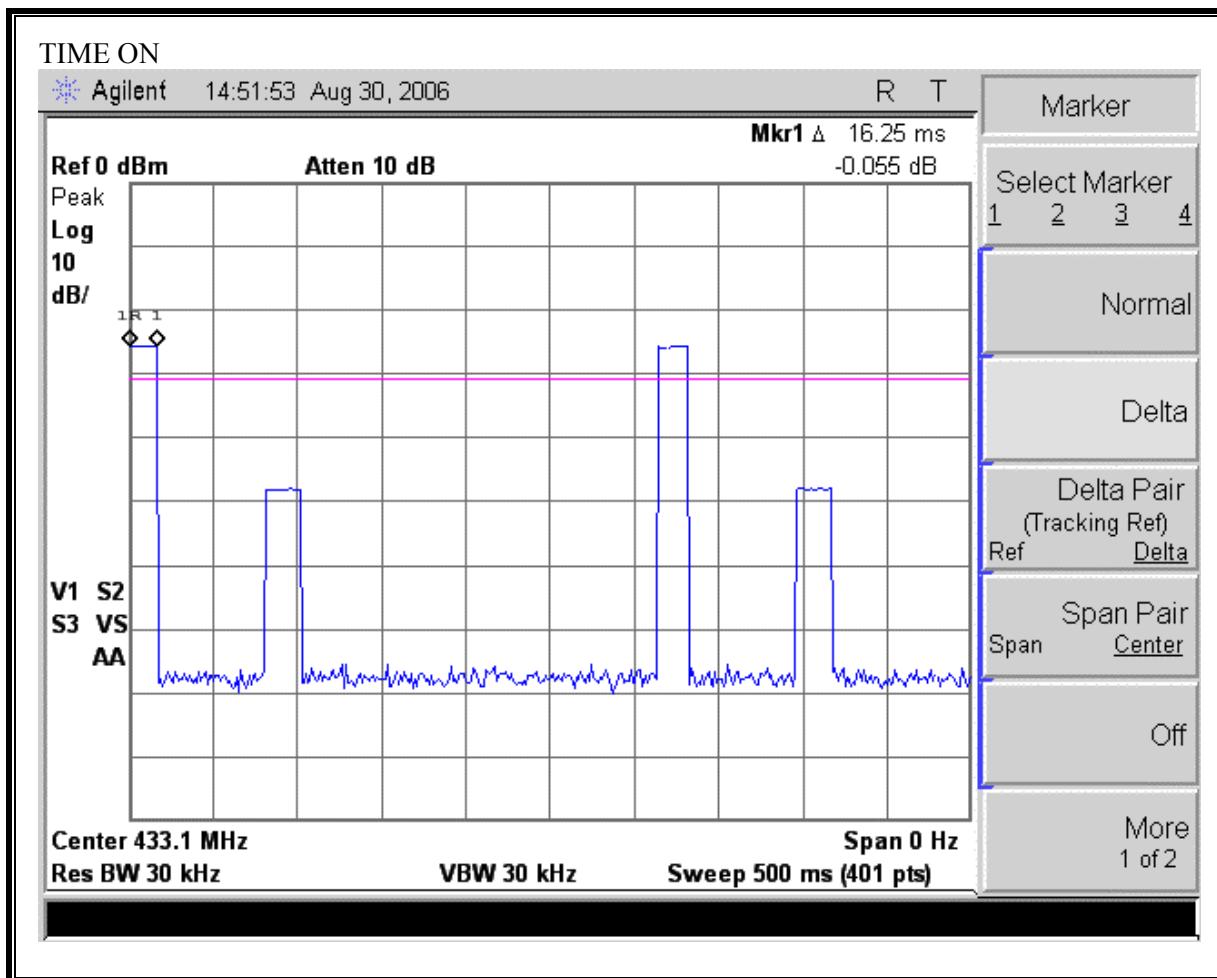
RESULTS

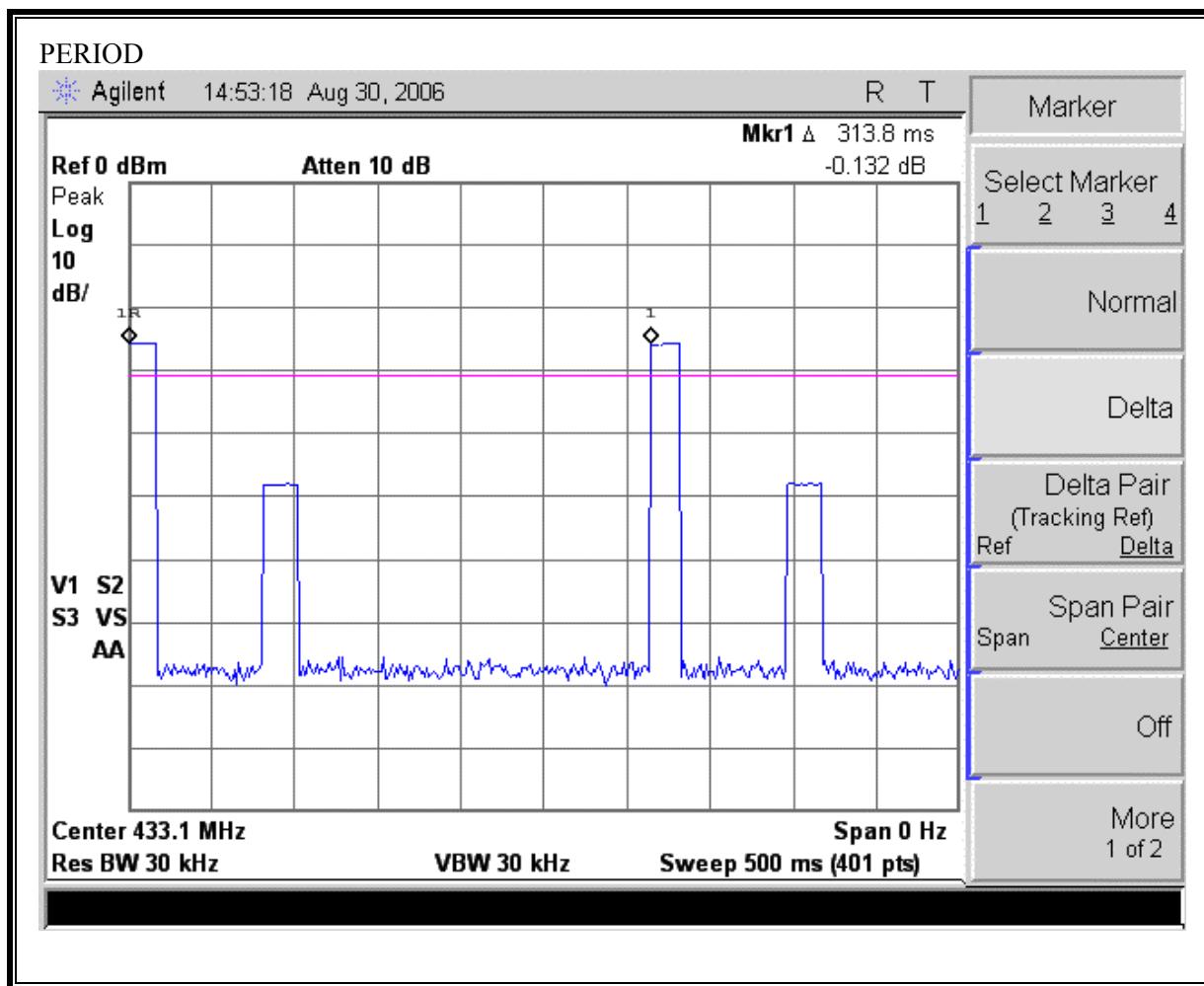
Tx on = 16.25 ms

Tx on + Tx off = 313.8 ms

Duty Cycle x = 5.2 %

Duty Cycle Correction Factor = $10 * \log (1/x) = 12.9$ dB





7.2. RADIATED EMISSIONS

7.2.1. TRANSMITTER RADIATED EMISSIONS

LIMITS

§ 15.249 Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHZ, and 24.0–24.25 GHz.

