WERBEL MICROWAVE LLC
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Directional Coupler, 6-18GHz, 30dB, SMA Female

WMC-6-18-30dB-S

Description

Model WMC-6-18-30dB-S from Werbel Microwave is a directional coupler that covers 6 to 18 GHz with broadband flat coupling response, high directivity, and excellent return loss performance. The high coupling value and short mainline minimizes lost power during the monitoring. Covers the upper half of C band, X band and Ku band in a single package measuring only 1.00 x 0.6 x 0.5 inches. Our unique design approach to couplers provides a maximally flat coupling response across the passband with minimal ripple, typically ±0.5dB or less. Directivity 14dB typical. Return loss 21dB typical. Insertion loss 0.4dB typical. Assembled and tested in USA using RoHS compliant materials, although lead solder may be used on special order to support military applications.

Photo is representative.

Specifications	Min.	Typ.	Max.	Units
Frequency	6	--	18	GHz
Impedance	--	50	--	Ohm
Coupling	--	30	±2.0	dB
Frequency Sensitivity (Flatness)	--	±0.5	±1.5	dB
Mainline Loss[1]	--	0.4	0.8	dB
Directivity	10	14	--	dB
Return Loss (In and Out)	15	21	--	dB
Return Loss (Coupling)	14	19	--	dB
Isolation	--	44	--	dB
Input Power (CW)[2]	--	--	50	Watts

Mechanical

Connector Interface	SMA-Female
Operating Temperature[3]	-55 to +85 °C
Storage Temperature	-55 to +100 °C
Weight	0.8 oz (22.7 g)
Humidity	10-90% non-condensing
Environment	Indoors Use Only

