RF Exposure Report

Report No.:	SA200427C09 R1
FCC ID:	A4RGUIK2
Model Name:	GUIK2
Received Date:	Apr. 27, 2020
Date of Evaluation:	Jun. 10, 2020
Issued Date:	Jan. 06, 2021
Applicant:	Google LLC
Address:	1600 Amphitheatre Parkway, Mountain View, CA 94043, 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
SA200427C09	Original Release	Jun. 12, 2020
SA200427C09 R1	Revised frequency of 60GHz Tx Transmitter	Jan. 06, 2021

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 : Gina Liu , **Date:** Jan. 06, 2021

Gina Liu / Specialist

Approved by : , **Date:** Jan. 06, 2021

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

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

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**.

2.4 Antenna Gain

Antenna Type	Antenna Gain (dBi)			
PIFA	2.4 G WLAN / BT	5G WLAN		Thread
		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	58000-63500	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 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + Thread + 60GHz Tx Transmitter = 0.105/1 + 0.042/1 + 0.004/1 = 0.151

WLAN 5GHz + BT + Thread + 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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