3GPP TSG-RAN WG2 Meeting #112-e R2-20xxxxx

Electronic, 02 November - 13 November 2020

Agenda item: 6.15

Source: Apple

Title: Summary on [AT112-e][023][R4 NR16] UL 7.5kHz Shift (Apple)

Document for: Discussion

# 1 Introduction

This document is to capture offline discussions for the below.

* [AT112-e][023][R4 NR16] UL 7.5kHz Shift (Apple)

Treat R2-2008740, R2-2009466, R2-2009467, R2-2009468, R2-2009469, R2-2009470, R2-2009471, R2-2009700, R2-2009701, R2-2010227

Intended outcome: Intermediate: Determine agreeable parts. Final: For agreeable parts, agreed CRs.

Deadline: Intermediate deadline(s) by Rapporteur, Final: Discussion stop at Wed Nov 11, 1200 UTC

# 2 Contact Information

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# 3 Discussion

There were recently some discussions in RAN4 on UL 7.5kHz shifting especially on whether UE is mandatory to support it on NR TDD spectrums for dynamic spectrum sharing. This topic is in response to RAN4 LS R4-2011746 [1] which proposes that RAN4 understanding is if a UE does not support UL 7.5kHz shift for the given network configuration, the UE should avoid camping on this cell and consider this cell as barred.

R2-2009466 [2] presents three alternatives to introduce the access barring mechanism. R2-2009701 [3] proposes a way similar to the 3rd alternative in R2-2009466 [2]. While R2-2010227 [10] has a different view and thinks that there is no need to prevent UE camping in RAN2 specification for TDD 7.5kHz shift function for Rel-16 onwards UEs. And for Rel-15 UE which supports the TDD bands but not support 7.5kHz shift, R2-2010227 [10] proposes to rely on RAN4 spec [38.101] which specifies that “A UE that does not support it will be unable to communicate with a network that signals Δshift = 7.5 kHz.” and there is no need of RAN2 spec change to support UL 7.5kHz shift for TDD bands.

**Q1: Should we change RAN2 spec to support the RAN4 agreement that if a UE does not support UL 7.5kHz shift for the given network configuration, the UE should avoid camping on this cell and consider this cell as barred?**

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| Company | Yes/No | Comments |
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**Q2: Do you think we should introduce a solution to let legacy Rel-15 UE to properly bar the cell configured with UL 7.5kHz shift?**

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| Company | Yes/No | Comments |
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**Q3: If the answer to Q2 is Yes, which alternative is preferred?**

* **Approach 1: Alternative 1 in R2-2009466**
* **Approach 2: Alternative 2 in R2-2009466**
* **Approach 3: Other approach, please elaborate**

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| Company | Approach | Comments |
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In R2-2009466 [2] and R2-2009700/9701 [8][9], UE capability is raised to support mobility case where UE is handed over from a band without UL 7.5kHz shift to a TDD band with UL 7.5kHz shift. Further, R2-2009466 [2] proposes to have a per SCS UE capability for future proof.

**Q4: Do you agree that a corresponding UE capability for UL 7.5kHz shift is needed? If Yes, should we make it per SCS UE capability?**

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| Company | UE Capability on UL 7.5kHz shift?  (Yes/No) | Per SCS UE capability? (Yes/No) | Comments |
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**Q5: Which Release to start the change in RAN2 spec? If it starts from Rel-16, should it be marked as early implementable?**

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| Company | Starting Release | Early implementable? (Yes/No) | Comments |
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# 4 Conclusions

TBD

# 5 References

1. R4-2011746 LS on clarification for the UE behaviour when UL 7.5kHz shift is optionally supported by a UE
2. R2-2009466 Discussion on UL 7.5kHz shift in NR TDD bands Apple
3. R2-2009467 UL 7.5kHz shifting for NR TDD bands – Alt1 38.331 CR Apple
4. R2-2009468 UL 7.5kHz shifting for NR TDD bands – Alt 2 38.331 CR Apple
5. R2-2009469 UL 7.5kHz shifting for NR TDD bands – Alt 3 38.331 CR Apple
6. R2-2009470 UL 7.5kHz shifting for NR TDD bands 38.306 CR Apple
7. R2-2009471 Draft LS to RAN4 on UE capability for UL 7.5kHz shifting for NR TDD bands in DSS Apple
8. [R2-2009700](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_112-e\Docs\R2-2009700.zip) UE capability for UL 7.5KHz shift in NR TDD with 30KHz SCS Ericsson CR Rel-16 38.306 16.2.0 0433 - F NR\_n48\_LTE\_48\_coex-Core
9. [R2-2009701](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_112-e\Docs\R2-2009701.zip) UE behaviour 1when UL 7.5KHz shift is not supported Ericsson CR Rel-16 38.331 16.2.0 2107 - F NR\_n48\_LTE\_48\_coex-Core
10. [R2-2010227](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_112-e\Docs\R2-2010227.zip) Discussion on supporting 7.5KHz shift for TDD bands Huawei, HiSilicon discussion Rel-16 NR\_n48\_LTE\_48\_coex-Core