

## OVERVIEW

The **QMultiFlex-400™** offers an affordable solution for point-to-multipoint satellite IP. The Hub supports a highly-efficient **DVB-S2/X** shared outbound along with up to 16 **DVB-S2/X** returns.

In addition, the **QMultiFlex-400™** supports an embedded Hub Cancellor utilising the powerful DVB-S2 and DVB-S2X waveforms, allowing satellite carriers in a point-to-multipoint system to operate in the same satellite bandwidth, providing satellite BW savings of up to 50%.

Receive-only **QMultiFlex-400™** units can be cascaded to a transmit **QMultiFlex-400™** in order to share an outbound carrier between up to 128 remote sites.

**The QMultiFlex-400™ is unique in the industry in allowing a rack of hub equipment, including all standard test and network equipment, to be replaced at a fraction of the price by a single box.**

### Advanced Bandwidth-Efficient Features

The **QMultiFlex-400™** supports the most powerful bandwidth-saving technology available, including an embedded **Hub canceller**.

**DVB-S2X**, is 20% to 60% more bandwidth efficient than its predecessor, DVB-S2.

IP features including VCM, ACM matched to a full suite of traffic shaping options.

## FEATURES

- ▶ Star, Mesh & hybrid point-to-multipoint IP
- ▶ Modulator with up to 16 demodulators
- ▶ **Embedded Hub Cancellor**
- ▶ DVB-S2X outbound/inbounds
- ▶ Data rates to 345Mbps outbound & 338Mbps composite inbound across all enabled demodulators.
- ▶ **XStream IP™** advanced IP optimization suite including, TCP acceleration, traffic shaping & VCM/ACM
- ▶ **Q-NET™ Navigator** network control app
- ▶ Virtual Network Operator (VNO) support
- ▶ Layer 2 (including VLAN) & Layer 3 support
- ▶ Optimized spectral roll-offs, down to 5%
- ▶ Built-in spectrum and constellation monitors
- ▶ Supports low-cost **Q-Lite, QFlex, QFlex-400 & QFlex-400 P2MP** remote modems
- ▶ Optional redundancy protection
- ▶ Software Defined Network support: vendor-independent network device control using

## Markets and Applications

- ▶ IP trunking/backhaul & cellular backhaul
- ▶ Corporate/enterprise networking
- ▶ Government universal service obligation networks
- ▶ Broadcast
- ▶ Maritime, oil & gas communications
- ▶ Comms-on-the-move (COTM) networks

Common Specifications	
Frequency	<b>L-band:</b> 950 to 2450MHz (resolution 100Hz) <b>IF:</b> 50 to 180MHz (resolution 100Hz) N-type connectors for Tx & Rx
Traffic Interface	<b>4-port Gigabit Ethernet switch</b> (RJ45 connectors; used for IP traffic and M&C)
Network Topologies	Supports star, mesh and hybrid networks
Impedance	50Ω
Return Loss	<b>L-band:</b> >15dB; <b>IF:</b> >18dB
Redundancy	1:1 through 1:16 redundancy

Modulator Specification	
Operating Modes	<b>DVB-S2</b> (EN 302 307-1) & <b>DVB-S2X</b> (EN 302 307-2)
Data Rate (1bps resolution)	<b>DVB-S2/S2X:</b> 50kbps to 345Mbps
Symbol Rate (1spss resolution)	<b>DVB-S2/S2X:</b> 100ksps to 70Mps
Output Power (0.1dB resolution)	<b>L-band:</b> +5 to -40dBm (950 to 1950MHz) 0 to -40dBm (1950 to 2150MHz) 0 to -30dBm (2150 to 2450MHz) <b>IF:</b> 0 to -25dBm (0.1dB steps) (0.1dB steps)
Output Power Stability/Accuracy	<b>Stability:</b> ±1.0dB, 0°C to 50°C <b>Accuracy:</b> ±0.375dBm
Transmit Spectral Roll-off	<b>DVB-S2/S2X</b> 5%, 10%, 15%, 20%, 25%, 35%
Phase Accuracy	±2° maximum
Amplitude Accuracy	±0.2dB maximum
Carrier Suppression	-30dBc minimum
Output Phase Noise	As EN 302 307, IESS-308 & IESS-316
Harmonics & Spurious	Better than -55dBc/ 4kHz in-band (at 0dBm to -30dBm output)
Transmit On/Off Ratio	-65dBc minimum
BUC PSU Option	24V or 48V DC via IFL cable, 200W
BUC 10MHz Reference	Via IFL cable; 10MHz ± 0.01 ppm; 2dBm ± 2dBm
FSK Control	Allows monitor & control of a compatible L-band BUC from the modem via the Tx IFL cable

