

Frequency Mixer

JCIR-ED12838/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=36MHz (dB)		
		@LO (dBm)		
		+10	+13	+16
174.1	210.1	12.50	10.95	10.27
204.1	240.1	9.39	7.99	7.40
234.1	270.1	8.91	7.78	7.33
264.1	300.1	8.65	7.81	7.48
294.1	330.1	8.36	7.68	7.38
324.1	360.1	8.17	7.58	7.33
354.1	390.1	8.19	7.70	7.46
384.1	420.1	8.10	7.64	7.41
414.1	450.1	8.02	7.58	7.35
444.1	480.1	8.10	7.67	7.43
474.1	510.1	8.08	7.67	7.40
504.1	540.1	8.00	7.62	7.36
534.1	570.1	8.07	7.70	7.47
564.1	600.1	8.09	7.68	7.46
594.1	630.1	8.06	7.61	7.37
624.1	660.1	8.22	7.74	7.46
654.1	690.1	8.28	7.80	7.49
684.1	720.1	8.28	7.83	7.49
714.1	750.1	8.36	7.95	7.63
744.1	780.1	8.41	8.00	7.69
774.1	810.1	8.39	7.98	7.68
804.1	840.1	8.42	8.03	7.75
834.1	870.1	8.41	8.02	7.79
864.1	900.1	8.45	8.00	7.76
894.1	930.1	8.60	8.08	7.85
924.1	960.1	8.75	8.16	7.90
944.1	980.1	8.85	8.21	7.94
974.1	1010.1	9.04	8.36	8.03
994.1	1030.1	9.15	8.48	8.10
1024.1	1060.1	9.32	8.61	8.22
1044.1	1080.1	9.52	8.78	8.35
1074.1	1110.1	9.79	9.04	8.56
1094.1	1130.1	9.91	9.18	8.68
1124.1	1160.1	10.12	9.42	8.93
1144.1	1180.1	10.33	9.64	9.15
1174.1	1210.1	10.54	9.85	9.35
1194.1	1230.1	10.66	10.02	9.48
1224.1	1260.1	10.94	10.34	9.83
1244.1	1280.1	11.10	10.50	10.00
1274.1	1310.1	11.16	10.61	10.10

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+10	+13	+16
174.1	210.1	9.48	15.13	16.80
204.1	240.1	11.22	14.99	19.51
234.1	270.1	13.26	17.06	21.83
264.1	300.1	13.99	19.74	21.76
294.1	330.1	17.77	21.66	21.81
324.1	360.1	18.59	21.71	21.83
354.1	390.1	17.97	21.65	21.77
384.1	420.1	18.15	21.08	21.79
414.1	450.1	17.34	20.93	21.82
444.1	480.1	16.96	19.72	21.78
474.1	510.1	16.40	18.94	21.80
504.1	540.1	16.18	18.63	21.76
534.1	570.1	16.91	19.91	21.77
564.1	600.1	15.81	20.42	21.77
594.1	630.1	15.43	19.56	21.82
624.1	660.1	15.56	19.51	21.77
654.1	690.1	15.43	19.06	21.76
684.1	720.1	15.44	18.88	21.76
714.1	750.1	17.12	18.86	21.69
744.1	780.1	18.64	20.84	21.66
774.1	810.1	19.57	21.51	21.66
804.1	840.1	21.29	21.48	21.62
834.1	870.1	21.29	21.49	21.61
864.1	900.1	21.28	21.50	21.33
894.1	930.1	21.20	21.27	20.03
924.1	960.1	21.12	21.42	18.78
944.1	980.1	21.07	21.40	18.83
974.1	1010.1	20.98	21.32	20.32
994.1	1030.1	20.92	21.26	20.16
1024.1	1060.1	20.84	20.76	18.59
1044.1	1080.1	19.88	20.10	16.70
1074.1	1110.1	18.73	20.98	17.25
1094.1	1130.1	18.88	20.51	21.05
1124.1	1160.1	18.88	19.63	21.04
1144.1	1180.1	19.07	19.66	20.92
1174.1	1210.1	18.29	20.25	20.56
1194.1	1230.1	18.41	20.35	20.76
1224.1	1260.1	18.68	19.88	20.59
1244.1	1280.1	18.36	19.71	20.46
1274.1	1310.1	18.53	19.25	20.45

