

AIR-030 Factory Test

Date	02/04/2023	Release Ver.	V1.0
Category	<input type="checkbox"/> FAQ <input checked="" type="checkbox"/> SOP	Release Note	<input checked="" type="checkbox"/> Internal <input type="checkbox"/> External
Related OS	Ubuntu 20.04		
Abstract	AIR-030 工廠測試文件		
Keyword	AIR-030, Factory test tool		
Related Product	N/A		

(一)介紹

開啟測試程式

1. 開啟桌面 Terminal 程式
2. 輸入底下指令



```
ubuntu@nvair030a1:~$ cd advtest-factory/
```

```
ubuntu@nvair030a1:~/advtest-factory$ sudo ./factory_test_nvadia.sh
```

主程式

```
Test nvair030a1 script Version :
=====
(3)    [eMMC] - [eMMC Read\Write] test
(4)    [SDcard] - [SDcard Read\Write]
(5)    [USB] - [USB DISK]
(12)   [HDMI] - [Show Picture to HDMI] test
(25)   [CAN] - [Can bus] test
(28)   [Audio] - [Audio codec line out] test
(29)   [GPIO] - [GPIO in/out] test
(30)   [TPM] - [TPM encryption] test
(31)   [M.2.B Key] - [NVME module] test
(32)   [M.2 E key] - [AW-CB375NF/EWM-W159M201E] test
(33)   [PCIe x16] - [PCIe-2221NP] test
(34)   [COM] - [COM1 / RS232 loop test]
(35)   [COM] - [COM2 / RS232 loop test]
(36)   [COM] - [COM4 / RS232 loop test]
(37)   [COM] - [COM5 / RS232 loop test]
(38)   [RJ45] - [eth00] ping 192.168.0.1
(39)   [RJ45] - [eth01] ping 192.168.0.1
(40)   [RJ45] - [eth02] ping 192.168.0.1
(41)   [Burning] - [CPU GPU MEMORY]
(E/e)  exit test
=====
select function : █
```

(二)各項測試介紹

(3) [eMMC] - [eMMC Read\Write] test
測試 EMMC 讀寫。

```
select function : 3

Test Log Directory : ./logs/temp/20220421130908/
=====
[eMMC] - [eMMC Read\Write] : SUCCESS
Press any key to continue...█
```

(4) [SDcard] - [SDcard Read\Write]
測試 SD card 讀寫。測試前請確定 SD card 有格式化好

```
select function : 4

Test Log Directory : ./logs/temp/20220421132130/
=====
[SDcard] - [SDcard Read\Write] : SUCCESS
Press any key to continue...█
```

(5) [USB] - [USB DISK]
測試隨身碟讀寫，可以全部 USB 槽都插上隨身碟去測試，但建議一個一個測試才知道測試結果。測試前請確定隨身碟有格式化好

```
select function : 5

Test Log Directory : ./logs/temp/20220421131558/
=====
[USB] - [USB DISK] :
===(BUS 1) no usb disk===

/dev/sda start testing
    backing up...done
    writing 1024 bytes data ...done
    reading & comparing ...done
    restoring ...done
SUCCESS
Press any key to continue...
```

(12) [HDMI] - [Show Picture to HDMI] test

顯示一張圖片到畫面上，倘若有則輸入 y，若沒有輸入 n，重新顯示則輸入 r

```
Test Log Directory : ./logs/temp/20220421132444/
```

