

# Frequency Mixer

# SCM-2500NL

## 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
250.1	280.1	10.59	9.95	9.59	250.1	280.1	12.75	13.21	15.22	250.1	280.1	0.04	-0.02	0.02
330.4	360.4	8.87	8.25	7.91	330.4	360.4	10.68	13.32	13.61	330.4	360.4	0.40	0.34	0.30
410.6	440.6	7.51	6.91	6.59	410.6	440.6	6.37	7.17	8.15	410.6	440.6	0.89	0.77	0.63
490.9	520.9	6.50	6.01	5.77	490.9	520.9	6.49	7.42	8.75	490.9	520.9	1.30	1.08	0.89
571.1	601.1	6.17	5.77	5.59	571.1	601.1	16.84	12.84	11.68	571.1	601.1	1.48	1.10	0.86
651.4	681.4	6.36	5.95	5.75	651.4	681.4	9.90	13.40	17.43	651.4	681.4	1.85	1.52	1.26
731.6	761.6	6.12	5.54	5.29	731.6	761.6	10.79	9.86	9.75	731.6	761.6	2.91	2.49	2.11
811.9	841.9	5.89	5.16	4.83	811.9	841.9	4.08	5.29	6.18	811.9	841.9	3.52	3.17	2.77
892.1	922.1	6.13	5.31	4.90	892.1	922.1	3.06	4.67	6.29	892.1	922.1	3.23	3.10	2.87
972.4	1002.4	6.35	5.81	5.48	972.4	1002.4	1.96	3.26	4.74	972.4	1002.4	2.78	2.50	2.31
1052.6	1082.6	6.18	5.70	5.44	1052.6	1082.6	2.89	3.73	4.79	1052.6	1082.6	2.70	2.39	2.13
1132.9	1162.9	6.25	5.77	5.55	1132.9	1162.9	3.99	4.95	6.08	1132.9	1162.9	2.60	2.17	1.85
1213.2	1243.2	6.33	5.87	5.70	1213.2	1243.2	6.16	7.67	10.00	1213.2	1243.2	2.42	1.80	1.48
1293.4	1323.4	6.44	6.05	5.93	1293.4	1323.4	7.73	8.69	9.89	1293.4	1323.4	2.11	1.50	1.22
1373.7	1403.7	6.58	6.13	6.08	1373.7	1403.7	10.73	12.26	12.45	1373.7	1403.7	1.92	1.30	0.99
1453.9	1483.9	6.74	6.19	6.09	1453.9	1483.9	10.06	12.95	14.17	1453.9	1483.9	1.99	1.42	1.11
1534.2	1564.2	7.43	6.64	6.40	1534.2	1564.2	8.51	11.54	13.09	1534.2	1564.2	1.69	1.43	1.18
1614.4	1644.4	7.91	7.08	6.79	1614.4	1644.4	13.87	12.13	13.40	1614.4	1644.4	1.14	1.03	0.87
1694.7	1724.7	7.96	7.21	6.96	1694.7	1724.7	11.75	12.14	12.12	1694.7	1724.7	0.97	0.84	0.69
1774.9	1804.9	7.88	7.16	6.90	1774.9	1804.9	10.96	11.96	13.31	1774.9	1804.9	0.94	0.76	0.60
1855.2	1885.2	7.77	7.10	6.86	1855.2	1885.2	11.61	11.36	13.69	1855.2	1885.2	0.96	0.80	0.63
1935.5	1965.5	7.65	7.04	6.74	1935.5	1965.5	12.38	11.52	12.08	1935.5	1965.5	0.94	0.76	0.63
2015.7	2045.7	7.66	7.10	6.80	2015.7	2045.7	11.90	10.79	11.63	2015.7	2045.7	0.93	0.75	0.59
2096.0	2126.0	7.68	7.18	6.85	2096.0	2126.0	12.47	11.42	10.72	2096.0	2126.0	0.99	0.75	0.59
2176.2	2206.2	7.68	7.23	6.92	2176.2	2206.2	10.84	11.08	11.91	2176.2	2206.2	1.18	0.82	0.64
2256.5	2286.5	7.40	6.98	6.76	2256.5	2286.5	10.35	10.76	10.44	2256.5	2286.5	1.48	1.03	0.79
2336.7	2366.7	7.24	6.66	6.39	2336.7	2366.7	9.01	9.81	9.94	2336.7	2366.7	1.69	1.17	0.92
2417.0	2447.0	7.26	6.61	6.31	2417.0	2447.0	7.06	8.41	8.42	2417.0	2447.0	2.07	1.36	1.07
2497.2	2527.2	7.44	6.43	6.04	2497.2	2527.2	6.38	7.38	7.92	2497.2	2527.2	2.52	1.67	1.32
2577.5	2607.5	8.29	6.66	5.98	2577.5	2607.5	3.38	5.23	6.51	2577.5	2607.5	2.22	1.58	1.20
2657.7	2687.7	8.68	6.61	5.84	2657.7	2687.7	1.63	3.44	5.27	2657.7	2687.7	2.35	1.95	1.33
2738.0	2768.0	8.95	6.41	5.56	2738.0	2768.0	0.42	2.62	5.21	2738.0	2768.0	2.40	2.51	1.69
2818.3	2848.3	9.29	6.44	5.53	2818.3	2848.3	0.40	3.40	6.99	2818.3	2848.3	2.45	2.77	1.99
2898.5	2928.5	9.35	6.77	5.80	2898.5	2928.5	2.79	4.83	7.91	2898.5	2928.5	2.85	2.98	2.12
2978.8	3008.8	9.34	7.16	6.15	2978.8	3008.8	4.38	6.20	8.89	2978.8	3008.8	3.24	2.79	1.95
3059.0	3089.0	9.83	7.63	6.52	3059.0	3089.0	3.58	6.60	9.69	3059.0	3089.0	2.91	2.49	1.64
3139.3	3169.3	10.32	8.16	7.15	3139.3	3169.3	4.70	7.41	10.05	3139.3	3169.3	2.48	2.15	1.26
3219.5	3249.5	11.14	8.88	7.86	3219.5	3249.5	5.54	10.55	11.50	3219.5	3249.5	1.95	1.64	0.87
3299.8	3329.8	12.61	9.92	8.87	3299.8	3329.8	3.54	16.80	15.44	3299.8	3329.8	1.01	1.25	0.61
3400.1	3430.1	14.03	10.97	10.05	3400.1	3430.1	3.62	14.53	16.57	3400.1	3430.1	0.13	0.90	0.42



