

Frequency Mixer

TFM-ED12701/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+14dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+14	+17	+20			+14	+17	+20			+14	+17	+20
10.10	40.10	6.91	6.23	5.94	10.10	40.10	24.73	28.45	34.01	10.10	40.10	0.72	0.39	0.20
40.10	70.10	7.17	6.47	6.17	40.10	70.10	26.45	29.37	32.08	40.10	70.10	0.61	0.26	0.13
70.10	100.10	7.18	6.51	6.21	70.10	100.10	24.47	28.08	30.64	70.10	100.10	0.60	0.31	0.18
100.10	130.10	7.13	6.48	6.22	100.10	130.10	26.98	28.88	28.29	100.10	130.10	0.61	0.29	0.15
130.10	160.10	7.12	6.46	6.18	130.10	160.10	27.73	28.22	27.59	130.10	160.10	0.61	0.27	0.15
160.10	190.10	7.15	6.50	6.23	160.10	190.10	25.59	26.27	27.51	160.10	190.10	0.62	0.30	0.16
190.10	220.10	6.97	6.40	6.21	190.10	220.10	26.46	26.19	35.00	190.10	220.10	0.73	0.33	0.17
220.10	250.10	7.02	6.43	6.20	220.10	250.10	25.69	26.40	32.15	220.10	250.10	0.62	0.27	0.13
250.10	280.10	7.00	6.44	6.23	250.10	280.10	25.54	28.44	29.25	250.10	280.10	0.64	0.28	0.15
280.10	310.10	6.90	6.41	6.24	280.10	310.10	26.12	31.46	27.81	280.10	310.10	0.76	0.31	0.17
310.10	340.10	6.98	6.46	6.26	310.10	340.10	24.69	31.48	27.02	310.10	340.10	0.67	0.27	0.14
340.10	370.10	6.96	6.48	6.28	340.10	370.10	26.36	28.52	27.96	340.10	370.10	0.70	0.26	0.14
370.10	400.10	6.92	6.50	6.32	370.10	400.10	28.05	27.02	26.84	370.10	400.10	0.77	0.31	0.19
400.10	430.10	7.03	6.55	6.35	400.10	430.10	28.64	24.79	24.71	400.10	430.10	0.66	0.26	0.15
430.10	460.10	6.97	6.52	6.31	430.10	460.10	28.86	24.09	23.74	430.10	460.10	0.75	0.30	0.17
460.10	490.10	7.14	6.69	6.47	460.10	490.10	27.41	25.51	24.84	460.10	490.10	0.72	0.30	0.19
490.10	520.10	7.21	6.78	6.50	490.10	520.10	25.82	25.51	26.31	490.10	520.10	0.62	0.23	0.16
520.10	550.10	7.24	6.84	6.56	520.10	550.10	23.28	23.51	26.38	520.10	550.10	0.68	0.24	0.17
550.10	580.10	7.27	6.90	6.66	550.10	580.10	23.68	22.46	23.99	550.10	580.10	0.82	0.30	0.20
580.10	610.10	7.30	6.91	6.68	580.10	610.10	25.65	22.88	23.39	580.10	610.10	0.84	0.32	0.20
610.10	640.10	7.33	6.94	6.71	610.10	640.10	27.29	23.62	23.67	610.10	640.10	0.92	0.40	0.24
640.10	670.10	7.42	7.03	6.80	640.10	670.10	27.74	25.02	24.17	640.10	670.10	0.92	0.44	0.26
670.10	700.10	7.49	7.08	6.84	670.10	700.10	24.60	25.45	24.65	670.10	700.10	0.92	0.45	0.25
700.10	730.10	7.54	7.09	6.84	700.10	730.10	20.72	24.56	24.87	700.10	730.10	1.03	0.56	0.29
730.10	760.10	7.64	7.17	6.91	730.10	760.10	18.60	23.31	25.60	730.10	760.10	1.07	0.64	0.34
760.10	790.10	7.84	7.30	7.00	760.10	790.10	16.95	21.44	25.63	760.10	790.10	1.00	0.67	0.38
790.10	820.10	7.99	7.45	7.11	790.10	820.10	15.63	18.63	23.72	790.10	820.10	1.03	0.72	0.44
820.10	850.10	8.08	7.57	7.22	820.10	850.10	15.25	17.04	21.92	820.10	850.10	1.16	0.81	0.52
850.10	880.10	8.36	7.82	7.42	850.10	880.10	14.85	15.58	19.64	850.10	880.10	1.12	0.78	0.52
880.10	910.10	8.59	8.04	7.61	880.10	910.10	15.07	15.08	17.90	880.10	910.10	1.13	0.80	0.53
910.10	940.10	8.81	8.21	7.70	910.10	940.10	15.44	15.12	17.07	910.10	940.10	1.05	0.76	0.56
940.10	970.10	9.25	8.59	7.97	940.10	970.10	15.66	15.27	16.84	940.10	970.10	0.83	0.59	0.48
970.10	1000.10	9.62	8.88	8.22	970.10	1000.10	15.65	15.60	16.99	970.10	1000.10	0.66	0.43	0.36
1000.10	1030.10	10.03	9.17	8.45	1000.10	1030.10	15.73	16.42	17.34	1000.10	1030.10	0.41	0.28	0.24
1030.10	1060.10	10.47	9.51	8.68	1030.10	1060.10	15.74	17.33	18.67	1030.10	1060.10	0.09	0.09	0.14
1060.10	1090.10	10.91	9.85	8.87	1060.10	1090.10	15.65	17.52	19.86	1060.10	1090.10	-0.26	-0.15	0.03
1090.10	1120.10	11.36	10.19	9.03	1090.10	1120.10	15.61	17.20	20.19	1090.10	1120.10	-0.55	-0.38	-0.03
1120.10	1150.10	11.66	10.36	9.03	1120.10	1150.10	15.72	17.02	20.49	1120.10	1150.10	-0.69	-0.44	0.03
1140.10	1170.10	11.76	10.36	8.93	1140.10	1170.10	15.63	16.79	20.79	1140.10	1170.10	-0.77	-0.43	0.12
1170.10	1200.10	11.97	10.35	8.83	1170.10	1200.10	15.86	17.11	22.44	1170.10	1200.10	-0.76	-0.29	0.32

