RF Exposure Report

Report No.:	MFBHAT-WTW-P21060603
FCC ID:	R68E213W
Test Model:	E213F102S
Received Date:	Oct. 14, 2021
Date of Evaluation:	Jul. 04, 2022
Issued Date:	Sep. 30, 2022
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
MFBHAT-WTW-P21060603	Original Release	Sep. 30, 2022

1 Certificate of Conformity

Product:	E210 Series
Brand:	LANTRONIX
Test Model:	E213F102S
Sample Status:	Identical Prototype
Applicant:	Lantronix
Date of Evaluation:	Jul. 04, 2022
FCC Rule Part:	FCC Part 2 (Section 2.1091)
Standards:	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 : Vera Huang , **Date:** Sep. 30, 2022

Vera Huang / Specialist

Approved by : Jeremy Lin , **Date:** Sep. 30, 2022

Jeremy Lin / 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/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

Band	Max AV Power (dBm)	Duty Cycle	Time-Average Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
GPRS 850	33.5	25%	27.48	1	20	0.140	0.55
GPRS 1900	30.5	25%	24.48	3	20	0.111	1.00
LTE B2	24.5	100%	24.5	6	20	0.223	1.00
LTE B4	24.5	100%	24.5	6	20	0.223	1.00
LTE B5	24.5	100%	24.5	4	20	0.141	0.55
LTE B12	24.5	100%	24.5	3	20	0.112	0.46
LTE B13	24.5	100%	24.5	3	20	0.112	0.52
LTE B25	24.5	100%	24.5	6	20	0.223	1.00
LTE B26	24.5	100%	24.5	4	20	0.141	0.54

Band	Max AV Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN 2.4G	17.32	3.32	20	0.023	1

Note:

1. Tha maximum source-based time-averaged power was used for GPRS, and that it supports up to 2 - Slot, maximum duty cycle 25%.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
3. The EUT contains certified WWAN module with FCC ID: R68E213.
4. Refer to SIERRA module report (model: HL7802) for conducted power.
5. Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

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.

WWAN + WLAN = 0.141/0.54 + 0.023/1 = 0.284

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

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