

Source Based Time Average output power analysis:

Operation Condition:

In a typical operation condition the CDMA radio is in sleep mode until a alarm situation arises. These alarm conditions can be triggered by one of several sensors in the battery pack. These sensors sense vibration, tilt, temperature, light, battery level, humidity, pressure. Once the alarm is triggered, the radio wakes up and start GPS tracking by turning on the GPS receiver and reports the location through the CDMA wide area network to the host. The duty cycle of the CDMA transceiver and the GPS receiver depends on the application. Due to the limitations on battery life requirement the reporting period is limited to a maximum of once per hour. Each report will typical take in the order of 5-10s. There is also a hard duty cycle limit of 80s/hr by the carriers.

Analysis:

Due to the possibility that the device could be placed in a users pocket, although not the intended usage, the following analysis shows the SBTA versus SAR power threshold.

Max average power = 24.75 dBm = 298.5mW

Threshold Output power:

Cell Band $< 60/f(\text{GHz})\text{mW} = 71.9 \text{ mW SBTA}$ (where $f= 0.835$)

PCS Band $< 60/f(\text{GHz})\text{mW} = 31.9 \text{ mW SBTA}$ (where $f=1.88$)

Calculation

Max time on = 10 seconds.

Period (over 1 hour) = 3600 seconds.

Worst case period apply 6 min exposure time = 360 sec

SBTA factor = $10/360 = 2.8\%$

SBTA = $0.028 * 298.5 = 8.4\text{mW} < 31.9$

Conclusion:

SAR evaluation not required.