

MultiDSLAs Solution for Field & Drive Test

Even in the smartphone era, poor speech quality remains a major source of user dissatisfaction.

Manufacturers and network operators have a critical interest in optimizing network performance to ensure high user satisfaction.

But what defines the limits of user acceptance, and what truly constitutes “good” performance? While subjective testing offers accurate insights, it is often time-consuming and costly.

To address this, the ITU-T P.863 (POLQA) standard provides a reliable, objective method for assessing speech quality. When combined with a high-quality test system, POLQA accurately predicts the user experience for both current and emerging technologies.

Opale Systems’ lab and field test solutions deliver trusted performance indicators, supporting installation, commissioning, acceptance testing, and ongoing monitoring of wireless networks to maintain high communication quality.

Drive Test Applications

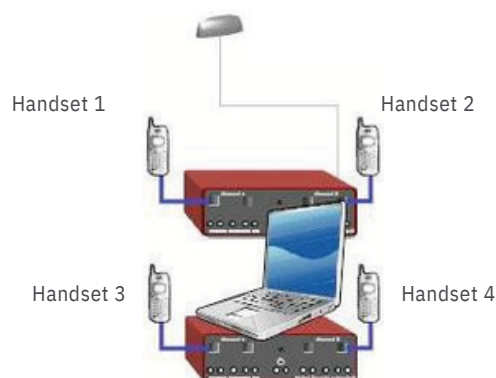
MultiDSLAs drive test systems with GPS provide a full range of performance measurements, including:

- Speech quality score (POLQA, PESQ)
- One-way delay
- Speech level
- Noise level
- GPS location
- GPS time
- Uplink/downlink analysis



Key features

- Excellent performance/cost ratio
- Support for narrowband, wideband and superwideband speech
- ITU speech quality metrics POLQA and PESQ
- Measure in the lab and in the field using the same system
- Android app to control call set-up and clear-down
- Precise control over speech levels with configuration for each handset model
- GPS time/location with data export configurable for mapping engines (Google Earth for example)
- Simple and flexible test design for special purposes



Applications include:

- ▶ **Handset Comparison**
Compare different handsets against a reference device, with separate reporting for each. Multiple handsets can be tested simultaneously.
- ▶ **Competitive Network Comparison**
Evaluate the performance of multiple networks using identical handsets to directly compare network coverage and overall performance.
- ▶ **Detailed Network Performance Analysis:**
Focus on a single network, investigate customer complaints, or validate performance after upgrades or maintenance.
- ▶ **Call Scenarios Supported:**
Fixed line to mobile, VPP/SIP to mobile, Mobile to mobile

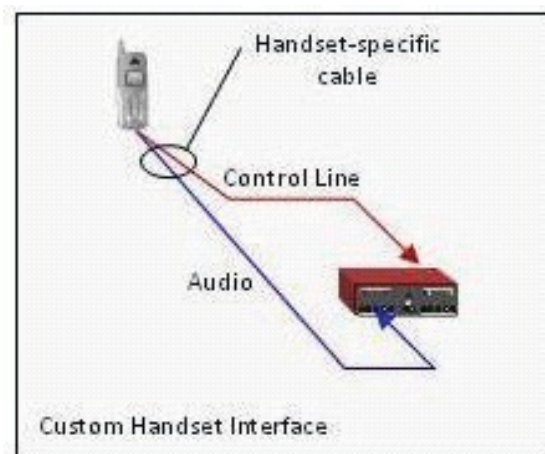
System Configuration

The MultiDSL drive test solution consists of one or two equipment sets—one deployed at the in-motion location and, if needed, one at the fixed location. Each set typically includes:

- MultiDSL Controller application and PC/laptop
- DSLA analog/digital test instrument
- OSS Android Application
- GPS device

Handset Interface

Opale Systems provides specialized cables for **interfacing with a wide range of cellular handsets**. The typical connection setup is illustrated below:



The cable carries microphone and earpiece audio signals between the handset and DSLA. The Control Line works in conjunction with the Opale Smartphone Supervizer (OSS) control feature to automatically set up and clear down calls. Just configure the phone numbers and the test system does the rest.

Delay And Delay Variation

Accurate one-way delay measurements are made for both fixed-mobile and mobile-mobile testing.

Delay variation is a feature of packet transmission and arises when a gateway jitter buffer is re-sized. The effect on speech quality can be minimal if this occurs in a silence interval but can be detrimental if it occurs during active speech. The PESQ and POLQA algorithms measure the time offset between

the reference speech samples and the captured degraded samples, for each speech utterance individually. Thus **MultiDSL reports the maximum, minimum, mean, median and standard deviation** of these measurements, providing a thorough analysis of delay variation and the impact on user experience.

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