

TEST REPORT

STANDARD : FCC Part15B Class B

Applicant	Testing Laboratory
Hitachi Information & Control Solutions, Ltd. 1-26, Omika-cho, 5-chome, Hitachi-shi Ibaraki-ken, 319-1221 Japan Tel. +81 294 53 6142	Intertek Japan K.K. Kashima Site URL: http://www.japan.intertek-etlsemko.com 3-2 Sunayama, Kamisu, Ibaraki 314-0255 Japan Tel. +81 479 40 1097

Equipment Type	Finger Vein Enrollment Device
Trademark	Hitachi-ICS
Model(s)	FVN600E
Serial No.	XR401501 0048
Equipment Authorization	Certification (FCC ID: WLT-FVN600E)
Test Result	Complied
Report Number	JK08120034
Report Issue Date	March 3, 2009

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

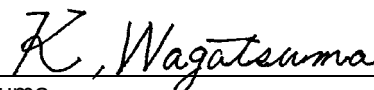
Approved by

Junichi Okada
[Site Manager]



Tested by

Koichi Wagatsuma




Lab Code : 100290-0

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

TABLE OF CONTENTS

	Page
SECTION 1. GENERAL INFORMATION	3
SECTION 2. SUMMARY OF TEST RESULTS	4
SECTION 3. EQUIPMENT UNDER TEST	5
SECTION 4. SUPPORT EQUIPMENT.....	6
SECTION 5. USED CABLE(S).....	7
SECTION 6. TEST CONFIGURATION	8
SECTION 7. OPERATING CONDITION	9
SECTION 8. TEST PROCEDURE(S)	10
SECTION 9. MEASUREMENT UNCERTAINTY	12
SECTION 10. EVALUATION OF TEST RESULTS	13
SECTION 11. PHOTOGRAPHS OF MAXIMUM EMISSION SET-UP	16
SECTION 12. LIST OF MEASURING INSTRUMENTS.....	18

SECTION 1. GENERAL INFORMATION

TEST PERFORMED

Location	Kashima No.12 Test Site
EUT Received	December 24, 2008
Date of Test	December 25, 2008
Standard Applied	FCC Part15B Class B
Measurement methods	ANSI C63.4-2003
Test Procedure	Document number : RJP-EM003, RJP-EM001
Deviation from Standard(s)	None

QUALIFICATIONS OF TESTING LABORATORY

ACCREDITATION	SCOPE	LAB. CODE	Remarks
NVLAP	EMC Testing	100290-0	USA
VLAC	EMC Testing	VLAC-008-1	JAPAN
BSMI	EMC Testing	SL2-IN-E-6008	TAIWAN
FILING			
VCCI	EMC Testing	R-788, C-278, C-279, T-351, T-352 R-274, C-280, C-281, T-353, T-359 R-272, C-276, C-277, T-360, T-361 R-576, C-590, T-362	JAPAN
FCC	EMC Testing	Designation Number : JP0008	USA
IC	EMC Testing	2065A-1, 2065A-3	CANADA
SAUDI ARABIA	EMC Testing	N/A	

ABBREVIATIONS

EUT	: Equipment Under Test	DoC	: Declaration of Conformity
AMN	: Artificial Mains Network	ISN	: Impedance Stabilization Network
LISN	: Line Impedance Stabilization Network	Q-P	: Quasi-peak
AMP	: Amplifier	AVG	: Average
ATT	: Attenuator	PK	: Peak
ANT	: Antenna	Cal	: Calibration
BBA	: Broadband Antenna	N/A	: Not applicable or Not available
DIP	: Dipole Antenna	LCD	: Liquid-Crystal Display
AE	: Associated Equipment		

SECTION 2. SUMMARY OF TEST RESULTS

The minimum margins to the limits are as follows:

Conducted disturbance at mains terminals	Finger Vein Enrollment device's Test of Access mode 9.0 dB (0.2706 MHz)
Radiated disturbance	Finger Vein Enrollment device's Test of Access mode 4.7 dB (336.00 MHz)

Note : See Section 10 for details.

