

Coaxial

# Diplexer

## ZDPLX-2150-S+

50Ω DC-2150 MHz  
(DC-10, 50-2150 MHz)



Generic photo used for illustration purposes only  
CASE STYLE: FL905

### The Big Deal

- Low insertion loss
- High Rejection
- Connectorized package

### Product Overview

ZDPLX-2150-S+ is a low-pass + high-pass combination device. Low pass port is designed for DC to 10 MHz and high pass port is designed for 50 to 2150 MHz. This diplexer is used in satellite, CATV, set-top box, modem, video equipment and multiband radio systems.

### Key Features

Feature	Advantages
Low passband insertion loss	Suitable for high performance application.
Extended stopband rejection	Spurious rejection and eliminates usage of additional filtering
Connectorized package	The connectorized package is easy to interface with other devices and well suited for test setups.

#### Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.  
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## ZDPLX-2150-S+

50Ω DC to 2150 MHz (DC-10, 50-2150 MHz)

### Maximum Ratings

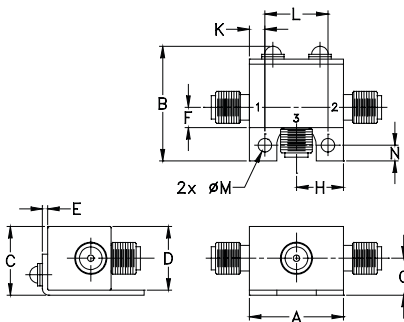
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Voltage at DC Port	25V max.
Input Current	100 mA
RF Power Input	400 mW

Permanent damage may occur if any of these limits are exceeded.

### Coaxial Connections

HIGH PASS PORT	1
LOW PASS PORT	2
COMMON PORT	3

### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.74	.90	.54	.50	.04	.16	.29
18.80	22.86	13.72	12.70	1.02	4.06	7.37
H	J	K	L	M	N	wt
.37	--	.122	.496	.106	.122	grams
9.40	--	3.10	12.60	2.69	3.10	20.0

Note: Please refer to case style drawing for details.

### Features

- Low insertion loss
- 50Ω Impedance
- Combination of low pass and high pass filters
- Connectorized package

### Applications

- Set-top box
- Satellite
- CATV



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CASE STYLE: FL905

Connectors	Model
SMA	ZDPLX-2150-S+

### +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

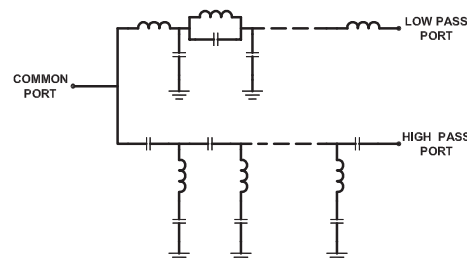
### Electrical Specifications at 25°C

Parameter	Port	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Insertion Loss	Low Pass	DC-10	-	0.5	1	dB
		High Pass	50-2150	-	0.9	1.5	
	Return Loss	Low Pass	DC-10	16	29	-	dB
		High Pass	50-2150	12	16	-	
		Common	DC-10	16	23	-	
			50-2150	12	20	-	
Stop Band Isolation	Low Pass	40-2200	20	31	-	dB	
		50-2150	30	44	-		
	High Pass	DC-18	20	33	-	dB	
		DC-10	30	61	-		

### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)			Return Loss (dB)	
	Low Pass Port	High Pass Port	Common Port	Low Pass Port	High Pass Port
1	0.31	107.59	28.63	28.90	0.00
10	0.45	61.63	26.43	33.04	0.12
18	0.79	32.85	22.37	20.33	0.58
23	1.77	21.71	10.45	9.59	1.64
26	3.43	14.34	7.69	5.97	3.94
29	8.90	4.15	11.57	2.26	15.11
34	20.66	1.43	19.41	0.70	17.65
40	30.59	0.87	22.62	0.45	21.32
50	44.17	0.53	29.02	0.30	25.28
60	57.24	0.39	32.45	0.23	24.73
410	63.29	0.07	43.25	0.03	41.67
1300	55.33	0.14	28.45	0.06	30.12
1700	58.07	0.24	23.36	0.28	26.32
2150	55.85	0.77	29.25	0.13	18.05
2200	55.52	0.55	25.33	0.14	19.61

