


# RADIO TEST REPORT

Test Report No.: TR11-14013F

**Applicant** : JVC KENWOOD Corporation  
**Type of Equipment** : CARD PRINTER  
**Model No.** : CX-7600  
**FCC ID** : ASIK9X004  
**Test regulation** : FCC Part15 Subpart C: 2014  
**Test item** : Conducted emission / Spurious emission only  
**Test result** : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Kashima, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by any agency of the Federal Government.

**Date of test(s):** June 2, 2014

**Tested by:**   
Hiromitsu Tanabe  
Assist. Sect. Manager  
of EMC Testing Sec.

**Approved by :**   
Kazuhiro Ando  
Manager of EMC Testing Sec.



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## **SECTION 1: Customer information**

Company Name : JVC KENWOOD Corporation  
Brand Name : JVC  
Address : 3-12 Moriya-cho, Kanagawa-ku, Yokohama-shi, Kanagawa, 221-0022 Japan  
Telephone Number : +81-45-939-7460  
Facsimile Number : +81-45-939-7417  
Contact Person : Makoto Hayase

## **SECTION 2: Equipment under test (E.U.T.)**

### **2.1 Identification of E.U.T.**

Type of Equipment : CARD PRINTER  
Model Number : CX-7600  
Serial Number : Refer to clause 4.2  
Rating : AC100-120V, 50/60Hz, 3.5A  
Country of Mass-production : Thailand  
Condition of EUT : Engineering prototype (Not for sale: This sample is not mass-produced items.)  
Receipt Date of Sample : May 16, 2014  
Modification of EUT : No modification by the test lab.

### **2.2 Product description**

Model: CX-7600 (referred to as the EUT in this report) is a Card Printer.

Clock frequency(ies) in the system : 25 MHz (LAN), 48 MHz (USB), 33.3 MHz (CPU), 30 MHz (USB)  
24 MHz (Print Head )

#### **<Radio part>**

Equipment type : Transceiver  
Frequency of operation : 13.56MHz  
Type of modulation : ASK  
Antenna type : Loop  
Antenna connector type : U.FL  
ITU code : A1D  
Operation temperature range : +15 to +30 deg.C.

FCC 15.203

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT.

### 2.3 difference from the base model

CX-7600 changed the following points from the original model (CX-7000).

1. The RAM capacity of a MAIN board:

Work RAM 64kBit (Before) 128kbit (After)

Picture RAM 64kBit (Before) 256kbit (After)

2. Print Head clock for printing : 8 MHz (Before) 24 MHz(After)

3. Countermeasure against EMI:

(1)Some resistors have replaced to the Ferrite Beads. The constant of some ferrite beads have changed.

(2)The metal plate addition which connects the rear chassis and central chassis

4. The print head : Tohshiba-hokuto 300dpi Print Head (Before)

Kyocera 600dpi Print Head (After)

### 2.4 Similar model and the difference from the base model

|                     | Printing type        | Color  | Brand   | Purpose           |
|---------------------|----------------------|--|---|-------------------|
| CX-7600             | Single and Both-side | pale gray                                    | WTJ (WoonJoo Tech, Corp.)<br>BRAVO(Emphor Fzco)<br>COSMOCOLOR | General           |
| XID 86XX<br>Printer | Single and Both-side | gray, white                                  | EDIsecure<br>(Matica Technologies Group)                      | General           |
| CX-D80H             | Single and Both-side | pale gray, metallic silver,<br>metallic blue | DNP<br>(Dai Nippon Printing Co. Ltd.)                         | General           |
| SR260               | Single-side          | dark gray, dark blue                         | Datacard (Datacard Corp.)                                     | General           |
| SR360               | Single and Both-side | ditto  | Datacard (Datacard Corp.)                                     | General           |
| SR360B              | Single and Both-side | ditto  | Datacard (Datacard Corp.)                                     | money and banking |

The test was performed with CX-7600 as a representative model.

This test report is covered with all modified model.