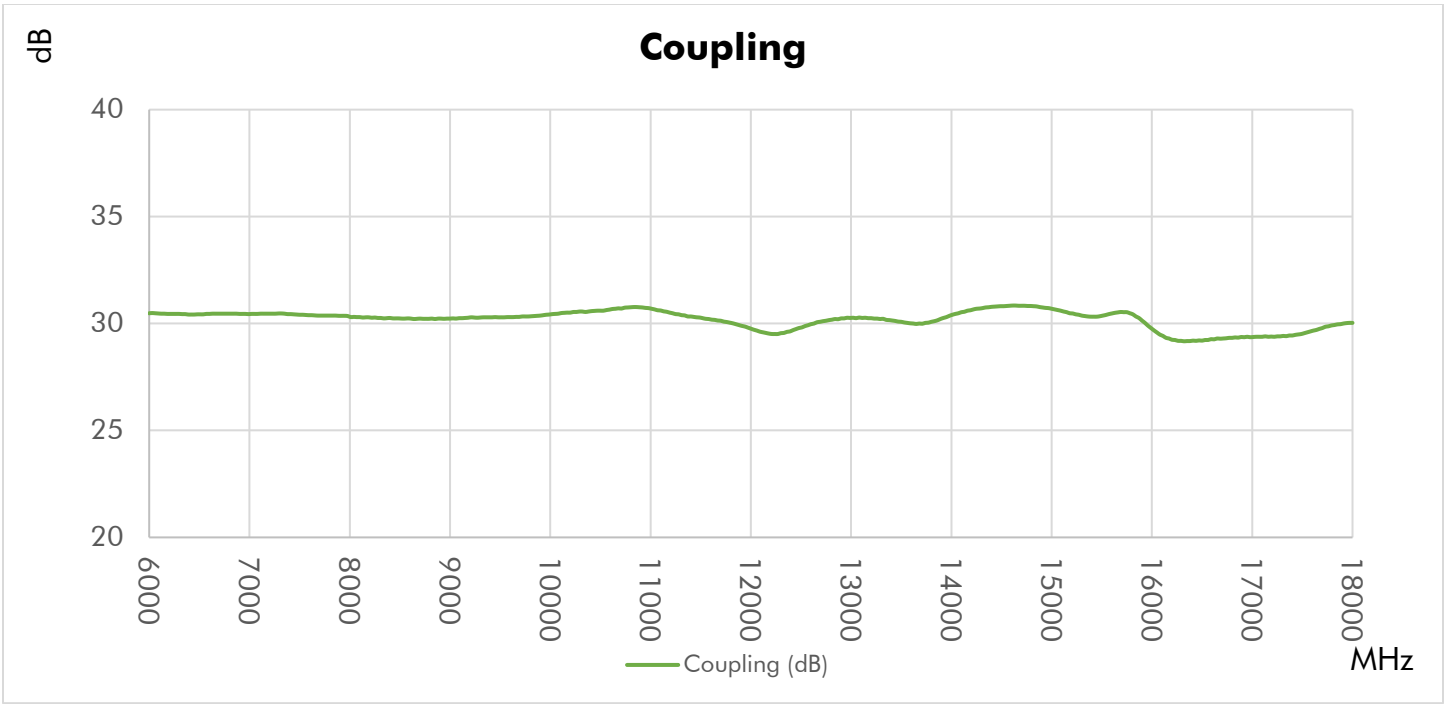
Materials

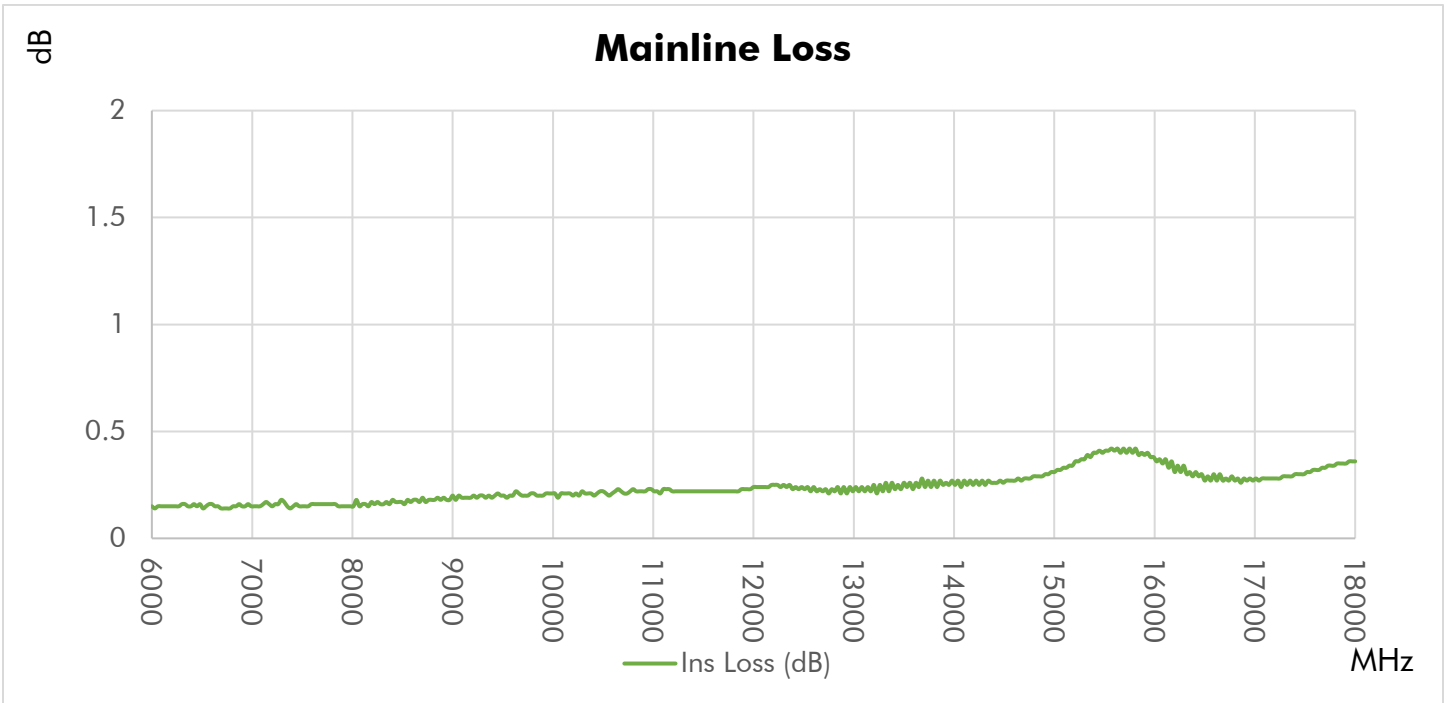
RoHS and REACH Compliant[4]

