

ChromaFlex

CT4 ChromaFlex Chromadigm DWDM Transmitter Modules



Patented
U.S.# 7,936,997

Chromadigm
- inside

CT4
(front view)

The ChromaFlex CT4 full RF spectrum DWDM transmitter incorporates ATX's Chromadigm chirp cancellation & clipping mitigation technology which significantly advances the performance of analog optical DWDM systems. The Chromadigm hybrid transmitter technology supports a much higher Optical Modulation Index (OMI), improves transmitter MER, to reduce optical launch power requirements to avoid the degrading effects of four wave mixing and crosstalk. The technology allows full utilization of the optical spectrum, up to 40 consecutive 100 GHz spaced ITU channels while delivering exceptional MER and error-free pre-FEC BER performance.

The CT4 includes an integrated multiplex filter to eliminate external connections and additional rack space consumption. A DMixed version is also available. Separate broadcast and narrowcast RF input ports simplifies the combining of targeted services. An optical test point is provided along with available express port options for combining additional transmitter wavelengths or extracting bi-directional return path optical signals. The CT4 transmitter occupies two module slots in the ChromaFlex chassis.

High output versions are also available, having Muxed or DMixed launch powers of 9 or 12 dBm per wavelength to avoid using EDFAs in the headend.

Applications

- High density node segmentation
- Hub eliminations
- Solving long distance applications with high performance
- RFoG service segmentation
- Fiber reclamation

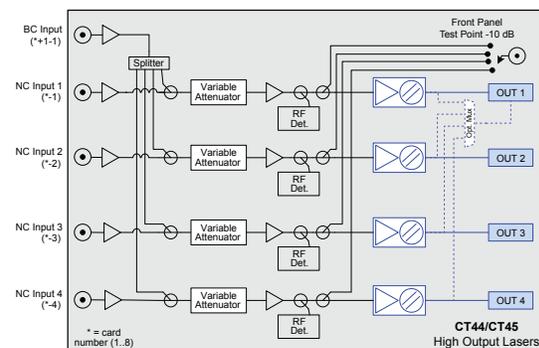
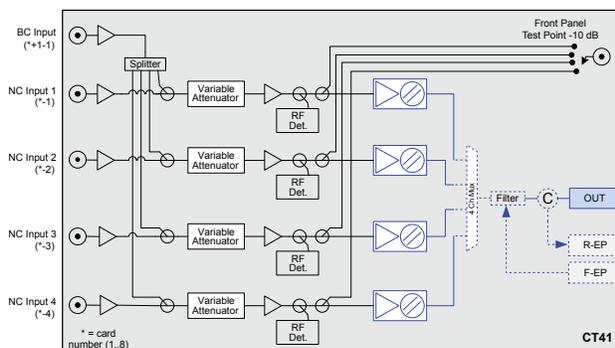
Features

- New options with higher launch powers up to +12 dBm
- 1.218 GHz
- Chirp-free transmitter for improved MER and distance independent performance
- Clipping mitigation for high OMI, superior MER and error-free pre-FEC BER performance
- Up to 40 standard ITU wavelengths per fiber with > 40 dB MER link performance
- Extended reach, over 100 km, to eliminate remote hubs
- Independent broadcast and narrowcast RF input ports
- SNMP v2c, Telnet or web GUI remote monitoring



CT41 Transmitter (front view)

