

WPEQ-160ACN(BT)

802.11ac/a/b/g/n Dual-Band

1T1R Wi-Fi Half Mini PCIe Module



Next-Generation High Throughput Enterprise Networking Solution

WPEQ-160ACN(BT) is an 802.11ac/a/b/g/n 2.4GHz+5GHz Half Mini PCIe module based on Qualcomm QCA9377-7 chipset. It supports 1T1R with RX diversity technology, which runs up to 433Mbps, provides higher throughput performance and reliability. The WPEQ-160ACN(BT) supports 20/40/80MHz and 256-QAM to maximize bandwidth efficiency.

WPEQ-160ACN(BT) is a single-die wireless local area network (WLAN) solution to support 1x1 802.11ac/a/b/g/n WLAN standards, designed to deliver superior integration of WLAN and low-energy technology. QCA9377 supports high-speed Wi-Fi connectivity and enriched media experiences for virtually all connected devices. It is optimized for energy efficiency, which is critical to extending the battery life of portable devices. QCA9377-7, which supports a low power USB 2.0 interface for WLAN

Embedded Application

Applications include medical devices, security systems, industrial, PoS, digital signs, Gaming machine, Medical equipment, industrial tablet PC's, handheld devices, thin client devices, etc.

Key Feature

- Qualcomm Atheros QCA9377-7
- Antenna: 2 x IPEX MHF1 connectors, 1T1R
- Data Rates: Allows link speeds up to 433Mbps
- Support Win7/8.1/10, Linux 4.0

Specification

| | |
|--------------------------------------|---|
| Standards | IEEE 802.11ac/a/b/g/n (1T1R) |
| Chipset | Qualcomm Atheros QCA9377-7 |
| Data Rate | 802.11b: 11Mbps 802.11a/g: 54Mbps 802.11n: MCS0~7 802.11ac: MCS0~9 |
| Operating Frequency | IEEE 802.11ac/a/b/g/n ISM Band: 2.412GHz~2.472GHz, 5.180GHz~5.825GHz *Subject to local regulations |
| Interface | WLAN: USB |
| Form Factor | Half Mini PCIe |
| Antenna | 2 x IPEX MHF1 connectors (main antenna 0 on, diversity antenna 1 off) |
| Modulation | Wi-Fi: 802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11a: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM) |
| Power Consumption | TX mode: 400mA RX mode: 200mA |
| Operating Voltage | DC 3.3V |
| Operating Temperature Range | -20°C~70°C |
| Storage Temperature Range | -30°C~85°C |
| Humidity (Non-Condensing) | 5%~90% (Operating) 5%~95% (Storing) |
| Dimension L x W x H (in mm) | 29.85mm(±0.3mm) x 26.65mm(±0.3mm) x 3.73mm(±0.3mm) |
| Weight (g) | 3.6g |
| Driver Support | Windows 7/8.1/10, Linux 4.0 (other version by project request) |
| Security | 64/128-bits WEP, WPA, WPA2, 802.1x |

OUTPUT POWER & SENSITIVITY

802.11b

| Data Rate | Tx \pm 2dBm | Rx Sensitivity |
|-----------|---------------|----------------|
| 11Mbps | 19dBm | \leq -76dBm |

802.11g

| Data Rate | Tx \pm 2dBm | Rx Sensitivity |
|-----------|---------------|----------------|
| 54Mbps | 16dBm | \leq -74dBm |

802.11n / 2.4GHz

| | Data Rate | Tx \pm 2dBm | Rx Sensitivity |
|------|-----------|---------------|----------------|
| HT20 | MCS7 | 16dBm | \leq -70dBm |
| | MCS7 | 16dBm | \leq -68dBm |

802.11a

| Data Rate | Tx \pm 2dBm | Rx Sensitivity |
|-----------|---------------|----------------|
| 54Mbps | 13dBm | \leq -73dBm |

