

# UM11098

## OM29263ADK Quick start guide antenna kit

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User manual  
COMPANY PUBLIC

### Document information

Information	Content
Keywords	NFC antenna, antenna kit, CLEV663B, CLRC663 plus, NFC Antenna Development Kit, OM29263ADK
Abstract	This document describes the OM29263ADK NFC Antenna Development Kit and how to use it.



Revision history		
Rev	Date	Description
1.0	20180208	Initial version

## 1 Introduction

The OM29263ADK antenna kit is a PCB, which provides 2 different tuned NFC antennas as well as 8 additional matching boards.

The PCB is prepared to easily break off each of the single boards. Before using any of the antennas or matching boards, all the PCBs must be separated from each other.

## 2 Hardware description

All 10 boards provide the same connector, which allows to easily connect any of the boards to the CLEV6630A, the CLEV6630B, the PNEV5180B or the PNEV7462C.

The Fig 1 shows the outline and the top layer of the OM29263ADK.

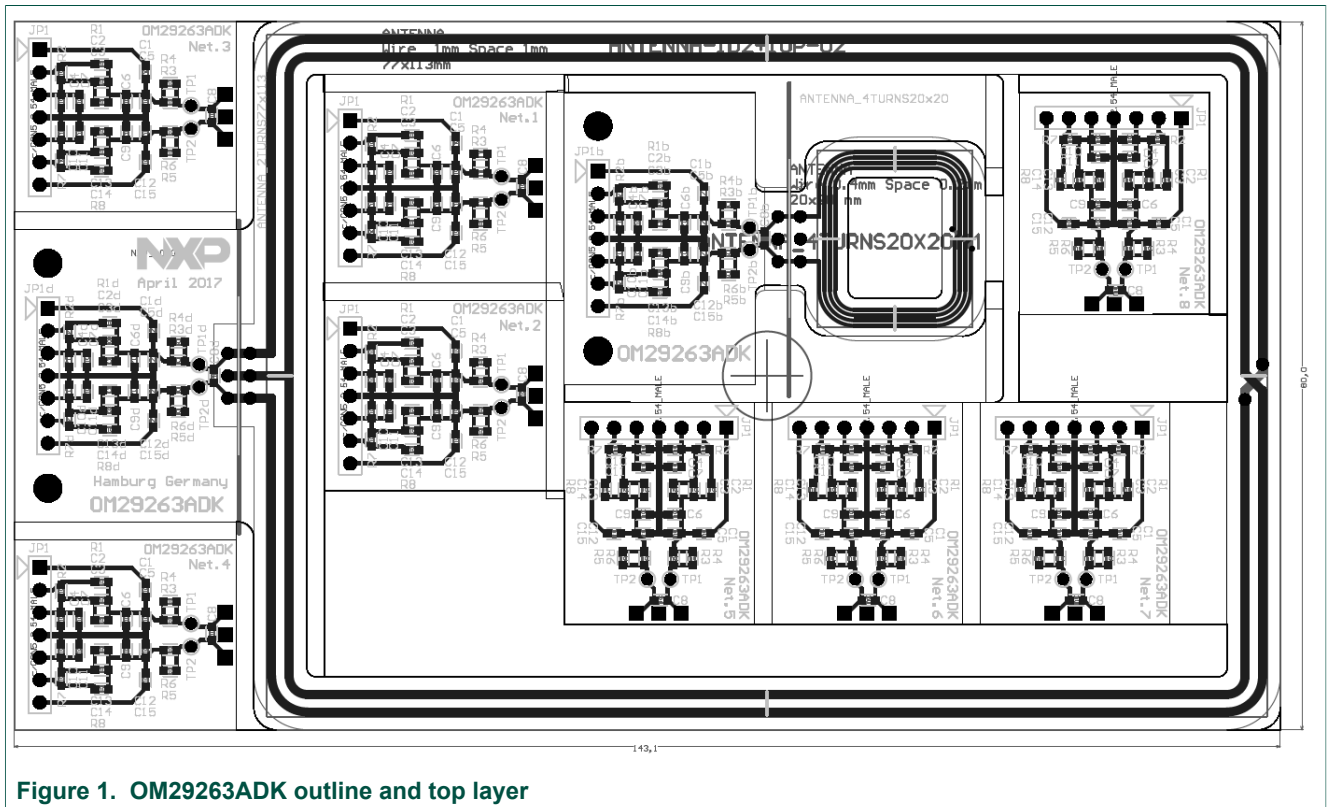
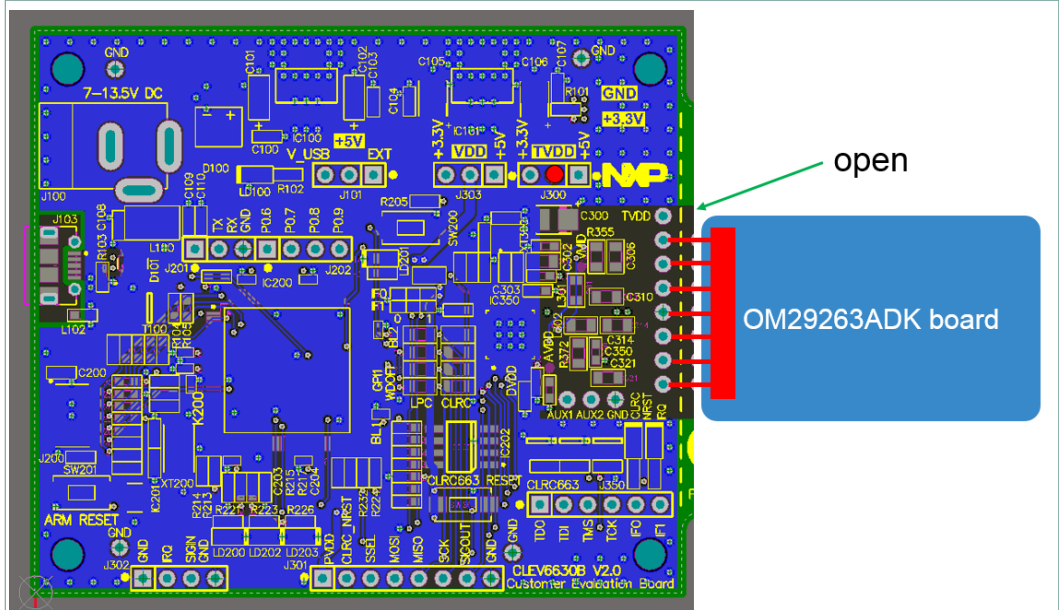