# Frequency Mixer

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## Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1500.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=500.1MHz (dB)	IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2500.1MHz (dB)
		@LO (dBm)			@LO (dBm)			@LO (dBm)
		+7			+7			+7
500.0	1000.1	6.62	10.0	510.1	6.00	500.0	2000.1	7.15
479.6	1020.5	6.75	22.6	522.7	5.97	487.4	2012.7	7.14
459.2	1040.9	6.70	35.1	535.2	5.99	474.9	2025.2	7.15
438.8	1061.4	6.78	47.7	547.8	6.04	462.3	2037.8	7.13
418.3	1081.8	6.87	60.3	560.4	6.04	449.7	2050.4	7.11
397.9	1102.2	6.85	72.8	572.9	6.01	437.2	2062.9	7.09
377.5	1122.6	6.99	85.4	585.5	6.02	424.6	2075.5	7.05
357.1	1143.0	7.01	97.9	598.0	5.95	412.1	2088.0	7.06
336.7	1163.4	6.97	110.5	610.6	5.94	399.5	2100.6	7.05
316.3	1183.9	6.93	123.1	623.2	5.98	386.9	2113.2	7.03
295.8	1204.3	6.80	135.6	635.7	6.00	374.4	2125.7	7.00
275.4	1224.7	6.75	148.2	648.3	6.15	361.8	2138.3	6.92
255.0	1245.1	6.65	160.8	660.9	6.21	349.2	2150.9	6.85
234.6	1265.5	6.56	173.3	673.4	6.26	336.7	2163.4	6.82
214.2	1285.9	6.52	185.9	686.0	6.41	324.1	2176.0	6.76
193.8	1306.4	6.39	198.5	698.6	6.40	311.5	2188.6	6.73
173.3	1326.8	6.29	211.0	711.1	6.51	299.0	2201.1	6.70
152.9	1347.2	6.22	223.6	723.7	6.59	286.4	2213.7	6.68
132.5	1367.6	6.19	236.2	736.3	6.62	273.8	2226.3	6.68
112.1	1388.0	6.18	248.7	748.8	6.76	261.3	2238.8	6.63
71.3	1428.9	6.26	261.3	761.4	6.73	248.7	2251.4	6.58
50.8	1449.3	6.26	273.8	773.9	6.76	236.2	2263.9	6.54
10.0	1490.1	6.41	286.4	786.5	6.85	223.6	2276.5	6.54
10.0	1510.1	6.55	299.0	799.1	6.83	211.0	2289.1	6.57
50.8	1550.9	6.45	311.5	811.6	6.97	198.5	2301.6	6.61
71.3	1571.4	6.53	324.1	824.2	7.03	185.9	2314.2	6.58
112.1	1612.2	6.74	336.7	836.8	7.07	173.3	2326.8	6.56
132.5	1632.6	6.81	349.2	849.3	7.24	160.8	2339.3	6.52
173.3	1673.4	6.98	361.8	861.9	7.27	148.2	2351.9	6.49
193.8	1693.9	7.09	374.4	874.5	7.35	135.6	2364.5	6.47
234.6	1734.7	7.20	386.9	887.0	7.45	123.1	2377.0	6.46
255.0	1755.1	7.28	399.5	899.6	7.45	110.5	2389.6	6.44
295.8	1795.9	7.34	412.1	912.2	7.58	97.9	2402.2	6.44
316.2	1816.4	7.41	424.6	924.7	7.61	85.4	2414.7	6.40
357.1	1857.2	7.56	437.2	937.3	7.61	72.8	2427.3	6.38
377.5	1877.6	7.69	449.7	949.8	7.67	60.3	2439.8	6.35
418.3	1918.4	7.81	462.3	962.4	7.67	47.7	2452.4	6.32
438.8	1938.9	7.87	474.9	975.0	7.71	35.1	2465.0	6.35
479.6	1979.7	7.93	487.4	987.5	7.78	22.6	2477.5	6.36
500.0	2000.1	7.97	500.0	1000.1	7.74	10.0	2490.1	6.55

