EMISSION -- TEST REPORT

TEST REPORT No.: **TR2-09388F** **Date of Issue: October 27, 2009**

KIND OF EQUIPMENT:	**CARD PRINTER**
MODEL:	**CX-7000 / XID 83XX Printer / CX-D80 / SR200 / SR300**
APPLICANT:	**Victor Company of Japan, Limited**
FCC ID:	**ASIK9X004**
TEST STANDARD(S):	**FCC Part 15 Subpart C, Section 15.225**
TEST RESULT:	**Complied**

The above equipment has been tested by EMC Kashima Corporation, and found compliance with the requirements of the above standards. The test result only responds to the tested sample. This test report shall not be reproduced except in full, without the written approval of EMC Kashima Corporation. The report must not be used to claim products endorsement by the accreditation or authorization body. The engineers of EMC Kashima Corporation were not involved in modification for the tested sample.

TESTED DATE(S): September 15, 16, 25, 2009

TESTED BY: Kazuhiro Ando, Manager; Hiromitsu Tanabe

APPROVED BY: Ken'ichi Suda, Director

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ilac-MRA ACCREDITED TESTING CERTIFICATE 1266.01

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REVISION HISTORY

Rev.	Issue Date	Revision Description	Effect Page	Revised By
00		Initial Issue	All	
01	Oct. 23, 2009	Change of the model name	All	K. Ando
02	Oct. 27, 2009	Addition of note and setup photo	Page 15, 16, 22	K. Ando

1 GENERAL INFORMATION

1.1	**APPLICANT**	Victor Company of Japan, Limited
1.2	**ADDRESS**	2969-2, Ishikawa-cho, Hachioji-shi, Tokyo 192-8620, Japan
1.3	**MANUFACTURER**	Victor Company of Japan, Limited
1.4	**KIND OF EQUIPMENT**	CARD PRINTER
1.5	**MODEL**	CX-7000 / XID 83XX Printer / CX-D80 / SR200 / SR300
1.6	**POWER RATING**	AC100-120V, 50/60Hz, 3.5A
1.7	**TESTING VOLTAGE**	AC120V, 60Hz
1.8	**CONDITION OF EUT**	Pre-Production
1.9	**OPERATING FREQUENCY**	13.56MHz
1.10	**TYPE OF MODURATION**	ASK
1.11	**OPERATING TEMPERATUR**	15 °C to 30 °C
1.12	**TEST STANDARD(S)**	FCC Part 15 Subpart C, Section 15.225
1.13	**TEST METHOD(S)**	ANSI C63.4: 2003
1.14	**TESTED DATE(S)**	September 15, 16, 25, 2009
1.15	**REMARK(S)**	CX-7000·····Single-side printing type, Both-side printing type XID 83XX Printer·····Single-side printing type, Both-side printing type CX-D80·····Single-side printing type, Both-side printing type SR200·····Single-side printing type SR300·····Both-side printing type Although CX-7000, XID 83XX Printer, CX-D80 and SR300 are different in model names. Those electrical structures are entirely same. In these models, only the plastic enclosure is different. The difference between SR200 and SR300 is only their printing type (Single-side printing or Both-side printing). The test was performed with CX-7000 that is both-sides printing type.

2 SUMMARY OF TEST RESULT

2.1 Test Result

FCC Part 15 Section	Test Item	Worst margin	Condition	Result
15.203	Antenna requirement	-	-	Pass Note1
15.207	Conducted emissions 9kHz - 30MHz	5.6dB at 18.5858MHz (Ave.)	-	Pass
15.225(a)(b)(c)	Radiated emissions 9kHz - 30MHz	73.5dB at 13.56MHz	Radiated	Pass
15.225(d)	Radiated emissions 9kHz - 30MHz	48.4dB at 27.12MHz	Radiated	Pass
15.225(d) 15.209	Radiated emissions 30MHz - 1GHz	10.8dB at 59.56MHz	Radiated	Pass
15.225(e)	Frequency stability	0.0032%	Radiated	Pass
15.215(c)	20dB Bandwidth	6.52kHz	Radiated	Pass

Note 1: Users cannot replace the antenna since it is attached to the inside of the printer.

