

# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = -55°C, Configuration A

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.69	2.08	3.19	1.30	-1.36	20.02	1.31	1.30	1.31	1.31
2750	4.22	2.32	3.17	0.95	-1.11	20.67	1.26	1.24	1.25	1.27
3000	3.83	2.56	3.15	0.64	-1.07	20.96	1.23	1.18	1.20	1.24
3250	3.54	2.81	3.15	0.37	-1.16	20.57	1.23	1.16	1.18	1.23
3500	3.28	3.01	3.14	0.13	-1.14	20.79	1.22	1.15	1.14	1.19
3750	3.06	3.23	3.14	0.09	-1.27	21.27	1.19	1.15	1.11	1.16
4000	2.90	3.41	3.15	0.28	-1.47	21.01	1.19	1.16	1.11	1.16
4250	2.77	3.60	3.17	0.43	-1.68	20.58	1.17	1.16	1.14	1.17
4500	2.66	3.76	3.18	0.56	-1.75	20.41	1.16	1.15	1.16	1.18
4750	2.57	3.91	3.19	0.66	-1.82	20.17	1.15	1.16	1.19	1.20
5000	2.49	4.03	3.19	0.76	-1.73	20.34	1.13	1.17	1.21	1.21
5250	2.43	4.15	3.21	0.84	-1.67	20.56	1.12	1.17	1.25	1.21
5500	2.39	4.24	3.22	0.90	-1.47	20.69	1.10	1.18	1.28	1.21
5750	2.35	4.32	3.22	0.96	-1.29	20.56	1.11	1.19	1.26	1.22
6000	2.32	4.41	3.24	1.01	-0.75	21.15	1.08	1.17	1.30	1.20
6250	2.27	4.47	3.23	1.07	-0.43	21.39	1.08	1.17	1.27	1.19
6500	2.23	4.53	3.23	1.14	-0.08	21.90	1.09	1.17	1.24	1.18
6750	2.20	4.58	3.23	1.19	0.02	22.23	1.10	1.19	1.20	1.18
7000	2.16	4.63	3.22	1.24	0.16	22.50	1.12	1.21	1.15	1.18
7200	2.14	4.67	3.22	1.28	0.16	22.94	1.13	1.21	1.12	1.16
7400	2.13	4.69	3.22	1.31	0.07	23.39	1.14	1.20	1.09	1.13
7600	2.11	4.73	3.22	1.33	0.00	24.16	1.14	1.18	1.10	1.09
7800	2.10	4.76	3.23	1.35	-0.09	25.59	1.13	1.14	1.11	1.06
8000	2.10	4.79	3.24	1.36	-0.12	26.48	1.13	1.11	1.11	1.02
8200	2.09	4.82	3.25	1.38	-0.15	27.52	1.12	1.08	1.12	1.02
8400	2.09	4.85	3.25	1.38	-0.05	29.21	1.10	1.05	1.12	1.04
8600	2.09	4.88	3.26	1.39	-0.10	30.14	1.06	1.01	1.10	1.07
8800	2.08	4.90	3.27	1.41	-0.07	30.62	1.02	1.06	1.06	1.08
9000	2.08	4.94	3.28	1.43	-0.15	28.86	1.06	1.13	1.04	1.12
9200	2.10	4.98	3.31	1.44	-0.16	26.84	1.14	1.18	1.13	1.14
9400	2.12	5.06	3.35	1.46	-0.20	24.78	1.22	1.22	1.23	1.16
9600	2.16	5.13	3.40	1.48	-0.21	22.95	1.28	1.26	1.32	1.20
9800	2.21	5.22	3.46	1.50	-0.40	21.51	1.36	1.33	1.41	1.24
10000	2.25	5.33	3.52	1.53	-0.64	19.77	1.45	1.41	1.52	1.31
10250	2.31	5.41	3.59	1.57	-1.45	18.03	1.52	1.55	1.57	1.41
10500	2.36	5.40	3.62	1.58	-2.58	16.53	1.55	1.64	1.56	1.50
10750	2.47	5.30	3.66	1.50	-4.08	15.16	1.58	1.65	1.53	1.51
11000	2.56	5.10	3.65	1.39	-4.52	14.49	1.56	1.64	1.43	1.49
11250	2.64	4.98	3.65	1.28	-4.41	13.95	1.52	1.57	1.34	1.46
11500	2.68	4.87	3.64	1.18	-3.54	13.65	1.48	1.45	1.28	1.43
11750	2.68	4.87	3.64	1.15	-2.28	13.92	1.42	1.39	1.23	1.40
12000	2.69	4.84	3.63	1.15	-1.75	14.15	1.41	1.38	1.20	1.32
12250	2.71	4.82	3.64	1.13	-1.28	14.81	1.36	1.39	1.23	1.26
12500	2.73	4.89	3.68	1.12	-1.12	15.26	1.28	1.37	1.25	1.23
12750	2.77	4.94	3.72	1.10	-1.54	15.48	1.22	1.38	1.30	1.23
13000	2.86	4.93	3.77	1.02	-1.81	15.16	1.20	1.40	1.35	1.25
13250	3.03	4.95	3.89	0.90	-2.02	14.56	1.20	1.37	1.43	1.32
13500	3.23	4.90	3.99	0.72	-1.86	13.55	1.27	1.36	1.48	1.43
13750	3.47	4.78	4.08	0.57	-0.82	12.77	1.40	1.43	1.51	1.49
14000	3.71	4.69	4.17	0.43	0.29	12.24	1.50	1.47	1.53	1.57
14250	3.99	4.58	4.27	0.28	1.48	11.90	1.63	1.56	1.59	1.63
14500	4.35	4.44	4.39	0.10	3.01	11.49	1.79	1.69	1.64	1.70
14750	4.68	4.34	4.51	0.08	4.73	11.32	1.94	1.81	1.72	1.73
15000	5.02	4.33	4.66	0.27	6.99	11.35	2.00	1.95	1.86	1.77

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

**Notes**

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- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at: [www.minicircuits.com/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/terms.jsp)



# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = -55°C, Configuration B

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.67	2.09	3.19	1.30	-0.43	20.03	1.31	1.31	1.30	1.31
2750	4.20	2.32	3.16	0.94	-0.07	20.68	1.27	1.25	1.24	1.26
3000	3.81	2.56	3.14	0.62	0.02	20.97	1.24	1.20	1.18	1.23
3250	3.51	2.81	3.14	0.35	-0.02	20.58	1.23	1.18	1.16	1.23
3500	3.26	3.03	3.14	0.12	0.09	20.81	1.19	1.14	1.15	1.22
3750	3.04	3.25	3.14	0.09	0.17	21.29	1.16	1.11	1.15	1.19
4000	2.88	3.45	3.16	0.27	0.16	21.02	1.16	1.11	1.16	1.19
4250	2.75	3.62	3.16	0.43	0.18	20.59	1.17	1.14	1.16	1.17
4500	2.64	3.76	3.16	0.56	0.27	20.42	1.18	1.16	1.15	1.16
4750	2.55	3.89	3.17	0.67	0.31	20.18	1.20	1.19	1.16	1.15
5000	2.48	3.99	3.17	0.78	0.39	20.35	1.21	1.21	1.17	1.13
5250	2.41	4.09	3.17	0.87	0.45	20.56	1.21	1.25	1.17	1.12
5500	2.37	4.17	3.18	0.94	0.62	20.70	1.21	1.28	1.18	1.10
5750	2.32	4.27	3.19	1.00	0.77	20.56	1.22	1.26	1.19	1.11
6000	2.28	4.33	3.19	1.07	0.95	21.16	1.20	1.30	1.17	1.08
6250	2.23	4.41	3.18	1.12	1.08	21.41	1.19	1.27	1.17	1.08
6500	2.19	4.49	3.19	1.17	1.09	21.92	1.18	1.24	1.17	1.09
6750	2.17	4.57	3.21	1.21	1.21	22.25	1.18	1.20	1.19	1.10
7000	2.15	4.65	3.22	1.24	1.35	22.52	1.18	1.15	1.21	1.12
7200	2.14	4.70	3.23	1.27	1.43	22.96	1.16	1.12	1.21	1.13
7400	2.11	4.75	3.23	1.29	1.53	23.41	1.13	1.09	1.20	1.14
7600	2.10	4.78	3.24	1.32	1.66	24.18	1.09	1.10	1.18	1.14
7800	2.07	4.82	3.23	1.35	1.59	25.62	1.06	1.11	1.14	1.13
8000	2.06	4.84	3.23	1.36	1.52	26.51	1.02	1.11	1.11	1.13
8200	2.06	4.85	3.23	1.39	1.55	27.52	1.02	1.12	1.08	1.12
8400	2.05	4.86	3.23	1.40	1.35	29.20	1.04	1.12	1.05	1.10
8600	2.05	4.88	3.24	1.42	1.26	30.15	1.07	1.10	1.01	1.06
8800	2.05	4.91	3.25	1.43	1.20	30.65	1.08	1.06	1.06	1.02
9000	2.07	4.95	3.28	1.44	1.23	28.91	1.12	1.04	1.13	1.06
9200	2.07	4.99	3.29	1.46	1.29	26.88	1.14	1.13	1.18	1.14
9400	2.08	5.05	3.32	1.49	1.14	24.80	1.16	1.23	1.22	1.22
9600	2.09	5.11	3.34	1.52	0.85	22.99	1.20	1.32	1.26	1.28
9800	2.11	5.22	3.39	1.56	0.38	21.54	1.24	1.41	1.33	1.36
10000	2.15	5.33	3.46	1.59	-0.58	19.81	1.31	1.52	1.41	1.45
10250	2.24	5.47	3.56	1.58	-1.92	18.05	1.41	1.57	1.55	1.52
10500	2.37	5.53	3.67	1.52	-3.45	16.55	1.50	1.56	1.64	1.55
10750	2.48	5.50	3.73	1.41	-4.51	15.19	1.51	1.53	1.65	1.58
11000	2.62	5.37	3.78	1.25	-4.38	14.52	1.49	1.43	1.64	1.56
11250	2.69	5.21	3.77	1.14	-3.54	13.98	1.46	1.34	1.57	1.52
11500	2.72	5.07	3.74	1.08	-2.37	13.70	1.43	1.28	1.45	1.48
11750	2.71	5.02	3.71	1.08	-1.55	13.96	1.40	1.23	1.39	1.42
12000	2.73	5.04	3.73	1.06	-1.13	14.19	1.32	1.20	1.38	1.41
12250	2.75	5.03	3.74	1.04	-0.41	14.85	1.26	1.23	1.39	1.36
12500	2.75	5.04	3.75	1.07	0.13	15.31	1.23	1.25	1.37	1.28
12750	2.81	5.03	3.78	1.07	-0.23	15.54	1.23	1.30	1.38	1.22
13000	2.88	4.96	3.80	1.02	-0.76	15.21	1.25	1.35	1.40	1.20
13250	3.01	4.89	3.85	0.97	-1.30	14.64	1.32	1.43	1.37	1.20
13500	3.19	4.75	3.90	0.86	-2.13	13.62	1.43	1.48	1.36	1.27
13750	3.41	4.69	4.00	0.69	-2.11	12.84	1.49	1.51	1.43	1.40
14000	3.64	4.62	4.10	0.53	-1.75	12.30	1.57	1.53	1.47	1.50
14250	3.97	4.57	4.26	0.31	-1.24	11.93	1.63	1.59	1.56	1.63
14500	4.29	4.57	4.43	0.08	0.52	11.51	1.70	1.64	1.69	1.79
14750	4.61	4.57	4.59	0.13	2.86	11.36	1.73	1.72	1.81	1.94
15000	4.90	4.54	4.72	0.29	5.40	11.41	1.77	1.86	1.95	2.00

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

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# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = -55°C, Configuration C

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.67	2.09	3.19	1.30	-0.26	20.27	1.30	1.31	1.31	1.31
2750	4.20	2.32	3.16	0.94	0.12	21.68	1.24	1.26	1.27	1.25
3000	3.81	2.56	3.14	0.63	0.27	23.13	1.18	1.23	1.24	1.20
3250	3.52	2.81	3.15	0.35	0.30	23.13	1.16	1.23	1.23	1.18
3500	3.26	3.03	3.14	0.12	0.43	23.36	1.15	1.22	1.19	1.14
3750	3.04	3.25	3.14	0.10	0.45	23.18	1.15	1.19	1.16	1.11
4000	2.88	3.45	3.16	0.28	0.35	22.22	1.16	1.19	1.16	1.11
4250	2.75	3.62	3.16	0.43	0.24	21.43	1.16	1.17	1.17	1.14
4500	2.64	3.77	3.17	0.56	0.27	21.07	1.15	1.16	1.18	1.16
4750	2.55	3.90	3.17	0.66	0.32	20.51	1.16	1.15	1.20	1.19
5000	2.48	4.00	3.17	0.76	0.49	19.95	1.17	1.13	1.21	1.21
5250	2.42	4.10	3.18	0.84	0.65	19.40	1.17	1.12	1.21	1.25
5500	2.38	4.18	3.19	0.90	0.97	18.82	1.18	1.10	1.21	1.28
5750	2.33	4.27	3.19	0.97	1.17	18.89	1.19	1.11	1.22	1.26
6000	2.30	4.33	3.20	1.03	1.68	18.70	1.17	1.08	1.20	1.30
6250	2.26	4.42	3.21	1.09	1.91	19.19	1.17	1.08	1.19	1.27
6500	2.22	4.49	3.21	1.15	2.11	19.85	1.17	1.09	1.18	1.24
6750	2.18	4.57	3.21	1.20	2.27	20.42	1.19	1.10	1.18	1.20
7000	2.15	4.65	3.22	1.25	2.37	21.18	1.21	1.12	1.18	1.15
7200	2.13	4.70	3.23	1.29	2.44	21.86	1.21	1.13	1.16	1.12
7400	2.11	4.74	3.23	1.32	2.38	22.49	1.20	1.14	1.13	1.09
7600	2.10	4.78	3.24	1.34	2.35	23.07	1.18	1.14	1.09	1.10
7800	2.08	4.81	3.23	1.37	2.21	24.34	1.14	1.13	1.06	1.11
8000	2.08	4.82	3.24	1.38	2.09	25.58	1.11	1.13	1.02	1.11
8200	2.09	4.84	3.25	1.40	2.02	26.68	1.08	1.12	1.02	1.12
8400	2.08	4.86	3.25	1.41	1.90	28.39	1.05	1.10	1.04	1.12
8600	2.07	4.87	3.25	1.42	1.87	32.24	1.01	1.06	1.07	1.10
8800	2.06	4.89	3.25	1.43	1.92	40.96	1.06	1.02	1.08	1.06
9000	2.08	4.93	3.28	1.45	2.00	37.50	1.13	1.06	1.12	1.04
9200	2.08	4.98	3.29	1.46	2.12	28.56	1.18	1.14	1.14	1.13
9400	2.13	5.04	3.35	1.50	2.00	24.23	1.22	1.22	1.16	1.23
9600	2.15	5.11	3.38	1.52	1.78	21.55	1.26	1.28	1.20	1.32
9800	2.19	5.21	3.44	1.56	1.40	19.33	1.33	1.36	1.24	1.41
10000	2.24	5.31	3.51	1.59	0.71	17.58	1.41	1.45	1.31	1.52
10250	2.30	5.46	3.60	1.61	-0.49	16.05	1.55	1.52	1.41	1.57
10500	2.36	5.51	3.66	1.58	-1.96	15.10	1.64	1.55	1.50	1.56
10750	2.46	5.48	3.71	1.50	-3.14	14.45	1.65	1.58	1.51	1.53
11000	2.55	5.34	3.72	1.37	-3.50	14.06	1.64	1.56	1.49	1.43
11250	2.63	5.20	3.73	1.26	-3.25	14.14	1.57	1.52	1.46	1.34
11500	2.67	5.04	3.70	1.17	-2.37	14.50	1.45	1.48	1.43	1.28
11750	2.68	4.98	3.68	1.15	-1.21	14.87	1.39	1.42	1.40	1.23
12000	2.70	4.98	3.69	1.16	-0.89	14.78	1.38	1.41	1.32	1.20
12250	2.73	4.97	3.71	1.14	-0.67	14.46	1.39	1.36	1.26	1.23
12500	2.76	4.97	3.73	1.14	-0.68	14.28	1.37	1.28	1.23	1.25
12750	2.78	4.95	3.73	1.10	-1.20	13.91	1.38	1.22	1.23	1.30
13000	2.87	4.89	3.76	1.03	-1.72	13.39	1.40	1.20	1.25	1.35
13250	3.02	4.82	3.83	0.92	-2.32	12.97	1.37	1.20	1.32	1.43
13500	3.23	4.67	3.89	0.77	-2.38	12.77	1.36	1.27	1.43	1.48
13750	3.48	4.61	4.01	0.62	-1.53	12.42	1.43	1.40	1.49	1.51
14000	3.70	4.56	4.11	0.48	-0.79	12.33	1.47	1.50	1.57	1.53
14250	3.99	4.54	4.26	0.31	0.21	12.12	1.56	1.63	1.63	1.59
14500	4.36	4.53	4.44	0.13	1.81	11.83	1.69	1.79	1.70	1.64
14750	4.69	4.51	4.60	0.02	3.38	11.44	1.81	1.94	1.73	1.72
15000	5.03	4.48	4.75	0.19	5.17	11.06	1.95	2.00	1.77	1.86

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

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# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = -55°C, Configuration D

