3GPP TSG-RAN WG2 Meeting #127bis R2-240xxxx

Hefei, China, Oct 14th – 18th, 2024

Source: RAN2 Vice Chairman (CATT)

Title: Report from session on Rel-18 MIMO and MUSIM, Rel-19 MIMO, LPWUS, and SBFD

## Organizational email discussion

* [AT127bis][200] Organizational – Rel-18 MIMO and MUSIM, Rel-19 MIMO, LPWUS, and SBFD (RAN2 VC)

Scope:

a) Share plans for online/offline discussions during the meeting, and

b) Share draft session notes and agreements for review

## 7.17 Dual Transmission/Reception (Tx/Rx) Multi-SIM for NR

(NR\_DualTxRx\_MUSIM-Core; leading WG: RAN2; REL-18; WID: [RP-233071](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_100/Docs/RP-231461.zip))

Time budget: 0 TU

Tdoc Limitation: 1 tdocs

### 7.17.1 Organizational

Incoming LS, Rapporteur input, etc..

Corrections to TS 38.300.

R2-2408854 Clarification of UE capability restrictions in MUSIM Ericsson CR Rel-18 38.300 18.3.0 0920 - F NR\_DualTxRx\_MUSIM-Core

### 7.17.2 Corrections

R2-2408029 Clarification for the initiation of the MUSIM proactive UAI after HO/CHO Huawei, HiSilicon discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

R2-2408403 Correction to the musim-AffectedBandsList and musim-AvoidedBandsList ZTE Corporation CR Rel-18 38.331 18.3.0 5006 - F NR\_DualTxRx\_MUSIM-Core

## 7.20 NR MIMO evolution

(NR\_MIMO\_evo\_DL\_UL-Core; leading WG: RAN1; REL-18; WID: [RP-233028](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_98e/Docs/RP-223276.zip))

Time budget: 0TU

Tdoc Limitation: 1 tdoc

R2-2408510 Clarification to the k value in STx2P PHR MAC CE Huawei, HiSilicon CR Rel-18 38.321 18.3.0 1939 - F NR\_MIMO\_evo\_DL\_UL-Core

=> Withdrawn

### 7.20.1 Organizational

Incoming LS, Rapporteur input, etc..

Stage 2 corrections.

### 7.20.2 Corrections

RRC and UE capabilties

R2-2408180 Correction on simultaneousU-TCI-UpdateListx CATT, Nokia discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2408912 Correction to SRS resources for UL full power transmission mode 2 Ericsson CR Rel-18 38.306 18.3.0 1189 - F NR\_MIMO\_evo\_DL\_UL-Core

8Tx related

R2-2408352 Discussion on supporting 8Tx in MAC specification ASUSTeK discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2408748 Considerations on Remaining UP Issues for R18 MIMO ZTE Corporation discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

PHR related

R2-2409024 Correction on multi-entry PHR for MIMO STx2P multi-panel scheme Samsung CR Rel-18 38.321 18.3.0 1959 - F NR\_MIMO\_evo\_DL\_UL-Core

R2-2409092 Remaining issue on STx2P PHR LG Electronics Inc. discussion Rel-18 NR\_MIMO\_evo\_DL\_UL-Core

R2-2409141 Clarification on the k values in the STx2P PHR MAC CE Huawei, HiSilicon CR Rel-18 38.321 18.3.0 1970 - F NR\_MIMO\_evo\_DL\_UL-Core

## 8.4 Low-power wake-up signal and receiver for NR (LP-WUS/WUR)

(NR\_LPWUS-Core; leading WG: RAN1; REL-19; WID [RP-241824](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_105/Docs/RP-241824.zip))

Time budget: 1 TU

Tdoc Limitation: 3 tdocs

### 8.4.1 Organizational

LS, Rapporteur input, including workplan, etc.

Spec editor assignment suggested by WI Rapporteur

[38.300 => Ericsson]

[38.321 => Apple]

[38.331 => vivo]

[38.304 => CATT]

[38.306 => Huawei]

R1 LS

*Chair: for this R1 LS we will discuss related proposals under A.I. 8.4.2.*

R2-2407921 LS on LP-WUS operation in IDLE/INACTIVE mode (R1-2407559; contact: Apple) RAN1 LS in Rel-19 NR\_LPWUS To:RAN2, RAN4

* ?? Noted

### 8.4.2 Procedure and configuration of LP-WUS in RRC\_IDLE/INACTIVE

Procedure and configuration of LP-WUS indicating paging monitoring triggered by LP-WUS, including at least configuration, sub-grouping and entry/exit condition for LP-WUS monitoring

