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

**Title: 3GPP SA4 SQ SWG report at SA4#114-e**

**Document for: Approval**

**Agenda item: 13.4**

**3GPP SA4 #114-e Speech Quality Sub-Working Group**

The SQ SWG during SA4#114-e (26 participants) was held in three telcos (with 1 ½ hour time slots). The SQ SWG e-mail discussions during the meeting can be tracked here:

<https://list.etsi.org/scripts/wa.exe?A0=3GPP_TSG_SA_WG4_SQ>

**Executive summary**

The meeting handled 12 documents including four output documents. The meeting outcome is summarized below:

* **Incoming LSs:** two liaison statements from ITU-T SG 12 (S4-210861, S4-210863) have been reviewed and noted.
* **ATIAS (Terminal Audio quality performance and Test methods for Immersive Audio Services)**: One input on motion to sound latency measurement from Qualcomm (S4-210829) has been discussed and noted; the method described in this Tdoc would be suitable for measurements of UEs (combination of phone and headset) using a round-table and a test fixture. The ATIAS time plan has not been updated - no telco post-114-e is scheduled.
* **HaNTE (Handsets Featuring Non-Traditional Earpieces)**: The updated Lab 1 report from Qualcomm (S4-210829) has been discussed and noted. The round robin activity is now finished and a report of complete aggregated results by HEAD acoustics has been presented and noted. Results indicate very good reproducibility for the traditional non-HaNTE device example (DUT8) while results for HaNTE devices (DUTs 1 to 7) show some variability, it is not yet clear what is the reason for this observed problem (e.g. test method not reproducible, some DUTs with bad performance, lab mistake, etc.). Further analysis (e.g. subjective testing of DUTs) is foreseen to explain this lack of reproducibility, and labs were invited to crosscheck their data to be able to consolidate the analysis for the next meeting. The updated HaNTE time plan (S4-210946) has been agreed – no telco post-114-e is scheduled.
* **HInT (Extension for headset interface tests of UE)**: A Tdoc with proposals for HInT from HEAD acoustics (S4-210825) has been discussed and noted; this Tdoc reported an initial test series conducted in order to investigate the applicability of provisional HInT test methods and requirements The draft CRs to 26.132 and 26.131 submitted at this meeting (S4-210824 and S4-210834, resp.) have been revised based on comments and online edits. The updated dCR to 26.132 (S4-210945) has been agreed. The updated dCR to 26.131 (S4-210948) has been reviewed, it was requested to leave more time for review, and this Tdoc has been forwarded to plenary. The updated HInT time plan (S4-210947) has been agreed, with one telco post-114-e (see below).

**Agreed adhoc conference calls post SA4#114-e:**

* Telco on HInT on July 30, host: HEAD acoustics, submission deadline: July 29, 23:59 CEST.

**A.I. 9.1 Opening of the session**

The SQ Chair opens the session at 14:00 CEST on May 20. He shows the agenda including the Tdoc allocation (with two incoming LSs allocated in the opening SA4 plenary) and displays the meeting schedule.

**A.I. 9.2 Registration of documents**

The allocation of input Tdocs as shown in the agenda is agreed (see Annex A for the latest version of the agenda).

**A.I. 9.3 Liaison Statements**

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| **S4-210861** | LS on ITU-T P.700 “Calculation of loudness for speech communication” | ITU-T SG12 |

**Presenter:** Jan Reimes (HEAD acoustics)

See introduction by email:

<https://list.etsi.org/scripts/wa.exe?A2=ind2105C&L=3GPP_TSG_SA_WG4_SQ&O=D&P=2951>

“P.700: Loudness for speech in telecommunication

This Recommendation offers a replacement for the well-known SLR and RLR methods that have some drawbacks (measurements at ERP, limited to WB, not really designed for binaural applications). With the recent “maintenance update” of P.700, several points regarding the usage of monaural/binaural measurements were clarified and described more in detail. The method may also be used as a kind of more sophisticated alternative/replacement for P.56 active speech level in terminal as well as subjective testing (-> ATIAS, IVAS).”

**Comments / questions:**

Stéphane: this is for information, any comment?

Stefan B: having similar topic when testing quality for IVAS, there is also ITU-R BS.1770, we may want to check which one we prefer, it is also related to the question of implementations of P.700

Jan: regarding scope, P.700 is for mono and binaural, ITU-R is for calibrating data in digital format, while P.700 is for virtual or acoustic loudness level. There is no C code available, but it is very clear which components are to be taken: P.56 algorithm, some G.160 code and ISO 532-1 core (which is not freely available), if you have the ISO standard it is easy to get the C reference code, there are 2-3 parts available, and you do not need a license.

