

## [Behind the iPhone 12, other smartphones that are too powerful](#)

Audrey Travère, Radio France, Dec 2, 2023 (Google translation from French)

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The iPhone 12, like around forty other smartphones, has been singled out for exceeding regulatory thresholds for radio frequencies.

Temporarily removed from the market in September 2023, the iPhone 12 was only the tip of the iceberg. Since 2017, around forty smartphone models have been singled out for exceeding the authorized radio frequency emission power.

Users of the iPhone 12 (manufactured by Apple) in France learned on September 12 their smartphones were emitting too waves. In fact, the specific absorption rate (SAR) of Apple's smartphone exceeded the authorized limits. This measurement, regulated at European level, makes it possible to quantify the energy of electromagnetic waves emitted by our phones and absorbed by the human body.

But what probably users did not know is that this excess was not new to the supervisory authorities. The National Frequency Agency (ANFR) had been aware of this information for at least two years. Indeed, the test that revealed this non-compliance was carried out in December 2021. Two years in which iPhone 12 users were therefore overexposed to the radio frequencies emitted by their phones.

### **The risk of an American legal counterattack**

Such a delay is not common in this type of procedure.

Another factor has played a role. In these highly codified procedures, there is a period reserved for a contradictory exchange between the

manufacturer of the telephone in question and the ANFR. Once informed, the company has the opportunity to respond and provide its arguments. In the case of the iPhone 12, the ANFR was obliged to respect the procedure to the letter, thus justifying this if long before making the information public. *“If it had deviated from it,”* explains Jean-Noel Barrot, Minister Delegate for Digital Affairs, *“she would have been attacked by Apple’s hordes of lawyers.”*

The ANFRA’s decision to temporarily withdraw the iPhone did not prevent Apple from questioning the methods used by the agency, considering that the removal of its device was *“related to a specific test protocol used by French regulators and not to a safety problem.”* However, the company had to update the aircraft in metropolitan France in order to reduce its emission power and could be marketed again on the territory.

#### **44 other models pinned**

But the iPhone 12 is not the only one to have exceeded the wave emission limits: since 2017, 44 phones have also been judged non-compliant following DAS tests carried out by the ANFR. *“In 36 cases, the manufacturer has made an update to re-enform his phone,”* says Conil. *In six other cases, the manufacturer recalled his products. And in the last two cases, an order was made to recall and withdraw the telephones from the market, since the manufacturer had not taken any corrective action.”*

Manufacturers pinned by the control agency include Alcatel, Wiko, Huawei, Xiaomi, Samsung and Motorola, etc. Since the iPhone 12 episode, two more aircraft have been withdrawn from the market: the Emporia Simplicity V27 and the Doogee S88 PLUS.

#### **Unsuitable tests?**

The ANFR has therefore identified many telephones emitting above the thresholds authorised at European level, even though the method of calculating the DAS tests is considered unsuitable by some experts.

Indeed, a smartphone, in real condition, emits on several frequencies at the same time: 4G, 5G, but also WiFi or Bluetooth. Combined emissions, sometimes called “wavelengths”. However, *“the current technologies do not make it possible to measure these simultaneous broadcasts during the test, explains an industrialist interviewed by Radio France’s investigation unit. During the DAS test, the connected devices do not emit on all these frequencies at once, as is the case when they are used under real-world conditions.”*

Other technical limitations of these tests are singled out. In particular, those of the “trunk DAS”, which corresponds to the transmissions of a telephone placed in a jacket pocket or in a bag. In an opinion delivered in 2019, ANSES – the National Health Security Agency – recommends testing the power of telephones in contact with the body, not five millimetres, as is currently the case, in order to *“represent a realistic situation of exposure”*. In other words, the conditions under which the tests are currently carried out do not take full account of the use of mobile phones.

With ANSES recommendations, the French authorities have requested a review of these standards at European level. In a letter to the European Commission on 20 September 2020, the government said that *“changes in the use of mobile phones are reflected in a wide variety of situations in which phones are no longer just ears to hold a conversation. (...) (...) There is also an increasing interconnection of telephones with multiple connected objects, such as helmets or watches, which promote prolonged connections of the telephone to the mobile network without being held by hand: it is often worn in a garment, therefore closer or in contact with the trunk.”* Hence the need, according to the French Government, to review the way in which emission power is calculated.

## **The Battle of Standards**

At EU level, the European Committee for Electrotechnical Standardisation (Cenelec) is responsible for establishing the standards and standards that govern the conduct of DAS tests. In the Committee,

experts from all over Europe are currently studying French applications. But since 2020, no decision has been taken. According to several sources interviewed by the Radio France investigation unit, in addition to administrative delays, this inertia is explained in particular by the reluctance of some industrialists to strengthen controls on the power of mobile phones.

ANFR staff demonstrate 5G frequency capture in the presence of the Secretary of State for Digital Affairs in Grenoble on 3/09 2021.

For manufacturers are very present in these crucial discussions. The European working group responsible for developing standards includes representatives of Sony, Ericsson, Nokia and the operator Vodafone. There is also the presence of the Mobile and Wireless Forum lobby, which represents the interests of Samsung, Apple and Huawei among others. The ANFR and the sister agencies of other European states are also present, as are a number of engineers or scientists.