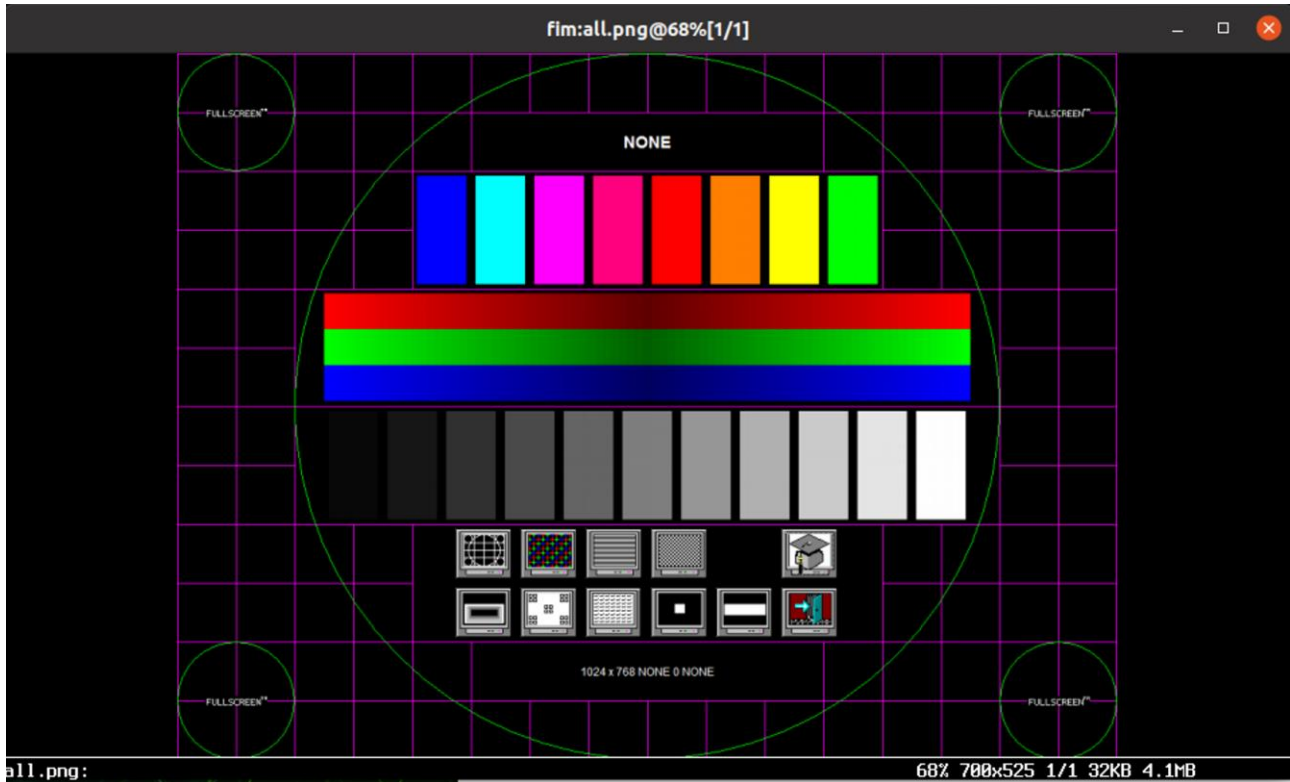
```
=====
```

```
Interactive Test [HDMI] - [Show picture to HDMI]
```

```
Look at the HDMI Display
```

```
Did you see the picture on the HDMI display? (y/n/r[etry]): 
```

若有顯示，桌面會彈出一個視窗



(25) [CAN] - [Can bus] test

接上字句測試

```
select function : 25
```

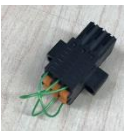
```
Test Log Directory : ./logs/temp/20230204031854/
```

```
=====
```

```
[CAN bus test] - [CAN bus]
```

```
: SUCCESS
```

```
Press any key to continue...
```



(28) [Audio] - [Audio codec line out] test

播放聲音測試，遇到“Press any key to continue”，按任意鍵才開始撥放，成功請輸入 y，沒聽到聲音請按 n，重聽請按 r

```
select function : 28

Test Log Directory : ./logs/temp/20230204032423/
=====
Interactive Test [Audio] - [Audio input\output]
  Playing the audio file for 5 seconds
  Press any key to continue
  Did you hear the recorded audio? (y/n/r[etry]): y
[Audio] - [Audio input\output] : SUCCESS

Press any key to continue...
```

