

DCM Test Report

| | | |
|--------------------------------|--------------------------------------|---|
| Cable Type : 4x2x24 x PE/PVC | Factory Number : PHOENIX | Data File Name : DA078985.D3S |
| Cable I.D. : F/UTP#24X4P CABLE | Order Number : 1145 GY-265 200129707 | Specification File : FTP C5e-305M.S3S |
| Temperature : 25.00 °C | Relative Humidity : 50 % | Test Date/Time : 01/30/2020 03:27:48 PM |
| Length : 305.00 m | Number of Pairs to Test : 4 | Operator : M 200122WE601004/3 |
| Starting Position : 13 | | 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: |
|------------|-----------|-------|

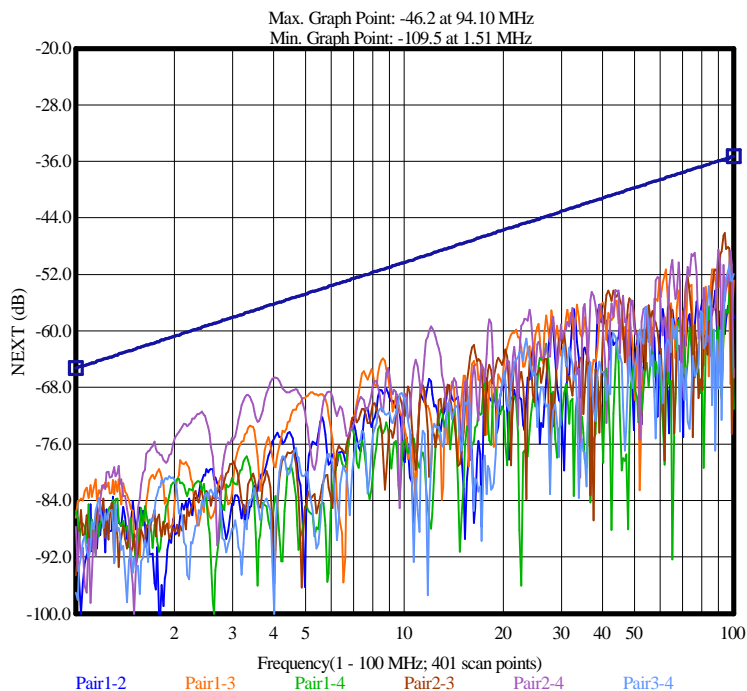
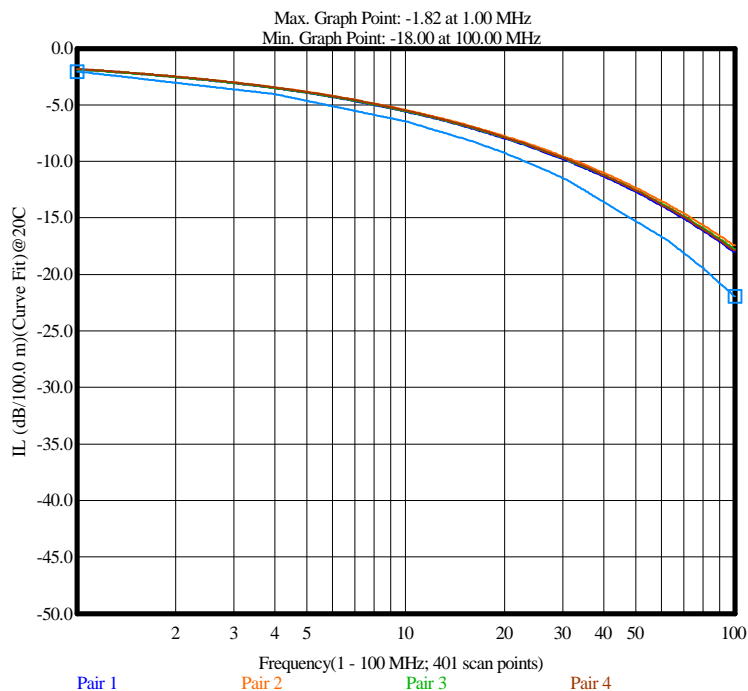
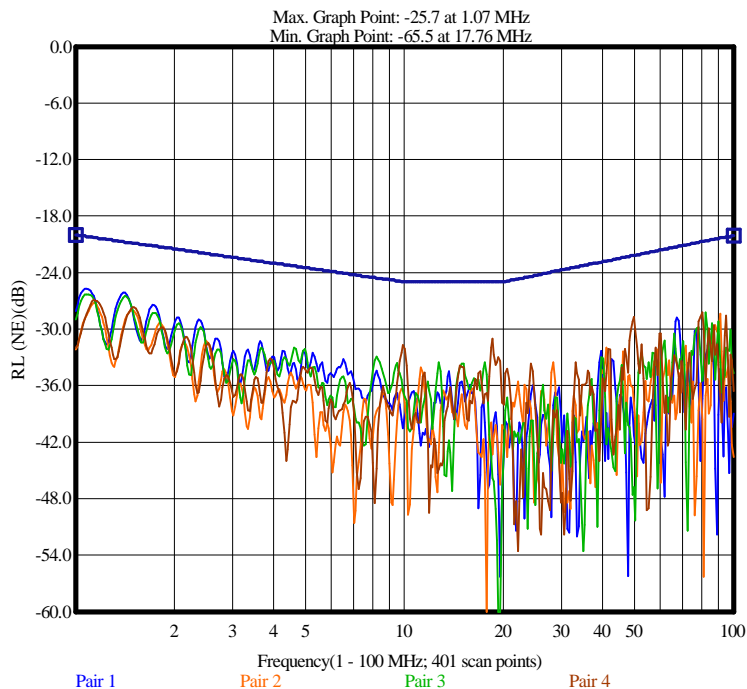
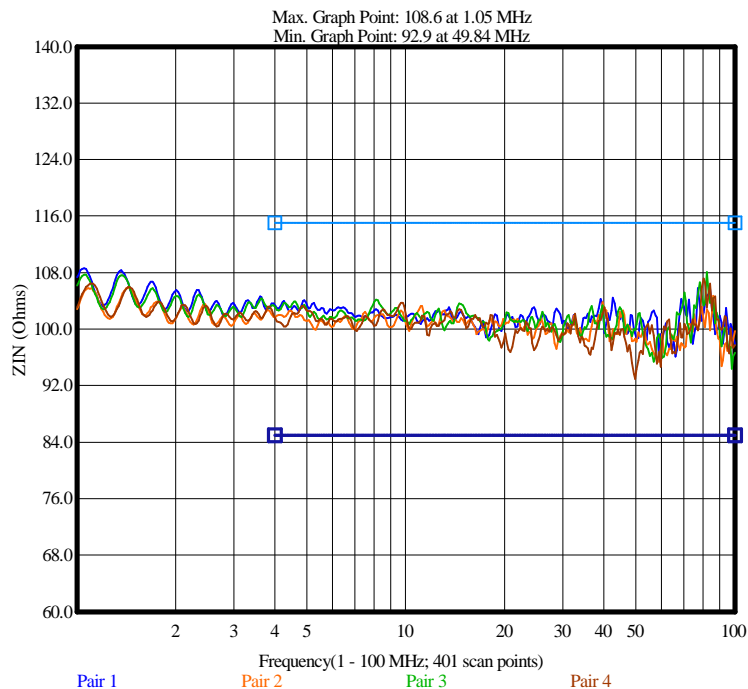
DCM Test Report

| | | |
|--------------------------------|--------------------------------------|---|
| Cable Type : 4x2x24 x PE/PVC | Factory Number : PHOENIX | Data File Name : DA078985.D3S |
| Cable I.D. : F/UTP#24X4P CABLE | Order Number : 1145 GY-265 200129707 | Specification File : FTP C5e-305M.S3S |
| Temperature : 25.00 °C | Relative Humidity : 50 % | Test Date/Time : 01/30/2020 03:27:48 PM |
| Length : 305.00 m | Number of Pairs to Test : 4 | Operator : M 200122WE601004/3 |
| Starting Position : 13 | | Analyzer Type : ENA |

