

# **RTX – IVI**

Verify function method

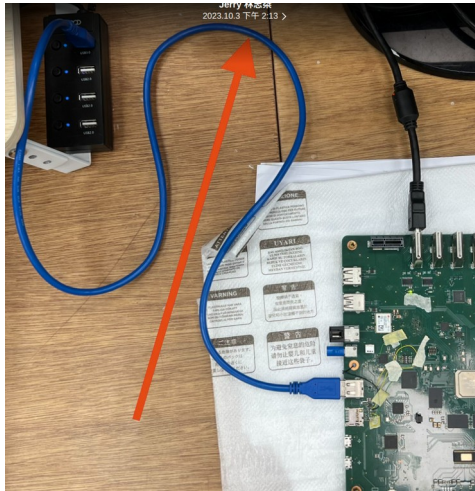
V0.0.5

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# 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

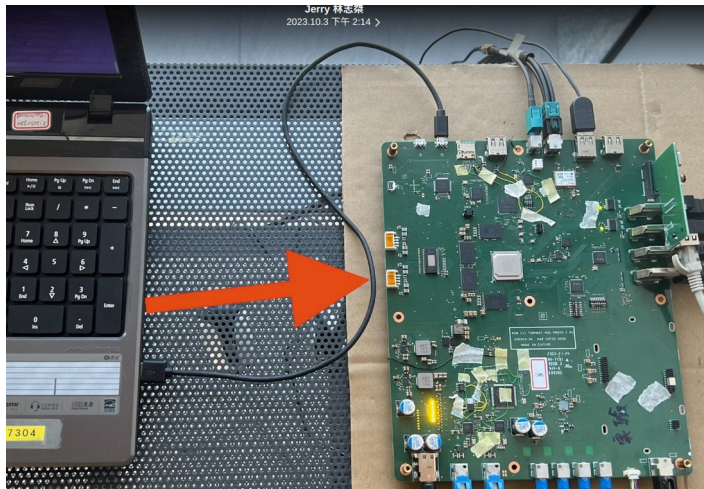
```
jerry@jerry-TravelMate-P215-53:~/Renesas_IVI/apk/RTX_IVI_PreInstall/GNSS_Status$ ls
at.harnisch.android.gnss.apk  config.arm64_v8a.apk  config.xxhdp1.apk  icon.png  manifest.json
jerry@jerry-TravelMate-P215-53:~/Renesas_IVI/apk/RTX_IVI_PreInstall/GNSS_Status$ adb install-multiple *.apk
Success
```

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.

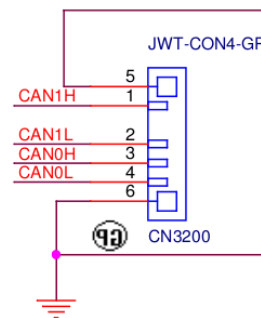
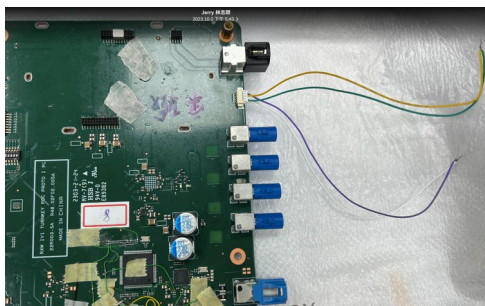
## GNSS

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.

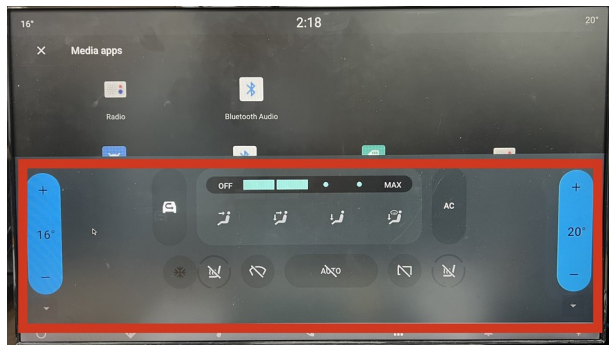
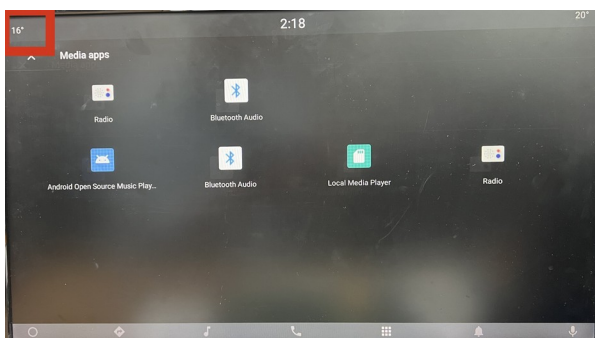