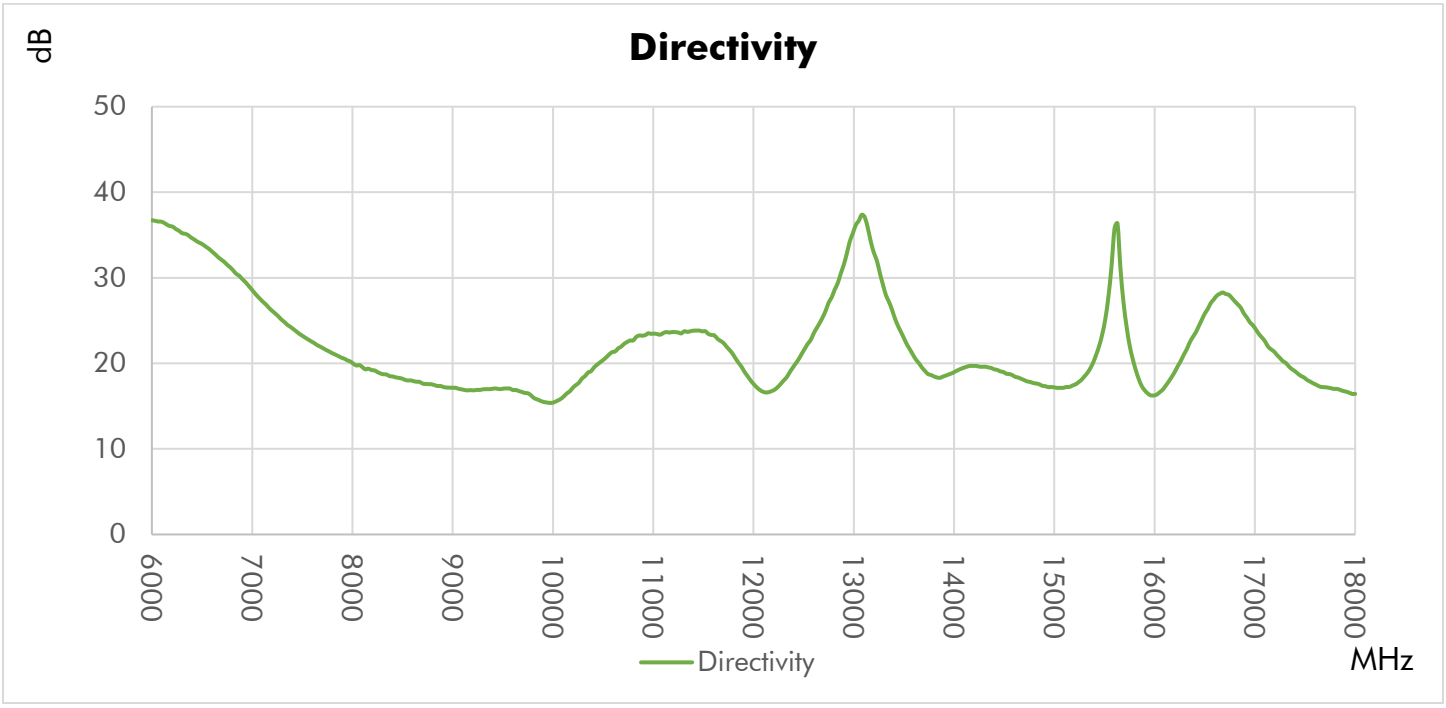
Enclosure	Aluminum
Connectors	Stainless Steel
Contacts	Be Cu, Gold Plated
Insulators	PTFE
Finish	Green Paint

