

# Bi-Directional Coupler

# SYBD-20-272HP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +25°C

FREQ. (MHz)	INSERTION LOSS		COUPLING		DIRECTIVITY		RETURN LOSS			
	(dB)		(dB)		(dB)		(dB)			
	IN-OUT	FWD-REV	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
100	0.16	0.15	45.15	45.14	37.30	38.34	49.42	46.68	46.87	48.60
200	0.14	0.14	39.14	39.17	41.36	42.77	47.02	44.50	44.08	48.43
300	0.12	0.12	35.68	35.69	41.15	43.03	47.98	44.46	43.70	52.38
400	0.11	0.10	33.20	33.20	39.41	39.98	49.10	44.51	42.21	48.35
500	0.10	0.09	31.29	31.31	37.23	36.06	45.95	43.24	39.76	42.67
600	0.09	0.07	29.75	29.76	35.68	33.66	43.06	41.43	37.38	38.88
700	0.08	0.07	28.44	28.46	34.21	32.02	40.55	39.68	35.14	35.92
800	0.06	0.06	27.33	27.37	32.34	29.70	38.74	38.43	33.51	34.06
900	0.05	0.04	26.36	26.38	31.46	28.47	37.50	37.12	31.97	32.37
1000	0.03	0.04	25.53	25.55	30.16	27.00	36.46	36.09	30.86	31.31
1100	0.02	0.02	24.72	24.75	29.37	26.27	35.36	35.04	29.96	30.56
1200	0.00	0.01	24.07	24.07	27.56	24.69	35.21	34.14	29.60	30.01
1300	0.00	0.00	23.44	23.46	27.68	24.30	34.69	34.25	29.45	29.78
1400	0.01	0.01	22.87	22.89	26.92	24.01	34.56	34.30	29.83	30.05
1500	0.02	0.03	22.30	22.32	27.38	23.93	34.77	34.85	30.45	30.47
1600	0.04	0.04	21.88	21.90	25.73	22.98	35.03	35.83	32.00	31.72
1700	0.04	0.05	21.39	21.41	26.65	23.46	35.41	36.47	33.42	32.61
1750	0.06	0.06	21.18	21.20	26.12	23.27	35.98	37.24	34.30	33.02
1800	0.06	0.05	20.99	21.01	26.25	22.96	36.11	38.23	35.54	33.51
1900	0.08	0.07	20.67	20.69	25.15	22.50	38.32	41.23	37.37	34.02
2000	0.08	0.07	20.39	20.38	23.60	21.78	39.61	44.27	36.81	34.63
2050	0.07	0.06	20.40	20.43	21.61	20.11	41.17	53.61	36.75	33.83
2100	0.07	0.06	20.16	20.20	23.07	21.26	40.18	57.60	36.69	33.67
2150	0.07	0.07	19.90	19.96	25.09	22.56	39.56	57.78	35.94	34.22
2200	0.09	0.09	19.74	19.80	25.44	23.07	41.67	51.25	34.94	34.55
2300	0.10	0.09	19.50	19.58	24.64	22.84	42.69	50.31	34.71	34.42
2350	0.09	0.09	19.27	19.36	26.16	23.66	43.13	48.48	35.19	36.26
2400	0.10	0.10	19.29	19.33	24.30	22.28	44.49	45.59	35.51	36.62
2450	0.10	0.09	19.10	19.14	25.48	24.12	45.11	48.05	36.39	36.90
2500	0.11	0.10	19.03	19.08	24.79	23.38	45.34	48.65	37.29	38.05
2550	0.11	0.11	18.97	19.01	24.06	22.81	46.15	47.52	37.74	40.39
2600	0.11	0.11	18.74	18.78	27.13	24.63	46.77	48.06	38.75	42.04
2700	0.13	0.12	18.62	18.62	25.47	23.60	50.50	43.57	36.85	41.13
2800	0.14	0.13	18.45	18.47	24.25	22.68	48.42	39.80	33.39	36.09
2900	0.15	0.14	18.29	18.37	23.26	22.07	39.96	36.02	30.28	32.05
3000	0.17	0.15	18.07	18.20	24.11	22.16	35.82	33.00	27.54	28.47
3100	0.18	0.18	17.87	17.99	22.87	21.07	31.53	30.27	25.65	26.63
3200	0.18	0.19	17.81	17.85	21.66	19.80	28.92	28.12	24.36	24.94
3300	0.20	0.19	17.67	17.67	20.96	18.95	27.11	26.31	23.72	23.96
3400	0.21	0.21	17.51	17.54	19.89	18.06	25.32	24.98	23.38	23.53
3500	0.22	0.22	17.37	17.36	18.98	17.26	24.09	23.83	23.19	23.22
3600	0.25	0.23	17.26	17.17	18.54	16.49	23.05	23.19	23.66	23.46
3700	0.25	0.24	17.12	17.12	17.50	15.79	22.57	22.70	24.64	24.23
3800	0.27	0.25	17.02	16.94	17.19	15.08	22.19	22.52	25.87	25.70
3900	0.28	0.25	16.80	16.79	16.56	14.95	22.18	22.82	28.57	27.71
4000	0.29	0.25	16.70	16.66	16.19	14.33	22.44	23.17	32.62	30.51
4500	0.33	0.34	16.38	16.40	14.19	12.34	30.88	33.63	24.15	24.34
5000	0.44	0.44	16.25	16.27	14.93	12.71	22.48	23.54	19.70	20.06
5500	0.48	0.50	16.26	16.27	14.81	12.65	20.46	21.04	19.34	19.13
6000	0.54	0.62	16.45	16.50	11.62	10.60	19.91	20.12	16.19	16.03
6500	0.72	0.90	16.74	16.67	9.62	8.60	15.23	14.96	11.93	11.91
7000	1.18	1.34	17.29	17.10	9.28	8.13	10.64	11.03	9.69	9.86

