FCC PART 15 CLASS B

EMI MEASUREMENT AND TEST REPORT

For

Newmen Technology Corp., Ltd.

No.1 Newmen Road, Tong Sheng Village, Long Hua, Shen Zhen, China

FCC ID: QF5MS-009TP

March 14, 2003

This Report Concerns:	**Equipment Type:**
☒ Original Report	Mouse - ITE

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Report No.:	S0303038
Test Date:	April 9, 2002
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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

The *Newmen Technology Corp., Ltd.* 's product, model *MS-009TP; MS-010TP; MS-013TP; KT4090* or the "EUT" as referred to in this report is a mouse which measures approximately 3.5"L x 2.25" W x 1.5" H.

** The test data was only good for the test sample. It may have deviation for other test sample.*

1.2 Objective

The following Class B report is prepared on behalf of ***Newmen Technology Corp. Ltd.*** in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules and regulations and to ICES-003 of the Canadian Interference - Causing Equipment Regulations.

The objective of the manufacturer is to demonstrate compliance with FCC Class B limits for Information Technology Equipment.

1.3 Related Submittal(s)/Grant(s)

No Related Submittals.

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-1992, 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 Corporation. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.5 Test Facility

The open Area Test site used by Bay Area Compliance Laboratory Corporation to collect radiated electromagnetic disturbance and disturbance voltage measurement data is located in the No. 3 building JingHua Courtyard, Shennanzhong Rd ShenZhen, Guandong 518031, P.R. C, Xinmiao District, Wuhou Avenue, Chengdu City, Sichuan Province, P. R. C, and 230 Commercial St. Ste. 2, Sunnyvale, CA 94085 USA.

Test site at BACL 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 has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-1992.

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, Bay Area Compliance Laboratory Corporation is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (NVLAP). The scope of the accreditation covers the FCC Method - 47 CFR Part 15 - Digital Devices, IEC/CISPR 22: 1998, and AS/NZS 3548: Electromagnetic Interference - Limits and Methods of measurement of Information Technology Equipment test methods under NVLAP Lab Code 200167-0.

1.6 Test Equipment List

Manufacturer	Description	Model	Serial Number	Cal. Due Date
R/S	Spectrum Analyzer	FSEM	849720/019	08/05/2003
R/S	Receiver	ESCS30	828304/014	09/05/2003
HP	Amplifier	8447D	2944A09795	08/05/2003
ETS	Log Periodic Antenna	3146	9603-4421	09/05/2003
ETS	Biconical Antenna	3110B	3360	08/05/2003
Solar Electronics	LISN	TYPE 8012-50-R-24-BNC	21162	09/05/2003
Solar Electronics	LISN	TYPE 8012-50-R-25-BNC	21163	10/05/2003

* **Statement of Traceability**: Bay Area Compliance Laboratory Corp. certifies that all calibration has Been performed using suitable standards traceable to the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

1.7 Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
LEGEND	System PC	Qitian1200	N/A	N/A
Seagate	Hard Drive	ST 320410A	5FG2TFAX	DOC
Sony	3.5" Floppy Drive	FDD-MPF920-E	72930348	DOC
LEGEND	Motherboard	MS-6395	N/A	DOC
TELTA	SPS	DPS-145PB-111F	Lup0219016447C	DOC

1.8 Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
KTC	CRT Monitor	700E	N/A	DOC
SAST	Modem	AEM-2100	0293	N/A
LEGEND	Keyboard	SK-1688	C2057790	DOC
LEGEND	Mouse	M-S61	LZA21702500	JNZ211403
HP	Laser Jet 5L Printer	C3941A	JPTV013237	DOC
GAMTEC	Joy Stick	MB-821	N/A	DOC
LEGEND	Headphone	N/A	N/A	N/A

1.9 External I/O Cables List and Details

Cable Description	Length (M)	From/Port	To
Shielded KB Cable	1.6	KB Port/Host	Keyboard
Shielded Mouse Cable	1.5	Mouse Port/Host	Mouse Receiver/EUT
Shielded Serial Cable	1.5	Serial Port/Host	Modem
Shielded Printer Cable	2.0	Parallel Port/Host	Printer
Unshielded Audio Cable	2.0	Sound Card	Headphone

2 - SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software, EMCTEST-H Program, contained on the hard drive, is auto starting on power-up. Once loaded, the program sequentially exercises each system component.

