

IBIS Quality Status Report

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IBIS Summit Meeting

January 31, 2012

DesignCon, Santa Clara, CA

IBIS Quality Task Group Meetings

- 19 meetings in 2012
- Regular Participants:
 - Ericsson
 - Intel
 - IO Methodology
 - Nokia-Siemens Networks
 - SiSoft
 - Teraspeed
- Primary Topics:
 - IQ Specification
 - AMI quality
 - Waveform validation
 - IBIS Parser



IBIS Quality Specification

- Current IBIS Quality Specification version is 2.0
 - http://www.eda.org/ibis/quality_ver2.0/quality_ver2_0.pdf
- QUILs (QUALity Issue List):
 1. [Check for Pullup/Pulldown I-V Zero-crossing for IQ2.0](#)
 2. [Correct usage of Open-sink](#)
- No update currently planned

1.1. IBIS Quality Level Definitions

The quality level is defined as a combination of correctness checks and correlation checks. The correctness level is a number, and other special designations such as correlation are shown as appended letters. Some examples:

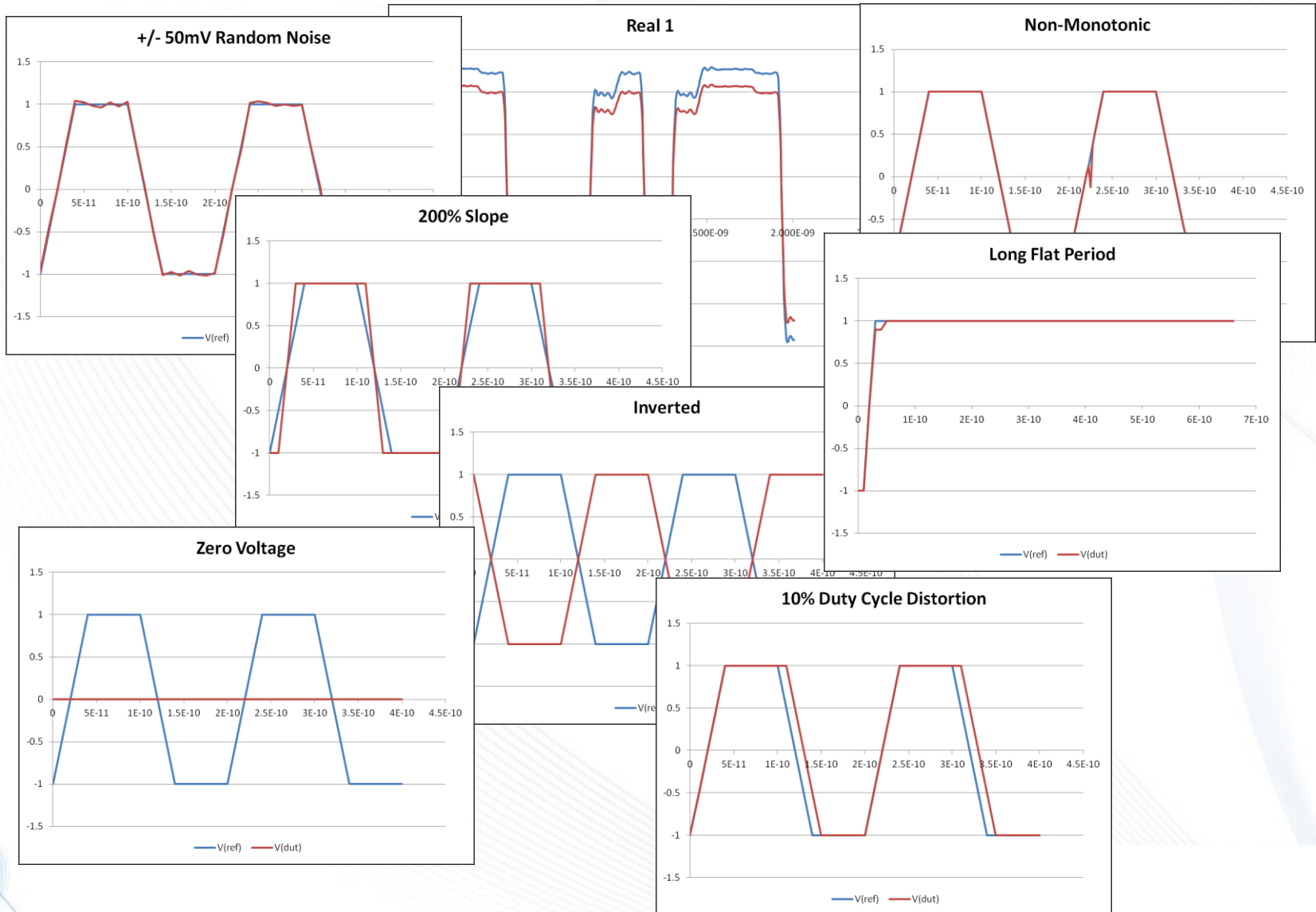
- **IQ0** - No IQ checking at all
- **IQ1** - Passes IBISCHK without Errors or unexplained Warnings
- **IQ2** - IQ1 + data for basic simulation checked
- **IQ3** - IQ2 + data for timing analysis checked