### Functional Schematic



### Notes

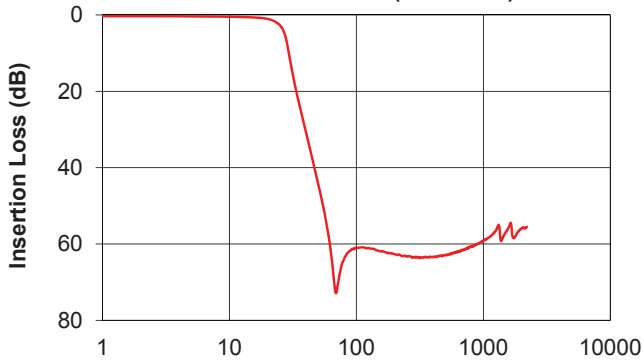
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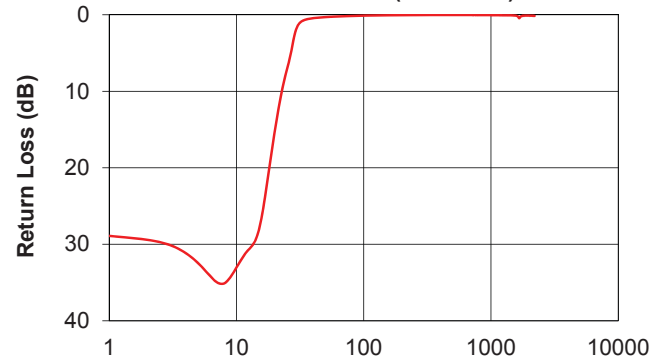
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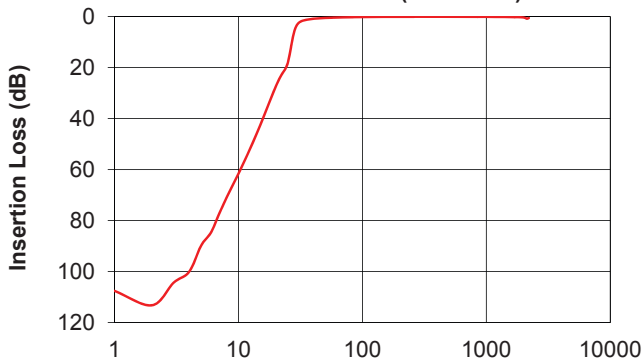
ZDPLX-2150-S+ LOW PASS PORT  
INSERTION LOSS (P<sub>in</sub>=0dBm)



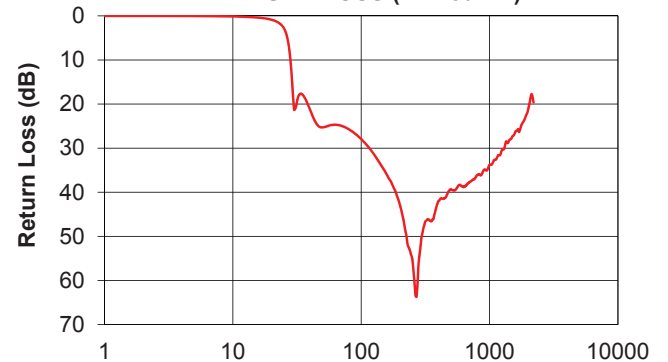
ZDPLX-2150-S+ LOW PASS PORT  
RETURN LOSS (P<sub>in</sub>=0dBm)



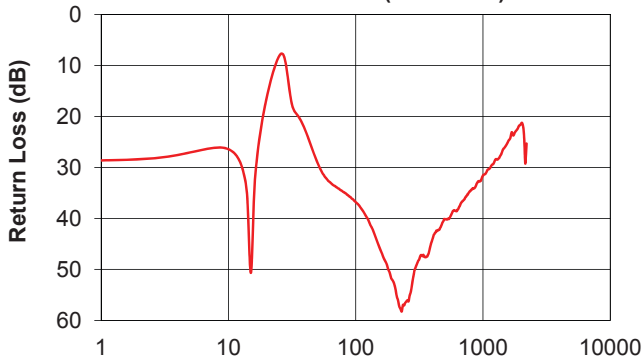
ZDPLX-2150-S+ HIGH PASS PORT  
INSERTION LOSS (P<sub>in</sub>=0dBm)



ZDPLX-2150-S+ HIGH PASS PORT  
RETURN LOSS (P<sub>in</sub>=0dBm)



ZDPLX-2150-S+ COMMON PORT  
RETURN LOSS (P<sub>in</sub>=0dBm)



