



HYUNDAI CALIBRATION & CERTIFICATION TECH. CO., LTD.

PRODUCT COMPLIANCE TEAM
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CERTIFICATION

Manufacture; IMAGEQUEST CO., LTD. SAN 136-1, AMI-RI, BUBAL-EUP, ICHEON-SI, KYOUNKI-DO, 467-701, KOREA IMAGEQUEST FRN : 0005-8664-39	Date of Issue: APRIL 4, 2002 Test Report No.: HCT-F02-0401 Test Site: HYUNDAI CALIBRATION & CERTIFICATION TECHNOLOGIES CO., LTD. HCT FRN : 0005-8664-21
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FCC ID :

PJIQ15

MODEL / TYPE :

L15A0C060

FCC Rule Part(s):	Part 15 & 2; ET Docket 95-19
Classification:	FCC Class B Peripheral Device (JBP)
Standard(s):	FCC Class B: 1998 (CISPR 22)
Equipment(EUT) Type:	15" LCD Monitor
Max Resolution:	1024 X 768 (@60KHz/ 75Hz)
Port/ Connector(s)	15-pin D-sub VGA connector; USB 1 upstream port and 2 downstream ports
LCD PANEL	SAMSUNG ELECTRONICS CO.,LTD. (LTM150XH-L01)

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-1992.(See Test Report if any modifications were made for compliance)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

HYUNDAI C-Tech. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse of 1988,21 U.S.C.853(a).

Report prepared by : Ki-Soo Kim
Manager of EMC Tech. Part



TABLE OF CONTENTS

	PAGE
1. GENERAL INFORMATION.....	3
1.1 Product Description.....	3
1.2 Related submittal(s)/Grant(s).....	3
1.3 Tested System Details.....	4
1.4 Test Methodology.....	4
1.5 Test Facility.....	4
2. SYSTEM TEST CONFIGURATION.....	5
2.1 Justification.....	5
2.2 EUT Exercise Software.....	5
2.3 Cable Description.....	6
2.4 Noise Suppression Parts on Cable.....	6
2.5 Equipment Modifications.....	7
2.6 Configuration of Tested System.....	8
3. PRELIMINARY TESTS.....	9
3.1 Power line Conducted Emissions Tests.....	9
3.2 Radiated Emissions Tests.....	9
4. FINAL CONDUCTED AND RADIATED EMISSION TESTS SUMMARY.....	9
4.1 Conducted Emission Tests.....	10
4.2 Radiated Emission Tests.....	11
5. FIELD STRENGTH CALCULATION.....	12
6. LIST OF TEST EQUIPMENT	13

ATTACHMENT A	ID Label / Location Info.
ATTACHMENT B.....	External Photos.
ATTACHMENT C	Block Diagram..
ATTACHMENT D	Test Setup Photos.
ATTACHMENT E	User's Manual.
ATTACHMENT F	Internal Photos.

1. GENERAL INFORMATION

1.1 Product Description

The ImageQuest CO., LTD. Model Q15 (referred to as the EUT in this report) is a 15" LCD Monitor HOR. Freq. 60KHz w/max. Resolution of 1024 X 768 . Product specification information described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	PLASTIC
LIST OF EACH OSC. OR XTAL. FREQ.(FREQ. 1MHz)	12MHz , 16MHz , 20MHz
POWER REQUIREMENT	DC 12V/5V ---- 2.0A / 2.0A
NUMBER OF LAYERS	MAIN BOARD 2 LAYER OSD BOARD 2 LAYER POWER BOARD 2 LAYER INVERTER BOARD 2 LAYER
MAX. RESOLUTION	1024 X 768 (@60KHz/ 75 Hz)
H-SYNC FREQUENCY RANGE	31.0KHz 60.0KHz
V-SYNC FREQUENCY RANGE	56Hz 75Hz
LCD TYPE	15" (LCD Type NO : LTM150XH-L01)

