**3GPP TSG-SA4 Meeting #134 *S4-252040***

**Dallas, United States, 17th Nov 2025 - 21st Nov 2025 revision of *S4-251939***

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26.252** | **CR** | **0004** | **rev** | **2** | **Current version:** | **19.0.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Corrections for IVAS test sequences | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Dolby Laboratories Inc., Ericsson LM, Fraunhofer IIS, Huawei, Nokia, NTT, Orange, Panasonic Holdings Corporation, Philips International B.V. VoiceAge Corporation, Qualcomm Inc. | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | IVAS\_Codec | | | | |  | ***Date:*** | | | 2025-11-20 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Updated set of test sequences for TS 26.258. Incomplete description for split rendering, missing details on LC3plus conformance, missing file types in overview. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Updated test sequences for TS 26.258  Added missing filetype to overview  Clarification of conformance testing for split rendering | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Implementers will not be able to run conformance tests | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 1, 2, 4.1, 5.2, 6.3.6 (new), 7.1, 7.3, Readme.txt (separate file), electronic attachment | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | Updates to electronic attachment depend on TS 26.258 CR 0004. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev 1: Corrected version for reference [10].  Rev 2: Updated LC3plus conformance to match 26.253, corrected styles. | | | | | | | | |

==============First change==============

# 1 Scope

The present document specifies the digital test sequences for the Immersive Voice and Audio Services (IVAS) codec. These sequences shall be used in conformance testing for implementations of the IVAS codec (3GPP TS 26.253), Rendering (3GPP TS 26.254), Error Concealment of Lost Packets (3GPP TS 26.255) and Jitter Buffer Management (JBM) (3GPP TS 26.256) and its reference C code specification 3GPP TS 26.258 (floating-point). The sequences shall also be used for conformance testing of implementations of Split Rendering functions addressing Immersive Audio for Split Rendering Scenarios ISAR according to 3GPP TS 26.249. In addition, the present document specifies procedures for conformance testing.

==============Next change==============

# 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 TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 26.250: "Codec for Immersive Voice and Audio Services (IVAS); General overview".

[3] Void

[4] 3GPP TS 26.253: "Codec for Immersive Voice and Audio Services (IVAS); Detailed Algorithmic Description including RTP payload format and SDP parameter definitions".

[5] 3GPP TS 26.254: "Codec for Immersive Voice and Audio Services (IVAS); Rendering".

[6] 3GPP TS 26.255: "Codec for Immersive Voice and Audio Services (IVAS); Error concealment of lost packets".

[7] 3GPP TS 26.256: "Codec for Immersive Voice and Audio Services (IVAS); Jitter Buffer Management".

[8] 3GPP TS 26.258: "Codec for Immersive Voice and Audio Services (IVAS); C code (floating- point)".

[9] 3GPP TS 26.444: "Codec for Enhanced Voice Services (EVS); Test Sequences".

[10] ETSI TS 103 634 V1.6.1 (2025-10), "Digital Enhanced Cordless Telecommunications (DECT); Low Complexity Communication Codec plus (LC3plus)".

[11] 3GPP TS 26.249: "Immersive Audio for Split rendering scenarios”.

==============Next change==============

## 4.1 Introduction

This specification provides digital test sequences that shall be used to test conformance for an implementation of the IVAS codec (TS 26.253 [4]), Rendering (TS 26.254 [5]), Error Concealment of Lost Packets (TS 26.255 [6]) and Jitter Buffer Management (JBM) (TS 26.256 [7]), and its reference C code specification in TS 26.258 [8] (floating-point). An overview of the IVAS Codec specifications is found in TS 25.250 [2]. The sequences shall also be used for conformance testing of implementations of Split Rendering functions addressing Immersive Audio for Split Rendering Scenarios ISAR according to 3GPP TS 26.249 [11].

A standard compliant implementation of the above specifications shall pass the conformance tests according to clause 7. The necessary test sequences can be found in the corresponding ZIP files according to the attached Readme.txt file.

NOTE: The test sequences apply to specific version(s) of the IVAS codec as indicated by the name of the ZIP file, e.g., IVAS-FL-1.0. The codec version number is used to have consistent numbering across reference C code specifications.

Clause 5 describes the format of the files, which contain the digital test sequences. Clause 6 describes the test sequences for the IVAS codec, including rendering, error concealment of lost packets, and jitter buffer management. Clause 7 describes the conformance testing procedure for implementations of the IVAS codec.

==============Next change==============

## 5.2 File format

The test sequence data is provided in PC (little-endian byte order) files, according to table 1.