The sequence used is as follows:

1) Lines of Hs are printed on the monitor
2) The printer outputs Hs
3) The modem receives Hs.

The complete cycle takes approximately 5 - 10 seconds and the process is continuously repeated.

2.3 Special Accessories

As shown in section 2.5, all interface cables used for compliance testing are shielded as normally supplied by INMAC, Monster Cable, Y.C. Cables and Qubbain Data Max.

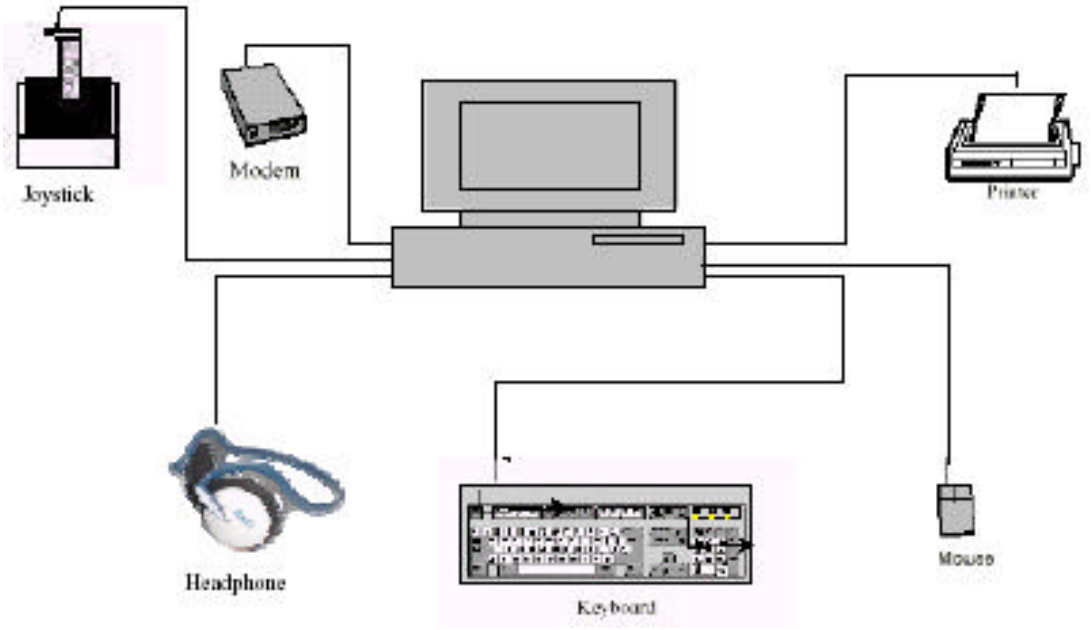
2.4 Block Diagram

Please refer to the Appendix D.

