

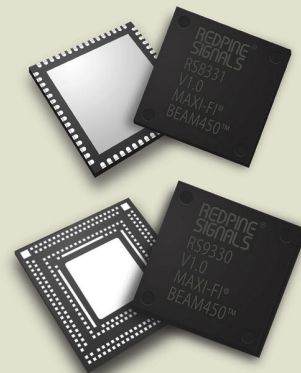
# MAXI-FI® BEAM450™ PRODUCT BRIEF



BEAM450™

## 3X3 802.11ABGN CHIPSET

Maxi-Fi® BEAM450™ is Redpine Signals' 3-Spatial Stream dual-band 802.11n solution. This high-performance MIMO chipset includes RS9330 802.11n Baseband chip, interfacing to either the RS8330 (Dual-band MIMO Radio chip) or the RS8331 (Dual-band MIMO Radio chip with built-in High Power-amplifiers). The Maxi-Fi BEAM450 chipset provides low-cost CMOS integration of a high performance MAC, baseband processor, analog front-end, crystal oscillator, calibration EEPROM, dual-band RF transceiver and dual-band high-power amplifiers (RS8331 only), thus providing a cost-effective solution targeting high throughput and high QoS wireless applications.



Maxi-Fi BEAM450 is industry's first 802.11n solution to support "Software configurable simultaneous dual-band". This patent pending feature provides system integrators the capability to re-configure the MIMO chipset on-the-fly from a 3-Spatial Stream 450Mbps 3x3 system (working in either 2.4GHz or 5GHz ISM bands) into a Simultaneous dual-band system with 150Mbps in one band and 300Mbps in the other band. Simultaneous dualband enables robust QoS provisioning for demanding video applications in crowded wireless environments, and significantly, Maxi-Fi BEAM450 provides this at zero cost and power overhead to the system. Redpine also provides TURBO900™ and TURBO1350™ reference designs which use two or three RS9330 chips respectively. These designs provide physical layer throughputs of 900Mbps and 1.35Gbps on a "single" PCI-e host interface, thus addressing the performance requirements of today's most demanding wireless video applications

## Features

- High-Performance 3 Tx – 3 Rx Dual-band 802.11n , dynamically scaled down to 1Tx – 1Rx using MIMO Power-save
- 450 Mbps data-rate using 3-Spatial Stream 802.11n MCS-23 for high user throughput
- Leverages Redpine's Patent Pending ML MIMO decoder for optimal receiver performance
- On-the-fly "Software Configurable" Simultaneous dual band – Patent Pending
- Supports 10/20/40 MHz operation
- "Host and Application Agnostic" Chip cascading in TURBO900™ and TURBO1350™ reference designs. Provides 900Mbps and 1.35 Gbps PHY throughputs using 80MHz and 120MHz bandwidths respectively – on a single PCI-e host interface
- Hardware Assisted Radar-detection for compliance to FCC and ETSI norms, enabling usage of more channels in the 5GHz band
- Supports 802.11n Advanced Transmit Beamforming (Implicit and Explicit) for increased throughput robustness.
- Integrated ThreadArch® Four-threaded processor with on chip memory for low-host overhead and customer specific differentiations
- On-chip DMA with scatter gather support for maximizing the effective throughput for a given data-rate
- Supports IPSec and TCP Checksum host-offloading
- High level of CMOS integration to minimize RBOM (E.g., On-chip OTP, Crystal Oscillator and High Power Amplifiers)
- Rich set of Peripheral and host interfaces to allow maximum flexibility for the system integrator. Host interfaces include PCIe, PCI, USB 2.0 and SDIO.

