

RF exposure evaluation

IC 29530-ROCK4CPLUS

According to §2.5.2, RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz⁶ and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

Note:

The Tune up e.i.r.p. of the device is as follow,

| Worst mode | Frequency (MHz) | Tune up (dBm) | Max. Tune up (dBm) | Max. Tune up (W) | $1.31 \times 10^{-2} f^{0.6834}$ W | Result |
|---------------|-----------------|---------------|--------------------|------------------|------------------------------------|--------|
| BT(8DPSK) | 2402 | 1±1 | 2 | 0.0016 | 2.68 | PASS |
| BLE | 2402 | 3±1 | 4 | 0.0025 | 2.68 | PASS |
| 2.4G WIFI (b) | 2437 | 13±1 | 14 | 0.0251 | 2.70 | PASS |

| Worst mode | Frequency (MHz) | Tune up EIRP (dBm) | Max. Tune up EIRP (dBm) | Max. Tune up EIRP (W) | $1.31 \times 10^{-2} f^{0.6834}$ W | Result |
|------------|-----------------|--------------------|-------------------------|-----------------------|------------------------------------|--------|
| 5.1G (a) | 5180 | 15±1 | 16 | 0.0398 | 4.53 | PASS |

Simultaneous transmitting evaluation:

From above data, the exposed power density at a distance (R) of 20cm from the center of radiation of the antenna for 2.4G wifi and 5G WIFI can be calculated according to OET 65 as follow:

For Simultaneous transmitting of WIFI 5G and 2.4GHz WiFi and BLE

Simultaneous transmitting = $0.0025/2.68 + 0.0251/2.70 + 0.0398/4.53 = 0.0190 < 1$

Since the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in the device is ≤ 1.0 , the EUT is considered to satisfy MPE compliance for simultaneous transmission operations.