

Fiber Loss Budgets

Document ID: 12221

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Introduction

This document provides the optical transmit power and receive sensitivity for fiber optic connectors on various router and switch interfaces. These numbers can be used in the calculations explained in the "Evaluating the Power Budget" section of the ATM Interface Processor (AIP) documentation. (When you view the AIP documentation, use your browser's "Find" feature to locate the desired section of the document.)

Note: The AIP documentation uses the terms PT (minimum transmitter power) and PR (minimum receiver sensitivity). In this document, the "transmit dBm min" column equals PT and the "receive dBm min" column equals PR.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

Optical Transmit Power and Receive Sensitivity for Fiber Optic Connectors Table

Standard	Fiber	Transmit (dBm)		Receive (dBm)		Distance Objective	
		max	min	max	min	km	mi
ISO/IEC 9314-3	MM	-14	-20	-14	-31	2	1.2

		SM cat I	-14	-20	-14	-31	14		8.4	
		SM cat II	0	-4	-15	-37	58		34.8	
Device	Fiber	Type	Connector	Transmit (dBm)		Receive (dBm)		Distance		
				max	min	max	min	km	mi	
Catalyst 1900c, Catalyst 2820	MM	100BaseFX	SC	-14	-19	-14	-33.5			
Catalyst 3000	SM	OC-3	SC	-8	-14	-8	-32.5	10	6.2	
	MM	OC-3	SC							
	MM	100BaseF	SC					full-duplex 2; half-duplex 0.4	full-duplex 1.2; half-duplex 0.24	
	MM	10BaseF	SC					2	1.2	
	MM	100VG	SC							
Catalyst 5000 Catalyst 2900 (non-XL) Catalyst 2926	MM	10baseFL	ST	-12	-20	-12	-32.5	2	1.2	
	SM	OC-3	SC	-8	-14	-8	-32.5	30	18	
	MM	OC-3	SC	-14	-19	-14	-32.5	2	1.2	
	SM	FDDI	ST	-4	-7	-14	-33	30	18	
	MM	FDDI	MIC	-14	-18.5	-14	-34	2	1.2	
Cisco 1100 concentrator Cisco 1400 concentrator	SM	FDDI	ST	-4	-7	-14	-33	30	18	
Cisco 4000 NPs	MM	FDDI	MIC	-14	-18.5	-14	-34	2	1.2	
	SM	FDDI	MIC	-14	-20	-14	-31	10	6.2	
	MM	FDDI	MIC	-10	-16	-10	-27	2	1.2	
	SM	OC-3	SC	-8	-18.5	-14	-30	15	9	
	SM LR	OC-3	SC		-3		-36	20	12.4	
	MM	OC-3	SC		-15		-28	3	1.5	
AIP	SM	OC-3	ST	-8	-15	-14	-31	14.8	9	
	MM	OC-3	SC	-14	-20	-14	-30	2.4	1.5	
	SM	TAXI	ST	-14	-20	-14	-31			
	MM	TAXI	MIC	-10	-16	-10	-27	2	1.2	
FDDI Interface Processor (FIP) AGS+ FDDI applique	SM	FDDI	ST	-14	-20	-14	-31	10	6.2	
ATM Port Adapters (PAs) (ATM lite)	MM	FDDI	MIC	-10	-16	-10	-27	2	1.2	
	SM	OC-3	SC	-8	-15	-8	-31			
	MM	OC-3	SC	-14	-20	-14	-30			

Fast Ethernet PA	MM	FE	SC						
FDDI PA	SM	FDDI	SC	-14	-19	-14	-31	15	9.3
	MM	FDDI	MIC	-14	-19	-14	-31	2	1.2
Packet OC-3 Interface Processor (POSIP)	SM IR	OC-3	SC	-8	-15	-8	-31	15	9
Cisco 12000	MM SM IR	OC-3	SC	-14	-18.5	-14	-30	3	1.5
		OC-3	SC	-8	-15	-8	-28	15	9.3
	MM	OC-3	SC	-14	-20	-14	-26	0.5	0.3
	SM IR	OC-3	SC	-8	-15	-8	-31	15	9.3
LightStream 100 ATM switch	MM	OC-3	SC	-14	-20	-14	-26	0.5	0.3
	155-Mbps SM	OC-3C	SC	-8	-15	0	-34		
	155-Mbps MM	OC-3C	SC						
LightStream 1010 ATM switch	100-Mbps MM	TAXI	MIC						
	SM IR	OC-3	SC	-8	-15	-8	-30	15	9
	SM IR+	OC-3	SC	-3	-8	-3	-32	30	18
	SM LR	OC-3	SC	0	-5	-10	-30	40	25
	MM	OC-3	SC	-14	-20	-14	-30	2	1.2
	SM IR	OC-12	SC	-8	-15	-8	-28	15	9
	SM LR	OC-12	SC	2	-3	-8	-28	40	25
Catalyst 8540MSR ATM switch	MM	OC-12	SC	-14	-20	-14	-26	0.5	0.3
	SM IR	OC-12	SC	-8	-14	-3	-28	15	9
HP Gigabit Ethernet Converters (GBIC) HFBR-5601 Cisco Field-replaceable unit (FRU) WS-G5484	MM 62.5/125um	OC-12	SC	-14	-20	-14	-26	0.5	0.3
	MM SR	1000Base-SX	SC	-4	-10	0	-17	220/275 meters	720/900 feet
HP GBIC HFCT-5611 ¹ Cisco FRU WS-G5486	50/125um MM SR	1000Base-SX	SC	-4	-10	0	-17	550 meters	1800 feet
	MM LR	1000Base-LX	CH	-3	-9.5	-3	-19	550 meters	1800 feet
	50um MM LR	1000Base-LX	CH	-3	-9.5	-3	-19	550 meters	1800 feet
	9/125um SM LR	1000Base-LX	CH	-3	-9	-3	-19	10	6

Catalyst 8510	MM	100BaseFX	SC	8	15	8	28	.5	1640 feet
Catalyst 8540	MM	100BaseFX	MT-RJ	8	15	8	28	.5	1640 feet

Note:

¹ All GBICs use Class 1 lasers, even with multimode fiber. A Mode Conditioning Cable (MCC) is required when using multimode fiber with any LX/LH GBIC. All of these GBICs have a minimum cable length of two meters.

Related Information

- [ATM Technical Support Page](#)
- [LAN & ATM Switches Product Support Page](#)
- [Cisco 12000 Series Internet Routers Technical Support Page](#)
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Updated: Jan 15, 2008

Document ID: 12221