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Page 1 of 3



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# Bi-Directional Coupler

# SYBD-20-272HP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = -55°C

FREQ. (MHz)	INSERTION LOSS		COUPLING		DIRECTIVITY		RETURN LOSS			
	(dB)		(dB)		(dB)		(dB)			
	IN-OUT	FWD-REV	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
100	0.16	0.18	45.15	45.13	38.84	34.36	51.77	47.99	41.45	41.53
200	0.15	0.18	39.14	39.16	37.87	37.58	44.46	43.15	43.08	45.33
300	0.14	0.17	35.66	35.67	39.60	42.87	43.49	42.25	44.31	48.80
400	0.13	0.18	33.17	33.20	40.77	43.96	48.29	46.02	44.84	56.52
500	0.13	0.17	31.26	31.28	39.78	41.91	54.77	49.69	43.98	52.65
600	0.12	0.17	29.70	29.73	39.42	37.16	52.33	48.62	41.05	43.24
700	0.12	0.17	28.39	28.42	37.09	34.47	44.03	43.29	37.24	37.88
800	0.11	0.17	27.31	27.31	33.34	30.80	41.20	40.99	34.68	35.03
900	0.10	0.16	26.30	26.31	33.72	30.13	38.89	38.57	32.75	33.16
1000	0.09	0.16	25.41	25.43	33.48	28.89	36.57	36.39	30.77	31.32
1100	0.08	0.15	24.65	24.69	29.15	26.21	34.60	34.42	29.55	30.45
1200	0.07	0.15	24.00	24.00	28.98	25.42	33.52	32.76	28.72	29.26
1300	0.07	0.15	23.34	23.36	28.11	24.60	33.16	32.74	27.71	28.26
1400	0.06	0.15	22.77	22.79	26.91	24.07	33.58	33.22	28.24	28.66
1500	0.05	0.14	22.17	22.19	28.36	24.55	33.83	33.70	29.70	29.83
1600	0.04	0.14	21.83	21.84	25.57	22.54	33.57	34.14	31.10	30.99
1700	0.03	0.14	21.29	21.30	26.59	23.63	32.84	33.39	32.31	31.78
1750	0.03	0.13	21.18	21.20	24.32	21.46	33.21	34.02	33.41	32.94
1800	0.03	0.12	20.96	20.99	23.73	21.10	32.97	34.20	33.68	33.48
1900	0.00	0.11	20.66	20.66	22.34	20.20	36.18	37.76	35.24	33.85
2000	0.02	0.15	20.24	20.24	23.97	22.17	38.29	45.35	40.03	35.24
2050	0.00	0.14	20.31	20.32	19.80	19.81	43.81	47.09	38.22	36.61
2100	0.02	0.15	19.84	19.87	25.06	24.49	39.30	50.21	42.38	36.70
2150	0.00	0.13	19.80	19.83	24.12	21.73	40.27	52.52	37.57	36.45
2200	0.01	0.15	19.77	19.79	22.26	21.38	42.90	50.37	35.32	33.96
2300	0.01	0.12	19.26	19.32	26.69	24.59	42.12	48.11	34.50	34.73
2350	0.02	0.16	19.29	19.38	23.65	22.09	45.00	44.49	35.26	34.56
2400	0.00	0.15	19.05	19.12	25.75	23.98	47.69	43.63	37.21	35.98
2450	0.00	0.14	18.74	18.89	29.74	28.55	53.53	46.30	36.09	35.23
2500	0.01	0.11	18.98	19.07	23.02	21.66	40.99	39.44	34.88	37.45
2550	0.00	0.12	18.88	18.90	24.16	22.67	41.07	40.70	37.26	39.69
2600	0.00	0.13	18.67	18.74	25.04	23.83	42.28	45.11	40.69	40.86
2700	0.01	0.12	18.30	18.41	28.45	23.91	44.84	43.13	35.14	38.23
2800	0.01	0.12	18.35	18.33	23.85	21.24	44.01	39.38	33.05	35.54
2900	0.03	0.13	18.27	18.30	21.33	19.85	39.90	35.89	29.71	31.35
3000	0.05	0.13	17.91	18.05	23.93	21.65	37.13	33.62	26.56	27.80
3100	0.05	0.11	17.67	17.84	22.68	20.93	32.83	30.95	24.85	26.08
3200	0.05	0.10	17.59	17.67	21.81	19.13	29.49	28.77	24.13	25.17
3300	0.06	0.10	17.43	17.53	20.40	19.01	26.57	25.94	23.68	24.30
3400	0.09	0.10	17.21	17.36	19.52	18.12	24.08	23.96	23.68	24.22
3500	0.08	0.10	17.12	17.12	19.32	17.44	22.95	22.68	24.18	24.55
3600	0.11	0.10	17.02	16.93	19.13	17.21	22.55	22.51	25.67	25.84
3700	0.11	0.09	16.88	16.88	18.24	16.34	22.52	22.59	25.83	25.80
3800	0.12	0.10	16.78	16.74	17.33	15.95	22.23	22.45	25.56	25.25
3900	0.12	0.10	16.65	16.59	16.47	15.38	21.98	22.57	26.56	26.20
4000	0.12	0.10	16.54	16.48	15.77	14.74	22.15	22.75	29.60	28.20
4500	0.15	0.04	16.04	15.99	15.34	12.82	29.67	34.99	26.43	25.55
5000	0.23	0.02	15.89	15.94	14.47	12.79	23.31	24.56	18.47	18.67
5500	0.28	0.06	15.95	15.90	14.35	12.38	20.55	20.98	17.97	17.84
6000	0.31	0.11	16.06	16.11	12.77	11.65	19.58	19.72	16.17	16.20
6500	0.48	0.32	16.28	16.17	9.86	8.56	14.94	14.85	12.09	12.00
7000	0.86	0.79	17.09	16.91	8.66	7.26	10.58	10.89	8.61	8.70