AMI Quality Checklist

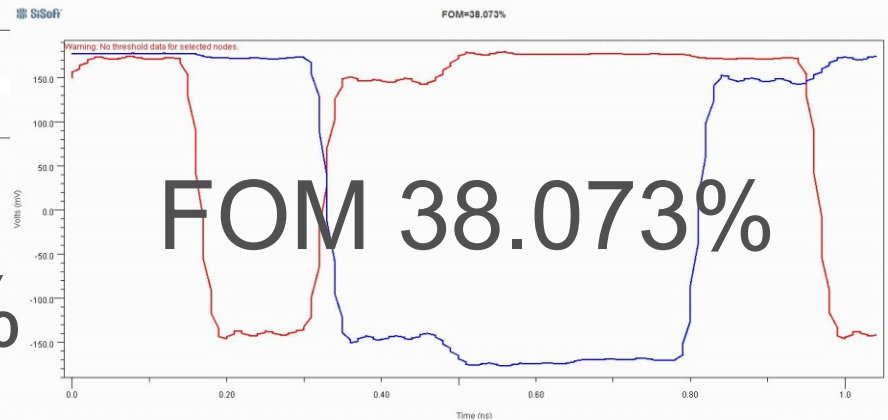
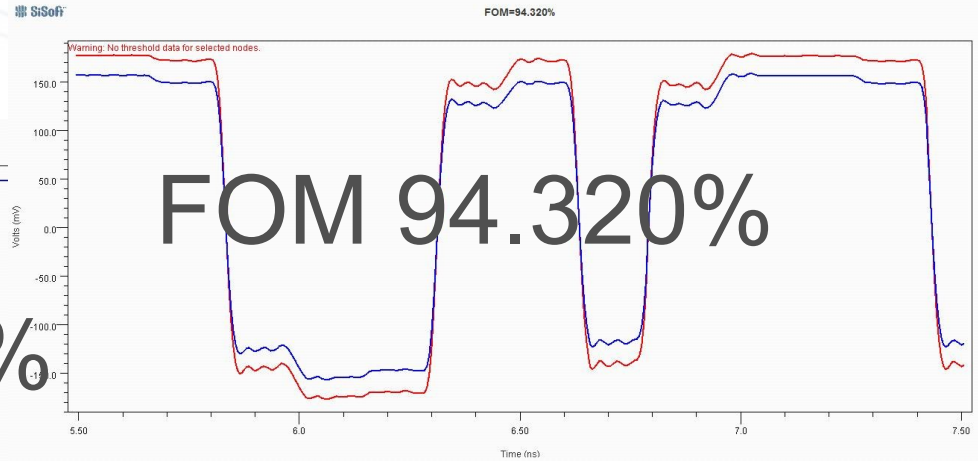
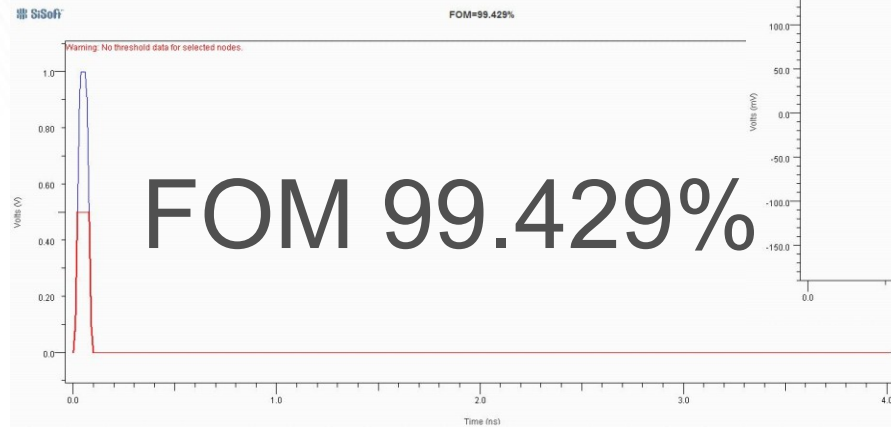
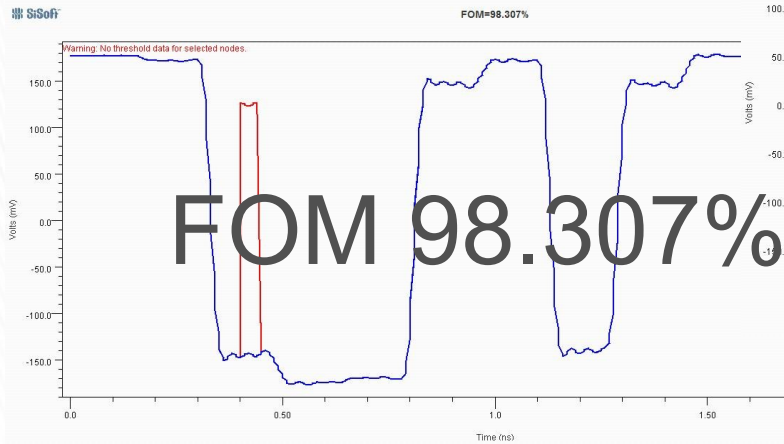
- 1.1 Parameter names in DLL same as names in AMI file
- 1.6 Fully IBIS compliant analog model present
- 2.4 Multiple instances of one model can run in one simulation/analysis
- 2.6 Model can run multiple simultaneous simulations
- 2.7 Unrecognized parameters do not cause failure
- 2.8 Useful parameter Descriptions
- 4.5 Information about maximum data rate delivered

