

**DCM Test Report**

Cable Type : 4x2x23 x FEP	Factory Number :	Data File Name : DA051461.XLD
Cable I.D. : UTP#23X4P CABLE	Order Number :	Specification File : SLOT CAT6E-600Mhz.LDS
Temperature : 25.00 卨	Operator : CHANG	Test Date : 06/12/2010
Length : 305.00 m	Number of Pairs to Test : 4	Test Time : 07:09:43 AM
Starting Position : 6		

**Pass - Fail Test Certificate - 4 Pairs**

**High Frequency**

Test Type	Test Result
<b>Input Impedance (Zin)(Ohms)(Open/Short)</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>
<b>ATT to NEXT Ratio (ACR)(dB/100.0 m)</b>	<b>OK</b>
<b>Power Sum ACR (PS ACR)(dB/100.0 m)</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( % )@20C</b>	<b>OK</b>
<b>Mutual Capacitance(nF/100.0 m)@1000Hz</b>	<b>OK</b>
<b>Cap. Unbalance to Ground(pF/0.0 m)@1000Hz</b>	<b>OK</b>
<b>Cap. Unbalance to Shield(pF/100.0 m)@1000Hz</b>	<b>OK</b>

Signature:	Approved:	Date:
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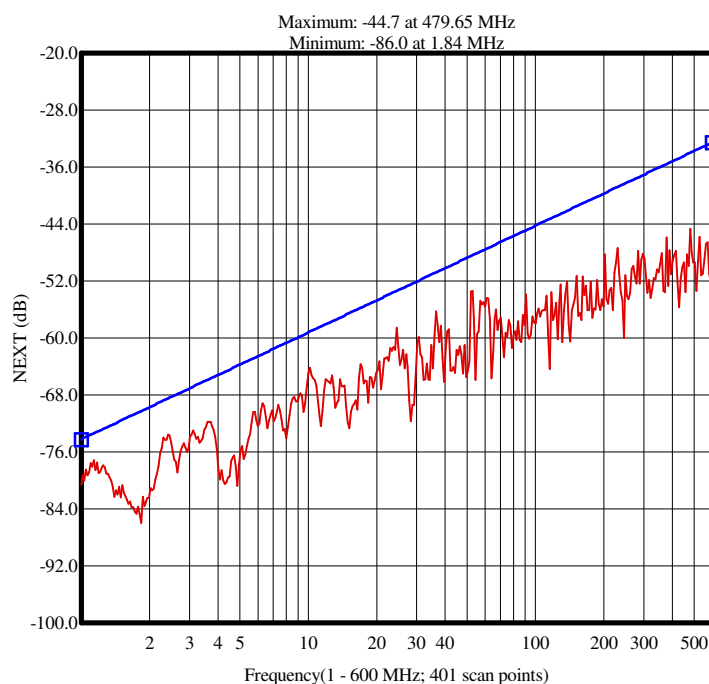
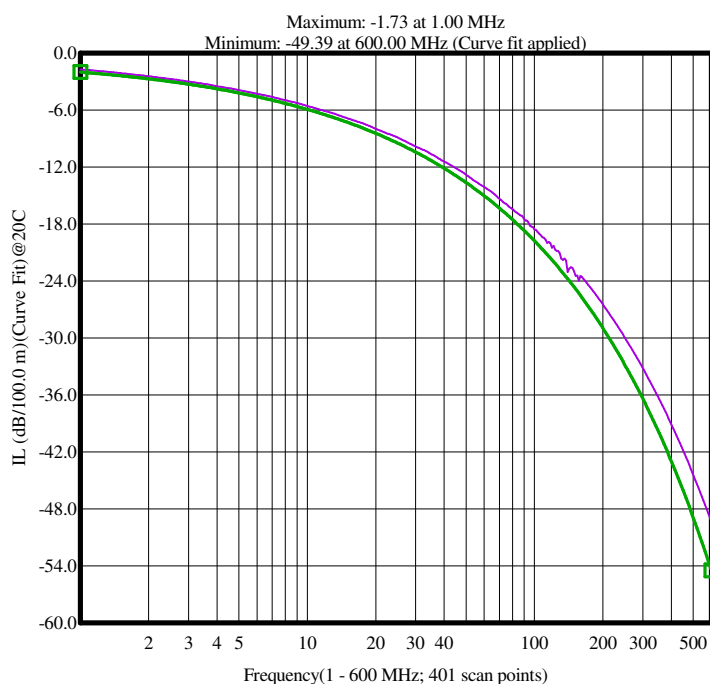
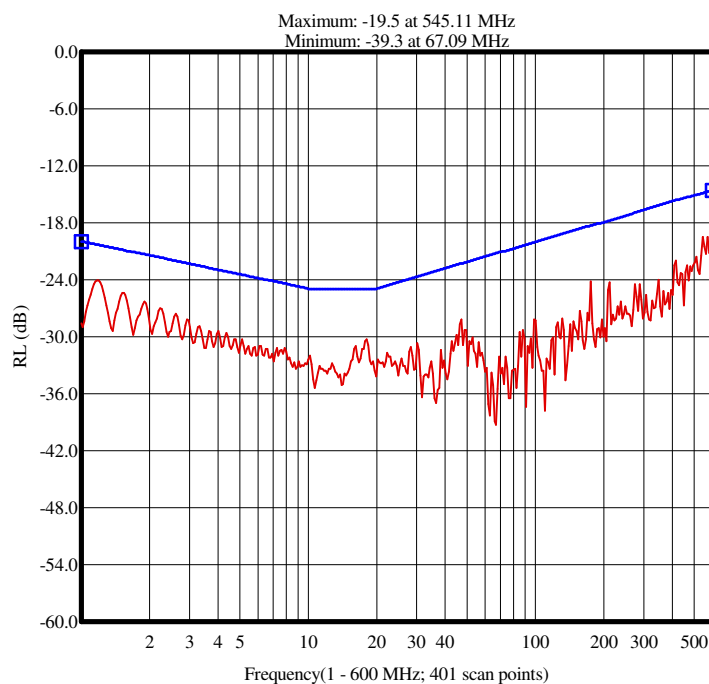
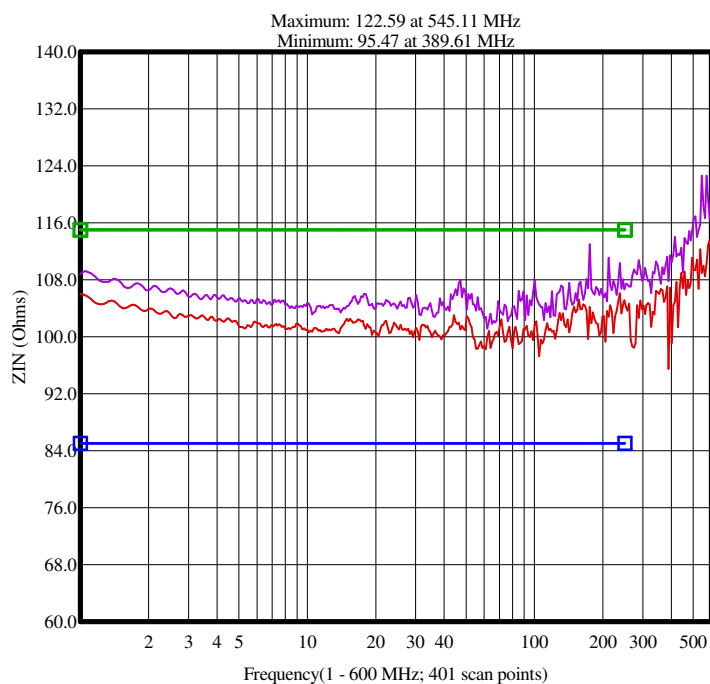
### DCM Test Report

Cable Type : 4x2x23 x FEP	Factory Number :	Data File Name : DA051461.XLD
Cable I.D. : UTP#23X4P CABLE	Order Number :	Specification File : SLOT CAT6E-600Mhz.LDS
Temperature : 25.00 卨	Operator : CHANG	Test Date : 06/12/2010
Length : 305.00 m	Number of Pairs to Test : 4	Test Time : 07:09:43 AM
Starting Position : 6		