1.2 Related Submittal(s) / Grant(s)

ORIGINAL SUBMITTAL ONLY

1.3 Tested System Details

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

DEVICE TYPE	MANUFACTURER	MODEL NUMBER	FCC ID / DoC	CONNECTED TO
MONITOR (EUT)	IMAGEQUEST CO., LTD.	Q15	PJIQ15	HOST
PC(HOST)	H/P	KR14111606	DoC	N/A
KEY BOARD	H/P	BF12502086	DoC	HOST
PRINTER	H/P	HP895C	DoC	HOST
MODEM	3COM CORPORATION	56K FAX MODEM	DoC	HOST
VIDEO CARD	NVIDIA	NVIDIA GeForce MX 200	DoC	HOST
MOUSE	H/P	M-S48a	DoC	HOST
USB MOUSE	LOGITECH	M-BE55	DoC	EUT
USB FLASH DRIVE	Jung Myung Telecom Co.,Ltd	E-D900-00-4988	DoC	EUT

1.4 Test Methodology

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 meters.

1.5 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1,MAEKOK-RI,HOBUP-MYUN,ICHON-SI,KYOUNGKI-DO, 467-701,KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 24,2000(Confirmation Number: EA90661)

2.SYSTEM TEST CONFIGURATION

2.1 Justification

The device was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the following components and I/O cards inside the E.U.T were used.

DEVICE TYPE	MANUFACTURE	MODEL/PART NUMBER
MAIN BOARD	ImageQuest CO., Ltd.	3041001038
POWER BOARD	NEO ELECTRONICS CO.,LTD	3610200103
OSD BOARD	ImageQuest CO., Ltd.	3010700802
INVERTOR BOARD	ImageQuest CO., Ltd	3610400247
LCD BOARD	SAMSUNG ELECTRONICS CO.,LTD.	LTM150XH-L01

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 disc, was inserted into drive A and is auto starting on power-up. Once loaded, the program sequentially exercises each system component in turn. The sequence used is : (1) Display test, (2) RS 232 test (3) Key board test, (4) Printer test, (5) FDD test, (6) HDD test. The complete cycle takes about 20 seconds and is repeated continuously. As the keyboard and mouse are strictly input devices, no data is transmitted to them during test. They are however, continuously scanned for data input activity. The video resolution modes setup and change program was used during the radiated and conducted emission testing.

2.3 Cable Description

	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
MONITOR(EUT)	N	Y	1.8(P), 1.5(D), 1.5(D)
PC(HOST)	N	N/A	1.8(P)
PRINTER	N	Y	2.0(P),1.8(D)
KEY BOARD	N/A	Y	2.0(D)
MODEM	N	Y	2.0(P),0.8(D)
MOUSE	N/A	Y	1.8(D)
UPLOAD	N/A	Y	1.8(D)
USB MOUSE	N/A	N/A	0.8(D)
USB FRESH DRIVE	N/A	N/A	N/A

The marked "(D)" means the Data Cable and "(P)" means the Power Cable.

2.4 Noise Suppression Parts on Cable. (I/O CABLE)

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
MONITOR(EUT)	Y	BOTH END	Y	BOTH END
PRINTER	Y	PC END	Y	BOTH END
KEY BOARD	Y	PC END	Y	PC END
MODEM	Y	PC END	Y	BOTH END
MOUSE	N	N/A	Y	PC END
UPLOAD	Y	BOTH END	Y	BOTH END
USB MOUSE	N	N/A	Y	EUT END
USB FRESH DRIVE	N	N/A	Y	EUT END