Worst Case Summary

High Frequency

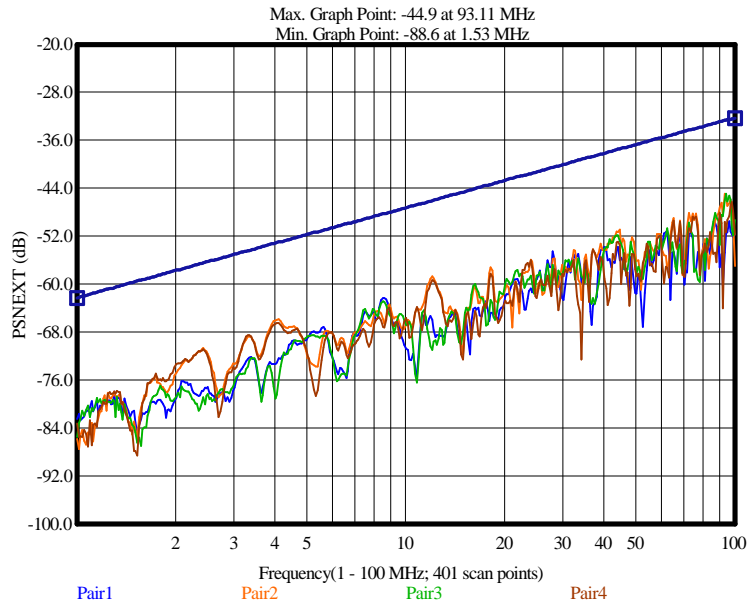
| Test Type | Specification | Measured (Pair) | Margin | @ Frequency (MHz) | Test Result |
|------------------------------------|---------------|------------------|--------|-------------------|-------------|
| Input Impedance (Zin)(Terminated) | 85.0 (Min) | 92.9 (Pair 4) | 7.9 | 49.84 | Passed |
| Input Impedance (Zin)(Terminated) | 115.0 (Max) | 108.0 (Pair 3) | 7.0 | 82.29 | Passed |
| Return Loss (RL) | 20.8 (Min) | 26.1 (Pair 1) | 5.3 | 1.42 | Passed |
| Insertion Loss (IL)(Curve Fit)@20C | 2.04 (Max) | 1.86 (Pair 3) | 0.18 | 1.00 | Passed |
| Near End Crosstalk Loss (NEXT) | 49.1 (Min) | 59.4 (Pairs 2-4) | 10.3 | 12.04 | Passed |
| Power Sum NEXT(PSNEXT) | 32.7 (Min) | 44.9 (Pair 2) | 12.2 | 93.11 | Passed |



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

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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 | 8.02 | xxx | 7.64 | xxx | 7.83 | xxx | 0.160 | Passed |
| Resistance Unbalance(%) | 5.00 | 0.25 | xxx | 0.01 | xxx | 0.11 | xxx | 0.086 | Passed |
| Mutual Capacitance(nF/100.0 m)@1000Hz | 5.60 | 5.10 | xxx | 4.91 | xxx | 5.01 | xxx | 0.083 | Passed |
| Cap. Unbalance to Ground(pF/100.0 m)@1000Hz | 330.00 | 10.86 | xxx | 0.01 | xxx | 7.19 | xxx | 4.429 | 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 [13] | 8.02 | 8.02 | 0.01 | 5.08 | 10.85 | Passed Passed Passed Passed |
| Pair 2 [14] | 7.70 | 7.71 | 0.10 | 4.95 | 7.03 | |
| Pair 3 [15] | 7.96 | 7.97 | 0.09 | 5.10 | -0.01 | |
| Pair 4 [16] | 7.64 | 7.66 | 0.25 | 4.91 | 10.86 | |

