

RFID/NFC Laboratory Services

RFID/NFC transponders from smart-TEC are developed and produced according to your requirements. The range of electrical and physical parameters and influencing factors that need to be taken into account for successful project implementation is very extensive. We therefore support you with extensive tests, measurements, analyses and documentation from our measurement laboratories to ensure the success of your project.

Our RFID/NFC lab services at a glance:

Design measurement package for HF/NFC (HF/NFC lab measurements)

Scope

Each HF/NFC laboratory measurement consists of a working range and a threshold measurement with up to 5 samples on different surfaces.

Aim

The measurement provides a test certificate of the theoretical performance of the RFID transponder under laboratory conditions. Changes caused by different surfaces are documented to determine the read range as a function of the original surface. This information is used in the development of an optimised RFID transponder for the customer.

Detailed information about the process

A laboratory ideal 'in air' measurement is compared with a realistic measurement (suitable surface) to identify changes in performance. The influence of the background often leads to a frequency shift. A realistic assessment of the final performance of the RFID transponder can be derived from the comparison of the two measurements. The results are used to develop more suitable RFID transponders. Professional RFID development analyses the response field strength (using threshold measurement) as a function of frequency on the original background.

Performance

RFID/NFC lab measurement with test report



Standard test (working area and threshold)

Design Measurement Package for UHF (UHF laboratory and free-field measurements in your own test environment)

Scope

Each UHF laboratory measurement includes a threshold measurement and a 360° orientation test with up to 5 test objects on different surfaces. Free field measurements with current readers are also offered.

Aim

All measurements are documented in a test report. The results of the threshold measurement are the response field strength and the theoretical reading range. The 360° measurement determines the radiation characteristics of the RFID transponder, taking into account the required UHF frequency (ETSI or FCC band). UHF transponders are tested and verified with readers from well-known manufacturers.

Detailed information about the process

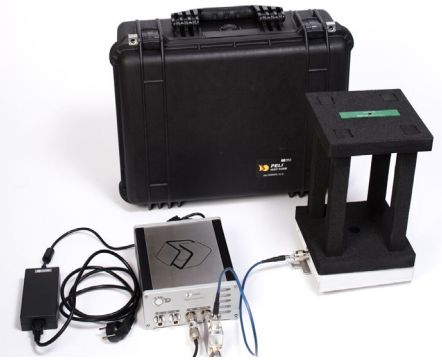
A laboratory ideal measurement ‚in air‘ is compared with a realistic measurement (suitable background) to detect changes in performance. The influence of the background often results in a frequency shift. The radiation pattern is central to far-field use. Transponders are measured at the ideal angle between the reading antenna and the RFID antenna. The 360° measurement shows the theoretical reading range at different angles. Performance will vary depending on antenna design, transponder type and surface.

For long range UHF transponders, moving detection is recommended to reduce read gaps. If this is not possible, a sufficient buffer should be maintained. Measurements are made at 868 MHz (ETSI) or 915 MHz (FCC).

In the open field, variations may occur due to environmental conditions and the combination of RFID transponder type and reader. Laboratory and free field measurements provide a direct comparison of range and allow an initial recommendation of reader hardware.

Performance

RFID laboratory measurement
incl. test report



Standard test
(threshold and 360° measurement)
with state of the art equipment

Field Measurement Package for UHF (UHF free field measurements in customer environment)

Scope

The UHF free-field measurement includes a threshold measurement with up to 5 test objects on different surfaces at a distance from each other at the customer's site.

Aim

The measurement provides a test certificate of the theoretical performance of the RFID transponder under customer conditions. The aim is to accurately determine the read range and provide critical information for real-world use.

Detailed information about the process

Ideally, the performance of RFID tags is determined at the customer's site in the final application scenario. In addition to the read range, read gaps are also identified and evaluated under real-life conditions. The exact procedure is determined in consultation with the customer.

Performance

RFID field test measurement incl.
test report



Working Range

The distance between the reading antenna and the transponder is measured as the height is gradually reduced. The working range is the maximum distance at which the transponder can be successfully addressed.

Threshold

The response field strength and theoretical reading range are determined by gradually reducing the field strength. The lowest field strength at which the transponder is still successfully addressed determines these values.

360°-Messung

A threshold measurement is combined with a rotation of the transponder around the main axes while the transponder is addressed at the selected frequency (ETSI 868 MHz or FCC 915 MHz).