



FCC 47 CFR PART 15 SUBPART B

TEST REPORT

For

PCI Parallel Serial Card

FCC ID Number: H9M4079FL

Model: 4079FL

Trade Name: N/A

Issued for

SUNIX CO., LTD.

**10FL., No. 205-3 Sec. 3, Pei Sin Road, Sindien City,
Taipei County, Taiwan, R.O.C.**



Issued by

Compliance Certification Services Inc.

Hsintien Lab.

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1 TEST RESULT CERTIFICATION

Applicant: SUNIX CO., LTD.
10FL., No. 205-3 Sec. 3, Pei Sin Road, Sindien City,
Taipei County, Taiwan, R. O. C.

Manufacturer: SUNIX CO., LTD.
10FL., No. 205-3 Sec. 3, Pei Sin Road, Sindien City,
Taipei County, Taiwan, R. O. C.

Equipment Under Test: PCI Parallel Serial Card

Trade Name: N/A

Model: 4079FL

Deviation: None

Detailed EUT Description: See Item 2 of this report

FCC ID: H9M4079FL

Date of Test: December 18, 2003 & December 23, 2003

Applicable Standard	Class / Limit	Test Result
FCC Part 15 Subpart B	Class B	No non-compliance noted
Deviation from Applicable Standard		
None		

The above equipment was tested by Compliance Certification Services Inc. for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart B and the measurement procedures were according to ANSI C63.4. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

Approved by:

David Wang
Manager of Hsintien Laboratory
Compliance Certification Services Inc.

Reviewed by:

Vince Chiang
Section Manager of Hsintien Laboratory
Compliance Certification Services Inc.



2 EUT DESCRIPTION

Product	PCI Parallel Serial Card
Trade Name	N/A
Model	4079FL
Housing Type	N/A
EUT Power Rating	DC 5V from Host PC
AC Power During Test	120VAC / 60 Hz
Power Supply Manufacturer	MSI
Power Supply Model Number	N/A
AC Power Cord Type	Unshielded, 1.8m (Detachable)
EUT I/O Cable Type	Shielded, 0.25m (Detachable)
OSC/Clock Frequency	14.7456MHz

I/O PORT OF EUT

I/O PORT TYPE		Q' TY	TESTED WITH
DB44 Pin	1) PIO Port	1	1
	2) SIO Port	2	2

Note: Client consigns only one model sample (Model Number is 4079FL) to test.



3 TEST METHODOLOGY

3.1 EUT SYSTEM OPERATION

1. Windows XP Boots System.
2. Run Emctest.exe to activate all peripherals and display “H” pattern on monitor screen.
3. Run Winemc.exe then select “com7” & “com8” for testing.

3.2 DECISION OF FINAL TEST MODE

1. The following test mode(s) were scanned during the preliminary test:

Mode 1

Normal Mode

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

Mode 1

Then, the EUT configuration and cable configuration of the above highest emission mode was recorded for all final test items.

4 SETUP OF EQUIPMENT UNDER TEST

Setup Diagram

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

Support Equipment

No	Equipment	Model	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1.	PS/2 Mouse	M-S34	LNA11806870	DZL211029 BSMI ID: 4862A011	LOGITECH	Shielded, 1.8m	N/A
2.	PS/2 Keyboard	Y-SP29	SYU250387290	BSMI ID:3902C736	LOGITECH	Shielded, 1.8m	N/A
3.	Printer	C61	N/A	BSMI ID:3902E006	EPSON	Shielded, 1.8m	Unshielded, 1.8m
4.	Monitor	PN19NS	AQ19H2RT8025852	BSMI ID: 3902C163	SAMSUNG	Shielded, 1.8m with two cores	Unshielded, 1.8m
5.	Host PC	N/A	N/A	N/A	MSI	Shielded, 0.25m	Unshielded, 1.8m
6.	Modem	5JEG4033MKO	L0063CG2D007217	5RJTAI-35500-M5-E	TOP-SOLUTION	Shielded, 0.7m	Unshielded, 1.8m
7.	Modem	5JEG4033MKO	L0063CG2D007186	5RJTAI-35500-M5-E	TOP-SOLUTION	Shielded, 0.7m	Unshielded, 1.8m

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

5 FACILITIES AND ACCREDITATIONS







5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at CCS Taiwan Hsintien Lab at No. 165, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan.

