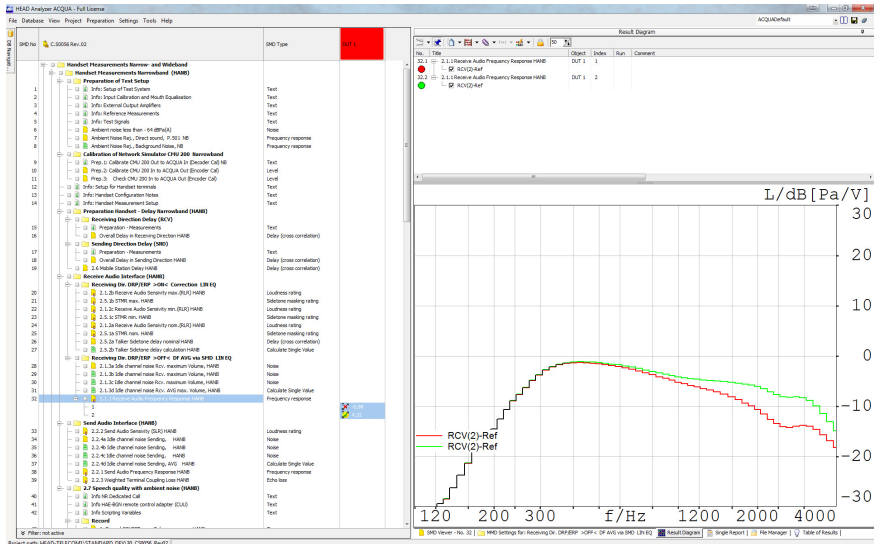


DATA SHEET

C.S0056 (Code 6788)

Electro-acoustic Measurements of cdma2000® Mobile Terminals according to 3GPP2 Standard C.S0056



C.S0056 measurement project in communication analysis system ACQUA

OVERVIEW

3GPP2 standard C.S0056 specifies test methods to assess the recommended minimum performance requirements for cdma2000® mobile terminals.

HEAD acoustics has implemented the measurements required by the standard into the automated test suite C.S0056 for the communication quality analysis system ACQUA.

Note: cdma2000® is the trademark for the technical nomenclature for certain specifications and standards of the Organizational Partners (OPs) of 3GPP2. Geographically (and as of the date of publication), cdma2000® is a registered trademark of the Telecommunications Industry Association (TIA-USA) in the United States.

DESCRIPTION

The tests implemented in the C.S0056 test suite cover all relevant **electro-acoustic performance** aspects of **cdma2000® mobile terminals** as specified by the 3GPP2 standard.

The specifications of the standard are intended to ensure a level of electro-acoustic performance approaching that defined by the ITU-T for PSTN circuits. These electro-acoustic requirements are applicable to all speech service options of mobile terminal handsets. Requirements for loudspeaker, headset, and hands-free configurations are not addressed in the standard and are for further study.

The measurements in the HEAD acoustics test suite may be changed, adapted or modified if needed in order to conduct additional tests. The tests can be combined in any way to create individual test sequences.

Combined with the advanced communication quality analysis system ACQUA and the calibrated front end MFE VI.1, the C.S0056 test suite with its predefined measurement descriptors and automated measurement sequences allows the fast and easy acquisition, analysis and documentation of measurement data.

APPLICATIONS

- **Conformance testing** of cdma2000® mobile terminals according to 3GPP2 standard C.S0056
- **Automated quality analysis** of 3GPP2 cdma2000® mobile terminals
- **Experimental development and optimization** of 3GPP2 cdma2000® mobile terminals with objective evaluation of speech quality

SYSTEM REQUIREMENTS

C.S0056 (Code 6788) requires the following system components:

- **ACQUA** Communication Quality Analysis System as one of the following versions:
 - Standard (Code 6810)
 - Compact systems (Code 6860.xx)
- **ACOPT 21 3QUEST** (Code 6844): 3-fold Quality Evaluation of Speech in Telecommunications
- **MFE VI.1** (Code 6462): Measurement Front End with integrated mouth amplifier; *alternatively: MFE VI (Code 6460) Measurement Front End (requires external mouth amplifier)*

- **HMS II.3-33** (Code 1230.1): Artificial HEAD Measurement System with Pinna Type 3.3
- **HHP III.1** (Code 1403): HEAD Handset Positioner
- **Background Noise Simulation System**, e.g. **HAE-BGN** (Code 6971)
- **Radiotester** e.g. Rohde & Schwarz CMU200 (not delivered by HEAD acoustics)
- **CTD III** (Code 6081) 1 m cable 9-pin Sub-D <-> Telecom (for connection of HEAD acoustics measurement front ends to radiotester CMU200)

