

Frequency Mixer

SYM-ED7819/4

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=60MHz (dB)			RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)			RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+17dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+19	+21	+23			+19	+21	+23			+19	+21	+23
80.1	20.1	6.40	6.26	6.19	80.1	20.1	31.17	35.69	33.26	80.1	20.1	1.07	0.78	0.58
160.1	100.1	6.69	6.52	6.42	160.1	100.1	26.89	27.05	27.50	160.6	100.6	0.95	0.69	0.47
240.1	180.1	6.93	6.71	6.58	240.1	180.1	24.55	25.27	26.27	241.1	181.1	0.81	0.53	0.39
320.1	260.1	7.12	6.86	6.67	320.1	260.1	24.66	25.93	27.81	321.6	261.6	0.71	0.50	0.39
400.1	340.1	7.24	6.92	6.67	400.1	340.1	25.19	27.32	29.40	402.2	342.2	0.72	0.62	0.50
480.1	420.1	7.10	6.77	6.56	480.1	420.1	27.91	30.16	35.11	482.7	422.7	0.85	0.74	0.57
560.1	500.1	7.11	6.74	6.55	560.1	500.1	28.54	31.62	37.86	563.2	503.2	0.98	0.83	0.64
640.1	580.1	6.98	6.69	6.54	640.1	580.1	30.67	35.99	37.71	643.7	583.7	1.07	0.85	0.64
720.1	660.1	7.01	6.74	6.58	720.1	660.1	37.77	36.14	35.14	724.2	664.2	1.08	0.83	0.60
800.1	740.1	7.07	6.81	6.69	800.1	740.1	34.43	32.34	32.32	804.7	744.7	1.00	0.75	0.54
880.1	820.1	7.18	6.95	6.82	880.1	820.1	41.44	37.38	39.70	885.3	825.3	0.97	0.72	0.52
960.1	900.1	7.16	6.96	6.86	960.1	900.1	39.94	35.18	32.97	965.8	905.8	0.88	0.63	0.47
1040.1	980.1	7.15	6.95	6.86	1040.1	980.1	31.47	32.31	33.08	1046.3	986.3	0.79	0.64	0.48
1120.1	1060.1	7.22	7.03	6.94	1120.1	1060.1	31.05	31.28	30.45	1126.8	1066.8	0.68	0.50	0.39
1200.1	1140.1	7.43	7.22	7.11	1200.1	1140.1	28.91	31.96	32.30	1207.3	1147.3	0.59	0.39	0.28
1280.1	1220.1	7.58	7.36	7.26	1280.1	1220.1	29.38	33.70	33.56	1287.8	1227.8	0.56	0.40	0.28
1360.1	1300.1	7.78	7.54	7.43	1360.1	1300.1	30.00	33.43	33.72	1368.4	1308.4	0.57	0.36	0.25
1440.1	1380.1	7.97	7.74	7.61	1440.1	1380.1	34.42	32.92	32.02	1448.9	1388.9	0.54	0.33	0.23
1520.1	1460.1	8.09	7.84	7.72	1520.1	1460.1	34.60	35.40	33.40	1529.4	1469.4	0.54	0.39	0.27
1600.1	1540.1	8.36	8.10	7.96	1600.1	1540.1	29.29	31.94	36.11	1609.9	1549.9	0.56	0.38	0.28
1680.1	1620.1	8.58	8.31	8.14	1680.1	1620.1	32.27	36.42	37.00	1690.4	1630.4	0.54	0.34	0.25
1760.1	1700.1	8.87	8.55	8.35	1760.1	1700.1	30.02	32.81	38.64	1770.9	1710.9	0.60	0.40	0.29
1840.1	1780.1	9.10	8.74	8.52	1840.1	1780.1	38.06	33.79	32.57	1851.5	1791.5	0.63	0.41	0.30
1920.1	1860.1	9.12	8.72	8.49	1920.1	1860.1	32.61	32.05	31.53	1932.0	1872.0	0.67	0.48	0.36
2000.1	1940.1	9.19	8.70	8.47	2000.1	1940.1	34.29	29.85	29.54	2012.5	1952.5	0.63	0.49	0.40
2080.1	2020.1	9.27	8.77	8.49	2080.1	2020.1	33.60	28.44	27.82	2093.0	2033.0	0.65	0.58	0.50
2160.1	2100.1	9.46	9.05	8.77	2160.1	2100.1	35.05	31.37	30.21	2173.5	2113.5	0.70	0.52	0.46
2240.1	2180.1	9.62	9.13	8.84	2240.1	2180.1	31.04	30.00	30.09	2254.0	2194.0	0.70	0.53	0.48
2320.1	2260.1	9.64	9.14	8.87	2320.1	2260.1	29.56	27.88	28.17	2334.6	2274.6	0.76	0.57	0.51
2400.1	2340.1	9.46	9.08	8.82	2400.1	2340.1	29.97	28.04	27.13	2415.1	2355.1	0.79	0.59	0.54
2480.1	2420.1	9.31	8.96	8.74	2480.1	2420.1	28.42	26.96	26.23	2495.6	2435.6	0.91	0.70	0.59
2560.1	2500.1	9.20	8.87	8.66	2560.1	2500.1	25.20	24.91	24.86	2576.1	2516.1	1.17	0.81	0.64
2640.1	2580.1	9.31	8.97	8.76	2640.1	2580.1	25.47	25.39	25.75	2656.6	2596.6	1.35	0.92	0.70
2720.1	2660.1	9.53	9.13	8.93	2720.1	2660.1	25.81	26.01	25.81	2737.1	2677.1	1.54	1.03	0.80
2800.1	2740.1	9.67	9.21	9.01	2800.1	2740.1	24.98	25.79	25.53	2817.6	2757.6	1.67	1.13	0.85
2880.1	2820.1	9.76	9.34	9.16	2880.1	2820.1	24.48	26.36	26.87	2898.2	2838.2	1.66	1.09	0.75
2960.1	2900.1	9.88	9.56	9.40	2960.1	2900.1	23.88	26.71	28.77	2978.7	2918.7	1.61	0.96	0.59
3040.1	2980.1	10.28	9.99	9.83	3040.1	2980.1	24.23	27.12	29.15	3059.2	2999.2	1.60	0.95	0.56
3120.1	3060.1	10.74	10.41	10.29	3120.1	3060.1	24.44	27.50	29.51	3139.7	3079.7	1.73	0.92	0.53
3200.1	3140.1	11.00	10.70	10.59	3200.1	3140.1	25.04	27.36	28.33	3200.1	3140.1	1.69	0.90	0.49

