FCC CFR47 PART 15 DIGITAL DEVICE

TEST REPORT

FOR

PCI-SOUND CARD

MODEL: A401G60

FCC ID: LWHA401G60

REPORT NUMBER: 98E7420

ISSUE DATE: AUGUST 4, 1998

Prepared for

LABWAY CORPORATION
6F, 788, CHUNG CHENG RD., CHUNG HO CITY
TAIPEI HSIEN, TAIWAN, R. O. C.

Prepared by

COMPLIANCE ENGINEERING SERVICES, INC.
No. 199, CHUNG SHENG ROAD
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NVLAP®

LAB CODE: 200064-0

COMPLIANCE
Consulting Services
FCC, VCCI, CISPR, CE
UL, CSA, TÜV

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COMPLIANCE ENGINEERING SERVICES, INC. DOCUMENT NO:CCSTP4002B
NO.199, CHUNG SHENG ROAD, HSIN TIEN, TAIPEI, TAIWAN R.O.C. TEL:(02)2217-0894/FAX:2217-1254

1. VERIFICATION OF COMPLIANCE

NVLAP LAB CODE: 200064-0

COMPANY NAME: LABWAY CORPORATION
6F, 788, CHUNG CHENG RD., CHUNG HO CITY
TAIPEI HSIEN, TAIWAN, R. O. C.

CONTACT PERSON: CHRIS FONG / MANAGER

TELEPHONE NO: (02) 323-40222

MODEL NO/NAME: A401G60

SERIAL NO: N/A

DATE TESTED: JULY 29, 1998

TYPE OF EQUIPMENT:	INFORMATION TECHNOLOGY EQUIPMENT (ITE)
MEASUREMENT DISTANCE:	( ) 3 METER (×) 10 METER
TECHNICAL LIMIT:	CLASS B
FCC RULES:	PART 15
MEASUREMENT PROCEDURE	ANSI C63.4:92 / EN55022
EQUIPMENT AUTHORIZATION PROCEDURE	CERTIFICATION
MODIFICATION MADE ON EUT	☒ YES ☐ NO
DEVIATIONS FROM MEASUREMENT PROCEDURE	☐ YES (refer to section 21 for comments) ☒ NO
RADIATED EMISSION TEST RESULT	-1.6 dB @ 147.45 MHz/VERTICAL & 73.71 MHz/HORIZONTAL
CONDUCTED EMISSION TEST RESULT	-13.1 dB @ 0.155 MHz/L1

The above equipment was tested by Compliance Engineering Services, Inc. for compliance with the requirements set forth in the FCC CFR 47, PART 15. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved By

MIKE C.I. KUO / VICE PRESIDENT
COMPLIANCE ENGINEERING SERVICES

Acknowledged By

CHRIS FONG / MANAGER
LABWAY CORPORATION

2. PRODUCT DESCRIPTION

LIST OF EACH OSC. OR XTAL. FREQ. (FREQ.>=1 MHz)	X1 = 24.576 MHz
CHIPSET BRAND AND PART NO.	ANALOG, AD1889XS
NUMBER OF PCB LAYERS	2 LAYERS
POWER REQUIREMENTS	DC 5/12V
NO. OF EXTERNAL I/O CONNECTORS	4

3. TESTED SYSTEM DETAILS

The Model names for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Host Computer

Device Type	**Manufacturer**	**Model Number**	**Serial Number**	**FCC ID**
HOST COMPUTER	VIVA	VIVA586-133	HS-06	DOC
HARD DRIVE	Maxtor	81750A4	HD-06	N/A
FLOPPY DRIVE	Panasonic	JU-257A606P	FD-06	N/A
CD-ROM DRIVE	SONY	CDU711	CD-06	AK8CDU7110
VGA CARD	TNC	TRUESPEED S3_968 PCI	CV25	JDF-968PCI-001
I/O CARD	BUILT-IN	N/A	N/A	N/A
SOUND CARD **(EUT)**	LABWAY	A401G60	N/A	LWHA401G60

External Peripheral Devices

Device Type	**Manufacturer**	**Model Number**	**Serial No.**	**FCC ID / DoC**
MONITOR	VIVA	1568	N/A	DOC
KEYBOARD	Acer	6311-TW	KB-13	JVPKBS-WIN
MOUSE	LOGITECH	M-M35	ME-05	DZL210365
PRINTER	MATSUSHITA	KX-P1080*i*	PRN-01	ACJ5Z6KX-P1080I
JOYSTICK	LOGITECH	3119	JOY-05	N/A
SPEAKER	J-S	J-003	SPK-04	N/A
PLAYER	Matsushita	RQ-L317	PLY-02	N/A
MICROPHONE	KOKA	DM-510	MIC-04	N/A

4. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at No. 199, Chung Sheng Road, Hsin Tien City, Taipei, Taiwan R.O.C. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5. ACCREDITATION AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code:200064-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT(1300F2))

6. MEASUREMENT INSTRUMENTATION

Radiated emissions were measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, ridged waveguide, liner horn. EMI receivers were used for line conducted readings, spectrum analyzers with pre-selectors and quasi-peak detectors were used to perform radiated measurements. Receiving equipment (i.e., receiver, analyzer, quasi-peak adapter, pre-selector) and LISNs conform to CISPR specification for "Radio Interference Measuring Apparatus and Measurement Methods," Publication 16.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

7. MEASURING INSTRUMENT CALIBRATION

The measuring equipment which was utilized in performing the tests documented herein has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment which is traceable to recognized national standards.

