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Satellite Communications: Primary DTT Distribution

An Integrated Content Delivery and Supervision Solution over Satellite

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Primary Distribution for DTT networks (Digital Terrestrial Television)

- What is required and what are the solutions?

Which Content delivery carriers?

- **Transportation can be over:**
  - **FiNe** (Fiber Network, black or switched)
    - Advantages: cheap, large BW, ..
    - Disadvantages: not available everywhere, depending on service provider, high risk of cut-offs, often unreliable.
  - **Microwave Radio**
    - Advantages: fairly reliable
    - Disadvantages: expensive CAPEX and OPEX if large networks, p.-to-p. or limited – mp., limited reach + line of sight, needs freq./type approvals, cumbersome installation, vandalism, …
  - **Satellite:**
    - Advantages: large and total coverage, reliable, cheap OPEX when large nr. of Rx sites, independent of network operator, no boundaries,…
    - Disadvantages: Capex higher (?), exceeds boundaries (politics) …

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Techn. Requirements for DVB-T/H

- Transport of n x Muxes to all Tx towers, independent of topography
- Usually n x 24 Mb/s fitting in 36 or 54 MHz Transponder
- Fully transparent link for SFN synch. (Single Frequency Network)
- Need for M&C of ALL towers (Main and Low power Towers)
- Guaranteed Reliability and Availability of signal to home
- Compatible and interoperable with existing and future equipment
- Low cost Capex/Opex
- Local content in some cases (local insert vs. hub insert)
- ……

Primary Multiple TV Content Distribution over Satellite with Remote SCADA Monitor & Control Network

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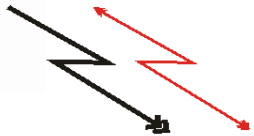


Mux contents (max 8)

ASI 1

ASI 2

ASI 3

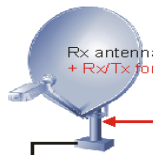
ASI n

SSPB

Advantech DVB-S2 MultiStreram Modulator SBM75e

SCADA stations

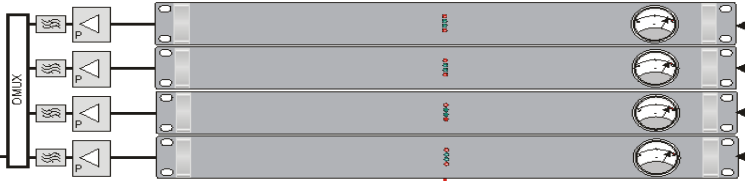
Advantech DISCOVERY
DVB-RCS VSAT Hub



Rx antenna, typ 1.2 m
+ Rx/Tx for SatNet SCADA.

Advantech DVB-S2 - MultiStream Demodulator SBD75e

DVB-T
DVB-H
ATSC
ISDB-T
DMB-T



OMUX

COFDM Modulators, Freq. 1 to n

ASI 1

ASI 2

ASI 3

ASI n

Mux contents (max, 8 ASI)

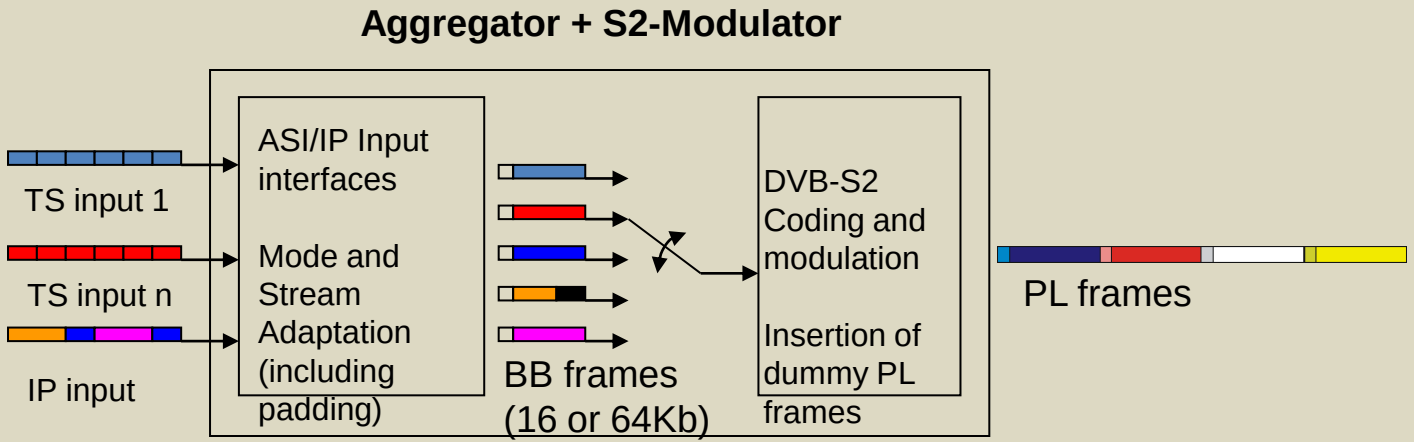
M&C IP Hub

Advantech SatNet IP Modem Terminal for SCADA S5420

Any other device (Airco, fire protection, access, etc)

DVB-S2 MultiStream Operation (refresh)

- A DVB-S2 modulator can have several physical or logical inputs (CCM, VCM or ACM mode)



- The data of every input is processed in separated Base Band frames with its specific header. (ISI (Input Stream Identifier) + 16 or 64 kb)
- The BB frames are time-combined at the Physical Layer on the same carrier (no DVB-TS multiplexing)
- Demodulators can receive and decode multiple individual streams and independently from each other , using ISI filtering
- When no data is present, the modulator can pad incomplete BB frames or by inserting dummy PL frames.

