Frequency Mixer TFM-12MH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	5.59	5.26	5.21
90.8	120.8	5.95	5.68	5.56
171.6	201.6	6.26	5.92	5.71
252.3	282.3	6.83	6.31	5.94
333.0	363.0	7.14	6.54	6.13
413.8	443.8	7.53	6.73	6.27
494.5	524.5	7.81	6.94	6.43
575.3	605.3	7.94	7.04	6.53
656.0	686.0	8.01	7.14	6.68
736.7	766.7	8.00	7.20	6.78
817.5	847.5	7.68	7.05	6.65
898.2	928.2	7.66	7.07	6.68
978.9	1008.9	7.40	6.90	6.60
1059.7	1089.7	7.20	6.79	6.52
1140.4	1170.4	6.93	6.60	6.41
1221.1	1251.1	6.84	6.52	6.35
1301.9	1331.9	6.76	6.47	6.32
1382.6	1412.6	6.71	6.41	6.25
1463.4	1493.4	6.83	6.45	6.31
1544.1	1574.1	6.94	6.47	6.30
1624.8	1654.8	7.24	6.65	6.42
1705.6	1735.6	7.36	6.73	6.43
1786.3	1816.3	7.49	6.82	6.49
1867.0	1897.0	7.71	7.00	6.65
1947.8	1977.8	7.81	7.14	6.70
2028.5	2058.5	7.98	7.29	6.95
2109.2	2139.2	7.87	7.26	6.91
2210.2	2240.2	8.04	7.55	7.25
2290.9	2320.9	8.05	7.55	7.30
2391.8	2421.8	8.15	7.64	7.46
2472.6	2502.6	8.28	7.71	7.54
2573.5	2603.5	8.74	8.17	7.96
2654.2	2684.2	8.94	8.41	8.23
2755.1	2785.1	9.28	8.68	8.49
2835.9	2865.9	9.65	9.05	8.84
2936.8	2966.8	9.98	9.36	9.12
3017.5	3047.5	10.15	9.68	9.40
3118.4	3148.4	10.44	10.03	9.76
3199.2	3229.2	10.81	10.43	10.16
3300.1	3330.1	11.13	10.70	10.40

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+10	+13	+16
10.1	40.1	33.21	24.44	22.54
90.8	120.8	16.19	14.57	14.95
171.6	201.6	12.36	13.58	15.70
252.3	282.3	11.29	13.67	16.88
333.0	363.0	12.74	15.83	19.61
413.8	443.8	13.67	17.65	20.89
494.5	524.5	15.12	17.98	19.72
575.3	605.3	15.20	17.35	18.83
656.0	686.0	15.04	16.76	18.12
736.7	766.7	14.66	16.39	17.51
817.5	847.5	14.71	16.24	17.27
898.2	928.2	14.90	15.89	17.20
978.9	1008.9	14.74	15.83	16.50
1059.7	1089.7	15.66	16.07	16.70
1140.4	1170.4	16.78	16.65	17.14
1221.1	1251.1	16.95	17.58	17.33
1301.9	1331.9	17.70	18.38	18.00
1382.6	1412.6	16.88	18.43	19.85
1463.4	1493.4	17.09	18.31	19.51
1544.1	1574.1	18.72	19.40	20.71
1624.8	1654.8	22.05	18.68	19.95
1705.6	1735.6	22.23	19.45	18.87
1786.3	1816.3	19.18	19.52	19.84
1867.0	1897.0	18.02	18.25	19.07
1947.8	1977.8	17.12	17.74	17.49
2028.5	2058.5	16.56	17.46	18.56
2109.2	2139.2	16.24	16.68	17.76
2210.2	2240.2	16.56	16.81	17.49
2290.9	2320.9	16.43	17.04	17.42
2391.8	2421.8	16.68	17.06	17.78
2472.6	2502.6	17.78	20.14	19.33
2573.5	2603.5	18.05	20.39	21.13
2654.2	2684.2	18.58	19.20	21.56
2755.1	2785.1	21.95	17.98	21.12
2835.9	2865.9	26.98	21.61	21.43
2936.8	2966.8	24.79	21.71	23.32
3017.5	3047.5	29.56	21.57	23.39
3118.4	3148.4	25.20	25.41	25.39
3199.2	3229.2	25.85	27.02	26.90
3300.1	3330.1	26.15	27.40	27.34

