

FCC PART 15 CLASS B



EMI MEASUREMENT AND TEST REPORT

For

Human Advanced Co., Ltd

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FCC ID: TUHOMC1007

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: RF STB
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Report Number: R0511162	
Report Date: 2005-12-6	
Reviewed By:  Snell Leong	
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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Human Advanced Co., Ltd* product, FCC ID: *TUHOMC1007*, model number: OMC1007, or the "EUT" as referred to this report, is a *RF STB*, which measures approximately 16.5 cm W x 21.5 cm L x 5.0 cm H.

** The test data gathered are from production sample, serial number: HUAD0002, provided by the manufacturer.*

Objective

This Class B report is prepared on behalf of *Human Advanced Co., Ltd* in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with U.S.A. FCC Class B and Canada ICES-003 issue 4 limits for conducted and radiated margin requirements for Information Technology Equipment.

Related Submittal(s)/Grant(s)

No Related Submittals.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp.

Test Facility

The Open Area Test site used by Bay Area Compliance Laboratory Corporation to collect radiated and conducted emission measurement data is located in the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA.

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules and Article 8 of the VCCI regulations. The facility also complies with the test methods and procedures set forth in ANSI C63.4-2003.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations is attached hereinafter and can also be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm>

SYSTEM TEST CONFIGURATION

Justification

The EUT was tested in accordance with ANSI C63.4-2003.

EUT Exercise Software

The EUT exercising software program was designed to exercise the various installed components in accordance with ANSI C63.4-2003.

Special Accessories

The unit was tested with the normally supplied cabling and accessories provided by the supporting equipment and no special accessories were used.

Schematics / Block Diagram

Exhibit D contains a copy of the EUT's schematics diagram as reference.

Equipment Modifications

No modifications were made to the EUT.

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Toshiba	TV	14AF41	20448785A	N/A
Leader Instruments	NTSC pattern generator	LCG-400	2050017	N/A
Human Advanced	STB Controller	OMC1006		

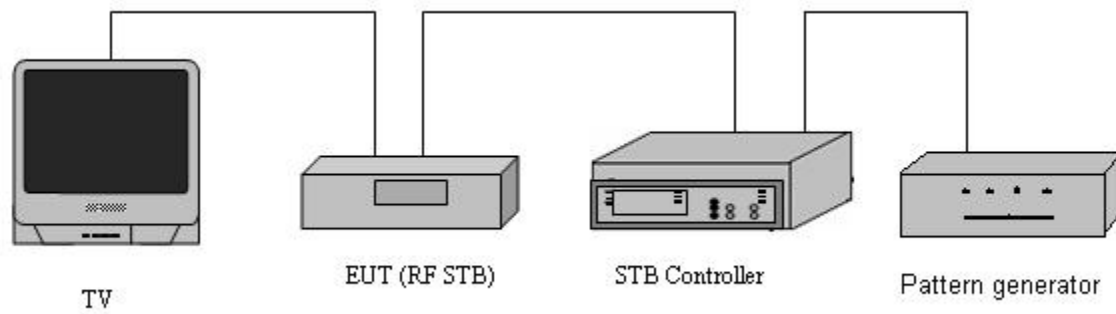
Power Supply and Line Filters

Manufacturer	Description	Model	Serial Number	FCC ID
Tae Young Electronics Co., Ltd	AC Power Adaptor	GRA1215	N/A	N/A

