

LOOPBACK-SFPx

10G SFP+ Electrical Passive Loopback, 0dB/ 3.5dB/ 5dB



Product Features

- ❖ SFP+ MSA Compliant
- ❖ Hot-pluggable MSA footprint
- ❖ Custom Memory Maps Capability
- ❖ Case Temperature range from -20° to 85°C
- ❖ Compliant with SONET, SDH, GBE, FC
- ❖ Power Consumption Different Option
- ❖ Internal Attenuation Different Option

Applications

- ❖ Board and System Level Testing
- ❖ Test and Measurement
- ❖ Switch and Router Chamber Testing ---HASS and HALT
- ❖ 100Mb/s to 10.5Gbps

Description

The SFP+ Loopback modules provide an effective way of testing the SFP+ port in the host system by looping back the electrical signal (optics are excluded). The units provide basic serial ID information that attempts to mimic a shortwave Gigabit Ethernet, 1.25G, 2.125G FC SFP transceiver, 4.25G FC, 8.5G FC and 10Gb/s Ethernet/FC for factory, environment, installation, simulation tests.

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Storage Temperature	Tstg	-40		85	°C	
Supply Voltage	Vcc			6.00	V	Vcc-ground
Data DC Voltage	Voffset	-10		10	Vpk	V (Tx+, Tx-, Rx+, Rx-) to ground

Module Specifications - Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Ambient Operating Temperature	Ta	-20		85	°C	
Supply Voltage	Vcc	3.15	3.3	3.45	Vdc	
Baud Rate	BRate	0.1		10.5	Gpbs	

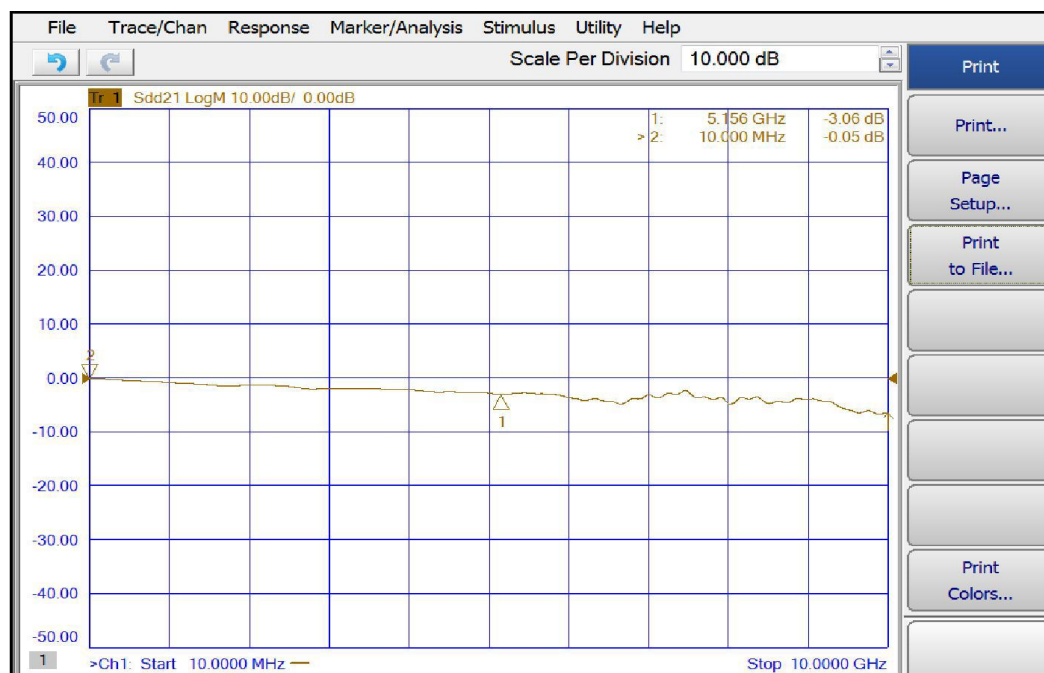
Performance Specifications - Electrical

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Bit Error Rate	BER			1E-12		Errors/Bit See Note1
Supply Current – Serial ID write	IccW		2	30	mA	For Serial ID option only
Supply Current – Serial ID read	IccR		0.4	10	mA	
Surge Current	I _{surge}			30	mA	Surge above steady state value

