



## RF Exposure evaluation

FCC ID: UCC-A660S

### 1. Reference

According to §1.1307(b)(1), 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 of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

KDB447498 D01: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

### 2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

| Frequency Range(MHz)                        | Electric Field Strength(V/m) | Magnetic Field Strength(A/m) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (minute) |
|---------------------------------------------|------------------------------|------------------------------|-------------------------------------|-------------------------|
| Limits for Occupational/Controlled Exposure |                              |                              |                                     |                         |
| 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 – 1500                                  | /                            | /                            | f/300                               | 6                       |
| 1500 – 100,000                              | /                            | /                            | 5                                   | 6                       |

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

| Frequency Range(MHz)                        | Electric Field Strength(V/m) | Magnetic Field Strength(A/m) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (minute) |
|---------------------------------------------|------------------------------|------------------------------|-------------------------------------|-------------------------|
| Limits for Occupational/Controlled Exposure |                              |                              |                                     |                         |
| 0.3 – 3.0                                   | 614                          | 1.63                         | (100) *                             | 30                      |
| 3.0 – 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



### 3. MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=PG/4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

### 4. Antenna Information

EUT can only use antennas certificated as follows provided by manufacturer;

| Antenna No. | Model No. of antenna: | Type of antenna:                      | Gain of the antenna (Max.)                                                                                                                                                                                                      | Frequency range: |
|-------------|-----------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 2.4GWIFI    | /                     | Internal antenna                      | Ant 1: 9.46 dBi for 2400-2500MHz<br>Ant 2: 9.46 dBi for 2400-2500MHz                                                                                                                                                            |                  |
| 5GWIFI      | /                     | External antenna and Internal antenna | Ant 1: 13.01 dBi for 5180MHz to 5320MHz(Internal antenna), 22.64 dBi for 5500MHz to 5825MHz(External antenna),<br>Ant 2: 13.01 dBi for 5180MHz to 5320MHz(Internal antenna), 22.64 dBi for 5500MHz to 5825MHz(External antenna) |                  |

### 5. Manufacturing Tolerance

For ANT1

2.4GWIFI(Peak)

| 802.11b         |            |           |            |
|-----------------|------------|-----------|------------|
| Channel         | Channel 01 | Channel 6 | Channel 11 |
| Target (dBm)    | 22.0       | 22.0      | 22.0       |
| Tolerance ±(dB) | 1.0        | 1.0       | 1.0        |
| 802.11g         |            |           |            |
| Channel         | Channel 01 | Channel 6 | Channel 11 |
| Target (dBm)    | 21.0       | 21.0      | 21.0       |
| Tolerance ±(dB) | 1.0        | 1.0       | 1.0        |
| 802.11n(HT20)   |            |           |            |
| Channel         | Channel 01 | Channel 6 | Channel 11 |
| Target (dBm)    | 17.0       | 17.0      | 17.0       |
| Tolerance ±(dB) | 1.0        | 1.0       | 1.0        |
| 802.11n(HT40)   |            |           |            |

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| Channel              | Channel 03 | Channel 6 | Channel 9  |
|----------------------|------------|-----------|------------|
| Target (dBm)         | 17.0       | 17.0      | 17.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |
| 802.11ax(HE20)       |            |           |            |
| Channel              | Channel 01 | Channel 6 | Channel 11 |
| Target (dBm)         | 17.0       | 17.0      | 17.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |
| 802.11ax(HE40)       |            |           |            |
| Channel              | Channel 03 | Channel 6 | Channel 9  |
| Target (dBm)         | 17.0       | 17.0      | 17.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |

**5GHz WLAN**

| IEEE 802.11a (Average)         |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz)                | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                   | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 4.0  | 4.0  | 4.0  | 23.0 | 23.0 | 23.0 |
| Tolerance $\pm$ (dB)           | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11n(VHT20) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                   | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 20.0 | 20.0 | 20.0 |
| Tolerance $\pm$ (dB)           | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11n(VHT40) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                | 5190 | 5230 | 5270 | 5310 | 5350 | 5390 | 5430 | 5470 | 5510 | 5550 | 5590 | 5630 |
| Target (dBm)                   | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  |
| Tolerance $\pm$ (dB)           | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11ac(VHT20) (Average) |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                   | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 20.0 | 20.0 | 20.0 |

