



Kirale Technologies SL
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FCC Modular Approval Request

Federal Communications Commission
Equipment Authorization Branch
7435 Oakland Mills Road
Columbia MD 21046

Logroño, October 26, 2017

Dear application examiner,

Kirale Technologies KTWM102-11/KTWM102-21 (FCC ID:2AG3IM102) would like to have your authorization as a modular approval according to the requirements of the FCC section 15.212 rules, that are fulfilled as stated below:

(1) Single modular transmitters must meet the following requirements to obtain a modular transmitter approval.

(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.

Yes, the KTWM102-11/KTWM102-21 modular transmitter includes a non-detachable custom shield, with the crystal located internal to the shield and the tuning capacitors external to the shield, as shown in the external photos.

(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.

Yes, the KTWM102-11/KTWM102-21 module buffers the modulation and data in firmware. The buffering of data is controlled by Kirale's proprietary firmware. The OEM customer cannot adjust firmware to provide for excessive data rates or modulation parameters outside of the FCC approved modes. The transmission is performed with 250 kbps O-QPSK modulation.

(iii) The modular transmitter must have its own power supply regulation.

Yes, the ATSAMR21 SoC included in the KTWM102-11/KTWM102-21 module, which in turn powers the RF section, provides input power supply regulation in the range of 1.8 VDC – 3.6 VDC, assuring a stable power supply voltage.

(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).

Yes, the KTWM102-11/KTWM102-21 module fulfills the requirements of sections 15.203 and 15.204(c). The KTWM102 module comes in two variants, one with a permanently attached antenna (2450AT18B100) and the other one with a unique antenna coupler (W.FL connector).

(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)).

Yes, the KTWM102-11/KTWM102-21 module is tested in a stand-alone configuration, mounted on the test platform KTDG102 only for power and communication purposes and complying with all the requirements of this rule. Please see test report and photos for this module.

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

(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:2AG3IM102” or “Contains FCC ID:2AG3IM102.” 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.

(B) If the modular transmitter uses an electronic display of the FCC identification number, the information must be readily accessible and visible on the modular transmitter or on the device in which it is installed. If the module is installed inside another device, then the outside of the device into which the module is installed must display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains FCC certified transmitter module(s).” Any similar wording that expresses the same meaning may be used. The user manual must include instructions on how to access the electronic display. A copy of these instructions must be included in the application for equipment authorization.

Yes, the KTWM102-11/KTWM102-21 module shield will be manufactured with its FCC ID number engraved or

printed on it. When the module is installed inside another device, the FCC ID will not be visible and the OEM customer will be instructed to how to apply the exterior label.

(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.

Yes, the KTWM102-11/KTWM102-21 module is compliant with all applicable FCC rules. Any regulatory instructions are included in the user manual.

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

Yes, the KTWM102-11/KTWM102-21 module will comply with any applicable RF exposure requirements in its final configuration.

Name: Manuel Amutio
Title: CEO
Company: Kirale Technologies SL
Signature:

A handwritten signature in blue ink, appearing to be 'Manuel Amutio', written over a light blue grid background.