

OneExpert DSL (ONX-580)

For xDSL, G.fast and FTTH



Fast, consistent, and complete!

Consistently achieve high-performance results when deploying ultra-fast residential broadband over xDSL, G.fast, and FTTH.

OneExpert™ helps field technicians fix problems right the first time, every time. A multitouch, user-friendly interface and OneCheck™ automated tests ease complex tasks with clear pass/fail results. And, its future-proof modules ensure years of use supporting access and home networks.

Open, Modular Design

OneExpert offers the advantages of integrated cloud-based applications, touch screen interfaces, smartphones, and tablets. OneExpert helps technicians perform more efficiently and fix problems faster while ensuring service providers can invest in a long-term, open platform. Modular hardware means the meter can be updated as technology is updated. Software can be upgraded and enhanced in the field, so no down-time for these changes.

KEY BENEFITS AND FEATURES

- Modular platform scales for new WiFi, fiber, and xDSL technology including VDSL Profile 35b and G.fast
- OneCheck automates field tests and simplifies Copper and DSL results to consistently close jobs correctly
- One button OneCheck TDR auto identifies fault types and locations right away
- Prove the true customer experience with a standardized TrueSpeed™ test (RFC-6349)
- OneExpert™ app uses everyday mobile devices for remote control, data enhancements, and connectivity
- StrataSync™ cloud-enabled asset and test data management provides visibility for test results and completed tasks and keeps track of used instrument inventory

Large screen, simplifies results analysis

Multitouch user interface for quick testing



StrataSync - cloud-based asset and data management

Wireless personal area network//WiFi ready connectivity

xDSL Testing up to G.fast

A sync test is essential in characterizing DSL link quality (bandwidth rates, margins, errors, and likelihood for errors). This test also helps determine whether issues are coming from the equipment (CPE or DSLAM/DPU ports) or from the profile settings. It shows important results on a single DSL summary screen page. The test uncovers errors (CRC, FEC, LOS, LOF, and LOM) that impact application layers such as IP video.

| Module | ONX-TM-BDCM Broadcom xDSL/ V35b | ONX-TM-BDCM-212 BDCM/V35b/G.fast 212 |
|---------------------------------|------------------------------------|---|
| ADSL | ■ | ■ |
| ADSL/VDSL Anx A/M/L (to 30a) | ■ | ■ |
| ADSL2 Bonded Anx A/M/L | ■ | ■ |
| VDSL2 Bonded Anx A/M/L (to 17a) | ■ | ■ |
| V35b | ■ | ■ |
| V35b Bonded | — | ■ |
| BDCM G.fast 106MHz | ■ | ■ |
| BDCM G.fast 212MHz | — | ■ |
| BDCM 106MHz Bonded | — | ■ |

Specifications

DSL Modems

*Specifications apply to all modems listed unless a modem part is listed after the specification. When listed in the specification, it only applies to parts listed after the specification.

Test Interface

Replaceable test module; test access over copper test leads (tip A, ring B leads for single channel; T/A, R/B, T1/A1, R1/B1 for bonding) or 8-pin modular (RJ45 type) with pin assignments 4 and 5 for DSL single pair and 3, 4, 5, 6 for DSL bonding.

Modem Chipset and Version

| Catalog # | Chipset | Configuration |
|-----------------|----------------|---|
| ONX-TM-BDCM | Broadcom 63138 | OneExpert Broadcom 63138 (ADSL/VDSL Bonded, V35B) Test Module |
| ONX-TM-BDCM-212 | Broadcom 63158 | OneExpert Broadcom 63158 V35B (GFAST 212) Test Module |

G.fast (Fast access to subscriber terminals) Standard Compliance

ITU-T G.9700 to 106MHz for module ONX-TM-BDCM & to 212 MHz for ONX-TM-BDCM-212

ITU-T G.9701 to 106MHz for module ONX-TM-BDCM & to 212 MHz for ONX-TM-BDCM-212

VDSL Standard Compliance

Standard compliance as supported by the Broadcom 63158 and 63138 chipsets

ITU-T G.993.2 — VDSL2

ITU-T-G.998.1 — ATM bonding

ITU-T-G.998.2 — PTM bonding

ITU-T-G.993.5 — Self-FEXT cancellation (vectoring)

