3GPP TSG-RAN WG2 Meeting #111-e R2-20xxxxx

Online, August 17th - 28th, 2020

Source: Session Chair (MediaTek)

Title: Report of session on positioning and sidelink relay

# 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.

* [AT111-e][600][POS][Relay] Organisational Nathan – Positioning/Relay (MediaTek)

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

Intended outcome: Well-informed participants

Deadline: Friday 2020-08-28 1000 UTC

* [AT111-e][601][POS] UE E-CID measurement reporting in LTE Rel-15 (Nokia)

Scope: Discuss the CR in R2-2008051 and determine if it is agreeable.

Intended outcome: Agreed CR (revised in R2-2008257 if necessary)

Deadline: Wednesday 2020-08-19 1000 UTC

* [AT111-e][602][Relay] TR skeleton approval (OPPO)

Scope: Discuss and approve the TR skeleton from R2-2006602 updated as necessary.

Intended outcome: Agreeable TR skeleton, in R2-2008251

Deadline: Monday 2020-08-24 1200 UTC

* [AT111-e][603][Relay] Scope, requirements, and scenarios (InterDigital)

Scope: Discuss proposals on the scope, requirements, and scenarios for UE-to-network and UE-to-UE relaying, including:

* Coverage scenarios
* Connectivity scenarios
* Uu and PC5 RATs
* RRC states for relaying
* Cast types for the PC5 link
* Potential reuse of requirements from earlier releases (e.g. FeD2D, LTE ProSe relaying)

Extension to conclude on P5, P7, and remaining open issues on P9-P24, and conclude on the agreeable parts.

Intended outcome: Summary with potential agreeable TP, in R2-2008252

Deadline: Monday 2020-08-24 1200 UTC; extended to Thursday 2020-08-27 1200 UTC

* [AT111-e][604][Relay] L3 relay protocol stacks (Qualcomm)

Scope: Discuss and document the proposed L3 relay design(s), focussing on general mechanisms of L3 architecture based sidelink relaying including protocol stacks and high level description of required UP/CP functionalities..

Intended outcome: Summary with potential agreeable TP, in R2-2008253

Deadline: Monday 2020-08-24 1200 UTC; extended to Wednesday 2020-08-26 1000 UTC

* [AT111-e][605][Relay] L2 relay mechanism (MediaTek)

Scope: Discuss and document the proposed L2 relay design(s), focussing on general mechanisms of L2 architecture based sidelink relaying including protocol stacks and high level description of required UP/CP functionalities.

Intended outcome: Summary with potential agreeable TP, in R2-2008254

Deadline: Monday 2020-08-24 1200 UTC; extended to Wednesday 2020-08-26 1000 UTC

* [AT111-e][606][Relay] Discovery model and procedure (OPPO)

Scope: Discuss proposals on the discovery model and procedures, including:

* Protocol stacks for discovery
* Potential reuse of discovery models from LTE
* Resource pool for discovery
* Visibility of discovery signalling in AS layers
* Conditions for discovery
* Authorisation related aspects

Intended outcome: Summary with potential agreeable TP, in R2-2008255

Deadline: Wednesday 2020-08-26 1200 UTC

* [AT111-e][607][POS] Integrity definitions, KPIs, and use cases (Swift)

Scope: Discuss proposals and attempt to reach consensus on definitions, KPIs, and use cases for positioning integrity.

Intended outcome: Summary with potential agreeable TP, in R2-2008256. Extension to further converge and produce a text proposal in R2-2008262, with attention to anticipated specification impact.

Deadline: Thursday 2020-08-20 1100 UTC – extended to Thursday 2020-08-27 1200 UTC

* [AT111-e][608][POS] SUPL update to methods table in 38.305 (Qualcomm)

Scope: Checking of the CR in R2-2007630.

Intended outcome: Agreed CR

Deadline: Thursday 2020-08-27 1200 UTC

* [AT111-e][609][POS] Checking of R2-2007831, R2-2007828, and R2-2006841 (Huawei)

Scope: Confirm the changes in R2-2007831, R2-2007828, and R2-2006841 taking into account RAN3 progress where relevant. For R2-2006841, step 5 of the flow should be updated but no new procedure is introduced.

Intended outcome: Agreed CRs

Deadline: Thursday 2020-08-27 1200 UTC

* [AT111-e][610][POS] RRC miscellaneous CR (Ericsson)

Scope: Generate a positioning update RRC CR:

* Review R2-2006942 and capture RAN2 agreements from P1 and P2 of R2-2007581
* Discuss P8, P10, P11 of R2-2007581 and capture agreeable aspects

Intended outcome: Agreeable CR in R2-2008258

Deadline: Thursday 2020-08-27 1200 UTC

* [AT111-e][611][POS] LPP miscellaneous CR (Qualcomm)

Scope: Capture RAN2 decisions on P3-P6 of R2-2008120; discuss P7-P16 of R2-2008120 and merge the results into a rapporteur CR.

Intended outcome: Agreeable CR, in R2-2008260

Deadline: Thursday 2020-08-27 1200 UTC

* [AT111-e][612][POS] Assumptions for analysis of commercial use cases (Ericsson)

Scope: Align understanding of the RAN2 scope and assumptions for accuracy, latency, and efficiency objectives for commercial use cases. Attempt to capture a summary of proposals to this meeting that can be discussed in RAN2 directly.

Intended outcome: Summary in R2-2008261

Deadline: Wednesday 2020-08-26 1200 UTC

* [AT111-e][613][POS] Integrity error sources (Huawei)

Scope: Categorise the identified error sources and develop a way forward, considering RAT-dependent and RAT-independent methods, with the understanding that the use of specific positioning methods may be use-case-dependent.

Intended outcome: Summary in R2-2008263

Deadline: Thursday 2020-08-27 1200 UTC

# 4 EUTRA corrections Rel-15 and earlier

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

Only essential corrections. No documents should be submitted to 4. Please submit to 4.x

## 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.

[R2-2008051](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008051.docx) UE E-CID measurement reporting Nokia, Nokia Shanghai Bell CR Rel-15 36.305 15.5.0 0091 - F LCS\_LTE

* [AT111-e][601][POS] UE E-CID measurement reporting in LTE Rel-15 (Nokia)

Scope: Discuss the CR in R2-2008051 and determine if it is agreeable.

Intended outcome: Agreed CR (revised in R2-2008257 if necessary)

Deadline: Wednesday 2020-08-19 1000 UTC

[R2-2008257](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008257.docx) UE E-CID measurement reporting Nokia, Nokia Shanghai Bell CR Rel-15 36.305 15.5.0 0091 1 F LCS\_LTE

* Nokia think a similar change could be introduced in 38.305, and wonder if we should fix earlier releases. Intel think for stage 2 it is not critical to change the earlier releases. Qualcomm think even Rel-15 may not be necessary and we could fix it from Rel-16 only. Huawei think we could rely on the magic sentence. Intel think the text is from Rel-9 and has not produced problems, and the magic sentence suggests that earlier UEs may have problems that need to be fixed. Huawei disagree with this implication and understand that it means the change can be adopted in any release; they think the magic sentence was introduced exactly to avoid large numbers of duplicate CRs for past releases. Qualcomm point out the revision number is wrong.
* Add the magic sentence and convert to Rel-16.
* Agreed with these changes as R2-2008259 (Rel-16). A new CR number is needed; proponent to contact the secretary.

# 5 Rel-15 WI: New Radio (NR) Access Technology

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

Only essential corrections

## 5.5 Positioning corrections

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.

[R2-2006665](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\38305_CR0026_(Rel-15)_R2-2006665.docx) Correction on 38.305 in Table 4.3-1Supported versions of UE positioning methods CATT CR Rel-15 38.305 15.6.0 0026 - F NR\_newRAT-Core

* vivo agree with the change but wonder if the UE provision of measurements to the gNB should be mentioned for the RAN-assisted case. CATT think the terminology could be updated to clarify which node “performs” rather than “provides” measurements.
* Intel think we should only clarify statements like this if there is a real problem such as IOT.
* Qualcomm think 23.273 says the UE “obtains” measurements for UE-based, and they understand that the terms “LMF-based” and “LMF-assisted” only exist in RAN2 specifications. They think it would be beneficial to have the definitions but we could change only for Rel-16.
* Ericsson think the proposal is common understanding, and it could have some clarification benefit for a new reader but would be OK to leave as it is. Think the word “provide” is appropriate and we should not change to indicate who “performs” measurements.
* CATT think the clarification of the meaning of “LMF-based” is necessary and will relate to the integrity enhancements in Rel-17.
* ZTE support the CR.
* Nokia think these definitions are already made clear in section 3.1 and nothing new is needed.
* Qualcomm think for UE-based it is wrong to say the UE “provides” measurements; it “performs” or “obtains” them.
* Intel think if there is a Rel-17 concern we can discuss in Rel-17. CATT think the clarification is valid also in the earlier releases. Intel think if we agree the CR, the consequences if not approved should justify it, and clarification is not a good motivation for a CR to an earlier release.
* Nokia also have a concern and think section 3.1 covers it.
* Not pursued

[R2-2006666](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\38305_CR0027_(Rel-16)_R2-2006666.docx) Correction on 38.305 in Table 4.3-1Supported versions of UE positioning methods CATT CR Rel-16 38.305 16.1.0 0027 - A NR\_newRAT-Core

[R2-2006667](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\36305_CR0089_(Rel-15)_R2-2006667.docx) Correction on 36.305 in Table 4.3-1Supported versions of UE positioning methods CATT CR Rel-15 36.305 15.5.0 0089 - F NR\_newRAT-Core

* Not pursued

[R2-2006668](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\36305_CR0090_(Rel-16)_R2-2006668.docx) Correction on 36.305 in Table 4.3-1Supported versions of UE positioning methods CATT CR Rel-16 36.305 16.1.0 0090 - A NR\_newRAT-Core

# 6 Rel-16 NR Work Items

Essential corrections. While high maintenance intensity is expected, Rel-16 corrections are treated separately per WI.

## 6.6 NR Positioning Support

(NR\_pos-Core; leading WG: RAN1; REL-16; started: Mar 19; target; Jun 20; WID: RP-200218, SR: RP-201342). R2 and R1 parts are 100% complete.

(NR TEI16 Positioning)

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

Email max expectation: 5 email threads

### 6.6.1 General and Stage 2 corrections

Including incoming LSs, Including impact to 36.305 and 38.305. Stage 2 corrections should be discussed with the specification rapporteur before submission.

