

# Low Pass Filters

## NLP-SERIES

50Ω DC to 2700 MHz



CASE STYLE: FF57

### Features

- rugged shielded case
- wide selection of cut-off frequencies
- custom fco models available

### Applications

- lab use
- test equipment
- video equipment

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-54151736  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

### Low Pass Filters Electrical Specifications

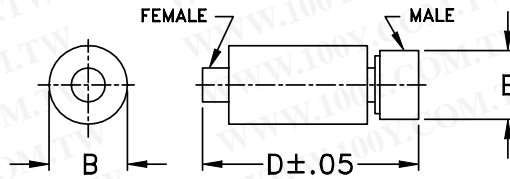
MODEL NO.	PASSBAND, MHz (loss < 1 dB)	fco, MHz Nom. (loss 3 dB)	STOPBAND, MHz		VSWR		PRICE \$ Qty. (1-9)
			(loss > 20dB)	(loss > 40 dB)	Passband Typ.	Stopband Typ.	
NLP-1.9*	DC-1.9	2.5	3.4-4.7	4.7-200	1.7:1	18:1	
NLP-2.5*	DC-2.5	2.75	3.8-5.0	5.0-200	1.7:1	18:1	
NLP-5	DC-5	6	8-10	10-200	1.7:1	18:1	
NLP-10.7	DC-11	14	19-24	24-200	1.7:1	18:1	
NLP-15	DC-15	17	23-32	32-200	1.7:1	18:1	
NLP-21.4	DC-22	24.5	32-41	41-200	1.7:1	18:1	
NLP-30	DC-32	35	47-61	61-200	1.7:1	18:1	
NLP-50	DC-48	55	70-90	90-200	1.7:1	18:1	
NLP-70	DC-60	67	90-117	117-300	1.7:1	18:1	
NLP-90	DC-81	90	121-157	157-400	1.7:1	18:1	
NLP-100	DC-98	108	146-189	189-400	1.7:1	18:1	
NLP-150	DC-140	155	210-300	300-600	1.7:1	18:1	
NLP-200	DC-190	210	290-390	390-800	1.7:1	18:1	
NLP-250	DC-225	250	320-400	400-1200	1.7:1	18:1	
NLP-300	DC-270	297	410-550	550-1200	1.7:1	18:1	
NLP-450	DC-400	440	580-750	750-1800	1.7:1	18:1	
NLP-550	DC-520	570	750-920	920-2000	1.7:1	18:1	
NLP-600	DC-580	640	840-1120	1120-2000	1.7:1	18:1	
NLP-750	DC-700	770	1000-1300	1300-2000	1.7:1	18:1	
NLP-800	DC-720	800	1080-1400	1400-2000	1.7:1	18:1	
NLP-850	DC-780	850	1100-1400	1400-2000	1.7:1	18:1	
NLP-1000	DC-900	990	1340-1750	1750-2000	1.7:1	18:1	
NLP-1200	DC-1000	1200	1620-2100	2100-2500	1.7:1	18:1	
NLP-1750	DC-1500	1750	2400-3000	3000-6000	1.3:1	18:1	
NLP-2400	DC-2200	2400	3150-4000	4000-6000	1.3:1	18:1	
NLP-2950	DC-2700	2950	3700-4500	4500-6000	1.3:1	18:1	

\* 1dB compression at +13 dBm input power

### Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5W max.

### Outline Drawing



B—OVERALL BODY DIMENSION

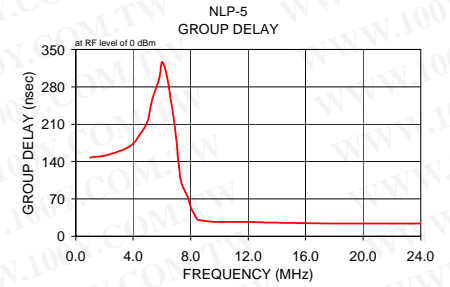
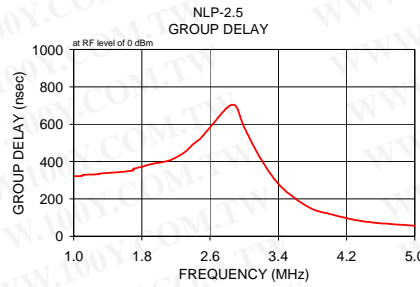
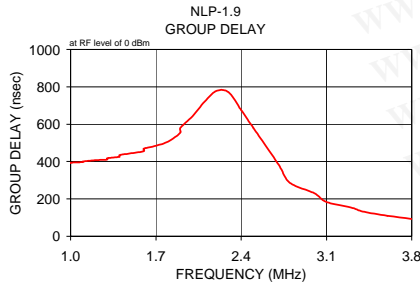
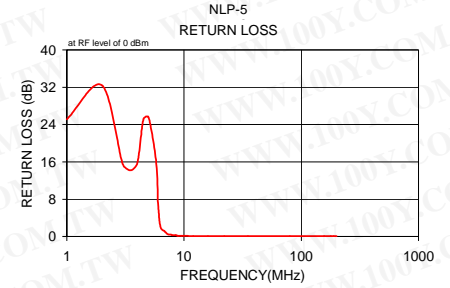
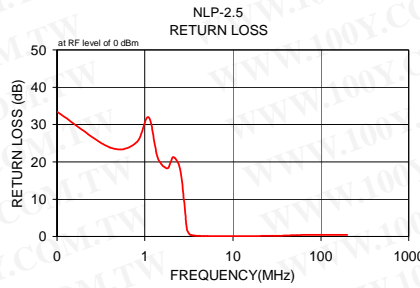
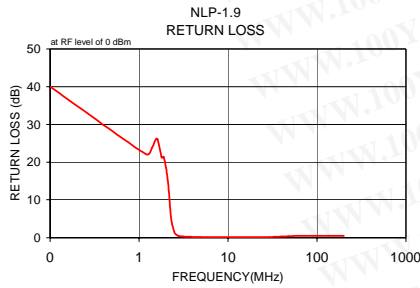
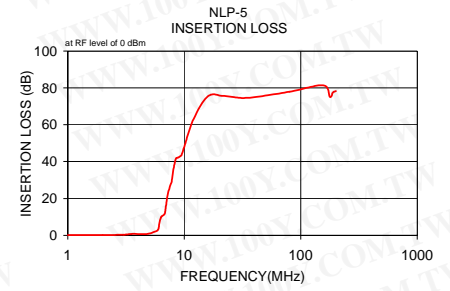
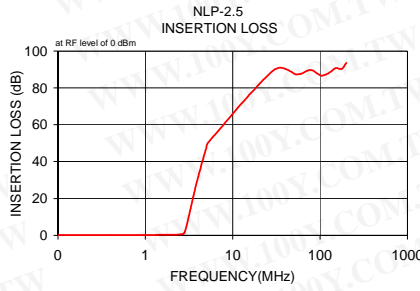
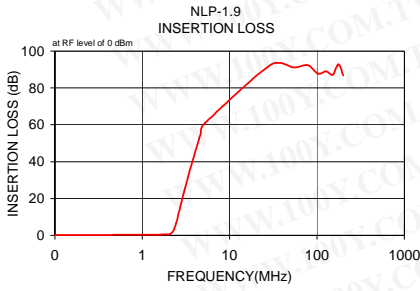
### Outline Dimensions (inch/mm)

B	D	E	wt.
.67	2.90	.82	grams
17.02	73.66	20.83	90.0

# Typical Performance Curves

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# NLP-SERIES



Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	$\bar{x}$	$\bar{x}$
0.10	0.09	0.01	1.00	390.94
1.20	0.24	0.02	1.00	393.92
1.40	0.26	0.01	1.10	397.21
1.60	0.31	0.01	1.10	400.27
1.80	0.40	0.02	1.20	406.34
1.90	0.45	0.02	1.30	410.76
2.10	0.75	0.12	1.30	417.77
2.30	2.93	0.75	1.40	425.39
2.50	8.32	1.21	1.40	434.33
2.70	14.69	1.17	1.50	444.37
2.80	17.71	1.12	1.60	455.27
3.00	23.30	1.01	1.60	468.79
3.10	25.89	0.96	1.70	484.50
3.30	30.68	0.90	1.80	506.65
3.40	32.92	0.87	1.90	554.15
3.60	37.12	0.84	1.90	579.78
3.80	41.00	0.81	2.00	642.41
4.00	44.61	0.79	2.10	720.76
4.30	49.67	0.81	2.20	779.41
4.50	52.78	0.80	2.30	768.87
4.70	55.74	0.88	2.40	675.19
5.00	60.00	0.86	2.50	579.64
29.40	92.50	4.17	2.70	390.84
53.80	91.19	3.63	2.80	286.22
78.10	92.39	2.10	3.00	230.56
102.50	87.80	2.75	3.10	182.81
126.90	89.05	3.87	3.30	153.96
151.30	87.17	2.60	3.40	132.22
175.60	92.87	7.14	3.60	109.19
200.00	86.82	4.04	3.80	92.80

