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MAXIMUM PERMISSIBLE EXPOSURE ASSESSMENT REPORT

On Model Name: UHF Long Range Reader

Model Numbers: BU-900R-K

Brand Name: BlueCard

FCC ID Number: SMABLUECARD900

Prepared for Bluecard Software Technology Co., Ltd

Test Report #: BEI-1211-10910-FCC MPE

Tested by: Senenano ECMG
Engineer Company Name

Reviewed by: Janemym ECMG
Senior Engineer Company Name

QC Manager: Swall Zhang ECMG
QC Manager Company Name

Test Report Released by: Swall Zhang April 19th, 2013
Swall Zhang Date

Test Location

Tests performed in a Certified ANSI Semi-Anechoic Chamber and Shielded Room.

Test Site Location : Galanz

*25 South Ronggui Rd., Shunde,
Foshan, Guangdong, China*

Tel : (86)-757-23612785

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Test Facility

The test facility was recognized, certified, or accredited by the following organizations:

- **CNAL – LAB Code: L2244**

Galanz EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **FCC – Registration No.: 580210**

Galanz EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC was maintained in our files.

List of Test and Measurement Instruments

Equipment	Manufacturer	Model No.	Serial No.	Calibrated Untill
<i>Spectrum Analyzer</i>	<i>R&S</i>	<i>FSP30</i>	<i>100755</i>	<i>2013-11-30</i>
<i>EMI Receiver</i>	<i>SCHAFFNER</i>	<i>SMR4503</i>	<i>11725</i>	<i>2013-11-30</i>
<i>LISN</i>	<i>ETS</i>	<i>4825/2</i>	<i>1161</i>	<i>2013-11-30</i>
<i>Coaxial Cable</i>	<i>ATC</i>	<i>N/A</i>	<i>N/A</i>	<i>2013-11-30</i>
<i>Double-ridged Wave guide horn</i>	<i>ETS</i>	<i>3115</i>	<i>6587</i>	<i>2013-11-30</i>
<i>3116C Double-Ridged Waveguide Horn</i>	<i>ETS-Lindgren</i>	<i>3116C</i>	<i>6587/01</i>	<i>2013-11-30</i>
<i>Amplifier</i>	<i>Agilent</i>	<i>83017A</i>	<i>MY39500438</i>	<i>2013-11-30</i>
<i>Band filter</i>	<i>ASI</i>	<i>82346</i>	<i>S06389</i>	<i>2013-11-30</i>
<i>Biconilog Antenna</i>	<i>ETS</i>	<i>3142C</i>	<i>00042672</i>	<i>2013-11-30</i>
<i>Semi-anechoic Chamber</i>	<i>ETS</i>	<i>N/A</i>	<i>N/A</i>	<i>2013-11-30</i>

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Opinions and Interpretations

This test report relates to the abovementioned equipment under test (EUT). Without the permission of ECMG Electronic Technical Testing Corp (Shenzhen) Test Lab this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. The manufacturer has sole responsibility of continued compliance of the device.

Statement of Measurement Uncertainty

The data and results referenced in the document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation.

Administrative Data

Test Sample : UHF Long Range Reader

Model Name : BU-900R-K

Model Tested : BU-900R-K

Receipt Date : January 21th, 2013

Date Tested : March 10th to March 29th, 2013

Applicant : Bluecard Software Technology Co., Ltd

*Address : D-801 Shangdi Science Building No. 8 Shangdi
West Road Haidian District Beijing, China*

Telephone : (86)-10-58859090

Fax : (86)-10-58859191

Manufacturer : Bluecard Software Technology Co., Ltd

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West Road Haidian District Beijing, China*

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Fax : (86)-10-58859191

EUT Description

Bluecard Software Technology Co., Ltd., model tested BU-900R-K(referred to as the EUT in this report) is an UHF Long Range Reader. Main technical specifications of the EUT are as follows:

Parameter		Range
Rating(s)	Rated voltage	DC 9-12V
	Rated Current	≤ 5A
Specification of Wireless & Antenna	Operating band	902-928MHz
	Modulation Type	ASK
	Wireless power	Max. 30dBm at the end of cable
	Frequency of Number	50 channels with 500 kHz channel spacing
	Antenna gain	8dBi
	Polarization	Horizontal
	Antenna type	1 integrated, Linear Horizontal Polarization
	VSWR	<1.5
	Input impedance	50 (Ω)
	Antenna Beamwidth	≤ 90°
Communications Interface	Ethernet/RS485/ Wiegand (26/34)	
Power Jack	12V DC Power connector	
Power adapter information	Input :100-240VAC,50/60Hz	
	Output: 12VDC,3.8A	
	Model: GFP451DA-1238-1	
	Brand name: GME	

NOTE: For more detailed informations or features please refer to user's manual of EUT.

ATTACHMENT 1 – RF EXPOSURE COMPLIANCE REQUIREMENT

Applicable Standard:

According to FCC Part 15, Section 15.247(i):

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

The test methods used comply with ANSI/IEEE C95.1, "IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz".

This test report shows the compliance with the limits for Maximum Permissible Exposure (MPE) specified in FCC Part 1, Section 1.1310 and the criteria to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in FCC Part 1, Section 1.1307(b).

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

Limits for General Population/Uncontrolled Exposure

a) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Times / E / 2 , / H / 2 or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100000			5	6

(b) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm²)	Averaging Times / E / 2 , / H / 2 or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100000			1.0	30

*Note: f=frequency in MHz; *Plane-wave equivalent power density.*

MPE Calculation Method:

$$E \text{ (V/m)} = (30 * P * G)^{0.5} / d \quad \text{Power Density: } S \text{ (mW/m}^2\text{)} = E^2 / 3770$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$S = (30 * P * G) / (3770 * d^2)$$

From the peak EUT RF output power, the minimum mobile separation distance d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

Note :The maximal conducted peak output power is 23.84dBm (0.242Watts) in the lowest channel(902.75MHz).

Test Result:

<i>Channel (MHz)</i>	<i>Antenna Gain (Numeric)</i>	<i>Peak Output Power (dBm)</i>	<i>Peak Output Power (W)</i>	<i>Power Density (S) (mW/cm2)</i>	<i>Limit of Power Density (S) (mW/cm2)</i>	<i>Test Result</i>
<i>Lowest</i>	6.3	23.84	0.242	0.303	0.6013	<i>Compliant</i>

The unit does meet the requirement.