



EMISSION TEST REPORT

Test report file No. : **02-IST-060/FB** Date of issue : Apr. 03, 2002.

Model / Type No. : NEWGEN

Kind of product : Digital Voice Recorder

Brand name : TERAVALUE

Applicant : TeraValue Techonology Co., Ltd.

Manufacturer : TeraValue Techonology Co., Ltd.

Address : Suite 509, Kyounggi Venture Bldg., Korea Desigh Center,
#344-1, Yatap-1dong, Bundang-Gu, Sungnam-Si, Kyounggi-Do, Korea

Test result according to the regulation(s)

☒ Positive ☐ Negative

at page 3.

This test report without appendix consists of 20 pages.

It is not allowed to copy this report even partly without the allowance of the Test Laboratory.

This equipment is complied 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.

DIRECTORY

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B) Test Data.

Conducted emissions (Mains)	: 450 kHz - 30 MHz	<u>13~15</u>
Radiated emissions	: 30 MHz – 1 GHz	<u>16~19</u>

C) Appendix

TEST REGULATIONS

The tests were performed according to the following regulations ;

-
- - FCC Part 15, Subpart B (Unintentional Radiators, Class B)

Information of Test Laboratory

IST EMC Lab.

San 21-8 Goan-Ri, Baekam-Myun, Yongin-Si, Kyunggi-Do, Korea

International - Tel : 82-31 - 333 - 4093. Fax : 82-31 - 333 - 4094.

Domestic - Tel : 031 - 333 - 4093. Fax : 031 - 333 - 4094.

ENVIRONMENTAL CONDITIONS

Temperature	<u>16</u>
Humidity	<u>42</u> %
Atmospheric pressure	<u>1003</u> mbar

TEST CONDITIONS

The **measurement of the conducted emissions (Interference voltage)** was performed in a shielded room.

Test location :

☒ Shielded room. No.1

☐ Compact chamber 2

Used testing instruments :

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESH 3	Test Receiver	Rohde & Schwarz	Jun. 16, 2001	861742/015
3725/2	LISN	EMCO	Jul. 30, 2001	9101-2068
KNW-407	LISN	Hyup-Rip	Jul. 26, 2001	8-883-10
ESH 3-Z2	Pulse Limiter	Rohde & Schwarz	Jul. 13, 2001	357.8810.52

Test - accessories :

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

Measurement Procedures :

Conducted emissions measurements were made in accordance with ANSI C-63.4-1992, "Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The measurement were performed over the frequency range of 0.45MHz to 30MHz using a 50Ω/50uH LISN as the input transducer to an EMI/Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within an IF bandwidth of 10kHz or for "quasi-peak" within a bandwidth of 9kHz.

All used test-instruments as well as the test-accessories are calibrated regularly.

Test engineer :



Y.J.Kim / Research Engineer
IST EMC Lab.

The **measurement of the radiated emissions (Electric field)** in the frequency range from 30 MHz to 1GHz was performed in horizontal and vertical antenna polarization at a open-site which meet the site attenuation requirement of ANSI C63.4-1992 and a test distance of :

Location : ☒ Open Site No. 1 ☐ Open Site No. 2 ☐ Open Site No. 3
 Distance : ☒ 3 meters ☐ 10 meters

Used testing instruments :

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESVP	Test Receiver	Rohde & Schwarz	Jun. 12, 2001	861744/018
VULB 9160	Antenna	Schwarzbeck	Jun. 04, 2001	3048

Test - accessories :

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

Measurement procedures

Radiated measurements were in accordance with ANSI C63.4-1992 "Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The measurements were performed over the frequency range of 30MHz to 1GHz using antenna as the input transducer to a EMI/Field Intensity Meter. The measurements were made with the detector set for "quasi-peak" within a bandwidth of 120kHz.

All used test-instruments as well as the test-accessories are calibrated regularly.

Test engineer :



Y.J.Kim / Research Engineer
IST EMC Lab.

EQUIPMENT UNDER TEST

Equipment Description

The Equipment Under Test (EUT) is the **Digital Voice Recorder of TeraValue Techonology Co., Ltd.**

Outer dimensions	32(W) x 122(H) x 22(D) (mm)
Weight	62g(Without batteries)
Power requirements	DC 3.0V, AAA alkaline x 2battery
Flash memory	32/64/128MB(Optional)
Singnal to Noise Ratio	90dB
Effective maximum output	100mW
View finder	Optical viewfinder
Pixels	VGA CMOS IMAGE SENSOR(640 x 480)
PC Interface	USB(Universal Serial Bus)
Exposure	Auto
Focus range	20cm ~ Infinity(F/2.4), Macro focus range
PC OS	Windows 98, ME, 2000

EUT Type :

- ☒ Table-Top.
- ☐ Floor-Standing.
- ☐ Table-Top and Floor-Standing(Combination).

Operation – mode of the E.U.T. :

The equipment under test was operated during the measurement under following conditions :

- ☐ Standby.
- ☒ Operational Condition : - Download files from PC to EUT.
 - Play

Configuration of the equipment under test :

Following peripheral devices and interface cables were connected during the measurement :

Equipment	Type	Brand	Serial No
PC	Brio BA600/550	HP	SG01603779
Monitor	529B	Daewoo	GC95510039
Keyboard	SK-2502C	HP	M000456820
Mouse	M-S48a	HP	LZA01051466

Connecting Interface Cables :

- USB I/O cable(with core) : 1.6 m
- Earphone cable : 0.8 m
- Microphone cable : 1.0 m

TEST RESULT

Download Mode :

Conducted emissions : 450 kHz - 30 MHz

The requirements are.