(29) [GPIO] - [GPIO in/out] test

接上字句測試



```
select function : 29

Test Log Directory : ./logs/temp/20230204052141/
=====
[DIO] - [DIO TEST] : [20230204.05.21.41] (count:1 / 2)
write 0 value to gpio OUT : gpio300
write 0 value to gpio OUT : gpio301
write 0 value to gpio OUT : gpio302
write 0 value to gpio OUT : gpio303
write 0 value to gpio OUT : gpio304
write 0 value to gpio OUT : gpio305
write 0 value to gpio OUT : gpio306
write 0 value to gpio OUT : gpio307
gpio IN pin : gpio308 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio309 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio310 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio311 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio312 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio313 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio314 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio315 is the same as gpio OUT pin- [PASS]
[20230204.05.21.42] (count:2 / 2)
write 1 value to gpio OUT : gpio300
write 1 value to gpio OUT : gpio301
write 1 value to gpio OUT : gpio302
write 1 value to gpio OUT : gpio303
write 1 value to gpio OUT : gpio304
write 1 value to gpio OUT : gpio305
write 1 value to gpio OUT : gpio306
write 1 value to gpio OUT : gpio307
gpio IN pin : gpio308 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio309 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio310 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio311 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio312 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio313 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio314 is the same as gpio OUT pin- [PASS]
gpio IN pin : gpio315 is the same as gpio OUT pin- [PASS]
Test is completed!!!
Press any key to continue...
SUCCESS
```

(30) [TPM] - [TPM encryption] test

```
select function : 30

Test Log Directory : ./logs/temp/20230204052351/
=====
[TPM] - [TPM SELFTEST command] : SUCCESS
Press any key to continue...
```

(31) [M.2.B Key] - [NVME module] test

測試 NVME 讀寫，請按字句。

```
select function : 31

Test Log Directory : ./logs/temp/20230204053653/
=====
NVME partition nvme0n1p1 exist
[M2] - [NVME test]
/dev/nvme0n1p1 start testing
      backing up...done
      writing 1024 bytes data ...done
      reading & comparing ...done
      restoring ...done
SUCCESS
Press any key to continue...
```

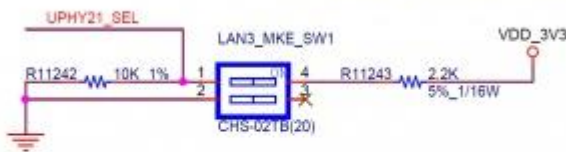


(32) [M.2 E key] - [AW-CB375NF/EWM-W159M201E] test

測試是否有認到 AW-CB375NF 模組，先調整 dip switch

- LAN3_MKE_SW1 - SW1 : ON

LAN3 & M.2 KEY-E PCIe Selector (DIP SW place BOT side)



SW1	SW2	PCIe Function
ON	-	PCIe switch to M.2-E (LAN3 disable)
OFF	-	PCIe switch to LAN3 (M.2-E disable)




```
select function : 32
```

```
Test Log Directory : ./logs/temp/20230204073124/
```

```
=====
```

