

MEASUREMENT/TECHNICAL REPORT

APPLICANT: Sparkle Computer Co., Ltd.

MODEL NO.: SP7000

FCC ID: M697000

This report concerns (check one) : **Original Grant**
Class II Change

Equipment type: VGA Card

Deferred grant requested per 47CFR 0.457(d)(1)(ii)?

Yes No If yes, defer until: _____ (date)

We, the undersigned, agree to notify the Commission by (date) _____ / _____ / _____
of the

intended date of announcement of the product so that the grant can be issued on that date.

Transiyion Rules Request per 15.37?

Yes No

If no, assumed Part 15, Subpart B for unintentional radiator the new 47 CFR (10-1-90 Edition)
provision.

Report Prepared

by Testing House : Neutron Engineering Inc.

for Company Name: Sparkle Computer Co., Ltd.

Address: 13F, No. 2, Sec. 1, Fu Hsing S. Rd., Taipei, Taiwan, R.O.C.

Applicant Signature :



Jack Hsiao/ Manager

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(1996).

Prepared by : Lydia Chiang**Reviewed by :** Vincent Su**Approved by :** George Yao**Issued Date :** Sep. 14, 2001**Report No. :** NEI-FCCB-01103**Company Stamp :****NEUTRON ENGINEERING INC.**

No. 132-1, Lane 329, Sec. 2, Palain Rd.,

Shijr Jen, Taipei, Taiwan

TEL : (02) 2646-5426 FAX : (02) 2646-6815

Table of Contents

1. General Information.....	
1-1 Product Description.....	4
1-2 Related Submittal(s)/Grant(s).....	4
1-3 Tested System Details.....	5
1-4 Test Methodology.....	6
1-5 Test Facility.....	6
2. System Test Configuration.....	
2-1 Justification.....	7
2-2 EUT Exercise Software.....	7
2-3 Special Accessories.....	8
2-4 Equipment Modifications.....	8
2-5 Configuration of Tested System.....	9
Figure 2-1 Configuration of Tested System.....	11
3. Block Diagram(s).....	13
4. Conducted Emission Datas.....	14
5. Radiated Emission Datas	
5-1 Radiated Emission Data.....	19
5-2 Field Strength Calculation.....	24
5-3 Correction Factor Table VS Frequency.....	25
6. Attachment	
Photos of Tested EUT.....	26
User's Manual.....	27

1. GENERAL INFORMATION

1-1. Product Description

The Sparkle Computer Co., Ltd. Model: SP7000(referred to as the EUT in this report) is a VGA Card 64MB on Board with DDR or SDRM.

The summarized feature of EUT as following:

- Windows2000,WindowsNT 4.0/5.0,Windows98 and Windows95

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 : SP7000

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
SP7000	M697000	VGA Card	Add-On Card , Shielded Data Cable
CM753ET	N/A (3)	Monitor	Shielded Data Cable ⁽²⁾ Un-Shielded Power Cord
444	N/A (3)	PC	Un-Shielded Power Cord.
DPU-414	N/A (3)	Printer	Shielded Serial Data Cable Un-Shielded Power Cord
DM-1414V	N/A (3)	Modem	Shielded Parallel Data Cable Un-Shielded Power Cord
FDA-104GA	F42FDA-104G	Keyboard	Shielded Data Cable
M-S34	N/A (3)	Mouse	Shielded Data Cable
PVM-1390	AK896APVM1390	TV	Shielded Data Cable ⁽²⁾ Un-Shielded Power Cord
PRIMAX	N/A (3)	Projector	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 reedited 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. System Test Configuration

2-1. 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)640x480/31.5KHz(VGA&DVI Mode)
- (2)800x600/47KHz(VGA&DVI Mode)
- (3)1024x768/60KHz(VGA&DVI Mode)
- (4)1280x1024/94 KHz (VGA Mode)
- (5)1600x1200/106 KHz (VGA Mode)
- (6)S-Video

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:1280x1024/85Hz/94KHz
1600x1200/85Hz/106KHz
- (2)VGA Mode:800x600/75Hz/47KHz
10240x768/75Hz/60KHz
- (3)S-Video Mode

2-2. 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 device (Monitor or Projector).
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.

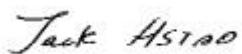
2-3. Special Accessories

Not available for this EUT intended for grant.

2-4. Equipment Modifications

Not available for this EUT intended for grant.

