

QTP940-5S1-GEVK Evaluation Board User's Manual

Introduction

QTP940-5S1-GEVK is mPCIe hardware reference module for Quantenna® QT3940BC chipset. This module can be integrated with different Residential GW SoCs to provide up to 1.7 Gbps PHY/Data Link Speed in 80 MHz mode in receive direction. It consists of one 11ac digital baseband chip and one 4 chain 5 GHz RFIC with Skyworks SKY85717-11 FEM.

Description

The QT3940BC chipset is the industry's highest performance 2x4 802.11ac client solution for best coverage.

I/O Interfaces and Features

- 2x4 MIMO Configuration
- Digital Transmit Beamforming: Explicit and Blind (Implicit)
- Advanced MIMO Features STBC and Channel State Aware Link Management for Sustained Link Robustness
- Embedded Aggregation, De-aggregation, and Packet Re-ordering
- MU-MIMO Support for Two Users
- Expanded Support for 128 Users
- LDPC Support
- Works with Quantenna RFIC QT2518B and QT6020B
- DDR2/DDR3 Memory Support
- PCIe Gen2.0 with Embedded DMA
- Two RGMII/MII Interfaces
- Standards: 802.11ac/n/a
 - 802.11i (WEP, WPA/WPA2, RADIUS)
 - 802.11d
 - 802.11e (WMM, WMM-PS)
 - 802.11w
 - 802.11h
 - 802.11k
- Operating Frequencies: 4.9–5.85 GHz
- Maximum Data Rate (per Stream) – Rates are for 256 QAM
 - ♦ 80 MHz: 1.7 Gbps
 - ♦ 40 MHz: 800 Mbps
 - ♦ 20 MHz: 346.8 Mbps

Operation

- ♦ 80 MHz: 1.7 Gbps
- ♦ 40 MHz: 800 Mbps
- ♦ 20 MHz: 346.8 Mbps



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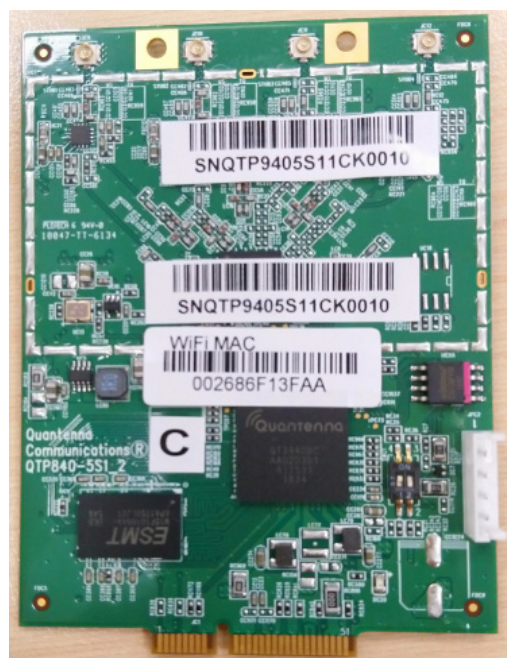


Figure 1. QTP940-5S1-GEVK Photo

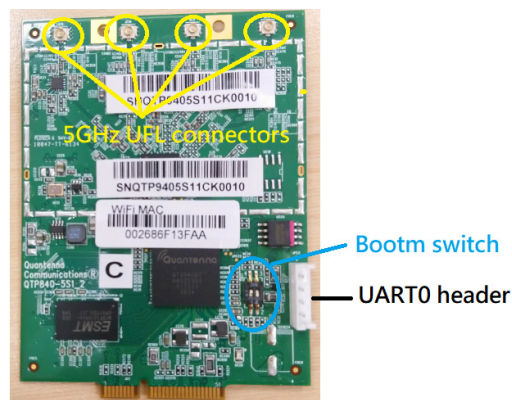


Figure 2. QTP940-5S1-GEVK Description

APPLICATIONS INFORMATION

Power Configuration

QTP940-5S1-GEVK is designed to be powered from mPCIe gold finger. When the board is powered on, the power LED will be steady green.

UART Header

The UART header is used to connect serial port for debug purpose.

Table 1. SERIAL PORT SETTING

Baud Rate	115200
Data	8 bit
Parity	None
Stop	1 bit
Flow Control	None

Boot Mode Switch

Boot mode switch controls serial port mode.

Table 2. BOOT MODE SWITCH DEFINITION

State	Definition
00	bootm
10	SPI-0 (Default)

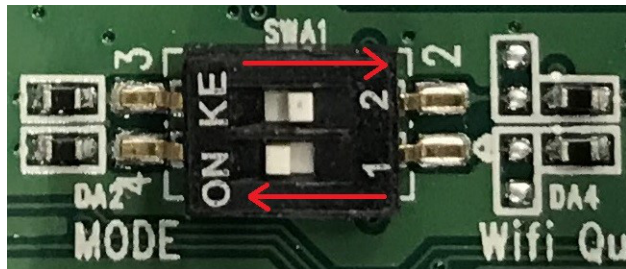


Figure 3. Default Setting (SPI-0)

