Certification of Compliance

CFR 47 Part 15 Subpart B

Test Report File No.	: 09-IST-0390	**Date of Issue** :	May 28, 2009
FCC ID	: W9RXD2100SP		
Model(s)	: XD2100SP		
Kind of Product	: POS TERMINAL		
Applicant	: EXADIGM INC.		
Address	: 2871 PULLMAN STREET, SANTA ANA, CA 92705, U.S.A		
Manufacturer	: MOIN CO.,LTD.		
Address	: #B204-7, Factory World, 332-2, Woncheon-dong,		
	Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea 443-758		

Test Result ■ **Positive** ☐ **Negative**

Reviewed By

S.J. Cho / EMC Group Manager

Approved By

B.S. Kim / Chief

Comment(s)

- Investigations requested : Measurement to the relevant clauses of FCC rules and regulations Part 15 Subpart B – Unintentional Radiators, Class B.
- The test report with appendix consists of 16 pages.
- The test result only responds to the tested sample.
- It is not allowed to copy this report even partly without the allowance of IST EMC Laboratory.
- This equipment as for has been shown to be capable of continued compliance 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 2003.

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Note:

INFORMATIONS OF TEST LABORATORY

EMC LABORATORY of IST Co., Ltd. ***(FCC Filing Lab.)***

400-19, Singal-Dong, Giheung-Gu, Yongin-Si,

Gyeonggi-Do, 446-599, Korea

TEL : +82 31 326 6700 FAX : +82 31 326 6797

ENVIRONMENTAL CONDITIONS

Temperature	21.0 ℃
Humidity	43.0 %
Atmospheric pressure	1015 mbar

POWER SUPPLY SYSTEM USED

Power supply system	120 Vac, 60 Hz (Refer to the product information)

PRODUCT INFORMATION

Battery	Battery pack with built-in charger
	High capacity Lithium-ion 7.2V DC removable battery
	APM – Advanced Power Management
Display	128 x 64 pixel graphical LCD with back lighting
	8 lines x 21 characters and graphics with 16 shades of grey
	Time and date indicator
Dimensions	Length: 10.38" (26.35cm)
	Width: 3.75" (9.53cm)
	Height: 3.75" (9.53cm)
	Weight: 1.8lbs (0.816kg)
Environmental	32° F to 104° F (0° C - 40° C)
	90% maximum relative humidity
Keypad	3x4 back-lit numeric keypad with 4 soft function keys
	3DES and DUKPT functionality
	PCI Approved
Magnetic Card Reader	Bidirectional high and low coercivity swipe reader
	Reads ISO track 1 and 2 or optional ISO track 2 and 3
	Triple track reader (optional)
Memory	512KB SRAM
	8MB Flash ROM expandable to 32MB
	16MB SDRAM expandable to 64MB

- EMC suppression device is not used during the test.
- Please refer to user's manual.

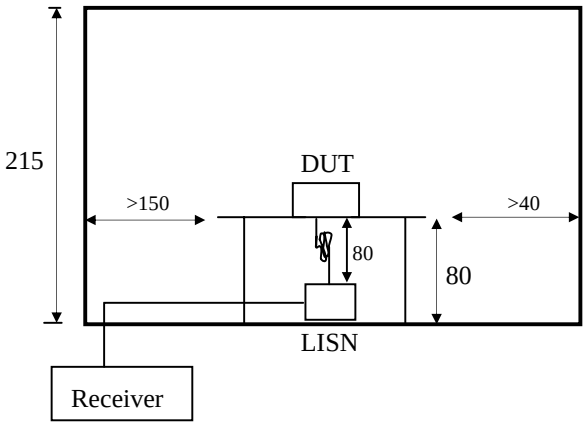
DESCRIPTIONS OF TEST

Conducted Emissions:

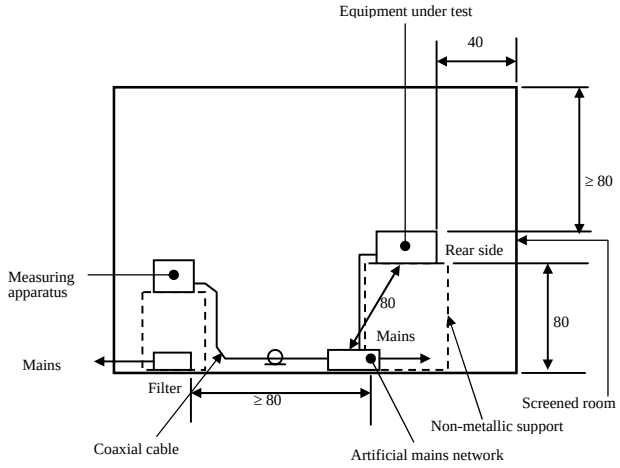
The measurement were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω/50 uH LISN as the input transducer to a Spectrum Analyzer or a Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within a bandwidth of 10 KHz or for "quasi-peak" & "Average" within a bandwidth of 9 KHz.