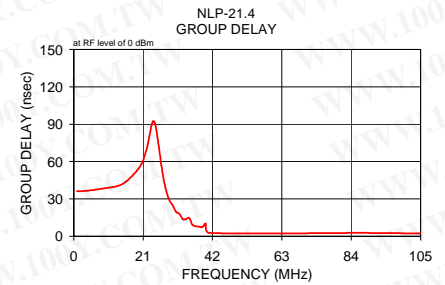
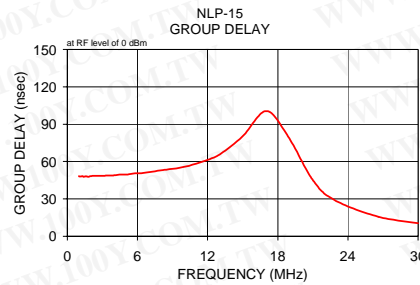
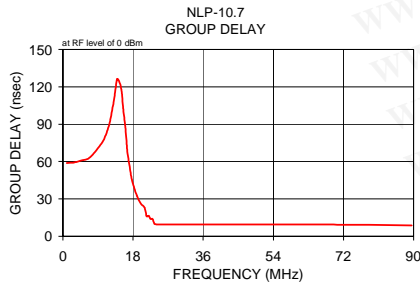
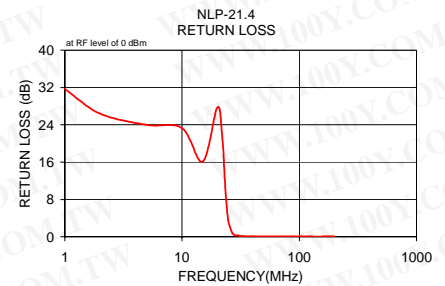
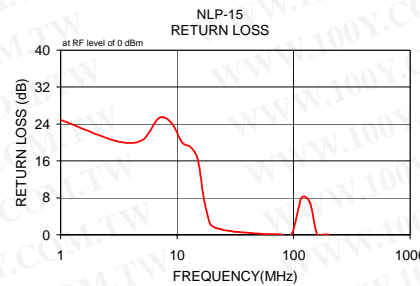
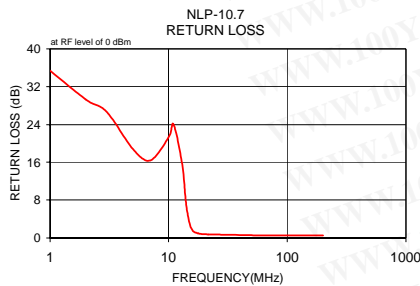
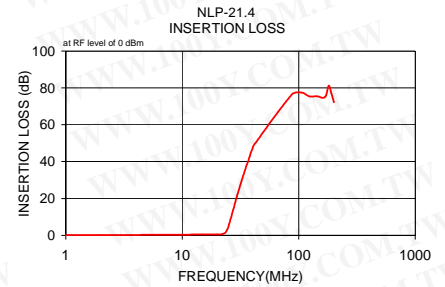
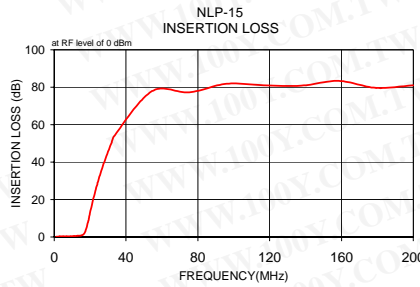
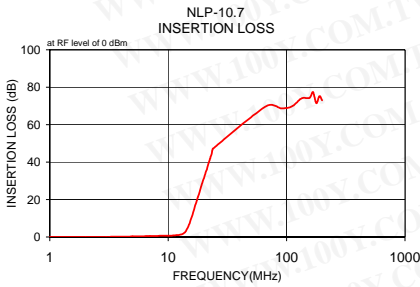
Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	$\bar{x}$	$\bar{x}$
0.10	0.10	0.00	1.00	322.00
0.40	0.10	0.00	1.10	323.10
0.80	0.10	0.00	1.10	327.30
1.10	0.10	0.00	1.20	330.20
1.40	0.20	0.00	1.30	332.30
1.80	0.20	0.00	1.30	335.00
2.10	0.30	0.00	1.40	338.60
2.50	0.50	0.10	1.50	341.40
2.80	1.30	0.50	1.60	346.30
3.00	6.00	1.20	1.70	353.00
3.20	11.70	1.30	1.70	361.00
3.30	14.60	1.30	1.80	372.10
3.50	20.00	1.20	1.90	385.30
3.60	22.40	1.20	2.10	402.80
3.80	27.00	1.10	2.20	422.50
4.00	31.20	1.10	2.30	449.70
4.20	34.90	1.10	2.40	492.20
4.40	38.40	1.00	2.50	530.40
4.60	41.70	1.00	2.80	689.10
4.80	44.70	1.00	2.90	697.90
5.00	47.50	1.00	3.00	582.00
5.20	50.10	1.00	3.20	410.20
29.60	89.70	3.80	3.40	280.50
53.90	87.30	1.40	3.60	201.20
78.30	89.70	4.30	3.80	145.70
102.60	86.70	3.10	4.00	119.20
127.00	88.20	4.30	4.20	96.40
151.30	90.80	3.30	4.40	79.40
175.70	90.30	4.10	4.70	65.40
200.00	93.50	9.40	5.00	55.80

Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)	
$\bar{x}$	$\sigma$	$\bar{x}$	$\bar{x}$	$\bar{x}$	
1.00	0.10	0.10	25.10	1.00	147.50
2.00	0.10	0.10	32.40	2.00	151.00
3.00	0.30	0.10	15.60	3.00	159.00
3.50	0.70	0.10	14.20	3.50	164.60
4.00	0.70	0.10	15.80	4.00	173.40
4.50	0.70	0.10	25.10	4.50	192.10
5.00	0.90	0.10	25.50	5.00	216.00
5.80	2.40	0.70	15.80	5.30	254.00
6.00	3.40	0.80	7.20	5.80	294.30
6.30	9.50	1.30	2.00	6.00	326.80
6.80	11.70	1.10	1.20	6.30	305.70
7.00	16.90	1.20	0.90	6.80	223.90
7.30	23.50	1.10	0.50	7.00	180.80
7.80	29.30	1.00	0.40	7.30	106.70
8.00	34.60	1.00	0.30	7.80	73.20
8.30	39.30	1.00	0.30	8.00	54.50
8.50	41.70	1.10	0.30	8.30	38.60
8.80	42.10	1.10	0.20	8.50	31.10
9.00	42.40	1.10	0.20	8.80	29.10
9.50	43.70	1.10	0.20	9.00	28.50
10.00	47.90	1.10	0.20	9.50	27.20
12.00	63.00	1.60	0.10	10.00	26.90
16.00	75.50	4.10	0.10	12.00	26.70
22.00	75.60	9.90	0.10	13.00	25.90
35.00	74.60	3.90	0.10	14.00	25.30
80.00	77.90	6.60	0.10	16.00	24.50
156.00	81.40	8.60	0.10	18.00	24.10
178.00	75.10	2.30	0.10	20.00	24.00
189.00	77.60	6.80	0.10	22.00	23.80
200.00	78.20	5.20	0.10	24.00	23.70

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# Typical Performance Curves

# NLP-SERIES



Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)	
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$	
1.00	0.10	0.10	35.40	1.00	58.80
2.00	0.10	0.10	29.30	2.00	59.10
3.00	0.10	0.10	26.70	3.00	59.30
5.00	0.30	0.10	18.80	5.00	61.00
7.00	0.50	0.10	16.40	7.00	63.40
10.00	0.70	0.10	21.30	10.00	74.90
11.00	0.80	0.10	24.00	11.00	81.20
13.00	1.40	0.20	15.60	12.00	91.10
14.00	2.90	0.60	7.40	13.00	107.20
15.00	6.70	1.20	3.10	13.50	117.90
16.00	11.80	1.50	1.50	14.00	126.30
17.00	17.20	1.50	1.10	15.00	118.50
17.50	19.80	1.60	1.00	15.50	101.90
18.00	22.30	1.60	0.90	16.00	88.40
19.00	27.00	1.70	0.80	16.50	69.70
20.00	31.40	1.70	0.80	17.00	58.30
21.50	37.50	1.80	0.70	17.50	48.60
22.50	41.60	2.00	0.70	18.00	42.00
23.00	43.40	2.00	0.70	19.00	32.50
23.50	45.40	2.30	0.70	20.00	26.30
24.00	47.30	2.30	0.70	21.00	22.80
67.50	69.90	8.90	0.50	21.50	15.90
89.50	68.70	2.90	0.50	22.00	16.40
111.50	69.80	2.20	0.50	22.50	13.90
133.50	74.00	3.20	0.50	23.00	13.80
156.00	74.30	4.90	0.50	23.50	9.80
167.00	77.30	6.10	0.50	24.00	9.50
178.00	71.40	2.80	0.50	67.50	9.30
189.00	75.10	2.80	0.50	78.50	9.00
200.00	73.00	2.10	0.50	89.50	8.70

