



ADVANCED DIRECT CONVERSION CABLE TUNER

FEATURES

- Single-chip direct conversion silicon tuner completes system design with Broadcom cable modem or set-top box
- DOCSIS®/EuroDOCSIS™ 1.0/1.1/2.0
- Supports 64, 256, and 1024 QAM
- Input frequency range of 50 MHz through 930 MHz
- IF (intermediate frequency) output range of 4 MHz, 4.5 MHz, and 5 MHz
- For use in 6-MHz, 7-MHz, and 8-MHz systems
- High linearity across entire frequency range
- Differential signals for high noise immunity
- Integrated and cost-effective BOM:
 - True single-chip tuner
 - Single 3.3V supply voltage
 - Fully integrated oscillator
 - Fully integrated channel selectivity
- Symmetrical IF output for direct connection to channel decoder
- Received Strength Signal Indicator (RSSI) information provided through Broadcom Serial Control (BSC) bus
- Standby mode
- 40-pin MFL package
- RoHS-compliant

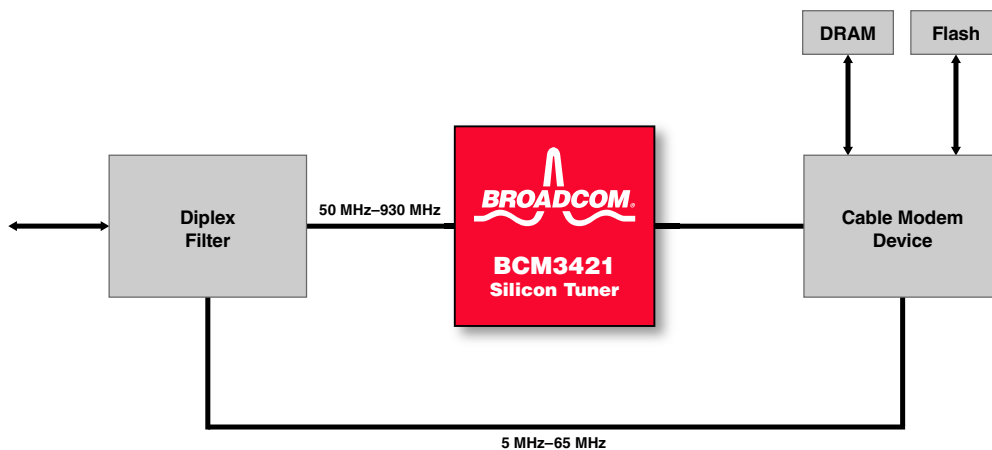
SUMMARY OF BENEFITS

- Extreme integration level leads to highly cost-effective BOM
- Eliminates significant external components:
 - SAW (Surface Acoustic Wave) IF filters
 - RSSI measurement components
 - IF amplifiers
 - Oscillator components
- Package optimization enables low-cost two-layer system PCB
- Minimal in-house RF expertise required
- Support for DOCSIS/EuroDOCSIS 2.0 enables one device solution to be used worldwide
- Superior alternative to can tuners
 - High quality and reliability (no hand tweaking)
 - Enables lower profile and smaller designs
 - Proven reference design for quick time-to-market
 - Simplified manufacturing flow
- Single supply voltage provides low-cost operation

