

## **Receiver SoC for ISDB-T Set-Top Boxes Touts Desirable Field Performance**

MaxLinear Inc. announced the MxL683, its next-generation high-performance, single-chip receiver for ISDB-T and SBTVD-T terrestrial set-top box applications. This monolithic system-on-chip is based on 65-nm CMOS process technology. The device integrates the company's latest "super radio" core with an ISDB-T demodulator to deliver exceptional system performance, even in very difficult terrestrial broadcast environments commonly found in Brazil and other Latin American countries. The MxL683 includes an embedded CPU for adaptive tuner and demodulator performance control, fast channel acquisition, and advanced power management. It also integrates voltage regulation, RF loop-through output and clock output for sharing a single crystal with multiple devices. The MxL683 device was designed to provide excellent rejection of out-of-band interference from 4G/LTE, Wi-Fi, Satellite and MoCA signals. This performance makes the SoC desirable for hybrid set-top boxes that combine multiple reception (e.g., satellite and terrestrial) and connectivity technologies in a single box, or on a single cable.

"MaxLinear's ISDB-T tuner technology was already well proven, but we were surprised at the extremely good demodulator performance, even in the most stringent time varying channel or echo conditions" said Prof. Dr. Gunnar Bedicks, Chief Researcher, Mackenzie University Digital TV Laboratory, a leading digital TV laboratory for transmission and reception systems in Sao Paulo, Brazil. "The demodulator outperformed all other commercially available solutions that we have tested, in the lab and in the field."

"The MxL683 is the industry's first true single-chip receiver for ISDB-T set-top boxes. The typical complexity and risks associated with RF design is virtually eliminated with this device," said Brian Sprague, MaxLinear Vice President and General Manager. "This solution allows our customers to get to market faster with better performance, lower cost and lower risk, the ultimate signs of a value-added product."

### Technical Highlights

Thanks to a noise figure lower than 4dB and exceptional demodulator C/N performance, the MxL683 achieves best-in-class sensitivity, which is important for low cost set-top boxes in emerging countries with widely scattered transmitters and typical weak signal conditions. The unmatched adjacent and co-channel interferer immunity provides assurance that set-top boxes will be reliable and robust in a crowded TV spectrum.

The MxL683 is fully compliant with the Japanese ISDB-T (ARIB STD-B21) and Brazilian SBTVD-T (ABNT NBR 15604) terrestrial TV receiver specifications. Additional features include auxiliary channel decoding for emergency broadcast

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warning system, high accuracy receiver signal strength indicator (RSSI), and fast channel scan algorithm to reduce the set-top box scan time by up to 50 percent.

MxL683's power consumption is approximately 470 milliwatts (mW) in active mode and 25mA in standby mode. The low power consumption and ultra-small 7 mm x 7 mm footprint make it an ideal solution for low cost, small form-factor designs as well as multi-tuner set-top boxes with personal video recorder (PVR) capabilities.

The MxL683 is currently sampling in a 7mm x7mm 48-QFN package.

### MaxLinear

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