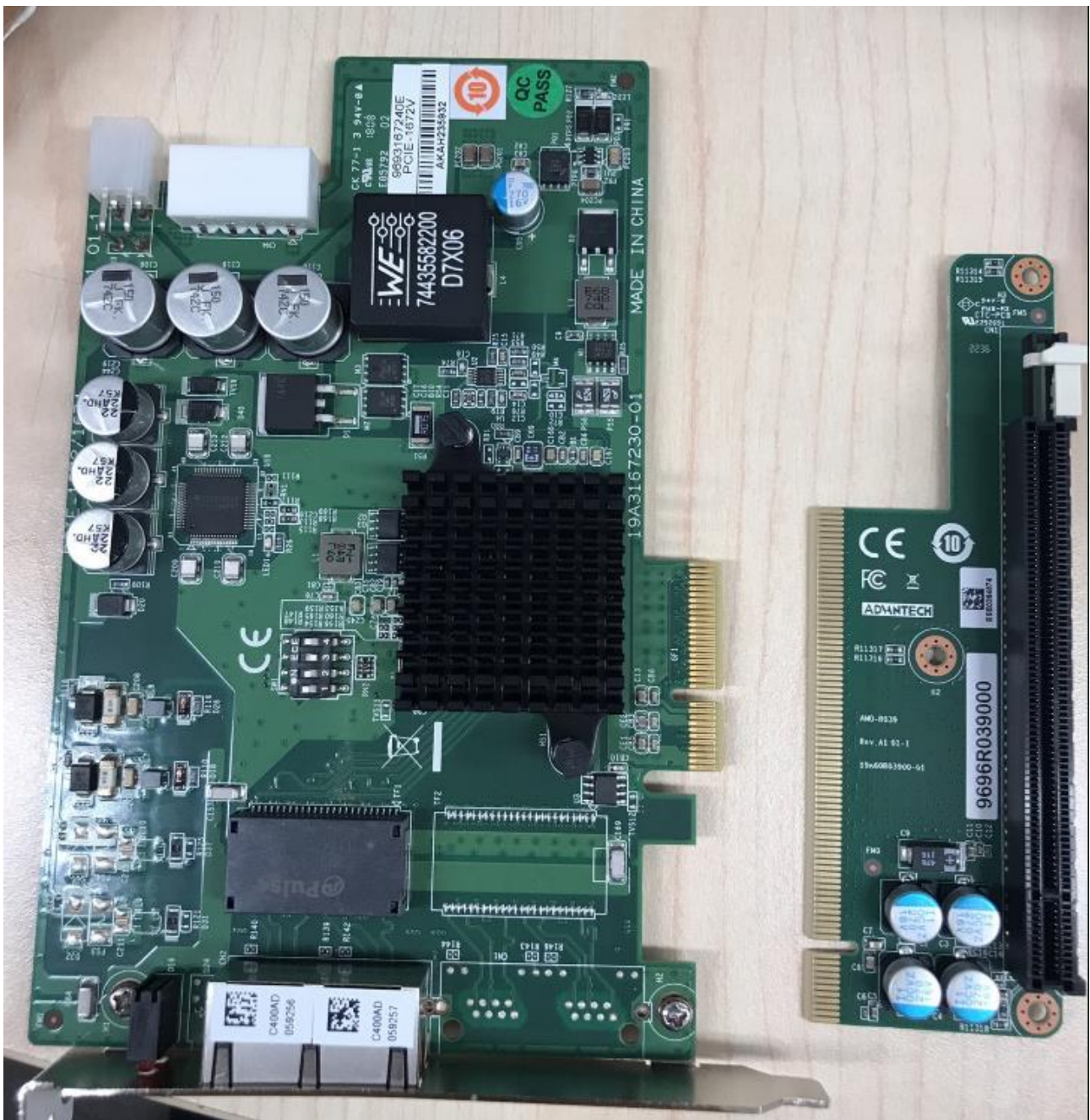
```
Bus 001 Device 004: ID 13d3:3549 IMC Networks
```

```
SUCCESS
```

```
Press any key to continue... [ ]
```