### Worst Case Summary

#### High Frequency

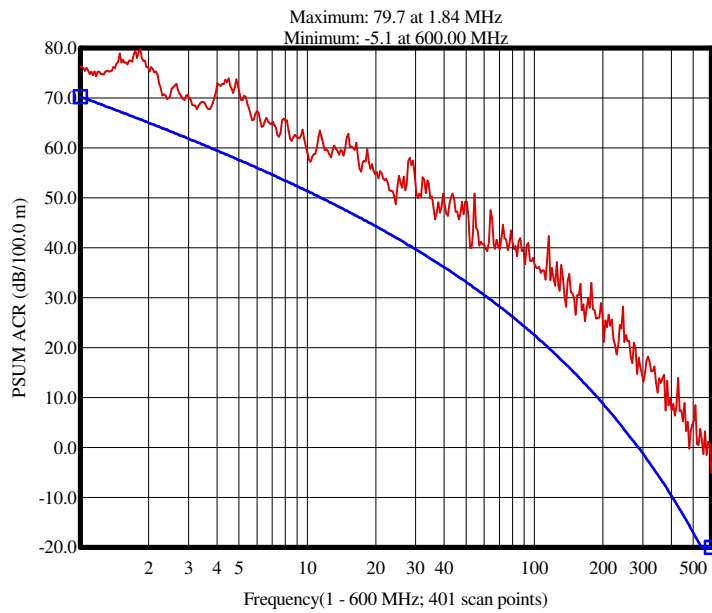
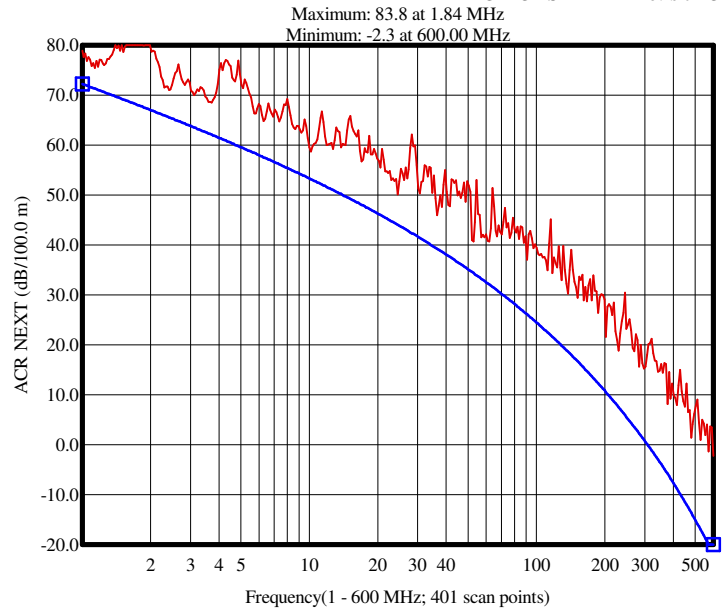
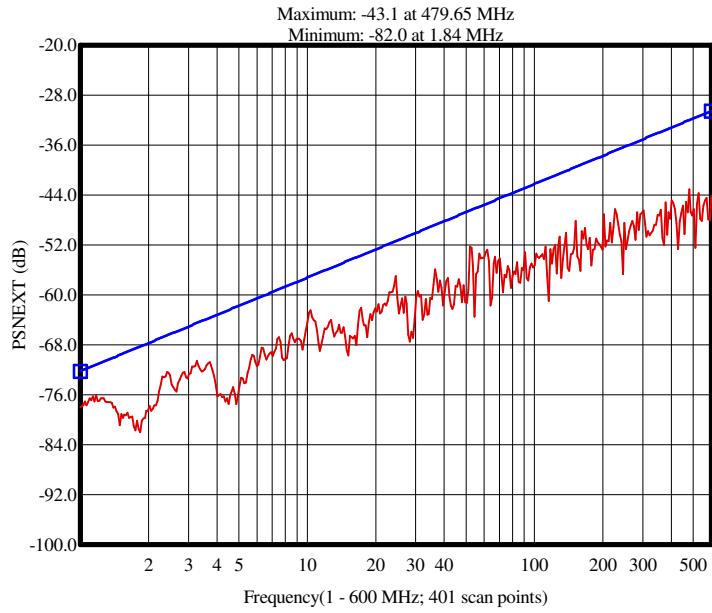
Test Type	Specification	Measured (Pair)	Margin	@ Frequency (MHz)	Test Result
Input Impedance (Zin)(Open/Short)	85.00 (Min)	97.25 (Pair 4)	12.25	104.98	Passed
Input Impedance (Zin)(Open/Short)	115.00 (Max)	112.98 (Pair 2)	2.02	175.13	Passed
Return Loss (RL)	20.3 (Min)	24.1 (Pair 2)	3.8	1.17	Passed
Insertion Loss (IL)(Curve Fit)@20C	2.80 (Max)	2.54 (Pair 1)	0.26	2.12	Passed
Near End Crosstalk Loss (NEXT)	73.4 (Min)	77.2 (Pairs 2-4)	3.8	1.14	Passed
Power Sum NEXT(PSNEXT)	71.4 (Min)	76.3 (Pair 4)	4.9	1.14	Passed
ATT to NEXT Ratio (ACR)	71.3 (Min)	75.4 (Pairs 4-2)	4.1	1.14	Passed
Power Sum ACR (PS ACR)	69.3 (Min)	74.5 (Pair 4)	5.2	1.14	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	7.19	xxx	6.98	xxx	7.09	xxx	0.087	Passed
Resistance Unbalance( % )	5.00	0.94	xxx	0.04	xxx	0.33	xxx	0.356	Passed
Mutual Capacitance(nF/100.0 m)@1000Hz	5.58	4.79	xxx	4.47	xxx	4.68	xxx	0.127	Passed
Cap. Unbalance to Ground(pF/0.0 m)@1000Hz	330.00	0.00	xxx	0.00	xxx	0.00	xxx	1.000	Passed
Cap. Unbalance to Shield(pF/100.0 m)@1000Hz	330.00	1.92	xxx	1.35	xxx	1.68	xxx	0.220	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	Capacitance Unbalance to Shield @1000 Hz	Test Result
Unit	Ohms/100.0 m	Ohms/100.0 m	%	nF/100.0 m	pF/0.0 m	pF/100.0 m	
Max Spec	9.38	9.38	5.00	5.58	330.00	330.00	
Min Spec	xxx	xxx	xxx	xxx	xxx	xxx	
Pair 1 [6]	7.19	7.18	0.04	4.77	0.00	1.35	Passed
Pair 2 [7]	6.99	7.06	0.94	4.47	0.00	1.84	Passed
Pair 3 [8]	7.17	7.16	0.15	4.67	0.00	1.92	Passed
Pair 4 [9]	6.98	6.99	0.21	4.79	0.00	1.62	Passed

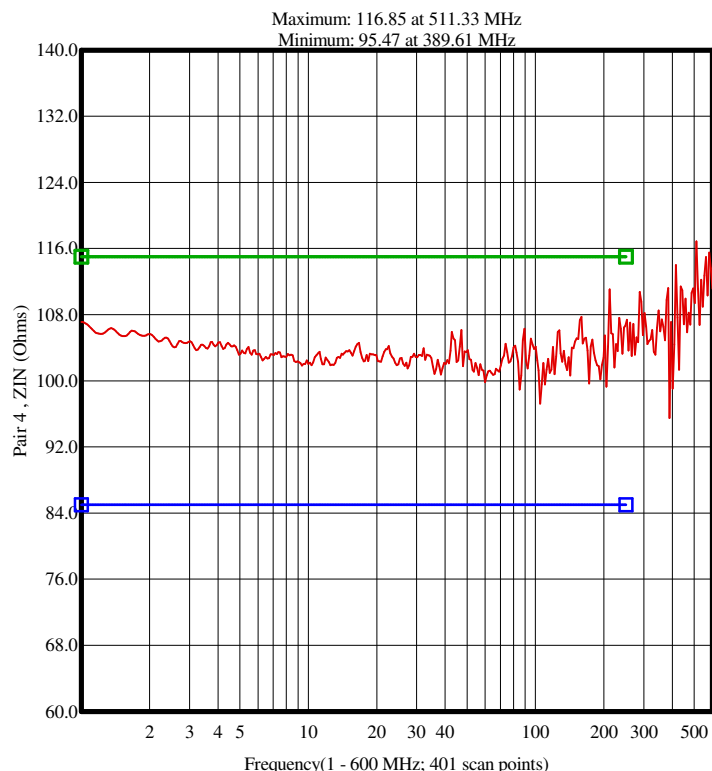
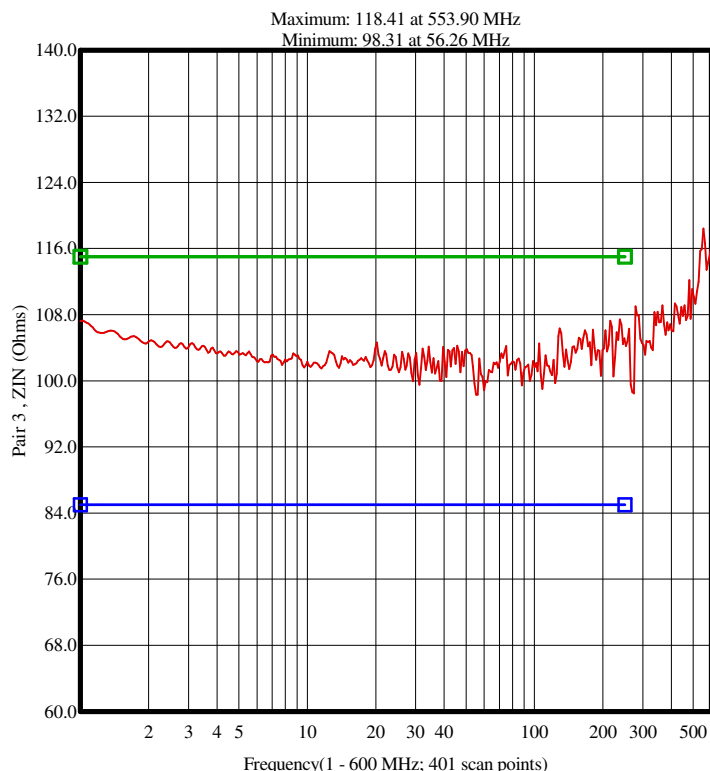
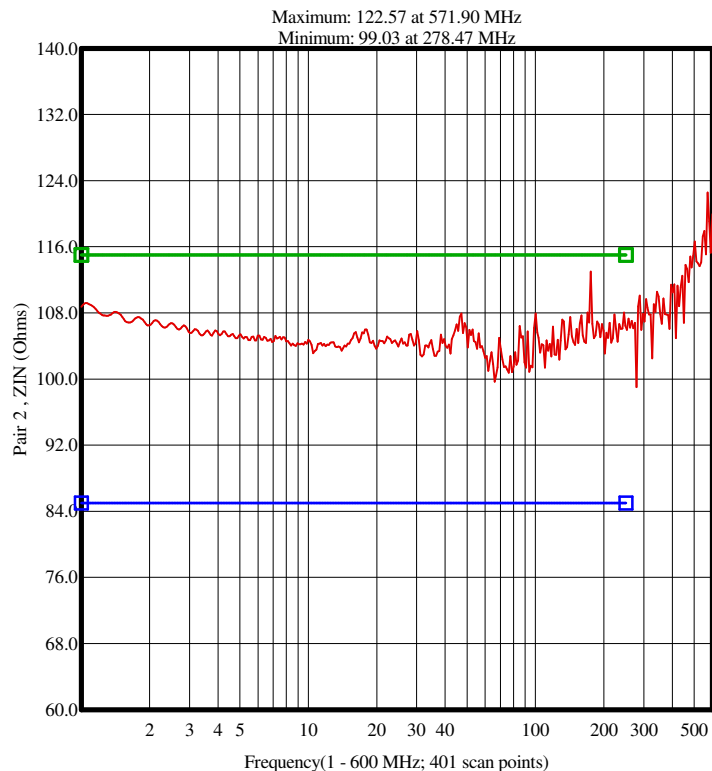
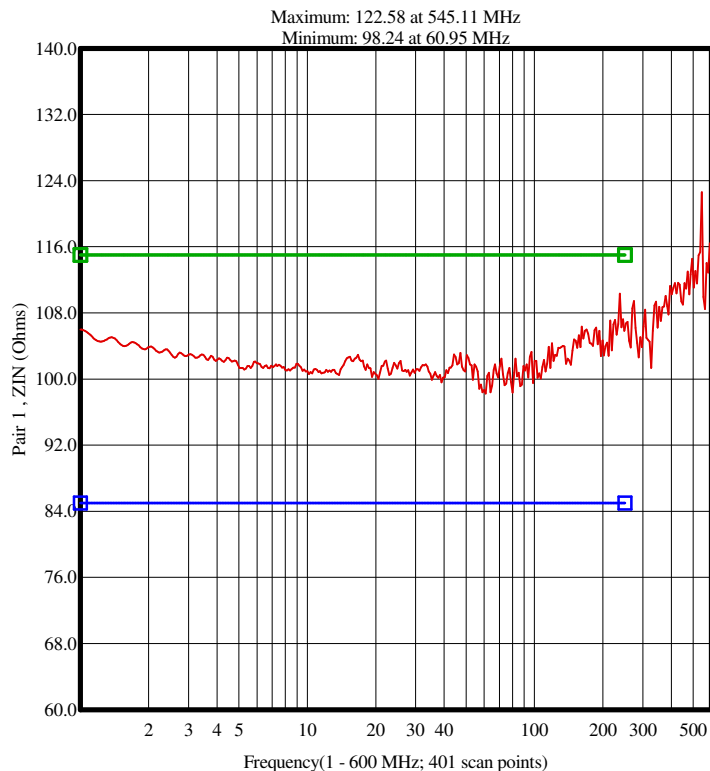
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### Summary and Graphic: Input Impedance (Zin)(Open/Short)