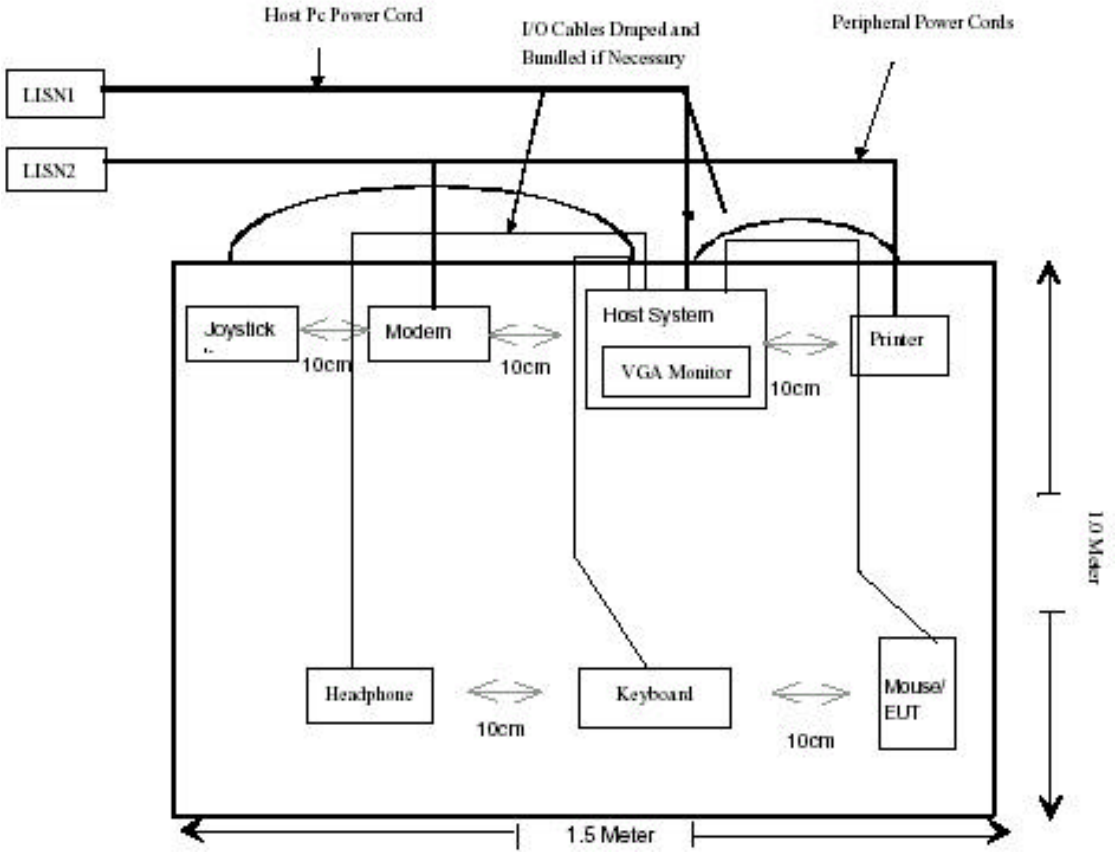
2.5 Equipment Modifications

No modifications were made by BACL to ensure EUT to comply with the applicable limits and requirements.

2.6 Test Setup Configuration



2.7 Test Setup Block Diagram



3- CONDUCTED EMISSIONS TEST

3.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, 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 $\pm$2.4 dB.

3.2 EUT Setup

The measurement was performed at the **O**pen **A**rea **T**est **S**ite, using the same setup per ANSI C63.4 - 1992 measurement procedure. The specification used was the FCC Part 15 Subpart C limits.

The host PC system was placed on the center of the back edge on the test table , the monitor was placed on the PC .The printer was placed on the right side of the host PC.

The keyboard was placed directly in front of the monitor, flushed with the front of the host PC. The mouse/EUT was placed on the right side of the keyboard. The modem, joystick the headphone were placed on the left side of the keyboard.

The external I/O cables were draped along the test table and flushed if necessary.

The spacing between the peripherals was 10 cm.

The host PC was connected to a 110Vac/60Hz power source.

3.3 Spectrum Analyzer Setup

The spectrum analyzer was set with the following configurations:

Start Frequency	150 kHz
Stop Frequency	30 MHz
Sweep Speed	Auto
IF Bandwidth	10 kHz
Video Bandwidth	10 kHz
Quasi-Peak Adapter Bandwidth	9 kHz
Quasi-Peak Adapter Mode	Normal

3.4 Test Procedure

During the conducted emission test, the power cord of host PC was connected to the auxiliary outlet of the first LISN. Other support equipment power cords were connected to the second LISN. Maximizing procedure was also performed on the highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak readings were only performed when an emission was found to be marginal (within -4 dBµV of specification limits). Quasi-peak readings are distinguished with a "**Qp**".

3.5 Summary of Test Results

According to the data in section 3.6, the EUT complied with the FCC PART 15 CLASS B Conducted margin for a Class B device, and these test results is deemed as satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations, with the *worst* margin reading of:

-**25.8** dBμV at **2.30** MHz in the **Neutral** mode, MS-009TP
-**26.3** dBμV at **0.15** MHz in the **Line** mode, MS-010TP
-**26.5** dBμV at **0.15** MHz in the **Line** mode, MS-013TP

3.6 Conducted Emissions Test Data

MS-009TP

LINE CONDUCTED EMISSIONS				FCC PART 15 CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBμV	QP/Ave/Peak	Line/Neutral	dBμV	dB
2.30	30.2	QP	Neutral	56	-25.8
0.15	39.6	QP	Line	66	-26.4
0.15	39.4	QP	Neutral	66	-26.6
2.36	26.7	QP	Line	56	-29.3
17.70	26.0	QP	Line	60	-34.0
6.30	20.5	QP	Neutral	60	-39.5

