

Sanya, China, April 16th – 20th, 2018

Agenda item: 7.1.6.2 and 7.1.6.3

Source: Samsung

Title: Summary of NR UL power control – CA aspects

Document for: Discussion and Decision

1 Introduction

This contribution summarizes remaining issues on power control for NR-CA and EN-DC based on companies' Tdocs submitted in AI 7.1.6.2 and AI 7.1.6.3.

Companies have addressed many issues which can be broadly categorized into the following:

- PHR related issues for NR-CA
 - Default parameter setting for virtual PHR
 - How to calculate PHR in case that different subcarrier spacing is used among CCs
 - Other
 - Whether or not to support Type 3 PHR in case that SRS is not tied with PUSCH in a serving cell where PUSCH is also configured
 - Whether PHR is supported per cell or per UL within a serving cell
 - Whether or not to include P_{max} in the virtual PHR
- Priority rule for NR-CA
 - Priority rule for simultaneous UL transmissions on SUL and non-SUL
 - Priority rule w.r.t numerology and TTI length
- EN-DC
 - Power sharing for NR architecture Option 4/4A
 - Residual aspects
 - Whether or not to introduce same definition of 'synchronous/asynchronous' dual connectivity as in LTE
 - UE's behavior for the case that shortened TTI/reduced processing time is configured on the MCG
- Other
 - NR-DC
 - Condition on limiting closed-loop accumulation
 - Power control UL MIMO
 - Clarification on TPC command block for SRS (i.e., DCI 2_3)

2 Companies' Views

This section provides details on companies' views as follows:

1) Default parameter setting for virtual PHR

Company	View
Huawei, HiSilicon	- The following are proposed and corresponding Text Proposal is provided. - One virtual PHR with the lowest serving cell and BWP index can be reported - If the mapping between $\{j, q_d, l\}$ set and SRI field is provided, the default $\{j, q_d, l\}$ set is the set associated with SRI field being equal to 0 in DCI format 0_1, otherwise $\{j, q_d, l\}$ set is the first in the $\{j, q_d, l\}$ set for PUSCH transmission
CATT	- The following are proposed: - The power accumulation function $f_{f,c}(i,l)$ should be set to zero for virtual PHR. - The default RS of <i>num-pusch-pathlossReference-rs</i> used for Type 2 virtual PHR calculation is defined as the low index of the configured <i>num-pusch-pathlossReference-rs</i> for a given carrier. - The default value is set to the lowest index of P0 and its associated α for the scheduled-based PUSCH transmission from multiple configured <i>SRI-P0AlphaSetIndex-Mapping</i> values for the virtual PHR calculation of the non-scheduling serving cell.
vivo	If there is not grant for virtual PHR for CA/DC, default $j = 0, l = 0$ and $q_d = 0$
ZTE	- The following agreement on PHR from RAN2 is not aligned with RAN1 recent agreements for supporting beam specific PHR, i.e., $\{j, q_d, l\}$ setting for PHR Agreement(RAN2): - NR defines a MAC CE for single serving cell scenario (similar to LTE but with PCmax added if RAN1 has agreed that it has to be report). The UE determines which format to use similar to LTE. - NR does not supports separate PHR triggering settings (e.g. <i>dlPathLossChange</i>) for SUL carrier and NR UL carrier in one cell. No new PHR triggers or formats for beams are defined for now. - The following are proposed: - More than one predefined $\{j, q_d, l\}$ setting should be supported for all $\{l\}$ or for all $\{q_d\}$, e.g. each PHR is for each l or q_d respectively. - PHY layer calculates PH based on $\{j, q_d, l\}$ setting notified by MAC layer for both real PHR and virtual PHR. - Send an LS to RAN2 to take into account $\{j, q_d, l\}$ setting and the potential issues which at least include: - Specify how to set a RS set for PL estimation and how to decide PL changes larger than threshold for possibly more than one RS for PHR trigger condition. - Specify how to decide power control parameter setting $\{j, q_d, l\}$ for both real and virtual PHR.
ASUSTeK	- The following are proposed: - Power headroom during transition time of bandwidth part switch is derived based on power control parameter set and default $\{j, q_d, l\}$ setting of the new bandwidth part. - Path-loss estimate and power control adjustment state of the original bandwidth part may be considered for deriving power headroom during transition time of bandwidth part switch.
Samsung	- For virtual PHR calculation, the following options can be considered: - Opt1: $j = 2, q_d = 0, l = 0$ - Opt2: q_d is the latest pathloss index; j and l are associated with the latest q_d.
Intel	The PC parameter set $\{j, q_d, l\}$ is configured by RRC message as part of power control parameter sets for each CC.
Qualcomm	- For the determination of j, q_d, and l for virtual PHR of PUSCH, down-select from the following two options: - Opt1: fix $l = 0$ or 1, q_d and j are the most recent ones associated with l - Opt2: If more than one closed power control loops, l is a function of slot number, e.g., $l = 0$ for odd-numbered slots and $l = 1$ for even-numbered slots; otherwise, $l = 0$. q_d and j are the most recent ones associated with l.

