

**APPLICATION
EXAMPLES
INCLUDED**



Code 1406

HHP IV

HEAD Handset Positioner, MotoMount (Hexapod) Version

OVERVIEW

HHP IV

Code 1406

HEAD Handset Positioner, MotoMount (Hexapod) Version

HHP IV is an electrically driven hexapod (parallel kinematic system) with a mounting bracket on the hexapod platform for a clamping device that holds a telephone handset. It forms a complete assembly with an artificial head of the HMS II series. HHP IV drives handsets to standardized and recommended test positions according to Recommendation ITU-T P.64 or IEEE 269. Further, customized positions are available within the technical limits of HHP IV.

KEY FEATURES

Fully automated positioning of handsets at the ear of an artificial head of the HMS II series

The hexapod kinematic of HHP IV allows positioning the handset in positions along the coordinate system from Recommendation ITU-T P.64

Automatic documentation in ACQUA of approached positions and applied application force of the handset

Remote control via ACQUA

Compatible with every artificial head from the HMS II Series after initial calibration

Manual control via touch panel

APPLICATIONS

Suitable for use with artificial heads HMS II.3, HMS II.3 LN, HMS II.3 LN HEC, HMS II.3 ViBRIDGE, HMS II.4 and HMS II.5

Fully automated and reproducible voice quality testing of, e.g.:

- > Smartphones (with and without display speaker)
- > Cordless phones
- > Communication devices with handset
- > Tablets

Analysis of positional robustness

Effects of user-behavior on voice quality in sending and receiving direction of the device under test

DETAILS

HHP IV is a motorized device to move telephone handsets in specified positions. It has a jig to clamp telephone handsets. Utilizing the included electrical motors, it drives telephone handsets to various positions close to the pinna or on the pinna of an artificial head from the HMS series. HHP IV supports standard test positions (STP) according to ITU-T Recommendation P.64 and recommended test positions (RTP) specified by IEEE 269 and ITU-T Recommendation P.64. Further, it allows adjusting contact pressure from the handset to the pinna of the artificial head.

DESCRIPTION

Application

Mounted on an artificial head from the HMS II series, HHP IV automatically positions a clamped handset in a wide range of standard or user-defined positions close to the pinna or on the pinna. Furthermore, the contact pressure of the handset to the pinna is adjustable. The positioner is compatible with the 3.3, 3.4, and 4.4 pinna types from Recommendation ITU-T P.57.

HHP IV enhances the analysis of voice quality from handsets in dependence of position and contact pressure. It becomes easier, faster and, more economical. The construction allows movement along three perpendicular axes and rotations around them. HHP IV provides an extended assessment of positioning aspects, in particular with regard to positional robustness testing.

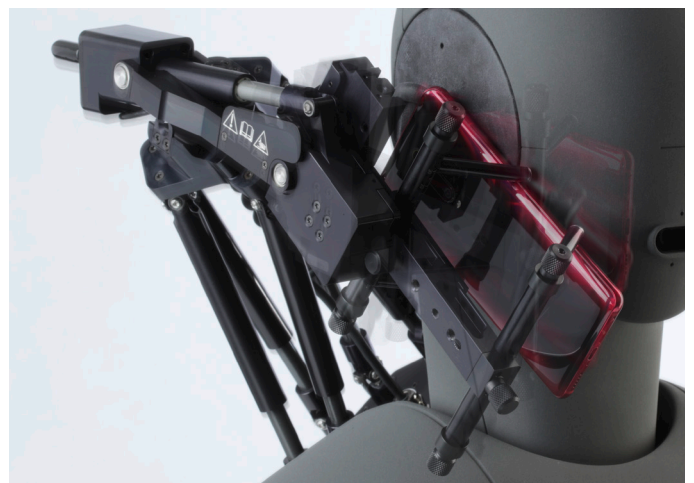
HHP IV is a sturdy and sophisticated construction based on the principles of hexapod parallel kinematics. Its telescopic legs and the longitudinal movement are driven by stepper motors.

Drive Unit and Hexapod

The hexapod (parallel kinematic system) and the drive unit are the core of HHP IV. The housing at the bottom contains six stepper motors for moving the hexapod platform. Two bolts and a screw attach the housing to the neck mounting plate of the artificial head. Six telescopic legs connect to the motors of the drive unit at the hexapod basis and the hexapod platform by cardan joints. On the hexapod platform is a seventh stepper motor which connects to another telescopic leg which controls the longitudinal movement.

