**Source: SA4 SQ SWG Chair[[1]](#footnote-1)**

**Title: 3GPP SA4 SQ SWG report from teleconference on HInT (23 April 2021)**

**Document for: Approval**

**Agenda item: tbd**

**Executive summary**

The meeting (10 participants, 1 hour) covered all three input Tdocs on HInT. The outcome is summarized below:

* Test methods: the proposal in S4aQ210163 (requesting to clarify Figure 15a5b on the test setup) was agreed, the dCR on HiNT to 26.132 will be updated for the next SA4 meeting.
* Requirements: the updated dCR to 26.131 in S4aQ210164 (including tentative requirements in brackets for all test cases except frequency masks) was reviewed and agreed as a basis for further editing. Several updates were suggested and they will be captured in the next version to be submitted to SA4#114-e.
* HEAD acoustics invited interested labs to contact them to get an initial test database implementing draft test methods for HInT.

**A.I. 1 Approval of Agenda and Tdoc allocation**

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| --- | --- | --- |
| [**S4aQ210162**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/Docs/S4aQ210162.zip) | Proposed agenda for SQ SWG teleconference on HInT (23 April 2021) | SA4 SQ SWG Chair |

**Presenter:** Stéphane

**Comments / questions:**

Stéphane: There was an issue with the automatic Tdoc numbering 3GU which was giving MBS SWG Tdoc numbers. This has been fixed. However, there is another issue with the sequence of SQ AH Tdoc numbers, in our March 15 telco the latest Tdoc number was S4aQ200167, now the prefix is changed to S4aQ100xxx but numbers are from 162 to 164 for this call. We will have to address this issue offline with ETSI MCC.

Any other comments? Can we approve the agenda?

**Answer: yes.**

**Decision:**

S4aQ210162 is approved.

**A.I. 4.3 HInT**

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| [**S4aQ210163**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/Docs/S4aQ210163.zip) | [HInT] Clarification of test set-up | Sony Europe B.V. |

**Presenter:** Peter

Figure 15a5b in TS 26.132 could benefit from being further clarified.

The text in subclause 5.1.6.1 reads:

For testing echo and double talk scenarios, an artificial feedback of the receive signal into the sending path shall be used. This echo path can be realized in an analogue (e.g, a stand-alone device) or digital (e.g., part of the test system) way. For measurements without artificial echo loss, the feedback path is disabled.

But the figure shows only the variant where a stand-alone device is used:

It suggested to modify the figure, or include two figures, such that it is easier for readers to understand both variants. The exact way to do this is for discussion.

**Comments / questions:**

Jan: there was offline discussion, I agree with Peter, the figure is a bit unclear, and not fully compatible with the text. I will update the figure, for the next draft CR to 26.132, to include the test system or to have it outside, it’s indeed a bit imprecise.

Stéphane: any other comment?

**Answer: no**

Stéphane: in this case, we will see the updated dCR at SA4#114-e.

what status for this Tdoc, it can be agreed or noted, and it is for agreement?

Peter: it could be agreed?

**Answer: yes**

**Decision:**

S4aQ210163 is agreed.

The Editor of the dCR to 26.132 is tasked to update Figure 15a5b in the dCR on HiNT to 26.132, for the next SA4 meeting.

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| [**S4aQ210164**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/Docs/S4aQ210164.zip) | dCR 26.131 Extension for headset interface tests of UE | Orange |

**Presenter:** Stéphane

Updates consisted in replacing TBDs in requirements with some tentative values in brackets and fixing some sections. All updates are in yellow for the sake of clarity.

**Comments / questions:**

* loudness:

Peter: thank you for the proposed values, on loudness, is 0 dB proposed even for the analog case

Stéphane: yes, there was some offline exchange with Jan on this

Peter: should correspond to analog voltage level as seen in P.381, levels are not 1 to 1 in measured values compared to what you observed at POI, should not be controversial

Jan: the assumption to have loudness of 0 dB is from the TS 26.132 dCR, there is a difference between analog and digital connections intentionally to have transfer functions in the same scale, for analog the reference is -60 dBV in send and -39 dBV in receive, so the JLR should be comparable between analog and digital, it is was inspired by P.381. Values are comparable if one assumes that loudness rating has a soft weighting, so it’s level values.