Motorola, Lenovo	- Virtual PUSCH PHR in case of CA/DC, to determine the default setting, - For the selection of the PC parameter set, select one of the options: - Opt1: explicitly fixed in specification (e.g., the lowest index PC parameters) - Opt2: implicitly fixed in specification (e.g., that corresponding to configured-grant-free Type 1 with $j = 1$, q_d given by <i>UL-TWG-pathlossreference-index</i>, and l given by <i>PUSCH-closed-loop-index</i>) - For selection of the uplink BWP, select one of the options: - Opt1: initial or first active UL BWP on primary cell, otherwise an UL BWP with BWP index = 0 - Opt2: BWP with lowest UL BWP index configured with the smallest subcarrier spacing - Opt3: most recent active BWP - For the selection of the uplink carrier, - semi-statically configured carrier for PUSCH if present, otherwise one of the options - Opt1: semi-statically configured carrier for PUCCH, or - Opt2: a fixed carrier, e.g., the non-SUL carrier
Ericsson	- To compute virtual PH for a serving cell/uplink for which there is no grant, the following PC parameters configured that serving cell/uplink are used P_0 and alpha given by the values corresponding $P_0\alpha\text{index} = 0$ of <i>p0-pusch-alpha-setconfig</i> - DL RS for PL estimation given by the RS corresponding to <i>pusch-pathlossreference-index</i> = 0 of <i>pusch-pathloss-Reference-rs</i> - Closed-loop index $l = 0$
DOCOMO	Default parameters for virtual PH calculation for PUSCH are linked with default SRS resource set ID, i.e., ID = 0 as in virtual PH calculation for SRS.
Nokia	One main concern from Nokia is whether virtual PHR would be triggered before the configuration of SRI table or mapping of UL PC parameters to SRI table. If Virtual PHR can be triggered before those configuration, $\{j, q_d\}$ cannot be used for virtual PH reporting. So we suggest: Default setting is extracted from RRC configuration according to $P_0\alpha\text{index} = 0$, <i>pusch-pathlossreference-index</i> = 0, no closed-loop adjustment or $l = 0$.

2) PHR in case that different subcarrier spacing is used among CCs

Company	View
ASUSTeK	Process timing for UL transmission with PHR may be considered for determining actual or virtual power headroom derivation on other serving cells.
LGE	In case of UL CA with different numerologies, PHR on an UL carrier in a slot includes PHR in the first overlapping slot(s) in the other aggregated carrier(s).
Samsung	Predefined slot index is used for PHR calculation when multiple slots of one CC overlaps with a slot of the CC carrying the PHR.

3) Other PHR related issues

Company	View
Huawei, HiSilicon	For Type 3 PHR, the following are proposed: - Type-3 power headroom should be reported when SRS power control is not tied with the corresponding PUSCH in a serving cell where PUSCH is also configured. - The following MAC CE formats can be considered for reporting the PHs when the power control of PUSCH and SRS is independent from each other: - Opt1: new MAC CE with 2 entries, one for SRS and the other one for PUSCH - Opt2: reuse MAC CE for CA and identify the entries with same serving cell

	index by PH type – Also, the following is proposed for Type 3 PHR and corresponding Text Proposal is provided for 38.213 v15.1.0: • Support SRS PH report along with PUSCH PH, when the SRS resource set with independent power control is configured to the UE.
Huawei, HiSilicon	– For PHR for SUL, the following are proposed: • Power headroom should be reported per UL within a serving cell at least when the SRS and PUSCH are scheduled on different UL carriers. • The following two options can be considered as the MAC CE format for reporting PHRs for SUL and non-SUL: ▫ Opt1: new MAC CE with 2 entries, one for SUL and the other one for non-SUL ▫ Opt2: reuse MAC CE for CA and define a mapping from entries with the same serving cell index to non-SUL and SUL
Samsung	– For P_{cm}ax for virtual PHR calculation, the following is proposed: • P_{cm}ax is reported together with PH in case of virtual PHR.