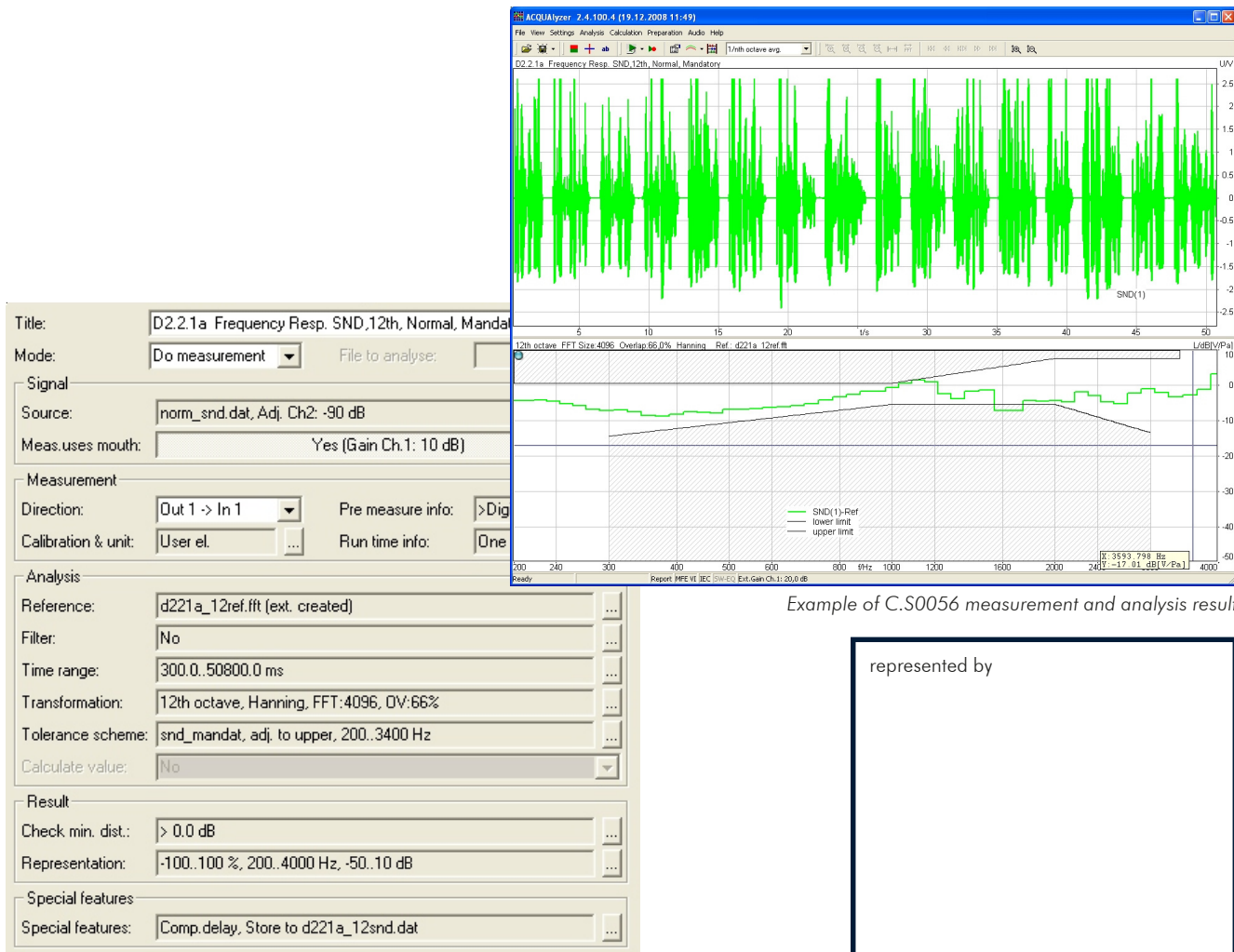
DELIVERY ITEMS

- **C.S0056** (Code 6788) as ACQUA database on DVD
- **V2C file** (for ACQUA 3.1.200 or later) on license CD
- **Manual** (as PDF on DVD)

MEASUREMENTS

The following list gives an overview of the measurements included in the C.S0056 test suite (numbering according to standard):

SMD Title			SMD Type
	Narrowband (HANB)	Wideband (HAWB)	
2.1.1 Receive Audio Frequency Response	●	●	Frequency response
2.1.2 Receive Audio Sensivity min/nom/max Volume	●	●	Level
2.1.3 Idle Channel Noise Receiving	●	●	Noise
2.2.1 Send Audio Frequency Response	●	●	Frequency response
2.2.2 Send Audio Sensivity	●	●	Loudness rating
2.2.3 Weighted Terminal Coupling Loss	●	●	Echo loss
2.2.4 Idle Channel Noise Sending	●	●	Noise
2.4 Wideband to Narrowband Loudness Contrast RCV/SND		●	Calculate Single Value
2.5.1 STMR min/nom/max Volume	●	●	Sidetone Masking Rating
2.5.2 Talker Sidetone Delay	●	●	Delay (cross correlation)
2.6 Mobile Station Delay	●	●	Delay (cross correlation)
2.7 Speech Quality with ambient Noise	●	●	3QUEST



Example of C.S0056 measurement descriptor in ACQUA analysis system