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Main advantages of DVB-S2 and Multiple Stream

- Far lower CAPEX:
  - only one uplink eqt for large number of Transport Streams
  - Only one Receive eqt. for equal number of TS (other solutions require one demod/IRD per TS)

- Lower OPEX: MS and VCM allows full usage of Transp. bandwidth: this allows saturation of TxP, requiring less power and BW (saturated TxP)

- Future-proof architecture: use of IP BBF and/or ASI in MS, VCM, and ACM, add new Muxes later, easy network expansion, ...

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The ADVANTECH solution:

- One Rx unit integrating both DVB-S2 MultiStream Filtering (ISI) in CCM, VCM and ACM modes and DVB-S + Proprietary PTSD mode (fully compatible)
- No extra licenses to pay
- Physical layer descrambling or BISS descrambling available
- Data synchronisation with or w/o ISSY restamping (Input Stream Synchronizer)
- Includes graphical analyzer (spectrum, constellation, Rx quality, etc. ofr easy pointing and signal qualification)
- Available in Single or in Dual version

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The ADVANTECH advantages:

- 1 RU Demodulator integrating both existing and future solutions: SBD75e
- Easy switch-over from DVB-S to S2 CCM-MS, VCM, ACM)
- Fully compatible with existing (terrestrial) equipment
- Important CAPEX savings
- SBM75e Modulator is integrating up to 8 ASI aggregated inputs (no separate eqt. needed!)
- Reduced installation space required (1RU for up to 8 ASI)
- Dual version can be used for Simultaneous Rx of different carriers, or as redundant unit.
- M&C of same equipment via SNMP, webbrowser, RS232 etc.)

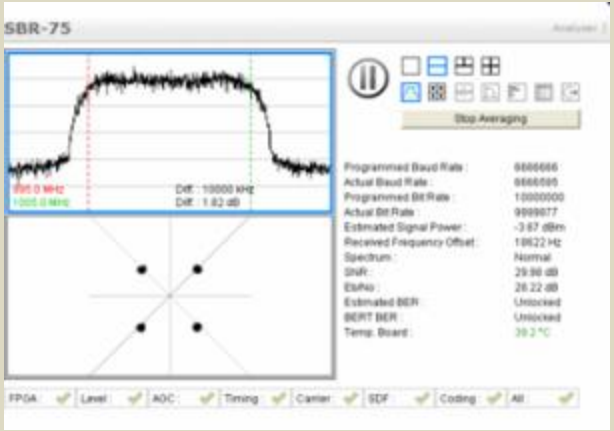
The SBM75e Modulator

High Speed Broadcast Modulator designed for the broadcasting of digital television signals and/or transmission of high-speed data (IP) over industry standard Digital Video Broadcasting over Satellite (DVB-S/S2).

The SBM75's is designed to provide best in class performance for critical applications:

- Digital Video Broadcast (DVB)
- Digital Satellite News Gathering (DSNG)
- Business enterprise data distribution
- Broadband Interactive services (DVB-RCS)
- Outstanding performance from 64kbps to 200Mbps

The SBD75e Demodulator



- Additionally, an optional Management via 10/100BT with SNMP or RS-232, also integrated GUI Web browser.
- All performance features ranging from modulation to speeds are feature key (FK) offering “no forklift upgrade” path.

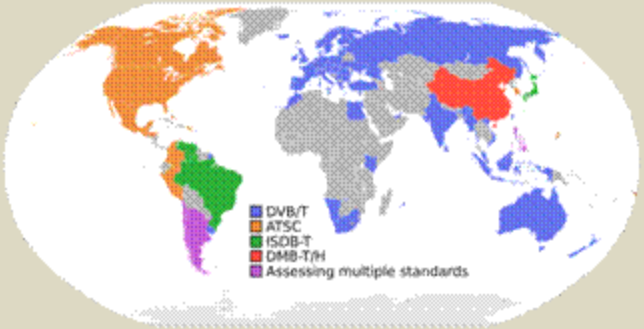
- ISI broadband de-aggregator (selectively retrieves multiple MPEG-TS from carrier).
- ISSY time stamping for stream synchronization
- Null-packet reinsertion.
- Optional: BISS encryption support.
- Optional: Variable Coding Modulation support (VCM)
- Optional: Adaptive Coding Modulation support (ACM)
- Optional (HW): Multi-receiver (up to 3 demodulator bds = 9 ASI out)
- Optional (HW): L-band and 70/140Mhz support.
- Optional (HW): 10/100/1000BaseT interface

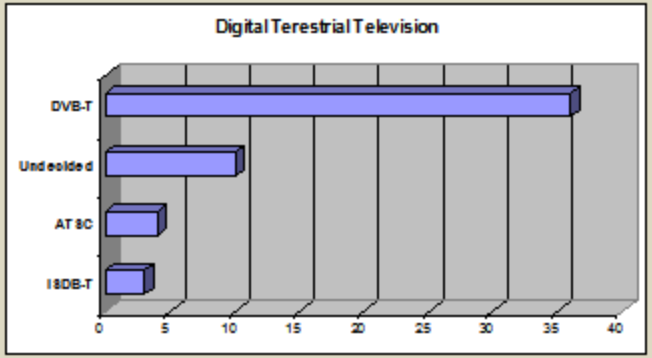
DTT actual Status

DVB-T is the most widely deployed DTT (Digital Terrestrial Television) system worldwide, with services on air in over thirty five countries and more than 60 million home receivers deployed.

Significant number of countries, in Europe, Southeast Asia, Africa, the Middle East and Latin America, are planning for the launch of DVB-T(2) services in the next 2-3 years.

Advantech Wireless deployed over 1500 demodulators in countries such as France, Russia, United Kingdom, etc





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Advantech Wireless: Open for Questions

Q&A:

We’re listening…

Thank you for your attention.