

Frequency Mixer

MCA-50MH+

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=+9dBm (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+10	+13	+16			+10	+13	+16			+10	+13	+16
800.1	830.1	7.54	6.67	6.06	800.1	830.1	19.28	18.30	20.34	800.1	830.1	0.69	0.65	0.68
940.1	970.1	7.43	6.48	5.84	940.1	970.1	17.63	20.65	26.36	940.1	970.1	0.73	0.71	0.75
1080.1	1110.1	8.03	6.89	6.05	1080.1	1110.1	15.78	19.40	21.00	1080.1	1110.1	0.25	0.42	0.60
1220.1	1250.1	7.64	6.61	6.08	1220.1	1250.1	16.10	20.68	23.57	1220.1	1250.1	0.48	0.50	0.49
1360.1	1390.1	7.24	6.63	6.28	1360.1	1390.1	18.28	19.87	20.46	1360.1	1390.1	0.59	0.41	0.38
1500.1	1530.1	7.15	6.42	6.16	1500.1	1530.1	22.58	19.18	19.30	1500.1	1530.1	0.54	0.38	0.33
1640.1	1670.1	7.34	6.55	6.16	1640.1	1670.1	18.70	19.07	21.07	1640.1	1670.1	0.36	0.27	0.26
1780.1	1810.1	7.53	6.51	6.09	1780.1	1810.1	17.53	24.22	27.22	1780.1	1810.1	0.47	0.33	0.25
1920.1	1950.1	7.75	6.55	6.24	1920.1	1950.1	20.22	20.67	21.16	1920.1	1950.1	0.56	0.42	0.21
2060.1	2090.1	8.08	6.98	6.61	2060.1	2090.1	16.41	25.04	27.67	2060.1	2090.1	0.72	0.40	0.27
2200.1	2230.1	10.18	8.33	7.73	2200.1	2230.1	16.58	18.37	28.34	2200.1	2230.1	0.04	0.30	0.19
2480.1	2510.1	9.90	8.86	8.15	2480.1	2510.1	18.05	19.60	21.11	2480.1	2510.1	0.02	0.04	0.16
2620.1	2650.1	8.13	7.63	7.24	2620.1	2650.1	18.53	26.41	23.23	2620.1	2650.1	0.73	0.27	0.25
2760.1	2790.1	7.98	7.49	7.12	2760.1	2790.1	17.46	29.56	21.05	2760.1	2790.1	0.61	0.34	0.22
2900.1	2930.1	7.67	6.99	6.65	2900.1	2930.1	20.79	22.23	20.88	2900.1	2930.1	0.56	0.40	0.31
3040.1	3070.1	7.47	6.81	6.55	3040.1	3070.1	20.13	20.60	20.65	3040.1	3070.1	0.93	0.56	0.42
3180.1	3210.1	7.05	6.65	6.50	3180.1	3210.1	17.04	16.98	17.97	3180.1	3210.1	0.95	0.55	0.46
3320.1	3350.1	6.78	6.37	6.21	3320.1	3350.1	15.56	15.24	15.83	3320.1	3350.1	0.98	0.60	0.51
3460.1	3490.1	6.73	6.33	6.14	3460.1	3490.1	17.43	18.27	19.06	3460.1	3490.1	0.91	0.54	0.45
3600.1	3630.1	6.63	6.36	6.25	3600.1	3630.1	15.66	16.83	18.22	3600.1	3630.1	1.10	0.58	0.43
3740.1	3770.1	6.55	6.25	6.12	3740.1	3770.1	16.20	18.09	19.25	3740.1	3770.1	1.07	0.52	0.34
3880.1	3910.1	6.52	6.31	6.23	3880.1	3910.1	17.22	20.48	22.20	3880.1	3910.1	1.17	0.58	0.32
4020.1	4050.1	6.88	6.70	6.63	4020.1	4050.1	19.18	20.92	22.64	4020.1	4050.1	1.12	0.60	0.29
4160.1	4190.1	7.38	7.20	7.06	4160.1	4190.1	20.94	24.29	27.20	4160.1	4190.1	1.06	0.57	0.35
4300.1	4330.1	7.92	7.60	7.37	4300.1	4330.1	19.95	20.59	23.47	4300.1	4330.1	1.09	0.54	0.34
4460.1	4490.1	7.96	7.41	7.13	4460.1	4490.1	18.08	23.13	25.56	4460.1	4490.1	1.12	0.61	0.38
4600.1	4630.1	8.81	8.10	7.71	4600.1	4630.1	19.80	23.05	32.90	4600.1	4630.1	0.68	0.47	0.39
4760.1	4790.1	9.24	8.31	7.82	4760.1	4790.1	26.52	24.05	22.51	4760.1	4790.1	0.64	0.53	0.56
4900.1	4930.1	9.53	8.41	7.90	4900.1	4930.1	32.78	25.40	18.85	4900.1	4930.1	0.52	0.48	0.53
5060.1	5090.1	9.45	8.31	7.91	5060.1	5090.1	18.03	24.69	19.38	5060.1	5090.1	0.57	0.59	0.53
5200.1	5230.1	9.73	8.29	7.97	5200.1	5230.1	15.71	20.41	23.64	5200.1	5230.1	0.36	0.62	0.44
5360.1	5390.1	10.53	8.74	8.30	5360.1	5390.1	13.97	19.05	22.57	5360.1	5390.1	0.30	0.67	0.52
5500.1	5530.1	11.61	9.59	8.97	5500.1	5530.1	12.97	17.30	16.31	5500.1	5530.1	0.25	0.90	1.06
5660.1	5690.1	12.73	10.40	9.48	5660.1	5690.1	14.78	18.92	18.06	5660.1	5690.1	0.40	1.29	1.55
5800.1	5830.1	11.92	9.96	9.37	5800.1	5830.1	15.30	17.49	17.87	5800.1	5830.1	1.01	1.58	1.44
5960.1	5990.1	11.19	9.99	9.83	5960.1	5990.1	15.01	17.17	20.04	5960.1	5990.1	1.85	1.68	1.11
6100.1	6130.1	11.30	10.42	10.09	6100.1	6130.1	13.33	16.75	16.56	6100.1	6130.1	2.08	1.73	1.38
6260.1	6290.1	11.98	11.01	11.10	6260.1	6290.1	14.69	16.07	14.15	6260.1	6290.1	2.30	1.93	0.88
6400.1	6430.1	13.35	12.46	13.35	6400.1	6430.1	13.25	14.91	17.81	6400.1	6430.1	1.21	1.43	1.06

