

AT76C651B

INTEGRATED DVB[®]/DAVIC[™]-COMPLIANT QAM DEMODULATOR

- Less than 0.5 dB degradation with respect to theoretical 256-QAM
- Faster than 10 ms locking time
- Robust against signal loss
- Widely applicable for cable television, multipoint distribution systems (MMDS) and cable modems

New!
Integrated 10-bit
high-bandwidth
ADC



Image: Studio Cadrange

- DAVIC/DVB/ETS300.429/ITU-T J.83 annex A, C fully compliant
- 1024, 512, 256, 128, 64, 32, 16-QAM and QPSK demodulation
- Variable symbol rate recovery
- Fully digital carrier recovery (coherent or differential for QPSK)
- Selectable transversal or decision feedback 32-tap equalizer
- Bit error rate and packet error rate monitoring
- Signal-to-noise ratio estimation
- Residual phase noise estimation
- Advanced CMOS technology, 3.3V operation

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Atmel's AT76C651B QAM Demodulator brings the benefits of state-of-the-art digital signal processing to a series of applications for multimedia, TV, Internet access and PC high-speed data exchange. With less than 0.5 dB degradation with respect to theoretical 256-QAM, the AT76C651B enables cable operators to deploy set-top boxes on their network using 256-QAM modulation. This offers up to 56M bits/sec of television and data per TV channel, thus adding 3 to 4 additional TV programs for each channel.

Also, with a particularly short locking time, the user can switch from one channel to another with no noticeable delay. Finally, interactive broadcasting will no longer suffer from a lack of bandwidth.

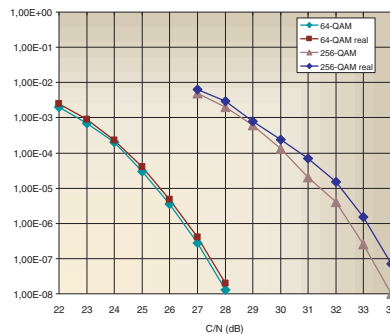
High-performance Low-cost Integrated Solution

The AT76C651B is designed for high-performance low-cost set-top boxes and cable modems for European, American and Asian CATV and MMDS (Microwave Multipoint Distribution System) standards. In addition to its strict implementation of the DVB and DAVIC standards, the following functions give the AT76C651 the highest performance on the market without additional costs:

- Dual Automatic Gain Control (AGC) for protection against noise from adjacent digital and analog channels
- Variable bandwidth filtering and interpolation offering virtually no degradation at any symbol rate
- Dual DDS carrier frequency/phase recovery for large frequency offsets
- 32-tap dual-structure equalizer offering up to 5.2 μ s echo compensation

Bit Error Rate Performance

The bit error rate measured with the AT76C651B shows virtually no degradation in 64-QAM and only 0.5 dB in 256-QAM.

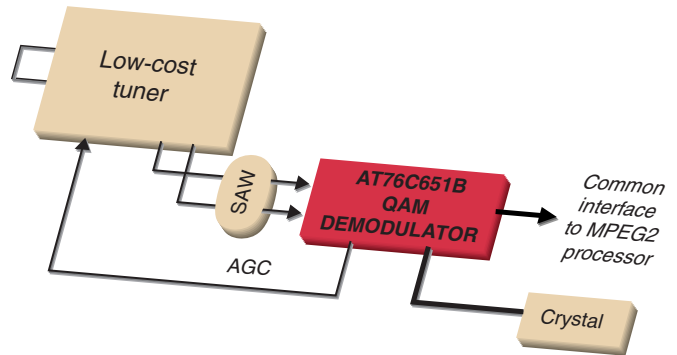


Bit Error Rate Performance



Integration into a Set-top Box or Cable Modem

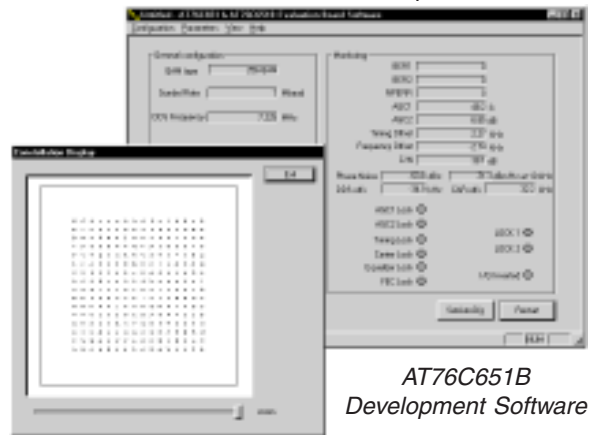
The AT76C651B is positioned in the front end of a set-top box or cable modem immediately after the tuner and the amplification chain. The outgoing MPEG2 Transport Stream is sent to the MPEG2 processor and descrambler for video/audio processing.



AT76C651B Block Diagram

Evaluation Kit with Windows Software Environment

The AT76C651B Evaluation Kit consists of an evaluation board that enables a user to rapidly evaluate the performance of the component in a real environment. Any QAM modulation source (QAM modulator, CATV network, MMDS network) can be connected to the board. A PC software monitor shows all the parameters that can be traced (AGC level, frequency offset, bit error rate, C/N true measurement, phase noise true measurement), as well as the received constellation or the equalizer echo compensation. The board combined with the software is the perfect tool for a live demonstration to cable operators.



AT76C651B Development Software