

*Silver*  
TELECOM

**Ag2130 Evaluation Board  
User Manual**

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<b>1</b>	<b>Introduction</b>	<b>2</b>
<b>2</b>	<b>Board Description</b>	<b>2</b>
2.1	<i>Board Power</i> .....	3
2.2	<i>Ag2130 Power Options</i> .....	3
2.3	<i>Ag2130 Impedance Programming</i> .....	3
<b>3</b>	<b>Getting Started</b>	<b>3</b>
3.1	<i>Equipment Required</i> .....	3
<b>4</b>	<b>Using the Board</b>	<b>4</b>
4.1	<i>Power On Conditions</i> .....	4
4.2	<i>Seizing and Releasing the Line</i> .....	4
4.3	<i>Line Test</i> .....	5
<b>5</b>	<b>Using an Ag2130 and Ag117x Evaluation Boards</b>	<b>5</b>
5.1	<i>Set-up Conditions</i> .....	5
5.2	<i>Ringng the Phone</i> .....	6
5.3	<i>Making a Call</i> .....	6
<b>6</b>	<b>Using the Ag2130 and Ag117x via a CODEC board</b>	<b>7</b>
6.1	<i>Set-up Conditions</i> .....	7
6.2	<i>Operation</i> .....	7
<b>7</b>	<b>Circuit Schematic and Software</b>	<b>7</b>

# 1 Introduction

This manual is intended to be a guide to using the “Ag2130: Low Cost PSTN Interface”.

The Ag2130 evaluation board has been designed to work with the Ag1170 evaluation board. Examples of the different set-ups that can be used are shown within this user manual.

# 2 Board Description

The Ag2130 evaluation board can be set at either +5V or +3V, the Ag2130 will work at either of these voltages.

The board has a single-in-line (SIL) device sockets for the single-in-line.

The evaluation board has two 25-way D-Type connectors (CN1 socket and CN2 plug) these can be used to connect this board to other evaluation boards. There is also an RJ11 connector CN3 to connect the line and a power connector CN6 to connect to the power pack (included in the evaluation kit only).

