



## **RF Exposure Evaluation Report**

**APPLICANT** : Silicon Controls Pty. Ltd.  
**EQUIPMENT** : GASLOG Cellular Dialer  
**BRAND NAME** : GASLOG  
**MODEL NAME** : SC414C7714  
**MARKETING NAME** : GASLOG Cellular Dialer  
**FCC ID** : XV2SC414002  
**FILING TYPE** : Certification  
**STANDARD** : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

### **SPORTON INTERNATIONAL (SHENZHEN) INC.**

**No. 101, Complex Building C, Guanlong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P.R.C.**



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**Revision History**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA372503	Rev. 01	Initial issue of report	Aug. 22, 2013

## **1. Administration Data**

### **1.1. Testing Laboratory**

<b>Test Site</b>	SPORTON INTERNATIONAL (SHENZHEN) INC.
<b>Test Site Location</b>	No. 101, Complex Building C, Guanlong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755-8637-9589 FAX: +86-755-8637-9595

### **1.2. Applicant**

<b>Company Name</b>	Silicon Controls Pty. Ltd.
<b>Address</b>	Suite 2, Level 1; 12 Waterloo Road; Macquarie Park NSW 2113 Australia

### **1.3. Manufacturer**

<b>Company Name</b>	Silicon Controls Pty. Ltd.
<b>Address</b>	Suite 2, Level 1; 12 Waterloo Road; Macquarie Park NSW 2113 Australia

## 2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	GASLOG Cellular Dialer
Brand Name	GASLOG
Model Name	SC414C7714
Marketing Name	GASLOG Cellular Dialer
FCC ID	XV2SC414002
Wireless Technology and Frequency Range	CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz
Mode	• CDMA2000 : 1xRTT
Antenna Type	PCB Antenna
HW Version	101592 rev 1
SW Version	Module CE-910; F/W version 18.11.001 Application F/W: CDMA Compliance Test Suite build 174
EUT Stage	Identical Prototype

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

### **3. Maximum RF average output power among production units**

Maximum Target Burst Average Power for Production Unit (dBm)		
Mode / Band	CDMA2000 BC0	CDMA2000 BC1
1xRTT RC1 SO55	26	26
1xRTT RC3 SO55	26	26
1xRTT RC3 SO32(+ F-SCH)	26	26
1xRTT RC3 SO32(+SCH)	26	26

### **4. Conducted RF Output Power (Unit: dBm)**

Band	CDMA2000 BC0			CDMA2000 BC1		
Channel	1013	384	777	25	600	1175
Frequency (MHz)	824.70	836.52	848.31	1851.25	1880.00	1908.75
1xRTT RC1+SO55	25.13	24.76	24.65	25.09	24.92	24.45
1xRTT RC3+SO55	25.30	25.05	24.91	25.12	25.03	24.45
1xRTT RC3+SO32 (+ F-SCH)	25.28	24.92	24.83	25.10	24.96	24.55
1xRTT RC3 SO32(+SCH)	25.31	24.97	24.88	25.04	24.97	24.54

## 5. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

## **6. Radio Frequency Radiation Exposure Evaluation**

### **WWAN Operating frequency $\leq$ 1.5GHz**

Mode	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum Conducted Power (dBm)	Source Base-Time Average Power (mW)	ERP (mW)	Calculated RF Exposure (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
CDMA2000 BC0	824.70	-0.50	0.89	26.00	398.11	216.27	0.07	0.55

### **WWAN Operating frequency $>$ 1.5GHz**

Mode	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum Conducted Power (dBm)	Source Base-Time Average Power (mW)	EIRP (mW)	Calculated RF Exposure (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
CDMA2000 BC1	1851.25	-2.50	0.56	26.00	398.11	223.87	0.04	1.00

**Note:** According to "Maximum RF average output power among production units" to evaluate radiation exposure.

### **Conclusion:**

Per 47 CFR §2.1091, EUT source-based time-averaged ERP  $<$  1.5W for RF operating frequency  $\leq$  1.5GHz, EUT source-based time-averaged EIRP  $<$  3W for RF operating frequency  $>$  1.5GHz, routine evaluation of MPE is not required; MPE calculation is sufficient to show compliance. The MPE calculation results indicate that the EUT complies with the RF exposure limit of ANSI/IEEE C95.1-1992.