EMI TEST REPORT

Test Report No. : 31LE0201-YW-01

Applicant:	**Hitachi, Ltd., Information & Telecommunication Systems Company**
Type of Equipment:	**USB Finger Vein Biometric Scanner**
Model No.:	**PC-KCA100**
FCC ID:	**ZQDPCKCA100**
Test regulation:	**FCC Part 15 Subpart B:2010 Class B** **ICES-003 Issue No. 4 Class B**
Test result:	**Complied**

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3. This sample tested is in compliance with the limits of the above regulation.
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6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
7. The test was performed in accordance with FCC regulation, as an alternative arrangement of ICES-003.

Date of test:

July 19, 2011

Representative test engineer:

Hiroyuki Furutaka
Engineer of WiSE Japan,
UL Verification Service

Approved by:

Tomoyuki Yamashita
Manager of WiSE Japan,
UL Verification Service

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JAB Testing RTL02610

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Section 1 : Customer information

Company Name	:	Hitachi, Ltd., Information & Telecommunication Systems Company
Brand Name	:	Hitachi, Ltd.
Address	:	Hitachi Systemplaza Shinkawasaki 890 Kashimada, Saiwai, Kawasaki, Kanagawa, 212-8567 Japan
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Contact Person	:	Kazumi Kubota

Section 2 : Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of equipment	:	USB Finger Vein Biometric Scanner
Model No.	:	PC-KCA100
Serial No.	:	19
Rating	:	DC 4.75 -5.25 V, 0.5 A
Country of Mass-production	:	Japan
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Size	:	58 x 81 x 72 (Width x Length x Height (mm))
Modification of EUT	:	No modification by the test lab.
Receipt Date of Sample	:	July 19, 2011

2.2 Product description

Model: PC-KCA100 (referred to as the EUT in this report) is a USB Finger Vein Biometric Scanner.
The clock frequencies used in the EUT: Xtal: 24 MHz, Micon: 98 MHz (max.)

Section 3 : Test specification, procedures and results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart B:2010, final revised on October 13, 2010
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart B Unintentional Radiators
Test Specification	:	* ICES-003 Issue No. 4
Title	:	Spectrum Management Interference-Causing Equipment Standard Digital Apparatus * The test was performed in accordance with FCC regulation, as an alternative arrangement.

3.2 Procedures & results

Item	Test Procedure	Limits	Deviation	Worst margin	Result
Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Class B	N/A	16.7 dB (7.6650 MHz, AV, L1)	Complied
Radiated emission	ANSI C63.4:2003 8. Radiated emission measurements	Class B	N/A	9.8 dB (437.20 MHz, Vertical)	Complied
*1) Measurements were limited up to 1 GHz since the highest frequency of internal source of the EUT is less than 108 MHz. Note: UL Japan's EMI Work Procedures No. 13-EM-W0420					

3.3 Addition to standard

No addition, exclusion nor deviation has been made from the standard.

3.4 Confirmation

UL Japan, Inc. hereby confirms that E.U.T., in the configuration tested, complies with the specifications FCC Part15 Subpart B:2010 Class B and ICES-003 Issue No. 4 Class B.

3.5 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

		Open area test site			Shielded room			
		No.1	No.2	No.3	No.1	No.2	No.3	No.7
		(±)	(±)	(±)	(±)	(±)	(±)	(±)
Conducted disturbance								
LISN (AMN)	9 kHz - 150 kHz	3.9 dB	-	-	3.9 dB	3.6 dB	3.6 dB	3.9 dB
	150 kHz - 30 MHz	3.1 dB	-	-	3.1 dB	3.0 dB	2.9 dB	3.1 dB
Radiated disturbance								
3 m	9 kHz - 30 MHz	3.5 dB	3.4 dB	3.2 dB	-	-	-	-
	30 MHz - 300 MHz	5.0 dB	5.1 dB	5.2 dB	-	-	-	-
	300 MHz - 1000 MHz	5.1 dB	5.2 dB	5.2 dB	-	-	-	-
	1 GHz - 18 GHz	5.6 dB	5.7 dB	5.7 dB	-	-	-	-

Conducted emission test

The data listed in this test report has enough margin, more than the site margin.