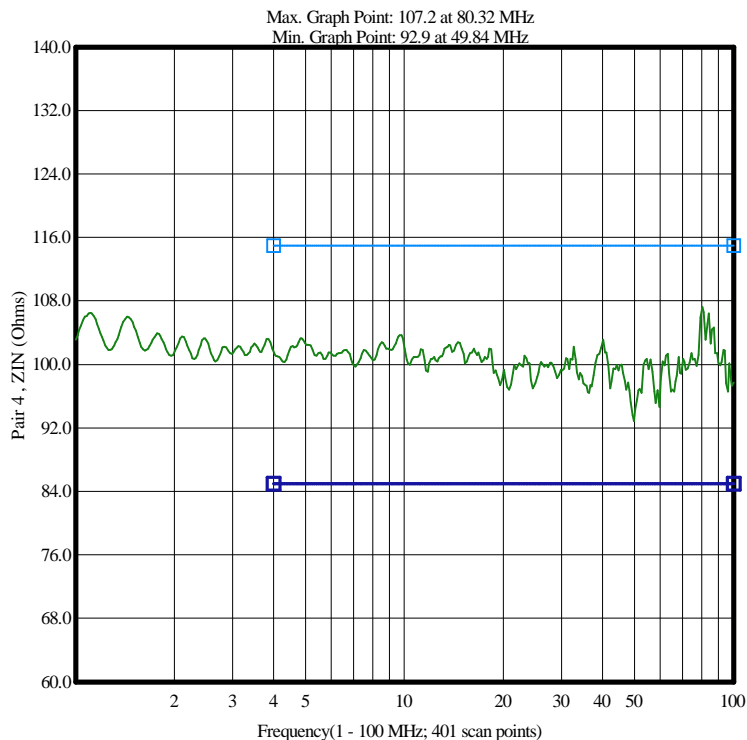
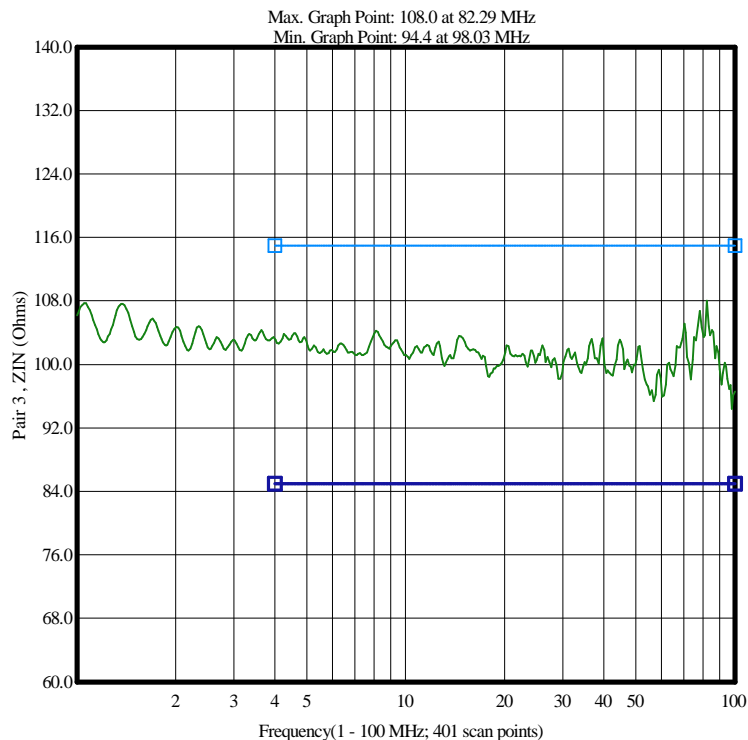
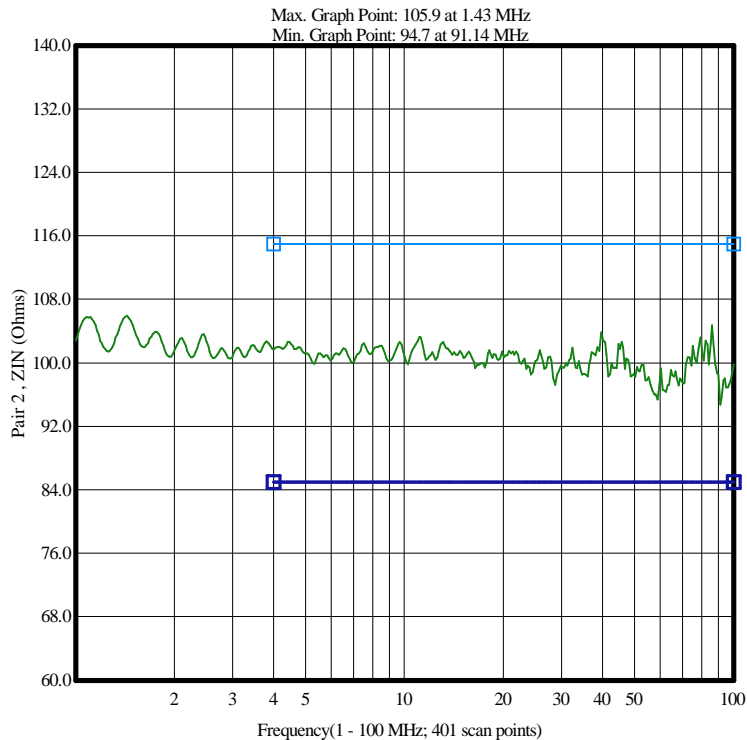
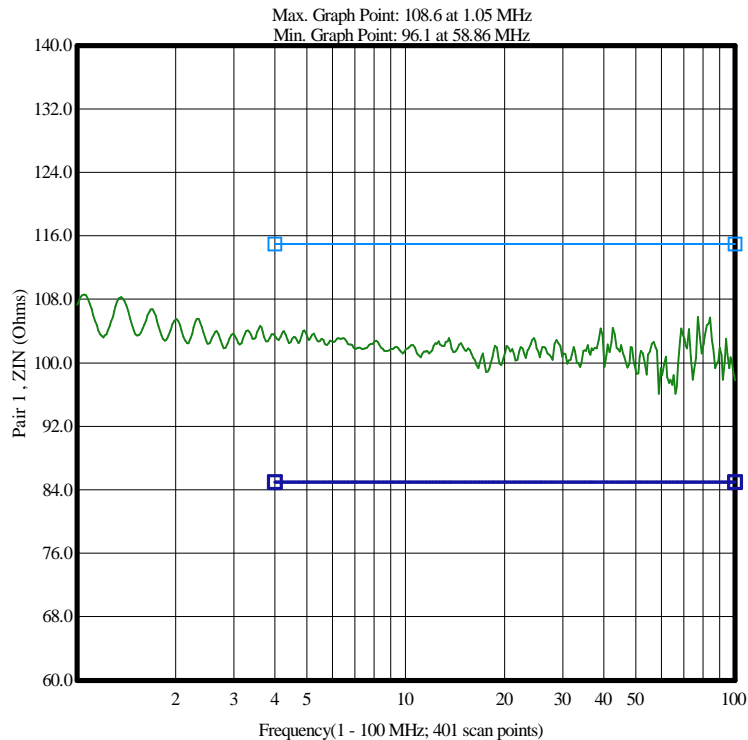
N/A = Not Applicable.
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Summary and Graphic: Input Impedance (Zin)(Terminated)

| Pair | Specification | | Measured(Ohms) | | Margin (Ohms) | | @ Frequency (MHz) | | Test Result |
|-------------|---------------|---------|----------------|---------|---------------|---------|-------------------|---------|-------------|
| | Minimum | Maximum | Minimum | Maximum | Minimum | Maximum | Minimum | Maximum | |
| Pair 1 [13] | 85.0 | 115.0 | 96.1 | 105.8 | 11.1 | 9.2 | 58.86 | 77.36 | Passed |
| Pair 2 [14] | 85.0 | 115.0 | 94.7 | 104.7 | 9.7 | 10.3 | 91.14 | 86.22 | Passed |
| Pair 3 [15] | 85.0 | 115.0 | 94.4 | 108.0 | 9.4 | 7.0 | 98.03 | 82.29 | Passed |
| Pair 4 [16] | 85.0 | 115.0 | 92.9 | 107.2 | 7.9 | 7.8 | 49.84 | 80.32 | Passed |



