**3GPP TSG-RAN2 Meeting #110-e *R2-200xxxx***

**Online, , 1st Jun 2020 - 12th Jun 2020**

**Agenda Item:** **6.19.1**

**Source: China Telecom**

**Title:** **Report of [AT110e][026][Other] UL Tx switching (China Telecom)**

**Document for: Discussion and decision**

# Introduction

This report is for email discussion

* [AT110e][026][Other] UL Tx switching (China Telecom)

Scope: Treat R2-2004375, R2-2004328, R2-2005219, R2-2004756, R2-2005220, R2-2005222 (proponents are responsible to explain and drive)

Part 1: Identify agreeable changes. Deadline: June 4, 0700 UTC. (Remaining parts if needed can be revisited on-line).

Part 2: For agreeable parts, continuation to agree CRs. Deadline: June 10, 0700 UTC

The related documents are list as below

[R2-2004375](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004375.zip) LS on UE capability on DL interruption for UL Tx switching (R4-2005665; contact: Apple) RAN4 LS in Rel-16 NR\_RF\_FR1 To:RAN2 Cc:RAN1

[R2-2004328](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004328.zip) Reply LS on UE Tx switching period delay and DL interruption (R1-2002960; contact: Apple) RAN1 LS in Rel-16 NR\_RF\_FR1 To:RAN4 Cc:RAN2

[R2-2005219](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005219.zip) Report of [Post109bis-e][045][R16 Other] UL TX Switching-NR\_FR1 (China Telecom) China Telecommunications discussion

[R2-2004756](file:///D:/Documents/3GPP/tsg_ran/WG2/RAN2/2005_R2_110-e/Docs/R2-2004756.zip) Remaining issues on UL switching Apple, China Telecom discussion Rel-16 NR\_newRAT-Core

[R2-2005220](file:///D:/Documents/3GPP/tsg_ran/WG2/RAN2/2005_R2_110-e/Docs/R2-2005220.zip) 38331CR for UE capability and RRC configuration of supporting UL Tx switching China Telecommunications CR Rel-16 38.331 16.0.0 1659 - B NR\_RF\_FR1

[R2-2005222](file:///D:/Documents/3GPP/tsg_ran/WG2/RAN2/2005_R2_110-e/Docs/R2-2005222.zip) 38306CR for UE capability of supporting UL Tx switching China Telecommunications CR Rel-16 38.306 16.0.0 0328 - B NR\_RF\_FR1

# Discussion

## 2.1 potential agreeable changes

In RAN2#109bis-e meeting the following conclusion for UL TX Switching-NR\_FR1 was achieved via online discussion

* In configuration indicate the UL carrier pair (a carrier on one band and another carrier on the other band) for UL Tx switching.
* In configuration indicate switching period (i.e., UL interruption) in *UplinkConfig*.
* to use UE capability filter for UL Tx switching capability reporting.
* R2 assumes that in configuration, we’d have explicit indicating that which carrier is carrier1, which carrier is carrier2.
* New or existing band combination list, under which the UE capabilities associated with UL Tx switching are reported, decide next meeting

In the email discussion [Post109bis-e][045], most companies had consensus views on the following proposals **Proposal 1-3**. The detailed discussion for the proposals can refer to the report of the discussion [1].

**Proposal 1: to introduce a new band combination list, under which the UE capabilities associated with UL Tx switching are reported.**

**Proposal 2: reporting capability on each UL band pairs per BC that supports UL Tx switching.**

**Proposal 3: introducing a capability reporting DL interruption, which is defined as per band per band combination for each band pair supporting UL Tx switching.**

During the draft CR discussion, a slight tendency is to report the capabilities for switching period and DL interruption (in proposal 3) only for the band pairs with UL Tx switching capability.

For the capability which reports the supported option in UL CA case where UE supports UL Tx switching, the level of the capability was controversial [1]. According to RAN1 updated conclusion, the capability was defined as per BC.

**Proposal 4: introducing a per BC capability which reports the supported option (between option 1 or option 2, as specified in TS 38.214) in UL CA case where UE supports UL Tx switching.**

Q1: can we agree the above proposals Proposal 1-4?

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments if there is any |
| Ericsson | Yes | We would prefer reporting capability on a single UL band pair per BC, but we recognize the overwhelming majority and the need to close this. The proposals are acceptable to us. |
| CATT | Yes |  |
| Nokia, Nokia Shanghai Bell | Yes with some clarifications | **P2:** We assume that only those carriers for which UL is simultaneously allowed (i.e.UL+UL or UL+SUL) can be paired here.  **P3:** We are fine with this but just like with single UL, we should note that it’s up to RAN4 on which DL carriers the interruption is allowed for a given UL Tx switching case.  **P4:** As we indicated in the email discussion, using generic names like “option 1” and “option 2” is a bad practice: Yes, those are often used during the discussion but once we define the capabilities, it’s necessary that the options describe the behaviour. That’s why we think using e.g. “switchedUL” (option 1) and “dualUL” (option 2) is more meaningful. |
| MediaTek | Yes | On P4 we agree with Nokia that using a meaning full naming is better. But for proposal itself is fine, we could further discuss the naming in the CR. |
| Huawei | Yes | We agree with the four proposals. We can further work on the CR details, e.g. capability names and descriptions in phase 2 discussion. |
| ZTE | Yes | Regarding the naming of option1 and option2, the suggestion from Nokia looks good to us. |
| OPPO | Yes |  |
| Apple | Yes |  |

## 2.2 other issues

There were some other issues in the discussion [Post109bis-e][045], some of which we did not have enough time to discuss.

Companies are welcome to provide issues and proposals if the raised issues still remain or there are other new ones. Especially for the issues having potential impact for the CRs, signalling examples for the CRs would be appreciated.

Q2: Do companies have any other issues or proposals? If so, they can be provided below.

|  |  |
| --- | --- |
| Company | Issues/Proposals |
| Ericsson | We think we have to discuss also how to make UE capability coordination between MN and SN for EN-DC/NR-DC cases, since a new band combination list is added and the current signalling for *allowedBC-ListMRDC* cannot signal band combination entries from this new band combination list. Probably something similar as the approach we adopted for *supportedBandCombinationListNEDC-Only* could work. |
| Nokia, Nokia Shanghai Bell | It needs to be made clear in the CR that the so-called “Case 1” functionality only applies when the UL Tx switching is configured: With legacy configuration, UE still behaves according to legacy (i.e. it is capable of UL transmission on both carriers involved in the UL Tx switching as per Rel-15 operation). |
| MediaTek | The CR in general need more detail discussion. We could further work on this once we agree P1 to P4. |
| OPPO | Even though we agreed on the new BC list, it is good to clarify the intended capability to be reported in the legacy BC list and the new BC list, which is not crystal clear yet. |
| Apple | Agree with OPPO that we should clarifty how UE report UE capabilities for legacy BC list and new BC list, which is discussed in our paper R2-2004756. But we could discuss those details in the second phase as long as it does not impact the CR drafting. |

# Summary

# References

[1] R2-2005219 Report of [Post109bis-e][045][NR16 Other] UL TX Switching-NR\_FR1 (China Telecom)

[2] [R2-2002531](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_109bis-e\Docs\R2-2002531.zip), LS on UE Tx switching period delay and DL interruption (R4-2002816; contact: Apple), RAN4

[3] R2-2004358, LS on Rel-16 RAN1 UE features lists for NR (R1-2003072; contact: NTT DOCOMO, AT&T)

[4] R2-2004375, LS on UE capability on DL interruption for UL Tx switching (R4-2005665; contact: Apple)