

Frequency Mixers

LEVEL 7 (+7 dBm LO, up to +1 dBm RF)

Models

TUF-5
 TUF-5SM

T-74-09-01



computer-automated performance data

typical production unit / for data of other models consult factory

mixer conversion loss and isolation

RF MHz	LO MHz	Conversion Loss (dB)			Isolation L-R (dB)			Isolation L-I (dB)		
		LO + 4 dBm	LO + 7 dBm	LO + 10 dBm	LO + 4 dBm	LO + 7 dBm	LO + 10 dBm	LO + 4 dBm	LO + 7 dBm	LO + 10 dBm
20.000	50.000	6.33	5.76	5.50	69.02	69.06	68.24	50.16	50.01	49.77
40.000	70.000	6.11	5.54	5.27	63.58	63.75	63.61	46.43	45.70	45.41
50.000	80.000	6.00	5.44	5.20	61.66	61.73	61.60	44.11	43.88	43.72
100.000	70.000	5.94	5.38	5.14	56.16	56.05	55.78	38.85	38.99	38.98
158.750	128.750	5.96	5.40	5.19	52.34	52.30	51.82	36.10	36.23	35.74
200.000	170.000	5.91	5.41	5.20	50.15	49.90	48.79	34.62	34.38	33.79
297.500	267.500	6.12	5.58	5.33	47.03	46.54	45.34	31.74	31.36	30.79
436.250	406.250	6.40	5.81	5.52	45.66	46.39	47.22	28.23	28.70	28.59
500.000	470.000	6.57	5.94	5.63	45.24	46.35	47.53	26.79	27.70	27.93
575.000	545.000	6.79	6.28	5.78	44.28	45.43	46.69	25.50	26.65	27.62
713.750	683.750	7.45	6.65	6.23	42.95	43.76	44.80	23.58	25.47	27.32
750.000	720.000	7.62	6.73	6.29	42.81	43.43	44.23	23.20	25.18	27.28
852.500	822.500	7.67	6.83	6.35	41.93	42.21	42.70	22.64	24.77	26.98
991.250	961.250	7.85	7.20	6.70	40.44	40.31	40.22	21.27	22.85	24.04
1000.000	970.000	7.77	7.15	6.66	40.30	40.23	40.15	21.10	22.65	23.80
1130.000	1100.000	7.86	7.28	6.85	39.02	38.87	38.41	19.21	19.85	19.82
1268.750	1238.750	7.86	7.27	6.91	38.49	38.46	38.13	16.87	17.22	17.01
1407.500	1377.500	8.15	7.29	6.91	37.51	37.61	37.31	14.38	14.48	14.44
1453.750	1423.750	8.29	7.22	6.79	37.09	37.14	36.69	13.51	13.58	13.43
1500.000	1470.000	8.60	7.38	6.93	36.81	36.87	36.41	12.94	12.98	12.91