Frequency Mixer

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=837.5MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=810MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=865.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+21			+21			+21
827.4	10.1	7.72	10.1	820.1	7.37	855.0	10.1	7.80
790.2	47.3	7.79	50.5	860.5	6.70	834.4	30.7	7.84
753.1	84.4	7.84	91.0	901.0	6.68	813.8	51.3	7.88
715.9	121.6	7.72	131.4	941.4	6.59	793.2	71.9	7.94
678.8	158.7	7.76	171.8	981.8	6.61	772.6	92.5	7.95
641.6	195.9	7.77	212.3	1022.3	6.65	752.0	113.1	7.93
604.5	233.0	7.74	252.7	1062.7	6.78	731.3	133.8	7.86
567.3	270.2	7.76	293.1	1103.1	6.74	710.7	154.4	7.79
517.8	319.7	7.66	333.5	1143.5	6.81	690.1	175.0	7.88
480.6	356.9	7.46	374.0	1184.0	6.86	669.5	195.6	7.87
431.1	406.4	7.29	414.4	1224.4	6.93	648.9	216.2	7.66
393.9	443.6	7.19	475.0	1285.0	6.91	628.3	236.8	7.93
344.4	493.1	7.02	515.5	1325.5	7.05	607.7	257.4	7.83
307.2	530.3	7.00	576.1	1386.1	7.13	587.1	278.0	7.85
257.7	579.8	6.97	616.6	1426.6	7.15	566.5	298.6	7.79
220.5	617.0	6.95	677.2	1487.2	7.13	545.9	319.2	7.65
171.0	666.5	6.71	717.6	1527.6	7.21	525.2	339.9	7.70
133.8	703.7	6.68	778.3	1588.3	7.43	504.6	360.5	7.59
84.3	753.2	6.63	818.7	1628.7	7.44	484.0	381.1	7.49
47.2	790.3	6.71	879.3	1689.3	7.70	463.4	401.7	7.42
10.0	847.5	7.52	919.8	1729.8	7.74	442.8	422.3	7.39
94.2	931.7	6.71	980.4	1790.4	7.97	422.2	442.9	7.35
206.5	1044.0	6.59	1020.9	1830.9	8.05	401.6	463.5	7.23
290.7	1128.2	6.82	1081.5	1891.5	8.24	381.0	484.1	7.23
403.0	1240.5	6.90	1121.9	1931.9	8.25	360.4	504.7	7.11
487.2	1324.7	6.94	1182.6	1992.6	8.59	339.8	525.3	7.10
599.5	1437.0	7.08	1223.0	2033.0	8.64	319.1	546.0	7.11
683.7	1521.2	7.24	1283.6	2093.6	8.98	298.5	566.6	6.99
796.0	1633.5	7.48	1324.1	2134.1	8.99	277.9	587.2	7.05
880.2	1717.7	7.74	1384.7	2194.7	9.42	257.3	607.8	6.99
992.4	1829.9	8.07	1425.2	2235.2	9.41	236.7	628.4	7.01
1076.6	1914.1	8.28	1485.8	2295.8	9.66	216.1	649.0	6.81
1188.9	2026.4	8.69	1526.2	2336.2	9.70	195.5	669.6	6.74
1273.1	2110.6	9.02	1586.9	2396.9	9.87	174.9	690.2	6.65
1385.4	2222.9	9.47	1627.3	2437.3	9.89	154.3	710.8	6.73
1469.6	2307.1	9.71	1687.9	2497.9	10.10	133.7	731.4	6.63
1581.9	2419.4	9.90	1728.4	2538.4	10.10	92.4	772.7	6.72
1666.1	2503.6	10.08	1789.0	2599.0	10.34	71.8	793.3	6.73
1778.4	2615.9	10.43	1829.5	2639.5	10.38	30.6	834.5	6.82
1862.6	2700.1	10.62	1890.1	2700.1	10.58	10.0	855.1	7.42

