

## FCC 47 CFR MPE REPORT

Icon Health and Fitness, Inc.

Tablet

Model Number: MP21-ARGON2-MIRROR

FCC ID: OMC420612

|                          |                                                                     |
|--------------------------|---------------------------------------------------------------------|
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|                          |                                                                     |
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|                 |                       |
|-----------------|-----------------------|
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## Maximum Permissible Exposure

### 1. Applicable Standards

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

#### 1.1. Limits for Maximum Permissible Exposure (MPE)

##### (a) Limits for Occupational/Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm <sup>2</sup> ) | Averaging Times $ E ^2$ , $ H ^2$ or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|-----------------------------------------|--------------------------------------------------|
| 0.3-3.0               | 614                               | 1.63                              | (100)*                                  | 6                                                |
| 3.0-30                | 1842/f                            | 4.89/f                            | (900/f)*                                | 6                                                |
| 30-300                | 61.4                              | 0.163                             | 1.0                                     | 6                                                |
| 300-1500              |                                   |                                   | F/300                                   | 6                                                |
| 1500-10000            |                                   |                                   | 5                                       | 6                                                |

##### (b) Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm <sup>2</sup> ) | Averaging Times $ E ^2$ , $ H ^2$ or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|-----------------------------------------|--------------------------------------------------|
| 0.3-1.34              | 614                               | 1.63                              | (100)*                                  | 30                                               |
| 1.34-30               | 824/f                             | 2.19/f                            | (180/f)*                                | 30                                               |
| 30-300                | 27.5                              | 0.073                             | 0.2                                     | 30                                               |
| 300-1500              |                                   |                                   | F/1500                                  | 30                                               |
| 1500-10000            |                                   |                                   | 1.0                                     | 30                                               |

Note: f=frequency in MHz; \*Plane-wave equivalent power density

## 1.2. MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric Field (V/m)

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

## 2. Conducted Power Result

| Mode                    | Frequency<br>(MHz) | Peak output power<br>(dBm) | Peak output<br>power (mW) | Target power<br>(dBm) | Antenna gain |          |
|-------------------------|--------------------|----------------------------|---------------------------|-----------------------|--------------|----------|
|                         |                    |                            |                           |                       | (dBi)        | (Linear) |
| GFSK                    | 2402               | 5.18                       | 3.296                     | 5±2                   | 2.9          | 1.95     |
|                         | 2441               | 5.21                       | 3.319                     | 5±2                   | 2.9          | 1.95     |
|                         | 2480               | 5.13                       | 3.258                     | 5±2                   | 2.9          | 1.95     |
| $\pi$ /4-DQPSK          | 2402               | 3.97                       | 2.495                     | 3±2                   | 2.9          | 1.95     |
|                         | 2441               | 4.05                       | 2.541                     | 4±2                   | 2.9          | 1.95     |
|                         | 2480               | 3.92                       | 2.466                     | 3±2                   | 2.9          | 1.95     |
| 8-DPSK                  | 2402               | 3.85                       | 2.427                     | 3±2                   | 2.9          | 1.95     |
|                         | 2441               | 4.01                       | 2.518                     | 4±2                   | 2.9          | 1.95     |
|                         | 2480               | 3.89                       | 2.449                     | 3±2                   | 2.9          | 1.95     |
| BLE                     | 2402               | 5.22                       | 3.327                     | 5±2                   | 2.9          | 1.95     |
|                         | 2440               | 5.23                       | 3.334                     | 5±2                   | 2.9          | 1.95     |
|                         | 2480               | 5.17                       | 3.289                     | 5±2                   | 2.9          | 1.95     |
| IEEE<br>802.11b         | 2412               | 15.57                      | 36.058                    | 15±2                  | 2.9          | 1.95     |
|                         | 2437               | 16.12                      | 40.926                    | 16±2                  | 2.9          | 1.95     |
|                         | 2462               | 16.01                      | 39.902                    | 16±2                  | 2.9          | 1.95     |
| IEEE<br>802.11g         | 2412               | 19.20                      | 83.176                    | 19±2                  | 2.9          | 1.95     |
|                         | 2437               | 19.38                      | 86.696                    | 19±2                  | 2.9          | 1.95     |
|                         | 2462               | 19.85                      | 96.605                    | 19±2                  | 2.9          | 1.95     |
| IEEE<br>802.11n<br>HT20 | 2412               | 19.48                      | 88.716                    | 19±2                  | 2.9          | 1.95     |
|                         | 2437               | 19.70                      | 93.325                    | 19±2                  | 2.9          | 1.95     |
|                         | 2462               | 19.75                      | 94.406                    | 19±2                  | 2.9          | 1.95     |
| IEEE<br>802.11a         | 5180               | 11.91                      | 15.524                    | 11±2                  | 2.9          | 1.95     |
|                         | 5200               | 10.72                      | 11.803                    | 10±2                  | 2.9          | 1.95     |
|                         | 5240               | 12.44                      | 17.539                    | 12±2                  | 2.9          | 1.95     |
|                         | 5260               | 12.24                      | 16.749                    | 12±2                  | 2.9          | 1.95     |
|                         | 5300               | 12.65                      | 18.408                    | 12±2                  | 2.9          | 1.95     |
|                         | 5320               | 12.79                      | 19.011                    | 12±2                  | 2.9          | 1.95     |
|                         | 5500               | 10.26                      | 10.617                    | 10±2                  | 2.9          | 1.95     |
|                         | 5580               | 10.46                      | 11.117                    | 10±2                  | 2.9          | 1.95     |
|                         | 5700               | 12.16                      | 16.444                    | 12±2                  | 2.9          | 1.95     |
|                         | 5745               | 11.39                      | 13.772                    | 11±2                  | 2.9          | 1.95     |
|                         | 5785               | 9.63                       | 9.183                     | 9±2                   | 2.9          | 1.95     |
|                         | 5825               | 8.64                       | 7.311                     | 8±2                   | 2.9          | 1.95     |

