



ANSES Opinion on SAR

The recent publication by the French health agency ANSES on the Specific Absorption Rate (SAR) value of mobile phones carried close to the body found that the scientific literature has not established any adverse health effects associated with their use. ANSES did encourage consumers “to comply with the operating instructions (regarding distance) mentioned by manufacturers in the instructions”. In their communication, ANSES also confirmed that “the electromagnetic radiation emissions from mobile telephones corresponded to a "worst case" situation, in which the device was emitting at maximum power throughout the test. In principle, this is not the case under real conditions or use.”¹

The SAR value² is a measure of the amount of RF energy absorbed by the body when using a mobile phone. The SAR values reported for each model of mobile phone tend to significantly overstate real-life exposure levels, as the applicable compliance standards are very conservative³. Furthermore, as recognised by ANSES, the SAR testing of devices is undertaken at maximum power levels under laboratory conditions, whereas in reality they operate at significantly lower power levels, adapting constantly to use the minimum power required to make and receive a call, to maximise battery life.

The low power levels in real-life have been confirmed by several studies of 3G and 4G devices.^{4,5,6,7} For instance the study on 4G devices concluded:

*The mean output powers in all the environments were found to be less than 1% of the maximum available output power. These values are in line with results obtained for 3G UE despite an almost tenfold increase in the achievable peak data throughput.*⁷

All mobile phone models are tested to make sure they meet the relevant national/international RF exposure standards and regulatory requirements before they are placed on the market. The RF exposure standards specify the maximum SAR for wireless communication devices such as mobile phones. An additional safety factor also exists to ensure that all users, including for example children, pregnant women and seniors, can safely use these devices.

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¹ <https://www.anses.fr/en/content/exposure-mobile-telephones-carried-close-body>

² Detailed information on SAR can be found at <http://www.sartick.com>

³ http://www.mwfai.org/docs/eng/111025_MMf_Viewpoint_SARSAMconservativness_final.pdf

⁴ Persson et al., Output power distributions of terminals in a 3G mobile communication network *Bioelectromagnetics.*, Vol. 33, Pg. 320 - 325, 2012

⁵ Wiart et.al. Exposure induced by WCDMA Mobile Phones in Operating Networks, *IEEE Trans on wireless communications* vol 8 No 12 2009

⁶ Dragan Jovanovic et al, Mobile telephones: A comparison of radiated power between 3G VoIP calls and 3G VoCS calls, *Journal of Exposure Science and Environmental Epidemiology* (2015) 25, 80–83

⁷ Paramananda Joshi et al, Output Power Levels of 4G User Equipment and Implications on Realistic RF EMF Exposure Assessments, *IEEE Access*, 2017