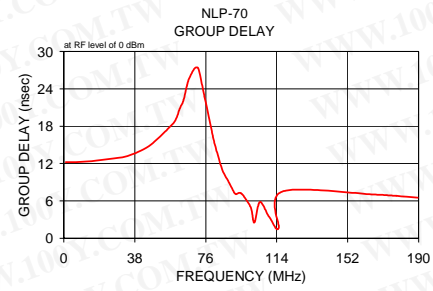
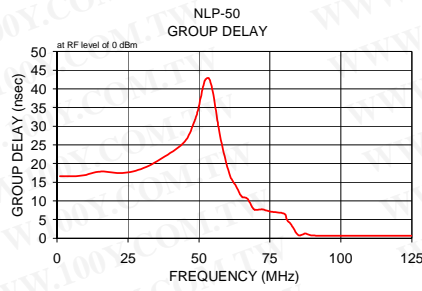
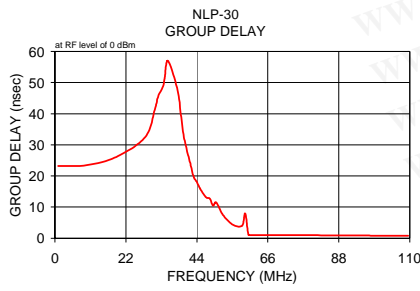
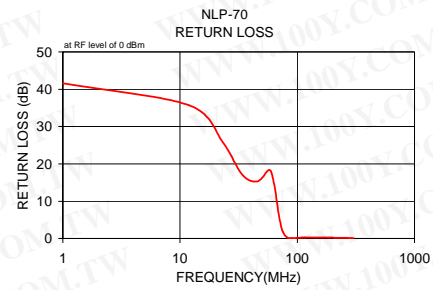
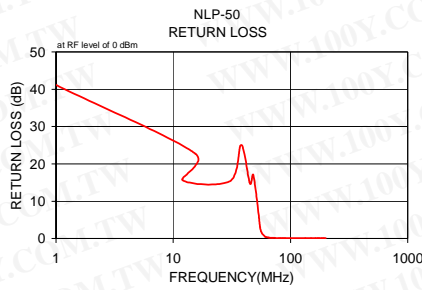
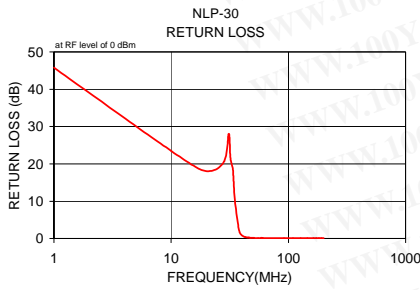
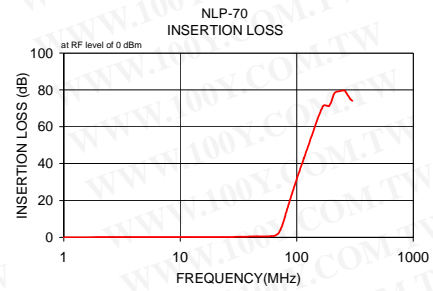
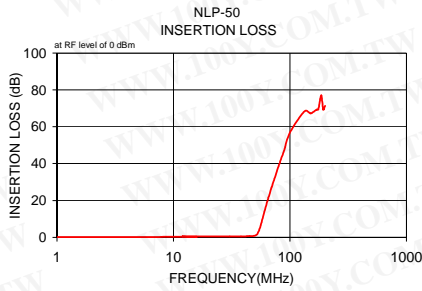
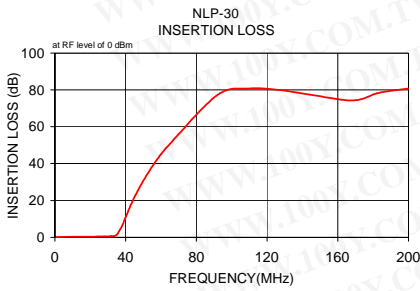
Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)	
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$	
1.00	0.20	0.00	24.90	1.00	48.10
3.00	0.30	0.00	20.30	1.10	47.90
5.00	0.30	0.00	20.50	1.30	48.20
7.00	0.30	0.10	25.30	1.40	47.70
9.00	0.40	0.10	24.10	1.60	48.10
11.00	0.50	0.10	20.00	1.80	47.70
13.00	0.60	0.10	19.00	2.00	48.30
15.00	0.80	0.10	16.40	2.30	48.40
17.00	2.30	0.40	7.60	2.50	48.40
19.00	8.80	0.60	2.60	2.90	48.60
19.80	12.30	0.60	2.00	3.20	48.60
20.60	15.70	0.50	1.70	3.60	48.80
21.40	18.90	0.50	1.50	4.00	48.90
22.20	22.00	0.50	1.40	4.60	49.50
23.00	24.90	0.50	1.30	5.10	49.50
23.80	27.70	0.50	1.20	5.80	50.40
25.40	32.90	0.50	1.00	6.50	50.80
27.10	37.90	0.60	0.90	7.30	51.90
28.70	42.20	0.70	0.80	8.20	53.10
30.40	46.60	0.90	0.70	9.30	54.50
32.00	50.50	1.00	0.60	10.40	56.60
33.60	54.20	1.50	0.60	11.70	60.30
54.40	77.80	6.00	0.20	13.10	66.10
75.20	77.20	4.70	0.10	15.00	80.30
96.00	81.80	4.40	0.10	17.00	100.50
116.80	81.00	4.80	8.00	18.80	81.40
137.60	80.80	3.90	7.00	21.10	43.80
158.40	83.30	5.00	0.10	23.00	28.30
179.20	79.60	3.60	0.10	26.60	15.70
200.00	81.00	5.20	0.10	30.00	10.40

Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)	
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$	
1.00	0.10	0.10	31.70	1.00	36.20
2.00	0.10	0.00	26.40	2.00	36.10
5.00	0.20	0.10	24.00	5.00	36.80
10.00	0.30	0.10	23.30	10.00	38.70
15.00	0.50	0.10	16.10	15.00	42.30
20.00	0.50	0.10	27.70	20.00	55.70
22.00	0.60	0.10	21.60	22.00	69.40
23.50	1.50	0.40	9.60	23.00	81.70
24.50	3.50	1.00	4.40	23.50	88.30
25.00	5.00	1.20	3.00	24.00	92.30
27.00	12.40	1.50	0.70	24.50	91.50
29.00	19.50	1.40	0.30	25.00	85.70
30.00	22.80	1.40	0.30	26.00	66.80
31.00	25.80	1.30	0.20	27.00	48.90
32.00	28.60	1.30	0.20	28.00	36.30
33.00	31.30	1.30	0.20	29.00	28.80
35.00	36.30	1.20	0.10	30.00	24.50
38.00	42.90	1.30	0.10	31.00	19.40
39.00	45.10	1.10	0.10	32.00	17.90
40.00	46.80	1.00	0.10	33.00	13.70
41.00	48.70	1.00	0.10	34.00	13.70
86.50	76.20	2.00	0.10	35.00	14.60
105.00	77.50	4.30	0.10	36.00	8.90
124.00	75.40	0.60	0.10	38.00	7.60
143.00	75.50	1.80	0.00	39.00	7.40
162.00	74.80	3.50	0.10	40.00	10.00
171.50	75.80	4.40	0.10	41.00	2.70
181.00	81.20	8.20	0.10	86.50	2.60
190.50	77.00	3.20	0.10	96.00	2.40
200.00	72.20	2.40	0.10	105.00	2.30

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# Typical Performance Curves

# NLP-SERIES



Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)	
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$	
1.00	0.10	0.10	45.80	1.00	23.20
10.00	0.20	0.10	23.50	10.00	23.50
19.00	0.30	0.10	18.20	19.00	26.10
28.00	0.40	0.10	20.40	28.00	32.50
31.00	0.50	0.10	28.10	31.00	41.60
32.00	0.60	0.10	21.80	32.00	45.60
33.50	0.60	0.10	18.80	33.50	48.80
34.00	0.80	0.10	16.10	34.00	51.30
35.00	1.30	0.30	9.90	35.00	57.00
38.00	6.10	0.90	2.10	38.00	47.70
40.00	10.80	0.90	0.90	39.00	39.90
43.00	17.60	0.80	0.40	40.00	32.40
45.00	21.70	0.70	0.30	42.00	23.80
46.00	23.60	0.70	0.30	43.00	19.70
47.00	25.40	0.70	0.20	44.00	18.00
48.00	27.20	0.70	0.20	45.00	15.90
50.00	30.60	0.60	0.20	46.00	14.30
55.00	38.30	0.60	0.10	47.00	13.00
59.00	43.70	0.70	0.20	48.00	12.70
60.00	45.00	0.70	0.10	49.00	10.50
61.00	46.30	0.50	0.10	50.00	11.50
91.50	76.90	4.10	0.10	52.00	7.60
109.50	80.80	5.30	0.10	55.00	4.40
127.50	79.90	2.80	0.10	58.00	4.00
145.50	77.20	3.00	0.10	59.00	7.90
164.00	74.50	3.40	0.10	60.00	1.00
173.00	74.90	3.80	0.10	61.00	1.00
182.00	78.10	5.90	0.10	91.50	0.90
191.00	79.60	6.80	0.10	100.50	0.80
200.00	80.70	6.90	0.10	109.50	0.80

