

# 50 Series Enterprise Modules

## Dual-Band 802.11n Wi-Fi + Bluetooth 4.0

FOR THE BEST IN ENTERPRISE WIRELESS, LAIRD HAS YOU COVERED



Powered by the Qualcomm Atheros QCA6004 and the Cambridge Silicon Radio CSR8811, Laird's 50 Series Wi-Fi® + Bluetooth® modules achieve the best possible connectivity in any RF environment. With industry-leading software, Linux and Android support, and a wide range of form factors, Laird's 50 Series is a flexible option for your enterprise wireless needs. The security and robustness inherited from Laird's expertise in its 40 and 45 Series modules means the most reliable wireless in crucial, even life-critical applications, such as medical and industrial.

- **New Wireless Capabilities:** Advanced 802.11a/b/g/n, 2x2 MIMO, Advanced Power Save, Enhanced BT/Wi-Fi Coexistence, Fast Roam
- **New Form Factors:** Extremely small 15mm x 15mm SiP module, M.2 module, and more
- **Bluetooth 4.0:** Enables Classic Bluetooth and Low Energy mode.
- **Complete RF Pathway:** Onboard baluns, mobile phone coexistence filter, diplexer, power amplifier, low noise amplifier, and reference crystal oscillator.
- **Pre-calibrated for performance:** Tuned in manufacturing

## Features at a Glance



### BRING WI-FI + BLUETOOTH TO EVEN MORE DEVICES

50 Series modules are supported on Linux® and Android™.



### ALWAYS CONNECTED, EVEN IN THE HARSHTEST CONDITIONS

802.11r + CCKM support for rapid roaming and true TX/RX Diversity with 2x2 MIMO.



### MULTIPLE FORM FACTORS TO SUIT DIVERSE NEEDS

Available as a SiP, 60-pin SDIO, M.2 (USB or SDIO), and full wireless bridge subsystem.



### ROBUST SECURITY FOR ENTERPRISE DEMANDS

Full list of security standards and EAP types, plus WB's added security via Level 2 bridging.



### BROAD CERTIFICATION AND INTERNATIONAL APPROVALS

Certifications and approvals for FCC (USA), IC (Canada), ETSI (Europe), KC (Korea), Giteki (Japan), and RCM (AS/NZ).



### PERSONAL SUPPORT FROM DESIGN TO MANUFACTURE

Laird's industry-recognized integration and support organization is dedicated to reducing your time to market.

## Application Areas



Connected Hospital/  
Medical Devices



IoT Bridging/  
Cable Replacement



Industrial/AIDC

## Configuration Options

### SSD50NBT SIP Module



- Featured on each 50 Series variant
- Smallest footprint (1.5mm x 1.5mm x 2.5mm)

Small and customizable

### M2US50NBT/M2SD50NBT USB or SDIO Module



- Popular low-profile M.2 form (E-key type)
- Choose from USB or SDIO interface options
- 22mm x 30mm x 3.3mm

Widely adopted form factor, easier integration

### MSD50NBT SDIO Module



- Features 60-pin Molex connector for SDIO interface
- 32mm x 22mm x 4.7mm

Upgrade path for existing MSD customers

### WB50NBT Standalone Wireless Subsystem



- On-board Linux-based MPU
- Layers of physical/logical security
- Operates independent of host
- 47mm x 37mm x 4.9mm

Secure, robust all-in-one solution

## Key Specifications

| Category       | Feature                      | Specification  |
|----------------|------------------------------|--|
| Chipset        | Main Chip                    | Wi-Fi: Qualcomm Atheros QCA6004<br>Bluetooth: Cambridge Silicon Radio Ltd. (CSR) CSR8811 A08   |
| Interfaces     | Logical Interfaces           | USB and SDIO (Wi-Fi), UART (Bluetooth)   |
| RF Performance | Transmit Power               | Wi-Fi: 12 to 18 dBm. Bluetooth: 3 to 6 dBm   |
|                | Typical Receiver Sensitivity | Wi-Fi: -72 to -93 dBm. Bluetooth: -76 to -87 dBm.  |
|                | Antenna Options              | Pin access (SSD50). 2x U.FL (WB50, MSD50, M2US/M2SD)   |
| Environmental  | Operating Temp/Humidity      | -30°C to 85°C (-22°F to 185°F). 10 to 90% humidity (non-condensing)  |
| Wi-Fi          | Operating Frequency          | 2.4 GHz to 2.495, 5.15 GHz to 5.825 GHz (including DFS)  |
|                | Regulatory Domains           | ETSI, FCC, MIC, KCC, IC, AS/NZ (pending)   |
|                | Wi-Fi Media                  | DSSS, CCK, OFDM  |
|                | Wi-Fi Media Access Protocol  | Carrier sense multiple access with collision avoidance (CSMA/CA)   |
|                | Wi-Fi Standards              | IEEE 802.11a/b/g/n, 802.11d, 802.11e, 802.11h, 802.11i, 802.11r  |
| Bluetooth      | Standards                    | Bluetooth v2.1 with EDR, Bluetooth 4.0 (Bluetooth Low Energy)  |
| Software       | Operating Systems Supported  | <b>Linux</b> 3.x.x, 4.0.x kernel, <b>Android</b> 4.1.2 (Jellybean) and newer   |
| Security       | Standards                    | WEP, WPA, WPA2   |
|                | Encryption                   | WEP, TKIP, AES   |
|                | Supported EAP Types          | EAP-FAST, EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, PEAP-TLS, LEAP   |
| Certifications | Applicable Certifications    | <b>Wi-Fi Alliance</b> (pending)<br>802.11a, 802.11b, 802.11g, 802.11n<br>WPA Enterprise, WPA2 Enterprise<br><b>Cisco Compatible Extensions (Version 4)</b> (pending)<br><b>Bluetooth SIG Qualification</b> (pending) |
| Warranty       |                              | Three-year Limited Lifetime  |



For full specifications on 50 Series modules, please see the appropriate Hardware Integration Guide.

## Did You Know?

LSR, a Laird Business, is a leader in Wireless Product Development, offering true end-to-end solutions through its array of services and technical expertise.



### Design Services

- RF Hardware and Antenna Design
- Software/Firmware Development
- Mobile App/Cloud Development
- Industrial Design
- Mechanical Engineering



### EMC Testing & Certification

- On-Site FCC/IC/CE/Giteki/RCM EMC Certification
- Wireless and Antenna Testing
- EMC Emissions Testing
- International Testing Services

Contact Sales - Americas: +1 262 375 4400      Korea: +82 10 2622 3935  
Europe: +44 1628 940 ext. 958      Hong Kong: +852 2923 0610

To learn more about LSR visit:  
[www.lsr.com](http://www.lsr.com)

Interested in Laird's 50 Series modules?  
Contact us at [www.lairdtech.com/contact-us-50-series](http://www.lairdtech.com/contact-us-50-series)

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