EMC

TEST REPORT

REPORT NO. : F86092301
MODEL NO. : SBC-555
DATE OF TEST : Oct. 8, 1997

MULTIPLE LISTING FOR: AAEON TECHNOLOGY INC.
MODEL: SBC-554V

PREPARED FOR: AAEON TECHNOLOGY INC.

ADDRESS : 1F, NO. 6, ALLEY 6, LANE 45, PAO-HSIN RD.,
HSIN-TIEN CITY, TAIPEI, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

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1. CERTIFICATION

Issue Date: Oct. 24, 1997

Product	:	CPU BOARD
Trade Name	:	AAEON
Model No.	:	SBC-555
Applicant	:	AAEON TECHNOLOGY INC.
Standard	:	FCC Part 15, Subpart B, Class A 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 Oct. 8, 1997. 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 A limits of conducted and radiated emission of applicable standards.

PREPARED BY: Sharon Hsiung , DATE: 10/24/97
(Sharon Hsiung)

TESTED BY: ELLIS WU , DATE: 10/24/97
(Ellis Wu)

APPROVED BY: , DATE: 10/24/97
(Harris W. Lai)

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	CPU BOARD
Model No.	:	SBC-555
Power Supply	:	Switching
Data Cable	:	N/A

Note: The EUT has two model names which are identical to each other in all aspects except for the followintg:

* Model: SBC-555, BUS interface: ISA
* Model: SBC-554V, BUS interface: PISA (PCI+ISA)

From the above two models, model: SBC-555 was chosen as representative model and its data is recorded in this report.

During the test, the EUT was installed in a metal enclosure with a slot board to form an industrial PC. The other parts of industrial PC includes the following:

* Case: AAEON, model: AIPC-110
* Switching power supply: SEASONIC, model: SSG-250G
* VGA Card: AAEON, model: DPC-421 (for model: SBC-400 and SBC-410)

The EUT was tested under the CPU: MMX 200 MHz, frequency of clock generator is 66.6 MHz.

For more detailed features description, 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	KEYBOARD	TATUNG	FDA-102A	F4Z4K3FDA-102A	Shielded Signal (1.2m)
2	COLOR MONITOR	ADI	937G	BR8937G	Shielded Signal (1.5m) Nonshielded Power(1.8m)
3	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.9m)
4	MODEM	DATATRONICS	1200CK	E2O5OV1200CK	Shielded signal (1.2m) Nonshielded Power (1.9m)
5	USB KEYBOARD	BTC	7932	E5XKBUCP10410	Shielded signal (1.7m)

Note: A USB cable (1.2m) was connected to the USB port of the EUT to form an open loop.

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	March 24, 1998
ROHDE & SCHWARZ TEST RECEIVER	ESVS 30	841977/008	Oct. 5, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 29, 1997
CHASE BiLOG Antenna	CBL6111A	1647	Aug. 2, 1998
EMCO Double Ridged Guide Antenna	3115	9312-4192	March 21, 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

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: 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) dBuV/m	Class B (at 10m) 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	:	26 ℃
Humidity	:	49 %
Atmospheric Pressure	:	1060 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -24.8 dB at 19.239 MHz Minimum passing margin of radiated emission: -8.6 dB at 465.00 MHz

4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
2. Industrial PC reads a test program to enable all functions.
3. The Industrial PC reads and writes messages from HDD.
4. The Industrial PC sends "H" messages to monitor and monitor display "H" patterns on screen.
5. The Industrial PC sends "H" messages to modem.
6. The Industrial PC sends "H" messages to printer, and the printer prints them on paper.
7. Repeat steps 2-7.

4.1.2 TEST DATA OF CONDUCTED EMISSION

EUT: **CPU BOARD** MODEL: **SBC-555**

6 dB Bandwidth: 10 kHz

TEST PERSONNEL: ELLIS WU

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
0.159	53.00	-	53.00	-	79.00	66.00	-26.0	-	-26.0	-
0.189	47.70	-	46.80	-	79.00	66.00	-31.3	-	-32.2	-
0.581	31.60	-	31.50	-	73.00	60.00	-41.4	-	-41.5	-
6.180	36.20	-	40.00	-	73.00	60.00	-36.8	-	-33.0	-
11.872	41.40	-	41.60	-	73.00	60.00	-31.6	-	-31.4	-
19.239	48.20	-	48.00	-	73.00	60.00	-24.8	-	-25.0	-