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## Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10
250.1	54.97	55.83	55.65	36.23	36.09	35.88
330.4	56.23	58.93	56.23	32.53	32.38	32.55
410.6	53.63	62.38	59.59	29.28	29.65	29.94
490.9	48.30	54.74	63.25	27.31	27.78	28.11
571.1	46.72	50.74	48.85	25.34	25.71	25.93
651.4	47.45	48.72	45.46	23.63	24.12	24.47
731.6	46.28	51.27	47.81	22.38	22.93	23.26
811.9	38.77	42.74	47.09	21.24	21.70	22.04
892.1	35.09	38.02	40.72	20.06	20.54	20.77
972.4	32.44	34.87	37.29	18.66	19.04	19.15
1052.6	31.14	33.14	34.97	17.09	17.29	17.41
1132.9	30.15	32.14	33.77	15.76	15.86	15.81
1213.2	29.69	31.80	33.26	14.45	14.60	14.72
1293.4	29.78	31.89	33.33	13.60	13.92	14.28
1373.7	30.53	32.74	33.84	13.75	14.29	14.78
1453.9	30.72	33.80	35.98	14.01	14.68	15.21
1534.2	27.54	31.04	34.41	14.18	15.03	15.74
1614.4	26.95	30.99	35.33	14.55	15.61	16.53
1694.7	29.46	33.57	38.03	15.58	16.59	17.47
1774.9	33.18	37.03	40.09	16.76	17.72	18.33
1855.2	36.22	38.47	39.21	17.92	18.59	18.96
1935.5	37.72	38.61	38.55	18.95	19.32	19.43
2015.7	37.14	37.05	37.11	19.77	19.80	19.69
2096.0	37.02	36.75	36.30	20.46	20.15	19.77
2176.2	36.89	36.80	36.28	20.94	20.18	19.57
2256.5	37.36	37.77	37.56	20.91	20.04	19.45
2336.7	36.52	36.94	37.16	20.67	19.70	19.05
2417.0	36.17	36.52	36.56	19.95	19.36	18.77
2497.2	36.49	36.76	37.15	19.08	18.88	18.45
2577.5	36.87	36.02	35.85	18.06	18.08	18.02
2657.7	39.11	38.30	37.36	17.09	17.42	17.56
2738.0	41.97	40.97	38.35	16.32	16.69	16.92
2818.3	49.79	41.20	35.72	15.58	15.98	16.26
2898.5	39.44	36.00	33.06	15.20	15.63	16.02
2978.8	30.78	33.42	32.41	15.70	16.07	16.49
3059.0	29.35	32.95	33.19	16.56	16.75	17.02
3139.3	29.91	33.75	34.38	17.02	16.87	16.94
3219.5	30.99	34.92	36.26	16.69	16.49	16.40
3299.8	32.70	36.41	38.04	15.90	15.83	15.59
3400.1	35.24	38.57	40.82	14.95	14.92	14.75