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|                                 |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Tolerance ± (dB)                | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11ac(VHT40) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5190 | 5230 | 5270 | 5310 | 5510 | 5550 | 5670 | 5755 | 5795 |      |      |      |
| Target (dBm)                    | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 20.0 | 20.0 |      |      |      |
| Tolerance ± (dB)                | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |      |      |
| IEEE 802.11ac(VHT80) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5210 |      | 5290 |      | 5530 |      | 5610 |      | 5775 |      |      |      |
| Target (dBm)                    | 7.0  |      | 7.0  |      | -1.0 |      | -1.0 |      | 20.0 |      |      |      |
| Tolerance ± (dB)                | 1.0  |      | 1.0  |      | 1.0  |      | 1.0  |      | 1.0  |      |      |      |
| IEEE 802.11ac(VHT160) (Average) |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5570 |      |      |      |      |      |      |      |      |      |      |      |
| Target (dBm)                    | -1.0 |      |      |      |      |      |      |      |      |      |      |      |
| Tolerance ± (dB)                | 1.0  |      |      |      |      |      |      |      |      |      |      |      |
| IEEE 802.11ax(HE20) (Average)   |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                    | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 20.0 | 20.0 | 20.0 |
| Tolerance ± (dB)                | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11ax(HE40) (Average)   |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5190 | 5230 | 5270 | 5310 | 5510 | 5550 | 5670 | 5755 | 5795 |      |      |      |
| Target (dBm)                    | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 20.0 | 20.0 |      |      |      |
| Tolerance ± (dB)                | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |      |      |
| IEEE 802.11ax(HE80) (Average)   |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency                       | 5210 |      | 5290 |      | 5530 |      | 5610 |      | 5775 |      |      |      |

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|                                |      |      |      |      |      |
|--------------------------------|------|------|------|------|------|
| (MHz)                          |      |      |      |      |      |
| Target (dBm)                   | 12.0 | 12.0 | -1.0 | -1.0 | 20.0 |
| Tolerance $\pm$ (dB)           | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11ax(HE160) (Average) |      |      |      |      |      |
| Frequency (MHz)                | 5570 |      |      |      |      |
| Target (dBm)                   | 0.0  |      |      |      |      |
| Tolerance $\pm$ (dB)           | 1.0  |      |      |      |      |

For ANT2

2.4GWIFI(Peak)

|                      |            |           |            |
|----------------------|------------|-----------|------------|
| 802.11b              |            |           |            |
| Channel              | Channel 01 | Channel 6 | Channel 11 |
| Target (dBm)         | 22.0       | 22.0      | 22.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |
| 802.11g              |            |           |            |
| Channel              | Channel 01 | Channel 6 | Channel 11 |
| Target (dBm)         | 21.0       | 21.0      | 21.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |
| 802.11n(HT20)        |            |           |            |
| Channel              | Channel 01 | Channel 6 | Channel 11 |
| Target (dBm)         | 17.0       | 17.0      | 17.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |
| 802.11n(HT40)        |            |           |            |
| Channel              | Channel 03 | Channel 6 | Channel 9  |
| Target (dBm)         | 17.0       | 17.0      | 17.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |
| 802.11ax(HE20)       |            |           |            |
| Channel              | Channel 01 | Channel 6 | Channel 11 |
| Target (dBm)         | 17.0       | 17.0      | 17.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |
| 802.11ax(HE40)       |            |           |            |
| Channel              | Channel 03 | Channel 6 | Channel 9  |
| Target (dBm)         | 17.0       | 17.0      | 17.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |

## 5GHz WLAN

| IEEE 802.11a (Average)         |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz)                | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                   | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 11.0 | 3.0  | 3.0  | 3.0  | 23.0 | 23.0 | 23.0 |
| Tolerance ± (dB)               | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11n(VHT20) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                   | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 19.0 | 19.0 | 19.0 |
| Tolerance ± (dB)               | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11n(VHT40) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                | 5190 | 5230 | 5270 | 5310 | 5510 | 5550 | 5670 | 5755 | 5795 |      |      |      |
| Target (dBm)                   | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 20.0 | 20.0 |      |      |      |
| Tolerance ± (dB)               | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |      |      |      |
| IEEE 802.11ac(VHT20) (Average) |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                   | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 19.0 | 19.0 | 19.0 |
| Tolerance ± (dB)               | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11ac(VHT40) (Average) |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                | 5190 | 5230 | 5270 | 5310 | 5510 | 5550 | 5670 | 5755 | 5795 |      |      |      |
| Target (dBm)                   | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 20.0 | 20.0 |      |      |      |
| Tolerance ± (dB)               | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |      |      |      |
| IEEE 802.11ac(VHT80) (Average) |      |      |      |      |      |      |      |      |      |      |      |      |



