

EX1 gigabit and WiFi test solution

SIMPLE, MULTIPURPOSE AND CARRIER-GRADE



WiFi testing

EXFO's EX1 is an industry first: a pocket-sized test solution that evolves with your network, from validating bandwidth speed to full line rate Gigabit Ethernet as well as complete WiFi testing to guarantee residential and business customers' quality of experience.

SPEC SHEET

KEY FEATURES AND BENEFITS

Full line rate capable gigabit tester powered by the industry-leading Speedtest® by Ookla® algorithm

Wireless interface (WiFi) for both Speedtest by Ookla and WiFi channel map capabilities

Support of 2.4 GHz and 5.0 GHz WiFi frequency bands

Latency, download and upload throughput performance metrics with adjustable pass/fail thresholds based on subscribers' purchased plans

Controlled entirely through Android™ or iOS® smart devices offering a completely "untethered experience" for setup, testing, birth certificate generation and cloud-enabled firmware upgrades

Free and clear testing of challenging or harsh test environments with Bluetooth® low-energy technology for a connection range up to 100 ft (30 m)

Electrical, WiFi and optical* interface ready

Efficient job closeout with best-in-class birth certificate generation—reports generated in PDF or CSV formats can be sent by email, text, cloud, Skype, etc. directly to the subscriber or stored in the cloud for the provider's future reference

Carrier-grade quality hardware including onboard FPGA muscle—delivering repeatable and reliable metrics each time

Rechargeable Li-ion battery operated

* Future capability

EXFO's EX1, paired with an Android or iOS smart device, is a one-of-a-kind Ethernet tester designed to qualify broadband connections and monitor residential and business customers' quality of experience (QoE). The pocket-sized EX1 solution enables communication service providers and MSOs to validate delivery of full line rate Gigabit Ethernet services and WiFi to their subscribers. The advantage of the EX1 is threefold: it includes FPGA-powered hardware, built-in dedicated WiFi chipset and the world-leading Speedtest® by Ookla® algorithm, delivering repeatable and reliable metrics, every time.

Ethernet speed and latency measurements can be performed on both electrical (RJ45) or wireless interfaces (WiFi 802.11 ac/a/b/g/n) making the EX1 the ideal tool for generating birth certificates of Ethernet services during the provisioning phase. Moreover, field technicians can easily execute a WiFi channel map analysis (2.4 GHz and 5 GHz frequency bands) and, as a result, help determine the best placement for access points at the customer's location. The EX1 is therefore a must-have tool for troubleshooting activities that are expedited with the use of its unique graphical views and features enabled by the WiFi channel map analysis function.

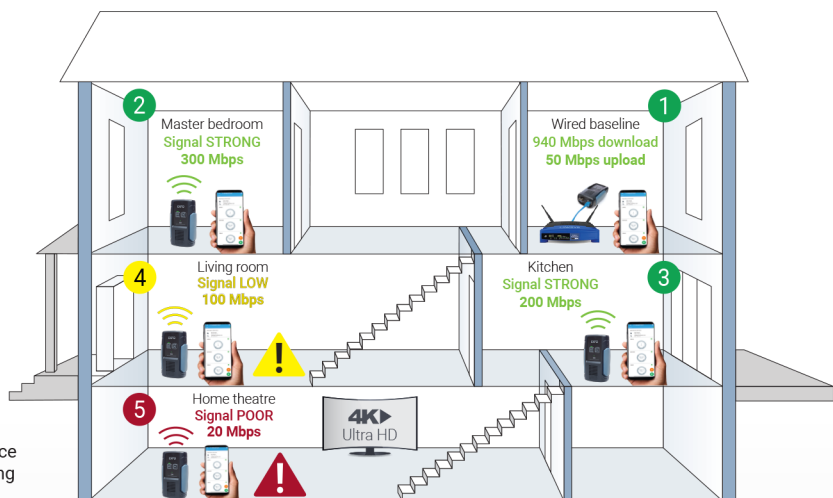
The EX1 does not require a screen. Instead, its ultra-intuitive application runs directly on a field technician's smart device, displaying all tasks performed, including connection, setup, result gathering, report generation and cloud-enabled firmware upgrades.

