



Echo Probe – Technical Overview

Advanced mobile network measurement solution

Echo Probe is part of the Enhancell Echo product family which consists of network measuring tools that run directly on commercial handsets.

With Echo you do not need custom test devices and firmware. This means that you can be assured to see the network exactly as your customers see it.

Echo Probe runs on commercial phones placed in an enclosure with transferrable license which not only saves you from spending on expensive custom hardware but also allows you to easily upgrade the test device. In addition, automatic software updates guarantee that you are always running the latest software.



Echo Probe

Echo Probe is a custom-designed solution for unattended non-stop service quality monitoring in fixed locations. It is convenient, compact, and cost-effective solution to monitor wireless network signals and to perform measurements and tests remotely, simultaneously, and autonomously in a multitude of locations.

Echo Probe is a standalone system that comes with and works on more than 180 different commercial off-the-shelf phones. The enclosure for outdoor operation includes air-conditioning and can be connected to an AC power connection to ensure uninterrupted operation.

Real-time remote control and monitoring

Echo Probe is controlled remotely via Echo Cloud online service which also provides a user interface for real-time network monitoring. With Cloud, it is possible to control a multitude of Echo Probe units simultaneously with the same or multiple sets of configurations. Tests can also be scheduled via Cloud.

Echo Probe is a low-profile probe with its fully integrated design that allows measurements to be performed discreetly while avoiding any disturbances. The design can be customized to meet local requirements. The Probe concept is designed to support up to hundreds of probes to allow distributed data collection and KPI monitoring.



Key Benefits

2G to 5G support

Echo Probe supports measurement for a wide range of 2G–5G parameters ensuring the full advantages of 5G measurement for the users. 4G licenses are upgradeable to 5G making upgrading convenient and cost-effective. Customers can enjoy the 5G license benefits on most 5G supported Android and Harmony OS handsets.

Support of standard phones

Like all Echo products, Echo Probe runs with a large variety of off-the-shelf phones and is therefore fully customizable according to the customers network, technologies, and phone brand requirements. Phones can easily be replaced or swapped for upgrades to the latest phone versions and technologies.

24/7 unattended monitoring

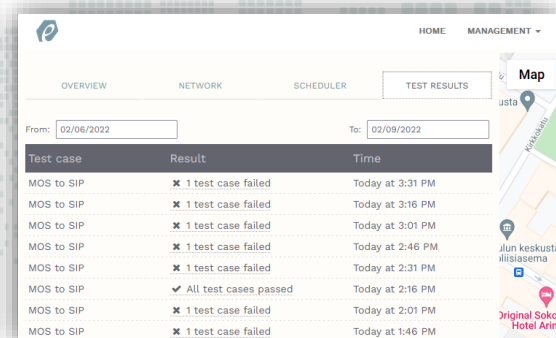
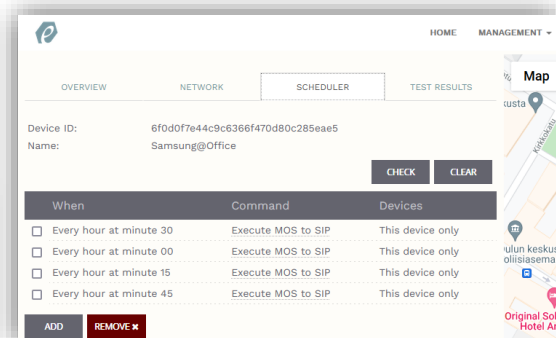
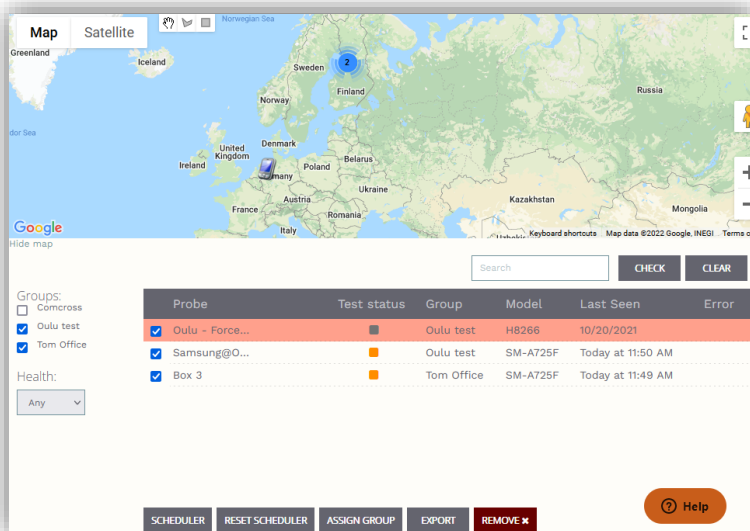
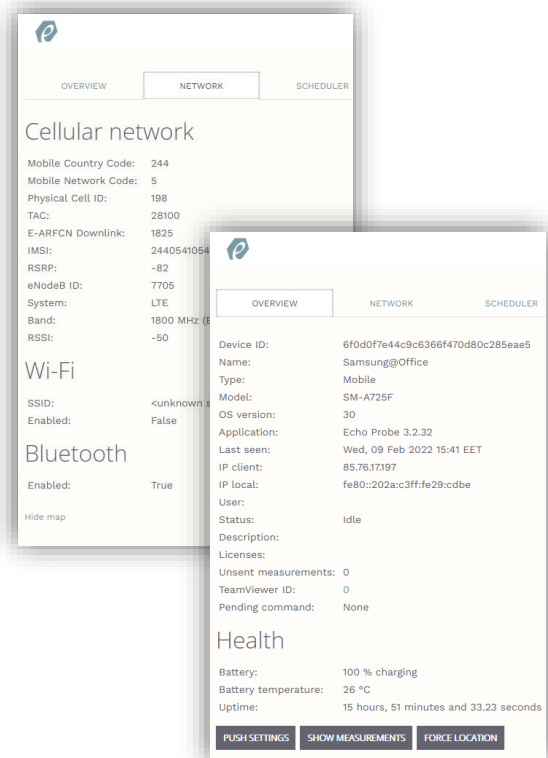
Echo Probe enables targeted 24/7 service quality monitoring without the need for device supervision. Echo Probe enables operators, infrastructure vendors, and testing service providers to continuously collect data from a real end-user perspective.

