

# 3<sup>rd</sup> party FM certification for DCS World

## List of required charts

### (Preliminary)

1. Flight envelope for MSA and certain gross weight.  
A standard flight envelope chart as it is obtained from physical model. If the real plane has restrictions (by the reasons of dynamic pressure, high Mach heating, engine issues, etc) they must be turned off in the FM during the test and plotted on the chart over the pure FM curve.
2. Excessive power in the term of climb rate in m/s vs TAS for several altitudes and the certain grossweight. This parameter must be obtained from level flight acceleration test. For old prop planes an integral curve for altitude vs time can be added. If integral acceleration curves (TAS vs time) are available for the real plane the excessive power curves must be integrated into the same form. There is no use to maintain the altitude with highest accuracy during the acceleration test – the best way to determine excessive power is to obtain time derivation of the full energy including TAS and altitude information.
3. Turn rates for several altitudes and certain grossweight (grad/s vs TAS). This parameter can be obtained from the flight record using time derivation of heading when TAS and altitude are constant for at least 5 seconds. If necessary (if it's the same form in RL manual) the rate turn can be presented in the term of G-load vs speed. The haute voltage of the test is to obtain turn rates for certain excessive power – not for everyone...

The above mentioned curves must be obtained using in-game flight tests or (that is easier) results of in-vitro calculation tool with addition of several points from in-game tests to prove the calculations. In this case all used math must be shown. All in-game tests must be conducted with constant fuel amount, excluding the case when the real-time test used for comparison was not recalculated for constant mass.

It is very important to add real life curves to the FM plottings for comparison and estimation of FM fidelity.

The provided raw material of the flight tests must contain lua export data in the .XLS or text format suitable for Excel import using the following format:

Flight test tasks, data, plane type, grossweight (w or w/o fuel consumption)  
Comments on the timeline (what test was conducted at the certain time range)  
Full record of the tests (the initial part of the record can be skipped if necessary)

Time, s	TAS, m/s	Abs alt, m	G-load (vertical axes)	Heading (Phi), deg	dE/dt (*)	dPhi/dt (*)
0.00						
0.01						

(\*) – calculated

Any parameters from lua export can be added if necessary with proper explanations, for example, instant fuel consumption if available, controls position, etc.

4. Takeoff distance as it is specified for RL plane (to the certain altitude over ground) for the same GW.
5. Landing distance as it is specified for RL plane (from the certain altitude over ground or after touchdown) for the same GW.
6. Fuel consumption charts or several numbers in the same conditions as for the RL plane. Can be used the same flight profiles as for the RL plane to determine overall fuel consumption.
7. Stall speed tests (power on/off) with and without flaps for the certain grossweight.
8. Trim curves (elevator, rudder and ailerons if necessary vs TAS (IAS, M) for the planes using somewhat different from ED SFM.
9. Roll rates vs TAS (IAS) at the same altitude as in the manual of the RL plane.