3GPP TSG-RAN WG2 Meeting #110 electronic draftR2-2005737

**Online, June 1 – June 12 2020**

Agenda Item: 8.7

Source: Session Chair (Huawei)

Title: [draft] Report NB-IoT breakout session

Document for: Approval

**General**

Recording of voice or video at meetings is not used in 3GPP. This applies also to this e-Meeting. At this e-Meeting, no specific actions are taken to prevent the recording of web conferences. Companies that have concerns related to recordings, if any, may express those by email in the main meeting organizational thread [AT110][000]

Please see the following Tdocs for e-meeting guidance:

R2-2004300 Agenda for RAN2#110 Chairman agenda

[R2-2004462](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004462.zip) RAN2 110 Methods and Guidance RAN2 chairman, RAN2 vice chairmen, session chairs discussion

**Time Schedule**Please refer to the latest schedule in the RAN2 inbox on the public 3GPP servers.

**Access Tools**

*HTTP Upload Tool:*

ETSI IT has created a facility in Inbox and Inbox/Drafts folders on the public 3GPP servers to allow delegates to upload their documents using a web browser (however Internet Explorer is not yet supported). Open your browser and navigate to your chosen folder – for example,

<https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110/Inbox>

Click the green button to log in using your EOL account. A panel will appear in the upper part of the screen and documents may be dragged and dropped onto this landing pad; this causes them to be uploaded to the folder.

*Secure FTP:*

Those e-delegates who prefer to use FTP-like access to our e-meeting Inbox & Draft folders but are concerned by their usernames and passwords being sent unencrypted over the internet, ETSI IT has fitted the server with FTPS (SSL) so delegates can connect from their favourite FTP client using the address: ftps.3gpp.org. Please enter your username and password when prompted.

**Organizational**

* Incoming LSs are noted by default. Contact companies should flag LSs that need to be replied from this meeting.
* Legacy topics will be treated by email only. Please see the list of offline email discussions below.
* Rel-16 (draft) CRs and text proposals will be handled as part of the email discussion on the corresponding CR(s) or the ASN.1 review email discussion if associated with a RIL#.
* All organizational emails and notes will be shared over the following email discussion throughout both meeting weeks:
* [AT110][300][NBIOT] Organisational (Session Chair)

Status: Started

Scope: Comments to session notes. Kick-off and management of email discussions for NB-IoT session. Coordination issues. Other organisational issues and announcements.

Intended outcome: Approval of Report from NB-IoT session.

Deadline: June 12 1000 UTC

**List and Status of Offline Email Discussions**

NOTE: The official kick off date for these email discussions is Monday, June 1st 0700 UTC. The rapporteurs can share them on the reflector earlier, however companies are not required to participate before the official kick off date. The deadlines refer to the deadline for providing company comments unless stated otherwise.

* [AT110-e][301][NBIOT] R16 36.331 CR (Huawei)

Status: Started

Scope: Update the CR with agreements from this meeting.

Intended outcome: Agreed CR in R2-2005921

Deadline: June 12 1000 UTC

* [AT110-e][302][NBIOT] R16 36.300 CR (Huawei)

Status: Started

Scope: Update the CR with agreements from this meeting.

Intended outcome: Agreed CR in R2-2005922

Deadline: June 12 1000 UTC

* [AT110-e][303][NBIOT] R16 36.304 CR (Nokia)

Status: Not Started

Scope: Update the CR with agreements from this meeting.

Intended outcome: Agreed CR in R2-2005923

Deadline: June 12 1000 UTC

* [AT110-e][304][NBIOT] R16 36.321 CR (Ericsson)

Status: Started

Scope: Update the CR with agreements from this meeting.

Intended outcome: Agreed CR in R2-2005924

Deadline: June 12 1000 UTC

* [AT110-e][305][NBIOT] R16 36.306 CR (Blackberry)

Status: Not Started

Scope: Update the CR with agreements from this meeting.

Intended outcome: Agreed CR in R2-2005925

Deadline: June 12 1000 UTC

* [AT110-e][306][NBIOT] R16 RAN1 features list and UE capabilities (Huawei)

Status: Started.

Scope: [R2-2005030](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005030.zip).

Intended outcome: Report in R2-2005926

Deadline: June 5 1000 UTC

* [AT110-e][307][NBIOT] R16 ASN.1 Review (Huawei)

Status: Started.

Scope: Remaining RIL issues

Intended outcome: Report in R2-2005927

Deadline: June 5 1000 UTC

* [AT110-e][308][NBIOT] R14 Allow sending Rel-14 AS RAI when no UL grant (Mediatek)

Status: Started

Scope: [R2-2004812](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004812.zip), [R2-2004816](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004816.zip), [R2-2004828](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004828.zip)

Intended outcome: Report in R2-2005928, CRs TBD.