☒ KEPT

☐ NOT KEPT

Min. limit margin

14.1 dB at 0.5928 MHz

Remarks : See test-graph to be attached at pages 13~15.

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are.

☒ KEPT

☐ NOT KEPT

Min. limit margin

9.5 dB at 253.6 MHz

Remarks : See test-data at page 16~17.

Play Mode :

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are.

☒ KEPT

☐ NOT KEPT

Min. limit margin

13.8 dB at 339.2 MHz

Remarks : See test-data at page 18~19.

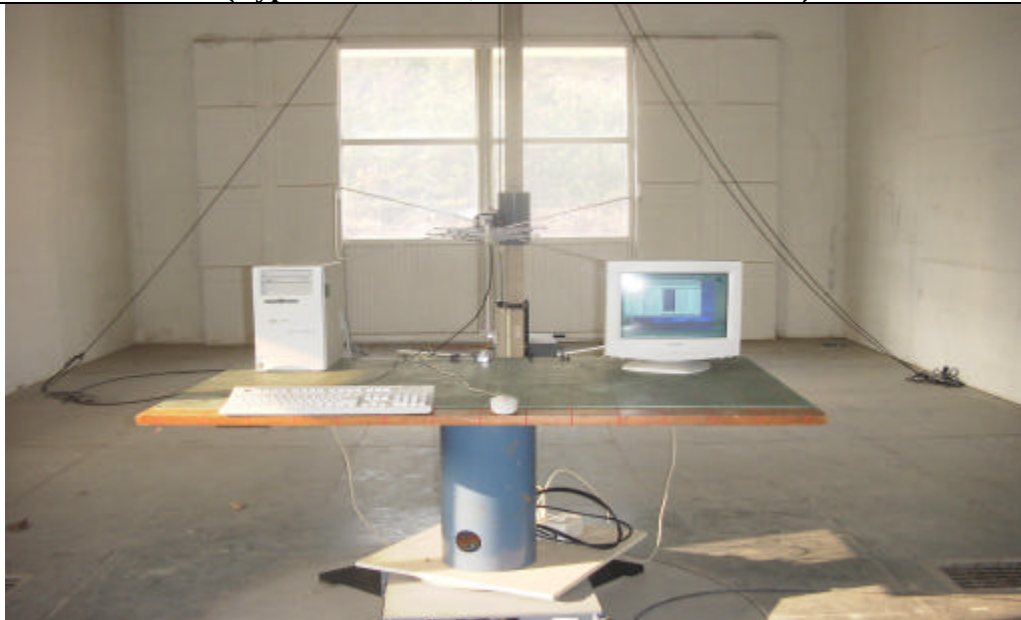
Test Set-Up
(Type : NEWGEN, Mode: Download Mode)



