



# 3DMARK<sup>®</sup> MOBILE<sup>ES1.1</sup>



## Reviewer's Guide: 3DMark<sup>®</sup>Mobile ES 1.1 Developers' Edition

**Product Name:** 3DMark<sup>®</sup>Mobile ES 1.1 Developers' Edition

**Product Tagline:** The OpenGL<sup>®</sup> ES Benchmark

**About this Guide:** This Reviewer's Guide is intended to provide test procedures for media interesting in benchmarking next generation OpenGL ES 3D hardware, as well as provide product details for those that are interested in reviewing the 3DMarkMobile ES 1.1 Developers' Edition Benchmark tool.



## Benchmarking 3D performance in next generation mobile devices

3DMark®Mobile ES 1.1 Developers' Edition is a robust OpenGL® ES 1.0 and 1.1 benchmark that tests future workload and game technology intended for deployment in next generation mobile 3D hardware. High detail game content generates workloads that tax OpenGL ES 3D hardware. Combined with an array of feature tests consisting of pixel processing, vertex processing, and CPU processing, development hardware and prototype device performance can be tested, evaluated and compared, fairly and consistently.

3DMarkMobile ES 1.1 Developers' Edition is intended for use on development hardware to assist in product development, design evaluation and for mobile hardware media reviews of next generation devices, as they become available.

Futuremark will release a consumer version of 3DMarkMobile ES 1.1 once OpenGL ES 1.0 and 1.1 3D hardware is available in retail mobile devices.

For use on development boards, 3DMarkMobile ES 1.1 Developers' Edition contains simple UI, as well as using a simple command line interface or basic text configuration file to run each test executable individually or as a batch. Results are saved into a text file.

### Availability

3DMarkMobile ES 1.1 Developers' Edition will be available via source code licensing to our BDP members, to enable porting and compiling the benchmark to their own development platforms. Compiled versions will be distributed on request to media and other parties. Futuremark will provide binary versions of the benchmark for Windows (i386)\*, Windows CE (ARM) and Symbian (ARM) platforms. The binaries will be built using the latest publicly available SDKs for each of the platforms.

\* For development purposes only

### Key Features

- OpenGL ES 1.0 and 1.1 3D hardware benchmark application
- Produces workloads designed to stress next generation mobile 3D hardware
- Source code licensing available for BDP members
- Binaries available in Windows (i386), Windows CE (ARM), and Symbian (ARM) platforms
- Includes two high detail game tests, pixel processing test, vertex processing test, and CPU processing test

### Key Benefits

- 3DMarkMobile ES 1.1 is the only product designed specifically to benchmark next generation OpenGL ES 1.0 and 1.1 3D hardware.
- Source code licensing enables developers to port the benchmark to their platform, to satisfy their development requirements
- Binaries will enable developers to test hardware on common platforms
- Mobile hardware media reviewers will be able to test next generation hardware as development boards and next generation devices are made available



## Game Tests and Feature Details

### Game Tests

Game Test 1: Cyber Samurai – A robot samurai performs a kata in a traditional Japanese dojo. The scene is comprised of the colorful samurai, an authentic, richly ornamented dojo, and a variety of props such as bonsai, and katana. The animation is created using linked hierarchies and forward kinetics, and does not require hardware vertex processing.

- OpenGL ES 1.0 Common Lite
- ~ 40 second duration
- 10K-20K polygon budget
- 3 MB texture memory (uncompressed RGBA)
- Single texturing
- FPS metrics

Game Test 2: Proxycon – Futuristic warriors defend their space station from attack with laser blasters. Fast paced cuts reveal parts of the station from a first person shooter perspective. The detailed scene and animation features many richly textured elements and several animated characters.

- OpenGL ES 1.1 Common Lite
- ~ 45 second duration
- 10K-20K polygon budget
- 3 MB texture memory (uncompressed RGBA)
- Multi-texturing
- FPS metrics

### Feature Tests

- Pixel Processing – Simple fill rate test, with single and multi-texturing, benchmarks raw pixel processing performance. Texels per second are measured.
- Vertex Processing – A gouraud shaded object and scene produces a polygon throughput count of approximately 50K to benchmark raw vertex processing performance. Polygons per second are measured.
- CPU Processing – Matrix Palette (“skinning”) testing, forcing the computations to be performed on the CPU.
- Image Quality Test – A pipe-like object with suitable textures and a variety of possibilities for turning specific OpenGL ES features on and off to observe the image quality.

## Device Requirements

### Min system requirements

- Any OpenGL ES 1.0 / 1.1 enabled device or hardware development board



## How will the benchmark be used?

### **Hardware technology developers / Semiconductor manufacturers**

3DMarkMobile ES 1.1 game test workloads and feature tests emulate the functional requirements of future mobile 3D game applications, years prior to those applications being available in the mobile device market. Being able to run these test features and generate workloads at the development board and prototype phase will allow for better testing and evaluation of technology implementations, ultimately yielding better performing 3D capable devices.

Manufacturers will need to run tests without UI issues, individually, in batches and looped. Source code will be needed for manufacturers to port and compile for their development boards and platforms.

Results can be used by manufacturers for promotion of their technology's performance to handset and mobile device manufacturers

### **Handset - Mobile device manufacturers**

When determining which 3D hardware chip to include in a handset, accurate, fair, and unbiased benchmark tests will permit manufacturers to make an accurate determination of 3D performance. Compiled binaries and source code will provide handset manufacturers the tools they need for effective evaluation and testing.

### **Software developers**

Game test workloads will help developers evaluate next generation hardware and device capabilities to assess how well those devices will handle their future 3D product offerings.

### **Media**

Mobile media will need consistent and reliable 3D tests to evaluate next generation hardware performance for reviews, whether it's in the form of development boards, prototypes and in time, next generation devices.



## Usage & Distribution Guidelines

These guidelines contain important information about using 3DMark®Mobile06 Developers' Edition and publishing results. Please consult the guide below before using the software or publishing results. If you have any questions related to these matters, please contact us!

### Testing guidelines

For reliable benchmarking, we highly recommend that you follow with these testing guidelines and steps:

- Turn off any possible power-saving features on the device
- Turn off any possible wireless activity on the device (such as Bluetooth, Wifi, etc.)
- Remove the device from any possible cradle or other PC connection
- Reboot the device before running the tests, or otherwise ensure that there are no other applications running during the benchmark run
- If the device supports texture compression, verify that you run the benchmark with the appropriate data file provided by Futuremark

### Publishing benchmark results

Only licensed users may publish benchmark results in marketing materials or in any media or publication. Make sure that you follow instructions set forth in the license agreement and in our testing guidelines. Also, include the official 3DMarkMobile ES 1.1 logo with a link or referral to Futuremark.

### Default scores

In order to keep the reported scores comparable, we highly recommend that you use the default settings as a reference point. Referring to the default settings will make comprehending the results easier for other users running 3DMarkMobile ES 1.1 on their systems.

### Distribution guidelines

3DMarkMobile ES 1.1 or parts of it can not be distributed without a specific written permission from Futuremark.

Please contact [sales@futuremark.com](mailto:sales@futuremark.com) for more details on how to obtain a Source Code license or for compiled binaries for 3DMarkMobile ES 1.1.

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## Additional Information

For market and development information and press inquiries; send your request via email to [sales@futuremark.com](mailto:sales@futuremark.com)

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