

SharkSim Quality Checker User Guide

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Inside This Manual

Overview

This document describes the IBIS Quality Checker add-on module for SharkSim. The Quality Checker uses an external specification file based upon the component datasheet to automatically validate the IBIS buffer model parameters in the IBIS file. Quality checks can be run on individual buffer models or in batch mode. The results of the quality checks can be displayed in the Quality Checker GUI window as well as an external HTML report. Additional advanced post processing of the HTML table can be performed using the supplied javascripts in the release library.

SharkSim Documentation

The SharkSim application documentation is divided into separate User Guides as listed below.

SharkSim Editor and Viewer Guide. Describes how to load and view IBIS simulation models as well as general application features.

SharkSim Quality Checker Guide. Describes how to use the Quality Checker feature to validate IBIS simulation models.

SharkSim SPICE to IBIS Guide. Describes how to translate SPICE to IBIS simulation models using the built-in translation GUI features and also how to build a full IBIS file.

SharkSim IBIS Simulation and Correlation Guide. Describes how to simulate IBIS buffer models and view the results. Also describes how to use existing [Test Data] to perform full correlation.

Customer Support

Customers can view the HTML help file any time from within the application by selecting the **Help** icon. The user guides are also in PDF format in the application release directory.

Customers can also visit www.sharksim.com to get full support for the application through additional tutorials, white papers, videos, forums, and contact information of the SharkSim developers.

Naming Conventions

Many different naming conventions are used when talking about the IBIS Specification. For all of the SharkSim User Guides the following conventions have been followed:

IBIS File. This refers to the overall IBIS file with a .ibs extension.

IBIS Buffer Model. This refers to the individual keyword [Model] types in the overall IBIS file. The buffer models as listed by the [Model] keyword are the actual sections where the IBIS data is stored for each [Model] type.

IBIS keywords [keyword]. The IBIS Specification specifies special keywords using the format [keyword] and the User Guides use the same format to highlight the fact that a keyword is being used.

Many engineers interchange ‘IBIS File’ and ‘IBIS Model’. Sometimes an engineer will be talking about the full IBIS file with .ibs extension yet will call it an IBIS model. The SharkSim User Guides have tried to distinguish between IBIS File and IBIS Buffer Model to make the terminology easier to understand.

How the Quality Checker Works

Overview

The Quality Checker module in SharkSim automatically performs IBIS Specification syntax checks, advanced data integrity checks, and validates IBIS buffer model parameters against the datasheet using an external specification file. With the 2.0 release the Quality Checker will not display IBIS Quality Specification compliant checks as well. The Quality Checker is not a replacement for the IBIS Parser but rather an addition to the IBIS Parser by providing advanced quality checks. The results of the quality checks can be seen instantly in the Quality Checker GUI window and a full report can be viewed in HTML format.

Opening the Quality Checker

The Quality Checker can be opened from the navigation menu item **Validate | Model Quality Checks** and by using the hotkey F5. The checklist icon can also be used from the toolbar menu.

Setting Up the Quality Checker

When the Quality Checker is first opened there is no data in the viewer window. The user first needs to set the **Preferences** by selecting the **Preferences** button at the bottom of the GUI window. Then the user needs to select the IBIS buffer model and Component from the drop down selection boxes labeled **Model** and **Component**. Finally the user needs to either load a specification file using the **Load spec file** button or one will automatically be loaded based upon the Tech field in the buffer model. Once the specification file has been loaded, both the IBIS data and the specification file data will be populated in the viewer window.

Using the Quality Checker Viewer

The Quality Checker viewer displays a snapshot of the IBIS data and the specification file data for the selected IBIS buffer model and component. If any of the listed IBIS data fields are not within the specification file values the IBIS data fields will appear **red**. The specification file is an ASCII text file that can be

modified and saved while the Quality Checker window is open. The specification file needs to be reloaded to apply any new changes.

Running and Viewing Quality Checker Results

To run the full set of quality checks the user can select the **Run Quality Checker** button to run the quality checks. A new window will pop up displaying a report indicating how many pass, fail, ignore messages there are for the selected IBIS buffer model. To see the full HTML report the user can select the **open html results** button and the default web browser will open up the selected HTML report file. The HTML report categories a quality check as either a pass, fail, or ignore. A quality check may be ignored if there is no data in the IBIS buffer model or if a particular quality check does not apply to the IBIS buffer model type. The user can also perform advanced table editing using the supplied javascripts as long as the HTML reports are saved in the 'reports' folder that came with the release directory.