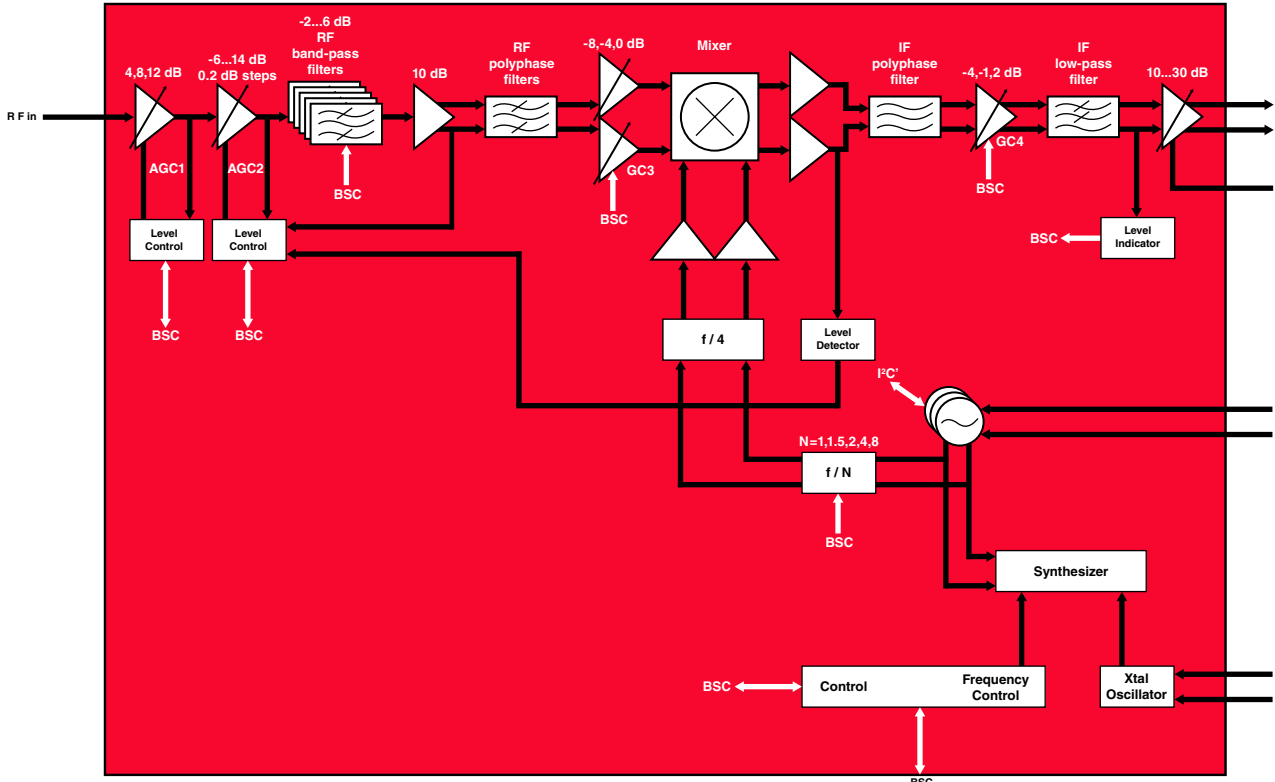
APPLICATIONS

- Cable modems
- Cable gateways
- Single-tuner set-top boxes
- Non-battery voice cable modems

Tuner Application Example (Cable Modem)



OVERVIEW



BCM3421 Block Diagram

The BCM3421 is a highly integrated, advanced direct conversion, single-chip silicon tuner. It integrates the global tuning function, including selectivity, and supports 64-QAM, 256-QAM, and 1024-QAM digital cable modem applications. The input signal is first driven to the LNA with wideband AGC and then filtered and fed to the image rejection mixer. The LO signal feeds the second input of the mixer which downconverts the RF signal to a low 4-MHz IF frequency. The IF signal is then filtered (channel selectivity) and shaped to be connected to the channel decoder inputs. There is no need for an external SAW filter. Additionally, the Voltage Controlled Oscillator (VCO) is fully integrated with no external tank component.

The BCM3421 is specifically designed for use with Broadcom's industry-leading single-chip cable modem devices. With a low BOM cost and a proven reference design, the BCM3421 provides a better alternative to traditional can tuners.

The BCM3421 supports an IF output frequency range of 4 MHz, 4.5 MHz, and 5 MHz, enabling one device to support both DOCSIS and EuroDOCSIS standards.

Extreme care was taken to develop proven reference designs that both reduce cost and provide a platform that increases the speed of product development. Minimal in-house RF expertise is required to quickly develop and produce low-cost cable modems.

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BROADCOM CORPORATION
16215 Alton Parkway, P.O. Box 57013
Irvine, California 92619-7013

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Phone: 949-450-8700
Fax: 949-450-8710
E-mail: info@broadcom.com
Web: www.broadcom.com