STRIPLINE SURFACE MOUNT

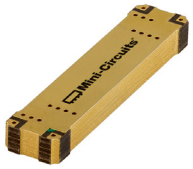
Power Splitter/Combiner

QCH-272+

50Ω 700 to 2700 MHz 2-Way 90° 200W

KEY FEATURES

- High power handling, up to 200W
- Wide bandwidth
- Excellent amplitude unbalance, ±0.1 dB

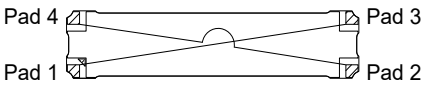


Generic photo used for illustration purposes only

APPLICATIONS

- Balanced amplifiers
- I&Q modulators
- Defense and military

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' QCH-272+ is a 2-way 90° power splitter, capable of handling up to 200W with amplitude unbalance of ±0.1 dB typ and phase unbalance of ±0.9 deg. typ. Operating over a frequency range of 700 to 2700 MHz, the outstanding phase and amplitude unbalance make this component a versatile building block for use in a variety of systems and sub-system designs from balanced amplifiers and antenna feeds to military applications and more. The splitter is fabricated using laminated PCB process (1.80 x 0.40 x 0.19") and includes wrap-around terminations for good solderability and easy visual inspection.

ELECTRICAL SPECIFICATIONS [1, 2] AT +25°C

Parameter	Conditions (MHz)	Min.	Typ.	Max.	Unit
Frequency Range	–	700	–	2700	MHz
Insertion Loss [3]	700 - 2700	–	0.3	0.5	dB
Isolation	700 - 2700	17	22	–	dB
Phase Unbalance	700 - 2700	–	±0.9	±5.0	deg
Amplitude Unbalance	700 - 2700	–	±0.1	±1.0	dB
	800 - 2700	–	±0.1	±0.6	
Return Loss	700 - 2700	16.5	23	–	dB
Thermal Resistance [4]	700 - 2700	–	0.3	–	°C/W

1. Tested in Evaluation Board TB-QCH-272+. De-embbeded to the device reference plane.
2. Model is symmetrical and all ports are interchangeable, see Port Function Description/Configuration table for details and S-Parameters for actual performance.
3. Does not include theoretical loss due to coupling. Nominal theoretical loss is 3 dB.
4. Thermal Resistance is defined as Θjc= (Hot Spot Temperature on DUT - Base Plate Temperature)/Input Power.

ABSOLUTE MAXIMUM RATINGS [5]

Operating Case Temperature [6]		-55°C to +105°C
Storage Temperature		-55°C to +105°C
Power Input	**+85°C case**	200 W
	+95°C case	170 W
	+105°C case	140 W

5. Permanent damage may occur if any of these limits are exceeded.
6. Case temperature is defined as temperature on base plate.

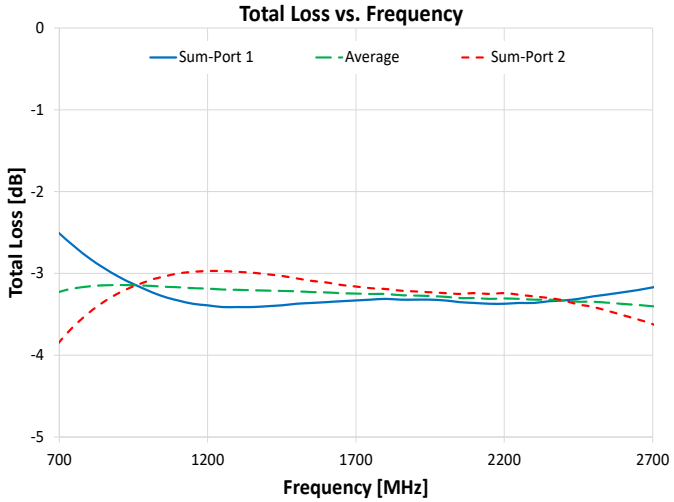
Power Splitter/Combiner

QCH-272+

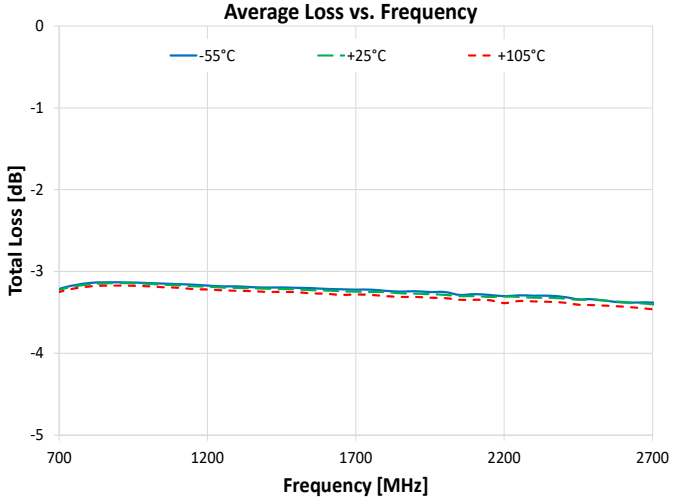
50Ω 700 to 2700 MHz 2-Way 90° 200W

TYPICAL PERFORMANCE GRAPHS*

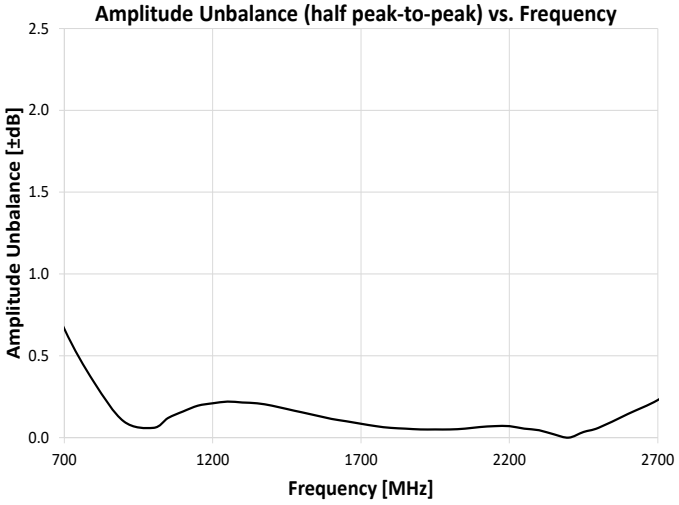
QCH-272+
Total Loss vs. Frequency



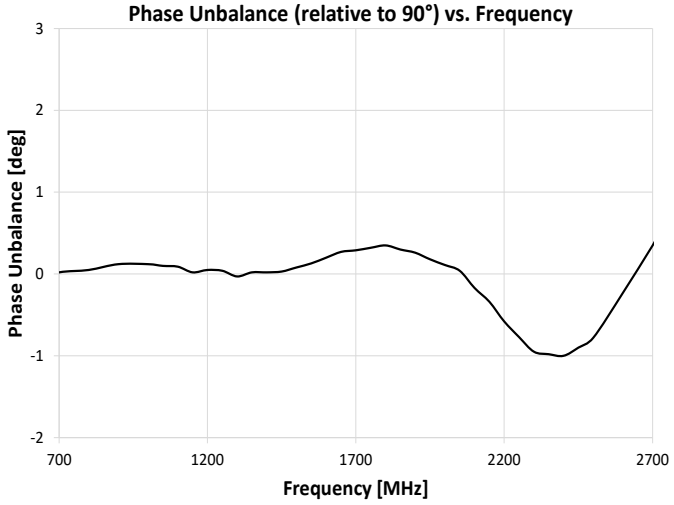
QCH-272+
Average Loss vs. Frequency



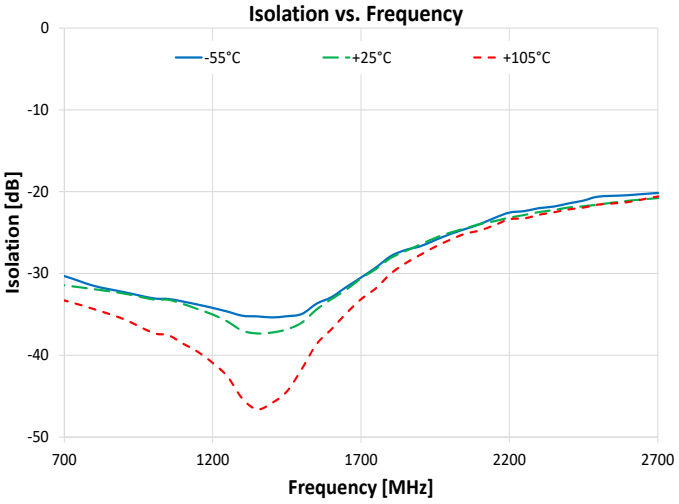
QCH-272+
Amplitude Unbalance (half peak-to-peak) vs. Frequency



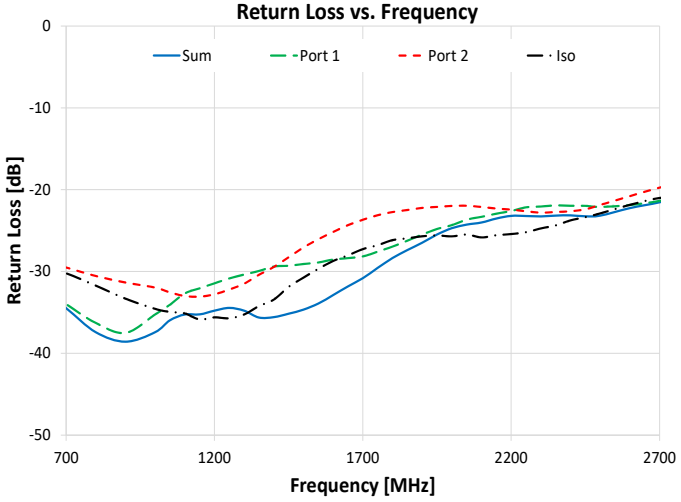
QCH-272+
Phase Unbalance (relative to 90°) vs. Frequency



QCH-272+
Isolation vs. Frequency



QCH-272+
Return Loss vs. Frequency



* Data corresponds to Configuration A at +25°C unless otherwise specified.

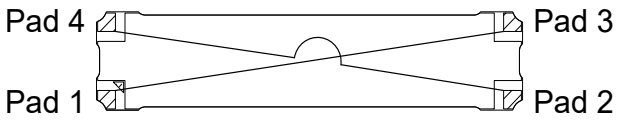
STRIPLINE SURFACE MOUNT

Power Splitter/Combiner

QCH-272+

50Ω 700 to 2700 MHz 2-Way 90° 200W

FUNCTIONAL DIAGRAM



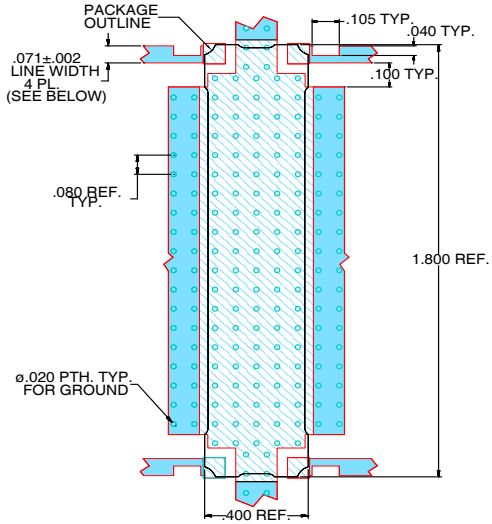
PAD DESCRIPTION/CONFIGURATION [7]

Function	Pad	Description
Sum	1	Sum port
Isolation	2	Isolation port
Port 1 (0°)	3	0° port
Port 2 (90°)	4	90° port
Ground	5	Ground

Configuration	Sum	Isolation	Port 1 (0°)	Port 2 (90°)
A	1	2	3	4
B	2	1	4	3
C	3	4	1	2
D	4	3	2	1

7. Model is symmetrical and all ports are interchangeable, see Port Function Configurations table and s-parameters for actual performance.

SUGGESTED PCB LAYOUT (PL-480)

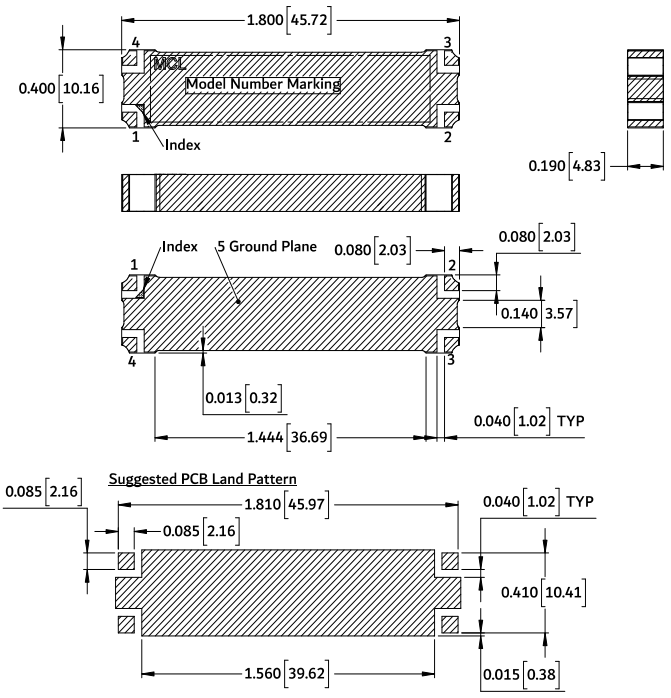


NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4003C WITH DIELECTRIC THICKNESS 0.032"±.003". COPPER: 1 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

CASE STYLE DRAWING (PQ2181)



NOTES:
1. Base material: Printed wiring laminate.
2. Termination finish: 2-5 µinch (.05-.13 microns) Immersion Gold.
3. Dimensions: Inches [mm]. Tolerances 2 Pl. ±.03 inch; 3 Pl. ±.010 inch.
4. Weight: 1.0 grams
5. Marking may contain other features or characters for internal lot control.

Metallization

Solder Resist

PRODUCT MARKING*: QCH-272+

* Marking may contain other features or characters for internal lot control.

