

# FCC ID: 2ABC5-E0107

## Maximum Permissible Exposure (MPE)

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

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> ) | Averaging time (minutes) |
|----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposure</b>         |                               |                               |                                     |                          |
| 0.3-3.0                                                        | 614                           | 1.63                          | *100                                | 6                        |
| 3.0-30                                                         | 1842/f                        | 4.89/f                        | *900/f <sup>2</sup>                 | 6                        |
| 30-300                                                         | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300-1,500                                                      |                               |                               | f/300                               | 6                        |
| 1,500-100,000                                                  |                               |                               | 5                                   | 6                        |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 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                       |
| 300-1,500                                                      |                               |                               | f/1500                              | 30                       |
| 1,500-100,000                                                  |                               |                               | 1.0                                 | 30                       |

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

## MPE Calculation Method

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

E = Electric field (V/m)

P = Average 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

$$Pd = \frac{30 * P * G}{377 * D^2}$$

From the 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.

BT:

## Measurement Result

Operation Frequency: 2402MHz~2480MHz

Power density limited: 1mW/ cm<sup>2</sup>

Antenna Type: FPC antenna

Antenna gain:2.49dBi;

R=20cm

mW=10<sup>^(dBm/10)</sup>

antenna gain Numeric=10<sup>^(dBi/10)</sup>= 10<sup>^(2.49/10)</sup>=1.77

| Channel Freq. (MHz) | modulation | conducted power | Tune-up power (dBm) | Max           |       | Antenna |         | Evaluation result | Power density Limits |
|---------------------|------------|-----------------|---------------------|---------------|-------|---------|---------|-------------------|----------------------|
|                     |            | (dBm)           |                     | tune-up power |       | Gain    |         | (mW/cm2 )         | (mW/cm2)             |
|                     |            |                 |                     | (dBm)         | (mW)  | (dBi)   | Numeric |                   |                      |
| 2402                | DH5        | 6.99            | 7±1                 | 8             | 6.310 | 2.49    | 1.77    | 0.0022            | 1                    |
| 2441                |            | 7.28            | 7±1                 | 8             | 6.310 | 2.49    | 1.77    | 0.0022            | 1                    |
| 2480                |            | 7.45            | 7±1                 | 8             | 6.310 | 2.49    | 1.77    | 0.0022            | 1                    |
| 2402                | 2DH5       | 6.5             | 7±1                 | 8             | 6.310 | 2.49    | 1.77    | 0.0022            | 1                    |
| 2441                |            | 6.88            | 7±1                 | 8             | 6.310 | 2.49    | 1.77    | 0.0022            | 1                    |
| 2480                |            | 7.12            | 7±1                 | 8             | 6.310 | 2.49    | 1.77    | 0.0022            | 1                    |
| 2402                | 3DH5       | 6.51            | 7±1                 | 8             | 6.310 | 2.49    | 1.77    | 0.0022            | 1                    |
| 2441                |            | 6.84            | 7±1                 | 8             | 6.310 | 2.49    | 1.77    | 0.0022            | 1                    |
| 2480                |            | 7.07            | 7±1                 | 8             | 6.310 | 2.49    | 1.77    | 0.0022            | 1                    |

| Channel Freq. (MHz) | modulation | conducted power | Tune-up power (dBm) | Max           |       | Antenna |         | Evaluation result | Power density Limits |
|---------------------|------------|-----------------|---------------------|---------------|-------|---------|---------|-------------------|----------------------|
|                     |            | (dBm)           |                     | tune-up power |       | Gain    |         |                   |                      |
|                     |            |                 |                     | (dBm)         | (mW)  | (dBi)   | Numeric | (mW/cm2 )         | (mW/cm2)             |
| 2402                | GFSK(1M)   | 3.66            | 4±1                 | 5             | 3.162 | 2.49    | 1.77    | 0.0011            | 1                    |
| 2440                |            | 4.27            | 4±1                 | 5             | 3.162 | 2.49    | 1.77    | 0.0011            | 1                    |
| 2480                |            | 4.71            | 4±1                 | 5             | 3.162 | 2.49    | 1.77    | 0.0011            | 1                    |