### **SECTION 3: Test specification, procedures & results**

#### **3.1 Test specification**

Test specification : FCC Part 15 Subpart C: 2014  
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators  
Section 15.207 Conducted limits  
Section 15.209 Radiated emission limits, general requirements  
Section 15.225 Operation within the band 13.110-14.010MHz

#### **3.2 Procedures & Results**

| Item  | Test Procedure   | Specification                | Remarks  | Deviation | Worst Margin   | Results  |
|---|--|------------------------------|----------|-----------|--|----------|
| Conducted emission  | ANSI C63.4:2003<br>7. AC powerline conducted emission measurements | FCC 15.207                   | -        | N/A       | 5.4dB<br>Freq.: 13.5600MHz<br>Detector: AV<br>Phase: N | Complied |
| Electric field strength of Fundamental emission   | ANSI C63.4:2003<br>13. Measurement of intentional radiators        | FCC 15.225 (a)               | Radiated | N/A       | 77.5dB<br>Polarization: Vertical                       | Complied |
| Electric field strength of Spurious emission (within the 13.110-14.010MHz band)   | ANSI C63.4:2003<br>13. Measurement of intentional radiators        | FCC 15.225 (b)(c)            | Radiated | N/A       | 43.6dB<br>Freq.: 14.010MHz<br>Polarization: Vertical   | Complied |
| Electric field strength of Spurious emission (outside of the 13.110-14.010MHz band)   | ANSI C63.4:2003<br>13. Measurement of intentional radiators        | FCC 15.209<br>FCC 15.225 (d) | Radiated | N/A       | 3.4dB<br>Freq.: 599.94MHz<br>Polarization: Horizontal  | Complied |
| 20dB bandwidth  | ANSI C63.4:2003<br>13. Measurement of intentional radiators        | FCC 15.215 (c)               | -        | *1)       | -  | -        |
| Frequency tolerance   | ANSI C63.4:2003<br>13. Measurement of intentional radiators        | FCC 15.225 (e)               | -        | *1)       | -  | -        |
| Note: UL Kashima's Work Procedures No. TP-01, TP-02 and TP-04<br>*1)The radio parts was not tested because it is identical with CX-7000. Refer to the data of test report CX-7000 (Test Report No.: TR6-14375F) |  |                              |          |           |  |          |

#### **3.3 Addition to standard**

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

### 3.4 Uncertainty

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

| Test Items                                       | Frequency range  | Uncertainty |
|--|------------------|-------------|
| Conducted emission<br>(AC Mains) AMN             | 0.15 MHz-30 MHz  | 2.8 dB      |
| Radiated emission<br>(Measurement distance: 3 m) | 0.009 MHz-30 MHz | 2.7 dB      |
|  | 30 MHz-1000 MHz  | 5.9 dB      |

#### Conducted emission test

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

#### Radiated emission test

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

### 3.5 Test location

UL Kashima, Inc.  
1614 Mushihata, Katori-shi, Chiba-ken, 289-0341 JAPAN  
Telephone number : +81 478 82 0963  
Facsimile number : +81 478 82 3373  
A2LA Accreditation No. : 1266-01

|                             | FCC<br>Registration<br>No. | IC<br>Registration<br>No. | Width x Depth x<br>Height (m) | Size of reference<br>ground<br>plane/horizontal<br>conducting plane (m) | Maximum<br>measurement<br>distance |
|-----------------------------|----------------------------|---------------------------|-------------------------------|---|------------------------------------|
| No.1 Open site              | 90558                      | IC 4659A-1                | 6.0 x 5.5 x 2.5               | 20 x 40   | 10 m                               |
| No.2 Open site              | 510504                     | IC 4659A-2                | 4.4 x 4.4 x 2.15              | 18 x 20   | 10 m                               |
| No.5 Open site              | 99356                      | IC 4659A-5                | 8.6 x 7.1 x 2.4               | 18 x 23   | 10 m                               |
| No.1 Shielded room          | 90558                      | IC 4659A-1                | 5.4 x 4.5 x 2.3               |   | -                                  |
| No.2 Shielded room          | 510504                     | IC 4659A-2                | 3.6 x 2.7 x 2.3               |   | -                                  |
| No.3 Shielded room          | -                          | -                         | 5.4 x 3.6 x 2.3               |   | -                                  |
| No.4 Shielded Room          | -                          | -                         | 6.1 x 6.1 x 3.1               |   | -                                  |
| No.5 Shielded Room          | 99356                      | IC 4659A-5                | 4.2 x 3.1 x 2.5               |   | -                                  |
| No.3 Fully Anechoic Chamber | -                          | -                         | 7.0 x 3.5 x 3.5               |   | -                                  |
| No.6 Semi-anechoic Chamber  | 372431                     | IC 4659A-6                | 8.5 x 5.5 x 5.2               |   | 3 m                                |
| No.10 Semi-anechoic Chamber | 682397                     | IC 4659A-10               | 18.4 x 9.9 x 7.7              |   | 10 m                               |
| No.11 Semi-anechoic Chamber | 718605                     | IC 4659A-7                | 9.0 x 6.5 x 5.2               |   | 3 m                                |

### 3.6 Test setup, Data of test & Test instruments

Refer to APPENDIX 1 to 3.