Power Splitter/Combiner

QCH-272+

50Ω 700 to 2700 MHz 2-Way 90° 200W

ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD

CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S4P files) data set (.zip file) de-embedded to device pads
Case Style	PQ2181 Lead finish: 2-5 µ inch (0.05-0.13 microns) immersion gold
RoHS Status	Compliant
Tape and Reel	F120
Suggested Layout for PCB Design	PL-480
Evaluation Board	TB-QCH-272+ Gerber file
Environmental Rating	ENV02T8

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-Circuit's 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 https://www.minicircuits.com/terms/viewterm.html

Surface Mount

2 Way 90° Power Splitter/Combiner QCH-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.51	3.82	3.12	0.66	-0.48	30.01	-30.99	-31.17	-28.62	-29.65
740	2.65	3.66	3.13	0.51	-0.47	30.38	-32.54	-32.42	-29.46	-30.65
780	2.76	3.52	3.12	0.38	-0.53	30.90	-33.04	-33.41	-29.66	-31.66
820	2.87	3.40	3.13	0.27	-0.59	31.18	-33.38	-34.45	-29.85	-32.45
860	2.97	3.29	3.13	0.17	-0.57	31.48	-33.51	-35.46	-30.12	-33.43
900	3.05	3.21	3.13	0.09	-0.66	31.57	-33.41	-36.08	-30.30	-34.54
940	3.13	3.14	3.13	0.01	-0.65	31.91	-33.97	-36.55	-30.64	-35.51
980	3.19	3.08	3.13	0.06	-0.67	32.22	-34.09	-35.81	-30.81	-36.10
1020	3.26	3.04	3.15	0.11	-0.72	32.66	-34.07	-34.80	-30.84	-36.27
1060	3.30	3.00	3.15	0.15	-0.71	32.62	-34.02	-33.60	-30.95	-35.69
1100	3.34	2.97	3.15	0.18	-0.74	32.84	-33.81	-32.03	-30.77	-34.98
1140	3.38	2.95	3.16	0.21	-0.71	33.12	-33.96	-30.98	-30.42	-34.70
1180	3.40	2.94	3.16	0.23	-0.70	33.19	-33.31	-30.00	-30.23	-34.06
1220	3.42	2.93	3.17	0.24	-0.76	33.68	-32.57	-28.98	-30.07	-33.67
1260	3.43	2.93	3.17	0.25	-0.70	33.91	-32.15	-28.13	-29.96	-33.50
1300	3.44	2.93	3.18	0.25	-0.67	34.23	-32.12	-27.48	-30.08	-32.98
1340	3.44	2.95	3.19	0.24	-0.74	34.29	-32.55	-26.89	-29.88	-32.77
1380	3.43	2.96	3.19	0.23	-0.73	34.49	-31.99	-26.25	-29.32	-32.89
1420	3.42	2.98	3.19	0.22	-0.76	34.66	-31.53	-25.88	-28.96	-32.65
1460	3.41	2.99	3.19	0.20	-0.77	34.52	-30.92	-25.49	-28.18	-32.32
1500	3.40	3.01	3.20	0.19	-0.81	34.17	-30.28	-25.06	-27.33	-32.23
1540	3.38	3.04	3.21	0.17	-0.88	33.33	-29.81	-24.82	-26.38	-31.36
1580	3.38	3.06	3.22	0.16	-0.92	32.88	-29.37	-24.57	-25.70	-30.78
1620	3.36	3.08	3.22	0.13	-0.97	31.98	-28.61	-24.57	-24.71	-30.37
1660	3.35	3.11	3.23	0.11	-1.04	31.14	-28.10	-24.71	-23.86	-29.36
1700	3.34	3.12	3.23	0.11	-1.16	30.16	-27.59	-24.64	-23.16	-28.85
1740	3.33	3.14	3.23	0.10	-1.16	29.15	-27.25	-24.53	-22.62	-28.27
1780	3.34	3.17	3.25	0.08	-1.31	28.22	-26.94	-24.42	-22.30	-27.27
1820	3.33	3.18	3.25	0.07	-1.39	27.23	-26.72	-23.88	-21.82	-26.71
1860	3.34	3.17	3.25	0.09	-1.36	27.12	-26.80	-23.84	-21.68	-26.36
1900	3.33	3.17	3.25	0.08	-1.23	26.49	-26.47	-23.38	-21.39	-25.54
1940	3.34	3.18	3.26	0.08	-1.21	25.82	-26.01	-22.94	-21.24	-25.03
1980	3.34	3.19	3.26	0.08	-1.14	25.27	-25.21	-22.70	-20.97	-24.87
2020	3.36	3.20	3.28	0.08	-1.22	24.48	-24.46	-22.40	-20.72	-24.52
2060	3.39	3.23	3.31	0.08	-1.41	23.78	-24.14	-21.82	-20.59	-24.30
2100	3.41	3.17	3.29	0.12	-0.90	23.62	-23.31	-21.50	-20.63	-24.26
2140	3.41	3.19	3.30	0.11	-0.80	23.09	-22.63	-21.10	-20.49	-24.05
2180	3.43	3.21	3.32	0.11	-0.64	22.52	-22.20	-20.77	-20.61	-23.88
2220	3.43	3.19	3.31	0.12	-0.36	22.42	-21.77	-20.21	-20.69	-24.03
2260	3.42	3.21	3.31	0.11	-0.10	22.16	-21.66	-19.88	-20.77	-23.93
2300	3.40	3.23	3.31	0.09	0.08	21.92	-21.75	-19.86	-20.88	-23.96
2340	3.38	3.25	3.31	0.07	0.05	21.78	-21.49	-19.87	-20.89	-24.20
2380	3.38	3.28	3.33	0.05	0.10	21.54	-21.24	-19.81	-20.93	-24.03
2420	3.35	3.32	3.33	0.02	0.11	21.30	-21.06	-19.76	-20.93	-23.65
2460	3.34	3.34	3.34	0.00	-0.06	21.15	-21.01	-19.85	-20.97	-23.93
2500	3.34	3.37	3.35	0.02	-0.31	20.69	-20.84	-19.54	-20.88	-23.08
2540	3.29	3.42	3.35	0.07	-0.41	20.65	-20.39	-19.46	-20.66	-22.71
2580	3.27	3.47	3.37	0.11	-0.68	20.54	-20.16	-19.17	-20.46	-22.23
2620	3.29	3.54	3.41	0.13	-1.32	19.98	-20.20	-18.99	-20.14	-21.52
2660	3.24	3.54	3.39	0.16	-1.51	20.11	-19.87	-18.99	-19.46	-21.37
2700	3.21	3.59	3.40	0.20	-1.44	20.21	-19.95	-18.93	-19.13	-21.22
2740	3.14	3.66	3.39	0.27	-1.95	20.21	-19.72	-18.92	-18.66	-20.87
2780	3.13	3.71	3.41	0.31	-2.24	20.15	-19.83	-18.93	-18.47	-21.02
2820	3.08	3.77	3.41	0.36	-2.40	20.17	-19.59	-18.84	-17.77	-20.87

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

Notes
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Surface Mount

2 Way 90° Power Splitter/Combiner QCH-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.51	3.83	3.12	0.66	0.26	30.18	29.65	28.62	31.17	30.99
740	2.64	3.66	3.12	0.51	0.32	30.48	30.65	29.46	32.42	32.54
780	2.75	3.52	3.12	0.38	0.29	30.97	31.66	29.66	33.41	33.04
820	2.86	3.40	3.12	0.27	0.29	31.19	32.45	29.85	34.45	33.38
860	2.96	3.30	3.13	0.17	0.35	31.44	33.43	30.12	35.46	33.51
900	3.04	3.22	3.13	0.08	0.33	31.62	34.54	30.30	36.08	33.41
940	3.12	3.14	3.13	0.01	0.37	31.79	35.51	30.64	36.55	33.97
980	3.18	3.08	3.13	0.06	0.41	32.07	36.10	30.81	35.81	34.09
1020	3.24	3.04	3.14	0.11	0.40	32.49	36.27	30.84	34.80	34.07
1060	3.29	3.00	3.14	0.15	0.45	32.51	35.69	30.95	33.60	34.02
1100	3.33	2.97	3.15	0.19	0.42	32.73	34.98	30.77	32.03	33.81
1140	3.37	2.95	3.15	0.22	0.49	32.99	34.70	30.42	30.98	33.96
1180	3.39	2.94	3.16	0.23	0.54	33.10	34.06	30.23	30.00	33.31
1220	3.41	2.94	3.17	0.24	0.52	33.51	33.67	30.07	28.98	32.57
1260	3.42	2.94	3.17	0.25	0.60	33.88	33.50	29.96	28.13	32.15
1300	3.42	2.95	3.18	0.25	0.58	34.17	32.98	30.08	27.48	32.12
1340	3.42	2.95	3.18	0.24	0.56	34.37	32.77	29.88	26.89	32.55
1380	3.41	2.97	3.18	0.23	0.59	34.62	32.89	29.32	26.25	31.99
1420	3.40	2.99	3.19	0.22	0.52	34.84	32.65	28.96	25.88	31.53
1460	3.39	3.00	3.19	0.20	0.48	34.85	32.32	28.18	25.49	30.92
1500	3.37	3.02	3.19	0.18	0.44	34.53	32.23	27.33	25.06	30.28
1540	3.37	3.05	3.21	0.17	0.33	33.89	31.36	26.38	24.82	29.81
1580	3.36	3.06	3.21	0.16	0.33	33.37	30.78	25.70	24.57	29.37
1620	3.34	3.09	3.21	0.14	0.25	32.44	30.37	24.71	24.57	28.61
1660	3.33	3.10	3.21	0.12	0.18	31.47	29.36	23.86	24.71	28.10
1700	3.34	3.12	3.23	0.12	0.05	30.50	28.85	23.16	24.64	27.59
1740	3.32	3.13	3.22	0.11	0.07	29.55	28.27	22.62	24.53	27.25
1780	3.33	3.15	3.24	0.10	0.01	28.48	27.27	22.30	24.42	26.94
1820	3.34	3.16	3.25	0.09	-0.01	27.52	26.71	21.82	23.88	26.72
1860	3.34	3.16	3.25	0.10	0.02	27.24	26.36	21.68	23.84	26.80
1900	3.33	3.16	3.24	0.09	0.11	26.63	25.54	21.39	23.38	26.47
1940	3.34	3.16	3.25	0.09	0.12	25.89	25.03	21.24	22.94	26.01
1980	3.35	3.17	3.26	0.10	0.25	25.28	24.87	20.97	22.70	25.21
2020	3.36	3.19	3.27	0.09	0.14	24.51	24.52	20.72	22.40	24.46
2060	3.39	3.21	3.30	0.10	0.09	23.77	24.30	20.59	21.82	24.14
2100	3.40	3.16	3.28	0.13	0.54	23.63	24.26	20.63	21.50	23.31
2140	3.40	3.17	3.28	0.12	0.75	23.04	24.05	20.49	21.10	22.63
2180	3.41	3.20	3.30	0.12	0.80	22.48	23.88	20.61	20.77	22.20
2220	3.39	3.18	3.28	0.11	1.19	22.40	24.03	20.69	20.21	21.77
2260	3.38	3.20	3.29	0.10	1.30	22.13	23.93	20.77	19.88	21.66
2300	3.37	3.23	3.30	0.08	1.40	21.91	23.96	20.88	19.86	21.75
2340	3.35	3.24	3.29	0.06	1.30	21.76	24.20	20.89	19.87	21.49
2380	3.35	3.28	3.31	0.04	1.32	21.54	24.03	20.93	19.81	21.24
2420	3.32	3.31	3.31	0.01	1.22	21.30	23.65	20.93	19.76	21.06
2460	3.31	3.37	3.34	0.03	1.17	21.16	23.93	20.97	19.85	21.01
2500	3.31	3.37	3.34	0.03	0.96	20.72	23.08	20.88	19.54	20.84
2540	3.25	3.42	3.33	0.09	0.73	20.67	22.71	20.66	19.46	20.39
2580	3.23	3.46	3.34	0.11	0.31	20.59	22.23	20.46	19.17	20.16
2620	3.25	3.49	3.37	0.12	-0.34	19.99	21.52	20.14	18.99	20.20
2660	3.20	3.54	3.37	0.16	-0.39	20.15	21.37	19.46	18.99	19.87
2700	3.19	3.59	3.39	0.20	-0.55	20.24	21.22	19.13	18.93	19.95
2740	3.12	3.64	3.37	0.26	-1.02	20.25	20.87	18.66	18.92	19.72
2780	3.12	3.70	3.40	0.28	-1.32	20.18	21.02	18.47	18.93	19.83
2820	3.07	3.74	3.39	0.33	-1.51	20.20	20.87	17.77	18.84	19.59