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz.....	50	500
2400–2483.5 MHz.....	50	500
5725–5875 MHz.....	50	500
24.0–24.25 GHz.....	250	2500

(c) Field strength limits are specified at a distance of 3 meters.

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12

8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

The EUT is investigated in the X, Y, and Z orientations with the worst case reported

FUNDAMENTAL, HARMONICS AND SPURIOUS EMISSIONS 30 – 1000 MHz

COMPLIANCE Certification Services		Project #: 06J10511 Report #: _____ Date & Time: 8/25/2006 Test Engr: Alvin Ilarina						
FCC, VCCI, CISPR, CE, AUSTEL, NZ UL, CSA, TUV, BSMI, DHHS, NVLAP		561F MONTEREY ROAD, SAN JOSE, CA 95037-9001 PHONE: (408) 463-0885 FAX: (408) 463-0888						
Company: Honda	EUT Description: SENSOR							
Test Configuration : EUT								
Type of Test: Fundamental Emissions								
Mode of Operation: TX Continous Modulated								
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Duty Cycle (dB)	Level (dBuV/m)	Limit	Margin (dB)	Polarity H/V	Detector (P/Q/A)
High Channel - Z Position (Worst Case)								
918.28	60.10	26.07	-12.90	73.27	94.00	-20.73	H	PK
918.28	59.80	26.07	-12.90	72.97	94.00	-21.03	H	QP
918.27	63.41	26.07	-12.90	76.58	94.00	-17.42	V	PK
918.28	63.13	26.07	-12.90	76.30	94.00	-17.70	V	QP
Low Channel - Z Position (Worst Case)								
910.38	60.70	26.01	-12.90	73.81	94.00	-20.19	H	PK
910.38	60.20	26.01	-12.90	73.31	94.00	-20.69	H	QP
910.38	64.90	26.01	-12.90	78.01	94.00	-15.99	V	PK
910.38	64.43	26.01	-12.90	77.54	94.00	-16.46	V	QP

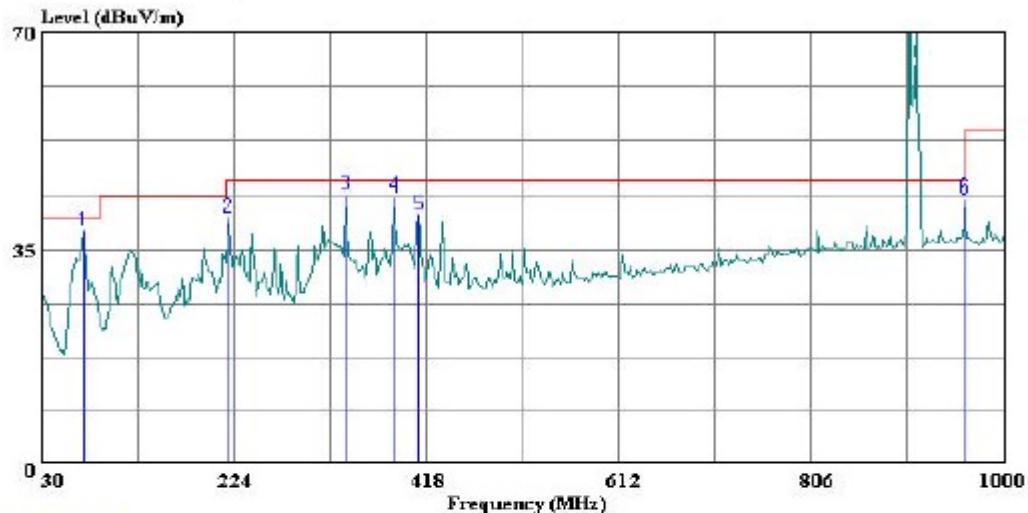
HARMONICS AND SPURIOUS EMISSIONS 30 – 1000 MHz

LOW CHANNEL - HORIZONTAL



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 40 File#: 30-1000MHz.EMI Date: 08-21-2006 Time: 14:06:01



(Audix ATC)

Trace: 39

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Gordon Andrews
Company: : Honda R&D
Project #: : 06J10511
Configuration: : Sensor w/12V Battery & Laptop for USB
Mode of Operation: Tx Low Channel
Serial Number: : 01786
: Mod: Three turns of ferrite on US

Page: 1

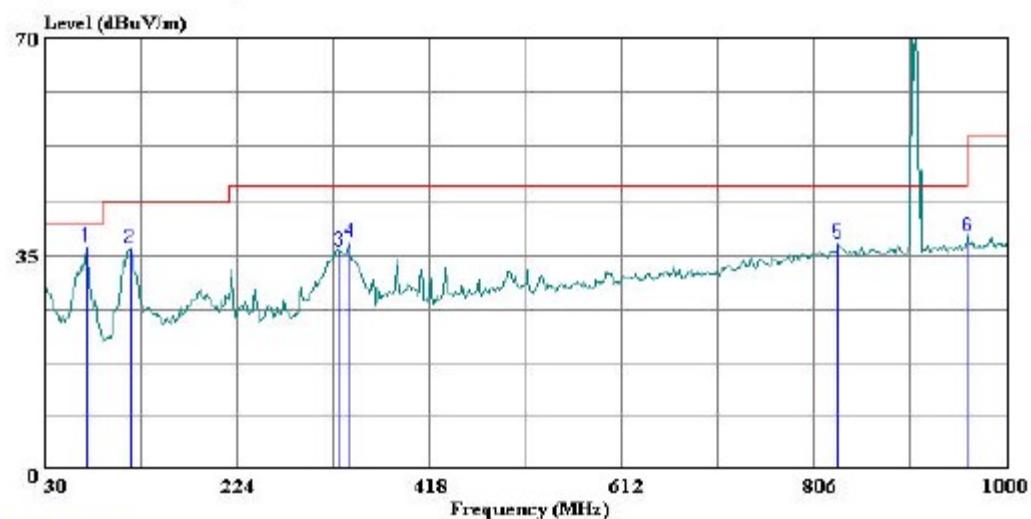
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	Level	Factor					
MHz	dBuV						
1	72.680	28.77	9.23	38.00	40.00	-2.00	Peak
2	218.180	27.65	12.51	40.16	46.00	-5.84	Peak
3	337.490	27.15	16.56	43.71	46.00	-2.29	Peak
4	385.990	25.73	17.73	43.46	46.00	-2.54	Peak
5	410.240	22.48	18.31	40.79	46.00	-5.21	Peak
6	960.230	16.52	26.56	43.08	54.00	-10.92	Peak

