

Directional Coupler, 0.3-8GHz, 20dB, SMA Female

WMC-0.3-8-20dB-S

Description

Model WMC-0.3-8-20dB-S from Werbel Microwave is a directional coupler that covers 300 MHz to 8 GHz with broadband flat coupling response, high directivity, and excellent return loss performance. Coupling flatness ± 0.6 dB typical. Directivity 25dB typical. Return loss 26dB typical. Insertion loss 0.5dB typical. Enclosure measures 6.00 x 0.73 x 0.50 inches with threaded mounting holes. SMA Female connectors. Device is RoHS compliant.

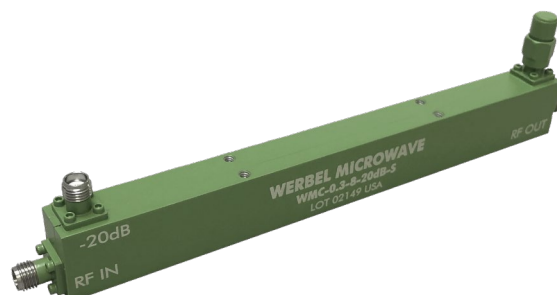


Photo is representative.

Specifications		Min.	Typ.	Max.	Units
Frequency		300	--	8000	MHz
Impedance		--	50	--	Ohm
Coupling		--	20 $\pm$ 1.2	--	dB
Frequency Sensitivity (Flatness)		--	$\pm$ 0.60	$\pm$ 1.20	dB
Mainline Loss ¹		--	0.5	1.1	dB
Directivity	300-6000MHz	18	25	--	dB
	6000-8000MHz	16	22	--	dB
Main Line Return Loss	300-6000MHz	20	28	--	dB
	6000-8000MHz	17	26	--	dB
Secondary Line Return Loss	300-6000MHz	20	27	--	dB
	6000-8000MHz	17	23	--	dB
Isolation		--	48	--	dB
Input Power (CW) ²		--	--	20	Watts
Termination Power		--	--	1	Watt