Incoming LSs

[R2-2006522](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006522_R3-204379.docx) Reply LS on Aperiodic SRS (R3-204379; contact: Intel) RAN3 LS in Rel-16 NR\_pos-Core To:RAN2 Cc:RAN1

* Noted

[R2-2006523](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006523_R3-204380.docx) LS on mapping of PosSIB(s) to Area(s) (R3-204380; contact: Huawei) RAN3 LS in Rel-16 NR\_pos-Core To:RAN2

* Noted

Summary document

[R2-2008098](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008098%20Summary%20of%206.6.1.docx) Summary of 6.6.1 CATT discussion Rel-16 NR\_pos-Core Late

P1:

* Nokia wonder why the UE-based/UE-assisted entries were deleted. Qualcomm clarify this was for consistency with the new text. Ericsson ask for confirmation that this is in the most recent SUPL release and the reference is up to date. Qualcomm indicate this was handled as a bugfix in SUPL 2.0. CATT ask if the reference in 38.305 needs updating. Qualcomm understand that SUPL 2.0 remains as the same release. Polaris confirm this understanding. NextNav clarify it is handled as a maintenance release, and wonder if we should update the “NG-RAN node assisted” column and the E-CID description as “for E-UTRA”. Qualcomm point out we have separate E-CID methods for E-UTRA and NR, so they think the table is correct in that respect; and there is a separate Rel-15 CR addressing the NG-RAN node assisted aspect.
* NextNav think the table would be clearer for E-CID if we changed the method names.
* Nokia think Note 4 may need to be removed for clarity, and rely on stage 3 to clarify the relationship of NR CID and E-UTRA E-CID. Qualcomm think the table and note are correct because NR CID really was introduced as part of E-UTRA E-CID in Rel-15. Also point out this is somewhat out of scope for the CR. Intel tend to agree with Qualcomm and think we should focus on the proposed changes; confusion between the E-CID methods should not happen with the current table and section 8. Ericsson think we should not delete the UE-assisted and UE-based differentiation in the legacy text. Qualcomm point out we have no UE-based OTDOA in LPP so only UE-assisted is valid. Ericsson think a parallel change could be needed to 36.305.
* Ericsson would like some more time. Can discuss by email.
* Intel wonder why for NR we need to distinguish DL E-CID. Qualcomm think the SUPL CR is explicit about DL only, because the SLP cannot get the UL measurements from the gNB.
* [AT111-e][608][POS] SUPL update to methods table in 38.305 (Qualcomm)

Scope: Checking of the CR in R2-2007630.

Intended outcome: Agreed CR

Deadline: Thursday 2020-08-27 1200 UTC

P2:

* On SRS-only RP, CATT think we can also discuss if the definition of PRS-only TP should be updated accordingly for DL-only positioning. Ericsson think we may not need this definition and it should have been also discussed in RAN3; they are not sure of the motivation for the new definition. Intel tend to agree with Ericsson that this should be discussed in RAN3 and they can generate a stage 2 CR. Qualcomm think this is not purely a RAN3 issue since we already use the term “SRS-only RP” in 38.305. On the PRS-only TP, we need to maintain backward compatibility with LTE. Huawei agree that the term is already used and we should define it. Intel agree that if we use the term it makes sense to define it. Ericsson wonder if we could use the existing term RP without specifying SRS-only. Ericsson would like more time for a comeback on this proposal.
* On A-AoA definition and abbreviations for A-AoA and Z-AoA, Nokia wonder if in section 3.2 it should say “angle” or “angles”.
* OK to have this change with the correction to “angle”.
* On section 8.9.1 where “UL AoA” is added, Intel point out the dash is missing.
* Qualcomm think there are additional editorial points, and this CR is not based on the latest version of the spec.
* Nokia think there is some misuse of measurement terminology.
* [AT111-e][609][POS] Checking of R2-2007831, R2-2007828, and R2-2006841 (Huawei)

Scope: Confirm the changes in R2-2007831, R2-2007828, and R2-2006841 taking into account RAN3 progress where relevant. For R2-2006841, step 5 of the flow should be updated but no new procedure is introduced.

Intended outcome: Agreed CRs

Deadline: Thursday 2020-08-27 1200 UTC

P3:

* Nokia think there is related discussion in RAN3 on the geographic coordinates, and it should be discussed in one place. So we should wait for RAN3 decision. Intel agree, and in general think this proposal is to capture RAN3 agreement and RAN3 can do it directly. Huawei also agree. Qualcomm understand that RAN3 have decided RAN2 should take care of it. Huawei report that there is ongoing email discussion in RAN3 and understand that RAN3 will produce the details with no LS exchange needed. Qualcomm believe this discussion is on stage 3 and the chair notes indicate RAN2 should handle it; they note RAN2 introduced this table.
* Handle by email [609]

P4/P5:

* Intel wonder why RAN2 should confirm the meaning of an NRPPa message. CATT understand that P4 just confirms the function of the message, but they think P5 is more in RAN3 scope. vivo have the same understanding as CATT on P4 and P5. Qualcomm think generally RAN2 is responsible for 38.305 and they agree this can be decided in RAN2.
* Intel wonder if we agree this, will we still need to wait for RAN3 on the details and capture more next time? Qualcomm agree it would make sense to align stage 2 to NRPPa once stage 3 is complete. Huawei think P4 is stable already and we could capture it; they understand that RAN3 have a lot of work and there is no harm in discussing it here.
* CATT wonder if we should clarify the working scope for stage 2 between RAN2 and RAN3. Nokia think this has become a bit of a grey area; in 38.300 we allow RAN3 to send agreed CRs to RAN2 for final review and application to the spec, and it would be good to have something like this for 38.305. Qualcomm think this is under normal working procedures and any group can provide input, with the final check and approval in RAN2 responsibility. CATT agree RAN2 can check CRs from RAN3, but think RAN2 cannot originate CRs on NRPPa; they agree with Nokia’s suggestion to have RAN3 provide stage 2 CRs to RAN2 for final check. Chair thinks this could be driven by companies in RAN3. Intel agree with Qualcomm about the procedure; RAN3 can only endorse a CR to a RAN2 spec and send it to us for final agreement. Intel also agree that of course RAN2 cannot change NRPPa, but we can capture RAN3 stage 3 details into stage 2 if RAN3 have not done it.
* Ericsson think RAN3 are heavily loaded; they think we could try to agree the principle of P4.
* Nokia agree RAN3 can endorse CRs for RAN2 agreement, but think there is some extra effort to make sure stage 2/stage 3 are aligned with the current way of working; they would like RAN3 to confirm the contents of the NRPPa message officially. Intel think load is a concern in RAN2 as well and we should not spend a lot of time on this issue; instead we can capture P4/P5 next meeting.
* Noted

P6:

* Huawei think the consequence of not agreeing this proposal is just some wasted SRS transmissions; they do not see it as critical.
* CATT think the existing procedure works; the UE can send the periodic SRS first and the gNB receives it when configured to. So they also see this as an enhancement that could be discussed in Rel-17.
* Qualcomm think step 5 in the existing sequence is not correct because there is no activation for the periodic case, and this could be clarified in the wording. CATT agree with Qualcomm. Intel also agree and think we do not need to introduce a new procedure. Ericsson think this is acceptable as long as we clarify the applicability of step 5.
* Step 5 can be updated; CR to be revised offline.

P7:

* Intel think this can be discussed in RAN3 directly as it is related to an NRPPa message. Ericsson agree. CATT think this should not be an issue since it is clear that for multi-RTT the signal should be Rel-16 SRS, and agree it can be discussed in RAN3. Huawei understand that this is exactly the issue since the gNB does not know that Rel-16 SRS is needed.
* Noted (RAN3 can discuss)

P8:

* Huawei think this is also an NRPPa proposal that can be discussed in RAN3. CATT agree.
* Noted (RAN3 can discuss)

CRs

[R2-2006841](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006841%20UL%20SRS%20Configurations.docx) Signalling sequence for UL SRS Configuration Ericsson discussion Rel-16 38.305

[R2-2007630](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007630_(CR%2038305-g10%20SUPL%20support).docx) Correction to SUPL support for NR positioning methods Qualcomm Incorporated CR Rel-16 38.305 16.1.0 0028 - F NR\_pos-Core

[R2-2007828](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007828%20Correction%20to%20Stage-2%20for%20gNB%20and%20LMF%20information%20transfer.docx) DraftCR to Stage-2 for gNB and LMF information transfer Huawei, HiSilicon CR Rel-16 38.305 16.1.0 0029 - F NR\_pos-Core

[R2-2007829](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007829%20Text%20proposal%20on%20stage2%20spec%20for%20aperiodic%20SRS.docx) Text proposal on stage2 spec for aperiodic SRS Huawei, HiSilicon CR Rel-16 38.305 16.1.0 0030 - F NR\_pos-Core

[R2-2007830](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007830%20TP%20for%20POSITIONING%20INFORMATION%20REQUEST.docx) TP for POSITIONING INFORMATION REQUEST Huawei, HiSilicon CR Rel-16 38.305 16.1.0 0031 - F NR\_pos-Core

[R2-2007831](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007831%20Miscellaneous%20correction%20to%20stage2%20specification.doc) Miscellaneous correction to stage2 specification Huawei, HiSilicon CR Rel-16 38.305 16.1.0 0032 - F NR\_pos-Core

### 6.6.2 RRC corrections

Including impact to 36.306, 36.331 and 38.331.

Summary document

[R2-2007581](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007581%20Summary%20of%20the%20AI%206.6.2%20for%20RRC%20in%20Pos.docx) Summary of the AI 6.6.2 for positioning RRC correction Huawei, HiSilicon discussion Late

P1:

* Huawei understand that this is basically editorial. Intel agree this is a correct change.
* Huawei think this can be merged to the miscellaneous corrections CR.
* Field description will be removed; to be merged into R2-2006942.

P2:

* Huawei understand that this is also editorial but may not be strongly motivated. Qualcomm do not see a strong need to change the ASN.1 even though BC. Nokia think we could go with the rapporteur’s preference. Intel understand there is no backward compatibility issue with changing a field name, but do not have a strong view. Ericsson think it would be OK to align.
* Align the field names; to be merged into R2-2006942.