Clamping Device

The clamping device holds the handset during measurements. It has got adjustable screws and clamps for attaching any handset device within the dimensional limits. There are two types of clamping the devices available. The regular one (CDM-R) for common handsets and a wide clamping device (CDM-W) for wider handsets and tablets.



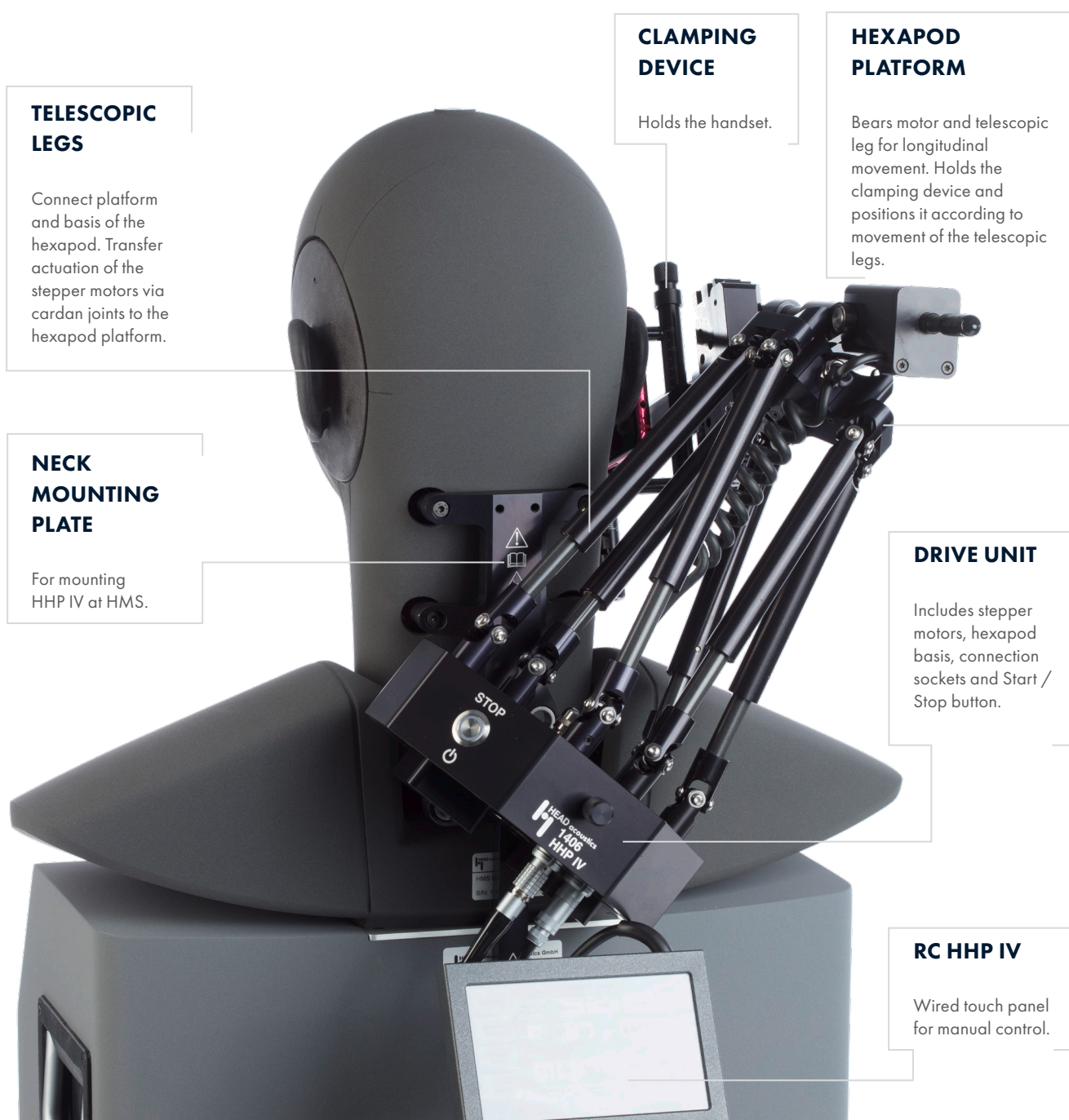
Handset Positioning

The positioning jig is assembled to the clamping device and helps positioning the loudspeaker of the handset at the ear cap reference point (ECRP). The jig has a reticle and dimension specifications for this purpose.

