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Universal Radio Platform Handles Digital and Legacy Analog

A PRIVATE MOBILE radio (PMR) common platform processor to support digital/analog Frequency Division Multiple Access (FDMA) PMR/LMR and 2-slot time division multiple access (TDMA) digital systems has been developed by UK-based low-power wireless semiconductor specialists CML Microcircuits.

COMPLEX DESIGN CHALLENGE

With each system potentially having different requirements and specifications that affected the actual radio architecture design, the radio manufacturers' holy grail of a single universal cost-effective radio platform became a complex design challenge.

The rationale behind the CMX7241/7341 PMR Common Platform Processor sets out to address this. The CMX7241/7341 provides a common platform that can deliver FDMA digital PMR/LMR, TDMA digital PMR/LMR, and legacy analog. Based on CML's proprietary FirmASIC component technology, a Function Image (FI) can be uploaded into the device to determine the CMX7241/7341 overall functions and operating characteristics.

The first FI focuses on digital and analog FDMA PMR/LMR. It provides a complete feature set including auxiliary functions to support the whole radio. The company says that when combined with its CMX994 Direct Conversion Receiver IC, it presents a flexible, highly integrated radio platform solution.

OPERATING FEATURES

Main operating features of the pro-

cessor include automatic analog/digital detection; digital PMR/LMR; ETSI TS 102 658, TS 102 490, and EN 301 166 compliance; embedded air interface physical and data link layers; and mode 1, 2, and 3 operation.

From an analog PMR/LMR perspective, the operational characteristics include: EN 300 086, EN 300 296, and TIA-603-D compliance; complete audio processing; sub-audio signaling; audio-band signaling; and an MPT 1327 modem.

The figure below shows a typical digital/analog PMR/LMR radio application. The CMX994 Direct Conversion Receiver provides maximum on-chip integration that allows a small RF receiver to be realized with minimal external components. Improvements in semiconductor technologies have seen DCRx increasingly displace superhet as

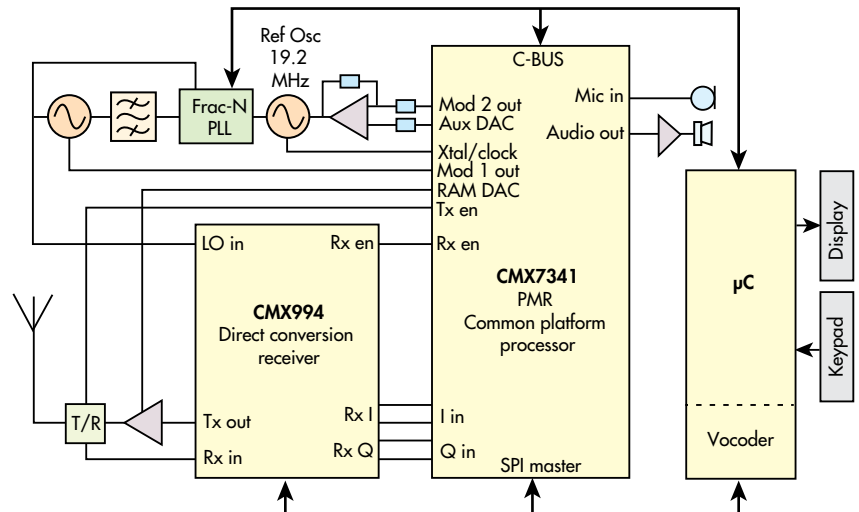
the technology choice for radio receivers in many applications.

DESIGN FLEXIBILITY

Earlier this year CML Microcircuits added the 16-FSK modulation to the CMX7164 Multi-mode Wireless Data Modem portfolio. Addition of the 16-FSK constant envelope modulation is expected to enhance the design flexibility of this modem IC, enabling telemetry systems to evolve into higher data throughput without the need to move to a linear modulation scenario.

The CMX7164 covers both constant envelope and linear modulation schemes, and also provides a good platform to support customer-specific modulation schemes.

The CMX7164 is available now, offering low-power 3.3V operation in small VQFN/LQFP packaging. [tmw](#)



Here is a block diagram illustrating the common-platform multi-mode analog/digital PMR/LMR radio.