**Source: SA4 SQ SWG Interim Chairman[[1]](#footnote-0)**

**Title: 3GPP SA4 SQ SWG report at SA4#109-e**

**Document for: Approval**

**Agenda item: 13.4**

**3GPP SA4 #109-e Speech Quality Sub-Working Group**

The SQ SWG during SA4#109-e was held as a combination of email discussions and 2 telcos.

All SQ e-mail discussions during the week can be tracked here:

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Teleconference, June 27th 2020 at 7-8.30 CEST

The interim SQ chairman Frédéric Gabin (Ericsson) declared the SQ SWG meeting opened and invited delegates to candidate for the open SQ SWG chair position.

Frédéric asked for a volunteer SQ secretary for the SQ sessions for SA4 #109-e. Peter Isberg (Sony) volunteered. Two document were allocated to SQ.

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| **9** | **Speech Quality (SQ) SWG** |  |
| 9.1 | Opening of the session |  |
| 9.2 | Registration of documents |  |
| 9.3 | Liaison Statements |  |
| 9.4 | CRs to Features in Release 15 and earlier, and other contributions on terminal acoustics |  |
| 9.5 | ATIAS (Terminal Audio quality performance and Test methods for Immersive Audio Services) |  |
| 9.6 | HaNTE (Handsets Featuring Non-Traditional Earpieces) | **845** |
| 9.7 | New Work / New Work Items and Study Items | **756** |
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**A.I. 9.3 Liaison Statements**

Dealt with by plenary email agreements..

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

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| [**S4-200845**](http://www.3gpp.org/ftp/tsg_sa/WG4_CODEC/TSGS4_109-e/Docs/S4-200845.zip) | Report on HaNTE round robin progress at Lab 1 | Qualcomm Incorporated |

Presenter: Andre Schevciw (Qualcomm)

Testing slightly delayed due to the covid situation. As decided in SA4#108-e, lab 1 is making pilot tests. We used an “express version” (shortened test time, e.g. shorter time signals, using only one sentence pair) due to lab availability. A robotic arm was used to test devices in various positions on HATS. Privacy measurements were performed with a low-noise microphone (self noise 6.5 dBA) on two devices, one traditional and one with a vibrating display.

Three fork holding positions were used when testing the HaNTE device, but there were limitations due to placement of buttons.

Test reports are attached to the tdoc. There are some errors in the TOC for the RLR for privacy (28 dB wrong due to adding the handsfree correction of 14 dB instead of subtracting it).

Discussion:

Peter Isberg (Sony): Low-noise microphone is one thing, but what about the room?

Andre: In our case, it is about 9 dBA

Jan Reimes (HEAD acoustics): As additional information, we have also implemented measured active speech level. Can have some problem with noise floor but the activity figure can give a hint about whether noise is detected as active speech.

Andre: What about measuring loudness?

Jan: Yes, can do

Jan: Regarding signals; Can add short sentence for “express testing”, and keep at least one long test as reference.

Jan: What about positions? We haven’t agreed.

Andre: “5 on a dice” was used

Jan: Good. How much variation around the MCERP? Would be good to agree.

Antero Tossavainen (Huawei): Thanks Andre for good work. About chapter 2: Can you clarify the short sentences, are they used for all tests (RLR, frequency response, MOS-LQO…)?

Andre: All tests.

Antero: What about MOS result differences due to a short signal?

Andre: Not intending that short gives the same absolute MOS as the long signal. Only looking for delta between positions.

Jan: Was MOS really for 6 s sentence? They are the mixed ones from P.501, or?

Andre: Yes, same as in the ITU-T Q5 round-robin

Jan: These are developed to produce almost the same results as the longer signals. Still, would prefer that we use long version in some of the cases and only try to save time on some of the tests.

Antero: It takes a long time to set up the test. The length of the signals is often not so important.

Antero: Andre, did you find differences for other fork positions?

Andre: Not analyzed this time. In the study phase such differences were found for some devices, depending on how much structural vibrations where boundary conditions are changed by the forks.

Antero: If we test different fork positions but are not able to control the force, I think we should study if the results are affected. We could use the time for other testing.

Andre: Yes, the work with the round-robin should give the data which could justify a decision on this point

Antero: It would be interesting to control fork force and also how users hold the device

Antero: Chapter 4: About the positions on the screen, there have been 4 different spots +/-5 mm. Shall we instead try +/-10 mm? End users may not be so precise, a wider range may be preferred.

Andre: The 5 mm was an arbitrary choice. We can change.

Antero: Since you have a robotic arm, perhaps you could investigate many positions. If not, I suggest to use +/-10 mm.

Antero: About the privacy, what was the distance?

Andre: 1 m from the centre of the HATS. HATS is rotating, the microphone is fixed.

Antero: Is it normal free-field RLR or special test?