Note 2: "Pass" is only based on the measurement data and it does not include the measurement uncertainty. Accordingly, the statement below is applied to the test result.
- It is possible to determine compliance at a level of confidence of 95% in case that the margin is not less than the measurement uncertainty in the Laboratory.
- It is not possible to determine compliance at a level of confidence of 95% in case that the margin is less than the measurement uncertainty in the Laboratory. However, the measured result indicates that the product tested complies with the specification limit.

3 EQUIPMENT UNDER TEST

3.1 Description of The EUT

Product features

This card printer allows printing of high-quality full color images equivalent to photographic quality onto standard size (ISO7810 compliance) plastic cards using sublimation type transfer printing.
Able to print both side of a card.
Use of sublimation type retransfer printing enables printing of cards other than those made of PVC and non-contact IC cards, etc. with uneven surfaces that were previously difficult to print directly.
Lamination is possible by using optional laminator.

Purpose of using the radio device

In this printer a special ink ribbon for sublimation type printing used. The ink ribbon bobbin has a RF-ID tag (passive type) built inside. The radio communication between the printer and the ink ribbon bobbin give the following functions, of which no user is informed.

1. Discerning the type of ink ribbon
   This printer can automatically discern what type of ink ribbon is installed out of the various options, for example, both sides full color, one side full color rear side monochrome, and so on.

2. Managing the number of used picture frames in an ink ribbon. The information on the number of used/remained picture frames can be got by writing the number of used picture frame into the RF-ID tag, even when ink ribbons are exchanged.

3.2 Operation - mode of The EUT

The equipment under test was operated during the measurement under following conditions:

- Transmit mode

4 TEST CONFIGURATION

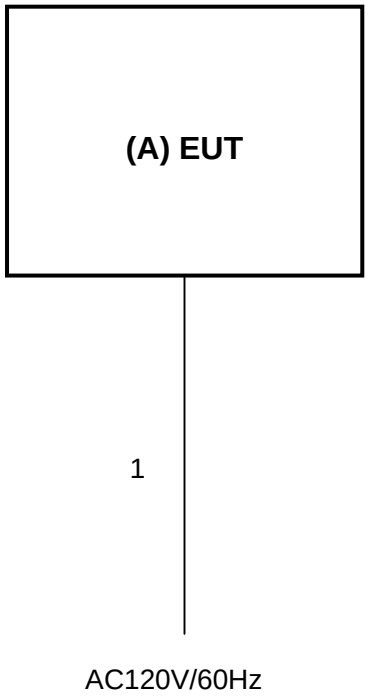
4.1 EUT(s) and Peripheral(s)

	Equipment Name	Model	Serial No.	Company	FCC ID
A	**Card Printer (EUT)**	**CX-7000**	**ES4 #5**	**JVC**	**ASIK9X004**

4.2 Cable(s) Used

	Cable Name	Length	Shielded	Remarks (Model, Company, etc.)
1	AC Power (EUT)	2.0 m	no	EUT accessory

4.3 Connection figure



5 TEST FACILITIES

All measurement facilities in EMC Kashima Corporation are located in 1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan.

Accredited by American Association for Laboratory Accreditation (A2LA) for the emission and immunity tests stated in the scope of the certificate under Certificate Number 1266-01.

Authorized by TUV Rheinland for the emission and immunity tests stated in the scope of the certificate under Certificate No. UA 50061520-0001.

Registered by Federal Communications Commission (FCC). Each registered facility number is as follows:
Test site No. 1 90558 / Test site No. 2 510504 / Test site No. 4 90557
Test site No. 5 99356 / Test site No. 6 372431

Registered by Industry Canada (IC). Each registered facility number is as follows:
Test site No. 1 IC 4659A-1 / Test site No. 2 IC 4659A-2 / Test site No.5 IC 4659A-5
Test site No. 6 IC 4659A-6

Approved by Saudi Arabian Standards Organization (SASO).

