**3GPP TSG RAN WG1 Meeting #121 R1-25xxxxx**

**St Julian’s, Malta, May 19th – 23rd, 2025**

**Title:** [Draft]Draft LS on Low NR band carrier aggregation via switching

**Response to:**

**Release:** Release-19

**Work Item:** NR\_LBCA\_Sw

**Source:** Apple [To be RAN1]

**To:** RAN2, RAN4

**Cc:**

**Contact person:**

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**Attachments:** None

# Overall Description

RAN1 would like to inform RAN2 and RAN4 of the following agreements related to Low NR band carrier aggregation via switching

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| --- |
| Agreement* For Rel-19 low NR band carrier aggregation via switching, support only semi-static configuration of switching pattern to a UE based on UE-specific RRC configuration between the following two cases
* Case 1: Tx/Rx on FDD carrier 1 and no Rx on SDL carrier 2
* Case 2: Rx on SDL carrier 2 and no Tx/Rx on FDD carrier 1
* FDD carrier 1 is PCell and SDL carrier 2 is SCell
* SCS 15KHz on both carriers

AgreementFor RRC configuration of semi-static switching pattern in Rel-19 low NR band carrier aggregation via switching, it is not expected that the same slot (1ms) contains both symbol(s) configured as FDD carrier and symbol(s) configured as SDL carrier. AgreementFor Rel-19 low NR band carrier aggregation via switching, the semi-static switching pattern and corresponding switching gap are based on the downlink timing (DL reception time at UE side) of Pcell.AgreementFor RRC configuration of semi-static switching pattern in Rel-19 low NR band carrier aggregation via switching, the time unit (resolution) of the semi-static switching pattern configuration is slot (1ms for 15kHz SCS).Agreement* For RRC configuration of semi-static switching pattern in Rel-19 low NR band carrier aggregation via switching, support bitmap design
	+ NW configures a periodicity, denoted as slots, and a bitmap of P bits. Each bit in the bitmap indicates which carrier is configured for the corresponding slot, ‘0’ indicates FDD carrier 1, and ‘1’ indicates SDL carrier 2

* + The pattern starts from the beginning of SFN 0 of PCell
* Restriction of maximum X switch(es) within Y slot(s),
	+ FFS: detailed value and relation of X and Y.
* FFS: other restriction

AgreementFor RRC configuration of semi-static switching pattern in Rel-19 low NR band carrier aggregation via switching, regarding the location of the switching gap, * For switching from SDL carrier to FDD carrier, the switching gap is always assumed at the “switch from” carrier, i.e., SDL carrier.
* For switching from FDD carrier to SDL carrier, downselect one of the following solutions
	+ Alt 1: Switching gap is always assumed at the “switch from” carrier, i.e., FDD carrier
	+ Alt 2: NW configures whether the switching gap is at the FDD carrier or SDL carrier
	+ Alt 3: Switching gap is always assumed at the SDL carrier

AgreementFor RRC configuration of semi-static switching pattern in Rel-19 low NR band carrier aggregation via switching, semi-static switching pattern is periodic with periodicity of P slots (ms), support P= 40 msAgreementFor RRC configuration of semi-static switching pattern in Rel-19 low NR band carrier aggregation via switching, the duration of the switching gap is RRC configured by the NW,* Switching gap duration can be different for FDD to SDL switch, and SDL to FDD switch.
* Note: NW ensures that the switching gap is enough to cover at least the switching period as in RAN4 LS (R1-2501702) and UL TA (if needed)
	+ For the UL TA,
		- Switching gap for SDL to FDD switch ends at the end of slot on SDL
			* Note: RAN1 assumes that switching gap for SDL to FDD switch includes UL TA
		- FFS: whether it has specification impact
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# Actions

**To RAN2:**

**Action:** RAN1 respectfully asks RAN2 to take the above agreements into account.

**To RAN4:**

**Action:** RAN1 respectfully asks RAN4 to take the above agreements into account.

# Dates of Next TSG-RAN1 Meeting

RAN1 #122 25 August – 29 August 2025 Bengaluru, India

RAN1 #122bis 13 October – 17 October 2025 Prague, Czech Republic