EXHIBIT B - TEST REPORT NO 3793/1686 FROM TRLEMC

BRAIN BOXES LIMITED
UNIT 3c WAVERTREE BOULEVARD SOUTH
WAVERTREE TECHNOLOGY PARK
LIVERPOOL L7 9PF
TEL: 0151 220 2500
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Registered in England: No. 3245094

TRLEMC

TEST REPORT NO: 3793/1686

COPY NO: 1

ISSUE NO: 1

REPORT ON THE RFI TESTING OF A
BRAIN BOXES
PCI 4- PORT RS 232 CARD
WITH RESPECT TO
THE FCC RULES CFR 47: JULY 1996
PART 15 LIMIT B

TEST DATE: 16TH - 19TH MARCH 1998

TESTED BY: ..... J CHARTERS

APPROVED BY: ..... S HAYES

DATE: 14/4/98

Distribution:

Copy Nos: 1 BRAIN BOXES

2 TRL EMC Ltd

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Quality System Certified to BS EN ISO 9001 (1994) Registration FS 21805

NAMAS TESTING No. 0728 No. 0728 SI No. 1359

SUMMARY

TEST REPORT NO:	3793/1686
TRL EMC LTD WO:	3793
PURPOSE OF TEST:	Radio Frequency Interference Emissions Certification
TEST SPECIFICATION:	FCC Rules CFR 47 (JULY 1996) Part 15 LIMIT B
EQUIPMENT UNDER TEST:	PCI 4- PORT RS 232 CARD
EQUIPMENT SERIAL NO:	PR-9
TEST RESULT:	Measured as Compliant (Note uncertainty values in Appendix B)
MANUFACTURER/AGENT:	BRAIN BOXES UNIT 3, WAVERTREE BOULEVARD SOUTH WAVERTREE TECHNOLOGY PARK LIVERPOOL L7 9PF
ORDER NO:	2994
TESTED BY:	TRL EMC LTD
DATE OF TEST:	16TH - 19TH MARCH 1998

CONTENTS

1 INTRODUCTION

This report presents the results of Radio Frequency Interference (RFI) tests carried out in accordance with the FCC Rules CFR 47: JULY 1996 Part 15, LIMIT B, specification on equipment type PCI 4- PORT RS 232 CARD.

The testing was carried out for BRAIN BOXES by TRL EMC Ltd, an independent test house, at their EMC test facility located at Up Holland, West Lancashire, England.

The test site is FCC listed and is calibrated as recommended in Document ANSI C63.4 1992.

This report also details the configuration of the equipment under test, the test methods used and any relevant modifications where appropriate.

The equipment and peripherals were operated as specified in ANSI C63.4: 1992 Document.

2 SYSTEM UNDER TEST

2.1 Equipment Under Test (EUT)

BRAIN BOXES

PCI 4- PORT RS 232 CARD

Serial No: PR-9

Model No: CC-268

2.2 System Equipment

IBM Keyboard
FCC ID: 13914OC

Microsoft Mouse
FCC ID: C3KK S8
Serial No: 00766211

Printer Canon BJ30
FCC ID AZDK10152
Serial No: XAM28294

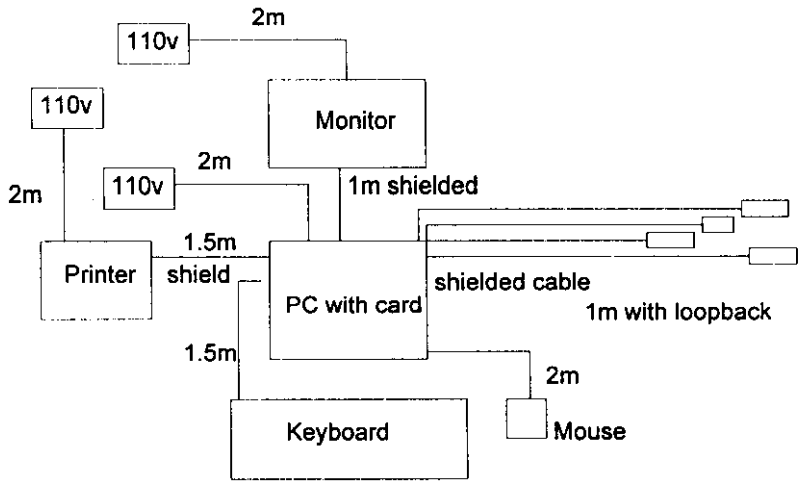
PC Dell Dimension P100t
FCC ID: E2KHN TRDMT