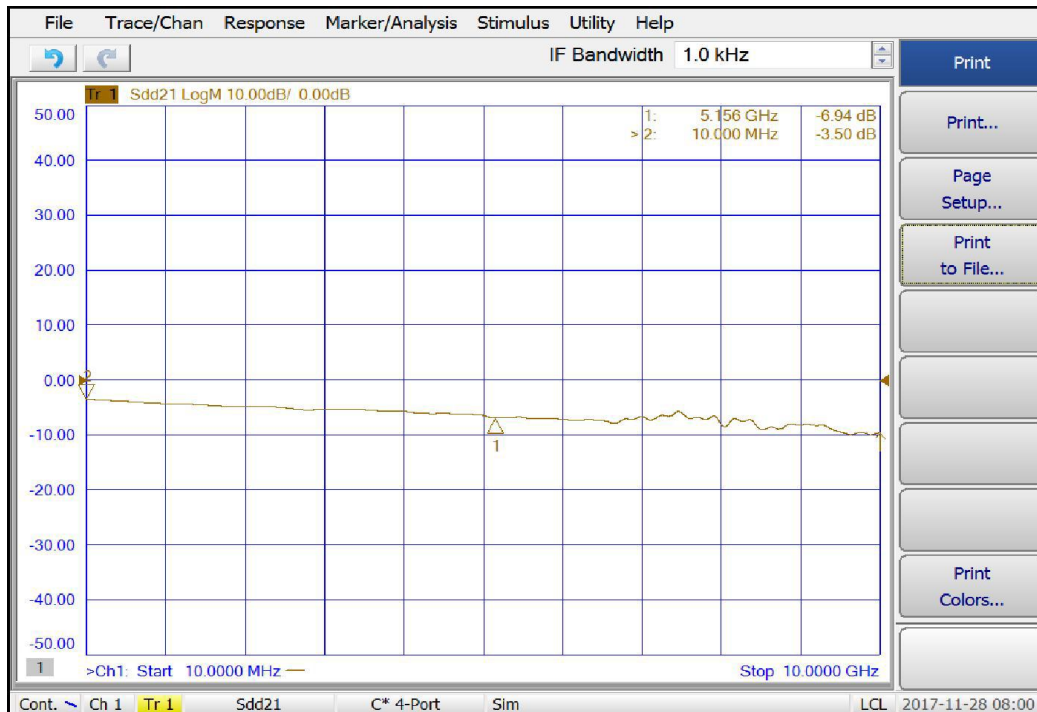
Notes 1: Tested with a 2⁷-1, 2²³-1, 2³¹-1 PRBS pattern