Embedded Hub Cancellor	
Hub Cancellor BW (100kHz to 72MHz)	Hub Transmit and IB Multiple receive carriers are overlaid in the same space segment. Cancellation allows unwanted Hub transmit to be removed leaving the wanted receive carriers. <b>NOTE:</b> 14 demods supported when Hub Cancellor is enabled.
Hub Cancellor data rate options	256kbps, 512kbps, 1024kbps, 2.5Mbps, 5Mbps, 10Mbps, 15Mbps, 20Mbps, 25Mbps, 30Mbps, 40Mbps, 50Mbps, 60Mbps, 80Mbps, 100Mbps and 200Mbps traffic rate
Carrier Asymmetry	<b>Power:</b> -10dB to +10dB <b>Symbol rate:</b> Up to 10:1
Eb/No Degradation	Typically less than 0.2dB
Delay Range	0 to 330ms

Demodulator Specification	
Demodulators	<b>Options:</b> 4, 8, 12 or 16 (total) (14 Demods with Hub canceller enabled)
Operating Bandwidth	All inbound carriers must be within a bandwidth of 72MHz
Waveform	<b>Options:</b> <b>DVB-S2/S2X</b> (EN 302 307-1 & 2)
Data Rate	<b>Each DVB-S2X inbound:</b> 50kbps to 197Mbps <b>Total for all inbounds combined:</b> Up to 338Mbps 1bps resolution
Symbol Rate	<b>Each DVB-S2X inbound:</b> 100ksps to 40Mps <b>Total for all inbounds combined:</b> Up to 68Mps 1spss resolution
Input Range (dBm)	<b>L-band minimum:</b> -140 + 10 log (symbol rate) <b>IF minimum:</b> -130 + 10 log (symbol rate) <b>IF/L-band maximum:</b> -68 + 10 log (symbol rate)
Maximum Composite	+10dBm
Wanted-to-Composite	-102 + 10 log (symbol rate)
Receive Spectral Roll-off	<b>DVB-S2/S2X</b> 5%, 10%, 15%, 20%, 25%, 35%
LNB 10MHz Reference	Via IFL cable; 10MHz ± 0.01 ppm; 2dBm ± 2dBm
LNB Voltage	Selectable 13V, 15V, 18V, 20V or 24V DC to LNB via IFL cable; maximum 0.75A

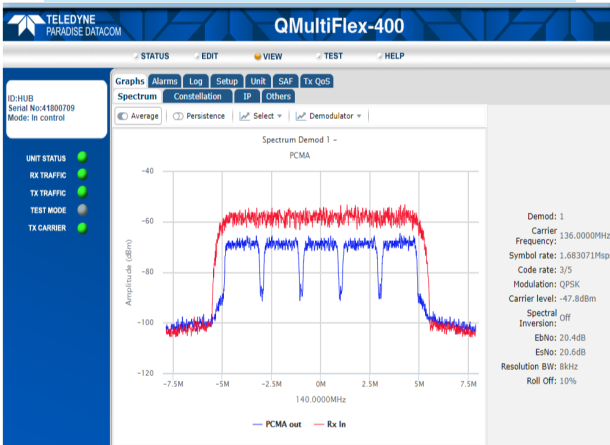
DVB Carrier ID Option (ETSI TS 103 129)	
Supports the identification of interfering carriers by superimposing a low-power CID waveform onto the carrier with negligible degradation. <b>Supported for all carriers.</b> A carrier monitoring system is required to decode CID waveforms	

