

Frequency Mixer

RMS-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=+1dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+4	+7	+10			+4	+7	+10			+4	+7	+10
0.5	30.5	7.81	7.45	7.25	10.1	40.1	20.53	21.83	21.00	10.1	40.1	1.36	0.93	0.71
1.0	31.0	7.02	6.68	6.52	50.4	80.4	20.48	21.74	27.51	50.4	80.4	1.32	1.01	0.72
2.0	32.0	6.45	6.15	6.00	90.8	120.8	25.27	21.86	19.85	90.8	120.8	1.25	0.97	0.73
5.0	35.0	6.12	5.84	5.69	110.9	140.9	19.89	25.12	23.32	110.9	140.9	1.36	0.97	0.72
10.0	40.0	6.09	5.78	5.64	151.3	181.3	23.71	21.85	32.79	151.3	181.3	1.23	0.87	0.62
50.4	80.4	6.23	5.88	5.70	171.5	201.5	19.46	23.17	21.57	171.5	201.5	1.18	0.85	0.74
90.8	120.8	6.25	5.92	5.79	211.8	241.8	18.15	24.18	19.84	211.8	241.8	1.10	0.88	0.72
110.9	140.9	6.29	5.94	5.83	232.0	262.0	22.36	21.16	27.56	232.0	262.0	1.21	0.96	0.79
151.3	181.3	6.32	6.00	5.86	272.3	302.3	18.30	22.26	25.84	272.3	302.3	1.26	0.96	0.73
171.5	201.5	6.29	6.02	5.89	292.5	322.5	16.64	20.23	21.98	292.5	322.5	1.18	0.92	0.73
211.8	241.8	6.29	6.03	5.91	332.8	362.8	20.46	19.16	20.27	332.8	362.8	1.26	0.88	0.72
232.0	262.0	6.33	6.03	5.91	353.0	383.0	18.50	24.41	19.41	353.0	383.0	1.27	0.91	0.71
272.3	302.3	6.34	6.09	5.95	393.3	423.3	20.77	18.32	19.43	393.3	423.3	1.28	0.98	0.74
292.5	322.5	6.37	6.09	5.95	413.5	443.5	18.51	20.44	30.14	413.5	443.5	1.33	0.97	0.79
332.8	362.8	6.41	6.12	5.96	453.8	483.8	18.06	18.50	24.26	453.8	483.8	1.42	1.12	0.86
353.0	383.0	6.41	6.11	5.98	474.0	504.0	14.46	16.41	19.76	474.0	504.0	1.39	1.15	0.95
413.5	443.5	6.45	6.15	5.99	514.3	544.3	12.98	13.47	16.05	514.3	544.3	1.38	1.04	0.96
453.8	483.8	6.58	6.23	6.06	534.5	564.5	13.02	13.05	15.61	534.5	564.5	1.45	1.09	0.87
474.0	504.0	6.61	6.28	6.10	574.8	604.8	12.82	14.05	16.56	574.8	604.8	1.58	1.20	1.02
514.3	544.3	6.66	6.33	6.13	595.0	625.0	13.45	15.30	19.28	595.0	625.0	1.58	1.24	1.00
534.5	564.5	6.66	6.37	6.17	635.4	665.4	14.17	16.69	21.70	635.4	665.4	1.87	1.49	1.26
574.8	604.8	6.75	6.36	6.18	655.5	685.5	13.73	20.58	20.48	655.5	685.5	1.63	1.43	1.18
595.0	625.0	6.78	6.39	6.17	695.9	725.9	13.12	20.05	18.71	695.9	725.9	1.64	1.44	1.13
635.4	665.4	6.94	6.44	6.19	716.0	746.0	12.37	23.51	21.77	716.0	746.0	1.62	1.42	1.23
695.9	725.9	7.21	6.63	6.29	756.4	786.4	12.14	18.16	18.07	756.4	786.4	1.60	1.40	1.18
716.0	746.0	7.30	6.72	6.37	776.5	806.5	11.78	16.34	16.96	776.5	806.5	1.59	1.40	1.14
756.4	786.4	7.54	6.98	6.57	816.9	846.9	13.69	16.42	15.22	816.9	846.9	1.58	1.31	1.14
776.5	806.5	7.68	7.11	6.72	837.0	867.0	13.57	19.89	15.67	837.0	867.0	1.44	1.20	0.95
816.9	846.9	7.87	7.34	6.94	877.4	907.4	18.50	19.50	17.75	877.4	907.4	1.28	1.12	0.79
877.4	907.4	8.07	7.66	7.35	897.6	927.6	17.27	18.62	18.04	897.6	927.6	1.34	1.02	0.79
897.6	927.6	8.08	7.71	7.49	937.9	967.9	14.51	16.20	17.30	937.9	967.9	1.29	1.09	0.76
937.9	967.9	8.30	7.96	7.73	958.1	988.1	13.42	13.90	15.19	958.1	988.1	1.19	0.86	0.84
958.1	988.1	8.38	8.06	7.85	998.4	1028.4	11.92	14.03	15.03	998.4	1028.4	1.16	0.93	0.74
998.4	1028.4	8.52	8.19	8.06	1018.6	1048.6	11.74	12.92	14.62	1018.6	1048.6	1.15	0.85	0.75
1018.6	1048.6	8.60	8.30	8.19	1058.9	1088.9	11.46	11.84	13.70	1058.9	1088.9	1.04	0.76	0.61
1058.9	1088.9	8.81	8.56	8.51	1079.1	1109.1	11.10	12.02	14.98	1079.1	1109.1	1.03	0.69	0.56
1079.1	1109.1	8.94	8.75	8.70	1119.4	1149.4	11.20	11.88	14.39	1119.4	1149.4	1.03	0.79	0.70
1119.4	1149.4	9.29	9.13	9.06	1139.6	1169.6	11.63	12.47	12.77	1139.6	1169.6	0.89	0.73	0.62
1179.9	1209.9	10.07	9.85	9.79	1179.9	1209.9	11.02	12.65	13.41	1179.9	1209.9	0.92	0.58	0.52
1200.1	1230.1	10.29	10.10	10.08	1200.1	1230.1	10.76	12.74	12.35	1200.1	1230.1	0.85	0.46	0.56



