3GPP TSG-RAN WG2 Meeting #109bis-e R2-200xyzw

**Online, 20 April – 30 April 2020**

Source: Session Chair (MediaTek)

Title: Report of session on Rel-15 and -16 LTE and NR positioning

# Status of At-Meeting Email Discussions

This subclause is not an Agenda Item. It contains a running summary of the email discussions assigned to take place during the meeting weeks. This section will be moved to an appendix in the final version of the report.

* [AT109bis-e][600] Organisational Nathan - Positioning (MediaTek)

Status: Started

Scope: Organisational discussions and announcements, as needed throughout the meeting weeks

Intended outcome: Well-informed participants

Deadline: Thursday 2020-04-30 1000 UTC

* [AT109bis-e][601][POS] LPP ASN.1 issue gathering and easy agreements (Qualcomm)

Status: Completed

Scope: Collect the issues from the contributions in agenda item 6.8.2.4, excluding R2-2003143 and R2-2003144

Intended outcome: Endorsed baseline CR starting from R2-2003350 (R2-2003981) and list of open issues (R2-2003982) for continuing ASN.1 review after this meeting

Deadline: Comments by Monday 2020-04-27 1000 UTC; final output documents by Wednesday 2020-04-29 1000 UTC

* [AT109bis-e][602][POS] LPP ASN.1 structural issues (Ericsson)

Status: Completed

Scope: Initial discussion on the issues raised in R2-2003144

Intended outcome: Report of potential easy agreements and remaining open issues (R2-2003983) suitable for capture in the LPP ASN.1 issue list

Deadline: Comments by Tuesday 2020-04-28 1000 UTC; output document Wednesday 2020-04-29 1000 UTC

* [AT109bis-e][603][POS] Introduction of NavIC Keplerian set IE (Reliance Jio)

Status: Completed

Scope: Review of the CR submitted in R2-2003821 to introduce the definition of NavModel-NavIC-KeplerianSet

Intended outcome: Agreed-in-principle CR in R2-2003998

Deadline: Wednesday 2020-04-29 1000 UTC

* [AT109bis-e][604][POS] LS on support of non-periodic SRS and SSB configuration (Intel)

Status: Completed

Scope: Draft an LS to RAN1/RAN3 in reply to R2-1914310, indicating that:

* the RAN2 signalling can currently configure aperiodic SRS for positioning, but we need to know if it the specification effort is feasible to complete from RAN3 perspective.
* Activation/deactivation of SP SRS is recommended by LMF to gNB with the final activation/deactivation by gNB, and NRPPa signalling for SRS triggering is needed.
* For the assistance information in NRPPa for SSB configuration for UL-only positioning, it should include both TF configuration and SSB index in the NRPPa message.

Intended outcome: Approved LS

Deadline: Wednesday 2020-04-22 1200 UTC

* [AT109bis-e][605][POS] Checking of draft CRs on SSB configuration (Huawei)

Status: Completed

Scope: Check the draft CRs in R2-2003055 and R2-2003056.

Intended outcome: Agreed in principle CRs in R2-2003985 and R2-2003986 (the latter is revised to R2-2003987)

Deadline: Wednesday 2020-04-22 1200 UTC

* [AT109bis-e][606][POS] MAC proposals (Huawei)

Status: Completed

Scope: Discuss the proposals from R2-2003135, R2-2003062, R2-2002618, and R2-2003768, and develop a CR incorporating the agreeable proposals

Intended outcome: Agreed in principle CR to 38.321, in R2-2003988

Deadline: Wednesday 2020-04-29 1000 UTC

* [AT109bis-e][607][POS] Update of 38.305 (Qualcomm)

Status: Completed

Scope: Update 38.305 in light of the meeting agreements, using R2-2003348 as baseline.

Intended outcome: Agreed in principle CR in R2-2003990

Deadline: Wednesday 2020-04-29 1000 UTC

* [AT109bis-e][608][POS] GNSS terminology updates (ESA)

Status: Completed

Scope: Conclude on the clarifications of GNSS terminology in 36.305 and 38.305 from R2-2003396.

Intended outcome: Agreed in principle CRs for Rel-15 and Rel-16: R2-2003991 (36.305 Rel-15), R2-2003992 (36.305 Rel-16), R2-2003993 (38.305 Rel-15), R2-2003994 (38.305 Rel-16)

Deadline: Wednesday 2020-04-29 1000 UTC

* [AT109bis-e][609][POS] Checking of CRs on proprietary interface between E-SMLC and LMF (CATT)

Status: Completed

Scope: Checking of the CRs from R2-2002914 and R2-2002913.

Intended outcome: Agreed in principle CRs for Rel-15 and Rel-16: R2-2003995 (Rel-15), R2-2003996 (Rel-16)

Deadline: Friday 2020-04-24 1000 UTC

* [AT109bis-e][610][POS] LPP proposals (Ericsson)

Status: Completed

Scope: Discuss proposals 2, 4, 5, 6, 7, 8 from R2-2003783

Intended outcome: Summary of agreements in R2-2003997

Deadline: Wednesday 2020-04-29 1000 UTC

# 4 EUTRA corrections Rel-15 and earlier

See Appendix A for reference to Work items, work item codes and WIDs.

No documents should be submitted to 4. Please submit to 4.x

NOTE For R2 109e for R15 and earlier releases, only documents on important and urgent issues shall be submitted and treated. No text enhancements without behavioural or functional change.

## 4.4 Positioning corrections Rel-15 and earlier

Documents in this agenda item will be handled by email. No web conference is planned for this agenda item.

# 5 WI: New Radio (NR) Access Technology

(NR\_newRAT-Core; leading WG: RAN1; REL-15; started: Mar. 17; closed: Jun. 19: WID: RP-191971)

NOTE For R2 109bis-e for R15 and earlier releases, only documents on important and urgent issues shall be submitted and treated. No text enhancements without behavioural or functional change.

## 5.2 Stage 2

### 5.2.3 Positioning

Corrections to both the stage 2 and stage 3 aspects related to positioning. Stage 2 CRs should be discussed with the specification rapporteur before submission.

Documents in this agenda item will be handled in a break out session.

[R2-2002913](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002913%20Clarification%20on%20UE%20Positioning%20Architecture%20in%2038%20305%20for%20Rel-15.doc) Clarification on UE Positioning Architecture in 38.305 for Rel-15 CATT draftCR Rel-15 38.305 15.5.0 B NR\_newRAT-Core

* Revised in R2-2003995 (in offline discussion [AT109b-e][609])

[R2-2003479](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003479%20Correction%20to%20periodic%20reporting.docx) Correction to periodic reporting Huawei, HiSilicon CR Rel-15 37.355 15.0.0 0254 - F NR\_newRAT-Core

Qualcomm understand that this was intentional and values ri0-25 and ri0-5 really do map to 1 s and 2 s.

* Not pursued

[R2-2003482](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003482%20Correction%20to%20periodic%20reporting.docx) Correction to periodic reporting Huawei, HiSilicon CR Rel-16 37.355 16.0.0 0255 - A NR\_newRAT-Core

## 6.8 NR Positioning Support

(NR\_pos-Core; leading WG: RAN1; REL-16; started: Mar 19; target; Jun 20; WID: [RP-](file:///C:\Data\3GPP\TSGR\TSGR_84\docs\RP-191156.zip)200218, SR: RP-200217). Documents in this agenda item will be handled in a break out session

Time budget: 1 TU

### 6.8.1 Organisational

Including incoming LSs, rapporteur inputs, etc.

