

DCM Test Report

| | | |
|--------------------------------|-------------------------------------|---|
| Cable Type : 4x2x24 x PE/PE | Factory Number : PHOENIX | Data File Name : DA079660.D3S |
| Cable I.D. : U/UTP#24X4P CABLE | Order Number : 1143 BLACK 200235871 | Specification File : SC6E-550-305M.S3S |
| Temperature : 25.00 °C | Relative Humidity : 50 % | Test Date/Time : 02/10/2020 10:22:45 PM |
| Length : 305.00 m | Number of Pairs to Test : 4 | Operator : X 180730SM014005/R1 |
| Starting Position : 1 | | Analyzer Type : ENA |

Pass - Fail Test Certificate - 4 Pairs

High Frequency

| Test Type | Test Result |
|--|-------------|
| Input Impedance (Zin)(Ohms)(Terminated) | OK |
| Return Loss (RL)(dB) | OK |
| Insertion Loss (IL)(Curve Fit)(dB/100.0 m)@20C | OK |
| Near End Crosstalk Loss (NEXT)(dB) | OK |
| Power Sum NEXT(PSNEXT)(dB) | OK |

Low Frequency

| Test Type | Test Result |
|---|-------------|
| Conductor Resistance(Ohms/100.0 m)@20C | OK |
| Resistance Unbalance(%) | OK |
| Mutual Capacitance(nF/100.0 m)@1000Hz | OK |
| Cap. Unbalance to Ground(pF/100.0 m)@1000Hz | OK |

| | | |
|------------|-----------|-------|
| Signature: | Approved: | Date: |
|------------|-----------|-------|

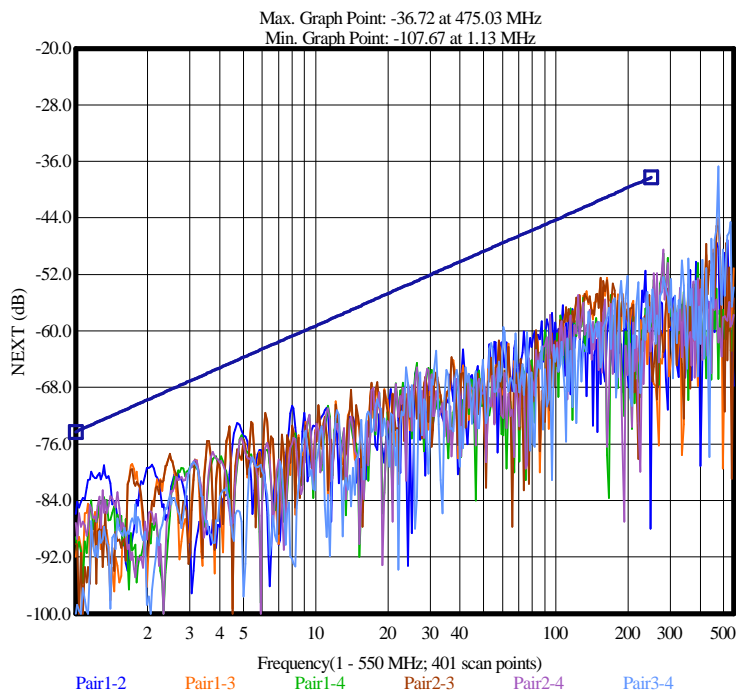
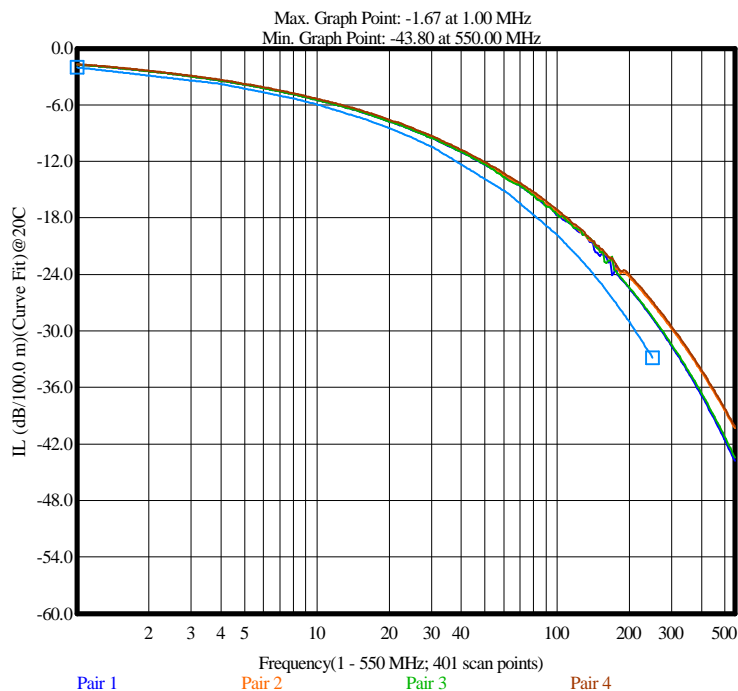
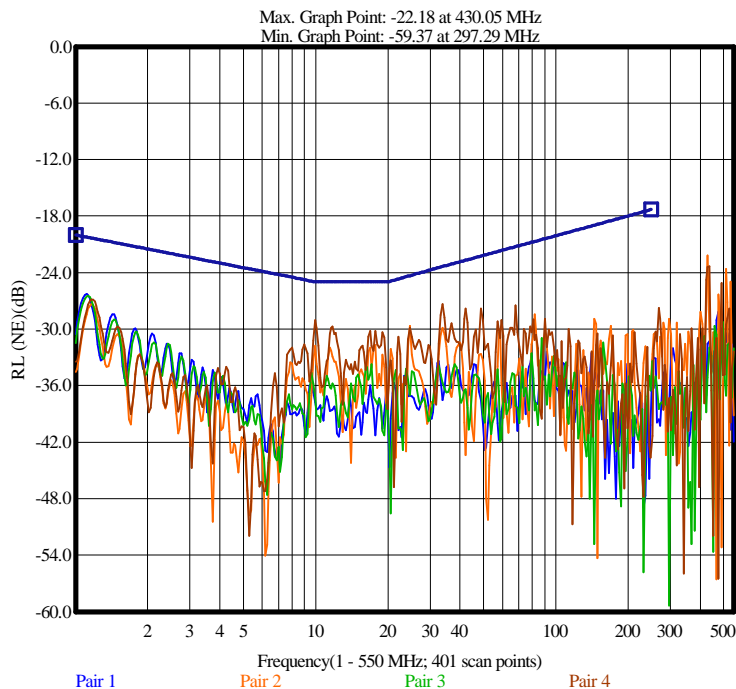
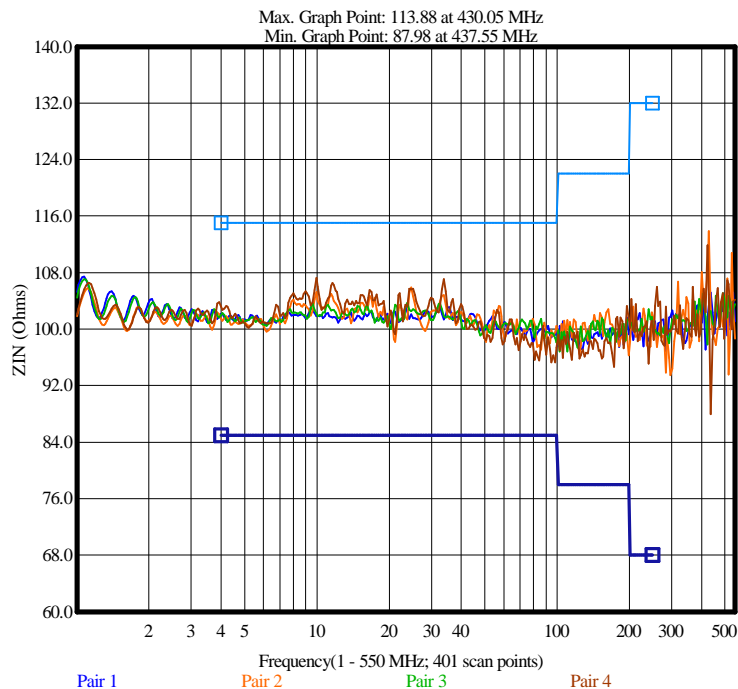
DCM Test Report

| | | |
|--------------------------------|-------------------------------------|---|
| Cable Type : 4x2x24 x PE/PE | Factory Number : PHOENIX | Data File Name : DA079660.D3S |
| Cable I.D. : U/UTP#24X4P CABLE | Order Number : 1143 BLACK 200235871 | Specification File : SC6E-550-305M.S3S |
| Temperature : 25.00 °C | Relative Humidity : 50 % | Test Date/Time : 02/10/2020 10:22:45 PM |
| Length : 305.00 m | Number of Pairs to Test : 4 | Operator : X 180730SM014005/R1 |
| Starting Position : 1 | | Analyzer Type : ENA |

