

Frequency Mixers

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

Models

TUF-2
TUF-2SM

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
50.000	80.000	6.51	6.03	5.83	60.07	61.24	61.91	62.57	62.94	62.41
100.000	70.000	6.66	6.12	5.88	54.20	55.20	55.87	59.27	58.22	56.88
129.167	99.167	6.55	6.03	5.82	52.12	53.19	53.99	58.02	56.36	55.21
200.000	170.000	6.34	5.94	5.79	48.54	49.63	50.34	55.06	53.04	51.66
208.333	178.333	6.44	5.97	5.80	48.33	49.40	50.10	55.05	52.95	51.62
287.500	257.500	6.40	5.98	5.81	45.90	46.76	47.52	51.28	49.61	48.05
340.278	310.278	6.33	5.94	5.79	44.50	45.51	46.16	48.97	47.70	46.65
366.667	336.667	6.30	5.91	5.76	44.03	45.07	45.72	47.78	46.56	45.82
445.833	415.833	6.23	5.88	5.72	42.62	43.51	44.19	44.52	43.99	43.72
498.611	468.611	6.35	5.96	5.81	42.00	42.80	43.42	43.31	42.71	42.05
500.000	470.000	6.37	5.98	5.82	42.01	42.81	43.43	43.31	42.75	42.09
551.389	521.389	6.41	6.04	5.87	41.60	42.43	42.87	42.09	42.00	41.59
630.556	600.556	6.56	6.27	6.00	41.07	41.96	42.40	39.80	39.82	39.98
683.333	653.333	6.75	6.36	6.13	40.40	41.15	41.84	38.94	38.97	38.72
709.722	679.722	6.82	6.45	6.21	39.93	40.66	41.36	38.17	38.42	38.14
788.889	758.889	6.92	6.59	6.41	39.16	39.89	40.44	36.74	37.39	37.67
868.056	838.056	7.28	6.81	6.62	38.76	39.69	40.25	35.45	36.49	37.33
947.222	917.222	7.54	7.04	6.85	38.55	39.66	40.23	34.36	34.99	35.77
973.611	943.611	7.88	7.23	6.99	38.69	39.91	40.57	34.48	34.80	35.50
1000.000	970.000	8.07	7.37	7.03	38.50	39.73	40.41	34.50	34.65	35.19

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			
50.000	1.02	1.08	1.16	1.76	2.52	3.54	1.69	1.49	1.28	50.000	-235.28	-0.11
100.000	1.06	1.10	1.17	1.72	2.47	3.47	1.70	1.51	1.32	100.000	-246.85	0.00
145.000	1.09	1.12	1.19	1.70	2.42	3.38	1.73	1.55	1.36	129.167	-229.93	-0.02
200.000	1.14	1.17	1.23	1.68	2.35	3.27	1.77	1.61	1.44	200.000	-230.78	-0.04
259.000	1.19	1.22	1.27	1.66	2.31	3.17	1.83	1.68	1.53	208.333	-237.03	-0.04
316.000	1.25	1.27	1.32	1.68	2.32	3.19	1.90	1.76	1.62	287.500	-241.18	0.17
373.000	1.30	1.33	1.37	1.72	2.34	3.19	1.94	1.82	1.71	340.278	-229.30	0.17
400.000	1.34	1.36	1.40	1.72	2.32	3.14	1.96	1.85	1.74	366.667	-233.22	0.23
468.000	1.41	1.43	1.47	1.76	2.32	3.10	2.03	1.92	1.83	445.833	-244.79	0.44
500.000	1.45	1.47	1.50	1.80	2.34	3.10	2.06	1.95	1.86	498.611	-217.91	0.63
525.000	1.48	1.50	1.53	1.82	2.33	3.06	2.09	1.98	1.89	500.000	-217.41	0.68
601.000	1.58	1.58	1.61	1.90	2.37	3.07	2.13	2.02	1.95	551.389	-212.58	0.75
677.000	1.69	1.68	1.69	1.96	2.38	3.01	2.15	2.03	1.96	630.556	-215.80	1.06
734.000	1.79	1.76	1.77	1.99	2.35	2.94	2.23	2.08	2.02	683.333	-193.57	1.04
753.000	1.83	1.79	1.80	1.99	2.33	2.89	2.17	2.00	1.92	709.722	-200.21	1.09
829.000	1.99	1.94	1.93	2.06	2.34	2.86	2.20	2.02	1.93	788.889	-217.86	1.21
905.000	2.18	2.11	2.10	2.13	2.38	2.84	2.19	1.99	1.89	868.056	-168.57	1.41
962.000	2.39	2.31	2.28	2.17	2.42	2.84	2.20	1.97	1.86	947.222	-190.84	1.45
981.000	2.45	2.37	2.34	2.17	2.42	2.84	2.20	1.97	1.85	973.611	-183.66	1.49
1000.000	2.52	2.44	2.40	2.17	2.41	2.83	2.20	1.97	1.83	1000.000	-175.78	1.32



50 to 1000 MHz

Mini-Circuits

ULTRA-REL™ MIXERS

5-YR. GUARANTEE*

mixer harmonic intermodulation

(relative to desired IF output)

