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Digital cellular telecommunications system (Phase 2+) (GSM); Half rate speech; Test sequences for the GSM half rate speech codec (GSM 06.07 version 6.0.1 Release 1997)

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Digital cellular telecommunications system (Phase 2+);
Half rate speech;
Test sequences for the GSM half rate speech codec
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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Special Mobile Group (SMG).

An electronic attachment accompanies the present document, containing test sequences for a bit exact implementation of the half rate speech transcoder.

Archive 8yo0300o.ZIP which accompanies the present document contains compressed files which are labelled as follows:

Disks24.zip	Clause 10: Test sequences for the GSM half rate speech codec; Disks 2 and 4 (GSM 06.07).
Disks135.zip	Clause 10: Test sequences for the GSM half rate speech codec; Disks 1, 3 and 5 (GSM 06.07).
Disks6A.zip	Clause 10: Test sequences for the GSM half rate speech codec; Disks 6 and 10 (GSM 06.07).
Disks7B.zip	Clause 10: Test sequences for the GSM half rate speech codec; Disks 7 and 11 (GSM 06.07).
Disks89.zip	Clause 10: Test sequences for the GSM half rate speech codec; Disks 8 and 9 (GSM 06.07).

The present document specifies the half rate speech traffic channels for the Digital cellular telecommunications system.

The present document specifies the digital test sequences for the GSM half rate speech codec for the digital cellular telecommunications system. The present document, is part of a series covering the half rate speech traffic channels as described below:

GSM 06.02	"Digital cellular telecommunications system (Phase 2+); Half rate speech; Half rate speech processing functions".
GSM 06.06	"Digital cellular telecommunications system (Phase 2+); Half rate speech; ANSI-C code for the GSM half rate speech codec".
GSM 06.07	**"Digital cellular telecommunications system (Phase 2+); Half rate speech; Test sequences for the GSM half rate speech codec".**
GSM 06.20	"Digital cellular telecommunications system (Phase 2+); Half rate speech; Half rate speech transcoding".
GSM 06.21	"Digital cellular telecommunications system (Phase 2+); Half rate speech; Substitution and muting of lost frames for half rate speech traffic channels".
GSM 06.22	"Digital cellular telecommunications system (Phase 2+); Half rate speech; Comfort noise aspects for half rate speech traffic channels".
GSM 06.41	"Digital cellular telecommunications system (Phase 2+); Half rate speech; Discontinuous Transmission (DTX) for half rate speech traffic channels".
GSM 06.42	"Digital cellular telecommunications system (Phase 2+); Half rate speech; Voice Activity Detector (VAD) for half rate speech traffic channels".

The contents of the present document is subject to continuing work within SMG and may change following formal SMG approval. Should SMG modify the contents of the present document it will be re-released with an identifying change of release date and an increase in version number as follows:

Version 6.x.y

where:

6 indicates Release 1997 of GSM Phase 2+

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

y the third digit is incremented when editorial only changes have been incorporated in the specification.

National transposition dates	
Date of adoption of this EN:	05 June 1999
Date of latest announcement of this EN (doa):	30 September 1999
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 March 2000
Date of withdrawal of any conflicting National Standard (dow):	31 March 2000

1 Scope

The present document specifies the digital test sequences for the GSM half rate speech codec. These sequences test for a bit exact implementation of the half rate speech transcoder (GSM 06.20 [2]), Voice Activity Detector (GSM 06.42 [6]), comfort noise (GSM 06.22 [4]) and the discontinuous transmission (GSM 06.41 [5]).

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.

- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] GSM 06.20: "Digital cellular telecommunications system (Phase 2+); Half rate speech; Half rate speech transcoding".

[3] GSM 06.21: "Digital cellular telecommunications system (Phase 2+); Half rate speech; Substitution and muting of lost frame for half rate speech traffic channels".

[4] GSM 06.22: "Digital cellular telecommunications system (Phase 2+); Half rate speech; Comfort noise aspects for half rate speech traffic channels".

[5] GSM 06.41: "Digital cellular telecommunications system (Phase 2+); Half rate speech; Discontinuous Transmission (DTX) for half rate speech traffic channels".

[6] GSM 06.42: "Digital cellular telecommunications system (Phase 2+); Half rate speech; Voice Activity Detector (VAD) for half rate speech traffic channels".

[7] GSM 06.06: "Digital cellular telecommunications system (Phase 2+); Half rate speech; ANSI-C code for the GSM half rate speech codec".

[8] GSM 06.02: "Digital cellular telecommunications system (Phase 2+); Half rate speech; Half rate speech coding functions".

3 Definitions and abbreviations

3.1 Definitions

Definition of terms used in the present document can be found in GSM 06.20 [2], GSM 06.21 [3], GSM 06.22 [4], GSM 06.41 [5] and GSM 06.42 [6].

3.2 Abbreviations

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

ETS European Telecommunication Standard

GSM   Global System for Mobile communications

For abbreviations not given in this subclause, see GSM 01.04 [1].

4 General

Digital test sequences are necessary to test for a bit exact implementation of the half rate speech transcoder (GSM 06.20 [2]), Voice Activity Detector (GSM 06.42 [6]), comfort noise (GSM 06.22 [4]) and the discontinuous transmission (GSM 06.41 [5]).

The test sequences may also be used to verify installations of the ANSI C code in GSM 06.06 [7].

Clause 5 describes the format of the files which contain the digital test sequences. Clause 6 describes the test sequences for the speech transcoder. Clause 7 describes the test sequences for the VAD, comfort noise and discontinuous transmission.

Clause 8 describes the method by which synchronization is obtained between the test sequences and the speech codec under test.

Clause 9 describes the optional acceptance testing of the speech encoder and decoder in the TRAU by means of 8 bit A- or µ-law compressed test sequences on the A-Interface.

Electronic copies of the digital test sequences are provided as clause 10, these digital test sequences are contained in archive 8yo0300o.ZIP which accompanies the present document.

5 Test sequence format

This clause provides information on the format of the digital test sequences for the GSM half rate speech transcoder (GSM 06.20 [2]), Voice Activity Detector (GSM 06.42 [6]), comfort noise (GSM 06.22 [4]) and the discontinuous transmission (GSM 06.41 [5]).

5.1 File format

The test sequence files are provided in archive 8yo0300o.ZIP which accompanies the present document.

Following decompression, by execution of the 11 "disk*.exe" files, four types of file are provided:

- Files for input to the GSM half rate speech encoder: *.INP

- Files for comparison with the encoder output: *.COD

- Files for input to the GSM half rate speech decoder: *.DEC

- Files for comparison with the decoder output: *.OUT

Tables 1, 2, 3 and 4 define the formats of the four types of file. Each parameter in these tables is contained in a 16 bit word except for the samples of the 8 bit PCM test sequences, which are contained in an 8 bit word each. The left or right justification is indicated in the tables. The size and location of speech parameters in the encoder output (*.COD) and decoder input files (*.DEC) are described in GSM 06.20 [2].

5.2 Codec homing

Each *.INP file includes two homing frames at the start of the test sequence. The function of these frames is to reset the speech encoder state variables to their initial value. In the case of a correct installation of the ANSI-C simulation (GSM 06.06 [7]), all speech encoder output frames shall be identical to the corresponding frame in the *.COD file. In the case of a correct hardware implementation undergoing type approval, the first speech encoder output frame is undefined and need not be identical to the first frame in the *.COD file, but all remaining speech encoder output frames shall be identical to the corresponding frames in the *.COD file.