

# Frequency Mixer

# ZMIQ-653H-E+

## Typical Performance Data

RF (IN) (GHz)	LO (GHz)	CONVERSION LOSS IF FIXED @IF(OUT)=200MHz (dB)		
		@LO (dBm)		
		+17	+18	+19
18.0	18.2	15.27	14.66	14.74
19.0	19.2	13.54	13.19	12.99
20.0	20.2	12.66	12.41	12.30
21.0	21.2	11.92	11.71	11.66
22.0	22.2	11.69	11.52	11.52
23.0	23.2	12.26	12.27	12.40
24.0	24.2	13.15	13.16	13.36
25.0	25.2	13.82	13.90	14.11
26.0	26.2	14.41	14.60	14.93
27.0	27.2	14.59	14.89	15.32
28.0	28.2	15.01	15.34	15.88
29.0	29.2	15.05	15.35	15.89
30.0	30.2	15.15	15.48	16.00
31.0	31.2	15.08	15.44	16.06
32.0	32.2	14.50	14.82	15.46
33.0	33.2	14.17	14.60	15.25
34.0	34.2	13.70	14.00	14.53
35.0	35.2	13.52	14.21	14.62
36.0	36.2	11.92	12.36	13.11
37.0	37.2	11.93	12.26	12.66
38.0	38.2	12.20	12.56	13.04
39.0	39.2	12.02	12.35	12.81
40.0	40.2	11.90	12.11	12.43
41.0	41.2	12.16	12.35	12.79
42.0	42.2	12.82	12.86	13.10
43.0	43.2	14.16	14.19	14.42
44.0	44.2	15.19	15.14	15.30
45.0	45.2	15.08	14.97	15.02
46.0	46.2	14.74	14.68	14.82
47.0	47.2	14.53	14.32	14.32
48.0	48.2	14.20	14.11	14.26
49.0	49.2	14.47	13.82	13.63
50.0	50.2	15.49	14.27	13.85
51.0	51.2	14.28	14.12	14.21
52.0	52.2	14.60	14.32	14.26
53.0	53.2	14.09	13.65	13.61
54.0	54.2	13.35	13.09	13.07
55.0	55.2	13.23	13.04	13.01
56.0	56.2	13.62	13.42	13.34
57.0	57.2	14.14	13.93	13.84
58.0	58.2	13.81	13.84	13.98
59.0	59.2	14.19	14.04	13.93
60.0	60.2	13.86	13.78	13.70
61.0	61.2	13.48	13.46	13.50
62.0	62.2	14.67	14.45	14.36
63.0	63.2	16.97	16.32	15.93
64.0	64.2	16.35	15.61	15.33
65.0	65.2	15.32	14.69	14.48

RF (IN) (GHz)	LO (GHz)	CONVERSION LOSS IF FIXED @IF(OUT)=200MHz (dB)		
		@LO (dBm)		
		+17	+18	+19
18.0	20.0	15.25	15.21	15.23
19.0	21.0	13.15	13.25	13.42
20.0	22.0	12.12	12.20	12.37
21.0	23.0	11.60	11.71	11.91
22.0	24.0	11.88	12.03	12.27
23.0	25.0	12.49	12.69	12.76
24.0	26.0	13.82	14.00	14.12
25.0	27.0	14.35	14.68	14.78
26.0	28.0	14.37	14.80	15.24
27.0	29.0	15.18	15.55	16.10
28.0	30.0	15.60	15.92	16.43
29.0	31.0	15.17	15.52	16.05
30.0	32.0	15.20	15.53	16.06
31.0	33.0	15.28	15.77	16.47
32.0	34.0	14.88	15.37	16.06
33.0	35.0	15.15	15.40	15.84
34.0	36.0	13.99	14.33	14.84
35.0	37.0	12.79	13.10	13.63
36.0	38.0	12.49	12.84	13.35
37.0	39.0	12.45	12.63	13.04
38.0	40.0	12.62	12.80	13.20
39.0	41.0	12.32	12.61	13.01
40.0	42.0	11.96	12.06	12.41
41.0	43.0	12.60	12.54	12.66
42.0	44.0	13.32	13.26	13.30
43.0	45.0	14.84	14.69	14.64
44.0	46.0	15.99	15.75	15.91
45.0	47.0	15.94	15.49	15.45
46.0	48.0	15.45	15.12	15.24
47.0	49.0	15.53	14.83	14.72
48.0	50.0	16.93	15.29	14.85
49.0	51.0	14.94	14.37	14.30
50.0	52.0	14.79	14.29	14.21
51.0	53.0	15.69	14.81	14.55
52.0	54.0	15.43	14.89	14.80
53.0	55.0	14.98	14.51	14.48
54.0	56.0	14.43	13.97	13.90
55.0	57.0	13.83	13.40	13.33
56.0	58.0	13.90	13.67	13.82
57.0	59.0	14.41	14.08	14.06
58.0	60.0	14.71	14.30	14.25
59.0	61.0	14.30	14.13	14.16
60.0	62.0	14.31	14.01	13.94
61.0	63.0	15.21	14.65	14.43
62.0	64.0	16.45	15.29	15.03
63.0	65.0	17.13	16.22	15.90
64.0	66.0	18.21	16.99	16.22
65.0	67.0	18.65	17.84	17.31

