



### EMC TEST REPORT For FCC



Test Report No. : CTK02-F038

Date of Issue : July 31, 2002

Model/Type No: : HB-100K

Kind of Product : Braille PDA

Applicant : HIMS Korea Co., Ltd.

Applicant Address : High-Tech Venture Hall 5105, 53-3, Eoeun-dong,  
Yuseong-ku, Daejeon, KOREA

Manufacturer : HIMS Korea Co., Ltd.

Manufacturer Address : High-Tech Venture Hall 5105, 53-3, Eoeun-dong,  
Yuseong-ku, Daejeon, KOREA

Contact Person : Kyeong Seon CHOI (Manager)

Telephone : +82-42-864-4460

Received Date : March 22, 2002

Test period : Start: March 23, 2002 End: July 27, 2002

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: July 31, 2002

Reviewed by

James Hong  
EMC Technical Manager  
Date: July 31, 2002



## REPORT REVISION HISTORY

Date	Revision	Page No
July 31, 2002	Issued (CTK02-F038)	All

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## 1.0 General Product Description

### 1.0.1 Tested Equipment

- Unless otherwise indicated, all tests were conducted on Model HB-100K.
- Tests performed on Model \_\_\_\_\_ were considered to be representative of Model(s) \_\_\_\_\_.

### 1.0.2 Equipment Size, Mobility and Identification

Dimensions:      Approx. 15.0 by 25.3 by 5.8       cm     in  
Mobility:           Hand-Held     Table-top     Floor-standing  
                          -  
Serial No.:        Not applicable

### 1.0.3 Electrical Ratings

Input:              Adaptor – AC 100V, 50/60Hz, 22VA  
                         EUT – DC 5V, 1.5A  
Output:             Adaptor – DC 5V, 1.5A  
                         EUT – 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:            AC 110V  
Frequency:         60Hz

### 1.0.5 Clock & Other Frequencies Utilized

Main – 3.6864MHz  
Real time – 32kHz  
System – 103MHz  
LAN – 20MHz  
Parallel – 14.31818MHz  
VGA – 12.288MHz  
Audio – 8.192MHz, 11.2896MHz

## 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 or DoC
Notebook Computer	I & B COM	Slim 5360	MBOVAA111100094	DOC
PRINTER	SEIKO EPSON CORP	EPSON STYLUS COLOR 460	BWCE143331	DOC
MOUSE (USB)	PANWEST	Cyber Beetle	PM1F154000055	DOC
Head phone	CAMAC	CMK-C3	-	-
Adaptor	HJC	JC-05015U	-	-

Cable Description

#	Description	Ferrited	Length (m)	Other Details
1	AC power cable	-	-	Direct Plug-In type adaptor
2	AC power cable, Unshielded	No	1.8	Connect to AC power
3	Printer cable, Shielded	Yes	1.8	Between EUT and printer
4	USB cable, Shielded	No	1.5	Between EUT and notebook
5	RS232C cable, Shielded	No	2.5	Between EUT and notebook
6	Headset cable, Unshielded	No	1.8	-
7	Mouse cable, Shielded	No	1.8	Between EUT and USB mouse
8	LAN cable, Unshielded	No	20.0	Connect to HUB
9	DC output cable, Unshielded	No	1.8	-

n/a = not available

### 1.4 Test Software

- Pinging
- Name - Microsoft ActiveSync

### 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
- Test program (customer specific)
- Practice operation - Data was communicated between the EUT and notebook.



CERTITEK

## CERTITEK Standards Laboratory Co., Ltd.

386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100

Tel: +82-31-339-9970 Fax: +82-31-339-9855

<http://www.certitek.com/>



### 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	EMI (CE, RE) EMS (ESD, Burst, RS, Surge, CS, Power-Frequency Susceptibility, Voltage Dips and Short Interruptions)	 No. 51, KR0025
International	KOLAS	EMC	
Europe	GLAS	EMC EN 55011, EN 55022, EN 55024, EN 61326, EN 50130-4, EN 50081-1, EN 50081-2, EN 50082-1, EN 50082-2, EN 61000-6-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11, EN 61000-3-2, EN 61000-3-3	 No.13000796-02



