



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



UM11098

OM29263ADK Quick start guide antenna kit

Rev. 1.0 — 8 February 2018
465010

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.

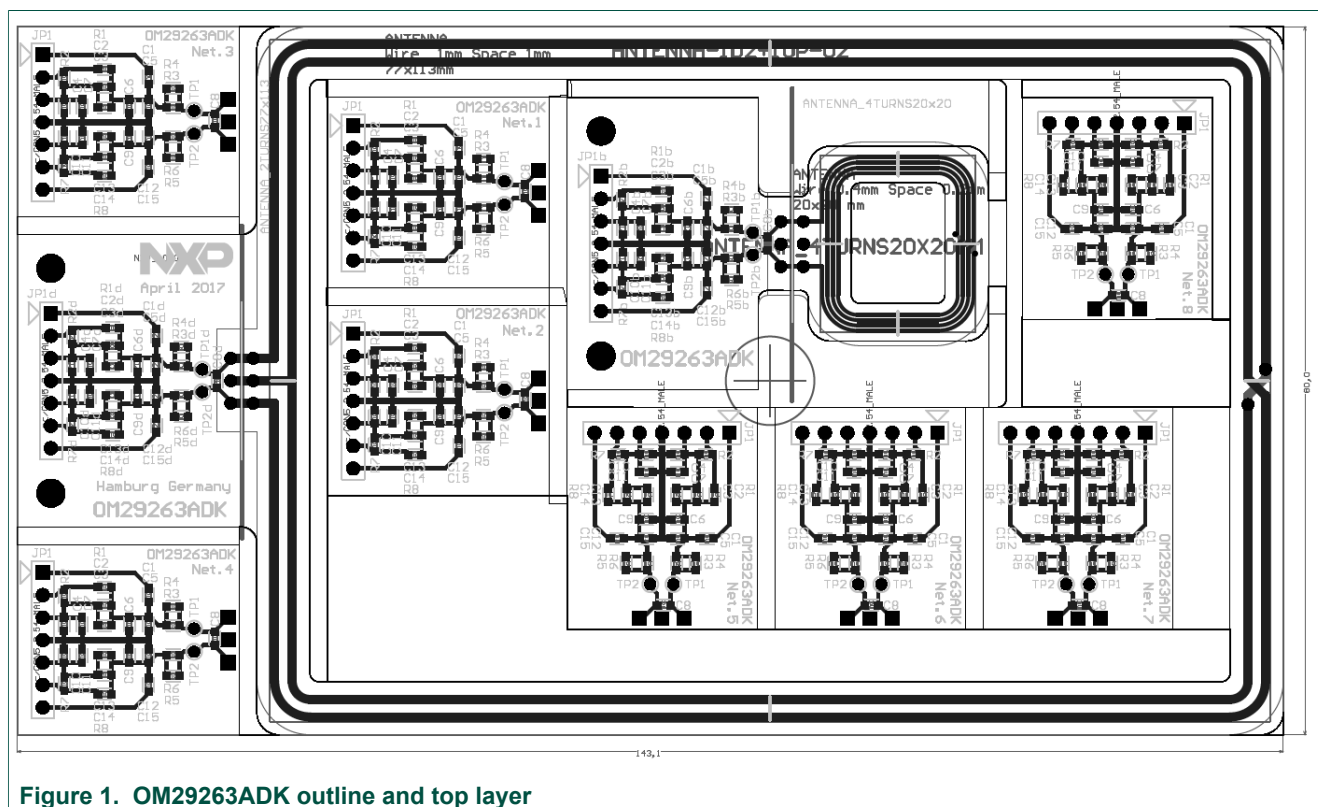
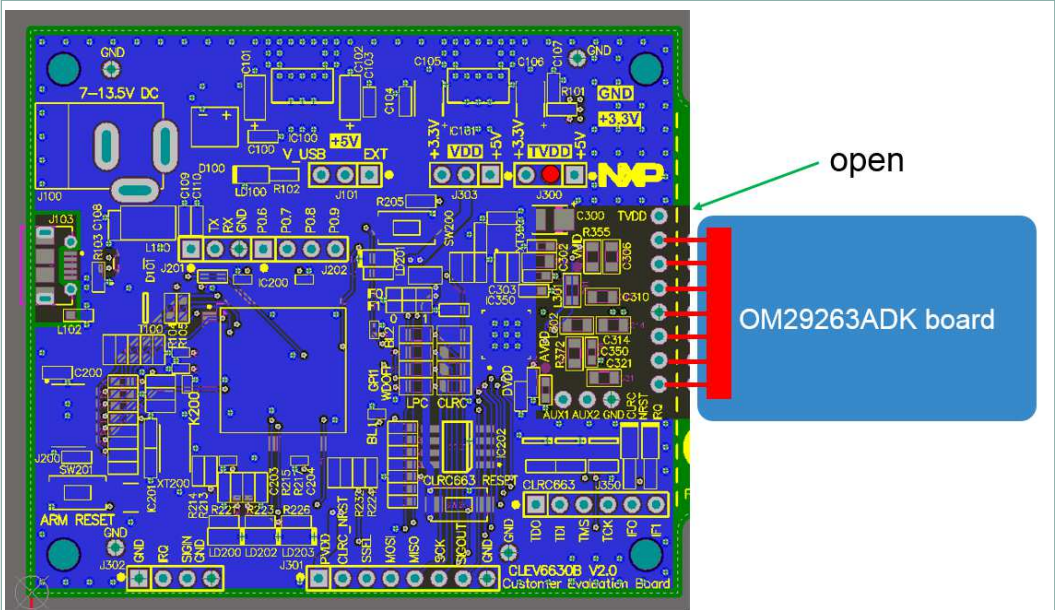