Deadline: June 5 1000 UTC

* [AT110-e][309][NBIOT] R15 Clarification on PHR report for power class 14dBm UE (Huawei)

Status: Started

Scope: [R2-2005026](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005026.zip), [R2-2005027](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005027.zip)

Intended outcome: Report in [R2-2005929](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005929.zip), CRs R2-2005943, R2-2005944

Deadline: June 5 1000 UTC, CRs: June 10 1000 UTC

* [AT110-e][310][NBIOT] R15 Clarification for dedicated SR with HARQ-ACK (ZTE)

Status: Started

Scope: [R2-2005588](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005588.zip), [R2-2005590](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005590.zip)

Intended outcome: Report in R2-2005930, CRs R2-2005941, R2-2005942

Deadline: June 5 1000 UTC, CRs: June 10 1000 UTC

* [AT110-e][311] [NBIOT/eMTC] Rel-15 CRs for WUS system support (Huawei)

Status: Started

Scope: 36.300 and 36.304 CRs

Intended outcome: Approved CRs in R2-2005932, R2-2005933, R2-2005934, R2-2005935

Deadline: June 5 1000 UTC

* [AT110-e][312][NBIOT/eMTC] Reply LS on assistance indication for WUS (Qualcomm)

Status: Complete

Scope: Draft the reply LS on assistance indication for WUS

Intended outcome: Approved LS in [R2-2005931](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005931.zip)

Deadline: June 3 1000 UTC

* [AT110-e][313][NBIOT/eMTC] PUR open issues (Ericsson)

Status: Started

Scope: Finalise PUR open issues based on [R2-2005726](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005726.zip)

Intended outcome: Report in [R2-2005936](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005936.zip), Phase 2 report in R2-2005940

Deadline: phase 1 – June 2 16:00 UTC. Phase 2 – Friday 1000 UTC

* [AT110-e][314][NBIOT/eMTC] PUR Reply LS to RAN1 (Ericsson)

Status: Not Started

Scope: Reply to the 2 LSs on PUR open issues and working assumption

Intended outcome: Approved LS in R2-2005937

Deadline: June 5 10:00 UTC

* [AT110-e][315][NBIOT] CSS overlapping case for UE specific DRX (Sequans)

Status: Not Started

Scope: Try to work offline on an update/variant of B2 to find a way acceptable to all, and if not possible then fallback to C1.

Intended outcome: Report in R2-2005938

Deadline: June 5 1000 UTC

## 4.1 NB-IoT corrections Rel-15 and earlier

Documents in this agenda item will be handled in a break out session. Common NB-IoT/eMTC parts treated jointly with 4.2. No web conference is planned for this agenda item

### 4.1.0 In-principle agreed CRs

[R2-2005025](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005025.zip) Clarification on RLC UM SN size for NB-IoT Huawei, HiSilicon CR Rel-15 36.322 15.3.0 0145 2 F NB\_IOTenh2-Core [R2-2004056](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2004056.zip)

* Agreed

### 4.1.1 Other

[R2-2004317](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004317.zip) Reply LS on assistance indication for WUS (S2-2003217; contact: Qualcomm) SA2 LS in Rel-15 NB\_IOTenh3-Core, LTE\_eMTC5-Core To:RAN3, RAN2 Cc:CT1

* QC thinks “last used cell” may be unclear, so the reply depends a bit on what we agree for our specification.
* noted

[R2-2005012](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005012.zip) Discussion on eNB knowledge of UE Radio paging capability when UE is in RRC\_CONNECTED mode Huawei, HiSilicon discussion Rel-15 NB\_IOTenh2-Core, LTE\_eMTC4-Core

* QC think, and Huawei agree, that for the handover case eNB does not know the UE radio paging capability. There are other cases where the capability may not be known.
* Ericsson wonders whether eNB needs to know
* Reply to SA2 that a WUS capable eNB will not be able to determine after handover or re-establishment following RLF whether the UE supports WUS.
* RAN2 strongly recommends to avoid relying on UE capability enquiry to retrieve the capability

[R2-2005013](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005013.zip) System support for Wake Up Signal Huawei, HiSilicon CR Rel-15 36.300 15.9.0 1264 1 F NB\_IOTenh2-Core, LTE\_eMTC4-Core R2-2000809

[R2-2005014](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005014.zip) System support for (Group) Wake Up Signal Huawei, HiSilicon draftCR Rel-16 36.300 16.1.0 NB\_IOTenh2-Core, LTE\_eMTC4-Core, NB\_IOTenh3-Core, LTE\_eMTC5-Core R2-2000810

[R2-2005015](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005015.zip) System support for Wake Up Signal Huawei, HiSilicon CR Rel-15 36.304 15.5.0 0795 - F NB\_IOTenh2-Core, LTE\_eMTC4-Core R2-2000608

[R2-2005016](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005016.zip) System support for Wake Up Signal Huawei, HiSilicon CR Rel-16 36.304 16.0.0 0796 - A NB\_IOTenh2-Core, LTE\_eMTC4-Core