LOW CHANNEL – VERTICAL



561F Monterey Road
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Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 38 File#: 30-1000MHz.EMI Date: 08-21-2006 Time: 13:58:13



(Audix ATC)
Trace: 37

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Gordon Andrews
Company: : Honda R&D
Project #: : 06J10511
Configuration: : Sensor w/12V Battery & Laptop for USB
Mode of Operation: Tx Low Channel
Serial Number: : 01786
: Mod: Three turns of ferrite on US

Page: 1

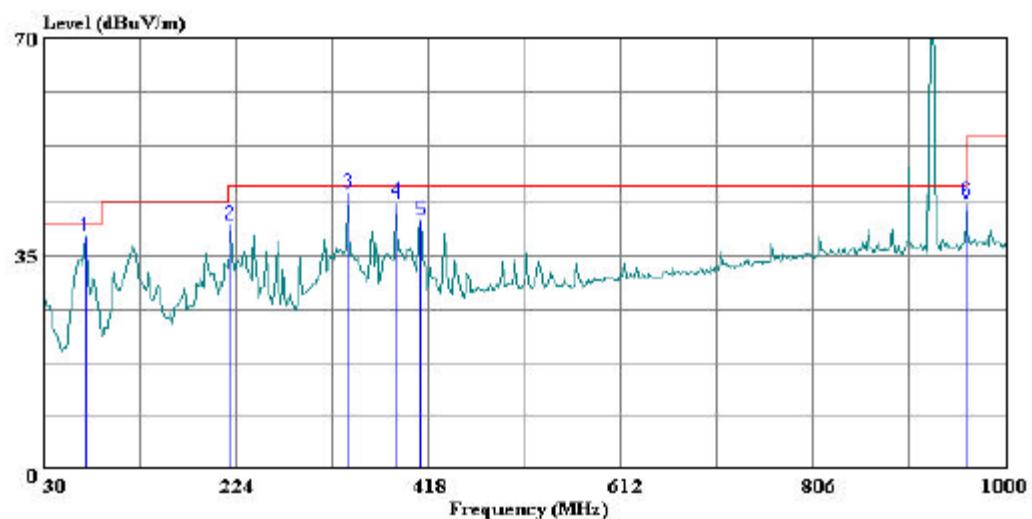
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	Level	Factor			
MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	72.680	27.02	9.23	36.25	40.00 -3.75 Peak
2	116.330	21.43	14.71	36.14	43.50 -7.36 Peak
3	326.820	19.32	16.32	35.64	46.00 -10.36 Peak
4	337.490	20.53	16.56	37.09	46.00 -8.91 Peak
5	829.280	11.80	24.92	36.72	46.00 -9.28 Peak
6	961.200	11.39	26.57	37.96	54.00 -16.04 Peak

HIGH CHANNEL - HORIZONTAL



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 34 File#: 30-1000MHz.EMI Date: 08-21-2006 Time: 12:43:56



Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Gordon Andrews
Company: : Honda R&D
Project #: : 06J10511
Configuration: : Sensor w/12V Battery & Laptop for USB
Mode of Operation: Tx High Channel
Serial Number: : 01786
: Mod: Three turns of ferrite on US

Page: 1

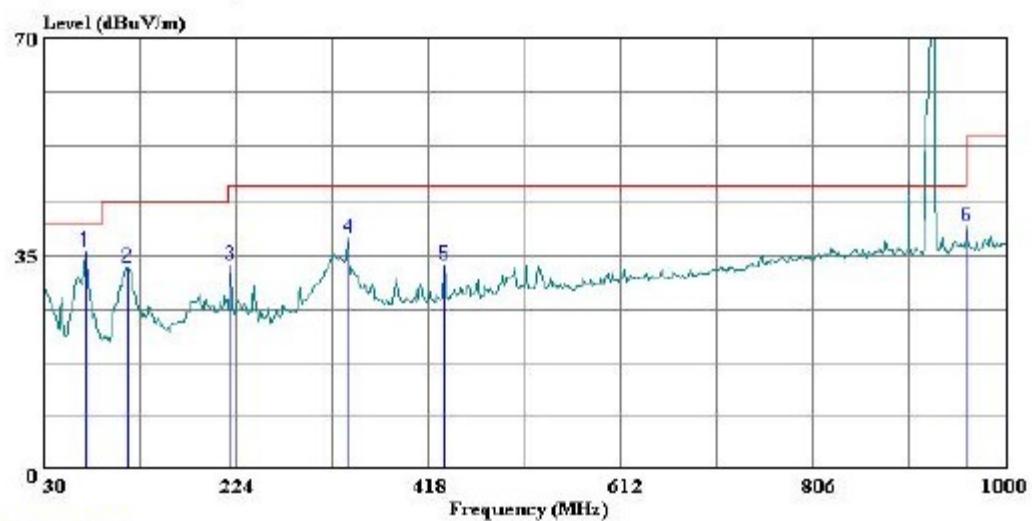
Freq	Read		Limit	Over	Remark
	Level	Factor			
MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	72.680	28.91	9.23	38.14	40.00 -1.86 Peak
2	218.180	27.42	12.51	39.93	46.00 -6.07 Peak
3	337.490	28.20	16.56	44.76	46.00 -1.24 Peak
4	385.990	25.67	17.73	43.40	46.00 -2.60 Peak
5	410.240	22.38	18.31	40.69	46.00 -5.31 Peak
6	960.230	16.87	26.56	43.43	54.00 -10.57 Peak

HIGH CHANNEL - VERTICAL



561F Monterey Road
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Tel: (408) 463-0888
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Data#: 36 File#: 30-1000MHz.EMI Date: 08-21-2006 Time: 12:52:15



(Audix ATC)
Trace: 35

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Gordon Andrews
Company: : Honda R&D
Project #: : 06J10511
Configuration: : Sensor w/12V Battery & Laptop for USB
Mode of Operation: Tx High Channel
Serial Number: : 01786
: Mod: Three turns of ferrite on US

Page: 1

Freq	Read		Limit Line	Over Limit	Remark
	Level	Factor			
MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	72.680	26.41	9.23	35.64	40.00 -4.36 Peak
2	115.360	18.27	14.60	32.87	43.50 -10.63 Peak
3	218.180	20.82	12.51	33.33	46.00 -12.67 Peak
4	337.490	21.32	16.56	37.88	46.00 -8.12 Peak
5	434.490	14.65	18.84	33.49	46.00 -12.51 Peak
6	960.230	13.06	26.56	39.62	54.00 -14.38 Peak

