

CMA 5000

eXtended Transport Analysis Application Next-Generation SONET/SDH Monitoring Option



Key Features

- Ideal tool for Next-Generation SONET/SDH analysis in a field environment
- Identify automatically the VCAT members
- See in real time the speed of each individual container
- Read the LCAS activity in text format

The last decade has seen a tremendous evolution of transport technologies. SONET/SDH, which are still today the predominant transport standards present in the metropolitan and core networks have migrated from a rigid hierarchy of bit rate for voice network, to a transport medium for a wide variety of non-traditional data. This evolution was facilitated in part by recent innovations such as "Next-Generation SONET/SDH" technologies.

"Next-Generation SONET/SDH" is a generic term including different technologies: Virtual Concatenation (VCAT), Link Capacity Adjustment Scheme (LCAS)

The objective of these technologies is to adapt the legacy SONET/SDH networks to transport data more efficiently.

For the operators and carriers, the advantages of the evolution of SONET/SDH are obvious: efficiency, flexibility, new service revenues and more.

However, for the engineers and technicians who have to install, turn-up and maintain today's networks, specific test instruments capable of handling these different technologies are needed.

The CMA 5000-XTA module with its "Next-Generation SONET/SDH" Monitoring option is the perfect tool for field technicians. The ability to automatically test VCAT, LCAS, Differential Delay without complex configuration operations is a key feature of this option.

Key Features

- Simultaneous monitoring of all the VCAT groups

Interfaces and Signal Specifications¹

Interfaces available for the "Next-Generation SONET/SDH" option						
Interfaces	SONET/SDH	Rates ⁴	HO Path	XTA 10G	XTA 2.5G	XTA 622
Optical 1550 nm & 1310 nm ²	OC-192	9953.280 ³		✓	—	—
	OC-48	2488.320	STS-3-c SPE	✓	✓	—
	OC-12	622.080	STS-1-SPE	✓	✓	✓
	OC-3	155.520		✓	✓	✓
	STM-64	9953.280 ³		✓	—	—
	STM-16	2488.320	VC-4 (AU-4)	✓	✓	—
	STM-4	622.080	VC-3 (AU-3)	✓	✓	✓
	STM-1	155.520		✓	✓	✓
Electrical	STS-3	155.520	STS-3-c SPE	✓	✓	✓
	STS-1	51.840	STS-1-SPE	✓	✓	✓
	STM-1	155.520	VC-4 (AU-4) VC-3 (AU-3)	✓	✓	✓

Notes:

¹ All the general specifications of the XTA modules are described in the CMA 5000 eXtended Transport Analysis Application datasheet

² SC/PC Connectors

³ For the OC-192 / STM-64 interface, the wavelength is 1550 nm or 1310 nm

⁴ Mb/s

ITU-T and ANSI Recommendations	
Virtual Concatenation (VCAT)	ITU-T: G.707, G.783, G.806 ANSI: T1.105
Link Capacity Adjustment Scheme (LCAS)	ITU-T: G.7042 ANSI: Refers to G.7042

Virtual Concatenation (VCAT) Monitoring

VCAT Monitoring Characteristics	
High Order Concatenation	SONET: STS-3-c SPE, STS-1-SPE SDH: VC-4 (AU-4), VC-3 (AU-3)
Overhead Analysis	Real time display of the following information: <ul style="list-style-type: none"> • J1 path trace message of all the containers (ASCII sequence) • C2 signal label of all the containers (interpretation in text format)
Group Overview	<ul style="list-style-type: none"> • All the VCAT containers are automatically broken down by group • Alarm detection for all group members : LOM, OOM1, OOM2, SQM • Error detection for all group members: CRC-8 • CTRL field interpretation for all group members: NORM (Normal), DNU (Do Not Use), EOS (End of Sequence)

Key Features

- Graphical view of differential delay (in real time)
- Simultaneous LCAS monitoring of all the existing groups
- Automatic measurements. No configuration necessary

Group #	Member	SQ	CTRL	LOM	OOM1	OOM2	SQM	CRC-8
1	SPE #1	0	NO LCAS	●	●	●	●	●
	SPE #4	1	NO LCAS	●	●	●	●	●
	SPE #7	2	NO LCAS	●	●	●	●	●
	SPE #10	3	NO LCAS	●	●	●	●	●
	SPE #29	4	NO LCAS	●	●	●	●	●
	SPE #32	5	NO LCAS	●	●	●	●	●
2	SPE #12	0	NO LCAS	●	●	●	●	●
	SPE #8	1	NO LCAS	●	●	●	●	●
	SPE #15	2	NO LCAS	●	●	●	●	●
3	SPE #21	2	NO LCAS	●	●	●	●	●
	SPE #17	3	NO LCAS	●	●	●	●	●
	SPE #30	4	NO LCAS	●	●	●	●	●
	SPE #25	5	NO LCAS	●	●	●	●	●
	SPE #43	6	NO LCAS	●	●	●	●	●

The XTA application automatically detects the VCAT containers and automatically breaks them down by group. No complex configuration is required. The result is available immediately after pushing the START button.

Differential Delay Analysis

Differential Delay Analysis Characteristics

- Differential Delay
- Analysis of the differential delay of all group members (maximum delay: 224 ms)
 - Displays in real time of the pointer values of all group members: shows graphically the acceleration and showing down of each group member

Group #	Member	SQ	Diff. Delay (ms)	Group Delay (ms)	Pointer Activity
1	SPE #1	0	0.0000	1.26596	Group #1
	SPE #4	1	0.11207		
	SPE #7	2	0.22302		
	SPE #10	3	1.15006		
	SPE #29	4	0.0000		
	SPE #32	5	1.26596		
	SPE #37	6	0.0000		

The XTA application is able to measure the differential delay for each group member in real time.

LCAS Protocol Monitoring

LCAS Monitoring Characteristics

- LCAS Monitoring
- Display the LCAS activity by decoding in text format the value of the CTRL field of all group members:
- ADD, REMOVE, FIXED, NORM, DNU, EOS
 - LCAS activity displayed in an "Event Log" window with a time stamp

Ordering Information

CMA 5000 XTA 10G-1310 Module

Order Number	Description
5663-501-XTA	"Next-Generation SONET/SDH" Monitoring option for XTA 10G-1310 module

CMA 5000 XTA 10G-1550 Module

Order Number	Description
5665-501-XTA	"Next-Generation SONET/SDH" Monitoring option for XTA 10G-1550 module

CMA 5000 XTA 2.5G Module

Order Number	Description
5616-501-XTA	"Next-Generation SONET/SDH" Monitoring option for XTA 2.5G module

CMA 5000 XTA 622 Module

Order Number	Description
5604-501-XTA	"Next-Generation SONET/SDH" Monitoring option for XTA 622 module

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