P3:

* Qualcomm think this change is not needed.
* Noted

P4/P5/P6:

* Huawei clarify this issue is still under RAN4 discussion, but RAN4 have agreed a UE capability is needed; they prefer to add a new field description rather than add to an existing one, because the new field is no longer conditionally optional.
* Chair wonders if there is value in endorsing a baseline CR without agreeing to it. Ericsson think we can capture the ASN.1 impact.
* Intel understand that we need to wait for RAN4 no matter whether we agree to a baseline or not. They think the change is simple once RAN4 have concluded, so we don’t need to endorse a baseline CR, and think we cannot capture capability now and the function in the next version. Huawei clarify they do not intend to endorse the existing CR formally but just to wait for RAN4 and capture their agreements as soon as possible. They can also accept just waiting for RAN4.
* Ericsson think we can start discussion before hearing from RAN4. Intel think we should only trigger RAN2 discussion if we receive an agreement from RAN4.
* Noted (wait for RAN4)

P7:

* Intel think there are also LPP changes proposed related to this change, and we need to discuss whether to capture them.
* Qualcomm think the system information area ID is described in RRC and any related procedure should remain in RRC. For both P7 and P8, they think we do not need descriptions of the handling in LPP.
* CATT think P7 is not related to LPP but a general clarification of the interface between layers. However, their motivation is the assumption that LPP needs this information.
* Intel agree with Qualcomm that the validity is handled in RRC.
* Ericsson think this is more UE implementation and may not need to be specified. Nokia agree that there is no requirement to handle this in LPP.
* CATT think LPP needs this information to judge whether the system information is valid.
* Intel agree with Ericsson that this is UE implementation.
* Noted

P9:

* Apple understand that this is covered in email discussion [014].
* [AT111-e][610][POS] RRC miscellaneous CR (Ericsson)

Scope: Generate a positioning update RRC CR:

* Review R2-2006942 and capture RAN2 agreements from P1 and P2 of R2-2007581
* Discuss P8, P10, P11 of R2-2007581 and capture agreeable aspects

Intended outcome: Agreeable CR in R2-2008258

Deadline: Thursday 2020-08-27 1200 UTC

Measurement gap patterns

[R2-2006544](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006544%20Remaining%20issues%20on%20measurement%20gap%20for%20NR%20positioning.docx) Remaining issues on measurement gap for NR positioning vivo discussion NR\_pos-Core

[R2-2006926](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006926%20RRCMeasurement%20gaps.docx) Measurement gaps for PRS-based measurements Ericsson CR Rel-16 38.331 16.1.0 1754 - B NR\_pos-Core

[R2-2007559](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007559%20capability%20.docx) Introuduction of UE Capabilitues for support of measurement gaps for PRS-based measurements Ericsson CR Rel-16 38.306 16.1.0 0384 - B NR\_pos-Core

[R2-2007832](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007832%20Introduction%20of%20PRS%20mesurement%20gap.doc) Introduction of PRS mesurement gap Huawei, HiSilicon CR Rel-16 38.331 16.1.0 1925 - F NR\_pos-Core

[R2-2007837](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007837%20Correction%20on%20PRS%20mesurement%20gap%20capability.doc) Correction on PRS mesurement gap capability Huawei, HiSilicon CR Rel-16 38.306 16.1.0 0393 - F NR\_pos-Core

System information

[R2-2006664](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\38331_CR1726_(Rel-16)_R2-2006664.docx) Correction on 38.331 to capture agreements of area scope for posSIB validity CATT CR Rel-16 38.331 16.1.0 1726 - F NR\_pos-Core

[R2-2006755](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\38331_CR1736_(Rel-16)_R2-2006755.docx) Correction on on-demand SI in RRC\_CONNECTED CATT CR Rel-16 38.331 16.1.0 1736 - F NR\_pos-Core

[R2-2006844](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006844%20Extention%20.docx) Addition of extension marker for positioning SI broadcast status Ericsson CR Rel-16 38.331 16.1.0 1741 - F NR\_pos-Core

[R2-2007076](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007076_CR1779_38331_Rel16_Corrections%20to%20acquisition%20of%20posSIB(s)%20in%20RRC_CONNECTED.docx) Corrections to acquisition of posSIB(s) in RRC\_CONNECTED Samsung Electronics Co., Ltd CR Rel-16 38.331 16.1.0 1779 - F NR\_pos-Core

[R2-2007078](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007078_CR1781_38331_Rel16_Corrections%20to%20handing%20posSIB-MappingInfo%20in%20received%20SIB1.docx) Corrections to handing posSIB-MappingInfo in received SIB1 Samsung Electronics Co., Ltd CR Rel-16 38.331 16.1.0 1781 - F NR\_pos-Core

Others

[R2-2006942](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006942%20RRC%20Minor.docx) Minor corrections and update for RRC Positioning Ericsson CR Rel-16 38.331 16.1.0 1757 - F NR\_pos-Core

[R2-2007547](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007547_CR_unused%20field_38.331.docx) Corrections to unused field nr-CarrierFreq and misalignment between LPP and RRC Samsung Electronics Romania CR Rel-16 38.331 16.1.0 1860 - F NR\_pos-Core

### 6.6.3 LPP corrections

Including impacts to UE capabilites

Summary document

[R2-2008120](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008120_(Summary%20of%206.6.3%20LPP%20Corrections).docx) Summary of LPP corrections agenda item 6.6.3 Qualcomm Incorporated discussion NR\_pos-Core

P1:

* Intel think RRC allows NBC changes and we could do the same for LPP to avoid additional extensions and dummification.
* Huawei understand that in this meeting we can take NBC changes. CATT share the same view and think it can be discussed case by case if something requires a BC change.
* We can take NBC changes to LPP in this meeting

P2:

* Intel agree with this proposal and think capabilities can be included or treated separately.
* Merge to a single rapporteur CR

P3:

* vivo understand that the current structure has no problem, but there is some misalignment in the RAN1 spec. So they think an LS is needed.
* ZTE think we should move dl-PRS-NumSymbols to resource level since there is no RAN1 agreement saying it is the same for all resources in a set.
* CATT think no action is needed and the current RAN2 spec follows the RAN1 guidance. They think it is not critical to align the parameter data structures and the RAN1 LS implies that the value will be the same across a resource set.
* Nokia think we can follow the L1 parameter list and the current spec is aligned. So we would make no changes now, but could send an LS to RAN1 for clarification.
* Chair wonders if we could fix it later with a BC change. Qualcomm think it would be difficult as the parameter is mandatory.
* Intel understand the RAN1 intention was to have a common value across the resource set, and the parameter list is consistent with that. So they see that no change is needed and also no LS.
* Huawei think if we make a change for this, there is no RAN1 agreement to support it. They understand that any change should be driven from RAN1 and think RAN2 doesn’t need to act.
* vivo point out there is also no RAN1 agreement saying the number of symbols is the same across a set. So we need to send an LS to prompt them to capture the constraint.
* CATT agree with Intel that the LS with the parameter list was clear, and we should wait for an LS from RAN1.
* Ericsson think no action is needed, and do not see a misalignment between LPP and 38.214. The latter just says that there is a parameter for the resource defining the number of symbols, but does not specify whether it is variable per resource or per set.
* Qualcomm have the same understanding as Intel, Ericsson, and Huawei, but think it would be harmless to send an LS. Intel think we would only get feedback next meeting and we would have to make an awkward change; they also think the parameters were sent back to RAN1 for checking already, and this issue can be handled directly in RAN1 if companies have a concern.
* ZTE think it would be good to have aligned wording in the specifications.
* Ericsson think nothing is broken from RAN2 perspective, and agree with Intel that it can be handled in RAN1.
* No action in RAN2 on this issue now

P4:

* Qualcomm understand that the SSB index is provided in the QCL information and it is not needed in NR-SSB-Config.
* ZTE also think it is not needed in NR-SSB-Config.
* vivo agree to delete the field description.
* Delete field description of ssb-Index in NR-SSB-Config

P5:

* Ericsson think we agreed to something similar for beam information, and there is overhead for the locations that could be reduced. They also think the location can be the same within a frequency layer (multiple TRPs representing the same site) due to the limitation on the number of resource sets for a TRP.
* Qualcomm think the coincident TRPs will not occur in real deployments, even if they are mounted on the same tower, but they are OK with the proposal.
* CATT think the LMF can calculate positions more accurately if TRPs are not precisely collocated, so they understand that this will not have benefits in real deployments.
* Intel also think this is not a likely scenario in real deployments, but the proposal does not harm the specification.
* Ericsson think collocated TRPs between different frequency layers is a real scenario, to allow using the same antenna location. For the open office scenario they foresee a small device with multiple sectors precisely collocated.
* Huawei think the LMF implementation can handle the scenario by using the same PRS-Id for different TRPs. Ericsson think this does not work across frequency layers because each layer has a locally unique PRS-Id and it cannot be reused in this way.
* CATT think the proposal is acceptable for the case of different frequency layers.
* vivo understand that the PRS-Id could be reused. We have the frequency layer level that can distinguish them. Ericsson think this was discussed previously and the PRS-Id has to be unique per TRP within the assistance data scope, e.g. to distinguish which measurements are being reported.
* Huawei understand that a TRP can have 2 PRS resource sets per frequency layer, and up to 8 across frequency layers, and the ID is the same across the frequency layers in this case. Ericsson have a different understanding and think the parameter list does not reflect this; they consider that the requirement to support 8 resource sets is what the UE can handle, not what a single TRP can operate, and the AD hierarchy would have to be different to support PRS-Id reuse. Huawei think RAN1 discussed this issue in terms of the value range of the ID.
* Qualcomm have the understanding that the TRPs from different frequency layers are normally separate sites, but think it would do no harm to have the possibility in the spec.
* Huawei can accept the proposal, but want to clarify that the PRS-Id can be reused across frequency layers, e.g. if one TRP transmits with different bandwidths on different frequency layers. Ericsson disagree but think it is a separate issue from the signalling.
* OPPO can accept the proposal but think we should clarify if the PRS-Id can be reused across frequency layers. They have the same understanding as Huawei and some concern that we introduce two methods of representing the same situation. Qualcomm think the spec does not need to care about how the PRS-Id is assigned; it is up to network deployment.
* Introduce the associatedDL-PRS-ID in the TRP location info element.

