

RFID vs NFC...

What are the differences?



Radio Frequency Identification (RFID) and Near Field Communication (NFC) are two closely related global wireless communication technologies used for a variety of applications, including access control, asset tracking and contactless payments. Both RFID and NFC technologies provide one-way communication and the ability to communicate without a direct line of sight. However, there are significant differences between the two.

RFID

RFID, first patented in 1983, enables communication between an unpowered RFID tag and a powered RFID reader.

RFID systems have three parts:

1. Tag
2. Antenna
3. Reader

RFID frequencies range from:

- Low Frequency (LF) in the 125-134 kHz band
- High Frequency (HF) in the 13.56 MHz band
- Ultra High Frequency (UHF) in the 856-960 MHz band

RFID Systems can be either:

- Active: with its own power source, broadcast range up to 100 meters, and ideal for material location
- Passive: no power source, powered by a reader, read range from near contact to 25 meters

Multiple RFID tags can be scanned simultaneously.

Common applications for RFID include: asset tracking in warehousing, airport baggage handling, race timing, inventory management, tool tracking, access control, attendee tracking, livestock identification, and more.

NFC

NFC was developed to enable secure mobile payments and is limited to singular and close proximity interactions. 90% of top ten handset makers have NFC-enabled devices and both Android and Windows support the technology openly. Apple uses NFC as the

backbone of its Apple Pay system, but has yet to open the NFC radio to third party developers.

NFC operates at the same frequency (13.56 MHz) as HF RFID, and it can act as both a reader and a tag. However, devices must be in close proximity (usually no more than a few centimeters) due to the short read range.

Common applications for NFC include: transferring information between two smart phones such as file sharing, instant connection setups, and the ability to link everyday objects to online content; contactless payment using credit cards, debit cards, key fobs and other NFC secure devices; and smart posters with exclusive content.

KEY DIFFERENCES BETWEEN RFID AND NFC

Key differences between NFC and RFID include:

- RFID is only capable of communication from reader to tag. For instance, the reader (interrogator) can write to the RFID tag, and the interrogator can read from the RFID tag, but the tag cannot read or write the RFID interrogator. Furthermore, two RFID readers are not able to communicate with one another.
- NFC is capable of two way communication and can be used for more complex interactions, such as card emulation and peer-to-peer sharing.
- NFC is limited to communication at typically 5cm or less in distance.

Here's a quick overview of key differences between HF RFID and NFC:

	HF RFID	NFC
Operating Frequency	13.56 MHz	
Communication	Read / Write Passive Tag	Read / Write Passive Tag Emulate Tag Peer-to-Peer Communication
Standards	ISO 14443, ISO15693, ISO18092, JIS X 6319-4	
Read distance	Generally 5-6 cm. Shorter for NFC Peer to Peer	
Standardized Tag Data Formatting	None	NDEF Formatting
Scan Tags Simultaneously	Yes	

For more information on RFID applications, visit www.jadaktech.com. And if you have further questions about specific standards within RFID (such as ISO 15693, ISO 14443, ISO18000-6C, RAIN RFID, EPC C1G2), contact us at 888.388.0490; we'd be happy to help.

USA Office
7279 William Barry Blvd.
North Syracuse, NY
13212-3349

+1 315.701.0678 Phone
+1 315.701.0679 Fax
email: info@jadaktech.com

European Office
Emmastraat 16
4811 AG Breda
The Netherlands

+31 (0)76.522.5588 Phone
+31 (0)76.522.4747 Fax
email: info@jadak.eu

Asia Pacific Office
Building 8
Gangtian Industrial Square
GangTian Road
Suzhou Industrial Park
JiangSu, China 215024

+86 512.6283.7080 Phone
email: info@jadaktech.com

