

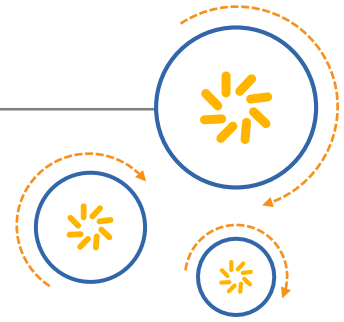
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Qualcomm Atheros, Inc.



# IPQ40xx UBoot Diagnostics Command Set

## for USB, I2C, and PCIE Interfaces

80-Y8520-2 Rev. A

January 22, 2016

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## Revision history

Revision	Date	Description
A	January 2016	Initial release

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# 1 Introduction

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This document provides information on the commands supported in U-Boot for USB, I2C, and PCIE interfaces.

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## 2 Supported USB Commands

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This section describes the supported USB commands.

### 2.1 Start command

Command	Description
usb start	This command probes all the USB controllers and tries to recognize the connected storage devices. If this succeeds, all other commands such as usb info and usb tree can be executed.

#### Sample snapshot:

```
IPQ40xx) # usb start
Re)start USB...
USB0: Register 2000240 NbrPorts 2
Starting the controller
USB XHCI 1.00
scanning bus 0 for devices... 2 USB Device(s) found
USB1: Register 1000140 NbrPorts 1
Starting the controller
USB XHCI 1.00
scanning bus 1 for devices... 2 USB Device(s) found
scanning usb for storage devices... 2 Storage Device(s) found
```

## 2.2 Reset command

Command	Description
usb reset	This command resets (rescans) the USB controller.

### Sample snapshot:

```
IPQ40xx) # usb reset
(Re)start USB...
USB0:  Register 2000240 NbrPorts 2
Starting the controller
USB XHCI 1.00
scanning bus 0 for devices... 2 USB Device(s) found
USB1:  Register 1000140 NbrPorts 1
Starting the controller
USB XHCI 1.00
scanning bus 1 for devices... 2 USB Device(s) found
scanning usb for storage devices... 2 Storage Device(s) found
```

## 2.3 Stop command

Command	Description
usb stop [f]	This command disconnects all the USB controllers.

### Sample Snapshot:

```
IPQ40xx) # usb stop
stopping USB..
```



## 2.4 Tree command

Command	Description
usb tree	<p>This command shows the details of storages and controllers connected to each other in a tree structure.</p> <p>For example, if two mass storage devices are connected to each controller, it shows that device 1 is connected to controller 1, and device 2 is connected to controller 2 respectively.</p>

### Sample Snapshot:

```
(IPQ40xx) # usb tree
USB device tree:
 1 Hub (5 Gb/s, 0mA)
 | u-boot XHCI Host Controller
 |
+-2 Mass Storage (480 Mb/s, 200mA)
   HP v220w AA00000000004618

 3 Hub (5 Gb/s, 0mA)
 | u-boot XHCI Host Controller
 |
+-4 Mass Storage (480 Mb/s, 200mA)
   Generic Mass Storage E236A8F4
```

## 2.5 Info command

Command	Description
usb info [dev]	This command shows the USB controller and devices information like manufacture name, mass storage etc.

### Sample Snapshot:

```
(IPQ40xx) # usb info
1: Hub, USB Revision 3.0
- u-boot XHCI Host Controller
- Class: Hub
- PacketSize: 9 Configurations: 1
- Vendor: 0x0000 Product 0x0000 Version 1.0
Configuration: 1
- Interfaces: 1 Self Powered 0mA
Interface: 0
- Alternate Setting 0, Endpoints: 1
- Class Hub
```

- Endpoint 1 In Interrupt MaxPacket 8 Interval 255ms
- 2: Mass Storage, USB Revision 2.0
- HP v220w AA00000000004618
  - Class: (from Interface) Mass Storage
  - PacketSize: 64 Configurations: 1
  - Vendor: 0x03f0 Product 0x5a07 Version 17.0
- Configuration: 1
- Interfaces: 1 Bus Powered 200mA
- Interface: 0
- Alternate Setting 0, Endpoints: 2
  - Class Mass Storage, Transp. SCSI, Bulk only
  - Endpoint 1 In Bulk MaxPacket 512
  - Endpoint 2 Out Bulk MaxPacket 512
- 3: Hub, USB Revision 3.0
- u-boot XHCI Host Controller
  - Class: Hub
  - PacketSize: 9 Configurations: 1
  - Vendor: 0x0000 Product 0x0000 Version 1.0
- Configuration: 1
- Interfaces: 1 Self Powered 0mA
- Interface: 0
- Alternate Setting 0, Endpoints: 1
  - Class Hub
  - Endpoint 1 In Interrupt MaxPacket 8 Interval 255ms
- 4: Mass Storage, USB Revision 2.0
- Generic Mass Storage E236A8F4
  - Class: (from Interface) Mass Storage
  - PacketSize: 64 Configurations: 1
  - Vendor: 0x058f Product 0x6387 Version 1.5
- Configuration: 1
- Interfaces: 1 Bus Powered 200mA
- Interface: 0
- Alternate Setting 0, Endpoints: 2
  - Class Mass Storage, Transp. SCSI, Bulk only
  - Endpoint 1 Out Bulk MaxPacket 512
  - Endpoint 2 In Bulk MaxPacket 512

## 3 Supported I2C Commands

---

This section describes the supported I2C commands.