P6:

* Intel understand that without this the LMF does not know the UE’s CA configuration, and wonder if the UE would need to update the capability when its CA configuration changes. They think this could be considered in Rel-17.
* Huawei think there is nothing the LMF can do with this information.
* Do not introduce the intra-/inter-band CA capabilities for SRS at the LMF

P7/P8:

* Qualcomm think we need the capabilities, and the questions are which IE to extend, how many instances of the capability to support, and how to structure them. They understand that we need to extend the top-level capability IE and can avoid repeating the capability for 1024 bands. On the ASN.1 structure they would like to avoid capturing SEQUENCEs of a single element.
* Huawei think it is OK to take R2-2007632 as a baseline, but think the periodic SRS capability should be mandatory.
* Intel understand that Qualcomm’s assumption is the UE will only report the capabilities for bands that are configured in the current CA configuration, and wonder if this will mean updating the capability when the configuration changes. Qualcomm think this is the consequence and the UE capability becomes dynamic. Intel note there is no mechanism for the UE to push the capability.
* [AT111-e][611][POS] LPP miscellaneous CR (Qualcomm)

Scope: Capture RAN2 decisions on P3-P6 of R2-2008120; discuss P7-P16 of R2-2008120 and merge the results into a rapporteur CR.

Intended outcome: Agreeable CR, in R2-2008260

Deadline: Thursday 2020-08-27 1200 UTC

CRs

[R2-2006543](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006543%20Correction%20of%20DL-PRS-NumSymbols.docx) Correction of DL-PRS-NumSymbols vivo discussion NR\_pos-Core

[R2-2006546](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006546%20Discussion%20on%20remaining%20issues%20on%20LPP.docx) Discussion on remaining issues on LPP vivo discussion NR\_pos-Core

[R2-2006663](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\37355_CR0262_(Rel-16)_R2-2006663.docx) Correction on 37.355 to capture agreements of area scope for posSIB validity CATT CR Rel-16 37.355 16.1.0 0262 - F NR\_pos-Core

[R2-2006847](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006847%20reference%20TRP.docx) Need of reference TRP in the TRP-LocationInfo IE for UE-based assistance data distribution efficiency Ericsson discussion Rel-16 37.355

[R2-2006949](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006949%20Handling%20on%20RAN1%20positioning%20related%20capabilities.doc) Handling on RAN1 positioning related capabilities Intel Corporation discussion Rel-16 NR\_pos-Core

[R2-2006950](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006950%20Capture%20RAN1%20positioning%20related%20capabilities.docx) Capture RAN1 positioning related capabilities Intel Corporation CR Rel-16 37.355 16.1.0 0263 - F NR\_pos-Core

[R2-2007632](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007632_(CR%2037355-g10%20UE%20Capabilities).docx) Addition of missing SRS for Positioning capabilities Qualcomm Incorporated CR Rel-16 37.355 16.1.0 0264 - F NR\_pos-Core

[R2-2007634](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007634_(CR%2037355-g10%20AD%20sharing%20and%20priority%20description).docx) Assistance data sharing and priority for measurements Qualcomm Incorporated CR Rel-16 37.355 16.1.0 0265 - F NR\_pos-Core

[R2-2007635](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007635_(CR37355-g10%20padding%20of%20c0).docx) Addition of missing padding rule for initial counter c0 Qualcomm Incorporated CR Rel-16 37.355 16.1.0 0266 - F LCS\_LTE\_acc\_enh-Core, NR\_pos-Core

[R2-2007833](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007833%20Correction%20of%20the%20SRS%20capability%20in%20LPP.docx) Correction of the SRS capability in LPP Huawei, HiSilicon CR Rel-16 37.355 16.1.0 0267 - F NR\_pos-Core

[R2-2007834](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007834%20Correction%20on%20SignalMeasurementInformation.doc) Correction on SignalMeasurementInformation Huawei, HiSilicon CR Rel-16 37.355 16.1.0 0268 - F NR\_pos-Core

[R2-2007835](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007835%20Correction%20on%20ProvideAssistantData.doc) Correction on ProvideAssistantData Huawei, HiSilicon CR Rel-16 37.355 16.1.0 0269 - F NR\_pos-Core

[R2-2007836](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007836%20Correction%20on%20PRS%20configuration.doc) Correction on PRS configuration Huawei, HiSilicon CR Rel-16 37.355 16.1.0 0270 - F NR\_pos-Core

[R2-2007941](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007941%20Correction%20to%20NR-SSB-Config.docx) Correction to NR-SSB-Config ZTE Corporation, Sanechips CR Rel-16 37.355 16.1.0 0271 - F NR\_pos-Core

### 6.6.4 MAC corrections

[R2-2006545](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006545%20Discussion%20on%20SRS%20for%20positioning%20during%20the%20DRX%20inactive%20period.docx) Discussion on SRS for positioning during the DRX inactive period vivo discussion NR\_pos-Core

* Intel ask what the MAC spec impact of P1 and P3 would be; their understanding is that the current spec should already support them.
* CATT disagree with P1 and think the UE can make this decision in implementation; they would prefer not to limit the behaviour.
* Huawei think for P1, the active time is a longer duration than the onDurationTimer and the UE should be able to transmit throughout the active time. They understand that RAN4 will discuss this issue in this meeting cycle.
* Qualcomm think we should not introduce new functionality, and the current spec indicates there is no different behaviour compared to Rel-15 SRS. They think based on the status of RAN4, DRX enhancements should be postponed.
* Ericsson agree with Qualcomm that this can be discussed in the Rel-17 framework. CATT agree and think we should wait for RAN4 conclusion. Nokia also agree.
* Intel want to clarify what the existing behaviour is if we change nothing now; they understand it aligns with P1/P3. Also point out we already sent a related LS to RAN4.
* Huawei think if we agree to P1, it is not aligned with the current behaviour because of the difference between active time and onDurationTimer. So taking P1 would change the MAC.
* Noted

### 6.6.5 Other

# 7 Rel-16 EUTRA Work Items

Essential corrections

## 7.6 LTE Positioning

(NavIC, LTE TEI16 Positioning)

# 8 Rel-17 NR Work Items

## 8.7 NR Sidelink relay SI

(FS\_NR\_SL\_relay; leading WG: RAN2; REL-17; WID: RP-193253)

Time budget: 2 TU

Tdoc Limitation: 4 tdocs

Email max expectation: 4 threads

### 8.7.1 Organizational

TR skeleton, rapporteur inputs, other organizational documents. Documents in this AI do not count towards the tdoc limitation.

Incoming LS

[R2-2006531](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006531_S2-2004750.docx) LS on Security Requirements for Sidelink/PC5 Relays (S2-2004750; contact: MediaTek) SA2 LS in Rel-17 FS\_5G\_ProSe To:SA3 Cc:RAN2, RAN3

* Noted

Workplan

[R2-2006601](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006601%20-%20Work%20plan%20of%20R17%20SL%20relay.doc) Work plan of R17 SL relay OPPO discussion Rel-17 FS\_NR\_SL\_relay

* ZTE note there are some topics included only in this meeting and wonder if we should complete the discussion and ignore these topics in future meetings. OPPO clarify we intend to progress as much as possible and use the other meetings if necessary; the plan does not exclude future meetings for these topics.
* Ericsson think we officially have not had an extension to the SI and wonder if it is safe to plan on three meetings instead of two. Chair thinks with only two meetings we would just have to conclude on the issues where we managed to discuss. OPPO clarify the work plan is based on the template of the SID.
* AT&T think Ericsson’s point is well taken and we need to make progress.
* Futurewei wonder about the categorisation of items as “easy” or “hard”: Is it really necessary, or is it enough to have the timetable for when we finish? They also agree with Ericsson’s concern about whether we can count on three meetings. OPPO think the point on “easy” and “hard” is well taken and it is only intended as guidance for what needs more time.
* Huawei want to avoid explicitly postponing something to the third meeting, until we know we have a third meeting.
* Noted

TR skeleton

[R2-2006602](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Docs\R2-2006602.zip) Skeleton of TR 38.836 v0.0.0 OPPO draft TR Rel-17 38.836 0.0.0 FS\_NR\_SL\_relay

* Revised in R2-2008251
* [AT111-e][602][Relay] TR skeleton approval (OPPO)

Scope: Discuss and approve the TR skeleton from R2-2006602 updated as necessary.

Intended outcome: Agreeable TR skeleton, in R2-2008251

Deadline: Monday 2020-08-24 1200 UTC

[R2-2008251](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Docs\R2-2008251.zip) Skeleton of TR 38.836 v0.0.0 OPPO draft TR Rel-17 38.836 0.0.0 FS\_NR\_SL\_relay

* Endorsed

Other

[R2-2007168](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007168.docx) ?[Draft]? LS to SA3 on the security related aspects for NR sidelink relay CATT LS out FS\_NR\_SL\_relay To:SA3

### 8.7.2 Scope, requirements, and scenarios

Clarify the required contents of the TR, high-level requirements, assumptions on supported scenarios. Including expectations on other groups if any.

* [AT111-e][603][Relay] Scope, requirements, and scenarios (InterDigital)

Scope: Discuss proposals on the scope, requirements, and scenarios for UE-to-network and UE-to-UE relaying, including:

* Coverage scenarios
* Connectivity scenarios
* Uu and PC5 RATs
* RRC states for relaying
* Cast types for the PC5 link
* Potential reuse of requirements from earlier releases (e.g. FeD2D, LTE ProSe relaying)

Extension to conclude on P5, P7, and remaining open issues on P9-P24, and conclude on the agreeable parts.

