RS9113 n-Link®, Connect-io-n® and WiSeConnect® Modules Evaluation Board

REDPINE SIGNALS®

Driving Wireless Convergence

PRODUCT BRIEF

RS9113 n-Link®, Connect-io-n® and WiSeConnect® Modules Evaluation Board

The RS9113 n-Link®, Connect-io-n®, WiSeConnect® module families are based on Redpine Signals' RS9113 ultra-low-power, single spatial stream, dual-band 802.11n + Bluetooth 4.0 + ZigBee Convergence SoC. The RS9113 modules integrate a multi-threaded MAC processor with integrated analog peripherals and support for digital peripherals, baseband digital signal processor, analog front-end, crystal oscillator, calibration OTP memory, dual-band RF transceiver, dual-band high-power amplifiers, baluns, diplexers, diversity switch, Quad-SPI Flash and even an on-board antenna in some cases thus providing a fully-integrated, plug-and-play solution for embedded wireless applications.

These modules come with a rich set of interfaces allowing maximum flexibility of integration into any Host Processor or Micro-controller system. The RS9113 Evaluation Kit (EVK) is a single platform that enables evaluation of both hosted (n-Link®), (Connect-io-n®) and embedded (WiSeConnect®) RS9113 modules. It can be interfaced to multiple Host Processors or Micro-controllers over interfaces like SDIO, USB, USB-CDC, SPI and UART. The EVK includes a sample driver, supplicant and example applications to test the following:

1) Wireless Functionality for Wi-Fi, Bluetooth 4.0 and ZigBee
2) Security modes
3) Throughputs
4) Power Consumption
5) Firmware Upgrade

Evaluation Kit

RS9113 Module Family Evaluation Kit

USB Pen Drive
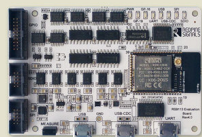
RS9113 Module Evaluation Board

SDIO Adapter Cable

SPI Adapter Cable

Micro A/B-type USB Cable

Female – Female Cables

Evaluation Kit Contents

The RS9113 Module Evaluation Kit comes with the following components:

1)   RS9113 Module Evaluation Board

2)   USB Pen Drive

3)   Micro A/B-type USB cable

4)   SDIO Adaptor Cable

5)   SPI Adaptor Cable

6)   Female - Female Cables

Wireless Specifications

Network Standard Support	IEEE 802.11 a/b/g/n, 802.11j[†], 802.11d/e/i, 802.11w[†], 802.1X, 802.11k[†], 802.11v[†], 802.11r[†], 802.11h[†] Bluetooth v2.1 EDR, v4.0 802.15.4-2009 (2.4GHz)
Data Rates	802.11n: from 6.5 Mbps to 150 Mbps (MCS 0-7) 802.11a/g: from 6 Mbps to 54 Mbps 802.11b: from 1 Mbps to 11 Mbps Bluetooth: 1, 2, 3Mbps 802.15.4-2009: 250Kbps
Modulation Techniques	OFDM with BPSK, QPSK, 16-QAM, 64-QAM 802.11b with CCK and DSSS Bluetooth: GFSK, DQPSK, 8DPSK 802.15.4-2009: DSSS
802.11n Advanced Features	1-SS, 40MHz bandwidth, Greenfield Preamble, Short-GI, 1 spatial stream STBC, RIFS, A-MSDU, A-MPDU, Aggregation with Block-ack, A-MSDU inside A-MPDU and Virtual AP support
Bluetooth Advanced Features[†]	Scatternet, Adaptive Frequency Hopping, Interlaced scanning, 15 active slaves in proprietary mode, hold, sniff and park modes
ZigBee Advanced Features	CCM* security, orphan scanning, coordinator realignment
Wi-Fi modes	Wi-Fi client, Access point, Wi-Fi Direct
Bluetooth Modes	Master, slave, scatternet[†]
ZigBee Modes	ZigBee Coordinator[†], Router[†], End device
QoS	WMM and WMM Power Save Support
Host Interfaces	USB 2.0, SPI, UART
Other Peripherals/Interfaces	I2C, I2S, SPI, QSPI, USART, GPIO, JTAG, Analog(ADC/DAC) and Ultra-low-power peripherals.
Supply Voltage	3.0-3.6V, 1.8-3.6V
Operating Temperature	Industrial Grade -40ºC to +85ºC
Software and Regulatory Certification	Wi-Fi Alliance Compliance (802.11bgn, WPA, WPA2 Personal and Enterprise, WMM, WMM-PS, WPS, Wi-Fi Direct™, Voice-Personal[β], Protected management frames[†]), Cisco CCX v5[†], Bluetooth-SIG Qualification[‡], Worldwide Regulatory Compliance: FCC (IDs are XF6-RS9113SB, XF6-RS9113DB) IC (IDs are 8407A-RS9113SB, 8407A-RS9113DB) CE/ETSI, TELEC[‡], SRRC[‡]

