

Frequency Mixer

UNCL-L1+

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)		
-7	-4	-1	-7	-4	-1	-7	-4	-1						
10.1	40.1	6.26	5.91	6.20	10.1	40.1	17.16	14.16	12.77	10.1	40.1	1.83	1.76	1.77
50.8	80.8	6.28	6.18	6.13	50.8	80.8	17.85	14.47	12.22	50.8	80.8	1.48	1.51	1.32
91.5	121.5	6.38	6.15	6.16	91.5	121.5	16.70	14.61	12.38	91.5	121.5	1.63	1.44	1.43
132.3	162.3	6.36	6.16	6.18	132.3	162.3	16.17	15.15	12.46	132.3	162.3	1.59	1.44	1.31
173.0	203.0	6.32	6.17	6.21	173.0	203.0	15.55	13.79	12.71	173.0	203.0	1.63	1.45	1.39
213.7	243.7	6.39	6.20	6.23	213.7	243.7	15.15	13.81	12.74	213.7	243.7	1.54	1.42	1.28
254.4	284.4	6.37	6.19	6.21	254.4	284.4	14.33	14.08	12.88	254.4	284.4	1.51	1.37	1.24
295.2	325.2	6.36	6.19	6.19	295.2	325.2	13.56	13.87	13.01	295.2	325.2	1.59	1.42	1.26
335.9	365.9	6.40	6.24	6.22	335.9	365.9	13.52	14.80	13.58	335.9	365.9	1.53	1.34	1.24
376.6	406.6	6.42	6.27	6.26	376.6	406.6	12.73	13.25	12.35	376.6	406.6	1.54	1.33	1.24
417.3	447.3	6.47	6.27	6.23	417.3	447.3	12.92	13.43	12.50	417.3	447.3	1.50	1.31	1.23
458.1	488.1	6.46	6.30	6.24	458.1	488.1	14.24	13.82	12.79	458.1	488.1	1.56	1.40	1.26
498.8	528.8	6.60	6.36	6.26	498.8	528.8	14.53	14.76	13.09	498.8	528.8	1.60	1.39	1.27
539.5	569.5	6.64	6.41	6.30	539.5	569.5	12.73	14.26	13.38	539.5	569.5	1.68	1.47	1.33
580.2	610.2	6.77	6.51	6.38	580.2	610.2	11.08	12.59	13.55	580.2	610.2	1.72	1.49	1.36
620.9	650.9	6.82	6.54	6.37	620.9	650.9	9.75	10.93	11.04	620.9	650.9	1.82	1.57	1.41
661.7	691.7	6.92	6.58	6.37	661.7	691.7	9.28	10.59	11.03	661.7	691.7	1.87	1.68	1.49
702.4	732.4	7.10	6.68	6.42	702.4	732.4	8.98	11.02	12.49	702.4	732.4	1.93	1.74	1.57
743.1	773.1	7.23	6.75	6.44	743.1	773.1	8.84	12.03	14.45	743.1	773.1	2.00	1.84	1.67
783.8	813.8	7.53	6.92	6.54	783.8	813.8	7.48	11.80	15.68	783.8	813.8	1.89	1.83	1.70
824.6	854.6	7.71	7.06	6.61	824.6	854.6	6.79	11.10	16.49	824.6	854.6	1.88	1.83	1.75
865.3	895.3	8.00	7.31	6.81	865.3	895.3	6.89	10.94	20.60	865.3	895.3	1.72	1.67	1.64
906.0	936.0	8.15	7.46	6.93	906.0	936.0	7.12	10.40	14.42	906.0	936.0	1.70	1.65	1.64
946.7	976.7	8.34	7.67	7.14	946.7	976.7	6.79	8.79	10.38	946.7	976.7	1.52	1.50	1.50
987.4	1017.4	8.47	7.84	7.35	987.4	1017.4	6.14	7.20	7.94	987.4	1017.4	1.48	1.42	1.40
1028.2	1058.2	8.51	7.94	7.50	1028.2	1058.2	6.08	6.56	6.82	1028.2	1058.2	1.41	1.33	1.30
1068.9	1098.9	8.54	7.98	7.57	1068.9	1098.9	5.71	6.06	6.16	1068.9	1098.9	1.44	1.33	1.28
1109.6	1139.6	8.50	7.95	7.56	1109.6	1139.6	5.58	5.83	6.12	1109.6	1139.6	1.54	1.39	1.34
1150.3	1180.3	8.48	7.94	7.56	1150.3	1180.3	6.00	6.54	7.32	1150.3	1180.3	1.58	1.42	1.34
1191.1	1221.1	8.52	8.00	7.61	1191.1	1221.1	7.05	8.19	9.58	1191.1	1221.1	1.59	1.41	1.30
1231.8	1261.8	8.50	7.97	7.61	1231.8	1261.8	8.63	10.49	11.74	1231.8	1261.8	1.68	1.47	1.33
1292.9	1322.9	8.62	8.18	7.91	1292.9	1322.9	10.81	11.90	12.65	1292.9	1322.9	1.58	1.31	1.13
1333.6	1363.6	8.63	8.27	8.06	1333.6	1363.6	11.00	12.37	13.08	1333.6	1363.6	1.53	1.20	1.02
1394.7	1424.7	8.78	8.48	8.34	1394.7	1424.7	11.37	13.21	14.01	1394.7	1424.7	1.38	0.98	0.81
1435.4	1465.4	8.95	8.64	8.51	1435.4	1465.4	11.18	13.30	13.88	1435.4	1465.4	1.34	0.94	0.76
1496.5	1526.5	9.24	8.85	8.71	1496.5	1526.5	10.77	12.95	14.21	1496.5	1526.5	1.27	0.89	0.69
1537.2	1567.2	9.66	9.20	9.03	1537.2	1567.2	10.50	12.48	14.08	1537.2	1567.2	1.22	0.87	0.66
1598.3	1628.3	10.12	9.54	9.30	1598.3	1628.3	9.90	11.69	13.27	1598.3	1628.3	1.22	0.94	0.72
1639.0	1669.0	10.81	10.07	9.79	1639.0	1669.0	9.48	11.06	12.83	1639.0	1669.0	1.20	0.93	0.72
1700.1	1730.1	11.48	10.55	10.17	1700.1	1730.1	9.14	10.39	12.09	1700.1	1730.1	1.20	1.05	0.80

