

EXHIBIT D
CKC TEST REPORT

**CERTIFICATION TEST REPORT****FOR THE****KEYBOARD, RT23XXXXX****FCC/CISPR 22/85 (ANSI C63.4 1992)****CLASS B COMPLIANCE****DATE OF ISSUE: MARCH 29, 1998****PREPARED FOR:**

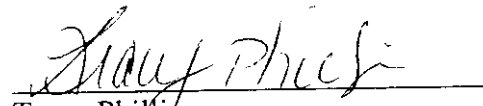
NMB Technologies, Inc.
9730 Independence Avenue
Chatsworth, CA 91311

P.O. No: Q008266

W.O. No: 68,458

Report No: **FB98-050**

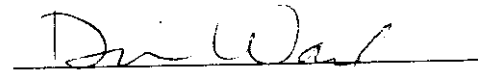
Date of test: March 6, 1998

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**ADMINISTRATIVE INFORMATION**

DATE OF TEST: March 6, 1998

PURPOSE OF TEST: To demonstrate the compliance of the Keyboard, RT23XXXXX, with the requirements for FCC/CISPR 22/85 Class B devices.

MANUFACTURER: NMB Technologies, Inc.
9730 Independence Avenue
Chatsworth, CA 91311

REPRESENTATIVE: Bob Dickerman

TEST LOCATION: CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92621

TEST PERSONNEL: Stu Yamamoto

TEST METHOD: ANSI C63.4 1992

FREQUENCY RANGE TESTED: 150kHz - 1000MHz

EQUIPMENT UNDER TEST: Keyboard
Manuf: NMB Technologies, Inc.
Model: RT23XXXXX
Serial: B0B930B6ZFQFL



SUMMARY OF RESULTS

The NMB Technologies, Inc. Keyboard, RT23XXXXX was tested in accordance with ANSI C63.4 (1992) for compliance with the Class B requirements of the FCC/CISPR 22/85 Rules.

As received, the above equipment was found to be fully compliant with the Class B limits of FCC/CISPR 22/85 for both radiated and conducted emissions.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

Keyboard, Computer HID serial input device

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 4 dB measurement uncertainty.

PERIPHERAL DEVICES

The EUT was tested with the following peripheral devices:

Computer

Manuf: Intel
Model: S100EDZ8FLC
Serial: A05721230
FCC ID: EJMBATTAHITI

Monitor

Manuf: HP
Model: D2806B
Serial: KR54366896
FCC ID: CSYSC-528UXH

Mouse

Manuf: Logitech
Model: M-CQ38
Serial: LT554205822
FCC ID: DZLM04

Modem

Manuf: Hayes
Model: 6802US
Serial: A00768023303
FCC ID: BFIJ9D9 6802US

Printer

Manuf: HP
Model: C2184A
Serial: CN5B21R1DM
FCC ID: B94C2184X

Modem

Manuf: Hayes
Model: 6802US
Serial: B10068023649
FCC ID: BFIJ9D9 6802US



REPORT OF MEASUREMENTS

The following Tables 1 and 2 report the six highest radiated and conducted emissions levels recorded during the tests performed on the Keyboard, RT23XXXXX. The data sheets from which these tables were compiled are contained in Appendix B.

Table 1: Six Highest Radiated Emission Levels

FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV/m	SPEC LIMIT dBμV/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
102.001	36.8	12.2	-28.1	1.8		22.7	30.0	-7.3	V
110.611	35.3	14.0	-28.1	1.9		23.1	30.0	-6.9	V
192.002	31.5	16.9	-28.0	2.6		23.0	30.0	-7.0	H
198.001	33.3	16.7	-28.0	2.7		24.7	30.0	-5.3	VQ
210.006	32.0	17.0	-28.0	2.7		23.7	30.0	-6.3	H
330.003	33.4	21.0	-28.0	3.4		29.8	37.0	-7.2	H

Test Method: ANSI C63.4 1992
Spec Limit : CISPR 22 Class B
Test Distance: 10 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
N = No Polarization
D = Dipole Reading
Q = Quasi Peak Reading
A = Average Reading

COMMENTS: The EUT is a keyboard and is connected to the host computer. The computer also has a monitor, mouse, printer, and two modems connected. The EUT is continually sending H's which is being displayed on the monitor. Voltage to computer is 120 VAC 60 Hz. Temperature: 16°C, Humidity: 50%.