4) Priority rule for NR-CA

Company	View
Motorola, Lenovo	– For priority of SUL, the following are proposed: • For simultaneous uplink transmissions that are power-limited, when one or multiple serving cell(s) are configured with both UL and SUL carriers. ▫ Existing priority rule based on signals/channels content ▫ In case transmissions with the same priority level on the two UL carriers, the UL carrier which is configured for PUCCH has higher priority
Huawei, HiSilicon	– For priority rule of SUL in case of SRS collision between SUL and non-SUL, the following is proposed and corresponding Text Proposal is provided: • In case of same priority order between two UL carriers in a cell, transmission on the non-SUL carrier is prioritized over transmission on the SUL carrier.
LGE	– For priority of SRS between UL and SUL, the following is proposed: • UL carrier which is configured for PUCCH has higher priority.
Motorola, Lenovo	– For priority rule w.r.t numerology and TTI length, the following is proposed: • Specification should support, within each priority level for a set of channels/signals in CA-based power control, (i) a higher priority for shorter TTI over longer TTI, and (ii) a higher priority for larger subcarrier spacing over smaller subcarrier spacing.

5) Issues on EN-DC

Company	View
Ericsson	– The following high-level framework for Option 4/4A power sharing between NR and LTE are proposed: • P_{LTE} and P_{NR} signaling defined for EN-DC should be reused for Option 4/4A • Dynamic power sharing capability should be supported for Option 4/4A. ▫ UE should scale down/drop LTE (SCG) transmissions when power limited, and the details of scaling/dropping can be left to UE implementation ▫ The capability bits for Option 4/4A dynamic power sharing should be separate from those already specified for EN-DC. • For support of semi-static partitioning of LTE and NR UL transmissions similar to Case1-OperationA agreed for EN-DC (for UEs not supporting dynamic power sharing), the changes agreed so far for LTE Pcell UE behavior can be replicated for LTE PScell.
LGE	– The following power scaling for Option 4/4A power sharing between NR and LTE • Alt 1: Same as LTE-NR DC, power scaling occurs at NR side only without

	affecting LTE side. Alt 2: Power scaling occurs at 'later' scheduled uplink transmission regardless of NR or LTE. In other words, 'earlier' scheduled transmission has higher priority.
Samsung	- The following are addressed and corresponding Text Proposal is provided. - Same definition of synchronous/asynchronous dual connectivity as in LTE is introduced in NR. - Synchronous DC: if the maximum UL timing difference between transmitted signals to different serving cells is equal to or less than the minimum requirement. In this case, UE's behavior in case of $\hat{P}_{LTE} + \hat{P}_{NR} > \hat{P}_{Total}^{EN-DC}$ is same as one described in TS38.213. - Asynchronous DC: if the maximum UL timing difference between transmitted signals to different serving cells is larger than the minimum requirement. In this case, a UE is not expected to be configured with $\hat{P}_{LTE} + \hat{P}_{NR} > \hat{P}_{Total}^{EN-DC}$ - For the case when a UE is configured for operation with shortened TTI and processing time on the MCG, it is sufficient for phase 1 to not allow operation with $\hat{P}_{LTE} + \hat{P}_{NR} > \hat{P}_{Total}^{EN-DC}$ and the same statement as for asynchronous operation can apply.
LGE	- The following PC between LTE sTTI and NR for EN-DC is proposed - If sTTI is configured, even though a UE supports dynamic power sharing capability, it is assumed that semi-static power sharing based Case-1 is used. With Case 1, sTTI uplink transmissions are allowed only in UL subframes by reference DL/UL configuration.