[R2-2005017](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005017.zip) System support for Group Wake Up Signal Huawei, HiSilicon draftCR Rel-16 36.304 16.0.0 NB\_IOTenh3-Core, LTE\_eMTC5-Core

[R2-2005199](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005199.zip) [draft] Reply LS on assistance indication for WUS Qualcomm Incorporated LS out Rel-15 NB\_IOTenh2-Core, LTE\_eMTC4-Core To:SA2, RAN3 Cc:CT1

[R2-2005200](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005200.zip) Restrict WUS to last used cell Qualcomm Incorporated CR Rel-15 36.300 15.9.0 1282 - C NB\_IOTenh2-Core, LTE\_eMTC4-Core

[R2-2005201](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005201.zip) Restrict WUS to last used cell Qualcomm Incorporated CR Rel-16 36.300 16.1.0 1283 - A NB\_IOTenh2-Core, LTE\_eMTC4-Core

[R2-2005202](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005202.zip) Restrict WUS to last used cell Qualcomm Incorporated CR Rel-15 36.304 15.5.0 0798 - C NB\_IOTenh2-Core, LTE\_eMTC4-Core

[R2-2005203](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005203.zip) Restrict WUS to last used cell Qualcomm Incorporated CR Rel-16 36.304 16.0.0 0799 - A NB\_IOTenh2-Core, LTE\_eMTC4-Core

* [AT110-e][311][NBIOT/eMTC] Rel-15 CRs for WUS system support (Huawei)

Scope: 36.300 and 36.304 CRs

Intended outcome: Approved CRs in R2-2005932, R2-2005933, R2-2005934, R2-2005935

Deadline: June 5 1000 UTC

* [AT110-e][312][NBIOT/eMTC] Reply LS on assistance indication for WUS (Qualcomm)

Scope: Draft the reply LS on assistance indication for WUS

Intended outcome: Approved LS in [R2-2005931](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005931.zip)

Deadline: June 3 1000 UTC

[R2-2005931](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005931.zip) [draft] Reply LS on assistance indication for WUS Qualcomm Incorporated to: SA2, RAN3 cc: CT1

* Huawei wonders if the RAN2 agreement is strong enough.
* Ericsson think we should avoid giving the wrong impression.
* Update agreement to “RAN2 strongly recommends to avoid relying on UE capability enquiry to retrieve the capability”
* Add “From RAN2 point of view, it is not necessary for a WUS capable eNB to know whether the UE in connected mode supports WUS”
* With the above changes the LS is approved in R2-2005939

[R2-2004812](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004812.zip) Allow sending Rel-14 AS RAI when no UL grant MediaTek Inc. discussion Late

[R2-2004816](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004816.zip) Allow sending Rel-14 AS RAI when no UL grant MediaTek Inc. CR Rel-14 36.321 14.12.0 1475 - F NB\_IOTenh-Core Late

R2-2004819 Allow sending Rel-14 AS RAI when no UL grant MediaTek Inc. CR Rel-14 36.321 14.12.0 1476 - F NB\_IOTenh-Core Withdrawn

[R2-2004828](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004828.zip) Allow sending Rel-14 AS RAI when no UL grant MediaTek Inc. CR Rel-15 36.321 15.8.0 1477 - A NB\_IOTenh-Core Late

* [AT110-e][308][NBIOT] R14 Allow sending Rel-14 AS RAI when no UL grant (Mediatek)

Status: Not Started

Scope: [R2-2004812](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004812.zip), [R2-2004816](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004816.zip), [R2-2004828](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004828.zip)

Intended outcome: Report in R2-2005928, CRs TBD.

Deadline: June 5 1000 UTC

[R2-2005026](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005026.zip) Clarification on PHR report for power class 14dBm UE Huawei, HiSilicon CR Rel-15 36.321 15.8.0 1478 - F NB\_IOTenh2-Core

* Revised in R2-2005943

[R2-2005943](file:///D:\\workfiles\\RAN\\RAN2\\RAN2_110-e\\docs\\R2-2005026.zip" \o "D:workfilesRANRAN2RAN2_110-edocsR2-2005026.zip) Clarification on PHR report for power class 14dBm UE Huawei, HiSilicon CR Rel-15 36.321 15.8.0 1478 - F NB\_IOTenh2-Core

[R2-2005027](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005027.zip) Clarification on PHR report for power class 14dBm UE Huawei, HiSilicon CR Rel-16 36.321 16.0.0 1479 - A NB\_IOTenh2-Core

* Revised in R2-2005944

[R2-2005](file:///D:\\workfiles\\RAN\\RAN2\\RAN2_110-e\\docs\\R2-2005027.zip" \o "D:workfilesRANRAN2RAN2_110-edocsR2-2005027.zip)944 Clarification on PHR report for power class 14dBm UE Huawei, HiSilicon CR Rel-16 36.321 16.0.0 1479 - A NB\_IOTenh2-Core

* [AT110-e][309][NBIOT] R15 Clarification on PHR report for power class 14dBm UE (Huawei)

