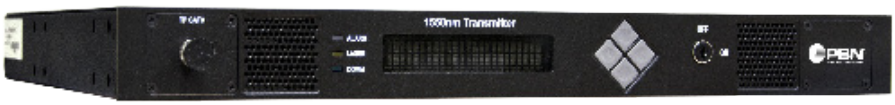
PBN
Pacific Broadband Networks

LTE153-6000

Externally-modulated Laser Transmitter for 1550 nm Wavelengths

High performance 1550 nm externally modulated CATV fiber optic transmitters
Supports both HFC and FTTx networks



Bridging the Light

About the Product

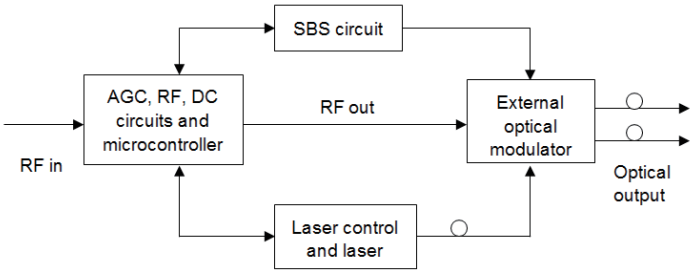
The LTE153-6000 is designed to deliver optimum performance over long-haul fiber with low dispersion. It is the ideal solution whenever the network requires long distance transmissions that support RF applications from 45 to 1003 MHz up to 150 km.

The LTE153-6000 provides a low chirp mode of operation with a very narrow spectrum. This allows the use of any 1550 nm DWDM wavelength for the transmission of broadcast and CATV, while maintaining excellent CNR, CSO, and CTB performance throughout the network.

The LTE153-6000 is packaged in a compact 19" sub-rack housing of 1RU, with dual redundant and hot-swappable power-supply modules.

The transmitter features adjustable dispersion compensation to maximize performance for the channel plan in use.

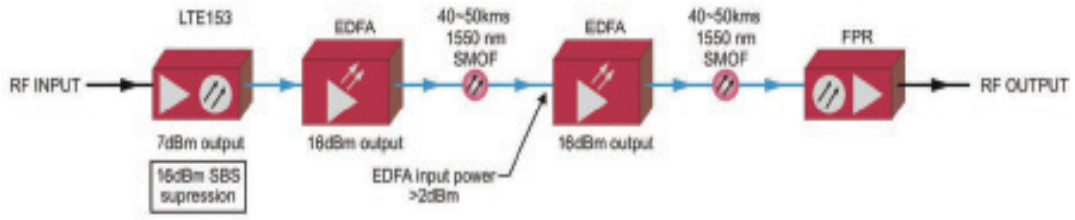
Block Diagram



Key Features and Functions

- RF pre-distortion circuit for excellent CSO and CTB performance together with a low distortion profile
- Versions for both long-haul applications and short-haul FTTH customer access networks
- Can be optimized for 60 PAL channels, 89 PAL channels, 80 NTSC channels or 110 NTSC channels. Flat response between 45~1003 MHz
- Dual redundant hot-swappable power supplies for universal mains or for telecom battery
- Field-adjustable Stimulated Brillouin Scattering (SBS) suppression for optimized CSO to suit 13~19 dBm fiber line drive levels.
- Field-adjustable Electronic Dispersion Compensation (EDC)
- Front panel LCD for local monitoring. Integrated SNMP agent for Serial (RS-232) Ethernet (RJ-45) port and remote monitoring
- Front Panel RF Test Point for easy access

Application Examples



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Specifications

Link Performance **

	Distance (km)	Channel Plan	Power (dBm)	Noise (MHz)	SBS Suppression (dBm)	CNR (dB)	CSO (dBc)	CTB (dBc) Max. @ 25 °C	CTB (dBc) Max. @ 0-50 °C
S-Type									
6000-SA	65	NTSC 80	7.0 / 7.0	4	16.0	53.0 / 53.0	-65 / -65	-65	-65
6000-SA	65	PAL 60	7.0 / 7.0	5	16.0	53.0 / 53.0	-65 / -65	-65	-65
6000-SA	65	NTSC 110	7.0 / 7.0	4	16.0	50.0 / 50.0	-65 / -65	-65	-65
6000-SA	65	PAL 89	7.0 / 7.0	5	16.0	50.0 / 50.0	-65 / -65	-65	-65
6000-SA	65	42 CENELEC	7.0 / 7.0	5	16.0	53.0 / 53.0	-65 / -65	-65	-65
Comments			Min. - Higher Power Available		Min.	Min.	Max.	Max.@ 25 °C	Max.@ 0-50 °C

Note: Specifications for the 2 x 10 dBm units, CSO port 2 degraded by 1 dB for Channel Loads 1 and 2, CSO port 2 degraded by 2 dB for Channel Loads 3 and 4. Channel load 1-2 = 80NTSC – 60PAL Channel load 3-4 = 110NTSC and 89 PAL.