RF (IN) (GHz)	LO (GHz)	IP-3 INPUT @ IF(OUT)=200MHz (dBm)		
		@LO (dBm)		
		+17	+18	+19
20.0	20.2	26.36	25.19	24.35
21.0	21.2	25.14	25.04	25.00
22.0	22.2	27.04	26.86	26.68
23.0	23.2	25.24	25.19	25.72
24.0	24.2	27.23	27.73	26.86
25.0	25.2	28.52	28.83	29.24
26.0	26.2	27.05	27.74	28.41
27.0	27.2	27.41	28.62	28.93
28.0	28.2	29.60	29.16	28.78
29.0	29.2	29.31	30.47	29.52
30.0	30.2	29.34	30.94	31.97
31.0	31.2	27.40	27.97	29.01
32.0	32.2	26.45	25.61	26.81
33.0	33.2	25.36	25.33	24.87
34.0	34.2	28.02	27.68	27.57
35.0	35.2	25.50	25.51	25.44
36.0	36.2	24.00	24.34	24.51
37.0	37.2	24.61	24.28	24.41
38.0	38.2	25.41	25.05	25.18
39.0	39.2	24.87	24.47	25.00
40.0	40.2	24.88	24.32	24.40
41.0	41.2	24.99	24.15	24.44
42.0	42.2	27.45	26.69	25.43
43.0	43.2	25.12	26.29	26.44
44.0	44.2	25.62	26.73	26.91
45.0	45.2	25.90	27.33	26.46
46.0	46.2	25.58	26.26	26.35
47.0	47.2	23.97	24.55	24.77
48.0	48.2	24.70	24.40	24.43
49.0	49.2	21.88	24.36	25.10
50.0	50.2	21.97	24.63	25.54
51.0	51.2	24.67	24.41	24.20
52.0	52.2	23.67	23.90	24.23
53.0	53.2	23.91	25.07	25.52
54.0	54.2	26.36	26.45	25.89
55.0	55.2	24.60	23.81	23.60
56.0	56.2	23.71	23.44	23.20
57.0	57.2	25.48	25.14	24.96
58.0	58.2	25.11	24.68	24.36
59.0	59.2	21.64	24.14	24.98
60.0	60.2	23.60	24.84	25.35
61.0	61.2	25.91	26.20	25.50
62.0	62.2	25.54	27.05	27.16
63.0	63.2	20.05	19.89	20.43
64.0	64.2	22.16	23.92	25.18
65.0	65.2	22.53	23.67	23.81

RF (IN) (GHz)	LO (GHz)	COMPRESSION @RF IN=+10dBm (dB)		
		@LO (dBm)		
		+17	+18	+19
18.0	18.2	0.62	0.67	0.32
19.0	19.2	0.23	0.25	0.14
20.0	20.2	0.06	0.11	0.03
21.0	21.2	0.14	0.19	0.11
22.0	22.2	0.11	0.14	0.06
23.0	23.2	0.15	0.16	0.09
24.0	24.2	0.11	0.12	0.03
25.0	25.2	0.07	0.07	0.01
26.0	26.2	0.07	0.06	0.00
27.0	27.2	0.07	0.04	0.00
28.0	28.2	0.07	0.04	0.04
29.0	29.2	0.10	0.07	0.01
30.0	30.2	0.09	0.02	0.04
31.0	31.2	0.13	0.06	0.04
32.0	32.2	0.17	0.11	0.00
33.0	33.2	0.13	0.02	0.08
34.0	34.2	0.08	0.04	0.14
35.0	35.2	0.16	0.03	0.09
36.0	36.2	0.24	0.08	0.11
37.0	37.2	0.20	0.07	0.10
38.0	38.2	0.17	0.07	0.11
39.0	39.2	0.12	0.07	0.12
40.0	40.2	0.13	0.08	0.08
41.0	41.2	0.21	0.22	0.08
42.0	42.2	0.15	0.12	0.04
43.0	43.2	0.09	0.09	0.03
44.0	44.2	0.12	0.07	0.01
45.0	45.2	0.04	0.05	0.08
46.0	46.2	0.44	0.42	0.42
47.0	47.2	0.62	0.53	0.51
48.0	48.2	0.45	0.40	0.41
49.0	49.2	0.77	0.58	0.49
50.0	50.2	0.59	0.59	0.47
51.0	51.2	0.60	0.57	0.57
52.0	52.2	0.51	0.48	0.48
53.0	53.2	0.76	0.63	0.59
54.0	54.2	0.48	0.46	0.46
55.0	55.2	0.47	0.47	0.50
56.0	56.2	0.67	0.63	0.63
57.0	57.2	0.52	0.47	0.46
58.0	58.2	0.54	0.56	0.57
59.0	59.2	1.01	0.82	0.76
60.0	60.2	0.85	0.73	0.67
61.0	61.2	0.82	0.80	0.82
62.0	62.2	0.97	0.77	0.70
63.0	63.2	0.99	1.04	1.01
64.0	64.2	0.71	0.65	0.59
65.0	65.2	0.59	0.62	0.59

