

### DCM Test Report

Cable Type : 4x2x23 x PE/LSZH	Factory Number : PHOENIX	Data File Name : DA004179.D3S
Cable I.D. : F/UTP#23X4P CABLE	Order Number : 2072 VI-15 MR-3-1	Specification File : F-SC6-305M.S3S
Temperature : 25.00 °C	Relative Humidity : 50 %	Test Date/Time : 02/13/2018 11:25:51 PM
Length : 305.00 m	Number of Pairs to Test : 4	Operator : L 180118SM013002/R1
Starting Position : 5		Analyzer Type : ENA

### Pass - Fail Test Certificate - 4 Pairs

#### High Frequency

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

#### Low Frequency

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

Signature:	Approved:	Date:
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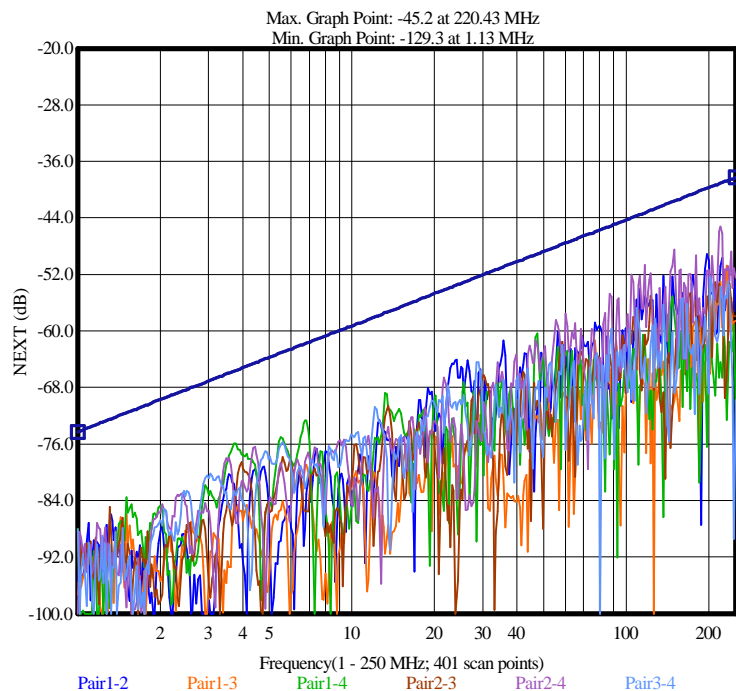
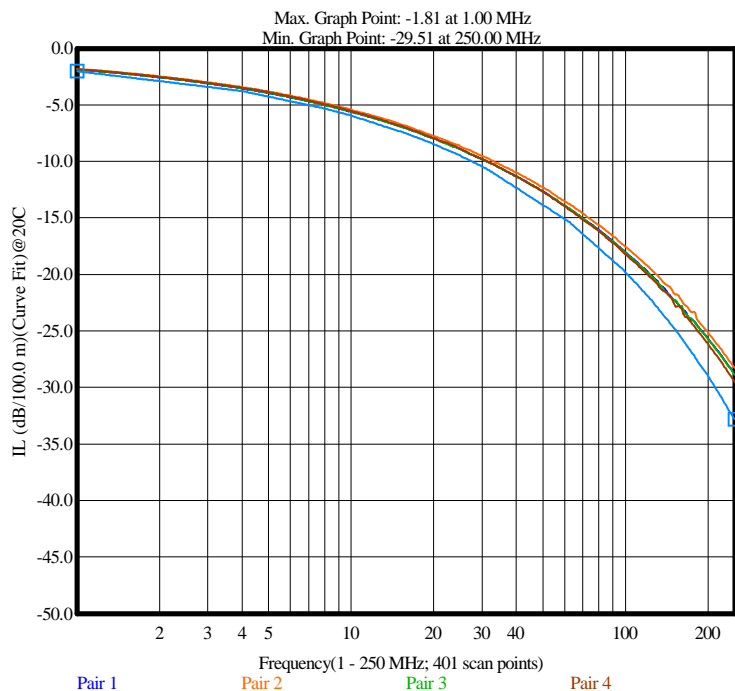
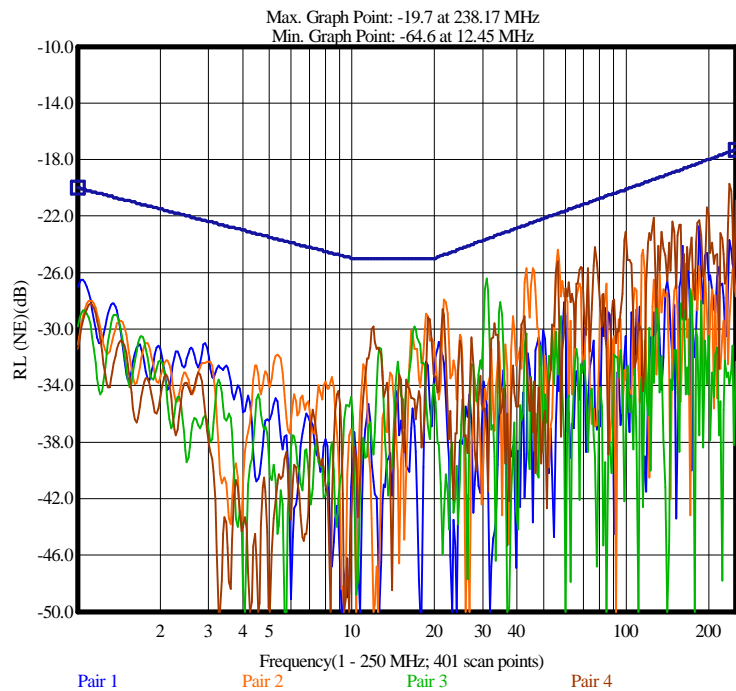
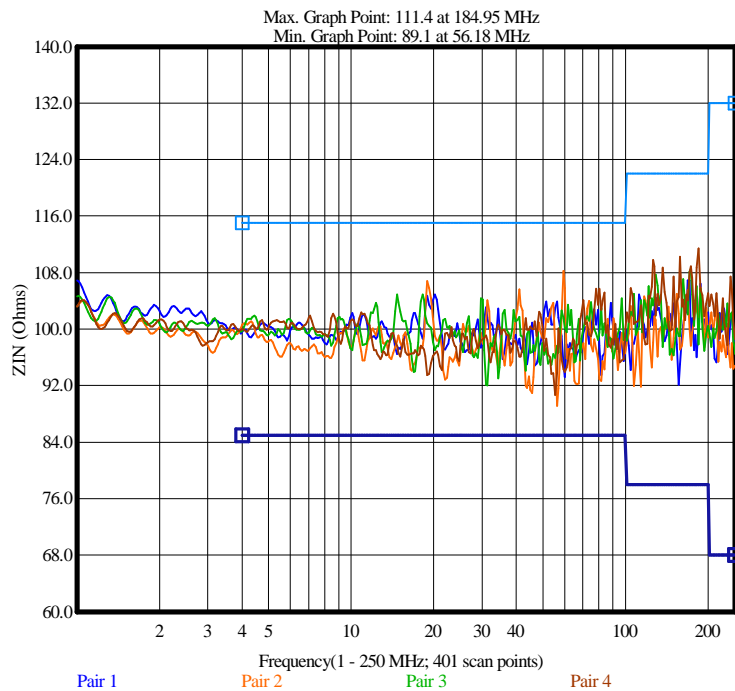
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Starting Position : 5		Analyzer Type : ENA