The measurement facilities are constructed in conformance with the requirements of CISPR 16-1, ANSI C63.4 and other equivalent standards.

5.2 LABORATORY ACCREDITATIONS AND LISTINGS

The test facilities used to perform Electromagnetic compatibility tests are registered or accredited by the organizations listed in the following table which includes the recognized scope specifically.

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	CFR 47, FCC Part 15/18 using ANSI 63.4; AS/NZS 3548; VCCI V3; CNS 13438; CNS 13439; CNS 13783; CNS 14115; CISPR 11/EN 55011; CISPR 14-1/EN 55014-1; CISPR 15/EN 55015; CISPR 22/EN 55022; EN 50081-1/EN 61000-6-3; EN 50082-1/EN 61000-6-4; IEC/EN 61000-4-2, IEC/EN 61000-4-3, IEC/EN 61000-4-4, IEC/EN 61000-4-5, IEC/EN 61000-4-6, IEC/EN 61000-4-8, IEC/EN 61000-4-11, IEC/EN 61000-3-2, IEC/EN 61000-3-3; CISPR 24/EN 55024; CISPR 14-2/EN 55014-2; EN 50081-2/EN 61000-6-1; EN 50082-2/EN 61000-6-2.	 824.01
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 250366
Japan	VCCI	3/10 meter Open Area Test Sites and Line Conducted Test Room to perform conducted/radiated measurements	 R-1434/1630~4 C-1511/1882
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2/3/4, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, Cisp 16-1/2/3/4	 ELA 103
Taiwan	CNLA	47 CFR FCC Part 15 Subpart B, EN 61000-3-2, EN 61000-3-3, CNS 13439, CNS 13783-1, CNS 13438, AS/NZS 3548, VCCI, CNS 13022-1/2/3, EN 55022, EN 55013, EN 55014-1, EN 61000-4-2/3/4/5/6/8/11, ENV 50204, ENV 50141, ENV 50142	 1108 ILAC MRA
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439	 SL2-IN-E-0005 SL2-A1-E-0005 SL2-R1-E-0005 SL2-R2-E-0005

Note: No part of this report may be used to claim or imply product endorsement by CNLA, A2LA or other government agency.



6 INSTRUMENT AND CALIBRATION

6.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

6.2 TEST AND MEASUREMENT EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and other equivalent standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective manual.

Equipment Used for Emission Measurement

Open Area Test Site # D				
EQUIPMENT	MFR	MODEL	SERIAL NUMBER	CAL. DUE
SPECTRUM ANALYZER	ADVANTEST	R3261A	21720276	04/11/04
MEASURE RECEIVER	R&S	ESVS30	828488/004	09/30/04
ANTENNA	SCHWARZBECK	VULB 9160	3104	05/09/04
CABLE	BELDEN	9913	N-TYPE09	04/06/04
PRE-AMPLIFIER	H.P.	8447D B	1644A02328	05/03/04
Site NSA	CCS	N/A	N/A	10/30/04
Above 1GHz Used				
ANTENNA (1-18GHz)	EMCO	3115	5761	02/24/04
AMPLIFIER (1-26.5GHz)	HP	8449B	3008A01266	02/20/04
CABLE (1-18GHz)	JYEBAO	LL143	1m-1	02/20/04
CABLE (1-18GHz)	JYEBAO	LL142	12m-1	02/20/04
EMC ANALYZER (100Hz-22GHz)	HP	8566B	2937A06102	06/25/04

Note: The measurement uncertainty is less than +/- 3.36dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.



Conducted Emission Test Site # A				
EQUIPMENT	MFR	MODEL	SERIAL NUMBER	CAL. DUE
TEST RECEIVER	R&S	ESHS10	843743/015	04/11/04
LISN	EMCO	3825/2	1435	01/19/04
LISN (EUT)	EMCO	3810/2	9801-1850	04/15/04
BNC CABLE	PASTERNAK ENTERPRISES	RG 223/U	BNC 05	06/15/04

Note: The measurement uncertainty is less than +/- 2.83dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.

