

Signal Integrity Report: 3M™ Wire-to-Board System, 450 Series

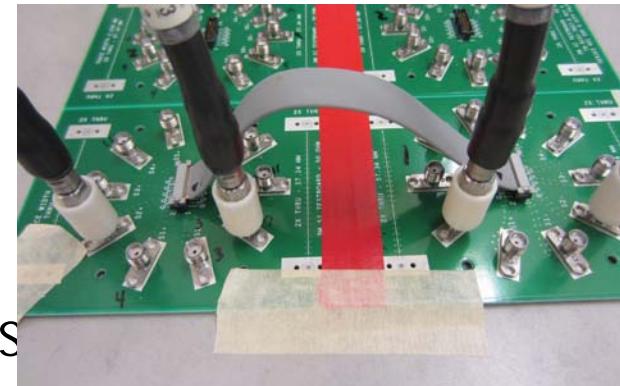
Rev. 1.0 2/6/14

Integrated Signal Management Solutions



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

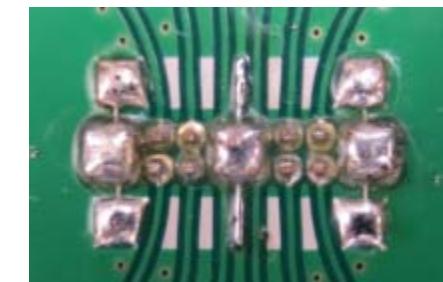


- Lengths tested
 - 0.33 m (12 inches)
 - 1.00 m (39.4 inches)
- Header Tail style
 - Thru-hole solder

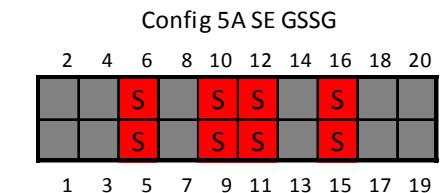
- Two different configurations tested
 - Configuration 4A – Differential Pairs
 - Configuration 5A – Single Ended Signals
- All positions colored in grey are ground

Config 4A Bal GSSSG																			
2	4	6	8	10	12	14	16	18	20	1	3	5	7	9	11	13	15	17	19
G	G	S-	S-	G	G	S-	S-	G	G										
G	G	S+	S+	G	G	S+	S+	G	G										

Red = Signals
Gray = Grounds



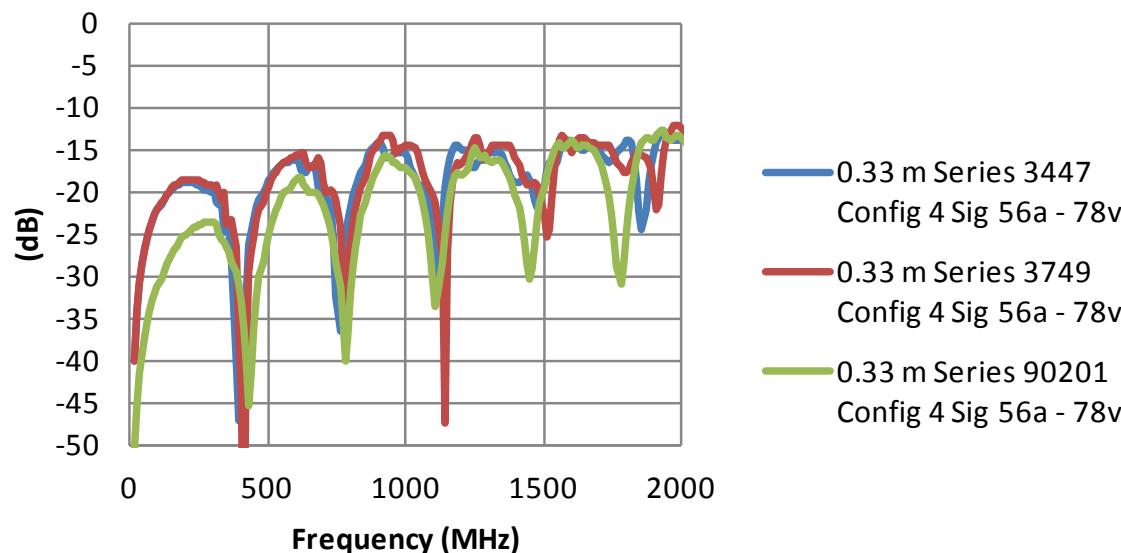
Config 5A SE GSSG																			
2	4	6	8	10	12	14	16	18	20	1	3	5	7	9	11	13	15	17	19
S	S	S	S	S	S	S	S	S	S										
S	S	S	S	S	S	S	S	S	S										