## **SECTION 4: Operation of E.U.T. during testing**

### **4.1 Operating mode**

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

| <b>Test item</b>                        | <b>Operating mode</b>  | <b>Tested frequency</b> |
|---|--|-------------------------|
| Conducted emission<br>Spurious emission | Transmitting<br><br>ISO/IEC 15693-2<br>• Modulation ASK100%<br>• Data transfer rate 6.62kbps | 13.56MHz                |

The EUT has the power settings by the software as follows;

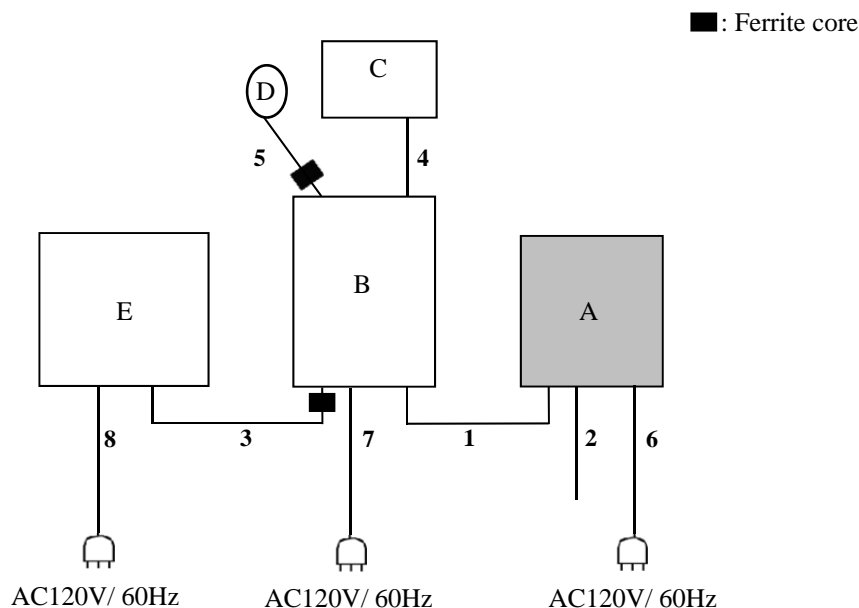
Power settings: Setting is controlled by the firmware and cannot be changed.

Software: CX-7600 TEST TOOL

**Justification:**The system was configured in typical fashion (as 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 | Remarks |
|-----|--------------|--------------|----------------|--------------|---------|
| A   | Card Printer | CX-7600      | 135V2080       | JVC KENWOOD  | EUT     |
| B   | PC           | DC5100SFF    | JPA61108Z4     | hp           | -       |
| C   | Keyboard     | KB-0316      | B942A0AGASPOLT | hp           | -       |
| D   | Mouse        | MO19KCA      | 346C30433      | Microsoft    | -       |
| E   | LCD Monitor  | Hp1502       | CNC5030CMD     | hp           | -       |

### List of cables used

| No. | Item     | Length(m) | Shield     |            | Remarks     |
|-----|----------|-----------|------------|------------|-------------|
|     |          |           | Cable      | Connector  |             |
| 1   | USB      | 2.0       | Shielded   | Shielded   | -           |
| 2   | Ethernet | 1.0       | Shielded   | Shielded   | Cat.5e      |
| 3   | VGA      | 1.5       | Shielded   | Shielded   | -           |
| 4   | Keyboard | 1.8       | Shielded   | Shielded   | -           |
| 5   | Mouse    | 1.6       | Shielded   | Shielded   | -           |
| 6   | AC       | 2.0       | Unshielded | Unshielded | EUT         |
| 7   | AC       | 2.0       | Unshielded | Unshielded | PC          |
| 8   | AC       | 1.8       | Unshielded | Unshielded | LCD Monitor |

## **SECTION 5: Conducted emission**

### **5.1 Operating environment**

The test was carried out in a semi-anechoic chamber.

Temperature : Refer to APPENDIX 1.  
Humidity : Refer to APPENDIX 1.

### **5.2 Test configuration**

EUT was placed on a platform of nominal size, 1.0m by 2.0m, raised 0.8m above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT was aligned and was 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 LISN. I/O cables that were connected to the peripherals were bundled in center. They were folded back and for the forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.