< Measurement data correction >

- * Conducted disturbance at mains terminals
 - Emission Level [dBμV] = Meter Reading [dBμV] + Factor [dB]
 - Margin [dB] = Limit [dBμV] - Emission Level [dBμV]
 - * Factor = LISN Factor + Cable Loss + ATT
- * Radiated disturbance
 - Emission Level [dBμV/m] = Meter Reading [dBμV] + Factor [dB/m]
 - Margin [dB] = Limit [dBμV/m] - Emission Level [dBμV/m]
 - * Factor = Antenna Factor + Cable Loss - Amplifier Gain + ATT
(– Distance Conversion Factor)

SECTION 3. EQUIPMENT UNDER TEST

The equipment under test (EUT) consisted of the following apparatus.

3.1 System Configuration

Symbol	Item	Model No.	Serial No.	Manufacturer	FCC ID
A1	Finger Vein Enrollment Device	FVN600E	XR401501 0048	Hitachi Information & Control Solutions, Ltd.	WLT-FVN600E
A2	AC Adapter	US300520	807-0829873	UNIFIVE	N.A.
Rated Power : Finger Vein Enrollment Device: DC5 V, 2 A AC Adapter: Input AC100-240 V, 50/60 Hz, 0.3 A Output DC 5V, 2 A					
Supplied Power : AC120 V, 60 Hz					
Condition of Equipment		Production			
Type		Table top			
Suppression Devices		No Modifications by the laboratory were made to the device			

3.2 Port(s)/Connector(s)

Port Name	Connector Type	Connector Pin	Remarks
USB	Series B	4pin	
Power	DC Jack	2pin	

3.3 Highest Frequency Oscillator(s) / Crystal(s)

Base Clock	Operating Frequency	Board Name	Remarks
48 MHz	144 MHz	SZC601	

3.4 Frequency Range of Measurements

	Required Measurement Frequency Range	Measured Frequency Range
Conducted	0.15 – 30 MHz	0.15 – 30 MHz
Radiated	30 – 2000 MHz	30 – 2000 MHz

SECTION 4. SUPPORT EQUIPMENT

The EUT was supported by the following equipment during the test.

Symbol	Item	Model No.	Serial No.	Manufacturer	FCC ID
B	Computer	Compaq nx6320	CNU71222R	HP	DoC
C	Printer	C8154A	TH571320G6	HP	DoC
D	AC Adapter	HP Part No: 381090-001	6Z23355701	HP	N.A.
E	AC Adapter	0957-2142	E10588013501L	HP	N.A.
Supplied Power:					
D, E	AC120 V, 60 Hz				

SECTION 5. USED CABLE(S)

