

Frequency Mixer

MWJ-ED16098/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=10MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP-3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+23dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+14	+17	+20			+14	+17	+20			+14	+17	+20
10.1	20.1	6.98	6.88	6.82	10.1	20.1	29.53	32.65	36.03	10.1	20.1	0.84	0.30	0.18
17.1	27.1	7.00	6.89	6.82	17.1	27.1	29.98	33.65	35.97	17.1	27.1	0.82	0.36	0.13
27.1	37.1	7.13	7.02	6.95	27.1	37.1	30.65	33.64	35.53	27.1	37.1	0.86	0.39	0.19
33.1	43.1	7.22	7.11	7.04	33.1	43.1	30.84	33.40	35.32	33.1	43.1	0.84	0.36	0.19
40.1	50.1	7.30	7.19	7.13	40.1	50.1	31.03	33.46	35.53	40.1	50.1	0.85	0.38	0.17
48.1	58.1	7.37	7.25	7.18	48.1	58.1	30.84	33.28	35.68	48.1	58.1	0.98	0.46	0.22
56.1	66.1	7.46	7.35	7.27	56.1	66.1	30.27	32.78	35.19	56.1	66.1	1.23	0.54	0.27
63.1	73.1	7.59	7.48	7.40	63.1	73.1	30.07	32.61	34.80	63.1	73.1	1.38	0.63	0.31
71.1	81.1	7.73	7.61	7.54	71.1	81.1	29.54	32.26	34.54	71.1	81.1	1.47	0.69	0.34
79.1	89.1	7.83	7.71	7.63	79.1	89.1	29.61	31.84	33.91	79.1	89.1	1.58	0.72	0.33
86.1	96.1	7.86	7.73	7.64	86.1	96.1	29.21	31.66	34.12	86.1	96.1	1.72	0.80	0.39
94.1	104.1	7.96	7.84	7.77	94.1	104.1	28.63	31.11	34.81	94.1	104.1	1.97	0.95	0.43
102.1	112.1	8.14	8.02	7.92	102.1	112.1	28.63	30.87	32.80	102.1	112.1	2.05	1.00	0.48
110.1	120.1	8.22	8.07	7.97	110.1	120.1	27.88	30.26	32.27	110.1	120.1	1.97	0.94	0.48
117.1	127.1	8.24	8.08	7.97	117.1	127.1	27.17	29.78	32.11	117.1	127.1	1.90	0.96	0.47
125.1	135.1	8.28	8.13	8.10	125.1	135.1	26.70	29.34	32.14	125.1	135.1	1.93	0.99	0.48
133.1	143.1	8.41	8.28	8.24	133.1	143.1	27.40	30.25	34.49	133.1	143.1	2.13	1.06	0.48
140.1	150.1	8.54	8.40	8.31	140.1	150.1	27.60	29.71	31.26	140.1	150.1	2.45	1.28	0.61
148.1	158.1	8.60	8.43	8.32	148.1	158.1	26.89	28.83	30.48	148.1	158.1	2.78	1.49	0.74
156.1	166.1	8.60	8.40	8.26	156.1	166.1	26.18	28.57	30.38	156.1	166.1	2.87	1.63	0.85
163.1	173.1	8.66	8.44	8.34	163.1	173.1	24.98	27.57	29.80	163.1	173.1	2.99	1.80	0.98
171.1	181.1	8.81	8.59	8.52	171.1	181.1	23.94	26.56	30.04	171.1	181.1	3.24	2.02	1.10
179.1	189.1	8.95	8.72	8.57	179.1	189.1	23.63	26.25	28.75	179.1	189.1	3.52	2.23	1.21
186.1	196.1	9.02	8.79	8.63	186.1	196.1	24.06	26.61	28.97	186.1	196.1	3.75	2.37	1.32
202.1	212.1	9.14	8.88	8.74	202.1	212.1	25.76	28.87	31.65	202.1	212.1	3.50	2.16	1.13
210.1	220.1	9.20	8.91	8.65	210.1	220.1	25.10	28.08	31.84	210.1	220.1	3.35	2.03	1.05
217.1	227.1	9.25	8.93	8.68	217.1	227.1	24.31	26.87	29.39	217.1	227.1	3.48	2.14	1.13
225.1	235.1	9.27	8.93	8.68	225.1	235.1	23.91	26.28	28.62	225.1	235.1	3.84	2.43	1.34
233.1	243.1	9.32	8.97	8.70	233.1	243.1	23.61	26.24	28.67	233.1	243.1	4.16	2.71	1.54
240.1	250.1	9.43	9.06	8.78	240.1	250.1	23.15	26.00	28.60	240.1	250.1	4.22	2.75	1.60
248.1	258.1	9.58	9.19	8.83	248.1	258.1	22.50	25.09	26.98	248.1	258.1	4.06	2.67	1.58
256.1	266.1	9.68	9.28	8.96	256.1	266.1	21.77	24.02	26.41	256.1	266.1	4.07	2.69	1.62
263.1	273.1	9.74	9.34	9.04	263.1	273.1	21.32	23.33	25.37	263.1	273.1	4.30	2.88	1.79
271.1	281.1	9.85	9.44	9.14	271.1	281.1	20.83	22.67	24.61	271.1	281.1	4.62	3.15	2.00
279.1	289.1	10.03	9.61	9.30	279.1	289.1	20.25	21.96	23.79	279.1	289.1	4.83	3.31	2.14
286.1	296.1	10.22	9.78	9.43	286.1	296.1	19.74	21.43	23.89	286.1	296.1	4.77	3.28	2.13
294.1	304.1	10.45	9.99	9.64	294.1	304.1	19.27	20.97	23.04	294.1	304.1	4.47	3.06	2.00
302.1	312.1	10.68	10.22	9.88	302.1	312.1	19.01	20.81	23.01	302.1	312.1	4.37	2.97	1.94
310.1	320.1	10.93	10.47	10.14	310.1	320.1	18.95	21.00	23.72	310.1	320.1	4.51	3.03	1.97

