# MobileMark 25 Benchmarking Rules v1.0

This document describes the rules governing publication of results derived from running the BAPCo MobileMark 25 benchmark. Any licensee who wishes to publish such results is obliged to adhere to all rules and regulations described in this document or other documents provided by BAPCo related to execution and reporting of MobileMark 25 benchmark results. BAPCo reserves the right to change the rules outlined in this document at any time. Licensees are encouraged to consult BAPCo website at www.bapco.com for the latest information regarding execution and publication rules. For more information please consult the Software License Agreement.

## Benchmark Execution

### Workload Manager

All benchmarks must be run using the MobileMark 25 Workload Manager. This utility is an executable program that runs the MobileMark 25 benchmark. It also includes a module that generates the final benchmark results for the system under test. All published results must be derived only from a complete and correct run of the benchmark. All tests must be performed without modification to any part of the MobileMark 25 software.

The collective set of hardware and software used in generation of an official MobileMark 25 result must be available to the public as defined by BAPCo's availability criteria. The following specific rules apply:

### Operating System

The operating system used to generate and publish results must be a publicly available release from the original software vendor. Consult the product manual at www.bapco.com for the current list of supported operating systems. Upgrade of specific drivers that are released and maintained by vendors other than the operating system vendor (e.g. graphics drivers, disk drivers, motherboard setting files, multimedia drivers) is allowed provided these drivers are publicly available, release-quality drivers from original vendors of such drivers. Licensees may also use operating system service packs, API updates (e.g. Direct X) and other such updates provided they are publicly available, release-quality software from the original vendor, and that they meet the benchmark's Operating System requirements. Licensees should also consult license agreements from individual software vendors to ensure compliance with vendor benchmark restrictions.

### System Configuration

To ensure the integrity of MobileMark 25 results, test systems must maintain the same hardware configuration and software settings throughout the execution of the test. Any modification to hardware configuration and/or software settings will invalidate the results

## Hardware

The system hardware used to generate official MobileMark 25 results must be publicly available at the time of publication or within 60 days thereafter. The system must be purchasable as a complete platform from an Original Equipment Manufacturer within 60 days of publication. Alternatively, licensees may report results for systems which may not be available from an OEM but whose individual components are publicly available and purchasable from various vendors at the time of publication or within 60 days thereafter. Note that the 60-day grace period does not apply to system software. All software used must be publicly available and be of release-quality available from the original software vendor.

## Software

OEM software used to generate official MobileMark 25 results has no grace period, and therefore must be release quality and publicly available from the original vendor immediately upon publication of results.

## Performance or Battery Life Enhancements

Use of performance or battery life enhancements such as using a software utility or other technique is allowed under the following conditions. Any performance or battery life enhancing software must be a release-quality, publicly available offering from the original vendor(s). Any performance or battery life enhancing techniques must be accessible to the public at large. Use of either method must be documented and included with the FDR submission. Performance or battery life enhancing techniques must not compromise the integrity of the system under test or the MobileMark 25 software. The use of drivers or other software specifically optimized for the purpose of increasing MobileMark 25 battery life or performance qualification scores is expressly prohibited. BAPCo shall reserve the right to review the usage of such tools or techniques and invalidate submitted results at its sole discretion**.**

## Wireless Connectivity

MobileMark 25 requires that the system's wireless network adapter be turned on and associated with a wireless network for the duration of the test. MobileMark 25 now supports running while connected to the Internet, but if issues occur, please disconnect from the Internet and try again.

## Screen Brightness

The test system display brightness must be set to a minimum brightness of 250 cd/m2 (nits) for LCD backlit display panel or comparable Perceptual Contrast Length (PCL) value as determined via the MobileMark25 screen Brightness Profiler wizard for valid FDR submission. This screen brightness setting must be

maintained for the duration of the test, except when "Screen off" or "Modern Standby" is in use (see below). Screen dimming, ambient light sensing or use of any other technology to alter the screen brightness during the test is not allowed unless specifically supported by the benchmark.

The new screen Brightness Profiler wizard helps guide the user through the process of setting the SUT screen brightness while on DC (battery) power, and includes the following:

- Display warm-up, as needed.
- Display of black and white checkerboard test pattern, with optional overlay for probe position.
- Adjustment of screen brightness to have comparable Perceptual Contrast Length (PCL) to 250 cd/m2 LCD backlit display panels, with a worse case limit of 250 cd/m2.
- Systems not capable of reaching the specified brightness must be documented as part of any FDR submission, and must run at maximum brightness setting.

Refer to the Brightness Profiler user guide at www.bapco.com/products/mobilemark-25 for more information.

## Screen Off

Use of operating system supported screen off capability is allowed provided that:

- Screen off timeout value must be set to a minimum of 5 minutes on DC power.

- Screen off only occurs during idle periods of the benchmark, only after the point in each idle period where 5 minutes of idle has elapsed.

## Modern Standby

Use of operating system supported Modern Standby is allowed at the tester's discretion provided that:

- Screen off timeout value must be set to a minimum of 5 minutes on DC power

- Modern standby only occurs during idle periods of the benchmark, only after the point in each idle period where 5 minutes of idle has elapsed.

- The test system meets the requirements of the Microsoft Modern Standby specification: https://docs.microsoft.com/en-us/windows-hardware/design/device-experiences/modern-standby

- Standby/Hibernate: Use of operating system supported standby/hibernate capability is NOT allowed, with the exception of Modern Standby when used in accordance with the rules above.

