



Report

Product Name : BOOK SIZE PC

Model No. : MFI-5GXM; MILLENNIUM-I

FCC ID. : O2PMILLENNIUM-I

Applicant : TECHNICA HOUSE INCORPORATION

Address : 4F, No. 9, Lane 235, Pao Chiao Rd.,

Hsin Tien City, Taipei Hsien, Taiwan, R.O.C.

Date of Receipt : April 29, 2002

Date of Test : May 09, 2002

Report No. : 025L101FI

The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Test Report Certification

Test Date : May 09, 2002

Report No.: 025L101FI



Accredited by NIST (NVLAP)

NVLAP Lab Code: 200533-0

Product Name : BOOK SIZE PC

Applicant : TECHNICA HOUSE INCORPORATION

Address : 4F, No. 9, Lane 235, Pao Chiao Rd.,
Hsin Tien City, Taipei Hsien, Taiwan, R.O.C.

Manufacturer : TECHNICA HOUSE INCORPORATION

Model No. : MFI-5GXM; MILLENNIUM-I

FCC ID. : O2PMILLENNIUM-I

Rated Voltage : AC 120V/60Hz

Trade Name : Microflex

Measurement Standard : CISPR 22:1997

Measurement Procedure : ANSI C63.4: 1992

Classification : Class B

Test Result : Complied



NVLAP Lab Code: 200533-0

The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By

:

Chialin Chen
(Chialin Chen)

Tested By

:

Sky Hsu
(Sky Hsu)

Reviewed By

:

Wallace Pan
(Wallace Pan)

Approved By

:

Gene Chang
(Gene Chang)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION.....	4
1.1. EUT Description	4
1.2. Tested System Details	5
1.3. Configuration of tested System.....	6
1.4. EUT Exercise Software	6
1.5. Test Facility	7
2. Conducted Emission.....	8
2.1. Test Equipment List.....	8
2.2. Test Setup	8
2.3. Limits	9
2.4. Test Procedure.....	9
2.5. Test Result	9
3. Radiated Emission.....	10
3.1. Test Equipment.....	10
3.2. Test Setup	10
3.3. Limits	11
3.4. Test Procedure.....	11
3.5. Test Result	11
4. EMI Reduction Method During Compliance Testing.....	12
5. Summary of Test Data.....	13
5.1. Test Data of Conducted Emission.....	14
5.2. Test Data of Radiated Emission.....	16
Attachment 1: EUT Test Photographs	
Attachment 2: EUT Detailed Photographs	
Reference : Laboratory of License	

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	: BOOK SIZE PC
Trade Name	: Microflex
FCC ID	: O2PMILLENNIUM-I
Model No.	: MFI-5GXM; MILLENNIUM-I
Main Board	: Microflex, MFI15233
CPU	: NS GX1-300MHz
HDD	: SAMSUNG, SVO644A
FDD	: MITSUMI, D353M3
VGA Card	: On Board
LAN Card	: On Board
Power Adapter	: CHANNEL WELL, CWT-80

Note:

1. The EUT is a BOOK SIZE PC, which have two models for marketing requirement.
2. The EUT with one printer port, four RS/232 ports, one VGA port, two USB ports, one PS/2 mouse port, one PS/2 keyboard port, one LAN port and one power port.
3. QuietTek has verified the construction and function in typical operation. The test mode were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Conducted Test:	NS GX1-300MHz, 1024*768/ 75Hz
Radiated Test:	NS GX1-300MHz, 1024*768/ 75Hz