-Procedure of Test

The line-conducted facility is located inside a shielded room No.1. A 1 m X 1.5 m wooden table 80cm height is placed 40 cm away from the vertical wall and 1.5 m away from the other wall of the shielded room. The Hyup-Rip KNW-407 and EMCO 3725/2 LISN are bonded to bottom of the shielded room. The EUT is located on the wooden table with distance more than 80 cm from the LISN and powered from the EMCO LISN .The peripheral equipment is powered from the other LISN. Power to the LISNs are filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner ϕ 1.2 cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the EMCO LISN. All interconnecting cables more than 1m were shortened by non-inductive bundling to a 1m length. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating conditions. The RF output of the LISN was connected to the R/S receiver to determine the frequency producing the maximum emission from the EUT. The frequency producing the maximum level was reexamined using Quasi-Peak mode by manual measurement, after scanned by automatic Peak mode for frequency range from 0.15 to 30 MHz. The bandwidth of the receiver was set to 10 kHz. The EUT, peripheral equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.



< Side View >



< Concept Drawing >

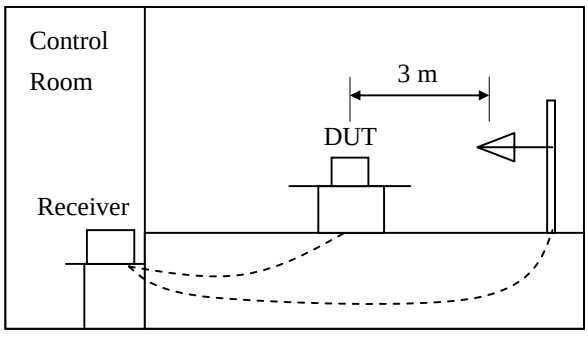
DESCRIPTION OF TEST

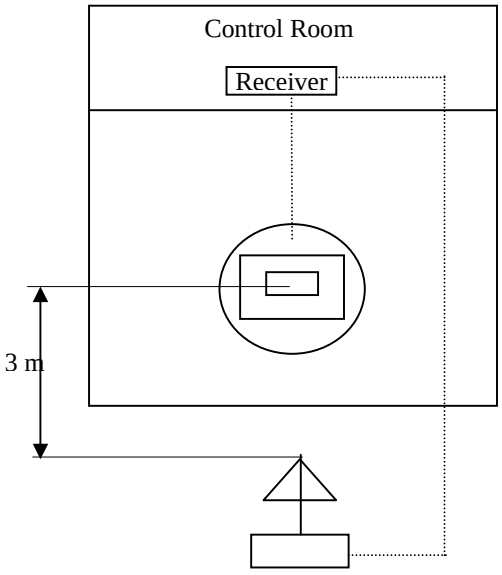
Radiated Emissions:

The measurement was performed over the frequency range of 30 MHz to 1 GHz using antenna as the input transducer to a Spectrum analyzer or a Field Intensity Meter. The measurement was made with the detector set for "quasi-peak" within a bandwidth of 120 KHz.

-Procedure of Test

Preliminary measurements were made at 3 meter using bi-conical and log-periodic antennas, and spectrum analyzer to determine the frequency producing the max. emission in anechoic chamber. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turn-table azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 MHz to 1000 MHz using S/B bi-log antenna. Above 1GHz, linearly polarized double ridge horn antennas were used. Final measurements were made at open site with 3-meters test distance using S/B bi-log antenna or horn antenna. The OATS have been verified in regular for its normalized site attenuation. The test equipment was placed on a wooden table. Sufficient time for the EUT, peripheral equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The detector function was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 120 kHz or 1 MHz depending on the frequency of type of signal. The EUT, peripheral equipment and interconnecting cables were re-configured to the set-up producing the max. emission for the frequency and were placed on top of a 0.8-meter high nonmetallic 1 x 1.5 meter table. The EUT, peripheral equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation to the EUT and/or peripheral equipment and changing the polarity of the antenna, whichever determined the worst-case emission.