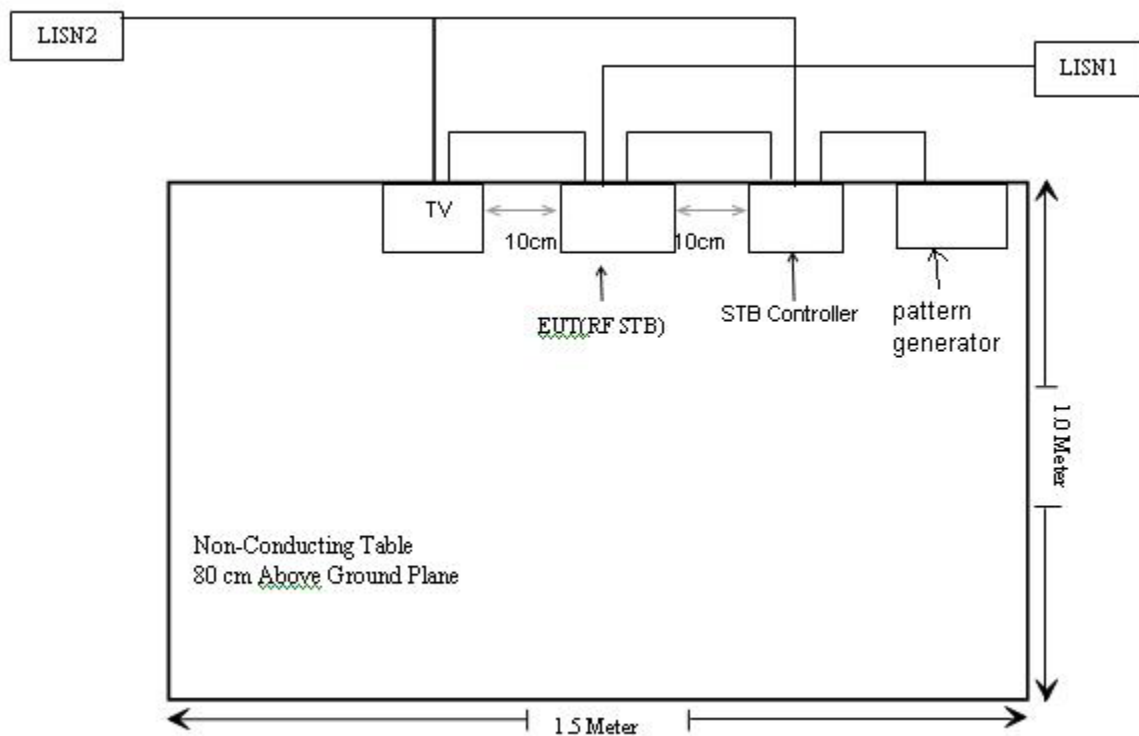
Interface Ports and Cabling

Cable Description	Length (M)	From	To
Coaxial cable	2	STB controller	RF STB
Coaxial cable	3	RF STB	TV
Coaxial cable	1.5	Pattern generator	STB controller

Configuration of Test System



Test Setup Block Diagram



SUMMARY OF TEST REPORT

RULE	DESCRIPTION	RESULTS
15.107	Conducted Emissions	Compliant
15.109	Radiated Emissions	Complies*
15.111	Antenna Power Conduction Measurement	Compliant
15.115(b)(1)(ii)	Output Signal Level Measurement	Compliant
15.115(b)(2)(ii)	Output Terminal Conducted Spurious Emission Measurement	Compliant
15.115(c)(1)(ii)	Transfer Switch Measurement	Compliant
15.19	Labelling Requirements	Compliant
15.21, 15.105	Information to the User	Compliant
15.27	Special Accessories	Compliant

*: Test data was within the measurement uncertainty.

§15.107 - CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are receiver, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at BACL is +2.4 dB.

EUT Setup

The measurement was performed in the shielded room, using the same setup per ANSI C63.4-2003 measurement procedure. The specification used was FCC 15 Class B limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

The EUT was connected to 120Vac/60Hz power source.

Receiver Setup

The receiver was set to investigate the frequency from 150 kHz to 30MHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
Rohde & Schwarz	Artificial LISN	ESH2-Z5	871884/039	2005-08-16
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2005-09-15
Fluke	Calibrated Voltmeter	189	18485-38	2005-07-18

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the EUT was connected to the mains outlet of the LISN-1. Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the peak detection mode, quasi-peak and average. Average readings are distinguished with an "Ave".

Test Results Summary

According to the recorded data, the EUT complied with the FCC Conducted limits for a Class B device, with the worst margin reading of:

-10.8 dB at 0.150MHz on the Neutral conductor mode.