Notes

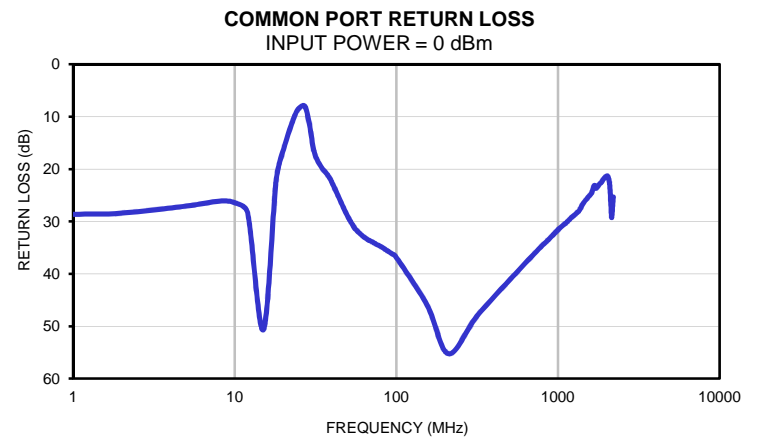
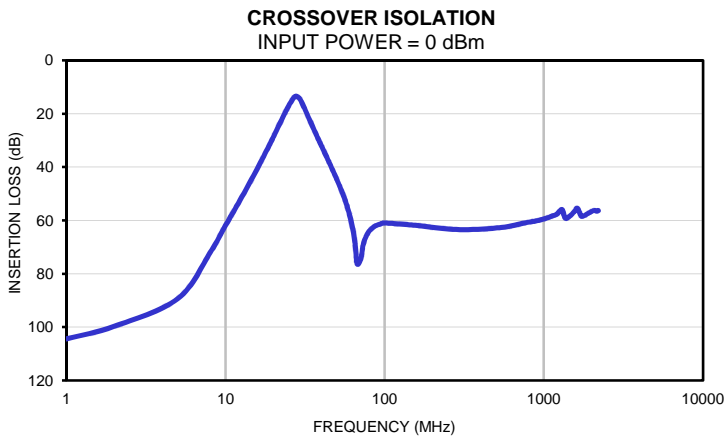
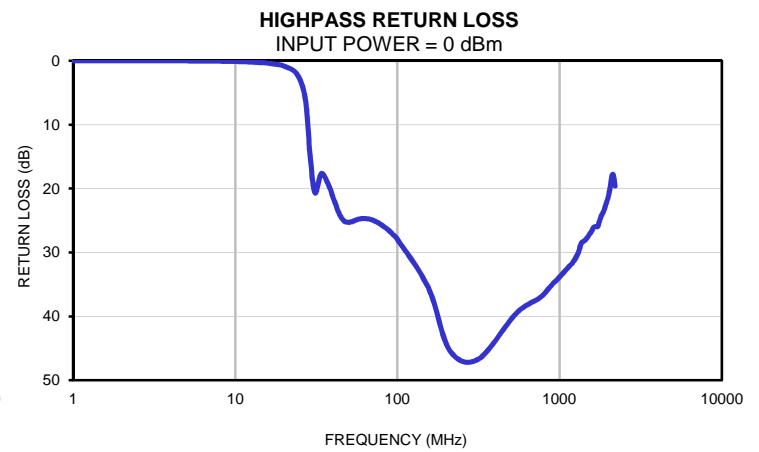
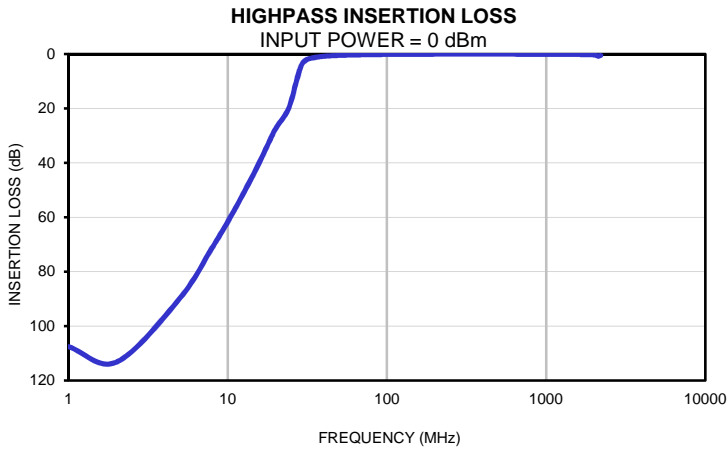
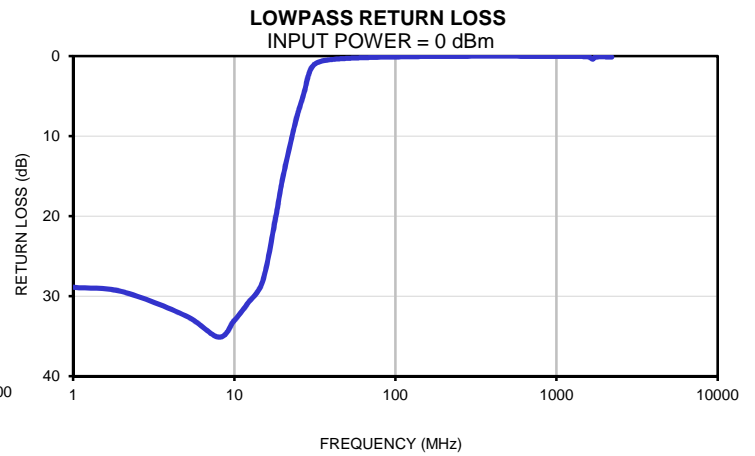
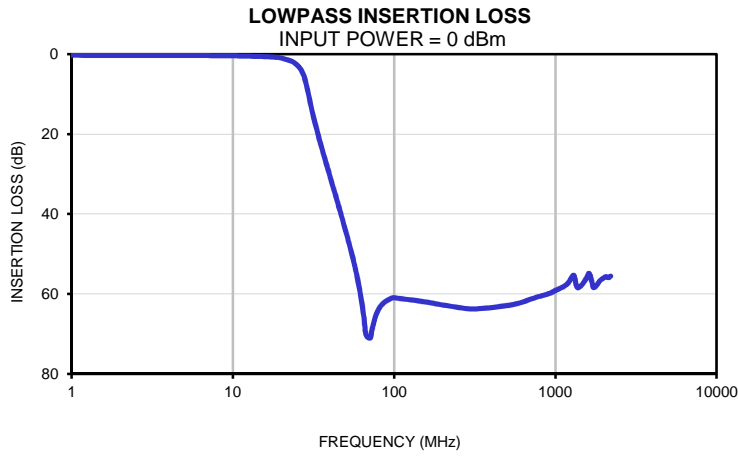
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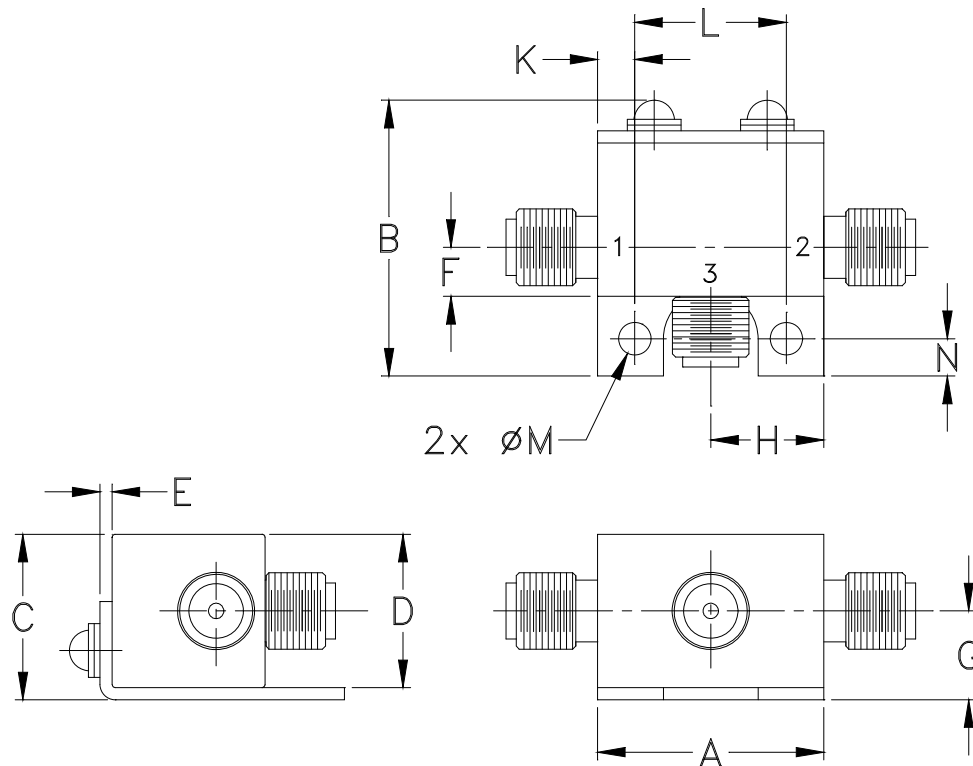
## Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)		Cross over isolation (dB) (between LPF and HPF)	RETURN LOSS (dB)		
	Lowpass port	Highpass port		Common port	Lowpass port	Highpass port
1	0.31	107.59	104.45	28.63	28.90	0.00
2	0.32	113.24	99.71	28.41	29.42	0.01
5	0.35	89.79	89.38	27.06	32.46	0.03
8	0.41	71.10	72.02	26.13	35.12	0.08
10	0.45	61.63	61.80	26.43	33.04	0.12
12	0.51	53.40	53.62	28.34	31.00	0.19
15	0.62	42.51	43.14	50.68	28.14	0.33
18	0.79	32.85	34.07	22.37	20.33	0.58
20	1.02	27.41	28.59	16.26	15.24	0.86
24	2.17	20.32	18.89	9.15	8.23	2.10
27	4.58	9.94	13.75	7.92	4.72	5.96
29	8.90	4.15	14.18	11.57	2.26	15.11
31	14.27	2.26	17.42	16.74	1.17	20.68
34	20.66	1.43	22.84	19.41	0.70	17.65
38	27.48	1.00	29.19	21.34	0.50	19.74
40	30.59	0.87	32.04	22.62	0.45	21.32
44	36.35	0.69	37.33	25.36	0.37	24.09