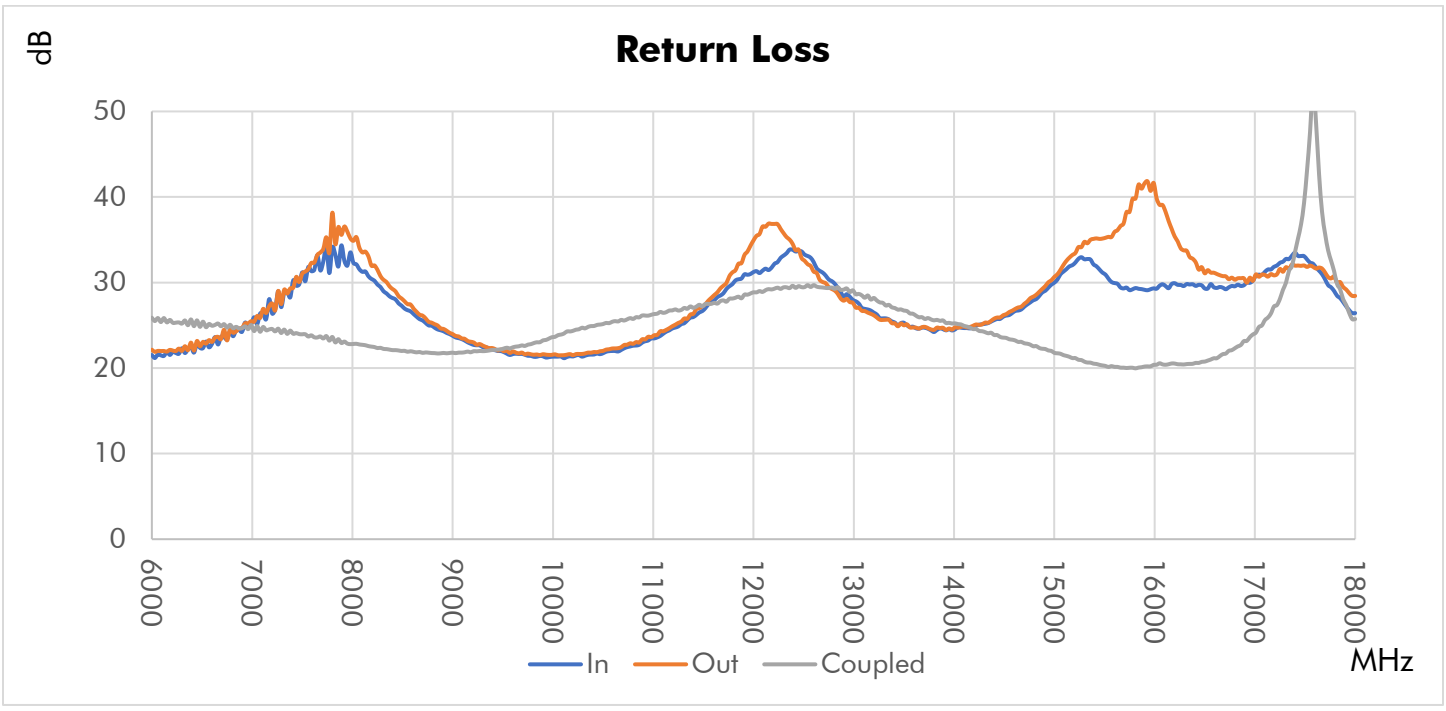
1. Mainline loss includes coupling loss.
2. All output ports should be terminated in a 50-ohm load with 1.2:1 max VSWR.
3. Electrical specifications at +25 °C only.
4. To the best of our knowledge at time of publication.

