

EMC TEST REPORT For FCC



Test Report No. : CTK01-F141

Date of Issue : October 23, 2001

Model/Type No: : Sedi@n

Kind of Product : Personal Computer System Controller

Applicant : MICROBANK Co., Ltd.

Applicant Address : Wolgyedong 447-1 Nowongu Seoul, Korea. Zip code 139-701

Manufacturer : MICROBANK Co., Ltd.

Manufacturer Address : Wolgyedong 447-1 Nowongu Seoul, Korea. Zip code 139-701

Contact Person : Mr. Woon Ho Ahn / Assist. Manager

Telephone : +82-2-940-5530

Received Date : September 6, 2001

Test period : Start: September 7, 2001 End: October 4, 2001

Test Results : ☒ In Compliance ☐ Not in Compliance

The test results presented in this report relate only to the object tested.

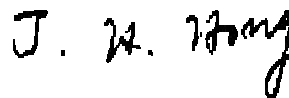
CERTiTEK Standards Laboratory Co., Ltd. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the above test item(s) and test method(s).

Tested by



Michael Jang
EMC Test Engineer
Date: October 23, 2001

Reviewed by



James Hong
EMC Technical Manager
Date: October 23, 2001

REPORT REVISION HISTORY

Date	Revision	Page No
Oct. 23, 2001	Issued	All

This report shall not be reproduced except in full, without the written approval of CERTiTEK Standards Laboratory Co., Ltd. This document may be altered or revised by CERTiTEK Standards Laboratory Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by CERTiTEK Standards Laboratory Co., Ltd. will constitute fraud and shall nullify the document.

TABLE OF CONTENTS

1.0 General Product Description	4
1.0 General Product Description	4
1.1 Model Differences	4
1.2 Device Modifications	4
1.3 EUT Configuration(s)	5
1.4 Test Software	5
1.5 EUT Operating Mode(s)	5
1.6 Calibration Details of Equipment Used for Measurement.....	6
1.7 Test Facility	6
1.8 Measurement Procedure	6
1.9 Laboratory Accreditations and Listings	7
2.0 Emissions Test Regulations.....	8
2.1 Conducted Voltage Emissions	9
2.2 Radiated Electric Field Emissions.....	10
Configurations.....	11
APPENDIX A - TEST DATA.....	12
Conducted Voltage Emissions (Quasi-Peak reading).....	12
Radiated Electric Field Emissions (Quasi-Peak reading)	14

1.0 General Product Description

The product is Personal Computer System Controller.

Sedi@n is a product designed to control usage time of PC and protect our children from harmful information on the Internet by using IC card.

1.0.1 Tested Equipment

- ☒ Unless otherwise indicated, all tests were conducted on Model Sedi@n.
- ☐ Tests performed on Model _____ were considered to be representative of Model(s) _____ and _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions: 10.5 by 8.0 by 2.0 ☒ cm ☐ in

Mobility: ☐ Hand-Held ☒ Table-top ☐ Floor-standing

Serial No.: Not Applicable

1.0.3 Electrical Ratings

Input: Supplied by the desktop PC.

Output: Not applicable

1.0.4 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage: Not applicable

Frequency: Not applicable

1.0.5 Clock & Other Frequencies Utilized

Smart Card – 50kHz

Main CPU – 12MHz

1.1 Model Differences

Not applicable

1.2 Device Modifications

The following modifications were necessary for compliance:

Not applicable

1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

Device	Manufacturer	Model No.	Serial No.	FCC ID
PC	Hewlett Packard	DTPC-17	SG01501776	DOC
Monitor	Samsung	750P	P013H1DN301661	DOC
*MOUSE (Serial type)	SEJIN	SMB-200	5GCF008566	GJJS965M3
@MOUSE (Serial type)	Microsoft	BASM1	4475951-20000	DOC
*MOUSE (PS/2 type)	SEJIN	SWB-400	4BDF030577	GJJS965C0
@MOUSE (PS/2 type)	Logitech	M-S34	HCA11801280	DZL211029
*@MOUSE (USB type)	Logitech	M-U48a	LZA00900608	DOC
@MOUSE (USB type)	Logitech	M-BB48	LZE93853176	DOC
KEYBOARD	DIGITAL	60360403	RT4958TWKO	AQ6-MTN7Z15
Game Pad	Microsoft	Sidewinder game pad	03426853	C3KMGP1
HEADSET	Hi-sonic	-	-	-
PRINTER	Hewlett Packard	C4530A	US7A91703J	DOC

