ProGrAnalog

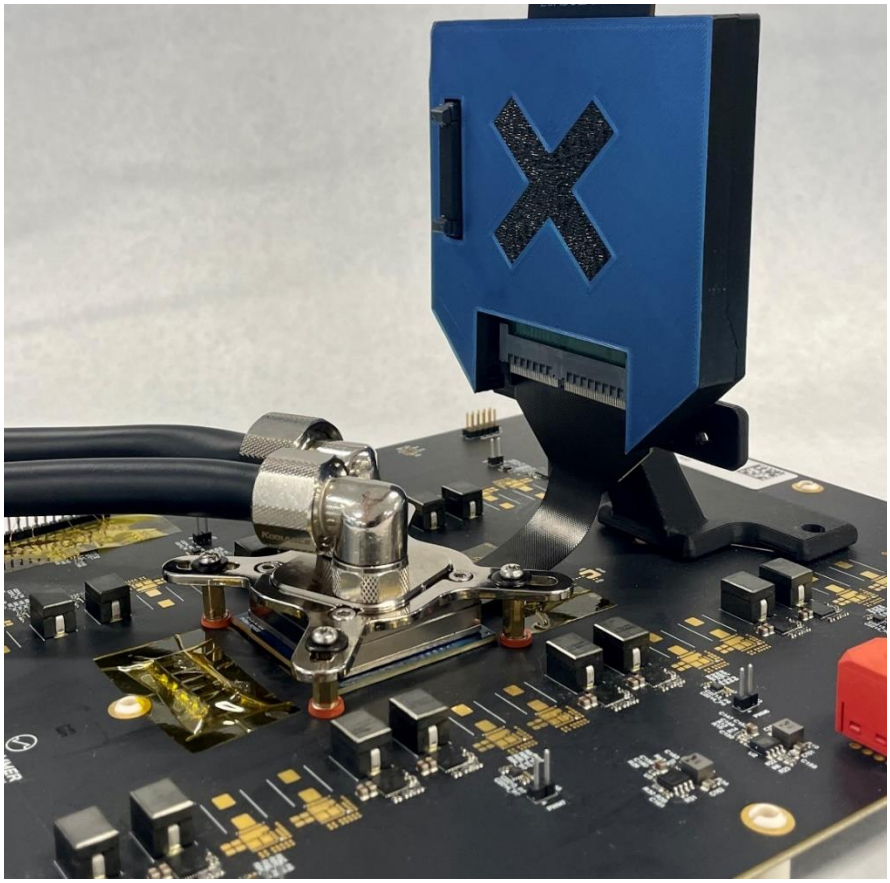
FFED-VC1902-VSVA2197

LOADSLAMMER
TRUST AND VERIFY

AMD Xilinx Power Test Adaptor for Versal VC1902-VSVA2197 series FPGAs

ProGrAnalog Corp.
Preliminary V0.3
08/15/2023

Form Factor Equivalent Device (FFED) for testing AMD Xilinx Versal ACAP VC1902-VSVA2197 FPGA's



