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Federal Communications Commission
Equipment Authorization Branch
7435 Oakland Mills Rd
Columbia MD 21046-1609

Dresden, 08th February 2013

Request for limited split modular approval

agent: dresden elektronik ingenieurtechnik gmbh
client: Atmel Automotive GmbH
FCC ID: VNR-E33SD-X5B-00
FCC Part 15 Certification

Dear Sir or Madam,

the Atmel Automotive GmbH, module FCC ID: VNR-E33SD-X5B-00 is seeking FCC authorization as a Limited Split Modular Device.

The wireless radio node consists of:

1. Radio Extender Board REB233SMAD(AVR2162), assembled with
2. Two 2.4GHz Omni Rubber Antennas M35-S, mounted on
3. REB Controller Base Board REB-CBB, which hosts an application firmware available with
4. Atmel AVR2025: IEEE 802.15.4 MAC Software Package

Part 1. and 4. are being certified and explain the Atmel series of controller boards.

The following requirements of the FCC Public notice DA00-1407 are fulfilled:

- 1. The radio front end must be shielded. The interface between the split sections of the modular system must be digital with a minimum signaling amplitude of 150mV peak-to-peak. [15.212(2i)]**

The radio part of the transmitter device is covered with its own RF shielding. See enclosed product photos in exhibit "external photos". The SPI and other interface signals have a amplitude above the requested minimum of 150mV peak-to-peak.



- 2. The modular transmitter must have buffered modulation/data inputs. Control information may be exchanged between the transmitter control elements and radio front ends. [15.212(1ii) + (2ii)]**

The transmitter device is operated over a digital interface (SPI + control signals). The transmitter device has a memory management unit inside of the IC. All data received over the digital interface is buffered internally.

- 3. The modular transmitter must have its own power supply regulation [15.212(1iii)]**

The transmitter gets supplied by the host device (REB-CBB). The transmitter is protected against overvoltage and reverse polarity.

- 4. The modular transmitter must comply with the antenna requirements of Section 15.203 and 15.204c [15.212(1iv)]**

The transmitter shall only be used with the tested approved antenna. This component is provided together with the transmitter and attached to the transmitter. In accordance with FCC public requirements DA00-1087 it is allowed to use a standard antenna connector when professional installation is required for the transmitter. A professional installation is applicable for limited modular approvals according to §15.212(1)(iv).

The transmitter is intended to be used for further engineering, development, demonstration, or evaluation purposes only, according to the user manual important notice. The EUT is designed to provide a reference design for the implemented transceiver to the customer.

If the customer decides to use the transmitter for an end user application, he has to engineer and certify the end user application with the help of this limited approved module reference design and compliant to FCC part 15 regulations including a new FCC ID.

- 5. The sections of a split modular transmitter must be tested in a host device. [15.212(2iii)]**

The EUT was tested installed in a host device. See also test setup photos in Exhibit "Test report". The REB233SMAD and the REB-CBB are intended for use together.

- 6. The modular transmitter must be labeled with its own FCC ID number. [15.212(1vi)]**

The EUT will be labelled with its own FCC ID number. The label is specified in Exhibit "Label Sample". If the EUT is installed inside of an end-product, the label will not be visible. In this case the customer will be instructed how to apply the exterior label.

- 7. The modular transmitter must comply with any specific rule or operating requirements applicable to the transmitter and the manufacturer must provide adequate instructions along with the module to explain any such requirements. [15.212(1vii)]**

The EUT is compliant with all applicable FCC rules. Detailed operation instructions are given in the product User Manual.

- 8. The modular transmitter must comply with any applicable RF exposure requirements. [15.212(1viii)]**

The transmitter and the host device (REB-CBB) comply with any applicable RF exposure requirements. See document "RF_exposure_requirements".



9. Manufacturers must ensure that only transmitter control elements and radio front end components that have been approved together are capable of operating together [15.212(2iv)]

The firmware on the controller device (REB-Controller Base Board) which was used during all pre-certification measurements behaves like follows: during power-up initialization, the controller reads and verifies the device ID of the radio IC on the transmitter device (Radio Extender Board) by issuing an dedicated command. If the appropriate transceiver ID has not been detected, the device immediately stops working. This is also indicated by flashing the LEDs on the controller device. Only after the controller device has verified that the authorized transmitter device is connected, radio transmission is possible.

For implementing a custom firmware, Atmel recommends using its radio protocol stack (see AVR2025) which includes the same protection mechanism as described above.

Sincerely,



Signature

Name

Michael Fleischmann

Title

Test Engineer

Company

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