

Directional Coupler, 6-18GHz, 20dB, SMA Female

WMC-6-18-20dB-S

Description

Model WMC-6-18-20dB-S from Werbel Microwave is a directional coupler that covers 6 GHz to 18 GHz with broadband flat coupling response, high directivity, and excellent return loss performance. Small enclosure measures just 1.00 x 0.60 x 0.38 inches with SMA-Female connectors. The device is RoHS compliant. Typical coupling ripple performance is ± 0.30 dB and is the result of Werbel Microwave's specially engineered coupling structure, which provides high accuracy in measurements. Insertion loss 0.57dB typical. Directivity 16dB typical. Return loss 20dB typical. The device covers X band and Ku band and may be built using lead solder, if required, on special order, as such to mitigate tin whiskers. Such reliability efforts are vital to the support of military applications. The product is designed, assembled, and tested in the USA.



Photo is representative.

Specifications	Min.	Typ.	Max.	Units
Frequency	6	--	18	GHz
Impedance	--	50	--	Ohm
Coupling	--	20	± 1.25	dB
Frequency Sensitivity (Flatness)	--	± 0.30	± 1.00	dB
Mainline Loss ¹	--	0.37	0.65	dB
Directivity	12	16	--	dB
Return Loss (In and Out)	15	20	--	dB
Secondary Line Return Loss	14	18	--	dB
Isolation	--	36	--	dB
Max Power (CW) ²	--	--	50	Watts

Mechanical

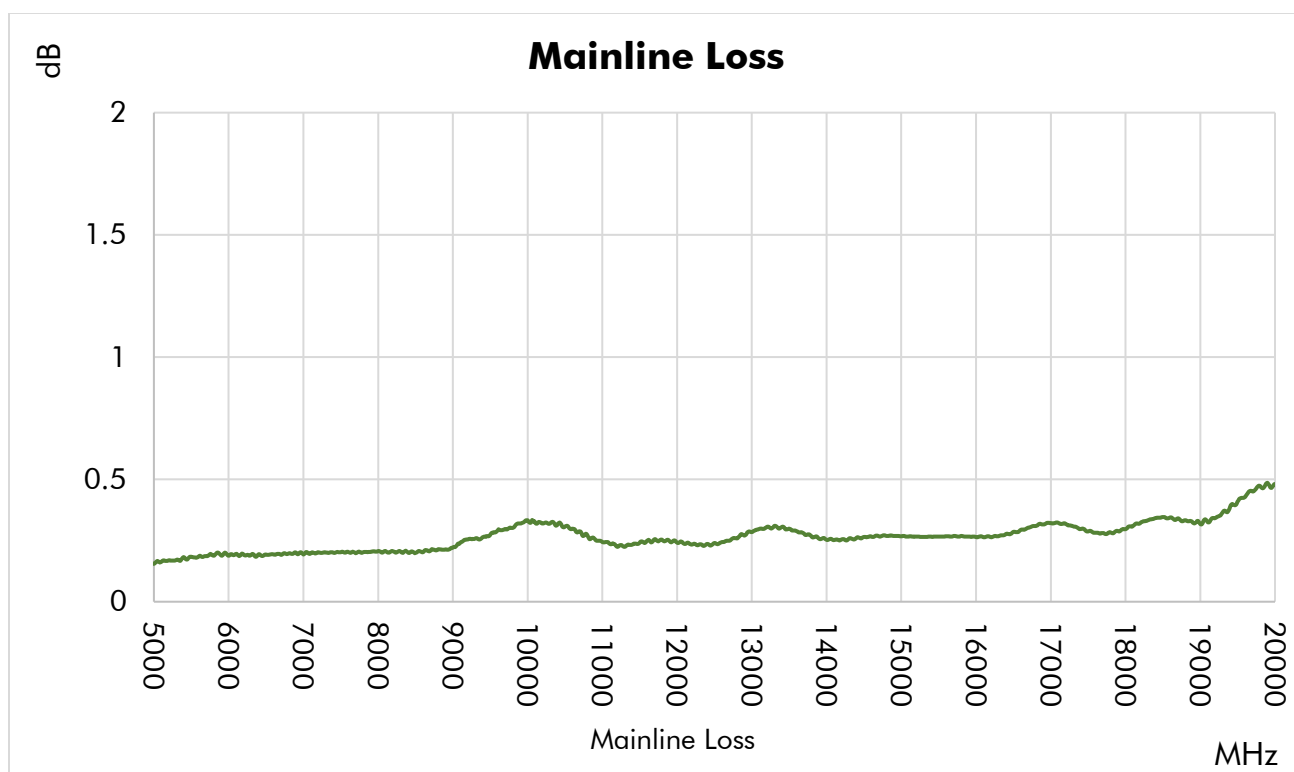
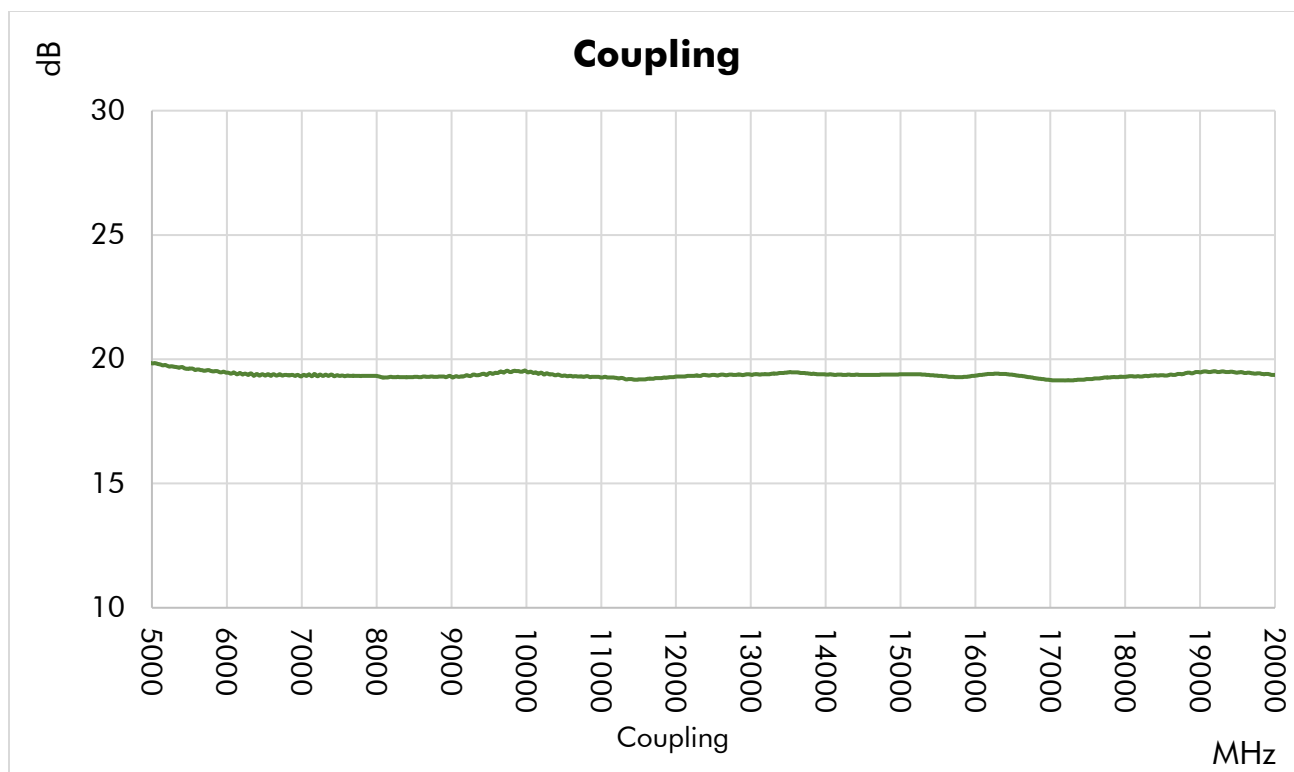
Connector Interface	SMA-Female
Operating Temperature ³	-55 to +85 °C
Storage Temperature	-55 to +100 °C
Weight	0.8 oz (22.7 g)
Humidity	10-90% non-condensing
Environment	Indoors Use Only