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

Notes
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Surface Mount

2 Way 90° Power Splitter/Combiner QCH-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.51	3.82	3.12	0.66	0.38	29.41	31.17	30.99	29.65	28.62
740	2.64	3.66	3.12	0.51	0.42	29.68	32.42	32.54	30.65	29.46
780	2.76	3.52	3.12	0.38	0.38	29.93	33.41	33.04	31.66	29.66
820	2.87	3.40	3.13	0.27	0.38	30.03	34.45	33.38	32.45	29.85
860	2.96	3.30	3.13	0.17	0.46	30.22	35.46	33.51	33.43	30.12
900	3.05	3.21	3.13	0.08	0.43	30.34	36.08	33.41	34.54	30.30
940	3.13	3.14	3.13	0.01	0.48	30.48	36.55	33.97	35.51	30.64
980	3.19	3.08	3.13	0.06	0.52	30.61	35.81	34.09	36.10	30.81
1020	3.25	3.04	3.14	0.11	0.52	30.62	34.80	34.07	36.27	30.84
1060	3.30	3.00	3.15	0.15	0.59	30.43	33.60	34.02	35.69	30.95
1100	3.34	2.97	3.15	0.19	0.58	30.24	32.03	33.81	34.98	30.77
1140	3.38	2.95	3.16	0.22	0.63	30.03	30.98	33.96	34.70	30.42
1180	3.39	2.94	3.16	0.23	0.70	30.02	30.00	33.31	34.06	30.23
1220	3.42	2.94	3.17	0.24	0.67	29.99	28.98	32.57	33.67	30.07
1260	3.42	2.93	3.17	0.25	0.75	29.80	28.13	32.15	33.50	29.96
1300	3.43	2.94	3.18	0.25	0.76	29.83	27.48	32.12	32.98	30.08
1340	3.43	2.95	3.18	0.24	0.74	29.66	26.89	32.55	32.77	29.88
1380	3.42	2.96	3.18	0.23	0.79	29.40	26.25	31.99	32.89	29.32
1420	3.41	2.98	3.19	0.22	0.74	29.22	25.88	31.53	32.65	28.96
1460	3.40	3.00	3.20	0.21	0.72	28.69	25.49	30.92	32.32	28.18
1500	3.39	3.02	3.20	0.19	0.70	28.08	25.06	30.28	32.23	27.33
1540	3.38	3.04	3.21	0.17	0.62	27.56	24.82	29.81	31.36	26.38
1580	3.37	3.05	3.21	0.16	0.58	27.06	24.57	29.37	30.78	25.70
1620	3.36	3.08	3.22	0.14	0.55	26.40	24.57	28.61	30.37	24.71
1660	3.34	3.10	3.22	0.12	0.50	25.89	24.71	28.10	29.36	23.86
1700	3.34	3.11	3.22	0.12	0.34	25.23	24.64	27.59	28.85	23.16
1740	3.33	3.12	3.22	0.11	0.38	24.58	24.53	27.25	28.27	22.62
1780	3.33	3.14	3.23	0.10	0.33	23.89	24.42	26.94	27.27	22.30
1820	3.33	3.16	3.24	0.09	0.22	23.42	23.88	26.72	26.71	21.82
1860	3.34	3.16	3.25	0.09	0.27	23.03	23.84	26.80	26.36	21.68
1900	3.33	3.16	3.24	0.09	0.38	22.49	23.38	26.47	25.54	21.39
1940	3.34	3.16	3.25	0.09	0.38	22.05	22.94	26.01	25.03	21.24
1980	3.34	3.17	3.25	0.09	0.49	21.61	22.70	25.21	24.87	20.97
2020	3.36	3.19	3.27	0.09	0.34	21.16	22.40	24.46	24.52	20.72
2060	3.39	3.21	3.30	0.09	0.30	20.76	21.82	24.14	24.30	20.59
2100	3.41	3.16	3.28	0.13	0.70	20.61	21.50	23.31	24.26	20.63
2140	3.41	3.17	3.29	0.12	0.89	20.27	21.10	22.63	24.05	20.49
2180	3.43	3.20	3.31	0.12	0.94	19.91	20.77	22.20	23.88	20.61
2220	3.43	3.18	3.30	0.13	1.29	19.91	20.21	21.77	24.03	20.69
2260	3.42	3.20	3.31	0.11	1.53	19.77	19.88	21.66	23.93	20.77
2300	3.41	3.23	3.32	0.09	1.69	19.64	19.86	21.75	23.96	20.88
2340	3.39	3.25	3.32	0.07	1.61	19.65	19.87	21.49	24.20	20.89
2380	3.38	3.28	3.33	0.05	1.70	19.64	19.81	21.24	24.03	20.93
2420	3.36	3.31	3.33	0.02	1.55	19.55	19.76	21.06	23.65	20.93
2460	3.35	3.37	3.36	0.01	1.59	19.67	19.85	21.01	23.93	20.97
2500	3.35	3.36	3.35	0.01	1.39	19.50	19.54	20.84	23.08	20.88
2540	3.29	3.43	3.36	0.07	1.13	19.61	19.46	20.39	22.71	20.66
2580	3.26	3.45	3.35	0.10	0.80	19.73	19.17	20.16	22.23	20.46
2620	3.29	3.49	3.39	0.10	0.14	19.24	18.99	20.20	21.52	20.14
2660	3.24	3.54	3.39	0.15	0.18	19.34	18.99	19.87	21.37	19.46
2700	3.20	3.58	3.39	0.19	0.09	19.35	18.93	19.95	21.22	19.13
2740	3.14	3.64	3.38	0.25	-0.51	19.19	18.92	19.72	20.87	18.66
2780	3.12	3.70	3.40	0.29	-0.74	19.13	18.93	19.83	21.02	18.47
2820	3.07	3.73	3.39	0.33	-0.89	18.82	18.84	19.59	20.87	17.77

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

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Surface Mount

2 Way 90° Power Splitter/Combiner QCH-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.51	3.83	3.12	0.66	-0.58	29.29	28.62	29.65	30.99	31.17
740	2.64	3.66	3.12	0.51	-0.57	29.65	29.46	30.65	32.54	32.42
780	2.76	3.52	3.12	0.38	-0.64	29.90	29.66	31.66	33.04	33.41
820	2.87	3.41	3.13	0.27	-0.71	30.01	29.85	32.45	33.38	34.45
860	2.96	3.30	3.13	0.17	-0.68	30.26	30.12	33.43	33.51	35.46
900	3.05	3.22	3.13	0.09	-0.76	30.44	30.30	34.54	33.41	36.08
940	3.13	3.15	3.14	0.01	-0.78	30.59	30.64	35.51	33.97	36.55
980	3.19	3.08	3.13	0.05	-0.80	30.73	30.81	36.10	34.09	35.81
1020	3.25	3.05	3.15	0.11	-0.84	30.86	30.84	36.27	34.07	34.80
1060	3.30	3.00	3.15	0.15	-0.83	30.65	30.95	35.69	34.02	33.60
1100	3.34	2.98	3.16	0.18	-0.89	30.32	30.77	34.98	33.81	32.03
1140	3.38	2.95	3.16	0.21	-0.87	30.03	30.42	34.70	33.96	30.98
1180	3.39	2.94	3.16	0.23	-0.85	30.16	30.23	34.06	33.31	30.00
1220	3.42	2.94	3.17	0.24	-0.90	30.04	30.07	33.67	32.57	28.98
1260	3.43	2.93	3.17	0.25	-0.85	29.60	29.96	33.50	32.15	28.13
1300	3.43	2.94	3.18	0.24	-0.86	29.42	30.08	32.98	32.12	27.48
1340	3.43	2.96	3.19	0.24	-0.92	29.49	29.88	32.77	32.55	26.89
1380	3.42	2.96	3.18	0.23	-0.89	29.20	29.32	32.89	31.99	26.25
1420	3.41	2.99	3.19	0.21	-0.96	28.64	28.96	32.65	31.53	25.88
1460	3.40	3.00	3.20	0.20	-1.00	27.99	28.18	32.32	30.92	25.49
1500	3.38	3.02	3.20	0.18	-1.07	27.62	27.33	32.23	30.28	25.06
1540	3.38	3.05	3.21	0.17	-1.15	27.17	26.38	31.36	29.81	24.82
1580	3.37	3.06	3.21	0.16	-1.15	26.54	25.70	30.78	29.37	24.57
1620	3.35	3.09	3.22	0.13	-1.25	25.95	24.71	30.37	28.61	24.57
1660	3.34	3.11	3.22	0.11	-1.37	25.54	23.86	29.36	28.10	24.71
1700	3.34	3.13	3.23	0.11	-1.44	25.12	23.16	28.85	27.59	24.64
1740	3.33	3.14	3.23	0.10	-1.46	24.31	22.62	28.27	27.25	24.53
1780	3.34	3.18	3.26	0.08	-1.63	23.54	22.30	27.27	26.94	24.42
1820	3.34	3.19	3.26	0.08	-1.62	23.18	21.82	26.71	26.72	23.88
1860	3.35	3.18	3.26	0.09	-1.61	22.92	21.68	26.36	26.80	23.84
1900	3.34	3.18	3.26	0.08	-1.51	22.39	21.39	25.54	26.47	23.38
1940	3.34	3.18	3.26	0.08	-1.45	21.89	21.24	25.03	26.01	22.94
1980	3.36	3.19	3.27	0.08	-1.38	21.56	20.97	24.87	25.21	22.70
2020	3.37	3.22	3.29	0.08	-1.41	21.23	20.72	24.52	24.46	22.40
2060	3.40	3.23	3.31	0.08	-1.58	20.82	20.59	24.30	24.14	21.82
2100	3.41	3.18	3.29	0.12	-1.09	20.63	20.63	24.26	23.31	21.50
2140	3.40	3.19	3.29	0.11	-0.91	20.28	20.49	24.05	22.63	21.10
2180	3.42	3.21	3.31	0.10	-0.72	20.00	20.61	23.88	22.20	20.77
2220	3.40	3.19	3.29	0.11	-0.45	20.00	20.69	24.03	21.77	20.21
2260	3.39	3.21	3.30	0.09	-0.28	19.80	20.77	23.93	21.66	19.88
2300	3.38	3.23	3.30	0.07	-0.20	19.65	20.88	23.96	21.75	19.86
2340	3.35	3.26	3.30	0.05	-0.23	19.66	20.89	24.20	21.49	19.87
2380	3.35	3.29	3.32	0.04	-0.22	19.66	20.93	24.03	21.24	19.81
2420	3.32	3.33	3.32	0.00	-0.19	19.57	20.93	23.65	21.06	19.76
2460	3.32	3.35	3.33	0.02	-0.46	19.64	20.97	23.93	21.01	19.85
2500	3.32	3.38	3.35	0.03	-0.74	19.49	20.88	23.08	20.84	19.54
2540	3.26	3.43	3.34	0.09	-0.81	19.59	20.66	22.71	20.39	19.46
2580	3.24	3.48	3.36	0.12	-1.13	19.64	20.46	22.23	20.16	19.17
2620	3.26	3.55	3.40	0.15	-1.79	19.21	20.14	21.52	20.20	18.99
2660	3.21	3.54	3.37	0.17	-2.07	19.32	19.46	21.37	19.87	18.99
2700	3.20	3.60	3.40	0.20	-2.03	19.31	19.13	21.22	19.95	18.93
2740	3.13	3.67	3.39	0.27	-2.39	19.19	18.66	20.87	19.72	18.92
2780	3.13	3.73	3.42	0.30	-2.78	19.15	18.47	21.02	19.83	18.93
2820	3.09	3.78	3.42	0.35	-2.98	18.90	17.77	20.87	19.59	18.84

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

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Surface Mount

2 Way 90° Power Splitter/Combiner QCH-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.51	3.84	3.12	0.67	-0.27	31.20	-32.51	-31.85	-29.76	-30.93
740	2.64	3.68	3.13	0.52	-0.28	31.23	-33.71	-32.74	-30.19	-31.50
780	2.75	3.54	3.13	0.39	-0.32	31.50	-34.27	-33.78	-30.36	-32.16
820	2.86	3.43	3.14	0.28	-0.35	31.66	-34.68	-34.86	-30.32	-32.58
860	2.96	3.32	3.14	0.18	-0.34	31.87	-35.27	-35.85	-30.57	-33.23
900	3.05	3.24	3.14	0.10	-0.44	32.00	-35.58	-36.15	-30.72	-33.93
940	3.12	3.17	3.14	0.03	-0.42	32.25	-35.93	-36.13	-30.85	-34.44
980	3.19	3.11	3.15	0.04	-0.42	32.65	-35.80	-35.28	-30.75	-34.95
1020	3.25	3.07	3.16	0.09	-0.47	33.06	-34.96	-34.45	-30.69	-35.32
1060	3.29	3.03	3.16	0.13	-0.44	33.03	-34.25	-33.35	-30.96	-35.35
1100	3.33	3.00	3.16	0.17	-0.46	33.46	-33.85	-32.13	-31.05	-35.40
1140	3.37	2.98	3.17	0.20	-0.44	33.97	-34.02	-31.28	-31.17	-35.95
1180	3.39	2.97	3.17	0.21	-0.42	34.16	-33.63	-30.33	-31.42	-35.57
1220	3.41	2.96	3.18	0.22	-0.47	34.94	-33.02	-29.36	-31.49	-35.21
1260	3.42	2.96	3.18	0.23	-0.41	35.21	-32.66	-28.56	-31.63	-35.05
1300	3.42	2.97	3.19	0.23	-0.38	35.77	-32.73	-28.05	-31.52	-34.71
1340	3.42	2.98	3.19	0.22	-0.43	35.87	-32.86	-27.58	-30.91	-34.32
1380	3.42	2.99	3.20	0.21	-0.43	36.08	-32.61	-27.12	-30.20	-34.17
1420	3.41	3.02	3.21	0.20	-0.43	35.91	-32.17	-26.79	-29.50	-33.61
1460	3.40	3.03	3.21	0.18	-0.45	35.65	-31.57	-26.53	-28.63	-32.95
1500	3.39	3.06	3.22	0.17	-0.50	35.07	-31.02	-26.18	-27.70	-32.43
1540	3.38	3.08	3.23	0.15	-0.56	33.92	-30.53	-25.87	-26.84	-31.76
1580	3.36	3.10	3.23	0.13	-0.61	33.16	-29.96	-25.62	-26.05	-30.84
1620	3.36	3.13	3.24	0.11	-0.65	32.05	-29.28	-25.41	-25.21	-30.21
1660	3.35	3.14	3.24	0.10	-0.69	31.28	-28.86	-25.41	-24.44	-29.45
1700	3.34	3.16	3.25	0.09	-0.73	30.17	-28.35	-25.37	-23.75	-28.76
1740	3.33	3.18	3.25	0.08	-0.76	29.20	-27.71	-25.21	-23.10	-28.32
1780	3.33	3.20	3.26	0.07	-0.80	28.38	-27.20	-25.16	-22.61	-27.71
1820	3.33	3.21	3.27	0.06	-0.80	27.46	-26.67	-24.93	-22.18	-27.10
1860	3.34	3.22	3.28	0.06	-0.77	26.87	-26.13	-24.72	-21.80	-26.85
1900	3.33	3.23	3.28	0.06	-0.77	26.15	-25.64	-24.31	-21.47	-26.22
1940	3.34	3.23	3.28	0.06	-0.74	25.49	-25.06	-23.82	-21.30	-25.80
1980	3.34	3.24	3.29	0.06	-0.68	25.03	-24.49	-23.50	-21.14	-25.77
2020	3.36	3.24	3.30	0.06	-0.67	24.57	-24.05	-23.06	-21.00	-25.46
2060	3.37	3.25	3.31	0.07	-0.56	24.14	-23.73	-22.55	-20.94	-25.24
2100	3.39	3.24	3.31	0.08	-0.40	23.74	-23.52	-22.29	-20.97	-25.51
2140	3.40	3.25	3.32	0.08	-0.30	23.46	-23.07	-22.00	-21.09	-25.29
2180	3.40	3.24	3.32	0.09	-0.08	23.12	-22.69	-21.60	-21.23	-25.10
2220	3.40	3.25	3.32	0.08	0.12	22.84	-22.42	-21.13	-21.34	-24.99
2260	3.40	3.26	3.33	0.07	0.27	22.54	-22.32	-20.72	-21.60	-24.70
2300	3.39	3.27	3.33	0.07	0.44	22.26	-22.31	-20.56	-21.83	-24.50
2340	3.38	3.30	3.34	0.05	0.48	22.07	-22.13	-20.35	-21.91	-24.42
2380	3.37	3.32	3.34	0.03	0.49	21.86	-21.95	-20.21	-22.06	-24.18
2420	3.36	3.35	3.35	0.01	0.54	21.64	-21.90	-20.13	-22.04	-23.92
2460	3.34	3.39	3.36	0.02	0.43	21.57	-22.00	-20.09	-21.95	-23.91
2500	3.32	3.42	3.37	0.05	0.36	21.38	-21.91	-20.12	-21.65	-23.56
2540	3.29	3.46	3.37	0.09	0.10	21.16	-21.61	-20.10	-21.24	-23.15
2580	3.28	3.50	3.39	0.11	-0.12	21.04	-21.33	-19.97	-20.85	-22.79
2620	3.24	3.54	3.39	0.15	-0.33	20.89	-21.12	-19.88	-20.37	-22.19
2660	3.22	3.59	3.40	0.19	-0.66	20.68	-21.10	-19.69	-19.88	-21.69
2700	3.19	3.63	3.40	0.23	-0.89	20.70	-20.94	-19.66	-19.43	-21.52
2740	3.14	3.70	3.41	0.28	-1.31	20.48	-20.65	-19.61	-18.99	-21.09
2780	3.12	3.75	3.42	0.33	-1.64	20.36	-20.46	-19.37	-18.53	-20.74
2820	3.08	3.82	3.43	0.38	-1.79	20.25	-20.43	-19.24	-18.23	-20.67

