



EMI TEST REPORT

Test Report No. : 31KE0311-YW-01


Applicant: Hitachi, Ltd., Information & Telecommunication
Systems Company
Type of Equipment: USB Finger Vein Biometric Scanner
Model No.: PCT-KC8203
FCC ID: ZQDPCTKC8203
Test regulation: FCC Part 15 Subpart B:2010 Class B
ICES-003 Issue No.4 Class B
Test Result: Complied

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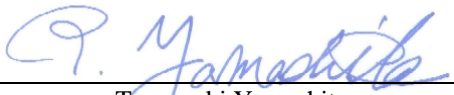
Date of test:

February 23, 2007

**Representative
test engineer:**


Masanori Nishiyama
Engineer of WiSE Japan,
UL Verification Service

Approved by:


Tomoyuki Yamashita
Manager of WiSE Japan,
UL Verification Service

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13-EM-F0429

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SECTION 1: Client information

Company Name : Hitachi, Ltd., Information & Telecommunication Systems Company
Brand Name : Hitachi, Ltd.
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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. : PCT-KC8203
Serial No. : -
Rating : DC 5.0 V
Country of Manufacture : Japan
Receipt Date of Sample : February 23, 2007
Condition of E.U.T. : Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No modification by the test lab.

2.2 Product description

Model: PCT-KC8203, referred to as the EUT in this report, is a USB Finger Vein Biometric Scanner.
This Module is used for authenticate user by using pattern of finger vein when user logon PC.
The clock frequency used in EUT: CPU: 48 MHz

SECTION 3: Test specification, procedures and results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart B: 2010, final revised on December 6, 2010 and effective January 5, 2011

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.

* The revision on December 6, 2010 does not affect the test specification applied to the EUT.

** Although the test report for this equipment was originally issued on 2007, the version of standard was updated to FCC Part 15 Subpart B: 2010 since there are no modifications which requires additional test.

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	13.1 dB (0.4836 MHz, QP, L1)	Complied
Radiated emission	ANSI C63.4:2003 8. Radiated emission measurements	Class B	N/A	3.5 dB (504.03 MHz, Vertical)	Complied

Note: UL Japan's EMI Work Procedures No. 13-EM-W0420

3.3 Additions or deviations to standards

No addition, deviation or exclusion has been made from standards.

3.4 Confirmation

UL Japan, Inc. hereby confirms that E.U.T., in the configuration tested, complies with the specifications FCC Part 15 Subpart B Class B and ICES-003 Issue 4 Class B.

3.5 Uncertainty

The measurement uncertainty (with a 95% confidence level) is as follows:

Test room	Conducted emission	Radiated emission (10m)		Radiated emission (3m)		
		30-300MHz	300MHz-1GHz	30-300MHz	300MHz-1GHz	1GHz<
No.1 open site	2.6 dB	4.2 dB	3.6 dB	4.2 dB	4.1 dB	5.5 dB
No.2 open site	2.6 dB	4.2 dB	3.6 dB	4.4 dB	4.1 dB	5.5 dB
No.3 open site	2.6 dB	4.2 dB	3.6 dB	4.2 dB	4.1 dB	5.4 dB
No.7 shielded room	2.6 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 report meets the limits unless the uncertainty is taken into consideration.

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3.6 Test Location

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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.

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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.

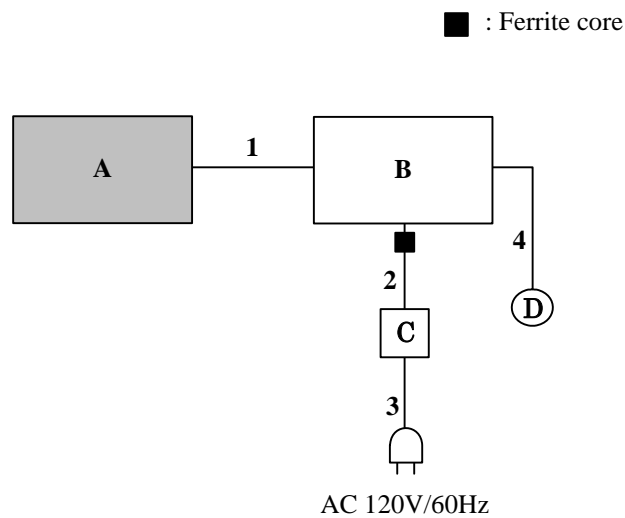
Test sequence is used: Authenticate mode, Idle mode

Operation: Authenticate mode: The module are taking a pattern of finger vein.

Idle mode: The module is connected to PC but any function does not work.

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.

** There is no parallel port on host so that parallel port device such as printer is impossible to connect.

It is the maximum load for EUT by connecting host PC and USB. And, there would be no effect on the testing result even if other peripheral device is connected. Therefore, the testing was done with this configuration.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID	Remark
A	USB Finger Vein Biometric Scanner	PCT-KC8203	-	Hitachi, Ltd., Information & Telecommunication Systems Company	ZQDPCTKC8203	EUT
B	PC	1706-25J	LV-B3574	IBM	DoC	-
C	AC Adaptor	DCWP CM2	92P1156	Lenovo	-	-
D	Mouse	M0C5U0	H0204Y73	DELL	DoC	-

List of cables used

No.	Name	Length (m)	Cable Shielding	Connector Shielding	Remark
1	USB Cable	1.8	Shielded	Shielded	-
2	DC Power Cable	1.7	Shielded	Shielded	-
3	AC Power Cable	1.0	Unshielded	Unshielded	2 wire
4	Mouse Cable	1.8	Shielded	Shielded	-

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SECTION 5: Conducted emission

5.1 Operating environment

The test was carried out in No.1 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
EUT operation mode : Authenticate mode, Idle mode

5.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT in a 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
IF Bandwidth : 9 kHz

5.5 Results

Summary of the test results: Pass

Date : February 23, 2007

Test engineer : Masanori Nishiyama

SECTION 6: Radiated emission

6.1 Operating environment

The test was carried out in No.1 open site.

Temperature : See data

Humidity : See data

6.2 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 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 30cm to 40cm long and were hanged 40cm height to the ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. 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

EUT operation mode : Authenticate mode, Idle mode

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 a screened 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 both vertical and horizontal antenna polarization.

The radiated emission measurements were made with the following detector function of the test receiver.

Detector Type : QP

IF Bandwidth : 120kHz

6.5 Results

Summary of the test results: Pass

Date : February 23, 2007

Test engineer : Masanori Nishiyama

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