2.5 Equipment Modifications

N/A

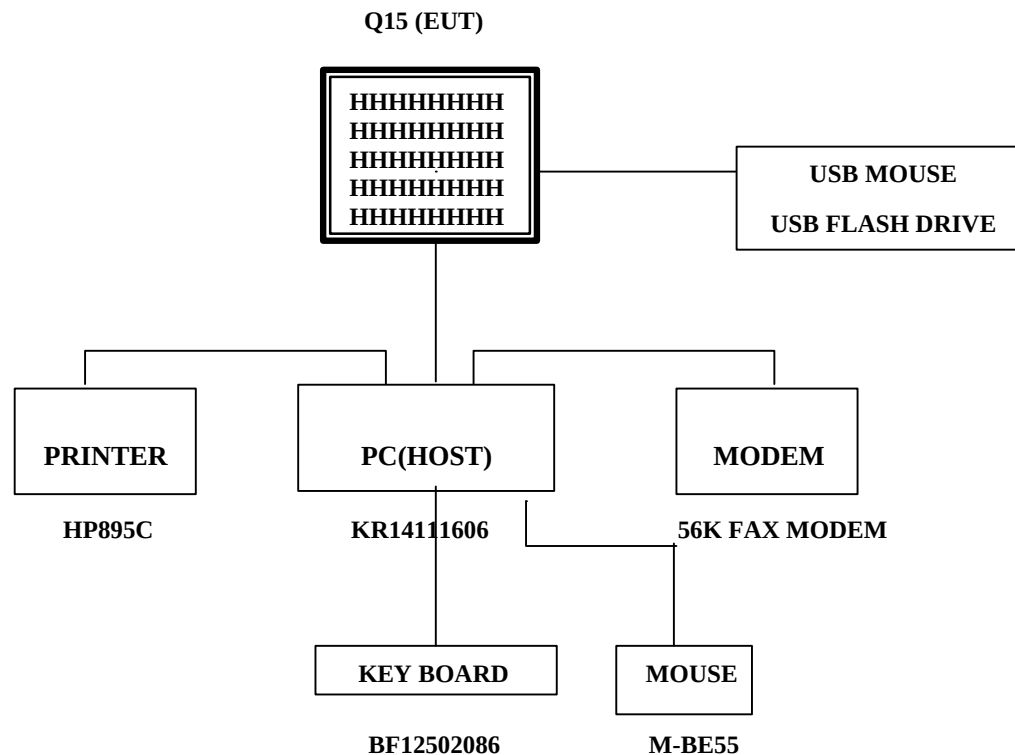
2.6 Configuration of Test system

Line Conducted Test : EUT was connected to LISN, all other supporting equipment were connected to another LISN.

Preliminary Power line Conducted Emission tests were performed by using the procedure in ANSI C63.4/1992 7.2.3 to determine the worse operating conditions.

Radiated Emission Test : Preliminary Radiated Emissions tests were conducted using the procedure in ANSI C63.4/1992 8.3.1.1 to determine the worse operating condition. Final Radiated Emission tests were conducted at 10 meter open area test site.

[Configuration of Tested System]



3. PRELIMINARY TESTS

3.1 AC Power line Conducted Emission Tests

During Preliminary Tests, the following operating mode were investigated

Processor Speed (MHz)	Video Resolution (w/max)	The worst operating condition
Pentium 1GHz	1024X768 (60KHz/75Hz)	X
	1024X768 (56.5KHz/70Hz)	
	800X600 (37.9KHz/60Hz)	
	800X600 (35.2 KHz/56Hz)	
	640X480 (31.5KHz/70Hz)	

4.2 Radiated Emission Tests

During Preliminary Tests, the following operating mode were investigated

Processor Speed (MHz)	Video Resolution (w/max)	The worst operating condition
Pentium 1GHz	1024X768 (60KHz/75Hz)	X
	1024X768 (56.5KHz/70Hz)	
	800X600 (37.9KHz/60Hz)	
	800X600 (35.2 KHz/56Hz)	
	640X480 (31.5KHz/70Hz)	

Tested by Kyoung-Houn SEO / Engineer

Date : MARCH 12 , 2002

4. FINAL CONDUCTED AND RADIATED EMISSION TESTS SUMMARY

4.1 Conducted Emission Test

The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

Humidity Level	: 40 %	Temperature	: 22
Limit apply to	: CISPR 22		
Type of Tests	: CLASS B		
Date	: MARCH 20, 2002		
Result	: PASSED BY -8.5 dB		
EUT	: 15" LCD MONITOR		

