# SPEC ACCEL™ OCL Result



Bull
(Test Sponsor: Technische Universitaet Dresden)

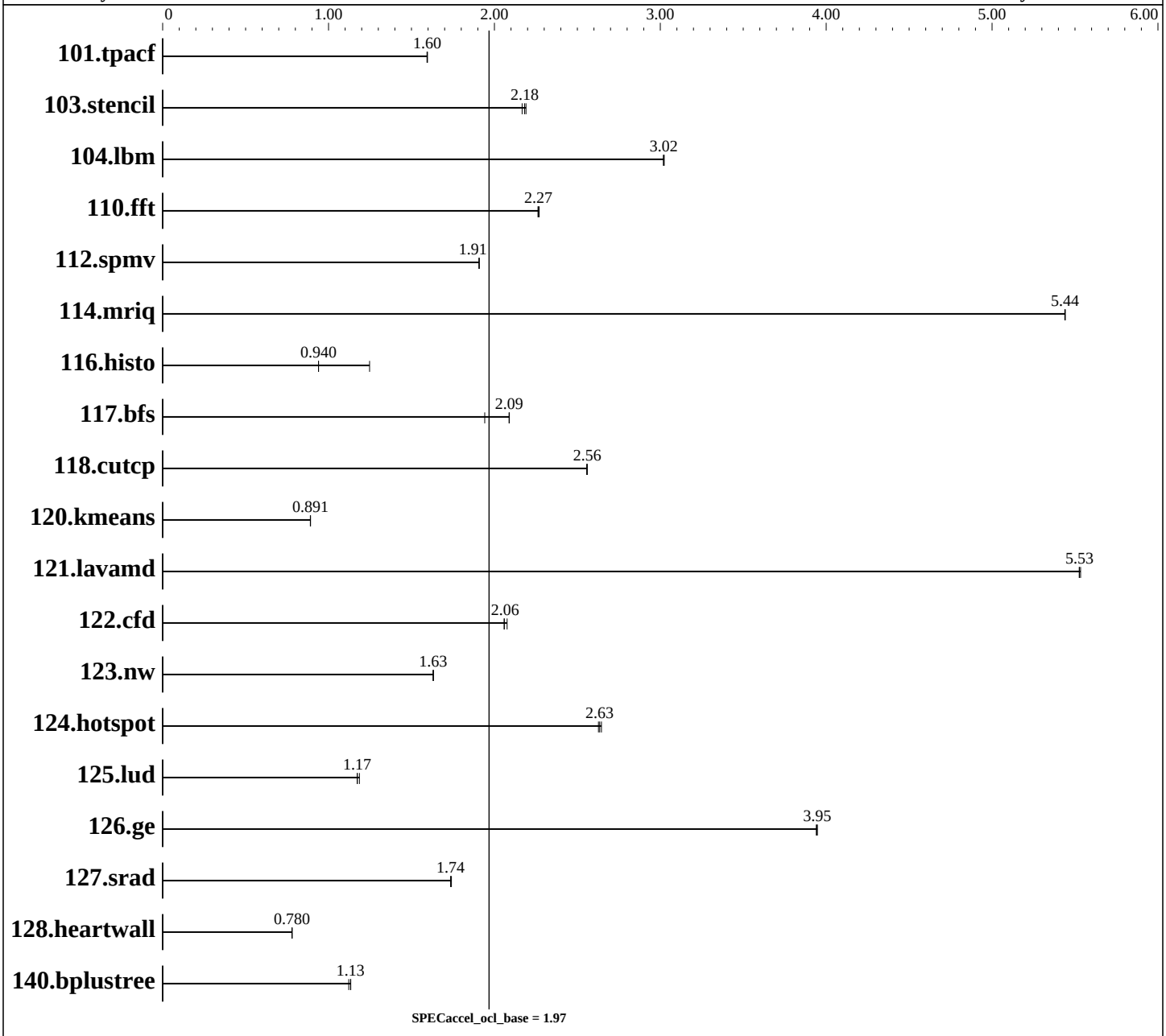
## NVIDIA Tesla K20X
## Bull B515

SPECaccel_ocl_peak = Not Run

SPECaccel_ocl_base = 1.97

**ACCEL license:** 37A
**Test sponsor:** Technische Universitaet Dresden
**Tested by:** Technische Universitaet Dresden

**Test date:** Sep-2015
**Hardware Availability:** Jul-2013
**Software Availability:** Mar-2015



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### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2450 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 2.90 GHz |
| CPU MHz: | 2100 |
| CPU MHz Maximum: | 2900 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 2 chips, 8 cores/chip |
| 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: | 48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC) |
| Disk Subsystem: | 29 TB NetApp FAS6280 |
| Other Hardware: | -- |

### Accelerator

| | |
|---|---|
| Accel Model Name: | Tesla K20X |
| Accel Vendor: | NVIDIA |
| Accel Name: | NVIDIA Tesla K20X |
| Type of Accel: | GPU |
| Accel Connection: | PCIe 2.0 16x |
| Does Accel Use ECC: | yes |
| Accel Description: | NVIDIA Tesla K20X, 2688 CUDA cores, 732 MHz<br>6 GB GDDR5 RAM<br>(Kepler Generation) |
| Accel Driver: | NVIDIA UNIX x86_64 Kernel Module 346.46 |

