CML Microcircuits

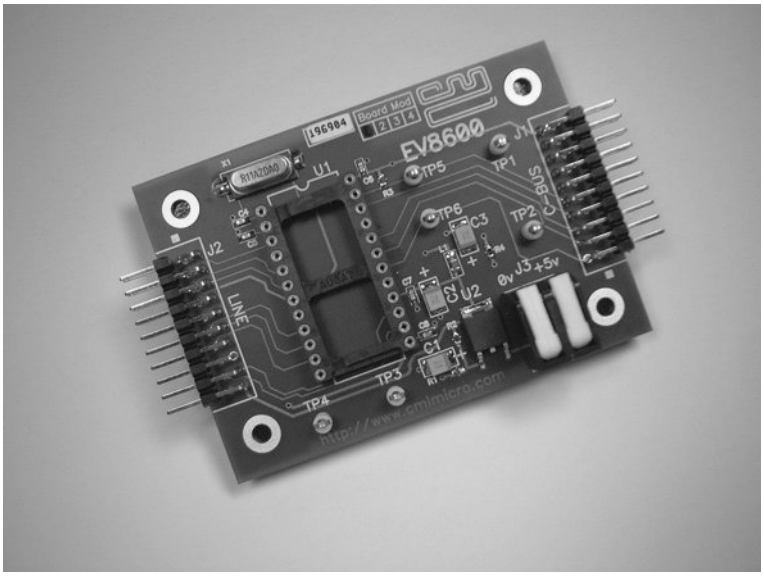
COMMUNICATION SEMICONDUCTORS

# EV8600
## Modem Evaluation Kit

UM8600/2 February 2006 Provisional Issue

### Features

- For the evaluation of the CMX865 and CMX868A modems
- Target IC Socket for ease of use
- Connectors for convenient connection of external DAA, host micro cards and test-measurement equipments
- Operation with users host controller card or CML PE0001 Interface Card
- Test points for convenient access to most useful signals
- On-board 11.0592MHz Xtal circuit
- On-board 3.3V voltage regulator supplies both analogue and digital rails
- Powered by a single, +5V unregulated supply




## 1 Brief Description

The EV8600 forms a basic evaluation platform for the CMX865 and CMX868A wireline modems. The board is populated with a dual-in-line socket to host the desired target IC and other components that are common to the two modems.

Two on-board connectors are provided for signal interfacing. The modem connector provides the analogue signal inputs and outputs plus other relevant signals to allow the addition of custom DAAs or to facilitate the connection of telecom test-measurment equipment. The C-BUS connector breaks out the full C-BUS serial interface for convenient connection of a host processor card or the CML PE0001 Evaluation Kit Interface Card.

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An on-board 3.3 volt filtered and regulated circuit is distributed to analogue and digital rails and is also available at both the modem connector and C-Bus connector for powering off-board circuits.

IC timing is made available by an on-board 11.0592MHz Xtal clock. On-board test-points provide easy access to IRQ and chip select functions as well as both analogue and digital ground points.

The analogue and digital ground planes are physically seperate but electrically coupled with a zero-Ohm resistor. This resistor can be removed or replaced with a capacitor if required.

Evaluation ICs are not supplied with this EvKit and should be purchased separately.

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It is always recommended that you check for the latest product datasheet version from the Datasheets page of the CML website: [www.cmlmicro.com].

# 2. Preliminary Information

## 2.1 Laboratory Equipment

The following laboratory equipment is needed to use this evaluation kit:

### 2.1.1 Power Supply

+5V (nominal), 300mA

## 2.2 Handling Precautions

Like most evaluation kits, this product is designed for use in laboratory environments. The following practices will help ensure its proper operation.

### 2.2.1 Static Protection

This product uses low power CMOS circuits which can be damaged by electrostatic discharge. Partially damaged circuits can function erroneously, leading to misleading results. Observe ESD precautions at all times when handling this product.

### 2.2.2 Contents - Unpacking

Please ensure that you have received all of the items on the separate information sheet (EK8600) and notify CML within 7 working days if the delivery is incomplete.

## 2.3 Approvals

There are no approvals for this product.