### Worst Case Summary

#### High Frequency

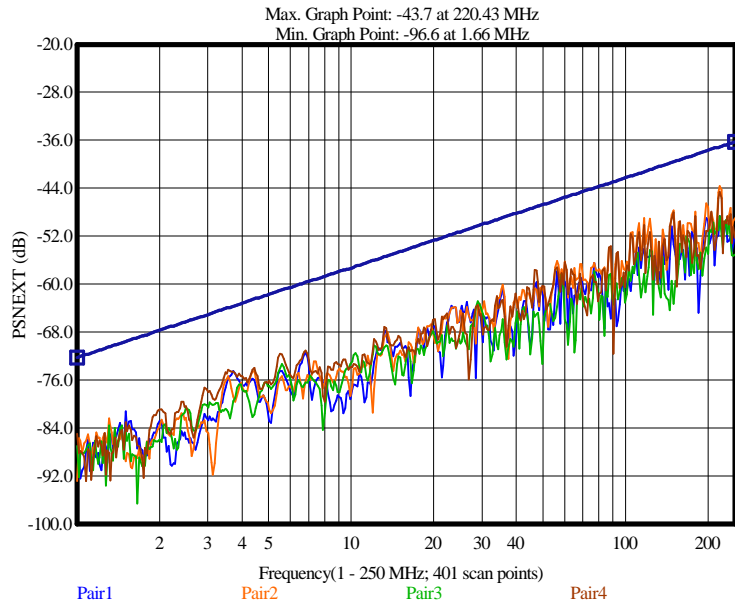
Test Type	Specification	Measured (Pair)	Margin	@ Frequency (MHz)	Test Result
Input Impedance (Zin)(Terminated)	85.0 (Min)	89.1 (Pair 2)	4.1	56.18	Passed
Input Impedance (Zin)(Terminated)	115.0 (Max)	108.2 (Pair 2)	6.8	59.41	Passed
Return Loss (RL)	17.5 (Min)	19.7 (Pair 4)	2.2	238.17	Passed
Insertion Loss (IL)(Curve Fit)@20C	2.02 (Max)	1.86 (Pair 1)	0.16	1.00	Passed
Near End Crosstalk Loss (NEXT)	39.1 (Min)	45.2 (Pairs 2-4)	6.1	220.43	Passed
Power Sum NEXT(PSNEXT)	37.1 (Min)	43.7 (Pair 2)	6.6	220.43	Passed



N/A = Not Applicable.  
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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	7.60	xxx	7.19	xxx	7.40	xxx	0.175	Passed
Resistance Unbalance( % )	5.00	0.35	xxx	0.04	xxx	0.15	xxx	0.123	Passed
Mutual Capacitance(nF/100.0 m)@1000Hz	5.60	5.42	xxx	5.18	xxx	5.30	xxx	0.108	Passed
Cap. Unbalance to Ground(pF/100.0 m)@1000Hz	330.00	28.20	xxx	4.97	xxx	14.14	xxx	8.627	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 [5]	7.60	7.60	0.06	5.42	-28.20	Passed
Pair 2 [6]	7.26	7.27	0.14	5.18	10.27	Passed
Pair 3 [7]	7.56	7.54	0.35	5.38	-13.12	Passed
Pair 4 [8]	7.19	7.20	0.04	5.20	-4.97	Passed