Preferences

Overview

SharkSim has a Preferences GUI window to set some of the Quality Checker preferences.

Opening the Preferences Window

The Preferences GUI window can be opened by selecting the **Preferences** button at the bottom of the GUI window.

Setting the Report Directory

The user must select an existing folder to store the HTML reports from the quality checker. The user can use the browse button to select the full folder path. It is recommended to select the 'reports' folder in the SharkSim release directory so the user can take advantage of the advanced HTML report editing available through the use of javascripts.

Setting the Spec File Directory

The user must select an existing folder to store the spec files used to quality check the individual buffer models. The spec files can have any name but if the name of the spec file matches the Tech Type field in the buffer model the spec file will be automatically used. This allows the user to not have to browse for different spec files to make the quality checking more efficient.

Setting the Quality Check Thresholds

The Quality Checker performs a set of IBIS Specification syntax and data integrity checks on the IBIS buffer model as well as comparing specified IBIS buffer model parameters to the specification file. Some of the quality checks require the user to set threshold tolerances or measurement methods. Below is an explanation of the different quality check thresholds.

Zero Crossing Error Tolerance

The Quality Checker looks at the Pulldown and Pullup IV curves to see if they pass through 0 Volts and 0 Amps. For most CMOS type buffers this should be a valid check due to the required IBIS Specification IV data extraction loading and the transistor equations. The user can set a tolerance level in Amps for how much error is allowed since simulation and measurement data used to generate IBIS buffer models will have some error in them. It is recommended to use a threshold of at least a couple of milliamps especially for older TTL type technology. For non-standard buffers or differential buffers a large error tolerance can be set so an error will not be flagged.

Pullup and Pulldown Impedance Measurement

The Pullup and Pulldown IV curves in an IBIS buffer model describe the drive strength of the buffer (or in other words the output impedance) when it is driving high and when it is driving low. Some interface specifications place a range on the allowable output impedance of an IO buffer.

The Pullup and Pulldown impedance check method allows the user to select a slope method or a specified measurement. The slope method assumes the IV curves go through 0 Volts and 0 Amps and takes the slope of the IV curve from approximately -0.2 Volts to +0.2 Volts to calculate the impedance. The specified measurement method allows the user to enter a specific voltage at which to take the impedance measurement.

Number of IV Points

The IBIS Specification version 4.2 allows up to 100 data points for any IV curve. The user can set a minimum number of IV data points and the Quality Checker will determine how many data points are in the IV curve and report an error if it is less than the specified value.

Number of VT Points

The IBIS Specification version 4.2 allows up to 1000 data points for any VT curve. The user can set a minimum number of VT data points and the Quality Checker

will determine how many data points are in the VT curve and report an error if it is less than the specified value.

Clamp Leakage Threshold

The Ground Clamp and Power Clamp IV curves normally contain the protection diodes of the IO buffer model and there should only be current flowing below ground and above Vcc. The user can set a threshold in Amps to detect if there is any current between 0 Volts and Vcc Volts and report an error.

IV Curve Monotonicity Threshold

The IBIS Parser takes the combined IV curves (Pullup+Power Clamp+Ground Clamp) or (Pulldown+Power Clamp+Ground Clamp) and determines if the combined curve is non-monotonic or not as it should be a linear data curve. However the IBIS Parser does not give a lot of information on where the data issue is and the user has no control over the linear threshold used. The user can set a threshold in Amps for a monotonicity check of combined IV curves and only report an error if the threshold is exceeded.

VT Curve Monotonicity Threshold

The Quality Checker will review each VT waveform in the IBIS buffer model and report an error if the waveform is non-monotonic. The user needs to enter a threshold value in units Volts that the checker will use to verify if the curve is monotonic.

IV Sweep Range Voltage Threshold

The Quality Checker reviews the voltage sweep range for the IV curves to make sure they meet the recommended IBIS specification sweep ranges. However due to small interpolation errors and numerical round offs sometimes there will be a small numerical difference. For example, the expected voltage sweep range might be -3.3 Volts to +6.6 Volts but in the actual IBIS file the sweep range is -3.299 to +6.6 which would be an error. This threshold allows the user to set a small tolerance level to ignore small numerical differences.