Entry/exit condition

R2-2408447 Discussion on procedure and configuration of LP-WUS in RRC\_IDLE/INACTIVE Huawei, HiSilicon discussion Rel-19

*Proposal 4: Thresholds of LP-WUS entry/exit conditions for OOK and OFDM based receivers are always configured when the respective LP-WUS configuration is provided by the network.*

*Proposal 5: Whether the measurement by LP-WUR is needed or not for LP-WUS entry condition should wait for RAN1/4’s further input.*

*Proposal 6: RAN2 to consider that the serving cell measurement by LP-WUR below configured threshold(s) as the baseline for LP-WUS exit condition. No need to introduce any additional conditions.*

*Proposal 7: RAN2 to consider how to avoid ping-pong behavior for LP-WUS entry/exit procedure.*

R2-2409058 LP-WUS in Idle and Inactive Ericsson discussion Rel-19 NR\_LPWUS-Core R2-2407396

*Proposal 23 The LR exit condition does not include MR measurements. Use cases where the UE is required to perform MR and LR measurements simultaneously can be discussed separately.*

*Proposal 24 The entry/exit threshold may include RSRP threshold, RSRQ threshold or both.*

*Proposal 25 The entry condition is met when all the measured quantities are above the configured threshold(s).*

*Proposal 26 The exit condition is met when one or more of the measured quantities are above the configured threshold(s).*

*Proposal 27 If an LP-SS threshold is configured, a threshold below the MR serving cell threshold of the entry condition can be configured where the UE is required to perform LP-SS measurements.*

*Proposal 28 Discuss MP or OP for the entry/exist condition for LP-WUS monitoring further during stage 3.*

Subgrouping

R2-2408114 Discussion on LP-WUS WUR in RRC\_IDLE INACTIVE vivo discussion Rel-19 NR\_LPWUS-Core

*Proposal 7: For CN assigned LP-WUS subgrouping, RAN2 assumes similar signalling defined for PEI should be reused for LP-WUS subgrouping. Final design is up to SA2/CT1/RAN3 discussion.*

*Proposal 8: For UE\_ID based subgrouping, similar formula defined for PEI subgrouping is reused for LP-WUS subgrouping, i.e.,*

*SubgroupID = (floor (UE\_ID/(N\*Ns\*Np)) mod subgroupsNumForUEID) + (subgroupsNumPerPO – subgroupsNumForUEID), where*

*- UE\_ID is related to 5G-S-TMSI,*

*- N is the number of total paging frames in one DRX cycle,*

*- Ns is the number of the PO for a PF,*

*- Np is the number of subgroupNumForUEID for PEI, if configured; otherwise, Np is 1,*

*- subgroupsNumForUEID and subgroupsNumPerPO are the subgroup number for UE\_ID based subgrouping for LP-WUS and the total subgroup number for LP-WUS, respectively.*

*Proposal 9: In order to allow UE to use LP-WUS together with PEI to reduce paging false alarm rate, it is expected independent subgroup ID is applied for a UE.*

*Proposal 10: For UE\_ID based subgrouping, different bits in 5G-S-TMSI are used as UE\_ID for LP-WUS subgrouping and the PEI subgrouping.*

On R1 LS (R2-2407921)

R2-2409157 On LR and MR operating frequencies (related to LS in R1-2407559) Vodafone discussion Rel-19

*Proposal 1: Support offloading RRM measurement to LR when LP-SS and NR channels are located in different carriers/bands if deemed feasible by RAN4.*

*Proposal 2: To avoid overloading LR band, support that the MR of a UE is able to receive paging messages on the LR band and reselects to another band to perform random access.*

*Proposal 3: Before going to deep sleep mode, the UE shall store information about the LR band in order to monitor paging on this band. The UE shall also keep information on the cell it was camping on to perform random access upon being paged.*

R2-2408572 Procedure and configuration of LP-WUS in RRC\_IDLE/INACTIVE Apple discussion Rel-19 NR\_LPWUS-Core

*Proposal 1: RAN2 LP-WUS discussion focuses on intra-frequency scenario, and the support of inter-frequency scenario is deprioritized in R18.*

*Proposal 2: It’s up to NW implementation to set LP-WUS frequency as high priority in order to help LP-WUS capable UE camps on.*

R2-2408007 Procedure and configuration of LP-WUS for IDLE and INACTIVE mode ZTE Corporation, Sanechips discussion Rel-19 NR\_LPWUS-Core