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Page 2 of 3



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# Bi-Directional Coupler

# SYBD-20-272HP+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @Temperature = +100°C

FREQ. (MHz)	INSERTION LOSS (dB)		COUPLING (dB)		DIRECTIVITY (dB)		RETURN LOSS (dB)			
	IN-OUT	FWD-REV	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
100	0.14	0.13	45.15	45.16	42.34	42.32	45.66	43.97	47.12	49.81
200	0.12	0.11	39.15	39.15	42.61	49.87	46.69	43.72	43.13	49.82
300	0.10	0.08	35.66	35.69	38.46	41.05	45.27	42.43	41.35	49.03
400	0.09	0.07	33.22	33.22	36.47	36.82	43.71	40.69	39.01	42.76
500	0.07	0.05	31.31	31.33	34.91	33.89	42.19	39.72	37.33	40.04
600	0.06	0.03	29.77	29.77	33.43	32.05	41.01	39.01	35.88	37.74
700	0.04	0.01	28.46	28.47	32.65	30.28	39.48	38.05	34.30	35.54
800	0.03	0.00	27.38	27.40	30.67	28.36	38.78	37.88	33.41	34.38
900	0.02	0.02	26.38	26.40	30.94	28.07	38.39	37.55	32.46	33.17
1000	0.00	0.03	25.51	25.53	30.54	27.52	37.97	37.21	31.88	32.49
1100	0.02	0.05	24.76	24.80	28.70	25.86	37.77	37.13	31.57	32.32
1200	0.03	0.07	24.12	24.13	28.00	25.09	38.33	37.02	31.59	31.96
1300	0.04	0.09	23.47	23.49	28.63	25.05	37.64	37.44	31.40	31.63
1400	0.05	0.10	22.90	22.92	27.80	24.61	36.97	37.18	31.73	31.83
1500	0.07	0.12	22.35	22.37	28.53	24.51	37.41	38.04	32.23	31.93
1600	0.08	0.13	21.99	22.02	26.06	22.93	37.96	40.00	33.49	32.51
1700	0.09	0.15	21.47	21.49	27.44	24.04	38.14	40.48	33.86	32.56
1750	0.11	0.17	21.23	21.27	26.70	23.40	38.54	40.98	33.57	32.90
1800	0.11	0.18	21.16	21.13	24.61	21.63	38.23	41.40	33.63	34.14
1900	0.15	0.21	20.92	20.89	21.31	19.39	40.61	42.16	34.48	34.86
2000	0.12	0.17	20.51	20.53	23.89	21.72	37.76	41.38	36.25	33.62
2050	0.14	0.18	20.49	20.54	21.64	19.80	40.00	43.61	35.37	34.01
2100	0.13	0.19	20.05	20.13	25.63	23.33	37.54	41.82	35.62	33.88
2150	0.17	0.20	19.99	20.07	24.53	21.86	38.99	41.26	35.31	34.71