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+2dBm (dB)		
		@LO (dBm)		
		+10	+13	+16
174.1	210.1	-0.56	-0.04	0.00
204.1	240.1	-0.39	0.01	0.02
234.1	270.1	-0.19	0.00	0.00
264.1	300.1	-0.06	0.00	-0.02
294.1	330.1	0.02	-0.01	-0.02
324.1	360.1	0.01	-0.03	-0.03
354.1	390.1	-0.02	-0.03	-0.02
384.1	420.1	-0.03	-0.04	-0.02
414.1	450.1	-0.04	-0.03	-0.02
444.1	480.1	-0.05	-0.03	-0.01
474.1	510.1	-0.04	-0.03	-0.01
504.1	540.1	-0.03	-0.03	-0.01
534.1	570.1	-0.03	-0.02	-0.01
564.1	600.1	-0.03	-0.01	-0.01
594.1	630.1	-0.04	0.00	0.00
624.1	660.1	-0.06	-0.01	0.01
654.1	690.1	-0.07	-0.02	0.01
684.1	720.1	-0.07	-0.04	0.01
714.1	750.1	-0.06	-0.04	0.00
744.1	780.1	-0.06	-0.04	-0.01
774.1	810.1	-0.04	-0.03	0.00
804.1	840.1	-0.01	-0.01	0.01
834.1	870.1	0.02	0.01	0.01
864.1	900.1	0.03	0.02	0.03
894.1	930.1	0.03	0.04	0.04
924.1	960.1	0.00	0.04	0.04
944.1	980.1	-0.01	0.05	0.05
974.1	1010.1	-0.03	0.04	0.07
994.1	1030.1	-0.04	0.03	0.08
1024.1	1060.1	-0.04	0.04	0.10
1044.1	1080.1	-0.05	0.05	0.10
1074.1	1110.1	-0.07	0.03	0.09
1094.1	1130.1	-0.08	0.01	0.06
1124.1	1160.1	-0.08	-0.01	0.03
1144.1	1180.1	-0.10	-0.02	0.01
1174.1	1210.1	-0.13	-0.04	0.00
1194.1	1230.1	-0.13	-0.08	-0.02
1224.1	1260.1	-0.12	-0.09	-0.05
1244.1	1280.1	-0.12	-0.09	-0.05
1274.1	1310.1	-0.11	-0.10	-0.05

REV. X2

JCIR-ED12838/1

101012

Page 1 of 4



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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+10	+13	+16	+10	+13	+16
210.1	72.50	66.27	63.48	44.83	44.31	43.55
240.1	72.27	66.47	63.54	44.61	44.12	43.45
270.1	74.19	67.93	64.46	43.40	42.80	42.21
300.1	70.41	65.63	64.40	42.15	41.62	41.14
330.1	71.29	68.02	64.65	41.28	40.94	40.53
360.1	66.46	64.49	62.62	40.43	40.26	40.04
390.1	62.33	63.99	63.04	39.62	39.53	39.40
420.1	64.63	63.56	62.07	39.23	39.24	39.15
450.1	64.52	63.86	62.49	38.83	39.02	39.05
480.1	63.09	67.59	68.70	38.58	38.96	39.06
510.1	59.20	61.43	63.66	37.98	38.44	38.94
540.1	57.52	60.00	60.91	37.26	37.88	38.38
570.1	55.53	57.59	58.38	36.34	37.08	37.61
600.1	54.96	58.26	60.83	35.66	36.40	37.07
630.1	54.18	57.26	60.70	35.15	35.93	36.68
660.1	54.26	58.00	61.39	34.66	35.54	36.38
690.1	52.97	57.15	61.65	34.13	35.06	35.96
720.1	52.46	56.72	62.22	33.76	34.83	35.81
750.1	51.20	55.10	60.03	33.37	34.57	35.59
780.1	49.94	53.40	57.14	32.91	34.21	35.36
810.1	49.07	51.71	54.74	32.69	34.15	35.46
840.1	48.16	50.39	53.19	32.54	34.10	35.55
870.1	47.51	49.48	51.76	32.15	33.80	35.40
900.1	47.50	49.48	51.48	32.04	33.74	35.46
930.1	47.19	49.31	51.21	31.98	33.70	35.53
960.1	46.50	48.74	50.33	31.94	33.62	35.54
980.1	46.16	48.40	50.19	31.90	33.58	35.52
1010.1	45.36	47.53	49.19	32.15	33.83	35.80
1030.1	44.55	46.51	47.98	32.23	33.96	35.88
1060.1	44.30	46.30	47.64	32.23	34.07	36.00
1080.1	43.54	45.36	46.33	32.32	34.34	36.37
1110.1	42.16	43.68	44.25	32.42	34.60	36.88
1130.1	41.30	42.59	42.96	32.27	34.41	36.68
1160.1	40.01	40.99	40.95	31.55	33.52	35.44
1180.1	39.36	40.14	40.02	31.13	33.00	34.81
1210.1	38.75	39.28	39.02	31.07	32.85	34.63
1230.1	38.25	38.60	38.23	31.05	32.80	34.53
1260.1	37.53	37.92	37.73	30.98	32.71	34.41
1280.1	37.08	37.21	37.11	31.01	32.73	34.46
1310.1	36.11	36.13	36.05	31.04	32.75	34.46

