

Report NO: 19D010008

PER-TAIX2-A10-2280

Intel® Movidius Myriad X VPU

Bulletin Compatibility Test Report

Summary	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Pass with Deviation (Comment: _____)			
Test Results Category				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	0
Defect Unsolved	0	0	0	0

Issue date

2019-04-22

Supervisor

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Test Engineer

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Version Released Records

Date	Version	Change History	Note
5/26/2015	A0	1. First release	

Note :

For all test items in this report, 3 results have been defined and described as following:

- Pass:** Functionality work perfectly
Fail: Functionality failed and must be resolved in the next version
N/A: Functionality Not Applicable or Not Available

This test report would be updated when re-test completed in product next change version.

Specification Validation

Main Specification

Item	Specification	Result			Note
		Pass	Fail	N/A	
CPU/Chipset	Intel® Movidius Myriad X VPU	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
mPCIe card	PCIe interface + USB interface	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Form Factor	Standard mPCIe form factor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Operation System	Only for Ubuntu16.04 and Windows10_64bits	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Platform Information

Item	Device Information		Note
Product of department	DMS		
PCB Model / Version	PER-TAIX-A10-2280 A0.2		
CPU Board	MIX-Q370D1		
Carrier Board	N/A		
CPU	Intel Core i7-8700 3.2GHz		
BIOS	R1.6 (MQ37BM16) (10/26/2018)		
Memory Type	Transcend DDR4 2400 16GB		
eMMC	N/A		
SATA HDD	Intel SSD540s Series 120GB		
SATA DVD-ROM	N/A		
USB DVD-ROM	ASUS SBW-06D2X		
DP Monitor	Dell U2713HM		
Camera	USB Logitech C615		
Operating System	<input checked="" type="checkbox"/>	Linux Ubuntu16.04.5 kernel 4.15.0-45-generic x86_x64	
	<input checked="" type="checkbox"/>	Windows10 Enterprise 64bit V1803	
Power Supply	ATX Power Supply : Antec NEO ECO520W		
	AT Power Supply: N/A		
	DC Adapter : N/A		
Battery Model	N/A		

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1. Compatibility Test with Linux Ubuntu

1.1. Device detection and driver installation

Process Step:

- a. `$lsusb` <check Movidius module detected>

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
Movidius device detection <Myriad X>	Found "03e7:2485" devices. <Myriad X ID>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Device x2
	Found "2c42:5114" devices <USB reset device ID>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Device x1

1.2. SDK installation

Process Step:

- a. Follow Intel OPENVINO installation guide to install SDK.
< <https://software.intel.com/en-us/articles/OpenVINO-Install-Linux> >
- b. Follow Intel installation guide to install HDDL driver.
- c. Run the Image Classification Demo and Inference Pipeline Demo
Classification Demo <./demo_squeezenet_download_convert_run.sh >
Inference Pipeline Demo <./demo_security_barrier_camera.sh >

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
Image Classification Demo	Test result show "Classification demo completed successfully"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OPENVINO R5.0.1
Inference Pipeline Demo	An image viewer window that displays a picture(car).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.3. Function Test

Process Step:

- a. Building Intel sample file.
<`$cd /opt/intel/computer_vision_sdk/deployment_tools/inference_engine/samples/`>
<`$. /build_samples.sh`>
After Building, the sample folder created in /home/inference_engine_samples_build
- b. Run two of Intel AI sample file by device MyriadX
< Example: `object_detection_demo_ssd_async -i "cars.mp4" -m`

vehicle-detection-adas-002.xml -d MYRIAD>

<Example: interactive_face_detection_demo -i "cam" -m face-detection-adas-001 -d MYRIAD>

- c. Run face_detection_demo sample file by device HDDL

<\$cd /opt/intel/computer_vision_sdk/deployment_tools/inference_engine/external/hddl/config/>

<\$sudo gedit hddl_autoboot.config>

Modify "total_device_num" from 8 change to 2>

<Reboot system>

< \$interactive_face_detection_demo -i "cam" -m face-detection-adas-001 -d HDDL>

Make sure Myriad device is working normally.

*Myriad device support FP16 only.

*Must run setupvars.bat before run intel samples.

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
Object detection	The program should working normally.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Interactive face detection	The program should working normally.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Interactive face detection by HDDL	The program should working normally.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.4. Performance Test

Process Step:

- a. hddl_autoboot.config set ""total_device_num" to 2.

- b. Run test "perfcheck.exe" for performance check.