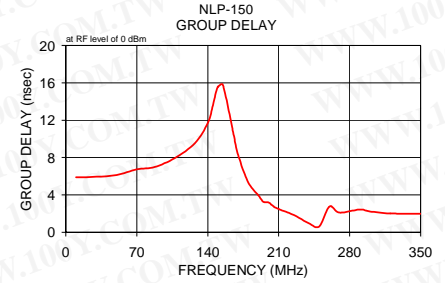
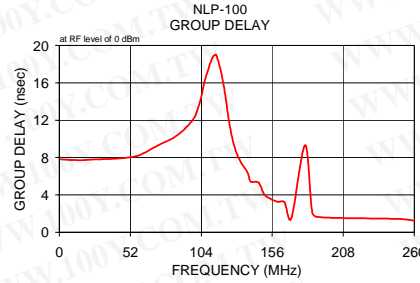
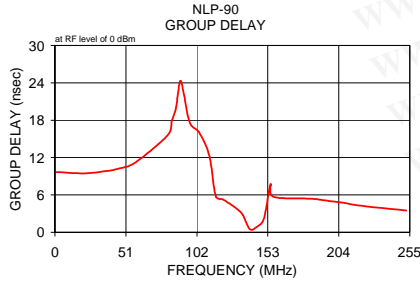
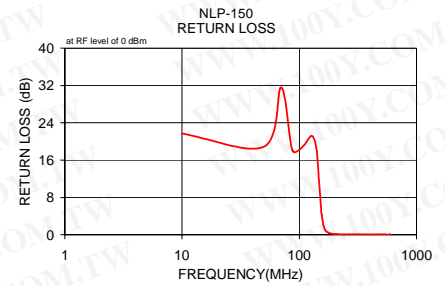
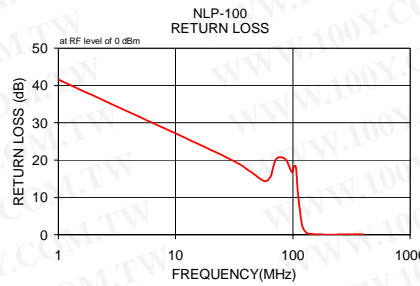
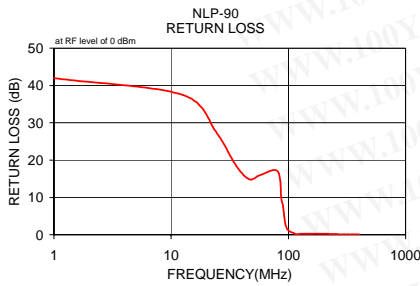
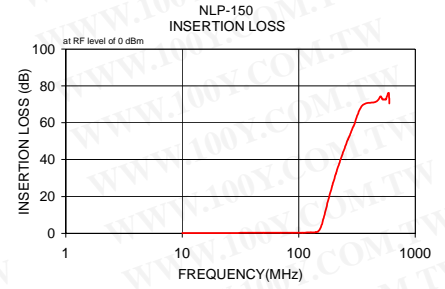
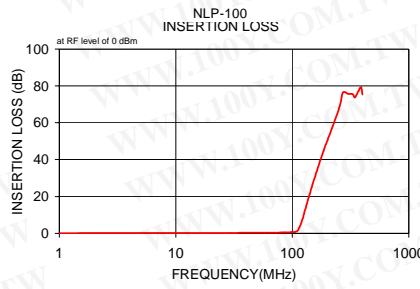
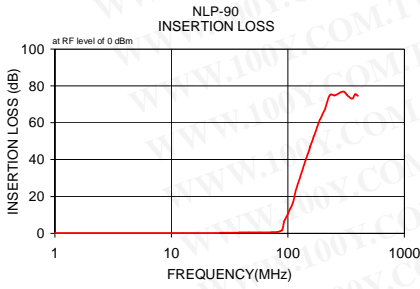
Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)	
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$	
1.0	0.1	0.0	41.2	1.0	16.6
15.5	0.2	0.1	22.7	8.5	16.7
12.0	0.4	0.1	15.7	15.5	17.9
30.5	0.4	0.1	15.4	23.0	17.5
38.0	0.4	0.1	25.1	30.5	18.8
45.0	0.7	0.1	14.8	38.0	21.9
48.0	0.7	0.1	17.1	45.0	25.9
52.0	1.5	0.2	9.9	48.0	30.6
55.0	4.7	0.3	3.0	49.5	33.9
57.0	8.0	0.4	1.5	52.0	42.1
61.0	14.8	0.5	0.5	53.5	42.8
65.0	21.0	6.0	0.3	55.0	38.8
67.0	23.7	0.6	0.2	57.0	29.2
69.0	26.3	0.7	0.2	59.0	22.0
70.0	27.6	0.7	0.2	61.0	16.7
72.5	30.6	0.8	0.2	63.0	14.0
80.0	38.7	1.2	0.1	65.0	11.2
82.5	41.1	1.4	0.1	67.0	10.6
85.0	43.5	1.6	0.1	69.0	8.1
87.5	45.8	1.8	0.1	70.0	7.6
90.0	48.0	2.2	0.1	72.5	7.7
100.0	56.9	4.1	0.1	75.0	7.1
133.5	68.4	5.2	0.1	80.0	6.6
150.0	67.2	4.2	0.1	81.0	4.9
163.0	68.6	4.6	0.1	82.5	3.6
170.5	69.4	3.3	0.1	85.0	0.8
175.0	69.4	5.8	0.1	87.5	1.2
185.5	77.1	8.8	0.1	90.0	0.7
192.5	69.5	5.2	0.1	100.0	0.7
200.0	71.3	9.7	0.1	125.0	0.7

Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)	
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$	
1.00	0.00	0.10	41.60	1.00	12.20
12.00	0.10	0.10	35.70	12.00	12.30
23.00	0.10	0.10	25.90	23.00	12.70
34.00	0.30	0.10	17.10	34.00	13.20
45.50	0.40	0.10	15.30	45.50	14.80
56.50	0.50	0.10	18.30	56.50	17.80
60.00	0.60	0.10	17.80	60.00	19.10
64.00	0.80	0.10	13.90	62.00	20.80
67.00	1.30	0.20	9.80	64.00	22.10
70.00	2.40	0.50	5.90	66.00	24.60
75.00	6.40	0.70	1.90	67.00	25.60
82.00	14.30	0.60	0.30	70.00	27.30
85.00	17.60	0.60	0.10	72.00	27.30
88.00	20.70	0.50	0.10	75.00	23.20
90.00	22.70	0.50	0.10	80.00	16.10
92.00	24.60	0.40	0.10	82.00	13.80
100.00	31.60	0.30	0.20	85.00	10.90
105.00	35.60	0.30	0.20	88.00	9.20
110.00	39.20	0.30	0.30	90.00	8.00
115.00	42.80	0.30	0.30	92.00	7.10
117.00	44.10	0.30	0.30	95.00	7.20
167.00	71.00	2.80	0.30	100.00	5.00
189.50	71.30	4.90	0.30	102.00	2.50
211.50	78.20	8.20	0.20	105.00	5.80
233.50	79.30	6.90	0.20	110.00	3.40
255.50	79.70	7.60	0.20	115.00	1.60
267.00	78.30	9.90	0.20	117.00	7.50
278.00	76.60	3.10	0.10	167.00	7.00
289.00	75.00	2.80	0.10	178.00	6.80
300.00	74.10	4.10	0.10	189.50	6.50

# Typical Performance Curves

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# NLP-SERIES



Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
1.00	0.05	0.10	1.00	9.67
12.50	0.14	0.10	12.50	9.50
24.00	0.18	0.10	24.00	9.49
35.50	0.31	0.10	18.70	9.78
46.50	0.42	0.10	14.90	10.24
58.00	0.43	0.10	16.10	11.24
81.00	0.69	0.10	17.00	15.57
87.00	1.28	0.40	9.70	17.89
90.00	2.01	0.50	7.60	20.00
93.00	6.43	0.90	3.80	24.26
97.00	8.74	1.00	1.70	21.73
104.00	12.94	1.10	0.80	17.53
111.00	16.72	1.20	0.50	15.89
115.50	21.91	1.20	0.10	12.22
121.00	26.16	1.20	0.20	5.80
130.00	32.40	1.30	0.30	5.23
140.00	38.50	1.40	0.30	3.89
145.00	41.31	1.40	0.30	2.74
150.00	43.98	1.50	0.30	0.49
155.00	46.76	1.70	0.30	0.84
157.00	47.69	1.80	0.30	2.06
184.10	60.11	2.90	0.30	7.69
206.60	66.87	1.40	0.30	5.68
229.60	75.03	5.60	0.20	5.38
252.60	74.83	7.60	0.20	5.06
298.10	76.96	7.10	0.10	4.74
321.10	75.07	4.90	0.10	4.32
355.60	73.10	4.40	0.10	4.01
378.10	75.50	4.80	0.10	3.76
400.10	74.56	6.30	0.10	3.45