7 LINE CONDUCTED & RADIATED EMISSION TEST

7.1 LIMIT

Maximum permissible level of Line Conducted Emission

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: The lower limit shall apply at the transition frequency.

Maximum permissible level of Radiated Emission measured at 10 meter

FREQUENCY (MHz)	Class A (dBuV/m)	Class B (dBuV/m)
	Quasi-peak	Quasi-peak
30 – 230	40	30
230 - 1000	47	37

Note: The lower limit shall apply at the transition frequency.

Maximum permissible level of Radiated Emission measured at 3 meter

FREQUENCY (MHz)	Class A (dBuV/m)		Class B (dBuV/m)	
	Average	Peak	Average	Peak
Above 1000	59.3	79.3	53.9	73.9

Note: The lower limit shall apply at the transition frequency.



7.2 TEST PROCEDURE OF LINE CONDUCTED EMISSION

Procedure of Preliminary Test

- The EUT was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- The test system with EUT received AC power, 120V/60Hz, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane.
- All support equipment received power from a second LISN.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a EMI Test Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to the Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Receiver.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.2 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.
- The EUT configuration and cable configuration of the above highest emission level were recorded for reference of the final test.

**Procedure of Final Test**

- EUT and support equipment were set up on the test bench as per step 10 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the AV. limit in Q.P. mode, then the emission signal was re-checked using an AV. detector.
- The test data of the worst-case condition(s) was recorded.

Data Sample:

Freq. MHz	Read Level dBuV	Factor dB	Level dBuV	Limit dBuV	Over Limit dB	Reading Type (P/Q/A)	Line (L1/L2)
x.xx	42.95	0.55	43.50	56	-12.50	Q	L1

Freq. = Emission frequency in MHz
Read Level = Uncorrected Analyzer/Receiver reading
Factor = Insertion loss of LISN + Cable Loss
Level = Read Level + Factor
Limit = Limit stated in standard
Over Limit = Reading in reference to limit
P = Peak Reading
Q = Quasi-peak Reading
A = Average Reading
L1 = Hot side
L2 = Neutral side

Calculation Formula

Over Limit (dB) = Level (dBuV) – Limit (dBuV)



7.3 TEST PROCEDURE OF RADIATED EMISSION

Procedure of Preliminary Test

- The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical usage as per ANSI C63.4.
- The EUT received AC power source, 120V/60Hz, from the outlet socket under the turntable. All support equipment received power from another socket under the turntable.
- The antenna was placed at 10 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.
- The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- The test mode(s) described in Item 3.2 were scanned during the preliminary test:
- After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.
- The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

**Procedure of Final Test**

- EUT and support equipment were set up on the turntable as per step 8 of the preliminary test.
- The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.
- The test data of the worst case condition(s) was recorded.

Data Sample:

Freq. MHz	Read Level dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Reading Type (P/Q/A)	Pol. (H/V)
x.xx	14.0	12.2	26.2	30	-3.8	Q	H

Freq. = Emission frequency in MHz

Read Level = Uncorrected Analyzer/Receiver reading

Factor = Antenna Factor + Cable Loss + Attenuator (3/6/10dB) – Amplifier Gain

Level = Read Level + Factor

Limit = Limit stated in standard

Over Limit = Reading in reference to limit

P = Peak Reading

Q = Quasi-peak Reading

A = Average Reading

H = Antenna Polarization: Horizontal

V = Antenna Polarization: Vertical

Calculation Formula

Over Limit (dB) = Level (dBuV/m) – Limit (dBuV/m)



7.4 TEST RESULTS

Line Conducted Emission

Model: 4079FL**Test Mode:** Mode 1**Temperature:** 23 °C**Humidity:** 73% RH**Test Results:** Passed**Tested by:** Alex Pan

(The chart below shows the highest readings taken from the final data, see **Appendix II** for details.)

