

## Customer Demo Board for the WM7121P

### Features

- WM7121P MEMS microphone
  - Pressure field
  - Free field
- Plug-and-play interface to smart codec main board
  - Functional test
  - Full signal path setup with smart codec
  - System development and prototyping
  - Algorithm verification

### Description

The CDB7121P is a flexible PCB for full electrical and acoustic validation of the WM7121P MEMS microphone. The CDB7121P is designed to connect to test equipment via on board test points or via a codec main board with mating edge connector socket.

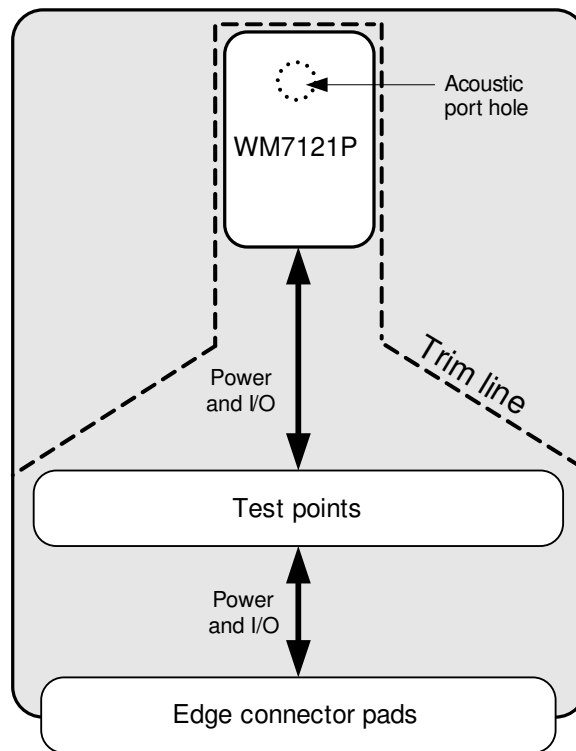
The CDB7121P is ideally suited for pressure field acoustic measurements. Furthermore, the flexible region can be trimmed to enable accurate free field measurements to be made.

The CDB7121P also serves as a component and layout reference for the WM7121P.

### Ordering Information

CDBWM7121-M-2

Customer Demo Board



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**Table of Contents**

<b>1 System Overview</b> .....	<b>3</b>
1.1 Test Points .....	3
1.2 Edge Connector .....	3
1.3 Trim Line .....	3
<b>2 Quick Setup Guide</b> .....	<b>4</b>
2.1 Pressure field acoustic test .....	4
2.2 Free field acoustic test .....	5
<b>3 Schematic</b> .....	<b>6</b>
<b>4 Layout</b> .....	<b>7</b>
<b>5 Known Issues</b> .....	<b>7</b>
<b>6 Bill of Materials</b> .....	<b>7</b>
<b>7 Revision History</b> .....	<b>7</b>

## 1 System Overview

The CDB7121P customer demo board is a flexible PCB for evaluating the WM7121P low-profile analog silicon microphone. The following subsections describe the features of CDB7121P customer demo board in detail.

### 1.1 Test Points

Six test points are available to provide all the connections from WM7121P to standard test equipment for full acoustic measurement. Test points are described in [Table 1-1](#). The operating supply voltage of WM7121P is provided in the data sheet, which is available from Cirrus website.

**Table 1-1. Test Point signals**

Test Point	Pin	Direction	Description
TP1	VDD	Supply	Analog Supply
TP2	OP+	Output	Microphone analogue output signal
TP3	NA	NA	Not Applicable
TP4, TP5, TP6	GND	Ground reference	Analog Ground

### 1.2 Edge Connector

The J1 and J2 edge connector pads provide a pluggable connection to a codec main board with compatible edge card socket. The edge connector pin-outs are described in [Table 1-2](#) and [Table 1-3](#).

**Table 1-2. Edge connection J1**

Pin	Pin	Direction	Description
1	OP+	Output	Microphone analogue output signal (pin 1 is marked by a small dot)
2	VDD	Supply	Analog supply from codec MICBIAS
3, 7	GND	Ground reference	Analog ground
8	—	—	Not applicable
4, 5, 6, 9, 10	NC	—	No connection

**Table 1-3. Edge connection J2**

Pin	Pin	Direction	Description
1,2,3,4,5,6,7,8,9,10	NC	NA	No Connection

### 1.3 Trim Line

To enable more accurate free field frequency responses to be obtained, the flexible region of the CDB7121P may be trimmed to reduce acoustic interactions. If required, there is a guide line on the silkscreen that can be cut along. Refer to [Fig. 4-1](#) for further details.