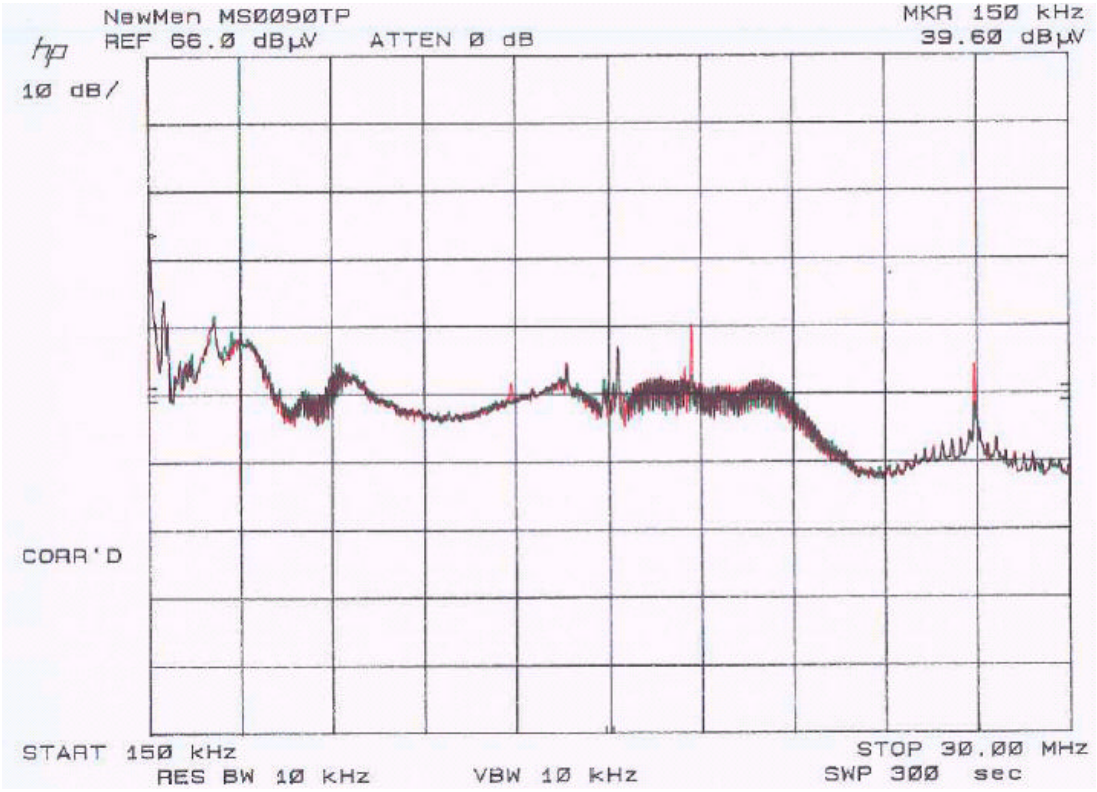
MS-010TP

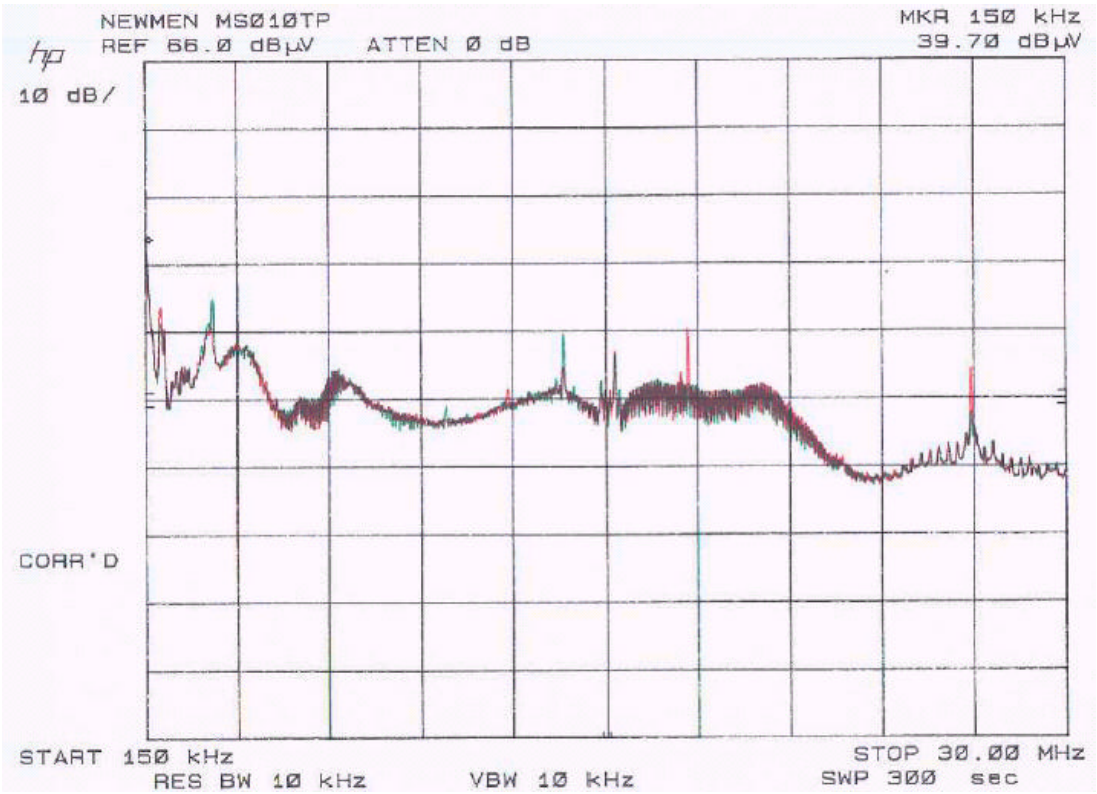
LINE CONDUCTED EMISSIONS				FCC PART 15 CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBμV	QP/Ave/Peak	Line/Neutral	dBμV	dB
0.15	39.7	QP	Line	66	-26.3
0.15	39.4	QP	Neutral	66	-26.6
2.30	27.1	QP	Neutral	56	-28.9
13.79	24.7	QP	Line	60	-35.3
6.39	20.9	QP	Line	60	-39.1
13.79	20.9	QP	Neutral	60	-39.1