Frequency Mixer

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=45.1MHz (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)=80.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+17			+17			+17
35.1	10.0	7.10	10.0	20.1	7.30	70.0	10.1	7.58
34.1	11.0	7.12	17.0	27.1	6.71	69.0	11.1	7.60
32.6	12.5	7.10	25.0	35.1	6.86	67.0	13.1	7.62
31.6	13.5	7.13	33.0	43.1	6.87	66.0	14.1	7.59
30.1	15.0	7.12	41.0	51.1	6.96	64.0	16.1	7.59
29.1	16.0	7.07	49.0	59.1	7.02	63.0	17.1	7.59
27.6	17.5	7.09	57.0	67.1	7.12	61.0	19.1	7.56
26.6	18.5	7.06	65.0	75.1	7.16	60.0	20.1	7.59
25.1	20.0	7.12	73.0	83.1	7.11	58.0	22.1	7.60
23.6	21.5	7.10	81.0	91.1	7.46	57.0	23.1	7.71
22.6	22.5	7.14	89.0	99.1	7.46	55.0	25.1	7.70
21.1	24.0	7.14	97.0	107.1	7.58	54.0	26.1	7.69
20.1	25.0	7.13	105.0	115.1	7.83	52.0	28.1	7.69
18.6	26.5	7.12	113.0	123.1	7.69	50.0	30.1	7.70
17.6	27.5	7.14	121.0	131.1	7.91	49.0	31.1	7.69
16.1	29.0	7.23	129.0	139.1	8.15	47.0	33.1	7.68
14.6	30.5	7.25	137.0	147.1	8.24	46.0	34.1	7.66
13.6	31.5	7.31	145.0	155.1	8.32	44.0	36.1	7.67
12.1	33.0	7.34	153.0	163.1	8.20	43.0	37.1	7.66
11.1	34.0	7.46	161.0	171.1	8.34	41.0	39.1	7.62
10.0	55.1	7.61	168.0	178.1	8.43	40.0	40.1	7.64
20.0	65.1	7.44	176.0	186.1	8.51	38.0	42.1	7.67
35.0	80.1	7.47	184.0	194.1	8.66	37.0	43.1	7.66
50.0	95.1	7.64	192.0	202.1	8.78	35.0	45.1	7.63
65.0	110.1	7.87	200.0	210.1	8.71	34.0	46.1	7.67
80.0	125.1	7.88	208.0	218.1	8.69	32.0	48.1	7.70
90.0	135.1	8.07	216.0	226.1	8.66	30.0	50.1	7.65
105.0	150.1	8.50	224.0	234.1	8.61	29.0	51.1	7.65
120.0	165.1	8.65	232.0	242.1	8.82	27.0	53.1	7.69
135.0	180.1	8.76	240.0	250.1	8.90	26.0	54.1	7.68
150.0	195.1	9.05	248.0	258.1	8.93	24.0	56.1	7.69
165.0	210.1	9.10	256.0	266.1	9.13	23.0	57.1	7.73
175.0	220.1	9.11	264.0	274.1	9.33	21.0	59.1	7.79
190.0	235.1	9.00	272.0	282.1	9.44	20.0	60.1	7.83
205.0	250.1	8.91	280.0	290.1	9.69	18.0	62.1	7.79
220.0	265.1	8.97	288.0	298.1	9.56	17.0	63.1	7.83
235.0	280.1	9.22	296.0	306.1	9.70	15.0	65.1	7.93
245.0	290.1	9.33	304.0	314.1	9.92	14.0	66.1	8.02
260.0	305.1	9.27	312.0	322.1	10.07	12.0	68.1	8.07
275.0	320.1	9.42	320.0	330.1	10.46	10.0	70.1	8.28