Registered by Voluntary Control Council for Interference by Information Technology Equipment (VCCI). Each registered facility number is as follows:

Test site No. 1	R-188・C-785	(Open site) /	C-187・T-1461	(Shielded room)
Test site No. 2	R-189	(Open site) /	C-188・T-1427	(Shielded room)
Test site No. 4	R-656	(Open site) /	C-613・T-354	(Shielded room)
Test site No. 5	R-1227・C-1290	(Open site) /	C-1291・T-1462	(Shielded room)
Test site No. 6	R-1895・C-2042・T-1502	(Anechoic chamber)		

6 MEASUREMENT UNCERTAINTY

The treatment of uncertainty is based on the general matters on the definition of uncertainty in “Guide to the expression of uncertainty in measurement (GUM)” published by ISO. The Lab’s uncertainty is determined by referring UKAS Publication LAB34:2002 “The Expression of Uncertainty in EMC Testing” and CISPR16-4-2:2003 “Uncertainty in EMC Measurements”.

The uncertainty of the measurement result in the level of confidence of approximately 95% (k=2) is as follows:

Conducted Emissions (Mains)	± 2.99 dB
Radiated emission test (9kHz - 30MHz)	± 3.70 dB
Radiated emission test (30MHz - 1000MHz)	± 4.40 dB

7 TEST CONDITIONS

7.1 Section 15.207 Conducted Emissions

7.1.1 Test Location

Test site No. 2 (Shielded room)

7.1.2 Used Test Instruments

Model	Name	Manufacturer	Code No.	Last Cal.	Remarks
SCR3051	Test Receiver	Schaffner	RCV07	2009.09	
ESH3-Z5	AMN	Rohde & Schwarz	LSN07	2009.04	
8567A	Spectrum Analyzer	Hewlett Packard	SPR09	2008.10	
5D-2W	Coaxial cable	FUJIKURA	2CSR-P	2009.04	

All used test instruments are calibrated at least once a year.

7.1.3 Test Procedure

The test setup and measurements were implemented according to the test method of ANSI C63.4: 2003 7. AC power line conducted emission measurements.
Final measurements were made on the conditions described on this page, and the photos of test-setup indicate the final conducted emissions.

7.1.4 Limit

Mains ports (AC Power line)

Frequency (MHz)	Quasi-peak (dBuV)	Average (dBuV)
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency.

7.2 Section 15.225(a)(b)(c)(d) Radiated Emissions (9kHz - 30MHz)

7.2.1 Test Location

Test site No. 2 (Open site) 3 meters distance

7.2.2 Used Test Instruments

Model	Name	Manufacturer	Code No.	Last Cal.	Remarks
ESHS10	Test Receiver	Rohde & Schwarz	RCH02	2009.03	
HFH2-Z2	Loop Antenna	Rohde & Schwarz	LPA01	2009.04	
5D-2W	Coaxial cable	FUJIKURA	MG5m	2009.05	

All used test instruments are calibrated at least once a year.

7.2.3 Test Procedure

The test setup and measurements were implemented according to the test method of ANSI C63.4: 2003 8. Radiated emission measurements.
The test was performed at 3 meter distance and its result was converted into the one at specified 30 meter distance according to 15.31(f). The turntable was rotated and the center point of the loop antenna was fixed at 1 meter above ground level to investigate the maximum radiated emission, positioning the loop antenna in vertical and horizontal. Final measurements were made on the conditions described on this page, and the photos of test-setup indicate the final radiated emissions.

7.2.4 Limit

Frequency (MHz)	Field strength @30m (uV/m)	Field strength @30m (dBuV/m)	Field strength @3m (dBuV/m)
Below 13.110	30	29.5	69.5
13.110 - 13.410	106	40.5	80.5
13.410 - 13.553	334	50.5	90.5
13.553 - 13.567	15,848	84	124
13.567 - 13.710	334	50.5	90.5
13.710 - 14.010	106	40.5	80.5
Above 14.010	30	29.5	69.5

dBuV/m = 20 x log (uV/m)
Distance factor = 40dB / decade (15.31(f))

7.3 Section 15.225(d) Radiated Emissions (30MHz - 1000MHz)

7.3.1 Test Location

Test site No. 2 (Open site) 3 meters distance

7.3.2 Used Test Instruments

Model	Name	Manufacturer	Code No.	Last Cal.	Remarks
SCR3051	Test Receiver	Schaffner	RCV07	2009.09	
VULB 9168	Logbicon Antenna	Schwarzbeck	LGBC02	2009.04	
8567A	Spectrum Analyzer	Hewlett Packard	SPR09	2008.10	
8447D	Pre-Amplifier	Hewlett Packard	PRA02	2009.04	
12DSFA/SF106A	Coaxial cable	FUJIKURA/SUHNER	2R10m106	2009.04	

All used test instruments are calibrated at least once a year.

