DCM Test Report

Cable Type	: 4x2x23 x PE/PVC	Factory Number	: PHOENIX	Data File Name	: DA172767.D3S
Cable I.D.	: U/UTP#23X4P CABLE	Order Number	: 10133 GY-265 231042000	Specification File	: CAT 6A-305M.S3S
Temperature	: 25.00 °C	Relative Humidity	: 50 %	Test Date/Time	: 10/23/2023 11:13:29 AM
Length	: 305.00 m	Number of Pairs to Test	: 4	Operator	: M 231020SM016001/303/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**
Return Loss (RL-Far End)(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:

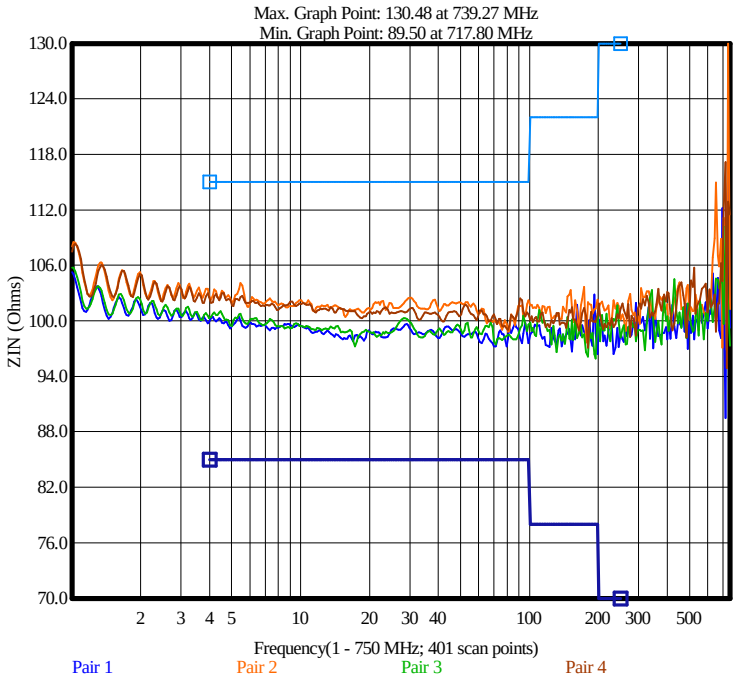
DCM Test Report

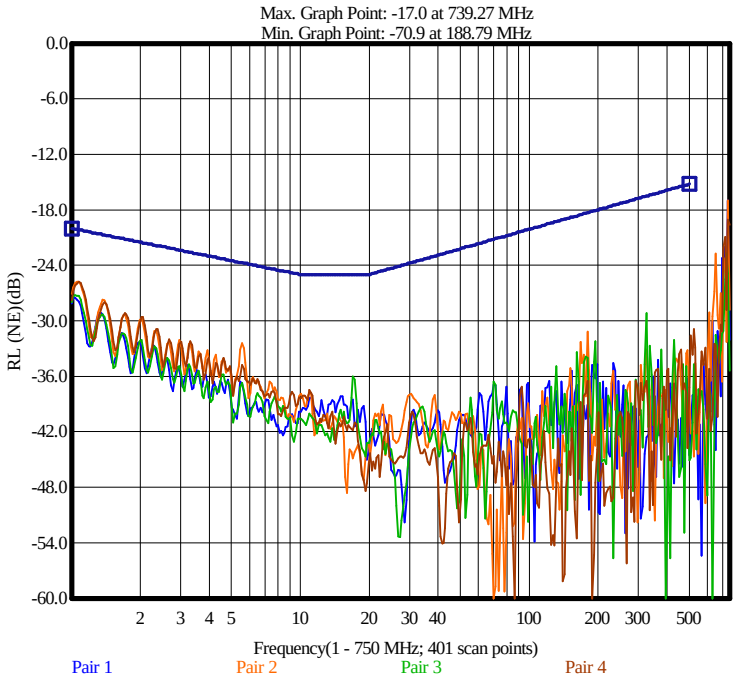
Cable Type	: 4x2x23 x PE/PVC	Factory Number	: PHOENIX	Data File Name	: DA172767.D3S
Cable I.D.	: U/UTP#23X4P CABLE	Order Number	: 10133 GY-265 231042000	Specification File	: CAT 6A-305M.S3S
Temperature	: 25.00 °C	Relative Humidity	: 50 %	Test Date/Time	: 10/23/2023 11:13:29 AM
Length	: 305.00 m	Number of Pairs to Test	: 4	Operator	: M 231020SM016001/303/R1
Starting Position	: 1			Analyzer Type	: ENA

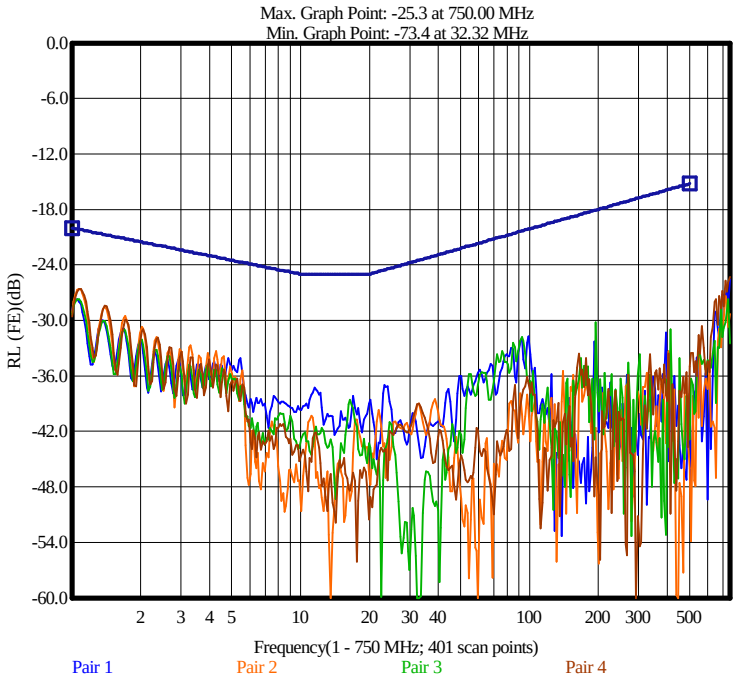
Worst Case Summary

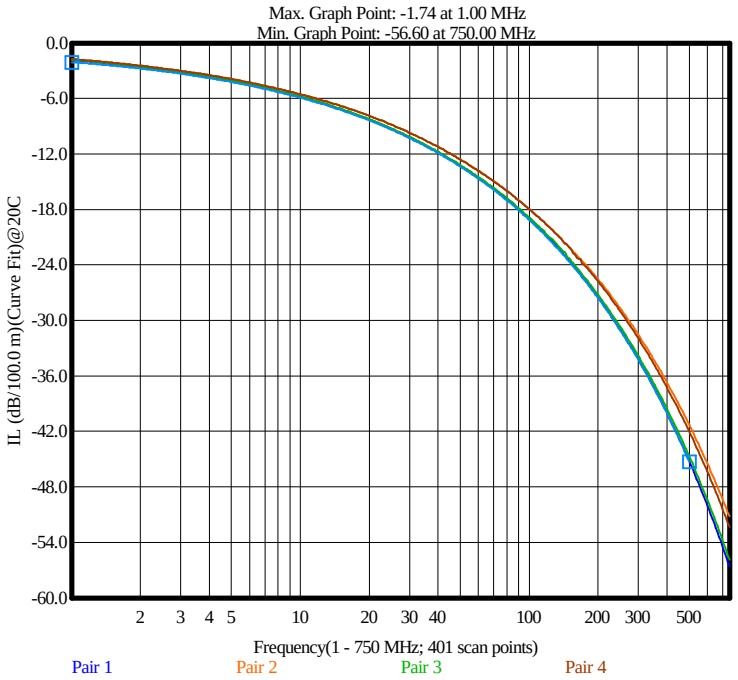
High Frequency

Test Type	Specification	Measured (Pair)	Margin	@ Frequency (MHz)	Test Result
Input Impedance (Zin)(Terminated)	85.00 (Min)	97.20 (Pair 1)	12.20	69.96	Passed
Input Impedance (Zin)(Terminated)	115.00 (Max)	104.11 (Pair 2)	10.89	5.47	Passed
Return Loss (RL)	20.2 (Min)	25.8 (Pair 2)	5.6	1.08	Passed
Return Loss (RL-Far End)	20.2 (Min)	26.6 (Pair 2)	6.4	1.08	Passed
Insertion Loss (IL)(Curve Fit)@20C	23.04 (Max)	23.03 (Pair 1)	0.01	142.42	Passed
Near End Crosstalk Loss (NEXT)	71.4 (Min)	79.9 (Pairs 2-3)	8.5	1.55	Passed
Power Sum NEXT(PSNEXT)	69.8 (Min)	79.1 (Pair 2)	9.3	1.48	Passed