Data Path

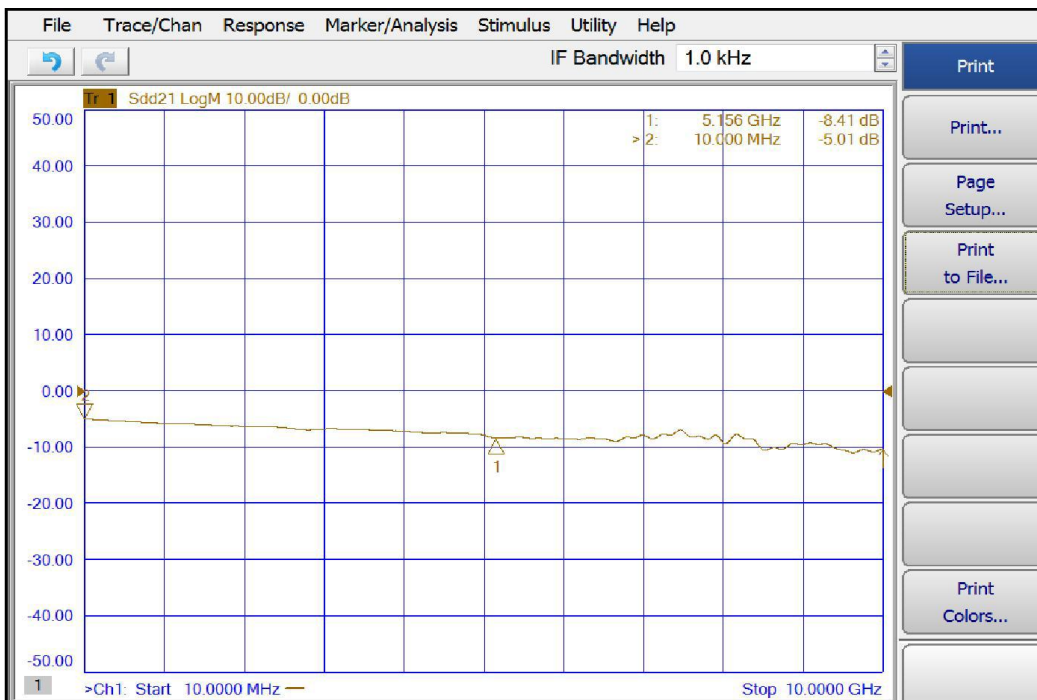
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Impedance			100		ohms	Differential Impedance
Durability Cycles			100		Times	



SDD21-0dB (Transmit Insertion Loss)



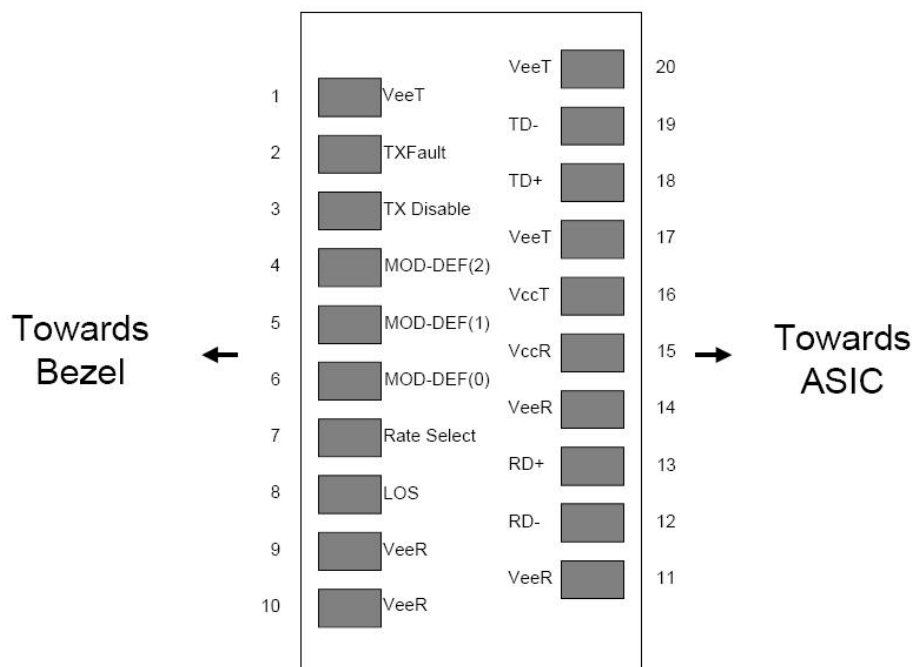
SDD21-3.5dB (Transmit Insertion Loss)



SDD21-5dB (Transmit Insertion Loss)