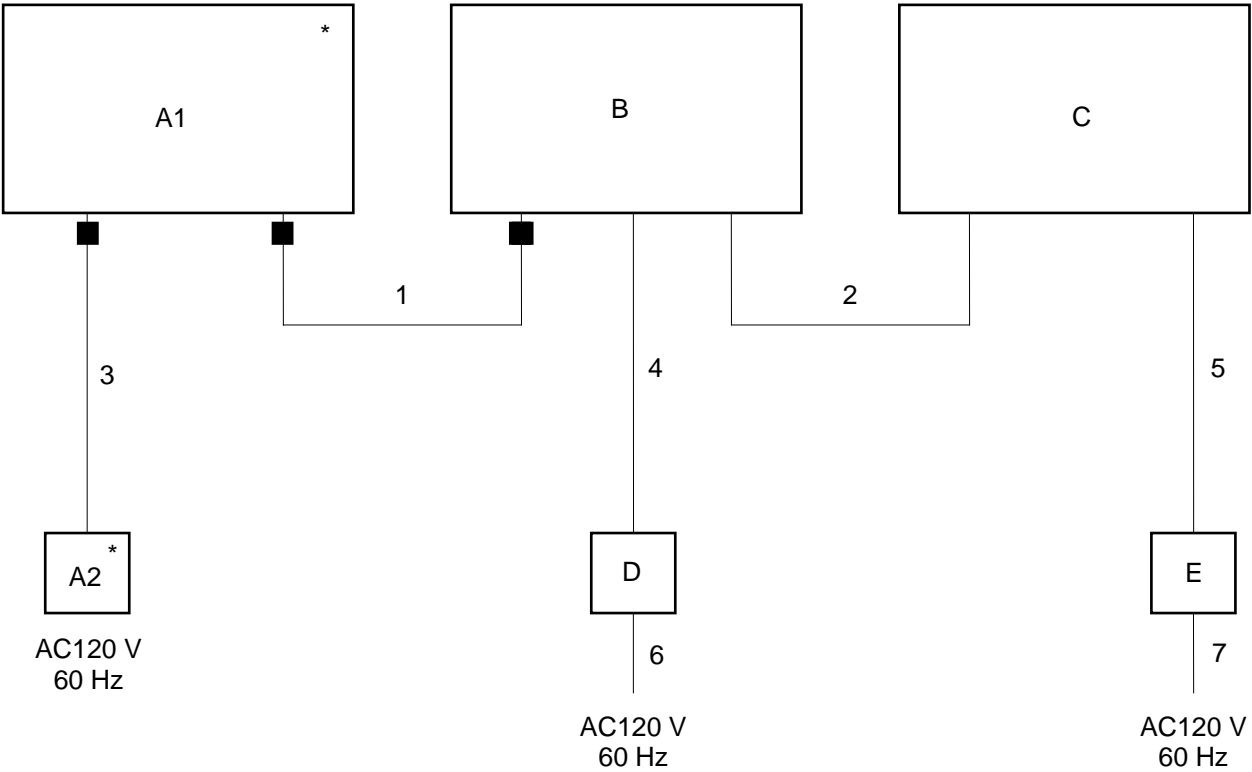
The following cable(s) was used for the test.

No.	Name	Length (m)	Shield	Metal Connector	Ferrite Core
1	USB cable	1.50	Yes	Yes	Removable x 2
2	Centronics cable	2.40	Yes	Yes	
3	Power cable for Finger Vein Enrollment Device	1.50	No	No	Fixed x 1
4	Power cable for Computer (DC)	1.80	No	No	
5	Power cable for Printer (DC)	1.75	No	No	
6	Power cable for Computer (AC)	1.80	No	No	
7	Power cable for Printer (AC)	0.90	No	No	

Note: No.1 and No.3 cables are supplied together with EUT by the applicant.

SECTION 6. TEST CONFIGURATION

* : EUT
■ : Ferrite core



The symbols and numbers assigned to the equipments and cables on this diagram correspond to the ones in Sections 3 to 5.

SECTION 7. OPERATING CONDITION

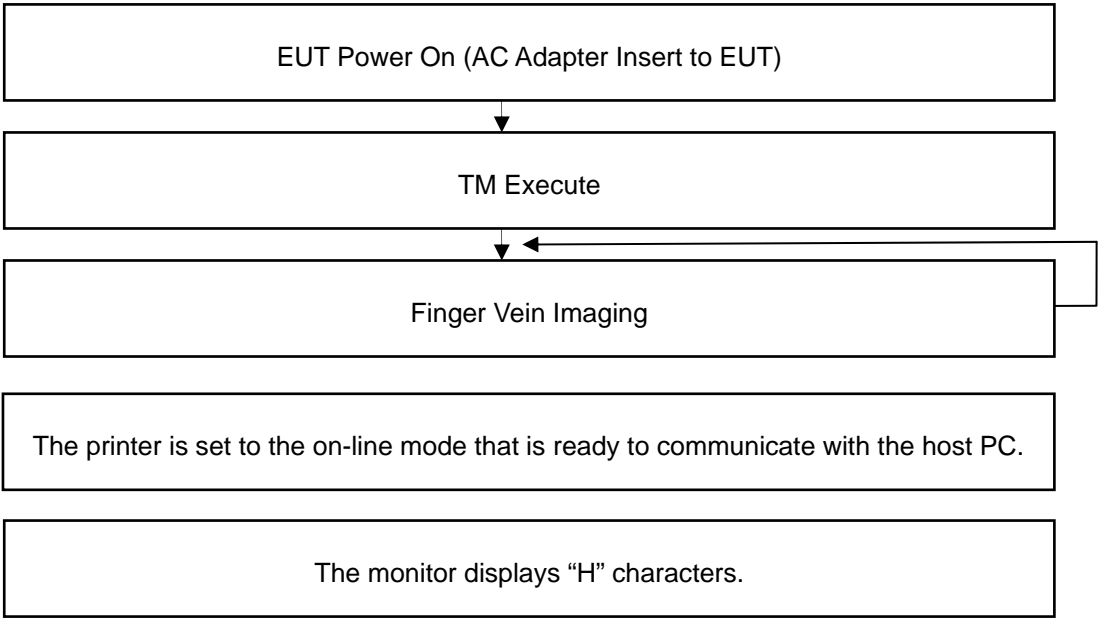
The EUT was operated under the following conditions during the test.

