



## MPE Calculation

|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| Applicant:            | Gree Electric Appliances, Inc. of Zhuhai                     |
| Address:              | Jinji West Rd, Qianshan, Zhuhai, Guangdong 519070, P.R.China |
| Product:              | WiFi Module                                                  |
| FCC ID:               | 2ADAP-GRJWB05JA                                              |
| Model No.:            | GRJWB05-JA                                                   |
| Reference RF report # | 709502608670-00A, 709502608670-00B, 709502608670-00C         |

According to subpart 15.247(i) and subpart §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.

Limits for Maximum Permissible Exposure (MPE) (KDB 447498 D01, §1.1310, §2.1091)

| (B) Limits for General Population/Uncontrolled Exposure |                               |                               |                                     |                          |
|---------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| Frequency Range (MHz)                                   | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (minutes) |
| 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;

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

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4 \pi R^2$  = power density (in appropriate units, e.g. mW/cm<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);



## Calculated Data: BLE

|                                                                                          |        |
|------------------------------------------------------------------------------------------|--------|
| Maximum tune-up conducted power(dBm):                                                    | 9.0    |
| Maximum tune-up conducted power(mW):                                                     | 7.94   |
| Prediction distance (cm):                                                                | 20     |
| Antenna Gain, typical (dBi):                                                             | 1.85   |
| Maximum Antenna Gain (numeric):                                                          | 1.53   |
| The worst case is power density at predication frequency at 20 cm (mW/cm <sup>2</sup> ): | 0.0024 |
| MPE limit for general population exposure at prediction frequency (mW/cm <sup>2</sup> ): | 1.00   |

**Note:** *The maximum tune-up conducted power (9.0 dBm) was declared by the manufacturer.*

The max power density 0.0019 (mW/cm<sup>2</sup>) < 1 (mW/cm<sup>2</sup>)

Result: Compliant

## Calculated Data: 2.4GHz Wi-Fi

|                                                                                          |        |
|------------------------------------------------------------------------------------------|--------|
| Maximum tune-up conducted power(dBm):                                                    | 20.0   |
| Maximum tune-up conducted power(mW):                                                     | 100.00 |
| Prediction distance (cm):                                                                | 20     |
| Antenna Gain, typical (dBi):                                                             | 1.85   |
| Maximum Antenna Gain (numeric):                                                          | 1.53   |
| The worst case is power density at predication frequency at 20 cm (mW/cm <sup>2</sup> ): | 0.0305 |
| MPE limit for general population exposure at prediction frequency (mW/cm <sup>2</sup> ): | 1.00   |

**Note:** *The maximum tune-up conducted power (20.0 dBm) was declared by the manufacturer.*

The max power density 0.0305 (mW/cm<sup>2</sup>) < 1 (mW/cm<sup>2</sup>)

Result: Compliant



## Calculated Data: 5.0GHz Wi-Fi

|                                                                                          |        |
|------------------------------------------------------------------------------------------|--------|
| Maximum tune-up conducted power(dBm):                                                    | 16.0   |
| Maximum tune-up conducted power(mW):                                                     | 39.81  |
| Prediction distance (cm):                                                                | 20     |
| Antenna Gain, typical (dBi):                                                             | 1.52   |
| Maximum Antenna Gain (numeric):                                                          | 1.42   |
| The worst case is power density at predication frequency at 20 cm (mW/cm <sup>2</sup> ): | 0.0112 |
| MPE limit for general population exposure at prediction frequency (mW/cm <sup>2</sup> ): | 1.00   |

**Note:** The maximum tune-up conducted power (16.0 dBm) was declared by the manufacturer.

The max power density 0.0112 (mW/cm<sup>2</sup>) < 1 (mW/cm<sup>2</sup>)

Result: Compliant

*Remark: The device does not support simultaneous 2.4GHz Wi-Fi ,2.4GHz BLE or 5GHz Wi-Fi, because they share the same antenna and can't transmit simultaneously. There is not simultaneous transmission possibility.*

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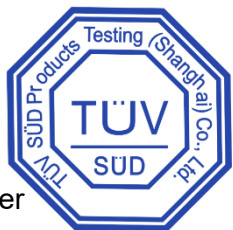
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