



RADIO TEST REPORT

Test Report No.: 28EE0156-YK-01-B

Applicant : ALPS Electric co., Ltd
Peripheral products division Onahama Plant

Type of Equipment : Photo Printer

Trademark : Polaroid Corporation

Model No. : CZA-10011B

FCC ID : CWTK2101

Test regulation : FCC Part15 Subpart C: 2008

Test result : Complied

1. This test report shall not be reproduced except 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 limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.

Date of test: January 15, 23, 24, 25 and 28, 2008

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1 Applicant Information

Company Name : ALPS Electric Co., Ltd Peripheral products division Onahama Plant
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2 Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Photo Printer
Model No. : CZA-10011B
Serial No. : Refer to 4.2 in this report.
Rating : AC100-240V, 50/60Hz
Country of Manufacture : Japan
Receipt Date of Sample : January 8, 2007
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

ALPS Electric co., Ltd Peripheral products division Onahama Plant, Model: CZA-10011B (referred to as the EUT in this report) is a Photo Printer.

The clock frequency used in EUT:
CPU: 12MHz

Radio Specification

Equipment type : Transceiver
Frequency of operation : 2402-2480MHz
Other clock frequency : 26MHz
Bandwidth & channel spacing : 79MHz & 1MHz
Type of modulation : FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK)
Antenna model & type : AF 216M245001-T (Helical antenna)
Antenna gain : +1.0dBi (Max.)
Antenna connector type : None
ITU code : F1D, G1D
Operation temperature range : -20 ~ +75 deg. C.

FCC Part15.31 (e)

The Bluetooth module is provided with stable power supply (DC3.3 V), therefore, the equipment complies power supply regulation.

FCC Part15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the module. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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3 Test Specification, Procedures and Results

3.1 Test specification

Test specification : FCC Part15 Subpart C: 2008, final revised on January 30, 2008
 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 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz,
 and 5725-5850MHz

*The revision on January 30, 2008 does not influence the test specification applied to the EUT.

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	FCC 15.207	-	N/A	17.6dB (0.1980MHz, QP, N, Tx 2402MHz, 3DH5)	Complied
Carrier Frequency Separation	FCC Public Notice DA 00-705	FCC15.247 (a)(1)	Conducted	N/A	*See data.	Complied
20dB Bandwidth	FCC Public Notice DA 00-705	FCC15.247 (a)(1)	Conducted	N/A		Complied
Number of Hopping Frequency	FCC Public Notice DA 00-705	FCC15.247 (a)(1)(iii)	Conducted	N/A		Complied
Dwell time	FCC Public Notice DA 00-705	FCC15.247 (a)(1)(iii)	Conducted	N/A		Complied
Maximum Peak Output Power	FCC Public Notice DA 00-705	FCC15.247 (b)(1)	Conducted	N/A		Complied
Spurious Emission	FCC Public Notice DA 00-705	FCC15.209 FCC15.247 (d)	Conducted/ Radiated	N/A	0.8dB (1654.00MHz, AV, Horizontal, Tx 2480MHz 3DH5)	Complied

Note: UL Japan's EMI Work Procedures No.QPM05 and QPM15.

In case any questions arise about test procedure, ANSI C63.4: 2003 is also referred.

3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Worst Margin	Results
Occupied Bandwidth (99%)	ANSI C63.4:2003 13. Measurement of intentional radiators RSS-Gen 4.6.1	RSS-Gen 4.6.1	Conducted	-	Complied

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

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3.4 Uncertainty

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

	No.1 open site (±)	No.2 open site (±)	No.1 anechoic chamber (±)
Conducted emission			
150kHz-30MHz	2.8 dB	2.8 dB	2.8 dB
Radiated emission (3m)			
30-300MHz	4.5 dB	4.4 dB	4.5 dB
300-1000MHz	4.3 dB	4.3 dB	4.3 dB
1GHz<	5.7 dB	5.7 dB	5.7 dB

Antenna port conducted test	(±)
Below 1GHz	0.4dB
1GHz and above	0.7dB

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 report meets the limits unless the uncertainty is taken into consideration.

3.5 Test Location

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NVLAP Lab. code : 200441-0

No. 1 test site has been fully described in a report submitted to FCC office, and accepted on August 26, 2005 (Registration No.: 95486).

IC Registration No. : 2973B-1

No. 2 test site has been fully described in a report submitted to FCC office, and accepted on April 4, 2005 (Registration No.: 466226).

IC Registration No. : 2973B-3

No. 1 anechoic chamber has been fully described in a report submitted to FCC office, and accepted on November 2, 2005 (Registration No.: 95967).

IC Registration No. : 2973B-2

Test room	Width x Depth x Height (m)	Test room	Width x Depth x Height (m)
No.1 shielded room	8.0 x 5.0 x 2.5	No.1 Semi-anechoic chamber	10.0 x 7.5 x 5.7
No.2 shielded room	5.0 x 4.0 x 2.5		
No.3 shielded room	4.0 x 5.0 x 2.7		

Open test site	Maximum measurement distance
No.1 open test site	30m
No.2 open test site	10m

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4 System Test Configuration

4.1 Justification

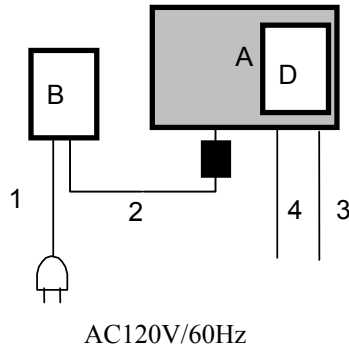
The system was configured in typical fashion (as a customer would normally use it) for testing.

