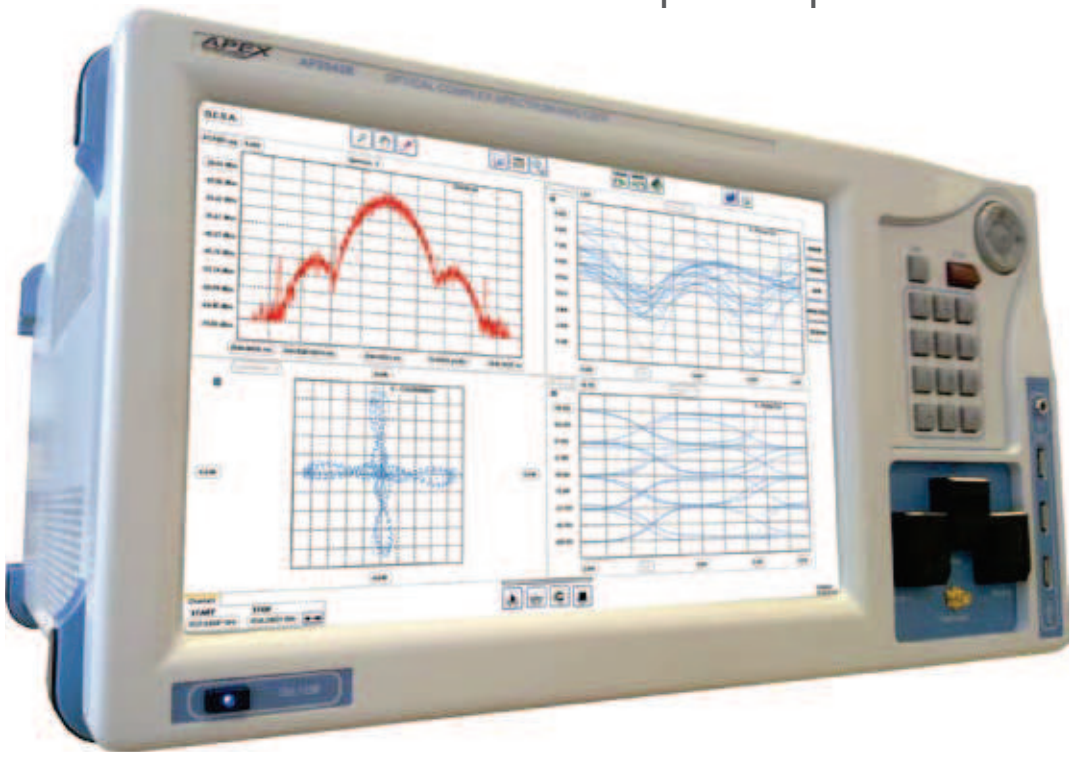
APEX TECHNOLOGIES

NEW

PRELIMINARY

An Optical Modulation Analyzer
&
an Optical Spectrum Analyzer



AP2640 series
Optical Complex Spectrum Analyzer

Optical Spectrum Analyzer
20 MHz Resolution
+/-3 pm Wavelength accuarcy

Optical Modulation Analyzer
13 THz Optical Bandwidth
PRBS pattern analysis
No modulation format limitation
Polarization diversity
Fast measurement

Optical Complex Spectrum Analyzer

BASED ON AN INTERFEROMETRIC PRINCIPLE, APEX TECHNOLOGIES OPTICAL COMPLEX SPECTRUM ANALYZER CAN BE USED AS AN OPTICAL MODULATION ANALYZER AND AS AN HIGH RESOLUTION OPTICAL SPECTRUM ANALYZER.

The internal Optical Spectrum Analyzer clearly show much more details than the grating based OSA and leaves any kind of guess work behind.