Each EUT current-carrying power lead was individually connected through a LISN to the input power source. Photographs of the set up are shown in Appendix 3.

### **5.3 Test conditions**

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

### **5.4 Test procedure**

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT in a semi-anechoic chamber. 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, a CISPR average detector.

The conducted emission measurements were made with the following detection of the test receiver.

Detection Type : Quasi-Peak/ CISPR-Average  
IF Bandwidth : 9kHz

### **5.5 Results**

Summary of the test results : Pass

Refer to APPENDIX 1.

## **SECTION 6: Radiated emission (Fundamental and Spurious emission)**

### **6.1 Operating environment**

The test was carried out in a semi-anechoic chamber.

Temperature : Refer to APPENDIX 1.  
 Humidity : Refer to APPENDIX 1.

### **6.2 Test configuration**

EUT was placed on a platform of nominal size, 1.0m by 2.0m, raised 0.8m above the conducting ground plane. The table is made of polystyrene foam. That has very low permittivity. The rear of EUT, including 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 for the forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Photographs of the set up are shown in Appendix 3.

### **6.3 Test conditions**

Frequency range : 9kHz - 1GHz  
 Test distance : 3m  
 EUT position : Table top

### **6.4 Test procedure**

The Radiated Electric Field Strength intensity has been measured with a ground plane and at a distance of 3m  
 Frequency: From 9kHz to 30MHz at distance 3m

The EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for vertical polarization (antenna angle: 0deg.to 360deg.) and horizontal polarization. Drawing of the antenna direction is shown in Figure 1.

Frequency: From 30MHz to 1GHz at distance 3m (Refer to Figure 2).

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.

Measurements were performed with QP, PK, and AV detector.

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

|                   | 9kHz to 90kHz & 110kHz to 150kHz | 90kHz to 110kHz | 150kHz to 490kHz | 490kHz to 30MHz | 30MHz to 1GHz                                      |
|-------------------|----------------------------------|-----------------|------------------|-----------------|--|
| Detector Type     | PK/AV                            | QP              | PK/AV            | QP              | QP   |
| IF Bandwidth      | 200Hz                            | 200Hz           | 9kHz             | 9kHz            | 120kHz   |
| Measuring antenna | Loop antenna                     |                 |                  |                 | Biconical (30-200MHz)<br>Logperiodic (200MHz-1GHz) |

\* FCC 15.31 (f)(2) (9kHz-30MHz)

9kHz – 490kHz [Limit at 3m]= [Limit at 300m]-40log (3[m]/300[m])

490kHz – 30MHz [Limit at 3m]= [Limit at 30m]-40log (3[m]/30[m])

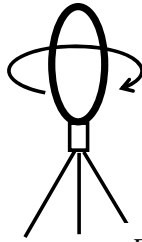
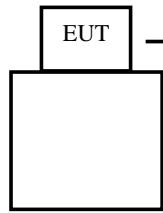
### **6.5 Results**

Summary of the test results : Pass

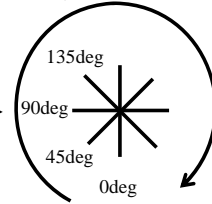
Refer to APPENDIX 1.

**Figure 1. Direction of the Loop Antenna**

*Side View (Vertical)*

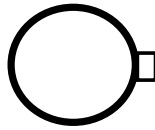
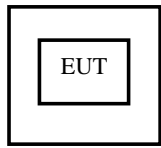


*Side View (Horizontal)*



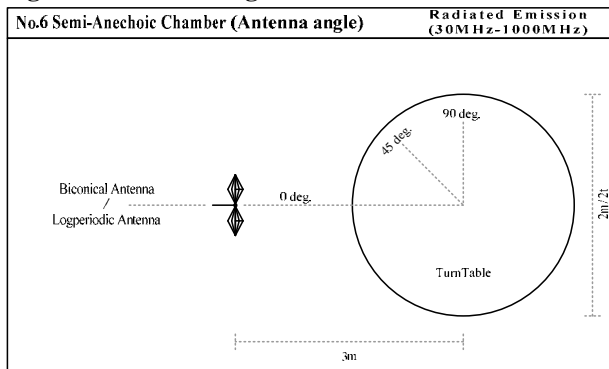
Front side: 0 deg.  
 Forward direction: clockwise

*Top View (Horizontal)*



Antenna was not rotated.