Peter: thanks, then I understand, when taking into account this difference in the measurement, this is one way to do it, could be fine

Andre: binaural headset, this is still a mono signal for RJLR

Jan: this is right for digital headset where there is just a mono signal, just one channel, it may apply for analog interface where there is just one channel but it is presented to both ears, at least a note should be added

Peter: on the loudness, for the binaural case we should replace ‘for each earphone’ by ‘for each channel’

Stéphane: well noted

* delay requirements:

Andre: for delay, same values are proposed for analog and wired digital connections, how do we address the extra delay from A/D conversion for the digital headset? is there a target value?

Stéphane: agree, at minimum we should have a note to clarify the delay breakdown to reflect this extra A/D conversion

Andre: always A/D in measurement when digital interface, there needs to be a delay specified for this

Fabrice: good point, is this part of the test equipment delay?

Andre: think so, makes sense

Jan: to test digital interface with analog source? usually we use digital signal only, you want to test the digital interface with analogue?

Andre: you can plug a USB-C to analog converter in the phone in call, then you measure as per analog

Jan: to connect analog headset to digital interface, agree to Fabrice that part of test equipment, but would test in digital case, this is not specified in the dCR to 26.131, I will revisit this

Andre: not advocating, but point is that delay would depend on the type of interface, if digital, one compensate for this

Stéphane: in 26.131 we would require to document the test setup, not sure we have to update the requirement if we subtract the extra delay

Andre: then need some text to describe subtraction

Jan: several times in both documents we explain that everything that belong to the test equipment should be subtracted, will make a note for the next version of the dCR to 26.132

Andre: if measure digital to digital, there is extra path because of D/A, if testing at digital interface, a bit different, maybe requirement is fine but not technically accurate.

Stéphane: request to make a distinction between analog and digital connections?

Andre: if small, don’t bother, but important to have a note to indicate that we did think about this, it may be OK if 2-3 ms, by adding a note stating that we keep requirements the same but we are aware of the extra D/A conversion.

Jan: you propose a lower or higher requirement? requirement should be less for digital interface? or there is additional coding?

Andre: if there is processing in the digital headset, other question, thinking a bit lower requirement if testing at digital interface, don’t know if use dongle of test digitally?

Jan: so far assumption is to test in digital way, so that all delays are compensated for, did not consider analog interface, but requirement should be the same, the adapter does not belong to the interface, but to the test equipment

Andre: in analog mode, it’s part of phone

Jan: USB-C used as analog?

Andre: meant testing acoustic presentation for receive side, will look at 26.132 whether delay should be the same

Peter: almost philosophical question, in latest P.381, if combine phone with such adapter and apply analog specification, if consider adapter in test equipment, it should be a reliable adapter with known behavior, default way is the consumer equipement if part of UE

Andre: mean companion adapter?

Peter: yes, but if objective is to test digital interface, this converter should be test equipment

Andre: this way to do digital is preferable, don’t know what is in TS 26.132

Jan: the digital interface is when reference point is digital interface, there are 3 different use cases: wireless digital (Bluetooth), analog wired (jack), wired digital, the adapter delivered with the phone is a different use case, if test USB-C this is covered by the test, but there is a different use case

Andre: then converter to get audio directly from test equipment

Jan: yes, see clause 5.x in dCR to 26.132 on digital interface

Andre: boils down to one analog interface and one digital interface, maybe there is a technical difference, should be very small

Jan: talking about 2-3 ms for both directions

* frequency responses:

Fabrice: realized, in 26.131 there is a missing figure for frequency response (Fig. 10 in WB), we should add it, don’t know if there are many releases impacted

Stéphane: right, we may fix this by separate CRs

Fabrice: I can look at it. I have a question on frequency masks, not familiar with P.381, why is there a tilt on the sending frequency masks? why an uplift above 1 kHz?

Peter: background is that the mike hanging on wire on the side, not in front of the mouth, you lose a lot of treble, to get the overall system flat it’s compensated, the mask is to compensate the roll-off that happens, it’s assuming a type of headset for analog.

Fabrice: if use test equipment, can we assume the same?

Peter: can revisit this, this is meant to be the kind of characteristics in send part

Jan: when looking in P.381, there are pure headset tests, for send frequency, almost inverse case with strong low-pass filter which almost cancels out, so when using a real headset, this cancels since injecting MRP signal, the frequency response is expected, that was the intention to make it not flat

Peter: it is explained in the text of P.381 why it is not flat, we should also do it, because it is not obvious to readers

Jan: makes sense

Stéphane: can add a note for the next version

* Sidetone requirements:

Peter: for digital interface, sidetone is provided by the headset, so we should not provide requirement for digital case, was it considered?