Monitor DA1565VA
FCC ID: H7 9DA-1565
Serial No: BD1649 D28783

2.3 Modes of Operation of EUT During Testing

During the test the PC was running EMC test 5 software. This software made the card transmit RS 232 data to each port in turn. At the RS 232 output port the cable split 4 ways, each was terminated with a loop back connector so that the data returned to the card.

2.4 Block Diagram of EUT Configuration



NOTE: All cables unshielded unless otherwise stated.
Cable lengths are as shown in diagram.

3 TEST CONDITIONS

3.1 Power Line Conducted Emissions

Measurement Freq Range	:-	450kHz - 30MHz
Line Voltage	:-	110 V AC
Line Frequency	:-	60 Hz
Artificial Mains Network (AMN) Impedance	:-	50 ohm/50μH
Receiver		
bandwidth	:-	9kHz
detectors	:-	Quasi-Peak (CISPR Time Constants) and Average
Configuration	:-	Conforming to ANSI C63.4: 1992 Document
EUT Height	:-	0.8m
Remarks	:-	All initial measurements were carried out using "Peak" and "Average" detectors. Any disturbances found to be within 6dB of the relevant limit were then re-measured using the "Quasi-Peak" and "Average" detectors and compared against the relevant limit over a one second period.
Measurement Uncertainty	:-	See Appendix B

3.1 **Power Line Conducted Emissions** continued..

Test equipment used for the Power Line Conduction measurement was:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL EMC No	ACTUAL EQUIPMENT USED
LISN/AMN	R & S	ESH3-Z5	863906/018	UH05	X
LISN/AMN	SCHWARZBECK	NSLK8128	164	UH76	
RECEIVER	R & S	ESHS 10	830051/001	UH03	X
RECEIVER	R & S	ESPC	843756/007	UH101	
SOFTWARE	R & S	ESXS-K1 V2.03b	840.913/162	N/A	X

3.2 Radiated E-Field Emissions

Measurement Freq Range	:-	30MHz - 1000MHz
Measurement Distance	:-	10 metres
Antenna Height	:-	1 - 4 metres
Antenna Polarisation	:-	Vertical and Horizontal
Receiver		
bandwidths	:-	120kHz
detectors	:-	Quasi-peak (CISPR Time constants)
Ambient Conditions	:-	16°C WET
EUT Height	:-	0.8 metre
Remarks	:-	All measurements were carried out on an open field test site constructed and calibrated in accordance with ANSI C63.4: 1992 Document. All significant emissions were maximised by: a) rotating the EUT b) elevating antenna c) polarising antenna Horizontal and Vertical d) manipulation and placement of system and power cables.
Measurement Uncertainty	:-	See Appendix B

3.2 **Radiated E-Field Emissions** continued..

Test equipment used for this radiated emission measurement was:

TYPE OF EQUIPMENT	MAKER/ SUPPLIER	MODEL No	SERIAL No	TRL EMC No	ACTUAL EQUIPMENT USED
OATS	TRL EMC	3m	N/A	UH06	
OATS	TRL EMC	10M	N/A	UH07	X
BICONE ANT	SCHWARZBECK	VHBA 9123		UH29	
LOG. P. ANT		UHALP9108		UH28	
BILOG ANT	CHASE EMC	CBL 6111	1519	UH70	
BILOG ANT	CHASE EMC	CBL 6112	2006	UH93	X
RECEIVER	R & S	ESVS10	825892/06	UH04	X
RECEIVER	R & S	ESPC	843756/007	UH101	
SOFTWARE	R & S	ESXS-K1 V2.02.06a	840.913/032	N/A	X

4 RESULTS OF TESTS

All measurements were taken with the EUT operating in a mode that activates all components of the equipment see Section 2.3. All external interface cables were connected and loaded with the appropriate terminations.