Pair [Position]	Specification		Measured(Ohms)		Margin (Ohms)		@ Frequency (MHz)		Test Result
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	
Pair 1 [6]	85.00	115.00	98.24	110.32	13.24	4.68	60.95	237.31	Passed
Pair 2 [7]	85.00	115.00	99.69	112.98	14.69	2.02	66.02	175.13	Passed
Pair 3 [8]	85.00	115.00	98.31	107.41	13.31	7.59	56.26	237.31	Passed
Pair 4 [9]	85.00	115.00	97.25	111.07	12.25	3.93	104.98	212.18	Passed



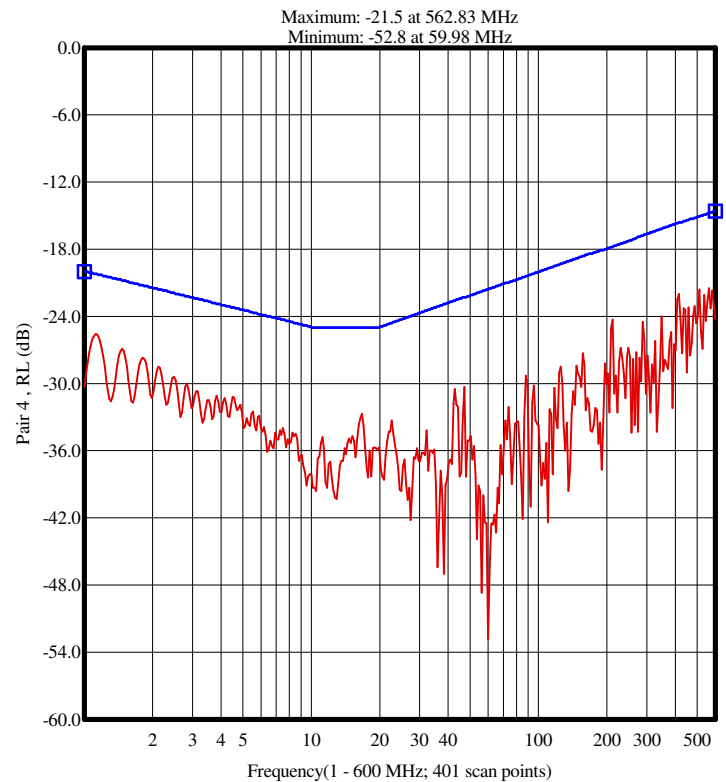
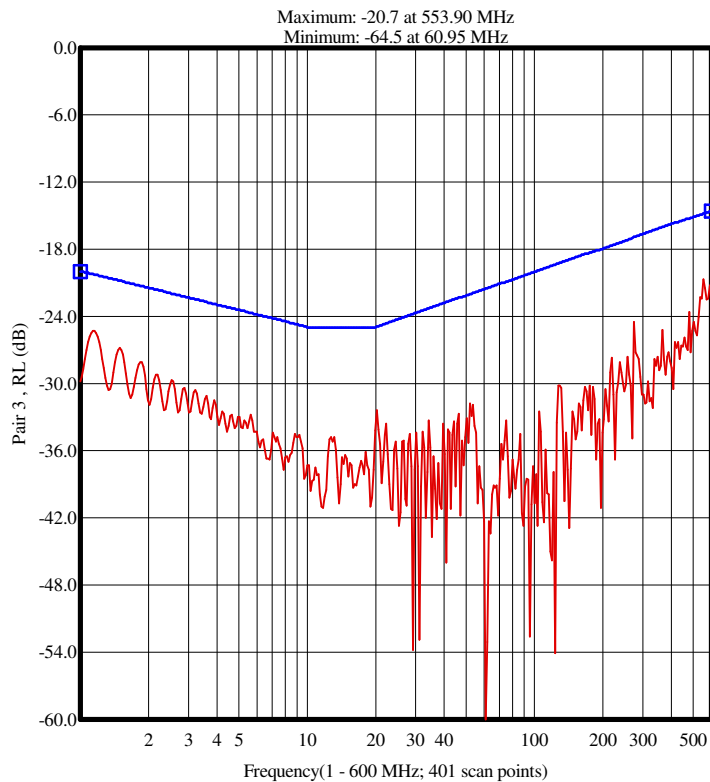
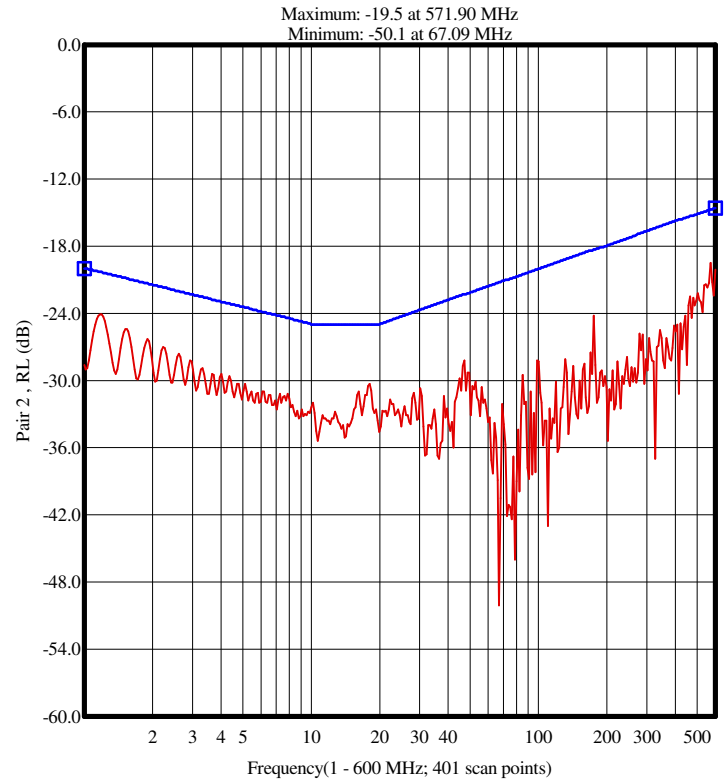
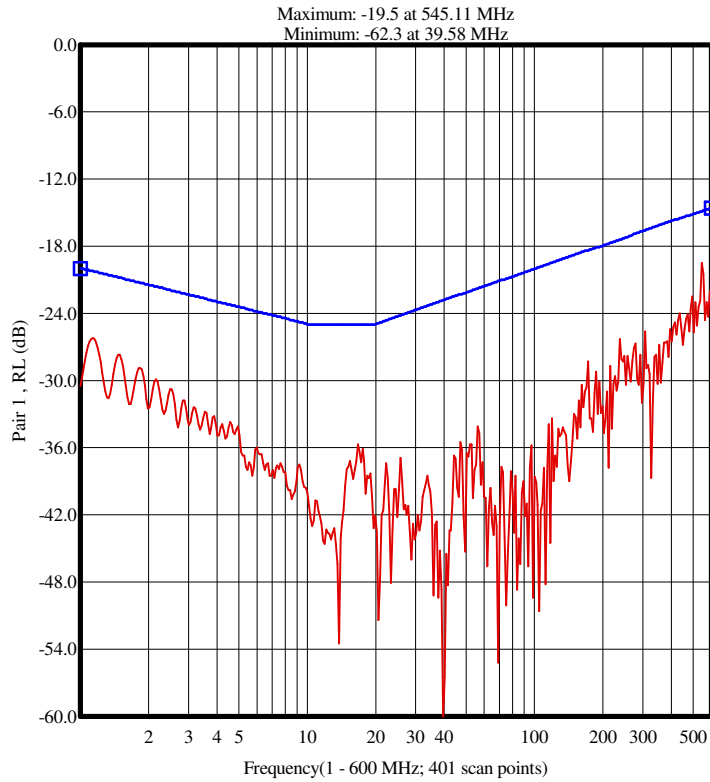
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Summary and Graphic: Return Loss (RL)

Pair [Position]	Spec (Min)(dB)	Measured(dB)	Margin (dB)	@ Frequency (MHz)	Test Result
Pair 1 [6]	14.9	19.5	4.6	545.11	Passed
Pair 2 [7]	20.3	24.1	3.8	1.17	Passed
Pair 3 [8]	20.3	25.3	5.0	1.15	Passed
Pair 4 [9]	20.2	25.6	5.4	1.12	Passed