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 A

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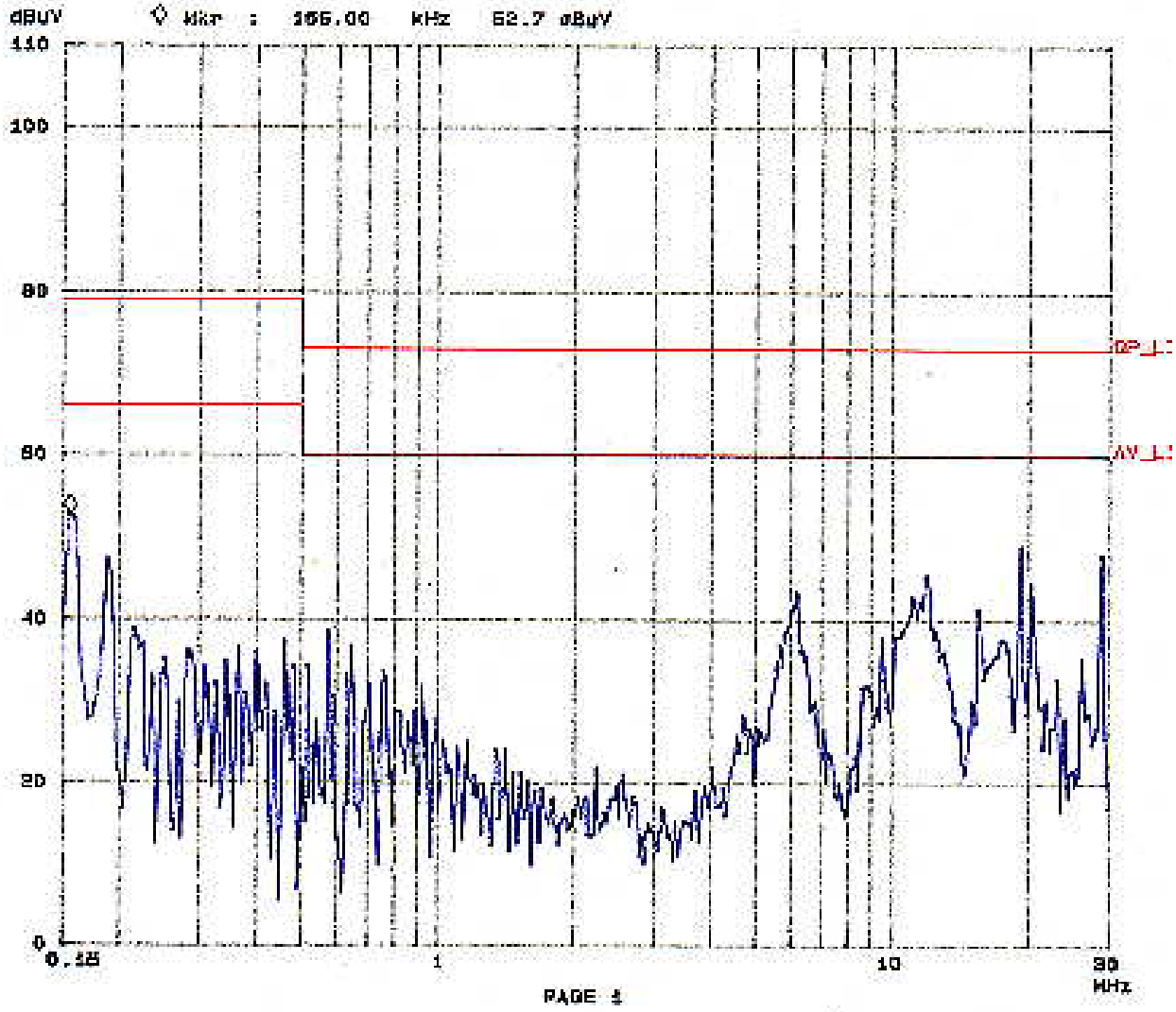
Tested by ELLIS WD

EUT: 88C-559
Operator: ELLIS
Test Spec: LISN : L
Comment: 120V AC/60Hz

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150K	450K	3K	10k	PK	0.05ms	10dBLN	OFF	60dB
450K	6M	3K	10k	PK	0.05ms	10dBLN	OFF	60dB
6M	30M	3K	10k	PK	0.05ms	10dBLN	OFF	60dB