7.1 Operating Condition

The test was carried out under Finger Vein Enrollment device's Test of Access mode.
EUT was examined in the operating conditions that had maximum emissions.

7.2 Operating Flow [Finger Vein Enrollment device's Test of Access mode]

Following operations were performed continuously.



SECTION 8. TEST PROCEDURE(S)

Test was carried out under the following conditions.

Conducted disturbance at mains terminals

Test setup as per standard

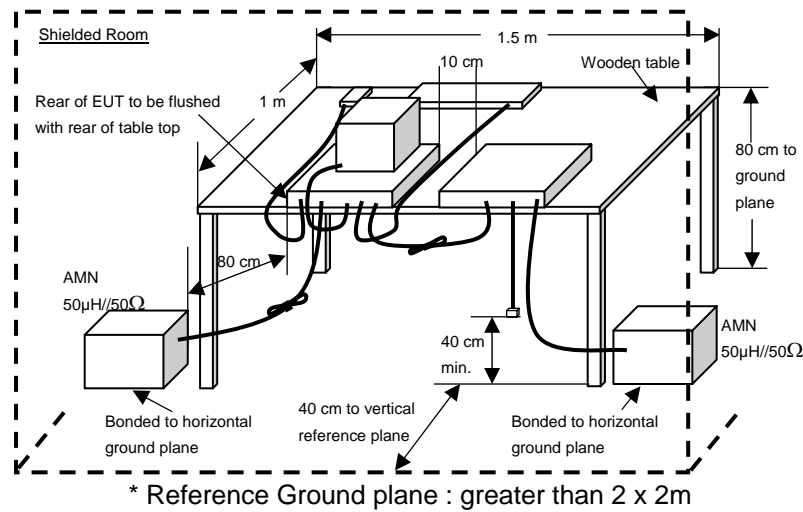
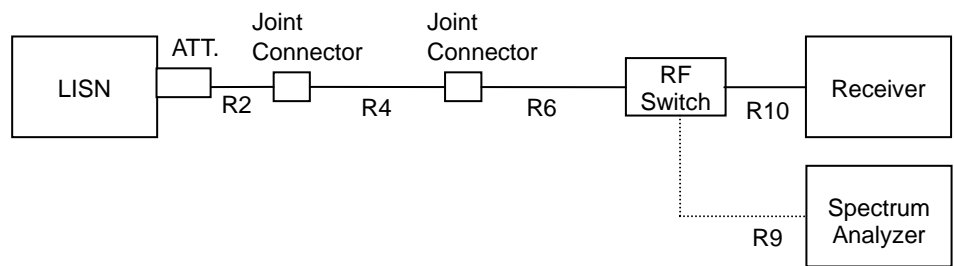


Diagram of the measuring instruments



Setting for the instruments

Frequency [MHz]	Instrument	Detector Function	Resolution Bandwidth	Video Bandwidth
0.15 – 30	Receiver	Quasi Peak	10 kHz	N/A
		Average	10 kHz	N/A

[Preliminary Measurement]

EUT is tested on all operating conditions.