Ramp Time Error Tolerance Threshold

The Quality Checker measures the actual 20 to 80% dv/dt transitions of the VT data of an IBIS buffer model and compares that to the Ramp data dt values in the IBIS file and reports an error if they are not the same. This threshold allows the user to set a threshold for when an error should be reported.

Loading an IBIS Buffer Model

Overview

Different features of the SharkSim application can be accessed using the menu items as well as the toolbar icons.

Selecting an IBIS Buffer Model

The user can select an IBIS buffer model from the IBIS file using the **Model** drop down selection box.

Selecting a Component

The user can select a Component from the IBIS file using the **Component** drop down selection box.

Using the Spec File

Overview

The Quality Checker performs some of its quality checks by reading in data from an external specification file. The specification file is an ASCII text file with a .spec extension. The special character # can be used to comment a line and empty lines are allowed. The format of the quality checks in the specification file is:

[check_name] [unit_name] = min,max

For example, the Voltage Range specification check line would look like the following:

[Voltage Range] [Volts] = 2.97, 3.63

The check value should be in the format of minimum and maximum values but NA can be used if there is no data or if the check is not applicable. The following section lists out the check name with units and the check performed.

If the filename of the .spec file matches the Tech Type field in the buffer model that .spec file will be automatically used. The Tech Type field is a special SharkSim data field that can be added to any buffer model using the IBIS Quick Editor.

Specification Checks

The Quality Checker uses the following specification name check lines to perform quality checks. These specification check values should come from the component datasheet or other component manufacturer data source.

[Voltage Range] [Volts]

The voltage range over recommended operating conditions.

[Temperature Range] [C]

The temperature range over recommended operating conditions.

[C_total] [pF]

The total capacitance of the IO buffer usually listed as C_{in} or C_{out} .

[Package ZO] [Ohm]

The impedance of a global package pin.

[Vmeas] [Volts]

The voltage measurement point of the output of the driver into the manufacturers test load.

[Vref] [Volts]

The reference voltage if used to measure V_{meas} .

[Cref] [pF]

The capacitance value if used to measure V_{meas} .

[Rref] [Ohms]

The resistance value if used to measure V_{meas} .

[Vinh] [Volts]

The DC high input voltage threshold level.

[Vinl] [Volts]

The DC low input voltage threshold level.

[Pulldown impedance] [Ohms]

The impedance of the IO buffer when driving high to low.

[Pullup impedance] [Ohms]

The impedance of the IO buffer when driving low to high.

[V/T frequency] [MHz]

The maximum operating frequency of the IO buffer.

[Ground clamp current] [A]

The current measured at -1.2 Volts of the Ground Clamp curve.

[Rise Edge Rate] [ps]

The rise time of the IO buffer from the datasheet divided by 2.

[Fall Edge Rate] [ps]

The fall time of the IO buffer from the datasheet divided by 2.

[Pin ZO] [Ohms]

The impedance of a specific package pin.

[Pin C_total] [pF]

The total capacitance of the IO buffer usually listed as C_{in} or C_{out} .

[Model Spec Vinl] [Volts]

The DC low input voltage threshold level.

[Model Spec Vinh] [Volts]

The DC high input voltage threshold level.

[Model Spec Vinl+] [Volts]

Hysteresis threshold voltage low maxlevel.

[Model Spec Vinl-] [Volts]

Hysteresis threshold voltage low min level.

[Model Spec Vinh+] [Volts]

Hysteresis threshold voltage high max level.

[Model Spec Vinh-] [Volts]

Hysteresis threshold voltage high min level.

[Model Spec S_overshoot_high] [Volts]

The static overshoot high voltage.

[Model Spec S_overshoot_high] [Volts]

The static overshoot low voltage.

[Model Spec D_overshoot_high] [Volts]

The dynamic overshoot high voltage.

[Model Spec D_overshoot_low] [Volts]

The dynamic overshoot low voltage.

[Model Spec D_overshoot_time] [Volts]

The dynamic overshoot time.

[Model Spec Pulse_high] [Volts]

The pulse immunity high voltage.

[Model Spec Pulse_low] [Volts]

The pulse immunity low voltage.

[Model Spec Pulse_time] [Volts]

The pulse immunity time.