Work suspended while major IBIS AMI
specification changes were in progress

IBIS Correlation Test Waveform Set



IBIS Accuracy Figure of Merit



IBIS FOM Test Waveform Results

Waveform	IBIS FOM
Perfect	100.000%
TimeOffset	90.244%
DutyCycle	95.122%
VoltageOffset	97.500%
Amplitude	97.988%
Dead	59.756%
Slope	95.122%
Inverted	19.512%
Overshoot	99.512%
NonMono	99.543%
Random	98.873%
LongFlat	99.851%
Real_1	94.320%

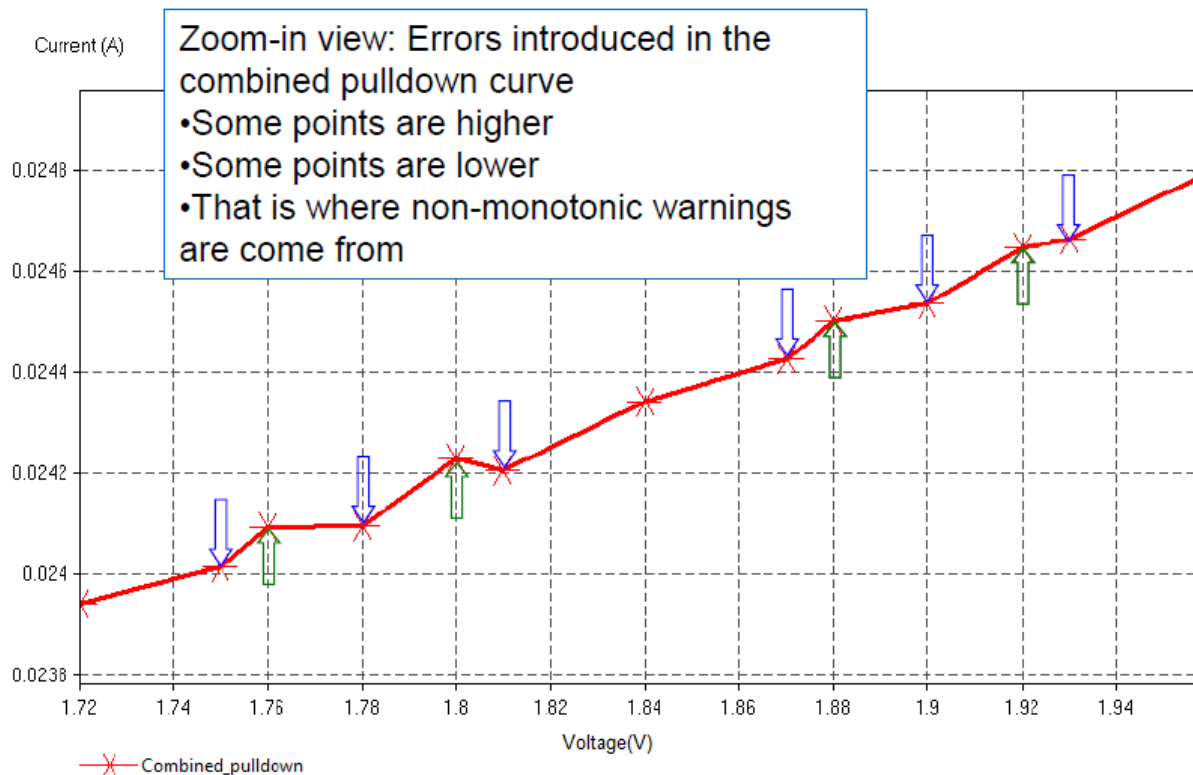


Even a broken clock is right twice a day

... Seeking a better way to measure correlation

IBIS Quality Parser BUG

- IBISCHK BUG 140: Unexpected Non-Monotonic Warning Messages for Combined I-V Tables



IBIS Golden Parser Document

- IBISCHK user guide
 - Command line usage
 - 1,204 Messages explained
 - Error number index
 - Explanation of variables
 - Algorithms explained

8	106	MDL_ERR_6	Reserved Digital Port <%s> used as analog port		
9	107	MDL_ERR_7	Orphan data line keyword.		
10	108	MDL_ERR_8	TTgnd Typical value should be > 0		
11	109	MDL_ERR_9	TTgnd Min value should be > 0		
12	110	MDL_ERR_10	TTgnd Max value should be > 0		
13	111	MDL_ERR_11	TTgnd typ value is not in between Min and Max		
14	112	MDL_ERR_12	TTpower Typical value should be > 0		
15	113	MDL_ERR_13	TTpower Min value should be > 0		
16	114	MDL_ERR_14	TTpower Max value should be > 0		
17	115	MDL_ERR_15	TTpower typ value is not in between Min and Max		
			[Model Spec] should be specified immediately after all the subparameters of a model and before the other keywords of a model		
18	116	MDL_ERR_16			Improper positioning of [Model Spec]

	D	E
	Parameters	Comment
	filename, line number	The code failed to allocate memory in Program data structures are corrupt
		Model keyword found but not within a section)
	portname	Improper use of Digital port <portname_enable) in
		Improper use of D_switch
	portname	<portname> (D_receive, D_enable, D_D_switch
	portname	Improper use of Reserved Digital port
		A Model related data line was found \
		Improper TTgnd typical value
		Improper TTgnd minimum value
		Improper TTgnd maximum value
		Improper range for TTgnd
		Improper TTpower typical value
		Improper TTpower minimum value