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB)		
		@LO (dBm)		
		+4	+7	+10
250.1	280.1	24.62	23.87	23.29
330.4	360.4	23.14	22.37	21.70
410.6	440.6	21.62	21.07	20.81
490.9	520.9	20.81	20.17	19.84
571.1	601.1	18.61	17.95	17.54
651.4	681.4	17.34	16.86	16.47
731.6	761.6	17.31	17.06	16.88
811.9	841.9	20.08	19.74	19.27
892.1	922.1	26.64	25.21	23.70
972.4	1002.4	34.31	31.10	29.00
1052.6	1082.6	27.22	25.40	23.61
1132.9	1162.9	22.54	20.76	19.57
1213.2	1243.2	19.03	17.50	16.77
1293.4	1323.4	18.10	17.00	16.39
1373.7	1403.7	18.66	17.79	17.13
1453.9	1483.9	21.20	20.70	20.10
1534.2	1564.2	19.06	19.15	19.07
1614.4	1644.4	18.20	18.59	18.77
1694.7	1724.7	19.09	19.65	19.92
1774.9	1804.9	20.64	21.04	21.14
1855.2	1885.2	22.06	22.39	22.61
1935.5	1965.5	23.23	23.37	23.50
2015.7	2045.7	24.31	24.30	24.53
2096.0	2126.0	25.28	25.35	25.35
2176.2	2206.2	26.31	26.41	26.38
2256.5	2286.5	27.26	27.28	27.27
2336.7	2366.7	27.96	27.94	27.86
2417.0	2447.0	28.75	28.75	28.62
2497.2	2527.2	29.58	29.21	29.03
2577.5	2607.5	30.73	29.84	29.26
2657.7	2687.7	31.19	29.93	29.03
2738.0	2768.0	30.18	29.02	28.23
2818.3	2848.3	28.40	28.52	28.34
2898.5	2928.5	27.44	29.16	30.75
2978.8	3008.8	26.43	27.35	28.49
3059.0	3089.0	23.39	24.41	25.58
3139.3	3169.3	21.33	22.95	24.40
3219.5	3249.5	20.84	22.75	24.49
3299.8	3329.8	21.30	23.38	25.26
3400.1	3430.1	23.01	25.03	27.08

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## Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)		
		@LO (dBm)		
		+4	+7	+10
250.1	280.1	10.96	9.69	9.18
330.4	360.4	6.73	6.05	5.72
410.6	440.6	4.26	3.84	3.62
490.9	520.9	2.80	2.56	2.46
571.1	601.1	2.27	2.18	2.16
651.4	681.4	2.25	2.17	2.13
731.6	761.6	2.13	1.95	1.85
811.9	841.9	1.95	1.69	1.54
892.1	922.1	2.09	1.81	1.63
972.4	1002.4	2.31	2.21	2.10
1052.6	1082.6	2.39	2.36	2.32
1132.9	1162.9	2.58	2.53	2.52
1213.2	1243.2	2.72	2.69	2.71
1293.4	1323.4	2.81	2.82	2.85
1373.7	1403.7	2.78	2.75	2.78
1453.9	1483.9	2.75	2.59	2.55
1534.2	1564.2	3.05	2.89	2.80
1614.4	1644.4	3.35	3.29	3.26
1694.7	1724.7	3.89	3.73	3.70
1774.9	1804.9	4.45	4.13	4.00
1855.2	1885.2	4.86	4.35	4.12
1935.5	1965.5	5.17	4.66	4.26
2015.7	2045.7	5.27	4.89	4.53
2096.0	2126.0	5.36	4.98	4.63
2176.2	2206.2	5.30	4.87	4.61
2256.5	2286.5	4.99	4.48	4.17
2336.7	2366.7	4.80	4.19	3.80
2417.0	2447.0	4.37	3.79	3.42
2497.2	2527.2	4.27	3.45	2.97
2577.5	2607.5	4.56	3.43	2.92
2657.7	2687.7	4.20	2.90	2.44
2738.0	2768.0	3.63	2.30	1.87
2818.3	2848.3	2.86	1.74	1.39
2898.5	2928.5	2.08	1.37	1.25
2978.8	3008.8	1.49	1.16	1.47
3059.0	3089.0	1.07	1.43	1.96
3139.3	3169.3	1.57	2.09	2.83
3219.5	3249.5	2.61	3.15	4.09
3299.8	3329.8	4.28	4.60	5.70
3400.1	3430.1	7.25	7.08	8.20