[R2-2002520](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002520_R1-2001483.doc) LS on outcome of email discussions on aperiodic SRS for positioning configuration from RAN1#100e (R1-2001483; contact: Ericsson) RAN1 LS in Rel-16 NR\_pos To:RAN2

Ericsson understand that this issue has been raised in the ASN.1 review. Huawei confirm there is a CR.

* Noted

[R2-2002529](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002529_R4-2002280.doc) LS on gNB measurements report mapping for NR Positioning (R4-2002280; contact: Ericsson) RAN4 LS in Rel-16 NR\_pos-Core To:RAN2, RAN3 Cc:RAN1

* Noted

[R2-2003316](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003316%20Discussion%20on%20capabilities%20for%20NR%20positioning.docx) Discussion on capabilities for NR positioning Intel Corporation discussion Rel-16 NR\_pos-Core Late

Intel understand that we may need to wait for RAN1 before treating this.

Come back later in the week when RAN1 have discussed.

* Topic will be handled under the general capabilities email discussion (allocated in the main session)

[R2-2003317](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003317%20Introduction%20of%20UE%20positioning%20capabilities.DOCX) Introduction of UE positioning capabilities Intel Corporation draftCR Rel-16 37.355 16.0.0 NR\_pos-Core Late

### 6.8.2 Architecture and protocol aspects

No documents should be submitted to 6.8.2. Please submit to 6.8.2.x.

#### 6.8.2.1 Stage 2

Including impact to 36.305 and 38.305. This agenda item may utilize a summary document to facilitate treatment of topics during the e-meeting (decision to be made based on submitted tdocs).

Including outcome of email discussion [Post109e#30][NR/Pos] Non-periodic SRS for positioning (Huawei)

Including outcome of email discussion [Post109e#31][NR/Pos] Details of spatial relation for positioning (Huawei)

Contributions on issues already resolved in email discussions [Post109e#30] and [Post109e#31] are discouraged.

Tdoc limitation: 1 tdoc

Non-periodic SRS

[R2-2003068](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003068%20%5bPost109e-30%5d%5bPos%5d%20Non-periodic%20SRS%20for%20positioning%20(Huawei).docx) [Post109e-30][NRPos] Non-periodic SRS for positioning (Huawei) Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

Proposal1: RAN2 should discuss whether aperiodic SRS is supported for R16 positioning.

Qualcomm understand that RAN1 agreed to support this and it is already in our specs; the only thing missing is the RAN3 support.

Intel agree from RAN2 perspective the only impact is stage 2 for activation/deactivation, but they see support of aperiodic SRS for neighbour cells as difficult.

Huawei agree with Qualcomm that from RAN2 perspective there is nothing missing, but they also understand that RAN1 left it to RAN2 to evaluate if it is feasible. We should guarantee it is feasible if we want to support it.

Ericsson think RAN1 should have confirmed feasibility, and think there would be capability signalling. They see no reason why we couldn’t support aperiodic in the signalling.

Nokia think we should be focussing on finalising the release and this is more of a functional issue, so it should perhaps be postponed to next release if there is disagreement on the feasibility. We also need to take RAN3 effort into account.

Qualcomm agree with Ericsson and think there is no RAN2 spec impact. If we do not support it in Rel-16 we would need to remove it from our specs. They agree there is NRPPa work to be done. The complexity is in network implementation.

Intel understand that RAN1 agreed to support aperiodic SRS to the serving gNB, and had some discussion of the difficulty of supporting it for neighbouring cells, and this is why they asked RAN2/3 to confirm feasibility. Suggest we could send an LS to RAN3 asking about their intention to support it.

Ericsson think the complexity for support at the neighbour cell is only for FR2.

Huawei think we cannot report that it is feasible from RAN2 perspective. They see big differences between aperiodic and SP cases due to the lack of stringent requirements on the transmission timing for the aperiodic case.

Nokia have the same concern as Huawei; they think that by signalling start time we can take the timing into account, but there are questions about whether the neighbour cell can receive it. They also wonder if RAN3 can complete their work in time. Intel confirm there is some concern about RAN3 completion.

vivo agree there are problems with neighbour cells, but they think for TRPs under the same serving cell it can be used and at least we should support aperiodic SRS for this case.

Qualcomm think the NRPPa procedures do not distinguish between serving and neighbour cells, and restricting it to the serving cell would be more signalling work.

OPPO think we could send an LS to RAN3, but they understand that from RAN2 perspective we should not indicate that the end-to-end feature is feasible.

* Send an LS to RAN3, indicating that the RAN2 signalling can currently configure aperiodic SRS for positioning, but we need to know if it the specification effort is feasible to complete from RAN3 perspective. Intel think this could be done in a reply to the previous RAN1 LS. (R2-1914310)

Proposal2: RAN2 should discuss how aperiodic SRS should be supported if it is agreed to be supported.

* Deferred

Proposal3: The Activation/Deactivation of the SP SRS and triggering of AP SRS is recommended by LMF to gNB; and the activation/deactivation MAC CE or triggering DCI are sent by gNB to UE.

Huawei think we can agree to the SP aspect.

Agreements:

The Activation/Deactivation of the SP SRS is recommended by LMF to gNB; and the activation/deactivation MAC CE is sent by gNB to UE (no stage 3 impact for RAN2).

Leave the design of NRPPa message for SRS triggering to RAN3 while capture the purpose and content of the message at stage 2 level in RAN2.

* [AT109bis-e][604][POS] LS on support of non-periodic SRS and SSB configuration (Intel)

Scope: Draft an LS to RAN1/RAN3 in reply to R2-1914310, indicating that:

* the RAN2 signalling can currently configure aperiodic SRS for positioning, but we need to know if it the specification effort is feasible to complete from RAN3 perspective.
* Activation/deactivation of SP SRS is recommended by LMF to gNB with the final activation/deactivation by gNB, and NRPPa signalling for SRS triggering is needed.
* For the assistance information in NRPPa for SSB configuration for UL-only positioning, it should include both TF configuration and SSB index in the NRPPa message.

Intended outcome: Approved LS

Deadline: Wednesday 2020-04-22 1200 UTC

[R2-2003984](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003984%20LS%20on%20SRS%20and%20SSB%20configuration%20for%20NR%20Positioning%20v4.docx) Draft Response LS on SRS and SSB configuration for NR Positioning Intel LSOut Rel-16 NR\_pos-Core To: RAN3 Cc: RAN1

* Approved as R2-2003989

[R2-2003054](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003054%20DraftLS_RAN3_non-periodicSRSPositioning.docx) DraftLS\_RAN3\_non-periodicSRSPositioning Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

Spatial relation and SSB configuration

[R2-2003069](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003069%20%5bPost109e-31%5d%5bPos%5d%20Details%20of%20spatial%20relation%20for%20positioning%20(Huawei).docx) [Post109e-31][Pos] Details of spatial relation for positioning (Huawei) Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

P1:

Ericsson think in some cases, as when the UE is moving, the speed of the update is a concern.

Qualcomm think “decided by the gNB” is better terminology than “determined by gNB”. Ericsson want to clarify the gNB sets the configuration and can diverge from the LMF’s recommendation. Qualcomm agree with this and think the LMF then needs to be informed. Nokia wonder if the LMF can take any action based on this information. Qualcomm understand it affects which TRPs will be involved and the LMF needs to send the SRS configuration to the TRPs.