mixer VSWR

φ detection

FREQ. (MHz)	VSWR RF port			VSWR LO port			VSWR IF port			FREQ. (MHz)	max DC output mV	DC offset mV
	LO + 4 dBm	LO + 7 dBm	LO + 10 dBm	LO + 4 dBm	LO + 7 dBm	LO + 10 dBm	LO + 4 dBm	LO + 7 dBm	LO + 10 dBm			
20.000	1.66	1.56	1.49	1.67	2.37	3.26	1.61	1.34	1.15	20.000	-227.32	0.17
50.000	1.56	1.44	1.35	1.63	2.31	3.18	1.61	1.34	1.15	40.000	-238.44	0.11
100.000	1.69	1.56	1.46	1.54	2.17	2.97	1.61	1.34	1.15	50.000	-242.56	0.10
200.000	1.75	1.62	1.51	1.54	2.16	2.94	1.62	1.34	1.16	100.000	-253.79	0.12
323.400	2.04	1.89	1.77	1.58	2.18	2.92	1.60	1.33	1.15	158.750	-229.69	0.16
401.100	2.28	2.12	1.99	1.63	2.20	2.90	1.58	1.31	1.15	200.000	-231.62	0.17
438.100	2.42	2.25	2.10	1.67	2.23	2.90	1.57	1.30	1.14	297.500	-238.47	0.33
552.800	2.84	2.65	2.48	1.77	2.27	2.88	1.51	1.26	1.11	436.250	-243.06	0.36
663.800	3.22	3.02	2.85	1.88	2.33	2.87	1.42	1.19	1.07	500.000	-208.99	0.46
741.500	3.45	3.26	3.10	1.93	2.35	2.85	1.35	1.13	1.05	575.000	-217.27	0.70
778.500	3.53	3.36	3.19	1.97	2.38	2.88	1.30	1.10	1.05	713.750	-202.23	0.92
815.500	3.60	3.43	3.29	2.03	2.42	2.91	1.26	1.07	1.08	750.000	-217.23	1.22
930.200	3.75	3.60	3.46	2.20	2.54	2.97	1.10	1.08	1.20	852.500	-189.86	0.76
1044.900	3.76	3.65	3.53	2.41	2.71	3.09	1.10	1.28	1.42	991.250	-185.84	0.51
1118.900	3.79	3.65	3.55	2.58	2.84	3.19	1.24	1.43	1.58	1000.000	-183.93	0.55
1159.600	3.79	3.62	3.54	2.68	2.90	3.24	1.34	1.55	1.71	1130.000	-196.56	1.95
1270.600	3.73	3.58	3.50	3.02	3.10	3.38	1.74	1.97	2.14	1268.750	-202.24	4.70
1385.300	3.66	3.50	3.42	3.48	3.39	3.57	2.32	2.57	2.75	1407.500	-169.06	5.38
1463.000	3.58	3.42	3.35	3.91	3.62	3.67	2.77	3.00	3.18	1453.750	-184.80	9.35
1500.000	3.54	3.39	3.32	4.09	3.76	3.76	3.06	3.30	3.48	1500.000	-159.22	8.52



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20 to 1500 MHz

Mini-Circuits

ULTRA-REL™ MIXERS

5-YR. GUARANTEE*

mixer harmonic intermodulation

(relative to desired IF output)

T-74-09-01

RF CAL													
RF ORDER HARMONIC	0	-	-	+5	24	8	36	17	48	36	50	47	42
	1	-	30	+0	44	27	38	36	60	39	60	47	51
	2	94	> 74	47	68	46	68	50	67	52	73	65 > 68	
	3	95	70	69	73	57	73	65 > 75	66 > 74	67	68		
	4	> 97	> 75	> 74	> 73	> 75	> 75	73 > 74	> 74	74 > 74	> 73		
	5	> 97	> 74	73	> 72	> 74	> 74	> 75	> 74	73 > 73	> 74	73	
	6	> 97	> 74	> 52	> 74	> 74	> 74	> 74	74 > 74	> 74	73	73	
	7	89	64	> 75	73	> 74	> 74	72	> 74	> 75	74	> 75	> 75
	8	> 91	68	66	> 75	> 75	> 74	> 74	72	> 75	> 75	> 75	> 74
	9	> 91	> 69	> 69	> 67	> 75	> 74	74	> 73	71	> 74	> 74	74
	10	91	> 69	> 70	67	66	> 75	73	> 74	> 74	> 73	74	> 75
		0	1	2	3	4	5	6	7	8	9	10	
Harmonic LO Order													