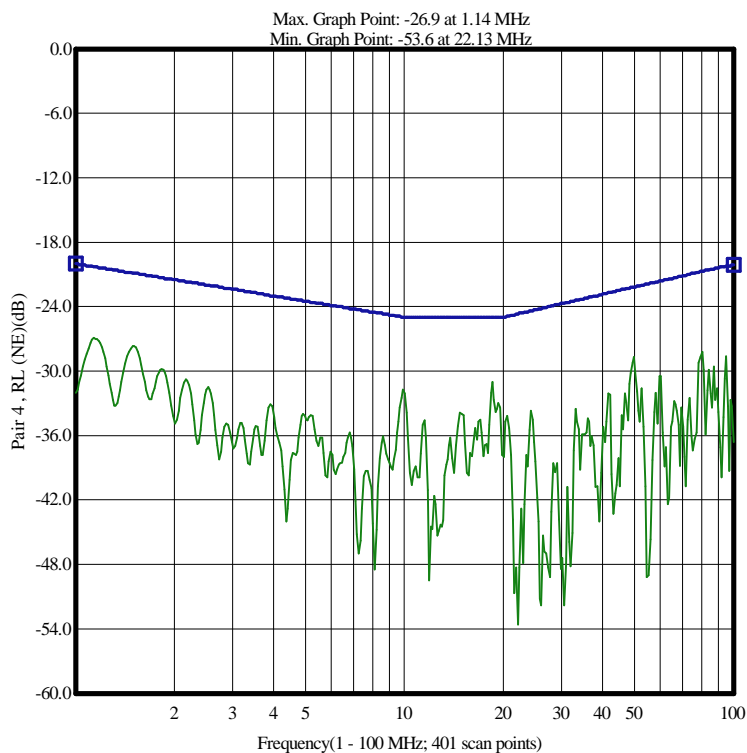
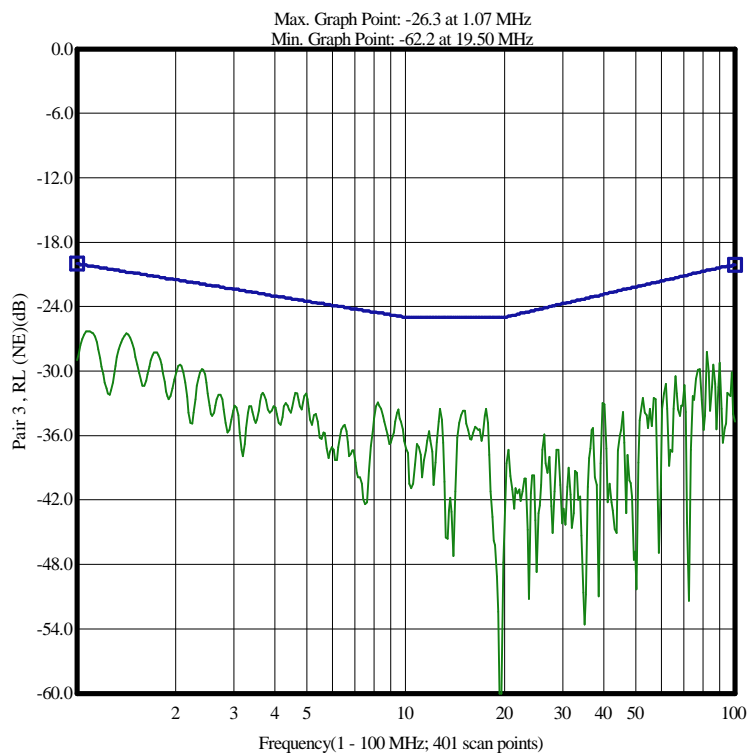
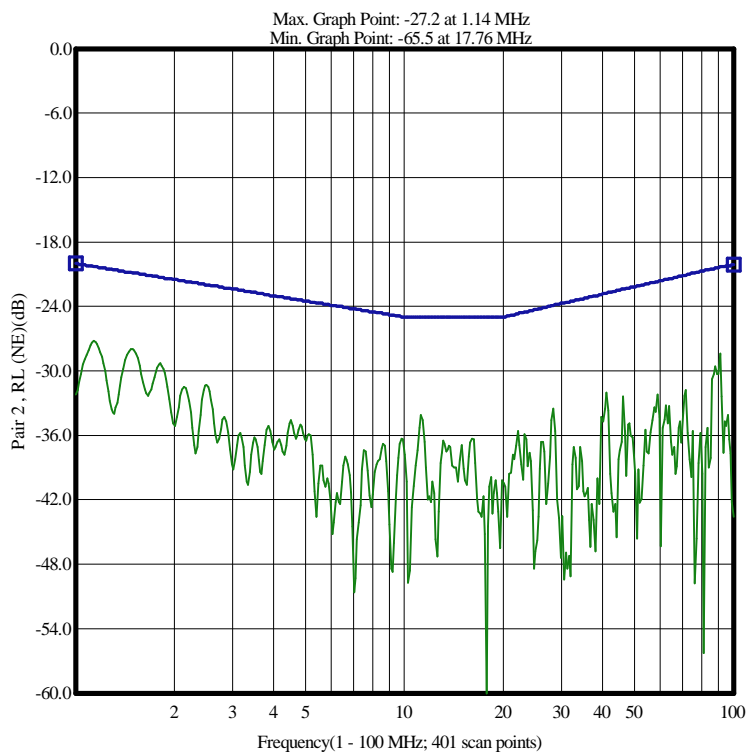
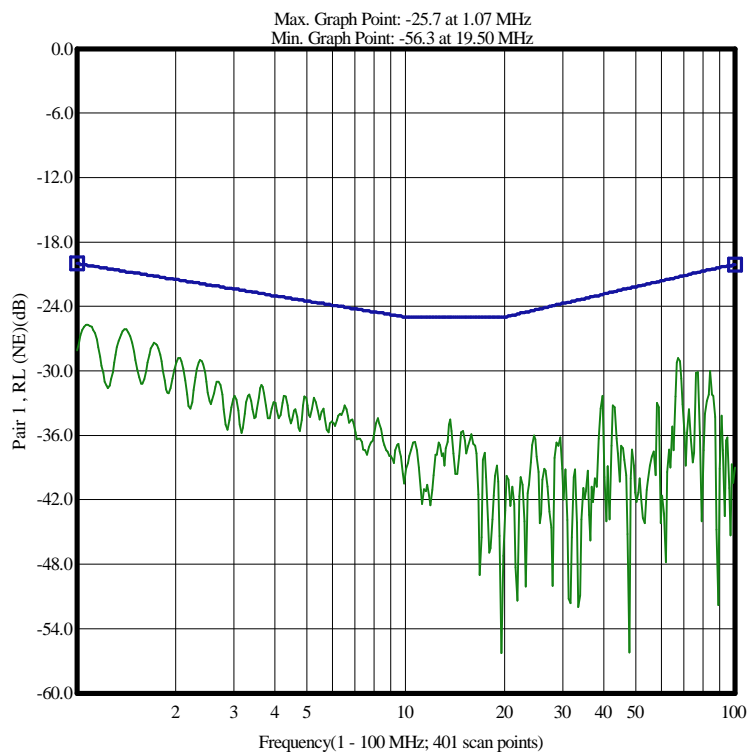
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Summary and Graphic: Return Loss (RL)

| Pair | Spec (Min)(dB) | Measured(dB) | Margin (dB) | @ Frequency (MHz) | Test Result |
|-------------|----------------|--------------|-------------|-------------------|-------------|
| Pair 1 [13] | 20.8 | 26.1 | 5.3 | 1.42 | Passed |
| Pair 2 [14] | 20.3 | 27.2 | 6.9 | 1.14 | Passed |
| Pair 3 [15] | 20.8 | 26.5 | 5.7 | 1.42 | Passed |
| Pair 4 [16] | 25.0 | 31.0 | 6.0 | 18.52 | Passed |



