Introducing a new band number is a well-known technique for RAN4, which has been used to differentiate between different (sub-)bands or portions thereof already in 3G WCDMA specifications.

One technique to address the issue of adding regional sub-bands within an existing 3GPP band is for 3GPP to define a new band or new band number for the added sub-bands. 3GPP would pro-forma select a new band number based on regional frequency allocations within an existing 3GPP band, referred to as the parent band.

To avoid that a legacy device supporting only the parent band (but not the new band or band number) will camp on a cell in the new sub-band, the network should only indicate the new band or band number on cells in the new sub-band.

Current specifications ensure that if a cell is broadcasting a band number that UE doesn’t support, that UE will not be camping on the cell. The technique of a new band number is therefore ensuring that UEs which are not complying to the requirements of the new sub-band will not camp on or access the cell in such sub-band. And the gNB sees from UE capabilities the bands that the UE supports and hence the gNB knows if the UE can be handed over to a cell in the new sub-band.

For this technique, the new band or new band number would reference the parent band for RF requirements. It should be mandated that the new band or band number can only be supported by a UE which also supports the associated parent band. Furthermore, adding a new band or band number normally triggers introduction of new band combinations, which would add many new band combinations to the specification and UE capability signalling. To ensure that UE capability signalling is not adversely impacted by the number of supported band combinations, this technique requires that the new band number corresponding to the new sub-band has a reference to the parent band for signalling carrier aggregation (CA) and dual-connectivity (DC) band combinations.

This technique requires no new signalling and can work for any release UEs, but it does change the semantics of 3GPP frequency bands and 3GPP should clarify the association between a new band or new band number and their parent band in signalling requirements. If applied, the new band or new band number approach is applied, 3GPP RAN4 should:

• Consider accommodations for cases where the UE subset support precludes the possibility to test some MSD exceptions.

• Ensure that the number of new band definitions does not exhaust the range of possible band numbers.

• Manage the additional procedural work due to the need to approve a new WID for the introduction of a new band introduction.