January 26, 2010

Federal Communications Commission
Authorization and Evaluation Division

Modular Approval request regarding application for certification of FCC ID: X2W-SR7-1

Realtime Technologies Ltd. hereby requests modular approval of the SR7 design (FCC ID: X2W-SR7-1). The Part 15 Requirements for modular approval have been met and will be discussed below.

Item1: RF Shielding

As documented in the SR7 photos, the module is fitted with a 12mm square metal shield that is soldered to circuit ground. This shield completely covers all circuitry on the design with the exception of the trace to the integral antenna and associated passive matching components. Use of a shield provides end-users of the SR7 design greatest flexibility in module application.

Item1: Buffered modulation/data inputs

The design choice of Texas Instruments part CC2420, a single-chip 2.4GHz IEEE 802.15.4 transceiver prevents non-compliant operation resulting from signals on any inputs to the module. The CC2420 must be configured using multi-byte commands on a Serial Periphal Interface Bus (SPI) to produce RF output data. Field strength testing across the range of communication channels at a high data rate confirms Texas Instrument's published data. In addition Texas Instruments has issued no errata regarding configuration of the CC2420 to enable outputs that violate Part 15 requirements. . The default state and start-up condition of the SR7 module is "RESET" with no RF output enabled. This condition is ensured by a pull-down resistor that must be driven high by an external CPU or microcontroller to initiate communication with the SR7 radio module.

Item3: Power Supply Regulation

The design choice of Texas Instruments part CC2420, a single-chip 2.4GHz IEEE 802.15.4 transceiver ensures compliance with power supply regulation as the RF VCO, Prescaler, front-end, LNA RX/TX switch, Mixers, IF chain, ADCs/DACs, Oscillator, Phase detector and charge-pump all use an isolated power domain that is wired to the CC2420's integrated 1.8V LDO on the SR7 Module. For additional information see *Texas Instruments Chipcon CC2420 Datasheet, Section 7.*

Item4: Antenna

SR7 uses a permanently attached surface mount "chip" type antenna-- the same antenna used for all compliance testing.

Item5: Test in stand-alone configuration
The test configuration matched or exceeded the worst case for modular use. SR7 requires connections to a host microcontroller, and DC power source of 2.1-3.6V for operation. During test was affixed to the SR1 "Span" design, a 43x14mm PCB. The SR1 contains a microcontroller running at 8Mhz and a 3.0V LDO. It was connected to an USB power plug with a 3 meter cable to provide a free-space environment for testing. The microcontroller application configured the SR7 and then looped on a data transmission. A typical application would alternate between transmitting, receiving, and data processing resulting in lower data rates than during test. The SR1 "Span" enclosure is plastic and does not impact RF emission with regard to Part 15. Similarly, the SR1 PCB layout is RF transparent around the unshielded area of the SR7 module. The test condition matches product use guidelines in the SR7 datasheet.

Item6: Labeling
The RF Shield is etched with the FCC ID number. In addition the agency compliance section of the SR7 datasheet provides end user guidance on exterior labeling to meet FCC guidance for equipment authorization.

Item7: Operating Requirements
The SR7 datasheet in conjunction with the Texas Instruments Chipcon CC2420 datasheet provide clear instructions for use of the device. Specifically the SR7 datasheet explains all device connections and operating conditions. There are no additional or operational or timing requirements required.

Item8: RF Exposure
The RF field strength measurements and test report demonstrates compliance with all FCC Rules with sufficient margin to ensure compliance in any user or installer application.

Realtime Technologies Ltd, has demonstrated that the SR7 design meets FCC requirements for modular approval. In addition to the information above, the core of the SR7 design is the CC2420 2/4GHz IEEE 802.15.4 RF Transceiver.   The datasheet for that device contains the following guidance:

> The **CC2420** is a low-cost, highly integrated
> solution for robust wireless communication
> in the 2.4 GHz unlicensed ISM band. It
> complies with worldwide regulations
> covered by ETSI EN 300 328 and EN 300
> 440 class 2 (Europe), FCC CFR47 Part 15
> (US) and ARIB STD-T66 (Japan).

Test results of the SR7 at Compliance Worldwide in Sandown, NH have confirmed the vendor statements on the CC2420.

Sincerely,

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Shimmer Research Division