# Frequency Mixer

# ZMIQ-653H-E+

## Typical Performance Data

IF (OUT) (GHz)	LO (GHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=20000MHz (dB)			IF (OUT) (GHz)	LO (GHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=42500MHz (dB)			IF (OUT) (GHz)	LO (GHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=65000MHz (dB)		
		@LO (dBm)					@LO (dBm)					@LO (dBm)		
		+17	+18	+19			+17	+18	+19			+17	+18	+19
0.01	20.0	12.61	12.44	12.31	0.01	42.49	13.27	13.27	13.37	0.01	64.99	15.28	14.68	14.43
0.1	20.1	12.44	12.31	12.22	0.1	42.4	13.30	13.25	13.42	0.03	64.97	15.19	14.65	14.36
1.0	21.0	11.97	11.97	12.04	1.0	41.5	13.41	13.42	13.67	0.05	64.95	15.19	14.64	14.34
1.5	21.5	11.97	12.07	12.27	1.5	41.0	13.35	13.38	13.59	0.07	64.93	15.15	14.64	14.33
2.0	22.0	12.09	12.17	12.35	2.0	40.5	13.39	13.38	13.63	0.09	64.91	15.15	14.64	14.34
2.5	22.5	12.38	12.49	12.69	2.5	40.0	13.38	13.40	13.70	0.1	64.9	15.17	14.66	14.32
3.0	23.0	12.58	12.74	12.98	3.0	39.5	13.31	13.48	13.93	0.2	64.8	15.29	14.72	14.39
3.5	23.5	12.75	12.93	13.10	3.5	39.0	13.23	13.33	13.70	0.3	64.7	15.33	14.73	14.38
4.0	24.0	12.86	13.03	13.28	4.0	38.5	13.25	13.41	13.84	0.4	64.6	15.25	14.72	14.38
4.5	24.5	13.20	13.31	13.41	4.5	38.0	13.43	13.75	14.27	0.5	64.5	15.35	14.72	14.35
5.0	25.0	13.71	13.82	13.88	5.0	37.5	13.53	13.85	14.38	1.0	64.0	15.61	14.75	14.44
5.5	25.5	14.41	14.58	14.64	5.5	37.0	13.61	13.91	14.46	2.0	63.0	15.86	15.28	14.95
6.0	26.0	14.68	14.88	15.04	6.0	36.5	14.05	14.36	14.87	3.0	62.0	14.98	14.60	14.39
6.5	26.5	15.16	15.36	15.42	6.5	36.0	14.17	14.53	15.03	4.0	61.0	14.75	14.62	14.45
7.0	27.0	15.65	15.86	15.93	7.0	35.5	14.19	14.50	14.98	5.0	60.0	15.33	15.07	14.86
7.5	27.5	15.77	16.01	16.02	7.5	35.0	14.38	14.69	15.17	6.0	59.0	14.93	14.78	14.59
8.0	28.0	16.23	16.46	16.70	8.0	34.5	14.49	14.73	15.16	7.0	58.0	14.82	14.85	14.99
8.5	28.5	16.47	16.68	16.95	8.5	34.0	14.75	15.05	15.56	8.0	57.0	15.80	15.57	15.40
9.0	29.0	16.78	17.03	17.35	9.0	33.5	14.89	15.13	15.58	9.0	56.0	15.78	15.67	15.63
9.5	29.5	16.57	16.86	17.23	9.5	33.0	14.92	15.11	15.52	10.0	55.0	15.73	15.65	15.61
10.0	30.0	16.60	16.94	17.37	10.0	32.5	15.07	15.24	15.63	11.0	54.0	16.15	15.92	15.81
10.5	30.5	16.35	16.69	17.14	10.5	32.0	15.49	15.60	15.90	12.0	53.0	17.83	17.18	16.81
11.0	31.0	16.23	16.58	17.07	11.0	31.5	16.41	16.46	16.70	13.0	52.0	17.74	17.36	17.11
11.5	31.5	16.21	16.55	17.07	11.5	31.0	17.48	17.44	17.56	14.0	51.0	17.87	17.32	17.00
12.0	32.0	16.31	16.59	17.07	12.0	30.5	18.29	18.23	18.36	15.0	50.0	20.44	18.52	17.75
12.5	32.5	16.37	16.70	17.22	12.5	30.0	18.39	18.48	18.74	16.0	49.0	19.63	18.63	18.07
13.0	33.0	16.25	16.60	17.11	13.0	29.5	17.98	18.29	18.72	17.0	48.0	19.47	18.72	18.43
13.5	33.5	15.87	16.26	16.77	13.5	29.0	17.17	17.49	17.97	18.0	47.0	20.65	19.46	19.05
14.0	34.0	15.71	16.14	16.68	14.0	28.5	16.92	17.29	17.78	19.0	46.0	21.01	20.00	19.80
14.5	34.5	15.24	15.60	16.10	14.5	28.0	16.51	16.91	17.33	20.0	45.0	21.70	20.69	20.31
15.0	35.0	15.39	15.78	16.30	15.0	27.5	16.61	16.98	16.97					
15.5	35.5	15.87	16.25	16.79	15.5	27.0	16.82	17.16	17.28					
16.0	36.0	16.25	16.70	17.33	16.0	26.5	16.92	17.19	17.30					
16.5	36.5	16.41	16.80	17.45	16.5	26.0	17.00	17.24	17.48					
17.0	37.0	16.55	16.87	17.44	17.0	25.5	16.91	17.14	17.25					
17.5	37.5	16.70	16.97	17.45	17.5	25.0	16.75	17.00	17.13					
18.0	38.0	16.96	17.18	17.60	18.0	24.5	16.86	17.05	17.34					
18.5	38.5	17.18	17.29	17.58	18.5	24.0	16.92	17.07	17.55					
19.0	39.0	17.58	17.68	17.92	19.0	23.5	17.10	17.30	17.62					
19.5	39.5	17.47	17.64	17.93	19.5	23.0	17.10	17.28	17.86					
20.0	40.0	15.66	15.68	15.72	20.0	22.5	16.94	17.14	17.72					