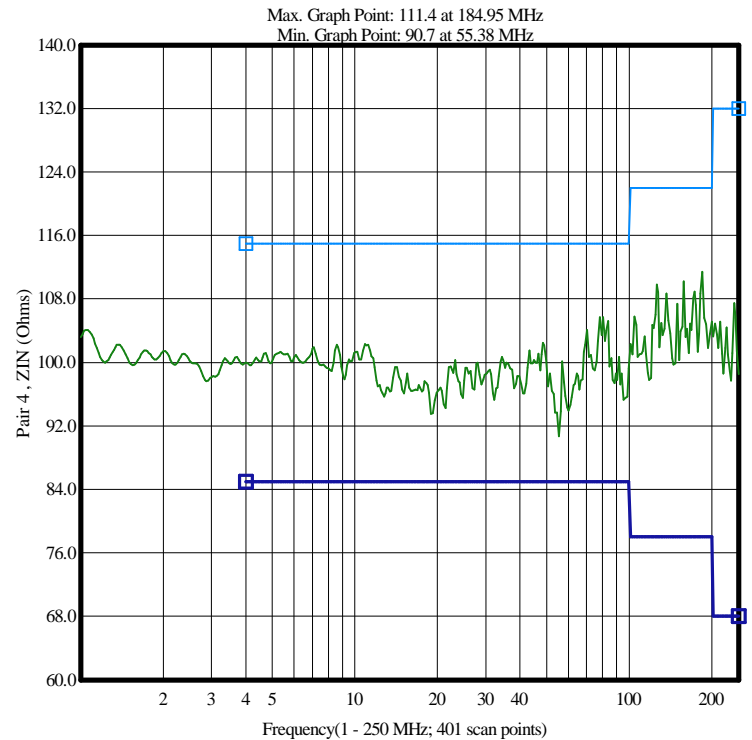
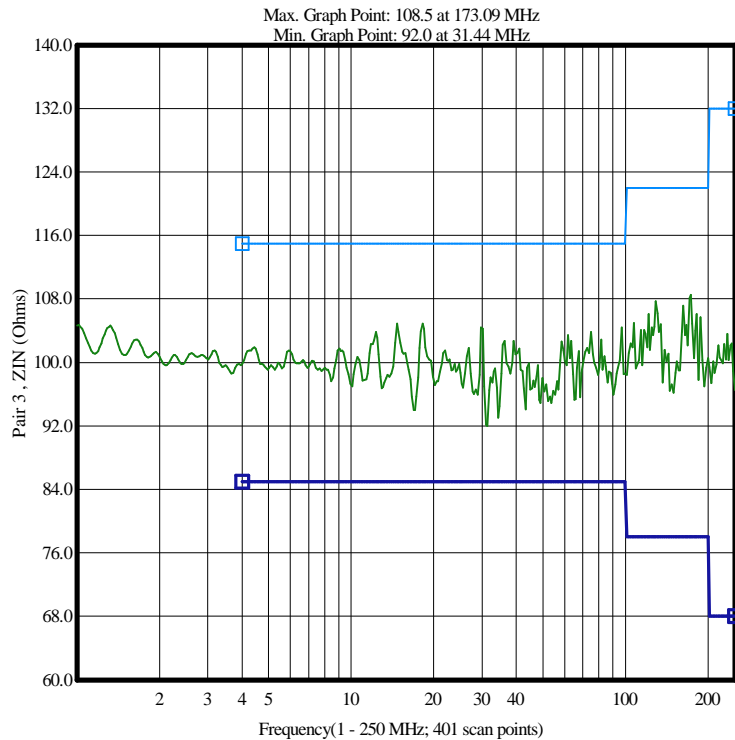
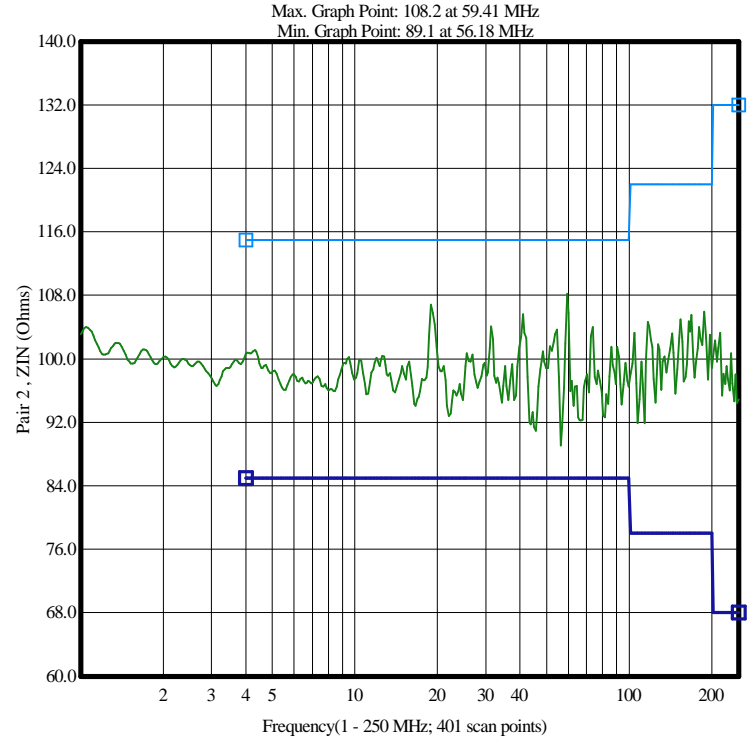
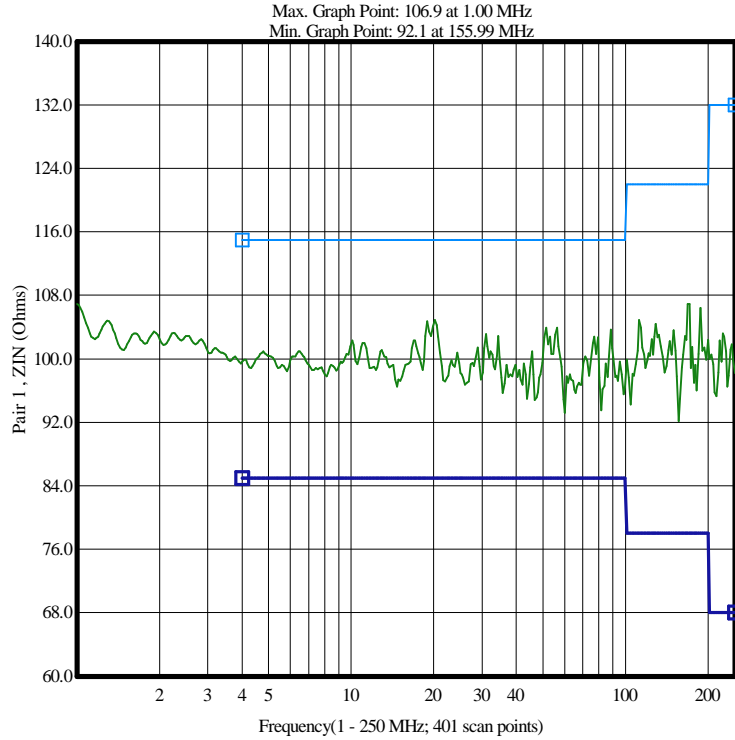
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### Summary and Graphic: Input Impedance (Zin)(Terminated)

Pair	Specification		Measured(Ohms)		Margin (Ohms)		@ Frequency (MHz)		Test Result
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	
Pair 1 [5]	85.0	115.0	93.2	104.9	8.2	10.1	60.22	20.18	Passed
Pair 2 [6]	85.0	115.0	89.1	108.2	4.1	6.8	56.18	59.41	Passed
Pair 3 [7]	85.0	115.0	92.0	104.9	7.0	10.1	31.44	14.68	Passed
Pair 4 [8]	85.0	115.0	90.7	105.7	5.7	9.3	55.38	78.19	Passed