Table 2: Six Highest Conducted Emission Levels

FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV	SPEC LIMIT dBμV	MARGIN dB	NOTES
		Lisn dB							
0.150957	43.8	0.0				43.8	55.9	-12.1	W
0.207431	45.2	0.0				45.2	53.3	-8.1	W
0.414661	36.5	0.0				36.5	47.6	-11.1	W
0.484415	36.8	0.0				36.8	46.3	-9.5	W
0.639428	40.1	0.0				40.1	46.0	-5.9	W
0.828083	32.3	0.0				32.3	46.0	-13.7	B

Test Method:
Spec Limit :
Test Distance:

ANSI C63.4 1992
CISPR 22 Class B
No Distance

NOTES: Q = Quasi Peak Reading
A = Average Reading
B = Black Lead
W = White Lead

COMMENTS: The EUT is a keyboard and is connected to the host computer. The computer also has a monitor, mouse, printer, and two modems connected. The EUT is continually sending H's which is being displayed on the monitor. Voltage to computer is 120 VAC 60 Hz. Temperature: 19°C, Humidity: 45%.

TABLE A**LIST OF TEST EQUIPMENT****Brea VCCI Acceptance No. R-301 & C-314**

1. Spectrum Analyzer, Hewlett Packard, Model No. 8568A, S/N 2049A01287. Display 85680A S/N 2106A02109. Calibration date: January 9, 1998. Calibration due date: January 9, 1999.
2. Preamp, Hewlett Packard, Model No. 8447D, S/N 1937A02548. Calibration date: April 4, 1997. Calibration due date: April 4, 1998.
3. Quasi-Peak Adapter, Hewlett Packard, Model No. 85650A, S/N - 2030A00532. Calibration date: August 8, 1997. Calibration due date: August 8, 1998.
4. Biconical Antenna, A & H Systems, Model No. SAS-200/540, S/N 220. Calibration date: April 15, 1997. Calibration due date: April 15, 1998.
5. Log Periodic Antenna, A & H Systems, Model No. SAS-200/516, S/N 331. Calibration date: April 16, 1997. Calibration due date: April 16, 1998.
6. Horn Antenna, Emco, Model No. 3115, S/N 4683. Calibration date: March 18, 1997. Calibration due date: March 18, 1998.
7. Magnetic Loop Antenna, Electro Metrics, Model No. ALR-25M, S/N 536. Calibration date: July 23, 1997. Calibration due date: July 23, 1998.
8. LISN, Solar Electronics, Model No. 8028-50-TS-24-BNC, S/N Brea #1. Calibration date: April 24, 1997. Calibration due date: April 24, 1998.
9. LISN, Solar Electronics, Model No. 50 uH, S/N Brea #2. Calibration date: April 24, 1997. Calibration due date: April 24, 1998.
10. Brea site calibration date: May 8, 1997. Brea site calibration due date: May 8, 1998.
11. Test software, EMI Test 2.86.

EUT SETUP

The equipment under test (EUT) and the peripherals listed were setup in a manner that represented their normal use, as shown in the setup photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany Table 1 for radiated emissions, and Table 2 for conducted emissions. Additionally, a complete description of all the ports and I/O cables is included on the information sheets contained in Appendix A.

During radiated emissions testing, the EUT was mounted on a nonconductive, rotating table 1 meter above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters. This configuration is typical for radiated emissions testing of table top devices.

I/O cables were connected to the EUT and peripherals in the manner required for normal operation of the system. Excess cabling was bundled in the center in a serpentine fashion using 30-40 centimeter lengths.

During conducted emissions testing, the EUT was located 80 centimeters above the conducting ground plane on the same nonconducting table as was used for radiated testing. The metal plane was grounded to the earth through the green wire safety ground. Power to the Host PC was provided via 3 meters of shielded power cable from a filter grounded to the metal plane to a LISN. The LISN was also grounded to the plane and attached to the LISN was a 4 ganged grounded outlet whose source was also shielded and 60 cm in length. All other objects were kept a minimum of 1 meter away from the EUT during the conducted test.

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Table A were used to collect both the radiated and conducted emissions data for the Keyboard, RT23XXXXX. For radiated measurements below 300 MHz, the biconical antenna was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used. All antennas were located at a distance of 10 meters from the edge of the EUT. Conducted emissions tests required the use of the FCC type LISN's.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, a reference level of 100 dB μ V and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, and a vertical scale of 10 dB per division.

TABLE B : ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE

TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in Tables 1 and 2 indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in Table 1 or Table 2. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data for the Keyboard, RT23XXXXX.

Peak

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP 85650A Quasi-Peak Adapter for the HP 8568B Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

When the frequencies exceed 1 GHz, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

TEST METHODS

The radiated and conducted emissions data of the Keyboard, RT23XXXXX, was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the "Sample Calculations". The corrected data was then compared to the FCC/CISPR 22/85 Class B emissions limits to determine compliance.

Preliminary and final measurements were taken in order to better ensure that all emissions from the EUT were found and maximized.