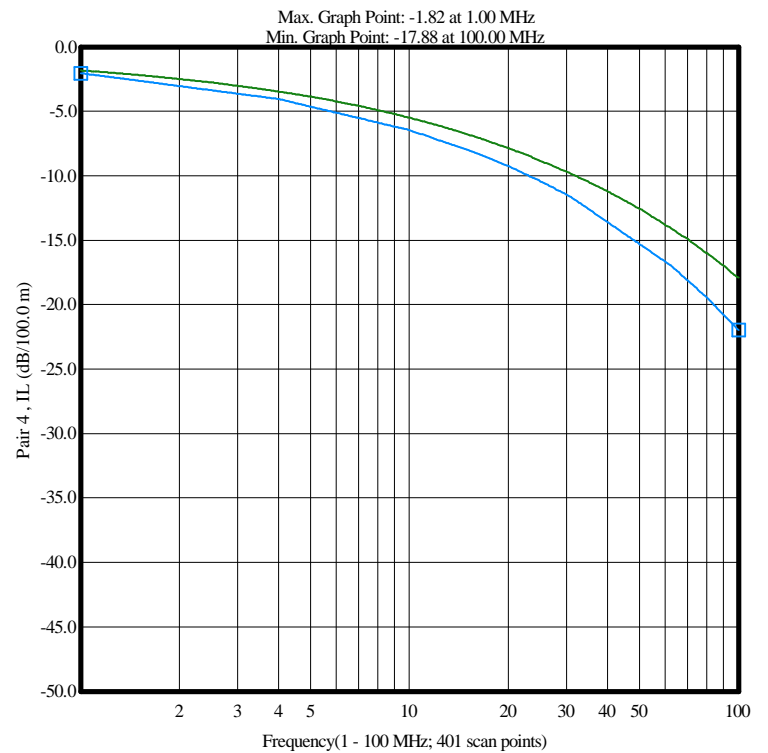
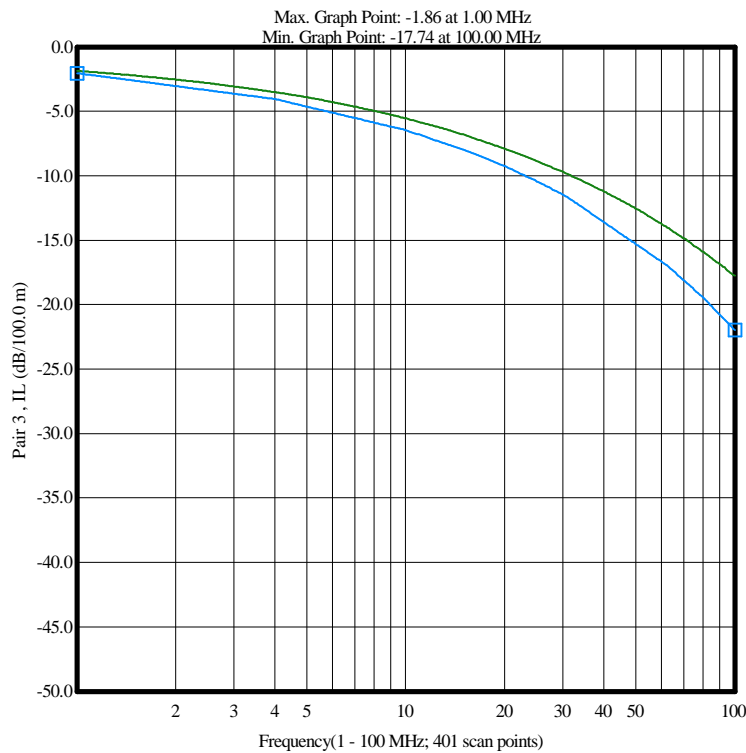
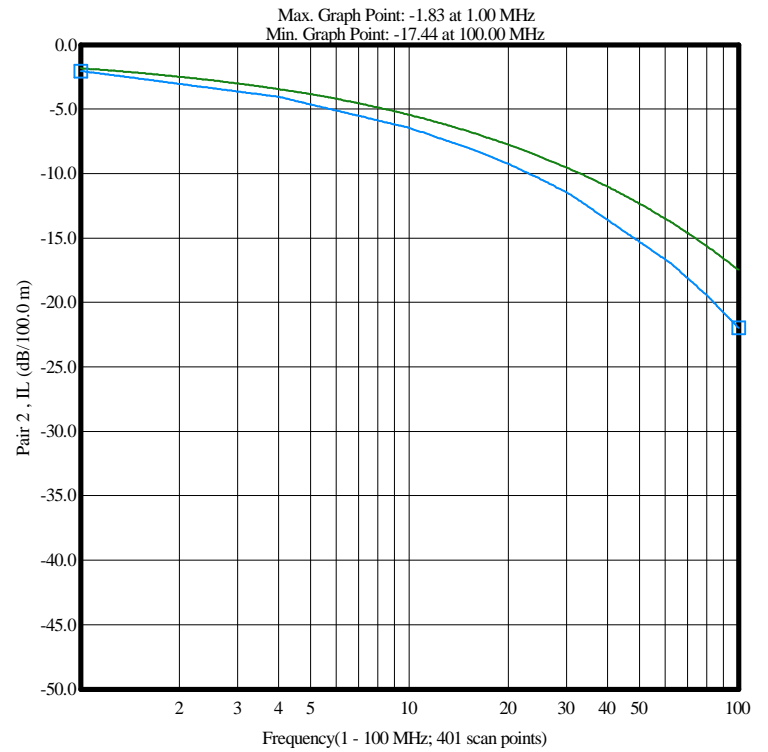
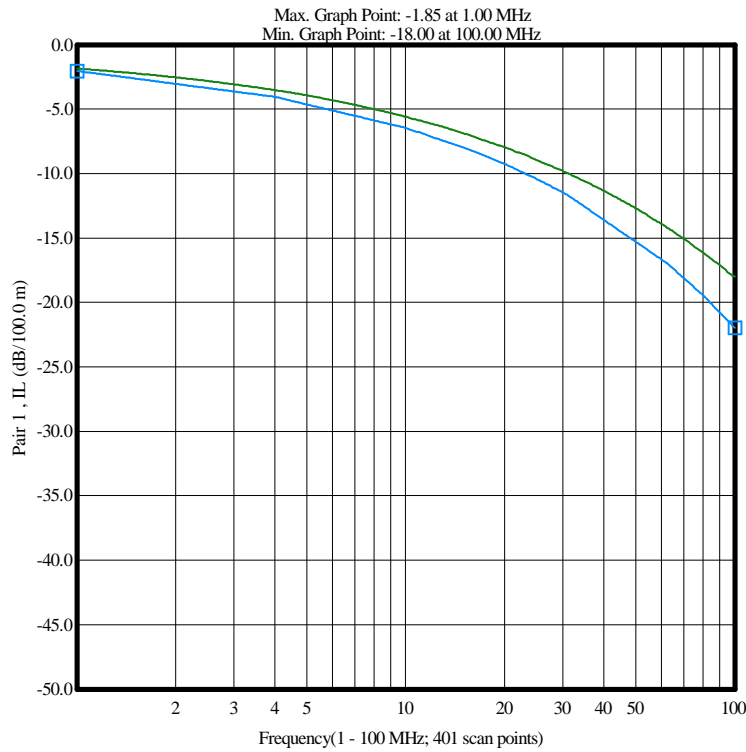
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Summary and Graphic: Insertion Loss (IL)(Curve Fit)@20C

| Pair | Spec (Max)(dB/100.0 m) | Measured(dB/100.0 m) | Margin (dB/100.0 m) | @ Frequency (MHz) | Test Result |
|-------------|------------------------|----------------------|---------------------|-------------------|-------------|
| Pair 1 [13] | 2.04 | 1.85 | 0.19 | 1.00 | Passed |
| Pair 2 [14] | 2.04 | 1.83 | 0.21 | 1.00 | Passed |
| Pair 3 [15] | 2.04 | 1.86 | 0.18 | 1.00 | Passed |
| Pair 4 [16] | 2.04 | 1.82 | 0.22 | 1.00 | Passed |