Frequency Mixer

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+14	+17	+20	+14	+17	+20
20.1	50.44	50.53	51.15	52.21	51.93	52.73
27.1	49.35	49.50	49.62	50.56	50.51	50.84
37.1	49.03	48.97	49.27	50.01	49.88	50.02
43.1	49.42	49.30	49.61	50.36	50.02	50.26
50.1	49.54	49.48	49.74	50.07	49.94	50.01
58.1	50.32	50.31	50.06	50.79	50.57	50.29
66.1	51.51	51.15	51.07	51.60	51.85	51.48
73.1	52.90	52.61	52.43	52.45	52.54	52.32
81.1	54.36	53.83	53.73	53.48	53.34	53.19
89.1	54.71	54.52	53.91	54.39	54.34	53.91
96.1	54.70	54.42	54.02	54.43	54.25	54.13
104.1	54.80	54.20	53.67	54.41	54.01	53.83
112.1	54.37	53.96	53.44	54.73	54.54	53.97
120.1	54.50	53.69	53.24	54.90	54.37	54.07
127.1	54.17	53.58	53.05	54.41	53.71	53.65
135.1	53.59	52.49	51.96	53.98	53.36	52.90
143.1	53.10	52.09	51.43	53.52	52.70	51.97
150.1	53.55	52.49	51.69	53.67	52.86	51.93
158.1	55.44	54.06	53.29	55.98	54.53	53.82
166.1	57.72	56.40	55.33	58.22	56.58	55.70
173.1	59.87	58.30	57.16	60.55	58.83	57.53
181.1	62.54	60.65	59.22	65.36	62.49	60.89
189.1	64.43	63.04	61.30	68.52	64.71	63.28
196.1	65.56	64.29	63.07	71.73	69.58	67.17
212.1	64.16	63.50	63.28	72.20	71.12	70.22
220.1	63.66	63.07	63.04	66.12	66.74	66.15
227.1	63.05	62.73	63.19	65.48	65.87	65.07
235.1	63.45	62.97	63.35	65.24	65.20	65.26
243.1	63.11	62.70	63.05	64.24	64.01	63.82
250.1	63.17	63.13	63.60	63.66	63.23	62.92
258.1	63.37	63.78	64.43	61.88	62.50	62.53
266.1	63.23	63.51	64.24	62.88	62.64	62.05
273.1	62.28	62.78	63.66	61.88	61.62	61.49
281.1	60.79	61.52	62.20	61.64	61.63	61.23
289.1	60.05	60.40	61.11	62.30	61.29	60.50
296.1	59.31	60.13	60.75	61.36	60.17	59.59
304.1	58.92	59.52	60.12	61.06	59.81	59.18
312.1	57.79	58.28	58.93	60.82	59.79	59.27
320.1	56.63	56.96	57.44	61.00	59.98	59.29

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+14	+17	+20
10.1	20.1	38.32	39.81	38.25
17.1	27.1	38.06	39.05	37.95
27.1	37.1	38.32	39.35	39.36
33.1	43.1	38.96	40.35	40.74
40.1	50.1	39.64	41.27	42.73
48.1	58.1	39.57	40.52	42.66
56.1	66.1	37.82	38.93	39.31
63.1	73.1	37.77	38.48	38.73
71.1	81.1	38.83	40.01	40.86
79.1	89.1	40.69	41.25	43.70
86.1	96.1	40.09	41.83	44.16
94.1	104.1	39.96	41.42	42.71
102.1	112.1	38.28	38.87	38.95
110.1	120.1	38.57	39.43	40.34
117.1	127.1	40.00	41.03	42.64
125.1	135.1	40.84	42.00	43.88
133.1	143.1	40.32	41.31	42.74
140.1	150.1	38.77	39.55	39.70
148.1	158.1	37.38	37.95	38.11
156.1	166.1	38.02	38.58	39.65
163.1	173.1	38.64	39.76	41.26
171.1	181.1	39.22	40.64	43.45
179.1	189.1	38.90	39.70	41.08
186.1	196.1	38.44	38.81	39.47
202.1	212.1	39.92	41.61	43.01
210.1	220.1	42.48	43.37	46.12
217.1	227.1	42.59	44.29	47.62
225.1	235.1	42.35	43.49	44.91
233.1	243.1	40.94	40.41	40.13
240.1	250.1	41.60	42.07	42.39
248.1	258.1	44.16	45.88	47.65
256.1	266.1	47.81	50.22	51.67
263.1	273.1	47.60	49.91	52.72
271.1	281.1	44.81	44.73	48.46
279.1	289.1	44.15	42.83	43.88
286.1	296.1	44.57	45.04	47.33
294.1	304.1	44.97	46.33	48.40
302.1	312.1	45.99	46.72	49.20
310.1	320.1	45.34	45.56	46.86

