

Frequency Mixer

SYM-25DLHW

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+5dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+7	+10	+13			+7	+10	+13			+7	+10	+13
10.1	40.1	6.43	5.87	5.64	10.1	40.1	31.02	26.52	27.03	10.1	40.1	0.50	0.22	0.10
110.9	140.9	6.83	6.34	6.02	110.9	140.9	22.62	24.99	23.48	110.9	140.9	0.45	0.21	0.09
211.7	241.7	6.84	6.35	6.07	211.7	241.7	22.01	22.27	19.72	211.7	241.7	0.47	0.18	0.10
312.6	342.6	6.88	6.41	6.08	312.6	342.6	21.04	18.89	19.83	312.6	342.6	0.42	0.19	0.08
413.4	443.4	6.87	6.40	6.12	413.4	443.4	18.39	18.20	20.81	413.4	443.4	0.45	0.20	0.09
514.2	544.2	6.90	6.43	6.14	514.2	544.2	17.56	18.87	21.77	514.2	544.2	0.47	0.19	0.08
615.0	645.0	6.91	6.45	6.19	615.0	645.0	17.23	19.56	27.02	615.0	645.0	0.46	0.19	0.08
715.8	745.8	6.95	6.51	6.21	715.8	745.8	17.16	21.87	25.89	715.8	745.8	0.47	0.18	0.08
816.7	846.7	7.03	6.57	6.27	816.7	846.7	17.76	20.61	26.38	816.7	846.7	0.45	0.17	0.08
917.5	947.5	7.14	6.64	6.34	917.5	947.5	18.39	24.53	28.01	917.5	947.5	0.40	0.15	0.08
1018.3	1048.3	7.18	6.70	6.37	1018.3	1048.3	19.36	29.87	23.02	1018.3	1048.3	0.41	0.16	0.09
1119.1	1149.1	7.28	6.74	6.39	1119.1	1149.1	21.02	26.23	21.51	1119.1	1149.1	0.40	0.16	0.09
1219.9	1249.9	7.42	6.83	6.49	1219.9	1249.9	20.19	30.46	23.27	1219.9	1249.9	0.38	0.16	0.08
1320.8	1350.8	7.55	6.96	6.58	1320.8	1350.8	20.57	26.27	25.38	1320.8	1350.8	0.39	0.17	0.09
1421.6	1451.6	7.70	7.07	6.69	1421.6	1451.6	19.36	24.15	27.49	1421.6	1451.6	0.44	0.18	0.10
1522.4	1552.4	7.80	7.23	6.82	1522.4	1552.4	18.23	22.92	28.62	1522.4	1552.4	0.47	0.22	0.11
1603.1	1633.1	7.96	7.37	6.94	1603.1	1633.1	18.45	23.37	29.22	1603.1	1633.1	0.52	0.25	0.12
1703.9	1733.9	8.19	7.56	7.11	1703.9	1733.9	17.22	22.22	28.27	1703.9	1733.9	0.57	0.29	0.16
1784.5	1814.5	8.42	7.74	7.27	1784.5	1814.5	16.76	26.81	22.75	1784.5	1814.5	0.52	0.28	0.16
1885.3	1915.3	8.72	8.01	7.47	1885.3	1915.3	16.50	21.72	23.15	1885.3	1915.3	0.48	0.25	0.15
1966.0	1996.0	8.88	8.17	7.58	1966.0	1996.0	16.29	21.07	22.58	1966.0	1996.0	0.42	0.22	0.13
2066.8	2096.8	9.04	8.28	7.70	2066.8	2096.8	17.31	19.50	18.60	2066.8	2096.8	0.36	0.18	0.12
2147.5	2177.5	9.10	8.34	7.75	2147.5	2177.5	16.80	16.93	17.42	2147.5	2177.5	0.38	0.21	0.14
2248.3	2278.3	9.14	8.37	7.74	2248.3	2278.3	15.83	15.89	16.43	2248.3	2278.3	0.35	0.22	0.17
2329.0	2359.0	9.08	8.32	7.78	2329.0	2359.0	15.01	15.47	15.85	2329.0	2359.0	0.42	0.24	0.19
2429.8	2459.8	9.00	8.28	7.76	2429.8	2459.8	14.93	14.91	15.46	2429.8	2459.8	0.52	0.32	0.25
2510.4	2540.4	9.00	8.28	7.77	2510.4	2540.4	14.32	14.84	15.19	2510.4	2540.4	0.57	0.34	0.26
2611.2	2641.2	8.99	8.31	7.83	2611.2	2641.2	14.23	14.72	15.16	2611.2	2641.2	0.59	0.34	0.27
2691.9	2721.9	8.94	8.30	7.85	2691.9	2721.9	14.23	14.42	15.02	2691.9	2721.9	0.63	0.37	0.25
2792.7	2822.7	9.05	8.39	7.96	2792.7	2822.7	14.16	14.96	15.66	2792.7	2822.7	0.69	0.37	0.26
2873.4	2903.4	9.19	8.52	8.03	2873.4	2903.4	13.93	14.83	16.16	2873.4	2903.4	0.70	0.37	0.25
2974.2	3004.2	9.41	8.67	8.23	2974.2	3004.2	13.88	14.92	15.69	2974.2	3004.2	0.70	0.39	0.25
3054.9	3084.9	9.65	8.87	8.34	3054.9	3084.9	13.74	14.53	15.71	3054.9	3084.9	0.70	0.38	0.27
3155.7	3185.7	9.85	8.97	8.46	3155.7	3185.7	13.46	14.62	15.16	3155.7	3185.7	0.74	0.37	0.27
3236.3	3266.3	10.04	9.09	8.51	3236.3	3266.3	13.16	14.32	14.78	3236.3	3266.3	0.89	0.47	0.29
3337.1	3367.1	10.28	9.26	8.62	3337.1	3367.1	13.35	14.01	15.12	3337.1	3367.1	0.91	0.46	0.31
3417.8	3447.8	10.68	9.52	8.86	3417.8	3447.8	13.46	14.66	15.29	3417.8	3447.8	0.92	0.46	0.31
3518.6	3548.6	11.18	9.82	9.11	3518.6	3548.6	14.56	15.15	15.57	3518.6	3548.6	0.84	0.52	0.29
3599.3	3629.3	11.60	10.10	9.35	3599.3	3629.3	15.16	15.57	15.82	3599.3	3629.3	0.78	0.49	0.30
3700.1	3730.1	12.34	10.54	9.66	3700.1	3730.1	18.05	16.28	16.63	3700.1	3730.1	0.63	0.51	0.28



