REPORT No. : SZ14110133S01A

RF EXPOSURE EVALUATION REPORT

APPLICANT	:	Launch Tech Co., Ltd.
PRODUCT NAME	:	Automotive Diagnosis Terminal
MODEL NAME	:	G5001
TRADE NAME	:	LAUNCH、golo
BRAND NAME	:	LAUNCH、golo
FCC ID	:	XUJGOLOG5001
STANDARD(S)	:	47CFR 2.1091 KDB 447498 D01 General RF Exposure Guidance v05r02
ISSUE DATE	:	2015-07-08

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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DIRECTORY

Change History		
Issue	Date	Reason for change
1.0	2015-07-08	First edition

TEST REPORT DECLARATION

Applicant	Launch Tech Co., Ltd.
Applicant Address	Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang, Shenzhen, China
Manufacturer	Launch Tech Co., Ltd.
Manufacturer Address	Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang, Shenzhen, China
Product Name	Automotive Diagnosis Terminal
Model Name	G5001
Brand Name	LAUNCH、golo
HW Version	GLO_MAIN_V3_141202
SW Version	V3.54_WC_EN
Test Standards	47CFR 2.1091; KDB 447498 D01 General RF Exposure Guidance v05r02
Issue Date	2015-07-08
SAR Evaluation	Not Required

Tested by : Liu Jun
Liu Jun

Reviewed by : Zhu Zhan
Zhu Zhan

Approved by : Zeng Dexin
Zeng Dexin

1. TECHNICAL INFORMATION

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

1.1. Identification of Applicant

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

1.2. Identification of Manufacturer

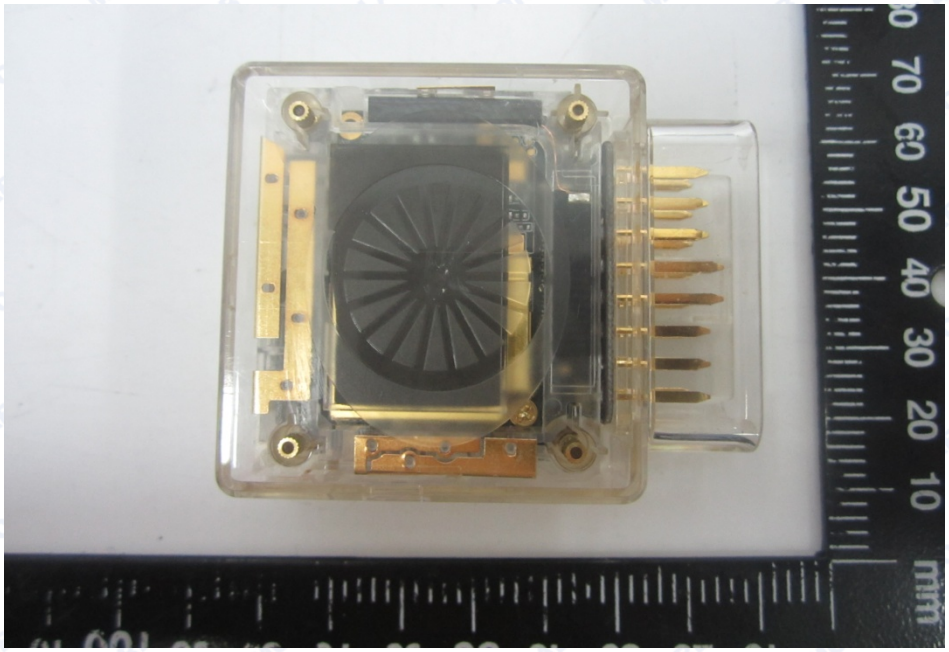
Company Name:	Launch Tech Co., Ltd.
Address:	Launch Industrial Park, North of Wuhe Rd., Banxuegang, Longgang, Shenzhen, China

