

RF Exposure Report

Report No.: SABHAT-WTW-P20121068

FCC ID: R68OQ845US

Test Model: Open-Q 845 uSOM

Received Date: Jan. 22, 2021

Date of Evaluation: Apr. 15, 2021

Issued Date: Apr. 21, 2021

Applicant: Lantronix

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FCC Registration / 788550 / TW0003
Designation Number:



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Release Control Record

Issue No.	Description	Date Issued
SABHAT-WTW-P20121068	Original Release	Apr. 21, 2021

1 Certificate of Conformity

Product: Open-Q 845 uSOM

Brand: Lantronix

Test Model: Open-Q 845 uSOM

Sample Status: Engineering Sample

Applicant: Lantronix

Date of Evaluation: Apr. 15, 2021

Standards: FCC Part 2 (Section 2.1091)

References Test KDB 447498 D01 General RF Exposure Guidance v06

Guidance: IEEE C95.3 -2002

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 RF characteristics under the conditions specified in this report.

Prepared by :



Date:

Apr. 21, 2021

Lena Wang / Specialist

Approved by :



Date:

Apr. 21, 2021

Dylan Chiou / Senior 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				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

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

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 21cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max Average Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN					
CDD Mode					
2412-2462	26.56	6.33	21	0.351	1
5180-5240	16.73	9.12	21	0.069	1
5260-5320	16.75	9.12	21	0.070	1
5500-5720	23.87	9.12	21	0.359	1
5745-5825	26.02	9.12	21	0.589	1
Beamforming Mode					
2412-2462	25.09	6.33	21	0.250	1
5180-5240	13.83	9.12	21	0.036	1
5260-5320	16.75	9.12	21	0.070	1
5500-5720	20.86	9.12	21	0.180	1
5745-5825	26.02	9.12	21	0.589	1
BT EDR					
2402-2480	14.41	3.32	21	0.011	1
BT LE					
2402-2480	11.34	3.32	21	0.005	1

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Note:

1. Directional gain:

2.4GHz Band: $=3.32\text{dBi} + 10\log(2) = 6.33\text{dBi}$

5GHz: Directional Gain = $6.11\text{dBi} + 10\log(2) = 9.12\text{dBi}$

BT antenna gain: 3.32dBi

2. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

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

The simultaneous operation mode was determined by client.

1. WLAN 2.4G+ 5GHz $= 0.351/1 + 0.589/1 = 0.940$
2. WLAN 2.4G+ BT $= 0.351/1 + 0.011/1 = 0.362$
3. WLAN 5G+ BT $= 0.589/1 + 0.011/1 = 0.6$

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

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