



May 9th, 2006

OmniSense's S-1 Radio Module, FCC ID : RY20002 , is seeking FCC Authorization as a modular transmitter. The EUT meets the requirements for modular approval as detailed in FCC public Notice DA00-1407. Compliance to each of the requirements is described below:

Questions are:

1. **"The modular transmitter must have its own RF shielding."**
 - a. The module integrates the RF shield.
2. **"The modular transmitter must have buffered modulation/data inputs."**
 - a. All transmitter data inputs pass through a microcontroller which digitally controls the RF transceiver chip.
3. **"The modular transmitter must have its own power supply regulation."**
 - a. The transceiver chip used is the Nordic NRF905. Its specification states in part "nRF905 is an extremely robust RF device due to internal voltage regulators". The nRF905 has an on-chip 1.8 Volt regulator ensuring stable and predictable RF performance over a wide 1.9-3.6V external supply range.
4. **"The modular transmitter must comply with the antenna requirements of section 15.203 and 15.204(c)."**
 - a. The antenna is soldered to the PCB and is therefore permanently attached OR
 - b. The antenna is attached through a compliant Reverse Polarity SMA connector.
5. **"The modular transmitter must be tested in a stand-alone configuration."**
 - a. The module was tested in a stand alone configuration.
6. **"The modular transmitter must be labeled with its own FCC ID number."**
 - a. The module has the text "FCC ID RY20002" silk-screened on the PCB. When this is not visible because the module is incorporated inside another device the following label will be used:
 - i. "Contains Transmitter Module FCC ID: RY20002"
7. **"The modular transmitter must comply with any specific rule or operating requirements applicable to the transmitter and the manufacture must provide adequate instruction along with the module to explain any such requirements."**
 - a. There is no known way to manipulate the module's external digital control signals to result in non-compliant transmitter behavior.



8. “The modular transmitter must comply with any applicable RF exposure requirements.”

- a. The EUT supports the connection of only one antenna at a time. The MPE estimates are as follows: Table 1 in 47 CFR 1.1310 defines the maximum permissible exposure (MPE) for the general population as 1mW/cm². The distance from the EUT’s transmitting antenna where the exposure level reaches the maximum permitted level is calculated using the general equation:

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

- ii. Where:

1. S = power density (1mW/cm² maximum permitted level)
 2. P = power input to the antenna (7.1mW)
 3. G = linear power gain relative to an isotropic radiator (0dBi = numeric gain of 1)
 4. R = distance to the center of the radiation of the antenna
- iii. Solving for R, the 1mW/cm² limit is reached 0.75 cm or closer to the transmitting antenna. Therefore, no warning labels, no RF exposure warnings in the manual, or other protection measures will be used with the EUT.