Figure 1. OM29263ADK outline and top layer

Each of the 10 boards provide a 7 pin row connector, which fits directly to any of the listed NFC Reader Evaluation boards (see [1], [2], [3] or [4]). The original antenna of the corresponding evaluation board must be cut off, before the large antenna, the small antenna or any of the matching boards can be connected.

Note: Be aware that the 7pin antenna connector does not use the 5V supply pin (TVDD) of the evaluation board. So, this pin is left open (same like on the original antenna).

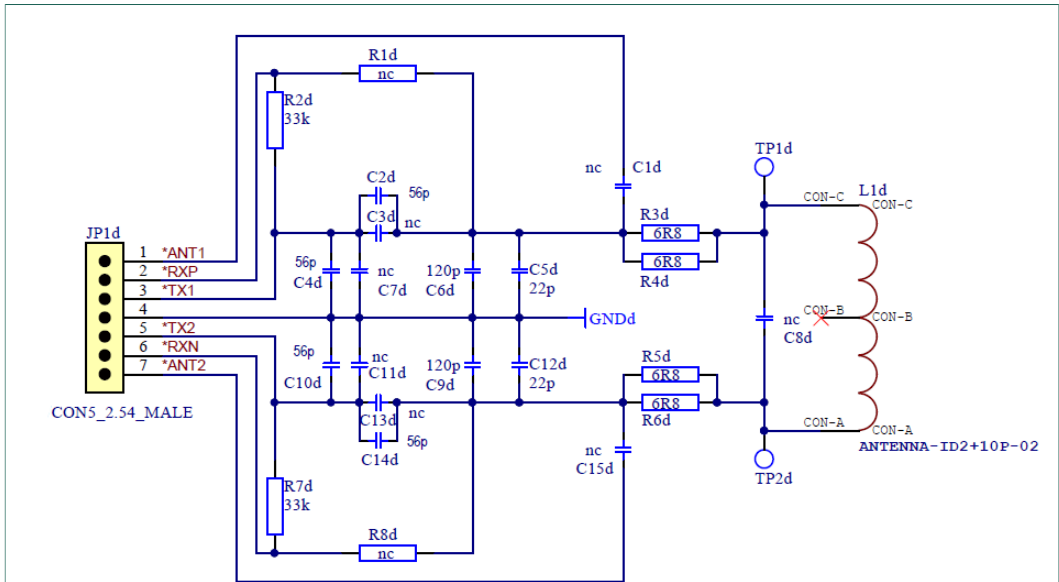


1. The antenna of the CLEV6630B is cut off and replaced by an OM29263 ADK board.

Figure 2. Example of the CLEV663B with OM29263 ADK board

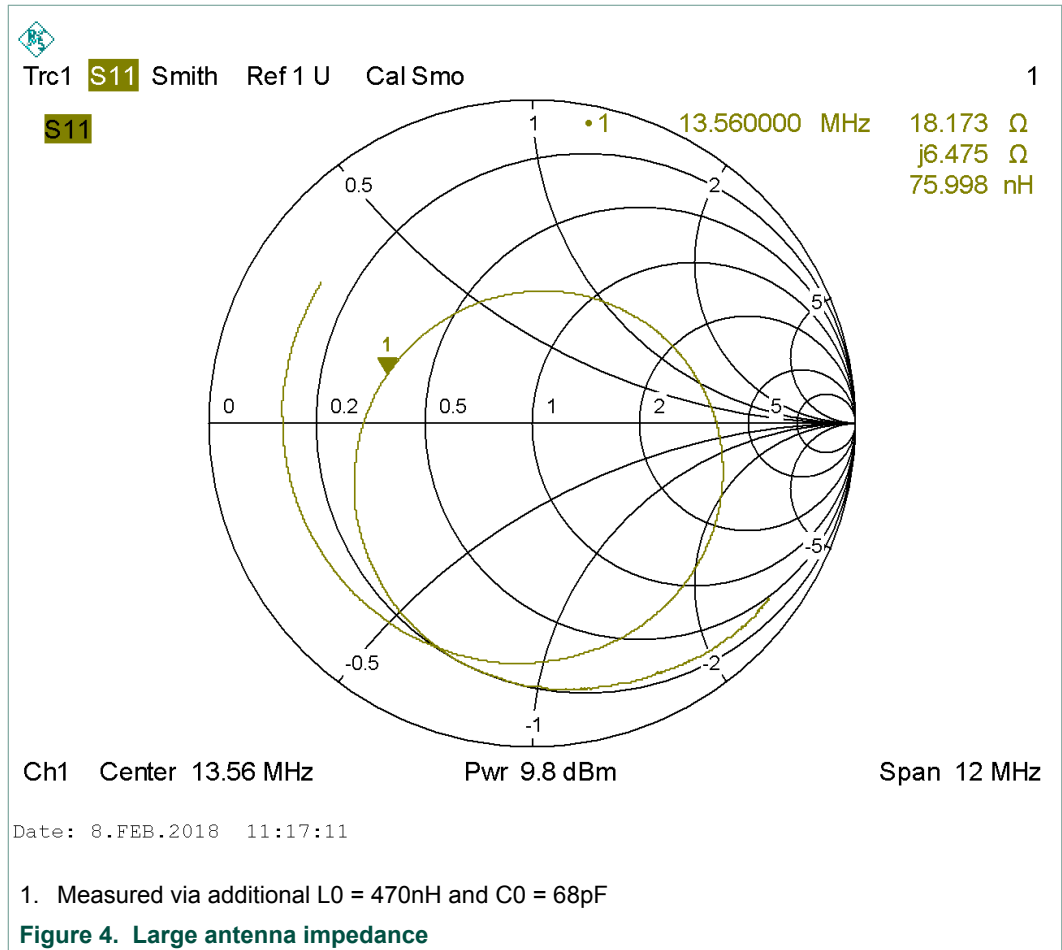
### 2.1 Large antenna

The large antenna can be directly connected and used on the CLEV6630A and CLEV6630B. The Fig 3 shows the tuning circuit, and Fig 4 shows the antenna impedance, measured with the CLEV6630B (L0 = 470nH and C0 = 68pF).



1. nc = not assembled

Figure 3. Large antenna circuit diagram



**2.1.1 Use with CLEV6630A and CLEV6630B**

The standard CLEV6630A and CLEV6630B are prepared with an EMC filter inductance of L0 = 470nH and a EMC filter capacitance of C0 = 124pF (= 68pF + 56pF). L0 as well as the 68pF are assembled on the main board, while the missing 56pF are assembled on the antenna board. So, the antenna board can be directly connected to the CLEV6630A or CLEV6630B without any additional modification, after the original antenna had been removed (cut off).