# Frequency Mixer

# ZMIQ-653H-E+

## Typical Performance Data

LO (GHz)	LO-RF ISOLATION (dB)			LO-I/Q ISOLATION (dB)			LO-Q ISOLATION (dB)			RF (IN) (GHz)	LO (GHz)	RF-IF ISOLATION (dB)		
	@LO (dBm)			@LO (dBm)			@LO (dBm)					@LO (dBm)		
	+17	+18	+19	+17	+18	+19	+17	+18	+19			+17	+18	+19
18.2	33.45	34.11	34.56	43.89	44.02	43.8	29.09	29.17	29.3	18.0	18.2	25.39	25.66	25.91
19.2	32.67	33.76	34.53	42.81	42.60	43.1	29.66	29.92	30.2	19.0	19.2	26.19	26.17	26.19
20.2	32.20	33.13	33.87	38.19	38.76	39.8	29.17	29.60	30.1	20.0	20.2	26.92	26.82	26.83
21.2	34.34	35.32	36.06	36.83	37.69	38.8	29.58	30.01	30.5	21.0	21.2	25.39	25.63	25.97
22.2	35.80	36.68	37.38	36.81	37.53	38.4	31.16	31.55	32.0	22.0	22.2	22.56	22.76	23.12
23.2	38.52	39.16	39.56	39.60	39.89	40.1	31.53	31.96	32.3	23.0	23.2	23.54	23.46	23.48
24.2	41.65	42.27	42.57	42.35	40.12	39.2	31.97	32.21	32.3	24.0	24.2	24.89	24.90	24.91
25.2	44.27	44.89	44.88	41.47	39.57	39.5	31.33	31.49	31.5	25.0	25.2	24.98	25.02	25.01
26.2	47.80	48.32	48.44	43.40	41.73	41.3	31.28	31.35	31.4	26.0	26.2	26.36	26.45	26.47
27.2	50.32	50.91	50.85	44.83	43.77	43.8	32.77	32.70	32.7	27.0	27.2	28.16	28.24	28.24
28.2	51.96	54.11	56.29	43.47	43.17	42.5	33.63	33.44	33.4	28.0	28.2	28.99	29.02	29.11
29.2	49.97	50.96	52.19	42.81	42.86	42.6	34.58	34.26	34.1	29.0	29.2	29.60	29.69	29.71
30.2	51.47	53.35	55.60	42.52	42.78	42.8	35.05	34.68	34.5	30.0	30.2	30.98	31.09	31.15
31.2	51.16	53.23	56.82	42.43	42.75	42.9	35.19	34.82	34.6	31.0	31.2	31.81	31.90	31.99
32.2	55.81	58.03	61.03	42.78	43.05	43.2	35.84	35.50	35.3	32.0	32.2	32.15	32.10	32.23
33.2	52.76	53.04	53.05	42.49	42.69	42.7	34.69	34.48	34.3	33.0	33.2	31.86	31.90	32.00
34.2	51.42	52.28	53.02	42.13	42.34	42.4	33.36	33.24	33.2	34.0	34.2	30.97	31.06	31.10
35.2	45.06	45.41	45.81	42.70	42.96	43.1	33.63	33.60	33.6	35.0	35.2	29.92	30.01	30.12
36.2	43.29	43.60	44.01	43.10	43.39	43.5	33.84	33.87	33.9	36.0	36.2	30.46	30.62	30.65
37.2	44.50	44.72	44.85	44.45	44.69	44.8	33.98	34.05	34.1	37.0	37.2	31.73	31.81	31.92
38.2	43.43	43.77	44.01	44.60	44.85	45.0	33.18	33.29	33.4	38.0	38.2	33.19	33.26	33.28
39.2	41.32	41.77	42.14	43.83	44.03	44.2	32.00	32.14	32.3	39.0	39.2	34.26	34.55	34.54
40.2	40.76	41.62	42.35	43.09	43.32	43.6	34.93	35.03	35.1	40.0	40.2	31.89	31.86	31.81
41.2	46.98	48.04	48.21	47.95	48.11	48.1	31.49	31.62	31.7	41.0	41.2	30.09	30.27	30.24
42.2	42.33	42.74	43.06	49.94	49.90	49.9	30.05	30.21	30.3	42.0	42.2	30.40	30.48	30.41
43.2	39.29	39.40	39.52	47.18	47.34	47.5	28.15	28.30	28.4	43.0	43.2	29.75	29.71	29.90
44.2	35.55	35.88	36.16	35.89	36.31	36.6	27.24	27.38	27.5	44.0	44.2	26.71	26.71	26.80
45.2	42.68	43.39	43.90	36.15	36.49	36.7	26.47	26.61	26.7	45.0	45.2	33.29	33.29	33.38
46.2	51.61	53.97	55.76	37.36	37.79	38.1	26.93	27.17	27.4	46.0	46.2	44.29	44.29	44.38
47.2	55.48	58.81	61.97	37.27	37.71	38.1	27.40	27.67	27.9	47.0	47.2	59.44	56.95	58.90
48.2	58.01	59.79	60.19	36.33	36.65	36.9	26.89	27.07	27.2	48.0	48.2	54.25	55.31	53.25
49.2	56.15	56.47	56.90	36.33	36.72	37.1	27.74	28.01	28.3	49.0	49.2	49.81	48.97	49.28
50.2	56.59	57.07	57.21	35.34	35.71	36.1	27.91	28.17	28.5	50.0	50.2	46.70	47.09	46.56
51.2	55.30	54.65	54.25	29.92	30.14	30.3	26.21	26.33	26.4	51.0	51.2	44.54	44.34	44.42
52.2	54.85	55.85	56.03	25.39	25.74	26.1	26.96	27.20	27.4	52.0	52.2	40.39	39.94	40.03
53.2	51.81	53.70	55.61	28.30	28.48	28.7	27.79	27.76	27.8	53.0	53.2	36.77	36.83	36.78
54.2	52.13	53.36	54.36	31.36	31.66	32.0	30.25	30.08	30.0	54.0	54.2	34.2	34.2	33.8
55.2	52.90	54.62	55.78	35.59	35.70	35.8	26.86	26.98	27.0	55.0	55.2	42.2	42.4	42.5
56.2	52.45	54.91	57.69	52.15	51.68	51.2	27.58	27.70	27.8	56.0	56.2	50.7	49.8	51.9
57.2	49.54	51.43	53.32	45.3	45.5	45.8	30.12	30.21	30.3	57.0	57.2	64.0	60.1	55.6
58.2	50.56	50.57	50.20	37.0	36.8	36.8	40.86	41.22	41.5	58.0	58.2	52.5	52.4	52.6
59.2	48.72	50.15	51.52	43.78	43.79	43.84	31.78	32.03	32.2	59.0	59.2	58.3	58.8	58.0
60.2	47.96	49.27	50.29	44.63	44.85	45.32	31.51	31.72	32.2	60.0	60.2	69.1	64.1	61.8
61.2	46.54	47.38	48.00	41.71	41.88	41.93	29.18	29.10	29.0	61.0	61.2	69.6	66.0	65.6
62.2	45.64	46.40	46.79	41.87	41.96	42.16	31.39	31.01	30.9	62.0	62.2	59.9	64.6	61.2
63.2	45.91	46.69	47.51	42.59	43.23	43.81	35.95	36.14	36.5	63.0	63.2	59.2	59.0	57.3
64.2	44.71	45.20	45.75	41.32	41.62	42.14	35.73	35.17	35.2	64.0	64.2	58.1	57.4	56.1
65.2	44.13	44.55	44.91	40.41	40.64	41.11	34.05	33.65	33.6	65.0	65.2	52.3	55.1	55.6