(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-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.54	3.84	3.14	0.66	0.11	31.37	30.93	29.76	31.85	32.51
740	2.67	3.68	3.15	0.51	0.14	31.33	31.50	30.19	32.74	33.71
780	2.78	3.54	3.14	0.38	0.10	31.57	32.16	30.36	33.78	34.27
820	2.89	3.43	3.15	0.27	0.10	31.67	32.58	30.32	34.86	34.68
860	2.99	3.32	3.15	0.17	0.15	31.83	33.23	30.57	35.85	35.27
900	3.07	3.24	3.15	0.08	0.10	32.04	33.93	30.72	36.15	35.58
940	3.15	3.17	3.16	0.01	0.12	32.12	34.44	30.85	36.13	35.93
980	3.22	3.11	3.16	0.06	0.16	32.49	34.95	30.75	35.28	35.80
1020	3.28	3.07	3.17	0.11	0.13	32.87	35.32	30.69	34.45	34.96
1060	3.32	3.03	3.17	0.15	0.18	32.93	35.35	30.96	33.35	34.25
1100	3.36	3.00	3.18	0.19	0.15	33.36	35.40	31.05	32.13	33.85
1140	3.40	2.98	3.18	0.21	0.19	33.85	35.95	31.17	31.28	34.02
1180	3.42	2.97	3.19	0.23	0.21	34.09	35.57	31.42	30.33	33.63
1220	3.44	2.97	3.20	0.24	0.19	34.81	35.21	31.49	29.36	33.02
1260	3.45	2.97	3.20	0.24	0.23	35.24	35.05	31.63	28.56	32.66
1300	3.45	2.98	3.21	0.24	0.19	35.77	34.71	31.52	28.05	32.73
1340	3.45	2.99	3.21	0.24	0.16	36.08	34.32	30.91	27.58	32.86
1380	3.45	3.00	3.22	0.23	0.17	36.34	34.17	30.20	27.12	32.61
1420	3.44	3.02	3.22	0.21	0.12	36.26	33.61	29.50	26.79	32.17
1460	3.43	3.04	3.23	0.20	0.06	36.16	32.95	28.63	26.53	31.57
1500	3.41	3.06	3.23	0.18	0.00	35.59	32.43	27.70	26.18	31.02
1540	3.41	3.08	3.24	0.17	-0.08	34.55	31.76	26.84	25.87	30.53
1580	3.39	3.10	3.24	0.15	-0.15	33.59	30.84	26.05	25.62	29.96
1620	3.39	3.13	3.26	0.14	-0.23	32.47	30.21	25.21	25.41	29.28
1660	3.38	3.14	3.26	0.13	-0.29	31.55	29.45	24.44	25.41	28.86
1700	3.37	3.15	3.26	0.11	-0.32	30.46	28.76	23.75	25.37	28.35
1740	3.37	3.17	3.27	0.10	-0.38	29.51	28.32	23.10	25.21	27.71
1780	3.37	3.18	3.27	0.10	-0.40	28.55	27.71	22.61	25.16	27.20
1820	3.37	3.19	3.28	0.09	-0.39	27.67	27.10	22.18	24.93	26.67
1860	3.38	3.20	3.29	0.09	-0.39	26.91	26.85	21.80	24.72	26.13
1900	3.38	3.20	3.29	0.09	-0.35	26.22	26.22	21.47	24.31	25.64
1940	3.38	3.21	3.29	0.09	-0.31	25.50	25.80	21.30	23.82	25.06
1980	3.39	3.22	3.30	0.09	-0.24	24.98	25.77	21.14	23.50	24.49
2020	3.40	3.22	3.31	0.09	-0.17	24.53	25.46	21.00	23.06	24.05
2060	3.42	3.23	3.32	0.10	-0.15	24.08	25.24	20.94	22.55	23.73
2100	3.43	3.22	3.32	0.11	0.00	23.71	25.51	20.97	22.29	23.52
2140	3.43	3.22	3.32	0.11	0.12	23.36	25.29	21.09	22.00	23.07
2180	3.43	3.22	3.32	0.11	0.38	23.06	25.10	21.23	21.60	22.69
2220	3.42	3.24	3.33	0.09	0.53	22.79	24.99	21.34	21.13	22.42
2260	3.41	3.25	3.33	0.08	0.57	22.49	24.70	21.60	20.72	22.32
2300	3.41	3.27	3.34	0.07	0.68	22.23	24.50	21.83	20.56	22.31
2340	3.39	3.29	3.34	0.05	0.66	22.04	24.42	21.91	20.35	22.13
2380	3.39	3.33	3.36	0.03	0.59	21.85	24.18	22.06	20.21	21.95
2420	3.37	3.36	3.36	0.01	0.55	21.62	23.92	22.04	20.13	21.90
2460	3.35	3.40	3.37	0.03	0.37	21.58	23.91	21.95	20.09	22.00
2500	3.34	3.43	3.38	0.05	0.12	21.39	23.56	21.65	20.12	21.91
2540	3.31	3.46	3.38	0.08	-0.13	21.17	23.15	21.24	20.10	21.61
2580	3.30	3.50	3.40	0.10	-0.41	21.06	22.79	20.85	19.97	21.33
2620	3.27	3.54	3.40	0.13	-0.73	20.88	22.19	20.37	19.88	21.12
2660	3.25	3.57	3.41	0.16	-1.02	20.69	21.69	19.88	19.69	21.10
2700	3.22	3.63	3.42	0.20	-1.23	20.72	21.52	19.43	19.66	20.94
2740	3.19	3.69	3.43	0.25	-1.55	20.51	21.09	18.99	19.61	20.65
2780	3.16	3.74	3.44	0.29	-2.00	20.36	20.74	18.53	19.37	20.46
2820	3.13	3.80	3.45	0.33	-2.16	20.25	20.67	18.23	19.24	20.43

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

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Surface Mount

2 Way 90° Power Splitter/Combiner QCH-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.51	3.84	3.12	0.67	0.50	30.21	31.85	32.51	30.93	29.76
740	2.64	3.68	3.13	0.52	0.52	30.23	32.74	33.71	31.50	30.19
780	2.75	3.54	3.13	0.40	0.50	30.39	33.78	34.27	32.16	30.36
820	2.86	3.43	3.14	0.29	0.51	30.44	34.86	34.68	32.58	30.32
860	2.96	3.32	3.14	0.18	0.58	30.40	35.85	35.27	33.23	30.57
900	3.04	3.24	3.14	0.10	0.54	30.52	36.15	35.58	33.93	30.72
940	3.12	3.17	3.14	0.02	0.59	30.52	36.13	35.93	34.44	30.85
980	3.19	3.11	3.15	0.04	0.64	30.59	35.28	35.80	34.95	30.75
1020	3.25	3.07	3.16	0.09	0.63	30.77	34.45	34.96	35.32	30.69
1060	3.29	3.03	3.16	0.14	0.70	30.78	33.35	34.25	35.35	30.96
1100	3.33	3.00	3.16	0.17	0.70	30.91	32.13	33.85	35.40	31.05
1140	3.37	2.98	3.17	0.20	0.75	30.99	31.28	34.02	35.95	31.17
1180	3.38	2.97	3.17	0.21	0.82	31.20	30.33	33.63	35.57	31.42
1220	3.41	2.97	3.18	0.22	0.81	31.35	29.36	33.02	35.21	31.49
1260	3.41	2.97	3.18	0.23	0.87	31.23	28.56	32.66	35.05	31.63
1300	3.42	2.98	3.19	0.22	0.88	31.26	28.05	32.73	34.71	31.52
1340	3.42	2.99	3.20	0.22	0.86	31.04	27.58	32.86	34.32	30.91
1380	3.41	3.00	3.20	0.21	0.91	30.73	27.12	32.61	34.17	30.20
1420	3.40	3.02	3.21	0.20	0.89	30.39	26.79	32.17	33.61	29.50
1460	3.39	3.04	3.21	0.18	0.86	29.85	26.53	31.57	32.95	28.63
1500	3.38	3.05	3.21	0.17	0.83	29.09	26.18	31.02	32.43	27.70
1540	3.37	3.08	3.22	0.15	0.76	28.38	25.87	30.53	31.76	26.84
1580	3.35	3.10	3.22	0.14	0.73	27.71	25.62	29.96	30.84	26.05
1620	3.35	3.12	3.23	0.12	0.68	26.91	25.41	29.28	30.21	25.21
1660	3.34	3.14	3.24	0.11	0.63	26.37	25.41	28.86	29.45	24.44
1700	3.33	3.15	3.24	0.10	0.61	25.58	25.37	28.35	28.76	23.75
1740	3.33	3.17	3.25	0.08	0.58	24.95	25.21	27.71	28.32	23.10
1780	3.32	3.18	3.25	0.08	0.56	24.37	25.16	27.20	27.71	22.61
1820	3.33	3.19	3.26	0.07	0.54	23.82	24.93	26.67	27.10	22.18
1860	3.33	3.20	3.26	0.07	0.60	23.30	24.72	26.13	26.85	21.80
1900	3.33	3.20	3.26	0.07	0.62	22.70	24.31	25.64	26.22	21.47
1940	3.34	3.21	3.27	0.07	0.67	22.27	23.82	25.06	25.80	21.30
1980	3.34	3.22	3.28	0.07	0.73	21.84	23.50	24.49	25.77	21.14
2020	3.36	3.22	3.29	0.07	0.77	21.50	23.06	24.05	25.46	21.00
2060	3.38	3.23	3.30	0.08	0.88	21.21	22.55	23.73	25.24	20.94
2100	3.39	3.22	3.30	0.08	0.98	20.84	22.29	23.52	25.51	20.97
2140	3.40	3.22	3.31	0.09	1.12	20.72	22.00	23.07	25.29	21.09
2180	3.41	3.22	3.31	0.09	1.41	20.55	21.60	22.69	25.10	21.23
2220	3.40	3.24	3.32	0.08	1.54	20.39	21.13	22.42	24.99	21.34
2260	3.40	3.25	3.32	0.08	1.70	20.28	20.72	22.32	24.70	21.60
2300	3.40	3.27	3.33	0.06	1.85	20.14	20.56	22.31	24.50	21.83
2340	3.38	3.30	3.34	0.05	1.88	20.09	20.35	22.13	24.42	21.91
2380	3.38	3.33	3.35	0.03	1.89	20.06	20.21	21.95	24.18	22.06
2420	3.36	3.36	3.36	0.00	1.86	19.92	20.13	21.90	23.92	22.04
2460	3.34	3.40	3.37	0.03	1.77	19.96	20.09	22.00	23.91	21.95
2500	3.32	3.43	3.37	0.06	1.59	19.95	20.12	21.91	23.56	21.65
2540	3.29	3.47	3.38	0.09	1.31	19.87	20.10	21.61	23.15	21.24
2580	3.28	3.50	3.39	0.11	1.13	19.94	19.97	21.33	22.79	20.85
2620	3.24	3.53	3.38	0.15	0.79	19.81	19.88	21.12	22.19	20.37
2660	3.22	3.57	3.39	0.18	0.57	19.69	19.69	21.10	21.69	19.88
2700	3.18	3.62	3.39	0.22	0.40	19.68	19.66	20.94	21.52	19.43
2740	3.14	3.69	3.41	0.28	0.03	19.46	19.61	20.65	21.09	18.99
2780	3.11	3.74	3.41	0.31	-0.39	19.34	19.37	20.46	20.74	18.53
2820	3.07	3.80	3.42	0.36	-0.53	19.16	19.24	20.43	20.67	18.23

