CHANNEL BONDING

Channel bonding allows the Service Provider to bond transmission capabilities across the same link to deliver higher throughput for select remote sites.

According to the DVB-S2X standard, Channel Bonding for Transport Stream (TS) transmissions splits a TS in two or three parts for parallel transmission over satellite. The receive part recomposes the original TS, meaning that multiple carriers can be combined to act as one very large carrier.
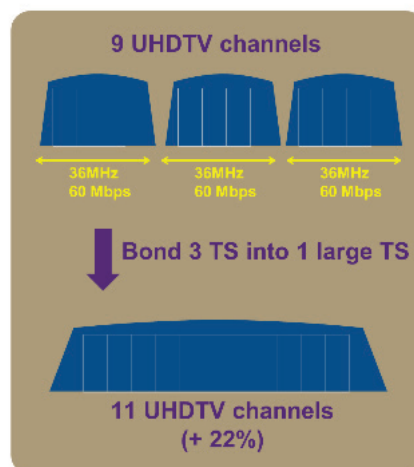
For ultra-high-definition (UHD) television, only three or four channels would fit on a 36 MHz transponder. The statistical multiplexing gain of seven UHD channels composing a Direct-to-Home (DTH) bouquet can only be obtained through the Channel Bonding of two carriers, as the bit rate exceeds what is available in a single Ku-band Transponder Equivalent (TPE) of 36 MHz.

The efficiency gain of statistical multiplexing on seven channels is typically 20%.

For a use case where only three programs fit into one bouquet to fully load a 36 MHz transponder — meaning that for nine programs, three transponders would be required — the DVB-S2X standard allows the creation of a single transport stream and splits these programs over three 36 MHz transponders. Due to statmux gains, it is possible to add two more programs into the same bouquet on the same transponders.

This example applies if all programs are UHD, but the same is possible for standard- and high-definition channels. Chipsets for DTH set-top boxes have mandatory support for channel bonding.

DIALOG

powered by

Newtec ◀ iDIRECT

CHANNEL BONDING CALCULATION: Example

9 UHDTV channels

36MHz
60 Mbps

36MHz
60 Mbps

36MHz
60 Mbps

Bond 3 TS into 1 large TS

**11 UHDTV channels
(+ 22%)**

UHDTV channel ~ 20 Mbps

No Bonding
- 3 channels in 1 TPX (60 Mbps)
- 9 channels = 3 TPX

With Bonding:
- 11 channels in 3 TPX

→ Gain of **22%**