CATT think if the serving gNB does not know about the neighbouring gNBs, the LMF can help set the spatial relation so the neighbouring gNBs can collect the SRS, and this is why the LMF recommendation is needed. ZTE think in this case it’s not right to say that the gNB “decides” since all it can do is follow the LMF’s recommendation; they would prefer to say it “chooses”. Qualcomm and Huawei think this is a matter of gNB implementation.

P5:

OPPO wonder if this is intended for the UL-only methods. Huawei confirm this was the intention.

P6:

Qualcomm agree we should keep the previous agreement but think this wording is unclear. They are not sure why RRC index is required.

Agreements:

Spatial relation of SRS is recommended by the LMF and decided by the gNB. It is up to gNB implementation whether to follow the LMF recommendation. The gNB informs the LMF of its decision.

UE does not report RSRP of DL-PRS in RRC procedures for SRS configuration.

Keep the current SSB configuration for the DL-only positioning in the LPP message.

Keep the current configuration of SSB in RRC for UL-only positioning. This means that the RRC configuration can carry the full SSB configuration or SSB index and PCI.

For the assistance information in NRPPa for SSB configuration for UL-only positioning, it should include both TF configuration and SSB index in the NRPPa message.

* Include the RAN3-related decisions above in the LS from discussion #604.

[R2-2003055](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003055%20DraftCR%20for%20SSB%20configuration%20in%20LPP%20spec.docx) DraftCR for SSB configuration in LPP spec Huawei, HiSilicon draftCR Rel-16 37.355 16.0.0 NR\_pos-Core

[R2-2003056](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003056%20DraftCR%20for%20SSB%20configuration%20in%20RRC%20spec.docx) DraftCR for SSB configuration in RRC spec Huawei, HiSilicon draftCR Rel-16 38.331 16.0.0 NR\_pos-Core

[R2-2003057](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003057%20DraftLS%20to%20RAN3%20on%20Spatial%20relations%20for%20positioning.docx) DraftLS\_RAN3\_On Spatial relations for positioning Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

* [AT109bis-e][605][POS] Checking of draft CRs on SSB configuration (Huawei)

Scope: Check the draft CRs in R2-2003055 and R2-2003056.

Intended outcome: Agreed in principle CRs in R2-2003985 and R2-2003986 (the latter is revised to R2-2003987)

Deadline: Wednesday 2020-04-22 1200 UTC

[R2-2003985](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003985%20DraftCR%20for%20SSB%20configuration%20in%20LPP%20spec.docx) Correction on SSB configuration in LPP spec Huawei, HiSilicon draftCR Rel-16 37.355 16.0.0 NR\_pos-Core

* Endorsed in email discussion [AT109bis-e][605]
* Will be included in the LPP baseline CR (output of discussion #601)

[R2-2003986](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003986%20DraftCR%20for%20SSB%20configuration%20in%20RRC%20spec.docx) Correction on SSB configuration in RRC spec Huawei, HiSilicon draftCR Rel-16 38.331 16.0.0 NR\_pos-Core

* Revised in R2-2003987

[R2-2003987](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003987%20DraftCR%20for%20SSB%20configuration%20in%20RRC%20spec.docx) Correction on SSB configuration in RRC spec Huawei, HiSilicon draftCR Rel-16 38.331 16.0.0 NR\_pos-Core

* Endorsed in email discussion [AT109bis-e][605]

Summary document

[R2-2003620](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003620%20Summary%20of%20AI%206_8_2_1.docx) Summary document for agenda item 6.8.2.1 - NR Positioning Stage 2 Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_pos-Core Late

P1:

CATT understand that this is a clarification to align to an SA2 spec.

Ericsson think it should be discussed in RAN3 and are not sure if the wording “proprietary” is correct.

Huawei wonder if this also applies to Rel-15. Chair understands that this is a shadow CR of a Rel-15 proposal.

Intel think the dotted line already means there is no officially specified interface between E-SMLC and LMF.

CATT clarify that the word “proprietary” was copied from SA2.

Nokia observe that there is similar text in 36.305 for the E-SMLC and SLP, with the word “proprietary”.

Ericsson want to check if 36.305 says “proprietary” or “out of scope”. Qualcomm confirm that “proprietary” is used and they see this CR as an alignment.

P3:

Samsung confirm that they are OK with the agreements on non-periodic SRS.

P4:

CATT think PCI is not required for the UE, but the network would benefit from it for multi-UE management.

vivo prefer to keep all the parameters and modify the TRP-ID description as in the Huawei proposal.

Intel are also fine to keep this information.

Nokia would like to understand the justification to delete it. Qualcomm clarify that they understood it was obvious and captured elsewhere.

P5:

Intel and Huawei think this is needed. CATT agree.

Ericsson think the formulation is not ideal as it is for the spatial relation, not reception per se.

vivo wonder if there is a connection to P9. Huawei intend that this is TRP ID from the RAN3 perspective and P9 will not affect it.

P9:

Intel think that not all the current TRP-Id information is needed in all cases, and for transfer between LMF and gNB we need the PRS ID. They understand that TRP ID in the RAN3 sense is not needed by the UE.

Ericsson think PRS ID is not really appropriate here and the TRP ID is a good grouping of identifiers that are regularly used together. They are not sure if divergence between RAN2 and RAN3 terminology is a real problem here, and understand that in the UE-specific cases the PRS ID is the TRP ID. They think TRP ID should be the identity of the TRP, not a complex structure.

Qualcomm agree that the current “TRP-Id” is not really an ID of the TRP, but a container to collect all identities that could be associated with the TRP. They disagree that the TRP ID and PRS ID are the same, e.g. there may be TRPs without PRS. If we break down the TRP-Id IE we would end up with separate IEs in the different cases, and the UE needs some global ID to associate the assistance data together. They understand that the current IE matches what we have in LTE but puts it in a high-level container. We could break out the container or rename it to something like “TRP-Identifiers”.

Huawei generally agree with Qualcomm and understand that the TRP ID in the sense of RAN3 is signalled between LMF and gNB, and the PRS ID is agreed by RAN1. They think PRS ID is enough for the communication between the LMF and the UE, but have some sympathy for Qualcomm’s comment that a container might be needed. If a container is needed, the name should be changed.

Intel agree that we have divergence from RAN3 and the PRS ID should be used between UE and LMF; there is no need for the RAN3 TRP ID in the LPP protocol.

Ericsson would be fine with discussing the naming and structure under LPP.

Nokia understand from the RAN1 definition that the TRP-Id container is to uniquely identify a PRS resource across different resource sets from a single TRP. In this case “TRP-Id” would be a misnomer and something like “TRP-UniqueIdToLocatePRS-Resource” would be better.

vivo want to understand if the TRP ID definition in RAN3 matches the TRP-Id IE. They doubt it is the same. Chair has the same understanding. Huawei agree.

Huawei think we can agree that PRS ID is what needs to be transferred from UE to LMF, irrespective of the container naming. Intel and Qualcomm think this is correct. Qualcomm understanding is that this is the only place we have confusion about the terminology and in other places we use “TRP ID” correctly (in the RAN3 sense).

P7:

CATT have a concern about the geographical coordinates. In their understanding this would be configured by OAM to the LMF, rather than transferred by NRPPa. They think RAN3 could discuss.