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+19	+21	+23	+19	+21	+23
20.1	38.26	40.86	43.33	32.47	33.89	35.23
100.1	46.88	49.67	52.40	37.81	39.71	41.31
180.1	50.26	52.71	54.79	38.33	39.71	40.37
260.1	52.10	54.08	55.68	38.87	39.12	38.94
340.1	53.65	55.17	55.96	37.93	37.56	36.98
420.1	55.21	55.56	55.26	37.25	36.51	35.79
500.1	57.16	56.30	56.02	37.43	36.20	35.56
580.1	58.93	60.65	62.72	36.88	35.96	35.39
660.1	60.10	60.93	61.43	37.36	36.50	35.97
740.1	59.07	57.75	56.88	37.67	36.66	36.33
820.1	55.69	53.92	52.02	37.87	37.38	37.00
900.1	50.76	49.91	48.97	37.65	37.13	37.06
980.1	47.01	46.13	45.61	36.73	36.80	37.16
1060.1	46.80	45.93	44.38	35.70	35.99	36.25
1140.1	46.58	45.08	43.92	35.66	35.68	36.07
1220.1	43.77	42.05	40.98	36.57	36.27	36.13
1300.1	40.71	39.63	39.01	36.65	36.03	35.76
1380.1	40.00	38.85	38.38	36.20	35.34	35.01
1460.1	39.71	38.61	38.01	35.24	34.43	34.08
1540.1	39.17	38.40	37.88	35.73	35.08	34.73
1620.1	38.21	37.33	36.71	35.61	35.16	34.90
1700.1	36.66	36.23	35.87	34.86	34.68	34.50
1780.1	36.41	36.24	35.58	35.21	35.54	35.25
1860.1	36.33	36.07	35.40	34.76	35.15	35.09
1940.1	36.37	35.85	35.11	35.71	36.09	35.90
2020.1	35.18	34.36	33.96	35.43	35.32	35.01
2100.1	35.61	34.63	33.72	34.44	34.20	33.63
2180.1	37.06	35.45	34.23	33.94	33.01	32.07
2260.1	38.18	36.07	34.96	33.01	31.62	30.80
2340.1	39.19	37.08	35.89	32.19	30.88	30.08
2420.1	39.63	38.80	37.75	30.80	30.05	29.25
2500.1	37.37	37.17	36.88	30.12	29.18	28.31
2580.1	35.57	35.83	36.05	30.30	29.18	28.19
2660.1	33.74	33.99	34.59	30.37	29.16	28.13
2740.1	32.04	32.35	33.22	30.43	28.94	28.11
2820.1	30.25	30.67	31.41	30.05	28.53	27.74
2900.1	28.74	29.23	29.89	30.08	28.50	27.63
2980.1	27.61	28.28	28.98	30.12	28.89	27.82
3060.1	27.27	27.68	28.38	30.78	29.27	28.23
3140.1	27.96	28.35	28.96	30.43	29.30	28.47

