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11 May 2011

AmericanTCB
6731 Whittier Avenue
McLean VA 22101
Attn: Director of Certification

RE: Declaration of Compliance to RF Exposure Limits for Humans

Healthsense FCC ID: VUR100057

RF Exposure Statement

1. Standard Applicable

According to FCC 1.1307 (b)(1) and IC RSS-102, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a portable device operating in 2412-2462 MHz range at 71 mW.

2. Measurement Result:

MPE calculations
$S = PG / 4\pi r^2$

S = power density = 0.016 mw/cm^2
P = transmitter conducted power in milliwatts = 71
G = antenna numeric gain = 0.5 dBi, or 1.12
R = distance to radiation center in centimeters = 20

This is less than general population/uncontrolled exposure guideline of 1 mW/cm^2.

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Minimization of RF Exposure and Power Consumption

The 802.11 MSR is used primarily in battery powered applications. In order to maximize battery life, the device spends the majority of its time sleeping. The Healthsense software requires that the device send a heartbeat once every 15 minutes. This keeps the device associated with an access point, and confirms to the Healthsense monitoring software that the device is functioning correctly. The heartbeat transmission is, at maximum, 500 microseconds in length. This results in a time averaged output power of 74 mW * .000500/(15*60) = .00004 mW.
In the Healthsense pendant application, an alert is sent if the end user presses the pendant button. The MSR radio is woken up and sends a signal that is, at maximum, 500 microseconds in length. The device then dwells with its red LEDs lit, waiting for the alert to be cleared. The radio is not transmitting at this time. The alert is cleared by holding down the pendant button for ten seconds. At this time another transmission is sent, to notify the monitoring system that the alert has been cleared. The shortest possible interval between transmissions is the case where the end user pushes the button, releases it, then immediately holds it down for ten seconds. In this case the time averaged output power would be 74 mW * 2 * .000500 /10 = .0074 mW.
In the event that the pendant transmits and does not receive an acknowledge message from the access point, it retries every two seconds, for ten seconds. This is the maximum RF duty cycle than can occur in the pendant application. Its time averaged output power is 74 mW * 2 * .000500/2 = .037 mW.

By implementing the software as outlined above, both power consumption and RF exposure are minimized.