Status: Not Started

Scope: [R2-2005026](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005026.zip), [R2-2005027](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005027.zip)

Intended outcome: Report in [R2-2005929](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005929.zip), CRs R2-2005943, R2-2005944

Deadline: June 5 1000 UTC, CRs: June 10 1000 UTC

[R2-2005929](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005929.zip" \o "https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005929.zip) Report of [AT110-e][309][NBIOT] R15 Clarification on PHR report for power class 14dBm UE (Huawei)

* Noted

[R2-2005588](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005588.zip) Clarification for dedicated SR with HARQ-ACK ZTE Corporation, Sanechips, MediaTek Inc. CR Rel-15 36.321 15.8.0 1469 1 F NB\_IOTenh2-Core

* Revised in R2-2005941

[R2-2005](file:///D:\\workfiles\\RAN\\RAN2\\RAN2_110-e\\docs\\R2-2005588.zip" \o "D:workfilesRANRAN2RAN2_110-edocsR2-2005588.zip)941 Clarification for dedicated SR with HARQ-ACK ZTE Corporation, Sanechips, MediaTek Inc. CR Rel-15 36.321 15.8.0 1469 1 F NB\_IOTenh2-Core [R2-2003254](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003254.zip" \o "https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2003254.zip)

[R2-2005590](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005590.zip) Clarification for dedicated SR with HARQ-ACK ZTE Corporation, Sanechips, MediaTek Inc CR Rel-16 36.321 16.0.0 1483 - A NB\_IOTenh2-Core

* Revised in R2-2005942

[R2-2005](file:///D:\\workfiles\\RAN\\RAN2\\RAN2_110-e\\docs\\R2-2005590.zip" \o "D:workfilesRANRAN2RAN2_110-edocsR2-2005590.zip)942 Clarification for dedicated SR with HARQ-ACK ZTE Corporation, Sanechips, MediaTek Inc CR Rel-16 36.321 16.0.0 1483 - A NB\_IOTenh2-Core

* [AT110-e][310][NBIOT] R15 Clarification for dedicated SR with HARQ-ACK (ZTE)

Status: Not Started

Scope: [R2-2005588](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005588.zip), [R2-2005590](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005590.zip)

Intended outcome: Report in R2-2005930, CRs R2-2005941, R2-2005942

Deadline: June 5 1000 UTC, CRs: June 10 1000 UTC

## 7.2 Additional enhancements for NB-IoT

(NB\_IOTenh3-Core; leading WG: RAN1; REL-16; started: Jun 18; target; June 20; WID: RP-200293; SR: RP-200440)

Time budget: 2.5 TU

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

Some sub-items in 7.1 and 7.2 may be treated jointly.

### 7.2.1 Organisational

Including incoming LSs, draft TS, rapporteur inputs, etc

A web conference will be used for handling some of the discussions in this AI.

One CR per specification will be provided by the corresponding rapporteur. No individual company CRs are expected. Companies should provide TPs when needed.

[R2-2004322](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004322.zip) Reply LS on MO exception data (S2-2003504; contact: Qualcomm) SA2 LS in Rel-16 5G\_CIoT To:CT4 Cc:RAN2, CT1

* noted

[R2-2004342](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004342.zip) Reply LS on open PUR issues for NB-IoT/eMTC (R1-2002846; contact: Intel) RAN1 LS in Rel-16 NB\_IOTenh3-Core, LTE\_eMTC5-Core To:RAN2

* noted

[R2-2004345](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004345.zip) LS on PUR working assumption for NB-IoT and eMTC (R1-2002944; contact: Huawei) RAN1 LS in Rel-16 NB\_IOTenh3-Core, LTE\_eMTC5-Core To:RAN2

* noted

[R2-2004466](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004466.zip) RAN2 agreements for Rel-16 additional enhancements for NB-IoT and MTC Rapporteur (BlackBerry) other Rel-16 LTE\_eMTC5-Core, NB\_IOTenh3-Core

* noted

[R2-2004631](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004631.zip) Corrections to MAC for Rel-16 NB-IoT Ericsson CR Rel-16 36.321 16.0.0 1472 1 F NB\_IOTenh3-Core, LTE\_eMTC5-Core R2-2004043

* [AT110-e][304][NBIOT] R16 36.321 CR (Ericsson)

Status: Not Started

Scope: Update the CR with agreements from this meeting.

Intended outcome: Agreed CR in R2-2005924

Deadline: June 12 1000 UTC

[R2-2004930](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004930.zip) Introduction of Rel-16 NB-IoT enhancements Nokia CR Rel-16 36.304 16.0.0 0788 2 B NB\_IOTenh3-Core R2-2004042

* [AT110-e][303][NBIOT] R16 36.304 CR (Nokia)

Status: Not Started

Scope: Update the CR with agreements from this meeting.