Host board Connector Pin out

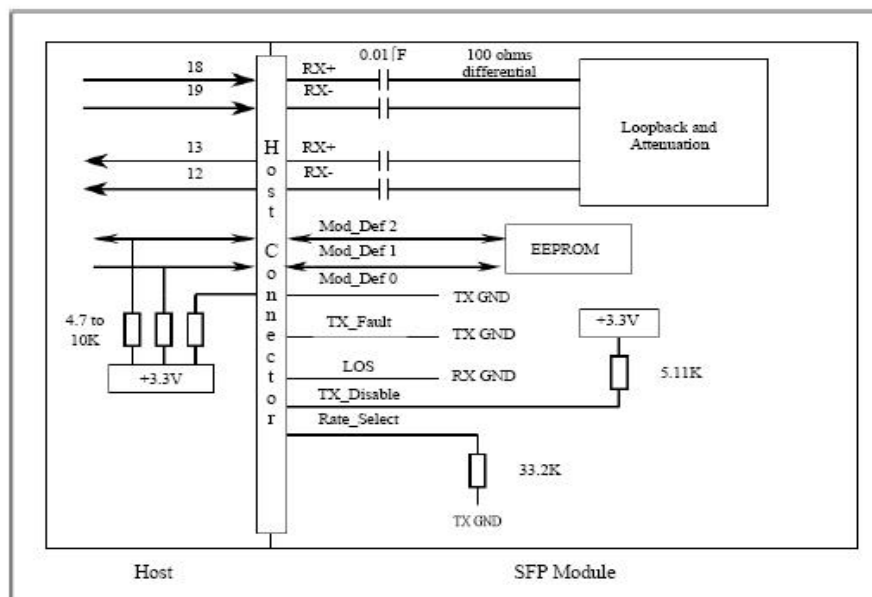
MSA Compliant Connector



SFP Transceiver Connector, Pin Descriptions

Pin	Logic	Description
1	TGND	Transmit ground
2	TX_FAULT	Internally tied to Transmit ground. TX_FAULT is not implemented.
3	TX_DISABLE	Internally pulled up to Vcc through a 5.11k ohm resistor. TX_DISABLE is not implemented.
4	MOD_DEF(2)	Signal SDA (Data) of the 2-wire serial ID interface
5	MOD_DEF(1)	Signal SCL (Clock) of the 2-wire serial ID interface
6	MOD_DEF(0)	This pin is internally tied to Transmit ground
7	RATE SELECT	Pin is internally pulled low through a 33.2k resistor. Rate Select is not implemented.
8	LOS	Internally tied to Receiver Ground. LOS is not implemented.

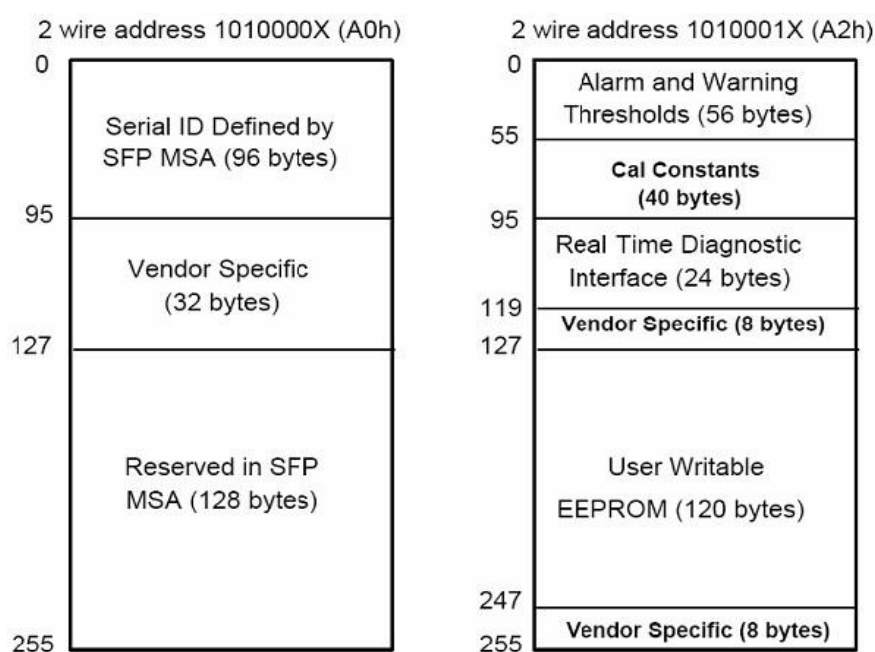
9	RGND	Receiver ground
10	RGND	Receiver ground
11	RGND	Receiver ground
12	RD-	Differential receiver outputs. User to terminate to 100 ohms differential
13	RD+	Differential receiver outputs. User to terminate to 100 ohms differential
14	RGND	Receiver ground
15	VCCR	Not used.
16	VCCT	EEPROM power
17	TGND	Transmit ground
18	TD+	Differential transmitter inputs. Internally terminated to 100 ohms differential.
19	TD-	Differential transmitter inputs. Internally terminated to 100 ohms differential.
20	TGND	Transmit ground