Equipment Under Test

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 Mode

■ Operational Condition : ■ Normal Operating

The test results of followings are the representative of worst case emissions for the available resolution can be adjusted.
It is investigated the emission characteristic for RGB mode.

Configuration of the equipment under test :

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

Equipment	Type	Brand	Serial No.	FCC Compliance Info.
PC	dx7200 MT	HP	CNG603020G	DoC
Keyboard	RT2300	Microsoft	7668200551839	DoC
USB Mouse	Wheel Mouse Optical 1.1A USB and PS/2 Compatible	HP	N/A	DoC
Printer	A0302380	Northern Telecom	2516S60951	DS46XU225C-L
Monitor	1708FPt	Dell Inc.	N/A	DoC

Connecting Interface Cables :
- Unshielded AC power cable(without ferrite core) : 1.8 m
- Shielded monitor's signal cable (with two ferrite core) : 1.5 m
- Shielded Printer's signal cable (without ferrite core) : 1.8 m
- PC Audio In cable (without ferrite core) 1.2 m

Note :

SUMMARY

Emissions

■ Conducted Emission

The requirements are ● MET ○ Not MET
Minimum limit margin 14.92 dB at 0.168 MHz
Maximum limit exceeding
Remarks : Limits are kept with more 3dB margin.
With average detect mode and neutral phase.
Find the test data in following pages 9 to 10.

■ Radiated Emission

The requirements are ● MET ○ Not MET
Minimum limit margin 3.38 dB at 249.994 MHz
Maximum limit exceeding
Remarks : Limits are kept with more 3dB margin.

Find the test data in following page 12.

Test Date

Begin of testing : March 24, 2009
End of testing : March 25, 2009

Prepared By

Note :

- ■ means the test is applicable,
- □ is not applicable.

K.W. Kim / EMC Engineer

TEST CONDITIONS AND DATA

Conducted Emissions

[Applicable]

◆ Test Equipment Used

The test equipment used is calibrated in regular for every year.

Model Name	Manufacturer	Descriptions	Calibration Date	Serial Number
ESCI	Rohde & Schwarz	EMI Test Receiver	June 26, 2008	100373
KNW-407	Hyup-Rip	LISN	Oct. 11, 2008	8-833-10
ESH3-Z2	Rohde & Schwarz	Pulse Limiter	May 21, 2009	357.8810.52

