

February 8, 2006

RE: Ambient Modular Radio Application

The purpose of this application is to obtain a full modular approval of the Senao NL-5354MP Plus Aries2 802.11a/b/g MINI PCI Wireless Module, (which was previously approved as a modular transmitter under FCC ID: NI3-AT53V216 by Senao International) with the addition of two external antennas: 1) Nearson portable rubber duck, Model: S181TR-2450R, and 2) Netgate omnidirectional, Model ANT-8-OMNI-NF. This approval is being sought by Ambient Corporation with a proposed FCC ID: SPKCOPWRLAA. The device is being installed by Ambient into their Wireless X-Node device which utilizes the above mentioned antennas.

The original goal of the testing performed at the request of Ambient Corporation was to obtain certification of the entire assembly; with the Senao module installed in the X-Node enclosure. The aim of certification has now changed to obtaining a modular approval which would include the two additional antennas. Please note that the technical report was written based on obtaining a non-modular approval. However, it does contain all of the tests data needed (in combination with the original Senao reports) to obtain a new modular approval with 2 additional antennas. The requirements for modular approval are addressed below.

Since the modular transmitter has previously been granted approval by the manufacturer (FCC ID: NI3-AT53V216), and is physically unchanged but for the addition of external antennas, the following requirements are unaffected:

- 1) The modular transmitter must have its own RF shielding.
- 2) The modular transmitter must have buffered modulation/data inputs.
- 3) The modular transmitter must have its own power supply regulation

The remaining requirements demand further comment:

- 4) The added antennas employ “unique” connectors to satisfy the requirements of 15.203 and 15.204(c). The module has a reverse TNC connector. The Nearson 2dBi whip comes with an optional reverse TNC connection to attach directly to the module port. The Netgate 8dBi antenna has a reverse N connector and attaches to the reverse TNC port through an extension cable. Since the module port and the antenna have non-standard connectors, only the cable and antennas specified by Ambient may be used.



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- 5) The module in its original application for modular approval was tested in a stand-alone configuration. In this application, the only further consideration is the effect of the addition of the antennas. The test configuration satisfies this consideration.
- 6) The module itself will be labeled with FCC ID: SPKCOPWRLAA. This will replace any label provided by the module manufacturer.
- 7) The Senao module is physically unchanged except for the addition of external antennas, and application for which it will be used is unchanged. Therefore the specific rules and operating requirements applicable to the transmitter are satisfied. See the statement in the Installation Manual regarding indoor operation in the 5.15-5.25GHz range which is mandated by the Users Manual issued by Senao.
- 8) Attached is the original RF Exposure Report which shows that the module complied with the requirement with a 2dBi antenna. See the attached 8dBi RF Exposure Report which shows that the requirement is still met with the addition of the ANT-8-OMNI-NF. See also Amient's Installation Manual which specifies the 20cm minimum separation distance between the antenna and all persons. This warning was mandated by the original Senao module Users Manual.