Applicant Signature :



Date:

Jul. 02, 2001

Type/Printed Name:

Jack Hsiao

Position:

Manager

2.5 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.	Model/Type No.	I/O Port	FCC ID	Remark
E-1	VGA Card	Sparkle	SP7000	Card Slot	M69700	EUT
E-2	Monitor	Hitachi	CM753ET	VGA Port	N/A(3)	
E-3	PC	IBM	444		N/A(3)	
E-4	Printer	SII	DPU-414	Printer Port	N/A(3)	
E-5	Modem	ACEEX	DM-1414V	Com Port	N/A(3)	
E-6	Keyboard	Forward	FDA-104GA	PS/2 Port	F42FDA-104G	
E-7	Mouse	HP	M-S34	PS/2 Port	DZL211029	
E-8	TV	SONY	PVM-1390	S-Video Port	AK896APVM1390	
E-9	Projector	PRIMAX	38VIV101-01	DVI Port	N/A(3)	

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

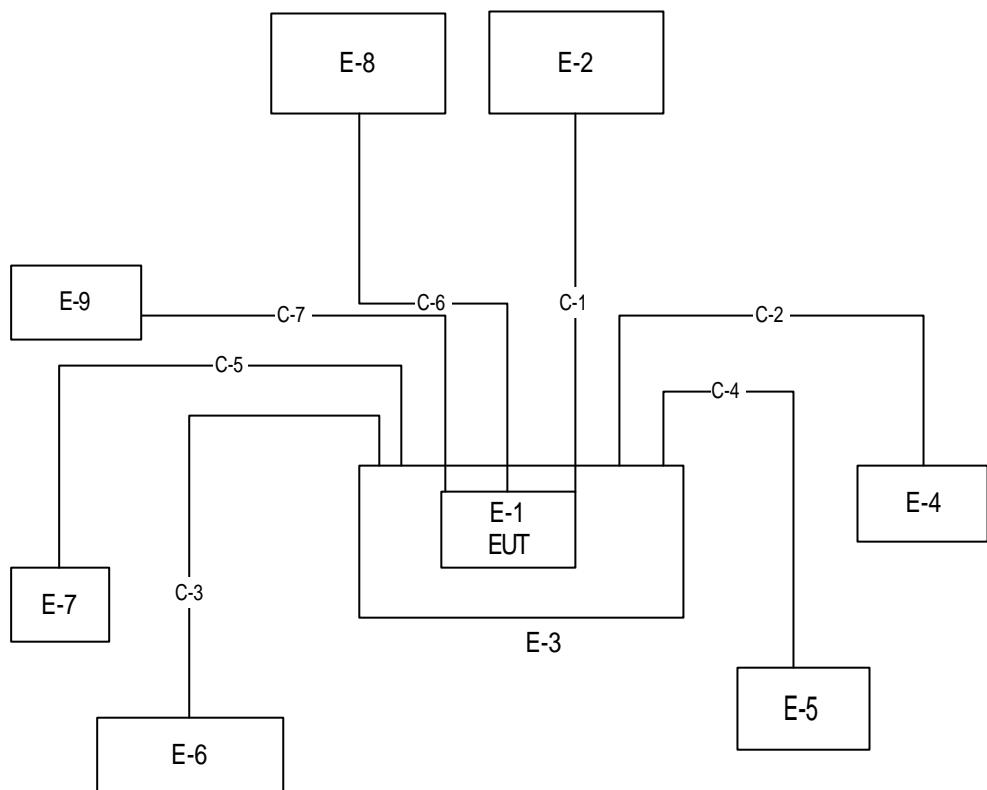
Item	I/O Cable	Device Connected	Shielded	Ferrite Core	Detachable/Permanentl y	Note
C-1	Video Cable	EUT-Monitor	Yes	No	Permanently attached on Monitor	
C-2	Centronics Cable	PC-Printer	Yes	No	Part of Printer, Detachable	
C-3	Keyboard Cable	PC-Keyboard	Yes	No	Permanently attached on KB	
C-4	RS-232 Cable	PC-Modem	Yes	No	Part of Modem, Detachable	
C-5	Mouse Cable	PC-Mouse	Yes	No	Permanently attached on Mouse	
C-6	Video Cable	PC-TV Set	Yes	No	Permanently attached on TV Set	
C-7	Video Cable	PC-Projector	Yes	No	Permanently attached on Projector	