Intended outcome: Agreed CR in R2-2005923

Deadline: June 12 1000 UTC

[R2-2005028](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005028.zip) Miscellaneous corrections to TS 36.300 for Rel-16 NB-IoT Huawei, HiSilicon CR Rel-16 36.300 16.1.0 1277 2 F NB\_IOTenh3-Core R2-2004039

* [AT110-e][302][NBIOT] R16 36.300 CR (Huawei)

Status: Not Started

Scope: Update the CR with agreements from this meeting.

Intended outcome: Agreed CR in R2-2005922

Deadline: June 12 1000 UTC

[R2-2005029](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005029.zip) Miscellaneous corrections to 36.331 for Rel-16 NB-IoT Huawei, HiSilicon CR Rel-16 36.331 16.0.0 4287 2 F NB\_IOTenh3-Core, LTE\_eMTC5-Core R2-2004040

* [AT110-e][301][NBIOT] R16 36.331 CR (Huawei)

Status: Not Started

Scope: Update the CR with agreements from this meeting.

Intended outcome: Agreed CR in R2-2005921

Deadline: June 12 1000 UTC

### 7.2.2 UE-group wake-up signal (WUS)

UE group wake Up signal for MTC and NB-IoT is treated jointly under this Agenda Item.

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

A web conference will be used for handling some of the discussions in this AI.

[R2-2006009](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2006009.zip) Summary of GWUS contributions Qualcomm discussion NB\_IOTenh3-Core, LTE\_eMTC5-Core

|  |
| --- |
| Agreements   * Use the SA2 defined solution (i.e. re-use the R15 solution) with group WUS with no additional changes for minimising false wake-up * Each configured probability threshold shall have at least 1 WUS group. * Use [R2-2005278](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005278.zip) as a baseline to discuss resource location signalling for eMTC as part of the CR updates. * Replace choice structure for per carrier group WUS signalling with “*gwus-Config-r16 WUS-ConfigPerCarrier-NB-r15*” * frequencyLocation-r16 is not necessarily the same for all gap types. * Merge rows for WUS Resource 1 and WUS resource 3 in Table 7.5.x-1 in TS 36.304 endorsed CR * Wait for input from RAN1 to correct the table in 36.304 endorsed CR to implement the meaning of ‘NB is below centre frequency’ * Delete “*Any WUS group from the list numGroupsList that is not assigned to a probability group is assigned to the WUS group list used for UE ID based grouping.*” from TS 36.331. |

[R2-2005129](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005129.zip) Group WUS for mobile UE Lenovo, Motorola Mobility discussion Rel-16

[R2-2005146](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005146.zip) On supporting UE group WUS operation with mobility Sony, Ericsson discussion Rel-16 NB\_IOTenh3-Core [R2-2002671](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_109bis-e/Docs/R2-2002671.zip)

[R2-2005204](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005204.zip) Group WUS corrections Qualcomm Incorporated discussion Rel-16 LTE\_eMTC5-Core, NB\_IOTenh3-Core

[R2-2005278](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005278.zip) GWUS Resource location signalling for eMTC Nokia Solutions & Networks (I) discussion Rel-16 NB\_IOTenh3

[R2-2005624](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005624.zip) TP for 36.331 changes for GWUS Config Nokia Solutions & Networks (I) discussion Rel-16

### 7.2.3 Transmission in preconfigured resources

Transmission in preconfigured resources for MTC and NB-IoT is treated jointly under this Agenda Item.

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

A web conference will be used for handling some of the discussions in this AI.

[R2-2005726](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005726.zip) Summary for 7.2.3 Preconfigured uplink resources Ericsson discussion NB\_IOTenh3-Core, LTE\_eMTC5-Core

**TB sizes:**

For agreement:

**Proposal 1 Maximum value for *requestedTBS* for eMTC is b2984 and for NB-IoT b2536.**

Further discuss:

**Proposal 2 For *requestedTBS* code points, choose between a range of, e.g., 16 values or full list of TB sizes from b328 to b2984 (eMTC) or to b2536 (NB-IoT).**

**PUR offset / start time:**

For agreement:

**Proposal 3 Confirm that PUR starting time configuration in *pur-StartTime* is an offset relative to a reference H-SFN.**

**Proposal 6 Adopt a multi-level structure for *pur-StartTime*. Highest level indicates H-SFN and lowest level indicates subframe. FFS whether SFN level is needed.**

**Proposal 10 Requested offset has the same range as the agreed H-SFN level of *pur-StartTime*.**

Further discuss:

**Proposal 4 *pur-StartTime* reference is the H-SFN corresponding to the last subframe of the first transmission of RRC release message containing pur-Config.**

**Proposal 5 Discuss whether alignment of the reference H-SFN between eNB and UE requires further clarification.**

**Proposal 7 Discuss whether working assumption: "Maximum PUR time offset should be the same as maximum PUR periodicity" is confirmed.**

**Proposal 8 Discuss and choose the value range and code points for H-SFN in *pur-StartTime*.**

**Proposal 9 Discuss and choose the value range and code points for subframe level (and SFN level, if needed) in *pur-StartTime*.**

