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TECHNICAL SPECIFICATION

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Contents

Foreword

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Version x.y.z

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y   the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

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1   Scope

The present document specifies the Voice Activity Detector (VAD) used in the Discontinuous Transmission (DTX) of the EVS Codec. Although the main application of the VAD algorithm is the detection of speech or voice signals, the algorithm is more accurately described as a Signal Activity Detection (SAD) algorithm.

The present document is a high level overview of the functionality with reference to the Codec Detailed Algorithmic Description where the functionality is specified in detail.

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.

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[1]   3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2]   3GPP TS 26.441: "Codec for Enhanced Voice Services (EVS); General Overview".

[3]   3GPP TS 26.445: "Codec for Enhanced Voice Services (EVS); Detailed Algorithmic Description ".

[4]   3GPP TS 26.442: "Codec for Enhanced Voice Services (EVS); ANSI C code (fixed-point)".

[5]   3GPP TS 26.443: "Codec for Enhanced Voice Services (EVS); ANSI C code (floating-point)".

[6]   3GPP TS 26.444: "Codec for Enhanced Voice Services (EVS); Test Sequences".

[7]   3GPP TS 26.446: "Codec for Enhanced Voice Services (EVS); AMR-WB Backward Compatible Functions".

[8]   3GPP TS 26.449: "Codec for Enhanced Voice Services (EVS); Comfort Noise Generation (CNG) Aspects".

[9]   3GPP TS 26.450: "Codec for Enhanced Voice Services (EVS); Discontinuous Transmission (DTX)".

[10]   3GPP TR 26.952: "Codec for Enhanced Voice Services (EVS); Performance Characterization".

3   Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

ACELP	Algebraic Code-Excited Linear Prediction
AMR-WB	Adaptive Multi Rate Wideband (codec)
CNG	Comfort Noise Generator
DTX	Discontinuous Transmission
EVS	Enhanced Voice Services
FB	Fullband

FEC	Frame Erasure Concealment
IP	Internet Protocol
JBM	Jitter Buffer Management
MSB	Most Significant Bit
MTSI	Multimedia Telephony Service for IMS
NB	Narrowband
PS	Packet Switched
PSTN	Public Switched Telephone Network
SAD	Signal Activity Detection
SC-VBR	Source Controlled - Variable Bit Rate
SID	Silence Insertion Descriptor
SWB	Super Wideband
VAD	Voice Activity Detection
WB	Wideband
WMOPS	Weighted Millions of Operations Per Second

4 General

The function of the Enhanced Voice Services coder VAD algorithm, or more accurately the SAD algorithm, is to indicate whether each 20 ms frame contains signals that should be transmitted, e.g. speech, music or other audio. The output of the SAD algorithm is a Boolean flag (f_{SAD}) that is set to one for the active signal, which is any useful signal bearing some meaningful information. Otherwise, the flag is set to zero indicating an inactive signal, which has no meaningful information. The inactive signal is mostly a pause or background noise.

The procedure of the present document is mandatory for implementation in all network entities and User Equipment (UE)s supporting the EVS coder.

The present document does not describe the ANSI-C code of this procedure. In the case of discrepancy between the procedure described in the present document and its ANSI-C code specifications contained in [4] the procedure defined by the [4] prevails.

5 The SAD Algorithm

The Enhanced Voice Services codec signal activity detection (SAD) module described in the present document consists of three sub-SAD modules; SAD1, SAD2 and SAD3.

SAD1 and SAD2 are combined initially to provide an efficient preliminary activity decision. This preliminary decision is then modified by the third sub-SAD module, SAD3, depending upon the codec mode of operation.

The efficient preliminary activity output is used as the final SAD decision for the AMR-WB IO modes, while the activity output with SAD3 is used as the final SAD decision for all other bit-rates.

Sub-clause 5.1.12 in [3] describes the operation of the SAD and the algorithms involved in the three sub-SAD modules in detail.

Annex A (informative): Change history

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History

Document history		
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