

## SM1 - DVB-S2 SCPC Modem with a GigE Interface

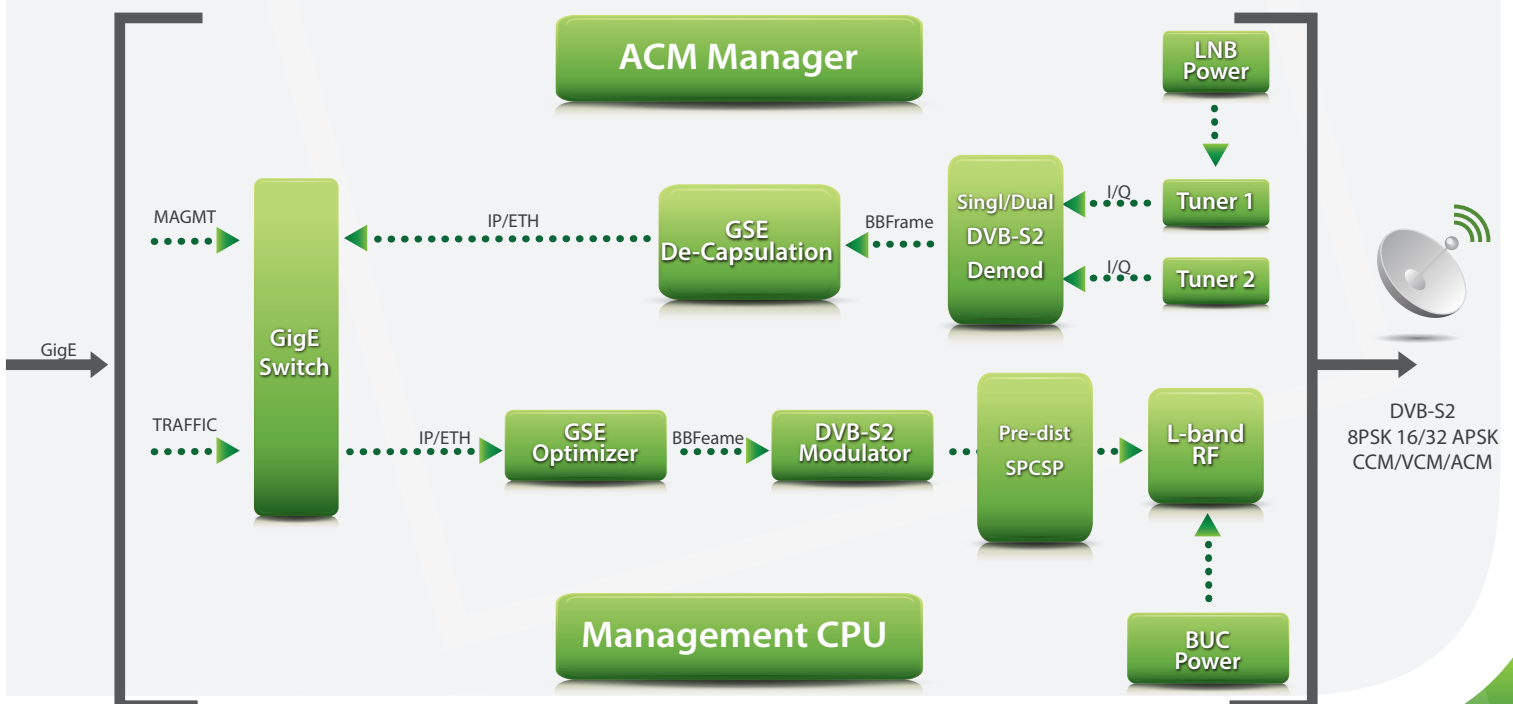
The SM1 Advanced DVB-S2 SCPC Modem with a GigE interface, offers service providers a strong competitive edge when offering their services in today's competitive market. SM1's best cost-performance parameters lead the market. With the high spectral efficiency of the DVB-S2 standard and its extensions the SM1 delivers more performance at lower cost and significantly reduces long-term operating costs. With return channel that can be selectable from SCPC DVB-S2, DVB-RCS or Random Access, The SM1 is optimal for any network.



### SM1 Product Highlights

- DVB-S2 receiver with support of 5% roll off, ACM, VCM, and 16/32 APSK
- Configurable return channel for DVB-S2 SCPC, DVB-S2 SCPC with Spread Spectrum, DVB-RCS or Random access
- Up to 67.5Msps in both direction.
- Wire speed processing of traffic – full hardware implementation.
- GigE interface to support full DVB-S2 transponder
- Embedded ACM manager for P2P
- Advanced GSE VCM optimizer for high channel utilization
- High BUC power drive – up to 24V/8AMP.
- Pre-Distortion – in open and close loop

### SM1 Block Diagram



# SM1

## Enhanced Features

**Focus on Data transfer** – SM1's unique architecture focuses on data transfer over satellite, leaving routing and other functionality to external device .

**Standard base** - SM1 utilize the state of the are standards in satellite communication to offer high spectral efficiency and avoiding propriety solutions

**Wire-speed** – SM1 handles traffic between the satellite to the network via dedicated hardware, supporting payload rates of up to 250 Mbps and eliminating the bottleneck caused by CPU processing

**Adaptive/Variable Code Modulation** – IP satellite providers can provide real-time and flexible power and modulation schemes and packet density to pre-defined customer groups at various locations instead of addressing the lowest common denominator

**Support for ACM** – SM1 internal ACM Manager offers channel optimization without need for external equipment.

**Efficiency** – SM1 supports the new generic stream IP over DVB-S2 encapsulation, offering superior Performance for IP over satellite delivery, as compared to the multiprotocol encapsulation (MPE)

**Spread Spectrum** – Spread the Tx signal is the key to use the SM1 with small antennas for on the move communication.

**Easy Integration** – With the flexibility of the GSE the SM1 can offer L2 , L3 and MPLS based forwarding of traffic. Flexibility that simplify the integration of SM1 in any network

**Channel Encryption** – To ensure the highest levels of service security, SM1 supports BISS ore AES based encryption using local or Internet-based key management.