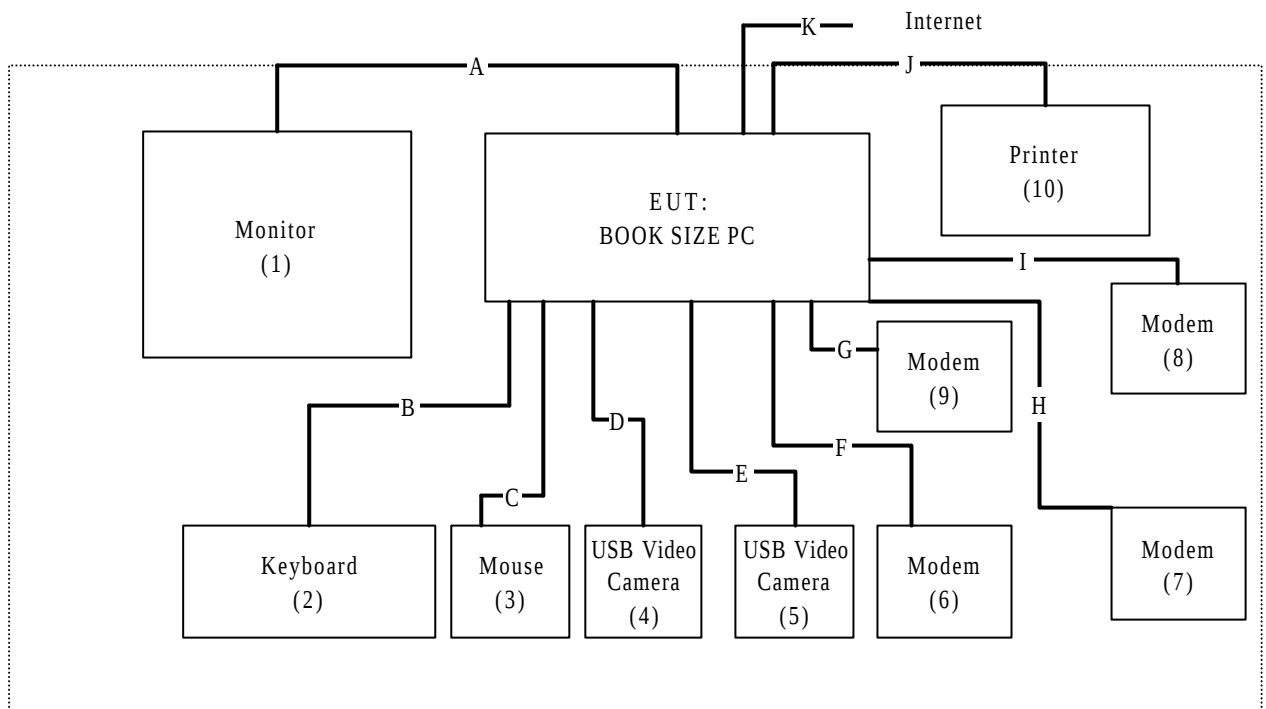
1.2. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	FCC ID
(1)	Monitor	ADI	CM703	038054T10203888A	FCC DOC
(2)	Keyboard	HP	SK-2506	C00083358	FCC DOC
(3)	Mouse	SYNNES	MW3-P	000120549	FCC DOC
(4)	USB Video Camera	Logitech	V-UB2	LZA04656864	FCC DOC
(5)	USB Video Camera	Logitech	V-UB2	LZA04656855	FCC DOC
(6)	Modem	ACEEX	DM-1414	0102027559	IFAXDM1414
(7)	Modem	ACEEX	DM-1414	0102027558	IFAXDM1414
(8)	Modem	ACEEX	DM-1414	0102027549	IFAXDM1414
(9)	Modem	ACEEX	DM-1414	0102027547	IFAXDM1414
(10)	Printer	EPSON	Color 680	015999	N/A

	Cable Type	Cable Description
A.	VGA cable	Shielded, 1.8m with core *1
B.	Keyboard cable	Shielded, 1.8m with core
C.	PS/2 Mouse cable	Shielded, 1.0m
D.	USB Video Camera cable	Shielded, 1.8m with core *1
E.	USB Video Camera cable	Shielded, 1.8m with core *1
F.	Modem cable	Shielded, 1.5m
G.	Modem cable	Shielded, 1.5m
H.	Modem cable	Shielded, 1.5m
I.	Modem cable	Shielded, 1.5m
J.	Printer cable	Shielded, 1.5m
K.	LAN cable	Shielded, 3.0m

1.3. Configuration of tested System



1.4. EUT Exercise Software

- (1) Setup the EUT and simulators as shown on 1.3.
- (2) Turn on the power of all equipment and run Windows.
- (3) Personal Computer reads data from disk.
- (4) EUT will sends "H" pattern to monitor, the monitor will show "H" pattern on the screen.
- (5) EUT sends "H" pattern to printer, the printer will print "H" pattern on paper.
- (6) EUT reads and writes data into and from modem.
- (7) Run the "EMCTEST.EXE", "EMITEST.EXE" test program on the windows desktop.
- (8) EUT will read data from floppy disk and then writes the data into floppy disk, same operation for hard disk.
- (9) EUT Connect another simulation PC through LAN port and carry out Read/Write work each other.
- (10) Repeat the above procedure (3) to (9).

