

# Cisco GS7000 1218-MHz 4-Way Segmentable Node

## Product Description

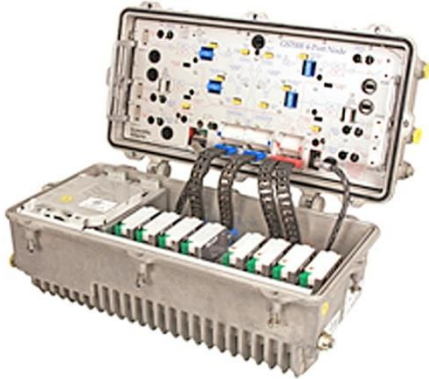
Consumer bandwidth demand continues to grow at a rapid rate every year. As a result, cable operators with devices based on DOCSIS<sup>®</sup> need to prepare their networks for the future. They need to plan for reduced service group sizes and ultimately for double or quadruple (or greater) bandwidth speeds. The Cisco<sup>®</sup> GS7000 1218-MHz 4-Way Segmentable Node enables them to implement these plans. This platform allows independent segmentation and redundancy for both forward and reverse paths in a reliable, easily configurable, technician-friendly package (Figure 1).

The forward path of the GS7000 1218-MHz node launch amplifier has additional gain to drop-into existing 870- and 1000-MHz networks. It can be initially deployed in nonsegmented mode with a single broadcast optical receiver distributing common RF services to either four output ports (all high level) or six output ports (two high level and four lower level). The forward path can also be fully segmented by using four independent optical receivers, with each feeding its own output port, or it can be left and right segmented by using two independent optical receivers, with each feeding half the node's output ports. Forward-path optical redundancy is also supported through the use of optional redundant optical receivers. The type of forward-path segmentation or redundancy is determined by the type of Cisco GS7000 forward configuration module installed.

The GS7000 node's reverse path is equally flexible. Reverse traffic can be segmented or combined and routed to a maximum of four distributed feedback (DFB) or coarse wavelength-division multiplexing (CWDM) reverse optical transmitters, or to the Cisco GS7000 Enhanced Digital Reverse (EDR) Transmitters as part of the EDR system. Reverse-path optical redundancy is supported through the use of optional redundant optical transmitters. The type of reverse-path segmentation or redundancy is determined by the type of GS7000 reverse configuration module installed.

All optical transmitters and optical receivers used in the GS7000 platform have new high-profile module covers that include both a self-contained fiber pigtail connector storage area and an integrated pull ring for easier module installation and removal. Additionally, the GS7000 optical receiver has a new low-current design that dissipates less power and incorporates a two-state interstage RF attenuator switch for performance optimization.

**Figure 1.** Cisco GS7000 1218-MHz 4-Way Segmentable Node



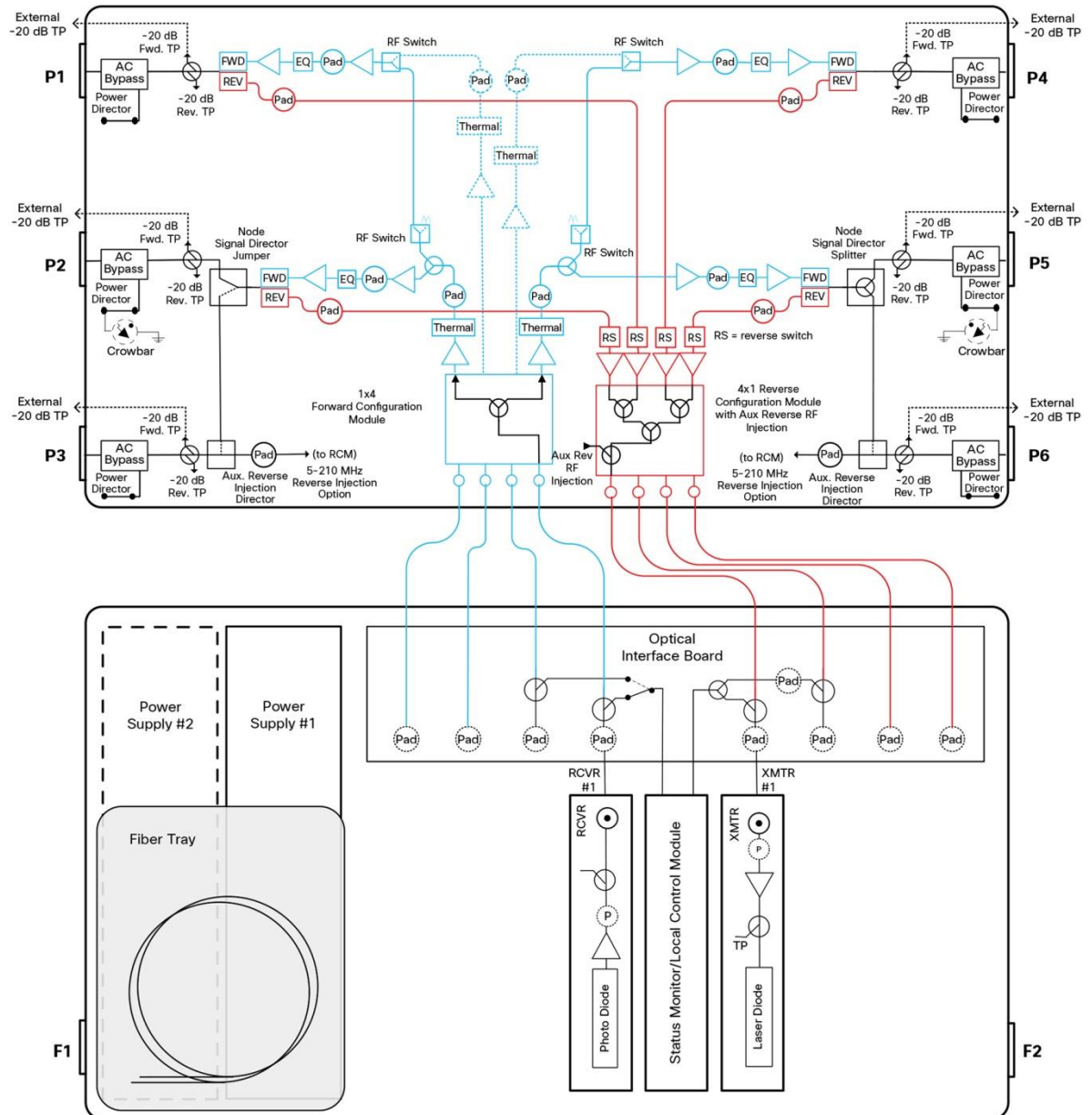
## Features

- Six-port 1.2-GHz RF platform
- Gallium nitride (GaN) gain stages
- Easy forward and reverse RF split changes
- Field-accessible plug-in forward interstage linear equalizers, forward and reverse configuration modules, and signal directors
- 1218-MHz accessories in the Cisco GainMaker<sup>®</sup> style
- Onboard three-state reverse switch (on, off, and 6 dB) allows each reverse input to be isolated for noise and ingress troubleshooting (status monitoring or local control module required)
- Positions for up to four optical receivers and four optical transmitters in housing lid
- Optional low-cost local control module that can be installed with a redundant forward configuration module to allow optical path redundancy when no status monitor is required
- Optional status monitoring using a DOCSIS transponder (using standard SCTE-HMS MIBs)
- Fiber entry ports on both ends of housing lid
- Fiber management tray and track for easy access to fiber connections
- Primary and redundant power supplies with passive load sharing
- Spring-loaded seizure assemblies to allow coaxial connectors to be installed or removed without removing amplifier chassis
- Dual or split AC power

