Introduction

FSXMark11 is intended to provide a means of measuring the performance of FSX in a repeatable and consistent manner. The sole aim of this guide is to ensure consistency in the use of FSXMark11 for the purpose of accurate comparison of results between different users and hardware configurations. With that said, please don't cause confusion by sharing your results unless they conform 100% to the directions given within this guide. Also note that FSXMark11 requires a fresh installation of FSX.

The benchmark is a 5 minute long auto piloted Boeing 737-800 flight around the Boston city center. The flight takes place at 240kts at a lofty cruising altitude of 1500ft. The selected flight path, FSX settings, and weather should put a considerable load on any computer.

FSX Installation

Before beginning, please realize that a lot of time has gone into developing this benchmark to make it as easy for you to follow as possible. Please respond appropriately by taking the time to follow it closely and systematically. Printing it and checking off or highlighting each completed step is a good way to make sure nothing is missed.

Due to the difficult nature of benchmarking FSX, a fresh FSX install is the only way to ensure equality between different computer configurations. Even with very popular add-ons, disabling or uninstalling add-ons to try to take FSX back to a "fresh" install is generally unsuccessful as many software packages leave files behind. Please do not report your benchmark results unless you have truly done a fresh FSX install. If you are uninstalling FSX, be careful to check that all relevant files have actually been deleted. The Microsoft Flight Simulator X folder and several of its contents are almost always left behind.

1. FSX Un-Installation

   Uninstall all add-on scenery, aircraft, textures or other modifications.
   Uninstall FSX.
   Delete the Microsoft Flight Simulator X folder and all of its contents.

2. FSX Installation

   Install FSX as normal.

3. Install Service Packs (skip if you have FSX Acceleration)

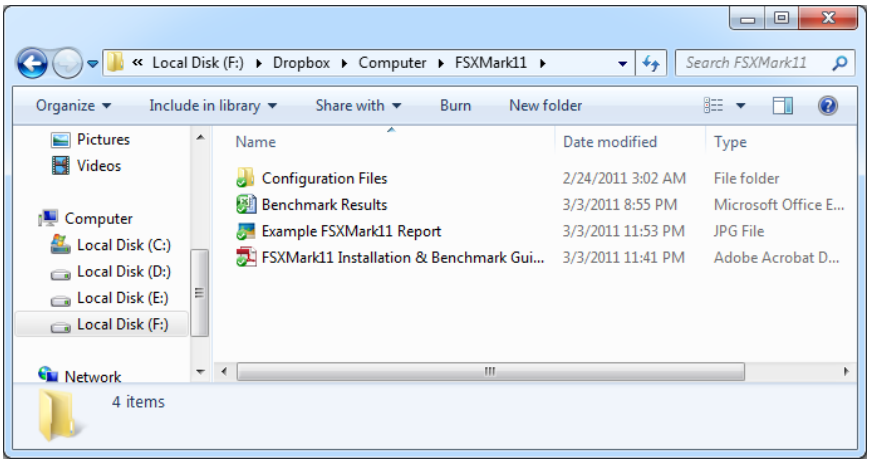
   Reboot and install FSX Service Pack 1.
   Reboot and install FSX Service Pack 2.

4. Install FSX Acceleration

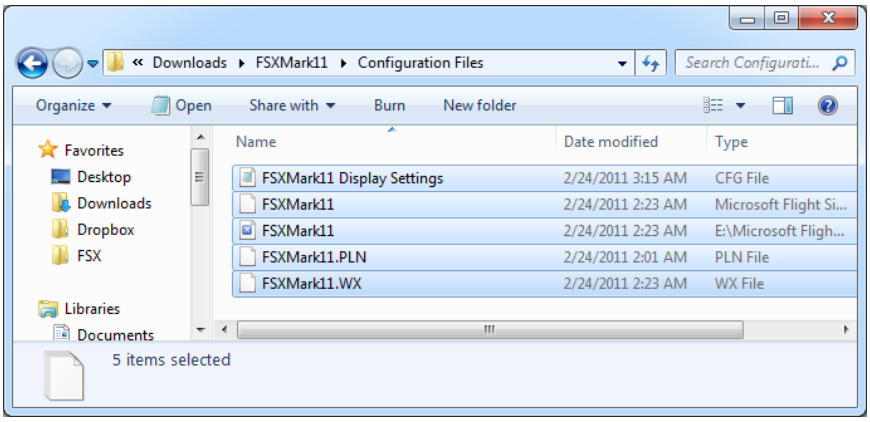
   Reboot and install FSX Acceleration.

FSXMark11 Installation

1. After extracting the FSXMark11 zip file, you should see the following in the FSXMark11 folder



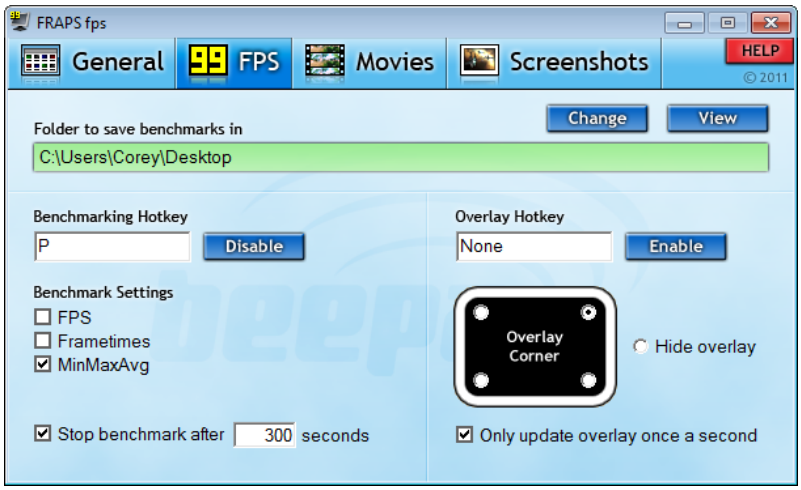
2. Copy the contents of the ***Configuration Files*** folder



3. Navigate to ***My Documents*** and paste the files to the ***Flight Simulator X Files*** folder

FRAPS Installation

1. Download the free version of FRAPS: http://www.fraps.com/download.php
2. Once you have FRAPS installed, open it and duplicate the following settings



With the above settings, the "P" key acts as a toggle for FRAPS execution while simultaneously working as the pause key for FSX. At the start of the benchmark, hitting P unpauses the flight, starts FRAPS, and causes the FRAPS counter to disappear. Once the FRAPS run has completed (300 seconds later), the FRAPS counter will reappear and you can end the flight. Each execution of FRAPS saves a file in the benchmark directory. After each FRAPS benchmark run, the flight should be ended, not paused, to avoid the collection of invalid benchmark files. At the end of each run, end the flight and reload it from the FSX Free Flight window.

Sometimes the first test run will produce different results than subsequent runs. To avoid this, discard the first test run. Also, when performing tests, it's important that the results have some measure of repeatability. To maximize accuracy and repeatability, you are strongly advised to take the average of the results from the 2nd, 3rd, and 4th run. The results should be very consistent.

