

# PRODUCT INTRODUCTION

MD1230A-16

MU740701A-16

10GbE Link Fault Signaling Test

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# 10 GbE Link Fault Signaling Test

## Product Introduction

MD1230A-16  
MU740701A-16



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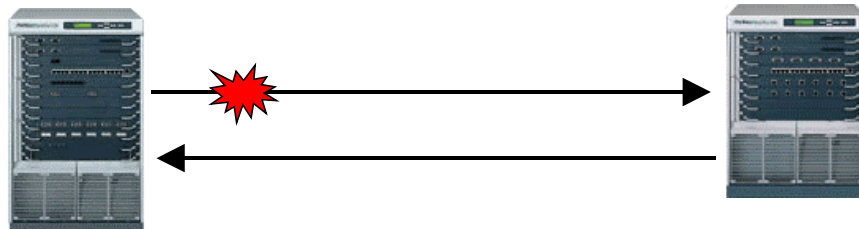
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## Link Fault Signaling

### Overview

- Traditional Ethernet has no function for detecting network faults
- This issue is important for 10 Gbps because of WAN applications
- 10 GbE has a function for detection and notification of physical layer faults
  - ◆ Link Fault Signaling (LFS)



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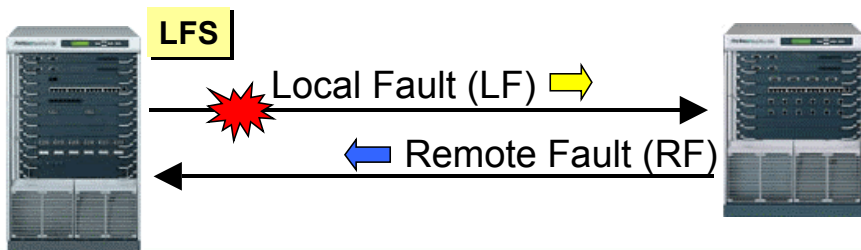
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# Link Fault Signaling

## Overview (continued)

- Link Fault Signaling (LFS) sends physical layer alarms
  - ◆ LF (Local Fault) signal
  - ◆ RF (Remote Fault) signal
- MD1230A Family can measure LFS via a software option (-16)
  - ◆ MD1230A mainframe and MT7407A chassis



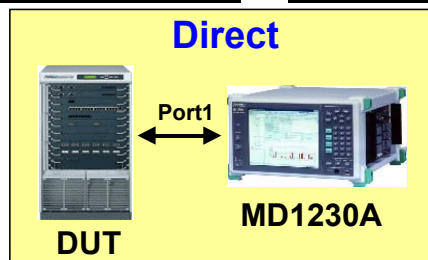
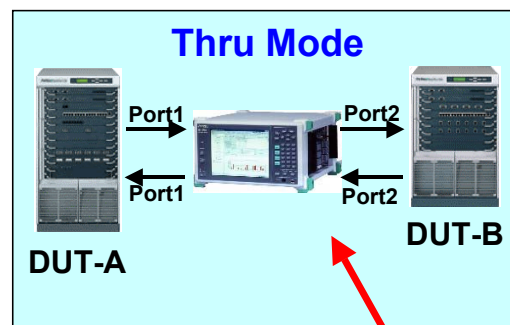
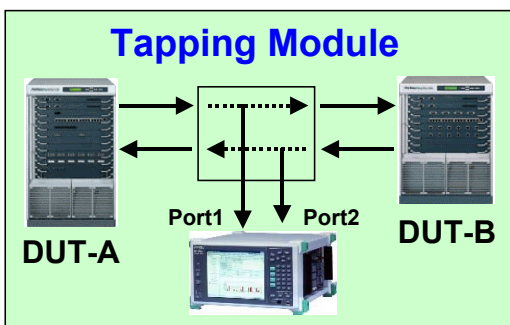
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# Link Fault Signaling

## Supports Three Types of Connections



No separate tapping module required

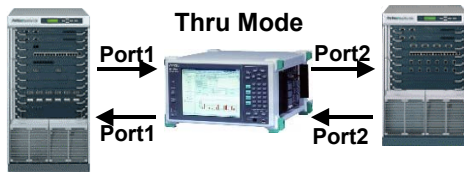
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# LFS Test Applications