Andre: there are recommended modules for the reference code?

Jan: no, but the P.56 algorithm has source code, the speech frame classifier from G.160 is available and ISO 532-1 code is attached.

Andre: I had issues with ISO 531-1 implementations that had not the same values, there could be some inconsistencies, and I wonder if there is a reference code.

Jan: yes, the source code is available online, but in the specification you cannot find it, you have to buy the ISO specification to get the link. ISO 532-1 has one example code.

Peter: there is a difference between P.700 and BS.17770, BS.1770 is for a specific purpose in a simple way, if you look at traditional loudness ratings, they are more advanced in taking the human perception than BS.1770. The ISO specification is way more advanced, it is not similar.

Stéphane: this information on P.700 can be taken into account in future work, there is no active work item to update loudness ratings in TS 26.131 or 26.132, I suggest we note this LS.

**Decision:** S4-210861 is noted.

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| **S4-210863** | LS on revised P.57 and P.58 defining a new fullband human like ear simulator | ITU-T SG12 |

**Presenter:** Jan Reimes (HEAD acoustics)

See introduction by email:

<https://list.etsi.org/scripts/wa.exe?A2=ind2105C&L=3GPP_TSG_SA_WG4_SQ&O=D&P=2951>

“P.57/P.58: Ear simulators / HATS

These also well-known Recommendations specify artificial ears (P.57) and head-and-torso-simulators (HATS, P.58) used for testing in telecommunication. In 3GPP TS 26.131/132 for example, a HATS according to P.58 that is equipped with ear simulators of type 3.3 is required for testing. Recently, two new ear simulators type 4.3 and 4.4 were introduced, which have basically two advantages compared to the type 3.x ears:

1. The pinna and new ear canal entry are anatomically shaped, which improves fitting of headsets significantly (in particular, in-ears).
2. Transfer impedance of the ear canal was revised in order to align with an average human ear based on subjective data. In addition, it is now defined up to 20 kHz (type 3.x: only up to 10 kHz).

(Note: the LS only mentioned type 4.3 ear simulator, which was introduced at the SG12 meeting in January. The type 4.4 ear simulator was introduced at the meeting from last week. The LS was drafted during a telco between these two regular meetings)”

**Comments / questions:**

None.

Stéphane: we can conclude that we note this LS, this is information and we can take this into account in future.

**Decision:** S4-210863 is noted.

**A.I. 9.4 CRs to Features in Release 16 and earlier, and other contributions on terminal acoustics**

None.

**A.I. 9.5 ATIAS (Terminal Audio quality performance and Test methods for Immersive Audio Services)**

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| [**S4-210829**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210829.zip) | Measuring Motion-to-Sound Latency on Spatial Audio Headsets | Qualcomm Incorporated |

**Presenter:** Andre Schevciw (Qualcomm)

This Tdoc is not on headsets but on the entire system (combination of phone and headset). Clause 4.2.3 of TS 26.260 specifies a measurement methodology for motion to sound latency but it requires a synchronized playback of two renderer instances and it is not suitable for measurements of UEs when such synchronization is not possible.

**Comments / questions:**

Jan: on results of DUT1, scatter in data between L/R, there is quite some variance, up to 4 dB for one channel, you do not reposition but repeat 20 times the same measurement?

Andre: yes, looking at effect over time, this is something to investigate, could be one headset

Jan: no artifact, but a bias?

Andre: in two devices we had the same system but a different form factor

Jan: minor comments, advice for turn table, there are hidden features from manufacturer

Tomas: related question, look at system level, before 0, see DUT2 there are larger differences before 0

Andre: may be sealing issue, all within 0.5 dB

Tomas: it varies more than 0.2 dB which is used as a theshold

Andre: this variation could be a different thing, one case has earbuds, some may have an amount of leak, Fig. 4 is more consistent

Tomas: could be interesting to analyze what happened

Stefan D: you rotate what? HATS or UE? did not find from speed, it is linear or angular velocity?

Andre: need to check, 2m/s or 2 degrees/s, phone is fixed, only thing moving is HATS, acceleration is importat, we start from 0 and there is a big inertia. Point is being at rest, you start motion, once you observe a difference at a certain level, you define motion to sound latency

Stefan D: measurement based on start, not easy to detect, if use stop of motion you get a clear indication

Stefan B: why deviate from methodology of VRStream activity? simplicity? other reason? also why use pink noise?