6) Other

Company	View
InterDigital	- The following are proposed for NR-DC: - Uplink Power Control for NR DC should focus on maximizing the allocation of power to overlapping transmissions for the most general asynchronous scenario i.e., NR CA case 2. - Optimizations to specific deployments and/or UE configuration (e.g., synchronous transmissions starting within $< x \mu s$) may be considered once a baseline for uplink power control for NR DC is completed. - NR DC supports uplink PCM(s) that maximizes sharing of the UE's maximum output power. - NR DC supports a baseline PCM(s) for the general case of asynchronous overlapping transmissions - Power allocation for NR DC supports flexible grouping of transmissions based on timing-related aspects. - Transmission grouping supports grouping based on HARQ timeline [PUSCH/PUCCH, K1, K2]. Details FFS. - When configured, NR power control mode assigns a fraction of the UE's maximum output power (P_{CMAX}) to a transmission group (TRGx). The number of supported TRGs is FFS. - PCM2 is used as the baseline for power allocation for NR DC. - PCM2 is extended to support multiple HARQ timelines i.e. different combinations of [TTI, K1, K2]. - PCM2 is extended to support multiple (i.e., more than two) groups of transmissions - The extended PCM2 (e.g., PCM3) supports dynamically adaptive guaranteed power levels per group of transmissions. - Dynamic adaptation of guaranteed power level for a group of transmissions is controlled by the network. FFS whether it is based on scheduling activity, explicit signalling (e.g DCI or MAC CE), or both. - The extended PCM2 (e.g., PCM3) is also applicable to NR CA case 2. - For UEs that support NR CA case 2 but not NR DC, support for PCM3 is a UE

	capability.
Ericsson	– The following conditions that limit the closed loop accumulation are proposed: • For DCI formats 0_0 and 0_1 associated with an UL grant corresponding to (i, j, q_d, l): ▫ If the UE has reached $P_{\text{CMAX},f,c}(i)$ for carrier f of serving cell c, for the given (i, j, q_d, l), positive TPC commands for carrier f of serving cell c shall not be accumulated for that given l. ▫ If the UE has reached $P_{\text{CMAX},f,c}(i)$ for carrier f of serving cell c, for the given (i, j, q_d, l), negative TPC commands for carrier f of serving cell c shall not be accumulated for that given l. • Closed loop power control for PUCCH given DCI formats 1_0 and 1_1 adopts an analogous solution to DCI formats 0_0 and 0_1 for limiting accumulation. • Limitation of the closed loop accumulation for PUSCH in the case of DCI format 2_2 should be based on a condition on all $P_{\text{PUSCH},f,c}(i, j, q_d, l)$ affected by the group common DCI. ▫ If for all $P_{\text{PUSCH},f,c}(i, j, q_d, l)$, affected by the TPC command, the condition $P_{\text{PUSCH},f,c}(i, j, q_d, l) > P_{\text{CMAX},f,c}(i)$ holds, then positive TPC commands should not be accumulated. ▫ If for all $P_{\text{PUSCH},f,c}(i, j, q_d, l)$, affected by the TPC command, the condition $P_{\text{PUSCH},f,c}(i, j, q_d, l) < \text{minimum_power}$ holds, then negative TPC commands should not be accumulated. • Closed loop power control for PUCCH given DCI format 2_2 adopts an analogous solution to PUSCH given DCI format 2_2 for limiting accumulation. • Defining when to limit TPC accumulation in case of DCI format 2_3 is done in an analogous manner as for DCI format 2_2.
Ericsson	– The following power control for UL MIMO are proposed and corresponding Text Proposal is provided: • Introduction of a scaling parameter, β for PUSCH transmission power where $\beta = 1$ for single antenna port transmission, and for multi-antenna port transmission: ▫ $\beta = \min\{1, \alpha\}$ with $\alpha = K \cdot \rho_0 / \rho$ where ρ is the number of antenna ports and ρ_0 is the number of non-zero antenna ports. $K = 1$ for non-codebook based transmission and K for codebook-based transmission is given by a Table in R1-1805205
Huawei	– The following SRS TPC is proposed • DCI 2_3 configuration should be clarified/captured for SRS resource set(s) configured as a separate power control from PUSCH in one serving cell, based on SRS-CarrierSwitching in 38.331.

