

CERTIFICATION

We hereby certify that:

The test data , data evaluation , test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (1992)/ CISPR22(1997) and the energy emitted by the sample EUT tested as described in this report is in compliance with CLASS B conducted and radiated emission limits of FCC Rules Part 15, Subpart B/ CISPR22(1997).

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Reviewed by : Vincent Su



Approved by : George Yao



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Company Stamp :



NEUTRON ENGINEERING INC.

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1. GENERAL INFORMATION

1-1. Product Description

The Sparkle Computer Co., Ltd. Model: SP7000T2(referred to as the EUT in this report) is a VGA Card 64MB on Board with DDR or SDRAM.

The summarized feature of EUT as following:

- Windows XP, Windows 2000, Windows Me, Windows 98 and Linux Compatible

A more detailed and/or technical description of EUT is attached in **User's Manual**.

1-2. Related Submittal(s) / Grant (s)

1-2-1. Models Covered

Models covering in this test report is : SP7000T2

1-2-2. Models Difference

N/A

1-3. Tested System Details

The FCC IDs for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

Model No.	FCC ID	Equipment	Cable
SP7000T2	M697000T2	VGA Card	Add-On Card , Shielded Data Cable
CM753ET	DOC	Monitor	Shielded Data Cable ⁽²⁾ Un-Shielded Power Cord
VECTRA VE C/333	DOC	PC	Un-Shielded Power Cord.
DPU-414	DOC	Printer	Shielded Serial Data Cable Un-Shielded Power Cord
DM-1414V	DOC	Modem	Shielded Parallel Data Cable Un-Shielded Power Cord
FDA-104GA	F42FDA-104G	Keyboard	Shielded Data Cable
M-S34	DZL211029	Mouse	Shielded Data Cable
CM-10DXA	N/A	Monitor	Shielded Data Cable ⁽²⁾ Un-Shielded Power Cord

Notes:

- (1) EUT submitted for grant.
- (2) Monitor's attached video cable without ferrite core.
- (3) The support equipment was authorized by Declaration of Conformity.

1-4. Test Methodology

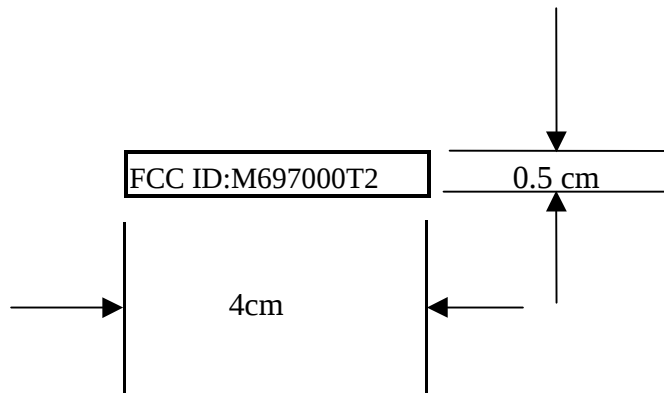
Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (1992)/CISPR 22(1997). Radiated testing was performed at an antenna to EUT distance 10 meters.

1-5. Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the address of No. 132-1, Lane 329, Sec. 2, Palain Road, Shijr 221, Taipei, Taiwan, R.O.C. of NEUTRON ENGINEERING INC. This site has been fully described in report dated Jun. 25, 1999 Submitted to your office, and accepted in a letter dated Sep. 02, 1999 (Reg. No. 95335).

2. Product Labeling

2-1. FCC ID label



The remained portion of label statement required by FCC is attached in the user's manual.

2-2 Location of Label on EUT



3. System Test Configuration

3-1. Justification

The system was configured for testing in a typical fashion (as a customer would normally use it). The EUT (VGA Card) was Added-On to a support equipment-Personal Computer. Peripherals of PC, such as monitor, keyboard, modem and printer were contained in this system in order to comply with the ANSI C63.4/CISPR 22 Rules requirement.

The system was investigated/evaluated by pre-scanning the pixel resolution in follows mode(s):

(1)1600x1200/85Hz/106KHz (VGA&DVI Mode)

(2)1024x768/85Hz/69KHz (VGA&DVI Mode)

(3)S Mode

The system operated in following mode(s) was(were) found to be the worst case during the pre-scanning. This operating mode(s) was(were) tested and used to collect the data included.

(1)VGA Mode: 1600x1200/85Hz/106KHz

1024x768/85Hz/69KHz

(2)DVI Mode: 1600x1200/85Hz/106KHz

1024x768/85Hz/69KHz

(3)S Mode

3-2. EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software, contained on a 3-1/2 inch disk, was inserted into driver A and is auto-starting on power-up. Once loaded, the program sequentially exercises each system component in turn. The sequence used is:

1. Read(write) from(to) mass storage device (Disk).
2. Send "H" pattern to video port DVI or D-Sub device (Monitor).
3. Send "H" pattern to video port device (TV)
4. Send " H " pattern to parallel port device (Printer).
5. Send " H " pattern to serial port device (Modem).
6. Repeated from 2 to 5 continuously.

As the keyboard and mouse are strictly input devices, no data is transmitted to (from) them during test. They are, however, continuously scanned for data input activity.

3-3. Special Accessories

Not available for this EUT intended for grant.

3-4. Equipment Modifications

Not available for this EUT intended for grant.

Applicant Signature :



Date:

Feb. 25, 2002

Type/Printed Name:

Jack Hsiao

Position:

Manager

3.5 Configuration of Tested System

The configuration of tested system is described as the block diagram shown in next page Figure 3.1 and details information of I/O cable and power cord connection are tabulated as Table A and B. The monitor is powered from a floor mounted receptacle (referred to as the wall outlet in the previous described) was tested.