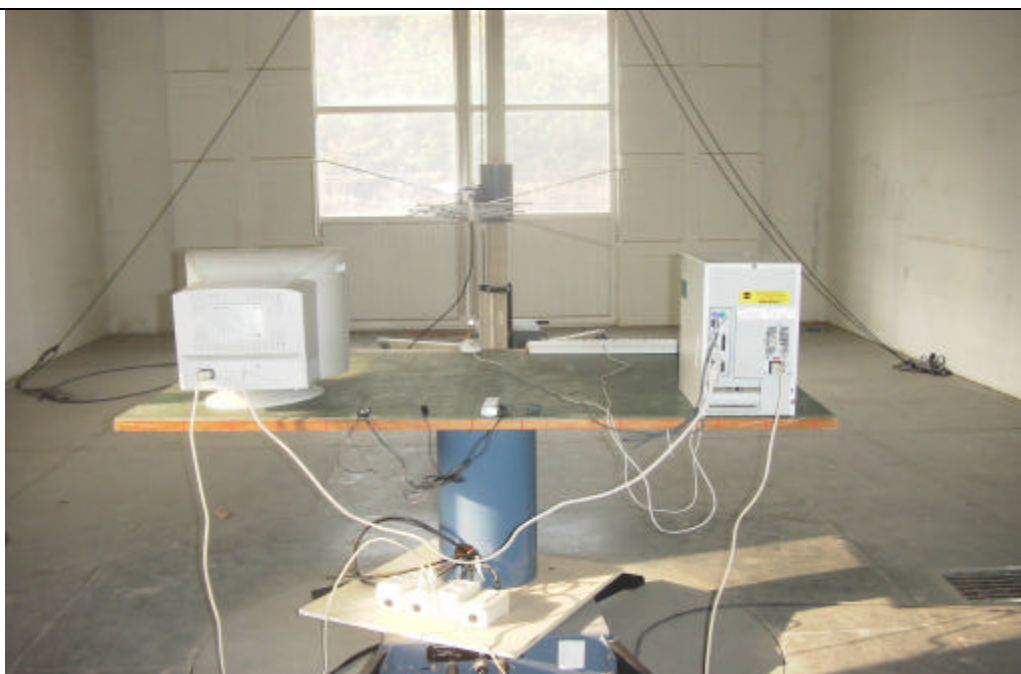
Conducted emission 450kHz ~ 30MHz



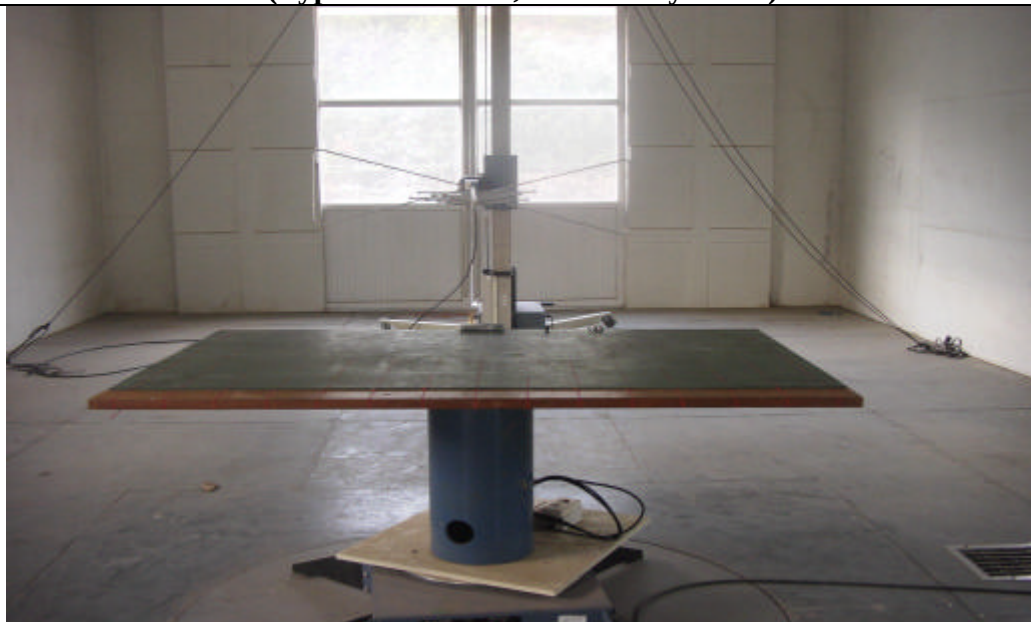
Test Set-Up
(Type : NEWGEN, Mode: Download Mode)



