

For System Design and Platform Testing

Spirent's E2010 Wireless Device Design Tester is the perfect testing platform for developers of LTE UEs. A single hardware platform can be used in every stage of mobile device development.

Applications

Mobile Device Development

- RF/Baseband Design Verification Testing (DVT)
- Radio Protocol DVT
- System-Level DVT
- Chipset Platform DVT

Benefits

- Reduced development time With efficient development and debugging tools for R&D teams, the E2010 reduces overall development time
- Optimize data service capabilities Testing against data and application servers is as simple as plugging into the port... directly, through a LAN, or via the Internet
- Maximize Return on Investment Cost-effective, scalable test platform minimizes long-term spending and brings value to every stage of the product life-cycle... all the way from early-stage development to operator acceptance and deployment

Spirent's E2010 is a state-of-the-art platform that provides a wide range of multi-technology testing scenarios for the device development engineer. Multiple test modes tailor the interfaces and functionality to most efficiently address the task at hand, making this single platform the ideal solution at all stages of the design cycle.

E2010 introduces the world's most advanced Evolved Packet Core (EPC) emulation. This state-machine-based EPC brings realistic IPv4/v6 network-side message responses and timing to the lab...without requiring a single line of script. E2010 boasts multi-cell, capability, integrated MIMO support and purpose-specific interfaces designed to ensure efficiency and optimal testing workflow.



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Key Features

- Powerful purpose-specific applications to support device testing
- System/platform testing
 - The industry's only complete and realistic Evolved Packet Core (EPC) emulation
 - Powerful GUI for easy test scenario creation without script generation or software programming
 - Real IPv6 connections (not just address assignments)
 - Real-time state machine for realistic messaging and message timing
 - Real-time message and event analyzer displays and logs Layer 3 messages
 - Multi-path fading and integrated 2x2 MIMO (options)

Key Facts–Platform

- UL signal capture and in-band measurement capabilities
- Integrated SISO, SIMO, MIMO 2x2, MIMO 4x2
- Multi-cell support
- Integrated fading
- Support for 3GPP LTE bands (380MHz to 3 GHz)
- Support for LTE bandwidths (1 MHz 20 MHz)
- L1-L3 protocol stacks comply with 3GPP Release 10

E2010 for System/Platform DVT

For system-level DVT of UEs or chipset platforms, E2010 integrates a fully developed real-time Evolved Packet Core (EPC) emulation, The result is the industry's only system with realistic connection anchoring points, message timing and complete network-side message realization. This is the same EPC used by network equipment manufacturers to ensure proper operation of network products.

A real-time state machine emulates an entire network for testing mobile devices designed for LTE networks. An intuitive GUI makes it easy to set up network scenarios for adversarial testing, data testing, handover testing, and much more. Message logging and decoding minimizes the time required for analysis and debugging.

E2010 further accelerates LTE device development and debugging with the E2010 Software Development Kit (SDK). The SDK provides deep control of LTE Network Emulation functions and events. With the hundreds of functions and commands available, users can create and run custom tests to meet R&D needs and internal test plans. For rapid test protoyping/development, E2010's Development Library UI offers a clean interface to get your test up and running quickly and efficiently.

Other E2010 modes address RF/baseband development and radio protocol development. Please separate Spirent data sheets for more details.



Intuitive GUI for Fast, Error-Free Setup

- DVT, debugging and testing should not be bottlenecks in achieving your time-to-market goals.
- E2010's graphical software lets you zoom in on low-level parameters without having to pore through manuals or specifications. Designed by engineers for engineers, the GUI's clean interface makes it easy to "dive deep" and control the fine details of emulating a complete network.
- With E2010, details are coded into drop-down boxes and laid out so that the most complex network configuration can be set up in a few minutes, with just a few mouse clicks. Once a configuration has been set, it can be saved and stored for future use.

Real-Time State Machine

E2010 uses a real-time state machine rather than the script-driven simulations common in most conformance testing solutions. Overhead, Layer 2 and Layer 3 messages are delivered with the same timing and with the same real-life responses as a live network.