Qualcomm think the table is correct and the LMF definitely needs to know this information for position calculation.

Huawei understand that in LTE the geographical information is in SLm interface rather than OAM. They agree that the details are RAN3 scope, but we need to capture it in stage 2.

Nokia think it could be OAM but this cannot be relied upon for all cases.

P8:

Qualcomm understand that the signalling in LTE supports this information exchange, and it was an oversight that this was not copied.

Huawei think we could take into account the RAN3 naming of this procedure as TRP information exchange. Qualcomm clarify this is already included in R2-2003348.

P12:

Intel think this needs to be discussed separately because it affects Rel-15. Qualcomm think we could take the Rel-16 decision now and Rel-15 can follow.

Agreements:

The interface between E-SMLC and LMF will be captured as “proprietary” in 38.305.

The information PCI/GCI/TRP-ID for UL SRS is kept in 38.305 for transfer from LMF to gNB for multi-RTT, UL-TDOA, and UL-AoA positioning.

In Table 8.10.2.4-2, Table 8.13.2.3-2 and Table 8.14.2.3-2 in TS 38.305, change “PCI, GCI, and TRP ID of the TRP for the UE to transmit UL SRS” to “PCI, GCI, and TRP ID of the TRP to receive UL SRS”. Wording can be fine-tuned in further discussion and in light of what we decide about TRP-ID handling. TRP ID here refers to the RAN3 definition of the term.

Stage 2 terminology for the information transferred from UE to LMF (replacing the current TRP ID for multi-RTT, DL-TDOA, and DL-AoD) will be aligned with the stage 3 conclusion on IE structure.

The following assistance data are transferred between gNB and LMF for UL-only positioning:

|  |
| --- |
| PCI, GCI, and TRP IDs of the TRPs served by the gNB |
| SSB information of the TRPs (the time/frequency occupancy of SSBs) |
| Geographical coordinates of the TRPs served by the gNB (include reference location for the receiving antenna of the reference TRP, relative locations for receiving antennas of other TRPs) |

LMF initiated assistance data delivery procedure needs to be specified. To be added to section 5.2.

* [AT109bis-e][607][POS] Update of 38.305 (Qualcomm)

Scope: Update 38.305 in light of the meeting agreements, using R2-2003348 as baseline.

Intended outcome: Agreed in principle CR in R2-2003990

Deadline: Wednesday 2020-04-29 1000 UTC

[R2-2003990](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003990_(38305%20corrections).docx) Various Corrections to NR Positioning Qualcomm Incorporated draftCR Rel-16 38.305 16.0.0 NR\_newRAT-Core

* [AT109bis-e][608][POS] GNSS terminology updates (ESA)

Scope: Conclude on the clarifications of GNSS terminology in 36.305 and 38.305 from R2-2003396.

Intended outcome: Agreed in principle CRs for Rel-15 and Rel-16: R2-2003991 (36.305 Rel-15), R2-2003992 (36.305 Rel-16), R2-2003993 (38.305 Rel-15), R2-2003994 (38.305 Rel-16)

Deadline: Wednesday 2020-04-29 1000 UTC

[R2-2003991](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003991%20CR%20to%20clarify%20the%20meaning%20of%20GNSS%20term%20in%2036.305%20Rel-15.docx) [CR to 36.305 on GNSS terminology] ESA CR Rel-15 36.305 15.4.0 0081 1 F NR\_newRAT-Core

* Agreed in principle in email discussion [AT109bis-e][608]

[R2-2003992](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003992%20CR%20to%20clarify%20the%20meaning%20of%20GNSS%20term%20in%2036.305%20Rel-16.docx) [CR to 36.305 on GNSS terminology] ESA CR Rel-16 36.305 16.0.0 0082 1 A NR\_newRAT-Core

* Agreed in principle in email discussion [AT109bis-e][608]

[R2-2003993](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003993%20CR%20to%20clarify%20the%20meaning%20of%20GNSS%20term%20in%2038.305%20Rel-15.docx) [CR to 38.305 on GNSS terminology] ESA CR Rel-15 38.305 15.5.0 0011 1 F NR\_newRAT-Core

* Agreed in principle in email discussion [AT109bis-e][608]

[R2-2003994](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003994%20CR%20to%20clarify%20the%20meaning%20of%20GNSS%20term%20in%2038.305%20Rel-16.docx) [CR to 38.305 on GNSS terminology] ESA CR Rel-16 38.305 16.0.0 0012 1 A NR\_newRAT-Core

* Agreed in principle in email discussion [AT109bis-e][608]
* [AT109bis-e][609][POS] Checking of CRs on proprietary interface between E-SMLC and LMF (CATT)

Scope: Checking of the CRs from R2-2002914 and R2-2002913.

Intended outcome: Agreed in principle CRs for Rel-15 and Rel-16: Agreed in principle CRs for Rel-15 and Rel-16: R2-2003995 (Rel-15), R2-2003996 (Rel-16)

Deadline: Friday 2020-04-24 1000 UTC

[R2-2003995](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003995%20draft%20CR-38305_CR_Rel15.docx) Clarification on UE Positioning Architecture CATT draftCR Rel-15 38.305 15.5.0 F NR\_pos-Core

* Agreed in principle as R2-2004143

[R2-2003996](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003996%20draft%20CR-38305_CR_Rel16.docx) Clarification on UE Positioning Architecture CATT draftCR Rel-16 38.305 16.0.0 A NR\_pos-Core

* Agreed in principle as R2-2004144

[R2-2004143](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\38305_CR0009_(Rel-15)_R2-2004143.docx) Clarification on UE Positioning Architecture CATT CR Rel-15 38.305 15.5.0 0009 - F NR\_pos-Core

* Agreed in principle in email discussion [AT109bis-e][609]

[R2-2004144](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\38305_CR0010_(Rel-16)_R2-2004144.docx) Clarification on UE Positioning Architecture CATT CR Rel-16 38.305 16.0.0 0010 - A NR\_pos-Core

* Agreed in principle in email discussion [AT109bis-e][609]

The following documents will not be individually treated

[R2-2002914](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002914%20Clarification%20on%20UE%20Positioning%20Architecture%20in%2038%20305%20for%20Rel-16.doc) Clarification on UE Positioning Architecture in 38.305 for Rel-16 CATT draftCR Rel-16 38.305 16.0.0 B NR\_pos-Core

[R2-2002939](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002939.docx) Discussion on reusing Rel-15 SRS for Multi-RTT ZTE Corporation discussion

[R2-2003060](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003060%20Text%20proposal%20to%20stage-2%20specification.docx) Text proposal to stage-2 specification Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

[R2-2003348](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003348_(38305%20corrections).docx) Various Corrections to NR Positioning Qualcomm Incorporated discussion

[R2-2003396](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003396%20Text%20proposal%20to%20clarify%20the%20meaning%20of%20GNSS.docx) Text Proposal to clarify the meaning of GNSS term ESA, Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_pos-Core

[R2-2003731](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003731%20non-periodic%20SRS%20for%20positioning.docx) On supporting of non-periodic SRS for positioning Samsung R&D Institute UK discussion

#### 6.8.2.2 RRC

Including impact to 36.331 and 38.331. This agenda item will utilize a summary document to facilitate treatment of topics during the e-meeting.