Note : * - For the radiated emission test
@ - For the conducted emission test

☒ Cable Description

#	Description	Ferrited	Length (m)	Other Details
1	AC Power, Unshielded	No	1.8	Connect to AC Power from Monitor
2	AC Power, Unshielded	No	1.8	Connect to AC Power from PC
3	AC Power, Unshielded	No	1.8	Connect to AC Power from printer
4	Monitor cable, Shielded	Yes	1.8	Connect to PC
5	Printer cable, Shielded	No	1.8	Connect to PC
6	Mouse cable, Shielded	No	2.0	USB Type
7	Mouse cable, Shielded	No	2.0	USB Type
8	Mouse cable, Shielded	No	2.0	PS/2 Type
9	Mouse cable, Shielded	No	2.0	Serial Type
10	Keyboard cable, Shielded	No	2.0	-
11	Line in cable, Unshielded	No	2.0	-
12	Headset cable, Unshielded	No	2.0	-
13	Game Pad cable, Unshielded	No	2.0	-
14	EUT cable, Shielded	No	1.5	Connect to Keyboard jack

n/a = not available

1.4 Test Software

☐ Pinging
☒ Name / Manufacturer
- Sedi@n / Microbank.co.kr

1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

☐ Test program (H-Pattern) ☐ Test program (color bar)
☐ Standby ☒ Practice operation
☐ Test program (customer specific)
☐

1.6 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.7 Test Facility

The measurement facility is located at 386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.8 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested. Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)





Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-1992 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

1.9 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 and 10 meter Open Area Test Sites to perform FCC Part 15/18 measurements.	 93250
JAPAN	VCCI	10 meter Open Area Test Site and one conducted site.	 R-948, C-986
KOREA	MIC	10 meter Open Area Test Site and EMS (ESD, RS, EFT/Burst, Surge)	 No. 51, KR0025
International	KOLAS	EMC	 KOLAS LABORATORY ACCREDITATION SCHEME NO. 119

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

☐ EN 50081-1 /1992

☐ EN 55011 /1998

☐ Group 1

☐ Group 2

☐ Class A

☐ Class B

☐ EN 55013 /A12:1994

☐ EN 55014 /1987

☐ Household appliances and similar

☐ Portable tools

☐ Semiconductor devices

☐ EN 55014 /A2:1990

☐ EN 55014 /1993

☐ Household appliances and similar

☐ Portable tools

☐ Semiconductor devices

☐ EN 55015 /1987

☐ EN 55015 /A1:1990

☐ EN 55015 /1993

☐ EN 55022 /A1:1995

☐ Class A

☐ Class B

☐ EN 55022 /1998

☐ Class A

☐ Class B

☐ EN 61000-3-2 /1995 (EN 60555 Part 2 /4.87)

☐ EN 61000-3-3 /1995 (EN 60555 Part 3 /4.87)

☐ BS

☐ VCCI V-3/99.05 : 1999

☐ Class A

☐ Class B

☒ FCC Part 15 SUBPART B

☐ Class A

☒ Class B

☐ AS 3548 (1992)

☐ Class A

☐ Class B

☐ CISPR 11 (1990)

☐ Group 1

☐ Group 2

☐ Class A

☐ Class B

☐ CISPR 22 (1993)

☐ Class A

☐ Class B

2.1 Conducted Voltage Emissions

Test Date

October 4, 2001

Test Location

EMI-CE: Shielded Room

Test Instruments

<input checked="" type="checkbox"/> Field Strength Meter	Rohde Schwarz	ESHS30	828144/002
--	---------------	--------	------------