Test mode: Transmitting (Packet size: DH5 and 3DH5)
 - Low channel : 2402MHz
 - Middle channel : 2441MHz
 - High channel : 2480MHz
 - Hopping mode
 - Inquiry mode

*Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT. However, the limit level 125mW of AFH mode was used due to the overlap of the bandwidth.

4.2 Configuration and peripherals

■ : Ferrite core



*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	Printer	CZA-10011B	003 (*1)	ALPS Electric Co., Ltd	EUT
			004 (*2)		
B	AC Adaptor	STD-0903P	0744	ADAPTER TECH	-
C	Battery	2ATL462849-ALP	-	Polaroid	-

*1) Antenna port conducted test

*2) Other test

List of cables used

No.	Name	Length (m)	Shield	
			Cable	Connector
1	AC Power Cord	1.5	Unshielded	Unshielded
2	DC Power Cord	1.8	Shielded	Unshielded
3	USB cable *3)	0.5	Shielded	Unshielded
4	USB cable	2.0	Shielded	Shielded

*3) The cable was used to input test commands and didn't influence the test result.

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5 Conducted Emissions

5.1 Operating environment

The test was carried out in No.1 shielded room.

5.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.8m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of peripherals was aligned and 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 a Line Impedance Stabilization Network (LISN) and excess AC cable was bundled in center. A drawing of the set up is shown in the photos of Appendix 1.

5.3 Test conditions

Frequency range : 0.15 - 30MHz
EUT operation mode: Transmitting

5.4 Test procedure

The EUT was connected to a LISN (AMN). An overview sweep with peak detection has been performed. The Conducted emission measurements were made with the following detector function of the test receiver.

Detector: QP/AV
IF Bandwidth: 9kHz

5.5 Results

Summary of the test results : Pass

Date : January 25, 2008 Test engineer : Yasumasa Owaki

6 Carrier Frequency Separation

Test Procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass

Date : January 25, 2008 Test engineer : Makoto Hosaka

7 20dB Bandwidth & Occupied Bandwidth (99%)

Test Procedure

The bandwidth was measured with a spectrum analyzer connected to the antenna port.

The channel separation in Hopping mode and Inquiry mode was separated by 25kHz and 2/3 of the 20dB bandwidth.

Summary of the test results: Pass

Date : January 25, 2008 Test engineer : Makoto Hosaka

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8 Number of Hopping Frequency

Test Procedure

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass

Date : January 28, 2008 Test engineer : Fumiaki Matsuo

9 Dwell time

Test Procedure

The Dwell time was measured with a spectrum analyzer connected to the antenna port.
Measurement was performed with the packet type of DH1, DH3, DH5, 3DH1, 3DH3 and 3DH5.

Summary of the test results: Pass

Date : January 25, 2008 Test engineer : Makoto Hosaka

10 Maximum Peak Output Power

Test Procedure

The Maximum Peak Output Power was measured with a power meter connected to the antenna port.

Summary of the test results: Pass

Date : January 28, 2008 Test engineer : Fumiaki Matsuo

11 Out of Band Emissions (Antenna Port Conducted)

Test Procedure

The Out of Band Emissions was measured with a spectrum analyzer connected to the antenna port.

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a conducted measurement.

Summary of the test results: Pass

Date : January 28, 2008 Test engineer : Fumiaki Matsuo

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12 Out of Band Emissions (Radiated)

12.1 Operating environment

The test was carried out in No.1 anechoic chamber.

12.2 Test configuration

EUT was placed on a urethane platform of nominal size, 0.5m by 0.5m, raised 80cm above the conducting ground plane. A drawing of the set up is shown in the photos of Appendix 1.

12.3 Test conditions

Frequency range : 30MHz - 26GHz
 Test distance : 3m
 EUT operation mode : Transmitting

12.4 Test procedure

The Radiated Electric Field Strength intensity has been measured with a ground plane and at a distance of 3m. 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.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
Detector IF	QP: BW 120kHz	PK: RBW: 1MHz/VBW: 1MHz, AV RBW: 1MHz/VBW: 300Hz (See data)
Bandwidth		
Measuring antenna	Biconical (30-300MHz) Logperiodic (300MHz-1GHz)	Horn

The equipment and its antenna were previously checked at each position of three axes X, Y and Z. The position in which the maximum noise occurred was chosen to put into measurement. See the table below and photographs in page 13. With the position, the noise levels of all the frequencies were measured.

Frequency	Worst position	
Below 1GHz	Horizontal: X	Vertical: Y
Above 1GHz	Horizontal: X	Vertical: X

12.5 Band edge

Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209 and band edge level at 2400MHz is below the 20dBc. Refer to the data.

12.6 Results

Summary of the test results : Pass *No noise was detected above the 5th order harmonics.

Date : January 15, 23 and 24, 2008

Test engineer : Toyokazu Imamura and Ichiro Isozaki

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APPENDIX 1: Photographs of test setup

Page 11	:	Conducted emission
Page 12	:	Radiated emission
Page 13	:	Pre-check of the worst position

APPENDIX 2: Test Data

Page 15 - 23	:	Conducted emission
Page 24	:	Carrier frequency separation
Page 25 - 27	:	20dB bandwidth
Page 28 - 32	:	Number of hopping frequency
Page 33 - 46	:	Dwell time
Page 47	:	Maximum peak output power
Page 49 - 65	:	Out of band emissions (Antenna Port Conducted)
Page 66 - 83	:	Out of band emissions (Radiated)
Page 84	:	Duty cycle
Page 85 - 87	:	Occupied bandwidth

APPENDIX 3: Test instruments

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