Note:

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

Figure 2.1 Configuration of Tested System

Fig. 2-1 Configuration of Tested System



2-2 Test Equipment

Item	Instruments	Mfr/Brand	Model/Type No.	Serial No.	Calibrated Date	Next Cali. Date	Note
1	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3058	2000-10-28	2001-10-27	✓
2	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3060	2000-10-21	2001-10-20	✓
3	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9161	4022	2001-07-04	2002-07-03	
4	LISN	EMCO	3825/2	9605-2539	2001-06-22	2002-06-21	
5	LISN	Rolf Heine	NNB-2/16Z	98083	2000-10-21	2001-10-20	✓
6	LISN	Rolf Heine	NNB-2/16Z	98053	2000-11-23	2001-11-22	✓
7	Horn Antenna	EMCO	3115	9605-4803	2001-05-09	2002-05-08	
8	Quasi-Peak Adapter	HP	85650A	2521A00844	2001-03-25	2001-09-24	✓
9	RF Pre-Selector	HP	85685A	2648A00417	2001-03-25	2001-09-24	✓
10	Spectrum Analyzer	HP	85680B	2634A03025	2001-03-25	2001-09-24	✓
11	Spectrum Monitor	HP	85662B	2648A13616	2001-03-25	2001-09-24	✓
12	Pre-Amplifier	Anritsu	MH648A	M09961	2000-12-04	2001-12-03	✓
13	Test Receiver	R&S	ESMI	843977/005	2000-11-07	2001-11-06	
14	Pre-Amplifier	R&S	ESMI-Z7	1045.5020	2001-05-21	2002-05-20	
15	Test Receiver	R&S	ESH3	860156/018	2000-10-24	2001-10-23	
16	Test Receiver	R&S	ESVP	860687/009	2000-10-24	2001-10-23	
17	Test Receiver	MEB	SMV41	130	2000-12-20	2001-12-19	✓
18	Absorbing Clamp	R&S	MDS-21	841077/011	2001-08-18	2002-08-17	
19	Voltage Probe	R&S	ESH2-Z3	841.800/023	200-08-20	2002-08-19	
20	Pulse Limiter	Electro-Metrics	EM-7600	112644	2001-02-09	2002-02-08	✓
21	Spectrum Analyzer	ADVAN TEST	R3261C	81720298	2001-08-17	2002-08-16	
22	Oscilloscope	Tektronix	2465B	J305135	2000-11-02	2001-11-01	
23	Impedance PAD	HRS	HI-NNF-PJ-50/75	0264	2001-03-15	2002-03-14	
24	Attenuator	Stack	10dB	1	2001-03-15	2002-03-14	
25	Audio Generator	Good Will	GAG808A	21845	N/A	N/A	
26	Antenna Mast	Chance Most	CMTB-1.5	N/A	N/A	N/A	✓
27	Turn Table	Chance Most	CMTB-1.5	N/A	N/A	N/A	✓
28	Signal Generator	HP	8648A	3426A01034	2000-02-10	2002-02-09	
29	Test Receiver	PMM	PMM 9000	4310J01002	2000-11-26	2001-11-27	

Remark :

✓ indicates the instrument used in Test Report.

N/A denotes No Model No. / Serial No. and No Calibration specified.

3. Block Diagram(s)

Figure 3.1 Block diagram of system, Page 13.A

4. Conducted Emission Data

4.1 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 **-8.59 dB** in mode of **Line** terminal **0.15 MHz**
 Test Mode: VGA 1280x1024/85Hz/94KHz

Freq. (MHz)	Terminal	Measured(dBuV)		Limits(dBuV)		Safe Margin (dBuV)	Safe Margin Note
		L/N	QP-Mode	AV-Mode	QP-Mode		
0.15	Line		55.56	47.30	65.89	55.89	-8.59 (AV)
0.43	Line		37.61	*	57.23	47.23	-19.62 (QP)
0.92	Line		36.21	*	56.00	46.00	-19.79 (QP)
2.87	Line		35.96	*	56.00	46.00	-20.04 (QP)
4.09	Line		42.42	*	56.00	46.00	-13.58 (QP)
6.19	Line		38.83	*	60.00	50.00	-21.17 (QP)
0.15	Neutral		54.36	46.42	65.78	55.78	-9.36 (AV)
0.43	Neutral		36.81	*	57.33	47.33	-20.52 (QP)
0.91	Neutral		35.41	*	56.00	46.00	-20.59 (QP)
2.65	Neutral		37.99	*	56.00	46.00	-18.01 (QP)
4.14	Neutral		42.41	*	56.00	46.00	-13.59 (QP)
6.19	Neutral		38.23	*	60.00	50.00	-21.77 (QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=100KHz, VBW =100KHz, Sweep Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=1MHz, VBW=10Hz, Sweep 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: Timonk Siva Test Engr.: David Test Date : Sep. 02, 2001