Frequency Mixer

SYM-25DLHW

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1250.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=40.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2500.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+10			+10			+10
1000.0	250.1	6.90	10.0	50.1	6.25	1000.0	1500.1	8.46
979.8	270.3	6.96	30.2	70.3	6.29	979.8	1520.3	8.39
959.6	290.5	6.98	50.4	90.5	6.27	959.6	1540.5	8.40
939.4	310.7	7.02	70.6	110.7	6.25	939.4	1560.7	8.43
919.2	330.9	6.97	90.8	130.9	6.24	919.2	1580.9	8.45
899.0	351.1	6.99	111.0	151.1	6.26	899.0	1601.1	8.40
878.8	371.3	7.02	131.2	171.3	6.29	878.8	1621.3	8.37
858.6	391.5	6.93	151.4	191.5	6.27	858.6	1641.5	8.38
838.4	411.7	7.00	171.6	211.7	6.28	838.4	1661.7	8.34
818.2	431.9	6.93	191.8	231.9	6.23	818.2	1681.9	8.34
798.0	452.1	6.95	212.0	252.1	6.24	798.0	1702.1	8.31
777.8	472.3	6.95	232.2	272.3	6.26	777.8	1722.3	8.30
757.6	492.5	6.96	252.4	292.5	6.25	757.6	1742.5	8.31
737.3	512.8	6.93	272.7	312.8	6.23	737.3	1762.8	8.29
717.1	533.0	6.95	292.9	333.0	6.19	717.1	1783.0	8.31
696.9	553.2	6.89	313.1	353.2	6.21	696.9	1803.2	8.22
676.7	573.4	6.90	333.3	373.4	6.21	676.7	1823.4	8.24
656.5	593.6	6.88	353.5	393.6	6.19	656.5	1843.6	8.26
636.3	613.8	6.88	373.7	413.8	6.18	636.3	1863.8	8.25
616.1	634.0	6.89	393.9	434.0	6.12	616.1	1884.0	8.29
575.7	674.4	6.90	434.3	474.4	6.16	575.7	1924.4	8.26
555.5	694.6	6.87	454.5	494.6	6.12	555.5	1944.6	8.29
515.1	735.0	6.89	494.9	535.0	6.09	515.1	1985.0	8.27
494.9	755.2	6.88	515.1	555.2	6.10	494.9	2005.2	8.19
454.5	795.6	6.89	555.5	595.6	6.10	454.5	2045.6	8.21
434.3	815.8	6.92	575.7	615.8	6.08	434.3	2065.8	8.21
393.9	856.2	6.90	616.1	656.2	6.10	393.9	2106.2	8.12
373.7	876.4	6.91	636.3	676.4	6.08	373.7	2126.4	8.16
333.3	916.8	6.87	676.7	716.8	6.07	333.3	2166.8	8.17
313.1	937.0	6.87	696.9	737.0	6.07	313.1	2187.0	8.17
272.7	977.4	6.85	737.3	777.4	6.13	272.7	2227.4	8.22
252.4	997.7	6.83	757.6	797.7	6.13	252.4	2247.7	8.24
212.0	1038.1	6.79	798.0	838.1	6.14	212.0	2288.1	8.22
191.8	1058.3	6.81	818.2	858.3	6.14	191.8	2308.3	8.17
151.4	1098.7	6.79	858.6	898.7	6.14	151.4	2348.7	8.23
131.2	1118.9	6.81	878.8	918.9	6.14	131.2	2368.9	8.22
90.8	1159.3	6.84	919.2	959.3	6.18	90.8	2409.3	8.19
70.6	1179.5	6.82	939.4	979.5	6.16	70.6	2429.5	8.23
30.2	1219.9	6.81	979.8	1019.9	6.18	30.2	2469.9	8.25
10.0	1240.1	6.93	1000.0	1040.1	6.16	10.0	2490.1	8.27