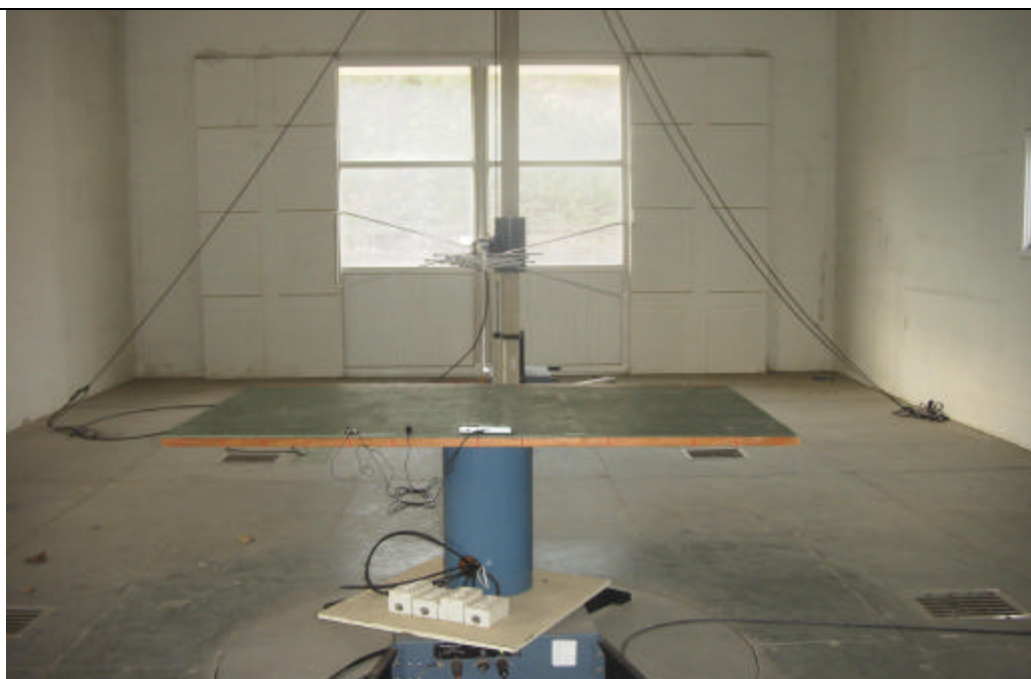
Radiated emission 30MHz ~ 1000MHz



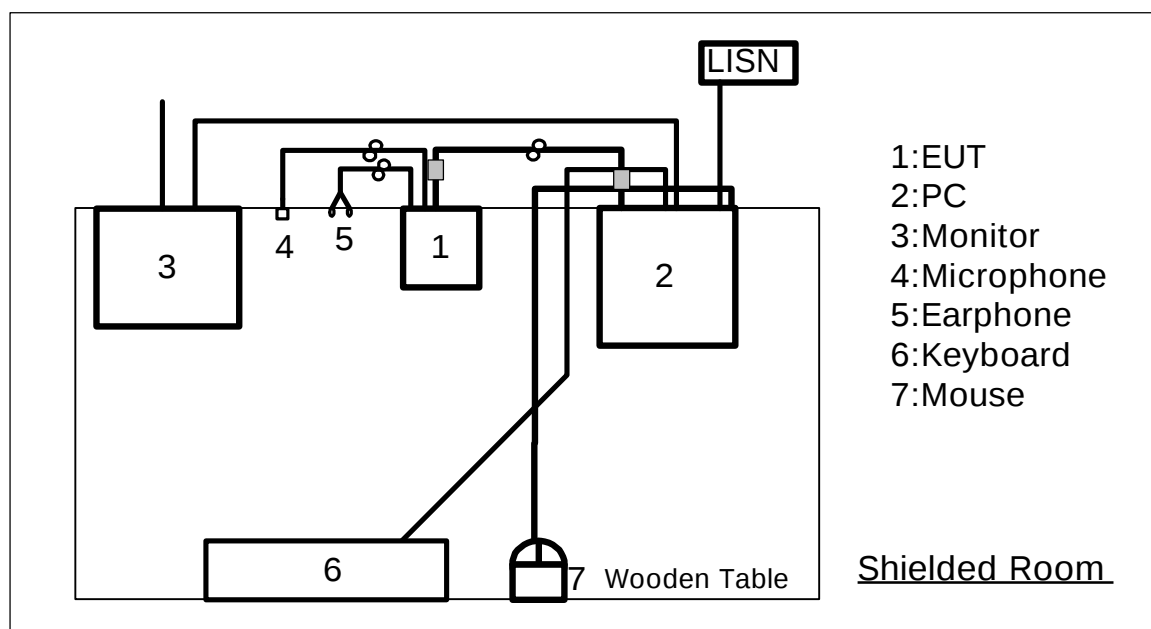
Test Set-Up
(Type : NEWGEN, Mode: Play Mode)