## LFS Monitoring



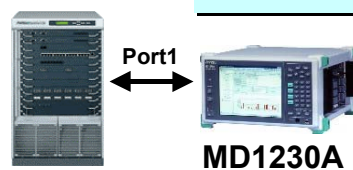
- Check LFS sequence
- Test interoperability
- Troubleshooting

## Transmit LF & RF Signals



- Check LFS sequence
- Perform abnormal tests

## LFS Emulation



- Connect to equipment that supports LFS

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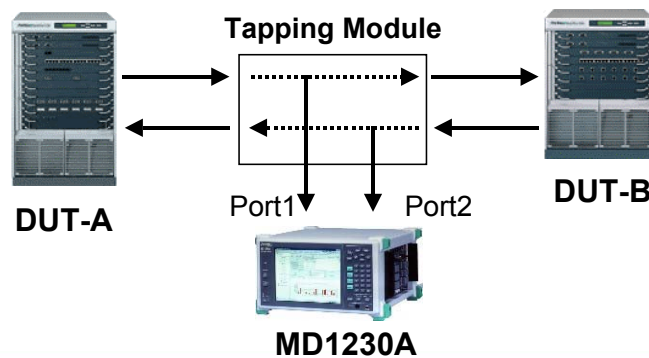
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# LFS Monitoring

## Applications

- Capture and analyze LFS data
  - ◆ Supports both tapping module and through mode capture
- Generate and analyze IP and Ethernet frames simultaneously



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# LFS Monitoring

## LFS Alarm and Counters

Turn on the Alarm when LFS is detected

- Check the condition of 10 GbE networks by counting LFS over a long period

Transmitted LF Signal	2,599	73,850
Transmitted RF Signal	20,136	97,182
Received LF Signal	4,680	50,441
Received RF Signal	9,198	46,468

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# LFS Monitoring

## Capture and Decode

- Capture and analyze LFS signals
- Analyze XGMII data
  - Idle code
  - Start code
  - others ...

Start / Stop      Trigger setting

List of captured data

No.	Port	RXC (0-3)	RXD (Lane 0-3)
1	1	1111	07070707
2	1	1111	07070707
3	1	1111	07070707
4	1	1111	07070707
5	1	1111	07070707
6	1	1000	9C000001
7	1	1111	07070707
8	1	1111	07070707
9	1	1111	07070707
10	1	1111	U/U/U/U/
11	1	1111	07070707
12	1	1111	07070707
13	1	1111	07070707
14	1	1111	07070707
15	1	1111	07070707
16	1	1111	07070707
17	1	1111	07070707
18	1	1111	07070707
19	1	1111	07070707
20	1	1111	07070707
21	1	1111	07070707
22	1	1111	07070707

Decode view

Lane	RXC	RXD	Code
0	1	9C	Sequence
1	0	0	Data
2	0	0	Data
3	0	1	Data

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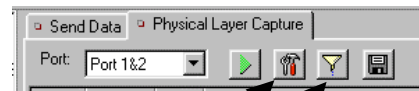
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# LFS Monitoring

## Efficient Troubleshooting

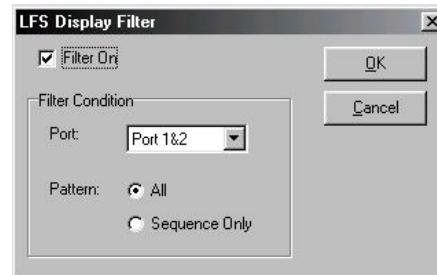
- Trigger and filter functions help you select on the important data
- Solve problems quickly and efficiently



