

Frequency Mixers

LEVEL 17S (+17 dBm LO, up to +14 dBm RF)

Model
TUF-5H

T-74-09-01



computer-automated performance data
typical production unit / for data of other models consult factory

mixer conversion loss and isolation

RF FREQ. (MHz)	FREQ. (MHz)	Conversion Loss (dB)			FREQ. (MHz)	Isolation L-R (dB)			FREQ. (MHz)	Isolation L-I (dB)		
		LO +14 dBm	LO +17 dBm	LO +20 dBm		LO +14 dBm	LO +17 dBm	LO +20 dBm		LO +14 dBm	LO +17 dBm	LO +20 dBm
20.0000	50.0000	7.79	6.69	5.99	20.0000	78.70	76.70	71.60	53.50	54.80	55.70	
50.0000	80.0000	7.47	6.37	5.67	45.0000	71.40	69.50	64.30	46.80	48.00	49.10	
110.0000	140.0000	7.09	5.99	5.49	80.0000	67.10	65.00	60.10	41.90	43.50	44.80	
200.0000	230.0000	6.98	5.98	5.58	140.0000	64.20	61.10	55.50	37.50	39.10	41.50	
320.0000	350.0000	6.93	6.13	5.73	230.0000	60.70	58.30	53.80	33.90	36.40	37.80	
500.0000	530.0000	7.29	6.49	6.09	350.0000	57.40	56.50	58.00	31.70	33.60	34.50	
635.0000	665.0000	8.16	6.96	6.46	455.0000	50.30	50.80	56.80	29.60	31.50	32.70	
740.0000	770.0000	8.89	7.59	6.69	530.0000	46.50	47.20	47.60	28.10	30.20	32.00	
845.0000	875.0000	9.69	8.29	7.49	560.0000	45.60	46.10	46.60	27.70	29.80	31.70	
950.0000	980.0000	9.48	8.38	7.48	665.0000	43.50	44.20	43.20	26.40	28.60	30.90	
1000.0000	1030.0000	9.41	8.21	7.41	770.0000	40.40	41.40	40.50	26.00	27.80	29.90	
1055.0000	1085.0000	8.97	7.97	7.27	875.0000	37.80	38.90	38.20	25.50	27.10	28.40	
1100.0000	1130.0000	8.78	7.98	7.28	1000.0000	35.60	36.60	36.20	24.30	25.20	25.70	
1200.0000	1230.0000	8.23	7.63	7.33	1085.0000	36.50	37.20	36.60	23.80	24.10	23.80	
1250.0000	1280.0000	8.15	7.55	7.15	1190.0000	35.00	36.30	36.10	23.00	22.90	22.10	
1300.0000	1330.0000	7.97	7.47	7.17	1280.0000	33.50	35.00	35.00	21.90	21.70	20.90	
1350.0000	1380.0000	7.73	7.23	6.93	1330.0000	32.70	34.50	34.50	21.20	21.10	20.20	
1400.0000	1430.0000	7.80	7.30	7.00	1380.0000	32.10	34.00	34.20	20.30	19.90	18.90	
1470.0000	1500.0000	7.77	7.17	6.77	1400.0000	31.90	33.80	34.00	19.80	19.30	18.40	
1500.0000	1470.0000	7.91	7.21	6.91	1500.0000	31.20	33.30	33.50	17.30	17.00	16.10	