Mechanical

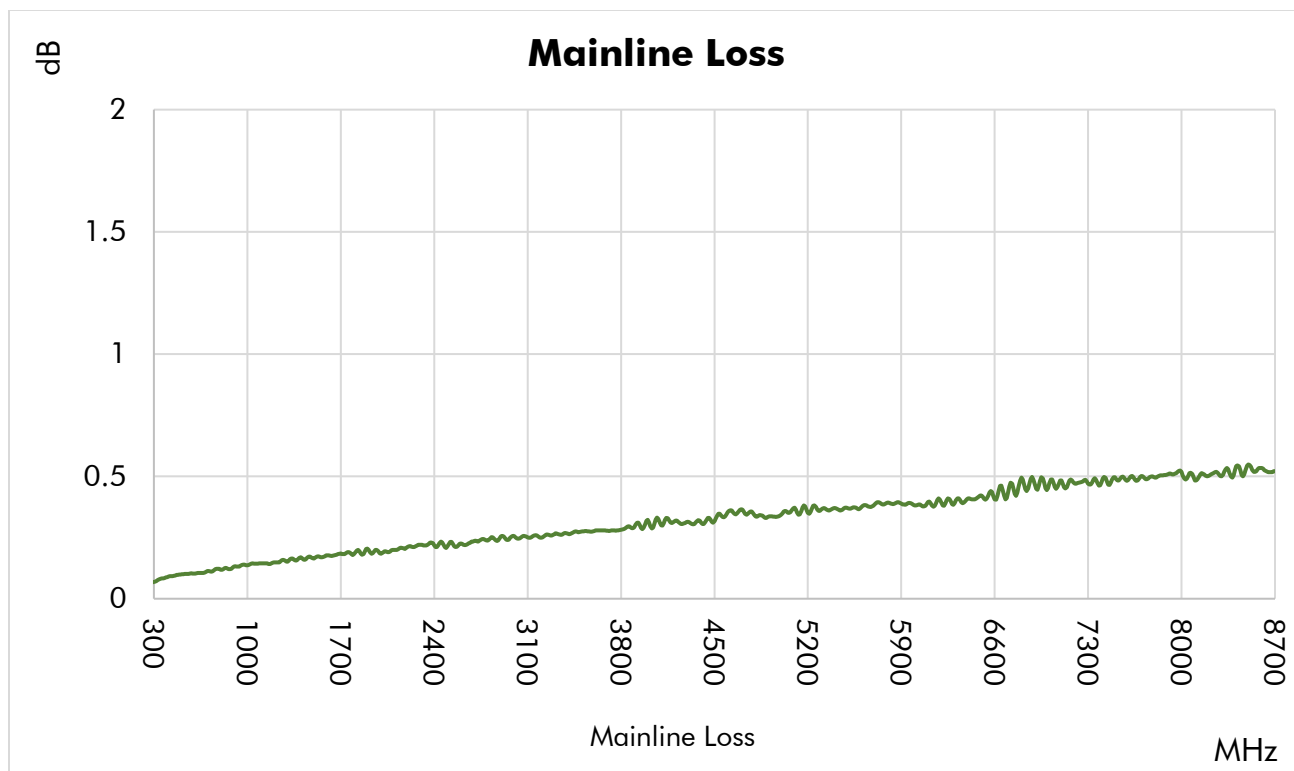
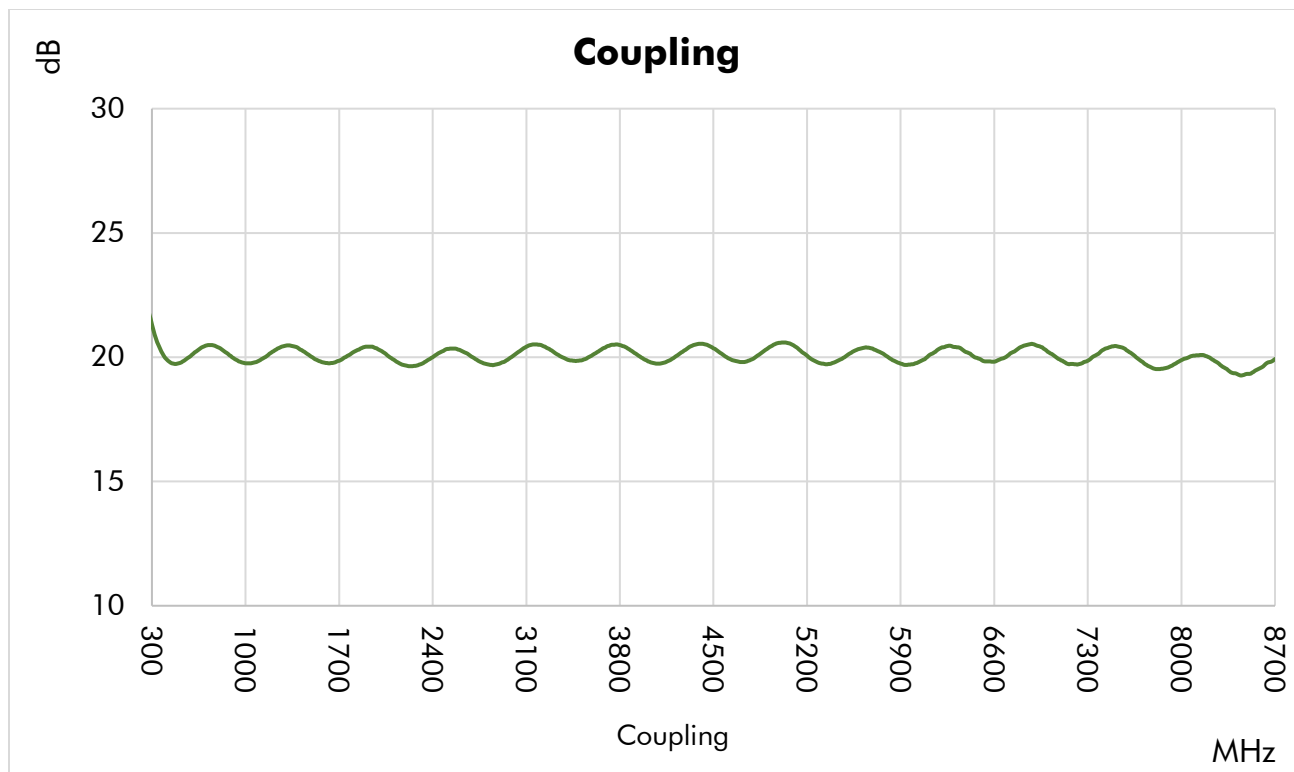
Connector Interface	SMA-Female
Operating Temperature ³	-55 to +85 °C
Storage Temperature	-55 to +100 °C
Weight	3.5 oz (86 g)
Humidity	10-90% non-condensing
Environment	Indoors Use Only