Radiated Emissions Testing

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode (printing "H's" to the CRT and peripherals) with the I/O cables and line cords facing the antenna. The frequency range of 30 MHz - 88 MHz was then scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks which were at or near the limit were recorded. The frequency range of 100 - 300 MHz was scanned in the same manner, using the biconical antenna, and the peaks recorded. Lastly, a scan of the FM band from 88 - 110 MHz was made, using a reduced resolution bandwidth and a reduced frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 - 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 - 1000 MHz was again scanned. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

For the final radiated scan, the equipment was again positioned with its I/O and power cables facing the antenna. A thorough scan of all frequencies was manually made using a small frequency span, rotating the turntable as needed. Comparison with the previously recorded measurements was then made.

Using the peak readings from both scans as a guide, the test engineer then maximized the readings with respect to the table rotation, antenna height and configuration of the peripherals and cables. Maximizing of the cables was achieved by monitoring the spectrum analyzer on a closed circuit television monitor while the EUT cables were being moved and rearranged on the EUT table for maximum emissions. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

Conducted Emissions Testing

For conducted emissions testing, a 30 to 50 second sweep time was used for automated measurements in the frequency bands of 150 kHz to 1.705 MHz, 1.705 MHz to 3 MHz, and 3 MHz to 30 MHz. All readings within 20 dB of the limit were recorded. At frequencies where the recorded emissions were close to the limit, further investigation was performed manually at a slower sweep rate.

SAMPLE CALCULATIONS

The basic spectrum analyzer reading was converted using correction factors as shown in the six highest emissions readings in Tables 1 and 2. For radiated emissions in dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula:

$$\begin{aligned} & \text{Meter reading (dB}\mu\text{V)} \\ & + \text{Antenna Factor (dB)} \\ & + \text{Cable Loss (dB)} \\ & - \text{Distance Correction (dB)} \\ & - \text{Pre-amplifier Gain (dB)} \\ & = \text{Corrected Reading (dB}\mu\text{V/m)} \end{aligned}$$

This reading was then compared to the applicable specification limit to determine compliance. For conducted emissions, no correction factors were needed when 50 μ H LISN's were used.

APPENDIX A
INFORMATION ABOUT THE EQUIPMENT UNDER TEST

INFORMATION ABOUT THE EQUIPMENT UNDER TEST

Test Software/Firmware:

CRT was displaying: Scrolling "H's"

The EUT has no power cord

Line voltage used during testing: 120 VAC 60Hz

I/O PORTS

Type	#
Serial, Keyboard	1

CRYSTAL OSCILLATORS

Type	Freq In MHz
RC Oscillator (Clock)	4

PRINTED CIRCUIT BOARDS

Function	Model & Rev	Clocks, MHz	Layers	Location
Logic Z86K15 MPU	122296 Rev. A	4	1	Inside K/B