Mechanical/Environmental	
Size	1U chassis, 285mm deep excluding handles, connectors and fans
Weight	3kg
Power Supply	90 to 264VAC, 50/60Hz 1.9A Fused IEC connector (live and neutral fused); 48V DC option
Compliances	FCC, CE and RoHS compliant
Safety Standards	EN62368-1:2014, Edition 2
Emissions & Immunity	<b>Emissions:</b> EN55022:2010 Class B <b>Immunity:</b> EN55024:2010
Operating Temperature	0 to 50°C (storage: -20°C to 70°C)
Humidity	95% relative humidity, non-condensing

## Network Control: Q-NET™ Navigator

**Q-NET™ Navigator** supports the control of all network modems and third-party network devices from a single application. Includes easy-to-use navigation, multiple operator roles/access levels (including Virtual Network Operator support), continuous status/ alarm polling and automatic synchronisation of all network configuration changes. **Q-NET™ Navigator** is included as standard.

## Hub Cancellor Spectral View:




Ethernet: Standard Features	
Bridging and Static Routing	<b>Trunking mode:</b> Hardware Layer 2 switch supporting 345Mbps bi-directional traffic at up to 200,000 packets per second; zero jitter <b>Layer 2 switch &amp; Layer 3 router:</b> Software processing capability of up to 150,000 packets per second
IPv4/IPv6	Dual IPv4/IPv6 TCP/IP supporting IPv4/IPv6 bridging and routing
VLAN Support	IEEE 802.1q VLAN access/trunking
Software Defined Network Support	OpenFlow and other WA-SDN protocols provide support for network virtualisation; see Q-NET Satellite Network Solution whitepaper for more details
DHCP	DHCP client for automatic allocation of M&C IP address; DHCP server allocates IP addresses to network devices
NAT	NAT firewall; allows all network devices to share a single IP address when viewed from other end of satellite link
SNMP	SNMP v1, v2c & v3
Access Control Lists	Separate IP and MAC address black/white user access control lists
Network Time Protocol (NTP)	NTP client synchronises modem time & date to NTP server; provides millisecond accuracy
Web Server	Modem web server M&C interface (inc. built-in tools listed under Test Facilities)
AAA RADIUS Secure User Login	Authentication, Authorisation & Accounting. Greater access control & accountability. Replaces standard modem login with user's personal network login credentials
IP Metrics	Tx, Rx throughput (bps, pps) graphs; dropped, errored packet counts
sFlow Performance Metrics	sFlow is the industry standard for network monitoring, giving full modem performance visibility to sFlow compatible network management devices
Active Queue Management (AQM)	Implements CoDel (controlled delay) which overcomes buffer bloat by maintaining a constant delay through the modem for all IP packets
Virtual Routing & Forwarding	VRF supports multiple modem routing tables, allowing inter-VLAN routing
Ethernet MTU Size	10k bytes

XStream IP™ Tier 1 (Tx only)	
<i>XStream IP™ is an IP optimization suite designed for maximum reliability and bandwidth efficiency. The following features are provided as a standard part of the Modulator Option.</i>	
Traffic Shaping	Provides guaranteed throughput for priority traffic; supports Committed and Burst Information Rates. Stream classification uses one or more of: VLAN ID, IP address, IEEE 802.1p priority & Diffserv DSCP
IP-over-DVB Encapsulation	Supports the transmission of IP packets with/without Ethernet frames over DVB-S2/DVB-S2X; encapsulates & decapsulates using highly-efficient Ethernet Multi-Stream (EMS) encapsulation

XStream IP™ Tier 2 (Tx only) Option	
<i>The Tier 2 option extends the transmit capabilities provided by the XStream IP™ Tier 1 option.</i>	
DVB-S2/S2X ACM	Dynamically varies modcod with varying link conditions in order to maximise throughput for each remote site at all times by converting unused link margin into additional throughput; 100% link availability
DVB-S2/S2X VCM	Supports the transmission of up to 6 IP streams. Each stream has its own associated modcod for optimal per-site throughput