Tdoc limitation: 1 tdoc

Summary document

[R2-2003769](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003769%20Summary%20of%20Agenda%20Item%206.8.2.2%20for%20RRC.DOCX) Summary of agenda item 6.8.2.2 for RRC Huawei discussion Rel-16 NR\_pos-Core

P6:

Ericsson wonder if this is in scope for the Rel-16 WI but support the concept.

NextNav understand that the broadcast objectives in the work item are broad and this just captures what we agreed in LTE, migrated to NR. Huawei agree.

Nokia think it is a straightforward change.

Agreement:

Support posSibType4-1 and posSibType5-1 for Barometric Pressure and TBS based on MBS signals in the broadcast system information in 38.331.

The following documents will not be individually treated

[R2-2002598](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002598.docx) Broadcast of additional assistance data NextNav, AT&T, FirstNet, Intel, Polaris Wireless CR Rel-16 38.331 16.0.0 1508 - C NR\_pos, NR\_pos-Core

* Agreed in principle

[R2-2002617](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002617%20Discussion%20on%20gap%20configuration%20and%20request%20for%20NR%20positionin.docx) Discussion on GAP configuration and request for NR positioning vivo discussion Rel-16 NR\_pos-Core

[R2-2003059](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003059%20DraftCR%20on%20LocationMeasurementIndication.docx) DraftCR on LocationMeasurementIndication Huawei, HiSilicon draftCR Rel-16 38.331 16.0.0 NR\_pos-Core

[R2-2003136](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003136%20Recommendation.docx) Recommendation message from LMF to gNB for SRS configuration Ericsson discussion Rel-16

[R2-2003137](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003137%20UE%20Capability%20SRS.docx) UL SRS UE Capability Ericsson discussion

[R2-2003729](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003729%20SSB%20configuration.docx) SSB configuration for DL-/UL-only method in RRC Samsung R&D Institute UK discussion

#### 6.8.2.3 LPP

This agenda item will utilize a summary document to facilitate treatment of topics during the e-meeting. Note that documents on specific ASN.1 issues should be submitted to AI 6.8.2.4.

Tdoc limitation: 1 tdoc

Summary document

[R2-2003783](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003783_(Summary%20of%206.8.2.3%20LPP).docx) Summary of LPP agenda item 6.8.2.3 Qualcomm Incorporated discussion Rel-16 NR\_pos-Core

Rapporteur’s Proposal 2: RAN2 should discuss the interpretation of additional paths measurements (nr AdditionalPathList) in case of additional timing measurements are reported.

Rapporteur’s Proposal 3: Interesting companies should discuss any enhancements to common reporting in future Releases; e.g. as part of the positioning/latency enhancements study for Rel-17.

Rapporteur’s Proposal 4: RAN2 should discuss the use cases for a new LocationInformationType ‘locationEstimateAndMeasurementsRequired’ in IE CommonIEsProvideLocationInformation first, before introducing the feature in LPP.

Rapporteur’s Proposal 5: RAN2 should discuss whether PSCell/Scell information should be provided by a target device in CommonIEsRequestAssistanceData.

Rapporteur’s Proposal 6: RAN2 should inform RAN1 of the RAN2 discussion and concerns related to the SMTC information in the SSB assistance data, and ask RAN1 for any status update of the working assumption in RAN1.

Rapporteur’s Proposal 7: RAN2 should inform RAN1 of the RAN2 discussion and ask whether PRS-PRS QCL Type D indication is still needed (this may be a combined LS to RAN1 incl. Rapporteur’s Proposal 6).

Rapporteur’s Proposal 8: RAN2 should discuss whether

(a) to change the name of the IE TRP-ID (e.g., to distinguish from the RAN3 TRP-ID), or

(b) to remove IE TRP-ID from LPP and add the relevant TRP-ID fields to the individual parent IEs.

Rapporteur’s Proposal 9: Fix the above issue (Parameter nr-UE-RxTxTimeDiff in LPP multi-RTT location IE should refer 38.215 for the definition) in the LPP Clean-up.

* [AT109bis-e][610][POS] LPP proposals (Ericsson)

Scope: Discuss proposals 2, 4, 5, 6, 7, 8 from R2-2003783

Intended outcome: Summary of agreements in R2-2003997

Deadline: Wednesday 2020-04-29 1000 UTC

[R2-2003997](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003997_Offline-610_LPP_details_summary.docx) Email discussion report: [AT109bis-e][610][POS] LPP proposals (Ericsson) Ericsson discussion Rel-16 NR\_pos-Core

Qualcomm have a concern about some proposals, especially P3/P4.

P1:

CATT understand that only RSTD measurements require reference time, and we need to clarify what measurements the additional paths apply to. They also think we need guidance from RAN1 about the definition. Intel understand that RAN1 agreed the UE reports additional results for the same pair of TRPs, and we agreed reporting of additional paths based on timing.

Ericsson think RAN1 are discussing the measurements, and we already have an agreement about additional paths for timing measurements similar to LTE. They understand that we need a field description for the relative RSTD, and they interpret that RAN1 agreement implies that there should be only one time reference. CATT agree with this interpretation and think we should follow the RAN1 agreement. Nokia think we need to keep a clear separation between additional measurements and additional paths. Huawei agree and do not think any RAN1 involvement is needed; the difference is between signalling one differential RSTD and signalling two differential RSTDs. Qualcomm agree that there is no need for RAN1 to be involved, but they think it involves more than just the field description and the ASN.1 might need to change; they understand that the additional path is always for TDOA, not RSTD.

* [Post109bis-e][xx][POS] Reference for additional path reporting (Ericsson)

Scope: Discuss the options for a time reference convention for additional path reporting and conclude a way forward, starting from the text proposal in Annex 1 of R2-2003997.

Intended outcome: Summary for next meeting

Deadline: Long

P3:

Qualcomm understand that this would have a large impact on all positioning methods and we should not introduce it now. Intel agree. Nokia would prefer that we not continue to discuss it in Rel-16. Qualcomm think it is not in scope for the WI and may even have SA2 impact. Ericsson think we should not exclude further discussion. Intel think we need to limit discussion time and should agree not to have it. Qualcomm agree with Intel.

P3 is not pursued.

P4:

Huawei think that for NGEN-DC it would be useful to know the NR serving cell. So they see value in indicating the PSCell. CATT think this proposal is not in Rel-16 scope and could be postponed to Rel-17. Intel understand that the main work for this release is to support NR RAT-dependent positioning and NGEN-DC/EN-DC should not be in scope.

P5, P6:

Chair suggests we change nothing now as there was no consensus in the discussion. Interested companies can coordinate internally.

P7:

Qualcomm dispute that TRP-ID is “complex”; they think it comports with our usual practice of grouping IEs.

Ericsson think there was a majority view to split up the IE.

Intel think we do not have consistent use of the different fields inside TRP-ID and the grouping is confusing. Qualcomm do not agree that the fields are not needed in other places; e.g. the DL-PRS-Id cannot be used by itself to identify the assistance data across broadcast and unicast. They understand that the full structure is needed in all places where we use it for certain cases. Huawei think out of the 11 cases where it is used, 8 of them only need the DL-PRS-Id.

Ericsson think we could acknowledge that we see the need for the DL-PRS-Id in all cases, and we need to go case by case.

