

## DE9941

### SDR 1 Demonstrator

Software Defined Radio Demonstrator for Linear Radio Systems

#### Introduction

There is a growing market requirement for small, flexible Software Defined Radio (SDR) data modems.

The technology to accomplish this is now available with the release of CML's highly integrated RF and baseband product offerings: CMX998, CMX994 and CMX7164.

The CMX998 is a market-leading Cartesian Loop Transmitter IC providing optimum PA linearisation for non-constant envelope/linear systems.

The CMX994 is the ultimate Direct Conversion Receiver, providing direct conversion from RF down to I/Q baseband.

The CMX7164 multi-mode Wireless Data Modem IC, based on *FirmASIC*<sup>®</sup> technology, offers multiple modulation schemes that can be uploaded into the device via Function Image™. The device supports both linear and non-linear modulation schemes (2-FSK, 4-FSK, GMSK, 4-QAM, 16-QAM and 64-QAM).

#### Design Support

Available via the CML website ([www.cmlmicro.com](http://www.cmlmicro.com))

- User manual
- Board schematics
- Board Gerber files
- BOM list
- Scripts
- CMX998, CMX994, CMX7164 individual IC datasheets

#### Links

- [www.cmlmicro.com](http://www.cmlmicro.com)
- [DE9941 product page](#)

#### DE9941 Brief Description

The DE9941 is a small demonstration platform for a linear modulation-based Software Defined Radio (SDR) for wireless data applications.

The small form factor of this credit card sized board is possible due to the high integration of key functions comprising:

- Cartesian Loop Transmitter - CMX998
- Direct Conversion Receiver - CMX994
- Multi-mode Wireless Data Modem - CMX7164

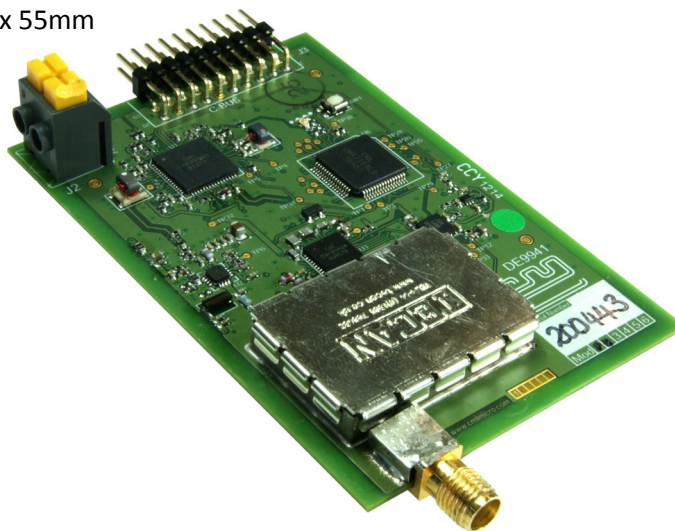
The DE9941 can be used to demonstrate transmit and receive performance with 4/16/64 QAM linear modulation and constant-envelope modulation schemes such as 2/4-level FSK and GMSK, that are also available on the CMX7164 Multi-mode Wireless Data Modem.

Included on board is a 1W power amplifier and RF performance is designed to be compliant with EN 302 561