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+9dBm (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	1.84	1.29	1.14
90.8	120.8	1.65	1.33	1.13
171.6	201.6	1.71	1.48	1.37
252.3	282.3	1.69	1.56	1.45
333.0	363.0	1.76	1.69	1.60
413.8	443.8	1.76	1.76	1.70
494.5	524.5	1.67	1.73	1.62
575.3	605.3	1.47	1.56	1.52
656.0	686.0	1.37	1.45	1.43
736.7	766.7	1.36	1.40	1.33
817.5	847.5	1.36	1.27	1.20
898.2	928.2	1.30	1.21	1.09
978.9	1008.9	1.38	1.21	1.08
1059.7	1089.7	1.39	1.20	1.07
1140.4	1170.4	1.22	0.99	0.86
1221.1	1251.1	1.09	0.86	0.74
1301.9	1331.9	1.01	0.76	0.62
1382.6	1412.6	0.97	0.68	0.55
1463.4	1493.4	0.94	0.60	0.47
1544.1	1574.1	0.93	0.64	0.50
1624.8	1654.8	0.90	0.66	0.52
1705.6	1735.6	0.97	0.74	0.62
1786.3	1816.3	0.99	0.79	0.69
1867.0	1897.0	0.88	0.78	0.67
1947.8	1977.8	0.78	0.69	0.65
2028.5	2058.5	0.69	0.58	0.54
2109.2	2139.2	0.80	0.66	0.61
2210.2	2240.2	0.64	0.48	0.45
2290.9	2320.9	0.56	0.44	0.41
2391.8	2421.8	0.52	0.38	0.38
2472.6	2502.6	0.49	0.37	0.34
2573.5	2603.5	0.28	0.24	0.25
2654.2	2684.2	0.25	0.21	0.23
2755.1	2785.1	0.16	0.17	0.20
2835.9	2865.9	0.16	0.17	0.17
2936.8	2966.8	0.15	0.16	0.19
3017.5	3047.5	0.16	0.12	0.15
3118.4	3148.4	0.21	0.14	0.16
3199.2	3229.2	0.20	0.14	0.15
3300.1	3330.1	0.19	0.14	0.15

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Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1010.1MHz (dB) @LO (dBm) +13
1000.0	10.1	10.62
979.8	30.3	10.50
959.6	50.5	10.32
939.4	70.7	10.23
919.2	90.9	10.15
899.0	111.1	9.98
878.8	131.3	9.84
858.6	151.5	9.70
838.4	171.7	9.55
818.2	191.9	9.47
798.0	212.1	9.32
777.8	232.3	9.20
757.6	252.5	9.03
737.3	272.8	9.00
717.1	293.0	8.91
696.9	313.2	8.91
676.7	333.4	8.68
656.5	353.6	8.63
636.3	373.8	8.57
616.1	394.0	8.37
575.7	434.4	8.22
555.5	454.6	8.15
515.1	495.0	8.13
494.9	515.2	8.15
454.5	555.6	8.02
434.3	575.8	7.94
393.9	616.2	7.72
373.7	636.4	7.62
333.3	676.8	7.50
313.1	697.0	7.50
272.7	737.4	7.42
252.4	757.7	7.39
212.0	798.1	7.32
191.8	818.3	7.19
151.4	858.7	7.22
131.2	878.9	7.18
90.8	919.3	7.15
70.6	939.5	7.11
30.2	979.9	6.97
10.0	1000.1	6.92

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +13
10.0	20.1	5.34
50.6	60.7	5.44
91.3	101.4	5.43
131.9	142.0	5.52
172.5	182.6	5.43
213.2	223.3	5.30
253.8	263.9	5.27
294.4	304.5	5.35
335.1	345.2	5.57
375.7	385.8	5.63
416.3	426.4	5.66
436.7	446.8	5.56
477.3	487.4	5.73
497.6	507.7	5.87
538.3	548.4	6.04
558.6	568.7	6.11
599.2	609.3	6.20
619.5	629.6	6.26
660.2	670.3	6.47
680.5	690.6	6.53
721.1	731.2	6.73
741.4	751.5	6.88
782.1	792.2	7.20
802.4	812.5	7.25
843.0	853.1	7.47
863.3	873.4	7.49
904.0	914.1	7.96
924.3	934.4	8.09
964.9	975.0	8.24
985.2	995.3	8.45
1025.9	1036.0	8.73
1046.2	1056.3	8.78
1086.8	1096.9	9.19
1107.1	1117.2	9.32
1147.8	1157.9	9.60
1168.1	1178.2	9.81
1208.7	1218.8	10.26
1229.0	1239.1	10.33
1269.7	1279.8	10.90
1290.0	1300.1	11.10