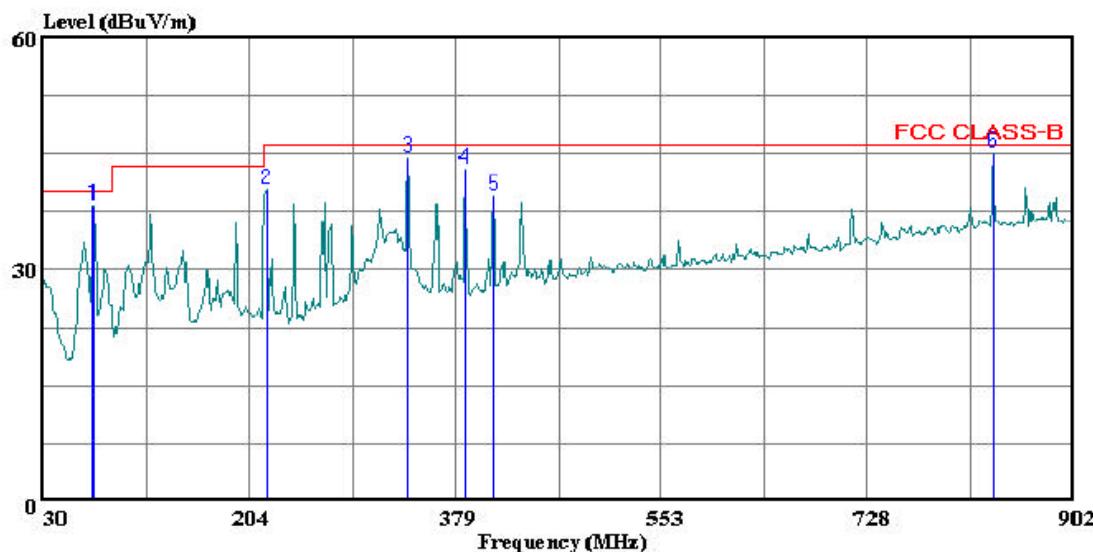
BANDEdge

LOW CHANNEL - HORIZONTAL



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 23 File#: 30-1000MHz.EMI Date: 08-21-2006 Time: 11:44:41



(Audix ATC)

Trace: 22

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Gordon Andrews
Company: : Honda R&D
Project #: : 06J10511
Configuration: : Sensor w/12V battery only
Mode of Operation: Tx Low Channel
Serial Number: : 01786

Page: 1

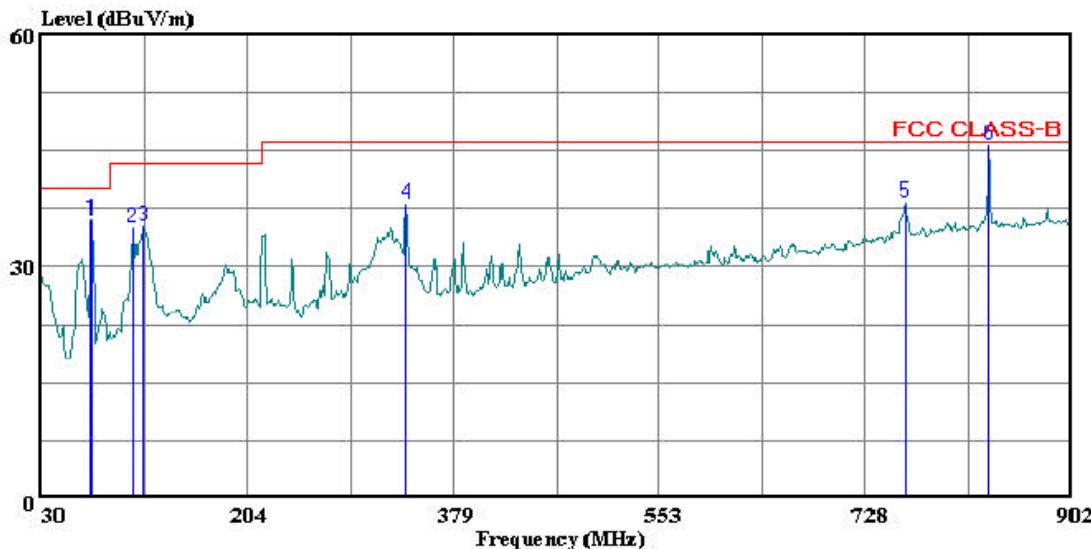
Freq	Read		Limit	Over	Remark
	MHz	dB _{uV}	dB	dB _{uV/m}	dB _{uV/m}
1	72.728	28.89	9.27	38.16	40.00 -1.84 Peak
2	219.224	27.82	12.56	40.38	46.00 -5.62 Peak
3	338.688	27.93	16.59	44.52	46.00 -1.48 Peak
4	386.648	25.21	17.71	42.93	46.00 -3.07 Peak
5	411.064	21.24	18.32	39.56	46.00 -6.44 Peak
6	833.984	20.10	24.99	45.09	46.00 -0.91 Peak

LOW CHANNEL - VERTICAL



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 25 File#: 30-1000MHz.EMI Date: 08-21-2006 Time: 11:56:23



Condition: FCC CLASS-B VERTICAL
Test Operator: : Gordon Andrews
Company: : Honda R&D
Project #: : 06J10511
Configuration: : Sensor w/12V battery only
Mode of Operation: Tx
Serial Number: : 01786

Page: 1

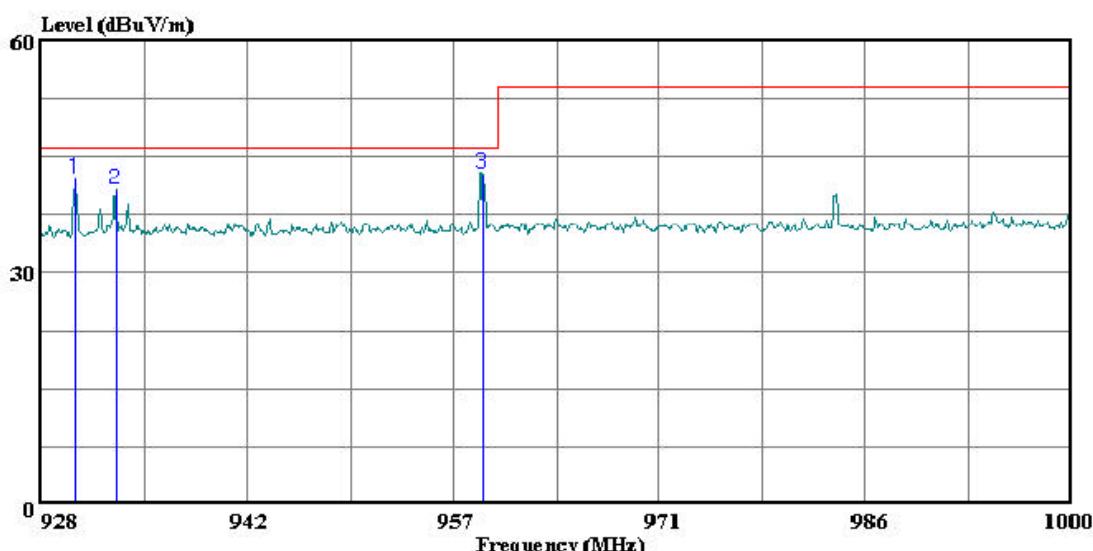
Freq	Read		Limit	Over	Remark	
	Level	Factor				
	MHz	dB _{uV}	dB	dB _{uV/m}	dB _{uV/m}	dB
1	72.728	26.74	9.27	36.01	40.00	-3.99 Peak
2	107.608	21.79	13.03	34.82	43.50	-8.68 Peak
3	116.328	20.46	14.60	35.06	43.50	-8.44 Peak
4	338.688	21.41	16.59	38.00	46.00	-8.00 Peak
5	761.608	14.15	24.02	38.17	46.00	-7.83 Peak
6	831.368	20.70	24.94	45.64	46.00	-0.36 Peak