## Windows 10 Performance/Power Slider and Battery Saver Mode

The Windows 10 Performance/Power slider may be used to configure the system under test, provided that the slider position remains the same for the duration of the test. For slider positions "Better Battery", "Better Performance" and "Best Performance", the Battery Saver threshold must not exceed 20%, and the setting "Lower screen brightness while in battery saver" must be unchecked. When using the "Best Battery" position for slider testing, the Battery Saver threshold must be set to 100% so that battery saver remains in effect throughout the test. The setting for "Lower screen brightness while in battery saver" must be unchecked. Refer to the MobileMark 25 user guide 'Windows 10 Performance/Power slider' section for details on how to configure the slider for "Best Battery".

## Full Disclosure Report

A complete Full Disclosure Report (FDR), must be generated by the Workload Manager for all published results. This FDR must include the MobileMark 25 battery life rating and the performance qualification, as well as the performance scores for each of the three scenarios. Additional information about the configuration of the system under test must also be included in the FDR. The format and the information included in this report is determined by BAPCo. No modifications should be made to the FDR (modifications to the FDR will invalidate the FDR).

### Publication of results

BAPCo requires all licensees to submit FDRs to the BAPCo website (https://results.bapco.com) for all publicly available published results. Results may be submitted by any of the following methods:

1) Clicking the 'submit results' button from inside the benchmark GUI after a completed run
2) Uploading results via the online submission form at https://results.bapco.com

Or, if the above options are not available

3) Results may be submitted by email to report@bapco.com

Licensees are responsible for retaining FDR records for all published results. Results submitted by email will also be published at results.bapco.com.

All FDRs submitted by licensees to BAPCo are subject to a 10 working day review period. During this review period any BAPCo member can challenge the submitted FDR or submit a counter FDR. When a challenge occurs or a counter FDR is submitted, BAPCo will decide which, if any, of the FDRs will be accepted for inclusion in the FDR database.

Any publication of results must be accompanied by at least the system model number plus any discrepancies between the shipping configuration of that system model and the configuration of the system model actually tested.

Results collected on systems that do not meet the minimum system requirements for running MobileMark 25 may be published if submitted to BAPCo for inclusion in the FDR database. However, BAPCo will only offer technical support for system configurations that meet or exceed the minimum system requirements for MobileMark 25.

Any publication of MobileMark 25 results must include the MobileMark 25 Battery Life score, the MobileMark 25 Overall DC Performance score, and the MobileMark 25 Index score from the same run.

Any publication of MobileMark 25 results must include a link to the matching result in the online results database at results.bapco.com.

## Relative Performance

Licensees have the option of publishing the relative performance (and battery life) of two or more systems (for example, "System X is 15% faster than System Y using MobileMark 25") as long as the licensee adheres to the Benchmark Execution and Publication rules above for all systems.

If a licensee publishes the relative performance of two or more systems and one or more of those systems does not adhere to the Benchmark Execution and Publication rules above, the licensee must state that the performance results are "estimated" or "projected" when making the claim (for example, "We estimate that System X is 15% faster than System Y using MobileMark 25"). Publishing absolute scores of estimated or projected results is not permitted.

## Availability

When publishing MobileMark 25 results, the tested system must be available for purchase by the public either at the time of publication or within 60 days after publication. Note that the 60-day grace period does not apply to system software. All software used must be release-quality and made publicly available from the original software vendor.

## FDR Processing

The submitted FDRs are processed by BAPCo and classified as:

*Released for publication* - The results are released for publication as filed.

*Rejected* - The results are rejected for publication as filed.

The Released for publication classification is in no way a validation or an endorsement of the results by BAPCo. Licensees are free to publish results as long as a complete and valid FDR has been generated and submitted to results.bapco.com. BAPCo will perform frequent audits of the submitted FDRs and reserves the right to revoke the license granted to licensees who have not adhered to the regulations described in this or other MobileMark 25 documentation. In the case where an FDR is returned to the licensee with rejected classification, the licensee must immediately stop publication of the rejected results until the matter is clarified by BAPCo. Any publication of results must be accompanied by at least the system model number plus any discrepancies between the configuration of the stated model number and the configuration of the system tested. Any publication of MobileMark 25 results must include the MobileMark 25 Battery Life score, the  MobileMark 25 Overall DC Performance score, and the MobileMark

25 Index score from the same run. The term MobileMark is a registered trademark of the Business Applications Performance Corporation and may only be used in conjunction with performance metrics generated by the MobileMark 25 Workload Manager. Any other performance characterizations may be made but must be derived from the performance metrics generated by the Workload Manager. The terms MobileMark and MobileMark 25 may not be used as the performance metric describing such characterizations.

## Publication of Results on Non-OEM Platforms

BAPCo accepts FDR submissions and allows the publication of performance qualified battery life indices when using MobileMark 25 for making "Non-OEM" platform comparisons. This includes performance-qualified battery life comparisons on systems that are not shipped from an OEM as a complete platform. An example of such comparisons would be swapping to a different hard disk or changing the amount of RAM in the test system and demonstrating the impact on the benchmark results. Results submitted to BAPCo or published on Non-OEM platforms must be marked as Modified on the accompanying FDR submission and whenever appearing in publications of any kind. Any publication of MobileMark 25 results must include the MobileMark 25 Battery Life score and MobileMark 25 Overall Performance Qualification score from the same run.