







- ★ *q-RxLevMin* and *q-QualMin* define the minimum SS-RSRP and SS-RSRQ requirements for the target NR carrier. The RSRQ requirement is optional so may be excluded from SIB24
- ★ *q-RxLevMinSUL* defines a minimum SS-RSRP requirement which is applicable if SIB24 specifies a Supplemental Uplink band and if the UE supports the corresponding Supplemental Uplink band combination. The link budget belonging to a Supplemental Uplink may differ from the link budget for the Normal Uplink. If coverage is uplink limited then *q-RxLevMinSUL* can be adjusted relative to *q-RxLevMin* to reflect the difference in link budgets
- ★ *p-MaxNR* defines the maximum UE transmit power permitted when using a cell belonging to the target NR carrier
- ★ *ns-PmaxListNR* provides a list of up to 8 pairs of {*additionalPmaxNR*, *additionalSpectrumEmissionNR*}. These pairs specify additional spectrum emission requirements which should be satisfied if the UE uses the corresponding maximum transmit power. The values are applicable to the first operating band listed within *multiBandInfoList*
- ★ *deriveSSB-IndexFromCell* indicates whether or not the UE can assume radio frame alignment for all cells belonging to the target NR carrier. Radio frame alignment allows the UE to use the timing belonging to one NR cell to derive the SSB Indices belonging to other NR cells. This helps to reduce measurement delays because it avoids the requirement to decode the PBCH belonging to each individual NR cell
- ★ *maxRS-IndexCellQual* and *threshRS-Index* are used when deriving a ‘cell level’ result from a set of ‘beam level’ measurements. If the target NR cell is configured with multiple SS/PBCH beams then it is necessary to derive a ‘cell level’ result from one or more ‘beam level’ measurements. If *maxRS-IndexCellQual* is excluded, the UE sets the ‘cell level’ result equal to the highest ‘beam level’ measurement. Otherwise, the UE derives the ‘cell level’ result by calculating a linear average of the highest ‘beam level’ measurements which exceed *threshRS-Index*. The maximum number of ‘beam level’ measurements included in the average is defined by *maxRS-IndexCellQual*. If none of the beam level measurements exceed *threshRS-Index*, the ‘cell level’ result is set equal to the highest ‘beam level’ measurement
- ★ *multiBandNsPmaxListNR* provides a list of up to 8 pairs of {*additionalPmaxNR*, *additionalSpectrumEmissionNR*} for each operating band listed within *multiBandInfoList* (with the exception of the first band which is already catered for using *ns-PmaxListNR*). Each list specifies additional spectrum emission requirements which should be satisfied if the UE uses the corresponding maximum transmit power after selecting the corresponding operating band. Similarly, *multiBandNsPmaxListNR-SUL* provides a list of up to 8 pairs of {*additionalPmaxNR*, *additionalSpectrumEmissionNR*} for each operating band listed within *multiBandInfoListSUL*
- ★ *ssb-ToMeasure* specifies the set of SS/PBCH Blocks to be measured within the measurement duration. A short, medium or long bitmap is broadcast according to the frequency range. A short bitmap is broadcast for carriers below 3 GHz (up to 4 SS/PBCH), a medium bitmap is broadcast for carriers between 3 GHz and 6 GHz (up to 8 SS/PBCH), and a long bitmap is broadcast for carriers greater than 6 GHz (up to 64 SS/PBCH). The UE measures SS/PBCH Blocks which correspond to a ‘1’ within the bit string. The UE measures all SS/PBCH Blocks if *ssb-ToMeasure* is excluded from the SIB
- ★ *t-ReselectionNR* defines the time-to-trigger for cell reselection towards NR. *sf-Medium* and *sf-High* define scaling factors for medium and high mobility conditions. *t-ReselectionNR* is multiplied by the appropriate scaling factor when medium or high mobility is detected
- ★ In the case of the EN-DC Non-Standalone Base Station, NR Secondary Cell Addition may be supported from only a subset of LTE carriers. This may result from band combinations which have not been standardised within the 3GPP specifications. It then becomes necessary to move 5G subscribers onto an LTE carrier which supports NR Secondary Cell Addition. This scenario is illustrated in Figure 447
- ★ 5G subscribers can be moved onto the appropriate LTE carrier using RRC Idle mode procedures but it is necessary to ensure that the solution is transparent to non-5G subscribers. The LTE Base Station can receive subscription information within the S1AP: *Initial Context Setup Request*. This message can include an ‘NR Restriction in EPS as Secondary RAT’ flag and also a Subscriber Profile Identity (SPID). The EPC can allocate specific SPID values to 5G subscribers allowing the Base Station to differentiate those subscribers. In addition, the S1AP: *Initial Context Setup Request* includes UE capability information so the Base Station can verify that the subscriber is using a 5G capable device

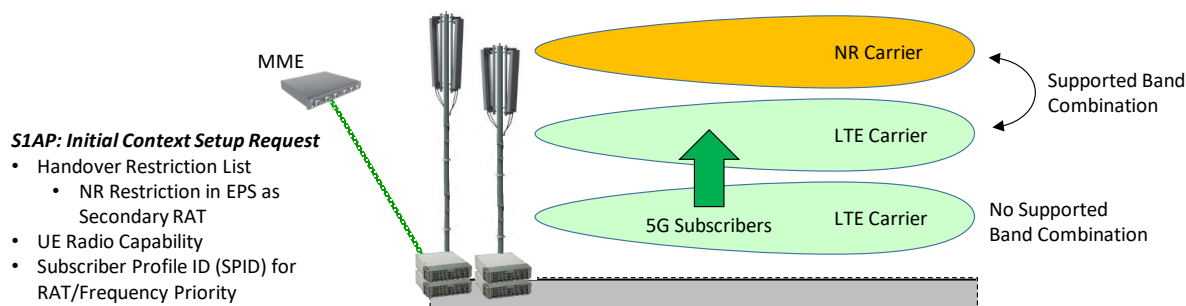


Figure 447 – NR Secondary Cell Addition supported from a subset of LTE carriers

- ★ The LTE Base Station can allocate UE specific Absolute Priorities to the 5G subscribers within the *RRC Release* message. These Absolute Priorities can be configured to ensure that UE move onto an LTE carrier which supports 5G Secondary Cell Addition
- ★ 3GPP References: TS 36.331, TS 36.413, TS 24.301