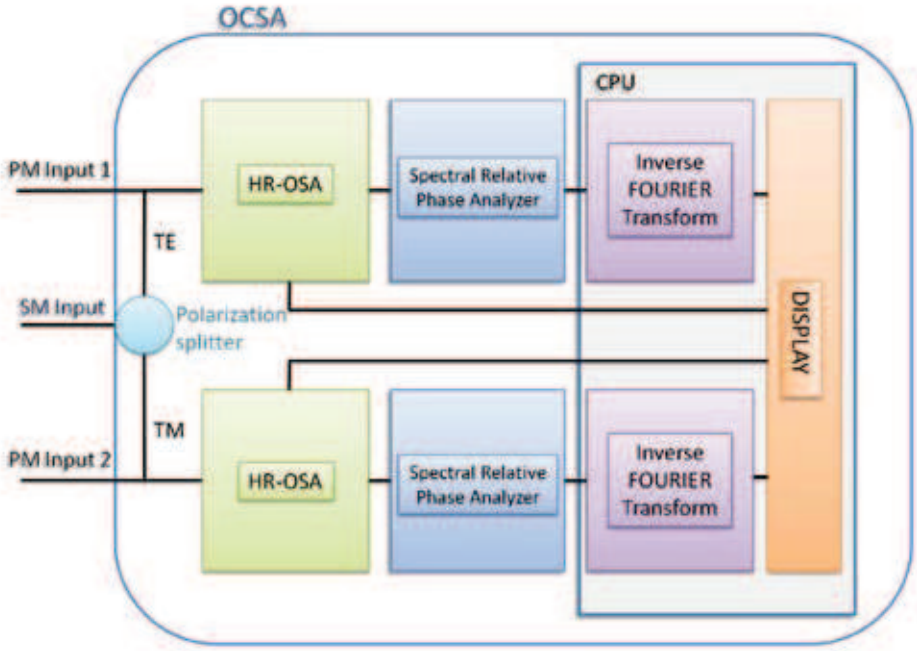
Key Features:

- From 250 GHz to 20 MHz resolution
- +/-3 pm wavelength accuracy
- Close-in dynamic range > 60dB @ +/- 3pm
- Rectangular shape resolution filters
- 2 channels, one per polarization axis
- Built in tunable laser source
- Component transmission analysis

The internal Optical Modulation Analyzer has no bit rate / baud rate limitation and it can analyze any kind of modulation formats.

Key Features:

- No Baud rate limitation (13 THz Optical Bandwidth)
- No Modulation format limitation (BPSK, DPSK, QPSK, DP-QPSK, 16 QAM, 64 QAM...)
- PRBS Patterns analysis
- Polarization diversity
- Fast Measurement
- Phase, Chirp, Intensity vs time - Constellation - Eye diagram - EVM - BER



An High Resolution Optical Spectrum Analyzer & a 13 THz Bandwidth Optical Modulation Analyzer in a cost effective Equipment !

Main frame Specifications:

Screen	12.1 inch, color TFT
Front keyboard	Yes
USB connector	Yes
Internal memory	More than 1 000 traces
File format	Trace file (.dat, .txt), setup file, screen copy (.bmp), marker table
Mouse and keyboard	Yes (USB type in front panel)
GPIB	Yes
Ethernet	Yes (10/100 base T)
Operating temperature	+10°C to + 35°C
Power requirement	AC 100 to 120V / 200 to 250V, 50/60Hz
Optical input	FC/PC SMF28

Optical Spectrum Analyzer Specifications:

	AP2641B	AP2643B
Wavelength measurement	1525 nm to 1607 nm	1520 nm to 1630 nm
Wavelength span range	80 pm to 82 nm	80 pm to 110 nm
Polarization	2 OSA, 1 for each polarization channel	
Wavelength resolution (@3dB)[d]	Manual setting from 200MHz to 250GHz, 180 MHz (1.44 pm), 20 MHz (0.16 pm)	
Close-in dynamic range [a e]	>40 dB @ +/- 1 pm >60 dB @ +/- 3 pm	
Spurious free dynamic [d]	55 dB Typical (50 dB min)	
Sweep time [d e]	1s for 11 nm	
Wavelength absolute accuracy[a c]	+/- 3 pm	
Measurement level range [a e]	-70dBm (monochromatic) to +10dBm	
Absolute level accuracy [a b e]	+/- 0.3dB (monochromatic)	
Level repeatability [a b d e]	+/- 0.2dB	
Optical input	FC/PC for SM fiber	
Internal absolute WL calibrator	Yes	
Display capabilities		
X scale	Wavelength in nm or frequency in GHz	
Y scale	Optical power in mW or dBm	
Analysis functions	OSNR, linewidth, SMSR, Trace A – B, Peak search	
Option OSA01		
Optical tunable laser source specifications		
Wavelength range	1525 nm to 1607 nm	1520 nm to 1630 nm
Spectrum line width (@ 3 dB)	500 kHz typical	
Output power	-7 dBm typical	
SMSR	>45 dBc	
ASE	< -40 dBc over 0.1 nm	
RIN	< -135 dB/Hz	
Wavelength stability	+/- 10 pm over 1 hour	
Power stability	+/- 0.02 dB over 1 hour	
Fiber/connector type	Polarization maintaining fiber FC/APC connector	
option OSA02		
Optical tracking generator specifications		
Dynamic [a d]	63 dB	
Option OSA08		
3 inputs specifications		
Optical inputs	1 FC/PC for SM fiber input	2 FC/PC for PM fiber inputs