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|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz)                 | 5210 | 5290 |      |      | 5530 |      |      | 5610 |      | 5775 |      |      |
| Target (dBm)                    | 7.0  | 7.0  |      |      | -1.0 |      |      | -1.0 |      | 19.0 |      |      |
| Tolerance ± (dB)                | 1.0  | 1.0  |      |      | 1.0  |      |      | 1.0  |      | 1.0  |      |      |
| IEEE 802.11ac(VHT160) (Average) |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5570 |      |      |      |      |      |      |      |      |      |      |      |
| Target (dBm)                    | 0.0  |      |      |      |      |      |      |      |      |      |      |      |
| Tolerance ± (dB)                | 1.0  |      |      |      |      |      |      |      |      |      |      |      |
| IEEE 802.11ax(HE20) (Average)   |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                    | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 20.0 | 20.0 | 20.0 |
| Tolerance ± (dB)                | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11ax(HE40) (Average)   |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5190 | 5230 | 5270 | 5310 | 5510 | 5550 | 5670 | 5755 | 5795 |      |      |      |
| Target (dBm)                    | 7.0  | 7.0  | 7.0  | 7.0  | -1.0 | -1.0 | -1.0 | 20.0 | 20.0 |      |      |      |
| Tolerance ± (dB)                | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |      |      |      |
| IEEE 802.11ax(HE80) (Average)   |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5210 |      | 5290 |      | 5530 |      | 5610 |      | 5775 |      |      |      |
| Target (dBm)                    | 7.0  |      | 7.0  |      | 0.0  |      | 0.0  |      | 19.0 |      |      |      |
| Tolerance ± (dB)                | 1.0  |      | 1.0  |      | 1.0  |      | 1.0  |      | 1.0  |      |      |      |
| IEEE 802.11ax(HE160) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5570 |      |      |      |      |      |      |      |      |      |      |      |
| Target (dBm)                    | 0.0  |      |      |      |      |      |      |      |      |      |      |      |

|                     |     |
|---------------------|-----|
| Tolerance ±<br>(dB) | 1.0 |
|---------------------|-----|

For MIMO:

## 2.4GWIFI

| 802.11n(HT20)        |            |           |            |
|----------------------|------------|-----------|------------|
| Channel              | Channel 01 | Channel 6 | Channel 11 |
| Target (dBm)         | 20.0       | 20.0      | 20.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |
| 802.11n(HT40)        |            |           |            |
| Channel              | Channel 03 | Channel 6 | Channel 9  |
| Target (dBm)         | 20.0       | 20.0      | 20.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |
| 802.11ax(HE20)       |            |           |            |
| Channel              | Channel 01 | Channel 6 | Channel 11 |
| Target (dBm)         | 20.0       | 20.0      | 20.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |
| 802.11ax(HE40)       |            |           |            |
| Channel              | Channel 03 | Channel 6 | Channel 9  |
| Target (dBm)         | 20.0       | 20.0      | 20.0       |
| Tolerance $\pm$ (dB) | 1.0        | 1.0       | 1.0        |

## 5GHz WLAN

| IEEE 802.11n(HT20) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz)               | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                  | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 2.0  | 2.0  | 2.0  | 23.0 | 23.0 | 23.0 |
| Tolerance ± (dB)              | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11n(HT40) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)               | 5190 | 5230 | 5270 | 5310 | 5510 | 5550 | 5670 | 5755 | 5795 |      |      |      |
| Target (dBm)                  | 10.0 | 10.0 | 10.0 | 10.0 | 2.0  | 2.0  | 2.0  | 23.0 | 23.0 |      |      |      |
| Tolerance ± (dB)              | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |      |      |      |
| IEEE 802.11ac(HT20) (Average) |      |      |      |      |      |      |      |      |      |      |      |      |

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|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz)                 | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                    | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 2.0  | 2.0  | 2.0  | 23.0 | 23.0 | 23.0 |
| Tolerance ± (dB)                | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11ac(HT40) (Average)   |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5190 | 5230 | 5270 | 5310 | 5510 | 5550 | 5670 | 5755 | 5795 |      |      |      |
| Target (dBm)                    | 10.0 | 10.0 | 10.0 | 10.0 | 2.0  | 2.0  | 2.0  | 23.0 | 23.0 |      |      |      |
| Tolerance ± (dB)                | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |      |      |      |
| IEEE 802.11ac(VHT80) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5210 |      | 5290 |      | 5530 |      | 5610 |      | 5775 |      |      |      |
| Target (dBm)                    | 10.0 |      | 10.0 |      | 2.0  |      | 2.0  |      | 23.0 |      |      |      |
| Tolerance ± (dB)                | 1.0  |      | 1.0  |      | 1.0  |      | 1.0  |      | 1.0  |      |      |      |
| IEEE 802.11ac(VHT160) (Average) |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5570 |      |      |      |      |      |      |      |      |      |      |      |
| Target (dBm)                    | 2.0  |      |      |      |      |      |      |      |      |      |      |      |
| Tolerance ± (dB)                | 1.0  |      |      |      |      |      |      |      |      |      |      |      |
| IEEE 802.11ax(VHE20) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5180 | 5200 | 5240 | 5260 | 5280 | 5320 | 5500 | 5580 | 5700 | 5745 | 5785 | 5825 |
| Target (dBm)                    | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 2.0  | 2.0  | 2.0  | 23.0 | 23.0 | 23.0 |
| Tolerance ± (dB)                | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| IEEE 802.11ax(VHE40) (Average)  |      |      |      |      |      |      |      |      |      |      |      |      |
| Frequency (MHz)                 | 5190 | 5230 | 5270 | 5310 | 5510 | 5550 | 5670 | 5755 | 5795 |      |      |      |
| Target (dBm)                    | 10.0 | 10.0 | 10.0 | 10.0 | 2.0  | 2.0  | 2.0  | 23.0 | 23.0 |      |      |      |

