

Frequency Mixer

MBA-12+

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
550.0	580.0	16.13	11.51	10.12	550.0	580.0	1.92	6.34	7.93	550.0	580.0	-2.19	0.10	0.35
650.0	680.0	11.14	9.75	9.23	650.0	680.0	2.93	5.90	10.89	650.0	680.0	0.46	0.33	0.18
750.0	780.0	9.70	8.36	7.82	750.0	780.0	5.62	13.99	14.72	750.0	780.0	0.51	0.51	0.54
850.0	880.0	8.34	7.23	6.72	850.0	880.0	9.21	13.93	14.53	850.0	880.0	1.00	1.00	0.96
950.0	980.0	8.36	7.18	6.44	950.0	980.0	6.58	9.70	12.08	950.0	980.0	0.78	1.02	1.12
1050.0	1080.0	8.09	7.00	6.41	1050.0	1080.0	4.48	7.43	10.73	1050.0	1080.0	0.83	1.02	1.01
1150.0	1180.0	7.75	7.01	6.69	1150.0	1180.0	6.80	9.77	11.63	1150.0	1180.0	1.25	1.04	0.87
1250.0	1280.0	7.67	7.17	6.95	1250.0	1280.0	9.44	11.12	12.64	1250.0	1280.0	1.30	0.96	0.80
1350.0	1380.0	7.90	7.43	7.24	1350.0	1380.0	10.19	11.48	12.98	1350.0	1380.0	1.21	0.81	0.60
1450.0	1480.0	8.03	7.73	7.57	1450.0	1480.0	10.41	10.59	11.79	1450.0	1480.0	1.34	0.91	0.62
1550.0	1580.0	8.07	7.79	7.69	1550.0	1580.0	10.78	10.96	11.70	1550.0	1580.0	1.21	0.79	0.51
1650.0	1680.0	7.75	7.50	7.45	1650.0	1680.0	11.64	11.90	11.89	1650.0	1680.0	1.15	0.80	0.60
1750.0	1780.0	7.74	7.39	7.26	1750.0	1780.0	13.03	13.17	12.91	1750.0	1780.0	0.76	0.56	0.45
1850.0	1880.0	7.60	7.24	7.08	1850.0	1880.0	12.88	13.96	14.19	1850.0	1880.0	0.74	0.46	0.35
1950.0	1980.0	8.03	7.66	7.50	1950.0	1980.0	11.52	13.23	14.12	1950.0	1980.0	1.05	0.77	0.62
2050.0	2080.0	7.79	7.46	7.31	2050.0	2080.0	12.13	12.77	13.49	2050.0	2080.0	0.69	0.50	0.42
2150.0	2180.0	7.63	7.20	7.01	2150.0	2180.0	11.70	12.69	13.37	2150.0	2180.0	0.93	0.75	0.64
2250.0	2280.0	8.08	7.73	7.58	2250.0	2280.0	12.07	13.71	15.49	2250.0	2280.0	0.67	0.52	0.42
2350.0	2380.0	8.17	7.67	7.46	2350.0	2380.0	12.84	14.03	14.96	2350.0	2380.0	0.60	0.47	0.38
2450.0	2480.0	8.13	7.65	7.51	2450.0	2480.0	9.99	11.63	13.28	2450.0	2480.0	0.71	0.53	0.41
2550.0	2580.0	9.13	8.50	8.23	2550.0	2580.0	12.72	14.21	12.33	2550.0	2580.0	-0.09	-0.23	-0.24
2650.0	2680.0	8.71	8.00	7.69	2650.0	2680.0	6.70	7.33	7.89	2650.0	2680.0	0.26	0.08	0.01
2750.0	2780.0	8.00	7.25	7.00	2750.0	2780.0	6.96	8.04	8.97	2750.0	2780.0	0.64	0.31	0.19
2850.0	2880.0	8.48	7.51	7.24	2850.0	2880.0	9.19	9.48	10.04	2850.0	2880.0	0.49	0.27	0.16
2950.0	2980.0	8.05	7.05	6.73	2950.0	2980.0	6.87	7.98	9.10	2950.0	2980.0	0.76	0.54	0.39
3050.0	3080.0	7.53	6.61	6.33	3050.0	3080.0	6.87	7.83	9.10	3050.0	3080.0	0.97	0.72	0.51
3150.0	3180.0	7.22	6.30	6.01	3150.0	3180.0	6.01	7.77	9.22	3150.0	3180.0	0.95	0.71	0.53
3250.0	3280.0	6.77	5.96	5.75	3250.0	3280.0	8.09	9.16	10.40	3250.0	3280.0	1.03	0.71	0.57
3350.0	3380.0	6.49	5.84	5.66	3350.0	3380.0	8.83	9.58	10.74	3350.0	3380.0	1.05	0.72	0.60
3450.0	3480.0	6.36	5.87	5.73	3450.0	3480.0	9.52	9.94	10.87	3450.0	3480.0	0.98	0.70	0.62
3550.0	3580.0	6.44	6.06	5.97	3550.0	3580.0	10.02	10.49	10.99	3550.0	3580.0	0.92	0.70	0.73
3650.0	3680.0	6.78	6.57	6.68	3650.0	3680.0	11.52	11.46	10.31	3650.0	3680.0	0.85	0.70	0.83
3730.0	3760.0	7.55	7.42	7.74	3730.0	3760.0	12.93	12.89	12.55	3730.0	3760.0	0.76	0.62	0.76
3830.0	3860.0	8.34	7.69	7.27	3830.0	3860.0	10.74	12.76	8.32	3830.0	3860.0	0.57	0.78	1.39
3910.0	3940.0	7.69	7.20	6.94	3910.0	3940.0	9.84	11.45	9.96	3910.0	3940.0	0.67	0.76	1.15
4010.0	4040.0	7.27	6.87	6.72	4010.0	4040.0	8.85	9.93	9.69	4010.0	4040.0	0.82	0.82	1.03
4090.0	4120.0	7.14	6.79	6.71	4090.0	4120.0	8.87	10.26	9.83	4090.0	4120.0	0.70	0.67	0.81
4190.0	4220.0	7.35	6.96	6.87	4190.0	4220.0	9.05	10.30	10.71	4190.0	4220.0	0.55	0.48	0.54
4270.0	4300.0	7.76	7.31	7.21	4270.0	4300.0	9.43	10.47	11.54	4270.0	4300.0	0.51	0.41	0.44
4370.0	4400.0	8.14	7.73	7.69	4370.0	4400.0	10.49	11.20	12.31	4370.0	4400.0	0.53	0.42	0.41