4. Conducted Emission Data

4.1 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 **-6.80 dB** in mode of **Neutral** terminal **0.99 MHz**
 Test Mode: VGA 1600x1200/85Hz/106KHz

Freq. (MHz)	Terminal	Measured(dBuV)		Limits(dBuV)		Safe (dBuV)	Margins Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.16	Line	53.17	*	65.36	55.36	-12.19	(QP)
0.32	Line	40.21	*	59.84	49.84	-19.63	(QP)
0.58	Line	36.21	*	56.00	46.00	-19.79	(QP)
2.84	Line	37.36	*	56.00	46.00	-18.64	(QP)
4.18	Line	43.20	*	56.00	46.00	-12.80	(QP)
7.85	Line	42.69	*	60.00	50.00	-17.31	(QP)
0.16	Neutral	51.57	*	65.36	55.36	-13.79	(QP)
0.99	Neutral	49.20	*	56.00	46.00	-6.80	(QP)
0.92	Neutral	35.41	*	56.00	46.00	-20.59	(QP)
2.84	Neutral	38.56	*	56.00	46.00	-17.44	(QP)
4.07	Neutral	42.82	*	56.00	46.00	-13.18	(QP)
7.98	Neutral	41.92	*	60.00	50.00	-18.08	(QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=100KHz, VBW =100KHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=1MHz, VBW=10Hz, 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 Sw Test Engr.: David Test Date : Sep. 02,2001

4. Conducted Emission Data

4.1 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 **-7.64 dB** in mode of **Line** terminal **0.15 MHz**
 Test Mode: DVI 800x600/75Hz/47KHz

Freq. (MHz)	Terminal	Measured(dBuV)		Limits(dBuV)		Safe (dBuV)	Margins Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.15	Line	56.96	48.30	65.94	55.94	-7.64	(AV)
0.43	Line	39.01	*	57.29	47.29	-18.28	(QP)
1.24	Line	32.77	*	56.00	46.00	-23.23	(QP)
2.87	Line	35.76	*	56.00	46.00	-20.24	(QP)
4.20	Line	42.20	*	56.00	46.00	-13.80	(QP)
6.22	Line	38.84	*	60.00	50.00	-21.16	(QP)
0.15	Neutral	53.96	48.20	65.89	55.89	-7.69	(AV)
0.22	Neutral	46.01	*	62.86	52.86	-16.85	(QP)
0.43	Neutral	36.41	*	57.23	47.23	-20.82	(QP)
0.90	Neutral	35.21	*	56.00	46.00	-20.79	(QP)
4.20	Neutral	43.00	*	56.00	46.00	-13.00	(QP)
6.19	Neutral	38.63	*	60.00	50.00	-21.37	(QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=100KHz, VBW =100KHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=1MHz, VBW=10Hz, 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 Liu Test Engr.: David Test Date : Sep. 02,2001

4. Conducted Emission Data

4.1 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 **-8.64 dB** in mode of **Line** terminal **0.15 MHz**
 Test Mode: DVI 1024x768/75Hz/60KHz

Freq. (MHz)	Terminal	Measured(dBuV)		Limits(dBuV)		Safe (dBuV)	Margins Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.15	Line	55.56	47.30	65.94	55.94	-8.64	(AV)
0.43	Line	38.01	*	57.29	47.29	-19.28	(QP)
1.24	Line	33.57	*	56.00	46.00	-22.43	(QP)
2.84	Line	36.76	*	56.00	46.00	-19.24	(QP)
4.09	Line	42.82	*	56.00	46.00	-13.18	(QP)
6.22	Line	38.64	*	60.00	50.00	-21.36	(QP)
0.16	Neutral	52.97	*	65.67	55.67	-12.70	(QP)
0.43	Neutral	37.21	*	57.29	47.29	-20.08	(QP)
0.93	Neutral	35.61	*	56.00	46.00	-20.39	(QP)
2.77	Neutral	36.57	*	56.00	46.00	-19.43	(QP)
4.20	Neutral	42.20	*	56.00	46.00	-13.80	(QP)
26.84	Neutral	38.45	*	60.00	50.00	-21.55	(QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=100KHz, VBW =100KHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=1MHz, VBW=10Hz, 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

