



EMC

TEST REPORT

REPORT NO. : F87033106

MODEL NO. : BTC 1817DSL

DATE OF TEST : Apr. 1, 1998

PREPARED FOR: BEHAVIOR TECH COMPUTER CORP.

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PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION



Accredited Laboratory

12F, NO.1, SEC.4, NAN-KING EAST RD.,
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**1. CERTIFICATION**

Issue Date: Apr. 11, 1998

Product : SOUND CARD
Trade Name : BTC
Model No. : BTC 1817DSL
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 Apr. 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

TESTED BY: Lance Tseng DATE: 4/11/98
(Lance Tseng)

CHECKED BY: Sharon Hsiung, DATE: 4/11/98
(Sharon Hsiung)

APPROVED BY: Mike Su, DATE: 4/11/98
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION**NVLAP[®]**

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	SOUND CARD
Model No.	:	BTC 1817DSL
Power Supply	:	DC (from PC)
Data Cable	:	N/A

Note: For more detailed features, please refer to manufacturer's specification or 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	D4574A	FCC DoC approved	Nonshielded Power (1.8m)
2	MONITOR	ACER	7134T	JVP7134T	Shielded Signal (1.6m) Nonshielded Power (1.8m)
3	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.8m)
4	MODEM	DATATRONICS	1200C+	E2O5OV1200CK	Shielded Signal (1.2m) Nonshielded Power (1.8m)
5	KEYBOARD	TATUNG	FDA-102A	F4Z4K3FDA-102A	Shielded Signal (1.6m)
6	MOUSE	HP	M-S34	DZL211029	Shielded Signal (1.6m)
7	JOYSTICK	MICROSOFT	SIDE WINDER	C3KMJ1	Shielded Signal (1.94m)
8	TAPE RECORDER	PANASONIC	N/A	N/A	Shielded Signal (1.3m)
9	MICROPHONE	CAROL	MUD-329	N/A	Shielded Signal (2.8m)
10	SPEAKER	J-S	J-003	N/A	Shielded Signal (1.3m)

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	3544A01042	May 5, 1998
HP Preamplifier	8447D	2944A08313	Sept. 18, 1998
ROHDE & SCHWARZ TEST RECEIVER	ESVS 30	841977/008	Oct. 5, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE BiLOG Antenna	CBL6111A	1647	Aug. 2, 1998
EMCO Turn Table	1016	1722	N/A
EMCO Tower	1051	1263	N/A
Open Field Test Site	Site 4	ADT-R04	Aug. 1, 1998

Note: 1. The measurement uncertainty is less than +/- 3dB, 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	828765/002	July 31, 1998
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	828075/003	July 28, 1998
EMCO-L.I.S.N.	3825/2	90031627	July 28, 1998
Shielded Room	Site 5	ADT-C05	N/A

Note: 1. The measurement uncertainty is less than +/- 2.6dB, 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 : 65 %
Atmospheric Pressure : 1060 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -19.1 dB at 0.234 MHz Minimum passing margin of radiated emission: -3.3 dB at 228 MHz

4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
2. PC runs a test program to enable all functions of EUT.
3. PC reads and writes from HDD and FDD.
4. PC sends "H" messages to monitor and monitor displays them on screen.
5. PC sends messages to printer, then printer prints them on paper.
6. PC sends messages to modem.
7. PC sends audio messages to speakers via EUT.
8. Repeat steps 3-8.



4.1.2 TEST DATA OF CONDUCTED EMISSION

EUT: **SOUND CARD**MODEL: **BTC 1817DSL**

6 dB Bandwidth: 10 kHz

TEST PERSONNEL:

Lance Tsen

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
0.156	41.50	-	43.20	-	65.60	55.60	-24.1	-	-22.4	-
0.174	43.20	-	43.70	-	64.70	54.70	-21.5	-	-21.0	-
0.181	43.30	-	44.40	-	64.40	54.40	-21.1	-	-20.0	-
0.234	43.20	-	42.90	-	62.30	52.30	-19.1	-	-19.4	-
10.727	40.50	-	39.80	-	60.00	50.00	-19.5	-	-20.2	-
17.444	33.50	-	35.50	-	60.00	50.00	-26.5	-	-24.5	-