Stéphane: not considered, could specify requirements for analog interface

Peter: could be done

**Decision:**

S4aQ210164 is agreed as a basis for further editing. Suggested updates will be captured in the next version to be submitted to SA4#114-e.

**A.I. 5 Review of the future work plan**

Stéphane: Anything on the future work plan for HiNT?

Jan: outside official work plan, we have created a first database implementing test cases in the dCR to 26.132, not finalized for the wired digital connection. We would like to provide this to interested labs in the next weeks. If you are interested to test during the summer break, let me know, please send me an email.

**A.I. 6 Close of the session**

The SQ Chair thanked HEAD acoustics for hosting the meeting, and he thanked contributing companies for their inputs and all delegates for their participation. He recalled that the next AH telco will take place on the 3rd of May on HaNTE.

The meeting was closed at 16:57 CEST.

**Annex A – Meeting agenda**

**Source: SA4 SQ SWG Chair[[2]](#footnote-2)**

**Title: Proposed agenda for SQ SWG teleconference on HInT (23 April 2021)**

**Document for: Approval**

**Agenda item: 1**

**Agenda for this telco (keeping only relevant items from the unique agenda for 3GPP SA4 AH telcos post-113e):**

|  |  |  |
| --- | --- | --- |
| 1 | Approval of Agenda | S4aQ200162app |
| 3 | Reports /Liaison if any, postponed from the formal preceding SA4 meeting |  |
| 4.3 | HInT | S4aQ200163a (Sony, test setup)S4aQ200164a (Orange, dCR to TS 26.131) |
| 5 | Review of the future work plan |  |
| 6 | Close of the session |  |

**Legend for Tdocs:**

* **Color: not-yet processed**, **processed**, **late**, **~~withdrawn~~**, **moved to a different A.I.**, **under email agreement**
* a agreed, app approved, n noted, pa partially agreed, np not pursued, pp postponed…

**Unique agenda for AH telcos post-112e (for information):**

|  |  |
| --- | --- |
| 1 | Approval of Agenda |
| 2 | IPR and Anti Trust Reminder |
| 3 | Reports /Liaison if any, postponed from the formal preceding SA4 meeting |
| 4 | List of Work Items for submission of Contributions in the current meeting |
| 4.1 | FS\_5GSTAR |
| 4.2 | FS\_5GMS\_Multicast |
| 4.3 | HInT |
| 4.4 | 5GMS3 |
| 4.5 | ITT4RT |
| 4.6 | ATIAS |
| 4.7 | HaNTE |
| 4.8 | IVAS\_Codec |
| 4.9 | FS\_VR\_CoGui |
| 4.10 | FS\_5GVideo |
| 4.11 | FS\_FLUS\_NBMP |
| 4.12 | FS\_EMSA |
| 4.13 | FS\_XRTraffic |
| 4.14 | 8K\_VR\_5G |
| 4.15 | FS\_5GMS\_EXT |
| 5 | Review of the future work plan |
| 6 | Any other topic of discussion |

**Annex B – List of participants**

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| --- |
| Amazon – Scott Isabelle |
| Apple - Fabrice Plante |
| Ericsson - Tomas Toftgard |
| HEAD acoustics - Jan Reimes |
| Huawei Technologies – Huan-Yu Su |
| Orange - Alain Curti |
| Orange - Stéphane Ragot |
| Qualcomm - Andre Schevciw |
| Samsung - Sungryeul Rhyu |
| Sony - Peter Isberg |

**Annex C - Documents status**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tdoc | Title | Source(s) | Agenda Item(s) | Status |
| [**S4aQ210162**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/Docs/S4aQ210162.zip) | Proposed agenda for SQ SWG teleconference on HInT (23 April 2021) | SA4 SQ SWG Chair | 1 | Approved |
| [**S4aQ210163**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/Docs/S4aQ210163.zip) | [HInT] Clarification of test set-up | Sony Europe B.V. | 4.3 | Agreed |
| [**S4aQ210164**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/Docs/S4aQ210164.zip) | dCR 26.131 Extension for headset interface tests of UE | Orange | 4.3 | Agreed |

1. **Mr. Stéphane Ragot, Orange**

   **stephane [dot] ragot [at] orange [dot] com**

   **M: +33 6 76 63 09 23** [↑](#footnote-ref-1)
2. **Mr. Stéphane Ragot, Orange**

   **stephane [dot] ragot [at] orange [dot] com**

   **M: +33 6 76 63 09 23** [↑](#footnote-ref-2)