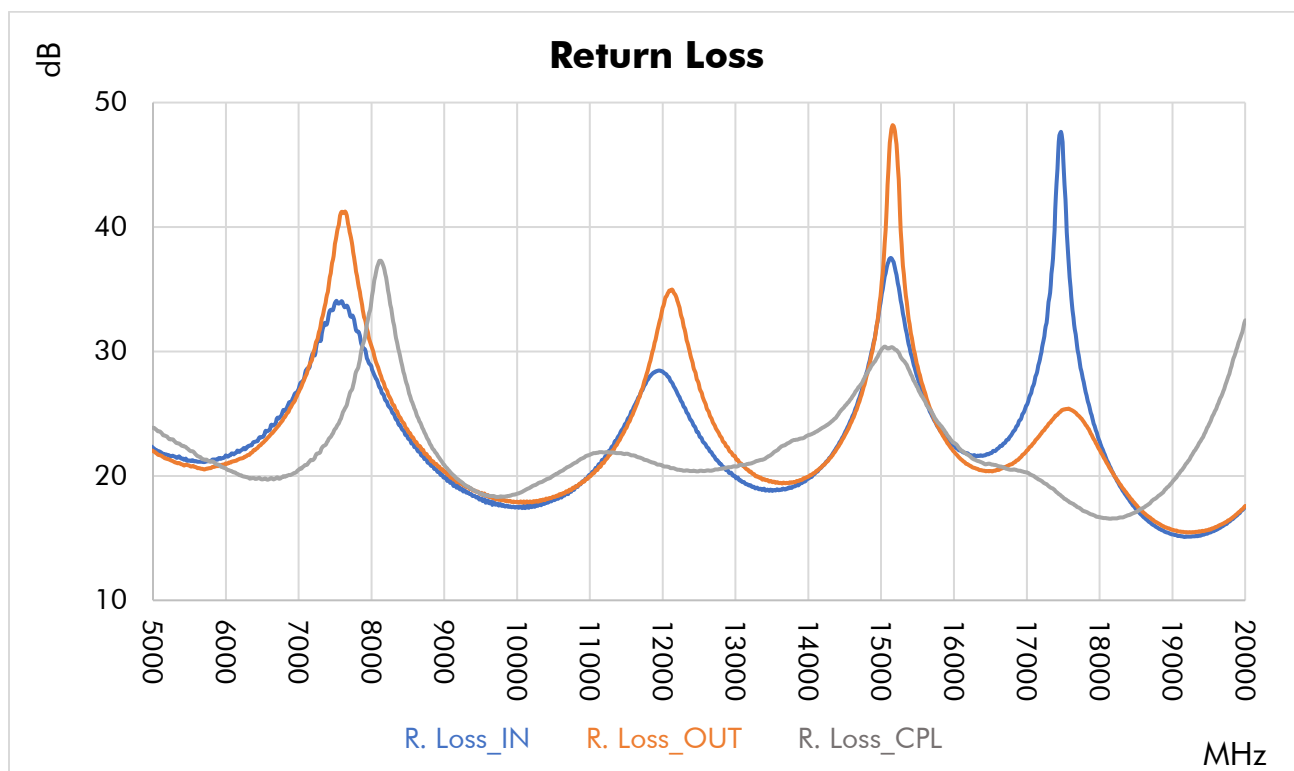
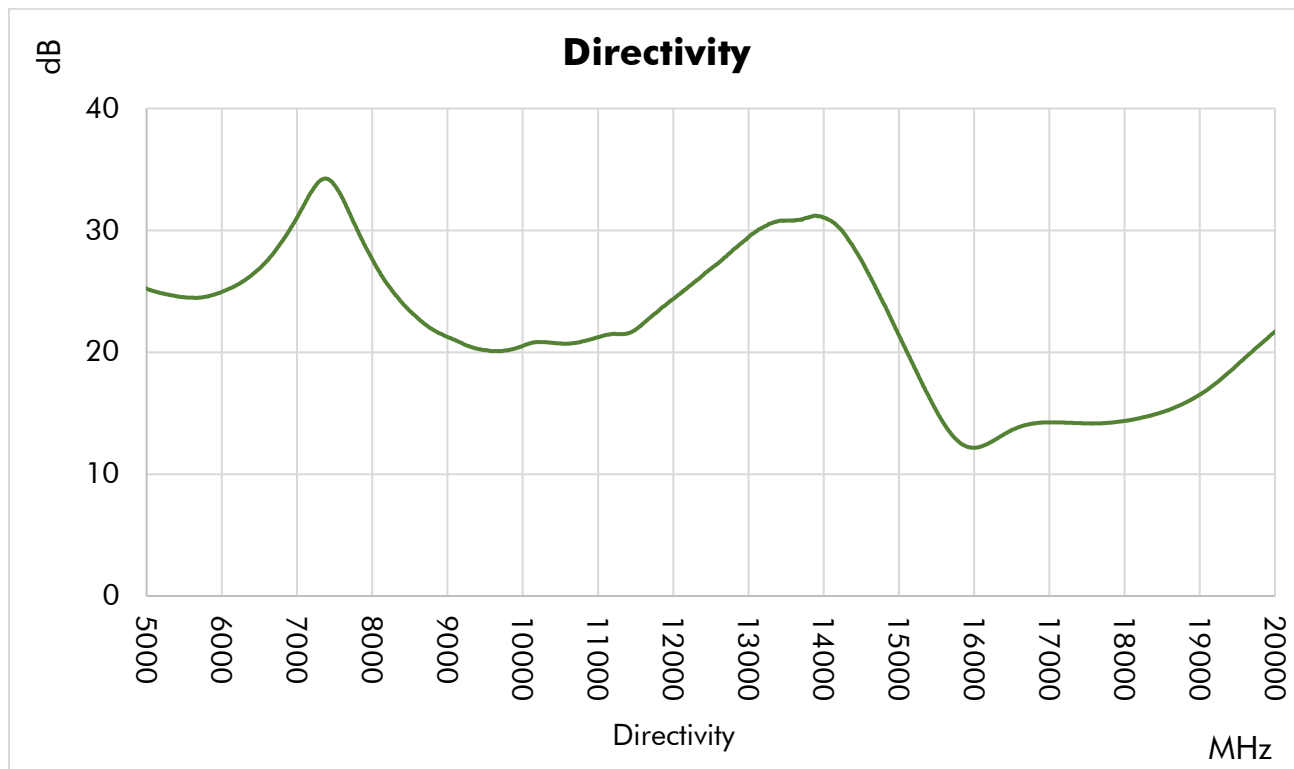
1. Mainline loss includes coupling loss.
2. All output ports should be terminated in a 50-ohm load with 1.2:1 max VSWR.
3. Electrical specifications at +25 °C.
4. To the best of our knowledge at time of publication.