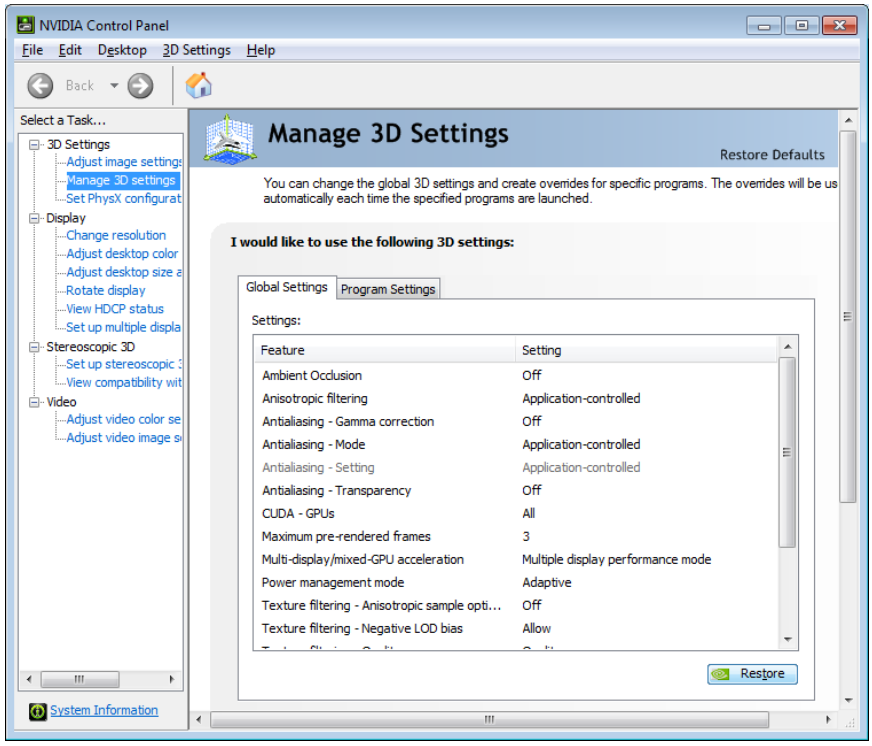
Graphics (NVIDIA)

FSX allows very limited control over graphics and leaves much to be desired in terms of control and quality. Most users get around this by installing third party utilities that allow FSX to make much better use of today's high powered graphics cards. These utilities may include NVIDIA Control Panel, NVIDIA Inspector, and NVIDIA nHancer among many others.

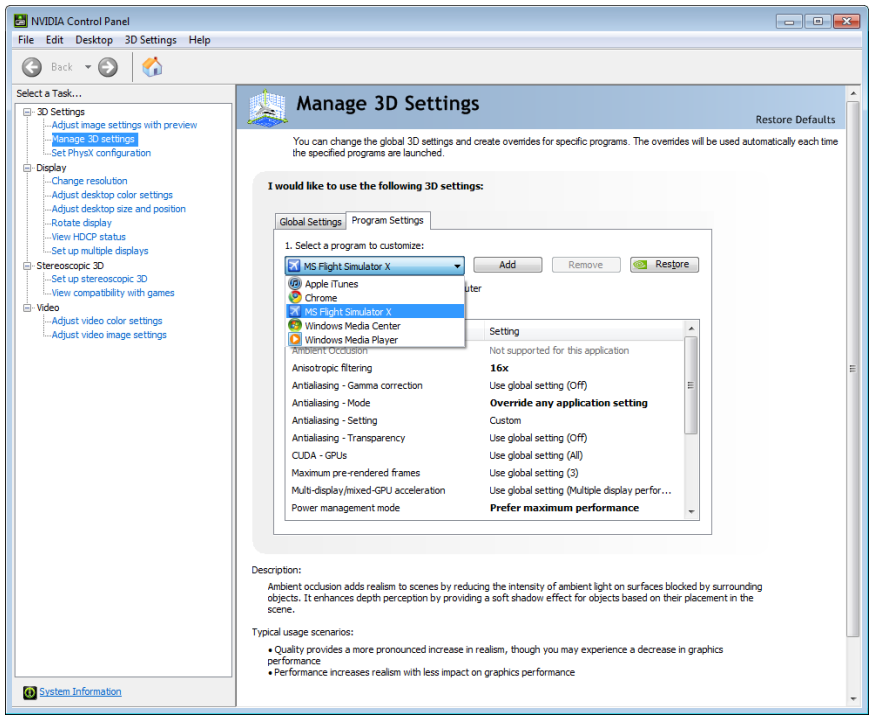
The problem is that the use of these utilities can have a huge impact on frame rates. To make sure your benchmark results are not skewed by graphics utilities, this guide will show you how to disable them and/or restore the default settings. You are responsible for taking note of changes or backing up your profiles wherever applicable

1. NVIDIA Control Panel

In the ***Global Settings*** tab, reset NVIDIA control panel to default values by clicking ***Restore***

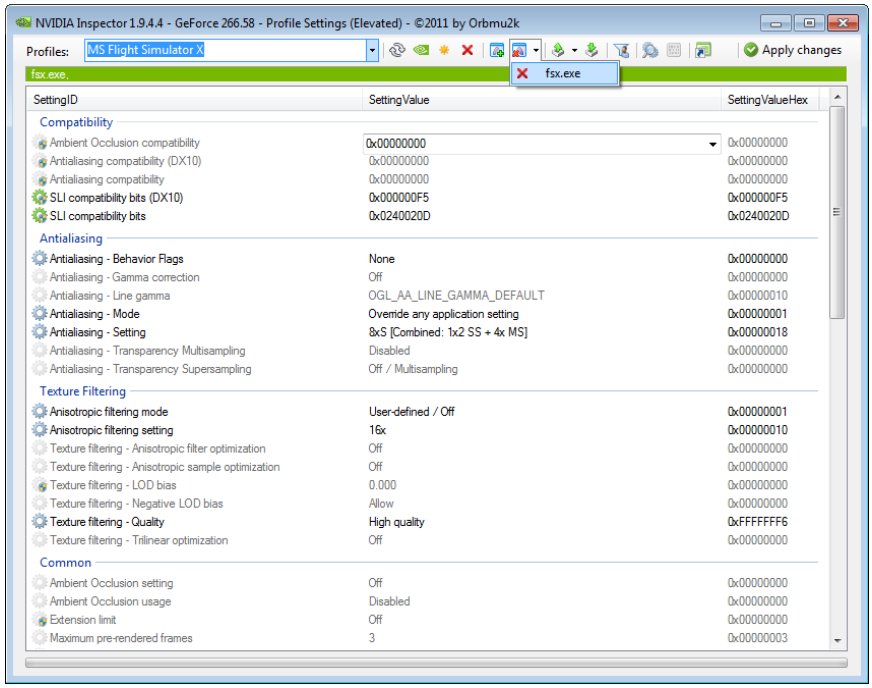


In the ***Program Settings*** tab, select MS Flight Simulator X and again click ***Restore*** to revert the application to the default global settings. If MS Flight Simulator X is not in the dropdown, proceed to the next step.