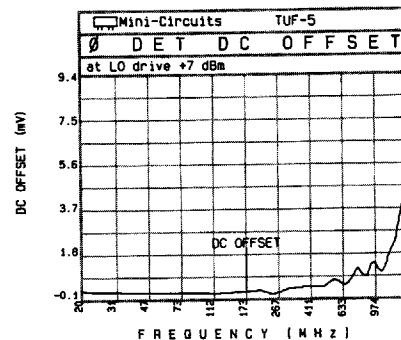
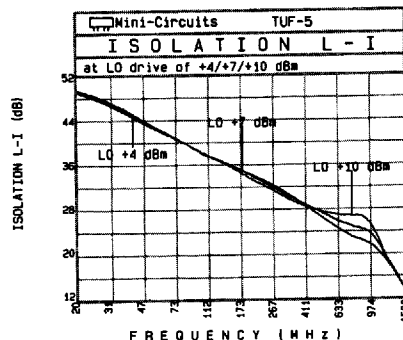
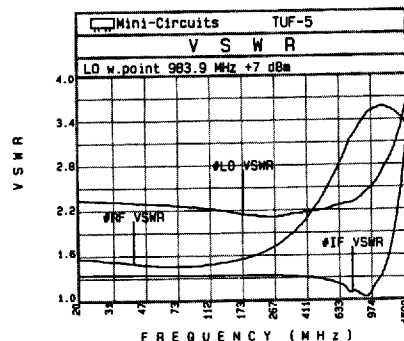
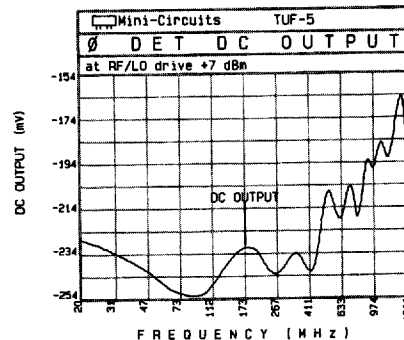
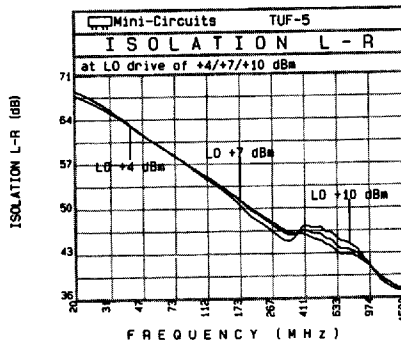
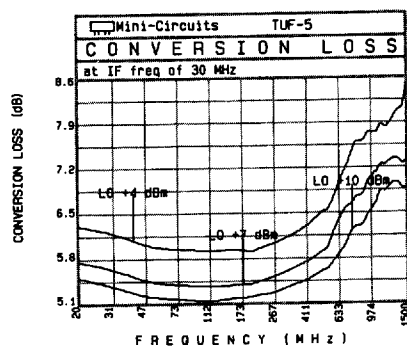
test condition: RF IN: 945.10 MHz; -14.94 DBM
LO IN: 915.01 MHz; +7.00 DBM
IF OUT: 30.09 MHz; -21.95 DBM

RF CAL													
RF ORDER HARMONIC	0	-	-	6	34	19	49	30	56	46	69	64	62
	1	-	30	0	46	27	41	40	64	46	69	57	65
	2	76	64	41	61	40	64	44	63	48	79	60	71
	3	> 96	53	53	66	38	64	48	59	50	82	56	73
	4	> 96	81	68	75	56	74	55	73	60	73	61	81
	5	> 96	> 84	71	75	72	75	55	74	62	73	65	> 84
	6	94	83	72	84	80	82	67	> 84	65	> 84	73	81
	7	82	76	> 85	> 84	84	> 85	> 84	> 84	71	82	75	> 84
	8	> 91	78	> 78	> 85	> 84	> 84	> 84	> 84	78	> 84	75	> 84
	9	> 91	78	> 79	76	> 85	> 84	> 84	> 84	> 84	> 85	81	83
	10	> 92	78	79	> 80	75	> 85	83	> 85	> 84	> 83	83	> 85
			0	1	2	3	4	5	6	7	8	9	10
Harmonic LO Order													

test condition: RF IN: 945.10 MHz; -5.01 DBM
LO IN: 915.01 MHz; +7.00 DBM
IF OUT: 30.09 MHz; -11.88 DBM

typical performance curves

(production unit)



In Stock...Immediate Delivery