

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT**

OF

RFID T&A System

MODEL No.: U600-P

Trade mark: ZKSoftware

FCC ID: WJP-U600P

REPORT NO: E0807076F

ISSUE DATE: July 28, 2008

Prepared for

ZKSoftware Inc.

**ZK Mansion, Wuhe Road, Gangtou, Bantian, Buji Town, Longgang District,
Shenzhen, China 518129**

Prepared by

SHENZHEN EMTEK Co., Ltd.

**Bldg 69, Majialong Industry Zone, Nanshan District,
Shenzhen, Guangdong, China**
TEL: 86-755-26954280
FAX: 86-755-26954282

VERIFICATION OF COMPLIANCE

Applicant:	ZKSoftware Inc. ZK Mansion, Wuhe Road, Gangtou, Bantian, Buji Town, Longgang District, Shenzhen, China 518129
Product Description:	RFID T&A System
Model Number:	U600-P
Serial Number:	N/A
File Number:	E0807076F
Date of Test:	July 14, 2008 to July 26, 2008

We hereby certify that:

The above equipment was tested by SHENZHEN EMTEK Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part C.

The test results of this report relate only to the tested sample identified in this report.

Approved By



David Lee/ Q.A. Manager
SHENZHEN EMTEK Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description

The ZKSoftware Inc. Model: U600-P (referred to as the EUT in this report) The EUT is an short range, lower power, RFID T&A System designed as an Input Device.
A major technical descriptions of EUT is described as following:

- A). Operation Frequency: 125KHz one channel.
- B). Power Supply: DC 5V/2A with AC/DC Adaptor

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: WJP-U600P filing to comply with Section 15.209 of the FCC Part 15, Subpart C Rules. The composite system (receiver) is compliance with Subpart B is authorized under a DoC procedure.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 Test Facility

Site Description	
EMC Lab.	: Accredited by CNAS, 2005.11.02 The certificate is valid until 2010.11 The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006(identical to ISO/IEC17025:2005) The Certificate Registration Number is L2291
	Accredited by TUV Rheinland Shenzhen 2008.3 The Laboratory has been assessed according to the requirements ISO/IEC 17025
	Accredited by FCC, March 18, 2008 The Certificate Registration Number is 709623.
	Accredited by Industry Canada, August 30, 2005 The Certificate Registration Number is 46405-4480
Name of Firm	: SHENZHEN EMTEK Co., Ltd.
Site Location	: Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the **frequency range between 0.15 MHz and 30MHz** using **CISPR Quasi-Peak and average detector mode**.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

2.4 Limitation

(1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency range MHz	Limits dB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note

- 1.The lower limit shall apply at the transition frequencies
- 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

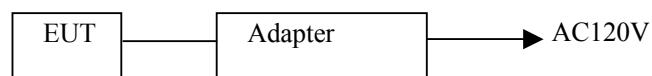
(2) Radiated Emission

Frequency (MHz)	Field strength μV/m	Distance (m)
0.009-0.490	2400/F(KHz)	300
0.490-1.705	24000/F(KHz)	30
1.705-30	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

** Except as provided in paragraph(g), Fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., Sections 15.231 and 15.241.

2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System



3. Summary Of Test Results

FCC Rules	Description Of Test	Result
§ 15.207	Conducted Emission	Compliant
§ 15.205	Restricted bands	Compliant
§ 15.209	Radiated Emission	Compliant

4. Description of test modes

The EUT (RFID T&A System) has been tested under normal operating condition.

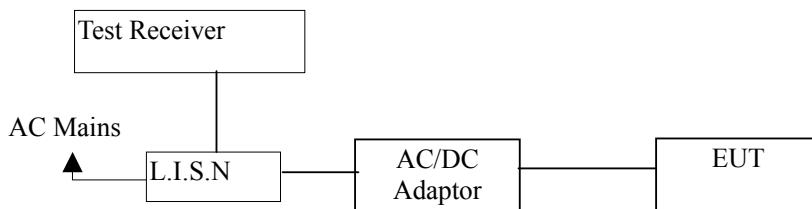
The EUT stay in continuous transmitting mode. The Frequency 125KHz are chosen for testing.

5. Conducted Emissions Test

5.1 Measurement Procedure:

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)



5.3 Measurement Equipment Used:

Conducted Emission Test Site # 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/29/2008	05/29/2009
L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	05/29/2008	05/29/2009
L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	05/29/2008	05/29/2009
50ΩCoaxial Switch	Anritsu	MP59B	M20531	05/29/2008	05/29/2009

**5.4 Measurement Result:
PASS**

Date of Test:	July 18, 2008	Temperature:	22
Frequency Detector:	0.15~30MHz	Humidity:	50%
Test Result:	PASS	Test Mode:	On

Test Line	Frequency MHz	Emission Level QP dB(μV)	Emission Level AV dB(μV)	Limits QP dB(μV)	Limits AV dB(μV)	Margin QP dB(μV)	Margin AV dB(μV)
Neutral	0.150	39.50	27.50	66.00	56.00	-26.50	-28.50
	0.195	27.50	24.10	63.82	53.82	-36.32	-29.72
	0.345	32.00	17.20	59.08	49.08	-27.08	-31.88
	0.982	35.61	21.50	56.00	46.00	-20.39	-24.50
	1.523	34.61	23.60	56.00	46.00	-21.39	-22.40
	5.635	35.61	24.69	60.00	50.00	-24.39	-25.31
Line	0.152	43.00	31.50	65.87	55.87	-22.87	-24.37
	0.250	33.30	22.90	61.76	51.76	-28.46	-28.86
	0.335	37.90	27.60	59.33	49.33	-21.43	-21.73
	0.952	33.63	30.25	56.00	46.00	-22.37	-15.75
	1.560	35.62	25.96	56.00	46.00	-20.38	-20.04
	5.621	36.24	36.95	60.00	50.00	-23.76	-13.05