2. NVIDIA Inspector

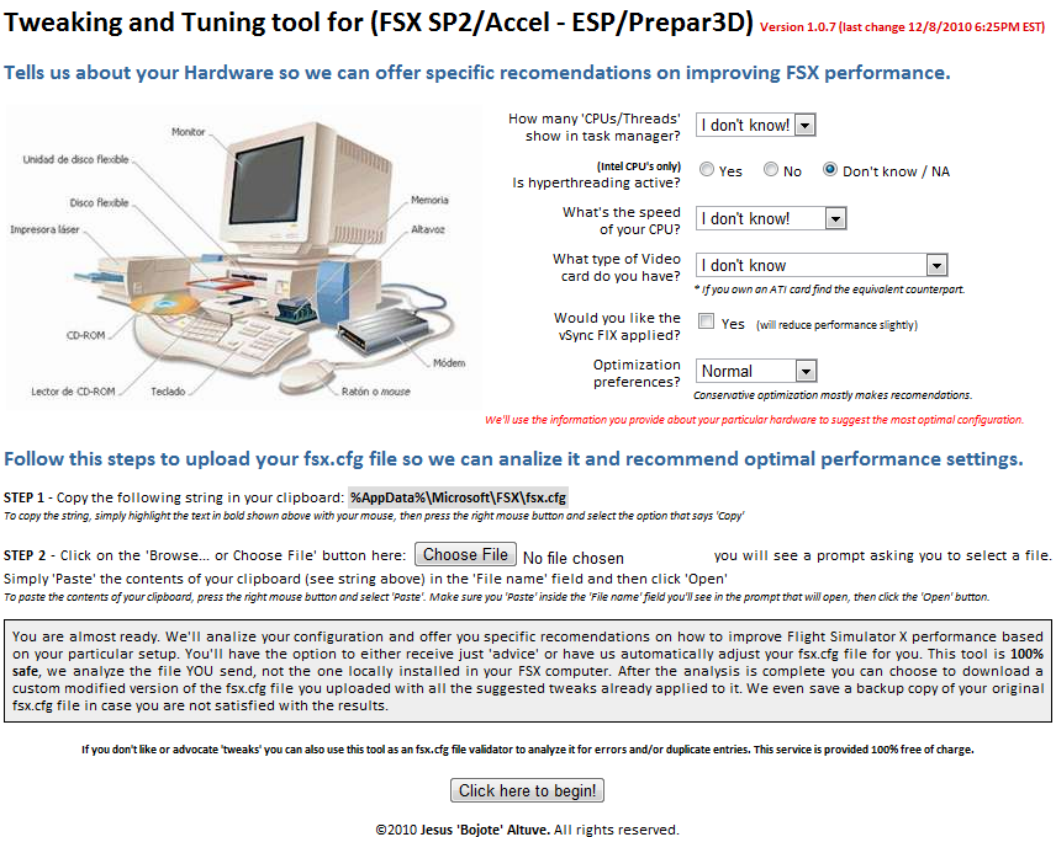
Remove FSX.EXE from the MS Flight Simulator X profile and click ***Apply Changes***. You can re-add FSX.EXE once you have completed benchmarking.



FSX.CFG Optimization

The aim of this guide up to this point has been to eliminate variables that may cause inconsistent test results, thus allowing comparison of results between different users and systems. Tweaks to the FSX configuration file (FSX.CFG) are common practice among the FSX community and are an important step to tailoring FSX to the hardware on which it will run. While some hardware may not have much to gain from FSX.CFG tweaks, other hardware benefits immensely from them. Conveniently enough, there is an online utility for applying the common FSX.CFG tweaks. Please utilize it per the directions below. When finished, do not add any other tweaks regardless of the impact it may have on your results.

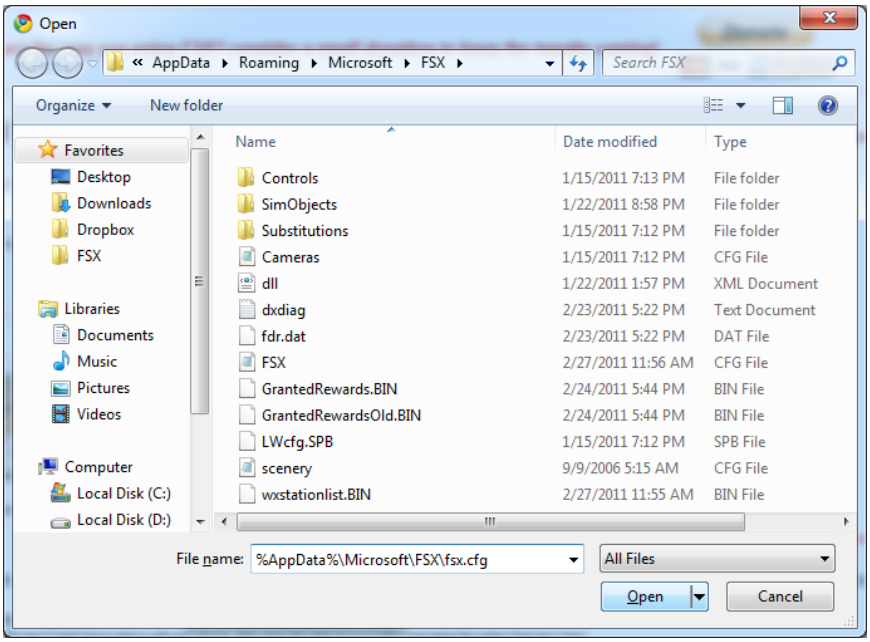
1. Navigate to http://www.venetubo.com/fsx.html



2. Fill out the form to reflect your hardware

   Do not check the ***vSync*** fix. Leave the optimization preferences dropdown set to ***Normal***.

3. Click ***Choose File***, enter ***%AppData%\Microsoft\FSX\fsx.cfg*** *into the file name, and click Open*



4. Hit the ***Click here to begin!*** button at the bottom of the page

You will be taken to the page below, which will list the changes made as well as an explanation of each change.

Tweaking & Tuning Results for (FSX SP2/Acceleration - ESP - Prepar3D)

Based on your Hardware configuration and the current settings present in the **FSX.cfg** file you just sent, we have determined some the following recommendations may apply to you. You are using the **NORMAL** setting, we'll simply recommend (but not change) sliders that affect performance at the expense of visual quality. All other tweaks will be applied. See legend for reference so you know exactly what was changed.

message in green simply indicates you had that option already optimized
Text in blue refers to actual tweaks that were **automatically applied** to the file you uploaded.
a red color indicates important recomendations we are **NOT** applying to your configuration.