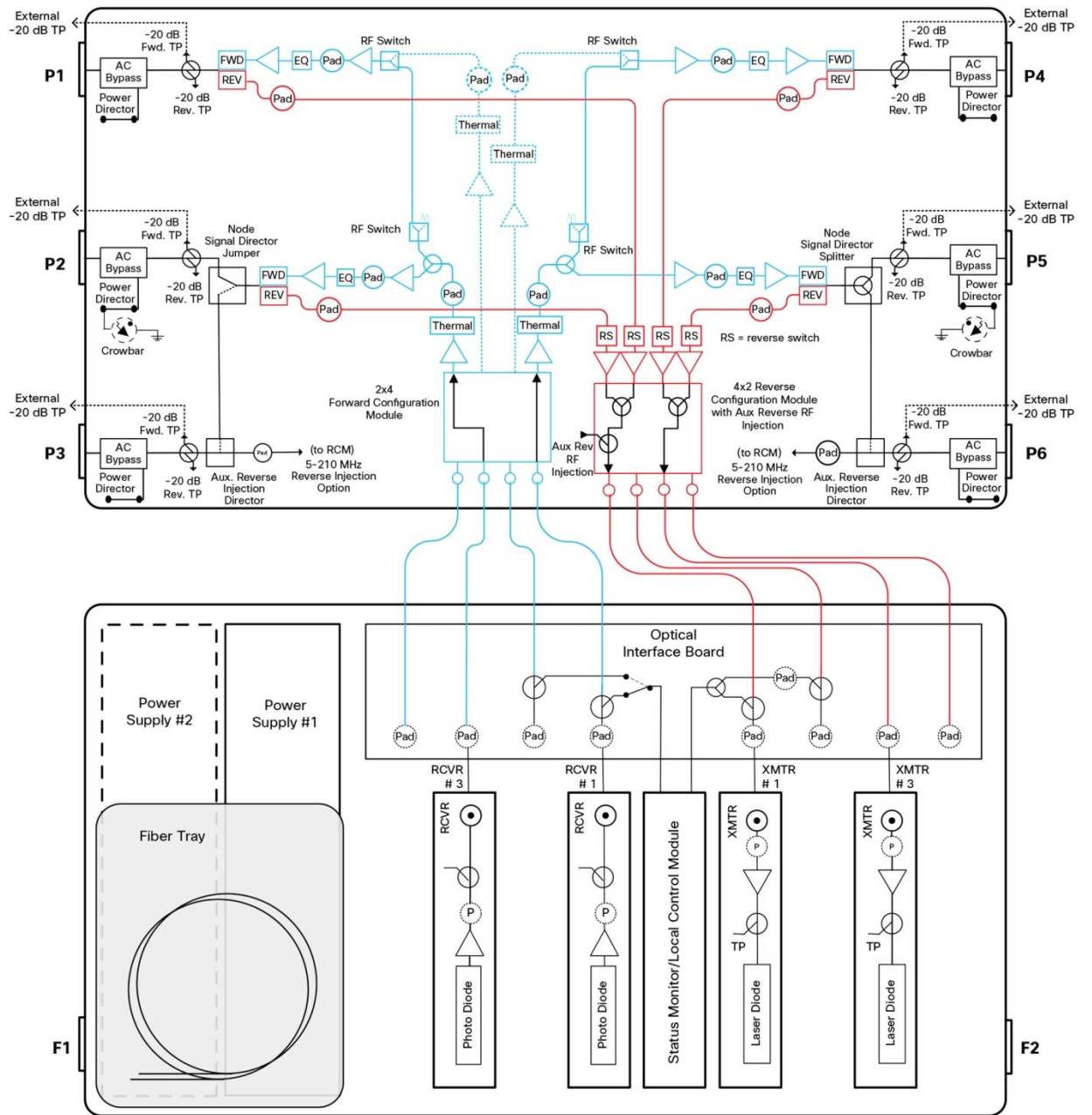
## Node Block Diagrams

Figures 2, 3, and 4 provide block diagrams of different node configurations.

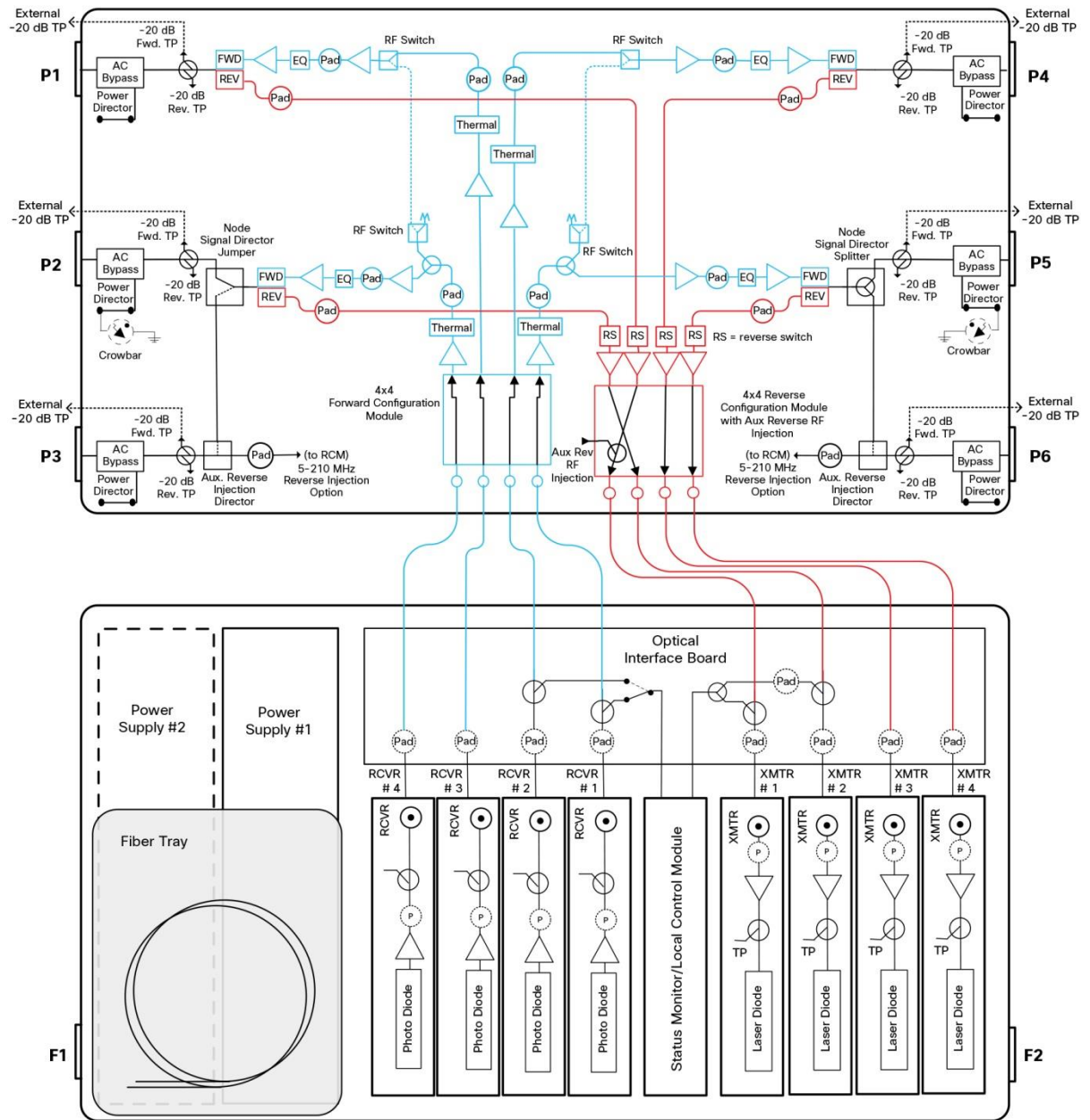
**Figure 2.** Block Diagram: Nonsegmented Node