Conducted Emissions Test Data

Environmental Conditions

Temperature:	20 °C
Relative Humidity:	37%
ATM Pressure:	1009mbar

Testing was performed by Oscar Au on 2005-11-18.

Line Conducted Emissions				FCC15 Class B	
Frequency MHz	Amplitude dBμV	Detector Qp/Ave/Peak	Phase Line/Neutral	Limit dBμV	Margin dB
0.150	45.2	Ave	Neutral	56.00	-10.8
0.150	44.3	Ave	Line	56.00	-11.7
17.200	43.5	QP	Neutral	60.00	-16.5
0.150	47.1	QP	Neutral	66.00	-18.9
0.150	46.5	QP	Line	66.00	-19.5
12.500	25.3	Ave	Line	50.00	-24.7
13.600	23.6	Ave	Neutral	50.00	-26.4
17.200	32.7	QP	Line	60.00	-27.3
12.500	28.1	QP	Line	60.00	-31.9
17.200	16.3	Ave	Line	50.00	-33.7
17.200	13.0	Ave	Neutral	50.00	-37.0
13.600	22.6	QP	Neutral	60.00	-37.4

Plots of Conducted Emission

The plots of conducted emission are presented hereinafter as reference.

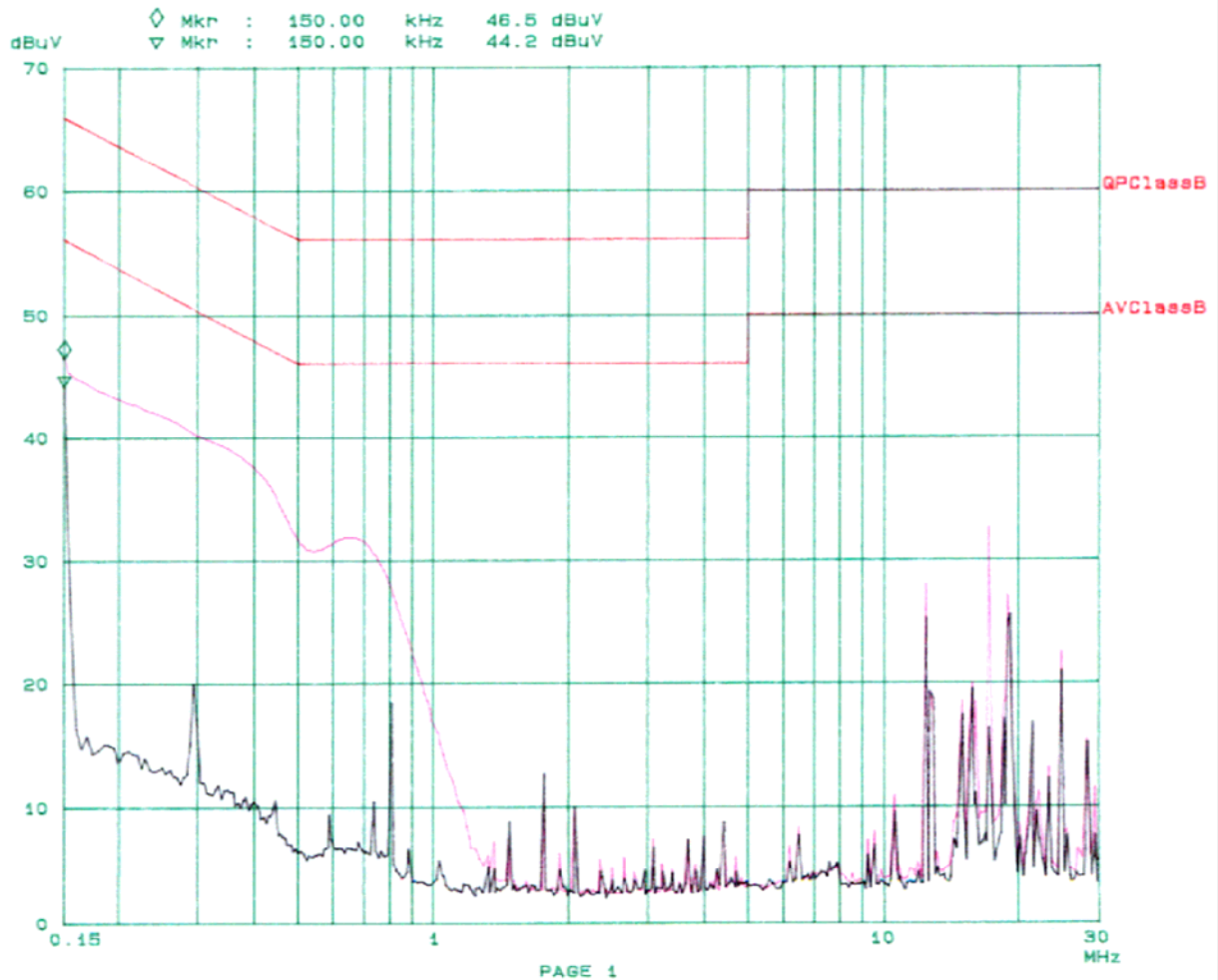
Bay Area Compliance Laboratory Corp
Class B