The spectrum analyzer is controlled by the computer program to sweep the frequency range to be measured, then spectrum chart is plotted out to find the worst emission conditions in operating mode and/or configuration decision for the final test.

All leads other than safety ground are tested.

[Final Measurement]

The EUT is operated in the worst emission condition found by the preliminary test.

The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.

At least six highest spectrum are measured in quasi-peak and average (if necessary) using the test receiver.

SECTION 9. MEASUREMENT UNCERTAINTY

Radiated disturbance at 3m	U_{lab}	U_{cisp}
30 MHz – 1000 MHz Above 1 GHz	+/- 3.8 dB +/- 4.3 dB	5.2 dB
Radiated disturbance at 10m		
30 MHz – 1000 MHz Above 1 GHz	+/- 5.5 dB +/- 4.3 dB	5.1 dB
Radiated disturbance at 30m		
	N/A	5.2 dB
Radiated disturbance (power)		
11.7 GHz – 12.7 GHz	+/- 4.3 dB	Nil
Conducted disturbance at mains terminals		
9 kHz – 150 kHz 150 kHz – 30 MHz	+/- 3.0 dB	4.0 dB 3.6 dB
Conducted disturbance at telecommunication ports (voltage)		
9 kHz – 30 MHz	+/- 3.4 dB	Nil
Conducted disturbance at telecommunication ports (current)		
9 kHz – 30 MHz	+/- 2.8 dB	Nil
Conducted disturbance at terminals		
150 kHz – 30 MHz	+/- 2.8 dB	Nil
Disturbance power		
30 MHz – 300 MHz	+/- 4.9 dB	4.5 dB

The above expanded instrumentation uncertainty, U_{lab} , is estimated in accordance with CISPR 16-4-2. Traceability to national standard in SI units is ensured with these values. Compliance with the limits in this standard are determined without in consideration of the measurement uncertainty of the measurement instrumentation.

SECTION 10. EVALUATION OF TEST RESULTS

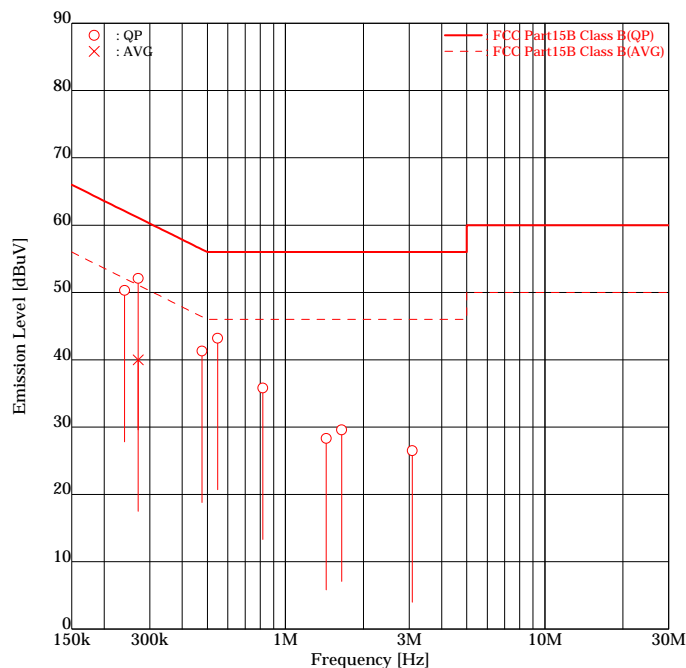
10.1 Conducted disturbance at mains terminals

Intertek Japan K.K.