## Typical Performance Data

RF (IN) (GHz)	LO (GHz)	RF VSWR (:1)		
		@LO (dBm)		
		+17	+18	+19
18.0	18.2	4.37	4.44	4.51
19.0	19.2	2.88	3.01	3.10
20.0	20.2	2.32	2.31	2.29
21.0	21.2	1.62	1.59	1.56
22.0	22.2	1.62	1.60	1.57
23.0	23.2	1.74	1.71	1.67
24.0	24.2	2.69	2.64	2.61
25.0	25.2	4.73	4.64	4.64
26.0	26.2	3.93	3.88	3.86
27.0	27.2	3.15	3.11	3.11
28.0	28.2	4.59	4.50	4.44
29.0	29.2	4.11	4.05	4.01
30.0	30.2	4.02	3.98	3.95
31.0	31.2	4.34	4.30	4.30
32.0	32.2	3.92	3.89	3.91
33.0	33.2	3.49	3.46	3.48
34.0	34.2	2.98	2.96	2.99
35.0	35.2	1.77	1.75	1.74
36.0	36.2	1.94	1.90	1.88
37.0	37.2	1.68	1.65	1.62
38.0	38.2	2.22	2.17	2.13
39.0	39.2	2.31	2.25	2.22
40.0	40.2	1.68	1.64	1.61
41.0	41.2	1.99	1.95	1.94
42.0	42.2	2.29	2.23	2.20
43.0	43.2	2.91	2.85	2.81
44.0	44.2	3.92	3.85	3.81
45.0	45.2	5.23	5.13	5.05
46.0	46.2	4.06	3.97	3.88
47.0	47.2	3.37	3.27	3.18
48.0	48.2	2.71	2.63	2.57
49.0	49.2	2.97	2.86	2.78
50.0	50.2	3.14	3.02	2.93
51.0	51.2	3.41	3.27	3.24
52.0	52.2	3.86	3.75	3.66
53.0	53.2	2.98	2.93	2.91
54.0	54.2	1.82	1.83	1.84
55.0	55.2	1.15	1.18	1.20
56.0	56.2	1.66	1.67	1.65
57.0	57.2	2.80	2.77	2.72
58.0	58.2	2.93	2.84	2.84
59.0	59.2	2.10	2.04	2.01
60.0	60.2	1.70	1.68	1.66
61.0	61.2	2.41	2.40	2.32
62.0	62.2	2.44	2.40	2.35
63.0	63.2	3.27	3.23	3.20
64.0	64.2	2.72	2.68	2.61
65.0	65.2	1.55	1.52	1.50

LO (GHz)	LO VSWR (:1)		
	@LO (dBm)		
	+17	+18	+19
18.2	1.37	1.40	1.41
19.2	1.28	1.29	1.29
20.2	1.32	1.31	1.31
21.2	1.42	1.42	1.43
22.2	1.53	1.52	1.52
23.2	1.51	1.52	1.53
24.2	1.42	1.43	1.44
25.2	1.30	1.30	1.30
26.2	1.17	1.17	1.17
27.2	1.06	1.06	1.06
28.2	1.09	1.09	1.09
29.2	1.18	1.18	1.18
30.2	1.25	1.25	1.26
31.2	1.29	1.29	1.30
32.2	1.30	1.30	1.31
33.2	1.28	1.29	1.30
34.2	1.27	1.28	1.28
35.2	1.28	1.28	1.28
36.2	1.32	1.31	1.30
37.2	1.39	1.38	1.37
38.2	1.47	1.46	1.45
39.2	1.50	1.49	1.48
40.2	1.46	1.45	1.45
41.2	1.34	1.33	1.33
42.2	1.17	1.16	1.17
43.2	1.04	1.05	1.06
44.2	1.26	1.25	1.25
45.2	1.49	1.48	1.47