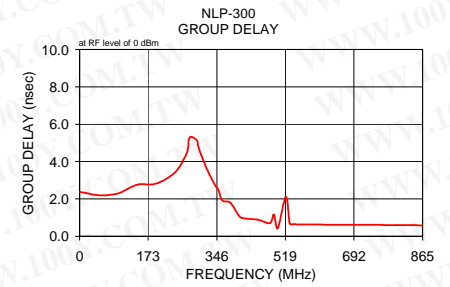
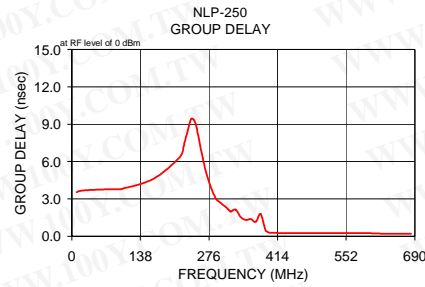
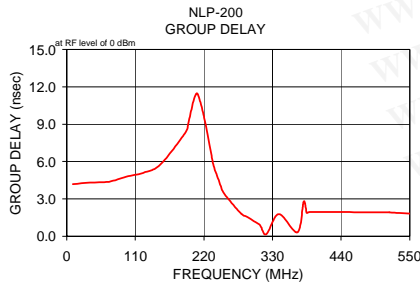
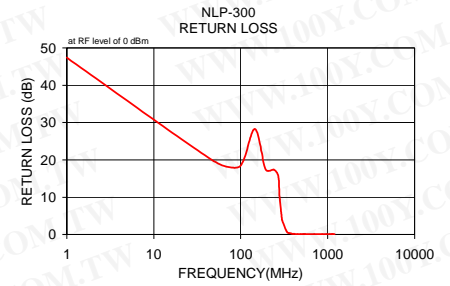
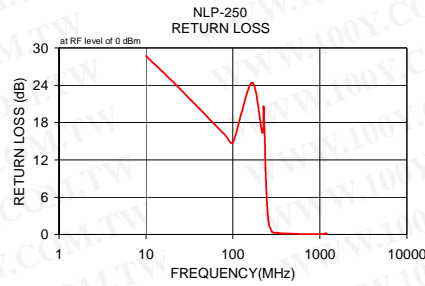
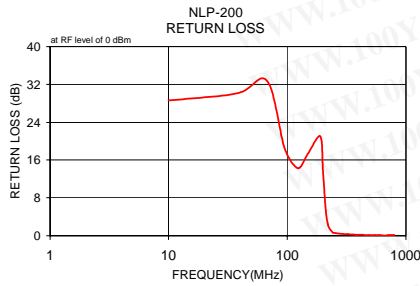
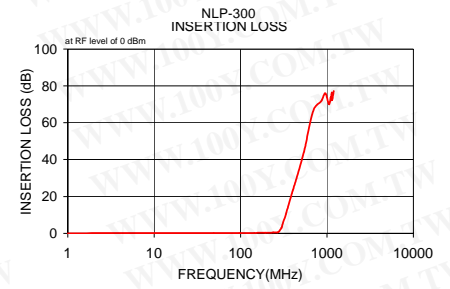
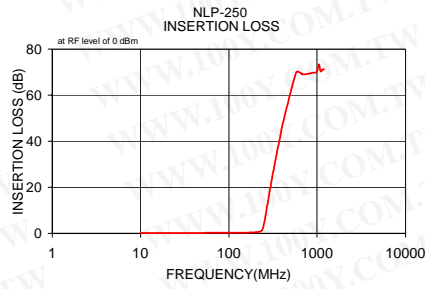
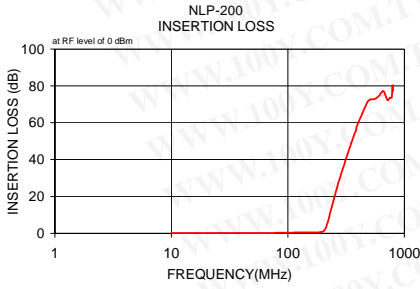
Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
1.00	0.02	0.10	41.60	7.80
29.50	0.16	0.10	20.20	7.72
58.00	0.34	0.10	14.40	7.81
72.00	0.31	0.10	20.30	7.90
86.50	0.41	0.10	20.20	8.23
98.00	0.58	0.10	16.80	9.28
102.00	0.62	0.10	18.40	10.40
106.00	0.75	0.10	18.30	12.09
108.00	0.93	0.20	15.00	13.51
112.00	1.72	0.50	9.30	14.55
120.00	5.98	1.30	2.50	15.90
130.00	13.62	1.30	0.60	16.95
138.00	19.37	1.20	0.30	18.65
140.00	20.73	1.20	0.30	18.92
146.00	24.55	1.20	0.20	16.03
150.00	26.95	1.10	0.10	11.26
160.00	32.54	1.20	0.10	8.38
170.00	37.64	1.20	0.10	6.34
180.00	42.35	1.20	0.10	5.44
185.00	44.43	1.30	0.00	5.30
189.00	46.24	1.40	0.00	4.07
250.10	67.20	3.60	0.10	3.55
271.60	76.41	8.40	0.10	3.25
300.10	75.73	6.40	0.10	3.19
330.10	75.45	3.90	0.10	1.50
343.10	73.72	2.60	0.10	9.31
360.10	75.87	4.30	0.10	2.44
371.60	77.51	9.80	0.10	1.63
390.10	79.32	7.80	0.10	1.41
400.10	75.26	2.40	0.10	1.23

Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
10.00	0.12	0.10	21.70	5.88
50.00	0.20	0.00	18.90	5.93
70.00	0.19	0.10	31.60	6.12
87.50	0.30	0.10	18.10	6.72
107.50	0.34	0.10	19.00	6.97
127.50	0.43	0.10	21.20	7.94
140.00	0.59	0.10	18.50	9.56
147.50	1.11	0.10	11.00	11.71
155.00	3.27	0.20	4.30	13.58
165.00	9.15	0.40	1.20	14.70
180.00	18.50	0.60	0.40	15.57
195.00	26.35	0.70	0.20	15.78
200.00	28.70	0.70	0.20	10.70
205.00	30.89	0.70	0.20	8.26
210.00	33.01	0.80	0.20	5.34
220.00	36.90	0.80	0.10	3.93
240.00	43.83	0.90	0.10	3.24
260.00	49.92	1.30	0.10	3.19
270.10	52.20	1.90	0.10	2.75
290.10	57.13	1.70	0.10	2.47
300.00	59.12	2.50	0.10	2.06
320.00	64.42	3.70	0.10	1.55
360.00	69.97	6.80	0.10	0.95
462.50	71.43	5.20	0.10	0.62
502.50	74.26	2.10	0.10	2.74
522.50	72.73	2.60	0.10	2.10
540.00	72.69	4.10	0.10	2.43
560.00	72.65	5.60	0.00	2.22
590.00	76.20	9.30	0.10	2.01
600.00	70.55	3.80	0.10	1.98

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Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)	
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$	
10.00	0.08	0.10	28.60	10.00	4.18
37.50	0.12	0.10	30.10	37.50	4.31
67.50	0.15	0.10	32.80	67.50	4.38
95.00	0.26	0.10	18.50	95.00	4.78
122.50	0.43	0.10	14.30	122.50	5.09
150.00	0.39	0.10	17.40	150.00	5.75
190.00	0.58	0.10	21.00	190.00	8.30
200.00	0.96	0.20	13.60	195.00	9.07
210.00	2.52	0.70	5.90	200.00	10.18
220.00	6.01	1.10	2.40	205.00	11.13
240.00	15.07	1.30	0.70	210.00	11.42
250.00	19.34	1.30	0.60	220.00	9.61
260.00	23.25	1.40	0.50	235.00	5.78
280.00	30.20	1.50	0.40	240.00	5.00
290.00	33.33	1.50	0.40	245.00	4.34
300.00	36.17	1.50	0.30	250.00	3.63
320.00	41.60	1.80	0.30	260.00	2.95
370.00	53.41	2.30	0.20	280.00	1.79
380.00	55.00	2.80	0.20	290.00	1.54
385.00	56.23	2.70	0.20	300.00	1.21
390.00	57.87	4.00	0.20	310.00	0.88
490.00	71.86	7.90	0.10	320.00	0.15
550.00	72.71	1.60	0.10	340.00	1.77
602.50	74.42	2.50	0.10	370.00	0.31
660.00	77.14	4.30	0.00	380.00	2.76
715.00	72.38	5.70	0.10	385.00	1.86
750.00	73.49	3.50	0.10	390.00	1.94
780.00	73.91	4.70	0.10	490.00	1.92
790.00	80.33	5.30	0.10	517.50	1.91
800.00	77.51	9.60	0.10	550.00	1.81