Materials

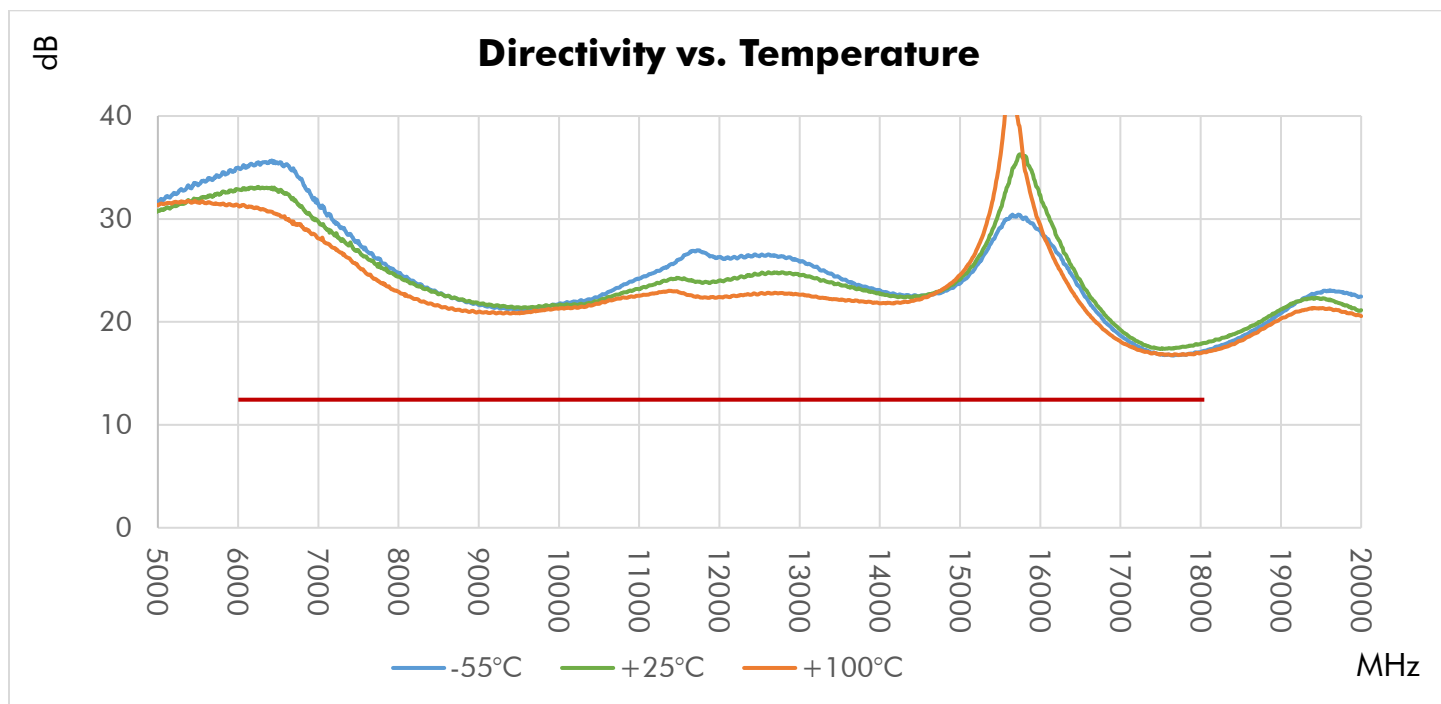
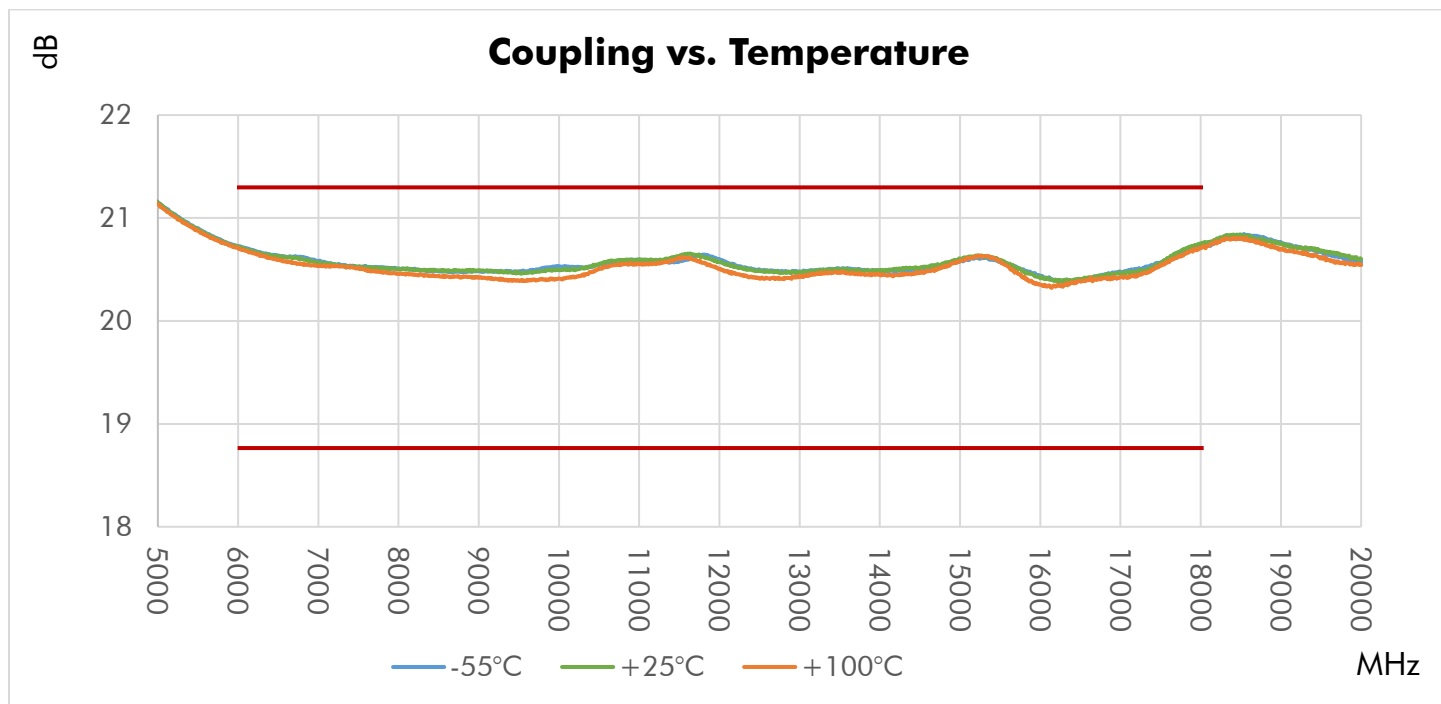
RoHS and REACH Compliant ⁴	
Enclosure	Aluminum
Connectors	Stainless Steel
Contacts	Be Cu, Gold Plated
Insulators	PTFE
Finish	Green Paint

