

QUALCOMM®

# AR6103

1-stream 11n for Mobile





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## 1-stream 11n for Mobile

**Qualcomm® Align™**  
 The search for a perfect fit:  
 a value to velocity ratio  
 that really computes.  
 Performance meets Practical.



### Qualcomm Align

Qualcomm Align technology leverages the 802.11n 1-stream specification to provide the optimal upgrade path from legacy 802.11 solutions. The single-stream solution enables a new class of Wi-Fi devices that deliver performance enhancements over the existing 802.11g technology, at comparable price points. Align® solutions are forward compatible to higher-performance, multi-stream, MIMO-based 802.11n, and are available in reference designs to serve the networking, PC and consumer electronics markets. The enhanced throughput of Align 1-stream solutions improves network efficiency by occupying the wireless channel for shorter periods than slower 11g devices – reducing congestion and increasing capacity for additional wireless devices. Align employs all the mandatory and select optional features of the 11n specification, and Qualcomm’s advanced radio design techniques, to effectively double the wireless coverage over legacy WLAN.

### Solution Highlights

The AR6103 incorporates all the features and performance of the award winning AR6003 solution, including:

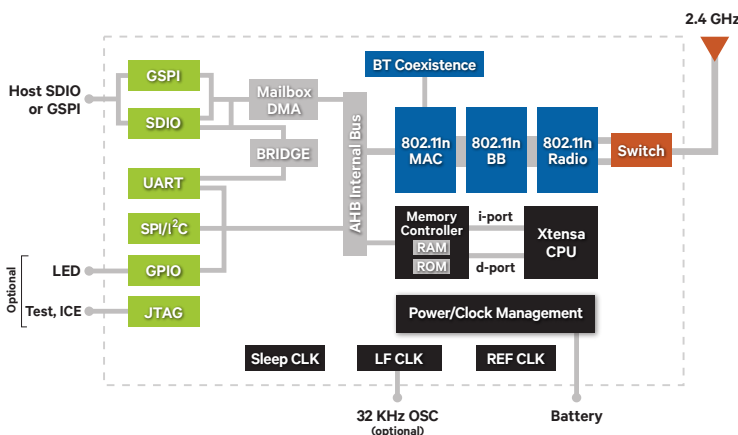
- Single-stream 802.11n for faster downloads, longer range, and lower power consumption
- The highest actual end-user throughput-over-range utilizing advanced 802.11n features including: full & half guard interval, hardware accelerated frame aggregation, space time block coding (STBC), and low density parity check (LDPC) encoding
- Highest level of on-chip integration using CMOS technology
  - Radio/MAC/Baseband
  - Patented Qualcomm Efficient Power Amplifier (EPA™) for high transmitter output power
  - Integrated power management unit
- Direct Connect™ AP Mode technology
- Qualcomm Universal Wireless Cooperation for enhanced Wi-Fi/Bluetooth Cooperation

### Qualcomm radio-on-chip for Mobile

The combination of wireless solutions for mobile WLAN, with our dominant position in the home, office and metro Wi-Fi networking markets, enables a worldwide wireless ecosystem based on the company’s technologies. Qualcomm-engineered technologies provide the most reliable wireless performance and connectivity anywhere you go. Qualcomm radio-on-chip for mobile technologies give customers the unsurpassed ability to:

- Build the most power-efficient devices
- Design for the smallest form factor applications
- Achieve the most cost-effective designs
- Deliver Qualcomm-class performance in a wide array of mobile devices, all featuring a high level of design and integration ease

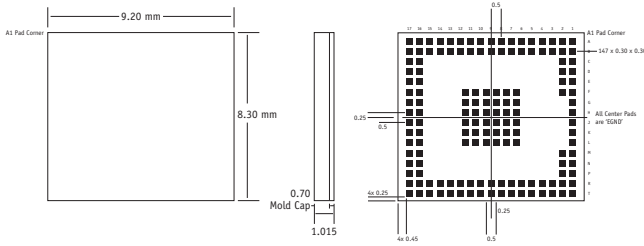
### AR6103 System Architecture



### AR6103 Product Overview

The AR6103 is Qualcomm’s third-generation Wi-Fi solution, featuring 802.11n for portable consumer electronics devices. Based on the game-changing AR6003 Wi-Fi chip, the AR6103 brings 802.11n throughput, range and power efficiency to portable CE devices, such as eBook, smartbooks and tablet PCs, Internet radios, printers, remote controls, and smart grid devices.