Frequency Mixer

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=90.1MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+14	+17	+20		+14	+17	+20		+14	+17	+20
10.1	20.1	1.29	1.36	1.45	20.1	1.51	1.51	1.52	10.1	1.50	1.58	1.84
17.1	27.1	1.36	1.40	1.40	27.1	1.80	1.80	1.78	11.1	1.42	1.52	1.55
27.1	37.1	1.48	1.54	1.59	37.1	2.18	2.19	2.16	13.1	1.21	1.44	1.63
33.1	43.1	1.54	1.57	1.61	43.1	2.41	2.42	2.38	15.1	1.50	1.52	1.65
40.1	50.1	1.64	1.68	1.72	50.1	2.67	2.68	2.68	17.1	1.63	1.66	1.71
48.1	58.1	1.73	1.78	1.83	58.1	2.98	2.98	2.99	18.1	1.44	1.64	1.70
56.1	66.1	1.90	1.95	1.99	66.1	3.29	3.29	3.29	20.1	1.72	1.84	1.61
63.1	73.1	1.87	1.93	1.97	73.1	3.54	3.54	3.54	22.1	1.63	1.74	1.61
71.1	81.1	1.92	1.97	2.03	81.1	3.81	3.82	3.82	24.1	1.70	1.66	1.87
79.1	89.1	1.97	2.01	2.06	89.1	4.08	4.08	4.08	26.1	1.59	1.74	1.76
86.1	96.1	2.00	2.05	2.11	96.1	4.29	4.30	4.30	27.1	1.48	1.66	1.74
94.1	104.1	2.03	2.08	2.12	104.1	4.51	4.51	4.51	29.1	1.69	1.65	1.86
102.1	112.1	2.05	2.10	2.14	112.1	4.71	4.71	4.72	31.1	1.66	1.78	1.83
110.1	120.1	2.12	2.16	2.20	120.1	4.91	4.91	4.92	33.1	1.71	1.78	1.86
117.1	127.1	2.17	2.22	2.27	127.1	5.04	5.05	5.04	35.1	1.73	1.81	1.77
125.1	135.1	2.22	2.26	2.30	135.1	5.18	5.19	5.19	36.1	1.78	1.77	1.91
133.1	143.1	2.22	2.25	2.26	143.1	5.31	5.31	5.31	38.1	1.73	1.84	1.87
140.1	150.1	2.24	2.24	2.26	150.1	5.42	5.41	5.41	40.1	1.80	1.80	1.85
148.1	158.1	2.27	2.27	2.28	158.1	5.50	5.50	5.50	42.1	1.80	1.91	1.93
156.1	166.1	2.30	2.28	2.29	166.1	5.57	5.57	5.57	44.1	1.77	1.84	1.98
163.1	173.1	2.29	2.28	2.28	173.1	5.63	5.63	5.63	45.1	1.84	1.79	2.00
171.1	181.1	2.30	2.26	2.24	181.1	5.71	5.70	5.70	47.1	1.72	1.92	1.92
179.1	189.1	2.26	2.20	2.15	189.1	5.77	5.77	5.77	49.1	1.84	1.85	1.87
186.1	196.1	2.26	2.16	2.09	196.1	5.83	5.83	5.83	51.1	1.79	1.84	1.90
202.1	212.1	2.30	2.18	2.08	212.1	5.91	5.90	5.90	54.1	1.73	1.76	1.92
210.1	220.1	2.37	2.25	2.14	220.1	5.93	5.93	5.93	56.1	1.82	1.83	1.96
217.1	227.1	2.49	2.36	2.25	227.1	5.94	5.94	5.94	58.1	1.82	1.90	1.88
225.1	235.1	2.67	2.53	2.41	235.1	5.92	5.92	5.93	60.1	1.83	1.83	1.89
233.1	243.1	2.85	2.69	2.56	243.1	5.92	5.92	5.92	62.1	1.78	1.89	2.05
240.1	250.1	3.04	2.86	2.70	250.1	5.91	5.90	5.91	63.1	1.78	1.81	1.91
248.1	258.1	3.23	3.03	2.85	258.1	5.87	5.88	5.88	65.1	1.83	1.80	1.98
256.1	266.1	3.36	3.15	2.95	266.1	5.84	5.85	5.85	67.1	1.82	1.89	1.94
263.1	273.1	3.46	3.22	3.00	273.1	5.79	5.80	5.79	69.1	1.87	1.94	1.97
271.1	281.1	3.55	3.28	3.03	281.1	5.75	5.75	5.74	71.1	1.99	2.00	2.04
279.1	289.1	3.60	3.31	3.06	289.1	5.69	5.69	5.69	72.1	1.95	2.03	2.05
286.1	296.1	3.63	3.34	3.08	296.1	5.65	5.65	5.65	74.1	1.97	2.04	2.05
294.1	304.1	3.67	3.37	3.12	304.1	5.59	5.58	5.57	76.1	1.98	1.97	2.08
302.1	312.1	3.76	3.47	3.22	312.1	5.52	5.52	5.51	78.1	1.92	2.03	2.04
310.1	320.1	3.95	3.65	3.40	320.1	5.46	5.46	5.45	80.1	2.00	2.00	2.07