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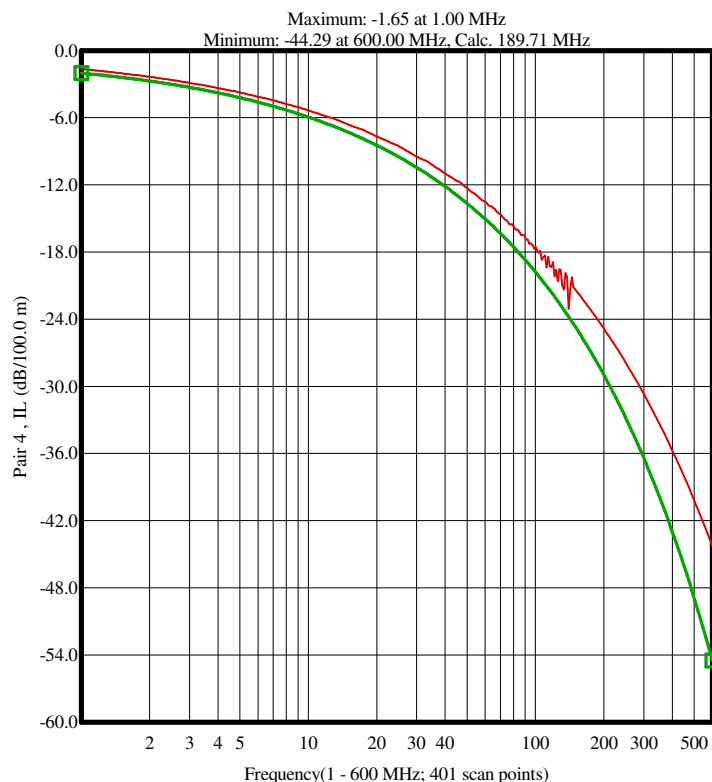
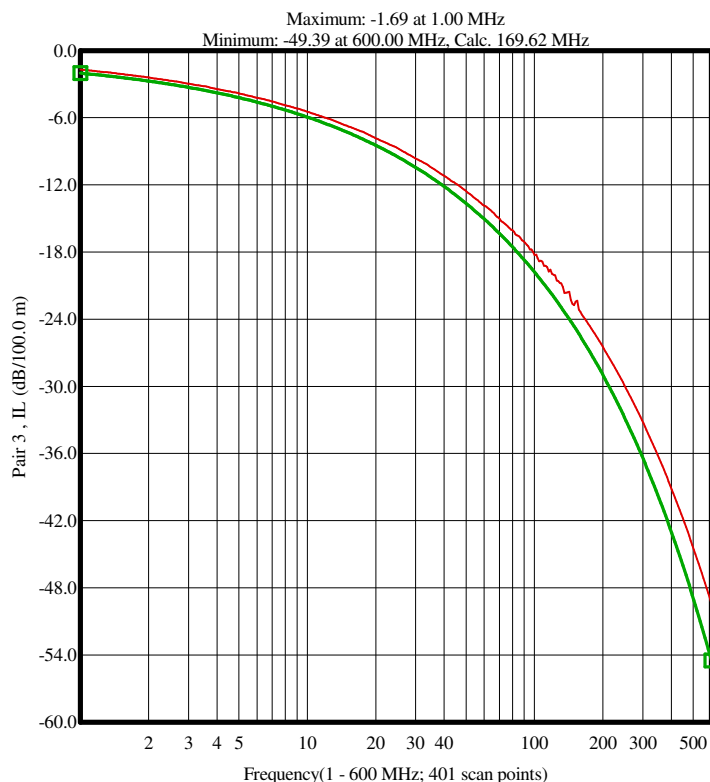
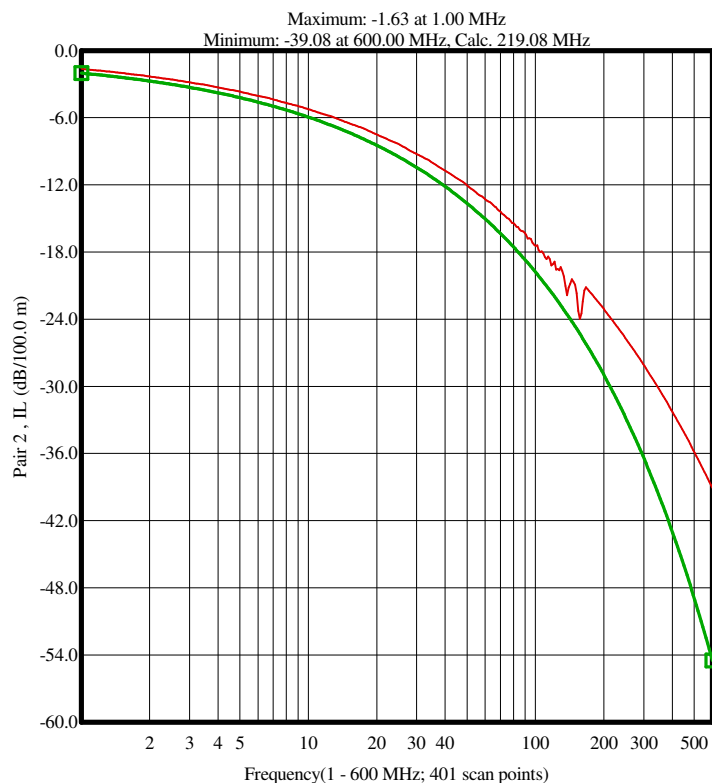
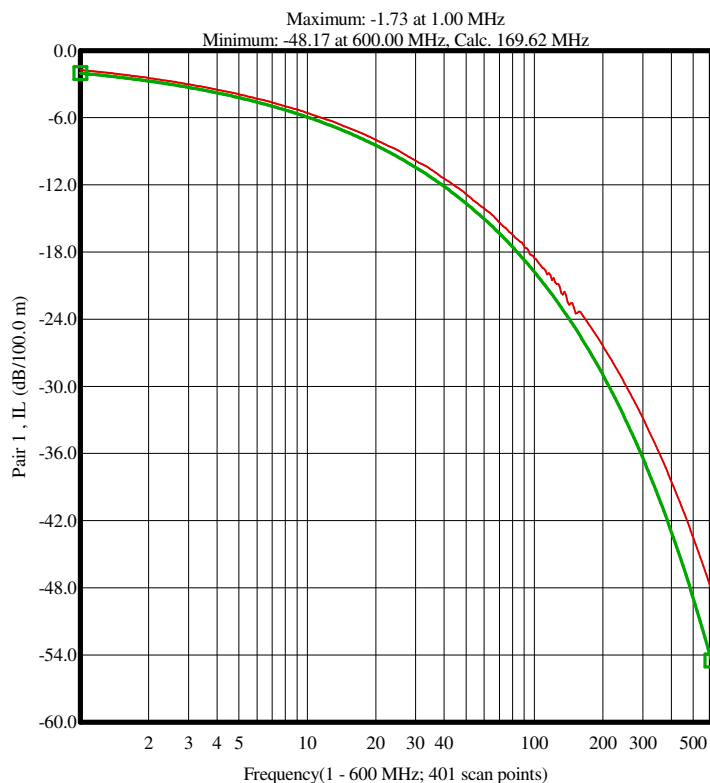
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### Summary and Graphic: Insertion Loss (IL)(Curve Fit)@20C

(Formula):  $IL \leq [ (1.808 * \sqrt{f}) + (0.017 * f) + (0.200 / \sqrt{f}) ] * 1.000 * \text{Stranded Factor}$  (Refer to manual)

Pair [Position]	Spec (Max)(dB/100.0 m)	Measured(dB/100.0 m)	Margin (dB/100.0 m)	@ Frequency (MHz)	Test Result
Pair 1 [6]	2.80	2.54	0.26	2.12	Passed
Pair 2 [7]	2.07	1.69	0.38	1.07	Passed
Pair 3 [8]	2.07	1.76	0.31	1.07	Passed
Pair 4 [9]	2.06	1.70	0.36	1.05	Passed