IF (OUT) (GHz)	Q PORT VSWR @LO=65000MHz (:1)		
	@LO (dBm)		
	+17	+18	+19
0.01	1.02	1.05	1.10
0.02	1.02	1.05	1.09
0.03	1.02	1.05	1.09
0.04	1.02	1.05	1.09
0.05	1.02	1.05	1.09
0.06	1.02	1.05	1.09
0.07	1.02	1.05	1.09
0.08	1.02	1.05	1.09
0.09	1.02	1.05	1.09
0.1	1.03	1.05	1.09
0.2	1.04	1.04	1.08
0.3	1.04	1.04	1.08
0.4	1.04	1.04	1.08
0.5	1.05	1.04	1.08
0.6	1.05	1.05	1.08
0.7	1.06	1.05	1.08
0.8	1.07	1.06	1.09
0.9	1.07	1.06	1.09
1.0	1.08	1.07	1.09
2.0	1.12	1.09	1.10
3.0	1.15	1.10	1.10
4.0	1.14	1.14	1.15
5.0	1.30	1.33	1.36
6.0	1.64	1.65	1.67
7.0	2.10	2.07	2.07
8.0	2.48	2.41	2.38
9.0	2.82	2.70	2.64
10.0	3.04	2.91	2.84
11.0	3.21	3.06	2.98
12.0	3.26	3.10	3.01
13.0	3.06	2.90	2.81
14.0	2.83	2.68	2.59
15.0	3.01	2.85	2.75
16.0	3.84	3.66	3.55
17.0	4.90	4.68	4.55
18.0	5.62	5.39	5.25
19.0	5.74	5.54	5.40
20.0	4.88	4.73	4.64

IF (OUT) (GHz)	I PORT VSWR @LO=65000MHz (:1)		
	@LO (dBm)		
	+17	+18	+19
0.01	1.37	1.16	1.06
0.02	1.38	1.16	1.06
0.03	1.38	1.16	1.06
0.04	1.38	1.16	1.06
0.05	1.38	1.16	1.06
0.06	1.38	1.16	1.06
0.07	1.38	1.16	1.06
0.08	1.38	1.16	1.06
0.09	1.38	1.16	1.06
0.1	1.38	1.16	1.06
0.2	1.39	1.17	1.07
0.3	1.39	1.17	1.07
0.4	1.39	1.17	1.08
0.5	1.39	1.17	1.08
0.6	1.39	1.17	1.08
0.7	1.38	1.17	1.08
0.8	1.38	1.17	1.09
0.9	1.38	1.17	1.09
1.0	1.38	1.18	1.10
2.0	1.39	1.19	1.13
3.0	1.42	1.22	1.15
4.0	1.37	1.21	1.17
5.0	1.42	1.34	1.34
6.0	1.77	1.67	1.66
7.0	2.28	2.10	2.05
8.0	2.74	2.48	2.37
9.0	3.15	2.83	2.69
10.0	3.44	3.11	2.96
11.0	3.71	3.37	3.21
12.0	3.82	3.43	3.24
13.0	3.67	3.24	3.02
14.0	3.33	2.93	2.73
15.0	3.21	2.83	2.64
16.0	3.62	3.21	3.01
17.0	4.44	4.01	3.78
18.0	5.23	4.76	4.52
19.0	5.05	4.64	4.42
20.0	4.14	3.82	3.66

# Frequency Mixer

# ZMIQ-653H-E+

## Typical Performance Data

IF (IN) (MHz)	LO (GHz)	SINGLE SIDEBAND REJECTION IF FIXED @IF(IN)=2000MHz (dB)		
		@LO (dBm)		
		+17	+18	+19
200	18.2	14.20	14.06	14.08
200	19.2	22.39	22.44	22.16
200	20.2	23.47	22.61	21.61
200	21.2	26.09	25.81	25.25
200	22.2	24.99	24.67	24.21
200	23.2	28.64	27.20	25.81
200	24.2	26.62	25.69	24.67
200	25.2	24.28	23.66	23.15
200	26.2	25.51	24.99	24.44
200	27.2	27.36	26.51	26.17
200	28.2	31.33	30.97	30.84
200	29.2	37.45	42.14	47.24
200	30.2	29.07	30.92	32.97
200	31.2	25.64	27.19	28.86
200	32.2	29.23	31.88	31.76
200	33.2	30.52	32.05	30.57
200	34.2	24.06	25.17	25.99
200	35.2	27.00	31.59	41.55
200	36.2	25.06	27.83	30.57
200	37.2	22.37	23.95	25.72
200	38.2	22.12	23.57	24.54
200	39.2	19.85	20.83	21.95
200	40.2	17.10	17.74	18.27
200	41.2	19.18	20.11	20.99
200	42.2	18.70	19.88	20.88
200	43.2	19.54	20.41	21.47
200	44.2	25.49	26.71	27.98
200	45.2	24.90	25.10	25.14
200	46.2	23.92	24.26	24.93
200	47.2	25.10	25.23	25.95
200	48.2	26.80	27.25	27.96
200	49.2	31.78	29.35	29.05
200	50.2	33.10	42.92	36.40
200	51.2	32.11	29.90	27.82
200	52.2	31.27	29.81	28.87
200	53.2	34.32	32.12	30.57
200	54.2	35.77	37.22	35.17
200	55.2	34.01	31.92	28.76
200	56.2	43.17	38.44	34.26
200	57.2	46.66	40.79	36.92
200	58.2	38.50	34.79	30.73
200	59.2	33.52	38.69	41.70
200	60.2	37.49	37.54	36.85
200	61.2	29.88	28.39	27.33
200	62.2	28.87	27.59	27.31
200	63.2	28.75	29.79	28.69
200	64.2	22.79	20.42	20.06
200	65.2	19.57	18.45	17.94