7.3.3 Test Procedure

The test setup and measurements were implemented according to the test method of ANSI C63.4: 2003 8. Radiated emission measurements.
They were performed at the measurement distance that specified for compliance to determine the frequency producing the maximum emissions. The turntable was rotated and the antenna height was varied 1 to 4 meters to investigate the maximum radiated emission for the horizontal and vertical polarization. Final measurements were made on the conditions described on this page, and the photos of test-setup indicate the final radiated emissions.

7.3.4 Limit

Frequency (MHz)	Field strength @3m (uV/m)	Field strength @3m (dBuV/m)
30 - 88	100	40
88 - 216	150	43.5
216 -960	200	46
Above 960	500	54

dBuV/m = 20 x log (uV/m)

7.4 Section 15.225(e) Frequency Stability

7.4.1 Test Location

Test site No. 6

7.4.2 Used Test Instruments

Model	Name	Manufacturer	Code No.	Last Cal.	Remarks
R3162	Spectrum Analyzer	ADVANTEST	SPR11	2009.07	
7334-1	Loop Sensor	SOLAR	LPA03	2009.02	
8494B	Attenuator	HP	SAT05	2008.10	
8495B	Attenuator	HP	SAT06	2008.10	
Sucoflex 104	Micro Wave cable	SUHNER	MWC-3m	2009.02	
Sucoflex 104	Micro Wave cable	SUHNER	MWC-0.5m	2009.06	
PR-4KPH	Temperature Chamber	ESPEC	TMPC02	2008.12	
83III	MULTIMETER	FLUKE	MTM02	2008.12	

All used test instruments are calibrated at least once a year.

7.4.3 Test Procedure

The test setup and measurements were implemented according to the test method of ANSI C63.4: 2003 Annex H5.
The EUT was measured with the condition that the measuring instrument was connected to the antenna through the coaxial cable, whose antenna was placed near the EUT. The measurement started with the Temperature chamber sufficiently stabilized.

7.4.4 Limit

Item	Variation	Limit (%)
Temperature variation	-20°C - +50°C	+/- 0.01
Voltage variation	85% - 115%	+/- 0.01

7.5 Section 15.215(c) 20dB Bandwidth

7.5.1 Test Location

Test site No. 6

7.5.2 Used Test Instruments

Model	Name	Manufacturer	Code No.	Last Cal.	Remarks
R3162	Spectrum Analyzer	ADVANTEST	SPR11	2009.07	
7334-1	Loop Sensor	SOLAR	LPA03	2009.02	
8494B	Attenuator	HP	SAT05	2008.10	
8495B	Attenuator	HP	SAT06	2008.10	
Sucoflex 104	Micro Wave cable	SUHNER	MWC-3m	2009.02	
Sucoflex 104	Micro Wave cable	SUHNER	MWC-0.5m	2009.06	
PR-4KPH	Temperature Chamber	ESPEC	TMPC02	2008.12	
83III	MULTIMETER	FLUKE	MTM02	2008.12	

All used test instruments are calibrated at least once a year.

7.5.3 Test Procedure

The test setup and measurements were implemented according to the test method of ANSI C63.4: 2003 Annex H6.
The spectrum analyzer RBW and VBW were set as follows. The marker-to-peak function of the spectrum analyzer was used to measure to peak level and the marker-delta function was used to measure the emission 20dB below the peak. It has been plotted.