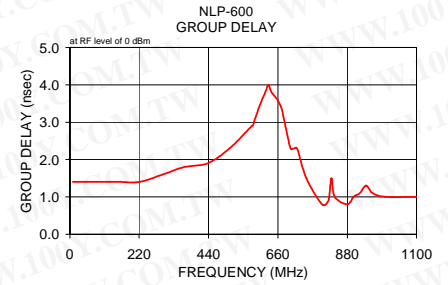
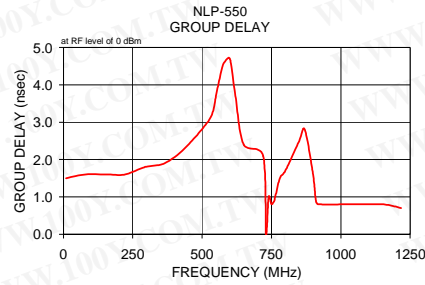
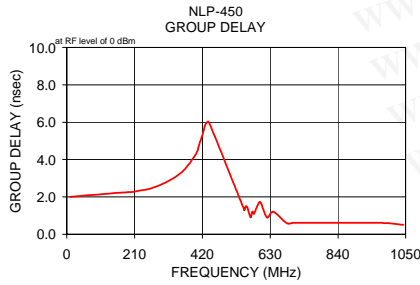
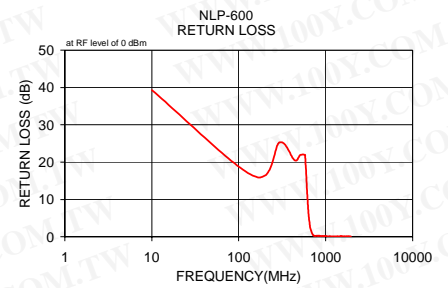
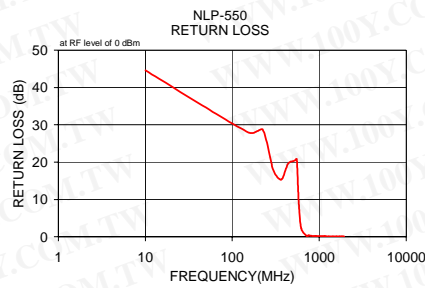
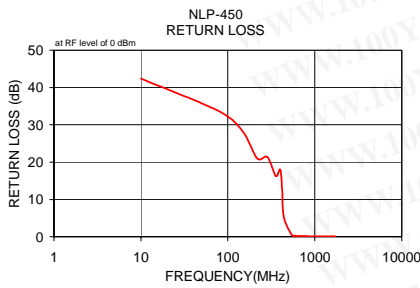
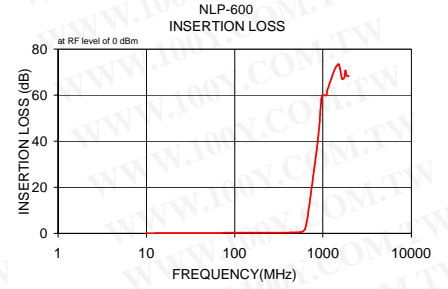
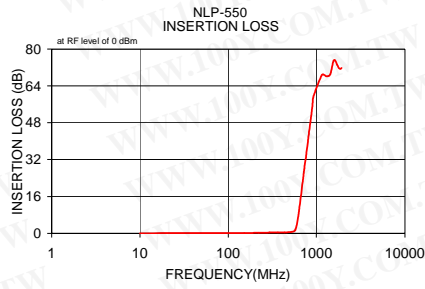
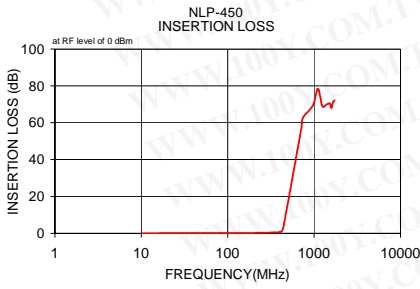
Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)	
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$	
10.00	0.03	0.10	28.70	10.00	3.54
20.00	0.03	0.10	24.70	20.00	3.66
80.00	0.20	0.10	16.10	80.00	3.78
100.00	0.28	0.10	14.80	100.00	3.80
165.00	0.27	0.10	24.40	165.00	4.63
217.50	0.60	0.10	16.40	217.50	6.37
225.00	0.64	0.10	20.40	225.00	7.25
240.00	1.59	0.30	8.30	230.00	8.00
250.00	3.87	0.60	3.60	240.00	9.42
260.00	7.27	0.90	1.60	245.00	9.37
280.00	14.62	1.00	0.50	250.00	8.91
300.00	21.27	1.10	0.30	260.00	6.90
310.00	24.28	1.20	0.30	270.00	5.18
315.00	25.71	1.20	0.30	280.00	3.91
320.00	27.12	1.30	0.30	290.00	3.02
330.00	29.77	1.30	0.30	300.00	2.66
350.00	34.87	1.60	0.20	310.00	2.33
370.00	39.35	1.90	0.20	315.00	2.14
380.00	41.63	2.00	0.20	320.00	1.98
390.00	43.91	2.30	0.20	330.00	2.13
400.00	46.09	2.70	0.20	340.00	1.53
580.00	69.80	3.00	0.10	350.00	1.30
682.50	69.02	1.50	0.10	360.00	1.37
785.00	69.27	2.40	0.10	370.00	1.15
890.00	69.72	4.50	0.10	380.00	1.78
992.50	70.16	5.10	0.10	390.00	0.46
1045.00	73.29	6.60	0.10	400.00	0.27
1097.50	70.40	5.60	0.00	580.00	0.25
1147.50	71.08	3.90	0.20	630.00	0.20
1200.00	71.31	2.10	0.20	682.50	0.20

Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)	
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$	
1.00	0.02	0.10	47.40	1.00	2.37
49.00	0.13	0.10	19.70	49.00	2.20
97.00	0.17	0.10	18.20	97.00	2.29
145.00	0.15	0.10	28.30	145.00	2.76
193.00	0.28	0.10	17.50	193.00	2.82
241.00	0.36	0.10	17.40	241.00	3.42
270.00	0.53	0.10	15.60	270.00	4.45
280.00	1.00	0.10	9.80	275.00	5.14
297.00	2.83	0.20	4.30	280.00	5.33
300.00	3.29	0.20	3.80	290.00	5.24
340.00	11.27	0.30	0.70	297.00	5.08
360.00	15.31	0.30	0.40	300.00	4.75
380.00	19.09	0.40	0.30	320.00	3.64
400.00	22.62	0.40	0.20	340.00	2.79
410.00	24.31	0.40	0.20	350.00	2.49
450.00	30.64	0.60	0.10	360.00	1.91
490.00	36.51	0.90	0.10	380.00	1.79
520.00	40.88	1.20	0.10	400.00	1.15
530.00	42.34	1.30	0.10	410.00	0.98
540.00	43.72	1.30	0.10	450.00	0.88
550.00	45.07	1.50	0.10	480.00	0.70
700.00	66.82	5.70	0.10	490.00	1.16
864.00	71.78	6.60	0.10	500.00	0.43
960.00	76.06	6.90	0.10	520.00	2.11
1056.00	70.05	3.20	0.10	530.00	0.67
1110.00	73.87	7.70	0.10	540.00	0.65
1120.00	72.31	5.10	0.10	550.00	0.63
1140.00	76.33	5.10	0.10	700.00	0.61
1150.00	72.33	3.50	0.10	800.00	0.59
1200.00	77.29	5.80	0.10	864.00	0.58

# Typical Performance Curves

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Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
10.00	0.00	0.10	42.40	2.00
80.00	0.10	0.10	33.60	2.10
147.50	0.10	0.10	28.30	2.20
217.50	0.20	0.10	21.00	2.30
285.00	0.30	0.10	21.40	2.60
355.00	0.50	0.10	16.30	3.30
400.00	0.60	0.10	18.00	4.30
420.00	1.00	0.10	12.80	4.80
440.00	2.80	0.20	5.20	5.30
545.00	26.50	0.90	0.40	5.90
555.00	28.60	0.90	0.30	6.00
565.00	30.60	1.00	0.30	1.50
570.00	31.50	1.00	0.30	1.30
575.00	32.50	1.00	0.30	1.50
580.00	33.50	1.00	0.30	1.40
590.00	35.40	1.00	0.30	1.10
620.00	40.90	1.10	0.20	0.90
680.00	51.20	1.60	0.20	1.20
700.00	54.80	1.80	0.10	1.10
720.10	57.90	1.20	0.10	1.50
750.00	63.00	2.70	0.20	1.70
975.00	69.50	2.10	0.10	0.90
1112.50	78.50	9.90	0.10	1.20
1250.00	68.90	2.90	0.10	0.60
1387.50	69.80	8.20	0.10	0.60
1525.00	70.50	5.60	0.10	0.60
1592.50	68.10	0.90	0.10	0.60
1662.50	71.20	4.90	0.10	0.60
1730.00	72.20	6.00	0.10	0.50

