RF Exposure Report

Report No.:	SABHAT-WTW-P21030696 R1
FCC ID:	R68OQ660US
Test Model:	Open-Q 660 uSOM
Received Date:	Mar. 18, 2021
Date of Evaluation:	Jul. 29, 2021
Issued Date:	Nov. 08, 2021
Applicant:	Lantronix, Inc.
Address:	7535 Irvine Center Drive, Suite 100, Irvine, CA 92618 USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SABHAT-WTW-P21030696	Original Release	Sep. 10, 2021
SABHAT-WTW-P21030696 R1	Revise Applicant	Nov. 08, 2021

1 Certificate of Conformity

Product:	Open-Q 660 uSOM
Brand:	Lantronix
Test Model:	Open-Q 660 uSOM
Sample Status:	Engineering Sample
Applicant:	Lantronix, Inc.
Date of Evaluation:	Jul. 29, 2021
Standards:	FCC Part 2 (Section 2.1091)
References Test Guidance:	KDB 447498 D01 General RF Exposure Guidance v06

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 : Lena Wang , **Date:** Nov. 08, 2021

Lena Wang / Specialist

Approved by : , **Date:** Nov. 08, 2021

Dylan Chiou / Senior 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

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

where

Pd = power density in mW/cm^2

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 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	26.82	6.33	21	0.373	1
5180-5240	16.72	9.12	21	0.069	1
5260-5320	16.87	9.12	21	0.072	1
5500-5720	23.38	9.12	21	0.321	1
5745-5825	26.14	9.12	21	0.606	1
Beamforming Mode					
2412-2462	24.69	6.33	21	0.228	1
5180-5240	13.77	9.12	21	0.035	1
5260-5320	16.87	9.12	21	0.072	1
5500-5720	20.78	9.12	21	0.176	1
5745-5825	26.14	9.12	21	0.606	1
BT EDR					
2402-2480	12.51	3.32	21	0.007	1
BT LE					
2402-2480	11.41	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: =3.32dBi + 10log(2)= 6.33dBi
   5GHz: Directional Gain = 6.11dBi + 10log(2)=9.12dBi
   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 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

The simultaneous operation mode was determined by client.

1. WLAN 2.4G+ 5GHz =0.373/1+0.606/1=0.979
2. WLAN 2.4G+ BT =0.373/1+0.007/1=0.380
3. WLAN 5G+ BT =0.606/1+0.007/1=0.613

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

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