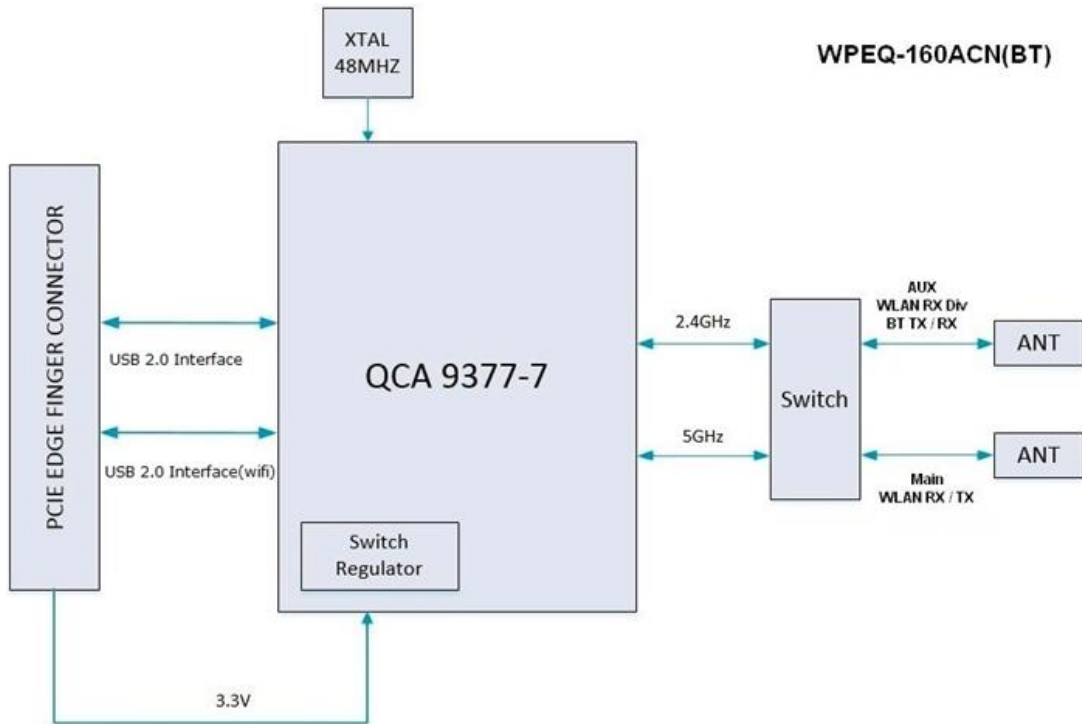
802.11n / 5GHz

| | Data Rate | Tx \pm 2dBm | Rx Sensitivity |
|------|-----------|---------------|----------------|
| HT20 | MCS7 | 13dBm | \leq -67dBm |
| | MCS7 | 13dBm | \leq -63dBm |

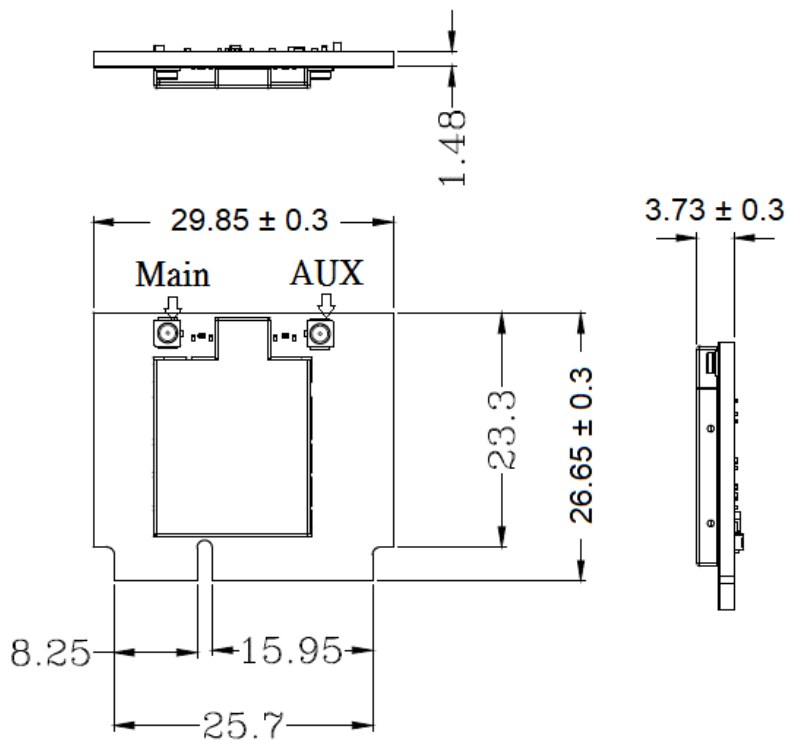
802.11ac

| | Data Rate | Tx \pm 2dBm (1TX) | Rx Sensitivity |
|-------|-----------|---------------------|----------------|
| VHT80 | MCS9 | 10dBm | \leq -55dBm |