REV. X3

UNCL-L1+

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Page 1 of 5



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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=260.1MHz (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)=510.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		-4			-4			-4
250.0	10.1	6.62	10.0	20.1	6.30	500.0	10.1	6.71
243.8	16.3	6.58	50.5	60.6	6.15	487.4	22.7	6.78
237.7	22.4	6.59	91.0	101.1	6.31	474.9	35.2	6.68
231.5	28.6	6.59	131.4	141.5	6.46	462.3	47.8	6.64
225.4	34.7	6.52	171.9	182.0	6.37	449.7	60.4	6.65
219.2	40.9	6.51	212.4	222.5	6.55	437.2	72.9	6.53
213.1	47.0	6.53	252.9	263.0	6.39	424.6	85.5	6.56
206.9	53.2	6.48	293.4	303.5	6.55	412.1	98.0	6.58
200.8	59.3	6.46	333.9	344.0	6.49	399.5	110.6	6.57
194.6	65.5	6.50	374.3	384.4	6.73	386.9	123.2	6.48
188.5	71.6	6.48	414.8	424.9	6.58	374.4	135.7	6.53
182.3	77.8	6.50	455.3	465.4	6.71	361.8	148.3	6.52
176.2	83.9	6.54	495.8	505.9	6.58	349.2	160.9	6.52
170.0	90.1	6.44	536.3	546.4	6.76	336.7	173.4	6.50
163.8	96.3	6.49	576.7	586.8	6.85	324.1	186.0	6.52
157.7	102.4	6.44	617.2	627.3	6.61	311.5	198.6	6.47
151.5	108.6	6.41	657.7	667.8	6.70	299.0	211.1	6.51
145.4	114.7	6.41	698.2	708.3	6.70	286.4	223.7	6.54
139.2	120.9	6.38	738.7	748.8	6.72	273.8	236.3	6.45
133.1	127.0	6.39	779.2	789.3	6.69	261.3	248.8	6.54
126.9	133.2	6.47	819.6	829.7	6.85	248.7	261.4	6.58
120.8	139.3	6.44	860.1	870.2	6.78	236.2	273.9	6.54
114.6	145.5	6.43	900.6	910.7	6.63	223.6	286.5	6.50
108.5	151.6	6.38	941.1	951.2	6.85	211.0	299.1	6.57
102.3	157.8	6.42	981.6	991.7	6.42	198.5	311.6	6.53
96.2	163.9	6.35	1022.0	1032.1	6.69	185.9	324.2	6.55
90.0	170.1	6.30	1062.5	1072.6	6.82	173.3	336.8	6.61
83.8	176.3	6.44	1103.0	1113.1	6.48	160.8	349.3	6.54
77.7	182.4	6.49	1143.5	1153.6	6.54	148.2	361.9	6.55
71.5	188.6	6.46	1184.0	1194.1	6.62	135.6	374.5	6.54
65.4	194.7	6.40	1224.5	1234.6	6.59	123.1	387.0	6.62
59.2	200.9	6.52	1285.2	1295.3	6.58	110.5	399.6	6.62
53.1	207.0	6.38	1325.7	1335.8	6.96	97.9	412.2	6.53
46.9	213.2	6.63	1386.4	1396.5	7.15	85.4	424.7	6.57
40.8	219.3	6.47	1426.9	1437.0	7.47	72.8	437.3	6.56
34.6	225.5	6.42	1487.6	1497.7	7.88	60.3	449.8	6.56
28.5	231.6	6.44	1528.1	1538.2	8.47	47.7	462.4	6.77
22.3	237.8	6.27	1588.8	1598.9	9.17	35.1	475.0	6.59
16.2	243.9	6.35	1629.3	1639.4	9.59	22.6	487.5	6.52
10.0	250.1	6.45	1690.0	1700.1	10.25	10.0	500.1	6.66

