Healthsense™
1191 Northland Drive
Mendota Heights, MN 55120 Suite 100
FRN: 0017129644
Grantee Code: VUR

March 16, 2011

AmericanTCB
6731 Whittier Avenue
McLean VA 22101

Attn: Director of Certification

RE: FCC ID: VUR100057 . submittal as modular device

1. The modular transmitter must have its own RF shielding. This is intended to ensure that the module does not have to rely upon the shielding provided by the device into which it is installed in order for all modular transmitter emissions to comply with FCC Part 15 and Industry Canada limits. It is also intended to prevent coupling between the RF circuitry of the module and any wires or circuits in the device into which the module is installed. Such coupling may result in non-compliant operation.

   The MSR passed testing without use of the shield. The Modular Sensor Radio has an optional metal shield if required. The Healthsense MSR(s) are used with a family of carrier boards that are essentially identical in functionality.

2. The modular transmitter must have buffered modulation/data inputs (if such inputs are provided) to ensure that the module will comply with Part 15 and Industry Canada requirements under conditions of excessive data rates or over-modulation.

   Module fully complies with IEEE 802.11 communication protocol, which controls data flow.

3. The modular transmitter must have its own power supply regulation. This is intended to ensure that the module will comply with Part 15 and Industry Canada requirements regardless of the design of the power supplying circuitry in the device into which the module is installed.

   The Modular Sensor Radio (MSR) has a common connection castellation design configuration, which is soldered to a carrier board. As the castellation produces a common interface, various MSRs can be interchanged between carrier boards (of essentially identical functionality) to produce the needed combinations of wireless interface and sensor functionality. The carrier board with the MSR is the final deliverable product. The MSR is only used with Healthsense carrier boards, which are essentially identical in function.

   The carrier board requirements include: the reverse battery projection, a protective power on reset circuit, regulation of the battery output if needed and the sensor signal conditioning. This modular design approach allows multiple wireless interfaces to be implemented on proven sensor carrier boards, which speeds time to market. Note, the MSR design manual specifies requirements for the carrier board.

4. The modular transmitter must comply with the antenna requirements of FCC Sections 15.203 and 15.204(c) and Industry Canada requirements. The antenna must either be permanently attached or employ a "unique" antenna coupler (at all connections between the module and the antenna, including the cable). Any antenna used with the module must be approved with the

module, either at the time of initial authorization or through a Class II permissive change. The "professional installation" provision of FCC Section 15.203 may not be applied to modules.

Antenna(s) are soldered to the MSR.

5. The modular transmitter must be tested in a stand-alone configuration, i.e., the module must not be inside another device during testing. This is intended to demonstrate that the module is capable of complying with FCC Part 15 and Industry Canada emission limits regardless of the device into which it is eventually installed. Unless the transmitter module will be battery powered, it must comply with the AC line conducted requirements found in FCC Section 15.207. AC or DC power lines and data input/output lines connected to the module must not contain ferrites, unless they will be marketed with the module (see FCC Section 15.27(a)). The length of these lines shall be length typical of actual use or, if that length is unknown, at least 10 centimeters to insure that there is no coupling between the case of the module and supporting equipment. Any accessories, peripherals, or support equipment connected to the module during testing shall be unmodified or commercially available (see FCC Section 15.31(i)).

   MSR is battery powered.

6. The modular transmitter must be labeled with its own FCC ID / IC number, and, if the FCC ID / IC number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: XYZMODEL1 / IC: XXX-YYYY" or "Contains FCC ID: XYZMODEL1 / IC: XXX-YYYY." Any similar wording that expresses the same meaning may be used. The Applicant may either provide such a label, an example of which must be included in the application for equipment authorization, or, must provide adequate instructions along with the module which explain this requirement. In the latter case, a copy of these instructions must be included in the application for equipment authorization.

   The MSR will be labeled and the device will carry a label "Contains FCC ID: VUR100057"

7. The modular transmitter must comply with any specific rule or operating requirements applicable to the transmitter and the manufacturer must provide adequate instructions along with the module to explain any such requirements. A copy of these instructions must be included in the application for equipment authorization. For example, there are very strict operational and timing requirements that must be met before a transmitter is authorized for operation under FCC Section 15.231 and Industry Canada specifications. For instance, data transmission is prohibited, except for operation under FCC Section 15.231(e), in which case there are separate field strength level and timing requirements. Compliance with these requirements must be assured.

   Device is Test Report validated compliance is provided with application.

8. The modular transmitter must comply with any applicable RF exposure requirements. For example, FCC Rules in Sections 2.1091, 2.1093 and specific Sections of Part 15, including 15.319(i), 15.407(f), 15.253(f) and 15.255(g), require that Unlicensed PCS, UNII and millimeter wave devices perform routine environmental evaluation for RF Exposure to demonstrate compliance. In addition, spread spectrum transmitters operating under Section 15.247 are required to address RF Exposure compliance in accordance with Section 15.247(b)(4). Modular transmitters approved under other Sections of FCC Part 15, when necessary, may also need to address certain RF Exposure concerns, typically by providing specific installation and operating instructions for users, installers and other interested parties

Healthsense™

1191 Northland Drive
Mendota Heights, MN 55120 Suite 100
FRN: 0017129644
Grantee Code: VUR

to ensure compliance. Refer to Industry Canada RSS-GEN Section 7.1.1 and 7.1.2 for Industry Canada requirements.

Compliance statement is provided with application.

Sincerely,

Dean Anderson
Vice President of Engineering
Healthsense, Inc.