Test Accessories

<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9206-1971
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9409-2246
<input type="checkbox"/> LISN	EMCO	3825/2	9607-2574
<input checked="" type="checkbox"/> Control PC	HP	Vectra 500	SG72000192

Frequency Range of Measurement

☐ 150 kHz to 30 MHz
☒ 450 kHz to 30 MHz
☐ _____

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

<input checked="" type="checkbox"/> MET	minimum margin is 8.0 dB μ V at 3.26 MHz
<input type="checkbox"/> NOT MET	limit exceeded by maximum of ____ dB μ V at ____ MHz
<input type="checkbox"/> NOT APPLICABLE	

Remarks

None

2.2 Radiated Electric Field Emissions

Test Date

September 7, 2001

Test Location

- ☐ EMI-OATS: Testing was performed at a test distance of 10 m
☒ EMI-OATS: Testing was performed at a test distance of 3 m

Test Instruments

☒ Field Strength Meter Rohde Schwarz ESVS30 826638/008

Test Accessories

<input checked="" type="checkbox"/> Ultra Broadband Antenna	R & S	HL562	361324/014
<input type="checkbox"/> Biconical Antenna	Schwarzbeck	BBA9106	41-00201
<input type="checkbox"/> Biconical Antenna	EMCO	3110B	9607-2564
<input type="checkbox"/> Log-periodic Antenna	EMCO	3146	9607-4567

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

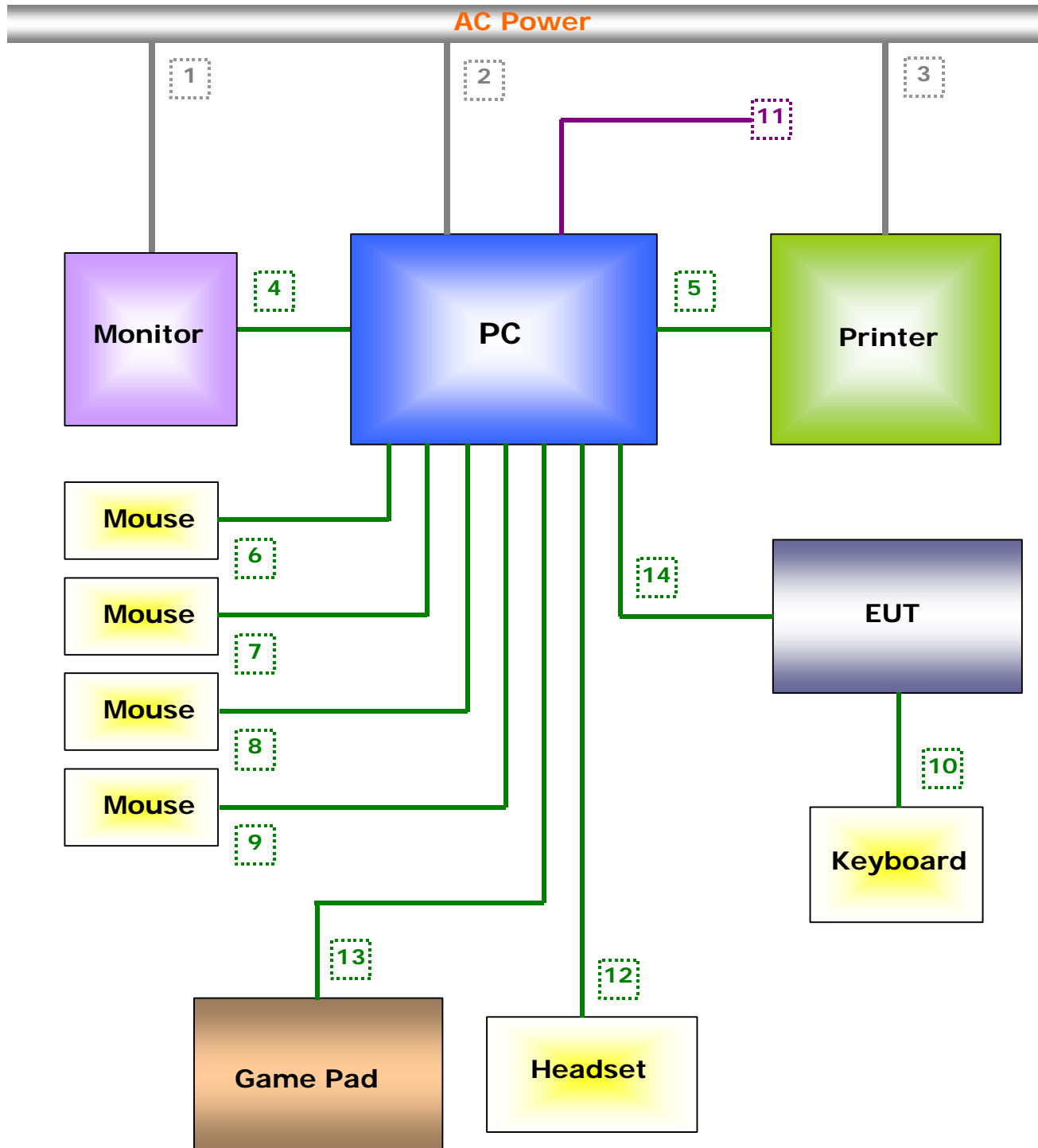
The requirements are:

