



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 7**

CERTIFICATION TEST REPORT

FOR

MICROWAVE/PIR MOTION SENSOR

MODEL NUMBER: DT-906 and DT-907*

FCC ID: C2D0600906

IC: 573H-0600906

REPORT NUMBER: 08U12122-1, Revision A

ISSUE DATE: OCTOBER 10, 2008

Prepared for
**HONEYWELL INTERNATIONAL
625 COOLIDGE DRIVE, SUITE 150
FOLSOM, CA 95630, U.S.A.**

Prepared by
**COMPLIANCE CERTIFICATION SERVICES
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888**

*Details of models differences are contained in the body of this test report.

NVLAP[®]

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	10/08/08	Initial Issue	F. Ibrahim
A	10/10/08	Corrected model number	T.Chu

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>DESCRIPTION OF MODEL(S) DIFFERENCE</i>	<i>6</i>
5.3. <i>DESCRIPTION OF AVAILABLE ANTENNAS.....</i>	<i>6</i>
5.4. <i>MAXIMUM OUTPUT POWER.....</i>	<i>6</i>
5.5. <i>WORST-CASE CONFIGURATION.....</i>	<i>6</i>
5.6. <i>DESCRIPTION OF TEST SETUP.....</i>	<i>7</i>
6. TEST AND MEASUREMENT EQUIPMENT	9
7. TEST RESULTS.....	10
7.1. <i>DUTY CYCLE.....</i>	<i>10</i>
7.2. <i>99% BANDWIDTH</i>	<i>11</i>
7.3. <i>RADIATED EMISSION.....</i>	<i>13</i>
7.3.1. <i>FUNDAMENTAL RADIATED EMISSION.....</i>	<i>14</i>
7.3.2. <i>TX/RX SPURIOUS RADIATED EMISSIONS ABOVE 1 GHz</i>	<i>15</i>
7.3.3. <i>TX/RX SPURIOUS RADIATED EMISSIONS BELOW 1 GHz.....</i>	<i>17</i>
8. AC MAINS LINE CONDUCTED EMISSIONS	21
8.1. <i>MAXIMUM PERMISSIBLE EXPOSURE</i>	<i>25</i>
9. SETUP PHOTOS.....	29

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: HONEYWELL INTERNATIONAL
625 COOLIDGE DRIVE, SUITE 150
FOLSOM, CA 95630, U.S.A.

EUT DESCRIPTION: MICROWAVE/PIR MOTION SENSOR

MODEL: DT-906

SERIAL NUMBER: 02211

DATE TESTED: October 1-7, 2008

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Pass
INDUSTRY CANADA RSS-210 Issue 7, Annex 2	Pass
INDUSTRY CANADA RSS-GEN Issue 2	Pass

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS 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:



FRANK IBRAHIM
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:



CAN CHUNG
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, FCC CFR 47 Part 15, RSS-GEN Issue 2, and RSS-210 Issue 7.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

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
Power Line Conducted Emission	+/- 2.3 dB
Radiated Emission	+/- 3.4 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Microwave / PIR Motion Sensor that operates at 10525 MHz; and it is manufactured by Honeywell International.

5.2. DESCRIPTION OF MODEL(S) DIFFERENCE

The DT-906 and DT-907 are identical products in all respects except for an additional PCBA which provides the "Anti-mask" feature on the DT-906, i.e. both the DT-906 and the DT-907 use the identical microwave source, antenna horn, mounting, etc. As the additional PCBA is included on the DT-906, which is the unit that was tested, i.e., it is the worst-case for emission characteristics of the products.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna was designed as an integral part of the microwave source, and as such, has no specification of its own.

5.4. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak EIRP output power @ 3m distance as follows:

Frequency (GHz)	Mode	Output Power (dBuV/m)
10.525	Modulator	118.20

5.5. WORST-CASE CONFIGURATION

The worst-case position of the EUT was determined as that which produced the highest output power. After investigation of the three orthogonal positions, the X Position was found to be the worst-case, so all emissions tests were done with the EUT in the X orientation.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
DC Power Supply	Universal Battery	UB1245	2361208N	N/A
DC Power Supply	Heald Institute of Technology	Deluxe Regulated PS	N016343	

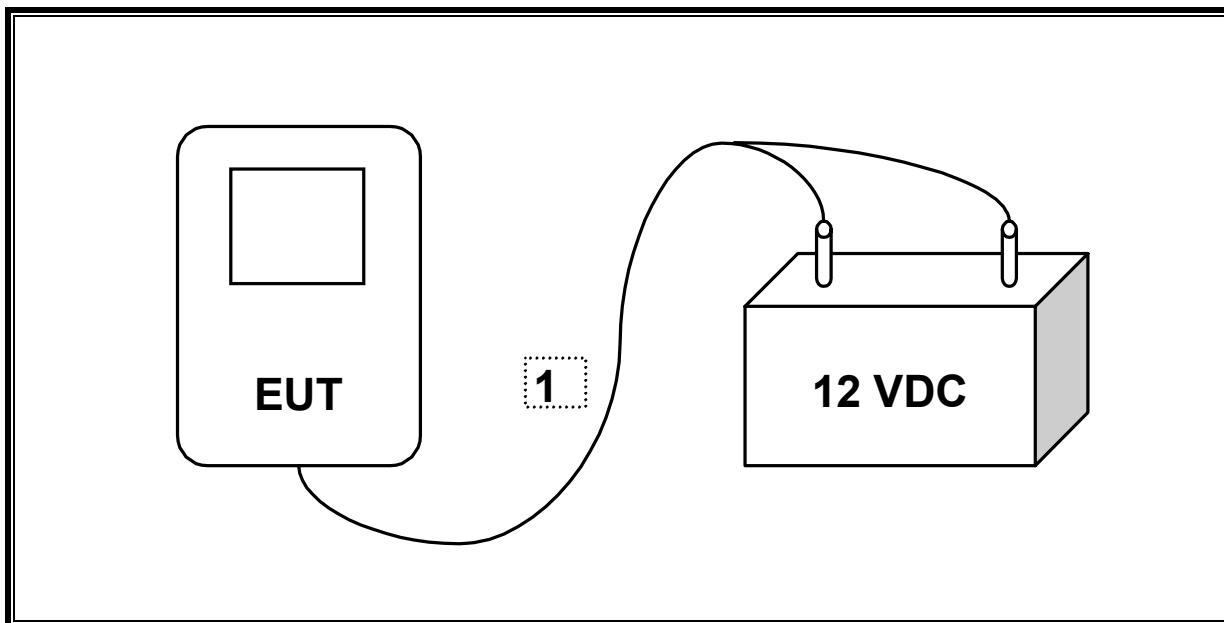
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	DC Terminal	Un-Shielded	1.5m	N/A