Worst Case Summary

High Frequency

| Test Type | Specification | Measured (Pair) | Margin | @ Frequency (MHz) | Test Result |
|------------------------------------|---------------|-------------------|--------|-------------------|-------------|
| Input Impedance (Zin)(Terminated) | 85.00 (Min) | 95.29 (Pair 4) | 10.29 | 95.00 | Passed |
| Input Impedance (Zin)(Terminated) | 115.00 (Max) | 107.26 (Pair 4) | 7.74 | 9.94 | Passed |
| Return Loss (RL) | 23.36 (Min) | 27.34 (Pair 4) | 3.98 | 33.86 | Passed |
| Insertion Loss (IL)(Curve Fit)@20C | 2.04 (Max) | 1.75 (Pair 1) | 0.29 | 1.02 | Passed |
| Near End Crosstalk Loss (NEXT) | 72.51 (Min) | 79.05 (Pairs 1-2) | 6.54 | 1.31 | Passed |
| Power Sum NEXT(PSNEXT) | 73.29 (Min) | 78.02 (Pair 1) | 4.73 | 1.17 | Passed |

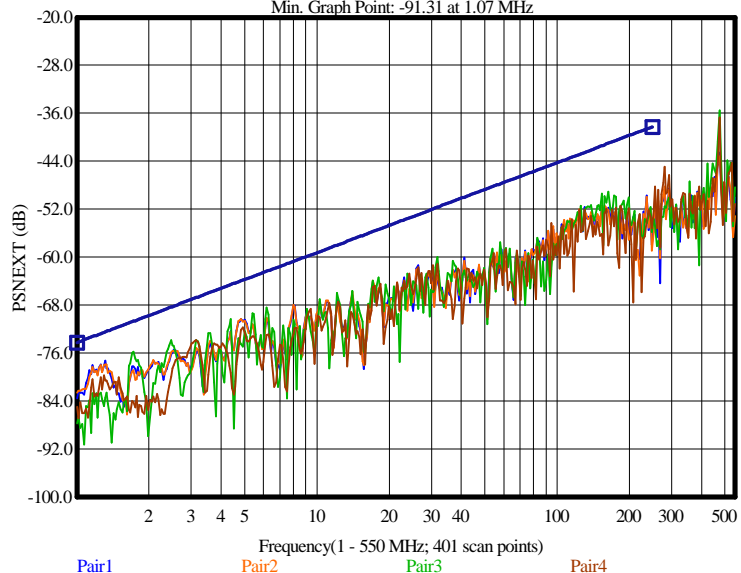


N/A = Not Applicable.
 --- = Disable/Bypassed Pair.

* = Measured value out of spec.
 xxx = No entry.

*** = Measured value is invalid.

Max. Graph Point: -35.49 at 475.03 MHz
Min. Graph Point: -91.31 at 1.07 MHz



N/A = Not Applicable.
--- = Disable/Bypassed Pair.

* = Measured value out of spec.
xxx = No entry.

*** = Measured value is invalid.

Worst Case Summary

Low Frequency

| Statistical Parameter | Maximum | | Minimum | | Average Maximum | | Standard Deviation | | Result |
|---|------------|----------|------------|----------|-----------------|----------|--------------------|----------|--------|
| | Spec Limit | Measured | Spec Limit | Measured | Spec Limit | Measured | Spec Limit | Measured | |
| Conductor Resistance(Ohms/100.0 m)@20C | 9.38 | 7.45 | xxx | 7.14 | xxx | 7.30 | xxx | 0.116 | Passed |
| Resistance Unbalance(%) | 5.00 | 0.87 | xxx | 0.55 | xxx | 0.69 | xxx | 0.137 | Passed |
| Mutual Capacitance(nF/100.0 m)@1000Hz | 5.60 | 5.06 | xxx | 4.84 | xxx | 4.96 | xxx | 0.091 | Passed |
| Cap. Unbalance to Ground(pF/100.0 m)@1000Hz | 330.00 | 35.70 | xxx | 0.37 | xxx | 16.41 | xxx | 15.425 | Passed |

Detail: Resistance/Capacitance Measurement -Normalized

| Test Types | Conductor Resistance Ra @20C | Conductor Resistance Rb @20C | Resistance Unbalance | Mutual Capacitance @1000 Hz | Capacitance Unbalance to Ground @1000 Hz | Test Result |
|------------|------------------------------|------------------------------|----------------------|-----------------------------|--|-------------|
| Unit | Ohms/100.0 m | Ohms/100.0 m | % | nF/100.0 m | pF/100.0 m | |
| Max Spec | 9.38 | 9.38 | 5.00 | 5.60 | 330.00 | |
| Min Spec | xxx | xxx | xxx | xxx | xxx | |
| Pair 1 [1] | 7.45 | 7.41 | 0.57 | 5.06 | -27.38 | Passed |
| Pair 2 [2] | 7.22 | 7.18 | 0.55 | 4.90 | -0.37 | Passed |
| Pair 3 [3] | 7.41 | 7.35 | 0.87 | 5.03 | -35.70 | Passed |
| Pair 4 [4] | 7.19 | 7.14 | 0.78 | 4.84 | -2.20 | Passed |