R2-2408043 LP-WUS in RRC\_IDLE and INACTIVE China Telecom discussion Rel-19 NR\_LPWUS-Core

R2-2408072 LP-WUS operation in IDLE/INACTIVE modes CMCC discussion Rel-19 NR\_LPWUS-Core

R2-2408168 Discussion on LP-WUS operation in IDLE/INACTIVE mode Spreadtrum Communications discussion Rel-19

R2-2408182 LP-WUS in RRC\_IDLE/INACTIVE CATT discussion Rel-19 NR\_LPWUS-Core

R2-2408239 Discussion on LP-WUS in RRC\_IDLE and RRC\_INACTIVE Sharp discussion Rel-19

R2-2408289 Procedure of LP-WUS in RRC\_IDLE and INACTIVE HONOR discussion Rel-19 NR\_LPWUS-Core

R2-2408415 Discussion on LP-WUS in RRC\_IDLE INACTIVE NEC discussion Rel-19 NR\_LPWUS-Core

R2-2408428 General considerations on the procedure for RRC\_IDLE\_INACTIVE Xiaomi Communications discussion

R2-2408450 Discussion on procedure and configuration of LP-WUS in RRC\_IDLEINACTIVE OPPO discussion

R2-2408489 Procedure and Configuration of LP-WUS in RRC Idle/ Inactive Lenovo discussion Rel-19 NR\_LPWUS-Core

R2-2408709 RAN2 aspects on LP-WUS/WUR in RRC Idle/Inactive mode Sony discussion Rel-19 NR\_LPWUS-Core

R2-2408741 LP-WUS in IDLE and INACTIVE Nokia discussion Rel-19 NR\_LPWUS-Core

R2-2408763 LP-WUS operation in IDLE/Inactive state Qualcomm Incorporated discussion NR\_LPWUS-Core

R2-2408768 LP-WUS operation in RRC\_IDLE and RRC\_INACTIVE LG Electronics Inc. discussion Rel-19 NR\_LPWUS-Core

R2-2408949 Discussion on LP-WUS operation in RRC\_IDLE/INACTIVE modes InterDigital, Inc. discussion Rel-19 NR\_LPWUS-Core

R2-2409005 Procedure and Configuration of LP-WUS in RRC Idle Inactive Mode Samsung discussion Rel-19

### 8.4.3 RRM measurement relaxation and offloading in RRC\_IDLE/INACTIVE

RRM relaxation of UE MR for both serving and neighbor cell measurements, and UE serving cell RRM measurement offloaded from MR to LP-WUR, including the necessary conditions

RRM relaxation for serving and neighbor cell

R2-2408769 RRM relaxation and RRM offloading LG Electronics Inc. discussion Rel-19 NR\_LPWUS-Core

*Regarding the neighbor cell measurement relaxation*

*Proposal 1 For neighbor cell measurement relaxation for UEs capable of LP-WUS, do not define additional criterion over the R16 criteria, i.e. ‘UE with low mobility’ and ‘UE not at cell edge’.*

*Proposal 2 For neighbor cell measurement relaxation for UEs capable of LP-WUS, enhance the R16 criteria, i.e. ‘UE with low mobility’ and ‘UE not at cell edge’, to enable UE to evaluate them based on the LR measurements when the serving cell measurement is offloaded to LR.*

R2-2408159 Discussion on RRM measurement in RRC IDLE and INACTIVE OPPO discussion Rel-19 NR\_LPWUS-Core

*Proposal 1 For the entry condition for relaxing serving cell measurement and neighbour cell measurement on MR, the serving cell measurement result on both MR and LR should be higher than configured threshold(s).*

*Proposal 2 For the exit condition for relaxing serving cell measurement and neighbour cell measurement on MR, the serving cell measurement result on MR or LR is lower than configured threshold(s).*

*Proposal 3 The configured threshold for entry serving cell and neighbour cell measurement relaxation should be lower than the threshold configured for serving cell measurement fully offloading from MR to LR.*

*Proposal 4 Low mobility criterion can also be considered for serving cell measurement offloading and serving cell and neighbour cell measurement relaxation.*

Chair: other proposals can be discussed if time allows in CB session.