## Specifications

Network Standard Support	IEEE 802.11a/b/g/j, 802.11n, 802.11e/i/w, 802.1X, 802.11k, 802.11h
Data Rates	802.11n: from 6.5 Mbps to 450 Mbps 802.11a/g: from 6 Mbps to 54 Mbps 802.11b: from 1 Mbps to 11 Mbps TURBO900™ Ref. Design: Up to 900Mbps TURBO1350™ Ref. Design: Up to 1.35Gbps
Modulation Techniques	OFDM with BPSK, QPSK, 16-QAM, and 64-QAM 802.11b with CCK and DSSS
QoS	WMM and WMM Power Save Support
Wireless Security	802.11i: AES, TKIP, WPA2, WPS, WPE WAPI, WEP-64, WEP-128
802.11n Features	MCS0-7, MCS8-15, MCS16-23, MCS32, MCS33-38, and MCS39-52 3 spatial stream MIMO; On-the-fly Software configurable Simultaneous Dual-band (3x3 can be configured as 2x2 + 1x1) 1 spatial stream STBC, RIFS, Beamforming (Implicit and Explicit), Greenfield Preamble, Short-GI, Aggregation with Block-ack (A-MPDU, A-MSDU, AMSDU inside AMPDU), PSMP, MTBA, Fragmentation and Virtual AP support (up to 8 BSSIDs)
Host Interfaces	USB 2.0, PCIe, PCI, SDIO, SPI
Other Interfaces	I2C, SPI, UART, GPIO, JTAG
Supply Voltages	1.2V ± 10%, 3.3V ± 10%
Operation Temperature	Industrial Grade -40°C to +85°C
Certification Support	WiFi Alliance (802.11abgn, WPA, WPA2, WMM, WMM Power-save, WPS, Wi-Fi Direct™) World-Wide Regulatory Compliance

## Applications

- High Performance Laptops
- Wireless Routers
- Access Points
- Storage Devices
- Broadband Access Modems
- Set-top Boxes
- HDTVs
- Blu-ray Players, etc

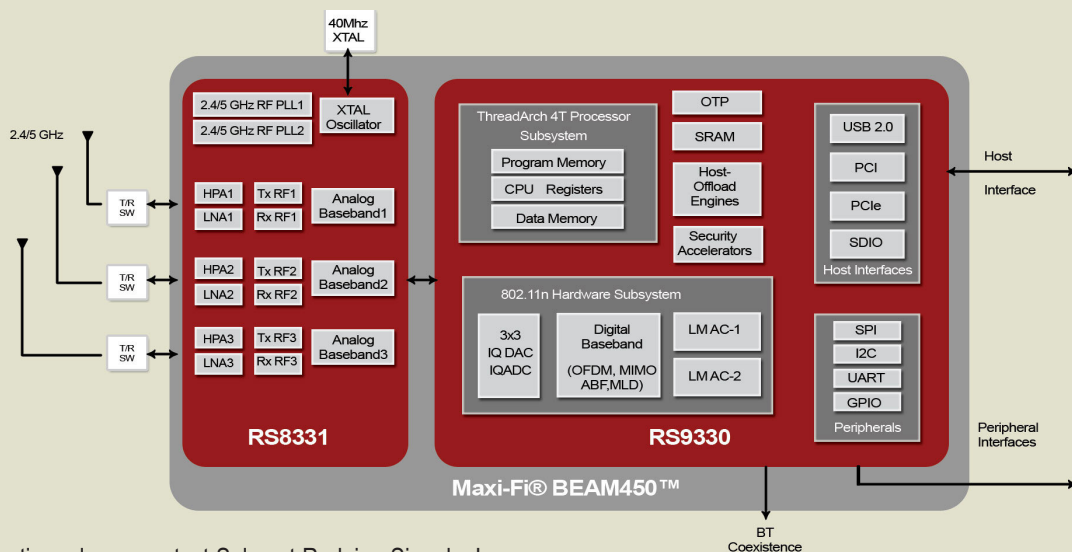
## Module Reference Design

Redpine offers form-factor PCI-e, USB2.0 and mini-PCI reference designs along with software for manufacture testing and diagnostics. For details on availability please contact sales

## Software Package

The Maxi-Fi® BEAM450 chipset is accompanied by Redpine's OneBox™ software framework with DirectLINQ™. OneBox™ supports Access Point, Station and Wi-Fi Direct™ functionality on a variety of host platforms and operating systems. The software package includes complete MAC firmware, reference drivers and configuration graphical user interface (GUI) for Linux and Windows families.

## MAXI-FI® BEAM450™ 3X3 DUAL-BAND WIRELESS SYSTEM DIAGRAM



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