TABLE A - Test Equipment

Item	Equipment	Mfr/Brand	Model/Type No.	Port Connected	FCC ID	Series No.	Note
E-1	VGA Card	Sparkle	SP7000T2	Card Slot	N/A	N/A	EUT
E-2	Monitor	Hitachi	CM753ET	VGA Port	DOC	T8L000003	
E-3	PC	HP	VECTRA VE C/333		DOC	N/A	
E-4	Printer	SII	DPU-414	Com Port	DOC	1045105A	
E-5	Modem	ACEEX	DM-1414V	Com Port	DOC	8041708	
E-6	Keyboard	Forward	FDA-104GA	PS/2 Port	F42FDA-104G	FDKB8110136	
E-7	Mouse	HP	M-S34	PS/2 Port	DZL211029	C3751-60201	
E-8	Monitor	TVS	CM-10DXA	S-Video Port	N/A	BAZB8A507803	

Remark:

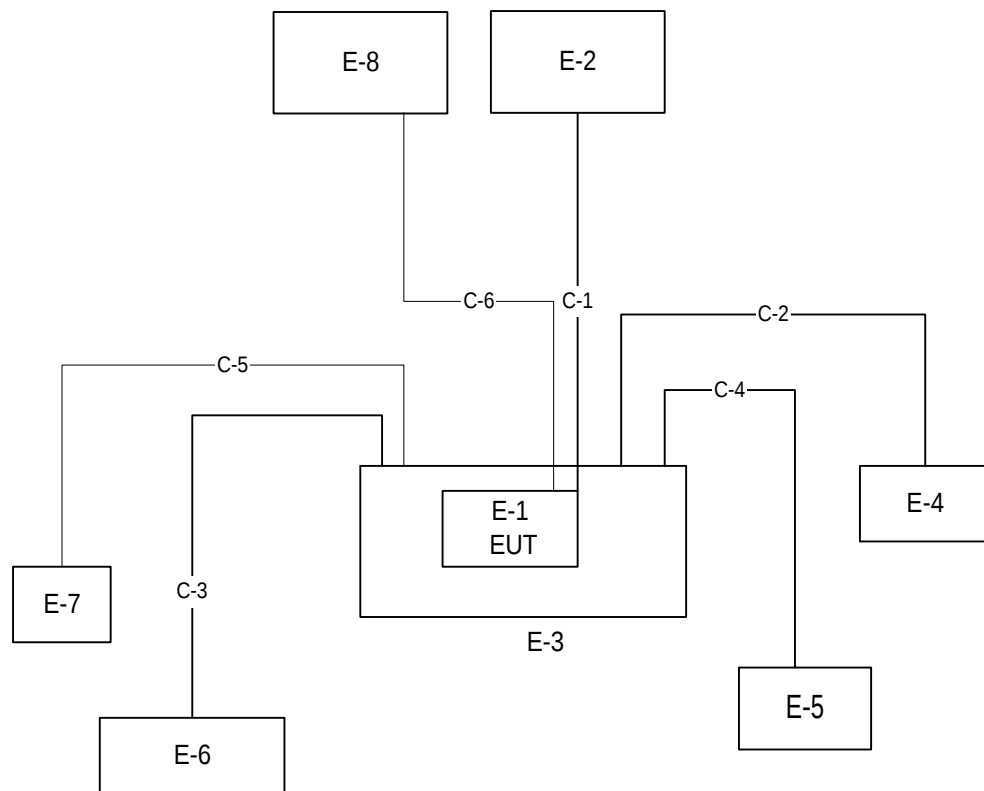
- (1) Unless otherwise denoted as EUT in 'Remark' column, device(s) used in tested system is a support equipment.
- (2) Unless otherwise marked as in 'Remark' column, Neutron consigns the supporting equipment(s) to the tested system.
- (3) The support equipment was authorized by Declaration of Conformity.

Table B. - Informations Cable Information

Item	I/O Cable	Device Connected	Shielded Type	Ferrite Core	Detachable/ Permanently	Length	Note
C-1	Video Cable	EUT-Monitor	Yes	No	Permanently attached on Monitor	150 cm	
C-2	Centronics Cable	PC-Printer	Yes	No	Part of Printer, Detachable	200 cm	
C-3	Keyboard Cable	PC-Keyboard	Yes	No	Permanently attached on KB	200 cm	
C-4	RS-232 Cable	PC-Modem	Yes	No	Part of Modem, Detachable	175 cm	
C-5	Mouse Cable	PC-Mouse	Yes	No	Permanently attached on Mouse	280 cm	
C-6	Video Cable	PC-Monitor	Yes	No	Permanently attached on Monitor	200 cm	

Note:

- (1) Unless otherwise marked as in (Remark) column, Neutron consigns the supporting equipment(s) to the tested system.