Frequency Mixer

MCA-50MH+

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=3000.1001MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1000.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=5010.1001MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+13			+13			+13
2200.0	800.1	9.12	10.0	1010.1	6.99	4210.0	800.1	10.69
2089.7	910.4	9.19	130.0	1130.1	6.42	4110.0	900.1	10.52
1979.4	1020.7	9.13	250.0	1250.1	6.26	4010.0	1000.1	10.35
1869.1	1131.0	9.10	370.0	1370.1	6.28	3910.0	1100.1	10.13
1758.8	1241.3	9.27	490.0	1490.1	6.34	3810.0	1200.1	9.80
1648.6	1351.5	9.11	610.0	1610.1	6.39	3710.0	1300.1	9.68
1538.3	1461.8	8.63	730.0	1730.1	6.50	3610.0	1400.1	10.13
1428.0	1572.1	8.13	850.0	1850.1	6.33	3510.0	1500.1	10.22
1317.7	1682.4	8.18	970.0	1970.1	6.10	3410.0	1600.1	10.56
1207.4	1792.7	8.53	1090.0	2090.1	6.31	3310.0	1700.1	10.95
1097.1	1903.0	8.65	1210.0	2210.1	6.71	3190.0	1820.1	11.14
986.8	2013.3	8.42	1330.0	2330.1	7.01	3090.0	1920.1	10.99
876.5	2123.6	8.17	1450.0	2450.1	7.08	2970.0	2040.1	11.02
766.3	2233.8	8.00	1570.0	2570.1	7.04	2870.0	2140.1	10.86
656.0	2344.1	7.89	1690.0	2690.1	7.45	2750.0	2260.1	10.45
545.7	2454.4	7.37	1810.0	2810.1	7.88	2650.0	2360.1	10.28
435.4	2564.7	7.17	1930.0	2930.1	8.05	2530.0	2480.1	10.00
325.1	2675.0	7.48	2050.0	3050.1	8.15	2430.0	2580.1	10.16
214.8	2785.3	7.55	2170.0	3170.1	8.18	2310.0	2700.1	10.14
104.5	2895.6	6.98	2310.0	3310.1	8.72	2210.0	2800.1	9.57
10.0	3010.1	7.23	2430.0	3430.1	9.10	2090.0	2920.1	9.30
179.5	3179.6	6.94	2570.0	3570.1	9.16	1990.0	3020.1	9.00
349.0	3349.1	7.10	2690.0	3690.1	9.25	1870.0	3140.1	8.80
518.5	3518.6	7.00	2830.0	3830.1	9.29	1770.0	3240.1	8.77
688.0	3688.1	6.92	2950.0	3950.1	8.79	1650.0	3360.1	9.15
857.5	3857.6	6.67	3090.0	4090.1	8.80	1550.0	3460.1	9.42
1051.2	4051.3	6.68	3210.0	4210.1	8.87	1430.0	3580.1	9.34
1220.7	4220.8	6.91	3350.0	4350.1	9.44	1330.0	3680.1	9.21
1414.4	4414.5	7.36	3470.0	4470.1	9.52	1210.0	3800.1	9.02
1583.9	4584.0	7.62	3610.0	4610.1	8.95	1110.0	3900.1	8.87
1777.6	4777.7	7.78	3730.0	4730.1	8.42	990.0	4020.1	8.95
1947.1	4947.2	8.75	3870.0	4870.1	7.94	890.0	4120.1	8.93
2140.9	5141.0	9.42	3990.0	4990.1	7.50	770.0	4240.1	8.76
2310.4	5310.5	9.76	4130.0	5130.1	7.77	670.0	4340.1	8.61
2504.1	5504.2	10.44	4250.0	5250.1	8.65	550.0	4460.1	8.53
2673.6	5673.7	10.95	4390.0	5390.1	9.87	450.0	4560.1	8.59
2867.3	5867.4	11.13	4510.0	5510.1	10.32	330.0	4680.1	8.62
3036.8	6036.9	11.51	4650.0	5650.1	10.77	230.0	4780.1	8.48
3230.5	6230.6	11.63	4770.0	5770.1	11.45	110.0	4900.1	8.41
3400.0	6400.1	13.40	4910.0	5910.1	12.90	10.0	5000.1	8.49