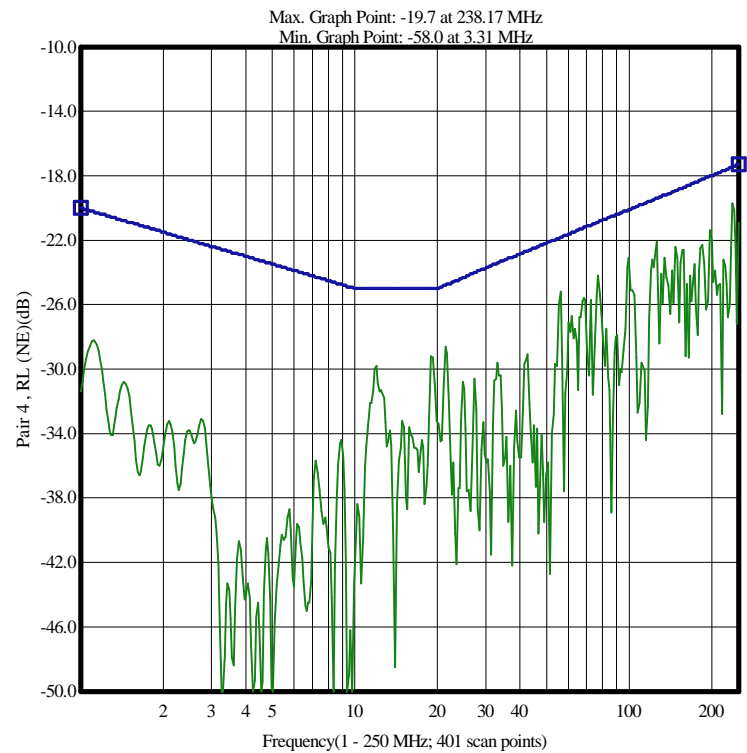
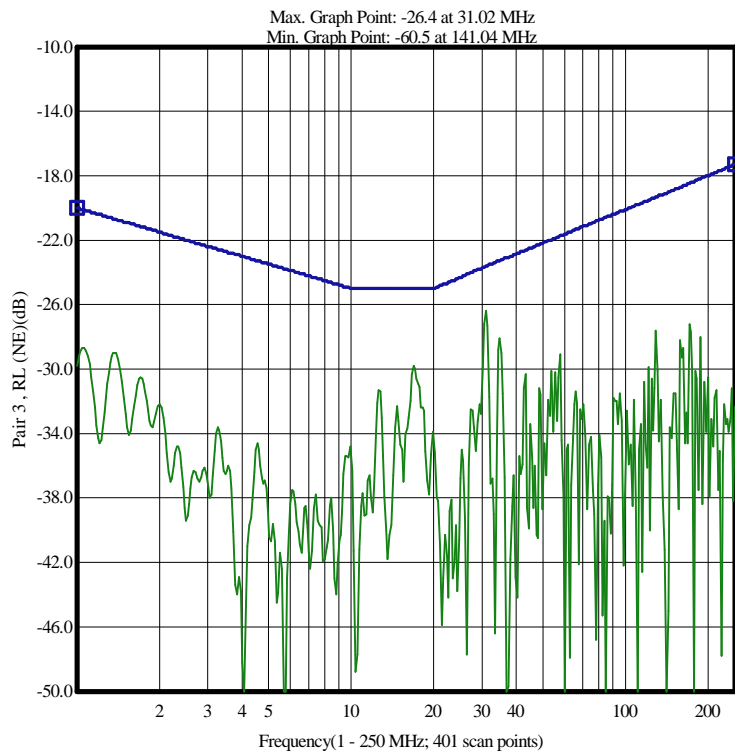
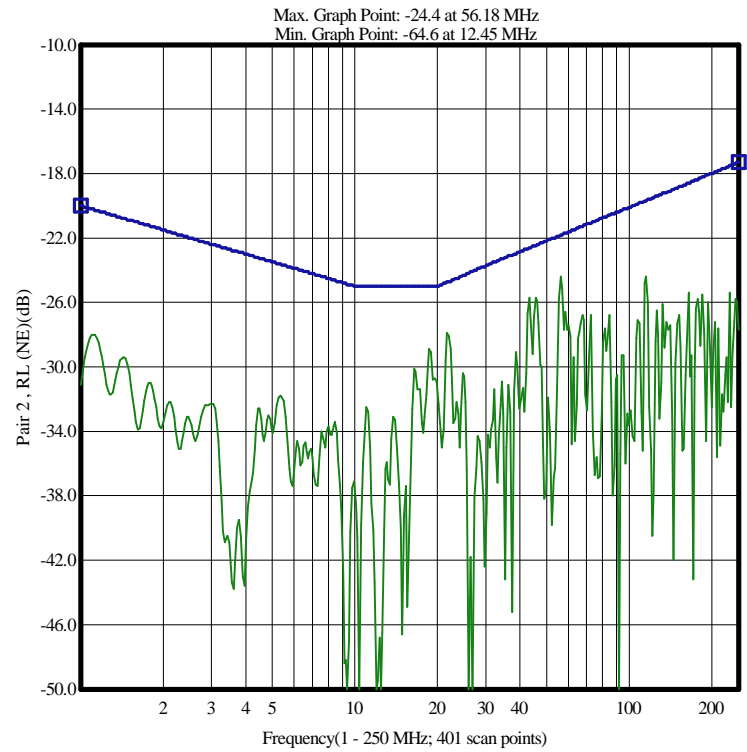
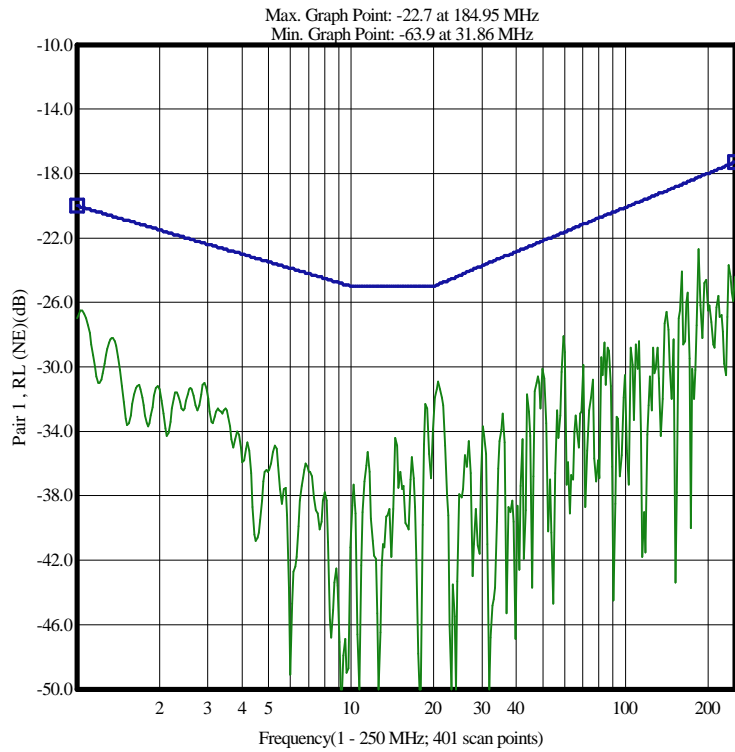
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### Summary and Graphic: Return Loss (RL)

Pair	Spec (Min)(dB)	Measured(dB)	Margin (dB)	@ Frequency (MHz)	Test Result
Pair 1 [5]	18.2	22.7	4.5	184.95	Passed
Pair 2 [6]	21.8	24.4	2.6	56.18	Passed
Pair 3 [7]	23.6	26.4	2.8	31.02	Passed
Pair 4 [8]	17.5	19.7	2.2	238.17	Passed