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
174.1	210.1	28.83	28.97	29.08
204.1	240.1	28.41	28.43	28.38
234.1	270.1	27.64	27.65	27.64
264.1	300.1	27.37	27.25	27.15
294.1	330.1	27.19	27.00	26.89
324.1	360.1	26.93	26.74	26.63
354.1	390.1	26.76	26.59	26.52
384.1	420.1	26.64	26.44	26.32
414.1	450.1	26.63	26.38	26.19
444.1	480.1	26.83	26.52	26.26
474.1	510.1	27.13	26.83	26.58
504.1	540.1	27.13	26.87	26.68
534.1	570.1	27.16	26.94	26.81
564.1	600.1	26.91	26.82	26.78
594.1	630.1	26.35	26.39	26.42
624.1	660.1	25.73	25.90	26.02
654.1	690.1	24.97	25.09	25.26
684.1	720.1	24.11	24.15	24.15
714.1	750.1	23.14	23.15	23.09
744.1	780.1	22.14	22.12	22.04
774.1	810.1	21.24	21.21	21.10
804.1	840.1	20.47	20.38	20.30
834.1	870.1	19.70	19.59	19.52
864.1	900.1	19.00	18.86	18.83
894.1	930.1	18.49	18.31	18.28
924.1	960.1	18.04	17.93	17.87
944.1	980.1	17.76	17.70	17.64
974.1	1010.1	17.42	17.46	17.47
994.1	1030.1	17.16	17.22	17.32
1024.1	1060.1	16.90	17.03	17.26
1044.1	1080.1	16.64	16.82	17.11
1074.1	1110.1	16.42	16.58	16.86
1094.1	1130.1	16.27	16.43	16.63
1124.1	1160.1	16.20	16.36	16.51
1144.1	1180.1	16.17	16.32	16.50
1174.1	1210.1	16.15	16.28	16.48
1194.1	1230.1	16.14	16.25	16.44
1224.1	1260.1	16.15	16.27	16.45
1244.1	1280.1	16.22	16.35	16.55
1274.1	1310.1	16.32	16.50	16.72