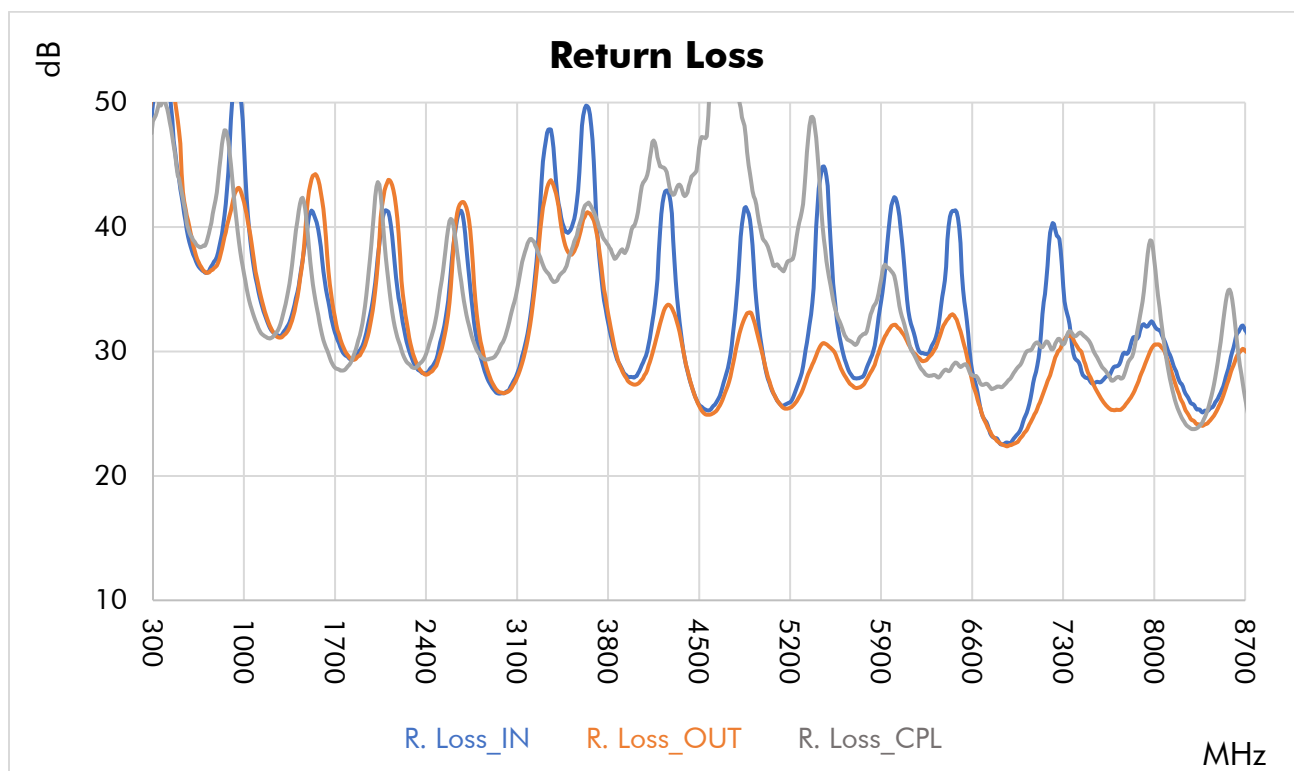
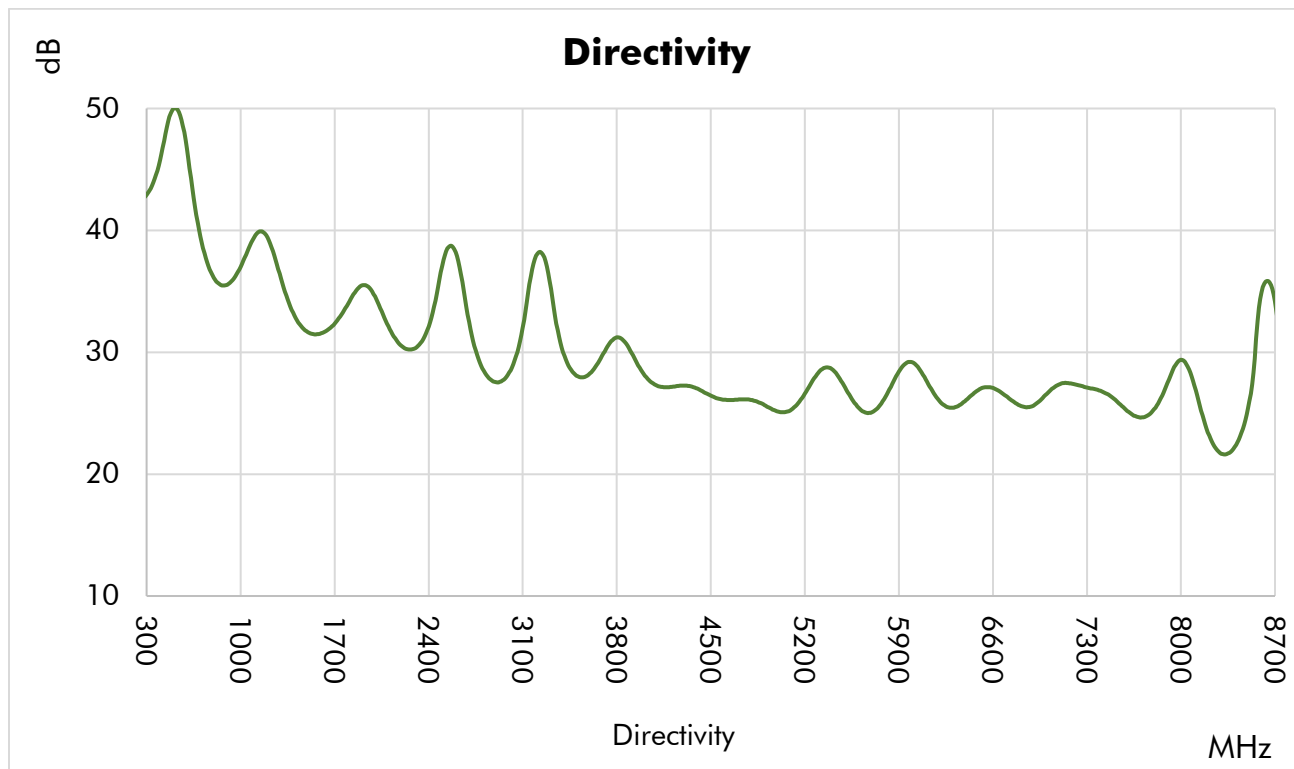
1. Mainline loss includes coupling loss.
2. All output ports should be terminated in a 50-ohm load with 1.2:1 max VSWR.
3. Electrical specifications at +25 °C only.
4. To the best of our knowledge at time of publication.