Intended outcome: Summary with potential agreeable TP, in R2-2008252

Deadline: Monday 2020-08-24 1200 UTC; extended to Thursday 2020-08-27 1200 UTC

[R2-2008252](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008252%20-%20summary%20of%20offline%20603Relay_v39_Rapp.docx) [AT111-e][603] Scope, requirements, and scenarios (Interdigital) InterDigital discussion Rel-17 FS\_NR\_SL\_relay

P1/P2/P3:

* LG ask if the remote and relay UE are connected and the relay UE is handed over to LTE, how do we handle this case? Considering this they think the UE may need to be triggered to do path switch.
* Ericsson think if we agree P1-P3, the scenario described by LG would result in releasing the relaying. They think this could be investigated later.
* Futurewei understand that this scenario could be considered later. Lenovo have a similar view and are OK with the proposals.
* vivo agree with the proposals but think we should eliminate the case considered by LG if we are not going to support cross-RAT cases.
* Agreed

P4:

* Huawei think we should be clear about when “UE-to-NW relay” means the architecture and when it means the relay UE. Ericsson agree.
* Ericsson think it should be under network control which link the remote UE uses (when in coverage).
* Agreed

P5:

* ZTE agree to support both the same and different gNBs, and think we cannot assume no RAN2 impact.
* Ericsson wonder if the remote UE has data to transmit, why it would transmit to a gNB that is not its serving gNB. Chair think this could happen at edge of cell.
* LG wonder if “same gNB” means “same PCell”.
* Qualcomm think the different gNB scenario is possible. For LG’s question, they think we can discuss further.
* Lenovo understood that “same gNB” meant “same serving cell” and think the different gNB scenario makes sense to avoid upper layers needing to know about the serving cell.
* Spreadtrum wonder if the remote UE should monitor paging from the gNB or the relay UE.
* Samsung think the different gNB scenario adds complexity, and wonder if we are going to study the scenarios in parallel or focus on the same gNB first. They would prefer the latter. Interdigital think we don’t know if it will add complexity, and the simplest approach may be to not rule anything out. Samsung think we should avoid different solutions for the different scenarios.
* Huawei think the different gNB is valid but not the main use case and think we could strive to minimise the additional impact.
* Futurewei think we should aim for a common solution for the cases. They think the issue is mainly about connection establishment with the UE-to-NW relay and service continuity; for connection establishment they see commonality but think there may be impact for service continuity.
* Ericsson agree with the comment from Samsung and think we should not add scenarios. Would prefer to start with the single gNB. vivo see some validity in Samsung’s comment but prefer not to prioritise now, and think we could target a common solution.
* Lenovo suggest that we could continue the discussion on this point.
* Convida think we could also clarify the definition of “same gNB” (e.g. would we model the remote UE as having two serving cells, do we support simultaneous Uu and PC5 connectivity).
* Futurewei think there was a majority view in the email discussion and we could conclude.
* Nokia think we should not deprioritise a potentially significant use case because of anticipated complexity at this stage.
* Can discuss further by email (including P5 and P7, focussing on whether to prioritise the cases and clarification of the meaning of “same gNB”).

P6:

* Apple think we target a common solution for UE-to-UE and UE-to-NW, and if all UEs are OOC we may not be able to rely on RAN3 to handle authorisation. So we may need to assume the relay UE is in coverage.
* Futurewei agree we want to have a common approach but are not sure we can enforce the relay being in coverage. They think the relay UE could be authorised by preconfiguration or provisioning.
* Qualcomm think all UEs OOC is a significant use case especially for PS.
* ZTE also support the proposal and think authorisation works for V2X when OOC, so it should be a solvable problem here.
* OPPO think OOC is important, and looking at the SA2 solutions they understand that there are candidates that support this case even without RAN authorisation.
* Huawei think the different coverage cases may cause different solutions, and we should add a guideline that we strive for a common solution.
* MediaTek support the proposal.
* Fujitsu wonder if this would also apply to groupcast/broadcast and would prefer to clarify that the goal for a common solution only applies to unicast.
* Agreed

P8:

* Qualcomm support the proposal. MediaTek also.
* Samsung understand that this would exclude groupcast/broadcast data since we have no PC5-RRC connection for those cases. They think data could be unicast over Uu but groupcast/broadcast over PC5. Interdigital think there was a majority to consider unicast as a priority.
* Futurewei think it should say “after” rather than “once” to avoid the implication of a race condition.
* vivo have some concern regarding relaying paging or SIBs.
* Fujitsu are also concerned about not excluding groupcast/broadcast.
* ZTE wonder what remote UE behaviour would be expected if the relay UE starts in idle/inactive mode.
* Convida support the proposal.
* Agreed (for unicast data only; we take no conclusion on groupcast/broadcast at this time).

Agreements:

NR sidelink is assumed on PC5 between the remote UE(s) and the UE to NW relay or UE to UE relay.

NR Uu is assumed on the Uu link of the UE to NW relay.

Cross-RAT configuration/control of remote/relay UEs is not considered.

For UE to NW relay, the following are considered: 1) UE to NW Relay UE in coverage and remote UE out of coverage; 2) UE to NW relay UE and remote UE both in coverage.

For UE to UE relays, any of the UEs involved in relaying can be either in coverage or out of coverage. RAN2 will strive for a common solution to the in- and out-of-coverage cases.

For UE to NW relay, relaying of unicast data between the remote UE and the network can occur after a PC5-RRC connection is established between the relay UE and the remote UE.

Proposal 9: Relaying of data between a remote source UE and a remote destination UE can occur once a PC5 link is established between the source UE, relay, and destination UE.

Proposal 10: Configuring/scheduling a UE’s sidelink by SN is out of scope of this study.

Proposal 11: For UE to NW relay, RAN2 assumes the remote UE has an active connection with only a single relay UE or to Uu at a given time. The remote UE can have a direct Uu connection or a connection via a single relay UE, but these two connections should not be active at the same time. Transmissions over different links (e.g. during path switch) are not precluded.

Proposal 12: For UE to UE relay, RAN2 assumes the remote UE has an active connection with only a single relay UE at a given time. Transmissions over different links (e.g. during path switch) are not precluded.

Proposal 13: For UE to NW relay, RAN2 focuses initial study on unicast data traffic between the UE and the NW.

Proposal 14: For UE to UE relay, RAN2 focuses initial study on unicast data traffic between the remote source UE and the remote destination UE.

Proposal 15: For L3 UE to NW relay, both relay and remote UEs can perform relay discovery in any RRC state. A remote UE can perform relay discovery whle OOC.

Proposal 16: For L3 UE to NW relay, a relay UE must be in RRC\_CONNECTED to perform relaying of data.

Proposal 17: For L2 relay, the RRC state of the relay and remote UE’s can change when connected via PC5.

Proposal 18: For L2 relay, both relay and remote UE must be in RRC CONNECTED to perform active relaying of data.

Proposal 19: For L2 relay, the relay UE can be either in RRC\_IDLE or RRC\_CONNECTED as long as the PC5-connected remote UE is in RRC\_IDLE.

Proposal 20: The remote UE in L2 UE to NW relay supports RRC\_INACTIVE. UE behavior specific to RRC\_INACTIVE can be considered in the WI stage.

Proposal 21: The relay UE in L2 UE to NW relay supports RRC\_INACTIVE. UE behavior specific to RRC\_INACTIVE can be considered in the SI/WI stage.

Proposal 22: RAN2 assumes no restrictions on the RRC states of any UEs involved in UE to UE relaying.

Proposal 23: RAN2 to further discuss whether to capture the requirements in this question, and if yes whether to:

i) Use them as comparison criteria in the L2/L3 comparison

ii) Identify in the TR which requirements can be applicable to L2 and/or L3

Proposal 24: RAN2 assumes an initial plan for prioritization (can be revisited if needed):

i) First focus on UE to NW relay and issues of UE to UE relay with similar solution as UE to NW relay

ii) Study issues specific to UE to UE relay if time permits, with leftovers in the WI

[R2-2008046](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Docs\R2-2008046.zip) General considerations on working for NR SL relay Huawei, HiSilicon, Apple, CMCC, China Telecom, China Unicom, MediaTek Inc., Sharp, Spreadtrum, Xiaomi, ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006609](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006609.docx) Clarification on the Scenarios for NR Sidelink Relay CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006721](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006721%20consideration%20on%20the%20study.docx) Considerations on the Study of NR Sidelink Relay Futurewei discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006554](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006554%20-%20Study%20item%20scope%20and%20focus%20areas%20prioritization.docx) Discussion on sidelink relay study item scope and focus areas prioritization Qualcomm Incorporated discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006570](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006570.docx) Scenarios and Assumptions on Sidelink Relay MediaTek Inc. discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006603](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006603%20-%20Scenarios%20for%20sidelink%20relay%20study.doc) Scenarios for sidelink relay OPPO discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006717](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006717%20NR%20Sidelink%20Relay%20Requirements%20and%20Scenarios.docx) Requirements, Assumptions and Supported Scenarios for NR Sidelink Relay Intel Corporation discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006735](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006735%20Initial%20Considerations%20for%20NR%20SL%20Relay.doc) Initial considerations on NR sidelink relay ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006758](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006758%20(R17%20SL%20Relay%20SI_A872).doc) Discussion and TP on Requirements and Scenarios for SL Relays InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006856](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006856-UE-to-UE%20Relay%20for%20unicast%20SL.docx) NR SL-based UE-to-UE relay for unicast SL Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006857](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006857-casting%20types%20in%20SL%20based%20relays.docx) Casting types in NR SL-based relays Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006866](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006866_8_7_2_Scope%20requirements%20and%20scenarios%20in%20sidelink%20relay.doc) Scope, Requirements and Scenarios in NR Sidelink Relaying Fujitsu discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006968](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006968%20Sidelink%20relay%20scenario.doc) NR sidelink relay scenarios Samsung Electronics Co., Ltd discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007038](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007038_SL%20relay%20discussion%20in%20SI%20phase.doc) SL relay discussion in SI phase vivo discussion Rel-17

[R2-2007039](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007039_Scope%20and%20Scenarios%20of%20SL%20relay.docx) Scope and Scenarios of SL relay vivo discussion Rel-17

[R2-2007043](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007043.doc) Scope and scenarios on NR sidelink relay Spreadtrum Communications discussion

[R2-2007099](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\._R2-2007099%20SL%20relay%20scearios_v1.doc) Discussion on NR Sidelink Relay Scenarios Apple, Convida Wireless discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007202](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007202%20High-level%20requirements%20-cln.doc) High-level requirements Samsung Electronics GmbH discussion

[R2-2007290](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007290-%20Service%20continuity%20in%20sidelink%20relay.docx) Service continuity scenarios for sidelink relay Ericsson discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007293](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007293-%20Scope%20and%20initial%20steps%20for%20SL%20relay.docx) Scope and initial steps for SL relay Ericsson discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007626](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007626_relaying.doc) Initial considerations for SL relaying Kyocera discussion Rel-17

[R2-2007775](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007775%20Discussion%20on%20UE-to-network%20coverage%20extension.docx) Discussion on UE-to-network coverage extension ETRI discussion Rel-17

[R2-2008017](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008017%20Scope%20and%20scenarios%20for%20NR%20sidelink%20relay.docx) Scope and scenarios for NR sidelink relay LG Electronics Inc. discussion Rel-17 FS\_NR\_SL\_relay

### 8.7.3 Relaying Mechanisms and their characteristics

Start to populate the TR. Put on the table mechanisms, their characteristics at least with respect to aspects A-F for L2 and L3 relay etc.