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	-7	-4	-1	-7	-4	-1
40.1	54.82	59.96	64.23	34.94	37.57	40.39
80.8	50.03	54.77	59.40	29.95	32.87	36.03
121.5	46.41	50.98	54.64	26.41	29.43	32.60
162.3	44.66	49.46	49.73	24.50	27.64	30.79
203.0	43.44	47.25	45.04	23.19	26.28	29.35
243.7	42.67	44.64	41.43	21.68	24.67	27.72
284.4	42.16	42.50	37.79	20.84	23.81	26.87
325.2	41.88	39.96	35.34	19.54	22.45	25.50
365.9	41.88	37.26	32.38	19.12	22.09	25.23
406.6	41.23	34.55	30.21	18.50	21.53	24.82
447.3	40.80	33.42	29.09	17.90	21.01	24.36
488.1	40.96	32.28	28.07	17.43	20.72	24.29
528.8	41.76	30.85	26.84	16.90	20.21	23.92
569.5	37.32	28.33	24.90	16.91	20.30	23.96
610.2	35.02	26.75	23.66	16.74	20.05	23.54
650.9	32.29	25.63	22.76	16.97	20.20	23.31
691.7	31.57	24.86	22.42	17.01	20.08	22.71
732.4	31.24	24.96	22.49	17.01	19.83	21.99
773.1	29.73	25.08	22.83	17.51	20.16	21.83
813.8	29.11	25.37	23.55	17.74	20.33	21.61
854.6	28.20	25.69	24.10	17.64	19.80	20.65
895.3	27.39	25.76	24.75	17.90	19.60	20.03
936.0	26.51	25.93	25.25	18.21	19.31	19.30
976.7	25.83	25.84	25.66	18.71	18.92	18.53
1017.4	25.25	25.82	26.22	18.79	18.40	17.85
1058.2	25.02	25.90	26.71	18.03	17.14	16.55
1098.9	24.87	25.92	26.99	16.96	15.80	15.24
1139.6	24.80	25.98	27.30	15.32	14.19	13.72
1180.3	24.87	26.19	27.73	14.07	12.99	12.62
1221.1	25.04	26.37	27.91	12.53	11.69	11.29
1261.8	25.41	26.77	28.37	11.21	10.50	10.19
1322.9	26.75	28.15	29.84	8.85	8.41	8.48
1363.6	28.00	29.17	30.70	7.20	7.12	7.38
1424.7	29.89	30.53	31.93	5.39	5.55	6.16
1465.4	29.53	30.10	31.45	4.46	4.72	5.43
1526.5	28.02	28.82	30.05	3.51	3.97	4.78
1567.2	26.19	27.35	28.80	2.91	3.44	4.27
1628.3	23.81	25.55	27.29	2.29	2.98	3.90
1669.0	21.91	23.80	25.74	1.96	2.54	3.53
1730.1	19.75	21.97	24.15	1.50	2.20	3.25