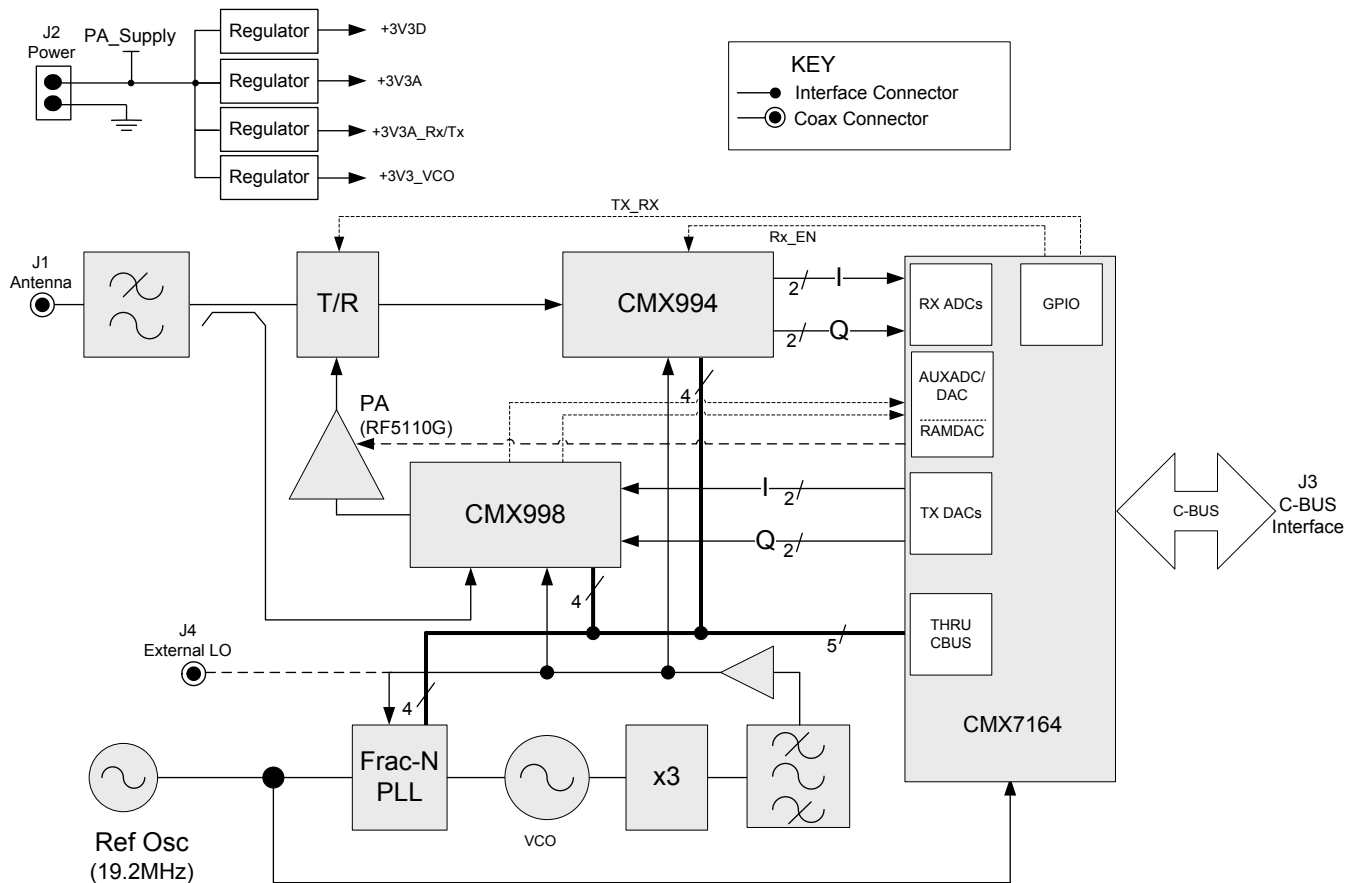
The design is aimed to be small and low cost, with the minimal number of components/values.

#### Feature Summary

- Demonstration of SDR Wireless Data Modem
- Direct Conversion Receiver, Linear Cartesian Loop Transmitter, Fractional-n PLL and VCO
- 1W Transmitter operation
- Designed to meet EN 302 561
- On-board PLL and VCO for 452MHz to 467MHz operation
- Single serial C-BUS interface
- Connects directly to PE0002 Interface Board
- Scripts available for quick-start evaluation
- Small size - 83mm x 55mm



## Board Block Diagram



For further details of the DE9941 SDR Demonstrator Board for Linear Radio Systems, please visit CML's website ([www.cmlmicro.com](http://www.cmlmicro.com)) and search for 'DE9941'



CML's proprietary *FirmASIC*® component technology reduces cost, time to market and development risk, with increased flexibility for the designer and end application. *FirmASIC*® combines Analogue, Digital, Firmware and Memory technologies in a single silicon platform that can be focused to deliver the right feature mix, performance and price for a target application family. Specific functions of a *FirmASIC*® device are determined by uploading its Function Image™ during device initialization. New Function Images™ may be later provided to supplement and enhance device

functions, expanding or modifying end-product features without the need for expensive and time-consuming design changes. *FirmASIC*® devices provide significant time to market and commercial benefits over Custom ASIC, Structured ASIC, FPGA and DSP solutions. They may also be exclusively customised where security or intellectual property issues prevent the use of Application Specific Standard Products (ASSP's).

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