* [AT111-e][604][Relay] L3 relay protocol stacks (Qualcomm)

Scope: Discuss and document the proposed L3 relay design(s), focussing on general mechanisms of L3 architecture based sidelink relaying including protocol stacks and high level description of required UP/CP functionalities..

Intended outcome: Summary with potential agreeable TP, in R2-2008253

Deadline: Monday 2020-08-24 1200 UTC; extended to Wednesday 2020-08-26 1000 UTC

* [AT111-e][605][Relay] L2 relay mechanism (MediaTek)

Scope: Discuss and document the proposed L2 relay design(s), focussing on general mechanisms of L2 architecture based sidelink relaying including protocol stacks and high level description of required UP/CP functionalities.

Intended outcome: Summary with potential agreeable TP, in R2-2008254

Deadline: Monday 2020-08-24 1200 UTC; extended to Wednesday 2020-08-26 1000 UTC

[R2-2008253](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008253%20-%20Rapporteur%20summary%20of%20offline%20discussion%20%5b604%5d%5bRelay%5d%20L3%20relay%20protocol%20stacks%20(merge%20TP).docx) Summary of offline discussion [604][Relay] L3 relay protocol stacks (Qualcomm) Qualcomm Incorporated discussion Rel-17 FS\_NR\_SL\_relay

[R2-2008254](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008254%20Summary%20of%20%5bAT111-e%5d%5b605%5d%5bRelay%5d%20L2%20Relay%20Mechanism%20(MediaTek).docx) [AT111-e][605][Relay] L2 Relay Mechanism (MediaTek) MediaTek Inc. discussion Rel-17 FS\_NR\_SL\_relay

Scope and work organisation

[R2-2006604](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006604%20-%20Protocol%20stack%20and%20CP%20procedure%20for%20sidelink%20relay.docx) Protocol stack and CP procedure for SL relay OPPO discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007292](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007292-%20Considerations%20on%20L2%20and%20L3%20SL%20relay%20protocol%20design.docx) Considerations on L2 and L3 SL relay protocol design Ericsson discussion Rel-17 FS\_NR\_SL\_relay

General architecture and procedures

[R2-2007608](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007608_SLRelay_ProtocolStack_Intel.docx) Impact on user plane protocol stack and control plane procedure for Sidelink Relay Intel Corporation discussion Rel-17 FS\_NR\_SL\_relay

[R2-2008047](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008047.doc) Study aspects of UE-to-Network relay and solutions for L2 relay Huawei, HiSilicon discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006722](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006722%20protocol%20stack%20and%20connection%20setup.docx) Protocol Stack and Connection Setup Procedure of Sidelink Relay Futurewei discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007181](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007181.doc) Overview of Layer-2 and Layer-3 sidelink relay mechanisms Sony discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006555](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006555%20-%20UE-to-network%20relay%20architecture%20and%20prcoedures.docx) UE-to-network relay architecture and procedures Qualcomm Incorporated discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006572](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006572.docx) Architecture Options for Sidelink Relay MediaTek Inc. discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006610](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006610.docx) User and Control Plane Procedures for L2 UE-to-NW Relay CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006718](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006718_SLRelay_Intel.docx) Characteristics of L2 and L3 based Sidelink relaying Intel Corporation discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006737](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006737%20Discussion%20on%20NR%20SL%20Relay%20Architecture.doc) Discussion on NR SL Relay Architecture ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006759](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006759%20(R17%20SL%20Relay%20SI%20A873%20UEtoNW).doc) Discussion and TP on UE to NW Relay Based on L2 Relay Architecture InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006760](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006760%20(R17%20SL%20Relay%20SI%20A873%20UEtoUE).doc) Discussion and TP on UE to UE Relay Based on L2 Relay Architecture InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006855](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006855-L3RelayIssues.docx) Considerations for L3 UE-to-Network Relays Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006962](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006962.docx) Mechanisms for supporting L2-based Sidelink Relays AT&T discussion

[R2-2007044](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007044.doc) Discusssion on architecture for NR sidelink relay Spreadtrum Communications discussion

[R2-2007100](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007100%20SL%20relay%20user%20plane%20procedures.doc) Discussion on User Plane mechanisms for Layer 2 Relay Apple discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007101](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007101%20SL%20relay%20control%20plane%20procedures.doc) Discussion on Control Plane mechanisms for Layer 2 Relay Apple discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007460](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007460%20Protocol%20stack%20design%20for%20L2%20relay%20v1.1.doc) Protocol stack design for L2 relay Lenovo, Motorola Mobility discussion Rel-17

[R2-2007461](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007461%20Relayed%20connection%20management%20v1.1.doc) Relayed connection management Lenovo, Motorola Mobility discussion Rel-17

[R2-2008019](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008019%20Relaying%20mechanism%20for%20NR%20sidelink.docx) Relaying mechanism for NR sidelink LG Electronics Inc. discussion Rel-17 FS\_NR\_SL\_relay

Re/selection

[R2-2006736](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006736%20Discussion%20on%20relay%20initiation%20and%20relay%20UE%20(re-)selection.doc) Discussion on relay initiation and relay UE (re-)selection ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007040](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007040_Selection,%20Authorization%20and%20Security%20for%20L2%20and%20L3%20relay.doc) Selection/Authorization and Security for L2 and L3 relay vivo discussion Rel-17

[R2-2006557](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006557%20-%20Discussion%20on%20NR%20sidelink%20relay%20selection%20and%20reselection.doc) Discussion on NR sidelink relay selection and reselection Qualcomm Incorporated discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006770](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006770%20-%20Discussion%20on%20SL%20relay%20(re)selection%20and%20authorization.doc) Discussion on SL relay (re)selection and authorization OPPO discussion Rel-17

[R2-2006861](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006861_NR_SL_Relaying.docx) NR Sidelink Relay (Re-)Selection Criterion and Procedure Fraunhofer IIS, Fraunhofer HHI discussion Rel-17

[R2-2006867](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006867_8_7_3_Mechanisms%20and%20their%20characteristics%20in%20sidelin%20relaying.doc) Mechanisms and Characteristics in NR Sidelink Relaying Fujitsu discussion Rel-17 FS\_NR\_SL\_relay

[R2-2008043](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008043%20Consideration%20of%20Relay%20characteristics.docx) Consideration of Relay characteristics LG Electronics Inc. discussion Rel-17 FS\_NR\_SL\_relay

Service continuity

[R2-2008048](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008048.docx) Service continuity for L2 UE-to-Network relay Huawei, HiSilicon discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006723](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006723%20service%20continuity.docx) Service Continuity with Sidelink Relay Futurewei discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007041](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007041_Protocol%20stack%20and%20service%20continuity%20for%20L2%20and%20L3%20relay.docx) Protocol stack and service continuity for L2 and L3 relay vivo discussion Rel-17

[R2-2007816](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007816-Consideration%20on%20UE-to-NW%20Relay-v0806.doc) Considerations on UE-to-NW Relay ETRI discussion FS\_NR\_SL\_relay

[R2-2008066](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008066.doc) Discussion on service continuity from Uu to relay Xiaomi communications discussion

QoS

[R2-2006724](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006724%20QoS.docx) QoS Control with Sidelink Relay Futurewei discussion Rel-17 FS\_NR\_SL\_relay

RRC states

[R2-2007462](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007462%20RRC%20state%20and%20CN%20registration%20of%20remote%20UE%20v1.1.doc) RRC state and CN registration of the remote UE Lenovo, Motorola Mobility discussion Rel-17

[R2-2006571](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006571.docx) RRC States for Relaying MediaTek Inc. discussion Rel-17 FS\_NR\_SL\_relay

Architecture comparison

[R2-2006611](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006611.docx) L2/L3 UE-to-NW Relay Comparison CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006639](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006639.docx) L2 vs L3 - Relay (re-)Selection, Quality of Service (QoS) Fraunhofer HHI, Fraunhofer IIS discussion

[R2-2006641](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006641.docx) L2 vs L3 - Relay/Remote UE Authorization, Service Continuity Fraunhofer HHI, Fraunhofer IIS discussion

[R2-2006843](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006843.docx) View on L2/L3 SL relay ITL discussion

[R2-2007203](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007203%20L3%20vs%20L2%20relaying%20-cln.doc) L3 vs L2 relaying Samsung Electronics GmbH discussion

### 8.7.4 Discovery model/procedure for sidelink relaying

* [AT111-e][606][Relay] Discovery model and procedure (OPPO)

Scope: Discuss proposals on the discovery model and procedures, including:

* Protocol stacks for discovery
* Potential reuse of discovery models from LTE
* Resource pool for discovery
* Visibility of discovery signalling in AS layers
* Conditions for discovery
* Authorisation related aspects

Intended outcome: Summary with potential agreeable TP, in R2-2008255

Deadline: Wednesday 2020-08-26 1200 UTC

R2-2008255 (Summary of [AT111-e][606]) OPPO discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007098](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007098%20SL%20relay%20discovery_v1.doc) Discussion on NR Sidelink Relay Discovery Apple, Convida Wireless discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006556](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006556%20-%20Discussion%20on%20relay%20discovery.doc) Discussion on relay discovery model / procedure Qualcomm Incorporated discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006761](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006761%20(R17%20SL%20Relay%20SI%20A874%20Discovery).doc) Discovery Procedure for SL Relaying InterDigital discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006573](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006573.docx) Initiation of relaying operation MediaTek Inc. discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006612](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006612.docx) Discovery Model/Procedure for NR Sidelink Relay CATT discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006738](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006738%20Discussion%20on%20relay%20discovery%20and%20link%20management.doc) Discussion on relay discovery and link management ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006771](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006771%20-%20Discussion%20on%20SL%20relay%20discovery%20procedure.doc) Discussion on SL relay discovery procedure OPPO discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006862](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006862_NR_SL_Relaying_Discovery.docx) NR Sidelink Relaying Discovery Fraunhofer IIS, Fraunhofer HHI discussion Rel-17

[R2-2006868](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006868_8_7_4_Discovery%20modelprocedure%20in%20sidelink%20relaying.doc) Discovery Model and Procedure in NR Sidelink Relaying Fujitsu discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006931](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006931.docx) On Sidelink Discovery for Relaying Intel Corporation discussion Rel-17 FS\_NR\_SL\_relay

[R2-2006969](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006969%20Sidelink%20relay%20discovery%20model%20and%20procedure.doc) Sidelink relay discovery model and procedure Samsung Electronics Co., Ltd discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007042](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007042_Discussion%20of%20Relay%20UE%20discovery.doc) Discussion of Relay UE discovery vivo discussion Rel-17