## 3. Quick Start

Firstly, a sample of the chosen target device, not supplied, CMX865P4 or CMX868AP4, must be fitted to the socket provided, U1.

An example of how the EV8600 evaluation board may be used in a modem development system is shown below:

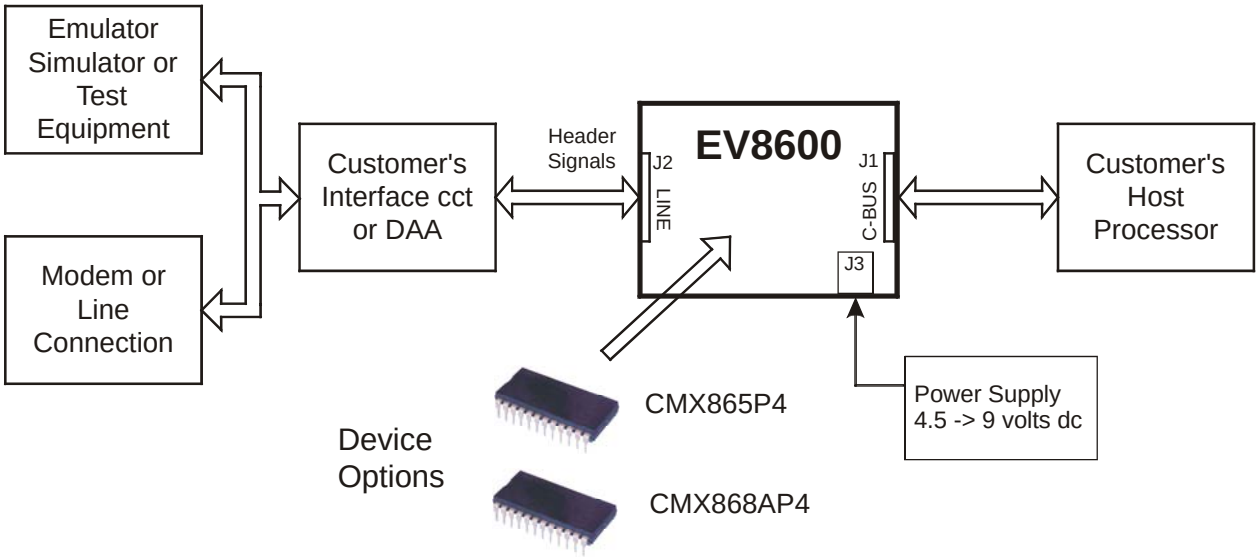


**Figure 1 Modem development using EV8600**

**Care should be taken when connecting the EV8600 to external circuits, as the C-BUS connector (J1) and the line connector (J2) are of the same form factor.**

## 4. Signal Lists

| CONNECTOR PINOUT | | | | |
|---|---|---|---|---|
| **Connector Ref.** | **Connector Pin No.** | **Signal Name** | **Signal Type** | **Description** |
| J1 | 1 | - | N/C | |
| | 2 | CSN | I/P | C-BUS Chip select. Connects to host μC. |
| | 3 | - | N/C | |
| | 4 | CDATA | I/P | C-BUS Serial data input. Connects to host μC. |
| | 5 | - | N/C | |
| | 6 | SCLK | I/P | C-BUS Serial clock input. Connects to host μC. |
| | 7 | - | N/C | |
| | 8 | RDATA | O/P | C-BUS Serial data output. Connects to host μC. |
| | 9 | - | N/C | |
| | 10 | IRQN | O/P | C-BUS Interrupt request. Connects to host μC. |
| | 11, 12 | GNDD | PWR | Digital supply ground. |
| | 13, 14, 15, 16, 17, 18 | - | N/C | |
| | 19, 20 | VDDD | PWR | 3.3V dc digital supply rail. |
| J2 | 1 | - | N/C | |
| | 2 | RLYDRV | O/P | Hook switch control. |
| | 3 | - | N/C | |
| | 4 | RD | I/P | Ring detector input. |
| | 5 | VDDD | PWR | 3.3V dc digital supply rail. |
| | 6 | RT | BI | Ring detector time constant. |
| | 7, 8 | GNDD | PWR | Digital supply ground. |
| | 9, 10 | GNDA | PWR | Analogue supply ground. |
| | 11 | RXAFB | O/P | Receive amplifier feedback. |
| | 12 | RXAN | I/P | Receive amplifier inverting input. |
| | 13 | RXA | I/P | Receive amplifier non-inverting input. |
| | 14 | VBIAS | BI | Analogue bias voltage, 1.65V dc. |
| | 15, 16 | GNDA | PWR | Analogue supply ground. |