Frequency Mixer

RMS-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)
		+7			+7			+7
240.0	10.1	6.01	10.0	20.1	5.81	490.0	10.1	6.29
234.1	16.0	5.99	22.3	32.4	5.62	477.7	22.4	6.27
228.2	21.9	5.98	34.6	44.7	5.61	465.4	34.7	6.25
222.3	27.8	5.97	46.9	57.0	5.61	453.1	47.0	6.24
216.4	33.7	5.97	59.2	69.3	5.59	440.8	59.3	6.25
210.5	39.6	6.02	71.5	81.6	5.59	428.5	71.6	6.21
204.6	45.5	6.01	83.8	93.9	5.61	416.2	83.9	6.17
198.7	51.4	5.99	96.2	106.3	5.63	403.8	96.3	6.15
192.8	57.3	5.98	108.5	118.6	5.64	391.5	108.6	6.14
186.9	63.2	5.96	120.8	130.9	5.62	379.2	120.9	6.15
181.0	69.1	5.97	133.1	143.2	5.61	366.9	133.2	6.13
175.1	75.0	5.98	145.4	155.5	5.67	354.6	145.5	6.12
169.2	80.9	5.95	157.7	167.8	5.67	342.3	157.8	6.13
163.3	86.8	5.94	170.0	180.1	5.64	330.0	170.1	6.12
157.4	92.7	5.95	182.3	192.4	5.67	317.7	182.4	6.13
151.5	98.6	5.94	194.6	204.7	5.69	305.4	194.7	6.13
145.6	104.5	5.94	206.9	217.0	5.68	293.1	207.0	6.12
139.7	110.4	5.93	219.2	229.3	5.68	280.8	219.3	6.12
133.8	116.3	5.92	231.5	241.6	5.73	268.5	231.6	6.12
127.9	122.2	5.94	243.8	253.9	5.76	256.2	243.9	6.14
122.1	128.0	5.93	256.2	266.3	5.74	243.8	256.3	6.10
116.2	133.9	5.93	268.5	278.6	5.79	231.5	268.6	6.05
110.3	139.8	5.92	280.8	290.9	5.81	219.2	280.9	6.04
104.4	145.7	5.94	293.1	303.2	5.83	206.9	293.2	6.13
98.5	151.6	5.93	305.4	315.5	5.82	194.6	305.5	6.13
92.6	157.5	5.94	317.7	327.8	5.84	182.3	317.8	6.13
86.7	163.4	5.95	330.0	340.1	5.83	170.0	330.1	6.13
80.8	169.3	5.92	342.3	352.4	5.84	157.7	342.4	6.10
74.9	175.2	5.93	354.6	364.7	5.86	145.4	354.7	6.16
69.0	181.1	5.92	366.9	377.0	5.92	133.1	367.0	6.15
63.1	187.0	5.76	379.2	389.3	5.93	120.8	379.3	6.16
57.2	192.9	5.83	391.5	401.6	5.88	108.5	391.6	6.14
51.3	198.8	5.89	403.8	413.9	5.88	96.2	403.9	6.16
45.4	204.7	6.26	416.2	426.3	5.97	83.8	416.3	6.13
39.5	210.6	5.97	428.5	438.6	6.02	71.5	428.6	6.16
33.6	216.5	5.98	440.8	450.9	5.99	59.2	440.9	6.16
27.7	222.4	5.94	453.1	463.2	6.03	46.9	453.2	6.16
21.8	228.3	6.00	465.4	475.5	6.04	34.6	465.5	6.22
15.9	234.2	5.94	477.7	487.8	6.04	22.3	477.8	6.26
10.0	240.1	6.08	490.0	500.1	6.07	10.0	490.1	6.40