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

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Surface Mount

2 Way 90° Power Splitter/Combiner QCH-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.54	3.84	3.14	0.66	-0.63	30.09	29.76	30.93	32.51	31.85
740	2.67	3.68	3.15	0.51	-0.66	30.21	30.19	31.50	33.71	32.74
780	2.78	3.54	3.14	0.38	-0.73	30.36	30.36	32.16	34.27	33.78
820	2.89	3.43	3.15	0.27	-0.78	30.42	30.32	32.58	34.68	34.86
860	2.99	3.32	3.15	0.17	-0.78	30.45	30.57	33.23	35.27	35.85
900	3.08	3.24	3.16	0.09	-0.88	30.62	30.72	33.93	35.58	36.15
940	3.16	3.17	3.16	0.01	-0.91	30.62	30.85	34.44	35.93	36.13
980	3.22	3.11	3.16	0.05	-0.92	30.69	30.75	34.95	35.80	35.28
1020	3.28	3.07	3.17	0.11	-0.99	30.98	30.69	35.32	34.96	34.45
1060	3.33	3.03	3.18	0.15	-0.96	30.95	30.96	35.35	34.25	33.35
1100	3.37	3.00	3.18	0.18	-1.02	30.89	31.05	35.40	33.85	32.13
1140	3.40	2.98	3.18	0.21	-1.02	30.91	31.17	35.95	34.02	31.28
1180	3.42	2.96	3.18	0.23	-1.01	31.26	31.42	35.57	33.63	30.33
1220	3.44	2.96	3.19	0.24	-1.07	31.25	31.49	35.21	33.02	29.36
1260	3.45	2.96	3.20	0.25	-1.05	30.82	31.63	35.05	32.66	28.56
1300	3.45	2.97	3.20	0.24	-1.08	30.68	31.52	34.71	32.73	28.05
1340	3.46	2.98	3.21	0.24	-1.14	30.75	30.91	34.32	32.86	27.58
1380	3.45	2.99	3.21	0.23	-1.13	30.35	30.20	34.17	32.61	27.12
1420	3.44	3.02	3.22	0.21	-1.19	29.61	29.50	33.61	32.17	26.79
1460	3.43	3.03	3.23	0.20	-1.24	29.03	28.63	32.95	31.57	26.53
1500	3.42	3.05	3.23	0.18	-1.33	28.62	27.70	32.43	31.02	26.18
1540	3.41	3.08	3.24	0.17	-1.40	27.98	26.84	31.76	30.53	25.87
1580	3.39	3.10	3.24	0.15	-1.46	27.18	26.05	30.84	29.96	25.62
1620	3.39	3.13	3.26	0.13	-1.54	26.51	25.21	30.21	29.28	25.41
1660	3.38	3.14	3.26	0.12	-1.62	26.09	24.44	29.45	28.86	25.41
1700	3.37	3.16	3.26	0.11	-1.66	25.51	23.75	28.76	28.35	25.37
1740	3.37	3.18	3.27	0.10	-1.71	24.67	23.10	28.32	27.71	25.21
1780	3.37	3.19	3.28	0.09	-1.75	24.06	22.61	27.71	27.20	25.16
1820	3.37	3.21	3.29	0.08	-1.73	23.65	22.18	27.10	26.67	24.93
1860	3.38	3.22	3.30	0.08	-1.75	23.25	21.80	26.85	26.13	24.72
1900	3.38	3.22	3.30	0.08	-1.76	22.66	21.47	26.22	25.64	24.31
1940	3.38	3.23	3.30	0.08	-1.72	22.18	21.30	25.80	25.06	23.82
1980	3.40	3.23	3.31	0.08	-1.66	21.86	21.14	25.77	24.49	23.50
2020	3.40	3.24	3.32	0.08	-1.61	21.63	21.00	25.46	24.05	23.06
2060	3.42	3.24	3.33	0.09	-1.56	21.30	20.94	25.24	23.73	22.55
2100	3.43	3.24	3.33	0.09	-1.40	20.88	20.97	25.51	23.52	22.29
2140	3.43	3.24	3.33	0.09	-1.27	20.78	21.09	25.29	23.07	22.00
2180	3.44	3.24	3.34	0.10	-1.05	20.68	21.23	25.10	22.69	21.60
2220	3.42	3.25	3.33	0.09	-0.87	20.50	21.34	24.99	22.42	21.13
2260	3.42	3.26	3.34	0.08	-0.81	20.32	21.60	24.70	22.32	20.72
2300	3.41	3.27	3.34	0.07	-0.70	20.16	21.83	24.50	22.31	20.56
2340	3.39	3.29	3.34	0.05	-0.71	20.11	21.91	24.42	22.13	20.35
2380	3.39	3.32	3.35	0.03	-0.75	20.08	22.06	24.18	21.95	20.21
2420	3.37	3.35	3.36	0.01	-0.74	19.93	22.04	23.92	21.90	20.13
2460	3.35	3.38	3.36	0.02	-0.94	19.94	21.95	23.91	22.00	20.09
2500	3.34	3.41	3.37	0.04	-1.10	19.94	21.65	23.56	21.91	20.12
2540	3.31	3.46	3.38	0.08	-1.34	19.84	21.24	23.15	21.61	20.10
2580	3.30	3.50	3.40	0.10	-1.64	19.86	20.85	22.79	21.33	19.97
2620	3.27	3.54	3.40	0.14	-1.85	19.81	20.37	22.19	21.12	19.88
2660	3.25	3.59	3.42	0.17	-2.26	19.70	19.88	21.69	21.10	19.69
2700	3.23	3.63	3.43	0.21	-2.51	19.66	19.43	21.52	20.94	19.66
2740	3.19	3.70	3.44	0.26	-2.83	19.50	18.99	21.09	20.65	19.61
2780	3.17	3.76	3.45	0.30	-3.24	19.42	18.53	20.74	20.46	19.37
2820	3.14	3.82	3.47	0.34	-3.42	19.27	18.23	20.67	20.43	19.24

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

Notes
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Surface Mount

2 Way 90° Power Splitter/Combiner QCH-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.54	3.87	3.15	0.67	-0.21	33.15	-34.38	-34.97	-32.07	-34.06
740	2.67	3.71	3.16	0.53	-0.20	33.61	-36.21	-36.88	-33.17	-35.38
780	2.78	3.57	3.16	0.40	-0.23	34.10	-36.68	-38.71	-33.26	-36.61
820	2.89	3.46	3.17	0.29	-0.26	34.53	-37.16	-40.98	-33.34	-37.69
860	2.99	3.36	3.17	0.19	-0.23	35.17	-37.70	-43.29	-33.90	-38.75
900	3.07	3.28	3.17	0.11	-0.31	35.51	-37.65	-42.54	-33.89	-40.42
940	3.15	3.21	3.18	0.04	-0.29	36.31	-38.21	-41.77	-34.18	-41.72
980	3.21	3.16	3.18	0.03	-0.29	37.03	-38.22	-39.97	-34.16	-42.75
1020	3.28	3.12	3.20	0.08	-0.33	37.88	-37.38	-37.76	-33.98	-43.82
1060	3.32	3.08	3.20	0.12	-0.31	38.30	-36.48	-36.18	-34.39	-44.54
1100	3.36	3.05	3.20	0.15	-0.33	39.24	-36.03	-34.79	-34.55	-45.13
1140	3.40	3.04	3.22	0.18	-0.31	40.48	-36.51	-33.69	-35.00	-47.00
1180	3.41	3.03	3.22	0.19	-0.30	41.32	-36.34	-32.65	-35.63	-46.77
1220	3.43	3.02	3.22	0.20	-0.36	42.83	-35.98	-31.66	-35.82	-45.08
1260	3.45	3.02	3.23	0.21	-0.33	44.15	-35.38	-30.63	-35.87	-45.24
1300	3.45	3.03	3.23	0.21	-0.27	46.11	-35.06	-29.98	-35.73	-44.08
1340	3.45	3.04	3.24	0.20	-0.36	46.30	-35.52	-29.33	-34.94	-43.13
1380	3.45	3.05	3.25	0.20	-0.34	47.97	-35.15	-28.65	-33.80	-42.66
1420	3.44	3.07	3.25	0.18	-0.36	46.02	-34.48	-28.36	-32.76	-40.81
1460	3.43	3.09	3.26	0.17	-0.36	44.04	-33.92	-28.02	-31.23	-38.17
1500	3.42	3.11	3.26	0.15	-0.37	41.90	-33.23	-27.67	-29.84	-37.00
1540	3.41	3.14	3.27	0.13	-0.41	38.97	-32.83	-27.45	-28.40	-35.19
1580	3.41	3.15	3.28	0.12	-0.41	37.81	-32.56	-27.10	-27.67	-33.92
1620	3.39	3.18	3.28	0.10	-0.43	36.08	-31.88	-27.00	-26.59	-33.34
1660	3.38	3.21	3.29	0.08	-0.44	34.67	-31.35	-26.91	-25.60	-32.16
1700	3.37	3.22	3.29	0.07	-0.49	33.24	-30.72	-26.70	-24.75	-31.24
1740	3.36	3.24	3.30	0.06	-0.46	32.15	-30.16	-26.56	-23.97	-30.58
1780	3.36	3.28	3.32	0.04	-0.57	30.85	-29.26	-26.46	-23.42	-29.41
1820	3.36	3.30	3.33	0.02	-0.65	29.42	-28.50	-26.02	-22.80	-28.91
1860	3.37	3.29	3.33	0.03	-0.60	28.91	-28.08	-26.00	-22.35	-28.51
1900	3.36	3.30	3.33	0.03	-0.51	27.98	-27.30	-25.45	-21.99	-27.73
1940	3.36	3.31	3.33	0.02	-0.53	27.02	-26.51	-24.89	-21.74	-27.26
1980	3.36	3.32	3.34	0.03	-0.45	26.30	-25.73	-24.43	-21.45	-27.10
2020	3.40	3.35	3.37	0.02	-0.78	25.30	-25.34	-24.08	-21.33	-26.54
2060	3.42	3.36	3.39	0.03	-0.77	24.76	-25.18	-23.42	-21.24	-26.40
2100	3.42	3.31	3.36	0.06	-0.25	24.68	-24.44	-22.89	-21.35	-26.10
2140	3.42	3.32	3.37	0.05	-0.20	24.21	-23.91	-22.52	-21.36	-25.93
2180	3.46	3.34	3.40	0.06	-0.09	23.51	-23.58	-22.15	-21.59	-25.33
2220	3.45	3.31	3.38	0.07	0.17	23.38	-23.14	-21.58	-21.72	-25.35
2260	3.45	3.32	3.38	0.07	0.42	23.02	-23.02	-21.16	-21.88	-24.99
2300	3.44	3.35	3.39	0.05	0.61	22.62	-22.96	-20.95	-22.07	-24.53
2340	3.43	3.37	3.40	0.04	0.69	22.43	-22.61	-20.84	-22.25	-24.71
2380	3.43	3.39	3.41	0.02	0.78	22.17	-22.45	-20.66	-22.42	-24.48
2420	3.41	3.42	3.41	0.01	0.89	21.86	-22.37	-20.43	-22.43	-23.93
2460	3.39	3.46	3.42	0.04	0.65	21.73	-22.56	-20.52	-22.68	-24.39
2500	3.40	3.48	3.44	0.05	0.60	21.41	-22.44	-20.36	-22.38	-23.78
2540	3.34	3.53	3.43	0.10	0.57	21.35	-21.97	-20.44	-21.78	-23.51
2580	3.31	3.59	3.45	0.14	0.47	21.17	-21.83	-20.40	-21.50	-23.24
2620	3.33	3.62	3.47	0.15	-0.10	20.63	-21.50	-20.21	-20.61	-22.25
2660	3.27	3.66	3.46	0.20	-0.36	20.57	-21.44	-20.49	-20.06	-22.08
2700	3.24	3.72	3.47	0.25	-0.32	20.51	-21.36	-20.34	-19.66	-21.68
2740	3.18	3.80	3.48	0.32	-0.85	20.33	-20.99	-20.20	-19.15	-20.99
2780	3.16	3.86	3.50	0.37	-1.32	20.03	-21.05	-20.09	-19.02	-20.87
2820	3.12	3.92	3.50	0.41	-1.55	19.94	-20.74	-19.79	-18.49	-20.50

(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-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.56	3.86	3.16	0.65	0.03	33.40	34.06	32.07	34.97	34.38
740	2.69	3.70	3.17	0.50	0.06	33.75	35.38	33.17	36.88	36.21
780	2.80	3.56	3.16	0.38	0.03	34.20	36.61	33.26	38.71	36.68
820	2.92	3.45	3.18	0.26	0.03	34.54	37.69	33.34	40.98	37.16
860	3.01	3.35	3.18	0.17	0.07	35.12	38.75	33.90	43.29	37.70
900	3.10	3.27	3.18	0.08	0.03	35.56	40.42	33.89	42.54	37.65
940	3.18	3.20	3.19	0.01	0.04	36.11	41.72	34.18	41.77	38.21
980	3.24	3.14	3.19	0.06	0.06	36.77	42.75	34.16	39.97	38.22
1020	3.30	3.10	3.20	0.11	0.03	37.59	43.82	33.98	37.76	37.38
1060	3.34	3.06	3.20	0.15	0.06	38.13	44.54	34.39	36.18	36.48
1100	3.38	3.04	3.21	0.18	0.01	39.06	45.13	34.55	34.79	36.03
1140	3.42	3.02	3.22	0.21	0.04	40.23	47.00	35.00	33.69	36.51
1180	3.44	3.01	3.22	0.22	0.06	41.12	46.77	35.63	32.65	36.34
1220	3.46	3.01	3.23	0.23	0.02	42.42	45.08	35.82	31.66	35.98
1260	3.47	3.01	3.23	0.24	0.04	44.15	45.24	35.87	30.63	35.38
1300	3.48	3.02	3.24	0.24	0.02	45.97	44.08	35.73	29.98	35.06
1340	3.48	3.03	3.25	0.23	-0.05	47.17	43.13	34.94	29.33	35.52
1380	3.47	3.04	3.25	0.23	-0.05	49.29	42.66	33.80	28.65	35.15
1420	3.46	3.06	3.26	0.21	-0.12	47.58	40.81	32.76	28.36	34.48
1460	3.46	3.08	3.27	0.20	-0.18	45.61	38.17	31.23	28.02	33.92
1500	3.45	3.10	3.27	0.18	-0.22	43.20	37.00	29.84	27.67	33.23
1540	3.44	3.13	3.28	0.17	-0.32	39.97	35.19	28.40	27.45	32.83
1580	3.44	3.13	3.28	0.16	-0.35	38.33	33.92	27.67	27.10	32.56
1620	3.42	3.16	3.29	0.14	-0.37	36.64	33.34	26.59	27.00	31.88
1660	3.41	3.18	3.29	0.12	-0.41	34.99	32.16	25.60	26.91	31.35
1700	3.41	3.21	3.31	0.11	-0.55	33.59	31.24	24.75	26.70	30.72
1740	3.40	3.22	3.31	0.10	-0.54	32.49	30.58	23.97	26.56	30.16
1780	3.40	3.24	3.32	0.09	-0.60	31.04	29.41	23.42	26.46	29.26
1820	3.41	3.26	3.33	0.08	-0.64	29.63	28.91	22.80	26.02	28.50
1860	3.41	3.26	3.33	0.08	-0.65	28.93	28.51	22.35	26.00	28.08
1900	3.41	3.26	3.33	0.08	-0.58	28.04	27.73	21.99	25.45	27.30
1940	3.41	3.27	3.34	0.08	-0.60	27.01	27.26	21.74	24.89	26.51
1980	3.42	3.28	3.35	0.08	-0.53	26.23	27.10	21.45	24.43	25.73
2020	3.45	3.33	3.39	0.07	-0.78	25.25	26.54	21.33	24.08	25.34
2060	3.47	3.32	3.39	0.08	-0.76	24.69	26.40	21.24	23.42	25.18
2100	3.47	3.27	3.37	0.11	-0.35	24.65	26.10	21.35	22.89	24.44
2140	3.47	3.28	3.37	0.10	-0.20	24.11	25.93	21.36	22.52	23.91
2180	3.49	3.31	3.40	0.10	-0.22	23.45	25.33	21.59	22.15	23.58
2220	3.48	3.29	3.38	0.10	0.17	23.35	25.35	21.72	21.58	23.14
2260	3.47	3.30	3.38	0.09	0.23	22.99	24.99	21.88	21.16	23.02
2300	3.47	3.33	3.40	0.08	0.35	22.61	24.53	22.07	20.95	22.96
2340	3.45	3.34	3.39	0.06	0.29	22.42	24.71	22.25	20.84	22.61
2380	3.45	3.38	3.41	0.04	0.29	22.17	24.48	22.42	20.66	22.45
2420	3.43	3.41	3.42	0.02	0.24	21.85	23.93	22.43	20.43	22.37
2460	3.42	3.47	3.44	0.03	0.14	21.74	24.39	22.68	20.52	22.56
2500	3.42	3.47	3.44	0.02	-0.05	21.42	23.78	22.38	20.36	22.44
2540	3.37	3.53	3.45	0.08	-0.18	21.37	23.51	21.78	20.44	21.97
2580	3.35	3.55	3.45	0.10	-0.68	21.20	23.24	21.50	20.40	21.83
2620	3.36	3.58	3.47	0.11	-0.84	20.64	22.25	20.61	20.21	21.50
2660	3.32	3.66	3.49	0.17	-1.16	20.59	22.08	20.06	20.49	21.44
2700	3.30	3.72	3.50	0.20	-1.36	20.53	21.68	19.66	20.34	21.36
2740	3.24	3.79	3.51	0.27	-1.88	20.36	20.99	19.15	20.20	20.99
2780	3.23	3.84	3.52	0.30	-2.23	20.03	20.87	19.02	20.09	21.05
2820	3.19	3.90	3.53	0.35	-2.58	19.95	20.50	18.49	19.79	20.74