ITU-T-G.998.4 — Improved impulse noise protection for DSL transceivers

Single-pair profiles: 8a/8b/8c/8d, 12a/12b, 17a, 30a

Dual-pair profiles: 8a/8b/8c/8d, 12a/12b, 17a

Vectoring profiles single-pair: 8a/8b/8c/8d, 12a/12b, 17a, 35b

Vectoring profiles dual-pair: 8a/8b/8c/8d, 12a/12b, 17a

Band plan 997 and 998, U0 band

ITU G.993.2 Annex Y vector-friendly mode

ADSL Standard Compliance

Standard compliance as supported by the Broadcom 63138 and 63158 chipsets

ITU-T G.992.1 Annex A, (ADSL)

ITU-T G.992.3 Annex A, L (ADSL2)

ITU-T G.992.5 Annex A, M (ADSL2+)

ITU-T-G.998.1 ATM bonding

ITU-T-G.998.2 PTM bonding

ANSI T1.413-1998, Issue 2

ITU-T G.992.5 INP Amendment 3

Specifications (continued)

| Copper Test - DVOM | | |
|---|-------------------|-----------------|
| Test Interface | | |
| Tip/A – ring/B – ground/earth | | |
| Range | Resolution | Accuracy |
| AC Volts | | |
| 0 to 212 V RMS | 0.1 to 1 V | 1% ±5 V |
| DC Volts | | |
| 0 – 300 V | 0.1 to 1 V | 1% ±0.5 V |
| Resistance | | |
| 0 – 999 Ω | 1 Ω 2% | ±2.5 Ω |
| 1 – 9.99 kΩ | 10 Ω | 2% |
| 10 – 99.9 kΩ | 100Ω | 2% |
| 100 – 999 kΩ | 1 kΩ | 2% |
| 1.0 – 9.9 MΩ | 10 kΩ | 2% |
| 10.0 – 99.9 MΩ | 100 kΩ | 2% |
| 100 – 999 MΩ | 1 MΩ | 10% |
| Leakage | | |
| 100 – 999 MΩ | 1 MΩ | 10% |
| Distance to Short (conversion from resistance measurement depending on cable setup) | | |
| 0 – 30 k ft (0 – 10 km) | | |
| Capacitance/Opens (conversion from capacitance measurement depending on cable setup) | | |
| 0 – 47.1 nF | | 1% ±15 pF |
| 47.1 nF – 1.57 uF | | |
| 0 – 3 k ft (0 – 999 m) | 1 ft (1 m) | 2% ±15 pF |
| 3 – 10 k ft (1 – 3.3 km) | 10 ft (1m) | |
| 10 –100 k ft (1 – 33.3 km) | 100 ft (10m) | |
| DC Current | | |
| 0 – 110 mA | 0.1 | 1% ±0.5 mA |
| Longitudinal Balance | | |
| 20 – 70 dB | 1 dB | ±2 dB |
| 70 – 100 dB | 1 dB | |
| Power Influence (PI) – Noise to Ground | | |
| 40 to 120 dB n | 0.1 dB | ±2 dB |
| –50 to +30 dBm | 0.1 dB | ±2 dB |
| Metallic (Narrowband) Noise | | |
| 0 to 50 dB n | 0.1 dB | ±2 dB |
| –90 dBm to –40 dBm | 0.1 dB | ±2 dB |
| Narrowband Filters | | |
| IEEE 743 C-Message (dBr nC), IEEE 743 3K Flat (dBr n), O.41 Psophometric (dBmP) | | |
| Load Coil Test | | |
| up to 5 ±1 | | |
| POTS | | |
| Test Interface | | |
| RJ11, tip A – ring B | | |
| POTS Dialer | | |
| DTMF or pulse-dial mode | | |
| Ring detect | | |
| Caller ID (Bellcore Telcordia TR-TSY-000030) | | |
| Call log (last 10 calls) | | |
| Phonebook (quick dial) | | |

