1.2 GHz OBI-free ONU with 1G/10G PON pass through port

LBON520ACT series

To eliminate the problem of OBI from RF over Glass (RFoG), Fiber to the Home (FTTH) networks, Technetix offers the OBI-free LBON520ACT RFoG premise Optical Network Unit (ONU).

Optical Beat Interference (OBI) occurs when simultaneous optical upstream transmissions from multiple CPE devices (RFoG mini nodes) interfere with each other – a condition that becomes more likely as subscriber densities increase.

The LBON520ACT with xPON pass through port provides OBI elimination in networks with multiple upstream lasers in passive optical splitter networks. This device incorporates the necessary filtering for proper rejection between RFoG and 1G/10G PON wavelengths to support GPON and 10G PON overlays with RFoG to coexist on the same fiber network.

LBON520ACT
(front view)

The LBON520ACT device eliminates OBI without compromising network performance and allows operators to deliver higher capacity DOCSIS® 3.0 and 3.1 technologies efficiently. The device provides groups of 8 stable upstream wavelengths, separated by 0.5 nm and thermally controlled to maintain its center wavelength over temperatures from -40°C to +60°C (-40°F to +140°F). The user can choose from 8 wavelengths (from 1603.5 nm to 1616.5 nm) via the interactive front panel on the ONU.

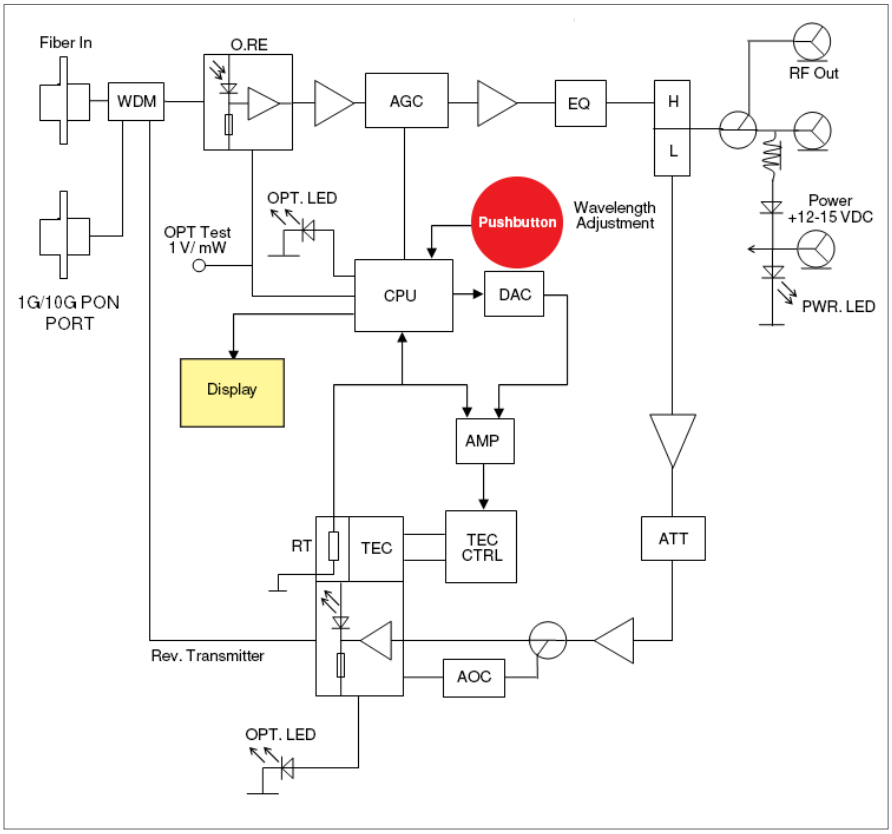
The LBON520ACT device uses an LED display to show the selected channel/wavelength of the ONU. The LED display will also show the optical receive input level in dBm. A pushbutton beside the display allows the user to select the desired wavelength. The LBON520ACT device supports 42/54 MHz, 65/85 MHz and 85/102 MHz frequency splits with the downstream frequency band out to 1218 MHz. The LBON520ACT device series comes standard with Automatic Gain Control (AGC) and burst-mode return lasers (2 or 3 mW).