8. UNITS OF MEASUREMENT

Measurements of radiated interference are reported in terms of dB(uV/m) at a specified distance. The indicated readings on the spectrum analyzer were converted to dB(uV/m) by use of appropriate conversion factors. Measurements of conducted interference are reported in terms of dB(uV).

The field strength is calculated by adding the Antenna Factor and Cable Factors, then by subtracting the Amplifier Gain from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG

Where FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor
AG = Amplifier Gain

Assume a receiver reading of 52.5 dBuV is obtained. The Antenna Factor of 7.4dB/m and a Cable Factor of 1.1dB is added. The Amplifier Gain of 29 dB is subtracted, giving a field strength of 32 dBuV/m. The 32 dBuV/m value was mathematically converted to its corresponding level in uV/m.

FS = 52.5 + 7.4 + 1.1 - 29 = 32 dBuV/m

Level in uV/m = Common Antilogarithm [(32 dBuV/m)/20] = 39.8 uV/m

9. ANTENNAS

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 10 meters from the leading edge of the turn table.

10. CLASSIFICATION OF DIGITAL DEVICE

Class A includes digital devices that are marketed for use in commercial, industrial or business environments, excluding devices which are marketed for use by the general public or are intended to be used in the home.

Class B includes digital devices that are marketed for use in residential environments, notwithstanding use in commercial, business and industrial environments.

Note: The responsible party may also qualify a device intended to be marketed in a commercial, business or industrial environment as

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Class B device, and in fact is encouraged to do so provided the device complies with the technical specifications for a Class B digital device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B digital device, regardless of its intended use.

11. RADIATED EMISSION LIMITS

FCC PART 15 CLASS B

MEASURING DISTANCE OF 3 METER		
FREQUENCY RANGE (MHz)	FIELD STRENGTH (Microvolts/m)	FIELD STRENGTH (dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

FCC CLASS B ALTERNATIVE DISTANCE (CISPR 22:1993)

MEASURING DISTANCE OF 10 METER		
FREQUENCY RANGE (MHz)	FIELD STRENGTH (Microvolts/m)	FIELD STRENGTH (dBuV/m)
30-88	30	29.5
88-216	45	33.0
216-960	60	35.6
960-1000	150	43.5
ABOVE 1000	150	43.5

Note: Limits extrapolated 20dB/decade

FCC PART 15 CLASS A

MEASURING DISTANCE OF 10 METER		
FREQUENCY RANGE (MHz)	FIELD STRENGTH (Microvolts/m)	FIELD STRENGTH (dBuV/m)
30-88	90	39.1
88-216	150	43.5
216-960	210	46.4
Above 960	300	49.5

12. CONDUCTED EMISSION LIMITS

CLASS B

FREQUENCY RANGE	FIELD STRENGTH (Microvolts)	FIELD STRENGTH (dBuV)
450kHz-30MHz	250	48

CLASS A

FREQUENCY RANGE	FIELD STRENGTH (Microvolts)	FIELD STRENGTH (dBuV)
450kHz-1.705MHz	1000	60
1.705MHz - 30MHz	3000	69.54

13. CONDUCTED EMISSION TEST PROCEDURE

The EUT is located so that the distance between the boundary of the EUT and the closest surface to the LISN is 0.8m.

EUT test configuration is according to Section 7 of ANSI C63.4/1992.

Conducted disturbance shall be measured between the phase lead and the ground, and between the neutral lead and the ground. The frequency 0.450 - 30 MHz shall be investigated.

Set the EMI receiver to PEAK detector setting and sweep continuously over the frequency range to be investigated. Set resolution bandwidth to 9kHz minimum. Connect EMI receiver input cable to LINE 1 RF measurement connection on the LISN. Connect a 50ohm terminator to the unused RF connection on the LISN. For each mode of EUT operation, maximize emissions readings by manipulating cable and wire positions. Record the configuration for each EUT power cord which produces emissions closest to the limit. Repeat the same procedure for LINE 2 of each EUT power cord.

14. RADIATED EMISSION TEST PROCEDURE

The EUT and all other support equipment are placed on a wooden table 80 cm above the ground screen. Antenna to EUT distance is either 3 meters or 10 meters (Class B or Class A). During the test, the table is rotated 360 degrees to maximize emissions, and the antenna is positioned from 1 to 4 meters above the ground screen to further maximize emissions. The antenna is polarized in both vertical and horizontal positions.