R2-2408008 RRM measurement relaxation and offloading in RRC\_IDLE and RRC\_INACTIVE mode ZTE Corporation, Sanechips discussion Rel-19 NR\_LPWUS-Core

R2-2408071 Discussion on RRM measurement relaxation and offloading in RRC\_IDLE INACTIVE CMCC discussion Rel-19 NR\_LPWUS-Core

R2-2408111 RRM measurement relaxation and offloading in RRC\_IDLE/INACTIVE Huawei, HiSilicon discussion Rel-19 NR\_LPWUS-Core

R2-2408115 Discussion on RRM measurement relaxation and offloading in RRC\_IDLE/INACTIVE vivo discussion Rel-19 NR\_LPWUS-Core

R2-2408169 Discussion on RRM measurement relaxation in IDLE/INACTIVE mode Spreadtrum Communications discussion Rel-19

R2-2408183 RRM Relaxation and Offloading in RRC\_IDLE/INACTIVE CATT discussion Rel-19 NR\_LPWUS-Core

R2-2408240 Discussion on RRM measurement relaxation and offloading Sharp discussion Rel-19

R2-2408306 RRM measurement relaxation and offloading in RRC\_IDLE/INACTIVE Lenovo discussion Rel-19

R2-2408416 Discussion on LP-WUS RRM NEC discussion Rel-19 NR\_LPWUS-Core

R2-2408429 Discussion on RRM measurement relaxation for RRC\_IDLE\_INACTIVE Xiaomi Communications discussion

R2-2408573 RRM measurement relaxation and offloading in RRC\_IDLE/INACTIVE Apple discussion Rel-19 NR\_LPWUS-Core

R2-2408710 Discussion on RRM aspects for LP-WUS/WUR Sony discussion Rel-19 NR\_LPWUS-Core

R2-2408742 RRM measurement relaxation in RRC\_IDLE/INACTIVE Nokia discussion Rel-19 NR\_LPWUS-Core

R2-2408765 LP-WUS RRM measurement relaxation and offloading Qualcomm Incorporated discussion NR\_LPWUS-Core

R2-2408849 RRM Measurement Relaxation and Offloading in RRC\_IDLE /INACTIVE Mode China Telecom discussion

R2-2408950 Discussion on RRM measurement relaxation and offloading InterDigital, Inc. discussion Rel-19 NR\_LPWUS-Core

R2-2409006 RRM measurement relaxation and offloading in RRC Idle Inactive Mode Samsung discussion Rel-19

R2-2409059 LP-WUS and RRM measurements Ericsson discussion Rel-19 NR\_LPWUS-Core R2-2407397

### 8.4.4 Procedures for LP-WUS in RRC\_CONNECTED

Procedures to allow UE MR PDCCH monitoring triggered by LP-WUS including activation and deactivation procedure of LP-WUS monitoring.

Option 1-2 related

R2-2409076 LP-WUS in RRC\_CONNECTED Nokia discussion

*Proposal 1. In option 1-2, a new LP-WUS On-duration timer is introduced, which starts an offset after detection of LP-WUS.*

*Proposal 2. In option 1-2, a new LP-WUS inactivity timer is introduced, which*

*- starts upon PDCCH detection following LP-WUS detection, and restarts upon PDCCH scheduling a new transmission in UL/DL while the LP-WUS inactivity timer is running.*

*- starts LP-WUS monitoring upon expiry of the timer*

R2-2408184 Analysis on LP-WUS for RRC\_CONNECTED Mode CATT discussion Rel-19 NR\_LPWUS-Core

*Proposal 7: Define a new timer for PDCCH monitoring triggered by LP-WUS, i.e. after LP-WUS triggers the UE to perform PDCCH monitoring, the UE starts a new timer. When the new timer is running, the UE monitors PDCCH, i.e. the UE is in DRX Active Time.*

*Proposal 8: When the UE receives PDCCH schedules new transmission for DL/UL, the UE starts/restarts drx-InactivityTimer.*

*Proposal 10: The drx-onDurationTimer is not started in Option 1-2.*

R2-2409007 Procedures for LP-WUS in RRC Connected Mode Samsung discussion Rel-19

*Proposal 1. During the PDCCH monitoring timer is running (e.g., drx-onDurationTimer for Option 1-1 and FFS new/legacy timer for Option 1-2), UE behaves the same as in UE C-DRX on duration, e.g., apply drx-inactivityTimer for a successful PDCCH reception.*

*Proposal 2. When the LP-WUS capable UE is monitoring PDCCH with Option 1-2, and if the drx-inactivityTimer is expired, the UE goes back to LP-WUS monitoring if possible.*

R2-2408116 Discussion on LP-WUS WUR in RRC\_Connected vivo discussion Rel-19 NR\_LPWUS-Core

*Proposal 2: For Option 1-2, the timer duration for PDCCH monitoring triggered by LP-WUS is defined as part of C-DRX Active Time.*