Typical Performance at +25 °C

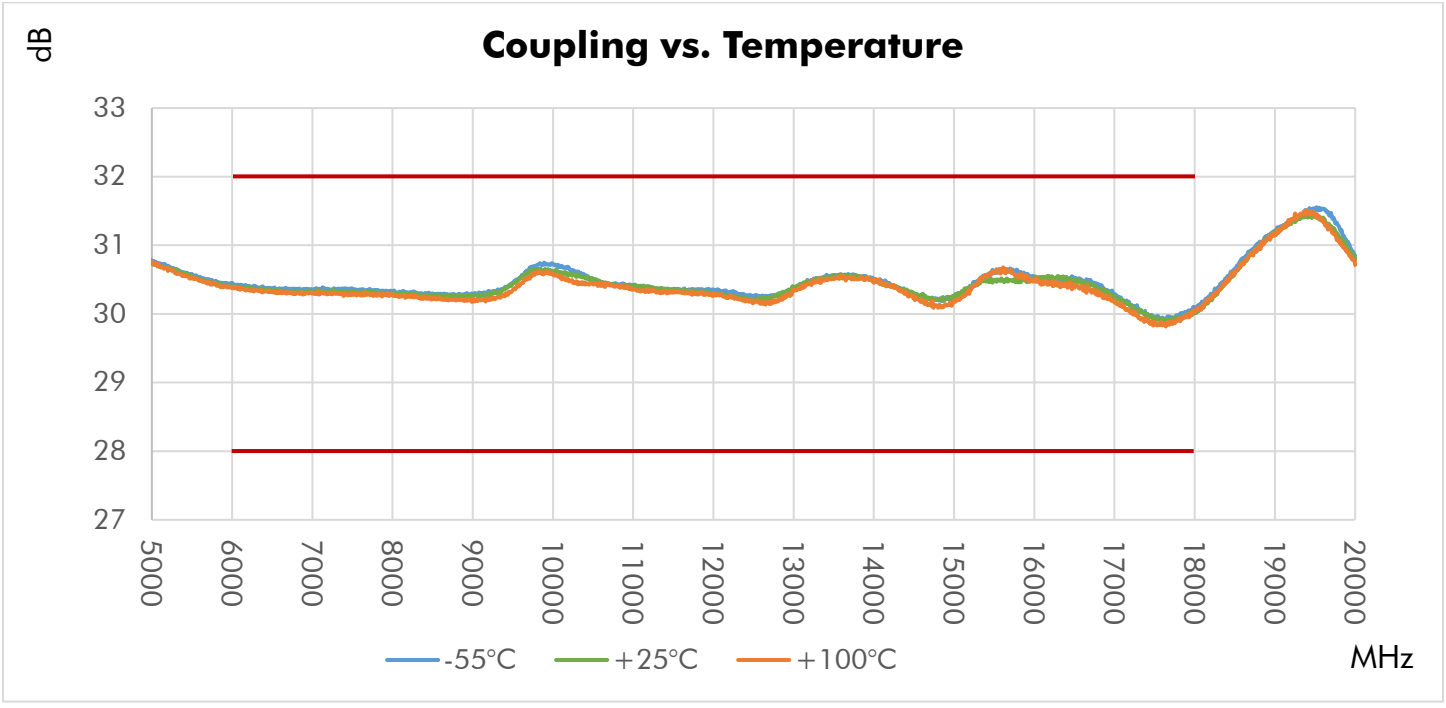


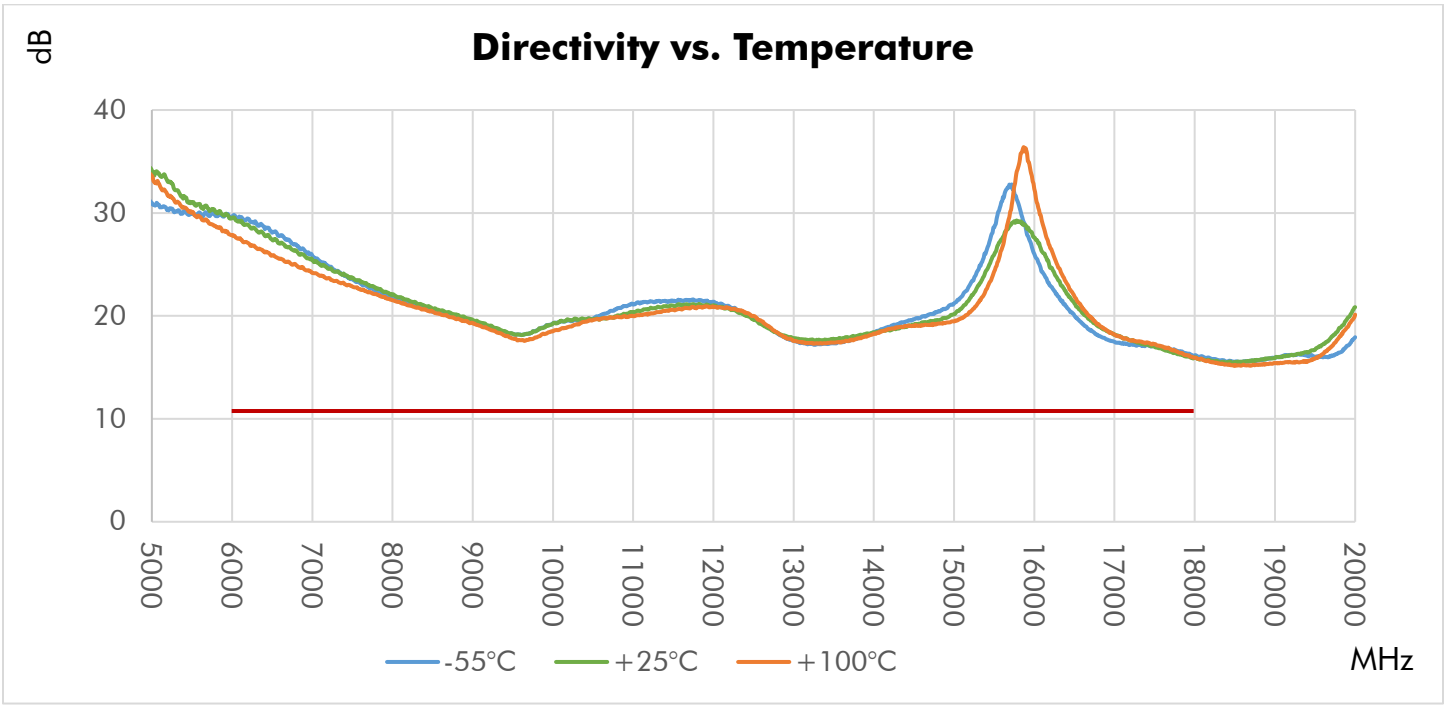


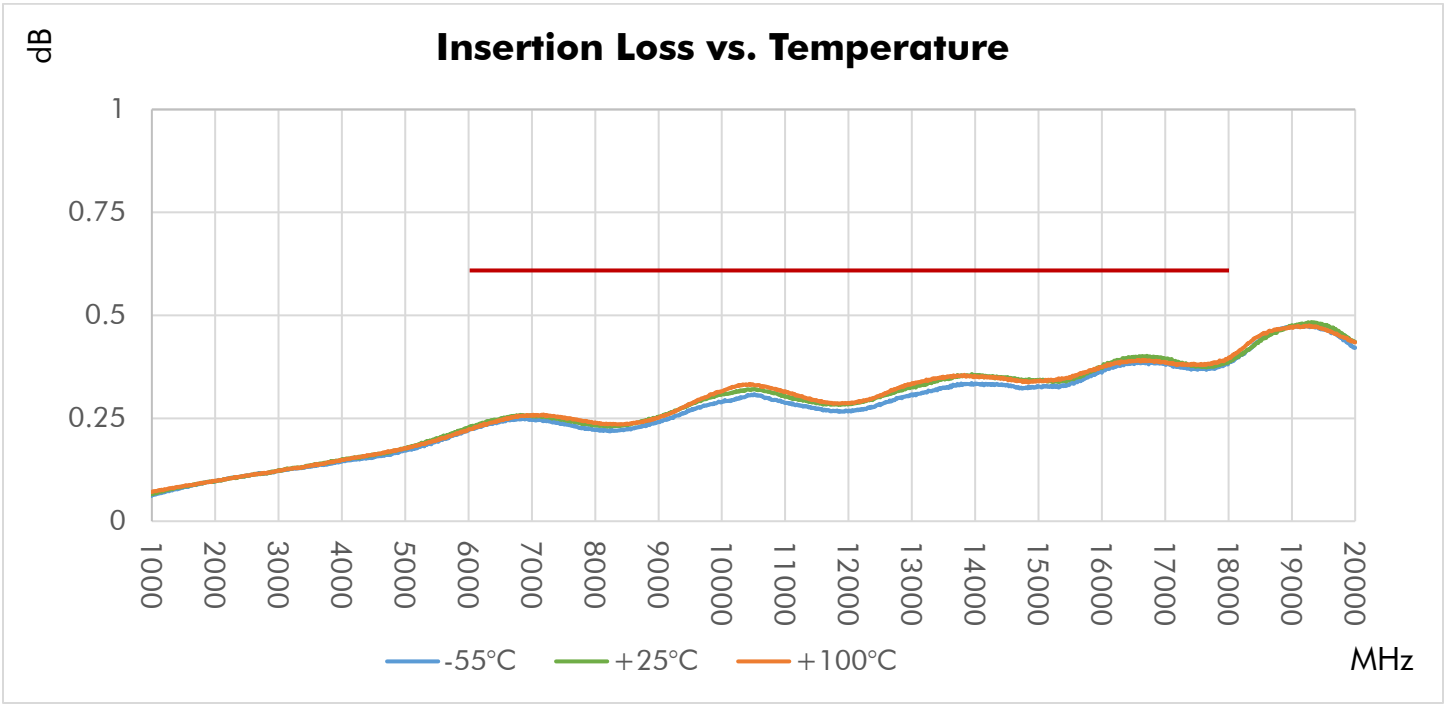

Directivity
dB
50
40
30
20
10
0
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000
16000
17000
18000
MHz
Directivity