HIGH CHANNEL - HORIZONTAL



561F Monterey Road
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Tel: (408) 463-0888
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Data#: 29 File#: 30-1000MHz.EMI Date: 08-21-2006 Time: 12:12:11



(Audix ATC)

Trace: 28

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Gordon Andrews
Company: : Honda R&D
Project #: : 06J10511
Configuration: : Sensor w/12V battery only
Mode of Operation: Tx High Channel
Serial Number: : 01786

Page: 1

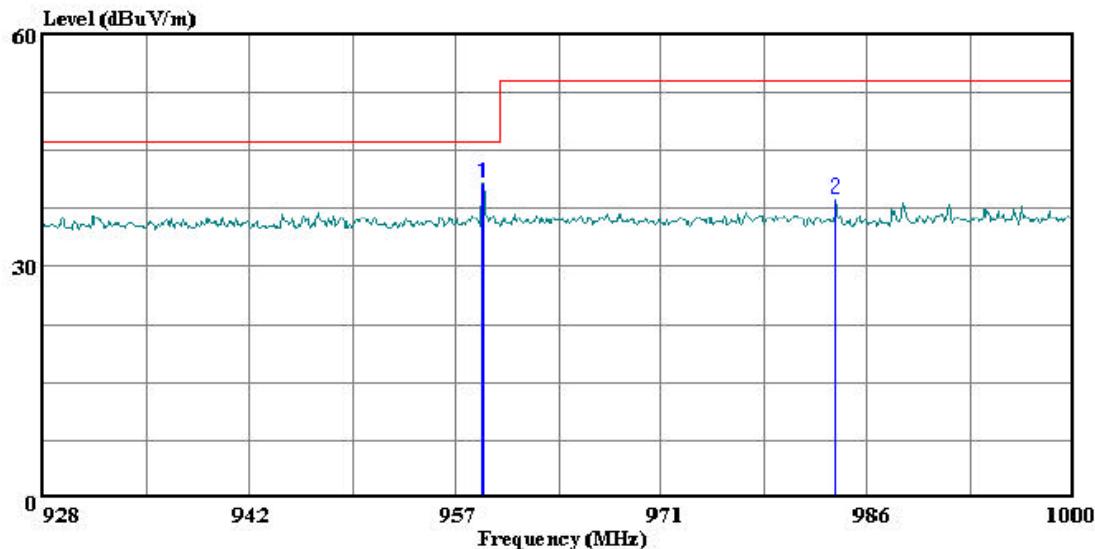
Freq	Read		Limit Line	Over Limit	Remark
	Level	Factor			
MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	930.304	15.85	26.27	42.12	46.00 -3.88 Peak
2	933.184	14.41	26.32	40.73	46.00 -5.27 Peak
3	958.816	16.32	26.53	42.85	46.00 -3.15 Peak

HIGH CHANNEL - VERTICAL



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 31 File#: 30-1000MHz.EMI Date: 08-21-2006 Time: 12:25:21



(Audix ATC)
Trace: 30 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Gordon Andrews
Company: : Honda R&D
Project #: : 06J10511
Configuration: : Sensor w/12V battery and laptop for USB
Mode of Operation: Tx High Channel
Serial Number: : 01786

Page: 1

		Read		Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1	958.744	14.11	26.53	40.64	46.00	-5.36 Peak
2	983.368	11.84	26.76	38.60	54.00	-15.40 Peak

HARMONICS AND SPURIOUS EMISSIONS ABOVE 1 GHz

High Frequency Measurement Compliance Certification Services, Morgan Hill Open Field Site															
Company: Honda R&D Project #: 06J10511 Date: 08/21/2006 Test Engineer: Gordon Andrews Configuration: EUT(Sensor) Mode:ContinuosTx Low & Hi channels															
Test Equipment:															
Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn >18GHz												
T120; S/N: 29310 @3m	T144 Miteq 3008A00931														
Hi Frequency Cables															
2 foot cable	3 foot cable	12 foot cable	HPF				Reject Filter				Peak Measurements RBW=VBW=1MHz				
	Gordon 177080004										Average Measurements RBW=1MHz ; VBW=10Hz				
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
LOW CH															
1.820	3.0	56.1	49.3	30.9	2.1	-38.3	0.0	0.0	50.8	44.0	74	54	-23.2	-10.0	V
2.730	3.0	51.6	45.7	32.3	2.5	-37.4	0.0	0.0	48.9	43.0	74	54	-25.1	-11.0	V
3.640	3.0	49.0	44.8	32.9	2.8	-36.9	0.0	0.0	47.9	43.7	74	54	-26.1	-10.3	V
4.550	3.0	46.2	41.1	33.4	3.2	-36.5	0.0	0.0	46.3	41.2	74	54	-27.7	-12.8	V
1.820	3.0	52.7	45.3	30.9	2.1	-38.3	0.0	0.0	47.4	40.0	74	54	-26.6	-14.0	H
2.730	3.0	50.2	44.1	32.3	2.5	-37.4	0.0	0.0	47.5	41.4	74	54	-26.5	-12.6	H
3.640	3.0	48.1	41.5	32.9	2.8	-36.9	0.0	0.0	47.0	40.4	74	54	-27.0	-13.6	H
4.550	3.0	43.0	40.1	33.4	3.2	-36.5	0.0	0.0	43.1	40.2	74	54	-30.9	-13.8	H
HI CH															
1.837	3.0	57.1	50.5	31.0	2.1	-38.3	0.0	0.0	51.9	45.3	74	54	-22.1	-8.7	V
2.755	3.0	52.3	46.8	32.3	2.5	-37.4	0.0	0.0	49.7	44.2	74	54	-24.3	-9.8	V
3.673	3.0	50.2	46.2	32.9	2.8	-36.8	0.0	0.0	49.1	45.1	74	54	-24.9	-8.9	V
4.591	3.0	48.1	43.1	33.5	3.2	-36.5	0.0	0.0	48.3	43.3	74	54	-25.7	-10.7	V
1.837	3.0	53.4	46.4	31.0	2.1	-38.3	0.0	0.0	48.2	41.2	74	54	-25.8	-12.8	H
2.755	3.0	51.3	45.3	32.3	2.5	-37.4	0.0	0.0	48.7	42.7	74	54	-25.3	-11.3	H
3.673	3.0	49.8	42.2	32.9	2.8	-36.8	0.0	0.0	48.7	41.1	74	54	-25.3	-12.9	H
4.591	3.0	44.0	41.2	33.5	3.2	-36.5	0.0	0.0	44.2	41.4	74	54	-29.8	-12.6	H
No other emissions were detected above system noise floor.															
f Measurement Frequency					Amp	Preamp Gain				Avg Lim				Average Field Strength Limit	
Dist	Distance to Antenna				D Corr	Distance Correct to 3 meters				Pk Lim				Peak Field Strength Limit	
Read	Analyzer Reading				Avg	Average Field Strength @ 3 m				Avg Mar				Margin vs. Average Limit	
AF	Antenna Factor				Peak	Calculated Peak Field Strength				Pk Mar				Margin vs. Peak Limit	
CL	Cable Loss				HPF	High Pass Filter									