Figure 1. OM29263ADK outline and top layer

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).

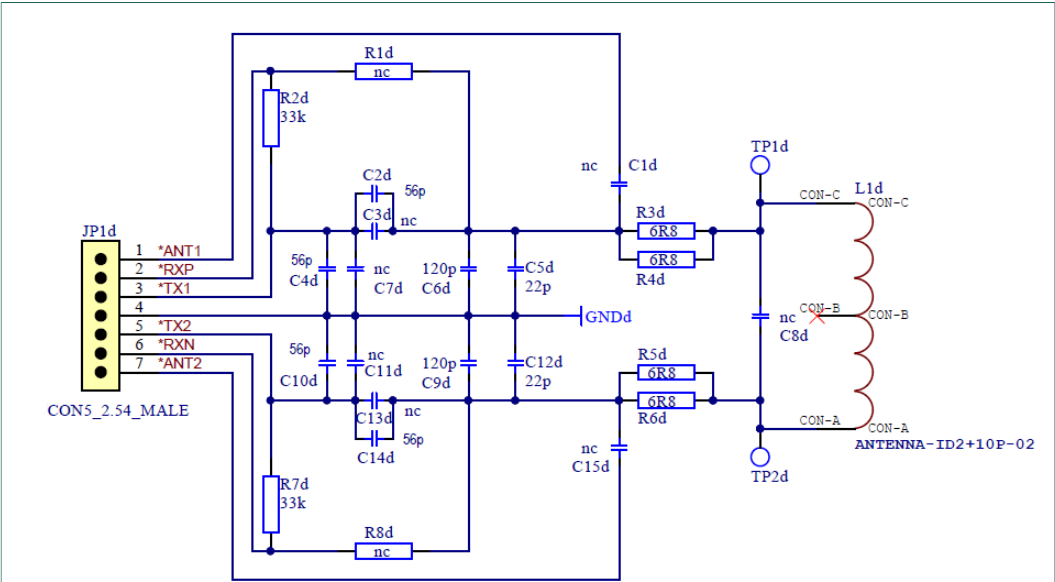


1. The antenna of the CLEV6630B is cut off and replaced by an OM29263 ADK board.

Figure 2. Example of the CLEV663B with OM29263 ADK board

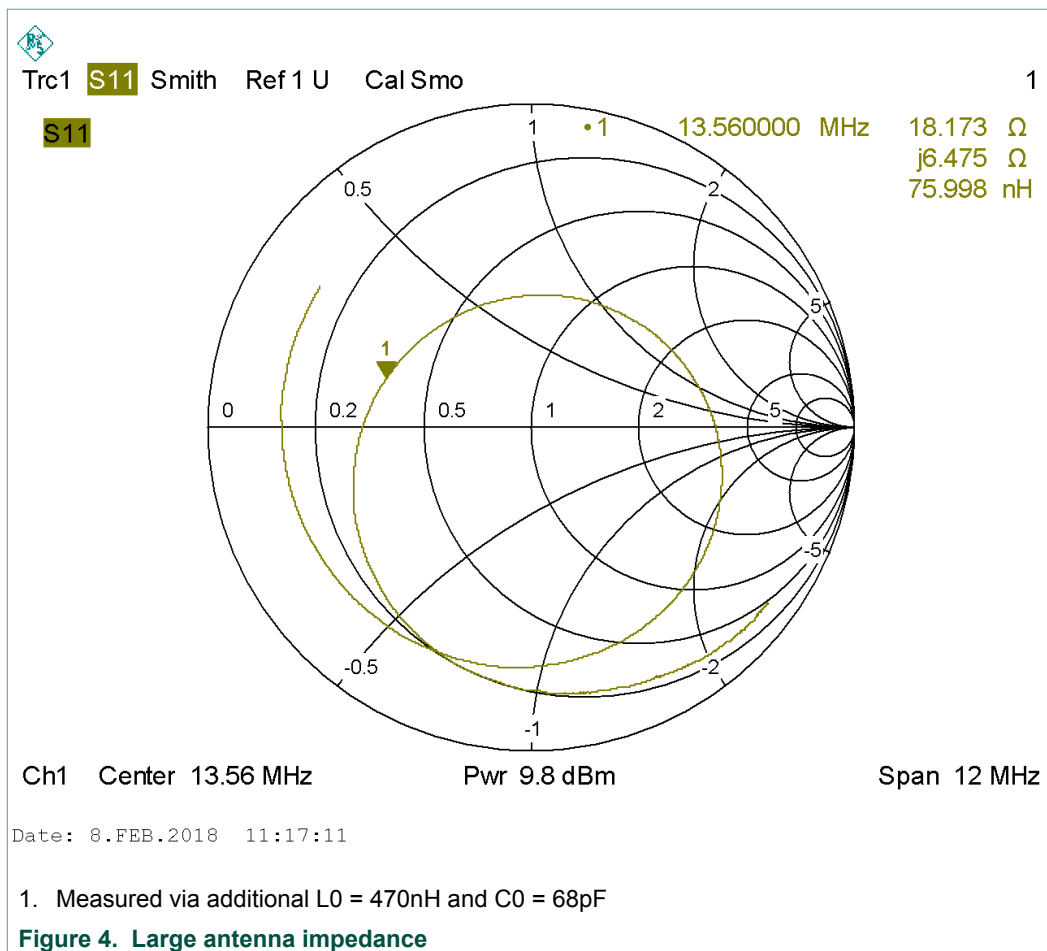
