

Testing Highly Integrated Wireless Circuits and Systems with Low Cost Tester: How to Overcome the Challenge?

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Position Paper

Today's wireless communication products become more complex and more integrated. The low cost prices paid by the consumer for wireless phones and the competitive market imposed a tremendous pressure to have low cost RF ICs. The test cost becomes almost the main factor determining profit margin. To economically test high volumes of integrated RF ICs at a fraction of the cost of the IC we have to define a complete new test strategy. Buying new ATEs or upgrading testers for each category of application is an expensive operation and increases test cost.

Depending on the complexity of the RFICs, two different platforms can be used for test, either a rack and stack bench equipment connected to a PC or using a 2M\$ Automatic Test Equipment.

Each platform has each advantage and inconvenient. The rack and stack is a low cost solution but limited to few measurements and can only be adapted to the very low integrated devices. With this low cost solution the risk to impact time to volume is high and it is hard to keep an efficient maintenance procedure of the equipments while in production.

The expensive ATE platform is very flexible and adequate for complex devices but costly. The upgrade cost is high enough if we like to cover a wide range of applications. In this panel we will debate the best strategy in order to keep the test cost a small fraction of the total RF IC cost. This panelist will focus on how the design for test at the board level is the key solution to cover a wide range of applications in the same test platform. It allows us measuring parameters impossible to measure with existing ATE. By using design for test at board level we avoid modification of the RF chip and confrontation with the designer. It is flexible and application or product oriented. The design for test can even allows us testing RF devices in a mixed signal or a digital tester.