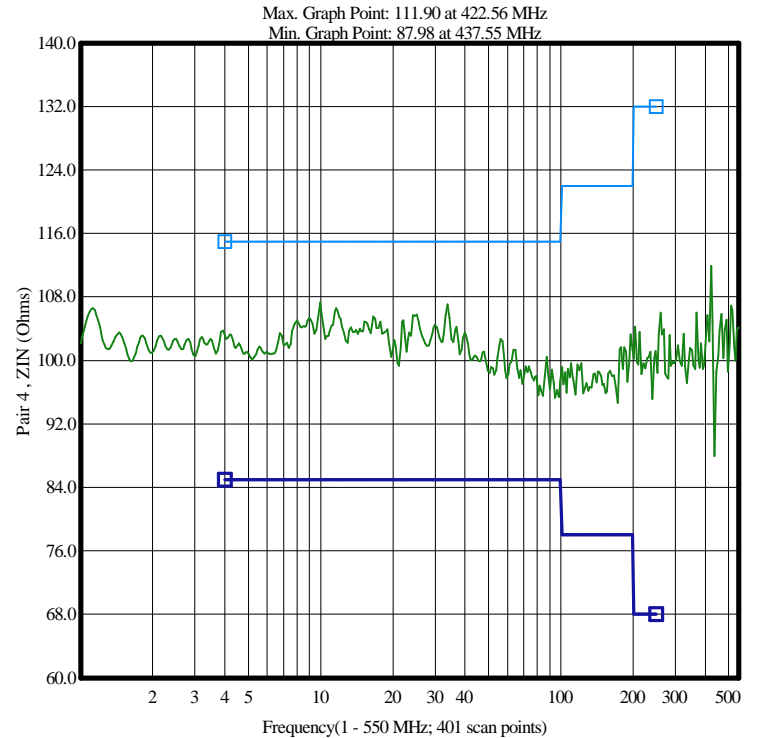
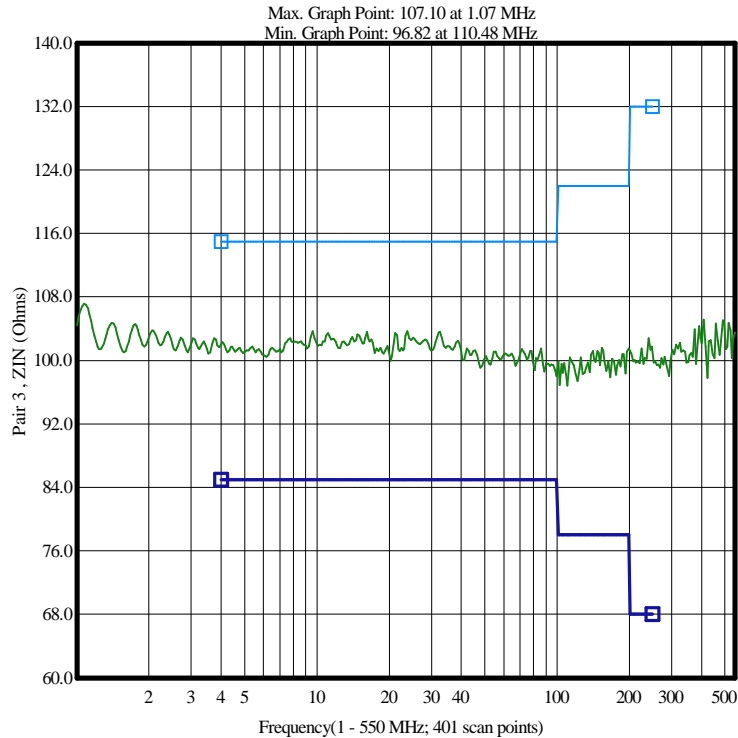
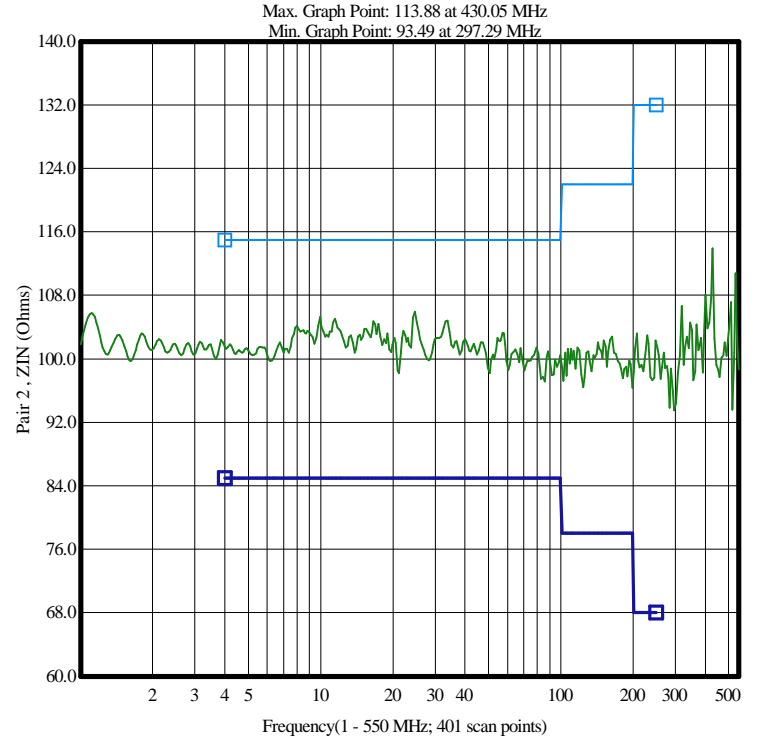
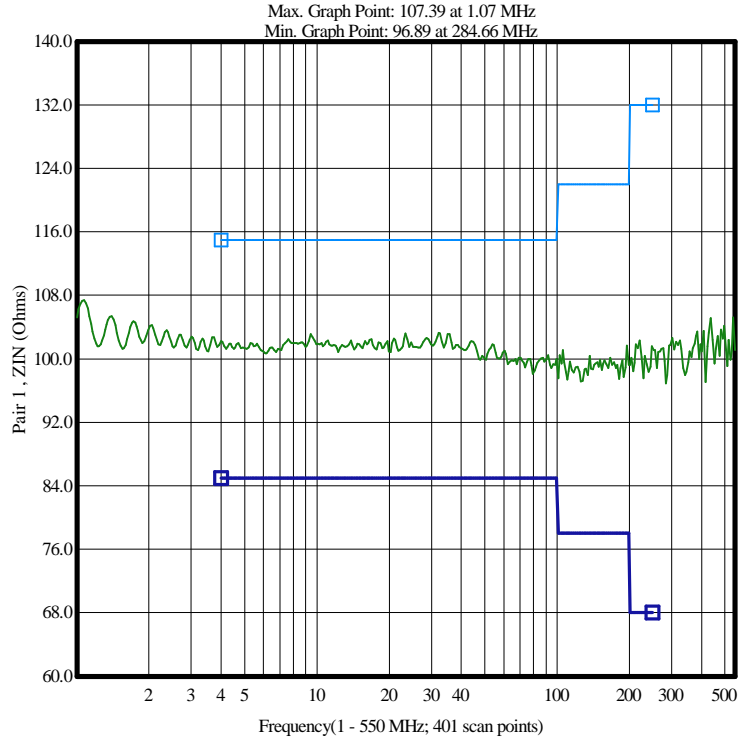
N/A = Not Applicable.
--- = Disable/Bypassed Pair.

* = Measured value out of spec.
xxx = No entry.

*** = Measured value is invalid.

Summary and Graphic: Input Impedance (Zin)(Terminated)

| Pair | Specification | | Measured(Ohms) | | Margin (Ohms) | | @ Frequency (MHz) | | Test Result |
|------------|---------------|---------|----------------|---------|---------------|---------|-------------------|---------|-------------|
| | Minimum | Maximum | Minimum | Maximum | Minimum | Maximum | Minimum | Maximum | |
| Pair 1 [1] | 85.00 | 115.00 | 98.08 | 103.26 | 13.08 | 11.74 | 79.46 | 32.15 | Passed |
| Pair 2 [2] | 85.00 | 115.00 | 97.14 | 105.89 | 12.14 | 9.11 | 85.71 | 24.70 | Passed |
| Pair 3 [3] | 85.00 | 115.00 | 98.06 | 103.69 | 13.06 | 11.31 | 99.64 | 23.82 | Passed |
| Pair 4 [4] | 85.00 | 115.00 | 95.29 | 107.26 | 10.29 | 7.74 | 95.00 | 9.94 | Passed |