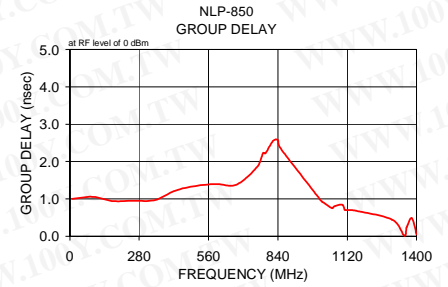
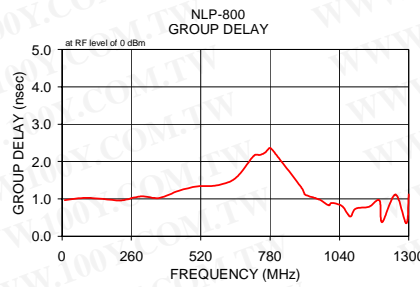
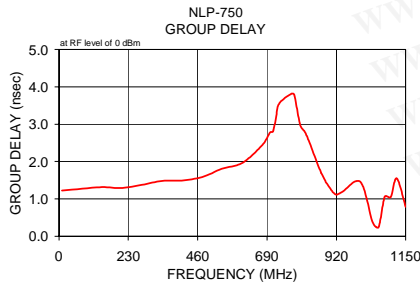
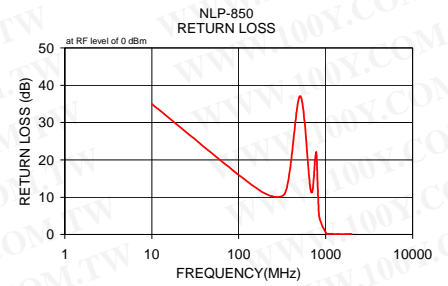
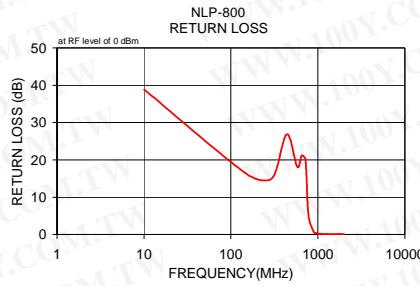
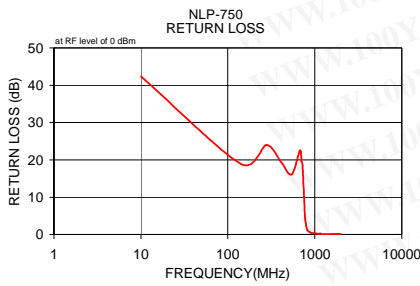
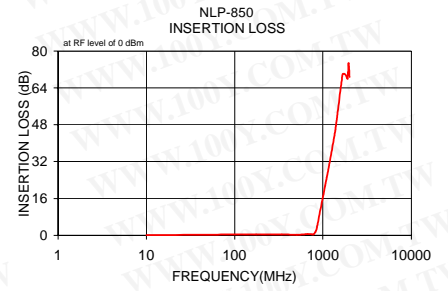
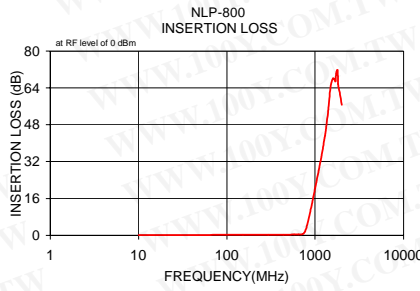
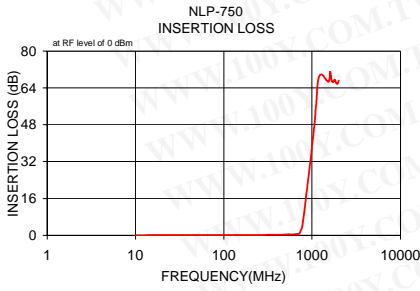
Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
10.00	0.00	0.10	44.60	1.50
152.50	0.10	0.10	28.00	1.60
222.50	0.20	0.10	28.80	1.60
295.00	0.30	0.10	18.00	1.60
365.00	0.40	0.10	15.30	1.80
437.50	0.40	0.10	19.60	1.90
520.00	0.60	0.10	20.40	2.30
550.00	0.80	0.10	20.80	3.00
570.00	1.20	0.30	12.70	3.30
580.00	1.70	0.40	9.20	3.70
620.00	7.10	1.10	2.30	4.40
720.00	26.50	1.60	0.20	4.60
730.00	28.50	1.60	0.30	4.70
740.00	30.00	1.60	0.30	3.70
750.00	31.60	1.60	0.40	2.40
760.00	33.20	1.70	0.40	2.10
800.00	39.90	1.90	0.30	0.00
870.00	50.80	2.40	0.20	1.00
900.00	55.60	2.90	0.20	0.80
910.00	58.10	4.70	0.20	0.90
920.00	59.20	4.20	0.20	1.50
1147.50	68.70	3.00	0.20	1.70
1290.00	68.20	3.50	0.10	2.50
1432.50	69.00	4.40	0.10	2.80
1572.50	75.20	5.70	0.10	1.60
1715.00	73.20	5.20	0.10	0.90
1787.50	71.80	3.40	0.10	0.80
1857.50	71.40	3.70	0.10	0.80
1930.00	71.80	6.90	0.10	0.70

Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
10.00	0.00	0.10	39.30	1.40
152.50	0.20	0.20	16.20	1.40
295.00	0.20	0.10	25.30	1.40
437.50	0.30	0.10	20.50	1.40
507.50	0.40	0.10	21.90	1.60
577.50	0.60	0.10	22.00	1.80
580.00	0.60	0.10	21.90	1.90
620.00	1.50	0.30	9.60	2.30
640.00	3.00	0.40	5.10	2.90
670.00	7.10	0.60	2.10	2.90
720.00	15.50	2.00	0.40	3.40
800.00	28.40	4.70	0.30	3.80
820.00	31.50	5.40	0.30	4.00
830.00	33.10	5.70	0.30	3.80
840.00	34.60	6.10	0.30	3.40
880.00	41.20	8.00	0.20	2.30
920.00	48.80	9.90	0.20	2.30
960.00	58.60	9.90	0.20	1.50
1000.00	60.00	9.90	0.20	0.80
1100.00	59.90	8.40	0.10	0.90
1120.00	62.10	8.80	0.10	1.50
1360.00	71.10	2.30	0.10	1.00
1502.50	73.50	9.30	0.20	0.80
1572.50	70.70	4.90	0.10	1.00
1650.00	67.10	3.40	0.10	1.10
1750.00	67.70	7.70	0.10	1.30
1800.00	70.70	9.50	0.10	1.10
1850.00	68.60	9.10	0.10	1.00
1950.00	68.20	7.10	0.10	1.00

# Typical Performance Curves

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Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
10.00	0.01	0.10	42.40	1.22
142.50	0.13	0.10	18.90	1.27
275.00	0.13	0.10	24.00	1.31
407.50	0.24	0.10	19.50	1.29
540.00	0.34	0.10	16.10	1.38
672.50	0.50	0.10	22.50	1.48
700.00	0.61	0.10	19.60	1.49
720.00	0.75	0.10	18.80	1.58
770.00	3.29	0.20	4.70	1.80
780.00	4.47	0.20	3.50	1.96
820.00	10.67	0.50	1.20	2.42
900.00	23.62	0.90	0.50	2.78
920.00	26.64	1.00	0.40	2.81
940.00	29.60	1.10	0.40	3.18
1000.00	38.46	1.50	0.30	3.55
1040.00	44.45	1.50	0.30	3.81
1080.00	50.55	2.00	0.20	3.79
1100.00	54.84	3.50	0.20	2.99
1120.00	57.93	4.70	0.20	2.72
1150.00	64.79	5.80	0.30	1.69
1200.00	68.75	5.60	0.10	1.27
1300.00	69.77	6.90	0.10	1.11
1535.00	66.70	2.90	0.10	1.19
1602.50	70.91	7.50	0.20	1.45
1667.00	67.12	3.10	0.10	0.38
1735.00	66.47	6.60	0.10	0.24
1800.00	67.59	9.90	0.10	1.05
1867.00	66.42	3.70	0.10	1.04
1932.00	65.70	7.40	0.10	1.54
2000.00	67.17	5.80	0.10	0.79