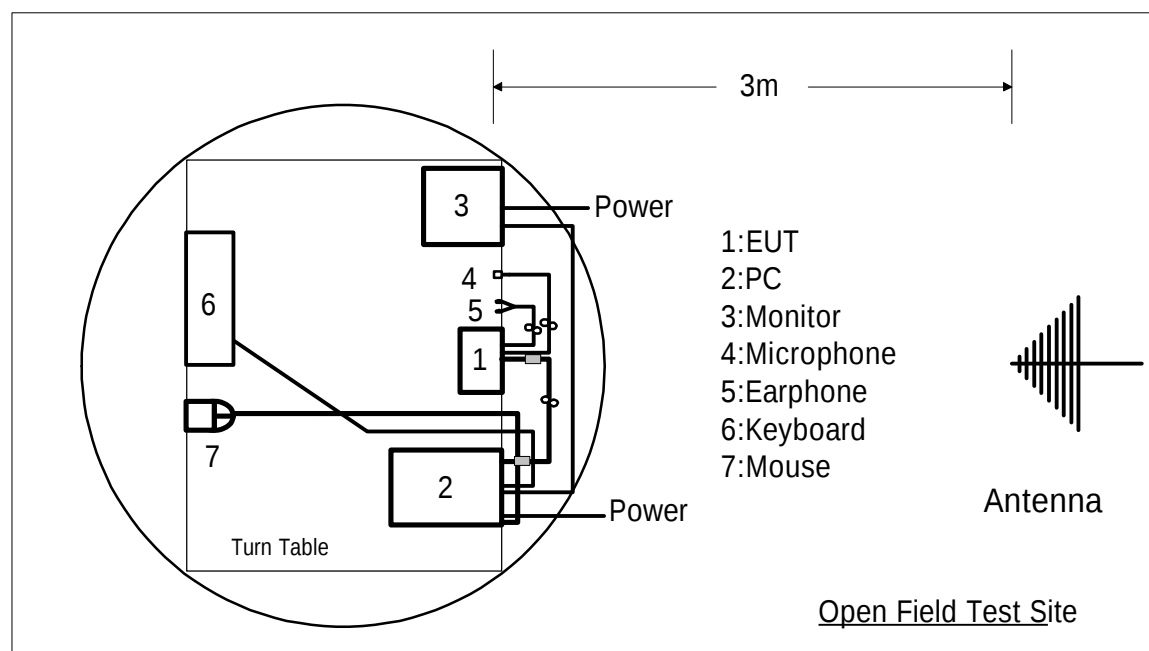
Radiated emission 30MHz ~ 1000MHz



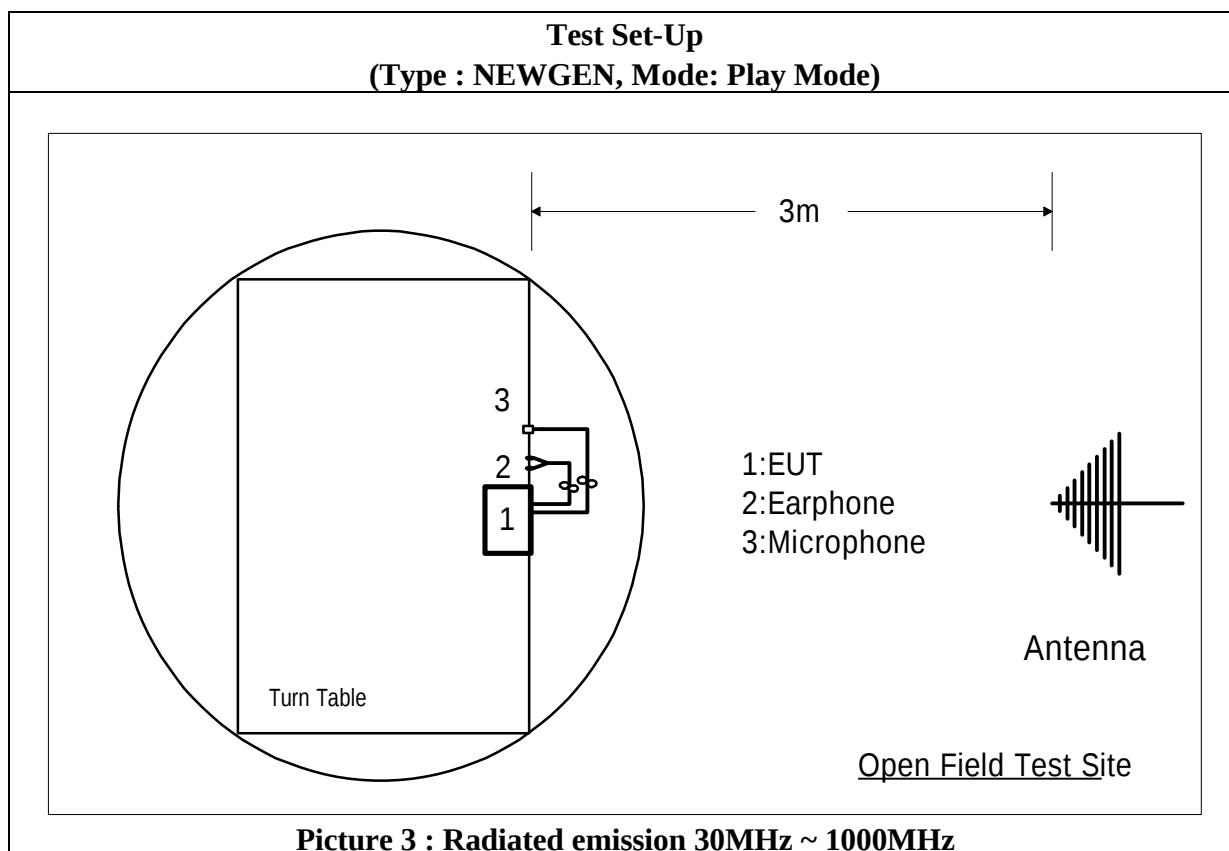
Test Set-Up
(Type : NEWGEN, Mode: Download Mode)



Picture 1 : Conducted emission 450kHz ~ 30MHz



Picture 2 : Radiated emission 30MHz ~ 1000MHz



Conducted Emission Test Data

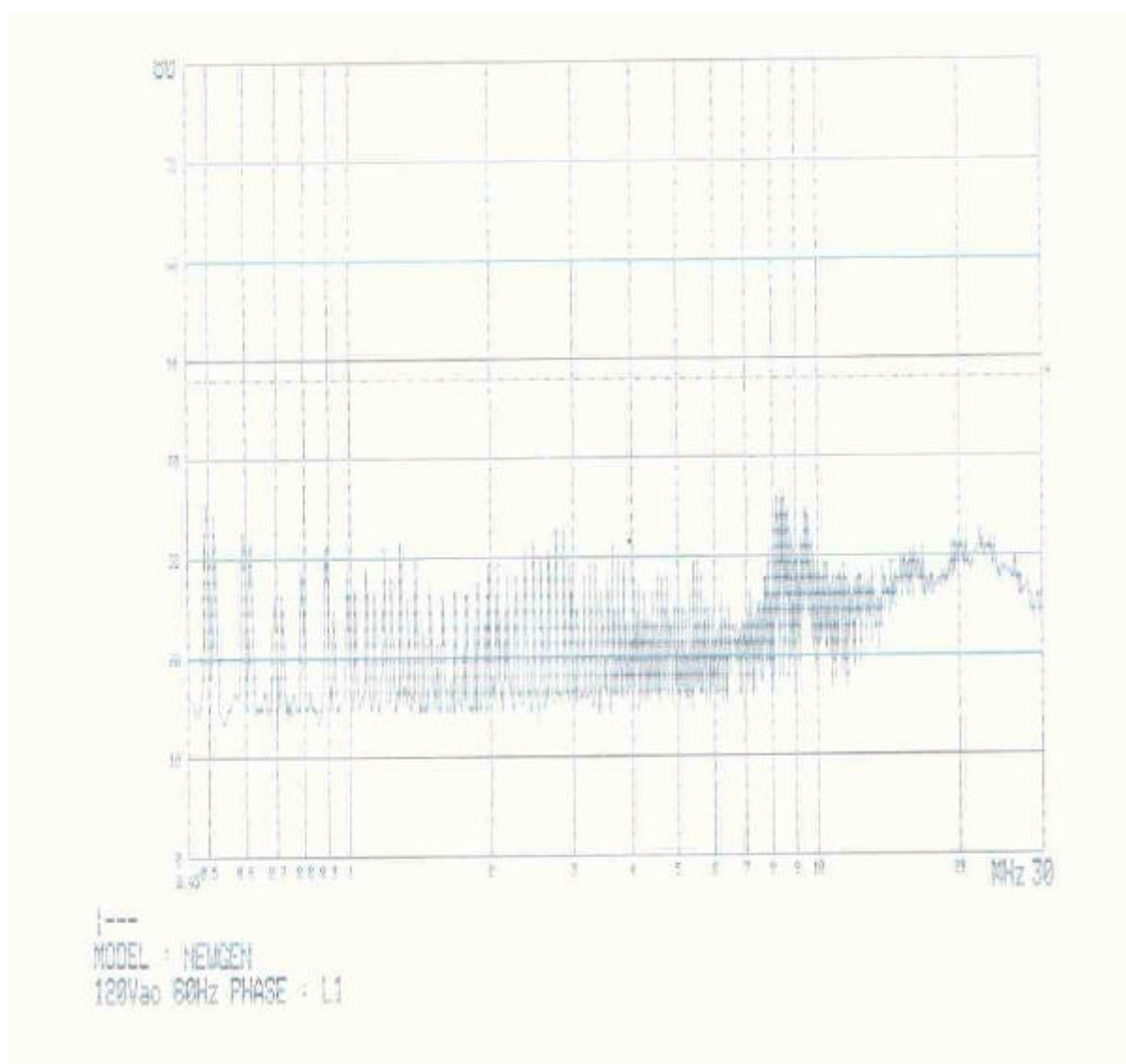
Type : NEWGEN
 Manufacturer : TeraValue Techonology Co., Ltd.
 Operation mode : Download files from PC to EUT
 Date : Mar. 28, 2002

