



## **Request for grant of Limited Modular Approval for the Zenner USA 208-0017-007 as FCC ID: 2ACOA-GM1**

Zenner USA manufactures a series of remote Residential Gas Meter Reading Devices. These are known as the Stealth Reader American Residential Gas and the Stealth Reader Rockwell Residential Gas. Both of the end-product embodiments utilize the same internal electronics with variations on the case design to accommodate the 2 different forms of Residential Gas Meters. The Zenner USA Part number for the finished radio module is 208-0017-007, which is also known as the Stealth Reader GMIU PCBA. To prevent confusion in the naming, the FCC ID of 2ACOA-GM1 will be used when referring to the PCBA radio module and Stealth American or Stealth Rockwell will be used when referring to the end-product.

2ACOA-GM1 is an application specific, magnetically coupled, radio interface which is part of a Mosaic® wireless mesh networking system. Mosaic® is a proprietary frequency hopping spread spectrum (FHSS) network owned by Zenner USA and operates in the unlicensed 902 MHz to 928 MHz ISM band

Mosaic® wireless networks are used in utility applications for automatic utility meter reading. Mosaic® networks use proprietary communications protocols and only interoperate with other Mosaic® devices designed by Zenner USA. They are not marketed to the general public for consumer applications.

Zenner USA is requesting the grant of a Limited Modular Approval for the 2ACOA-GM1.

Zenner USA designed the 2ACOA-GM1 to meet the requirements for a Limited Modular Approval. The 2ACOA-GM1 will be enclosed within and marketed to customers only as part of the Stealth Reader American Residential or Stealth Reader Rockwell Residential end-products. The customer need only install the end-product on a Gas Meter. The radio equipment is sealed in the end-product by a urethane encapsulant and as such will be inaccessible to the customer without destroying the end-product and probably the 2ACOA-GM1.

### **Statements of Compliance to Section 15.212 of the FCC rules for the 2ACOA-GM1 for Modular Approval:**

*§15.212(a)(i) The radio elements of the modular transmitter must have their own shielding. The physical crystal and tuning capacitors may be located external to the shielded radio elements.*

There is an RF shield covering the radio transmitter portion of the 2ACOA-GM1.

*§15.212(a)(ii) The modular transmitter must have buffered modulation/data inputs (if such inputs are provided) to ensure that the module will comply with part 15 requirements under conditions of excessive data rates or over-modulation.*

No modulation / data inputs are provided. The 2ACOA-GM1 embedded processor controls the data rate and FSK deviation frequency ensuring excessive data rates or over-modulation cannot occur.

*§15.212(a)(iii) The modular transmitter must have its own power supply regulation.*





The 2ACOA-GM1 is powered by Batteries operating between 3.6 and 3.7 VDC. No other power sources are used.

*§15.212(a)(iv) The modular transmitter must comply with the antenna and transmission system requirements of §§15.203, 15.204(b) and 15.204(c). 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). The "professional installation" provision of §15.203 is not applicable to modules but can apply to limited modular approvals under paragraph (b) of this section.*

The antenna is directly formed on the PCB as a Printed Circuit Board trace of the 2ACOA-GM1. In the finished application the 2ACOA-GM1 is embedded in a urethane potting material which prevents access to the antenna.

*§15.212(a)(v) The modular transmitter must be tested in a stand-alone configuration, i.e., the module must not be inside another device during testing for compliance with part 15 requirements. Unless the transmitter module will be battery powered, it must comply with the AC line conducted requirements found in §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 §15.27(a)). The length of these lines shall be the 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 and commercially available (see §15.31(i)).*

The 2ACOA-GM1 was tested in a stand-alone configuration. The 2ACOA-GM1 is battery powered.

*§15.212(a)(vi) The modular transmitter must be equipped with either a permanently affixed label or must be capable of electronically displaying its FCC identification number.*

*§15.212(a)(vi)(A) If using a permanently affixed label, the modular transmitter must be labeled with its own FCC identification number, and, if the FCC identification 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" or "Contains FCC ID: XYZMODEL1." Any similar wording that expresses the same meaning may be used. The Grantee 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 2ACOA-GM1 is permanently marked with the FCC ID as part of the Printed Circuit Fabrication. In addition, the various housings for the 2ACOA-GM1 have a label stating that the 2ACOA-GM1 is contained within the enclosure. The label has the identifying phrase "CONTAINS FCCID:2ACOA-GM1" Drawings specifying the label and placement are provided in the application for equipment authorization. These drawings are for use at the point of manufacture since there is no User access to the 2ACOA-GM1 once encapsulated.

*§15.212(a)(vii) The modular transmitter must comply with any specific rules or operating requirements that ordinarily apply to a complete 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.*



The 2ACOA-GM1 complies fully with the operating requirements of Part 15.247 as demonstrated in the test report exhibit. The 2ACOA-GM1 is a self-contained system. User configuration of the 2ACOA-GM1 is not required or provided.

*§15.212(a)(viii) The modular transmitter must comply with any applicable RF exposure requirements in its final configuration.*

Specific instructions for RF exposure are addressed in the User's Guide.

*§15.212 (b) A limited modular approval may be granted for single or split modular transmitters that do not comply with all of the above requirements, e.g., shielding, minimum signaling amplitude, buffered modulation/data inputs, or power supply regulation, if the manufacturer can demonstrate by alternative means in the application for equipment authorization that the modular transmitter meets all the applicable part 15 requirements under the operating conditions in which the transmitter will be used. Limited modular approval also may be granted in those instances where compliance with RF exposure rules is demonstrated only for particular product configurations. The applicant for certification must state how control of the end product into which the module will be installed will be maintained such that full compliance of the end product is always ensured.*

The 2ACOA-GM1 is designed with the intent that the requirements for a modular approval be met. The 2ACOA-GM1 is not available to parties outside of Zenner. Its purpose is as an electronic assembly to be housed in a structure that forms a Zenner USA product. The manufacture and test of the final product is performed at Zenner facilities, either globally or domestically or under the direction of Zenner USA.

Respectfully submitted,

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