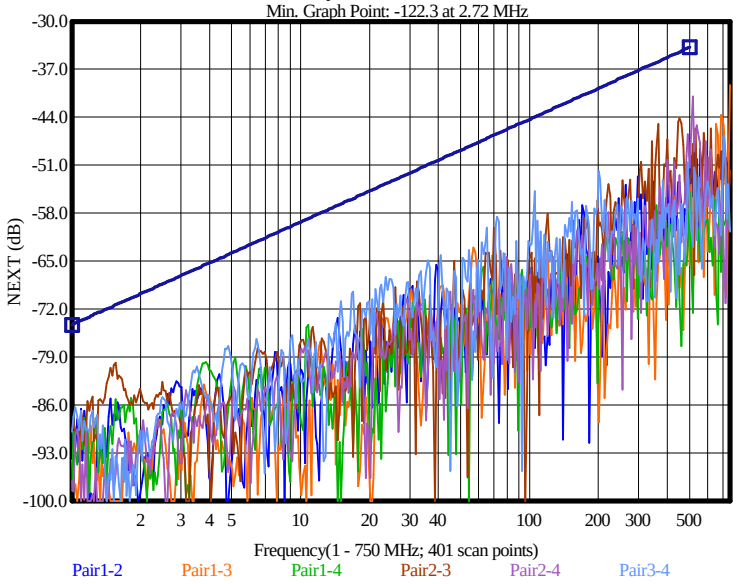


N/A = Not Applicable.
--- = Disable/Bypassed Pair.

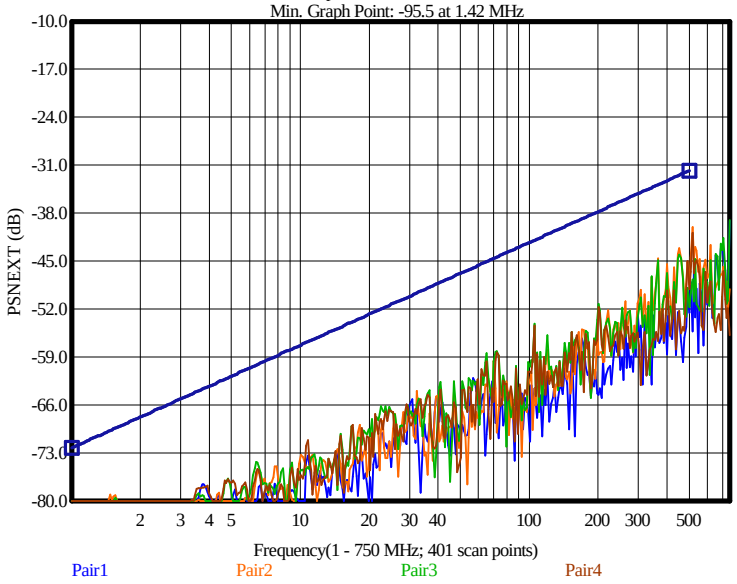
* = Measured value out of spec.
xxx = No entry.

*** = Measured value is invalid.

Max. Graph Point: -39.3 at 750.00 MHz
Min. Graph Point: -122.3 at 2.72 MHz



Max. Graph Point: -39.0 at 750.00 MHz
Min. Graph Point: -95.5 at 1.42 MHz



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* = 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		
Test Type	Spec Limit	Measured	Spec Limit	Measured	Spec Limit	Measured	Spec Limit	Measured	Result
Conductor Resistance(Ohms/100.0 m)@20C	9.38	7.53	xxx	7.27	xxx	7.39	xxx	0.099	Passed
Resistance Unbalance(%)	5.00	0.13	xxx	0.04	xxx	0.10	xxx	0.035	Passed
Mutual Capacitance(nF/100.0 m)@1000Hz	5.60	5.56	xxx	5.27	xxx	5.41	xxx	0.125	Passed
Cap. Unbalance to Ground(pF/100.0 m)@1000Hz	330.00	18.41	xxx	5.34	xxx	11.39	xxx	5.050	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]	7.53	7.53	0.04	5.56	-5.34	Passed
Pair 2 [2]	7.32	7.33	0.13	5.30	18.41	Passed
Pair 3 [3]	7.43	7.43	0.12	5.50	-8.11	Passed
Pair 4 [4]	7.28	7.27	0.10	5.27	13.71	Passed

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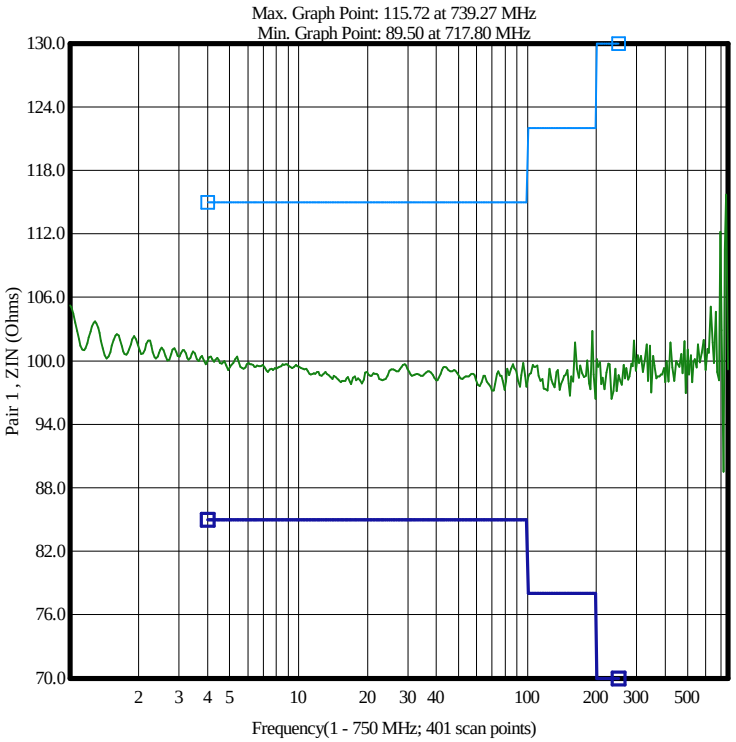
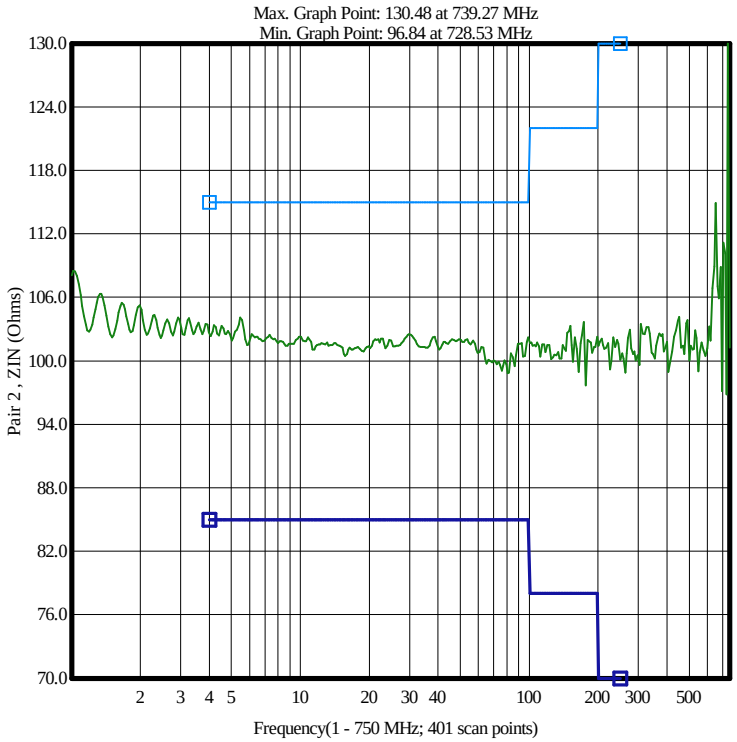
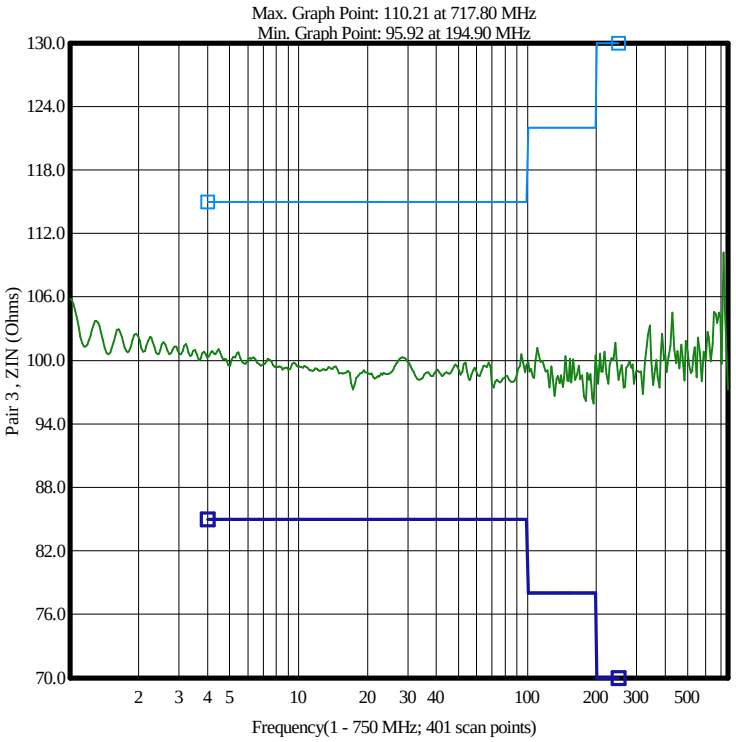
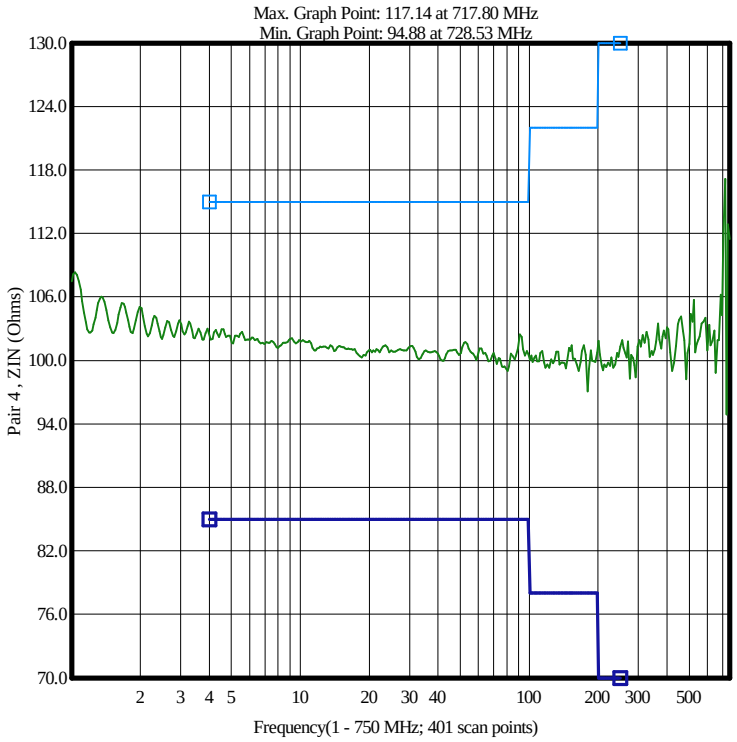
Summary and Graphic: Input Impedance (Zin)(Terminated)