Six Highest Conducted Emission Readings							
Frequency Range Investigated				150 kHz to 30 MHz			
Freq (MHz)	Read Level (dBuV)	Factor (dB)	Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Reading Type (P/Q/A)	Line (L1/L2)
0.151	50.07	0.12	50.19	65.96	-15.77	P	L1
0.151	46.39	0.12	46.51	65.96	-19.45	P	L2
0.197	47.47	0.12	47.59	63.76	-16.17	P	L2
0.296	40.60	0.14	40.74	60.37	-19.63	P	L2
0.393	43.34	0.16	43.50	57.99	-14.49	P	L2
0.589	36.27	0.18	36.45	56.00	-19.55	P	L2

NOTE: The emission level was or more than 2dB below the Average limit, so no re-check anymore.

**Radiated Emission****Model:** 4079FL**Test Mode:** Mode 1**Temperature:** 21°C**Humidity:** 72% RH**Test Results:** Pass**Tested by:** Alex Pan

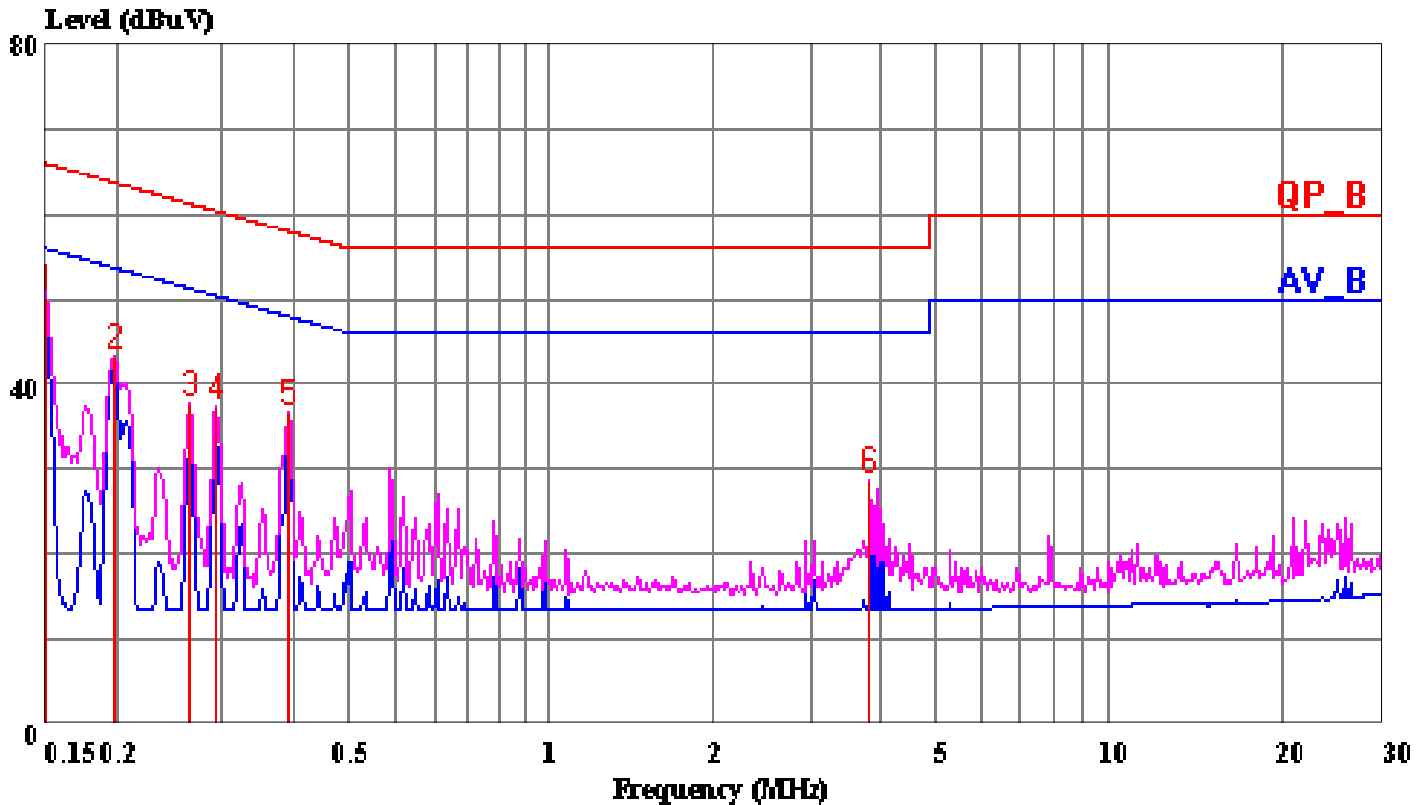
(The chart below shows the highest readings taken from the final data, see **Appendix II** for details.)

