

Android Benchmarks DevKit2.3v2.0

Introduction

This page provides comparison among various TI processors running TI's Android-DevKit. Data published here is for the latest version of released Android-DevKit. Items yet to be measured are marked "TBD" and those that are not applicable to a particular platform are marked "N/A".

Platform Benchmarks

This is a collection of benchmarks comparing mainly CPU speed and other data transfer operations. In below tests, AM389x@1GHz, and AM387x@600MHz.

RowboPerf: ARM

See RowboPERF User Guide ^[1] for more information about these metrics. The RowboPerf application calls native executables compiled with Android's NDK to perform these tests.

	AM389x	AM387x
Dhrystone	948.59	569.15
	DMIPS	DMIPS
Whetstone	250 MIPS	166.7 MIPS
Linpack	24524 Kflops	14610 Kflops

RowboPERF: 0xBench

See RowboPERF User Guide ^[1] for more information about these metrics.

Linpack	AM389x	AM387x
Mflops/s	14.97	9.09

Scimark2	AM389x	AM387x
Composite	18.45	11.02
Fast Fourier Transform	13.82	8.28
Jacobi Successive Over-relaxation	25.88	15.56
Monte Carlo integration	5.96	3.60
Sparse matrix multiply	16.88	10.01
dense LU matrix factorization	29.72	17.64

Boot Time

Numbers shown here measure the time from start of loading the kernel image to appearance of Android's Home Screen. These measurements are done using the default (pre-built) images provided with the DevKit. Please note that the very first time you boot your device, the boot time will be significantly higher (approx. 3-4 min).

Time (secs)	AM389x	AM387x
SD First Boot Time¹	60	66.2
SD Boot Time	42	27.9

¹ First boot time refers to first time the system is booted with a freshly created SD card.

EDMA Test

Need to devise this test.

Memory Bandwidth

Need to devise this test.

Browser Performance

Sunspider

These metrics were collected using the well-known Sunspider performance benchmarks available at <http://www2.webkit.org/perf/sunspider-0.9/sunspider.html>

Sunspider	AM389x	AM387x
Total	6287.5ms +/- 1.1%	10150.8 ms +/- 0.7%

V8

These metrics were collected using the v8 performance benchmarks available at <http://v8.googlecode.com/svn/data/benchmarks/v6/run.html>

V8	AM389x	AM387x
Total	200	134

AcidTests

These metrics were collected using the acid browser tests available at <http://acid3.acidtests.org/>

Acid3	AM389x	AM387x
Total	93/100	93/100

File Storage Performance

These tests were performed using the StorageIO application provided in RoboPerf. The application measures the write and read speed of different storage devices using several block sizes. For these tests the file size chosen was 100 MBytes. In order for the application to run the storage device chosen for the test must be mounted in the Android file system and have read and write access. All the tests were performed on devices with a vfat file system.

MMC/SD Performance

Throughput (MB/s)	AM389x	AM387x
Write, bs=512	6.817	2.623
Write, bs=4096	7.705	2.887
Write, bs=16384	7.935	3.210
Write, bs=65536	8.585	3.044
Write, bs=524288	10.046	3.062
Write, bs=1048576	12.047	2.926
Read, bs=512	39.884	11.684
Read, bs=4096	40.083	11.961
Read, bs=16384	188.592	11.796
Read, bs=65536	288.863	11.016
Read, bs=524288	355.449	11.293
Read, bs=1048576	350.694	10.073

USB Performance

Throughput (MB/s)	AM389x	AM387x
Write, bs=512	9.378	2.228
Write, bs=4096	47.554	3.224
Write, bs=16384	23.951	3.089
Write, bs=65536	33.309	3.866
Write, bs=524288	22.564	4.051
Write, bs=1048576	32.463	3.538
Read, bs=512	39.854	7.983
Read, bs=4096	184.284	8.892
Read, bs=16384	278.136	10.770
Read, bs=65536	335.008	8.809

Read, bs=524288	330.781	9.629
Read, bs=1048576	373.158	8.853

SATA Hard Drive Performance

The SATA hard drive used for this test is a Hitachi model HTS541680J9SA00.

Throughput (MB/s)	AM389x	AM387x
Write, bs=512	20.496	
Write, bs=4096	38.980	
Write, bs=16384	38.635	
Write, bs=65536	37.691	
Write, bs=524288	40.391	
Write, bs=1048576	37.395	
Read, bs=512	40.689	
Read, bs=4096	184.934	
Read, bs=16384	165.651	
Read, bs=65536	360.335	
Read, bs=524288	403.298	
Read, bs=1048576	404.855	

Connectivity Performance

These tests provide throughput comparison across commonly used transports/mediums.

Ethernet

Measures TCP Throughput between Server (running on Host PC) and Client (Android Platform) using different buffer sizes (bs in bytes) Both Server and client uses the Netperf utility. For more information about Netperf, please see Netperf Home page ^[2]

TCP Throughput	AM389x	AM387x
bs=16	136.22 Mb/s	106.6 Mb/s
bs=1024	136.49 Mb/s	101.69 Mb/s
bs=4096	263.99 Mb/s	233.56 Mb/s
bs=8192	373.67 Mb/s	233.56 Mb/s

ADB

Measure Android Debug Bridge (ADB) throughput between Host PC and Android device by pushing and pulling a 20MB file with random content 10 times. TX and RX numbers are from the Host PC point of view, so TX is measured by doing "adb push" on the Host PC.

Ethernet

ADB USB Throughput	AM389x	AM387x
TX	4853.80 KB/s	3905.40 KB/s
RX	5050.20 KB/s	5016.40 KB/s

Graphics Performance

RowboPERF: 0xBench 2D

See RowboPERF User Guide ^[1] for more information about these metrics.

2D	AM389x	AM387x
Draw Canvas (fps)	30.87	21.88
Draw Circle (fps)	23.60	16.44
Draw Circle2 (fps)	14.11	10.44
Draw Rect (fps)	6.77	4.15
Draw Arc (fps)	14.58	9.58
Draw Image (fps)	7.90	5.51
Draw Text (fps)	38.40	24.57

RowboPERF: 0xBench 3D

See RowboPERF User Guide ^[1] for more information about these metrics.

3D	AM389x	AM387x
OpenGL Cube (fps)	30.90	23.59
OpenGL Blending (fps)	30.89	22.11
OpenGL Fog (fps)	30.83	22.92
OpenGL Teapot (fps)	30.30	22.60

Versioning

This is Release DevKit-V2.3 v2.0. The release is available from http://software-dl.ti.com/dsps/dsps_public_sw/sdo_tii/TI_Android_DevKit/TI_Android_GingerBread_2_3_DevKit_2_0/index_FDS.html

References

- [1] http://processors.wiki.ti.com/index.php/RowboPERF_User_Guide
 - [2] <http://www.netperf.org/netperf/>
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