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

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Surface Mount

2 Way 90° Power Splitter/Combiner QCH-272+

Typical Performance Data

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

Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.54	3.86	3.15	0.67	0.34	32.12	34.97	34.38	34.06	32.07
740	2.67	3.70	3.15	0.52	0.37	32.58	36.88	36.21	35.38	33.17
780	2.78	3.56	3.15	0.39	0.36	32.93	38.71	36.68	36.61	33.26
820	2.90	3.45	3.17	0.28	0.36	33.19	40.98	37.16	37.69	33.34
860	2.99	3.35	3.17	0.18	0.44	33.57	43.29	37.70	38.75	33.90
900	3.08	3.27	3.17	0.10	0.41	33.53	42.54	37.65	40.42	33.89
940	3.15	3.20	3.17	0.02	0.44	33.77	41.77	38.21	41.72	34.18
980	3.22	3.14	3.18	0.04	0.48	33.95	39.97	38.22	42.75	34.16
1020	3.28	3.10	3.19	0.09	0.48	34.12	37.76	37.38	43.82	33.98
1060	3.32	3.06	3.19	0.13	0.53	34.30	36.18	36.48	44.54	34.39
1100	3.36	3.04	3.20	0.16	0.50	34.51	34.79	36.03	45.13	34.55
1140	3.40	3.02	3.21	0.19	0.55	34.66	33.69	36.51	47.00	35.00
1180	3.41	3.01	3.21	0.20	0.60	35.28	32.65	36.34	46.77	35.63
1220	3.43	3.01	3.21	0.21	0.56	35.42	31.66	35.98	45.08	35.82
1260	3.44	3.01	3.22	0.22	0.60	35.28	30.63	35.38	45.24	35.87
1300	3.45	3.01	3.22	0.22	0.63	35.28	29.98	35.06	44.08	35.73
1340	3.46	3.03	3.24	0.22	0.58	34.84	29.33	35.52	43.13	34.94
1380	3.45	3.04	3.24	0.21	0.63	34.39	28.65	35.15	42.66	33.80
1420	3.44	3.06	3.25	0.19	0.59	33.84	28.36	34.48	40.81	32.76
1460	3.43	3.07	3.25	0.18	0.57	32.83	28.02	33.92	38.17	31.23
1500	3.42	3.09	3.25	0.16	0.56	31.71	27.67	33.23	37.00	29.84
1540	3.41	3.12	3.26	0.14	0.50	30.59	27.45	32.83	35.19	28.40
1580	3.40	3.13	3.26	0.14	0.48	29.76	27.10	32.56	33.92	27.67
1620	3.39	3.16	3.27	0.12	0.48	28.74	27.00	31.88	33.34	26.59
1660	3.38	3.18	3.28	0.10	0.47	27.85	26.91	31.35	32.16	25.60
1700	3.37	3.20	3.28	0.09	0.33	26.94	26.70	30.72	31.24	24.75
1740	3.36	3.21	3.28	0.07	0.37	26.09	26.56	30.16	30.58	23.97
1780	3.36	3.24	3.30	0.06	0.34	25.24	26.46	29.26	29.41	23.42
1820	3.36	3.26	3.31	0.05	0.18	24.62	26.02	28.50	28.91	22.80
1860	3.37	3.26	3.31	0.05	0.25	24.04	26.00	28.08	28.51	22.35
1900	3.36	3.26	3.31	0.05	0.33	23.38	25.45	27.30	27.73	21.99
1940	3.37	3.27	3.32	0.05	0.30	22.82	24.89	26.51	27.26	21.74
1980	3.37	3.28	3.32	0.04	0.39	22.28	24.43	25.73	27.10	21.45
2020	3.40	3.33	3.36	0.04	0.05	21.65	24.08	25.34	26.54	21.33
2060	3.43	3.32	3.37	0.05	0.10	21.41	23.42	25.18	26.40	21.24
2100	3.44	3.27	3.35	0.08	0.53	21.22	22.89	24.44	26.10	21.35
2140	3.43	3.28	3.35	0.07	0.66	20.95	22.52	23.91	25.93	21.36
2180	3.47	3.31	3.39	0.08	0.67	20.61	22.15	23.58	25.33	21.59
2220	3.46	3.29	3.37	0.08	1.04	20.61	21.58	23.14	25.35	21.72
2260	3.46	3.30	3.38	0.08	1.22	20.46	21.16	23.02	24.99	21.88
2300	3.46	3.33	3.39	0.06	1.40	20.27	20.95	22.96	24.53	22.07
2340	3.44	3.35	3.39	0.04	1.38	20.24	20.84	22.61	24.71	22.25
2380	3.44	3.38	3.41	0.03	1.46	20.16	20.66	22.45	24.48	22.42
2420	3.43	3.41	3.42	0.00	1.39	20.00	20.43	22.37	23.93	22.43
2460	3.40	3.47	3.43	0.04	1.38	20.06	20.52	22.56	24.39	22.68
2500	3.41	3.47	3.44	0.04	1.26	19.93	20.36	22.44	23.78	22.38
2540	3.35	3.53	3.44	0.09	1.08	20.02	20.44	21.97	23.51	21.78
2580	3.32	3.56	3.44	0.12	0.70	20.12	20.40	21.83	23.24	21.50
2620	3.34	3.58	3.46	0.13	0.59	19.68	20.21	21.50	22.25	20.61
2660	3.28	3.66	3.47	0.20	0.28	19.77	20.49	21.44	22.08	20.06
2700	3.25	3.71	3.47	0.24	0.14	19.71	20.34	21.36	21.68	19.66
2740	3.18	3.78	3.47	0.31	-0.47	19.55	20.20	20.99	20.99	19.15
2780	3.16	3.84	3.49	0.35	-0.83	19.50	20.09	21.05	20.87	19.02
2820	3.12	3.90	3.49	0.39	-1.15	19.21	19.79	20.74	20.50	18.49

(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-272+

Typical Performance Data

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

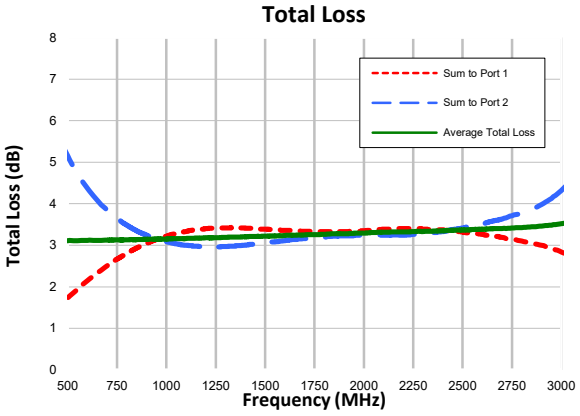
Freq. (MHz)	Total Loss[1] (dB)			Amp. Unbal. (±dB)	Phase Unbal. (deg)	Isolation (dB)	Return Loss (dB)			
	Sum-Port 1	Sum-Port 2	Avg	(half P-P)	(Rel. to 90°)	Port 1 - Port 2	Sum	Port 1	Port 2	Iso
700	2.56	3.88	3.17	0.66	-0.51	31.95	32.07	34.06	34.38	34.97
740	2.69	3.72	3.17	0.51	-0.51	32.51	33.17	35.38	36.21	36.88
780	2.81	3.58	3.18	0.39	-0.57	32.86	33.26	36.61	36.68	38.71
820	2.92	3.47	3.19	0.27	-0.63	33.15	33.34	37.69	37.16	40.98
860	3.02	3.37	3.19	0.18	-0.60	33.62	33.90	38.75	37.70	43.29
900	3.10	3.29	3.19	0.10	-0.68	33.63	33.89	40.42	37.65	42.54
940	3.18	3.22	3.20	0.02	-0.71	33.88	34.18	41.72	38.21	41.77
980	3.25	3.16	3.20	0.04	-0.72	34.07	34.16	42.75	38.22	39.97
1020	3.31	3.13	3.22	0.09	-0.80	34.39	33.98	43.82	37.38	37.76
1060	3.35	3.09	3.22	0.14	-0.76	34.50	34.39	44.54	36.48	36.18
1100	3.39	3.06	3.22	0.17	-0.82	34.42	34.55	45.13	36.03	34.79
1140	3.43	3.04	3.23	0.19	-0.84	34.50	35.00	47.00	36.51	33.69
1180	3.45	3.03	3.23	0.21	-0.83	35.32	35.63	46.77	36.34	32.65
1220	3.47	3.03	3.24	0.22	-0.90	35.16	35.82	45.08	35.98	31.66
1260	3.48	3.03	3.25	0.23	-0.89	34.52	35.87	45.24	35.38	30.63
1300	3.49	3.04	3.26	0.23	-0.90	34.32	35.73	44.08	35.06	29.98
1340	3.49	3.06	3.27	0.22	-1.00	34.36	34.94	43.13	35.52	29.33
1380	3.48	3.06	3.26	0.21	-0.99	33.72	33.80	42.66	35.15	28.65
1420	3.47	3.09	3.28	0.20	-1.05	32.68	32.76	40.81	34.48	28.36
1460	3.47	3.10	3.28	0.19	-1.10	31.73	31.23	38.17	33.92	28.02
1500	3.45	3.12	3.28	0.17	-1.16	31.16	29.84	37.00	33.23	27.67
1540	3.45	3.15	3.30	0.15	-1.23	30.11	28.40	35.19	32.83	27.45
1580	3.44	3.17	3.30	0.14	-1.22	29.14	27.67	33.92	32.56	27.10
1620	3.43	3.20	3.31	0.12	-1.26	28.31	26.59	33.34	31.88	27.00
1660	3.42	3.22	3.32	0.10	-1.34	27.56	25.60	32.16	31.35	26.91
1700	3.42	3.24	3.33	0.10	-1.37	26.89	24.75	31.24	30.72	26.70
1740	3.40	3.26	3.33	0.08	-1.36	25.79	23.97	30.58	30.16	26.56
1780	3.41	3.29	3.35	0.07	-1.50	24.93	23.42	29.41	29.26	26.46
1820	3.42	3.32	3.37	0.06	-1.48	24.49	22.80	28.91	28.50	26.02
1860	3.42	3.31	3.36	0.06	-1.49	24.03	22.35	28.51	28.08	26.00
1900	3.42	3.31	3.36	0.06	-1.43	23.37	21.99	27.73	27.30	25.45
1940	3.42	3.32	3.37	0.05	-1.41	22.74	21.74	27.26	26.51	24.89
1980	3.44	3.33	3.38	0.06	-1.36	22.33	21.45	27.10	25.73	24.43
2020	3.46	3.37	3.41	0.05	-1.60	21.80	21.33	26.54	25.34	24.08
2060	3.48	3.37	3.42	0.06	-1.59	21.52	21.24	26.40	25.18	23.42
2100	3.48	3.32	3.40	0.09	-1.13	21.29	21.35	26.10	24.44	22.89
2140	3.48	3.33	3.40	0.08	-1.03	21.02	21.36	25.93	23.91	22.52
2180	3.50	3.35	3.42	0.08	-0.91	20.75	21.59	25.33	23.58	22.15
2220	3.49	3.33	3.41	0.09	-0.67	20.74	21.72	25.35	23.14	21.58
2260	3.48	3.33	3.40	0.08	-0.51	20.51	21.88	24.99	23.02	21.16
2300	3.48	3.36	3.42	0.06	-0.40	20.30	22.07	24.53	22.96	20.95
2340	3.46	3.38	3.42	0.05	-0.37	20.27	22.25	24.71	22.61	20.84
2380	3.46	3.40	3.43	0.03	-0.34	20.19	22.42	24.48	22.45	20.66
2420	3.44	3.44	3.44	0.01	-0.23	20.04	22.43	23.93	22.37	20.43
2460	3.43	3.47	3.45	0.02	-0.58	20.04	22.68	24.39	22.56	20.52
2500	3.43	3.50	3.46	0.03	-0.68	19.93	22.38	23.78	22.44	20.36
2540	3.38	3.54	3.46	0.08	-0.70	20.02	21.78	23.51	21.97	20.44
2580	3.36	3.61	3.48	0.12	-0.89	20.06	21.50	23.24	21.83	20.40
2620	3.37	3.64	3.50	0.13	-1.52	19.71	20.61	22.25	21.50	20.21
2660	3.33	3.68	3.50	0.18	-1.83	19.79	20.06	22.08	21.44	20.49
2700	3.31	3.74	3.52	0.21	-1.81	19.72	19.66	21.68	21.36	20.34
2740	3.25	3.82	3.53	0.28	-2.20	19.62	19.15	20.99	20.99	20.20
2780	3.24	3.89	3.55	0.32	-2.72	19.61	19.02	20.87	21.05	20.09
2820	3.20	3.94	3.55	0.37	-2.98	19.34	18.49	20.50	20.74	19.79

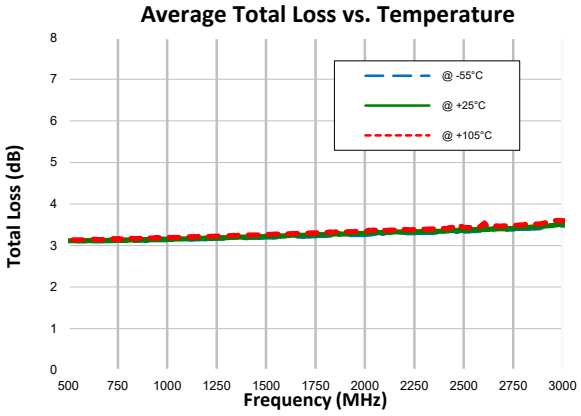
(Note 1) Total loss is the loss from Sum to each coupled port including the 3dB theoretical split.