Six Highest Radiated Emission Readings							
Frequency Range Investigated				30 MHz to 1000 MHz at 10m			
Freq (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Reading Type (P/Q/A)	Pol. (H/V)
50.100	36.90	-8.43	28.47	30.00	-1.54	Q	V
58.277	37.10	-8.86	28.24	30.00	-1.76	Q	V
133.202	34.89	-6.57	28.32	30.00	-1.68	Q	V
184.273	35.90	-7.37	28.53	30.00	-1.47	Q	V
66.611	37.83	-9.18	28.65	30.00	-1.35	Q	H
184.297	35.04	-7.37	27.67	30.00	-2.33	Q	H

NOTE: None.

Data#: 3 File#: C31217403C.EMI

Date: 2003-12-18 Time: 09:48:52



(Conduction A)

Trace: 2 1

Ref Trace:

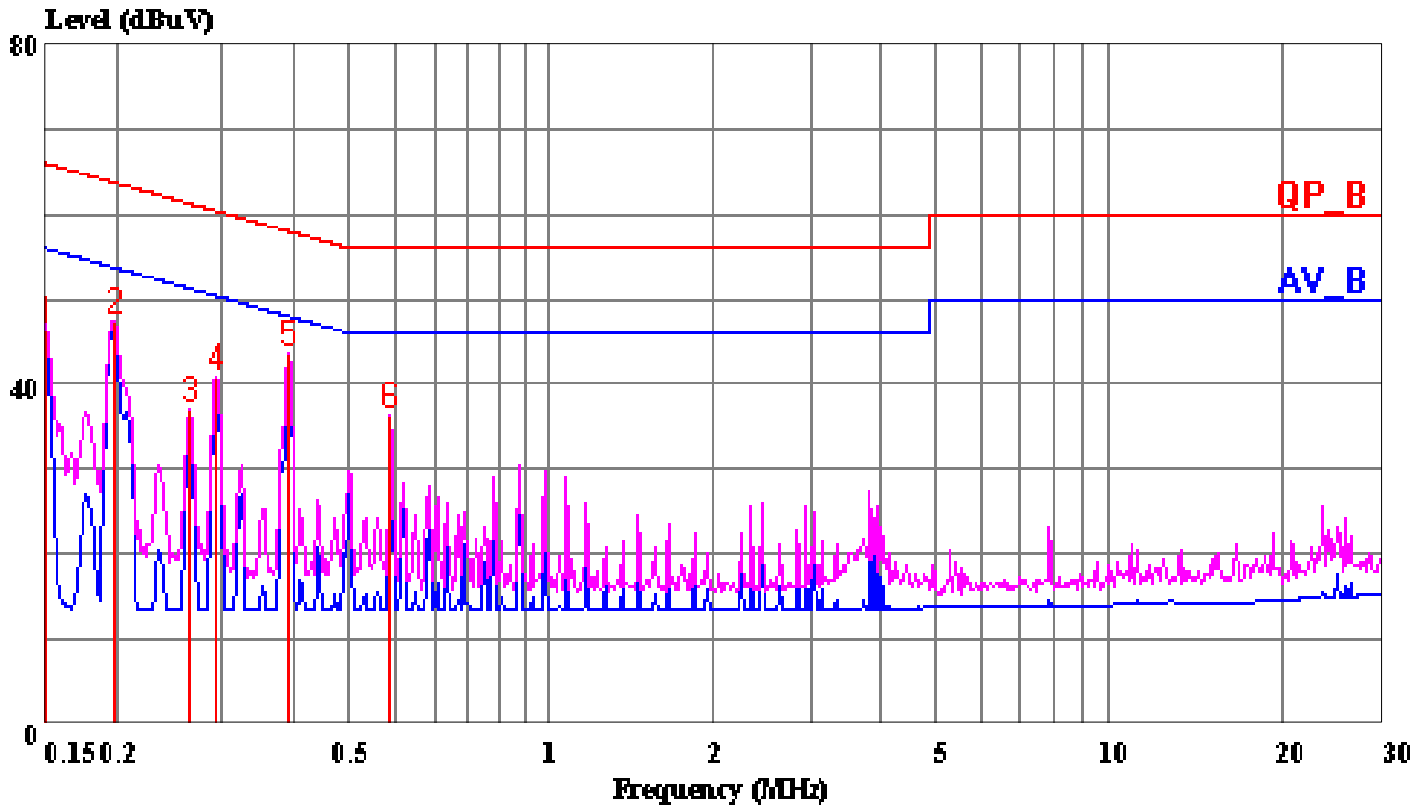
Condition: LINE
Report No. : C31217403
Test Engr. : ALEX PAN
Company : SUNIX CO., LTD.
EUT : 4079FL
Test Config : EUT / ALL PERIPHERALS
Type of Test: FCC CLASS B
Mode of Op. : NORMAL MODE