IF (IN) (MHz)	LO (GHz)	SINGLE SIDEBAND REJECTION IF FIXED @IF(IN)=2000MHz (dB)		
		@LO (dBm)		
		+17	+18	+19
2000	20.0	27.77	26.77	26.54
2000	21.0	23.19	23.10	23.13
2000	22.0	30.51	32.58	33.87
2000	23.0	31.24	33.21	34.95
2000	24.0	30.33	30.63	30.25
2000	25.0	28.91	28.73	28.31
2000	26.0	29.63	29.31	28.62
2000	27.0	30.56	32.27	33.46
2000	28.0	28.02	28.54	29.63
2000	29.0	25.83	25.73	25.96
2000	30.0	24.78	24.66	24.40
2000	31.0	24.02	23.86	23.49
2000	32.0	26.29	24.21	22.49
2000	33.0	24.78	23.75	23.04
2000	34.0	36.27	29.83	26.78
2000	35.0	35.35	30.15	26.50
2000	36.0	25.25	23.87	22.39
2000	37.0	23.85	23.85	22.73
2000	38.0	20.50	20.65	20.06
2000	39.0	19.15	18.85	18.05
2000	40.0	19.99	19.99	19.60
2000	41.0	20.77	20.59	20.16
2000	42.0	22.05	22.38	22.26
2000	43.0	23.26	23.89	24.38
2000	44.0	24.82	25.14	25.31
2000	45.0	23.15	23.45	23.90
2000	46.0	21.38	21.80	22.16
2000	47.0	22.08	22.59	23.19
2000	48.0	23.42	24.03	24.58
2000	49.0	26.49	25.71	25.61
2000	50.0	34.10	27.54	26.49
2000	51.0	25.02	24.34	23.93
2000	52.0	24.01	23.24	22.67
2000	53.0	30.22	27.24	25.89
2000	54.0	26.71	25.50	24.34
2000	55.0	28.39	27.04	25.66
2000	56.0	30.69	29.23	27.79
2000	57.0	33.45	31.40	30.58
2000	58.0	32.27	30.22	28.02
2000	59.0	34.99	32.80	31.56
2000	60.0	34.83	32.49	31.78
2000	61.0	28.71	27.30	26.32
2000	62.0	26.65	25.58	25.30
2000	63.0	27.29	24.93	23.69

IF (IN) (MHz)	LO (GHz)	SINGLE SIDEBAND REJECTION IF FIXED @IF(IN)=3000MHz (dB)		
		@LO (dBm)		
		+17	+18	+19
3000	21.0	20.07	20.69	21.67
3000	22.0	24.30	25.40	26.87
3000	23.0	25.44	26.59	28.02
3000	24.0	27.33	28.09	28.58
3000	25.0	26.50	26.82	27.02
3000	26.0	27.25	27.33	27.19
3000	27.0	26.50	27.49	28.25
3000	28.0	24.20	24.46	24.77
3000	29.0	22.58	22.60	22.76
3000	30.0	20.75	20.68	20.71
3000	31.0	19.68	19.63	19.58
3000	32.0	21.08	20.03	19.12
3000	33.0	24.25	23.24	22.26
3000	34.0	26.06	23.70	22.16
3000	35.0	26.96	24.08	22.37
3000	36.0	23.69	21.28	19.64
3000	37.0	22.56	21.86	20.41
3000	38.0	19.87	18.84	17.55
3000	39.0	20.74	19.79	18.48
3000	40.0	21.62	21.10	20.15
3000	41.0	22.59	22.01	20.70
3000	42.0	24.64	24.56	23.87
3000	43.0	24.74	24.94	25.21
3000	44.0	24.99	25.35	25.21
3000	45.0	24.02	24.63	24.84
3000	46.0	23.26	24.09	24.17
3000	47.0	23.57	24.64	25.26
3000	48.0	25.62	26.44	27.35
3000	49.0	26.03	26.87	27.36
3000	50.0	27.56	26.69	26.51
3000	51.0	25.88	25.75	25.20
3000	52.0	26.87	26.63	25.96
3000	53.0	31.70	31.61	30.55
3000	54.0	27.82	27.14	26.94
3000	55.0	28.22	28.19	28.55
3000	56.0	25.25	26.19	26.85
3000	57.0	26.28	27.01	28.02
3000	58.0	30.75	33.31	33.18
3000	59.0	28.94	28.91	29.24
3000	60.0	29.48	29.49	29.73
3000	61.0	28.21	27.88	27.39
3000	62.0	25.72	25.49	25.25

