

Measurement tree and result diagram for DTAG-Mobile-NB in communication analysis system ACQUA

## DATA SHEET

### DTAG-Mobile-NB

#### (Code 60013)

Voice Quality Evaluation of Mobile Phones,  
Narrowband Part

#### Overview

Speech quality assessment of mobile phones is quite a challenge due to the various kinds of signal processing involved (e.g. noise reduction algorithms, various kinds of speech processing and the transmission delay itself). All these aspects have a significant influence on conversational speech quality.

Therefore, Deutsche Telekom AG (DTAG) has developed the test specification "VoiceQuality Test Conditions for Narrow Band" which has been implemented by HEAD acoustics as measurement standard for the communication analysis system ACQUA. It provides **comprehensive tests** for the analysis of

- **Delay**
- **Speech transmission quality**
- **Echo**
- **Quality during double talk**
- **Quality of background noise transmission**

Manufacturers need DTAG-Mobile-NB to be able to prove conformance of their narrowband mobile devices with the requirements of the new DTAG test specification.

#### DESCRIPTION

The tests implemented in DTAG-Mobile-NB cover all requirements of the new DTAG specification regarding **voice quality in the narrowband range** such as

- delay measurements in sending and receiving direction
- objective speech quality assessment under single talk conditions in sending and receiving direction
- echo tests
- detailed evaluation of quality during double talk
- quality of background noise transmission.

In addition, **recordings using real speech** under single talk, echo and double talk conditions are implemented. Apart from the measured parameters these recordings also provide listening examples which can be used for audio demonstrations.

For determination of the quality of background noise transmission a standardized arrangement consisting of four loudspeakers and one subwoofer is used in a separate test room setup. It allows a **close-to-reality noise playback** and can be used for all types of background noise.

#### SYSTEM REQUIREMENTS

DTAG-Mobile-NB requires the following system components:

- **ACQUA** Communication Analysis System as one of the following variants (version 3.0.110 or later):
  - Full-license (Code 6810)
  - Workplace (Code 6830, for post-analysis and documentation only)
  - Compact Systems (Code 6860.xx)
- **HMS II.3** HEAD Measurement System (Code 1230) with pinna type 3.3. *Note: additional left ear simulator required for headset measurements. For acoustics shock measurements, Pinna type 3.4 can be used.*
- **HHP III** Handset Positioner (Code 1400)
- **MFE VI.1** Measurement Frontend (Code 6462) with option **MFEVI-BEQ** (Code 6461)
- **HAE-BGN** Background Noise Simulation (Code 6971)
- **ACOPT 10** TOSQA2001 Telecommunications Objective Speech Quality Assessment (Code 6820)
- **ACOPT 21** 3QUEST, 3-fold Quality Evaluation of Speech in Telecommunications (Code 6844)
- **System Simulator** e.g. R&S CMU200 with corresponding wideband option (not delivered by HEAD acoustics)

#### APPLICATIONS

- **Conformance tests** of narrowband mobile terminals (handset, hands-free and headset modes) according to DTAG test specification "Voice Quality Test Conditions for Narrow Band"

#### OPTIONS

- **ACOPT 20** Quality Pie (Code 6843)
- **UG DTAG-Mobile-WB** Upgrade to wideband measurements (Code 60014)