Significant emissions are shown on the following graphs:

GRAPH A1: Power Line Conducted Emissions
GRAPH A2: Radiated E-Field Emissions

The results recorded on Graph 2 are maximum values recorded with respect to EUT azimuth, receiver antenna polarisation and height.

The table below summarises worst case results.

MEASUREMENT	FREQUENCY	EMISSION LEVEL	LIMIT VALUE
Power Line Conduction Quasi Peak Detector (Graph A1)	NO SIGNIFICANT	EMISSIONS WITHIN	6 dBμV OF LIMIT
Power Line Conduction Average Detector (Graph A1)	1.535 MHz	43.99 dBμV	48 dBμV
Radiated E-Field Emissions (Graph A2)	34.1 MHz	24.3 dBμV/m	30 dBμV/m

4.1 Sample Calculation

The radiated emission levels used in the report are calculated thus:

FREQUENCY (MHz)	MEASURED VALUE (dBμV)	ANTENNA VALUE (dBV/m)	EMISSION LEVEL (dBμV/m)
34.1	8.5	15.8	24.3

5 LIST OF RFI MODIFICATIONS

During the test there were no EMC modifications incorporated into the equipment .

6 CONCLUSIONS

6.1 Result of Testing

The BRAIN BOXES , PCI 4- PORT RS 232 CARD meets the requirements of FCC Rules CFR 47 (JULY 1996) Part 15, LIMIT B in the configuration tested defined in section 2 of this report and incorporating any modifications detailed in section 5 of this report.

Note should be taken of modifications (if any) as described in section 5 of this report.

6.2 Conformity in Production

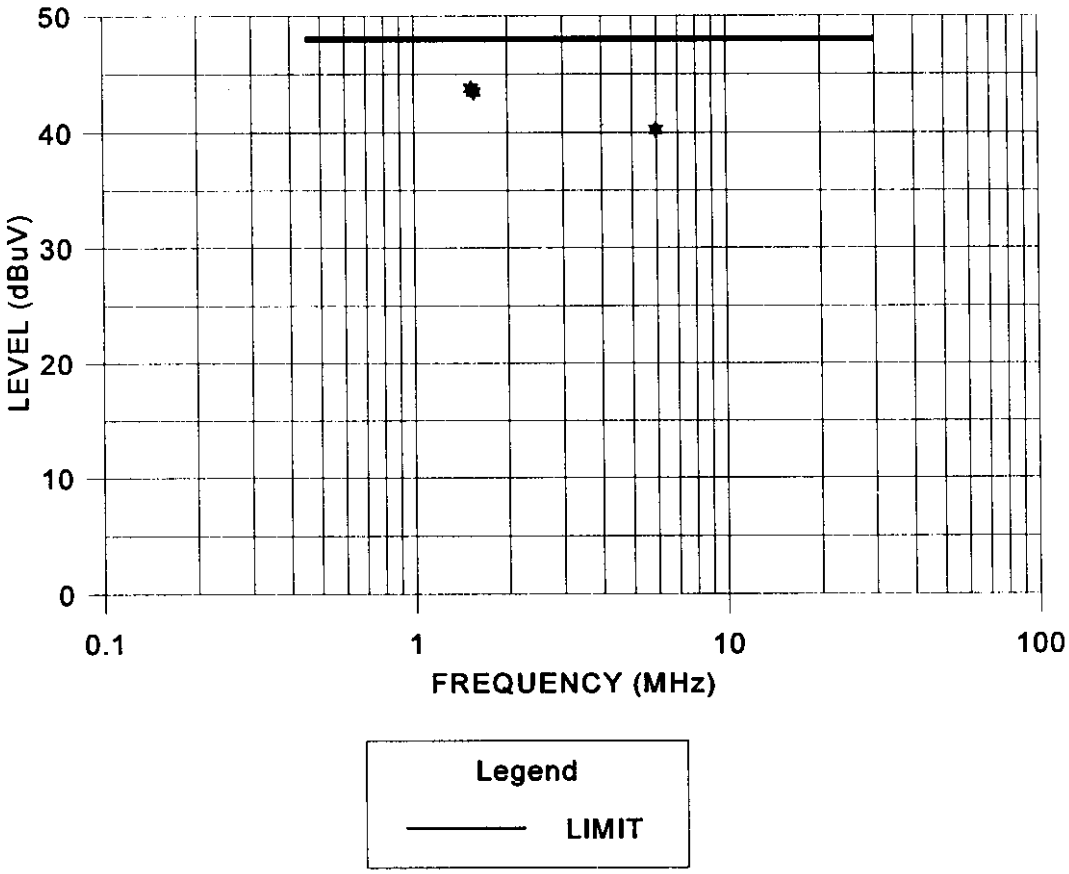
TRL EMC Ltd has based this test report on results from the equipment sample(s) provided.