Andre: pink noise provides stationary envelope, it’s easy to detect differences between L/R, deviation is because other method required that two renderers are running simultaneously and it is not doable without access to software, here we operate a black box. Whether it can be done at stop may be possible, can consider, key it so have a more robust method to detect motion

Milan: what is done fur DUTs 2 and 3? pink noise is played on computer where it is binauralized when artificial head moves?

Andre: all happens in the device or headset, we don’t know how it is distributed, not our concern. once motion is started, if HATS is looking at center, sound field is not exactly 0 but there is a dispersion. With motion, looking at interaural difference and 0.2 dB will say motion came into effect in the sound field. We just record and look at point where sound is no more symmetric.

Milan: for DUT1 understand played sound from device, you measure how fast the device is reacting, for DUTs 2 and 3, more a streaming from external computer?

Andre: same content but coudl not load file, had to stream through network

Milan: binauralization on headser?

Andre: or phone

Stéphane: time to conclude

Andre: suggest we note this document

**Decision:** S4-210829 is noted.

**A.I. 9.6 HaNTE (Handsets Featuring Non-Traditional Earpieces)**

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| [**S4-210853**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210853.zip) | Revised results of HaNTE Round Robin Tests from Lab 1 | Qualcomm Incorporated |

**Presenter:** Andre Schevciw (Qualcomm)

This contribution reports on the second set of measurements performed on Handsets featuring Non-Traditional Earpieces (HaNTE) at Laboratory 1. Measurements were performed according to the plan for data collection, though some measurement issues as reported by Laboratories 2, 3, and 4 necessitated for some modifications. Due to the addition of such measurement changes, it was agreed for Laboratory 1 to perform a second set of measurements before aggregating its data into the round robin results.

**Comments / questions:**

Jan: table in 2.4 is taken from one recording or measurement?

Andre: I need to confirm with our lab expert, if we measure with a low-noise microphone we go down to 9 dBSPL(A).

Jan: in aggregated results the room noise is estimated from the speech pauses from live data, here this seems a bit low. I measured the same way for speech pauses.

Andre: taking the HATS microphone?

Jan: no, but there may be additional noise due to the phone or round table

Andre: using 4955 mike, with low noise floor. I will review how we took the measurement, I get 9 dB for such a low-self noise microphone.

Jan: it is 26 dBSPL(A) in my table, but this is not an idle noise measurement, in any case the table was introduced because in one lab there was an issue with RLR level, but this is not a qualification for labs.

Andre: important in general, if say 26 dB, it should not come from the measurement microphone or the room itself. Could be somewhere else.

Stéphane: if no other comment, can we note this report like previous reports from other labs?

**Decision:** S4-210853 is noted

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| [**S4-210810**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210810.zip) | Aggregated results of HaNTE round robin test (update) | HEAD acoustics GmbH |

**Presenter:** Jan Reimes

This contribution reports on the Handsets featuring Non-Traditional Earpieces (HaNTE) round robin results at laboratories #1 (Qualcomm), #2 (HEAD acoustics GmbH), #3 (Orange) and #4 (Huawei Finland).

Tests were in general conducted according to the agreed test plan of the 3GPP work item HaNTE. However, due to some observed issues, some measurements and analyses were extended. This contribution shows merged/aggregated results across labs. Each lab in the round robin test also provided a separate report.

**Comments / questions:**

Tomas: at the beginning, lab 1 is with the previous report, the test was redone, it is not clear what is used, later or previous results.

Jan: right, I drafted this before Andre could draft his report, I will use 853 as the reference

Andre: all data presented here is for new results, not old data

Jan: got data before seeing the lab report

Tomas: it is better not to mention the results from the previous report

Jan: yes, I need to rephrase

Andre: hard work, extremely useful, it shows very poor repeatability across labs, wondering if labs did mistakes or what is not correct, we have control device 8 for which results are very consistent. My concern is that frequency response measurements are not matching well for HaNTE DUTs but for non HaNTE they are quite repeatable. Speech quality is more controlled, I don’t know if this is the right metric but I will investigate further.

With regards to privacy, DUT8 seems to radiate less but this is the second softest (see Fig. 5) at max volume, it could be a wash, questioning the value of privacy measurement, whether it is a HaNTE specific measurement or if there is anything special to require with an additional measurement, it seems it radiates less but not as high on maximum volume.

On shifts, it did show DUT8 is different and HaNTE on average have a better sweet spot.

On forks, the dependency on fork is not observed for DUT8.

Nothing is repeatable, I don’t know if it is labs, or some effect of the test equipment with devices. A good next step would be a subjective test, I can talk a bit more about that.