2.1 Large antenna

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

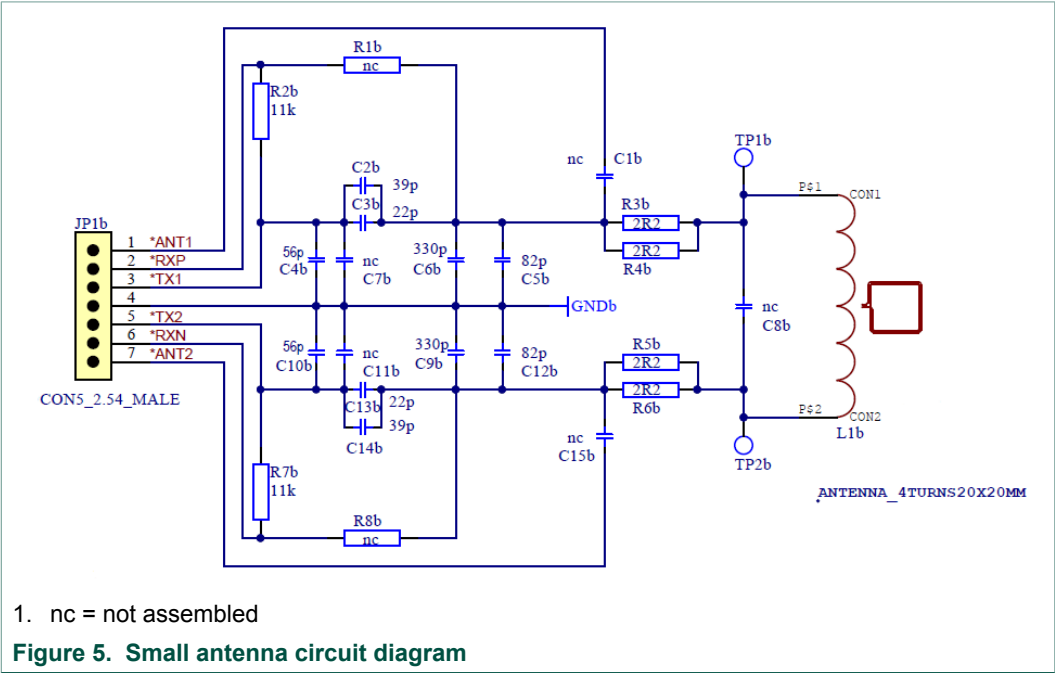
In case of PN5180 and PN7462 family, (a) the EMC filter cut off frequency must be adjusted, and (b) the DPC and related features should be disabled, since the antenna is asymmetrically tuned and the DPC is not used.

