

Report No.: SZ13050128S02



RF EXPOSURE EVALUATION REPORT

Issued to

Launch Tech Co., Ltd.

For

RCU

Model Name : RCU-G
 Trade Name : LAUNCH
 Brand Name : LAUNCH
 FCC ID : XUJRCUG
 Standard : FCC Oet65 Supplement C Jun.2001
 47CFR 2.1091
 KDB447498 D01 General RF
 Exposure Guidance v05
 Test date : 2013-6-20 to 2013-6-28
 Issue date : 2013-7-9

By
Shenzhen MORLAB Communication Technology Co., Ltd.

Tested by

Peng Huarui
 Peng Huarui
 (Test Engineer)

Date

2013.07.09

Approved by



Date

Review by

Nie Quan
 Nie Quan
 (Project Manager)

Date

2013.7.9



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Change History		
Issue	Date	Reason for change
1.0	Jul 9, 2013	First edition

1. Testing Laboratory

1.1. Identification of the Responsible Testing Laboratory

Company Name: Shenzhen Morlab Communications Technology Co., Ltd.
Department: Morlab Laboratory
Address: FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China 518101
Responsible Test Lab Manager: Mr. Su Feng
Telephone: +86 755 36698525
Facsimile: +86 755 36698525

1.2. Identification of the Responsible Testing Location

Name: Shenzhen Morlab Communications Technology Co., Ltd.
Morlab Laboratory
Address: FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China 518101
FCC Registration Number: 695796

1.3. Accreditation Certificate

Accredited Testing Laboratory: No. CNAS L3572

2. Technical Information

Note: the following data is based on the information by the applicant.

2.1. Identification of Applicant

Company Name: Launch Tech Co., Ltd.
Address: Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang, Shenzhen, China

2.2. Identification of Manufacturer

Company Name: Launch Tech Co., Ltd.
Address: Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang, Shenzhen, China

2.3. Equipment Under Test (EUT)

Model Name: RCU-G
Trade Name: LAUNCH
Brand Name: LAUNCH
Hardware Version: V1.00.003
Software Version: V1.00.001
Frequency Bands: GPRS 850MHz / 1900MHz;
Modulation Mode: GPRS: GMSK;
Multislot Class: GPRS: Class 10, EDGE: N/A
3GPP version: N/A
Antenna type: PIFA Antenna

2.3.1. Photographs of the EUT

Please see for photographs of the EUT External and Internal Photos

2.3.2. Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
1#	V1.00.003	V1.00.001

2.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	47 CFR§2.1091	Radiofrequency Radiation Exposure Evaluation: Mobilee Devices
2	FCC OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01)	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields
3	KDB 447498 D01	General RF Exposure Guidance v05

2.5. Test Environment and Conditions

Normal Temperature (NT):	20 ... 25 °C
Relative Humidity:	30 ... 75 %
Air Pressure:	980 ... 1020 hPa
Test frequency:	GSM 850MHz ; PCS 1900MHz
Operation mode:	Call established
Power Level:	GPRS 850 MHz Maximum output power(level 5) PCS 1900 MHz Maximum output power(level 0)

During power measurement test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition.

The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 125, 190 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of PCS 1900 MHz , The EUT is commanded to operate at maximum transmitting power.

3. Device Category and RF Exposure Limit

Refer user manual this device is a GSM wireless data module, Based on the FCC OET Bulletin 65 Supplement C and 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure. The definition of the category as following:

Mobile Derives:

CFR Title 47 § 2.1091(b)

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

General Population/Uncontrolled exposure

FCC OET Bulletin 65 (Edition 97-01), Supplement C, Section 1;

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

RF Exposure Limits For Maximum permissible Exposure (MPE)

(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/cm ²)	Averaging Time 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 ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

Note: f = frequency in MHz

* = Plane-wave equivalent power density

4. Measurement Of Conducted Output Power

1.GPRS Mode Conducted peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	28.75	27.32	27.08	N/A
	190	836.6	28.59	27.28	27.06	N/A
	251	848.8	28.17	27.36	27.30	N/A
PCS 1900	512	1850.2	30.44	28.56	27.32	N/A
	661	1880.0	30.59	28.21	27.29	N/A
	810	1909.8	29.54	27.92	27.41	N/A

Timeslot consignations:

No. Of Slots	Slot 1	Slot 2	Slot 3	Slot 4
Slot Consignation	1Up4Down	2Up2Down	3Up2Down	4Up1Down
Duty Cycle	1:8	1:4	1:2.67	1:2
Correct Factor	-9.00dB	-6.02dB	-4.26dB	-3.01dB

5. RF Exposure Evaluation

Assumed use distance from EUT to Human, **20 cm** separation distance warning is required. In this section, the power density at 20 cm location is calculated to examine if it is lower than the limit.

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

Where:

S = power density

P = output power (W)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

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

And the calculation result as following:

Band (MHz)	Frequency (MHz)	Antenna Gain		Conducted Average Power(dBm)	Conducted Average Power(mW)	Time-averagin g EIRP(mW)	Calculated to ERP(mW)	Calculated P.D (mW/cm2)	Limit (mW/cm2)
		(dBi)	(Numeric)						
GPRS 850	824.2	0	1	24.48	280.543	280.543	171.002	0.06	0.549
Band	Frequenc y (MHz)	Antenna Gain		Conducted Average Power(dBm)	Conducted Average Power(mW)	Time-averaging EIRP(mW)	Calculated to ERP(mW)	Calculated P.D (mW/cm2)	Limit (mW/cm2)
		(dBi)	(Numeric)						
GPRS 1900	1880.0	0	1	26.32	428.549	428.549	216.216	0.09	1.000

Note: 1. per KDB412172 D01 the relationship between ERP and EIRP as following:

$$ERP = EIRP - 2.15 \text{ dB}$$

Note: 2. Correct Factor = $10 \cdot \log(\text{Duty Cycle})$

Note: 3. Average Power = Peak Power + Correct Factor

Note: 4. The AV value of Slot 1 is really the worst case of output power on EGPRS mode

Result:

Per CFR Title 47 § 2.1091(c); Mobile devices that operate in the Cellular Radiotelephone Service, the Personal Communications Services, the Satellite Communications Services, the General Wireless Communications Service, the Wireless Communications Service, the Maritime Services and the

Specialized Mobile Radio Service authorized under subpart H of part 22 of this chapter, parts 24, 25, 26 and 27 of this chapter, part 80 of this chapter (ship earth stations devices only) and part 90 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if they operate at frequencies of 1.5 GHz or below and their effective radiated power(ERP) is 1.5 watts or more, or if they operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.

EUT source-based time averaged ERP $<1.5\text{W}$ for RF operating frequency $\leq 1.5\text{GHz}$, and EUT source-based time averaged ERP $< 3\text{W}$ for RF operating frequency $>1.5\text{GHz}$, routine evolution of MPE is not required; and the MPE calculation results show that the EUT complies with the FCC RF exposure limit.