TEST SETUP

The EUT was set up to work in both Tx and Rx modes simultaneously.

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	Asset	Cal Date	Cal Due	
RF Filter Section	HP	85420E	3705A00256	06/19/09	09/19/09	
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	10/25/07	10/25/08	
EMI Test Receiver	R & S	ESHS 20	827129/006	02/06/08	08/06/09	
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	06/19/09	09/19/09	
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent	E4446A	US42510266	10/26/07	10/26/08	
Preamp, 1000MHz	Sonoma	310N	185623	03/31/08	03/31/09	
Preamplifier, 26.5 GHz	Agilent / HP	8449B	3008A00561	09/27/07	11/27/09	
PreAmplifier 26-40 GHz	Miteq	NSP4000-SP2	924343	10/11/07	10/11/08	
Antenna, Biloc 30MHz ~ 2Ghz	Sunol Sciences	JB1	A0022704	09/28/07	09/28/08	
Antenna, Horn, 18 GHz	EMCO	3115	6717	04/22/08	04/22/09	
Antenna, Horn 18 ~ 26 GHz	ARA	SWH-28	1007	10/06/07	10/06/08	
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	1013	09/29/07	11/29/08	
Antenna, Horn 33 ~ 50 GHz	ATM	(OR8N4) 22-442-6	Lot#7046005	CNR	CNR	
Antenna, Horn 50 ~ 75 GHz	ATM	15-442-6	Lot#7046105	CNR	CNR	

7. TEST RESULTS

7.1. DUTY CYCLE

LIMITS

None; for reporting purposes only.

RESULTS

Tx on (usec)	Tx on + Tx off (usec)	Duty Cycle (%)	Correction Factor (dB)
13.33	335	3.98	-28.00

7.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

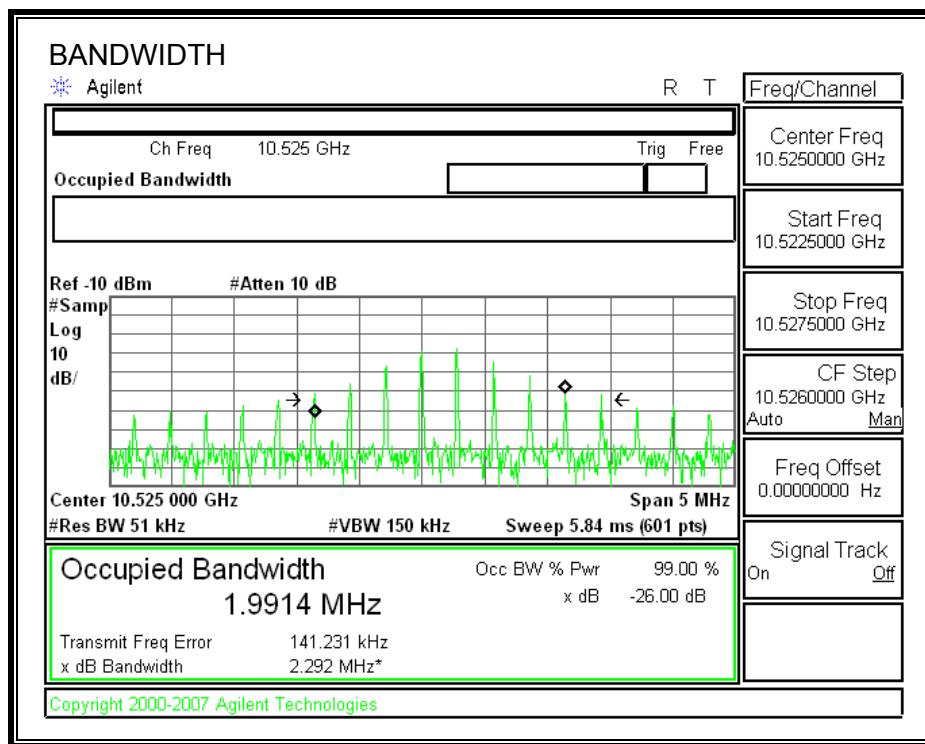
TEST PROCEDURE

The transmitter outputs are connected to the spectrum analyzer via a combiner. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

RESULTS

Frequency (GHz)	99% Bandwidth (MHz)
10.525	1.9914

99% BANDWIDTH



7.3. RADIATED EMISSION

LIMIT

§15.245

IC RSS-210, Section 2.6 (Transmitter), Annex 7

IC RSS-GEN, Section 6 (Receiver)

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Limits for radiated disturbance of an intentional radiator		
Fundamental Frequency (MHz)	Field Strength of fundamental (millivolts / meter)	Field Strength of harmonic (millivolts / meter)
902-928	500	1.6
2435-2465	500	1.6
5785-5815	500	1.6
10500-10550	2500	25
24075-24175	2500	25

TEST PROCEDURE

ANSI C63.4

The EUT is an intentional radiator that does not incorporate a digital device, the highest fundamental frequency generated or used in the device is 10.525 GHz; therefore, the frequency range was investigated from 30 MHz to the 5th harmonic of the highest fundamental frequency (52.625 GHz).