Specifications (continued)

| TDR | | |
|---|----------------------|-----------------|
| Test Interface | | |
| Tip A – ring B | | |
| Range | | |
| 0 to 30 k ft (0 to 10 km) | | |
| Test Modes | | |
| Standard | | |
| SmartGain | | |
| In-home | | |
| OneCheck | | |
| CrossTalk (ONX 580P only) | | |
| Dual Trace | | |
| Features | | |
| World view | | |
| Peak hold | | |
| QuickRange | | |
| Reference trace set, show, save, load | | |
| Stress TDR | | |
| Typical Test Case | | |
| 500 ft (150 m) bridged tap visible at 18 k ft (5500 m) on a 20 k ft (6000 m) 24 AWG cable/0.5 mm cable | | |
| Copper TIMS Option | | |
| Wideband Characteristics | | |
| Range | Resolution | Accuracy |
| Frequency | | |
| 10 kHz to 30 MHz | | 50 ppm |
| 10 kHz to 35 MHz for ONX-580P | | 50ppm |
| Amplitude | | |
| -80 to +10 dBm | 0.1 dB | ±2 dB |
| -90 to +10 dBm for ONX-580P | 0.1 dB | ±1 dB |
| Termination 100 Ω, 120 Ω, 135 Ω | | |
| Narrowband (VF) Characteristics | | |
| Frequency | | |
| 200 Hz to 10 kHz | | 50 ppm |
| 200 Hz to 20 kHz for ONX-580P | | 50 ppm |
| Amplitude | | |
| -80 to +10 dBm | 0.1 dB | ±0.5 dB |
| -90 to +10 dBm for ONX-580P | 0.1 dB | ±0.75 dB |
| Termination 600 Ω, 900 Ω, Bridged | | |
| Technology Filter Selection | | |
| Custom, ADSL, ADSL2+, VDSL 8 MHz, VDSL 12 MHz, VDSL 17 MHz, VDSL 30 MHz, VDSL 35 MHz (580P only), VDSL Upstream U0, Voice Frequency, HDSL, G-filter, G2-filter, J-25K8, J-138K8, J25K12, J-138K12, J-25K17, J-138K17, E-filter, F-filter, E1, IEEE-743 C-message, IEEE-743 3K Flat, O.41 Psophometric, no filter, power influence | | |
| Spectral Test | | |
| Technology filter selection | | |
| Spectral Power Influence test | | |
| Set reference, show reference | | |
| Max hold | | |
| Configurable external bridge | | |
| Power spectral density | dBm, dBm / Hz, dBr n | |

Specifications (continued)

| Span Selection | | | |
|--|--|------------|----------|
| | Range | Resolution | Accuracy |
| Narrowband Frequency Range - ONX 580 | | | |
| Power Harmonics | 0 Hz to 3.0 kHz | 2.0 Hz | 50 ppm |
| POTS | 0 Hz to 10 kHz | 5.0 Hz | 50 ppm |
| Narrowband Frequency Range - ONX580P | | | |
| Power Harmonics | 0 Hz to 9.8 kHz 2 Hz | 2 Hz | 50 ppm |
| POTS | 0 Hz to 20 kHz | 5 Hz | 50 ppm |
| Wideband Frequency Range | | | |
| ADSL | 20.48 kHz to 1.5 MHz | 1.078 kHz | 50 ppm |
| ADSL2+ | 20.48 kHz to 2.2 MHz | 1.078 KHz | 50 ppm |
| VDSL 8 MHZ | 17.25 kHz to 8.9 MHz | 4.3125 KHz | 50 ppm |
| VDSL 12 MHZ | 17.25 kHz to 12.9 MHz | 4.3125 KHz | 50 ppm |
| VDSL 17 MHZ | 17.25 kHz to 17.9 MHz | 8.625 KHz | 50 ppm |
| VDSL 30 MHZ | 17.25 kHz to 30 MHz | 8.625 KHz | 50 ppm |
| VDSL 35 MHZ | 17.25 kHz to 35 MHz | 8.625 kHz | 50 ppm |
| Custom range selection | | | |
| Amplitude | | | |
| ONX-580 | -80 dBm to 0 dBm | 0.1 dB | ±2 dB |
| ONX-580 | -130 dBm/Hz to -40 dBm/Hz | 0.1 dB | ±2 dB |
| ONX-580P | -90 dBm to 0 dBm | 0.1 dB | ±2 dB |
| ONX-580P | -140 dBm/Hz to -35 dBm/Hz | 0.1 dB | ±2 dB |
| Viewable range | | | |
| | -90 dBm to 0 dBm for ONX-580P | 0.1 dB | ±2 dB |
| | -140 dBm/Hz to -35 dBm/Hz for ONX-580P | 0.1 dB | ±2 dB |
| | 130 dBm to 30 dBm | | |
| | -160 dBm/Hz to -20 dBm/Hz | | |
| Narrowband and Wideband RX Tones and Loss | | | |
| Meter and list view | | | |
| Configurable External Bridge | | | |
| Power level | | dBm, dBr n | |
| Narrowband and Wideband Noise | | | |
| echnology filter selection | | | |
| Configurable external bridge | | | |
| Custom filter | | | |
| Noise power actual/min/max | | dBm, dBr n | |