Peter: thanks to Jan and all labs. One can squeeze as much as possible from data in terms of conclusions, wondering if conclusions can be detailed even more for each item, say something on interlab, differences within DUTs and with traditional devices.

The whole reason for the round robin is to see if stuff is repeatable or reproducible, how devices are performing, in conclusions suspect that privacy vary due to room reflections, not proven but worth mentioning.

Jan: last time made note, regarding room influence (large, small...), should be added to conclusions, this has a large impact

Peter: in some cases it was anechoic, in others semi-anechoic

agree, make sense about reproducibility for each item

Jan: see figures for analysis, could quantify variance across labs and devices, then one can conclude that there is a significant difference, what would be the consequence?

Peter: reason why devices measured in different places, see if reproducible results

Andre: issue is that results for HaNTE devices not reproducible, fig. 24 is outside bounds of 3GPP requirement tolerances, question is: why? mistake, lack of repeatability, lack of reproducibility? what to do next? could be kaco of intralab repeatability, we don’t see this problem with DUT8.

Peter: interesting, repeatability is not part of test plan, just reproducibility, don’t know the reason

Andre: best effort, there is much variation, if do fail/pass for frequency responses, there is a problem, you get a different thing in different labs, this is not seen with traditional devices, which is very good. For HaNTE this would cause a failure, is this a bad device? or test method is not reproducible?

some subjective tests could complement. We collected feedback with subjects in a room, maybe one can do the same in a bit more controlled way, to shed some light on metrics.

Jan: agree with Andre, to find conclusion based on data, see Fig. 26, an existing test method is used, we could modify it in a way with averaging or is it just a bad device?

some devices seem to work better, DUTs 3-4 are quite good, a lot of people wanted to listen, many said that some devices are not bad but DUTs 6-7 are not really good, such phones could be identified, not sure about other devices.

Andre: DUT3 perfromed well in our informal subjective test, it is quite reproducible across labs, interesting that DUT1 is very poor in low frequencies in terms of intralab reproducibility, if we find out that device is exhibiting poor quality, it indicates some action

Peter: agree, in conclusions, add an extra section on potential further work

Andre: this is like a TR in a study phase, it is a bit hard, we cannot jump to drafting CRs, a bit more is needed with data, I am not advocating to collect more data, we need to be pragmatic

Stéphane: this report on aggregated may still be improved by cleaning up some data, for instance some measurements with shifts were optional and one could report only averages over mandatory shifts, volume control was not fully consistent and results using different volume control could be excluded?

Jan: I will add a note to we can exclude shifts 5-8 that are not avail able in all case. In some cases on can redo plots. I will do updates in the next version.

For volume control, see Table 7, we had up to 1 or 2 step differences out of 14, usually one step if 1 or 1.5 dB, expect a difference of 3 dB, see results, these volume control differences may not explain all results, using one or more steps away has no major impact

Stéphane: there is also the issue that lab 3 had some differences for privacy, should the data be discarded for this test?

Jan: I would ask all labs to review results offline

Stéphane: we can conclude that this document will be revised, should we go for email discussions after this meeting or an AH call?

Jan: prefer adhoc call, somewhere in July or August, until then all labs should crosscheck results to confirm any outlier, then final report, we can discuss offline what to extend in conclusions, I will add things on room influence on privacy, shifts 0-4 averaging, and try to look into intralab and interdevice consistency.

Stéphane: the lab 4 report suggested some work on repeatability, would there be any lab volunteering to check this? we can note that Qualcomm may conduct a subjective test.

In conclusion, this Tdoc will be revised in a further meeting, and labs are invited to crosscheck results.

Stéphane: we will a telco, please remind that the SA4 Chair asked to produce a revised time plan for HaNTE at this meeting including a completion date, currently it’s Sept. 2021

Andre: I will prepare an updated time plan

Stéphane: we can plan AH telcos and also use email discusions.

**Decision:** S4-210810 is noted.

The HaNTE Rapporteur The HaNTE Rapporteur (Mr. Andre Schevciw) is tasked to prepare an updated time plan (which will be in S4-210946).

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| **S4-210946** | Proposals for data collection of HaNTE – test methods | HaNTE Rapporteur |

**Presenter:** Andre Schevciw (Qualcomm)

Only change is that we did not conclude at SA4#114-e, but there were good observations. One needs an extra round of data. The proposal (from Qualcomm) is to test devices with listening assessment, in a more controlled manner. One may look at results and see if there is any extra data. It is not clear if the problem is with data or deficiencies of the test method. Qualcomm would like to make an informed decision, holding the conclusions and next steps in 115-e.