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.68	2.08	3.19	1.30	-1.50	20.28	1.31	1.31	1.31	1.30
2750	4.20	2.31	3.16	0.94	-1.27	21.70	1.25	1.27	1.26	1.24
3000	3.81	2.55	3.13	0.63	-1.27	23.14	1.20	1.24	1.23	1.18
3250	3.51	2.79	3.14	0.37	-1.43	23.14	1.18	1.23	1.23	1.16
3500	3.26	3.00	3.13	0.13	-1.43	23.37	1.14	1.19	1.22	1.15
3750	3.04	3.21	3.12	0.08	-1.49	23.19	1.11	1.16	1.19	1.15
4000	2.89	3.40	3.14	0.26	-1.60	22.23	1.11	1.16	1.19	1.16
4250	2.76	3.59	3.16	0.42	-1.67	21.45	1.14	1.17	1.17	1.16
4500	2.64	3.75	3.16	0.56	-1.68	21.09	1.16	1.18	1.16	1.15
4750	2.56	3.90	3.18	0.67	-1.75	20.53	1.19	1.20	1.15	1.16
5000	2.48	4.03	3.19	0.78	-1.74	19.97	1.21	1.21	1.13	1.17
5250	2.42	4.14	3.20	0.87	-1.78	19.42	1.25	1.21	1.12	1.17
5500	2.37	4.24	3.21	0.93	-1.70	18.84	1.28	1.21	1.10	1.18
5750	2.33	4.31	3.21	0.99	-1.60	18.91	1.26	1.22	1.11	1.19
6000	2.28	4.40	3.21	1.05	-1.36	18.71	1.30	1.20	1.08	1.17
6250	2.24	4.46	3.21	1.10	-1.16	19.19	1.27	1.19	1.08	1.17
6500	2.20	4.52	3.21	1.15	-1.01	19.85	1.24	1.18	1.09	1.17
6750	2.17	4.57	3.21	1.20	-0.97	20.41	1.20	1.18	1.10	1.19
7000	2.16	4.61	3.21	1.23	-0.78	21.18	1.15	1.18	1.12	1.21
7200	2.14	4.65	3.22	1.27	-0.78	21.86	1.12	1.16	1.13	1.21
7400	2.12	4.67	3.21	1.28	-0.74	22.50	1.09	1.13	1.14	1.20
7600	2.10	4.71	3.21	1.30	-0.65	23.07	1.10	1.09	1.14	1.18
7800	2.08	4.74	3.21	1.33	-0.66	24.35	1.11	1.06	1.13	1.14
8000	2.07	4.76	3.21	1.34	-0.66	25.58	1.11	1.02	1.13	1.11
8200	2.06	4.80	3.22	1.36	-0.58	26.70	1.12	1.02	1.12	1.08
8400	2.05	4.83	3.22	1.38	-0.59	28.40	1.12	1.04	1.10	1.05
8600	2.05	4.85	3.23	1.39	-0.67	32.26	1.10	1.07	1.06	1.01
8800	2.05	4.86	3.23	1.40	-0.77	41.06	1.06	1.08	1.02	1.06
9000	2.07	4.91	3.26	1.42	-0.90	37.49	1.04	1.12	1.06	1.13
9200	2.07	4.94	3.27	1.43	-0.98	28.53	1.13	1.14	1.14	1.18
9400	2.06	5.03	3.30	1.45	-1.04	24.19	1.23	1.16	1.22	1.22
9600	2.07	5.09	3.32	1.47	-1.11	21.52	1.32	1.20	1.28	1.26
9800	2.11	5.19	3.38	1.50	-1.39	19.33	1.41	1.24	1.36	1.33
10000	2.15	5.29	3.44	1.53	-1.88	17.56	1.52	1.31	1.45	1.41
10250	2.24	5.38	3.53	1.54	-2.86	16.05	1.57	1.41	1.52	1.55
10500	2.37	5.38	3.62	1.51	-4.03	15.08	1.56	1.50	1.55	1.64
10750	2.49	5.28	3.66	1.41	-5.42	14.44	1.53	1.51	1.58	1.65
11000	2.63	5.08	3.68	1.27	-5.39	14.06	1.43	1.49	1.56	1.64
11250	2.69	4.94	3.67	1.16	-4.65	14.13	1.34	1.46	1.52	1.57
11500	2.73	4.84	3.66	1.09	-3.45	14.48	1.28	1.43	1.48	1.45
11750	2.73	4.84	3.66	1.08	-2.52	14.84	1.23	1.40	1.42	1.39
12000	2.73	4.80	3.64	1.05	-1.88	14.73	1.20	1.32	1.41	1.38
12250	2.76	4.79	3.66	1.03	-0.94	14.42	1.23	1.26	1.36	1.39
12500	2.77	4.86	3.69	1.06	-0.26	14.23	1.25	1.23	1.28	1.37
12750	2.83	4.90	3.74	1.06	-0.48	13.86	1.30	1.23	1.22	1.38
13000	2.90	4.89	3.78	1.02	-0.76	13.36	1.35	1.25	1.20	1.40
13250	3.05	4.91	3.88	0.94	-0.89	12.94	1.43	1.32	1.20	1.37
13500	3.22	4.86	3.96	0.82	-1.49	12.73	1.48	1.43	1.27	1.36
13750	3.46	4.76	4.06	0.64	-1.24	12.40	1.51	1.49	1.40	1.43
14000	3.67	4.65	4.13	0.48	-0.52	12.30	1.53	1.57	1.50	1.47
14250	3.96	4.54	4.24	0.28	0.23	12.08	1.59	1.63	1.63	1.56
14500	4.30	4.43	4.36	0.04	1.99	11.81	1.64	1.70	1.79	1.69
14750	4.62	4.31	4.46	0.19	4.41	11.39	1.72	1.73	1.94	1.81
15000	4.91	4.28	4.58	0.38	7.49	11.01	1.86	1.77	2.00	1.95

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

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# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = +25°C, Configuration A

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.79	2.15	3.27	1.32	-1.34	19.80	1.32	1.29	1.31	1.31
2750	4.35	2.39	3.26	0.98	-1.11	19.97	1.30	1.26	1.27	1.28
3000	3.98	2.63	3.25	0.67	-0.94	20.25	1.27	1.23	1.23	1.25
3250	3.67	2.86	3.24	0.40	-0.84	20.54	1.25	1.20	1.19	1.23
3500	3.41	3.07	3.24	0.16	-0.79	20.98	1.22	1.17	1.15	1.20
3750	3.19	3.29	3.24	0.06	-0.81	21.36	1.19	1.14	1.11	1.17
4000	3.01	3.48	3.24	0.24	-0.89	21.62	1.17	1.12	1.10	1.16
4250	2.87	3.67	3.25	0.40	-1.00	21.70	1.14	1.11	1.10	1.16
4500	2.76	3.84	3.27	0.54	-1.09	21.71	1.12	1.12	1.12	1.16
4750	2.67	4.00	3.28	0.65	-1.16	21.77	1.11	1.13	1.15	1.17
5000	2.61	4.14	3.31	0.75	-1.21	21.78	1.10	1.14	1.19	1.18
5250	2.56	4.26	3.33	0.83	-1.18	21.71	1.10	1.16	1.23	1.19
5500	2.52	4.36	3.34	0.89	-1.04	21.58	1.10	1.16	1.26	1.19
5750	2.50	4.45	3.37	0.94	-0.76	21.54	1.10	1.16	1.28	1.19
6000	2.46	4.53	3.37	0.99	-0.42	21.70	1.10	1.16	1.28	1.18
6250	2.43	4.59	3.38	1.05	-0.08	21.77	1.10	1.18	1.27	1.17
6500	2.41	4.64	3.38	1.10	0.20	21.85	1.10	1.19	1.25	1.16
6750	2.37	4.70	3.38	1.15	0.51	22.14	1.11	1.21	1.22	1.16
7000	2.34	4.74	3.38	1.21	0.63	22.70	1.12	1.21	1.18	1.15
7200	2.32	4.79	3.38	1.24	0.65	23.19	1.12	1.21	1.16	1.14
7400	2.31	4.82	3.39	1.27	0.60	23.87	1.13	1.19	1.14	1.12
7600	2.30	4.87	3.40	1.30	0.55	24.74	1.13	1.17	1.13	1.10
7800	2.28	4.90	3.40	1.32	0.45	25.82	1.12	1.15	1.12	1.09
8000	2.28	4.93	3.41	1.34	0.35	27.16	1.10	1.11	1.10	1.07
8200	2.28	4.96	3.42	1.35	0.30	28.76	1.08	1.07	1.08	1.04
8400	2.28	4.99	3.43	1.36	0.26	30.56	1.04	1.04	1.06	1.02
8600	2.28	5.02	3.44	1.38	0.25	31.43	1.01	1.05	1.05	1.03
8800	2.29	5.05	3.45	1.38	0.33	30.48	1.04	1.09	1.05	1.06
9000	2.29	5.09	3.47	1.40	0.29	27.97	1.09	1.14	1.10	1.11
9200	2.32	5.15	3.51	1.42	0.26	25.56	1.15	1.19	1.16	1.16
9400	2.34	5.21	3.54	1.43	0.23	23.57	1.20	1.23	1.21	1.20
9600	2.37	5.29	3.59	1.46	-0.01	21.77	1.27	1.27	1.28	1.25
9800	2.41	5.36	3.64	1.47	-0.32	20.22	1.34	1.33	1.35	1.30
10000	2.45	5.43	3.69	1.49	-0.64	18.95	1.40	1.37	1.41	1.34
10250	2.52	5.48	3.75	1.49	-1.25	17.61	1.47	1.42	1.45	1.39
10500	2.59	5.49	3.80	1.49	-1.74	16.66	1.51	1.47	1.46	1.41
10750	2.66	5.43	3.83	1.45	-2.45	15.89	1.52	1.51	1.45	1.42
11000	2.73	5.36	3.85	1.40	-2.93	15.20	1.52	1.54	1.42	1.42
11250	2.80	5.25	3.85	1.34	-3.13	14.82	1.49	1.56	1.37	1.40
11500	2.88	5.13	3.86	1.26	-3.15	14.53	1.45	1.55	1.31	1.37
11750	2.93	5.07	3.87	1.19	-2.89	14.41	1.41	1.53	1.29	1.35
12000	3.00	5.03	3.90	1.12	-2.53	14.44	1.37	1.48	1.28	1.33
12250	3.06	5.03	3.93	1.06	-1.68	14.49	1.33	1.43	1.29	1.31
12500	3.12	5.09	3.99	1.02	-0.91	14.64	1.31	1.38	1.31	1.30
12750	3.15	5.14	4.03	0.99	-0.38	14.80	1.27	1.33	1.33	1.30
13000	3.20	5.19	4.08	0.96	-0.04	14.90	1.25	1.30	1.35	1.30
13250	3.27	5.19	4.12	0.90	-0.13	14.86	1.25	1.29	1.37	1.32
13500	3.39	5.13	4.17	0.81	0.05	14.68	1.26	1.30	1.38	1.34
13750	3.55	5.04	4.23	0.69	0.32	14.33	1.31	1.36	1.42	1.37
14000	3.77	4.95	4.32	0.56	0.67	13.78	1.40	1.43	1.46	1.43
14250	4.05	4.84	4.43	0.38	1.41	13.20	1.50	1.52	1.52	1.51
14500	4.44	4.75	4.59	0.16	2.51	12.66	1.64	1.64	1.64	1.60
14750	4.88	4.67	4.77	0.08	4.58	12.15	1.80	1.80	1.76	1.71
15000	5.31	4.66	4.97	0.31	7.78	11.75	1.94	1.95	1.92	1.83