Frequency Mixer

Harmonics Tables

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RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	---	---	25.75	22.24	25.45	34.04	30.82	42.17	39.56	48.66	49.94	51.18
1	---	34.12	---	49.49	12.79	47.94	17.67	47.31	20.67	55.31	27.94	53.70
2	112.98	56.75	65.18	62.97	55.17	49.88	48.00	49.03	49.35	53.86	55.28	54.83
3	117.93	95.88	76.71	83.57	70.81	77.76	67.17	74.65	64.89	71.06	65.78	74.28
4	117.88	96.90	109.86	92.16	98.79	95.96	99.10	107.87	91.22	93.60	88.55	93.89
5	117.75	110.74	102.93	109.34	103.57	110.71	104.13	111.29	99.32	114.85	101.66	113.37
6	117.17	101.07	114.71	98.95	107.72	104.95	114.09	104.31	108.22	103.92	110.76	99.73
7	115.63	88.65	93.16	91.09	107.37	99.63	95.93	101.62	91.99	109.75	96.92	106.61
8	117.41	65.79	71.09	64.90	74.62	67.17	77.83	70.80	83.60	76.70	95.63	73.95
9	116.12	55.28	53.85	49.35	49.03	48.00	49.88	55.17	62.96	65.18	56.74	48.76
10	119.43	27.94	55.30	20.67	47.30	17.67	47.94	12.79	49.52	-0.04	34.10	0.78
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 45 MHz; 0 dBm.
LO IN: 55 MHz; +17.00 dBm
IF OUT: 10 MHz; -7.06 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	---	---	31.26	34.10	33.81	35.86	32.90	38.58	42.70	42.85	41.73	45.72
1	---	34.60	---	49.42	12.94	46.36	18.37	43.40	21.94	45.42	30.17	46.44
2	100.72	45.24	52.96	52.26	46.50	39.70	38.49	39.60	40.95	46.16	48.68	47.27
3	102.13	65.87	55.59	63.65	50.73	58.39	50.63	54.97	46.79	51.01	47.32	55.21
4	114.28	68.56	68.62	74.64	76.49	73.52	75.03	72.95	68.36	65.42	64.10	65.27
5	115.04	77.89	72.76	78.26	80.77	79.24	80.11	86.55	75.59	93.41	74.80	90.52
6	115.37	74.77	93.36	75.56	86.71	80.11	79.31	80.83	78.26	72.78	77.99	71.25
7	116.80	64.11	65.41	68.35	72.96	74.95	73.51	76.50	74.66	68.61	68.58	66.38
8	115.60	47.33	51.01	46.79	54.97	50.63	58.39	50.73	63.66	55.57	65.85	65.72
9	116.46	48.66	46.14	40.95	39.60	38.49	39.70	46.50	52.25	52.95	45.23	38.19
10	116.96	30.17	45.41	21.94	43.40	18.37	46.36	12.94	49.45	-0.09	34.58	0.72
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 45 MHz; 10 dBm.
LO IN: 55 MHz; +17.00 dBm
IF OUT: 10 MHz; 2.86 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 represents the Harmonics level of the RF Input Signal to the mixer