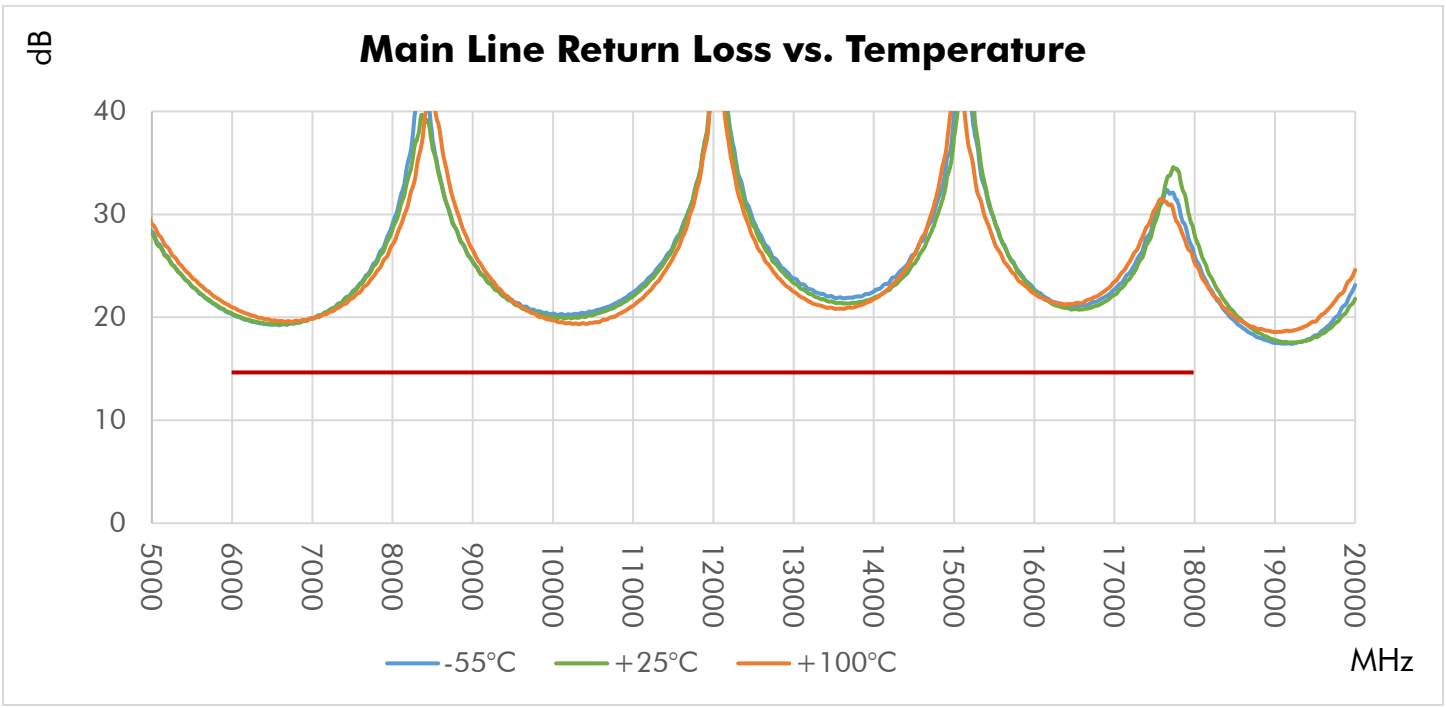

Return Loss
dB
50
40
30
20
10
0
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000
16000
17000
18000
MHz
In
Out
Coupled