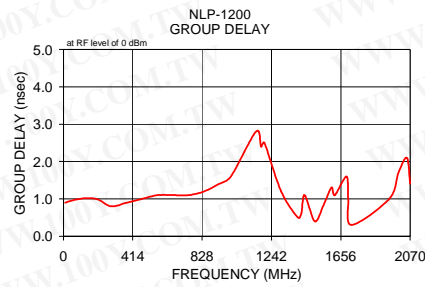
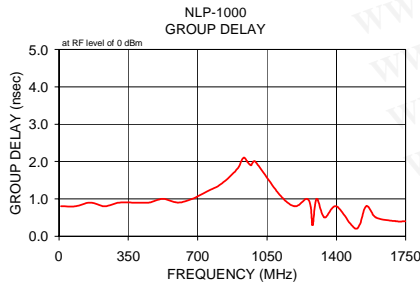
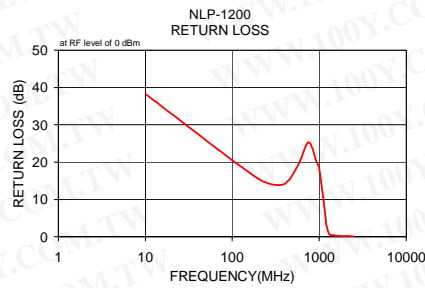
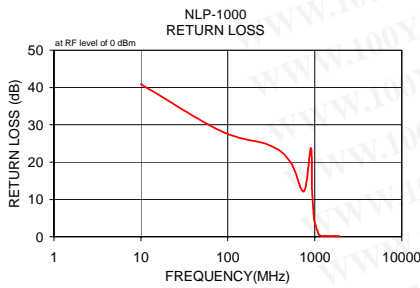
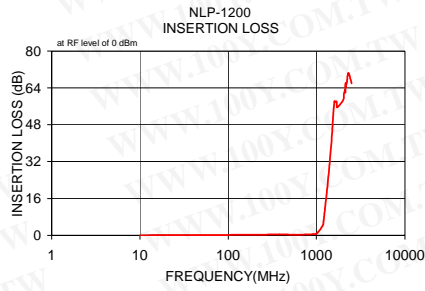
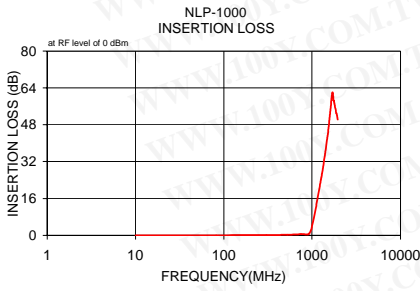
Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
10.00	0.04	0.10	38.90	1.00
152.50	0.20	0.10	16.20	1.03
295.00	0.26	0.10	15.00	1.00
437.50	0.18	0.10	26.90	0.96
577.50	0.32	0.10	18.20	1.07
650.00	0.35	0.10	21.20	1.03
720.00	0.48	0.10	20.10	1.22
760.00	1.36	0.20	8.00	1.33
800.00	3.45	0.30	3.70	1.36
900.00	11.91	0.50	0.60	1.55
950.00	16.24	0.50	0.40	2.16
1000.00	20.40	0.60	0.30	2.17
1010.00	21.22	0.60	0.20	2.23
1050.00	24.40	0.70	0.20	2.36
1080.00	26.70	0.70	0.20	2.21
1100.00	28.21	0.70	0.20	1.27
1190.00	34.98	1.00	0.10	1.12
1250.00	39.81	1.30	0.10	1.02
1290.00	43.03	1.50	0.10	0.96
1300.00	43.66	1.40	0.10	0.83
1400.00	53.30	3.10	0.10	0.89
1500.00	64.81	3.40	0.10	0.80
1600.00	68.20	6.60	0.10	0.53
1700.00	66.77	2.90	0.10	0.73
1720.00	68.97	6.70	0.10	0.79
1735.00	70.75	8.20	0.10	0.96
1800.00	71.72	6.90	0.10	0.38
1820.00	65.74	5.80	0.10	1.12
1900.00	61.76	6.10	0.10	0.35
2000.00	56.62	3.20	0.10	1.12

Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
10.00	0.02	0.10	35.00	1.00
175.00	0.38	0.10	11.80	1.05
342.50	0.44	0.10	11.30	0.94
507.50	0.18	0.10	37.10	0.95
672.50	0.57	0.10	11.80	0.97
755.00	0.43	0.10	20.20	1.22
780.00	0.40	0.10	21.90	1.35
820.00	1.33	0.60	9.10	1.40
850.00	3.00	0.90	4.40	1.38
1010.00	17.47	1.10	0.30	1.85
1030.00	19.18	1.10	0.20	2.23
1050.00	20.83	1.10	0.20	2.22
1060.00	21.63	1.10	0.20	2.55
1070.00	22.41	1.10	0.20	2.57
1100.00	24.70	1.10	0.20	2.36
1110.00	25.52	1.10	0.20	0.99
1150.00	28.51	1.20	0.20	0.92
1350.00	43.25	1.60	0.10	0.88
1360.00	44.10	1.90	0.10	0.78
1380.00	45.39	1.80	0.10	0.75
1400.00	47.43	2.20	0.10	0.80
1420.00	48.89	2.10	0.10	0.84
1667.50	69.86	3.10	0.10	0.70
1750.00	70.13	6.60	0.10	0.70
1835.00	69.30	4.70	0.10	0.69
1900.00	67.90	2.70	0.10	0.45
1920.00	70.63	3.50	0.10	0.02
1930.00	69.67	2.60	0.10	0.24
1950.00	74.71	7.20	0.10	0.48
2000.00	68.74	4.90	0.10	0.05

# Typical Performance Curves

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Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
10.00	0.00	40.90	10.00	0.80
82.50	0.00	28.40	82.50	0.80
305.00	0.10	24.50	157.50	0.90
525.00	0.20	20.00	230.00	0.80
747.50	0.50	12.20	305.00	0.90
900.00	0.40	23.80	377.50	0.90
930.00	0.80	12.40	452.50	0.90
970.00	2.10	5.90	525.00	1.00
990.00	3.10	4.10	600.00	0.90
1115.00	12.80	0.60	672.50	1.00
1250.00	23.30	0.20	747.50	1.20
1270.00	24.80	0.20	820.00	1.40
1280.00	25.50	0.20	900.00	1.80
1300.00	27.10	0.20	930.00	2.10
1340.00	30.20	0.20	950.00	2.00
1400.00	34.90	0.20	970.00	1.90
1500.00	43.30	0.20	990.00	2.00
1550.00	48.00	0.10	1115.00	1.10
1600.00	53.10	0.20	1190.00	0.80
1700.00	61.90	0.20	1250.00	1.00
1750.00	58.50	0.10	1270.00	0.80
1760.10	58.60	0.10	1280.00	0.30
1790.00	57.20	0.10	1300.00	1.00
1800.00	56.80	0.10	1340.00	0.50
1820.00	55.80	0.10	1400.00	0.80
1850.00	54.80	0.10	1500.00	0.20
1860.00	53.90	0.10	1550.00	0.80
1880.00	53.20	0.10	1600.00	0.50
1900.10	52.60	0.10	1700.00	0.40
1950.00	50.30	0.10	1750.00	0.40

Freq. (MHz)	Insertion Loss (dB)	Return Loss (dB)	Freq. (MHz)	G. Delay (nsec)
$\bar{x}$	$\sigma$	$\bar{x}$	(MHz)	$\bar{x}$
10.00	0.00	38.30	10.00	0.90
195.00	0.20	15.70	100.00	1.00
380.00	0.40	14.00	195.00	1.00
565.00	0.20	19.00	285.00	0.80
750.00	0.30	25.30	380.00	0.90
930.00	0.50	20.10	470.00	1.00
1000.00	0.60	18.10	565.00	1.10
1180.00	4.30	5.30	655.00	1.10
1200.00	5.70	3.40	750.00	1.10
1300.00	17.70	0.70	840.00	1.20
1420.00	32.20	0.50	930.00	1.40
1500.00	43.80	0.40	1000.00	1.60
1550.00	53.20	0.30	1150.00	2.80
1600.00	58.30	0.30	1180.00	2.40
1620.00	57.90	0.30	1200.00	2.50
1690.00	58.00	0.30	1300.00	1.20
1720.00	55.60	0.20	1400.00	0.50
2000.00	58.70	0.20	1420.00	0.60
2050.00	61.60	0.10	1440.00	1.10
2070.00	62.20	0.10	1500.00	0.40
2100.00	63.00	0.10	1550.00	0.80
2110.00	62.90	0.10	1600.00	1.30
2120.00	62.00	0.10	1620.00	1.10
2130.00	64.70	0.10	1690.00	1.60
2140.00	66.10	0.10	1700.00	1.00
2150.00	64.30	0.10	1720.00	0.30
2160.00	65.10	0.10	1945.00	1.00
2200.00	66.00	0.10	2000.00	1.70
2300.00	70.50	0.10	2050.00	2.10
2500.00	66.00	0.10	2070.00	1.40