# Anti-counterfeiting and anti-piracy technology guide

https://euipo.europa.eu/anti-counterfeiting-and-anti-piracy-technology-guide

## Near Field Communication (NFC)

NFC technology is currently available in most smartphones and smartwatches, where it allows users to link a credit card to their device and make payments when the device is close enough to an NFC-enabled payment machine. It is also used for paying on public transport and authenticating products. NFC transactions are normally concluded within seconds.



**Used for**

- Authentication
- Tracking/Tracing

**Suitable for**

- Very small products
- Small products
- Medium-sized products
- Large products

**Goes on**

- Product
- Packaging

**Can be used for**

- Physical products

**Visibility**

- Invisible

**Reading device needed**

- Yes

**Connection to server**

- Yes

### Description

NFC technology is a set of communication protocols for secure wireless communication between electronic devices less than 10 cm from each other. It derives from contactless card and RFID technologies. However, unlike these technologies, it moves away from the rigid distinction between reader and tag and passive and active devices. An NFC system can both send and receive queries, and – operating as a tag – it can work in both active and passive mode. NFC devices can be set either to communicate only when specific conditions are met, or to communicate in the same way as contactless cards do – fairly indiscriminately; in both cases, they operate at a frequency of 13.56 MHz.

In contrast to RFID system readers, which can read a large number of tags simultaneously (a useful function in logistics, for example), NFC readers can communicate with only one tag at a time. This makes NFC technology particularly suited to securing transactions such as credit card payments.

### Uses

NFC tags can be embedded into objects as small as payment cards and possibly even paper labels. Consequently, they can be used with a diverse range of products and materials.

As many smartphones already come with NFC tag readers built in, consumers can use this technology to check

the authenticity of products themselves (unlike with RFID tags).

## Implementation

In view of the variety of possible applications of NFC tags, any changes to the production process should generally be considered on a case-by-case basis.

If you want to integrate NFC devices into labels, then you do not need to make any changes to the production process; you just have to choose the most suitable label from the range available, and affix it to the product you want traced and authenticated.

If, however, you want to embed the NFC device directly into your product, then you will need to make specific changes to the production chain.

## Cost

Implementing NFC technology requires initial investments in management systems and in possible changes to the production process. NFC tags themselves cost in the range of a few dozen euro cents per tag – slightly more than passive RFID tags. This is because NFC tags offer more functions than passive RFID tags.

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