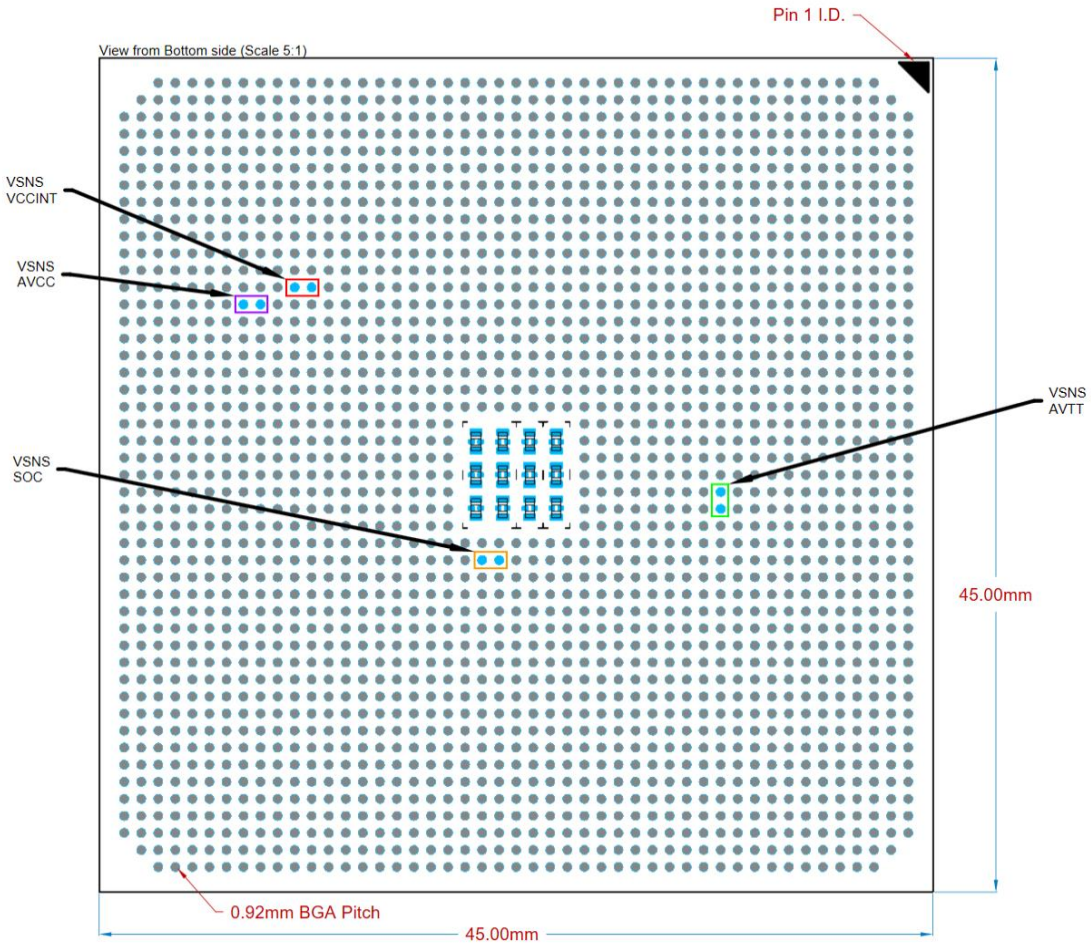
FFED-VC1902-VSVA2197 Features

- Static and high di/ dt transient testing
- 7 Load Cells
- Automatic Report Generation
- Automatic Test Vector Generation
- Allows for fast PDN Optimization and Verification
- As used by AMD Xilinx for internal development purposes
- API support with Command Line Interface (CLI)