- ☒ MET minimum margin is 18.94 dB ($\mu\text{V/m}$) at 861.8 MHz
☐ NOT MET limit exceeded by maximum of ____ dB($\mu\text{V/m}$) at ____ MHz
☐ NOT APPLICABLE

Remarks

See Appendix A for test data

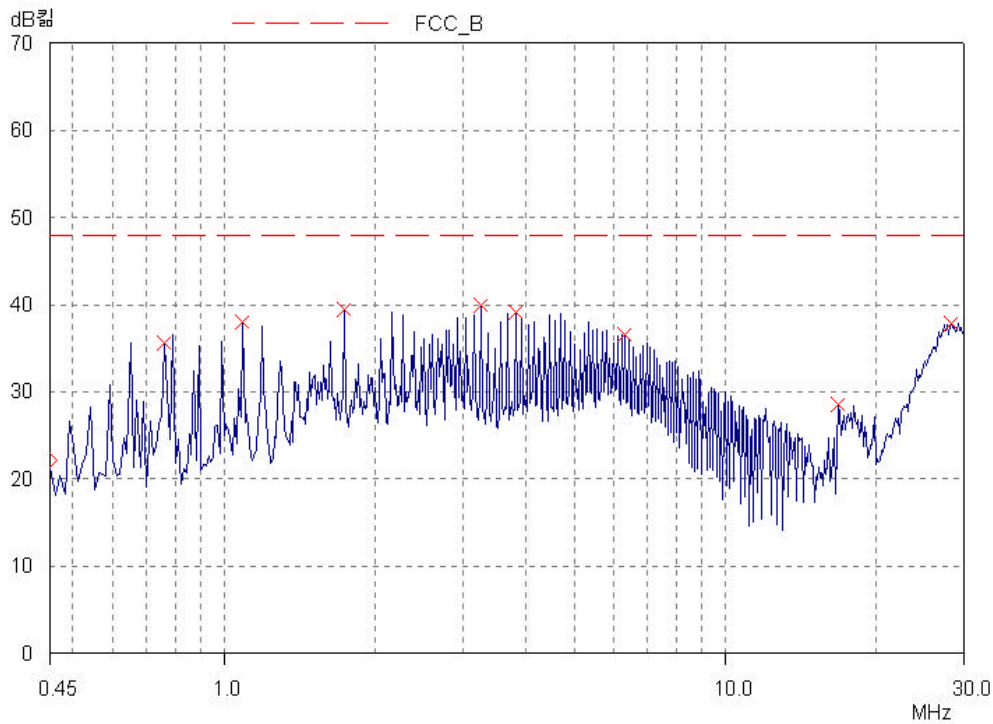
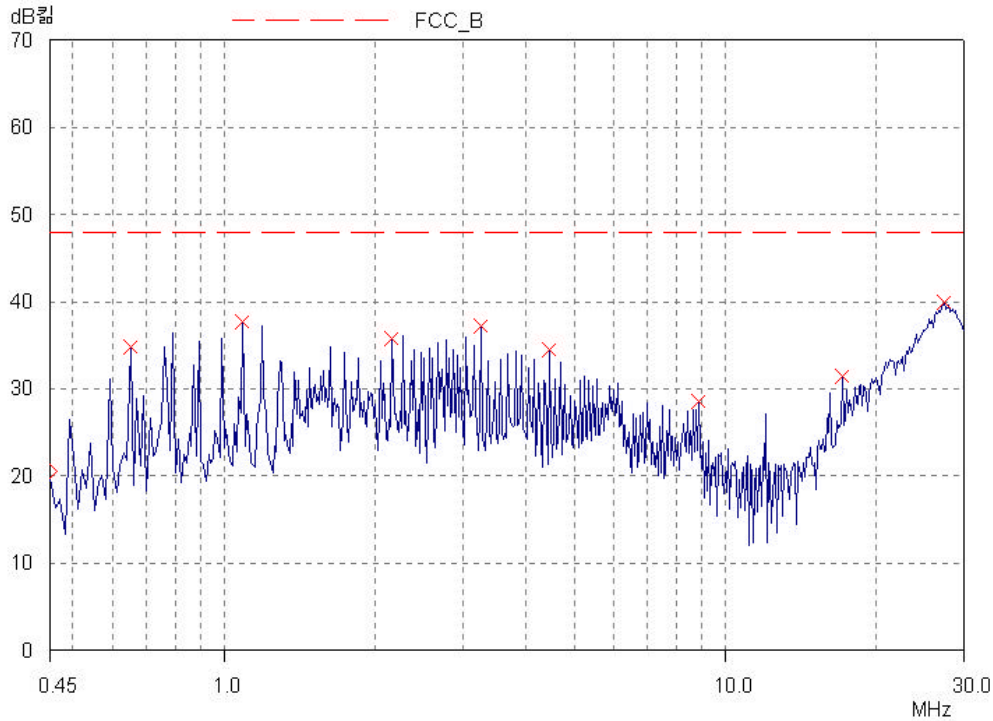
Configuration