**CP configuration**

For agreement:

**Proposal 11 It is up to eNB implementation how UE and PUR configuration are linked according to the configured PUR resources.**

Further discuss:

**Proposal 12 For CP-PUR, RAN2 intends to address the case of reconfiguration/release and 'm' counting so that PUR works properly. FFS to choose between the proposed solutions.**

**MAC-RRC interaction and other related topics**

Further discuss:

**Proposal 13 Capture calculation of PUR timing based on *pur-Periodicity* and *pur-StartTime* in TS 36.331 and remove Editor's note. FFS exact details.**

**Proposal 14 Discuss whether MAC layer should also calculate exact PUR timing or whether RRC layer provides the information to MAC in the form of UL grant.**

**Proposal 15 Discuss the following remaining details of MAC-RRC interaction:**

**a) Should PUR-RNTI be explicitly provided when configuring lower layers to use PUR (after RRC triggers PUR transmission)?**

**b) Should *pur-ResponseWindowSize* be provided to MAC when *pur-Config* is received or when lower layers are configured to use PUR?**

**c) How to address restarting *pur-TimeAlignmentTimer* in MAC if *pur-Config* is not present in RRC release?**

**d) Should PUR configuration be explicitly excluded in clause 5.3.12 in RRC when releasing the radio resource configuration?**

e) Should additional check if *pur-TimerAlignmentTimer* is running be added to MAC when transmitting HARQ feedback for PUR response message?

**Proposals related to RAN1 LSs:**

For agreement:

**Proposal 16 Confirm the feasibility of RAN1 working assumption on search space priority, send a reply LS to RAN1.**

Further discuss:

**Proposal 17 Choose between updating RRC configuration based on DCI repetition adjustment or storing the adjustment in PHY layer and using the latest value either from DCI or RRC.**

**Proposal 18 Update specifications related to DCI repetitions adjustment, if needed, and communicate RAN2 outcome to RAN1.**

* [AT110-e][313][NBIOT/eMTC] PUR open issues (Ericsson)

Scope: Finalise PUR open issues based on [R2-2005726](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005726.zip)

Intended outcome: Report in [R2-2005936](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005936.zip), Phase 2 report in R2-2005940

Deadline: phase 1 – June 2 16:00 UTC. Phase 2 – Friday 1000 UTC

[R2-2005936](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005936.zip" \o "https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005936.zip) [ATT110-e][313] PUR open issues Ericsson

***List of proposals:***

**TBS**

**Rapporteur proposal Q1: For *requestedTBS,* use 64 values for eMTC and 32 values for NB-IoT. Further decide which exact values are included.**

**PUR offset working assumption and the H-SFN configuration**

**Rapporteur proposal Q4: Discuss further whether the working assumption on requested offset should be confirmed or not.**

**CONDITIONAL ON Q4:**

**Rapporteur proposal Q4a: Confirm that PUR starting time configuration in *pur-StartTime* is an offset relative to a reference H-SFN.**

**Rapporteur proposal Q4b: *pur-StartTime* reference is the H-SFN corresponding to the last subframe of the first transmission of RRC release message containing *pur-Config*.**

**Rapporteur proposal Q4c: Discuss further whether the working assumption on requested offset should be confirmed or not.**

**Rapporteur proposal Q4d: H-SFN level is indicated in absolute terms, i.e. the configuration indicates the starting H-SFN according to signaled H-SFN value.**

***pur-StartTime* structure and requested offset**

**Rapporteur proposal Q5: Following structure is adopted as baseline for *pur-StartTime*:**

pur-StartTime-r16 ::= SEQUENCE {

pur-startHSFN-r16 INTEGER (0..1023) OR INTEGER (0..8191),

pur-startSFN-r16 INTEGER (0..1023),

pur-startSubframe-r16 INTEGER (0..9)

}

**Rapporteur proposal Q6: Revisit discussion on requested offset range once H-SFN level in *pur-StartTime* has been decided.**

**CP configuration**

**Rapporteur proposal Q7: It is up to eNB implementation how UE and PUR configuration are linked according to the configured PUR resources.**

**Rapporteur proposal Q8a: For CP-PUR, RAN2 intends to address the case of reconfiguration/release and 'm' counting so that PUR works properly.**

**Rapporteur proposal Q8b: Discuss further which mechanism is adopted to address the issues mentioned in Proposal Q8a.**

**Corrections / clarifications on MAC/RRC:**

**Rapporteur proposal Q9: RRC layer calculates the exact PUR timing and provides the information to MAC in the form of UL grant. Details of the timing of providing this information to MAC layer is up to UE implementation.**

**Rapporteur proposal Q10a: Discuss further whether clarifications are needed for specification text when "configuring lower layers to use PUR" regarding PUR-RNTI and TA timer configuration.**

