



# RADIO TEST REPORT

**Test Report No. : 29GE0077-HO-01-A**

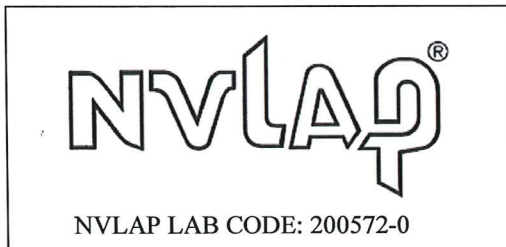
**Applicant** : KYOCERA Corporation  
**Type of Equipment** : iBurst User Terminal USB type  
**Model No.** : UTU03-1890F-US-A  
**Test regulation** : **FCC Part 24: 2008**  
**Output power, Band edge and Spurious emission (radiated) tests only for Class II change**  
**FCC ID** : JOYIUU19AC  
**Test Result** : **Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this 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 NVLAP, NIST, or any agency of the Federal Government.

**Date of test:** March 4 and 5, 2009

**Tested by:**    
Kazufumi Nakai Kazuya Yoshioka  
EMC Services EMC Services

**Approved by :**   
Tetsuo Maeno  
Site Manager of EMC Services



This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.  
\*As for the range of Accreditation in NVLAP, you may refer to the WEB address, <http://uljapan.co.jp/emc/nvlap.htm>

<b>CONTENTS</b>	<b>PAGE</b>
<b>SECTION 1: Customer information .....</b>	<b>3</b>
<b>SECTION 2: Equipment under test (E.U.T.) .....</b>	<b>3</b>
<b>SECTION 3: Test specification, procedures &amp; results .....</b>	<b>4</b>
<b>SECTION 4: Operation of E.U.T. during testing .....</b>	<b>6</b>
<b>SECTION 5: Output Power, Spurious emission and Band-Edge (Radiated) .....</b>	<b>8</b>
<b>APPENDIX 1: Photographs of test setup .....</b>	<b>9</b>
<b>Radiated Emissions .....</b>	<b>9</b>
<b>Worst Case Position (Horizontal: EUT-Y-axis, Antenna-extended. / Vertical: EUT-Z-axis, Antenna-extended.) .....</b>	<b>10</b>
<b>APPENDIX 2: Data of EMI test .....</b>	<b>11</b>
<b>Output Power (Radiated) .....</b>	<b>11</b>
<b>Output Power (Conducted) .....</b>	<b>12</b>
<b>Band Edge (Radiated) .....</b>	<b>13</b>
<b>Spurious Radiated Emission.....</b>	<b>15</b>
<b>APPENDIX 3: Test instruments.....</b>	<b>18</b>

## **SECTION 1: Customer information**

Company Name : KYOCERA Corporation  
Address : Yokohama Office  
2-1-1 Kagahara, Tsuzuki-ku, Yokohama-shi, Kanagawa 224-8502, Japan  
Telephone Number : +81-45-943-6189  
Facsimile Number : +81-45-943-6172  
Contact Person : Yasuo Honma

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

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

Type of Equipment : iBurst User Terminal USB type  
Model No. : UTU03-1890F-US-A  
Serial No. : 18  
Rating : DC 5V (from USB Bus Power)  
(PC's input: AC 120V / 60Hz)  
Receipt Date of Sample : February 24, 2009  
Country of Manufacture : Japan  
Condition of EUT : Engineering 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 No.: UTU03-1890F-US-A (referred to as the EUT in this report) is iBurst User Terminal USB type.

Equipment Type : Transceiver  
Other Clock Frequency : 96MHz, 24MHz, 18MHz, 9MHz, 6MHz, 32.768kHz

#### **[Transmitter part]**

Frequency Range : 1890MHz to 1910MHz  
Frequency operation : 1890.3125MHz to 1909.6875MHz  
Type of modulation : BPSK, BPSK+, QPSK, QPSK+, 8PSK, 8PSK+, 12QAM, 16QAM  
Bandwidth & Channel spacing : 500kHz & 625kHz  
Antenna Type : Extensible Helical Antenna  
Antenna Gain : 2.9dBi(max)  
Operating voltage (Inner) : DC5V

#### **[Change of original model]**

The amplifier of radio circuit was changed.