Operating Condition : 1024 X 768 (Hf : 60KHz, Vf : 75Hz)
 Detector : CISPR Quasi-Peak (6 dB Bandwidth : 9 KHz)
 CISPR Average(6 dB Bandwidth : 9 KHz)

Line Conducted Emission Tabulated Data

Power Line Conducted Emissions			CISPR 22		
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)	Detector Mode
4.655	37.5	NEUTRAL	46.0	-8.5	Average
1.285	35.6	NEUTRAL	46.0	-10.4	Average
2.020	35.6	NEUTRAL	46.0	-10.4	Average
2.390	35.5	HOT	46.0	-10.5	Average

Measured by : Kyoung-Houn SEO / Engineer

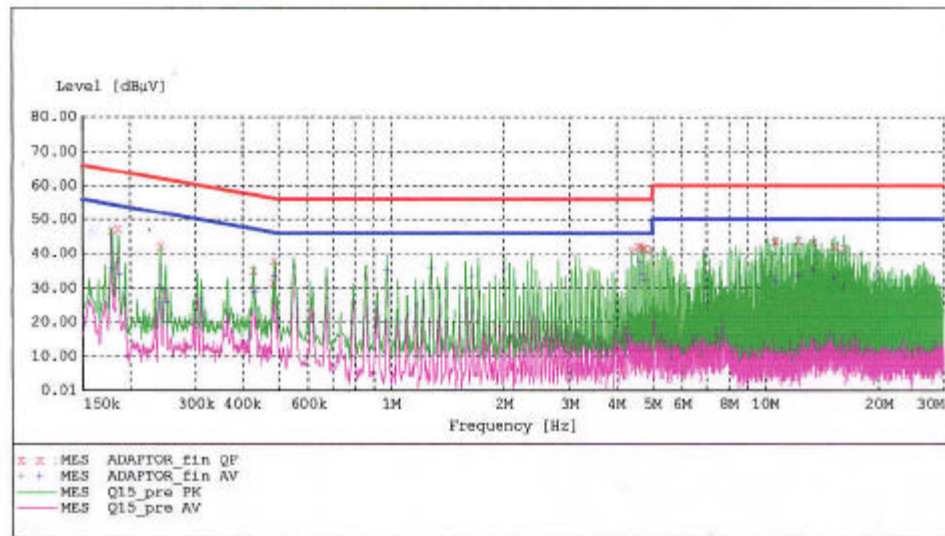
Date : MARCH 20, 2002

HYUNDAI C-TECH. CO., LTD.
EMC TEST LAB.

EUT: Q15
 Manufacturer: IMAGEQUEST
 Operating Condition: 1024 X 768 60K 75Hz
 Test Site: Shield Room
 Operator: KH-SEO
 Test Specification: EN 55022
 Comment: N
 Start of Test: 3/20/02

SCAN TABLE: "EN 55022 Voltage"

Short Description:			EN 55022 Voltage			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width	MaxPeak	10.0 ms	9 kHz	old-C/E FACTOR
150.0 kHz	30.0 MHz	5.0 kHz	Average			



MEASUREMENT RESULT: "ADAPTOR_fin QP"

3/20/02

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.180000	46.90	1.0	65	17.6	1	---
0.187000	47.30	1.0	64	16.9	1	---
0.243000	42.50	1.0	62	19.5	1	---
0.429000	35.30	1.0	57	22.0	1	---
0.485000	31.70	1.0	56	24.5	1	---
0.490000	38.10	1.0	56	18.1	1	---
4.410000	41.10	1.5	56	14.9	1	---
4.595000	42.30	1.5	56	13.7	1	---
4.655000	42.60	1.5	56	13.4	1	---
4.720000	41.60	1.5	56	14.4	1	---
4.780000	41.90	1.5	56	14.1	1	---
4.965000	41.60	1.6	56	14.4	1	---
10.600000	43.60	1.7	60	16.4	1	---
10.720000	44.00	1.7	60	16.0	1	---

MEASUREMENT RESULT: "ADAPTOR_fin QP"

(continued)

