



## IQnfc+™ Near Field Communication Test System

Near field communication (NFC) uses magnetic field induction to enable peer-to-peer wireless communication between two electronic devices in close proximity. It addresses a wide range of applications, such as e-commerce, Wi-Fi and Bluetooth® pairing and short transactions between devices. Given the easy-to-setup, secure and low-cost nature of NFC, this technology has gained popularity and has been integrated into many consumer electronic devices.

With the growth of NFC-enabled devices intensifying, manufacturers need to make sure their products' performance support a positive customer experience. Given the broad applicability of NFC and the innovative and critical use of this application across industries, malfunctioning devices could have broad implications. It is therefore imperative that this technology is tested in manufacturing to ensure product quality.

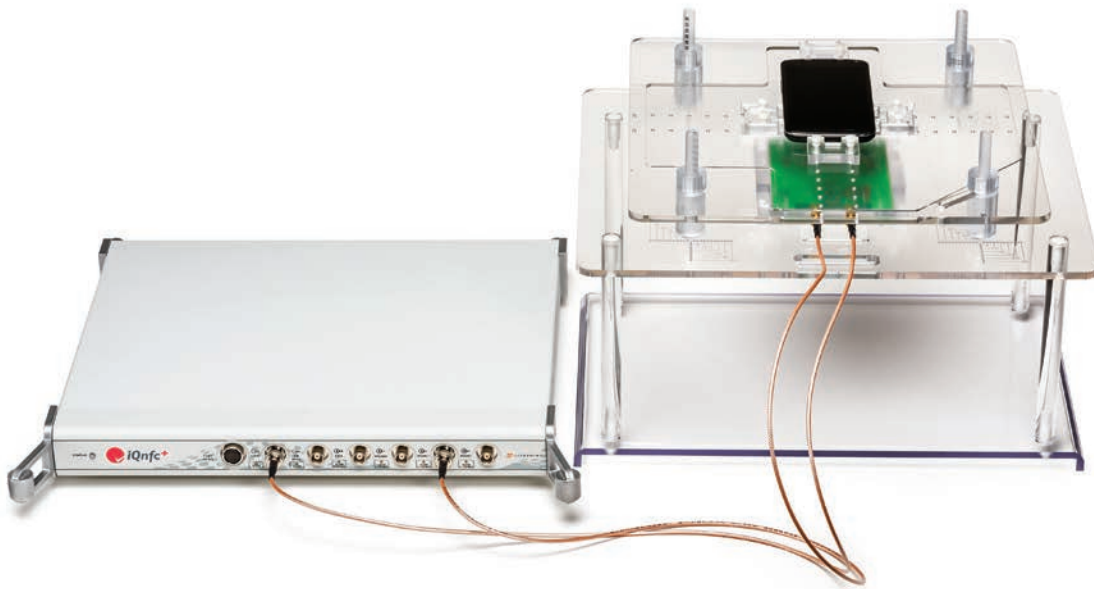
An inexpensive solution would be to go with the "golden DUT" (or NFC reference tag) approach with a go/no-go functional test. However, this approach does not reveal the quality of NFC-enabled devices. It gives no information on the possible cause of failures and also cannot detect marginal units. With the addition of RF parametric test, vital production metrics become available to empower quality-monitoring activities. As a result, the manufacturing process can consistently produce quality products. In turn, this effort builds differentiation and brand equity that translates into customer loyalty.

## Optimized NFC test solution

The LitePoint NFC test solution is purpose-built to test the physical layer of all NFC devices, components, and products in both design verification and manufacturing. It is a compact and rugged NFC test system that is optimized for both production lines and labs.

IQnfc+ is a standard based tester for NFC Forum and EMVCo analog test cases. It is simple to set up and easy to use with pre-defined test packages that include both turn-key software and standard test coils. It significantly simplifies NFC standard test setup and makes testing fast and affordable.

The LitePoint NFC test system is comprised of two components: test instrument and test coil (Figure 1). The test instrument has the main NFC test functional blocks including analyzer and NFC transceiver. It communicates with an external PC for data transfer and signal processing. The test system also controls the operation of the test head. The test head consists of antenna coils and tuning circuits. It is the interface for communication with the Device Under Test (DUT) and can be placed in customized test fixtures or the LitePoint test fixture. The LitePoint test fixture securely holds any standard coil and a DUT in place, making the positioning precise, repeatable, and convenient, especially during the development cycle.