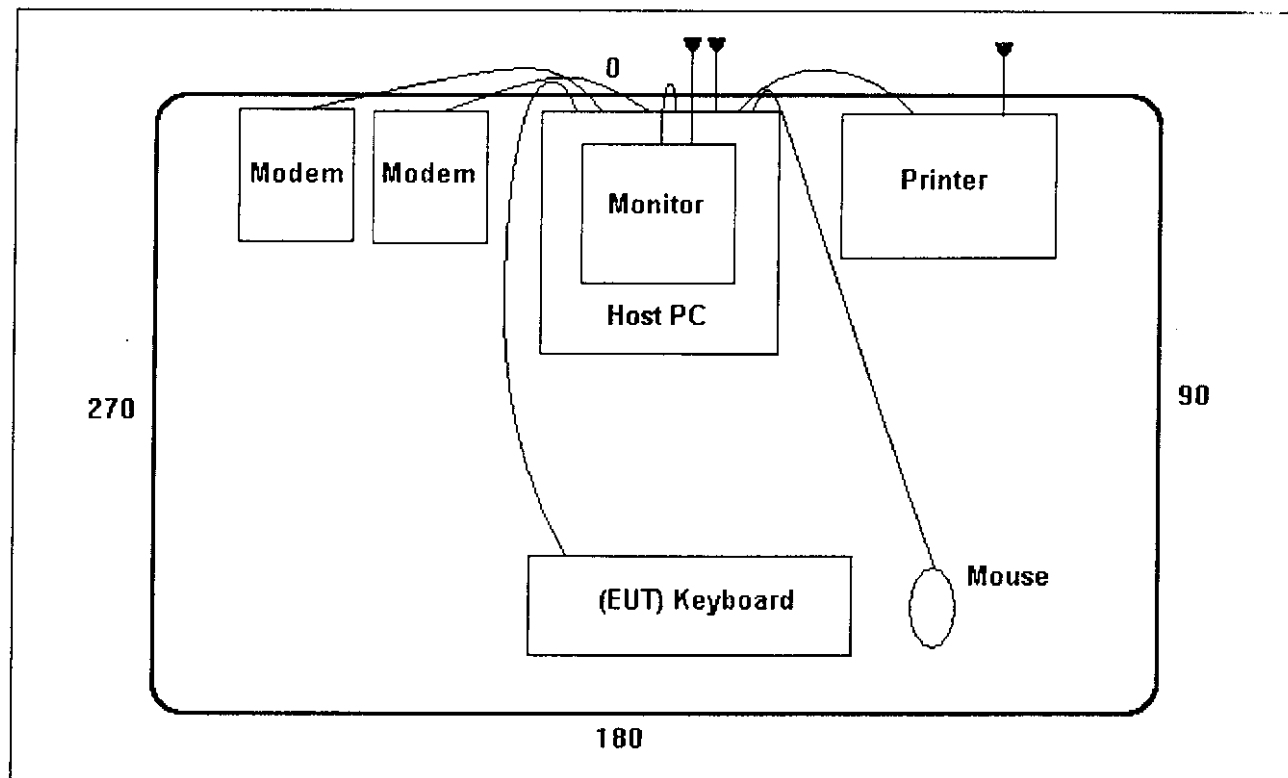
CABLE INFORMATION

Cable #: 1	Cable(s) of this type: 1
Cable Type: Serial	Shield Type: Foil
Construction: Round	Length In Meters: 2.4
Connected To End (1): Mini Din	Connected To End (2): PCB
Connector At End (1):	Connector At End (2):
Shield Grounded At (1): Chassis Ground	Shield Grounded At (2): Chassis Ground
Part Number:	Number of Conductors: 4
Notes:	

Cable Routing For Worst Case Emissions:

Cable length only allows routing as shown in photograph.

EQUIPMENT CONFIGURATION BLOCK DIAGRAM



NOTES:

APPENDIX B
MEASUREMENT DATA SHEETS



Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: NMB Technologies, Inc.

Date: Mar-06-98

Specification: CISPR 22 B RADIATED

Time: 11:09

Test Type: Maximized Emissions

Sequence#: 1

Equipment: Keyboard

Manufacturer: NMB Technologies, Inc.

Tested By: Stu Yamamoto

Model: RT23XXXXX

S/N: B0B930B6ZFQFL

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Keyboard*	NMB Technologies	RT23XXXXX	B0B930B6ZFQFL

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Intel	S100EDZ8FLC	A05721230
Monitor	HP	D2806B	KR54366896
Mouse	Logitech	M-CQ38	LT554205822
Modem	Hayes	6802US	A00768023303
Printer	HP	C2184A	CN5B21R1DM
Modem	Hayes	6802US	B10068023649

Test Conditions / Notes:

The EUT is a keyboard and is connected to the host computer. The computer also has a monitor, mouse, printer, and two modems connected. The EUT is continually sending H's which is being displayed on the monitor. Voltage to computer is 120 VAC 60 Hz. Temperature: 16°C, Humidity: 50%.

Measurement Data:

Sorted by Margin

Test Distance: 10 Meters

#	Freq MHz	Rdng dBμV	BICON CABLE LOG AMP				Dist dB	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar
			dB	dB	dB	dB					
1	198.001	33.3	-16.7	+2.7	+0.0	-28.0	+0.0	24.7	30.0	-5.3	Vert
Quasi Peak non keyboard											
2	210.006	32.0	-17.0	+2.7	+0.0	-28.0	+0.0	23.7	30.0	-6.3	Horiz
3	110.611	35.3	-14.0	+1.9	+0.0	-28.1	+0.0	23.1	30.0	-6.9	Vert
4	192.002	31.5	-16.9	+2.6	+0.0	-28.0	+0.0	23.0	30.0	-7.0	Horiz
5	330.003	33.4	+0.0	+3.4	+21.0	-28.0	+0.0	29.8	37.0	-7.2	Horiz
6	102.001	36.8	+12.2	+1.8	+0.0	-28.1	+0.0	22.7	30.0	-7.3	Vert
7	630.015	31.6	+0.0	+5.1	+20.4	-27.5	+0.0	29.6	37.0	-7.4	Horiz