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=2010.1MHz (dB) @LO (dBm) +13
1210.0	800.1	11.32
1169.3	840.8	10.83
1128.6	881.5	10.42
1108.3	901.8	10.28
1067.6	942.5	9.91
1047.3	962.8	9.66
1006.6	1003.5	9.47
986.3	1023.8	9.35
945.6	1064.5	8.97
925.3	1084.8	8.88
884.6	1125.5	8.73
864.2	1145.9	8.61
823.6	1186.5	8.48
803.2	1206.9	8.45
762.5	1247.6	8.35
742.2	1267.9	8.30
701.5	1308.6	8.22
681.2	1328.9	8.18
640.5	1369.6	8.10
620.2	1389.9	8.08
579.5	1430.6	8.00
559.2	1450.9	7.96
518.5	1491.6	7.86
498.1	1512.0	7.82
457.5	1552.6	7.76
437.1	1573.0	7.73
396.4	1613.7	7.63
376.1	1634.0	7.57
335.4	1674.7	7.49
315.1	1695.0	7.44
274.4	1735.7	7.38
254.1	1756.0	7.36
213.4	1796.7	7.29
193.1	1817.0	7.28
152.4	1857.7	7.21
132.0	1878.1	7.21
91.4	1918.7	7.20
71.0	1939.1	7.19
30.3	1979.8	7.20
10.0	2000.1	7.21

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Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+10	+13	+16	+10	+13	+16
40.1	60.95	62.47	63.05	76.91	74.96	73.84
120.8	52.75	54.08	55.28	68.52	66.58	63.35
201.6	48.90	50.54	52.14	56.57	54.80	55.05
282.3	46.36	48.24	50.05	49.62	49.28	49.18
363.0	44.33	46.46	48.54	46.05	45.84	45.09
443.8	42.71	44.79	46.74	44.98	43.62	41.90
524.5	41.55	43.39	45.19	43.94	41.33	39.05
605.3	40.80	42.72	44.42	42.53	39.71	37.42
686.0	39.71	41.61	43.34	41.81	37.62	35.45
766.7	38.59	40.10	41.67	40.08	36.05	33.87
847.5	37.81	39.06	40.41	38.50	34.61	32.67
928.2	37.33	38.33	39.35	37.29	33.75	31.43
1008.9	36.91	37.71	38.54	35.89	32.50	30.46
1089.7	37.35	38.02	38.54	34.11	31.35	29.60
1170.4	35.27	36.62	37.73	33.13	30.70	29.01
1251.1	35.30	36.68	37.81	31.56	29.73	28.15
1331.9	34.46	35.85	36.99	30.39	29.02	27.73
1412.6	33.69	35.07	36.18	29.60	28.55	27.38
1493.4	33.08	34.48	35.69	29.00	27.96	27.08
1574.1	32.09	33.69	35.06	28.52	27.53	26.70
1654.8	30.96	32.83	34.46	29.02	27.77	26.94
1735.6	30.27	32.79	35.28	32.75	30.93	29.79
1816.3	31.78	35.94	40.66	39.95	41.10	40.42
1897.0	33.39	38.13	43.48	31.01	31.93	32.18
1977.8	33.90	38.25	42.03	28.31	29.03	29.19
2058.5	34.27	38.02	40.76	27.11	27.62	27.93
2139.2	34.27	37.20	38.81	26.33	26.78	27.01
2240.2	34.55	36.84	37.63	25.58	26.12	26.17
2320.9	34.46	35.84	36.26	25.10	25.57	25.56
2421.8	34.01	34.34	34.59	24.60	24.69	24.79
2502.6	33.42	32.95	32.69	24.13	24.06	23.96
2603.5	33.01	32.03	31.80	23.80	23.40	23.13
2684.2	32.39	31.50	31.04	23.25	22.92	22.36
2785.1	31.45	30.20	29.61	22.87	22.27	21.61
2865.9	30.32	29.59	28.88	22.24	21.91	20.96
2966.8	29.24	28.68	28.09	21.49	21.30	20.52
3047.5	28.61	28.27	27.69	21.04	20.94	20.17
3148.4	27.96	27.92	27.42	20.44	20.59	20.04
3229.2	27.67	27.92	27.54	20.21	20.65	20.25
3330.1	27.56	27.93	27.79	20.26	20.88	20.67