Nokia think we have DL-PRS-Id and DL-PRS-IdInfo and the implementation of the latter seems to fit the ID definition from the L1 parameter spreadsheet, while the description of DL-PRS-Id matches the description of the ID. Intel understand that our high-level IEs attempt to group the IEs defined in RAN1 and there are different groups. Qualcomm think what we implemented matches the RAN1 agreements.

Qualcomm think the table assumes that all the AD come from a single source. More information is needed if it mixes broadcast and unicast.

* [Post109bis-e][xx][POS] TRP-ID structure (Ericsson)

Scope: Discuss the proposals for restructuring the TRP-ID and determine which fields are needed for which case. The table in R2-2003997 can be used as starting point.

Intended outcome: Summary for next meeting

Deadline: Long

Proposal 1 Discuss the field descriptions and names of the additional measurements and additional path fields.

Proposal 2 Discuss the text proposal in Annex 1

Proposal 3 Continue to analyse the need for combined location estimate and measurement reporting via a new location information type, and discuss whether this is within the WI scope, in an email discussion for the next meeting

Proposal 4 Do not add additional cell identifiers in the request for assistance data

Proposal 5 RAN2 to discuss whether the SMTC parameters shall remain or an LS to RAN1 is needed.

Proposal 6 Leave the QCL Type D information as is in the assistance data

Proposal 7 Split up the complex TRP-ID IE and use separate fields

Proposal 8 Discuss a suitable name for the TRP identifier with a (0..255) INTEGER value range

Proposal 9 Discuss which IEs that needs additional identifiers associated to the TRP with the table in [4] as baseline.

The following documents will not be individually treated

[R2-2002938](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002938.docx) Discussion on additional path reporting ZTE Corporation discussion

[R2-2003061](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003061%20Remaining%20issues%20with%20LPP.docx) Remaining issues with LPP Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

[R2-2003130](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003130%20Measurement%20Reporting.docx) Measurement Reporting for UE based positioning Ericsson discussion Rel-16

* Revised in R2-2003811

[R2-2003811](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003811%20Measurement%20Reporting.docx) Measurement Reporting for UE based positioning Ericsson, Deutsche Telekom discussion Rel-16

=> Revised in R2-2003822

[R2-2003822](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003822%20Measurement%20Reporting.docx) Measurement Reporting for UE based positioning Ericsson, Deutsche Telekom discussion Rel-16 NR\_pos-Core

[R2-2003318](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003318%20Handling%20on%20TRP-ID.docx) Handling on TRP-ID Intel Corporation discussion Rel-16 NR\_pos-Core

[R2-2003730](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003730%20RxTxTimeDiff%20in%20LPP.docx) UE Rx – Tx time difference definition in LPP Samsung R&D Institute UK discussion

#### 6.8.2.4 LPP ASN.1 issues

Any issues related only to the details of ASN.1 in 37.355. CRs should not be submitted to this agenda item except by the specification rapporteur.

The ASN.1 review process for LPP will proceed from company contributions in this meeting. Issues should be submitted under this agenda item and will be collected by the specification rapporteur. The review process will proceed by email after this meeting with issues to be concluded at RAN2#110-e.

* [AT109bis-e][601][POS] LPP ASN.1 issue gathering and easy agreements (Qualcomm)

Scope: Collect the issues from the contributions in agenda item 6.8.2.4, excluding R2-2003143 and R2-2003144

Intended outcome: Endorsed baseline CR starting from R2-2003350 (R2-2003981) and list of open issues (R2-2003982) for continuing ASN.1 review after this meeting

Deadline: Wednesday 2020-04-29 1000 UTC

[R2-2003982](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003982_(LPP%20Issues)_Summary.docx) Email discussion report: [AT109bis-e][601][POS] LPP ASN.1 issue gathering and easy agreements (Qualcomm) Qualcomm Incorporated discussion Rel-16 NR\_pos-Core

[R2-2003981](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Docs\R2-2003981.zip) LPP Clean-Up Qualcomm Incorporated draftCR Rel-16 37.355 16.0.0 NR\_pos-Core

* Endorsed as a baseline for email discussion after the meeting.
* [Post109bis-e][xx][POS] LPP ASN.1 review (Qualcomm)

Scope: Gather and discuss issues and develop a running CR for ASN.1 corrections, with R2-2003981 as a baseline.

Intended outcome: Open issues list and CR to next meeting

Deadline: Long

* [AT109bis-e][602][POS] LPP ASN.1 structural issues (Ericsson)

Scope: Initial discussion on the issues raised in R2-2003144

Intended outcome: Report of potential easy agreements and remaining open issues (R2-2003983) suitable for capture in the LPP ASN.1 issue list

Deadline: Comments by Tuesday 2020-04-28 1000 UTC; output document Wednesday 2020-04-29 1000 UTC

[R2-2003983](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003983_Offline-602_LPP%20structure_summary.docx) Email discussion report: [AT109bis-e][602][POS] LPP ASN.1 structural issues (Ericsson) Ericsson discussion Rel-16 NR\_pos-Core

* P2 can be captured in the ASN.1 review open issues list. P3 and P4 are already captured.
* [Post109bis-e][xx][POS] Structure of UE-based assistance data (Ericsson)

Scope: Discuss the structure of UE-based assistance data and determine if changes are needed to minimise repetition of information.

Intended outcome: Report to next meeting

Deadline: Long

Proposal 1 Keep matching structure for UEB AD, but investigate means to cross-reference between TRPs of UEB AD to avoid repeating information. Compare means to avoid repeating information via PER-encoded ASN.1 examples.

Proposal 2 Introduce a 1 degree resolution and an optional 0.1 degree refinement for beam direction representation and agree to the text proposal in Annex 2.

Proposal 3 Represent UEB AD grouped into NR-UEB-TRP-LocationData and NR-UEB-TRP-RTD-Info for both unicast and broadcast of assistance data

Proposal 4 Introduce DL-PRS Assistance data as an IE NR-DL-PRS-ProvideAssistanceData as part of the ProvideAssistanceData IE

[R2-2002915](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002915%20Clarification%20on%20SFN0-Offset%20and%20DL-AoD%20report%20in%20LPP%20ASN.1.doc) Clarification on SFN0-Offset and DL-AoD report in LPP ASN.1 CATT draftCR Rel-16 37.355 16.0.0 B NR\_pos-Core

[R2-2003066](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003066%20DraftCR%20for%20NR-DL-PRS-Config.docx) DraftCR for NR-DL-PRS-Config Huawei, HiSilicon draftCR Rel-16 37.355 16.0.0 NR\_pos-Core

[R2-2003067](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003067%20Miscellaneous%20Corrections%20to%20LPP%20ASN.1.docx) Miscellaneous Corrections to LPP ASN.1 Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

[R2-2003143](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003143%20Overhead.docx) Overhead in current structure Ericsson discussion Rel-16

[R2-2003144](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003144%20Important%20LPP%20structural%20aspects.docx) Important LPP structural aspects Ericsson discussion Rel-16

[R2-2003349](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003349_(LPP%20Issues).docx) Various Corrections to NR Positioning Qualcomm Incorporated discussion

[R2-2003350](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Docs\R2-2003350.zip) LPP clean-up Qualcomm Incorporated discussion Rel-16 NR\_pos-Core Late

[R2-2003781](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003781%20%20CR%2037.355%20Corrections%20to%20the%20introduction%20of%20NR%20positioning.docx) CR 37.355 V16.0.0, Corrections to the introduction of NR positioning Ericsson CR Rel-16 37.355 16.0.0 0256 - F NR\_pos-Core

#### 6.8.2.5 MAC

Including impact to 38.321.