18. Nov 05 16:02

EUT: OMC1007
Manuf: Human Advanced Co., Ltd
Op Cond: Normal
Operator: Oscar
Comment: L
120VAC

Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	1M	5k	9k	QP+AV	20ms	15dBLN	OFF
1M	5M	10k	9k	QP+AV	1ms	15dBLN	OFF
5M	30M	100k	9k	QP+AV	1ms	15dBLN	OFF



Bay Area Compliance Laboratory Corp
Class B

16. Nov 05 15:39

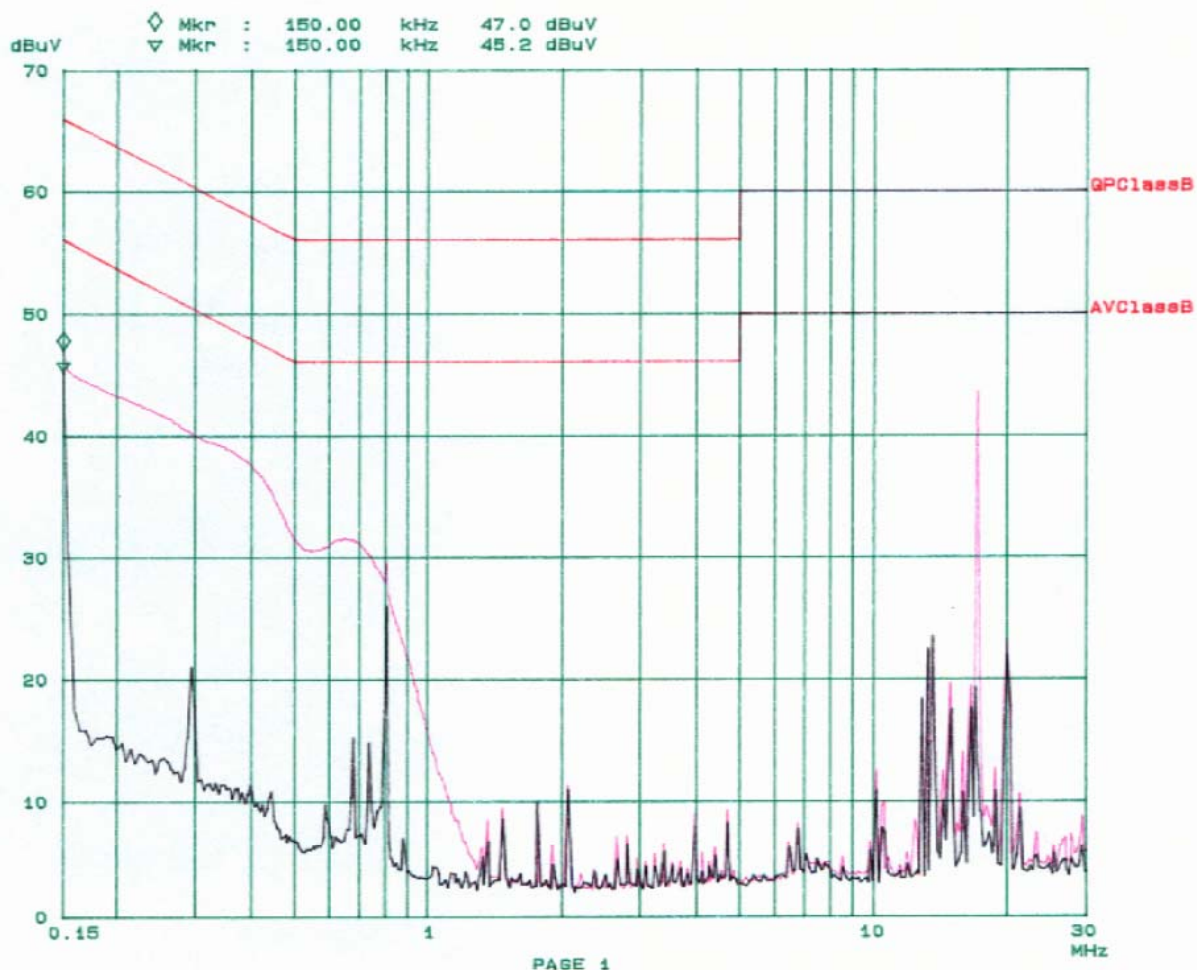
EUT: OMC1007
Manuf: Human Advanced Co., Ltd
Op Cond: Normal
Operator: Oscar
Comment: N
120VAC