8	332.386	33.3	+0.0	+3.4	+20.8	-28.0	+0.0	29.5	37.0	-7.5	Horiz
Quasi Peak											
9	180.002	30.8	+17.3	+2.5	+0.0	-28.1	+0.0	22.5	30.0	-7.5	Horiz
10	88.409	39.8	+9.1	+1.6	+0.0	-28.0	+0.0	22.5	30.0	-7.5	Vert
11	156.002	30.7	+17.5	+2.3	+0.0	-28.1	+0.0	22.4	30.0	-7.6	Horiz
12	166.199	30.5	+17.5	+2.4	+0.0	-28.1	+0.0	22.3	30.0	-7.7	Vert
13	75.780	41.5	+7.4	+1.5	+0.0	-28.1	+0.0	22.3	30.0	-7.7	Vert
14	319.523	31.9	+0.0	+3.4	+21.9	-28.0	+0.0	29.2	37.0	-7.8	Horiz
15	162.002	30.6	+17.4	+2.3	+0.0	-28.1	+0.0	22.2	30.0	-7.8	Horiz
16	150.001	30.5	+17.6	+2.2	+0.0	-28.1	+0.0	22.2	30.0	-7.8	Vert
17	192.012	30.7	+16.9	+2.6	+0.0	-28.0	+0.0	22.2	30.0	-7.8	Vert
18	221.990	29.9	+17.5	+2.8	+0.0	-28.0	+0.0	22.2	30.0	-7.8	Vert
19	46.299	36.8	+12.5	+1.1	+0.0	-28.2	+0.0	22.2	30.0	-7.8	Horiz
20	222.002	29.8	+17.5	+2.8	+0.0	-28.0	+0.0	22.1	30.0	-7.9	Horiz
21	318.007	31.6	+0.0	+3.4	+22.0	-28.0	+0.0	29.0	37.0	-8.0	Horiz
22	168.002	30.2	+17.5	+2.4	+0.0	-28.1	+0.0	22.0	30.0	-8.0	Horiz
23	168.003	30.1	+17.5	+2.4	+0.0	-28.1	+0.0	21.9	30.0	-8.1	Vert
24	210.010	30.2	+17.0	+2.7	+0.0	-28.0	+0.0	21.9	30.0	-8.1	Vert
25	172.615	29.9	+17.6	+2.5	+0.0	-28.1	+0.0	21.9	30.0	-8.1	Vert
26	102.400	35.8	+12.3	+1.8	+0.0	-28.1	+0.0	21.8	30.0	-8.2	Vert
27	67.374	41.1	+7.5	+1.4	+0.0	-28.2	+0.0	21.8	30.0	-8.2	Vert
28	317.984	31.1	+0.0	+3.4	+22.0	-28.0	+0.0	28.5	37.0	-8.5	Vert
29	71.580	41.0	+7.3	+1.4	+0.0	-28.2	+0.0	21.5	30.0	-8.5	Vert
30	342.025	32.9	+0.0	+3.5	+20.0	-28.0	+0.0	28.4	37.0	-8.6	Horiz
31	46.323	36.1	+12.4	+1.1	+0.0	-28.2	+0.0	21.4	30.0	-8.6	Vert

32	198.002	29.9	+16.7	+2.7	+0.0	-28.0	+0.0	21.3	30.0	-8.7	Horiz
33	42.089	33.8	+14.6	+1.0	+0.0	-28.1	+0.0	21.3	30.0	-8.7	Horiz
34	37.891	31.7	+16.7	+1.0	+0.0	-28.1	+0.0	21.3	30.0	-8.7	Horiz
35	629.987	30.2	+0.0	+5.1	+20.4	-27.5	+0.0	28.2	37.0	-8.8	Vert
36	102.395	35.0	+12.3	+1.8	+0.0	-28.1	+0.0	21.0	30.0	-9.0	Horiz
37	120.000	31.4	+15.7	+2.0	+0.0	-28.1	+0.0	21.0	30.0	-9.0	Vert
38	222.000	28.7	+17.5	+2.8	+0.0	-28.0	+0.0	21.0	30.0	-9.0	Vert
39	54.743	38.4	+9.6	+1.1	+0.0	-28.2	+0.0	20.9	30.0	-9.1	Vert
40	84.001	39.1	+8.2	+1.5	+0.0	-28.0	+0.0	20.8	30.0	-9.2	Vert
41	204.012	29.3	+16.8	+2.7	+0.0	-28.0	+0.0	20.8	30.0	-9.2	Vert
42	186.003	29.1	+17.1	+2.6	+0.0	-28.1	+0.0	20.7	30.0	-9.3	Vert
43	151.559	29.0	+17.6	+2.2	+0.0	-28.1	+0.0	20.7	30.0	-9.3	Vert
44	180.003	28.6	+17.3	+2.5	+0.0	-28.1	+0.0	20.3	30.0	-9.7	Vert
45	108.001	33.1	+13.4	+1.9	+0.0	-28.1	+0.0	20.3	30.0	-9.7	Vert
46	37.897	30.6	+16.7	+1.0	+0.0	-28.1	+0.0	20.2	30.0	-9.8	Vert
47	67.378	39.5	+7.5	+1.4	+0.0	-28.2	+0.0	20.2	30.0	-9.8	Horiz
48	664.759	27.3	+0.0	+5.3	+21.8	-27.3	+0.0	27.1	37.0	-9.9	Horiz
49	174.003	28.1	+17.6	+2.5	+0.0	-28.1	+0.0	20.1	30.0	-9.9	Vert
50	114.001	31.5	+14.6	+1.9	+0.0	-28.1	+0.0	19.9	30.0	-10.1	Vert
51	174.002	27.8	+17.6	+2.5	+0.0	-28.1	+0.0	19.8	30.0	-10.2	Horiz
52	120.001	30.1	+15.7	+2.0	+0.0	-28.1	+0.0	19.7	30.0	-10.3	Vert
53	204.002	28.1	+16.8	+2.7	+0.0	-28.0	+0.0	19.6	30.0	-10.4	Horiz
54	132.945	28.9	+16.7	+2.1	+0.0	-28.1	+0.0	19.6	30.0	-10.4	Vert
55	33.687	28.7	+18.0	+0.9	+0.0	-28.1	+0.0	19.5	30.0	-10.5	Vert
56	159.986	27.9	+17.4	+2.3	+0.0	-28.1	+0.0	19.5	30.0	-10.5	Horiz