Test Engr.:

David

Test Date :

Sep. 02,2001

4. Conducted Emission Data

4.1 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 **-2.20 dB** in mode of **Neutral** terminal **3.60 MHz**
 Test Mode: S Mode

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Safe Margins (dBuV)	Note
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.15	Line	55.16	48.80	65.84	55.84	-7.04	(AV)
0.20	Line	51.21	*	63.53	53.53	-12.32	(QP)
0.42	Line	39.81	*	57.43	47.43	-17.62	(QP)
0.90	Line	36.41	*	56.00	46.00	-19.59	(QP)
3.62	Line	49.57	43.20	56.00	46.00	-2.80	(AV)
12.85	Line	41.27	*	60.00	50.00	-18.73	(QP)
0.16	Neutral	54.77	49.60	65.67	55.67	-6.07	(AV)
0.22	Neutral	46.61	*	62.93	52.93	-16.32	(QP)
0.58	Neutral	36.61	*	56.00	46.00	-19.39	(QP)
0.73	Neutral	35.21	*	56.00	46.00	-20.79	(QP)
3.60	Neutral	49.08	43.80	56.00	46.00	-2.20	(AV)
12.52	Neutral	41.87	*	60.00	50.00	-18.13	(QP)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=100KHz, VBW =100KHz, Sweep Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=1MHz, VBW=10Hz, Sweep 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 Sw

Test Engr.:

David

Test Date :

Sep. 02,2001

5. Radiated Emission Data

5.1 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 **-5.59 dB** in polarity of **Vertical** **109.70 MHz**
 Test Mode :VGA 1280x1024/85Hz/94KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(OP) (dBuV/m)	Safe Margins (dBuV/m)	Note
109.70	V	40.45	- 16.04	24.41	30.00	- 5.59	
121.14	H	37.50	- 14.62	22.88	30.00	- 7.12	
121.18	V	39.77	- 14.62	25.15	30.00	- 4.85	
133.26	H	36.20	- 13.63	22.57	30.00	- 7.43	
133.27	V	37.17	- 13.63	23.54	30.00	- 6.46	
178.82	H	35.25	- 14.36	20.89	30.00	- 9.11	
222.79	V	35.40	- 14.64	20.76	30.00	- 9.24	
227.40	H	38.32	- 14.36	23.96	30.00	- 6.04	
238.90	V	37.65	- 13.93	23.72	37.00	- 13.28	
373.70	V	34.47	- 9.04	25.43	37.00	- 11.57	
410.30	H	36.50	- 8.12	28.38	37.00	- 8.62	
488.00	H	34.45	- 5.69	28.76	37.00	- 8.24	

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 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 data more than 10 frequencies, then only the Top 10 be listed.

5. Radiated Emission Data

5.1 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 **-4.33 dB** in polarity of **Vertical** **42.90 MHz**
 Test Mode :VGA 1600x1200/85Hz/106KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(OP) (dBuV/m)	Safe Margins (dBuV/m)	Note
42.90	V	39.50	- 13.83	25.67	30.00	- 4.33	
63.02	H	41.05	- 15.96	25.09	30.00	- 4.91	
127.39	V	35.85	- 14.09	21.76	30.00	- 8.24	
141.03	H	38.00	- 13.05	24.95	30.00	- 5.05	
176.26	V	39.97	- 14.11	25.86	30.00	- 4.14	
176.27	H	36.82	- 14.11	22.71	30.00	- 7.29	
193.89	V	38.45	- 15.35	23.10	30.00	- 6.90	
227.40	H	38.52	- 14.36	24.16	30.00	- 5.84	
229.10	V	37.10	- 15.35	21.75	30.00	- 8.25	
240.00	V	39.47	- 14.28	25.19	37.00	- 11.81	
403.40	H	38.87	- 8.38	30.49	37.00	- 6.51	
437.70	H	33.87	- 6.99	26.88	37.00	- 10.12	

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 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 data more than 10 frequencies, then only the Top 10 be listed.