Kashima No.12 Test Site

Conducted Voltages on Mains Port

APPLICANT : Hitachi Information & Control Solutions Ltd.
EUT NAME : Finger Vein Enrollment Device
MODEL NO. : FVN600E
SERIAL NO. : XR401501 0048
TEST MODE : Finger Vein Enrollment device's Test of Access mode
POWER SOURCE : AC120V/60Hz
DATE TESTED : Dec 25 2008
FILE NO. : JK08120034
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
TEMPERATURE : 18.0 [degC]
HUMIDITY : 40.0 [%]
NOTE :



ENGINEER : Koichi Wagatsuma

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.2400	QP	<u>44.2</u>	39.4	6.1	6.1	<u>50.3</u>	45.5	62.1	<u>11.8</u>	16.6
2	0.2706	QP	<u>46.0</u>	40.1	6.1	6.1	<u>52.1</u>	46.2	61.1	<u>9.0</u>	14.9
3	0.2706	AVG	<u>33.9</u>	31.2	6.1	6.1	<u>40.0</u>	37.3	51.1	<u>11.1</u>	13.8
4	0.4772	QP	<u>35.1</u>	30.0	6.2	6.1	<u>41.3</u>	36.1	56.4	<u>15.1</u>	20.3
5	0.5479	QP	<u>37.0</u>	32.3	6.2	6.1	<u>43.2</u>	38.4	56.0	<u>12.8</u>	17.6
6	0.8188	QP	<u>29.5</u>	27.8	6.3	6.3	<u>35.8</u>	34.1	56.0	<u>20.2</u>	21.9
7	1.4373	QP	<u>21.7</u>	22.0	6.3	6.3	<u>28.0</u>	28.3	56.0	<u>28.0</u>	27.7
8	1.6485	QP	<u>21.1</u>	23.2	6.4	6.4	<u>27.5</u>	29.6	56.0	<u>28.5</u>	26.4
9	3.0808	QP	<u>20.0</u>	19.3	6.5	6.5	<u>26.5</u>	25.8	56.0	<u>29.5</u>	30.2

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

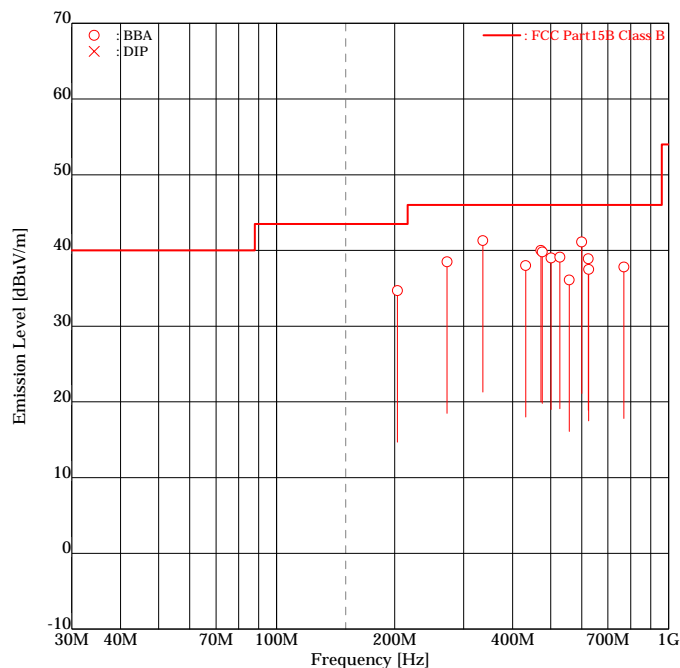
Emission Level = Read + Factor(LISN, Pad, Cable)

10.2 Radiated disturbance

10.2.1 Finger Vein Enrollment device's Test of Access mode (30MHz – 1000MHz)

Intertek Japan K.K. Kashima No.12 Test Site Radiated Electric Field

APPLICANT : Hitachi Information & Control Solutions Ltd.
EUT NAME : Finger Vein Enrollment Device
MODEL NO. : FVN600E
SERIAL NO. : XR401501 0048
TEST MODE : Finger Vein Enrollment device's Test of Access mode
POWER SOURCE : AC120V/60Hz
DATE TESTED : Dec 25 2008
FILE NO. : JK08120034
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 17.0 [degC]
HUMIDITY : 43.0 [%]
NOTE :



