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| **Applicant/Grantee** | **Atmel Norway AS** |
| **FCC ID:** | VW4A091729 |

**Section 15.212 Modular Transmitters**

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| **Request for Single Modular Approval** | ☒ | **Request for Limited Single Modular approval** | ☐ |

| Sl. No | Requirements | EUT Conditions | Comply (Y/N) |
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| 01 | 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 | The Module has its own shielding. Shielding can be employed on the board structure. | Y |
| 02 | 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 | All Modulation and data input(s) are buffered. Refer block diagram and schematic diagram. | Y |
| 03 | The modular transmitter must have its Own power supply regulation. | The AT86RF233 IC has internal power supply regulator of 1.8V, that is used to power the Radio core | Y |
| 04 | The modular transmitter must comply with the antenna and transmission system requirements of Sections 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 Section 15.203 is not applicable to modules but can apply to limited Modular approvals under paragraph (b) of this section. | An RF measurement port is provided with a unique connector for probing purpose. Please refer attached query response from FCC in appendix.<br><br>The Antenna for the module is Built-in Chip Antenna | Y |
| 05 | 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 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 | | Y |

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| | Module (see Section 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 Section 15.31(i)). | | |
| 06 | The modular transmitter must be equipped with either a permanently affixed label or must be capable of electronically displaying its FCC Identification number.<br>*(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*<br>*Installed must also display a label referring to The enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module*<br>*FCC ID: XYZMODEL1" or "Contains FCC ID:*<br>*XYZMODEL1." Any similar wording*<br>*That expresses the same meaning may be used.*<br>*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.*<br>*(B) If the modular transmitter uses an electronic*<br>*display of the FCC identification number, the*<br>*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* | Refer Zigbit RF233-Amp User Manual document. | Y |

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| | *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.* | | |
| 07 | 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. | . Refer Zigbit RF233-Amp User Manual document. | Y |
| 08 | The modular transmitter must comply with any applicable RF exposure requirements in its final configuration | | Y |

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

Sincerely,

Saravanakumar Marudhachalam

Manager, Tools HW development

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## Appendix

**From:** oetech@fccsun27w.fcc.gov [mailto:oetech@fccsun27w.fcc.gov]
**Sent:** Tuesday, June 05, 2012 1:48 PM
**To:** Yasi, Kenneth
**Subject:** Response to Inquiry to FCC



**Office of Engineering and Technology**

**Inquiry on 05/30/2012 :**

**Inquiry:**

Hello

I would like an official opinion regarding if a Hirose U.FL part number U.FL-R-SMT-1 is considered to meet the requirements of 15.212iv for unique rf connector, for :"single modular transmitter" certification. It has been suggested at specific TCB's that this does not meet "unique" characteristics. This is in regards to an 802.15.4 module product ( example FCC ID VW4A090668 ) and future designs.

This product was only allowed "limited modular certification" strickly due to the fact that it contained a U.FL rf connector.

A related question is in regards to "professional installation". These modules are manufactured and sold by us, an IC vendor to OEM product manufacturers. The module will be "installed" or integrated into a final product by the "professional"OEM vendor. The question is, the final product that includes the module and specified certified antenna,may be a consumer product or industrial product etc. and the final product may not require "professional installation of the total final product at an end location " but certainly the installation of the module within the product with its connections to the

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supplied antenna will be "professionally installed".

Does this scenario meet the "professional installation" requirement that then would not require one to consider the "unique" rf connector stipulation ?

The Intent is that we develop/manufacture an 802.15.4 rf module with U.FL rf connector and certify this design with a few specific antenna's having short cable and U.FL mating connector. Our customers, OEM product developers would purchase the module and specified tested antenna types, and install/design them into their final product. They would then take the FCC ID assigned to us, the module vendor, and include it on packageing, documentation etc. Then except for issues of SAR or multiple transmitters in a product which is not likely, they would not have to re submit their final product for part 15 "intentional radiator" certificaiton and testing. They would obviously have to handle normally all unintentional radiator digital testing and certification proceedures. We would provide with our module an " integration manual" to properly instruct the OEM on any an all requirements regarding SAR,multiple transmitters,antenna types, duty cycle or Power restrictions that they must adhere to.

Opinions and comments that we may use, and submit to the TCB organizations contracted to certify our products using U.FL connector's, would be very much appreciated.

Thank you

Ken Yasi

Atmel Corporation

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**FCC response on 06/05/2012**

**A certified transmitter module may use a standard connector on the module (such as a U.FL RF connector) and be considered under 15.203 as professionally installed under the following conditions:**

- **The module when installed in the OEM host can not be designed for end users to have access within the hosts to replace or change the antenna connection between the module and antenna(s).**

- **The OEM or host instructions must provide integration instructions to the host manufacture for instillation of all certified antennas and acceptable antenna connections between the module connector to the final antenna(s).**

- **The OEM instruction shall make it clear that if the host manufacture designs the host so that a broken antenna can be replaced by the user, that a standard antenna jack or electrical connector is prohibited under Part 15.203. The Host instructions shall provide a list of unique connectors commonly used for part 15 transmitters.**

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## Under these conditions that module does not have to be limited.

**Attachment Details:**

Do not reply to this message. Please select the Reply to an Inquiry Response link from the OET Inquiry System to add any additional information pertaining to this inquiry.

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