XStream IP™ Tier 3 (Tx and Rx) Option	
<i>The following features apply to both transmit and receive and can be used independently of XStream IP™ Tier 1 and XStream IP™ Tier 2 options. The Tier 3 option supports all demodulators for a single price.</i>	
TCP Acceleration	Typical throughput level of 90% of link capacity. Supports 4,400 concurrent accelerated TCP connections (plus at least 40,000 unaccelerated TCP connections) up to 100Mbps

Network Control	
<i>Web browser user interface support is provided as standard. SNMP and command line interfaces support the development of third-party user interfaces. In addition, the following network control application options are available</i>	
Q-NET™ Navigator	Allows all Paradise Modems to be fully controlled through a single application. It provides an easy-to-navigate site map, summary status reporting, etc. Provided as standard, free of charge
Modem Compatibility	Compatible with the use of QFlex-400, QFlex-400 P2MP and Q-Lite™ satellite modems

Test Facilities and Alarm Outputs	
Other test modes	Transmit CW Transmit alternate 1-0 pattern Simulated satellite delay for TCP/IP packets
Alarm Relays	4 independent Form C relays for unit, deferred, Tx and aggregated Rx alarms

Utilities Card (fitted as standard)	
9-way D type for 1:1 & 1:N redundancy (compatible with Q-NET PDQS Redundancy Switch)	
15-way D type for alarms, Tx Inhibit signal	
USB connector for software upgrades, etc. Second fan providing additional cooling FSK signalling	



Forward Error Correction	
DVB-S2X (EN 302 307-2)  Includes sup- port for DVB-S2	<b>Normal Frame:</b> <b>QPSK</b> 13/45, 9/20, 11/20 <b>8PSK</b> 23/36, 25/36, 13/18 <b>8APSK-L</b> 5/9, 26/45 <b>16APSK</b> 26/45, 3/5, 28/45, 23/36, 25/36, 13/18, 7/9, 77/90 <b>16APSK-L</b> 5/9, 8/15, 1/2, 3/5, 2/3 <b>32APSK</b> 32/45, 11/15, 7/9 <b>32APSK-L</b> 2/3 <b>64APSK</b> 11/15, 7/9, 4/5, 5/6 <b>64APSK-L</b> 32/45 <b>Short Frame:</b> <b>QPSK</b> 11/45, 4/15, 14/45, 7/15, 8/15, 32/45 <b>8PSK</b> 7/15, 8/15, 26/45, 32/45 <b>16APSK</b> 7/15, 8/15, 26/45, 3/5, 32/45 <b>32APSK</b> 2/3, 32/45
DVB-S2 (EN 302 307-1)	<b>QPSK</b> 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 <b>8PSK</b> 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 <b>16APSK</b> 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 <b>32APSK</b> 3/4, 4/5, 5/6, 8/9, 9/10

DVB-S2 Performance QEF (PER 10-7) Normal frames, Pilots off		
	Spectral Efficiency	Eb/No (dB) & Es/No (dB)
QPSK 1/4	0.490243	1.1 (-2.0)
QPSK 1/3	0.656448	0.7 (-1.1)
QPSK 2/5	0.789412	0.7 (-0.3)
QPSK 1/2	0.988858	1.1 (1.1)
QPSK 3/5	1.188304	1.7 (2.4)
QPSK 2/3	1.322253	2.0 (3.2)
QPSK 3/4	1.487473	2.4 (4.1)
QPSK 4/5	1.587196	2.6 (4.6)
QPSK 5/6	1.654663	3.0 (5.2)
QPSK 8/9	1.766451	3.7 (6.2)
QPSK 9/10	1.788612	3.9 (6.4)
8PSK 3/5	1.779991	3.5 (6.0)
8PSK 2/3	1.980636	4.0 (7.0)
8PSK 3/4	2.228124	4.6 (8.1)
8PSK 5/6	2.478562	5.6 (9.5)
8PSK 8/9	2.646012	6.6 (10.8)
8PSK 9/10	2.679207	6.9 (11.2)
16APSK 2/3	2.637201	5.2 (9.4)
16APSK 3/4	2.966728	5.8 (10.5)
16APSK 4/5	3.165623	6.2 (11.2)
16APSK 5/6	3.300184	6.6 (11.8)
16APSK 8/9	3.523143	7.5 (13.0)
16APSK 9/10	3.567342	7.8 (13.3)
32APSK 3/4	3.703295	7.3 (13.0)
32APSK 4/5	3.951571	7.8 (13.8)
32APSK 5/6	4.119540	8.4 (14.5)
32APSK 8/9	4.397854	9.4 (15.8)
32APSK 9/10	4.453027	9.6 (16.1)