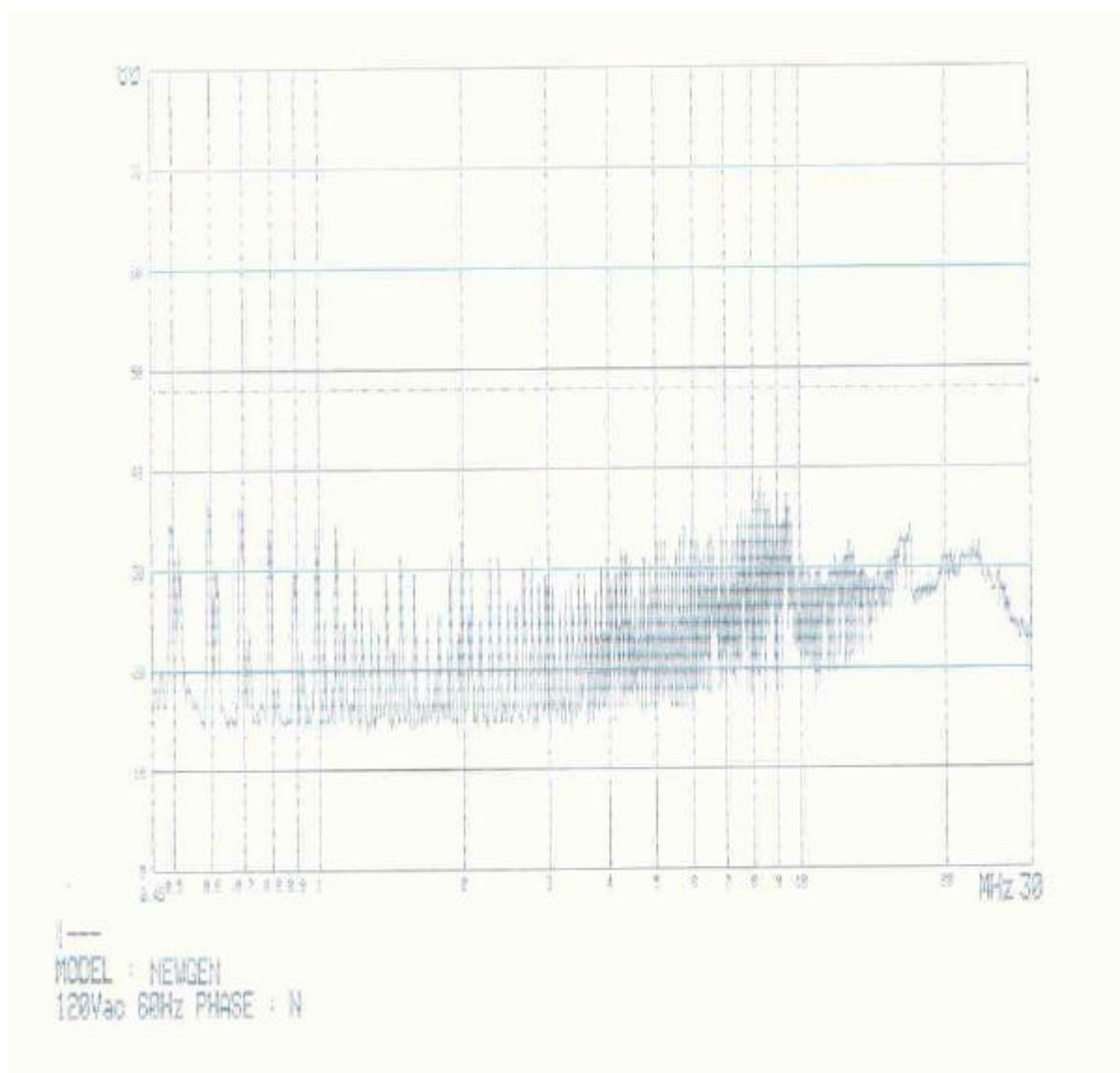
Frequency [MHz]	Reading [dB _m V]	Insertion loss [dB]	Phase (L1/N)	Result [dB _m V]	Limit [dB _m V]	Margin [dB]
0.4937	32.9	0.8	L1	33.7	48.0	14.3
0.5928	31.0	0.8		31.8	48.0	16.2
1.2839	27.3	0.8		28.1	48.0	19.9
2.7643	25.8	0.8		26.6	48.0	21.4
8.4925	30.5	0.8		31.3	48.0	16.7
9.4780	28.9	0.8		29.7	48.0	18.3
0.5928	33.1	0.8	N	33.9	48.0	14.1
1.0875	28.5	0.8		29.3	48.0	18.7
1.9773	27.6	0.8		28.4	48.0	19.6
5.7300	28.3	0.8		29.1	48.0	18.9
8.3991	31.0	0.8		31.8	48.0	16.2
9.3869	30.9	0.8		31.7	48.0	16.3
Cable loss are less than 0.1 dB						