RESULTS

7.3.1. FUNDAMENTAL RADIATED EMISSION

High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber																																								
<p>Company: Honeywell International Project #: 08U112122 Date: 10/01/08 Test Engineer: Can Ming Chung Configuration: Stand-alone EUT Mode: Tx and Rx</p> <p>Test Equipment:</p> <table border="1"> <tr> <td>Horn 1-18GHz</td> <td>Pre-amplifier 1-26GHz</td> <td>Pre-amplifier 26-40GHz</td> <td colspan="3">Horn > 18GHz</td> <td>Limit</td> </tr> <tr> <td>T59; S/N: 3245 @3m</td> <td></td> <td></td> <td colspan="3"></td> <td>FCC 15.245</td> </tr> </table> <p>Hi Frequency Cables</p> <table border="1"> <tr> <td>2 foot cable</td> <td>3 foot cable</td> <td>12 foot cable</td> <td>HPF</td> <td>Reject Filter</td> <td>Peak Measurements RBW=VBW=1MHz</td> </tr> <tr> <td></td> <td></td> <td>A.5m Chamber</td> <td></td> <td></td> <td>Average Measurements RBW=1MHz ; VBW=10Hz</td> </tr> </table>															Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz			Limit	T59; S/N: 3245 @3m						FCC 15.245	2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz			A.5m Chamber			Average Measurements RBW=1MHz ; VBW=10Hz
Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz			Limit																																		
T59; S/N: 3245 @3m						FCC 15.245																																		
2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz																																			
		A.5m Chamber			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 dBuVm	Avg dBuVm	Pk Lim dBuVm	Avg Lim dBuVm	Pk Mar dB	Avg Mar dB	Notes (V/H)																									
X-Position																																								
10.525	3.0	50.0	22.0	38.6	10.6	0.0	0.0	0.0	99.2	71.2	148.0	128.0	-48.8	-56.8	V																									
10.525	3.0	69.0	41.0	38.6	10.6	0.0	0.0	0.0	118.2	90.2	148.0	128.0	-29.8	-37.8	H																									
Y-Position																																								
10.525	3.0	68.2	40.2	38.6	10.6	0.0	0.0	0.0	117.4	89.4	148.0	128.0	-30.6	-38.6	V																									
10.525	3.0	46.4	18.4	38.6	10.6	0.0	0.0	0.0	95.6	67.6	148.0	128.0	-52.4	-60.4	H																									
Z-Position																																								
10.525	3.0	54.2	26.2	38.6	10.6	0.0	0.0	0.0	103.4	75.4	148.0	128.0	-44.6	-52.6	V																									
10.525	3.0	46.5	18.5	38.6	10.6	0.0	0.0	0.0	95.7	67.7	148.0	128.0	-52.3	-60.3	H																									
Duty Cycle FC = -28 dB																																								
f Measurement Frequency Dist Distance to Antenna Read Analyzer Reading AF Antenna Factor CL Cable Loss					Amp Preamp Gain D Corr Distance Correct to 3 meters Avg Average Field Strength @ 3 m Peak Calculated Peak Field Strength HPF High Pass Filter					Avg Lim Average Field Strength Limit Pk Lim Peak Field Strength Limit Avg Mar Margin vs. Average Limit Pk Mar Margin vs. Peak Limit																														

