# ARGUS® Selective Triple OPM + PON performance tests

**ARGUS®**
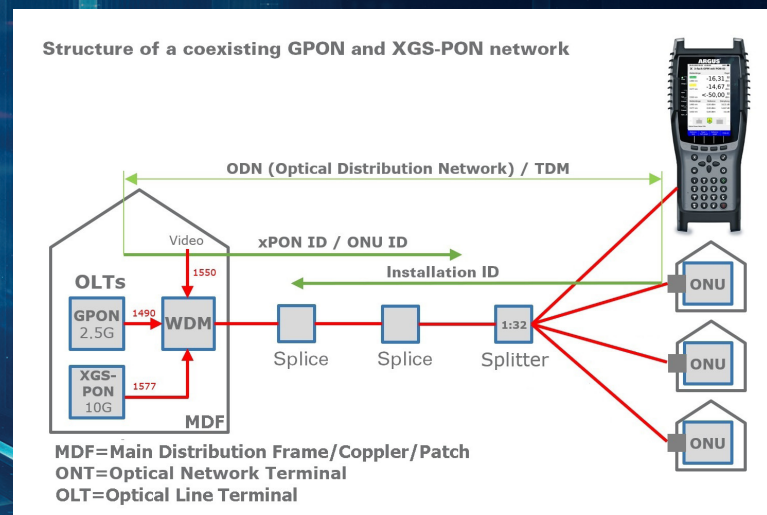testing the telecom network

## for all GPON and XGS-PON interfaces

XGS-PON is expected to deliver 10 Gbit/s. The same fiber infrastructure that has already been expanded for GPON can be used for this purpose. XGS-PON uses different optical wavelengths than GPON, which allows simultaneous rollout of GPON and XGS-PON over the same fiber optic line. According to the GPON standard (ITU-T G.984.3), this means a maximum of 2.5 Gbit/s downstream and 1.25 Gbit/s upstream. Only one fiber is used to simultaneously transmit the downstream at a wavelength of 1490 nm and the upstream at 1310 nm. With XGS-PON (ITU-T G.9807.1), 10 Gbit/s can be transmitted simultaneously in both directions in addition to GPON. For this purpose, 1577 nm are used as wavelengths in the downstream and 1270 nm in the upstream. Therefore, it is necessary to selectively measure individual wavelengths at such an access. The new Selective Triple OPM for the ARGUS® first filters the expectable downstream wavelengths and measures them with high accuracy and unaffected by the remaining light. Despite filtering, the ARGUS® can also determine other wavelengths on the line, e.g. 1550 nm, without having to change the plug. For this purpose, it offers the wavelength spectrum of 1270 to 1625 nm (which is common for standard OPMs) for measurement, which also covers the upstream wavelengths 1310 (GPON) and 1270 nm (XGS-PON). In order to correctly allocate the data streams for each subscriber, the OLT on the exchange side provides each ONT with a PON ID. This ID and the transmission power of the OLT are read out without reconnection, and the insertion loss is also calculated directly. Thus, three important values are available: the filtered measurement of the optical power, the optical attenuation of the link and the xPON ID. In order to fully test a GPON or XGS-PON access in the event of a fault or to transfer it to continuous operation after rollout, it is necessary to set up the protocol, perform the identification process, check services such as VoIP or IPTV for functionality and simulate high-performance speed tests via FTP/HTTP upload and download, iperf or Ookla® in the same way as for other accesses. For this purpose, the new ARGUS® PON tester performs a complete ONT simulation.

## Specifications:
- **Measuring range:**
  - **1577 & 1490 nm (filtered): from -40 to +6 dBm**
  - **1270 to 1625 nm (broadband):  from -50 to +10 dBm**
- **Accuracy: ±0,5 dB**
- **Calibration conditions: -20 dBm; 23°C ±5 K**
- **Connector: SC/APC, SFP+, LAN4 10 GBase-T**
- **Readout of PON ID and XGS-PON ID\* via SC/APC, detection up to:**
  - **GPON ≥ -30 dBm**
  - **XGS-PON ≥ -28 dBm**
- **Full ONT simulation (GPON ONT or XGS-PON ONT) via additional GPON/XGS-PON SFP transceiver module**
- **IP/Performance tests via SFP+, LAN4 10/5/2.5/1 GBase-T, 100Base-Tx with up to 1 Gbit/s (max. 2.5 Gbit/s)**

\* The network must provide the ID for it.



**Structure of a coexisting GPON and XGS-PON network**

ODN (Optical Distribution Network) / TDM

xPON ID / ONU ID

Installation ID

Video — 1550

OLTs

GPON 2,5G — 1490 → WDM

XGS-PON 10G — 1577

MDF

Splice — Splice — Splitter 1:32 — ONU

MDF=Main Distribution Frame/Coppler/Patch
ONT=Optical Network Terminal
OLT=Optical Line Terminal

### Triple OPM with PON ID

| 28.03.2022 09:29  v2.60.00 | 100% |
|---|---|

**X Triple OPM with PON-ID**

| Wavelength | | Level |
|---|---|---|
| PON-ID 1490 nm | | **-16,31** dBm |
| PON-ID 1577 nm | | **-14,67** dBm |
| 1550 nm | | **<-50,00** dBm |

| Wavelength | Reference | Attenuation |
|---|---|---|
| 1490 nm | 0,00 dBm | 16,31 dBm |
| 1577 nm | 0,00 dBm | 14,67 dBm |
| 1550 nm | 0,00 dBm | n/a dB |

Optical Power Meter PON

| Reference Off | Level → Ref. Level | Reference Level | PON-ID |

**Triple OPM with PON ID**

### GPON OPM

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**◀ GPON OPM**

| PON ID | HEX |
|---|---|
| PON ID | 01 00 27 17 20 33 2A |
| Class / Type: | B+ / RE |

Level (1490 nm)

| ONT (Rx): | **-16,31** dBm |
|---|---|
| Reference: | **-14,66** dBm |
| OLT (Tx): | **-10,00** dBm |

Attenuation

| OLT - ONT: | 6,31 dB |
|---|---|
| OLT - Ref.: | 4,66 dB |
| Ref. - ONT: | 2,35 dB |

Optical Power Meter PON

| Reference Off | Level → Ref. Level | Reference Level |

**GPON OPM**

**Available for:**