**Rapporteur proposal Q10b: *pur-ResponseWindowSize* is provided to MAC when lower layers are configured to use PUR.**

**Rapporteur proposal Q10c: If *pur-Config* is not present in RRC release, *pur-TimeAlignmentTimer*** **is kept running.**

**Rapporteur proposal Q10d: Clarify that PUR configuration is excluded in clause 5.3.12 in TS 36.331 when releasing the radio resource configuration.**

**Rapporteur proposal Q10e: Add additional check in MAC that *pur-TimeAlignmentTimer* is running when transmitting HARQ feedback for PUR response message.**

**RAN1 LSs:**

**Rapporteur proposal Q11: Discuss further whether to update RRC or keep DCI adjustment on repetitions in PHY layer taking into account the technical concerns which have been brought up.**

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| --- |
| **Agreements:**  TB sizes:   * Maximum value for *requestedTBS* for eMTC is b2984 and for NB-IoT b2536. * For *requestedTBS,* use 64 values for eMTC and 32 values for NB-IoT.   RAN1 LSs:   * Confirm the feasibility of RAN1 working assumption on search space priority, send a reply LS to RAN1. * Working assumption: Update RRC with DCI adjustment on repetitions. |

* [AT110-e][314][NBIOT/eMTC] PUR Reply LS to RAN1 (Ericsson)

Scope: Reply to the 2 LSs on PUR open issues and working assumption

Intended outcome: Approved LS in R2-2005937

Deadline: June 5 10:00 UTC

[R2-2004632](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004632.zip) [E906, E907] Remaining open issues in PUR Ericsson discussion NB\_IOTenh3-Core, LTE\_eMTC5-Core

[R2-2004633](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004633.zip) Draft LS reply on PUR open issues and working assumption Ericsson LS out NB\_IOTenh3-Core, LTE\_eMTC5-Core To:RAN1

[R2-2004817](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004817.zip) Remaining issue on NB-IoT Preconfigured resources ITL discussion Rel-16

[R2-2005019](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005019.zip) Discussion on start offset and requested TBS for PUR Huawei, HiSilicon discussion Rel-16 NB\_IOTenh3-Core, LTE\_eMTC5-Core

[R2-2005020](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005020.zip) RRC-MAC interactions for PUR Huawei, HiSilicon discussion Rel-16 NB\_IOTenh3-Core, LTE\_eMTC5-Core

[R2-2005021](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005021.zip) Discussion on RAN1 LSs for PUR Huawei, HiSilicon discussion Rel-16 NB\_IOTenh3-Core, LTE\_eMTC5-Core

[R2-2005022](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005022.zip) [Draft] Reply LS on PUR working assumption for NB-IoT and eMTC Huawei LS out Rel-16 NB\_IOTenh3-Core, LTE\_eMTC5-Core To:RAN1

[R2-2005023](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005023.zip) [Draft] Reply LS on open PUR issues for NB-IoT and eMTC Huawei LS out Rel-16 NB\_IOTenh3-Core, LTE\_eMTC5-Core To:RAN1

[R2-2005035](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005035.zip) Remaining FFSs for PUR ZTE Corporation, Sanechips discussion Rel-16 LTE\_eMTC5-Core, NB\_IOTenh3-Core

[R2-2005206](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005206.zip) [H810] [H840] [H854] PUR start time offset Qualcomm Incorporated discussion Rel-16 LTE\_eMTC5-Core, NB\_IOTenh3-Core

[R2-2005569](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005569.zip) Remaining issue of D-PUR TA timer in RRC ASUSTeK discussion Rel-16 NB\_IOTenh3-Core

[R2-2005570](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005570.zip) PUR configuration maintenance during RRC state transition ASUSTeK discussion Rel-16 36.331 NB\_IOTenh3-Core

[R2-2005571](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005571.zip) HARQ feedback in RRC\_IDLE ASUSTeK discussion Rel-16 36.321 NB\_IOTenh3-Core

### 7.2.4 NB-IoT Specific

NB-IoT specific topics

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

A web conference will be used for handling some of the discussions in this AI.

Includes [Post109bis-e][944][NBIOT] CSS overlapping case for UE specific DRX (Sequans)

[R2-2004812](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004812.zip) Necessity of time stamp info for ANR in NB-IoT ZTE Corporation, Sanechips discussion Rel-16 NB\_IOTenh3-Core

* Covered in ASN.1 review

[R2-2005686](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005686.zip) Report of [Post109bis-e][944][NBIOT] CSS overlapping case for UE specific DRX Sequans Communications discussion NB\_IOTenh3-Core

* Revised in [R2-2006005](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2006005.zip)

[R2-2006005](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2006005.zip) Report of [Post109bis-e][944][NBIOT] CSS overlapping case for UE specific DRX Sequans Communications discussion NB\_IOTenh3-Core

* Ericsson wonders whether C1 would prevent NW from using deep coverage along with the short DRX values in the same cell. Huawei and Sequans understand this to be the case. Nokia thinks it is too restrictive and would prefer B2.
* QC thinks any specification change should not impact legacy UEs, but it is not acceptable to do nothing. Ericsson and Huawei don’t think legacy UEs are impacted with C1.
* Try to work offline on an update/variant of B2 to find a way acceptable to all, and if not possible then fallback to C1.
* [AT110-e][315][NBIOT] CSS overlapping case for UE specific DRX (Sequans)

Status:

Scope: Try to work offline on an update/variant of B2 to find a way acceptable to all, and if not possible then fallback to C1.

