3GPP TSG-SA Meeting #128 S4-241317

**Jeju, South Korea, 20-24 May 2024**

**Source: Dolby Germany GmbH, Ericsson LM, Fraunhofer IIS, Huawei Technologies Co Ltd., Nokia Corporation, NTT, Orange, Panasonic Holdings Corporation, Philips International B.V., Qualcomm Incorporated, VoiceAge Corporation, Xiaomi, ZTE Corporation**

**Title: EVS Codec Extension for Immersive Voice and Audio Services, Phase 2**

**Document for: Approval**

**Agenda Item: 18**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: EVS Codec Extension for Immersive Voice and Audio Services, Phase 2

Acronym: IVAS\_Codec\_Ph2

Unique identifier:

Potential target Release: Rel-19

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  | X |  | X |  |
| No | X |  | X |  |  |
| Don't know |  |  |  |  |  |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
|  | Study  |
|  | Normative – Stage 1 |
|  | Normative – Stage 2 |
| x | Normative – Stage 3 |
|  | Normative – Other\* |

**\* Other = e.g. testing**

## 2.2 Parent Work Item

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| IVAS\_Codec | SA4 | 770024 | EVS Codec Extension for Immersive Voice and Audio Services |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 470030 | EVS\_Codec | Basis for the Codec |
| 830005 | ATIAS | ATIAS interfaces with IVAS on capture and on renderer sides  |
| 990025 | ISAR | Split Rendering operation is integrated into the IVAS codec |

# 3 Justification

The IVAS codec is completed in Rel-18, enabling services with immersive audio communication.

The task of converting the floating-point code to the fixed-point code is still ongoing. This conversion task is being handled by a 3rd party contracted by ETSI on behalf of SA4, and could not be completed by Rel-18 as initially expected. The expectation now is that this task will be completed in Rel-19 timeframe.

Furthermore, full characterization can only be accomplished once the fixed-point specification is available.

This will lead to an improved set of IVAS codec specifications. Part of improving the set of IVAS codec specifications should also be to carry out enhancements that can benefit current IVAS codec specifications.

To address these points, a Phase 2 development for the IVAS set of specifications is proposed.

# 4 Objective

The overall objective of this work item is to provide an improved set of IVAS specifications. The following objectives should be achieved with the work item:

* A fixed-point C-code to be part of TS 26.251 having:
	+ Same functionalities and equivalent performance as the floating-point C-code in TS 26.258.
	+ Full interoperability with floating-point C-code in TS 26.258.
	+ Comparable complexity as the floating-point C-code in TS 26.258.

This includes verification of 3rd party delivered code and necessary adaptation to the latest version of TS 26.258.

* Characterization of the IVAS codec based on the floating-point and fixed-point C-code to complement TR 26.997.
* Enhancements to the code conformance test procedures and criteria.
* Definition of relevant tiers of functionality to be implementable on a wide range of UEs with different capabilities, balancing user experience and implementation complexity/cost.
* Enhancements to the RTP payload format and SDP negotiation, including split rendering operation.
* Update relevant system specifications to make use of the enhancements.

# 5 Expected Output and Time scale

|  |
| --- |
| New specifications {One line per specification. Create/delete lines as needed} |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
| TS | 26.251 | Codec for Immersive Voice and Audio Services - C code (fixed-point) | SA#107 (March 2025) | SA#108 (June 2025) |  |

|  |
| --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 26.114 | Support of enhancements for the IVAS Codec | SA#108 (June 2025) |  |
| 26.117 | Referencing TS 26.251 | SA#108 (June 2025) |  |
| 26.119 | Support of enhancements for the IVAS Codec | SA#108 (June 2025) |  |
| 26.249 | Enhancement; Moving ISAR Fixed-Point Code to 26.251 | SA#108 (June 2025) |  |
| 26.250 | Definition of relevant tiers for implementation | SA#108 (June 2025) |  |
| 26.252 | Enhancement of conformance procedures and criteria | SA#108 (June 2025) |  |
| 26.253 | Enhancements to the RTP Payload Format | SA#108 (June 2025) |  |
| 26.997 | Performance characterization of the IVAS Codec in fixed-point | SA#108 (June 2025) |  |

# 6 Work item Rapporteur(s)

Su, Huan-yu, Huawei Technologies Co Ltd., su.huanyu@huawei.com

# 7 Work item leadership

SA4

# 8 Aspects that involve other WGs

None

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| Ericsson LM |
| Qualcomm Incorporated |
| Huawei Technologies Co Ltd |
| Dolby Germany GmbH |
| Nokia Corporation |
| Fraunhofer IIS |
| VoiceAge Corporation |
| Orange |
| ZTE Corporation |
| Philips International B.V. |
| Xiaomi |
| Panasonic Holdings Corporation |
| NTT |