*Proposal 3: For Option 1-2, during the timer for PDCCH monitoring triggered by LP-WUS is running, periodic CSI/L1-RSRP report and SP CSI report behaviour are the same as legacy drx-onDurationTimer duration without DCP configuration, i.e. always report during this timer triggered by LP-WUS.*

*Proposal 5: For Option 1-2, the length of the timer for PDCCH monitoring triggered by LP-WUS is configured by gNB. The length of this time is separate from the legacy drx-onDurationtimer.*

*Proposal 6: For Option 1-2, after the timer for PDCCH monitoring triggered by LP-WUS expires, the UE stops PDCCH monitoring, and switch back to LP-WUS monitoring.*

*Proposal 9: For Option 1-2, PDCCH monitoring behaviors related to legacy C-DRX Active Time other than drx-onDurationTimer are not affected. The C-DRX Active Time includes:*

*o ra-ContentionResolutionTimer, msgB-ResponseWindow, SR related C-DRX Active Time, CFRA for BFR related C-DRX Active Time, RACH-less LTM/handover procedure.*

Chair: other proposals can be discussed if time allows in CB session.

R2-2408009 Procedures for LP-WUS in RRC\_CONNECTED ZTE Corporation, Sanechips discussion Rel-19 NR\_LPWUS-Core

R2-2408030 Discussion on LP-WUS for RRC\_CONNECTED mode Huawei, HiSilicon discussion Rel-19 NR\_LPWUS-Core

R2-2408044 Procedures for LP-WUS in RRC\_CONNECTED China Telecom discussion Rel-19 NR\_LPWUS-Core

R2-2408084 Discussion on LP-WUS operation in CONNECTED mode CMCC discussion Rel-19 NR\_LPWUS-Core

R2-2408290 Procedure of LP-WUS in RRC\_CONNECTED HONOR discussion Rel-19 NR\_LPWUS-Core

R2-2408417 Discussion on LP-WUS in RRC\_CONNECTED NEC discussion Rel-19 NR\_LPWUS-Core

R2-2408430 Discussing on LP-WUS monitoring for RRC\_Connected Xiaomi Communications discussion

R2-2408451 Discussion on LP-WUS in RRC\_CONNECTED OPPO discussion

R2-2408490 LP-WUS in RRC Connected Mode Lenovo discussion NR\_LPWUS-Core

R2-2408574 Procedures for LP-WUS in RRC\_CONNECTED Apple discussion Rel-19 NR\_LPWUS-Core

R2-2408605 LP-WUS operation in RRC\_CONNECTED Mode LG Electronics Inc. discussion Rel-19 NR\_LPWUS-Core

=> Withdrawn

R2-2408692 LP-WUS in CONNECTED mode InterDigital discussion Rel-19 NR\_LPWUS-Core

R2-2408711 Considerations on LP-WUS/WUR in RRC Connected mode Sony discussion Rel-19 NR\_LPWUS-Core

R2-2408764 LP-WUS operation in CONNECTED state Qualcomm Incorporated discussion NR\_LPWUS-Core

R2-2409052 Discussion on LP-WUS for CONNECTED state NTT DOCOMO INC. discussion Rel-19

R2-2409060 LP-WUS in Connected Ericsson discussion Rel-19 NR\_LPWUS-Core R2-2407398

R2-2409160 LP-WUS operation in RRC\_CONNECTED Mode LG Electronics Inc. discussion Rel-19 NR\_LPWUS-Core

## 8.11 Evolution of NR duplex operation: Sub-band full duplex (SBFD)

(NR\_duplex\_evo-Core; leading WG: RAN1; REL-19; WID: [RP‑241614](https://www.3gpp.org/ftp/meetings_3gpp_sync/ran/docs/RP-241614.zip))

Time budget: 0.5 TU

Tdoc Limitation: 2 tdocs

### 8.11.1 Organizational

Incoming LS, Rapporteur input, including workplan, etc.

R1 LS

R2-2407917 LS to RAN3 on PHY/L1 aspects of information exchange among gNBs for CLI mitigation (R1-2407533; contact: Ericsson) RAN1 LS in Rel-19 NR\_duplex\_evo To:RAN3 Cc:RAN2

* ?? Noted

### 8.11.2 Random access in SBFD

RAN2 impacts to support SBFD operation to support random access in SBFD symbols by UEs in RRC \_CONNECTED mode and RRC\_IDLE/INACTIVE mode.