[R2-2007045](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007045-%20Discussion%20on%20discovery%20procedure%20for%20sidelink%20relay.doc) Discussion on discovery procedure for sidelink relay Spreadtrum Communications discussion

[R2-2007291](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007291-%20Discovery%20aspects%20for%20NR%20sidelink%20relay.docx) Discovery aspects for NR sidelink relay Ericsson discussion Rel-17 FS\_NR\_SL\_relay

[R2-2007476](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007476%20Considerations%20on%20discovery%20procedure%20for%20sidelink%20relay-v1.0.doc) Considerations on discovery procedure for sidelink relay Lenovo, Motorola Mobility discussion Rel-17

[R2-2008045](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008045%20Consideration%20of%20discovery%20model%20procedure%20for%20sidelink%20relay.docx) Consideration of discovery model/procedure for sidelink relay LG Electronics Inc. discussion Rel-17 FS\_NR\_SL\_relay

[R2-2008049](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008049.docx) Common aspects for L2 and L3 UE-to-Network relay Huawei, HiSilicon discussion Rel-17 FS\_NR\_SL\_relay

## 8.11 NR positioning enhancements SI

(FS\_NR\_pos\_enh; leading WG: RAN1; REL-17; WID: RP-200928)

Time budget: 2 TU

Tdoc Limitation: 4 tdocs

Email max expectation: 4 threads

### 8.11.1 Organizational

Rapporteur inputs and other organizational documents. Documents in this AI do not count towards the tdoc limitation.

Workplan

[R2-2006670](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006670.docx) Updated Work Plan for R17 SI NR Positioning Enhancements CATT, Intel Corporation, Ericsson discussion Rel-17 FS\_NR\_pos\_enh

* Noted

TR skeleton

[R2-2006958](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006958%20skeleton%20for%20TR38857.docx) skeleton for TR38857 Ericsson TS or TR cover Rel-17 38.857 0.0.1 FS\_NR\_pos\_enh

* ESA wonder where we would capture the error sources for different positioning methods. Ericsson think it can be captured within section 9, which will anyway need to be expanded.
* Nokia note there is a section related to NR impacts, and think we need to identify these aspects early for the integrity portions.
* Intel understand that this skeleton has been discussed in RAN1. For the NR impact section, they think it is more of a summary section that doesn’t need to be filled in now.
* Noted

[R2-2006671](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006671.docx) Skeleton proposals for TR38.857 CATT draftCR Rel-17 38.857 0.0.1 FS\_NR\_pos\_enh

* Intel think there is not a clear boundary between 9.3 and 9.4 and they could be combined.
* Huawei are not sure why RAT-dependent and RAT-independent sections are separate; they understand that the two only differ in terms of error source and threat model, but should have the same methodology.
* Ericsson think the KPIs should be common between RAT-independent and RAT-independent, but the methodologies could differ.
* CATT think we should separate the two at first, and if there is a common part we can merge in the future.

[R2-2006542](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006542%20-%20Proposed%20table%20of%20contents%20-%20Section%209%20-%20TR%2038.857.docx) Proposed table of contents - Section 9 (positioning integrity) - TR 38.857 Swift Navigation, Ericsson, Intel Corporation discussion Rel-17

* ESA wonder if it is necessary to mention specific other industry standards, and think the error sources are missing. This is also a bit related to the separation between RAT-dependent and RAT-independent, and they wonder what Swift’s intention is on capturing the errors. Swift understand that we can extend the skeleton as we progress the SI, e.g. for the error sources.
* Qualcomm think this embeds assumptions about the scope of study that should be introduced later when we develop the related concepts. E.g. there are specific techniques identified that we may not study. They would prefer to stick to the skeleton proposed by CATT.
* Huawei generally agree with ESA and Qualcomm, and think the TR should only include the outcome of our study, not the full background. CATT share the view and think we should focus on 3GPP scope and capturing our agreements.
* Nokia think the TR should serve as a guideline for a future WI, and from this point of view we should focus more on the impact we will have on the current 3GPP protocol and architectures. They find this proposal a bit unfocussed in this respect.
* Intel think we should not spend too much time on the skeleton and it can be driven by the content.
* Swift agree the detail could be reduced, but think this is a new topic for 3GPP and the underlying principles need some development. They agree that a taxonomy of error sources is needed.
* Skeleton to be addressed in the continuation of email discussion [607] (to be discussed later).

Coordination and organisation

[R2-2006749](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006749%20Handling%20on%20Rel-16%20leftover%20issue%20in%20Rel-17-v01.doc) Handling on Rel-16 leftover issue in Rel-17 Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh

* Qualcomm think there are no Rel-16 “leftovers” in the sense of unaddressed issues in the WI, and not everything that is proposed needs to be captured. They see the issues in this document as more TEI17 related. Huawei have the same view that there are no leftovers, and new issues can be proposed individually.
* Intel intended to capture issues that were discussed but not agreed in Rel-16. They think we should conclude in the SI on whether we would have these aspects in the WI.
* Noted

[R2-2006669](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006669.docx) Summary on Rel-17 positioning enhancement discussion in RAN1 CATT, Intel Corporation, Ericsson discussion Rel-17 FS\_NR\_pos\_enh

* Huawei are OK with the intention of P1, but are not sure how much latency analysis we can do in RAN2.
* Qualcomm think the scope implied by the proposals is already there in the SI objectives. We should not pre-restrict which sections we contribute to; it depends on contributions and consensus.
* Intel clarify the intention is to check for common understanding, and if companies have the same view we may not need to capture anything.
* CATT indicate the document is largely for information to understand the RAN1 progress.
* Nokia think we do not need to do any latency evaluation until and unless we receive guidance from RAN1; we should focus on integrity which is a RAN2 objective.
* Intel agree integrity is a high priority in RAN2 but think it is difficult for RAN1 to analyse end-to-end latency of the whole procedure. Qualcomm think we have a SID and we do not need to take a prioritisation decision; we have to fulfil all objectives, and they see RAN2 relevance also in the higher accuracy and lower latency objective.
* Noted

### 8.11.2 Enhancements for commercial use cases

Scope and general discussion related to the RAN2 objective on enhancements to support high accuracy, low latency, network efficiency, and device efficienty for commercial use cases. Detailed discussions may need to wait until RAN1 have progressed.

Goals and work planning for commercial objective

[R2-2006672](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006672.docx) Discussion on ehancements for commercial use cases CATT discussion Rel-17 FS\_NR\_pos\_enh

* Huawei understand that RAN1 will send an LS asking RAN2 to evaluate latency from the higher layer perspective. They think P4 needs to be discussed in RAN1 first, and are supportive of P5.
* CATT think P4 requires coordination with RAN1 and we can define the procedures.
* CATT clarify in P2 they intend for RAN2 to align on a specific latency model for company analyses.
* Intel agree with Huawei that P4 should be discussed first in RAN1. For P2, they think RAN2 should have a common understanding of what procedures are involved and what parts we consider regarding the latency, e.g. do we consider latency between RAN and CN? But they do not really consider this as a formal model.
* CATT think we could have an email discussion on the latency analysis model.
* [AT111-e][612][POS] Assumptions for analysis of commercial use cases (Ericsson)

Scope: Align understanding of the RAN2 scope and assumptions for accuracy, latency, and efficiency objectives for commercial use cases. Attempt to capture a summary of proposals to this meeting that can be discussed in RAN2 directly.

Intended outcome: Summary in R2-2008261

Deadline: Wednesday 2020-08-26 1200 UTC

R2-2008261 (Summary of [AT111-e][612]) Ericsson discussion Rel-17 FS\_NR\_pos\_enh

[R2-2006578](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006578%20Discussion%20on%20R17%20positioning%20enhancement_v1.docx) Discussion on R17 positioning enhancement Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

[R2-2006956](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006956%20Enhancements.docx) Enhancements for commercial use cases Ericsson discussion Rel-17

[R2-2006567](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006567%20Discussion%20on%20potential%20positioning%20enhancement.docx) Discussion on potential positioning enhancement vivo discussion FS\_NR\_pos\_enh

[R2-2007049](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007049-Discussion%20on%20positioning%20enhancements%20for%20commercial%20use%20cases.docx) Discussion on positioning enhancements for commercial use cases Spreadtrum Communications discussion

[R2-2007629](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007629_(Positioning%20Enhancements).docx) NR Positioning Enhancements Qualcomm Incorporated discussion

Latency reduction

[R2-2006750](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006750%20Consideration%20on%20the%20support%20of%20low%20latency%20requirement%20v01.doc) Consideration on the support of low latency requirement Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh

[R2-2007587](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007587%20(R17%20NR%20POS%20A8112).doc) End-to-end latency reduction for DL/UL positioning InterDigital, Inc. discussion Rel-17

On-demand PRS

[R2-2007128](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007128.docx) On-demand PRS transmission and dynamic PRS resource allocation Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_pos\_enh

[R2-2007159](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007159%20-%20Discussion%20on%20on-demand%20DL-PRS.doc) Discussion on on-demand DL-PRS OPPO discussion Rel-17 FS\_NR\_pos\_enh

[R2-2007170](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007170%20Discussion%20on%20PRS%20enhancements.doc) Discussion on PRS enhancements Beijing Xiaomi Electronics discussion

Idle/inactive state positioning

[R2-2007157](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007157-%20Positioning%20for%20UE%20in%20RRC%20IDLE%20and%20inactive%20state.doc) Positioning for UE in RRC Idle and Inactive state OPPO discussion Rel-17 FS\_NR\_pos\_enh

[R2-2007173](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007173%20Positioning%20enhancements%20for%20RRC%20IDLE%20and%20RRC%20INACTIVE%20state%20UE.doc) Positioning enhancements for RRC IDLE and RRC INACTIVE state UE Beijing Xiaomi Electronics discussion

Withdrawn

R2-2007694 On-demand PRS transmission and dynamic PRS resource allocation Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_pos\_enh Withdrawn

### 8.11.3 Integrity and reliability of assistance data and position information

[R2-2006541](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006541%20-%20TP%20Study%20on%20Positioning%20Integrity.docx) TP for Study on Positioning Integrity and Reliability Swift Navigation, Deutsche Telekom, u-blox, Ericsson, Mitsubishi Electric, Intel Corporation, CATT, UIC discussion Rel-17

#### 8.11.3.1 KPIs and use cases

* [AT111-e][607][POS] Integrity definitions, KPIs, and use cases (Swift)

Scope: Discuss proposals and attempt to reach consensus on definitions, KPIs, and use cases for positioning integrity.