Typical Performance Over Temperature

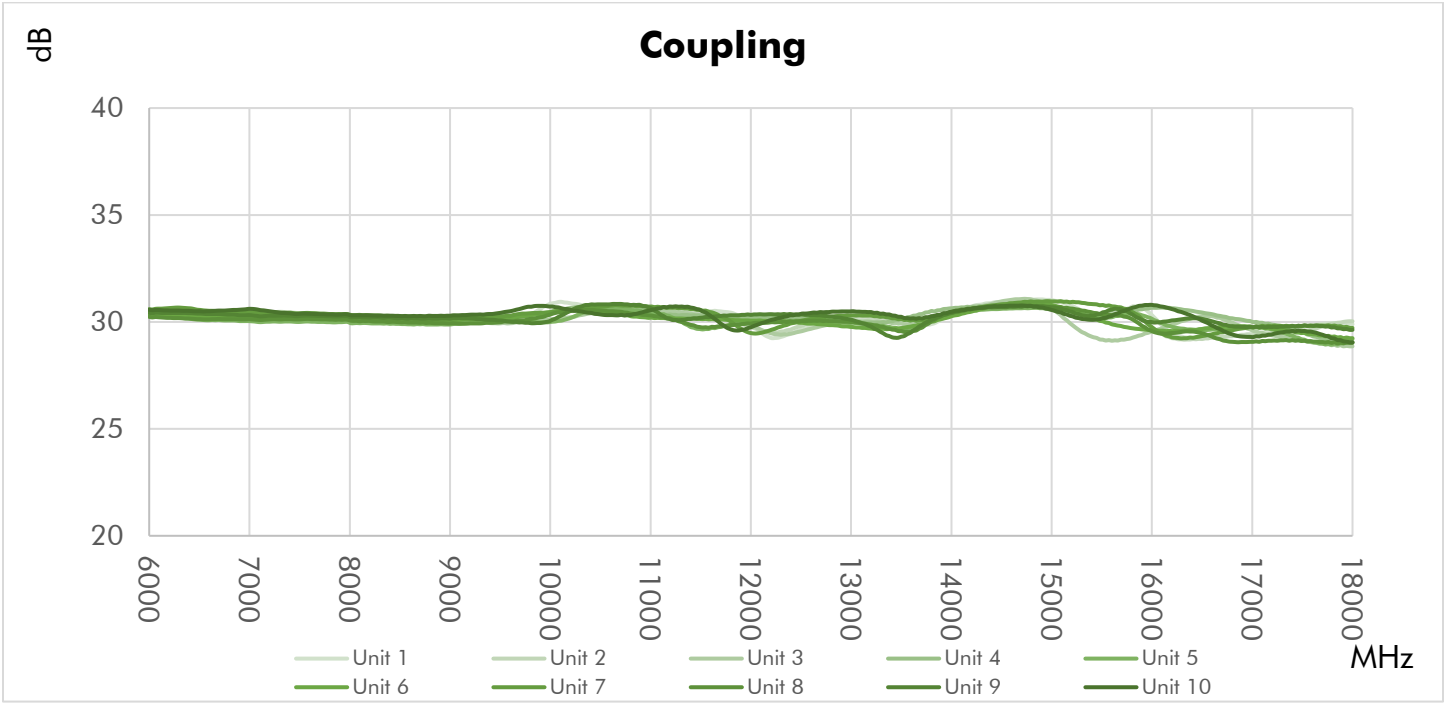


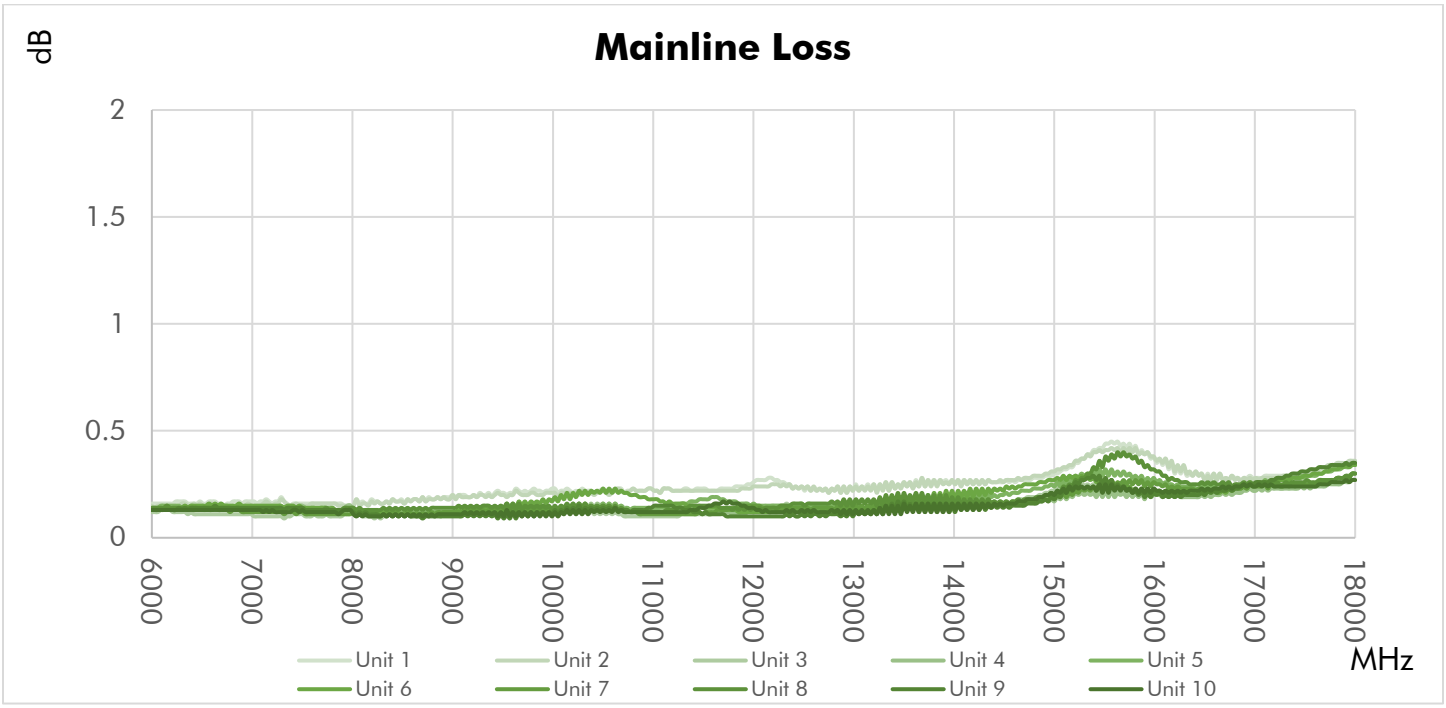



Insertion Loss vs. Temperature
dB
1
0.75
0.5
0.25
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000
16000
17000
18000
19000
20000
-55°C
+25°C
+100°C
MHz


Main Line Return Loss vs. Temperature
dB
40
30
20
10
0
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000
16000
17000
18000
19000
20000
-55°C
+25°C
+100°C
MHz