Early indication

R2-2408103 Discussion on random access procedure in SBFD vivo discussion Rel-19 NR\_duplex\_evo-Core

*Proposal 2: For Msg1-based early identification for SBFD-aware UE, RAN2 to discuss and determine whether to down-select from the following two options:*

*- Opt.a: The NW can identify the SBFD-aware UE if the UE sends Msg1 on ‘additional ROs’ as defined by RAN1;*

*- Opt.b: SBFD is considered as a new feature for PRACH preamble partitioning, i.e. the NW can configure SBFD as a feature as ‘true’ for a set of random access resources, which is similar to RedCap, Msg3 repetition, etc,.*

*Proposal 3: It is up to the NW implementation how to handle if it identifies the SBFD-aware UE with Msg1-based early identification, e.g. the NW decides whether to schedule SBFD resources to the SBFD-aware UE for Msg3 transmission.*

*Proposal 4: RAN2 to confirm not to support Msg3-based early identification for SBFD-aware UE.*

R2-2407950 Random Access in SBFD symbols CATT discussion Rel-19 NR\_duplex\_evo-Core

*Proposal 2: If additional RO is selected by SBFD-aware UE, early identification in Msg1 is supported.*

*Proposal 3: If legacy RO is selected by SBFD-aware UE, early identification in Msg1 is not supported.*

*Proposal 4: In case of early identification in Msg1 is not supported, UE can indicate it supports SBFD in Msg3.*

*Proposal 5: SBFD is not introduced as a feature (similar as RedCap, SDT and etc.) for random access.*

RACH resource selection

R2-2409152 Discussion on Random Access procedure for SBFD LG Electronics Inc. discussion Rel-19 NR\_duplex\_evo-Core

*Proposal 3. For RACH configuration Option 1 with Alt 1-1 (use one single RACH configuration with possible enhancement), RAN2 assumes that the same MAC procedure can be applied for both SBFD-aware UE and legacy UE.*

*Proposal 4. For RACH configuration Option 1 with Alt 1-1, it’s up to UE implementation to select one type between legacy-ROs and additional-ROs (i.e., no prioritization rule between SBFD RO and legacy RO).*

*Proposal 5. For RACH configuration Option 2, whether the SBFD-aware UE performs RA procedure using the legacy RACH configuration or additional RACH configuration should be determined before the RA type selection.*

*Proposal 6. For RACH configuration Option 2, SBFD-aware UE performs RA procedure using the SBFD RACH configuration, if it is configured. Additional conditions to use SBFD RACH configuration (e.g., RSRP threshold) can be defined, based on RAN1 discussion.*

*Proposal 7. For PRACH transmission re-attempt in one random access procedure on RACH configuration Option 1 with Alt 1-1, SBFD-aware UE independently selects an RO between legacy RO and SBFD RO for each re-attempt.*

*Proposal 8. For PRACH transmission re-attempt in one random access procedure on RACH configuration Option 2, use ROs of the same type (i.e., legacy-RO or Additional-RO) as the earlier PRACH transmission.*

R2-2408420 Random Access Procedures for SBFD Sharp discussion Rel-19 NR\_duplex\_evo-Core

*Proposal 3 An SBFD-aware UE selects either additional RO or legacy RO based on comparing measured RSRP with a RSRP threshold for RO selection in case of initial RA attempt.*

*Proposal 4 A fallback procedure on RO type selection from additional RO in SBFD symbols to legacy RO is supported when the number of PRACH transmission attempts exceed a threshold.*

*Proposal 5 RAN2 to discuss whether to support a fallback procedure on RO type selection from legacy RO to additional RO in SBFD symbols is supported when the number of PRACH transmission attempts exceed a threshold.*

R2-2408799 Views on random access for SBFD Qualcomm Incorporated discussion NR\_duplex\_evo-Core

*Proposal 6: Upon initiation of RACH procedure for a SBFD-aware UE, if no additional indication is from network, UE is allowed to select one type of ROs between legacy-ROs and additional-ROs based on certain specified/configured conditions/prioritizations.*

*Proposal 7: For the PRACH transmission re-attempt in one RACH procedure, after certain (configured) number of times of RACH attempt in one type of RACH occasions, and if additional certain conditions are met, UE is allowed to switch to another type of RACH occasions for RACH re-attempt.*

RACH configuration

R2-2409008 Random access in SBFD Samsung discussion Rel-19

*Proposal 1: RAN2 to confirm that the below two RACH configuration options are considered for SBFD based random access:*

*- Option 1: Use one single RACH configuration, and only based on the existing parameters of the single RACH configuration*

*- Option 2: Use two separate RACH configurations, including one legacy RACH configuration and one additional RACH configuration*