Figure 3.1 Configuration of Tested System

3-2 Test Equipment

Item	Instruments	Mfr/Brand	Model/Type No.	Serial No.	Calibrated Date	Next Cali. Date	Note
1	LISN	EMCO	3825/2	9605-2539	2001-06-22	2002-06-21	
2	LISN	Rolf Heine	NNB-2/16Z	98083	2001-10-20	2002-10-19	✓
3	LISN	Rolf Heine	NNB-2/16Z	98053	2001-11-22	2002-11-21	✓
4	Pulse Limiter	Electro-Metrics	EM-7600	112644	2001-02-09	2002-02-08	✓
5	50Ω Terminator	N/A	N/A	N/A	2001-05-21	2002-05-20	✓
6	Test Cable	N/A	C01	N/A	2001-12-08	2002-12-07	✓
7	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3058	2001-10-27	2002-10-26	✓
8	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3060	2001-10-20	2002-10-19	
9	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9161	4022	2001-07-04	2002-07-03	
10	Test Cable	N/A	10M_OS01	N/A	2001-12-08	2002-12-07	
11	Test Cable	N/A	OS01-1/-2	N/A	2001-12-08	2002-12-07	
12	Test Cable	N/A	10M_OS02	N/A	2001-12-08	2002-12-07	✓
13	Test Cable	N/A	OS02-1/-2/-3	N/A	2001-12-08	2002-12-07	✓
14	RF Switch	Anritsu	MP59B	M65982	2001-12-10	2002-12-09	✓
15	Quasi-Peak Adapter	HP	85650A	2521A00844	2001-09-24	2002-03-23	✓
16	RF Pre-Selector	HP	85685A	2648A00417	2001-09-24	2002-03-23	✓
17	Spectrum Analyzer	HP	85680B	2634A03025	2001-09-24	2002-03-23	✓
18	Spectrum Monitor	HP	85662B	2648A13616	2001-09-24	2002-03-23	✓
19	Pre-Amplifier	Anritsu	MH648A	M09961	2001-12-10	2002-12-09	✓
20	Spectrum Analyzer	ADVAN TEST	R3261C	81720298	2001-08-17	2002-08-16	
21	Test Receiver	R&S	ESH3	860156/018	2001-10-23	2002-10-22	
22	Test Receiver	R&S	ESVP	860687/009	2001-10-23	2002-10-22	
23	Test Receiver	MEB	SMV41	130	2001-12-05	2002-12-04	✓
24	Test Receiver	PMM	PMM 9000	4310J01002	2001-12-31	2002-12-30	
25	Horn Antenna	EMCO	3115	9605-4803	2001-05-09	2002-05-08	
26	Test Receiver	R&S	ESMI	843977/005	2001-11-14	2002-11-05	
27	Pre-Amplifier	R&S	ESMI-Z7	1045.5020	2001-05-21	2002-05-20	
28	Absorbing Clamp	R&S	MDS-21	841077/011	2001-08-18	2002-08-17	
29	Voltage Probe	R&S	ESH2-Z3	841.800/023	2001-08-20	2002-08-19	
30	Signal Generator	HP	8648A	3426A01034	2000-02-10	2002-02-09	
31	Antenna Mast	Chance Most	CMTB-1.5	N/A	N/A	N/A	✓
32	Turn Table	Chance Most	CMTB-1.5	N/A	N/A	N/A	✓

Remark :

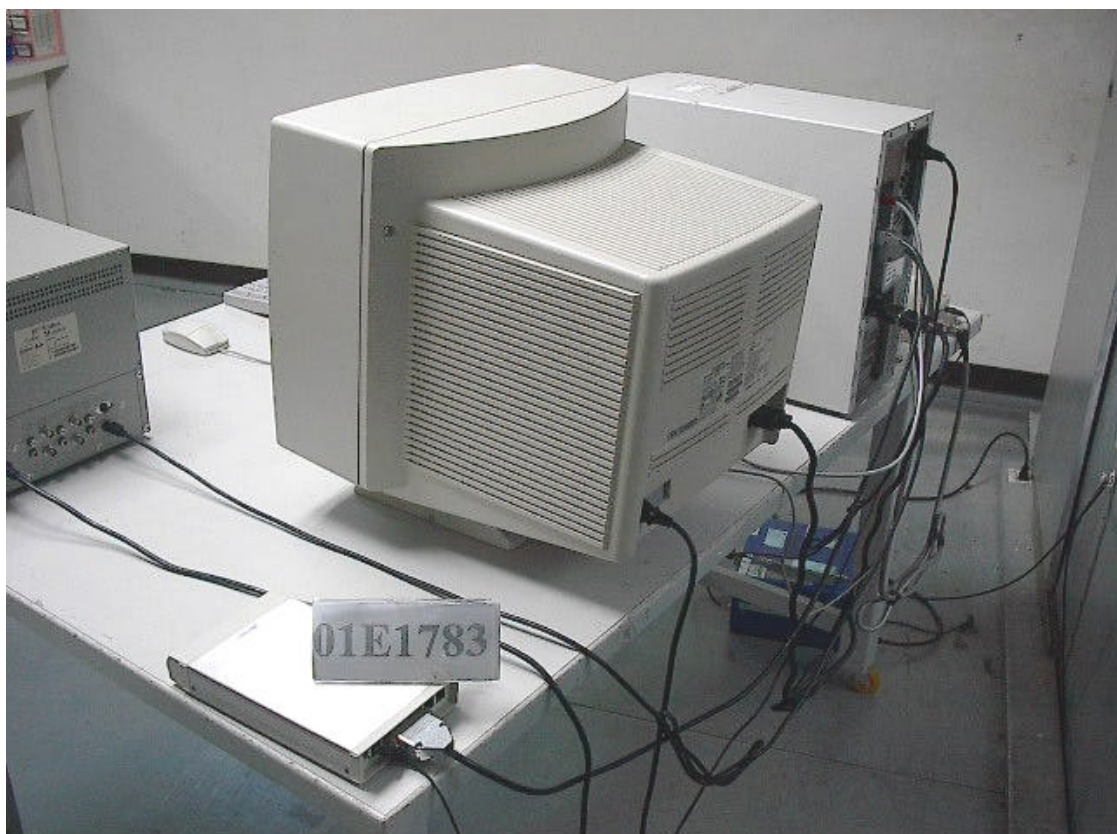
- (1) ✓ indicates the instrument used in Test Report.
- (2) N/A denotes No Model No. / Serial No. and No Calibration specified.