7.3. AC MAINS LINE CONDUCTED EMISSIONS

TEST PROCEDURE

ANSI C63.4

LIMIT

§15.207 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Notes:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

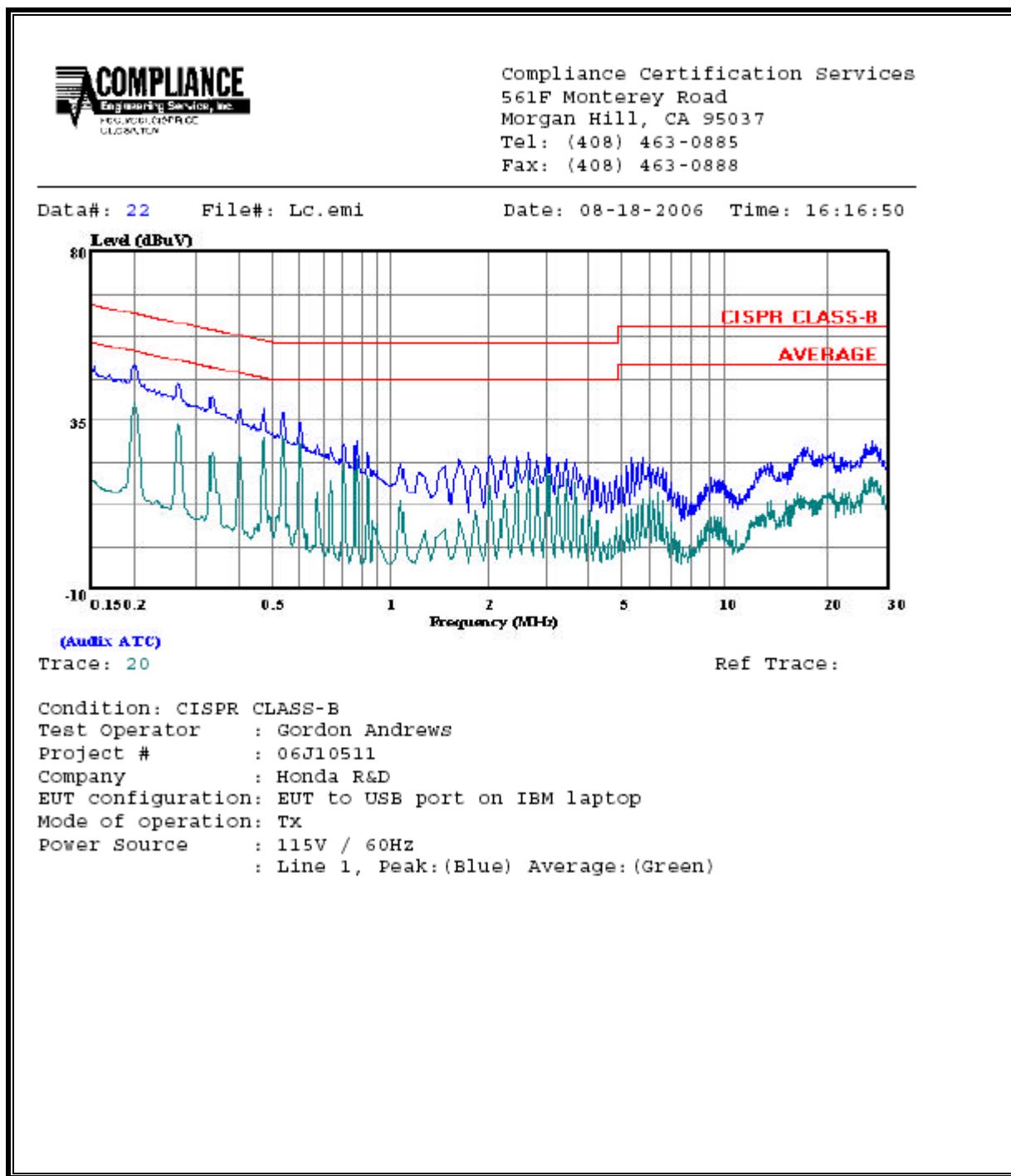
RESULTS

No non-compliance noted:

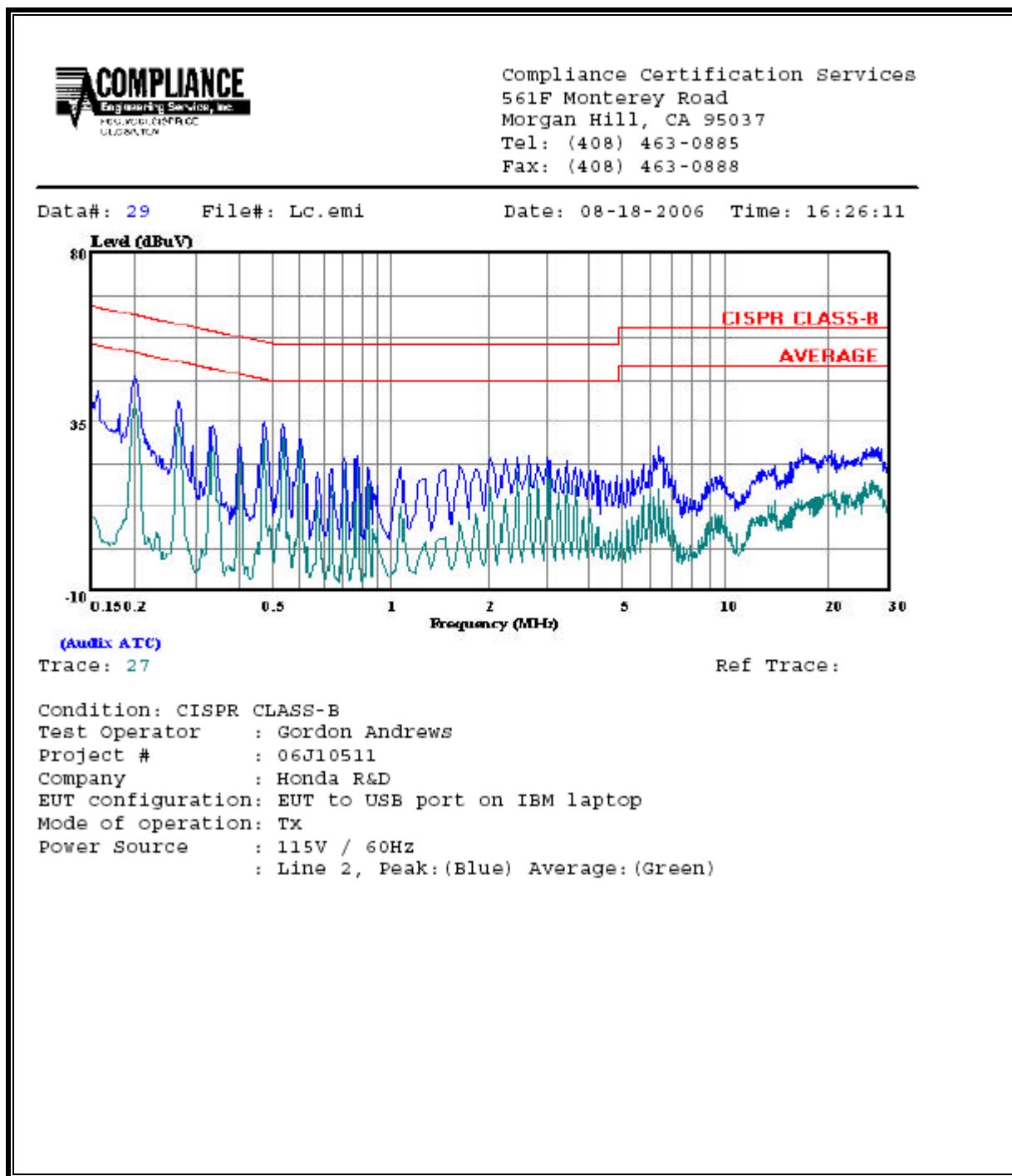
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Closs (dB)	Limit	FCC_B	Margin		Remark
	PK (dBuV)	QP (dBuV)	AV (dBuV)				QP (dB)	AV (dB)	
0.15	49.50	--	18.90	0.00	65.84	55.84	-16.34	-36.94	L1
0.20	49.70	--	40.00	0.00	63.65	53.65	-13.95	-13.65	L1
0.27	45.00	--	34.10	0.00	61.21	51.21	-16.21	-17.11	L1
0.20	47.30	--	39.80	0.00	63.57	53.57	-16.27	-13.77	L2
0.16	43.20	--	9.90	0.00	65.62	55.62	-22.42	-45.72	L2
0.27	40.50	--	34.26	0.00	61.24	51.24	-20.74	-16.98	L2
6 Worst Data									

