



RADIO TEST REPORT

Test Report No. : 29GE0080-HO-01

Applicant : KYOCERA Corporation
Type of Equipment : iBurst USER TERMINAL Desktop TYPE
Model No. : UTD-1890F-US-A
Test regulation : FCC Part 24: 2008
FCC ID : JOYIUD19AC
Test Result : Complied

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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 2 to April 17, 2009

Tested by:

Kazufumi Nakai
EMC Services

Approved by :

Tetsuo Maeno
Site Manager of EMC Services



NVLAP LAB CODE: 200572-0

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SECTION 1: Customer information

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

2.1 Identification of E.U.T.

Type of Equipment : iBurst USER TERMINAL Desktop TYPE
Model No. : UTD-1890F-US-A
Serial No. : 0Z08AX00063
Rating : AC100-240V, 50/60Hz
Receipt Date of Sample : February 27, 2009
Country of Mass-production : Japan
Condition of EUT : 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 No.: UTD-1890F-US-A (referred to as the EUT in this report) is iBurst USER TERMINAL Desktop TYPE.

Equipment Type : Transceiver

[Transmitter part]

Frequency of Operation : 1890MHz to 1910MHz
Type of modulation : BPSK, BPSK+, QPSK, QPSK+, 8PSK, 8PSK+, 12QAM, 16QAM
Bandwidth & Channel spacing : 500kHz & 625kHz
Antenna Type : Integrated Mono-Pole Antenna
Antenna Gain : 3.9dBi
Antenna connector Type : MMCX
Other Clock Frequency : 96MHz, 25MHz, 24MHz, 18MHz, 9MHz, 6MHz, 32.768kHz
Operating voltage (Inner) : DC9.0V, DC4.2V, DC3.3V, DC3.0V, DC1.5V
AC100-240V(AC/DC Adapter)

[Receiver part]

Type of Receiver : Super Heterodyne
Intermediate Frequency : 340kHz(RF), 4.5MHz(Base band)
IF Filter bandwidth : 625kHz
Other Clock Frequency : 100MHz, 96MHz, 72MHz, 25MHz, 24MHz, 20MHz, 18MHz, 9MHz, 6MHz, 32.768kHz

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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] 7.1dB 1909.6875MHz, Horizontal	Complied
Emission Bandwidth, 99% Occupied Bandwidth	FCC Part2 Section 2.1049(h)	Section 24.238	Conducted	N/A	-	Complied
Band-Edge	FCC Part2 Section 2.1049 FCC Part24 Section 24.238(b)	Section 24.238(a)	Conducted/ Radiated	N/A	[Radiated] 4.3dB, 1890.0000MHz, Horizontal	Complied
Spurious Emission (Conducted)	FCC Part2 Section 2.1051	Section 24.238(a)	Conducted	N/A	-	Complied
Spurious Emission (Radiated)	FCC Part2 Section 2.1053	Section 24.238(a)	Radiated	N/A	8.0dB 17012.81MHz Vertical	Complied
Frequency Stability (Temperature Variation)	FCC Part2 Section 2.1055(a) (1) and (b)	Section 24.235	Conducted	N/A	-	Complied
Frequency Stability (Voltage Variation)	FCC Part2 Section 2.1055(d)(1) and (2)	Section 24.235	Conducted	N/A	-	Complied
Peak-to- Average Ratio	-	Section 24.232(d)	Conducted	N/A	-	Complied

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

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

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3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
99% Occupied Band Width	RSS-Gen 4.6.1	RSS-Gen 4.6.1	Conducted	N/A	N/A	Complied

Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Confirmation

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

3.5 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.

Antenna terminal conducted tests (Output Power, Band-Edge, Spurious Emission, Peak-to-Average Ratio)

The measurement uncertainty for this test is 1.0dB.

Frequency tests (Bandwidth, Frequency Stability)

The measurement uncertainty for this test is 1×10^{-5} .

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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 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.

