

Compliance with 47 CFR 15.247(i)

“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 levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.”

The EUT, model number F-0414A, is a Bluetooth audio system comprised of two transceivers. One transceiver is a USB dongle that transmits audio from a PC, and the second transceiver is a standalone receiver with stereo output jacks that receives the audio and feeds it to a stereo system. The EUT operates in the 2400-2483.5MHz band as a 15.247 Bluetooth device. The EUT will only be used with a separation distance of 20 centimeters or greater between the antenna and the body of the user or nearby persons and can therefore be considered a mobile transmitter per 47 CFR 2.1091(b). The antenna on the standalone receiver is a quarter wave dipole that is also permanently attached to the unit. This antenna has a gain of 4.39dBi. The maximum peak conducted output power is 57.01mW.

The maximum peak power is 156.675 mW (EIRP) for FCC ID: DZL0414AR. Since the transmit frequency is greater than 1.5 GHz, and the output power is less than 3.0 W ERP, the EUT is categorically excluded from routine environmental evaluation per 47 CFR 2.1091(c).

The MPE estimates are as follows:

Table 1 in 47 CFR 1.1310 defines the maximum permissible exposure (MPE) for the general population as $(f_{\text{MHz}}/1500) \text{ mW/cm}^2$. The exposure level at a 20 cm distance from the EUT's transmitting antenna is calculated using the general equation:

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

Where: S = power density (mW/cm^2)

P = power input to the antenna (mW)

G = numeric power gain relative to an isotropic radiator

R = distance to the center of the radiation of the antenna (20 cm = limit for MPE estimates)

PG = EIRP

MPE Estimate

FCC ID: DZLF0414AR

Antenna Type	Transmit Frequency Band (MHz)	Max Peak Conducted Output Power (mW)	Antenna Gain (dBi)	Minimum Antenna Cable Loss (dB)	Power Density @ 20 cm (mW/cm^2)	General Population Exposure Limit from 1.1310 (mW/cm^2)
Quarter Wave Dipole	2400	57.01	4.39	0	0.031	1

Solving for S, the maximum power density 20 cm from the transmitting antenna is summarized in the following table:

The power density does not exceed 0.031 mW/cm^2 at 20 cm; therefore, the exposure condition is compliant with FCC rules.

The applicant's radio, FCC ID: DZL0414AR, is compliant with the requirements of 15.247(i).