4. Block Diagram(s)

Figure 4.1 Block diagram of system, Page 13.A

5. Conducted and Radiated Measurement Photos

5-1. Conducted Measurement Photos



5. Conducted and Radiated Measurement Photos

5-2. Radiated Measurement Photos



6. Conducted Emission Datas

6.1 The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Judgement: Passed by **-6.20 dB** in mode of **Line** terminal **0.15 MHz**
 Test Mode : VGA 1600x1200/106KHz/85Hz

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Safe Margins (dBuV)	
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		Note
0.15	Line	58.20	49.80	66.00	56.00	-6.20	(AV)
0.23	Line	46.40	*	62.60	52.60	-16.20	(QP)
0.44	Line	37.80	*	56.99	46.99	-19.19	(QP)
0.85	Line	42.80	*	56.00	46.00	-13.20	(QP)
1.82	Line	35.10	*	56.00	46.00	-20.90	(QP)
12.25	Line	33.10	*	60.00	50.00	-26.90	(QP)
0.16	Neutral	54.21	46.80	65.41	55.41	-8.61	(AV)
0.19	Neutral	46.57	*	63.86	53.86	-17.29	(QP)
0.85	Neutral	42.69	*	56.00	46.00	-13.31	(QP)
1.82	Neutral	36.77	*	56.00	46.00	-19.23	(QP)
18.23	Neutral	33.75	*	60.00	50.00	-26.25	(QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode and Average Mode with Detector BW=9KHz ; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 'Note'. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " *" marked in AVG Mode column of Interference Voltage Measured.
- (3) Measuring frequency range from 150KHz to 30MHz.

Review:

Vincent Lau

Test Engr.:

David

Test Date : Dec. 10, 2001

6. Conducted Emission Datas

6.1 The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Judgement: Passed by **-8.26 dB** in mode of **Line** terminal **0.16 MHz**
 Test Mode: VGA 1024x768/ 69KHz/85Hz

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Safe Margins	
		QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
0.16	Line	55.75	47.10	65.36	55.36	-8.26	(AV)
0.22	Line	45.98	*	62.74	52.74	-16.76	(QP)
0.33	Line	39.70	*	59.45	49.45	-19.75	(QP)
0.44	Line	37.19	*	57.02	47.02	-19.83	(QP)
0.90	Line	43.75	*	56.00	46.00	-12.25	(QP)
3.35	Line	33.36	*	56.00	46.00	-22.64	(QP)
0.15	Neutral	53.63	*	65.89	55.89	-12.26	(QP)
0.16	Neutral	53.20	*	65.36	55.36	-12.16	(QP)
0.59	Neutral	37.19	*	56.00	46.00	-18.81	(QP)
0.90	Neutral	43.84	*	56.00	46.00	-12.16	(QP)
1.82	Neutral	38.87	*	56.00	46.00	-17.13	(QP)
11.87	Neutral	33.24	*	60.00	50.00	-26.76	(QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode and Average Mode with Detector BW=9KHz ; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 'Note'. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " *" marked in AVG Mode column of Interference Voltage Measured.
- (3) Measuring frequency range from 150KHz to 30MHz.

Review:

Vincent Lau

Test Engr.:

David

Test Date : Dec. 10, 2001

6. Conducted Emission Datas

6.1 The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Judgement: Passed by **-5.01 dB** in mode of **Line** terminal **0.16 MHz**
 Test Mode: DVI 1600x1200/85Hz/106KHz

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Safe Margins (dBuV)	
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		Note
0.16	Line	55.79	50.40	65.41	55.41	-5.01	(AV)
0.22	Line	48.04	*	62.82	52.82	-14.78	(QP)
0.33	Line	41.18	*	59.45	49.45	-18.27	(QP)
0.86	Line	42.85	*	56.00	46.00	-13.15	(QP)
1.56	Line	34.91	*	56.00	46.00	-21.09	(QP)
3.94	Line	38.08	*	56.00	46.00	-17.92	(QP)
0.16	Neutral	54.44	48.60	65.41	55.41	-6.81	(AV)
0.19	Neutral	47.31	*	63.99	53.99	-16.68	(QP)
0.43	Neutral	36.08	*	57.23	47.23	-21.15	(QP)
0.89	Neutral	36.62	*	56.00	46.00	-19.38	(QP)
0.75	Neutral	38.49	*	56.00	46.00	-17.51	(QP)
0.86	Neutral	42.76	*	56.00	46.00	-13.24	(QP)
1.819	Neutral	39.10	*	56.00	46.00	-16.90	(QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode and Average Mode with Detector BW=9KHz ; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 'Note'. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " *" marked in AVG Mode column of Interference Voltage Measured.
- (3) Measuring frequency range from 150KHz to 30MHz.