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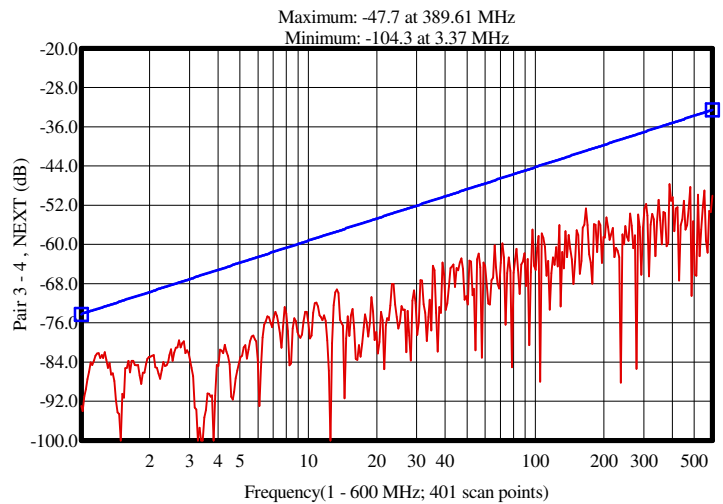
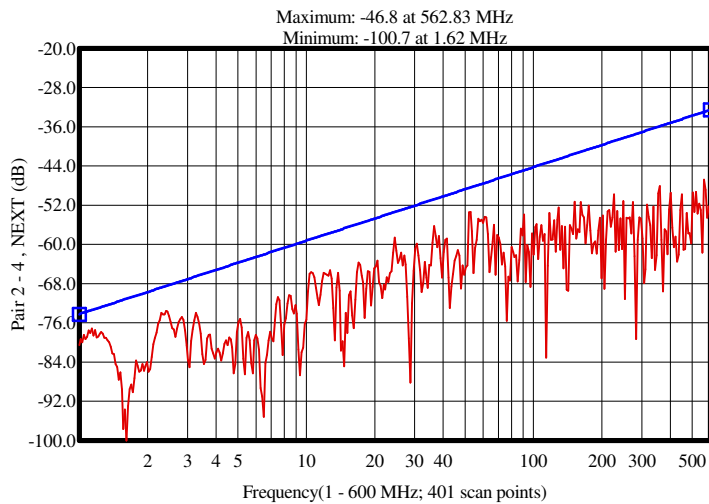
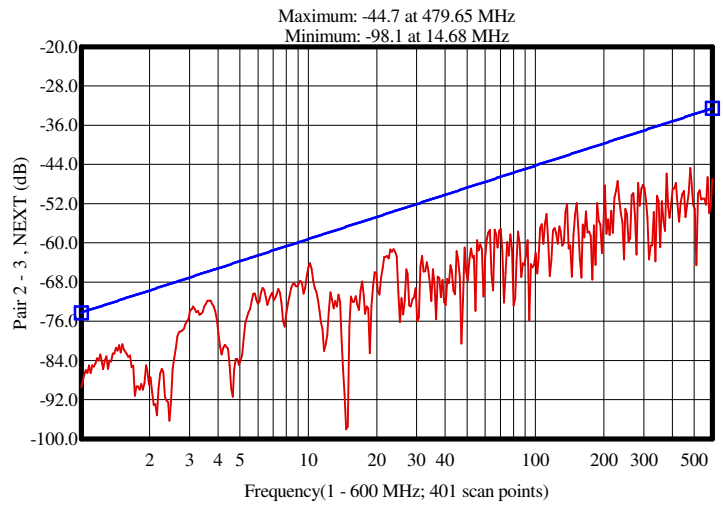
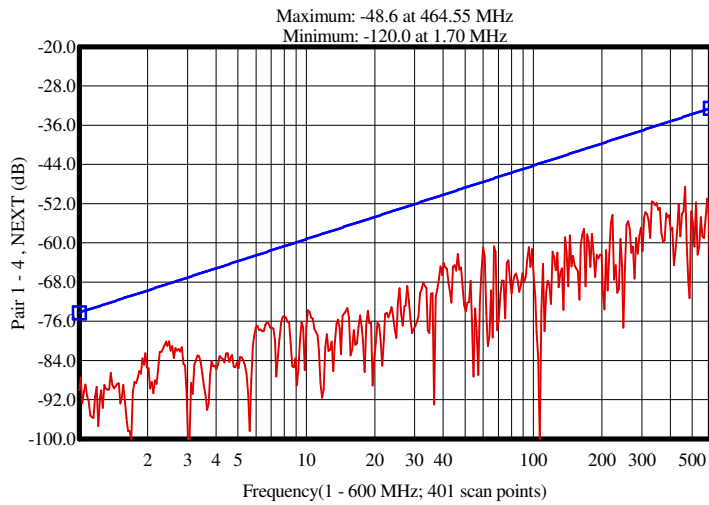
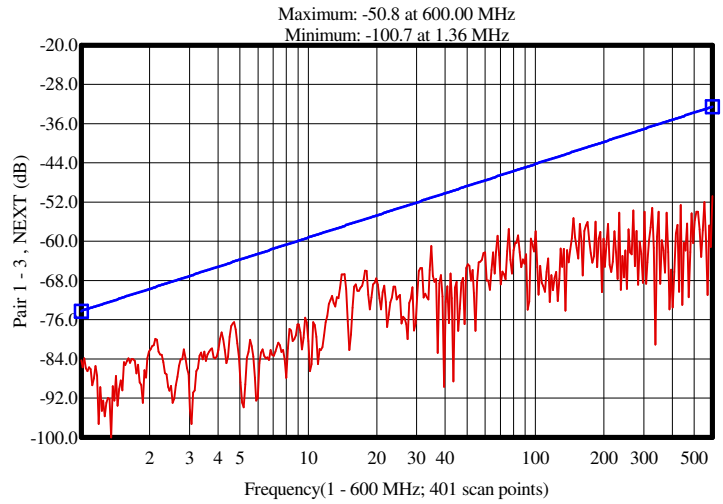
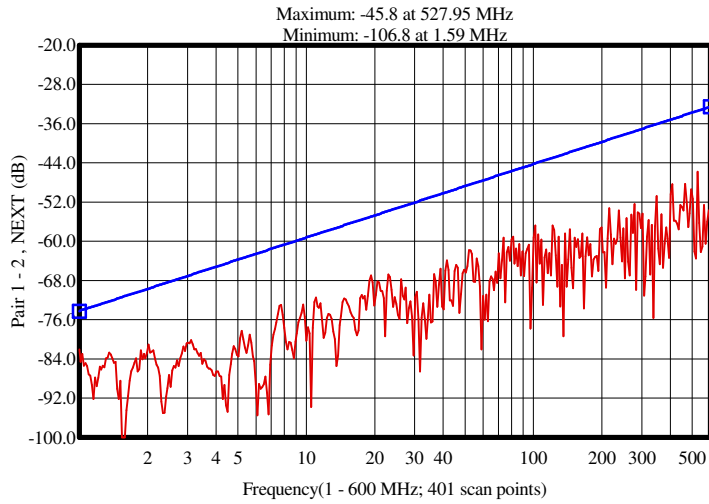
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### Summary and Graphic: Near End Crosstalk Loss (NEXT)

(Formula): NEXT >= 44.300 - 15.000 \* Log(f/100.000)

Pair [Position]	Spec (Min)(dB)	Measured(dB)	Margin (dB)	@ Frequency (MHz)	Test Result
Pair 1 - 2	74.3	82.1	7.8	1.00	Passed
Pair 1 - 3	57.1	66.8	9.7	14.00	Passed
Pair 1 - 4	68.5	80.2	11.7	2.41	Passed
Pair 2 - 3	59.1	64.2	5.1	10.16	Passed
Pair 2 - 4	73.4	77.2	3.8	1.14	Passed
Pair 3 - 4	73.1	82.2	9.1	1.19	Passed



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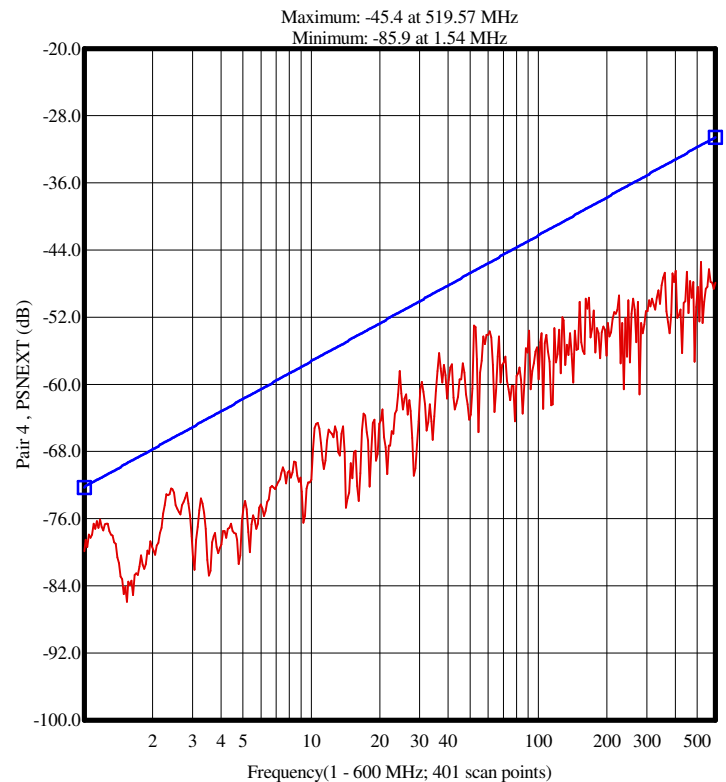
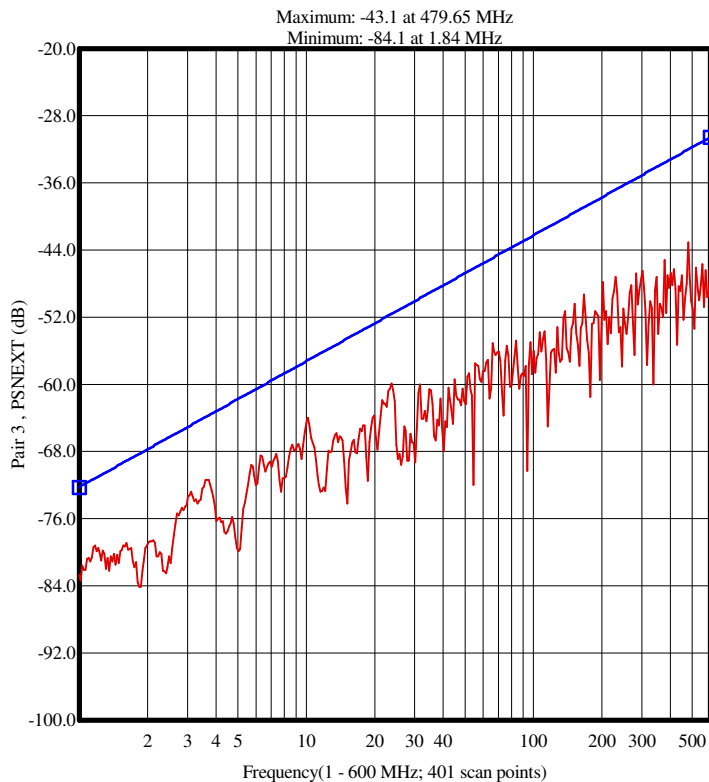
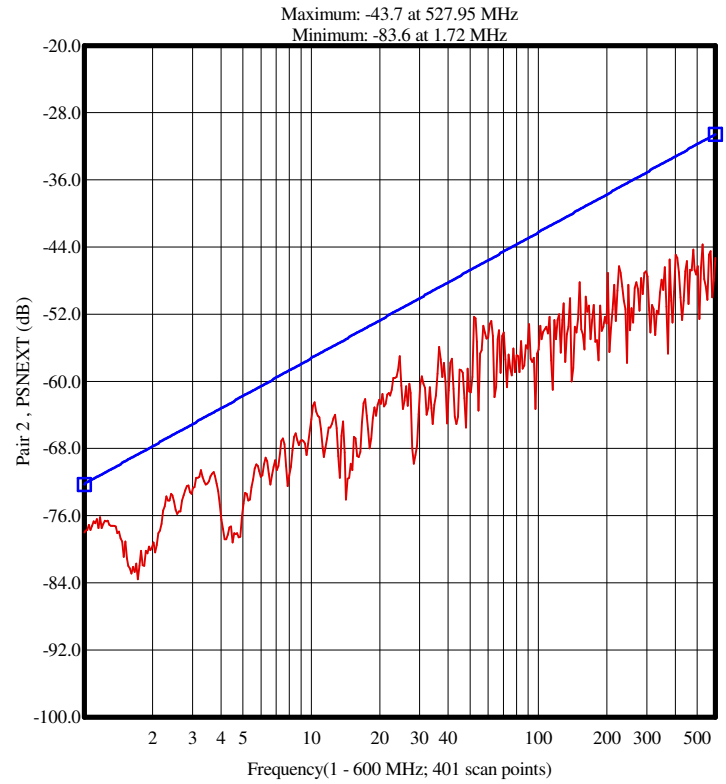
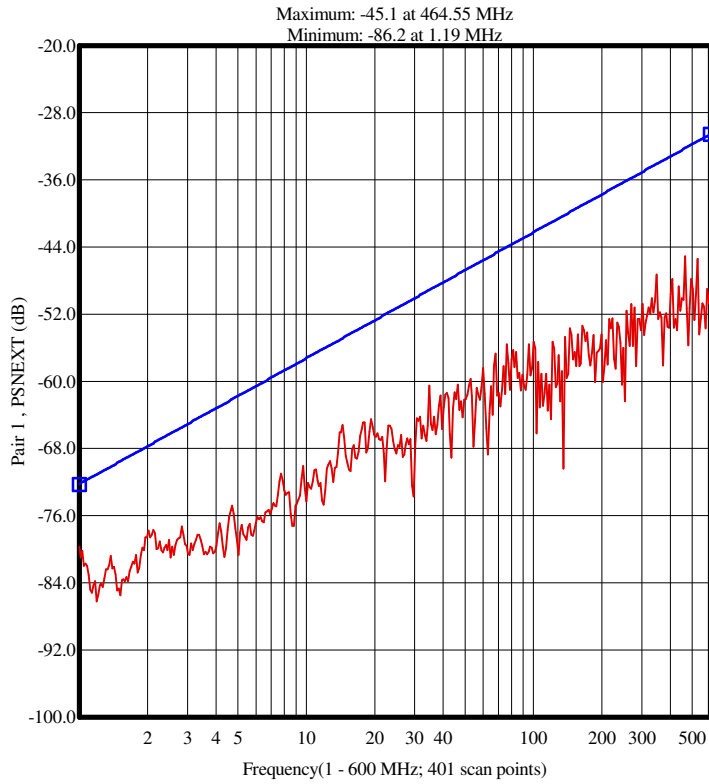
\*\*\* = Measured value is invalid.