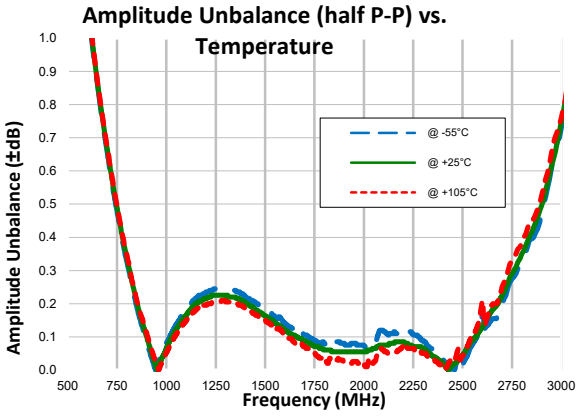
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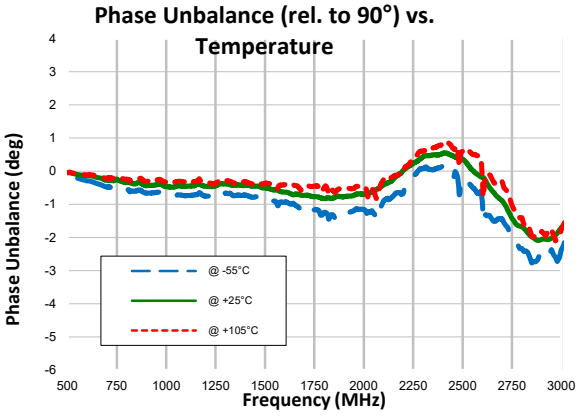
2 Way 90° Power Splitter/Combiner QCH-272+

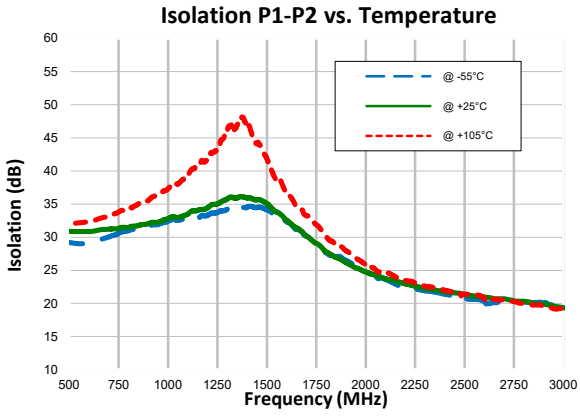
Typical Performance Graphs (Configuration A)







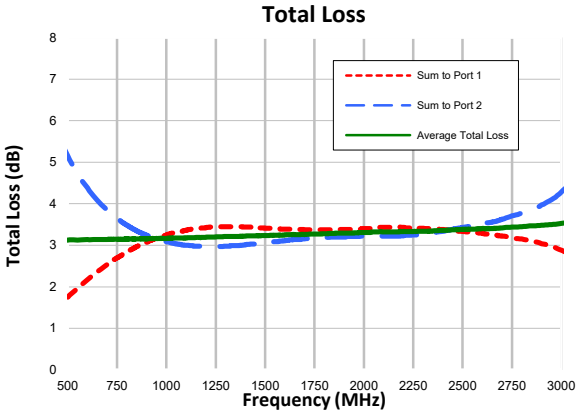


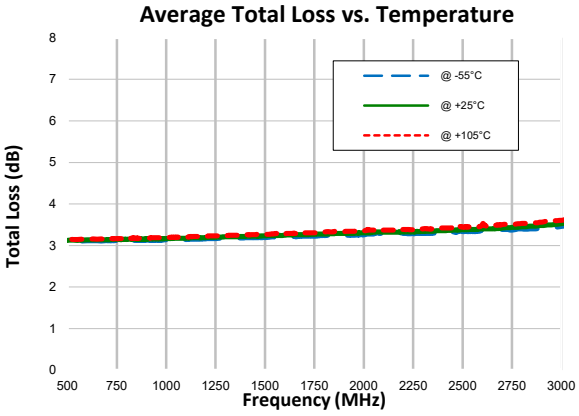


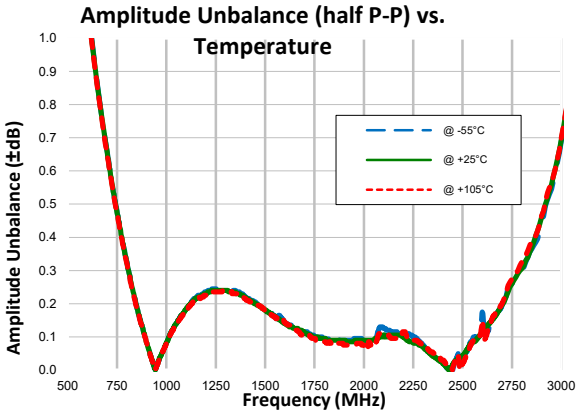
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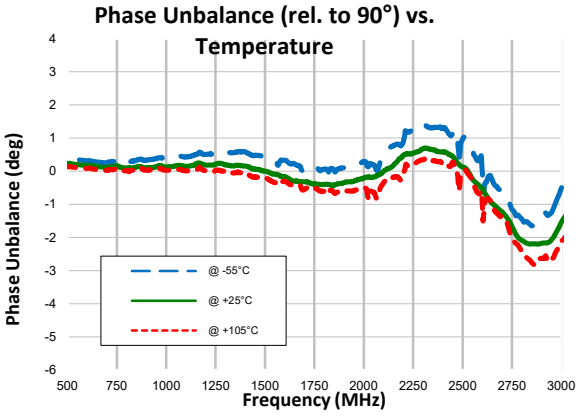
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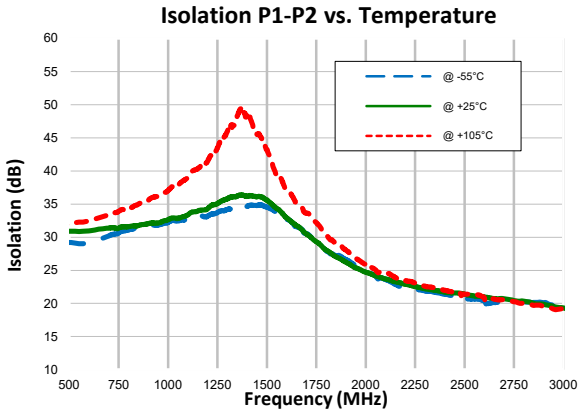
Typical Performance Curves (Configuration B)







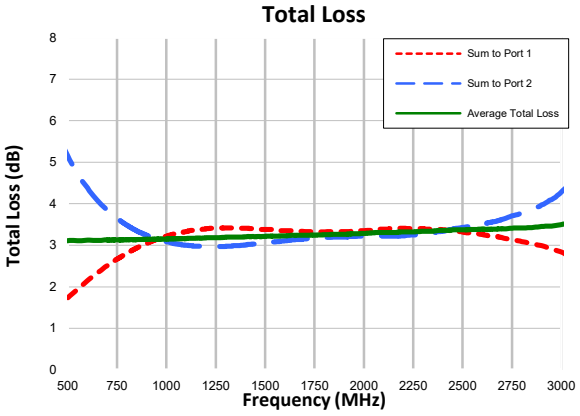


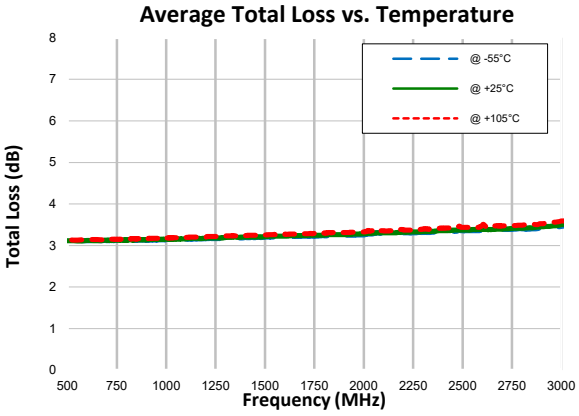


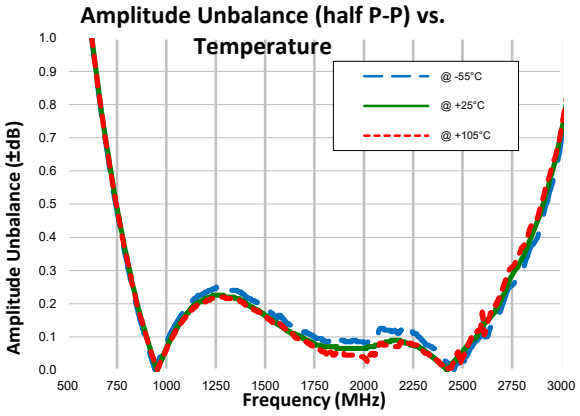
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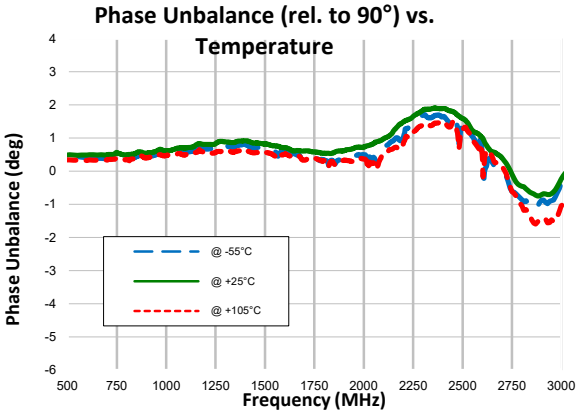
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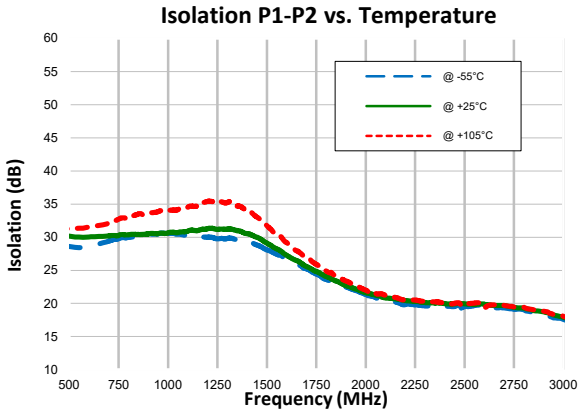
Typical Performance Curves (Configuration C)







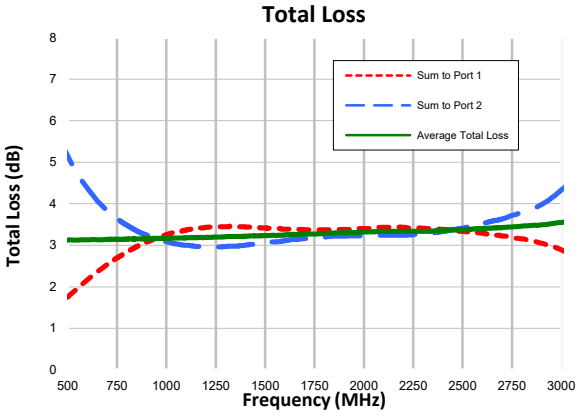


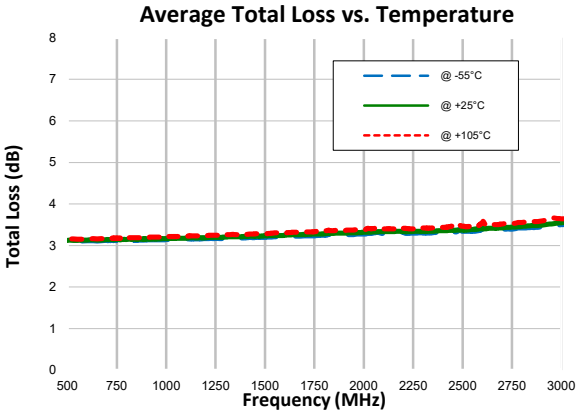


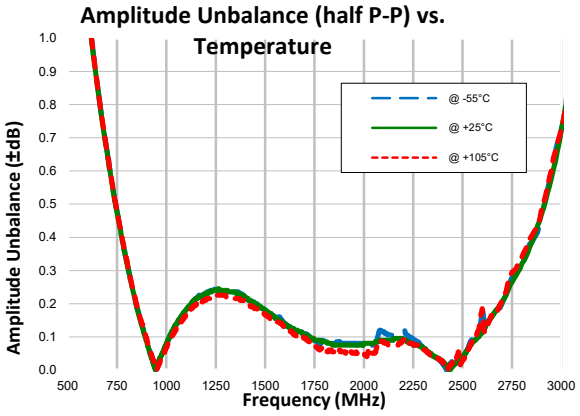
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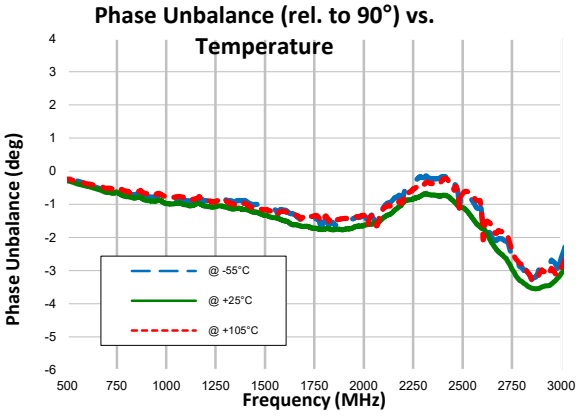
2 Way 90° Power Splitter/Combiner QCH-272+

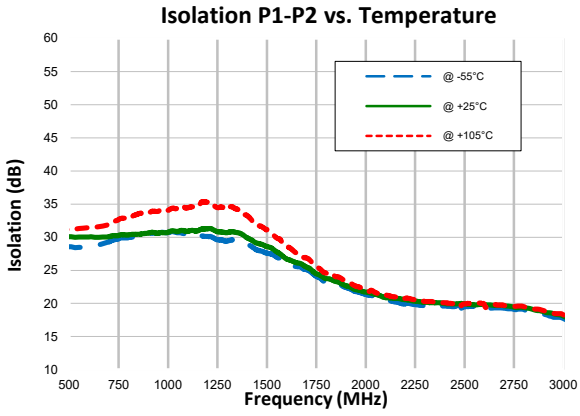
Typical Performance Curves (Configuration D)









