WERBEL MICROWAVE LLC
19 West Street, Unit A
East Hanover, N.J. 07936
www.WerbelMicrowave.com

Directional Coupler, 2-4 GHz, 20dB, SMA Female

WMC-2-4-20dB-S



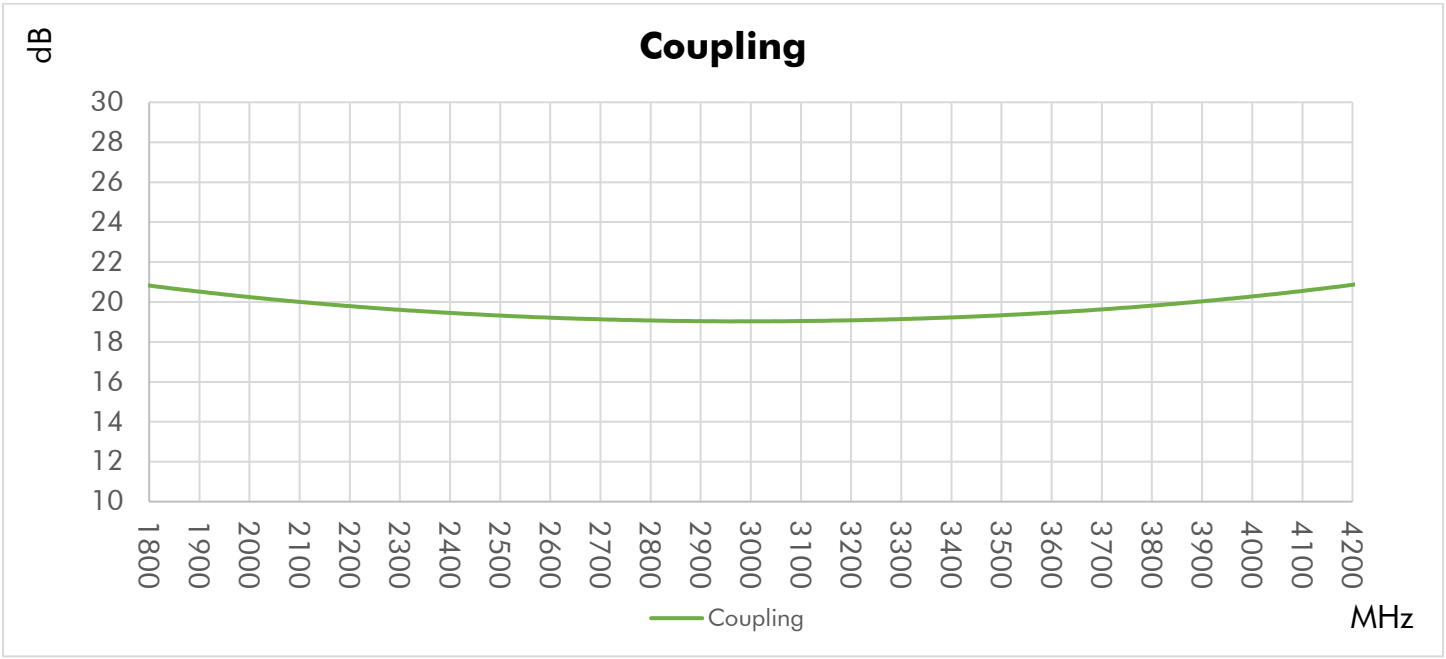
Werbel Microwave's 2–4 GHz directional couplers provide reliable RF signal sampling across a broad frequency range with excellent coupling flatness and low insertion loss. Designed for test, measurement, communications, and RF system applications, these compact couplers offer consistent performance and high power handling in a rugged package.

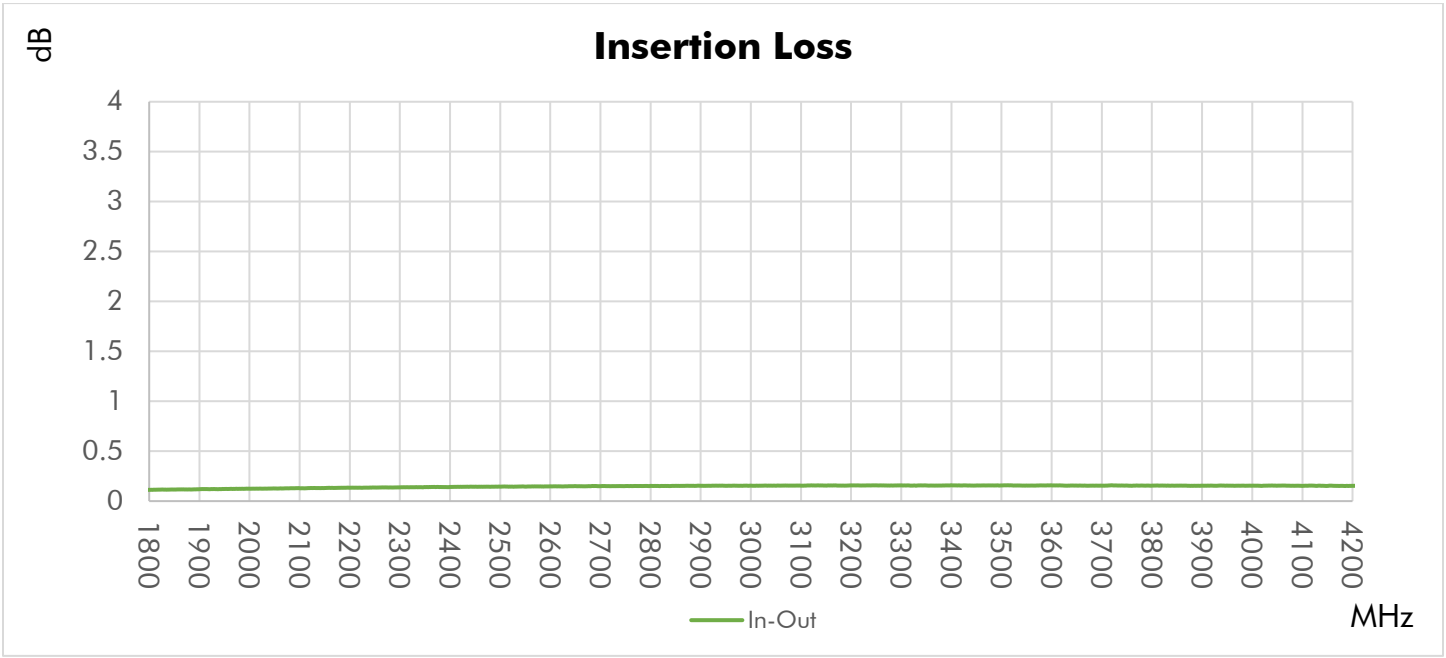
Parameter	Min.	Typ.	Max.	Unit
Frequency Range	2	-	4	GHz
Impedance		50		Ω
Coupling	-	20 ± 1.25	-	dB
Frequency Sensitivity (Flatness)	-	-	± 1.25	dB
Mainline Loss[1]	-	0.15	0.20	dB
Directivity	22	25+	-	dB
Mainline Return Loss	22	25+	-	dB
Secondary Line Return Loss	22	25+	-	dB
Isolation	-	45	-	dB
Forward Power (CW)[2]	-	-	50	W
Reverse Power (CW)[2]	-	-	37	W
Termination Power	-	-	1	W
DC Current Input-Output	-	-	1	A