Materials

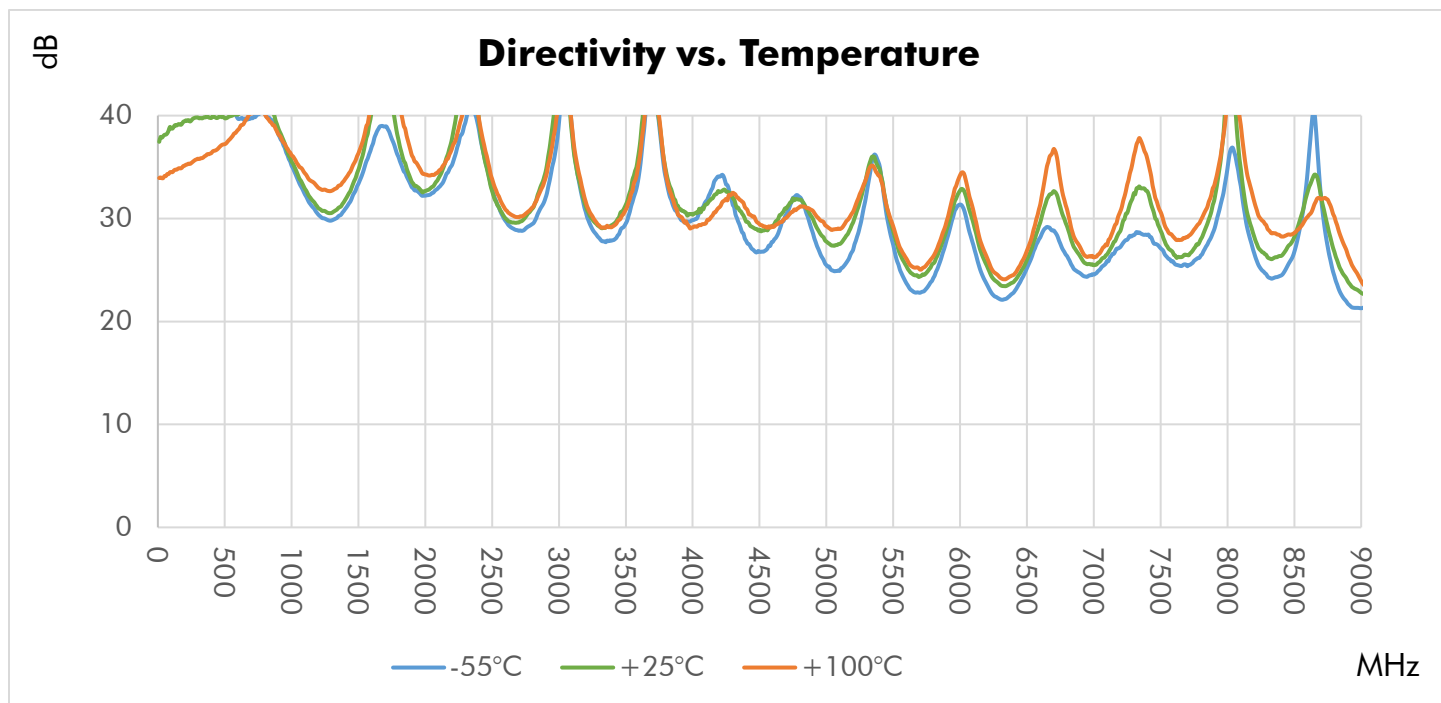
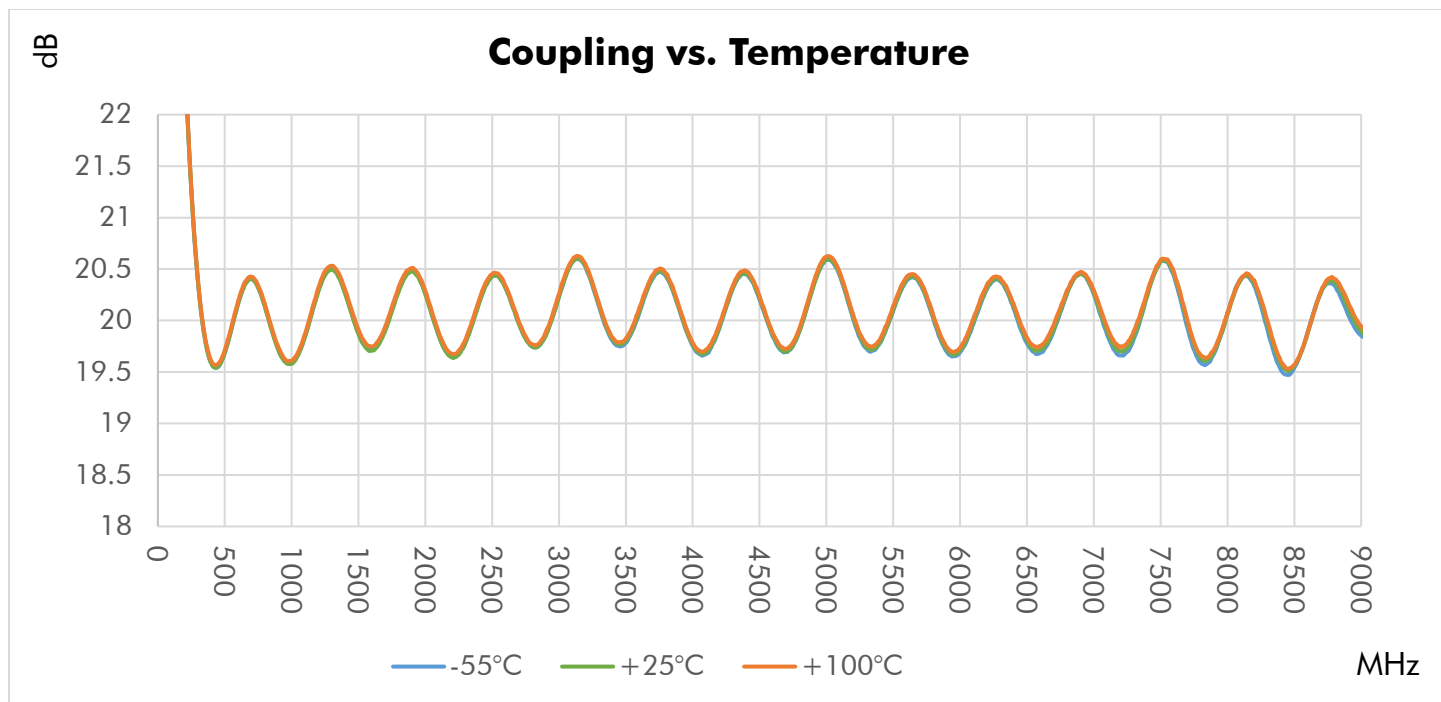
RoHS and REACH Compliant ⁴	
Enclosure	Aluminum
Connectors	Stainless Steel
Contacts	Be Cu, Gold Plated
Insulators	PTFE
Finish	Green Paint