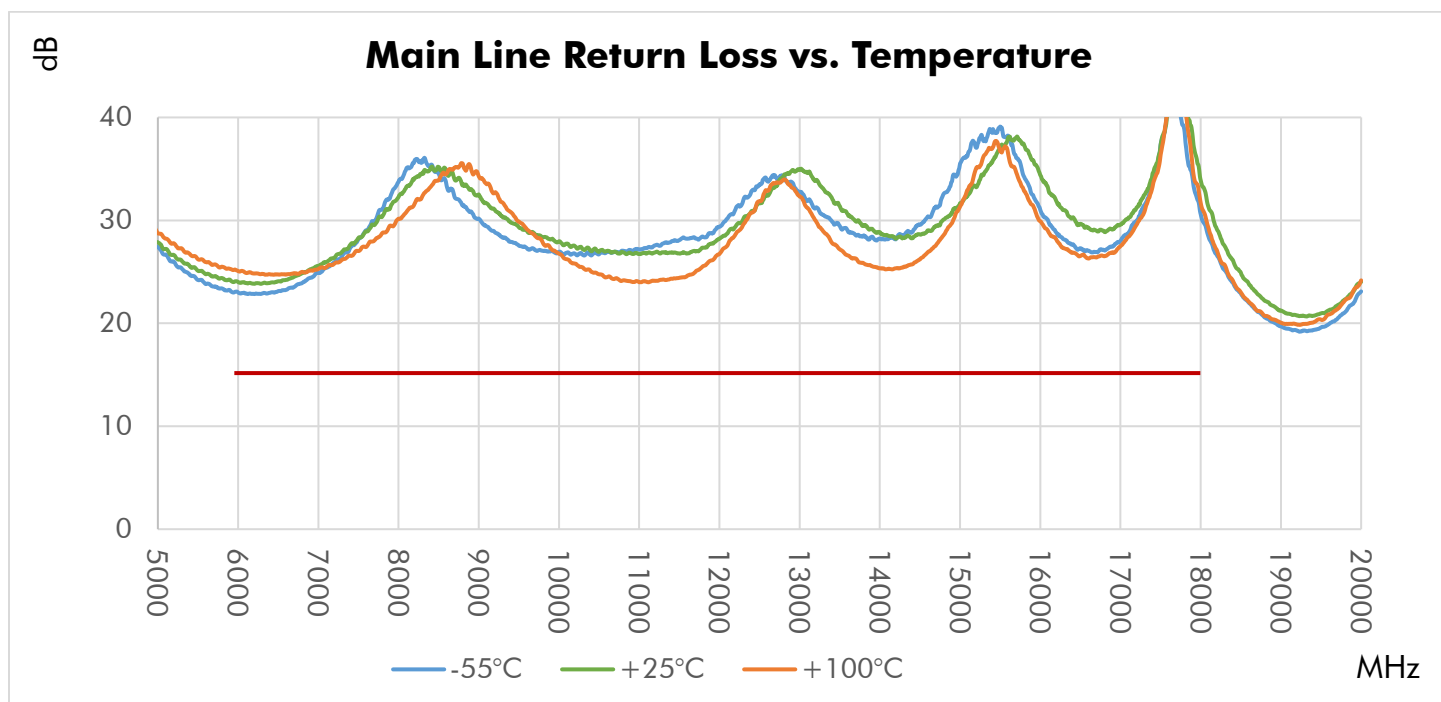
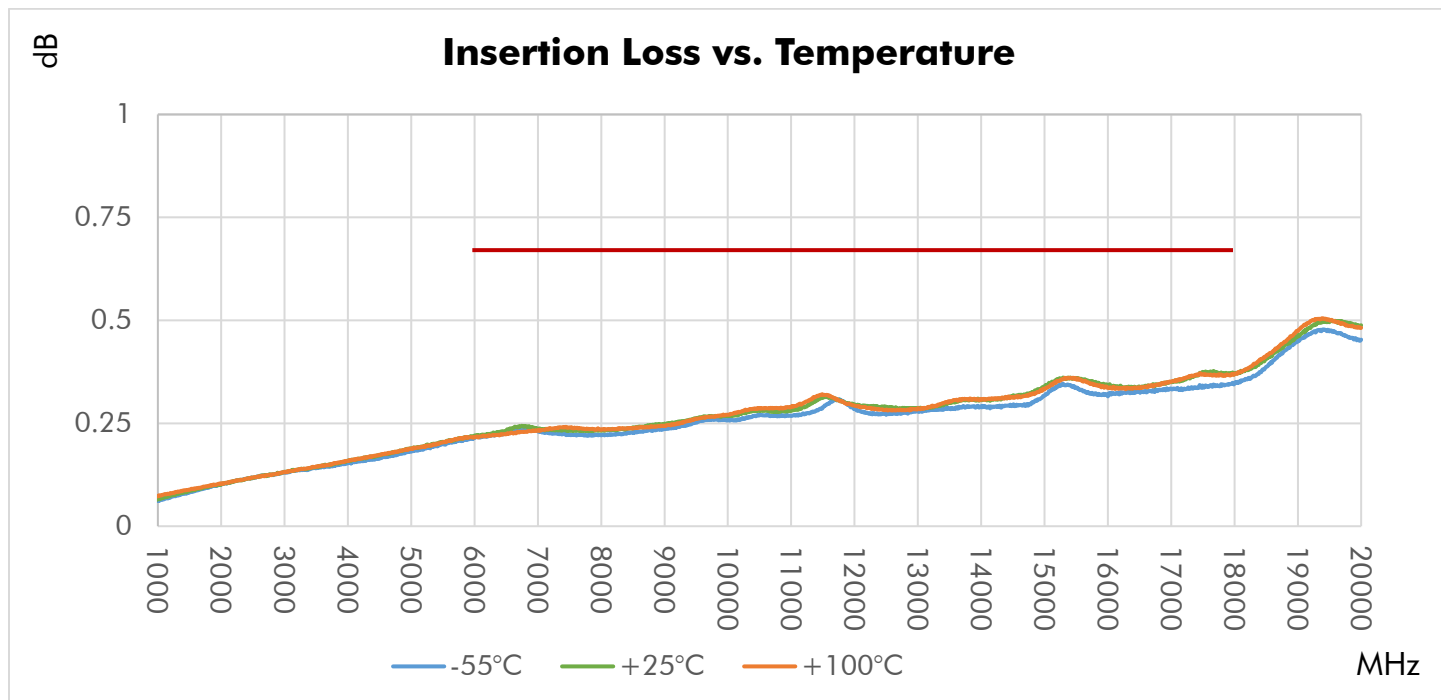
Typical Performance at +25 °C