Spectrum Analyzer Setup

RBW	VBW	Detector
1kHz	3kHz	Peak

8 TEST DATA

8.1 Section 15.207 Conducted Emissions

Company	:	Victor Company of Japan, Limited	Tested Date	:	September 15, 2009
Equipment	:	Card Printer	Temperature	:	23 °C
Model	:	CX-7000	Humidity	:	58 %
Power	:	AC120V 60Hz	Atmos. Press	:	1002 hPa
Test Mode	:	Transmit			
			Engineer	:	Hiromitsu Tanabe

Freq. (MHz)	Phase	Reading (dBuV)		Corr. Factor (dB)	Result (dBuV)		Limit (dBuV)		Margin (dB)	
		QP	AV		QP	AV	QP	AV	QP	AV
0.1901	N	27.0	-	10.0	37.0	-	64.0	54.0	27.0	-
0.4787	N	25.0	-	10.1	35.1	-	56.4	46.4	21.3	-
0.5711	N	29.0	-	10.1	39.1	-	56.0	46.0	16.9	-
0.6687	N	30.5	24.0	10.1	40.6	34.1	56.0	46.0	15.4	11.9
13.5600	N	33.0	32.9	11.2	44.2	44.1	60.0	50.0	15.8	5.9
18.0242	N	34.0	32.0	11.4	45.4	43.4	60.0	50.0	14.6	6.6
18.5858	N	34.0	33.0	11.4	45.4	44.4	60.0	50.0	14.6	5.6
0.1901	L	25.7	-	10.0	35.7	-	64.0	54.0	28.3	-
0.4787	L	20.0	-	10.1	30.1	-	56.4	46.4	26.3	-
0.5711	L	26.0	-	10.1	36.1	-	56.0	46.0	19.9	-
0.6687	L	25.7	20.0	10.1	35.8	30.1	56.0	46.0	20.2	15.9
13.5600	L	33.0	32.7	11.2	44.2	43.9	60.0	50.0	15.8	6.1
18.0242	L	35.0	31.0	11.4	46.4	42.4	60.0	50.0	13.6	7.6
18.5858	L	33.0	31.7	11.4	44.4	43.1	60.0	50.0	15.6	6.9

Correction Factor(dB) = AMN Factor(dB) + Cable Loss(dB) + Pulse Limiter Loss(dB)
Result(dBuV) = Reading (dBuV) + Correction Factor(dB)

8.2 Section 15.225(a)(b)(c) Radiated Emissions (9kHz - 30MHz)

Company	:	Victor Company of Japan, Limited	Tested Date	:	September 16, 2009
Equipment	:	Card Printer	Temperature	:	22 °C
Model	:	CX-7000	Humidity	:	55 %
Power	:	AC120V 60Hz	Atmos. Press	:	1002 hPa
Test Mode	:	Transmit			
Test Distance	:	3m			
			Engineer	:	Hiromitsu Tanabe

Freq. (MHz)	Pol. (H/V)	Reading @3m (dBuV)	Detector (QP/Pk)	Corr. Factor (dB)	Result (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)
13.5600	H	50.3	QP	0.2	50.5	124.0	73.5

Note 1:It is recognized that the emission level of the vertical polarization is obvious lower than that of the Horizontal polarization.
Note 2:Correction Factor(dB) = Antenna Factor(dB/m) + Cable Loss(dB)
Result(dBuV/m) = Reading(dBuV) + Correction Factor(dB)

Section 15.225(d) Radiated Emissions (9kHz - 30MHz)

Company	:	Victor Company of Japan, Limited	Tested Date	:	September 16, 2009
Equipment	:	Card Printer	Temperature	:	22 °C
Model	:	CX-7000	Humidity	:	55 %
Power	:	AC120V 60Hz	Atmos. Press	:	1002 hPa
Test Mode	:	Transmit			
Test Distance	:	3m			
			Engineer	:	Hiromitsu Tanabe

Freq. (MHz)	Pol. (H/V)	Reading @3m (dBuV)	Detector (QP/Pk)	Corr. Factor (dB)	Result (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)
27.1200	H	20.9	QP	0.2	21.1	69.5	48.4

Note 1:It is recognized that the emission level of the vertical polarization is obvious lower than that of the Horizontal polarization.
Note 2:Correction Factor(dB) = Antenna Factor(dB/m) + Cable Loss(dB)
Result(dBuV/m) = Reading(dBuV) + Correction Factor(dB)