*Proposal 2: For RACH configuration Option 2, RAN2 needs to specify a new RRC IE for the new SBFD based RACH configuration with a new set of parameters.*

*Proposal 3: RAN2 to confirm that the RACH configuration for SBFD is transmitted via SIB1, for either option 1 or 2. FFS dedicated RRC signalling detail.*

R2-2407955 Discussion on RACH in SBFD Xiaomi discussion Rel-19

R2-2408067 Discussion on random access in SBFD CMCC discussion Rel-19 NR\_duplex\_evo-Core

R2-2408219 Discussion on random access procedure in SBFD ZTE Corporation discussion Rel-19 NR\_duplex\_evo-Core

R2-2408364 Impacts on the random access by the evolution of duplex operation Huawei, HiSilicon discussion Rel-19 NR\_duplex\_evo-Core

R2-2408508 SBFD RACH configuration for initial random access Charter Communications, Inc discussion NR\_duplex\_evo Late

R2-2408550 Random Access for SBFD Operation NEC discussion

R2-2408594 Framework to support RACH in SBFD Apple discussion Rel-19 NR\_duplex\_evo-Core

R2-2408647 Random Access Operation of SBFD Nokia Corporation discussion Rel-19 NR\_duplex\_evo-Core

R2-2408690 Random access in Sub-Band Full Duplex Google Ireland Limited discussion

R2-2408717 Random access for SBFD Operation Sony discussion Rel-19 NR\_duplex\_evo-Core

R2-2408855 SBFD RA aspects Ericsson discussion Rel-19 NR\_duplex\_evo-Core

### 8.11.3 Other aspects

Other RAN2 impacts with SBFD if not covered by the previous agenda items.

R2-2408365 Discussion on the SBFD configuration and CLI measurement Huawei, HiSilicon discussion Rel-19 NR\_duplex\_evo-Core

*Proposal 1: For cell specific time resource indication of SBFD subbands, the network can indicate which symbol is SBFD symbol to SBFD-aware UEs, e.g. via the extended TDD-UL-DL-ConfigCommon field.*

*Proposal 2: For cell specific frequency resource indication of SBFD subbands, the network can indicate the frequency locations of SBFD subbands to SBFD-aware UEs, e.g. via the extended SCS-SpecificCarrier field.*

*Proposal 3: For UL resource muting for PUSCH, the configuration of time and frequency location for UL resource muting should be introduced.*

*Proposal 4: For L1 based UE-to-UE CLI measurement mechanism, the configuration of periodic, semi-persistent or aperiodic UE-to-UE CLI measurement resource (set) could be introduced, e.g. in CSI-MeasConfig field.*

*Proposal 5: For L1 based UE-to-UE CLI reporting mechanism, the configuration of report quantities could be introduced, e.g. in CSI-ReportConfig field.*

*Proposal 6: The triggering conditions for UE-to-UE CLI measurement report can be either periodical or event-triggered.*

*Proposal 7: For gNB-to-gNB CLI measurement, wait for RAN3 conclusion on what to be included in the inter-node message.*

R2-2409089 Other aspects of SBFD Nokia discussion Rel-19 NR\_duplex\_evo-Core

*Proposal 1: Regarding UE specific SBFD parameter signaling RAN2 should wait RAN1 (and possibly RAN4 need to give input as well) to confirm whether they are needed or not*

*Proposal 2: RAN2 can wait before discussing further details until we get more exact parameter lists from RAN1/RAN4 regarding detailed CLI and SBFD parameters.*

*Proposal 3: Support SBFD-aware UEs to prioritize SBFD cells over non-SBFD cells.*

*Proposal 4: For inter-cell CSI-RS measurements, UE is provided with information of the SBFD configuration of neighbouring cells.*

R2-2407951 Discussion on other aspects for SBFD CATT discussion Rel-19 NR\_duplex\_evo-Core

R2-2408035 Other aspects of SBFD Xiaomi discussion Rel-19 NR\_duplex\_evo-Core

R2-2408089 Discussion on SBFD related issues CMCC discussion Rel-19 NR\_duplex\_evo-Core

R2-2408104 Discussion on other aspects in SBFD vivo discussion Rel-19 NR\_duplex\_evo-Core

R2-2408220 Discussion on CLI measurement in SBFD ZTE Corporation discussion Rel-19 NR\_duplex\_evo-Core

R2-2408800 Other aspects of SBFD Qualcomm Incorporated discussion NR\_duplex\_evo-Core

R2-2408856 Non-RA aspects for subband full duplex (SBFD) operation Ericsson discussion Rel-19 NR\_duplex\_evo-Core

R2-2409098 Support of Cross Link Interference in SBFD Samsung discussion Rel-19 NR\_duplex\_evo-Core

## 8.12 NR MIMO Phase 5

(NR\_MIMO\_Ph5-Core; leading WG: RAN1; REL-19; WID: [RP-242394](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_105/Docs/RP-242394.zip))

Time budget: 0.5 TU

Tdoc Limitation: 1 tdocs

### 8.12.1 Organizational

LSs and rapporteur input, including workplan, etc.