57	164.189	27.5	+17.5	+2.4	+0.0	-28.1	+0.0	19.3	30.0	-10.7	Vert
58	33.681	28.5	+18.0	+0.9	+0.0	-28.1	+0.0	19.3	30.0	-10.7	Horiz
59	58.949	37.3	+8.5	+1.2	+0.0	-28.2	+0.0	18.8	30.0	-11.2	Vert
60	151.570	27.1	+17.6	+2.2	+0.0	-28.1	+0.0	18.8	30.0	-11.2	Horiz
61	79.990	37.8	+7.4	+1.5	+0.0	-28.0	+0.0	18.7	30.0	-11.3	Vert
62	164.196	26.7	+17.5	+2.4	+0.0	-28.1	+0.0	18.5	30.0	-11.5	Horiz
63	147.368	26.6	+17.5	+2.2	+0.0	-28.1	+0.0	18.2	30.0	-11.8	Horiz
64	159.979	26.5	+17.4	+2.3	+0.0	-28.1	+0.0	18.1	30.0	-11.9	Vert
65	42.105	30.5	+14.6	+1.0	+0.0	-28.1	+0.0	18.0	30.0	-12.0	Vert
66	122.088	28.3	+15.8	+2.0	+0.0	-28.1	+0.0	18.0	30.0	-12.0	Vert
67	138.937	26.8	+17.2	+2.1	+0.0	-28.1	+0.0	18.0	30.0	-12.0	Vert
68	155.768	26.3	+17.5	+2.3	+0.0	-28.1	+0.0	18.0	30.0	-12.0	Vert
69	84.200	36.0	+8.3	+1.5	+0.0	-28.0	+0.0	17.8	30.0	-12.2	Vert
70	143.158	26.4	+17.4	+2.1	+0.0	-28.1	+0.0	17.8	30.0	-12.2	Horiz
71	168.406	25.9	+17.5	+2.4	+0.0	-28.1	+0.0	17.7	30.0	-12.3	Horiz
72	134.738	26.7	+16.9	+2.1	+0.0	-28.1	+0.0	17.6	30.0	-12.4	Horiz
73	155.776	25.8	+17.5	+2.3	+0.0	-28.1	+0.0	17.5	30.0	-12.5	Horiz
74	234.035	31.5	+18.0	+2.9	+0.0	-28.0	+0.0	24.4	37.0	-12.6	Vert
75	186.002	25.7	+17.1	+2.6	+0.0	-28.1	+0.0	17.3	30.0	-12.7	Horiz
76	50.533	33.5	+10.8	+1.1	+0.0	-28.2	+0.0	17.2	30.0	-12.8	Vert
77	168.404	25.4	+17.5	+2.4	+0.0	-28.1	+0.0	17.2	30.0	-12.8	Vert
78	147.348	25.4	+17.5	+2.2	+0.0	-28.1	+0.0	17.0	30.0	-13.0	Vert
79	143.145	25.5	+17.4	+2.1	+0.0	-28.1	+0.0	16.9	30.0	-13.1	Vert
80	88.428	33.6	+9.1	+1.6	+0.0	-28.0	+0.0	16.3	30.0	-13.7	Horiz
81	130.499	25.7	+16.5	+2.0	+0.0	-28.1	+0.0	16.1	30.0	-13.9	Vert