Table 1: Overview of test sequence files

|  |  |
| --- | --- |
| File type | File extensions |
| Audio input to the encoder and output from the decoder and renderer | \*.wav |
| ISM metadata, Head rotation trajectories | \*.csv |
| MASA metadata | \*.met |
| Rate switching | \*.bin |
| IVAS bitstreams | \*.192 |
| Network simulator streams | \*.netsimout |
| ISAR bitstreams | \*.bit |
| ISAR bitstreams with frame errors | \*.ep |
| IVAS bitstreams with frame errors | \*.fer |
| Renderer configuration (text format or binary format) | \*.cfg, \*.dat |
| Renderer scene description | \*.txt |

==============Next change==============

## 6.3 IVAS codec test sequences

### 6.3.1 Mono operation test sequences

For mono operation (utilizing the bit-exact EVS compatibility mode of IVAS, including the AMR-WB interoperable function) the encoder and decoder shall be tested using test sequences and instructions in accordance with TS 26.444 [9].

### 6.3.2 Encoder test sequences

To test an IVAS encoder (beyond mono operation, see clause 6.3.1), test sequences and instructions provided in Readme\_IVAS\_enc.txt shall be used.

### 6.3.3 Decoder test sequences

To test an IVAS decoder (beyond mono operation, see clause 6.3.1), test sequences and instructions provided in Readme\_IVAS\_dec.txt shall be used. To test the IVAS decoder for split rendering (ISAR pre-renderer), test sequences and instructions provided in Readme\_IVAS\_ISAR\_dec.txt shall be used.

### 6.3.4 Renderer test sequences

To test an IVAS renderer, test sequences and instructions provided in Readme\_IVAS\_rend.txt shall be used.

### 6.3.5 Jitter buffer management test sequences

To test jitter buffer management (JBM) for an IVAS decoder, test sequences and instructions provided in Readme\_IVAS\_JBM\_dec.txt shall be used.

### 6.3.6 Split rendering post renderer test sequences

To test post renderer for IVAS split rendering, test sequences and instructions provided in Readme\_IVAS\_ISAR\_post\_rend.txt shall be used.

==============Next change==============

## 7.1 Bit-exact Conformance

For an implementation to be declared conformant according to the bit-exact conformance test procedure, the output sequences of the corresponding feature being implemented (IVAS encoder, IVAS decoder, IVAS renderer, JBM, ISAR pre-renderer, ISAR post-renderer) shall match bit-exactly the reference test sequences provided in the corresponding ZIP files in accordance with clause 6, including clause 6.3.1 for mono operation of the IVAS encoder and IVAS decoder. This applies for all implementations of the IVAS codec (TS 26.253 [4]), Rendering (TS 26.254 [5]), Error Concealment of Lost Packets (TS 26.255 [6]) and Jitter Buffer Management (JBM) (TS 26.256 [7]), and its reference C code specification TS 26.258 (floating-point). This also applies for implementations of Split Rendering functions addressing Immersive Audio for Split Rendering Scenarios ISAR according to 3GPP TS 26.249.

If optional features are implemented, the corresponding conformance tests shall pass.

==============Next change==============

## 7.3 LC3plus Conformance

For IVAS/ISAR split rendering operation utilizing LC3plus, the LC3plus encoder and decoder implementation shall pass the conformance test according to ETSI TS 103 634 clause 7. The conformance tests configuration is defined in Table x.

Table x: Conformance tests for LC3plus in IVAS split rendering

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| LC3plus for IVAS split rendering | Codec configuration | | | | Conformance tests group   (see clause 7.3.1) (see note 1) | | |
| HR mode | Sampling rate [Hz] | Frame size [ms] | Bit rate  [bytes per frame] (see note 2) | Core coder | Concealment | Channel Coder |
| Disabled | 48 000 | 5 | 80, 120, 160 | Enc, Dec, EncDec | Dec | N/A |
|  |  | 10 | 1553, 240, 320, 400 |  |  |
| Enabled |  | 5 | 80, 120, 160 | Enc, Dec, EncDec | Dec | N/A |
|  |  | 10 | 1553, 240, 320, 400 |  |  |
| NOTE 1: Some conformance tests are conducted for the modules encoder (enc), decoder (dec) and codec (EncDec) separately.  NOTE 2: As LC3plus operates in dual-mono for stereo signals, the conformance tests are applied on mono signals only.  NOTE 3:   Rates correspond to Basic Audio Profile for Bluetooth Low Energy audio using the configurations 48\_6 | | | | | | | |

==============Next change==============

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## Readme.txt file for IVAS test sequences - Nov 2025

## The test sequences for the IVAS codec are, due to their size, not directly attached to the specification file, but stored at:

## ftp://ftp.3gpp.org/Specs/archive/26\_series/26.252/test\_sequences/

## The filename is:

## 26252\_IVAS-FL-3.0.zip

## Note that the files will be updated with each new version of the IVAS source code specifications,

## so that the corresponding version numbers of the related test sequences always match the codec version.

## Contact:

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==============End of change==============