

RF Exposure Report

Report No.: SA200427C09

FCC ID: A4RGUIK2

Model Name: GUIK2

Received Date: Apr. 27, 2020

Date of Evaluation: Jun. 10, 2020

Issued Date: Jun. 12, 2020

Applicant: Google LLC

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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
SA200427C09	Original Release	Jun. 12, 2020

1 Certificate of Conformity

Product: Interactive Device

Test Model: GUIK2

Sample Status: Engineering Sample

Applicant: Google LLC

SN: 1J365004810040204Q00135(MLB SN)
SEM000061016 (FATP SN)

Date of Evaluation: Jun. 10, 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 :



Date:

Jun. 12, 2020

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Approved by :



Date:

Jun. 12, 2020

Dylan Chiou / 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				
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

Antenna Type	Antenna Gain (dBi)			
	PIFA	2.4 G WLAN / BT	5G WLAN	
5180~5720 MHz			5745~5825 MHz	
	4.3	4.0	4.8	3.0
Integral Microstrip Patch	60GHz Tx Transmitter			
	5.0			

2.5 Calculation Result of Maximum Conducted Power

Band	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN	2412-2472	22.93	4.3	20	0.105	1.00
	5180-5240	18.36	4.0	20	0.034	1.00
	5260-5320	18.13	4.0	20	0.032	1.00
	5500-5720	18.20	4.0	20	0.033	1.00
	5745-5825	17.78	4.8	20	0.036	1.00
BT	2402-2480	9.30	4.3	20	0.005	1.00
Thread	2405-2475	20.21	3.0	20	0.042	1.00
60GHz Tx Transmitter	58500-63000	7.80	5.0	20	0.004	1.00

Note: 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:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$\text{WLAN 2.4GHz} + \text{Thread} + \text{60GHz Tx Transmitter} = 0.105/1 + 0.042/1 + 0.004/1 = 0.151$$

$$\text{WLAN 5GHz} + \text{BT} + \text{Thread} + \text{60GHz Tx Transmitter} = 0.036/1 + 0.005/1 + 0.042/1 + 0.004/1 = 0.087$$

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

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