



CERTIFICATION TEST REPORT

FOR THE

KEYBOARD, RT93XXXXX

FCC/CISPR 22/85

CLASS B COMPLIANCE

DATE OF ISSUE: APRIL 30, 1998

PREPARED FOR:

NMB Technologies
9730 Independence Avenue
Chatsworth, CA 91311

P.O. No: Q010979

W.O. No: 68,822

Report No: **FB98-068**

Date of test: April 17 & 23 1998

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ADMINISTRATIVE INFORMATION

DATE OF TEST: April 17 & 23, 1998

PURPOSE OF TEST: To demonstrate the compliance of the Keyboard, RT93XXXXX, with the requirements for FCC/CISPR 22/85 Class B devices.

MANUFACTURER: NMB Technologies
9730 Independence Avenue
Chatsworth, CA 91311

REPRESENTATIVE: Bob Dickerman

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

TEST PERSONNEL: David Cortes

TEST METHOD: ANSI C63.4 1992

FREQUENCY RANGE TESTED: 150kHz - 1000MHz

EQUIPMENT UNDER TEST: Keyboard
Manuf: NMB Technologies
Model: RT93XXXXX
Serial:

SUMMARY OF RESULTS

The NMB Technologies Keyboard, RT93XXXXX 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: BFJ9D9 6802US

Printer

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

Modem

Manuf: Hayes
Model: 6802US
Serial: B10068023649
FCC ID: BFJ9D9 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, RT93XXXXX. 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				
149.992	32.2	17.6	-28.1	2.2		23.9	30.0	-6.1	VQ
167.978	32.2	17.5	-28.1	2.4		24.0	30.0	-6.0	VQ
179.994	31.8	17.3	-28.1	2.5		23.5	30.0	-6.5	V
191.985	32.2	16.9	-28.0	2.6		23.7	30.0	-6.3	H
197.983	32.6	16.7	-28.0	2.7		24.0	30.0	-6.0	VQ
209.989	31.9	17.0	-28.0	2.7		23.6	30.0	-6.4	V

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. Temperature: 21°C Humidity: 40%.

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							
0.152712	47.5	0.0				47.5	55.9	-8.4	W
0.205836	47.0	0.0				47.0	53.4	-6.4	W
0.410712	38.0	0.0				38.0	47.6	-9.6	W
0.481124	38.7	0.0				38.7	46.3	-7.6	W
0.547588	38.5	0.0				38.5	46.0	-7.5	W
3.101047	37.4	0.0				37.4	46.0	-8.6	W

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. Temperature: 21°C Humidity: 40%. Voltage to computer is 120 VAC 60 Hz.

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.
2. Preamp, Hewlett Packard, Model No. 8447D, S/N 1937A02548.
3. Quasi-Peak Adapter, Hewlett Packard, Model No. 85650A, S/N - 2030A00532.
4. Biconical Antenna, A & H Systems, Model No. SAS-200/540, S/N 220.
5. Log Periodic Antenna, A & H Systems, Model No. SAS-200/516, S/N 331.
6. Horn Antenna, Emco, Model No. 3115, S/N 4683.
7. Magnetic Loop Antenna, Electro Metrics, Model No. ALR-25M, S/N 536.
8. LISN, Solar Electronics, Model No. 8028-50-TS-24-BNC, S/N Brea #1.
9. LISN, Solar Electronics, Model No. 50 uH, S/N Brea #2.
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 computer 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, RT93XXXXX. 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, RT93XXXXX.

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, RT93XXXXX, 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: Power Supply Manufacturer: Power Supply Part Number: AC Line Filter Manufacturer: AC Line Filter Part Number:	Scrolling "H's"
The host computer AC power cord is removable and is NOT shielded	
Line voltage used during testing: 120V 60Hz	

I/O PORTS	
Type	#
Serial, Keyboard	1

CRYSTAL OSCILLATORS	
Type	Freq In MHz
RC Resonator (Clock)	4

PRINTED CIRCUIT BOARDS				
Function	Model & Rev	Clocks, MHz	Layers	Location
Logic KS88C0604 MPU	123202 Rev. A	4	1	Inside K/B