Frequency Mixer

TFM-ED12701/1

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=250.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
240.00	10.10	6.58	10.00	20.10	6.47	490.00	10.10	6.80
234.89	15.21	6.55	60.00	70.10	6.10	480.20	19.90	6.70
229.78	20.32	6.53	110.00	120.10	6.26	470.41	29.69	6.56
224.67	25.43	6.54	160.00	170.10	6.23	460.61	39.49	6.67
219.56	30.54	6.42	210.00	220.10	6.24	450.82	49.28	6.73
214.44	35.66	6.51	260.00	270.10	6.35	441.02	59.08	6.63
209.33	40.77	6.45	310.00	320.10	6.36	431.22	68.88	6.58
204.22	45.88	6.37	360.00	370.10	6.45	421.43	78.67	6.53
199.11	50.99	6.51	410.00	420.10	6.52	411.63	88.47	6.55
194.00	56.10	6.42	460.00	470.10	6.66	401.84	98.26	6.58
188.89	61.21	6.43	510.00	520.10	6.69	392.04	108.06	6.39
183.78	66.32	6.42	560.00	570.10	6.73	382.24	117.86	6.40
178.67	71.43	6.43	610.00	620.10	6.77	372.45	127.65	6.38
173.56	76.54	6.46	660.00	670.10	6.74	362.65	137.45	6.32
168.44	81.66	6.42	710.00	720.10	6.63	352.86	147.24	6.35
163.33	86.77	6.50	760.00	770.10	6.53	343.06	157.04	6.25
158.22	91.88	6.36	810.00	820.10	6.53	333.27	166.83	6.27
153.11	96.99	6.35	860.00	870.10	6.55	323.47	176.63	6.31
148.00	102.10	6.39	910.00	920.10	6.63	313.67	186.43	6.19
142.89	107.21	6.27	960.00	970.10	6.72	303.88	196.22	6.22
137.78	112.32	6.32	1010.00	1020.10	6.78	284.29	215.81	6.14
132.67	117.43	6.33	1060.00	1070.10	6.75	274.49	225.61	6.19
127.56	122.54	6.22	1110.00	1120.10	6.83	254.90	245.20	6.19
122.44	127.66	6.24	1160.00	1170.10	6.72	245.10	255.00	6.13
117.33	132.77	6.25	1210.00	1220.10	6.52	225.51	274.59	6.08
112.22	137.88	6.25	1260.00	1270.10	6.23	215.71	284.39	6.08
107.11	142.99	6.25	1310.00	1320.10	6.20	196.12	303.98	6.28
102.00	148.10	6.29	1360.00	1370.10	6.19	186.33	313.77	6.21
91.78	158.32	6.21	1410.00	1420.10	6.31	166.73	333.37	6.28
86.67	163.43	6.33	1460.00	1470.10	6.46	156.94	343.16	6.17
76.44	173.66	6.28	1520.00	1530.10	6.73	137.35	362.75	6.30
71.33	178.77	6.36	1570.00	1580.10	6.98	127.55	372.55	6.30
61.11	188.99	6.31	1630.00	1640.10	7.33	107.96	392.14	6.29
56.00	194.10	6.29	1680.00	1690.10	7.67	98.16	401.94	6.43
45.78	204.32	6.24	1740.00	1750.10	8.19	78.57	421.53	6.41
40.67	209.43	6.26	1790.00	1800.10	8.62	68.78	431.32	6.49
30.44	219.66	6.22	1850.00	1860.10	9.11	49.18	450.92	6.54
25.33	224.77	6.27	1900.00	1910.10	9.70	39.39	460.71	6.53
15.11	234.99	6.30	1960.00	1970.10	10.26	19.80	480.30	6.63
10.00	240.10	6.62	2010.00	2020.10	10.74	10.00	490.10	6.94