Never again miss a timing bug because a script-driven state machine wasn't capable of catching it. Never miss a protocol bug because a "call box" or "one-box radio test set" in the lab did not fully implement real-world network/packet core responses.

AirAccess				
File Edit View Instrument Network Call Test Help				*
1 D 📽 🖬 💌 181 81 141 141 141 141 141 141 141				SPIRENT
Network View	Test Configuration		Test Besults	1201042.42200
Dire eNoteB, one BSC, one eAN, one UTRAN, one SERAN	NNE			
			Timestamp Results	
B PDN-GW	21 21 00		16.54.28.375 Logging Framework Init Success 16.56.38.656 Connecting to instruments	
	E ICMPy6		17:01:00.843 Logging Evapework is consected	
HSS	Num of Unsolicited Router Advertisement	1	17:01:21:984. Connection to instruments succeeded. 17:02:06:515. Enable CalProcessing succeeded.	
B MME/S-GW	Router Advertisement interval(Sec)	2	17:02:05:515 Enable CalProcessing succeeded. 17:04:38:421 RRC State: Connected.	
B MMB/S-OW	E Misc		17:04:38:515 EPS Attach Requested	
NodeB1	MME Code MME Group	1	17:04:38:515 ECM State: Connected	
EA.	M-THSI	0x00000001	17:04:38:531 EMM State: Common Procedure Initiated. 17:04:38:875 EPS Authentication succeeded.	
AAA	T3412 Timer Enabled	True	17:04:39:390 S1UEContext Established	
	T 3412 Timer Unit	decihours	17:04:39:390 EMM State: Registered	
B HSGW/PDSN	T3412 Timer Value	9	17:04 39:390 EPS Attach succeeded.	
RNC1	E Network Initiated Detach		17:04:33:390. UE Attached to PDN successfully. 17:13:05:078 Disconnecting from instruments	
B BSC1	Detach Type	Reattach Required	17:13.05:578 Disconnected Iron instruments.	
MSC1	Include Detach Cause	No	17:13:24:500 Connecting to instruments	
Provi	Detach Cause Code	3	1	
BTS1	NAS Security Enabled	True	1	
EA	NAS Security Enabled NAS Integrity Algorithm	Beserved	- 1	
e eAN	NAS Ciphering Algorithm	Nul		
- And	NAS Authentication Enabled	True		
ave evbo	NAS Authentication Algorithm	Test	1	
B- CERAN (SIC) B- CERAN (SIC) B- CERAN (SIC) B- CERAN (SIC)	NAS Authenisation Enabled		-	
Message Analyzer	ļ	Apply Changes Discard Changes		
LTE CDMA Enotog Al				
Mog # Time Stamp Frequency Channel RRC Message NAS	Message			
Ready				
		<i>c</i>		

Drop-down boxes and intuitive layout make configuration fast, clean, and efficient.

Attach Event	
Response	Default Signaling
Additional Delay Before Response	Default Signaling
Repetition	No Response
Attach Reject Cause Code	Attach Reject
Authentication Event	
Response	Default Signaling
Additional Delay Before Response	0
Repetition	Infinity
IPv6 Router Solicitation Event	
Response	Default Signaling
Additional Delay Before Response	0
Repetition	Infinity
RRC Connection Event	
Response	DefaultSignaling
Additional Delay Before Response	
Repetition	0
RRC Connection Reject Wait Time	10
Response Attach Event Response	

E2010 Enables custom call processing for instant adversarial testing and "what if" test cases. This feature alone can shave weeks off your time-to-market schedule, and in many cases prevent you from deploying a buggy product.

Message and Event Analysis

As you work with E2010, the software continually parses and logs the Layer 3 messaging required in the interface between a mobile and a network. Unlike script-based protocol testers, E2010's full-featured protocol engine constantly verifies message contents, just as a live network will.