Frequency Mixer

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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
830.1	10.41	12.44	14.48	30.07	30.80	31.10
970.1	12.73	14.61	16.64	28.80	29.64	30.23
1110.1	15.45	16.83	18.21	28.68	29.74	30.21
1250.1	18.79	20.57	22.24	29.06	30.51	30.27
1390.1	22.53	25.81	28.15	29.45	30.83	30.12
1530.1	24.41	31.01	37.79	28.76	30.65	29.66
1670.1	25.72	34.94	37.64	28.25	29.89	28.86
1810.1	24.67	36.39	31.57	28.62	28.75	27.33
1950.1	23.86	34.48	30.42	28.61	27.74	26.59
2090.1	21.12	28.81	29.17	28.20	27.06	26.40
2230.1	21.75	27.50	24.03	28.01	26.41	25.82
2510.1	25.27	25.67	24.59	28.43	27.78	28.53
2650.1	27.42	28.56	27.72	28.15	28.50	29.58
2790.1	27.93	31.57	30.93	27.76	29.77	31.17
2930.1	28.45	31.00	33.59	26.56	28.60	30.15
3070.1	30.27	32.66	36.89	25.25	27.21	28.34
3210.1	29.69	32.44	36.66	24.32	26.73	27.05
3350.1	33.31	36.65	40.83	23.39	25.58	27.31
3490.1	45.57	44.07	41.60	22.45	24.81	27.25
3630.1	40.28	39.10	36.74	22.54	25.00	26.98
3770.1	41.15	45.55	40.59	22.97	25.32	26.82
3910.1	39.00	41.70	41.28	23.57	26.19	27.90
4050.1	35.58	36.74	41.07	24.14	27.01	28.17
4190.1	37.18	39.96	54.05	22.89	25.74	26.67
4330.1	37.61	45.70	46.08	22.87	24.99	25.87
4490.1	31.10	33.43	37.62	22.59	25.13	26.09
4630.1	30.21	32.90	37.20	22.16	24.47	24.89
4790.1	28.67	30.99	35.31	21.12	23.16	23.13
4930.1	27.23	28.79	31.66	20.82	23.21	23.47
5090.1	28.44	30.92	35.00	22.35	24.24	23.89
5230.1	28.73	30.40	33.69	23.45	25.03	23.29
5390.1	29.06	27.71	28.51	23.29	23.49	22.13
5530.1	30.75	28.79	29.20	24.29	23.52	22.36
5690.1	33.71	32.01	32.16	24.90	24.07	22.64
5830.1	36.65	36.29	36.14	24.32	23.59	22.36
5990.1	43.44	47.04	37.80	23.45	22.71	21.56
6130.1	36.52	37.55	33.02	21.97	21.20	20.50
6290.1	24.98	25.85	25.86	19.71	19.21	19.10
6430.1	21.46	22.05	21.65	21.20	20.73	20.45

