RF CORE 360 TEST SYSTEMS

(DC TO 67GHZ)

The CORE 360 System Philosophy

Unparalleled Performance. Unmatched Flexibility.

At Test System Solutions, our CORE 360 system philosophy has enabled us to provide customers with the cutting-edge technology and proven performance normally found only in expensive, closed, proprietary systems - but with the open architecture, plug-and-play flexibility, and COTS components that give you unbeatable value.

The "CORE" in CORE 360 is an acronym that captures the key principles behind our approach:

Commercial, Off-the-shelf, Reconfigurable, Equipment

- **Commercial, Off-the-shelf (COTS) Components:** Select from the industry's best instrumentation to perfectly meet your specific test needs.
- **Reconfigurable Equipment:** What you choose today will be able to adapt and evolve to handle tomorrow's changing requirements.

Our CORE 360 philosophy delivers all the advantages of a closed proprietary system, plus all the benefits of an open, integrator-built system - without any of the downsides. It guarantees:

- **Complete Openness:** Avoid vendor lock-in and seamlessly integrate with your existing infrastructure.
- **Minimum Component Cost:** Leverage the economies of scale of COTS hardware.
- **Minimum Non-Recurring Engineering (NRE):** Get your system up and running faster with pre-integrated, pre-validated components.
- **Maximum Maturity and Reliability:** Benefit from the proven performance of industry-standard COTS equipment.
- **Unparalleled Support:** Rely on our team of experts to provide world-class support for every aspect of your system.

With the CORE 360 philosophy, you get the best of both worlds: the power and performance of a closed, proprietary system at a fraction of the cost. It's the ultimate in flexibility, capability, and value.

RF CORE 360 Test Software

At the heart of the RF CORE 360 platform is our state-of-the-art test software, built on a modular, flexible framework that provides unparalleled capabilities to streamline your RF device testing. The RF CORE 360 Test Software leverages the powerful TestPoint framework by Testeract, delivering a simple, efficient development environment with tools for rapid debugging and lower long-term maintenance costs.

RF CORE 360 – DVT1

This system is a superset of the RF CORE 360 Platform, containing all the specialized equipment and capabilities needed to thoroughly test your RF devices during the critical DVT phase. Designed for maximum flexibility and configurability, this system can be easily configured with the precise test equipment required for your specific validation needs. And if your testing requirements ever change or expand, it's simple to add optional packages to enhance the system's capabilities.

RF CORE 360 - PVT1

This system is a specialized, cost-effective variant of our powerful RF CORE 360 platform, optimized for the Production Validation Testing (PVT) phase of your RF device development. By leveraging a Vector Signal Analyzer (VSA) and Vector Signal Generator (VSG) as the core test instruments, this system delivers comprehensive validation capabilities tailored for production-scale testing. Engineered for PVT, this system is the ideal solution for thoroughly validating your RF devices as they transition from design to production.

RF CORE 360 – PVT2

This system is a cost-effective variant of our powerful RF CORE 360 platform, designed specifically for the Production Validation Testing (PVT) phase of your RF device development. By leveraging a Vector Network Analyzer (VNA) as the primary test instrument, this system delivers comprehensive validation capabilities at an attractive price point. Optimized for PVT, this system is the ideal solution for validating your RF devices as they transition from design to production.

COTS EQUIPMENT OPTIONS
- Vector Network Analyzer
- Vector Signal Generator
- Vector Signal Analyzer
- RF Power Meter
- RF Attenuator
- RF Switching System
- DC Power Supply
- Oscilloscope

TEST INTERFACE OPTIONS
- Custom Test Panel
- COTS Mass Interconnect
- DUT Holding Fixture
- Self-test Module
- Self-test Interface Test Adapter
- DUT Interface Test Adapter

OPTIONAL PACKAGES
- Specific Protocols
- Custom Test Cases
- Custom Calibration
- Custom Self-test
- Custom GUIs
- Custom Test Fixtures
- ESS Tests
- Special Instrumentation