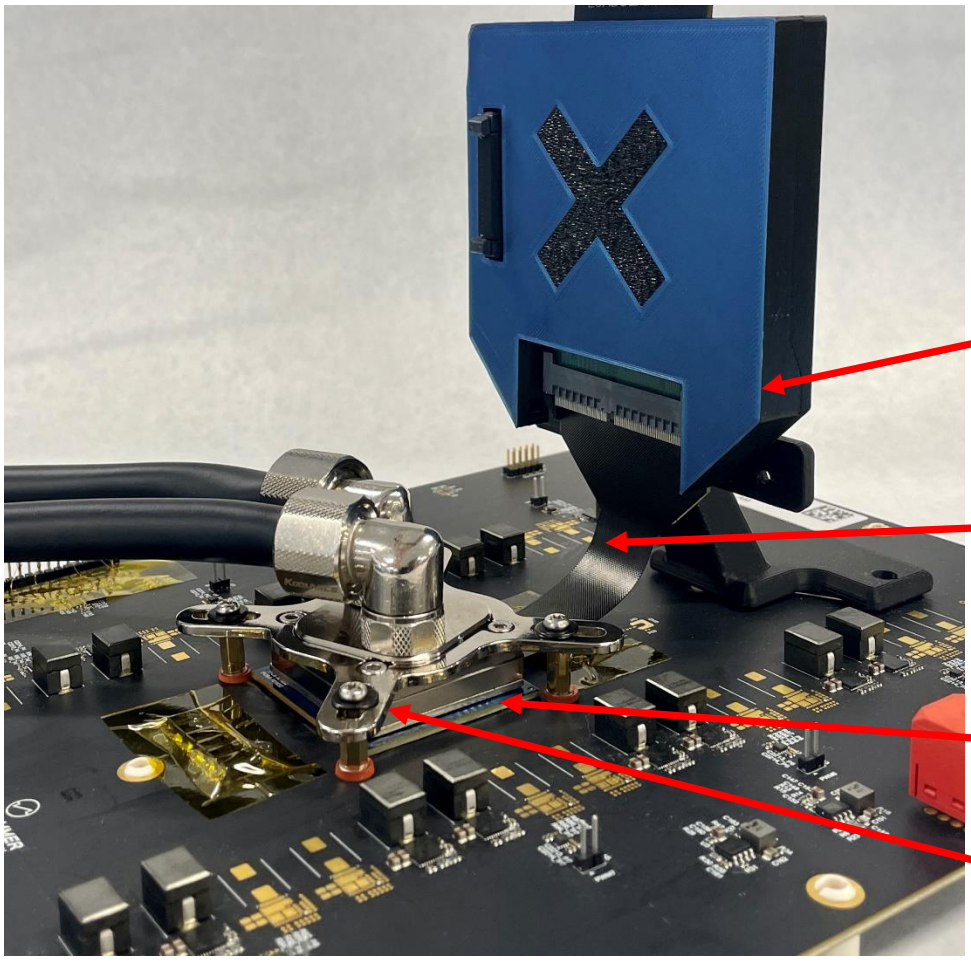
Electrical Specifications

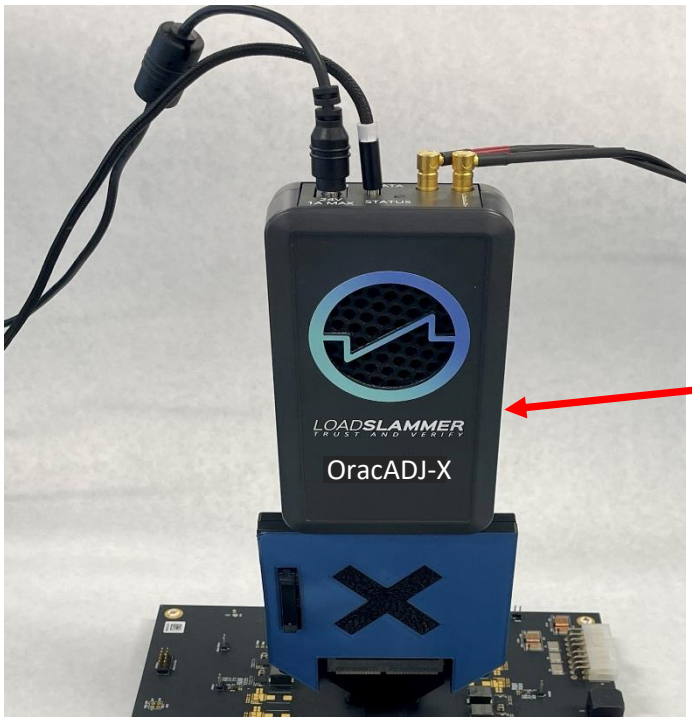
		Estimated Current Specs from AMD Xilinx PDM							
		VCCINT		VCC_SOC		VGYT_AVTT		VGYT_AVCC	
ACAP	Size (mm)	Quiescent (A)	Static/ Dynamic (A)	Quiescent (A)	Static/ Dynamic (A)	Quiescent (A)	Static/ Dynamic (A)	Quiescent (A)	Static/ Dynamic (A)
VC1902 - VSVA2197	45 x 45	20	190	18	18	10	10	6	6