WA

11/18/05

Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	1M	5k	9k	QP+AV	20ms	15dBLN	OFF
1M	5M	10k	9k	QP+AV	1ms	15dBLN	OFF
5M	30M	100k	9k	QP+AV	1ms	15dBLN	OFF



§15.109 - RADIATED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are receiver, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMI Measurements, the best estimate of the uncertainty of a radiation emissions measurement at BACL is +4.0 dB.

EUT Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup in accordance with the ANSI C63.4-2003. The specification used was the FCC15B limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

The EUT was connected to 120Vac/60Hz power source.

Receiver Setup

The system was tested to 1000 MHz.

During the radiated emission test, the receiver was set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>
Below 30MHz	10kHz	10kHz
30 – 1000MHz	100kHz	100kHz
Above 1000MHz	1MHz	1MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal Date
Sunol Sciences	Antenna	JB1	A013105-3	2005-2-11
Sunol Sciences	System Controller	SC99V	122303-1	N/R
Agilent	Amplifier, Pre	8447D	2944A10187	2005-8-20
Rohde & Schwarz	Receiver, EMI Test	ESCI 1166.5950K03	100044	2005-9-29

* **Statement of Traceability:** **BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the EUT all support equipment were connected to the AC floor outlet. Maximizing procedure was performed on the six (6) highest emissions in the described configurations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limits), and are distinguished with a "Qp" in the data table.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor, and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

Summary of Test Results

According to the following table, the EUT complied with the FCC Class B standards and these test results is deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations, and had the worst margin of:

-3.6 dB at 55.00/519.83 MHz in the Horizontal polarization , 30 to 1000 MHz*

**The test data was within the measurement of uncertainty.*

Radiated Emissions Test Data, measured at 3 meter**Environmental Conditions**

Temperature:	23 °C
Relative Humidity:	36%
ATM Pressure:	1010mbar

Testing was performed by Oscar Au on 2005-11-18.