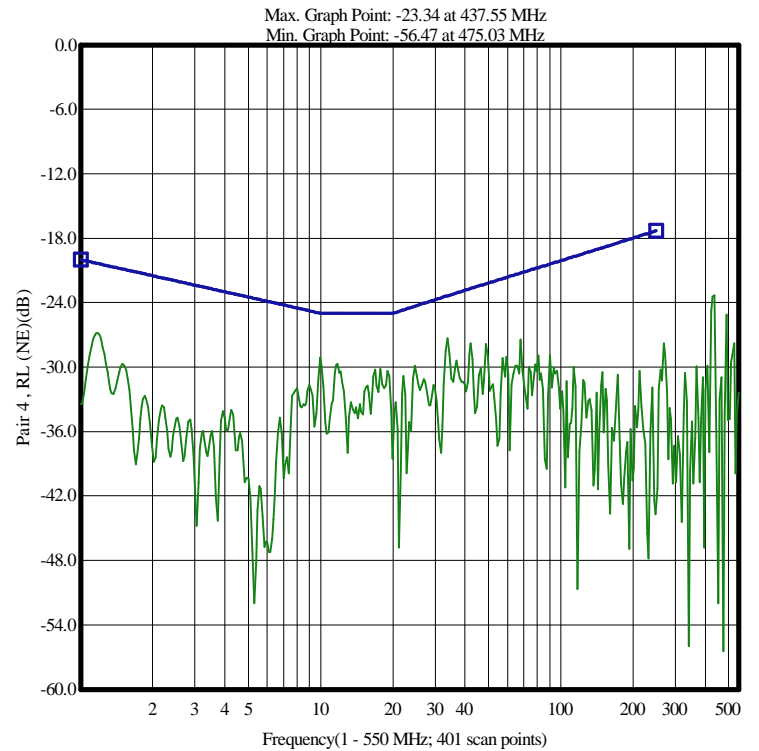
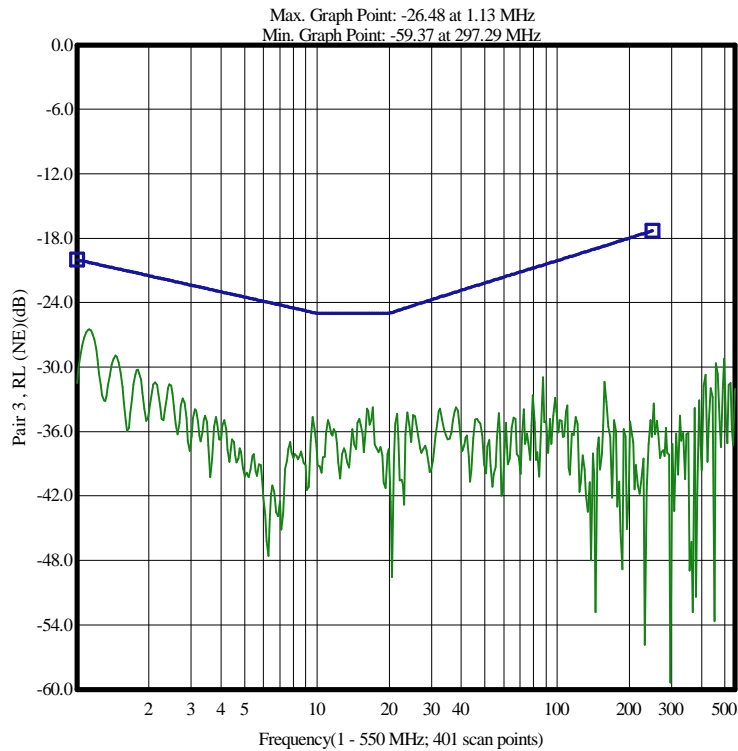
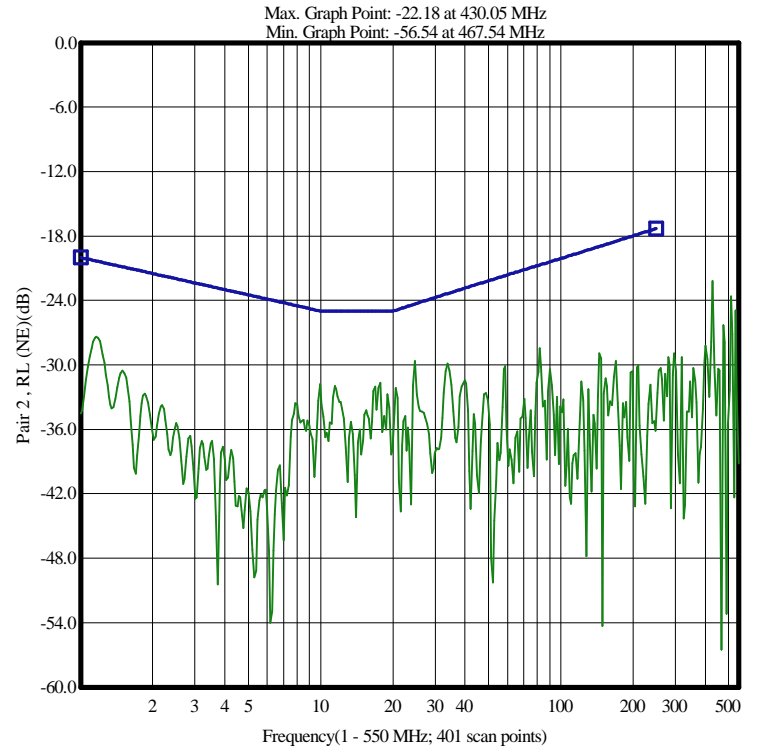
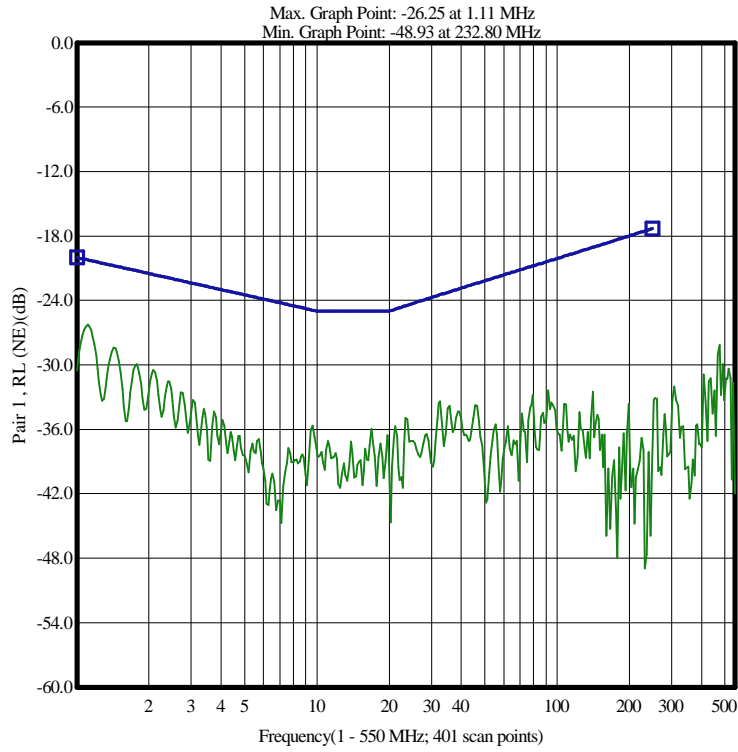
N/A = Not Applicable.
--- = Disable/Bypassed Pair.

* = Measured value out of spec.
xxx = No entry.

*** = Measured value is invalid.

Summary and Graphic: Return Loss (RL)

| Pair | Spec (Min)(dB) | Measured(dB) | Margin (dB) | @ Frequency (MHz) | Test Result |
|------------|----------------|--------------|-------------|-------------------|-------------|
| Pair 1 [1] | 20.23 | 26.25 | 6.02 | 1.11 | Passed |
| Pair 2 [2] | 24.34 | 29.67 | 5.33 | 24.70 | Passed |
| Pair 3 [3] | 20.26 | 26.48 | 6.22 | 1.13 | Passed |
| Pair 4 [4] | 23.36 | 27.34 | 3.98 | 33.86 | Passed |