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+19	+21	+23
80.1	20.1	24.02	23.96	23.99
160.1	100.1	25.49	25.46	25.50
240.1	180.1	25.98	25.89	25.75
320.1	260.1	26.55	26.53	26.36
400.1	340.1	27.60	27.54	27.39
480.1	420.1	28.70	28.96	29.53
560.1	500.1	29.87	30.31	30.81
640.1	580.1	31.81	32.25	32.43
720.1	660.1	33.88	34.12	33.90
800.1	740.1	37.17	37.11	36.34
880.1	820.1	43.00	43.17	41.64
960.1	900.1	50.41	53.55	53.31
1040.1	980.1	45.67	46.38	49.32
1120.1	1060.1	43.04	43.40	45.67
1200.1	1140.1	39.91	39.85	40.72
1280.1	1220.1	37.53	37.61	38.70
1360.1	1300.1	35.24	35.32	35.96
1440.1	1380.1	34.11	34.35	35.09
1520.1	1460.1	34.26	34.55	35.24
1600.1	1540.1	33.47	33.95	34.61
1680.1	1620.1	32.39	33.01	33.87
1760.1	1700.1	31.78	32.71	33.79
1840.1	1780.1	31.71	32.43	33.16
1920.1	1860.1	32.36	32.79	33.14
2000.1	1940.1	31.88	31.74	31.67
2080.1	2020.1	31.60	31.62	31.49
2160.1	2100.1	31.22	31.10	30.96
2240.1	2180.1	30.99	31.25	31.18
2320.1	2260.1	29.92	30.62	30.90
2400.1	2340.1	28.93	29.38	29.75
2480.1	2420.1	28.59	28.80	28.95
2560.1	2500.1	28.23	28.12	28.09
2640.1	2580.1	27.84	27.81	27.70
2720.1	2660.1	27.69	27.74	27.80
2800.1	2740.1	28.53	28.48	28.60
2880.1	2820.1	29.62	29.23	29.04
2960.1	2900.1	30.67	30.12	29.77
3040.1	2980.1	31.76	31.10	30.45
3120.1	3060.1	31.95	30.97	30.18
3200.1	3140.1	32.35	31.14	30.35