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+10	+13	+16
10.1	40.1	22.29	22.96	22.79
90.8	120.8	22.11	22.24	22.51
171.6	201.6	23.01	23.34	23.60
252.3	282.3	23.69	24.39	24.93
333.0	363.0	25.53	26.21	26.96
413.8	443.8	27.13	27.79	28.40
494.5	524.5	29.22	29.52	29.46
575.3	605.3	30.35	30.25	30.06
656.0	686.0	29.90	29.44	29.18
736.7	766.7	29.40	29.20	29.06
817.5	847.5	28.53	28.66	28.77
898.2	928.2	29.05	29.12	29.18
978.9	1008.9	31.27	31.00	30.91
1059.7	1089.7	31.24	30.62	30.00
1140.4	1170.4	30.50	29.67	29.03
1221.1	1251.1	28.93	27.88	27.33
1301.9	1331.9	27.80	26.98	26.37
1382.6	1412.6	26.91	26.35	25.88
1463.4	1493.4	26.04	25.73	25.45
1544.1	1574.1	24.94	24.83	24.76
1624.8	1654.8	24.38	24.37	24.39
1705.6	1735.6	24.79	24.81	24.89
1786.3	1816.3	27.96	27.90	27.87
1867.0	1897.0	31.81	31.79	31.71
1947.8	1977.8	34.09	34.21	34.33
2028.5	2058.5	35.08	35.00	35.00
2109.2	2139.2	31.34	31.14	30.99
2210.2	2240.2	26.20	26.16	26.05
2290.9	2320.9	23.18	23.17	23.15
2391.8	2421.8	20.31	20.38	20.37
2472.6	2502.6	18.63	18.85	18.95
2573.5	2603.5	17.24	17.54	17.68
2654.2	2684.2	16.48	16.85	17.03
2755.1	2785.1	15.71	16.20	16.54
2835.9	2865.9	15.82	16.31	16.73
2936.8	2966.8	15.88	16.44	16.91
3017.5	3047.5	16.40	16.90	17.45
3118.4	3148.4	17.27	17.67	18.14
3199.2	3229.2	17.91	18.13	18.38
3300.1	3330.1	18.35	18.42	18.50

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Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+10	+13	+16
10.1	40.1	1.13	1.04	1.05
90.8	120.8	1.26	1.13	1.05
171.6	201.6	1.36	1.26	1.22
252.3	282.3	1.65	1.54	1.47
333.0	363.0	2.01	1.89	1.80
413.8	443.8	2.51	2.31	2.18
494.5	524.5	3.00	2.74	2.56
575.3	605.3	3.42	3.10	2.89
656.0	686.0	3.60	3.27	3.08
736.7	766.7	3.63	3.32	3.13
817.5	847.5	3.45	3.21	3.04
898.2	928.2	3.43	3.19	3.02
978.9	1008.9	3.58	3.35	3.18
1059.7	1089.7	3.44	3.23	3.07
1140.4	1170.4	3.03	2.86	2.76
1221.1	1251.1	2.62	2.47	2.37
1301.9	1331.9	2.25	2.12	2.01
1382.6	1412.6	2.13	1.96	1.85
1463.4	1493.4	2.08	1.87	1.76
1544.1	1574.1	2.14	1.90	1.78
1624.8	1654.8	2.07	1.84	1.71
1705.6	1735.6	1.95	1.75	1.62
1786.3	1816.3	1.82	1.65	1.55
1867.0	1897.0	1.75	1.59	1.49
1947.8	1977.8	1.81	1.65	1.52
2028.5	2058.5	1.92	1.75	1.65
2109.2	2139.2	2.12	1.96	1.86
2210.2	2240.2	1.89	1.78	1.71
2290.9	2320.9	2.03	1.94	1.89
2391.8	2421.8	1.91	1.83	1.80
2472.6	2502.6	2.00	1.97	1.98
2573.5	2603.5	1.94	1.91	1.91
2654.2	2684.2	2.03	2.05	2.08
2755.1	2785.1	1.99	2.00	2.05
2835.9	2865.9	1.92	1.97	2.05
2936.8	2966.8	1.96	2.01	2.08
3017.5	3047.5	1.93	2.02	2.11
3118.4	3148.4	2.08	2.18	2.28
3199.2	3229.2	2.09	2.19	2.30
3300.1	3330.1	2.46	2.57	2.67

