Satellite Modulator

Description

Vyper is a state-of-the-art satellite modulator designed for applications over satellite in full compliance with the DVB-S, DVB-DSNG, DVB-S2 and DVB-S2X (Broadcast and DSNG profiles) standards. Vyper modulator covers the full L-Band range (950/2150 MHz) and IF Band range (50/180 MHz) on the same hardware platform. Vyper offers bit rate from 0.25 Mbps up to 200 Mbps with a Symbol Rate from 0.1 MBauds to 68 MBauds. Vyper has the capability to drive a Block Up Converter (BUC) via High Stability 10MHz reference available on the L-Band RF output signal. Vyper is compliant with latest Carrier ID requirements defined in ETSI 103 129. Vyper offers some free of charge services as a Push Data Service (DualCast) based on MPE, an ACM Contribution (ContribACM) feature that adapts the modulator MODCOD without any video interruption to continue under deteriorating satellite link conditions and Vyper offers the aggregation, up to 8 MPEG-TS multiplexes (MPTS) over ASI and Ethernet inputs, into one satellite carrier via the Multi-stream feature (as defined in DVB-S2 standard) whilst maintaining the integrity of the original content. Vyper offers a possible upgrade (via an option) to DVB-S2X Broadcast and DSNG profiles. That means Vyper supports all new MODCOD (linear MODCOD), the 64 APSK constellation and already the new roll off (from 5% to 15% by step of 1%) available with any satellite standards.

Performance & Reliability

Vyper has been designed to meet all ETSI EN 302 307 requirements: part I for DVB-S2 and part II for DVB-S2X. All modes of bit rate adaption are possible: PCR adaptation, Padding insertion and Dummy BBFrame insertion - resulting in Vyper’s unique automatic flexible rate adaptation. Vyper offers a flexible baudrate (from 0.1 MBaud to 68 MBaud) to fully feed a 72 MHz transponder. An internal PRBS generator can be used to generate a RF spectrum without any valid signal input. Vyper offers, without option, the possibility to receive the incoming MPEG-TS stream either over ASI or Ethernet inputs.

Vyper integrates the core technology required to perform high quality modulation based on TEAMCAST expertise. It provides customers with a best in class performance, providing a high SNR value, excellent shoulder levels and lowest phase noise. Vyper provides a high performance channel spectrum and in addition to the standard, roll off from 5 to 35% by step of 1% for all modulation: DVB-S/DVB-DSNG/DVB-S2 and of course for DVB-S2X. This results gives an efficient transmission in 32APSK (DVB-S2/S2X) and 64APSK (DVB-S2X) with lower power.

The user-friendly Embedded Web Browser ensures ease of use and enables full configuration of the modulator, including signal input management, selection of DVB-S, DVB-DSNG, DVB-S2 and DVB-S2X, modulation type (MODCOD) and control of the mute/unmute conditions for the RF output signal. The GUI also offers monitoring of the input stream (i.e. input format & useful bit rate).
Specifications

- **Standards**
  - Carrier ID: ETSI 103 129
  - DVB-S2X: EN 302 307 part II
  - DVB-S2: EN 302 307 part I
  - DVB-DSNG: EN 301 210
  - DVB-S: EN 300 421
  - MPEG-TS: ISO/IEC 13818-1
  - DVB MPEG-TS overASI: ENS0083-9, ETSI TR 101 891
  - DVB MPEG-TS over IP: ETSI TR 102 034
  - MPEG-2 PSI Tables (PAT and PMT): EN 300 468

- **Inputs**
  - MPEG-TS (188/204 bytes) over ASI (x2) - BNC connectors, 75 Ω
  - MPEG-TS (RTP/UDP - SMPTE-2022) over IP (x1) - RJ45
  - Multistream: up to 2 MPTS over ASI,
  - up to 6 MPTS over Ethernet,
  - Flexible bit rate adaptation:
  - PCR adaptation/Padding/Dummy frame
  - Encryption 0.25 to 200 Mbps
    - BISS (single/multiple programs): mode 0,1, E

- **RF Outputs**
  - L-Band: 950 MHz to 2150 MHz, step 1 Hz
    - +7dBm / -35dBm, step 0.1 dB
  - IF-Band: 50 MHz to 180 MHz, step 1 Hz
    - BNC 75 Ω
    - +5dBm / -35dBm, step 0.1 dB
  - SNR = 40 dB @ 0 dBm - 16 APSK - 30 Mbaud
  - Shoulders rejection = -50dB @ 0dBm & f/fN=1.5 for roll off 20%
  - Spurious: < -65 dBc @ 0 dBm for 50 to 180 or 950 to 2150 MHz
    - -60 dBc outside the useful band
  - Switchable 10MHz insertion on L-Band RF output:
    - Performances garanteed at 12VDC ± 0.2v:
      - @1Hz < -85 dBc/Hz
      - @10Hz < -115 dBc/Hz
      - @100Hz < -140 dBc/Hz
      - @1kHz < -145 dBc/Hz
      - @10kHz < -150 dBc/Hz
      - @1MHz < -150 dBc/Hz

- **Distortion Correction**
  - Cable Tilt Correction: ±0.04 dB/MHz maximum

- **Clock & Synchronization**
  - Standard Stability:
    - Stability: +/- 5 ppb over 0 to 70° C
    - Ageing: +/- 0.05 ppb/day - +/- 7.5 ppb/year
  - External 10 MHz input for RF synchronization

- **DualCast**
  - Opportunistic Push Data Service Insertion:
    - Upgrade of the PSI/SI tables
    - Browse file via GUI with size up to 100Mbytes
    - (60s off line video file SD 4:2:0 around 5 Mbytes)

- **Modulation**
  - DVB-S / DSN:
    - Outer/Inner FEC: Reed Solomon/Viterbi
    - QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
    - 8PSK: 2/3, 5/6, 8/9
    - 16APSK: 3/4, 5/6, 7/8
    - 32APSK: 3/4, 5/6, 8/9, 9/10
    - PL Scrambling codes [0, 264143]
    - Supported DVB modes:
      - CCM: Constant Coding and Modulation,
      - VCM: Variable Coding and Modulation,
      - SeamlessACM: Adaptive Coding and Modulation
    - DVB-S Short (16 200) Normal (64 800) frames:
      - Pilots ON or OFF
      - Variable symbol from 0.1 to 68 Mbaud, step 1 Baud
  - DVB-S2X Broadcast & DSNG profiles
    - Same features as defined for DVB-S2
    - New constellation for DSNG profile: 64APSK
    - All new linear MODCOD for QPSK/8PSK/16APSK/32APSK

- **Control & Monitoring**
  - RS232 control port with SCPI protocol
  - SNMP (V2C) and Web Interface Control & Monitoring
  - Keyboard and display on the front panel
  - Alarm relays - connector 9-pin sub-D (F)
  - Dry contact management for 1+1 redundancy
    - 1 port for MPEG-TS over IP
    - 1 port for MPEG-TS over IP and Control

- **Physical**
  - Power supply: 90 to 240 VAC - 50 Hz - 30W
  - Dimensions: 450 x 350 x 44  (LxlxH)
  - Weight: 4 kg
  - Temperature: 0°C to 50°C

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Order Information

- XSSR-VYP0-2502 DVB-S/DSNG/S2 Modulator - IF and RF output - 1U Rack
- XSSO-VYP0-S2XR DVB-S2X standard - Broadcast & DSNG profiles - Software release
- XSSO-VYP0-BISE BISS-0/1/E Encryption license - Software release

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*Specifications are not contractual and are subject to revision without notice.*