FEATURES

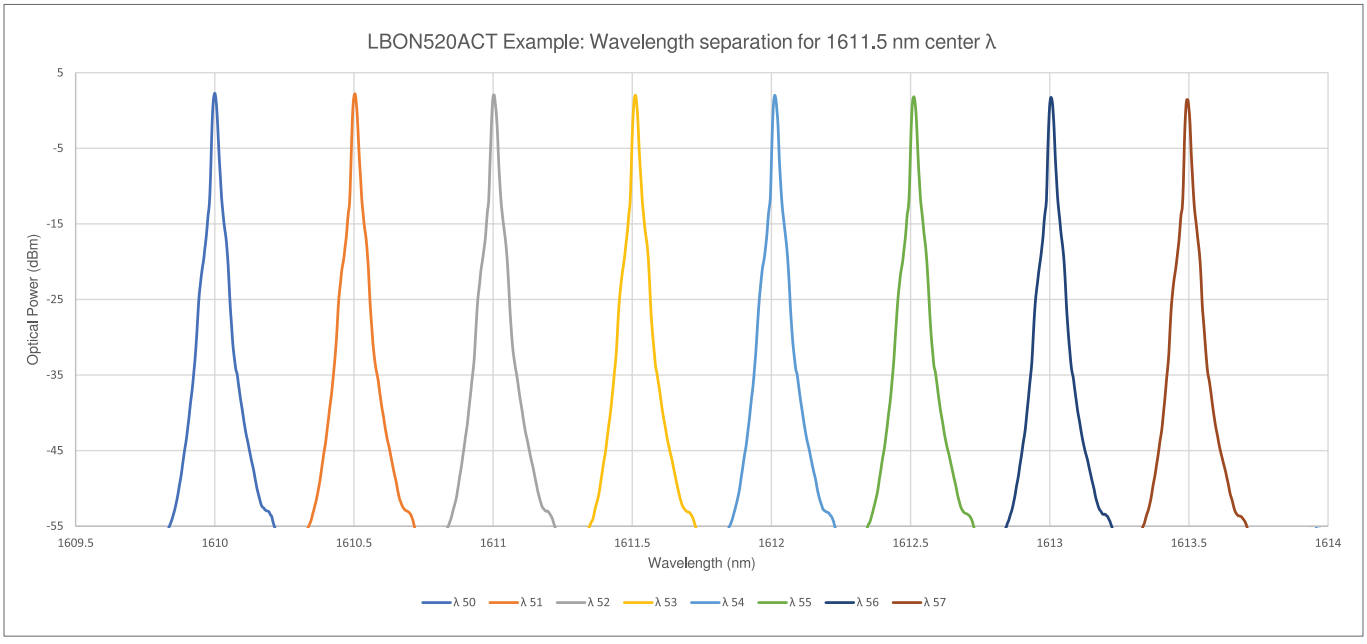
- Eliminates OBI
- User-selectable 8 wavelengths separated by 0.5 nm with the press of a button
- Thermally controlled stable DFB laser rated for -40°C to +60°C (-40°F to +140°F)
- LED display shows wavelengths and ONU status
- 1G/10G PON pass through port supporting RFoG and xPON on same fiber
- Input optical wavelength: 1550 nm
- Optical (AGC): -6 to +2 dBm
- Transmit wavelength: 1610±6.5 nm
- Downstream bandwidth: 102-1218 MHz
- Upstream bandwidth: 5-85 MHz
- Output RF level: 20 dBmV @ 1002 MHz
- RF bi-directional test point: -20 dB
- Pwr-On, Opt I/P, Opt TX LED indicators
- Future optional split: 204/258 MHz

