# Technical Report

## J-Testr Technical Overview

### Introduction

The J-Testr test system is constructed of the below elements:

- Mechanics
  - Main Enclosure and lid
  - Base Plate
  - UUT Mounting Plate (Optional Usage)
- External Power supply
- Motherboard
- Peripheral Cards
- UUT Interposer Card

The J-Test System has only two connections, one for the external power and one to the external JTAG software system such as the XJTAG XJLINK2.

### Mechanics

The mechanics of the J-Testr system have been designed for maximum flexibility and provides a compact platform to build a JTAG based test system.

#### *Main Enclosure and lid*

Inside the main enclosure the motherboard, peripheral cards and cooling fans are situated.

The top of the main enclosure has multiple fixing points to mount the UUT interposer via standard 3mm threaded 14mm high standoffs

The main enclosure uses 3mm bottom mounting points to allow fixing of the flat sheet metal lid, these same mounting points also enable simple fixing of the enclosure inside of 'bed of nail' rigs when required.

#### *Base Plate*

The base plate lifts the main enclosure to a suitable working height and provides the ability to slant the UUT toward the operator for more convenient operation. Space underneath the base plate has been designed to store the external PSU and system cables whilst in storage.

#### *UUT Mounting Plate*

The UUT Mounting plate is designed to provide a clean flat surface area for the UUT to be mounted. The UUT can either be mounted directly to the interposer with connectors or via cables using the spaces at all sides that give easy cabling access to the Interposer.

### External Power supply

For safety requirements and convenience the J-Testr system is powered by an external 'Bulk' 250W isolated power supply. The external supply can be either a 24V 10A or 48V 5A supply depending of the power requirement of the UUT as below:

- UUT 2.5V to 15V* -> 24V Input
- UUT 5V to 30V* -> 48V Input

*Note – Other voltages available on requests

## Motherboard

The motherboard is the heart of the system and provides all the power, thermal management and communications to the whole test system. The motherboard has a dedicated JTAG TAP input to convert the incoming JTAG bus to the internal system high speed bus architecture.

The motherboard has 8 identical peripheral slots, split into two banks of four, for the fitting of stimulation peripherals as per the customer's system requirements. Each peripheral slot has power, high speed bus and JTAG TAP connections to the external JTAG system

The motherboard also provides programmable control for the system fans for thermal management of the system

## Peripheral Cards

The Peripheral Cards provide stimulation features to the UUT via the UUT Interposer. The unique mechanical design of the Peripheral Cards allows direct plugging of to the Motherboard and the UUT interposer in one swift action without any cabling.

There are several standard featured peripheral cards that offer functions such as Power, ADC, DAC, IO, Timing and Loads. A development peripheral card is also available that allows users to design their own stimulation peripherals easy and efficiently.

Each peripheral card has an electronic Tag for software identification plus a mechanical keying system to avoid peripherals being plugged into the incorrect 'slot'.

## UUT Interposer Card

The Interposer Card is custom per UUT to be tested and is designed by the customer or via Eigerdesign using their consultancy service.

The Interposer is used to route stimulation signals from the peripheral cards to the UUT but can also be used to mount custom electronics to assist with the testing. All mechanical mounting data, including peripheral keying information, and connector pin-outs are provided to the customer to make the design process simple.

A checking service, if required, is offered to customer to make sure the mechanical mounting positions are correct before committing to the PCB manufacture.

## Design Process Block Diagram