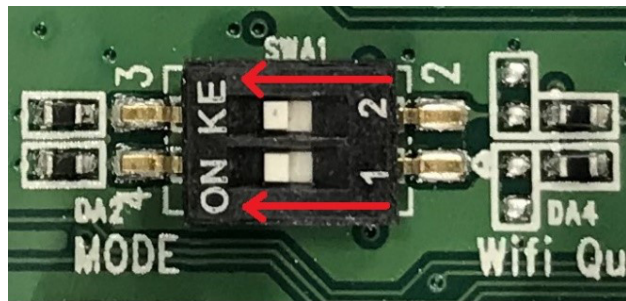


Figure 4. Bootm Setting

BOARD POWER UP

Console Display When QTP940-5S1-GEVK Successfully Boots Up

When QTP940-5S1-GEVK successfully boots up, it will show “quantenna #”.

```
COM14 - Tera Term VT
File Edit Setup Control Window Help
[ 24.555000] MAC address 1: 00:00:00:00:00:00
[ 24.560000] Recommended U-Boot: v37.4.0.136
Carrier ID 0, uboot update flag 0
MU-MIMO is not supported on this device
PTA disabled
'monitor_temperature' is not enabled/set
M0U1 service started
/scripts/cadloop starting /sbin/qharvestd, at 00:00:26 up 0 min, load average: 0
.48, 0.11, 0.03
Jan 1 00:00:26 qharvestd[11281]: qharvestd[notice]: qharvestd v1.31 started
Jan 1 00:00:26 qharvestd[11281]: qharvestd[error]: client-id: not set or not num
eric
DHCP client disabled
Starting httpd
starting pid 1146, tty '/dev/console': '/bin/sh -l'

BusyBox v1.10.3 (2018-02-28 23:18:42 PST) built-in shell (ash)
Enter 'help' for a list of built-in commands.

quantenna #
```

Figure 5. QTP940-5S1-GEVK Successfully Boots Up

Web GUI

QTP940-5S1-GEVK default IP address is 192.168.1.200.

```
COM14 - Tera Term VT
File Edit Setup Control Window Help
quantenna # ifconfig
br0 Link encap:Ethernet HWaddr 00:26:86:F0:D0:5D
    inet addr:192.168.1.200 Bcast:192.168.1.255 Mask:255.255.255.0
    inet6 addr: fe80::26:86:f0:d0:5d/64 Scope:Link
    UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
    RX packets:0 errors:0 dropped:0 overruns:0 frame:0
    TX packets:6 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:0
    RX bytes:0 (0.0 B) TX bytes:468 (468.0 B)

eth1_0 Link encap:Ethernet HWaddr 00:26:86:F0:D0:5D
    UP BROADCAST PROMISC MULTICAST MTU:1500 Metric:1
    RX packets:0 errors:0 dropped:0 overruns:0 frame:0
    TX packets:2 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:0
    RX bytes:0 (0.0 B) TX bytes:156 (156.0 B)
    Interrupt:20

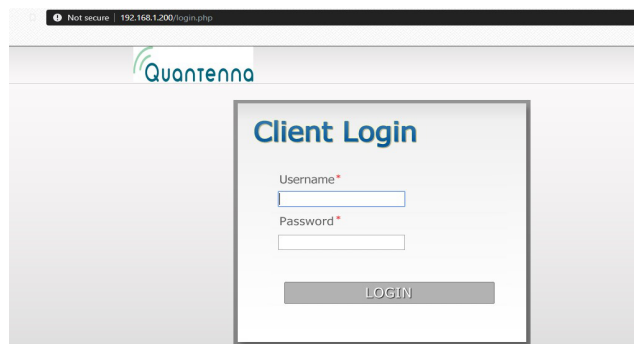
eth1_1 Link encap:Ethernet HWaddr 00:26:86:F0:D0:5D
    UP BROADCAST PROMISC MULTICAST MTU:1500 Metric:1
    RX packets:0 errors:0 dropped:0 overruns:0 frame:0
    TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:0
    RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
    Interrupt:19

lo Link encap:Local Loopback
    inet addr:127.0.0.1 Mask:255.0.0.0
    inet6 addr: ::1/128 Scope:Host
    UP LOOPBACK RUNNING MTU:16436 Metric:1
    RX packets:0 errors:0 dropped:0 overruns:0 frame:0
    TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:0
    RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

wifio Link encap:Ethernet HWaddr 00:26:86:F0:D0:90
    UP BROADCAST PROMISC MULTICAST MTU:1500 Metric:1
    RX packets:0 errors:0 dropped:0 overruns:0 frame:0
    TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:1024
    RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

quantenna #
```

Figure 6. Default IP Address



Web GUI username: super
password: super

Figure 7. Web GUI Username and Password

Telnet

QTP940-5S1-GEVK could also be accessed through telnet. Use board IP address and the login username is “root”.

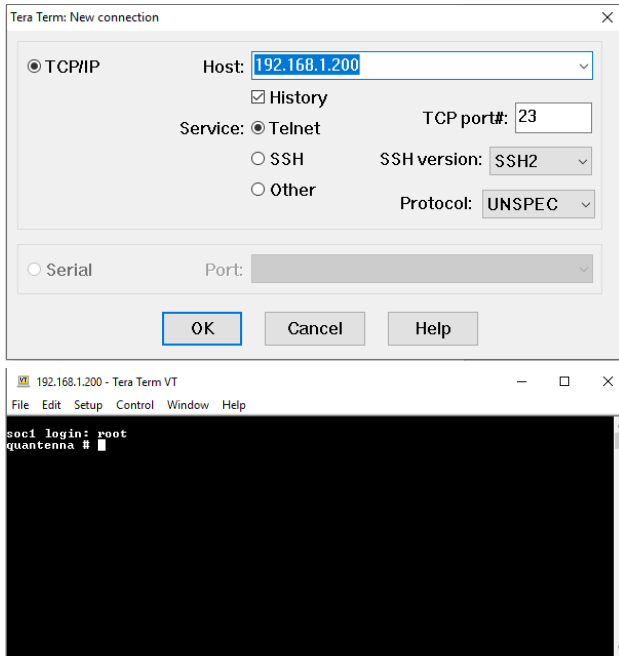


Figure 8. Access Through Telnet

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