(33) [PCIe x16] - [PCIe-2221NP] test

測試字句如下，右側是轉接板，左邊是一個 PCIe to LAN 板

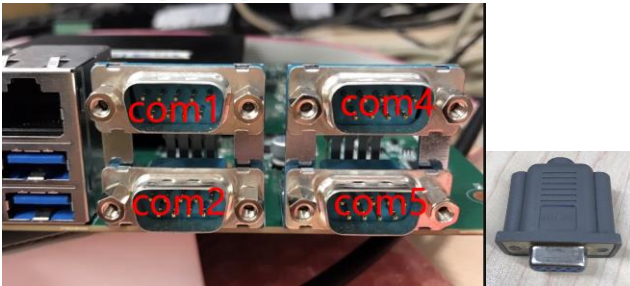


請將網路線接到底下網路孔



測試過程，第一步直接按 enter，第二步輸入 ping 到遠端的 IP，預設是 192.168.0.1

```
select function : 33
Test Log Directory : ./logs/temp/20230204055856/
=====
Interactive Test [PCIe x16] - [PCIE-2221NP]
INTERFACE:eth0
Device eth0 down!
Device eth0 up
eth0 state up!
Please input request DHCP yes=1 or no=0(enter timeout value (default:1)):
DHCP_TIMEOUT 1
udhcpd: started, v1.30.1
udhcpd: sending discover
udhcpd: sending select for 172.22.28.180
udhcpd: lease of 172.22.28.180 obtained, lease time 604800
dhcp_ip:udhcpd: sending select for 172.22.28.180
get IP Address
Please input PING_IP(enter to default:192.168.0.1): 8.8.8.8
PING_IP 8.8.8.8
0%
ping 8.8.8.8 pass!
SUCCESS
```



(34) [COM] - [COM1 / RS232 loop test]
 測試 COM1 RS232 loop back，請接字句

```
select function : 34

Test Log Directory : ./logs/temp/20230204064149/
=====
[COM] - [COMPORT LOOPBACK ttyTHS0] : SUCCESS
Press any key to continue... [ ]
```

(35) [COM] - [COM2 / RS232 loop test]
 測試 COM2 RS232 loop back，請接字句

```
select function : 35

Test Log Directory : ./logs/temp/20230204064118/
=====
[COM] - [COMPORT LOOPBACK ttyTHS4] : SUCCESS
Press any key to continue... [ ]
```

(36) [COM] - [COM4 / RS232 loop test]
 測試 COM4 RS232 loop back，請接字句

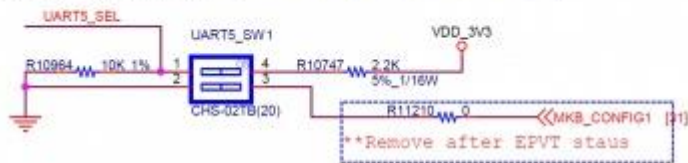
```
select function : 36

Test Log Directory : ./logs/temp/20230204063823/
=====
[COM] - [COMPORT LOOPBACK ttyTHS3] : SUCCESS
Press any key to continue... [ ]
```

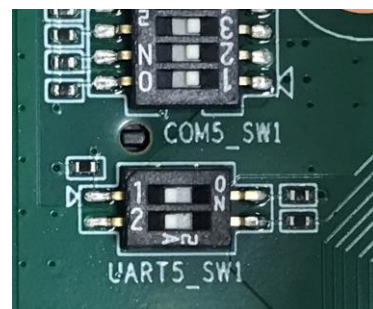
(37) [COM] - [COM5 / RS232 loop test]
 測試 COM5 RS232 loop back，請接字句，先調整 dip switch

- UART5_SW1 - SW1 : ON

UART5 Selection (DIP SW place BOT side)



SW1	SW2	Function
ON	-	COM5 ENABLE , M.2-E BT DISABLE
OFF	-	COM5 DISABLE , M.2-E BT ENABLE
-	-	Default (Signal auto selection)
-	OFF	M.2 KEY-B - SWITCH to PCIe signal
-	ON	M.2 KEY-B - SWITCH to USB3 signal




```
select function : 37
```

```
Test Log Directory : ./logs/temp/20230204064022/
```

```
=====
```

```
[COM] - [COMPORT LOOPBACK ttyTHS1]
```

```
: SUCCESS
```

```
Press any key to continue... [ ]
```

