**3GPP TSG RAN WG1 #100bis R1-** **200xxxx**

**e-Meeting, April 20th – 30th, 2020**

**Agenda item:** 6.2.2.4

**Source:** Moderator (Qualcomm Incorporated)

**Title:** Email discussion [100b-e-LTE-NB\_IoTenh3-Coex-NR-04]

**Document for:** Discussion and Decision

# Background

This document contains the discussion for the following:

[100b-e-LTE-NB\_IoTenh3-Coex-NR-04] Email approval of the reply LS for R1-2001518 for both eMTC and NB-IoT by 4/23 – Alberto (Qualcomm)

The following tdocs have been submitted to this agenda item regarding this LS:

* [R1-2001848](ftp://ftp.3gpp.org/tsg_ran/WG1_RL1/TSGR1_100b_e/Docs/R1-2001848.zip) Discussion on RAN2 LS on NR coexistence ZTE
* [R1-2002502](ftp://ftp.3gpp.org/tsg_ran/WG1_RL1/TSGR1_100b_e/Docs/R1-2002502.zip) On the LS on NR coexistence for NB-IoT/eMTC Ericsson
* [R1-2002602](ftp://ftp.3gpp.org/tsg_ran/WG1_RL1/TSGR1_100b_e/Docs/R1-2002602.zip) Draft reply LS on NR coexistence Huawei, HiSilicon
* [R1-2002175](ftp://ftp.3gpp.org/tsg_ran/WG1_RL1/TSGR1_100b_e/Docs/R1-2002175.zip) Coexistence of LTE-MTC with NR Qualcomm Incorporated
* [R1-2002177](ftp://ftp.3gpp.org/tsg_ran/WG1_RL1/TSGR1_100b_e/Docs/R1-2002177.zip) Coexistence of NB-IoT with NR Qualcomm Incorporated

# Question 1

***Question 1: For NB-IoT, which, if any, resource reservation parameters for NR are likely to be the same across different carriers?***

***Question 1.1: If some resource reservation parameters for NR can be same across different NB-IoT carriers then can all the parameters be the same for all the NB-IoT carriers configured via dedicated signalling?***

* **Ericsson:** Not all carriers have the same configuration, but not every carrier will have a different configuration – RAN2 can configure each carrier selected from a small set (e.g. two) of different configurations. Additionally, it should be possible to disable resource reservation for a given carrier.
* **ZTE:** None of the resource reservation parameters are likely to be the same for different carriers (regardless of these being configured by dedicated signaling or not).
* **Huawei:** It should be allowed that all the resource reservation parameters are different.
* **Qualcomm:** Periodicity/startPosition/subframe(slot) level resource/time domain reservation can be cell common. Bitmaps may be different for different carriers – a default parameter can be provided in SIB, which may be overridden by dedicated signaling.

**Q1-1: Is it acceptable to have common values for periodicity / startPosition / time domain reservation across different carriers?**

* + **Option 1: They are likely to be common, but they may be different.**
  + **Option 2: RAN2 can assume that these values are common.**
  + **Option 3: None of these values are likely to be common.**

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| **Company name** | **Comment** |
| ZTE | Option 3  Different coexistence scenarios may occur for different non-anchor carriers. Some NB-IoT non-anchor carriers may be in the frequency region that NR SSB locates while other NB-IoT non-anchors carriers are not overlapped with NR SSB frequency region. In addition, since high priority periodic NR service in one frequency region may be different from another frequency region, to meet the flexible reservation requirement of each NB-IoT carrier, periodicity/startPosition/time domain reservation across different carriers should allow different configurations. |
| Qualcomm | Option 2 |
| Nokia, NSB | Our view is that it should be possible to configure different parameters for different carriers. Some parameters like periodicity and startPosition may be common across some carriers.  Option 1 is closest to our view, but we would still like the ability to configure each carrier independently. |

**Q1-2: Is it acceptable to have any of the following signaling optimizations?**

* + **Option 1: Override SIB parameters by unicast RRC.**
  + **Option 2: Signal a small set of configurations in SIB. Each carrier includes a pointer to one of these configurations**

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| **Company name** | **Comment** |
| ZTE | It seems the question is out of the scope of LS response. |
| Qualcomm | Option 1, Option 2 could also be acceptable |
| Nokia, NSB | We don’t support Option 1. We feel Option 2 is somewhat limiting but may be acceptable. |

# Question 2

***Question 2: For NB-IoT and eMTC, which, if any, parameters are likely to be the same for uplink and downlink?***

* **Ericsson, ZTE:** It cannot be assumed that any parameters are likely to be the same.
* **Huawei:**
  + For NB-IoT and eMTC, periodicity / startPosition/subframeBitmap/slotBitmap may be common for uplink and downlink.
  + For eMTC, symbolBitmap may be the same for downlink and uplink.
* **Qualcomm:** It is desirable to configure uplink and downlink separately.

**Q2-1: On common values for periodicity / startPosition / subframeBitmap/slotBitmap for uplink and downlink, plus additionally symbolBitmap for eMTC:**

* + **Option 1: They are likely to be common, but they may be different.**
  + **Option 2: RAN2 can assume that these values are common.**
  + **Option 3: None of these values are likely to be common.**

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| **Company name** | **Comment** |
| ZTE | Option 3  Potential intention of introducing DL resource reservation is to avoid collision with NR SSB, NR CORESET and NR DL SPS. Potential intention of UL resource reservation may be to avoid collision with NR SRS and NR UL SPS. Even for SPS, since the characteristic of DL SPS and UL SPS may be different, resource reservation configurations for NR DL and UL SPS may not be the same. |
| Qualcomm | Option 3, Option 1 would also be acceptable. |
| Nokia, NSB | Option 3 |

# Question 3

***Question 3: For NB-IoT and eMTC, which, if any, parameters are likely to be the same in neighbour cells on the same carrier frequency?***

* **Ericsson, ZTE:** It cannot be assumed that any parameters are likely to be the same.
* **Huawei:** If the same SSB pattern is configured in neighbor cells, resource reservation are the same in the same carrier frequency.
* **Qualcomm:** In some cases, the same resource reservation may be present in the same carrier frequency, but it should be possible to override (e.g. with delta configuration)

**Q3-1: Can parameters be common across neighbor cells?**

* + **Option 1: They are likely to be common, but they may be different.**
  + **Option 2: They may be common depending on the deployment and configurations.**
  + **Option 3: None of these values are likely to be common.**

**In all cases, RAN2 should provide signaling support to indicate different patterns.**

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| **Company name** | **Comment** |
| ZTE | Option 3  Different neighbour cells on the same carrier frequency may have different coexistence scenario. |
| Qualcomm | Option 2. |
| Nokia, NSB | Option 2 |

# Draft LS response <To be drafted after receiving responses>