### Software

| | |
|---|---|
| Operating System: | bullx Linux Server release 6.3 (V1)<br>2.6.32-279.5.2.bl6.Bull.35_restricted.x86_64 |
| Compiler: | GNU Compiler C/C++ Version 4.9.1 |
| File System: | nfs |
| System State: | Run level 3 (Multi-User) |
| Other Software: | NVIDIA Cuda SDK 7.0, driver version 346.46 |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 101.tpacf | **67.1** | **1.60** | 67.1 | 1.59 | 67.0 | 1.60 | | | | | | |
| 103.stencil | 57.7 | 2.17 | 57.1 | 2.19 | **57.3** | **2.18** | | | | | | |
| 104.lbm | **37.1** | **3.02** | 37.0 | 3.02 | 37.1 | 3.02 | | | | | | |
| 110.fft | 49.1 | 2.26 | 48.9 | 2.27 | **49.0** | **2.27** | | | | | | |
| 112.spmv | 77.0 | 1.91 | **77.1** | **1.91** | 77.1 | 1.91 | | | | | | |
| 114.mriq | 20.0 | 5.44 | 20.0 | 5.44 | **20.0** | **5.44** | | | | | | |
| 116.histo | 121 | 0.940 | **121** | **0.940** | 91.4 | 1.25 | | | | | | |
| 117.bfs | **56.0** | **2.09** | 56.0 | 2.09 | 60.3 | 1.94 | | | | | | |
| 118.cutcp | **38.7** | **2.56** | 38.7 | 2.56 | 38.7 | 2.56 | | | | | | |
| 120.kmeans | 112 | 0.890 | 112 | 0.891 | **112** | **0.891** | | | | | | |
| 121.lavamd | 19.7 | 5.53 | **19.7** | **5.53** | 19.7 | 5.53 | | | | | | |
| 122.cfd | **61.2** | **2.06** | 60.7 | 2.08 | 61.2 | 2.06 | | | | | | |
| 123.nw | 70.5 | 1.63 | **70.5** | **1.63** | 70.5 | 1.63 | | | | | | |
| 124.hotspot | **43.3** | **2.63** | 43.1 | 2.65 | 43.4 | 2.63 | | | | | | |
| 125.lud | 101 | 1.17 | **101** | **1.17** | 100 | 1.19 | | | | | | |
| 126.ge | 39.3 | 3.95 | **39.3** | **3.95** | 39.3 | 3.94 | | | | | | |
| 127.srad | **65.6** | **1.74** | 65.5 | 1.74 | 65.7 | 1.74 | | | | | | |
| 128.heartwall | **136** | **0.780** | 136 | 0.781 | 136 | 0.779 | | | | | | |
| 140.bplustree | **95.4** | **1.13** | 95.2 | 1.13 | 96.3 | 1.12 | | | | | | |

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

## Platform Notes

```
MultiThreading disabled in BIOS
 Sysinfo program /home/s1428123/spec-accel/Docs/sysinfo
 $Rev: 6874 $ $Date:: 2013-11-20 #$ 0953404ef7e75a5f9bbb534c6de3f831
 running on taurusi2001 Tue Sep  8 11:03:54 2015

 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 E5-2450 0 @ 2.10GHz
       2 "physical id"s (chips)
       16 "processors"
    cores, siblings (Caution: counting these is hw and system dependent.  The
    following excerpts from /proc/cpuinfo might not be reliable.  Use with
```

Continued on next page

## Platform Notes (Continued)

```
      caution.)
         cpu cores : 8
         siblings  : 8
         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:       49396228 kB
      HugePages_Total:       0
      Hugepagesize:       2048 kB

   /usr/bin/lsb_release -d
      bullx Linux Server release 6.3 (V1)

   From /etc/*release* /etc/*version*
      bull-release: bullx Linux Server release 6.3 (V1)
      redhat-release: bullx Linux Server release 6.3 (V1)
      system-release: bullx Linux Server release 6.3 (V1)
      system-release-cpe: cpe:/o:bullx:linux:6server:ga:server

   uname -a:
      Linux taurusi2001 2.6.32-279.5.2.bl6.Bull.35_restricted.x86_64 #1 SMP Wed Apr
      24 14:29:54 CEST 2013 x86_64 x86_64 x86_64 GNU/Linux

   run-level 3 Aug 13 17:30

   SPEC is set to: /home/s1428123/spec-accel
      Filesystem     Type    Size  Used Avail Use% Mounted on
      172.26.75.132:/hrsk_userhome
                     nfs      29T   24T  5.3T  82% /home

   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 1.1 CUDA 7.0.28
    OpenCL Device #0: Tesla K20Xm, v 346.46
```

C++ benchmarks:

```
    OpenCL Platform: NVIDIA CUDA, OpenCL 1.1 CUDA 7.0.28
    OpenCL Device #0: Tesla K20Xm, v 346.46
```

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## Base Compiler Invocation

C benchmarks:
gcc

C++ benchmarks:
g++

## Base Optimization Flags

C benchmarks:
-O2 -I/sw/taurus/libraries/cuda/7.0.28/include
-L/sw/taurus/libraries/cuda/7.0.28/lib64 -lOpenCL

C++ benchmarks:
-O2 -I/sw/taurus/libraries/cuda/7.0.28/include
-L/sw/taurus/libraries/cuda/7.0.28/lib64 -lOpenCL

The flags file that was used to format this result can be browsed at
http://www.spec.org/accel/flags/flags-advanced.20150930.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/accel/flags/flags-advanced.20150930.xml



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

Tested with SPEC ACCEL v1.0.
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