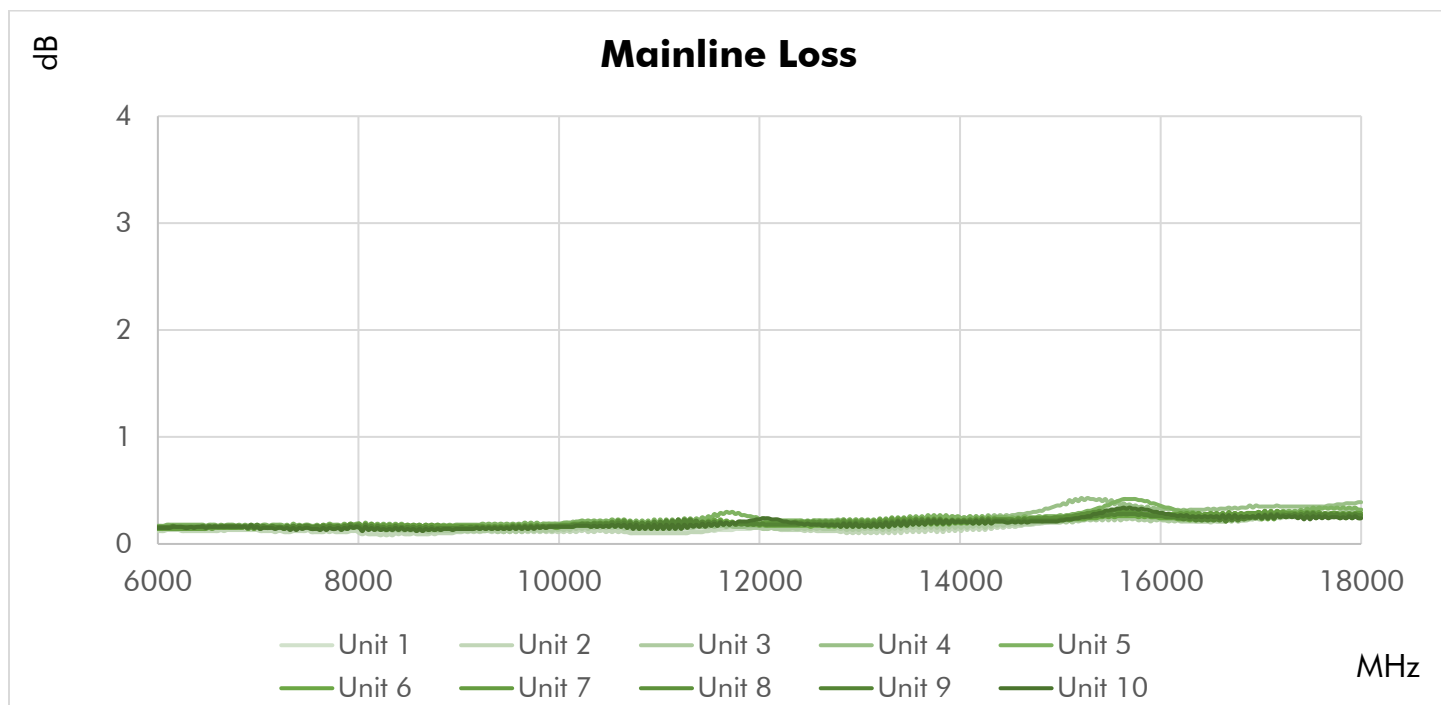
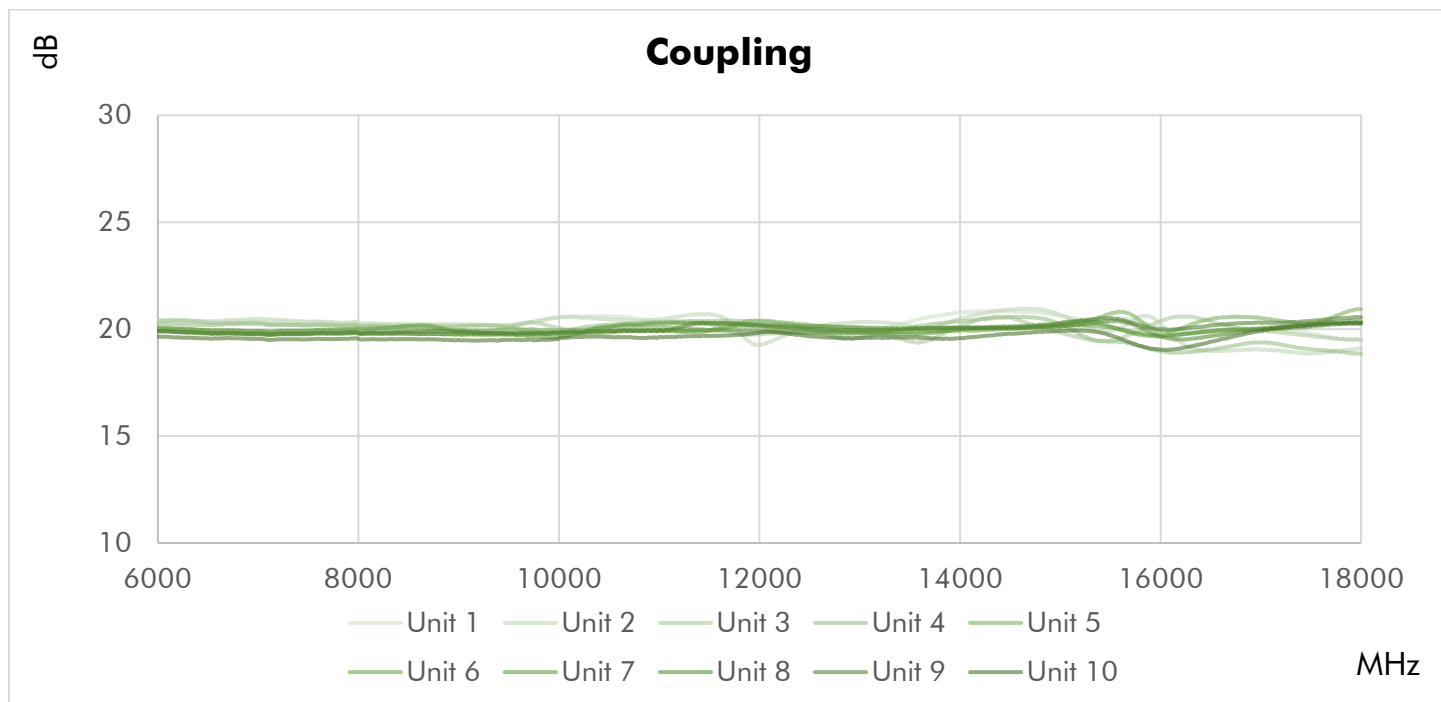