◇ Auxiliary Equipment Used

Model Name	Manufacturer	Descriptions

◇ Accessories including cables

Name	Length	Port and Descriptions

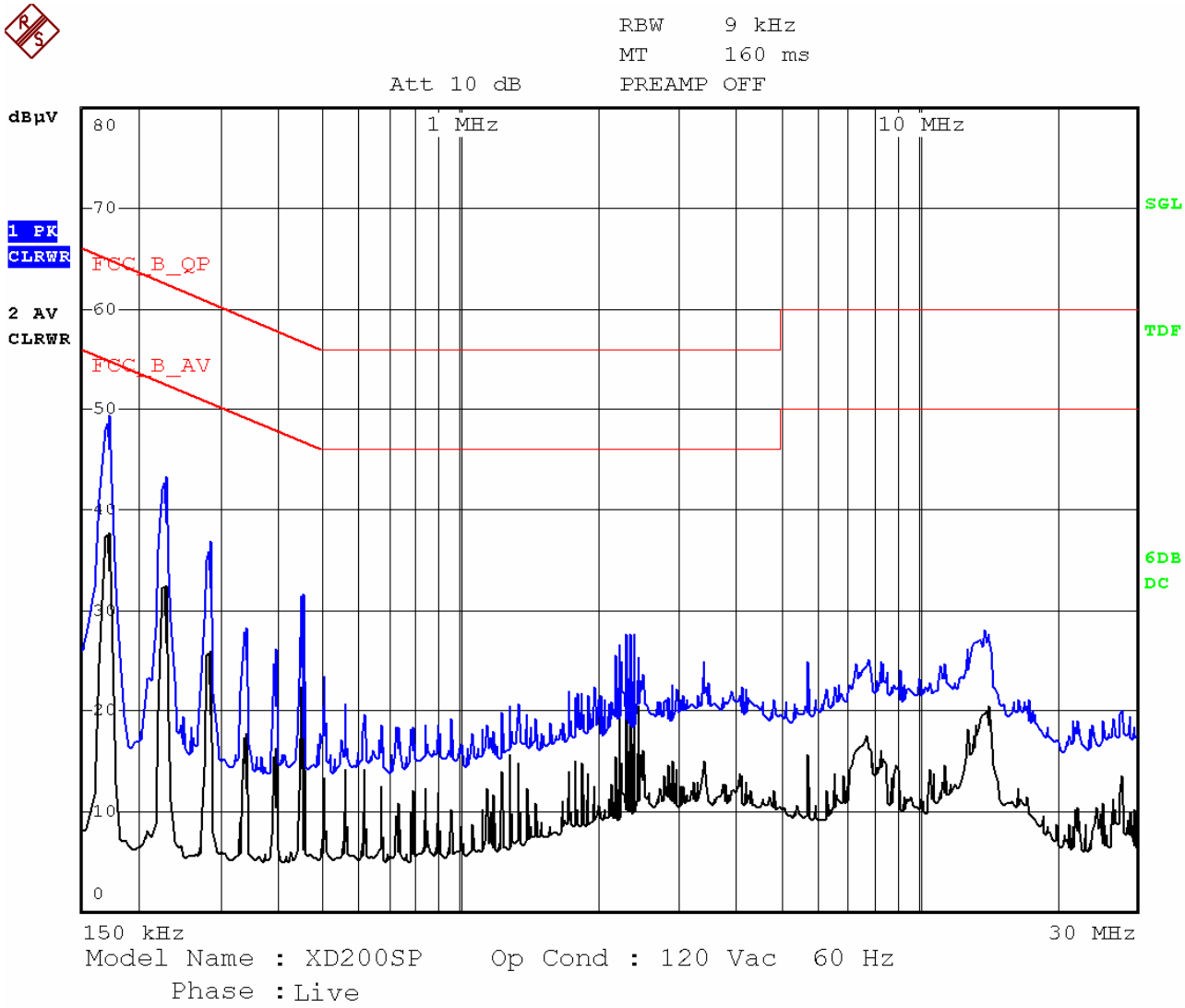
◆ Environmental Conditions

Temperature	21.0 ℃
Humidity	43.0 %
Atmosphere pressure	1015 mbar

◆ Test Program See Test configuration page 6.
◆ Test Date March 24, 2009
◆ Test Area Conducted Room No.1

Note : The equipment used is calibrated in regular for every year.
The test results of followings are the representative of the worst case emissions for resolutions that are available.

