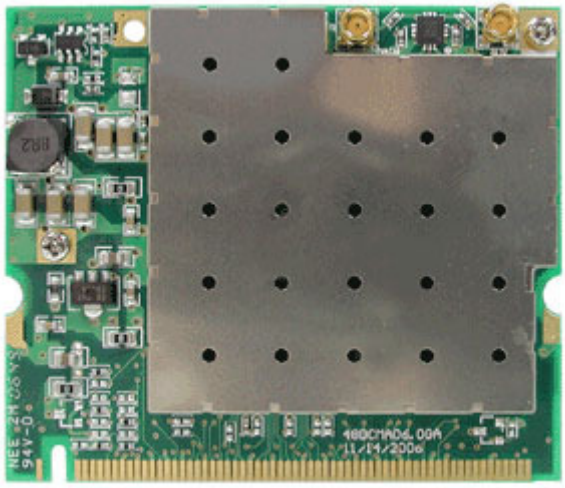
# CM10-H(MMCX): High power 802.11 a/b/g wifi mini-PCI module, AR5006XS



CM10-H (MMCX) is a high power 600mW(28dBm) IEEE802.11a/b/g 108Mbps wifi **mini-PCI** module with two MMCX RF connectors designed specifically for integration in reliability/performance-critical applications. High power design with advanced **SuperAG** feature, CM10-H (MMCX) is ideal for embedding into super-range and high-speed applications such as outdoor point to point or building to building wireless Access Point/Bridge connections.

Optional WinCE 4.2/5.0 drivers enable ASD manufacturers to provide products that enjoy improved innovation and time to market through trouble-free WiFi integration.

Key Features:

- Average power up to 200mW (23dBm) and peak power up to 600mW (28dBm) on both 802.11a and 802.11 b/g modes provide superior wifi coverage.
- **Mini-PCI** Type IIIA form factor with screw hole is ideal for solid mounting onto motherboard.
- Supported by **MADWiFi** providing Linux kernel drivers for industrial, academic, or personal projects at highest flexibility and lowest cost.
- Windows 98/ME/2000/XP/NT4.0/Vista drivers and site survey function provide immediate 11a/b/g wifi and management capability.
- 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.
- **Super AG®** supports data rate up to 108Mbps in 802.11a and 802.11g super mode.
- Future support of 802.11d (Regulatory Domain), 802.11e (Quality of Service, WMM), and 802.11h (TPC/DFS/DFS2) by software upgrade.
- Supports 64/128/152-bit WEP encryption, IEEE 802.1x authentication, AES & TKIP, and CCX3.0 encryption.
- Heat sink design provides reliable high power RF performance.

- Two MMCX antenna connectors enable robust assembly and lower loss for external antenna.
- RoHS compliance meets environment-friendly requirement.

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| Main Chipset | Atheros® AR5414A |
| Standard Conformance | IEEE 802.11a, 802.11b, 802.11g |
| Frequency Range | • 802.11a mode:<br>  ○ 5.15~5.35GHz & 5.725~5.85GHz for US<br>  ○ 4.9~5.35GHz for Japan<br>  ○ 5.15~5.35GHz & 5.47~5.725GHz for ETSI<br>• 802.11b/g mode:<br>  ○ 2.400~2.4835GHz for US, Canada, Japan, ETSI, and China |
| Channel Bandwidth | • 802.11a mode: 40MHz, 20MHz, 10MHz, and 5MHz<br>• 802.11b mode: 20MHz<br>• 802.11g mode: 40MHz, 20MHz, 10MHz, 5MHz |
| Interface | 32-bit mini-PCI Type IIIA |
| Operation Voltage | 3.3VDC ± 10% (5VDC optional by project) |
| Modulation Technique | • 802.11a:<br>  ○ OFDM with BPSK, QPSK, 16-QAM, and 64-QAM<br>• 802.11b:<br>  ○ DSSS with CCK, DQPSK, and DBPSK<br>• 802.11g:<br>  ○ OFDM with BPSK, QPSK, 16-QAM, and 64-QAM<br>  ○ DSSS with CCK, DQPSK, and DBPSK |
| Data Rate | • 802.11a (normal mode): 54, 48, 36, 24, 18, 12, 9, 6Mbps, auto-fallback<br>• 802.11a (Super mode): 108, 96, 72, 48, 36, 24, 18, 12Mbps, auto-fallback<br>• 802.11b(normal mode): 11, 5.5, 2, 1Mbps, auto-fallback<br>• 802.11g(normal mode): 54, 48, 36, 24, 18, 12, 9, 6Mbps, auto-fallback<br>• 802.11g (Super mode): up to 108Mbps |
| Operating Range (subject to the | • 802.11a<br>  ○ outdoor: over 350 meters @ 6Mbps |

