RF EXPOSURE EVALUATION REPORT

FCC ID	:	**A4RGXCA6**
Equipment	:	**Wireless Device**
Model Name	:	**GXCA6**
Applicant	:	**Google LLC** **1600 Amphitheatre Parkway,** **Mountain View, California, 94043 USA**
Standard	:	**47 CFR Part 2.1091**

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 2.1091 and it complies with applicable limit.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

Approved by: Cona Huang / Deputy Manager

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FA990608-02B	Rev. 01	Initial issue of report	May 12, 2020

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Wireless Device
Model Name	GXCA6
FCC ID	A4RGXCA6
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	WLAN: 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Reviewed by: Jason Wang

Report Producer: Wan Liu

2. Maximum RF average output power among production units

Mode		Maximum Average Power (dBm)
2.4GHz WLAN	802.11b	17
	802.11g	17
	802.11n-HT20	17
	802.11n-HT40	16
5GHz WLAN	802.11a	16
	802.11n-HT20	16
	802.11n-HT40	15
	802.11ac-VHT20	16
	802.11ac-VHT40	15
	802.11ac-VHT80	12
Bluetooth BR/EDR		7
Bluetooth LE		7

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

<Ant 1>

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)	Power Density / Limit
2.4GHz WLAN	3.80	17.00	20.800	0.120	120.226	0.024	1.000	0.024
5GHz WLAN	7.60	16.00	23.600	0.229	229.087	0.046	1.000	0.046
Bluetooth	3.80	7.00	10.800	0.012	12.023	0.002	1.000	0.002

Note: For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band

<Ant 2>

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)	Power Density / Limit
2.4GHz WLAN	3.90	17.00	20.900	0.123	123.027	0.024	1.000	0.024
5GHz WLAN	7.70	16.00	23.700	0.234	234.423	0.047	1.000	0.047
Bluetooth	3.90	7.00	10.900	0.012	12.303	0.002	1.000	0.002

Note: For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band

4.2. Collocated Power Density Calculation

Co-location	
1	ANT1_BT+ANT2_2.4g
2	ANT1_BT+ANT2_5G
3	ANT1_BLE+ANT2_5G
4	ANT1_BLE+ANT2_2.4G
5	ANT2_BT+ANT1_2.4g
6	ANT2_BT+ANT1_5G
7	ANT2_BLE+ANT1_5G
8	ANT2_BLE+ANT1_2.4G

Ant 1_2.4GHz/5GHz WLAN Power Density / Limit	Ant 2_Bluetooth Power Density / Limit	∑(Power Density / Limit) of Ant 1 + Ant 2
0.046	0.002	0.048

Ant 1_Bluetooth Power Density / Limit	Ant 2_2.4GHz/5GHz WLAN Power Density / Limit	∑(Power Density / Limit) of Ant 1 + Ant 2
0.002	0.047	0.049

Note:

1. ∑(Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WLAN + Bluetooth.
2. Considering the WLAN module collocation with the Bluetooth transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 2 collocated transmitters is compliant

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.