	Specification		Measured(Ohms)		Margin (Ohms)		@ Frequency (MHz)		
Pair	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Test Result
Pair 1 [1]	85.00	115.00	97.20	100.42	12.20	14.58	69.96	4.13	Passed
Pair 2 [2]	85.00	115.00	98.83	104.11	13.83	10.89	80.47	5.47	Passed
Pair 3 [3]	85.00	115.00	97.23	101.06	12.23	13.94	17.23	4.47	Passed
Pair 4 [4]	85.00	115.00	99.00	102.95	14.00	12.05	80.47	4.60	Passed









N/A = Not Applicable.
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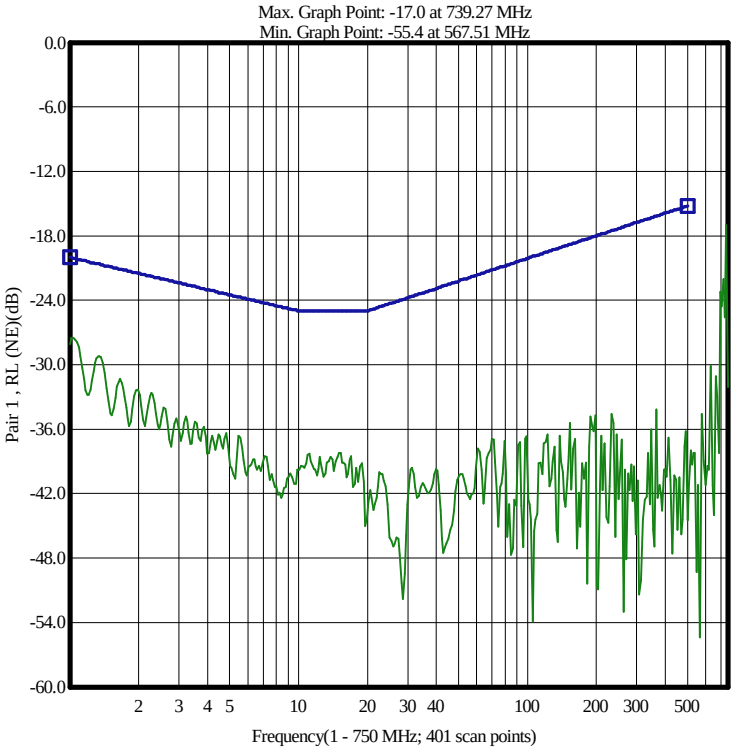
xxx = No entry.

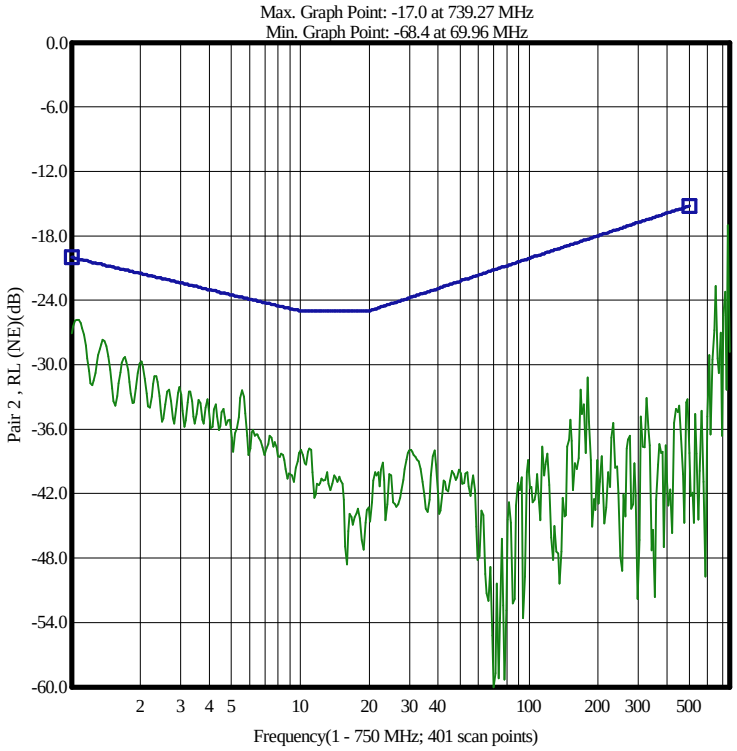
*** = Measured value is invalid.

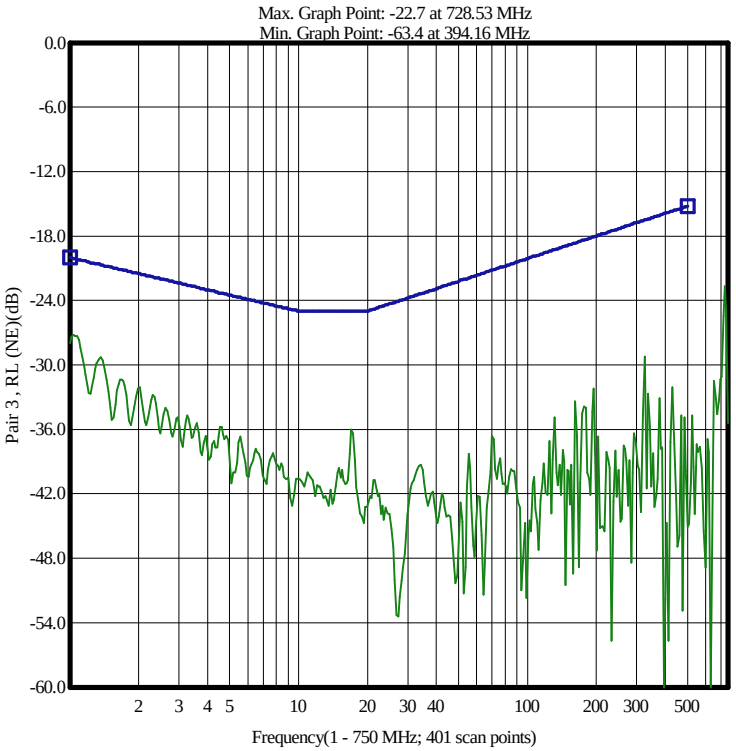
Summary and Graphic: Return Loss (RL)

