

TWN4

Mobile Apps for Android and iOS

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Contents

- 1 Mobile Badge BLE NFC - App for Android or iOS Phone / Tablet 3
 - 1.1 Function 3
 - 1.1.1 Authenticate with the app using BLE communication 3
 - 1.1.2 Application-dependent distance threshold adjustment when using BLE communication 4
 - 1.1.3 BLE background mode 4
 - 1.1.4 Authenticate with the app using NFC communication (Android only) 4
 - 1.1.5 The transferred ID 4
 - 1.2 System Application Notes 5
 - 1.3 Requirements 5
 - 1.4 Installation 5
 - 1.4.1 Play Store for Android phones / tablet 5
 - 1.4.2 App Store for iOS phones / tablet 5
 - 1.5 Menu 6
 - 1.5.1 Settings 6
 - 1.5.2 Requirements 6
 - 1.5.3 Disclaimer 6
 - 1.5.4 Licenses 7
 - 1.5.5 About 7
- 2 TWN4 NFC Demo - NFC App for Android Phone / Tablet 8
- 3 Disclaimer 9

1 Mobile Badge BLE NFC - App for Android or iOS Phone / Tablet

1.1 Function

The function of the app is to send a unique ID (detailed in 1.1.5) to an ELATEC TWN4 MultiTech BLE reader. The function is realized by connecting automatically to readers in the proximity of the mobile device. The app utilizes two communication technologies: Bluetooth Low Energy (BLE) on Android and iOS and additionally NFC on Android.

The distance between the mobile phone and the ELATEC reader acts as a "trigger" for transferring the ID to the ELATEC reader. This allows for card-like user experience. Placing the phone near the reader initiates the connection and data transfer. When using BLE communication the distance threshold can be adjusted by the user. See 1.5.1 Settings for details.

1.1.1 Authenticate with the app using BLE communication

When the app is active on the screen and Bluetooth is enabled on the phone, it searches (scans) for appropriately configured ELATEC readers.

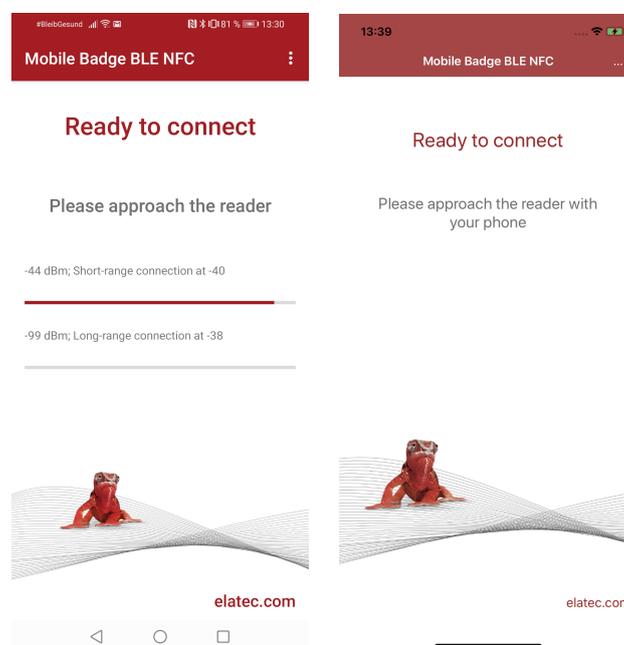


Figure 1.1: Mobile Badge - Main screen

Upon reaching of a pre-defined "threshold" distance, connection is initiated and the ID (see 1.1.5) is transferred automatically. The pre-defined value depends on the phone type and manufacturer. Android phones

differ significantly in their Bluetooth sensitivity. The ELATEC app employs a proprietary method on the Android platform for determining a phone-specific value, so that a connection is initiated when the phone is at a distance of approx. 10-15 cm from the reader. On iPhone this is not necessary, as iPhones behave very similarly in this respect.

The distance threshold can be adjusted by the user for two types of applications (see 1.1.2 Application-dependent distance threshold adjustment when using BLE communication) on both platforms. See 1.5.1 Settings for details.

1.1.2 Application-dependent distance threshold adjustment when using BLE communication

Unlike NFC, which requires the communicating devices to be closely positioned -within a few centimeters-, Bluetooth Low Energy (BLE) allows connection and communication at distances of multiple meters. System applications where card-like or NFC-like behavior of the app is imperative require the function to be within a short range - only a few centimeters. This requirement is in contradiction with the needs of systems where a long-range function is appropriate, like opening a garage door while inside a car. ELATEC has developed a proprietary technology for satisfying both requirements in one app. This technology allows coexistence of systems with contradictory range of connection distance requirements.

ELATEC readers can be configured with a special setting which allows the app to detect the type of application in which the reader operates. There are two types at this time: short-range (e.g. printer solutions) and long-range (e.g industrial, physical access). For each type of application the adjustment range is available separately on the settings screen (see 1.5.1 Settings).

1.1.3 BLE background mode

When this mode is on (the switch is under the menu entry "Settings"; see 1.5.1 Settings for details), the app can authenticate in the background while another app is on the screen or the screen is locked. Enable this point and close the app: the BLE authentication is still active.