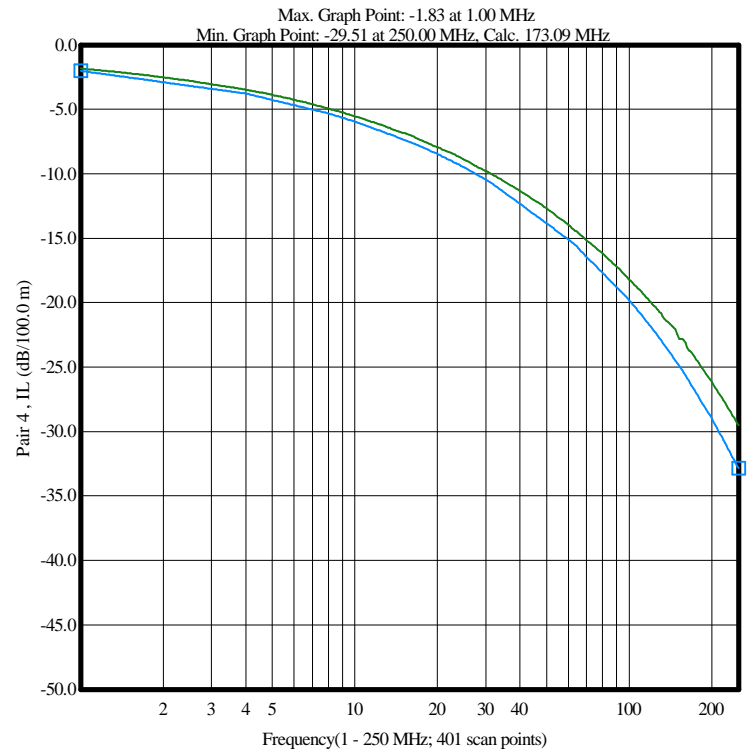
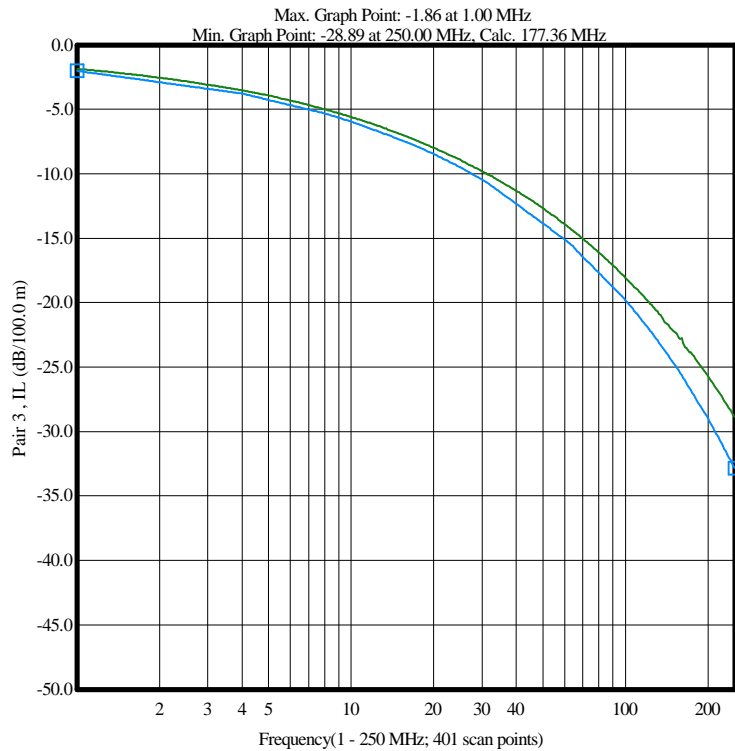
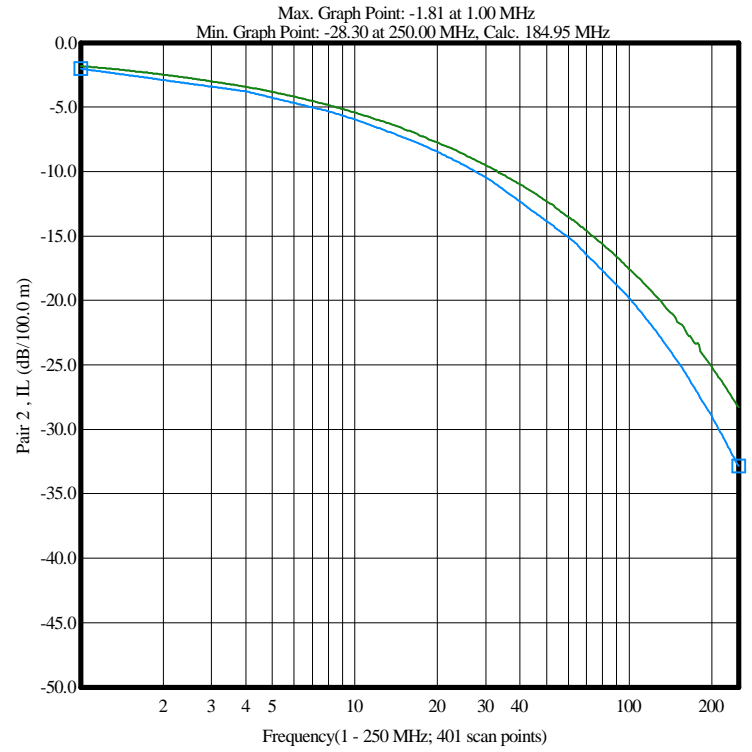
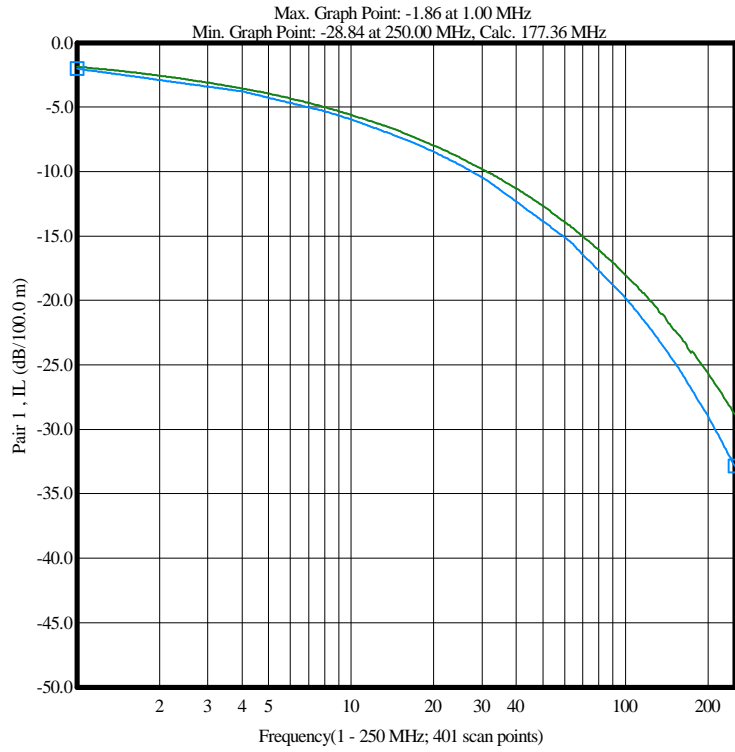
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**Summary and Graphic: Insertion Loss (IL)(Curve Fit)@20C**

Pair	Spec (Max)(dB/100.0 m)	Measured(dB/100.0 m)	Margin (dB/100.0 m)	@ Frequency (MHz)	Test Result
Pair 1 [5]	2.02	1.86	0.16	1.00	Passed
Pair 2 [6]	2.04	1.83	0.21	1.02	Passed
Pair 3 [7]	2.02	1.86	0.16	1.00	Passed
Pair 4 [8]	2.02	1.83	0.19	1.00	Passed