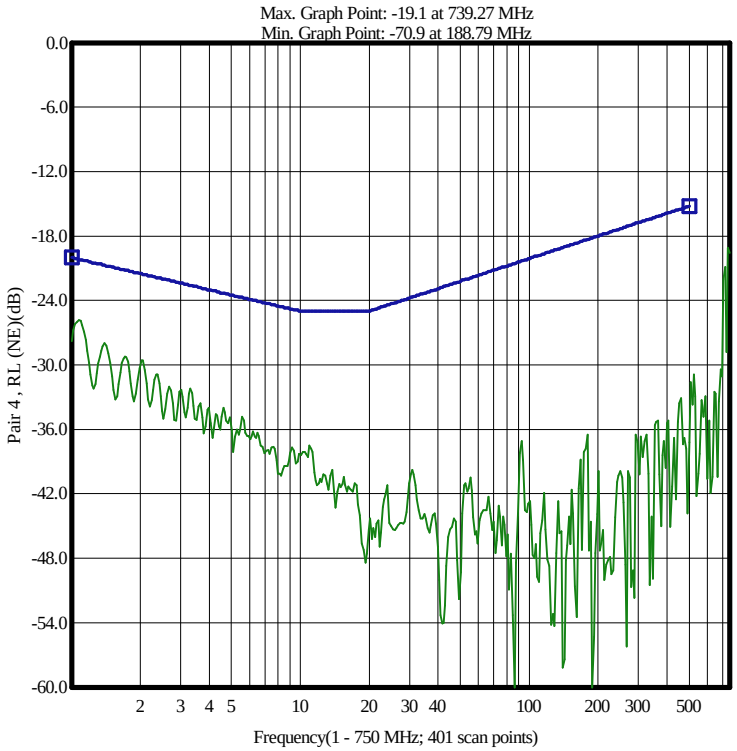
(Cat 6A): RL >= 20 + 5 * log(f); 25; 25 - 7 * log(f/20)

Pair	Spec (Min)(dB)	Measured(dB)	Margin (dB)	@ Frequency (MHz)	Test Result
Pair 1 [1]	20.1	27.5	7.4	1.04	Passed
Pair 2 [2]	20.2	25.8	5.6	1.08	Passed
Pair 3 [3]	20.2	27.3	7.1	1.08	Passed
Pair 4 [4]	20.2	25.8	5.6	1.08	Passed









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

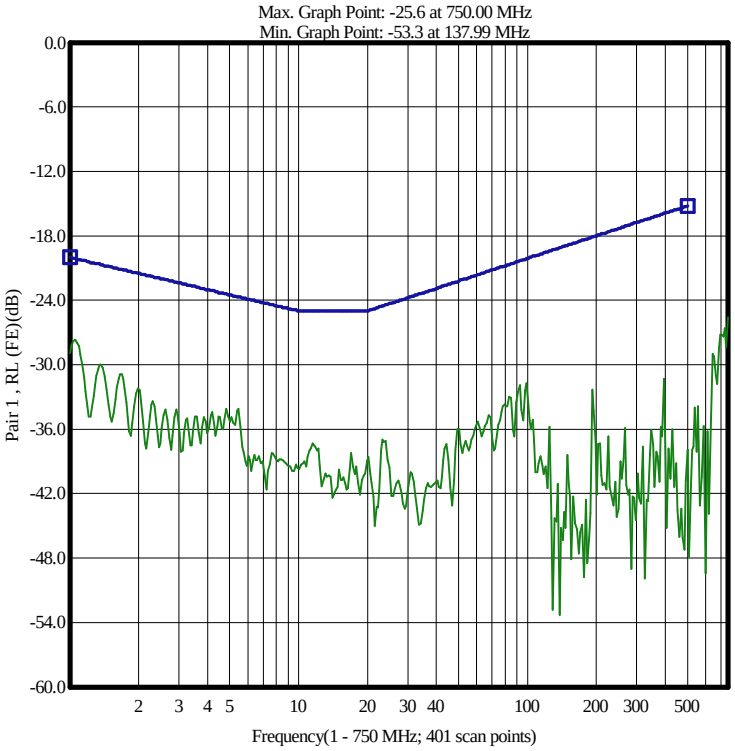
* = Measured value out of spec.
xxx = No entry.

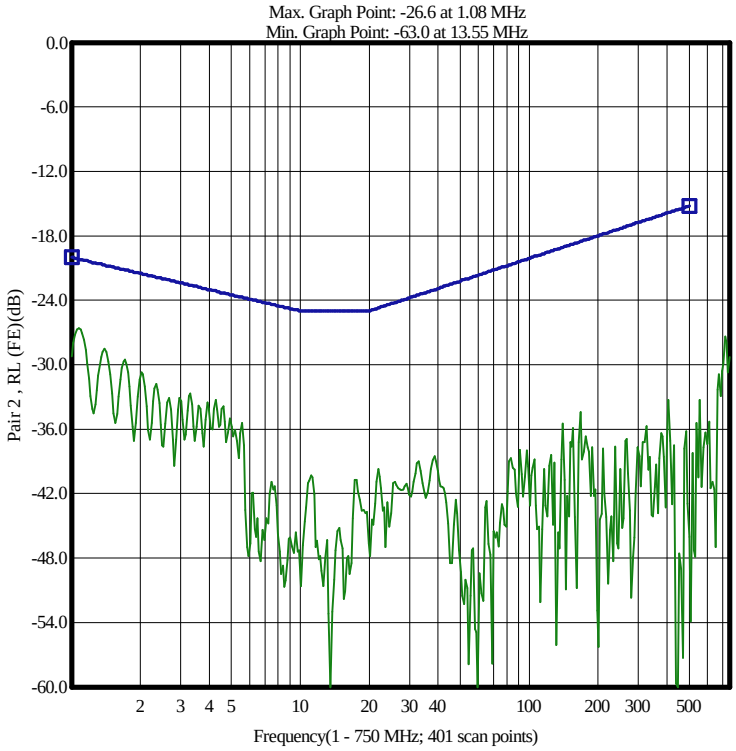
*** = Measured value is invalid.

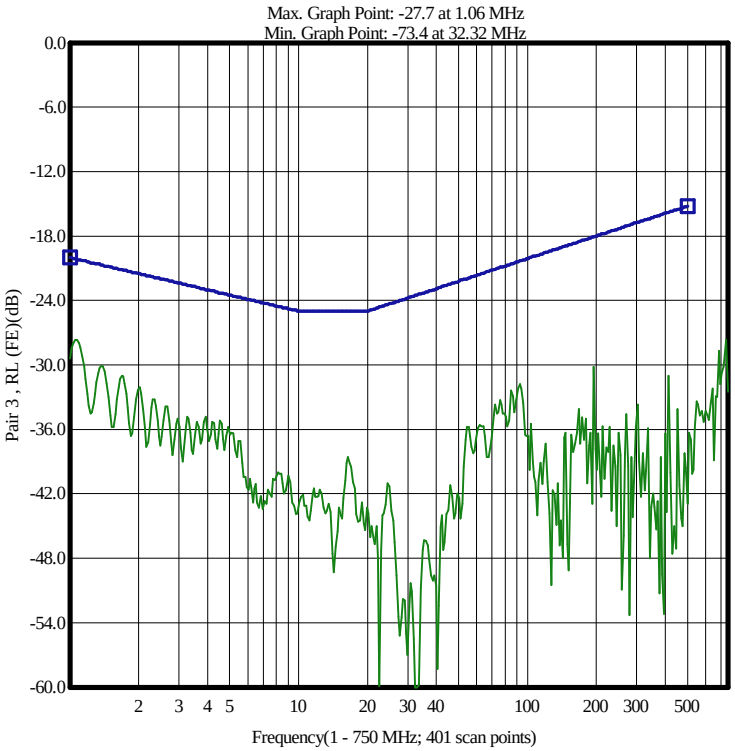
Summary and Graphic: Return Loss (RL_FE)