47	40.35	0.60	41.08	27.33	0.33	25.10
50	44.17	0.53	44.68	29.02	0.30	25.28
52	46.66	0.50	47.09	29.99	0.28	25.20
55	50.44	0.45	50.74	31.21	0.26	24.98
58	54.38	0.41	54.80	32.00	0.24	24.77
62	60.38	0.37	61.28	32.80	0.22	24.69
65	66.01	0.34	68.18	33.26	0.21	24.73
67	70.23	0.33	76.22	33.52	0.20	24.78
71	71.01	0.30	74.07	33.91	0.18	24.98
73	68.80	0.29	69.44	34.13	0.18	25.12
77	65.36	0.27	65.55	34.52	0.16	25.43
81	63.46	0.25	63.65	34.87	0.15	25.81
85	62.45	0.23	62.51	35.30	0.14	26.20
88	61.91	0.22	61.97	35.60	0.14	26.51
94	61.26	0.20	61.36	36.18	0.13	27.22
99	60.94	0.19	60.97	36.67	0.12	27.81
155	61.96	0.11	61.84	45.98	0.06	35.51
210	62.87	0.08	62.80	55.25	0.04	45.32
315	63.71	0.07	63.48	48.07	0.03	46.71
540	62.67	0.08	62.67	40.12	0.03	39.53
760	60.83	0.09	60.95	35.29	0.04	37.04
900	59.97	0.10	60.16	33.06	0.04	35.00
1010	59.05	0.11	59.41	31.45	0.04	33.73
1140	58.00	0.12	58.31	30.07	0.05	32.24
1210	57.05	0.13	57.64	29.25	0.05	31.54
1300	55.33	0.14	55.94	28.45	0.06	30.12
1360	58.25	0.16	59.09	27.82	0.07	28.58
1440	57.94	0.15	58.65	26.44	0.07	28.06
1560	56.05	0.17	56.61	25.16	0.10	26.86
1620	54.83	0.18	55.41	24.48	0.20	26.10
1680	56.77	0.25	57.15	23.11	0.40	25.93