82	75.798	35.1	+7.4	+1.5	+0.0	-28.1	+0.0	15.9	30.0	-14.1	Horiz
83	134.720	24.9	+16.9	+2.1	+0.0	-28.1	+0.0	15.8	30.0	-14.2	Vert
84	80.013	34.7	+7.4	+1.5	+0.0	-28.0	+0.0	15.6	30.0	-14.4	Horiz
85	138.949	24.3	+17.2	+2.1	+0.0	-28.1	+0.0	15.5	30.0	-14.5	Horiz
86	58.944	34.0	+8.5	+1.2	+0.0	-28.2	+0.0	15.5	30.0	-14.5	Horiz
87	63.163	34.4	+7.9	+1.3	+0.0	-28.2	+0.0	15.4	30.0	-14.6	Vert
88	113.668	27.1	+14.5	+1.9	+0.0	-28.1	+0.0	15.4	30.0	-14.6	Vert
89	126.296	25.4	+16.1	+2.0	+0.0	-28.1	+0.0	15.4	30.0	-14.6	Vert
90	130.529	25.0	+16.5	+2.0	+0.0	-28.1	+0.0	15.4	30.0	-14.6	Horiz
91	117.878	26.2	+15.3	+1.9	+0.0	-28.1	+0.0	15.3	30.0	-14.7	Vert
92	126.318	25.3	+16.1	+2.0	+0.0	-28.1	+0.0	15.3	30.0	-14.7	Horiz
93	255.633	28.1	+19.1	+3.0	+0.0	-28.0	+0.0	22.2	37.0	-14.8	Vert
94	71.588	34.6	+7.3	+1.4	+0.0	-28.2	+0.0	15.1	30.0	-14.9	Horiz
95	122.108	25.0	+15.8	+2.0	+0.0	-28.1	+0.0	14.7	30.0	-15.3	Horiz
96	84.219	32.9	+8.3	+1.5	+0.0	-28.0	+0.0	14.7	30.0	-15.3	Horiz
97	63.154	33.4	+7.9	+1.3	+0.0	-28.2	+0.0	14.4	30.0	-15.6	Horiz
98	117.898	25.0	+15.3	+1.9	+0.0	-28.1	+0.0	14.1	30.0	-15.9	Horiz
99	54.724	30.8	+9.6	+1.1	+0.0	-28.2	+0.0	13.3	30.0	-16.7	Horiz
100	50.514	28.5	+10.8	+1.1	+0.0	-28.2	+0.0	12.2	30.0	-17.8	Horiz

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: NMB Technologies, Inc.

Date: Mar-06-98

Specification: CISPR22 B COND [AVE]

Time: 11:39

Test Type: Conducted Emissions

Sequence#: 3

Equipment: Keyboard

Manufacturer: NMB Technologies, Inc.

Tested By: Stu Yamamoto

Model: RT23XXXXX

S/N: B0B930B6ZFQFL

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Keyboard*	NMB Technologies	RT23XXXXX	B0B930B6ZFQFL

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Intel	S100EDZ8FLC	A05721230
Monitor	HP	D2806B	KR54366896
Mouse	Logitech	M-CQ38	LT554205822
Modem	Hayes	6802US	A00768023303
Printer	HP	C2184A	CN5B21R1DM
Modem	Hayes	6802US	B10068023649

Test Conditions / Notes:

The EUT is a keyboard and is connected to the host computer. The computer also has a monitor, mouse, printer, and two modems connected. The EUT is continually sending H's which is being displayed on the monitor. Voltage to computer is 120 VAC 60 Hz. Temperature: 19°C, Humidity: 45%.

Measurement Data:

Sorted by Margin

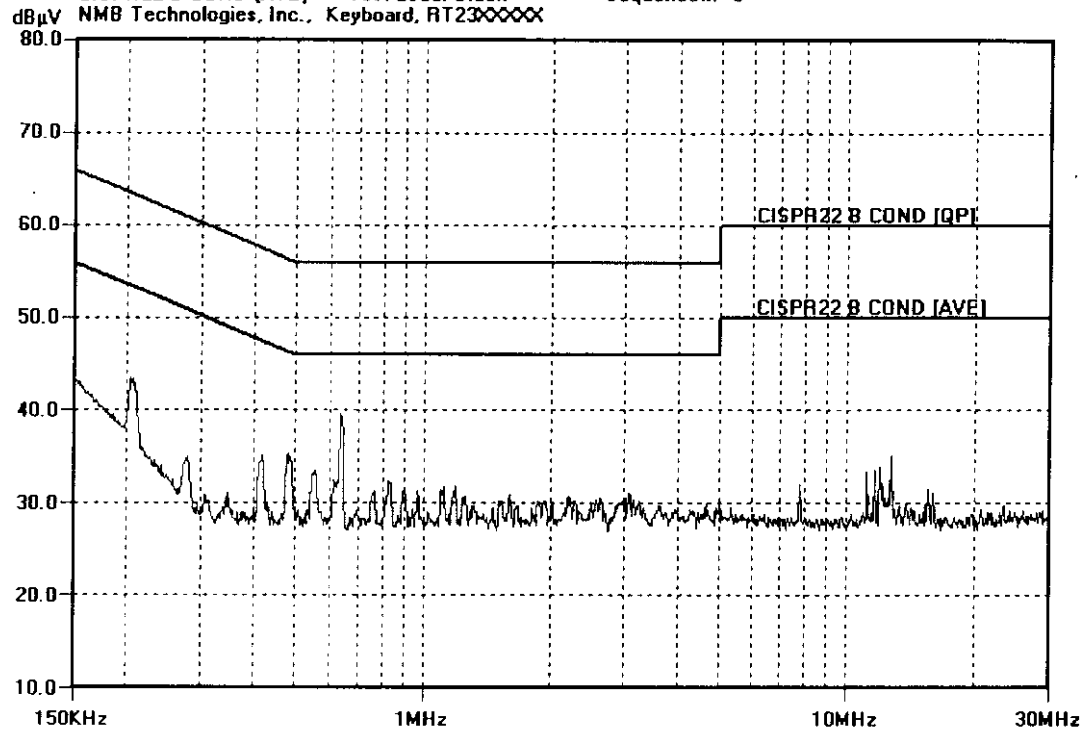
Test Lead: Black

#	Freq	Rdng dBμV	dB	dB	dB	dB	Dist dB	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar
1	637.084k	39.6					+0.0	39.6	46.0	-6.4	Black
2	207.431k	43.3					+0.0	43.3	53.3	-10.0	Black
3	203.602k	43.5					+0.0	43.5	53.5	-10.0	Black
4	481.124k	35.2					+0.0	35.2	46.3	-11.1	Black
5	477.176k	35.1					+0.0	35.1	46.4	-11.3	Black
6	416.635k	35.1					+0.0	35.1	47.5	-12.4	Black
7	554.827k	33.5					+0.0	33.5	46.0	-12.5	Black
8	150.957k	43.4					+0.0	43.4	55.9	-12.5	Black



9	614.052k	32.5	+0.0	32.5	46.0	-13.5	Black
10	828.083k	32.3	+0.0	32.3	46.0	-13.7	Black
11	1.186M	31.7	+0.0	31.7	46.0	-14.3	Black
12	1.112M	31.7	+0.0	31.7	46.0	-14.3	Black
13	900.016k	31.5	+0.0	31.5	46.0	-14.5	Black
14	1.102M	31.4	+0.0	31.4	46.0	-14.6	Black
15	764.293k	31.2	+0.0	31.2	46.0	-14.8	Black

CKC LABORATORIES INC Date: Fri Mar-06-1998 Time: 11:36:14 WO#: 68458
 CISPR22 B COND [AVE] Test Lead: Black Sequence#: 3
 NMB Technologies, Inc., Keyboard, RT230000X



Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: NMB Technologies, Inc.

Date: Mar-06-98

Specification: CISPR22 B COND [AVE]

Time: 11:43

Test Type: Conducted Emissions

Sequence#: 4

Equipment: Keyboard

Manufacturer: NMB Technologies, Inc.

Tested By: Stu Yamamoto

Model: RT23XXXXX

S/N: B0B930B6ZFQFL

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Keyboard*	NMB Technologies	RT23XXXXX	B0B930B6ZFQFL

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Intel	S100EDZ8FLC	A05721230
Monitor	HP	D2806B	KR54366896
Mouse	Logitech	M-CQ38	LT554205822
Modem	Hayes	6802US	A00768023303
Printer	HP	C2184A	CN5B21R1DM
Modem	Hayes	6802US	B10068023649

Test Conditions / Notes:

The EUT is a keyboard and is connected to the host computer. The computer also has a monitor, mouse, printer, and two modems connected. The EUT is continually sending H's which is being displayed on the monitor. Voltage to computer is 120 VAC 60 Hz. Temperature: 19°C, Humidity: 45%.

Measurement Data:

Sorted by Margin

Test Lead: White

#	Freq	Rdng dBμV	dB	dB	dB	dB	Dist dB	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar
1	639.428k	40.1					+0.0	40.1	46.0	-5.9	White
2	207.431k	45.2					+0.0	45.2	53.3	-8.1	White
3	635.110k	37.8					+0.0	37.8	46.0	-8.2	White
4	554.169k	37.3					+0.0	37.3	46.0	-8.7	White
5	484.415k	36.8					+0.0	36.8	46.3	-9.5	White
6	414.661k	36.5					+0.0	36.5	47.6	-11.1	White
7	150.957k	43.8					+0.0	43.8	55.9	-12.1	White
8	429.796k	34.5					+0.0	34.5	47.3	-12.8	White

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Report No: FB98-050

9	815.189k	32.1	+0.0	32.1	46.0	-13.9	White
10	1.862M	31.9	+0.0	31.9	46.0	-14.1	White
11	834.869k	31.8	+0.0	31.8	46.0	-14.2	White
12	1.186M	31.6	+0.0	31.6	46.0	-14.4	White
13	609.116k	31.6	+0.0	31.6	46.0	-14.4	White
14	757.507k	31.4	+0.0	31.4	46.0	-14.6	White
15	1.095M	31.1	+0.0	31.1	46.0	-14.9	White

