# DE9943

## SDR Demonstrator

Software Defined Radio Demonstrator for Two-slot TDMA Digital Radio

## Introduction

Two-slot TDMA Digital Radio is a growing market leading the PMR migration to digital technology.

Even though the market is very competitive there with many opportunities for newcomers to enter, take advantage of latest IC developments and release leading edge products into the market.

An easy development path to assist the market newcomers is essential.  This is a key factor in getting the end product to market in the fastest possible time.

The DE9943 SDR demonstrator provides the answer, as it simplifies the overall development task.

 The board is supplied with support files to enable a quick and easy transition to a customer's own end product design.

## Design Support

Available via the CML website (www.cmlmicro.com)

- DE9943 SDR Demonstrator
    - User manual
    - Board schematics
    - Board Gerber files
    - BOM list
    - Scripts
    - Host 'C' code
- Individual Product Data
    - CMX7161 TDMA Digital Radio Processor
    - CMX994 Direct Conversion Receiver
    - CMX7262 Professional Radio Vocoder

## Links

- www.cmlmicro.com
- DE9943 product page
- CMX7161 Product page

## DE9943 Brief Description

The DE9943 is a compact demonstration/evaluation platform for 2-slot TDMA Digital Radio designs incorporating the CMX7161 TDMA Digital Radio Processor, the CMX7262 TWELP Professional Radio Vocoder and the CMX994 Direct Conversion Receiver.

The DE9943 can be used to demonstrate a complete RF transceiver and baseband function supporting a direct conversion receiver and VCO two-point modulation transmitter. The board features a built in keyboard, display, microphone and loudspeaker and so can be used to demonstrate DMR peer-to-peer operation in a standalone configuration.

The board has an ARM processor which handles initial board power up and loading of the Function Images for the CMX7161 and CMX7262. Once the system is powered up, the processor will handle basic radio functionality (channel selection etc) and baseband control, allowing demonstration of a simple voice call and data transfer.

The DE9943 provides a Fractional-N PLL and VCO plus associated circuits to provide local oscillator signals for the CMX994. The design also includes a 1W power amplifier, harmonic filter and Tx/Rx switch. The RF performance is designed to be compliant with EN 300 113 and all the circuits are provided with power-down capability to allow standby functionality.

## Feature Summary

- Direct Conversion Digital Radio Demonstrator
- Provides a demonstration platform for:
    - Direct Conversion Receiver CMX994
    - TDMA Radio Processor CMX7161
    - TWELP Professional Radio Vocoder CMX7262
- Can function in the following modes
    - Completely stand-alone
    - Controlled by scripts running via a PC
    - User-defined host controller interface
- Designed to meet ETSI EN 300 113
- 'C' code for rapid development of  host drivers
- Powered by external 4.5V power supply or 3 x AA batteries