## 2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

- EN 50081-1:1992
- EN 55011:1998 +A1:1999
  - Group 1
  - Class A
  - Group 2
  - Class B
- EN 55013:1990 +A12:1994 +A13:1996 +A14:1999
- EN 55013:2001
- EN 55014-1:1993 +A1:1997 +A2:1999
  - Household appliances and similar
  - Portable tools
  - Semiconductor devices
- EN 55014-1:2000
- EN 55014-2:1997
- EN 55015:1996 +A1:1997 +A2:1999
- EN 55015:2000
- EN 55020:1994 +A11:1996 +A13:1999 +A14:1999
- EN 55020:1994 +A11:1996 +A12:1999 +A13:1999 +A14:1999
- EN 55022:1994 +A1:1995 +A2:1997
  - Class A
  - Class A
  - Class B
  - Class B
- EN 55022:1998 +A1:2000
- EN 61000-3-2:1995 +A1:1998 +A2:1998
- EN 61000-3-2:1995 +A1:1998 +A2:1998 +A14:2000
- EN 61000-3-2:2000
- EN 61000-3-3:1995
- VCCI V-3/99.05 : 1999
  - Class A
  - Class A
  - Class B
  - Class B
- FCC Part 15 SUBPART B
  - Class A
  - Class B
- AS 3548 (1992)
  - Class A
  - Class A
  - Class B
  - Class B





## 2.1 Conducted Voltage Emissions

### Test Date

July 11, 2002

### Test Location

EMI-CE: Shielded Room

### Test Instruments

<input checked="" type="checkbox"/> Field Strength Meter	Rohde & Schwarz	ESHS30	828144/002
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### Test Accessories

<input type="checkbox"/> LISN	EMCO	3825/2	9206-1971
<input checked="" type="checkbox"/> LISN	EMCO	3825/2	9409-2246
<input checked="" 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:

MET                                    minimum margin is 3.1 dBuV at 0.15 MHz  
 NOT MET                                limit exceeded by maximum of \_\_\_\_ dBuV at \_\_\_\_ MHz  
 NOT APPLICABLE

### Remarks

See Appendix A for test data.



## 2.2 Radiated Electric Field Emissions

### Test Date

July 26, 2002

### 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

<input checked="" type="checkbox"/> Field Strength Meter	Rohde & Schwarz	ESVS30	826638/008
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### Test Accessories

<input checked="" type="checkbox"/> ULTRA Broadband Antenna	Rohde & Schwarz	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:

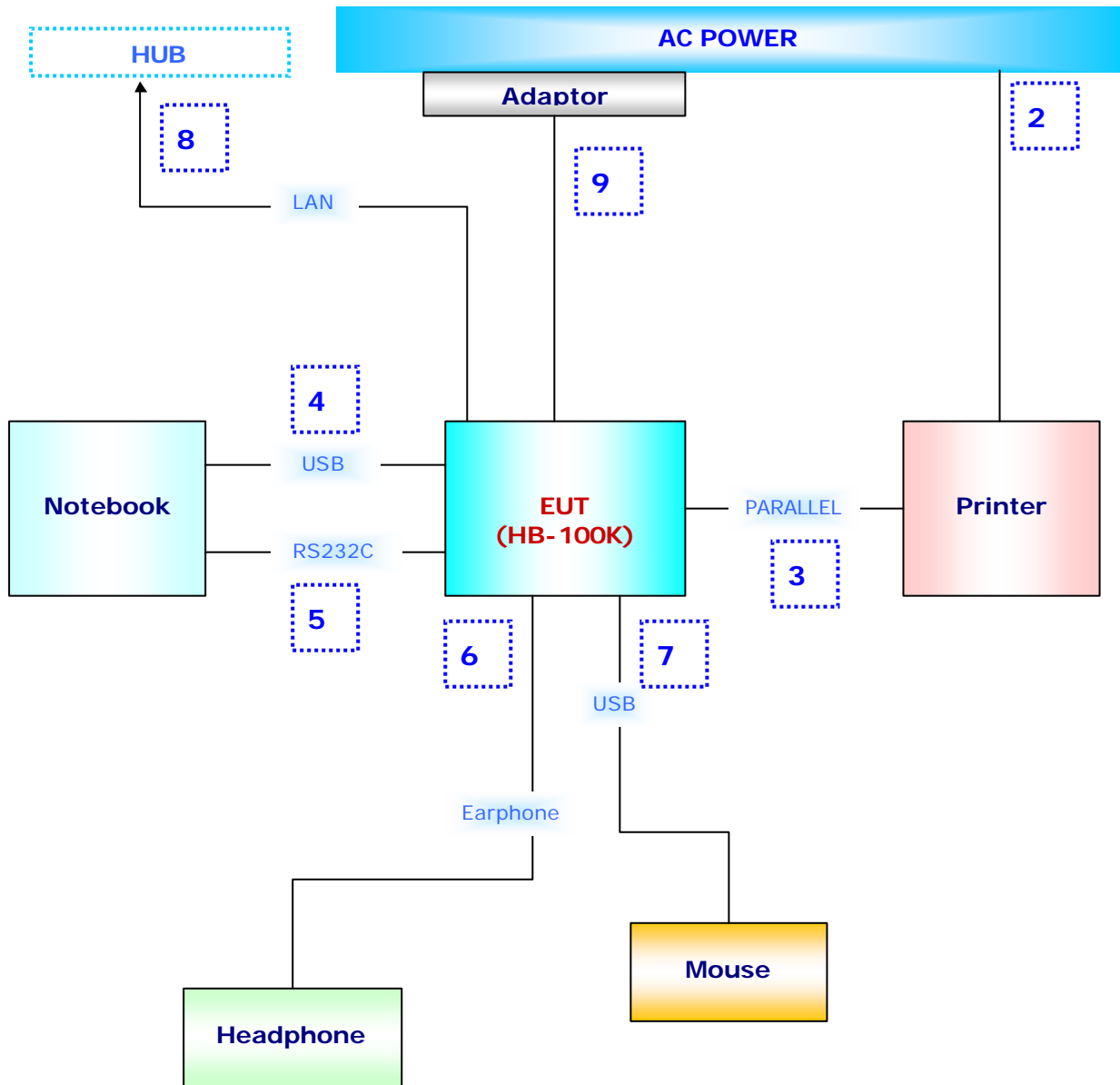
- MET minimum margin is 3.0 dB (uV/m) at 215.6 MHz
- NOT MET limit exceeded by maximum of \_\_\_\_ dB(uV/m) at \_\_\_\_ MHz
- NOT APPLICABLE

