RF Exposure Report

Report No.:	SABHAT-WTW-P20110381
FCC ID:	R68OQ865S
Test Model:	Open-Q 865XR SOM
Received Date:	Nov. 12, 2020
Test Date:	Nov. 30 ~ Dec. 16, 2020
Issued Date:	Jan. 04, 2021
Applicant:	Lantronix
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

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Release Control Record

Issue No.	Description	Date Issued
SABHAT-WTW-P20110381	Original release	Jan. 04, 2021

1 Certificate of Conformity

Product:	Open-Q 865 SOM
Brand:	Lantronix
Test Model:	Open-Q 865XR SOM
Sample Status:	Engineering sample
Applicant:	Lantronix
Test Date:	Nov. 30 ~ Dec. 16, 2020
Standards:	FCC Part 2 (Section 2.1091)
References Test Guidance:	KDB 447498 D01 General RF Exposure Guidance v06 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 : Polly Chen , **Date:** Jan. 04, 2021

Polly Chien / Specialist

Approved by : Bruce Chen , **Date:** Jan. 04, 2021

Bruce Chen / 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

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

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 20cm 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	25.93	6.33	20	0.335	1
5180-5240	16.82	9.12	20	0.078	1
5260-5320	16.06	9.12	20	0.066	1
5500-5720	23.83	9.12	20	0.392	1
5745-5825	24.17	9.12	20	0.424	1
Beamforming Mode					
2412-2462	25.34	6.33	20	0.292	1
5180-5240	13.82	9.12	20	0.039	1
5260-5320	13.05	9.12	20	0.033	1
5500-5720	20.83	9.12	20	0.197	1
5745-5825	24.17	9.12	20	0.424	1
BT EDR					
2402-2480	16.63	3.32	20	0.020	1
BT LE					
2402-2480	15.70	3.32	20	0.016	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 =0.335/1+0.424/1=0.759
2. WLAN 2.4G+ BT =0.335/1+0.020/1=0.355
3. WLAN 5G+ BT =0.424/1+0.020/1=0.444

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

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