



## DRAFT-802.11n PRODUCT FAMILY

### FEATURES

- First IEEE 802.11n draft-compliant Wi-Fi® solution
- BCM4321—MAC/baseband controller for draft-802.11n and 802.11a/b/g devices (PCI/PCI Express®/CardBus)
- BCM2055—2x2 dual-band single-chip radio—3x3 and 4x4 antenna options for increased range and performance
- All CMOS implementation of the world's most advanced system architecture for draft-802.11n networks
- Fully backward-compatible with IEEE 802.11a/b/g legacy devices
- Allows cost-effective system design using low-cost PCB and single-sided assembly
- High-performance features across the Intensi-fi™ product line
  - High-performance whole house wireless coverage
  - OneDriver™
  - SecureEasySetup™
  - SmartRadio™
  - WPA™/WPA2™
  - Cisco® Compatible Extensions (CCX4)
  - Full-rate Advanced Encryption Standard (AES) engine in hardware
  - WMM™ for quality of service

### SYSTEM/CHIP BENEFITS

- Reference Designs
  - BCM94321CB2—CardBus reference design
  - BCM94321MP—Mini PCI reference design
  - BCM94321MC—PCI Express Mini Card reference design
  - BCM94704NR—AP/Router reference design
  - BCM94705NR—GbE AP/Router reference design
- Two spatially multiplexed streams support data rates up to 270 Mbps.
- Increased rate/range performance enhances user satisfaction while reducing product support calls.
- Self-calibrating architecture allows high-yield board manufacturing.
- 2x2 antenna structure maintains form factor compatibility with high-volume IEEE 802.11a/g industrial designs.
- Low-cost CMOS implementation for MAC, baseband, and radio allows integration with Broadcom's cable/DSL/set-top/VoIP chipsets.
- OneDriver: Single driver across platforms simplifies driver update process and improves customer satisfaction.
- Designs meet Pb-free/RoHS worldwide requirements.
- SecureEasySetup for simple Wi-Fi setup and security configuration.

### APPLICATIONS

- Wireless client cards for desktop and notebook PCs (PCI, PCI Express, Mini Card, Mini PCI, and CardBus form factors)
- High-performance draft-802.11n router solutions with the BCM4704 SoC and BCM4705 SoC
- Home multimedia entertainment wireless networks
- Consumer Wi-Fi devices and other embedded applications requiring high-performance throughput and range

### Intensi-fi Reference Designs



AP/Router Reference Design



PCI Express  
Mini Card  
Reference Design



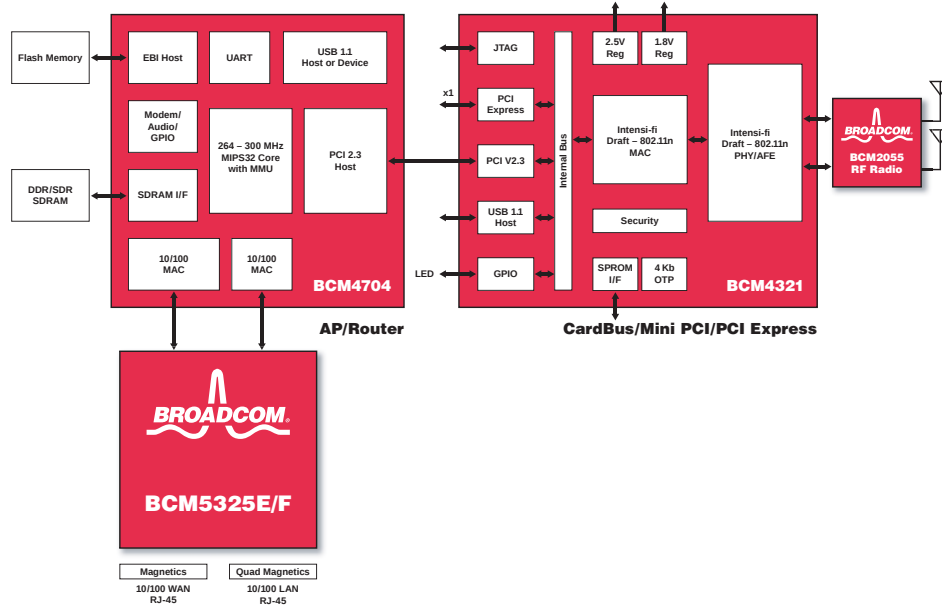
Mini PCI  
Reference Design



CardBus  
Reference Design

# OVERVIEW

## BCM4321 and BCM2055 AP/Router Block Diagram



### Intensi-fi Specifications

|                              |                                                                                                                                               |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Interface/System bus support | PCI/CardBus/PCI Express                                                                                                                       |
| Standard                     | IEEE 802.11g, 802.11b, 802.11a, Intensi-fi draft-802.11n                                                                                      |
| Data rate (Mbps)             | 54, 48, 36, 24, 18, 12, 9, 6, 11, 5.5, 2, 1<br>20 MHz BW: 130, 117, 104, 78, 52, 39, 26, 13<br>40 MHz BW: 270, 243, 216, 162, 108, 81, 54, 27 |
| Modulation                   | PSK/CCK, DQPSK, DBPSK, OFDM                                                                                                                   |
| Network architectures        | Infrastructure and ad hoc                                                                                                                     |
| Operating frequencies        | 2.4 GHz—2.5 GHz, 4.9 GHz—5.85 GHz                                                                                                             |
| Operating channels           | 2.4 GHz: 11 for North America, 13 for Europe, and 14 for Japan<br>5 GHz: 12 for North America, 19 for Europe, and 4 for Japan                 |
| RF output power              | 2x2: 2.4 GHz 16 dBm $\pm 1.5$ dB, 5 GHz 14.5 dBm $\pm 1.5$ dB                                                                                 |
| Antenna connectors           | Two or more antennas for simultaneous transmission and reception                                                                              |
| Power requirements           | 1.8V (3.3V for reference designs)                                                                                                             |
| Power consumption            | Average standby <130 mW                                                                                                                       |
| Security                     | IEEE 802.1x, WEP/WEP2, WPA/WPA2, TKIP, Weak-key avoidance, CCX, CCX 2.0, CCX 3.0, CCX4.0, 128-bit OCB mode AES, IEEE 802.11i                  |
| Software support             | Microsoft® Vista, Windows® XP, Windows® 2000, Linux®, VxWorks®                                                                                |
| Certifications               | Worldwide regulatory, Wi-Fi 802.11a/b/g, WHQL, CCX                                                                                            |

### ORDERING INFORMATION

|             |                                                                           |
|-------------|---------------------------------------------------------------------------|
| BCM94321CB2 | 2.4-GHz Intensi-fi draft-802.11n CardBus reference design                 |
| BCM94321MP  | 2.4/5-GHz Intensi-fi draft-802.11n Mini PCI reference design              |
| BCM94321MC  | 2.4/5-GHz Intensi-fi draft-802.11n PCI Express Mini Card reference design |
| BCM94704NR  | 2.4/5-GHz Intensi-fi draft-802.11n AP/Router reference design             |
| BCM94705NR  | 2.4/5-GHz Intensi-fi draft-802.11n GbE AP/Router reference design         |

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