## 2 Quick Setup Guide

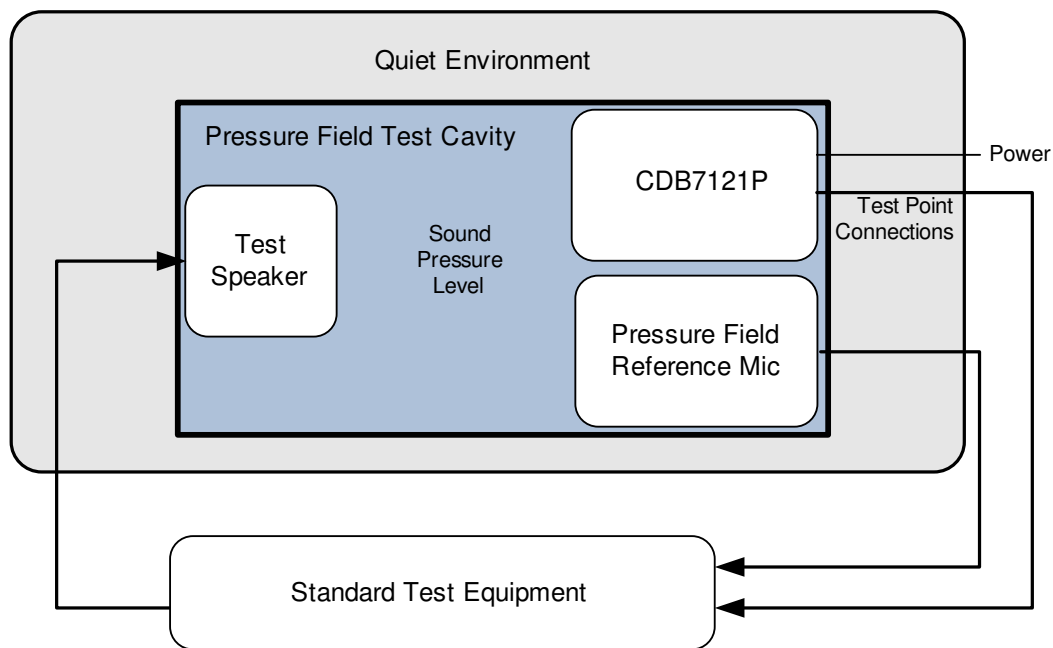
As a standalone PCB, the CDB7121P can be used in a pressure field acoustic test setup or free field acoustic test setup. It can also be connected to a compatible codec main board to enable full signal path setup within a system platform.

Acoustic measurements can be obtained using a number of different methods. Typical acoustic test setups, using a comparison method, are shown in [Section 2.1](#) and [Section 2.2](#).

### 2.1 Pressure field acoustic test

Recommendations for accurate pressure field measurements are as follows:

- Ensure calibrated test equipment is used for making measurements
- Ensure CDB7121P acoustic port hole is tightly sealed within the pressure field test cavity
- Ensure CDB7121P and reference mic are placed close together with minimum placement error
- Use a suitable test microphone—a pressure field reference microphone is recommended
- Ensure the pressure field test cavity is tightly sealed
- Measurements should be performed within a quiet environment