(38) [RJ45] - [eth00] ping \$PING_SERVER



位置

測試過程，第一步直接按 enter，第二步輸入 ping 到遠端的 IP，預設是 192.168.0.1

```
select function : 38
```

```
Test Log Directory : ./logs/temp/20230204065248/
```

```
=====
```

```
Interactive Test [RJ45 eth00] - [GBE]
```

```
INTERFACE:eth00
```

```
Device eth00 down!
```

```
Device eth00 up
```

```
eth00 state up!
```

```
Please input request DHCP yes=1 or no=0(enter timeout value (default:1)):
```

```
DHCP_TIMEOUT 1
```

```
udhcpc: started, v1.30.1
```

```
udhcpc: sending discover
```

```
udhcpc: sending select for 172.22.28.194
```

```
udhcpc: lease of 172.22.28.194 obtained, lease time 604800
```

```
dhcp_ip:udhcpc: sending select for 172.22.28.194
```

```
get IP Address
```

```
Please input PING_IP(enter to default:192.168.0.1): 8.8.8.8
```

```
PING_IP 8.8.8.8
```

```
0%
```

```
ping 8.8.8.8 pass!
```

```
SUCCESS
```

```
Press any key to continue... [ ]
```

(39) [RJ45] - [eth01] ping \$PING_SERVER



位置

測試過程，第一步直接按 enter，第二步輸入 ping 到遠端的 IP，預設是 192.168.0.1

```
select function : 39

Test Log Directory : ./logs/temp/20230204065138/
=====
Interactive Test [RJ45 eth01] - [GBE]
INTERFACE:eth01
Device eth01 down!
Device eth01 up
eth01 state up!
Please input request DHCP yes=1 or no=0(enter timeout value (default:1)):
DHCP_TIMEOUT 1
udhcpd: started, v1.30.1
udhcpd: sending discover
udhcpd: sending select for 172.22.28.190
udhcpd: lease of 172.22.28.190 obtained, lease time 604800
dhcp_ip:udhcpd: sending select for 172.22.28.190
get IP Address
Please input PING_IP(enter to default:192.168.0.1): 8.8.8.8
PING_IP 8.8.8.8
0%
ping 8.8.8.8 pass!
SUCCESS
```