Optical Performance

	Y
Operating wavelength	1555 nm ± 5 nm ITU-DWDM grid channel 18~40
Output power	7.0 / 7.0 dBm output version 10.0 / 10.0 dBm output version
SBS suppression	13 to 19 dBm

RF Performance

RF bandwidth	45 ~ 1003 MHz	
RF flatness	± 0.75 dB @ 45 ~ 1003 MHz	
RF input return loss	≥ 16 dB	
RF input impedance	75 Ω	
Front Panel RF test point	-20 dB ± 1 dB down from RF input	
RF connector	SCTE F-Type	
Nominal RF input level per TV channel	**CW/Video mode**	**Manual mode**
PAL 60 ch	20 ± 2 dBmV/ch	18 ± 1 dBmV/ch
PAL 89 ch	18 ± 2 dBmV/ch	16 ± 1 dBmV/ch
NTSC 80 ch	19 ± 2 dBmV/ch	17 ± 1 dBmV/ch
NTSC 110 ch	17 ± 2 dBmV/ch	15 ± 1 dBmV/ch
CELENEC 42 ch	20 ± 2 dBmV/ch	18 ± 1 dBmV/ch

SNMP Management

Network Port	RJ45-10/100baseTx
MIB	SCTE MIB for HFC optical transmitters, and associated MIBs

General

Power supplies	2 slots for redundant and hot-swappable units, AC or DC: AC: 90~265 Vac 50~60 Hz; DC: 36~72 Vdc
Power consumption:	≤ 65 Watt
Operating temperature	0 °C to +50 °C
Storage temperature	-20 °C to +70 °C
Dimensions (H x W x D)	44 x 485 x 381 mm (width includes 19" front panel ears, depth includes, connectors, fans & front panel)
Shipping size (H x W x D)	80 x 600 x 670 mm (107 dm^3)
Weight	6.0 kg
Shipping weight	6.5 kg

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Long Haul Fiber Planning

The Stimulated Brillouin Scattering (SBS) suppression of the LTE153-6000 externally-modulated laser transmitter must be optimized for the best possible Composite Second Order (CSO) distortion performance. The selected SBS value must correspond with the projected maximum optical drive level in the fiber lines. For short lines this level can be slightly higher than for very long lines.

A reduced line drive level, together with a reduced SBS suppression threshold in the transmitter, increases the maximum achievable system range. The LTE153-6000 incorporates field-adjustable SBS thresholds. This ensures that the selected level will match the fiber line drive level as close as possible for best the possible performance.

In very long line systems, the CSO will be highly affected by fiber dispersion. This is most visible on analog TV channels at the high end of the 45~1003 MHz bandwidth. The quality of the applied fibers is very important, and for the best performance these fibers should be dispersion-shifted with minimum dispersion in the 1550 nm region.

It is recommended that RF analog loads are below the 600Mhz RF domain and all digital RF channels above 600 MHz. This will ensure optimum RF performance of the LTE153-6000 transmitter. The digital RF in the upper RF band is more resilient for fiber impairments issues than analog RF signals.

Order Details

LTE153-6000-[UV]-[WXY]-[Z] ..... Laser transmitter, externally modulated, 19” 1RU, with SNMP

Options:

U Link type
- **S**

V Output power
- **A** 7.0/7.0 dBm optical output
- **D** 10.0/10.0 dBm optical output

W Optical connectors
- **1** SC/APC angle polished connector

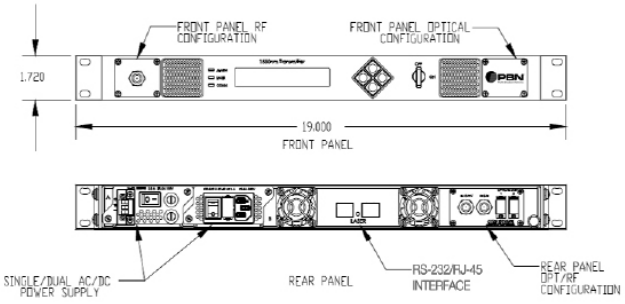
X Optical wavelength
- **00** 1555 nm ± 5 nm
- **01** 1550 nm ± 5 nm
- **xx** ITU DWDM grid channel 18~40 (refer to relevant ITU DWDM standards)

Note: Transmitters operating on ITU grid have an increased delivery time up to 4-6 weeks.

Y Power supply options

AC = 90~265 Vac 50~60 Hz, DC = 36~72 Vdc
- **3** Dual: AC primary, AC secondary
- **4** Dual: AC primary, DC secondary
- **5** Dual: DC primary, DC secondary

Z Power Cable *
- **EU** Power Cable for Europe (not for use in UK)
- **CN** Power Cable for China
- **CH** Power Cable for Switzerland
- **US** Power Cable for USA
- **UK** Power Cable for UK
- **AU** Power Cable for Australia



Examples

LTE153-6000-SA-1013-EU ..... Laser transmitter, in stand-alone 19” sub rack, 1 RU, externally modulated, 1550 nm ± 5 nm, 2 x 7 dBm outputs with SC/APC connectors, Dual redundant universal mains AC power supplies. Integrated SNMP, Power Cable for Europe (not for use in UK).

Pacific Broadband Networks
Offices: Australia, Melbourne: +61-3-8561-1400 China, Beijing: +86-10-5791-0655 EMEA, Netherlands: +31-36-536-8011
www.pbnglobal.com
info@pbnglobal.com