**Figure 3.** Block Diagram: Left and Right Segmented Node



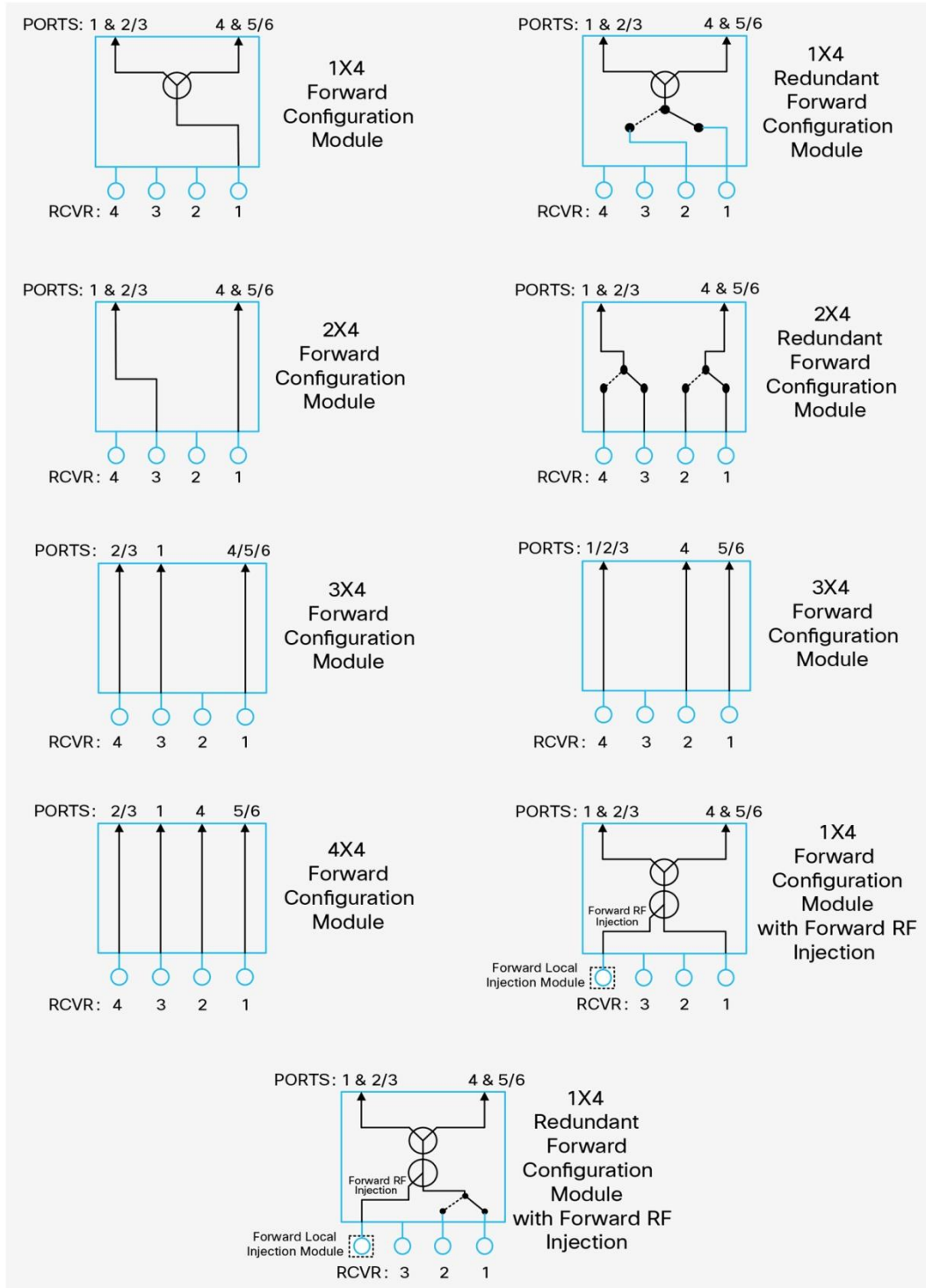
**Figure 4. Block Diagram: Fully Segmented Node**



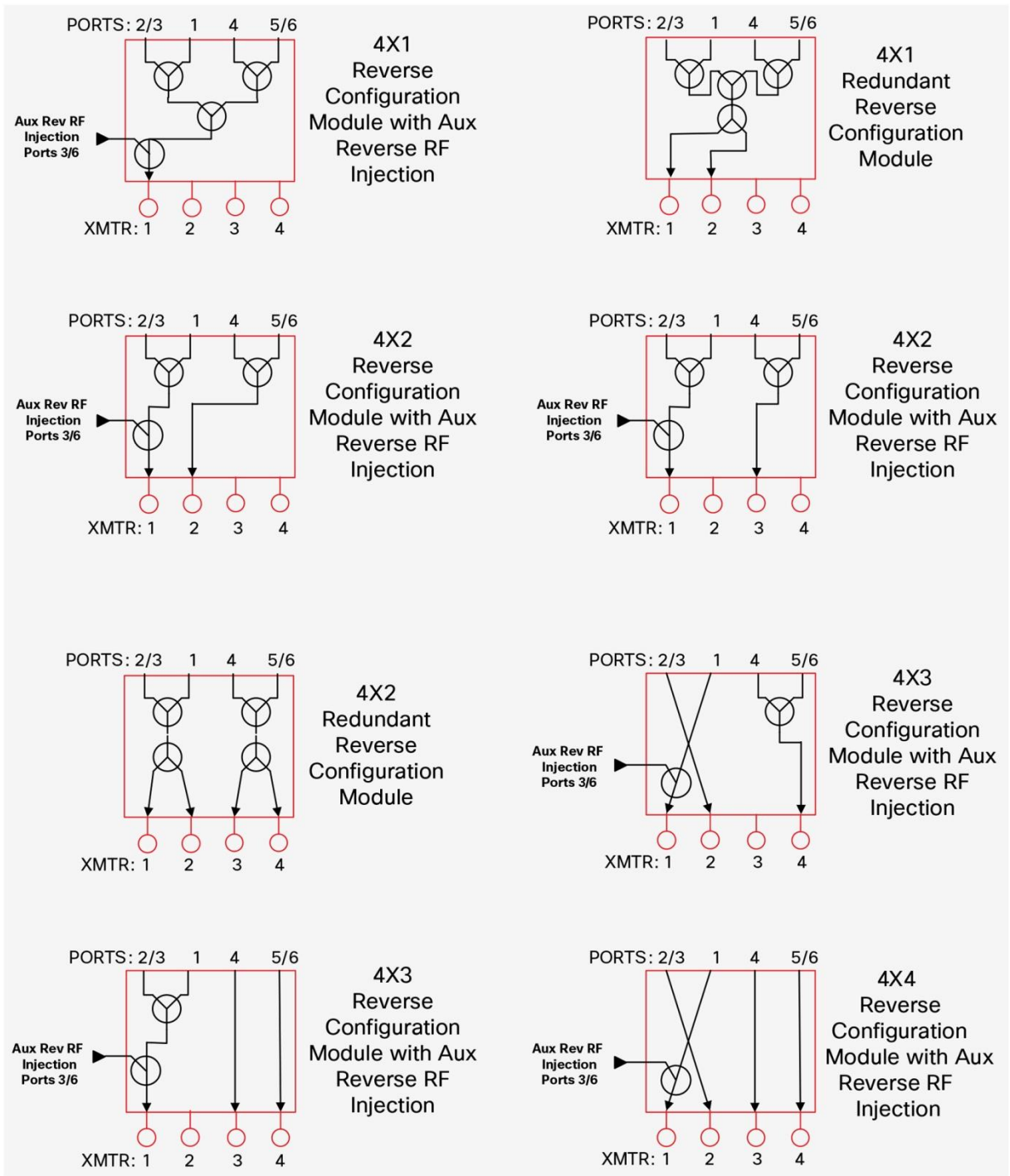
## Configuration Module Block Diagrams

Figures 5 and 6 provide block diagrams for forward and reverse configuration modules.

**Figure 5.** Block Diagrams: Forward Configuration Modules



**Figure 6.** Block Diagrams: Reverse Configuration Modules



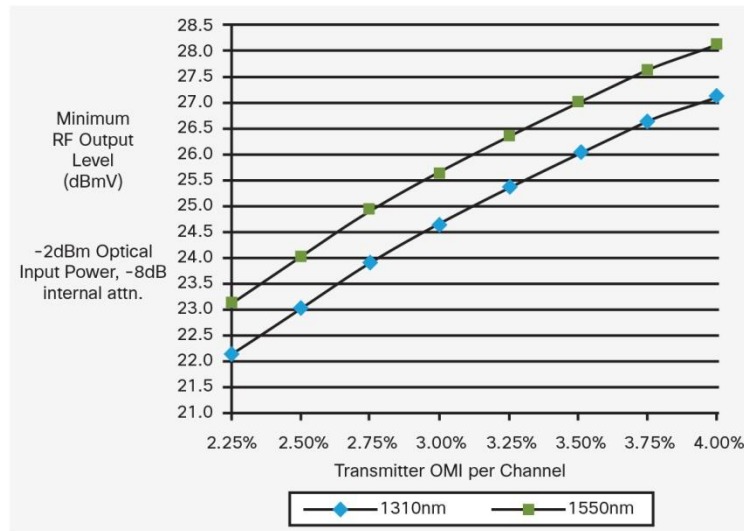
## Optical Section Specifications

Table 1 provides specifications for the optical section of the forward receiver module. Figures 7 through 10 show output levels and optical modulation index (OMI) values at different settings. Tables 2 and 3 summarize station performance characteristics.