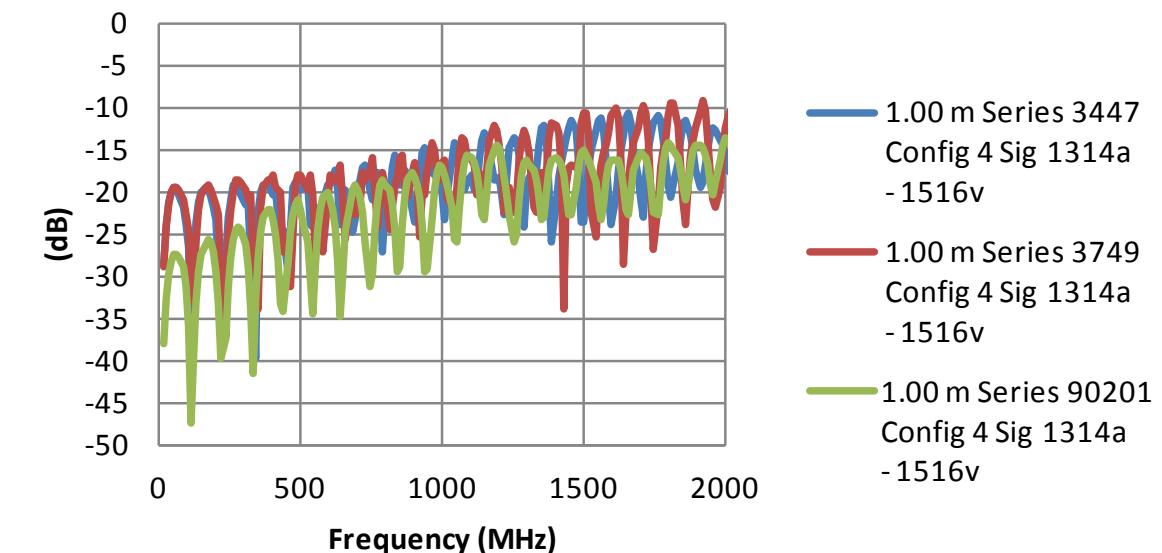
Differential NEXT

- 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

0.33 m (12 in.) Diff. NEXT



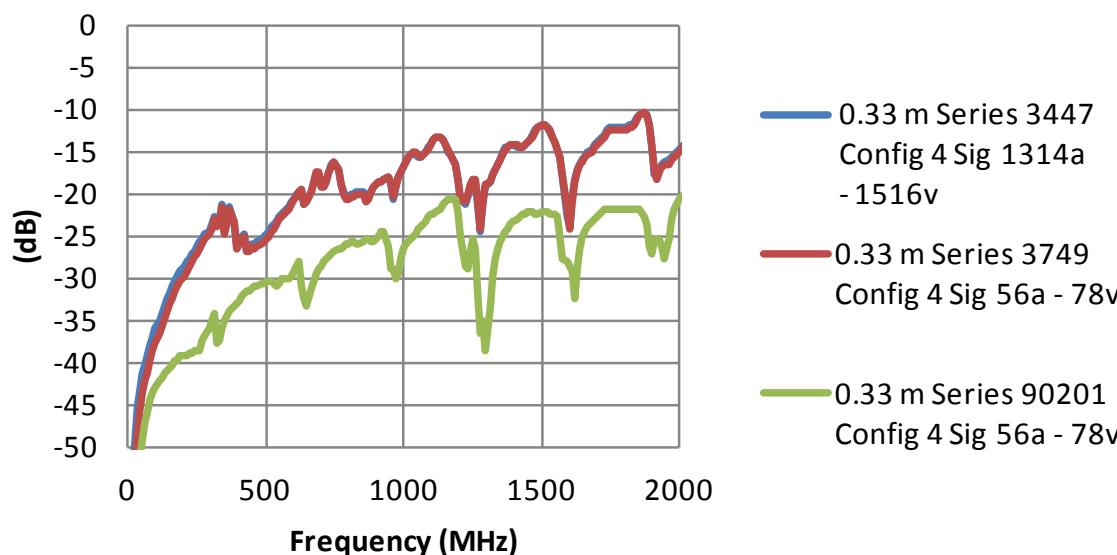
1 m (39.4 in.) Diff. NEXT



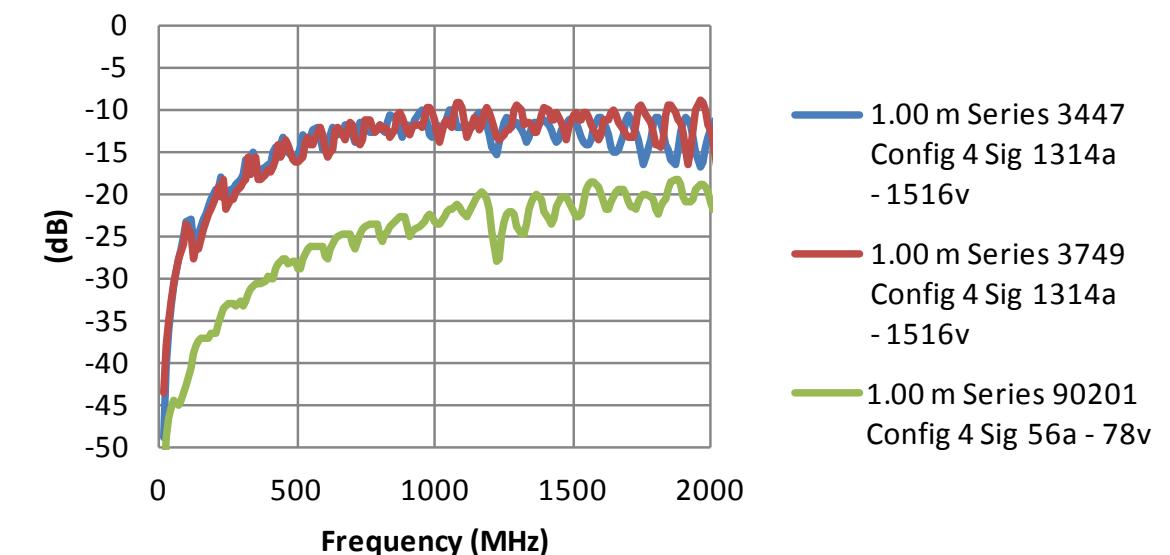