---

**UL Japan, Inc.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

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

#### **3.1 Test Specification**

Test Specification : FCC Part 24 2008, final revised on May 2, 2008

Title : FCC 47CFR Part 24  
Personal Communications Services

#### **3.2 Procedures and results**

Item	Test Method	FCC Regulations	Remarks	Deviation	Worst margin	Results
Output Power	FCC Part2 Section 2.1046(a)	Section 24.232(c)	Conducted/ Radiated	N/A	[Radiated] 5.3dB, 1909.6875MHz, Vertical	Complied
Emission Bandwidth, 99% Occupied Bandwidth	FCC Part2 Section 2.1049(h)	Section 24.238	Conducted *1)	N/A	-	N/A
Band-Edge	FCC Part2 Section 2.1049  FCC Part24 Section 24.238(b)	Section 24.238(a)	Radiated	N/A	2.0dB, 1890.00MHz, Horizontal	Complied
Spurious Emission (Conducted)	FCC Part2 Section 2.1051	Section 24.238(a)	Conducted	N/A	-	N/A
Spurious Emission (Radiated)	FCC Part2 Section 2.1053	Section 24.238(a)	Radiated	N/A	9.6dB 13297.81MHz Horizontal	Complied
Frequency Stability (Temperature Variation)	FCC Part2 Section 2.1055(a) (1) and (b)	Section 24.235	Conducted *1)	N/A	-	N/A
Frequency Stability (Voltage Variation)	FCC Part2 Section 2.1055(d)(1) and (2)	Section 24.235	Conducted *1)	N/A	-	N/A

Note: UL Japan, Inc.'s EMI Work Procedures No. QPM05

\*1) The test is not required in this report for Class II change. (The amplifier of radio circuit was changed.)

Please refer to Test Report No.29BE0211-HO-01-A-R1 of UL Japan, Inc.

\*These tests were also referred to TIA-603-C "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards."

#### **3.3 Confirmation**

UL Japan, Inc. hereby confirms that E.U.T., in the configuration tested, complies with the specifications FCC Part 24.

**UL Japan, Inc.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

### 3.4 Uncertainty

#### EMI

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

#### Radiated emission tests (Output Power, Band-Edge, Spurious Emission)

The measurement uncertainty for this test is 4.62dB(30-1000MHz) and 5.06dB(Above 1GHz).

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

### 3.5 Test Location

UL Japan, Inc. Head Office EMC Lab. \*NVLAP Lab. code: 200572-0

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

	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 semi-anechoic chamber	313583	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

\* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

### 3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

#### UL Japan, Inc.

#### Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

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

### **4.1 Operating Modes**

The mode is used :

- 1) Transmitting mode for Output Power and Spurious radiated emission tests: Modulation 7 \*1
- 2) Transmitting mode for Band edge(Radiated) tests: Modulation 3 (1890MHz) / Modulation 0 (1910MHz) \*1

\*1: Modulation

Modulation Class	Method
Modulation 0	BPSK
Modulation 1	BPSK+
Modulation 2	QPSK
Modulation 3	QPSK+
Modulation 4	8PSK
Modulation 5	8PSK+
Modulation 6	12QAM
Modulation 7	16QAM

(Bandedge (1910MHz) worst) \*2)

(Bandedge (1890MHz) worst) \*2)

(Output Power worst) Refer to p.12 \*1)

- \*1) The worst modulation of Output Power decided from what had the highest Output power level in the modulation 0 to 7.  
\*2) The worst modulation of Bandedge decided from what had the highest bandedge level in the modulation 0 to 7 at the time of the test report of 29BE0211-HO-D-R1.

It used worst data stream in normal communication mode for all tests.  
1 data frame structure is 3 slots (545usec./slot) in 5msec in every time.