The manufacturer is advised that they may have an obligation to demonstrate that production samples are in conformity with the Standards noted.

APPENDIX A

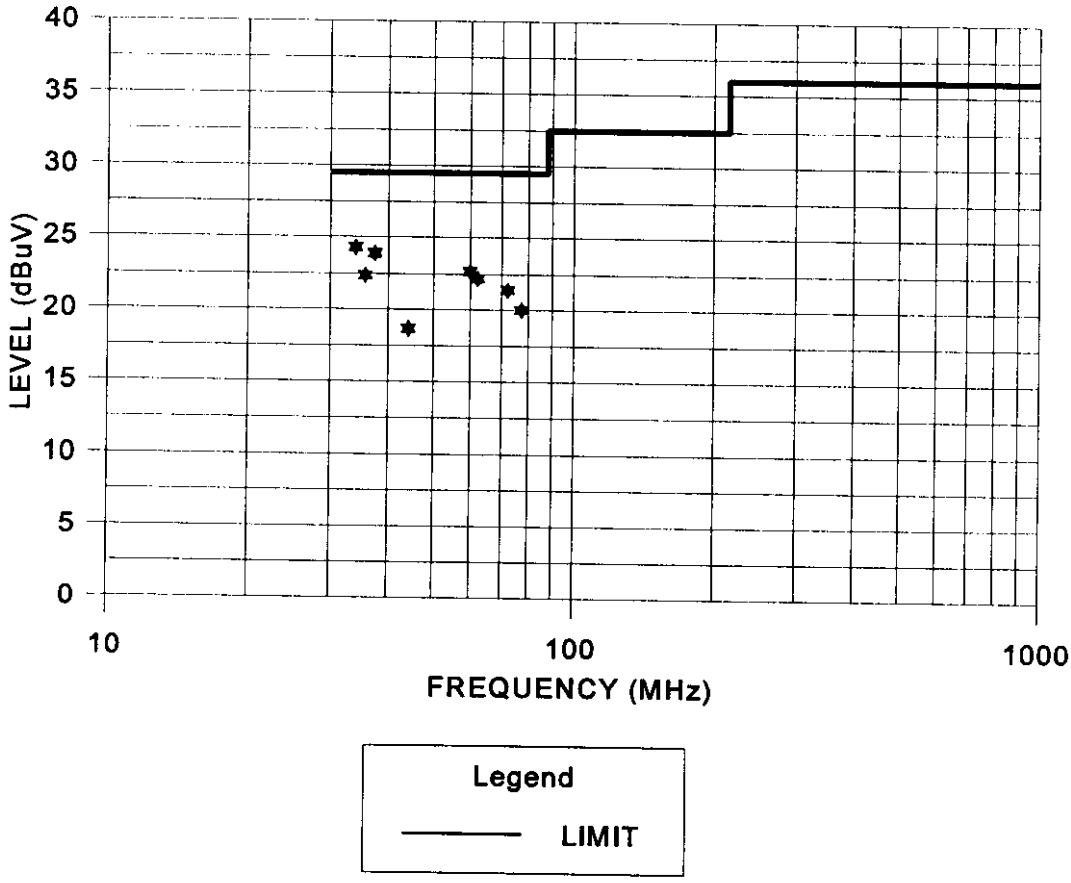
GRAPHS

Graph A1: **POWER LINE CONDUCTED EMISSIONS**



Graph A2:

RADIATED E-FIELD EMISSIONS



APPENDIX B

MEASUREMENT UNCERTAINTY

PROC NO	RF109
ISSUE	2
DATE	15.10.96

EMC TEST MEASUREMENT UNCERTAINTY
SCHEDULE A

LABORATORY TESTS

MEASUREMENT		EXPANDED UNCERTAINTY	
		LONG GREEN	UP HOLLAND
E-FIELD STRENGTH 10m	<300MHz >300MHz	± 4.45dB ± 4.45dB	± 2.4dB ± 2.4dB
E-FIELD STRENGTH 3m	<300MHz >300MHz	± 4.13dB ± 4.03dB	± 3.4dB ± 3.4dB
CONDUCTED EMISSIONS AC Power Line	PROBE LISN/AMN	± 1.19dB ± 1.26dB	± 1.19dB ± 0.98dB
H-FIELD STRENGTH		± 2.25dB	± 2.14dB
RFS	3V/m 10V/m	± 0.83V ± 1.87V	± 0.83V ± 1.5 V
ESD	<10kV >10kV	± 220V ± 320V	± 220V ± 320V
FAST BURST TRANSIENTS	<2kV >2kV	± 100V ± 110V	± 100V ± 110V
DIPS AND VARIATIONS		± 3.39%	± 3.39%

SITE TESTS

MEASUREMENT		MOBILE 1	MOBILE 2
E-FIELD STRENGTH Manufacturers Site	<300MHz >300MHz	± 6.38dB ± 5.99dB	± 6.38dB ± 5.99dB
E-FIELD STRENGTH User Site	<300MHz >300MHz	± 1.68dB ± 1.68dB	± 1.68dB ± 1.68dB
CONDUCTED EMISSIONS AC Power Line	PROBE LISN/AMN	± 1.19dB ± 1.26dB	± 1.19dB ± 1.26dB

FULL MEASUREMENT UNCERTAINTY BUDGETS AND CALCULATIONS APPEAR IN PROCEDURE 54-P015.

APPENDIX C

PHOTOGRAPHS

APPENDIX D

ADDITIONAL INFORMATION

ADDITIONAL INFORMATION

Power Line Conduction Scan Data.

TRL EMC LTD

20 Mar 1998 04:21

POWERLINE CONDUCTION

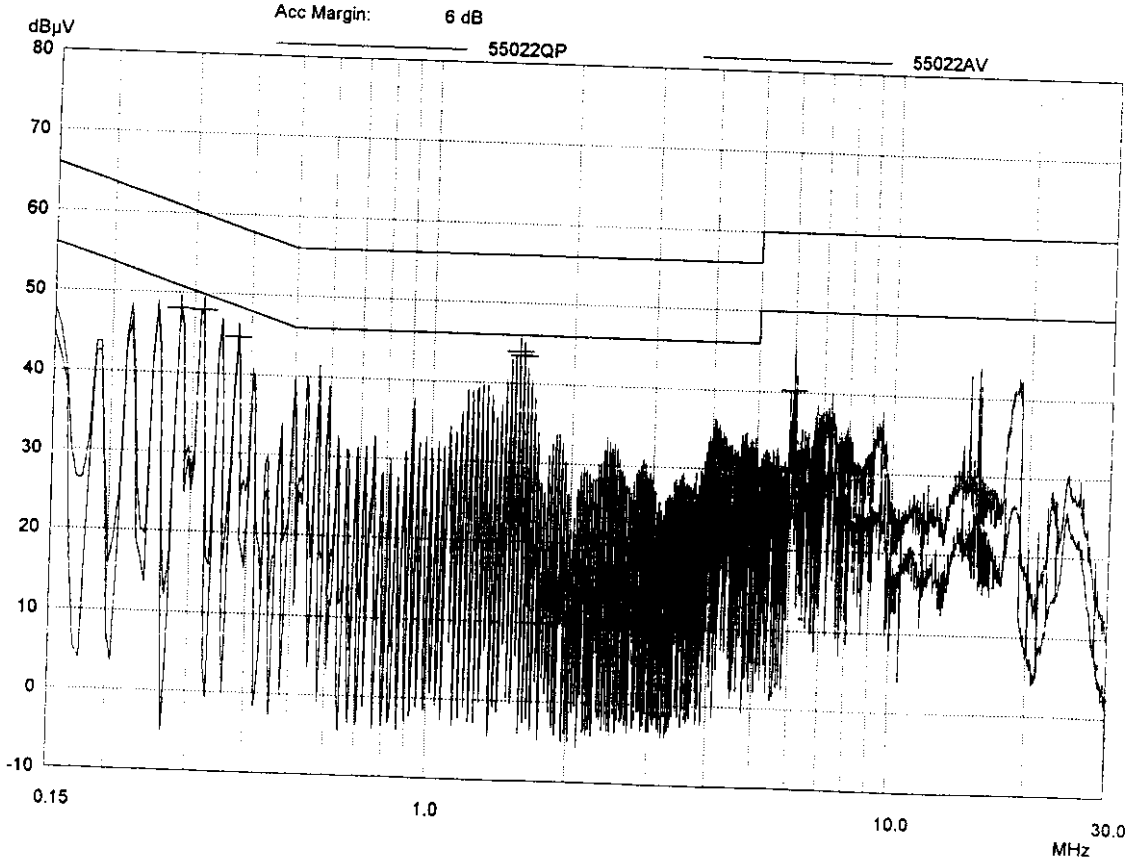
EUT:	4port rs232 pci card
Manuf:	BRAIN BOXES
Op Cond:	ESH3-Z5 LISN, TRLUH21
Operator:	J CHARTERS
Test Spec:	EN55022 CLASS B (OR VARIANT)
Comment:	NEUTRAL
File:	pc2.dat : BAIN BOXES NEUTRAL

