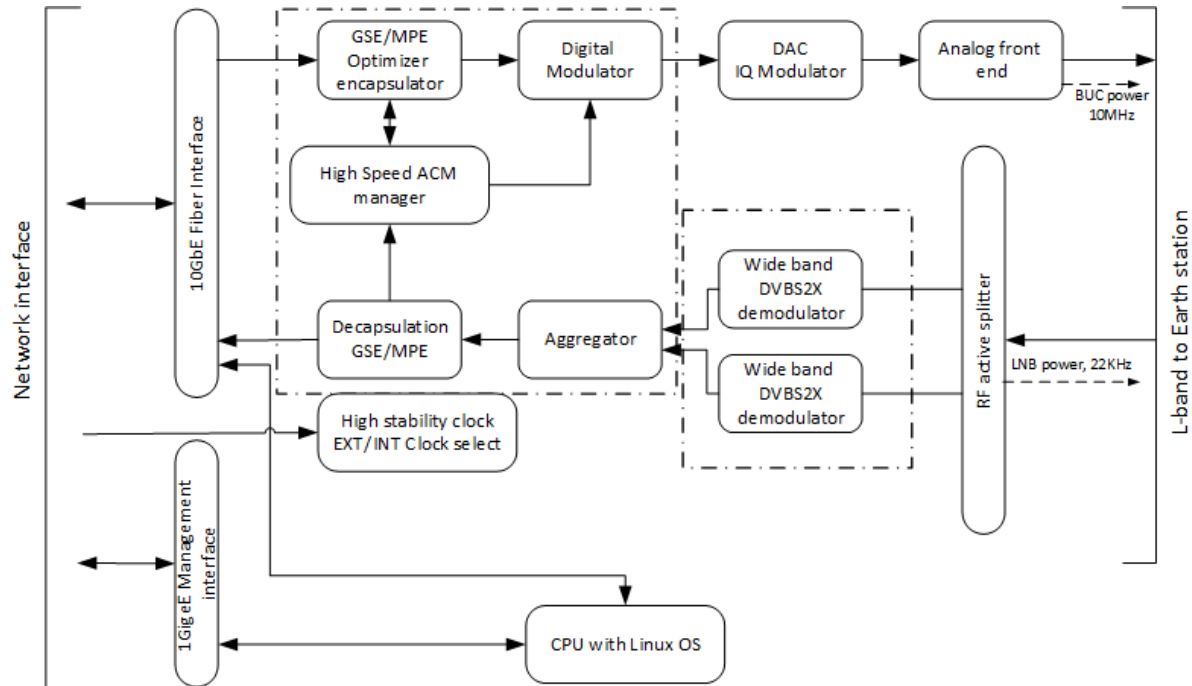


## 1. SM1ProX - DVB-S2x SCPC Modem

Block diagram:



Modulator and Wideband Demodulator supporting DVBS2/X standards. The SM1PROX is an advanced platform, capable of transmission up to 220Mbps and 60MSPs, and reception of up to 460MSPs including Annex-M time slicing. In the receive direction the unit can deliver up to 324Mbps.



## 2. General Overview

The SM1ProX offers GigE data interface and Hardware based packet processing to assure high bit rate and high packet rate.

## Product Highlights

- DVB-S2x Modem with support down to 5% roll off, ACM, VCM
- Modulations from QPSK to 256APSK.
- From 100Ksps Up to 60Msps in transmit direction
- Receive can go up to 460Msps, Compliant to Annex-M
- Wire speed processing of traffic - full hardware implementation. Over 350Kpps, in each direction, simultaneously
- Up to 324Mbps on the receive direction.
- Embedded ACM manager for P2P. High ACM rate to support Ka Band
- Flow control for efficient channel use in ACM
- GSE encapsulation (a Version with BBFRAME interface is also available)
- Optional: NCR insertion in Tx and Lock in Rx
- Advanced GSE VCM optimizer for high channel utilization
- BUC power drive - 24V up to 4.5AMP.
- LNB power – 13/18V and 22KHz On/Off
- Supports L2, L3 and Mixed (VLAN) based modes
- Fast Lock time and Re-Lock time for STOM
- Based on AYECKA reliable hardware design in use by thousands of devices
- Advanced web UI

### 3. Specifications

#### Receiver Specification

Standard DVB-S2x with annex M Support (2 slices)

Modulation and Code rates - see detailed table below

Symbol rate:

- 60Msps in Narrow band mode
- 460Msps in wideband mode

Roll-off Factors 0.05, 0.15, 0.2, 0.25, 0.35

Coding LDPC and BCH decoder as for DVB-S2x specifications

Framing - Normal and Short Modes CCM, VCM,

ACM

#### Receiver RF

Input Frequency Full L-Band range 950- 2150MHz

Signal Level -35 to -75 dBm

Symbol Rates 100Ksps to 460 Msps (Low SR require PLL LNB)

Input Connector Type F- 75 Ohms, or SMA - 50 Ohms

Redundancy Two RF inputs with Automatic selection

LNB Power 13/18V, 22Khz,

De Encapsulation :

GSE ETSI TS 102 606, ETSI TS 102 771

BBFrames over UDP Comply with ESA / Sat labs

L.3 protocol

#### Transmitter Specification

SCPC - DVB-S2x mode

Modulation - see detailed table below

Channel Rate up to 220 Mbps

Roll-off Factors 0.05,0.1,0.15,0.2, 0.25, 0.35

Coding LDPC and BCH decoder as for DVB-S2x requirements

#### Transmitter RF

Output frequency range Full L-Band 950-2150Mhz.