7.3.2. TX/RX SPURIOUS RADIATED EMISSIONS ABOVE 1 GHz

<p>High Frequency Measurement Compliance Certification Services, Fremont 5m Chamber</p> <p>Company: Honeywell International Project #: 08U12122 Date: 10/01/08 Test Engineer: Can Ming Chung Configuration: Stand-alone EUT Mode: Tx and Rx</p> <p>Test Equipment:</p> <table border="1"><tr><td>Horn 1-18GHz</td><td>Pre-amplifier 1-26GHz</td><td>Pre-amplifier 26-40GHz</td><td colspan="4">Horn > 18GHz</td><td>Limit</td></tr><tr><td>T59; S/N: 3245 @3m</td><td>T144 Miteq 3008A00931</td><td>T88 Miteq 26-40GHz</td><td colspan="4">T89; ARA 18-26GHz; S/N:1049</td><td>RX RSS 210</td></tr><tr><td colspan="18">Hi Frequency Cables</td></tr><tr><td>2 foot cable</td><td>3 foot cable</td><td>12 foot cable</td><td colspan="2">HPF</td><td colspan="2">Reject Filter</td><td colspan="10"><p>Peak Measurements RBW=VBW=1MHz</p><p>Average Measurements RBW=1MHz ; VBW=10Hz</p></td></tr><tr><td>f GHz</td><td>Dist (m)</td><td>Read Pk dBuV</td><td>Read Avg. dBuV</td><td>AF dB/m</td><td>CL dB</td><td>Amp dB</td><td>D Corr dB</td><td>Fltr dB</td><td>Peak dBuV/m</td><td>Avg dBuV/m</td><td>Pk Lim dBuV/m</td><td>Avg Lim dBuV/m</td><td>Pk Mar dB</td><td>Avg Mar dB</td><td colspan="2">Notes (V/H)</td></tr><tr><td>21.052</td><td>3.0</td><td>42.6</td><td>14.6</td><td>33.4</td><td>12.5</td><td>-35.2</td><td>0.0</td><td>0.0</td><td>53.3</td><td>25.3</td><td>74.0</td><td>54.0</td><td>-20.7</td><td>-28.7</td><td colspan="2">V</td></tr><tr><td>21.052</td><td>3.0</td><td>43.8</td><td>15.8</td><td>33.4</td><td>12.5</td><td>-35.2</td><td>0.0</td><td>0.0</td><td>54.5</td><td>26.5</td><td>74.0</td><td>54.0</td><td>-19.5</td><td>-27.5</td><td colspan="2">H</td></tr></table> <p>Duty Cycle CF = -28 dB Note: No other signals from EUT were detected above the system noise floor</p> <table border="1"><tr><td>f</td><td>Measurement Frequency</td><td>Amp</td><td>Preamp Gain</td><td>Avg Lim</td><td>Average Field Strength Limit</td></tr><tr><td>Dist</td><td>Distance to Antenna</td><td>D Corr</td><td>Distance Correct to 3 meters</td><td>Pk Lim</td><td>Peak Field Strength Limit</td></tr><tr><td>Read</td><td>Analyzer Reading</td><td>Avg</td><td>Average Field Strength @ 3 m</td><td>Avg Mar</td><td>Margin vs. Average Limit</td></tr><tr><td>AF</td><td>Antenna Factor</td><td>Peak</td><td>Calculated Peak Field Strength</td><td>Pk Mar</td><td>Margin vs. Peak Limit</td></tr><tr><td>CL</td><td>Cable Loss</td><td>HPF</td><td>High Pass Filter</td><td></td><td></td></tr></table>																		Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz				Limit	T59; S/N: 3245 @3m	T144 Miteq 3008A00931	T88 Miteq 26-40GHz	T89; ARA 18-26GHz; S/N:1049				RX RSS 210	Hi Frequency Cables																		2 foot cable	3 foot cable	12 foot cable	HPF		Reject Filter		<p>Peak Measurements RBW=VBW=1MHz</p> <p>Average Measurements RBW=1MHz ; VBW=10Hz</p>										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)		21.052	3.0	42.6	14.6	33.4	12.5	-35.2	0.0	0.0	53.3	25.3	74.0	54.0	-20.7	-28.7	V		21.052	3.0	43.8	15.8	33.4	12.5	-35.2	0.0	0.0	54.5	26.5	74.0	54.0	-19.5	-27.5	H		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		
Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz				Limit																																																																																																																																														
T59; S/N: 3245 @3m	T144 Miteq 3008A00931	T88 Miteq 26-40GHz	T89; ARA 18-26GHz; S/N:1049				RX RSS 210																																																																																																																																														
Hi Frequency Cables																																																																																																																																																					
2 foot cable	3 foot cable	12 foot cable	HPF		Reject Filter		<p>Peak Measurements RBW=VBW=1MHz</p> <p>Average Measurements RBW=1MHz ; VBW=10Hz</p>																																																																																																																																														
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)																																																																																																																																						
21.052	3.0	42.6	14.6	33.4	12.5	-35.2	0.0	0.0	53.3	25.3	74.0	54.0	-20.7	-28.7	V																																																																																																																																						
21.052	3.0	43.8	15.8	33.4	12.5	-35.2	0.0	0.0	54.5	26.5	74.0	54.0	-19.5	-27.5	H																																																																																																																																						
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																																																																																																																																																		

Note: the limit for RSS 210 (Rx) is tighter than the limit for FCC 15.245, and since the EUT was transmitting and receiving simultaneously this data sheet cover both FCC 15.245 and RSS 210.

Noise Floor Levels:

Specification Distance: 3 meters							
Freq GHz	SA dBuV	AF dB/m	Distance m	Distance dB	Field dBuV/m	Limit dBuV/m	Margin dB
33 to 50 GHz							
RBW = 1 MHz, peak detection							
50	39.2	44.2	0.1	-29.5	53.86	74	-20.14
RBW = 1 MHz, average detection							
50	27.2	44.2	0.1	-29.5	41.86	54	-12.14
50 to 75 GHz							
RBW = 1 MHz, peak detection							
75	39.2	47.7	0.1	-29.5	57.36	74	-16.64
RBW = 1 MHz, average detection							
75	27.2	47.7	0.1	-29.5	45.36	54	-8.64
75 to 110 GHz							
RBW = 1 MHz, peak detection							
110	39.2	51.0	0.1	-29.5	60.66	74	-13.34
RBW = 1 MHz, average detection							
110	27.2	51.0	0.1	-29.5	48.66	54	-5.34