Differential FEXT

- 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



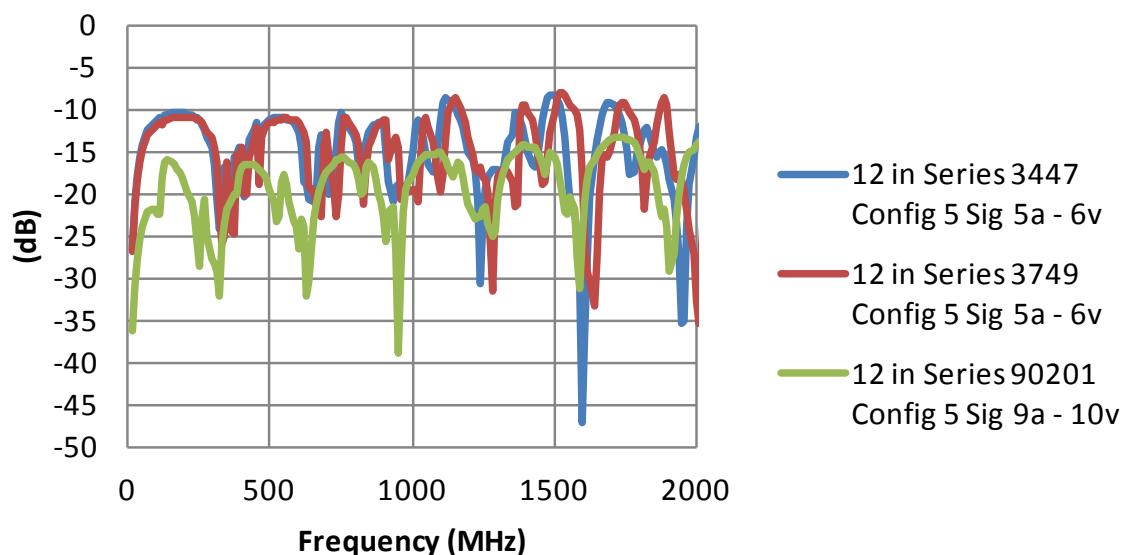
1.0 m (39.4 in.) Diff. FEXT



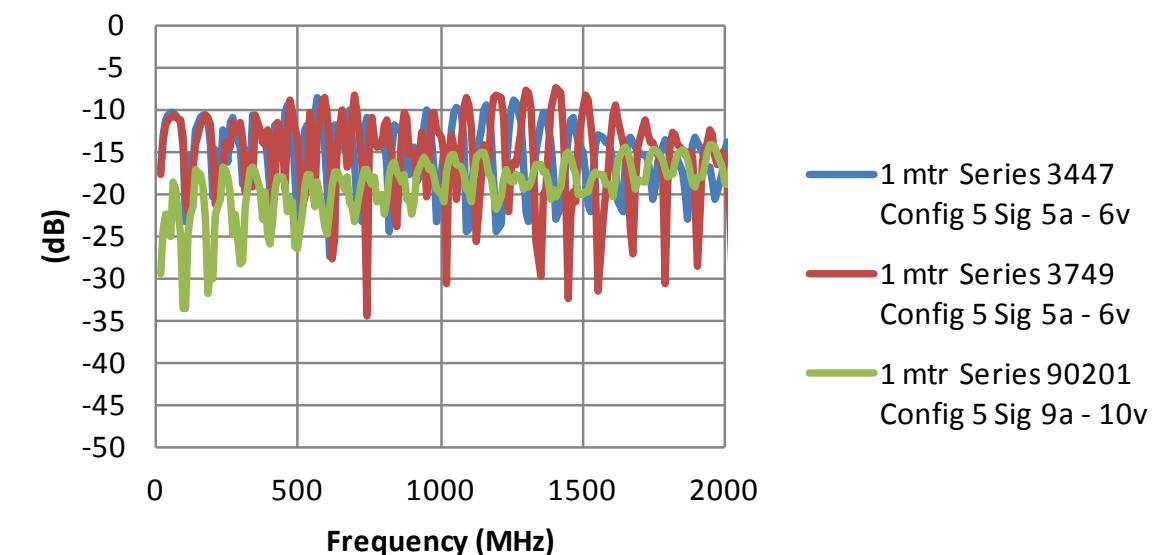
Single Ended NEXT

