**3GPP TSG-RAN WG4 Meeting # 111**  **R4-240xxxx**

**Fukuoka , Japan, 20th – 24th May, 2024**

**Title:** LS on inconsistent issue between extended k1 range and RRC parameter DL-DataToUL-ACK-v1700 for R17 NTN

**Release:** Rel-18

**Study Item:** NR\_ATG

**Source:** TSG RAN WG4

**To:** TSG RAN WG2

**Cc:** TSG RAN WG1

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**Attachments:** None

**1. Overall Description:**

R18 ATG introduced the k1 extension UE capability *k1-RangeExtensionATG-r18*, which is basically same as R17 NTN UE capability *k1-RangeExtension-r17*, to indicate whether the UE supports extended K1 value range of (0..31) for unpaired spectrum, as defined in TS 38.306.

It is natural that R18 ATG could reuse the related RRC parameter for k1 which was introduced in R17 NTN WI. However, when RAN4 do such reusing work, RAN4 identified the inconsistent issue between extended k1 range and RRC parameter DL-DataToUL-ACK-v1700 for R17 NTN. We give our observations as following for information:

The k1 range for R17 NTN (the WI implicitly compatibility to support ATG) was agreed to be extended to (0...31) in RAN1#104-e

Agreement from RAN1#104:

For unpaired spectrum, extend the value range of K1 from (0..15) to (0..31)

The current range of DL-DataToUL-ACK-v1700 is(16...31), based on following signaling design and description.

dl-DataToUL-ACK SEQUENCE (SIZE (1..8)) OF INTEGER (0..15) OPTIONAL, -- Need M

*Unrelated parts skipped*

DL-DataToUL-ACK-r16 ::= SEQUENCE (SIZE (1..8)) OF INTEGER (-1..15)

DL-DataToUL-ACK-r17 ::= SEQUENCE (SIZE (1..8)) OF INTEGER (-1..127)

DL-DataToUL-ACK-v1700 ::= SEQUENCE (SIZE (1..8)) OF INTEGER (16..31)

DL-DataToUL-ACK-DCI-1-2-r16 ::= SEQUENCE (SIZE (1..8)) OF INTEGER (0..15)

DL-DataToUL-ACK-DCI-1-2-r17 ::= SEQUENCE (SIZE (1..8)) OF INTEGER (0..127)

UL-AccessConfigListDCI-1-1-r16 ::= SEQUENCE (SIZE (1..16)) OF INTEGER (0..15)

UL-AccessConfigListDCI-1-2-r17 ::= SEQUENCE (SIZE (1..16)) OF INTEGER (0..15)

UL-AccessConfigListDCI-1-1-r17 ::= SEQUENCE (SIZE (1..3)) OF INTEGER (0..2)

DL-DataToUL-ACK-MulticastDCI-Format4-1-r17 ::= SEQUENCE (SIZE (1..8)) OF INTEGER (0..15)

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| ***dl-DataToUL-ACK, dl-DataToUL-ACK-DCI-1-2***List of timing for given PDSCH to the DL ACK (see TS 38.213 [13], clause 9.1.2). The field *dl-DataToUL-ACK* applies to DCI format 1\_1 and the field *dl-DataToUL-ACK-DCI-1-2* applies to DCI format 1\_2 (see TS 38.212 [17], clause 7.3.1 and TS 38.213 [13], clause 9.2.3). The *dl-DataToUL-ACK-v1700* is applicable for NTN and *dl-DataToUL-ACK-r17* is applicable for up to 71 GHz. If *dl-DataToUL-ACK-r16* *or dl-DataToUL-ACK-r17* or *dl-DataToUL-ACK-v1700* is signalled, UE shall ignore the *dl-DataToUL-ACK* (without suffix). The value -1 corresponds to "inapplicable value" for the case where the A/N feedback timing is not explicitly included at the time of scheduling PDSCH.The fields *dl-DataToUL-ACK-r17* and *dl-DataToUL-ACK-DCI-1-2-r17* are only applicable for SCS of 480 kHz or 960 kHz. |

RAN4 think this valid issue belongs to R17 maintenance which need to be firstly discussed and addressed in RAN2.

**2. Actions:**

**To RAN2**

**ACTION:** RAN4 kindly requests RAN2 to above information into consideration, and address the inconsistent issue between k1 range and RRC parameter DL-DataToUL-ACK-v1700 for R17 NTN.

**3. Date of Next TSG-RAN WG4 Meetings:**

TSG-RAN WG4 Meeting #112 19 Aug - 23 Aug 2024 Maastricht , NL

TSG-RAN WG4 Meeting #112bis 14 Oct - 18 Oct 2024 China (TBC) , CN