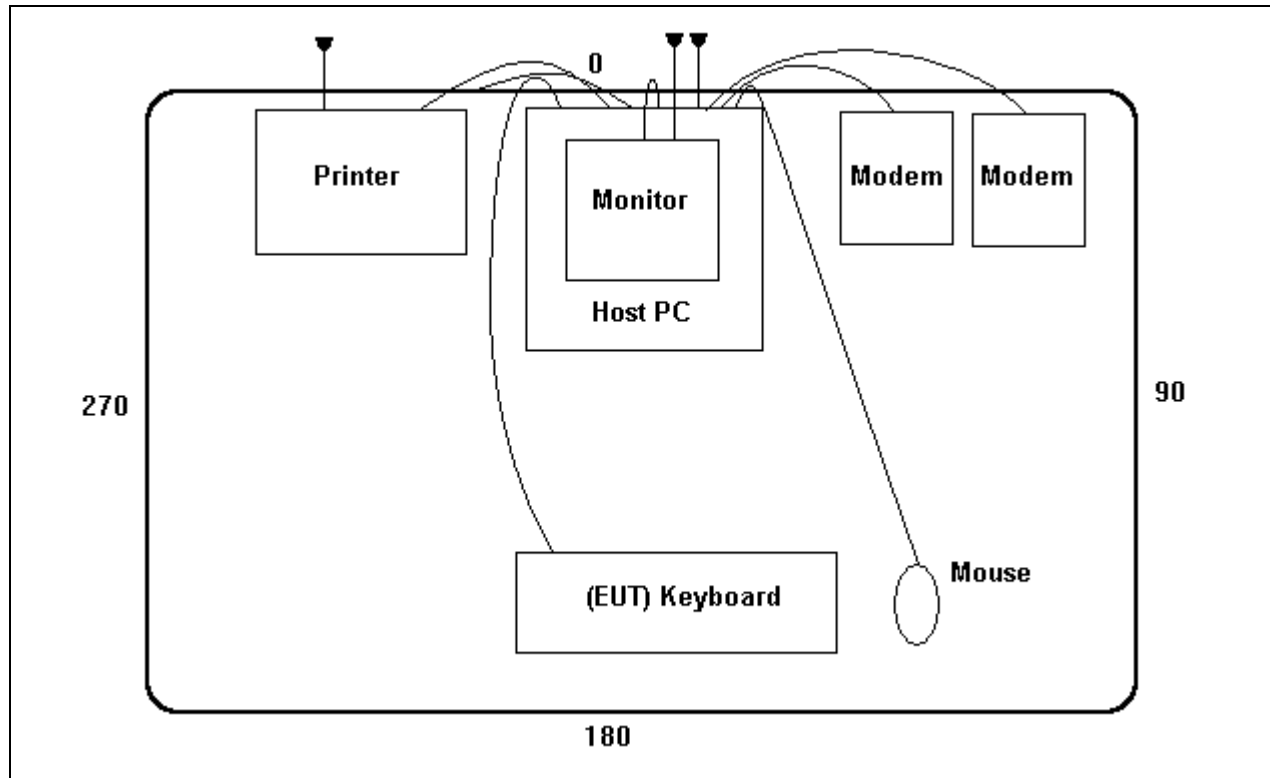
REQUIRED EUT CHANGES TO COMPLY:
None

CABLE INFORMATION

Cable #: 1	Cable(s) of this type: 1
Cable Type: Construction: Connected To End (1): Connector At End (1): Shield Grounded At (1): Part Number:	Shield Type: Length In Meters: Connected To End (2): Connector At End (2): Shield Grounded At (2): Number of Conductors:
Notes:	

Cable Routing For Worst Case Emissions:
Cable length only allows routing as shown in photograph.