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

(Formula):  $PSNEXT \geq 42.30 - 15.00 * \log(f/100.000)$

Pair [Position]	Spec (Min)(dB)	Measured(dB)	Margin (dB)	@ Frequency (MHz)	Test Result
Pair 1 [6]	72.3	79.7	7.4	1.00	Passed
Pair 2 [7]	71.4	76.4	5.0	1.14	Passed
Pair 3 [8]	57.1	64.0	6.9	10.16	Passed
Pair 4 [9]	71.4	76.3	4.9	1.14	Passed



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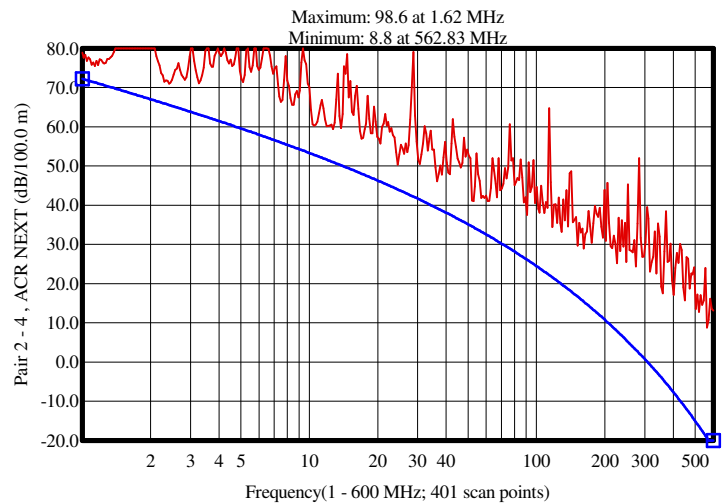
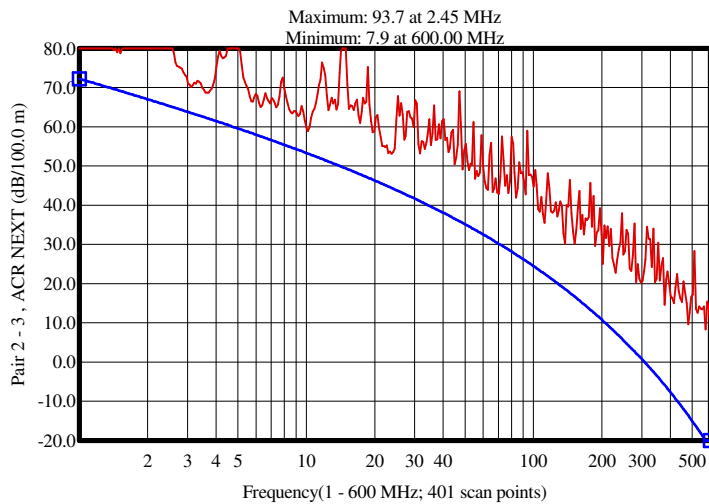
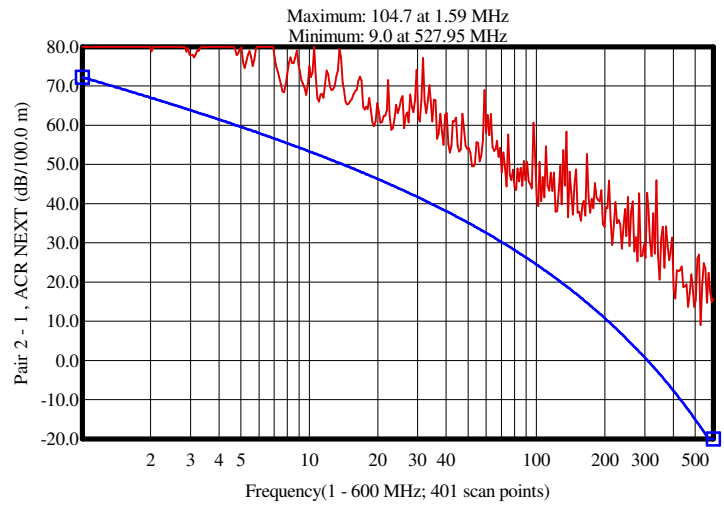
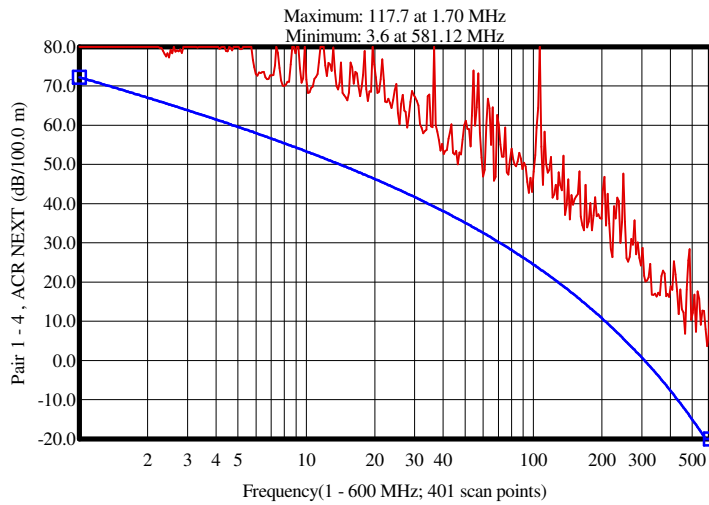
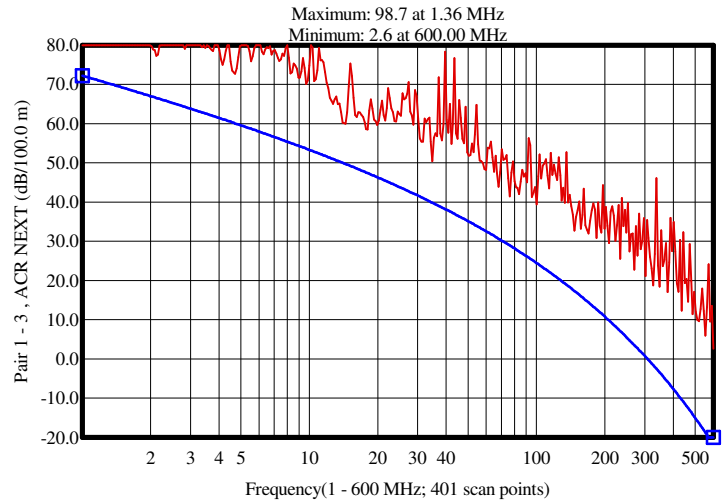
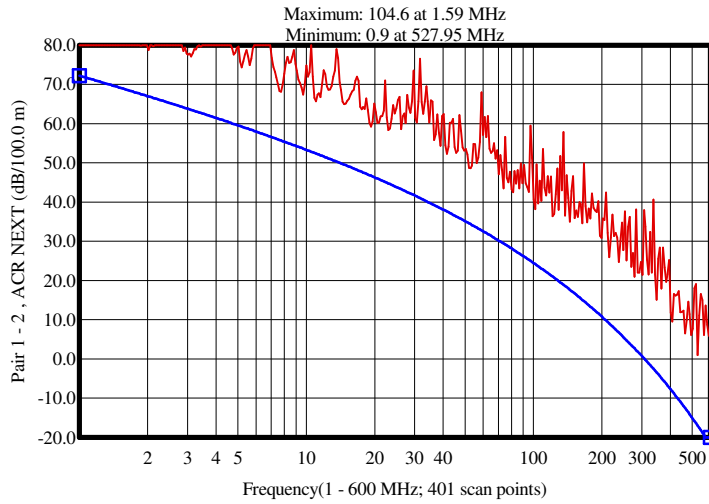
\* = Measured value out of spec.  
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**Summary and Graphic: ATT to NEXT Ratio (ACR)**

(Formula):  $ACR(next) \geq (1.000 * NEXT Formula) - (1.000 * IL Formula) + 0.000$  (Refer to manual)