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1650MHz (dB)
		@LO (dBm)
		+7
880.0	770.0	10.82
842.2	807.8	9.70
804.3	845.7	9.09
766.5	883.5	9.03
728.7	921.3	9.42
690.9	959.1	9.46
653.0	997.0	9.52
615.2	1034.8	9.50
577.4	1072.6	9.11
520.7	1129.3	8.88
482.8	1167.2	8.90
426.1	1223.9	8.74
388.3	1261.7	8.57
331.5	1318.5	8.37
293.7	1356.3	8.19
237.0	1413.0	8.05
199.1	1450.9	7.96
142.4	1507.6	7.82
104.6	1545.4	7.78
47.8	1602.2	7.66
10.0	1640.0	7.60
52.1	1702.1	7.49
94.3	1744.3	7.51
157.4	1807.4	7.36
199.6	1849.6	7.04
262.8	1912.8	7.16
304.9	1954.9	7.13
368.1	2018.1	6.95
410.2	2060.2	6.83
473.4	2123.4	7.19
515.5	2165.5	7.64
578.7	2228.7	8.09
620.9	2270.9	8.45
684.0	2334.0	8.99
726.2	2376.2	9.41
789.4	2439.4	9.48
831.5	2481.5	9.56
894.7	2544.7	9.81
936.8	2586.8	10.09
1000.0	2650.0	10.36

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=789.9MHz (dB)
		@LO (dBm)
		+7
10.1	800.0	7.78
30.1	820.0	7.85
50.1	840.0	7.92
70.1	860.0	7.86
90.1	880.0	7.88
110.1	900.0	7.90
130.1	920.0	7.97
150.1	940.0	8.02
170.1	960.0	8.07
190.1	980.0	8.12
210.1	1000.0	8.37
230.1	1020.0	8.65
250.1	1040.0	8.51
270.1	1060.0	8.60
290.1	1080.0	8.41
310.1	1100.0	8.16
330.1	1120.0	8.24
350.1	1140.0	8.10
390.1	1180.0	8.15
410.1	1200.0	8.07
450.1	1240.0	8.17
470.1	1260.0	8.16
510.1	1300.0	8.26
530.1	1320.0	8.27
570.1	1360.0	8.26
590.1	1380.0	8.26
630.1	1420.0	8.52
650.1	1440.0	8.50
690.1	1480.0	8.57
710.1	1500.0	8.69
750.1	1540.0	8.89
770.1	1560.0	8.90
810.1	1600.0	8.91
830.1	1620.0	9.01
870.1	1660.0	9.18
890.1	1680.0	9.35
930.1	1720.0	9.70
950.1	1740.0	9.73
990.1	1780.0	10.02
1010.1	1800.0	10.27