**Figure 2. Antenna angle**



## **Contents of APPENDIXES**

### **APPENDIX 1: Data of Radio tests**

Conducted emission  
Radiated emission

### **APPENDIX 2: Test instruments**

Test instruments

### **APPENDIX 3: Photographs of test setup**

Conducted emission  
Radiated emission

# Conducted Emission Test

(0.15MHz - 30MHz at Mains Ports)

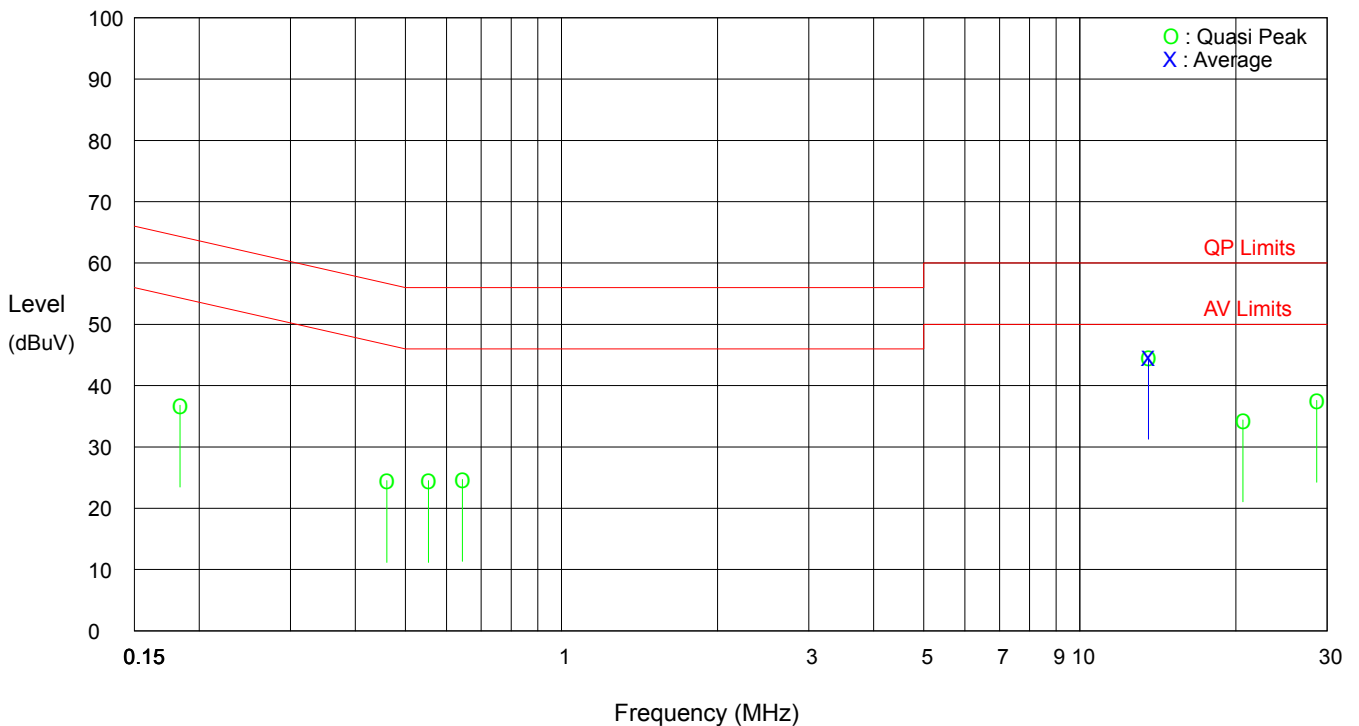
Company : JVC KENWOOD Corporation  
 Equipment : Card Printer  
 Model : CX-7600  
 Power : AC120V/60Hz  
 Test Mode : Transmitting  
 Remarks :  
 Standard : FCC Part15C (0.15MHz-30MHz)

Report No. : TR11-14013F  
 Tested Date : 2014/06/02  
 Temperature : 24°C  
 Humidity : 57 %  
 Atmos. Press. : 1008 hPa