**Redundancy** – With its dual RX inputs, the SM1 Provide redundancy in the reception channels. The Two RF inputs are fully independent and support 2 LNB powering

**Flexible Management Interface** - Provides an independent 100baseT management interface Supporting CLI, Telnet, HTTP and SNMP

**Highly Competitive Pricing** – Ayecka's SM1 offers advanced technology at more than 50% less than other similar devices on the market

## Applications

**SCPC** – The superior RF front end and support for high bit rates makes the SM1 an optimal solution for reception of SCPC signals.

**Backhauling** – The small form factor and competitive price make the Cellular and Wireless local loop backhauling

**SCADA / M2M** – using the SM1 return channel in Random Access mode, The SM1 is an optimal solution to SCADA networks in all scales.



# SM1

## Receiver

Standard	DVB-S2 Multistream Support
Modulation	QPSK, 8PSK, 16APSK, 32APSK
Channel Rate	over 240 Mbps
Roll-off Factors	0.05, 0.15, 0.2, 0.25, 0.35
Coding	LDPC and BCH decoder as for DVB-S2 specifications
Code rates	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Framing	DVB-S2 Normal and Short
Modes	CCM, VCM, ACM (IP based Signaling)

## Receiver RF

Input Frequency	Full L-Band range 950-2150MHz
Signal Level	-35 to -75 dBm
Symbol Rates	100Ksps to 67.5 Msps (Low SR require PLL LNB)
Input Connector	Type F- 75 Ohms, SMA – 50 Ohms
Redundancy	Two RF inputs with Automatic selection
LNB Power	14/18V, 22KHz, DiSEqC 2.0

## Encapsulation

MPE	ETSI 301 192
GSE	ETSI TS 102 606, ETSI TS 102 771
<b>BBFrames Over UDP</b>	<b>Comply with ESA / Sat labs L.3 protocol</b>

## Transmitter

### SCPC – DVB-S2 mode

Modulation	QPSK, 8PSK, 16APSK, 32APSK
Channel Rate	up to 240 Mbps
Roll-off Factors	0.05, 0.1, 0.15, 0.2, 0.25, 0.35
Coding	LDPC and BCH decoder as for DVB-S2 requirements
Code rates	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
Output frequency range	Full L-Band 950-2150Mhz. Optional 70Mhz/140Mhz IF
RF connector Type	Type F, 75 Ohms / SMA 50 Ohms
Output Spectrum	< 55 dBc/4kHz, modulated mask area
Excludes spectral	Phase Noise
Reference clock	Better than IESS-316
Return loss	10Mhz Internal, stability ± 0.28 ppm
Output Off	> 10 dB
Flatness	better than 50db
band, +/- 2dB over the full band	10Mhz Internal, stability ± 0.28 ppm
	> 10 dB
	better than 50db
	+/- 0.5 dB over any 36MHz

## Network

Physical interfaces	RJ-45 10/100/1000 BaseT Auto Switching
Traffic handling	MPE – L3, GSE – L2/L3
Forwarding path	Hardware based, Wire Speed
GSE	Tx – Up to 8 Different Label / MODCOD/ISI channels
	Rx – ISI + 4 labels
	Advanced GSE VCM optimizer for high channel utilization
MPE	Tx – Up to 1024 entries Forward
	Rx – 8 PID/MAC filters Supported
Multicast	Manual or DHCP
IP address	Based on ESA / Sat labs L.2 protocol
BBFrames Over UDP	BISS / AES*
Encryption	Independent or using Traffic Supported in GSE*
Management port	Pro-MPEG and RFC2250*
IPV6	
MPEG-TS over IP	

## Control and Monitoring

Serial Port	Serial over USB CLI
IP	10/100 BaseT interface CLI and SNMP Management
Management interface	Configurable – DSCP, VLAN.
Over the Air – One way	FEC protected, Carousel mode
SNMP-based messages	from head end to Receivers*
Maintenance	Software, Firmware and boot loader are field upgradable using TFTP
SNMP Traps	RX Unlock, Link Margin low, Link Margin High
Web	PHP based* customizable on request.

## Environmental Conditions

Operating Temp.	0° to 50° C
Storage Temp.	-25° to +85° C
Humidity	5% to 95% non-condensing

## Physical Characteristics

Desk top – No BUC power	3 cm x 10 cm x 15 cm (HxWxD), 0.5KG
Rack mount	1U 19" 20 cm deep. 2.5KG

## Power supply

Desk top – No BUC power	12V 2A DC
Rack mount	100V – 240V

## Standards compliancy

Safety	TUV/c TUVus; CE, UL/NRTL
EMI/EMC	FCC part 15, Class B, EN 55022, EN 55024, EN61000, AS/NZS CISPR 22

**DVB-SCPC with Spread Spectrum, DVB-RCS\*, Random Access\*** - Please contact Ayecka for more information

For more information please contact [sales@ayecka.com](mailto:sales@ayecka.com) | [www.ayecka.com](http://www.ayecka.com)

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