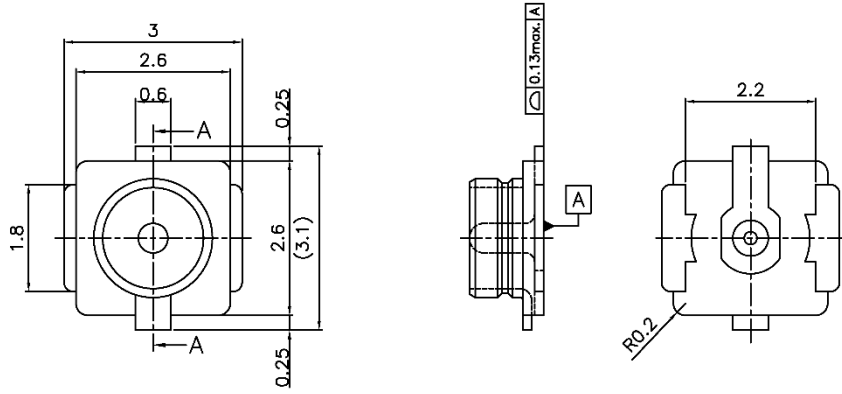
Block Diagram



Mechanical Diagram (mm)



MHF1 connector spec



Unit: mm

Pin Assignment

| Pin# | Pin Name | Description | Pin# | Pin Name | Description |
|------|---------------|-----------------|------|---------------|-----------------|
| 1 | No Connection | - | 2 | +3.3V | +3.3V |
| 3 | No Connection | - | 4 | GND | GND |
| 5 | No Connection | - | 6 | No Connection | - |
| 7 | No Connection | - | 8 | No Connection | - |
| 9 | GND | GND | 10 | No Connection | - |
| 11 | No Connection | - | 12 | No Connection | - |
| 13 | No Connection | - | 14 | No Connection | - |
| 15 | GND | GND | 16 | No Connection | - |
| 17 | USB(BT) D+ | USB serial data | 18 | GND | GND |
| 19 | USB(BT) D- | USB serial data | 20 | No Connection | - |
| 21 | GND | GND | 22 | No Connection | - |
| 23 | No Connection | - | 24 | +3.3V | +3.3V |
| 25 | No Connection | - | 26 | GND | GND |
| 27 | GND | GND | 28 | No Connection | - |
| 29 | GND | GND | 30 | No Connection | - |
| 31 | No Connection | - | 32 | No Connection | - |
| 33 | No Connection | - | 34 | GND | GND |
| 35 | GND | GND | 36 | USB(Wi-Fi) D- | USB serial data |
| 37 | GND | GND | 38 | USB(Wi-Fi) D+ | USB serial data |
| 39 | 3.3V | +3.3V | 40 | GND | GND |
| 41 | 3.3V | +3.3V | 42 | No Connection | - |

Pin Assignment

| Pin# | Pin Name | Description | Pin# | Pin Name | Description |
|------|---------------|-------------|------|---------------|-------------|
| 43 | GND | GND | 44 | No Connection | - |
| 45 | No Connection | - | 46 | No Connection | - |
| 47 | No Connection | - | 48 | No Connection | - |
| 49 | No Connection | - | 50 | GND | GND |
| 51 | No Connection | - | 52 | 3.3V | +3.3V |

Certification

Dipole Ant.

 FCC
 IC
 NCC
 CE (RED EN 300 328 V2.2.2 / EN 301 893 V2.1.1)
 MIC
 ASNZS

Ordering Information

| Product Name | Part Number | Description |
|-----------------|-------------|---|
| WPEQ-160ACN(BT) | R9701890012 | 802.11ac/a/b/g/n Dual-Band 1T1R Wi-Fi Half Mini PCIe Module |

Optional Accessory

| Product Name | Part Number | Description |
|---------------|-------------|--|
| Ant. AD-103AG | R3410110203 | 2dBi 5G/2.4GHz Dipole RP-SMA |
| Ant. AD-301N | R3410110220 | 4.4dBi/5dBi 2.4G/5GHz Dipole RP-SMA |
| CBIRF-ME150 | R3470300023 | RF Cable, I-PEX/MHF1 to RP-SMA(F); L:150mm; Coaxial 1.37 Black |
| CBIRF-ME250 | R3470300024 | RF Cable, I-PEX/MHF1 to RP-SMA(F); L:250mm; Coaxial 1.37 Black |