LINE 1 RESULTS

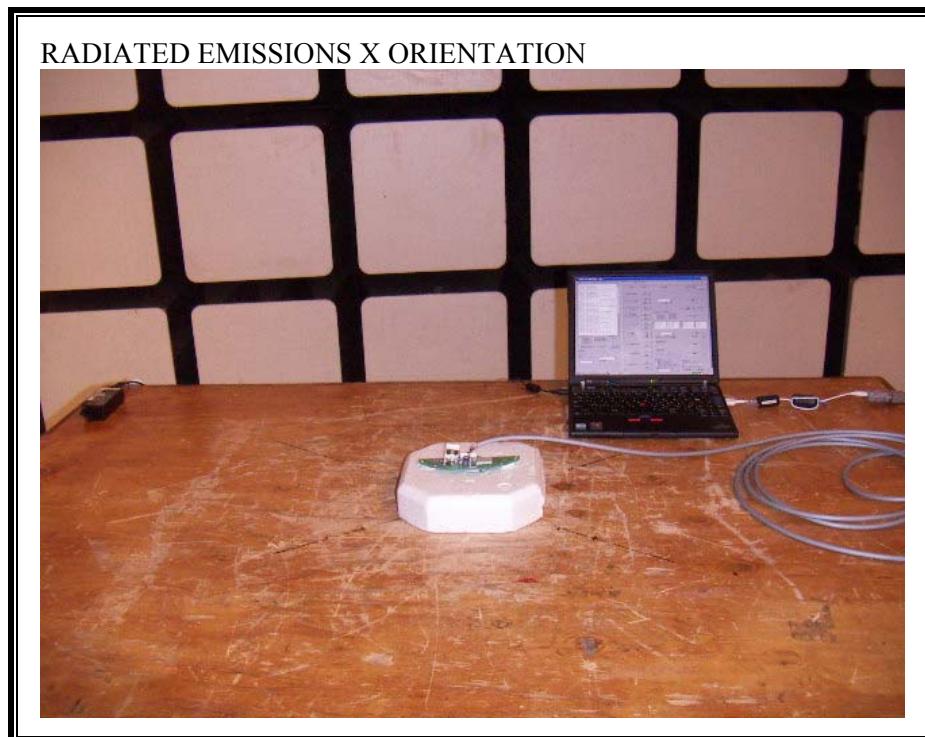


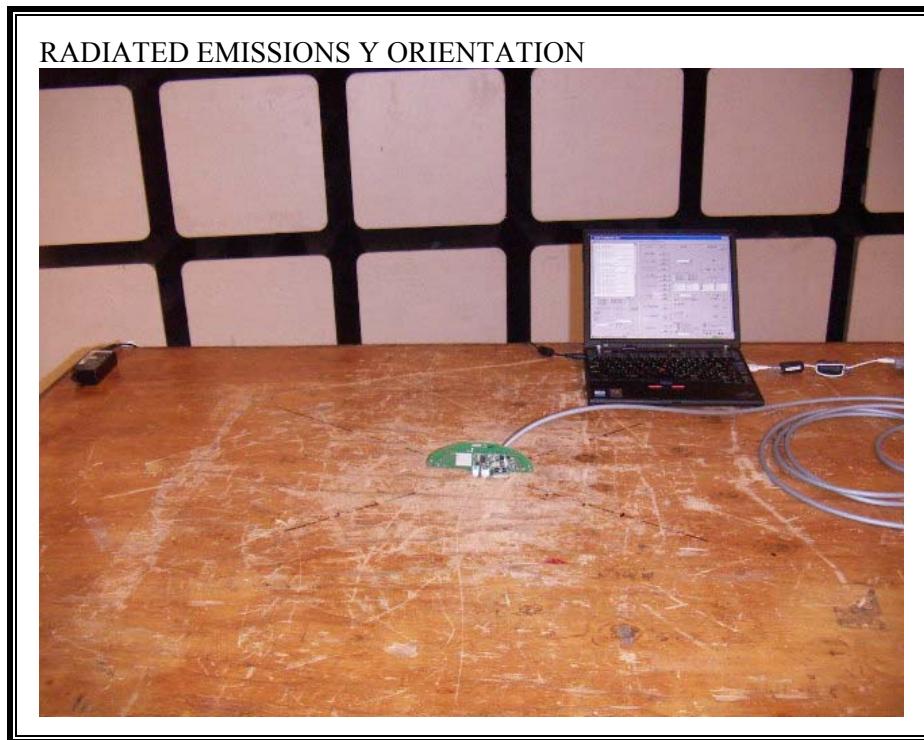
LINE 2 RESULTS

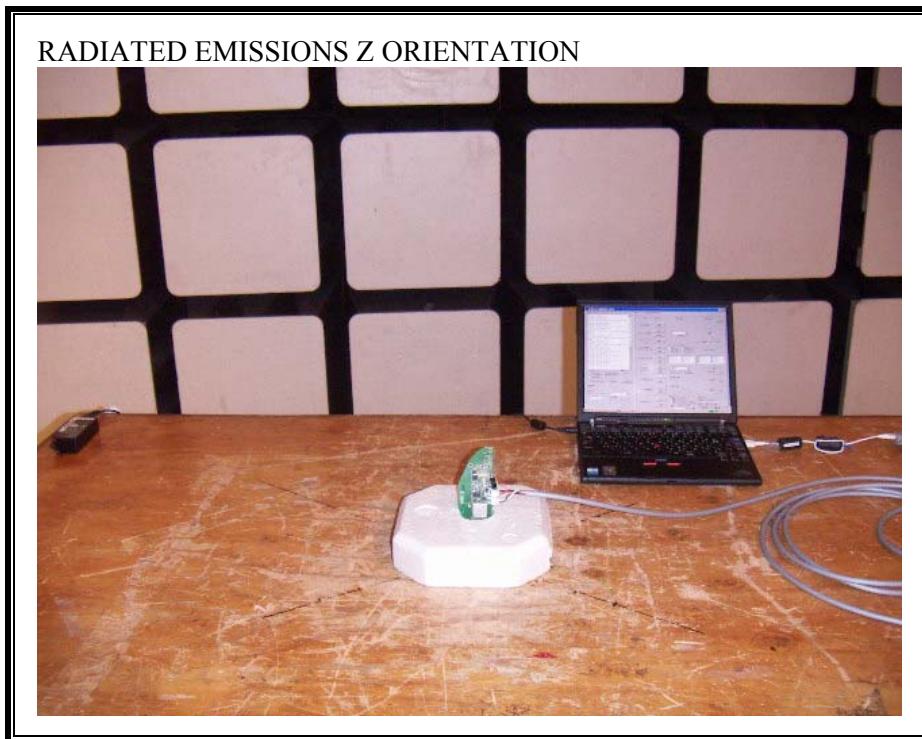


8. SETUP PHOTOS

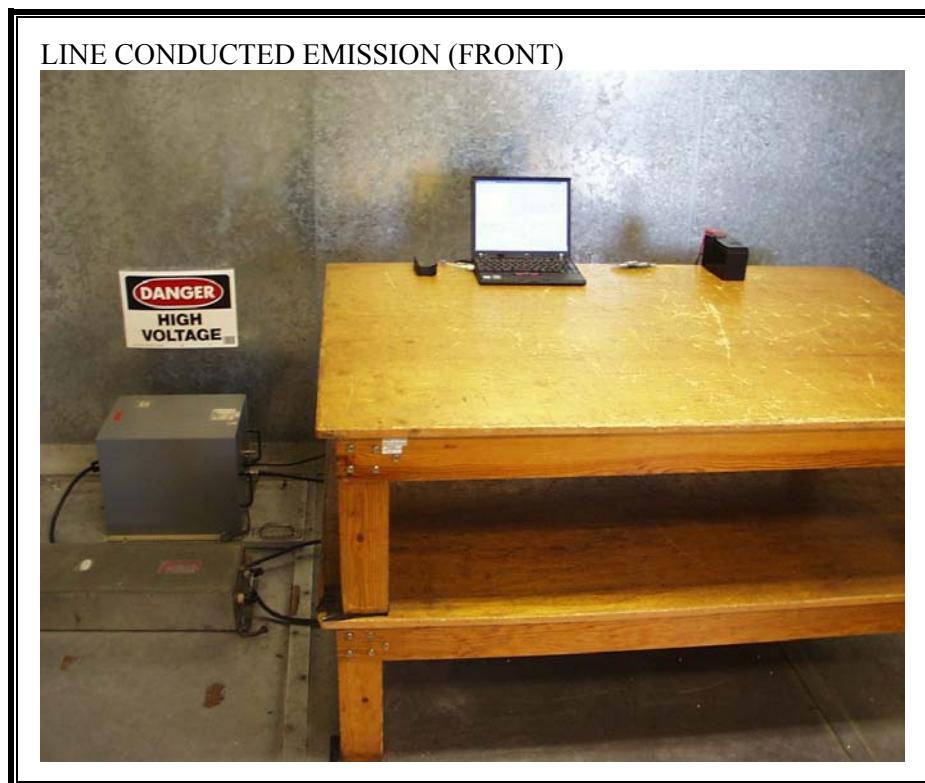
RADIATED EMISSION

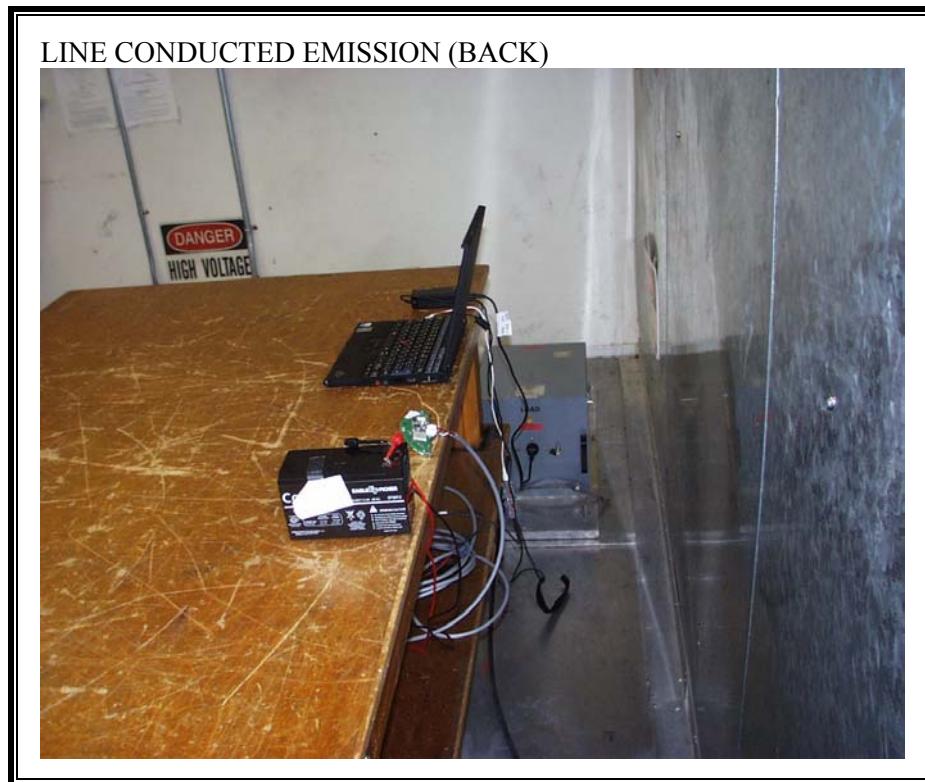






AC MAINS LINE CONDUCTED EMISSION





END OF REPORT