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		-7	-4	-1
10.1	40.1	12.10	10.17	8.30
50.8	80.8	2.77	0.83	1.07
91.5	121.5	7.43	5.30	3.28
132.3	162.3	17.30	15.32	13.47
173.0	203.0	30.80	28.96	27.34
213.7	243.7	25.06	23.22	21.70
254.4	284.4	23.19	21.38	20.25
295.2	325.2	27.90	26.13	25.27
335.9	365.9	26.79	25.09	24.15
376.6	406.6	25.68	24.02	23.20
417.3	447.3	28.87	27.31	26.12
458.1	488.1	26.28	24.62	23.28
498.8	528.8	27.34	26.01	24.65
539.5	569.5	27.47	26.18	24.90
580.2	610.2	28.16	26.85	25.70
620.9	650.9	27.54	26.42	25.44
661.7	691.7	25.55	24.82	24.17
702.4	732.4	23.33	22.72	22.13
743.1	773.1	21.61	20.94	20.30
783.8	813.8	20.37	19.71	18.99
824.6	854.6	19.80	19.03	18.32
865.3	895.3	19.43	18.60	17.95
906.0	936.0	19.40	18.66	18.00
946.7	976.7	19.26	18.64	18.36
987.4	1017.4	19.57	18.98	19.06
1028.2	1058.2	20.18	19.73	20.38
1068.9	1098.9	20.94	20.78	21.65
1109.6	1139.6	21.97	22.06	22.93
1150.3	1180.3	22.99	23.15	23.84
1191.1	1221.1	24.20	24.26	24.81
1231.8	1261.8	25.16	25.04	25.39
1292.9	1322.9	26.15	26.15	26.39
1333.6	1363.6	26.62	26.35	26.53
1394.7	1424.7	25.98	25.82	25.71
1435.4	1465.4	24.67	24.43	24.11
1496.5	1526.5	22.49	22.25	21.95
1537.2	1567.2	21.24	20.98	20.75
1598.3	1628.3	19.72	19.58	19.42
1639.0	1669.0	18.73	18.66	18.53
1700.1	1730.1	17.55	17.52	17.52