RF connector Type-F, 75 Ohms / SMA 50 Ohms

Output Spectrum < 55 dBc/4kHz, modulated carrier Excludes spectral mask area

Phase Noise Better than IESS-316

Reference clock 10Mhz Internal, stability  $\pm 1$  ppm or External

Return loss > 10 dB

Output Off better then 50db

Flatness +/- 0.5 dB over any 36MHz band, +/- 2dB over the full band

## Network Specification

Physical interfaces RJ-45 10/100/1000 BaseT Auto Switching

Forwarding path Hardware based, Wire Speed - over 350Kpps

Advanced GSE VCM optimizer for high channel utilization and minimization of padding

Multicast Supported

Flow control and Pause frames

Jumbo frames

IP address Manual or DHCP

BBFrames over UDP Based on ESA / Sat labs L.2 protocol

Management port Independent or combined with Traffic port for enhanced security

MPEG-TS over IP to integrate with external PSI/SI server

## Control and Monitoring

Serial Port - Serial over USB CLI

Web UI, gRPC, REST

## General Specification

Software, Firmware and boot loader are field upgradable using web page image upgrade

## Environmental Conditions

Operating Temp. 0° to 50° C

Storage Temp. -25° to +85° C

Humidity 5% to 95% non-condensing

## Physical Characteristics

Desk top - 5 cm x 15 cm x 20 cm (HxWxD), 0.5KG

## Power supply

150W external AC/DC Converter, 110-220VAC input

## Standards compliancy

Safety TUV/c TUVus; CE, UL/NRTL EMI/EMC

FCC part 15, Class B, EN 55022,

EN 55024, EN61000, AS/NZ

## Supported MODCODS

### DVB-S supported rates:

$\frac{1}{2}$ ,  $\frac{2}{3}$ ,  $\frac{3}{4}$ ,  $\frac{5}{6}$ ,  $\frac{7}{8}$

### DVB-S2 ModCodes

#	Mode	#	Mode	#	Mode	#	Mode
1	QPSK 1/4	9	QPSK 5/6	17	8PSK 9/10	25	32APSK 4/5
2	QPSK 1/3	10	QPSK 8/9	18	16APSK 2/3	26	32APSK 5/6
3	QPSK 2/5	11	QPSK 9/10	19	16APSK 3/4	27	32APSK 8/9
4	QPSK 1/2	12	8PSK 3/5	20	16APSK 4/5	28	32APSK 9/10
5	QPSK 3/5	13	8PSK 2/3	21	16APSK 5/6	29	Reserved
6	QPSK 2/3	14	8PSK 3/4	22	16APSK 8/9	30	Reserved
7	QPSK 3/4	15	8PSK 5/6	23	16APSK 9/10	31	Reserved
8	QPSK 4/5	16	8PSK 8/9	24	32APSK 3/4	0	DUMMY PLFRAME

## DVB S2x PLS Codes

PLSCode	Modulation	Code Rate	Frame Length	PLS Code	Modulation	Code Rate	Code Rate
132	QPSK	13\45	Normal	194	64APSK	4\5	Normal
134	QPSK	9\20	Normal	198	64APSK	5\6	Normal
136	QPSK	11\20	Normal	200	128APSK*	3\4	Normal
138	8APSK	5\9-L	Normal	202	128APSK*	7\9	Normal
140	8APSK	26\45-L	Normal	204	256APSK*	29\45-L	Normal
142	8PSK	23\36	Normal	206	256APSK*	2\3-L	Normal
144	8PSK	25\36	Normal	208	256APSK*	31\45-L	Normal
146	8PSK	13\18	Normal	210	256APSK*	32\45	Normal
148	16APSK	1\2-L	Normal	212	256APSK*	11\15-L	Normal
150	16APSK	8\15-L	Normal	214	256APSK*	3\4	Normal
152	16APSK	5\9-L	Normal	216	QPSK	11\45	Short
154	16APSK	26\45	Normal	218	QPSK	4\15	Short
156	16APSK	3\5	Normal	220	QPSK	14\45	Short
158	16APSK	3\5-L	Normal	222	QPSK	7\15	Short
160	16APSK	28\45	Normal	224	QPSK	8\15	Short
162	16APSK	23\36	Normal	226	QPSK	32\45	Short
164	16APSK	2\3-L	Normal	228	8PSK	7\15	Short
166	16APSK	25\36	Normal	230	8PSK	8\15	Short
168	16APSK	13\18	Normal	232	8PSK	26\45	Short
170	16APSK	7\9	Normal	234	8PSK	32\45	Short
172	16APSK	77\90	Normal	236	16APSK	7\15	Short
174	32APSK	2\3-L	Normal	238	16APSK	8\15	Short
178	32APSK	32\45	Normal	240	16APSK	26\45	Short
180	32APSK	11\15	Normal	242	16APSK	3\5	Short
182	32APSK	7\9	Normal	244	16APSK	32\45	Short
184	64APSK	32\45-L	Normal	246	32APSK	2\3	Short
186	64APSK	11\15	Normal	248	32APSK	32\45	Short
190	64APSK	7\9	Normal				

Note: '\*' means MODCODs un officially supported by STmicroelectronics

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