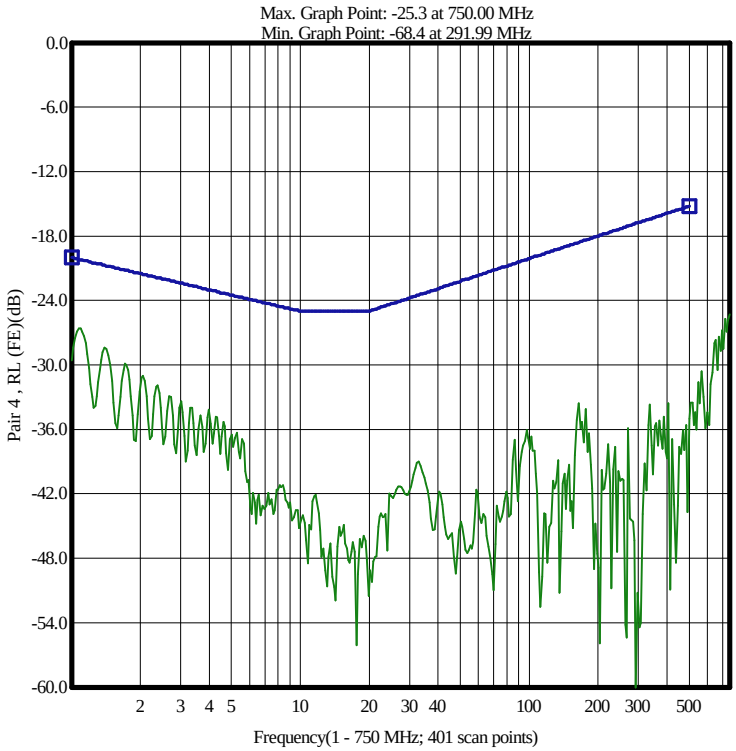
(Cat 6A): RL >= 20 + 5 * log(f); 25; 25 - 7 * log(f/20)

Pair	Spec (Min)(dB)	Measured(dB)	Margin (dB)	@ Frequency (MHz)	Test Result
Pair 1 [1]	20.1	27.7	7.6	1.06	Passed
Pair 2 [2]	20.2	26.6	6.4	1.08	Passed
Pair 3 [3]	20.2	27.7	7.5	1.08	Passed
Pair 4 [4]	20.2	26.6	6.4	1.08	Passed









N/A = Not Applicable.
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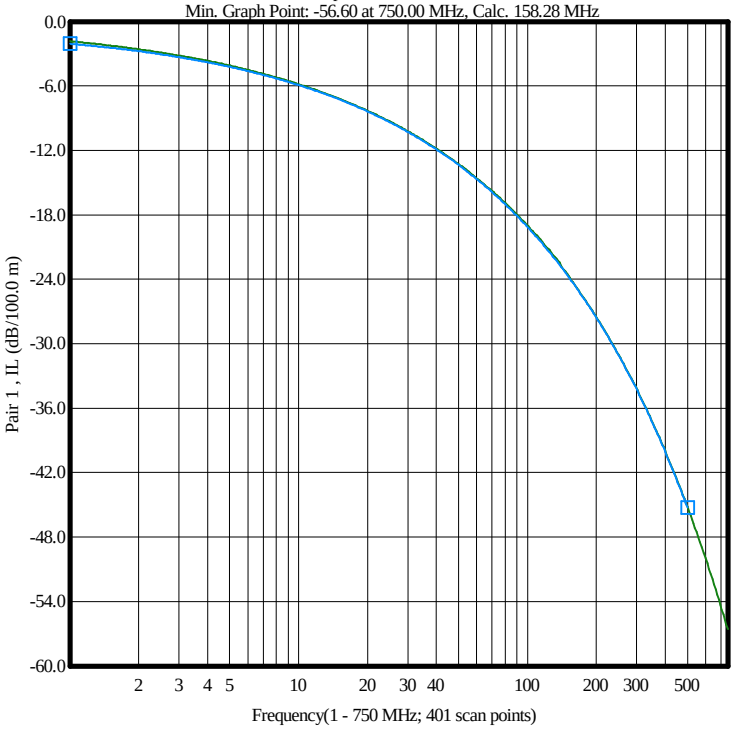
Summary and Graphic: Insertion Loss (IL)(Curve Fit)@20C

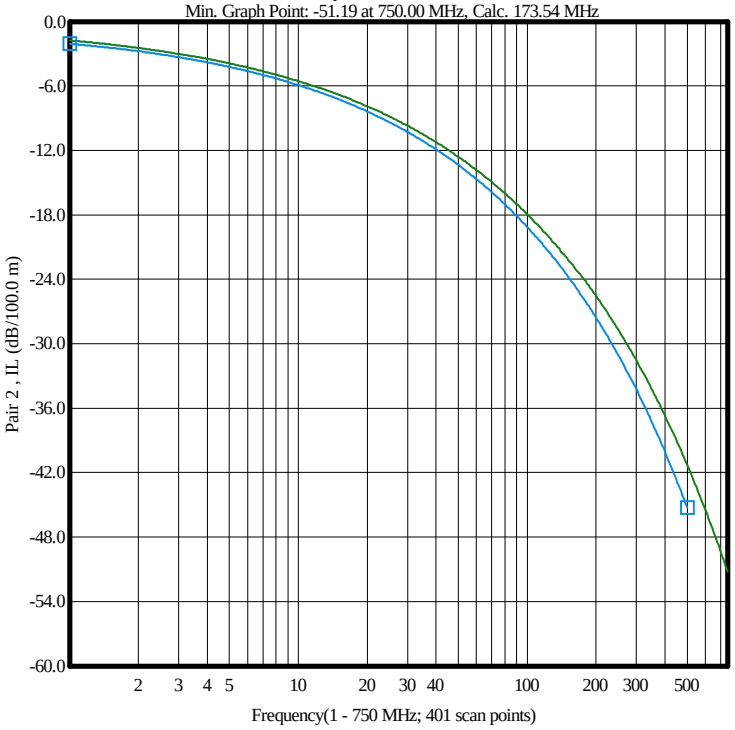
(Cat 6A): IL <= 1.82 sqrt(f) + 0.0091 * f + 0.25 / sqrt(f) (Refer to manual)

Pair	Spec (Max)(dB/100.0 m)	Measured(dB/100.0 m)	Margin (dB/100.0 m)	@ Frequency (MHz)	Test Result
Pair 1 [1]	23.04	23.03	0.01	142.42	Passed
Pair 2 [2]	2.67	2.38	0.29	1.84	Passed
Pair 3 [3]	5.89	5.77	0.12	9.89	Passed
Pair 4 [4]	2.69	2.39	0.30	1.88	Passed

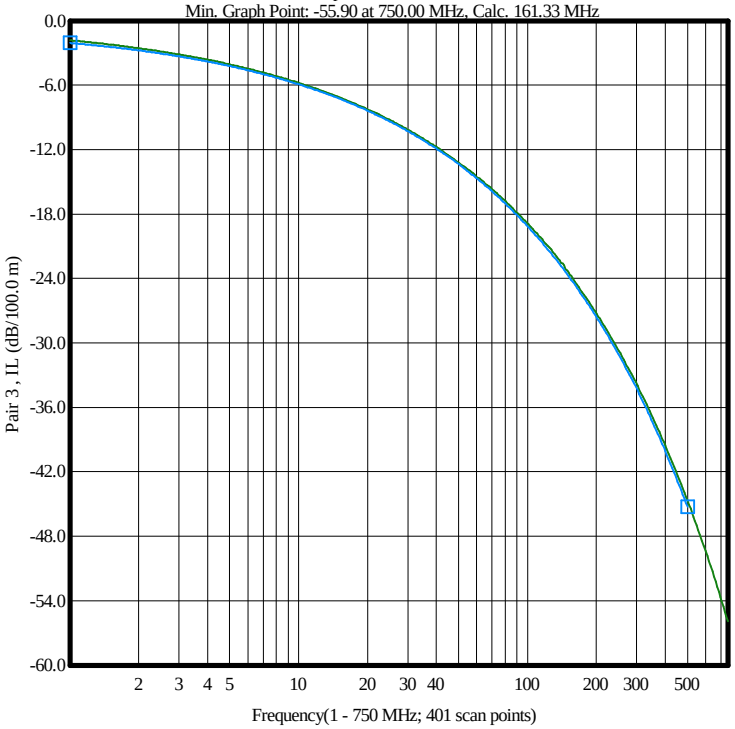
Max. Graph Point: -1.83 at 1.00 MHz
Min. Graph Point: -56.60 at 750.00 MHz, Calc. 158.28 MHz



