

ROHDE & SCHWARZ

Make ideas real



THE IMPACT OF 5G NEW RADIO (5G NR) ON CELLULAR NETWORK ANALYSIS (CNA)



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**TREAT 5G NR
AS ANOTHER
TECHNOLOGY?**

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5G NR

CHALLENGES VERSUS POSSIBILITIES

5G NR radio network layouts are much more complex than legacy technologies. New frequency band ranges (24 GHz to 53 GHz or mmWave) and new architecture options (dual connectivity) create new opportunities and challenges for radio network design and analysis. While most features impact mobile network testing (MNT) activities, such as planning, optimization or trouble-shooting, some can also have an impact on cellular network analysis (CNA).

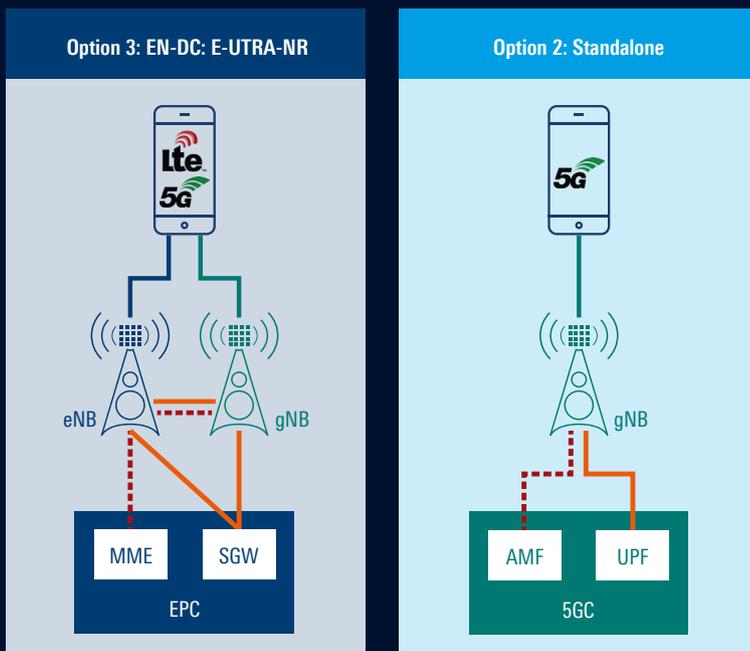


HANDLING 5G NR IN CNA ACTIVITIES

MAIN ASPECTS

- ▶ Two frequency ranges: FR1 (sub 6 GHz) and FR2 (usually between 24 GHz and 53 GHz).
- ▶ In non-standalone (NSA) connectivity, mobile devices are initially connected to an LTE anchor cell, which might use the same antenna or a different tower/site. The control signaling is in the 4G Core and 5G service (data) is only available on top of an existing 4G network.
- ▶ In standalone (SA) connectivity, mobile devices are directly connected to a 5G NR cell, where both control signaling and data transmission use the 5G Core; as seen in previous mobile phone technologies.
- ▶ 5G NR NSA cells might not transmit SIB1 at all, or only partially (e.g. no tracking area code (TAC) content).

eNB is the master node



The two main 5G NR connectivity options as of today



WHAT DOES IT MEAN FOR GOVERNMENT CUSTOMERS HANDLING CNA ACTIVITIES?

New frequency ranges might impact the measurement capabilities of existing systems and require new devices to cover them.

Being unable to identify 5G NR NSA cells does not seriously affect CNA, since critical information is still available in LTE (mainly cell global identities (CGIs)).



ROHDE & SCHWARZ SOLUTION

Handling 5G NR CNA is not easy but NESTOR from Rohde&Schwarz offers simplicity, reliability and efficiency for a comprehensive, yet focused software solution.

Together with the R&S TSMx scanner family, Rohde&Schwarz NESTOR allows demodulation, decoding and spectrum measurements, as well as parallel measurements of FR1 and FR2 with two antennas (the hardware setup is extended to include a downconverter for FR2).

Powerful analysis algorithms drastically reduce the time and technical knowledge required and let the user efficiently focus on data of interest.



APPLICATIONS

Whether determining the network environment, supporting search and rescue, forensics or protecting sensitive areas from misconfigured cells, the solution supports a wide range of CNA activities for fast, reliable and repeatable results.

CONCLUSION

Rohde & Schwarz solutions cover all 5G NR CNA requirements and customers can treat this new technology like any other, since the solution can automatically handle and visualize critical information.

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Rohde & Schwarz

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The impact of 5G new radio on cellular network analysis

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