Radiated emission test

The data listed in this test report has enough margin, more than the site margin.

3.6 Test Location

UL Japan, Inc. Yokowa EMC Lab.
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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 open area test site	90412	2973A-1	-	40 x 18	-
No.2 open area test site	90411	2973A-2	-	20 x 18	-
No.3 open area test site	90412	2973A-3	-	20 x 18	-
No.1 shielded room	-	-	5.5 x 6.4 x 2.7	5.5 x 6.4	-
No.2 shielded room	-	-	4.5 x 3.6 x 2.7	4.5 x 3.6	-
No.3 shielded room	-	-	3.6 x 7.2 x 2.4	3.6 x 7.2	-
No.4 shielded room	-	-	5.5 x 5.0 x 2.4	4.35 x 3.35	-
No.5 shielded room	-	-	5.5 x 4.3 x 2.5	5.54 x 3.0	-
No.6 shielded room	-	-	5.2 x 3.2 x 2.9	5.2 x 3.2	-
No.7 shielded room	-	-	9.3 x 3.4 x 2.7	9.3 x 3.4	-
No.1 EMS lab. (Full-anechoic chamber)	-	-	5.0 x 8.0 x 3.5	-	-
No.2 EMS lab. (Full-anechoic chamber)	-	-	4.0 x 7.0 x 3.5	-	-

3.7 Test setup, Data of EMI & Test instruments

Refer to Appendix 1 to 3.

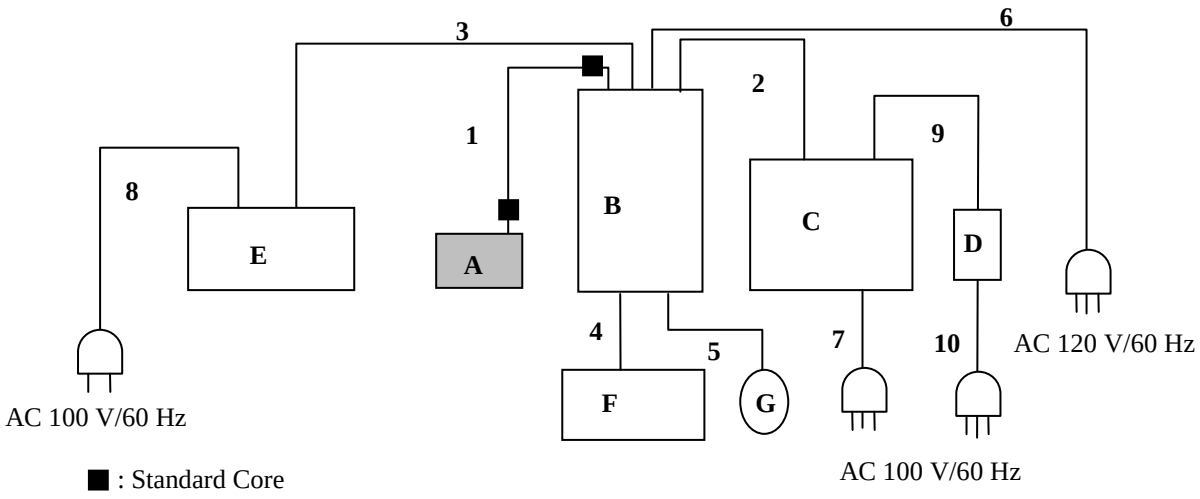
Section 4 : Operation of E.U.T. during testing

4.1 Operating modes

The EUT exercise program used during testing was designed to exercise the various system components in a manner similar to typical use.
Test sequence is used: Running

Justification: The system was configured in typical fashion (as a customer would normally use it) for testing.