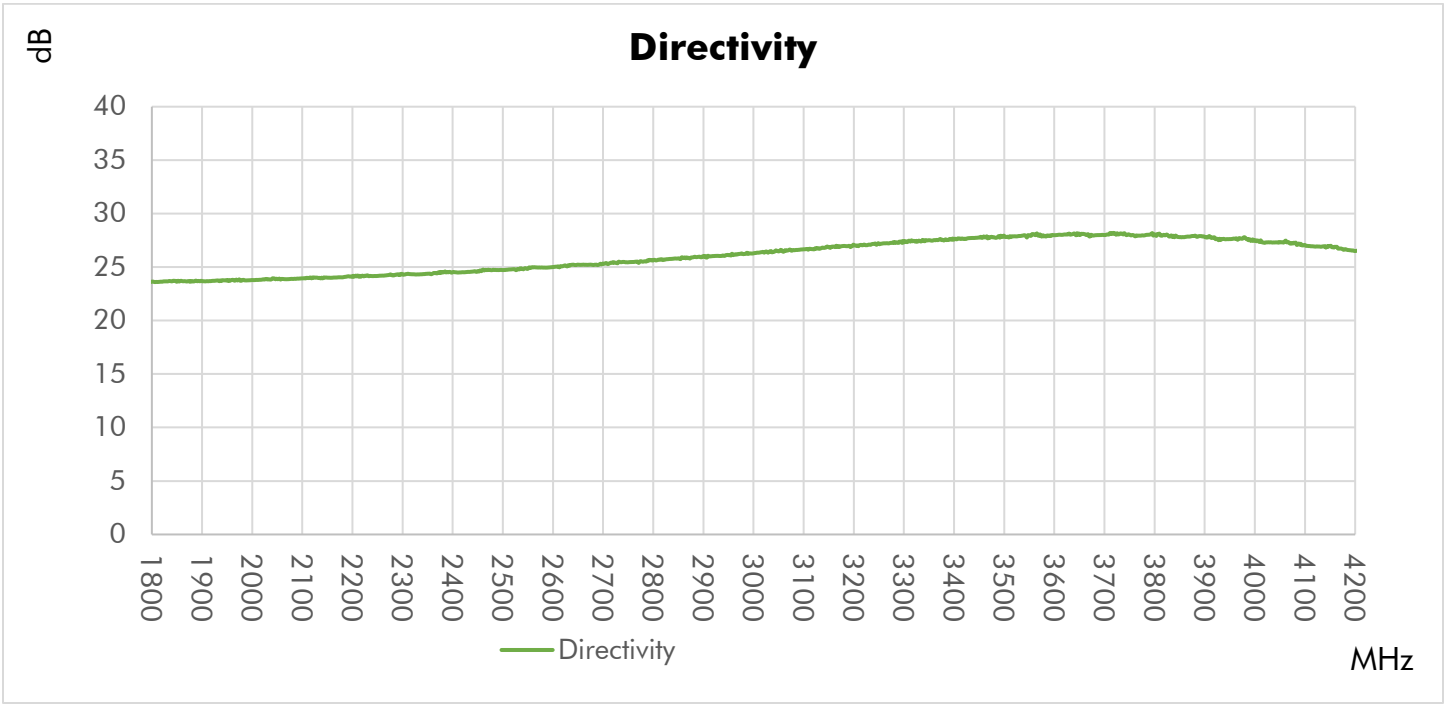
Connector Interface	SMA Female	RoHS Status[4]	RoHS3 Compliant
Operating Temperature[3]	-55 to +85 °C	REACH Status[4]	REACH Unaffected
Storage Temperature	-55 to +100 °C	Enclosure Material	Aluminum
Nominal Weight	23 g (0.8 oz)	Connectors Material	Stainless Steel
Operating Humidity	10-90% (non-condensing)	Contacts Material	Beryllium Copper, Gold Plated
Operating Environment	Indoor Use Only	Insulators Material	Virgin PTFE
HTSUS Code	8525.50.3035	Finish	Green Paint
ECCN	EAR99		