Frequency MHz	Reading dBuV	Direction Degree	Height Meter	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Factor dBuV	FCC 15B	
									Limit	Margin
55.00	56.0	160	1.0	H	7.3	1.6	28.5	36.4	40	-3.6*
519.83	47.8	180	2.8	H	18.1	5.0	28.5	42.4	46	-3.6*
564.08	45.6	180	1.5	H	18.4	5.1	28.7	40.4	46	-5.6
74.00	52.7	180	1.5	V	8.1	1.8	28.4	34.2	40	-5.8
519.83	45.4	100	1.8	V	18.1	5.0	28.5	40.0	46	-6.0
530.89	43.5	180	1.5	H	18.6	5.0	28.5	38.6	46	-7.4
541.95	43.1	190	1.1	H	18.8	5.2	28.5	38.6	46	-7.4
586.20	43.3	180	1.3	H	18.8	5.3	28.8	38.6	46	-7.4
508.77	43.5	220	1.5	V	17.8	4.9	28.5	37.7	46	-8.3
564.08	42.9	90	1.5	V	18.4	5.1	28.7	37.7	46	-8.3
575.13	42.1	200	1.5	V	18.8	5.2	28.7	37.4	46	-8.6
508.77	43.1	180	2.0	H	17.8	4.9	28.5	37.3	46	-8.7
575.13	41.5	180	2.8	H	18.8	5.2	28.7	36.8	46	-9.2
586.20	41.2	200	1.5	V	18.8	5.3	28.8	36.5	46	-9.5
597.25	40.3	200	1.5	V	19.4	5.4	28.6	36.5	46	-9.5
107.98	48.4	250	1.0	V	11.0	2.1	28.2	33.3	43.5	-10.2
530.89	40.3	90	1.5	V	18.6	5.0	28.5	35.4	46	-10.6
541.95	39.8	30	1.8	V	18.8	5.2	28.5	35.3	46	-10.7
192.03	45.9	230	1.5	V	11.5	2.9	27.7	32.6	43.5	-10.9
192.03	45.8	200	2.5	H	11.5	2.9	27.7	32.5	43.5	-11.0
597.25	38.5	200	2.0	H	19.4	5.4	28.6	34.7	46	-11.3
74.00	46.5	160	2.5	H	8.1	1.8	28.4	28.0	40	-12.0
107.98	45.2	280	2.8	H	11.0	2.1	28.2	30.1	43.5	-13.4
55.00	45.0	180	2.5	V	7.3	1.6	28.5	25.4	40	-14.6

*The test data was within the measurement of uncertainty.

§15.111 – Antenna Power Conduction Measurement

EUT Setup

The measurement was performed in the shielded room, using the same setup per ANSI C63.4-2003 measurement procedure. The specification used was FCC 15 Class B limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

The EUT was connected to 120Vac/60Hz power source.

Receiver Setup

The system was tested to 2000 MHz.

During the test, the receiver was set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>
Below 30MHz	10kHz	10kHz
30 – 1000MHz	100kHz	100kHz
Above 1000MHz	1MHz	1MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal Date
Leader Instrument	NTSC pattern generator	LCG-400	2050017	N/R
HP	Spectrum analyzer	8566B	2332A02816	10-Nov-2004
HP	Spectrum analyzer display	85662A	3026A20081	10-Nov-2004
HP	Quasi-Peak adaptor	85650A	3107A01505	10-Nov-2004
Inmet	Matching Pad	9079	N/A	N/R
HP	Pre-amplifier	8447D	2944A06639	15-Aug-2005
HP	Pre-amplifier	8447D	2944A06639	15-Aug-2005

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Test Procedure

The RF input terminal was connected to the test receiver through the matching pad (75-50 ohm) with pre-amplifier connected. RF output was measured under the EUT operating mode. Result is displayed on the spectrum analyzer.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor, and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Cable Factor} - \text{Amplifier Gain} + \text{Matching Pad loss}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

The limit is 2.0 nanowatts in the frequency range from 30MHz to 5000MHz.

Summary of Test Results

According to the following table, the EUT complied with the FCC Class B standards and these test results is deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations, and had the worst margin of:

-8.4 dB at 601 MHz

Environmental Conditions

Temperature:	15 °C
Relative Humidity:	40%
ATM Pressure:	1010mbar

Testing was performed by Oscar Au on 2005-11-19.