Typical Performance Over Temperature





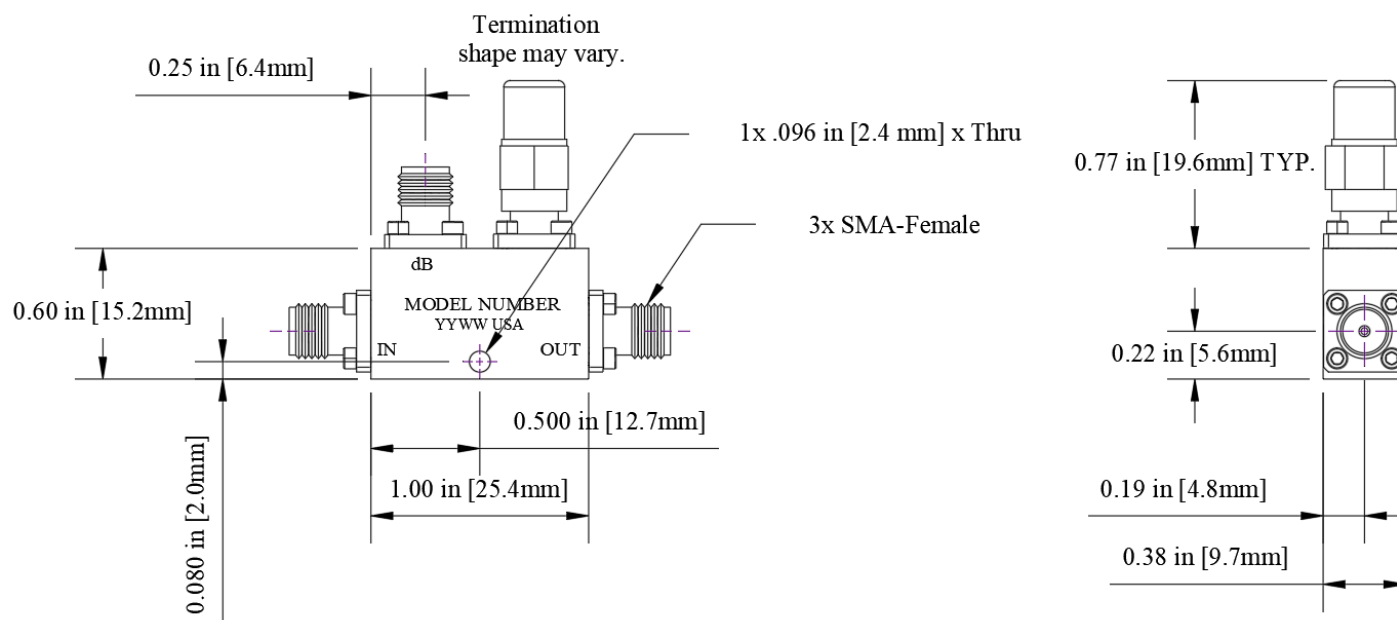
Repeatability in Production



Typical Performance Data

Frequency (MHz)	Return Loss (dB)			Mainline Loss (dB)	Coupling (dB)	Directivity (dB)
	In	Out	Cpl.	In-Out	In-Cpl.	
5000	22.3	21.9	24.0	0.2	19.8	25.0
5500	21.3	20.8	22.0	0.1	19.5	24.5
6000	22.1	21.5	20.5	0.3	19.5	25.1
6500	23.3	23.3	19.9	0.0	19.1	27.4
7000	27.9	27.7	20.6	0.3	19.3	31.9
7500	34.6	41.8	23.9	0.2	19.3	32.8
8000	28.3	28.6	35.5	0.3	19.3	26.7
8500	22.3	22.5	26.5	0.2	19.3	22.8
9000	20.0	20.4	20.7	0.1	19.0	21.0
9500	19.1	19.3	18.5	0.7	19.9	20.2
10000	17.9	18.3	18.6	0.0	19.3	20.7
10500	18.3	18.6	20.1	0.5	19.5	20.7
11000	19.9	19.9	21.8	0.2	19.2	21.4
11500	24.6	24.5	21.8	0.2	19.2	22.3
12000	28.1	35.3	20.7	0.2	19.5	24.8
12500	22.8	26.0	20.5	0.3	19.2	27.2
13000	19.4	20.6	20.7	0.4	19.5	30.0
13500	18.5	19.1	21.9	0.1	19.4	30.9
14000	19.9	20.2	23.3	0.3	19.4	30.8
14500	24.1	24.1	25.8	0.3	19.4	26.6
15000	35.8	40.1	30.4	0.3	19.4	20.4
15500	26.9	27.1	26.8	0.3	19.3	14.2
16000	22.4	21.6	22.6	0.2	19.3	12.2
16500	22.0	20.4	20.9	0.4	19.4	13.9
17000	26.0	22.6	20.2	0.3	19.2	14.2
17500	39.4	25.1	18.1	0.2	19.3	14.2
18000	21.9	21.3	16.6	0.3	19.3	14.5
18500	17.0	17.2	17.2	0.4	19.3	15.3
19000	15.3	15.7	19.7	0.1	19.5	16.9
19500	15.6	15.9	24.4	0.6	19.5	19.4
20000	17.9	18.1	32.8	0.6	19.4	22.2

Outline Dimensions



Outline # OL-1006

Dimensions are in inches, [mm] shown for convenience.

Tolerances on 2-pl decimals: $\pm .03$. 3-pl decimals: $\pm .015$.

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Reliability testing was performed as an internal requalification of the product to substantiate the published specifications, which were previously arrived at by calculation and/or similarity to existing products. The results of these tests are provided as a courtesy and shall not form part of a contract or warranty. While reliability tests may depict the product being tested beyond the published specification ratings for the purpose of stress testing the product, this does not imply that the product should be operating above the rated limits for any length of time. Specifications related to reliability (e.g., performance over temperature, power handling, DC current, HI-POT) are "designed to meet" and are not individually tested in production of commercially available products. Please contact a Werbel Microwave LLC Applications Engineer if specific reliability testing is needed on a particular product.