Andre: It’s the hand-held handsfree RLR test with the 14 dB correction, but at a different position

Peter: Regarding privacy; Perhaps ISO loudness is overkill and could also be deceiving, because the test report may not give information about noise components versus actual signal from the device. RLR tests as used are better in this respect, if the curve is plotted.

Jan: Can we decide about the positions?

Frédéric: Agreement to use +/-10 mm

Antero: A 10 mm grid with 9 positions is suggested

Andre: Concern about test time.

Antero: OK, we can stick with 5 positions. But more points can be tested on a voluntary basis.

Andre: Suggest: labs shall do +/-10 mm grid and should on a voluntary basis also test at 5 mm grid

Antero: My proposal was to test +/-10 with shall 5 positions and should 9 positions. Not convinced about the +/-5 mm, they are probably too close.

Frédéric drafted Antero’s suggestion in Notepad

x o x

o x o

x o x

o indicates optional point

Antero: Yes. How do we choose the center point?

Andre: Depends on device (UI illustration, exploration (scanning), listening, … First lab documents.

Stepháne Ragot (Orange): Regarding the HATS, you didn’t use the torso part, right? Is it intended we use just one HATS model and positioner type for the round-robin?

Andre: The idea is that we test multiple HATS. So far only one HATS with express test plan. The labs have to do what they can in this situation.

Antero: Regarding privacy; It is measured at 1 m distance as RLR. What volume control setting is used? Or is it loudness aligned?

Andre: It is for the maximum volume control setting

Antero: Some device may be louder than other. Should we look for the delta between the close and distant RLR? Or absolute RLR limit for privacy?

Andre: That goes more towards requirements (later issue). My thinking is, is it intelligible/audible at 1 m distance?

Antero: Suggest to first set to the same loudness at the ear

Alain (Orange): What volume control was used for the frequency response?

Andre: I used nominal

Alain: Suggest to measure also at maximum volume control

Jan: Measurements at maximum volume control is easy. Nominal is tricky because more than one setting will “pass”. So we need to use the exact same volume setting for the round-robin (not just one that meets the required range).

Andre: Can do, sometimes it’s tricky to know the exact setting.

Jan: I would keep the privacy at maximum

Andre: We can do the delta as Antero suggested

Jan: agree

Peter: For privacy, the target should be to use the nominal volume control setting (since the maximum is not relevant for the use case with a silent environment) but a practical solution could be to use the maximum and observe the delta between normal and distant RLR. For frequency response, the 3GPP requirement is for nominal volume control setting only. But for the round-robin it can be explored.

Alain: Could not find what volume control setting should be used for FR. Propose we use the first setting with RLR lower than -3 dB.

Antero: I think we should use the nominal for FR. The requirement applies for nominal. For the maximum, other criteria may be used.

Andre: Not trying to do a pass/fail test for FR. Rather, how does it change w.r.t positions etc? Delta is more important. One setting is enough.

Peter: 3GPP specifies the nominal volume control setting for all tests if not otherwise indicated for the respective test

Frédéric: Alain, is it ok to use nominal?

Alain: ok

Antero: Is 1 m the distance justified? What about 0.5 m?

Peter: also think 1 m may be unpractical in some labs

Stepháne: Regarding volume control, we are evaluating potential new tests. In practice we want to ensure that there are no quality problems for HaNTE devices. We have noticed problems at max volume control. The max setting is important for the round-robin.

Frédéric: You said you could live with it. Time is almost up.

Stepháne: We can come back on this

Frédéric: New tdoc number for a revised test plan?

Andre: Suggest 42 cm (as hand-held handsfree)

Frédéric: All ok? -> Agreed 42 cm

Peter: Want clarification for the minutes on positions

Frédéric: Can we confirm +/-10 mm grid is mandatory for the round-robin. 5 points are mandatory, another 4 points are optional. Grid 5 mm grid can be optionally added.

Revision tdoc no 916.

Decision: Document status is Noted.

**A.I. 9.7 ANTeM (Ambient noise test methodology for evaluation of acoustic UE performance)**

Frédéric: Shall we trigger an email discussion on 756?

Jan: Yes

Participants list

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Teleconference, June 29th 2020 at 7.30-9.00 CEST

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Frédéric: Today we will cover revisions of HaNTE test plan and updated WID for headset testing.

HaNTE test plan 916



Presenter: Andre Schevciw (Qualcomm)

Agreed to have a teleconference June 26th 2020 15.00-16.30 CEST hosted by Qualcomm, to review the test plan, considering experiences from HaNTE lab 1.

Andre: Have added text about how the UE “default” position on HATS is determined, depending on the available information. Suggest to evaluate wideband only for now. Have defined the privacy measurements as the difference in RLR (artificial ear vs 42 cm distance), according to the agreements in SQ May 27th. Likewise added a figure concerning the variation of position around the default.