LBON520ACT series

FUNCTIONAL SCHEMATIC



WAVELENGTH PLOT



LBON520ACT series

SPECIFICATIONS

Parameter		Specification		
Forward Receiver		**Min.**	**Typ.**	**Max.**
Optical Receive Wavelength		1540-1565 nm		
Optical Input Power (optical AGC)		-6 to +2 dBm		
RFoG Path Rejection of PON Wavelengths	1260-1540 nm	≤ -30 dB		
	1565-1598 nm	≤ -30 dB		
	1625-1680 nm	≤ -30 dB		
PON Path Rejection of RFoG (1551/1611 nm)		≤ -25 dB		
PON Pass Through Port Loss (1G/10G)		1 dB		
Optical Input Return Loss		45 dB min.		
RF Frequency Range [1]		102 MHz		1218 MHz
Flatness of Frequency Response (f = fmin to 1218 MHz)			±1 dB	
Output Return Loss (f = fmin to 1218 MHz)		16 dB		
Reference Output Level (@ 1002 MHz (±2 dB)) [4]			20 dBmV	
Slope (RF Frequency Range (±1 dB))			6 dB	
C/N [2]		50 dB	51 dB	
CTB [2]				-65 dB
CSO [2]				-60 dB
Return Transmitter		**Min.**	**Typ.**	**Max.**
Optical Wavelength [6]		1610±6.5 nm		
Optical Wavelength Separation [6]		0.5 nm		
Optical Wavelength Drift over Temperature		≤0.05 nm		
Optical Output Power			2 mW	
RF Input Level (total power)		20-40 dBmV		
Dynamic Input Range [3]			15 dB	
Frequency Range [1]		5 MHz		85 MHz
Flatness of Frequency Response (f = 5 to fmax MHz)			±0.75 dB	±1 dB
Input Return Loss (f = 5 to fmax MHz)		16 dB		
Optical Output Return Loss		45 dB min.		
TX OMI [5]			35%	
Laser Turn ON Level (±1.5 dB)			15 dBmV	
Laser Turn OFF Level (±1.5 dB)			-4 dBmV	
Laser Turn ON Time			1.3 µs	
Laser Turn OFF Time			1.6 µs	
Power, Environmental & Physical				
Total Power Consumption (with 15 VDC power pack)		≤5.2 W		
Operating Temperature		-40°C to +60°C (-40°F to +140°F)		
Dimensions (H x W x D)		3.4"H x 6.7"W x 1.5"D (8.6H x 17.0W x 3.8D cm)		
Weight		1.6 lb (0.7 kg)		

NOTES:

(1) Other diplex splits available: 42/54 MHz
(2) -1 dBM optical input, 3.5% OMI/channel, 54-550 MHz analog channels, & digital compressed channels
(3) NPR @ 30 dB. Measured using a receiver with an equivalent input noise (EIN) of < 2.5 pA/Hz0.5 with a link budget of 23 dB (20 km fiber + passive loss). NPR test performed with 80 MHz noise loading
(4) 3.5% OMI/channel
(5) SCTE 174 2010 with a single 39 dBmV tone. 35% ±3 dB
(6) Groups of 8 user-selectable optical wavelengths separated by 0.5 nm to choose from 1603.5-1616.5 nm

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LBON520ACT series

ORDERING INFORMATION

		Fwd Output Level		Total Return Input Power		Laser Type		TX Power		Common Connector		PON Connector		TX Wavelength		Sub-Split		Power Adapter
LBON520ACT	-	**xx**	-	**xx**	-	**D**	-	**x**	-	**xx**	-	**xx**	-	**61**	-	**xx**	-	**xx**
		20 = 20 dBmV		25 = 25 dBmV		D = DFB		2 = 2 mW		SA = SC/APC		SA = SC/APC		61 = 1610 nm		45 = 42/54		00 = None
		36 = 36 dBmV		30 = 30 dBmV				3 = 3 mW		SU = SC/UPC		SU = SC/UPC				68 = 65/85		01 = N. America
																81 = 85/102		02 = Europe

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