**2.1.2 Use with PNEV5180B and PNEV7462C**

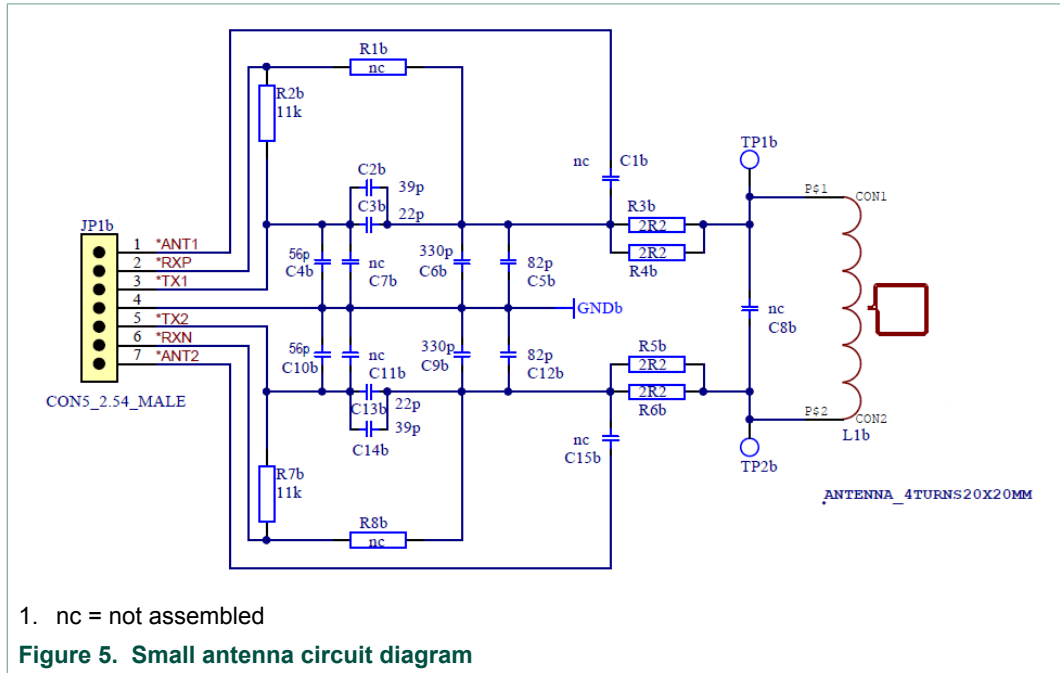
In case of PN5180 and PN7462 family, (a) the EMC filter cut off frequency must be adjusted, and (b) the DPC and related features should be disabled, since the antenna is asymmetrically tuned and the DPC is not used.