Jan: What about for positions?

Andre: No variation of fork positions is required by the test plan

Stepháne: Regarding volume control setting; Did you update for frequency response?

Andre: The test method is the same as in TS 26.131/132. This means nominal volume control unless otherwise sepcified.

Orange: I think we converged on including also a test at max volume control. But it is enough for one of the positions. We would request to add that back.

Andre: We already have a maximum volume for POLQA test. We can compute the frequency response in combination with that measurements.

Stepháne: That would be fine. Regarding HATS types; How do we align between labs?

Andre: I will try to do at least the marked positions for vendor A and vendor B.

Stepháne: Great. So, it will be sufficient to add the maximum volume control frequency response to the round-robin test plan.

Andre: We can add a sentence “for the max volume control, the frequency response shall be reported”

Stepháne: Above note 3, we can say “The RFR shall be measured and reported for maximum volume control”

Andre: But then we should also mention nominal

Stepháne:

Peter: OK to have both nominal/max for exploration in the round-robin. What about the speech material if we reuse the POLQA measurement?

Jan: Yes, good point, this signal is not usually used for RFR. I suggest either the 26.132 standardized or the short P.501.

Stepháne: Good points. We reported before, the RLR for various signals. Better to use the 26.132 existing signal. Suggest to not specify it together with POLA but rather with the existing RFR text. A text was drafted online.

Frédéric: Does this work, Peter?

Peter: Yes, excellent

Frédéric: other comments? (none)

Stepháne: Under privacy we have the word “Requirement”

Andre, Frédéric, Stepháne: We change to “Potential requirement”

Frédéric: Any other comments? (none)

916 revised to 919

Decision: 916 Document status is Revised.

Decision: 919 document status is Agreed without presentation.

WID New WID on Extension for headset interface tests of UE, tdoc 756

Tdoc 756 has been edited offline to a draft 918 which was displayed from the Drafts folder.

Presenter: Jan Reimes (HEAD acoustics)

Andre: What about the assumptions for the headset characteristics (sensitivity, impedance etc)

Jan: The headset itself is not a UE in 3GPP

Andre: But the ITU-T specs P.381/382 also have headset requirements

Jan: I am open for adding it, but perhaps it’s out of scope for TS 26.131/132

Andre: We need to update the scope anyway. Don’t intend to create requirements for headsets, but we need to present some guideline about the headset characteristics.

Jan: Some editorials provided by Fabrice in the objectives

Andre: What does “standard” mean? Can we write “standardized”?

Peter: Other standards write something like “standardized allowing interconnection of devices from different manufacturers”

Jan:

Peter: ITU-T intends to in Sept-20 consent a new Recommendation on digital wired/wireless headphone interfaces

Jan: Yes, the work item is intended to carry on long enough to potentially utilize that.

Andre: suggest we spell out “analogue wired”, “digital wired”, “digital wireless”

Jan: Yes, will do that offline

Jan: Fabrice, you suggested to delete some sub-clauses in the Objectives

Fabrice: I thought it was already covered elsewhere. We can keep the two last bullets. The last should probably be rephrased (device providing neither a bundled headset nor a headset inteface.

Jan: yes. We need some text in 26.131/132 to describe the different parts of a UE.

Andre: Mainly it is up to conformance test organizations to pick the parts of 26.131/132.

Jan: Yes. But helpful for those organizations like GCF. But no strong position.

Peter: The WID should be clear about intentions but the exact word-smithing can be done later

Fabrice: Agree.

Jan: OK. Let’s delete the second bullet. The first will be re-worded.

Frédéric: Agreeable? (no objections)

Jan: Currently SA#93 at the end of the release

Frédéric: Not necessary to put the last SA meeting of the release

Jan: Prefer to keep

Frédéric. OK. Agreeable? (yes)

Stepháne: Suppose you remove comments?

Jan: Yes. Anyone wants to be co-rapporteur? (none)

Jan: Samsung should be added (which part of Samsung?)

Frédéric: Samsung Electronics Co., Ltd (please check with Eric)

Andre: Please add Qualcomm Inc. as co-signer

Stepháne: We already so-signed. If Jan wants assistance, Orange can volunteer for 26.131 parts.

Jan: That would be good.

Agreed to add

Tomas: I had some offline comments, but it has now been clarified, it’s OK

Frédéric: tdoc 918 will go to plenary, please put draft in Drafts. Email agreement is also possible but less preferred.

Jan: OK

Fabrice: Sorry, can we review again about “standardized”? Just want to make sure Jan makes this edit.

Jan: OK

Imre (Qualcomm): Please change to “Qualcomm Incorporated”

**A.I. 9.11 Any other business**

Frédéric: Any other business? (none)

The chair closed the SQ SWG session.

Participants list

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Final agenda

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**Annex C - Documents status**

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

None

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

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

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

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