(40) [RJ45] - [eth02] ping \$PING_SERVER



位置

測試過程，第一步直接按 enter，第二步輸入 ping 到遠端的 IP，預設是 192.168.0.1

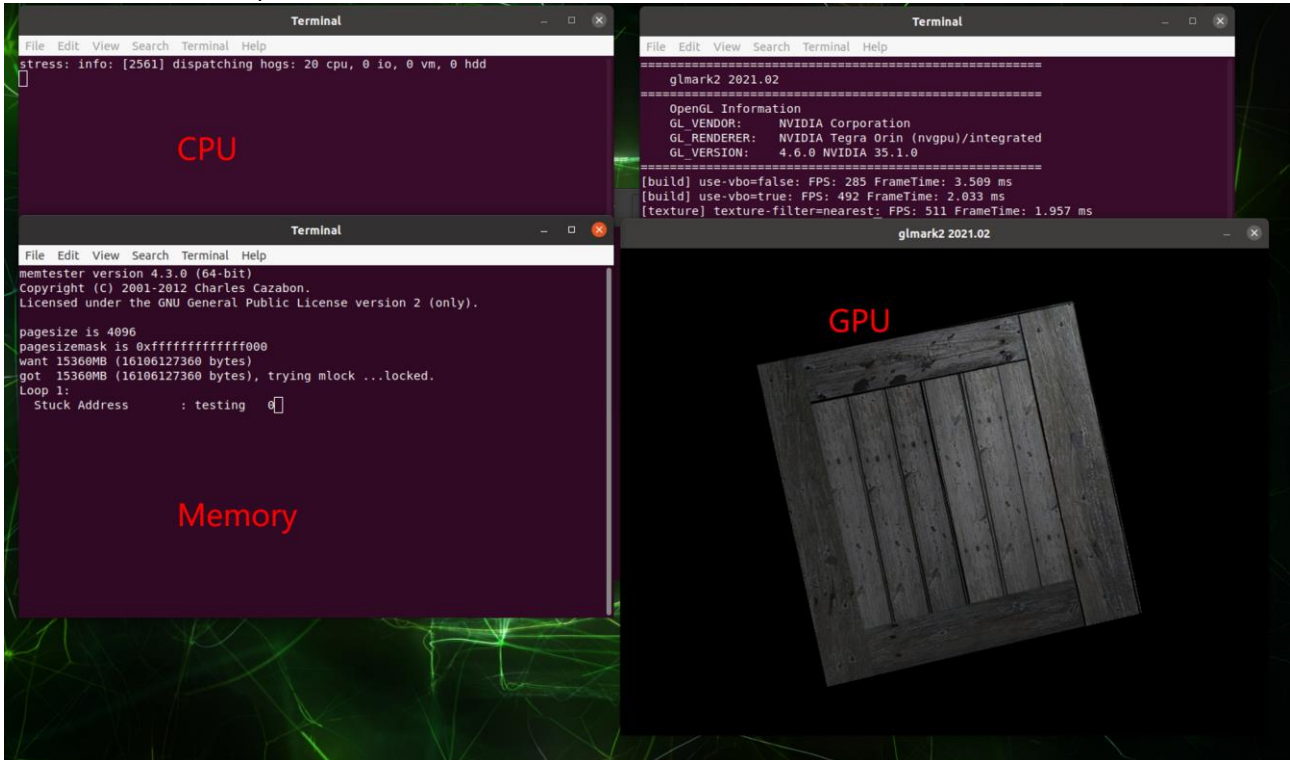
```
select function : 40

Test Log Directory : ./logs/temp/20230204064521/
=====
Interactive Test [RJ45 eth02] - [GBE]
INTERFACE:eth02
Device eth02 down!
Device eth02 up
eth02 state up!
Please input request DHCP yes=1 or no=0(enter timeout value (default:1)):
DHCP_TIMEOUT 1
udhcpd: started, v1.30.1
udhcpd: sending discover
udhcpd: sending select for 172.22.28.172
udhcpd: lease of 172.22.28.172 obtained, lease time 604800
dhcp_ip:udhcpd: sending select for 172.22.28.172
get IP Address
Please input PING_IP(enter to default:192.168.0.1): 8.8.8.8
PING_IP 8.8.8.8
0%
ping 8.8.8.8 pass!
SUCCESS

Press any key to continue... [ ]
```

(41) [Burning] - [CPU GPU MEMORY]

對 CPU / GPU / Memory 做燒機測試，時間未限定



(三)Image 燒錄

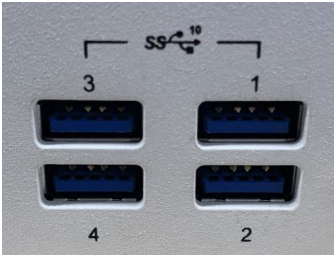
1.準備 Host 與 AIR-030 各一台



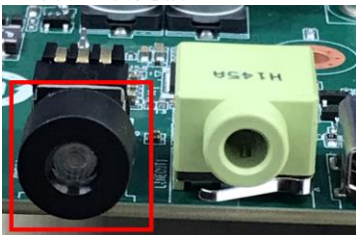
2.使用 Micro USB 線連接兩個裝置
AIR-030 USB-OTG 孔



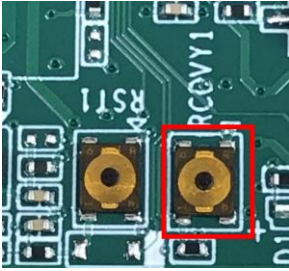
Host – 任一個 USB-Type-A 孔



3.AIR-030 上電
電源按鈕會亮橘燈



按住 recovery button (在 AIR-030 背面)