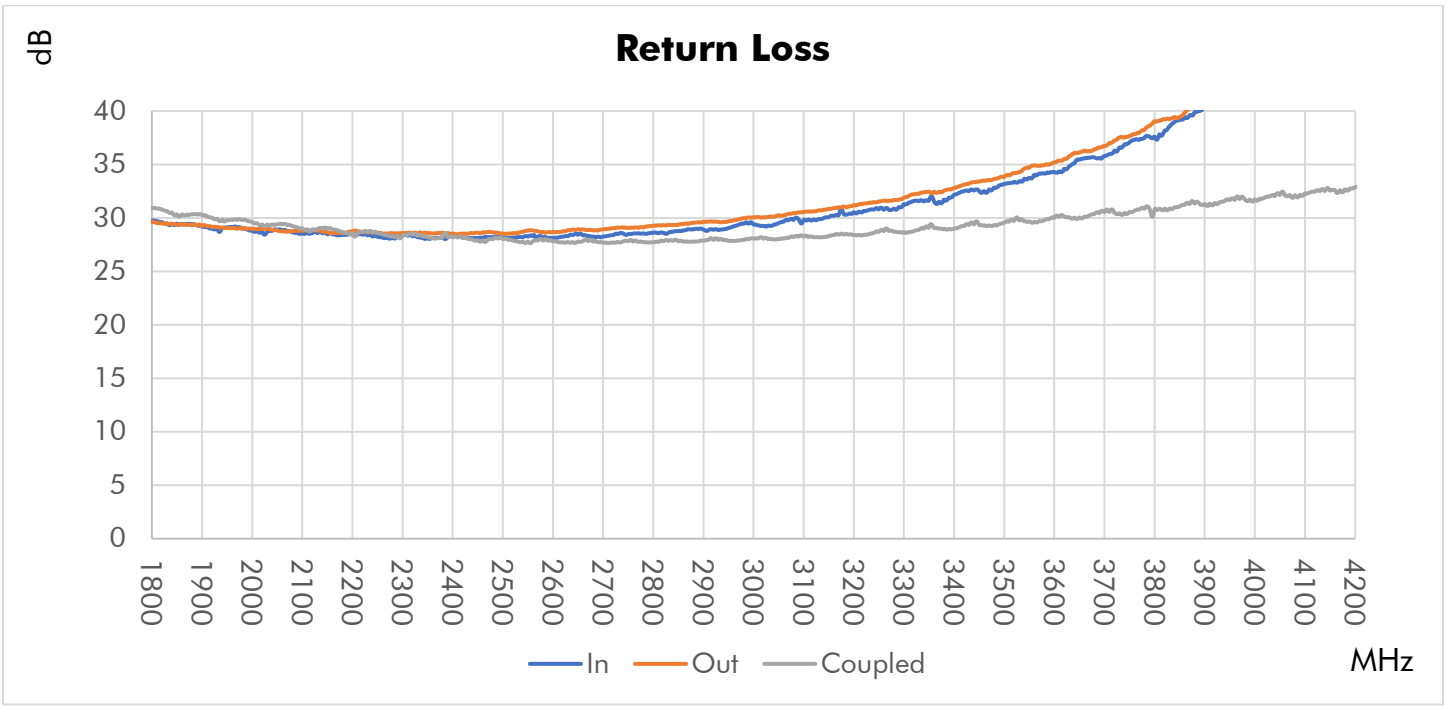
1. Mainline loss includes coupling loss.
2. All output ports should be terminated in a 50-ohm load with 1.2:1 max VSWR.
3. Electrical specifications are tested at +25 °C.
4. To the best of our knowledge at the time of publication.