CH.3

Frequency	Reading	Amplifier	Cable loss	Matching loss	Correction factor	limit	Margin
MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB
601	63.7	28.6	0.8	5.7	41.6	50	-8.4
1945.1	66.9	35.4	1.9	5.7	39.1	50	-10.9
871.9	56.5	27.7	1.0	5.7	35.5	50	-14.5
671.6	55.8	28.5	0.8	5.7	33.8	50	-16.2
1493	51.1	34.9	1.3	5.7	23.2	50	-26.8
1115.8	41	26.5	1.3	5.7	21.5	50	-28.5

§15.115(b)(1)(ii) – Output signal level measurement

EUT Setup

The measurement was performed in the shielded room, using the same setup per ANSI C63.4-2003 measurement procedure. The specification used was FCC 15 Class B limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

The EUT was connected to 120Vac/60Hz power source.

Receiver Setup

The system was tested to 2000 MHz.

During the test, the receiver was set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>
Below 30MHz	10kHz	10kHz
30 – 1000MHz	100kHz	100kHz
Above 1000MHz	1MHz	1MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal Date
Leader Instrument	NTSC pattern generator	LCG-400	2050017	N/R
HP	Spectrum analyzer	8566B	2332A02816	10-Nov-2004
HP	Spectrum analyzer display	85662A	3026A20081	10-Nov-2004
HP	Quasi-Peak adaptor	85650A	3107A01505	10-Nov-2004
Inmet	Matching Pad	9079	N/A	N/R
HP	Pre-amplifier	8447D	2944A06639	15-Aug-2005
HP	Pre-amplifier	8447D	2944A06639	15-Aug-2005

* **Statement of Traceability:** **BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Test Procedure

The RF output terminal was connected to the test receiver through the matching pad (75-50 ohm) with pre-amplifier connected. RF output was measured under the EUT operating mode. Result is displayed on the spectrum analyzer. Leader generate bar pattern onto the EUT. Spectrum was checked in each test mode and operation mode, and the maximum measured data were reported.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor, and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Cable Factor} - \text{Amplifier Gain} + \text{Matching Pad loss}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

Summary of Test Results

According to the following table, the EUT complied with the FCC Class B standards and these test results is deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations, and had the worst margin of:

-7.2 dB at 67.214 MHz at channel 4

Environmental Conditions

Temperature:	15 °C
Relative Humidity:	40%
ATM Pressure:	1010mbar

**Testing was performed by Oscar Au on 2005-11-19.*

Test	Frequency	Reading	Amplifier	Cable loss	Matching loss	Correction factor	limit	Margin
channel	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB
	56.704	68.9	26.7	0.3	5.7	48.2	56.5	-8.3
3	61.253	82.1	26.7	0.3	5.7	61.4	69.5	-8.1
	65.715	68.3	26.7	0.3	5.7	47.6	56.5	-8.9
	62.711	70	26.7	0.3	5.7	49.3	56.5	-7.2
4	67.214	83	26.7	0.3	5.7	62.3	69.5	-7.2
	71.723	69.4	26.7	0.3	5.7	48.7	56.5	-7.8

§15.115(b)(2)(ii) – Output terminal conducted spurious emission measurement

EUT Setup

The measurement was performed in the shielded room, using the same setup per ANSI C63.4-2003 measurement procedure. The specification used was FCC 15 Class B limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

The EUT was connected to 120Vac/60Hz power source.

Receiver Setup

The system was tested to 2000 MHz.

During the test, the receiver was set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>
Below 30MHz	10kHz	10kHz
30 – 1000MHz	100kHz	100kHz
Above 1000MHz	1MHz	1MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal Date
Leader Instrument	NTSC pattern generator	LCG-400	2050017	N/R
HP	Spectrum analyzer	8566B	2332A02816	10-Nov-2004
HP	Spectrum analyzer display	85662A	3026A20081	10-Nov-2004
HP	Quasi-Peak adaptor	85650A	3107A01505	10-Nov-2004
Inmet	Matching Pad	9079	N/A	N/R
HP	Pre-amplifier	8447D	2944A06639	15-Aug-2005
HP	Pre-amplifier	8449B	3008A01978	10-Aug-2005

* **Statement of Traceability:** **BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Test Procedure

The RF output terminal was connected to the test receiver through the matching pad (75-50 ohm) with pre-amplifier connected. RF output was measured under the EUT operating mode. Result is displayed on the spectrum analyzer. Leader generate bar pattern onto the EUT. Spectrum was checked in each test mode and operation mode, and the maximum measured data were reported.

