Asus
(Test Sponsor: HZDR)
NVIDIA Tesla K80
ASUS ESC4000 G3 Series

SPECaccel_ocl_peak = 2.70
SPECaccel_ocl_base = 2.39

SPECACCEL™ OCL Result

ACCEL license: 65A
Test sponsor: HZDR
Tested by: HZDR

Test date: Aug-2017
Hardware Availability: Nov-2014
Software Availability: Aug-2016

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## SPEC ACCEL OCL Result

**Asus**  
(Test Sponsor: HZDR)  
**NVIDIA Tesla K80**  
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<th><strong>Accelerator</strong></th>
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### Hardware

- **CPU Name:** Intel Xeon E5-2630 v3  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.20 GHz  
- **AVX clock:** 2100 MHz  
- **CPU MHz:** 2400  
- **CPU MHz Maximum:** 3200  
- **FPU:** Integrated  
- **CPU(s) enabled:** 16 cores, 2 chips, 8 cores/chip, 2 threads/core  
- **CPU(s) orderable:** 1,2 chips  
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 256 KB I+D on chip per core  
- **L3 Cache:** 20 MB I+D on chip per chip  
- **Other Cache:** None  
- **Memory:** 256 GB (16 x 16 GB 2Rx4 PC4-2133P-E, running at 1866 MHz)  
- **Disk Subsystem:** 128 GB Samsung SSD 850 PRO  
- **Other Hardware:** None

### Software

- **Operating System:** Ubuntu 14.04.5 LTS  
- **Compiler:** GNU Compiler C/C++ Version 6.2.0  
- **File System:** ext3  
- **System State:** Run level 5 (user-level)  
- **Other Software:** NVIDIA Cuda SDK 7.0, driver version 367.48

### Accelerator

- **Accel Model Name:** Tesla K80  
- **Accel Vendor:** NVIDIA  
- **Accel Name:** NVIDIA Tesla K80  
- **Type of Accel:** GPU  
- **Accel Connection:** PCIe 3.0 x16  
- **Does Accel Use ECC:** yes  
- **Accel Description:** NVIDIA Tesla K80, 2496 CUDA cores, 875 MHz  
- **Accel Driver:** NVIDIA UNIX x86_64 Kernel Module 367.48
SPEC ACCEL OCL Result

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Platform Notes

Sysinfo program /tmp/spec/1.2/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on kepler020 Thu Aug 24 13:14:25 2017

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see: http://www.spec.org/accel/Docs/config.html#sysinfo

From /proc/cpuinfo
  model name : Intel(R) Xeon(R) CPU E5-2630 v3 @ 2.40GHz
  2 "physical id"s (chips)
  32 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
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---

**Platform Notes (Continued)**

```plaintext
cpu cores : 8  
siblings : 16  
physical 0: cores 0 1 2 3 4 5 6 7  
physical 1: cores 0 1 2 3 4 5 6 7  
cache size : 20480 KB
```

From `/proc/meminfo`

- MemTotal: 264058968 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

```
/usr/bin/lsb_release -d
Ubuntu 14.04.5 LTS
```

From `/etc/*release* /etc/*version*`

- debian_version: jessie/sid
- os-release:
  - NAME="Ubuntu"
  - VERSION="14.04.5 LTS, Trusty Tahr"
  - ID=ubuntu
  - ID_LIKE=debian
  - PRETTY_NAME="Ubuntu 14.04.5 LTS"
  - VERSION_ID="14.04"
  - HOME_URL="http://www.ubuntu.com/"
  - SUPPORT_URL="http://help.ubuntu.com/"
  - rh-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)

```
uname -a:
Linux kepler020 4.4.0-38-generic #57~14.04.1-Ubuntu SMP Tue Sep 6 17:20:43 UTC 2016 x86_64 x86_64 x86_64 GNU/Linux
```

run-level 5 Apr 10 07:27

SPEC is set to: /tmp/spec/1.2

```
Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda1      ext3   44G   14G   28G  34% /
```

Cannot run dmidecode; consider saying 'chmod +s /usr/sbin/dmidecode'

(End of data from sysinfo program)

---

**Base Runtime Environment**

C benchmarks:

- OpenCL Platform: NVIDIA CUDA, OpenCL 1.2 CUDA 8.0.44  
- OpenCL Device #0: Tesla K80, v 367.48

Continued on next page
Asus  
(Test Sponsor: HZDR)

NVIDIA Tesla K80
ASUS ESC4000 G3 Series

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Base Runtime Environment (Continued)

C++ benchmarks:
OpenCL Platform: NVIDIA CUDA, OpenCL 1.2 CUDA 8.0.44
OpenCL Device #0: Tesla K80, v 367.48

