CM9-GP is an IEEE802.11a/b/g 108Mbps wifi mini-PCI module in type IIIB form factor designed specifically for integration in performance-critical applications. Providing 108Mbps connection speed, reliability, security, and low power consumption required for business-critical applications, CM9-GP is a feature-rich full size mini-PCI. It is ideal for embedding into new or existing ergonomic devices such as notebooks, APs, and application-specific devices (ASDs) used in vertical market.

Optional 14KV ESD protection design avoids surge damage in outdoor applications, and optional Wake-on-WLAN feature enables devices to turn off when idle and power-on remotely to conserve power.

**Key Features:**
- Mini-PCI Type IIIB form factor is ideal for embedding into new or existing performance-critical applications.
- Windows 98SE/ME/2000/XP/NT4.0 SP6/Linux driver and comprehensive client utility supports provide immediate 11a/b/g wifi and management capability.
- Supported by MADWiFi providing Linux kernel drivers for industrial, academic, or personal projects at highest flexibility and lowest cost.
- Optional WinCE4.2/5.0 drivers assure trouble-free WiFi integration.
- Supports universal 802.11a/11g/11b auto fallback data rate and seamless roaming among 802.11a, 802.11b, and 802.11g multiple AP wifi networks.
- SuperA/G supports data rate up to 108 Mbps in 802.11a turbo mode and 802.11g super mode; 54 Mbps in standard 802.11a and 802.11g mode.
- Off/normal/maximum power management options minimize system power consumptions.
- Optional 14KV ESD protection available by project.
- Optional wake-on-WLAN enables devices to turn off when idle and remote power-on to conserve power.
- Country code selector provides flexibility to change regulatory domains.
- Hardware radio on/off mechanism support provides highest design flexibility for integrators.
- Hardware encryption of WEP/WPA/WPA2 security is ideal for performance-critical devices.
- Supports WEP/WPA/WPA2, IEEE802.1x (EAP-TLS, EAP-PEAP, LEAP), and LEAP/CCX3.0 providing advanced level of LAN security.
- Supports eXtended Range (XR) technology improves wireless coverage.
- Dual Hirose U.FL antenna connectors enable transmit and receive diversity for flexible RF design.

**Higher Performance than MB42 Reference Design:**
- becomes an industry standard of WiFi MiniPCI module.
- 6dB sensitivity improvement than standard MB42 design.
- 5dB EVM improvement than standard MB42 design to provide stable quality on Tx signal.
Specifications:

Standard Conformace
IEEE 802.11a, 802.11b, 802.11g

Frequency Range
- USA/Canada: 2.400~2.483GHz, 5.15~5.35GHz, 5.725~5.825GHz
- Europe: 2.400~2.483GHz, 5.15~5.34GHz, 5.47~5.725GHz
- Japan: 2.400~2.483GHz, 4.90~5.091GHz, 5.15~5.25GHz
- China: 2.400~2.483GHz, 5.725~5.85GHz

Interface
32-bit mini-PCI Type IIIB

Operation Voltage
3.3V +/-5%

Modulation Technique
- 802.11a: OFDM with BPSK, QPSK, QAM, 64QAM
- 802.11b: DSSS with DBPSK, DQPSK, and CCK
- 802.11g: OFDM and DSSS

Data Rate
- 802.11a (Normal mode): 54, 48, 36, 24, 18, 12, 9, 6Mbps, auto-fallback
- 802.11a (Turbo mode): 108, 96, 72, 48, 36, 24, 18, 12 Mbps, auto-fallback
- 802.11b/g: 11, 5.5, 2, 1 Mbps, auto-fallback, up to 54 Mbps
- 802.11g (Super mode): up to 108 Mbps

Operating Channels
- 802.11a
  - US/Canada: 12 non-overlapping channels
  - Europe: 19 non-overlapping channels
  - Japan: 4 non-overlapping channels and 7 non-overlapping
  - China: 5 non-overlapping channels (5.725~5.85GHz)
- 802.11b/g
  - US/Canada: 1~11
  - Major European Countries: 1~13
  - France: 10~13
  - Japan: 11b: 1~13 or 14, 11g: 1~13
  - China: 1~13

Power Consumption

<table>
<thead>
<tr>
<th></th>
<th>802.11a</th>
<th>802.11b</th>
<th>802.11g</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTP Tx</td>
<td>360~410mA</td>
<td>430~470mA</td>
<td>350~400mA</td>
</tr>
<tr>
<td>FTP Rx</td>
<td>310~350mA</td>
<td>310~350mA</td>
<td>310~350mA</td>
</tr>
<tr>
<td>Standby mode</td>
<td>270~310mA</td>
<td>250~290mA</td>
<td>280~320mA</td>
</tr>
<tr>
<td>Power saving mode</td>
<td>20mA (typical)~40mA(max)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF Off</td>
<td>20mA (typical)~40mA(max)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Transmit Power Settings
- 802.11a: 18 dBm @6Mbps, 12 dBm @54Mbps
- 802.11b: 19 dBm
- 802.11g: 19 dBm @6Mbps, 14 dBm @54Mbps

Operating Range (subject to environment and antenna)
- 802.11a
  - Outdoor: over 350m@6Mbps
  - Indoor: 35~100m@6Mbps
- 802.11b
  - Outdoor: over 350m@11Mbps
  - Indoor: 35~100m@11Mbps
- 802.11g
  - Outdoor: over 350m@6Mbps
  - Indoor: 35~100m@6Mbps

Receive Sensitivity
- 802.11a
  - -67 dBm@54 Mbps
  - -87 dBm@6 Mbps
- 802.11b
  - -87 dBm@11 Mbps
  - -94 dBm@1 Mbps
- 802.11g
  - -70 dBm@54 Mbps
  - -87 dBm@6 Mbps

Antenna
two UFL ultra-miniature coaxial antenna connections for diversity receive at both 2.4GHz and 5 GHz. Use Hirose pigtail to connect to a standard antenna.

MAC Protocol
CSMA/CA with ACK architecture 32-bit MAC

Security
- 64-bit, 128-bit, 152-bit WEP Encryption
- 802.1x Authentication
- AES-CCM & TKIP Encryption
- WPA, WPA2
- Cisco CCX

Operation Mode
Infrastructure & Ad-hoc mode
### Specifications:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Systems Supported</td>
<td>Windows 98 SE, Windows Me, Windows 2000, Windows XP, NT4.0 SP6, Linux</td>
</tr>
<tr>
<td>WHQL</td>
<td>Windows XP (Windows 2000 support)</td>
</tr>
<tr>
<td>Dimension/Weight</td>
<td>• Size: 59.75mm(L) x 44.60mm (W) x 5.00mm (H)</td>
</tr>
<tr>
<td></td>
<td>• Weight: 11g/1pcs</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>-20°C ~ 80°C</td>
</tr>
<tr>
<td>Operation Temperature Range</td>
<td>0°C ~ 70°C</td>
</tr>
<tr>
<td>EMC Certificate</td>
<td>FCC part 15 (USA), ETSI, EN301893, EN60950 (Europe), Telec (Japan) with multiple e-antenna.</td>
</tr>
<tr>
<td>Environmental Friendly Compliance</td>
<td>RoHS</td>
</tr>
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### Ordering Information:

<table>
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<tr>
<th>Part Number</th>
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<tbody>
<tr>
<td>CM9-GP</td>
<td>802.11 a/b/g 108Mbps wifi mini-PCI module, MB42/AR5213A+AR5112</td>
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