



26th Sep 2013

To whomsoever it may concern

Product Application

This document explains the nature of intended application of the product mentioned below.

Product name: 2.4GHz ZigBit with ATmega256RFR2 and UFL connector

Product Model: ATZB-S1-256-3-0-U

FCC ID: VW4A092074

Product Application:

The ZigBit RFR2 UFL is a Zigbit module of the Atmel ATmega256RFR2. The IC integrates a powerful, 8-bit AVR[®] RISC microcontroller, an IEEE 802.15.4-compliant transceiver, and additional peripheral features. The built-in radio transceiver supports the worldwide accessible 2.4GHz ISM band.

The system is designed standard-based applications such as ZigBee/IEEE 802.15.4, ZigBee RF4CE, and 6LoWPAN, as well as high data rate ISM applications. Module has a unique antenna connector- U.FL (U.FL-R-SMT-1(10)).

Sincerely,

A handwritten signature in black ink, appearing to read "Saravanakumar". The signature is fluid and cursive, written over a white background.

Saravanakumar Marudhachalam
Manager, Tools HW Development,
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26-Sep-2013

Theory of Operation/Technical Description – FCC ID: VW4A092074

- RF circuit function:

The IEEE 802.15.4 compliant ATmega256RFR2 SoC(micro controller and RF transceiver in single chip) generates a modulated carrier wave at 2.4000- 2.4835 GHz with 16 IEEE 802.15.4 channels. This transceiver circuit is used by system applications as a physical layer for ZigBee applications.

- RF signal flow:

RF SoC IC outputs a differential RF signal- RFP & RFN passes through tuning elements to the RF path till the UFL antenna connector(U.FL-R-SMT-1(10)) and gets radiated or vice versa during reception

- Description of Antenna system:

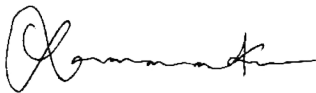
RF signal from/to the SoC goes to U.FL-R-SMT-1(10) Antenna connector and then through tuning elements to the chip antenna. Tuning elements are present to ensure compliance.

- Compliance with 15.203 antenna requirements:

FCC 15.203 requirements for this design are tested and verified during FCC compliance testing.

- Description of all modulation schemes used in the product:

Module uses O-QPSK with half-sine pulse shaping.



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Specifications of EUT

Operating Frequency	2400MHz – 2483.5MHz
No. of channels	16
Channel Spacing	5MHz
Modulation	DSSS (O-QPSK)
Transmitted Power	5.15dBm
Data Rate	250 kbps
Antenna Type	Refer Page 6 of 29 (Test Report)
Number of antenna	Two
Antenna Gain	Refer Page 6 of 29 (Test Report)
Supply Voltage	1.8V to 3.6VDC
Dimensions	20x30mm
Environmental	-20 to +85 degrees C range