FFED Dimensions & Voltage Sense Points

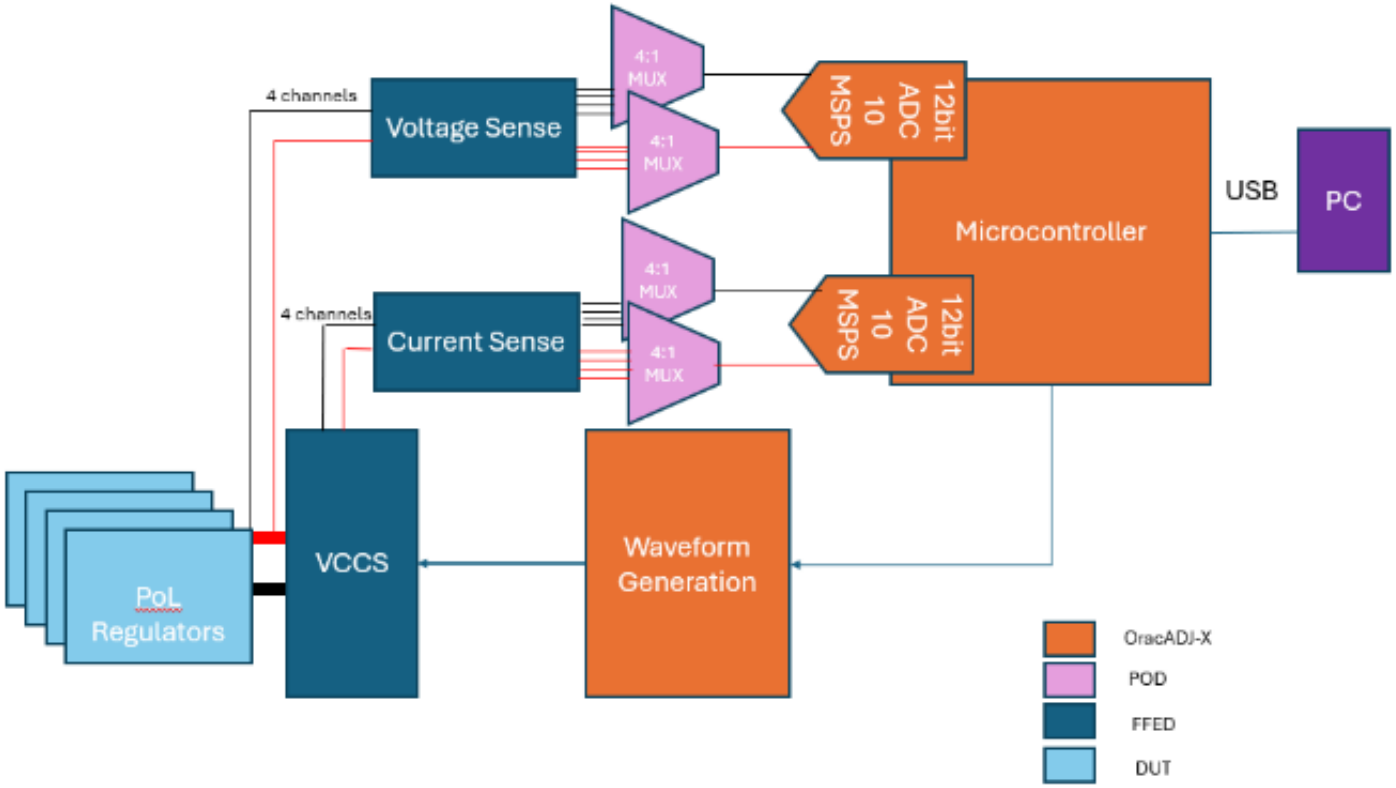


FFED-VC1902-VSVA2197 Typical Setup



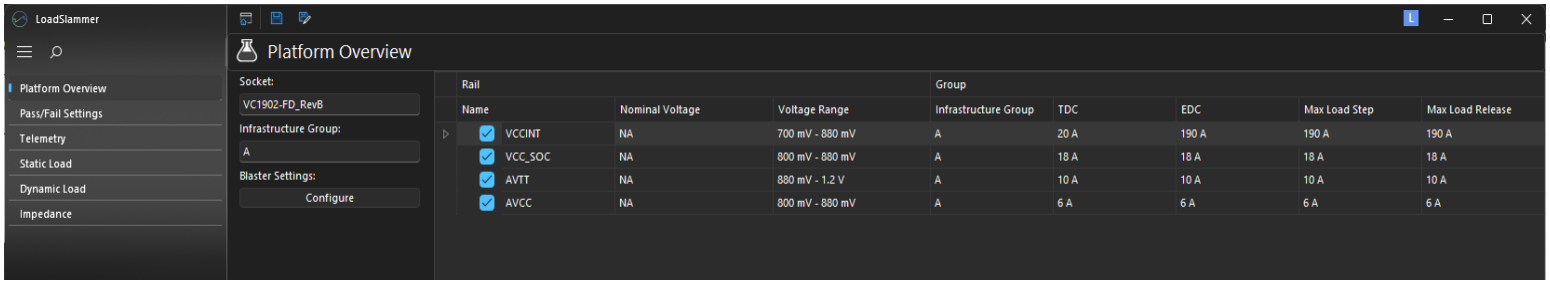


Top Level System Overview

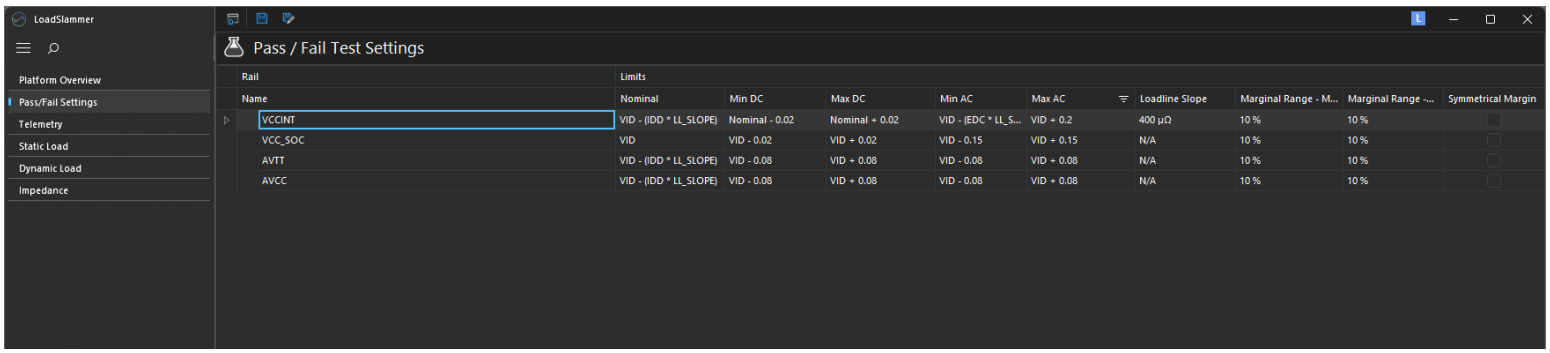


LoadSlammer GUI Setup for FFED-VC1902-VSVA2197

Use Power Design Manager (PDM) settings as inputs to GUI for selecting voltage range and max current.

