

RF Exposure Report

Report No.: SA200204C24

FCC ID: A4R-G4CVZ

Test Model: G4CVZ

Received Date: Feb. 04, 2020

Date of Evaluation: Apr. 27, 2020

Issued Date: May 04, 2020

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
SA200204C24	Original Release	May 04, 2020

1 Certificate of Conformity

Product: Thermostat

Test Model: G4CVZ

Sample Status: Engineering Sample

Applicant: Google LLC

Date of Evaluation: Apr. 27, 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:** May 04, 2020
Gina Liu / Specialist

Approved by : Dylan Chiou, **Date:** May 04, 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

$$Pd = (P_{out} * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm²

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 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	2412-2462	20.9	1.09	20	0.031	1.00
	5180-5240	20.2	3.20	20	0.044	1.00
	5260-5320	21.4	1.96	20	0.043	1.00
	5500-5700	21.8	1.30	20	0.041	1.00
	5745-5825	19.9	1.95	20	0.030	1.00
BT	2402-2480	12.1	1.09	20	0.004	1.00
60GHz transmitter	59000-63000	10.3	5.00	20	0.007	1.00

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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

$$\text{WLAN 2.4GHz} + 60\text{GHz transmitter} = 0.031 + 0.007 = 0.038$$

$$\text{WLAN 5GHz} + 60\text{GHz transmitter} = 0.044 + 0.007 = 0.051$$

$$\text{BT} + \text{WLAN 5GHz} + 60\text{GHz transmitter} = 0.004 + 0.007 = 0.011$$

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

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