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|                                 |      |     |      |     |      |     |      |     |      |
|---------------------------------|------|-----|------|-----|------|-----|------|-----|------|
| Tolerance ± (dB)                | 1.0  | 1.0 | 1.0  | 1.0 | 1.0  | 1.0 | 1.0  | 1.0 | 1.0  |
| IEEE 802.11ax(VHE80) (Average)  |      |     |      |     |      |     |      |     |      |
| Frequency (MHz)                 | 5210 |     | 5290 |     | 5530 |     | 5610 |     | 5775 |
| Target (dBm)                    | 10.0 |     | 10.0 |     | 3.0  |     | 3.0  |     | 23.0 |
| Tolerance ± (dB)                | 1.0  |     | 1.0  |     | 1.0  |     | 1.0  |     | 1.0  |
| IEEE 802.11ax(VHE160) (Average) |      |     |      |     |      |     |      |     |      |
| Frequency (MHz)                 | 5570 |     |      |     |      |     |      |     |      |
| Target (dBm)                    | 3.0  |     |      |     |      |     |      |     |      |
| Tolerance ± (dB)                | 1.0  |     |      |     |      |     |      |     |      |

## 6. Standalone MPE Result

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 100 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance,  $r=100\text{cm}$ , as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

| Modulation Type                        | Output power |          | Antenna<br>Gain<br>(dBi) | Antenna<br>Gain<br>(linear) | MPE<br>(mW/cm <sup>2</sup> ) | MPE<br>Limits<br>(mW/cm <sup>2</sup> ) |
|----------------------------------------|--------------|----------|--------------------------|-----------------------------|------------------------------|----------------------------------------|
|                                        | dBm          | mW       |                          |                             |                              |                                        |
| 2.4GWIFI ANT 1                         | 23.0         | 199.5262 | 9.46                     | 8.8308                      | 0.01403                      | 1.0000                                 |
| 2.4GWIFI ANT 2                         | 23.0         | 199.5262 | 9.46                     | 8.8308                      | 0.01403                      | 1.0000                                 |
| 5GWIFI ANT 1 for<br>5180MHz to 5320MHz | 12.0         | 15.8489  | 13.01                    | 19.9986                     | 0.00252                      | 1.0000                                 |
| 5GWIFI ANT 2 for<br>5180MHz to 5320MHz | 12.0         | 15.8489  | 13.01                    | 19.9986                     | 0.00252                      | 1.0000                                 |
| 5GWIFI ANT 1 for<br>5500MHz to 5825MHz | 24.0         | 251.1886 | 22.64                    | 183.6538                    | 0.36729                      | 1.0000                                 |
| 5GWIFI ANT 2 for<br>5500MHz to 5825MHz | 24.0         | 251.1886 | 22.64                    | 183.6538                    | 0.36729                      | 1.0000                                 |

*Remark:*

1. Output power (Peak) including turn-up tolerance;
2. MPE evaluate distance is 100cm from user manual provide by manufacturer.



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**Simultaneous Evaluation**

| 2.4G<br>WIFI ANT<br>1 MPE<br>(mW/cm <sup>2</sup> ) | 2.4G WIFI<br>ANT 2<br>MPE<br>(mW/cm <sup>2</sup> ) | 5GWIFI<br>ANT 1 for<br>5180MHz<br>to<br>5320MHz<br>MPE<br>(mW/cm <sup>2</sup> ) | 5GWIFI<br>ANT 2 for<br>5180MHz<br>to<br>5320MHz<br>MPE<br>(mW/cm <sup>2</sup> ) | 5GWIFI<br>ANT 1 for<br>5500MHz<br>to<br>5825MHz<br>MPE<br>(mW/cm <sup>2</sup> ) | 5GWIFI<br>ANT2 for<br>5500MHz<br>to<br>5825MHz<br>MPE<br>(mW/cm <sup>2</sup> ) | MPE     | MPE<br>Limits |
|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------|---------------|
| 0.01403                                            | 0.01403                                            | 0.00252                                                                         | 0.00252                                                                         | 0.36729                                                                         | 0.36729                                                                        | 0.76769 | 1.0000        |

**7. Conclusion**

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

-----THE END OF REPORT-----