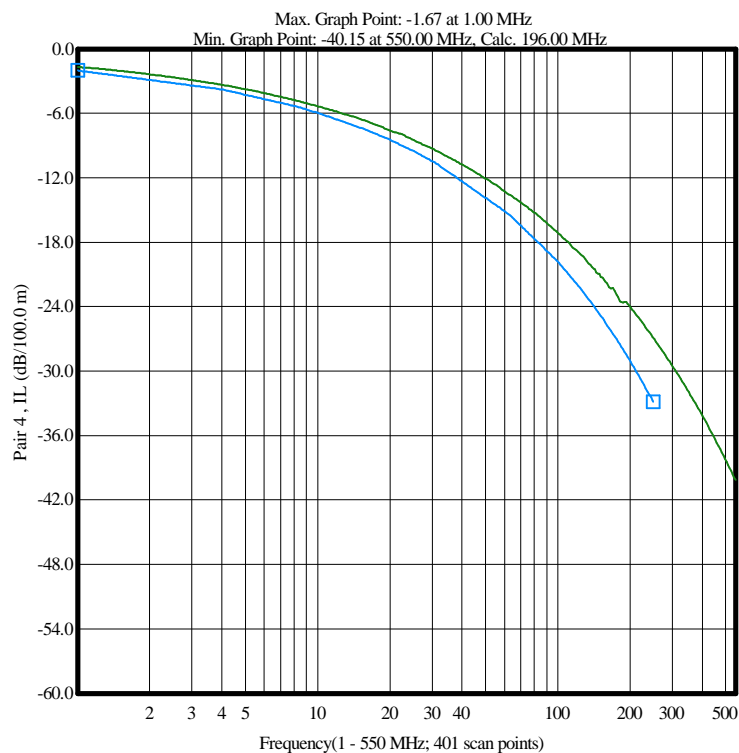
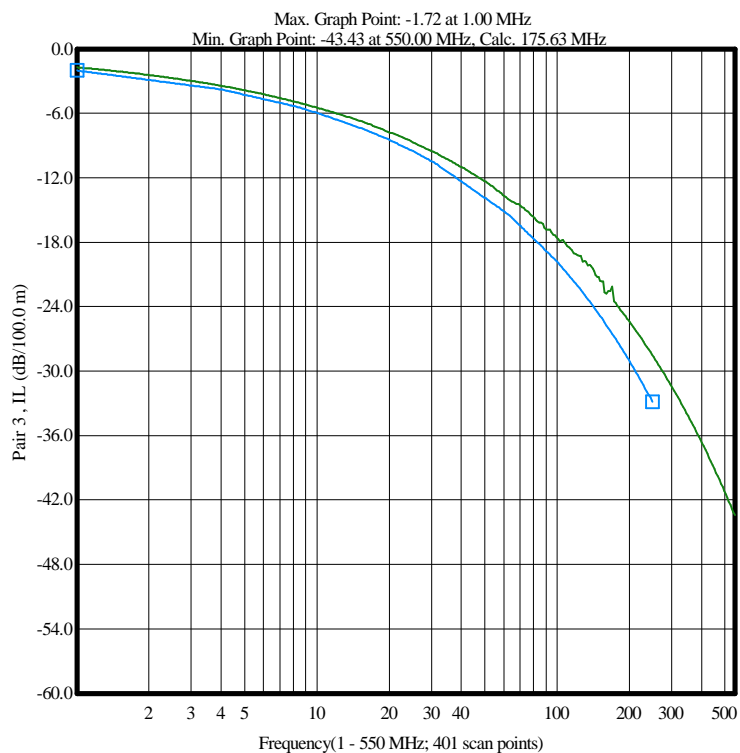
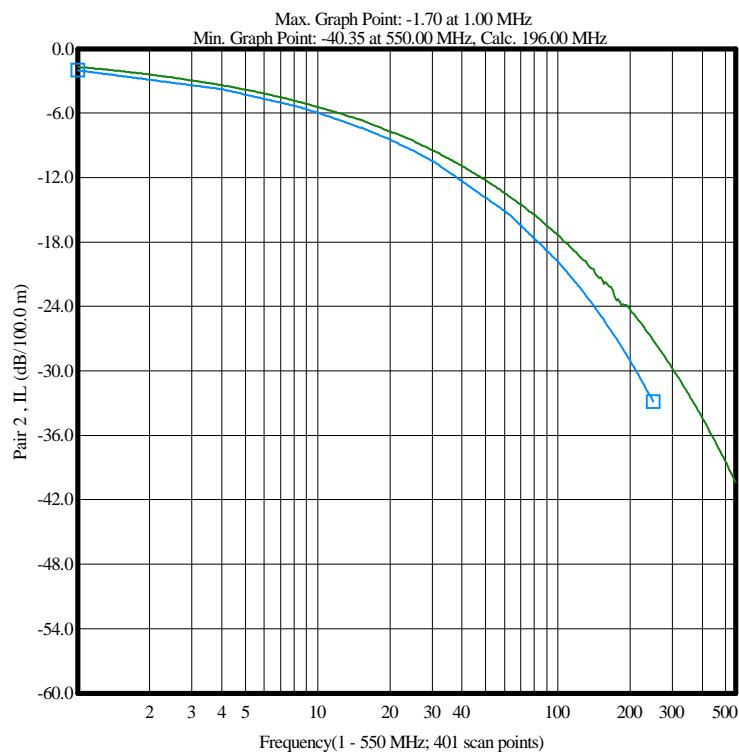
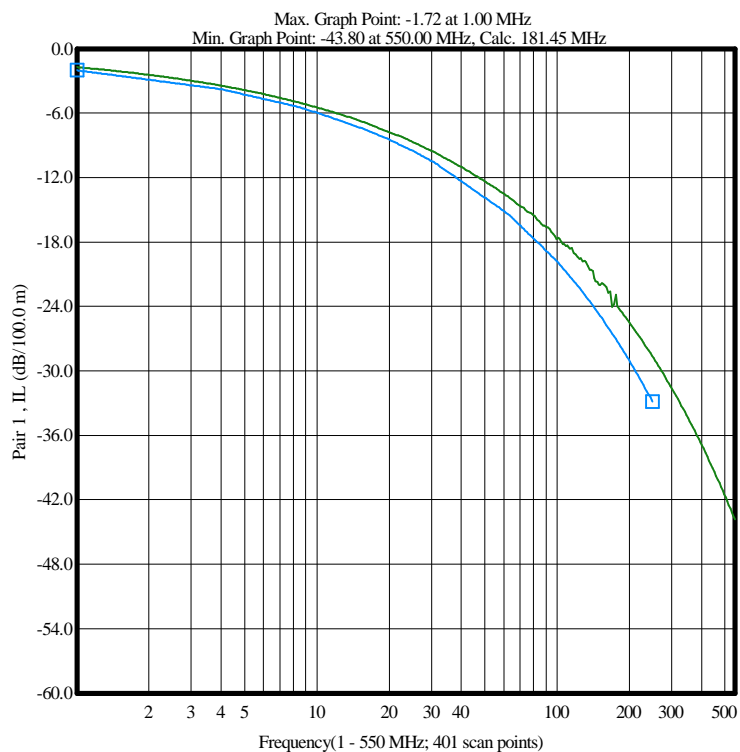
N/A = Not Applicable.
--- = Disable/Bypassed Pair.

* = Measured value out of spec.
xxx = No entry.

*** = Measured value is invalid.

Summary and Graphic: Insertion Loss (IL)(Curve Fit)@20C

| Pair | Spec (Max)(dB/100.0 m) | Measured(dB/100.0 m) | Margin (dB/100.0 m) | @ Frequency (MHz) | Test Result |
|------------|------------------------|----------------------|---------------------|-------------------|-------------|
| Pair 1 [1] | 2.04 | 1.75 | 0.29 | 1.02 | Passed |
| Pair 2 [2] | 2.02 | 1.70 | 0.32 | 1.00 | Passed |
| Pair 3 [3] | 2.02 | 1.72 | 0.30 | 1.00 | Passed |
| Pair 4 [4] | 2.04 | 1.70 | 0.34 | 1.02 | Passed |