# Frequency Mixer

# ZMIQ-653H-E+

## Typical Performance Data

RF (IN) (GHz)	LO (GHz)	AMPLITUDE UNBALANCE IF FIXED @IF(OUT)=200MHz (dB)			RF (IN) (GHz)	LO (GHz)	PHASE UNBALANCE IF FIXED @IF(OUT)=200MHz (Deg)		
		@LO (dBm)					@LO (dBm)		
		+17	+18	+19			+17	+18	+19
18.0	18.2	0.86	0.60	0.43	18.0	18.2	-96.12	-96.39	-96.49
19.0	19.2	0.45	0.29	0.12	19.0	19.2	-97.40	-97.92	-97.61
20.0	20.2	0.28	0.27	0.24	20.0	20.2	-94.02	-93.09	-92.38
21.0	21.2	0.15	0.11	0.05	21.0	21.2	-89.84	-88.93	-88.20
22.0	22.2	0.38	0.20	0.02	22.0	22.2	-98.61	-98.00	-97.01
23.0	23.2	0.26	0.12	0.03	23.0	23.2	-94.88	-94.14	-93.24
24.0	24.2	0.17	0.04	0.03	24.0	24.2	-94.51	-93.93	-93.53
25.0	25.2	0.05	0.04	0.04	25.0	25.2	-93.76	-93.36	-93.36
26.0	26.2	0.20	0.15	0.13	26.0	26.2	-92.62	-92.21	-92.14
27.0	27.2	0.24	0.31	0.31	27.0	27.2	-92.84	-91.80	-91.77
28.0	28.2	0.61	0.62	0.63	28.0	28.2	-95.86	-95.24	-94.93
29.0	29.2	0.87	0.88	0.90	29.0	29.2	-96.38	-96.00	-95.69
30.0	30.2	1.11	1.18	1.26	30.0	30.2	-95.94	-95.69	-95.33
31.0	31.2	1.10	1.26	1.43	31.0	31.2	-94.38	-94.21	-93.89
32.0	32.2	1.15	1.37	1.64	32.0	32.2	-89.84	-89.40	-89.23
33.0	33.2	1.18	1.48	1.74	33.0	33.2	-89.24	-88.66	-88.37
34.0	34.2	1.02	1.31	1.59	34.0	34.2	-83.90	-84.50	-85.51
35.0	35.2	0.26	0.57	0.88	35.0	35.2	-85.66	-86.47	-87.23
36.0	36.2	0.14	0.49	0.83	36.0	36.2	-83.72	-84.48	-85.26
37.0	37.2	0.05	0.27	0.59	37.0	37.2	-83.38	-83.97	-84.40
38.0	38.2	0.19	0.07	0.37	38.0	38.2	-83.32	-84.20	-84.72
39.0	39.2	0.36	0.15	0.13	39.0	39.2	-82.82	-83.86	-84.67
40.0	40.2	0.96	0.77	0.51	40.0	40.2	-85.18	-86.25	-87.19
41.0	41.2	0.07	0.16	0.25	41.0	41.2	-88.99	-89.76	-89.96
42.0	42.2	0.06	0.24	0.47	42.0	42.2	-87.30	-88.22	-89.08
43.0	43.2	0.29	0.40	0.52	43.0	43.2	-86.58	-87.69	-88.66
44.0	44.2	0.63	0.66	0.69	44.0	44.2	-85.88	-86.48	-86.98
45.0	45.2	0.43	0.44	0.45	45.0	45.2	-83.39	-83.88	-84.27
46.0	46.2	0.25	0.26	0.29	46.0	46.2	-84.62	-85.12	-85.57
47.0	47.2	0.23	0.18	0.16	47.0	47.2	-86.60	-86.69	-86.84
48.0	48.2	0.14	0.07	0.01	48.0	48.2	-88.76	-88.59	-88.31
49.0	49.2	0.58	0.18	0.03	49.0	49.2	-90.62	-90.56	-90.36
50.0	50.2	1.18	0.38	0.10	50.0	50.2	-90.38	-90.56	-90.59
51.0	51.2	0.14	0.30	0.53	51.0	51.2	-92.61	-92.33	-91.94
52.0	52.2	0.13	0.32	0.48	52.0	52.2	-96.81	-96.14	-95.36
53.0	53.2	0.11	0.15	0.30	53.0	53.2	-100.59	-99.40	-98.24
54.0	54.2	0.01	0.19	0.42	54.0	54.2	-99.95	-99.08	-98.35
55.0	55.2	0.12	0.29	0.57	55.0	55.2	-102.75	-101.63	-100.45
56.0	56.2	0.11	0.25	0.47	56.0	56.2	-106.06	-104.52	-102.87
57.0	57.2	0.11	0.03	0.16	57.0	57.2	-109.03	-107.32	-105.75
58.0	58.2	0.03	0.15	0.40	58.0	58.2	-106.78	-105.13	-103.15
59.0	59.2	0.23	0.11	0.05	59.0	59.2	-107.67	-106.61	-105.65
60.0	60.2	0.25	0.17	0.12	60.0	60.2	-105.74	-105.17	-104.74
61.0	61.2	0.17	0.09	0.05	61.0	61.2	-103.45	-102.67	-101.53
62.0	62.2	0.33	0.19	0.12	62.0	62.2	-102.48	-101.97	-101.59
63.0	63.2	1.14	0.69	0.47	63.0	63.2	-100.85	-100.90	-100.77
64.0	64.2	1.04	0.42	0.24	64.0	64.2	-99.21	-98.61	-98.24
65.0	65.2	1.18	0.44	0.12	65.0	65.2	-98.36	-97.36	-96.32