**Comments / questions:**

Stéphane: no telco?

Andre: difficult, need to organize the subjective test

Stéphane: need to add the completion date with the SA meeting.

(*Andre adds online the drafting of CRs for SA4#115-e and the subsequent SA meeting*)

**Decision:** S4-210946 is agreed.

**A.I. 9.7 HInT (Extension for headset interface tests of UE)**

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| [**S4-210825**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210825.zip) | Proposals for HInT | HEAD acoustics GmbH |

**Presenter:** Jan Reimes (HEAD acoustics)

The 3GPP work item HInT introduces test methods and requirements in 3GPP TS 26.131 and TS 26.132 for the analogue and digital headset interface of UE. Based on the latest drafts of change requests, an initial test series was conducted in order to investigate the applicability of test methods as well as the provisional requirements. This document summarizes the findings made so far.

**Comments / questions:**

Peter: lots of good things, few comments, on 2.1.2: the sum of L/R channels is only possible if you invert one channel to make sense, it is only a good idea is you know that the headset has specific wiring, here we assume a standardized interface, so this kind of assumption would not be correct.

Jan: yes, could be difficult, we did not consider how this could be implemented in headsets, so looking into headset interface only, and this is the motivation to use just one output channel. The channel handling is not specified, it should be specified for testing to minimize confusion.

Peter: one might even recommend not to use inverted polarity, one solution is to share the same output on L/R, agree to use only one channel

on 2.2.2, one may always use volume to maximum to have well defined settings

Jan: good idea, do not expect level to change, specifying level to max may get some confusion for nominal

Peter: yes, one would have to adapt relevant parts to indicate one volume

Jan: might need to check woring to avoid big impacts on the test methods

Peter: on 3.3, remind history of receive idle channel noise, when DAI was used, one could block interface so that no signal is coming from network, all noise came from D/A or amplifier. This method was designed to not have a signal from the network. Then over time different, now only testing the part that was not intended, so think what makes sense to test and verify pass/fail if test. One could be testing the noise level of the system simulator or the behavior of codecs at low input levels (which differs a bit). It might make more sense to apply a low level signal and make sure that pass/fail criteria do not enforce a noise gate in digital domain. If there is noise in the system, one would artificially stop it, which is not part of the UE, so caution here.

Jan: 2 comments, on noise gate, tests recommend an activation signal before idle channel noise measurement, other part is values in table for acoustic interface on top of the headset interface, from the SNR approach one can expect that these proposed values are easier to achieve for both analog and digital connections. Based on informal tests, one would expect that values for acoustic interface are harder to achieve.

Peter: The use of an activation signal shows a problem, we try to do something good for the end user but we are forced to use a noise gate, and we should have an activation signal to make sure that there is no noise gate. This is important, I do not want to enforce processing that is not good for the end user.

on 3.5 I agree with the final statement, we need to ensure that no sidetone is applied for the digital interface, we don’t know what type of headset is used and there might be too much delay in some cases, it is up to the headset to apply sidetone according to its acoustic properties.

Tomas:on testing in SWB/FB, unsure if the test needs to support the whole transmission, what is is the proposal?

Jan: for SWB/FB, it can be addressed in the test setup clause, with just an explanation that test methods for SWB/FB are preliminary, when Bluetooth is enabled, SWB/FB frequency responses would fail, one can only test up to WB. There is a bottleneck, and a note should be inserted to say that the WB requirements apply for such SWB/FB case. I have no concrete proposal but we will need to revise the dCR.

Tomas: BT SIG has worked on a new codec, not yet specified in profiles, it might come soon.

Jan: yes, should take this into account and update when it will be available

Peter: in ITU-T series where there was an issue with a system where one part is WB and another part is SWB, on could get some inspiration.

Jan: good hint

Stéphane: any other comment? otherwise, time to conclude on this document... this is for discussion and we understand that there will be a follow-up with results, can we note it?

Jan: yes

**Decision:**  S4-210825 is noted.

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| [**S4-210824**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210824.zip) | DraftCR TS26.132 on Headset Interface Description (update) | HEAD acoustics GmbH |

**Presenter:** Jan Reimes (HEAD acoustics)

See updates in ‘DIFF’ versions (attached to Tdoc).

**Comments / questions:**

Stéphane: several editorial comments, on the statement:

“This echo path should be realized in digital way. Analogue realizations, e.g., a stand-alone device, are for further study.”

the wording ‘should’ could be a ‘shall’ to avoid ambiguity, especially because alternative are for further study.