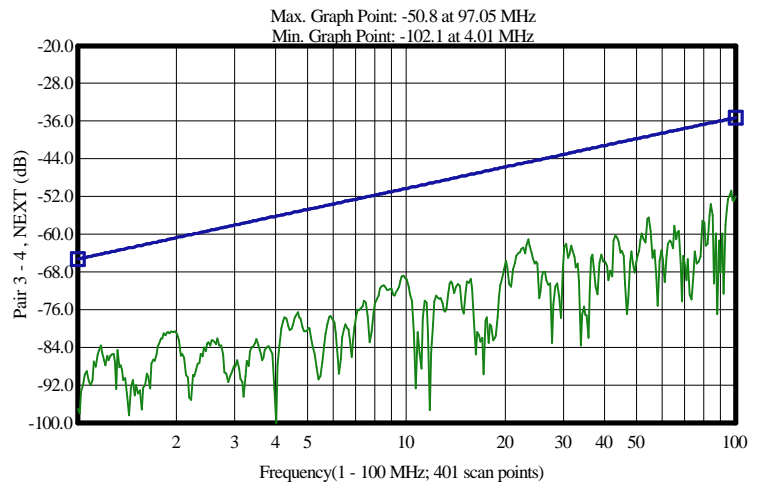
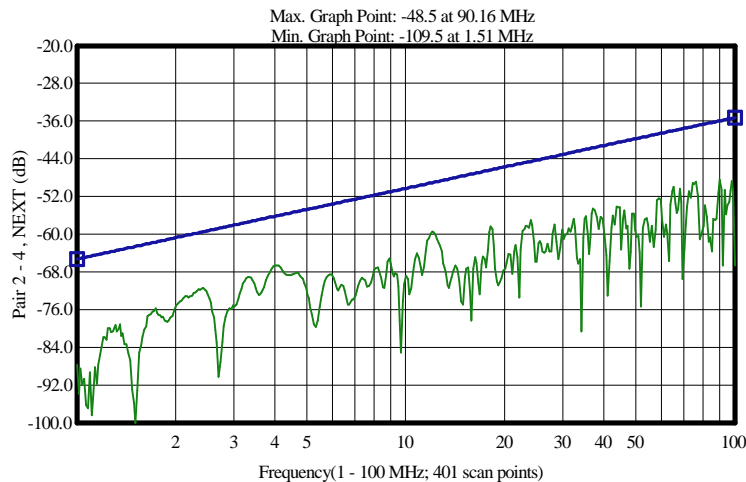
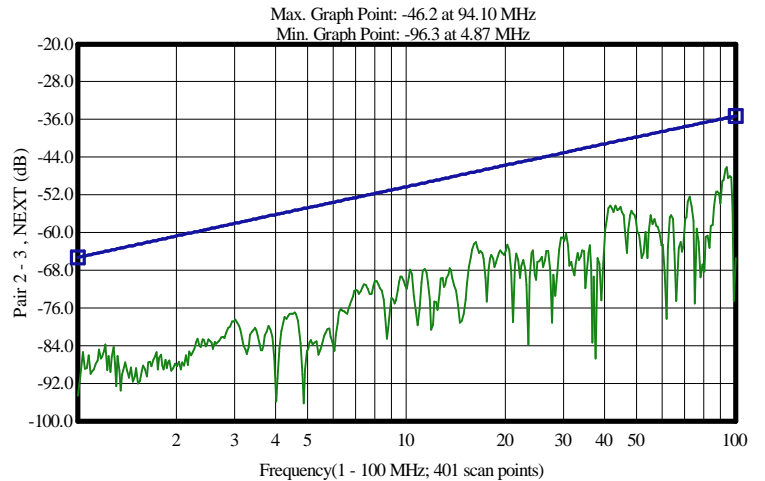
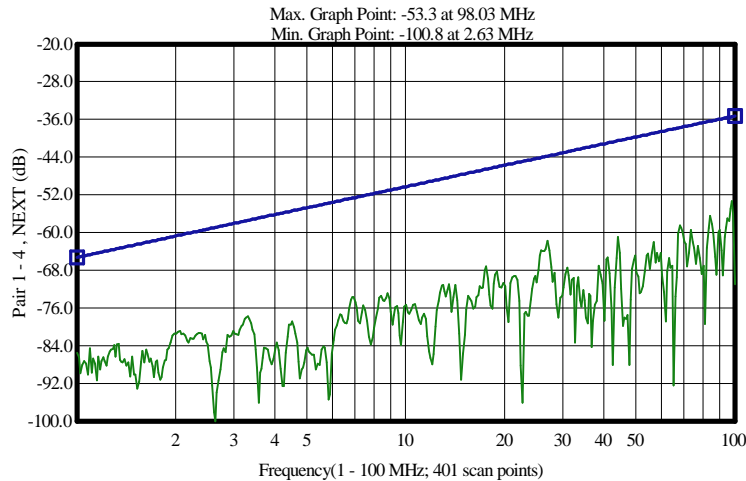
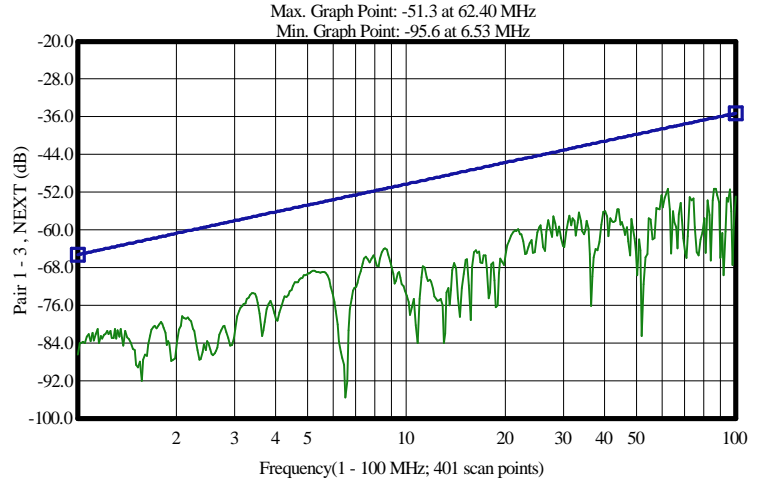
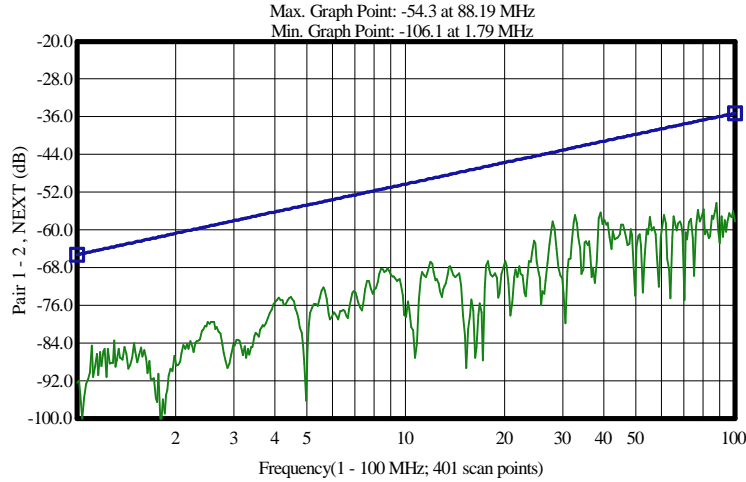
N/A = Not Applicable.
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Summary and Graphic: Near End Crosstalk Loss (NEXT)

| Pair | Spec (Min)(dB) | Measured(dB) | Margin (dB) | @ Frequency (MHz) | Test Result |
|------------|----------------|--------------|-------------|-------------------|-------------|
| Pair 1 - 2 | 42.5 | 56.9 | 14.4 | 32.77 | Passed |
| Pair 1 - 3 | 51.3 | 63.9 | 12.6 | 8.61 | Passed |
| Pair 1 - 4 | 35.4 | 53.3 | 17.9 | 98.03 | Passed |
| Pair 2 - 3 | 35.7 | 46.2 | 10.5 | 94.10 | Passed |
| Pair 2 - 4 | 49.1 | 59.4 | 10.3 | 12.04 | Passed |
| Pair 3 - 4 | 35.5 | 50.8 | 15.3 | 97.05 | Passed |