Review:

Vincent Lu

Test Engr.:

David

Test Date : Dec. 10, 2001

6. Conducted Emission Datas

6.1 The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Judgement: Passed by **-3.10 dB** in mode of **Neutral** terminal **0.15 MHz**
 Test Mode: DVI 1024x768 /69KHz/85Hz

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Safe Margins (dBuV)	
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		Note
0.16	Line	56.33	47.60	65.67	55.67	-8.07	(AV)
0.16	Line	53.57	50.10	65.26	55.26	-5.16	(AV)
0.22	Line	46.96	*	62.82	52.82	-15.86	(QP)
0.33	Line	39.72	*	59.40	49.40	-19.68	(QP)
0.90	Line	43.68	*	56.00	46.00	-12.32	(QP)
1.83	Line	32.63	*	56.00	46.00	-23.37	(QP)
11.93	Line	34.42	*	60.00	50.00	-25.58	(QP)
18.52	Line	38.45	*	60.00	50.00	-21.55	(QP)
0.15	Neutral	53.17	52.90	66.00	56.00	-3.10	(AV)
0.20	Neutral	46.68	*	63.65	53.65	-16.97	(QP)
0.59	Neutral	36.57	*	56.00	46.00	-19.43	(QP)
0.90	Neutral	44.55	41.60	56.00	46.00	-4.40	(AV)
1.56	Neutral	37.64	*	56.00	46.00	-18.36	(QP)
1.83	Neutral	37.01	*	56.00	46.00	-18.99	(QP)
3.94	Neutral	36.65	*	56.00	46.00	-19.35	(QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode and Average Mode with Detector BW=9KHz ; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 'Note'. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " *" marked in AVG Mode column of Interference Voltage Measured.
- (3) Measuring frequency range from 150KHz to 30MHz.

Review:

Vincent Lau

Test Engr.:

David

Test Date :

Dec. 10, 2001

6. Conducted Emission Datas

6.1 The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Judgement: Passed by **-2.30 dB** in mode of **Neutral** terminal **3.42 MHz**
 Test Mode: S-Video 1024x768 /60KHz/75Hz

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Safe Margins	
		QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
0.16	Line	54.84	45.70	65.62	55.62	-9.92	(AV)
0.19	Line	47.10	*	64.04	54.04	-16.94	(QP)
1.71	Line	52.00	41.80	56.00	46.00	-4.00	(QP)
3.42	Line	50.09	41.70	56.00	46.00	-4.30	(AV)
5.06	Line	47.57	*	60.00	50.00	-12.43	(QP)
11.87	Line	31.57	*	60.00	50.00	-28.43	(QP)
0.15	Neutral	57.79	50.30	65.89	55.89	-5.59	(AV)
0.20	Neutral	48.17	*	63.61	53.61	-15.44	(QP)
0.22	Neutral	45.84	*	62.74	52.74	-16.90	(QP)
1.70	Neutral	51.29	41.02	56.00	46.00	-4.71	(QP)
3.42	Neutral	50.04	43.70	56.00	46.00	-2.30	(AV)
5.06	Neutral	47.62	*	60.00	50.00	-12.38	(QP)
11.87	Neutral	31.67	*	60.00	50.00	-28.33	(QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode and Average Mode with Detector BW=9KHz ; SPA setting in RBW=10KHz,VBW =10KHz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 'Note'. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " *" marked in AVG Mode column of Interference Voltage Measured.
- (3) Measuring frequency range from 150KHz to 30MHz.

Review:

Vincent Lu

Test Engr.:

David

Test Date : Dec. 10, 2001

7. Radiated Emission Datas

7.1 The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, as well as the limit. Explanation of the Correction Factor is given in paragraph 7.2.

Judgement: Passed by **-9.12 dB** in polarity of **Vertical 206.49 MHz**
 Test Mode :VGA 1600x1200/85Hz/106KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Safe Margins (dBuV/m)	Note
162.23	V	29.55	- 12.78	16.77	30.00	- 13.23	
167.47	V	28.60	- 13.28	15.32	30.00	- 14.68	
167.77	H	27.32	- 13.31	14.01	30.00	- 15.99	
177.03	H	29.70	- 14.19	15.51	30.00	- 14.49	
189.81	V	30.90	- 15.24	15.66	30.00	- 14.34	
195.03	H	29.45	- 15.37	14.08	30.00	- 15.92	
205.96	H	33.92	- 15.46	18.46	30.00	- 11.54	
206.49	V	36.32	- 15.44	20.88	30.00	- 9.12	
216.33	V	33.07	- 15.08	17.99	30.00	- 12.01	
216.33	H	33.20	- 15.08	18.12	30.00	- 11.88	
229.16	V	34.15	- 14.28	19.87	30.00	- 10.13	
229.27	H	32.80	- 14.28	18.52	30.00	- 11.48	

Remark :

- (1) Test Receiver or Spectrum Analyzer measurement condition setting are Res. BW=100KHz, Video BW =100KHz , Sweep. Time = 0.2 sec./MHz
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.
- (5) If the peak scan value lower limit less than 20dB, then this signal data will be listed. But if these signal datas more than 10 frequencies, then only the Top 10 be listed.

Review:

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Test Engr.:

David

Test Date :

Dec. 05, 2001

7. Radiated Emission Datas (1 G Hz)

- 7.1** The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, as well as the limit. Explanation of the Correction Factor is given in paragraph 7.2.