[Model Spec Vmeas] [Volts]

The voltage measurement point of the output of the driver into the manufacturers test load for all three (typ/min/max) process corners.

[Model Spec Vmeas_rising] [Volts]

The voltage measurement point of the output of the driver for a rising edge into the manufacturers test load for all three (typ/min/max) process corners.

[Model Spec Vmeas_falling] [Volts]

The voltage measurement point of the output of the driver for a falling edge into the manufacturers test load for all three (typ/min/max) process corners.

[Model Spec Cref] [pF]

The capacitance value for all three (typ/min/max) process corners if used to measure Vmeas.

[Model Spec Cref_rising] [pF]

The capacitance value for all three (typ/min/max) process corners for a rising edge if used to measure Vmeas.

[Model Spec Cref_falling] [pF]

The capacitance value for all three (typ/min/max) process corners for a falling edge if used to measure Vmeas.

[Model Spec Cref_diff] [pF]

The differential capacitance value if used to measure Vmeas.

[Model Spec Rref] [Ohms]

The resistance value for all three (typ/min/max) process corners if used to measure Vmeas.

[Model Spec Rref_rising] [Ohms]

The resistance value for all three (typ/min/max) process corners for a rising edge if used to measure Vmeas.

[Model Spec Rref_falling] [Ohms]

The resistance value for all three (typ/min/max) process corners for a falling edge if used to measure Vmeas.

[Model Spec Rref_diff] [Ohms]

The differential resistance value if used to measure Vmeas.

[Model Spec R_load] [Volts]

The resistor used to generate [Ramp] 20/80 transition times.

[Receiver Thresholds]

The [Receiver Thresholds] keywords define advanced timing measurement thresholds for both single-ended and differential signals. These keywords are often used for DDRx interfaces. Please see the [Receiver Threshold] section in the IBIS Specification for the full descriptions and usage of these keywords. SharkSim uses the same keywords and sub keywords as the official IBIS Specification.

Running the Quality Checker

Overview

The Model Quality Checker performs a comprehensive list of checks on an IBIS buffer model in an IBIS file that include advanced data integrity checks, IBIS Specification syntax checks, and datasheet validation checks using the specification file.

Performing Checks

The user can select the **Run Quality Checker** button to perform quality checks on the currently selected IBIS buffer model. The results summary will be shown in a new window indicating how many pass, fail, and ignore messages were found. The user can view the full quality check HTML report by selecting the **open html results** button. Ignore messages are issued for quality checks that do not apply to the model type selected and for quality checks that only have a Typical quality check rather than a Typical/Minimum/Maximum check. The user can also interact with the HTML table using the supplied javascripts.

List of Quality Checks

The Model Quality Checker performs the following list of quality checks using the data from the IBIS file and the data from the specification file:

Package Zo

This quality check takes the L_pkg and C_pkg values from the [Package] section of the IBIS file and calculates the package impedance using $Z = \sqrt{L/C}$ and compares it to the specification file value.

C_total

This quality check takes the C_pkg value and C_comp value from the selected IBIS buffer model and adds them together to calculate the C_total value and this value is compared to the specification file value.

Temperature

This quality check takes the values from the IBIS buffer model [Temperature Range] and compares them to the specification file value.

Voltage

This quality check takes the values from the IBIS buffer model [Voltage Range] and compares them to the specification file value.

Vref

This quality check takes the Vref value from the IBIS buffer model if it is present and compares it to the specification file value.

Cref

This quality check takes the Cref value from the IBIS buffer model if it is present and compares it to the specification file value.

Rref

This quality check takes the Rref value from the IBIS buffer model if it is present and compares it to the specification file value.

Vmeas

This quality check takes the Vmeas value from the IBIS buffer model if it is present and compares it to the specification file value.

Vinh

This quality check takes the Vinh value from the IBIS buffer model if it is present and compares it to the specification file value.

Vinl

This quality check takes the Vinl value from the IBIS buffer model if it is present and compares it to the specification file value.

Pulldown impedance

This quality check measures the impedance of the Pulldown IV curve using the selected method from the Quality Checker Preferences and compares it to the specification file value.

Pullup impedance

This quality check measures the impedance of the Pullup IV curve using the selected method from the Quality Checker Preferences and compares it to the specification file value.

Pulldown Zero Cross

This quality check measures where the Pulldown IV curve crosses zero volts and zero amps and reports an error if it is larger than the specified threshold.

