Spirent **Live2Lab**®

Virtual Drive Test-Conversion Tool

Live2Lab® Virtual Drive Test-Conversion Tool (Live2Lab VDT-CT) is a powerful solution that automatically converts RF data collected during drive testing and plays it back in the lab. The ability to replicate field data in the lab reduces the expense in drive testing and serves as a core component for accurately measuring the user experience in the lab.

Applications

- Device benchmarking and comparison
- Research and development
- Design verification
- Regression testing
- Device design
- User experience measurement

With the continued rollout of mobile broadband services enabled by technologies such as LTE and LTE-Advanced, accurate measurement of the user experience is more complex and critical than ever before. In mobile device development and deployment, engineers require lab test solutions that enable replication of real-world conditions and quantifiable metrics that are predictive of the actual end-user experience.

Spirent's Live2Lab® Virtual Drive Test-Conversion Tool (Live2Lab VDT-CT) is a tool that works in conjunction with Spirent's Vertex™, VR5, and SR5500 channel emulators. It imports drive logs captured in the field and automates the conversion process without requiring any additional software effort. The resultant data can be easily stored and played back in the lab to allow troubleshooting for issues found in the field. Live2Lab VDT-CT can be integrated with service experience measurement systems in a lab environment or a live network – enabling correlation of metrics between field and lab, a necessity for evaluating the mobile experience.
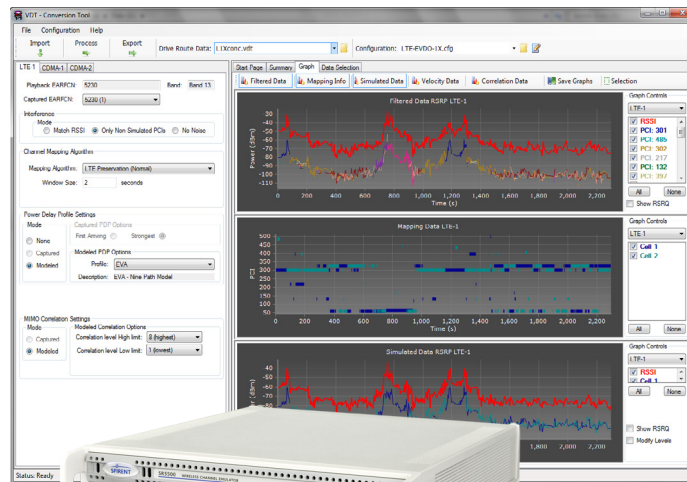
Live2Lab VDT-CT corrects for missing errors in captured data and can model additional MIMO and diversity conditions

Live2Lab VDT-CT works in conjunction with Spirent Vertex™, VR5, and SR5500 channel emulators

Spirent **Live2Lab**®
Virtual Drive Test-Conversion Tool

Key features

- Supports all major mobile wireless technologies on all bands, including Wi-Fi

- Supports high-speed train and air applications

- Supports QXDM logging in native format

- Hybrid logging supports simultaneous scanner and phone logging (on up to 3 devices) to enhance data collection for LTE, CDMA, and WCDMA

- All data can be graphically displayed to allow easy and intuitive analysis

- Supports multi-system processing

- Enhanced Noise Simulation provides fine-tuned noise level control

Benefits

- **Reduced development costs.** Minimize the need for expensive drive testing.

- **Reduced time-to-market.** Fewer physical drive tests eases the strain of tight deployment schedules. Fix more problems quickly in the lab rather than in the field.

- **Enhanced product quality.** An absolutely repeatable drive test on a bench top. Quickly isolate RF issues that might otherwise go unnoticed until after deployment.

- **Simplified, efficient testing.** Seamless integration with Spirent's Vertex or VR5 and XD5 Multilink Duplexer reduces necessary cabling and increases testing capacity.

Replaying the live network in the lab

Live2Lab VDT-CT takes drive logs captured in the field and converts and maps them onto the lab test setup for realistic playback. It supports lab connections of up to 40 RF channels, which can be configured to:

- Unidirectional 2x2 downlink for 20 cells
- Bidirectional 2x2 for 10 cells
- Bidirectional (FDD or TDD) SISO for 20 cells
- Bidirectional 4x2 for 5 cells
- Unidirectional 4x2 for 10 cells
- Unidirectional 2x8
- Hybrid 2x2/1x4
- Unidirectional Dual 2x2 + Quad 1x2

Live2Lab VDT-CT supports the processing of all major mobile technologies, including:

- FDD LTE, TD-LTE
- HSPA+, HSDPA
- EDGE, GPRS, GSM
- EV-DO, cdma2000
- 1X TD-SCDMA
- Wi-Fi 802.11n/ac 2.4GHz, and 5GHz

Users can capture the drive logs in a variety of popular logging tools:

- QXDM in ISF format
- JDSU (stand-alone or with up to 3 UEs)
- Anite Nemo
- Accuver XCAL
- Transcom
- Rohde & Schwarz
- PCTEL

After they are imported, multiple logs can be concatenated or merged to generate more sophisticated logs for conversion.