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

---

**UL Japan, Inc.**

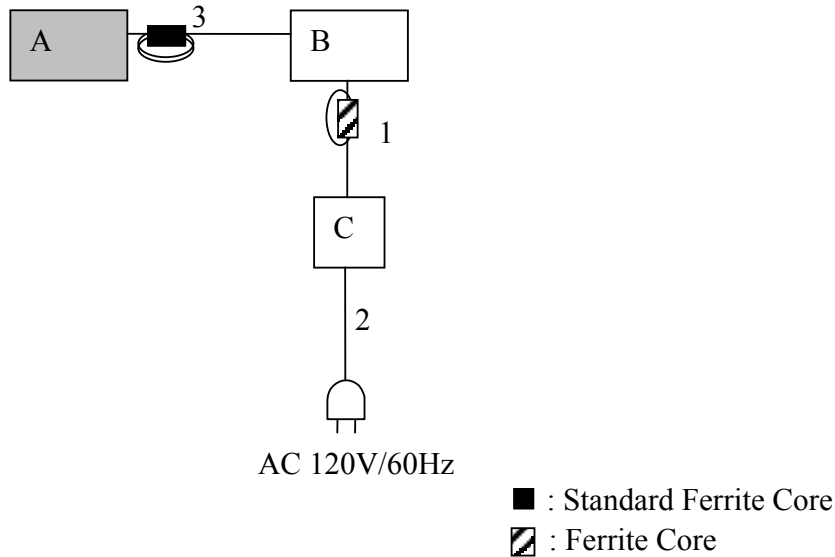
**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

## 4.2 Configuration and peripherals



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

### Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	iBurst User Terminal USB type	UTU03-1890F-US-A	18	KYOCERA Corporation	EUT
B	Personal Computer	FMV-780MT5	R4400146	Fujitsu	-
C	AC Adapter	FMV-AC311S	747424B	Fujitsu	-

### List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	1.8	Unshielded	Unshielded	1 Ferrite Core, 2 turns, 5cm from Item C, Manufacturer: TDK, Model: ZCAT2035-0930
2	AC Cable	2.0	Unshielded	Unshielded	-
3	USB Cable	0.8	Shielded	Shielded	1 Ferrite Core, 3 turns, 6cm from Item A, Manufacturer: TDK, Model: ZCAT2035-0930

**UL Japan, Inc.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

## **SECTION 5: Output Power, Spurious emission and Band-Edge (Radiated)**

[Conducted]

### **Test Procedure**

The output power (conducted) was measured with a power meter, and an attenuator was connected with the antenna port.

**Test data** : **APPENDIX 2**  
**Test result** : **Pass**

[Radiated]

### **Test Procedure**

- 1) EUT was placed on a urethane platform of nominal size, 0.5m by 1.0m, raised 80cm above the conducting ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.  
The Radiated Electric Field Strength intensity has been measured in a semi anechoic chamber with a ground plane and at a distance of 3m (below 10GHz) and 1m (above 10GHz).  
The measuring antenna height was varied between 1 to 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
- 2) Exchanged the EUT to the Substitution Antenna, the measurement was set for the same height as the EUT. The frequency below 1GHz of the Substitution Antenna was used as the Half wave dipole Antenna, which is harmonized with the measured frequency in 1).  
The frequency above 1GHz of the Substitution Antenna was used with Horn Antenna.  
The Substitution Antenna was connected with the Signal Generator, and the polarized electromagnetic radiation of the Substitution Antenna was matched with the one of the measuring Antenna, which was set with the Signal Generator to the measured frequency in 1). Then, we set with the Output power (CW) of the Signal Generator where the measuring electromagnetic field is equal to the measured value in 1).  
The measuring antenna height varied between 1 and 4m to obtain the maximum receiving level.  
Its Output power of Signal Generator was recorded.
- 3) Effective radiated power was calculated by subtracting the cable loss and the attenuator loss connected between the Signal Generator and the Substitution Antenna from the Output power of the Signal Generator recorded in 2).  
For the usage of the Antenna (Horn Antenna) except for the Half wave dipole Antenna (2.15dBi) for the Substitution Antenna, the Equivalent isotropic radiated power was calculated by compensating the finite difference in the Antenna gain of the isotropic Antenna (Antenna gain: 0dBi), and Substitution Antenna.

- The carrier level and noise levels were confirmed at each position of X and Y axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.
- The carrier level and noise levels were confirmed at each position of retracted and extended EUT's antenna to see the position of maximum noise, and the test was made at the position that has the maximum noise.

**Test data** : **APPENDIX 2**  
**Test result** : **Pass**

---

**UL Japan, Inc.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124