Typical Transmit Power(+/-2 dBm)	Wi-Fi: 18 dBm for 802.11b DSSS
	           18 dBm for 802.11g/n OFDM
	           12 dBm for 802.11a/n OFDM
	Bluetooth: 15 dBm
	ZigBee : 15 dBm

Rx sensitivity (+/- 1dBm)	Wi-Fi: 1Mbps -97 dBm (< 8% PER)
	           54 Mbps -76.5 dBm (< 10% PER)
	           MCS7(20MHz) -73 dBm (< 10% PER)
	           MCS7(40MHz) -69.5 dBm (< 10% PER)
	Bluetooth: 1 Mbps -94 dBm
	           2 Mbps -92 dBm
	           3 Mbps -84 dBm
	           BTLE(1Mbps) -91 dBm
	ZigBee: 250 Kbps -102 dBm (< 8% PER)

Evaluation Board

The Evaluation Board is designed to configure the module to use the interface on which power supply is detected. This is indicated through the LEDs mounted on the board.
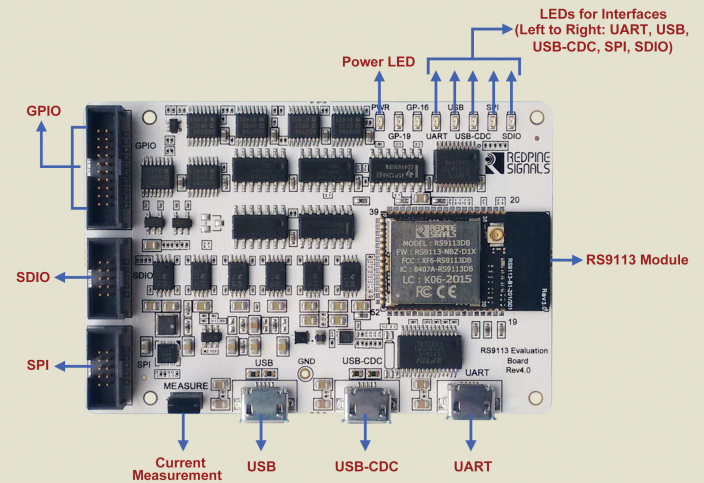
There is a 2-pin inline jumper available for measuring the current being sourced by the module during different stages of operation. This is labeled as "MEASURE" on the PCB. The user may connect a power meter or an ammeter to this jumper to measure the current.

The USB drive is bootable. It is loaded with Fedora Core 18 OS with the OneBox-Mobile driver binaries included for evaluation of n-Link® modules on a standard PC/Laptop platform.

The USB drive also has the release package for the Connect-io-n® / WiSeConnect® modules which includes the firmware, documentation and reference projects for multiple platforms.

Redpine provides drivers for multiple OS's and MCU platforms for the n-Link® modules and also OS-less MCU platforms for WiSeConnect® modules. The software provided in this kit is to enable easy and quick evaluation on a PC. Please contact Redpine Signals' Sales (sales@redpinesignals.com) for availability of drivers for an OS and MCU of your choice.

Ordering Information

Part Numbers

RS9113 - N B Z - A 1 X - E V B

A = "S" for Single band (2.4 GHz),
"D" for Dual Band (2.4 GHz/5GHz)

Related Links:

- RS9113 n-Link® Module Product Brief
- RS9113 Connect-io-n® Module Product Brief
- RS9113 WiSeConnect® Module Product Brief

†: These features are not supported by current software releases. Contact Repine Signals Sales (sales@redpinesignals.com) for details.

‡: These certifications are in progress at this time. Contact Redpine Signals Sales (sales@redpinesignals.com) for more details and for certifications not listed here.

β: Applicable to n-Link® modules only

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