GIGABIT ETHERNET TESTING

Internet service providers (ISPs) and multiple system operators (MSOs) often receive calls and complaints related to the speed and the latency measured by their customers. These complaints are often unresolved and result in substantial customer churn. Customer expectations are not always met, and service providers are not necessarily equipped with the right tools to define expectations with customers when deploying new services. The EX1 was designed with this in mind and allows installers to provide a complete birth certificate for newly deployed services.

- 1 Get the wired baseline values
- 2 Verify master bedroom WiFi
- 3 Verify kitchen WiFi
- 4 Verify living room WiFi
- 5 Verify home theater WiFi

Field technicians are now equipped with the data they need to quickly resolve residential network performance issues – whether that means moving a router, changing WiFi channels or adding extenders.



The figure above outlines the typical steps for installing a residential gigabit broadband service using the EX1.

- › **Step 1:** The technician validates the wired download/upload speeds and latency at the entry point of the house. This step will confirm that the ISP or MSO has delivered the expected metrics according to the customer's chosen package. This first step can be used as the benchmark for the rest of the residential analysis.
- › **Step 2 and 3:** The technician can now start the analysis of WiFi performance. Family members regularly make use of an assortment of internet services from different locations: over-the-top video, music streaming, email, etc. It's up to the technician to confirm that these services are operating optimally in all locations of the residence. In this scenario, services in the master bedroom and kitchen are performing well, with a strong signal level and high throughput.
- › **Step 4:** The technician sees a drop in the WiFi signal and notices that the Speedtest throughput has reached a point where certain internet services could be affected, especially if multiple users are using the WiFi.
- › **Step 5:** The technician moves to the home theater where there is a brand-new TV using WiFi to stream 4K ultra high definition (UHD) broadcasts. The signal is very low and the throughput level is not sufficient for a typical 4K UHD stream.

In sum, by using the EX1 for both wired and wireless installations, the field techs can gain complete insight on how to remedy any given situation. They can move the router, change the WiFi channels or add extenders. The EX1 guarantees the job is done right the first time, drastically reducing any future WiFi-related complaints.

WiFi Channel Map

The EX1's WiFi channel map will report all access points found within the vicinity of the location under test. The access point connected to the EX1 will always show up at the top of the list, accompanied by a house icon. Field techs can filter results for 2.4 GHz and 5 GHz frequency bands by signal strength and channel. The channel map will return the access point name, BSSID, channel, channel frequency, signal strength and manufacturer.

The EX1's channel map and the Speedtest over WiFi are key troubleshooting features. Subscribers can see the tests performed by the service provider's technicians and receive reports showing the exact status of their purchased service.

The EX1 is ideal not only for residential use but also a wide range of other settings:

- › Public transportation networks can evaluate the WiFi services offered to their customers throughout bus, train or subway routes
- › Smart cities
- › Stadiums and conference centers
- › Hotels

Signal filtering available — Excellent, Good, Fair, Weak — 5 GHz

Option to select different channels — ALL 36-64 100-144 149-165

Displays the house icon indicating the access point (router) to which it is connected

Access Point Name	BSSID	Manufacturer	Channel	Frequency	Signal Strength
EX1_5GHz	60:38:E0:CA:06:12	Belkin International Inc.	CH 40	(5200 MHz)	-44 dBm
EXFO R&D	3C:CE:73:48:82:A9	Cisco Systems Inc.	CH 48	(5240 MHz)	-62 dBm
EXFO_Public_WiFi	3C:CE:73:48:82:AC	Cisco Systems Inc.	CH 48	(5240 MHz)	-63 dBm
EXFO R&D	D4:A0:2A:D1:2E:69	Cisco Systems Inc.	CH 161	(5805 MHz)	-67 dBm
EXFO_Public_WiFi	D4:A0:2A:D1:2E:6C	Cisco Systems Inc.	CH 161	(5805 MHz)	-67 dBm
EXFO_Public_WiFi	A4:56:30:5D:80:1C	Cisco Systems Inc.	CH 44	(5220 MHz)	-74 dBm
EXFO R&D					