7.3.3. TX/RX SPURIOUS RADIATED EMISSIONS BELOW 1 GHz

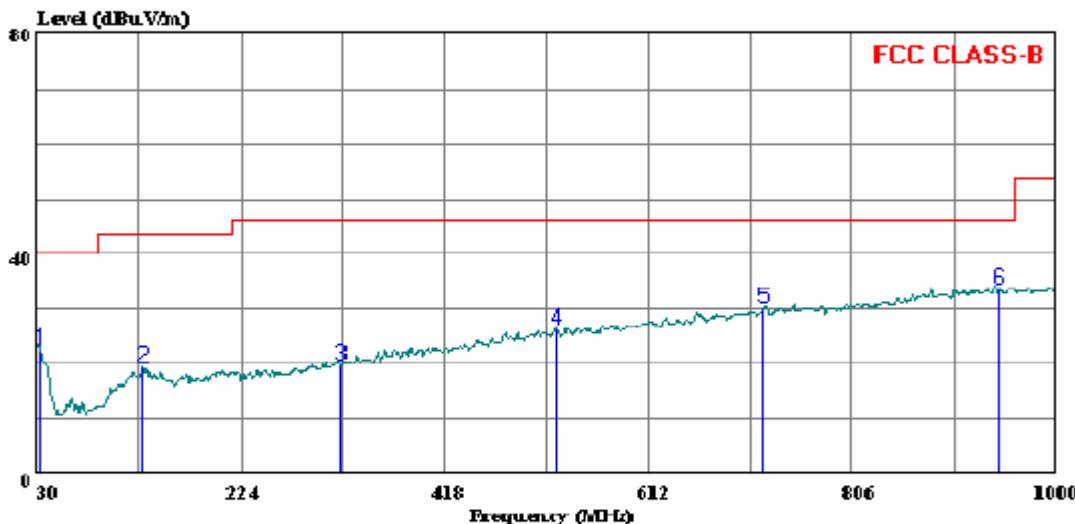
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 6 File#: 08U12122.EMI Date: 10-01-2008 Time: 23:25:14



Condition: FCC CLASS-B HORIZONTAL
Test Operator:: Can Ming Chung
Project #: 08U12122
Company: Honeywell International
Configuration:: Stand-alone EUT
Mode : Tx and Rx
Target: FCC Class-B

HORIZONTAL DATA

Freq	Read			Limit		Over	
	Level	Factor	Level	Line	Limit	Remark	
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	32.910	30.67	-8.30	22.37	40.00	-17.63	Peak
2	130.880	32.73	-13.38	19.35	43.50	-24.15	Peak
3	319.060	30.24	-10.49	19.75	46.00	-26.25	Peak
4	524.700	30.57	-4.32	26.25	46.00	-19.75	Peak
5	721.610	30.21	-0.19	30.02	46.00	-15.98	Peak
6	945.680	30.37	3.17	33.54	46.00	-12.46	Peak

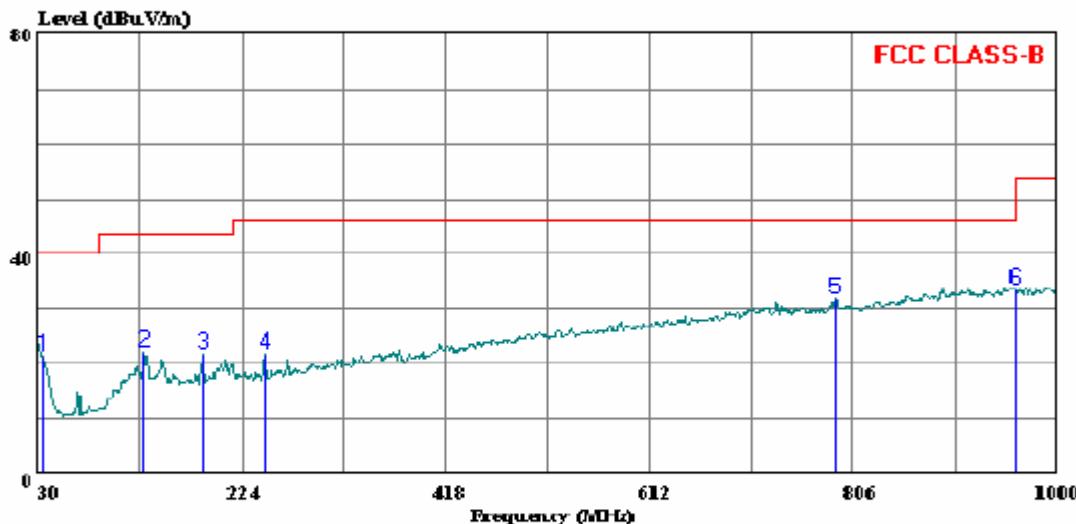
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 4 File#: 08U12122.EMI Date: 10-01-2008 Time: 23:17:02



Trace: 3

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator:: Can Ming Chung
Project #: : 08U12122
Company: : Honeywell International
Configuration:: Stand-alone EUT
Mode : : Tx and Rx
Target: : FCC Class-B

VERTICAL DATA

Freq	MHz	Read		Level	Limit	Line	Over	Remark
		Level	Factor					
		dBuV		dB	dBuV/m	dBuV/m	dB	
1	33.880	30.87	-9.49	21.38	40.00	-18.62	Peak	
2	130.880	35.55	-13.38	22.17	43.50	-21.33	Peak	
3	187.140	35.90	-13.94	21.96	43.50	-21.54	Peak	
4	245.340	35.19	-13.25	21.94	46.00	-24.06	Peak	
5	788.540	31.18	0.66	31.84	46.00	-14.16	Peak	
6	960.230	30.22	3.40	33.62	54.00	-20.38	Peak	

8. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207 (a)
IC RSS-GEN, Section 7.2.2

Frequency of emission (MHz)	Conducted Limit (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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