Pullup Zero Cross

This quality check measures where the Pullup IV curve crosses zero volts and zero amps and reports an error if it is larger than the specified threshold.

V/T Frequency

This quality check looks at how long the VT waveforms are and then calculates the IBIS buffer model maximum frequency by dividing the time window by two and compares it to the specification file value. This check is useful to see if the IBIS buffer model is overclocked as the VT time window needs to be half of the desired operating frequency period.

Ground Clamp Current

This quality check measures the current at -1.2 Volts of the Ground Clamp IV Curve and compares it to the specification file value.

Pin Zo

This quality check takes the L_pin and C_pin values from the [Package] section of the IBIS file and calculates the package impedance using $Z = \sqrt{L/C}$ and compares it to the specification file value.

Pin C_{total}

This quality check takes the C_{pin} value and C_{comp} value from the selected IBIS buffer model and adds them together to calculate the C_{total} value and this value is compared to the specification file value.

Rise Edge Rate

This quality check takes the Rising Ramp Edge Rate dV/dt_r from the IBIS buffer model and compares it to the specification file value.

Fall Edge Rate

This quality check takes the Falling Ramp Edge Rate dV/dt_f from the IBIS buffer model and compares it to the specification file value.

Ramp Time Rising

This quality check takes the Rising Ramp Edge Rate dV/dt_r from the IBIS buffer model and compares the value to the measured 20% to 80% of the Rising Waveform to Ground VT waveform and reports an error if larger than the specified threshold.

Ramp Time Falling

This quality check takes the Falling Ramp Edge Rate dV/dt_f from the IBIS buffer model and compares the value to the measured 20% to 80% of the Falling Waveform to V_{cc} VT waveform and reports an error if larger than the specified threshold.

IV Curve Points

This quality check calculates the number of data points in an IV curve and reports an error if less than the specified value.

VT Curve Points

This quality check calculates the number of data points in a VT curve and reports an error if less than the specified value.

C_comp Same

This quality check reads the C_comp value of an IBIS buffer model and reports an error if all of the C_comp values for Typical/Minimum/Maximum are the same.

Model Spec Checks

All of the [Model Spec] parameters if present in the buffer model will be checked against the spec file.

Receiver Threshold Checks

All of the [Receiver Thresholds] parameters if present in the buffer model will be checked against the spec file.

VT Waveform Match

This quality check reads the VT waveforms in an IBIS buffer model and checks to see if all of the VT waveforms are the same length and reports an error if they are not.

Ramp Rate Order (rising)

This quality check reads the Rising Ramp Rate dV/dt_r values and checks to see if the order $min < typ < max$ is valid and reports an error if they are not.

Ramp Rate Order (falling)

This quality check reads the Falling Ramp Rate dV/dt_f values and checks to see if the order $min < typ < max$ is valid and reports an error if they are not.

IV Sweep Range Pullup

This quality check reads the voltage range of the Pullup IV curve in the IBIS buffer model and compares it to the range $-V_{cc}$ to $2*V_{CC}$ based upon the voltage range in the IBIS buffer model.

IV Sweep Range Pulldown

This quality check reads the voltage range of the Pulldown IV curve in the IBIS buffer model and compares it to the range $-V_{cc}$ to $2*V_{CC}$ based upon the voltage range in the IBIS buffer model.

IV Sweep Range Power Clamp

This quality check reads the voltage range of the Power Clamp IV curve in the IBIS buffer model and compares it to the range $-V_{cc}$ to 0 Volts based upon the voltage range in the IBIS buffer model.

IV Sweep Range Ground Clamp

This quality check reads the voltage range of the Pullup IV curve in the IBIS buffer model and compares it to the range $-V_{cc}$ to V_{cc} based upon the voltage range in the IBIS buffer model.

Clamp Leakage

This quality check looks at the combined Ground Clamp and Power Clamp IV curves and reports an error if the current between 0 Volts and V_{cc} is larger than the specified threshold.

IV Monotonicity Pullup (Combined)

This quality check takes the combined IV curves for the Pullup, Power Clamp, and Ground Clamp curves and report an error if the combined curve is not monotonic based upon the specified threshold.