| CONNECTOR PINOUT | | | | |
|---|---|---|---|---|
| **Connector Ref.** | **Connector Pin No.** | **Signal Name** | **Signal Type** | **Description** |
| J2 | 17 | TXAN | O/P | Transmit negative output. |
| | 18 | TXA | O/P | Transmit positive output. |
| | 19 | - | N/C | |
| | 20 | VDDA | PWR | 3.3V dc analogue supply rail. |
| J3 | 1 | +VIN | PWR | External supply voltage. |
| | 2 | GNDA | PWR | External supply ground. |

| TEST POINTS | | |
|---|---|---|
| **Test Point Ref.** | **Default Measurement** | **Description** |
| TP1 | 0V | Digital supply ground. |
| TP2 | 0V | Digital supply ground. |
| TP3 | 0V | Analogue supply ground. |
| TP4 | 0V | Analogue supply ground. |
| TP5 | +3.3V | C-BUS Interrupt output. |
| TP6 | +3.3V | C-BUS Chip Select input. |

**Notes:** I/P = Input
O/P = Output
BI = Bidirectional
N/C = Not connected
PWR = Power supply connection

## 5. Circuit Schematics and Board Layouts

For clarity, circuit schematics are available as separate high resolution files. This can be found on the CML website.

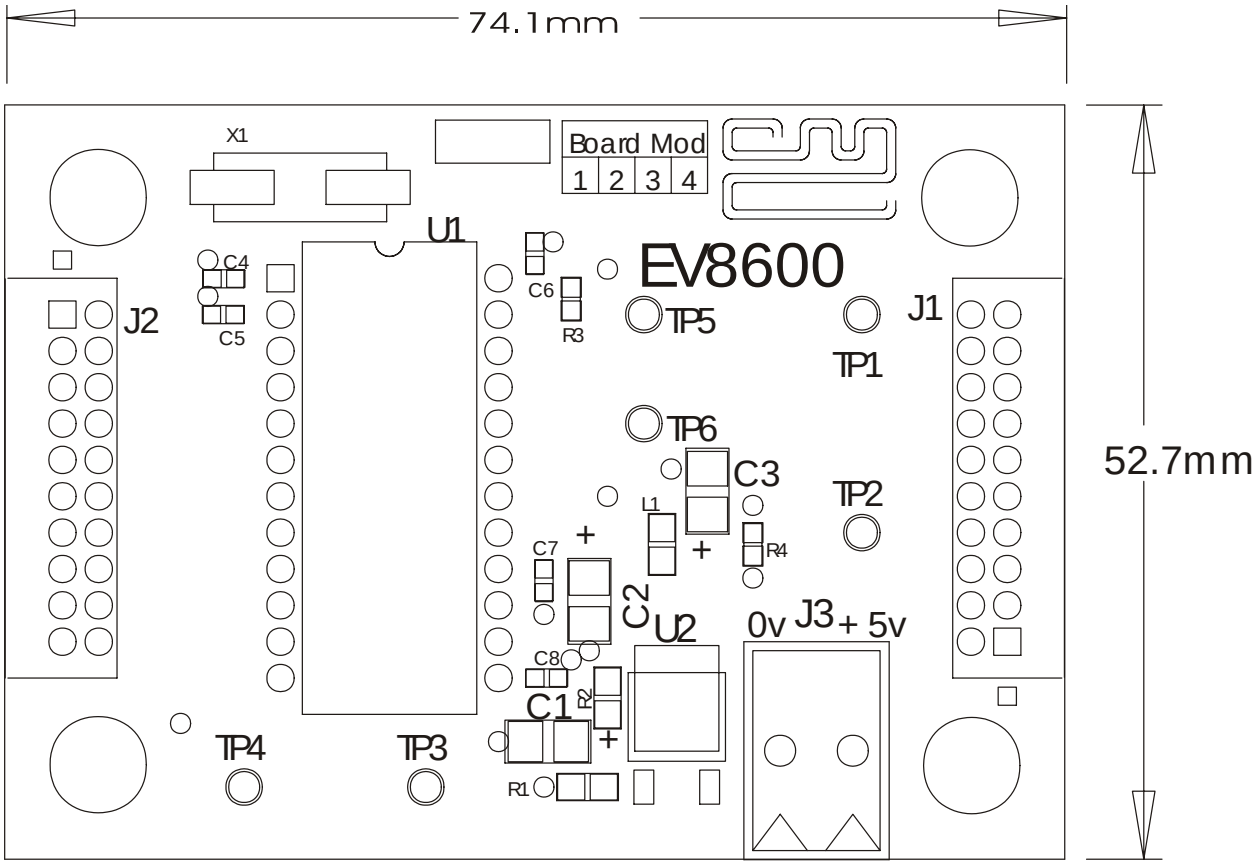


**Figure 2 Evaluation Board - Layout**

# 6. Detailed Description

## 6.1 Hardware Description

### 6.1.1 Power supply

The board is fitted with a voltage regulator, U2. The voltage is set to +3.3V dc. Analogue and digital supplies are separated by an inductor, L1. The analogue and digital ground planes are separated by a 0Ω link, R4. There is available current capacity in the regulator to power external circuitry on both the modem and control sides of the board.

### 6.1.2 Clock/Oscillator

The CMX86x target device is clocked at a frequency of 11.0592MHz, which is provided by crystal X1.

### 6.1.3 Modem Interface

All analogue signals, hook switch control and ring detector input are brought to this connector, J2. In addition both analogue and digital supplies are available for powering external circuitry.