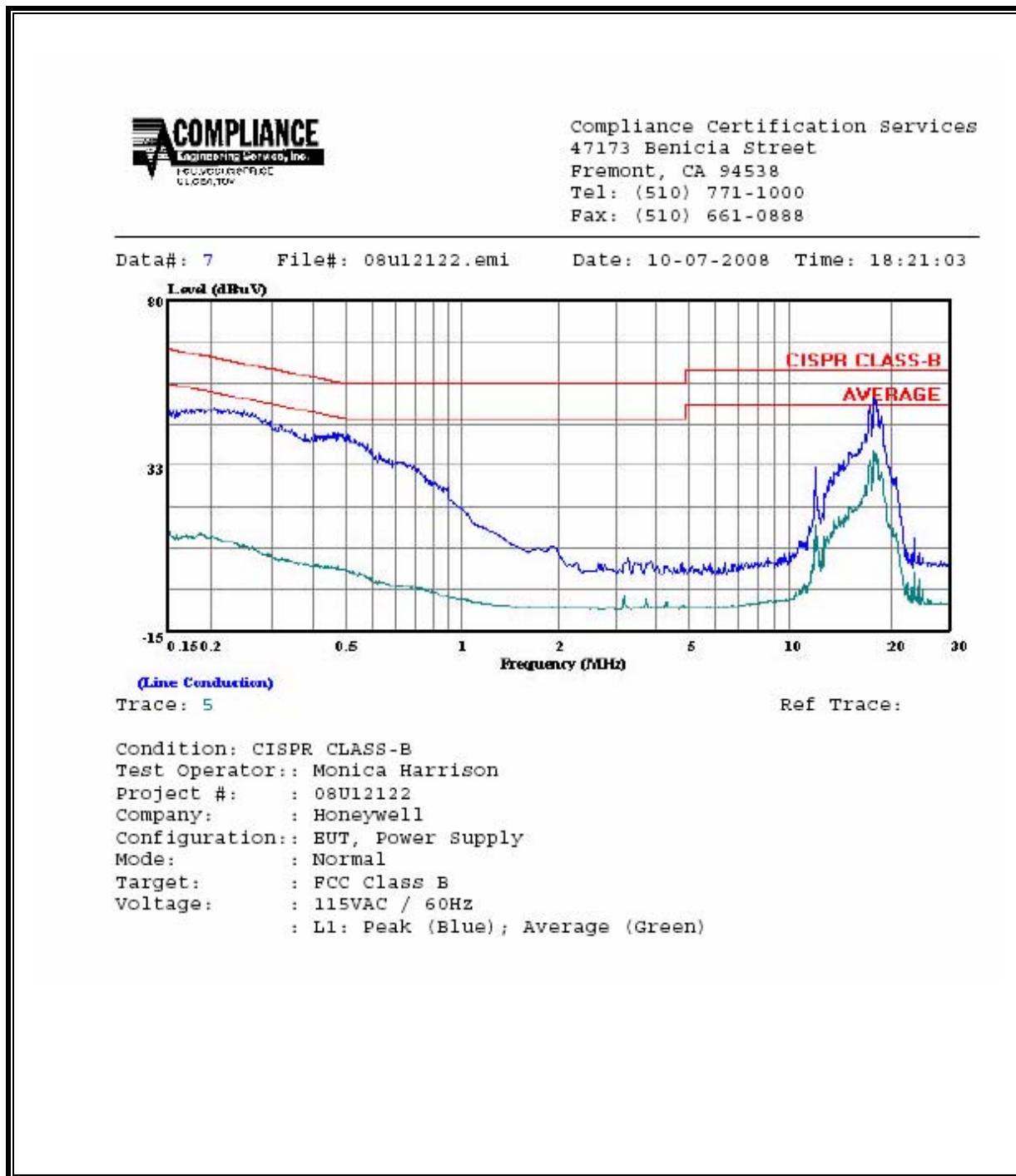
ANSI C63.4

RESULTS

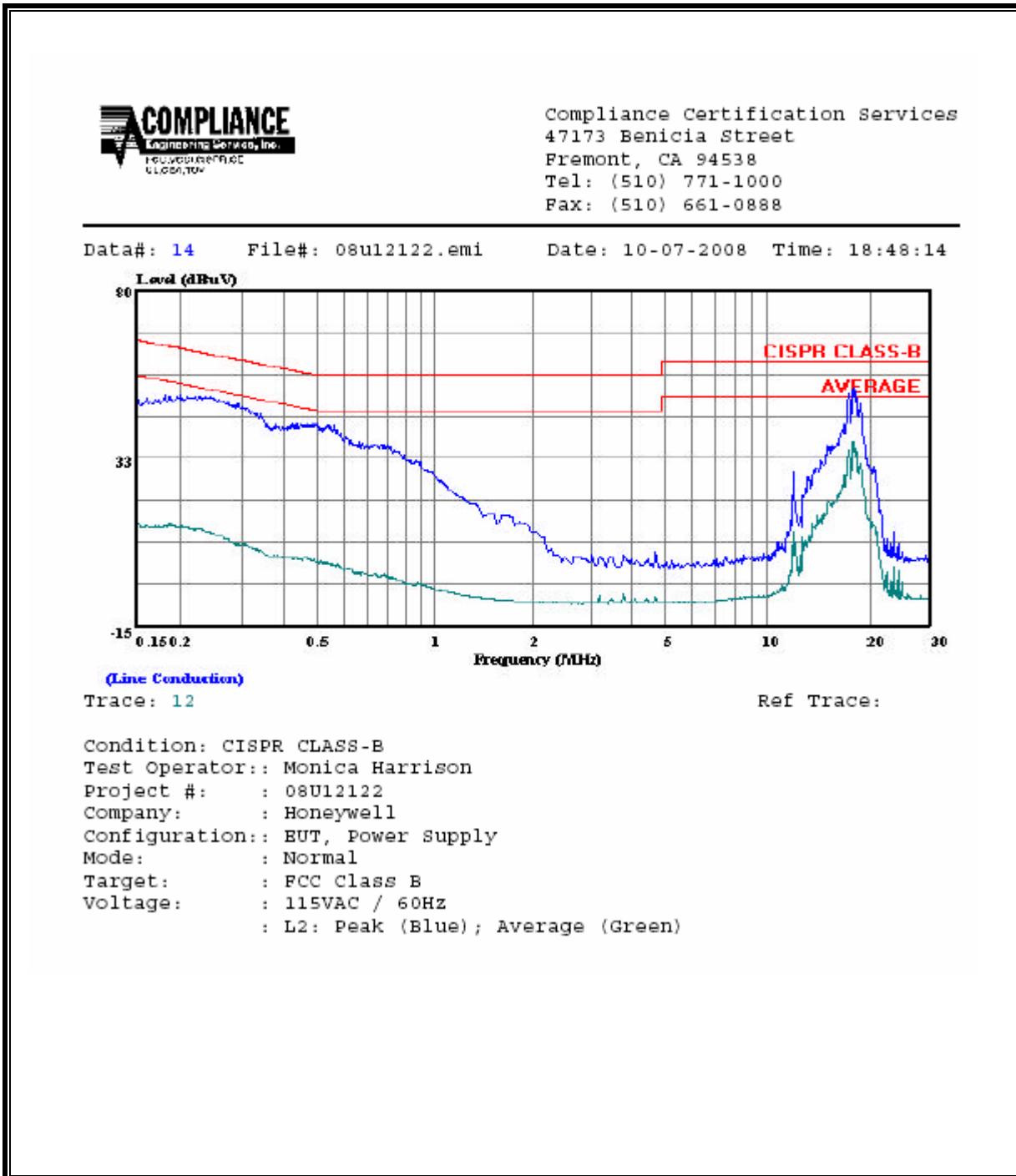
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq. (MHz)	Reading			Closs (dB)	Limit QP	EN_B AV	Margin		Remark L1 / L2
	PK (dBuV)	QP (dBuV)	AV (dBuV)				QP (dB)	AV (dB)	
17.75	51.97	--	36.86	0.00	60.00	50.00	-8.03	-13.14	L1
0.50	41.20	--	2.22	0.00	56.00	46.00	-14.80	-43.78	L1
0.20	49.02	--	11.90	0.00	63.45	53.45	-14.43	-41.55	L1
17.85	52.63	--	37.09	0.00	60.00	50.00	-7.37	-12.91	L2
0.48	42.04	--	3.60	0.00	56.32	46.32	-14.28	-42.72	L2
0.23	50.06	--	12.73	0.00	62.52	52.52	-12.46	-39.79	L2
6 Worst Data									

LINE 1 RESULTS



LINE 2 RESULTS



8.1. MAXIMUM PERMISSIBLE EXPOSURE

FCC RULES

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500	f/300	6
1500–100,000	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
30–300	27.5	0.073	0.2	30
300–1500	f/1500	30
1500–100,000	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

IC RULES

IC Safety Code 6, Section 2.2.1 (a) A person other than an RF and microwave exposed worker shall not be exposed to electromagnetic radiation in a frequency band listed in Column 1 of Table 5, if the field strength exceeds the value given in Column 2 or 3 of Table 5, when averaged spatially and over time, or if the power density exceeds the value given in Column 4 of Table 5, when averaged spatially and over time.

Table 5
Exposure Limits for Persons Not Classed As RF and Microwave Exposed Workers (Including the General Public)