Pair [Position]	Spec (Min)(dB/100.0 m)	Measured(dB/100.0 m)	Margin (dB/100.0 m)	@ Frequency (MHz)	Test Result
Pair 1 - 2	72.2	80.4	8.2	1.00	Passed
Pair 1 - 3	72.0	82.1	10.1	1.03	Passed
Pair 1 - 4	65.5	77.5	12.0	2.41	Passed
Pair 2 - 1	72.2	80.5	8.3	1.00	Passed
Pair 2 - 3	53.1	58.9	5.8	10.16	Passed
Pair 2 - 4	71.3	75.5	4.2	1.14	Passed



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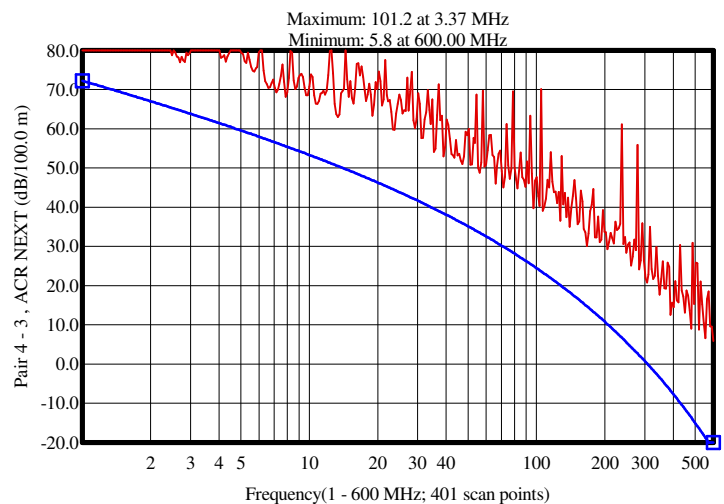
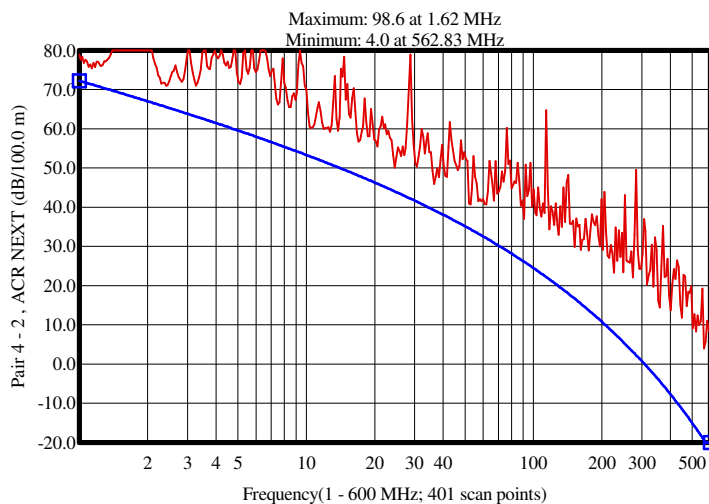
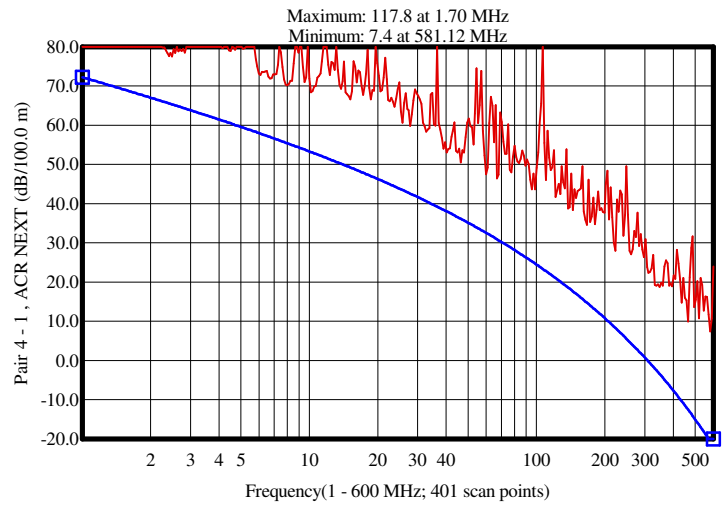
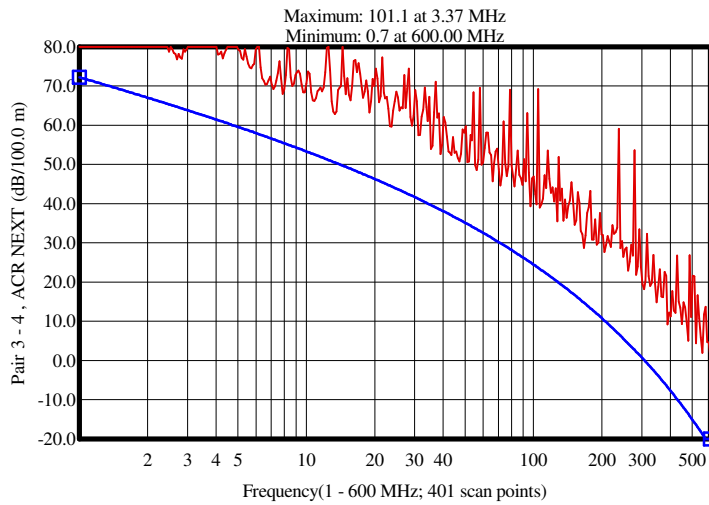
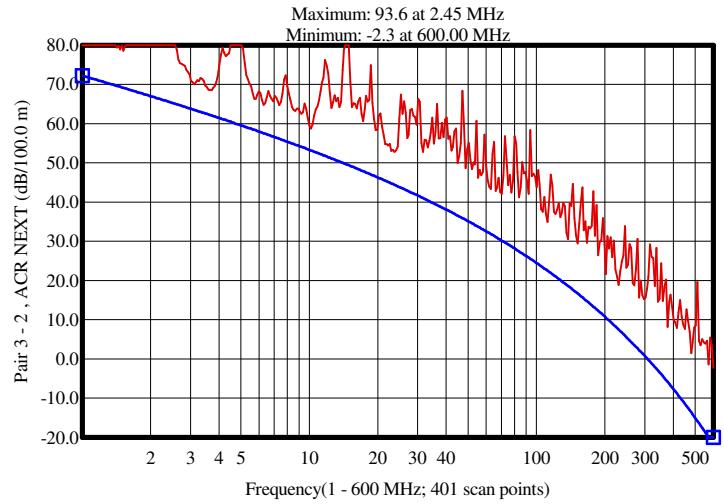
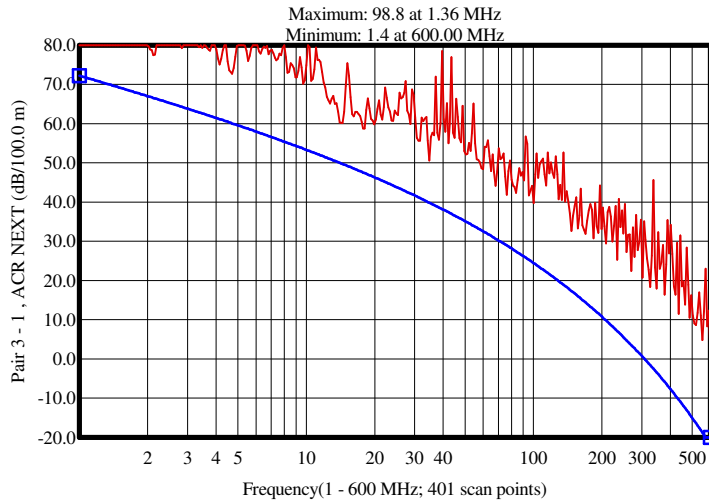
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**Summary and Graphic: ATT to NEXT Ratio (ACR)**

(Formula:  $ACR(next) \geq (1.000 * NEXT Formula) - (1.000 * IL Formula) + 0.000$  (Refer to manual))

Pair [Position]	Spec (Min)(dB/100.0 m)	Measured(dB/100.0 m)	Margin (dB/100.0 m)	@ Frequency (MHz)	Test Result
Pair 3 - 1	72.0	82.2	10.2	1.03	Passed
Pair 3 - 2	53.1	58.7	5.6	10.16	Passed
Pair 3 - 4	71.0	80.5	9.5	1.17	Passed
Pair 4 - 1	65.5	77.6	12.1	2.41	Passed
Pair 4 - 2	71.3	75.4	4.1	1.14	Passed
Pair 4 - 3	71.0	80.5	9.5	1.17	Passed



