

## DE9944

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### SDR Demonstrator for FDMA Digital Radio

The DE9944 is a compact demonstration/evaluation platform for FDMA Analogue / Digital Radio designs based on the CMX7141 FDMA PMR Processor and incorporating the CMX618 RALCWI Vocoder, the CMX7262 TWELP Professional Radio Vocoder, and the CMX994 Direct Conversion Receiver.

#### Features

- Direct Conversion Digital Radio Demonstrator
- Digital PMR (e.g. dPMR) and Analogue FM
- Provides demonstration platform for:
  - Direct Conversion Receiver CMX994
  - FDMA Radio Processor CMX7141
  - TWELP Professional Radio Vocoder CMX7262
  - RALCWI Vocoder with Integrated Voice Codec CMX618
- On-board ARM Host Processor (Cortex M3 with internal flash and RAM)
- 16-button (4 x 4) keypad
- 2 x 16-Character LCD Display
- Can function in the following modes:
  - Completely stand-alone
  - Controlled by scripts running via PC
  - User-defined host controller interface
- On-board Frac-N PLL and VCO for 444MHz to 450MHz operation
- 1W Power Amplifier
- On-board Microphone
- On-board Speaker
- Jack sockets for audio in/audio out
- Powered by external 4.5V power supply or 3 x AA batteries
- Designed to meet:
  - EN 301 166 (6.25kHz digital)
  - EN 300 086 (12.5kHz analogue FM)
  - Relevant clauses of TIA-603-D

#### Supply Requirement

- 4.5 V or 3 x AA batteries

The board can be used to demonstrate a complete RF transceiver and baseband function supporting a direct conversion receiver and VCO 2-point modulation transmitter.

The DE9944 features a built in keyboard, display, microphone and speaker and so can be used to demonstrate peer-to-peer operation in a stand-alone configuration.

The board has an ARM processor which handles initial board power up and loading of the Function Images™ for the **CMX7141** and **CMX7262**. Once the system is powered up, the processor implements a basic radio. The DE9944 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 301 166 for dPMR application and TIA-603-D / EN 300 086 for analogue applications. All the circuits are provided with power-down capability to allow powersave / standby operation.

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For further information, please refer to the 'Design Resources' section on the **CMX7141/CMX618/CMX7262/CMX994** product page at [cmlmicro.com](http://cmlmicro.com)

## WHAT TO DO NEXT

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## CML Microcircuits Benefits

### Faster time to market

Developing proven high performance and field tested ASSP ICs, CML is helping engineers to cope with increasing pressure in delivering shorter project design cycles.

### Design flexibility

CML's *FirmASIC*<sup>®</sup> reconfigurable technology with the use of a Function Image upload enables a single hardware platform to be used for multiple communications systems.

### High Quality

With 100% of products being tested before shipping, customers are assured of the highest reliability.

### Product Longevity

Designing with CML products, manufacturers are rewarded with longer product life cycles and a stable BOM, ensuring minimum engineering costs and maximum profit.

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### Superior Support

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