Jan: ‘shall’ is better, ‘should’ is proposed as a compromise

Stéphane: we can check with all delegates, is ‘shall’ OK?

**Answer: yes**

(*Jan does the online correction*)

Stéphane: another comment is on the statement

“To accurately select the analysis window of measurements, the delay introduced by the test equipment shall be as constant as possible.”

It is difficult to verify this requirement with a wording ‘as constant as possible’, one may set a threshold on delay variation

Jan: in 5.3 we have a table , ppm values are still in brackets (see [5 ppmn])

Stéphane: recall that in the past there was a request to leave more time and keep the value in brackets, possibly this was proposed by HEAD acoustics, it may be changed or this is for the next meeting?

Jan: will see

Peter: thank you for working on the figure according to our Tdoc, this looks very good now

Jan: your input triggered internal discussions, we realized that it is better to have the echo path in the test equipment and not externally.

Stéphane: any other comment?

based on discussions, we will revise this Tdoc. The Editor will be invited to share a draft version of this revision and we will check the status in the wrap-up session.

**Decision:**  S4-210824 is revised to S4-210945.

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| [**S4-210834**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210834.zip) | dCR 26.131 Extension for headset interface tests of UE | Orange |

**Presenter:** Stéphane Ragot (Orange)

This is an incremental update on top of the latest dCR from the April 23 telco.

Changes are mainly to capture comments and proposals on idle channel noise in receiving and delay, and splitting analogue and digital interface case. Changes are in yellow on top of the existing highlighting.

**Comments / questions:**

Peter: same comment as for previous input (S4-210825). for ideal channel noise we need to be careful, we need to make sure that it is OK

Stéphane: current requirements are in brackets, there is no intention to have bad requirements, and in previous SQ SWG AH telco there was an offer from HEAD acoustics to verify the proposed test methods and requirements, maybe Jan can clarify?

Jan: we can provide a demo database for testing, there is a bit of delay in creating it but it should be ready in 2-3 weeks, this is the offer we can make, if you are interested contact me offline

I have a comment on idle channel noise in 5.3.4, there is a requirement with ‘should’ and then a performance objective in the sentences:

“For the nominal volume control setting, the level of single frequency disturbances should be ≤ [ 90 dBV(A) for analogue and 67 dBm0(A) for digital connections] in the frequency range from 100 Hz to 10 kHz. As a performance objective it is recommended that the level should be ≤ [ 94 dBV(A) for analogue and 71 dBm0(A) for digital connections].”

Stéphane: yes, I am aware of this problem, it is only for NB and this problem is inherited from the headset text (clause 5.2.3), it is correct that there seems to be two performance objectives in this case

Jan: the performance objective is for overall level?

Stéphane: no I read it as 2 performance objectives

Jan: this is unclear

Stéphane: we can have a TODO here to check the current specification

Jan: for masks, we noted that there is some increase above 1 kHz. In informal tests with preliminary measurements, we found that in most case the output signal is flat in sending. One can wonder if we need to make a difference for analog and digital? With one manufacturer there were 2-3 devices in WB mode that followed correctly P.381 but lots of devices have a flat response.

Peter: very good point, the shaping is done only in the analog case, it is difficult to do it in the headset, with the digital connection, it is doable inside the headset. The correct system partitioning is such that one can argue that the mask should be flat when digital. For analog, be careful, there are pros and cons on the good shaping, compromise could be to allow flat or better allow both?

Andre: don’t know if flat is better but this may have to do with extensive POLQA usage on the electrical interface, don’t say this is a justification but there is a practical issue

Stéphane: we may create separate subsections for requirements on mask for analog and digital, this would be for the next version for the dCR

Jan: not requesting to do this now

Stéphane: have to stop the discussion here, we will revisit the status of the Tdoc in the wrap-up session

Jan: I have another comment, will send an email over the SQ reflector

Stéphane: The Tdoc is parked until the wrap-up.

(*see the email with the additional comment here:*

<https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_SQ;73c1cd2a.2105c>)

**Decision:** S4-210834 is revised to S4-210948.

|  |  |  |
| --- | --- | --- |
| **S4-210945** | DraftCR TS26.132 on Headset Interface Description (update) | HEAD acoustics GmbH |

**Presenter:** Jan Reimes (HEAD acoustics)

See ‘DIFF’ version with change marks.

**Comments / questions:**

Peter: I suggested max volume setting, it is straighforward to test, if the UE does some level adjustment in digital interface this may cause some issues for nominal input, this was a bit improvised

Jan: max makes it easier, we would have to fix the wording

Peter: this might avoid a later problem, we can state that nominal is used othewise stated.

