The digital set-top box and PVR market continually demands ever-decreasing costs -- both through the bill of materials for the final consumer product and the costs of designing that product.

To help meet this demand, ST has created the STV6111 satellite tuner IC for digital satellite TV broadcast applications. This device is a highly-integrated, low-cost, low-power satellite silicon tuner with a high specification that ensures it meets the requirements of today's satellite broadcast formats: DVB-S, DVB-S2, ISDB-S, ABS-S and others.

Key features
- RF-to-Baseband direct conversion architecture
- Single 3.3-V DC supply; low consumption
- Outstanding performance in heavily loaded spectrum conditions
- Input frequency range: 950 to 2150 MHz
- Supports 1 to 60 Msymb/s using internal filter
- Specific operating mode for symbol rate up to 220 Msymb/s
- RF-AGC or Channel-AGC support
- Extremely low-phase noise, compliant with DVB-S2 requirements using fractional-N synthesizer
- Low external component count
- Flexible crystal frequency output to drive the demodulator and/or other tuner ICs
- Continuously variable gain
- Programmable 6- to 50-MHz cut-off frequency (Butterworth 5th-order baseband filters)

Key performance figures
- Noise figure at max. gain: 8.5 dB (max.)
- Best-in-class linearity:
  - IIP3 = +9 dBm (min.)
  - IIP2 = +27 dBm (min.)
- Low-phase noise:
  - 0.5 °RMS (typ.) over 1 kHz to 1 MHz band
- Wide operating temperature range: -40 to 85 °C

Targeted applications
- Direct broadcasting satellite (DBS), satellite
- modems: BPSK, QPSK, 8PSK, 16/32 APSK modulations
- Set-top box, PCTV and iDTV
- Outdoor units
The STV6111 is controlled by an I²C interface and has been designed to minimize the external bill of materials to reduce manufacturing costs and to simplify the board layout. The reduced component count ensures greater system reliability leading to increased consumer satisfaction.

When used together, the STV6111 and ST’s successful demodulator and MPEG decoder ICs (such as the STV0903/STV0913 and the STi5xxx/STi7xxx/STiHxxx families) combine to form highly cost-effective complete satellite solutions.

**Application diagram**

![Application diagram]

**Reference design**

A full range of evaluation boards are available for the STV6111.

For faster time-to-market for satellite platforms, ST provides a wide range of STV6111-based example designs, ranging from small form-factor NIM reference designs - including industry-leading DVB-S/S2 demodulators (STV0903/STV0913) - to complete set-top box ready-to-industrialize designs. Complete design packages, including schematics, layout and detailed RF recommendations, are available upon request.

The STV6111 is fully supported by software drivers supplied as part of ST’s STAPI driver suite.