

EXHIBIT 3

RFI/EMI TEST REPORT



EMC

TEST REPORT

REPORT NO. : F86101001A

MODEL NO. : 5133

DATE OF TEST : Sept. 1, 1998

PREPARED FOR: BEHAVIOR TECH COMPUTER CORP.

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PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION



Accredited Laboratory

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1.

CERTIFICATION

Issue Date: Sept. 2, 1998

Product : KEYBOARD
Trade Name : PACKARD BELL
Model No. : 5133
Applicant : BEHAVIOR TECH COMPUTER CORP.
Standard : FCC Part 15, Subpart B, Class B
ANSI C63.4-1992
CISPR 22: 1993 +A1+A2

We hereby certify that one sample of the designation has been tested in our facility on Sept. 1, 1998. The test record, data evaluation and Equipment Under Test (EUT) configurations represent herein are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

The test results show that the EUT as described in this report is in compliance with the Class B limits of conducted and radiated emission of applicable standards

PREPARED BY: Ariel Hsieh , DATE: 9/2/98
(Ariel Hsieh)

TESTED BY: Joey Chen , DATE: 8/2/98
(Joey Chen)

APPROVED BY: Mike Su , DATE: 8/2/98
(Mike Su)

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	KEYBOARD
Model No.	:	5133
Power Supply	:	DC 5V (from PC)
Data Cable	:	Shielded (1.7m)

Note: This report is prepared for Class II permissive change.

The main changes are as follows:

- 1) IC U1, brand: Winbond, model: 80C52, is updated to IC U1, brand: UMC6868.
- 2) Added a metal plate on the keyboard membrane.
- 3) Added a piece of metal plate on the solder side of control board. A ground wire was connected between two of the metal plates.

For more detailed features, please refer to ATTACHMENT 1 - TECHNICAL DESCRIPTION OF EUT and User's Manual.



2.2 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories are used to form representative test configuration during the tests.

No	Product	Brand	Model No.	FCC ID	I/O Cable
1	PERSONAL COMPUTER	HP	D4579A	FCC Doc approved	Nonshielded Power (1.8m)
2	MONITOR	ADI	PD-959	FCC Doc approved	Shielded Signal (1.2m) Nonshielded Power (1.8m)
3	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.8m)
4	MODEM	ACEEX	1414	IFAXDM1414	Shielded Signal (1.2m) Nonshielded Power (1.8m)
5	MOUSE	DEXIN	A2P800A	NIYA2P800A	Shielded Signal (1.5m)
6	VGA CARD	DIAMOND	STEALTH 64	FTUPCI968524	N/A

2.3 TEST METHODOLOGY AND CONFIGURATION

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4:1992. Radiated testing was performed at an antenna to EUT distance of 10 m on an open area test site. Please refer to the photos of test configuration in Item 5.



3. TEST INSTRUMENTS

3.1 TEST INSTRUMENTS (EMISSION)

RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated until
HP Spectrum Analyzer	8590L	3544A00941	Dec. 14, 1998
HP Pre-Amplifier	8447D	2944A08312	Sept. 10, 1998
R&S Receiver	ESVS10	844591/010	Sept. 23, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE BILOG Antenna	CBL6111A	1500	Sept. 12, 1998
EMCO Turn Table	1060-04	1196	N/A
EMCO Tower	1051	1264	N/A
Open Field Test Site	Site 1	ADT-R01	Sept. 5, 1998

Note: 1. The measurement uncertainty is less than ± 3 dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months.

And the calibrations are traceable to NML/ROC and NIST/USA.

CONDUCTED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	July 22, 1999
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	892107/003	July 20, 1999
EMCO L.I.S.N.	3825/2	9504-2359	July 20, 1999
Shielded Room	Site 3	ADT-C03	N/A

Note: 1. The measurement uncertainty is less than ± 2.6 dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months.

And the calibrations are traceable to NML/ROC and NIST/USA.



3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION

LIMIT OF RADIATED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 - 230	40	30
230 - 1000	47	37

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
Above 1000	300	49.5	500	54.0

Note: (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

LIMIT OF CONDUCTED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: (1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.