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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+7	+10	+13	+7	+10	+13
10.1	50.30	55.25	60.28	34.84	38.11	41.06
110.9	57.65	62.91	62.75	34.25	37.88	41.30
211.7	61.28	59.37	57.23	34.42	37.88	40.45
312.6	58.96	55.65	54.27	35.08	38.03	39.52
413.4	56.07	53.27	51.78	35.83	38.02	38.47
514.2	53.95	51.22	49.84	36.41	37.46	37.46
615.0	51.58	49.78	48.96	36.39	36.59	36.52
715.8	48.05	46.72	46.37	36.05	35.69	35.57
816.7	45.86	44.86	44.52	35.33	34.93	34.83
917.5	44.55	43.82	43.56	34.78	34.42	34.52
1018.3	41.77	41.69	41.86	34.16	34.07	34.21
1119.1	39.48	39.57	40.24	33.93	33.66	34.08
1219.9	38.17	38.40	39.12	33.65	33.55	34.09
1320.8	37.54	37.78	38.57	33.82	34.11	34.85
1421.6	37.28	37.57	38.26	34.72	34.96	35.64
1522.4	37.59	38.31	39.20	36.31	36.40	36.60
1603.1	37.82	38.86	39.96	37.65	37.41	37.21
1703.9	38.38	39.54	40.69	40.32	40.43	39.81
1784.5	38.99	40.25	41.18	42.77	45.18	44.93
1885.3	39.62	41.15	42.00	43.98	51.34	54.84
1966.0	39.45	40.83	41.52	41.95	45.31	46.40
2066.8	39.05	40.47	40.90	38.68	39.45	39.40
2147.5	38.14	39.49	39.96	36.20	36.13	35.84
2248.3	36.95	38.38	39.19	33.89	33.55	33.18
2329.0	36.04	37.51	38.60	32.18	31.64	31.39
2429.8	34.74	35.95	36.98	30.76	29.87	29.40
2510.4	33.67	34.69	35.51	29.71	28.65	28.00
2611.2	32.14	33.04	33.61	28.69	27.84	27.09
2691.9	31.02	31.64	32.10	28.01	26.99	26.26
2792.7	29.82	30.11	30.35	27.21	26.34	25.62
2873.4	29.03	28.99	28.99	26.41	25.44	24.68
2974.2	28.27	28.18	27.72	26.18	25.32	24.17
3054.9	27.69	27.72	27.41	25.62	24.94	24.15
3155.7	27.23	27.71	27.62	25.29	25.07	24.45
3236.3	26.70	27.54	27.76	24.86	24.88	24.49
3337.1	26.14	27.21	27.73	24.59	24.89	24.56
3417.8	25.95	26.98	27.74	24.55	24.86	24.69
3518.6	25.72	26.53	27.33	24.38	24.91	24.85
3599.3	25.71	26.32	27.05	24.29	24.88	24.87
3700.1	26.00	26.40	27.02	24.38	25.17	25.25