Able to view all information like channel number, channel frequency and channel signal strength

SPECIFICATIONS

GENERAL SPECIFICATIONS	
Size (H x W x D)	125 mm x 75 mm x 45 mm (5 in x 3 in x 1 ¾ in)
Weight	0.45 kg (1 lb)
Temperature	
Operating	0 °C to 40 °C (32 °F to 104 °F)
Storage	
With battery (short term < 1 month)	-10 °C to 40 °C (14 °F to 104 °F)
Relative humidity range	≤ 93 %, non-condensing

INTERFACES	
Electrical RJ45 test port	10/100/1000 Mbit/s
Optical SFP test port ^a	Optical 1GE SFP
USB port	USB 3.0 Type-C port
Bluetooth and WiFi	Bluetooth v4.2 and WiFi 802.11 ac/a/b/g/n
Processor	ARM Dual Cortex-A53 ARMv8 1.0 GHz
Memory	1 GB
Storage	8 GB

BATTERY/POWER SUPPLY	
Type	Rechargeable Li-ion smart battery
Battery autonomy	One full day of customer visits (i.e. average of 10 residential broadband customer visits)
Charging time	3.5 h using supplied wall charger
AC/DC adapter/charger	Input: 100–240 VAC; 50/60 Hz; 1.0 A max, output: 5 V; 2.4 A

SMART DEVICE REQUIREMENTS	
Smart device supported	Android OS and iOS based devices
OS version	Android 6.0 Marshmallow and higher, iOS 10 and higher
Bluetooth support	Bluetooth low energy technology (version 4.0 and higher) ^b

Notes

a. Future capability.

b. Many Android phones and tablets support Bluetooth low energy technology, especially if the device was purchased recently. To verify if supported, please check if Bluetooth low energy technology (version 4) compatibility is listed in the technical specifications of smart devices in question.

GIGABIT ETHERNET TESTING CAPABILITIES

Speedtest by Ookla (Electrical and WiFi interfaces)

- › Latency
- › Download speed
- › Upload speed
- › Server information
- › Client WAN IP
- › Automatic/manual server selection
- › Pass/fail verdict based on thresholds
- › Configurable job information
- › PDF/CSV automatically generated reports

WIFI TESTING CAPABILITIES

Channel Map

- › Support of 802.11ac/a/b/g/n
- › Support of 2.4 GHz and 5 GHz frequency bands
- › Visualization of WiFi channel map analysis
- › Channel map filtering based on signal level: Excellent, Good, Fair, Weak
- › Channel map filtering: 5 GHz channels can be filtered by all, 36–64, 100–144, 149–165 channels
- › Information per access point: BSSID, manufacturer, channel #, frequency and RSSI
- › Graphical selection of access points for clarity and in-depth troubleshooting

EXFO Headquarters > Tel.: +1 418 683-0211 | Toll-free: +1 800 663-3936 (USA and Canada) | Fax: +1 418 683-2170 | info@EXFO.com | www.EXFO.com

EXFO serves over 2000 customers in more than 100 countries. To find your local office contact details, please go to www.EXFO.com/contact.

EXFO is certified ISO 9001 and attests to the quality of these products. EXFO has made every effort to ensure that the information contained in this specification sheet is accurate. However, we accept no responsibility for any errors or omissions, and we reserve the right to modify design, characteristics and products at any time without obligation. Units of measurement in this document conform to SI standards and practices. In addition, all of EXFO's manufactured products are compliant with the European Union's WEEE directive. For more information, please visit www.EXFO.com/recycle. **Contact EXFO for prices and availability or to obtain the phone number of your local EXFO distributor.**

For the most recent version of this spec sheet, please go to www.EXFO.com/specs.

In case of discrepancy, the web version takes precedence over any printed literature.

Android is a trademark of Google Inc.

Ookla and Speedtest are registered trademarks of Ookla

The Bluetooth® word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc.

iOS is a registered trademark of Cisco System, Inc. and/or its affiliates in the U.S. and certain other countries.