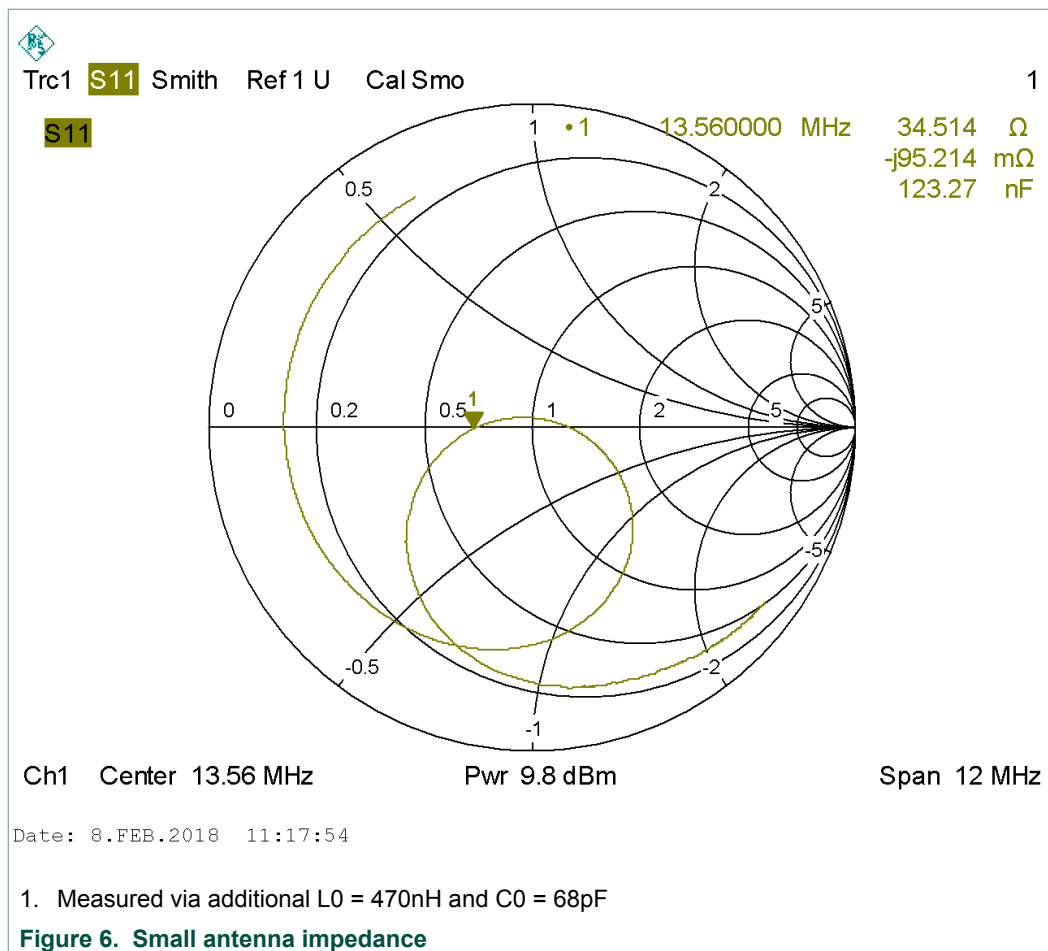
(a) The original antenna uses a symmetrical tuning, which uses an EMC filter with L0 = 470nH and C0 = 253pF (220pF + 33pF). The inductor as well as the first part of the capacitance (220pF) are assembled on the main board. To operate the OM29263ADK antenna, the C0 (220pF) on the PNEV5180B or the PNEV7462C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