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.151	50.07	0.12	50.19	65.96	-15.77	Peak
2	0.197	43.18	0.12	43.30	63.76	-20.46	Peak
3	0.266	37.60	0.13	37.73	61.25	-23.51	Peak
4	0.296	37.26	0.14	37.40	60.37	-22.97	Peak
5	0.393	36.53	0.16	36.69	57.99	-21.30	Peak
6	3.922	28.39	0.29	28.68	56.00	-27.32	Peak

Data#: 6 File#: C31217403C.EMI

Date: 2003-12-18 Time: 09:51:59



(Conduction A)

Trace: 5 4

Ref Trace:

Condition: NEUTRAL
Report No. : C31217403
Test Engr. : ALEX PAN
Company : SUNIX CO., LTD.
EUT : 4079FL
Test Config : EUT / ALL PERIPHERALS
Type of Test: FCC CLASS B
Mode of Op. : NORMAL MODE

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.151	46.39	0.12	46.51	65.96	-19.45	Peak
2	0.197	47.47	0.12	47.59	63.76	-16.17	Peak
3	0.266	36.99	0.13	37.12	61.25	-24.12	Peak
4	0.296	40.60	0.14	40.74	60.37	-19.63	Peak
5	0.393	43.34	0.16	43.50	57.99	-14.49	Peak
6	0.589	36.27	0.18	36.45	56.00	-19.55	Peak

Data#: 3 File#: C31217403D.EMI
D-Site

Date: 2003-12-23 Time: 17:02:03

Condition: VERTICAL /10m
Report No. : C31217403
Test Engr. : ALEX PAN
Company : SUNIX CO., LTD.
EUT : 4079FL
Test Config : EUT / ALL PERIPHERALS
Type of Test: FCC CLASS B
Mode of Op. : NORMAL MODE

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	50.100	36.90	-8.43	28.47	30.00	-1.54	QP
2	58.277	37.10	-8.86	28.24	30.00	-1.76	QP
3	83.690	33.87	-11.17	22.70	30.00	-7.30	Peak
4	120.070	32.67	-7.89	24.78	30.00	-5.22	Peak
5	133.202	34.89	-6.57	28.32	30.00	-1.68	QP
6	184.273	35.90	-7.37	28.53	30.00	-1.47	QP
7	300.100	33.75	-4.96	28.79	37.00	-8.21	Peak

Data#: 5 File#: C31217403D.EMI
D-Site

Date: 2003-12-23 Time: 17:20:14

Condition: HORIZONTAL /10m
Report No. : C31217403
Test Engr. : ALEX PAN
Company : SUNIX CO., LTD.
EUT : 4079FL
Test Config : EUT / ALL PERIPHERALS
Type of Test: FCC CLASS B
Mode of Op. : NORMAL MODE

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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	50.239	34.55	-8.43	26.12	30.00	-3.89	QP
2	58.640	31.87	-8.86	23.01	30.00	-6.99	Peak
3	66.611	37.83	-9.18	28.65	30.00	-1.35	QP
4	83.299	36.41	-11.15	25.26	30.00	-4.74	QP
5	118.910	30.97	-7.97	23.00	30.00	-7.00	Peak
6	184.297	35.04	-7.37	27.67	30.00	-2.33	QP