**Table 1.** Specifications for Optical Section of Forward Receiver Module

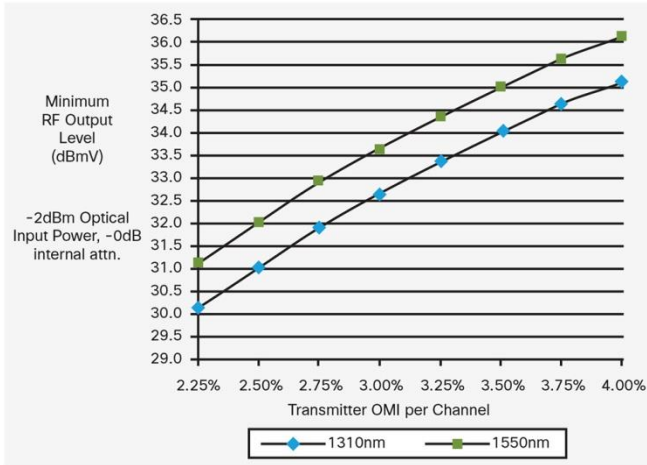
Optical Section: Forward Receiver Module	Unit	GS7000 Standard Receiver	GS7000 Low-Input Receiver	Notes
Wavelength	nm	1260 to 1620 nm	1260 to 1620 nm	
Optical input range	<ul style="list-style-type: none"> <li>mW</li> <li>dBm</li> </ul>	<ul style="list-style-type: none"> <li>0.25 to 1.6</li> <li>-6 to +2</li> </ul>	<ul style="list-style-type: none"> <li>0.1 to 0.63</li> <li>-10 to -2</li> </ul>	1
RF pass band	MHz	54 to 1218	54 to 1218	
Frequency response	dB	± 0.5	± 0.5	2
Tilt	dB	0 to +1	0 to +1	
Optical input test point (±10%)	VDC	1 V per mW	1 V per mW	3
Redundant optical receive transponder switching threshold default (±1.0 dB)	dBm	-10	-10	
Receiver RF output level at -2 dBm (or -6 dBm) optical input power	dBmV	Refer to Figures 7 and 8	Refer to Figures 9 and 10	4
Receiver RF output test point (±1.0 dB)	dB	-20	-20	

**Figure 7.** Standard Receiver RF Output Level and Transmitter OMI: Receiving Switch with -8 dB Setting

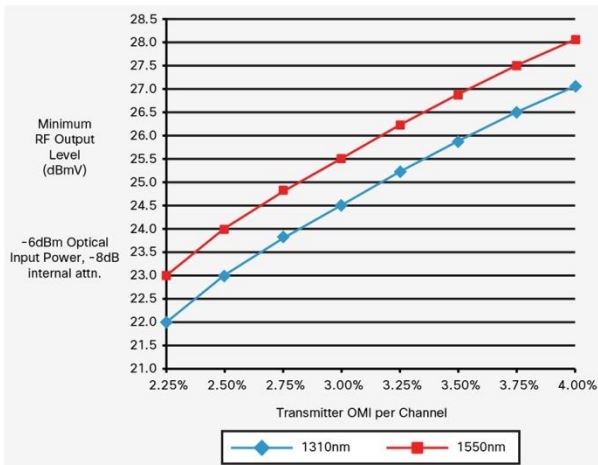




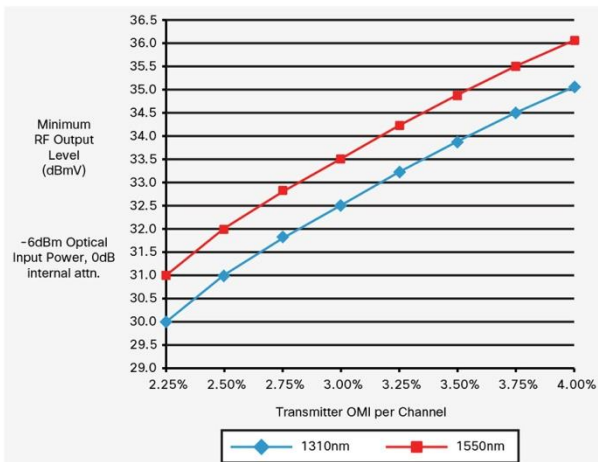
**Figure 8.** Standard Receiver RF Output Level and Transmitter OMI: Receiving Switch with 0 dB Setting



**Figure 9.** Low-Input Receiver, RF Output Level Compared to Transmitter OMI: Receiving Switch with -8 dB Setting



**Figure 10.** Low-Input Receiver, RF Output Level Compared to Transmitter OMI: Receiving Switch with 0 dB Setting



**Notes for Optical Section Specifications:**

<sup>1</sup> Receiver has a 2-position RF attenuator switch (-8 dB and 0 dB). For the standard receiver, the 0 dB setting is used for -6 to -2 dBm optical input power, and the -8 dB setting is used for -2 to +2 dBm optical input power. For the low-input receiver, the 0 dB setting is used for -10 to -6 dBm optical input power, and the -8 dB setting is used for -6 to -2 dBm optical input power.

<sup>2</sup> These specifications apply to the forward receiver module only. They do not include frequency response contributions from the forward optical transmitter.

<sup>3</sup> Optical output refers to a 1310-nm wavelength; for a 1550-nm wavelength, the output is ~1.1 V/mW.

<sup>4</sup> This specification is the minimum receiver RF output level for the stated transmitter percentage OMI per channel, with the specified receiver optical input power and receiver attenuator setting. To determine RF output levels at other optical input power levels, add (or subtract) 2 dB in the RF level for each 1 dB increase (or decrease) in receiver optical input power.

For reverse optical transmitter and link performance, see the “Analog Reverse Optical Transmitters with Thermal Compensation” data sheet.

**Table 2.** RF Section General Station Performance

General Station Performance	5-42/54 Split	Unit	Forward	Reverse	Notes
Pass band		MHz	54 to 1218	5 to 42	
Input and output port return loss		dB	16	16	
Hum modulation at 12A		dB	70 (54 to 870 MHz) 60 (870 to 1218 MHz)	60 (5 to 25 MHz) 70 (25 to 42 MHz)	
Hum modulation at 15A		dB	65 (54 to 870 MHz) 60 (870 to 1218 MHz)	60 (5 to 25 MHz) 65 (25 to 42 MHz)	
Test points (±1.0 dB)		dB	-20	-20	

General Station Performance	5-65/86 Split	Unit	Forward	Reverse	Notes
Pass band		MHz	86 to 1218	5 to 65	
Input and output port return loss		dB	16	15.75	
Hum modulation at 12A		dB	70 (86 to 870 MHz) 60 (801 to 1218 MHz)	60 (5 to 25 MHz) 70 (25 to 65 MHz)	
Hum modulation at 15A		dB	65 (86 to 870 MHz) 60 (870 to 1218 MHz)	60 (5 to 25 MHz) 65 (25 to 65 MHz)	
Test points (±1.0 dB)		dB	-20	-20	

General Station Performance	5-85/102 Split	Unit	Forward	Reverse	Notes
Pass band		MHz	105 to 1218	5 to 85	
Input and output port return loss		dB	16	16	
Hum modulation at 12A		dB	70 (105 to 870 MHz) 60 (870 to 1218 MHz)	60 (5 to 25 MHz) 70 (25 to 85 MHz)	
Hum modulation at 15A		dB	65 (105 to 870 MHz) 60 (870 to 1218 MHz)	60 (5 to 25 MHz) 65 (25 to 85 MHz)	
Test points (±1.0 dB)		dB	-20	-20	