Memory Map

The EEPROM on the SFP+ passive cable assembly is designed for 256 addresses. The information for addresses 0 to 127 is listed below. This information can be tailored to any customer request. Any address can be altered to display customer specific information and more memory can be added if more addresses are needed. Addresses 128 to 255 can be reserved for customer specific information that is in addition to the SFF 8472 specification.

Memory Map (Specific Data Field Descriptions)



EEPROM Serial ID Memory Contents (A0h)

DATA Address (DEC)	DATA Address (HEX)	Value (HEX)	Name of Field	Description
0	0	0x03	Identifier	SFP+
1	1	0x04	Ext. Identifier	Serial ID
2	2	0x80	Connector	Vendor Specific
3	3	0x01	Transceiver	1X Copper Passive
4	4	0x00		
5	5	0x00		

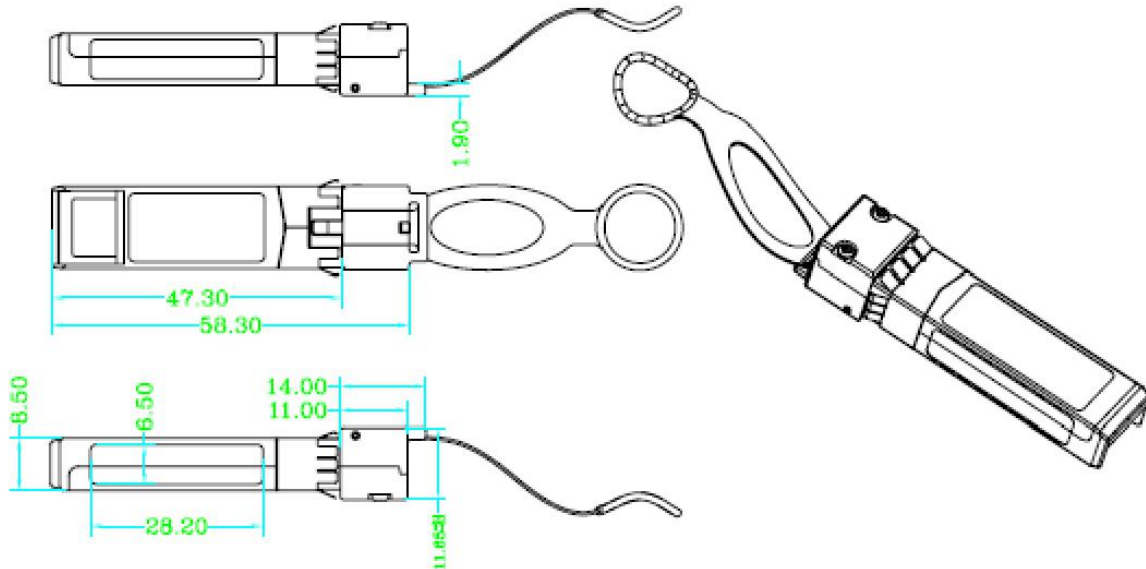
6	6	0x00		
7	7	0x00		
8	8	0x04		SFP+ Passive copper
9	9	0x80		Twin Axial Pair (TW)
10	A	0x00		
11	B	0x06	Encoding	64B/66B
12	C	0x67	BR, Nominal	1030MBs
13	D	0x00	Rate Identifier	Unspecified
14	E	0x00	Length (SMF,km)	Unsupported
15	F	0x00	Length (SMF)	Unsupported
16	10	0x00	Length (50um)	Unsupported
17	11	0x00	Length (62.5um)	Unsupported
18	12	0x00	Length (cable)	Unspecified
19	13	0x00	Length (OM3)	Unsupported
20	14	0x31	Vendor Name	Fiber Mall
21	15	0x30		
22	16	0x47		
23	17	0x74		
24	18	0x65		
25	19	0x6B		
26	1A	0x20		
27	1B	0x20		
28	1C	0x20		
29	1D	0x20		
30	1E	0x20		
31	1F	0x20		
32	20	0x20		
33	21	0x20		
34	22	0x20		
35	23	0x20		