EUT test configuration is according to Section 8 of ANSI C63.4/1992.

Monitor the frequency range of interest at a fixed antenna height and EUT azimuth. Frequency span should be small enough to easily

differentiate between broadcast stations and intermittent ambients. Rotate EUT 360 degrees to maximize emissions received from EUT. If emission increases by more than 1 dB, or if another emission appears that is greater by 1 dB, return to azimuth where maximum occurred and perform additional cable manipulation to further maximize received emission.

Move antenna up and down to further maximize suspected highest amplitude signal. If emission increased by 1 dB or more, or if another emission appears that is greater by 1dB or more, return to antenna height where maximum signal was observed and manipulate cables to produce highest emissions, noting frequency and amplitude.

15. AMBIENT CONDITIONS

The ambient conditions at the time of final tests were as follows:

	Radiated Emission	Conducted Emission
Temperature	31℃	33℃
Humidity	81%	81%

16. SYSTEM TEST CONFIGURATION

The equipment under test was configured and operated in a manner which tended to maximize its emission characteristics in a typical application. Power and signal distribution, ground, interconnecting cabling and physical placement of equipment simulated the typical application and usage insofar as practicable.

SOFTWARE USED DURING THE TESTS	
Operating System	MS-DOS 6.22
File Name	MKECDAPL.EXE, EMITEST.EXE
Program Sequence	1. MS-DOS 6.22 BOOTS SYSTEM. 2. RUN MKECDAPL.EXE SET CD-ROM DRIVE TO PLAY CD. 3. RUN EMITEST.EXE EXCUTE TO ALL PERIPHERALS AND DISPLAY "H" PATTERN ON MONITOR SCREEN.

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17. EQUIPMENT MODIFICATIONS

To achieve compliance to CLASS B levels, the following change(s) were made during compliance testing:

Mod.#1 ADDED A R-C LOW PASS FILTER ON THE #60 PIN OUTPUT OF U3 CHIPSET.(R=47 Ω, C=20 pF)

Mod.#2 ADDED A 20 pF BYPASS CAPACITOR ON THE #2 OF U1 CHIPSET.

Mod.#3 ADDED A 0.01 μF CAPACITOR AT EACH PIN(1, 2, 7, 9, 10, 14, 15 PIN) BYPASS OF J5.

Mod.#4 REPLACED R27 RESISTOR TO 5.1 Ω.

Mod.#5 DELETED L2 FERRITE BEAD.

Mod.#6 SOLDERED BRACKET GROUNDS WITH J1, J2 AND J4 GROUND PINS.

Mod.#7 SOLDERED WITH CHASSIS GROUND AND DIGITAL GROUND AT SOLDERED SIZE ON THE FOLLOWING POINTS: (1) L2 GROUND.
(2) TOP OF C16 GROUND.
(3) R18 GROUND.

Mod.#8 ADDED 0.01 μF BYPASS CAPACITORS ON 1 AND 4 PINS OF J2.

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19. TEST EQUIPMENT LIST

Equipment	Manuf.	Model No.	Serial No.	Site	Cal Date	Due Date
EMI TEST DISPLAY	ROHDE & SCHWARZ	DSAI-D 804.8932.52	827832/001	D	11/97	11/98
EMI TEST RF UNIT	ROHDE & SCHWARZ	ESBI-RF/1005.4300.52	827832/001	D	11/97	11/98
AMPLIFIER	H.P.	8447E A	272A02379	D	12/97	12/98
ANTENNA	EMC TEST SYSTEMS	CBL6111	1118	D	4/98	4/99
LISN(EUT)	EMCO	3825/2	1842	D	1/98	1/99
LISN	EMCO	3825/2	1435	D	6/98	6/99
CABLE	TALLEY	HELIX FSJ4-50B	D0301	D	12/97	12/98
CABLE	TIME MICROWAVE	LMR-400-2	D1001	D	12/97	12/98
SPECTRUM ANALYZER	H.P.	8568B	2928A04814	E	2/98	2/99
SPECTRUM DISPLAY	H.P.	85662A	2848A18276	E	2/98	2/99
QUASI-PEAK DETECTOR	H.P.	85650A	2811A01439	E	2/98	2/99
AMPLIFIER	H.P.	8447D B	1644A02328	E	4/98	4/99
ANTENNA	CHASE	CBL6111A	1547	E	10/97	10/98
TEST RECEIVER	ROHDE & SCHWARZ	ESHS20	840455/006	E	2/98	2/99
LISN	EMCO	3825/2	1371	E	9/97	9/98
LISN(EUT)	FISCHER	FCC-LISN-50/250 -25-2	107	E	4/98	4/99
CABLE	TIME MICROWAVE	LMR-400-2	E1001	E	4/98	4/99
CABLE	TALLEY	HELIX FSJ4-50B	E0301	E	4/98	4/99

