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Technical Specification

Universal Mobile Telecommunications System (UMTS);

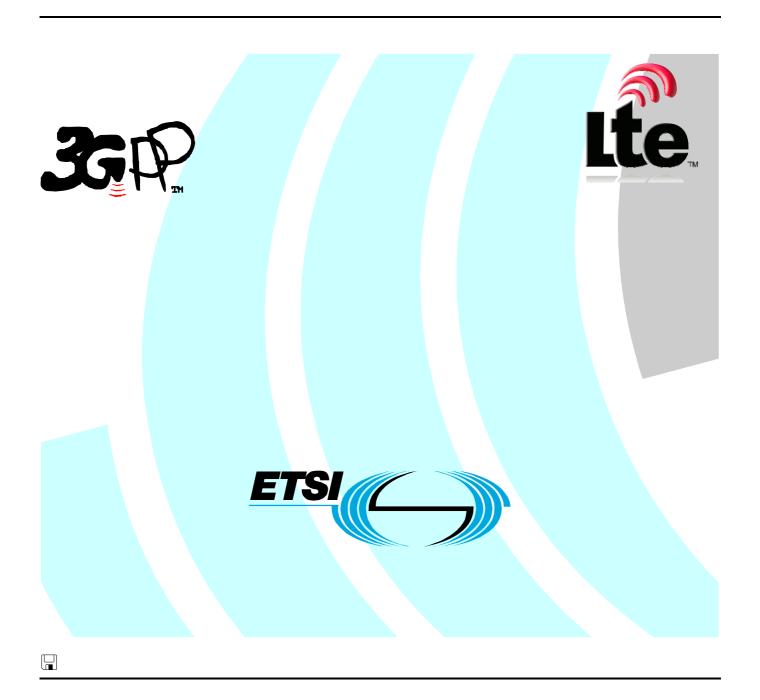
LTE;

Speech Enabled Services (SES);

**Distributed Speech Recognition (DSR)** 

extended advanced front-end test sequences

(3GPP TS 26.177 version 8.0.0 Release 8)



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## **Foreword**

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Version x.y.z

#### where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

## 1 Scope

The present document specifies the digital test sequences for the DSR Extended Advanced Front-end speech codec. These sequences can be used to test for a bit exact implementation of the DSR Advanced Front-end codec and quantization (3GPP TS 26.243).

## 2 References

The following documents contain provisions, which through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.
- [1] 3GPP TS 26.243: "ANSI-C code for the Fixed-Point Distributed Speech Recognition Extended Advanced Front-end".
- [2] ETSI ES 202 050: "Speech Processing, Transmission and Quality Aspects (STQ); Distributed speech recognition; Advanced front-end feature extraction algorithm; Compression algorithms DSR advanced front end."
- [3] ETSI ES 202 212: "Speech Processing, Transmission and Quality Aspects (STQ); Distributed speech recognition; Extended advanced front-end feature extraction algorithm; Compression algorithms; Back-end speech reconstruction algorithm".
- [4] 3GPP TS 26.074: "AMR speech codec test sequences"
- [5] 3GPP TS 26.174: "Adaptive Multi-Rate (AMR) Wideband speech codec test sequences"

#### 3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AFE Advanced Front-end
AMR Adaptive Multi-Rate
AMR-NB AMR Narrowband
AMR-WB AMR Wideband

DSR Distributed Speech Recognition

ETSI European Telecommunications Standards Institute

GSM Global System for Mobile communications

SES Speech Enabled Services
VAD Voice Activity Detector
X-AFE eXtended Advanced Front-end

#### 4 General

Digital test sequences are provided to test for a bit exact implementation of the Distributed Speech Recognition Extended Advanced Front-end (3GPP TS 26.243 [1]).

The test sequences may also be used to verify installations of the ANSI C code in 3GPP TS 26.243 [1].

Clause 5 describes the format of the files, which contain the digital test sequences.

## 5 Test sequence format

This clause provides information on the format of the digital test sequences for the DSR Extended Advanced Front-end (TS 26.243 [1]).

#### 5.1 File format

The test sequence files in PC (little-endian) byte order are provided in archive files (ZIP format), which accompany the present document.

Following decompression, three types of file are provided:

- \*.inp Input to the speech encoder.
- \*.cep Cepstral output of the encoder, input to the quantizer.
- \*.pitch Pitch output of the encoder, input to the quantizer.
- \*.class Class output of the encoder, input to the quantizer.
- \*.vad VAD output of the encoder, input to the quantizer.
- \*.bs Output of the quantizer

Two test scripts are provided for exercising the Extended Advanced Front-end and quantizer functions.

All file formats are described in 3GPP TS 26.243 [1].

## 6 DSR test sequences

Forty-three encoder input sequences are provided, 22 with 8kHz sampling, 23 with 16kHz sampling.

8kHz sampling:

T00.INP - T21.INP as described in the AMR test sequences document TS 26.074 [4].

16kHz sampling:

T00.INP - T22.INP as described in the AMR WB test sequences document TS 26.174 [5].

# Annex A (informative): Change history

Change history									
Date	TSG SA#	TSG Doc.	CR	Rev	Subject/Comment	Old	New		
12-2004	26	SP-040833			Approved at TSG SA#26	1.0.0	6.0.0		
06-2007	36				Version for Release 7	6.0.0	7.0.0		
12-2008	42				Version for Release 8	7.0.0	8.0.0		

## History

Document history								
V8.0.0	January 2009	Publication						