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

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

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>

5 Legal information

5.1 Definitions

Draft — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

5.2 Disclaimers

Limited warranty and liability — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. NXP Semiconductors takes no responsibility for the content in this document if provided by an information source outside of NXP Semiconductors. In no event shall NXP Semiconductors be liable for any indirect, incidental, punitive, special or consequential damages (including - without limitation - lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory. Notwithstanding any damages that customer might incur for any reason whatsoever, NXP Semiconductors' aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms and conditions of commercial sale of NXP Semiconductors.

Right to make changes — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use — NXP Semiconductors products are not designed, authorized or warranted to be suitable for use in life support, life-critical or safety-critical systems or equipment, nor in applications where failure or malfunction of an NXP Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental damage. NXP Semiconductors and its suppliers accept no liability for inclusion and/or use of NXP Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification. Customers are responsible for the design and operation of their applications and products using NXP Semiconductors products, and NXP Semiconductors accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the NXP Semiconductors product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products. NXP Semiconductors does not accept any

liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using NXP Semiconductors products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). NXP does not accept any liability in this respect.

Export control — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

Evaluation products — This product is provided on an "as is" and "with all faults" basis for evaluation purposes only. NXP Semiconductors, its affiliates and their suppliers expressly disclaim all warranties, whether express, implied or statutory, including but not limited to the implied warranties of non-infringement, merchantability and fitness for a particular purpose. The entire risk as to the quality, or arising out of the use or performance, of this product remains with customer. In no event shall NXP Semiconductors, its affiliates or their suppliers be liable to customer for any special, indirect, consequential, punitive or incidental damages (including without limitation damages for loss of business, business interruption, loss of use, loss of data or information, and the like) arising out of the use of or inability to use the product, whether or not based on tort (including negligence), strict liability, breach of contract, breach of warranty or any other theory, even if advised of the possibility of such damages. Notwithstanding any damages that customer might incur for any reason whatsoever (including without limitation, all damages referenced above and all direct or general damages), the entire liability of NXP Semiconductors, its affiliates and their suppliers and customer's exclusive remedy for all of the foregoing shall be limited to actual damages incurred by customer based on reasonable reliance up to the greater of the amount actually paid by customer for the product or five dollars (US\$5.00). The foregoing limitations, exclusions and disclaimers shall apply to the maximum extent permitted by applicable law, even if any remedy fails of its essential purpose.

Translations — A non-English (translated) version of a document is for reference only. The English version shall prevail in case of any discrepancy between the translated and English versions.

5.3 Licenses

Purchase of NXP ICs with NFC technology

Purchase of an NXP Semiconductors IC that complies with one of the Near Field Communication (NFC) standards ISO/IEC 18092 and ISO/IEC 21481 does not convey an implied license under any patent right infringed by implementation of any of those standards. Purchase of NXP Semiconductors IC does not include a license to any NXP patent (or other IP right) covering combinations of those products with other products, whether hardware or software.

5.4 Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

Figures

Fig. 1.	OM29263ADK outline and top layer	3	Fig. 4.	Large antenna impedance	5
Fig. 2.	Example of the CLEV663B with OM29263		Fig. 5.	Small antenna circuit diagram	6
	ADK board	4	Fig. 6.	Small antenna impedance	7
Fig. 3.	Large antenna circuit diagram	4			

Contents

1	Introduction	3
2	Hardware description	3
2.1	Large antenna	4
2.1.1	Use with CLEV6630A and CLEV6630B	5
2.1.2	Use with PNEV5180B and PNEV7462C	5
2.2	Small antenna	6
2.2.1	Use with CLEV6630A and CLEV6630B	7
2.2.2	Use with PNEV5180B and PNEV7462C	7
2.3	Matching board	8
3	Software description	8
4	References	8
5	Legal information	9

Please be aware that important notices concerning this document and the product(s) described herein, have been included in section 'Legal information'.

© NXP B.V. 2018.

All rights reserved.

For more information, please visit: <http://www.nxp.com>

For sales office addresses, please send an email to: salesaddresses@nxp.com

Date of release: 8 February 2018

Document identifier: UM11098

Document number: 465010