		Improper TTPower maximum value
		Improper range for TTPower

Parser source code reference

- How to call the parser
- Reference organized by code module
- Code examples

Utils

This is a small library of all-purpose, general utility functions for use by chrome code. Everything clients need is contained within the `Utils` namespace.

`Utils.reportWarning()`

This function can be used to report a warning to the JS Error Console, which can be displayed in Firefox by choosing "Error Console" from the "Tools" menu.

`aMessage` is a plaintext string corresponding to the warning to provide.

`stackFrame` is an optional `nsIStackFrame` instance that corresponds to the stack frame which is reporting the error; a link to the line of source that it references will be shown in the JS Error Console. It defaults to the caller's stack frame.

```
var EXPORTED_SYMBOLS = ["Utils"];

const Cc = Components.classes;
const Ci = Components.interfaces;

var Utils = {};

// Keep a reference to the global object, as certain utility functions
// need it.
Utils._globalObject = this;

Utils.reportWarning = function reportWarning(aMessage, stackFrame) {
    if (!stackFrame)
        stackFrame = Components.stack.caller;

    var consoleService = Components.classes["@mozilla.org/consoleService;1"]
        .getService(Components.interfaces.nsIConsoleService);
    var scriptError = Components.classes["@mozilla.org/scripterror;1"]
        .createInstance(Components.interfaces.nsIScriptError);

    var aSourceName = stackFrame.filename;
    var aSourceLine = stackFrame.sourceLine;
    var aLineNumber = stackFrame.lineNumber;
    var aColumnNumber = null;
    var aFlags = scriptError.warningFlag;
    var aCategory = "ubiquity javascript";
    scriptError.init(aMessage, aSourceName, aSourceLine, aLineNumber,
        aColumnNumber, aFlags, aCategory);
    consoleService.logMessage(scriptError);
};
```

Participation Encouraged!

- **Meetings every other Tuesday, 8:00am PT**
- Web: http://eda.org/ibis/quality_wip/
- Email list:
 - Web subscribe: <http://www.freelists.org/list/ibis-quality/>
 - Or send email:
 - To: ibis-quality-request@freelists.org
 - Subject: subscribe