1.5. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: May 15, 2001 File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Reference 31040/SIT1300F2
June 29, 2001 Accreditation on NVLAP
NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation

Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwa, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

2. Conducted Emission

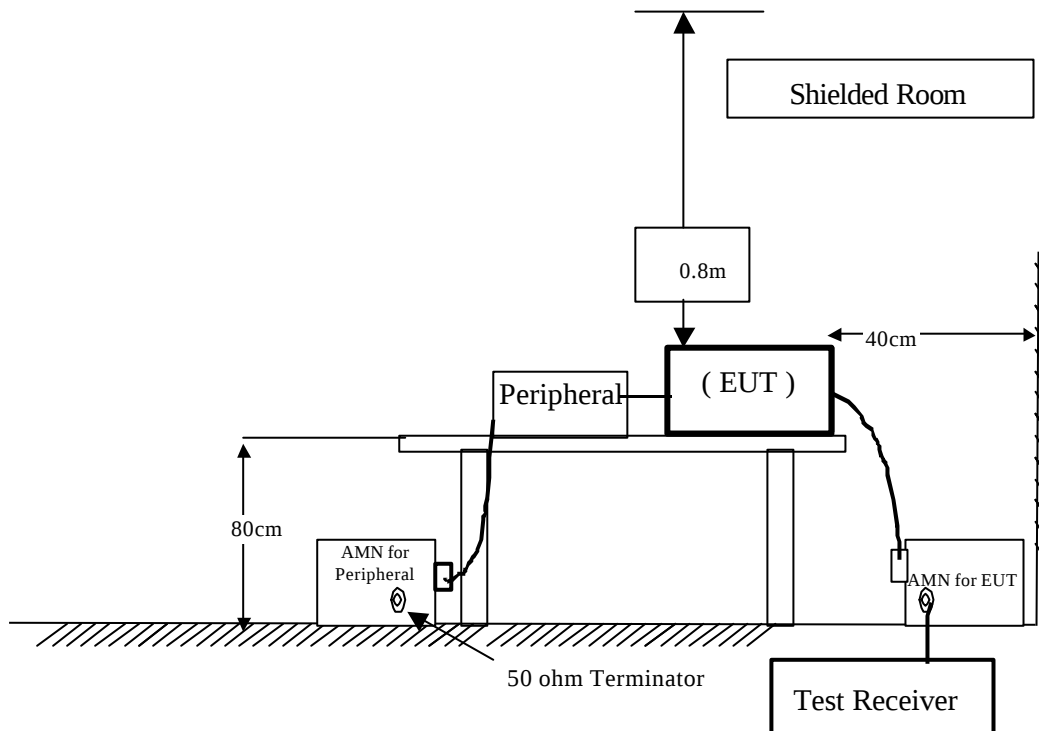
2.1. Test Equipment List

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal..	Remark
1	Test Receiver	R & S	ESCS 30/838251/0001	May, 2002	
2	L.I.S.N.	R & S	ESH3-Z5/836679/0023	May, 2002	EUT
3	L.I.S.N.	R & S	ENV 4200/833209/0023	May, 2002	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2002	
5	N0.4 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

CISPR 22 Limits (dBuV)				
Frequency MHz	Class A		Class B	
	QP	AV	QP	AV
0.15 - 0.50	79	66	66-56	56-46
0.50-5.0	73	60	56	46
5.0 - 30	73	60	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4:1992 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Test Result

The emission from the EUT was below the specified limits. The worst-case emissions are shown in section 5. The acceptance criterion was met and the EUT passed the test.