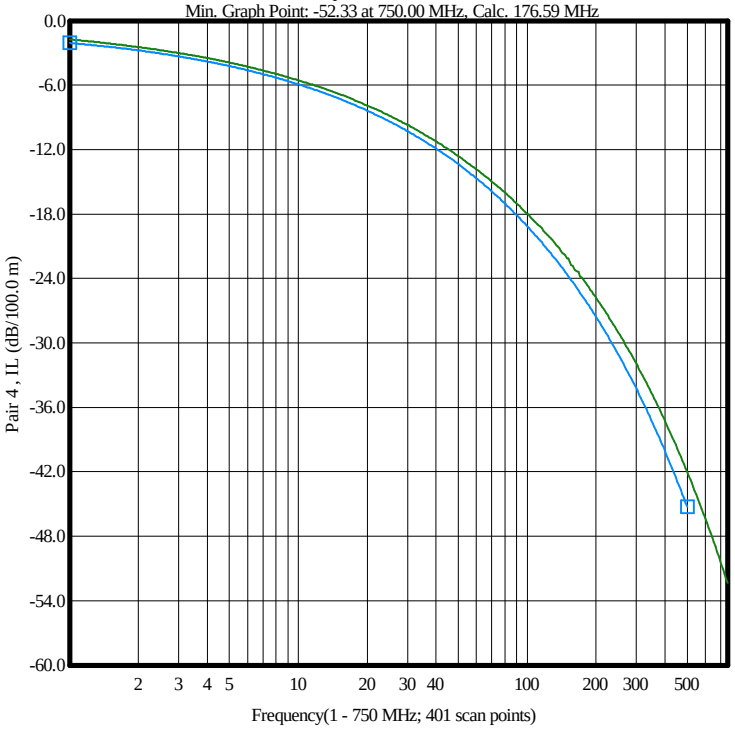
Max. Graph Point: -1.75 at 1.00 MHz
Min. Graph Point: -51.19 at 750.00 MHz, Calc. 173.54 MHz



Max. Graph Point: -1.81 at 1.00 MHz
Min. Graph Point: -55.90 at 750.00 MHz, Calc. 161.33 MHz



Max. Graph Point: -1.74 at 1.00 MHz
Min. Graph Point: -52.33 at 750.00 MHz, Calc. 176.59 MHz



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

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xxx = No entry.

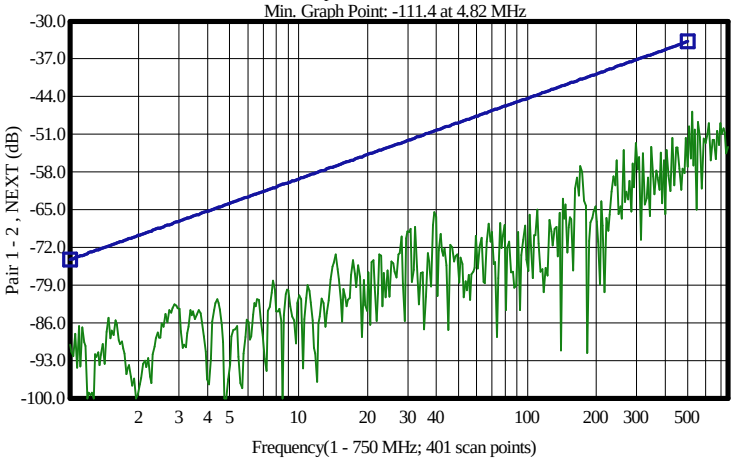
*** = Measured value is invalid.

Summary and Graphic: Near End Crosstalk Loss (NEXT)

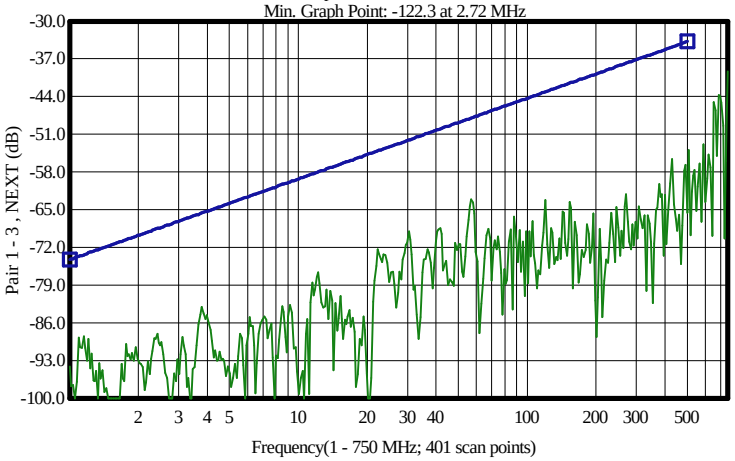
(Cat 6A): NEXT >= 44.3 - 15 *log(f/100)

Pair	Spec (Min)(dB)	Measured(dB)	Margin (dB)	@ Frequency (MHz)	Test Result
Pair 1 - 2	73.7	86.6	12.9	1.10	Passed
Pair 1 - 3	73.4	88.5	15.1	1.15	Passed
Pair 1 - 4	71.4	85.2	13.8	1.55	Passed
Pair 2 - 3	71.4	79.9	8.5	1.55	Passed
Pair 2 - 4	33.9	46.5	12.6	492.77	Passed
Pair 3 - 4	44.0	54.8	10.8	105.41	Passed

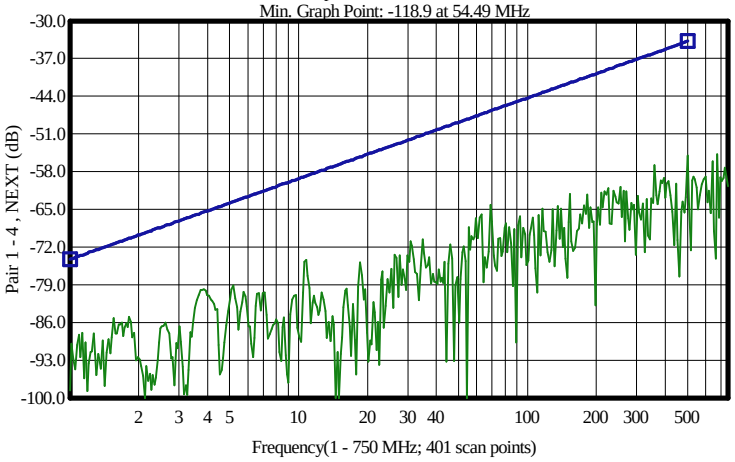
Max. Graph Point: -46.8 at 524.13 MHz
Min. Graph Point: -111.4 at 4.82 MHz



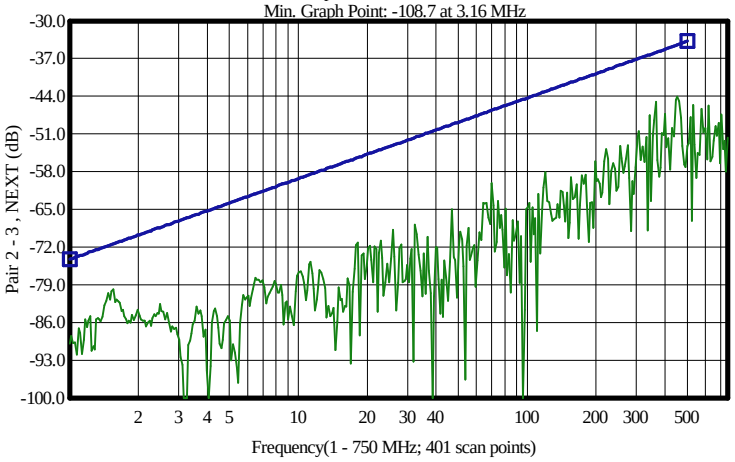
Max. Graph Point: -39.3 at 750.00 MHz
Min. Graph Point: -122.3 at 2.72 MHz



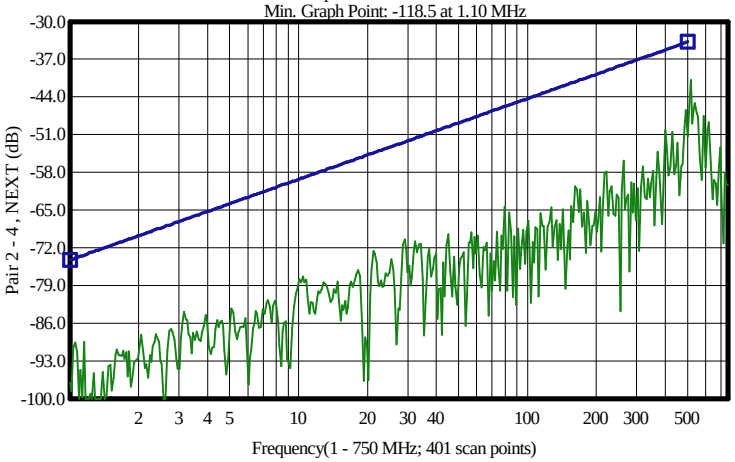
Max. Graph Point: -54.8 at 674.86 MHz
Min. Graph Point: -118.9 at 54.49 MHz