Repeatability in Production

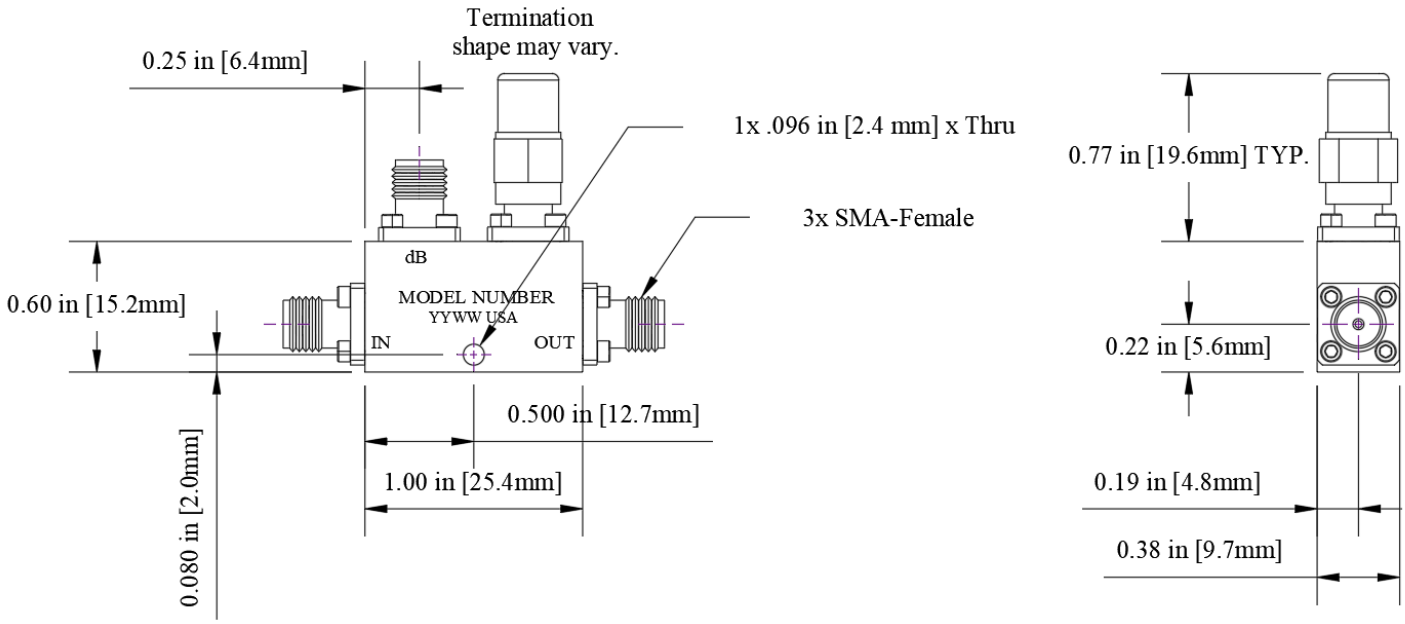




Typical Performance Data

Frequency (MHz)	Return Loss (dB)			Mainline Loss (dB)	Coupling (dB)	Directivity (dB)
	In	Out	Cpl.	In-Out	In-Cpl.	
5000	29.4	28.0	24.9	0.2	30.9	42.5
5500	24.5	23.8	21.7	0.1	30.6	30.9
6000	22.4	21.9	19.7	0.4	30.6	25.8
6500	20.6	20.9	19.4	0.0	30.2	22.9
7000	21.8	21.0	20.7	0.4	30.4	21.3
7500	23.4	22.3	25.1	0.2	30.4	20.6
8000	26.7	26.0	42.0	0.2	30.4	20.2
8500	43.8	36.3	26.8	0.3	30.2	19.9
9000	28.7	29.6	21.3	0.1	30.2	19.5
9500	23.0	22.4	19.1	0.6	30.7	19.7
10000	19.1	18.6	18.4	0.1	30.3	19.8
10500	17.3	16.9	18.6	0.5	30.9	19.8
11000	16.8	16.8	19.4	0.4	30.3	18.8
11500	18.8	19.4	20.7	0.2	30.5	18.4
12000	22.5	25.5	22.2	0.4	30.5	18.4
12500	24.9	30.5	24.4	0.3	30.1	18.4
13000	21.1	22.4	26.8	0.5	30.3	17.3
13500	18.4	19.5	23.5	0.2	30.3	18.3
14000	18.1	19.5	19.8	0.4	30.6	20.8
14500	20.1	22.1	18.6	0.4	30.6	24.0
15000	25.5	28.0	20.7	0.4	30.6	20.9
15500	31.1	26.6	29.8	0.3	30.5	15.2
16000	24.5	21.7	28.3	0.3	30.2	15.0
16500	22.4	19.8	20.7	0.4	30.5	19.3
17000	25.0	21.2	20.4	0.4	30.1	17.7
17500	37.2	25.7	24.8	0.3	29.9	16.6
18000	25.6	26.6	20.4	0.3	30.1	16.7
18500	20.4	21.2	15.3	0.3	30.5	17.8
19000	19.5	19.4	14.0	0.3	30.9	18.0
19500	21.0	19.8	15.5	0.4	31.4	17.1
20000	24.8	22.4	20.4	0.4	31.1	17.3

Outline Dimensions



Outline # OL-1006
Dimensions are in inches, [mm] shown for convenience.
Tolerances on 2-pl decimals: ±.03. 3-pl decimals: ± .015.