

ADVANCED MODULATION SATELLITE RECEIVER

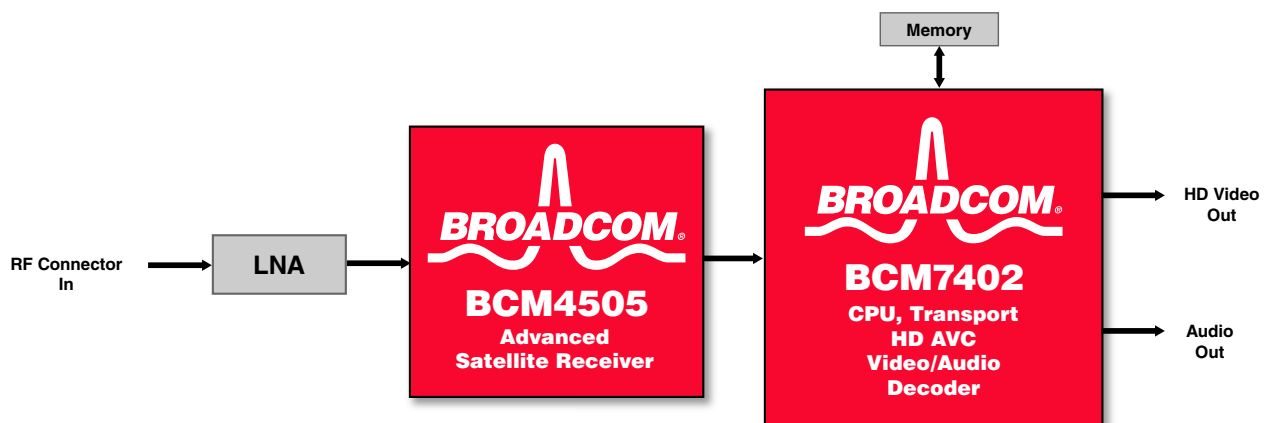
FEATURES

- **Dual direct conversion satellite tuners**
 - Direct conversion architecture in standard CMOS process
 - Supports QPSK and 8PSK demodulation
 - Input frequency range: 250 to 2150 MHz
 - Integrated 8-bit A/D converters
- **Integrated advanced demodulation decoder**
 - DVB-S2 Broadcast, DVB-S, 8PSK Turbo
- **Data Rates:**
 - DVB-S: 1-45 Msps
 - DVB-S2: 1-45 Msps
 - 8PSK Turbo: 2-30 Msps
- **Code Rates:** $\frac{1}{4}$, $\frac{1}{3}$, $\frac{2}{5}$, $\frac{1}{2}$, $\frac{3}{5}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{8}$, $\frac{8}{9}$, $\frac{9}{10}$
- **Integrated DiSEqC 2.x transceivers**
- **On-chip microcontroller for acquisition and tracking**
- **128-pin epLQFP package**

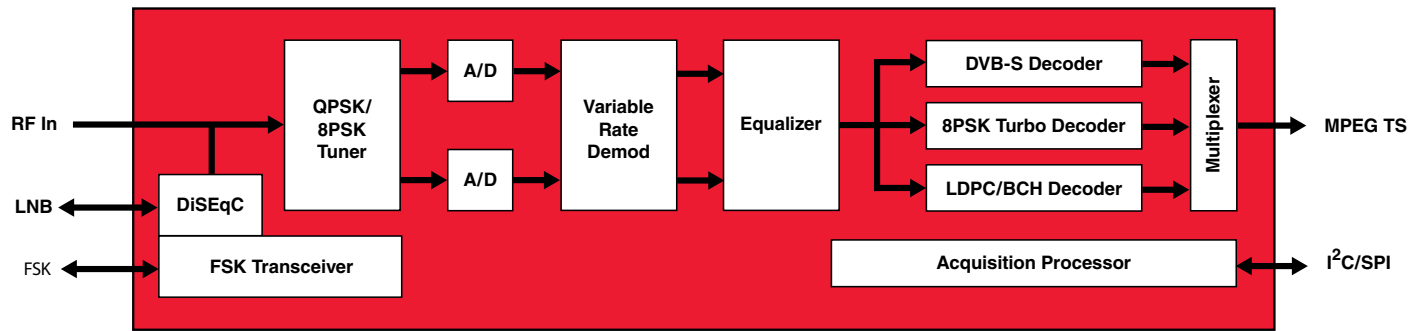
SUMMARY OF BENEFITS

- **Highly integrated, cost effective front-end solution for advanced modulation satellite systems in a single package**
- **Ideal for next-generation PVR satellite systems and Home Media Centers, supporting DVB-S2 Broadcast while maintaining backward-compatible support for DVB-S legacy transmissions.**
- **Advanced design architecture requires no external RAM.**
- **MPEG-2 transport output interfaces provide glueless system integration with Broadcom® integrated audio/video decoders.**
- **Integrated microcontroller for receiver operations, including configuration, acquisition, and performance monitoring.**
- **Host interface operates via a high-level API to reduce software development time and to simplify system integration.**
- **Small footprint and low power consumption**

BCM4505 System Block Diagram Example



OVERVIEW



BCM4505 Block Diagram

The BCM4505 is a fully integrated satellite receiver single-chip solution targeted at multituner advanced modulation satellite receiver systems and ideally suited for new-generation satellite receivers and integrated multifunction Home Media Centers.

The BCM4505 integrates a CMOS tuner and advanced modulation decoder supporting DVB-S2 Broadcast, DVB-S, DIRECTV®, and 8PSK Turbo applications. The highly integrated tuner section is based on existing volume-production Broadcom technologies and a direct-conversion technology to reduce external components and increase performance.

The BCM4505 is designed to support the full 1-45 Msps DVB operating range with support for 250 to 2150 MHz input frequencies.

It contains two 8-bit A/D converters, all-digital variable-rate QPSK/ 8PSK receivers, an advanced modulation LDPC/BCH and Turbo FEC decoder, and a DVB-S compliant FEC decoder. All required RAM is integrated and all required clocks are generated on-chip from a single reference crystal. The baseband IQ analog waveforms from the tuner section are sampled by the integrated 8-bit A/D converters and resampled by the integrated interpolative digital filter banks.

Optimized soft decisions are then fed into either a DVB-S-compliant FEC decoder, or an advanced-modulation DVB-S2 LDPC/BCH or Turbo decoder. The final error-corrected output is delivered in MPEG-2 transport format. The output clock is generated by an on-chip PLL for low-jitter operation and glueless integration with Broadcom's high definition audio video subsystems, such as the BCM7401 and the BCM7402.

The communication link sections include an on-chip microcontroller for all system configuration, acquisition, control, monitoring and diagnostics functions, as well as an integrated DiSEqC 2.x controller for 2-way communication with an LNB, and a single FSK transceiver for communication with ODU's that support multiple LNB configurations over a single coax connection.

The BCM94505 reference design is available for easy system design and testing using the BCM4505 advanced modulation receiver chip. Schematics, Gerber files, and evaluation software are available.

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4505-PB01-R 12/04/08

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