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	5kHz	10kHz	PK+AV	10msec	Auto	OFF	60dB

Transducer	No.	Start	Stop	Name
	1	9kHz	30MHz	UH21

Final Measurement: X QP / + AV
Meas Time: 2sec
Subranges: 25
Acc Margin: 6 dB



TRL EMC LTD

20 Mar 1998 04:21

POWERLINE CONDUCTION

EUT:	4port rs232 pci card
Manuf:	BRAIN BOXES
Op Cond:	ESH3-Z5 LISN, TRLUH21
Operator:	J CHARTERS
Test Spec:	EN55022 CLASS B (OR VARIANT)
Comment:	NEUTRAL
File:	pc2.dat : BAIN BOXES NEUTRAL

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	5kHz	10kHz	PK+AV	10msec	Auto	OFF	60dB

Transducer	No.	Start	Stop	Name
	1	9kHz	30MHz	UH21

Final Measurement: X QP / + AV
Meas Time: 2sec
Subranges: 25
Acc Margin: 6 dB

Final Measurement Results:

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB

No results

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB
0.28	47.96	50.82	2.86
0.315	47.85	49.84	1.99
0.375	44.65	48.39	3.74
1.535	43.99	46.00	2.01
1.565	43.48	46.00	2.52
5.995	40.26	50.00	9.74

* limit exceeded

E-Field Scan Data.