Judgement: Passed by **-1.39 dB** in polarity of **Vertical 3648.00 MHz**
 Test Mode :VGA 1600x1200/85Hz/106KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Safe Margins (dBuV/m)	Note
1256.00	V	34.70	9.66	44.36	54.00	- 9.64	
2036.00	H	33.12	13.65	46.77	54.00	- 7.23	
2272.00	H	33.56	15.88	49.44	54.00	- 4.56	
2476.00	V	33.07	15.24	48.31	54.00	- 5.69	
3320.00	H	33.50	17.13	50.63	54.00	- 3.37	
3324.00	V	33.17	17.19	50.36	54.00	- 3.64	
3648.00	V	34.29	18.32	52.61	54.00	- 1.39	
4036.00	V	31.73	19.99	51.72	54.00	- 2.28	
4048.00	H	31.85	19.68	51.53	54.00	- 2.47	
4496.00	H	32.46	19.47	51.93	54.00	- 2.07	
4556.00	V	32.67	19.58	52.25	54.00	- 1.75	
4852.00	H	32.62	20.31	52.93	54.00	- 1.07	

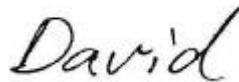
Remark :

- (1) Test Receiver or Spectrum Analyzer measurement condition setting are Res. BW=1 MHz, Video BW =1MHz , Sweep. Time = 0.2 sec./MHz
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』
- (3) Measuring frequency range from 1GHz to 5GHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.
- (5) If the peak scan value lower limit less than 20dB, then this signal data will be listed. But if these signal datas more than 10 frequencies, then only the Top 10 be listed.

Review:



Test Engr.:



Test Date : March 14, 2002

7. Radiated Emission Datas

7.1 The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, as well as the limit. Explanation of the Correction Factor is given in paragraph 7.2.

Judgement: Passed by **-6.22 dB** in polarity of **Horizontal 184.69 MHz**
 Test Mode :VGA 1024x768/85Hz/69KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Safe Margins (dBuV/m)	Note
163.31	V	33.82	- 12.89	20.93	30.00	- 9.07	
177.03	H	32.27	- 14.19	18.08	30.00	- 11.92	
180.69	V	32.95	- 14.52	18.43	30.00	- 11.57	
183.26	H	34.65	- 14.74	19.91	30.00	- 10.09	
184.69	H	38.62	- 14.84	23.78	30.00	- 6.22	
196.80	V	34.85	- 15.41	19.44	30.00	- 10.56	
202.57	H	33.75	- 15.51	18.24	30.00	- 11.76	
206.43	V	36.17	- 15.44	20.73	30.00	- 9.27	
206.43	H	33.02	- 15.44	17.58	30.00	- 12.42	
216.33	V	33.30	- 15.08	18.22	30.00	- 11.78	
226.66	H	32.15	- 14.41	17.74	30.00	- 12.26	
373.90	V	29.45	- 9.04	20.41	37.00	- 16.59	

Remark:

- (1) Test Receiver or Spectrum Analyzer measurement condition setting are Res. BW=100KHz, Video BW =100KHz , Sweep. Time = 0.2 sec./MHz
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.
- (5) If the peak scan value lower limit less than 20dB, then this signal data will be listed. But if these signal datas more than 10 frequencies, then only the Top 10 be listed.

Review:



Test Engr.:



Test Date : Dec. 05, 2001

7. Radiated Emission Datas

7.1 The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, as well as the limit. Explanation of the Correction Factor is given in paragraph 7.2.

Judgement: Passed by **-5.89 dB** in polarity of **Horizontal 123.44 MHz**
 Test Mode : DVI 1600x1200/85Hz/106KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBUV)	Corr.Factor(CF) (dB)	Measured(FS) (dBUV/m)	Limits(QP) (dBUV/m)	Safe Margins (dBUV/m)	Note
75.57	V	40.27	- 18.30	21.97	30.00	- 8.03	
76.71	V	41.55	- 18.42	23.13	30.00	- 6.87	
123.43	H	38.37	- 14.46	23.91	30.00	- 6.09	
123.44	H	38.57	- 14.46	24.11	30.00	- 5.89	
142.87	H	34.97	- 12.97	22.00	30.00	- 8.00	
167.23	V	33.50	- 13.26	20.24	30.00	- 9.76	
206.60	V	34.25	- 15.44	18.81	30.00	- 11.19	
216.29	H	31.80	- 15.08	16.72	30.00	- 13.28	
216.30	V	34.22	- 15.08	19.14	30.00	- 10.86	
225.61	V	32.95	- 14.45	18.50	30.00	- 11.50	
334.13	H	32.20	- 10.60	21.60	37.00	- 15.40	
422.43	H	33.72	- 7.61	26.11	37.00	- 10.89	

Remark:

- (1) Test Receiver or Spectrum Analyzer measurement condition setting are Res. BW=100KHz, Video BW =100KHz, Sweep. Time = 0.2 sec./MHz
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.
- (5) If the peak scan value lower limit less than 20dB, then this signal data will be listed. But if these signal datas more than 10 frequencies, then only the Top 10 be listed.

Review:

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Test Engr.:

David

Test Date :

Nov. 30, 2001

7. Radiated Emission Datas (1 G Hz)

7.1 The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, as well as the limit. Explanation of the Correction Factor is given in paragraph 7.2.

Judgement: Passed by **-0.23 dB** in polarity of **Vertical 4996.00 MHz**
 Test Mode : DVI 1600x1200/85Hz/106KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Safe Margins (dBuV/m)	Note
2196.00	V	34.60	14.05	48.65	54.00	- 5.35	
2208.00	H	34.60	14.21	48.81	54.00	- 5.19	
3060.00	V	32.49	16.51	49.00	54.00	- 5.00	
3176.00	H	34.72	17.15	51.87	54.00	- 2.13	
3612.00	H	33.60	18.24	51.84	54.00	- 2.16	
3636.00	V	33.76	18.30	52.06	54.00	- 1.94	
4012.00	H	32.26	19.45	51.71	54.00	- 2.29	
4020.00	V	33.10	19.34	52.44	54.00	- 1.56	
4444.00	V	32.59	19.33	51.92	54.00	- 2.08	
4452.00	H	31.78	19.30	51.08	54.00	- 2.92	
4764.00	H	32.11	19.86	51.97	54.00	- 2.03	
4996.00	V	33.05	20.72	53.77	54.00	- 0.23	

Remark:

- (1) Test Receiver or Spectrum Analyzer measurement condition setting are Res. BW=1 MHz, Video BW =1MHz , Sweep. Time = 0.2 sec./MHz
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』
- (3) Measuring frequency range from 1GHz to 5GHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.
- (5) If the peak scan value lower limit less than 20dB, then this signal data will be listed. But if these signal datas more than 10 frequencies, then only the Top 10 be listed.

