# RTX – IVI

Verify function method

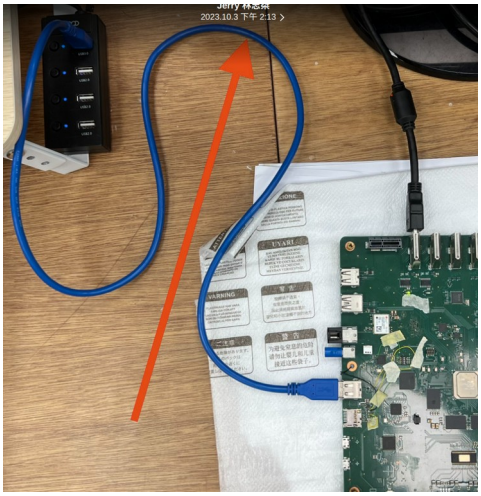
V0.0.4

# Table of Contents

# Pre-install APP and Tools

1. 下載 Pre-Install 需要的檔案.(https://drive.google.com/file/d/11-w8kGvS6Hw38jhIq7KuSSI5FWKzYEyF/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

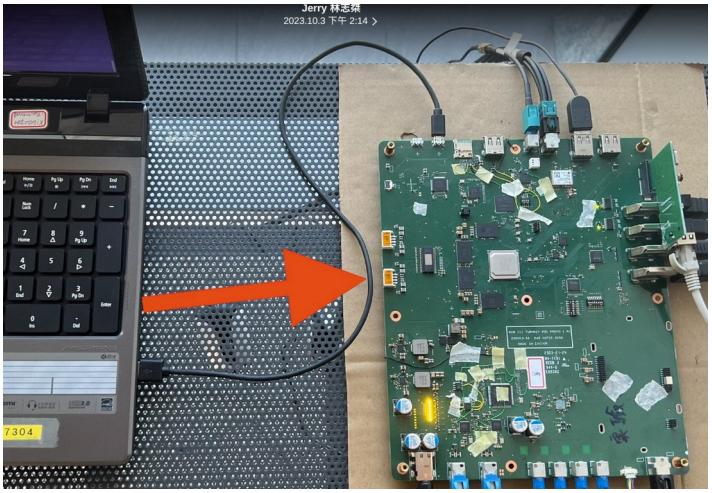
```
jerry@jerry-TravelMate-P215-53:~/Renesas_IVI/apk/RTX_IVI_PreInstall/GNSS_Status$ ls
at.harnisch.android.gnss.apk  config.arm64_v8a.apk  config.xxhdpi.apk  icon.png  manifest.json
jerry@jerry-TravelMate-P215-53:~/Renesas_IVI/apk/RTX_IVI_PreInstall/GNSS_Status$ adb install-multiple *.apk
Success
```

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 -f 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 | rmmod 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 | rmmod 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**

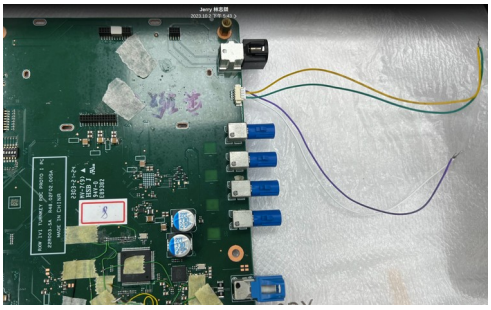
**重開機後**執行 Radio App, 可以 scan 到有效的頻道.

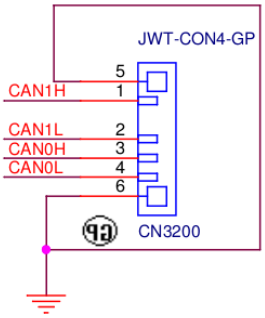
# GNSS

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.

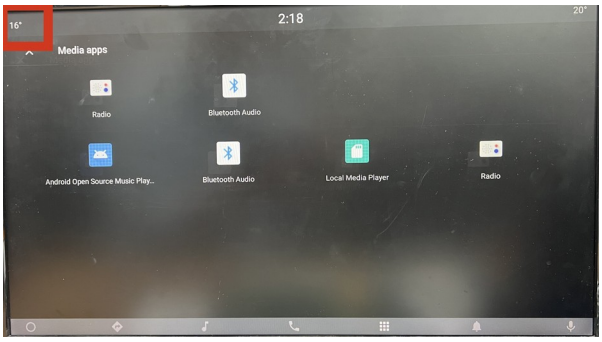

# CAN

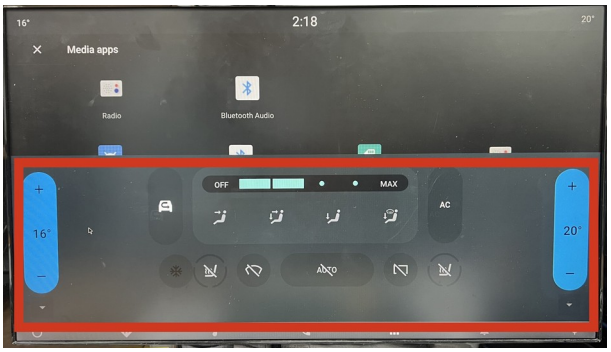
將 Can0 與 Can1 對接如下圖 (CAN1H <-> CAN0H ； CAN1L <-> CAN0L)






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

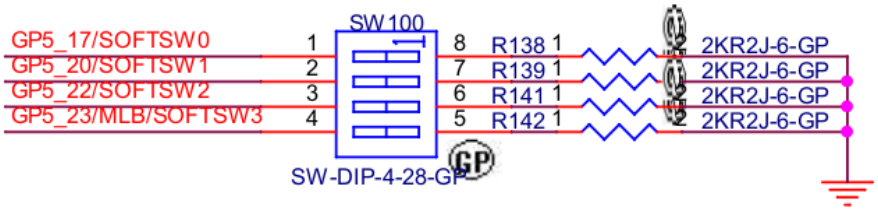
2. 在 Android UI 上任意 click 冷氣相關設定, 會在 can1 看到 can0 丟出的 message

```
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.

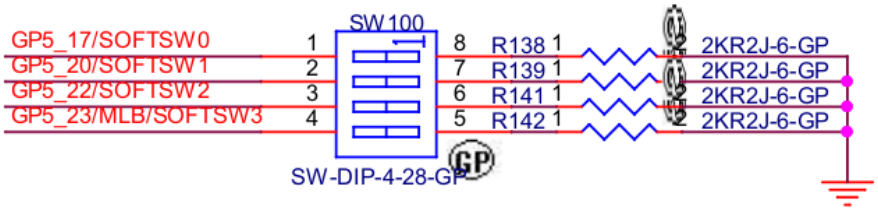
若插入 USB storage (只支援 format 為 FAT 且只有一個 partition) , 可在 Files app 中看到 storage 中的檔案.

# 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:/ # msd_cmd Boot
iMode = 0
Excute set_Boot_1
Excute set_Boot_2
```

3. mst_cmd StartTestVideo => 進入 test pattern mode

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

4. 可在螢幕上看到 test pattern 畫面

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
```

# 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 |