Typical Performance at +25 °C

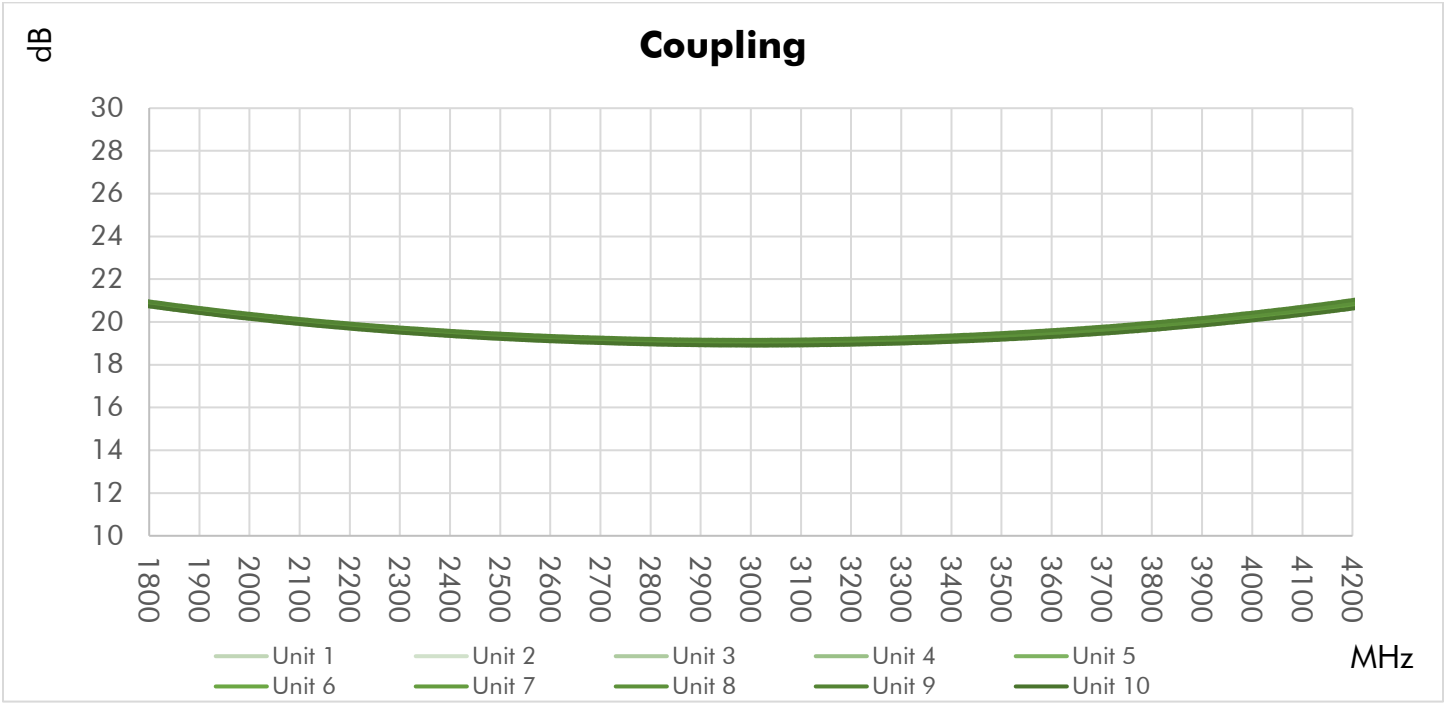


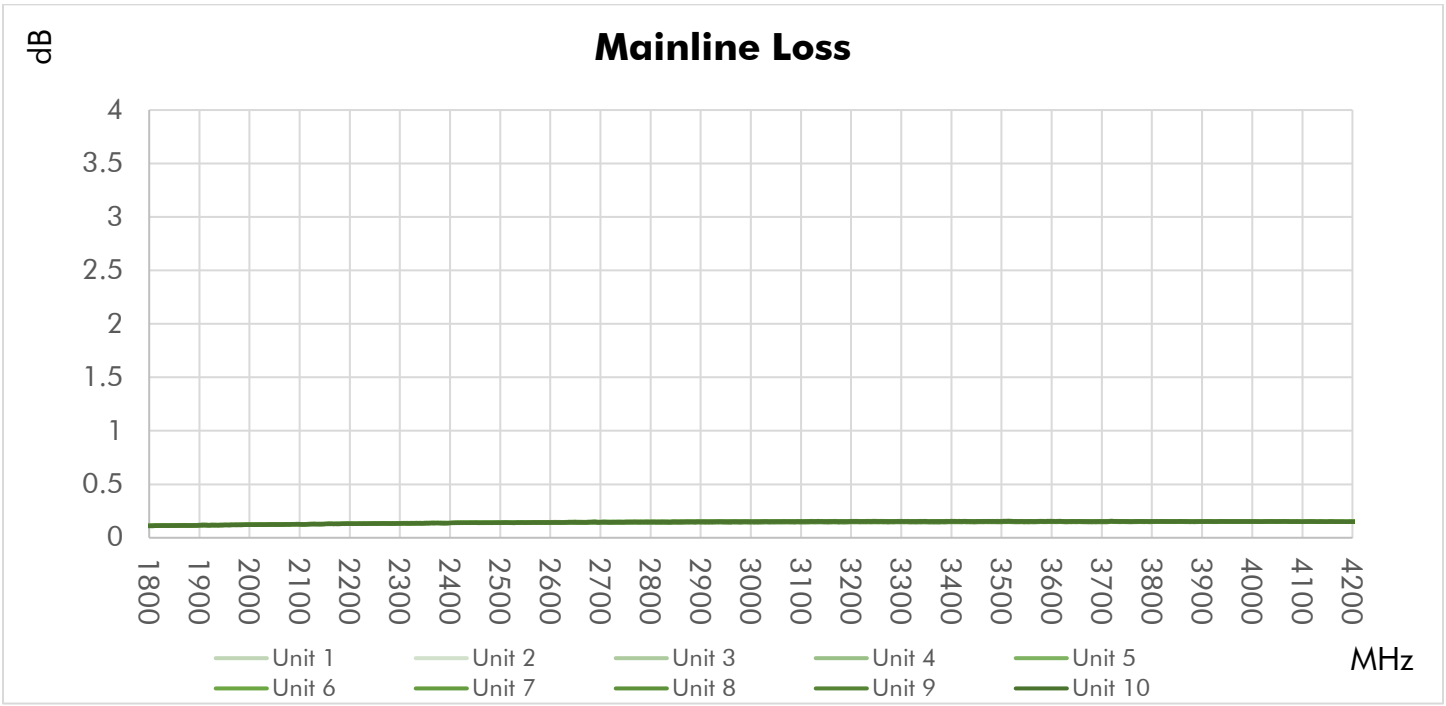


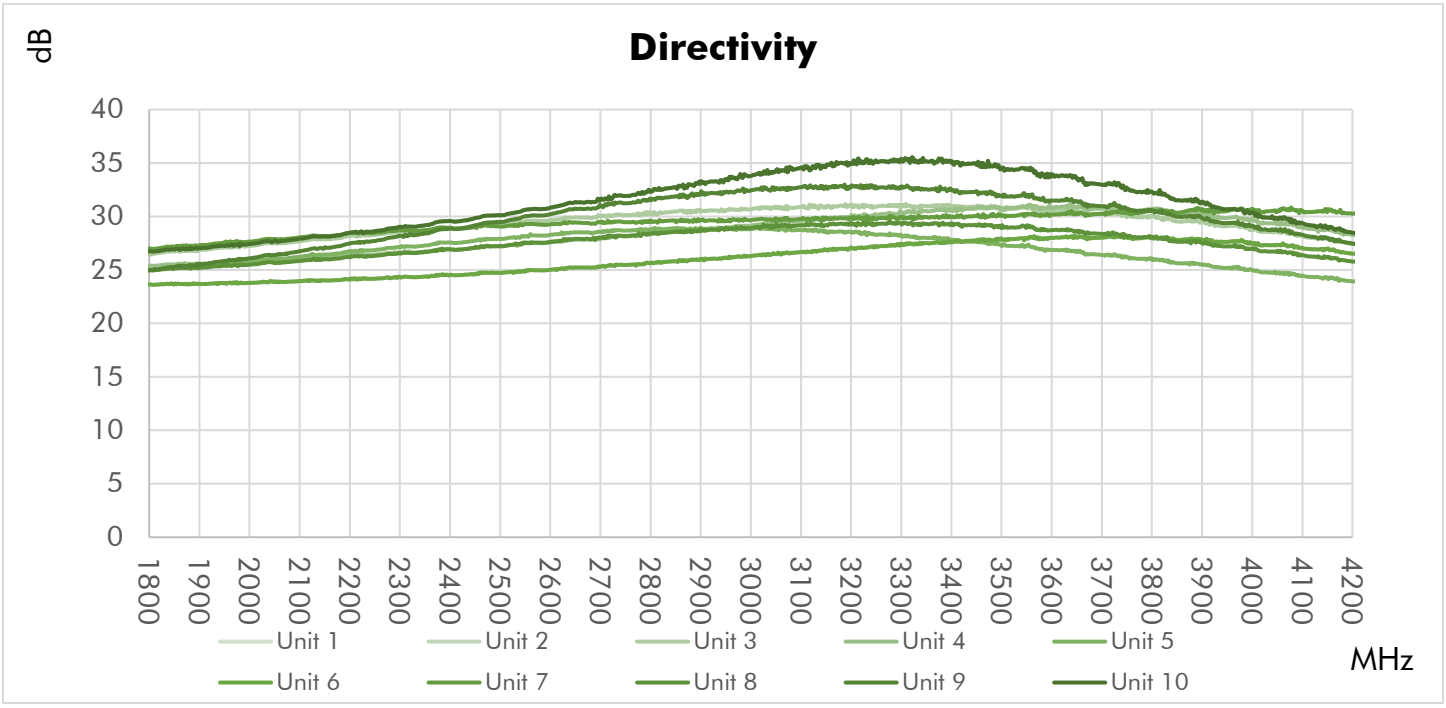

Directivity
dB
40
35
30
25
20
15
10
5
0
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900
4000
4100
4200
Directivity
MHz