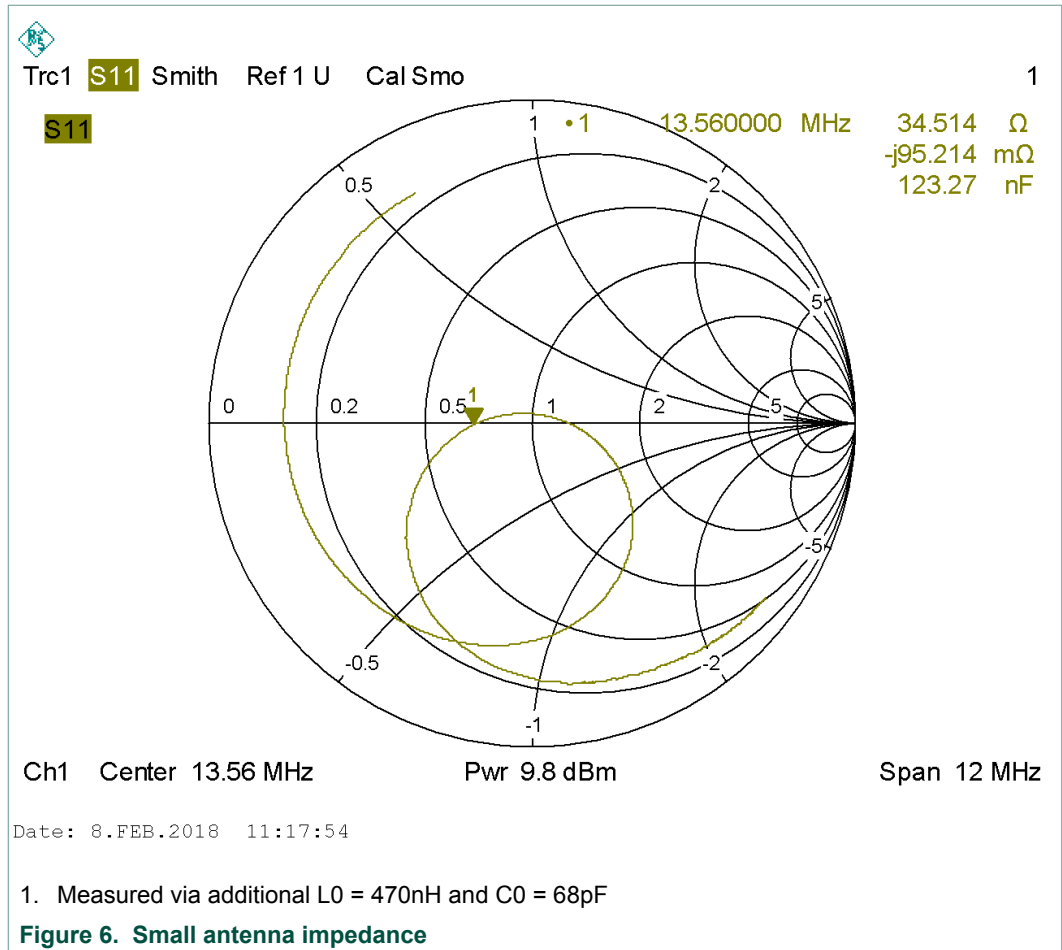
(a) The original antenna uses a symmetrical tuning, which uses an EMC filter with L0 = 470nH and C0 = 253pF (220pF + 33pF). The inductor as well as the first part of the capacitance (220pF) are assembled on the main board. To operate the OM29263ADK antenna, the C0 (220pF) on the PNEV5180B or the PNEV7462C must be replaced by a 68pF.

(b) The DPC and its related features should be disabled to operate an asymmetrical antenna.

### 2.2 Small antenna

The small antenna can be directly connected and used on the CLEV6630A and CLEV6630B. The Fig 5 shows the tuning circuit and Fig 6 shows the antenna impedance, measured with the CLEV6630B ( $L_0 = 470\text{nH}$  and  $C_0 = 68\text{pF}$ ).





**2.2.1 Use with CLEV6630A and CLEV6630B**

The standard CLEV6630A and CLEV6630B are prepared with an EMC filter inductance of L0 = 470nH and a EMC filter capacitance of C0 = 124pF (= 68pF + 56pF). L0 as well as the 68pF are assembled on the main board, while the missing 56pF are assembled on the antenna board. So, the antenna board can be directly connected to the CLEV6630A or CLEV6630B without any additional modification, after the original antenna had been removed (cut off).

**2.2.2 Use with PNEV5180B and PNEV7462C**

In case of PN5180 and PN7462 family, (a) the EMC filter cut off frequency must be adjusted, and (b) the DPC and related features should be disabled, since the antenna is asymmetrically tuned and the DPC is not used.

(a) The original antenna uses a symmetrical tuning, which uses an EMC filter with L0 = 470nH and C0 = 253pF (220pF + 33pF). The inductor as well as the first part of the capacitance (220pF) are assembled on the main board. To operate the OM29263ADK antenna, the C0 (220pF) on the PNEV5180B or the PNEV7462C must be replaced by a 68pF.

(b) The DPC and its related features should be disabled to operate an asymmetrical antenna.

### 2.3 Matching board

The OM29263ADK matching board can be used to connect and tune any own antenna coil to any of the NFC reader evaluation boards.

## 3 Software description

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The antenna kit does neither need nor contain any software. The antennas are supposed to be used together with the given SW of the related evaluation boards (e.g. refer to [5]).

## 4 References

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1. <https://www.nxp.com/products/identification-and-security/nfc/nfc-reader-ics/clrc663-iplus-i-nfc-frontend-development-kit-for-access-management-applications:OM26630FDK>
2. CLEV6630A
3. <https://www.nxp.com/products/identification-and-security/nfc/nfc-reader-ics/pn5180-nfc-frontend-development-kit-for-pos-terminal-applications:OM25180FDK>
4. <https://www.nxp.com/pages/nfc-controller-development-kit:OM27462CDK>
5. <https://www.nxp.com/products/identification-and-security/nfc/nfc-reader-ics/nfc-cockpit-configuration-tool-for-nfc-ics:NFC-COCKPIT>



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