Frequency Mixer TUF-18DHSM+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=50MHz (dB) @LO (dBm)		
		+14	+17	+20
10.1	60.1	7.78	7.48	7.32
110.3	160.3	7.15	6.95	6.88
210.6	260.6	7.26	7.02	6.89
310.8	360.8	7.26	6.99	6.87
411.1	461.1	7.39	7.10	6.94
511.3	561.3	7.31	7.04	6.91
611.5	661.5	7.34	7.05	6.91
711.8	761.8	7.33	7.06	6.91
812.0	862.0	7.44	7.12	6.95
912.3	962.3	7.70	7.35	7.16
1012.5	1062.5	7.75	7.37	7.17
1112.7	1162.7	7.95	7.52	7.29
1233.0	1283.0	8.10	7.66	7.42
1333.3	1383.3	8.16	7.73	7.49
1453.5	1503.5	8.25	7.88	7.65
1553.8	1603.8	8.28	7.94	7.74
1674.1	1724.1	8.19	7.83	7.63
1774.3	1824.3	8.12	7.73	7.52
1894.6	1944.6	8.32	7.84	7.55
1994.8	2044.8	8.07	7.66	7.43
2115.1	2165.1	7.82	7.48	7.28
2215.4	2265.4	7.77	7.50	7.29
2335.7	2385.7	7.55	7.31	7.20
2435.9	2485.9	7.47	7.25	7.16
2556.2	2606.2	7.42	7.25	7.17
2656.4	2706.4	7.43	7.24	7.15
2776.7	2826.7	7.44	7.23	7.14
2876.9	2926.9	7.49	7.29	7.21
2997.2	3047.2	7.63	7.42	7.35
3097.5	3147.5	7.75	7.52	7.44
3217.8	3267.8	7.84	7.63	7.56
3318.0	3368.0	7.99	7.71	7.56
3438.3	3488.3	8.13	7.81	7.68
3538.5	3588.5	8.29	7.91	7.68
3658.8	3708.8	8.88	8.40	8.12
3759.0	3809.0	9.40	8.93	8.62
3879.3	3929.3	9.62	8.99	8.60
3979.6	4029.6	9.49	8.77	8.40
4099.9	4149.9	9.80	8.98	8.51
4200.1	4250.1	9.77	8.92	8.45

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+14	+17	+20
10.1	60.1	21.76	20.99	21.01
110.3	160.3	22.88	23.34	22.12
210.6	260.6	23.39	19.77	21.33
310.8	360.8	18.20	19.73	23.59
411.1	461.1	17.25	20.32	24.76
511.3	561.3	19.50	23.04	28.33
611.5	661.5	19.89	24.11	29.32
711.8	761.8	24.31	28.69	27.84
812.0	862.0	23.31	26.86	29.93
912.3	962.3	22.34	25.52	27.97
1012.5	1062.5	24.92	26.48	26.07
1112.7	1162.7	22.82	25.09	25.91
1233.0	1283.0	22.71	24.44	24.91
1333.3	1383.3	22.77	22.82	23.35
1453.5	1503.5	22.55	22.45	22.97
1553.8	1603.8	21.82	23.21	23.38
1674.1	1724.1	21.34	22.89	23.74
1774.3	1824.3	21.38	21.36	21.84
1894.6	1944.6	19.49	19.90	19.52
1994.8	2044.8	18.18	18.47	17.87
2115.1	2165.1	18.04	18.27	17.44
2215.4	2265.4	17.59	17.77	17.49
2335.7	2385.7	18.37	18.64	18.03
2435.9	2485.9	18.04	18.74	18.79
2556.2	2606.2	18.12	18.91	19.35
2656.4	2706.4	18.17	19.01	19.78
2776.7	2826.7	19.03	20.04	20.62
2876.9	2926.9	18.74	20.50	21.80
2997.2	3047.2	19.32	19.79	20.38
3097.5	3147.5	18.42	19.67	20.87
3217.8	3267.8	18.96	19.92	21.30
3318.0	3368.0	19.90	20.27	21.57
3438.3	3488.3	21.22	20.62	22.06
3538.5	3588.5	23.36	23.12	23.96
3658.8	3708.8	21.22	24.72	25.51
3759.0	3809.0	20.97	22.89	24.08
3879.3	3929.3	23.86	23.60	22.73
3979.6	4029.6	19.51	20.26	20.69
4099.9	4149.9	19.43	18.81	19.08
4200.1	4250.1	18.53	18.15	18.48

