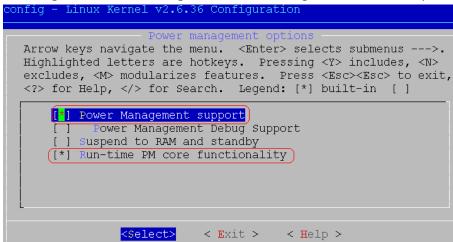# MTK MT7620 EHCI USB-IF EHSET Procedure Application Note

0. 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:

```
                        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, </>
r 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 SE0 (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 <u>USB storage</u> device

Step3: Plug in <u>USB storage</u> 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 <u>USB hub</u> device

Step3: Plug in <u>USB hub</u> 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 <u>USB hub</u> device into fixture

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

<u>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.</u>

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 <u>USB hub</u> device into fixture

Then soon the USB hub device will enter Suspend mode automatically

Step4: Plug in <u>USB storage</u> into the <u>USB hub</u>

<u>Then the USB hub device will resume immediately and start to send SOF.</u>