

RF Exposure Report

Report No.: SA180327E09

FCC ID: JNZYR0068

Test Model: Y-R0068

Received Date: Mar. 27, 2018

Test Date: Mar. 29, 2018

Issued Date: Apr. 13, 2018

Applicant: LOGITECH FAR EAST LTD.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

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**FCC Registration /
Designation Number:** 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SA180327E09	Original release.	Apr. 13, 2018

1 Certificate of Conformity

Product: Wireless Keyboard
Brand: Logitech
Test Model: Y-R0068
Sample Status: ENGINEERING SAMPLE
Applicant: LOGITECH FAR EAST LTD.
Test Date: Mar. 29, 2018
Standards: FCC Part 2 (Section 2.1093)
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 : Mary Ko , **Date:** Apr. 13, 2018
Mary Ko / Specialist

Approved by : May Chen , **Date:** Apr. 13, 2018
May Chen / Manager

2 Evaluation Result

Following FCC KDB 447498 D01 “General SAR test exclusion guidance”

The corresponding SAR Exclusion Threshold condition, listed below:

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot [\sqrt{f(\text{GHz})}]$$
$$\leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$
 - $f(\text{GHz})$ is the RF channel transmit frequency in GHz.
 - Power and distance are rounded to the nearest mW and mm before calculation.
 - The result is rounded to one decimal place for comparison. The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

- 2) At 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following:
 - a) [Threshold at 50 mm in step 1) + (test separation distance - 50mm)·(f(MHz)/150)] mW, at 100MHz to 1500 MHz
 - b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

- 3) At frequencies below 100 MHz, the following may be considered for SAR test exclusion.
 - a) The threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by $[1 + \log(100/f(\text{MHz}))]$ for test separation distances > 50 mm and < 200 mm.
 - b) The threshold determined by the equation in a) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$ for test separation distances ≤ 50 mm.
 - c) SAR measurement procedures are not established below 100 MHz. When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any test results to be acceptable.

3 SAR Test Exclusion Thresholds

BT-LE Avg. Power Table

Channel	Frequency (MHz)	Avg. Power	
		(mW)	(dBm)
0	2402	3.606	5.57
19	2440	3.565	5.52
39	2480	3.483	5.42

For BT-LE SAR Test Exclusion Thresholds

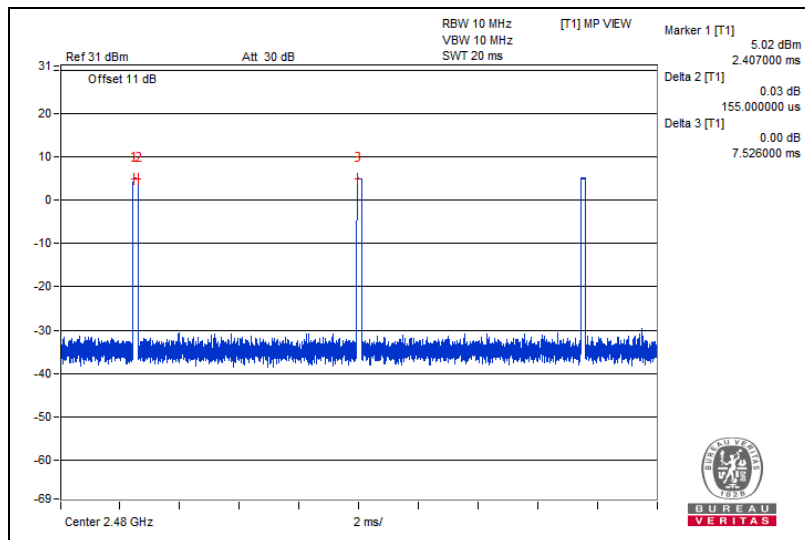
Frequency (MHz)	Max Avg. Power (dBm)	*Max Time Avg. Power (dBm)	Max Time Avg. Power (mW)	SAR test exclusion calculation value ^(NOTE 2)	1-g SAR test exclusion thresholds	Result
2.402 ~ 2.480	5.57	-11.29	0.074	0.02294	3	Pass

- NOTE:** 1. The antenna type is Metal PIFA antenna with 1.76dBi gain.
 2. Calculate SAR test exclusion thresholds from condition "1" formulas.
 3. *Time Avg. Power= Avg. Power+Duty factor

BT-LE Duty Cycle of Test Signal

Duty Cycle	Tx on (ms)	Tx total (ms)	Duty Factor (dB)
		0.155	7.526

Duty Factor = $10 * \log(\text{Tx on} / \text{Tx total})$



GFSK Avg. Power Table

Channel	Frequency (MHz)	Avg. Power	
		(mW)	(dBm)
1	2405	3.589	5.55
8	2444	3.548	5.50
12	2474	3.499	5.44

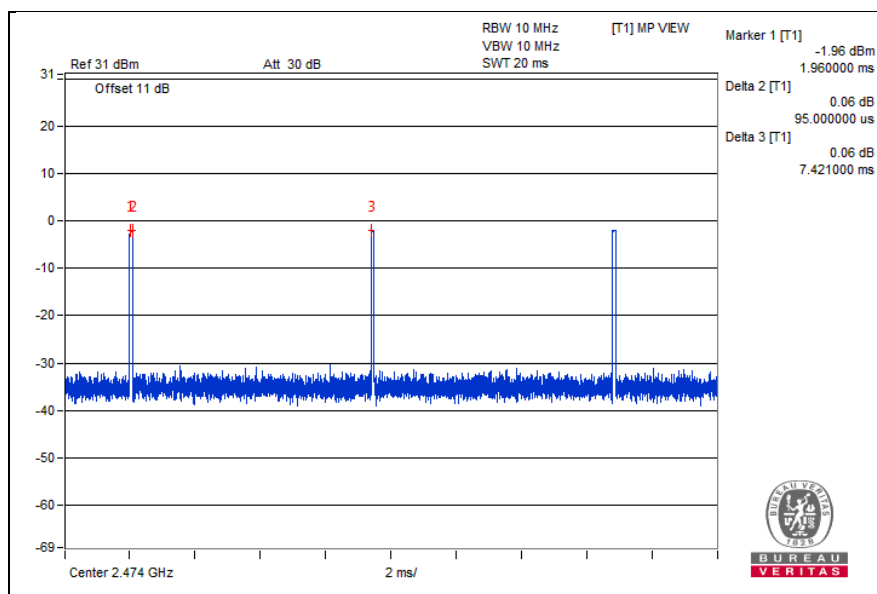
For GFSK SAR Test Exclusion Thresholds

Frequency (MHz)	Max Avg. Power (dBm)	*Max Time Avg. Power (dBm)	Max Time Avg. Power (mW)	SAR test exclusion calculation value ^(NOTE 2)	1-g SAR test exclusion thresholds	Result
2.405 ~ 2.474	5.55	-13.38	0.046	0.01427	3	Pass

- NOTE:**
1. The antenna type is Metal PIFA antenna with 1.76dBi gain.
 2. Calculate SAR test exclusion thresholds from condition “1” formulas.
 3. *Time Avg. Power=Avg. Power+Duty factor

GFSK Duty Cycle of Test Signal

Duty Cycle	Tx on (ms)	Tx total (ms)	Duty Factor (dB)
	0.095	7.421	-18.93
Duty Factor = $10 \cdot \log(\text{Tx on} / \text{Tx total})$			



4 Conclusion

The device of BT-LE and GFSK modulation type can't transmit simultaneously. Since Source-base time average power is below SAR test exclusion power thresholds, the SAR evaluation is not required.

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