

Check for DC Modeling

To run this script

Select **Scripts > Project > DC_Model_Check** from the Menus.

Or, in versions that support the script, you can run the utility directly from this page using this button.

Description

This script will check each data file and EM structure for passivity and impedance at DC to look for problems. This script will run simulations but only for the item being analysed. This script will work best if your project has been simulated before it is run. The result is an html page summarizing any issues with an explanation of what was checked. The top information includes:

This page displays results of checks to determine if Data Files and EM structures are well behaved at DC. This becomes an issue when using either of these with nonlinear simulators which must always solve for the circuit at DC first. If you are only doing linear analysis, the DC values are not a problem.

It checks the following:

1. Passivity of the structure at DC. Values should be > -0.0001
2. Real part of the impedance at each port at DC. Looking for negative values < -100000 . This implies that large negative values are okay.
3. Angle of reflection coefficient at each port at DC. Looking for values not 0 or 180 (± 0.5) degrees. Complex impedances are not used in the simulators at DC, but they show extrapolation or measurement issues.

The first line for each document or sweep in a document lists the overall health of data. The additional information listed supports the overall health checks. This file lists the real part of the impedance and the angle of gamma looking into each port for inspection. Any values determined to be bad will be printed in RED

Additional Details:

1. Disabled EM documents are not checked and will be listed as such.
2. Checks are done to determine if data files are for active devices. The worst case passivity is checked and if less than -1 assumes device is active. Results will be shown in BLUE.

Below shows a picture of some sample results.

Data File = 100B3R3C

FAILED: Data checks showed this document is bad at DC.

FAILURE: Structure is considered non-passive at DC, should be > -0.0001 and value is -0.1700046

Port	Real Zin	Angle Gamma	Notes
1	-1884.3	359.4026	1 volt source will produce 0.5307 ma current in the wrong direction
2	-1884.3	359.4026	1 volt source will produce 0.5307 ma current in the wrong direction

Data File = 2301_3v

Data appears to be for an active device. Assumes you will not be using this data file with nonlinear analysis.

Data File = 90nH_D

Data checks showed this document appears valid at DC.

Structure is passive at DC, should be > -0.0001 and value is -0.0000001

Port	Real Zin	Angle Gamma	Notes
1	50.2	0.0501	1 volt source will produce 19.9062 ma current into the port.
2	50.2	0.0501	1 volt source will produce 19.9062 ma current into the port.