Remote Control

ACQUA provides menus to control all settings and features of HHP IV. Thus, after successful calibration and the attachment of the handset, fully automatic remote operation of HHP IV via ACQUA is possible. For larger distances between HHP IV and the computer running ACQUA, there is the option CUU III.10 which extends the original cable by ten meters.

RC HHP IV is a wired touch panel to control HHP IV manually. During idle time, running measurements, or for more convenient operation, there is a magnetic holder to attach the touch panel.



TECHNICAL DATA

Electrical

Input voltage	24 V
Power consumption	30 W

Electrical Motors

Motor type	7 x stepper motor
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Mechanical

Application force	up to 18 N with a resolution of 0.1 N
Weight of handset	max. 600 g
Dimensions of handset (length, width, depth)	Applying CDM-R ≥ 50 mm, 30 – 93 mm, < 45 mm Applying CDM-W ≥ 50 mm, 81 – 200 mm, < 45 mm
Maximum positioning range per axis (coordinate system as defined by Recommendation ITU-T P.64)	-45° ≤ A ≤ +45° -10° ≤ B ≤ +45° -5° ≤ C ≤ +5°

Factory Calibration

Reference adapter ERP 3.3	Tolerance range
› Xm axis	› 0 mm ± 0.25 mm
› Ym axis	› 0 mm ± 0.25 mm
› Zm axis	› 0 mm ± 0.25 mm
› Angle deviation	› 0° -0.00°/+0.35°

RC HHP IV

Display	5" touchscreen, 800 x 400 pixel
Dimensions (length, width, depth)	128 mm x 92 mm x 17 mm

Environmental Conditions

Operating temperature	15 °C – 35 °C / 59 °F – 95 °F
Storage temperature	-20 °C – 70 °C / -4 °F – 158 °F
Air humidity	20% – 80% relative humidity, non-condensing

Dimensions

Weight	approx. 5 kg
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OPTIONS

CDM-W (Code 1408)

- › Clamping Device MotoMount , Wide, Complete

CUU III.10 (Code 6114-10)

- › Cable extension USB <> USB, type A, 10 m

SCOPE OF DELIVERY

HHP IV (Code 1406)

- › Handset positioner, MotoMount (Hexapod) Version

CDM-R (Code 1407)

- › Clamping Device MotoMount, Regular, Complete

RC HHP IV (Code 1413)

- › Handheld remote control

Pos-CDM-R (Code 1638.11)

- › Positioning jig for Regular VariMount/MotoMount Clamping Device

AK HHP IV (Code 1638.42)

- › Allen key 2.5 mm

NMP HHP IV (Code 1638.43)

- › Neck mounting plate

MH-RC HHP IV (Code 1638.44)

- › Magnetic Holder for RC HHP IV

Cal HHP IV HEC (Code 1638.47)

- › Calibration Disc

- › ERP positioning pointer

4 x short fixation screws

2 x long fixation screws

8 x M4 × 10 socket screws

CUSB II.1.5 (Code 5478-1.5)

- › USB 2.0 cable, type B <> type A

HCC-HHP IV (Code 1634.2)

- › Carrying case

PS 24-60-L4 (Code 0617B)

- › Power supply 24 V, 60 W, LEMO 4-pin

Manual

GENERAL REQUIREMENTS

Hardware

One of the following Head Measurement Systems:

HMS II.3 (Code 1703)

- › Head Measurement System, basic version with right ear simulator, 3.3 pinna, and artificial mouth

HMS II.3 LN (Code 1703.1)

- › Head Measurement System, low-noise version with right ear simulator, 3.3 pinna, and artificial mouth

HMS II.3 LN HEC (Code 1703.2)

- › Head Measurement System, low-noise version with human-like ear canal simulator right, 4.4 pinna, and artificial mouth

HMS II.3 ViBRIDGE (Code 1703.3)

- › Head Measurement System, low-noise, with human-like ViBRIDGE ear simulators (left and right), 4.4 pinna, and artificial mouth

HMS II.4 (Code 1704)

- › Head Measurement System, basic version with right ear simulator, 3.3 pinna

HMS II.5 (Code 1705)

- › Head Measurement System, basic version with 3.3 pinna and artificial mouth

Software

One of the following software applications:

ACQUA (Code 6810)

- › Advanced Communication Quality Analysis Software, Full-license version

ACQUA Compact (Code 6860)