Tdoc limitation: 1 tdoc

LCID/eLCID

[R2-2003135](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003135%20MAC%20CE.docx) Change LCID to eLCID for SP Positioning SRS Activation/Deactivation MAC CE Ericsson CR Rel-16 38.321 16.0.0 0720 - F NR\_pos-Core

[R2-2003062](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003062%20Correction%20to%20SP-SRS%20(de-)activation%20MAC%20CE.docx) Correction to SP SRS actication deactivation MAC CE Huawei, HiSilicon draftCR Rel-16 38.321 16.0.0 NR\_pos-Core

DRX

[R2-2002618](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002618%20Discussion%20on%20the%20impact%20of%20DRX%20on%20SRS%20for%20NR%20positioning.docx) Discussion on the impact of DRX on SRS for NR positioning vivo discussion Rel-16 NR\_pos-Core

Other

[R2-2003063](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003063%20Runnnig%20CR%20to%20MAC%20spec%20for%20R16%20Positioning.docx) Runnnig CR to MAC spec for R16 Positioning Huawei, HiSilicon draftCR Rel-16 38.321 16.0.0 NR\_pos-Core

=> Revised in R2-2003768

[R2-2003768](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003768%20Runnnig%20CR%20to%20MAC%20spec%20for%20R16%20Positioning.docx) Running CR to MAC spec for R16 Positioning Huawei, HiSilicon draftCR Rel-16 38.321 16.0.0 NR\_pos-Core

* [AT109bis-e][606][POS] MAC proposals (Huawei)

Scope: Discuss the proposals from R2-2003135, R2-2003062, R2-2002618, and R2-2003768, and develop a CR incorporating the agreeable proposals

Intended outcome: Agreed in principle CR to 38.321, in R2-2003988

Deadline: Wednesday 2020-04-29 1000 UTC

[R2-2004208](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2004208%20Summary%20on%20MAC%20proposals%20under%206.8.2.5.docx) Summary on MAC proposals under 6.8.2.5 Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

P2:

Qualcomm wonder if this is in RAN2 scope; it may be more for RAN4 to decide. Huawei think RAN4 could be involved but the reasons for not transmitting Rel-15 SRS in off-period are in RAN2 scope. Qualcomm think DRX control by the gNB was discussed as a reason to have the SRS configured by the gNB rather than the LMF. Ericsson think it can be discussed based on contributions for next meeting, and people can check with RAN4 colleagues. vivo think we should send an LS to RAN4.

Huawei wonder what the RAN4 impact would be and what we would ask. vivo see a relationship to whether the UE can transmit SRS from deep sleep during the DRX off-period, and think if companies have RAN4-related concerns we should provide the options to RAN4 and let them make a decision. Qualcomm think we can ask if it is feasible and if there are impacts on power consumption and RAN4 performance requirements. Intel agree it is reasonable to send an LS, and think the issue relates to the retuning time needed to transmit SRS.

Apple understand that this would only apply to Rel-16 SRS for positioning. Huawei confirm that the intention is not to change anything for Rel-15 SRS.

* [Post109bis-e][xx][POS] LS to RAN4 on positioning SRS during DRX inactive period (Huawei)

Scope: Draft an LS to RAN4 indicating that RAN2 have discussed allowing transmission of Rel-16 SRS for positioning during the DRX inactive period, and asking if it is feasible from RAN4 perspective.

Intended outcome: Approved LS

Deadline: Short

[R2-2003988](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003988%20Runnnig%20CR%20to%20MAC%20spec%20for%20R16%20Positioning.docx) DraftCR of MAC for R16 Positioning Huawei, HiSilicon CR Rel-16 38.321 16.0.0 0735 F NR\_pos-Core

Huawei indicate this captures the non-controversial conclusions of the discussion and editorial corrections.

* Agreed in principle

#### 6.8.2.6 Broadcast assistance data

This agenda item will utilize a summary document to facilitate treatment of topics during the e-meeting.

Tdoc limitation: 1 tdoc

*Document transferred from main session*

[R2-2004209](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2004209-%20%5bAT109bis-e%5d%5b056%5d%5bOdSIBconn%5d%20On%20demand%20SI%20Open%20issue%20for%20positioning.docx) Summary of [AT109bis-e][056][OdSIBconn] Ondemand SI Open issue for positioning Ericsson discussion Rel-16 NR\_unlic-Core, 5G\_V2X\_NRSL-Core, NR\_IIOT-Core, LTE\_NR\_DC\_CA\_enh-Core, NR\_pos-Core

Agreements:

The working assumption to support the Msg1-based mechanism for requesting positioning assistance data in RRC\_IDLE/RRC\_INACTIVE is confirmed.

* [Post109bis-e][xx][POS] Open issues on on-demand SI for positioning (Ericsson)

Scope: Review the open issues from R2-2004209 and agree on which ones can be implemented in the RRC CR for on-demand SI.

Intended outcome: Open issues list with agreeable issues identified.

Deadline: Short

Summary document

[R2-2003607](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003607%20Summary%20for%20Broadcast%20Assistance%20Data(Agenda%206.8.2.6).doc) Summary for Broadcast of Assistance Data CATT discussion Late

P2:

CATT agree with the proposal. Huawei wonder how the GNSS ID/SBAS ID will be encoded in the RACH resource for Msg1-based, and wonder if Msg3 can accommodate the fields.

Nokia understand the justification but wonder if there would be an additional gNB requirement to maintain different versions of the SIB for different GNSSs/SBASs.

Ericsson understand that this is only for connected mode.

* [Post109bis-e][xx][POS] Remaining issues on broadcast (CATT)

Scope: Discuss the proposals from R2-2003607.

Intended outcome: Summary for next meeting

Deadline: Long

Proposal 2 by Rap: Agree with GNSS ID/SBAS ID in principle and merge it into running CR 38.331 for ASN.1 check.

Proposal 3 by Rap: Agree not to include segment number in NRPPa metadata.

The following documents will not be individually treated

[R2-2002916](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2002916.doc) Summary of the agreement and left issues on Broadcast Assistance Data CATT discussion Rel-16 38.331 NR\_pos-Core

[R2-2003058](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003058%20DraftCR%20for%20on-demand%20SI%20request%20for%20positioning%20in%20IDLE%20and%20INACTIVE.docx) DraftCR for on-demand SI request for positioning Huawei, HiSilicon draftCR Rel-16 38.331 16.0.0 NR\_pos-Core

[R2-2003132](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003132%20unicast%20tag.docx) On the need of unicast tag for positioning si-BroadcastStatus Ericsson discussion Rel-16

* Revised in R2-2003810

[R2-2003810](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003810%20unicast%20tag.docx) On the need of unicast tag for positioning si-BroadcastStatus Ericsson, Deutsche Telekom discussion Rel-16

Withdrawn/Not available

R2-2003140 On Relevance of Broadcast Ericsson discussion Rel-16 Withdrawn

#### 6.8.2.7 UE-based positioning

This agenda item may utilize a summary document to facilitate treatment of topics during the e-meeting (decision to be made based on submitted tdocs).