<perfcheck.exe -m

xxx\intel_models\vehicle-detection-adas-0002\FP16\vehicle-detection-adas-0002.xml -inputs_dir

"c:\intel\computer_vision_sdk\deployment_tools\demo" -d HDDL>

Reference performance:

Test item	Test sample	Result			Note
		HDDL device x1	HDDL device x2	HDDL device x8	
Perfcheck	Vehicle-detection-adas-0002.xml	Min fps	11.0673	22.1624	86.0394
		Avg fps	11.0673	22.1624	89.6243
		Max fps	11.0673	22.1624	100.379

Test result:

Test item	Criteria	Actual fps	Result			Note
			Pass	Fail	N/A	
Performance / fps	Compare with reference score: fps±10%	22.16	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1.5. Stability Test

1.5.1. 12-Hours Face detection demo Test

Process Step:

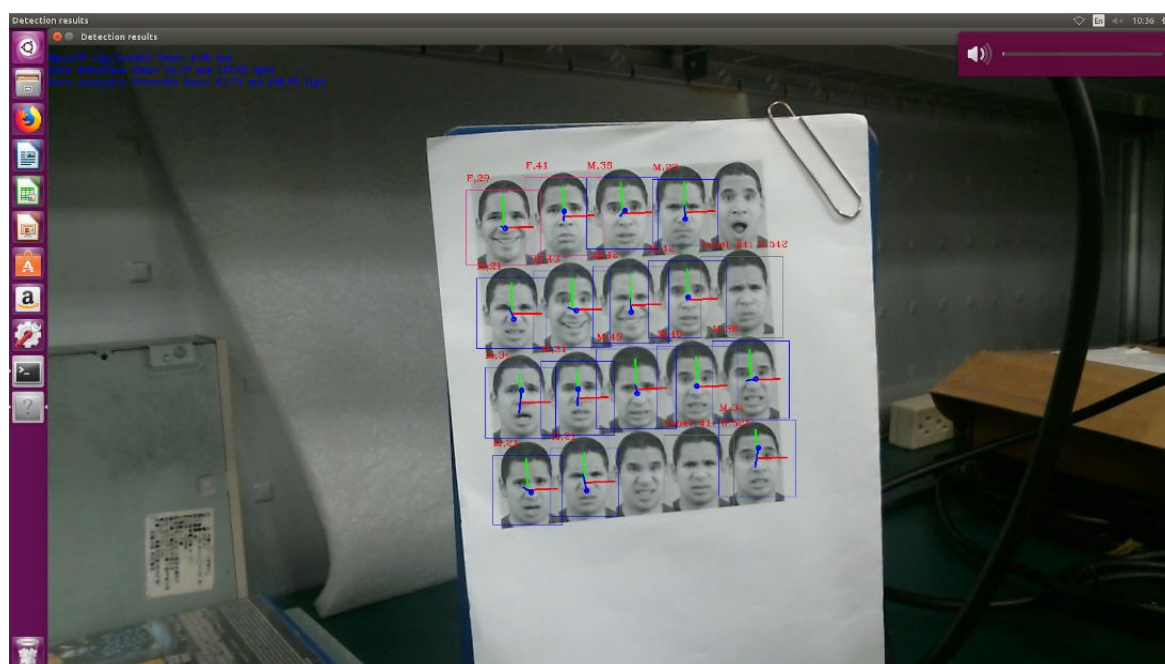
- a. Run test "interactive_face_detection_demo.exe" and Intel sample "Face-detection-retail-0004.xml"+ "age-gnder-recognition-retail-0013.xml"+ "head-pose-estimation-adas-0001.xml", and device select MYRIAD for AI card run in test.

```
< ./interactive_face_detection_sample -i "cam" -d HDDL -d_ag HDDL -d_hp CPU -m
"%INTEL_MODELS%\face-detection-retail-0004\FP16\face- detection-retail-0004.xml" -m_ag
"%INTEL_MODELS%\age-gender-
recognition-retail-0013\FP16\age-gender-recognition-retail-0013.xml" -m_hp
"%INTEL_MODELS%\head-pose-estimation-adas-0001\FP32\head-pose-
estimation-adas-0001.xml">
```

<燒機選用臉部偵測，年齡偵測，動作偵測三個 sample 腳本，且執行裝置皆選擇 MYRIAD 來做燒機測試>

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
Run in test for 12 hours.	System no hang or program error.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OpenCV cap/render time:3ms
	Performance (fps) is not reduced at room temperature.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Face detection time:46fps Face Analysis Networks time:37fps



Linux runin test picture.

