3GPP TSG-RAN WG4 Meeting #112bis R4-24170912

Hefei, China, October 14th – 18th, 2024

**Agenda item:** 6.4.4

**Source:** Intel Corporation

**Title:** WF on UE RF requirements for Rel-19 NR channel BW less than 5MHz for FR1 Phase 2

**Document for:** Approval

# Topic #1: UE RF requirements for inter-band NR CA/DC with less than 5MHz CBW

## Sub-topic 1-1 Scell SSB position restrictions (Sync raster applicability)

### Issue 1-1-1: SCell SSB position restrictions

* Tentative agreement
	+ Update RAN4 #112 agreement as follows:
		- SCell with 15 PRB transmission bandwidth configuration within 3 MHz channel can be configured only with SS Block frequency position same as defined in TS 38.101-1 Table 5.4.3.1-2
		- For band n100
			* SCell with 12 PRB transmission bandwidth configuration within 3 MHz channel can be configured only with SS Block frequency positions same as defined in TS 38.101-1 Table 5.4.3.1-3
			* SCell with 20 PRB transmission bandwidth configuration within 5 MHz channel can be configured only with SS Block frequency positions same as defined in TS 38.101-1 Table 5.4.3.1-3
		- Capture corresponding restrictions as notes in TS 38.101-1 TS 38.101-1 Table 5.4.3.1-2 and Table 5.4.3.1-3

## Sub-topic 1-2 UE Capability signalling

RAN4 #112 agreements are provided below:

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| * Options for further discussion
	+ Option 1: Request RAN2 to introduce UE capability signaling to enable less than 5MHz CBW operation for CA/DC
		- The following Rel-18 capabilities for NR less than 5MHz CBW operation need to be extended or new capabilities defined to enable CA/DC operation scenario with one or more component carriers with less than 5MHz CBW
			* [support12PRB-CORESET0-r18]
			* [support3MHz-ChannelBW-Asymmetric-r18]
			* [support3MHz-ChannelBW-Symmetric-r18]
			* [support5MHz-ChannelBW-20PRB-CORESET0-r18]
			* [support12PRB-CORESET0-GSCN-41637-r18]
		- UE capability signalling granularity is FFS
		- The respective UE capabilities shall be early-implementable from Rel-18
		- The details including whether to update existing Rel-18 capabilities or introduce new Rel-19 capabilities are up to RAN2
	+ Option 2: Do not introduce new UE capability signaling to enable less than 5MHz CBW operation for CA/DC
		- RAN4 to define BCSs for band combination CA\_n100A-n101A or combinations with other band where 3 MHz is supported as usual where 3MHz / 5MHz channel bandwidths are listed for each band. BCS5 with supportedMinBandwidthUL-r17 set to 5 MHz can be used to indicate that a UE supports CA channel BWs other than 3 MHz for a given band.
		- RAN2 specs need to remove “This feature is only applicable to single-carrier operation from Rel-19. RAN2 to confirm no NBC issues.
		- No new RAN2 UE capability signaling is required.”
	+ Other options are not precluded
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### Issue 1-2-1: UE capability signalling

* Tentative agreement
	+ Option 1:
		- UE needs to be able to indicate for each carrier in the CA/DC band combination whether it supports less than 5 MHz bandwidth operation
			* To declare the support of less than 5 MHz bandwidth operation in the CA/DC band combination UE needs to indicate
				1. UE capabilities defined for NR < 5MHz in Rel-18 with existing granularity (per Band or per UE)
				2. BCS including carriers with less than 5 MHz operation for the band combination
		- UE should be capable to support CA/DC with less than 5MHz starting from Rel-18
		- The signalling details including whether to update existing capabilities or define new ones are up to RAN2