Review: Vincent Test Engr.: David Test Date : July 05,2001

5. Radiated Emission Data

5.1 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 **-3.04 dB** in polarity of **Horizontal 111.69 MHz**
 Test Mode : DVI 800x600/75Hz/47KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(OP) (dBuV/m)	Safe Margins (dBuV/m)	Note
63.42	V	40.00	- 16.73	23.27	30.00	- 6.73	
73.40	H	42.40	- 18.04	24.36	30.00	- 5.64	
111.69	H	42.60	- 15.64	26.96	30.00	- 3.04	
140.80	V	37.85	- 13.46	24.39	30.00	- 5.61	
142.00	H	38.70	- 13.39	25.31	30.00	- 4.69	
145.90	V	36.30	- 13.17	23.13	30.00	- 6.87	
224.96	V	39.49	- 15.23	24.26	30.00	- 5.74	
299.97	V	44.10	- 11.79	32.31	37.00	- 4.69	
416.00	H	39.50	- 8.72	30.78	37.00	- 6.22	
664.00	H	34.00	- 1.38	32.62	37.00	- 4.38	
692.00	H	31.30	- 0.67	30.63	37.00	- 6.37	
692.00	V	31.93	- 0.67	31.26	37.00	- 5.74	

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 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 data more than 10 frequencies, then only the Top 10 be listed.

5. Radiated Emission Data

5.1 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 **-4.19 dB** in polarity of **Horizontal** **299.97 MHz**
 Test Mode : DVI 1024x768/75Hz/60KHz

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(OP) (dBuV/m)	Safe Margins (dBuV/m)	Note
40.50	H	39.50	- 15.15	24.35	30.00	- 5.65	
73.50	V	41.80	- 18.04	23.76	30.00	- 6.24	
77.60	H	42.60	- 18.60	24.00	30.00	- 6.00	
118.10	H	38.20	- 15.26	22.94	30.00	- 7.06	
135.71	V	37.00	- 13.79	23.21	30.00	- 6.79	
153.90	V	36.80	- 12.94	23.86	30.00	- 6.14	
249.96	V	45.10	- 14.20	30.90	37.00	- 6.10	
299.97	H	44.60	- 11.79	32.81	37.00	- 4.19	
422.38	H	38.90	- 8.54	30.36	37.00	- 6.64	
486.56	H	37.50	- 6.81	30.69	37.00	- 6.31	
599.92	V	34.50	- 3.28	31.22	37.00	- 5.78	
645.40	V	33.20	- 1.85	31.35	37.00	- 5.65	

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 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 data more than 10 frequencies, then only the Top 10 be listed.

Review: Vincent Liu Test Engr.: David Test Date : July 05,2001

5. Radiated Emission Data

5.1 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 **-4.94 dB** in polarity of **Horizontal 227.40 MHz**
Test Mode : S Mode

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(OP) (dBuV/m)	Safe Margins (dBuV/m)	Note
70.06	H	40.62	- 17.19	23.43	30.00	-	6.57
118.60	V	38.65	- 14.94	23.71	30.00	-	6.29
133.20	V	37.57	- 13.63	23.94	30.00	-	6.06
149.50	V	35.95	- 12.63	23.32	30.00	-	6.68
150.01	H	34.75	- 12.63	22.12	30.00	-	7.88
178.82	H	36.00	- 14.36	21.64	30.00	-	8.36
227.40	H	39.42	- 14.36	25.06	30.00	-	4.94
238.90	V	39.05	- 13.93	25.12	37.00	-	11.88
372.60	V	33.80	- 9.14	24.66	37.00	-	12.34
410.30	H	35.72	- 8.12	27.60	37.00	-	9.40
488.00	H	34.40	- 5.69	28.71	37.00	-	8.29
550.90	V	32.72	- 4.25	28.47	37.00	-	8.53

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 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 data more than 10 frequencies, then only the Top 10 be listed.

Review: Vincent Test Engr.: David Test Date : July 05,2001

5-2. 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:

$$\mathbf{FS = RA + AF + CL - AG}$$

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

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

as shown in the data tables' Correction Factor column.

2. The Field Strength will be calculated by

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

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:

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

5-3. 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

6. Photos of Tested EUT:

1. Photo # 1 Front View, Rear View

2. Photo # 2 Side View

Attachment

User' s Manual