General Station Performance	5-204/258 Split	Unit	Forward	Reverse	Notes
Pass band		MHz	258 to 1218	5 to 204	
Input and output port return loss		dB	16	16	
Hum modulation at 12A		dB	70 (258 to 870 MHz) 60 (870 to 1218 MHz)	60 (5 to 25 MHz) 70 (25 to 204 MHz)	
Hum modulation at 15A		dB	65 (258 to 870 MHz) 60 (870 to 1218 MHz)	60 (5 to 25 MHz) 65 (25 to 204 MHz)	
Test points ( $\pm 1.0$ dB)		dB	-20	-20	

**Table 3.** Forward and Reverse Station Performance

Forward Station Performance	All Splits	Unit		Notes
Amplifier type		-	GaN	
Operational gain (minimum)		dB	42	1
Frequency response ...	54 to 1002 MHz	dB	$\pm 0.50$	1
	54 to 1218 MHz	dB	$\pm 0.75$	
Internal tilt ( $\pm 1$ dB)		dB	18	1, 2
Port-to-port isolation with full segmentation		dB	70 (54 to 750 MHz) 60 (750 to 1002 MHz) 50 (1002 to 1218 MHz)	1
Port-to-port isolation with left and right segmentation		dB	70 (54 to 750 MHz) 60 (751 to 1002 MHz) 50 (1003 to 1218 MHz)	1
Noise at:	54 MHz	dB	14.0	1
	1218 MHz		13.0	
Reference output levels at (analog equivalent):	1218 MHz	dBmV	56	
	1002 MHz		52.5	
	870 MHz		50.5	
	750 MHz		48.7	
	650 MHz		47	
	550 MHz		45.5	
	258 MHz		41	
	105 MHz		39	
	86 MHz		38.5	
54 MHz		38		
Reference output tilt	(54 to 1218 MHz)	dB	18	2, 3
	(86 to 1218 MHz)		17.5	
	(105 to 1218 MHz)		17	
	(258 to 1218 MHz)		15	

Forward Station Performance	5-42/54 Split	Unit		Notes
78 NTSC Channels (CW) with Digital				6
Composite triple beat		dB	72	4
Composite second order (high side)		dB	66	4
CIN		dB	56	4
All Quadrature Amplitude Modulation (QAM)				6
CIN		dB	50	

Unless otherwise noted, specifications reflect typical performance and are referenced to 68°F (20°C). Specifications are based on measurements made in accordance with SCTE and ANSI standards (where applicable), using standard frequency assignments.

Reverse Station Performance (All Splits)	Unit	Reverse	Notes
Amplifier type	-	GaAs FET	
Operational gain (minimum)	dB	0	5
Frequency response	dB	±0.5	5
Internal tilt (+/-1 dB)	dB	0	5
Path-to-path isolation	dB	70 (5 to 85 MHz) 60 (85 to 204 MHz)	5
Noise	dB	7.5 (5 to 85 MHz) 7.7 (85 to 204 MHz)	5

**Notes:**

- Forward performance is for the station from the output of the optical receiver to the node RF output port, with 0 dB pad in the optical interface board (OIB), any forward configuration module, 0.5 dB interstage (I/S) pad, 18 dB linear I/S equalization factory-selected output pad, and signal director jumper. This specification includes OIB losses.
- The reference output tilt and internal tilt are both linear tilt.
- The forward reference output tilt specified is achieved through field installation of appropriate linear I/S equalization, in conjunction with the internal tilt of the launch amplifier and the tilt associated with the optical link (transmitter and receiver combination).
- The stated distortion performance is for the launch amplifier section operated at reference output levels and tilts. Full station performance can be determined by combining the optic performance and the launch amplifier performance.
- Reverse performance is for the station from the reverse input port to the input of the reverse optical transmitter module, with 0 dB reverse input pad.
- Load with the specified NTSC CW carries from 55 to 550 MHz. "Digital" refers to 550- to 1218-MHz load with QAM carriers at -6 dB relative to analog video carrier levels.

**Other Specifications**

Tables 4 through 7 list other specifications for the GS7000 node.

**Table 4.** Station Delay Characteristics

Station Delay Characteristics		42/54 Split	
Forward (Chrominance-to-Luminance Delay)		Reverse (Group Delay in 1.5 MHz Bandwidth)	
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)
55.25 to 58.83	18	5.0 to 6.5	36
61.25 to 64.83	15	6.5 to 8.0	15
67.25 to 70.83	8	8.0 to 9.5	12
		37.5 to 39.0	12
		39.0 to 40.5	18
		40.5 to 42.0	20

Unless otherwise noted, specifications reflect typical performance and are referenced to 68°F (20°C). Specifications are based on measurements made in accordance with SCTE/ANSI standards (where applicable), using standard frequency assignments.

Station Delay Characteristics 65/86 Split			
Forward (Chrominance-to-Luminance Delay)		Reverse (Group Delay in 1.5 MHz Bandwidth)	
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)
88.0 to 92.43	18	5.0 to 6.5	36
112.0 to 116.43	5	6.5 to 8.0	15
120.0 to 124.43	5	8.0 to 9.5	8
		60.5 to 62.0	8
		62.0 to 63.5	8
		63.5 to 65.0	12

Station Delay Characteristics 85/102 Split			
Forward (Chrominance-to-Luminance Delay)		Reverse (Group Delay in 1.5 MHz Bandwidth)	
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)
109.28 to 112.86	18	5.0 to 6.5	36
115.28 to 118.86	10	6.5 to 8.0	15
121.28 to 124.86	8	8.0 to 9.5	8
		80.5 to 82.0	8
		82.0 to 83.5	12
		83.5 to 85.0	18

Station Delay Characteristics 204/258 Split			
Forward (Chrominance-to-Luminance Delay)		Reverse (Group Delay in 1.5 MHz Bandwidth)	
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)
259.26 to 262.84	10	5.0 to 6.5	36
265.26 to 268.84	8	6.5 to 8.0	15
271.26 to 274.84	8	8.0 to 9.5	10
		199.5 to 201.0	5
		201.0 to 202.5	5
		202.5 to 204	10

**Table 5.** Electrical Data

Electrical	Units					Notes
Maximum AC through current (continuous)	Amps	15				
Maximum AC through current (surge)	Amps	25				
Component DC Power Consumption (Typical)		At +24.5 VDC	At +8.5 VDC	At +5.5 VDC	At -6 VDC	
Launch amplifier configured with 1x4 forward configuration module (with reverse amplifier)	Amps	3.10	0.28	-	-	
Launch amplifier configured with 4x4 forward configuration module (with reverse amplifier)	Amps	3.10	0.56	-	-	
1.2 GHz optical receiver (standard and low input)	Amps	0.16	-	-	-	
Reverse transmitter: dense wavelength-division multiplexing (DWDM)	Amps	0.22	-	-	0.10	

Electrical	Units					Notes
Reverse transmitter: 1310 and CWDM	Amps	0.11	-	-	0.09	
Status monitoring DOCSIS transponder	Amps	0.17	-	0.02	-	
Local control module (LCM)	Amps	-	-	0.07	-	
1:1 EDR Transmitter (CWDM and DWDM)	Amps	0.11	-	-	-	
2:1 EDR Transmitter (CWDM and DWDM)	Amps	0.26	-	-	-	
Power supply DC current rating	Amps	6.2	1.0	1.3	0.8	

**Table 6.** Station Powering Data

Station Powering Data												
GS7000 Node	I DC (Amps at 24 VDC)		AC Voltage									
			90	85	80	75	70	65	60	55	50	45
With 1 forward receiver, 1x4 forward configuration module, 1 reverse transmitter, and 4x1 reverse configuration module	3.54	AC current (A)	1.5	1.6	1.5	1.5	1.6	1.7	1.8	2.0	2.2	2.4
		Power (W)	103.0	102.7	102.4	102.2	102.3	102.0	102.0	102.1	102.2	102.8
With 4 forward receivers, 4x4 forward configuration module, 4 reverse transmitters, and 4x4 reverse configuration module	4.35	AC current (A)	1.8	1.8	1.8	1.9	2.0	2.1	2.3	2.4	2.8	3.0
		Power (W)	129.5	129.2	129.0	128.8	128.6	128.8	128.7	128.9	129.5	130.0

Data is based on the stations configured with the status monitoring transponder. AC currents specified are based on measurements made with a typical CATV type ferro-resonant AC power supply (quasi-square wave).