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+10dBm (dB) @LO (dBm)		
		+14	+17	+20
10.1	60.1	0.44	0.29	0.20
110.3	160.3	0.36	0.18	0.09
210.6	260.6	0.36	0.17	0.09
310.8	360.8	0.35	0.18	0.11
411.1	461.1	0.34	0.22	0.13
511.3	561.3	0.38	0.25	0.16
611.5	661.5	0.38	0.25	0.17
711.8	761.8	0.50	0.33	0.22
812.0	862.0	0.56	0.37	0.25
912.3	962.3	0.52	0.36	0.25
1012.5	1062.5	0.63	0.45	0.30
1112.7	1162.7	0.55	0.42	0.30
1233.0	1283.0	0.49	0.36	0.25
1333.3	1383.3	0.48	0.37	0.27
1453.5	1503.5	0.49	0.37	0.29
1553.8	1603.8	0.53	0.39	0.31
1674.1	1724.1	0.69	0.56	0.46
1774.3	1824.3	0.78	0.64	0.55
1894.6	1944.6	0.58	0.56	0.52
1994.8	2044.8	0.72	0.64	0.59
2115.1	2165.1	0.88	0.74	0.67
2215.4	2265.4	0.88	0.72	0.63
2335.7	2385.7	1.04	0.83	0.68
2435.9	2485.9	0.95	0.76	0.63
2556.2	2606.2	0.83	0.64	0.53
2656.4	2706.4	0.74	0.56	0.47
2776.7	2826.7	0.73	0.49	0.40
2876.9	2926.9	0.75	0.47	0.37
2997.2	3047.2	0.69	0.40	0.27
3097.5	3147.5	0.68	0.37	0.25
3217.8	3267.8	0.69	0.39	0.24
3318.0	3368.0	0.64	0.39	0.26
3438.3	3488.3	0.60	0.34	0.21
3538.5	3588.5	0.65	0.45	0.32
3658.8	3708.8	0.59	0.47	0.37
3759.0	3809.0	0.69	0.48	0.36
3879.3	3929.3	0.78	0.50	0.40
3979.6	4029.6	1.13	0.80	0.62
4099.9	4149.9	0.95	0.73	0.59
4200.1	4250.1	0.97	0.76	0.64

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=900.1MHz (dB) @LO (dBm) +17
700.0	200.1	7.29
683.3	216.8	7.30
666.7	233.4	7.33
650.0	250.1	7.38
633.3	266.8	7.38
616.7	283.4	7.40
600.0	300.1	7.41
583.3	316.8	7.33
566.7	333.4	7.35
550.0	350.1	7.34
533.3	366.8	7.38
516.7	383.4	7.35
500.0	400.1	7.37
483.3	416.8	7.32
466.7	433.4	7.31
450.0	450.1	7.34
433.3	466.8	7.24
416.7	483.4	7.25
400.0	500.1	7.24
383.3	516.8	7.19
366.7	533.4	7.21
350.0	550.1	7.23
333.3	566.8	7.25
316.7	583.4	7.22
300.0	600.1	7.22
283.3	616.8	7.21
266.7	633.4	7.19
250.0	650.1	7.21
233.3	666.8	7.19
216.7	683.4	7.20
200.0	700.1	7.17
183.3	716.8	7.19
166.7	733.4	7.16
150.0	750.1	7.17
133.3	766.8	7.15
116.7	783.4	7.20
100.0	800.1	7.17
83.3	816.8	7.21
66.7	833.4	7.19
50.0	850.1	7.29

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=100.1MHz (dB) @LO (dBm) +17
50.0	150.1	6.96
67.9	168.0	6.96
85.9	186.0	6.94
103.8	203.9	6.91
121.8	221.9	6.83
139.7	239.8	6.84
157.7	257.8	6.79
175.6	275.7	6.83
193.6	293.7	6.79
211.5	311.6	6.78
229.5	329.6	6.73
247.4	347.5	6.73
265.4	365.5	6.72
283.3	383.4	6.75
301.3	401.4	6.72
319.2	419.3	6.70
337.2	437.3	6.67
355.1	455.2	6.67
373.1	473.2	6.65
391.0	491.1	6.66
409.0	509.1	6.66
426.9	527.0	6.65
444.9	545.0	6.63
462.8	562.9	6.62
480.8	580.9	6.64
498.7	598.8	6.61
516.7	616.8	6.62
534.6	634.7	6.60
552.6	652.7	6.61
570.5	670.6	6.59
588.5	688.6	6.63
606.4	706.5	6.61
624.4	724.5	6.64
642.3	742.4	6.60
660.3	760.4	6.63
678.2	778.3	6.61
696.2	796.3	6.66
714.1	814.2	6.66
732.1	832.2	6.70
750.0	850.1	6.68