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20. CORRECTION FACTOR

OATS NO. D

	ANTENNA 3 METER			ANTENNA 10 METER			SITE D
FREQ (MHZ)	HORI.	VERT.	CABLE LOSS (dB)	HORI.	VERT.	CABLE LOSS (dB)	AMP GAIN (dB)
30	20.35	17.65	0.66	18.32	16.84	0.68	22.26
35	16.29	15.02	0.68	15.33	14.36	0.73	22.23
40	13.65	12.09	0.73	13.11	11.87	0.83	22.26
45	10.69	9.88	0.81	10.31	9.70	0.91	22.24
50	8.42	7.42	0.81	8.46	8.25	0.92	22.21
60	5.29	5.81	0.92	5.41	4.57	1.02	22.15
70	5.12	4.95	0.99	5.75	4.91	1.09	22.11
80	6.46	6.71	1.05	6.93	7.29	1.15	22.20
90	8.14	8.86	1.01	8.37	8.46	1.22	22.21
100	9.70	10.47	1.09	9.72	9.16	1.32	22.14
120	11.09	12.51	1.14	11.09	11.04	1.37	22.14
125	11.20	12.32	1.27	11.13	11.27	1.53	22.03
140	11.59	12.46	1.35	10.86	10.91	1.57	22.09
150	11.05	11.35	1.35	10.34	11.02	1.63	22.06
160	10.56	11.08	1.39	9.92	10.16	1.70	22.18
175	9.55	9.91	1.50	9.17	9.08	1.76	22.21
180	9.50	9.70	1.42	8.86	9.26	1.72	22.18
200	9.95	10.14	1.50	8.58	9.66	1.80	22.26
250	12.24	11.70	1.65	11.60	12.01	1.93	22.31
300	13.84	12.71	1.72	13.05	13.35	2.08	22.34
400	16.54	15.85	2.08	16.21	16.36	2.49	22.39
500	18.70	18.45	2.41	18.41	18.60	2.85	22.34
600	19.92	19.67	2.70	19.74	19.63	3.18	22.46
700	21.43	21.14	2.92	21.37	21.20	3.53	22.44
800	22.50	22.88	3.35	22.53	22.73	3.89	22.06
900	22.36	22.66	3.53	23.34	22.95	4.32	21.81
1000	24.74	24.69	3.81	25.66	24.40	4.42	21.12
1100	24.29	24.47	4.04	24.77	24.71		21.32
1200	25.41	25.82	4.77	25.49	25.46		21.30
1300	28.33	28.45	4.90	28.12	28.11		21.01
1400	26.16	26.59	7.80	28.07	27.15		
1500	29.20	29.24	6.63	29.21	28.69		
1600	27.44	27.79	5.53	28.59	28.24		
1700	31.27	30.79	5.48	29.31	28.76		
1800	32.61	31.49	5.64	31.25	31.19		
1900	33.54	32.74	6.22	34.18	32.01		
2000	32.01	32.34	5.74	32.71	32.21		

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21. TEST RESULT SUMMARY

Preliminary Radiated Emission Tests were performed at the 10 meter open area test site. CCS test procedure no:CCSUE2001B and the procedure listed in ANSI C63.4 /1992 section 8.3.1.1. were used. The following preliminary tests were conducted to determine the worst mode of operation and configuration.

Preliminary Radiated Emission Test			
Frequency Range Investigated		30 MHz TO 1000 MHz	
Mode of operation	Date	Data Report No.	Worst Mode
NORMAL MODE	7/29/98	980729D2	☒

Final Radiated Emission Test was conducted by operating the worst mode as indicated above.

OATS No: D / 10 M	Data Report No. 980729D2	Date 7/29/98	Tested By: ERIC LIN

Six Highest Radiated Emission Readings

Frequency Range Investigated				30 MHz TO 1000 MHz			
Freq (MHz)	Meter Reading (dBm)	C.F. (dB/m)	Corrected Reading (dBuV)	Limits (dBuV)	Margin (dB)	Reading Type P/Q/A	Pol. H/V
73.70	-65.0	-15.2	26.8	30	-3.2	Q	V
85.98	-68.0	-13.0	26.0	30	-4.0	P	V
122.87	-71.6	-9.4	26.0	30	-4.0	P	V
147.45	-69.1	-9.5	28.4	30	-1.6	Q	V
73.71	-63.8	-14.8	28.4	30	-1.6	Q	H
120.01	-72.0	-9.7	25.3	30	-4.7	P	H

C.F.(Correction Factor)=Antenna Factor+Cable Loss-Amplifier Gain
Corrected Reading = Metering Reading + C.F.
Margin=Corrected Reading - Limits
P=Peak Reading H=Horizontal Polarization/Antenna
Q=Quasi-peak V=Vertical Polarization/Antenna
A=Average Reading

Comments: **N/A**

Preliminary Conducted Emission Tests were performed according to CCS test procedure no:CCSUE2002B and ANSI C63.4/1992 section 7.2.3. The following preliminary tests were conducted to determine the worst mode of operation.

