RP-161143
Agenda Item 9.2.3
3GPP RAN#72
Busan, South Korea

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Unlicensed standalone operations for 5G NR

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Background

One of the objectives from the approved 5G NR study item RP-160671 include:

- …Study and identify the technical features necessary to enable the new radio access to meet objective 1 and 2, also including:
  - Tight interworking between the new RAT and LTE
  - Interworking with non-3GPP systems
  - Operation in licensed bands (paired and unpaired), and licensed assisted operations in unlicensed bands
    - *[Standalone operation in unlicensed bands is FFS]*

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Motivation

- Cellular technology will compete with non-3GPP technologies in 5G bands
  - Non-3GPP technologies targeting 5G unlicensed use cases do not need to be tethered to licensed band
- Unlicensed standalone operations in 5G should be considered as part of 5G NR study item
  - Without study, it is impossible to uncover potential advantages with unlicensed standalone operations
  - For example, it is possible that NR unlicensed standalone mode may provide less interference, and better performance than other non-3GPP technologies for specific use cases
  - We are at an early stage of the NR study. A deliberate comparison with other non-3GPP technologies is merited at this stage
- Depending on the outcome of the study, further decision can be made at a later point to include unlicensed standalone mode in the NR or not

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Possible use cases

- Multi-Dwelling Units (MDUs), hotspots, and other dense small cell deployments
  - Recommend including in the study on how a centrally coordinated unlicensed standalone approach can help reduce interference in the unlicensed band among large numbers of clients and base stations
- Efficient device operation
  - Unlicensed standalone 5G operation needs only the unlicensed radio. Other radios can be used less when standalone is in operation
- Single band for international roaming
  - The unlicensed 5G band is available in many countries, allowing for a single band that can be used for most roaming scenarios
- Potential use with MIoT, D2D

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High level study objectives for unlicensed standalone in 5G NR

- Support fair coexistence mechanisms with other non-3GPP technologies
- Support multiple unlicensed standalone 5G networks in the same band

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Proposal

Propose to update objective in 5G NR SID as follows:

- …Study and identify the technical features necessary to enable the new radio access to meet objective 1 and 2, also including:
  - Tight interworking between the new RAT and LTE
  - Interworking with non-3GPP systems
  - Operation in licensed bands (paired and unpaired), ~~and~~ licensed assisted operations in unlicensed bands, as well as standalone operations in unlicensed bands
    - ~~*[Standalone operation in unlicensed bands is FFS]*~~

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