Trigger setting

Screen filter

Lane	TXC (bin)	TXD (hex)
0		9C
1	0	00
2	0	00
3	0	01



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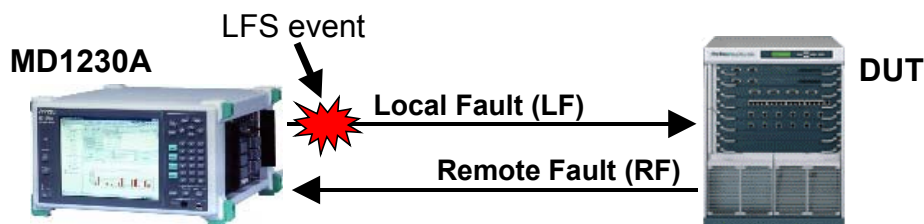
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# XGMII Code Transmission

## Capabilities

- Complete an LFS event by transmitting the LF or RF signals
- Check functionality by transmitting an edited sequence of XGMII codes



- Check the LFS sequence
- Perform abnormal tests

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# XGMII Code Transmission

**Transmit On/ Off**

**Choose transmit codes**

**Transmit code edit screen**

- Choose LF or RF signal
- Select "Edit Signal" to edit any code sequence

Lane	TXC (bin)	TXD (hex)
0	1	9C
1	0	00
2	0	00
3	0	00

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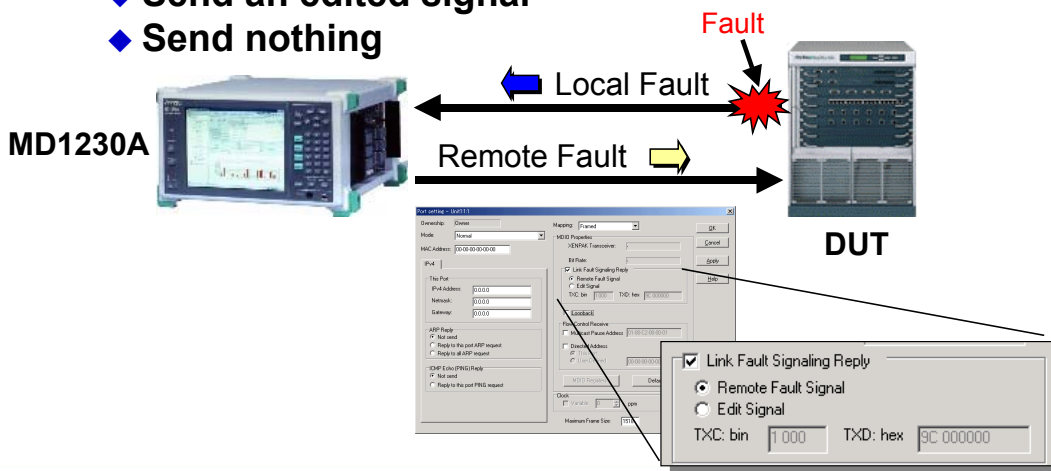
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# LFS Emulation

Connecting to Equipment that Supports LFS

- Responses to receiving LF signal
  - ◆ Send RF
  - ◆ Send an edited signal
  - ◆ Send nothing



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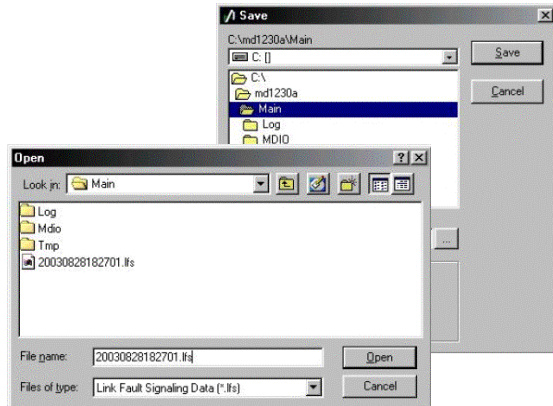


# Other LFS Test Functions

## Save and Load

No	Port	RXC (0-3)	RXD (Lane 0-3)
83	77	0	FF83DF17
84	78	0	32084ED1
85	79	0	E7CD4EC2
86	80	0	9DC635C0
87	81	0	B8362589
88	82	0	2AE44656
89	83	1111	FD070707
90	84	1111	07070707
91	85	1111	07070707
92	86	1000	FB555555
93	87	0	55555555
94	88	0	00000000
95	89	0	00000000
96	90	0	00000000
97	91	0	08004500
98	92	0	00000002
99	93	0	40004000
100	94	0	3CC07F00
101	95	0	00017F00
102	96	0	0001F8F8
103	97	0	2828000C
104	98	0	FF83DF17
105	99	0	32084ED1
106	100	0	E7CD3C41

Excel sample



- “Capture Summary” is stored as a .CSV file
- Use this for easy Excel reports

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Thank You!