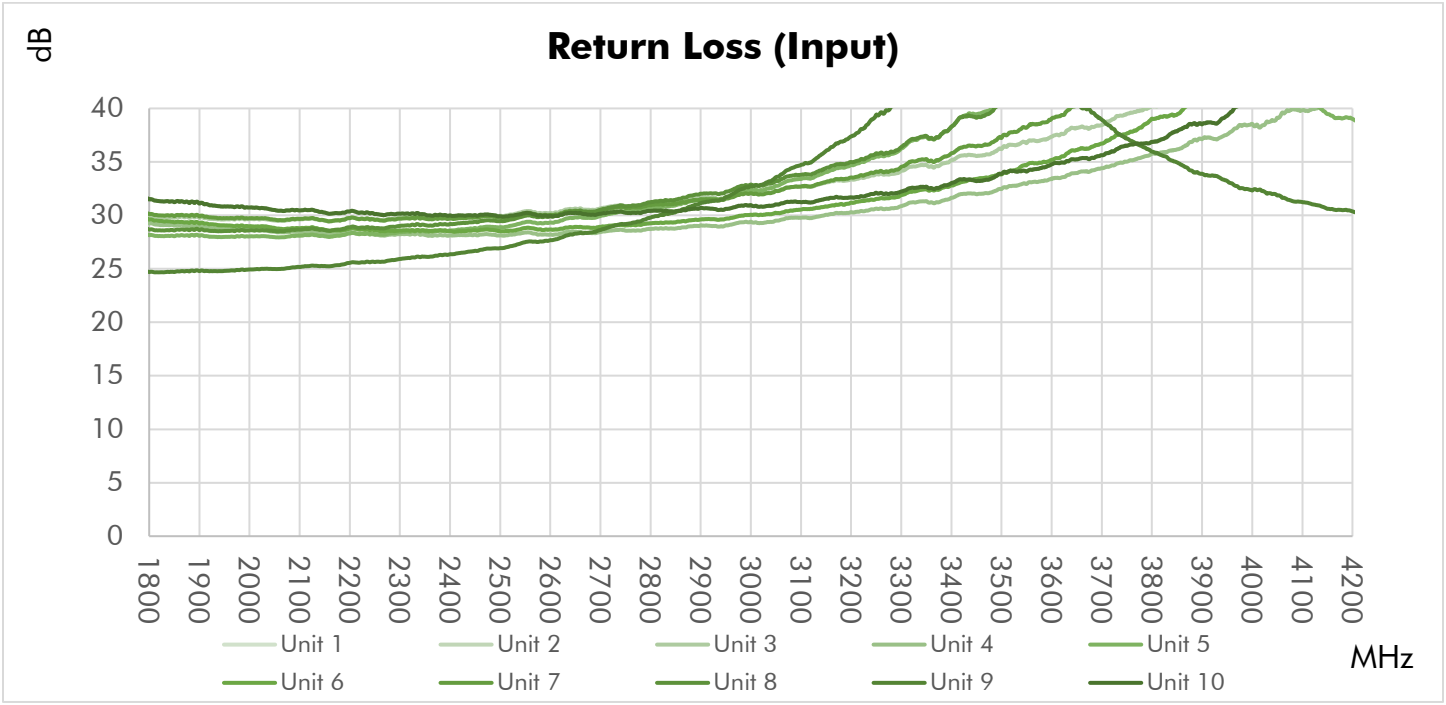

Return Loss
dB
40
35
30
25
20
15
10
5
0
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900
4000
4100
4200
In
Out
Coupled
MHz