Stéphane: could have a conditional formulation instead of ‘it is expected ... ‘ statement, this may be fixed offline and forward the dCR to plenary, or we may add an editor’s note.

Jan: simply add an editor’s note

(*Jan adds online an editor’s note on nominal level*)

Stéphane: any other comment, can we agree on this Tdoc?

**Answer: yes**

**Decision:**  S4-210945 is agreed.

|  |  |  |
| --- | --- | --- |
| **S4-210948** | dCR 26.131 Extension for headset interface tests of UE | Orange |

**Presenter:** Stéphane Ragot (Orange)

See draft revision sent by email at <https://list.etsi.org/scripts/wa.exe?A2=ind2105D&L=3GPP_TSG_SA_WG4_SQ&O=D&P=1714>

“The changes on top of S4-210834 are as follows:

-       Inclusion of proposal for generic delay requirements for the electrical interface based on Jan’s draft text shared over the SQ reflector – see clauses 5.12.3, 6.11.3, 7.11.3 and 8.11.3 – the note on delay allowance for wired digital is now a note integrated in the table listing delay budgets for various electrical interfaces

-       Correction of delay reference points for electrical interfaces: comments from Jan, especially on the Bluetooth interface, raised the issue of reference points that should be revisited – see draft proposals in clauses 5.12.0, 6.11.0, 7.11.0 and 8.11.0 – this should not be controversial but this is new text so your review will be appreciated

-       Replacement of ‘analog’ by ‘analogue’

-       Editorial (typo in allowance fixed)

Changes are highlighted in yellow however this is on top of the existing highlighting.”

**Comments / questions:**

Fabrice: this is quite new, request more time for internal review

Stéphane: fair comment, in this case we will not go for agreement on this document

Fabrice: requirements are in brackets?

Stéphane: everything is still in brackets (sections and values for requirements), the value of delay allowance for analogue is 0 as before

Andre: request to put all values in Table 8quater1 in TBD

(*Stéphane does online edits with values in the table replaced by TBD*)

Stéphane: this Tdoc may be presented to SA4 plenary with no agreement at SQ SWG level

Jan: can it be used as a basis for further editing

Stéphane: it can be proposed for this, but there is a risk that it is not agreed in plenary and then the only agreed version is from the April 23 telco.

**Decision:** No status at SQ SWG level (following a request for more time for review)

S4-210948 is forwarded to closing plenary

|  |  |  |
| --- | --- | --- |
| **S4-210947** | Time Plan for HInT, v0.5 | HEAD acoustics GmbH, Orange |

**Presenter:** Jan Reimes (HEAD acoustics)

See draft time plan proposal at <https://list.etsi.org/scripts/wa.exe?A2=ind2105D&L=3GPP_TSG_SA_WG4_SQ&O=D&P=3444>

This includes a proposed telco on July 30.

**Comments / questions:**

Stéphane: in the draft time plan, need to correct the wording for the dCR to 26.131 which is not agreed at SQ SWG level.

(*Jan edits online the status at SA4#114-e to indicate a review of documents*)

Stéphane: can be agree on the telco as:

Telco (July 30th, 16:00-17:00 CEST; Submission Deadline: July 29th 23:59 CEST; Host: HEAD acoustics GmbH)

**Answer: yes**

**Decision:** S4-210947 is agreed.

One telco post-114-e is agreed:

Telco (July 30th, 16:00-17:00 CEST; Submission Deadline: July 29th 23:59 CEST; Host: HEAD acoustics GmbH)

**A.I. 9.8 New Work / New Work Items and Study Items**

None.

**A.I. 9.9 Any other business**

None.

**A.I. 9.10 Close of the session**

The SQ Chair thanked all contributors and all delegates, he stated that contributions have been received for all work items and there was good progress at this meeting.

The meeting was closed at 17:19 CEST on May 26.

