

broadband, low distortion

Frequency Mixers

Models

LEVEL 13 (+13dBm LO, up to +9dBm RF)

TFM-3MH
TUF-3MH

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 +10dBm	LO +13dBm	LO +16dBm	LO +10dBm	LO +13dBm	LO +16dBm	LO +10dBm	LO +13dBm	LO +16dBm
.100	30.10	5.47	5.15	4.95	> 70.00	> 73.00	> 76.00	59.41	60.91	63.34
1.000	31.00	4.85	4.57	4.42	> 70.00	> 73.00	> 76.00	59.03	60.66	63.06
5.000	35.00	4.92	4.68	4.54	> 70.00	> 73.00	> 76.00	58.89	60.53	62.89
10.000	40.00	4.99	4.73	4.56	> 70.00	> 73.00	71.81	58.55	60.07	62.11
20.000	50.00	5.09	4.80	4.61	65.25	65.05	64.42	57.10	58.37	59.62
33.420	63.42	4.93	4.67	4.53	59.88	59.52	59.13	54.59	55.39	56.16
50.000	80.00	4.91	4.68	4.57	55.23	55.49	53.26	51.75	52.20	51.48
58.410	88.41	4.84	4.65	4.57	53.68	53.27	50.86	50.45	50.21	49.34
66.740	96.74	4.87	4.68	4.55	52.40	50.90	49.02	49.03	48.39	47.78
83.400	53.40	4.90	4.66	4.55	48.74	46.98	45.89	45.72	45.26	44.91
100.060	70.06	4.74	4.54	4.48	45.35	44.09	43.84	43.05	42.57	42.68
116.720	86.72	4.80	4.62	4.56	42.52	41.59	41.71	40.83	40.51	40.95
133.380	103.38	4.86	4.69	4.63	40.42	40.36	40.85	38.94	38.94	39.71
150.040	120.04	4.90	4.74	4.69	38.88	38.78	39.39	37.73	37.88	38.66
166.700	136.70	4.95	4.82	4.76	36.88	37.43	38.44	36.06	36.81	38.02
183.360	153.36	5.03	4.90	4.83	36.07	36.56	37.14	35.07	35.51	36.27
200.000	170.00	5.04	4.89	4.80	35.72	36.59	37.11	34.90	35.86	36.73
216.680	186.68	5.03	4.88	4.78	34.55	35.77	36.72	33.92	35.35	36.86
233.340	203.34	4.98	4.84	4.77	32.96	33.97	35.32	32.41	33.58	35.36
250.000	220.00	5.08	4.93	4.84	32.36	33.05	34.27	32.08	32.71	33.84