The DC supply has a fixed undervoltage lockout of 33V AC.

**Table 7.** Environmental and Mechanical Specifications

Environmental	Units	
Operating temperature range	Degrees	-40 to 140°F (-40 to 60°C)
Relative humidity range	Percent	5 to 95%
Mechanical		
Housing Dimensions	Weight	
L x H x D: 21.3 x 11.6 x 11.1 in. (541 x 295 x 282 mm)		Station with 4 receivers, 4 transmitters, 2 power supplies: 50.0 lb. (22.7 kg)

Unless otherwise noted, specifications reflect typical performance and are referenced to 68°F (20°C). Specifications are based on measurements made in accordance with SCTE/ANSI standards (where applicable), using standard frequency assignments.

## Ordering Information

The GS7000 node is available in a variety of configurations, shown in Table 8. You can also select other components during the ordering process (Tables 9 through 15). Please consult with your account representative, customer service representative, or system engineer to determine the best configuration for your particular application.

**Table 8.** Cisco GS7000 1.2-GHz Node Configurations

Cisco GS7000 1.2-GHz Node Configurations	Part Number for Ordering
<b>42/54 MHz Split</b>	
GS7K 1.2GHz, 4254, 1PS, SIRx, 1x4FCM, 4x1RCM, TPA, STDFBRTRY	GS7KS411S11XXXXXXXX
GS7K 1.2GHz, 4254, 1PS, LIRX, 1x4FCM, 4x1RCM, TPA, STDFBRTRY	GS7KS411L11XXXXXXXX
GS7K 1.2GHz, 4254, 1PS, SIRx, 1X4FCM, 4x2RCM-2:1EDR, TPA, STDFBRTRY	GS7KS411S13XXXXXXXX
GS7K 1.2GHz, 4254, 1PS, LIRX, 1X4FCM, 4x2RCM-2:1EDR, TPA, STDFBRTRY	GS7KS411L13XXXXXXXX
<b>65/86 MHz Split</b>	
GS7K 1.2GHz, 65/86, 1PS, SIRx, 1x4FCM, 4x1RCM, TPA, STDFBRTRY	GS7KS611S11XXXXXXXX
GS7K 1.2GHz, 65/86, 1PS, LIRX, 1x4FCM, 4x1RCM, TPA, STDFBRTRY	GS7KS611L11XXXXXXXX
GS7K 1.2GHz, 65/86, 1PS, SIRx, 1X4FCM, 4x2RCM-2:1EDR, TPA, STDFBRTRY	GS7KS611S13XXXXXXXX
GS7K 1.2GHz, 65/86, 1PS, LIRX, 1X4FCM, 4x2RCM-2:1EDR, TPA, STDFBRTRY	GS7KS611L13XXXXXXXX
<b>85/102 MHz Split</b>	
GS7K 1.2GHz, 85/102, 1PS, SIRx, 1x4FCM, 4x1RCM, TPA, STDFBRTRY	GS7KS811S11XXXXXXXX
GS7K 1.2GHz, 85/102, 1PS, LIRX, 1x4FCM, 4x1RCM, TPA, STDFBRTRY	GS7KS811L11XXXXXXXX
GS7K 1.2GHz, 85/102, 1PS, SIRx, 1X4FCM, 4x2RCM-2:1EDR, TPA, STDFBRTRY	GS7KS811S13XXXXXXXX
GS7K 1.2GHz, 85/102, 1PS, LIRX, 1X4FCM, 4x2RCM-2:1EDR, TPA, STDFBRTRY	GS7KS811L13XXXXXXXX
<b>204/258 MHz Split</b>	
GS7K 1.2GHz, 204/258, 1PS, SIRx, 1x4FCM, 4x1RCM, TPA, STDFBRTRY	GS7KS211S11XXXXXXXX
GS7K 1.2GHz, 204/258, 1PS, LIRX, 1x4FCM, 4x1RCM, TPA, STDFBRTRY	GS7KS211L11XXXXXXXX
GS7K 1.2GHz, 204/258, 1PS, SIRx, 1X4FCM, 4x2RCM-2:1EDR, TPA, STDFBRTRY	GS7KS211S13XXXXXXXX
GS7K 1.2GHz, 204/258, 1PS, LIRX, 1X4FCM, 4x2RCM-2:1EDR, TPA, STDFBRTRY	GS7KS211L13XXXXXXXX

**Table 9.** Cisco GS7000 1.2-GHz Node Accessories

Required Accessories
<p><b>Note:</b> Configured Nodes ship with 0 dB reverse input pads but no pads on the OIB. All other standard accessories are shipped from the factory. Four forward launch amplifier attenuator pads, 15 dB linear equalizers, and two signal director jumpers are shipped with every configured node.</p> <p><b>Plug-in Pads (attenuators): Available in 1.0 dB Steps from 0 to 20 dB</b></p> <ul style="list-style-type: none"> <li>• 1 required for each Optical Receiver Module installed in the node (for Optical Interface Board)</li> <li>• 1 required for each Optical Transmitter Module installed in the node (for Optical Interface Board)</li> <li>• 1 required for each Reverse input path activated unless the shipped 0 dB value is adequate. (for Launch Amplifier)</li> </ul>
Optional Accessories
<p><b>Plug-in Forward Linear Equalizers: Available in 1.5 dB Steps from 0 to 24 dB</b></p> <ul style="list-style-type: none"> <li>• Node shipped with 18 dB Linear Equalizers (4) installed for 18 dB of tilt to 1218 MHz (GM-EQL-1.2G-18)</li> </ul> <p><b>Plug-in Signal Directors: 2 Required</b></p> <ul style="list-style-type: none"> <li>• Node shipped with Jumpers installed to activate 4 RF output ports</li> <li>• Optional 2-Way Splitters are required to activate 5 or 6 RF output ports</li> </ul>

Plug-in Pads (Attenuators): Available in 1.0 dB Steps from 0 to 20 dB	Part Number for Ordering
GainMaker Plug-in Pad 1.2 GHz, 0dB (Multi=10)	GM-PAD-1.2G-00=
GainMaker Plug-in Pad 1.2 GHz, 1dB (Multi=10)	GM-PAD-1.2G-1.0=
GainMaker Plug-in Pad 1.2 GHz, 2dB (Multi=10)	GM-PAD-1.2G-2.0=
GainMaker Plug-in Pad 1.2 GHz, 3dB (Multi=10)	GM-PAD-1.2G-3.0=
GainMaker Plug-in Pad 1.2 GHz, 4dB (Multi=10)	GM-PAD-1.2G-4.0=
GainMaker Plug-in Pad 1.2 GHz, 5dB (Multi=10)	GM-PAD-1.2G-5.0=
GainMaker Plug-in Pad 1.2 GHz, 6dB (Multi=10)	GM-PAD-1.2G-6.0=
GainMaker Plug-in Pad 1.2 GHz, 7dB (Multi=10)	GM-PAD-1.2G-7.0=
GainMaker Plug-in Pad 1.2 GHz, 8dB (Multi=10)	GM-PAD-1.2G-8.0=
GainMaker Plug-in Pad 1.2 GHz, 9dB (Multi=10)	GM-PAD-1.2G-9.0=
GainMaker Plug-in Pad 1.2 GHz, 10dB (Multi=10)	GM-PAD-1.2G-10.0=
GainMaker Plug-in Pad 1.2 GHz, 11dB (Multi=10)	GM-PAD-1.2G-11.0=
GainMaker Plug-in Pad 1.2 GHz, 12dB (Multi=10)	GM-PAD-1.2G-12.0=
GainMaker Plug-in Pad 1.2 GHz, 13dB (Multi=10)	GM-PAD-1.2G-13.0=
GainMaker Plug-in Pad 1.2 GHz, 14dB (Multi=10)	GM-PAD-1.2G-14.0=
GainMaker Plug-in Pad 1.2 GHz, 15dB (Multi=10)	GM-PAD-1.2G-15.0=
GainMaker Plug-in Pad 1.2 GHz, 16dB (Multi=10)	GM-PAD-1.2G-16.0=
GainMaker Plug-in Pad 1.2 GHz, 17dB (Multi=10)	GM-PAD-1.2G-17.0=
GainMaker Plug-in Pad 1.2 GHz, 18dB (Multi=10)	GM-PAD-1.2G-18.0=
GainMaker Plug-in Pad 1.2 GHz, 19dB (Multi=10)	GM-PAD-1.2G-19.0=
GainMaker Plug-in Pad 1.2 GHz, 20dB (Multi=10)	GM-PAD-1.2G-20.0=
GainMaker Plug-in Pad 1.2 GHz 75ohm Terminator (Multi=10)	GM-PAD-1.2G-75=