Tested by : Hiromitsu Tanabe

| No. | Frequency<br>(MHz) | N            |      | L            |      | Correction<br>Factor<br>(dB) | Result       |      | Limits     |      | Margin |     |
|-----|--------------------|--------------|------|--------------|------|------------------------------|--------------|------|------------|------|--------|-----|
|     |                    | QP<br>(dBuV) | AV   | QP<br>(dBuV) | AV   |                              | QP<br>(dBuV) | AV   | QP<br>(dB) | AV   |        |     |
| 1   | 0.1836             | 26.7         | -    | 26.5         | -    | 10.1                         | 36.8         | -    | 64.3       | 54.3 | 27.5   | -   |
| 2   | 0.4603             | 14.0         | -    | 14.3         | -    | 10.2                         | 24.5         | -    | 56.7       | 46.7 | 32.2   | -   |
| 3   | 0.5540             | 14.3         | -    | 14.3         | -    | 10.2                         | 24.5         | -    | 56.0       | 46.0 | 31.5   | -   |
| 4   | 0.6440             | 14.5         | -    | 14.0         | -    | 10.2                         | 24.7         | -    | 56.0       | 46.0 | 31.3   | -   |
| 5   | 13.5600            | 33.4         | 33.3 | 32.0         | 31.9 | 11.3                         | 44.7         | 44.6 | 60.0       | 50.0 | 15.3   | 5.4 |
| 6   | 20.6435            | 20.7         | -    | 22.7         | -    | 11.7                         | 34.4         | -    | 60.0       | 50.0 | 25.6   | -   |
| 7   | 28.6430            | 25.7         | -    | 25.3         | -    | 11.9                         | 37.6         | -    | 60.0       | 50.0 | 22.4   | -   |

Result = Reading(higher data of N or L) + Correction Factor(AMN factor + cable loss)



## Data of Electric field strength of Fundamental emission and Spurious emission within the band: FCC15.225(a)(b)(c)

UL Kashima, Inc.

No.11 Semi-Anechoic Chamber

Company: JVC KENWOOD Corporation  
 Equipment: Card Printer  
 Model: CX-7600  
 Sample No.: 135V2080  
 Power: AC120V/60Hz  
 Mode: Transmitting

Regulation: FCC Part15 Subpart C 15.225  
 Test Distance: 3m  
 Date: June 2, 2014  
 Temperature: 24 deg.C  
 Humidity: 57 %RH  
 Tested by: Hiromitsu Tanabe

Remarks:

**Fundamental emission**

| No. | FREQ<br>[MHz] | Test Receiver<br>Reading |               | Antenna<br>Factor<br>[dB/m] | LOSS<br>[dB] | AMP<br>GAIN<br>[dB] | Distance<br>factor<br>[dB] | RESULT          |                 | LIMIT<br>(30m)<br>[dBuV/m] | MARGIN      |             |
|-----|---------------|--------------------------|---------------|-----------------------------|--------------|---------------------|----------------------------|-----------------|-----------------|----------------------------|-------------|-------------|
|     |               | Hor<br>[dBuV]            | Ver<br>[dBuV] |                             |              |                     |                            | Hor<br>[dBuV/m] | Ver<br>[dBuV/m] |                            | Hor<br>[dB] | Ver<br>[dB] |
| 1   | 13.560        | 15.7                     | 26.5          | 19.6                        | 0.3          | 0.0                 | -40.0                      | -4.4            | 6.4             | 83.9                       | 88.3        | 77.5        |

Calculation: Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT)[dB]-Gain(AMP)[dB]+Distance factor[dB]

Distance factor:  $40 \times \log(3\text{m}/30\text{m}) = -40 \text{ dB}$

Limits (30m)

((reference) worst carrier @3m)

• 13.553MHz to 13.567MHz : 83.9dBuV/m (FCC 15.225(a))

46.4 dBuV/m

**Spurious emission within the band**

| No. | FREQ<br>[MHz] | Test Receiver<br>Reading |               | Antenna<br>Factor<br>[dB/m] | LOSS<br>[dB] | AMP<br>GAIN<br>[dB] | Distance<br>factor<br>[dB] | RESULT          |                 | LIMIT<br>(30m)<br>[dBuV/m] | MARGIN      |             |
|-----|---------------|--------------------------|---------------|-----------------------------|--------------|---------------------|----------------------------|-----------------|-----------------|----------------------------|-------------|-------------|
|     |               | Hor<br>[dBuV]            | Ver<br>[dBuV] |                             |              |                     |                            | Hor<br>[dBuV/m] | Ver<br>[dBuV/m] |                            | Hor<br>[dB] | Ver<br>[dB] |
| 1   | 13.110        | -                        | 5.5           | 19.6                        | 0.3          | 0.0                 | -40.0                      | -               | -14.6           | 29.5                       | -           | 44.1        |
| 2   | 13.410        | -                        | 5.8           | 19.6                        | 0.3          | 0.0                 | -40.0                      | -               | -14.3           | 40.5                       | -           | 54.8        |
| 3   | 13.553        | 6.7                      | 12.5          | 19.6                        | 0.3          | 0.0                 | -40.0                      | -13.4           | -7.6            | 50.4                       | 63.8        | 58.0        |
| 4   | 13.567        | 5.8                      | 12.4          | 19.6                        | 0.3          | 0.0                 | -40.0                      | -14.3           | -7.7            | 50.4                       | 64.7        | 58.1        |
| 5   | 13.710        | -                        | 5.9           | 19.6                        | 0.3          | 0.0                 | -40.0                      | -               | -14.2           | 40.5                       | -           | 54.7        |
| 6   | 14.010        | -                        | 6.0           | 19.6                        | 0.3          | 0.0                 | -40.0                      | -               | -14.1           | 29.5                       | -           | 43.6        |