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

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# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = +25°C, Configuration B

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.78	2.15	3.27	1.32	-0.83	19.80	1.31	1.31	1.29	1.32
2750	4.34	2.39	3.26	0.97	-0.54	19.97	1.28	1.27	1.26	1.30
3000	3.97	2.64	3.25	0.67	-0.32	20.25	1.25	1.23	1.23	1.27
3250	3.67	2.87	3.25	0.40	-0.14	20.54	1.23	1.19	1.20	1.25
3500	3.40	3.09	3.24	0.17	-0.03	20.97	1.20	1.15	1.17	1.22
3750	3.18	3.30	3.24	0.05	0.06	21.36	1.17	1.11	1.14	1.19
4000	3.01	3.49	3.24	0.24	0.09	21.61	1.16	1.10	1.12	1.17
4250	2.87	3.67	3.25	0.40	0.10	21.70	1.16	1.10	1.11	1.14
4500	2.76	3.83	3.26	0.54	0.09	21.70	1.16	1.12	1.12	1.12
4750	2.67	3.97	3.27	0.66	0.10	21.76	1.17	1.15	1.13	1.11
5000	2.60	4.09	3.28	0.77	0.11	21.77	1.18	1.19	1.14	1.10
5250	2.54	4.20	3.29	0.86	0.10	21.71	1.19	1.23	1.16	1.10
5500	2.50	4.29	3.30	0.93	0.11	21.58	1.19	1.26	1.16	1.10
5750	2.46	4.36	3.31	1.00	0.16	21.53	1.19	1.28	1.16	1.10
6000	2.43	4.44	3.32	1.05	0.28	21.70	1.18	1.28	1.16	1.10
6250	2.41	4.52	3.34	1.09	0.42	21.77	1.17	1.27	1.18	1.10
6500	2.38	4.59	3.35	1.13	0.60	21.85	1.16	1.25	1.19	1.10
6750	2.37	4.67	3.37	1.17	0.84	22.14	1.16	1.22	1.21	1.11
7000	2.34	4.75	3.38	1.20	1.04	22.70	1.15	1.18	1.21	1.12
7200	2.32	4.80	3.39	1.24	1.16	23.19	1.14	1.16	1.21	1.12
7400	2.30	4.85	3.39	1.26	1.24	23.87	1.12	1.14	1.19	1.13
7600	2.29	4.89	3.40	1.29	1.29	24.74	1.10	1.13	1.17	1.13
7800	2.27	4.92	3.40	1.32	1.24	25.82	1.09	1.12	1.15	1.12
8000	2.26	4.95	3.40	1.34	1.15	27.16	1.07	1.10	1.11	1.10
8200	2.25	4.97	3.40	1.36	1.05	28.75	1.04	1.08	1.07	1.08
8400	2.25	5.00	3.41	1.37	0.96	30.55	1.02	1.06	1.04	1.04
8600	2.25	5.02	3.42	1.38	0.81	31.43	1.03	1.05	1.05	1.01
8800	2.26	5.05	3.43	1.40	0.74	30.47	1.06	1.05	1.09	1.04
9000	2.27	5.09	3.46	1.41	0.57	27.97	1.11	1.10	1.14	1.09
9200	2.29	5.15	3.49	1.43	0.41	25.56	1.16	1.16	1.19	1.15
9400	2.31	5.19	3.52	1.45	0.19	23.57	1.20	1.21	1.23	1.20
9600	2.33	5.27	3.56	1.48	-0.24	21.76	1.25	1.28	1.27	1.27
9800	2.37	5.35	3.61	1.50	-0.76	20.22	1.30	1.35	1.33	1.34
10000	2.41	5.42	3.66	1.51	-1.35	18.95	1.34	1.41	1.37	1.40
10250	2.48	5.50	3.73	1.50	-2.47	17.60	1.39	1.45	1.42	1.47
10500	2.56	5.54	3.80	1.47	-3.38	16.66	1.41	1.46	1.47	1.51
10750	2.66	5.56	3.87	1.39	-4.32	15.88	1.42	1.45	1.51	1.52
11000	2.76	5.53	3.93	1.30	-4.90	15.19	1.42	1.42	1.54	1.52
11250	2.86	5.47	3.97	1.20	-4.87	14.81	1.40	1.37	1.56	1.49
11500	2.95	5.38	4.00	1.09	-4.33	14.52	1.37	1.31	1.55	1.45
11750	3.03	5.31	4.02	1.02	-3.59	14.40	1.35	1.29	1.53	1.41
12000	3.07	5.22	4.01	0.98	-2.72	14.43	1.33	1.28	1.48	1.37
12250	3.12	5.17	4.03	0.96	-1.65	14.48	1.31	1.29	1.43	1.33
12500	3.15	5.15	4.04	0.97	-0.82	14.63	1.30	1.31	1.38	1.31
12750	3.17	5.12	4.04	0.99	-0.59	14.79	1.30	1.33	1.33	1.27
13000	3.20	5.11	4.05	1.00	-0.71	14.88	1.30	1.35	1.30	1.25
13250	3.26	5.07	4.07	0.97	-1.21	14.85	1.32	1.37	1.29	1.25
13500	3.36	5.00	4.10	0.89	-1.75	14.68	1.34	1.38	1.30	1.26
13750	3.52	4.93	4.17	0.76	-2.14	14.32	1.37	1.42	1.36	1.31
14000	3.73	4.87	4.26	0.61	-2.34	13.77	1.43	1.46	1.43	1.40
14250	4.02	4.79	4.39	0.41	-2.02	13.18	1.51	1.52	1.52	1.50
14500	4.39	4.74	4.56	0.18	-1.13	12.64	1.60	1.64	1.64	1.64
14750	4.81	4.71	4.76	0.07	0.97	12.14	1.71	1.76	1.80	1.80
15000	5.22	4.69	4.95	0.28	4.10	11.73	1.83	1.92	1.95	1.94

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

**Notes**

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- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at: [www.minicircuits.com/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/terms.jsp)



# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = +25°C, Configuration C

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.79	2.15	3.27	1.32	-0.36	20.23	1.29	1.32	1.31	1.31
2750	4.35	2.39	3.26	0.97	-0.06	20.89	1.26	1.30	1.28	1.27
3000	3.98	2.64	3.26	0.67	0.20	21.65	1.23	1.27	1.25	1.23
3250	3.67	2.88	3.25	0.40	0.40	22.44	1.20	1.25	1.23	1.19
3500	3.41	3.09	3.25	0.16	0.51	23.25	1.17	1.22	1.20	1.15
3750	3.18	3.30	3.24	0.06	0.58	23.92	1.14	1.19	1.17	1.11
4000	3.01	3.50	3.25	0.25	0.57	24.02	1.12	1.17	1.16	1.10
4250	2.87	3.67	3.25	0.40	0.55	23.50	1.11	1.14	1.16	1.10
4500	2.76	3.83	3.26	0.54	0.56	22.64	1.12	1.12	1.16	1.12
4750	2.67	3.98	3.28	0.65	0.59	21.80	1.13	1.11	1.17	1.15
5000	2.60	4.10	3.29	0.75	0.66	21.01	1.14	1.10	1.18	1.19
5250	2.56	4.20	3.30	0.83	0.75	20.21	1.16	1.10	1.19	1.23
5500	2.52	4.29	3.32	0.90	0.93	19.50	1.16	1.10	1.19	1.26
5750	2.49	4.37	3.33	0.96	1.22	19.20	1.16	1.10	1.19	1.28
6000	2.46	4.45	3.34	1.01	1.55	19.13	1.16	1.10	1.18	1.28
6250	2.43	4.53	3.35	1.06	1.87	19.22	1.18	1.10	1.17	1.27
6500	2.40	4.60	3.36	1.11	2.15	19.38	1.19	1.10	1.16	1.25
6750	2.37	4.67	3.37	1.16	2.48	19.77	1.21	1.11	1.16	1.22
7000	2.34	4.75	3.38	1.21	2.68	20.51	1.21	1.12	1.15	1.18
7200	2.32	4.81	3.39	1.25	2.72	21.24	1.21	1.12	1.14	1.16
7400	2.30	4.85	3.39	1.28	2.72	22.28	1.19	1.13	1.12	1.14
7600	2.29	4.90	3.40	1.31	2.73	23.45	1.17	1.13	1.10	1.13
7800	2.28	4.93	3.40	1.33	2.60	24.97	1.15	1.12	1.09	1.12
8000	2.28	4.95	3.41	1.35	2.50	27.31	1.11	1.10	1.07	1.10
8200	2.28	4.97	3.42	1.36	2.41	30.65	1.07	1.08	1.04	1.08
8400	2.28	5.00	3.43	1.38	2.32	36.41	1.04	1.04	1.02	1.06
8600	2.28	5.02	3.44	1.39	2.24	45.99	1.05	1.01	1.03	1.05
8800	2.29	5.06	3.46	1.40	2.23	34.72	1.09	1.04	1.06	1.05
9000	2.29	5.10	3.47	1.42	2.11	29.03	1.14	1.09	1.11	1.10
9200	2.31	5.15	3.50	1.43	2.05	25.67	1.19	1.15	1.16	1.16
9400	2.34	5.20	3.54	1.45	1.88	23.37	1.23	1.20	1.20	1.21
9600	2.37	5.28	3.59	1.48	1.55	21.49	1.27	1.27	1.25	1.28
9800	2.41	5.36	3.64	1.49	1.16	19.85	1.33	1.34	1.30	1.35
10000	2.45	5.43	3.69	1.51	0.67	18.66	1.37	1.40	1.34	1.41
10250	2.52	5.50	3.76	1.52	-0.20	17.41	1.42	1.47	1.39	1.45
10500	2.58	5.55	3.82	1.50	-0.92	16.59	1.47	1.51	1.41	1.46
10750	2.66	5.57	3.88	1.46	-1.93	15.72	1.51	1.52	1.42	1.45
11000	2.73	5.54	3.91	1.39	-2.51	15.00	1.54	1.52	1.42	1.42
11250	2.79	5.48	3.93	1.31	-2.84	14.57	1.56	1.49	1.40	1.37
11500	2.88	5.39	3.96	1.22	-2.81	14.22	1.55	1.45	1.37	1.31
11750	2.93	5.32	3.96	1.15	-2.48	13.95	1.53	1.41	1.35	1.29
12000	3.00	5.23	3.97	1.09	-2.11	13.91	1.48	1.37	1.33	1.28
12250	3.06	5.18	3.99	1.04	-1.31	13.89	1.43	1.33	1.31	1.29
12500	3.12	5.16	4.02	1.01	-0.71	13.96	1.38	1.31	1.30	1.31
12750	3.15	5.13	4.03	0.99	-0.40	14.11	1.33	1.27	1.30	1.33
13000	3.20	5.12	4.05	0.96	-0.27	14.15	1.30	1.25	1.30	1.35
13250	3.26	5.08	4.08	0.91	-0.45	14.19	1.29	1.25	1.32	1.37
13500	3.39	5.01	4.12	0.83	-0.46	14.06	1.30	1.26	1.34	1.38
13750	3.55	4.93	4.18	0.71	-0.60	13.79	1.36	1.31	1.37	1.42
14000	3.77	4.88	4.29	0.58	-0.52	13.39	1.43	1.40	1.43	1.46
14250	4.05	4.80	4.41	0.40	-0.10	12.90	1.52	1.50	1.51	1.52
14500	4.43	4.76	4.59	0.19	0.77	12.34	1.64	1.64	1.60	1.64
14750	4.88	4.72	4.80	0.04	2.68	11.81	1.80	1.80	1.71	1.76
15000	5.31	4.70	4.99	0.26	5.39	11.32	1.95	1.94	1.83	1.92

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

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# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = +25°C, Configuration D

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.78	2.15	3.27	1.32	-1.82	20.23	1.31	1.31	1.32	1.29
2750	4.33	2.38	3.25	0.98	-1.61	20.89	1.27	1.28	1.30	1.26
3000	3.97	2.62	3.24	0.68	-1.46	21.65	1.23	1.25	1.27	1.23
3250	3.66	2.86	3.24	0.41	-1.39	22.44	1.19	1.23	1.25	1.20
3500	3.40	3.07	3.23	0.17	-1.34	23.25	1.15	1.20	1.22	1.17
3750	3.18	3.29	3.23	0.05	-1.32	23.92	1.11	1.17	1.19	1.14
4000	3.01	3.48	3.24	0.24	-1.38	24.03	1.10	1.16	1.17	1.12
4250	2.87	3.67	3.25	0.40	-1.46	23.50	1.10	1.16	1.14	1.11
4500	2.76	3.84	3.27	0.54	-1.56	22.64	1.12	1.16	1.12	1.12
4750	2.66	3.99	3.28	0.66	-1.66	21.80	1.15	1.17	1.11	1.13
5000	2.59	4.13	3.29	0.77	-1.75	21.01	1.19	1.18	1.10	1.14
5250	2.54	4.26	3.32	0.85	-1.82	20.21	1.23	1.19	1.10	1.16
5500	2.50	4.36	3.33	0.92	-1.85	19.50	1.26	1.19	1.10	1.16
5750	2.46	4.45	3.34	0.98	-1.81	19.20	1.28	1.19	1.10	1.16
6000	2.42	4.52	3.34	1.03	-1.68	19.12	1.28	1.18	1.10	1.16
6250	2.40	4.58	3.35	1.08	-1.52	19.22	1.27	1.17	1.10	1.18
6500	2.38	4.63	3.36	1.12	-1.35	19.38	1.25	1.16	1.10	1.19
6750	2.36	4.69	3.37	1.16	-1.15	19.78	1.22	1.16	1.11	1.21
7000	2.34	4.74	3.38	1.20	-1.01	20.51	1.18	1.15	1.12	1.21
7200	2.32	4.79	3.38	1.24	-0.91	21.24	1.16	1.14	1.12	1.21
7400	2.30	4.82	3.38	1.26	-0.89	22.27	1.14	1.12	1.13	1.19
7600	2.28	4.86	3.38	1.29	-0.89	23.44	1.13	1.10	1.13	1.17
7800	2.26	4.90	3.38	1.31	-0.93	24.98	1.12	1.09	1.12	1.15
8000	2.26	4.93	3.39	1.33	-1.02	27.31	1.10	1.07	1.10	1.11
8200	2.24	4.95	3.39	1.34	-1.07	30.66	1.08	1.04	1.08	1.07
8400	2.24	4.99	3.40	1.36	-1.11	36.40	1.06	1.02	1.04	1.04
8600	2.25	5.01	3.41	1.37	-1.18	45.97	1.05	1.03	1.01	1.05
8800	2.25	5.05	3.43	1.38	-1.15	34.71	1.05	1.06	1.04	1.09
9000	2.26	5.09	3.45	1.40	-1.24	29.02	1.10	1.11	1.09	1.14
9200	2.28	5.15	3.48	1.42	-1.35	25.67	1.16	1.16	1.15	1.19
9400	2.30	5.20	3.51	1.43	-1.46	23.37	1.21	1.20	1.20	1.23
9600	2.32	5.28	3.55	1.46	-1.78	21.48	1.28	1.25	1.27	1.27
9800	2.36	5.35	3.60	1.47	-2.24	19.85	1.35	1.30	1.34	1.33
10000	2.40	5.42	3.65	1.49	-2.68	18.66	1.41	1.34	1.40	1.37
10250	2.47	5.47	3.72	1.48	-3.52	17.40	1.45	1.39	1.47	1.42
10500	2.55	5.48	3.77	1.45	-4.22	16.59	1.46	1.41	1.51	1.47
10750	2.64	5.43	3.82	1.38	-4.87	15.72	1.45	1.42	1.52	1.51
11000	2.75	5.35	3.86	1.31	-5.34	15.00	1.42	1.42	1.52	1.54
11250	2.84	5.24	3.88	1.22	-5.16	14.57	1.37	1.40	1.49	1.56
11500	2.94	5.13	3.90	1.13	-4.67	14.22	1.31	1.37	1.45	1.55
11750	3.01	5.07	3.92	1.07	-3.98	13.95	1.29	1.35	1.41	1.53
12000	3.06	5.03	3.93	1.02	-3.15	13.91	1.28	1.33	1.37	1.48
12250	3.11	5.02	3.96	0.99	-2.02	13.89	1.29	1.31	1.33	1.43
12500	3.14	5.08	4.00	0.98	-1.05	13.96	1.31	1.30	1.31	1.38
12750	3.16	5.14	4.03	0.99	-0.59	14.11	1.33	1.30	1.27	1.33
13000	3.18	5.18	4.07	1.00	-0.48	14.16	1.35	1.30	1.25	1.30
13250	3.25	5.18	4.11	0.96	-0.90	14.19	1.37	1.32	1.25	1.29
13500	3.35	5.13	4.15	0.87	-1.24	14.06	1.38	1.34	1.26	1.30
13750	3.51	5.03	4.20	0.74	-1.22	13.79	1.42	1.37	1.31	1.36
14000	3.71	4.94	4.28	0.59	-1.16	13.40	1.46	1.43	1.40	1.43
14250	4.00	4.83	4.39	0.39	-0.51	12.90	1.52	1.51	1.50	1.52
14500	4.37	4.74	4.55	0.16	0.59	12.35	1.64	1.60	1.64	1.64
14750	4.79	4.66	4.72	0.10	2.85	11.80	1.76	1.71	1.80	1.80
15000	5.20	4.66	4.92	0.33	6.47	11.32	1.92	1.83	1.94	1.95