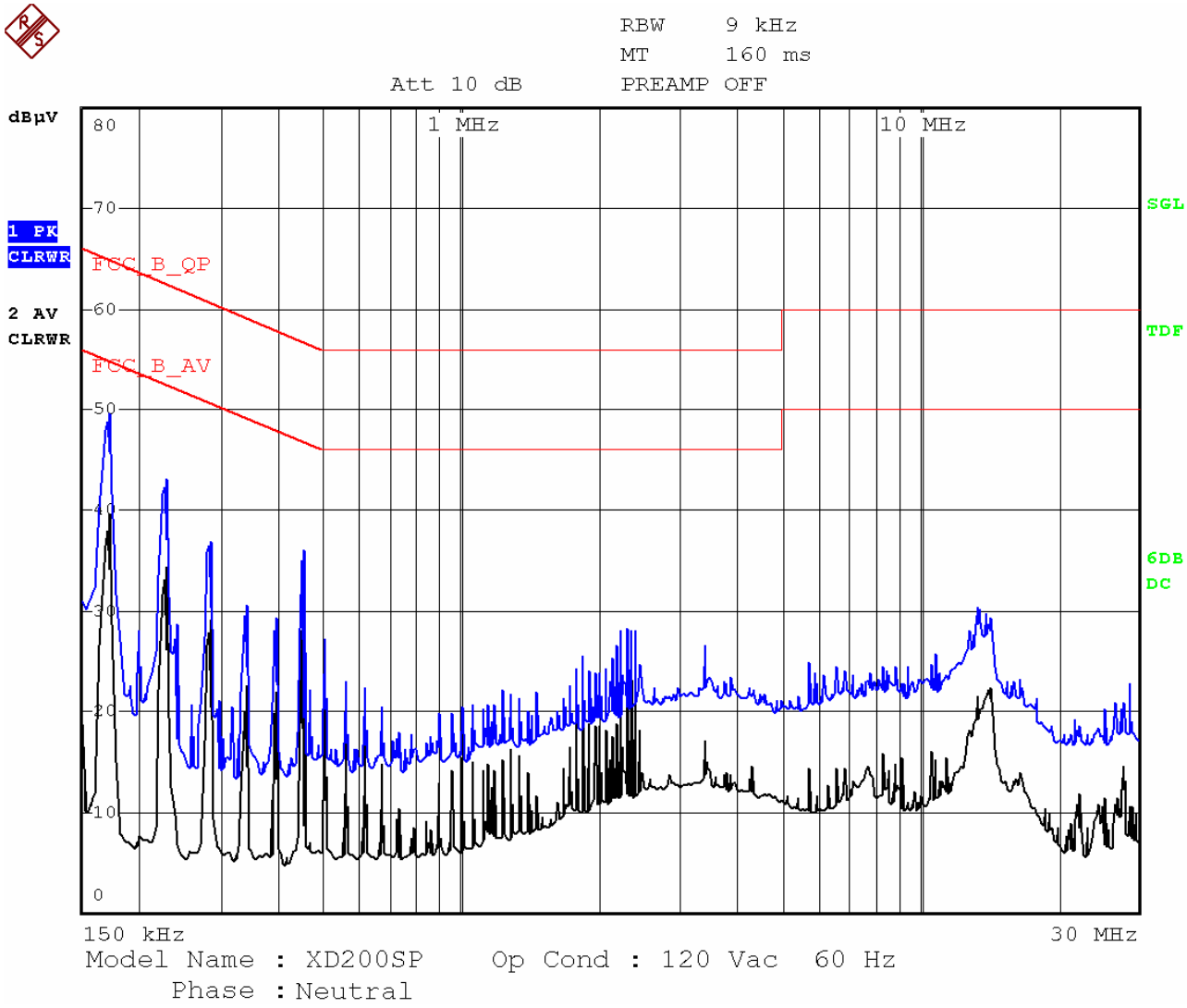
Conducted Emissions



Freq. [MHz]	Measurement [dB µV]		Limit [dB µV]		Insertion Loss	Cable Loss	Result [dB µV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	[dB]	[dB µV]	Q-peak	Average	Q-peak	Average
0.168	48.14	38.47	65.06	55.06	0.31	0.80	49.25	39.58	15.81	15.48
0.222	41.40	32.96	62.74	52.74	0.23	0.64	42.26	33.82	20.48	18.92
0.279	34.68	26.87	60.85	50.85	0.23	0.28	35.19	27.38	25.66	23.47
0.446	29.98	23.20	56.95	46.95	0.22	0.20	30.40	23.62	26.55	23.33
2.345	25.51	23.24	56.00	46.00	0.25	0.72	26.48	24.21	29.52	21.79
13.848	19.66	14.30	60.00	50.00	0.50	0.42	20.58	15.22	39.42	34.78

Note :

Conducted Emissions



Freq. [MHz]	Measurement [dB µV]		Limit [dB µV]		Insertion Loss	Cable Loss	Result [dB µV]		Margin [dB]	
	Q-peak	Average	Q-peak	Average	[dB]	[dB µV]	Q-peak	Average	Q-peak	Average
0.168	49.02	39.44	65.06	55.06	0.32	0.80	50.14	40.56	14.92	14.50
0.222	41.37	33.36	62.74	52.74	0.22	0.64	42.23	34.22	20.52	18.53
0.279	36.07	28.93	60.85	50.85	0.22	0.28	36.57	29.43	24.27	21.41
0.446	33.98	29.06	56.95	46.95	0.22	0.20	34.40	29.48	22.55	17.47
2.345	16.54	12.56	56.00	46.00	0.23	0.72	17.50	13.52	38.51	32.49
13.849	20.83	14.47	60.00	50.00	0.50	0.42	21.74	15.38	38.26	34.62

Note :

TEST CONDITIONS AND DATA

Radiated Emissions

[Applicable]

◆ Test Equipment Used

The test equipment used is calibrated in regular for every year.