**Table 10.** Cisco GS7000 Forward Components

Cisco GS7000 Forward Components	Part Number for Ordering
<b>GS7K Launch Amp 1.2 GHz 42/54 MHz</b>	GS7K-LA-1.2G-4254=
<b>GS7K Launch Amp 1.2 GHz 65/86 MHz</b>	GS7K-LA-1.2G-6586=
<b>GS7K Launch Amp 1.2 GHz 85/102 MHz</b>	GS7K-LA-1.2G-8502=
<b>GS7K Launch Amp 1.2 GHz 204/258 MHz</b>	GS7K-LA-1.2G-0458=
<b>GS7K 1.2 GHz FWD Config Mod, 1x4 1.2 GHz</b>	GS7K-FCM-1.2G-14=
<b>GS7K 1.2 GHz FWD Config Mod, 1x4 Redundant 1.2 GHz</b>	GS7K-FCM-1.2G-14R=
<b>GS7K 1.2 GHz FWD Config Mod, 1x4 FWD Inject/Redun 1.2 GHz</b>	GS7K-FCM-1.2G-14I=
<b>GS7K 1.2 GHz FWD Config Mod, 2x4 1.2 GHz</b>	GS7K-FCM-1.2G-24=
<b>GS7K 1.2 GHz FWD Config Mod, 2x4 Redundant 1.2 GHz</b>	GS7K-FCM-1.2G-24R=
<b>GS7K 1.2 GHz FWD Config Mod, 3x4, RX 1, 3, 4 1.2 GHz</b>	GS7K-FCM-1.2G-34B=
<b>GS7K 1.2 GHz FWD Config Mod, 3x4, RX 1, 2, 4 1.2 GHz</b>	GS7K-FCM-1.2G-34A=
<b>GS7K 1.2 GHz FWD Config Mod, 4x4 1.2 GHz</b>	GS7K-FCM-1.2G-44=
<b>GS7000 1.2 GHz Signal Director Jumper (Multi=10)</b>	GS7K-SD-1.2G-JMP=
<b>GS7000 1.2 GHz Signal Director Splitter (Multi=10)</b>	GS7K-SD-1.2G-SPLT=
<b>GS7000 1.2 GHz Directional Coupler 8dB 2/6 (Multi=10)</b>	GS7K-1.2G-DC8-26=

Unless otherwise noted, specifications reflect typical performance and are referenced to 68°F (20°C). Specifications are based on measurements made in accordance with SCTE/ANSI standards (where applicable), using standard frequency assignments.



Cisco GS7000 Forward Components	Part Number for Ordering
GS7000 1.2 GHz Directional Coupler 8 dB 3/5 (Multi=10)	GS7K-1.2G-DC8-35=
GS7000 1.2 GHz Directional Coupler 12dB 2/6 (Multi=10)	GS7K-1.2G-DC12-26=
GS7000 1.2 GHz Directional Coupler 12 dB 3/5 (Multi=10)	GS7K-1.2G-DC12-35=
Forward Local Injection Module Kit	4013575
GainMaker 1.2 GHz Forward Equalizer, 0dB (Multi=10)	GM-EQC-1.2G-0=
GainMaker 1.2 GHz Forward Linear Equalizer, 1.5dB (Multi=10)	GM-EQL-1.2G-1.5=
GainMaker 1.2 GHz Forward Linear Equalizer, 3dB (Multi=10)	GM-EQL-1.2G-3=
GainMaker 1.2 GHz Forward Linear Equalizer, 4.5dB (Multi=10)	GM-EQL-1.2G-4.5=
GainMaker 1.2 GHz Forward Linear Equalizer, 6dB (Multi=10)	GM-EQL-1.2G-6=
GainMaker 1.2 GHz Forward Linear Equalizer, 7.5dB (Multi=10)	GM-EQL-1.2G-7.5=
GainMaker 1.2 GHz Forward Linear Equalizer, 9dB (Multi=10)	GM-EQL-1.2G-9=
GainMaker 1.2 GHz Forward Linear Equalizer, 10.5dB (Multi=10)	GM-EQL-1.2G-10.5=
GainMaker 1.2 GHz Forward Linear Equalizer, 12dB (Multi=10)	GM-EQL-1.2G-12=
GainMaker 1.2 GHz Forward Linear Equalizer, 13.5dB (Multi=10)	GM-EQL-1.2G-13.5=
GainMaker 1.2 GHz Forward Linear Equalizer, 15dB (Multi=10)	GM-EQL-1.2G-15=
GainMaker 1.2 GHz Forward Linear Equalizer, 16.5dB (Multi=10)	GM-EQL-1.2G-16.5=
GainMaker 1.2 GHz Forward Linear Equalizer, 18dB (Multi=10)	GM-EQL-1.2G-18=
GainMaker 1.2 GHz Forward Linear Equalizer, 19.5dB (Multi=10)	GM-EQL-1.2G-19.5=
GainMaker 1.2 GHz Forward Linear Equalizer, 21dB (Multi=10)	GM-EQL-1.2G-21=
GainMaker 1.2 GHz Forward Linear Equalizer, 22.5dB (Multi=10)	GM-EQL-1.2G-22.5=
GainMaker 1.2 GHz Forward Linear Equalizer, 24dB (Multi=10)	GM-EQL-1.2G-24=
GS7000 1.2 GHz Standard Input Optical Receiver, SCA	GS7K-1.2G-STDRX=
GS7000 1.2 GHz Low Input Optical Receiver, SCA	GS7K-1.2G-LIRX=

Table 11. Cisco GS7000 Reverse Configuration Modules

Cisco GS7000 Reverse Configuration Modules	Part Number for Ordering
GS7K 1.2 GHz Reverse Config Mod, 4x1	GS7K-RCM-1.2G-41=
GS7K 1.2 GHz Reverse Config Mod, 4x1, Redundant	GS7K-RCM-1.2G-41R=
GS7K 1.2 GHz Reverse Config Mod, 4x2, TX 1, 2	GS7K-RCM-1.2G-42A=
GS7K 1.2 GHz Reverse Config Mod, 4x2, TX 1, 3	GS7K-RCM-1.2G-42B=
GS7K 1.2 GHz Reverse Config Mod, 4x2, Redundant	GS7K-RCM-1.2G-42R=
GS7K 1.2 GHz Reverse Config Mod, 4x3, TX 1, 3, 4	GS7K-RCM-1.2G-43B=
GS7K 1.2 GHz Reverse Config Mod, 4x3, TX 1, 2, 4	GS7K-RCM-1.2G-43A=
GS7K 1.2 GHz Reverse Config Mod, 4x4	GS7K-RCM-1.2G-44=
GS7000 Node High Gain Analog DFB Tx 1310 SCA	4011952

**Table 12.** Cisco GS700 CWDM Reverse Optical Transmitters

Cisco GS7000 CWDM Reverse Optical Transmitters	Part Number for Ordering
GS7000 Node High Gain Analog CWDM Tx 1470 SCA	4011955
GS7000 Node High Gain Analog CWDM Tx 1490 SCA	4011956
GS7000 Node High Gain Analog CWDM Tx 1510 SCA	4011957
GS7000 Node High Gain Analog CWDM Tx 1530 SCA	4011961
GS7000 Node High Gain Analog CWDM Tx 1550 SCA	4011965
GS7000 Node High Gain Analog CWDM Tx 1570 SCA	4011966
GS7000 Node High Gain Analog CWDM Tx 1590 SCA	4011967
GS7000 Node High Gain Analog CWDM Tx 1610 SCA	4011968