Preliminary Conducted Emission Test			
Frequency Range Investigated		150 kHz TO 30 MHz	
Mode of operation	Date	Data Report/Plot No.	Worst Mode
NORMAL MODE	7/29/98	980729E1~2 / N/A	☒

Final Conducted Emission Test was conducted by operating the worst mode as indicated above.

Conducted Room	Plot No	Date	Tested By:
	N/A	7/29/98	ERIC LIN

Six Highest Conducted Emission Readings

Frequency Range Investigated				150 kHz TO 30 MHz			
Freq (MHz)	Meter Reading (dBuV)	C.F. (dB)	Corrected Reading (dBuV)	Limits (dBuV)	Margin (dB)	Reading Type (P/Q/A)	Line (L1/L2)
0.155	52.6	0	52.6	65.9	-13.1	P	L1
0.200	47.9	0	47.9	63.6	-15.7	P	L1
0.580	42.0	0	42.0	56.0	-14.0	P	L1
0.660	42.8	0	42.8	56.0	-13.4	P	L1
0.730	38.6	0	38.6	56.0	-17.4	P	L1
0.150	48.2	0	48.2	66.0	-17.8	P	L2

C.F.(Correction Factor)=Insertion Loss + Cable Loss
Corrected Reading = Metering Reading + C.F.
Margin=Corrected Reading - Limits
P=Peak Reading L1=Hot
Q=Quasi-peak L2=Neutral
A=Average Reading

Comments: **N/A**

APPENDICES

EXTERNAL I/O CABLE CONSTRUCTION DESCRIPTION

CONFIGURATION BLOCK DIAGRAM

CONDUCTED EMISSION PLOT

RADIATED EMISSION DATA

EUT PHOTOGRAPHS

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External I/O Cable Construction Description

CABLE NO: **1**	Number of I/O ports of this type: **1**
I/O Port: **MIDI/JOYSTICK**	Connector Type: **DB15**
Capture Type: **Snap-In**	Type of Cable used: **Un-Shielded**
Cable Connector Type: **Molded**	Cable Length: **1.5 M**
Bundled During Tests: **No**	Data Traffic Generated: **Yes**
Remarks: **N/A**	

CABLE NO: **2, 4, 5**	Number of I/O ports of this type: 3
I/O Port: **AUDIO OUT, MIC IN, LINE IN**	Connector Type: **Phone Jack**
Capture Type: **Snap-In**	Type of Cable used: **Un-Shielded**
Cable Connector Type: **Molded**	Cable Length: **1.2 M, 2.0 M, 1.5 M**
Bundled During Tests: **No, Yes, No**	Data Traffic Generated: **Yes**
Remarks: **N/A**	

CABLE NO: **3**	Number of I/O ports of this type: **1**
I/O Port: **KB**	Connector Type: **DIN-5 Pin**
Capture Type: **Snap-In**	Type of Cable used: **Shielded**
Cable Connector Type: **Molded**	Cable Length: **1.8 M**
Bundled During Tests: **No**	Data Traffic Generated: **Yes**
Remarks: **N/A**	