- 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

ADT CO. SITE 5
CISPR 22 CLASS B

01. Apr 98 14:31

EUT: BTC 1817DSL
Test Spec: LISN: L

Report No. F87033106

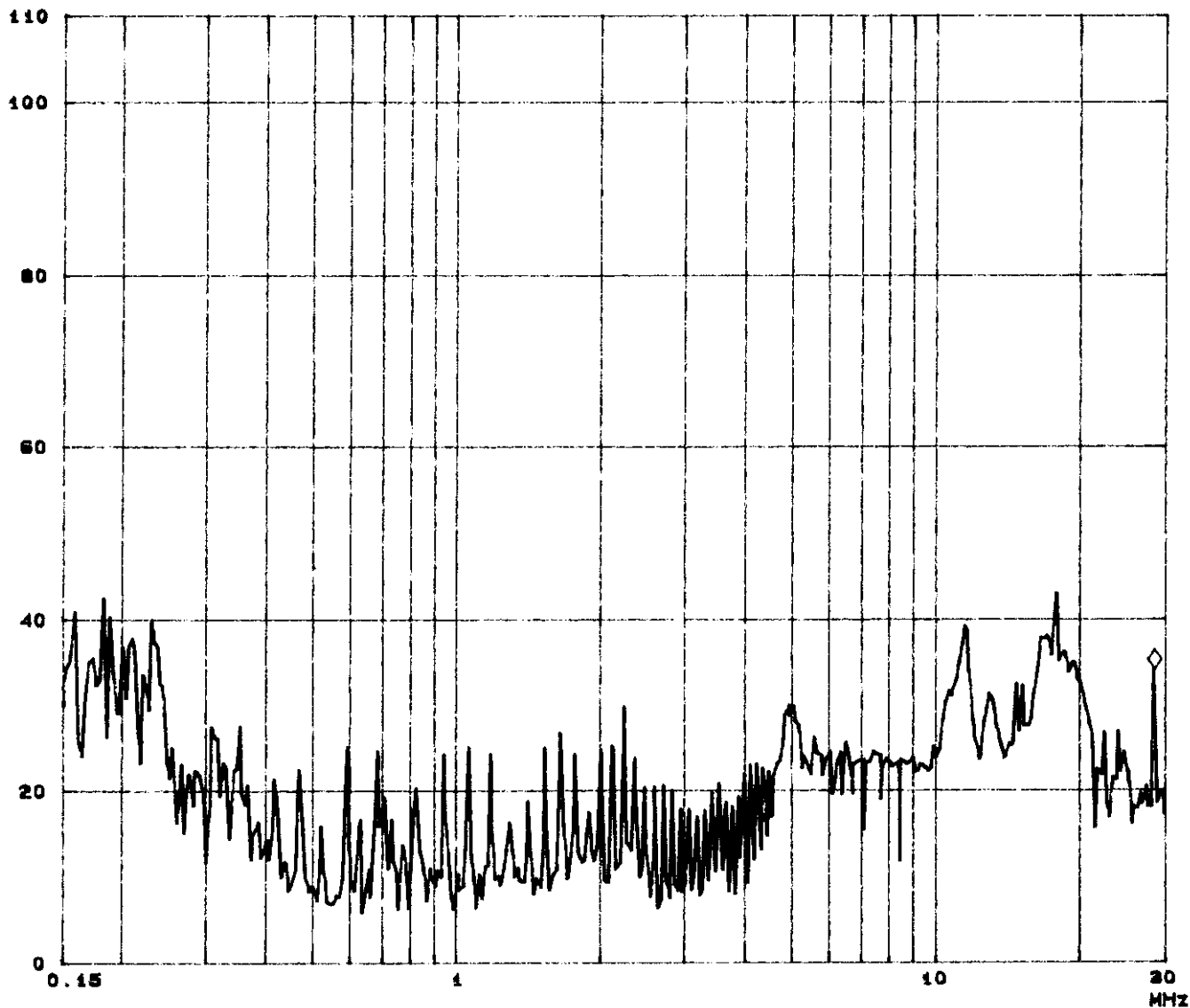
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Tested by Lianu Tseng

Fast Scan Settings (3 Ranges)

