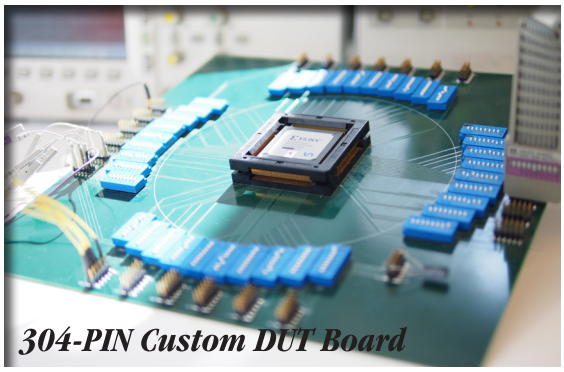
Signature Services - FPGAs

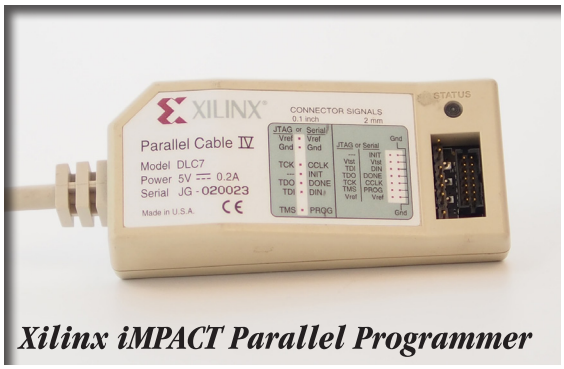
Field-programmable gate arrays (FPGA) are our specialty at AAA – we test a complete assortment of Altera, Lattice and Xilinx products and provide a variety of FPGA test and certification services for all of your project requirements. For legacy products such as the XC3000 family, early Spartan devices, and current products such as the Virtex and Kintex Ultrascale, AAA is your one-stop shop for Xilinx FPGA testing.



304-PIN Custom DUT Board

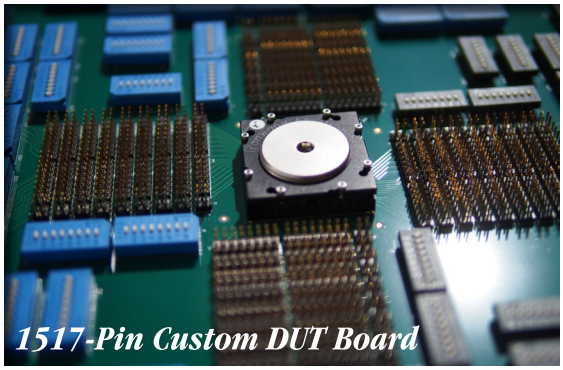
FPGA Test Expertise

Field Programmable Gate Arrays (FPGA), especially the mature legacy products, are mission critical elements to a host of key military, transportation, medical and aviation industry systems that require 100% functional verification from the minute the part is powered up. AAA engineers consistently develop the industry's most comprehensive FPGA test plans to make sure the parts work as expected – every time.



Xilinx iMPACT Parallel Programmer

Our facility is an ISO/IEC 17025 accredited independent test lab staffed with engineers from the semiconductor industry. FPGA services include all aspects of counterfeit detection requirements for AS6081 Level A Inspections, such as chemical, visual and physical analysis as well as X-Ray, XRF, CSAM and decapsulation services. Best of all, AAA provides certified FPGA test results that document the device performance at the temperature or speed you need.



1517-Pin Custom DUT Board

Put AAA's FPGA testing expertise to work for you.

FPGA Test services available from AAA include:

- Full AC/DC testing using clocked test vectors
- Speed certification
- Temperature testing from: -70°C to 225°C
- Wide range of test fixtures – from 8 to 1517 pins
- FPGA authentication using IDCODE verification
- Erase, program and blank check of FPGAs
- Environmental testing and burn-in
- Failure analysis
- Test standards include:
  - MIL-STD-750
  - MIL-PRF-19500
  - MIL-PRF-38535
  - MIL-STD-202
  - AS6081
  - QTSL

Altera Stratix II DUT Board

FPGAs have been AAA's specialty since our startup in 2009 – a result of previous semiconductor industry experience at Xilinx, Cypress Semiconductor, and Broadcom. The team developed test methods that correctly validate FPGAs, PLDs and PALs using approved software from companies such as Xilinx, Altera and Lattice, among others, to generate clocked test vectors that verify both the speed and functionality of these devices as well as providing IDCODE Verification – the only 100% authentication method available in the industry.

Speed Certification: A comprehensive variety of chip design platform tools available from Xilinx such as ISE, XACT and Foundation and from Altera such as Quartus II, and MAX+PLUS II BASELINE are used to generate test vectors for FPGAs and CPLDs. The results: high fault coverage testability assuring maximum functionality certified to meet the speeds specified by the manufacturer. AAA Test Lab will verify your devices operate at the specified temperature, speed, and voltage ratings per device marking and part number ordered. AC testing at temperature is often used for Automotive, Military and Medical applications.

Up-screening: When Industrial (-40°C to 85°C) or higher-grade product is required but only Commercial (0°C to 70°C) devices are available, AAA can up-screen the devices to the desired temperature range and certify conforming product to the device parameters at the appropriate level. The result – Commercial grade devices that pass testing, can be certified as Industrial, Automotive, Medical or Military Grade Device such as JANTX Semiconductor components.

Testing to 1517 Pins: Test fixtures for FPGAs from 8 to 1517 pins and everything in between – the result of working with numerous clients with diverse testing needs. We have over 250 test sockets in-house to save time and money when developing your test plan and performing the testing. Choose from the industry's most comprehensive array of package sockets, as well as multiple parametric testers developed to analyze individual pins for all other package types.

FPGA Authentication: The manufacturer's approved chip design platform tools are used to run IDCODE Verification and authenticate devices equipped with this feature. The test results of a successful FPGA chip IDCODE Verification displays specific information about the details of the chip including the part number and revision level – information that is seldom visible when looking at a die.

```
Boundary-scan chain validated successfully.
'1': IDCODE is '00100000011000111000000010010011'
'1': IDCODE is '20638093' (in hex).
'1': : Manufacturer's ID = Xilinx xcv800, Version : 2
```

This "Electronic De-cap", can eliminate the need to destroy an expensive FPGA part to verify authenticity as part of any counterfeit detection testing requirements. Best of all, this chip verification is performed on 100% of the parts so you have complete assurance that all parts are authentic, not just the one that was de-capped. Ask your test house if they offer IDCODE Verification the next time you need FPGAs tested. It could save you money and guarantee all your parts are authentic.

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