SOFTWARE ARCHITECTURE
- Robust Framework
- Modular Deployment
- Scalable Architecture
- Maintainable Code Base
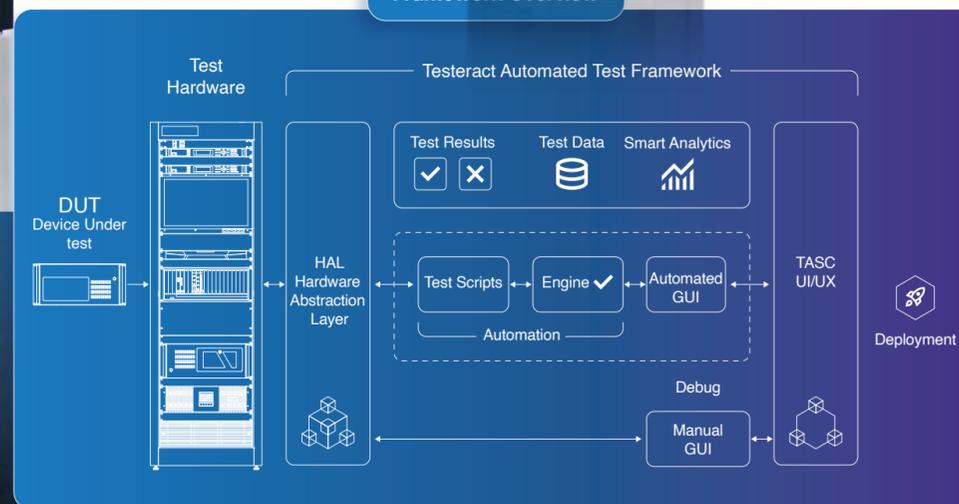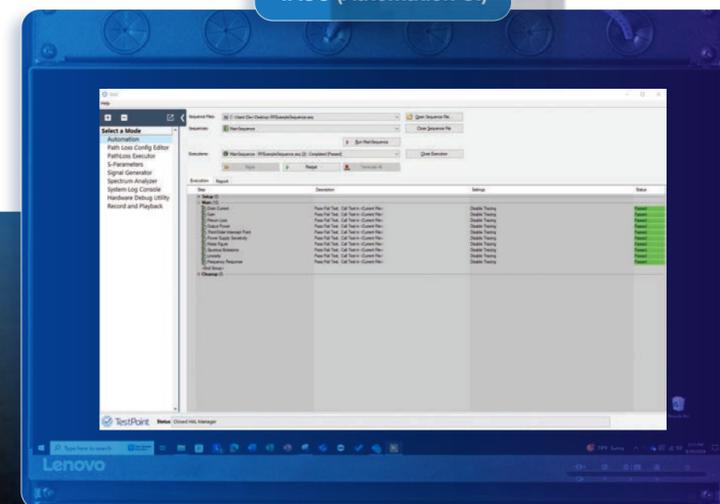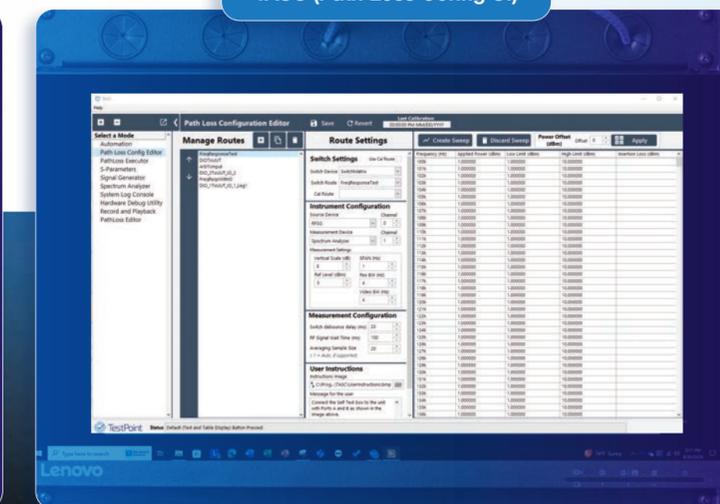- Unparalleled Documentation
- Professional Training

SOFTWARE COMPONENTS
- DUT Testing Module
- Path-Loss Calibration Module
- Self-test Module
- Engineering Debug Module
- Report Generation Module
- Database Logging Module
- Custom Debug UIs

Framework Overview

Test Hardware — Testeract Automated Test Framework

DUT Device Under test — HAL Hardware Abstraction Layer — Test Scripts — Engine — Automated GUI — Automation — TASC UI/UX — Deployment — Test Results — Test Data — Smart Analytics — Debug — Manual GUI