36	24	0x00	Transceiver	Unspecified
37	25	0x00	Vendor OUI	Unspecified
38	26	0x00		
39	27	0x00		
40	28	0x43	Vendor PN	LOOPBACK-SFPx
41	29	0x41		
42	2A	0x42		
43	2B	0x2D		
44	2C	0x53		
45	2D	0x46		
46	2E	0x50		
47	2F	0x2D		
48	30	0x4C		
49	31	0x42		
50	32	0x30		
51	33	0x20		
52	34	0x20		
53	35	0x20		
54	36	0x20		
55	37	0x20		
56	38	0x30	Vendor Rev	01
57	39	0x31		
58	3A	0x20		
59	3B	0x20		
60	3C	0x00	ACTIVE CABLE SPECIFICATION COMPLIANCE	Unspecified
61	3D	0x00		Unspecified
62	3E	0x00	Unallocated	
63	3F	0x00	CC_BASE	
64	40	0x00	Options	Unspecified
65	41	0x00		
66	42	0x00	BR, max	Unspecified

67	43	0x00	BR, min	Unspecified
68	44	0x53	Vendor SN	S1808010001
69	45	0x31		
70	46	0x38		
71	47	0x30		
72	48	0x38		
73	49	0x30		
74	4A	0x31		
75	4B	0x30		
76	4C	0x30		
77	4D	0x30		
78	4E	0x31		
79	4F	0x20		
80	50	0x20		
81	51	0x20		
82	52	0x20		
83	53	0x20		
84	54	0x31	Date Code	180801
85	55	0x38		
86	56	0x30		
87	57	0x38		
88	58	0x30		
89	59	0x31		
90	5A	0x20		
91	5B	0x20		
92	5C	0x00	Diagnostic Monitoring Type	Unsupported
93	5D	0x00	Enhanced Options	Unspecified
94	5E	0x00	SFF-8472 Compliance	Unspecified
95	5F	0x00	CC_EXT	
96	60	0x00	Vendor Specific	Vendor Specific EEPROM
97	61	0x00		

98	62	0x00		
99	63	0x00		
100	64	0x00		
101	65	0x00		
102	66	0x00		
103	67	0x00		
104	68	0x00		
105	69	0x00		
106	6A	0x00		
107	6B	0x00		
108	6C	0x00		
109	6D	0x00		
110	6E	0x00		
111	6F	0x00		
112	70	0x00		
113	71	0x00		
114	72	0x00		
115	73	0x00		
116	74	0x00		
117	75	0x00		
118	76	0x00		
119	77	0x00		
120	78	0x00		
121	79	0x00		
122	7A	0x00		
123	7B	0x00		
124	7C	0x00		
125	7D	0x00		
126	7E	0x00		
127	7F	0x00		
128-255	80-FF	0XFF	Reserved	Reserved for SFF-8079

Mechanical Specifications



Ordering Information

Part Number	Product Description
LOOPBACK-SFP0	SFP+ Electrical Passive Loopback, 0dB, 0W
LOOPBACK-SFP3.5	SFP+ Electrical Passive Loopback, 3.5dB, 0W
LOOPBACK-SFP5	SFP+ Electrical Passive Loopback, 5dB, 0W

Notes: Maximum total power value is specified across the full temperature and voltage range and may vary according to different options.