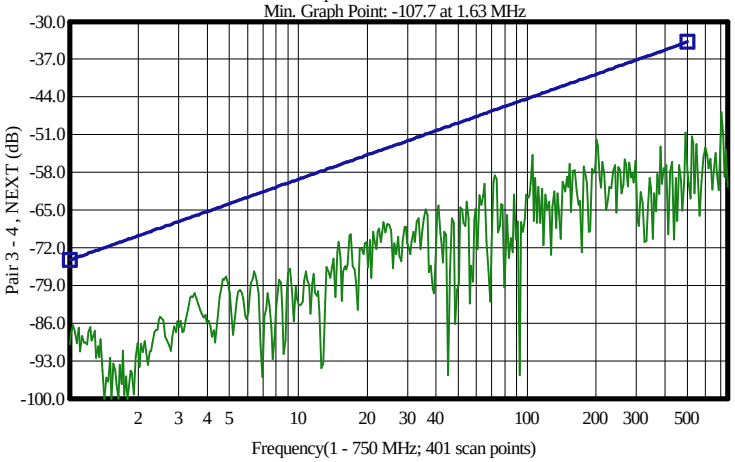
Max. Graph Point: -44.1 at 453.58 MHz
Min. Graph Point: -108.7 at 3.16 MHz



Max. Graph Point: -40.9 at 516.29 MHz
Min. Graph Point: -118.5 at 1.10 MHz



Max. Graph Point: -46.8 at 707.06 MHz
Min. Graph Point: -107.7 at 1.63 MHz



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

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xxx = No entry.

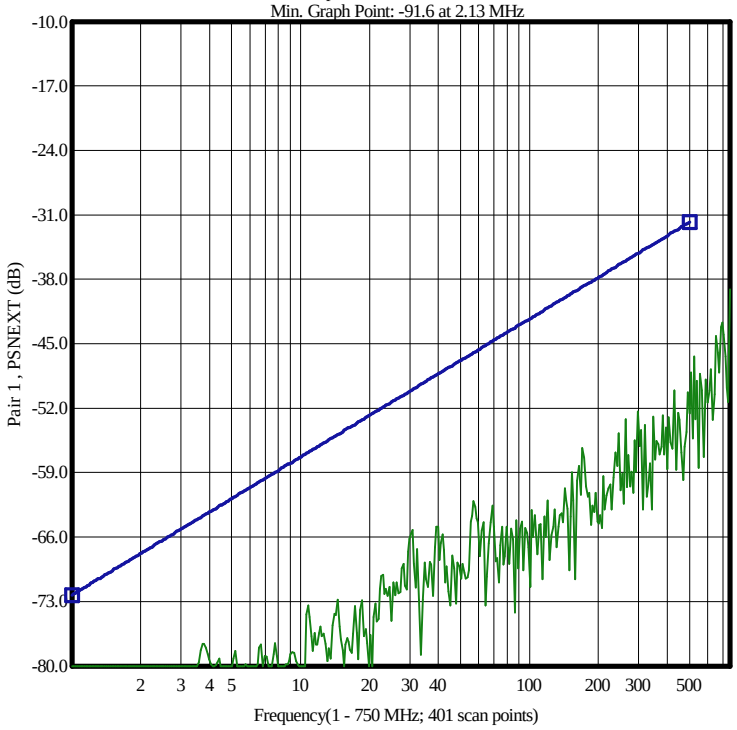
*** = Measured value is invalid.

Summary and Graphic: Power Sum NEXT(PSNEXT)

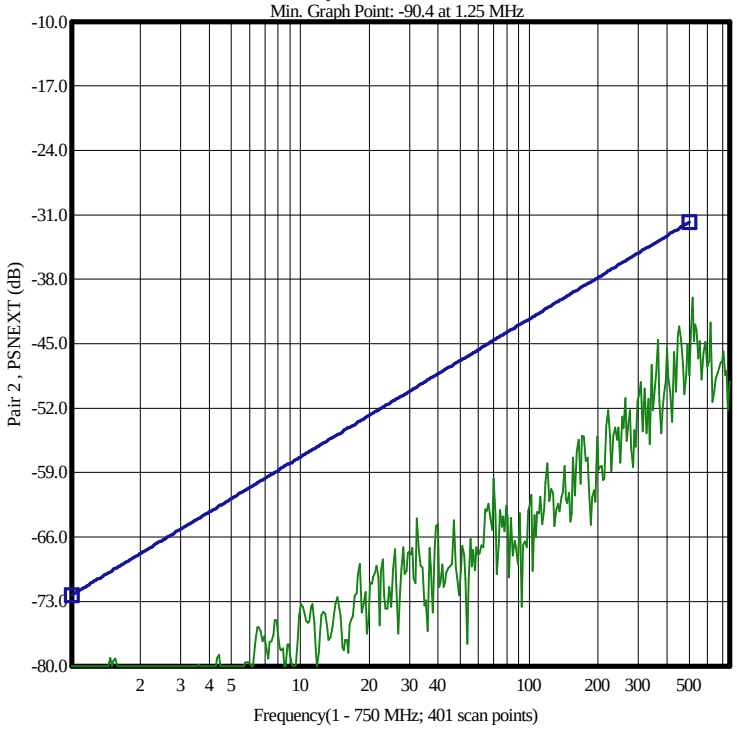
(Cat 6A): PSNEXT >= 42.3 - 15 log(f/100)

Pair	Spec (Min)(dB)	Measured(dB)	Margin (dB)	@ Frequency (MHz)	Test Result
Pair 1 [1]	71.7	83.0	11.3	1.10	Passed
Pair 2 [2]	69.8	79.1	9.3	1.48	Passed
Pair 3 [3]	69.4	79.6	10.2	1.55	Passed
Pair 4 [4]	72.1	84.3	12.2	1.04	Passed

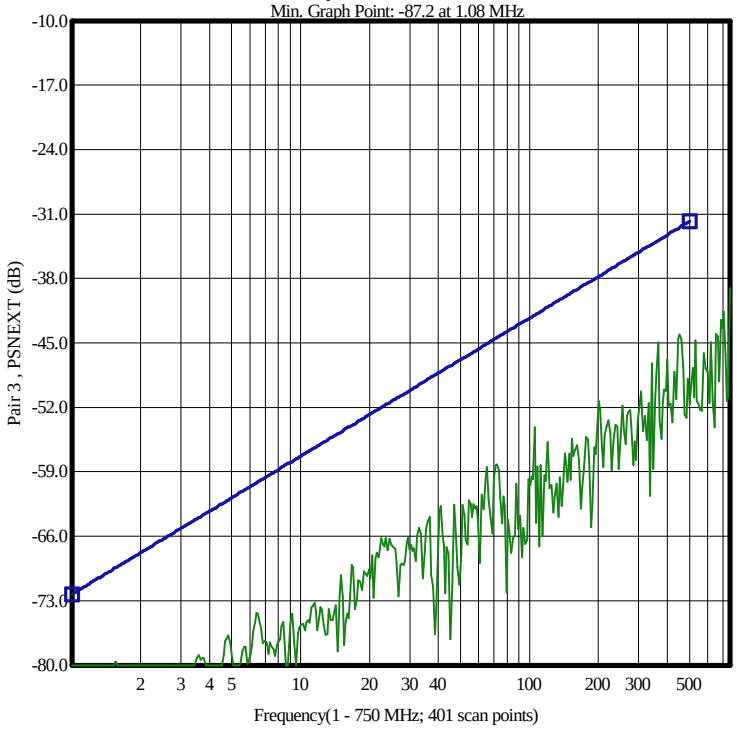
Max. Graph Point: -39.1 at 750.00 MHz
Min. Graph Point: -91.6 at 2.13 MHz



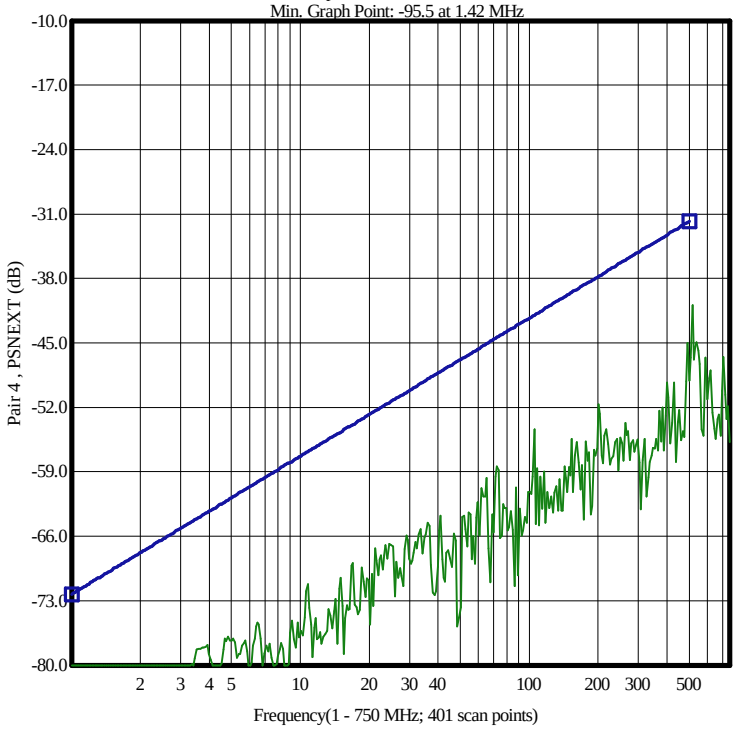
Max. Graph Point: -40.0 at 516.29 MHz
Min. Graph Point: -90.4 at 1.25 MHz



Max. Graph Point: -39.0 at 750.00 MHz
Min. Graph Point: -87.2 at 1.08 MHz



Max. Graph Point: -40.9 at 516.29 MHz
Min. Graph Point: -95.5 at 1.42 MHz



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

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xxx = No entry.