Repeatability Among Random Samples

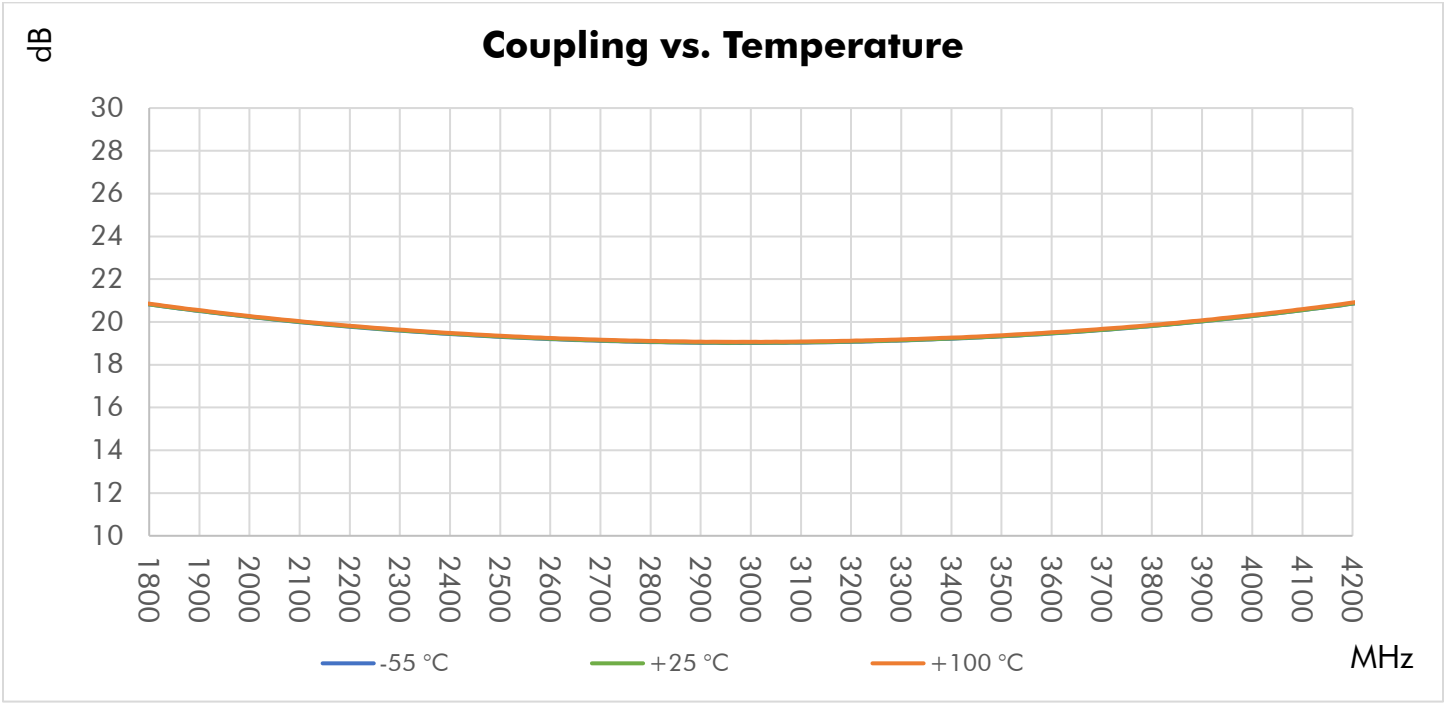


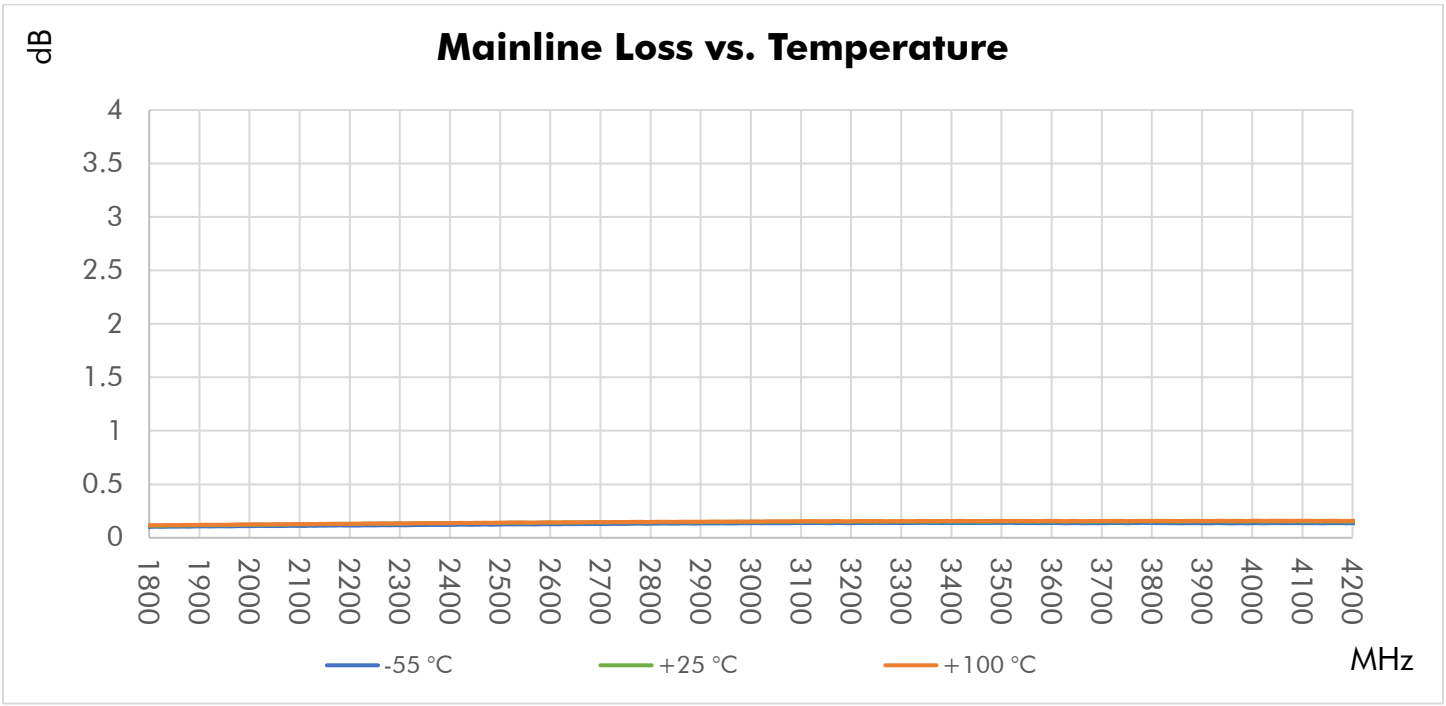


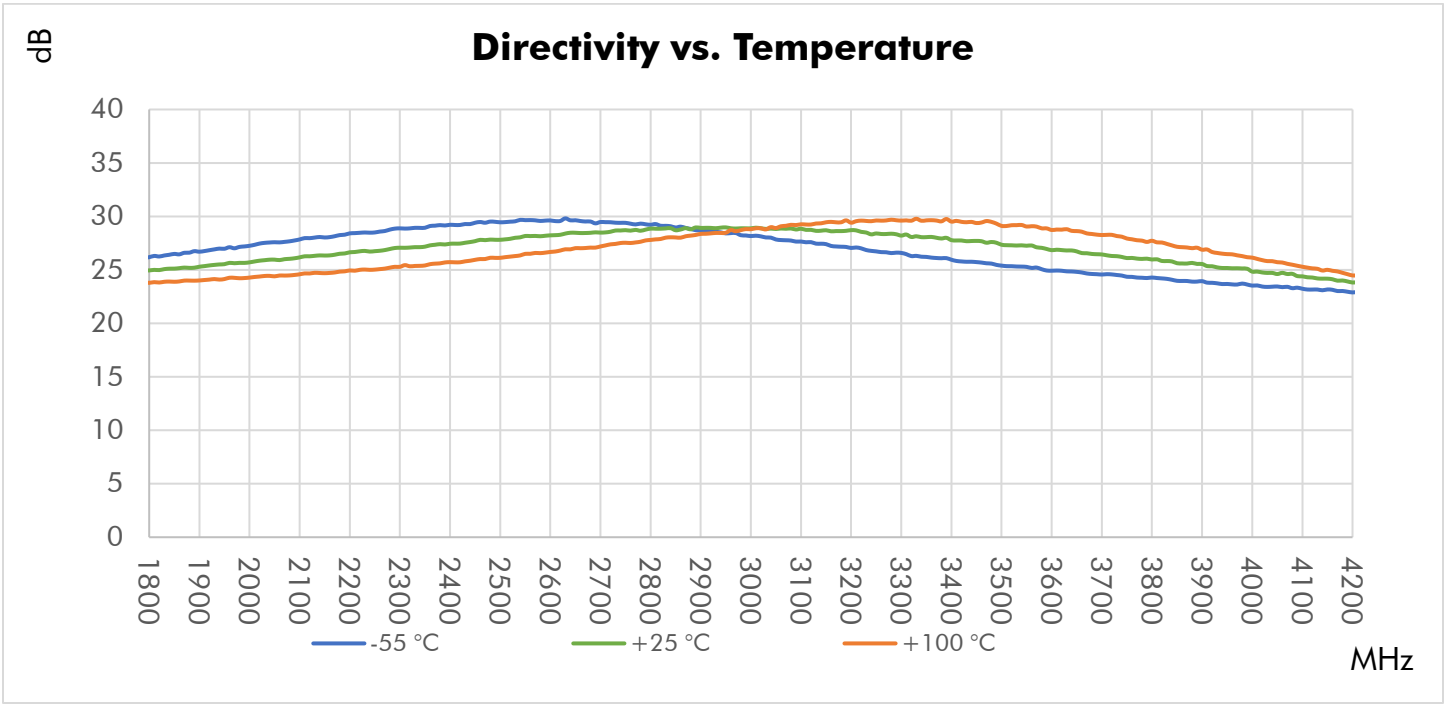

Directivity
dB
40
35
30
25
20
15
10
5
0
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900
4000
4100
4200
MHz
Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Unit 9
Unit 10

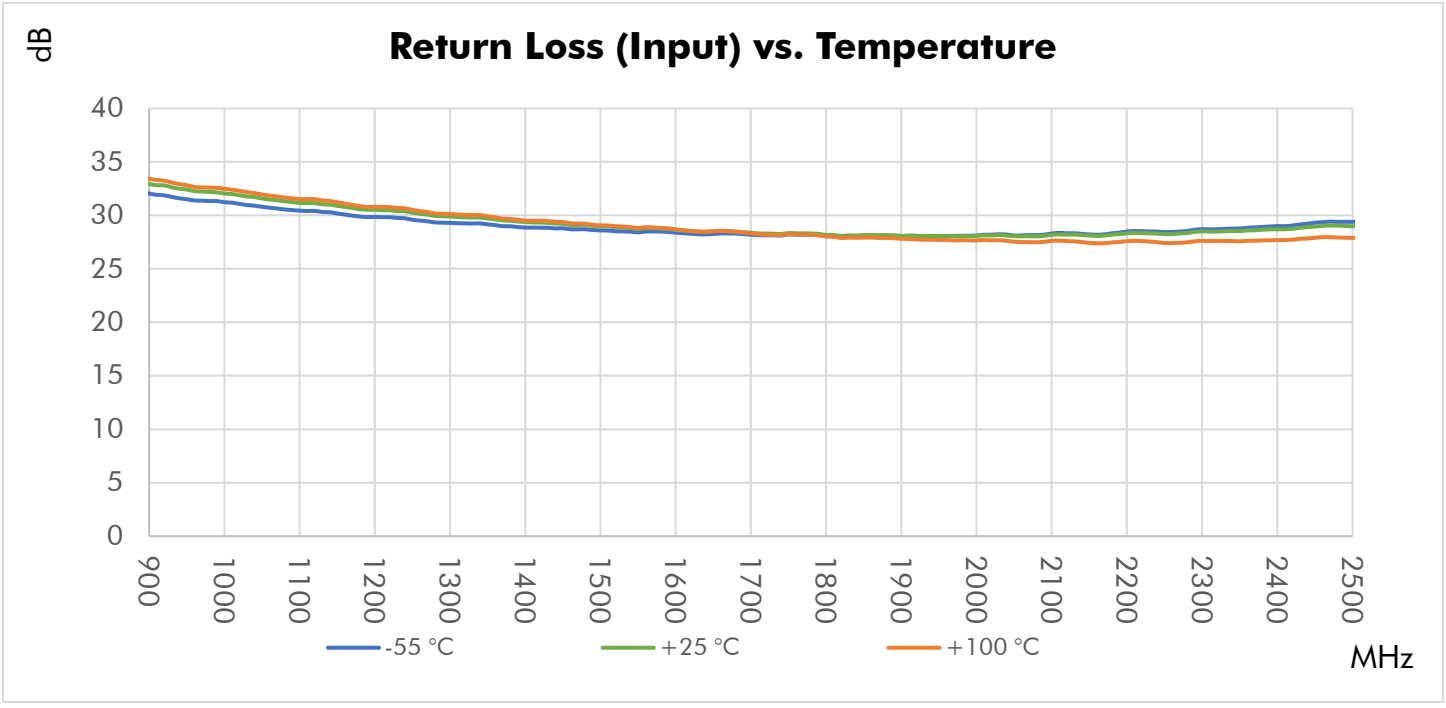

Return Loss (Input)
dB
40
35
30
25
20
15
10
5
0
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900
4000
4100
4200
MHz
Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Unit 9
Unit 10

Typical Performance Over Temperature





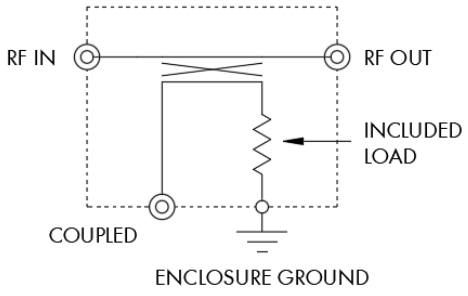

Directivity vs. Temperature
dB
40
35
30
25
20
15
10
5
0
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900
4000
4100
4200
-55 °C
+25 °C
+100 °C
MHz