In this mode system notifications inform about the app status. The notifications can be disabled from the system notification settings on each platform. The settings are also accessible directly from the notification. Please consult the respective system documentation for details.

1.1.4 Authenticate with the app using NFC communication (Android only)

The app transfers the same ID (detailed in 1.1.5) over NFC provided the ELATEC reader is configured appropriately (see 1.3 Requirements). The function can be disabled by a switch under the menu entry "Settings" (see 1.5.1 Settings for details)

1.1.5 The transferred ID

The transferred ID is a unique 16-byte number. The format of the data forwarded to the backend host can be configured in the reader firmware.

1.2 System Application Notes

The ELATEC apps "Mobile Badge BLE NFC" offer simple and effective components for building modern mobile systems or extending existing systems with mobile solutions. Employing Bluetooth BLE (Android and iOS) and NFC (Android) wireless communication, they deliver a unique number (ID) to ELATEC TWN4 products, which in turn transfer it to the backend infrastructure. System integrators can implement Identification, authentication and authorization in their products by assigning the ID to users' records in their directories. Deployment of hardware tokens or cards is thus made unnecessary. All the users need is their mobile phones and an ELATEC app.

1.3 Requirements

- ELATEC reader
 - TWN4 MultiTech 2 BLE or
 - TWN4 MultiTech 3 BLE
- Reader firmware (minimum version 3.22) with
 - "Mobile Badge BLE 2.0" authentication functionality (for BLE)
 - "HCE" functionality (for NFC on Android)

The app supports Android 5.0 and above as well as iOS 11.x and above. The following app permissions are necessary:

- Bluetooth
- Location (Android)

1.4 Installation

1.4.1 Play Store for Android phones / tablet

Install the app "Mobile Badge BLE NFC" on your phone / tablet from [Google Play Store](#):



1.4.2 App Store for iOS phones / tablet

Install the app "Mobile Badge BLE NFC" on your phone / tablet from [Apple App Store](#):



1.5 Menu

The menu can be accessed by pressing the three dots symbol "..." on the top right corner of the screen. The following subsections describe the functionality of each option in the menu.

1.5.1 Settings

On top of the screen the ID (see 1.1.5 The transferred ID) is displayed.

The next section is for changing the trigger distance for BLE communication (see 1.1.1 Authenticate with the app using BLE communication) by adjusting the value with a slider:

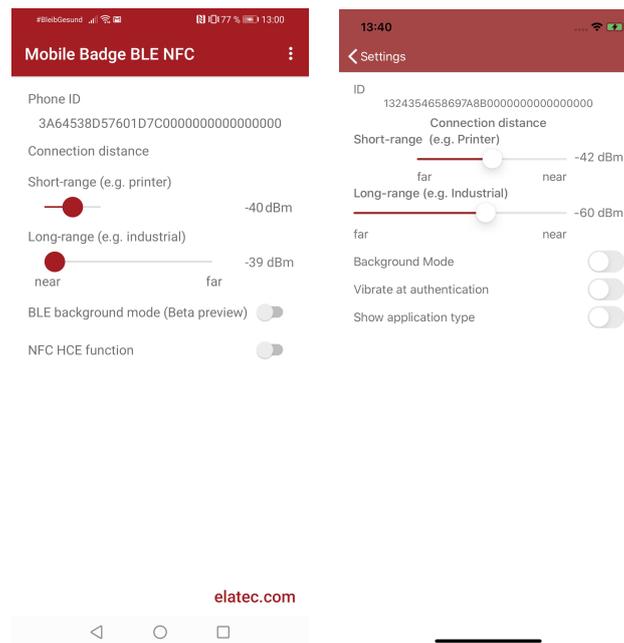


Figure 1.2: The settings screen

The values are inversely reciprocal to the connection distance. A higher value sets a smaller distance for connection. E.g. with a setting of -30 the phone needs to be nearer to the reader for connection than with a setting of -40. ($-30 > -40$). There are also two adjustment ranges. See 1.1.2 Application-dependent distance threshold adjustment when using BLE communication) for details about the purpose of the two adjustment ranges.

The switches in the next section allow enabling and disabling of functionality which is described in 1.1.3 BLE background mode and 1.1.4 Authenticate with the app using NFC communication (Android only) respectively.

1.5.2 Requirements

Information about devices and their configuration necessary for the app to provide its functions. See also 1.3 Requirements.

1.5.3 Disclaimer

This menu point gives remarks on the functionality of the app and the disclaimer of warranty and limitation of liability.

1.5.4 Licenses

Information about licensed software used in the app.

1.5.5 About

The menu point "About" gives general information about the app. The app version can be checked here.

2 TWN4 NFC Demo - NFC App for Android Phone / Tablet

The TWN4 NFC Demo App exchanges selectable NDEF messages with the TWN4 MultiTech reader.

Requirements:

- TWN4 MultiTech reader with NFC firmware.
- NFC enabled mobile phone / tablet

Permissions:

- NFC
- Phone (for IMEI transmission)

3 Disclaimer

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