Spec editor assignment suggested by WI Rapporteur

[38.300 => CMCC]

[38.321 => Samsung]

[38.331 => Ericsson]

R1 LS

R2-2407906 LS to RAN2 on RRC and MAC CE impacts for Rel-19 NR MIMO Ph5 (R1-2407285; contact: Samsung) RAN1 LS in Rel-19 NR\_MIMO\_Ph5 To:RAN2

* ?? Noted

Work plan

R2-2409128 Work Plan for Rel-19 on NR MIMO Phase 5 CMCC, Samsung, MediaTek Inc. Work Plan Rel-19 NR\_MIMO\_Ph5-Core

* ?? Noted

Running CR

R2-2408909 Running CR for MIMO Phase 5 Ericsson draftCR Rel-19 38.331 18.3.0 B NR\_MIMO\_Ph5-Core

* ?? Noted

### 8.12.2 Initial analysis on RAN2 impact

Initial analysis on R2 impact, including RRC and MAC aspects

Initial discussions on potential R2 impact

*Chair: plan is to briefly go through all the propoals in #8092 and #9023 for high level understanding of the R2 impact.*

R2-2408092 RAN2 Impacts of Rel-19 NR MIMO CMCC discussion Rel-19 NR\_MIMO\_Ph5-Core

R2-2409023 Discussion on RAN2 impacts Samsung discussion Rel-19 NR\_MIMO\_Ph5

R2-2408022 Discussion on the pathloss offset update via MAC CE and RRC Xiaomi discussion Rel-19 NR\_MIMO\_Ph5-Core

R2-2408125 Discussion on UE-initiated/event-driven beam management vivo discussion Rel-19 NR\_MIMO\_Ph5-Core

R2-2408181 Discussion on MAC CE impact for PL offset updates CATT discussion Rel-19 NR\_MIMO\_Ph5-Core

R2-2408196 Discussion on UE-initiated/event-driven beam management SHARP Corporation discussion NR\_MIMO\_Ph5-Core

R2-2408402 Initial Analysis on the RAN2 Impact for the R19 MIMO ZTE Corporation discussion Rel-19 NR\_MIMO\_Ph5-Core

R2-2408511 Initial analysis on RAN2 impact for Rel-19 NR MIMO Ph5 Huawei, HiSilicon discussion NR\_MIMO\_Ph5-Core

=> Revised in R2-2409200

R2-2409200 Initial analysis on RAN2 impact for Rel-19 NR MIMO Ph5 Huawei, HiSilicon discussion NR\_MIMO\_Ph5-Core

R2-2408649 RAN2 Aspects of the NR MIMO Nokia Corporation discussion Rel-19 NR\_MIMO\_Ph5-Core

R2-2408667 User plane and Control plane impacts from MIMO Ericsson discussion Rel-19 NR\_MIMO\_Ph5-Core

R2-2408723 Enhancement for Asymmetric DL sTRP/UL mTRP Sony discussion Rel-19 NR\_MIMO\_Ph5

R2-2408795 Discussion on the design considerations for MIMO Phase 5 Qualcomm Incorporated discussion

R2-2409093 Consideration on RAN2 impact in MIMO phase 5 LG Electronics Inc. discussion Rel-19 NR\_MIMO\_Ph5-Core

R2-2409168 Triggering condition of PHR for UL-only TRP NTT DOCOMO INC. discussion Rel-19

## List of post meeting email discussions

*Template (will be deleted in final report)*

* [AT127bis][20x][MIMOevo/MUSIM/LPWUS/SBFD/MIMO\_Ph5] Proposals for xxxxx (xxxx)

Scope: xxx

Intended outcome: Summary/Proposals in R2-24xxxxx for CB.

Deadline: xxx

* [Post127bis][20x][MIMOevo/MUSIM/LPWUS/SBFD/MIMO\_Ph5] xxxxx (xxxx)

Scope: xxx

Intended outcome: Summary/Proposals for xxxx

Deadline: xxx