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+10	+13	+16
800.1	830.1	29.88	27.96	27.56
940.1	970.1	28.11	26.53	26.39
1080.1	1110.1	29.10	28.05	26.34
1220.1	1250.1	28.83	27.04	27.04
1360.1	1390.1	29.16	28.53	29.02
1500.1	1530.1	28.35	28.34	28.86
1640.1	1670.1	27.22	27.49	26.87
1780.1	1810.1	25.26	26.49	25.90
1920.1	1950.1	25.98	25.82	25.80
2060.1	2090.1	29.05	26.77	26.62
2200.1	2230.1	30.56	28.73	27.98
2480.1	2510.1	41.03	34.24	34.80
2620.1	2650.1	45.07	38.39	38.46
2760.1	2790.1	42.49	35.71	34.39
2900.1	2930.1	40.23	39.36	36.71
3040.1	3070.1	51.73	42.07	39.62
3180.1	3210.1	35.04	34.40	32.70
3320.1	3350.1	29.45	27.98	26.98
3460.1	3490.1	26.71	25.95	25.31
3600.1	3630.1	25.47	25.30	25.11
3740.1	3770.1	25.33	26.30	26.68
3880.1	3910.1	27.19	27.63	27.26
4020.1	4050.1	22.08	21.57	21.01
4160.1	4190.1	19.53	19.43	19.55
4300.1	4330.1	17.09	16.83	16.92
4460.1	4490.1	17.48	17.56	17.73
4600.1	4630.1	18.10	18.35	18.44
4760.1	4790.1	18.88	19.39	19.38
4900.1	4930.1	17.65	17.90	17.99
5060.1	5090.1	17.94	18.36	18.76
5200.1	5230.1	19.21	20.03	20.45
5360.1	5390.1	20.40	21.41	21.70
5500.1	5530.1	20.12	20.20	21.23
5660.1	5690.1	18.90	19.34	20.31
5800.1	5830.1	17.60	18.35	19.31
5960.1	5990.1	16.05	17.27	18.34
6100.1	6130.1	15.15	16.19	17.20
6260.1	6290.1	14.30	15.04	15.46
6400.1	6430.1	13.82	14.47	15.09

