GT-202

Wi-Fi Module

General Description

The **GT-202** WiFi module from Zephyr Engineering, Inc. is an intelligent platform for the Internet of Everything. This complete networking platform enables customers to add full-featured Wi-Fi to a wide variety of products with minimal development effort and cost. It supports a network stack along with SSL security, enabling full-featured internet connectivity and reliable information exchange in a small, low-cost system.

The **GT-202** provides two host interfaces for connecting to local system controllers. A UART-based host interface can be used for rapid development and deployment of simple data streams between the local device and the internet cloud. A SPI slave interface is available for applications that require more advanced connectivity to the network. The reference design platform will include a PMOD interface board (**GT-202-PMOD**) to connect to existing micro controller reference platforms (e.g. Renesas Synergy S7G2 based SK-S7G2 Starter Kit or DK-S7G2 Development Kit) using a standard 12-pin PMOD connector.
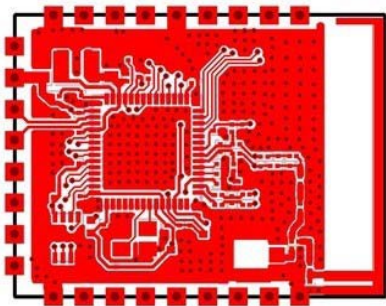
The **GT-202** module contains a Qualcomm Atheros QCA4002 chip. The QCA4002 is a single chip system on a chip (SoC) 1x1 802.11 b/g/n device optimized for low-power embedded applications with single-stream capability for both Tx and Rx. It has an integrated network processor with a large set of TCP/IP with IPv4/IPv6-based services. These services can be accessed via a serial SPI link or by a UART link connected to an external host CPU.

Typical applications:
- Household appliances
- Gaming consoles
- Handheld terminals
- Embedded wireless products
- Security monitoring devices
- Industrial control
- Home automation

The **GT-202** module can be configured to support a UART serial link. This enables a host CPU and a remote device to establish a point-to-point communication link over WLAN using a UART serial link to the host CPU.
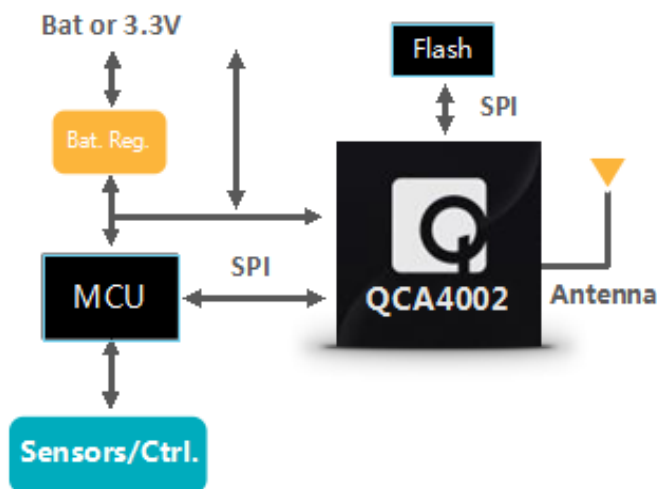

Serial to Wi-Fi SoC Solution
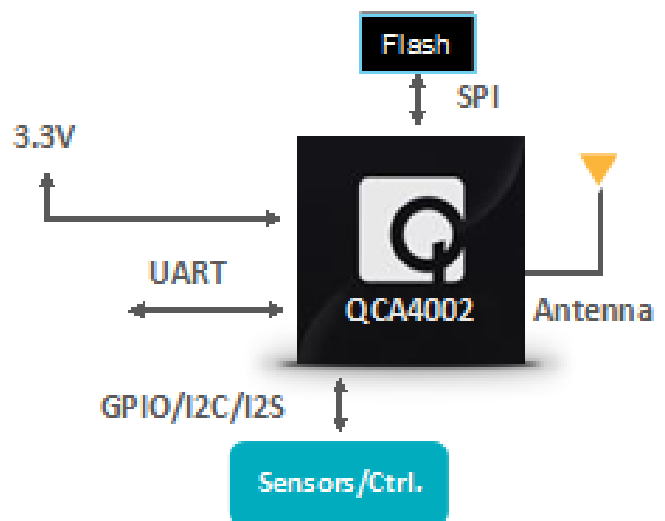
The **GT-202** module can be configured to support a SPI slave interface to a host CPU as well. In this mode, the **GT-202** can get full network functionality.

MCU Attach Full network offload

Application Program Interface

APIs provided by Qualcomm Atheros enable flexible host application customization. The firmware is written, owned, controlled, and maintained by Qualcomm Atheros, whereas the reference host software is supplied for system integrator to create application-specific host software, or even to use without modification.