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
12.315000	44.10	1.7	60	15.9	1	---
13.480000	43.60	1.7	60	16.4	1	---
15.380000	42.40	1.7	60	17.6	1	---
16.235000	42.10	1.7	60	17.9	1	---

MEASUREMENT RESULT: "ADAPTOR_fin AV"

3/20/02

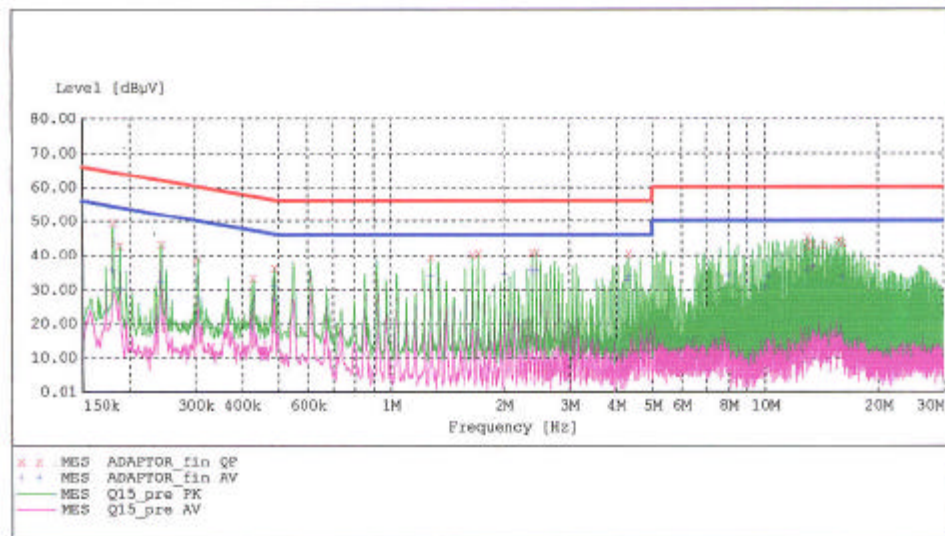
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.180000	35.60	1.0	55	18.9	1	---
0.188000	34.10	1.0	54	20.0	1	---
0.242000	30.10	1.0	52	21.9	1	---
0.250000	25.90	1.0	52	25.8	1	---
0.429000	28.90	1.0	47	18.4	1	---
0.490000	33.50	1.0	46	12.6	1	---
0.980000	35.10	1.0	46	10.9	1	---
1.285000	35.60	1.1	46	10.4	1	---
2.020000	35.60	1.3	46	10.4	1	---
4.655000	37.50	1.5	46	8.5	1	---
4.720000	34.30	1.5	46	11.7	1	---
4.780000	32.70	1.5	46	13.3	1	---
10.600000	33.30	1.7	50	16.7	1	---
10.720000	31.70	1.7	50	18.3	1	---
12.315000	33.90	1.7	50	16.1	1	---
13.480000	35.30	1.7	50	14.7	1	---
15.380000	33.20	1.7	50	16.8	1	---
16.235000	30.60	1.7	50	19.4	1	---

HYUNDAI C-TECH. CO., LTD.
EMC TEST LAB.

EUT: Q15
Manufacturer: IMAGEQUEST
Operating Condition: 1024 X 768 60K 75Hz
Test Site: Shield Room
Operator: KH-SEO
Test Specification: EN 55022
Comment: H
Start of Test: 3/20/02

SCAN TABLE: "EN 55022 Voltage"

Short Description:			EN 55022 Voltage			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.0 kHz	30.0 MHz	5.0 kHz	MaxPeak	10.0 ms	9 kHz	old-C/E FACTOR
			Average			

**MEASUREMENT RESULT: "ADAPTOR_fin QP"**

3/20/02

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.182000	49.50	1.0	64	14.9	1	---
0.189000	43.10	1.0	64	21.0	1	---
0.245000	43.30	1.0	62	18.7	1	---
0.306000	39.20	1.0	60	20.9	1	---
0.430000	33.30	1.0	57	24.0	1	---
0.491000	36.40	1.0	56	19.8	1	---
1.285000	39.30	1.1	56	16.7	1	---
1.655000	40.20	1.2	56	15.8	1	---
1.715000	40.70	1.2	56	15.3	1	---
2.390000	40.90	1.3	56	15.1	1	---
2.450000	41.10	1.3	56	14.9	1	---
4.350000	40.60	1.5	56	15.4	1	---
12.930000	43.00	1.7	60	17.0	1	---
13.050000	45.40	1.7	60	14.6	1	---