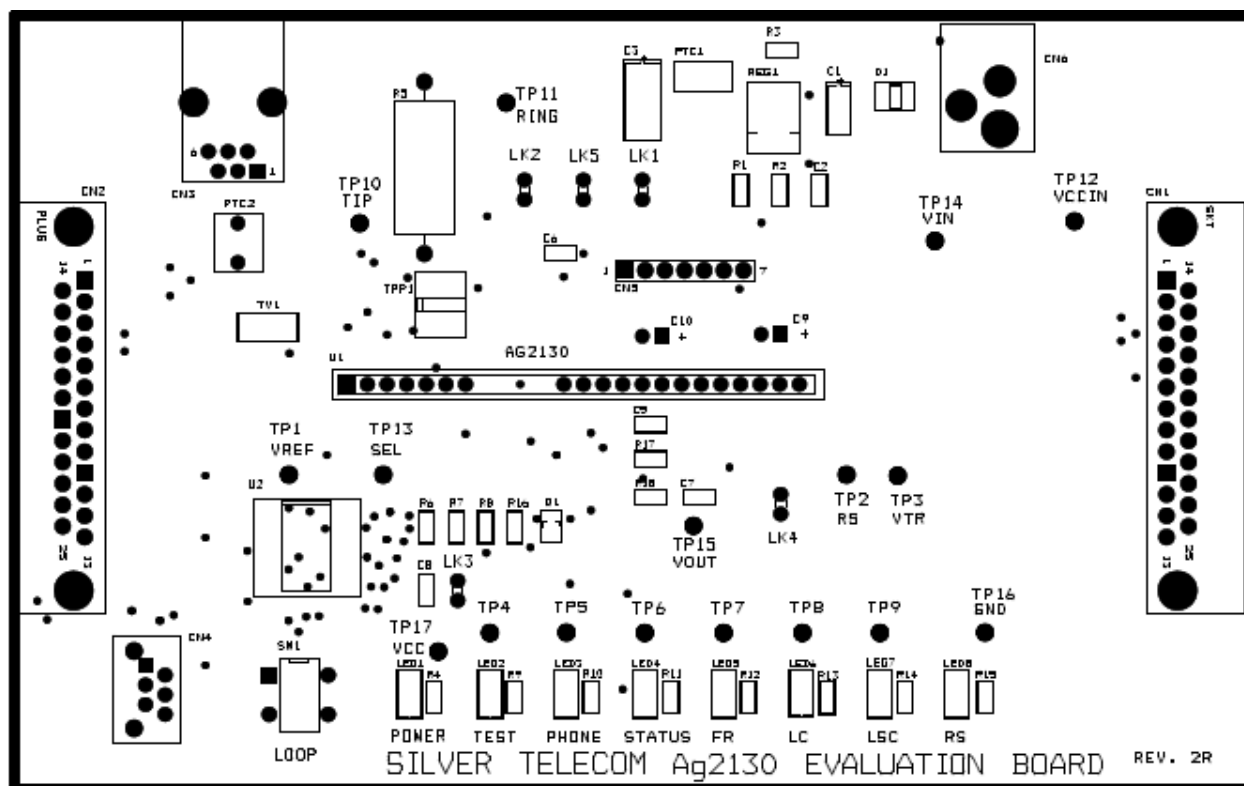


Figure 1

## **2.1 Board Power**

The Ag2130 is powered by an on-board regulator, the power socket CN6 accepts an input voltage\* range of 7.5V to 9V, the supply needs to be capable of supply to 1 Amp. The Ag2130 evaluation kit has a power pack included, but if a different power supply is going to be used then it is important that it meets the above criteria and the centre pin is positive (+).

- \* The power input is polarity protected and the on-board regulator provides the supply rail for the Ag2130 and the additional board circuitry.

## **2.2 Ag2130 Power Options**

To set the board Vcc rail to +5V ensure LK1 is NOT fitted, to set the Vcc rail to +3.3V ensure LK1 is fitted.

## **2.3 Ag2130 Impedance Programming**

When using the Ag2130, the impedance module must be fitted to the evaluation board (CN5).

A 600R impedance module is supplied as standard with the Ag2130 evaluation kit, but other variants are available upon request. They can be provided to match various Network and Terminal Impedances, see the Ag2130 data sheet for more information.

# **3 Getting Started**

## **3.1 Equipment Required**

Figure 2 shows a basic set up using a single Ag2130 evaluation board connected to the line.

The equipment required: -

- PSU 7.5V @ 1 Amp (supplied)
- (PSTN) Line

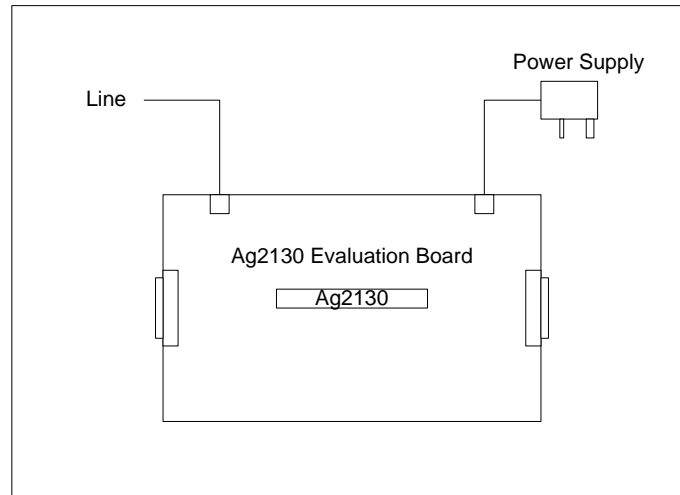


Figure 2: Basic set-up

## 4 Using the Board

### 4.1 Power On Conditions

When the Ag2120 evaluation board is powered and connected to the Line, the board will default to the conditions shown in Table 1 (idle state).