DVB-S2X Performance QEF (PER 10-7) Normal frames, Pilots off		
	Spectral Efficiency	Eb/No (dB) & Es/No (dB)
QPSK 13/45	0.567805	0.5 (-2.0)
QPSK 9/20	0.889135	0.9 (0.4)
QPSK 11/20	1.088581	1.1 (1.5)
8APSK-L 5/9	1.647211	3.1 (5.3)
8APSK-L 26/45	1.713601	3.2 (5.5)
8PSK 23/36	1.896173	3.6 (6.4)
8PSK 25/36	2.062148	4.1 (7.2)
8PSK 13/18	2.145136	4.3 (7.6)
16APSK-L 1/2	1.972253	3.4 (6.3)
16APSK-L 8/15	2.104850	3.5 (6.7)
16APSK-L 5/9	2.193247	3.6 (7.0)
16APSK-L 3/5	2.370043	3.9 (7.6)
16APSK-L 2/3	2.635236	4.4 (8.6)
16APSK 26/45	2.281645	4.2 (7.8)
16APSK 3/5	2.370043	4.4 (8.1)
16APSK 28/45	2.458441	4.2 (8.1)
16APSK 23/36	2.524739	4.6 (8.6)
16APSK 25/36	2.745734	5.2 (9.6)
16APSK 13/18	2.856231	5.4 (10.0)
16APSK 7/9	3.077225	6.0 (10.9)
16APSK 77/90	3.386618	7.0 (12.3)
32APSK-L 2/3	3.289502	6.5 (11.7)
32APSK 32/45	3.510192	6.5 (12.0)
32APSK 11/15	3.620536	6.7 (12.3)
32APSK 7/9	3.841226	7.5 (13.3)
64APSK-L 32/45	4.206428	8.4 (14.6)
64APSK 11/15	4.338659	8.9 (15.3)
64APSK 7/9	4.603122	9.3 (15.9)
64APSK 4/5	4.735354	9.5 (16.3)
64APSK 5/6	4.933701	10.3 (17.2)

**PER v BER**

**Note:** A PER of 10-7 is equivalent to a BER of 6.6 x 10-11.

DVB-S2 Performance QEF (PER 10-7) Short frames, Pilots off		
	Spectral Efficiency	Eb/No (dB) & Es/No (dB)
QPSK 1/4	0.365324	2.2 (-2.2)
QPSK 1/3	0.629060	1.3 (-0.7)
QPSK 2/5	0.760928	1.1 (-0.1)
QPSK 1/2	0.848840	1.6 (0.9)
QPSK 3/5	1.156532	2.1 (2.7)
QPSK 2/3	1.288400	2.3 (3.4)
QPSK 3/4	1.420269	2.9 (4.4)
QPSK 4/5	1.508181	3.1 (4.9)
QPSK 5/6	1.596093	3.5 (5.5)
QPSK 8/9	1.727961	4.0 (6.4)
8PSK 3/5	1.725319	4.0 (6.4)
8PSK 2/3	1.922040	4.5 (7.3)
8PSK 3/4	2.118761	5.1 (8.4)
8PSK 5/6	2.381056	6.0 (9.8)
8PSK 8/9	2.577777	7.0 (11.1)
16APSK 2/3	2.548792	5.6 (9.7)
16APSK 3/4	2.809662	6.2 (10.7)
16APSK 4/5	2.983575	6.7 (11.4)
16APSK 5/6	3.157488	7.1 (12.1)
16APSK 8/9	3.418357	8.1 (13.4)
32APSK 3/4	3.493093	8.1 (13.5)
32APSK 4/5	3.709309	8.7 (14.4)
32APSK 5/6	3.925526	9.0 (14.9)
32APSK 8/9	4.249850	10.2 (16.5)