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10
0.5	77.47	89.00	86.40	58.57	64.40	71.90
1.0	76.77	82.65	81.16	59.07	64.35	70.66
2.0	74.40	76.59	75.41	58.90	63.49	66.01
5.0	68.98	68.78	67.98	57.58	59.68	59.61
10.0	63.87	63.45	62.82	55.47	55.38	54.46
50.4	58.21	58.82	59.02	56.01	56.22	56.20
90.8	53.78	53.92	54.38	51.72	51.59	51.00
110.9	51.97	52.41	52.64	50.63	50.08	49.83
151.3	49.18	49.78	50.10	48.22	47.43	47.12
171.5	48.26	48.78	49.03	47.18	46.71	46.16
211.8	46.62	47.07	47.36	45.63	44.87	44.25
232.0	45.83	46.38	46.65	44.79	43.85	43.18
272.3	44.56	45.04	45.33	43.25	42.09	41.28
292.5	44.11	44.62	44.92	42.68	41.53	40.65
332.8	43.38	43.98	44.33	40.85	39.68	38.82
353.0	42.80	43.36	43.67	39.63	38.58	37.77
413.5	40.75	41.45	41.90	36.41	35.40	34.86
453.8	39.77	40.45	40.92	34.78	33.64	32.93
474.0	39.30	39.99	40.49	34.34	33.14	32.30
514.3	39.15	39.71	40.07	33.17	32.04	31.16
534.5	38.94	39.29	39.41	32.56	31.47	30.61
574.8	38.83	38.99	38.86	31.12	30.12	29.32
595.0	38.95	39.09	38.95	30.24	29.22	28.38
635.4	38.52	38.40	37.93	28.45	27.48	26.65
695.9	37.50	37.41	36.88	26.28	25.41	24.62
716.0	36.82	36.69	36.12	25.53	24.72	23.90
756.4	36.33	36.41	36.01	24.28	23.64	22.86
776.5	35.96	36.18	35.97	23.65	23.05	22.26
816.9	35.29	35.57	35.58	22.35	21.90	21.19
877.4	35.00	35.39	35.61	20.83	20.56	19.96
897.6	34.99	35.44	35.72	20.14	19.94	19.37
937.9	35.56	36.26	36.53	19.20	19.03	18.43
958.1	36.44	37.31	37.30	18.65	18.46	17.84
998.4	38.97	39.93	38.40	17.66	17.46	16.76
1018.6	41.32	40.42	37.37	17.06	16.83	16.13
1058.9	50.05	40.48	35.76	16.27	16.02	15.34
1079.1	62.01	39.57	34.74	15.71	15.52	14.88
1119.4	41.05	34.95	31.62	14.86	14.63	14.05
1179.9	32.65	29.99	27.84	13.73	13.57	13.05
1200.1	30.68	28.41	26.56	13.36	13.19	12.68