Model Name	Manufacturer	Descriptions	Calibration Date	Serial Number
ESCS 30	Rohde & Schwarz	Test Receiver	Sep. 28, 2008	100171
VULB9160	Schwarzbeck	Antenna	Aug. 10, 2007	3048

◇ Auxiliary Equipment Used

Model Name	Manufacturer	Descriptions

◇ Accessories including cables

Name	Length	Port and Descriptions

◆ Environmental Conditions

Temperature	15.0 ℃
Humidity	54.0 %
Atmosphere pressure	1015 mbar

◆ Test Program — See test configuration page 6.
◆ Test Date — March 25, 2009
◆ Test Area — Open Area Test Site #2 (3m)

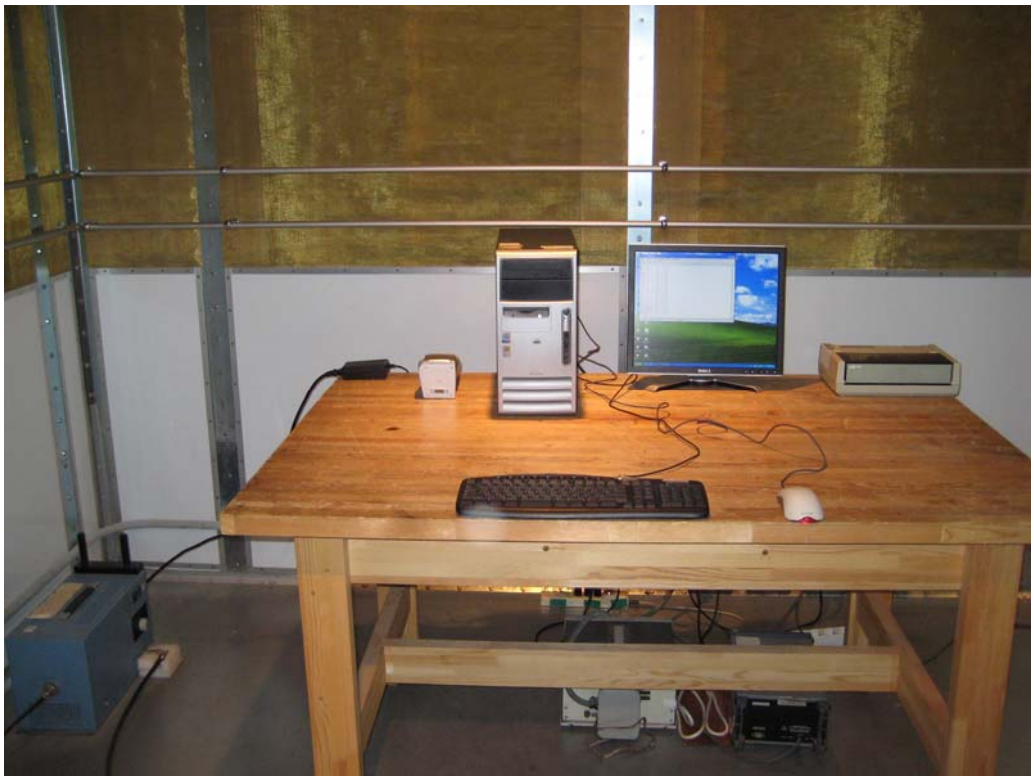
Note : The equipment used is calibrated in regular for every year.
The test results of followings are the representative of the worst case emissions for resolutions that are available.

Radiated Emissions

Mode	Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB/m]	Cable Loss [dB]	Polar. [H/V]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]
	80.113	23.60	7.84	1.00	100	V	40.00	32.44
	130.438	23.00	11.94	1.55	100	V	43.50	36.49
	161.400	20.30	13.27	1.81	206	H	43.50	35.38
	221.220	26.00	9.84	2.21	100	H	46.00	38.05
	249.994	29.30	10.93	2.39	100	H	46.00	42.62
	624.985	15.80	19.31	3.89	110	V	46.00	39.00
End of Data								

Note:

Appendix A. The Photos of Test Setup



Conducted Emissions - Front View

Conducted Emissions - Rear View

Appendix A. The Photos of Test Setup

Radiated Emissions - Front View

Radiated Emissions - Rear View

Appendix A. The Photos of EUT

Front View

Rear View

Appendix A. The Photos of EUT

Left View

Right View