Cloud control

Once deployed, all functionalities are remote controlled by our advanced Cloud dashboard to avoid physical access needs to the probes.

The dashboard allows to:

- 24/7 monitoring to check for trouble-free operation
- Alarm function to inform support team
- Remote (re)configuration of all tests and scripts
- Scheduler to individually run tests on the probes
- Automatic and manual reboot in case of probe errors or at any given time
- Remote software update to keep the probe always up to date
- Automatic forward of KPI results to any supported postprocessing/reporting tool.



Echo Probe installation

Echo Probe can be installed as a local measurement probe in any fixed location for large-scale operations enabling multiple applications.

Measurements can be controlled remotely from any location via Cloud. Echo Probe can also be used as a target for call tests: place one Echo probe unit to a fixed location and perform calls to another Echo probe unit.

Self-healing

Intelligent self-healing procedures ensure an autonomous operation, recovering from equipment faults without manual intervention.

Economic efficiency with flexibility

The remote control via Cloud enables anyone to fix Echo Probe to any location while measurements are controlled, and settings and tests pushed to it remotely. This is convenient especially in situations where the measurement areas require security clearances or other permissions. Simply hand the Echo Probe to a person who has the clearances and permissions while the devices are controlled and monitored remotely by technical personnel.

PC-less campaigns without upfront preparations

Echo Probe does not require a PC to perform measurements, therefore, it offers unparalleled flexibility. Simply place Echo Probe in the designated location for measurement. Echo Probe is immediately ready for use and under no circumstances requires upfront preparation.

Extensive electronic sealing

Echo Probe enclosure includes not only a state-of-the-art electronic protection to shield the electronics from overvoltage but also surge protection for any external power spikes.

Advanced temperature control for a wide range of climate

The advanced climate control unit includes both active cooling and heating elements and therefore it allows installation to outdoors with a wide range of temperature variation. The cooling system has fanless design and therefore does not require any openings in the enclosure keeping it water and dustproof. The enclosure also has double-plated design with air gap surrounding it which makes it well insulated allowing even wider range of operation.

Weatherproof for outdoor installation

The Probe enclosure is classified IP55 to allow outdoor installation. The classification guarantees that the enclosure is protected from limited dust ingress, and from low pressure water jets from any direction.

Fully certified

Echo probe is CE certified. You can rest assured that it meets and exceeds any CE standards for safety.