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1800.1MHz (dB) @LO (dBm) +17
750.0	1050.1	7.95
732.1	1068.0	7.96
714.1	1086.0	7.99
696.2	1103.9	8.04
678.2	1121.9	8.07
660.3	1139.8	8.05
642.3	1157.8	8.07
624.4	1175.7	8.07
606.4	1193.7	8.09
588.5	1211.6	8.07
570.5	1229.6	8.07
552.6	1247.5	8.01
534.6	1265.5	8.00
516.7	1283.4	7.93
498.7	1301.4	7.96
480.8	1319.3	7.84
462.8	1337.3	7.84
444.9	1355.2	7.74
426.9	1373.2	7.81
409.0	1391.1	7.77
391.0	1409.1	7.84
373.1	1427.0	7.75
355.1	1445.0	7.79
337.2	1462.9	7.73
319.2	1480.9	7.78
301.3	1498.8	7.73
283.3	1516.8	7.73
265.4	1534.7	7.67
247.4	1552.7	7.70
229.5	1570.6	7.69
211.5	1588.6	7.72
193.6	1606.5	7.72
175.6	1624.5	7.69
157.7	1642.4	7.63
139.7	1660.4	7.63
121.8	1678.3	7.63
103.8	1696.3	7.61
85.9	1714.2	7.64
67.9	1732.2	7.61
50.0	1750.1	7.70

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+14	+17	+20	+14	+17	+20
10.1	30.84	34.66	38.44	24.07	25.87	27.53
110.3	47.18	54.27	64.61	33.09	36.09	38.50
210.6	54.21	66.20	60.46	34.29	36.85	37.89
310.8	60.02	56.34	53.03	34.24	35.63	35.00
411.0	55.72	50.69	48.57	34.74	33.84	32.56
511.3	50.56	47.42	45.69	33.42	31.70	30.12
611.5	49.19	45.58	43.82	32.18	29.86	28.41
711.8	48.36	44.60	42.45	30.91	28.50	26.91
812.0	47.43	43.70	41.23	29.91	27.27	25.56
912.2	48.57	44.11	41.42	28.35	25.73	24.31
1012.5	51.61	46.21	42.82	27.71	24.92	23.41
1112.7	46.71	46.29	43.08	26.95	24.39	22.84
1233.0	42.29	42.95	42.43	26.33	23.90	22.48
1333.2	40.06	40.86	40.21	25.73	23.37	21.99
1453.5	38.27	39.45	39.70	25.43	23.07	21.61
1553.7	37.15	38.22	38.75	25.35	23.11	21.68
1674.0	35.87	36.63	36.91	24.70	22.73	21.60
1774.3	34.47	35.13	35.52	24.57	22.74	21.77
1894.6	32.96	33.78	34.36	24.76	23.17	22.25
1994.8	32.29	33.27	34.10	25.56	24.06	22.99
2115.1	31.98	33.28	34.53	26.46	25.05	24.04
2215.3	32.39	33.71	35.24	27.33	25.77	24.87
2335.6	33.76	35.84	37.78	28.50	27.10	26.04
2435.8	34.92	37.87	40.70	30.18	28.36	27.47
2556.1	36.41	40.05	44.16	32.34	30.21	29.00
2656.4	37.14	40.72	45.57	32.89	31.17	29.99
2776.6	42.81	49.04	62.15	34.59	32.56	31.57
2876.9	46.49	55.11	55.09	35.27	33.53	32.71
2997.2	50.50	50.70	47.05	35.30	33.87	33.27
3097.4	50.16	46.89	43.53	36.24	34.79	33.75
3217.7	46.63	45.63	43.03	36.99	34.97	33.62
3317.9	45.59	47.05	44.25	37.01	35.26	33.73
3438.2	48.16	46.88	44.57	38.64	35.73	33.70
3538.4	48.43	46.53	44.75	40.13	36.76	34.35
3658.7	42.64	42.38	42.58	40.45	36.81	34.76
3759.0	41.47	41.56	41.93	39.86	36.69	34.92
3879.2	50.26	53.53	55.69	38.69	35.63	33.77
3979.5	47.11	44.47	43.17	37.26	35.08	33.42
4099.8	35.77	34.62	34.23	34.22	32.70	31.67
4200.0	30.55	29.48	29.20	33.43	32.31	31.30

