

RF exposure evaluation

IC 29530-ROCK4SE

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 e.i.r.p. (dBm)	Max. Tune up e.i.r.p. (dBm)	Max. Tune up e.i.r.p. (W)	$1.31 \times 10^{-2} f^{0.6834}$ W	Result
BT(8DPSK)	2402	3±1	4	0.0025	2.68	PASS
BLE	2402	0±1	1	0.0013	2.68	PASS
2.4G WIFI (b)	2437	12±1	13	0.0200	2.70	PASS
5.1G (a)	5240	13±1	14	0.0251	4.56	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

$$\text{Simultaneous transmitting} = 0.0025/2.68 + 0.0200/2.70 + 0.0251/4.56 = 0.01385 < 1$$

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.