



RADIO TEST REPORT

Test Report No. : 28LE0177-HO-A-R3

Applicant : KYOCERA Corporation
Type of Equipment : iBurst User Terminal 2Mbps Desktop type
Model No. : UTW1900D-US-A
Test regulation : FCC Part 24 2005
FCC ID : JOYIUW19AA
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.
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6. Original test report number of this report is 28LE0177-HO-A.

Date of test: July 31 to August 21, 2008

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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 2Mbps Desktop type
Model No. : UTW1900D-US-A
Serial No. : 0108EJ00005
Rating : AC 120V / 60Hz
Receipt Date of Sample : July 31, 2008
Country of Manufacture : Japan
Condition of EUT : Production prototype
(Not for Sale: This sample is not mass-produced items.)
Modification of EUT : No Modification by the test lab

2.2 Product Description

Model No.: UTW1900D-US-A (referred to as the EUT in this report) is iBurst User Terminal 2Mbps Desktop type.

UTW1900D-US-A has two radio parts of the same specifications. (Master radio part and Slave radio part)

Master radio part and Slave radio part have each one antenna port.

The two radio parts can transmit simultaneously, but, they do not transmit in the same channel. It transmits in a different channel.

Equipment Type : Transceiver
Frequency Range : 1905MHz to 1910MHz
Frequency operation : 1905.3125MHz to 1909.6875MHz
Type of modulation : BPSK, BPSK+, QPSK, QPSK+, 8PSK, 8PSK+, 12QAM, 16QAM
Bandwidth : 500kHz
Channel spacing : 625kHz
Intermediate Frequency : 202.5MHz, 4.5MHz
Antenna Type : Co-Linear
Antenna connector Type : MMCX
Antenna Gain : 4dBi
Other Clock Frequency : 144MHz, 25MHz, 24MHz, 20MHz, 18MHz, 9MHz, 6MHz, 32.768kHz
Operating voltage (Inner) : DC 8.44V- DC 9.45V
Temperature of operation : 0 deg. C. to + 40 deg. C.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 24 2005, final revised on October 20, 2005
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	Section 2.1046	Section 24.232(c)	Conducted/ Radiated	N/A	[Radiated] 4.1dB, PK, 1909.6875MHz, Horizontal	Complied
Emission Bandwidth, 99% Occupied Bandwidth	Section 2.1049	Section 24.238(b)	Conducted	N/A	-	Complied
Band-Edge	Section 2.1049	Section 24.238(a), (b)	Conducted/ Radiated	N/A	[Radiated] 0.9dB, 1905MHz, Horizontal	Complied
Spurious Emission (Conducted)	Section 2.1051	Section 24.238(a)	Conducted	N/A	-	Complied
Spurious Emission (Radiated)	Section 2.1053	Section 24.238(a)	Radiated	N/A	1.5dB 13337.19MHz Horizontal	Complied
Frequency Stability (Temperature Variation)	Section 2.1055(a) (1) and (b)	Section 24.235	Conducted	N/A	-	Complied
Frequency Stability (Voltage Variation)	Section 2.1055(d)(1) and (2)	Section 24.235	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."

*These tests were performed without any deviations from test procedure except for additions or exclusions.

3.3 Confirmation

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

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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.

Antenna terminal conducted tests (Output Power, Band-Edge, Spurious Emission)

The measurement uncertainty for this test is 1.0dB.

Frequency tests (Bandwidth, Frequency Stability)

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

3.5 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.

3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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

4.1 Operating Modes

The mode is used :

- 1) Transmitting mode for Bandwidth and Bandedge(Radiated) tests: Modulation 3, Slave antenna port *1,*2
- 2) Transmitting mode for except Bandwidth and Bandedge tests: Modulation 7, Slave antenna port *1,*2
- 3) Transmitting mode for Bandedge(Conducted) tests: Modulation 0 to 7, Slave antenna port. *2
- 4) Transmitting mode for Bandedge(Radiated) tests: Modulation 3, *1, *3
ch0 (1905.3125MHz) was transmitted by Slave antenna port and ch1 (1905.6875MHz) was transmitted by Master antenna port, that two frequencies were transmitted simultaneously for Low side bandedge (1905MHz).
ch7 (1909.6875MHz) was transmitted by Slave antenna port and ch6 (1909.3125MHz) was transmitted by Master antenna port, and that two frequencies were transmitted simultaneously for High side bandedge (1910MHz).
- 5) Transmitting mode for spurious emission(Radiated) tests: Modulation 7, *1, *3
ch0 (1905.3125MHz) was transmitted by Slave antenna port and ch1 (1905.6875MHz) was transmitted by Master antenna port, that two frequencies were transmitted simultaneously for Low side bandedge (1905MHz).
ch7 (1909.6875MHz) was transmitted by Slave antenna port and ch6 (1909.3125MHz) was transmitted by Master antenna port, and that two frequencies were transmitted simultaneously for High side bandedge (1910MHz).