| Mode                    | Frequency<br>(MHz) | Peak output power<br>(dBm) | Peak output<br>power (mW) | Target power<br>(dBm) | Antenna gain |          |
|-------------------------|--------------------|----------------------------|---------------------------|-----------------------|--------------|----------|
|                         |                    |                            |                           |                       | (dBi)        | (Linear) |
| IEEE<br>802.11n<br>HT20 | 5180               | 11.14                      | 13.002                    | 11±2                  | 2.9          | 1.95     |
|                         | 5200               | 10.77                      | 11.940                    | 10±2                  | 2.9          | 1.95     |
|                         | 5240               | 12.49                      | 17.742                    | 12±2                  | 2.9          | 1.95     |
|                         | 5260               | 12.26                      | 16.827                    | 12±2                  | 2.9          | 1.95     |
|                         | 5300               | 12.36                      | 17.219                    | 12±2                  | 2.9          | 1.95     |
|                         | 5320               | 13.32                      | 21.478                    | 13±2                  | 2.9          | 1.95     |
|                         | 5500               | 9.87                       | 9.705                     | 9±2                   | 2.9          | 1.95     |
|                         | 5580               | 10.04                      | 10.093                    | 10±2                  | 2.9          | 1.95     |
|                         | 5700               | 12.16                      | 16.444                    | 12±2                  | 2.9          | 1.95     |
|                         | 5745               | 10.99                      | 12.560                    | 10±2                  | 2.9          | 1.95     |
|                         | 5785               | 10.01                      | 10.023                    | 10±2                  | 2.9          | 1.95     |
|                         | 5825               | 8.27                       | 6.714                     | 8±2                   | 2.9          | 1.95     |
| IEEE<br>802.11n<br>HT40 | 5190               | 11.05                      | 12.735                    | 11±2                  | 2.9          | 1.95     |
|                         | 5230               | 11.77                      | 15.031                    | 11±2                  | 2.9          | 1.95     |
|                         | 5270               | 12.22                      | 16.672                    | 12±2                  | 2.9          | 1.95     |
|                         | 5310               | 12.75                      | 18.836                    | 12±2                  | 2.9          | 1.95     |
|                         | 5510               | 9.14                       | 8.204                     | 9±2                   | 2.9          | 1.95     |
|                         | 5590               | 12.43                      | 17.498                    | 12±2                  | 2.9          | 1.95     |
|                         | 5670               | 12.56                      | 18.030                    | 12±2                  | 2.9          | 1.95     |
|                         | 5755               | 11.35                      | 13.646                    | 11±2                  | 2.9          | 1.95     |
|                         | 5795               | 9.89                       | 9.750                     | 9±2                   | 2.9          | 1.95     |

## Calculated Result and Limit

| Mode              | Target power (dBm) | Antenna gain |          | Power Density (S) (mW/cm <sup>2</sup> ) | Limited of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|-------------------|--------------------|--------------|----------|-----------------------------------------|----------------------------------------------------|-------------|
|                   |                    | (dBi)        | (Linear) |                                         |                                                    |             |
| 2.4G Band         |                    |              |          |                                         |                                                    |             |
| GFSK              | 7                  | 2.9          | 1.95     | 0.00194                                 | 1                                                  | Compiles    |
| $\pi$ /4-DQPSK    | 6                  | 2.9          | 1.95     | 0.00154                                 | 1                                                  | Compiles    |
| 8-DPSK            | 6                  | 2.9          | 1.95     | 0.00154                                 | 1                                                  | Compiles    |
| BLE               | 7                  | 2.9          | 1.95     | 0.00194                                 | 1                                                  | Compiles    |
| IEEE 802.11b      | 18                 | 2.9          | 1.95     | 0.02448                                 | 1                                                  | Compiles    |
| IEEE 802.11g      | 21                 | 2.9          | 1.95     | 0.04883                                 | 1                                                  | Compiles    |
| IEEE 802.11n HT20 | 21                 | 2.9          | 1.95     | 0.04883                                 | 1                                                  | Compiles    |
| 5G Band           |                    |              |          |                                         |                                                    |             |
| IEEE 802.11a      | 14                 | 2.9          | 1.95     | 0.00974                                 | 1                                                  | Compiles    |
| IEEE 802.11n HT20 | 15                 | 2.9          | 1.95     | 0.01227                                 | 1                                                  | Compiles    |
| IEEE 802.11n HT40 | 14                 | 2.9          | 1.95     | 0.00974                                 | 1                                                  | Compiles    |

| Mode      | Power Density (S) (mW/cm <sup>2</sup> ) | total (mW/cm <sup>2</sup> ) | Limited of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|-----------|-----------------------------------------|-----------------------------|----------------------------------------------------|-------------|
| BT        | 0.00194                                 | 0.06498                     | 1                                                  | Compiles    |
| BLE       | 0.00194                                 |                             | 1                                                  | Compiles    |
| 2.4GWi Fi | 0.04883                                 |                             | 1                                                  | Compiles    |
| 5GWi Fi   | 0.01227                                 |                             | 1                                                  | Compiles    |

**End of Test Report**