5.5 Conducted Measurement Photos:



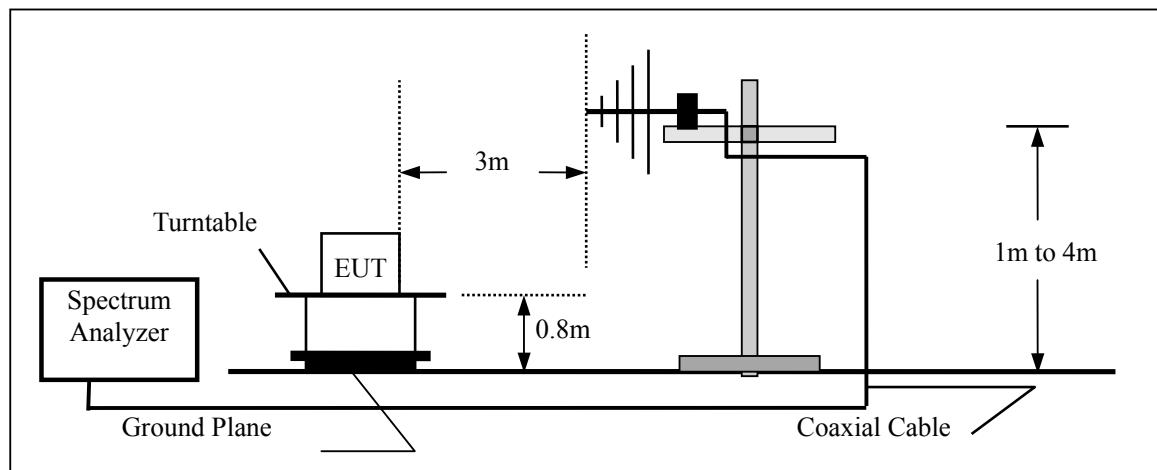
6. Radiated Emission Test

6.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving loop antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

6.2 Test SET-UP (Block Diagram of Configuration)

Radiated Emission Test Set-Up



6.3 Measurement Equipment Used:

Open Area Test Site # 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	FSEM30	849720/019	05/29/2008	05/29/2009
Amplifier	HP	8449B	3008A00277	05/29/2008	05/29/2009
Loop Antenna	HFRAE 5162	ROHDE&SCHWARZ	9507	05/29/2008	05/29/2009
Horn Antenna	Sunol Sciences	DRH-118	A052604	05/29/2008	05/29/2009
EMI Test Receiver	Rohde & Schwarz	ESCI	100028	05/29/2008	05/29/2009
Amplifier	HP	HP8447E	1937A01046	05/29/2008	05/29/2009
Broadband Antenna	Sunol Sciences	JB1	A040904-2	05/29/2008	05/29/2009

6.4 Measurement Result

A. Fundamental Radiated Emission Data

Operation Mode:	Transmitting Mode	Test Date :	July 14, 2008
Test Item:	Below 30MHz	Temperature :	24
Fundamental Frequency:	125KHz	Humidity :	52 %
Test Result:	PASS	Test By:	Andy

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
0.126	H	85.62	105.8	-20.18	Average
0.251	H	76.25	99.6	-23.35	Average
0.126	V	83.63	105.8	-22.17	Average
0.252	V	73.61	99.6	-25.99	Average

Note:

Other harmonics emissions are lower than 20dB below the allowable limit.

- (1) The 300m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows:
$$3m \text{ Limit(dBuV/m)} = 20\log(2400/F(KHZ)) + 40\log(300/3) = 20\log(2400/125) + 40\log(300/3) = 25.67 + 80$$
- (2) Emission Level= Reading Level+Probe Factor +Cable Loss

B. General Radiated Emission Data

Operation Mode: Transmitting Mode
Test Item: 30M~1000MHz
Fundamental Frequency: 125KHz
Test Result: PASS

Test Date : July 14, 2008
Temperature : 24
Humidity : 52%
Test By: Andy

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
61.51	V	26.62	40.00	-13.38	QP
92.61	V	32.50	43.50	-11.00	QP
186.67	V	28.63	43.50	-14.87	QP
447.25	V	38.20	46.00	-7.80	QP
567.68	V	36.90	46.00	-9.10	QP
782.72	V	40.24	46.00	-5.76	QP
59.62	H	25.36	40.00	-14.64	QP
107.60	H	26.73	43.50	-16.77	QP
340.51	H	33.58	46.00	-12.42	QP
563.69	H	36.46	46.00	-9.54	QP
789.94	H	35.61	46.00	-10.39	QP
856.95	H	38.62	46.00	-7.38	QP

Note: Emission Level= Reading Level+ Probe Factor +Cable Loss

APPENDIX 1

PHOTOGRAPHS OF SET UP

Radiated Emission Setup Photos