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	26.04	25.96	25.73
110.9	140.9	25.58	25.46	25.52
211.7	241.7	26.15	26.26	26.41
312.6	342.6	26.87	27.03	27.08
413.4	443.4	28.12	28.23	28.18
514.2	544.2	29.34	29.29	29.23
615.0	645.0	30.94	30.74	30.44
715.8	745.8	32.84	32.47	31.97
816.7	846.7	35.18	34.37	33.90
917.5	947.5	38.72	37.78	36.63
1018.3	1048.3	40.67	39.69	38.95
1119.1	1149.1	40.27	39.87	39.84
1219.9	1249.9	40.16	39.93	40.58
1320.8	1350.8	39.35	39.68	40.04
1421.6	1451.6	39.46	38.96	39.36
1522.4	1552.4	40.88	39.86	39.60
1603.1	1633.1	41.04	39.35	38.54
1703.9	1733.9	42.00	39.87	39.03
1784.5	1814.5	43.01	41.21	39.71
1885.3	1915.3	43.31	40.91	39.72
1966.0	1996.0	41.30	39.97	38.62
2066.8	2096.8	38.78	38.20	37.57
2147.5	2177.5	37.90	37.40	36.46
2248.3	2278.3	37.37	37.03	36.06
2329.0	2359.0	36.47	36.22	35.50
2429.8	2459.8	35.47	34.68	34.28
2510.4	2540.4	33.89	33.38	33.23
2611.2	2641.2	31.80	31.40	31.57
2691.9	2721.9	29.93	29.83	30.05
2792.7	2822.7	27.74	27.81	28.25
2873.4	2903.4	26.45	26.51	26.88
2974.2	3004.2	24.74	24.80	25.08
3054.9	3084.9	23.65	23.71	23.86
3155.7	3185.7	23.34	23.32	23.37
3236.3	3266.3	23.78	23.78	23.72
3337.1	3367.1	24.32	24.50	24.42
3417.8	3447.8	24.55	24.96	24.95
3518.6	3548.6	24.32	25.04	25.16
3599.3	3629.3	24.11	24.90	25.07
3700.1	3730.1	23.88	24.62	24.85

Frequency Mixer

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+7	+10	+13
10.1	40.1	1.27	1.11	1.04
110.9	140.9	1.30	1.15	1.08
211.7	241.7	1.35	1.20	1.14
312.6	342.6	1.41	1.27	1.20
413.4	443.4	1.50	1.35	1.28
514.2	544.2	1.57	1.42	1.35
615.0	645.0	1.65	1.51	1.43
715.8	745.8	1.74	1.58	1.49
816.7	846.7	1.81	1.64	1.55
917.5	947.5	1.90	1.71	1.61
1018.3	1048.3	1.96	1.77	1.65
1119.1	1149.1	2.03	1.80	1.68
1219.9	1249.9	2.05	1.81	1.67
1320.8	1350.8	2.05	1.80	1.64
1421.6	1451.6	2.01	1.77	1.62
1522.4	1552.4	2.00	1.78	1.66
1603.1	1633.1	1.98	1.79	1.67
1703.9	1733.9	1.96	1.79	1.69
1784.5	1814.5	1.95	1.81	1.71
1885.3	1915.3	1.93	1.81	1.74
1966.0	1996.0	1.92	1.80	1.73
2066.8	2096.8	1.85	1.74	1.65
2147.5	2177.5	1.80	1.68	1.59
2248.3	2278.3	1.75	1.63	1.56
2329.0	2359.0	1.71	1.60	1.53
2429.8	2459.8	1.67	1.56	1.49
2510.4	2540.4	1.64	1.56	1.49
2611.2	2641.2	1.66	1.58	1.54
2691.9	2721.9	1.66	1.59	1.56
2792.7	2822.7	1.66	1.60	1.56
2873.4	2903.4	1.66	1.61	1.59
2974.2	3004.2	1.66	1.62	1.62
3054.9	3084.9	1.66	1.63	1.62
3155.7	3185.7	1.63	1.61	1.60
3236.3	3266.3	1.63	1.61	1.62
3337.1	3367.1	1.66	1.65	1.68
3417.8	3447.8	1.70	1.69	1.71
3518.6	3548.6	1.77	1.76	1.77
3599.3	3629.3	1.85	1.84	1.86
3700.1	3730.1	1.99	1.96	2.00