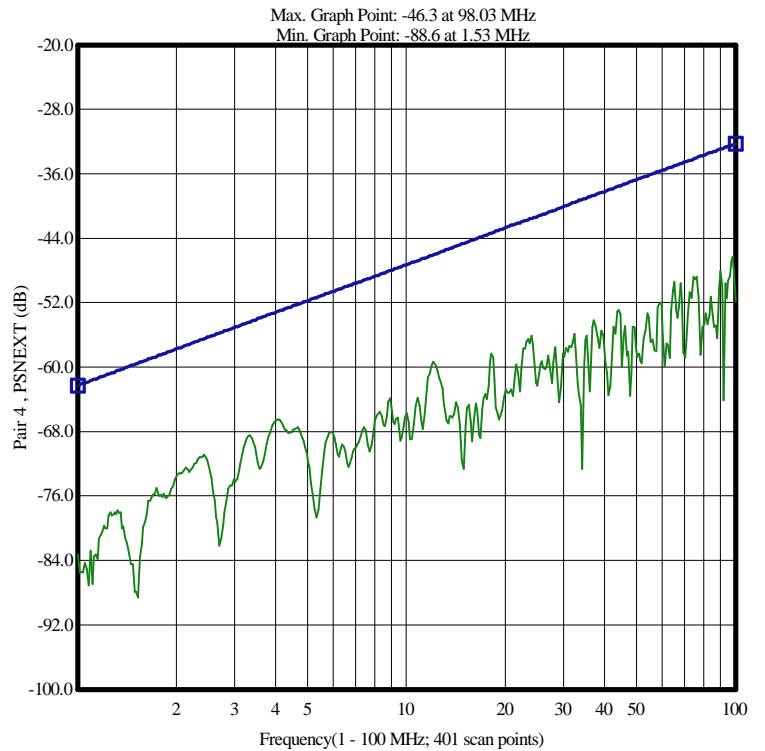
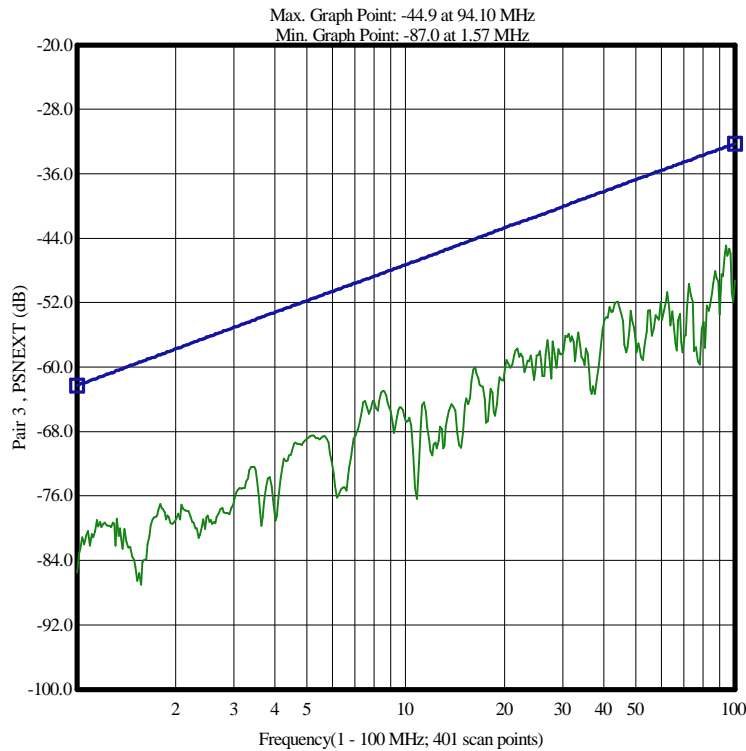
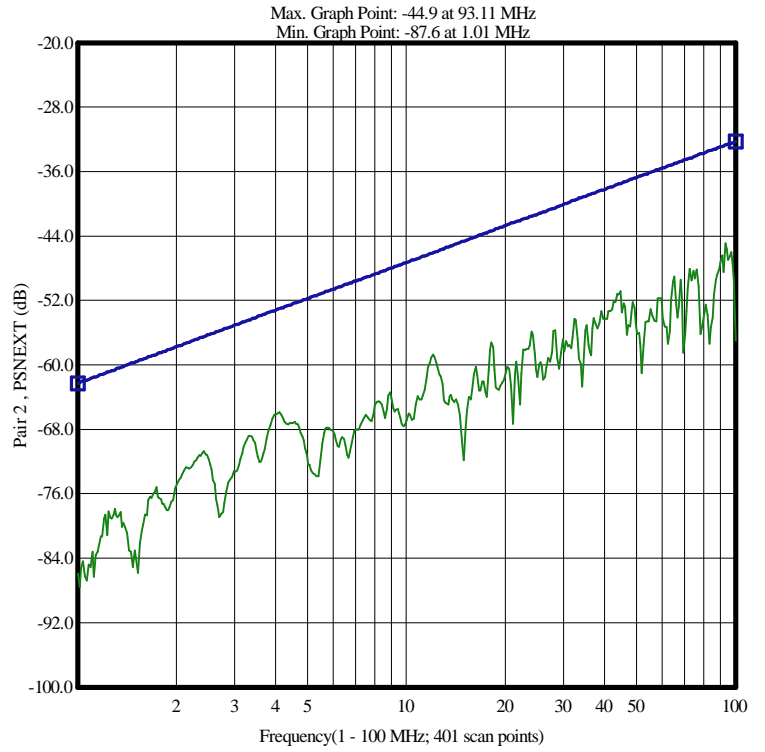
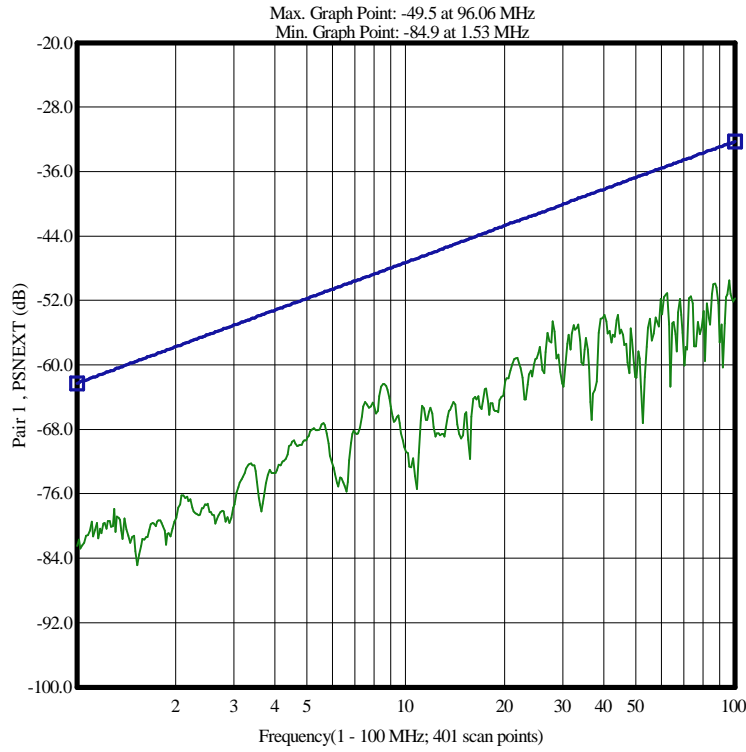
N/A = Not Applicable.
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Summary and Graphic: Power Sum NEXT(PSNEXT)

| Pair | Spec (Min)(dB) | Measured(dB) | Margin (dB) | @ Frequency (MHz) | Test Result |
|-------------|----------------|--------------|-------------|-------------------|-------------|
| Pair 1 [13] | 40.6 | 54.6 | 14.0 | 28.01 | Passed |
| Pair 2 [14] | 32.7 | 44.9 | 12.2 | 93.11 | Passed |
| Pair 3 [15] | 32.7 | 44.9 | 12.2 | 94.10 | Passed |
| Pair 4 [16] | 46.1 | 59.4 | 13.3 | 12.04 | Passed |