1.5.2. 12-Hours Perfcheck Test. <HDDL full loading test>

Process Step:

- a. Run test script "full_load.sh"

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
12-hours perfcheck test.	System no hang or program error.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Performance (fps) is not reduced at room temperature.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fps:22

```

ai@q370d1-Default-string: ~
| loadTime | 20190306 10:21:56 | 20190306 10:21:56 |
| runTime | 00:01:01 | 00:01:01 |
| inference | 680 | 682 |
| prevGraph | vd-net-caffe | vd-net-caffe |
| loadTime | 20190306 10:20:47 | 20190306 10:20:47 |
| unloadTime | 20190306 10:21:55 | 20190306 10:21:55 |
| runTime | 00:01:07 | 00:01:07 |
| inference | 749 | 750 |
+-----+
[10:23:03.2977][1927]I[DeviceManager.cpp:680] DeviceSnapshot(subclass=0):
| deviceId | 160(0xa0) | 161(0xa1) |
| device | 4.1 | 4.3 |
| util% | 100.00 % | 100.00 % |
| thermal | 51.14(0) | 44.87(0) |
| scheduler | squeeze | squeeze |
| comment | | |
| resetTimes | 0 | 1 |
| cacheNum | 1 | 1 |
| cacheGraph0 | vd-net-caffe | vd-net-caffe |
+-----+
| status | RUNNING | RUNNING |
| fps | 11.34 | 11.33 |
| curGraph | vd-net-caffe | vd-net-caffe |
| loadTime | 20190306 10:21:56 | 20190306 10:21:56 |
| runTime | 00:01:06 | 00:01:06 |
| inference | 736 | 738 |
| prevGraph | vd-net-caffe | vd-net-caffe |
| loadTime | 20190306 10:20:47 | 20190306 10:20:47 |
| unloadTime | 20190306 10:21:55 | 20190306 10:21:55 |
| runTime | 00:01:07 | 00:01:07 |
| inference | 749 | 750 |
+-----+
Total time: 44842 ms
Num iterations: 1000
Batch: 1
Min fps: 21.8545
Avg fps: 22.3005
Max fps: 22.7465
[10:23:04.4508][1946]I[ClientManager.cpp:189] client(id:795) unregistered
Plugin socket=2
[10:23:04.4619][1947]I[GraphManager.cpp:464] graph(795) destroyed
[HDDLPlugin] [10:23:04.5511][11374]I[Dispatcher2.cpp:219] Info: Listen Th
  
```

2. Compatibility Test with Windows10

2.1. Device and driver detection

Process Step:

Check Movidius MyriadX device in device manager\Universal Serial Bus devices

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
Device and Driver detection	Device was detected and no yellow icon.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Movidius MyriadX x2

2.2. SDK installation

Process Step:

a. Follow Intel OPENVINO installation guide to install SDK. <R5.0.1 above>

< <https://software.intel.com/en-us/articles/OpenVINO-Install-Windows>>

b. Run the Image Classification Demo and Inference Pipeline Demo

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
Image Classification Demo	Test result show "Classification demo completed successfully"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Inference Pipeline Demo	An image viewer window that displays a picture(car).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2.3. Function Test

Process Step:

a. Run two of Intel AI sample file by device MyriadX

< Example: object_detection_demo_ssd_async -i "cars.mp4" -m

vehicle-detection-adas-002.xml -d MYRIAD>

<Example: interactive_face_detection_demo -i "cam" -m face-detection-adas-001 -d MYRIAD>

Make sure Myriad device is working normally.

*Myriad device support FP16 only.

*Must run setupvars.bat before run intel samples.

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	

Object detection	The program should working normally.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Interactive face detection	The program should working normally.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2.4. Performance Test

Process Step:

c. hddl_autoboot.config set ""total_device_num" to 2.

d. Run test "perfcheck.exe" for performance check.

```
<perfcheck.exe -m
```

```
xxx\intel_models\vehicle-detection-adas-0002\FP16\vehicle-detection-adas-0002.xml -inputs_dir
```

```
"c:\intel\computer_vision_sdk\deployment_tools\demo" -d HDDL>
```

Reference performance:

Test item	Test sample	Result			Note
		HDDL device x1	HDDL device x2	HDDL device x8	
Perfcheck	Vehicle-detection-adas-0002.xml	Min fps	11.0673	22.1624	86.0394
		Avg fps	11.0673	22.1624	89.6243
		Max fps	11.0673	22.1624	100.379