8.3 Section 15.225(d) Radiated Emissions (30MHz - 1000MHz)

Company	:	Victor Company of Japan, Limited	Tested Date	:	September 15, 2009
Equipment	:	Card Printer	Temperature	:	22 °C
Model	:	CX-7000	Humidity	:	55 %
Power	:	AC120V 60Hz	Atmos. Press	:	1002 hPa
Test Mode	:	Transmit			
Test Distance	:	3m			
			Engineer	:	Hiromitsu Tanabe

Freq. (MHz)	Pol. (H/V)	Reading (dBuV)	Detector (QP/Pk)	Corr. Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.00	V	34.5	QP	-13.9	20.6	40.0	19.4
59.56	H	33.0	QP	-10.5	22.5	40.0	17.5
59.56	V	39.7	QP	-10.5	29.2	40.0	10.8
81.36	V	38.0	QP	-16.0	22.0	40.0	18.0
126.43	H	35.9	QP	-12.2	23.7	43.5	19.8
250.01	H	44.7	QP	-10.1	34.6	46.0	11.4
250.01	V	36.0	QP	-10.1	25.9	46.0	20.1
465.00	H	28.1	QP	-4.7	23.4	46.0	22.6
465.00	V	27.0	QP	-4.7	22.3	46.0	23.7

Correction Factor(dB) = Antenna Factor(dB/m) + Cable Loss(dB) – Preamplifier Gain(dB)
Result(dBuV/m) = Reading(dBuV) + Correction Factor(dB)

8.4 Section 15.225(e) Frequency Stability

Company	:	Victor Company of Japan, Limited	Tested Date	:	September 25, 2009
Equipment	:	Card Printer	Temperature	:	25 °C
Model	:	CX-7000	Humidity	:	46 %
Power	:	AC120V 60Hz	Atmos. Press	:	1013 hPa
Test Mode	:	Transmit			
			Engineer	:	Kazuhiro Ando

Temperature Variations

Temp. (°C)	Voltage (V)	Measured Frequency (MHz)				Worst Deviation (%)	Limit (%)
		Start-up	2 min.	5 min.	10 min.		
50	120	13.56041	13.56041	13.56041	13.56041	0.0030	+/- 0.01
40	120	13.56041	13.56041	13.56041	13.56041	0.0030	+/- 0.01
30	120	13.56042	13.56042	13.56042	13.56042	0.0031	+/- 0.01
20	120	13.56042	13.56042	13.56042	13.56042	0.0031	+/- 0.01
10	120	13.56044	13.56044	13.56044	13.56044	0.0032	+/- 0.01
0	120	13.56043	13.56043	13.56043	13.56043	0.0032	+/- 0.01
-10	120	13.56040	13.56041	13.56042	13.56042	0.0031	+/- 0.01
-20	120	13.56035	13.56036	13.56037	13.56037	0.0027	+/- 0.01