ENGINEER : Koichi Wagatsuma

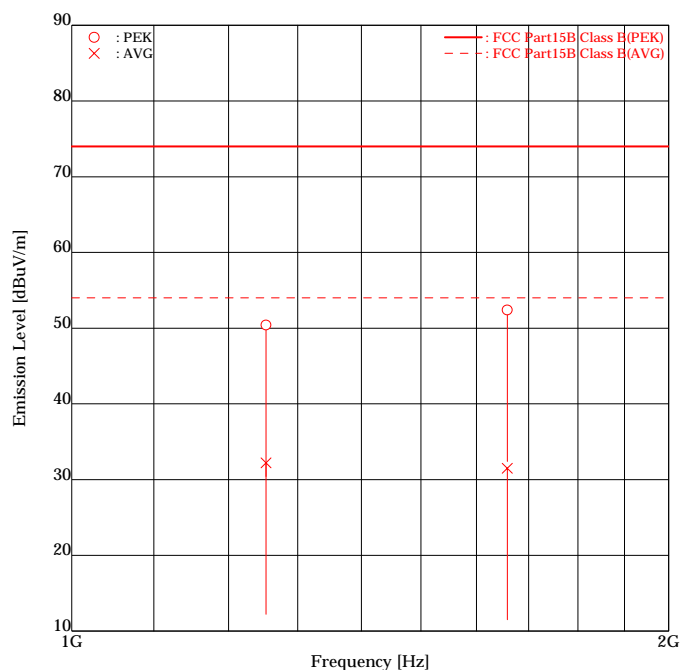
FREQUENCY [No]	FREQ [MHz]	ANT.	READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	203.29	BBA	38.2	-	-3.5	-3.5	34.7	-	43.5	8.8	-
2	272.15	BBA	38.4	-	0.1	0.1	38.5	-	46.0	7.5	-
3	336.00	BBA	<u>39.3</u>	-	2.0	2.0	<u>41.3</u>	-	46.0	<u>4.7</u>	-
4	432.00	BBA	33.0	-	5.0	5.0	38.0	-	46.0	8.0	-
5	472.49	BBA	<u>33.7</u>	-	6.3	6.3	<u>40.0</u>	-	46.0	<u>6.0</u>	-
6	476.25	BBA	-	<u>33.3</u>	6.5	6.5	-	<u>39.8</u>	46.0	-	<u>6.2</u>
7	501.14	BBA	<u>31.7</u>	-	7.3	7.3	<u>39.0</u>	-	46.0	<u>7.0</u>	-
8	528.01	BBA	<u>31.3</u>	28.0	7.8	7.8	<u>39.1</u>	35.8	46.0	<u>6.9</u>	10.2
9	557.90	BBA	27.8	-	8.3	8.3	36.1	-	46.0	9.9	-
10	600.00	BBA	<u>32.0</u>	29.1	9.1	9.1	<u>41.1</u>	38.2	46.0	<u>4.9</u>	7.8
11	624.01	BBA	29.0	29.5	9.4	9.4	38.4	38.9	46.0	7.6	7.1
12	625.01	BBA	28.1	-	9.4	9.4	37.5	-	46.0	8.5	-
13	768.67	BBA	-	26.0	11.8	11.8	-	37.8	46.0	-	8.2

Higher six points are underlined.
Other frequencies : Below the FCC Part15B Class B limit
Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamplifier)
ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

10.2.2 Finger Vein Enrollment device's Test of Access mode (1000MHz – 2000MHz)

Intertek Japan K.K. Kashima No.12 Test Site Radiated Electric Field

APPLICANT : Hitachi Information & Control Solutions Ltd.
EUT NAME : Finger Vein Enrollment Device
MODEL NO. : FVN600E
SERIAL NO. : XR401501 0048
TEST MODE : Finger Vein Enrollment device's Test of Access mode
POWER SOURCE : AC120V/60Hz
DATE TESTED : Dec 25 2008
FILE NO. : JK08120034
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 17.0 [degC]
HUMIDITY : 43.0 [%]
NOTE :