EQUIPMENT CONFIGURATION BLOCK DIAGRAM



RT93XXXXX

NOTES:

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Applicant: NMB Technologies
Equipment: Keyboard
Model Number: RT93XXXXX



Radiated Emissions - Front View

NOTES:

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Applicant: NMB Technologies
Equipment: Keyboard
Model Number: RT93XXXXX



Radiated Emissions - Back View

NOTES:

PHOTOGRAPH SHOWING CONDUCTED EMISSIONS

Applicant: NMB Technologies
Equipment: Keyboard
Model Number: RT93XXXXX



Conducted Emissions - Front View

NOTES:

PHOTOGRAPH SHOWING CONDUCTED EMISSIONS

Applicant: NMB Technologies
Equipment: Keyboard
Model Number: RT93XXXXX



Conducted Emissions - Back View

NOTES:

APPENDIX B

MEASUREMENT DATA SHEETS

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

Customer: **NMB Technologies** Date: Apr-17-98
Specification: **CISPR 22 B RADIATED** Time: 16:04
Test Type: **Maximized Emissions** Sequence#: 1
Equipment: **Keyboard**
Manufacturer: NMB Technologies Tested By: Stu Yamamoto
Model: RT93XXXXX
S/N:

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Keyboard*	NMB Technologies	RT93XXXXX	

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. Temperature: 21°C Humidity: 40%. Voltage to computer is 120 VAC 60 Hz

Measurement Data:

Sorted by Margin

Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	BICON CABLE			AMP dB	Dist dB	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar
			dB	dB	dB						
1	197.983	32.6	+16.7	+2.7		-28.0	+0.0	24.0	30.0	-6.0	Vert
Quasi Peak											
2	167.978	32.2	+17.5	+2.4		-28.1	+0.0	24.0	30.0	-6.0	Vert
Quasi Peak											
3	149.992	32.2	+17.6	+2.2		-28.1	+0.0	23.9	30.0	-6.1	Vert
Quasi Peak											
4	191.985	32.2	+16.9	+2.6		-28.0	+0.0	23.7	30.0	-6.3	Horiz
5	209.989	31.9	+17.0	+2.7		-28.0	+0.0	23.6	30.0	-6.4	Vert
6	179.994	31.8	+17.3	+2.5		-28.1	+0.0	23.5	30.0	-6.5	Vert
7	168.000	31.7	+17.5	+2.4		-28.1	+0.0	23.5	30.0	-6.5	Horiz
8	155.991	31.7	+17.5	+2.3		-28.1	+0.0	23.4	30.0	-6.6	Horiz

9	209.994	31.6	+17.0	+2.7	-28.0	+0.0	23.3	30.0	-6.7	Horiz
	Quasi Peak									
10	192.002	31.6	+16.9	+2.6	-28.0	+0.0	23.1	30.0	-6.9	Vert
11	180.004	31.4	+17.3	+2.5	-28.1	+0.0	23.1	30.0	-6.9	Horiz
12	91.750	39.7	+9.8	+1.6	-28.0	+0.0	23.1	30.0	-6.9	Vert
13	91.699	39.2	+9.8	+1.6	-28.0	+0.0	22.6	30.0	-7.4	Vert
14	166.170	30.7	+17.5	+2.4	-28.1	+0.0	22.5	30.0	-7.5	Vert
	Quasi Peak									
15	99.336	37.2	+11.6	+1.8	-28.1	+0.0	22.5	30.0	-7.5	Vert
16	221.983	30.1	+17.5	+2.8	-28.0	+0.0	22.4	30.0	-7.6	Horiz
	Quasi Peak									
17	162.012	30.3	+17.4	+2.3	-28.1	+0.0	21.9	30.0	-8.1	Horiz
18	221.983	29.6	+17.5	+2.8	-28.0	+0.0	21.9	30.0	-8.1	Vert
	Quasi Peak									
19	114.689	33.1	+14.7	+1.9	-28.1	+0.0	21.6	30.0	-8.4	Horiz
20	185.994	29.9	+17.1	+2.6	-28.1	+0.0	21.5	30.0	-8.5	Vert
21	198.001	29.7	+16.7	+2.7	-28.0	+0.0	21.1	30.0	-8.9	Horiz
	Quasi Peak									
22	114.680	32.6	+14.7	+1.9	-28.1	+0.0	21.1	30.0	-8.9	Vert
23	84.124	38.9	+8.3	+1.5	-28.0	+0.0	20.7	30.0	-9.3	Vert
24	204.034	28.7	+16.8	+2.7	-28.0	+0.0	20.2	30.0	-9.8	Vert
25	76.490	39.3	+7.4	+1.5	-28.1	+0.0	20.1	30.0	-9.9	Vert
26	65.027	39.0	+7.7	+1.3	-28.2	+0.0	19.8	30.0	-10.2	Vert
27	270.002	30.9	+20.5	+3.1	-28.0	+0.0	26.5	37.0	-10.5	Horiz
28	61.206	38.2	+8.1	+1.2	-28.2	+0.0	19.3	30.0	-10.7	Vert
29	68.848	38.2	+7.4	+1.4	-28.2	+0.0	18.8	30.0	-11.2	Vert
30	57.385	36.5	+8.9	+1.2	-28.2	+0.0	18.4	30.0	-11.6	Vert