Review:



Test Engr.:



Test Date : March. 14, 2001

7. Radiated Emission Datas

7.1 The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, as well as the limit. Explanation of the Correction Factor is given in paragraph 7.2.

Judgement: Passed by **-9.27 dB** in polarity of **Vertical 75.96 MHz**
 Test Mode : DVI 1024x768/85Hz/69KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Safe Margins (dBuV/m)	Note
75.96	H	39.07	- 18.34	20.73	30.00	- 9.27	
176.11	V	32.32	- 14.09	18.23	30.00	- 11.77	
176.97	H	30.02	- 14.19	15.83	30.00	- 14.17	
182.17	V	32.35	- 14.65	17.70	30.00	- 12.30	
190.83	H	30.57	- 15.28	15.29	30.00	- 14.71	
194.00	V	31.67	- 15.35	16.32	30.00	- 13.68	
208.44	V	33.30	- 15.39	17.91	30.00	- 12.09	
218.49	H	30.57	- 14.92	15.65	30.00	- 14.35	
224.95	H	32.12	- 14.49	17.63	30.00	- 12.37	
225.64	V	32.05	- 14.45	17.60	30.00	- 12.40	
466.86	V	30.87	- 6.14	24.73	37.00	- 12.27	
467.64	H	33.67	- 6.13	27.54	37.00	- 9.46	

Remark:

- (1) Test Receiver or Spectrum Analyzer measurement condition setting are Res. BW=100KHz, Video BW =100KHz , Sweep. Time = 0.2 sec./MHz
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.
- (5) If the peak scan value lower limit less than 20dB, then this signal data will be listed. But if these signal datas more than 10 frequencies, then only the Top 10 be listed.

Review:



Test Engr.:



Test Date : Nov. 30, 2001

7. Radiated Emission Datas

7.1 The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, as well as the limit. Explanation of the Correction Factor is given in paragraph 7.2.

Judgement: Passed by **-2.61 dB** in polarity of **Vertical 416.08 MHz**
 Test Mode : S Mode 1024x768/75Hz/60KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Safe Margins (dBuV/m)	Note
71.76	V	34.90	- 17.55	17.35	30.00	- 12.65	
133.94	H	34.62	- 13.57	21.05	30.00	- 8.95	
162.51	V	28.85	- 12.81	16.04	30.00	- 13.96	
163.89	H	33.57	- 12.94	20.63	30.00	- 9.37	
190.57	H	36.05	- 15.27	20.78	30.00	- 9.22	
193.84	V	33.65	- 15.34	18.31	30.00	- 11.69	
208.04	H	35.42	- 15.39	20.03	30.00	- 9.97	
224.30	H	34.20	- 14.53	19.67	30.00	- 10.33	
334.14	V	38.52	- 10.60	27.92	37.00	- 9.08	
415.33	H	37.17	- 7.90	29.27	37.00	- 7.73	
416.08	V	42.27	- 7.88	34.39	37.00	- 2.61	
467.68	V	30.25	- 6.13	24.12	37.00	- 12.88	

Remark:

- (1) Test Receiver or Spectrum Analyzer measurement condition setting are Res. BW=100KHz, Video BW =100KHz , Sweep. Time = 0.2 sec./MHz
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.
- (5) If the peak scan value lower limit less than 20dB, then this signal data will be listed. But if these signal datas more than 10 frequencies, then only the Top 10 be listed.

Review:



Test Engr.:



Test Date : Nov. 30, 2001

7-2. Field Strength Calculation

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

$$FS = RA + AF + CL - AG$$

Where **FS = Field Strength**

RA = Receiver Amplitude

AF = Antenna Factor (1)

CL = Cable Attenuation Factor (1)

AG = Amplifier Gain (1) (2)

Remark :

(1) The Correction Factor = AF + CL - AG, as shown in the data tables' Correction Factor column.

(2) AG is not available for Neutron's Open Site Facility

Example of Calculation:

Assume a Receiver Reading of 23.7 dBuV is obtained with an Antenna Factor of 7.2 dB and a Cable Factor of 1.1 dB. Then:

1. The Correction Factor will be calculated by

$$\text{Correction Factor} = AF + CL - AG = 7.2 + 1.1 - 0 = 8.3 \text{ (dB)}$$

as shown in the data tables' Correction Factor column.

