Tyger

Wideband Satellite Modulator

Tyger is a wideband satellite modulator dedicated to IP applications over satellite according to the DVB-S2 and DVB-S2X standards.

Tyger is a state-of-the-art high-Symbol-Rate (HSR) satellite modulator dedicated to IP applications over satellite according to the DVB-S2 and DVB-S2X standards. Teamcast's Tyger modulator covers the full L-Band range (950/2150 MHz) and offers bit rate up to 2 Gbps with a Symbol Rate from 1 to 480 MBauds.

Hybrid Input Management

Tyger is able to manage a various data format:

- MPEG-TS over ASI
- MPEG-TS over IP
- IP over 1GEth or 10GEth
- BBFrame over 1GEth or 10GEth

To ensure an optimized efficiency, GSE encapsulation is used.

Crystal Spectrum

Tyger covers the full L-Band spectrum range (950/2150 MHz) with a Symbol Rate from 0.05 to 480 MBaud and roll off factor from 5 to 35% (1% steps). This RF output constitutes a best in class performance, providing a high SNR value, excellent shoulder levels and lowest phase noise. The Enhanced Satellite Precorrection (E.S.P) is also available to compensate the possible imperfections of embedded filters and amplifiers of the satellite at such symbol rates.

Full implementation of the DVB-S2 and DVB-S2X standards

Tyger integrates the latest FPGA technology required to perform high quality modulation based on the DVB-S2 and DVB-S2X standards. It offers VCM/ACM multiqueuing, low roll off and timeslicing.

Easy integration in existing VSAT systems

Tyger can be fully configured remotely by SNMP and can be easily and seamlessly integrated into most existing systems to improve efficiency (Wideband, DVB-S2X), flexibility (ACM/VCM multiqueueing, Timeslicing, NCR insertion) and reliability (1+1 and N+1 redundancy).

Applications

- High speed data link on HTS satellite systems
- Upgrade of VSAT systems for the migration:
  - from DVB-S2 to DVB-S2X
  - from narrowband to wideband signals

Benefits

- DVB-S2/S2X standards
- Symbol Rate up to 480 Mbauds
- Roll-off from 5 to 35% (1% steps)
- GSE Encapsulation with GSE-Lite profiles
- GSE-HEM according to the EN 302 307 part 2 standard
- Multistream (up to 8 streams) according to EN 302 307 standard
- Time Slicing (up to 8 slices) according to EN 302 307 standard Annex M
- 8 ASI inputs
- 4 Ethernet ports 1GigE
- 2 Ethernet ports 10GigE
- BB Frame over Ethernet input
- Network Clock Reference (NCR)
- Linear & Non-Linear pre-correction

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INPUT

IP/Ethernet Management	• 4 physical inputs: - 2 x 10GigE (copper or fiber) - 2 x RJ45 10GigE • GSE encapsulation: - GSE Lite profiles support - GSE-HEM - Up to 8 GSE filtering profiles
MPEG-TS Management	• 8 MPEG-TS over ASI inputs: - BNC connectors, 75 Ω - 188 & 204 bytes • 1 MPEG-TS over ASI output: - BNC connectors, 75 Ω - 188 & 204 bytes • MPEG-TS over IP inputs - 2 x RJ45 1GigE & 2 x RJ45 10GigE - UDP or RTP • BISS Encryption mode 0, 1 or E

OUTPUT

RF Output	• Bandwidth up to 500 MHz • L-Band: 950 MHz to 2150 MHz, step 1 Hz N 50 Ω / +0dBm / -35dBm, step 0.1 dB • SNR > 40 dB @ 0 dBm -16 APSK - 72 Mbaud • Shoulders rejection < -50dB @ 0dBm & f/fN=1.5 for roll-off 20% • Spurious: < -65 dBc/4KHz @ 0 dBm for 950 to 2150 MHz range -60 dBc outside the useful band • Phase noise: @10Hz < -80 dBc/Hz @100Hz < -90 dBc/Hz @1KHz < -100 dBc/Hz @10KHz < -105 dBc/Hz @100KHz < -110 dBc/Hz @1MHz < -130 dBc/Hz • Switchable 10MHz insertion on L-Band RF output
MPEG-TS Management	• 1 MPEG-TS over ASI output: - BNC connectors, 75 Ω - 188 & 204 bytes

PHYSICAL

Dual Redundant AC Power supply	90 to 240 VAC - 50 Hz
Power consumption	100W
Mountable 1RU rack, Dimensions	483 x 376.5 x 43.8 mm
Weight	8 kg
Temperature Range	0°C to 50°C

FEATURING

Encapsulation

GSE encapsulation:
- GSE Lite profiles support
- GSE-HEM
- Up to 8 GSE filtering profiles

Modulation

Symbol rate: 0.05 to 480 Mbaud (1 Baud steps)

Standard roll-off and custom roll-off from 5 to 35 % (1% steps)

DVB-S2 & DVB-S2X:
- Singlestream or Multistream (up to 8 stream)
- Time Slicing (up to 8 slices)
- Outer encoding: BCH
- Inner encoding: LDPC (all code rates of the standards)
- Constellations: QPSK, 8PSK, 16APSK, 32APSK, 64APSK, 128APSK, 256APSK
- PL Scrambling codes
- Operating modes: CCM, VCM & ACM
- Frame length: Short & Normal frames
- Pilots insertion

Clock & synchronization

Internal 10 MHz Reference Frequency
- High stability: +/- 5 ppb over 0 to 70° C
- Ageing: +/- 0.05 ppb/day - +/- 7.5 ppb/year

External 10 MHz input for RF synchronization

External 1 PPS input for NCR initialization

Control & Monitoring

RS232 control port with SCPI protocol

2 dedicated Ethernet ports for
- SNMP (V2C) over Ethernet
- HTTP over Ethernet (Embedded web client)

Front panel keyboard & display

Redundancy

1+1 redundancy on Ethernet ports (x2) for Control

VRRP management for the 4 Data Ethernet ports

1+1 redundancy RF signal with Alarm relays
- connector 9-pin sub-D (F)
- Dry contact management

N+1 redundancy through Ethernet

ORDERING CODES

Tyger — Wideband Satellite Modulator

Hardware	XSSR-TYG0-3000	WideBand (500MHz) S2/S2X Modulator - GSE-Lite - 10GigE - L-Band output - 1U Rack
Software Options	XSSO-TYGX-WBAM	DVB-S2/S2X Time Slicing (Annex M)
	XSSO-TYG0-BISE	BISS-0/1/E Encryption
	XSSO-TYG0-GSCR	NCR over GSE

ENENSYS Technologies | 6 rue de la Carrière
CS 37734 | 35577 CESSON-SÉVIGNÉ | FRANCE
Tel: +33 (0)1 70 61 76 30 | Fax: +33 (0)2 99 36 03 84