Base Compiler Invocation

C benchmarks:
gcc
C++ benchmarks:
g++

Base Portability Flags

116.histo: -DSPEC_LOCAL_MEMORY_HEADROOM=2
122.cfd: -std=gnu++98

Base Optimization Flags

C benchmarks:
-02 -march=haswell -I/opt/pkg/devel/cuda/7.0/include
-L/opt/pkg/devel/cuda/7.0/libb64 -lcuda -lOpenCL

C++ benchmarks:
-02 -march=haswell -I/opt/pkg/devel/cuda/7.0/include
-L/opt/pkg/devel/cuda/7.0/libb64 -lcuda -lOpenCL

Peak Runtime Environment

C benchmarks:
OpenCL Platform: NVIDIA CUDA, OpenCL 1.2 CUDA 8.0.44
OpenCL Device #0: Tesla K80, v 367.48

C++ benchmarks:
OpenCL Platform: NVIDIA CUDA, OpenCL 1.2 CUDA 8.0.44
OpenCL Device #0: Tesla K80, v 367.48
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Peak Compiler Invocation

C benchmarks:
  gcc

C++ benchmarks:
  g++

Peak Portability Flags

116.histo: -DSPEC_LOCAL_MEMORY_HEADROOM=2
122.cfd: -std=gnu++98

Peak Optimization Flags

C benchmarks:

110.fft: basepeak = yes
114.mriq: basepeak = yes
116.histo: basepeak = yes

117.bfs: -O2 -march=haswell -DSPEC_ACCEL_WG_SIZE_0_0=64
         -DSPEC_ACCEL_WG_SIZE_1_0=64 -I/opt/pkg/devel/cuda/7.0/include
         -L/opt/pkg/devel/cuda/7.0/libb64 -lcuda -lOpenCL

118.cutcp: basepeak = yes
121.lavamd: basepeak = yes
124.hotspot: basepeak = yes
127.srad: basepeak = yes
128.heartwall: basepeak = yes
140.bplustree: basepeak = yes

C++ benchmarks:

101.tpacf: -O2 -march=haswell -DSPEC_ACCEL_WG_SIZE_0_0=1024
         -I/opt/pkg/devel/cuda/7.0/include
         -L/opt/pkg/devel/cuda/7.0/libb64 -lcuda -lOpenCL

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**SPEC ACCEL OCL Result**

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**Peak Optimization Flags (Continued)**

103.stencil: basepeak = yes

104.lbm: -O2 -march=haswell -DSPEC_ACCEL_WG_SIZE_0_0=32
-DSPEC_ACCEL_WG_SIZE_0_1=1 -DSPEC_ACCEL_WG_SIZE_0_2=1
-I/opt/pkg/devel/cuda/7.0/include
-L/opt/pkg/devel/cuda/7.0/libb64 -lcuda -lOpenCL

112.spmv: -O2 -march=haswell -DSPEC_ACCEL_WG_SIZE_0_0=96
-I/opt/pkg/devel/cuda/7.0/include
-L/opt/pkg/devel/cuda/7.0/libb64 -lcuda -lOpenCL

120.kmeans: -O2 -march=haswell -DSPEC_ACCEL_WG_SIZE_0_0=288
-I/opt/pkg/devel/cuda/7.0/include
-L/opt/pkg/devel/cuda/7.0/libb64 -lcuda -lOpenCL

122.cfd: -O2 -march=haswell -DSPEC_ACCEL_WG_SIZE_3_0=288
-I/opt/pkg/devel/cuda/7.0/include
-L/opt/pkg/devel/cuda/7.0/libb64 -lcuda -lOpenCL

123.nw: basepeak = yes

125.lud: -O2 -march=haswell -DSPEC_ACCEL_WG_SIZE_0_0=32
-I/opt/pkg/devel/cuda/7.0/include
-L/opt/pkg/devel/cuda/7.0/libb64 -lcuda -lOpenCL

126.ge: -O2 -march=haswell -DSPEC_ACCEL_WG_SIZE_0_0=512
-DSPEC_ACCEL_WG_SIZE_1_0=1 -DSPEC_ACCEL_WG_SIZE_1_1=512
-I/opt/pkg/devel/cuda/7.0/include
-L/opt/pkg/devel/cuda/7.0/libb64 -lcuda -lOpenCL

The flags file that was used to format this result can be browsed at [https://www.spec.org/accel/flags/flags-advanced.20170929.html](https://www.spec.org/accel/flags/flags-advanced.20170929.html)

You can also download the XML flags source by saving the following link:
[https://www.spec.org/accel/flags/flags-advanced.20170929.xml](https://www.spec.org/accel/flags/flags-advanced.20170929.xml)

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For questions about this result, please contact the tester.  
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC ACCEL v1.2.  
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