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2510.1MHz (dB)
		@LO (dBm)
		+7
1010.1	1500.0	10.66
990.1	1520.0	10.43
970.1	1540.0	10.10
950.1	1560.0	9.85
930.1	1580.0	9.67
910.1	1600.0	9.52
890.1	1620.0	9.33
870.1	1640.0	9.20
850.1	1660.0	9.13
830.1	1680.0	9.04
810.1	1700.0	9.02
790.1	1720.0	8.91
770.1	1740.0	8.78
750.1	1760.0	8.57
730.1	1780.0	8.48
710.1	1800.0	8.39
690.1	1820.0	8.23
670.1	1840.0	8.13
630.1	1880.0	8.12
610.1	1900.0	8.07
570.1	1940.0	7.76
550.1	1960.0	7.70
510.1	2000.0	7.67
490.1	2020.0	7.63
450.1	2060.0	7.74
430.1	2080.0	7.82
390.1	2120.0	7.76
370.1	2140.0	7.61
330.1	2180.0	7.55
310.1	2200.0	7.60
270.1	2240.0	7.62
250.1	2260.0	7.60
210.1	2300.0	7.53
190.1	2320.0	7.43
150.1	2360.0	7.38
130.1	2380.0	7.49
90.1	2420.0	7.63
70.1	2440.0	7.67
30.1	2480.0	7.84
10.1	2500.0	7.95

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)					@LO (dBm)		
	+4	+7	+10	+4	+7	+10			+4	+7	+10
580.0	32.21	36.00	36.16	20.29	20.65	21.01	550.0	580.0	24.26	19.94	15.58
680.0	30.70	31.45	30.55	20.95	19.95	20.06	650.0	680.0	19.68	15.32	13.33
780.0	26.96	27.87	27.07	20.60	19.10	19.05	750.0	780.0	17.24	14.84	13.43
880.0	25.70	25.70	24.76	20.29	19.10	18.65	850.0	880.0	17.75	16.12	15.18
980.0	25.65	24.73	23.53	19.54	19.11	18.34	950.0	980.0	19.83	18.34	17.46
1080.0	26.59	24.98	23.83	17.72	18.40	18.47	1050.0	1080.0	22.08	21.52	20.99
1180.0	28.49	26.45	24.92	15.36	16.77	18.02	1150.0	1180.0	22.72	23.78	24.32
1280.0	30.06	27.59	25.84	13.43	15.15	16.99	1250.0	1280.0	23.32	25.08	26.36
1380.0	31.29	28.76	27.34	12.15	13.89	15.89	1350.0	1380.0	23.57	26.07	27.60
1480.0	30.52	29.07	28.09	11.41	13.15	14.89	1450.0	1480.0	23.08	25.29	26.86
1580.0	30.34	29.89	29.67	10.72	12.30	13.81	1550.0	1580.0	24.66	26.75	27.88
1680.0	28.97	29.07	29.56	10.40	11.89	13.06	1650.0	1680.0	26.18	27.81	28.72
1780.0	28.63	29.28	29.85	10.50	11.78	12.68	1750.0	1780.0	26.63	27.74	28.41
1880.0	29.50	30.36	31.19	10.92	11.88	12.37	1850.0	1880.0	25.97	26.16	26.20
1980.0	30.67	31.62	32.52	11.43	11.91	11.98	1950.0	1980.0	25.80	25.81	25.73
2080.0	33.12	33.92	34.40	12.27	12.26	12.01	2050.0	2080.0	26.11	26.15	26.32
2180.0	36.01	36.53	36.75	13.01	12.38	11.73	2150.0	2180.0	25.84	25.66	25.56
2280.0	46.22	43.76	40.84	13.86	12.68	11.67	2250.0	2280.0	25.15	25.02	24.97
2380.0	45.27	53.72	45.40	14.91	13.10	11.83	2350.0	2380.0	25.39	25.37	25.41
2480.0	34.75	40.15	50.29	15.49	13.26	11.83	2450.0	2480.0	25.11	25.22	25.31
2580.0	30.10	33.42	38.47	15.86	13.66	11.97	2550.0	2580.0	24.55	24.81	24.82
2680.0	30.40	33.71	38.50	15.44	13.80	12.33	2650.0	2680.0	25.46	25.76	25.92
2780.0	31.73	37.37	49.13	15.34	13.92	12.60	2750.0	2780.0	26.49	26.87	27.01
2880.0	29.14	32.97	40.43	14.79	13.88	12.67	2850.0	2880.0	26.10	26.28	26.38
2980.0	29.75	34.19	48.08	14.26	13.96	13.25	2950.0	2980.0	27.53	27.45	27.22
3080.0	29.96	32.93	43.82	13.74	14.07	13.99	3050.0	3080.0	28.14	27.60	26.91
3180.0	33.69	41.14	43.91	13.37	14.19	14.81	3150.0	3180.0	28.76	27.97	27.01
3280.0	37.20	49.55	34.25	12.90	13.94	15.23	3250.0	3280.0	28.98	27.71	26.66
3380.0	47.51	36.33	30.02	12.75	14.04	15.67	3350.0	3380.0	28.56	27.18	26.27
3480.0	40.74	30.75	27.04	12.73	14.19	15.82	3450.0	3480.0	27.12	25.93	25.20
3580.0	30.91	26.19	23.96	12.75	14.06	15.35	3550.0	3580.0	24.73	23.87	23.30
3680.0	25.09	22.64	21.32	12.50	13.41	14.13	3650.0	3680.0	21.64	21.04	20.45
3760.0	22.30	20.95	20.96	11.96	12.39	12.91	3730.0	3760.0	19.16	18.84	18.48
3860.0	20.21	19.65	19.18	11.28	11.90	12.49	3830.0	3860.0	16.12	16.43	16.91
3940.0	20.34	19.42	18.33	11.97	12.97	13.82	3910.0	3940.0	15.45	15.75	16.12
4040.0	23.07	21.60	20.16	13.75	14.83	15.71	4010.0	4040.0	16.34	16.25	16.28
4120.0	25.34	23.48	21.98	15.02	15.96	16.75	4090.0	4120.0	17.36	16.83	16.46
4220.0	27.47	25.30	23.47	16.81	17.24	17.57	4190.0	4220.0	17.30	16.04	15.20
4300.0	28.72	26.76	24.66	18.21	18.34	18.21	4270.0	4300.0	17.36	15.53	14.32
4400.0	29.85	28.44	26.85	19.95	20.06	20.24	4370.0	4400.0	17.86	15.73	14.28