Frequency Mixer

TFM-ED12701/1

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)					@LO (dBm)		
	+14	+17	+20	+14	+17	+20			+14	+17	+20
40.10	65.98	64.66	63.32	78.11	66.35	60.75	10.10	40.1	49.22	48.64	47.86
70.10	62.19	61.08	60.45	71.52	63.70	58.42	40.10	70.1	37.56	37.73	37.62
100.10	60.06	59.41	59.09	67.57	61.42	56.47	70.10	100.1	33.17	33.48	33.56
130.10	56.52	56.16	55.87	64.35	58.97	53.88	100.10	130.1	30.65	30.85	30.90
160.10	57.64	57.33	56.78	59.46	56.71	52.58	130.10	160.1	28.95	29.26	29.44
190.10	55.48	55.36	54.88	57.48	55.83	52.09	160.10	190.1	27.50	27.81	28.02
220.10	55.19	54.84	54.04	54.52	53.26	50.26	190.10	220.1	26.59	26.89	27.12
250.10	54.52	53.96	52.96	51.48	50.90	48.76	220.10	250.1	25.71	26.16	26.39
280.10	53.77	53.05	52.11	50.20	49.66	47.97	250.10	280.1	25.39	25.71	25.95
310.10	53.39	52.41	51.32	47.42	46.91	46.02	280.10	310.1	25.29	25.60	25.76
340.10	52.30	51.25	50.19	45.59	45.35	44.66	310.10	340.1	24.84	25.62	25.89
370.10	51.90	51.06	49.82	43.82	43.69	43.55	340.10	370.1	24.75	25.63	26.14
400.10	51.12	50.84	49.60	41.76	41.88	42.08	370.10	400.1	24.55	25.52	26.12
430.10	50.19	49.65	48.79	40.52	40.72	40.94	400.10	430.1	24.70	25.43	26.24
460.10	49.85	48.92	48.31	39.17	39.47	39.80	430.10	460.1	25.51	25.86	26.36
490.10	49.52	48.09	47.31	37.86	38.13	38.61	460.10	490.1	25.80	26.12	26.19
520.10	48.71	47.51	46.46	36.88	37.09	37.58	490.10	520.1	26.44	26.93	26.93
550.10	47.86	46.88	45.90	35.97	36.21	36.67	520.10	550.1	26.33	26.63	26.98
580.10	47.77	46.88	46.22	35.14	35.55	35.99	550.10	580.1	25.60	25.78	26.14
610.10	47.14	46.12	45.68	34.33	35.00	35.54	580.10	610.1	24.42	24.63	25.00
640.10	47.92	46.24	45.83	33.40	34.26	34.92	610.10	640.1	22.72	22.98	23.40
670.10	49.29	46.33	45.42	32.56	33.67	34.46	640.10	670.1	21.25	21.40	21.85
700.10	49.89	46.41	45.15	31.82	33.10	33.96	670.10	700.1	20.17	20.21	20.63
730.10	51.44	47.89	46.48	31.04	32.33	33.49	700.10	730.1	19.34	19.13	19.27
760.10	51.23	48.71	46.99	30.47	31.71	33.06	730.10	760.1	18.71	18.31	18.20
790.10	50.69	49.39	47.51	29.93	30.99	32.29	760.10	790.1	18.24	17.67	17.35
820.10	48.73	48.55	46.87	29.54	30.39	31.59	790.10	820.1	17.77	17.14	16.72
850.10	47.58	47.88	46.66	29.30	29.96	31.02	820.10	850.1	17.41	16.78	16.36
880.10	46.28	46.82	46.24	28.94	29.50	30.43	850.10	880.1	17.07	16.44	15.99
910.10	45.20	45.58	45.61	28.58	29.12	29.90	880.10	910.1	16.72	16.15	15.67
940.10	44.72	44.61	44.93	28.28	28.80	29.46	910.10	940.1	16.40	15.93	15.43
970.10	44.02	43.38	43.36	28.04	28.58	29.11	940.10	970.1	16.07	15.68	15.18
1000.10	43.88	43.06	42.88	27.69	28.23	28.70	970.10	1000.1	15.82	15.51	15.17
1030.10	43.37	42.60	42.27	27.41	28.06	28.54	1000.10	1030.1	15.51	15.28	15.05
1060.10	43.05	42.42	42.06	27.22	27.86	28.44	1030.10	1060.1	15.20	15.04	14.86
1090.10	42.32	41.78	41.45	26.96	27.63	28.18	1060.10	1090.1	14.99	14.88	14.75
1120.10	41.80	41.35	41.02	26.72	27.52	28.17	1090.10	1120.1	14.77	14.72	14.68
1150.10	41.41	41.10	40.94	26.59	27.50	28.26	1120.10	1150.1	14.66	14.64	14.66
1170.10	41.17	41.09	41.15	26.49	27.50	28.37	1140.10	1170.1	14.61	14.63	14.66
1200.10	40.76	40.63	40.78	26.14	27.15	28.15	1170.10	1200.1	14.52	14.61	14.66