mixer VSWR

φ detection

FREQ. (MHz)	VSWR RF port			VSWR LO port			FREQ. (MHz)	VSWR IF port			FREQ. (MHz)	max DC output mV	DC offset mV
	LO +14 dBm	LO +17 dBm	LO +20 dBm	LO +14 dBm	LO +17 dBm	LO +20 dBm		LO +14 dBm	LO +17 dBm	LO +20 dBm			
20.000	1.78	1.64	1.57	1.31	1.69	2.49	20.000	2.50	1.86	1.55	20.000	-852.20	0.34
58.000	1.68	1.53	1.45	1.29	1.71	2.50	57.000	2.49	1.87	1.54	40.000	-890.00	0.32
172.000	1.75	1.61	1.52	1.26	1.63	2.38	167.000	2.39	1.80	1.52	50.000	-913.20	0.32
200.000	1.80	1.64	1.55	1.27	1.63	2.35	204.000	2.34	1.80	1.50	100.000	-882.20	0.49
324.000	1.97	1.80	1.70	1.26	1.58	2.21	315.000	2.20	1.71	1.46	158.750	-863.30	0.28
399.000	2.13	1.94	1.83	1.24	1.62	2.18	388.000	2.11	1.68	1.44	200.000	-905.00	0.42
437.000	2.22	2.02	1.90	1.24	1.62	2.18	425.000	2.03	1.64	1.41	297.500	-915.90	1.01
551.000	2.56	2.32	2.18	1.28	1.69	2.26	536.000	1.89	1.56	1.35	436.250	-767.80	1.09
665.000	3.06	2.73	2.55	1.41	1.77	2.18	646.000	1.77	1.46	1.30	500.000	-761.00	3.09
750.000	3.38	3.05	2.83	1.51	1.89	2.42	720.000	1.64	1.37	1.22	575.000	-804.60	-0.16
779.000	3.54	3.16	2.94	1.51	1.86	2.34	774.000	1.62	1.43	1.35	713.750	-708.80	0.13
817.000	3.67	3.29	3.05	1.53	1.84	2.25	812.000	1.58	1.39	1.32	750.000	-687.20	0.99
931.000	3.97	3.59	3.35	1.66	1.93	2.30	927.000	1.48	1.35	1.36	852.500	-681.80	0.97
1045.000	4.03	3.70	3.48	1.73	2.03	2.46	1041.000	1.44	1.43	1.49	991.250	-687.50	3.49
1121.000	3.93	3.65	3.43	1.85	2.08	2.52	1118.000	1.46	1.54	1.63	1000.000	-699.60	3.93
1158.000	3.90	3.58	3.44	1.87	2.08	2.52	1156.000	1.49	1.60	1.73	1130.000	-731.90	4.42
1272.000	3.67	3.45	3.26	1.97	2.14	2.50	1271.000	1.70	1.91	2.12	1268.750	-724.00	2.86
1386.000	3.41	3.21	3.08	2.27	2.24	2.50	1385.000	2.17	2.43	2.65	1407.500	-718.80	-0.60
1462.000	3.26	3.06	2.94	2.34	2.24	2.38	1462.000	2.63	2.91	3.14	1453.750	-701.80	-0.53
1500.000	3.09	2.92	2.79	2.54	2.37	2.50	1500.000	2.91	3.19	3.42	1500.000	-709.00	-5.05



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	16	37	54	38 > 71	58	57	65	55
	1	-	18	+0	30	37	61	56 68	73	66	68	55
	2	69	58	48	50	48	65	76 > 78	69	77 > 70	> 73	
	3	95 > 77	70	63	53	62	69 > 78 > 78	77 > 78	69			
	4	> 97 > 78	77	73	72	78	72 > 78	74 > 78 > 78 > 79				
	5	94 > 79 > 78 > 79 > 78 > 78 > 78	77 > 76	76 > 79 > 78								
	6	> 90 > 73 > 78 > 78 > 78 > 77 > 77 > 78	76 > 77	76 > 79								
	7	> 89 > 71	68	77 > 78 > 78 > 78	77 > 78	78 > 77 > 77						
	8	> 92	73 > 72	71	75 > 78	77 > 76	75 > 78	75	74			
	9	90	71 > 74 > 71	71	75	77	78 > 77 > 78	77	77			
	10	> 91	71	71 > 73 > 72	68 > 77 > 77 > 78	76	76 > 79					
		0	1	2	3	4	5	6	7	8	9	10
Harmonic LO Order												