Input Pin	LED Status *
LC = Logic 0	Power = ON PHONE = OFF STATUS = OFF FR = OFF LC = OFF LSC = OFF RS = OFF

Table 1: Default Condition

\* If the line is reversed or disconnected the FR LED will be ON.

### 4.2 Seizing and Releasing the Line

To Seize the line (take the Ag2130 off-hook) press and release the “LOOP” button, the “LSC” LED will turn ON followed by the “LC” LED. To Release the line (put the Ag2130 on-hook) press and release the “LOOP” button, both the “LSC” and “LC” LED will switch OFF.

### **4.3 Line Test**

The Ag2130 evaluation board automatically monitors the status of the (PSTN) Line. This is done by the onboard microcontroller measuring and comparing the dc voltage of the VREF and VTR pins of the Ag2130. This board uses a Microchip 16F88 microcontroller but there are other manufacturers that make similar microcontrollers that are more cost effective.

If the Line the line polarity is forward then the “FR” LED will be illuminated. If the line polarity is reversed then the “FR” LED will be OFF.

If the Line is not connected then the “STATUS” warning LED will illuminate. If there is a parallel phone connected that is off-hook, then the “PHONE” warning LED will illuminate (this LED will also illuminate if the Line voltage is too low).

During normal Line operating conditions the “STATUS” and “PHONE” LEDs will remain OFF.

## **5 Using an Ag2130 and Ag117x Evaluation Boards**

### **5.1 Set-up Conditions**

The Ag2130 evaluation board can be connected to an Ag117x evaluation board as shown in Figure 3. The Ag117x evaluation board can be used with the Ag1170 and Ag1171 SLIC modules.

The boards can be operated with a single power supply, in figure 3 the power supply is connected to board “A”. Because the Ag117x draws more supply current than the Ag2130, therefore this is the optimum configuration.

When connecting two evaluation board together, please ensure that the Vcc voltage selection are the same on both board (both set to 5V or both set to 3.3V).

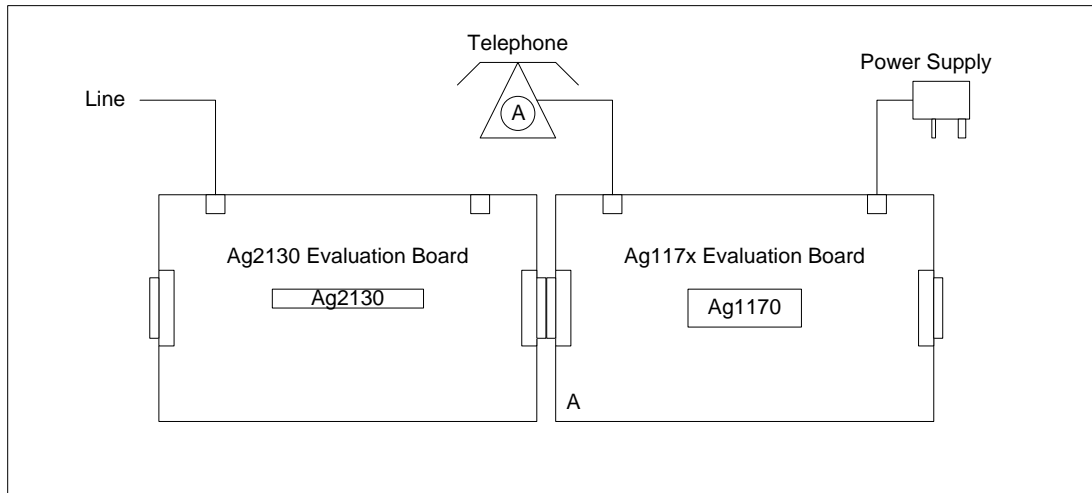


Figure 3: Connecting an Ag117x and Ag2130 Evaluation Boards

## 5.2 Ringing the Phone

If an external call is made from the “Line” connected to the Ag2130 evaluation board, the “RS” LED will flash at the ringing frequency, the board will also signal the Ag117x board and telephone “A” will ring. When telephone “A” goes off-hook, the ringing will automatically stop and the Ag117x board will instruct the Ag2130 board to seize the line (accepting the call).