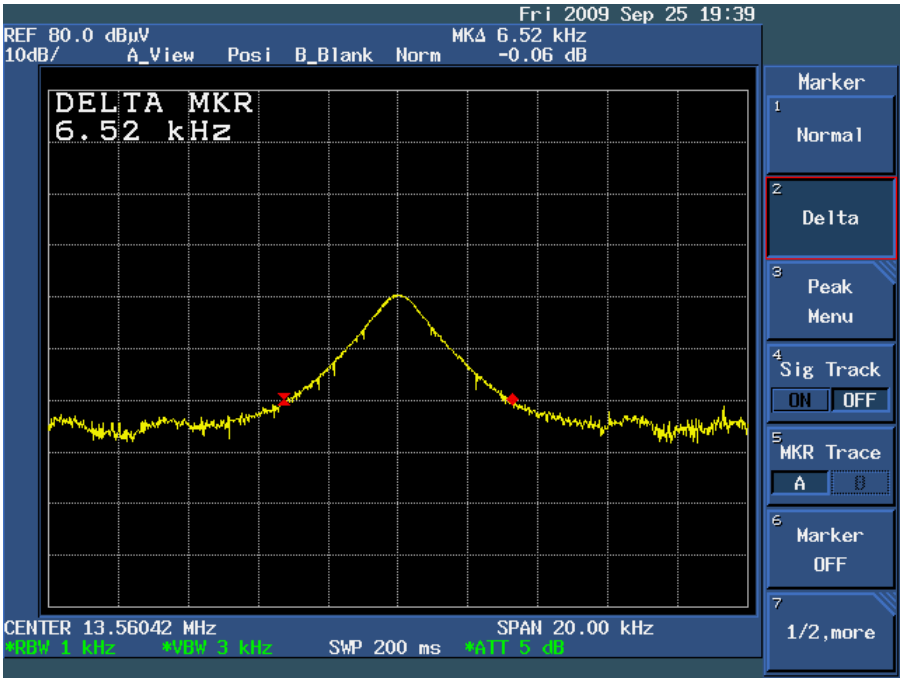
Voltage Variations

Temp. (°C)	Voltage (V)	Measured Frequency (MHz)				Worst Deviation (%)	Limit (%)
		Start-up	2 min.	5 min.	10 min.		
20	102	13.56042	13.56042	13.56042	13.56042	0.0031	+/- 0.01
20	120	13.56042	13.56042	13.56042	13.56042	0.0031	+/- 0.01
20	138	13.56042	13.56042	13.56042	13.56042	0.0031	+/- 0.01

8.5 Section 15.215(c) 20dB Bandwidth

Company	:	Victor Company of Japan, Limited	Tested Date	:	September 25, 2009
Equipment	:	Card Printer	Temperature	:	25 °C
Model	:	CX-7000	Humidity	:	46 %
Power	:	AC120V 60Hz	Atmos. Press	:	1013 hPa
Test Mode	:	Transmit			
			Engineer	:	Kazuhiro Ando

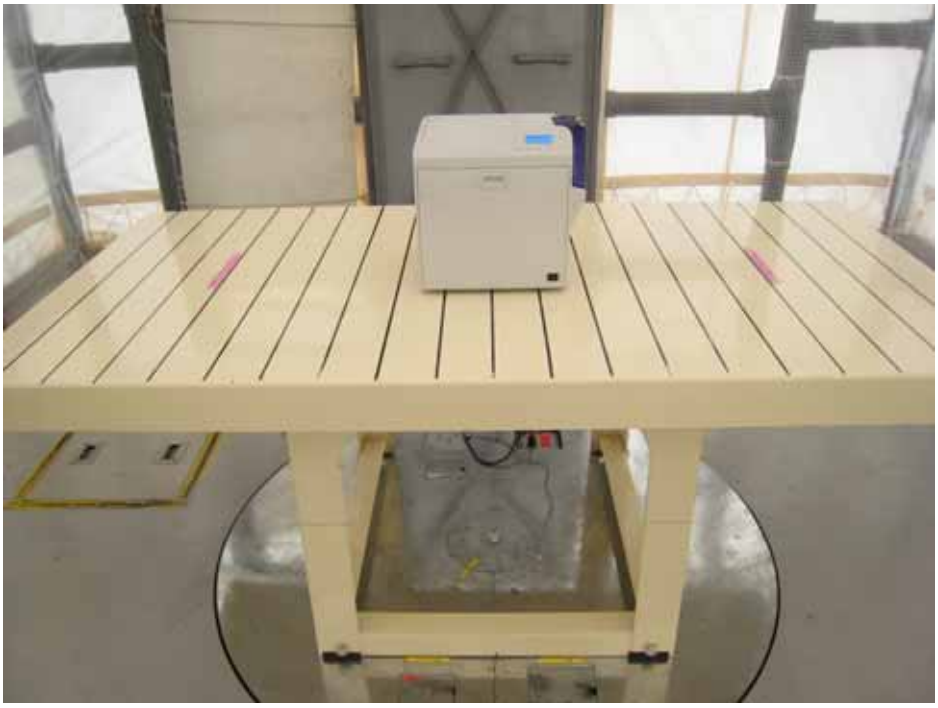
Freq. (MHz)	20dB Bandwidth (kHz)
13.56	6.52



9 THE PHOTOS OF TEST-SETUP

9.1 Conducted Emissions 150 kHz - 30 MHz

9.2 Radiated Emissions 9 kHz - 1000 MHz



Radiated Emissions 9 kHz - 30 MHz (Antenna polarization: Horizontal setup)

9.3 Frequency Stability