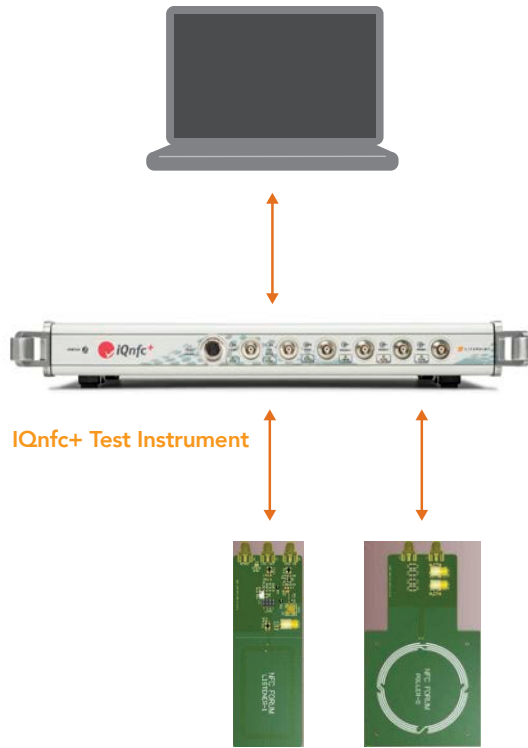


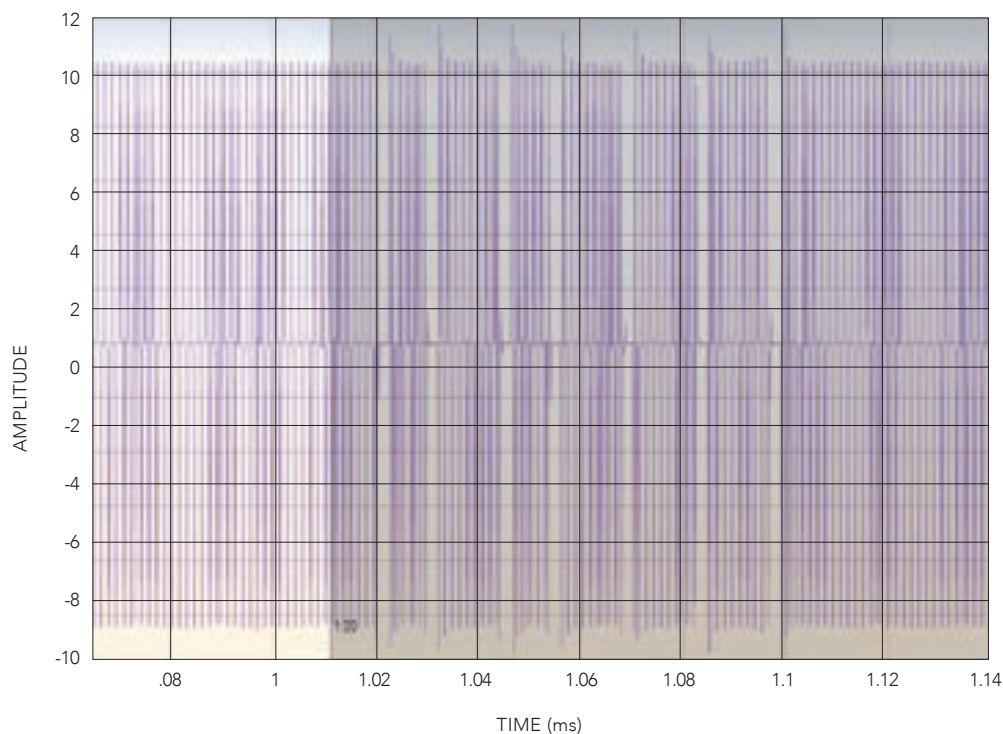
Figure 1 IQnfc+ configuration

## Comprehensive Test Coverage

IQnfc+ supports all main NFC standards and emulation of both initiator (a.k.a. PCD or polling device) and target (a.k.a. PICC or listening device) modes. The table below summarizes the standards test coverage. LitePoint provides turn-key software that facilitates test coil calibration, executes test plan and generates test reports for all analog test cases defined in EMVCo and NFC Forum.

NFC Forum	ISO Standard	Initiator	Target
NFC A	14443A (EMVco)	X	X
NFC B	14443B (EMVco)	X	X
NFC F	18092 (FeliCa)	X	X
NFC P2P	18092 peer to peer	X	X

Table 1 IQnfc+ standard support



Name	Value	Unit
Field Strength	4.39	A/m
Data Rate	105.94	kBPS
Modulation Index	99.93	%
Modulation Depth	99.96	%
Freq Error	-0.45	Hz
T1 (pulse fall and off time)	2.40	us
T2 (pulse off time)	1.95	us
T3 (pulse rise time)	0.13	us
T4 (pulse 60% modulation rise time)	0.09	us
T5 (time between pulse fall local)	0.12	us
Frame Delay Time	—	us
CRC	—	

Figure 2 Example of an NFC A initiator measurement

## Summary

LitePoint IQnfc+ test system is purpose-built to test the physical layer of all NFC devices, components, and products in both design verification and manufacturing. We provide complete NFC test solutions to ensure device quality and yield with simple-to-deploy test software packages. IQnfc+ covers both NFC Forum and EMVCo, making it an ideal NFC test system for convenient pre-conformance lab testing and for conformance-correlated mass production testing.