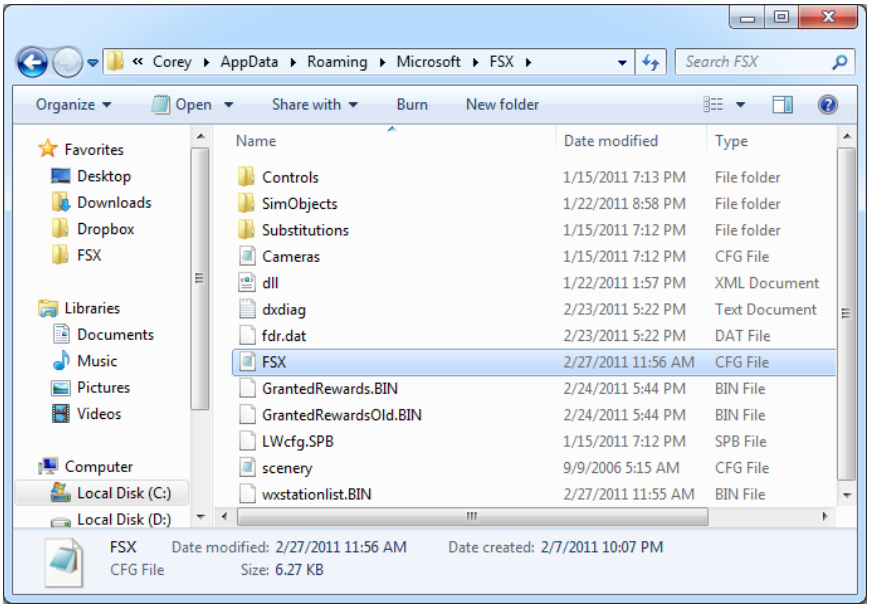
You are running with frame rates set to unlimited, great! but MAKE SURE you use the 'external' frame rate limiter set to 'exactly' 30 FPS for optimal results. You can download it here
AffinityMask not present. Adding for optimal results with your hardware.
You don't have a BufferPools section!, adding optimized settings.
HIGHMEMFIX was added to your config!
ALLOW_SHADER_30=1 has been added to make FSX Shader 3 compatible
Aircraft shadows removed for performance. Use Conservative to prevent this change.
Setting TextureMaxLoad to 30 for faster texture loading!
SWAP_WAIT_TIMEOUT has been added to your configuration to prevent blurries.
SmallPartRejectRadius have been added to your config for performance
Adding MAX_ASYNC_BATCHING_JOBS for improved autogen batching performance.
Adjusting SOUND_LOD for improved performance when using AI sounds.
Your Cloud draw distance is set above 70nm, try using an external weather program to limit visibility and set your cloud draw distance 10nm UNDER this visibility for optimal horizon cloud blend.
MAKE SURE to disable Transparency Anti-aliasing for improved smoothness with your NVIDIA GeForce GTS 250 card.

*** ATTENTION PLEASE READ *** the above changes were applied to the FSX.cfg file you uploaded! not the one FSX uses! so, if you want to apply this to your configuration make sure you download the tweaked FSX.cfg file suggested by the tool. (check below)

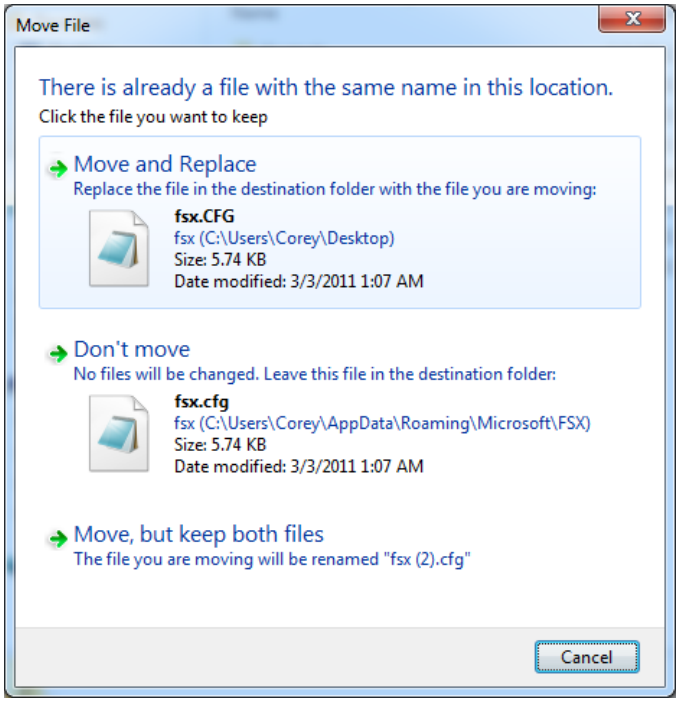
Download a **tweaked** version of your **FSX.cfg** file (with the above optimizations applied to it, all your other options are kept intact!). A **backup** copy of your original **FSX.cfg** file was saved here and will be kept for a period of **24 hours**. You can return to the previous page to re-send your **FSX.cfg** file and/or change tweak/hardware settings.

5. Select the ***Download*** link to download the tweaked FSX.CFG file

Save the new FSX.CFG file to \Users\(your user name)\AppData\Roaming\Microsoft\FSX.



When prompted, choose to ***replace*** the existing FSX.CFG.



6. Open the FSX.CFG and find the entry, ***WideViewAspect=False***

Change it to ***True*** and then save and close the file.

Test Preparation

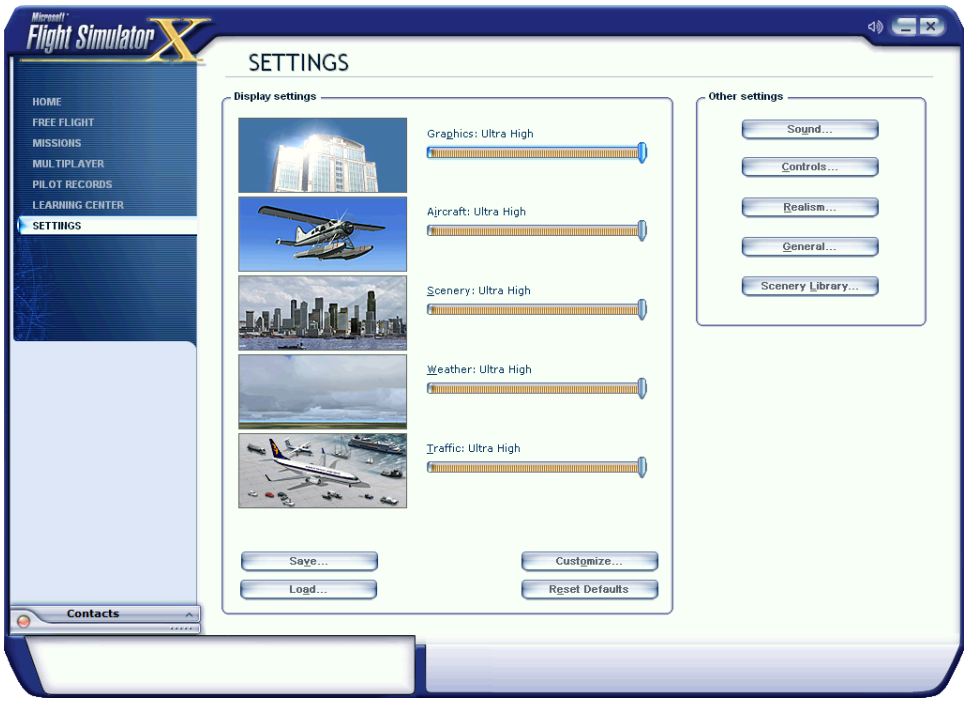
1. Disable any antivirus software

   Running such software can cause inconsistent test results.