ENGINEER : Koichi Wagatsuma

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	1253.30	PEK	53.5	<u>54.0</u>	-3.6	-3.6	49.9	<u>50.4</u>	74.0	24.1	<u>23.6</u>
2	1253.30	AVG	35.3	<u>35.8</u>	-3.6	-3.6	31.7	<u>32.2</u>	54.0	22.3	<u>21.8</u>
3	1658.50	PEK	50.5	<u>54.2</u>	-1.8	-1.8	48.7	<u>52.4</u>	74.0	25.3	<u>21.6</u>
4	1658.50	AVG	32.3	<u>33.3</u>	-1.8	-1.8	30.5	<u>31.5</u>	54.0	23.5	<u>22.5</u>

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamplifier)

ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

SECTION 12. LIST OF MEASURING INSTRUMENTS

Instrument	Model No.	Serial No.	Manufacturer	Cal. date	Due date
Conducted disturbance at mains terminals					
LISN (EUT)	ESH2-Z5	881492/014	ROHDE & SCHWARZ	Oct. 16, 08	Oct. 31, 09
6dB Attenuator	CFA-01	None	TME	May 02, 08	May 31, 09
LISN (Peripheral)	KNW-242	8-851-22	KYORITSU	Oct. 14, 08	Oct. 31, 09
50Ω Termination	CT-01	A010CON50	TME	Oct. 15, 08	Oct. 31, 09
Coaxial cable	RG-5A/U(16.0 m)	R2	Intertek Japan	May 02, 08	May 31, 09
Coaxial cable	RG-5A/U(7.0 m)	R4	Intertek Japan	May 02, 08	May 31, 09
Coaxial cable	RG-5A/U(4.0 m)	R6	Intertek Japan	May 02, 08	May 31, 09
Coaxial cable	5D-2W(1.5 m)	R9	Intertek Japan	May 02, 08	May 31, 09
Coaxial cable	5D-2W(1.2 m)	R10	Intertek Japan	May 02, 08	May 31, 09
Radiated disturbance					
Bi-cog Antenna	LPB-2513/A	1103	ARA	Sep. 30, 08	Sep. 30, 09
6dB Attenuator	MP721B	M57593	Anritsu	May 02, 08	May 31, 09
Amplifier	ZX60-3018G	002	Intertek Japan	May 02, 08	May 31, 09
Spectrum Analyzer	R3182	111100429	ADVANTEST	Jun. 06, 08	Jun. 30, 09
Amplifier	TPA0118-30	0402	TOYO	Sep. 11, 08	Sep. 30, 09
Double Ridged Antenna	3117	00055157	ETS LINDGREN	Aug. 06, 08	Aug. 31, 09
3dB Attenuator	6803.17.B	None	SUHNER	Sep. 11, 08	Sep. 30, 09
Coaxial cable	RG-5A/U(14.0 m)	R1	Intertek Japan	May 02, 08	May 31, 09
Coaxial cable	RG-5A/U(7.0 m)	R3	Intertek Japan	May 02, 08	May 31, 09
Coaxial cable	RG-5A/U(4.0 m)	R5	Intertek Japan	May 02, 08	May 31, 09
Coaxial cable	5D-2W(0.7 m)	R7	Intertek Japan	May 02, 08	May 31, 09
Coaxial cable	5D-2W(1.5 m)	R9	Intertek Japan	May 02, 08	May 31, 09
Coaxial cable	5D-2W(1.2 m)	R10	Intertek Japan	May 02, 08	May 31, 09
Coaxial cable	R286401343(1.0m)	R14 03 23 104	RADIAL	Sep. 11, 08	Sep. 30, 09
Coaxial cable	R286401344(8.0m)	R15 03 23 72	RADIAL	Sep. 11, 08	Sep. 30, 09
Site Attenuation				May 08, 08	May 31, 09
Common					
Test receiver	ESS (Firmware Version 1.07)	847151/012	ROHDE & SCHWARZ	Feb. 07, 08	Feb. 28, 09
RF Switch	ACX-150-1	None	Intertek Japan	May 02, 08	May 31, 09
Testing Software	emiT (Version 3,0,0,0)				

Note : Test instruments are calibrated according to Quality Manual and Calibration Rules of Intertek Japan K.K.