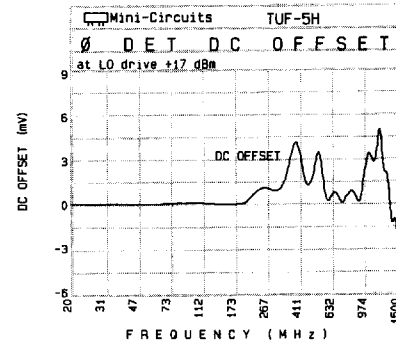
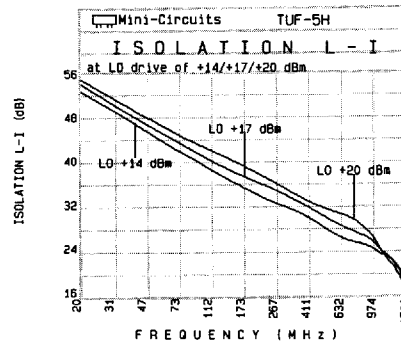
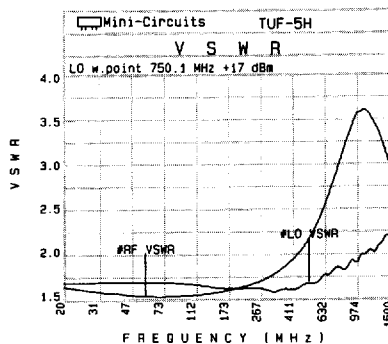
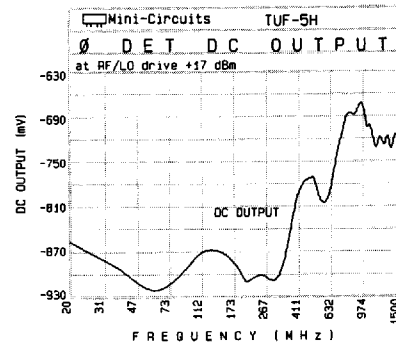
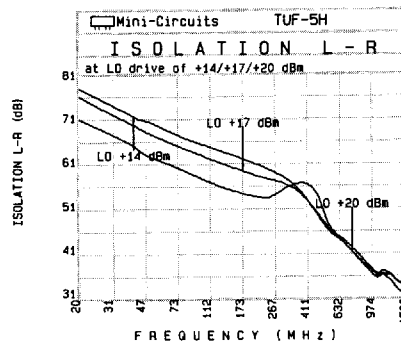
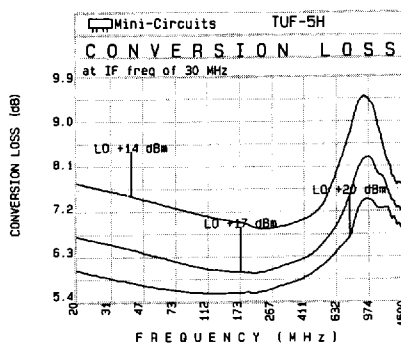
RF CAL													
RF ORDER HARMONIC	0	-	-	5	25	48	66	52	77	71	75	71	74
	1	-	19	+0	32	38	64	60	71	82	73	78	65
	2	50	51	48	41	41	60	79	80	66	87	73	81
	3	> 95	80	55	51	34	55	50	> 88	78	84	> 89	79
	4	95	88	87	72	55	61	52	71	87	86	79	88
	5	> 95	> 89	> 88	87	78	61	54	61	66	> 88	87	88
	6	> 90	> 82	> 87	> 88	> 89	81	66	72	64	78	86	> 89
	7	> 89	> 82	82	> 88	86	> 89	86	71	69	71	83	> 88
	8	> 90	> 84	> 80	> 82	86	> 88	87	84	77	79	74	83
	9	> 91	> 83	83	> 81	81	> 88	> 89	85	> 87	81	82	79
	10	90	81	> 83	> 82	> 81	> 82	> 88	> 87	88	> 87	84	85
		0	1	2	3	4	5	6	7	8	9	10	
Harmonic LO Order													

test condition: RF IN: 1000.10 MHz; -5.01 dBm
LO IN: 970.01 MHz; +17.03 dBm
IF OUT: 30.09 MHz; -13.12 dBm

test condition: RF IN: 1000.10 MHz; +5.02 dBm
LO IN: 970.01 MHz; +17.03 dBm
IF OUT: 30.09 MHz; -2.85 dBm

typical performance curves

(production unit)



In Stock...Immediate Delivery