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

| | | | | | | | | | | |
|-------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Frequency | 1.00 | 4.00 | 10.00 | 16.00 | 20.00 | 25.00 | 30.00 | 31.25 | 62.50 | 80.00 |
| Min Spec | 20.0 | 23.0 | 25.0 | 25.0 | 25.0 | 24.3 | 23.7 | 23.6 | 21.5 | 20.7 |
| Pair 1 [13] | 28.1 | 33.0 | 39.1 | 36.6 | 43.4 | 37.8 | 40.4 | 50.1 | 39.1 | 39.5 |
| Pair 2 [14] | 32.2 | 37.1 | 37.8 | 36.4 | 40.5 | 47.0 | 45.7 | 48.2 | 33.4 | 38.4 |
| Pair 3 [15] | 29.0 | 33.4 | 37.2 | 35.9 | 42.8 | 48.2 | 43.6 | 39.3 | 34.2 | 34.6 |
| Pair 4 [16] | 32.0 | 34.1 | 32.1 | 37.8 | 38.0 | 38.2 | 48.0 | 41.8 | 37.8 | 28.4 |

Continue:Return Loss (RL)(dB)

| | | | | | | | | | | |
|-------------|--------|--|--|--|--|--|--|--|--|--|
| Frequency | 100.00 | | | | | | | | | |
| Min Spec | 20.1 | | | | | | | | | |
| Pair 1 [13] | 39.0 | | | | | | | | | |
| Pair 2 [14] | 43.6 | | | | | | | | | |
| Pair 3 [15] | 34.7 | | | | | | | | | |
| Pair 4 [16] | 36.6 | | | | | | | | | |

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

| | | | | | | | | | | |
|-------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Frequency | 1.00 | 4.00 | 10.00 | 16.00 | 20.00 | 25.00 | 30.00 | 31.25 | 62.50 | 80.00 |
| Max Spec | 2.04 | 4.05 | 6.46 | 8.24 | 9.26 | 10.42 | 11.47 | 11.72 | 16.99 | 19.43 |
| Pair 1 [13] | 1.85 | 3.53 | 5.61 | 7.12 | 7.99 | 8.94 | 9.80 | 10.00 | 14.23 | 16.12 |
| Pair 2 [14] | 1.83 | 3.45 | 5.46 | 6.93 | 7.78 | 8.69 | 9.55 | 9.73 | 13.78 | 15.63 |
| Pair 3 [15] | 1.86 | 3.52 | 5.56 | 7.05 | 7.92 | 8.85 | 9.70 | 9.90 | 14.02 | 15.90 |
| Pair 4 [16] | 1.82 | 3.47 | 5.51 | 7.01 | 7.88 | 8.83 | 9.69 | 9.89 | 14.10 | 16.00 |

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

| | | | | | | | | | | |
|-------------|--------|--|--|--|--|--|--|--|--|--|
| Frequency | 100.00 | | | | | | | | | |
| Max Spec | 21.97 | | | | | | | | | |
| Pair 1 [13] | 18.00 | | | | | | | | | |
| Pair 2 [14] | 17.44 | | | | | | | | | |
| Pair 3 [15] | 17.74 | | | | | | | | | |
| Pair 4 [16] | 17.88 | | | | | | | | | |

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

| | | | | | | | | | | |
|------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Frequency | 1.00 | 4.00 | 10.00 | 16.00 | 20.00 | 25.00 | 30.00 | 31.25 | 62.50 | 80.00 |
| Min Spec | 65.3 | 56.2 | 50.3 | 47.2 | 45.7 | 44.3 | 43.1 | 42.8 | 38.3 | 36.7 |
| Pair 1 - 2 | 92.5 | 75.3 | 78.5 | 76.5 | 66.7 | 66.3 | 71.7 | 66.7 | 66.5 | 56.2 |
| Pair 1 - 3 | 86.5 | 78.8 | 74.0 | 65.6 | 65.0 | 60.7 | 63.5 | 57.1 | 51.9 | 58.5 |
| Pair 1 - 4 | 85.5 | 85.0 | 75.4 | 75.8 | 71.3 | 70.5 | 72.6 | 68.9 | 67.9 | 67.6 |
| Pair 2 - 3 | 94.6 | 93.6 | 72.0 | 62.7 | 63.9 | 66.7 | 61.4 | 66.4 | 62.2 | 67.8 |
| Pair 2 - 4 | 87.7 | 66.7 | 68.8 | 70.2 | 67.5 | 65.8 | 60.0 | 58.9 | 60.5 | 58.7 |
| Pair 3 - 4 | 97.1 | 99.8 | 69.7 | 76.8 | 65.9 | 66.1 | 65.1 | 64.5 | 61.9 | 57.4 |

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

| | | | | | | | | | | |
|------------|--------|--|--|--|--|--|--|--|--|--|
| Frequency | 100.00 | | | | | | | | | |
| Min Spec | 35.3 | | | | | | | | | |
| Pair 1 - 2 | 58.2 | | | | | | | | | |
| Pair 1 - 3 | 52.9 | | | | | | | | | |
| Pair 1 - 4 | 71.0 | | | | | | | | | |
| Pair 2 - 3 | 65.4 | | | | | | | | | |
| Pair 2 - 4 | 66.7 | | | | | | | | | |
| Pair 3 - 4 | 52.0 | | | | | | | | | |

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

| | | | | | | | | | | |
|-------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Frequency | 1.00 | 4.00 | 10.00 | 16.00 | 20.00 | 25.00 | 30.00 | 31.25 | 62.50 | 80.00 |
| Min Spec | 62.3 | 53.2 | 47.3 | 44.2 | 42.7 | 41.3 | 40.1 | 39.8 | 35.3 | 33.7 |
| Pair 1 [13] | 82.5 | 73.4 | 70.8 | 64.8 | 62.2 | 59.2 | 62.5 | 56.5 | 51.6 | 53.9 |
| Pair 2 [14] | 85.9 | 66.1 | 66.8 | 61.7 | 61.0 | 61.4 | 57.5 | 57.5 | 57.2 | 54.1 |
| Pair 3 [15] | 85.5 | 78.6 | 66.8 | 60.7 | 60.1 | 58.8 | 58.2 | 56.0 | 50.9 | 54.7 |
| Pair 4 [16] | 83.3 | 66.6 | 65.7 | 67.2 | 62.9 | 62.3 | 58.5 | 57.5 | 57.5 | 54.8 |

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Continue:Power Sum NEXT(PSNEXT)(dB)

| | | | | | | | | | | |
|-------------|--------|--|--|--|--|--|--|--|--|--|
| Frequency | 100.00 | | | | | | | | | |
| Min Spec | 32.3 | | | | | | | | | |
| Pair 1 [13] | 51.7 | | | | | | | | | |
| Pair 2 [14] | 57.0 | | | | | | | | | |
| Pair 3 [15] | 49.3 | | | | | | | | | |
| Pair 4 [16] | 51.8 | | | | | | | | | |

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