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)		
		-7	-4	-1		-7	-4	-1		-7	-4	-1
10.1	40.1	1.05	1.15	1.16	40.1	1.92	2.25	2.56	10.1	1.54	1.41	1.33
50.8	80.8	1.04	1.01	1.02	80.8	2.00	2.32	2.63	22.4	1.50	1.37	1.29
91.5	121.5	1.06	1.01	1.02	121.5	1.95	2.26	2.57	34.7	1.56	1.43	1.35
132.3	162.3	1.06	1.02	1.03	162.3	1.95	2.26	2.56	47.0	1.52	1.39	1.32
173.0	203.0	1.06	1.03	1.04	203.0	1.97	2.28	2.57	59.3	1.48	1.36	1.29
213.7	243.7	1.06	1.04	1.05	243.7	1.95	2.24	2.52	71.6	1.56	1.44	1.35
254.4	284.4	1.05	1.06	1.07	284.4	1.97	2.26	2.52	83.9	1.53	1.41	1.34
295.2	325.2	1.06	1.07	1.08	325.2	1.96	2.22	2.47	96.2	1.52	1.39	1.31
335.9	365.9	1.07	1.09	1.11	365.9	1.98	2.22	2.46	108.5	1.60	1.47	1.39
376.6	406.6	1.08	1.10	1.12	406.6	1.98	2.21	2.44	120.8	1.55	1.43	1.35
417.3	447.3	1.08	1.11	1.14	447.3	1.99	2.21	2.42	133.2	1.49	1.37	1.29
458.1	488.1	1.10	1.13	1.15	488.1	2.01	2.21	2.40	145.5	1.57	1.43	1.36
498.8	528.8	1.12	1.14	1.16	528.8	2.00	2.18	2.36	157.8	1.55	1.43	1.36
539.5	569.5	1.13	1.15	1.16	569.5	2.01	2.16	2.32	170.1	1.51	1.39	1.32
580.2	610.2	1.13	1.15	1.17	610.2	1.97	2.10	2.25	182.4	1.61	1.47	1.40
620.9	650.9	1.14	1.16	1.18	650.9	1.96	2.07	2.20	194.7	1.59	1.46	1.39
661.7	691.7	1.14	1.16	1.19	691.7	1.93	2.03	2.14	207.0	1.54	1.41	1.34
702.4	732.4	1.17	1.18	1.20	732.4	1.89	1.97	2.08	219.3	1.61	1.47	1.39
743.1	773.1	1.20	1.20	1.22	773.1	1.86	1.93	2.03	231.6	1.58	1.45	1.38
783.8	813.8	1.26	1.25	1.25	813.8	1.80	1.86	1.94	243.9	1.53	1.40	1.33
824.6	854.6	1.36	1.34	1.33	854.6	1.74	1.79	1.87	256.2	1.61	1.47	1.40
865.3	895.3	1.47	1.44	1.42	895.3	1.68	1.72	1.80	268.5	1.61	1.49	1.41
906.0	936.0	1.62	1.59	1.57	936.0	1.61	1.65	1.72	280.8	1.56	1.44	1.36
946.7	976.7	1.78	1.75	1.72	976.7	1.56	1.59	1.67	293.1	1.65	1.51	1.43
987.4	1017.4	1.94	1.91	1.89	1017.4	1.50	1.53	1.61	305.4	1.64	1.51	1.43
1028.2	1058.2	2.13	2.10	2.08	1058.2	1.46	1.49	1.57	317.7	1.58	1.45	1.38
1068.9	1098.9	2.27	2.26	2.24	1098.9	1.42	1.46	1.55	330.0	1.66	1.52	1.44
1109.6	1139.6	2.48	2.48	2.46	1139.6	1.38	1.44	1.54	342.3	1.65	1.53	1.45
1150.3	1180.3	2.64	2.64	2.63	1180.3	1.36	1.44	1.54	354.6	1.59	1.47	1.39
1191.1	1221.1	2.84	2.85	2.85	1221.1	1.35	1.43	1.55	366.9	1.67	1.54	1.46
1231.8	1261.8	3.02	3.04	3.04	1261.8	1.33	1.43	1.56	379.3	1.68	1.55	1.47
1292.9	1322.9	3.34	3.40	3.42	1322.9	1.32	1.44	1.59	391.6	1.62	1.49	1.42
1333.6	1363.6	3.52	3.59	3.63	1363.6	1.31	1.44	1.59	403.9	1.70	1.57	1.48
1394.7	1424.7	3.79	3.90	3.96	1424.7	1.31	1.45	1.61	416.2	1.73	1.59	1.51
1435.4	1465.4	3.92	4.02	4.11	1465.4	1.32	1.46	1.62	428.5	1.66	1.52	1.45
1496.5	1526.5	4.20	4.27	4.35	1526.5	1.36	1.49	1.65	440.8	1.71	1.58	1.50
1537.2	1567.2	4.33	4.37	4.44	1567.2	1.40	1.51	1.66	453.1	1.73	1.59	1.51
1598.3	1628.3	4.66	4.63	4.67	1628.3	1.46	1.56	1.70	465.4	1.65	1.51	1.44
1639.0	1669.0	4.84	4.77	4.78	1669.0	1.51	1.59	1.71	477.7	1.73	1.60	1.51
1700.1	1730.1	5.22	5.10	5.09	1730.1	1.57	1.63	1.74	490.0	1.78	1.64	1.56

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	7	12	12	21	18	24	24	25	33	27
1	-	24	+0	18	14	20	24	24	32	34	49	48
2	>90	52	54	53	50	53	48	53	50	52	59	52
3	>90	68	63	66	65	60	60	60	61	62	68	65
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: 250 MHz; -14.00 dBm.
LO IN: 280 MHz; -4.00 dBm
IF OUT: 30 MHz; -20.54 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	18	23	24	35	32	40	37	42	41	54
1	-	24	+0	17	14	19	26	24	37	37	52	57
2	74	46	48	46	45	48	42	49	44	47	54	49
3	>90	42	41	58	44	53	51	52	50	47	53	54
4	>90	63	64	74	61	64	58	59	59	58	65	60
5	>90	58	60	73	58	60	58	54	57	54	63	59
6	>90	>80	73	>80	>80	77	>80	>80	>80	77	>80	79
7	>90	>80	70	79	>80	76	78	70	79	66	79	65
8	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	80
9	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
10	>90	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 250 MHz; -4.00 dBm.
LO IN: 280 MHz; -4.00 dBm
IF OUT: 30 MHz; -10.46 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.