

Federal Communication Commission
 Authorization and Evaluation Division
 7435 Oakland Mills Road
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Attention: Reviewing Engineer

RE: RF exposure information for the equipment CK-1W (FCC ID: PYACK1W)

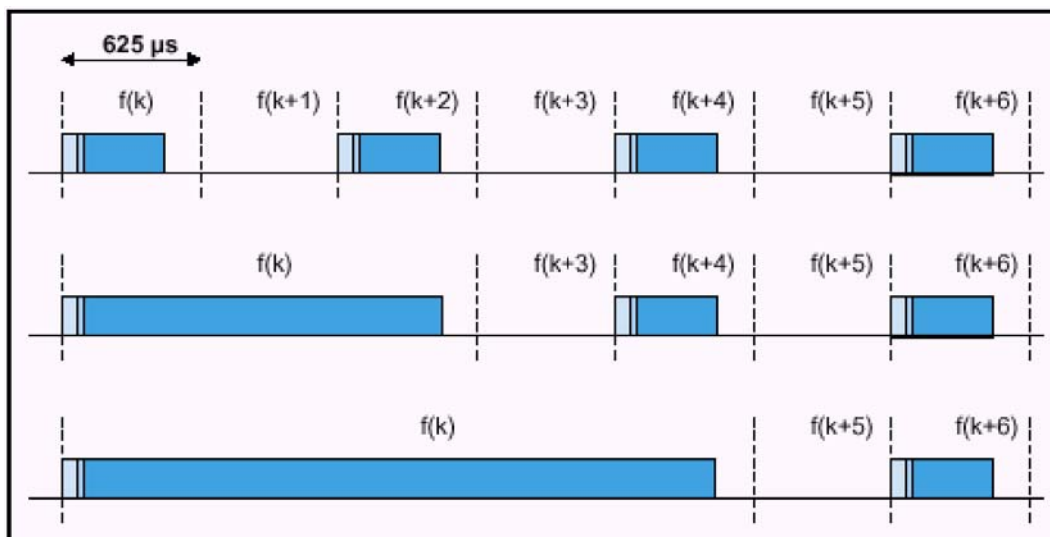
RF exposure information

The CK-1W (FCC ID: PYACK1W) is a device with a built-in Bluetooth radio module using spread spectrum technique.

A distance under normal operating conditions (wireless car kit shall be used as described in the manual) of more than 20 cm can be expected. Due to the low power of the device (less than 2.5 mW) the MPE limits can be guaranteed as the calculation below shows:

$$\text{EIRP}_{\text{max}} = 4 \text{ dBm} = 2.5 \text{ mW}$$

The worst case transmit duty cycle for only data Bluetooth device would be the transmission of DH5 packets in a piconet with just one additional user. This is shown as the bottom row in figure below.



For DH5 packets the transmitter transmits across five 625 microsecond slots minus a guard band of 259 microseconds. The transmission is followed by a 625 microsecond receive slot. The transmission duty cycle (Tdc) for this case can be calculated as:

$$T_{dc} = \frac{(625 * 5) - 259}{625 * 6}$$

$$T_{dc} = 76\%$$

The average power for DH5 packets would be:

$$\text{EIRP}_{\text{max}} \times 0.76 = 1.9 \text{ mW} = +2.79 \text{ dBm}$$

Using the equation from OET Bulletin 65 to estimate the distance from the antenna:

$$R = (\text{EIRP}/4\pi S)^{1/2}$$

Where,

R = distance to the centre of radiation of the antenna in cm

S = power density in mW/cm² (1 mW/cm² used for PE2050B)

EIRP = effective isotropically radiated power in mW (2.5 for PE2050B)

$$R = 0.39 \text{ cm}$$

Therefore the 1 mW/cm² requirement is not exceeded unless the body is less than 0.39 cm from the CK-1W antenna.

In normal operation of CK-1W, the body will be more than 20 cm from the antenna. So that, the CK-1W meets the MPE limits.