1.3. Equipment Under Test (EUT)

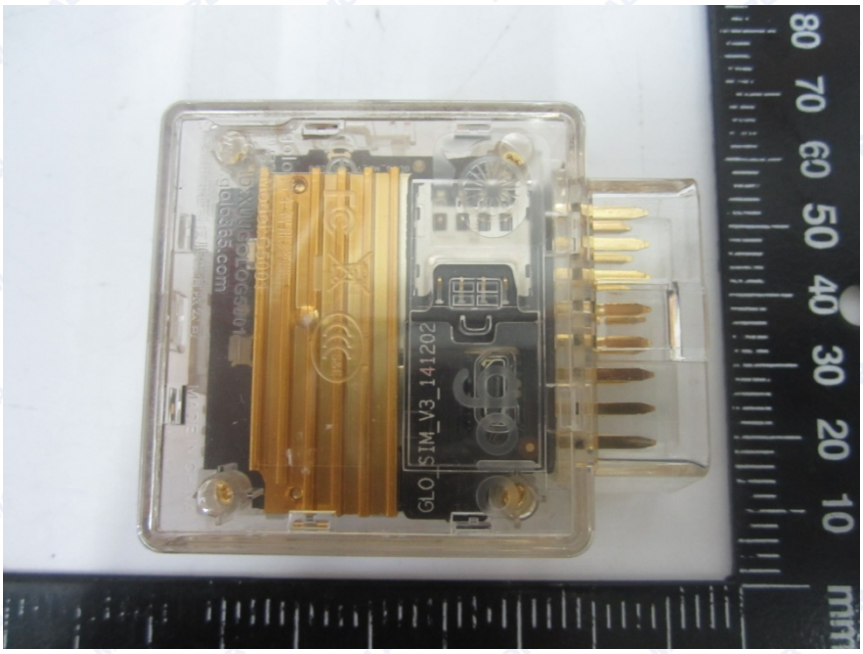
Model Name:	G5001
Trade Name:	LAUNCH、golo
Brand Name:	LAUNCH、golo
Hardware Version:	GLO_MAIN_V3_141202
Software Version:	V3.54_WC_EN
Tx Frequency Bands:	GSM 850: 824-849 MHz; GSM 1900: 1850-1910 MHz; WCDMA Band II : 1850-1910MHz; WCDMA Band V: 824-849 MHz; CDMA BC 0: 824-849MHz; CDMA BC 1:1850-1910MHz; 802.11 b/g/n20/n40: 2412-2462 MHz; Bluetooth; Bluetooth4.0;
Uplink Modulations:	GPRS: GSMK; EDGE: 8PSK; WCDMA/HSDPA/HSUPA/HSPA+:QPSK; CDMA:CDMA; WIFI 802.11b: DSSS; WIFI 802.11g: OFDM; WIFI 802.11n20/n40:OFDM; Bluetooth: GFSK/π/4-DQPSK/8-DPSK; Bluetooth4.0: GFSK
Antenna type:	Fixed Internal Antenna
Development Stage:	Identical prototype

1.3.1. Photographs of the EUT

1. EUT front view



2. EUT rear view



1.3.2. 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#	GLO_MAIN_V3_141202	V3.54_WC_EN

1.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	**47 CFR§2.1091**	Radiofrequency Radiation Exposure Evaluation: mobile devices
2	**KDB 447498 D01v05r02**	General RF Exposure Guidance

2. DEVICE CATEGORY AND RF EXPOSURE LIMIT

Per user manual, this device is a Quick Start Guide. Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47CFR 2.1091(b)

For purposes of this section, 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

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.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(B) Limits for General Population/Uncontrolled Exposure				
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

f = frequency in MHz * = Plane-wave equivalent power density

3. MEASUREMENT OF CONDUCTED PEAK OUTPUT POWER

1. WCDMA mode conducted output power values

Item	band	WCDMA 850			WCDMA 1900		
	ARFCN	4132	4175	4233	9262	9400	9538
	subtest	dBm			dBm		
5.2(WCDMA)	non	24.43	24.62	24.05	23.58	22.88	22.48
HSDPA	1	24.08	24.37	23.87	22.82	22.87	23.01
	2	24.07	24.35	23.85	22.80	22.85	23.00
	3	23.56	23.84	23.36	22.30	22.34	22.54
	4	23.55	23.85	23.35	22.31	22.35	22.53
HSUPA	1	24.35	24.49	24.08	23.16	22.87	22.09
	2	22.33	22.48	22.04	21.15	20.84	20.10
	3	23.34	23.47	23.05	22.15	21.85	21.08
	4	22.35	22.46	22.05	21.16	20.85	20.08
	5	24.34	24.42	24.07	23.15	22.85	22.05
HSPA+	1	24.42	24.58	24.01	22.43	23.46	23.16
Note:	The Conducted RF Output Power test of WCDMA /HSDPA /HSUPA/HSPA+ was tested by power meter.						