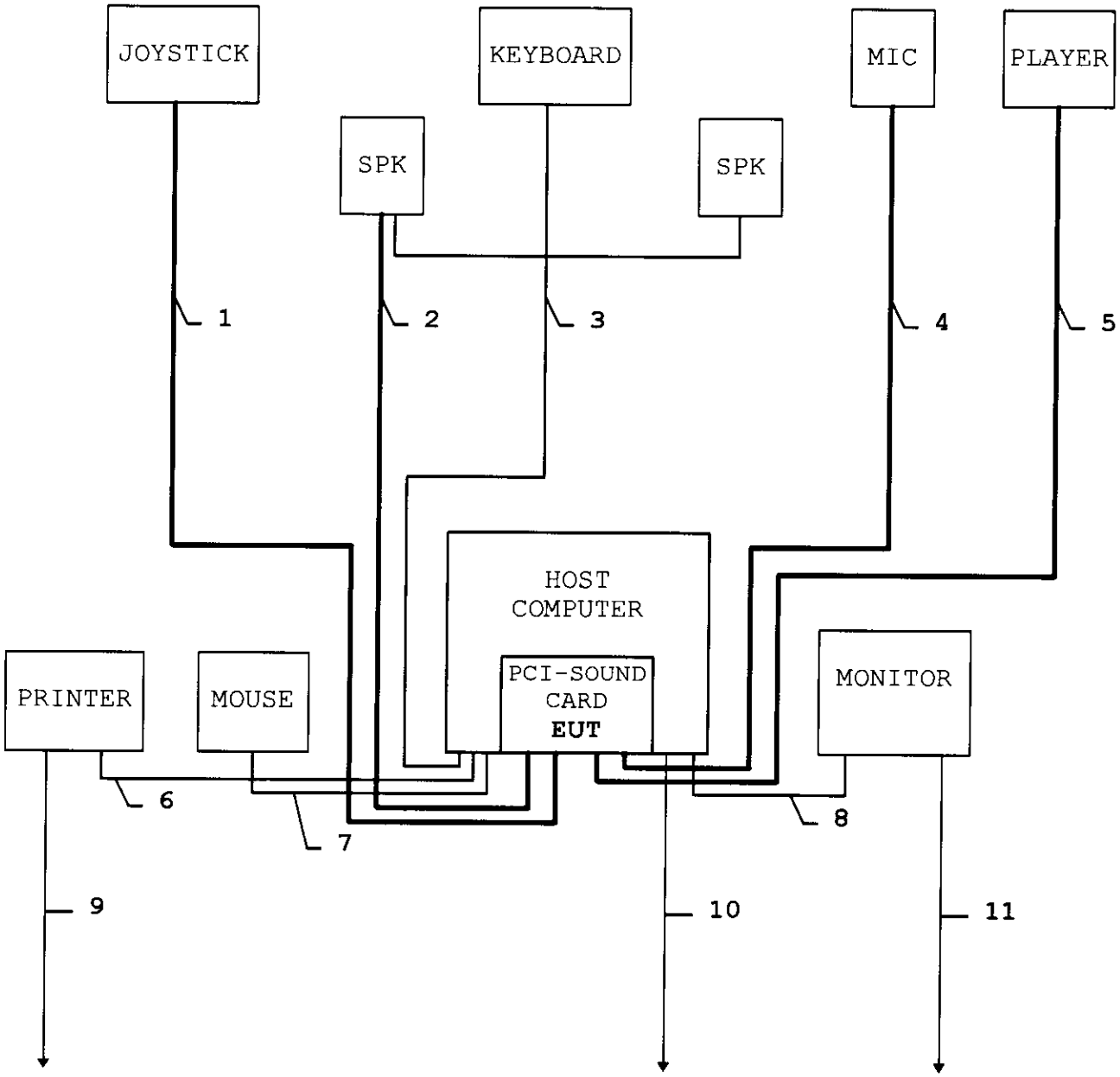
CABLE NO: **6**	Number of I/O ports of this type: **1**
I/O Port: **Parallel**	Connector Type: **DB25**
Capture Type: **Screw-In**	Type of Cable used: **Shielded**
Cable Connector Type: **Molded**	Cable Length: **1.8 M**
Bundled During Tests: **Yes**	Data Traffic Generated: **Yes**
Remarks: N/A	

CABLE NO: **7**	Number of I/O ports of this type: **1**
I/O Port: **Serial Mouse**	Connector Type: **DB9**
Capture Type: **Screw-In**	Type of Cable used: **Un-Shielded**
Cable Connector Type: **Molded**	Cable Length: **1.8 M**
Bundled During Tests: **No**	Data Traffic Generated: **Yes**
Remarks: N/A	

CABLE NO: **8**	Number of I/O ports of this type: **1**
I/O Port: **VGA**	Connector Type: **DB15**
Capture Type: **Screw-In**	Type of Cable used: **Shielded**
Cable Connector Type: **Molded**	Cable Length: **1.2 M**
Bundled During Tests: **No**	Data Traffic Generated: **Yes**
Remarks: **N/A**	

CABLE NO: **9~11**	Number of I/O ports of this type: **3**
I/O Port: **Power Cord**	Connector Type: **AC Inlet**
Capture Type: **Snap-In**	Type of Cable used: **Un-Shielded**
Cable Connector Type: **Molded**	Cable Length: **1.8 M**
Bundled During Tests: **No (Radiation), Yes (Line Conduction)**	Data Traffic Generated: **No**
Remarks: N/A	

Configuration Block Diagram



COMPLIANCE ENGINEERING SERVICES, INC. 29. Jul 98 18: 40

RFI VOLTAGE TEST.

