**3GPP TSG-SA4 Meeting #114-e *S4-210839***

**19th – 28th May 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **pseudo CHANGE REQUEST** | | | | | | | | |
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|  | **26.114** | **CR** |  | **rev** |  | **Current version:** | 17.0.0 |  |
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| *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 |  | Radio Access Network |  | Core Network |  |

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| ***Title:*** | Image Support in ITT4RT | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ITT4RT | | | | |  | ***Date:*** | | | 12th May 2021 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | Support for still background and still image overlays in ITT4RT is missing. | | | | | | | | |
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| ***Summary of change:*** | | This CR introduces support for still image backgrounds and overlays to ITT4RT based on the HEIF format. | | | | | | | | |
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| ***Consequences if not approved:*** | | Support for still images will be missing | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 5.2.4, 6.2.11, 7.4.8, Y.6.3, Y.6.4.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **First 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".

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[181] ISO/IEC 23008-12:2017, High Efficiency Coding and Media Delivery in Heterogeneous Environments – Part 12: Image File Format

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| **2nd Change** |

### 5.2.4 Static Images

MTSI clients in terminals offering static images shall support the HEIF image format as specified in [181] Annex B. An MTSI client that supports static images shall support the Main profile and the Main Still Picture profile of HEVC, Main tier, level 5.2.

Static images encoded using the HEVC shall have general\_progressive\_source\_flag equal to 1, general\_interlaced\_source\_flag equal to 0, general\_non\_packed\_constraint\_flag equal to 1, general\_frame\_only\_constraint\_flag equal to 1.

The Main Profile shall be used for the carriage of image sequences and the Main Still Picture profile shall be used for the carriage of single image items or image collections.

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| **3rd Change** |

### 6.2.11 Static Images

If static images are used in a session, then the “image” SDP attribute shall be present in the offer of the corresponding video media session.

The “image” attribute shall comply to the following ABNF syntax:

image\_attribute=”a=image:” pt SP transmission\_mode SP item\_count

transmission\_mode=”tmode=” (”coupled” / “decoupled”)

item\_count=”count=” 1\*DIGIT

The fields have the following semantics:

**pt**: the payload type used for the carriage of this image collection or image sequence.

**transmission\_mode**: the transmission mode coupled, indicates that the overlay images will be continuously streamed (retransmitted) for as long the overlay is to be rendered. The RTP timestamp shall be used to determine the presentation time of the overlay image. The images are not required to be stored and no looping is performed. All images shall be master images in this case. In case of “decoupled” transmission mode, the presentation of the images is overwritten by the image metadata. The RTP timestamps shall be used to determine the index of the images.

**item\_count**: provides the number of images in the corresponding image collection or image sequence.

An MTSI client that doesn’t support static images shall remove the image attribute in the answer. In such case, the sender should transmit the static image as a regular continuous video stream that conforms to the requirements in 7.4.3for an HEVC compressed video stream. If that is not possible, the sender shall initiate a session re-negotiation to remove the static image media line.

An MTSI client that supports the image attribute but does not support the decoupled mode shall reply with the mode set to “coupled” in the answer. An MTSI client that supports static images shall at least support the coupled transmission mode.

The "imageattr" attribute as specified in IETF RFC 6236 [76] shall be supported and shall indicate the image size if a single image is sent or the maximum image size if an image collection or image sequence is sent.

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| **4th Change** |

### 7.4.8 Static Images

The RTP payload format for HEVC as defined in [120] shall be used for the delivery of static images and image sequences.

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| **5th Change** |

Y.6.3 Still Background

Still image backgrounds shall be supported by ITT4RT clients. The format and signaling shall follow the static image format and signaling as defined in clauses 5.2.4, 6.2.11, and 7.4.8.

The signaling in clause Y.6.2 shall apply to indicate that the static background is 360 degree. The 3gpp\_360video attribute shall be used for that purpose.

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| **6th Change** |

Y.6.4.1 General

ITT4RT clients supporting the ‘Overlay’ feature may define an overlay source and overlay configuration in the SDP. An ITT4RT client that supports overlays shall support a video or image stream indicated by a media line in the SDP as the source of an overlay.

Static images, image collections, and image sequences as defined in clause 5.2.4 may be supported. The overlay signaling shall be the same as for video overlays.