MTK MT7620 EHCI USB-IF EHSET Procedure Application Note

1. Introduction

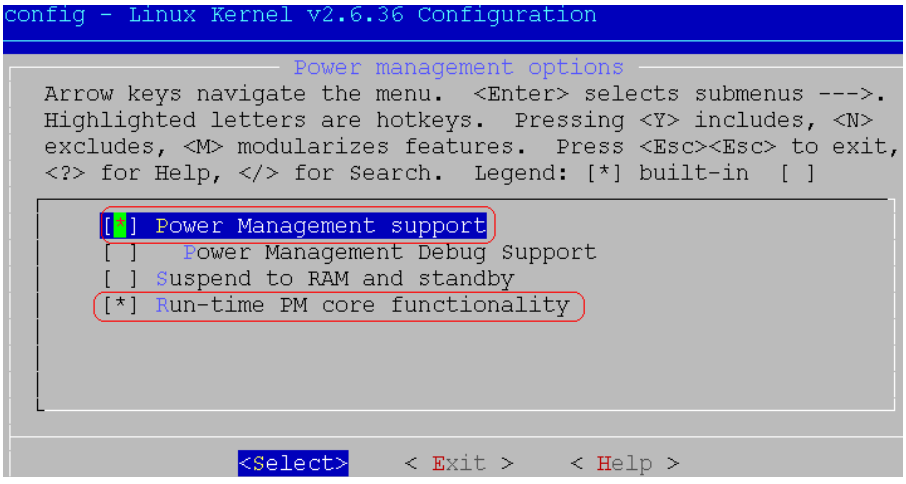
This documents describes how to test the USB-IF EHSET(Embedded Hi-Speed Host Electrical Test Procedure) on the MTK WiFi SoC platform. The tests item are including: High-Speed Signal Quality, Packet Parameters, CHIRP timing, Suspend/Resume, Test_J, Test_K, and Test_SE0.

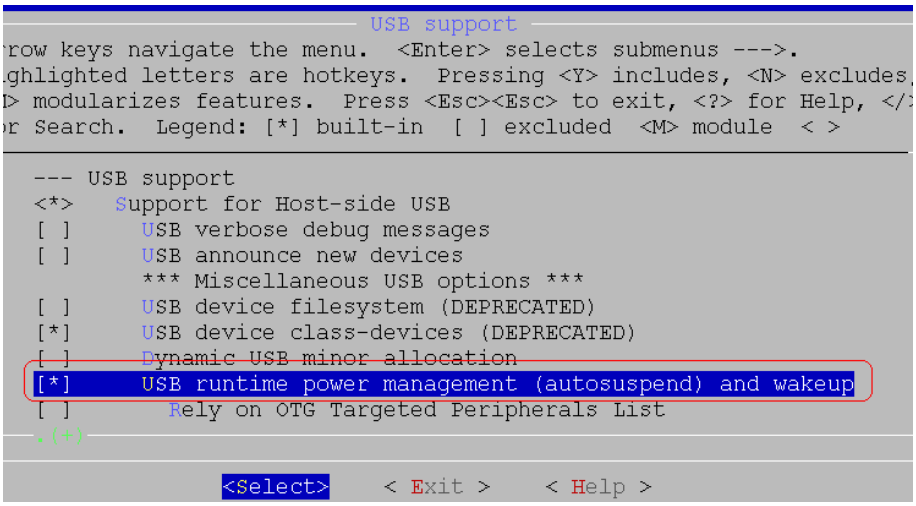
The EHSET spec is at http://www.usb.org/developers/onthego/EHSET_v1.01.pdf

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:





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 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.