4.2 Configuration and peripherals



*Cabling and setup were taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID	Remark
A	USB Finger Vein Biometric Scanner	PC-KCA100	19	Hitachi, Ltd., Information & Telecommunication Systems Company	ZQDPCKCA100	EUT
B	Personal Computer	DCSM	2NT47BX	DELL	DoC	-
C	LCD Monitor	1503FP	KR0413DP4760 2224B2YA	DELL	DoC	-
D	AC Adapter	PSCV360104A	C011244716	DELL	N/A	-
E	Printer	PIXUS560i	-	Canon	DoC	-
F	Keyboard	SK-8115	CN-0DJ319-716 16-7AR-0GEG	DELL	DoC	-
G	Mouse	MO28UOL	23-063520	IBM	DoC	-

List of cables used

No.	Name	Length (m)	Cable Shield	Connector Shield	Remark
1	USB Cable	2.0	Shielded	Shielded	-
2	RGB Cable	1.5	Unshielded	Shielded	-
3	Printer Cable	1.8	Unshielded	Shielded	-
4	Keyboard Cable	2.0	Shielded	Shielded	-
5	Mouse Cable	1.8	Shielded	Shielded	-
6	AC Power Cable	2.0	Unshielded	Unshielded	3 wire
7	AC Power Cable	2.0	Unshielded	Unshielded	3 wire
8	AC Power Cable	1.8	Unshielded	Unshielded	2 wire
9	DC Power Cable	0.8	Shielded	Unshielded	-
10	AC Power Cable	1.5	Unshielded	Unshielded	3 wire

Section 5 : Conducted emission

5.1 Operating environment

The test was carried out in shielded room.
Temperature : See data
Humidity : See data

5.2 Test configuration

EUT was placed on a wooden platform of nominal size, 1m by 1.8m raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT and its peripherals was aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface.
EUT was located 80cm from the LISN and excess AC cable was bundled in center. I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle and were hanged at a 40cm height to the ground plane. Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50ohm connectors of the LISN were resistively terminated in 50 ohm when not connected to the measuring equipment.
Photographs of the set up are shown in Appendix 1.

5.3 Test conditions

Frequency range : 0.15 - 30 MHz
EUT position : Table top

5.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT in shielded room.
The EUT was connected to a Line Impedance Stabilization Network (LISN).
An overview sweep with peak detection has been performed.
The measurements had been performed with a quasi-peak detector and if required, with an average detector.
The conducted emission measurements were made with the following detector function of the test receiver.
Detector Type : QP / AV
IF Band width : 9 kHz / 9 kHz

5.5 Results

Summary of the test results: Pass

Section 6 : Radiated emission

6.1 Operating environment

This test was carried out in open area test site.
Temperature : See data
Humidity : See data

6.2 Test configuration

EUT was placed on a table which was consisted by wooden, polyethylene foam and polycarbonate of nominal size, 1m by 2m raised 80cm above the conducting ground plane.
The rear of EUT and its peripherals was aligned and flushed with rear of tabletop.
I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle and were hanged 40cm height to the ground plane. The measurements were performed for vertical or horizontal antenna polarization or both as necessary. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.
Photographs of the set up are shown in Appendix 1.

6.3 Test conditions

Frequency range : 30 - 1000 MHz
Test distance : 3m
EUT position : Table top

6.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on an open test site with a ground plane at a distance of 3m. Pre check measurements were performed in shielded room with a search coil at 30-1000MHz to distinguish disturbances of EUT from the ambient noise.
Measurements were performed with quasi-peak detector.
The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
The measurements were performed for vertical or horizontal antenna polarization or both as necessary.
The radiated emission measurements were made with the following detector function of the test receiver and spectrum analyzer.
Detector Type: : QP
IF Band width: : 120 kHz

6.5 Results

Summary of the test results: Pass