Frequency Mixer

MCA-50MH+

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)		
		+10	+13	+16		+10	+13	+16		+10	+13	+16
800.1	830.1	2.28	2.04	1.84	830.1	1.28	1.33	1.82	10.0	1.50	1.13	1.03
940.1	970.1	2.50	2.20	1.95	970.1	1.41	1.11	1.58	70.0	1.53	1.15	1.02
1080.1	1110.1	3.11	2.73	2.42	1110.1	1.67	1.06	1.37	130.0	1.54	1.17	1.06
1220.1	1250.1	3.35	2.93	2.69	1250.1	2.06	1.25	1.19	190.0	1.55	1.19	1.08
1360.1	1390.1	3.30	2.95	2.77	1390.1	2.35	1.39	1.08	250.0	1.58	1.22	1.11
1500.1	1530.1	3.30	2.78	2.52	1530.1	2.57	1.48	1.04	310.0	1.60	1.25	1.15
1640.1	1670.1	3.24	2.74	2.38	1670.1	2.49	1.51	1.17	350.0	1.62	1.26	1.16
1780.1	1810.1	2.94	2.36	2.01	1810.1	2.63	1.69	1.35	410.0	1.66	1.30	1.20
1920.1	1950.1	2.72	2.23	2.01	1950.1	2.68	1.79	1.47	450.0	1.69	1.32	1.22
2060.1	2090.1	2.68	2.23	2.06	2090.1	2.73	1.82	1.53	510.0	1.73	1.38	1.28
2200.1	2230.1	2.60	2.31	2.13	2230.1	2.61	1.89	1.55	550.0	1.76	1.39	1.28
2480.1	2510.1	2.54	2.41	2.33	2510.1	2.53	1.73	1.46	650.0	1.82	1.46	1.36
2620.1	2650.1	2.58	2.43	2.30	2650.1	2.36	1.59	1.44	710.0	1.88	1.54	1.45
2760.1	2790.1	2.45	2.35	2.25	2790.1	2.31	1.62	1.52	750.0	1.90	1.56	1.48
2900.1	2930.1	2.32	2.18	2.07	2930.1	2.37	1.68	1.64	810.0	1.95	1.64	1.56
3040.1	3070.1	1.97	1.80	1.74	3070.1	2.37	1.66	1.70	850.0	1.93	1.63	1.56
3180.1	3210.1	1.72	1.52	1.43	3210.1	2.10	1.63	1.82	910.0	1.96	1.69	1.62
3320.1	3350.1	1.76	1.54	1.40	3350.1	1.97	1.64	1.93	950.0	1.93	1.68	1.62
3460.1	3490.1	1.42	1.27	1.20	3490.1	1.73	1.63	2.00	1010.0	1.93	1.70	1.64
3600.1	3630.1	1.31	1.21	1.20	3630.1	1.61	1.66	2.13	1050.0	1.90	1.69	1.64
3740.1	3770.1	1.14	1.13	1.22	3770.1	1.34	1.60	2.13	1110.0	1.89	1.71	1.67
3880.1	3910.1	1.03	1.18	1.32	3910.1	1.17	1.64	2.25	1150.0	1.84	1.69	1.68
4020.1	4050.1	1.09	1.25	1.38	4050.1	1.15	1.65	2.22	1210.0	1.80	1.69	1.71
4160.1	4190.1	1.13	1.12	1.17	4190.1	1.23	1.67	2.24	1250.0	1.75	1.68	1.73
4300.1	4330.1	1.38	1.37	1.37	4330.1	1.51	1.74	2.18	1310.0	1.69	1.66	1.74
4460.1	4490.1	1.75	1.68	1.64	4490.1	1.92	1.90	2.22	1350.0	1.62	1.64	1.76
4600.1	4630.1	2.27	2.16	2.09	4630.1	2.37	2.04	2.13	1410.0	1.54	1.62	1.77
4760.1	4790.1	2.89	2.71	2.60	4790.1	2.97	2.21	2.03	1450.0	1.50	1.66	1.84
4900.1	4930.1	3.32	3.01	2.86	4930.1	3.60	2.39	1.93	1510.0	1.49	1.73	1.94
5060.1	5090.1	3.57	3.03	2.82	5090.1	4.72	2.76	1.92	1550.0	1.56	1.88	2.13
5200.1	5230.1	4.03	3.16	2.80	5230.1	5.46	3.06	2.00	1610.0	1.63	2.03	2.30
5360.1	5390.1	4.07	3.05	2.68	5390.1	6.11	3.42	2.26	1650.0	1.77	2.24	2.53
5500.1	5530.1	4.62	3.72	3.31	5530.1	6.37	3.58	2.51	1710.0	1.89	2.41	2.73
5660.1	5690.1	4.67	3.81	3.35	5690.1	6.30	3.73	2.84	1750.0	2.02	2.61	2.95
5800.1	5830.1	4.04	3.25	2.93	5830.1	5.58	3.67	3.02	1810.0	2.15	2.80	3.17
5960.1	5990.1	2.95	2.60	2.53	5990.1	4.52	3.42	2.94	1850.0	2.26	2.96	3.36
6100.1	6130.1	2.41	2.28	2.26	6130.1	3.65	2.78	2.51	1910.0	2.39	3.12	3.54
6260.1	6290.1	1.87	1.86	1.86	6290.1	2.11	1.80	1.81	1950.0	2.48	3.24	3.66
6400.1	6430.1	1.86	2.00	2.19	6430.1	1.32	1.48	1.73	2010.0	2.52	3.21	3.58

Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	---	---	3	17	17	21	15	26	29	---	---	---
1	---	25	+0	40	22	47	38	43	40	48	---	---
2	76	54	54	46	51	56	53	62	56	58	57	---
3	>90	>77	71	>77	64	72	73	>77	>77	>77	66	>77
4	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
5	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
6	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
7	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
8	---	---	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
9	---	---	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
10	---	---	---	>77	>77	>77	>77	>77	>77	>77	>77	>77
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

Test conditions: RF IN: 3000 MHz; -6.00 dBm.
 LO IN: 3030 MHz; +13.00 dBm
 IF OUT: 30 MHz; -13.19 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	---	---	13	27	28	30	28	36	41	---	---	---
1	---	24	+0	47	23	46	41	44	46	51	---	---
2	57	45	47	36	42	47	47	55	47	53	52	---
3	84	59	50	63	42	54	53	61	61	64	55	67
4	>90	71	62	72	63	58	58	65	58	68	72	69
5	>90	80	77	74	75	73	62	70	71	79	75	72
6	>90	>87	>87	83	78	>87	77	77	75	>87	75	79
7	>90	>87	>87	>87	>87	>87	>87	>87	78	>87	82	>87
8	---	---	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
9	---	---	>87	>87	>87	>87	>87	>87	>87	>87	>87	>87
10	---	---	---	85	>87	>87	>87	>87	>87	>87	>87	>87
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 3000 MHz; 4.00 dBm.
 LO IN: 3030 MHz; +13.00 dBm
 IF OUT: 30 MHz; -3.34 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.