3.7 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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

4.1 Operating Modes

The mode is used :

- 1) Transmitting mode for Output Power test: Modulation 1 *1
- 2) Transmitting mode for Bandwidth test: Modulation 4 *1
- 3) Transmitting mode for Band edge test: Modulation 3 (1890MHz) / Modulation 6 (1910MHz) *1
- 4) Transmitting mode for Spurious emission and Frequency Stability tests: Modulation 7 *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

(Output Power worst) Refer to p.15 *1)

(Bandedge (1890MHz) worst) Refer to p.21 *2)

(Bandwidth worst) Refer to p.20 *3)

(Bandedge (1910MHz) worst) Refer to p.21 *2)

(Spurious emission worst) Refer to p.28 *4)

(Frequency Stability worst) Refer to p.36 *5)

- *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
- *3) The worst modulation of Bandwidth decided from what had the widest bandwidth in the modulation 0 to 7.
- *4) The worst modulation of Spurious emission decided from what had the highest Spurious emission level in the modulation 0 to 7.
- *5) The worst modulation of Frequency Stability decided from what had the highest Frequency Stability level in the modulation 0 to 7.

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.

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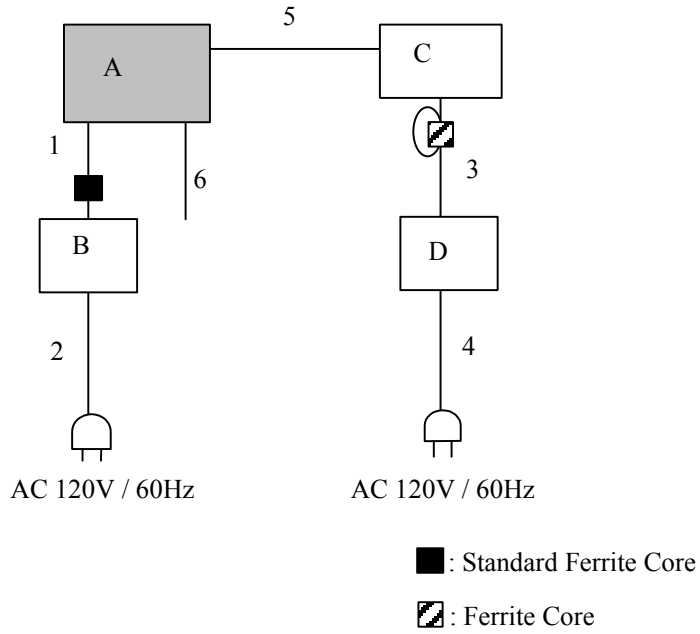
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4.2 Configuration and peripherals



* 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 Desktop TYPE	UTD-1890F-US-A	0Z08AX00063	KYOCERA Corporation	EUT
B	AC Adapter	3A-161DA09	-	ENG	-
C	Personal Computer	FMV-780MT5	R4400146	Fujitsu	-
D	AC Adapter	FMV-AC311S	747424B	Fujitsu	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	1.75	Unshielded	Unshielded	-
2	AC Cable	1.7	Unshielded	Unshielded	-
3	DC Cable	1.8	Unshielded	Unshielded	1 Ferrite Core, 2 turns, 5cm from Item C, Manufacturer: TDK, Model: ZCAT2035-0930
4	AC Cable	2.0	Unshielded	Unshielded	-
5	USB Cable	2.0	Shielded	Shielded	-
6	LAN Cable	1.0	Unshielded	Unshielded	*1)

*1) Used for Spurious Emission (Radiated) test only

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SECTION 5: Output Power, Spurious emission and Band-Edge (Conducted/Radiated)

[Conducted]

Test Procedure

The output power (conducted) was measured with a power meter, and an attenuator was connected with the antenna port. The Spurious emission and Band-Edge (conducted) was measured with a spectrum analyzer, and an attenuator was connected with the antenna port.

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

[Radiated]

Test Procedure

- 11) 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 0deg., 90deg. and 180 deg. axis of 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**

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SECTION 6: Bandwidth (Conducted)

Test Procedure

The Emission Bandwidth and 99% Occupied Bandwidth was measured with a spectrum analyzer, and an attenuator was connected with the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 7: Frequency Stability (Conducted)

Test Procedure

The Frequency Stability was measured with a Vector Signal Analyzer (89441A (HP) (MRENT-77)), and an attenuator was connected with the antenna port.

The Frequency Drift was measured with variation of ambient temperature from -30 to +50 deg.C. at the intervals of 10 deg.C., and also with variation of primary supply voltage from 85 to 115 % of the nominal voltage (102V, 120V, and 138V). The result is shown in ppm unit.

Test data : APPENDIX 2
Test result : Pass

SECTION 8: Peak-to-Average Ratio

Test Procedure

The Peak-to-Average Ratio was measured with a spectrum analyzer, and an attenuator was connected with the antenna port.

Test data : APPENDIX 2
Test result : Pass

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