Intended outcome: Report in R2-2005938

Deadline: Friday 1000 UTC

### 7.2.5 NB-IoT UE capabilities

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

A web conference will be used for handling some of the discussions in this AI.

[R2-2004467](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2004467.zip) Updates for Rel-16 additional enhancements NB-IoT BlackBerry UK Limited CR Rel-16 36.306 16.0.0 1746 2 F NB\_IOTenh3-Core R2-2004044

* [AT110-e][305][NBIOT] R16 36.306 CR (Blackberry)

Status: Not Started

Scope: Update the CR with agreements from this meeting.

Intended outcome: Agreed CR in R2-2005925

Deadline: June 12 1000 UTC

[R2-2005030](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005030.zip) RAN1 features list and UE capabilities issues Huawei, HiSilicon discussion Rel-16 NB\_IOTenh3-Core, LTE\_eMTC5-Core

* [AT110-e][306][NBIOT] R16 RAN1 features list and UE capabilities (Huawei)

Status: Not Started.

Scope: [R2-2005030](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005030.zip).

Intended outcome: Report in R2-2005926

Deadline: June 5 1000 UTC

### 7.2.6 ASN.1 review of NB-IoT

Including documents related to Class 2/3 ASN.1 review issues that require WI-specific discussion.

A web conference will be used for handling some of the discussions in this AI.

[R2-2005031](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005031.zip) [H812][H842] Signalling of newUEidentity for PUR Huawei, HiSilicon discussion Rel-16 NB\_IOTenh3-Core, LTE\_eMTC5-Core

* QC thinks this proposal introduces 1 byte overhead. Huawei thinks we don’t need to optimise specifically for this case, we do not usually signal all parameters at message level and RadioResourceConfigDedicated is anyway included in the message.
* Ericsson are fine to move the parameter as this is the typical way.
* Qualcomm still thinks the overhead is unnecessary but OK if the majority wants it.
* Move newUE-Identity from RRCConnectionSetup(-NB)/ RRCRonnectionResume(-NB) to RadioResourceConfigDedicated(-NB).

[R2-2005032](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005032.zip) [H813][H843] Description of groupForServiceList for GWUS Huawei, HiSilicon discussion Rel-16 NB\_IOTenh3-Core, LTE\_eMTC5-Core

* Already covered in WUS summary

[R2-2005033](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005033.zip) [H816] GWUS frequency location and resource pattern Huawei, HiSilicon discussion Rel-16 LTE\_eMTC5-Core

* Already covered in WUS summary

[R2-2005034](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_110-e/Docs/R2-2005034.zip) [H844, H847, H845, H846, H853 ] Miscellaneous RIL WI open issues Huawei, HiSilicon discussion Rel-16 NB\_IOTenh3-Core

**Proposal 1:** There is no need to add additional clarification that support for early contention resolution is mandatory for UE connected to 5GC. Change the RIL H844 status to ConcNoAct.

* Already proposed agreed in ASN.1 RIL

**Proposal 2:** Do not change the note. Change the RIL H847 status to ConcNoAct.

* Do not change the note under Table 5.6.0-1. Change the RIL H847 status to ConcNoAct.

**Proposal 3:** Do not introduce provision for full carrier EARFCN value in *anr-carrierList*. Change RIL H845 status to ConcNoAct.

* Do not introduce provision for full carrier EARFCN value in *anr-carrierList*. Change RIL H845 status to ConcNoAct.

**Proposal 4:** Do not introduce a time indication in the report of when the ANR measuremens were performed. Change RIL H846 status to ConcNoAct.

* Will check as part of ASN.1 review email and go with the majority.

**Proposal 5:** Delete the Editor’s Note. Change RIL H853 status to ConcNoAct.

* Already proposed agreed in ASN.1 RIL
* [AT110-e][307][NBIOT] R16 ASN.1 Review (Huawei)

Status: Not Started.

Scope: Remaining RIL issues

Intended outcome: Report in R2-2005927

Deadline: June 5 1000 UTC

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| --- |
| Agreements   * [H812][H842] Move newUE-Identity from RRCConnectionSetup(-NB)/ RRCRonnectionResume(-NB) to RadioResourceConfigDedicated(-NB). * [H847] Do not change the note under Table 5.6.0-1. Change the RIL H847 status to ConcNoAct * [H845] Do not introduce provision for full carrier EARFCN value in *anr-carrierList*. Change RIL H845 status to ConcNoAct. |