Tested frequency range were from 30MHz to more than 4.6MHz below the visual carrier frequency, and from more than 4.7MHz above the visual carrier frequency to 1000MHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor, and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Cable Factor} - \text{Amplifier Gain} + \text{Matching Pad loss}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

Summary of Test Results

According to the following table, the EUT complied with the FCC Class B standards and these test results is deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations, and had the worst margin of:

-7.2 dB at 67.214 MHz at channel 4

Environmental Conditions

Temperature:	15 °C
Relative Humidity:	40%
ATM Pressure:	1010mbar

**Testing was performed by Oscar Au on 2005-11-19.*

Test	Frequency	Reading	Amplifier	Cable loss	Matching loss	Correction factor	limit	Margin
channel	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB
	56.704	68.9	26.7	0.3	5.7	48.2	56.5	-8.3
3	61.253	82.1	26.7	0.3	5.7	61.4	69.5	-8.1
	65.715	68.3	26.7	0.3	5.7	47.6	56.5	-8.9
	62.711	70	26.7	0.3	5.7	49.3	56.5	-7.2
4	67.214	83	26.7	0.3	5.7	62.3	69.5	-7.2
	71.723	69.4	26.7	0.3	5.7	48.7	56.5	-7.8

§15.115(c)(1)(ii) – Antenna Transfer Switch measurement

EUT Setup

The measurement was performed in the shielded room, using the same setup per ANSI C63.4-2003 measurement procedure. The specification used was FCC 15 Class B limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

The EUT was connected to 120Vac/60Hz power source.

Receiver Setup

The system was tested to 2000 MHz.

During the test, the receiver was set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>
Below 30MHz	10kHz	10kHz
30 – 1000MHz	100kHz	100kHz
Above 1000MHz	1MHz	1MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal Date
Leader Instrument	NTSC pattern generator	LCG-400	2050017	N/R
HP	Spectrum analyzer	8566B	2332A02816	10-Nov-2004
HP	Spectrum analyzer display	85662A	3026A20081	10-Nov-2004
HP	Quasi-Peak adaptor	85650A	3107A01505	10-Nov-2004
Inmet	Matching Pad	9079	N/A	N/R
HP	Pre-amplifier	8447D	2944A06639	15-Aug-2005
HP	Pre-amplifier	8447D	2944A06639	15-Aug-2005

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Test Procedure

The RF input terminal was connected to the test receiver through the matching pad (75-50 ohm) with pre-amplifier connected. RF output was measured under the EUT operating mode. Result is displayed on the spectrum analyzer. A 75 ohm termination was connected to the RF output terminal. Spectrum was checked in each test mode and operation mode, and the maximum measured data were reported.

The spectrum was checked in each test mode and operation mode transfer switch isolation measurements were made on channel 3 or 4 video output frequency 61.2 or 67.2 and both positions of the transfer switch were checked for compliance.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor, and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Cable Factor} - \text{Amplifier Gain} + \text{Matching Pad loss}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

Summary of Test Results

According to the following table, the EUT complied with the FCC Class B standards and these test results is deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations, and had the worst margin of:

*** No significant data measurement was observed during the test.**

Environmental Conditions

Temperature:	15 °C
Relative Humidity:	40%
ATM Pressure:	1010mbar

**Testing was performed by Oscar Au on 2005-11-19.*

Test	Frequency	Reading	Amplifier	Cable loss	Matching loss	Correction factor	limit	Margin
channel	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB
3	61.253	During this test no significant readings detected					9.5	-
4	67.214						9.5	-