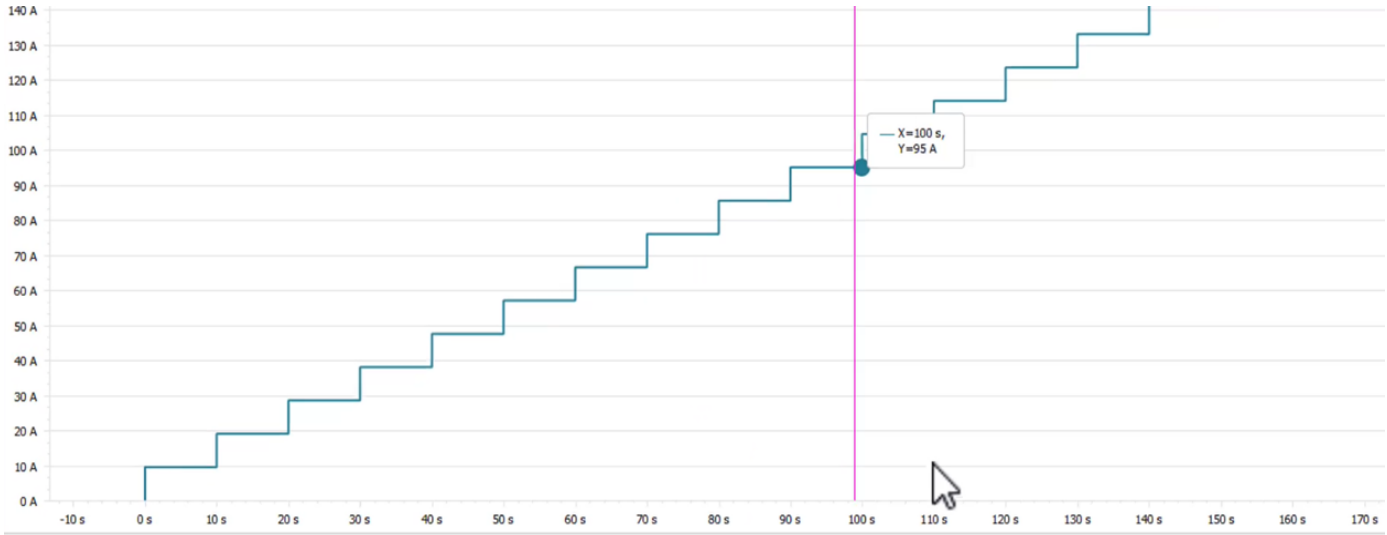


Setting Pass/Fail and Margins



Static Testing

example of static test settings on VCCINT



VCCINT

Current	
MaxCurrentFormula	**190 A**
MinCurrentFormula	**0 A**
StepCurrentFormula	**9.5 A**
Time	
DurationFormula	**10 s**
EdgeFormula	**1 ms**
Voltage	
PSUList	(Collection)