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+14	+17	+20
10.1	60.1	18.52	18.46	18.66
110.1	160.1	22.35	22.37	22.36
210.1	260.1	23.18	23.19	23.27
310.1	360.1	23.93	24.03	24.04
410.1	460.1	24.80	24.87	24.91
510.1	560.1	25.80	25.85	25.82
610.1	660.1	26.46	26.54	26.47
710.1	760.1	27.25	27.14	26.75
810.1	860.1	28.28	27.56	26.93
910.1	960.1	28.67	27.89	27.20
1010.1	1060.1	28.49	27.62	26.93
1110.1	1160.1	29.15	28.29	27.56
1210.1	1260.1	30.63	29.92	29.17
1310.1	1360.1	33.09	32.38	31.63
1410.1	1460.1	36.52	35.38	34.15
1510.1	1560.1	39.67	38.50	36.97
1630.1	1680.1	42.80	40.78	38.89
1730.1	1780.1	43.12	40.91	39.17
1850.1	1900.1	44.42	39.67	37.56
1950.1	2000.1	41.53	38.26	36.50
2070.1	2120.1	38.56	36.67	35.17
2170.0	2220.0	33.96	32.80	32.07
2290.0	2340.0	32.06	31.06	30.60
2390.0	2440.0	30.81	29.75	29.33
2510.0	2560.0	29.67	28.64	27.93
2610.0	2660.0	28.56	28.00	27.71
2730.0	2780.0	26.62	26.25	26.03
2830.0	2880.0	25.99	25.85	25.76
2950.0	3000.0	24.70	24.63	24.69
3050.0	3100.0	25.11	24.76	24.53
3170.0	3220.0	25.41	25.12	24.97
3270.0	3320.0	25.61	25.15	24.67
3390.0	3440.0	25.71	25.37	25.01
3490.0	3540.0	24.96	24.68	24.39
3610.0	3660.0	24.00	23.98	23.89
3710.0	3760.0	25.12	24.85	24.48
3830.0	3880.0	27.49	27.10	26.73
3930.0	3980.0	29.69	28.81	28.23
4050.0	4100.0	29.80	28.93	28.45
4150.0	4200.0	27.95	27.14	26.94

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+14	+17	+20
10.1	60.1	1.83	1.85	1.87
110.1	160.1	1.06	1.13	1.20
210.1	260.1	1.08	1.11	1.15
310.1	360.1	1.17	1.15	1.16
410.1	460.1	1.26	1.22	1.22
510.1	560.1	1.37	1.34	1.32
610.1	660.1	1.55	1.51	1.48
710.1	760.1	1.73	1.68	1.64
810.1	860.1	1.94	1.86	1.81
910.1	960.1	2.21	2.11	2.04
1010.1	1060.1	2.53	2.40	2.32
1110.1	1160.1	2.80	2.64	2.52
1210.1	1260.1	2.91	2.73	2.61
1310.1	1360.1	2.98	2.80	2.67
1410.1	1460.1	3.06	2.88	2.74
1510.1	1560.1	3.03	2.84	2.70
1630.1	1680.1	2.83	2.65	2.53
1730.1	1780.1	2.75	2.58	2.46
1850.1	1900.1	2.62	2.46	2.34
1950.1	2000.1	2.38	2.24	2.12
2070.1	2120.1	2.15	2.03	1.92
2170.0	2220.0	2.00	1.90	1.81
2290.0	2340.0	1.68	1.60	1.54
2390.0	2440.0	1.52	1.45	1.41
2510.0	2560.0	1.49	1.45	1.41
2610.0	2660.0	1.44	1.39	1.35
2730.0	2780.0	1.42	1.39	1.39
2830.0	2880.0	1.52	1.52	1.53
2950.0	3000.0	1.58	1.56	1.57
3050.0	3100.0	1.57	1.54	1.53
3170.0	3220.0	1.62	1.61	1.63
3270.0	3320.0	1.65	1.62	1.63
3390.0	3440.0	1.63	1.54	1.50
3490.0	3540.0	1.59	1.46	1.39
3610.0	3660.0	1.71	1.56	1.45
3710.0	3760.0	1.80	1.66	1.55
3830.0	3880.0	1.93	1.81	1.71
3930.0	3980.0	2.02	1.87	1.77
4050.0	4100.0	2.08	1.93	1.82
4150.0	4200.0	2.06	1.90	1.79