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=805MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+19	+21	+23		+19	+21	+23		+19	+21	+23
80.1	20.1	1.16	1.11	1.09	20.1	1.42	1.74	2.11	10.0	1.28	1.25	1.26
160.1	100.1	1.26	1.19	1.14	100.1	1.30	1.65	2.03	30.1	1.24	1.18	1.15
240.1	180.1	1.34	1.26	1.21	180.1	1.28	1.62	1.98	50.3	1.23	1.15	1.11
320.1	260.1	1.40	1.32	1.26	260.1	1.27	1.59	1.95	70.4	1.21	1.13	1.09
400.1	340.1	1.47	1.38	1.31	340.1	1.24	1.56	1.91	90.5	1.22	1.15	1.11
480.1	420.1	1.50	1.41	1.34	420.1	1.20	1.51	1.85	110.6	1.25	1.18	1.15
560.1	500.1	1.56	1.46	1.39	500.1	1.16	1.46	1.78	130.8	1.26	1.19	1.15
640.1	580.1	1.59	1.50	1.44	580.1	1.11	1.40	1.70	150.9	1.25	1.18	1.14
720.1	660.1	1.63	1.55	1.48	660.1	1.07	1.34	1.63	171.0	1.23	1.16	1.13
800.1	740.1	1.67	1.59	1.52	740.1	1.03	1.30	1.58	191.2	1.25	1.19	1.17
880.1	820.1	1.69	1.61	1.55	820.1	1.01	1.26	1.53	211.3	1.28	1.22	1.19
960.1	900.1	1.72	1.64	1.58	900.1	1.04	1.22	1.48	231.4	1.28	1.23	1.20
1040.1	980.1	1.77	1.69	1.63	980.1	1.08	1.17	1.42	251.5	1.26	1.21	1.19
1120.1	1060.1	1.82	1.73	1.67	1060.1	1.12	1.14	1.37	271.7	1.25	1.21	1.19
1200.1	1140.1	1.87	1.78	1.71	1140.1	1.17	1.13	1.34	291.8	1.27	1.24	1.23
1280.1	1220.1	1.87	1.77	1.70	1220.1	1.22	1.14	1.33	311.9	1.30	1.26	1.25
1360.1	1300.1	1.92	1.80	1.73	1300.1	1.27	1.17	1.33	332.1	1.30	1.26	1.25
1440.1	1380.1	2.00	1.90	1.82	1380.1	1.33	1.23	1.35	352.2	1.28	1.25	1.24
1520.1	1460.1	2.10	1.99	1.92	1460.1	1.40	1.30	1.39	372.3	1.30	1.27	1.27
1600.1	1540.1	2.20	2.09	2.01	1540.1	1.49	1.38	1.46	392.4	1.31	1.29	1.29
1680.1	1620.1	2.30	2.19	2.11	1620.1	1.59	1.49	1.55	412.6	1.35	1.32	1.32
1760.1	1700.1	2.38	2.28	2.20	1700.1	1.69	1.60	1.66	432.7	1.31	1.29	1.29
1840.1	1780.1	2.40	2.31	2.24	1780.1	1.77	1.71	1.78	452.8	1.33	1.32	1.33
1920.1	1860.1	2.38	2.29	2.22	1860.1	1.86	1.83	1.93	472.9	1.34	1.34	1.34
2000.1	1940.1	2.41	2.31	2.24	1940.1	1.94	1.94	2.07	493.1	1.36	1.35	1.35
2080.1	2020.1	2.44	2.35	2.27	2020.1	2.02	2.05	2.19	513.2	1.36	1.35	1.36
2160.1	2100.1	2.38	2.30	2.23	2100.1	2.08	2.13	2.27	533.3	1.35	1.35	1.36
2240.1	2180.1	2.28	2.18	2.13	2180.1	2.11	2.19	2.35	553.5	1.38	1.39	1.40
2320.1	2260.1	2.18	2.08	2.02	2260.1	2.17	2.29	2.48	573.6	1.38	1.38	1.40
2400.1	2340.1	2.10	2.01	1.94	2340.1	2.22	2.37	2.58	593.7	1.40	1.41	1.42
2480.1	2420.1	2.04	1.95	1.89	2420.1	2.25	2.41	2.61	613.8	1.39	1.40	1.41
2560.1	2500.1	2.01	1.92	1.84	2500.1	2.22	2.39	2.58	634.0	1.41	1.42	1.44
2640.1	2580.1	1.98	1.88	1.81	2580.1	2.18	2.35	2.52	654.1	1.41	1.43	1.45
2720.1	2660.1	1.96	1.85	1.78	2660.1	2.19	2.36	2.55	674.2	1.43	1.44	1.46
2800.1	2740.1	1.88	1.78	1.73	2740.1	2.21	2.39	2.57	694.4	1.43	1.45	1.47
2880.1	2820.1	1.80	1.75	1.71	2820.1	2.23	2.41	2.59	714.5	1.43	1.45	1.47
2960.1	2900.1	1.76	1.74	1.72	2900.1	2.21	2.39	2.57	734.6	1.45	1.47	1.50
3040.1	2980.1	1.79	1.78	1.78	2980.1	2.16	2.33	2.49	754.7	1.44	1.47	1.49
3120.1	3060.1	1.80	1.79	1.81	3060.1	2.14	2.30	2.45	774.9	1.48	1.51	1.54
3200.1	3140.1	1.76	1.77	1.80	3140.1	2.15	2.33	2.48	795.0	1.42	1.45	1.48

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	11	22	20	30	25	30	35	34	31	28
1	-	36	+0	32	13	48	33	44	28	51	44	49
2	60	63	50	64	52	69	54	66	60	60	63	61
3	90	77	65	76	65	73	67	75	62	83	62	81
4	>90	>85	72	>85	75	>85	81	>85	81	>85	>85	>85
5	>90	>85	>85	>85	>85	>85	82	>85	83	>85	>85	>85
6	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
7	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
8	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
9	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
10	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 834 MHz; 2.00 dBm.
LO IN: 775 MHz; +21.00 dBm
IF OUT: 59 MHz; -4.69 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	11	22	20	30	25	30	35	34	31	28
1	-	36	+0	32	13	48	33	44	28	50	44	49
2	60	63	50	64	52	69	54	66	60	60	63	61
3	90	77	65	74	65	74	67	75	61	83	62	81
4	>90	>85	72	>85	76	>85	78	>85	81	>85	>85	>85
5	>90	>85	>85	>85	>85	>85	>85	>85	83	>85	>85	>85
6	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
7	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
8	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
9	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
10	>90	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85	>85
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:

RF IN: 834 MHz; 2.00 dBm.
LO IN: 775 MHz; +21.00 dBm
IF OUT: 59 MHz; -4.7 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.