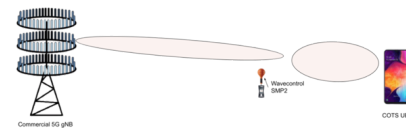


Our knowledge on 5G at your disposal !

SAFER team is showcasing to the general public **how 5G base stations are reducing the amount of electromagnetic radiation emitted to the environment**, using two demos :

- How **steerable active antennas use more efficiently the energy** thanks to their increased directivity (keeping signal-to-noise ratio constant),
- How **increased frequency bands in the mmWave range help to miniaturize, distribute and deploy smaller low-power coverage cells**,
- How the **signal power emitted by the base station has a lower magnitude than the one generated by the user terminal**, and
- How new waveforms and duplexing schemes (FDD vs TDD) decrease the exposure to radiation concerning previous generations of cellular technology.



In addition SAFER team defined **a methodology to evaluate objectively, efficiently, and accurately the level of electromagnetic radiation emitted by 5G active antennas systems**, answering following questions:

- how to account for the spatial dynamics of the antenna radiation pattern,
- how to account for the temporal dynamics of the measurement scenario, and
- contribute to the standardization of the measurement methodology.

4G vs 5G antennas: simplified but representative demonstration videos of experiments

- downlink vs uplink radiation, and
- frequency-selective vs code-selective measurements.

4G Antenna measurements

[Check up the video](#)

5G Antenna measurements

[Check up the video](#)

These videos were recorded during the [5G Connecting Tomorrow conference 2021](#) showing that the over-the-air measured radiated electromagnetic field (V/m) for a 5G-like directive antenna radiates less power as compared to an equivalent 4G-like sectorial antenna.

Other sources of information



Web site: <https://wwwfr.uni.lu/snt/research/sigcom/projects/safer>