2. CDMA 1xRTT power

Band	Channel	Frequency (MHz)	Output Power(dBm)
BC 0	1013	824.7	24.13
	384	836.52	24.19
	777	848.31	23.67
BC 1	25	1851.25	23.85
	600	1880.0	23.34
	1175	1908.75	23.74

3. CDMA EVDO power

Band	Channel	Frequency (MHz)	Output Power(dBm)
BC 0	1013	824.7	23.10
	384	836.52	23.20
	777	848.31	22.70
BC 1	25	1851.25	22.82
	600	1880.0	22.24
	1175	1908.75	20.74

4. 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	33.77	32.53	31.51	30.42
	190	836.6	33.87	32.63	31.61	30.52
	251	848.8	33.91	32.67	31.65	30.56
PCS 1900	512	1850.2	30.04	28.80	27.78	26.69
	661	1880.0	29.87	28.63	27.61	26.52
	810	1909.8	30.21	28.97	27.95	26.86

GPRS Time-based Average Power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	24.74	26.51	27.25	27.41
	190	836.6	24.84	26.61	27.35	27.51
	251	848.8	24.88	26.65	27.39	27.55
PCS 1900	512	1850.2	21.01	22.78	23.52	23.68
	661	1880.0	20.84	22.61	23.35	23.51
	810	1909.8	21.18	22.95	23.69	23.85

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	-9.03dB	-6.02dB	-4.26dB	-3.01dB

5. EDGE 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	33.70	32.46	31.36	30.27
	190	836.6	33.86	32.62	31.52	30.43
	251	848.8	33.91	32.67	31.57	30.48
PCS 1900	512	1850.2	29.89	28.65	27.55	26.46
	661	1880.0	29.97	28.73	27.63	26.54
	810	1909.8	30.40	29.16	28.06	26.97

EDGE Time-based Average Power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	24.67	26.44	27.10	27.26
	190	836.6	24.83	26.60	27.26	27.42
	251	848.8	24.88	26.65	27.31	27.47
PCS 1900	512	1850.2	20.86	22.63	23.29	23.45
	661	1880.0	20.94	22.71	23.37	23.53
	810	1909.8	21.37	23.14	23.80	23.96

6. WiFi Average output power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			802.11b (DSSS)	802.11g (OFDM)	802.11n20 (OFDM)
WiFi	1	2412	13.96	10.73	10.75
	6	2437	14.92	11.75	11.69
	11	2462	14.95	11.80	11.71

Band	Channel	Frequency (MHz)	Output Power(dBm)
			802.11n40 (OFDM)
Wifi	3	2422	10.23
	6	2437	10.99
	9	2452	10.97

7. BT+EDR 2.1 peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			GFSK	π/4-DQPSK	8-DPSK
BT	0	2402	4.93	4.46	4.61
	39	2441	5.25	4.83	4.91
	78	2480	5.74	5.28	5.43

Band	Channel	Frequency (MHz)	Output Power(dBm)
			GFSK
BT	0	2402	1.92
	19	2441	1.61
	39	2480	1.16

4. RF EXPOSURE EVALUATION

Standalone transmission MPE evaluation

Bands	Frequency (MHz)	Antenna Gain (dBi)	Conducted Average Power (dBm)	Time-averaging EIRP (mW)	Power density (mW/cm²)	Limit for MPE (mW/cm²)
GPRS850	848.8	0	30.56	1137.62	0.23	0.57
WCDMA850	836.0		24.62	286.73	0.06	0.56
BC0	836.5		24.19	262.42	0.05	0.56
GPRS1900	1909.8		26.86	485.29	0.10	1.0
WCDMA1900	1880.0		23.58	228.03	0.05	
BC1	1880.0		23.85	242.66	0.05	
802.11b	2462.0	-1	14.95	31.26	0.006	
Bluetooth	2480.0		5.74	3.75	0.0007	

Note:

1. MPE calculation method

$$\text{Power Density} = EIRP/4\pi R^2$$

Where: EIRP = P·G

P = Peak out power

G = Antenna gain

R = Separation distance (20cm)

ANNEX C GENERAL INFORMATION

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
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
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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

***** END OF REPORT *****