

RTX – IVI

Verify function method

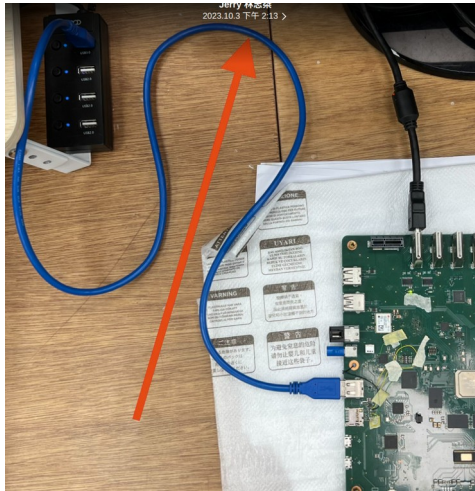
V0.0.3

Table of Contents

- Pre-install APP and Tools.....3
- DEBUG port CP2102N.....4
- eMMC.....4
- DDR.....4
- HDMI.....5
- Wifi.....5
- BT.....5
- Radio.....5
- GNSS.....6
- CAN.....6
- CSI Video In.....7
- PCIE.....7
- USB.....8
- SD Card.....8
- History.....9

Pre-install APP and Tools

1. 下載 Pre-Install 需要的檔案.(<https://drive.google.com/file/d/11-w8kGvS6Hw38jhIq7KuSSI5FWKzYyF/view?usp=sharing>)
2. 連接 USB Type-A 公對公傳輸線.



3. check 連線狀態

```
jerry@jerry-TravelMate-P215-53:~$ adb devices
List of devices attached
00001968      device
```

4. 安裝 Chrome app

```
jerry@jerry-TravelMate-P215-53:~/Renesas_IVI/apk/RTX_IVI_PreInstall$ adb install Google_Chrome.apk
Success
```

5. 安裝 GNSS_Status app

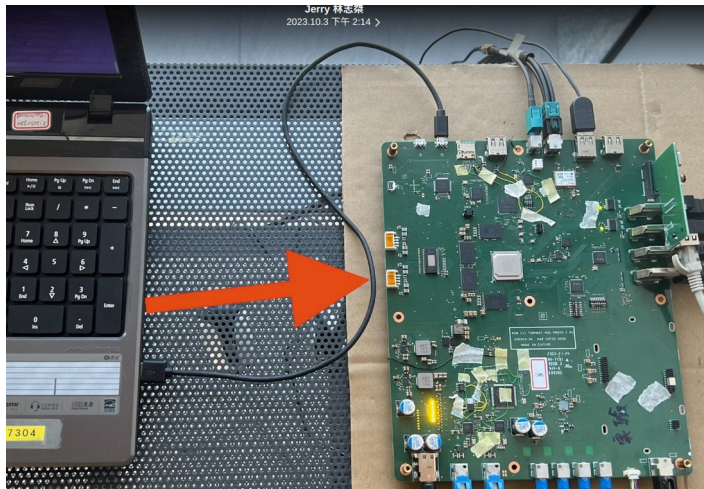
```
jerry@jerry-TravelMate-P215-53:~/Renesas_IVI/apk/RTX_IVI_PreInstall/GNSS_Status$ ls
at.harnisch.android.gnss.apk  config.arm64_v8a.apk  config.xxhdp1.apk  icon.png  manifest.json
jerry@jerry-TravelMate-P215-53:~/Renesas_IVI/apk/RTX_IVI_PreInstall/GNSS_Status$ adb install-multiple *.apk
Success
```

6. 將 can-test 放置到 IVI 的/data 位置.

```
jerry@jerry-TravelMate-P215-53:~/Renesas_IVI/apk/RTX_IVI_PreInstall$ adb root
restarting adbd as root
jerry@jerry-TravelMate-P215-53:~/Renesas_IVI/apk/RTX_IVI_PreInstall$ adb push can-test /data/
can-test: 1 file pushed. 23.8 MB/s (598416 bytes in 0.024s)
```

DEBUG port CP2102N

連接電腦與 Debug Port, 打開 terminal 程式, 設定 baudrate 為 115200, 開機時可以看到開機訊息.