Frequency Mixer

TFM-ED12701/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=500MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
10.10	40.1	1.31	1.16	1.14	40.10	1.08	2.10	5.34	10.00	1.90	1.66	1.48
40.10	70.1	1.16	1.06	1.08	70.10	1.05	1.65	2.81	20.00	1.93	1.68	1.49
70.10	100.1	1.15	1.01	1.08	100.10	1.06	1.52	2.35	30.00	1.89	1.64	1.45
100.10	130.1	1.16	1.03	1.06	130.10	1.08	1.56	2.46	40.00	1.90	1.65	1.47
130.10	160.1	1.12	1.02	1.10	160.10	1.08	1.54	2.39	50.00	1.92	1.67	1.49
160.10	190.1	1.15	1.06	1.10	190.10	1.08	1.49	2.24	60.00	1.89	1.63	1.45
190.10	220.1	1.13	1.05	1.11	220.10	1.10	1.51	2.28	70.00	1.92	1.66	1.48
220.10	250.1	1.12	1.07	1.14	250.10	1.12	1.54	2.28	80.00	1.95	1.70	1.52
250.10	280.1	1.15	1.10	1.16	280.10	1.11	1.51	2.21	90.00	1.90	1.64	1.46
280.10	310.1	1.14	1.10	1.15	310.10	1.15	1.53	2.26	100.00	1.92	1.66	1.48
310.10	340.1	1.14	1.10	1.17	340.10	1.17	1.57	2.28	110.00	1.99	1.74	1.55
340.10	370.1	1.14	1.14	1.21	370.10	1.18	1.56	2.23	120.00	1.95	1.70	1.52
370.10	400.1	1.15	1.14	1.20	400.10	1.23	1.59	2.26	130.00	1.90	1.65	1.47
400.10	430.1	1.14	1.14	1.22	430.10	1.25	1.63	2.31	140.00	1.93	1.68	1.50
430.10	460.1	1.15	1.17	1.24	460.10	1.27	1.62	2.26	150.00	1.96	1.71	1.52
460.10	490.1	1.17	1.18	1.23	490.10	1.32	1.65	2.27	160.00	1.95	1.69	1.51
490.10	520.1	1.17	1.19	1.25	520.10	1.32	1.69	2.32	170.00	1.99	1.73	1.54
520.10	550.1	1.20	1.22	1.29	550.10	1.36	1.70	2.31	180.00	1.99	1.73	1.55
550.10	580.1	1.21	1.22	1.28	580.10	1.40	1.72	2.33	190.00	1.97	1.71	1.52
580.10	610.1	1.21	1.24	1.29	610.10	1.42	1.76	2.37	200.00	2.03	1.77	1.58
610.10	640.1	1.23	1.27	1.32	640.10	1.47	1.77	2.35	210.00	2.02	1.76	1.58
640.10	670.1	1.25	1.28	1.33	670.10	1.51	1.79	2.34	220.00	1.96	1.70	1.52
670.10	700.1	1.23	1.28	1.34	700.10	1.54	1.82	2.37	240.00	2.07	1.81	1.62
700.10	730.1	1.24	1.30	1.37	730.10	1.59	1.86	2.37	250.00	2.11	1.82	1.55
730.10	760.1	1.25	1.29	1.35	760.10	1.62	1.88	2.37	270.00	2.10	1.83	1.63
760.10	790.1	1.24	1.25	1.31	790.10	1.66	1.93	2.43	280.00	2.08	1.81	1.62
790.10	820.1	1.24	1.24	1.29	820.10	1.69	1.99	2.49	300.00	2.08	1.82	1.63
820.10	850.1	1.26	1.23	1.28	850.10	1.71	2.00	2.49	310.00	2.07	1.80	1.61
850.10	880.1	1.27	1.22	1.25	880.10	1.73	2.02	2.52	330.00	2.15	1.88	1.69