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

dBuV ◇ Mkr : 28.63700MHz 34.0 dBuV



ADT CO. SITE 5
CISPR 22 CLASS B

01. Apr 98 14: 42

EUT: BTC 181702L
Test Spec: LISN : N

Report No. F87033106

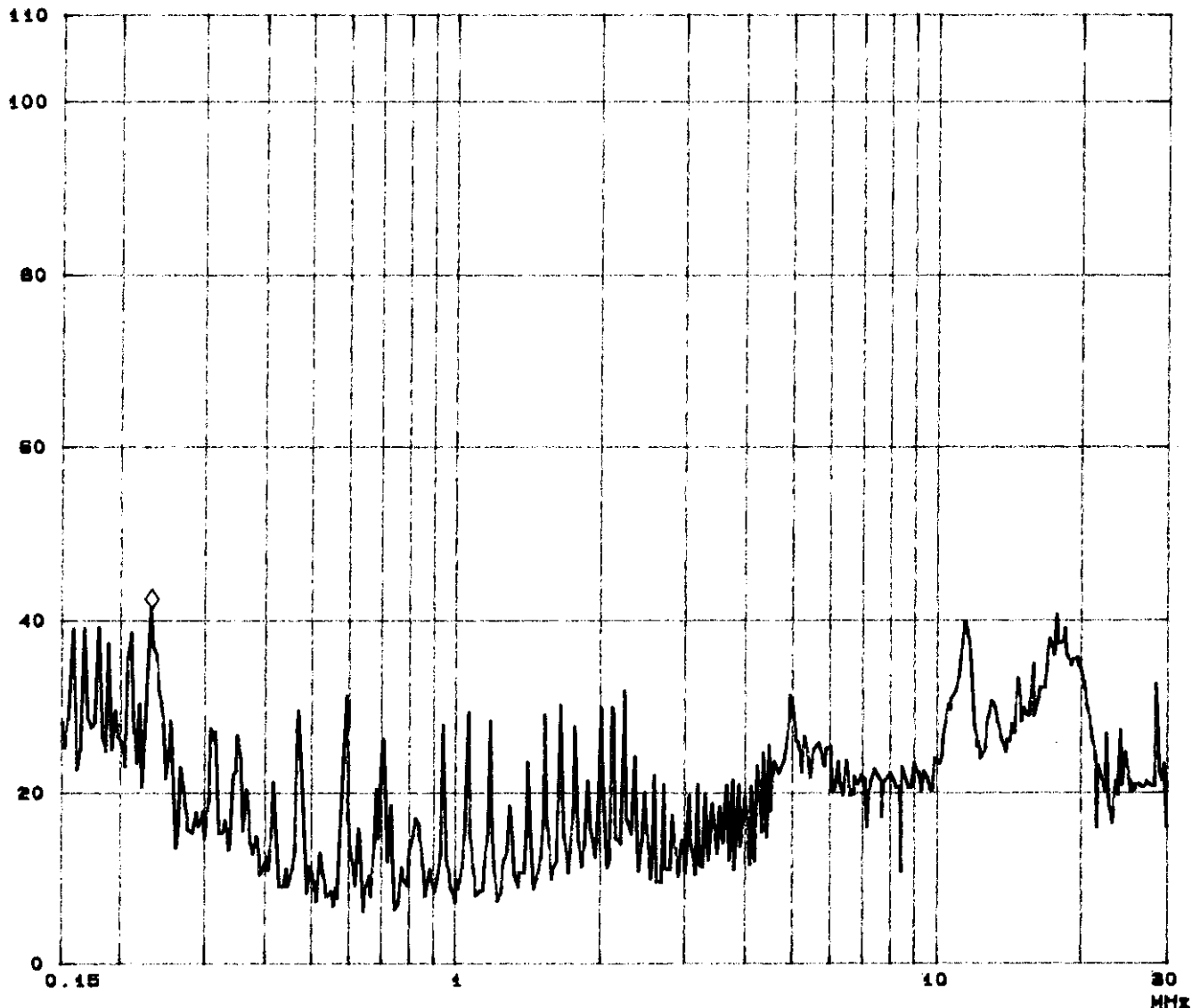
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Tested by Lance Terry

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	450k	2k	10k	PK	1ms	10dB LN	OFF	60dB
450k	5M	2k	10k	PK	1ms	10dB LN	OFF	60dB
5M	30M	2k	10k	PK	1ms	10dB LN	OFF	60dB

dBuV ◇ Mkr : 231.00 kHz 41.2 dBuV





4.1.3 TEST DATA OF RADIATED EMISSION

EUT: **SOUND CARD**MODEL: **BTC 1817DSL**

ANTENNA: CHASE BILOG CBL6111A

POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

TEST PERSONNEL: *Lance Tserng*

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
197.16	11.5	9.6	21.1	30.0	-8.9
206.20	11.9	12.5	24.4	30.0	-5.6
209.58	12.1	12.3	24.4	30.0	-5.6
215.22	12.4	9.4	21.8	30.0	-8.2
224.33	12.9	9.8	22.7	30.0	-7.3
299.15	15.9	15.4	31.3	37.0	-5.7
465.34	19.4	14.1	33.5	37.0	-3.5

- 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: **SOUND CARD**MODEL: **BTC 1817DSL**

ANTENNA: CHASE BILOG CBL6111A

POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

TEST PERSONNEL: *Lance Tseng*

Frequency (MHz)	Correction Factor (dB/m)	Reading Data dBuV	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
110.60	10.1	11.9	22.0	30.0	-8.0
200.49	11.2	12.5	23.7	30.0	-6.3
225.54	13.5	11.9	25.4	30.0	-4.6
228.00	13.7	13.0	26.7	30.0	-3.3
318.50	15.4	12.9	28.3	37.0	-8.7
365.60	17.0	11.2	28.2	37.0	-8.8

- 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