| Channel<br>Freq. (MHz) | modulation | conducted<br>power | Tune-up<br>power (dBm) | Max           |       | Antenna |         | Evaluation<br>result | Power<br>density<br>Limits |
|------------------------|------------|--------------------|------------------------|---------------|-------|---------|---------|----------------------|----------------------------|
|                        |            | (dBm)              |                        | tune-up power |       | Gain    |         |                      |                            |
|                        |            |                    |                        | (dBm)         | (mW)  | (dBi)   | Numeric | (mW/cm2 )            | (mW/cm2)                   |
| 2402                   | GFSK(2M)   | 3.58               | 4±1                    | 5             | 3.162 | 2.49    | 1.77    | 0.0011               | 1                          |
| 2440                   |            | 4.21               | 4±1                    | 5             | 3.162 | 2.49    | 1.77    | 0.0011               | 1                          |
| 2480                   |            | 4.73               | 4±1                    | 5             | 3.162 | 2.49    | 1.77    | 0.0011               | 1                          |

## 2.4G WIFI:

Operation Frequency: WIFI 802.11b/g/n/ax20: 2412-2462MHz,  
WIFI 802.11n/ax40:2422-2452MHz  
Power density limited: 1mW/ cm<sup>2</sup>

Antenna Type: FPC antenna

Antenna gain1: 2.49dBi

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)}=10^{(2.49/10)}=1.77$

| Channel Freq. (MHz) | modulation     | conducted power | Tune-up power (dBm) | Max           |        | Antenna |         | Evaluation result | Power density Limits |
|---------------------|----------------|-----------------|---------------------|---------------|--------|---------|---------|-------------------|----------------------|
|                     |                | (dBm)           |                     | tune-up power |        | Gain    |         |                   |                      |
|                     |                |                 |                     | (dBm)         | (mW)   | (dBi)   | Numeric | (mW/cm2 )         | (mW/cm2)             |
| 2412                | 802.11b        | 16.52           | 16±1                | 17            | 50.119 | 2.49    | 1.77    | 0.0177            | 1                    |
| 2437                |                | 15.99           | 16±1                | 17            | 50.119 | 2.49    | 1.77    | 0.0177            | 1                    |
| 2462                |                | 15.15           | 16±1                | 17            | 50.119 | 2.49    | 1.77    | 0.0177            | 1                    |
| 2412                | 802.11g        | 13.99           | 14±1                | 15            | 31.623 | 2.49    | 1.77    | 0.0112            | 1                    |
| 2437                |                | 14.14           | 14±1                | 15            | 31.623 | 2.49    | 1.77    | 0.0112            | 1                    |
| 2462                |                | 13.72           | 14±1                | 15            | 31.623 | 2.49    | 1.77    | 0.0112            | 1                    |
| 2412                | 802.11n H20    | 12.78           | 13±1                | 14            | 25.119 | 2.49    | 1.77    | 0.0089            | 1                    |
| 2437                |                | 13.27           | 13±1                | 14            | 25.119 | 2.49    | 1.77    | 0.0089            | 1                    |
| 2462                |                | 12.66           | 13±1                | 14            | 25.119 | 2.49    | 1.77    | 0.0089            | 1                    |
| 2422                | 802.11n(H T40) | 12.98           | 14±1                | 15            | 31.623 | 2.49    | 1.77    | 0.0112            | 1                    |
| 2437                |                | 14.52           | 14±1                | 15            | 31.623 | 2.49    | 1.77    | 0.0112            | 1                    |
| 2452                |                | 13.14           | 14±1                | 15            | 31.623 | 2.49    | 1.77    | 0.0112            | 1                    |
| 2412                | 802.11ax20     | 13.02           | 13±1                | 14            | 25.119 | 2.49    | 1.77    | 0.0089            | 1                    |
| 2437                |                | 13.25           | 13±1                | 14            | 25.119 | 2.49    | 1.77    | 0.0089            | 1                    |
| 2462                |                | 12.55           | 13±1                | 14            | 25.119 | 2.49    | 1.77    | 0.0089            | 1                    |
| 2422                | 802.11ax40     | 12.83           | 13±1                | 14            | 25.119 | 2.49    | 1.77    | 0.0089            | 1                    |
| 2437                |                | 13.49           | 13±1                | 14            | 25.119 | 2.49    | 1.77    | 0.0089            | 1                    |
| 2452                |                | 13.14           | 13±1                | 14            | 25.119 | 2.49    | 1.77    | 0.0089            | 1                    |