## 5.3 Making a Call

If both evaluation boards are in their idle state, when telephone “A” goes off-hook a dial tones should be audible.

To make a call, dial the number required from telephone “A” and when the connection is made the ring tone (or engaged tone) will be heard. When the far end phone goes off-hook the audio paths will be connected, if the audio level is too high (at the far end) then LK4 can be fitted to reduce this by 6dB.

## 6 Using the Ag2130 and Ag117x via a CODEC board

### 6.1 Set-up Conditions

The Ag2130 evaluation boards can be connected to an Ag117x evaluation board via a CODEC board as shown in Figure 4. Each board can be operated independently as shown in section 4.

The boards can be operated with a single power supply in figure 4 the power supply is connected to board “A”. Because the Ag117x draws the most power supply current, therefore this is the optimum configuration.

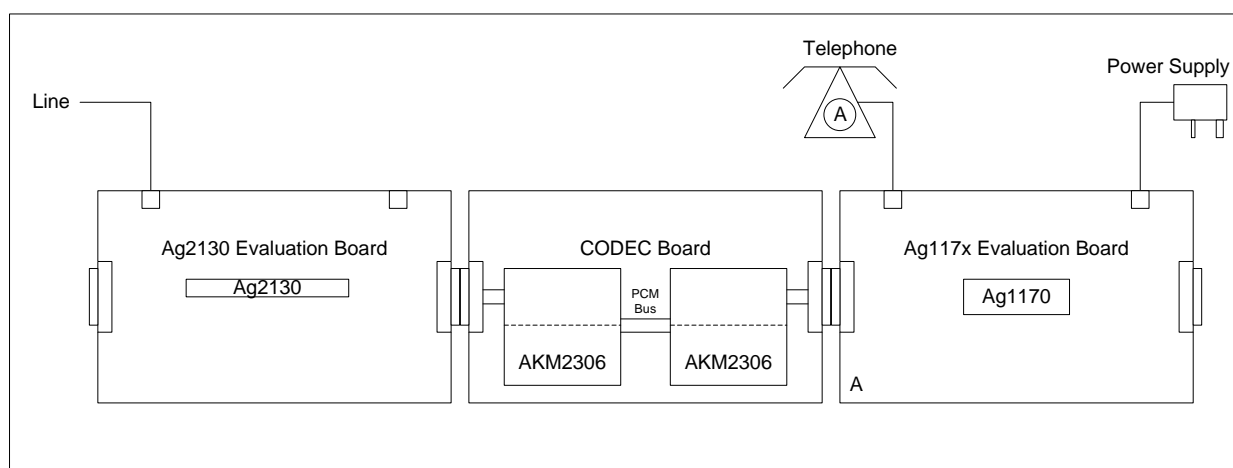


Figure 4: Connecting an Ag117x, Ag2130 and CODEC Boards

### 6.2 Operation

The operation of the Ag2130 evaluation board when used with the Ag117x and CODEC board is no different from that detailed in Section 5.

In this application the Ag2130 and Ag117x boards use channel 0 of the CODEC board (time slot 0). The CODEC board has two channels (0 and 1) in this case channel 1 is not used. But by default there will be data present on the PCM bus for this channel (in time slots 1). This channel can be muted or powered down by using the selector switches on the CODEC board, see the CODEC Board User Manual for details.

## 7 Circuit Schematic and Software

The circuit schematic for the Ag2130 evaluation board and the control software (asm file) is available from Silver Telecom Ltd upon request.