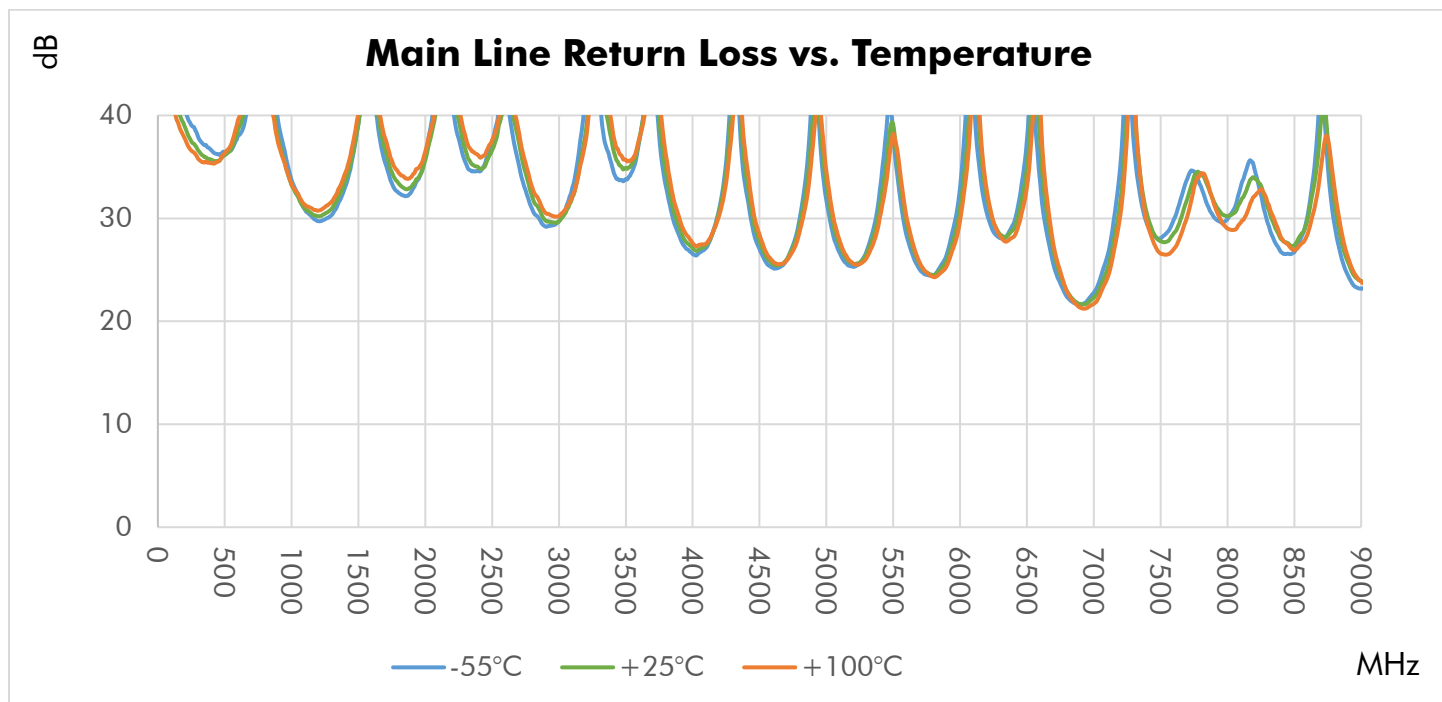
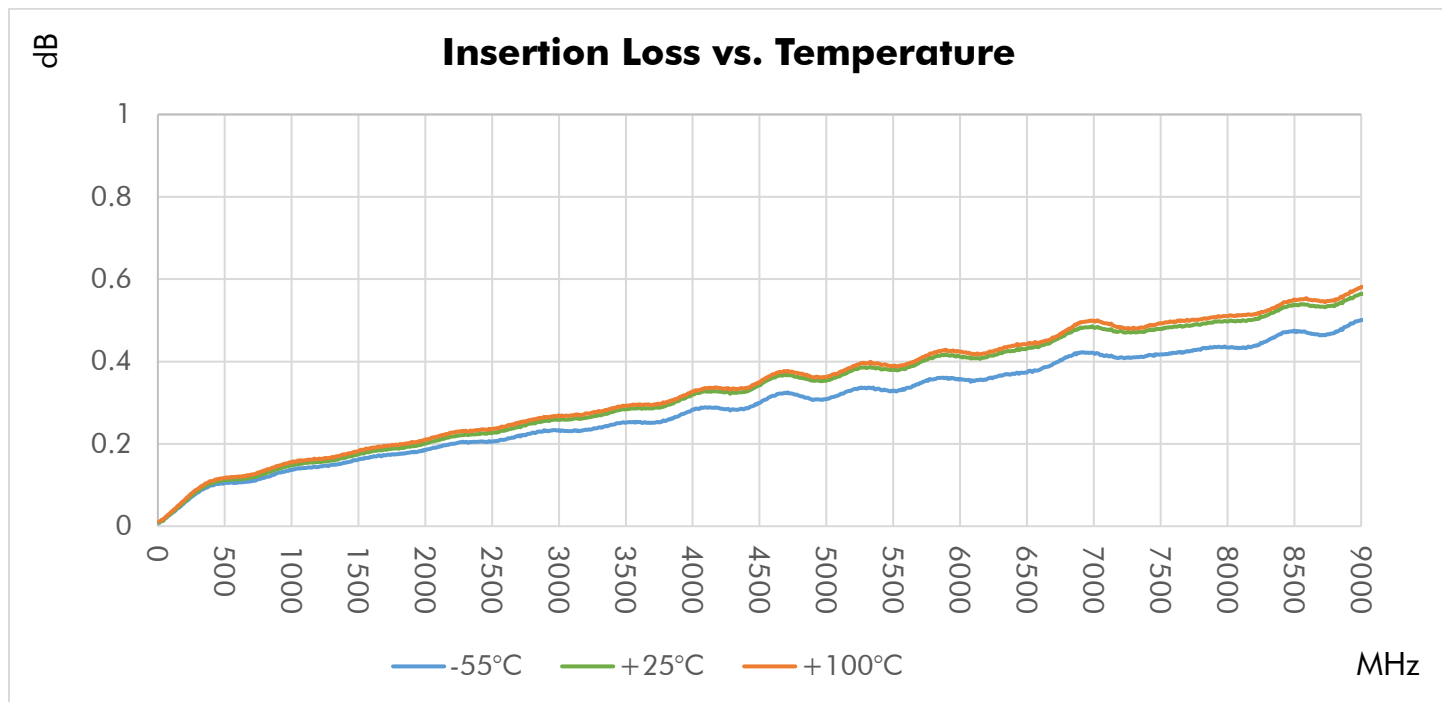
Typical Performance at +25 °C