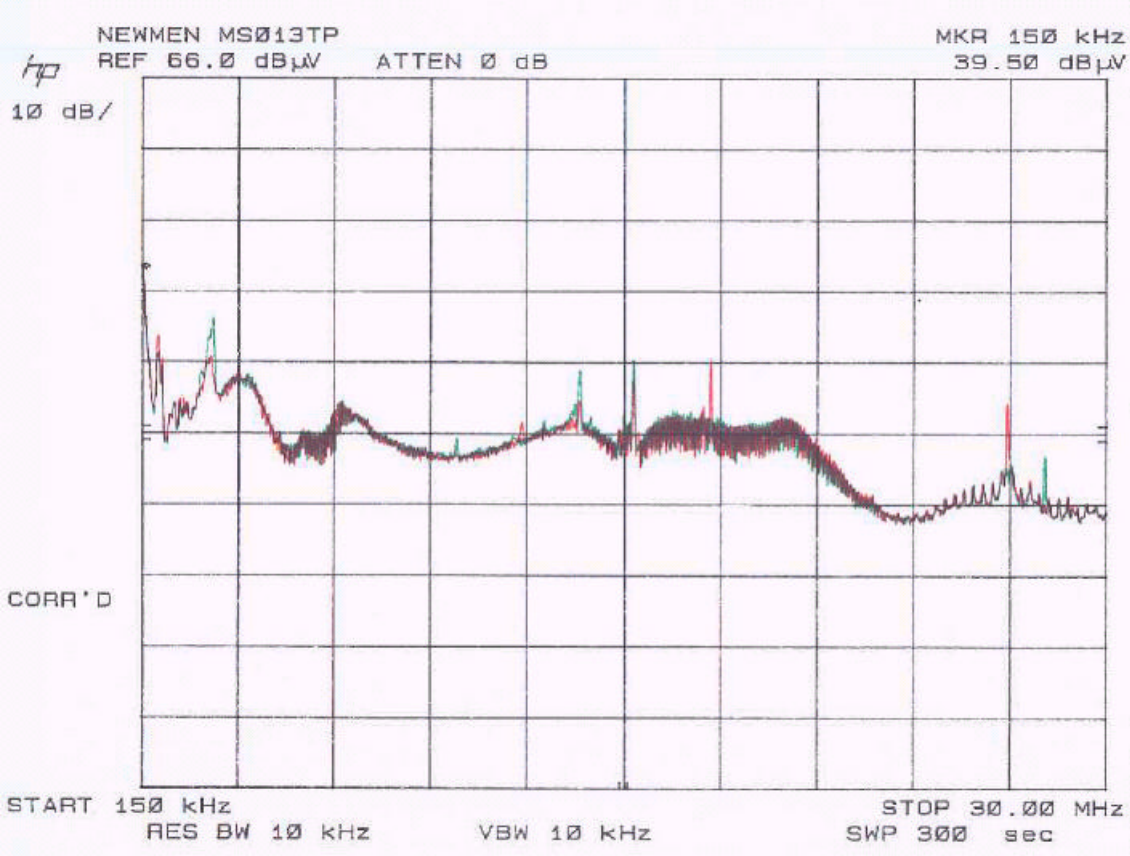
MS-013TP

LINE CONDUCTED EMISSIONS				FCC PART 15 CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBμV	QP/Ave/Peak	Line/Neutral	dBμV	dB
0.15	39.5	QP	Line	66	-26.5
0.15	39.2	QP	Neutral	66	-26.8
2.24	25.7	QP	Neutral	56	-30.3
2.39	32.2	QP	Line	56	-23.8
15.37	26.4	QP	Line	60	-33.6
17.76	26.4	QP	Neutral	60	-33.6

3.7 Plot of Conducted Emissions Test Data






NEWMEN MSØ13TP
REF 66.Ø dBµV
ATTEN Ø dB
MKR 15Ø kHz
39.5Ø dBµV
1Ø dB/
CORR'D
START 15Ø kHz
RES BW 1Ø kHz
VBW 1Ø kHz
STOP 3Ø.ØØ MHz
SWP 3ØØ sec

4- RADIATED EMISSION TEST

4.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, 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 EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at BACL is $\pm$4.0 dB.

4.2 EUT Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the ANSI C63.4 - 1992. The specification used was the FCC Class B limits.

The host PC system was placed on the center of the back edge on the test table, the monitor was placed on the PC .The printer was placed on the right side of the host PC.

The keyboard was placed directly in front of the monitor, flushed with the front of the host PC. The mouse/EUT was placed on the right side of the keyboard. The modem, joystick the headphone were placed on the left side of the keyboard.

The external I/O cables were draped along the test table and flushed if necessary.

The spacing between the peripherals was 10 cm.

The host PC was connected to a 110 VAC/ 60Hz power source.

4.3 Spectrum Analyzer Setup

According to FCC 47 CFR, Section 15.31, the system was tested to 1000 MHz.

The spectrum analyzer was set with the following configurations during the radiated emission test:

Start Frequency	30 MHz
Stop Frequency	1000 MHz
Sweep Speed	Auto
IF Bandwidth	100 KHz
Video Bandwidth	1 MHz
Quasi-Peak Adapter Bandwidth	120 kHz
Quasi-Peak Adapter Mode	Normal
Resolution Bandwidth	1MHz

4.4 Test Procedure

For the radiated emissions test, the host PC and all the other support equipment were connected to the AC floor outlet. Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -4 dBμV of specification limits), and are distinguished with a "**Qp**" in the data table.

4.5 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:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

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

Margin = Corr. Ampl. - Class B Limit

4.6 Summary of Test Results

According to the data in section 4.7, the EUT complied with the FCC Part 15 Class B standards, and these test results are deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations, and had the worst margin of:

-15.7 dBμV at **416.04** MHz in the **Vertical** polarization, MS-009TP

-6.8 dBμV at **452.51** MHz in the **Horizontal** polarization, MS-010TP

-9.4 dBμV at **416.03** MHz in the **Vertical** polarization, MS-013TP

4.7 Radiated Emissions Test Result

MS-009TP

INDICATED		TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC PART 15 CLASS B	
Frequency MHz	Ampl. dBμV/m	Angle Degree	Height Meter	Polar H/ V	Antenna dBμV/m	Cable dB	Amp. dB	Corr. Ampl. dBμV/m	Limit dBμV/m	Margin dB
416.04	33.7	90	1.2	v	15.8	5.8	25.0	30.3	46	-15.7
300.7	35.7	0	1	h	13.9	5.0	25.0	29.6	46	-16.4
127.82	35.8	0	1.2	v	12.3	3.5	25.0	26.6	43.5	-16.9
336.06	33.3	270	1	v	15.4	5.4	25.0	29.1	46	-16.9
416.02	30.6	0	1.2	h	15.8	5.8	25.0	27.2	46	-18.8
137.23	32.8	180	1.2	h	12.9	3.6	25.0	24.3	43.5	-19.2
137.24	32.2	180	1	v	12.9	3.6	25.0	23.7	43.5	-19.8
315.02	32.1	45	1	h	13.9	5.1	25.0	26.1	46	-19.9
186.15	30.3	270	1	v	13.8	4.0	25.0	23.1	43.5	-20.4
149.93	30.5	90	1.2	h	13.4	3.7	25.0	22.6	43.5	-20.9
247.91	33.6	90	1	v	11.3	4.6	25.0	24.5	46	-21.5
224.61	31.5	180	1	h	10.1	4.5	25.0	21.1	46	-24.9

MS-010TP

INDICATED		TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC PART 15 CLASS B	
Frequency MHz	Ampl. dBμV/m	Angle Degree	Height Meter	Polar H/ V	Antenna dBμV/m	Cable dB	Amp. dB	Corr. Ampl. dBμV/m	Limit dBμV/m	Margin dB
452.51	44.2	300	1.2	h	17.2	6.0	28.2	39.2	46	-6.8
258.04	49.7	180	1.2	h	12.0	4.8	27.4	39.1	46	-6.9
175.25	46.0	0	1.0	v	13.4	4.0	27.1	36.3	43.5	-7.2
187.26	43.9	270	1.2	v	13.8	4.0	27.1	34.6	43.5	-8.9
282.63	46.3	225	1.0	h	12.7	4.7	27.2	36.5	46	-9.5
48.02	42.8	180	1.2	v	11.3	2.2	26.9	29.4	40	-10.6
34.16	38.0	45	1.2	h	15.3	1.6	26.7	28.2	40	-11.8
407.36	40.0	0	1.0	v	16.2	5.8	28.0	34.0	46	-12.0
48.30	41.1	270	1.0	h	11.3	2.2	26.9	27.7	40	-12.3
233.48	42.7	90	1.0	h	11.8	4.4	27.2	31.7	46	-14.3
432.07	36.5	45	1.2	v	16.5	6.1	28.0	31.1	46	-14.9
307.21	39.6	225	1.0	h	13.7	5.0	27.3	31.0	46	-15.0
224.20	41.0	180	1.2	h	10.5	4.5	27.0	29.0	46	-17.0
282.63	38.2	0	1.2	v	12.7	4.7	27.2	28.4	46	-17.6
258.05	38.9	225	1.0	v	12.0	4.8	27.4	28.3	46	-17.7
233.48	38.1	90	1.2	v	11.8	4.4	27.2	27.1	46	-18.9
384.07	33.3	270	1.0	h	15.6	5.6	27.7	26.8	46	-19.2
169.38	34.1	90	1.2	h	13.3	3.8	27.5	23.7	43.5	-19.8

MS-013TP

INDICATED		TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC PART 15 CLASS B	
Frequency MHz	Ampl. dBμV/m	Angle Degree	Height Meter	Polar H/ V	Antenna dBμV/m	Cable dB	Amp. dB	Corr. Ampl. dBμV/m	Limit dBμV/m	Margin dB
416.03	40.0	270	1.0	v	15.8	5.8	25	36.6	46	-9.4
299.51	43.5	0	1.0	v	12.6	5.1	25	36.2	46	-9.8
432.62	38.2	225	1.0	h	16.2	6.1	25	35.5	46	-10.5
299.49	42.4	0	1.2	h	12.6	5.1	25	35.1	46	-10.9
366.06	38.6	180	1.2	v	14.9	5.5	25	34.0	46	-12.0
70.00	40.3	90	1.2	v	9.6	2.5	25	27.4	40	-12.6
332.78	35.7	0	1.2	h	15.4	5.4	25	31.5	46	-14.5
250.02	37.4	90	1.2	v	11.7	4.6	25	28.7	46	-17.3
137.24	33.7	300	1.0	v	12.9	3.6	25	25.2	43.5	-18.3
166.40	32.9	180	1.2	h	13.3	3.8	25	25.0	43.5	-18.5
61.26	33.8	180	1.0	h	9.6	2.2	25	20.6	40	-19.4
224.04	36.9	45	1.2	v	10.1	4.5	25	26.5	46	-19.5
233.85	35.6	0	1.0	h	11.3	4.4	25	26.3	46	-19.7