3. Radiated Emission

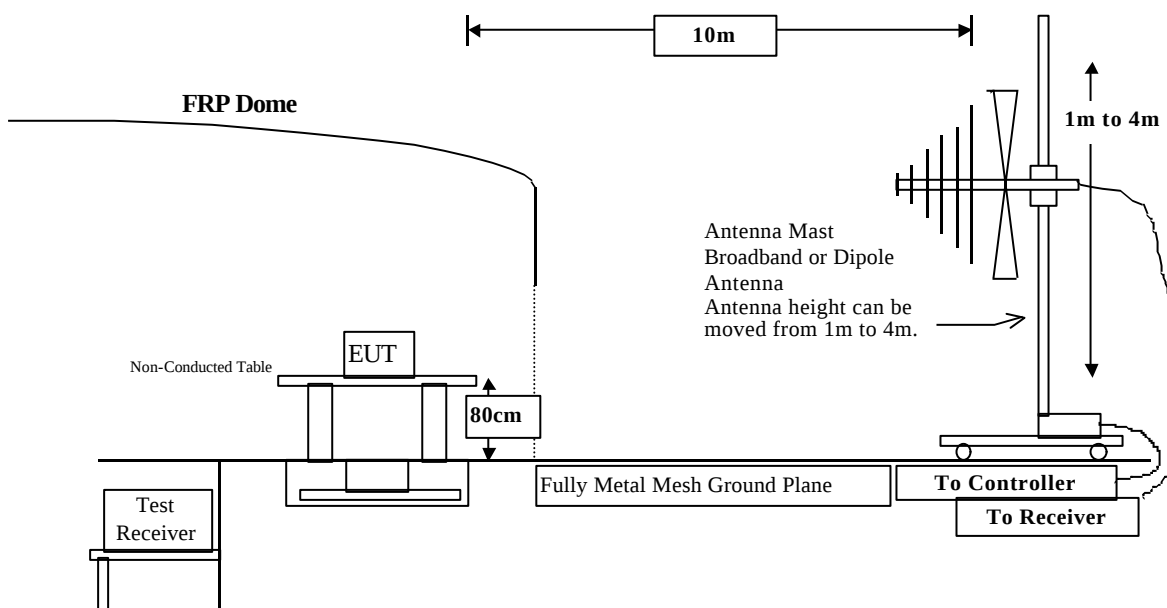
3.1. Test Equipment

The following test equipment are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☐ Site # 1	Test Receiver	R & S	ESVS 10 / 834468/003	July, 2001
	Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2002
	Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2002
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Nov., 2001
☒ Site # 2	Test Receiver	R & S	ESCS 30 / 836858 / 022	Nov., 2001
	Spectrum Analyzer	Advantest	3162 / 100803466	May, 2002
	Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2002
	Bilog Antenna	SCHAFFNER	CBL6112B / 2705	Oct., 2001
	Horn Antenna	ETS	3115 / 0005-6160	July, 2001
	Pre-Amplifier	QTK	QTK-AMP-01/ 0001	July, 2001
☐ Site # 3	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2002
	Spectrum Analyzer	Advantest	3162 / 100803480	May, 2002
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2002
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2002
	Horn Antenna	ETS	3115 / 0005-6160	July, 2001
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2001

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

3.2. Test Setup



3.3. Limits

According to CISPR 22 Limits (dBuV/m)				
Frequency MHz	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m
30 – 230	10	40	10	30
230 – 1000	10	47	10	37
According to FCC Part 15 Subpart B Limits (dBuV/m)				
Above 960	10	49.5	3	54

Remark: 1. The tighter limit shall apply at the edge between two frequency bands.

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. RF Line Voltage (dBuV/m) = 20 log RF Line Voltage (uV/m)

3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 10 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:1992 on radiated measurement.

Radiated emissions were investigated over the frequency range from 30MHz to 1GHz using a receiver bandwidth of 120kHz. Radiated was performed at an antenna to EUT distance of 10 meters.

3.5. Test Result

The emission from the EUT was below the specified limits. The worst-case emissions are shown in section 5. The acceptance criterion was met and the EUT passed the test.

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.

5. Summary of Test Data

The test data in the emission was performed according to the requirements of measurement standard and process. Quietek Corporation is assumed full responsibility for the accuracy and completeness of these measurements. The test data of the emission is listed as below.

All the tests were carried out with the EUT in normal operation, which was defined as:

Test Mode:

Conducted Test:	NS GX1-300MHz, 1024*768/ 75Hz
Radiated Test:	NS GX1-300MHz, 1024*768/ 75Hz

5.1. Test Data of Conducted Emission

Product : BOOK SIZE PC
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : NS GX1-300MHz, 1024*768/ 75Hz

Frequency MHz	Cable Loss dB	LISN Factor dB	Reading Level dBuV	Measurement Level dBuV	Limits dBuV
=====					
Quasi - Peak					
0.193	0.21	0.10	54.02	54.33	63.90
0.258	0.21	0.10	52.23	52.54	61.48
* 0.321	0.21	0.10	54.58	54.89	59.69
0.386	0.21	0.10	49.70	50.01	58.15
0.837	0.16	0.10	35.50	35.76	56.00
12.818	0.29	0.29	41.48	42.06	60.00
Average					
0.193	0.21	0.10	52.30	52.61	53.91
0.258	0.21	0.10	50.20	50.51	51.50
0.321	0.21	0.10	52.40	52.71	49.68
0.386	0.21	0.10	47.80	48.11	48.15
0.837	0.16	0.10	34.40	34.66	46.00
12.818	0.29	0.29	37.40	37.98	50.00

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + LISN Factor + Cable loss.

