3GPP TSG-RAN Meeting #90-eRP-20xxxx

Electronic Meeting, 7-11 December 2020

Agenda Item: 9.11

Source: Email discussion moderator (Intel)

Title: Report from Email Discussion [90E][36][SUL\_UL-DL]

Document for: Discussion and decision

# 1 Introduction

This documents reports on the following email discussion during RAN#90-e:

**[90E][36][SUL\_UL-DL]**

Goal: Generate an agreeable way forward.

Input contributions covered: RP-202747.

## 2 Initial Round

The tdoc RP-202747 makes 2 proposals:

**Proposal 1:**

* **RAN to decide between Option 1 and Option 2**
  + **Option 1: DL/UL configuration will not be introduced for SUL**
  + **Option 2: DL/UL configuration will be introduced for SUL**

**Proposal 2:**

* **In case Option 1 is chosen**
  + **From the capabilities, and all other perspectives, SUL is treated as FDD**
* **In case Option 2 is chosen** 
  + **From the capabilities and all other perspectives, SUL is treated the same as the band it shares frequency with (in case there are multiple such bands, RAN4 can make the determination which duplex mode is to be considered)**

Proposal 2 is reliant on the outcome of Proposal 1 and so for the initial round of discussion companies are requested to provide their views on Proposal 1 only. After making some conclusion on proposal 1 the discussion can be expanded to cover proposal 2.

Companies feedback related to Proposal 1.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei | Option 1.  In RAN4 it is clear that SUL, SDL, FDD and TDD are four different duplex mode and the corresponding bands are specified. And in WID for SUL on 2.3GHz and 1.9GHz, it is clear that those bands are purely uplink.  And RAN4 finalized all the SUL bands with the frequency range corresponding to TDD bands based on the assumption that all slots are available for UL on the SUL band as clearly shown in the agreed CRs. So only Option 1 is aligned with RAN4 assumption in Rel-16.  We do not see there is any agreement to introduce Option 2. Option 2 seems new and can only be considered for later releases, but for Rel-16 there is only one possible choice, i.e., Option 1. |
| Qualcomm | We somewhat prefer Option 1 but would not object to either.  Choosing Option 1 will require overturning a RAN1 decision on considering SUL as TDD when SUL is in a TDD band. |
| vivo | We think option 1 is more straightforward thus preferred. But the question we have is do we make such clarification from Rel-15 or Rel-16?? |
| OPPO | This is tightly coupled with the discussion of [90e][38], where [38] goes for a CR to treat the SUL as FDD, and [36] proposes to add a DL/UL configuration to handle the SUL for TDD case.  In our understanding, although so far the SUL for TDD case is currently not so critical as analysed in 2569, option-2 in proposal-1 is more future proof. Considering the reasoning in 2569, even if we go for introduction of D/U configuration as in option-2 of proposal-1, would the intention of 2569/2570 be also covered, if a full UL configuration is defined / allowed for SUL of TDD band? |
| CATT | Option 1.  Although SUL in TDD band was introduced in Rel-16 but it is clearly stated in the WIDs that the band is dedicated for SUL so there is no co-existence issue. |
| Huawei-2 | We would like to ask Qualcomm which RAN1 agreement you are referring to?  The proposal 1 is too general. When SUL overlaps with paired spectrum, we do not need to discuss applicability of DL/UL configuration. We should be careful about the conclusion.  By the way, we would like to provide more background on what happens for SUL in Rel-16. There are three new SUL bands specified in Rel-16, which corresponds to the frequency range of the existing TDD bands (n95, n97 and n98), as shown in our paper RP-202569. Take n98 for an example. In the WID RP-201363, it is clearly stated in the justification part that  *Band n39 with frequency range* *1880-1920MHz is an NR TDD band. There are no co-existence issues in n39/B39 and in China there is only one operator deployed in 1880-1920MHz. In order to meet the potential network deployment request of operator, a new SUL band (1880-1920MHz) will be defined under this WI*.  In the objective part, it is stated that  *NOTE: all the slots can be used as UL in this SUL band*.  In the agreed CR R4-2014330, there is a note  *NOTE 15: The requirements for this band are applicable only where no other NR or E-UTRA TDD operating band(s) are used within the frequency range of this band in the same geographical area. For scenarios where other NR or E-UTRA TDD operating band(s) are used within the frequency range of this band in the same geographical area, special co-existence requirements may apply that are not covered by the 3GPP specifications.*  So it is clear that in Rel-16 only Option 1 is the assumption based on which the work is done. Thus we prefer to adopt Option 1 and finalize the Rel-16 work. If companies still are interested in this work, we can discuss the other option in the future release. |
| ZTE | At this point, we are open to consider either Option1 or Option2 but we would like to first understand what each of these options implies. So we have the following questions:   1. Is it a common understanding that each of these Options implies what proposal 2 has? 2. Regardless of which option we decide, do we assume the same principle across the specs including e.g. TDD/FDD differentiation for UE capabilities and UE behaviour on SUL defined in the specs? 3. Is it a common understanding on the statements in the WID highlighted by Huawei above that the potential co-existence issue for the scenarios where SUL is overlapped with TDD operation does not exist? Based on the WID, it seems that such scenarios may still exist but it is just that special co-existence requirements for such scenarios are not covered by the 3GPP RAN4 spec. Then when RAN1 specs are designed, should it be based on the assumption that this co-existence issue does not exist? 4. Which RAN1 decision Qualcomm was referring to when they said “considering SUL as TDD when SUL is in a TDD band”? 5. Which release(s) does this proposal apply to? |
| Nokia, NSB | We are fine to go with Option 1 if that is indeed the majority preference, but with this option it would be good to clearly note that the specifications do not support SUL on a TDD band that has any bi-directional operation on that band. One also needs to address consistency with the related RAN1 agreements, as pointed out by Qualcomm, as well as ensure that RAN4 work including co-existence should also take this into account. |

## Annex: Contacts

Please provide a company contact that the email discussion moderator can contact if required.

|  |  |
| --- | --- |
| **Company** | **Contact name and email** |
| Huawei | Xizeng Dai, daixizeng@huawei.com |
| Qualcomm | pgaal@qti.qualcomm.com |
| vivo | panxueming@vivo.com |
| OPPO | qianxi.lu@oppo.com |
| CATT | xingyanping@catt.cn |
| Nokia | Cassio, cassio.ribeiro@nokia.com |
|  |  |