Frequency Mixer

JCIR-ED12838/1

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=894MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+10	+13	+16		+10	+13	+16		+10	+13	+16
174.1	210.1	1.65	1.90	2.12	210.1	2.49	3.36	4.26	10.0	1.54	1.40	1.30
204.1	240.1	1.68	1.95	2.17	240.1	2.43	3.21	3.99	30.0	1.10	1.11	1.12
234.1	270.1	1.75	2.01	2.21	270.1	2.36	3.05	3.71	50.0	1.05	1.05	1.06
264.1	300.1	1.84	2.07	2.24	300.1	2.37	2.99	3.56	70.0	2.57	2.34	2.18
294.1	330.1	1.89	2.10	2.24	330.1	2.30	2.84	3.33	90.0	1.70	1.67	1.66
324.1	360.1	1.95	2.14	2.27	360.1	2.24	2.71	3.13	110.0	1.84	1.68	1.61
354.1	390.1	1.99	2.15	2.27	390.1	2.20	2.62	2.98	130.0	1.90	1.71	1.61
384.1	420.1	2.00	2.14	2.24	420.1	2.13	2.49	2.80	150.0	1.95	1.74	1.63
414.1	450.1	2.03	2.16	2.25	450.1	2.06	2.36	2.62	170.0	1.97	1.76	1.64
444.1	480.1	2.03	2.15	2.24	480.1	2.01	2.27	2.49	190.0	1.97	1.75	1.63
474.1	510.1	2.01	2.12	2.20	510.1	1.93	2.16	2.34	210.0	2.00	1.77	1.63
504.1	540.1	2.01	2.11	2.19	540.1	1.86	2.05	2.21	230.0	2.29	2.08	1.97
534.1	570.1	2.02	2.11	2.18	570.1	1.81	1.96	2.09	250.0	2.19	1.97	1.86
564.1	600.1	2.02	2.10	2.18	600.1	1.74	1.87	1.97	270.0	2.18	1.96	1.85
594.1	630.1	2.04	2.11	2.18	630.1	1.68	1.78	1.87	290.0	2.18	1.96	1.85
624.1	660.1	2.06	2.12	2.19	660.1	1.62	1.71	1.78	310.0	2.20	1.98	1.86
654.1	690.1	2.08	2.14	2.20	690.1	1.57	1.63	1.69	330.0	2.21	1.98	1.86
684.1	720.1	2.11	2.16	2.21	720.1	1.51	1.56	1.60	350.0	2.25	2.02	1.89
714.1	750.1	2.18	2.22	2.26	750.1	1.45	1.49	1.51	370.0	2.26	2.03	1.90
744.1	780.1	2.25	2.28	2.32	780.1	1.41	1.43	1.44	390.0	2.27	2.04	1.91
774.1	810.1	2.32	2.36	2.40	810.1	1.36	1.37	1.38	410.0	2.30	2.06	1.92
804.1	840.1	2.42	2.46	2.50	840.1	1.33	1.33	1.33	430.0	2.30	2.06	1.92
834.1	870.1	2.52	2.56	2.60	870.1	1.31	1.30	1.29	450.0	2.34	2.09	1.95
864.1	900.1	2.62	2.66	2.69	900.1	1.30	1.29	1.28	470.0	2.32	2.08	1.94
894.1	930.1	2.76	2.78	2.81	930.1	1.30	1.29	1.28	490.0	2.33	2.08	1.94
924.1	960.1	2.89	2.89	2.92	960.1	1.32	1.31	1.30	510.0	2.36	2.11	1.96
944.1	980.1	2.98	2.96	2.99	980.1	1.33	1.33	1.32	530.0	2.36	2.11	1.96
974.1	1010.1	3.14	3.10	3.11	1010.1	1.36	1.37	1.37	550.0	2.36	2.10	1.96
994.1	1030.1	3.23	3.19	3.19	1030.1	1.38	1.40	1.40	570.0	2.34	2.08	1.94
1024.1	1060.1	3.36	3.30	3.29	1060.1	1.42	1.45	1.46	590.0	2.34	2.09	1.95
1044.1	1080.1	3.48	3.40	3.38	1080.1	1.46	1.49	1.51	610.0	2.36	2.10	1.95
1074.1	1110.1	3.65	3.55	3.50	1110.1	1.51	1.54	1.57	630.0	2.32	2.07	1.93
1094.1	1130.1	3.73	3.63	3.56	1130.1	1.54	1.59	1.62	650.0	2.30	2.05	1.92
1124.1	1160.1	3.84	3.74	3.66	1160.1	1.60	1.65	1.69	670.0	2.26	2.01	1.88
1144.1	1180.1	3.92	3.82	3.73	1180.1	1.65	1.70	1.74	690.0	2.24	2.00	1.87
1174.1	1210.1	4.06	3.96	3.87	1210.1	1.72	1.78	1.83	710.0	2.22	1.98	1.86
1194.1	1230.1	4.12	4.03	3.94	1230.1	1.76	1.83	1.88	730.0	2.14	1.92	1.80
1224.1	1260.1	4.26	4.17	4.09	1260.1	1.83	1.91	1.97	760.0	2.04	1.83	1.73
1244.1	1280.1	4.39	4.31	4.23	1280.1	1.88	1.96	2.03	780.0	1.99	1.79	1.70
1274.1	1310.1	4.56	4.50	4.41	1310.1	1.95	2.05	2.12	810.0	1.88	1.69	1.62

REV. X2

JCIR-ED12838/1

101012

Page 3 of 4



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Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	1	27	18	25	7	31	19	38	28	42
1	-	17	+0	38	14	29	37	48	43	37	52	45
2	87	>69	64	>69	68	>69	>69	>69	61	>69	69	>69
3	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
4	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
5	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
6	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
7	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
8	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
9	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
10	>90	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69	>69
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 666 MHz; -13.00 dBm.
LO IN: 702 MHz; +13.00 dBm
IF OUT: 36 MHz; -20.81 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	11	37	28	36	18	43	29	48	39	53
1	-	17	+0	37	14	29	36	49	45	38	54	45
2	67	62	55	61	60	66	62	70	51	62	62	66
3	>90	63	56	68	54	61	55	67	68	73	66	74
4	>90	>79	>79	>79	75	>79	75	>79	>79	>79	>79	>79
5	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
6	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
7	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
8	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
9	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
10	>90	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 666 MHz; -3.00 dBm.
LO IN: 702 MHz; +13.00 dBm
IF OUT: 36 MHz; -10.82 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.