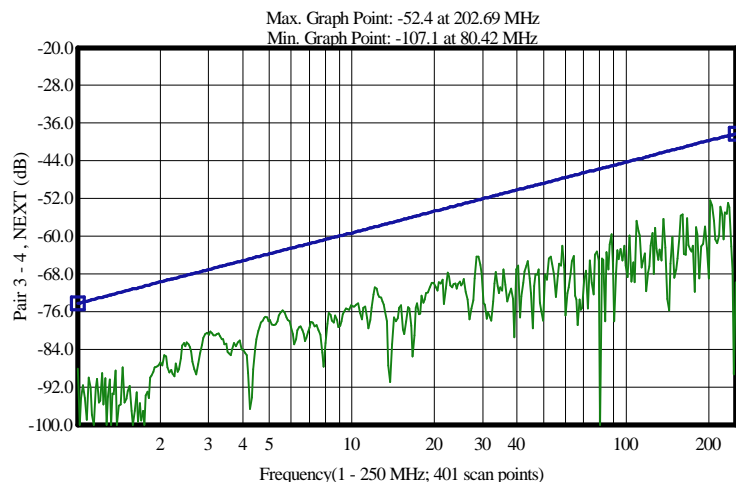
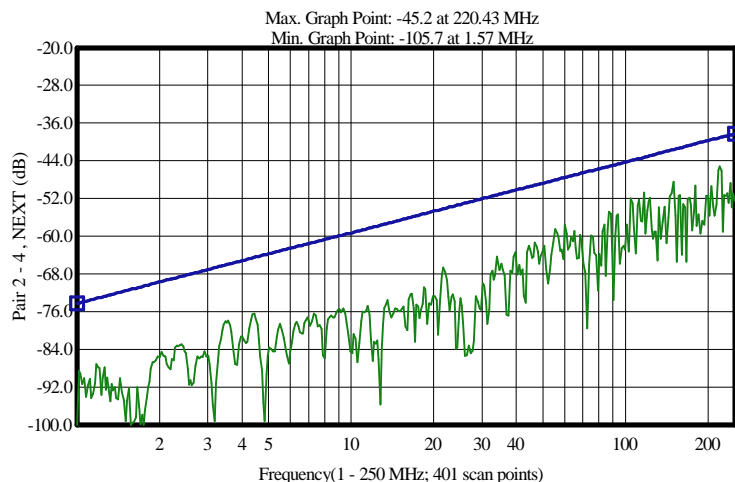
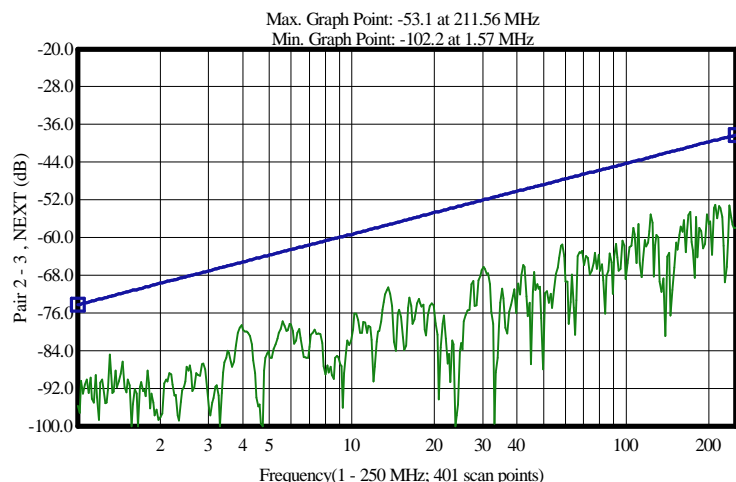
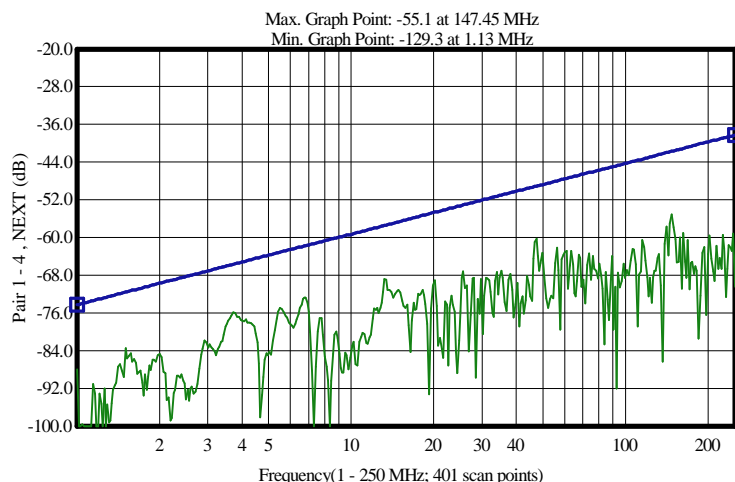
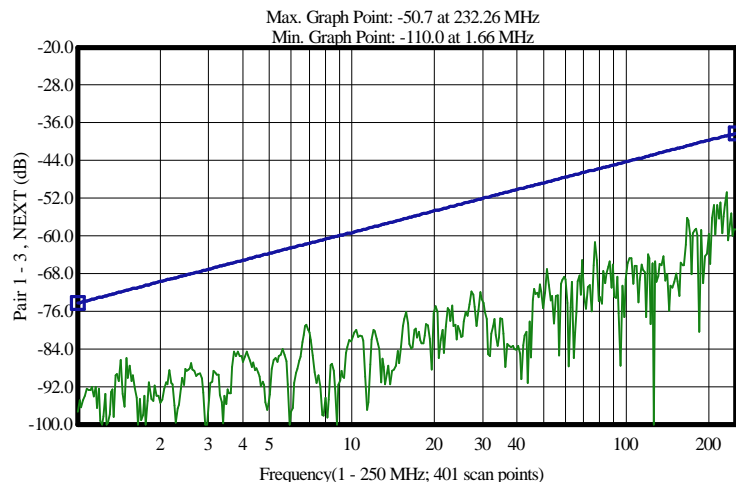
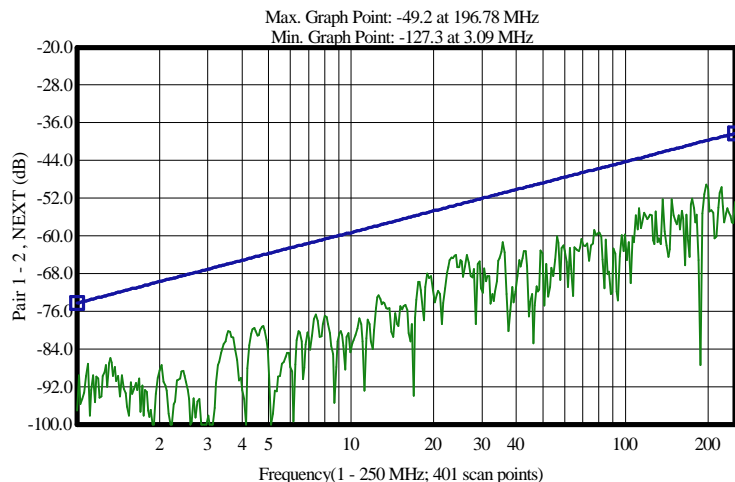
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### Summary and Graphic: Near End Crosstalk Loss (NEXT)