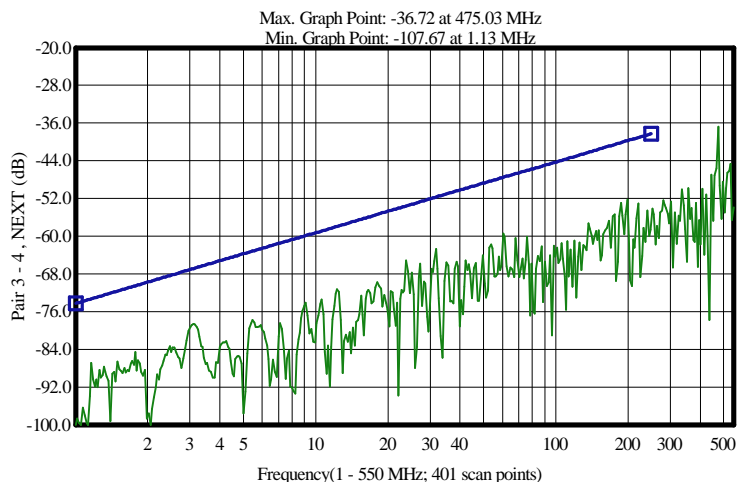
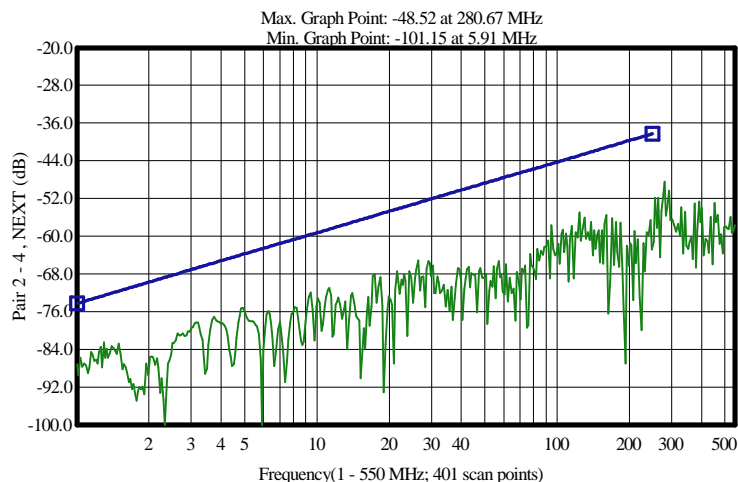
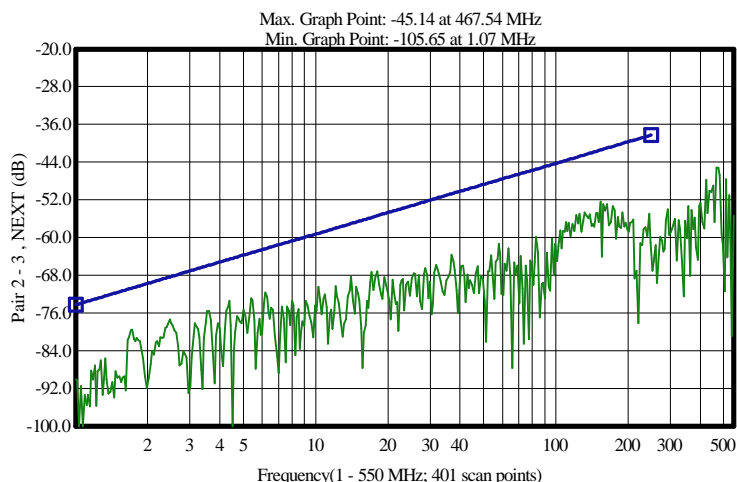
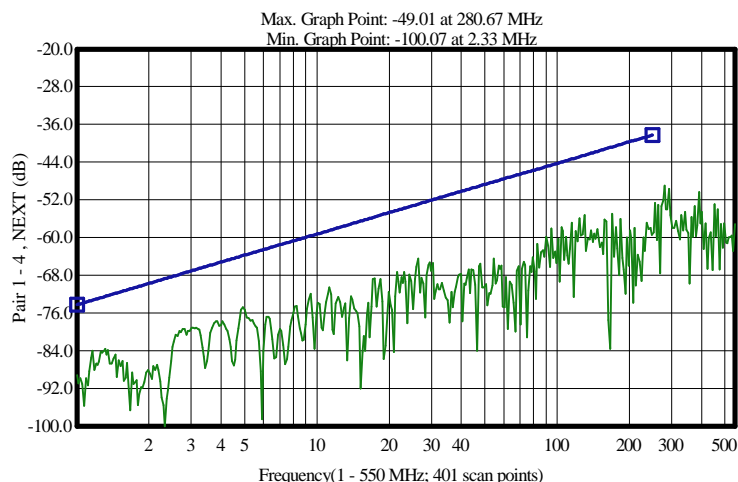
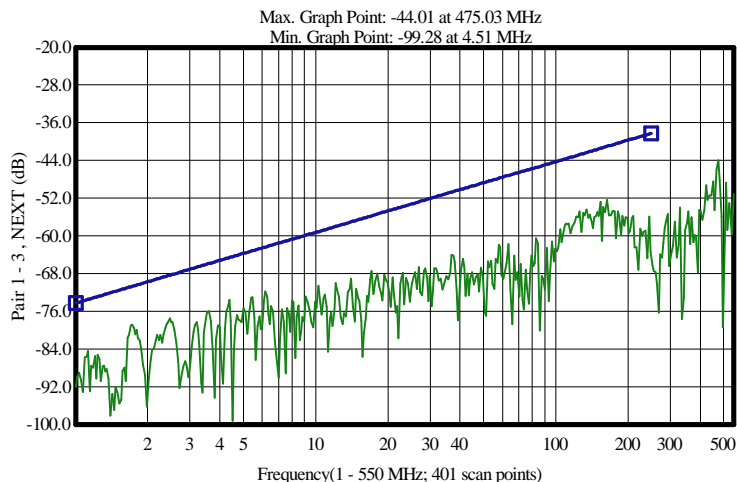
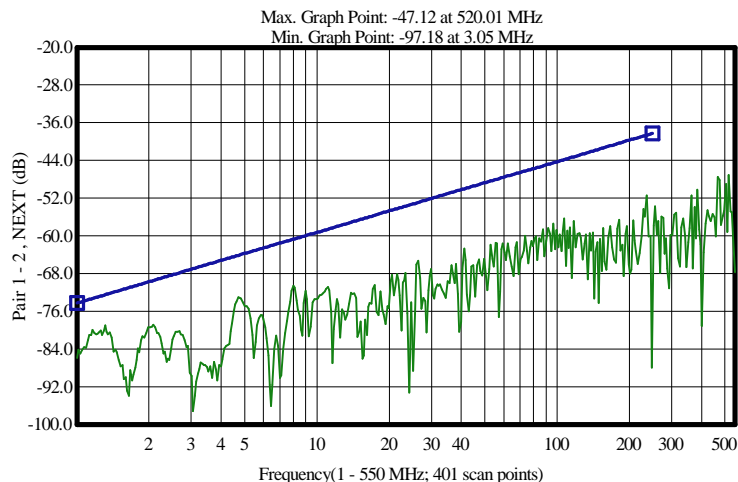
N/A = Not Applicable.
--- = Disable/Bypassed Pair.

* = Measured value out of spec.
xxx = No entry.

*** = Measured value is invalid.

Summary and Graphic: Near End Crosstalk Loss (NEXT)

| Pair | Spec (Min)(dB) | Measured(dB) | Margin (dB) | @ Frequency (MHz) | Test Result |
|------------|----------------|--------------|-------------|-------------------|-------------|
| Pair 1 - 2 | 72.51 | 79.05 | 6.54 | 1.31 | Passed |
| Pair 1 - 3 | 70.72 | 78.87 | 8.15 | 1.72 | Passed |
| Pair 1 - 4 | 73.29 | 84.04 | 10.75 | 1.17 | Passed |
| Pair 2 - 3 | 70.72 | 79.57 | 8.85 | 1.72 | Passed |
| Pair 2 - 4 | 72.61 | 82.57 | 9.96 | 1.29 | Passed |
| Pair 3 - 4 | 51.70 | 62.78 | 11.08 | 31.71 | Passed |



