








“Integration of RFID-RC522 Module with SPI Protocol on RB-A5D2X Board”

Prepared By: Venkatesh M venkatesh.m@phytecembedded.in

Required Hardware:

- Rugged Board- a5d2x
- USB cable
- RFID RC522 module
- Patch Cards
- RFID Tags

Pin connections:

<u>RC522 Module</u>		<u>RB-A5D2X (mikroBUS pinouts)</u>
VCC		PIN no: 7 VCC_3V3
RST		PIN no: 2 PB2_RST_mBUS1
GND		PIN no: 8 GND
MISO		PIN no: 5 PC29_MISO_mBUS1
MOSI		PIN no: 6 PC28_MOSI_mBUS1
SCK		PIN no: 4 PC30_SPCK_mBUS1
CS		PIN no: 3 PD0_NPCS1_mBUS

Step1: Create a directory to download the kernel source.

```
$ mkdir kernel_source
```

```
$ cd kernel_source
```

Step2: Clone kernel with the proper branch.

```
$ git clone https://github.com/rugged-board/linux-rba5d2x.git
```

```
$ cd linux-rba5d2x
```

```
$ git checkout origin/linux-rba5d2x
```

Step3: Copy the below patch files to the kernel source directory which you got with documents.

I) 0001-Rb-a5d2x.dtsi. patch

ii) 0002-rfid-rc522_driver. patch

Step4: Apply the patch files in the kernel source

```
$ git am 0001-Rb-a5d2x.dtsi. patch
```

```
$ git am 0002-rfid-rc522_driver. patch
```

Step5: Enable the toolchain.

```
$ . /opt/poky-tiny/2.5.2/environment-setup-cortexa5hf-neon-  
poky-linux-musleabi
```

Step6: Configure the kernel fo rugged board-a5d2x

```
$ make distclean
```

```
$ make clean
```

```
$ make rb_a5d2x_defconfig
```

```
$ make menuconfig
```

```
Device Drivers --->
```

```
  Misc devices --->
```

```
    <*> rfid RC522 for RB-A5D2x
```

```
$ make
```

Step11: After compilation of the make command.

```
$ cp arch/arm/boot/zImage
```

Note: From this location copy the zImage to BOOT partition of the SD card

```
$ cp arch/arm/boot/dts/imx6ul-phytec-ruggedboard-rdk.dtb
```

Note: "imx6ul-phytec-ruggedboard-rdk.dtb" file from this location to the BOOT partition of the SD card and rename it as "oftree".

Bootable SD card:

Follow below steps to prepare Bootable SD card:

Note: Here we will use zImage = we have compiled

Here we will use oftree = we have compiled

barebox.bin image = Default images

Step2: Copy kernel image(zImage), oftree image(.dtb) into the boot partition of the sdcard.

```
$ cp zImage /media/<username>/BOOT
```

```
$ cp oftree /media/<username>/BOOT
```

Step3: extract 'tar -xvf armhf-rootfs-debian-bullseye.tar' it into rootfs partition of SD card.

```
$ sudo tar -xvf armhf-rootfs-debian-bullseye.tar -C  
/media/<username>/rootfs/
```

Testing the RFID-RC522 module in Host terminal:

Step 4: Open the terminal and follow the given steps to boot the board.

```
$ Sudo minicom
```

```
: ~# root
```