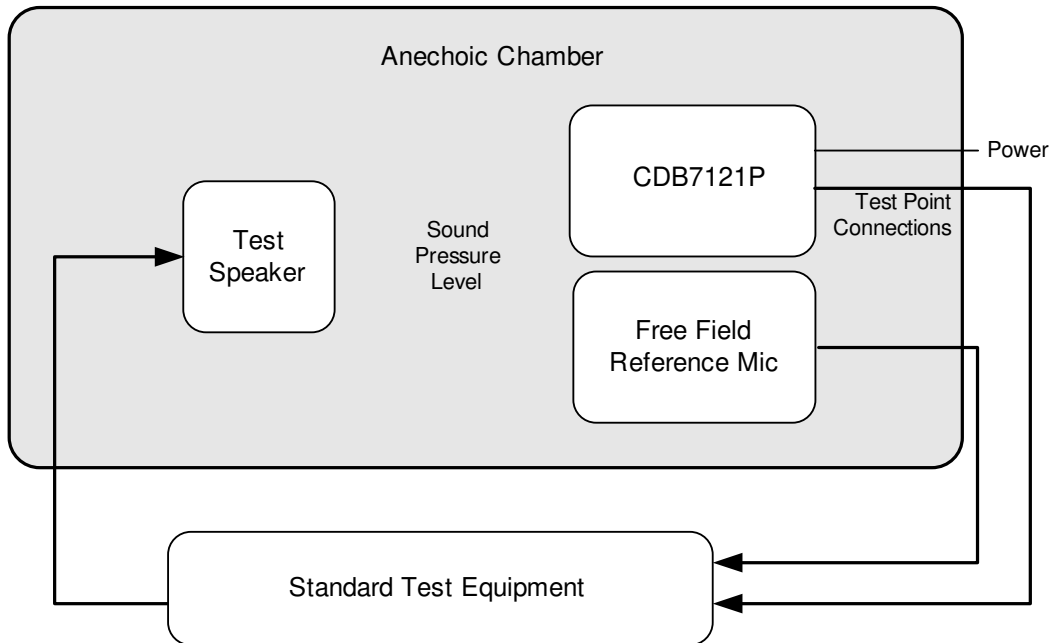


**Figure 2-1. Pressure field test setup with CDB7121P**

## 2.2 Free field acoustic test

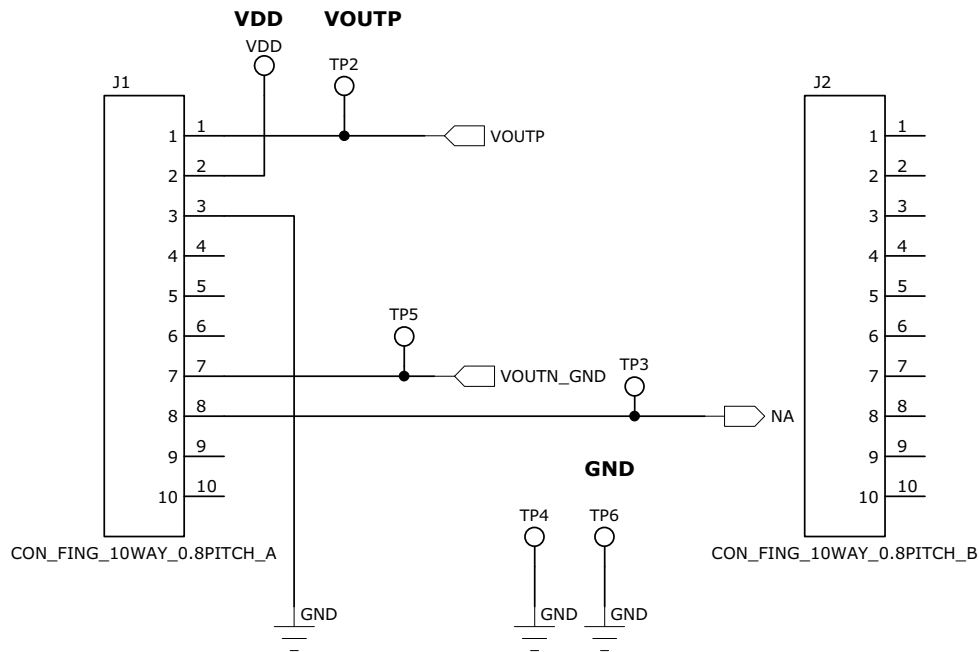
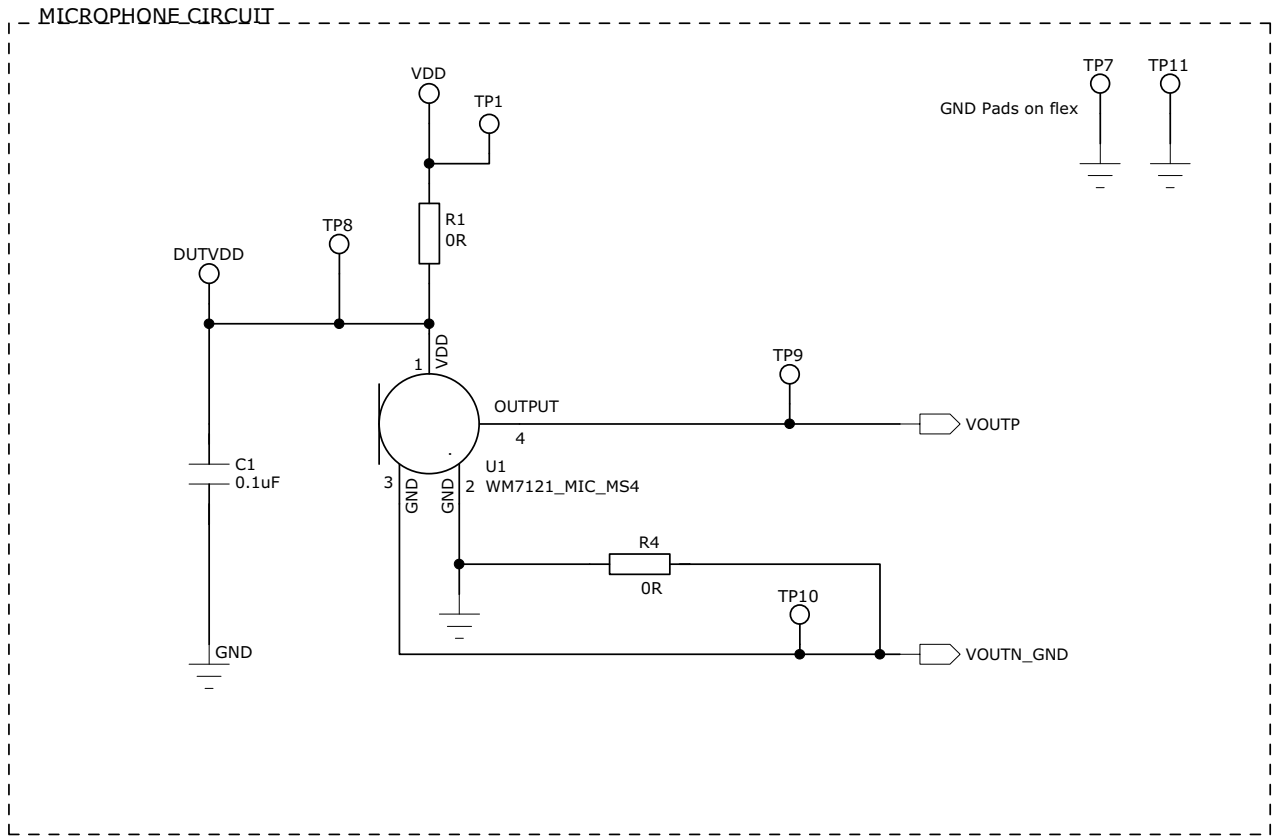
Recommendations for accurate free field measurements are as follows:

- Ensure calibrated test equipment is used for making measurements
- Ensure CDB7121P acoustic port hole and reference mic are facing to the incoming sound pressure
- Ensure CDB7121P and reference mic are placed close together with minimum placement error
- The CDB7121P may be trimmed along the 'Trim line' to improve accuracy
- Use a suitable test microphone—a free field reference microphone is recommended
- Measurements should be performed within an anechoic environment



**Figure 2-2. Free field test setup with CDB7121P**

### 3 Schematic



## 4 Layout

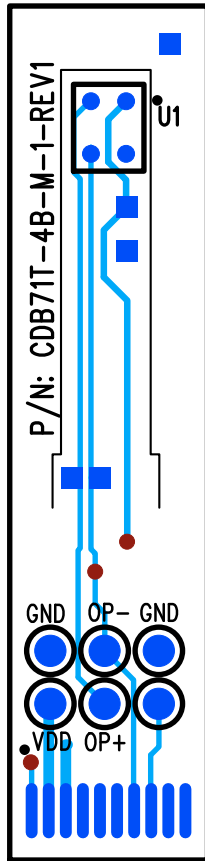


Figure 4-1. Top Layer + Silkscreen



Figure 4-2. Bottom Layer + Silkscreen

## 5 Known Issues

There are no known issues with this board.

## 6 Bill of Materials

Table 6-1. Bill of Materials

Item	RefDes	Description	Manufacturer	Manufacturer's Part Number
1	U1	WM7121P Bottom Port Analog Silicon Microphone	Cirrus Logic	WM7121PIMSE
2	C1	0.1- $\mu$ F 0603 SMD Ceramic Capacitor 16 V X7R	Phycomp	2238 786 15649
3, 4	R1, R4	0- $\Omega$ 0603 SMD chip resistor 1% 0.063W	Multicomp	MC 0.063W 0603 0R
5	PCB	WM7121P Top Port demo board PCB	Cirrus Logic	CDB71T-4B-M1

## 7 Revision History

Table 7-1. Revision History

Revision	Changes
DB1 NOV '16	<ul style="list-style-type: none"> <li>Initial version.</li> </ul>

**Important:** Please check [www.Cirrus.com](http://www.Cirrus.com) to confirm that you are using the latest revision of this document and to determine whether there are errata associated with this device.

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## Contacting Cirrus Logic Support

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To find the one nearest you, go to [www.cirrus.com](http://www.cirrus.com).

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