Functional Schematics



Specifications

DWDM Transmitter

		CT41	CT44 / CT45 (High Output)
OPTICAL PARAMETER			
WAVELENGTH	1530-1562nm CHs 20-59 with 100 GHz or 200 GHz Spacing Following Standard ITU Channel Assignments		
OPTICAL POWER⁽¹⁾	CT41N: 5.5 dBm, CT41X: 5.0 dBm		CT44: +9 dBm
	Derate 1.5 dB for DMuxed Output		CT45: +12 dBm
	Derate 0.5 dB for One Express Port		No Express Ports
	Derate 1.0 dB for Two Express Ports		
OPTICAL CONNECTOR	LC/APC		
LASER RIN	< -155 dB/Hz		
OPTICAL RETURN LOSS	> 50 dB		
RF PARAMETER			
BROADCAST BANDWIDTH	50-1218 MHz		
NARROWCAST FREQUENCY	50-1218 MHz		
BROADCAST PORT RF INPUT LEVEL⁽²⁾⁽³⁾	75 ANALOG	+15 dBmV An	
	30 AN + 125 QAM	+15/9 dBmV An/QAM	
	155 QAM	+13 dBmV/QAM	
	AGC RANGE	± 3 dB from Above	
NARROWCAST PORT RF INPUT LEVEL	Same Minimum QAM Levels as Broadcast Port. No Analog in NC Port		
AGC OFFSET RANGE	± 2.0 dB in 0.25 dB Steps		
MGC OFFSET RANGE	± 3.0 dB Total		
FLATNESS	± 0.75 dB from 50-1218 MHz		
RETURN LOSS	> 16 dB up to 860 MHz, > 14 dB 860-1218 MHz		
TEST PORT	-10 dB Below Input to Laser (post-AGC)	-10 dB Below RF Input (pre-AGC)	
RF ISOLATION	> 55 dB Between Individual NC Ports with Terminations		
PERFORMANCE			
MER	155 QAM (Up to 40 WL & 40 km with 1 EDFA), > 40 dB		
BER	< 1.0E-9 pre-FEC		
MANAGEMENT			
LOCAL	Hand-held Display, CLI, GUI		
REMOTE	SNMP Enterprise MIB, GUI, Telnet		
ELECTRICAL & OPERATIONAL			
POWER CONSUMPTION	10W/λ, 40W Total		
OPERATING TEMPERATURE	0°C to +50°C (+32°F to +122°F)		
STORAGE TEMPERATURE	-40°C to +65°C (-40°F to +149°F)		
HUMIDITY	5-85% Non-condensing		
DIMENSIONS	ChromaFlex Two-slot Module, 1.7"H x 7.5"W x 14.4"D (4.3H x 18.9W x 36.5D cm)		
WEIGHT	4.6 lbs (2.1 kg)		

NOTES:

(1) Minimum output power per wavelength, Muxed output, without test point or express ports. Optional features only decrease the output level from this.

For CT44 and CT45, this is the minimum output power whether Muxed or DMuxed option and there are no express port options.

(2) n Analog = n NTSC analog channels from 54 MHz.

(3) n QAM = n ITU-T J.83 ANNEX B QAM 256, starting at 54 MHz or after highest analog channel.

Ordering Information

Part Number Format: CT4 - - - - - - - - - -		
a b c d e f g h i j		
CT4ab	cdefg	hij
Base Model	Start/Stop ITU Channel (ITU Channels 20-62 & Spacing)	Optical Ports: Number of Output Ports, Test Points, Express Ports & Reflector Port Type (Max. of 4)
a = Launch Power/WL	c = ITU Channel Group	h = Number of Output Ports & Test Points
1 = 5.5 dBm	0 = Same ITU per TX	M = Muxed Output (1)
4 = 9 dBm	1 = 100 GHz Spacing, Contiguous	4 = DMuxed Outputs (4)
5 = 12 dBm	2 = 200 GHz Spacing, Contiguous	i = Express Port Types
b = X-Talk Version	de = First ITU Channel	0 = None
N = Normal	fg = Last ITU Channel	1 = One Forward Express Port
X = Enhanced	Special:	j = Return Reflector Port Type
	IIWG* = ITU Interoperable	0 = None
	Wavelength Plans, * = 1-4	
	1 : 26, 24, 22, 21	
	2 : 39, 36, 33, 28 etc.	
	Sxxxx = Special model. See custom description.	

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