DVB-S2X Performance QEF (PER 10-7) Short frames, Pilots off		
	Spectral Efficiency	Eb/No (dB) & Es/No (dB)
QPSK 11/45	0.453236	1.4 (-2.0)
QPSK 4/15	0.497192	1.3 (-1.7)
QPSK 14/45	0.585104	1.1 (-1.2)
QPSK 7/15	0.892796	1.4 (0.9)
QPSK 8/15	1.024664	1.7 (1.8)
QPSK 32/45	1.376313	2.6 (4.0)
8PSK 7/15	1.331876	3.1 (4.3)
8PSK 8/15	1.528597	3.4 (5.2)
8PSK 26/45	1.659745	3.8 (6.0)
8PSK 32/45	2.053188	4.8 (7.9)
16APSK 7/15	1.766184	4.0 (6.5)
16APSK 8/15	2.027053	4.4 (7.5)
16APSK 26/45	2.200966	4.8 (8.2)
16APSK 3/5	2.287923	5.0 (8.6)
16APSK 32/45	2.722705	5.8 (10.2)
32APSK 2/3	3.168769	6.8 (11.8)
32APSK 32/45	3.384985	7.3 (12.6)

**Q-MultiFlex™: The industry's first 'Hub in a Box'.**

Historically, networks required separate boxes for modulators, demods, IP optimisers, Ethernet switches, routers, packet encapsulators, spectrum analysers, oscilloscopes, redundancy controllers.

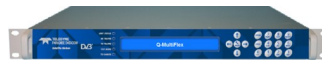
Now you can replace all of these with a single box! That's a lot of money you won't have to spend and that's leaving out the cost of spares, training and maintenance for all those individual boxes. And you can multiply the saving times over as you scale the network!



'Before'



and



'After'

