

## RF Exposure Report

**Report No.:** FCC\_RF\_SL20061501-CRE-008\_MPE

**FCC ID:** EROZUMLINK-KP

**Test Model:** ZUMLINK-KPPR

**Series Model:** N/A

**Received Date:** 12/07/2020

**Test Date:** 12/16/2020 - 01/20/2021

**Issued Date:** 01/22/2021

**Applicant:** Crestron Electronics, Inc.

**Address:** 15 Volvo DrRockleigh, NJ 07647, USA

**Manufacturer:** Crestron Electronics, Inc.

**Address:** 15 Volvo DrRockleigh, NJ 07647, USA

**Issued By:** Bureau Veritas Consumer Products Services, Inc.

**Lab Address:** 775 Montague Expressway, Milpitas, CA 95035

**Test Location (1):** 775 Montague Expressway, Milpitas, CA 95035

**FCC Registration /  
Designation Number:** 540430



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### Release Control Record

| Issue No.                     | Description      | Date Issued |
|-------------------------------|------------------|-------------|
| FCC_RF_SL20061501-CRE-008_MPE | Original Release | 01/22/2021  |
|                               |                  |             |

## 1 Certificate of Conformity

**Product:** ZUM Keypad

**Brand:** Crestron Electronics

**Test Model:** ZUMLINK-KPPR

**Series Model:** N/A

**Sample Status:** Engineering sample

**Applicant:** Crestron Electronics, Inc


**Test Date:** 12/16/2020 - 01/20/2021


**Standards:** FCC Part 2 (Section 2.1093)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services, Inc., Milpitas 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 EMC characteristics under the conditions specified in this report.

**Prepared by :**  \_\_\_\_\_, **Date:** \_\_\_\_\_ 01/22/2021  
Ellen Chu / Test Engineer

**Approved by :**  \_\_\_\_\_, **Date:** \_\_\_\_\_ 01/22/2021  
Deon Dai / Engineer Reviewer

## 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 <sup>2</sup> ) | 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 <sup>2</sup> )*              | 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<sup>2</sup>

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

The antenna type is Chip antenna with -2 dBi gain.

## 2.5 Calculation Result of Maximum Conducted Power

| Frequency Band (MHz) | Max Power (dBm) | Max Power (mW) | Turn-Up Tolerance | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|----------------------|-----------------|----------------|-------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2402-2480            | -0.34           | 0.925          | ± 1dB             | -2                 | 20            | 0.000116                            | 1                           |

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. Calculate SAR test exclusion thresholds from condition "1" formulas.

## 3 Conclusion

### 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

$$BT\_LE = 0.000116 < 1$$

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

--- END ---