MEASUREMENT RESULT: "ADAPTOR_fin QP"
(continued)

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
13.360000	43.40	1.7	60	16.6	1	---
14.400000	43.20	1.7	60	16.8	1	---
15.805000	44.50	1.7	60	15.5	1	---
16.115000	43.70	1.7	60	16.3	1	---

MEASUREMENT RESULT: "ADAPTOR_fin AV"
3/20/02

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.181000	35.90	1.0	54	18.5	1	---
0.189000	30.50	1.0	54	23.6	1	---
0.244000	32.40	1.0	52	19.6	1	---
0.307000	27.50	1.0	50	22.6	1	---
0.486000	27.20	1.0	46	19.1	1	---
0.491000	31.20	1.0	46	14.9	1	---
1.285000	34.10	1.1	46	11.9	1	---
2.020000	34.70	1.3	46	11.3	1	---
2.390000	35.50	1.3	46	10.5	1	---
2.450000	35.50	1.3	46	10.5	1	---
4.290000	32.60	1.5	46	13.4	1	---
4.350000	34.00	1.5	46	12.0	1	---
8.025000	34.30	1.6	50	15.7	1	---
10.050000	30.90	1.7	50	19.1	1	---
10.230000	34.00	1.7	50	16.0	1	---
13.050000	35.70	1.7	50	14.3	1	---
13.480000	36.70	1.7	50	13.3	1	---
16.115000	33.60	1.7	50	16.4	1	---

5. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor.

The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 21.5 dBuV is obtained. The Antenna Factor of 7.4 and a Cable Factor of 1.1 is added. The 30 dBuV/m value was mathematically converted to its corresponding level in uV/m.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dBuV/m}$$

$$\text{Level in uV/m} = \text{Common Antilogarithm} [(30 \text{ dBuV/m})/20] = 31.6 \text{ uV/m}$$

6. LIST OF TEST EQUIPMENT

<u>TYPE</u>	<u>MANUFACTURE</u>	<u>MODEL</u>	<u>CAL. DATE</u>
EMI Test Receiver	Rohde & Schwarz	ESH3	2001.6.29
EMI Test Receiver	Rohde & Schwarz	ESVP	2002.2.14
EMI Test Receiver	Rohde & Schwarz	ESI40	2001.11.5
EMI Test Receiver	Rohde & Schwarz	ESVS30	2002.3.6
Spectrum Monitor	Rohde & Schwarz	EZM	N.A
Graphic Plotter	Rohde & Schwarz	DOP2	N.A
Printer	Rohde & Schwarz	PDN	N.A
Spectrum Analyzer	H.P	8591EM	2001.7.11
LISN	EMCO	3825/2	2002.2.7
LISN	Rohde & Schwarz	ESH2-Z5	2001.8.12
Amplifier	Hewlett-Packard	8447E	2002.3.2
Dipole Antennas	Rohde & Schwarz	VHAP	2001.6.28
Dipole Antennas	Rohde & Schwarz	UHAP	2001.6.28
Biconical Antenna	Rohde & Schwarz	BBA-9106	2001.6.28
Log-Periodic Antenna	Rohde & Schwarz	UHALP-9107	2001.6.26
Antenna Position Tower	EMCO	1051-12	N.A
Turn Table	EMCO	1060-06	N.A
Line Filter	KEENE	ULW 2X30-60	N.A
Power Analyzer	Voltech	PM 3300	2002.2.20
Reference Network Impedance	Voltech	IEC 555	N.A
AC Power Source	PACIFIC	Magnetic Module	N.A
AC Power Source	PACIFIC	360AMX	N.A