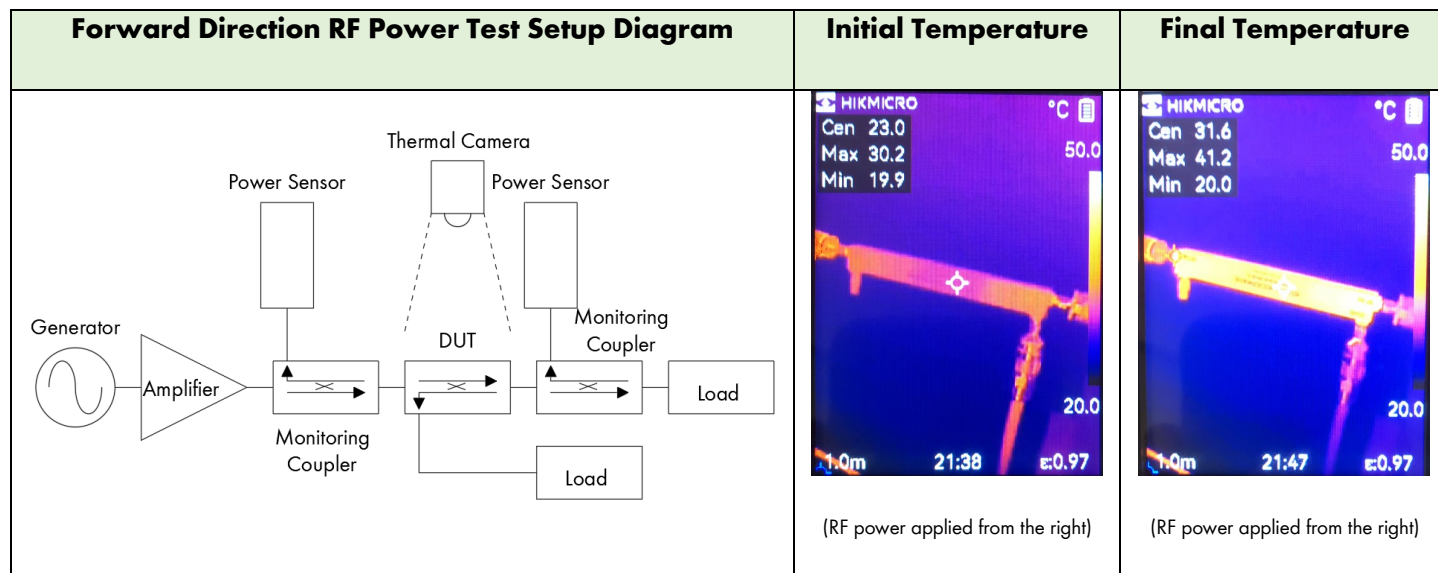
Typical Performance Over Temperature



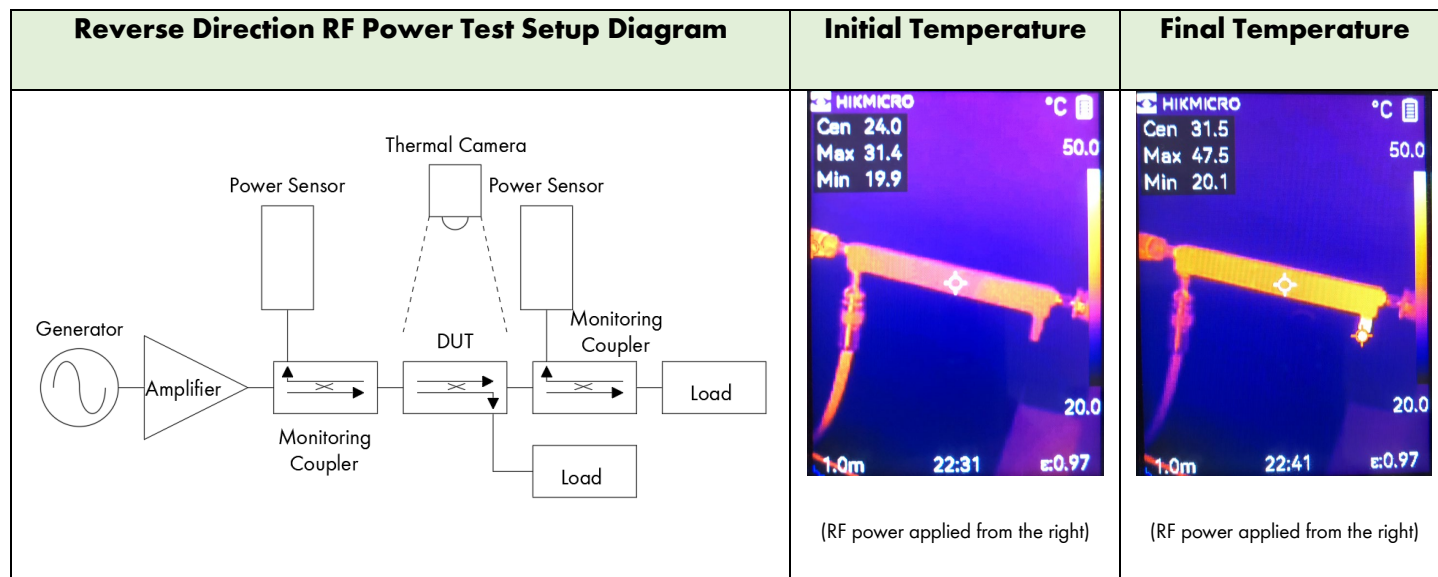


Reliability Testing

The RF power test was performed in both forward and reverse direction.



- 200 watts CW at 500MHz was applied to the DUT input for a duration of 10 minutes.
- The DUT temperature increased from 23.0°C (initial, center marker) to 41.2°C (final, max marker), resulting in an 18.2°C rise.

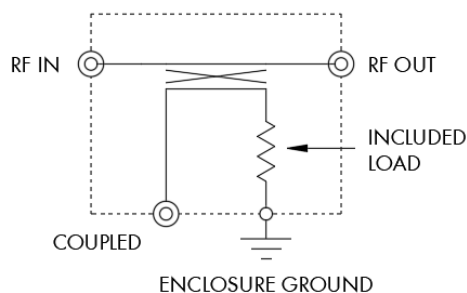


- 80 watts CW at 500MHz was applied to the DUT output for a duration of 10 minutes.
- The DUT temperature increased from 24.0°C (initial, center marker) to 47.5°C (final, max marker), resulting in a 23.5°C rise.
- The DUT termination was receiving an estimated power of 0.8W, based on a 20dB coupling factor.