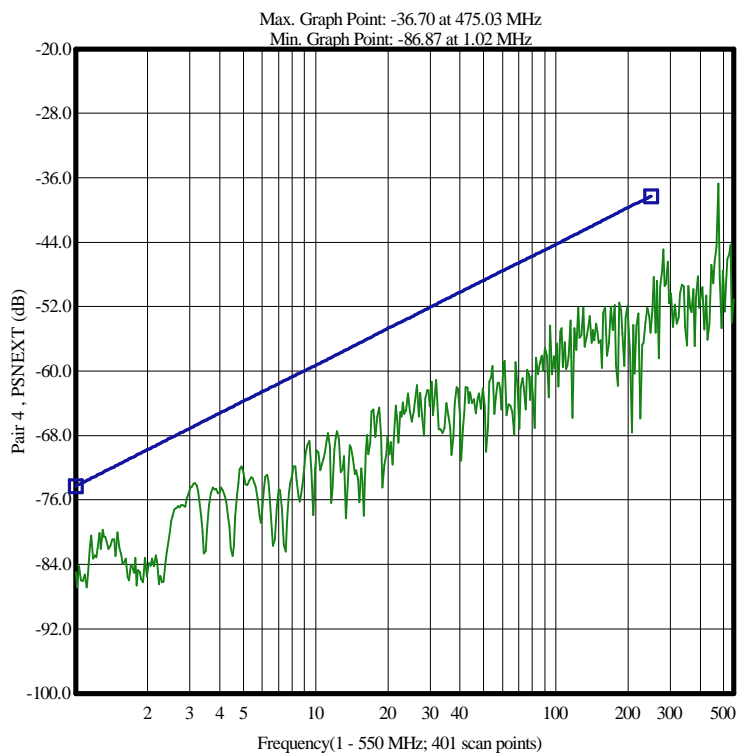
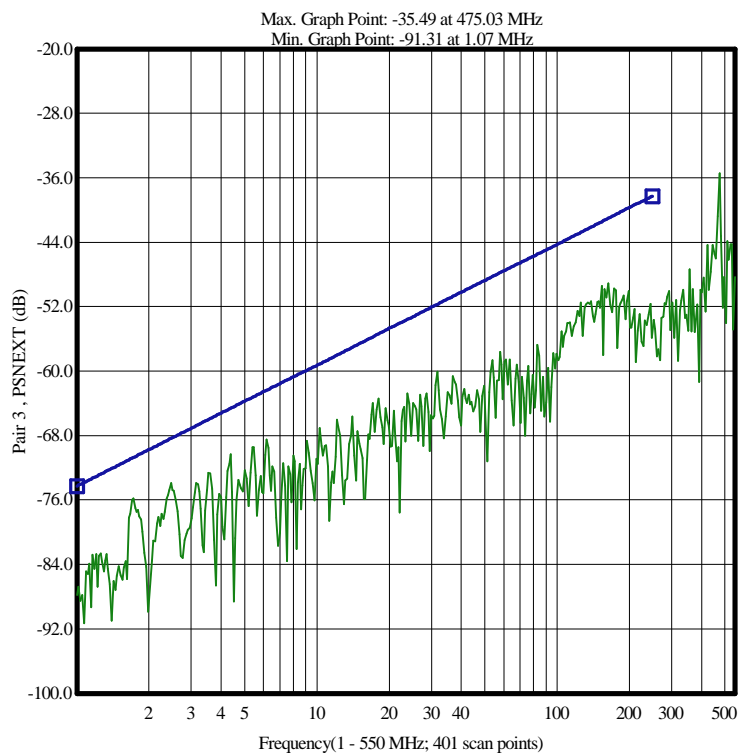
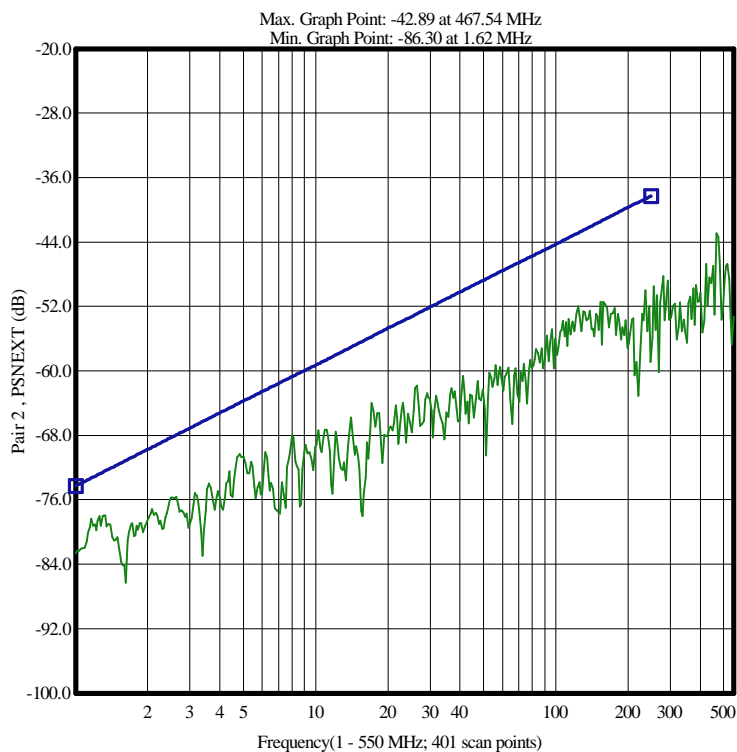
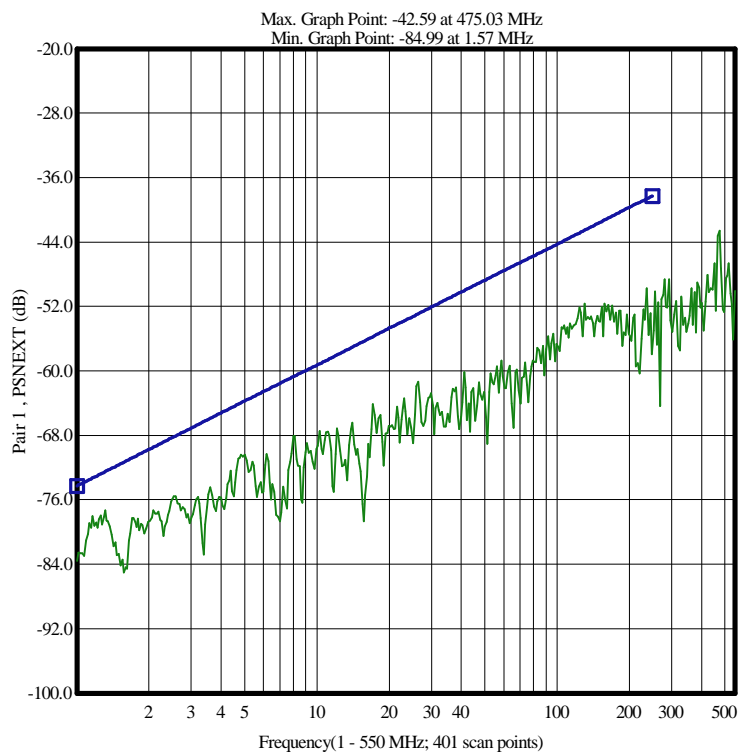
N/A = Not Applicable.
--- = Disable/Bypassed Pair.

* = Measured value out of spec.
xxx = No entry.

*** = Measured value is invalid.

Summary and Graphic: Power Sum NEXT(PSNEXT)

| Pair | Spec (Min)(dB) | Measured(dB) | Margin (dB) | @ Frequency (MHz) | Test Result |
|------------|----------------|--------------|-------------|-------------------|-------------|
| Pair 1 [1] | 73.29 | 78.02 | 4.73 | 1.17 | Passed |
| Pair 2 [2] | 73.29 | 78.34 | 5.05 | 1.17 | Passed |
| Pair 3 [3] | 70.72 | 75.81 | 5.09 | 1.72 | Passed |
| Pair 4 [4] | 66.88 | 73.98 | 7.10 | 3.10 | Passed |



N/A = Not Applicable.
--- = Disable/Bypassed Pair.

* = Measured value out of spec.
xxx = No entry.

*** = Measured value is invalid.

Detail Discrete Frequencies ---Input Impedance (Zin)(Ohms)(Terminated)

| | | | | | | | | | | |
|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Frequency | 4.00 | 8.00 | 10.00 | 16.00 | 20.00 | 25.00 | 31.25 | 62.50 | 99.90 | 100.00 |
| Max Spec | 115.00 | 115.00 | 115.00 | 115.00 | 115.00 | 115.00 | 115.00 | 115.00 | 115.00 | 122.00 |
| Min Spec | 85.00 | 85.00 | 85.00 | 85.00 | 85.00 | 85.00 | 85.00 | 85.00 | 85.00 | 78.00 |
| Pair 1 [1] | 102.20 | 101.98 | 101.82 | 102.06 | 100.93 | 101.68 | 102.15 | 99.37 | 99.56 | 99.41 |
| Pair 2 [2] | 101.42 | 104.08 | 104.81 | 102.95 | 101.92 | 105.00 | 102.60 | 100.61 | 100.18 | 100.08 |
| Pair 3 [3] | 102.01 | 102.28 | 102.06 | 103.07 | 100.99 | 102.73 | 102.24 | 100.61 | 98.36 | 98.47 |
| Pair 4 [4] | 103.11 | 105.01 | 106.78 | 103.81 | 101.35 | 105.69 | 103.00 | 99.90 | 97.68 | 97.79 |

Continue:Input Impedance (Zin)(Ohms)(Terminated)

| | | | | | | | | | | |
|------------|--------|--------|--------|--------|--------|--|--|--|--|--|
| Frequency | 125.00 | 155.00 | 199.90 | 200.00 | 250.00 | | | | | |
| Max Spec | 122.00 | 122.00 | 122.00 | 132.00 | 132.00 | | | | | |
| Min Spec | 78.00 | 78.00 | 78.00 | 68.00 | 68.00 | | | | | |
| Pair 1 [1] | 97.72 | 99.12 | 99.23 | 99.23 | 101.43 | | | | | |
| Pair 2 [2] | 97.07 | 99.83 | 97.00 | 97.07 | 102.02 | | | | | |
| Pair 3 [3] | 99.69 | 101.35 | 101.37 | 101.36 | 101.13 | | | | | |
| Pair 4 [4] | 96.09 | 96.04 | 101.03 | 100.98 | 100.31 | | | | | |