1 Frequency (MHz)	2 Electric Field Strength; rms (V/m)	3 Magnetic Field Strength; rms (A/m)	4 Power Density (W/m ²)	5 Averaging Time (min)
0.003–1	280	2.19		6
1–10	280/f	2.19/f		6
10–30	28	2.19/f		6
30–300	28	0.073	2*	6
300–1 500	$1.585f^{0.5}$	$0.0042f^{0.5}$	$f/150$	6
1 500–15 000	61.4	0.163	10	6
15 000–150 000	61.4	0.163	10	$616\,000/f^{1.2}$
150 000–300 000	$0.158f^{0.5}$	$4.21 \times 10^{-4}f^{0.5}$	$6.67 \times 10^{-5}f$	$616\,000/f^{1.2}$

* Power density limit is applicable at frequencies greater than 100 MHz.

Notes: 1. Frequency, f , is in MHz.
2. A power density of 10 W/m² is equivalent to 1 mW/cm².
3. A magnetic field strength of 1 A/m corresponds to 1.257 microtesla (μ T) or 12.57 milligauss (mG).

CALCULATIONS

Given

$$E = \sqrt{(30 * P * G) / d}$$

and

$$S = E^2 / 3770$$

where

E = Field Strength in Volts/meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power Density in milliwatts/square centimeter

Combining equations, rearranging the terms to express the distance as a function of the remaining variables, changing to units of Power to mW and Distance to cm, and substituting the logarithmic form of power and gain yields:

$$d = 0.282 * 10^{((P + G) / 20) / \sqrt{S}}$$

where

d = MPE distance in cm

P = Power in dBm

G = Antenna Gain in dBi

S = Power Density Limit in mW/cm²

Rearranging terms to calculate the power density at a specific distance yields

$$S = 0.0795 * 10^{((P + G) / 10) / (d^2)}$$

The power density in units of mW/cm² is converted to units of W/m² by multiplying by a factor of 10.