The AR6103 connects directly to an antenna, eliminating the need for complicated RF tuning and calibration. It is fully shielded, includes an integrated high-frequency reference clock, and connects directly to the battery, making it one of the smallest and lowest cost, complete 802.11n solution in the market.



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
A	GND	AVDD18	AVDD18	VDDIO	SHREF_J01	VDDI3	VBAT_42	PARFE33	PARFE33	OVDD12	GND	NC	NC	NC	NC	XTAL1
B	AVDD12	CLK_REF	NC	REF1	SHREF_J01	VDDI3	VBAT_42	PARFE33	PH_MODE	SHREF_J01	NC	NC	NC	NC	BT SW	BT_ACTIVE
C	HOST	NC	NC	REF2	SHREF_J01	VDDI3	VBAT_42	PARFE33	PH_MODE	SHREF_J01	NC	NC	NC	NC	NC	PERST
D	SD_CMD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	WLAN
E	SD_D1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	GND
F	SD_D2	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
G	SD_D1	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
H	SD_D0	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
J	SD_CLK	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
K	GND	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
L	ANTC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
M	NC	UART_TXD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
N	NC	UART_RXD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
P	NC	UART_RXD	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
R	NC	UART_CTS	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
T	ANTD	ANTC	GND	WIFI_RF	GND	UART_TXD	HM00E1	NC	TDS	TCX	NC	NC	NC	NC	NC	GND

## AR6103 Radio

- 2.4 GHz
- Integrated CMOS Efficient Power Amplifier (EPA™), LNA
- Adaptive radio biasing for low-power or high-performance modes
- Industry-leading receive sensitivity
- No external EEPROM required for RF calibration

## AR6103 MAC/Baseband/Processor

- IEEE 802.11b/g/n
- Integrated RISC processor
- Support for industry standard QoS schemes (802.11e, WMM, WMM-PS)
- Hardware accelerated security, including WAPI (China)

## AR6103 Specifications

On-chip functionality	Single-chip MAC/BB/RF/PA/LNA
Frequency Band	2.4 GHz
Network Standard	802.11b, 802.11g, 802.11n (1-stream)
Modulation Modes	CCK and OFDM with BPSK, QPSK, 16 QAM, 64 QAM
Hardware Encryption	WEP, WPA/WPA2 (AES and TKIP), WAPI
Quality of Service (QoS)	WMM, WMM-PS, 802.11e
Communications Interface	SDIO 2.0 and GSPI HCI UART over SDIO
Peripheral Interface	UART, SPI, I2C, 26 GPIO pins
Supported Data Rates	IEEE 802.11b 1 – 11 Mbps IEEE 802.11g 6 – 54 Mbps IEEE 802.11n 7.2 – 72.2 Mbps
Physical Specifications	8.3 mm x 9.2 mm LGA Package
Bluetooth Coexistence	Supports 2-, 3-, and 4-wire handshaking protocols Bluetooth™ 3.0 + HS ready

Qualcomm Atheros is a wholly owned subsidiary of Qualcomm Technologies, Inc. and a leading provider of wireless and wired technologies for the mobile, networking, computing and consumer electronics markets. We're focused on inventing technologies that connect and empower people in ways that are elegant and accessible to all.

Our broad connectivity portfolio allows us to offer our global customer base high-performance, end-to-end solutions, featuring Wi-Fi®, GPS, Bluetooth®, FM, Ethernet, HomePlug™ Powerline and PON technologies. By leveraging substantial expertise in RF, signal processing, software and networking we can deliver highly-integrated, low-power, system-level solutions that enable developers to create high-performance, differentiated products.

For more information, please visit us online @ [qca.qualcomm.com](mailto:qca.qualcomm.com)