3 Summary

Based on companies' views captured in Section 2, the following issues are identified:

1) Default parameter setting for virtual PHR

How to select serving cell index

- One virtual PHR with the lowest serving cell index

How to select the uplink carrier (i.e., SUL or non-SUL) on a serving cell

- Semi-statically configured carrier for PUSCH if present, otherwise one of the options
 - Opt1: semi-statically configured carrier for PUCCH, or
 - Opt2: a fixed carrier, e.g., the non-SUL carrier

How to select BWP index

- Opt1: the lowest BWP index
- Opt2: the lowest UL BWP index configured with the smallest subcarrier spacing

- Opt3: initial or first active UL BWP on primary cell
- Opt4: most recent active BWP

How to set $\{j, q_d, l\}$

- Opt1
 - If the mapping between $\{j, q_d, l\}$ set and SRI field is provided,
 - Default $\{j, q_d, l\}$ set is the set associated with SRI field being equal to 0 in DCI format 0_1.
 - Otherwise
 - Default $\{j, q_d, l\}$ set is the first in the $\{j, q_d, l\}$ set for PUSCH transmission
- Opt2
 - For j , $P0alphasetindex = 0$ of $p0-pusch-alpha-setconfig$
 - For q_d , $pusch-pathlossreference-index = 0$ of $pusch-pathloss-Reference-rs$
 - For l , $l = 0$
- Opt3: $j = 2$, $l = 0$ and $q_d = 0$
- Opt4
 - $f_{fc}(i, l)$ should be set to zero.
 - q_d is the default RS with the lowest index of the configured $num-pusch-pathlossReference-rs$ for a given carrier
 - j is the default value with the lowest index of P0 and its associated α from configured $SRI-P0AlphaSetIndex-Mapping$
- Opt5: PHY layer calculates beam specific PHR based on $\{j, q_d, l\}$ setting provided by MAC layer for both real and virtual PHR.
 - The default $\{j, q_d, l\}$ setting for virtual PHR is up to RAN2
 - Send LS to RAN2
- Opt6: q_d is the latest pathloss index; j and l are associated with the latest q_d .
- Opt7: fix $l = 0$ or 1, q_d and j are the most recent ones associated with l
- Opt8: If more than one closed power control loops, l is a function of slot number, e.g., $l = 0$ for odd-numbered slots and $l = 1$ for even-numbered slots; otherwise, $l = 0$. q_d and j are the most recent ones associated with l .
- Opt9: The PC parameter set $\{j, q_d, l\}$ is configured by RRC message as part of power control parameter sets for each CC.
- Opt10: Implicitly fixed in specification, e.g., that corresponding to configured-grant-free Type 1 with $j = 1$, q_d given by $UL-TWG-pathlossreference-index$, and l given by $PUSCH-closed-loop-index$

2) PHR calculation in case that different subcarrier spacing is used among CCs

- In case of UL CA with different numerologies, PHR on an UL carrier in a slot includes PHR in the first overlapping slot(s) in the other aggregated carrier(s)

3) Other PHR related issues

Type 3 PHR

- Type-3 power headroom is reported when SRS power control is not tied with the corresponding PUSCH in a serving cell where PUSCH is also configured.

PHR for SUL

- Power headroom should be reported per UL within a serving cell at least when the SRS and PUSCH are scheduled on different UL carriers.

Pcmax for virtual PHR

- Pcmax is reported together with PH in case of virtual PHR.

4) Priority rule for NR-CA

Priority rule for SUL

- For simultaneous uplink transmissions that are power-limited, when one or multiple serving cell(s) are configured with both UL and SUL carriers
 - Existing priority rule based on signals/channels content
 - In case transmissions with the same priority level on the two UL carriers,
 - Opt1: the UL carrier which is configured for PUCCH has higher priority
 - Opt2: transmission on the non-SUL carrier is prioritized over transmission on the SUL carrier.

Priority rule w.r.t numerology and TTI length

- Within each priority level for a set of channels/signals in CA-based power control,
 - A higher priority for shorter TTI over longer TTI
 - A higher priority for larger subcarrier spacing over smaller subcarrier spacing.

5) Issues on EN-DC

Framework for Option 4/4A power sharing between NR and LTE

- Opt1
 - P_LTE and P_NR signaling defined for EN-DC should be reused for Option 4/4A
 - Dynamic power sharing capability should be supported for Option 4/4A.
 - UE should scale down/drop LTE (SCG) transmissions when power limited, and the details of scaling/dropping can be left to UE implementation.
 - The capability bits for Option 4/4A dynamic power sharing should be separate from those already specified for EN-DC.
 - For support of semi-static partitioning of LTE and NR UL transmissions similar to Case1-OperationA agreed for EN-DC (for UEs not supporting dynamic power sharing), the changes agreed so far for LTE Pcell UE behavior can be replicated for LTE PScell.
- Opt2: Same as LTE-NR DC, power scaling occurs at NR side only without affecting LTE side.
- Opt3: Power scaling occurs at ‘later’ scheduled uplink transmission regardless of NR or LTE. In other words, ‘earlier’ scheduled transmission has higher priority.