#### DELIVERY ITEMS

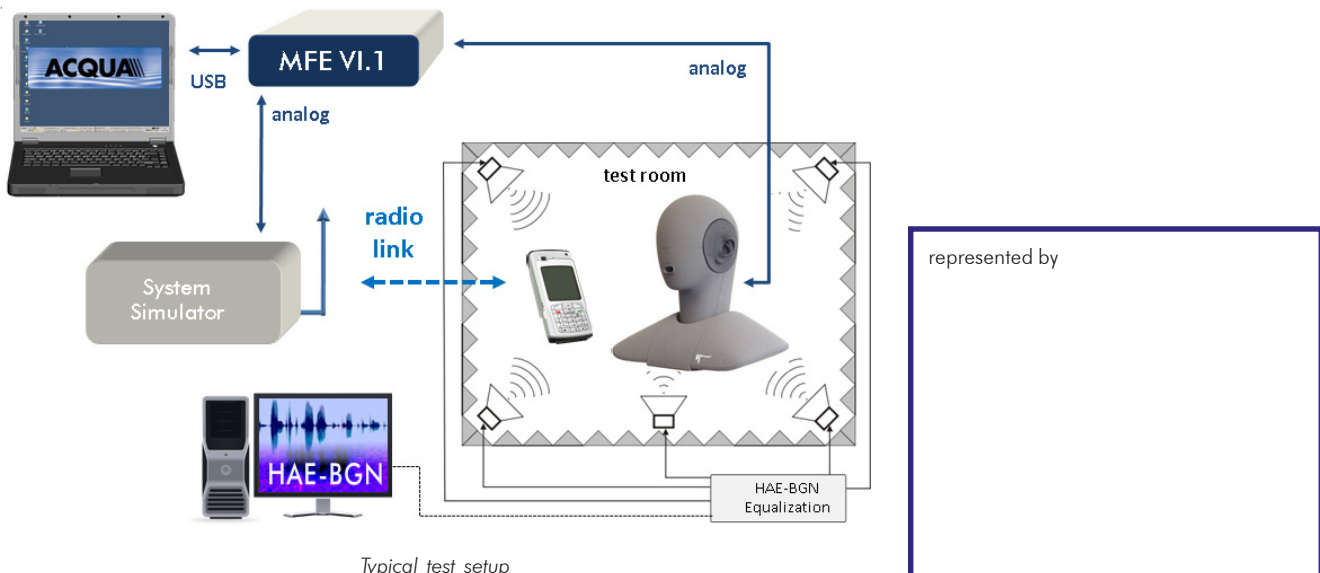
- **DTAG-Mobile-NB** measurement standard, delivered as ACQUA database on CD (Code 60013)
- **V2C file** (for ACQUA 3.0.110 or later), on CD
- **Manual** as PDF on CD

## MEASUREMENTS

The following measurements can be performed with DTAG-Mobile-NB:

	Handset NB	Handheld Hands-free NB	Headset NB
CMU Calibration	●	●	●
Delay SND /RCV/Echo/ Round Trip	●	●	●
Loudness Rating *	RCV, SND	RCV, SND	RCV, SND
TMOS Estimation by Frequency Response	RCV	-	RCV
Frequency Response *	RCV, SND	RCV, SND	RCV, SND
Idle Channel Noise *	RCV, SND	RCV, SND	RCV, SND
Distortion with activation, without activation	RCV, SND	RCV, SND	RCV, SND
Activation Sensitivity - Switch On	RCV	RCV	RCV
Attenuation Range - Switch Over	RCV, SND	RCV, SND	RCV, SND
Speech Quality TMOS*	RCV, SND	RCV, SND	RCV, SND
Activation in Sending Direction	SND	SND	SND
AGC Test SND	SND	SND	SND
Sidetone Delay	●	-	●
STMR - MAX, NOM	●	-	●
TCLw - Real Speech, CSS, MAX, NOM	●	●	●
Echo Att. vs. Time; -5, -25 dBm0, MAX, NOM	●	●	●
Spectral Echo Att.; -5, -16, -25 dBm0, MAX, NOM	●	●	●
Echo vs. Time, Variable Echo Path; -5, -25 dBm0, MAX, NOM	●	-	●
Stability loss - MAX	●	●	●
Initial Convergence with Hoth BGN - MAX	●	●	●
Attenuation Range during Double Talk	RCV, SND	RCV, SND	RCV, SND
Echo Components during Double Talk	●	●	●
BGNT with Near End Speech - Cafe, Hoth	●	●	●
BGNT with Far End Speech - Cafe, Hoth	●	●	●
Comfort Noise: Level Adjustment - Cafe	●	●	●
Comfort Noise: Spectral Adjustment -Cafe	●	●	●
Speech and Noise Quality BGN - Cafe, Car, Train, Road	SND	SND	SND
Speech and Noise Qual BGN S-N-G-MOS - Cafe, Car, Train, Road	SND	SND	SND
Speech Single Talk	RCV, SND	RCV, SND	RCV, SND
Speech Double Talk	RCV, SND	RCV, SND	RCV, SND
Speech in Sending Direction, Echo	●	●	●
Speech Single Talk, BGN	RCV, SND	RCV, SND	RCV, SND
Speech in Sending Direction, Double Talk BGN	●	●	●
Speech in SND Direction, Echo, BGN	●	●	●
Speech in Sending Direction, Echo Model	●	●	●
Speech in SND Direction, Echo Model BGN	●	●	●
Acoustic Shock Short Duration	RCV	RCV	RCV
Acoustic Shock Long Duration	RCV	RCV	RCV

\*comprises several measurement variants, e.g. varying application forces



Typical test setup