Signal Integrity Report: 3M™ Wire-to-Board System, 450 Series
Rev. 1.0  2/6/14
Tested Samples

- **3M™ Round Conductor Flat Cable varieties tested**
  - 3M™ Round Conductor Flat Cable, 3447 Series – PVC Flat Ribbon
  - 3M™ Round Conductor Flat Cable, 3749 Series – TPE Flat Ribbon
  - 3M™ Pleated Foil Shielded Cable, 90201 Series

- **Lengths tested**
  - 0.33 m (12 inches)
  - 1.00 m (39.4 inches)

- **Header Tail style**
  - Thru-hole solder

- Two different configurations tested
  - Configuration 4A – Differential Pairs
  - Configuration 5A – Single Ended Signals

- All positions colored in grey are ground
Differential NEXT

- **0.33 m Cable**
  - All three cable types exhibit peak diff. NEXT between -13 and -12 dB below 2 GHz

- **1 m Cable**
  - 3M™ Pleated Foil Shielded Cable, 90201 Series exhibits the lowest crosstalk below 2 GHz peaking at -13.8 dB
  - 3M™ Round Conductor Flat Cable, 3749 Series is the worst performer peaking at -9 dB

![Graph showing 0.33 m (12 in.) Differential NEXT](image)

![Graph showing 1 m (39.4 in.) Differential NEXT](image)
Differential FEXT

- **0.33 m Cable**
  - 3M™ Round Conductor Flat Cables, 3447 and 3749 Series each exhibit FEXT below -10 dB below 2 GHz
  - 3M™ Pleated Foil Shielded Cable, 90201 Series exhibits peak FEXT below -20 dB below 2 GHz

- **1 m Cable**
  - 3447 Series Cable exhibits and FEXT below -10 dB below 2 GHz
  - 3749 Series Cable exhibits and FEXT below -9 dB below 2 GHz
  - 90201 Series Cable exhibits peak FEXT below -18 dB below 2 GHz

**0.33 m (12 in.) Diff. FEXT**

**1.0 m (39.4 in.) Diff. FEXT**
Single Ended NEXT

- **0.33 m Cable**
  - 3M™ Round Conductor Flat Cable, 3447 and 3749 Series each exhibit NEXT below -8 dB below 2 GHz
  - 3M™ Pleated Foil Shielded Cable, 90201 Series exhibits peak NEXT below -13 dB below 2 GHz

- **1 m Cable**
  - 3447 Series Cable exhibits and NEXT below -8 dB below 2 GHz
  - 3449 Series Cable exhibits and NEXT below -7 dB below 2 GHz
  - 90201 Series Cable exhibits peak NEXT below -14 dB below 2 GHz

![0.33 m (12 in.) SE NEXT](image1)

![1 m (39.4 in.) SE NEXT](image2)
Single Ended FEXT

- **0.33 m Cable**
  - 3M™ Round Conductor Flat Cable, 3447 Series exhibits peak FEXT below -7 dB below 2 GHz
  - 3M™ Round Conductor Flat Cable, 3749 Series exhibits peak FEXT below -6 dB below 2 GHz
  - 3M™ Pleated Foil Shielded Cable, 90201 Series exhibits peak FEXT below -15 dB below 2 GHz

- **1 m Cable**
  - 3447 Series Cable exhibits FEXT below -7 dB below 2 GHz
  - 3449 Series Cable exhibits FEXT below -6 dB below 2 GHz
  - 90201 Series Cable exhibits peak FEXT below -14 dB below 2 GHz
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