1720	58.37	0.22	58.45	23.68	0.20	25.93
1800	57.84	0.22	58.21	22.95	0.12	24.37
1860	57.03	0.24	57.64	22.53	0.11	23.67
1910	56.50	0.26	57.27	21.92	0.11	22.84
2000	55.95	0.35	56.67	21.34	0.11	21.19
2040	55.72	0.45	56.37	21.40	0.12	20.08
2070	55.67	0.57	56.35	22.06	0.12	19.12
2100	55.81	0.73	56.27	23.64	0.12	18.11
2130	55.92	0.81	56.48	27.25	0.13	17.77
2150	55.85	0.77	56.54	29.25	0.13	18.05
2180	55.66	0.63	56.45	27.02	0.14	18.92
2200	55.52	0.55	56.32	25.33	0.14	19.61

## Typical Performance Curves



### Outline Dimensions



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N	WT, GRAM
FL905	.74 (18.80)	.90 (22.86)	.54 (13.72)	.50 (12.70)	.04 (1.02)	.16 (4.06)	.29 (7.37)	.37 (9.40)	- -	.122 (3.10)	.496 (12.60)	.106 (2.69)	.122 (3.10)	20.0

**Dimensions are in inches (mm). Tolerances: 2Pl.  $\pm .03$ ; 3Pl.  $\pm .015$ .**  
**Tolerance on hole size and interaxes dimensions to be  $\pm .005$ .**

#### Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.

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Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
HAST	130°C, 85% RH, 96 hours	JESD22-A110
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215