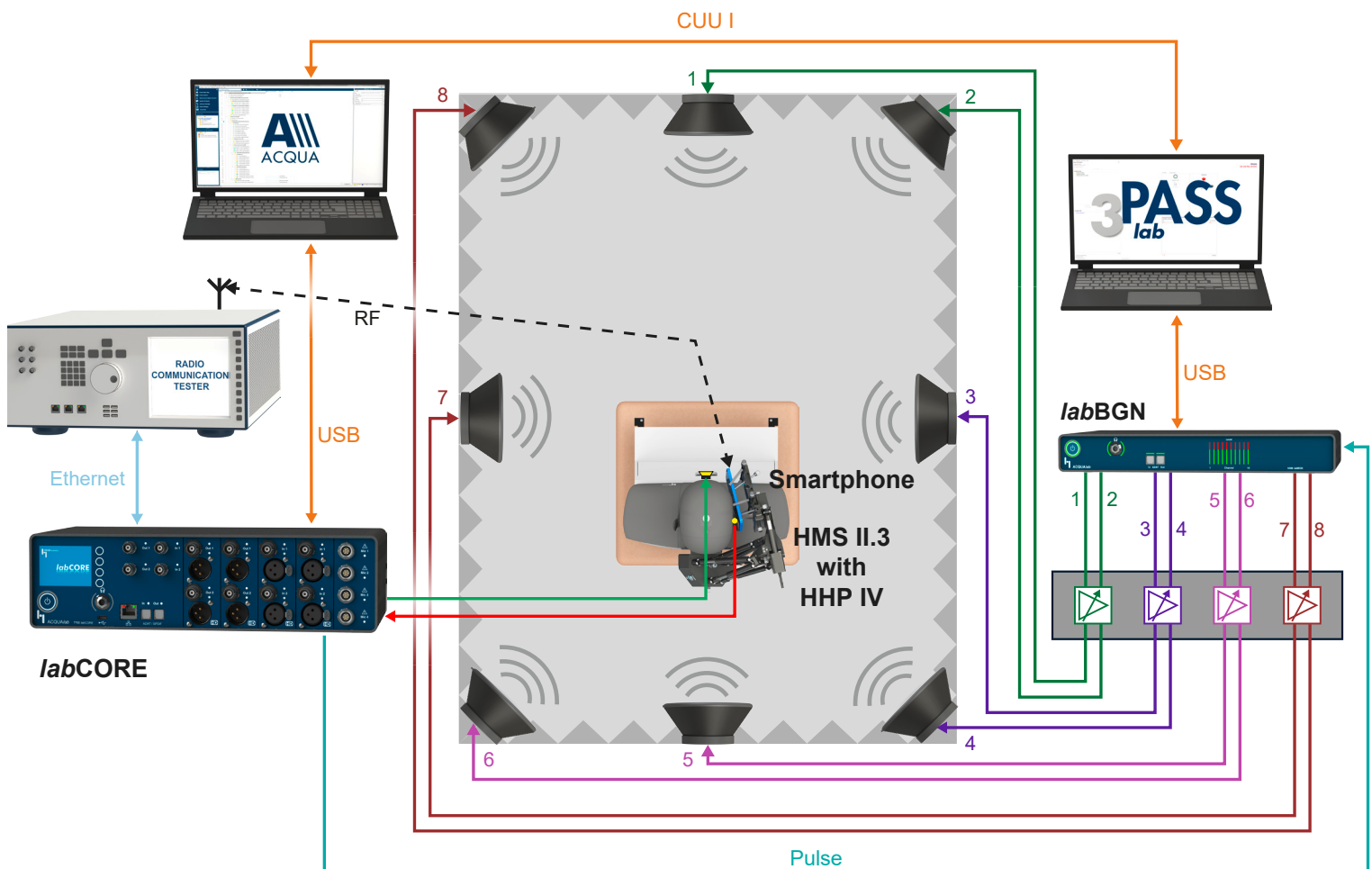
- › Compact test system

IN PRACTICE

APPLICATION EXAMPLES

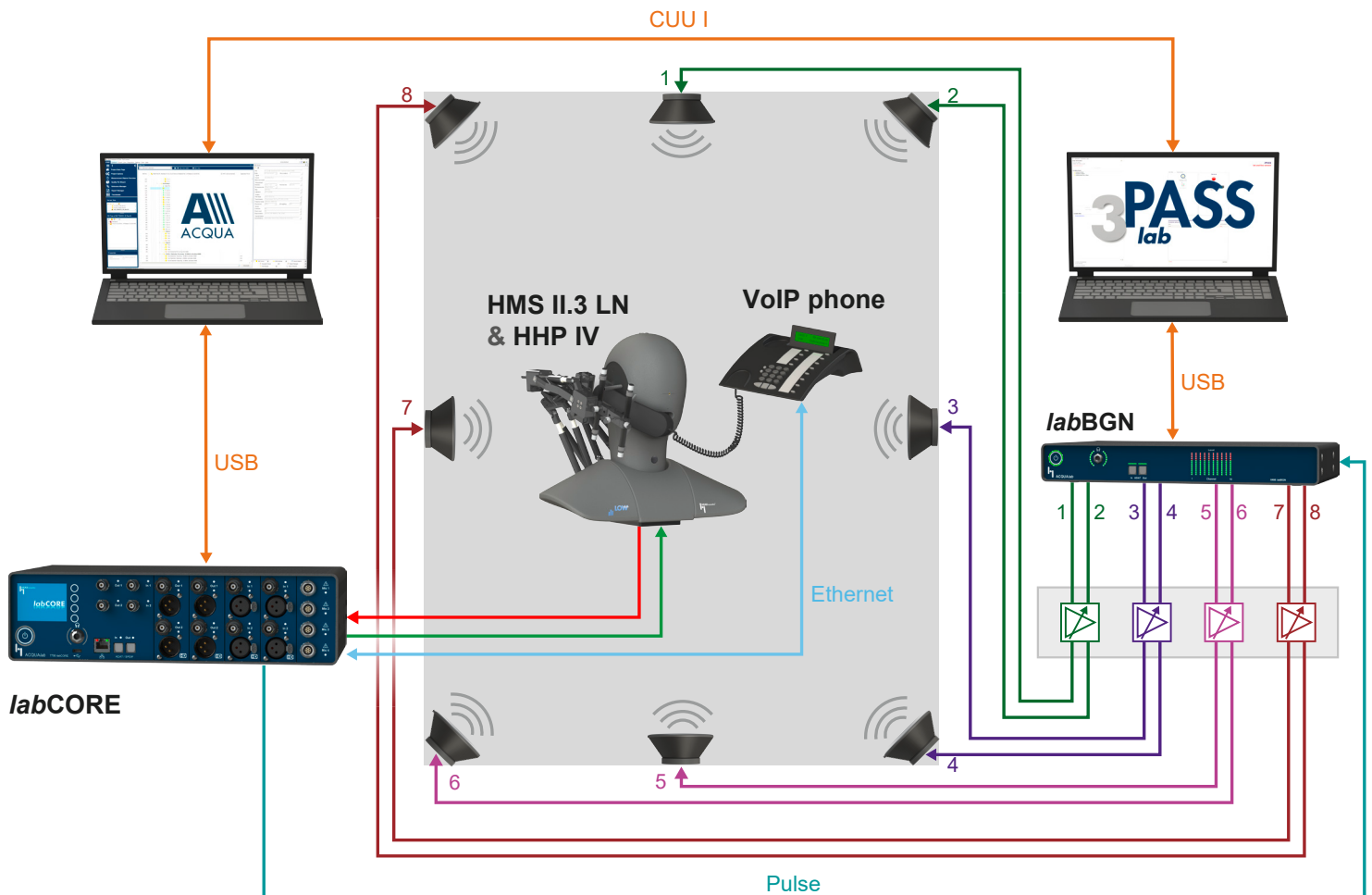
Smartphone

Exemplary measurement configuration including HHP IV holding a smartphone. HHP IV moves and holds the smartphone (device under test) at various positions on the pinna or close to the pinna of HMS II.3. The smartphone connects via the applied network to a radio tester. *labCORE* transmits signals to HMS II.3 for playback and receives signals from HMS II.3 for recording. *ACQUA* generates the signals for playback and analyzes the recorded signals. Further, *ACQUA* provides full control of HHP IV. *3PASS lab* plays back background noise to assess speech signal processing of the smartphone under real-life conditions.



VoIP Phone

Exemplary measurement configuration including HHP IV holding a handset of a VoIP phone. HHP IV moves and holds the handset at various positions on the ear or close to the ear of HMS II.3 LN. The VoIP phone connects via Ethernet to *labCORE*. *labCORE* transmits signals to HMS II.3 LN for playback and receives signals from HMS II.3 LN for recording. ACQUA generates signals for playback and analyzes recorded signals. Further, ACQUA provides full control of HHP IV. *3PASS lab* plays back background noise to assess speech signal processing of the VoIP phone under real-life conditions.



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