RF EXPOSURE REPORT

Product:	Telematics Box
Model Name:	LEC014
FCC ID:	2APY7LEC014
Applicant:	Guangxi Liugong Machinery Co., Ltd.
Address:	No.1 Liutai Road, Liuzhou, Guangxi P.R.China
Manufacturer:	Guangxi Liugong Machinery Co., Ltd.
Address:	No.1 Liutai Road, Liuzhou, Guangxi P.R.China
Prepared by:	BV 7Layers Communications Technology (Shenzhen) Co. Ltd
Lab Location:	No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China
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Report No.:	SA180611W007
Received Date:	Jun. 11, 2018
Test Date:	Jun. 18, 2018 ~ Jul. 16, 2018
Issued Date:	Jul. 17, 2018

This report should not be used by the client to claim product certification, approval, or endorsement by A2LA or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA180611W007	Original release	Jul. 17, 2018

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1 CERTIFICATION

PRODUCT:	Telematics Box
BRAND NAME:	LiuGong
MODEL NAME:	LEC014
APPLICANT:	Guangxi Liugong Machinery Co., Ltd.
TESTED:	Jun. 18, 2018 ~ Jul. 16, 2018
TEST SAMPLE:	Production Unit
STANDARDS:	**FCC Part 2 (Section 2.1091)** **FCC OET Bulletin 65, Supplement C (01-01)** **KDB 447498 D01 General RF Exposure Guidance v06** IEEE C95.1

The above equipment has been tested by **BV 7Layers Communications Technology (Shenzhen) Co. Ltd** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** Jul. 17, 2018
(Roger Li / Engineer)

APPROVED BY : _____ , **DATE:** Jul. 17, 2018
(Sam Tung / Manager)

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Telematics Box	
MODEL NAME	LEC014	
NOMINAL VOLTAGE	DC 24V	
OPERATING TEMPERATURE RANGE	-30 ~ 65℃	
MODULATION TYPE	**GPS/BDS**	C/A code
	GSM	GMSK, 8PSK
	WCDMA	BPSK/QPSK
OPERATING FREQUENCY	**GPS**	1575.42MHz
	BDS	1561.098MHz
	GSM	824.2MHz ~ 848.8MHz (FOR GSM 850) 1850.2MHz ~ 1909.8MHz (FORGSM 1900)
	WCDMA	1852.4MHz ~ 1907.6MHz (FOR WCDMA Band 2) 826.4MHz ~ 846.6MHz (FOR WCDMA Band 5)
ANTENNA GAIN	**GSM850**	Fixed Internal antenna with 1.2dBi gain
	GSM1900	Fixed Internal antenna with 3.57dBi gain
	WCDMA 850	Fixed Internal antenna with 1.2dBi gain
	WCDMA 1900	Fixed Internal antenna with 3.57dBi gain
HW VERSION	V103	
SW VERSION	V1.0.0	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	N/A	

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. There were Sample A & B for this project, the only difference is the Port, and Sample A was tested in this report:

SAMPLE	EUT CONFIGURATION INFORMATION
A	Port (16 Ping)
B	Port (12 Ping)

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3 RF EXPOSURE

3.1 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm^2)	AVERAGE TIME (minutes)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

3.2 MPE CALCULATION FORMULA

Pd = (Pout*G) / (4*pi*r2)

where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

3.3 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

3.4 CONDUCTED POWER

Band	GSM850		
Channel	128	189	251
Frequency (MHz)	824.2	836.4	848.8
GPRS 8	31.95	**31.97**	31.78
GPRS 10	30.82	30.84	30.65
GPRS 11	29.19	29.21	29.02
GPRS 12	27.70	27.72	27.53
EDGE 8 (MCS9)	25.33	25.35	25.16
EDGE 10 (MCS9)	25.23	25.25	25.06
EDGE 11 (MCS9)	24.80	24.82	24.63
EDGE 12 (MCS9)	24.76	24.78	24.59

Band	GSM1900		
Channel	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8
GPRS 8	**28.16**	27.83	27.74
GPRS 10	28.08	27.75	27.66
GPRS 11	27.98	27.65	27.56
GPRS 12	27.88	27.55	27.46
EDGE 8 (MCS9)	24.57	24.24	24.15
EDGE 10 (MCS9)	24.54	24.21	24.12
EDGE 11 (MCS9)	24.17	23.84	23.75
EDGE 12 (MCS9)	23.98	23.65	23.56

Band	WCDMA II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
RMC 12.2K	21.87	**22.58**	21.82
HSPA			
HSDPA Subtest-1	20.82	21.48	20.75
HSDPA Subtest-2	20.69	21.35	20.62
HSDPA Subtest-3	20.25	20.89	20.18
HSDPA Subtest-4	20.20	20.84	20.12
HSUPA Subtest-1	20.76	21.42	20.69
HSUPA Subtest-2	18.70	19.27	18.59
HSUPA Subtest-3	19.78	20.40	19.69
HSUPA Subtest-4	18.74	19.31	18.64
HSUPA Subtest-5	20.74	21.40	20.67

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	**23.41**	22.43	22.81
HSPA			
HSDPA Subtest-1	22.34	21.41	21.75
HSDPA Subtest-2	22.20	21.28	21.62
HSDPA Subtest-3	21.76	20.85	21.19
HSDPA Subtest-4	21.71	20.80	21.14
HSUPA Subtest-1	22.27	21.35	21.69
HSUPA Subtest-2	20.17	19.34	19.62
HSUPA Subtest-3	21.27	20.39	20.71
HSUPA Subtest-4	20.21	19.38	19.66
HSUPA Subtest-5	22.25	21.33	21.67

3.5 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

TUNE-UP POWER TABLE

Band	Frequency (MHz)	Operating Mode	Tune-Up Power And Tolerance (dBm)
GSM850	836.4	GPRS8	31.5± 1.0
GSM1900	1850.2	GPRS8	27.5± 1.0
WCDMA Band II	1880	RMC12.2K	22.0 ± 1.0
WCDMA Band V	826.4	RMC12.2K	22.5 ± 1.0

GSM

Band	Frequency (MHz)	Operating Mode	Antenna Gain (dBi)	Tune-up Power (dBm)	E.I.R.P Power (dBm)	E.I.R.P Power (mW)/8	Power Density (mW/cm^2)	limit (mW/cm^2)	PASS / FAIL
GSM850	836.4	GPRS8	1.2	32.5	33.70	293.029	0.058	0.56	PASS
GSM1900	1850.2	GPRS8	3.57	28.5	32.07	201.331	0.040	1.00	PASS

WCDMA

Band	Frequency (MHz)	Operating Mode	Antenna Gain (dBi)	Tune-up Power (dBm)	E.I.R.P Power (dBm)	E.I.R.P Power (mW)	Power Density (mW/cm^2)	limit (mW/cm^2)	PASS / FAIL
WCDMA II	1880	RMC12.2K	3.57	23.0	26.57	453.942	0.090	1.00	PASS
WCDMA V	826.4	RMC12.2K	1.2	23.5	24.70	295.121	0.059	0.55	PASS

--END--