

RF Exposure Report

Report No.: SA180718D12-4

FCC ID: PPQ-HUB01

Test Model: HUB01

Received Date: July 18, 2018

Test Date: Sep. 06, 2018

Issued Date: Oct. 24, 2018

Applicant: LITE-ON Technology Corp.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SA180718D12-4	Original release.	Oct. 24, 2018

1 Certificate of Conformity

Product: Norman Hub

Brand:  **NORMAN®**

Test Model: HUB01

Sample Status: ENGINEERING SAMPLE

Applicant: LITE-ON Technology Corp.

Test Date: Sep. 06, 2018

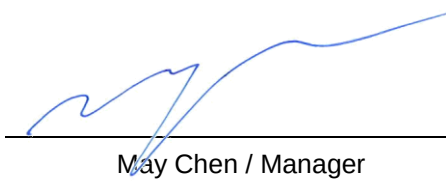
Standards: FCC Part 2 (Section 2.1091)

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.

Prepared by :  , **Date:** Oct. 24, 2018
Claire Kuan / Specialist

Approved by :  , **Date:** Oct. 24, 2018
May Chen / Manager

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

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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

Brand	Model	Antenna Gain (dBi)	Frequency range(GHz)	Antenna Type	Connector Type
Unictron	AA055A	2.5	2.4-2.4835	Chip Antenna	NA

2.5 Calculation Result

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN 2.4GHz	2462	232.809	2.5	20	0.08236	1

Note:

2.4GHz: Directional gain = 2.5dBi

Operation Mode	Evaluation Frequency (MHz)	Field Strength of Fundamental (dBuV/m)	Pout EIRP (dBm)	Pout EIRP (mW)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
GFSK	2459	93.7	-1.53	0.7031	20	0.00014	1

Note: Pout EIRP (dBm) = Field Strength of Fundamental (dBuV/m) - 95.23 (dB)

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

$WLAN\ 2.4GHz + GFSK = 0.08236 / 1 + 0.00014 / 1 = 0.08250$

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

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