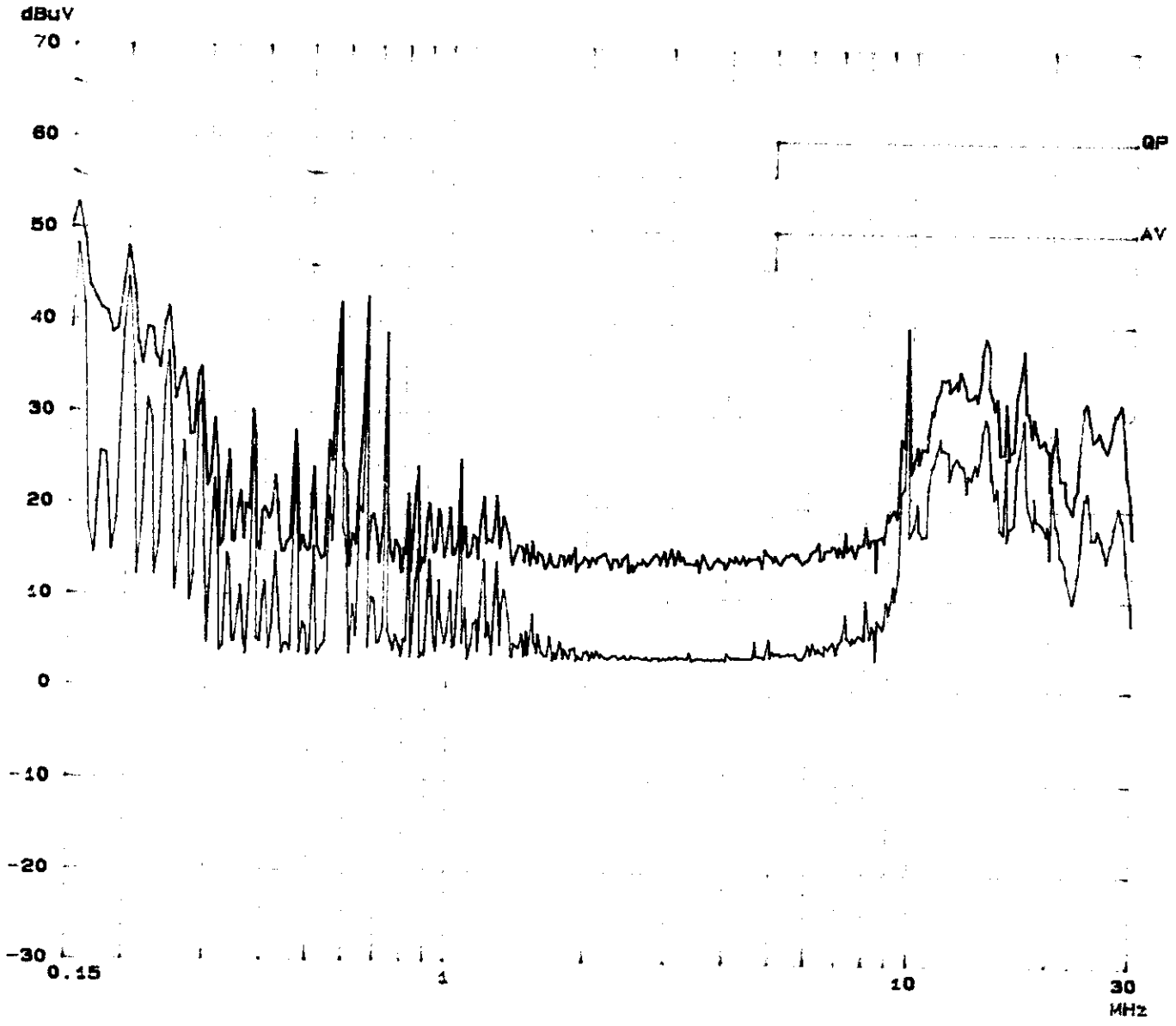
Eric

EUT: A401960
Manuf: LABWAY CORPORATION
Op Cond: NORMAL MODE
Operator: ERIC LIN
Test Spec: EN55022 CLASS B
Comment: LINE 1 , PEAK (RED) , AVERAGE (BLUE)

Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150K	500K	5K	10K	PK+AV	100ms	AUTO	LN OFF	80dB
500K	10M	10K	10K	PK+AV	20ms	AUTO	LN OFF	80dB
10M	30M	20K	10K	PK+AV	20ms	AUTO	LN OFF	80dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 2dB



COMPLIANCE ENGINEERING SERVICES, INC. 29. Jul 98 18: 44
RFI VOLTAGE TEST.