Pair	Spec (Min)(dB)	Measured(dB)	Margin (dB)	@ Frequency (MHz)	Test Result
Pair 1 - 2	39.8	49.2	9.4	196.78	Passed
Pair 1 - 3	38.8	50.7	11.9	232.26	Passed
Pair 1 - 4	65.7	75.9	10.2	3.72	Passed
Pair 2 - 3	42.9	55.1	12.2	122.94	Passed
Pair 2 - 4	39.1	45.2	6.1	220.43	Passed
Pair 3 - 4	52.4	64.4	12.0	28.50	Passed



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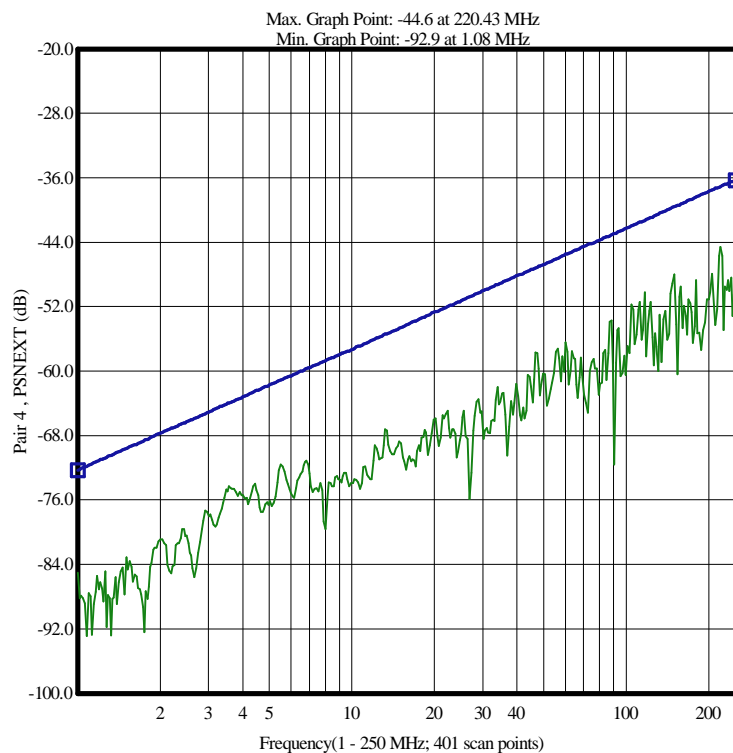
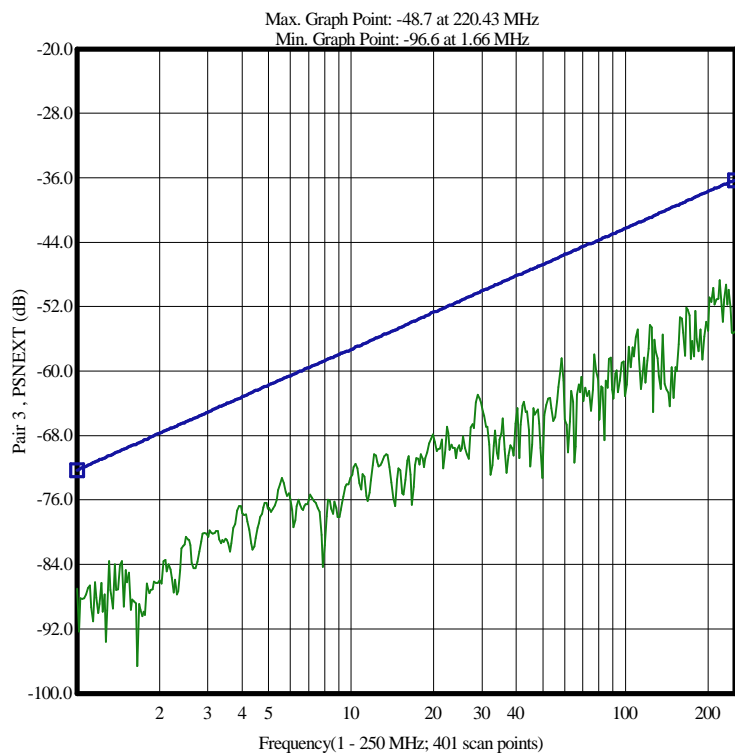
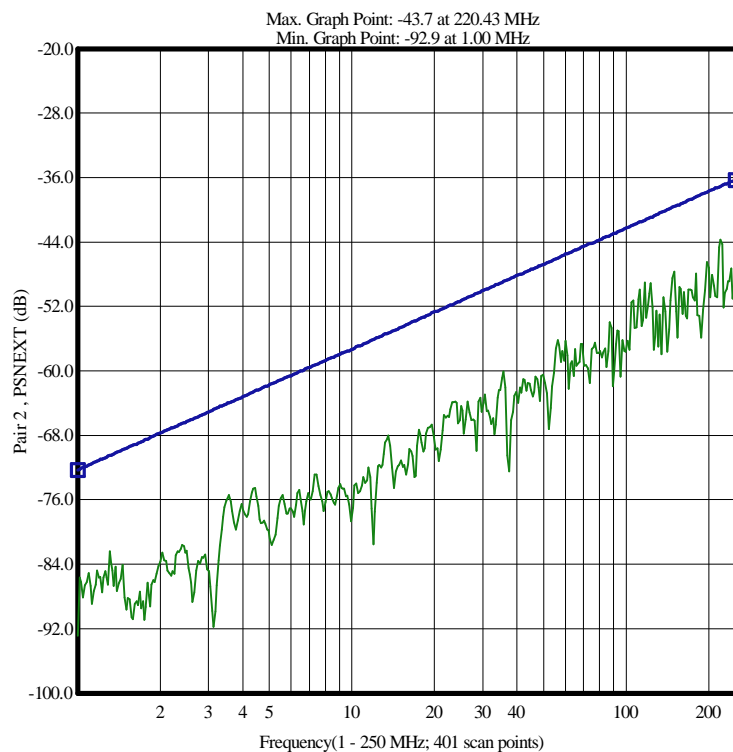
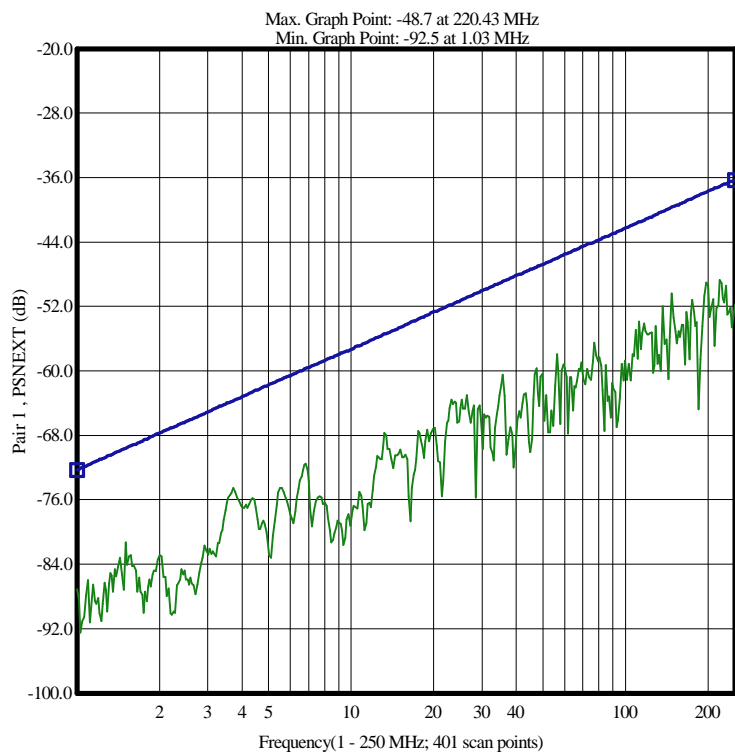
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### Summary and Graphic: Power Sum NEXT(PSNEXT)