## 5G WIFI:

Operation Frequency: WIFI 802.11a/ac/n/ax20: 5180-5240MHz; 5745-5825MHz;

WIFI 802.11ac/n/ax40: 5190-5230MHz; 5755-5795MHz;

Power density limited: 1mW/cm

Antenna Type: FPC antenna

Antenna gain:4.96dBi

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)}=10^{(4.96/10)}=3.13$

5.2G

| Channel<br>Freq. (MHz) | modulation | conducted<br>power | Tune-up<br>power (dBm) | Max           |        | Antenna |         | Evaluation<br>result | Power<br>density<br>Limits |
|------------------------|------------|--------------------|------------------------|---------------|--------|---------|---------|----------------------|----------------------------|
|                        |            | (dBm)              |                        | tune-up power |        | Gain    |         | (mW/cm2 )            | (mW/cm2)                   |
|                        |            |                    |                        | (dBm)         | (mW)   | (dBi)   | Numeric |                      |                            |
| 5180                   | 802.11a    | 11.69              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5200                   |            | 11.96              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5240                   |            | 12.61              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5180                   | 802.11n20  | 11.57              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5200                   |            | 11.86              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5240                   |            | 12.49              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5190                   | 802.11n40  | 11.58              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5230                   |            | 12.2               | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5180                   | 802.11ac20 | 11.59              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5200                   |            | 11.82              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5240                   |            | 12.65              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5190                   | 802.11ac40 | 11.73              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5230                   |            | 12.37              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5210                   | 802.11ac80 | 10.21              | 10±1                   | 11            | 12.589 | 4.96    | 3.13    | 0.0078               | 1                          |
| 5180                   | 802.11ax20 | 11.6               | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5200                   |            | 11.7               | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5240                   |            | 12.46              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5190                   | 802.11ax40 | 11.55              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5230                   |            | 12.19              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5210                   | 802.11ax80 | 11.98              | 11±1                   | 12            | 15.849 | 4.96    | 3.13    | 0.0099               | 1                          |

## 5.8G

| Channel<br>Freq. (MHz) | modulation | conducted<br>power | Tune-up<br>power (dBm) | Max           |        | Antenna |         | Evaluation<br>result | Power<br>density<br>Limits |
|------------------------|------------|--------------------|------------------------|---------------|--------|---------|---------|----------------------|----------------------------|
|                        |            | (dBm)              |                        | tune-up power |        | Gain    |         | (mW/cm2 )            | (mW/cm2)                   |
|                        |            |                    |                        | (dBm)         | (mW)   | (dBi)   | Numeric |                      |                            |
| 5745                   | 802.11a    | 12.43              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5785                   |            | 12.24              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5825                   |            | 11.88              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5745                   | 802.11n20  | 12.29              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5785                   |            | 12.25              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5825                   |            | 12.01              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5755                   | 802.11n40  | 12.23              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5795                   |            | 12.41              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5745                   | 802.11ac20 | 12.23              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5785                   |            | 12.41              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5825                   |            | 12                 | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5755                   | 802.11ac40 | 12.39              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5795                   |            | 12.22              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5775                   | 802.11ac80 | 12.45              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5745                   | 802.11ax20 | 12.42              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5785                   |            | 12.31              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5825                   |            | 11.9               | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5755                   | 802.11ax40 | 12.28              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5795                   |            | 12.44              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |
| 5775                   | 802.11ax80 | 12.36              | 12±1                   | 13            | 19.953 | 4.96    | 3.13    | 0.0124               | 1                          |

Signature:

Date: 2025-12-08



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