Frequency Mixer

MBA-12+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR @LO=2500MHz (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+4	+7	+10		+4	+7	+10		+4	+7	+10
550.0	580.0	6.91	5.41	4.89	580.0	15.39	12.44	8.55	10.0	1.77	2.26	2.63
650.0	680.0	5.07	4.68	4.38	680.0	9.33	6.09	4.92	30.0	1.73	2.18	2.52
750.0	780.0	4.45	3.90	3.54	780.0	4.39	3.24	3.19	50.0	1.71	2.14	2.46
850.0	880.0	3.72	3.27	2.96	880.0	2.58	2.15	2.37	70.0	1.71	2.13	2.44
950.0	980.0	3.59	3.23	2.95	980.0	2.14	1.77	1.97	90.0	1.71	2.13	2.43
1050.0	1080.0	3.54	3.18	2.92	1080.0	2.29	1.80	1.86	110.0	1.71	2.10	2.39
1150.0	1180.0	3.54	3.28	3.13	1180.0	2.64	1.95	1.90	130.0	1.70	2.07	2.34
1250.0	1280.0	3.70	3.52	3.38	1280.0	2.75	1.99	1.99	150.0	1.71	2.06	2.32
1350.0	1380.0	3.92	3.76	3.64	1380.0	2.61	2.03	2.17	170.0	1.72	2.05	2.30
1450.0	1480.0	3.91	3.82	3.76	1480.0	2.47	2.11	2.37	190.0	1.71	2.03	2.26
1550.0	1580.0	3.79	3.65	3.60	1580.0	2.40	2.24	2.57	210.0	1.70	1.99	2.21
1650.0	1680.0	3.53	3.25	3.11	1680.0	2.11	2.13	2.59	230.0	1.69	1.95	2.15
1750.0	1780.0	3.67	3.30	3.06	1780.0	1.73	1.99	2.58	250.0	1.70	1.92	2.11
1850.0	1880.0	3.31	3.02	2.78	1880.0	1.47	1.93	2.58	270.0	1.69	1.89	2.06
1950.0	1980.0	3.34	3.13	2.98	1980.0	1.37	1.91	2.57	290.0	1.69	1.85	2.00
2050.0	2080.0	2.95	2.73	2.56	2080.0	1.44	1.95	2.57	310.0	1.67	1.79	1.92
2150.0	2180.0	2.72	2.50	2.33	2180.0	1.60	1.99	2.54	330.0	1.70	1.76	1.87
2250.0	2280.0	2.72	2.59	2.49	2280.0	1.83	2.01	2.45	350.0	1.73	1.74	1.83
2350.0	2380.0	2.71	2.54	2.41	2380.0	2.18	2.13	2.41	370.0	1.76	1.72	1.78
2450.0	2480.0	2.42	2.24	2.14	2480.0	2.56	2.19	2.28	390.0	1.77	1.69	1.72
2550.0	2580.0	3.14	2.83	2.65	2580.0	3.06	2.35	2.22	410.0	1.82	1.68	1.67
2650.0	2680.0	3.90	3.39	3.10	2680.0	3.50	2.50	2.14	430.0	1.89	1.71	1.68
2750.0	2780.0	3.67	3.07	2.77	2780.0	3.94	2.53	1.96	450.0	1.97	1.75	1.69
2850.0	2880.0	4.01	3.31	3.01	2880.0	4.40	2.67	1.86	470.0	2.02	1.77	1.68
2950.0	2980.0	3.78	3.13	2.80	2980.0	4.60	2.67	1.72	490.0	2.10	1.81	1.70
3050.0	3080.0	3.06	2.52	2.25	3080.0	4.68	2.65	1.65	500.0	2.15	1.85	1.72
