SAR Testing Exemption Letter

Hand Held Legend, LLC

519 Davisville Rd, Unit 2, Willow Grove Pennsylvania 19090, United States

September 25th, 2024

To Whom It May Concern:

Re: SAR Testing Exemption for GC Ultimate Controller

This letter is to document the exemption from Specific Absorption Rate (SAR) testing for our product, GC Ultimate Controller, which utilizes Bluetooth Classic and Bluetooth Low Energy (BLE) technologies.

Product Details:

- Product Name: GC Ultimate Controller
- Model Number: GCU-R4K
- FCC ID: **PENDING**

We assert that this product is exempt from SAR testing requirements based on the following factors:

Low Transmission Power:

The maximum transmission power of our device is set to 3 dBm (approximately 2 mW).

Bluetooth Technology:

Our product exclusively uses Bluetooth Classic and Bluetooth Low Energy (BLE) technologies, which are designed for short-range, low-power communications.

Minimum Separation Distance:

The minimum distance from the user's hand to the transmitter is 1.5 cm, based on the controller's design when held by its two handles during normal use.

RF Exposure Calculations:

We have performed calculations to demonstrate that our device complies with FCC RF exposure limits, taking into account the transmission power and minimum separation distance. The calculations are as follows:

a) Power Density Calculation:

Using the far-field equation for power density:

$$S = EIRP / (4 * \pi * R^2)$$

Where:

S = Power density (W/m^2)

$EIRP$ = Equivalent Isotropically Radiated Power (W)

R = Distance from the antenna (m)

$EIRP$ = 2 mW = 0.002 W

R = 0.015 m (1.5 cm minimum distance)

$S = 0.002 / (4 * \pi * 0.015^2)$

$S = 0.707\ W/m^2$

b) MPE Limit Comparison:

For uncontrolled environments, the FCC's MPE limit for the general public in the frequency range of 2-100 GHz is **1 mW/cm^2 (10 W/m^2)**.

Our calculated power density (**0.707 W/m²**) is well below this limit, even at the minimum separation distance of 1.5 cm.

Compliance with RF Exposure Limits:

Based on these calculations, we affirm that our product complies with FCC RF exposure limits for an uncontrolled environment, as specified in **47 CFR §2.1093**, even at the minimum usage distance.

Conservative Estimate:

These calculations represent a worst-case scenario, assuming continuous transmission at maximum power. In typical use, the actual average power may be lower due to the nature of Bluetooth communication protocols and usage patterns.

We maintain that our product meets all necessary safety standards and FCC requirements. Given the demonstrated compliance with RF exposure limits at the minimum usage distance, we believe our product qualifies for exemption from SAR testing.

If you require any further information or clarification, please do not hesitate to contact us.

Sincerely,

Mitchell Cairns, Lead Engineer, Hand Held Legend, LLC.