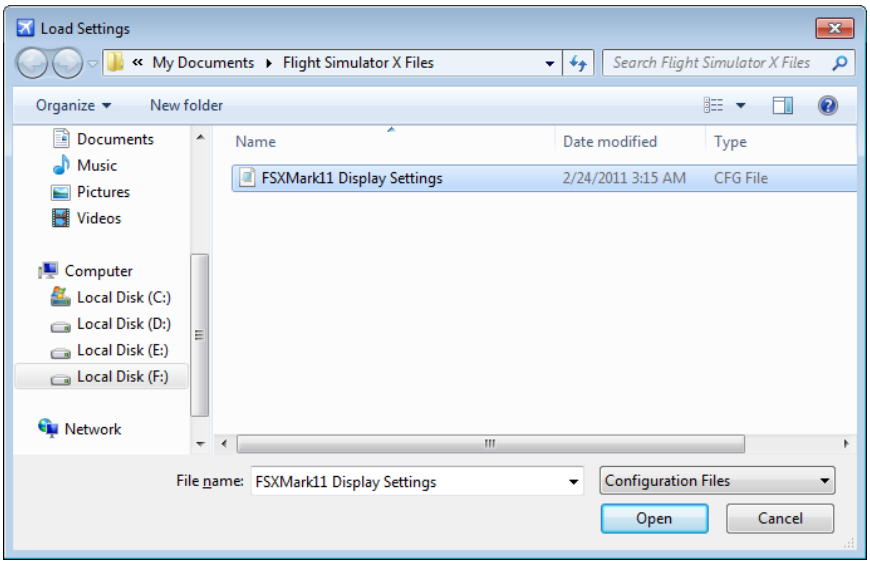
2. Shut down as many applications as practically possible

   Take note of which applications you disable so that you shut down the same items between tests. Restarting your computer before testing is a good way to minimize the number of running applications/processes.

3. Start FSX and proceed to the ***SETTINGS*** menu

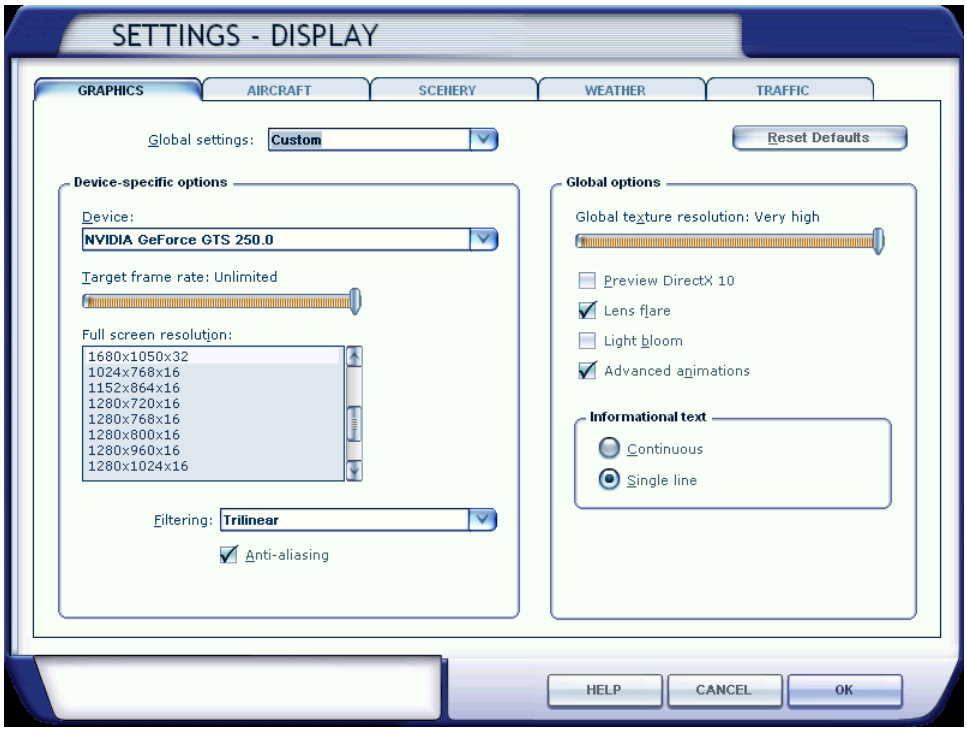


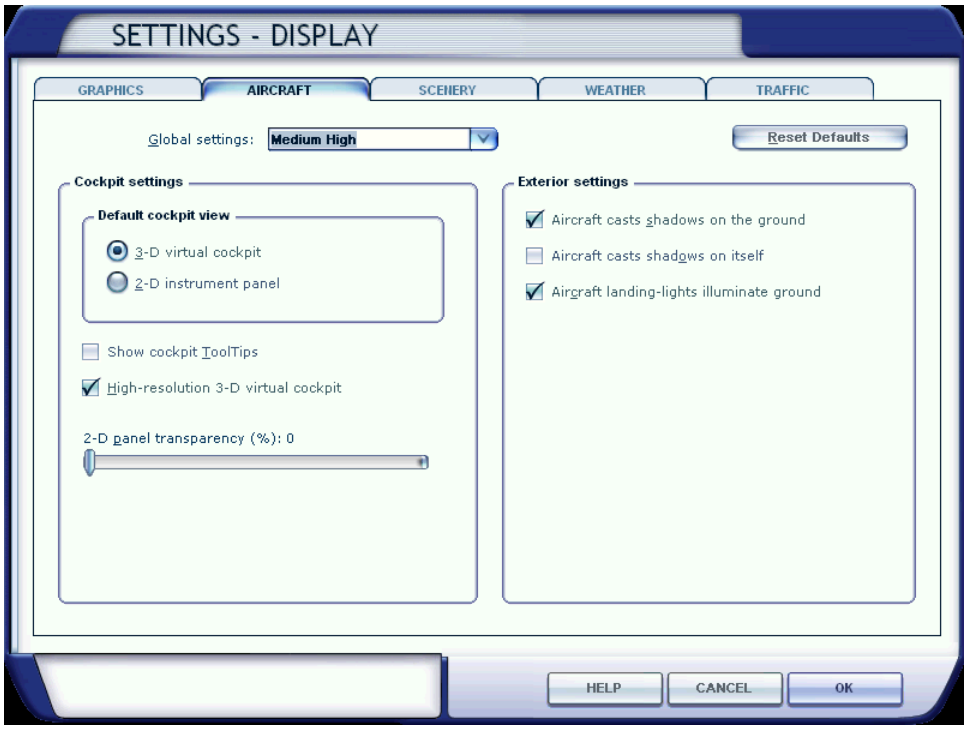
4. In the ***SETTINGS*** menu, click ***Load…*** and open the ***FSXMark11 Display Settings*** file