ADT CO. SITE 5
CISPR 22 CLASS A

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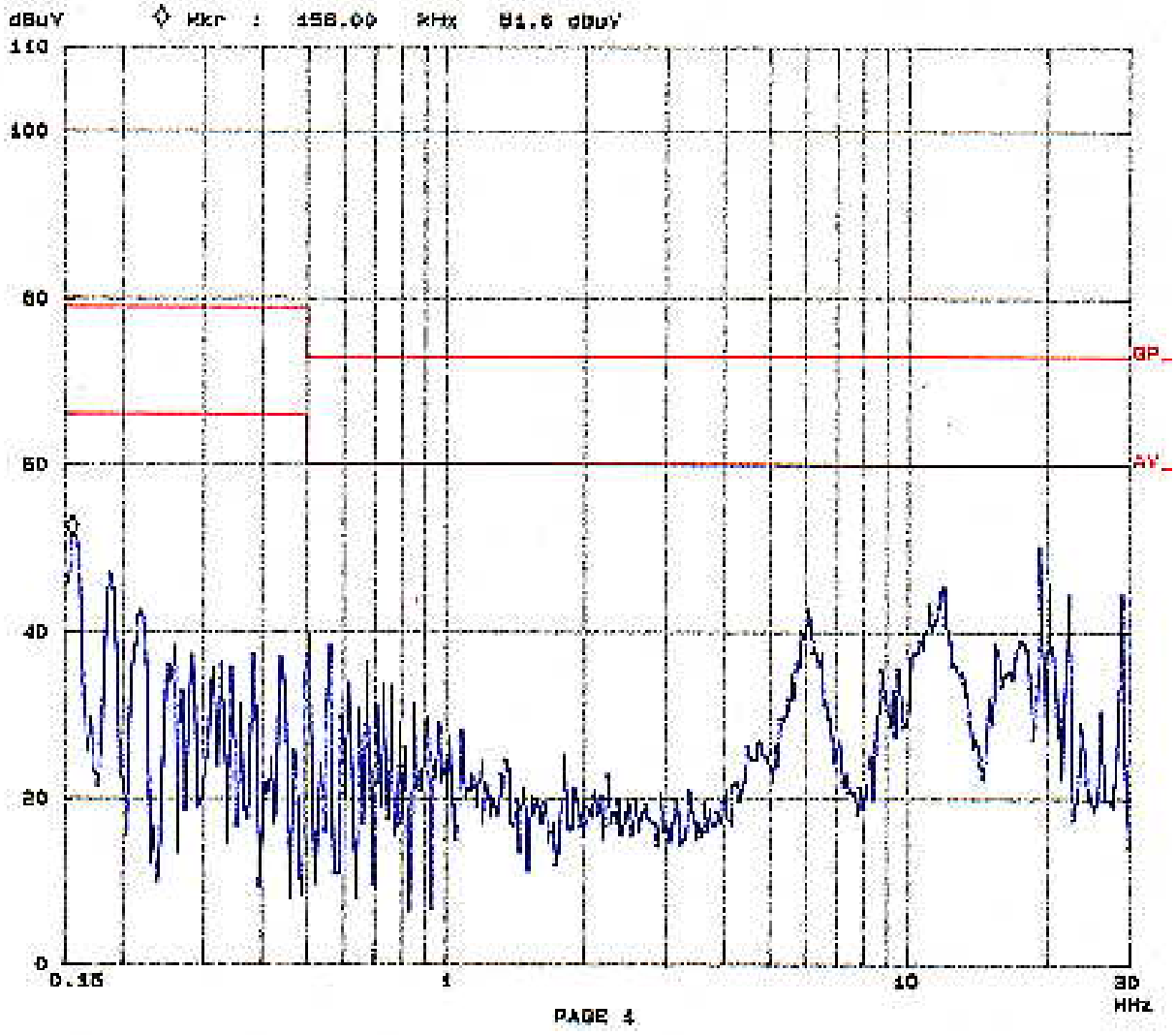
Tested by ELLIS WJ

EUT: 88C-885
Operator: ELLIS
Test Spec: LISN : N
Comment: 120V AC/60Hz

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	450k	2k	10k	PK	0.05ms	10dBLN	OFF	60dB
450k	5M	2k	10k	PK	0.05ms	10dBLN	OFF	60dB
5M	30M	2k	10k	PK	0.05ms	10dBLN	OFF	60dB