Transient – Static Testing

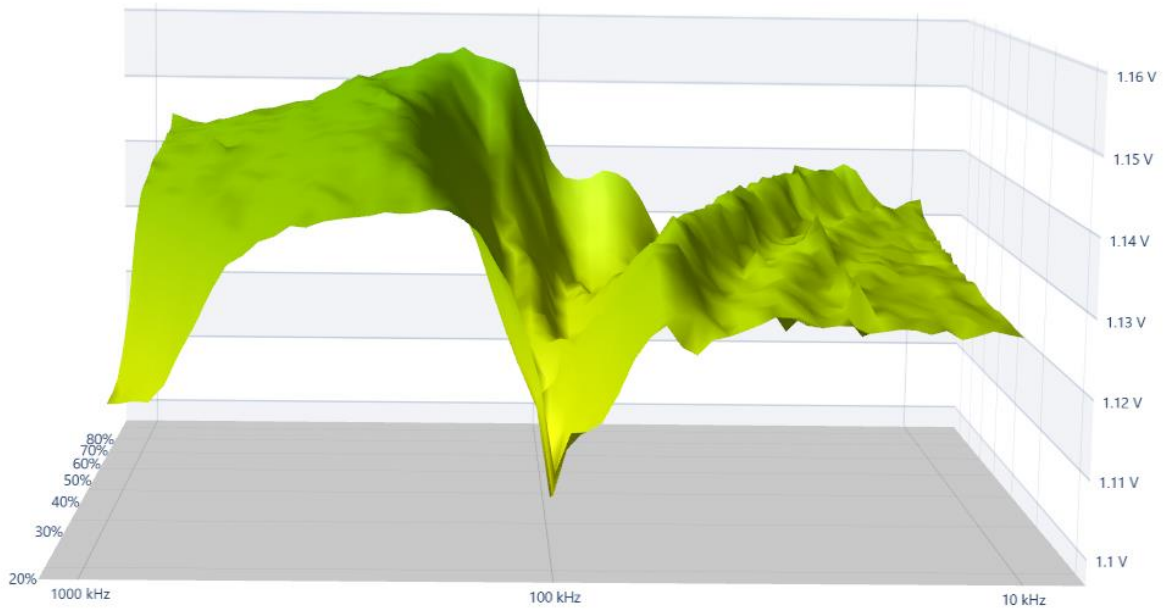
Example VCCINT rail

Transient – PWM and Frequency Sweep

Example VCCINT rail

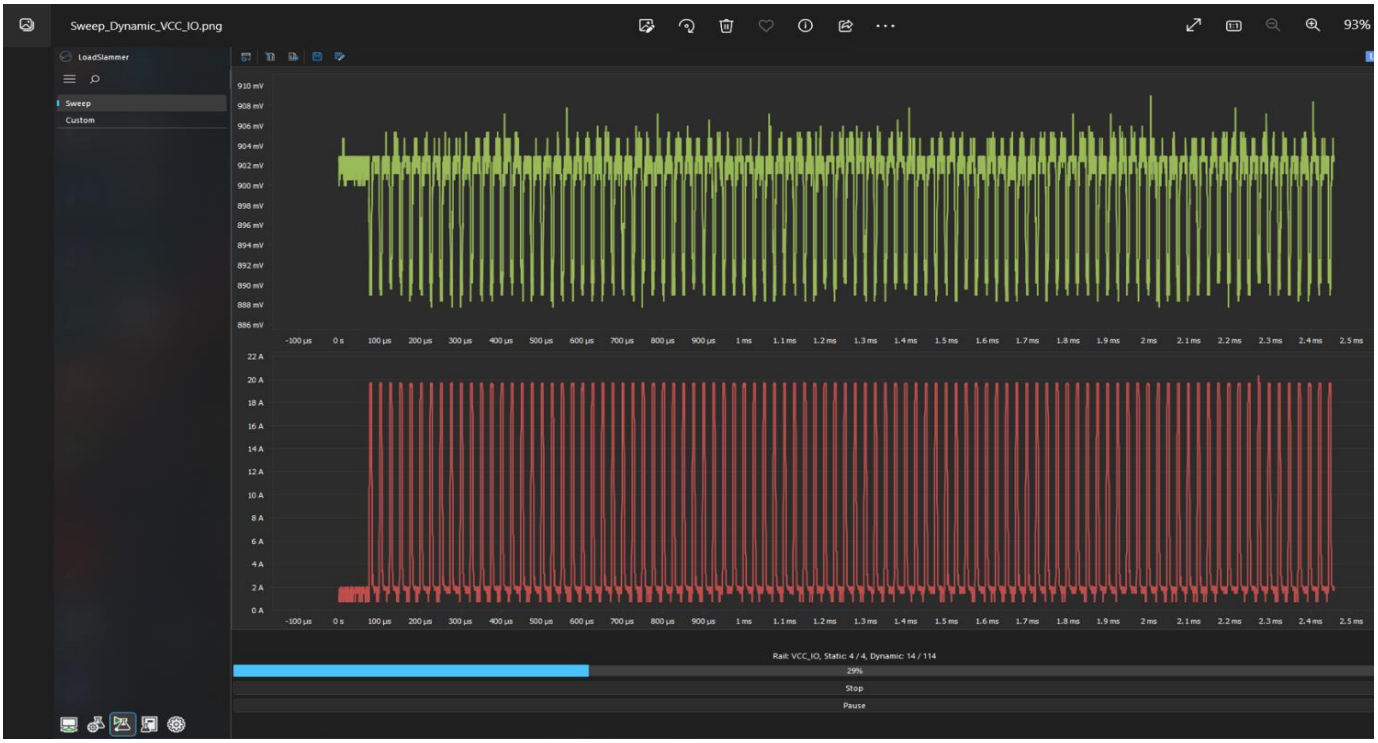
3D Sweep Results

Example VCCINT at 1.12V



Automation – Static & Dynamic Sweep Testing

example shows 4 static, 114 dynamic tests on VCCINT rail



Automated – Report Generation

AMD XILINX

Summary

	Pass	Borderline	Fail	Total
VCCINT	118	0	0	118
VCC_IO	118	0	0	118
VCC_SOC	118	0	0	118
VGTY_AVTT	118	0	0	118
Summary Total	100%	0%	0%	472

Test Settings

VCCINT

Tolerance Settings:

Nominal	DC Range	Min AC	MaxAC
VID - (IDD * LL_SLOPE)	Nominal ± 0.02	VID - (EDC * LL_SLOPE) - 0.11	VID +

Marginal Range for Max: 10 %

Marginal Range for Min: 10 %

Load Line Slope: 400 µΩ

Dynamic Load Settings:

EDC:	190 A
Max Load Step:	190 A
Max Load Release:	190 A
Duration:	100 ms

Static Load Settings:

Min Current:	0 A
Max Current:	190 A
Step Current:	47.5 A
Duration:	5 s

Max AC: 1.10 V Min AC: 0.70 V Load Line Slope: 400 µΩ

Waveform Analysis:

Frequency: 1 kHz Duty Cycle: 25 % EDC: 190 A

Load Step: 190 A Load Release: 190 A Duration: 100 ms