再按 Power 按鈕

檢查是否有在 Recovery 的狀態

a. 前往 Host 機器

b. 按快捷鍵 `ctrl+alt+t`，會彈出命令提示字元視窗，輸入

```
$ ei-52@ei52-Default-string:~$ lsub
```

看到 nVidia 表示有偵測到

```
ei-52@ei52-Default-string:~$ lsusb
Bus 002 Device 002: ID 8564:4100 Transcend Information, Inc. USB3.1 Hub
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 006: ID 0955:7223 NVIDIA Corp. APX
Bus 001 Device 004: ID 046d:c077 Logitech, Inc. M105 Optical Mouse
Bus 001 Device 005: ID 8564:1000 Transcend Information, Inc. JetFlash
Bus 001 Device 003: ID 0461:0010 Primax Electronics, Ltd HP PR1101U / Primax PMX-KPR1101U Keyboard
Bus 001 Device 002: ID 8564:4100 Transcend Information, Inc. USB2.1 Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
ei-52@ei52-Default-string:~$
```

4. 拷貝 image 檔案 (假設 image 已經在隨身碟)

a. 點擊工作列上的 icon

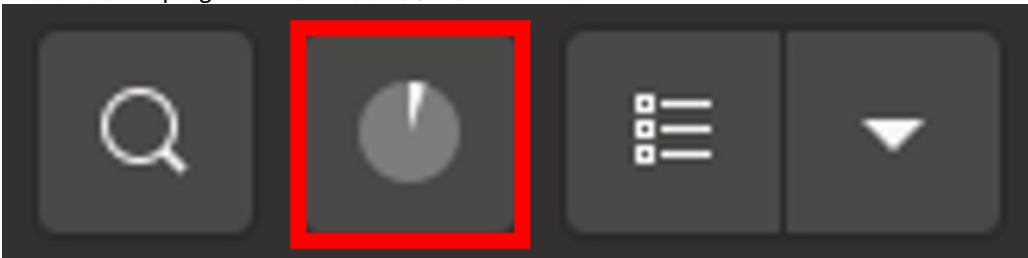


b. 對著 image 檔案按滑鼠右鍵，選擇“copy to”

c. 選擇桌面的 air030image 資料夾



d. 等底下紅色 progress 跑完，代表拷貝完畢



5. 燒錄 (耗費時間 12 分 10 秒)

b. 按快捷鍵 `ctrl+alt+t`，會彈出命令提示字元視窗，輸入

進入 air030image 資料夾

```
ei-52@ei52-Default-string:~$ cd Desktop/air030image/
```

解壓縮 image

```
ei-52@ei52-Default-string:~/Desktop/air030image$ tar -zxf air030_factory_test_20230204.tar.gz
```

進入燒錄位置

```
root@ei52-Default-string:/home/ei-52/Desktop/air030image$ cd bootloader/
```

切換 root 使用者

```
ei-52@ei52-Default-string:~/Desktop/air030image/bootloader$ sudo -s
```

燒錄

```
root@ei52-Default-string:/home/ei-52/Desktop/air030image/bootloader# source flashcmd.txt
```

燒錄完畢時 Host 端的命令提示視窗會顯示

```
[ 770.8107 ] Flashing completed

[ 770.8109 ] Coldbooting the device
[ 770.8136 ] tegrarc_m_v2 --chip 0x23 0 --ismb2
[ 770.8157 ] MB2 version 01.00.0000
[ 770.9731 ] Coldbooting the device
[ 770.9765 ] tegrarc_m_v2 --chip 0x23 0 --reboot coldboot
[ 770.9786 ] MB2 version 01.00.0000
root@ei52-Default-string:/home/ei-52/Desktop/air030image/bootloader#
```

若要刪除舊的檔案

進入 air030image 資料夾

```
ei-52@ei52-Default-string:~$ cd Desktop/air030image/
```

燒除所有檔案

```
ei-52@ei52-Default-string:~$ rm . -rf
```