LO (MHz)	LO VSWR (:1)		
	@LO (dBm)		
	+4	+7	+10
250.1	2.05	2.73	3.56
330.4	2.07	2.74	3.53
410.6	2.08	2.72	3.45
490.9	2.10	2.70	3.37
571.1	2.12	2.66	3.29
651.4	2.18	2.67	3.25
731.6	2.29	2.70	3.21
811.9	2.53	2.84	3.26
892.1	2.74	2.93	3.27
972.4	2.89	2.99	3.24
1052.6	2.95	2.95	3.13
1132.9	2.95	2.78	2.86
1213.2	2.98	2.62	2.60
1293.4	3.14	2.61	2.44
1373.7	3.19	2.54	2.25
1453.9	3.15	2.42	2.04
1534.2	3.03	2.28	1.83
1614.4	2.89	2.12	1.68
1694.7	2.68	1.98	1.59
1774.9	2.41	1.86	1.60
1855.2	2.14	1.80	1.70
1935.5	1.96	1.82	1.86
2015.7	1.87	1.90	2.05
2096.0	1.85	2.03	2.26
2176.2	1.92	2.21	2.49
2256.5	2.07	2.41	2.73
2336.7	2.25	2.60	2.93
2417.0	2.49	2.78	3.10
2497.2	2.78	2.98	3.25
2577.5	3.15	3.22	3.43
2657.7	3.52	3.47	3.60
2738.0	3.87	3.70	3.73
2818.3	4.15	3.94	3.88
2898.5	4.39	4.24	4.15
2978.8	4.74	4.55	4.41
3059.0	5.06	4.78	4.51
3139.3	5.23	4.89	4.56
3219.5	5.34	4.96	4.60
3299.8	5.41	4.96	4.56
3400.1	5.36	4.88	4.44

IF (OUT) (MHz)	IF VSWR @LO=2500.1MHz (:1)		
	@LO (dBm)		
	+4	+7	+10
10.0	1.31	1.20	1.27
22.6	1.33	1.05	1.11
35.1	1.30	1.14	1.23
47.7	1.32	1.19	1.27
60.3	1.37	1.21	1.29
72.8	1.39	1.21	1.28
85.4	1.41	1.24	1.31
97.9	1.44	1.31	1.37
110.5	1.50	1.39	1.45
123.1	1.54	1.46	1.51
135.6	1.57	1.48	1.52
148.2	1.56	1.49	1.54
160.8	1.58	1.51	1.59
173.3	1.64	1.57	1.64
185.9	1.70	1.62	1.67
198.5	1.74	1.67	1.70
211.0	1.76	1.70	1.72
223.6	1.78	1.74	1.77
236.2	1.83	1.81	1.85
248.7	1.90	1.87	1.91
261.3	1.95	1.89	1.93
273.8	1.96	1.88	1.91
286.4	1.96	1.90	1.93
299.0	2.00	1.96	2.00
311.5	2.06	2.06	2.09
324.1	2.11	2.11	2.14
336.7	2.10	2.09	2.11
349.2	2.05	2.04	2.05
361.8	2.04	2.01	2.04
374.4	2.06	2.04	2.07
386.9	2.10	2.07	2.09
399.5	2.10	2.07	2.07
412.1	2.07	2.04	2.02
424.6	2.04	2.01	2.00
437.2	2.03	2.02	2.02
449.7	2.03	2.01	2.01
462.3	2.01	1.97	1.96
474.9	1.95	1.91	1.89
487.4	1.89	1.85	1.83
500.0	1.87	1.84	1.82

## Harmonics Tables

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+13	26	14	30	13	34	29	33	31	47
1	-	15	+0	28	32	37	43	41	44	46	48	39
2	99	57	62	45	55	73	56	66	48	59	55	61
3	>100	68	77	62	63	77	>79	78	79	70	75	>79
4	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
5	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
6	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
7	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
8	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
9	>100	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79	>79
10	>100	>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: 1500.1 MHz; -14.00 dBm.  
 LO IN: 1530.01 MHz; +7.00 dBm  
 IF OUT: 29.91 MHz; -20.92 dBm

RF HARMONICS ORDER

	(-dBm)	(-dBc)										
0	-	-	+3	37	25	43	26	52	46	54	52	58
1	-	14	+0	28	31	37	45	44	49	52	54	53
2	82	46	56	39	48	78	50	59	43	56	51	59
3	>100	50	55	43	38	54	60	56	63	61	60	67
4	>100	79	82	73	64	56	65	69	67	70	59	65
5	>100	75	84	74	87	63	71	79	79	76	80	77
6	>100	84	81	>89	88	>89	71	78	81	83	80	82
7	>100	>89	>89	>89	>89	>89	>89	82	77	>89	86	>89
8	>100	>89	>89	>89	>89	>89	>89	>89	84	80	>89	>89
9	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
10	>100	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89	>89
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

### LO HARMONICS ORDER

Test conditions: RF IN: 1500.1 MHz; -4.00 dBm.  
 LO IN: 1530.01 MHz; +7.00 dBm  
 IF OUT: 29.91 MHz; -10.89 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.