4. TEST RESULTS (EMISSION)

4.1 RADIO DISTURBANCE

Frequency Range : 0.15 - 30 MHz (Conducted Emission)
30 - 1000 MHz (Radiated Emission)
Input Voltage : 120 Vac, 60 Hz
Temperature : 27 °C
Humidity : 53 %
Atmospheric Pressure : 998 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -20.0 dB at 0.280 MHz Minimum passing margin of radiated emission: -6.5 dB at 71.56 MHz

4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
2. PC reads a test program to enable all functions.
3. PC sends "H" messages to monitor and monitor display "H" patterns on screen.
4. PC sends "H" messages to modem.
5. PC sends "H" messages to printer, and the printer prints them on paper.
6. Repeat steps 3-6.

ADT CO. Shielded Room 3
CISPR 22 CLASS B

01. Sep 98 16:04

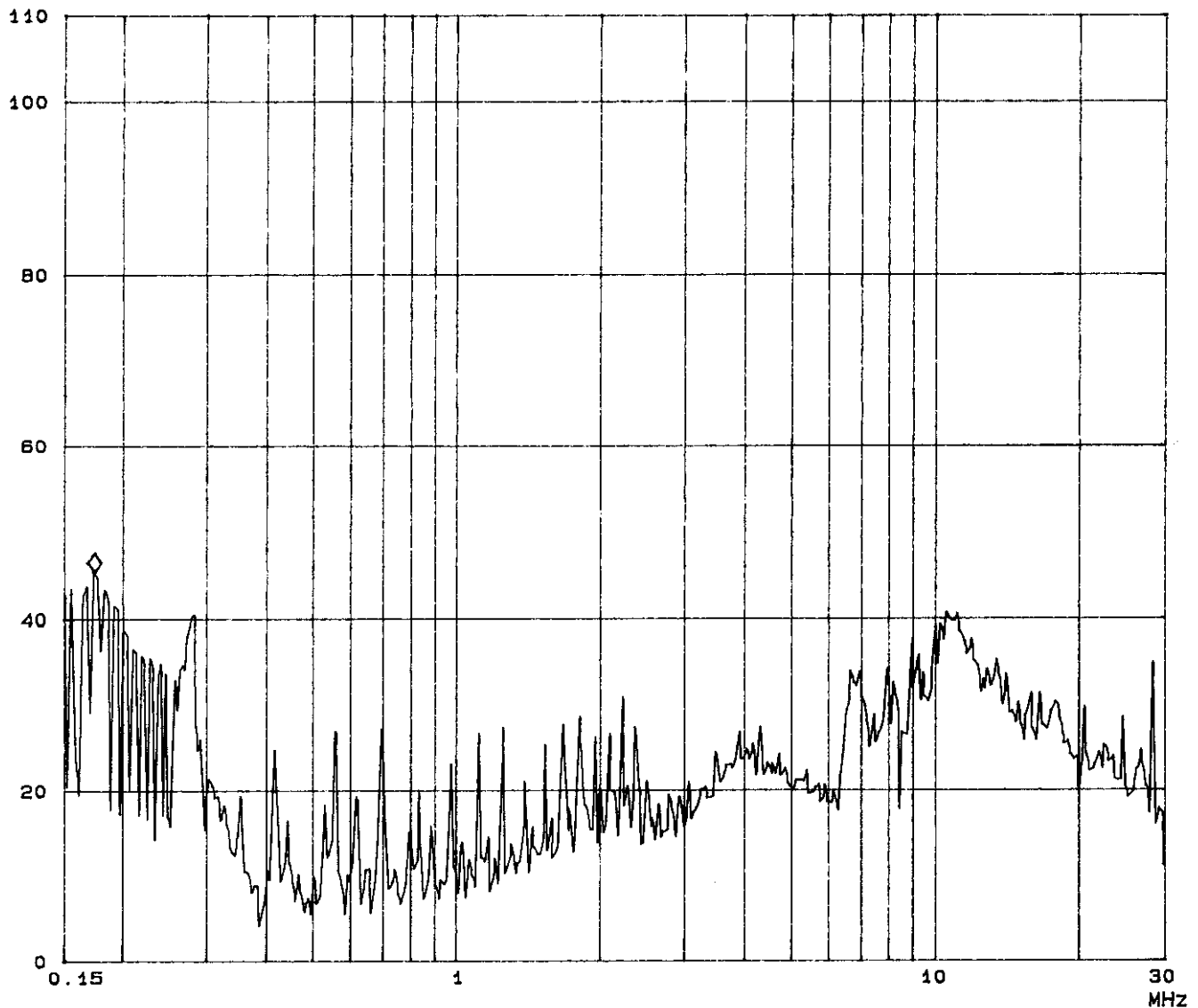
EUT: 5133
Test Spec: LISN : L
Comment: 120V AC/60 HZ