Specifications (continued)

| Wideband Impulse Noise | | |
|--|--------------------|---|
| Technology filter selection | | |
| Elapsed Time counter | | |
| Threshold, +3 dB threshold, -3 dB threshold | | |
| Configurable external bridge | | |
| Configurable dead time | | |
| Timeline view | dBm, dBr n, mV | |
| Counter view | dBm, dBr n, mV | |
| Wideband Impulse Noise Capture | | |
| Technology filter selection | | |
| Single and continuous capture | | |
| Trigger threshold | | |
| Time and frequency domain capture | dBm, dBr n | |
| Capture display | 10%, 50%, 90% | |
| RFL Test Option | | |
| Resistive Fault Locator | | |
| Single Pair RFL test mode | | |
| Separate Pair RFL test mode 580P only | | |
| Multiple gauge selection | | |
| Temperature adjustment | | |
| UFED support | | |
| Results for distance to strap (DTS), distance to fault (DTF), distance strap to fault (DSTF), resistance to strap (RTS), resistance to fault (RTF), fault resistance | | |
| | Range | Accuracy |
| Fault resistance (RF) | 0 to 20 MΩ | |
| Loop resistance | 0 to 7 kΩ | |
| Resistance to Fault (RTF) | RTS 1 Ω to 99 Ω | 0.1% RTS ±0.1Ω ±RF/10MΩ |
| | RTS 100 Ω to 999 Ω | 0.2% RTS ±0.1Ω ±RF/5MΩ |
| K-Test | | |
| Two-sided fault test | | |
| Results include fault resistance 1, fault resistance 2 | | |
| UFED support | | |
| | Range | Accuracy |
| Fault resistance (RF) | 0 to 20 MΩ | |
| Loop resistance | 0 to 7 kΩ | |
| Resistance to fault (RTF) | | 3% of Resistance to strap (RTS) or +/- 3 ohms, whichever is greater |

Specifications (continued)

| | |
|--|--|
| Battery | Li-ion internal rechargeable, 7.4 V nominal voltage, 6600 mAh |
| Operating time >4 hours for typical use cases | |
| Auto power down (adjustable) | |
| AC line operation via external adapter/car charger | |
| Connector | |
| DSL test module | Varies by module (8 Pin Modular and 6 Pin Modular) |
| Ethernet | 2 x 8-pin modular (RJ45) |
| T/A, R/B, T1/A1, R1/B1 and ground/Earth | 2 mm recessed banana |
| POTS | 8-pin modular (RJ45) and tip A – ring B |
| USB | 2 x USB 2.0 client ports |
| Connectivity | |
| USB flash drive | |
| Remote operation | |
| Mobile device application | |
| WiFi | |
| Standard | 802.11 a/b/g/n (2.4/5 GHz) |
| Audio Support | |
| Speaker/microphone | |
| Bluetooth headset | |
| Permissible Ambient Temperature | |
| Nominal range of use | 0 to 50°C (32 to 122°F) |
| Storage and transport | -10 to 60°C (14 to 140°F) |
| Humidity | |
| Operating humidity | 10 to 90% |
| Water/Dust Ingress | |
| Complies with IP54 | Designed to comply with Ip54 |
| Display | 127 mm (5 in) diagonal color WVGA (800 x 480 pixels) backlit LCD with projected capacitive multitouch screen |

Ordering Information

The OneExpert can be ordered fully configured for high-end ADSL2+ /VDSL2 /G.fast and copper test demands or scaled for specific needs and applications, such as all fiber only without copper.