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

Customer: **NMB Technologies** Date: Apr-23-98
Specification: **CISPR 22 B COND [AVE]** Time: 11:22
Test Type: **Conducted Emissions** Sequence#: 2
Equipment: **Keyboard**
Manufacturer: NMB Technologies Tested By: David Cortes
Model: RT93XXXXX
S/N:

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Keyboard*	NMB Technologies	RT93XXXXX	

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:

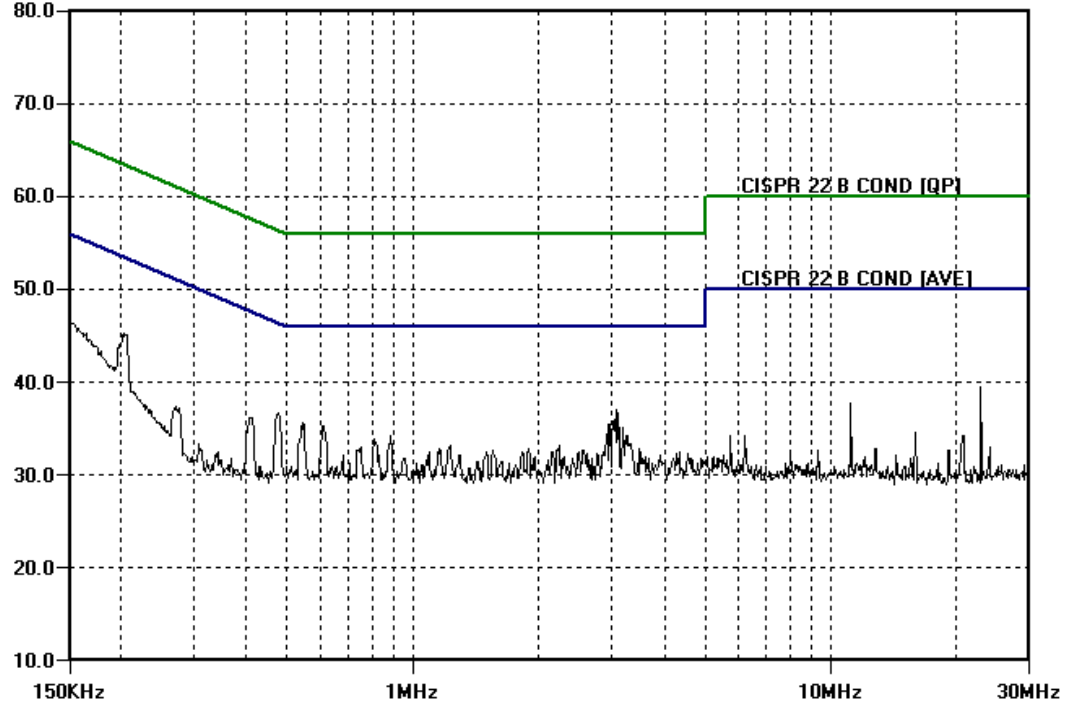
The EUT is a keyboard and is connected to the host computer. The computer also has a monitor, mouse, printer, and two modems connected. The EUT is continually sending H's which is being displayed on the monitor. Temperature: 21°C Humidity: 40%. Voltage to computer is 120 VAC 60 Hz