mixer VSWR

freq. MHz	VSWR, RF port			VSWR, LO port			VSWR, IF port			freq. (MHz)	max. DC output mV	DC offset mV
	LO +10dBm	LO +13dBm	LO +16dBm	LO +10dBm	LO +13dBm	LO +16dBm	LO +10dBm	LO +13dBm	LO +16dBm			
5.001	1.51	1.33	1.21	1.05	1.72	2.63	1.69	1.54	1.45	.100	-549.80	+0.00
10.000	1.52	1.33	1.22	1.04	1.65	2.54	1.69	1.54	1.45	.500	-571.90	+ .01
20.000	1.51	1.33	1.21	1.06	1.74	2.61	1.68	1.54	1.44	2.000	-572.60	+ .02
27.969	1.50	1.32	1.21	1.06	1.73	2.56	1.68	1.53	1.44	10.000	-572.00	+ .03
35.625	1.50	1.32	1.21	1.04	1.68	2.49	1.69	1.54	1.45	25.952	-567.70	+ .03
50.000	1.50	1.32	1.21	1.02	1.67	2.47	1.69	1.55	1.46	34.569	-565.30	+ .03
58.594	1.49	1.32	1.21	1.03	1.64	2.43	1.69	1.55	1.46	50.000	-562.90	+ .01
73.907	1.48	1.31	1.20	1.03	1.59	2.34	1.71	1.57	1.47	60.420	-567.60	- .02
96.876	1.46	1.29	1.19	1.03	1.64	2.34	1.72	1.58	1.48	77.655	-573.00	- .01
100.000	1.46	1.29	1.19	1.02	1.62	2.36	1.73	1.59	1.49	94.889	-579.40	- .07
119.840	1.43	1.26	1.17	1.04	1.64	2.34	1.75	1.61	1.51	100.000	-581.30	- .02
135.160	1.41	1.25	1.15	1.06	1.63	2.28	1.78	1.64	1.53	112.120	-583.10	- .20
150.470	1.39	1.23	1.14	1.08	1.64	2.30	1.81	1.65	1.56	129.360	-580.50	- .15
165.780	1.36	1.21	1.12	1.10	1.64	2.30	1.84	1.69	1.58	146.590	-575.90	- .06
181.090	1.34	1.19	1.10	1.11	1.63	2.26	1.87	1.73	1.63	163.830	-576.50	+0.00
200.000	1.31	1.16	1.07	1.12	1.64	2.26	1.93	1.78	1.67	181.060	-577.40	- .09
211.720	1.29	1.14	1.05	1.15	1.65	2.27	1.94	1.80	1.70	200.000	-585.90	+ .68
227.030	1.26	1.12	1.03	1.19	1.65	2.25	2.02	1.85	1.74	206.910	-586.90	+ .89
242.350	1.23	1.09	1.01	1.19	1.67	2.26	2.08	1.89	1.79	224.150	-584.30	+1.07
250.000	1.22	1.08	1.01	1.19	1.68	2.28	2.12	1.93	1.82	250.000	-570.10	+ .49

Measurements at RF & LO Power +13 dBm



0.15 to 400 MHz

Mini-Circuits**ULTRA-REL™ MIXERS**
5-YR. GUARANTEE*

00-26

T-74-09-01

mixer harmonic intermodulation

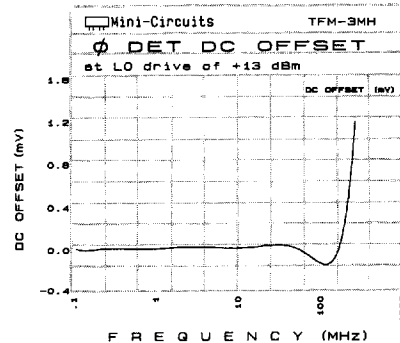
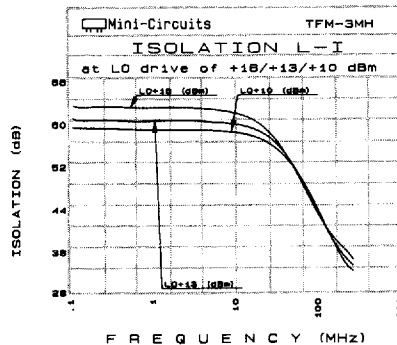
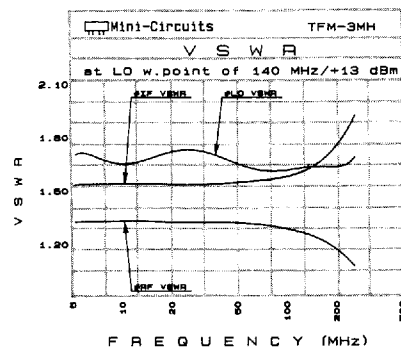
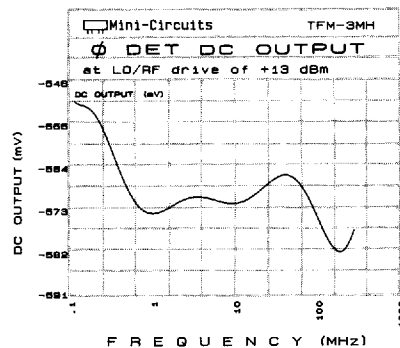
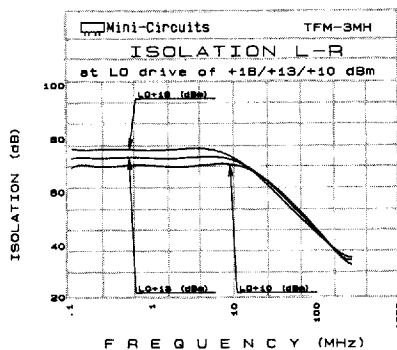
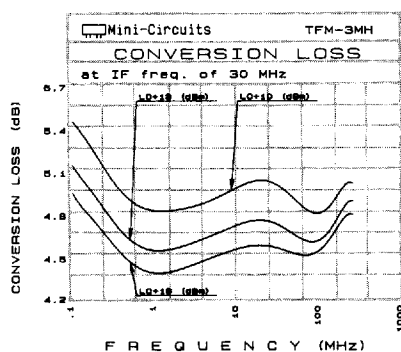
(relative to desired IF output)