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+10	+13	+16
40.1	1.58	2.52	3.77
120.8	1.52	2.35	3.45
201.6	1.51	2.24	3.22
282.3	1.54	2.21	3.14
363.0	1.59	2.23	3.13
443.8	1.65	2.25	3.12
524.5	1.65	2.21	3.04
605.3	1.72	2.20	2.96
686.0	1.73	2.13	2.84
766.7	1.77	2.11	2.75
847.5	1.75	2.05	2.65
928.2	1.78	2.03	2.58
1008.9	1.75	1.95	2.47
1089.7	1.77	1.92	2.40
1170.4	1.77	1.87	2.32
1251.1	1.82	1.86	2.28
1331.9	1.86	1.84	2.22
1412.6	1.91	1.83	2.17
1493.4	1.95	1.83	2.14
1574.1	1.98	1.86	2.14
1654.8	1.99	1.89	2.17
1735.6	2.02	1.93	2.23
1816.3	2.05	1.95	2.28
1897.0	2.07	1.95	2.26
1977.8	2.07	1.95	2.25
2058.5	2.06	1.95	2.25
2139.2	2.05	1.95	2.24
2240.2	2.06	1.92	2.19
2320.9	2.07	1.89	2.14
2421.8	2.09	1.84	2.04
2502.6	2.17	1.84	2.01
2603.5	2.18	1.82	1.94
2684.2	2.20	1.79	1.86
2785.1	2.15	1.75	1.76
2865.9	2.09	1.72	1.74
2966.8	1.98	1.63	1.67
3047.5	1.88	1.57	1.62
3148.4	1.76	1.50	1.59
3229.2	1.66	1.45	1.58
3330.1	1.59	1.44	1.59

IF (OUT) (MHz)	IF VSWR @LO=2000MHz (:1) @LO (dBm)		
	+10	+13	+16
10.0	1.17	1.06	1.21
30.2	1.12	1.06	1.24
50.4	1.13	1.08	1.24
70.6	1.12	1.09	1.26
90.8	1.16	1.09	1.22
111.0	1.12	1.11	1.27
131.2	1.13	1.13	1.28
151.4	1.15	1.18	1.33
171.6	1.15	1.16	1.31
191.8	1.17	1.20	1.34
212.0	1.15	1.20	1.36
232.2	1.18	1.26	1.41
252.4	1.19	1.28	1.44
272.7	1.21	1.28	1.43
292.9	1.21	1.31	1.48
313.1	1.21	1.31	1.48
333.3	1.26	1.39	1.57
353.5	1.26	1.38	1.55
373.7	1.29	1.42	1.60
393.9	1.27	1.42	1.61
434.3	1.34	1.52	1.72
454.5	1.36	1.53	1.73
494.9	1.38	1.58	1.79
515.1	1.44	1.66	1.89
555.5	1.50	1.73	1.96
575.7	1.48	1.71	1.95
616.1	1.58	1.83	2.09
636.3	1.63	1.89	2.14
676.7	1.67	1.94	2.20
696.9	1.75	2.03	2.31
737.3	1.86	2.14	2.43
757.6	1.86	2.13	2.41
798.0	2.00	2.29	2.57
818.2	2.08	2.37	2.66
858.6	2.15	2.45	2.73
878.8	2.25	2.55	2.84
919.2	2.40	2.71	3.00
939.4	2.40	2.70	2.99
979.8	2.57	2.86	3.15
1000.0	2.63	3.15	3.17

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Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	6	37	11	33	36	39	35	47	52	64
1	-	24	+0	38	37	41	33	38	40	40	40	42
2	74	76	58	57	54	>77	53	74	68	68	59	69
3	>90	65	73	74	51	>77	71	71	60	67	64	63
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	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
9	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
10	>90	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77	>77
RF CAL		0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 1000 MHz; -6.00 dBm.
LO IN: 1030 MHz; +13.00 dBm
IF OUT: 30 MHz; -13.11 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	16	48	21	45	50	53	57	65	60	71
1	-	24	+0	39	37	48	35	45	56	53	51	60
2	54	77	56	54	52	81	46	64	68	66	62	74
3	84	46	54	58	34	63	57	59	48	57	55	59
4	>90	70	63	81	70	68	66	>87	62	78	75	75
5	>90	70	61	69	72	72	48	73	67	70	58	63
6	>90	85	>87	83	73	>87	72	74	74	>87	74	>87
7	>90	83	86	>87	73	83	82	87	58	82	73	79
8	>90	>87	>87	>87	>87	>87	83	>87	79	81	80	>87
9	>90	86	>87	>87	>87	>87	81	>87	>87	>87	67	>87
10	>90	>87	>87	>87	>87	>87	>87	>87	>87	>87	85	87
RF CAL		0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions:
RF IN: 1000 MHz; 4.00 dBm.
LO IN: 1030 MHz; +13.00 dBm
IF OUT: 30 MHz; -3.05 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.

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