Summary Report: VC1902-FD - Group A

Report Created By: Roger
Created On: 1/20/2023 4:59:12 PM
Board Serial Number: 0F4043H Bench: 01

GUI Version: 1.0.0.0 Windows Version: Microsoft Windows NT 10.0.22000.0

Controller: LSP_AD SN: LSP_AD-C56ACEED
HW Revision Number: 0 Software Revision: 8/17/2022 8:40:44 PM

Adapter: 0
Revision: 4

Dynamic Analysis:

Rail Name: VCCINT **VID:** 0 V **Nominal Voltage:** 0.90 V

Max AC: 1.10 V **Min AC:** 0.70 V **Load Line Slope:** 400 µΩ

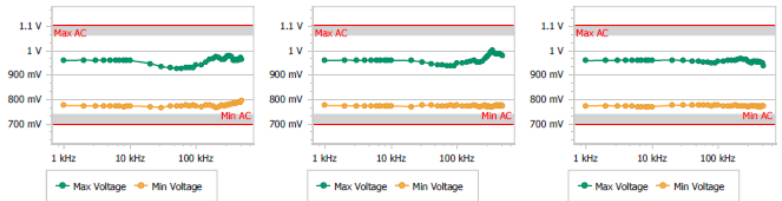
Duty 75 %			
Frequency	RMS	Min	Max
1 kHz	841.3 mV	773.5 mV	959.1 mV
2 kHz	841.8 mV	774.1 mV	959.7 mV
3 kHz	844.2 mV	773.5 mV	960.3 mV
4 kHz	843.6 mV	773.5 mV	960.9 mV
5 kHz	844.5 mV	772.3 mV	959.7 mV
6 kHz	844.4 mV	771.1 mV	960.9 mV
7 kHz	844.1 mV	770.5 mV	960.9 mV
8 kHz	844.8 mV	770.5 mV	960.9 mV
9 kHz	844.5 mV	770.5 mV	959.7 mV
10 kHz	844.7 mV	770.5 mV	959.7 mV
20 kHz	845.5 mV	775.3 mV	961.5 mV
30 kHz	846.4 mV	775.9 mV	959.7 mV
40 kHz	847.2 mV	775.3 mV	957.3 mV
50 kHz	846.4 mV	775.9 mV	955.4 mV
60 kHz	847.4 mV	775.3 mV	951.8 mV
70 kHz	847.8 mV	775.3 mV	951.8 mV