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+14	+17	+20
10.1	2.08	2.57	3.16
110.3	1.69	2.34	3.11
210.6	1.63	2.27	3.00
310.8	1.58	2.19	2.89
411.0	1.51	2.09	2.75
511.3	1.43	1.98	2.60
611.5	1.36	1.88	2.45
711.8	1.28	1.76	2.29
812.0	1.21	1.65	2.14
912.2	1.14	1.55	2.02
1012.5	1.07	1.48	1.92
1112.7	1.04	1.44	1.87
1233.0	1.13	1.47	1.89
1333.2	1.23	1.54	1.96
1453.5	1.35	1.68	2.11
1553.7	1.47	1.83	2.29
1674.0	1.61	2.02	2.51
1774.3	1.72	2.17	2.71
1894.6	1.88	2.39	2.96
1994.8	1.99	2.54	3.14
2115.1	2.14	2.73	3.35
2215.3	2.22	2.83	3.47
2335.6	2.25	2.87	3.50
2435.8	2.28	2.89	3.52
2556.1	2.28	2.86	3.45
2656.4	2.31	2.86	3.42
2776.6	2.31	2.84	3.36
2876.9	2.30	2.79	3.28
2997.2	2.33	2.77	3.22
3097.4	2.30	2.70	3.11
3217.7	2.25	2.58	2.93
3317.9	2.19	2.48	2.79
3438.2	2.09	2.34	2.60
3538.4	2.03	2.26	2.49
3658.7	1.92	2.14	2.35
3759.0	1.85	2.06	2.27
3879.2	1.79	2.00	2.21
3979.5	1.79	1.98	2.19
4099.8	1.81	1.97	2.15
4200.0	1.81	1.95	2.12

IF (OUT) (MHz)	IF VSWR @LO=1800.1MHz (:1) @LO (dBm)		
	+14	+17	+20
50.0	1.33	1.48	1.58
67.9	1.31	1.47	1.59
85.9	1.25	1.41	1.52
103.8	1.20	1.33	1.44
121.8	1.20	1.33	1.44
139.7	1.23	1.37	1.48
157.7	1.23	1.38	1.49
175.6	1.21	1.35	1.46
193.6	1.19	1.33	1.44
211.5	1.18	1.30	1.41
229.5	1.18	1.29	1.39
247.4	1.19	1.31	1.41
265.4	1.20	1.33	1.44
283.3	1.20	1.32	1.43
301.3	1.17	1.29	1.39
319.2	1.16	1.28	1.38
337.2	1.17	1.29	1.39
355.1	1.19	1.30	1.40
373.1	1.18	1.29	1.38
391.0	1.18	1.29	1.39
409.0	1.19	1.31	1.41
426.9	1.19	1.30	1.40
444.9	1.17	1.28	1.37
462.8	1.16	1.28	1.37
480.8	1.19	1.30	1.39
498.7	1.19	1.30	1.39
516.7	1.18	1.29	1.38
534.6	1.18	1.30	1.40
552.6	1.18	1.29	1.39
570.5	1.17	1.26	1.35
588.5	1.17	1.26	1.34
606.4	1.19	1.29	1.38
624.4	1.21	1.31	1.40
642.3	1.17	1.27	1.36
660.3	1.13	1.23	1.31
678.2	1.13	1.22	1.30
696.2	1.16	1.24	1.32
714.1	1.18	1.26	1.34
732.1	1.17	1.27	1.36
750.0	1.16	1.27	1.36

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	6	32	22	42	26	37	24	39	39	51
1	-	26	+0	29	14	36	22	38	29	35	37	49
2	79	49	57	51	41	56	44	60	45	59	40	48
3	>100	61	42	53	47	57	51	65	53	57	58	55
4	>100	78	68	71	60	61	62	68	62	72	63	74
5	>100	83	67	83	67	69	58	69	62	74	62	68
6	>100	85	73	80	75	77	69	73	74	83	71	79
7	>100	87	77	96	75	87	75	78	75	77	78	77
8	>100	93	88	93	89	88	89	84	81	84	85	97
9	>100	>98	91	96	95	>98	92	97	>98	88	91	90
10	100	>98	>98	>98	>98	>98	>98	>98	>98	94	91	89
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 950.10 MHz; +5.00 dBm.**
LO IN: 1000.01 MHz; +17.00 dBm
IF OUT: 49.91 MHz; -2.33 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+4	21	11	29	15	24	12	24	24	45
1	-	26	+0	30	14	35	22	36	29	32	35	44
2	90	60	67	58	51	62	56	72	54	70	49	55
3	>100	82	62	72	62	79	70	79	65	82	67	77
4	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
5	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
6	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
7	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
8	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
9	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
10	>100	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88	>88
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: **RF IN: 950.10 MHz; -5.00 dBm.**
LO IN: 1000.01 MHz; +17.00 dBm
IF OUT: 49.91 MHz; -12.42 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.