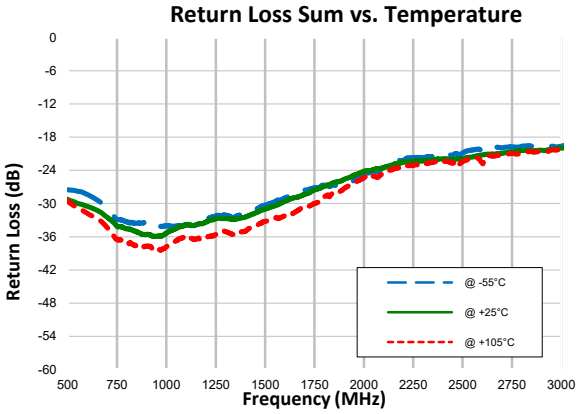


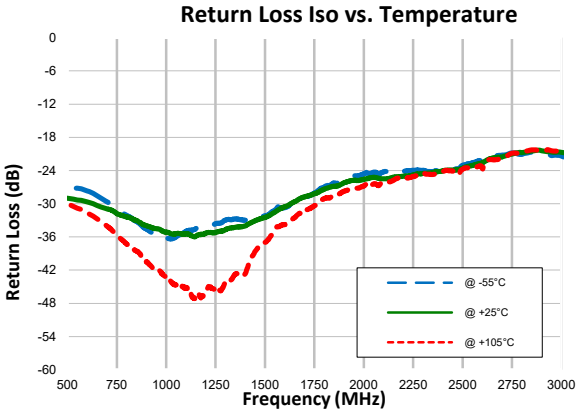
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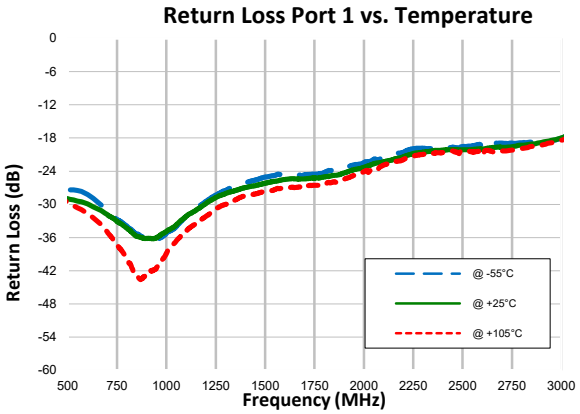
2 Way 90° Power Splitter/Combiner QCH-272+

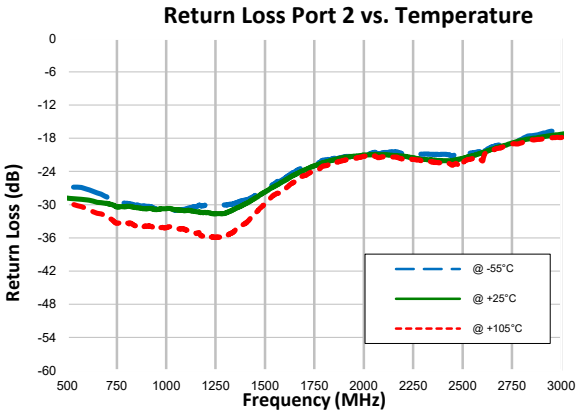
Typical Performance Curves (VSWR at Configuration A)









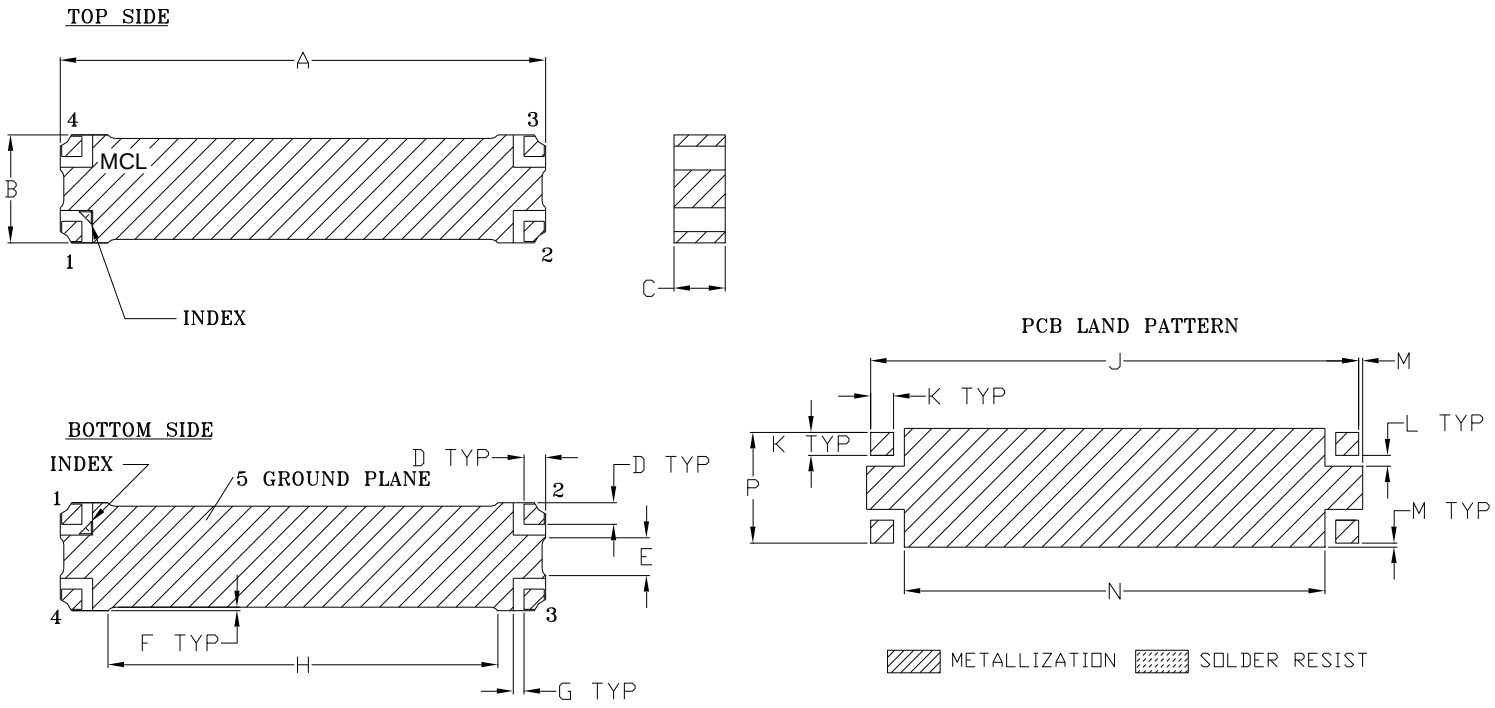


Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

Case Style PQ

Outline Dimensions

PQ2181



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N	P	WT. GRAMS
PQ2181	1.800 (45.72)	.400 (10.16)	.190 (4.83)	.080 (2.03)	.140 (3.56)	.013 (0.33)	.040 (1.02)	1.446 (36.73)	1.810 (45.97)	.085 (2.16)	.040 (1.02)	.015 (0.38)	1.560 (39.62)	.410 (10.41)	1.0

Dimensions are in inches (mm). Tolerances: 2PL. +/- .03; 3PL. +/- .010

Notes:

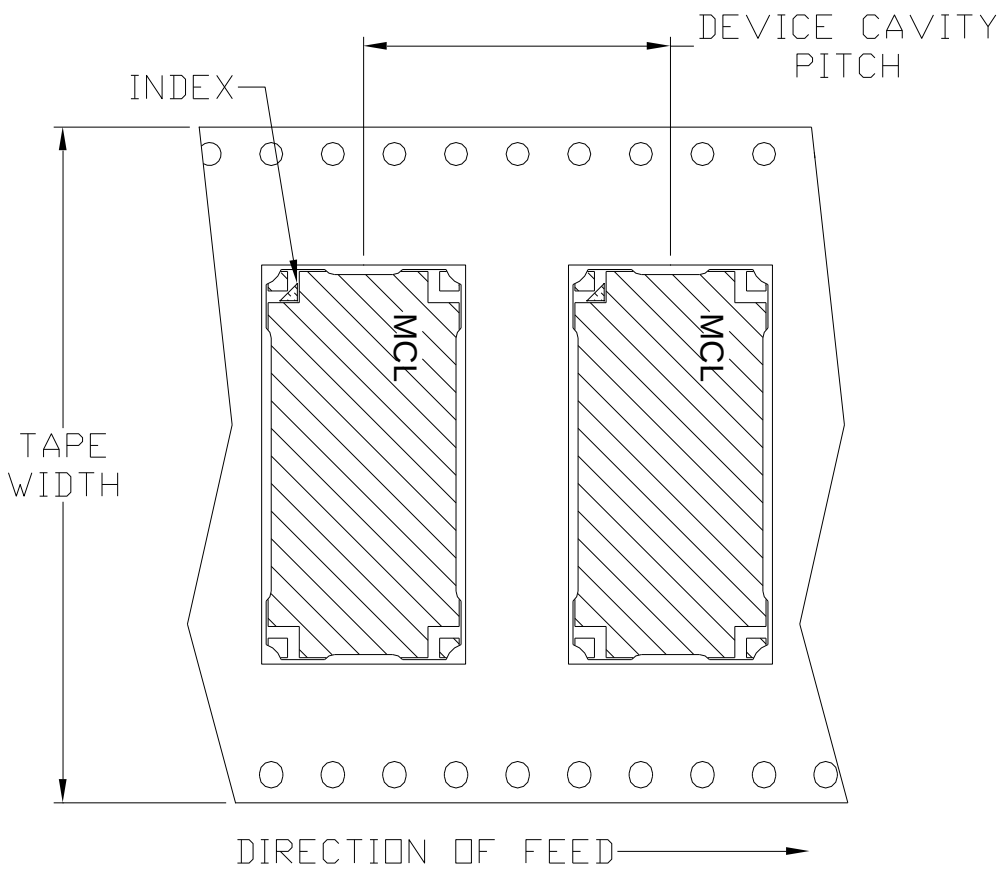
1. Base material: Printed wiring laminate.
2. Termination finish:
   For RoHS Cases, all models (+) suffix: 2-5 µinch (.05-.13 microns) Immersion Gold.
   For RoHS-5 Cases, all models no (+) suffix: Tin-Lead plate.

Mini-Circuits®
INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
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Tape & Reel Packaging TR-F120

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
72	16	13	Small quantity standards (see note)	20
				50
				100
				200
			Standard	500

Note: Please consult individual model data sheet to determine device per reel availability.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

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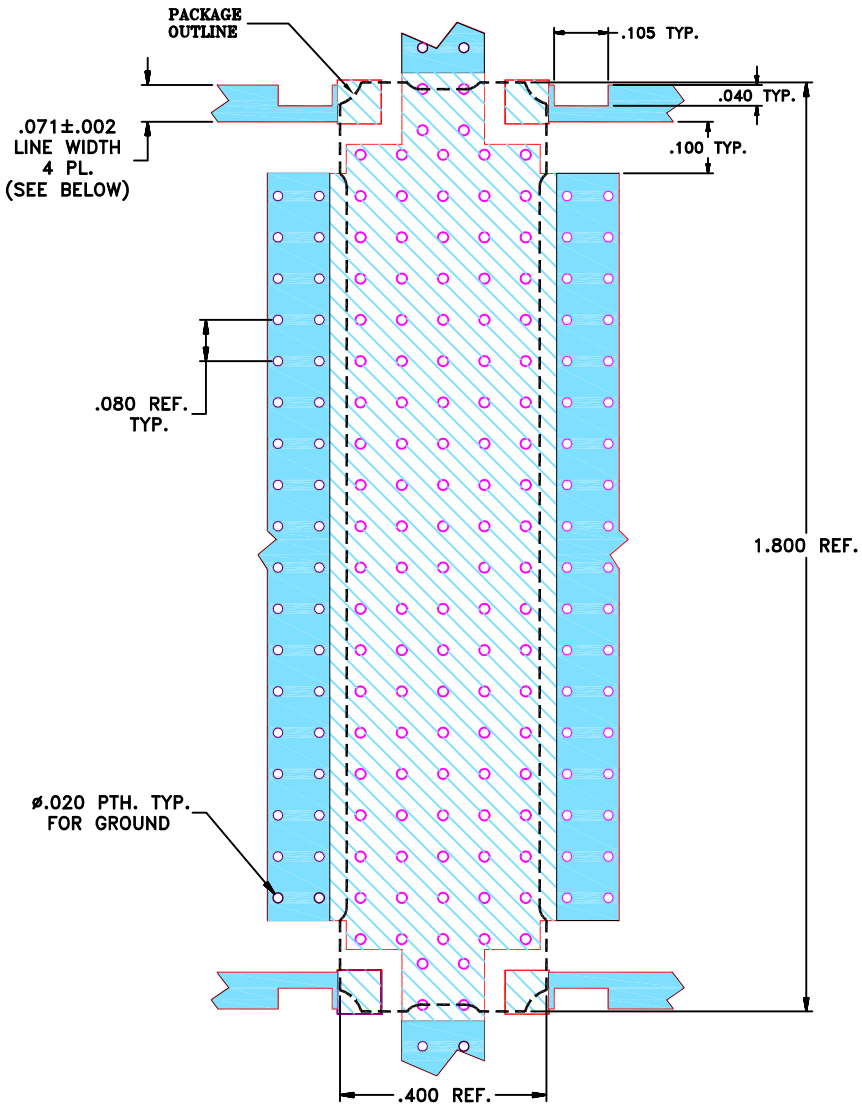
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THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M155012	NEW RELEASE (FROM RAVON)	09/16	GF	YB
A	M163158	ADD TRACE CUTOUTS	07/17	HH	YB
A	R92310	ADD TRACE CUTOUTS	07/17	HH	YB

SUGGESTED MOUNTING CONFIGURATION

FOR PQ2181 CASE STYLE 08DC08 PIN CONNECTION, 50 OHM



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4003C WITH DIELECTRIC THICKNESS. .032"±.003". COPPER: 1 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
3. CUTOUTS IN RF LINES ARE REQUIRED TO ACHIEVE SPECIFIED ISOLATION.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	GF (RAVON)	14 SEP 16
TOLERANCES ON:	CHECKED	HH (RAVON)	14 SEP 16
2 PL DECIMALS ±	APPROVED	YB (RAVON)	14 SEP 16
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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ASHEETA1.DWG REV:A DATE:01/12/95

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 08DC08, PQ2181
TB-884+

SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-480	A

FILE:	SCALE:	SHEET:
98PL480(A)	2.5:1	1 OF 1

Mini-Circuits

Environmental Specifications **ENV02T8**

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 105° C Case Environment	Individual Model Data Sheet
Storage Temperature	-55° to 105°C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutectic Process 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020C, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (high Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-883, Method 2007.3, Condition A
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215

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