### 3.1 List command

Command	Description
i2c probe	This command lists all the i2c devices connected on the bus.

#### Sample snapshot

```
(IPQ40xx) # i2c probe
```

```
Valid chip addresses: 54 55 56 57
```

### 3.2 Read command

Command	Description
i2c md chip address [.0, .1, .2] [# of objects]	This command reads specific registers from an i2c device.

#### Sample snapshot

```
(From the slave 0x54, read 0x5 registers starting from register 0x0 with  
offset length 2 bytes)
```

```
(IPQ40xx) # i2c md 0x54 0x0.2 0x5
```

```
0000: 90 30 30 07 55 .00.U
```

### 3.3 Write command

Command	Description
i2c mw chip address [.0, .1, .2] [# of objects])	This command writes to specific registers of an i2c device.

#### Sample snapshot

In the slave 0x54, write the value 0x2c to 0x2 registers starting from register 0x1 with offset length 2 bytes)

```
(IPQ40xx) # i2c mw 0x54 0x1.2 0x2c 0x2
```

```
(IPQ40xx) #
```

#### Readback

```
(IPQ) # i2c md 0x54 0x0.2 0x5
```

```
0000: 90 2c 2c 07 55 .,.,U
```

## 4 Supported PCIE Commands

This section describes the supported PCIE commands.

### 4.1 PCI command

Command	Description
pci [bus] [long]	This command displays a list of PCI devices connected to each bus along with device category. By default, it displays bus 0 and a short list of PCI devices connected on bus 0.

#### Sample snapshot:

```
IPQ40xx) # pci 1
Scanning PCI devices on bus 1
BusDevFun VendorId DeviceId Device Class Sub-Class
-----
01.00.00 0x168c 0x003c Network controller 0x80
01.01.00 0x168c 0x003c Network controller 0x80
01.02.00 0x168c 0x003c Network controller 0x80
01.03.00 0x168c 0x003c Network controller 0x80
01.04.00 0x168c 0x003c Network controller 0x80
01.05.00 0x168c 0x003c Network controller 0x80
01.06.00 0x168c 0x003c Network controller 0x80
01.07.00 0x168c 0x003c Network controller 0x80
01.08.00 0x168c 0x003c Network controller 0x80
01.09.00 0x168c 0x003c Network controller 0x80
01.0a.00 0x168c 0x003c Network controller 0x80
01.0b.00 0x168c 0x003c Network controller 0x80
01.0c.00 0x168c 0x003c Network controller 0x80
01.0d.00 0x168c 0x003c Network controller 0x80
01.0e.00 0x168c 0x003c Network controller 0x80
01.0f.00 0x168c 0x003c Network controller 0x80
01.10.00 0x168c 0x003c Network controller 0x80
01.11.00 0x168c 0x003c Network controller 0x80
01.12.00 0x168c 0x003c Network controller 0x80
01.13.00 0x168c 0x003c Network controller 0x80
01.14.00 0x168c 0x003c Network controller 0x80
```

01.15.00	0x168c	0x003c	Network controller	0x80
01.16.00	0x168c	0x003c	Network controller	0x80
01.17.00	0x168c	0x003c	Network controller	0x80
01.18.00	0x168c	0x003c	Network controller	0x80
01.19.00	0x168c	0x003c	Network controller	0x80
01.1a.00	0x168c	0x003c	Network controller	0x80
01.1b.00	0x168c	0x003c	Network controller	0x80
01.1c.00	0x168c	0x003c	Network controller	0x80
01.1d.00	0x168c	0x003c	Network controller	0x80
01.1e.00	0x168c	0x003c	Network controller	0x80
01.1f.00	0x168c	0x003c	Network controller	0x80

## 4.2 PCI header command

Command	Description
pci header b.d.f	This command displays PCI header for the bus, device, and function combination.

### Sample snapshot:

```
(IPQ40xx) # pci header 1.1.1
vendor ID = 0x168c
device ID = 0x003c
command register = 0x0000
status register = 0x0010
revision ID = 0x00
class code = 0x02 (Network controller)
sub class code = 0x80
programming interface = 0x00
cache line = 0x00
latency time = 0x00
header type = 0x00
BIST = 0x00
base address 0 = 0x00000004
base address 1 = 0x00000000
base address 2 = 0x00000000
base address 3 = 0x00000000
base address 4 = 0x00000000
base address 5 = 0x00000000
cardBus CIS pointer = 0x00000000
sub system vendor ID = 0x0000
sub system ID = 0x0000
expansion ROM base address = 0x00000000
interrupt line = 0xff
interrupt pin = 0x01
```

```
min Grant = 0x00
max Latency = 0x00
```

## 4.3 PCI display command

Command	Description
<code>pci display [.b, .w, .l] b.d.f [address] [# of objects]</code>	This command displays PCI configuration header for the bus, device, and function combination.

### Sample snapshot

```
(IPQ40xx) # pci display 1.1.1
00000000: 003c168c 00100000 02800000 00000000
00000010: 00000004 00000000 00000000 00000000
00000020: 00000000 00000000 00000000 00000000
00000030: 00000000 00000040 00000000 000001ff
```