Probe overview

ALL PROBES WITH ERRORS

Health overview

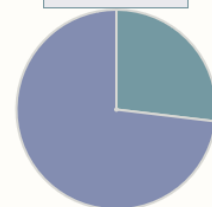


10 total

3 online
7 offline

Test overview

24 hours ago

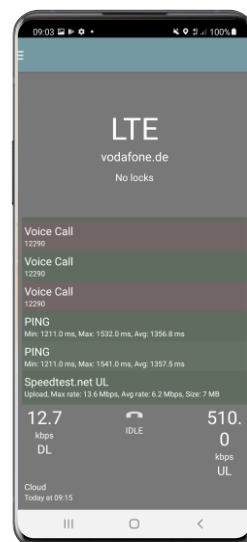


119 total

32 succeeded
87 failed

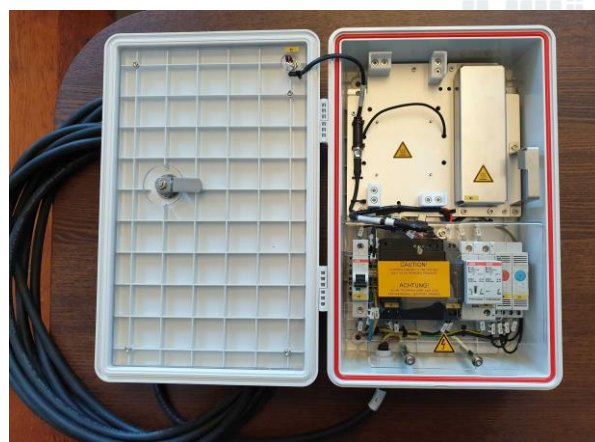
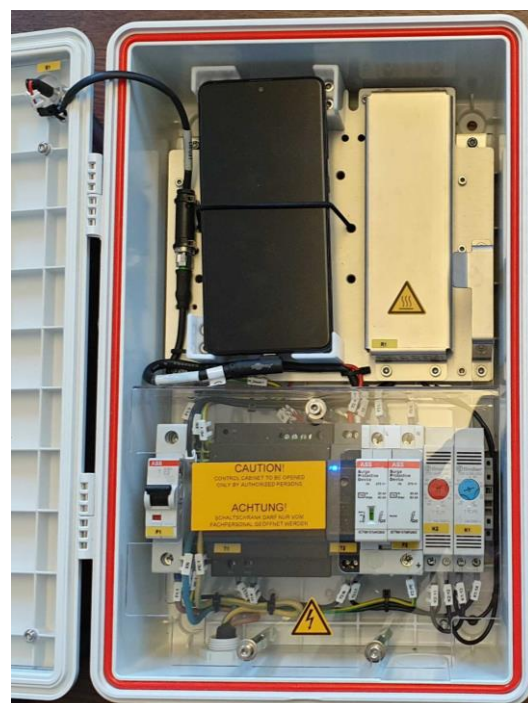
Software key features

- Android and Harmony OS supported application supporting Android 4.3 and newer, and Harmony OS
- Supports GSM, CDMA, EVDO, WCDMA, HSDPA, HSUPA, HSPA+, LTE/LTE-A, 5G, Wi-Fi and Bluetooth measurement
- Idle and Active testing using manual or scripted mode for voice call, voice quality, FTP, SFTP and HTTP data transfers, iPerf, HTML browsing, YouTube video streaming testing, SMS testing, traceroute testing, ping testing, and two-way ping (TWAMP) testing
- Manual and Scripted tests can be created and modified with built-in script editor in Cloud. When tests are edited in Cloud, they are automatically synchronized to devices
- Support for Google ViSQOL: an objective speech quality model for voice quality testing
- Support for POLQA voice quality testing real-time MOS calculation (optional)
- System lock, band lock, LTE cell lock, and carrier lock (UMTS). (Device-dependent feature.)
- Improved locking function allowing phone forcing without rebooting the device
- Support for both internal GPS and external GPS via Bluetooth.



Hardware key features

- CE certified and IP55 classified
- Lightweight and durable hardware design with safety features and easy fixing, lock-protected
- Central charger with pass through charging: device can be charged overnight or anywhere in the field
- Easy access to view or swap the build in phone
- Active air conditioning with heater/cooler to maintain any outdoor temperature ranges
- Dimensions are customizable accordingly customer requirements
- Weight is customizable accordingly customer requirements
- Operating temperature is -20°C ~ 45°C with active air conditioning
- Power connection is 230V



Echo Probe features

Feature Tests
Voice Call (MOC)
Voice Call (MTC)
VoLTE
VoWiFi
MOS-LQO (ViSQOL)
MOS (POLQA v3)
FTP (UL/DL)
SFTP (UL/DL)
SMS
HTTP Browser
HTTP File UL/DL
PING
TW PING (TWAMP)
YouTube
iPerf TCP/UPD (UL/DL)
Manual Script Testing
Automatic Script Testing
Wi-Fi
Ookla Speedtest.net UL/DL/Ping
Traceroute Test

Feature Forcing
Technology
Band
Channel
Cell

Feature Phone Rooting
Standard Android Root (Free of Charge)
Feature Remote Control
Measurement Control
Test case Management
Device Monitoring

Feature Chipset Support
Qualcomm
HiSilicon (Huawei)

Feature Technologies
GSM
UMTS
EVDO
LTE (TDD/FDD)
Wi-Fi
Bluetooth
5G (NSA/SA)



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