eMMC

執行 `df -h` 可以看到 eMMC 分割狀態.

```
console:/ # df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           7.4G   604K   7.4G   1% /dev
tmpfs           7.4G    0   7.4G   0% /mnt
tmpfs           7.4G    0   7.4G   0% /apex
/dev/block/dm-4  915M  912M   2.7M 100% /
/dev/block/dm-5  119M  118M   424K 100% /vendor
/dev/block/dm-6  225M  224M   700K 100% /product
/dev/block/dm-7   528K  520K    8.0K 99% /odm
/dev/block/mmcblk0p10 22G  361M   22G   2% /data
/data/media     22G  361M   22G   2% /mnt/runtime/default/emulated
```

DDR

執行 `free`

找到 MemTotal 可顯示 DDR Size

```
console:/ # free
              total          used          free          shared          buffers
Mem:         16078454784    2041262080    14037192704        3338240        19054592
-/+ buffers/cache:    2022207488    14056247296
Swap:              0              0              0
```

HDMI

可同時插著 4 個 HDMI 後, 再開機, 可看到 4 個 mirror 畫面.

Wifi

透過 Android Setting 中將 wifi enable 後連接至有效的 wifi AP, 即可連線. (建議用手機開熱點當 Wifi AP).

BT

透過 Android Setting 中的 BT 配對手機後, 可在 IVI 中看到手機的電話簿及通訊紀錄, 也可透過 IVI 播打電話.

Radio

第一次需要先將 firmware 燒入進 radio IC 外掛的 spi flash (U3401)中, 執行以下步驟

1. **su**

2. **ps -A | grep broadcastradio**

```
1|console:/ # ps -A | grep broadcastradio
audioserver 4563 1 93988 5448 binder_ioctl_write_read 0 S android.hardware.broadcastradio@2.0-service.renesas
```

3. **kill 4563 | rmmmod radio_i2c_si4689**

(4563 欄位是依照步驟 2 找到的 PID 自行修改帶入)

```
console:/ # kill 4563 | rmmmod radio_i2c_si4689
[ 359.302896] init: Service 'vendor.broadcastradio-2-0' (pid 4563) received signal 15
[ 359.310728] init: Sending signal 9 to service 'vendor.broadcastradio-2-0' (pid 4563) process group...
[ 359.320337] libprocessgroup: Successfully killed process cgroup uid 1041 pid 4563 in 0ms
[ 359.329904] init: starting service 'vendor.broadcastradio-2-0'...
```

4. **si_flash /dev/i2c-4 0x65 -i**

```
console:/ # si_flash /dev/i2c-4 0x65 -i
si_flash version v0.01-43-g369d8de
unknown argument (1 of 4): (null)
unknown argument (2 of 4): (null)
Booting to bootloader mode
si46xx_init_mode(1)
si46xx_init_patch()
si46xx_load_init()
Loading: /vendor/etc/firmware/si46xx/patch.bin (5796 bytes)
si46xx_load_init()
Operation done: 0
```

5. **si_flash /dev/i2c-4 0x65 -w /vendor/etc/firmware/si46xx/fm.bif -o 0x6000**

6. **si_flash /dev/i2c-4 0x65 -w /vendor/etc/firmware/si46xx/am.bif -o 0x106000**

重開機後執行 Radio App, 可以 scan 到有效的頻道.

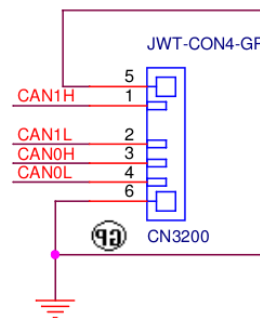
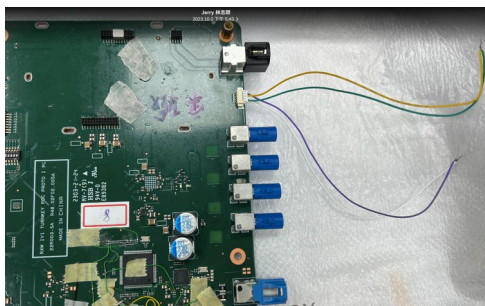
GNSS

將 GNSS 天線放置在戶外開闊處, 打開 GNSS Status App, 可以定位到現在位置的經緯度.