# 10 GbE Link Fault Signaling Test

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Specifications are subject to change without notice.

#### ANRITSU CORPORATION

1800 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan  
Phone: +81-46-223-1111  
Fax: +81-46-296-1264

#### ● U.S.A.

##### ANRITSU COMPANY

##### TX OFFICE SALES AND SERVICE

1155 East Collins Blvd., Richardson, TX 75081, U.S.A.  
Toll Free: 1-800-ANRITSU (267-4878)  
Phone: +1-972-644-1777  
Fax: +1-972-644-3416

#### ● Canada

##### ANRITSU ELECTRONICS LTD.

700 Silver Seven Road, Suite 120, Kanata,  
ON K2V 1C3, Canada  
Phone: +1-613-591-2003  
Fax: +1-613-591-1006

#### ● Brasil

##### ANRITSU ELETRÔNICA LTDA.

Praca Amadeu Amaral, 27 - 1 andar  
01327-010 - Paraiso, Sao Paulo, Brazil  
Phone: +55-11-3283-2511  
Fax: +55-11-3886940

#### ● U.K.

##### ANRITSU LTD.

200 Capability Green, Luton, Bedfordshire LU1 3LU, U.K.  
Phone: +44-1582-433280  
Fax: +44-1582-731303

#### ● Germany

##### ANRITSU GmbH

Grafenberger Allee 54-56, 40237 Düsseldorf, Germany  
Phone: +49-211-96855-0  
Fax: +49-211-96855-55

#### ● France

##### ANRITSU S.A.

9, Avenue du Québec Z.A. de Courtabœuf 91951 Les  
Ulis Cedex, France  
Phone: +33-1-60-92-15-50  
Fax: +33-1-64-46-10-65

#### ● Italy

##### ANRITSU S.p.A.

Via Elio Vittorini, 129, 00144 Roma EUR, Italy  
Phone: +39-06-509-9711  
Fax: +39-06-502-2425

#### ● Sweden

##### ANRITSU AB

Fagelviksvagen 9E S145 84 Stockholm, Sweden  
Phone: +46-853470700  
Fax: +46-853470730

#### ● Singapore

##### ANRITSU PTE LTD.

10, Hoe Chiang Road #07-01/02, Keppel Towers,  
Singapore 089315  
Phone: +65-6282-2400  
Fax: +65-6282-2533

#### ● Hong Kong

##### ANRITSU COMPANY LTD.

Suite 923, 9/F., Chinachem Golden Plaza, 77 Mody  
Road, Tsimshatsui East, Kowloon, Hong Kong, China  
Phone: +852-2301-4980  
Fax: +852-2301-3545

#### ● P. R. China

##### ANRITSU COMPANY LTD.

##### Beijing Representative Office

Room 1515, Beijing Fortune Building, No. 5 North  
Road, the East 3rd Ring Road, Chao-Yang District  
Beijing 100004, P.R. China  
Phone: +86-10-6590-9230

#### ● Korea

##### ANRITSU CORPORATION

8F Hyun Juk Bldg. 832-41, Yeoksam-dong,  
Kangnam-ku, Seoul, 135-080, Korea  
Phone: +82-2-553-6603  
Fax: +82-2-553-6604

#### ● Australia

##### ANRITSU PTY LTD.

Unit 3/170 Forster Road Mt. Waverley, Victoria, 3149,  
Australia  
Phone: +61-3-9558-8177  
Fax: +61-3-9558-8255

#### ● Taiwan

##### ANRITSU COMPANY INC.

7F, No. 316, Sec. 1, NeiHu Rd., Taipei, Taiwan  
Phone: +886-2-8751-1816  
Fax: +886-2-8751-1817

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