

MTK MT7620 EHCI USB-IF EHSET Procedure

Application Note

1. Introduction

This documents describes how to test the USB-IF EHSET(Embedded Hi-Speed Host Electrical Test Procedure) on the MTK WiFi SoC platform. The tests item are including: High-Speed Signal Quality, Packet Parameters, CHIRP timing, Suspend/Resume, Test_J, Test_K, and Test_SE0.

The EHSET spec is at http://www.usb.org/developers/onthego/EHSET_v1.01.pdf

1. Requirement

- 1.1. An common USB 2.0 hub and an USB storage dongle are required for EHSET tests.
- 1.2. Based on 4M/32M or 8M/64M default settings, the SDK kernel has to be configured with following 3 additional configs and then recompile:

```
config - Linux Kernel v2.6.36 Configuration

Power management options
Arrow keys navigate the menu.  <Enter> selects submenus --->.
Highlighted letters are hotkeys.  Pressing <Y> includes, <N>
excludes, <M> modularizes features.  Press <Esc><Esc> to exit,
<?> for Help, </> for Search.  Legend: [*] built-in  [ ]

[ ] Power Management support
[ ] Power Management Debug Support
[ ] Suspend to RAM and standby
[*] Run-time PM core functionality

<Select>  < Exit >  < Help >
```

```

--- USB support ---
row keys navigate the menu. <Enter> selects submenus --->.
ghlighted letters are hotkeys. Pressing <Y> includes, <N> excludes,
> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </>
or Search. Legend: [*] built-in [ ] excluded <M> module < >

--- USB support
<*> Support for Host-side USB
[ ] USB verbose debug messages
[ ] USB announce new devices
*** Miscellaneous USB options ***
[ ] USB device filesystem (DEPRECATED)
[ ] USB device class-devices (DEPRECATED)
[ ] Dynamic USB minor allocation
[*] USB runtime power management (autosuspend) and wakeup
[ ] Rely on OTG Targeted Peripherals List
. (+)

<Select> < Exit > < Help >

```

2. EHSET Test Procedure commands and steps

2.1. High-speed Signal Quality (EL_2, EL_3, EL_6, EL_7)

Plug-in USB port#0 and wait 5 sec. than plug-out it, then input following command in console:

```
# reg s 0xb01c0000
# reg w 0x54 0x41000
```

User may change the “0x54” to “0x58” if they want to test on the port#1(second port) as following:

```
# reg s 0xb01c0000
# reg w 0x58 0x41000
```

Please reboot system after this item is done.

2.2. Test J (EL_8, EL_9)

Plug-in USB port#0 and wait 5 sec. than plug-out it, then input following command in console:

```
# reg s 0xb01c0000
# reg w 0x54 0x11000
```

User may change the “0x54” to “0x58” if they want to test on the port#1(second port) as following:

```
# reg s 0xb01c0000
# reg w 0x58 0x11000
```

Please reboot system after this item is done.

2.3. Test K (EL_8, EL_9)

Plug-in USB port#0 and wait 5 sec. than plug-out it, then input following command in console:

```
# reg s 0xb01c0000  
# reg w 0x54 0x21000
```

User may change the "0x54" to "0x58" if they want to test on the port#1(second port) as following:

```
# reg s 0xb01c0000  
# reg w 0x58 0x21000
```

Please reboot system after this item is done.

2.4. Test SEO (EL_8, EL_9)

Plug-in USB port#0 and wait 5 sec. than plug-out it, then input following command in console:

```
# reg s 0xb01c0000  
# reg w 0x54 0x31000
```

User may change the "0x54" to "0x58" if they want to test on the port#1(second port) as following:

```
# reg s 0xb01c0000  
# reg w 0x58 0x31000
```

Please reboot system after this item is done.

2.5. Packet Parameters

2.5.1. Single_Step_Dev_Desc(EL_21, EL_23, EL_25)

Please follow the steps to process this test item:

Step1: start Scope triggering

Step2: Plug out USB storage device

Step3: Plug in USB storage device into fixture

2.5.2. Single_Step_Set_Feature(EL_22, EL_55)

Please follow the steps to process this test item:

Step1: start Scope triggering

Step2: Plug out USB storage device

Step3: Plug in USB storage device into fixture

2.6. CHIRP timing(EL_33, EL_34, EL_35)

Please follow the steps to process this test item:

Step1: start Scope triggering

Step2: Plug out USB hub device

Step3: Plug in USB hub device into fixture

2.7. Suspend/Resume

2.7.1. Suspend(EL_39)

Please follow the steps to process this test item:

Step1: start Scope triggering

Step2: Remove any USB devices on the USB hub

Step3: Plug in USB hub device into fixture

Then soon the USB hub device will enter Suspend mode automatically.

If the hub doesn't enter suspend mode, please make sure there is no any USB device on the hub, and the specific kernel configs(as mentioned in 1.Requirement) are has configured properly.

2.7.2. Resume(EL_41)

Please follow the steps to process this test item:

Step1: start Scope triggering

Step2: Remove any USB devices on the USB hub.

Step3: Plug in USB hub device into fixture

Then soon the USB hub device will enter Suspend mode automatically

Step4: Plug in USB storage into the USB hub

Then the USB hub device will resume immediately and start to send SOF.