3150.0	3180.0	2.46	2.06	1.83	3180.0	4.54	2.61	1.74	520.0	2.25	1.92	1.78
3250.0	3280.0	1.91	1.59	1.43	3280.0	4.06	2.42	1.84	530.0	2.30	1.96	1.81
3350.0	3380.0	1.60	1.34	1.21	3380.0	3.24	2.17	1.97	550.0	2.39	2.02	1.86
3450.0	3480.0	1.49	1.31	1.22	3480.0	2.55	2.03	2.14	560.0	2.43	2.05	1.88
3550.0	3580.0	1.59	1.45	1.40	3580.0	2.04	1.92	2.22	580.0	2.53	2.14	1.95
3650.0	3680.0	1.67	1.56	1.52	3680.0	1.66	1.78	2.15	590.0	2.59	2.19	2.00
3730.0	3760.0	1.63	1.48	1.43	3760.0	1.38	1.57	1.89	610.0	2.71	2.29	2.08
3830.0	3860.0	1.83	1.74	1.67	3860.0	1.02	1.34	1.68	620.0	2.76	2.33	2.11
3910.0	3940.0	1.87	1.76	1.65	3940.0	1.31	1.54	1.91	640.0	2.87	2.42	2.19
4010.0	4040.0	2.22	2.03	1.89	4040.0	1.68	1.81	2.15	650.0	2.94	2.47	2.23
4090.0	4120.0	2.30	2.10	1.96	4120.0	1.96	1.92	2.20	670.0	3.06	2.57	2.31
4190.0	4220.0	2.36	2.11	1.96	4220.0	2.43	2.14	2.22	680.0	3.16	2.64	2.38
4270.0	4300.0	2.47	2.20	2.04	4300.0	2.78	2.21	2.10	700.0	3.29	2.75	2.47
4370.0	4400.0	2.58	2.34	2.20	4400.0	3.19	2.26	1.89	710.0	3.35	2.80	2.51

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+17	47	18	33	11	36	20	45	33	57
1	-	21	+0	27	34	20	38	42	49	47	55	57
2	85	48	46	58	50	68	63	50	57	65	54	60
3	>90	58	>69	62	60	65	>69	62	>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: 1650 MHz; -14.00 dBm.
 LO IN: 1680 MHz; +7.00 dBm
 IF OUT: 30 MHz; -21.5 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+7	45	27	33	23	47	34	52	59	67
1	-	21	+0	27	34	23	40	42	53	60	65	55
2	65	39	36	47	39	67	51	51	50	63	52	64
3	>90	41	61	46	40	50	64	45	59	63	65	60
4	>90	57	64	61	64	61	64	67	66	54	>78	72
5	>90	69	75	54	>78	62	65	68	77	75	75	68
6	>90	>78	>78	71	78	>78	75	74	72	>78	74	68
7	>90	>78	>78	>78	>78	73	>78	>78	70	>78	>78	>78
8	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
9	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
10	>90	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78	>78
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 1650 MHz; -4.00 dBm.
 LO IN: 1680 MHz; +7.00 dBm
 IF OUT: 30 MHz; -11.61 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.