TRL EMC LIMITED

19 Mar 1998 10:41

RADIATED EMISSIONS

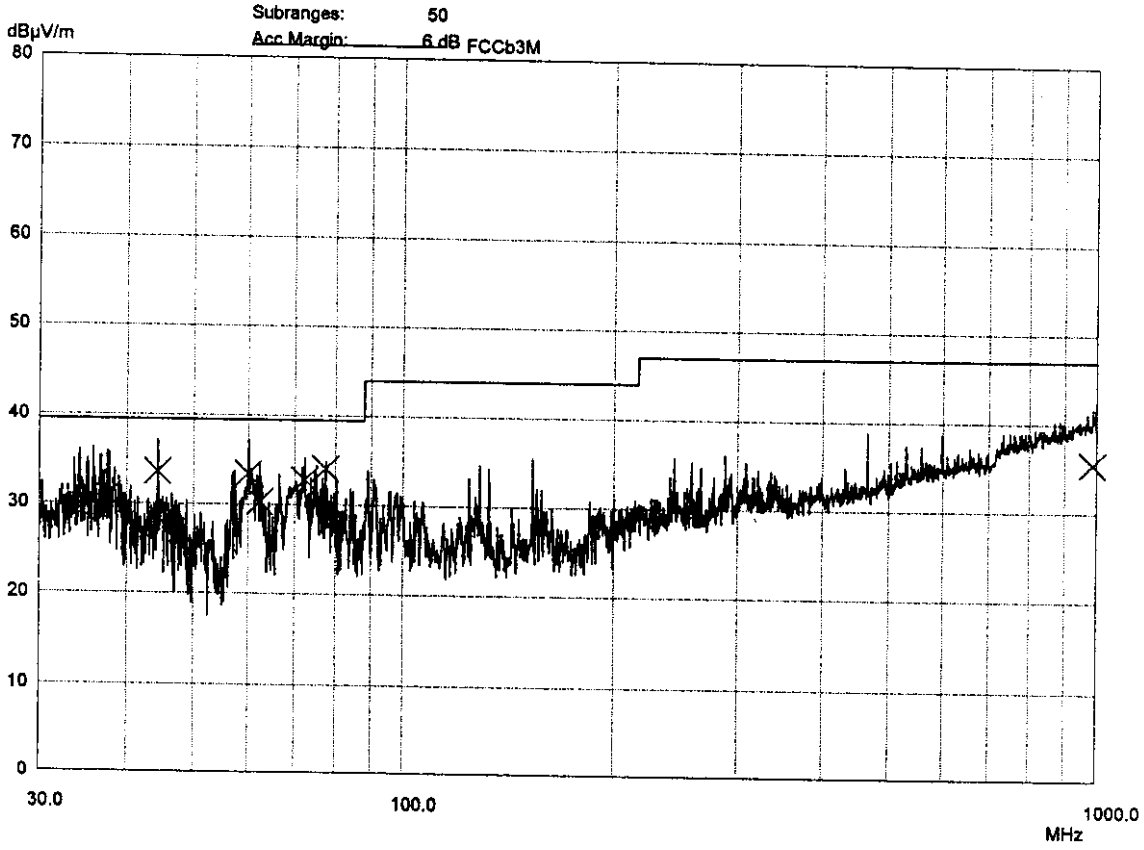
EUT:	PCI QUAD RS232 CARD
Manuf:	BRAIN BOXES
Op Cond:	PRESCAN (INDOOR) AT 3m
Operator:	J CHARTERS
Test Spec:	FCC PT. 15 LIMIT B
Comment:	NEW PRINTER CABLE - BACK TO INITIAL PRINTER
File:	6.dat : New Measurement

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
30MHz	1GHz	50kHz	120kHz	PK	1msec	Auto	ON	60dB

Transducer	No.	Start	Stop	Name
1	15	30MHz	1GHz	TRLUH72
	21	30MHz	1GHz	CBL6112

Final Measurement: X QP
Meas Time: 1sec
Subranges: 50
Acc Margin: 6 dB FCCb3M



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TRL EMC LIMITED

19 Mar 1998 10:41

RADIATED EMISSIONS

EUT: PCI QUAD RS232 CARD
Manuf: BRAIN BOXES
Op Cond: PRESCAN (INDOOR) AT 3m
Operator: J CHARTERS
Test Spec: FCC PT. 15 LIMIT B
Comment: NEW PRINTER CABLE - BACK TO INITIAL PRINTER

File: 6.dat : New Measurement

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
30MHz	1GHz	50kHz	120kHz	PK	1msec	Auto	ON	60dB

Transducer	No.	Start	Stop	Name
1	15	30MHz	1GHz	TRLUH72
	21	30MHz	1GHz	CBL6112

Final Measurement: X QP
Meas Time: 1sec
Subranges: 50
Acc Margin: 6 dB

Final Measurement Results:

Frequency MHz	QP Level dBµV/m	QP Limit dBµV/m	QP Delta dB
34.2	29.43	39.50	10.07 EUT
35.75	30.32	39.50	9.18 EUT
37.5	30.83	39.50	8.67 EUT
44.3	33.57	39.50	5.93 EUT
60.0	33.38	39.50	6.12 EUT
62.3	30.26	39.50	9.24 EUT
72.3	32.73	39.50	6.77 EUT
77.45	34.04	39.50	5.46 EUT
988.2	35.40	47.00	11.60 A.

* limit exceeded