

The Device is an interactive display panel. The panel is designed to be used as indoor equipment for commercial application.

Panel evaluated for RF radiation exposure according to the provisions of FCC §2.1091, MPE guidelines identified in FCC §1.1310 and FCC KDB 447498:2015.

TABLE 1 TO §1.1310(E)(1)—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f²)	<30
30-300	27.5	0.073	0.2	<30
300-1.500			f/1500	<30
1.500-100,000			1.0	<30

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

The worst-case scenario for **LoRa Radio at 13.56 MHz** is

S = 0.98 mW/cm², for General Population/Uncontrolled Exposure

The worst-case scenario for **pre-certifies WiFi Module 2400 MHz** is

S = 1 mW/cm², for General Population/Uncontrolled Exposure

Worse Transmitting power from new replaced pre-certified WiFi module FCC RF EXPOSURE REPORT#4789861913-5, ISSUE DATE: March 23, 2021

Worse Case new Pre-Certified WiFi Module transmitting powers					
TX	Operating Mode	Max. Tune up Power (dBm)	Max. antenna gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)
BT (Worse Case)	8DPSK	8	3.5	11.5	14.13
BLE (Worst case)	GFSK	1	3.5	4.5	2.82
WIFI 2.4G (Worst case)	WIFI 2.4G (SISO mode)	17	3.5	20.5	112.2
	WIFI 2.4G (MIMO mode)	14	6.51	20.51	112.4
WIFI5G (Worst case)	WIFI 5G	18	8.51	26.51	448

As per test report# # S002E047-43-T, worse transmitting power for Pen Tray (PT) and measured value for Panel (P) under test report QCIIDS665P1_FCCRpt.

Technology		Frequency (MHz)	Radiated Max. Field Strength (dBuv/m)	Max EIRP (dBuv/m – 95.2) (dBm)	Measured EIRP (mW)
RFID	P	13.56	52.11	-43.09	0.000049
	PT	13.56	53.3	-41.9	0.000064

Conclusion

Total Worse Case EIRP from three Radios = Worse WiFi EIRP (mW) + Worse Panel EIRP (mW) + Worse Pen Tray

$$= \quad \quad \quad 448 \text{ mW} \quad + \quad 0.000049 \text{ mW} \quad + \quad 0.000064$$

$$\text{EIRP} \quad = \quad 448.000113 \text{ mW}$$

$$\text{EIRP} \quad = \quad \mathbf{450 \text{ mW (rounded up)}}$$

To determine the minimum safe distance, the sum of all transmitted power is used

$$S = \text{EIRP} / (4\pi R^2)$$

Where: S, power density in 'mW/cm²'

EIRP, Effective Isotropic Radiated Power in 'mW'

R, distance to the center of the radiation of the antenna in 'cm'

And then re-arrange to determine the minimum safe distance for **General Population/Uncontrolled Exposure**.

$$R = \sqrt{[\text{EIRP} / (4\pi S)]}$$

$$R = \sqrt{[450 / (4\pi \times 0.98)]}$$

$$R = 6.044888395 \text{ cm}$$

R = rounded up to 6.1 cm distance Uncontrolled Exposure

Power Density using calculated distance

$$S = \text{EIRP} / (4\pi R^2)$$

$$S = 450 / [4\pi (20)^2]$$

$$S = 0.98 < \mathbf{0.089524655 \text{ mW/cm}^2}$$

$$S = 0.98 <<<< \mathbf{0.09 \text{ mW/cm}^2}$$

R = minimum 6.1 cm, for **uncontrolled exposure** (rounded up to the first decimal)

The manufacturer manual specified a minimum safe distance of 20 cm.