T-74-09-01

RF ORDER HARMONIC	RF CAL	0	1	2	3	4	5	6	7	8	9	10
0	-	-	15	28	25	29	27	51	29	47	30	43
1	-	21	+0	29	12	34	18	39	39	45	44	38
2	96	71	66	71	64	69	62	67	72	>74	66	72
3	>96	>75	75	>75	72	72	67	>75	69	>74	70	>75
4	95	>75	>74	>75	>75	>75	>76	>75	>75	>74	>74	>74
5	>95	>74	>74	>74	>75	>75	>76	>75	>75	>75	>75	>75
6	>96	>75	>54	>74	>75	>75	73	>75	>76	75	75	>76
7	>96	>74	74	>74	73	74	75	71	>76	>76	>75	>75
8	>96	73	>74	>74	72	74	>75	>76	>75	>76	74	72
9	>95	>75	74	>74	>73	>74	>74	74	>75	>75	>75	73
10	95	>75	>75	>75	>75	>75	>75	>74	>74	>74	>76	>76
		0	1	2	3	4	5	6	7	8	9	10
		Harmonic LO Order										

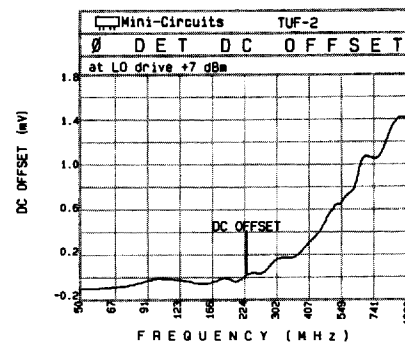
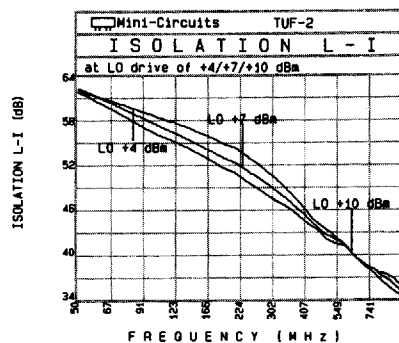
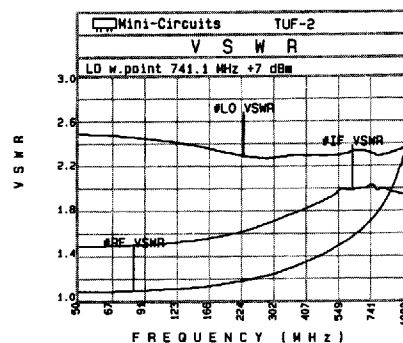
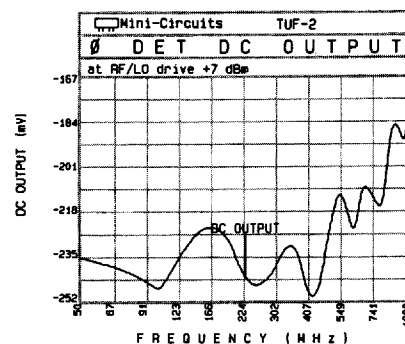
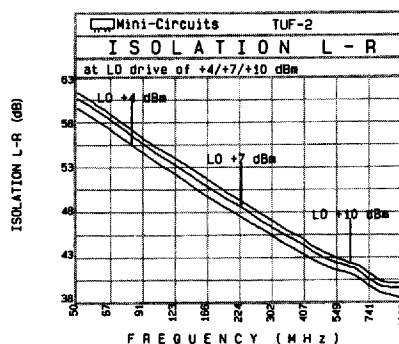
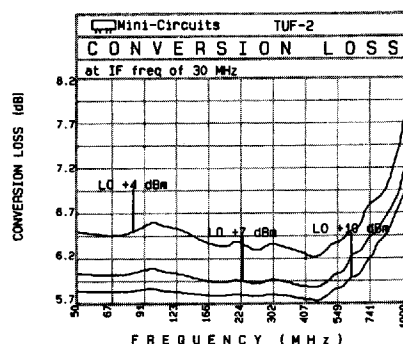
RF ORDER HARMONIC	RF CAL	0	1	2	3	4	5	6	7	8	9	10
0	-	-	26	38	36	41	37	61	42	60	45	58
1	-	21	+0	29	12	34	19	42	38	50	50	43
2	95	64	55	65	54	67	56	59	63	72	58	67
3	95	60	55	60	55	59	48	72	52	57	55	62
4	>96	82	>85	76	84	80	76	80	71	83	78	84
5	>95	80	77	82	66	76	59	71	58	77	57	71
6	>95	>85	>74	80	82	85	82	85	81	85	81	>85
7	>95	>85	81	>85	84	84	85	>85	84	82	82	83
8	>97	>85	83	>85	>84	>85	>85	>85	>86	>86	85	>86
9	>96	>86	>86	>85	83	>83	>85	>86	>85	>86	>86	>86
10	>96	>86	>85	84	>85	82	>85	>85	81	>84	85	>86
		0	1	2	3	4	5	6	7	8	9	10
		Harmonic LO Order										

test condition: RF IN: 490.10 MHz; -14.94 DBM
LO IN: 460.01 MHz; +7.01 DBM
IF OUT: 30.09 MHz; -20.78 DBM

test condition: RF IN: 490.10 MHz; -5.03 DBM
LO IN: 460.01 MHz; +7.01 DBM
IF OUT: 30.09 MHz; -10.59 DBM

typical performance curves

(production unit)



In Stock...Immediate Delivery