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

**Title: 3GPP SA4 SQ SWG report from teleconference on HaNTE (5 March 2021)**

**Document for: Agreement**

**Agenda item: 3**

**Executive summary**

The meeting (10 participants, 1 hour) covered two input Tdocs (S4a200162 and S4a200163). Preliminary test results from Lab 4 (Huawei) in S4a200162 were reported and discussed. Aggregated results collecting data from all labs involved in the round robin will be expected at SA4#113-e.

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

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| --- | --- | --- |
| [**S4aQ200163**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/3GPP_SA4_AHOC_MTGs/SA4_SQ/Docs/S4aQ200163.zip) | Proposed agenda for SQ SWG teleconference on HaNTE (5 March 2021) | SA4 SQ SWG Chair |

**Presenter:** Stéphane

**Comments / questions:**

None.

**Decision:**

S4aQ200163 is approved.

**A.I. 2 Reports/Liaisons**

None

**A.I. 4.7 HaNTE (Handsets Featuring Non-Traditional Earpieces)**

|  |  |  |
| --- | --- | --- |
| [**S4aQ200162**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/3GPP_SA4_AHOC_MTGs/SA4_SQ/Docs/S4aQ200162.zip) | Preliminary results of HaNTE round robin test results for Lab4 | HUAWEI TECHNOLOGIES Co. Ltd. |

**Presenter:** Antero (Huawei)

The Finland Research Center (FiRC) of Huawei Technologies contributed to the 3GPP SA4 “HaNTE” (Handsets with Non-Traditional Earpieces) round-robin testing as “Lab #4”. Other round-robin test participants are Qualcomm (“Lab #1”), Head Acoustics (“Lab #2”) and Orange (“Lab #3”).

The purpose of the round-robin testing is to review the performance of “singing display” devices to support the HaNTE work item objectives to update 3GPP requirements for handset telephony testing and performance criteria if necessary to ensure adequate user experience. Several performance aspects such as RLR, RFR, speech quality, distortion, robustness in holding position variation, call privacy, and sensitivity to different HATS models are evaluated.

This document focuses to the scope of results and findings of “Lab #4”, aiming to maintain compact document length preventing to repeat the items described already in prior HaNTE documents.

**Comments / questions:**

Andre: Thank you for this nice contribution, all good. Comment on subjective vs. objective testing. Some subjective tests were done during the study phase, not showing a big problem we thought it could show, e.g. due to tissue conduction. It showed inconsistencies between two HATS and depending on how phones are mounted which is a tricky part. We can revisit this in terms of listening tests and see if we need to run new tests. We had 20 people, the devices meeting the masks were clearly preferred by everybody. It is part of the study in the work item, we need to solve repeatability.

Jan: Minor comments. In Table 1 DUT4 and DUT2 fail even for nominal, they have no nominal volume between -1 and 8. Something is broken. DUT4 is strange but consistent. Question about volume settings: when checking with the previous contribution by HEAD acoustics, we did not include volume settings, we used the same for all cases, independent of meeting nominal or not. I cannot check if there is correct. For different HATS types on can take either one or another volume setting, but I am sure we used the same setting even if the loudness was not 2 dB.

Antero: Max volume is OK, but nominal depends on the HATS model in our case. For DUT8 it is the same setting (6 out of 15) but for others DUTs there may be one volume setting step difference. We wanted to choose the volume step to get closer to nominal RLR.

Jan: It is even more accurate, not a big issue. Other comment is on Table 2. You said that quality is quite good, looking at MOS scores I would disagree, some DUTs have 3 or even less at nominal. One may ask if this is a plausible score, and if it does sound that way. Most degradations come from the receive frequency responses that have funky curves. Most medium scores can be explained by this. What is causing a difference between HATS type is not seen as an issue, we found some devices clip and this looks very dangerous.

On Table 5, do you do an average of dB numbers?

Antero: DUT8 has challenge, failing RLR in many cases. Easy to position on ear.

Stéphane: There are points for discussion listed in the conclusion, should we take them?

Antero: Lab 4 has finished, measurements are done, next step is how to plot all data and summarize findings, to create a document as readable as possible. We assume lots of subjective tests have been done for traditional technology, but it is a bit different for HaNTE, how subjects feel, which one is closer because of HATS properties? Interesting to discuss this when there are not so many HaNTE devices in the market.

Stephane: At minimum the group could collect data and communicate with ITU-T.

Andre: We are repeating data in lab 1, can put this in the time plan.

Jan: All labs have done at least RLR and RFR on both HATS, we will see aggregated results and confirm if we see an issue or not.

Antero: On repeatability and reliability, we should have done it in our lab, not all devices have effect of fork positions; there may be just variability if replacing the phone.

Andre: In our lab, we use the same database as others, look at aggregated results, some questions on test method and if tests are suitable. If yes, are they reproducible and repeatable enough? If not, make some assessment, develop something else, possibly with another SDO. We may add text on possible discrepancies and something to be done.

Some problems have been observed.

Jan: Could try to have aggregated results for next SA4 meeting.

**Decision:**

S4aQ200162 is noted.

The source is invited to resubmit the report to SA4#113-e.

Aggregated results collecting data from all labs involved in the round robin will be expected at SA4#113-e.

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

Stephane: we have few minutes left to discuss the time plan of HaNTE.

Antero: We have shipped phones to Orange or is HEAD acoustics measuring?

Alain: We shipped devices to Qualcomm

**A.I. 6 Any other topic of discussion**

The SQ Chairman thanked all delegates for their participation and invited contributions/participation at the next SQ telco on March 15 and at SA4#113-e. The meeting was closed at 17:01.

**Annex A – Meeting agenda**

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

**Title: Proposed agenda for SQ SWG teleconference on HaNTE (5 March 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-112e):**

|  |  |  |
| --- | --- | --- |
| 1 | Approval of Agenda | S4aQ200163app |
| 3 | Reports /Liaison if any, postponed from the formal preceding SA4 meeting |  |
| 4.7 | HaNTE | S4aQ200162n (Huawei, report on RR test) |
| 5 | Review of the future work plan |  |
| 6 | Any other topic of discussion | ~~S4aQ200161~~ |

**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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| --- |
| Apple - Fabrice Plante |
| Dolby – Brian Lee |
| Ericsson – Tomas Toftgard |
| HEAD acoustics - Jan Reimes |
| HEAD acoustics – Hans Gierlich |
| Huawei Technologies – Antero Tossavainen |
| Orange - Alain Curti |
| Orange - Stéphane Ragot |
| Qualcomm - Andre Schevciw |
| Samsung - Sungryeul Rhyu |

**Annex C - Documents status**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tdoc | Title | Source(s) | Agenda Item(s) | Status |
| S4aQ200161 | 4K-HDR Test Material Selection for FS\_5GVideo | ATEME | 4.10 | Withdrawn |
| [**S4aQ200162**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/3GPP_SA4_AHOC_MTGs/SA4_SQ/Docs/S4aQ200162.zip) | Preliminary results of HaNTE round robin test results for Lab4 | HUAWEI TECHNOLOGIES Co. Ltd. | 4.7 | Noted |
| [**S4aQ200163**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/3GPP_SA4_AHOC_MTGs/SA4_SQ/Docs/S4aQ200163.zip) | Proposed agenda for SQ SWG teleconference on HaNTE (5 March 2021) | SA4 SQ SWG Chair | 1 | Approved |

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