

## Qualification of primary protection modules of PHOENIX CONTACT at ADSL and ADSL2+ systems

Due to the occurring severity of surge voltage damages, surge voltage protection of device connections is of high significance. Primary protection modules are used in the area of end customers (private households, etc.) or in the exchange, thus to reduce the occurrence of surge voltages at the line terminal. However, over the last years, the quality of device connections of analog telephone extensions (POTS) and ISDN basic connections has switched to high-bit rate DSL connections. As a consequence, the signal spectrum on the device connection lines has become wider, too. This may affect the service by the used, partly multi-level primary protection.

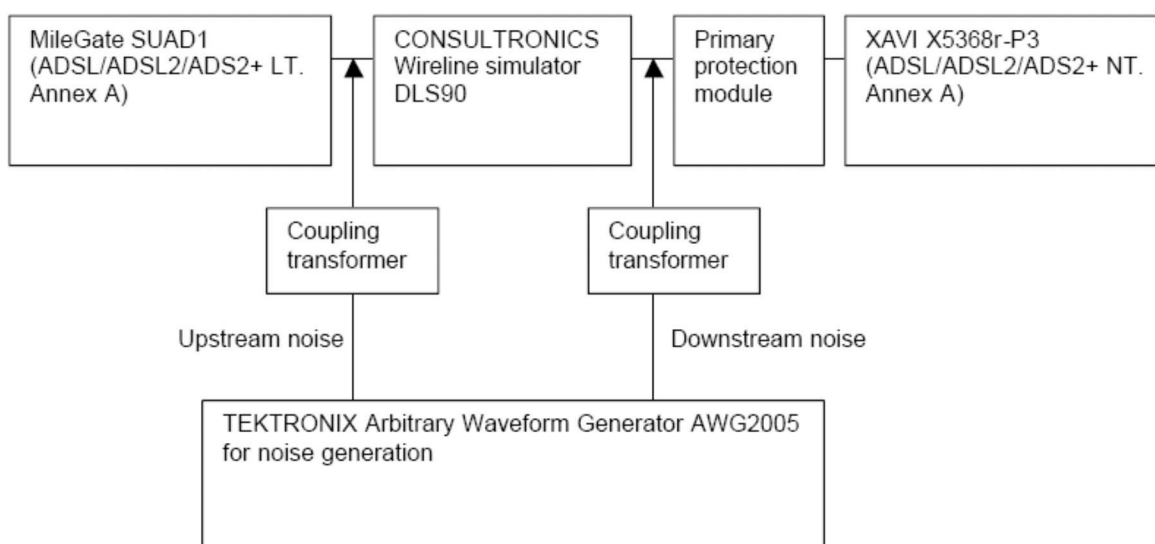
In connection to this, the **primary protection modules**

- PLUGTRAB **PT 2-ISDN NT-ST** with the base element **PT 4-BE**
- PLUGTRAB **PT 2-TELE-ST** with the base element **PT 1x2-BE**
- MAINTRAB **MNT-TAE D/WH**

were qualified in combination with the next generation access node MileGate of the company KEYMILE for the use with ADSL and ADSL2+. The aim was to detect whether the primary protection modules have an influence on the DSL performance.

This was effected by some selected performance measurements from DSL forum TR67 & ETSI TS 101 388 for ADSL as well as DSL forum WT 100 for ADSL2+.

Qualification was carried out by an accredited test laboratory EMC of KEYMILE GmbH in Hanover on January 24, 2006 using the below test environment:



All results were positive, i.e. **all primary protection modules comply with the following requirements:**

- ADSL acc. to DSL forum TR67 (Adaptive rate) and ETSI TS 101 388 V1.3.1 (Fixed rate) with **data rates from 1.024 kBit/s to 6.144 kBit/s**
- ADSL2+ acc. to DSL forum WT 100 V8 - dsl2005.874.00 with fixed data rates of 7.290 kBit/s and the adaptive **data rate of 16.640 kBit/s**.

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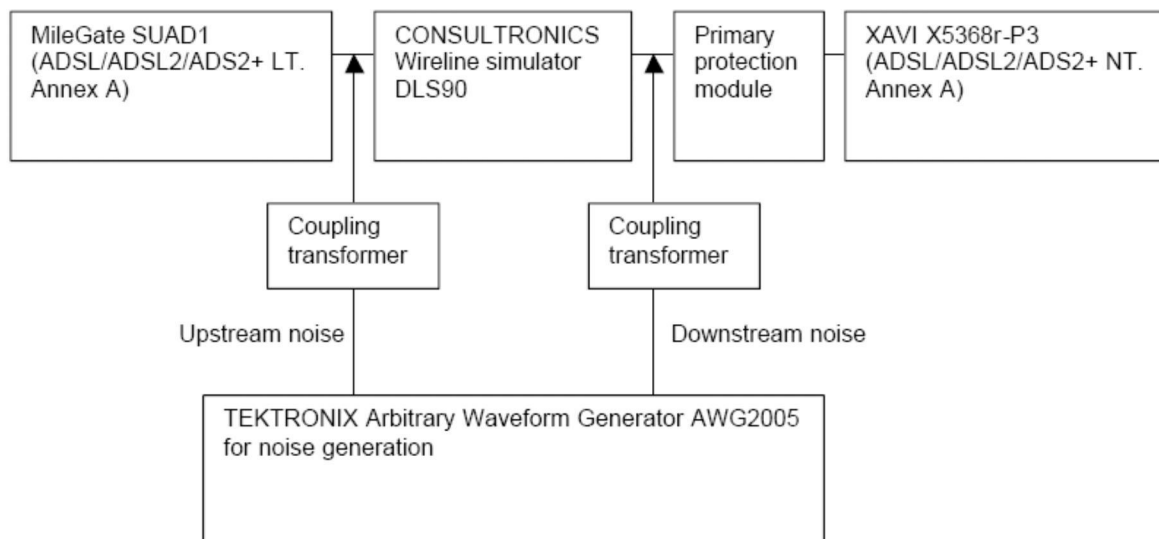
In connection to this, the **primary protection modules**

- TAE-TRAB **TAE-TRAB FM-NFN**
- TAE-TRAB **TAE-TRAB FM-NFN-AP**
- WESTERNTRAB **WT-RJ12-S/FM A/K AP**

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