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
Performance / fps	Compare with reference score: 22fps±10%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2.5. Stability Test

Process Step:

a. Run test "interactive_face_detection_demo.exe" and Intel sample "Face-detection-retail-0004.xml"+ "age-gnder-recognition-retail-0013.xml"+ "head-pose-estimation-adas-0001.xml", and device select MYRIAD for AI card run in test.

```
< interactive_face_detection_sample.exe -d HDDL -d_ag HDDL -d_hp CPU -m
```

```
"%INTEL_MODELS%\face-detection-retail-0004\FP16\face- detection-retail-0004.xml" -m_ag
```

```
"%INTEL_MODELS%\age-gender-
```

```
recognition-retail-0013\FP16\age-gender-recognition-retail-0013.xml" -m_hp
```

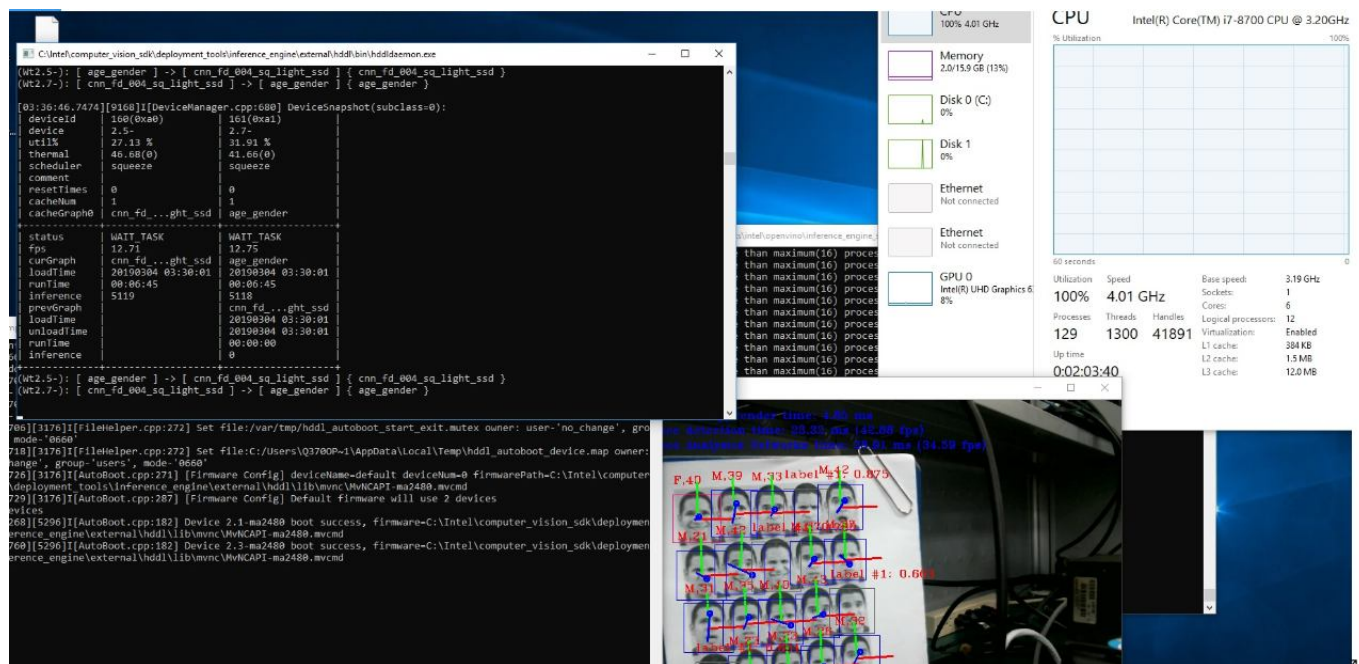
```
"%INTEL_MODELS%\head-pose-estimation-adas-0001\FP32\head-pose-estimation-adas-0001.xml">
```

<燒機選用臉部偵測，年齡偵測，動作偵測三個 sample 腳本，且執行裝置皆選擇 MYRIAD 來做燒機

測試>

Test result:

Test item	Criteria	Result			Note
		Pass	Fail	N/A	
Run in test for 12 hours.	System no hang or program error.	☒	☐	☐	OpenCV cap/render time:5ms Face detection time:40fps Face Analysis Networks time:15.19fps
	Performance (fps) is not reduced at room temperature.	☒	☐	☐	



Windows runin test picture