APPENDIX A - TEST DATA

Conducted Voltage Emissions (Quasi-Peak reading)

Frequency [MHz]	Correction Factor		Line	Quasi-peak				Average			
	LISN	Cable		Limit	Reading	Result	Margin	Limit	Reading	Result	Margin
				[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]
0.76	0.2	0.1	H	48.0	35.3	35.6	12.5				
1.09	0.2	0.1	H	48.0	37.7	38.0	10.0				
1.74	0.3	0.1	H	48.0	39.0	39.4	8.6				
3.26	0.2	0.1	H	48.0	39.7	40.0	8.0				
3.80	0.3	0.1	H	48.0	38.7	39.1	8.9				
6.30	0.3	0.1	H	48.0	36.2	36.6	11.4				
17.05	0.2	0.2	N	48.0	31.0	31.4	16.6				
27.26	0.5	0.4	N	48.0	39.0	39.9	8.1				



Radiated Electric Field Emissions (Quasi-Peak reading)

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
48.20	10.2	H	4.0	9.60	0.60	40.0	20.41	19.59
94.80	11.1	V	1.0	8.90	0.90	43.5	20.90	22.60
165.70	10.2	H	4.0	7.30	1.60	43.5	19.10	24.40
216.30	9.4	V	1.2	7.95	1.80	46.0	19.12	26.88
284.50	11.6	H	3.5	10.50	2.30	46.0	24.37	21.63
299.30	7.6	H	4.0	11.00	2.40	46.0	20.97	25.03
333.30	10.7	H	3.5	11.90	2.50	46.0	25.10	20.90
399.80	10.0	H	3.5	13.50	2.70	46.0	26.17	19.83
529.30	6.0	V	1.0	16.00	3.50	46.0	25.52	20.48
842.50	2.1	V	1.2	20.00	4.60	46.0	26.66	19.34
861.80	2.5	V	1.0	20.10	4.50	46.0	27.06	18.94