*** = Measured value is invalid.

NEXT SWEEP - Worst Margin (dB) (Negative sign indicates a failure.)

Dv/Rc	2	3	4
1	12.9	15.1	13.8
2	...	8.5	12.6
3	...	...	10.8

NEXT SWEEP - Worst Frequency (MHz)

Dv/Rc	2	3	4
1	1.10	1.15	1.55
2	...	1.55	493
3	...	...	105

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]	99.89	99.27	99.45	98.11	98.88	99.06	98.60	97.84	98.10	98.16
Pair 2 [2]	102.64	101.69	102.24	100.70	101.32	101.84	102.19	101.28	101.90	101.87
Pair 3 [3]	100.28	99.45	99.44	98.85	98.81	98.75	99.21	98.82	99.69	99.70
Pair 4 [4]	102.51	101.18	101.83	101.07	100.95	100.92	101.19	100.83	100.33	100.29

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]	99.11	97.95	98.79	98.91	98.55					
Pair 2 [2]	100.20	100.38	101.72	101.69	100.19					
Pair 3 [3]	97.68	98.59	99.65	99.61	98.26					
Pair 4 [4]	100.04	100.56	101.46	101.50	101.28					

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

(Cat 6A): RL >= 20 + 5 * log(f); 25; 25 - 7 * log(f/20)

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 [1]	28.1	38.3	41.3	39.8	39.4	43.7	46.1	39.6	39.2	40.4
Pair 2 [2]	27.1	34.4	38.5	38.0	48.3	43.7	40.5	38.3	43.8	40.5
Pair 3 [3]	28.0	37.6	39.2	40.6	41.1	43.1	44.0	41.1	44.5	48.2
Pair 4 [4]	27.8	34.2	40.1	38.4	41.8	45.0	45.0	40.1	43.6	42.8

Continue:Return Loss (RL)(dB)

Frequency	200.00	250.00	300.00	350.00	400.00	500.00				
Min Spec	18.0	17.3	16.8	16.3	15.9	15.2				
Pair 1 [1]	45.5	42.2	43.1	38.7	39.7	43.9				
Pair 2 [2]	41.6	47.5	48.8	47.2	40.9	37.8				
Pair 3 [3]	45.0	39.9	38.5	40.4	51.7	44.7				
Pair 4 [4]	41.2	39.9	38.8	45.8	35.4	37.7				

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

(Cat 6A): RL >= 20 + 5 * log(f); 25; 25 - 7 * log(f/20)

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 [1]	28.9	36.3	38.8	39.7	41.1	38.9	39.8	40.1	36.4	32.9
Pair 2 [2]	29.2	34.3	45.8	49.3	48.0	47.0	43.6	41.1	51.7	41.7
Pair 3 [3]	29.4	36.0	40.4	43.2	40.6	43.5	41.5	51.0	35.7	36.6
Pair 4 [4]	29.6	34.3	41.6	44.8	47.2	50.7	42.2	40.3	44.2	37.4

Continue:Return Loss (RL-FE)(dB)

Frequency	200.00	250.00	300.00	350.00	400.00	500.00				
Min Spec	18.0	17.3	16.8	16.3	15.9	15.2				
Pair 1 [1]	40.4	43.4	42.1	36.5	37.7	38.1				
Pair 2 [2]	55.2	40.0	38.1	43.3	36.7	45.8				
Pair 3 [3]	39.1	36.7	34.6	42.9	36.5	42.6				
Pair 4 [4]	48.5	40.8	53.0	38.9	38.6	35.7				

N/A = Not Applicable.
--- = Disable/Bypassed Pair.
* = Measured value out of spec.
xxx = No entry.
*** = Measured value is invalid.

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

(Cat 6A): IL <= 1.82 sqrt(f) + 0.0091 * f + 0.25 / sqrt(f) (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	2.08	3.80	5.31	5.93	7.49	8.38	9.38	10.50	14.99	19.14
Pair 1 [1]	1.83	3.66	5.21	5.84	7.40	8.31	9.30	10.42	14.91	18.98
Pair 2 [2]	1.75	3.49	4.96	5.56	7.04	7.90	8.84	9.90	14.13	17.95
Pair 3 [3]	1.81	3.63	5.17	5.80	7.35	8.25	9.24	10.36	14.79	18.87
Pair 4 [4]	1.74	3.48	4.96	5.56	7.03	7.90	8.84	9.90	14.15	17.98

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

Frequency	125.00	155.00	200.00	250.00	300.00	350.00	400.00	500.00		
Max Spec	21.51	24.09	27.58	31.07	34.27	37.25	40.05	45.26		
Pair 1 [1]	21.29	24.02	27.52	31.01	34.21	37.19	39.99	45.19		
Pair 2 [2]	20.13	22.46	25.56	28.70	31.56	34.21	36.69	41.27		
Pair 3 [3]	21.14	23.73	27.25	30.69	33.85	36.79	39.55	44.67		
Pair 4 [4]	20.14	22.63	25.80	29.02	31.96	34.69	37.25	41.99		

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

(Cat 6A): NEXT >= 44.3 - 15 *log(f/100)

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	65.3	60.8	59.3	56.2	54.8	53.3	51.9	47.4	44.3
Pair 1 - 2	90.1	96.6	83.9	81.5	81.5	81.4	80.6	76.7	70.8	75.6
Pair 1 - 3	94.1	84.8	92.2	97.5	85.6	100.4	78.2	72.8	84.6	75.0
Pair 1 - 4	98.6	80.9	85.5	88.0	80.1	89.7	80.1	71.6	66.1	74.8
Pair 2 - 3	89.9	95.6	78.9	76.9	83.0	74.3	78.2	72.7	70.2	64.7
Pair 2 - 4	97.1	86.4	82.6	78.6	82.1	92.6	76.4	77.8	78.5	67.8
Pair 3 - 4	90.0	85.9	83.7	82.2	75.5	72.5	67.8	71.2	63.3	62.5

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

Frequency	200.00	250.00	300.00	400.00	500.00					
Min Spec	39.8	38.3	37.1	35.3	33.8					
Pair 1 - 2	66.3	65.3	55.3	65.6	56.6					
Pair 1 - 3	86.4	68.1	68.9	62.4	64.9					
Pair 1 - 4	72.8	63.9	67.4	62.8	55.6					
Pair 2 - 3	58.6	60.9	54.3	47.4	53.5					
Pair 2 - 4	67.9	62.7	63.6	50.3	51.0					
Pair 3 - 4	53.6	57.4	61.9	57.8	57.2					

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

(Cat 6A): PSNEXT >= 42.3 - 15 log(f/100)

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	63.3	58.8	57.3	54.2	52.8	51.3	49.9	45.4	42.3
Pair 1 [1]	88.2	79.4	81.2	80.4	77.0	80.2	74.7	68.3	64.7	69.8
Pair 2 [2]	86.6	85.5	76.5	73.8	77.3	73.4	73.2	69.9	67.0	62.7
Pair 3 [3]	86.2	82.1	77.5	75.7	74.4	69.9	67.0	67.4	62.5	60.2
Pair 4 [4]	88.7	78.9	79.0	76.6	73.5	72.4	67.0	67.9	61.4	61.2

Continue:Power Sum NEXT(PSNEXT)(dB)

Frequency	200.00	250.00	300.00	400.00	500.00					
Min Spec	37.8	36.3	35.1	33.3	31.8					
Pair 1 [1]	64.4	60.6	54.4	58.5	52.4					
Pair 2 [2]	57.5	57.7	50.8	45.6	48.2					
Pair 3 [3]	52.1	55.5	52.4	46.9	51.5					
Pair 4 [4]	53.3	55.5	56.9	49.3	48.8					

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