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

**Notes**

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# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = +105°C, Configuration A

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.84	2.17	3.30	1.33	-2.24	19.79	1.31	1.30	1.30	1.32
2750	4.40	2.41	3.30	0.99	-2.04	20.01	1.29	1.25	1.27	1.29
3000	4.02	2.65	3.28	0.69	-1.94	20.32	1.26	1.21	1.22	1.26
3250	3.72	2.89	3.28	0.41	-1.95	20.64	1.24	1.17	1.18	1.23
3500	3.45	3.11	3.28	0.17	-2.02	21.02	1.22	1.15	1.14	1.20
3750	3.24	3.32	3.28	0.05	-2.14	21.46	1.20	1.14	1.11	1.17
4000	3.07	3.51	3.28	0.23	-2.30	21.99	1.17	1.13	1.10	1.15
4250	2.93	3.69	3.29	0.39	-2.45	22.33	1.14	1.13	1.10	1.14
4500	2.81	3.86	3.30	0.53	-2.63	22.64	1.11	1.13	1.11	1.14
4750	2.72	4.03	3.32	0.65	-2.82	22.68	1.09	1.12	1.14	1.15
5000	2.65	4.18	3.35	0.75	-2.98	22.31	1.09	1.13	1.17	1.17
5250	2.61	4.31	3.38	0.82	-3.14	21.77	1.10	1.14	1.22	1.19
5500	2.59	4.41	3.41	0.88	-3.17	21.11	1.12	1.15	1.26	1.21
5750	2.57	4.49	3.42	0.93	-2.94	20.94	1.12	1.15	1.28	1.21
6000	2.55	4.56	3.44	0.97	-2.66	20.75	1.13	1.17	1.29	1.20
6250	2.53	4.62	3.45	1.03	-2.20	20.88	1.12	1.19	1.28	1.18
6500	2.49	4.68	3.45	1.09	-1.85	21.20	1.13	1.22	1.25	1.17
6750	2.46	4.73	3.45	1.15	-1.64	21.73	1.13	1.25	1.22	1.17
7000	2.42	4.80	3.45	1.21	-1.65	22.71	1.13	1.25	1.18	1.16
7200	2.40	4.85	3.45	1.24	-1.80	23.63	1.13	1.23	1.17	1.14
7400	2.39	4.90	3.47	1.27	-1.92	24.96	1.12	1.20	1.16	1.12
7600	2.38	4.95	3.48	1.30	-2.10	26.41	1.12	1.17	1.15	1.09
7800	2.37	4.98	3.48	1.31	-2.22	27.63	1.11	1.12	1.15	1.06
8000	2.37	5.01	3.49	1.32	-2.30	29.03	1.09	1.08	1.13	1.04
8200	2.37	5.04	3.50	1.34	-2.41	29.94	1.06	1.05	1.10	1.02
8400	2.37	5.06	3.51	1.35	-2.43	30.07	1.02	1.05	1.07	1.03
8600	2.37	5.10	3.52	1.37	-2.52	29.39	1.02	1.08	1.07	1.04
8800	2.39	5.14	3.55	1.38	-2.63	28.19	1.07	1.11	1.10	1.07
9000	2.40	5.18	3.57	1.39	-2.80	26.86	1.12	1.14	1.15	1.10
9200	2.41	5.24	3.60	1.41	-2.90	25.23	1.17	1.18	1.21	1.14
9400	2.44	5.31	3.64	1.43	-3.07	23.63	1.22	1.23	1.26	1.18
9600	2.47	5.37	3.68	1.45	-3.22	21.99	1.27	1.28	1.31	1.24
9800	2.50	5.45	3.73	1.47	-3.60	20.37	1.32	1.33	1.35	1.30
10000	2.53	5.51	3.77	1.48	-4.09	19.10	1.36	1.38	1.38	1.35
10250	2.59	5.54	3.82	1.48	-4.72	17.82	1.40	1.43	1.39	1.40
10500	2.66	5.53	3.86	1.46	-5.30	16.83	1.44	1.46	1.39	1.41
10750	2.73	5.48	3.89	1.44	-5.88	16.30	1.46	1.47	1.37	1.40
11000	2.80	5.41	3.91	1.40	-6.28	15.82	1.47	1.48	1.34	1.37
11250	2.86	5.36	3.93	1.36	-6.56	15.57	1.46	1.48	1.32	1.33
11500	2.92	5.29	3.95	1.31	-6.83	15.42	1.42	1.49	1.30	1.31
11750	2.99	5.28	3.99	1.24	-6.95	15.17	1.37	1.47	1.30	1.31
12000	3.03	5.26	4.00	1.17	-6.96	15.10	1.31	1.47	1.31	1.33
12250	3.12	5.22	4.05	1.08	-6.68	14.92	1.28	1.46	1.33	1.34
12500	3.23	5.23	4.12	1.00	-6.04	14.75	1.28	1.44	1.37	1.35
12750	3.32	5.24	4.17	0.93	-5.18	14.63	1.29	1.40	1.41	1.35
13000	3.41	5.25	4.23	0.88	-4.15	14.47	1.30	1.37	1.41	1.35
13250	3.45	5.28	4.27	0.85	-3.36	14.50	1.32	1.34	1.40	1.36
13500	3.51	5.24	4.29	0.80	-3.22	14.48	1.33	1.33	1.38	1.38
13750	3.59	5.19	4.32	0.74	-2.91	14.57	1.34	1.31	1.35	1.39
14000	3.74	5.12	4.38	0.64	-2.92	14.50	1.37	1.33	1.38	1.41
14250	3.96	5.04	4.46	0.50	-2.91	14.21	1.42	1.39	1.44	1.43
14500	4.30	4.92	4.60	0.30	-2.44	13.80	1.52	1.53	1.55	1.49
14750	4.76	4.83	4.79	0.03	-1.35	13.20	1.65	1.74	1.72	1.59
15000	5.39	4.81	5.09	0.29	0.89	12.53	1.84	1.97	1.94	1.75

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

**Notes**

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- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at: [www.minicircuits.com/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/terms.jsp)



# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = +105°C, Configuration B

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.85	2.18	3.31	1.34	-0.11	19.79	1.32	1.30	1.30	1.31
2750	4.40	2.41	3.30	0.99	0.27	20.00	1.29	1.27	1.25	1.29
3000	4.02	2.66	3.29	0.69	0.58	20.32	1.26	1.22	1.21	1.26
3250	3.71	2.90	3.28	0.41	0.77	20.64	1.23	1.18	1.17	1.24
3500	3.45	3.12	3.28	0.18	0.91	21.03	1.20	1.14	1.15	1.22
3750	3.24	3.34	3.29	0.04	1.04	21.47	1.17	1.11	1.14	1.20
4000	3.08	3.53	3.30	0.22	1.16	22.00	1.15	1.10	1.13	1.17
4250	2.94	3.71	3.31	0.38	1.29	22.34	1.14	1.10	1.13	1.14
4500	2.82	3.87	3.31	0.52	1.44	22.65	1.14	1.11	1.13	1.11
4750	2.73	4.01	3.32	0.64	1.55	22.68	1.15	1.14	1.12	1.09
5000	2.66	4.14	3.34	0.76	1.54	22.31	1.17	1.17	1.13	1.09
5250	2.61	4.24	3.35	0.85	1.53	21.77	1.19	1.22	1.14	1.10
5500	2.58	4.33	3.37	0.92	1.50	21.10	1.21	1.26	1.15	1.12
5750	2.55	4.41	3.38	0.97	1.55	20.93	1.21	1.28	1.15	1.12
6000	2.54	4.49	3.41	1.01	1.73	20.74	1.20	1.29	1.17	1.13
6250	2.52	4.57	3.43	1.05	2.03	20.87	1.18	1.28	1.19	1.12
6500	2.50	4.65	3.44	1.09	2.38	21.19	1.17	1.25	1.22	1.13
6750	2.48	4.74	3.47	1.13	2.83	21.73	1.17	1.22	1.25	1.13
7000	2.45	4.83	3.48	1.18	3.09	22.71	1.16	1.18	1.25	1.13
7200	2.43	4.88	3.48	1.21	3.27	23.63	1.14	1.17	1.23	1.13
7400	2.40	4.93	3.48	1.25	3.32	24.96	1.12	1.16	1.20	1.12
7600	2.38	4.96	3.48	1.28	3.28	26.41	1.09	1.15	1.17	1.12
7800	2.37	4.99	3.49	1.31	3.18	27.64	1.06	1.15	1.12	1.11
8000	2.36	5.02	3.49	1.33	3.08	29.07	1.04	1.13	1.08	1.09
8200	2.36	5.04	3.50	1.34	2.99	29.98	1.02	1.10	1.05	1.06
8400	2.36	5.07	3.51	1.35	2.88	30.09	1.03	1.07	1.05	1.02
8600	2.37	5.10	3.52	1.37	2.88	29.40	1.04	1.07	1.08	1.02
8800	2.38	5.14	3.54	1.38	2.80	28.22	1.07	1.10	1.11	1.07
9000	2.40	5.18	3.57	1.39	2.73	26.86	1.10	1.15	1.14	1.12
9200	2.42	5.23	3.60	1.41	2.68	25.24	1.14	1.21	1.18	1.17
9400	2.45	5.29	3.64	1.43	2.32	23.61	1.18	1.26	1.23	1.22
9600	2.48	5.35	3.68	1.45	2.00	21.99	1.24	1.31	1.28	1.27
9800	2.53	5.44	3.75	1.46	1.55	20.35	1.30	1.35	1.33	1.32
10000	2.58	5.50	3.80	1.47	0.96	19.09	1.35	1.38	1.38	1.36
10250	2.65	5.55	3.86	1.45	0.17	17.82	1.40	1.39	1.43	1.40
10500	2.73	5.58	3.93	1.40	-0.54	16.82	1.41	1.39	1.46	1.44
10750	2.79	5.61	3.98	1.34	-0.91	16.31	1.40	1.37	1.47	1.46
11000	2.86	5.60	4.02	1.28	-1.13	15.83	1.37	1.34	1.48	1.47
11250	2.90	5.58	4.04	1.23	-1.08	15.58	1.33	1.32	1.48	1.46
11500	2.98	5.53	4.07	1.16	-0.85	15.44	1.31	1.30	1.49	1.42
11750	3.06	5.48	4.11	1.11	-0.57	15.19	1.31	1.30	1.47	1.37
12000	3.16	5.39	4.13	1.05	-0.21	15.12	1.33	1.31	1.47	1.31
12250	3.27	5.31	4.17	0.97	0.38	14.93	1.34	1.33	1.46	1.28
12500	3.36	5.25	4.20	0.94	1.25	14.77	1.35	1.37	1.44	1.28
12750	3.43	5.21	4.23	0.91	2.20	14.65	1.35	1.41	1.40	1.29
13000	3.46	5.20	4.24	0.90	2.93	14.48	1.35	1.41	1.37	1.30
13250	3.48	5.19	4.25	0.90	3.10	14.54	1.36	1.40	1.34	1.32
13500	3.52	5.15	4.26	0.86	3.05	14.51	1.38	1.38	1.33	1.33
13750	3.58	5.11	4.28	0.80	2.99	14.59	1.39	1.35	1.31	1.34
14000	3.72	5.04	4.33	0.71	2.68	14.51	1.41	1.38	1.33	1.37
14250	3.98	4.96	4.44	0.53	2.23	14.20	1.43	1.44	1.39	1.42
14500	4.30	4.89	4.58	0.31	2.56	13.79	1.49	1.55	1.53	1.52
14750	4.80	4.84	4.82	0.02	3.88	13.21	1.59	1.72	1.74	1.65
15000	5.38	4.83	5.10	0.29	6.70	12.55	1.75	1.94	1.97	1.84

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

**Notes**

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# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = +105°C, Configuration C

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.83	2.18	3.31	1.34	0.58	20.27	1.30	1.31	1.32	1.30
2750	4.39	2.42	3.29	0.99	1.07	21.17	1.25	1.29	1.29	1.27
3000	4.02	2.66	3.29	0.69	1.45	22.26	1.21	1.26	1.26	1.22
3250	3.71	2.90	3.28	0.41	1.72	23.32	1.17	1.24	1.23	1.18
3500	3.45	3.12	3.28	0.17	1.92	23.95	1.15	1.22	1.20	1.14
3750	3.23	3.34	3.28	0.04	2.08	24.01	1.14	1.20	1.17	1.11
4000	3.06	3.53	3.29	0.23	2.19	23.61	1.13	1.17	1.15	1.10
4250	2.92	3.71	3.30	0.39	2.29	23.28	1.13	1.14	1.14	1.10
4500	2.80	3.87	3.30	0.52	2.41	22.87	1.13	1.11	1.14	1.11
4750	2.71	4.02	3.32	0.64	2.53	22.42	1.12	1.09	1.15	1.14
5000	2.64	4.14	3.33	0.74	2.63	21.79	1.13	1.09	1.17	1.17
5250	2.60	4.25	3.35	0.82	2.76	20.83	1.14	1.10	1.19	1.22
5500	2.58	4.34	3.37	0.88	2.97	19.90	1.15	1.12	1.21	1.26
5750	2.56	4.42	3.39	0.93	3.34	19.36	1.15	1.12	1.21	1.28
6000	2.55	4.49	3.41	0.98	3.76	18.93	1.17	1.13	1.20	1.29
6250	2.52	4.57	3.43	1.02	4.32	18.74	1.19	1.12	1.18	1.28
6500	2.49	4.66	3.44	1.08	4.78	18.97	1.22	1.13	1.17	1.25
6750	2.45	4.74	3.45	1.13	5.25	19.37	1.25	1.13	1.17	1.22
7000	2.42	4.83	3.46	1.19	5.45	20.20	1.25	1.13	1.16	1.18
7200	2.39	4.89	3.46	1.23	5.54	21.05	1.23	1.13	1.14	1.17
7400	2.38	4.93	3.47	1.26	5.56	22.28	1.20	1.12	1.12	1.16
7600	2.37	4.97	3.48	1.29	5.52	23.71	1.17	1.12	1.09	1.15
7800	2.37	4.99	3.49	1.31	5.45	25.56	1.12	1.11	1.06	1.15
8000	2.36	5.01	3.49	1.33	5.44	28.08	1.08	1.09	1.04	1.13
8200	2.36	5.04	3.50	1.34	5.39	32.26	1.05	1.06	1.02	1.10
8400	2.36	5.07	3.51	1.35	5.40	40.86	1.05	1.02	1.03	1.07
8600	2.37	5.10	3.52	1.37	5.43	40.73	1.08	1.02	1.04	1.07
8800	2.38	5.14	3.54	1.38	5.42	31.72	1.11	1.07	1.07	1.10
9000	2.40	5.18	3.57	1.40	5.40	27.14	1.14	1.12	1.10	1.15
9200	2.41	5.23	3.60	1.41	5.45	24.29	1.18	1.17	1.14	1.21
9400	2.45	5.29	3.64	1.43	5.16	22.21	1.23	1.22	1.18	1.26
9600	2.46	5.35	3.67	1.44	4.97	20.71	1.28	1.27	1.24	1.31
9800	2.50	5.44	3.73	1.46	4.65	19.44	1.33	1.32	1.30	1.35
10000	2.53	5.50	3.77	1.46	4.23	18.45	1.38	1.36	1.35	1.38
10250	2.59	5.55	3.82	1.45	3.68	17.52	1.43	1.40	1.40	1.39
10500	2.66	5.58	3.88	1.43	3.27	16.91	1.46	1.44	1.41	1.39
10750	2.73	5.61	3.94	1.41	2.88	16.30	1.47	1.46	1.40	1.37
11000	2.80	5.60	3.98	1.37	2.53	15.81	1.48	1.47	1.37	1.34
11250	2.85	5.58	4.01	1.34	2.24	15.47	1.48	1.46	1.33	1.32
11500	2.91	5.52	4.02	1.27	1.94	14.89	1.49	1.42	1.31	1.30
11750	2.99	5.47	4.06	1.21	1.79	14.43	1.47	1.37	1.31	1.30
12000	3.04	5.36	4.05	1.12	1.84	14.08	1.47	1.31	1.33	1.31
12250	3.14	5.29	4.08	1.02	2.33	13.76	1.46	1.28	1.34	1.33
12500	3.25	5.22	4.12	0.95	3.17	13.55	1.44	1.28	1.35	1.37
12750	3.33	5.17	4.15	0.89	4.14	13.57	1.40	1.29	1.35	1.41
13000	3.41	5.17	4.20	0.87	5.36	13.64	1.37	1.30	1.35	1.41
13250	3.45	5.16	4.22	0.85	5.75	14.06	1.34	1.32	1.36	1.40
13500	3.51	5.11	4.24	0.81	5.83	14.43	1.33	1.33	1.38	1.38
13750	3.59	5.06	4.26	0.75	6.09	14.73	1.31	1.34	1.39	1.35
14000	3.73	5.02	4.33	0.66	6.05	14.64	1.33	1.37	1.41	1.38
14250	3.96	4.95	4.43	0.50	5.83	14.12	1.39	1.42	1.43	1.44
14500	4.30	4.89	4.58	0.30	6.28	13.28	1.53	1.52	1.49	1.55
14750	4.77	4.82	4.79	0.03	7.39	12.20	1.74	1.65	1.59	1.72
15000	5.40	4.81	5.09	0.27	9.76	11.39	1.97	1.84	1.75	1.94