*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

(Bandwidth / BandEdge worst) Refer to p.19 and p.20

(Output Power worst) Refer to p.14

The worst modulation of Bandwidth decided from what had the widest bandwidth in the modulation 0 to 7.
The worst modulation of Bandedge decided from what had the highest bandedge level in the modulation 0 to 7.
The worst modulation of Output Power decided from what had the highest Output power level in the modulation 0 to 7.

Refer to "iBurst User Terminal 2Mbps Desktop type(UTW) Specification Rev1.0.0" section 1.2.3 (p.3).

*2: Antenna port

Master
Slave

(Output Power worst) Refer to p.14

The worst port of Output Power decided from what had the highest Output power level in the Master or Slave.

Refer to "iBurst User Terminal 2Mbps Desktop type(UTW) Specification Rev1.0.0" section 2.3 (p.6).

*3: EUT has two radio parts of the same specifications. (Master radio part and Slave radio part)

Master radio part and Slave radio part have each one antenna port.

The two radio parts can transmit simultaneously, but, they do not transmit in the same channel.

It transmits in a different channel.

Highest level's antenna port (Slave antenna port) transmitted at Lowest or Highest channel,

and other antenna port transmitted at the neighboring channel. Because it was expected to the highest bandedge level.

Refer to "iBurst User Terminal 2Mbps Desktop type(UTW) Specification Rev1.0.0" section 2.3 (p.6).

It used worst data stream in normal communication mode for all tests. Refer to p.16.

1 data frame structure is 3 slots (545usec./slot) in 5msec in every time.

Refer to "iBurst User Terminal 2Mbps Desktop type(UTW) Specification Rev1.0.0" section 1.2.2 (p.2).

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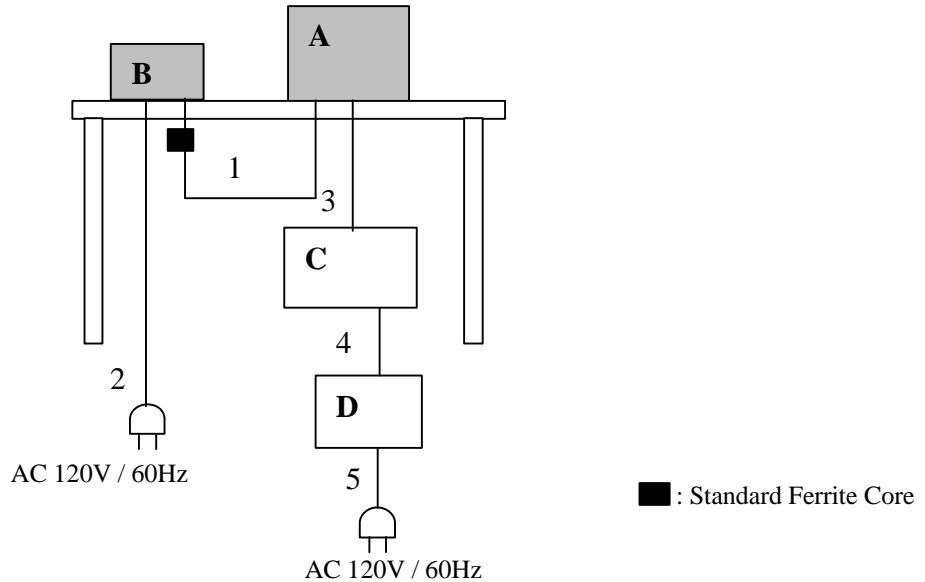
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Justification: The system was configured in typical fashion (as a customer would normally use it) for testing.

4.2 Configuration and peripherals



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

* The command was transmitted via LAN cable between the PC and the EUT only at setting. The LAN communication stops during the measurement (radio transmitting).

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	iBurst User Terminal 2Mbps Desktop type	UTW1900D-US-A	0108EJ00005	KYOCERA Corporation	EUT
B	AC Adapter	3A-161DA09	1	KYOCERA Corporation	EUT
C	Note PC	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	2.0	Unshielded	Unshielded	-
2	AC Cable	1.2	Unshielded	Unshielded	-
3	LAN Cable	2.0	Unshielded	Unshielded	-
4	DC Cable	1.8	Unshielded	Unshielded	-
5	AC Cable	2.0	Unshielded	Unshielded	-

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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

- 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. 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. axes 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-71)), 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

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