## CAN

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

```

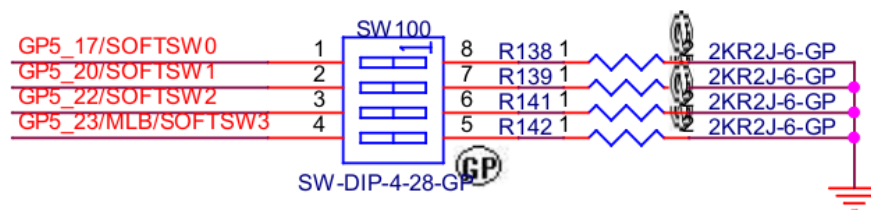
1|console:/ $
1|console:/ $
1|console:/ $
1|console:/ $
1|console:/ $ su
console:/ # /data/can-test
argc = 1
can1 at index 3

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 的 Park mode(SW100 Pin3 切 ON, Pin4 切 OFF), 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.

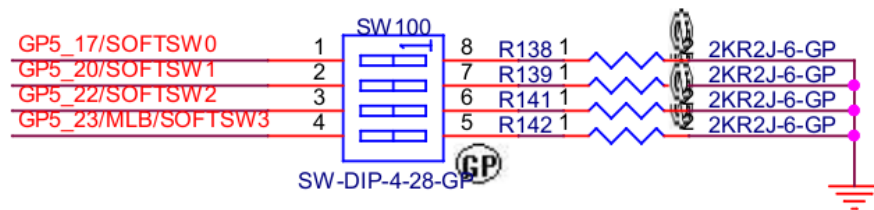
若插入 USB storage (只支援 format 為 FAT 且只有一個 partition) , 可在 Files app 中看到 storage 中的檔案.

## 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.

## ISDB-T Module



切換至 EVS 的 Reverse mode(SW100 Pin4 切 ON).

在 Debug Terminal 中輸入

1. su => 切換為 Root 權限

```
console:/ $ su
console:/ #
```

2. mst\_cmd Boot => 啟動 ISDB-T module

```
console:/ # mst_cmd Boot
iMode = 0
Excute set_Boot_1
Excute set_Boot_2
```

3. mst\_cmd StartTestVideo => 進入 test pattern mode

```
console:/ # mst_cmd StartTestVideo
iMode = 1
Excute set Video Test Mode!!!
```



4. 可在螢幕上看到 test pattern 畫面, 並且可以從示波器上看到 adv7482 輸出的 SSI 訊號.

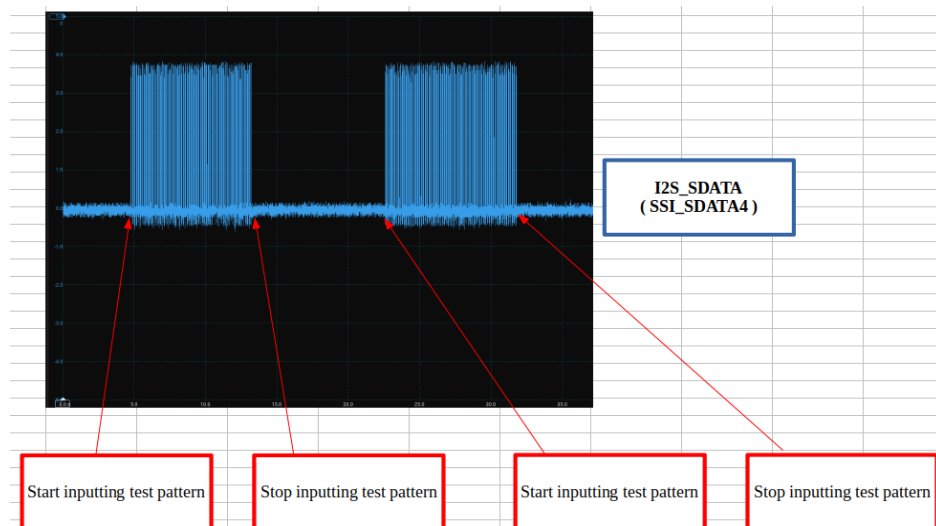


5. 如要關掉可以執行下列指令, 即可離開 test pattern mode

mst\_cmd StopTestVideo

```
console:/ # msd_cmd StopTestAudio  
iMode = 5
```

6. 下圖是在開啟 / 關閉 test pattern 時量測聲音 SSI Data 訊號的實際情況



# 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.
V0.0.4	2024-01-10	Add ISDB-T module.
V0.0.5	2024-02-01	Add ISDB-T audio part.