2200	0.17	0.20	19.95	20.01	22.84	21.17	43.29	44.38	36.83	34.72
2300	0.16	0.24	19.51	19.59	24.92	22.55	40.15	44.14	34.80	38.80
2350	0.14	0.22	19.53	19.60	22.57	20.55	39.46	42.61	36.29	37.88
2400	0.17	0.22	19.33	19.32	24.79	22.37	38.79	40.14	37.09	38.96
2450	0.17	0.24	19.07	19.25	25.21	23.52	40.06	39.33	36.23	41.42
2500	0.19	0.27	19.22	19.35	21.20	20.47	43.74	39.79	35.45	47.13
2550	0.18	0.27	19.04	19.07	22.89	21.42	41.57	39.01	36.86	47.38
2600	0.18	0.28	18.89	18.99	23.66	22.13	40.01	38.23	36.91	54.31
2700	0.21	0.28	18.71	18.78	23.59	21.83	39.40	36.46	36.24	43.80
2800	0.21	0.30	18.64	18.66	21.67	20.29	41.70	37.25	33.95	37.85
2900	0.22	0.32	18.51	18.57	20.59	19.54	39.84	36.22	31.70	33.82
3000	0.25	0.33	18.20	18.31	22.69	21.65	34.99	32.73	29.32	30.51
3100	0.25	0.35	18.04	18.13	22.14	20.81	32.10	30.83	28.01	28.84
3200	0.27	0.37	17.83	17.98	21.55	19.34	30.10	29.41	25.91	26.70
3300	0.28	0.38	17.76	17.84	20.78	19.03	28.33	28.01	25.37	25.48
3400	0.30	0.41	17.54	17.66	20.90	18.68	27.09	27.12	24.82	24.74
3500	0.31	0.43	17.49	17.52	19.72	17.72	25.98	26.09	24.04	24.06
3600	0.33	0.44	17.33	17.33	19.01	17.25	24.71	25.05	24.38	23.90
3700	0.35	0.45	17.24	17.27	18.01	16.00	23.76	24.22	25.43	24.59
3800	0.37	0.46	17.12	17.09	17.36	15.48	23.09	23.74	26.63	25.59
3900	0.38	0.47	16.99	17.02	16.64	14.70	22.87	23.66	29.71	28.00
4000	0.39	0.48	16.90	16.90	16.38	14.34	23.25	23.92	32.42	29.81
4500	0.45	0.61	16.46	16.45	14.55	12.75	31.58	31.23	24.28	25.22
5000	0.55	0.73	16.36	16.40	14.80	12.82	22.88	24.00	19.79	20.48
5500	0.63	0.80	16.50	16.51	14.68	12.67	19.83	20.29	19.02	18.96
6000	0.71	0.95	16.68	16.76	12.43	10.79	19.15	19.56	16.18	16.05
6500	0.88	1.25	16.95	16.87	9.57	8.81	15.37	15.14	12.08	12.16
7000	1.37	1.70	17.74	17.62	8.16	7.82	10.88	11.21	10.13	10.46

REV. X1

SYBD-20-272HP+

090203

Page 3 of 3



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