Synchronous/asynchronous EN-DC

- Synchronous DC: if the maximum UL timing difference between transmitted signals to different serving cells is equal to or less than the minimum requirement. In this case, UE’s behavior in case of $\hat{P}_{LTE} + \hat{P}_{NR} > \hat{P}_{Total}^{EN-DC}$ is same as one described in TS38.213

- Asynchronous DC: if the maximum UL timing difference between transmitted signals to different serving cells is larger than the minimum requirement. In this case, a UE is not expected to be configured with $\hat{P}_{\text{LTE}} + \hat{P}_{\text{NR}} > \hat{P}_{\text{Total}}^{\text{EN-DC}}$
- For the case when a UE is configured for operation with shortened TTI and processing time on the MCG, it is sufficient for phase 1 to not allow operation with $\hat{P}_{\text{LTE}} + \hat{P}_{\text{NR}} > \hat{P}_{\text{Total}}^{\text{EN-DC}}$ and the same statement as for asynchronous operation can apply

6) Other

Issues on NR-DC

- Only a single company has shown the view on power control for NR-DC aspects. The following are discussed and a bunch of proposals are provided.
 - The challenges related to NR-DC power control, design objectives for power sharing and design considerations for NR-DC power control modes.

Condition on limiting the closed-loop accumulation

- For UE-specific DCI formats, i.e., DCI formats 0_0, 0_1, 1_0 and 1_1,
 - If the UE has reached $P_{\text{CMAX},f,c}(i)$ for carrier f of serving cell c , for the given (i, j, q_d, l) , positive/negative TPC commands for carrier f of serving cell c shall not be accumulated.
- For group common DCI formats, i.e., DCI formats 2_2 and 2_3,
 - If for all $P_{\text{PUSCH},f,c}(i, j, q_d, l)$, affected by the TPC command, the condition $P_{\text{PUSCH},f,c}(i, j, q_d, l) > P_{\text{CMAX},f,c}(i)$ holds, then positive TPC commands should not be accumulated.
 - If for all $P_{\text{PUSCH},f,c}(i, j, q_d, l)$, affected by the TPC command, the condition $P_{\text{PUSCH},f,c}(i, j, q_d, l) < \text{minimum_power}$ holds, then negative TPC commands should not be accumulated.

Power control for UL MIMO

- Corrections on PUSCH power control for UL MIMO are proposed. It would be better to treat this Tdoc in MIMO session.

4 References

7.1.6.2 CA aspects

R1-1803700	Remaining details of UL power control design for CA	Huawei, HiSilicon
R1-1803764	Parameters setting on virtual PHR for CA	CATT
R1-1803843	Remaining issues on CA UL power control	vivo
R1-1803917	Remaining issues on NR power control in CA aspects	ZTE, Sanechips
R1-1804039	Virtual PHR derivation in some situations	ASUSTEK COMPUTER (SHANGHAI)
R1-1804386	Corrections on UL Power Control for EN-DC	Samsung
R1-1804567	Remaining issues on CA aspect of UL power control	LG Electronics
R1-1804737	Power headroom report for NR carrier aggregation	Intel Corporation
R1-1804813	Remaining Issues on power control for NR CA	Qualcomm Incorporated
R1-1804960	On CA-related NR UL power control	Motorola Mobility, Lenovo
R1-1805203	Remaining issues for CA and power sharing	Ericsson

7.1.6.3 Other

R1-1804286	Discussion on PHR for SUL	Huawei, HiSilicon
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R1-1804288 HiSilicon	TP on power control for concurrent transmission of SRS on both UL and SUL	Huawei,
R1-1804387	Corrections on PHR calculation for CA	Samsung
R1-1804449	Independent Power control for SRS	Huawei, HiSilicon
R1-1804675 Inc.	Timing and Asynchronous Transmissions with Power Control for NR DC	InterDigital,
R1-1804676	Power Control for NR DC	InterDigital, Inc.
R1-1805204	Remaining issues on closed loop power control	Ericsson
R1-1805205	Power control for UL MIMO	Ericsson