IV Monotonicity Pulldown (Combined)

This quality check takes the combined IV curves for the Pulldown, Power Clamp, and Ground Clamp curves and report an error if the combined curve is not monotonic based upon the specified threshold.

VT Monotonicity

This quality check looks at each individual VT curve and reports an error if the curve is not monotonic based upon the specified threshold.

R_load

This quality check looks at the R_load value from the specification value and compares it to the R_load value in the [Ramp] section to check if they are the same. If they are not than an error is given.

Checks Not Performed by SharkSim

In the final HTML report table there will be additional checks that are not automatically checked by SharkSim. These checks cannot be completed by the software due to the ambiguity and complexity of these checks. Most of these checks are listed here to be compliant with the IBIS Quality Specification. The user should review these checks manually and edit the HTML table (using the supplied javascripts) to be Pass, Fail, Ignore, or Exception. By default these checks are set as Pass. The checks with a short description are listed below:

Pin Section: This check ensures that the [Pin] section in the Component part of the IBIS file matches the device datasheet for pin order and pin count. [Note: the user can use the Package Editor in SharkSim to easily perform this check]

Diff Pin: These two checks are to ensure that if present the Diff Pin and T_delay* parameters are correct according to the datasheet.

Model Selector: These checks are supposed to verify that all [Model Selector] naming conventions are understandable and that the default model is consistent.

Model Process Order: This check ensures that [Model] process parameters are in the correct order (typ/min/max).

IV Table Process Order: This check ensures the IV data table is in the correct order (typ/min/max).

IV Double Count: This check ensures that clamp IV data is not double counted in pulldown and/or pullup IV data.

On Die Termination: This check is supposed to verify that if a buffer model has on-die termination is has been documented.

Vref Consistent: This check ensures that for open-drain, open-source, and ECL model types Vref is consistent.

Batch Quality Checker

The Model Quality Checker can be run in batch mode by selecting the **Batch Quality Checker** button. The user will be prompted to select a batch check file `batchcheck.txt`. This is an ASCII file that lists out the component, IBIS buffer model, and location of specification file to be used in the following format:

```
[Component_name] [IBIS_buffer_model_name] [File_Location]
```

Only tabs (no spaces) can be used to separate the information in the batch file. The Quality Checker will run the same quality checks on each listed IBIS buffer model and create individual HTML reports. A new window will pop up giving a summary of the pass, fail, and ignore messages for each IBIS buffer model and the user can select from a drop down list which HTML report to open.

Quality Check HTML Report

Overview

The Quality Checker performs all quality checks and creates an HTML report with the listed checks and results. The HTML reports are stored in the reports folder specified in the Preferences section.

Reading the HTML Report

The Quality Checker creates an HTML report for each IBIS buffer model checked in the application. In the HTML Report the header section contains the IBIS buffer model name, component name, and the number of reported pass/fail/ignore messages.

In the table in the HTML file the quality check performed **Check** is listed along with the **Typical/Minimum/Maximum** values from the IBIS buffer model. The minimum and maximum values from the specification file are also listed along with the units for the quality check. The results of the quality checks are given for each process corner in the **Typ Result/Min Result/Max Result** columns. Any additional information about the quality check is listed in the **Comments** column.

Editing the HTML Report

If the HTML report is saved in the default 'reports' folder in the SharkSim release directory it will automatically point to the javascript resources and enable them for the user with the following functions:

- The user can click on the column headers to sort the data
- The user can left click in the Typ/Min/Max Result columns to select a different check results: Pass, Fail, Ignore, Exception. If an Exception is selected the user should enter in the comments more details for the user.
- The user can left click in the Comments columns to edit the comments. By right clicking the comments column will be updated.

Whenever the Results columns are changed the check headers at the top of the HTML report will change as well to reflect the number of passes, fails, ignores, and exceptions. The overall IBIS Quality Level based upon the IBIS Quality Specification will be calculated as well. This quality level can be entered into the IBIS file for each buffer model using the Quick Editor.

In order to save the changes made to the HTML table the user must do a File | Save in the web browser otherwise the changes will not be saved.

Advanced Features

Overview

This section describes some of the advanced features of the Quality Checker in further detail.

Saving an IBIS Buffer Model

The user can select the **Save .mod** button and the currently selected IBIS buffer model will be saved as a .mod file that can be used in other parts of the SharkSim application. The .mod file contains all of the IBIS data under the specified [Model] section.