**Annex A – Meeting agenda**

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

**Title: Meeting agenda (SQ SWG during SA4#114-e)**

**Document for: Information**

**Agenda item: 9.2**

|  |  |  |  |
| --- | --- | --- | --- |
| 9 | Speech Quality (SQ) SWG | - |  |
| 9.1 | Opening of the session | - |  |
| 9.2 | Registration of documents | - |  |
| 9.3 | Liaison Statements | - | LS on P.700 (Q.5/12)861nLS on revised P.57 and P.58 (Q.5/12)863n |
| 9.4 | CRs to Features in Release 16 and earlier, and other contributions on terminal acoustics | - |  |
| 9.5 | ATIAS (Terminal Audio quality performance and Test methods for Immersive Audio Services) | - | M2S latency measurement (Qualcomm)829n |
| 9.6 | HaNTE (Handsets Featuring Non-Traditional Earpieces) | - | Revised Lab 1 report (Qualcomm)853nAggregated results (HEAD acoustics)810n Time plan946a A.I. 15.3 |
| 9.7 | HInT (Extension for headset interface tests of UE) | - | Proposals (HEAD acoustics)825ndCR 26.132 (HEAD acoustics)824->945a A.I. 15.4dCR 26.131 (Orange)834->948 A.I. 15.4 forwarded to plenary (proposed as basis for further editing) Time plan947a A.I. 15.4telco on July 30, host: HEAD acoustics, deadline: July 29, 23:59 CEST |
| 9.8 | New Work / New Work Items and Study Items | - |  |
| 9.9 | Any Other Business | - |  |
| 9.10 | 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

**Annex B – List of participants (table filled in online by delegates)**

|  |
| --- |
| Amazon - Scott Isabelle |
| Apple - Fabrice Plante |
| Dolby - Brian Lee |
| Dolby - Stefan Bruhn |
| Ericsson - Tomas Toftgård |
| ETSI MCC - Jayeeta Saha |
| Fraunhofer IIS - Markus Multrus |
| Fraunhofer IIS - Stefan Döhla |
| HEAD acoustics - Jan Reimes |
| Huawei - Elfed Howells |
| Huawei Technologies - Antero Tossavainen |
| Huawei- Wang Bin |
| NOKIA - Anssi Rämö |
| NOKIA - Lasse Laaksonen |
| NTT - Naotaka MORITA |
| NTT - Takehiro Moriya |
| OPPO - Dong Wang |
| OPPO - Minjie Xie |
| Orange - Stéphane Ragot |
| Panasonic-Hiroyuki Ehara |
| Philips - Marek Szczerba |
| Qualcomm  - Andre Schevciw |
| Qualcomm  - Imre Varga |
| Samsung - Sungryeul Rhyu |
| SONY - Peter Isberg |
| VoiceAge - Milan Jelinek |

**Annex C - Documents status**

**C.1 Agreed documents (not presented to SA4 plenary)**

None.

**C.2 Agreed documents (to be presented to SA4 plenary)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tdoc | Title | Source(s) | Agenda Item(s) | Status |
| **S4-210945** | DraftCR TS26.132 on Headset Interface Description (update) | HEAD acoustics GmbH | 9.7, 15.4 | Agreed |
| **S4-210946** | Proposals for data collection of HaNTE – test methods | HaNTE Rapporteur | 9.6, 15.3 | Agreed |
| **S4-210947** | Time Plan for HInT, v0.5 | HEAD acoustics GmbH, Orange | 9.7, 15.4 | Agreed |

**C.3 Other status than agreed documents (not to be presented to SA4 plenary)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tdoc | Title | Source(s) | Agenda Item(s) | Status |
| [**S4-210810**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210810.zip) | Aggregated results of HaNTE round robin test (update) | HEAD acoustics GmbH | 9.6 | Noted |
| [**S4-210824**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210824.zip) | DraftCR TS26.132 on Headset Interface Description (update) | HEAD acoustics GmbH | 9.7 | Revised |
| [**S4-210825**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210825.zip) | Proposals for HInT | HEAD acoustics GmbH | 9.7 | Noted |
| [**S4-210829**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210829.zip) | Measuring Motion-to-Sound Latency on Spatial Audio Headsets | Qualcomm Incorporated | 9.5 | Noted |
| [**S4-210834**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210834.zip) | dCR 26.131 Extension for headset interface tests of UE | Orange | 9.7 | Revised |
| [**S4-210853**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_114-e/Docs/S4-210853.zip) | Revised results of HaNTE Round Robin Tests from Lab 1 | Qualcomm Incorporated | 9.6 | Noted |
| **S4-210861** | LS on ITU-T P.700 “Calculation of loudness for speech communication” | ITU-T SG12 | 5.3, 9.3 | Noted |
| **S4-210863** | LS on revised P.57 and P.58 defining a new fullband human like ear simulator | ITU-T SG12 | 5.3, 9.3 | Noted |

**C.4 Other status than agreed documents (to be presented to SA4 plenary)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tdoc | Title | Source(s) | Agenda Item(s) | Status |
| **S4-210948** | dCR 26.131 Extension for headset interface tests of UE | Orange | 9.7, 15.4 | No status at SQ SWG level – forwarded to plenary |

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2. **Mr. Stéphane Ragot, Orange**

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