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| environment and antenna) | ○ indoor: 45~120 meters @ 6Mbps<br>• 802.11b<br>○ outdoor: over 400 meters @ 11Mbps<br>○ indoor: 45~120 meters @ 11Mbps<br>• 802.11g<br>○ outdoor: over 400 meters @ 6Mbps<br>○ indoor: 45~120 meters @ 6Mbps |
| Operating Channels | • 802.11a<br>○ USA/Canada: 12 non-overlapping channels (channel 36, 40, 44, 48, 52, 56, 60, 64, 149, 153,157, 161)<br>○ Major Europe Countries: 19 non-overlapping channels (channel 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140)<br>○ Japan: 5.17/5.19/5.21/5.23GHz (channel 34, 38, 42, 46) for J52<br>5.18/5.20/5.22/5.24/5.26/5.28/5.30/5.32GHz (channel 36, 40, 44, 48, 52, 56, 60, 64) for W52 and W53<br>4.92/4.94/4.96/4.98/5.04/5.06/5.08 GHz for 4.9GHz band<br>○ China: 5 non-overlapping channels (5.725~5.85GHz)<br>• 802.11b/g<br>○ USA/Canada: 11 (1~11)<br>○ Major Europe Countries: 13 (1~13)<br>○ France: 4 (10~13)<br>○ Japan: 14 for 802.11b (1~13 or 14th), 13 for 802.11g (1~13)<br>○ China: 13 (1~13) |
| Power Consumption | • 802.11a mode:<br>○ Continue Tx: 1100mA (typical)~1300mA (max)<br>○ Continue Rx: 250mA (typical)~270mA (max)<br>○ Standby mode: 280mA (typical)~290mA (max)<br>○ Power saving: 35mA (typical)~55mA (max)<br>○ Radio off: 40mA (typical)~55mA (max)<br>• 802.11b mode:<br>○ Continue Tx: 730mA (typical)~780mA (max)<br>○ Continue Rx: 200mA (typical)~220mA (max)<br>○ Standby mode: 230mA (typical)~240mA (max)<br>○ Power saving: 35mA (typical)~55mA (max) |

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| | ○ Radio off: 40mA (typical)~55mA (max)<br><br>• 802.11g mode:<br>○ Continue Tx: 730mA (typical)~780mA (max)<br>○ Continue Rx: 240mA (typical)~260mA (max)<br>○ Standby mode: 280mA (typical)~290mA (max)<br>○ Power saving: 35mA (typical)~55mA (max)<br>○ Radio off: 40mA (typical)~55mA (max) |
| Power Consumption under Chariot Test | • 802.11a mode (Chariot Tx: Throughput.scr):<br>○ 22dBm output power 6Mbps@ 5.825GHz: 870mA(typ.)<br>○ 19.5dBm output power 36Mbps@ 5.825GHz: 630mA(typ.)<br>○ 18dBm output power 54Mbps@ 5.825GHz: 550mA(typ.)<br><br>• 802.11b mode (Chariot Tx: Throughput.scr):<br>○ 24.5dBm output power 11Mbps@ 2.437GHz: 750mA(typ.)<br>○ 24dBm output power 1Mbps@ 2.437GHz: 830mA(typ.)<br><br>• 802.11g mode (Chariot Tx: Throughput.scr):<br>○ 24.5dBm output power 6Mbps@ 2.437GHz: 780mA(typ.)<br>○ 21dBm output power 54Mbps@ 2.437GHz: 480mA(typ.) |
| Antenna | two MMCX antenna connectors for diversity function<br><br>Remark: please make sure to install two antenna on these two antenna ports. For single antenna application, one 50 Ohm terminator (or Unex's ACMCX-1) installation on the other antenna port is required. This is a high-power module, PA will be damaged and cause DC-shorted if leave antenna port open during transmission. |
| Transmit Power Target | • 802.11a:<br>○ +22 ~ 24dBm @ 6, 9, 12, 18, 24Mbps<br>○ +22 ~ 23.5dBm @ 36Mbps<br>○ +19.5 ~ 21dBm @ 48Mbps<br>○ +18 ~ 20dBm @ 54Mbps<br><br>• 802.11b:<br>○ +23.5 ~ 24.5dBm @ 1, 2, 5.5, 11Mbps<br><br>• 802.11g:<br>○ +24 ~ 24.5dBm @ 6, 9, 12,18, 24Mbps<br>○ +23.5 ~ 24dBm @ 36Mbps<br>○ +21 ~ 22dBm @ 48Mbps |

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| | ○ +20 ~ 21dBm @ 54Mbps |
| MAC Protocol | CSMA/CA with ACK architecture 32-bit MAC |
| Security | • 64-bit, 128-bit and 152-bit WEP encryption<br>• 802.1 x authentication<br>• AES-CCM & TKIP encryption<br>• CCX3.0 |
| Operation Systems Supported | Windows 98SE, Windows Me, Windows 2000, Windows XP, Windows NT4.0, Windows Vista, MADWiFi Linux |
| WHQL | Windows 2000, XP |
| Wi-Fi Compliance | WECA compliance |
| Radio Option | hardware radio On/Off support |
| Advanced Function | • SuperAG®<br>• eXtended Range<br>• JumpStart V1.0 on Microsoft 2000, XP |
| Dimension | 59.6 mm(L) x 50.8mm(W) x 7.5mm(H) |
| Operation Temperature Range | 0°C ~ +70°C |
| Storage Temperature Range | -10°C ~ +80°C |
| Operating Humidity | 10%~95%, non-condensing |
| Storage Humidity | max. 95%, non-condensing |
| EMC Certificate | FCC part 15C, CE ETSI EN301893 EN60950 |
| Environment-Friendly Compliance | RoHS |