### Remarks

See Appendix A for test data



## Configuration



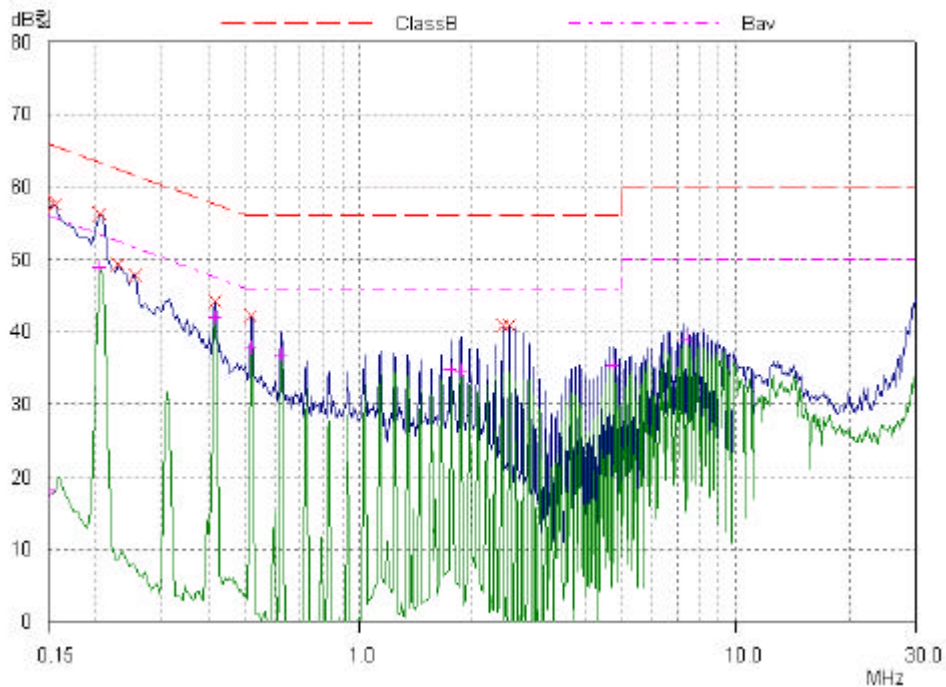
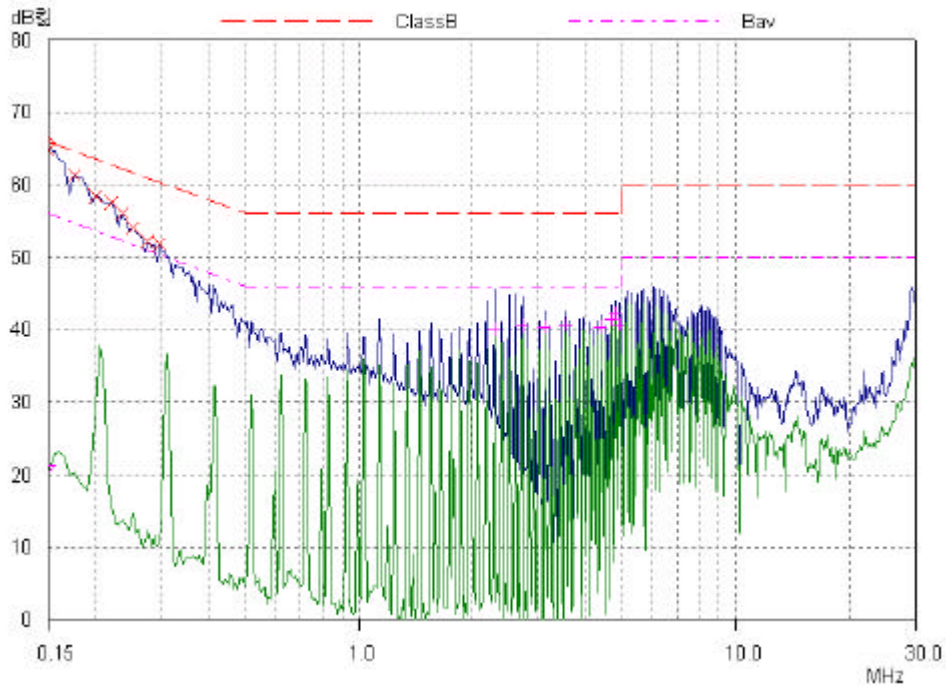


APPENDIX A - TEST DATA

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]
0.15	3.0	0.1	L	66.0	59.8	62.9	3.1				
0.18	3.0	0.1	L	64.7	58.3	61.4	3.4				
0.20	2.3	0.1	L	63.6	56.1	58.5	5.1				
0.22	2.3	0.1	L	62.8	55.2	57.6	5.2				
0.24	1.5	0.1	L	62.3	54.5	56.1	6.2				
0.25	1.5	0.1	L	61.8	52.4	54.0	7.8				
2.27	0.3	0.1	L					46.0	39.6	40.0	6.1
2.69	0.3	0.1	L					46.0	40.2	40.6	5.4
3.10	0.3	0.1	L					46.0	39.9	40.3	5.7
3.51	0.3	0.1	L					46.0	40.3	40.7	5.3
4.34	0.3	0.1	L					46.0	39.9	40.3	5.7
4.65	0.3	0.1	L					46.0	41.1	41.5	4.5
4.75	0.3	0.1	L					46.0	41.8	42.2	3.8
4.85	0.3	0.1	L					46.0	40.2	40.6	5.4

(Peak and Average mode scan graph)





**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	13.8	V	1.0	9.60	1.30	30.0	24.72	5.28
113.70	12.3	V	1.0	9.55	2.00	30.0	23.83	6.17
203.50	13.6	V	1.0	7.35	2.80	30.0	23.78	6.22
206.90	16.4	H	4.0	7.60	2.90	30.0	26.90	3.10
215.60	16.2	H	4.0	7.90	2.90	30.0	27.00	3.00
239.00	13.3	H	3.8	9.00	2.90	37.0	25.16	11.84
260.20	11.2	V	1.2	9.80	3.20	37.0	24.20	12.80
280.40	11.2	H	4.0	10.40	3.40	37.0	24.99	12.01
287.90	11.0	H	4.0	10.60	3.60	37.0	25.20	11.80
540.00	9.6	H	4.0	16.10	4.80	37.0	30.48	6.52
699.00	5.1	H	3.8	18.40	5.70	37.0	29.23	7.77