- On-board
    - ARM Host Processor (Cortex M3)
    - Frac-N PLL and VCO for 444 MHz to 450 MHz Operation
    - 1W Power Amplifier
    - Microphone
    - Loudspeaker
    - Jack sockets for audio in/audio out
    - 16-button (4 x 4) Keypad
    - 2 x 16-character LCD Display
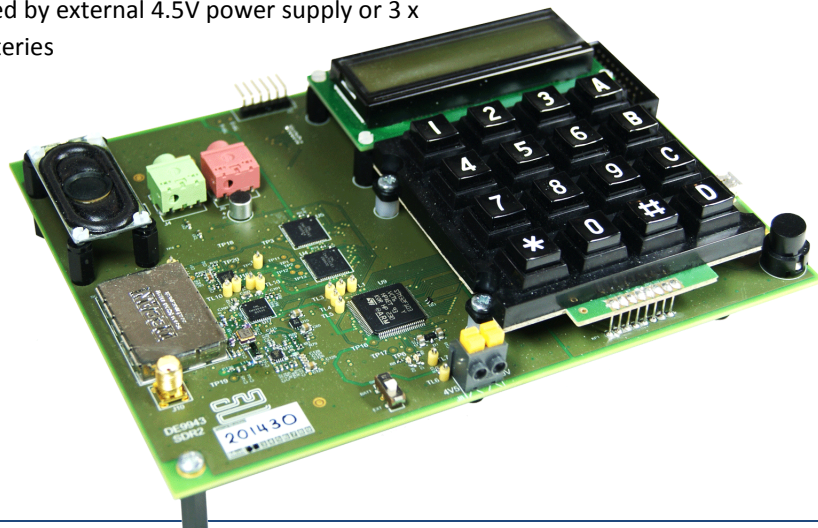
# Board Block Diagram
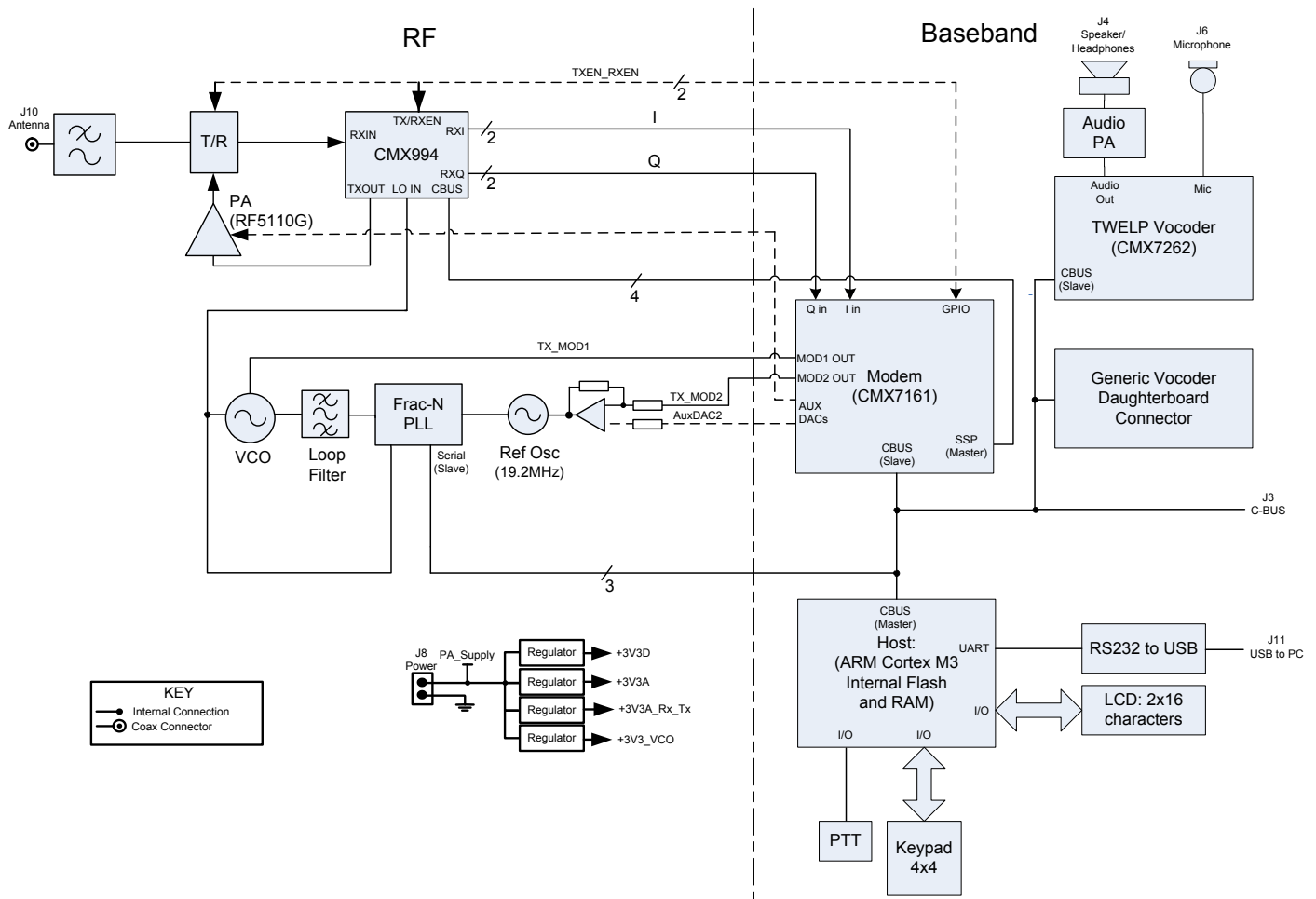


For further details of the DE9943 TDMA Digital Radio SDR Demonstrator Board, please visit CML's website (www.cmlmicro.com) and search for 'DE9943'

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