*L1 : Live Line

**N : Neutral Line

*** Please refer to data graphs at page 14 ~ 15



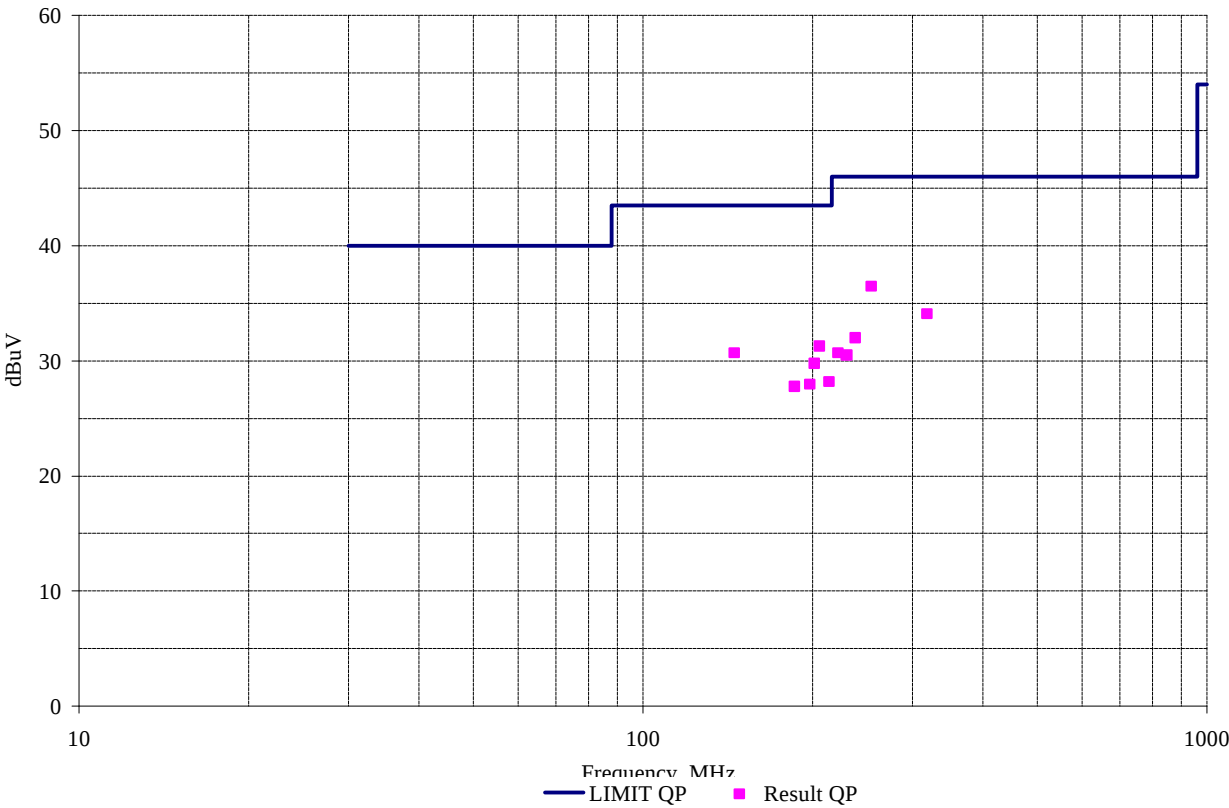


Radiation Test Data

Type : NEWGEN
 Manufacturer : TeraValue Techonology Co., Ltd.
 Operation mode : Download files from PC to EUT
 Test distance : 3 m
 Antenna : VULB9160
 Date : Mar. 29, 2002.

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB]	Cable Loss [dB]	Angle [deg]	Height [cm]	Polar [H/V]	Result [dBuV]	Limit [dBuV]	Margin [dB]
145.0	16.7	11.8	2.2	179	122	V	30.7	43.5	12.8
185.2	15.5	9.8	2.5	188	121	V	27.8	43.5	15.7
197.3	16.7	8.8	2.5	174	129	V	28.0	43.5	15.5
201.3	18.8	8.5	2.5	180	114	V	29.8	43.5	13.7
205.4	20.4	8.4	2.5	14	224	H	31.3	43.5	12.2
213.4	17.2	8.4	2.6	177	147	V	28.2	43.5	15.3
221.5	19.4	8.5	2.8	169	138	V	30.7	46.0	15.3
229.5	18.4	9.3	2.8	12	214	H	30.5	46.0	15.5
237.6	19.0	10.1	2.9	357	154	V	32.0	46.0	14.0
253.6	22.8	10.9	2.8	166	229	H	36.5	46.0	9.5
318.2	19.0	11.7	3.4	9	216	H	34.1	46.0	11.9
329.3	17.6	11.7	3.4	11	221	H	32.7	46.0	13.3
342.3	18.0	11.7	3.5	175	215	H	33.2	46.0	12.8
400.9	17.0	13.3	4.3	0	179	V	34.6	46.0	11.4
458.2	13.0	14.0	4.5	354	145	V	31.5	46.0	14.5