- 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



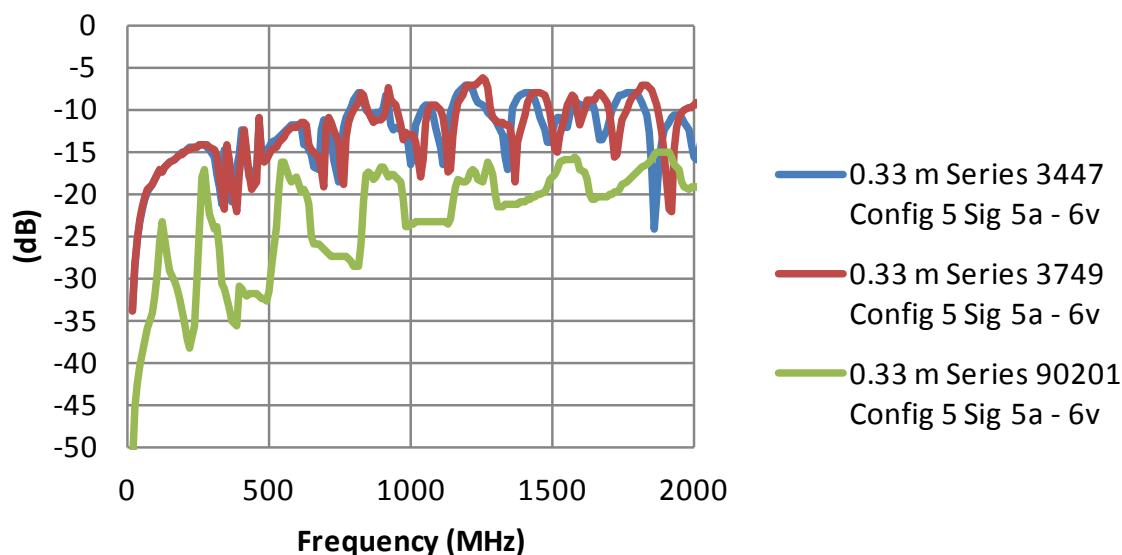
1 m (39.4 in.) SE NEXT



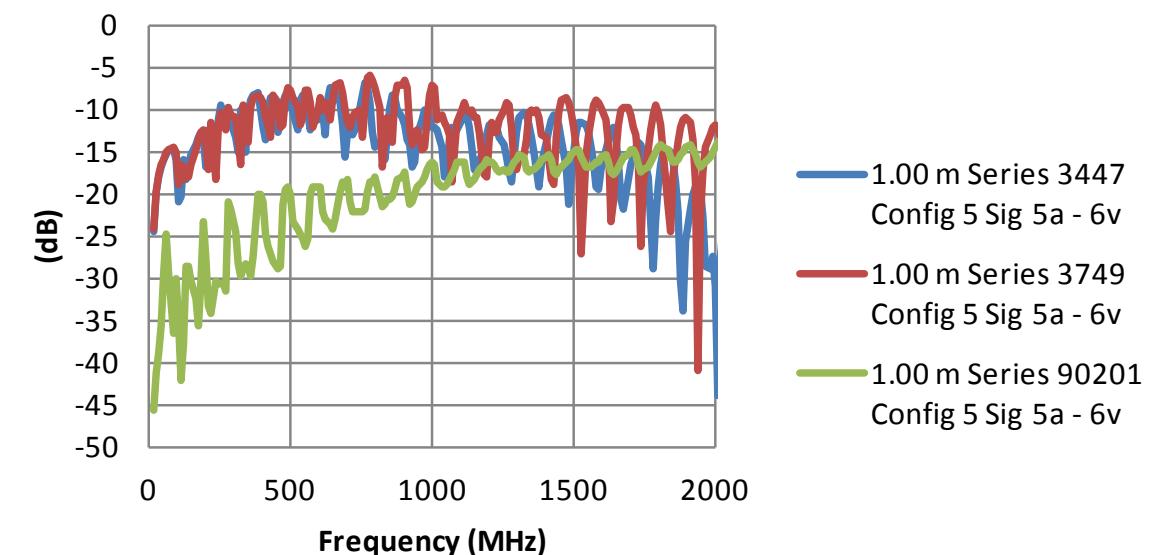
Single Ended FEXT

- 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 and FEXT below -7 dB below 2 GHz
 - 3449 Series Cable exhibits and FEXT below -6 dB below 2 GHz
 - 90201 Series Cable exhibits peak FEXT below -14 dB below 2 GHz

0.33 m (12 in.) SE FEXT



1 m (39.4 in.) SE FEXT



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