Product : BOOK SIZE PC
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : NS GX1-300MHz, 1024*768/ 75Hz

Frequency MHz	Cable Loss dB	LISN Factor dB	Reading Level dBuV	Measurement Level dBuV	Limits dBuV
=====					
Quasi - Peak					
0.193	0.21	0.10	53.46	53.77	63.89
0.258	0.21	0.10	55.10	55.41	61.49
* 0.322	0.21	0.10	55.98	56.29	59.66
0.387	0.21	0.10	52.65	52.96	58.13
0.710	0.16	0.10	35.18	35.44	56.00
12.466	0.15	0.28	42.25	42.68	60.00
Average					
0.193	0.21	0.10	41.30	41.61	53.91
0.258	0.21	0.10	53.00	53.31	51.50
0.322	0.21	0.10	53.40	53.71	49.66
0.387	0.21	0.10	52.40	52.71	48.13
0.710	0.16	0.10	33.20	33.46	46.00
12.466	0.15	0.28	38.90	39.33	50.00

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + LISN Factor + Cable loss.

5.2. Test Data of Radiated Emission

Product : BOOK SIZE PC
 Test Item : Radiated Emission
 Test Site : No.2 OATS
 Test Mode : NS GX1-300MHz, 1024*768/ 75Hz

Freq.	Cable	Probe	PreAMP	Reading	Emission	Margin	Limit
	Loss	Factor		Level	Level		
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m
=====							
Horizontal							
44.150	0.94	10.56	0.00	6.10	17.60	12.40	30.00
72.000	1.08	6.64	0.00	7.72	15.45	14.55	30.00
120.010	1.33	11.84	0.00	7.77	20.94	9.06	30.00
168.012	1.59	8.99	0.00	8.11	18.68	11.32	30.00
197.572	1.73	8.25	0.00	10.59	20.57	9.43	30.00
264.023	2.08	12.88	0.00	7.46	22.42	14.58	37.00
296.358	2.25	12.35	0.00	8.49	23.09	13.91	37.00
312.020	2.33	12.10	0.00	14.92	29.35	7.65	37.00
360.021	2.58	13.68	0.00	12.38	28.64	8.36	37.00
504.023	3.32	16.49	0.00	8.64	28.45	8.55	37.00
691.502	4.29	18.63	0.00	8.13	31.05	5.95	37.00
889.072	5.30	19.92	0.00	10.50	35.72	1.28	37.00
* 987.858	5.81	20.72	0.00	8.50	35.04	1.96	37.00
Vertical							
45.984	0.95	7.86	0.00	14.10	22.91	7.09	30.00
70.850	1.08	6.58	0.00	16.07	23.74	6.26	30.00
146.669	1.47	9.62	0.00	8.54	19.63	10.37	30.00
168.013	1.59	8.47	0.00	10.46	20.51	9.49	30.00
187.248	1.68	8.16	0.00	9.16	18.99	11.01	30.00
197.570	1.73	8.27	0.00	13.24	23.24	6.76	30.00
264.016	2.08	13.04	0.00	8.60	23.72	13.28	37.00
296.358	2.25	12.13	0.00	8.39	22.76	14.24	37.00
360.014	2.58	14.38	0.00	12.74	29.70	7.30	37.00
456.021	3.07	16.69	0.00	10.12	29.88	7.12	37.00
543.321	3.52	18.49	0.00	9.99	32.00	5.00	37.00
691.499	4.29	18.13	0.00	7.91	30.33	6.67	37.00
* 889.074	5.30	20.32	0.00	9.51	35.13	1.87	37.00
987.858	5.81	20.02	0.00	9.73	35.57	1.43	37.00

Note:

1. All Reading Levels are Quasi-Peak.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable loss – Preamp.

Attachment 1 : EUT Test Photographs

Attachment 1 : EUT Test Photographs

Front View of Conducted Test



Back View of Conducted Test



Front View of Radiated Test



Back View of Radiated Test



Attachment 2 : EUT Detailed Photographs

Reference : Laboratory of License