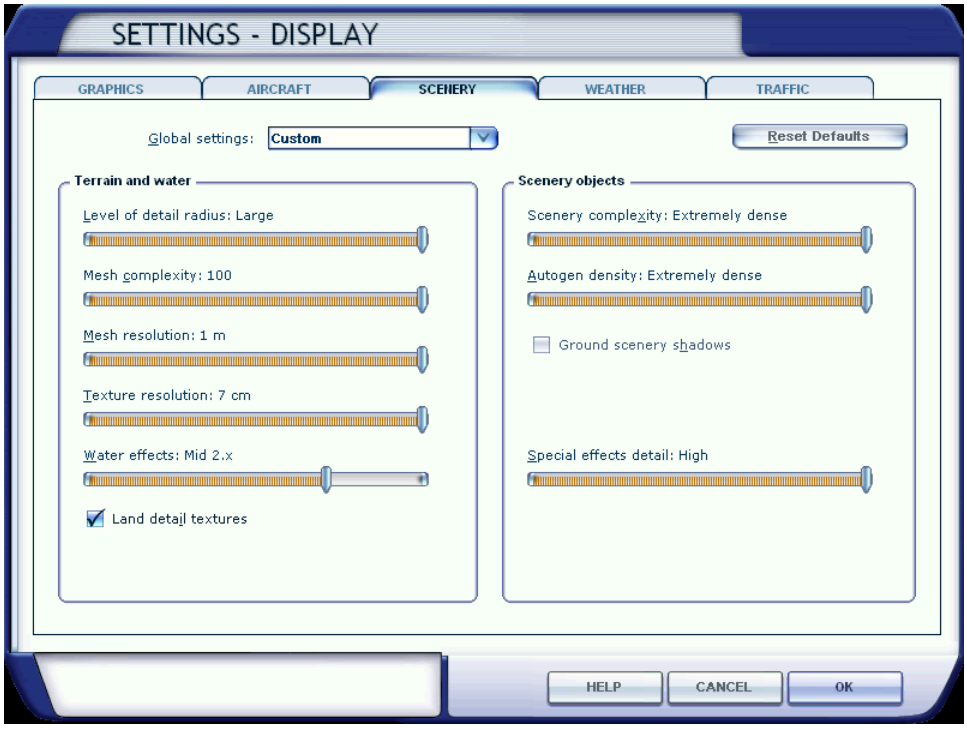


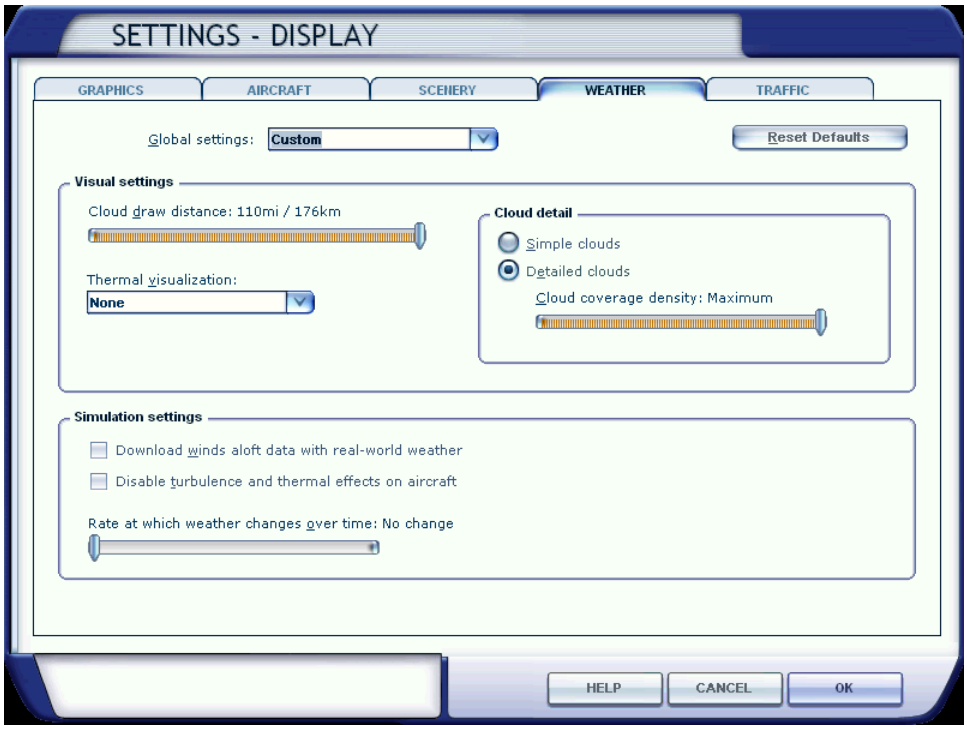
5. From the ***SETTINGS*** menu, click ***Customize…***

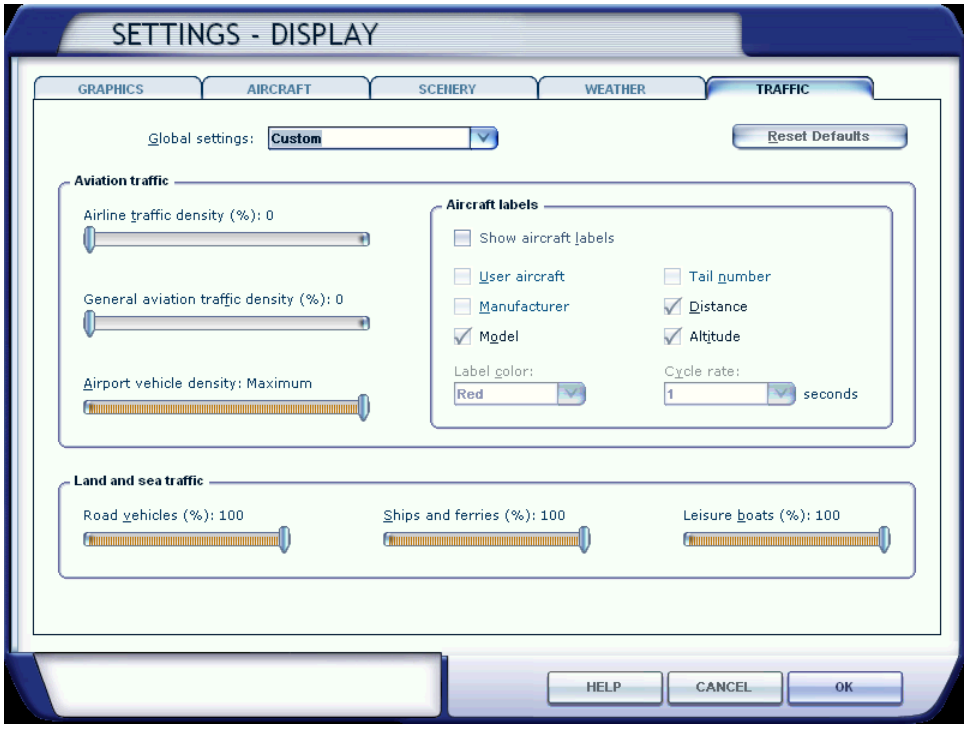
Ensure each of the Display Settings tabs appears exactly as below. This is critical as not all of the display settings are saved with the FSXMark11 Display Settings file. Also make sure to use the 1680x1050x32 screen resolution regardless of your monitor. The 1680x1050x32 setting should be compatible with most monitors including 1980x1020. This will help to ensure even comparison between systems. If 1680x1050x32 is not an option, select the next closest thing and make note of which display resolution you used.