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

**Notes**

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# 2 Way 90° Power Splitter/Combiner

# QCH-153+

## Typical Performance Data

Test Conditions: Input Power =+5 dBm @Temperature = +105°C, Configuration D

Freq. (MHz)	Total Loss <sup>1</sup> (dB)			Amp. Unbal. (±dB) (half P-P)	Phase Unbal. (deg) (Rel. to 90°)	Isolation (dB) Port 1 - Port 2	VSWR (:1)			
	Sum-Port 1	Sum-Port 2	Avg				Sum	Port 1	Port 2	Iso
2500	4.85	2.17	3.31	1.33	-3.08	20.28	1.30	1.32	1.31	1.30
2750	4.40	2.41	3.30	0.99	-2.99	21.19	1.27	1.29	1.29	1.25
3000	4.02	2.65	3.28	0.68	-2.98	22.27	1.22	1.26	1.26	1.21
3250	3.71	2.89	3.28	0.41	-3.10	23.33	1.18	1.23	1.24	1.17
3500	3.46	3.11	3.28	0.17	-3.24	23.94	1.14	1.20	1.22	1.15
3750	3.24	3.32	3.28	0.04	-3.40	24.02	1.11	1.17	1.20	1.14
4000	3.08	3.51	3.29	0.23	-3.57	23.62	1.10	1.15	1.17	1.13
4250	2.94	3.69	3.30	0.39	-3.70	23.29	1.10	1.14	1.14	1.13
4500	2.83	3.87	3.32	0.53	-3.87	22.88	1.11	1.14	1.11	1.13
4750	2.73	4.03	3.33	0.66	-4.09	22.43	1.14	1.15	1.09	1.12
5000	2.66	4.18	3.35	0.77	-4.37	21.80	1.17	1.17	1.09	1.13
5250	2.61	4.31	3.38	0.86	-4.68	20.84	1.22	1.19	1.10	1.14
5500	2.58	4.42	3.40	0.92	-4.96	19.91	1.26	1.21	1.12	1.15
5750	2.55	4.50	3.42	0.97	-5.06	19.37	1.28	1.21	1.12	1.15
6000	2.54	4.57	3.44	1.01	-5.03	18.94	1.29	1.20	1.13	1.17
6250	2.52	4.63	3.45	1.05	-4.85	18.76	1.28	1.18	1.12	1.19
6500	2.50	4.68	3.45	1.10	-4.63	18.98	1.25	1.17	1.13	1.22
6750	2.48	4.73	3.46	1.14	-4.47	19.38	1.22	1.17	1.13	1.25
7000	2.45	4.80	3.47	1.19	-4.44	20.21	1.18	1.16	1.13	1.25
7200	2.43	4.85	3.47	1.23	-4.51	21.06	1.17	1.14	1.13	1.23
7400	2.40	4.90	3.47	1.26	-4.63	22.29	1.16	1.12	1.12	1.20
7600	2.38	4.94	3.47	1.29	-4.81	23.72	1.15	1.09	1.12	1.17
7800	2.37	4.97	3.48	1.30	-4.98	25.58	1.15	1.06	1.11	1.12
8000	2.36	5.00	3.48	1.32	-5.17	28.09	1.13	1.04	1.09	1.08
8200	2.36	5.03	3.49	1.34	-5.32	32.27	1.10	1.02	1.06	1.05
8400	2.36	5.06	3.50	1.35	-5.48	40.79	1.07	1.03	1.02	1.05
8600	2.37	5.09	3.52	1.36	-5.59	40.77	1.07	1.04	1.02	1.08
8800	2.38	5.12	3.54	1.37	-5.77	31.76	1.10	1.07	1.07	1.11
9000	2.40	5.17	3.57	1.39	-5.99	27.15	1.15	1.10	1.12	1.14
9200	2.41	5.23	3.59	1.41	-6.22	24.31	1.21	1.14	1.17	1.18
9400	2.43	5.30	3.63	1.43	-6.46	22.21	1.26	1.18	1.22	1.23
9600	2.47	5.36	3.68	1.45	-6.76	20.71	1.31	1.24	1.27	1.28
9800	2.53	5.44	3.75	1.48	-7.29	19.45	1.35	1.30	1.32	1.33
10000	2.58	5.50	3.80	1.49	-7.98	18.45	1.38	1.35	1.36	1.38
10250	2.65	5.54	3.86	1.48	-8.85	17.53	1.39	1.40	1.40	1.43
10500	2.73	5.53	3.91	1.44	-9.75	16.91	1.39	1.41	1.44	1.46
10750	2.79	5.48	3.93	1.37	-10.35	16.31	1.37	1.40	1.46	1.47
11000	2.86	5.42	3.95	1.31	-10.64	15.81	1.34	1.37	1.47	1.48
11250	2.90	5.35	3.95	1.25	-10.57	15.46	1.32	1.33	1.46	1.48
11500	2.99	5.29	3.99	1.19	-10.33	14.88	1.30	1.31	1.42	1.49
11750	3.06	5.27	4.03	1.14	-10.02	14.42	1.30	1.31	1.37	1.47
12000	3.16	5.25	4.08	1.11	-9.71	14.05	1.31	1.33	1.31	1.47
12250	3.27	5.21	4.13	1.04	-9.38	13.74	1.33	1.34	1.28	1.46
12500	3.36	5.22	4.19	0.99	-8.72	13.53	1.37	1.35	1.28	1.44
12750	3.43	5.23	4.24	0.95	-7.89	13.54	1.41	1.35	1.29	1.40
13000	3.47	5.24	4.27	0.92	-7.37	13.62	1.41	1.35	1.30	1.37
13250	3.49	5.26	4.28	0.90	-6.87	14.04	1.40	1.36	1.32	1.34
13500	3.54	5.22	4.30	0.86	-6.85	14.41	1.38	1.38	1.33	1.33
13750	3.61	5.18	4.32	0.80	-6.87	14.71	1.35	1.39	1.34	1.31
14000	3.73	5.11	4.37	0.69	-7.18	14.63	1.38	1.41	1.37	1.33
14250	3.96	5.02	4.46	0.53	-7.40	14.10	1.44	1.43	1.42	1.39
14500	4.30	4.92	4.60	0.31	-7.06	13.27	1.55	1.49	1.52	1.53
14750	4.79	4.81	4.80	0.02	-5.79	12.17	1.72	1.59	1.65	1.74
15000	5.37	4.79	5.07	0.31	-3.07	11.36	1.94	1.75	1.84	1.97

(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

**Notes**

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at: [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

