

CCS Product Suite

PEER Group® CCS test products are the only software applications focused solely on the testing of semiconductor equipment. The product suite includes the industry's widely-accepted testing application, CCS Envoy™ and the industry's most rigorous test plans, CCS Test™. Only CCS test products provide the test technology, SEMI standards expertise and independence required to provide the lowest level of testing, compliance testing to SEMI standards. CCS Envoy is being used for SEMI standards compliance testing to the GEM and 300mm SEMI standards.

CCS Envoy Testing

CCS Envoy is an automated and repeatable test environment that is based on a SQL database. With CCS Envoy you analyze test results by generating reports against the SQL database instead of pouring through a log file of SECS-II messages. CCS Envoy executes CCS Test test plans, which are unlike common test scripts that are highly dependent on the expertise of the engineer that writes and executes the scripts, and then interprets the results. CCS Test plans guarantee repeatable results.

CCS Test test plans execute within CCS Envoy. Users load any number of test plans into CCS Envoy for an automated test session. CCS Tests off-the-shelf test plans include:

- ▶ SEMI 200mm and 300mm communication standards
- ▶ Industry standard 300mm operational scenarios (iSematech, Selete)

Who Tests the Test Plans?

We do! It is the combination of the SQA-level testing provided by CCS Envoy and the rigorous development of CCS Test test plans that enables CCS Envoy to be used for certification and regression testing. This is why many fabs are contracting PEER Group to produce their factory specific test plans.

Standards Testing Differences

The differences between testing 200mm and 300mm equipment implementations with regard to the communications interface is substantial. The testing of 200mm implementations focused primarily on the SEMI standards E4-SECS-I and E30-GEM. For 300mm implementations, the testing will focus on several more standards including E30-GEM, E37.1-HSMS-SS, E40-PM, E84-EPIO, E87-CMS, E90-STC and E94-CJM.

In addition, the 300mm factories are attempting, as much as possible, to standardize the operational aspects of their factories within the context of these standards. Previously, in 200mm implementations, each factory developed its own operational scenarios or methods. In this case, each supplier must meet the various operational criteria for each factory with little or no hope of duplicate implementation. With 300mm, having standard operational scenarios will provide each equipment supplier and each IC manufacturer with the ability to either deliver or accept consistent equipment factory automation interfaces.

300mm Testing Strategy

Due to the complexity of the 300mm standards and operational environment, a test methodology that ensures a consistent and incremental approach to communication interface testing is a must. PEER Group recommends the following test execution sequences for 300mm and AMHS equipment. This test sequence is intended to find issues at the lower levels prior to testing the more complex operational scenarios. The test engineer would start with the lowest level E37.1 and E84 test plans, and finish with the 300mm Operational and Factory-specific test plans.

- ▶ E37 HSMS-SS Unit Test
- ▶ E84 Enhanced PIO Unit Test
- ▶ E30 GEM Unit Test
- ▶ E87 Carrier Management Unit Test

- ▶ E40 Process Management Unit Test
- ▶ E94 Control Job Management Unit Test
- ▶ E90 Substrate Tracking Unit Test
- ▶ 300mm Operational Test (iSematech or Selete Operational Scenarios)

Benefits to Using PEER Group's CCS Product Suite for Testing

Many fabs and suppliers have standardized the testing of their factory automation interfaces using CCS Envoy. They are realizing a number of significant advantages including:

- ▶ Thorough and complete testing to SEMI standards
- ▶ Cost effective when compared to developing and maintaining internal SEMI standards expertise and testing scripts
- ▶ Reduced development time by having the test plans ready as host interfaces are developed
- ▶ Reduced test cycle time through automated testing and database analysis of results
- ▶ Factory automation interfaces that meet IC manufacturers' requirements and reduce final acceptance risks

About PEER Group

PEER Group provides innovative factory automation software solutions and consulting services to the semiconductor, photovoltaic, and electronics industries. The world's best manufacturing companies turn to PEER Group to solve their most challenging equipment automation, data management and process control problems. With more than 100,000 licenses shipped, we are the world's leading supplier of equipment connectivity and testing products to high-technology manufacturers and their equipment suppliers. Our innovative and reliable products and services help lower the cost of automation for high-volume manufacturers and their equipment suppliers.

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