*“The need to change the power of telephones taking into account contact with the body necessarily requires a small adaptation work for the industrialists. Because a phone doesn't conceive in a year, says Joe Wiart, president of the European Technical Committee (named 106X). So it takes a little time for them and it costs them money.”*

Nevertheless, according to Joe Wiart, the discussions are coming to fruition and the norm is expected to change next year.

## **Potentially harmful biological effects**

While the DAS standard is still the reference method for estimating the emission power of a telephone wave, it is nevertheless controversial. Since the 1990s, the International Commission on Non-Ionizing Radiation Protection (Icnirp) has been giving the “the” limits not to be exceeded in order to protect users of the airwaves. The problem is that this international organization, and its recommendations, recognize only one major effect: the thermal effect. These recommendations, *“which were taken over worldwide, were therefore established without considerations for biological effects,”* explains Clément Goutelle,

journalist and founder of the [investigative media La Brèche](#). *And France is limited to the standards* [recommended by the

Except that to be limited to thermal effects is to ignore a substantial part of the scientific literature of the last 30 years on the subject: of the more than 30,000 studies identified by ANSES, many consider that exposure to radiofrequency causes harmful biological effects ... and in particular of carcinogenic risks. In 2011, the WHO (World Health Organization) International Agency Research Centre (IARC) reviewed existing studies to assess the potential danger posed by telephone electromagnetic waves.

IARC, a WHO-affiliated body, has classified radio frequencies emitted by mobile phones as possibly carcinogenic to humans.

After intense discussions, IARC believes that [radio frequencies are “possibly carcinogenic to humans”](#). *“The data, which are constantly accumulating, are sufficient to conclude that classification, justified at the time, Jonathan Samet, chairman of the working group who came to this conclusion. This classification means that there could be a risk, and therefore the possible link between mobile phones and the risk of cancer needs to be closely monitored.”* The director of the center at the time, Christopher Wild, then urges the scientific community to carry out further research on the intensive long-term use of mobile phones, *“given the implications (...) for public health”*.

## **Experiments on mice and rats**

An appeal heard by NTP, the National Program of Toxicology in the United States, the work of which refers. For two years, so American researchers exposed rats and mice to radio frequencies almost continuously: 10 minutes with, 10 minutes without, for 18 hours every day. *“Obviously, we couldn’t attach mobile phones to the ears of rats or mice,”* explains Linda Birnbaum, the former director of NTP. *Their whole bodies have therefore been exposed to radiofrequency radiation in specially constructed chambers.”* As a result of these tests, NTP researchers conclude that they found “obvious evidence” of an

association between wave exposure and the development of brain and heart cancer in male rats.

*“Some people say that the mortality was very low. In other words, that this concerned only 3% of the rats, continues Linda Birnbaum. But with five or six billion people worldwide using mobile phones, a 3% increase would represent a large number of people at increased risk of brain tumours.”* Initially, the study was commissioned in 1998 by the FDA (Food and Drug Administration), the US Federal Food and Drug Administration. It was not until 20 years later, in 2018, that the conclusions were finally published, not without difficulties.

The FDA headquarters responsible for informing the public about radio frequencies emitted by mobile phones on 20/07/20, Maryland, USA.

*“We had to be the subject, let’s say, a little more assessments than usual before a study was published,”* recalls Linda Birnbaum, laughing a little yellow. *Our results have been resisted by some senior officials of the American health authorities. While FDA scientists supported the results, I think some of the leaders of this agency didn't believe them.”*

On the Icnirp side, which recommends the limit thresholds for wave exposure, there is the same scepticism about the results of the study of the National Program of US Toxicology. *“Of they claim to have found evidence, but that doesn't mean they actually found it,”* said Rodney Croft, president of the Icnirp. *When looking closely at the study, there is no evidence that radio frequencies cause cancer. The major flaw of this study is that they have not taken chance into account.”* Faced with this answer, Linda Birnbaum replied: *“This is completely false. Our study is based on statistics. I really wonder if he read the study in detail.”*

### **A precautionary “approach”**

On the French side, ANSES (Health Security Agency) is trying to see more clearly. *“The many studies that are carried out on this issue are very often contradictory,”* says Olivier Merckel, head of the Risk

Assessment Unit within ANSES. *Some of them point to carcinogenic effects while others find nothing.*” This does not prevent the agency from prompting caution: *“For us, there are enough indications to say: be careful,”* continues Olivier Merckel. *Because, indeed, we are not sure that there is no effect.”*

In France, ANSES encourages caution with regard to radio frequencies emitted by mobile phones, while waiting to be certain.

In fact, [the Agency has made a number of recommendations in](#) recent years. In particular, to use hands-free kits or to reduce children’s exposure. However, there is not yet any question of a “precautionary principle”. ANSES prefers to use the term “precautionary” “approspect” which has no binding power. A position that Maître Vincent Corneloup, a lawyer specializing in public law and who worked on the exhibition at radio frequencies: *“In environmental matters, there is unfortunately still a very strong reluctance of the State, but also of administrative judges to highlight the precautionary principle.”*

Faced with the controversy over the effects of electromagnetic waves, ANSES has set up several working groups. The first is preparing a new opinion on the carcinogenic risk linked to exposure to radio frequencies, which should be made public in mid-2024. The other working group is working on possible new limits for exposure to radio frequencies, different from those recommended by ICNIRP. And this time, these new would thresholds take into account factors other than just the thermal effect. The conclusions are expected in two years.