**Table 13.** Cisco GS7000 EDR CWDM Transmitter and Optical Pluggable Modules (OPMs)

Digital 1:1 EDR CWDM Transmitter and OPMs	Part Number for Ordering
EDR GS1185 Tx module	4042873
EDR Optical Pluggable Module for 1:1 Tx CWDM-1270nm	4042868.1270
EDR Optical Pluggable Module for 1:1 Tx CWDM-1290nm	4042868.1290
EDR Optical Pluggable Module for 1:1 Tx CWDM-1310nm	4042868.1310
EDR Optical Pluggable Module for 1:1 Tx CWDM-1330nm	4042868.1330
EDR Optical Pluggable Module for 1:1 Tx CWDM-1350nm	4042868.1350
EDR Optical Pluggable Module for 1:1 Tx CWDM-1370nm	4042868.1370
EDR Optical Pluggable Module for 1:1 Tx CWDM-1390nm	4042868.1390
EDR Optical Pluggable Module for 1:1 Tx CWDM-1410nm	4042868.1410
EDR Optical Pluggable Module for 1:1 Tx CWDM-1430nm	4042868.1430
EDR Optical Pluggable Module for 1:1 Tx CWDM-1450nm	4042868.1450
EDR Optical Pluggable Module for 1:1 Tx CWDM-1470nm	4042868.1470
EDR Optical Pluggable Module for 1:1 Tx CWDM-1490nm	4042868.1490
EDR Optical Pluggable Module for 1:1 Tx CWDM-1510nm	4042868.1510
EDR Optical Pluggable Module for 1:1 Tx CWDM-1530nm	4042868.1530
EDR Optical Pluggable Module for 1:1 Tx CWDM-1550nm	4042868.1270
EDR Optical Pluggable Module for 1:1 Tx CWDM-1570nm	4042868.1290
EDR Optical Pluggable Module for 1:1 Tx CWDM-1590nm	4042868.1310
EDR Optical Pluggable Module for 1:1 Tx CWDM-1610nm	4042868.1330
Digital 2:1 EDR CWDM Transmitter and OPMs	Part Number for Ordering
EDR GS2185 Tx module	4042877
EDR Optical Pluggable Module for 2:1 Tx CWDM-1270nm	4042871.1270
EDR Optical Pluggable Module for 2:1 Tx CWDM-1290nm	4042871.1290
EDR Optical Pluggable Module for 2:1 Tx CWDM-1310nm	4042871.1310
EDR Optical Pluggable Module for 2:1 Tx CWDM-1330nm	4042871.1330
EDR Optical Pluggable Module for 2:1 Tx CWDM-1350nm	4042871.1350
EDR Optical Pluggable Module for 2:1 Tx CWDM-1370nm	4042871.1370
EDR Optical Pluggable Module for 2:1 Tx CWDM-1390nm	4042871.1390
EDR Optical Pluggable Module for 2:1 Tx CWDM-1410nm	4042871.1410
EDR Optical Pluggable Module for 2:1 Tx CWDM-1430nm	4042871.1430
EDR Optical Pluggable Module for 2:1 Tx CWDM-1450nm	4042871.1450

EDR Optical Pluggable Module for 2:1 Tx CWDM-1470nm	4042871.1470
EDR Optical Pluggable Module for 2:1 Tx CWDM-1490nm	4042871.1490
EDR Optical Pluggable Module for 2:1 Tx CWDM-1510nm	4042871.1510
EDR Optical Pluggable Module for 2:1 Tx CWDM-1530nm	4042871.1530
EDR Optical Pluggable Module for 2:1 Tx CWDM-1550nm	4042871.1550
EDR Optical Pluggable Module for 2:1 Tx CWDM-1570nm	4042871.1570
EDR Optical Pluggable Module for 2:1 Tx CWDM-1590nm	4042871.1590
EDR Optical Pluggable Module for 2:1 Tx CWDM-1610nm	4042871.1610

**Table 14.** Cisco GS7000 EDR DWDM Transmitter and Optical Pluggable Modules (OPM)

Digital 1:1 EDR DWDM Transmitter and OPMs	Part Number for Ordering
EDR GS1185 Tx module	4042873
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH17	4042869.17
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH18	4042869.18
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH19	4042869.19
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH20	4042869.20
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH21	4042869.21
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH22	4042869.22
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH23	4042869.23
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH24	4042869.24
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH25	4042869.25
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH26	4042869.26
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH27	4042869.27
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH28	4042869.28
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH29	4042869.29
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH30	4042869.30
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH31	4042869.31
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH32	4042869.32
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH33	4042869.33
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH34	4042869.34
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH35	4042869.35
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH36	4042869.36
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH37	4042869.37
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH38	4042869.38
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH39	4042869.39
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH40	4042869.40
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH41	4042869.41
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH42	4042869.42
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH43	4042869.43
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH44	4042869.44
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH45	4042869.45

Unless otherwise noted, specifications reflect typical performance and are referenced to 68°F (20°C). Specifications are based on measurements made in accordance with SCTE/ANSI standards (where applicable), using standard frequency assignments

EDR Optical Pluggable Module for 1:1 Tx DWDM-CH46	4042869.46
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH47	4042869.47
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH48	4042869.48
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH49	4042869.49
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH50	4042869.50
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH51	4042869.51
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH52	4042869.52
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH53	4042869.53
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH54	4042869.54
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH55	4042869.55
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH56	4042869.56
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH57	4042869.57
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH58	4042869.58
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH59	4042869.59
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH60	4042869.60
EDR Optical Pluggable Module for 1:1 Tx DWDM-CH61	4042869.61
<b>Digital 2:1 EDR DWDM Transmitter and OPMs</b>	<b>Part Number for Ordering</b>
EDR GS2185 Tx module	4042877
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH17	4042872.17
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH18	4042872.18
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH19	4042872.19
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH20	4042872.20
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH21	4042872.21
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH22	4042872.22
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH23	4042872.23
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH24	4042872.24
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH25	4042872.25
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH26	4042872.26
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH27	4042872.27
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH28	4042872.28
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH29	4042872.29
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH30	4042872.30
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH31	4042872.31
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH32	4042872.32
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH33	4042872.33
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH34	4042872.34
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH35	4042872.35
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH36	4042872.36
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH37	4042872.37
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH38	4042872.38
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH39	4042872.39
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH40	4042872.40
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH41	4042872.41
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH42	4042872.42

EDR Optical Pluggable Module for 2:1 Tx DWDM-CH43	4042872.43
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH44	4042872.44
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH45	4042872.45
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH46	4042872.46
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH47	4042872.47
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH48	4042872.48
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH49	4042872.49
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH50	4042872.50
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH51	4042872.51
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH52	4042872.52
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH53	4042872.53
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH54	4042872.54
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH55	4042872.55
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH56	4042872.56
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH57	4042872.57
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH58	4042872.58
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH59	4042872.59
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH60	4042872.60
EDR Optical Pluggable Module for 2:1 Tx DWDM-CH61	4042872.61

**Table 15.** Cisco GS7000 Additional Components

Cisco GS7000 Additional Components	Part Number for Ordering
GS7K 1.2 GHz Housing with OIB and Standard Fiber Tray	GS7K-HSG-1.2G=
GS7K 1.2 GHz LID with OIB and Standard Fiber Tray	GS7K-LID-1.2G=
GS7K 1.2 GHz OIB	GS7K-1.2G-OIB=
Brackets for passives used in Expanded Fiber Tray	4027000
Expanded Fiber Tray, without brackets, SCA	4057377
SC APC bulkheads (PKG of 10)	4027740
GS7000 1.2 GHz Power Supply	GS7K-PS-1.2G=
Local Control Module (LCM)	4027113
Local Control Module (LCM) EDR	GS7K-LCM-EDR=
Status Monitoring Module - DOCSIS	GS7K-DOC-TRAN-1.2=
Test Point Cable Kit, (includes the 6 cables required to enable GS7000 housing external test points)	GS7K-TSTCABLE-HP=
Test Point Cable Kit-Long Reach	562580
GS7000 Forward Cable Kit (Kit of 5 Cables)	4019114
GS7000 Reverse Cable Kit (Kit of 5 Cables)	4019115
GS7K 1.2 GHz Split Kit 85/102 MHz (QTY=10)	GS7K-SKT-1.2G-85=
GS7K 1.2 GHz Split Kit 204/258 MHz (QTY=10)	GS7K-SKT-1.2G-204=

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