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
10.1	40.1	39.03	39.94	33.82
50.4	80.4	38.01	38.96	36.84
90.8	120.8	32.02	32.30	32.90
110.9	140.9	31.08	31.56	31.42
151.3	181.3	28.78	29.16	29.55
171.5	201.5	28.02	28.42	28.86
211.8	241.8	27.20	27.61	27.75
232.0	262.0	26.75	27.29	27.54
272.3	302.3	26.46	26.94	27.56
292.5	322.5	26.41	27.13	27.63
332.8	362.8	26.37	26.99	27.58
353.0	383.0	26.55	27.21	27.88
393.3	423.3	27.43	28.25	29.01
413.5	443.5	27.69	28.69	29.49
453.8	483.8	27.53	28.46	29.02
474.0	504.0	26.56	27.11	27.56
514.3	544.3	24.05	24.16	24.18
534.5	564.5	22.81	22.77	22.74
574.8	604.8	20.78	20.58	20.36
595.0	625.0	20.01	19.76	19.55
635.4	665.4	18.87	18.61	18.43
655.5	685.5	18.43	18.18	18.01
695.9	725.9	17.87	17.67	17.55
716.0	746.0	17.66	17.49	17.38
756.4	786.4	17.27	17.11	17.01
776.5	806.5	17.09	16.97	16.88
816.9	846.9	16.60	16.52	16.48
837.0	867.0	16.35	16.29	16.28
877.4	907.4	15.78	15.79	15.80
897.6	927.6	15.46	15.47	15.48
937.9	967.9	14.82	14.80	14.73
958.1	988.1	14.44	14.37	14.27
998.4	1028.4	13.65	13.50	13.32
1018.6	1048.6	13.24	13.07	12.85
1058.9	1088.9	12.42	12.17	11.90
1079.1	1109.1	11.92	11.67	11.38
1119.4	1149.4	11.02	10.73	10.43
1139.6	1169.6	10.57	10.29	10.00
1179.9	1209.9	9.69	9.39	9.11
1200.1	1230.1	9.30	9.00	8.74

Frequency Mixer

RMS-1+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=500.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
5.0	35.0	1.13	1.11	1.12	35.0	1.58	2.27	3.21	5.0	1.41	1.24	1.12
10.0	40.0	1.10	1.05	1.07	40.0	1.57	2.27	3.08	10.0	1.41	1.25	1.13
50.4	80.4	1.03	1.07	1.15	50.4	1.83	2.63	3.67	22.4	1.72	1.50	1.40
90.8	120.8	1.04	1.07	1.11	90.8	1.82	2.59	3.59	34.7	1.51	1.41	1.30
110.9	140.9	1.02	1.08	1.13	110.9	1.78	2.54	3.46	47.0	1.56	1.37	1.22
151.3	181.3	1.05	1.08	1.13	151.3	1.82	2.60	3.58	59.3	1.52	1.32	1.17
171.5	201.5	1.01	1.07	1.11	171.5	1.83	2.60	3.58	71.6	1.51	1.33	1.19
211.8	241.8	1.09	1.14	1.19	211.8	1.83	2.57	3.50	83.9	1.56	1.36	1.23
232.0	262.0	1.09	1.14	1.18	232.0	1.88	2.65	3.61	96.3	1.53	1.37	1.24
272.3	302.3	1.09	1.14	1.17	272.3	1.91	2.68	3.65	108.6	1.56	1.39	1.26
292.5	322.5	1.12	1.16	1.20	292.5	1.90	2.64	3.56	120.9	1.55	1.39	1.26
332.8	362.8	1.12	1.16	1.21	332.8	1.95	2.71	3.64	133.2	1.59	1.39	1.26
353.0	383.0	1.12	1.16	1.20	353.0	1.99	2.76	3.71	145.5	1.57	1.39	1.25
393.3	423.3	1.18	1.21	1.25	393.3	1.98	2.71	3.60	157.8	1.59	1.39	1.25
413.5	443.5	1.16	1.21	1.25	413.5	2.05	2.80	3.73	170.1	1.58	1.41	1.26
453.8	483.8	1.18	1.23	1.28	453.8	2.14	2.90	3.83	182.4	1.60	1.42	1.27
474.0	504.0	1.21	1.25	1.30	474.0	2.13	2.86	3.77	194.7	1.60	1.44	1.29
514.3	544.3	1.20	1.24	1.28	514.3	2.15	2.89	3.79	207.0	1.60	1.42	1.29
534.5	564.5	1.23	1.28	1.33	534.5	2.17	2.91	3.80	219.3	1.58	1.40	1.27
574.8	604.8	1.29	1.32	1.36	574.8	2.20	2.90	3.76	231.6	1.57	1.39	1.27
595.0	625.0	1.29	1.33	1.37	595.0	2.27	2.98	3.86	243.9	1.56	1.39	1.26
635.4	665.4	1.39	1.43	1.47	635.4	2.36	3.07	3.93	256.3	1.57	1.40	1.27
655.5	685.5	1.46	1.48	1.52	655.5	2.38	3.07	3.90	268.6	1.59	1.42	1.27
695.9	725.9	1.57	1.58	1.62	695.9	2.45	3.14	3.95	280.9	1.58	1.42	1.28
716.0	746.0	1.68	1.70	1.73	716.0	2.46	3.15	3.95	293.2	1.59	1.42	1.30
756.4	786.4	1.89	1.88	1.88	756.4	2.54	3.23	4.02	305.5	1.58	1.42	1.31
776.5	806.5	1.96	1.95	1.95	776.5	2.58	3.27	4.08	317.8	1.59	1.42	1.29
816.9	846.9	2.21	2.20	2.21	816.9	2.63	3.33	4.13	330.1	1.57	1.41	1.29
837.0	867.0	2.30	2.29	2.28	837.0	2.68	3.37	4.16	342.4	1.57	1.42	1.29
877.4	907.4	2.44	2.44	2.44	877.4	2.69	3.36	4.12	354.7	1.57	1.41	1.30
897.6	927.6	2.59	2.60	2.61	897.6	2.68	3.32	4.08	367.0	1.58	1.42	1.31
937.9	967.9	2.73	2.73	2.73	937.9	2.74	3.37	4.11	379.3	1.58	1.42	1.32
958.1	988.1	2.84	2.83	2.84	958.1	2.76	3.38	4.10	391.6	1.58	1.43	1.33
998.4	1028.4	3.10	3.11	3.13	998.4	2.76	3.35	4.02	403.9	1.59	1.44	1.34
1018.6	1048.6	3.17	3.17	3.16	1018.6	2.80	3.38	4.05	416.3	1.58	1.44	1.33
1058.9	1088.9	3.45	3.45	3.45	1058.9	2.81	3.34	3.96	428.6	1.58	1.44	1.34
1079.1	1109.1	3.61	3.60	3.60	1079.1	2.78	3.28	3.86	440.9	1.58	1.45	1.35
1119.4	1149.4	3.69	3.67	3.65	1119.4	2.84	3.31	3.87	453.2	1.60	1.46	1.36
1139.6	1169.6	3.97	3.95	3.91	1139.6	2.88	3.34	3.88	465.5	1.61	1.47	1.38
1179.9	1209.9	3.82	3.79	3.76	1179.9	2.86	3.26	3.75	477.8	1.61	1.49	1.39
1200.1	1230.1	3.73	3.70	3.65	1200.1	2.91	3.29	3.76	490.1	1.62	1.49	1.41