Calculation: Result[dBuV/m]=Reading[dBuV]+Ant.Fac[dB/m]+Loss(Cable+ATT)[dB]-Gain(AMP)[dB]+Distance factor[dB]

Outside filed strength frequencies

- $F_c \pm 7\text{kHz}$ : 13.553MHz to 13.567MHz
- $F_c \pm 150\text{kHz}$ : 13.410MHz to 13.710MHz
- $F_c \pm 450\text{kHz}$ : 13.110MHz to 14.010MHz

$F_c = 13.56\text{MHz}$

Limits (30m)

- 13.410MHz to 13.553MHz and 13.567MHz to 13.710MHz : 50.4dBuV/m (FCC 15.225(b))
- 13.110MHz to 13.410MHz and 13.710MHz to 14.010MHz : 40.5dBuV/m (FCC 15.225(c))
- Below 13.110MHz and Above 14.010MHz : 29.5dBuV/m (FCC 15.225(d)and FCC 15.209)

**UL Kashima, Inc.**

1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan

Telephone : +81-478-82-0963

Facsimile : +81-478-82-3373

**Radiated Emission**

UL Kashima, Inc.

No.11 Semi-Anechoic Chamber

Company: JVC KENWOOD Corporation  
 Equipment: Card Printer  
 Model: CX-7600  
 Sample No.: 135V2080  
 Power: AC120V/60Hz  
 Mode: Transmitting

Regulation: FCC Part15 Subpart C 15.225  
 Test Distance: 3m  
 Date: June 2, 2014  
 Temperature: 24 deg.C  
 Humidity: 57 %RH  
 Tested by: Hiromitsu Tanabe

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Distance factor[dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Height [cm] | Angle [deg.] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|---------------------|-----------------|----------------|-------------|-------------|--------------|--------|
| Hori.    | 199.98          | QP       | 49.1           | 14.4            | 5.4       | 32.1      |                     | 36.8            | 43.5           | 6.7         | 162         | 100          | at 3m  |
| Hori.    | 250.00          | QP       | 49.0           | 11.7            | 5.7       | 32.0      |                     | 34.4            | 46.0           | 11.6        | 125         | 200          | at 3m  |
| Hori.    | 333.30          | QP       | 52.7           | 13.8            | 6.2       | 32.0      |                     | 40.7            | 46.0           | 5.3         | 245         | 117          | at 3m  |
| Hori.    | 466.62          | QP       | 43.7           | 16.9            | 6.9       | 32.0      |                     | 35.5            | 46.0           | 10.5        | 157         | 75           | at 3m  |
| Hori.    | 533.28          | QP       | 47.3           | 18.2            | 7.1       | 32.0      |                     | 40.6            | 46.0           | 5.4         | 138         | 158          | at 3m  |
| Hori.    | 599.94          | QP       | 48.0           | 19.3            | 7.4       | 32.1      |                     | 42.6            | 46.0           | 3.4         | 110         | 155          | at 3m  |
| Hori.    | 733.26          | QP       | 41.5           | 21.0            | 7.9       | 32.1      |                     | 38.3            | 46.0           | 7.7         | 177         | 75           | at 3m  |
| Vert.    | 27.12           | QP       | 0.6            | 22.8            | 0.4       | 0.0       | -40.0               | -16.2           | 29.5           | 45.7        | 100         | 0            | at 30m |
| Vert.    | 30.00           | QP       | 45.1           | 13.7            | 3.9       | 32.2      |                     | 30.5            | 40.0           | 9.5         | 100         | 100          | at 3m  |
| Vert.    | 72.14           | QP       | 47.1           | 9.1             | 4.4       | 32.2      |                     | 28.4            | 40.0           | 11.6        | 100         | 175          | at 3m  |
| Vert.    | 250.00          | QP       | 44.7           | 11.7            | 5.7       | 32.0      |                     | 30.1            | 46.0           | 15.9        | 100         | 0            | at 3m  |
| Vert.    | 333.30          | QP       | 52.5           | 13.8            | 6.2       | 32.0      |                     | 40.5            | 46.0           | 5.5         | 100         | 185          | at 3m  |
| Vert.    | 466.62          | QP       | 43.6           | 16.9            | 6.9       | 32.0      |                     | 35.4            | 46.0           | 10.6        | 100         | 170          | at 3m  |
| Vert.    | 533.28          | QP       | 44.3           | 18.2            | 7.1       | 32.0      |                     | 37.6            | 46.0           | 8.4         | 170         | 70           | at 3m  |
| Vert.    | 733.26          | QP       | 40.8           | 21.0            | 7.9       | 32.1      |                     | 37.6            | 46.0           | 8.4         | 195         | 174          | at 3m  |
| Vert.    | 866.58          | QP       | 35.5           | 22.7            | 8.4       | 31.6      |                     | 35.0            | 46.0           | 11.0        | 117         | 180          | at 3m  |
| Vert.    | 933.21          | QP       | 33.7           | 23.3            | 8.6       | 31.2      |                     | 34.4            | 46.0           | 11.6        | 100         | 120          | at 3m  |