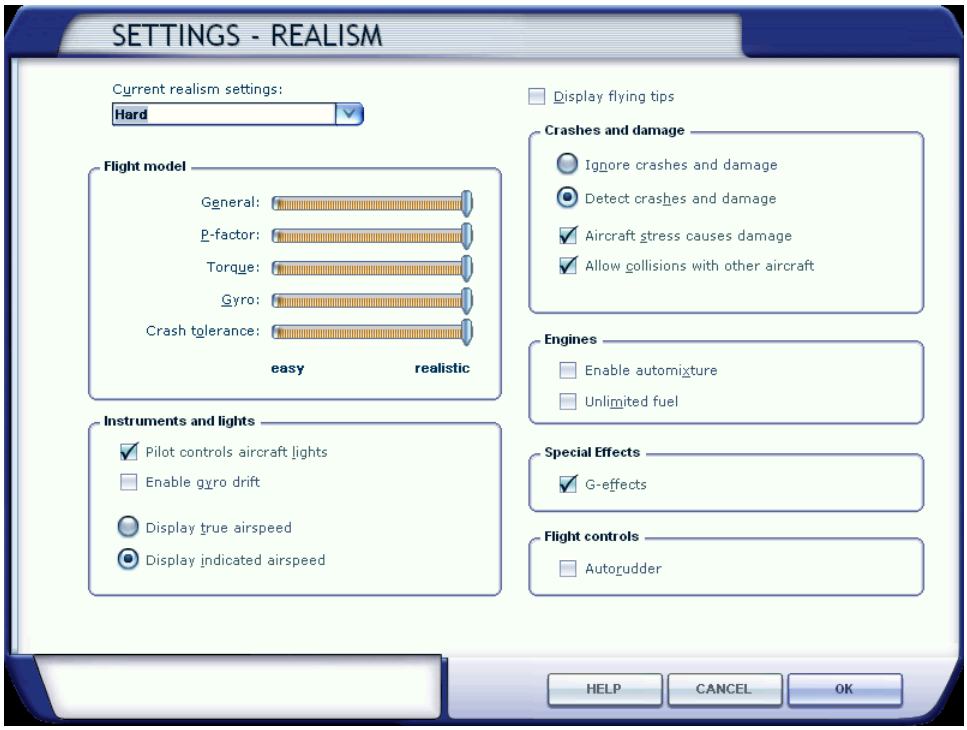

SETTINGS - DISPLAY
GRAPHICS
AIRCRAFT
SCENERY
WEATHER
TRAFFIC
Global settings:
Medium High
Reset Defaults
Cockpit settings
Default cockpit view
3-D virtual cockpit
2-D instrument panel
Show cockpit ToolTips
High-resolution 3-D virtual cockpit
2-D panel transparency (%): 0
Exterior settings
Aircraft casts shadows on the ground
Aircraft casts shadows on itself
Aircraft landing-lights illuminate ground
HELP
CANCEL
OK


SETTINGS - DISPLAY
GRAPHICS
AIRCRAFT
SCENERY
WEATHER
TRAFFIC
Global settings:
Custom
Reset Defaults
Terrain and water
Level of detail radius: Large
Mesh complexity: 100
Mesh resolution: 1 m
Texture resolution: 7 cm
Water effects: Mid 2.x
Land detail textures
Scenery objects
Scenery complexity: Extremely dense
Autogen density: Extremely dense
Ground scenery shadows
Special effects detail: High
HELP
CANCEL
OK


SETTINGS - DISPLAY
GRAPHICS
AIRCRAFT
SCENERY
WEATHER
TRAFFIC
Global settings:
Custom
Reset Defaults
Visual settings
Cloud draw distance: 110mi / 176km
Thermal visualization:
None
Cloud detail
Simple clouds
Detailed clouds
Cloud coverage density: Maximum
Simulation settings
Download winds aloft data with real-world weather
Disable turbulence and thermal effects on aircraft
Rate at which weather changes over time: No change
HELP
CANCEL
OK

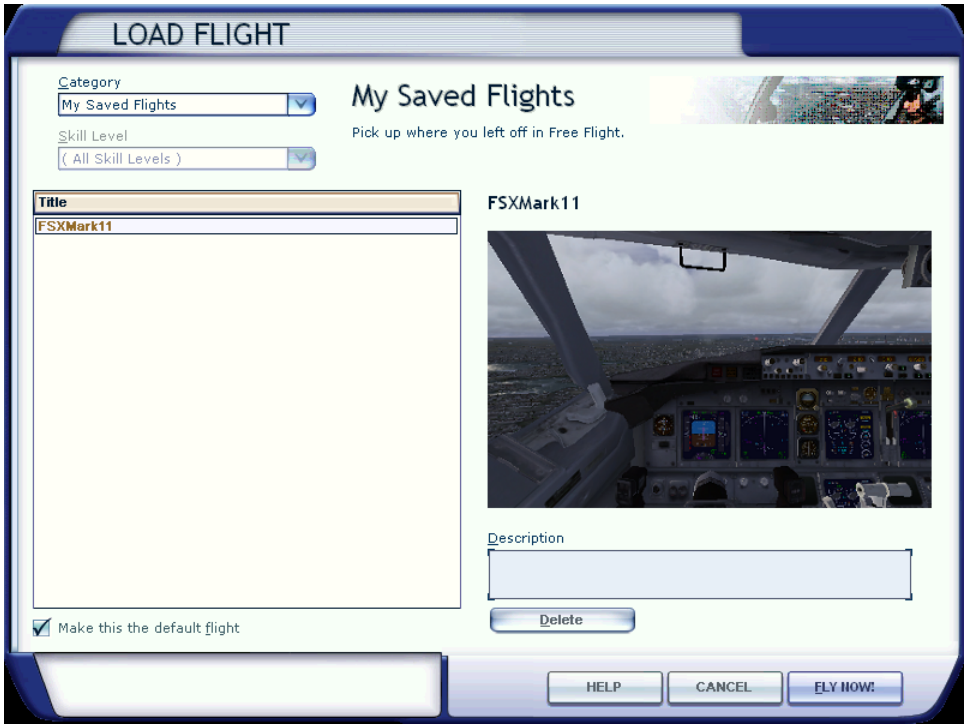

SETTINGS - DISPLAY
GRAPHICS
AIRCRAFT
SCENERY
WEATHER
TRAFFIC
Global settings:
Custom
Reset Defaults
Aviation traffic
Airline traffic density (%): 0
General aviation traffic density (%): 0
Airport vehicle density: Maximum
Aircraft labels
Show aircraft labels
User aircraft
Manufacturer
Model
Tail number
Distance
Altitude
Label color:
Red
Cycle rate:
1
seconds
Land and sea traffic
Road vehicles (%): 100
Ships and ferries (%): 100
Leisure boats (%): 100
HELP
CANCEL
OK

6. After ensuring the display settings are correct, click ***OK*** to return to the primary ***SETTINGS*** menu
7. From the ***SETTINGS*** menu, select ***Realism…*** and change the ***Current Realism Settings*** to ***Hard***



Test Execution

1. Start FRAPS and minimize it to the system tray
2. Go to the ***Free Flight*** tab, select ***FSXMark11***, and then select ***FLY NOW!***



Once loaded, you should see a paused flight of the Boeing 737-700 in VC view. You should also see a yellow FPS counter in the top right hand corner of the display, indicating that FRAPS is ready for action. If the FSX menu is showing at the top of the screen, press and hold down the ALT key until it disappears.

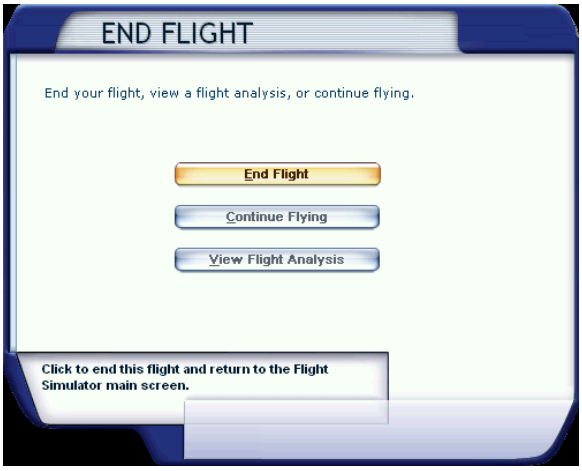
3. Hit the P key once

   This will both unpause the flight and start FRAPS, thus starting the benchmark. Note the time that you commenced the run as this will be used to identify the correct results file to open later. The way you know that FRAPS is working is that the counter background will briefly change color and then disappear. Don't worry, it will come back later.