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Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	450k	3k	10K	PK	1ms	10dBLN	OFF	60dB
450k	5M	3k	10k	PK	1ms	10dBLN	OFF	60dB
5M	30M	3k	10K	PK	1ms	10dBLN	OFF	60dB

dBuV \diamond Mkr : 174.00 kHz 45.3 dBuV



ADT CO. Shielded Room 3
CISPR 22 CLASS B

01. Sep 98 15:10

EUT: 5133
Test Spec: LISN : N
Comment: 120V AC/60 HZ

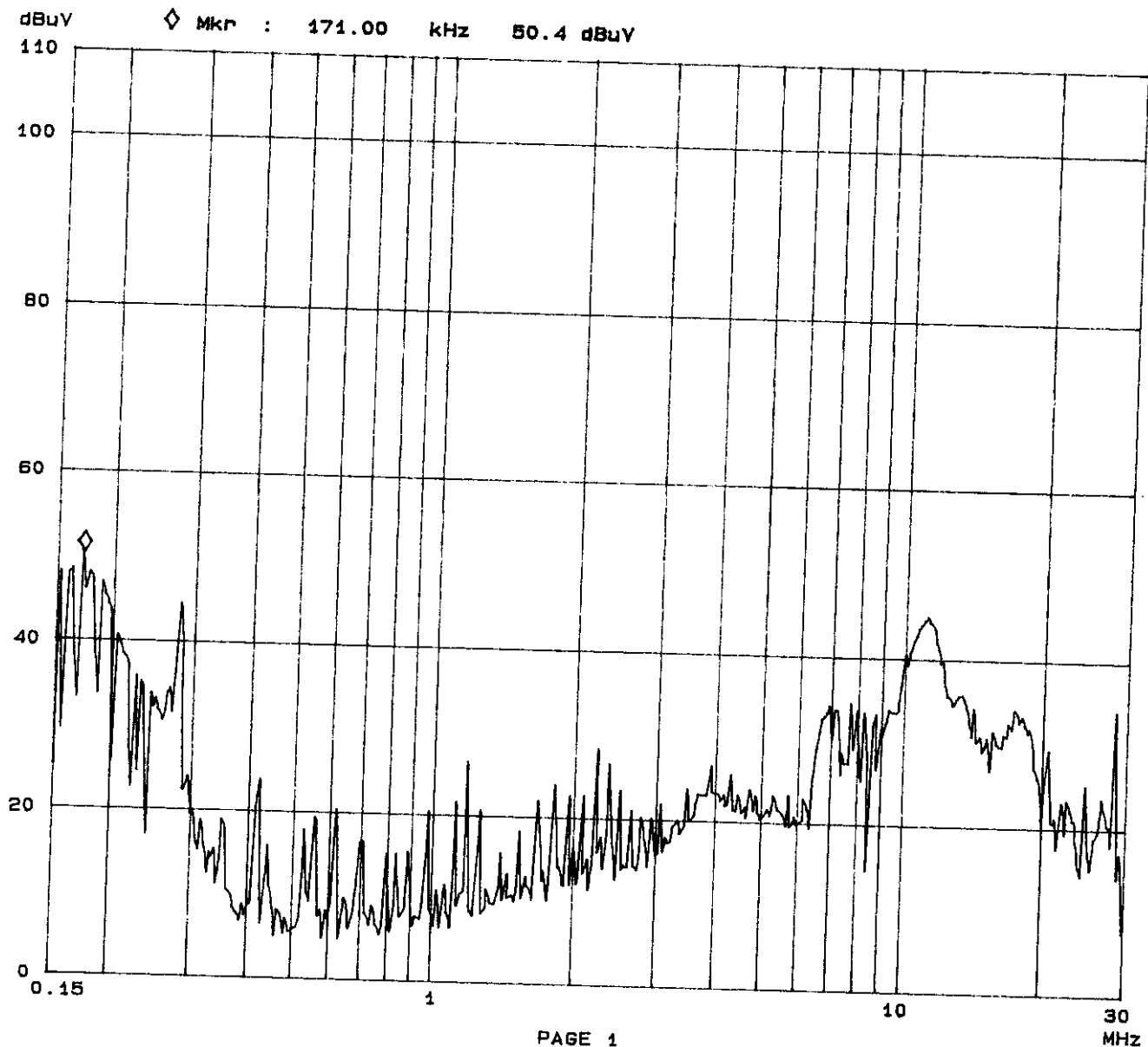
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Tested by *Jerry Chen*