In a drive route, users could see more than a hundred cells. It is unlikely most of the time that the lab setup can match the number of cells in the field. However, engineers still want the realistic cell dynamics as seen by the UE in the field for lab testing. Live2Lab VDT-CT makes it possible by introducing a number of mapping algorithms to suit different situations:

- Serving cell preservation in normal and harsh conditions
- Cell Preservation in normal and harsh conditions
- One-to-one mapping of strongest cells or longest appearing cells

High-speed applications

As users move into faster mobility scenarios such as traveling on high speed trains and aircraft, devices are subjected to higher Doppler spreads. Live2Lab VDT-CT has the capability to import and analyze logged data at speeds up to 1620km/hr (1007mph).

Rich and intuitive graphical user interface

In addition to the playback files for the channel emulators, Live2Lab VDT-CT also provides a rich set of graphics for intuitive analysis and verification. It visualizes the mapping process and the dynamics of cells during the drive as seen by the logging device and the device under test.

The graphical interface includes the following:

- Composite power graphics of multi-technologies for inter-RAT and handover analysis

- Filtered data graph for drive log data visualization

- Mapping data to show the results of cell mapping algorithm

- Geographic maps with many standard Google Map controls for drive route visualization and selection

- Selective call event identifiers (such as drops and handovers) for adding or removing instances from the drive test route
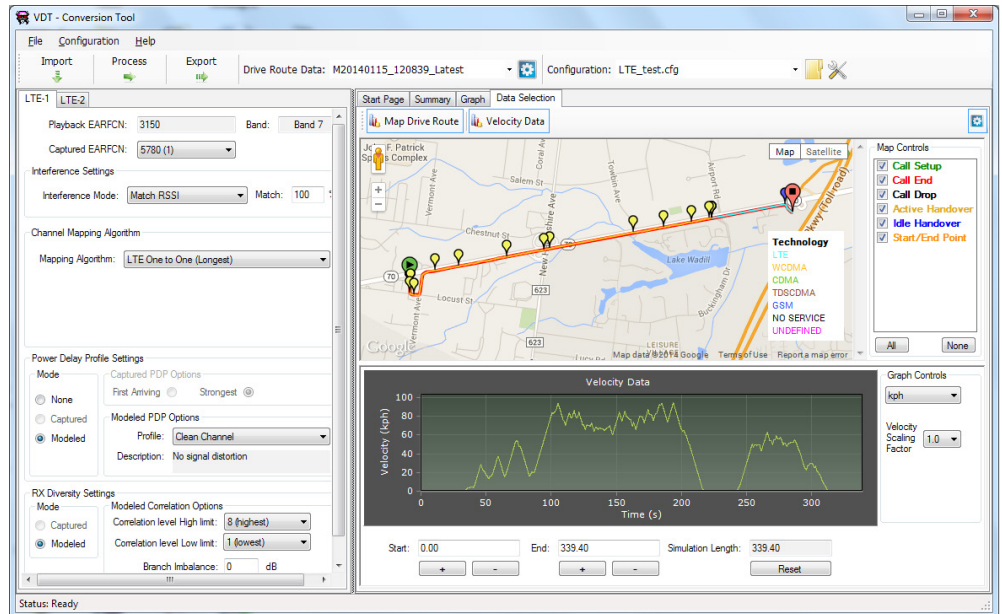
Live2Lab VDT-CT shows events like call origination, handover (idle and active), call drop, and throughput on the map along the route
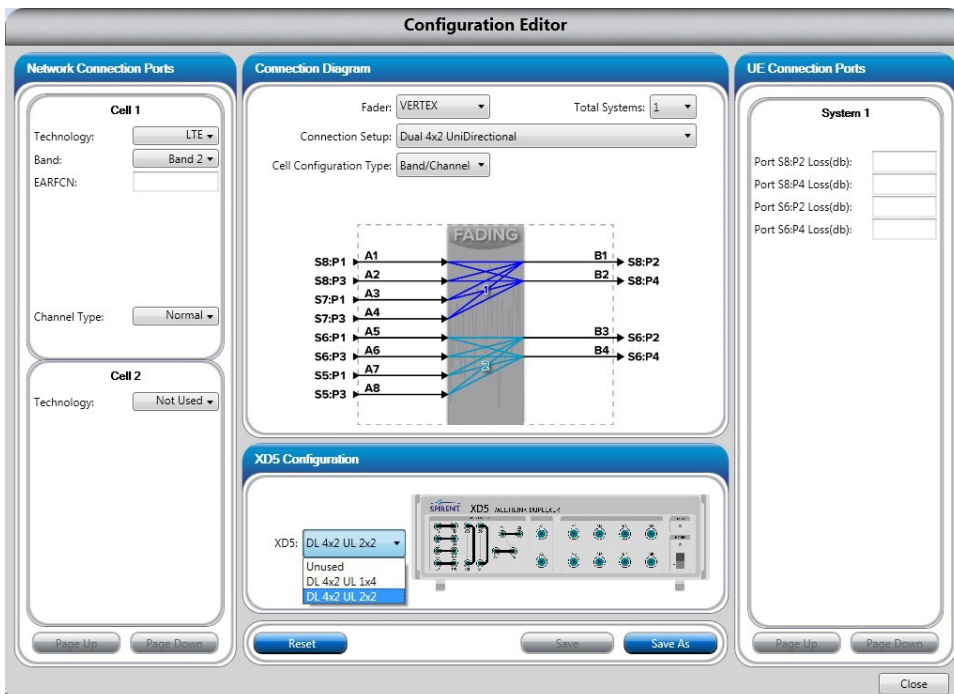
Simplified connections and greater capacity

