

RF Exposure Report

Report No.: SA180928E04

FCC ID: JNZNR0017

Test Model: N-R0017

Received Date: Sep. 28, 2018

Test Date: Oct. 20, 2018

Issued Date: Jan. 14, 2019

Applicant: LOGITECH FAR EAST LTD.

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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
SA180928E04	Original release.	Jan. 14, 2019

1 Certificate of Conformity

Product: Universal hub

Brand: Logitech

Test Model: N-R0017

Sample Status: ENGINEERING SAMPLE

Applicant: LOGITECH FAR EAST LTD.

Test Date: Oct. 20, 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 : Phoenix Huang , **Date:** Jan. 14, 2019
Phoenix Huang / Specialist

Approved by : May Chen , **Date:** Jan. 14, 2019
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

Transmitter Circuit	Antenna Gain with cable loss (dBi)	Frequency range (GHz)	Antenna Type	Antenna Connector
Chain 0	3.5	2.4~2.4835	Monopole (PCB)	NA
	3.8	5.15~5.35		
	4	5.5~5.85		
Chain 1	2.9	2.4~2.4835	Monopole (PCB)	NA
	3	5.15~5.35		
	4.5	5.5~5.85		

2.5 Calculation Result of Maximum Conducted Power

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	2437	242.103	3.5	20	0.10783	1
WLAN (UNII-1)	5180	30.409	3.8	20	0.01451	1
WLAN (U-NII-2A)	5300	29.107	3.8	20	0.01389	1
WLAN (UNII-2C)	5580	37.931	4.5	20	0.02127	1
WLAN (U-NII-3)	5755	36.392	4.5	20	0.02040	1
BT-EDR	2402	4.592	3.5	20	0.00205	1
BT-LE	2440	2.518	3.5	20	0.00112	1

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 + Bluetooth = $0.10783 / 1 + 0.00205 / 1 = 0.10988$

WLAN 5GHz + Bluetooth = $0.02127 / 1 + 0.00205 / 1 = 0.02332$

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

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