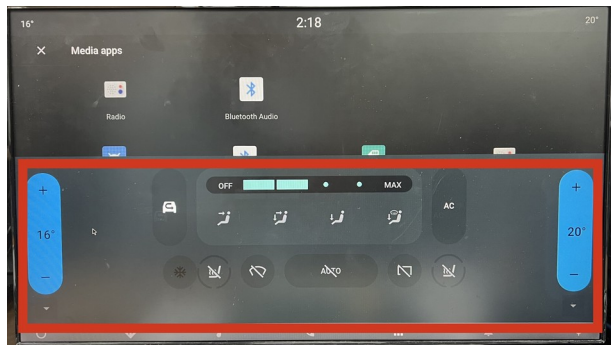
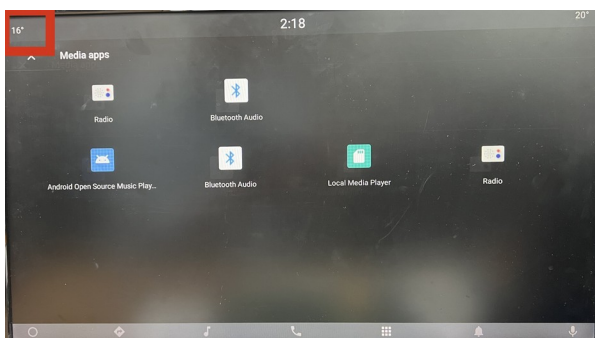


CAN

將 Can0 與 Can1 對接如下圖 (CAN1H <-> CAN0H ; CAN1L <-> CAN0L)



點擊左上或右上的溫度即會出現溫度控制界面.



1. 在 Debug Terminal 中輸入

```
1|console:/ $
1|console:/ $
1|console:/ $
1|console:/ $
1|console:/ $
1|console:/ $
1|console:/ $
1|console:/ $
1|console:/ $ su
console:/ # /data/can-test
argc = 1
can1 at index 3
```

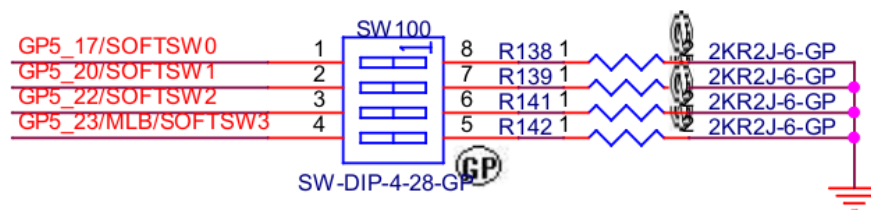
2. 在 Android UI 上任意 click 冷氣相關設定, 會在 can1 看到 can0 丟出的 message

```
1|console:/ $
1|console:/ $
1|console:/ $
1|console:/ $
1|console:/ $ su
console:/ # /data/can-test
argc = 1
can1 at index 3

got legacy CAN frame with length 8
000 [8] 03 05 60 15 0f 00 00 00
got legacy CAN frame with length 8
000 [8] 03 05 60 15 0e 00 00 00
got legacy CAN frame with length 8
000 [8] 01 05 40 15 01 00 00 00
got legacy CAN frame with length 8
000 [8] 01 05 40 15 03 00 00 00
```

CSI Video In

插上 4 路 ov10635 camera 後, 切換至 EVS mode(SW100 Pin3 切 ON), 即可看到 4 路 Camera 畫面.



PCIE

PCIE 插上 PCI-E Gigabit Ethernet Lan Card, 插上網路線, 可使用 Chrome 透過 Lan Card 上網.

USB

插上滑鼠 / 鍵盤 / USB storage.

若插入 USB storage (只支援 format 為 FAT 且只有一個 partition) , 可在 Files app 中看到 storage 中的檔案.

SD Card

插上 SD Card. (只支援 format 為 FAT 且只有一個 partition 的 SD 卡)

可在 Files app 中看到 SD 卡中的檔案.

History

Version	Date	Description
V0.0.1	2023-10-03	First creation
V0.0.2	2023-10-11	Modify steps to flash radio.
V0.0.3	2023-10-13	Modify APP download path.