4.1.3 TEST DATA OF RADIATED EMISSION

EUT: **CPU BOARD** MODEL: **SBC-555**

ANTENNA: CHASE BILOG CBL6111A POLARITY: Horizontal

DETECTOR FUNCTION AND BANDWIDTH: Quasi peak, 120 kHz (30-1000 MHz)
Peak, 1 MHz (1000 MHz-2000 MHz)

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

FREQUENCY RANGE: 1000-2000 MHz MEASURED DISTANCE: 3 M

TEST PERSONNEL: ELLIS WU

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
34.75	17.8	5.4	23.2	40.0	-16.8
36.38	17.1	7.5	24.6	40.0	-15.4
37.31	16.8	7.0	23.8	40.0	-16.2
42.23	14.7	7.1	21.8	40.0	-18.2
47.22	12.1	13.5	25.6	40.0	-14.4
70.24	7.6	11.8	19.4	40.0	-20.6
144.05	13.5	8.7	22.2	40.0	-17.8
200.48	11.6	8.6	20.2	40.0	-19.8
240.02	13.7	13.3	27.0	47.0	-20.0
465.10	19.4	16.7	36.1	47.0	-10.9

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

TEST DATA OF RADIATED EMISSION

EUT: **CPU BOARD** MODEL: **SBC-555**

ANTENNA: CHASE BILOG CBL6111A POLARITY: Vertical

DETECTOR FUNCTION AND BANDWIDTH: Quasi peak, 120 kHz (30-1000 MHz)
Peak, 1 MHz (1000 MHz-2000 MHz)

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

FREQUENCY RANGE: 1000-2000 MHz MEASURED DISTANCE: 3 M

TEST PERSONNEL: ELLIS WU

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
34.89	18.9	10.2	29.1	40.0	-10.9
36.72	17.7	7.5	25.2	40.0	-14.8
37.28	17.4	9.4	26.8	40.0	-13.2
42.01	14.2	9.8	24.0	40.0	-16.0
46.59	11.5	14.7	26.2	40.0	-13.8
70.22	8.1	17.1	25.2	40.0	-14.8
144.03	12.5	10.0	22.5	40.0	-17.5
200.45	11.2	12.3	23.5	40.0	-16.5
240.01	14.9	11.3	26.2	47.0	-20.8
465.00	20.5	17.9	38.4	47.0	-8.6

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

5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH MINIMUM MARGIN

RADIATED EMISSION TEST

CONDUCTED EMISSION TEST

6. ATTACHMENT I - TECHNICAL DESCRIPTION OF EUT

SPECIFICATIONS:

* CPU	Intel Pentium 75~200 MHz, P55C (MMX), Cyrix,/IBM/ SGS 6X86 PR100+~166+, M2, AMD K5 PR75~166, K6
* Bus Interface	ISA (for SBC-555), PISA (for SBC-554V)
* CPU Socket	PGA type
* BIOS	Award 256KB FLASH BIOS
* Chipset	SiS5582
* Super I/O Chipset	UMC8669C with Fully 16-bit I/O decoded
* 2nd Level Cache	On board 512KB pipeline burst 2nd level cache
* RAM memory	8MB to 128MB, Two 72-pin SIMM socket on board

* Enhanced IDE hard disk drive interface:
  Support up to two hard disk drives, BIOS auto-detect, Supports PIO mode 4 and Bus Master. Also supports Multi-word DMA and Ultra DMA/33

* Floppy disk drive interface:
  Supports up to two floppy disk drives, 5.25" (360KB and 1.2MB) and / or 3.5" (720KB, 1.44MB and 2.88MB)

* Multi-mode parallel port: Configured to LPT1, LPT2, LPT3 or disabled. Supports SPP, ECP and EPP

* Serial ports: One RS-232 and one RS-232/422/485 serial ports. Ports can be configured as COM1, COM2, COM3, COM4 or disabled individually. Two 16C550 serial UART's. IR connector reserved for future use.

* Keyboard/mouse connector:
  6 pin mini DIN connector supports standard PC/AT keyboard and PS/2 mouse

* USB connectors: Dual USB port on board

* Real Time Clock/Calendar:
  Dallas DS-12887 or equivalent with quartz oscillator, powered by lithium battery for data retention of up to 10 years.