### 6.1.4 C-BUS interface

The C-BUS control signals and the C-BUS interrupt request signal are brought to this connector, J1. In addition the digital supply is available for powering external circuitry. This connector is pin compatible with the CML PE0001 evaluation kit interface card.

## 6.2 Adjustments and Controls

None

# 7. Performance Specification

## 7.1 Electrical Performance

### 7.1.1 Absolute Maximum Ratings

Exceeding these maximum ratings can result in damage to the Evaluation Kit.

| | Min. | Max. | Units |
|---|---|---|---|
| Supply ($V_{IN}$ - $V_{SS}$) | -0.3 | 16.0 | V |
| Voltage on any connector pin to $V_{SS}$ | -0.3 | $V_{DD}$ + 0.3 | V |
| Current into or out of $V_{IN}$ and $V_{SS}$ pins | 0 | +300 | mA |
| Total current into or out of $V_{DDD}$ and $GND_D$ pins plus $V_{DDA}$ and $GND_A$ pins | | +300 | mA |
| Current into or out of any other connector pin | -20 | +20 | mA |

### 7.1.2 Operating Limits

Correct operation of the Evaluation Kit outside these limits is not implied.

| | Notes | Min. | Max. | Units |
|---|---|---|---|---|
| Supply ($V_{IN}$ - $V_{SS}$) | | 4.5 | 9.0 | V |

### 7.1.3 Operating Characteristics

***Details in this section represent design target values and are not currently guaranteed.***

For the following conditions unless otherwise specified:

Evaluation Device Xtal Frequency = 11.0592MHz, $V_{IN}$ = 5.0V, Tamb = +25°C.

For CMX86x parameters, see relevant CMX86x data sheet.

| | Notes | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| **DC Parameters** | | | | | |
| $V_{DDA}$ | | 3.15 | 3.3 | 3.45 | V |
| $V_{DDD}$ | | 3.15 | 3.3 | 3.45 | V |
| Current available from $V_{DDD}$ and $V_{DDA}$ combined. | | | - | 300 | mA |

## www.cmlmicro.com

**For FAQs see:** www.cmlmicro.com/products/faqs/

**For a full data sheet listing see:** www.cmlmicro.com/products/datasheets/download.htm

**For detailed application notes:** www.cmlmicro.com/products/applications/


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