# QMultiFlex-400™ IP Modulator / Multi-demodulator

Option	Description	Fully configurable - pay only for what you need!
<b>Base Unit</b> <i>(Note: Mod and/or Demod options must be selected to make the unit functional)</i>	✓	<p><b>Front-panel keypad and display</b>  <b>IF operation 50 to 180MHz; L-band operation 950 to 2450MHz; IF/L-band Tx/Rx N-type connectors</b>  <b>High-stability 10MHz reference (for BUC/LNB)</b>  <b>4-port Gigabit Ethernet switch for M&amp;C and traffic; all features described under Ethernet Standard Features</b>  <b>All features described under Test Facilities</b>  <b>AC mains input (unless DC input option selected)</b></p> <p><b>XStream IP™ Tier 1 (Tx only):</b> provided as standard with any <b>Modulator Option</b>; includes:</p> <ul style="list-style-type: none"> <li>• <b>Traffic Shaping:</b> CIR/BIR/priority settings for IP streams classified by VLAN ID, IP address, IEEE 802.1p priority &amp; Diffserv DSCP</li> </ul> <p><b>IP-over-DVB Encapsulation:</b> transmission of IP packets and Ethernet frames over DVB-S2/S2X using Ethernet Multi-Stream (EMS) encapsulation</p>
<b>Modulator Options</b>		<b>DVB-S2/S2X CCM Tx:</b> Modulator transmit function to 100Mbps/70MSPS (default); DVB-S2 QPSK, 8PSK, 16APSK & 32APSK Tx operation per EN 302 307-1. DVB-S2X QPSK, 8PSK, 8APSK, 16APSK, 32APSK & 64APSK Tx operation per EN 302 307-2. Includes 5%, 10%, 15%, 20%, 25% & 35% spectral roll-offs. Includes <b>XStream IP™ Tier 1 (Tx only)</b> , which comprises traffic shaping and IP-over-DVB encapsulation
<b>Modulator Data Rate Options</b>		<b>200Mbps data rate:</b> Extends 100Mbps Tx operation to 200Mbps ( <i>DVB-S2 &amp; DVB-S2X only</i> )
		<b>345Mbps data rate:</b> Extends 200Mbps Tx operation to 345Mbps ( <i>DVB-S2 &amp; DVB-S2X only</i> )
<b>Demodulator Options</b>		<b>Note: DVB-S2/S2X multi-demodulators include, as standard, the same modulations and roll-offs as specified for the DVB-S2/S2X modulator; default maximum composite receive data rate total of 338Mbps/68MSPS.</b> <b>Note: When the Hub Cancellor is enabled, a maximum of 14 demodulators are available.</b>
		<b>4 demodulators:</b> enables demodulators 1 to 4 inclusive (includes hardware for 16 demodulators)
		<b>8 demodulators:</b> enables demodulators 5 to 8 inclusive (requires 4 demodulator option)
		<b>12 demodulators:</b> enables demodulators 9 to 12 inclusive (requires 8 demodulator option)
		<b>16 demodulators:</b> enables demodulators 13 to 16 inclusive (requires 12 demodulator option)
<b>XStream IP™ Options</b>		<b>XStream IP™ Tier 2 (Tx only):</b> requires <b>Modulator Option</b> ; includes:
		<ul style="list-style-type: none"> <li>• <b>DVB-S2/S2X point-to-multipoint VCM</b> (up to 6 streams in shared outbound, each with its own modcod)</li> <li>• <b>DVB-S2/S2X point-to-multipoint ACM</b> (dynamic adjustment of all outbound modcods to maximize data rate)</li> </ul>
<b>Hub Cancellor</b> <i>(Supporting DVB-S2 and DVB-S2X waveforms)</i>  <i>Subject to prevailing modem data rate limits.</i>  <i>Occupied bandwidth: minimum 100kHz—72MHz</i>  <i>A Hub Cancellor is also available as a low-cost 90-day license for Redundant Hub units (the license counts down only when the canceller is active)</i>		<b>Hub Cancellor+ up to 256kbps</b>
		Extends Hub Cancellor+ to <b>512kbps</b>
		Extends Hub Cancellor+ up to <b>1.024Mbps</b>
		Extends Hub Cancellor+ up to <b>2.5Mbps</b>
		Extends Hub Cancellor+ up to <b>5Mbps</b>
		Extends Hub Cancellor+ up to <b>10Mbps</b>
		Extends Hub Cancellor+ up to <b>15Mbps</b>
		Extends Hub Cancellor+ up to <b>20Mbps</b>
		Extends Hub Cancellor+ up to <b>25Mbps</b>
		Extends Hub Cancellor+ up to <b>30Mbps</b>
		Extends Hub Cancellor+ up to <b>40Mbps</b>
		Extends Hub Cancellor+ up to <b>50Mbps</b>
		Extends Hub Cancellor+ up to <b>60Mbps</b>
		Extends Hub Cancellor+ up to <b>80Mbps</b>
		Extends Hub Cancellor+ up to <b>100Mbps</b>
	Extends Hub Cancellor+ up to <b>200Mbps</b>	
<b>DVB-CID</b>		<b>DVB Carrier ID:</b> Tx carrier identification per ETSI 103 129
<b>DC Input</b>		<b>48V DC: K3025</b> 48V DC primary power input (in place of 100 to 240V AC input)
<b>BUC PSU</b>		<b>AC In &amp; 24V Out: P3553</b> 24V 200W DC to Tx BUC
		<b>AC In &amp; 48V Out: P3554</b> 48V 200W DC to Tx BUC
		<b>24V &amp; 48V In &amp; 24V Out: P3555</b> +24V 200W DC to Tx BUC
		<b>24V &amp; 48V In &amp; 48V Out: P3556</b> +48V 200W DC to Tx BUC