Pair	Spec (Min)(dB)	Measured(dB)	Margin (dB)	@ Frequency (MHz)	Test Result
Pair 1 [5]	39.7	50.4	10.7	147.45	Passed
Pair 2 [6]	37.1	43.7	6.6	220.43	Passed
Pair 3 [7]	37.1	48.7	11.6	220.43	Passed
Pair 4 [8]	37.1	44.6	7.5	220.43	Passed



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**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	115.0	115.0	115.0	115.0	115.0	115.0	115.0	115.0	115.0	122.0
Min Spec	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	78.0
Pair 1 [5]	99.5	98.1	102.0	99.3	104.4	98.3	102.3	97.8	96.7	96.9
Pair 2 [6]	100.6	96.0	97.5	97.9	100.4	96.5	102.8	94.7	96.6	96.7
Pair 3 [7]	99.7	99.3	97.1	99.9	97.7	98.8	92.0	101.0	98.6	98.6
Pair 4 [8]	100.0	99.2	101.3	96.4	96.3	97.5	98.8	96.8	99.5	99.7

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

Frequency	199.90	200.00	250.00							
Max Spec	122.0	132.0	132.0							
Min Spec	78.0	68.0	68.0							
Pair 1 [5]	102.3	102.2	98.2							
Pair 2 [6]	98.9	98.9	94.9							
Pair 3 [7]	100.4	100.4	96.5							
Pair 4 [8]	105.0	104.9	98.5							

**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	20.0	23.0	24.5	25.0	25.0	25.0	24.3	23.6	21.5	20.1
Pair 1 [5]	27.0	35.6	37.9	39.8	39.9	33.1	38.0	38.5	38.5	31.2
Pair 2 [6]	31.1	41.7	33.7	37.9	35.5	31.5	30.6	34.4	30.4	33.5
Pair 3 [7]	29.8	46.9	41.8	35.6	33.7	34.4	37.1	26.9	45.5	37.2
Pair 4 [8]	31.4	44.1	40.9	41.7	34.1	33.3	31.2	39.8	27.8	23.4

**Continue:Return Loss (RL)(dB)**

Frequency	200.00	250.00								
Min Spec	18.0	17.3								
Pair 1 [5]	26.5	24.4								
Pair 2 [6]	32.2	27.7								
Pair 3 [7]	31.2	32.3								
Pair 4 [8]	22.2	20.9								

**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 [5]	1.86	3.55	5.01	5.62	7.11	7.99	8.93	10.00	14.19	18.02
Pair 2 [6]	1.81	3.43	4.84	5.44	6.90	7.76	8.66	9.71	13.78	17.56
Pair 3 [7]	1.86	3.53	5.00	5.60	7.12	7.99	8.92	10.00	14.19	18.06
Pair 4 [8]	1.83	3.49	4.94	5.55	7.05	7.95	8.89	9.98	14.30	18.21

**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 [5]	20.18	22.61	25.68	28.84						
Pair 2 [6]	19.66	21.86	25.16	28.30						
Pair 3 [7]	20.24	22.58	25.73	28.89						
Pair 4 [8]	20.39	22.81	26.17	29.51						

**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	74.3	65.2	60.7	59.3	56.2	54.7	53.3	51.8	47.3	44.3
Pair 1 - 2	97.1	92.0	77.3	83.7	75.8	72.6	65.2	69.1	64.1	60.5
Pair 1 - 3	97.3	86.4	94.9	81.8	78.7	75.8	81.4	81.8	77.5	68.7
Pair 1 - 4	88.0	77.5	84.7	84.1	74.3	69.8	76.2	68.6	66.9	68.3
Pair 2 - 3	95.7	79.2	88.8	80.5	74.8	76.0	82.6	67.6	74.6	68.3
Pair 2 - 4	102.8	81.3	85.8	84.6	79.7	72.8	73.5	76.5	62.2	62.1
Pair 3 - 4	88.1	84.1	83.4	74.8	75.1	70.3	70.4	76.8	68.5	66.6

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

Frequency	155.00	200.00	250.00							
Min Spec	41.4	39.7	38.3							
Pair 1 - 2	56.5	50.5	52.8							
Pair 1 - 3	71.3	60.1	58.6							
Pair 1 - 4	65.2	63.1	70.5							
Pair 2 - 3	61.0	57.1	57.9							
Pair 2 - 4	58.0	51.8	52.5							
Pair 3 - 4	62.3	67.4	69.8							

**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	72.3	63.2	58.7	57.3	54.2	52.7	51.3	49.8	45.3	42.3
Pair 1 [5]	87.1	76.8	76.4	78.3	71.1	67.2	64.7	65.7	62.1	59.1
Pair 2 [6]	92.9	77.0	76.5	77.8	71.5	68.8	64.5	64.9	59.7	57.4
Pair 3 [7]	87.0	77.4	82.0	73.1	71.1	68.3	69.8	66.9	67.0	62.9
Pair 4 [8]	85.0	75.4	79.5	73.9	71.0	66.0	67.9	67.4	60.2	59.9

**Continue:Power Sum NEXT(PSNEXT)(dB)**

Frequency	155.00	200.00	250.00							
Min Spec	39.4	37.7	36.3							
Pair 1 [5]	55.8	49.7	51.7							
Pair 2 [6]	52.5	47.5	49.0							
Pair 3 [7]	58.2	54.6	55.1							
Pair 4 [8]	55.3	51.0	52.3							

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