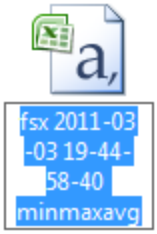
4. Sit back

   While the test is running, it is critical that you do NOT press any keys, move or click with your mouse, or press / push / pull any joystick / rudder / yoke button or slider during the test, as this will tarnish the test results. The benchmark will run for exactly five minutes at the conclusion of which you will see the FRAPS counter reappear in the top right corner.

5. Once the FRAPS counter has reappeared, hit ***Escape*** and select ***End Flight***



   This will return you to the Free Flight screen. Without closing FSX, look for the excel file created by FRAPS and rename it according to which test run it was (test 1, test 2, etc).



   Once you have renamed the excel file, you may reload the flight again for another benchmark run. Once again, DO NOT CLOSE FSX between test runs.

6. Re-run the benchmark

   Repeat steps 2 through 5. Once you have successfully completed four test runs, you may exit FSX and proceed to analyze your results.

Results Analysis & Reporting

Reporting your results to the flight sim community is the all-important final step to the FSXMark11 benchmark. To keep things simple and reduce the amount of deciphering necessary to understand your results, you will find in the FSXMark11 folder a spreadsheet titled ***Benchmark Results***. Use this spreadsheet and the directions below to report your results. You will notice that it only allows you to report your CPU, RAM, GPU, and Hard Drive. This was done to keep the report simple and relevant to the most critical hardware.

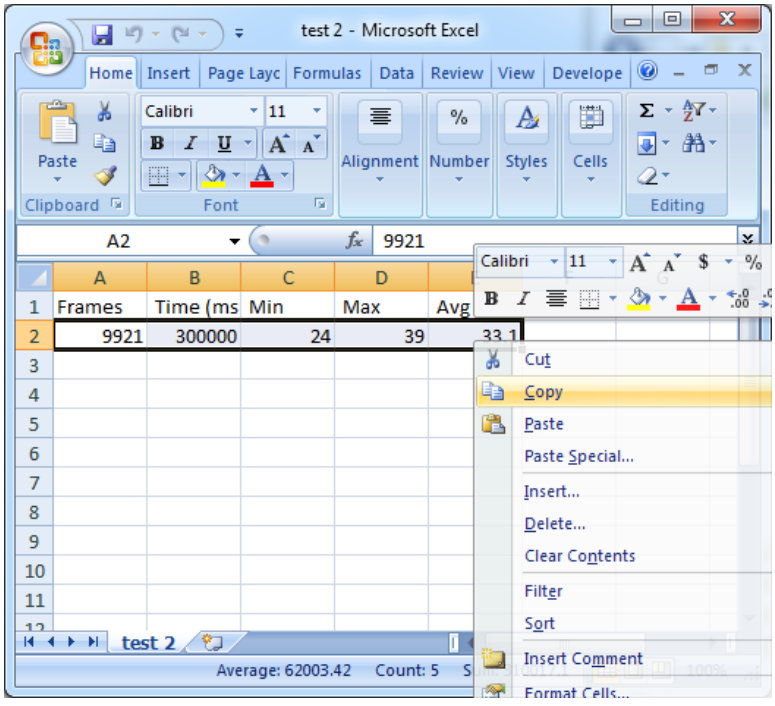
1. Open the ***Benchmark Results*** spreadsheet included with the FSXMark11 files
2. Update the hardware configuration for your computer

   Make sure to include information on CPU clock speed, memory speed and timing, as well as GPU memory size. The HDD should be the hard drive on which you have FSX installed. Here's my system as an example. Try to replicate the format.

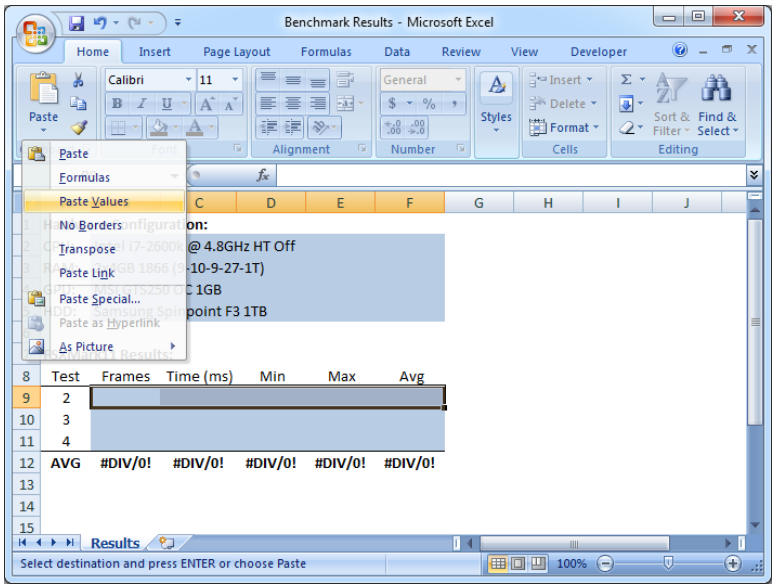
Hardware Configuration:

CPU:	Intel i7-2600k @ 4.8GHz HT Off
RAM:	2x4GB 1866 (9-10-9-27-1T)
GPU:	MSI GTS250 OC 1GB
HDD:	Samsung Spinpoint F3 1TB

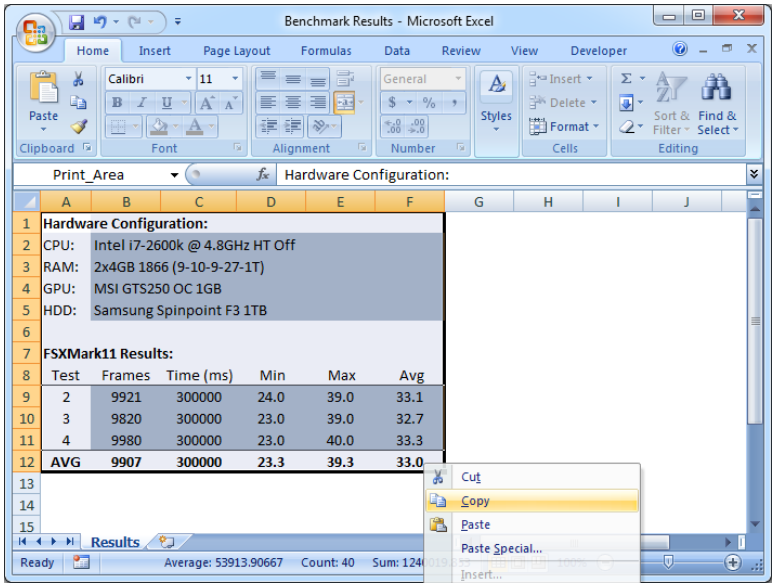
3. Open each of the individual test run files, ***test 2***, ***test 3***, and ***test 4***. Discard test 1.
4. ***Copy*** the values in each of the test run files



5. ***Paste*** the values to the corresponding row in the ***Benchmark Results*** spreadsheet.



6. Once all your information has been entered, copy cells A1 through F12 and paste it into paint.



7. Save the image from paint as a JPG and use it as a report for your results.

   When reporting your results in a forum, you may attach the image or provide a link to it if you have uploaded it to a photo hosting website such as Flickr or Picasaweb.

Thank You

That Concludes the FSXMark11 Benchmark. Thanks for your contribution to the FSX community.