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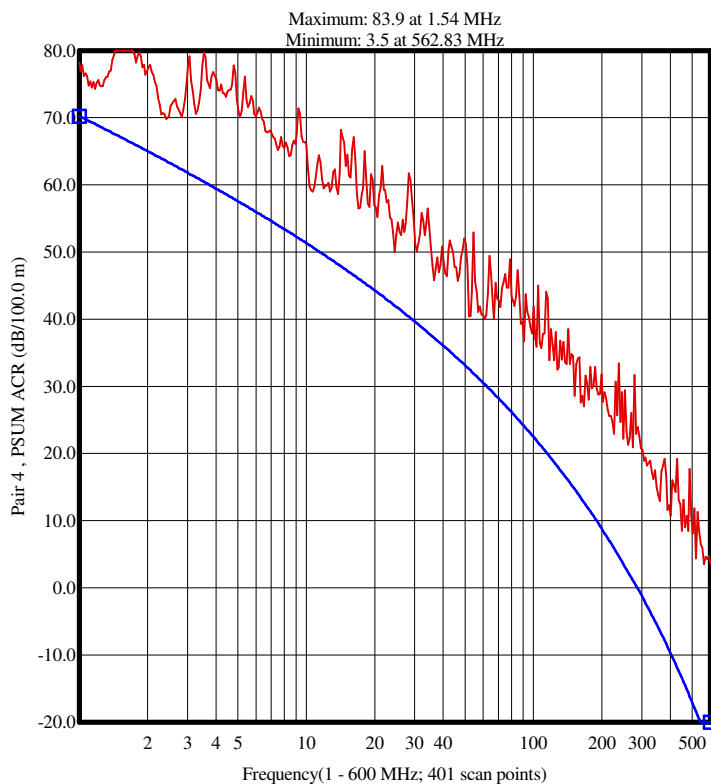
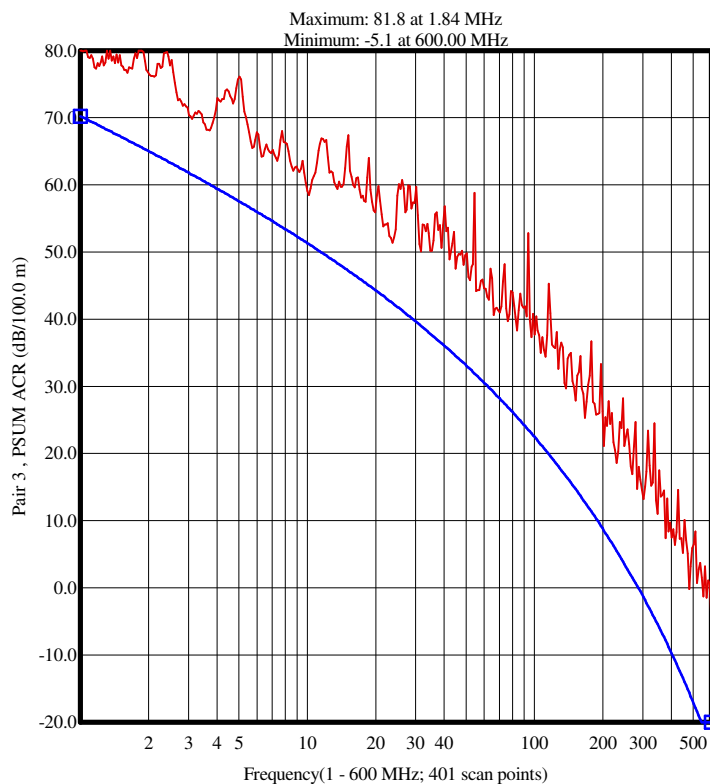
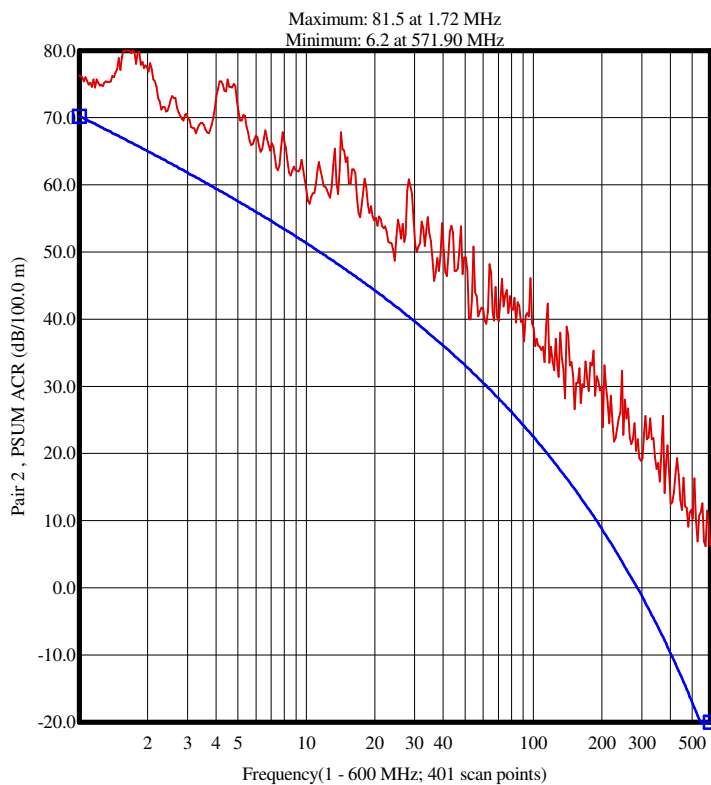
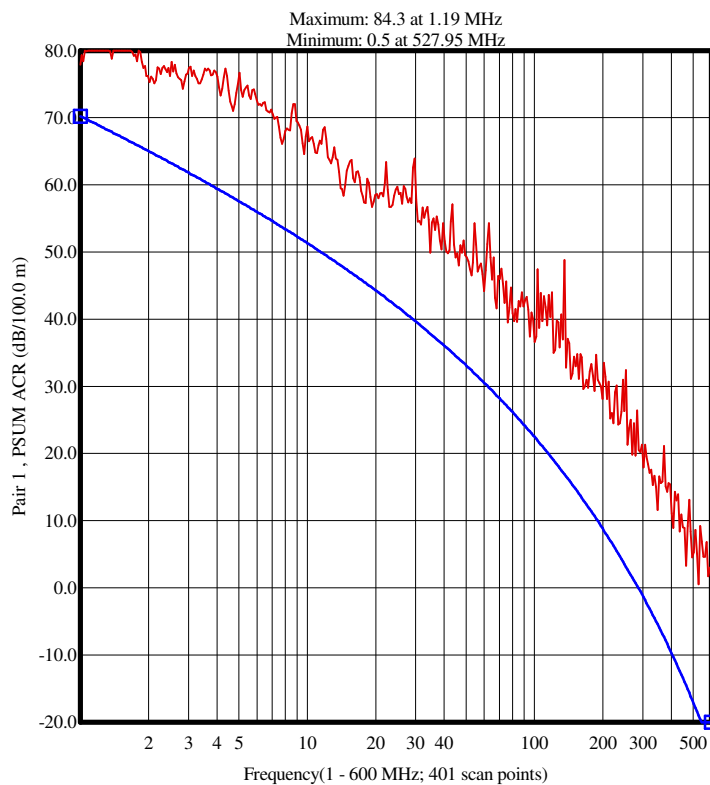
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### Summary and Graphic: Power Sum ACR (PS ACR)

(Formula): PS ACR >= [74.000-15.000\*Log(f/0.772)]-[1.808\*SQRT(f)+0.017\*f+0.200/SQRT(f)]+0.000\*Log(f) (Refer to manual)

Pair [Position]	Spec (Min)(dB/100.0 m)	Measured(dB/100.0 m)	Margin (dB/100.0 m)	@ Frequency (MHz)	Test Result
Pair 1 [6]	70.2	77.9	7.7	1.00	Passed
Pair 2 [7]	69.3	74.6	5.3	1.14	Passed
Pair 3 [8]	51.2	58.5	7.3	10.16	Passed
Pair 4 [9]	69.3	74.5	5.2	1.14	Passed



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**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 [6]	30.5	34.6	38.2	40.0	38.5	42.5	41.6	43.2	43.6	39.1
Pair 2 [7]	28.6	29.5	31.6	32.4	31.2	34.5	33.8	34.7	37.8	28.3
Pair 3 [8]	29.8	32.6	36.6	37.3	39.2	33.6	39.0	49.8	46.9	40.6
Pair 4 [9]	30.3	32.6	35.4	38.1	34.5	36.4	39.0	36.3	42.5	33.8

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

Frequency	155.00	200.00	250.00	300.00	400.00	500.00	600.00			
Min Spec	18.7	18.0	17.3	16.7	15.8	15.2	14.6			
Pair 1 [6]	34.0	33.0	28.5	30.9	26.1	24.4	22.2			
Pair 2 [7]	31.2	32.1	30.0	28.8	25.4	22.5	20.1			
Pair 3 [8]	33.4	34.1	30.6	31.0	28.4	24.8	21.0			
Pair 4 [9]	29.2	29.7	27.0	28.7	26.8	24.2	24.3			

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

(Formula):  $IL \leq [ (1.808 * \sqrt{f}) + (0.017 * f) + (0.200 / \sqrt{f}) ] * 1.000 * \text{Stranded Factor (Refer to manual)}$

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 [6]	1.73	3.50	4.98	5.58	7.10	7.98	8.91	10.05	14.40	18.60
Pair 2 [7]	1.63	3.29	4.69	5.24	6.68	7.50	8.37	9.43	13.52	17.45
Pair 3 [8]	1.69	3.43	4.89	5.47	6.96	7.83	8.73	9.84	14.10	18.29
Pair 4 [9]	1.65	3.35	4.78	5.35	6.83	7.67	8.55	9.65	13.87	17.56

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

Frequency	155.00	200.00	250.00	300.00	400.00	550.00	600.00			
Max Spec	25.16	28.98	32.84	36.42	42.97	51.75	54.49			
Pair 1 [6]	23.40	26.39	29.76	32.86	38.46	45.88	48.17			
Pair 2 [7]	23.53	23.11	25.75	28.11	32.25	37.51	39.08			
Pair 3 [8]	22.64	26.49	29.98	33.21	39.08	46.95	49.39			
Pair 4 [9]	21.76	24.84	27.91	30.70	35.72	42.29	44.29			

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

(Formula):  $NEXT \geq 44.300 - 15.000 * \log(f/100.000)$

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	82.1	86.9	77.8	80.2	75.4	72.4	73.4	78.2	74.0	59.7
Pair 1 - 3	84.3	82.6	87.7	80.3	69.1	68.0	71.2	65.5	69.1	58.1
Pair 1 - 4	90.1	85.6	75.0	77.4	80.3	82.4	77.4	74.0	78.2	66.5
Pair 2 - 3	89.5	77.6	74.4	65.1	71.6	67.4	71.7	64.4	57.6	62.2
Pair 2 - 4	80.6	82.4	76.4	75.4	75.5	64.8	62.0	62.9	56.5	61.9
Pair 3 - 4	93.0	84.7	74.2	76.0	79.4	79.3	76.9	67.3	72.2	65.2

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

Frequency	155.00	200.00	250.00	300.00	400.00	550.00	600.00			
Min Spec	41.4	39.7	38.3	37.1	35.2	33.1	32.6			
Pair 1 - 2	60.6	58.7	60.0	55.4	55.1	61.6	54.9			
Pair 1 - 3	61.0	61.2	63.9	59.0	70.7	54.6	50.8			
Pair 1 - 4	65.4	64.7	74.3	60.0	56.4	57.0	68.3			
Pair 2 - 3	59.2	53.4	53.4	48.7	50.2	51.0	47.0			
Pair 2 - 4	58.1	63.1	56.3	57.4	50.7	57.9	52.2			
Pair 3 - 4	61.0	58.5	56.8	54.1	50.6	50.6	50.1			

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

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

\*\*\* = Measured value is invalid.