Dynamic Analysis:

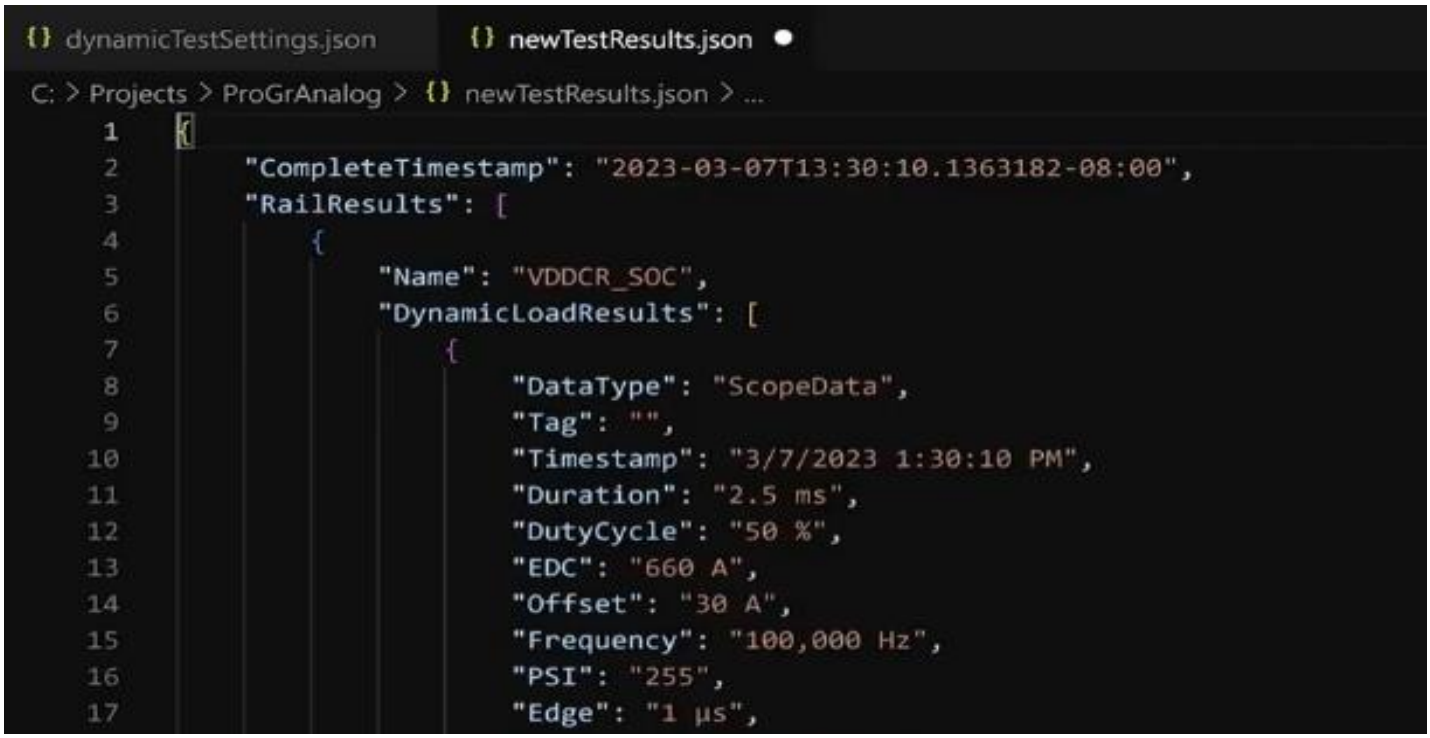
Rail Name: VCCINT **VID:** 0 V **Nominal Voltage:** 0.90 V

Max AC: 1.10 V **Min AC:** 0.70 V **Load Line Slope:** 400 µΩ

Duty = 25% Duty = 50% Duty = 75%



API Support – CLI for configuring and running tests.



Availability

AMD Xilinx part number	ProGrAnalog part number
XCVC1902-XXXX-VSVA2197	FFED-VC1902-VSVA2197

ECN: 3B993

HTS Code: 8471.80.1000

Visit us at:
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