Note: If system integrator leverages the Qualcomm Atheros host software components, ultimately the system developer is responsible for the host software on their platforms, OSes, and interconnects.

IPv4/IPv6 Networking

The QCA4002 includes a TCP/IP and UDP offload capability. This capability can reduce memory requirements on a host MCU by up to 100 Kbytes and also free up CPU cycles. The IP stack is a simultaneous IPv4/IPv6 stack with a BSD-like interface to simplify porting and integration with common embedded operating systems. The supported features of the QCA4002 (support for DHCP, multicast, and ARP) include:

- ARP
- Forwarding
- Fragmentation/reassembly (supported with limitation)
- IPv4/v6 header processing
- UDP/TCP socket support
- DHCP v4
- Neighbor discovery
- Broadcast/multicast
- Path MTU discovery
- Address auto-configuration
- Multicast
- TCP zero-copy feature

Warranty
- One Year

Certifications
- CE
- FCC
- ROHS compliant

Hardware Description

- Size: 24 x 18 x 2.5 mm (height is 3.6mm when a coax cable is plugged into the U.FL connector)
- Operating voltage: 3.3 V ± 10%
- Operating humidity: 20-70%
- Operating temperature range:
  - o Industrial: -40°C ~ +85°C
  - o Commercial: -10°C ~ +65°C
- RF connector: U.FL of Hirose
- Connector: SMD-Pad connector - 26 Pads
- Host interface: UART, SPI
  - o SPI slave: Allows simplified connection to local host MCU. Host driver and programming API available from Qualcomm Atheros.
  - o UART interface: Supports AT style command set.

Wireless Specification

- Standard supported: IEEE802.11b/g/n @2.4 GHz
- Frequency: 2.412 to 2.484GHz
- Channels: up to 13 channels

Performance Specification

- Host data rates
  - o UART: 115200, 8, n, 1, with actual data rate to 100k bps
 - o SPI: up to 10 Mbps

Protocols

- Internet protocols: IPv4/IPv6, TCP/UDP, ARP/NDP, DHCPv4, ICMPv6
- Security protocols: WPS, WPA, WPA2, WAPI, WEP, TKIP

Pin Assignment

Signal Name	Pin	Description
USB_DP	12	USB device / manufacturing test and configuration interface
USB_DN	13	
CHIP_PWD#	19	Power down control signal; setting this pin low forces the module in to its lowest power state
TDO	1	GPIO with multiplexed functions.
TCK/I2C_CLK	2	
UART1_TXD/I2S0_BCK/TM	3	
UART1_RXD/I2S0_MCK/TMS	4	
I2C_DATA/TDI	7	
SPI_CLK/SD_CLK/I2S1_MCK	8	
SPI_MISO/SD_D0/I2S1_WS/JTAG_EN	10	
SPI_INT/SD_D1/I2S1_SDO	14	
SD_D2/I2S1_SDI/HM0	15	
SPI_MOSI/SD_D3/I2S1_BCK	16	
SPI_CS/SD_CMD/HM1	17	
UART0_CTS	21	
I2S0_WS	22	
UART0_RTS	23	
UART0_TXD/I2S1_SDI	24	
UART0_RXD/I2S1_SDO/TRST	25	
GND	5	Ground
	9	
	18	
	26	
VDDIO_SDIO	6	3.3V supply for SDIO
3.3V	11	Analog 3.3 V supply
DVDD_GPIO	20	VDDIO 3.3 V supply for GPIOs

Mechanical View
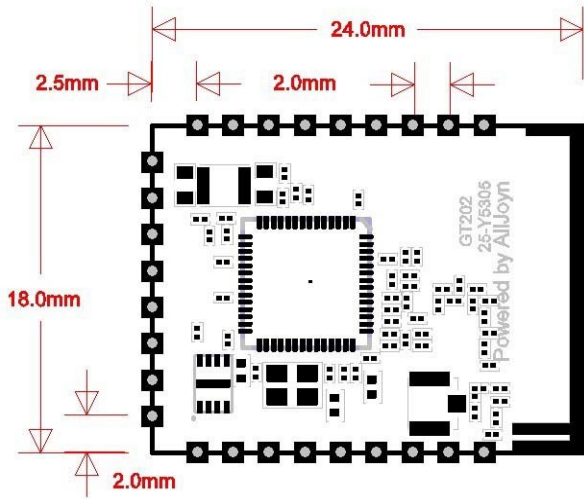
Ordering Information

Part Number	Description
GT202-GC3013	Industrial temp, PCB antenna, Firmware version is R3.3.4