Tdoc limitation: 1 tdoc

[R2-2003064](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003064%20Discussion%20on%20UE-based%20positioning.docx) Discussion on UE-based positioning Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

[R2-2003145](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003145%20Remaining%20issues%20UE-based.docx) Remaining issues with NR RAT dependent UE-based positioning Ericsson discussion Rel-16

* [Post109bis-e][xx][POS] Remaining issues on UE-based positioning (Huawei)

Scope: Discuss the proposals from R2-2003064 and R2-2003145.

Intended outcome: Summary for next meeting

Deadline: Long

### 6.8.3 Other

Tdoc limitation: 1 tdoc

[R2-2003065](C:\\Users\\mtk16923\\Documents\\3GPP Meetings\\202004 - RAN2_109bis-e, Online\\Extracts\\R2-2003065 Discussion on UL-ECID.docx" \o "C:\Users\mtk16923\Documents\3GPP Meetings\202004 - RAN2_109bis-e, Online\Extracts\R2-2003065 Discussion on UL-ECID.docx) Discussion on UL-ECID Huawei, HiSilicon discussion Rel-16 NR\_pos-Core

Intel wonder what the LPP impact is. Huawei agree there should not be LPP impact.

Nokia think this could be handled by stage 2 contributions and we previously decided to leave it to RAN3 to conclude on UL E-CID. Qualcomm have the same understanding and think there is no RAN2 impact but it is being discussed in RAN3. Intel agree with Qualcomm and think we can act if/when we receive an LS from RAN3.

CATT think UL E-CID is not in the WI scope.

[R2-2003376](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003376%20UE%20rxtx.docx) On UE RxTx Measurements Ericsson discussion Rel-16

Qualcomm think this was already discussed at the stage 2 level, and if companies want to use Rel-15 SRS for Rx-Tx they need to discuss in RAN1. Intel have the same view: RAN1 did not include this and we should not introduce it. Ericsson think it is more general than Rel-15 SRS and there can be error scenarios where we do not know the reference time for the SRS transmission. Qualcomm think this has been proposed before and is a RAN1 issue.

Ericsson clarify they do not propose to discuss Rel-15 SRS.

## 6.20 NR TEI16 enhancements

Small Technical Enhancements to NR. TEI should be predominantly within a single WG and fully completed within the same quarter in all affected WGs. RAN2 impact of RAN1/4-led TEI shall be limited to RRC signalling of configuration parameters and UE capabilities (no MAC impact, no RRC procedural impact, etc). Please also see [RP-191602](file:///C:\Data\3GPP\TSGR\TSGR_84\docs\RP-191602.zip) endorsed at RAN#84. Please submit to 6.20.x.

NOTE that proponent companies are responsible to ensure that correct CRs are provided in all groups for proposals that have impact in >1 working group.

Time budget: 1 TU

Tdoc Limitation: 2 tdocs. NOTE for TEI, the tdoc limitation applies to new proposals, not to open proposals since previous meeting(s)

### 6.20.1 RAN2 led TEI16 enhancements - Control plane related

#### 6.20.1.1 Open / ongoing proposals

[R2-2003142](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003142%20Transfer%20of%20unicast.docx) Transfer of unicast RS observations with GNSS integer ambiguity level information Ericsson

Qualcomm understand that this is a new proposal not connected to the previously agreed CR, and more justification is needed. Ericsson consider that it would be useful to inform the difference between stations to the UE, and think this was previously discussed for LTE. Qualcomm think this proposal deviates from the RTCM signalling and the benefit is not clearly shown. Nokia think we are trying to close Rel-16 and this proposal comes quite late. Intel have a similar view.

* Noted

Proposal 1 Define signalling to enable the UE to translate its integer ambiguity solution associated to a current reference station to an integer solution associated to a new reference station

Proposal 2 Introduce the text proposal in Appendix A into the running LPP CR

# 7 Rel-16 LTE Work Items

Documents in these agenda items will be handled in break out sessions

## 7.7 Support of Indian Navigation Satellite System NavIC

(LCS\_NAVIC; leading WG: RAN2; REL-16; started: Sept 19; target; March-20; WID: RP-192350)

Time budget: 0 TU Final agreement of CRs is expected

This item is 100%

[R2-2003821](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003821_%20Update%20missed%20out%20definition%20for%20Information%20Element%20NavModel-NavIC-KeplerianSet.docx) Update missed out definition for Information Element NavModel-NavIC-KeplerianSet Reliance Jio CR Rel-16 37.355 16.0.0 0257 - F LCS\_NAVIC-Core

* [AT109bis-e][603][POS] Introduction of NavIC Keplerian set IE (Reliance Jio)

Scope: Review of the CR submitted in R2-2003821 to introduce the definition of NavModel-NavIC-KeplerianSet

Intended outcome: Agreed-in-principle CR in R2-2003998

Deadline: Wednesday 2020-04-29 1000 UTC

[R2-2003998](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202004%20-%20RAN2_109bis-e,%20Online\Extracts\R2-2003998_Update%20missed%20out%20definition%20for%20Information%20Element%20NavModel-NavIC-KeplerianSet.docx) Update missed out definition for Information Element NavModel-NavIC-KeplerianSet Reliance Jio CR Rel-16 37.355 16.0.0 0257 1 F LCS\_NAVIC-Core

* Agreed in principle in email discussion [AT109bis-e][603]

# Summary

## Email discussions:

* [Post109bis-e][xx][POS] Reference for additional path reporting (Ericsson)

Scope: Discuss the options for a time reference convention for additional path reporting and conclude a way forward, starting from the text proposal in Annex 1 of R2-2003997.

Intended outcome: Summary for next meeting

Deadline: Long

* [Post109bis-e][xx][POS] TRP-ID structure (Ericsson)

Scope: Discuss the proposals for restructuring the TRP-ID and determine which fields are needed for which case. The table in R2-2003997 can be used as starting point.

Intended outcome: Summary for next meeting

Deadline: Long

* [Post109bis-e][xx][POS] LPP ASN.1 review (Qualcomm)

Scope: Gather and discuss issues and develop a running CR for ASN.1 corrections, with R2-2003981 as a baseline.

Intended outcome: Open issues list and CR to next meeting

Deadline: Long

* [Post109bis-e][xx][POS] Structure of UE-based assistance data (Ericsson)

Scope: Discuss the structure of UE-based assistance data and determine if changes are needed to minimise repetition of information.

Intended outcome: Report to next meeting

Deadline: Long

* [Post109bis-e][xx][POS] LS to RAN4 on positioning SRS during DRX inactive period (Huawei)

Scope: Draft an LS to RAN4 indicating that RAN2 have discussed allowing transmission of Rel-16 SRS for positioning during the DRX inactive period, and asking if it is feasible from RAN4 perspective.

Intended outcome: Approved LS

Deadline: Short

* [Post109bis-e][xx][POS] Open issues on on-demand SI for positioning (Ericsson)

Scope: Review the open issues from R2-2004209 and agree on which ones can be implemented in the RRC CR for on-demand SI.

Intended outcome: Open issues list with agreeable issues identified.

Deadline: Short

* [Post109bis-e][xx][POS] Remaining issues on broadcast (CATT)

Scope: Discuss the proposals from R2-2003607.

Intended outcome: Summary for next meeting

Deadline: Long

* [Post109bis-e][xx][POS] Remaining issues on UE-based positioning (Huawei)

Scope: Discuss the proposals from R2-2003064 and R2-2003145.

Intended outcome: Summary for next meeting

Deadline: Long