2. The Field Strength will be calculated by

$$FS = RA + \text{Correction Factor} = 23.7 + 8.3 = 32 \text{ (dBuV/m)}.$$

FS is the value shown in the data tables' Corrected Reading column and RA is the value shown in

the data tables' Receiver Reading column. The 32 dBuV/m value was mathematically converted

to its corresponding level in uV/m as:

$$\text{Log}^{-1}\{(32.0\text{dBuV/m})/20\} = 39.8 \text{ (uV/m)}$$

7-3. Correction Factor VS Frequency

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30.00	11.10	0.90
35.00	10.80	0.50
40.00	11.20	1.00
45.00	11.50	0.80
50.00	11.30	1.00
55.00	10.50	1.30
60.00	9.90	1.00
65.00	8.70	1.50
70.00	7.60	1.20
75.00	6.40	1.40
80.00	6.10	1.30
85.00	7.00	1.40
90.00	8.00	1.70
95.00	10.00	1.50
100.00	11.20	1.90
110.00	12.60	2.00
120.00	13.00	1.80
130.00	12.50	1.80
140.00	12.00	2.00
150.00	12.00	2.20
160.00	13.20	2.40
170.00	14.80	2.50
180.00	16.30	2.50
190.00	17.00	2.50
200.00	17.30	2.40
225.00	10.50	2.70
250.00	11.70	3.10
275.00	12.80	3.70
300.00	14.50	4.00
325.00	14.00	4.50
350.00	14.20	4.50
375.00	14.60	4.60
400.00	15.10	4.80
450.00	16.20	5.40
500.00	17.60	6.50
550.00	17.80	7.00
600.00	18.40	7.10
650.00	19.50	7.10
700.00	20.80	7.20
750.00	20.50	7.50
800.00	21.10	8.00
850.00	22.40	8.60
900.00	23.50	8.90
950.00	24.00	9.70
1000.00	24.80	10.30

8. Photos of Tested EUT:

- 1. Photo # 1 Front View, Rear View**
- 2. Photo # 2 Side View**

Attachment

User's Manual

Photo #1 Front View / Rear View

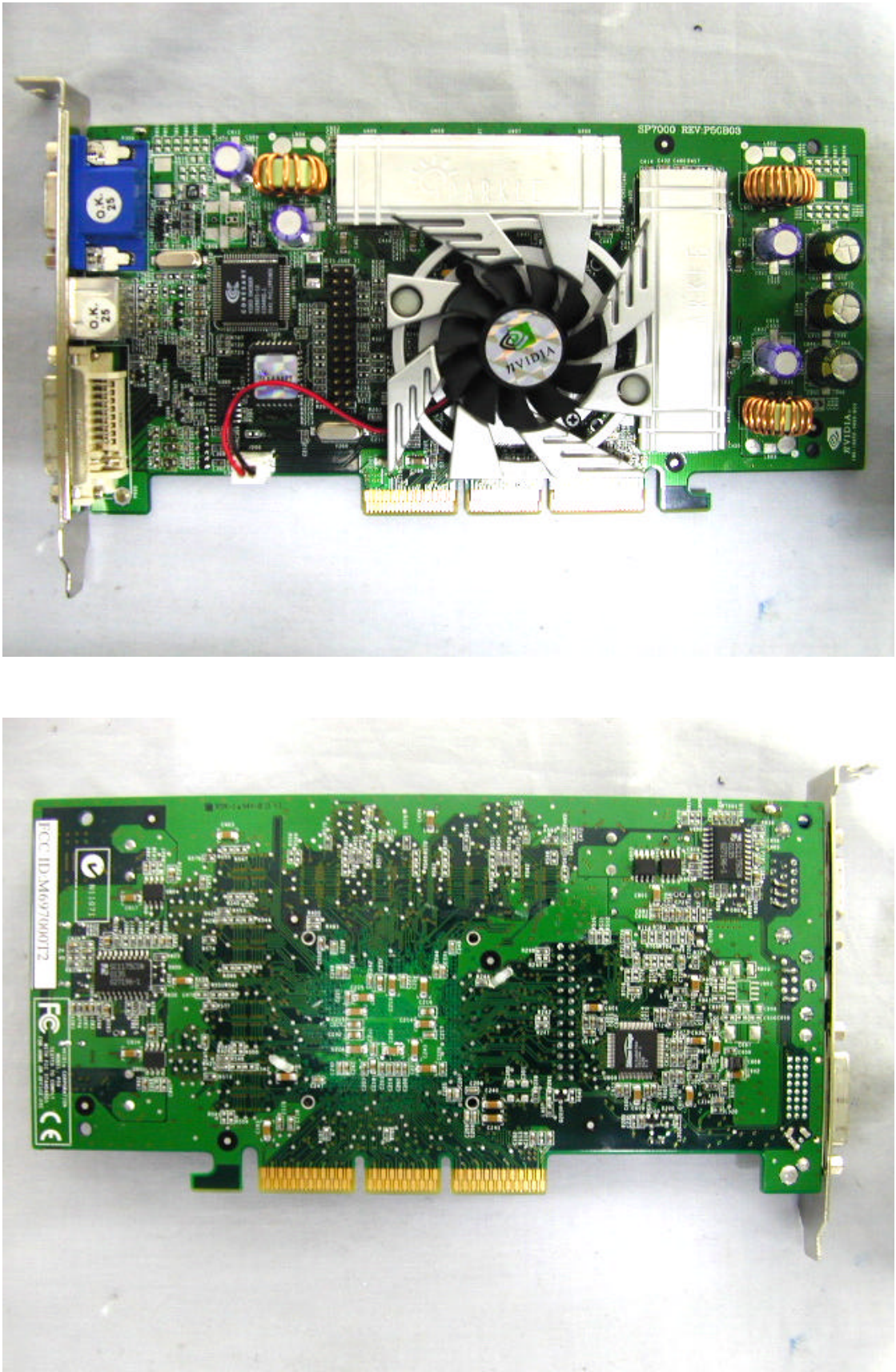


Photo # 2 Side View