880.10	910.1	1.29	1.23	1.24	910.10	1.76	2.04	2.54	340.00	2.11	1.83	1.65
910.10	940.1	1.36	1.30	1.30	940.10	1.80	2.06	2.55	360.00	2.21	1.92	1.72
940.10	970.1	1.44	1.37	1.35	970.10	1.82	2.06	2.54	370.00	2.18	1.90	1.72
970.10	1000.1	1.50	1.43	1.41	1000.10	1.85	2.06	2.53	390.00	2.16	1.88	1.69
1000.10	1030.1	1.63	1.56	1.53	1030.10	1.89	2.09	2.55	400.00	2.22	1.93	1.74
1030.10	1060.1	1.75	1.67	1.63	1060.10	1.92	2.08	2.52	420.00	2.21	1.93	1.74
1060.10	1090.1	1.86	1.77	1.72	1090.10	1.94	2.07	2.49	430.00	2.24	1.96	1.76
1090.10	1120.1	2.00	1.91	1.84	1120.10	1.97	2.08	2.48	450.00	2.26	1.97	1.77
1120.10	1150.1	2.12	2.03	1.95	1150.10	2.00	2.07	2.46	460.00	2.28	2.00	1.81
1140.10	1170.1	2.17	2.07	1.99	1170.10	2.02	2.05	2.43	480.00	2.25	1.96	1.77
1170.10	1200.1	2.29	2.18	2.08	1200.10	2.05	2.02	2.39	490.00	2.36	2.07	1.88

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	26	33	22	42	26	52	42	62	43	57
1	-	19	+0	31	15	38	29	44	25	38	26	49
2	68	75	53	69	54	67	53	67	56	69	65	>82
3	>90	61	57	65	52	64	46	74	46	64	44	59
4	>90	>82	>82	>82	>82	>82	79	>82	79	>82	75	>82
5	>90	81	78	>82	72	81	67	79	69	>82	70	>82
6	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
7	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
8	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
9	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82
10	>90	>82	>82	>82	>82	>82	>82	>82	>82	>82	>82	81
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -1.00 dBm.
LO IN: 280.1 MHz; +17.00 dBm
IF OUT: 30 MHz; -7.59 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	34	42	36	62	46	62	52	67	59	80
1	-	19	+0	32	15	44	25	41	34	46	40	59
2	48	58	50	62	50	64	47	63	50	69	71	91
3	68	46	44	50	49	56	45	50	45	57	38	54
4	>90	84	66	78	65	77	66	70	64	71	65	74
5	>90	62	66	67	58	66	49	60	47	61	46	67
6	>90	82	72	83	73	>92	78	>92	78	86	73	84
7	>90	70	73	78	70	72	64	70	59	70	58	71
8	>90	>92	83	>92	84	91	84	>92	83	>92	79	90
9	>90	85	75	76	73	78	69	79	67	77	67	79
10	>90	>92	>92	>92	>92	>92	>92	>92	92	>92	88	>92
RF CAL	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; 9.00 dBm.
LO IN: 280.1 MHz; +17.00 dBm
IF OUT: 30 MHz; 2.42 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.