Detail Discrete Frequencies ---Return Loss (RL)(dB)

| | | | | | | | | | | |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Frequency | 1.00 | 4.00 | 8.00 | 10.00 | 16.00 | 20.00 | 25.00 | 31.25 | 62.50 | 100.00 |
| Min Spec | 20.00 | 23.00 | 24.50 | 25.00 | 25.00 | 25.00 | 24.30 | 23.60 | 21.50 | 20.10 |
| Pair 1 [1] | 30.53 | 35.90 | 39.02 | 38.05 | 38.16 | 38.99 | 37.11 | 37.26 | 35.72 | 36.03 |
| Pair 2 [2] | 34.53 | 39.17 | 33.81 | 32.46 | 35.63 | 37.44 | 31.77 | 37.81 | 38.82 | 33.98 |
| Pair 3 [3] | 31.50 | 36.50 | 38.42 | 37.99 | 35.62 | 38.23 | 35.28 | 36.47 | 39.00 | 34.56 |
| Pair 4 [4] | 33.45 | 34.96 | 32.08 | 29.37 | 33.10 | 37.99 | 30.52 | 36.62 | 31.70 | 33.51 |

Continue:Return Loss (RL)(dB)

| | | | | | | | | | | |
|------------|--------|--------|--|--|--|--|--|--|--|--|
| Frequency | 200.00 | 250.00 | | | | | | | | |
| Min Spec | 18.00 | 17.30 | | | | | | | | |
| Pair 1 [1] | 35.74 | 38.02 | | | | | | | | |
| Pair 2 [2] | 34.32 | 35.03 | | | | | | | | |
| Pair 3 [3] | 39.17 | 35.52 | | | | | | | | |
| Pair 4 [4] | 40.12 | 42.95 | | | | | | | | |

Detail Discrete Frequencies ---Insertion Loss (IL)(dB/100.0 m)(Curve Fit)@20C

| | | | | | | | | | | |
|------------|------|------|------|-------|-------|-------|-------|-------|-------|--------|
| Frequency | 1.00 | 4.00 | 8.00 | 10.00 | 16.00 | 20.00 | 25.00 | 31.25 | 62.50 | 100.00 |
| Max Spec | 2.02 | 3.78 | 5.32 | 5.95 | 7.55 | 8.47 | 9.50 | 10.67 | 15.38 | 19.79 |
| Pair 1 [1] | 1.72 | 3.45 | 4.89 | 5.48 | 6.92 | 7.77 | 8.68 | 9.71 | 13.76 | 17.68 |
| Pair 2 [2] | 1.70 | 3.41 | 4.84 | 5.44 | 6.85 | 7.70 | 8.58 | 9.61 | 13.72 | 17.35 |
| Pair 3 [3] | 1.72 | 3.44 | 4.89 | 5.48 | 6.91 | 7.76 | 8.67 | 9.69 | 13.95 | 17.59 |
| Pair 4 [4] | 1.67 | 3.35 | 4.77 | 5.35 | 6.74 | 7.58 | 8.46 | 9.49 | 13.56 | 17.10 |

Continue:Insertion Loss (IL)(dB/100.0 m)(Curve Fit)@20C

| | | | | | | | | | | |
|------------|--------|--------|--------|--------|--|--|--|--|--|--|
| Frequency | 125.00 | 155.00 | 200.00 | 250.00 | | | | | | |
| Max Spec | 22.35 | 25.16 | 28.98 | 32.84 | | | | | | |
| Pair 1 [1] | 19.53 | 21.88 | 25.47 | 28.66 | | | | | | |
| Pair 2 [2] | 19.45 | 21.79 | 24.26 | 27.14 | | | | | | |
| Pair 3 [3] | 19.28 | 21.65 | 25.37 | 28.53 | | | | | | |
| Pair 4 [4] | 19.15 | 21.41 | 24.01 | 26.89 | | | | | | |

Detail Discrete Frequencies ---Near End Crosstalk Loss (NEXT)(dB)

| | | | | | | | | | | |
|------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Frequency | 1.00 | 4.00 | 8.00 | 10.00 | 16.00 | 20.00 | 25.00 | 31.25 | 62.50 | 100.00 |
| Min Spec | 74.30 | 65.20 | 60.70 | 59.30 | 56.20 | 54.70 | 53.30 | 51.80 | 47.30 | 44.30 |
| Pair 1 - 2 | 85.93 | 87.46 | 70.68 | 73.42 | 78.92 | 74.69 | 84.02 | 71.40 | 61.65 | 59.63 |
| Pair 1 - 3 | 92.00 | 80.72 | 73.76 | 74.53 | 79.66 | 70.05 | 71.44 | 67.24 | 65.90 | 62.82 |
| Pair 1 - 4 | 89.14 | 78.49 | 75.89 | 75.41 | 81.39 | 71.86 | 73.36 | 71.70 | 79.29 | 64.26 |
| Pair 2 - 3 | 90.19 | 80.31 | 73.54 | 74.88 | 79.68 | 71.64 | 69.91 | 67.80 | 67.05 | 62.25 |
| Pair 2 - 4 | 87.21 | 78.59 | 75.83 | 74.25 | 81.10 | 72.87 | 72.39 | 72.04 | 73.67 | 63.18 |
| Pair 3 - 4 | 101.98 | 83.45 | 92.34 | 81.07 | 78.36 | 75.99 | 69.12 | 65.48 | 66.33 | 63.89 |

N/A = Not Applicable.
--- = Disable/Bypassed Pair.

* = Measured value out of spec.
xxx = No entry.

*** = Measured value is invalid.

Continue:Near End Crosstalk Loss (NEXT)(dB)

| | | | | | | | | | | |
|------------|--------|--------|--------|--|--|--|--|--|--|--|
| Frequency | 155.00 | 200.00 | 250.00 | | | | | | | |
| Min Spec | 41.40 | 39.70 | 38.30 | | | | | | | |
| Pair 1 - 2 | 61.40 | 66.83 | 78.59 | | | | | | | |
| Pair 1 - 3 | 58.33 | 57.45 | 64.28 | | | | | | | |
| Pair 1 - 4 | 62.71 | 63.17 | 59.28 | | | | | | | |
| Pair 2 - 3 | 60.22 | 58.51 | 63.00 | | | | | | | |
| Pair 2 - 4 | 63.54 | 64.51 | 62.39 | | | | | | | |
| Pair 3 - 4 | 64.42 | 55.09 | 57.24 | | | | | | | |

Detail Discrete Frequencies ---Power Sum NEXT(PSNEXT)(dB)

| | | | | | | | | | | |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Frequency | 1.00 | 4.00 | 8.00 | 10.00 | 16.00 | 20.00 | 25.00 | 31.25 | 62.50 | 100.00 |
| Min Spec | 74.30 | 65.20 | 60.70 | 59.30 | 56.20 | 54.70 | 53.30 | 51.80 | 47.30 | 44.30 |
| Pair 1 [1] | 83.57 | 75.93 | 68.14 | 69.55 | 74.61 | 66.87 | 68.39 | 64.81 | 60.19 | 56.77 |
| Pair 2 [2] | 82.67 | 75.94 | 68.07 | 69.34 | 74.52 | 67.99 | 67.21 | 65.17 | 60.32 | 56.52 |
| Pair 3 [3] | 87.82 | 76.38 | 70.61 | 71.13 | 74.23 | 67.15 | 65.28 | 61.94 | 61.61 | 58.06 |
| Pair 4 [4] | 84.97 | 74.88 | 72.80 | 71.28 | 75.28 | 68.46 | 65.85 | 63.84 | 65.41 | 58.94 |

Continue:Power Sum NEXT(PSNEXT)(dB)

| | | | | | | | | | | |
|------------|--------|--------|--------|--|--|--|--|--|--|--|
| Frequency | 155.00 | 200.00 | 250.00 | | | | | | | |
| Min Spec | 41.40 | 39.70 | 38.30 | | | | | | | |
| Pair 1 [1] | 54.52 | 55.51 | 57.04 | | | | | | | |
| Pair 2 [2] | 55.01 | 56.93 | 57.97 | | | | | | | |
| Pair 3 [3] | 55.21 | 51.75 | 55.18 | | | | | | | |
| Pair 4 [4] | 58.47 | 53.06 | 54.30 | | | | | | | |

N/A = Not Applicable.
--- = Disable/Bypassed Pair.

* = Measured value out of spec.
xxx = No entry.

*** = Measured value is invalid.