Measurement Data: Sorted by Margin Test Lead: Black

#	Freq	Rdng dB μ V					Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	203.921k	45.3					+0.0	45.3	53.4	-8.1	Black
2	3.072M	37.0					+0.0	37.0	46.0	-9.0	Black
3	3.107M	36.7					+0.0	36.7	46.0	-9.3	Black
4	150.638k	46.6					+0.0	46.6	56.0	-9.4	Black
5	475.860k	36.7					+0.0	36.7	46.4	-9.7	Black
6	3.038M	35.9					+0.0	35.9	46.0	-10.1	Black
7	542.982k	35.7					+0.0	35.7	46.0	-10.3	Black
8	2.968M	35.5					+0.0	35.5	46.0	-10.5	Black

9	2.934M	35.5	+0.0	35.5	46.0	-10.5	Black
10	22.941M	39.4	+0.0	39.4	50.0	-10.6	Black
11	548.246k	35.4	+0.0	35.4	46.0	-10.6	Black
12	467.305k	35.9	+0.0	35.9	46.6	-10.7	Black
13	607.471k	35.2	+0.0	35.2	46.0	-10.8	Black
14	3.176M	35.1	+0.0	35.1	46.0	-10.9	Black
15	3.141M	35.1	+0.0	35.1	46.0	-10.9	Black
16	408.738k	36.2	+0.0	36.2	47.7	-11.5	Black
17	885.086k	34.3	+0.0	34.3	46.0	-11.7	Black
18	3.248M	34.2	+0.0	34.2	46.0	-11.8	Black
19	2.899M	34.2	+0.0	34.2	46.0	-11.8	Black
20	810.439k	33.8	+0.0	33.8	46.0	-12.2	Black

CKC LABORATORIES INC Date: Thu Apr-23-1998 Time: 11:17:37
CISPR 22 B COND [AVE] Test Lead: Black Sequence#: 2
dBμV NMB Technologies, Inc., Model: RT93XXXXXX



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

Customer: **NMB Technologies** Date: Apr-23-98
Specification: **CISPR 22 B COND [AVE]** Time: 11:29
Test Type: **Conducted Emissions** Sequence#: 3
Equipment: **Keyboard**
Manufacturer: NMB Technologies Tested By: David Cortes
Model: RT93XXXXX
S/N:

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Keyboard*	NMB Technologies	RT93XXXXX	

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. Temperature: 21°C Humidity: 40%. Voltage to computer is 120 VAC 60 Hz

Measurement Data:

Sorted by Margin

Test Lead: White

#	Freq	Rdng dB μ V					Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	205.836k	47.0					+0.0	47.0	53.4	-6.4	White
2	547.588k	38.5					+0.0	38.5	46.0	-7.5	White
3	481.124k	38.7					+0.0	38.7	46.3	-7.6	White
4	152.712k	47.5					+0.0	47.5	55.9	-8.4	White
5	3.101M	37.4					+0.0	37.4	46.0	-8.6	White
6	3.072M	37.0					+0.0	37.0	46.0	-9.0	White
7	410.712k	38.0					+0.0	38.0	47.6	-9.6	White
8	3.136M	35.8					+0.0	35.8	46.0	-10.2	White

9	603.523k	35.8	+0.0	35.8	46.0	-10.2	White
10	2.997M	35.2	+0.0	35.2	46.0	-10.8	White
11	2.962M	35.0	+0.0	35.0	46.0	-11.0	White
12	2.928M	34.7	+0.0	34.7	46.0	-11.3	White
13	3.176M	34.5	+0.0	34.5	46.0	-11.5	White
14	2.890M	34.3	+0.0	34.3	46.0	-11.7	White
15	824.011k	34.3	+0.0	34.3	46.0	-11.7	White
16	3.211M	34.2	+0.0	34.2	46.0	-11.8	White
17	818.582k	34.1	+0.0	34.1	46.0	-11.9	White
18	3.245M	33.9	+0.0	33.9	46.0	-12.1	White
19	1.895M	33.6	+0.0	33.6	46.0	-12.4	White
20	883.729k	33.4	+0.0	33.4	46.0	-12.6	White

CKC LABORATORIES INC Date: Thu Apr-23-1998 Time: 11:25:47
CISPR 22 B COND [AVE] Test Lead: White Sequence#: 3
dBμV NMB Technologies, Inc., Model: RT93XXXXXX

