

RF Exposure Report

Report No.: SA180626C38

FCC ID: 2AAC6-C10

Test Model: AUT-450C

Received Date: Jun. 26, 2018

Date of Evaluation: Aug. 03, 2018

Issued Date: Aug. 06, 2018

Applicant: Automatic Labs, Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
SA180626C38	Original Release	Aug. 06, 2018

1 Certificate of Conformity

Product: OBD2 dongle

Brand: Automatic Labs

Test Model: AUT-450C

Sample Status: Production Unit

Applicant: Automatic Labs, Inc.

Date of Evaluation: Aug. 03, 2018

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, 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.

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Approved by : Dylan Chiou, **Date:** Aug. 06, 2018
Dylan Chiou / Project Engineer

2 RF Exposure

2.1 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				
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

2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

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

2.3 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**.

2.4 Antenna Gain

BT/WLAN: metal antenna with 1.08 dBi gain

LTE Band 2: metal antenna with 3.6 dBi gain

LTE Band 4: metal antenna with 3.25 dBi gain

LTE Band 12: metal antenna with 2.88 dBi gain

2.5 Calculation Result of Maximum Conducted Power

Band	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
LTE 2	1850-1910	24.22	3.6	20	0.120	1.00
LTE 4	1710-1755	24.24	3.25	20	0.112	1.00
LTE 12	699-716	24.45	2.88	20	0.108	0.47
WLAN	2412-2462	16.23	1.08	20	0.011	1.00
BT	2402-2480	5.95	1.08	20	0.001	1.00

Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

$WWAN + WLAN + BT = 0.120 + 0.011 + 0.001 = 0.132$

Therefore the maximum calculations of above situations are less than the “1” limit.

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