Result = Reading + Ant Factor + Loss (Cable+Attenuator) - Gain(Amplifier) + Distance Factor

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

**UL Kashima, Inc.**

1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan

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**APPENDIX 2: Test Instruments****No.11 Test site (Conducted Emission)**

| <b>Instrument</b> | <b>Manufacturer</b> | <b>Model</b> | <b>Internal Code</b> | <b>Cal. Date</b> | <b>Due Date</b> |
|-------------------|---------------------|--------------|----------------------|------------------|-----------------|
| Test Receiver     | Rohde & Schwarz     | ESCI         | RCV09                | 2013/09/03       | 2014/09/30      |
| AMN               | Rohde & Schwarz     | ESH3-Z5      | LSN08                | 2013/07/19       | 2014/07/31      |
| AMN (for EUT)     | Rohde & Schwarz     | ESH3-Z5      | LSN11                | 2013/07/19       | 2014/07/31      |
| Spectrum Analyzer | Hewlett Packard     | 8567A        | SPR22                | 2013/10/07       | 2014/10/31      |
| Coaxial Cable     | Fujikura            | 5D-2W        | 11CSAC               | 2014/05/23       | 2015/05/31      |

**No.11 Test site (Radiated Emission: 9kHz – 30MHz)**

| <b>Instrument</b> | <b>Manufacturer</b> | <b>Model</b> | <b>Internal Code</b> | <b>Cal. Date</b> | <b>Due Date</b> |
|-------------------|---------------------|--------------|----------------------|------------------|-----------------|
| Loop Antenna      | Rohde & Schwarz     | HFH2-Z2      | LPA01                | 2013/06/25       | 2014/06/30      |
| Coaxial Cable     | Fujikura            | 3D-2W        | MG5m                 | 2014/05/10       | 2015/05/31      |
| Test Receiver     | Rohde & Schwarz     | ESHS10       | RCH02                | 2014/03/13       | 2015/03/31      |

**No.11 Test site (Radiated Emission: 30MHz – 1000MHz)**

| <b>Instrument</b>   | <b>Manufacturer</b> | <b>Model</b> | <b>Internal Code</b> | <b>Cal. Date</b> | <b>Due Date</b> |
|---------------------|---------------------|--------------|----------------------|------------------|-----------------|
| Test Receiver       | Rohde & Schwarz     | ESCI         | RCV09                | 2013/09/03       | 2014/09/30      |
| Biconical Antenna   | Schwarzbeck         | VHBB 9124    | BCA13                | 2014/05/07       | 2015/05/31      |
| Logperiodic Antenna | Schwarzbeck         | VULP 9118-B  | LGA15                | 2014/05/07       | 2015/05/31      |
| Spectrum Analyzer   | Hewlett Packard     | 8567A        | SPR22                | 2013/10/07       | 2014/10/31      |
| Pre-Amplifier       | Sonoma              | 310N         | PRA16                | 2014/05/23       | 2015/05/31      |
| Coaxial Cable       | Fujikura            | 5D-2W        | 11R10m               | 2014/05/23       | 2015/05/31      |