TASC (Automation UI)

TASC (Path Loss Config UI)

Test System Solutions

RF CORE 360 Test Matrix

Test Case	Power Amplifer	LNA	Mixer, Up/Down Converter	Multiplier/Divider	Oscillator	Switch	Isolator	Attenuator	Filter
S-parmeters (S11,S21,S12,S22)	✓	✓	✓	✓		✓	✓	✓	✓
Gain (Inband Spectrum) Flatness	✓	✓	✓	✓		✓	✓	✓	✓
Gain Compression	✓	✓	✓	✓		✓			
Input Return Loss (VSWR)	✓	✓	✓	✓		✓	✓	✓	✓
Output Return Loss (VSWR)	✓	✓	✓	✓		✓	✓	✓	✓
Noise Figure (NF)	✓	✓	✓	✓					
3rd order Intercept (IP3) / IMD	✓	✓	✓	✓		✓			✓
Isolation			✓			✓	✓		
Conversion Loss			✓	✓					
Phase and Group Delay	✓	✓	✓	✓		✓			✓
Harmonics	✓	✓	✓	✓	✓				
Spurious Emissions	✓	✓	✓	✓	✓				
Phase Noise (Absolute)					✓				
Phase Noise (Additive)	✓	✓	✓			✓			
Output Power Level	✓	✓	✓	✓	✓				
Frequency Accuracy					✓				
DC Voltage/Current	✓	✓	✓	✓	✓				
Transient Response Time	✓	✓	✓	✓	✓	✓			

Tailored to Your Evolving Test Requirements

The comprehensive RF CORE 360 Test Matrix shown above outlines the wide range of test cases available in our standard test software suite. However, we understand that your testing needs may evolve over time or require specialized capabilities beyond what's included.
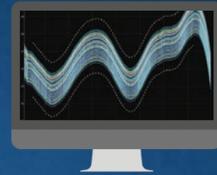
If your requirements call for additional testing functionality, we've got you covered. Our team can provide training to empower your engineering staff to develop new test cases

using the flexible TestPoint framework. Alternatively, we can offer software engineering support on a consulting basis to design and implement custom test solutions tailored to your specific needs.

No matter how your testing requirements change, the RF CORE 360 Test Software, backed by our expert support, will ensure you have the tools and capabilities to keep pace. It's a future-proof solution to power your RF device testing now and into the years ahead.
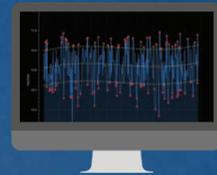

DATA ANALYTICS - FOR RF DESIGN AND PRODUCTION VERIFICATION

RF designs generate large amounts of multi-dimensional data across frequency, power, temperature, and time. Making sense of this data is beyond the capabilities of dashboards and static reports.
Effective RF verification, during design or production, requires interactive exploration, automated analysis, and intelligent algorithms that reveal patterns, outliers, and anomalies - to identify root causes and certify conformance.
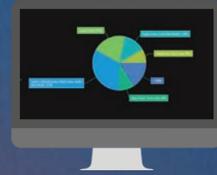
RF DATA INSIGHTS

Overlay RF Plots to correlate and find out-of-family data. View S-Parameter data in Smith charts. Group for side-by-side views by any field (serial, phase,station etc.) to pinpoint root cause.

OUTLIERS AND FAILURE ANALYSIS

Use regression lines, control lines, and spec masks to find outliers. Integrated disposition allows the engineer to mark data accepted or rejected, and to add notes and custom labels on data.

YIELD AND LIMIT CHECKING

Adjust limits and assess yield dynamically. Hypotheses testing, Binning, and Diagnostic trees allow you to find fail reasons, not just failures. Multi-use HW designs require varying specs for the same product.

AUTOMATION

Automate any data analysis session to create summary reports daily, weekly etc. Get push notifications via email on detected faults/failures.

- Web Application
- Metrics SPC Reports
- No-Schema Dynamic DB
- Custom Plugins

RF CORE 360 Test Platform

ACCELERATE PRODUCT LAUNCH

Drastically reduce time, cost, and risk of test automation. Our RF CORE platform slashes development efforts by up to 80% - get to market faster than ever.

Solution Partner

KEYSIGHT

Test System Solutions

www.tss-inc.com