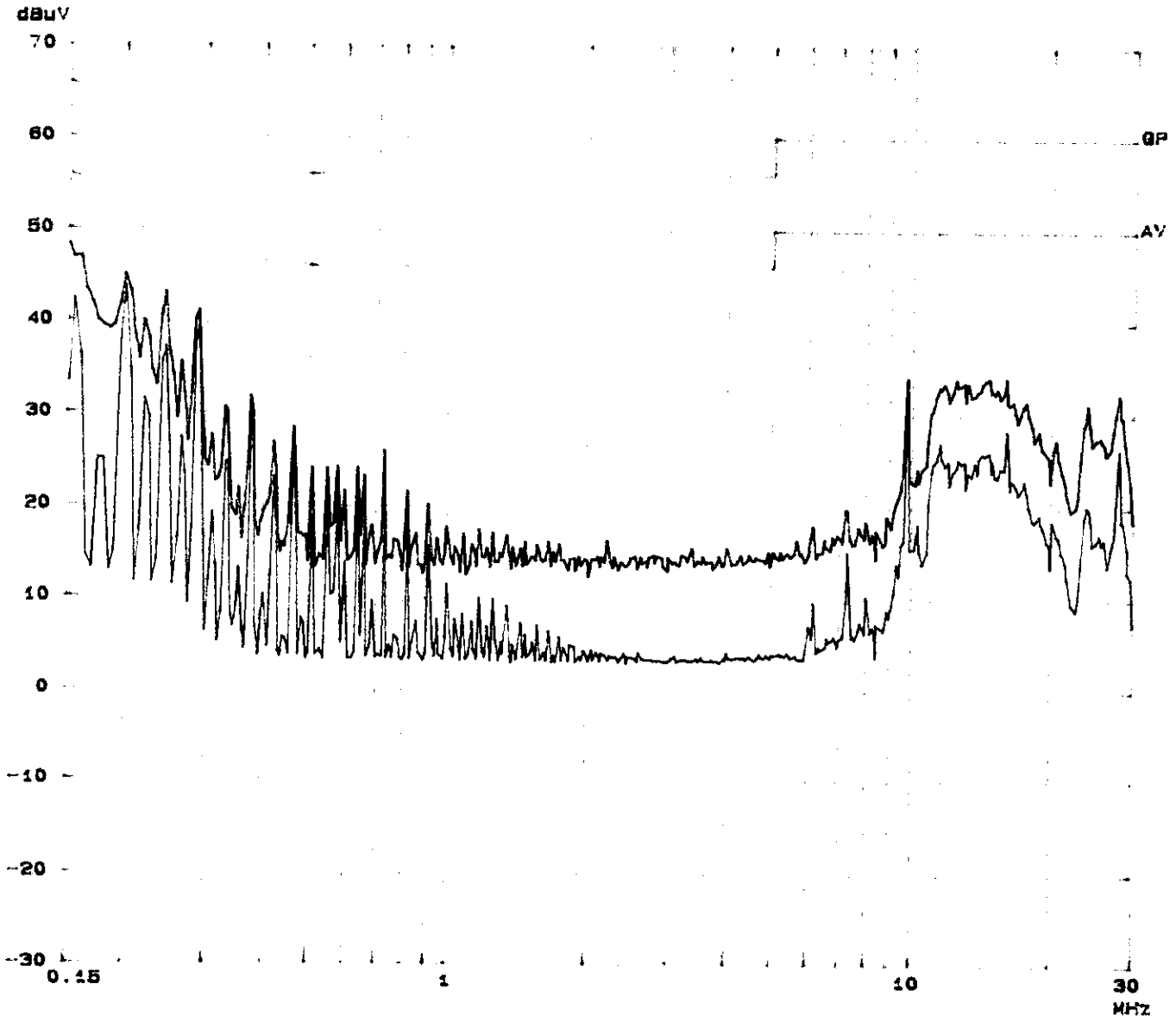
Eric

EUT: A401650
Manuf: LABWAY CORPORATION
Op Cond: NORMAL MODE
Operator: ERIC LIN
Test Spec: EN55022 CLASS B
Comment: LINE 2 . PEAK (RED) . AVERAGE (BLUE)

Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	500k	5k	10k	PK+AV	100ms	AUTO	LN OFF	60dB
500k	10M	10k	10k	PK+AV	20ms	AUTO	LN OFF	60dB
10M	30M	20k	10k	PK+AV	20ms	AUTO	LN OFF	60dB

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 2dB



Compliance Engineering Services, Inc.

>> 10 M RADIATED EMISSION DATA <<

Report No. : 980729D2
Date : 07/29/1998
Time : 13:39
Test Engr : ERIC LIN

Company : LABWAY CORPORATION
Equipment Under Test : A401G60
Test Configuration : EUT/HS06/MONITOR/KB13/ME05/JOY05/PRN01/PLY02 SPK04/MIC04
Type of Test : EN55022 CLASS B
Mode of Operation : NORMAL MODE

Freq.	dBm	CF(dB)	dBuV	EN55022-A	EN55022-B	EUT-A	EUT-B	Note
48.30	-71.3	-12.6	23.1	40.0	30.0	-16.9	-6.9	Vertical
QP READING AT 73.7MHZ								
73.70	-65.0	-15.2	26.8	40.0	30.0	-13.2	-3.2	Vertical
85.98	-68.0	-13.0	26.0	40.0	30.0	-14.0	-4.0	Vertical
122.87	-71.6	-9.4	26.0	40.0	30.0	-14.0	-4.0	Vertical
135.17	-72.7	-9.5	24.8	40.0	30.0	-15.2	-5.2	Vertical
QP READING AT 147.45MHZ								
147.45	-69.1	-9.5	28.4	40.0	30.0	-11.6	-1.6	Vertical
QP READING AT 73.71MHZ								
73.71	-63.8	-14.8	28.4	40.0	30.0	-11.6	-1.6	Horizontal
85.97	-70.7	-13.2	23.1	40.0	30.0	-16.9	-6.9	Horizontal
120.01	-72.0	-9.7	25.3	40.0	30.0	-14.7	-4.7	Horizontal
147.46	-72.4	-10.0	24.6	40.0	30.0	-15.4	-5.4	Horizontal
200.50	-74.1	-11.8	21.1	40.0	30.0	-18.9	-8.9	Horizontal
208.89	-73.5	-11.3	22.2	40.0	30.0	-17.8	-7.8	Horizontal

Total # of data 12

V2.0.a