

# **FCI Production SFP+ board side connector results compared to SFF8431 Appendix C Specifications for mated host and module compliance boards. (Measurement Report)**

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**SI-2009-02-004**

## ■ Purpose

- Show FCI's SFP+ board side connector 10099099-111LF performance compared to the Appendix C.4 requirement in SFF8431 revision 4.1 when mounted to the MCB and mated with the HCB.

## ■ Conclusion

- All test pass the Appendix C.4 requirements.

## ■ Differential Insertion Loss

### ■ Minimum Limit

$$\text{SDDxx(dB)} \leq (-0.012 - 0.694 \times \sqrt{f} - 0.127 \times 0.127 \times f)$$

f in GHz from 0.01 to 5.5

$$\text{SDDxx(dB)} \leq 0.75 - 0.65 \times f$$

f in GHz from 5.5 to 11.1

### ■ Maximum Limit

$$\text{SDDxx(dB)} \leq 0.0915 - 0.549 \times \sqrt{f} - 0.101 \times f$$

f in GHz from 0.01 to 11.1

## ■ Differential Return Loss

### ■ Module Compliance Board side

$$\text{SDDxx(dB)} \leq -20 + 2.75 \times f$$

f in GHz from 0.01 to 2

$$\text{SDDxx(dB)} \leq -14.5$$

f in GHz from 2 to 5

$$\text{SDDxx(dB)} \leq -23.25 + 8.75 \times (f/5)$$

f in GHz from 5 to 11.1

### ■ Host Compliance Board side

$$\text{SDDxx(dB)} \leq 20 + 2 \times f$$

f in GHz from 0.01 to 2.5

$$\text{SDDxx(dB)} \leq -15$$

f in GHz from 5 to 11.1

## ■ Maximum Common Mode Response

$$\text{SCCxx(dB)} \leq -12 + 2.8 \times f$$

f in GHz from 0.01 to 2.5

$$\text{SCCxx(dB)} \leq -5.2 + 0.08 \times f$$

f in GHz from 2.5 to 15

## ■ Maximum Differential to Common Mode Response

$$\text{SCDxx(dB)} \leq -30 + 2.91 \times f$$

f in GHz from 0.01 to 5.5

$$\text{SCDxx(dB)} \leq -14$$

f in GHz from 5.5 to 15

## ■ Maximum Differential NEXT Response

$$\text{NEXT(dB)} \leq -50$$

f in GHz from 0.01 to 4

$$\text{NEXT(dB)} \leq -70 + x \times f$$

f in GHz from 4 to 8

$$\text{NEXT(dB)} \leq -30$$

f in GHz from 8 to 15

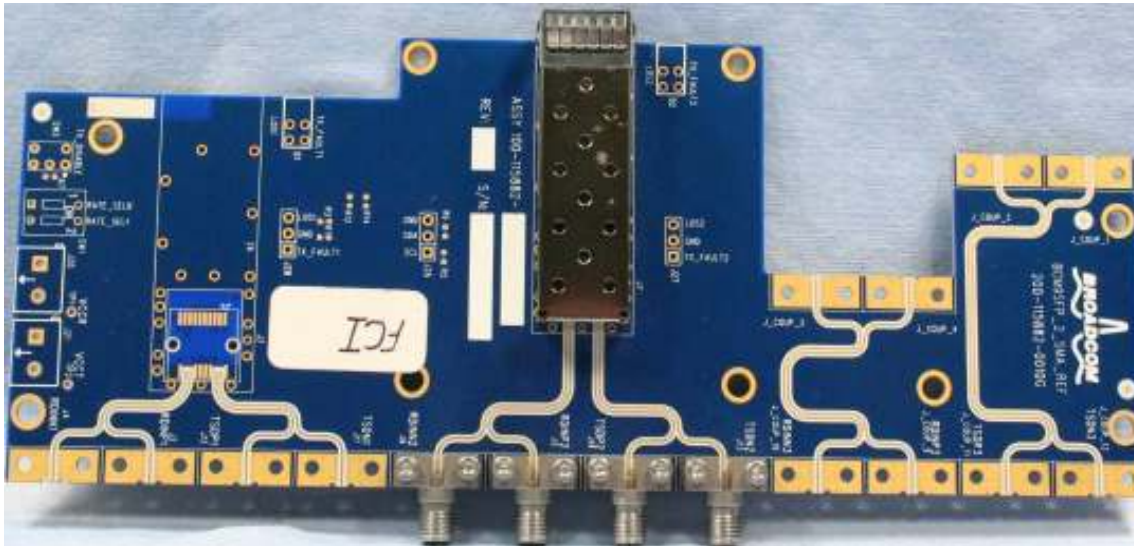
- Module compliance board, and host compliance board used to complete the required testing as callout in SFF-8431.
- The Gerber file for both the Host Compliance Board and the Module Compliance Board are available in SFF-8434.

1. Top Layer	Signal	17 $\mu\text{m}$ /0.5 oz Copper + 1.25 $\mu\text{m}$ Nickel + 2.5 $\mu\text{m}$ Gold
0.168 mm / 6.6 mils Rogers RO4350B		
2. Layer	Vee	17 $\mu\text{m}$ /0.5 oz Copper
0.382 mm / 15 mils FR4-6		
3. Layer	Vee	34 $\mu\text{m}$ /1 oz Copper
0.076 mm / 3 mils FR-4		
4. Layer	VccR	34 $\mu\text{m}$ /1 oz Copper
0.076 mm / 3 mils FR4-6		
5. Layer	Vee	34 $\mu\text{m}$ /1 oz Copper
0.076 mm / 3 mils FR4-6		
6. Layer	VccT	34 $\mu\text{m}$ /1 oz Copper
0.076 mm / 3 mils FR4-6		
7. Layer	Vee	34 $\mu\text{m}$ /1 oz Copper
0.076 mm / 3 mils FR4-6		
8. Layer	Signal	34 $\mu\text{m}$ /1 oz Copper
0.382 mm / 15 mils FR4-6		
9. Layer	Vee	17 $\mu\text{m}$ / 0.5 oz Copper
0.168 mm / 6.6 mils Rogers RO 4350B		
10. Bottom Layer	Signal	17 $\mu\text{m}$ Cu / 0.5 oz Copper+ 1.25 $\mu\text{m}$ Nickel + 0.25 $\mu\text{m}$ Gold

## Module Compliance Board stack-up

1. Top Layer	Signal	17 $\mu\text{m}$ /0.5 oz Copper plated to 1 oz min+ 1.25 $\mu\text{m}$ Nickel + 2.5 $\mu\text{m}$ Gold
0.168 mm / 6.6 mils Rogers RO4350B		
2. Layer	Vee	34 $\mu\text{m}$ /1 oz Copper
0.14 mm / 5.5 mils FR4-6		
3. Layer	Signal 1	17 $\mu\text{m}$ /0.5 oz Copper
0.178 mm / 7 mils FR4-6		
4. Layer	Signal 2	17 $\mu\text{m}$ /0.5 oz Copper
0.14 mm / 5.5 mils FR4-6		
5. Layer	Power	34 $\mu\text{m}$ /1 oz Copper
0.168 mm / 6.6 mils Rogers RO4350B		
6. Bottom Layer	Signal	17 $\mu\text{m}$ /0.5 oz Copper plated to 1 oz min + 1.25 $\mu\text{m}$ Nickel + 0.25 $\mu\text{m}$ Gold

## Host Compliance Board stack-up



FCI Module Compliance Board



Host Compliance board