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+7	+10	+13
10.1	1.01	1.51	2.06
110.9	1.05	1.50	2.12
211.7	1.10	1.48	2.08
312.6	1.12	1.44	2.02
413.4	1.16	1.39	1.94
514.2	1.24	1.34	1.86
615.0	1.29	1.29	1.77
715.8	1.34	1.24	1.68
816.7	1.39	1.18	1.59
917.5	1.42	1.13	1.52
1018.3	1.43	1.08	1.47
1119.1	1.43	1.04	1.44
1219.9	1.41	1.08	1.45
1320.8	1.39	1.15	1.50
1421.6	1.37	1.24	1.58
1522.4	1.34	1.33	1.70
1603.1	1.32	1.40	1.78
1703.9	1.30	1.49	1.91
1784.5	1.28	1.55	1.99
1885.3	1.28	1.63	2.10
1966.0	1.29	1.68	2.17
2066.8	1.32	1.75	2.26
2147.5	1.35	1.81	2.33
2248.3	1.41	1.87	2.40
2329.0	1.47	1.95	2.48
2429.8	1.53	1.99	2.51
2510.4	1.59	2.04	2.56
2611.2	1.66	2.08	2.57
2691.9	1.71	2.10	2.57
2792.7	1.78	2.14	2.57
2873.4	1.85	2.16	2.56
2974.2	1.96	2.22	2.57
3054.9	2.03	2.25	2.57
3155.7	2.13	2.31	2.59
3236.3	2.20	2.34	2.60
3337.1	2.29	2.39	2.63
3417.8	2.38	2.46	2.67
3518.6	2.50	2.54	2.71
3599.3	2.59	2.61	2.76
3700.1	2.73	2.72	2.84

IF (OUT) (MHz)	IF VSWR @LO=2500.1MHz (:1)		
	@LO (dBm)		
	+7	+10	+13
10.0	1.58	1.34	1.15
30.2	1.43	1.20	1.03
50.4	1.39	1.18	1.04
70.6	1.37	1.16	1.04
90.8	1.39	1.17	1.04
111.0	1.45	1.21	1.06
131.2	1.42	1.19	1.05
151.4	1.38	1.17	1.04
171.6	1.35	1.15	1.03
191.8	1.37	1.15	1.02
212.0	1.40	1.18	1.03
232.2	1.41	1.19	1.04
252.4	1.40	1.19	1.05
272.7	1.39	1.18	1.05
292.9	1.39	1.18	1.04
313.1	1.40	1.18	1.03
333.3	1.40	1.17	1.03
353.5	1.39	1.18	1.03
373.7	1.39	1.18	1.04
393.9	1.39	1.18	1.04
434.3	1.40	1.17	1.03
454.5	1.38	1.16	1.02
494.9	1.41	1.19	1.05
515.1	1.41	1.19	1.04
555.5	1.39	1.17	1.03
575.7	1.39	1.18	1.05
616.1	1.43	1.21	1.08
636.3	1.42	1.21	1.07
676.7	1.41	1.21	1.08
696.9	1.44	1.23	1.10
737.3	1.47	1.26	1.13
757.6	1.47	1.26	1.12
798.0	1.48	1.27	1.14
818.2	1.48	1.29	1.17
858.6	1.52	1.32	1.20
878.8	1.54	1.33	1.20
919.2	1.53	1.34	1.23
939.4	1.53	1.35	1.25
979.8	1.59	1.41	1.29
1000.0	1.60	1.41	1.29

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	16	37	39	37	40	42	40	60	59	67
1	-	29	+0	29	15	34	28	41	43	49	50	62
2	83	50	42	53	72	46	49	71	54	58	58	63
3	>100	57	57	54	60	55	49	56	58	60	57	56
4	>100	82	78	72	69	69	64	62	65	71	67	67
5	>100	85	81	74	66	66	64	66	63	70	69	69
6	>100	>93	>93	>93	90	>93	90	83	89	76	88	84
7	>100	93	90	>93	93	88	>93	>93	90	>93	91	90
8	>100	>93	>93	>93	>93	>93	>93	>93	>93	93	>93	93
9	>100	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
10	>100	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1270.1 MHz; 0.00 dBm.
 LO IN: 1300.01 MHz; +10.00 dBm
 IF OUT: 29.91 MHz; -6.91 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	6	24	24	26	25	30	26	45	41	46
1	-	30	+0	30	15	33	28	39	47	44	45	53
2	98	62	51	64	69	54	57	72	61	63	68	70
3	>100	76	75	70	69	70	66	76	70	77	69	73
4	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
5	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
6	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
7	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
8	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
9	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
10	>100	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1270.1 MHz; -10.00 dBm.
 LO IN: 1300.01 MHz; +10.00 dBm
 IF OUT: 29.91 MHz; -16.89 dBm

- Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
 2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
 3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

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