

## Product Brief

# ECC3100

## SkyPHY Receiver ASIC

### DESCRIPTION

SkyPHY is a revolutionary satellite communications chip implementing the new DVB-S2 standard and offering unprecedented bandwidth/power efficiency. ECC's industry leading experience in practical Adaptive Coding & Modulation (ACM), advanced Forward Error Correction (FEC), and IC design are combined to make the ECC3100 SkyPHY one of the premier solutions for next-generation satellite communications systems.

SkyPHY symbol rates can be programmed from 0.1 to 45 Msps, supporting a full range of applications from dedicated SCPC systems to very large shared VSAT networks. SkyPHY fully supports the interactive services modes defined in DVB-S2, allowing systems providers to offer the advantages of ACM to their customers.

SkyPHY enables next-generation manufacturers of SCPC, VSAT, consumer broadband satellite, and HDTV equipment to produce the industry's most advanced and cost-effective solutions.

### FEATURES

DVB-S2 Compliant

Near Shannon-Limit Performance

Adaptive Coding & Modulation (ACM) Compliant

0.1-45 Msps Symbol Rates

Demodulation of QPSK, 8PSK, and 16APSK

Microprocessor and I<sup>2</sup>C Configuration Interfaces

MPEG SPI/ASI & Local Bus Output Data Interfaces

Tuner Automatic Gain Control (AGC)

JTAG boundary scan

Internal PLL for clock generation from external low-cost crystal

Monitoring and estimation of critical statistics

### KEY BENEFITS

#### Improved Bandwidth Efficiency / Throughput

- 35% increase in capacity / throughput relative to DVB-S (minimum – DVB-S2 more than doubles capacity in many applications)
- 50% reduction in terminal antennal size / satellite EIRP requirement relative to DVB-S
- 8PSK, and 16APSK modulation provide higher bandwidth efficient options
- ACM doubles forward link network capacity in typical applications

#### Increased Availability / Link Margin

- DVB-S2 FEC improves link margin by an average of 2.8 dB
- ACM enables rain fade dynamic range of more than 14 dB

#### Expanded Coverage Area

- Extends range, expands footprints

#### Low Terminal Cost Points

- System-on-a-Chip SkyPHY architecture enables small, low-cost terminals

#### Interoperability

- Standards-based solution interoperates in multi-vendor environment



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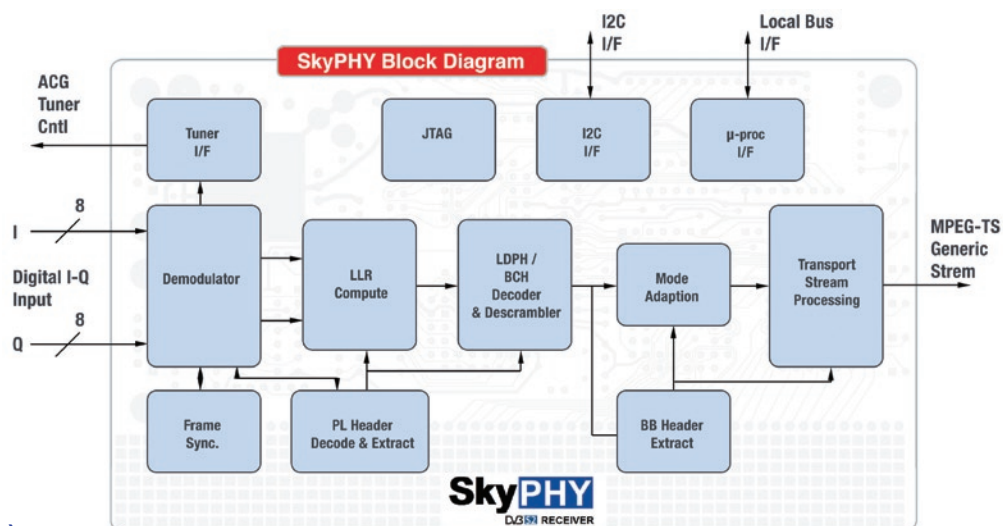
# ECC3100

## SkyPHY Receiver ASIC

SkyPHY combines DVB-S2 Demodulation, Decoding and Transport Stream Processing into a single ASIC.

The ASIC enables Next-generation DVB-S2 based systems in a highly integrated, cost-effective terminal

The ECC3100 is packaged in a 24x24mm, 176 pin QFP.



### SkyPHY PERFORMANCE (64k block size)

MOD	LDPC Code Identifier	BW Efficiency [bits/sym]	Es/No [dB] (QEF)	Eb/No [db]
QPSK	1/3	0.66	-0.9	0.9
QPSK	2/5	0.79	0.1	1.1
QPSK	1/2	0.99	1.3	1.3
QPSK	3/5	1.19	2.7	2.0
QPSK	2/3	1.32	3.3	2.1
QPSK	3/4	1.49	4.2	2.5
QPSK	4/5	1.59	4.9	2.9
QPSK	5/6	1.65	5.4	3.2
QPSK	8/9	1.77	6.4	3.9
QPSK	9/10	1.79	6.6	4.1
8 PSK	3/5	1.78	5.9	3.4
8 PSK	2/3	1.98	6.9	3.9
8 PSK	3/4	2.23	8.2	4.7
8 PSK	5/6	2.48	9.6	5.7
8 PSK	8/9	2.65	10.9	6.7
8 PSK	9/10	2.68	11.2	6.9
16 ASPK	2/3	2.64	9.3	5.1
16 APSK	3/4	2.97	10.5	5.8
16 APSK	4/5	3.17	11.4	6.4
16 APSK	5/6	3.30	11.9	6.7
16 APSK	8/9	3.52	13.1	7.6
16 APSK	9/10	3.57	13.3	8.5

Multiple code rate options and modulation types achieve near Shannon-Limit bandwidth efficiency over an extremely wide dynamic range.

Bits/symbol efficiencies represent MPEG-TS bits divided by modulated symbols (i.e. quoted numbers include all DVB-S2 framing overhead)

Required Es/No includes implementation loss in an L-band to L-band configuration (i.e. includes modulator, upconverter, tuner, and all SkyPHY implementation losses)

#### Efficient Channel Coding

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