Included Test Applications

(all mainframes and package orders except noted differently below)

Fiber Tests

- OneCheck Fiber
- Power meter (via Accessory)
- OTDR (via Accessory)
- Inspection (via Accessory)

Copper on mainframe ONX-580

- TDR
- OneCheck Copper
- DVOM
- Opens
- Longitudinal balance
- Load coil
- POTS TDR

Wiring Tools

- Wire map on mainframe ONX-580
- Hub flash
- Port discovery
- Ping tool

IP Data Tests

- Web browser
- IP ping
- FTP/HTTP speed test
- OneCheck Ethernet

WiFi

- Scan
- Access point
- WiFi Advisor support

StrataSync

- StrataSync Core Asset and Data Management

Ordering Information (continued)

| Description | Catalog Number |
|---|----------------------|
| Mainframe | |
| OneExpert; ONX-580 Pro ¹ | ONX-580P |
| OneExpert; ONX-580 ¹ | ONX-580 |
| OneExpert; ONX-580A ¹ | ONX-580A |
| Module | |
| OneExpert Broadcom 63138 (ADSL/VDSL Bonded, V35B) Test Module | ONX-TM-BDCM |
| OneExpert Broadcom 63158 V35B, GFAST 212 test module | ONX-TM-BDCM-212 |
| OneExpert cover module | ONX-COVER |
| Software Options | |
| ADSL/VDSL bonding option | ONX580-BONDED |
| Broadcom G.fast option | ONX580-GFAST |
| V.35b option | ONX580-V35B |
| G.fast Amendment 3 Option | ONX580-GFAST-212 |
| DSL Helper Utility | ONX580-DSL-HELPER |
| Mobile device connectivity | ONX580-MOBILE-001 |
| HPNA | ONX580-HPNA |
| TrueSpeed | ONX-TRUESPEED |
| Ookla SpeedTest | ONX-OOKLA-SPEEDTEST |
| Broadcom Speedservice | ONX-SPEED-SERVICE |
| VIAVI Speedcheck | ONX-SPEEDCHECK |
| Smart Access Anywhere | ONX-SMART-ACCESS |
| IP video | ONX580-IPVIDEO |
| VoIP | ONX-VOIP |
| MOS ² | ONX-MOS |
| Resistive fault locator | ONX580-RFL |
| Transmission impairments and spectral ³ | ONX580-TIMS |
| Copper Expert software | ONX580-COPPER-EXPERT |
| Cables | |
| Dual Pair Bed of Nails Copper Cables | CB-DUAL-BON |
| Single Pair Bed of Nails Copper Cables | CB-SINGLE-BON |
| Dual Pair Telco Clips Copper Cables | CB-DUAL-TELCO |
| Single Pair Telco Clips Copper Cables | CB-SINGLE-TELCO |
| Dual Pair Banana Copper Cables | CB-DUAL-4MM |
| Single Pair Banana Copper Cables | CB-SINGLE-4MM |
| Telco clip package for 4 mm banana | CB-CLIPS |
| Spectral monitor cable | CB-SPE-MON |
| Dual Pair Bed of Nails 8 Pin to Banana Cables | CB-DSL8-4MM |
| Dual Pair Bed of Nails 8 Pin to Telco Clip Cables | CB-DSL8-TELCO |
| Dual Pair Bed of Nails 8 Pin to Bed of Nails Cables | CB-DSL8-BON |
| Dual Pair Bed of Nails 6 Pin to Banana Cables | ONX-DSL6-4MM |
| Dual Pair Bed of Nails 6 Pin to Bed of Nails Cables | ONX-DSL6-BON |

Ordering Information (continued)

| Description | Catalog Number |
|---|------------------------|
| Accessories | |
| Battery | ONX580-BATTERY-48WH |
| AC universal power adapter | AC-CHARGER |
| Large carrying case | CC-034601 |
| Small carrying case | CC-CARRYING-CASE-SMALL |
| Soft glove | AC-GLOVE |
| Strand hook | AC-STRANDHOOK |
| Hand strap | AC-HANDSTRAP |
| Shoulder strap | AC-005101 |
| Car adapter | AC-CAR-CHARGER |
| Bluetooth headset | AC-BLUETOOTH-HEADSET |
| Wire mapping smart remote; RJ11, RJ45 | AC-WIREMAP-REMOTE |
| UFEDIIB bonded far end device with standard accessories | UFEDIIB-PKG-1 |
| SDI-100 WAND | SDI-100 |
| MP-60 – USB optical power meter | MP-60A |
| P5000i – USB fiber scope | FBP-P5000I |
| Services and Support Plans | |
| Bronze Support Plan 5 years | BRONZE-5 |
| Silver Support Plan 3 years | SILVER-3 |
| Silver Support Plan 5 years | SILVER-5 |

¹Includes test applications as specified above. Requires selection of battery, AC universal power adapter, and power cord.

²Requires VoIP software option.

³Enables copper RX tones, spectral, WB noise, wideband impulse noise, wideband impulse noise capture.