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#### Contact:

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## EQUIPMENT DATA SHEET: Optical Transmitter 1550 NM

### APPLICATION



- Externally modulated 1550 nm DFB laser transmitter for electrical to optical conversion of multi-channel CATV signals like AM-VSB, FM and QAM signals
- Enables the usage of optical amplifiers (EDFAs) as boosters or repeaters in order to realize large scale HFC networks
- Excellent performance enabling realization of links exceeding 100 km

### FEATURES

- Low noise, narrow line-width CW-DFB laser
- ITU-Grid wavelength (XL-Version)
- Wavelength adjustable +/- 100 GHz (XL-Version)
- Electro-optical modulator with 2 optical outputs
- Automatic RF gain control: CW, video, manual mode
- > 2 x 10 dBm output power (XL-100-Version)
- Adjustable SBS threshold up to 19 dBm to increase transmission distance (XL-Version)
- Front panel RF test point -20 dB
- Dual, hot-plug-in power supply modules for 100.. 240 VAC, -48 VDC, +24 VDC
- Web and SNMP Interface (a-version)
- RS485/232 interface (b-version)
- LC display and LED status indication
- General purpose I/O interface for remote functions
- Very thin, only 1 RU design for mounting into 19", ETSI or JIS racks



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### TECHNICAL DATA

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GENERAL ES10	UNIT	
Wavelength	[nm]	1548 ... 1560
Side mode suppression	[dB]	>30
Relative intensity noise (opt. return loss < -40 dB)	[dBc/Hz]	<-158 typ. <-160
Opt. Connector		any type of high return loss connectors front or rear side mounted
Optical fibre		standard single mode 9/125 µm
Nom. Input level per TV channel	[dBµV]	80
RF monitor output level	[dB]	-20 dB ( +0.2 ... -0.8 dB @ 862 MHz, - 1.3 dB @ 1 GHz)
Dynamic range of AGC	[dB]	+3 ... -6
RF-connector/ impedance		F-female, 75 Ohm, front or rear side mounted
Return loss	[dB]	> 20 (47 MHz) – 1,5 dB/oct., min. > 15
Control interface		a-version: Ethernet 10/100 interface; b-version: RS485/232 interface
Climatic Specification Operation Storage		ETS 300 019, class 3.1 ETS 300 019, class 1.2
EMI		EN50083-2 (April 1996), EN50083-2 /A1 (February 1998)
Power Supply Dual redundant, hot pluggable		100...240 VAC 36...72 VDC or 23.5...24.5 VDC
Power Consumption	[W]	≤ 60
Enclosure		19" / 1 RU (optionally compatible to ETSI or JIS standards)
Weight	[kg]	9.7



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ES10XL				
Optical Properties		Unit		
Wavelength	[nm]	1548 ... 1560 nm or ITU-grid (CH23... CH37)		
Wavelength adjustment range	[GHz]	+/- 100 in steps of 50		
Optical power, ES10-L-85	[dBm]	2 x 8.5 min.		
Optical power, ES10-L-100	[dBm]	2 x 10.0 min.		
SBS-Suppression	[dBm]	Threshold adjustable between +13 and +19 dBm		
Laser linewidth (type)	[MHz]	0.3		
Electrical Properties		Unit		
RF-Frequency Range	[MHz]	47 –1000		
Flatness	[dB]	<±0.75 (47...860 MHz) <±1.5 (860 MHz...1 GHz)		
Version		C42	D84	N77
Channel plan		CENELE C 42	PAL-D 84	NTSC 77
Number of channels TV / FM (-4dB) / QAM64 (-10dB)		42 / 0 / 0	84 / 0 / 0	77 / 0 / 0
Noise bandwidth	[MHz]	5	5	4
CNR Tx/Rx	[dB]	55.5	52.5	53.5
CNR Link 1	[dB]	55.0	52.0	53.0
CNR Link 2	[dB]	53.0	50.5	52.0
CNR Link 3	[dB]	50.5	49.0	50.0
CSO Tx/Rx and Link 1	[dBc]	64	65	65
CSO Link 2	[dBc]	63	65	65
CSO Link 3 at output #1	[dB]	62	63	65
CTB	[dBc]	65	65	65



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## EQUIPMENT DATA SHEET: Optical Transmitter 1550 NM

ES10L		
Optical Properties	Unit	
Wavelength		1548.....1560
Optical power, ES10-L-70	[dBm]	2 x 7 min.
SBS-Suppression	[dBm]	Fixed threshold +16.5 dBm
Laser linewidth (typ.)	[MHz]	0.65
Electrical Properties	Unit	
RF-Frequency Range	[MHz]	47 – 862
Flatness	[dB]	<±0.75
Version		D84
Channel plan		PAL-D 84
Number of channels TV / FM (-4dB) / QAM64 (-10dB)		84 / 0 / 0
Noise bandwidth	[MHz]	5
CNR Tx/Rx	[dB]	52.5
CNR Link 1	[dB]	51.5
CNR Link 2	[dB]	49.0
CNR Link 3	[dB]	46.5
CSO Tx/Rx and Link 1	[dBc]	65
CSO Link 2	[dBc]	65
CSO Link 3 at output #1	[dB]	63
CTB	[dBc]	65

### TEST CONFIGURATIONS

	Booster EDFA	1st Fibre Length	In-Line EDFA	2nd Fibre Length	RX
Tx/Rx	no	no	no	no	0 dBm
Link 1	no	35 km	no	no	0 dBm
Link 2	16 dBm	65 km	no	no	0 dBm
Link 3	13 dBm	52 km	13 dBm	52 km	0 dBm

RX with 7 pA/√Hz input noise current density  
EDFAs with 5dB noise figure  
RF input level at 80 dBuV / TV channel