	RF CAL												
RF ORDER HARMONIC	0	-	-	25	37	33	30	18	41	23	39	25	42
	1	-	17	-	33	12	34	18	41	28	40	34	45
	2	83	62	55	59	55	61	56	57	50	63	49	70
	3	94	61	52	54	65	55	50	61	50	52	47	64
	4	>96	80	76	75	79	74	73	77	69	77	69	75
	5	>95	>87	71	73	>85	70	68	72	64	78	65	72
	6	>96	>86	>85	>86	>85	>86	83	86	78	>85	76	>87
	7	>96	>85	>86	>85	81	86	>85	84	81	>85	79	>87
	8	>95	>88	>86	>86	>87	>86	>85	>86	>86	>87	>85	>84
	9	>96	>86	>87	>85	>87	>85	>85	>85	>86	>85	>87	>86
10	>95	>86	>86	>85	>85	>88	>85	>87	>86	>86	86	>86	
	0	1	2	3	4	5	6	7	8	9	10		
Harmonic LO Order													

test conditions: RF = IN: FREQ. 185.1 MHz DRIVE -3.97 DBM
LO IN: FREQ. 155.01 MHz DRIVE 12.92 DBM
IF MEASURED: FREQ. 30.09 MHz AMP. -9.22 DBM

RF CAL													
RF ORDER HARMONIC	0	-	-	15	27	24	19	7	30	12	28	14	29
	1	-	17	-	34	12	34	18	38	29	39	31	44
	2	>95	69	71	65	66	68	60	64	60	75	58	>74
	3	>95	74	68	69	69	70	62	73	65	68	60	>76
	4	>95	>77	>75	>77	>77	>77	>76	>78	>76	>78	75	>76
	5	>95	>76	>76	>77	>77	>76	>77	>75	>76	>75	>77	>76
	6	97	>77	>76	>77	>77	>77	>76	>77	>77	>76	>76	>77
	7	>94	>75	>77	>76	>76	>76	>77	>77	>76	>77	>77	>77
	8	>95	>76	>76	>76	>76	>77	>76	>76	>77	>77	>76	>76
	9	>96	>76	>77	>78	>76	>76	>75	>76	>76	>77	>77	>78
	10	>95	>76	>75	>77	>76	>76	>76	>77	>75	>76	>77	>76
		0	1	2	3	4	5	6	7	8	9	10	
Harmonic LO Order													

test conditions: RF IN: FREQ. 185.1 MHz DRIVE -14 DBM
LO IN: FREQ. 155.01 MHz DRIVE 12.92 DBM
IF MEASURED: FREQ. 30.09 MHz AMP. -19.23 DBM

typical performance curves
(production unit)

In Stock...immediate Delivery