Return Loss (Input) vs. Temperature
dB
40
35
30
25
20
15
10
5
0
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
-55 °C
+25 °C
+100 °C
MHz

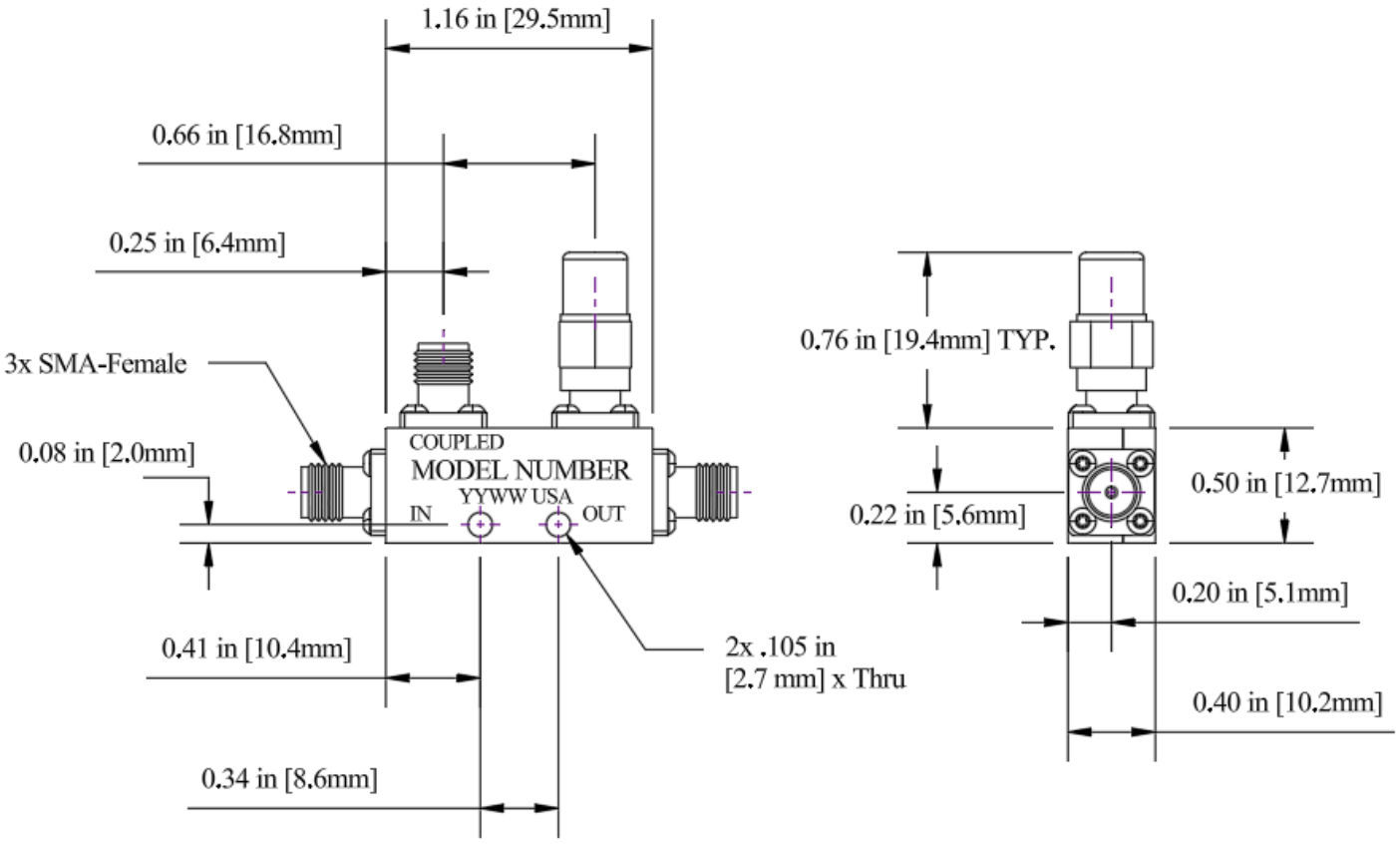
Typical Performance Data

Frequency (MHz)	Return Loss (dB)			Mainline Loss (dB)	Coupling (dB)	Directivity (dB)
	In	Out	Cpl.	In-Out	In-Cpl.	
1800	29.73	29.60	30.91	0.11	20.80	23.64
1900	29.19	29.24	30.25	0.12	20.50	23.68
2000	28.80	28.98	29.60	0.12	20.23	23.79
2100	28.53	28.79	29.02	0.13	19.98	23.95
2200	28.45	28.76	28.55	0.13	19.78	24.08
2300	28.36	28.59	28.37	0.14	19.59	24.28
2400	28.25	28.53	28.17	0.14	19.44	24.54
2500	28.12	28.52	28.00	0.14	19.31	24.73
2600	28.11	28.68	27.80	0.15	19.20	25.01
2700	28.26	28.93	27.69	0.15	19.12	25.32
2800	28.62	29.27	27.73	0.15	19.06	25.67
2900	28.89	29.62	27.85	0.15	19.03	25.97
3000	29.42	30.05	28.08	0.15	19.01	26.28
3100	29.73	30.53	28.26	0.15	19.02	26.66
3200	30.50	31.18	28.39	0.16	19.06	27.10
3300	31.26	31.87	28.66	0.16	19.12	27.45
3400	32.13	32.79	29.00	0.16	19.20	27.56
3500	33.13	33.82	29.53	0.16	19.31	27.95
3600	34.30	35.17	30.00	0.16	19.44	27.99
3700	35.77	36.72	30.53	0.15	19.60	28.00
3800	37.60	39.04	30.71	0.15	19.78	28.05
3900	40.42	41.56	31.30	0.15	19.99	27.84
4000	44.37	44.42	31.74	0.15	20.23	27.51
4100	47.83	46.47	32.29	0.15	20.51	27.08
4200	48.62	46.30	32.84	0.15	20.80	26.50

Simplified Electrical Schematic



Outline Dimensions



Dimensions are in inches, [mm] shown for convenience.
Tolerances on 2-pl decimals: ±.03. 3-pl decimals: ± .015.

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