Double-clicking a message in the Message Analyzer window displays a fully parsed and decoded message for "deep-dive" analysis of message fields. Bugs that might otherwise take hours to find (or never be caught) are brought to the forefront in a matter of seconds.

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Technical Specifications

RF Connectors						
Front panel (per transceiver) TX1, TX2		X1, TX2	TX2		RF output	
N female, 50 Ω		RX/TX1, RX/TX2		Combined input/output RF port		
Control Interfaces						
Rear panel LAN		3 x Ethernet RJ-45, 10/100/1000 Mbps		RJ-45, 10/100/1000 Mbps		
Other Interfaces						
Front panel				2 x USB 2.0 type A connector		
Rear panel		USB		2 x USB 2.0 type A connector		
		External display		VGA Sub-D15 connector		
		Reference clock input/output		2 x BNC connector		
		IF input/output		4 x BNC connector (per transceiver)		
		External trigger		2 x BNC connector (per transceiver)		
		Digital IQ input/output		2 x InfiniBand™ (per transceiver)		
Signal Generator						
Frequency	Frequency range		380 MH	30 MHz-3 GHz		
specifications	Frequency resolution		10 Hz	10 Hz		
	Modulation bandwidth		20 MHz			
	Phase noise				< -90 dBc/Hz	
	Finase noise		5 MHz		< -120 dBc/Hz	
Output level	Output power level range for c	connector configured	as			
specifications	ТХ	ТХ			-110 dBm to 0 dBm	
			PEP		Up to +15 dBm	
	TX/RX		CW		-110 dBm to -7 dBm	
			PEP		Up to +8 dBm	
	Output power level uncertainty for any connector		±2 dB			
	Output level resolution		0.1 dB			
	Output level repeatability		0.1 dB			
	Reference impedance		50 Ω			
	VSWR		1.4			
	2 nd harmonic level		<-36 dBc			
	3 rd harmonic level		<-36 dBc			
	Non-harmonics level		<-36 dBc			
	SNR at maximum output power		70 dB			
	Maximum leakage power for disabled RF outputs		-145 dBm			
	Origin offset		<-60 dBc			



Technical Specifications (cont'd)

Time Base						
Standard frequency Maximum frequency drift			±0.7 ppm/year			
reference	Short term stability		±0.05 ppm			
	Warm-up time		1 hour			
High stability	Maximum frequency drift		±0.1 ppm/year			
frequency reference (option)	Short term stability		±0.01 ppm			
-	Warm-up time		1 hour			
Capture size	Minimum		1 ms (1 sub-frame)			
	Maximum		500 ms (50 frames)			
Reference frequency	Connector type		BNC connector SYNC IN, rear panel			
inputs/outputs (input A)	Frequency		Sine wave		10 MHz	
(Square	wave	10 MHz	
					40/60 duty cycle or better	
	Maximum frequency variation		TBD			
	Input voltage range		0.4 – 2 Vpp			
	Impedance		50 Ω			
Required Environmer	ntal Conditions					
Operation ranges		Temperature		15°C to 35°C (60°F to 95°F)		
		Humidity		5% to 85% (non condensing)		
Storage ranges		Temperature		-10° to 50° Celsius (15°F to 120°F)		
		Humidity		5% to 85% (non condensing)		
EMC	EMC EN61326-1 (2006)					
Electrical safety	Electrical safety EN 61010-1					
Mechanical resistance		EN60068-2-6				
		EN60068-2-27				
		EN60068-2-64				
Power supply		Input range		100-240V AC / 50-60 Hz		
		Power consumption		550W max		
Dimensions		448.7(W) x 265.9(H) x 375.5(D), all units in mm 171.7(W) x 10.5 (H) x 14.8 (D), all units in inches				
Weight		23 kgs (51 lbs)				
Recommended calibra	ation interval	1 year				

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About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks.

We help bring clarity to increasingly complex technological and business challenges.

Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled.

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Accessories

Complete Annual Service Agreements are available for hardware and software components.

Spirent Global Services

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