



ATM Module for NIC Platform

SPECIFICATIONS

Physical Interfaces	SONET: STS-1, OC-1, OC-3, OC-12, OC-48, OC-192 SDH: STM-0/0e, STM-1/1e, STM-4, STM-16, STM-64 PDH: DS1, DS3, E1, E3		loss, cell misinsertion, CDV, cell reordering, test traffic insertion, VPI/VCI remapping, CLP tagging, CI setting, padding errors
Physical Layer PLCP Structure	SONET: VT1.5, VT2, VT6, Full SPE, STS-3c, STS-12c SDH: C-11, C-12, C-2, C-3, C-4, C-4-4 PDH (Direct/PLCP): DS1, DS3, E1, E3 (G.832, G.751)	Protocol Generation Error Measurement	AAL0 cell generation, AAL1/AAL5 protocol gen. HEC correctable and uncorrectable error counts and rates, AAL5 CRC errors, AAL5 length errors; PRBS bit error measurement, loss of PRBS sync; AAL1 SN/SNP error, lost cells, misinserted cell counts and rates; PLCP framing errors, PLCP BIP, PLCP FEBE counts and rates, PLCP B1 CNT, PLCP Framing Error Cnt, cell overflow, BERT analysis
Adaptation Layers	AAL0, AAL1, AAL5		
Header and Interface Support	Control of all cell header bits; UNI (3.0, 3.1, 4.0) and NNI support		
Channel Capacity	Transmit: 240 channels (independent AAL, service class, and bandwidth on all VCCs) Receive: 256 channels (cell count, bandwidth, AAL5 PDU counts and errors on all channels)	Error Injection	HEC-correctable and uncorrectable errors, HEC error rate from continuous to 10-9, HEC error burst from 1 to 10 on consecutive cells; PLCP B1, PLCP FEBE, PLCP POI, PLCP Frame (A1A2), PLCP (POI)
Test Traffic Generation	VCC Channel Count: Transmit foreground and background test channels Traffic Shaping: Foreground traffic shaping: Constant Bit Rate (CBR), real time/non-real time Variable Bit Rate (rt VBR, nrt VBR), Unspecified Bit Rate (UBR), Available Bit Rate: ABR (for STS-12c or Ac-4-4c only); foreground transmit resolution; background traffic shaping Cell Generation: Foreground VCC payload: 215 - 1 (cross cell PRBS) + INV, user-defined 32-bit pattern, full cell, 0.191 test cell, special OAM generation/ test feature, and burst cell transmission; background VCC payload	Error Measurement	HEC correctable and uncorrectable error counts and rates, AAL5 CRC errors, AAL5 length errors; PRBS bit error measurement, loss of PRBS sync; AAL1 SN/SNP error, lost cells, misinserted cell counts and rates; PLCP framing errors, PLCP BIP, PLCP FEBE counts and rates
Test Traffic Analysis	VCC Channel Count: Receive test channels: Bandwidth analysis, cell count/rate, CLP ratio, CLP indication, BERT analysis, 0.191 Rev0/Rev1 analysis, AAL1 analysis, AAL5 analysis Cell Analysis / QOS: Cell bandwidth analysis (count/rate) - 256 channels; correctable HEC errors; uncorrectable HEC errors; BERT analysis (count/rate); 0.191 analysis I.356 (CER, CMR, CLR, Cell Transfer Delay-CTD, SECB, MTBO, 2-point Cell Delay Variation-CDV); 1-point CDV; Cell misinsertion ratio for AAL1; cell inter-arrival analysis; real-time analysis channels (bandwidth, BERT, 0.191, AAL1, AAL5) and CLP monitoring	Alarm Detection	Cell synchronization loss, F4 and F5 AIS OAM flow (end-to-end/segment), F4 and F5 RDI OAM flow (end-to-end/segment); PLCP yellow alarm (RAI)
Performance Analysis	CER, CLR, CMR, SECBR	Cell Payload Patterns Error Injection	PRBS 215 -1, all 1's, 10101010, user-defined pattern HEC-correctable and uncorrectable errors, HEC error rate from continuous to 10-9, HEC error burst from 1 to 10 on consecutive cells; PRBS bit error rates from 10-2 to 10-9, PLCP framing errors, BIP, FEBE
Protocol Analysis	AAL0: Cell count and bandwidth utilization, bit error count, pattern sync errors AAL1: AAL1 SAR PDU header SNP errors, lost cells, misinserted cells for AAL1 VCCs; cell count and bandwidth utilization, bit error count, pattern sync errors; AAL5: GPCS analysis, VCC simultaneous analysis, CRC, PDU length errors Network Impairment: Cell error generation, cell	Alarm Generation	Cell synchronization loss, F4 and F5 AIS OAM flow (end-to-end/segment), F4 and F5 RDI flow (end-to-end/segment), PLCP yellow alarm
		SVC Support	Calling SVCs, called SVCs, load test-call setup, load test-cyclic calls
		SVC Signalling Analysis	Channel set up time, channel tear down, SSCOP link status indication, Tx/Rx attempted calls, Tx/Rx connected calls, Tx/Rx rejected calls, Tx/Rx cleared calls, call reference value
		SVC Monitoring	Call statistics, UNI signalling, ATM layer, AAL-5, signaling filters, UNI signaling errors, SSCOP errors, port, errors/alerts
		OAM Support (Generate & Analyze)	I.610 OAM support: F4 AIS, F5 AIS, F4 RDI, F5 RDI, F4 loopback, F5 loopback, PM OAM support (generate PM OAM with test traffic, receive and analyze PM OAM, forward monitoring PM OAM, backward reporting PM OAM)
		Cell Capture Support	Capture buffer size, capture filter-based on VPI/VCI, sending of captured data after optional modifications by user
		No. of Test Channels	240 Tx, 256 Rx



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