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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	15	24	18	36	16	40	22	45	25	40
1	-	21	+0	30	12	36	18	41	32	47	40	43
2	103	72	51	80	51	71	51	76	52	73	62	71
3	108	71	76	73	69	76	61	81	68	81	69	78
4	109	98	86	109	82	86	85	93	87	104	88	101
5	125	99	108	99	99	87	100	102	89	99	93	100
6	111	99	105	93	101	98	76	87	94	99	96	106
7	114	105	107	115	107	103	113	79	92	99	97	103
8	122	110	107	99	105	103	93	101	79	90	93	105
9	120	110	101	107	99	100	111	102	91	66	86	94
10	130	100	112	108	114	103	102	98	102	95	72	92
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -14.00 dBm.
 LO IN: 280.01 MHz; +7.00 dBm
 IF OUT: 29.91 MHz; -20.03 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	24	34	31	47	28	52	34	55	38	52
1	-	21	+0	31	12	37	19	43	32	52	41	49
2	101	76	45	69	46	69	46	68	48	66	55	76
3	108	52	51	54	55	62	48	59	46	64	55	65
4	105	77	64	74	62	77	62	76	59	85	62	80
5	112	76	64	66	58	68	56	67	54	78	56	71
6	113	88	80	90	80	96	81	93	88	94	83	90
7	121	98	77	105	72	85	77	84	81	81	78	83
8	128	102	93	102	92	98	100	103	88	108	94	104
9	118	96	97	100	87	95	83	94	86	68	89	99
10	116	118	107	114	105	106	107	102	104	99	93	99
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250.1 MHz; -4.00 dBm.
 LO IN: 280.01 MHz; +7.00 dBm
 IF OUT: 29.91 MHz; -10.12 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.

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