Intended outcome: Summary with potential agreeable TP, in R2-2008256. Extension to further converge and produce a text proposal in R2-2008262, with attention to anticipated specification impact.

Deadline: Thursday 2020-08-20 1100 UTC – extended to Thursday 2020-08-27 1200 UTC

[R2-2008256](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2008256%20Summary%20of%20%5bAT111-e%5d%5b607%5d.docx) [AT111-e][607][POS] Summary of email discussion on Integrity definitions, KPIs, and use cases (Swift) Swift Navigation discussion Rel-17 FS\_NR\_pos\_enh

* Qualcomm think there are definitions in the proposed baseline that are not clearly needed, and think it is strange that we start from the definitions. They think we could take definitions now of the four KPIs, and for other terms we should define them when we use them.
* Nokia think P2 and P5 are a bit contradictory since P5 uses the term PL. They understand that PL is something that the system should evaluate in real time, not a requirement from the application that could be described as a KPI.
* vivo have the same understanding as Nokia about the PL and think it needs to be decoupled from TTA.
* CATT agree with Qualcomm that we could capture just the four KPIs in the definitions now, and agree that PL is calculated so we should clarify its relation to KPIs.
* Swift understand that some additional definitions are useful to clarify the principles of integrity. On the PL, they agree we may need to revisit the definition of PL in relation to TIR and further discussion may be needed.
* Apple agree with Qualcomm and CATT on P1, and think some names could be changed to be more 3GPP-friendly.
* Huawei think in the literature, PL is treated as a KPI. In terms of the requirements, they think PL may not be a quantity we would capture in an SA1 spec; from that perspective only TTA, IR, and AL should be the quantities.
* ZTE are willing to include PL as a KPI, but wonder if we will separate AL into vertical and horizontal parts.
* ESA think the PL aspects can be further discussed offline. They think it is important to clarify the meaning of the KPIs further, and think the question of horizontal and vertical AL should be considered.
* Futurewei want to understand the RAN2 impact. They understand that PL can be defined but is calculated based on measurements, different from the other candidate KPIs, and wonder if RAN2 would derive the equation for calculating PL for different positioning methods. They also wonder about defining the new Positioning Integrity Function in RAN2 and what the impact would be. Swift think the PL equation would be implementation-defined.
* Intel understand that we will not define how AL, PL, etc. will be calculated, and the main work should be on what is forwarded between entities and applicability to use cases. They agree the definitions could be reduced but think the explanation of integrity concepts is needed.
* CATT think IR, AL, and TTA are related to QoS and could be used in SA1, and we need to consider whether to send an LS to SA1 asking them to define the service level for integrity.
* ESA think there are impacts on protocol and architecture that need to be considered, including potential impact to latency. They think we may have LPP impact to support users to derive PL or other KPIs on the device, and we should not spend too much time on the definitions.

Agreements:

* Start from the definitions of the four candidate KPIs. Additional definitions can be added when needed.

Proposal 1: Agree to the definitions provided in [1] as an initial baseline.

Proposal 2: Protection Level (PL) and Positioning System definitions should be FFS.

Proposal 3: Adopt the following definition of Positioning Integrity Function as a baseline,

taking into consideration the comments:

a. Positioning Integrity Function

Function within the Positioning System that, using the positioning measurements and other data, is able to generate the integrity-related data contained within the Positioning Information (e.g. Protection Level) so it can be employed by the positioning system to provide its service to the user application.

Proposal 4: Agree to discuss incorporating additional definitions from [2], including but not limited to Authentication, Confidence Level, Integrity Risk.

Proposal 5: Agree to the four KPIs: Target Integrity Risk (TIR), Alert Limit (AL), Protection Level (PL), Time-to-Alert (TTA).

Proposal 6: Agree that the four KPIs are common to RAT-Dependent and RAT-Independent positioning methods.

Proposal 7: KPI Performance interpretations are FFS.

Proposal 8: Agree to address safety-critical and liability-critical applications, including Automotive, Industrial IOT and Rail.

Proposal 9: Agree that other use cases can be considered case-by-case.

Proposal 10: Agree that use cases should be informational and illustrative in the TR with the goal of producing a use-case agnostic specification.

R2-2008262 (Text proposal from extension of [AT111-e][607]) Swift Navigation discussion Rel-17 FS\_NR\_pos\_enh

Use cases

[R2-2006754](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006754%20Consideration%20on%20positioning%20integrity%20v01.doc) Consideration on positioning integrity Intel Corporation discussion Rel-17 FS\_NR\_pos\_enh

[R2-2006673](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006673.docx) Discussion on integrity KPIs and use cases CATT discussion Rel-17 FS\_NR\_pos\_enh

[R2-2006564](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006564%20Identify%20positioning%20integrity%20use%20case%20and%20KPIs.docx) Identify positioning integrity use case and KPIs vivo discussion FS\_NR\_pos\_enh

[R2-2006579](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006579%20Discussion%20on%20positioning%20integrity%20KPIs%20and%20relevant%20use%20cases.docx) Discussion on positioning integrity KPIs and relevant use cases Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

[R2-2006954](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006954%20%20KPIs.docx) Positioning integrity KPIs and support for RAT dependent use cases Ericsson discussion Rel-17

[R2-2007050](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007050.docx) Discussion on positioning integrity KPIs and use cases Spreadtrum Communications discussion

[R2-2007646](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007646%20Discussion%20on%20use%20cases%20and%20KPIs%20for%20position%20integrity.docx) Discussion on use cases and KPIs for position integrity ESA discussion Rel-17 FS\_NR\_pos\_enh

KPI selection

[R2-2007102](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007102%20NR%20Positioning%20Integrity.doc) Discussion on Positioning Integrity Apple discussion Rel-17 FS\_NR\_pos\_enh

[R2-2007158](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007158-%20Discussion%20on%20the%20KPIs%20of%20integrity.doc) Discussion on the KPIs of integrity OPPO discussion Rel-17 FS\_NR\_pos\_enh

[R2-2007936](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007936%20Discussion%20of%20the%20positioning%20integrity%20definition.docx) Discussion of the positioning integrity definition ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_pos\_enh

Other

[R2-2007073](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007073_Positioning_SEI.docx) Discussion on integrity and reliability for positioning based on an IIoT use case Sumitomo Elec. Industries, Ltd discussion Rel-17

[R2-2007187](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007187__Pos_Integrity_v1.0.docx) Discussion on Integrity of positioning information Sony discussion Rel-17 FS\_NR\_pos\_enh

[R2-2007937](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007937%20Discussion%20of%20the%20integrity%20events%20and%20integrity%20failure.docx) Discussion of the integrity events and integrity failure ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_pos\_enh

#### 8.11.3.2 Error sources, threat models, occurrence rates and failure modes

* [AT111-e][613][POS] Integrity error sources (Huawei)

Scope: Categorise the identified error sources and develop a way forward, considering RAT-dependent and RAT-independent methods, with the understanding that the use of specific positioning methods may be use-case-dependent.

Intended outcome: Summary in R2-2008263

Deadline: Thursday 2020-08-27 1200 UTC

R2-2008263 (Summary of [AT111-e][613]) Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

[R2-2006580](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006580%20Discussion%20on%20positioning%20integrity%20validation%20and%20reporting.docx) Discussion on positioning integrity validation and reporting Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

[R2-2006674](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006674.docx) Discussion on error sources, threat models, occurrence rates and failure modes CATT discussion Rel-17 FS\_NR\_pos\_enh

[R2-2006565](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006565%20Identify%20Error%20sources%20for%20postioning%20integrity.docx) Identify Error sources for positioning integrity vivo discussion FS\_NR\_pos\_enh

[R2-2006955](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006955%20Factors.docx) Factors impacting positioning integrity Ericsson discussion Rel-17

[R2-2007647](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007647%20Discussion%20on%20GNSS%20position%20integrity%20error%20sources.docx) Discussion on GNSS position integrity error sources ESA discussion Rel-17 FS\_NR\_pos\_enh

[R2-2007938](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007938%20Discussion%20of%20the%20positioning%20error%20sources,%20threat%20models%20and%20failure%20modes.docx) Discussion of the positioning error sources, threat models and failure modes ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_pos\_enh

#### 8.11.3.3 Methodologies for network-assisted and UE-assisted integrity

[R2-2006566](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006566%20Discussion%20on%20positioning%20integrity%20methodologies.docx) Discussion on positioning integrity methodologies vivo discussion FS\_NR\_pos\_enh

[R2-2006675](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006675.docx) Discussion on methodologies for network-assisted and UE-assisted integrity CATT discussion Rel-17 FS\_NR\_pos\_enh

[R2-2006581](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006581%20Discussion%20for%20network-assisted%20and%20UE-assisted%20integrity.docx) Discussion for network-assisted and UE-assisted integrity Huawei, HiSilicon discussion Rel-17 FS\_NR\_pos\_enh

[R2-2006957](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2006957%20LPP.docx) LPP signalling for integrity support of RAT dependent positioning Ericsson discussion Rel-17

[R2-2007160](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007160%20-%20Discussion%20on%20%20methodologies%20for%20UE-based%20and%20UE-assisted%20integrity.doc) Discussion on methodologies for UE-based and UE-assisted integrity OPPO discussion Rel-17 FS\_NR\_pos\_enh

[R2-2007238](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007238.docx) Reporting movement model Fraunhofer IIS, Fraunhofer HHI discussion Rel-17

[R2-2007246](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007246.docx) Reporting the situational quality of RAT and RAT-independent technologies Fraunhofer IIS, Fraunhofer HHI discussion

[R2-2007588](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007588%20(R17%20NR%20POS%20A81133).doc) Methodologies for network-assisted and UE-assisted integrity InterDigital, Inc. discussion Rel-17

[R2-2007656](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007656%20Discussion%20on%20methodologies%20for%20position%20integrity.docx) Discussion on methodologies for position integrity ESA discussion Rel-17

[R2-2007939](file:///C:\Users\mtk16923\Documents\3GPP%20Meetings\202008%20-%20RAN2_111-e,%20Online\Extracts\R2-2007939%20Discussion%20of%20the%20methodologies%20for%20network-assisted%20and%20UE-assisted%20integrity.docx) Discussion of the methodologies for network-assisted and UE-assisted integrity ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_pos\_enh