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preampl	OpRge
150k	450k	3k	10k	PK	1ms	10dBLN	OFF	60dB
450k	5M	3k	10k	PK	1ms	10dBLN	OFF	60dB
5M	30M	3k	10k	PK	1ms	10dBLN	OFF	60dB





4.1.3 TEST DATA OF RADIATED EMISSION

EUT: KEYBOARDMODEL: 5133ANTENNA: CHASE BILOG CBL6111APOLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 M

TEST PERSONNEL:

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
49.87	10.9	8.2	19.1	30.0	-10.9
64.27	8.0	11.1	19.1	30.0	-10.9
71.56	8.2	15.3	23.5	30.0	-6.5
134.92	14.7	5.1	19.8	30.0	-10.2
139.86	14.7	5.8	20.5	30.0	-9.5
144.05	14.2	8.2	22.4	30.0	-7.6

REMARKS :

1. Emission level (dBuV/m) = Correction Factor(dB/m) + Meter Reading (dBuV).
2. Correction Factor(dB/m) = Ant. Factor(dB/m)+Cable loss(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value



TEST DATA OF RADIATED EMISSION

EUT: KEYBOARDMODEL: 5133ANTENNA: CHASE BILOG CBL6111APOLARITY: VerticalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 MTEST PERSONNEL: Jay Chen

Frequency (MHz)	Correction Factor (dB/m)	Reading Data dBuV	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
39.11	15.4	7.0	22.4	30.0	-7.6
63.99	7.7	10.6	18.3	30.0	-11.7
79.99	8.1	7.2	15.3	30.0	-14.7
114.55	14.3	3.4	17.7	30.0	-12.3
124.15	15.7	6.4	22.1	30.0	-7.9
174.51	12.8	6.4	19.2	30.0	-10.8
219.57	14.8	5.3	20.1	30.0	-9.9

REMARKS :

1. Emission level (dBuV/m) = Correction Factor(dB/m) + Meter Reading (dBuV).
2. Correction Factor(dB/m) = Ant. Factor(dB/m)+Cable loss(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value



6. ATTACHMENT 1 - TECHNICAL DESCRIPTION OF EUT

Specifications:

* Input Power	+5Vdc
* Operating temperature	0°C to 50°C
Relative humidity	20% to 90% non-condensing
Altitude	1000 ft. To 10000 ft.
* Mechanical Data	
Total travel	3.5+/-0.5mm
Pretravel	1.0+/-0.5mm
Operating Life (normal key)	10 million cycles min. per key
Peak Load before Make (normal key)	55+/-20 grams



4.1.2 TEST DATA OF CONDUCTED EMISSION

EUT: KEYBOARDMODEL: 5133

6 dB Bandwidth: 10 kHz

TEST PERSONNEL:

Freq.	L Level		N Level		Limit		Margin [dB (μV)]			
[MHz]	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.181	37.40	-	44.20	-	64.44	54.44	-27.0	-	-20.2	-
0.280	40.80	-	38.10	-	60.82	50.82	-20.0	-	-22.7	-
0.558	24.90	-	21.10	-	56.00	46.00	-31.1	-	-34.9	-
1.947	29.60	-	25.60	-	56.00	46.00	-26.4	-	-30.4	-
6.803	29.10	-	33.20	-	60.00	50.00	-30.9	-	-26.8	-
13.457	33.60	-	34.90	-	60.00	50.00	-26.4	-	-25.1	-

- Remarks:
1. "*": Undetectable
 2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 4. The emission level of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value