Cách làm cho M3

**KIỂM TRA LOẠI CONFIG (MSIOFx)**

A close up of a sign

Description automatically generated

Kiểm tra ta thấy M3 là **MSIOF3**

A diagram of a computer

Description automatically generated

Mắc dây thế này để setup cho master mode

**SET DEVICE TREE**

Check tên file device tree ở **JUN-2024/RENESAS\_RCH3M3M3NE3D3\_YoctoStartupGuide\_UME\_v5.9.4\_06\_Body.pdf**

A red line with black text

Description automatically generated

Sau đó vào folder linux-bsp/arch/arm64/boot/dts/renesas/r8a77961-salvator-xs.dts để thêm device tree cho msiof (xác định pin đó có chức năng gì, chưa set chức năng)

(ở đây đã set msiof1 cho các phần test sau)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| &pfc { |  |  |  |  |  |  |
|  | msiof1\_pins: spi1 { | |  |  |  |  |
|  |  | groups = "msiof1\_clk\_c", "msiof1\_sync\_c", | | |  |  |
|  |  |  | "msiof1\_rxd\_c", "msiof1\_txd\_c"; | | |  |
|  |  | function = "msiof1"; | |  |  |  |
|  | }; |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | msiof3\_pins: spi3 { | |  |  |  |  |
|  |  | groups = "msiof3\_clk\_d", "msiof3\_sync\_d", | | |  |  |
|  |  |  | "msiof3\_rxd\_d", "msiof3\_txd\_d"; | | |  |
|  |  | function = "msiof3"; | |  |  |  |
|  | }; |  |  |  |  |  |
| }; |  |  |  |  |  |  |

A white paper with black text and black text

Description automatically generated

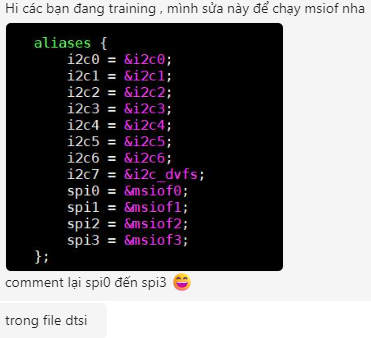
Tới đây tiếp tục thêm device tree để bật **master mode** (tới đây thêm device tree để xác định mode cho nó)

A computer code with numbers and symbols

Description automatically generated with medium confidence

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| &msiof3 { |  |  |  |  |  |
|  | pinctrl-0 = <&msiof3\_pins>; | |  |  |  |
|  | pinctrl-names = "default"; | |  |  |  |
|  | status = "okay"; | |  |  |  |
|  |  |  |  |  |  |
|  | slavedev { |  |  |  |  |
|  |  | compatible = "maker,slavedev"; | |  |  |
|  |  | reg = <0>; |  |  |  |
|  |  | spi-max-frequency = <16666666>; | | |  |
|  |  | spi-cpha; |  |  |  |
|  |  | spi-cpol; |  |  |  |
|  | }; |  |  |  |  |
| }; |  |  |  |  |  |

Trong H3 cần sửa như sau:



**THÊM DEVICE ID ĐỂ MATCH DRIVER VỚI THIẾT BỊ CÓ DEVICE ID ĐÓ**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **(4) Add the compatible value of the subnode** | | | |  |  |  |  |
|  | file : drivers/spi/spidev.c | |  |  |  |  |  |
|  | static const struct of\_device\_id spidev\_dt\_ids[] = { | | | |  |  |  |
|  | . . . |  |  |  |  |  |  |
|  | { .compatible = "maker,slavedev" }, <-- Add this line. | | | | |  |  |
|  | {}, |  |  |  |  |  |  |
|  | }; |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

Sau khi chỉnh device tree và thêm device id vào driver thì vào folder linux-bsb (source poky cross compiler 3.1.11 trước khi thực hiện)

Sau khi source thì make clean && make distclean && make defconfig && make menuconfig

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2) Create Image and Device tree | | | |  |  |  |  |  |  |  |  |
| a) Enable debugging options for communication test. | | | | |  |  |  |  |  |  |  |
| Required for transfer test between master mode and slave mode | | | | | |  |  |  |  |  |  |
|  |  | Device Drivers ---> | |  |  |  |  |  |  |  |  |
|  |  | [\*] SPI support ---> | |  |  |  |  |  |  |  |  |
|  |  | <\*> SuperH MSIOF SPI controller <-- Change "M" to "\*" in case of module test | | | | | | |  |  |  |
|  |  | [**\***] Transfer Synchronization Debug support for MSIOF | | | | |  |  |  |  |  |
|  |  | (1) Master of sleep latency (msec time) | | | |  |  |  |  |  |  |
|  |  | … |  |  |  |  |  |  |  |  |  |
|  |  | <\*> User mode SPI device driver support | | | |  |  |  |  |  |  |
|  |  | … |  |  |  |  |  |  |  |  |  |
|  |  | [\*] SPI slave protocol handlers | | |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| b) Create kernel image | | |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | $ make Image | |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| c) Create Device tree binary | | |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | $ make dtbs | |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| d) Copy them to a folder of your choice. | | | |  |  |  |  |  |  |  |  |

Khi chuyển mode sang slave (tức CN28 chuyển từ master sang slave) thì cắm dây như hình dưới

A screenshot of a computer

Description automatically generated

A close-up of a computer screen

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Definition of slave mode test** | | |  |  |  |  |
| **- Example for MSIOF 3 node in slave mode** | | | |  |  |  |
|  | &msiof3 { |  |  |  |  |  |
|  |  | pinctrl-0 = <&msiof3\_pins>; | |  |  |  |
|  |  | pinctrl-names = "default"; | |  |  |  |
|  |  | status = "okay"; | |  |  |  |
|  |  | **spi-slave;** |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  | **slave** { |  |  |  |  |
|  |  |  | compatible = "maker,slavedev"; | |  |  |
|  |  |  | spi-cpha; |  |  |  |
|  |  |  | spi-cpol; |  |  |  |
|  |  | }; |  |  |  |  |
|  | }; |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **- Example for MSIOF1 node in master mode** | | | |  |  |  |
|  | &msiof1 { |  |  |  |  |  |
|  |  | pinctrl-0 = <&msiof1\_pins>; | |  |  |  |
|  |  | pinctrl-names = "default"; | |  |  |  |
|  |  | status = "okay"; | |  |  |  |
|  |  |  |  |  |  |  |
|  |  | slavedev { |  |  |  |  |
|  |  |  | compatible = "maker,slavedev"; | |  |  |
|  |  |  | reg = <0>; |  |  |  |
|  |  |  | spi-max-frequency = <16666666>; | | |  |
|  |  |  | spi-cpha; |  |  |  |
|  |  |  | spi-cpol; |  |  |  |
|  |  | }; |  |  |  |  |
|  | }; |  |  |  |  |  |
|  |  |  |  |  |  |  |