Spirent's XD5 Multilink Duplexer allows a seamless integration with Vertex or VR5 that drastically simplifies cable connections and increases cell testing capacity. Live2Lab VDT- CT software detects the XD5 and displays its configuration editor, which allows XD5 provisioning and guidance for the cabling necessary for the chosen drive test. The XD5 eliminates external duplexers, splitters, and combiners, and reduces external cabling by almost half. It has a flexible architecture to support a wide variety of drive test scenarios with configurations of up to 16 SISO or eight 2x2 MIMO eNodeBs. See the XD5 datasheet for more information.

XD5 provisioning via Live2Lab VDT-CT installed on Spirent's Vertex channel emulator

Spirent Live2Lab®
Virtual Drive Test-Conversion Tool

SPIRENT®

Spirent services

Spirent Global Services provides a variety of professional services, support services and education services—all focused on helping customers meet their complex testing and service assurance requirements. For more information, visit the Global Services website at www.spirent.com or contact your Spirent sales representative.

Live2Lab VDT-CT integration provides end-to-end performance testing in the lab

Live2Lab VDT-CT is a key component in Spirent's end-to-end solution for user experience performance testing in the lab environment. Live2Lab VDT-CT maps the RF data captured from the live network to Spirent's Vertex, VR5, or SR5500 Spatial Channel Emulator, which then emulates the RF environment in the lab. Spirent's channel emulators can connect directly to your lab-based network infrastructure or to one of Spirent's network emulators. And for a more comprehensive solution, Spirent's service experience measurement systems can be integrated to provide voice/video quality, call performance, data speed, battery consumption, and multi-service performance metrics, enabling correlation between field and lab tests and accurate evaluation of the user experience.

Ordering Information

Part Number	Description
VDT-CT	A Single User License for Live2Lab Virtual Drive Test - Conversion Tool
VR5-VDT-CT-PLAYBACK	Playback License for VR5
VCE6-VDT-CT-PLAYBACK	Playback License for Vertex
SR5500-VDT-CT-PLAYBACK	Playback License for SR5500
VDT-CT-XD5	XD5 Integration License
VDT-CT-ASA	Live2Lab VDT-CT Annual Service Agreement
VDT-CT-LTE	LTE Technology Enablement
VDT-CT-UMTS	WCDMA & GSM Technology Enablement
VDT-CT-CDMA	CDMA Technology Enablement
VDT-CT-TDSCDMA	TD-SCDMA Technology Enablement
VDT-CT-LTEUMTS	LTE & UMTS Technology Enablement
VDT-CT-LTECDMA	LTE & CDMA Technology Enablement
VDT-CT-WIFI	WiFi Technology Enablement
VDT-CT-QXDM	QXDM ISF Log Data Format Conversion
VDT-CT-JDSU	JDSU Scanner Data Format Conversion
VDT-CT-JDSU-MULTI-UE	JDSU Scanner Data Format Conversion with up to 3 UEs
VDT-CT-ACCV	Accuver Log Data Format Conversion
VDT-CT-NEMO	Anite Nemo Scanner Data Format Conversion
VDC-CT-PCTEL	PCTEL Scanner Data Format Conversion
VDT-CT-TRANSCOM	Transcom Scanner Data Format Conversion
VDT-CT-ROMES	Rohde & Schwarz TSMW Scanner Data Format Conversion