MEASUREMENT OF DISTURBANCE RADIATION

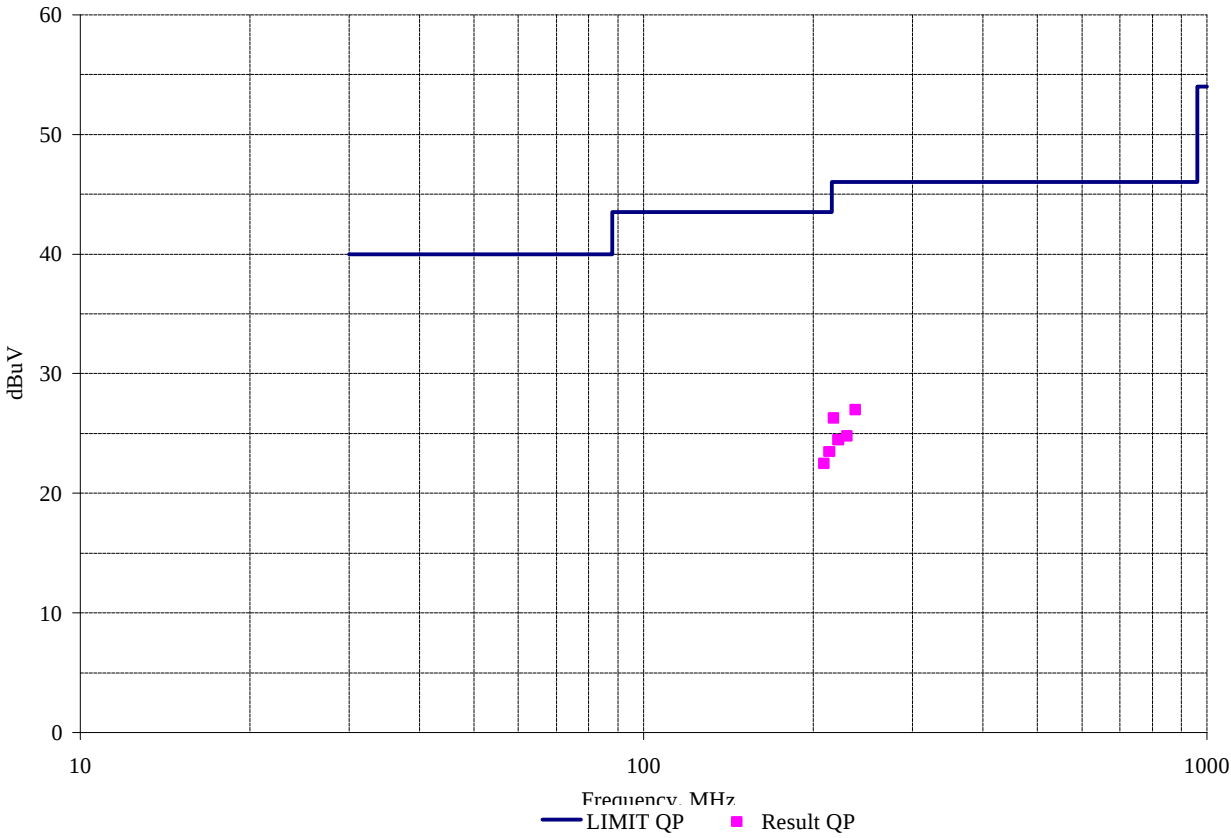


Radiation Test Data

Type : NEWGEN
 Manufacturer : TeraValue Techonology Co., Ltd
 Operation mode : Play Mode
 Test distance : 3 m
 Antenna : VULB9160
 Date : Mar. 29, 2002.

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB]	Cable Loss [dB]	Angle [deg]	Height [cm]	Polar [H/V]	Result [dBuV]	Limit [dBuV]	Margin [dB]
209.0	11.6	8.4	2.5	176	130	V	22.5	43.5	21.0
213.4	12.5	8.4	2.6	170	124	V	23.5	43.5	20.0
217.4	15.2	8.4	2.7	169	124	V	26.3	46.0	19.7
221.5	13.2	8.5	2.8	187	147	V	24.5	46.0	21.5
229.5	12.7	9.3	2.8	169	138	V	24.8	46.0	23.2
237.6	14.0	10.1	2.9	0	114	V	27.0	46.0	19.0
334.2	16.0	11.7	3.5	347	204	H	31.2	46.0	14.8
339.2	17.0	11.7	3.5	186	247	H	32.2	46.0	13.8
344.3	12.3	11.7	3.6	11	228	H	27.6	46.0	18.4
350.3	13.7	11.7	3.6	17	210	H	28.9	46.0	17.1
370.5	12.5	12.1	3.7	177	138	V	28.3	46.0	17.7
371.3	11.7	12.1	3.7	184	159	V	27.5	46.0	18.5
374.5	11.0	12.1	3.7	15	144	V	26.8	46.0	19.2

MEASUREMENT OF DISTURBANCE RADIATION



SUMMARY

GENERAL REMARKS :

The equipment is not modified anything, mechanical or circuit to improve EMI status during a measurement and complied the regulation "Part 15 subpart B Class B of CFR 47"

FINAL JUDGMENT :

The requirements according to the technical regulations are

☒ Kept ☐ Not kept

The equipment under test does

☒ Fulfill the general approval requirements mentioned on page 3.
☐ Not fulfill the general approval requirements mentioned on page 3.

Begin of testing : Mar. 28, 2002

End of testing : Mar. 29, 2002

Reviewed by :



Joon H. Lee, EMC Manager
IST EMC Lab.

Approved by :



G. Chung, Chief of EMC Lab.