Modulation Analyzer Specifications:

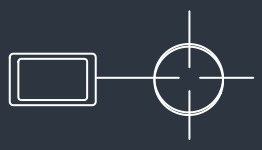
	AP2641B	AP2643B
Clock input frequency	Clock frequency = pattern frequency [f]	
Optical Bandwidth	10 THz	13 THz
Polarization	2 Modulation Analyzers, 1 for each polarization channel	
Clock power	> -17 dBm at pattern frequency [f]	
Pattern frequency	From 50 MHz to 1 GHz	
Measurement level range	Optical Spectral components must be between -60 dBm to 0 dBm	
Maximum temporal resolution	95fs	75fs
Measurement time	6 nm (750 GHz) /s	

The baud rate of the signal under test divided by the pattern length must be included in the pattern frequency range

For example at 10 GBaud : you can use any pattern length between 10 and 200 (PRBS 2^7-1 included)
For example at 28 GBaud : you can use any pattern length between 28 and 560 (PRBS 2^7-1, 2^8-1, 2^9-1 included)
For example at 40 GBaud : you can use any pattern length between 40 and 800 (PRBS 2^7-1, 2^8-1, 2^9-1 included)
For example at 100 GBaud : you can use any pattern length between 100 and 2000 (PRBS 2^7-1, 2^8-1, 2^9-1, 2^10-1 included)
For example at 400 GBaud : you can use any pattern length between 400 and 8000 (PRBS 2^9-1, 2^10-1, 2^11-1, 2^12-1 included)
For example at 1000 GBaud : you can use any pattern length between 1000 and 20000 (PRBS 2^10-1, 2^11-1, 2^12-1, 2^13-1, 2^14-1 included)

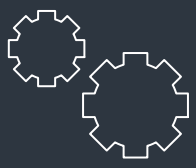
The equipment has no Baud rate upper limitation and it can measure any modulation format

a) At 1550 nm
b) At 0 dBm
c) After Wavelength calibration
d) Typical
e) Resolution 180 MHz
f) Pattern frequency = Baud Rate / Pattern Length



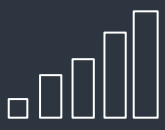
TUNABLE LASER SOURCE SOFTWARE

This optional software allows you to control the internal Tunable Laser Source. Fixed wavelength or sweeping modes are possible. Two kinds of sweeps are available, continuous or step by step.



TRACKING GENERATOR

Thanks to this option, the internal TLS and the OSA sweepings are synchronised. The OSA is able to measure the insertion loss/gain of a DUT (Bragg grating, multiplexer, tunable filter, amplifier...) with a dynamic of 63 dB,



POWER METER

The internal power meter measures the average power value of the input signal. The power of the two independent polarization channels and the total power can be displayed simultaneously.

APEX Technologies

APEX Technologies is located in Marcoussis in the French Optics Valley. The company was founded in 1998 and our first equipment has been shipped in 2001. We develop and produce innovative ultra high performance test equipment intended for fiber optic telecommunications research. Our policy “knowledge is power” reflects our work ethic. APEX Technologies is a company centred around a strong research team, our goal is to stay at the top of the advanced technology...

Related products

Optical Spectrum Analyzer:
Based on an interferometric method, APEX Technologies ultra high resolution optical spectrum analyzer combines high resolution (up to 5 MHz), wavelength accuracy (+/-3pm) and high dynamic range.This equipment is also able to measure two channels spectrums, one per polarization axis. The user can also use it like a tunable laser source or measure components tramsmissions (insertion loss/gain) thanks to the tracking generator function.

Multitest platform and plug-in modules:
A mainframe can control several plug-in modules (Tunable Laser Source, Power Meters, Switches, Tunable Attenuators...). Special methods have been developed for these products to be cost effective and still offer ultra high performance.

AP2040 series

AP2050 series

For further information or to book a demonstration, contact us or your local distributor.

Your local contact.

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