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Using an LC Harmonic Filter at 868 MHz and 915 MHz with the EVAL-ADF7020 and EVAL-ADF7025 Evaluation Boards
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INTRODUCTION

This application note outlines the steps for using an LC harmonic filter at 868 MHz and 915 MHz with the evaluation boards for the ADF7020 and ADF7025 devices.

The Analog Devices, Inc. reference designs for 868 MHz and 915 MHz currently use a dielectric filter from Murata (Murata LFL18924MTC1A052). This filter provides a low cost, small footprint solution to achieve the harmonic suppression necessary to meet relevant FCC and ETSI regulations.

HOW TO USE A HARMONIC FILTER

It is possible to use a simple LC harmonic filter in place of the dielectric filter. To do so, follow the steps outlined below.

1. Download the ADF7020 LC filter schematic and evaluation board Gerber files from the analog.com website.

    Although this schematic/layout refers to ADF7020 433 MHz operation, it can also be used for ADF7020 and ADF7025 868 MHz or 915 MHz operation using the values as shown in Table 1.

2. Insert the appropriate filter values from Table 1.

For the ADF7020, the evaluation board data sheet (EVAL-ADF7020-XDBX) provides the remainder of the BOM.

Use the EVAL-ADF7020DBX bill of materials (BOM) in the EVAL-ADF7020-XDBX data sheet, which is common to both frequencies, then:

*   For 915 MHz operation, refer to the EVAL-ADF7020DB1 BOM in the EVAL-ADF7020-XDBX data sheet.

*   For 868 MHz operation, refer to the ADF7020DB2 BOM in the EVAL-ADF7020-XDBX data sheet.

For the ADF7025, the evaluation board data sheet (EVAL-ADF7025DB1) provides the remainder of the BOM.

Table 1. Filter Values for 915 MHz and 868 MHz Operation

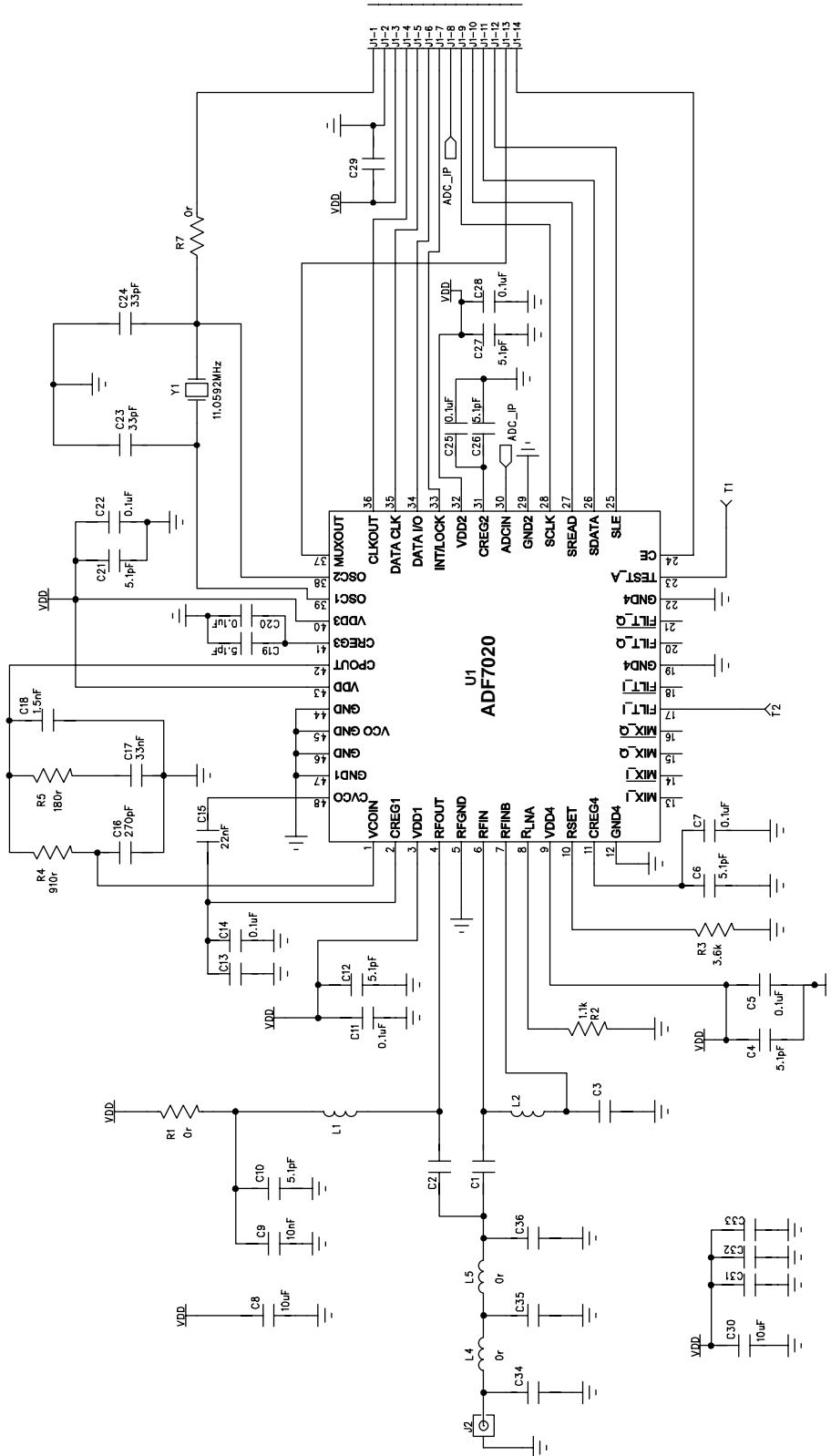| Filter	Value
L4	5.1 nH
L5	6.8 nH
C35	3.9 pF
C34	Not Connected
C36	Not Connected

Figure 1 provides the schematic of the ADF702x LC filter board.

Figure 1. Schematic of the ADF702x LC Filter Board

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