LIMITS

From FCC §1.1310 Table 1 (B), the maximum value of S = 1.0 mW/cm²

From IC Safety Code 6, Section 2.2 Table 5 Column 4, S = 10 W/m²

RESULTS

Operating Frequency (MHz)	MPE Distance (cm)	Output EIRP (dBm)	FCC Power Density (mW/cm ²)	IC Power Density (W/m ²)
10525.0	20.0	23.00	0.0397	0.3966

CONVERSION OF FIELD STRENGTH TO EIRP:

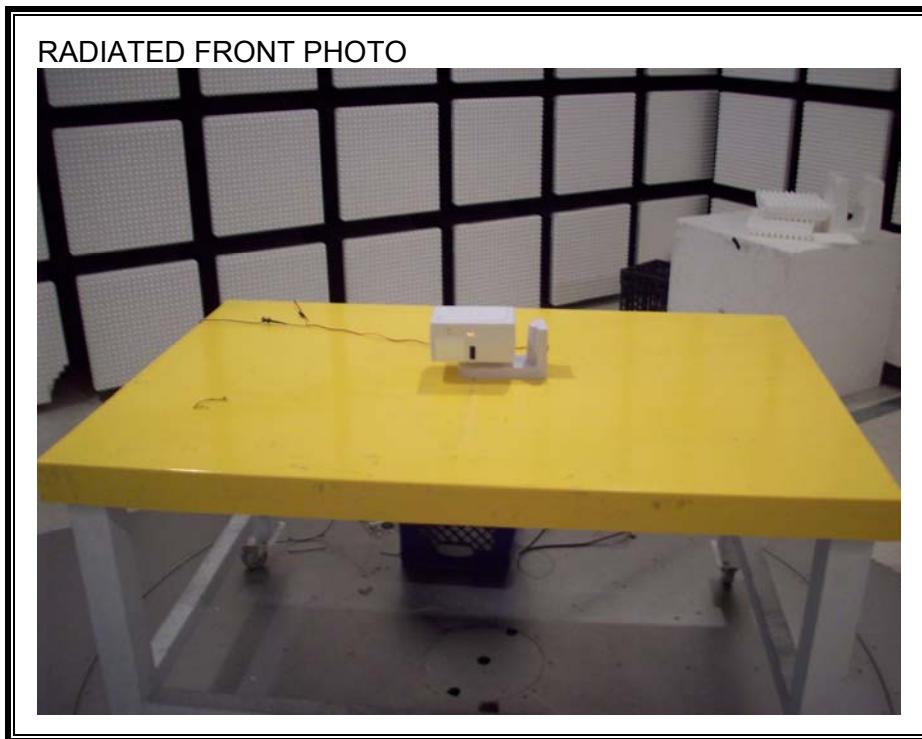
For frequencies where measurement equipment limitations preclude substitution measurements, the measured field strength at a 3 meter test distance is converted to EIRP using:

EIRP (dBm) = Field Strength at 3 meters (dBuV/m) – 95.2

9. SETUP PHOTOS

RADIATED RF MEASUREMENT SETUP

X - POSITION



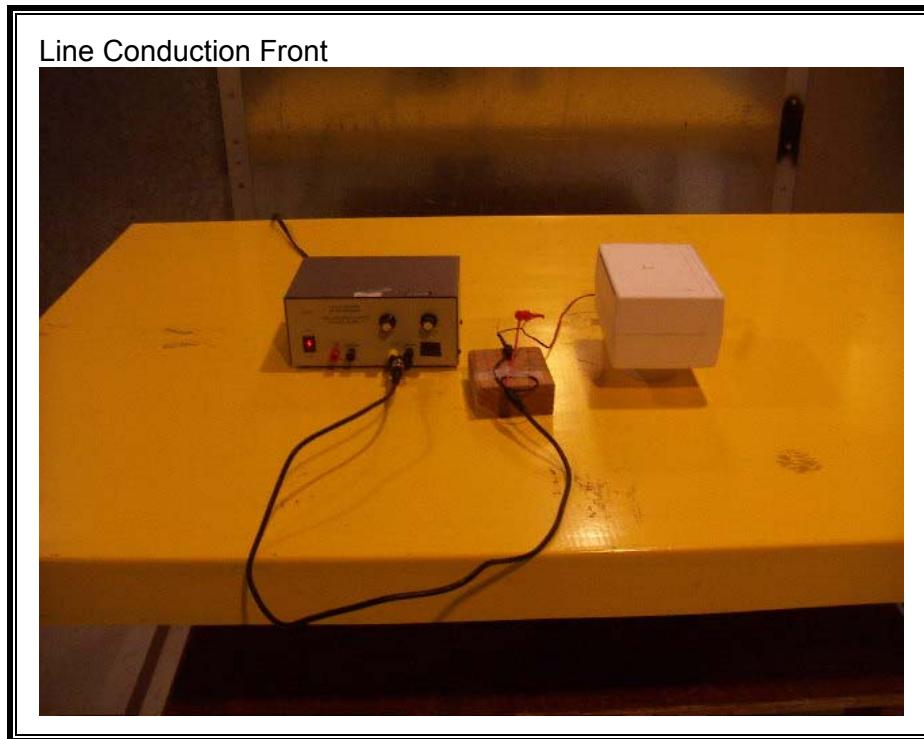
Y - POSITION



Z - POSITION



POWER LINE CONDUCTED EMISSIONS SETUP



Line Conduction Back



END OF REPORT