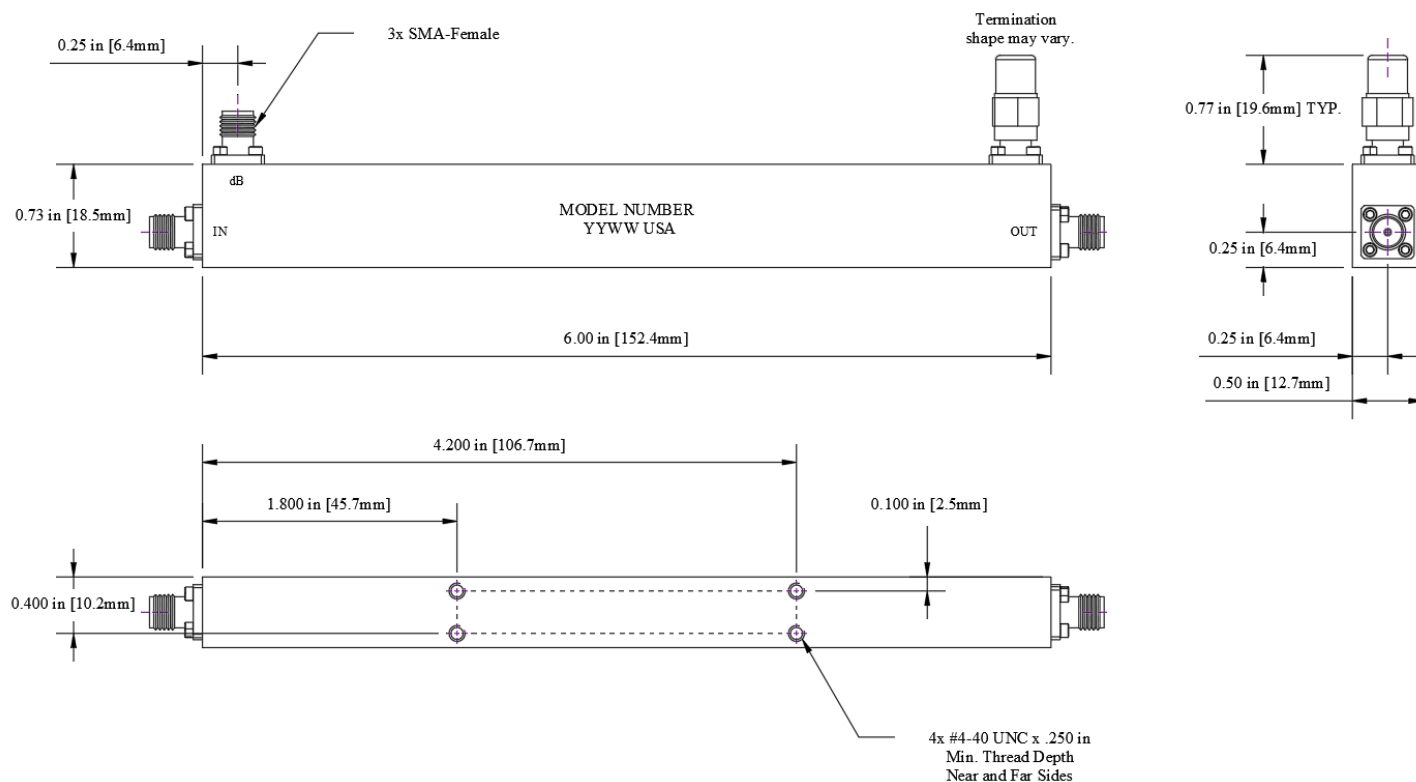
Typical Performance Data

Frequency (MHz)	Return Loss (dB)			Mainline Loss (dB)	Coupling (dB)	Directivity (dB)
	In	Out	Cpl.	In-Out	In-Cpl.	
300	58.8	55.4	53.4	0.1	20.6	44.6
500	40.0	39.6	44.9	0.1	19.9	48.0
700	36.0	37.4	38.3	0.1	20.5	36.0
900	62.2	45.1	42.4	0.1	19.8	36.5
1100	33.2	32.4	31.4	0.1	20.0	40.5
1300	32.8	33.1	34.2	0.2	20.5	33.1
1500	43.9	46.3	35.4	0.2	19.9	31.4
1700	30.2	29.8	28.6	0.2	19.9	33.6
1900	31.6	32.1	33.1	0.2	20.5	35.2
2100	37.0	38.5	34.4	0.2	19.8	30.4
2300	28.2	27.8	28.7	0.2	19.8	31.3
2500	33.5	33.4	36.3	0.2	20.4	41.5
2700	33.0	32.9	32.4	0.3	19.9	28.7
2900	26.4	26.3	29.4	0.3	19.9	27.8
3100	29.6	30.0	36.5	0.3	20.5	38.5
3300	52.2	46.4	36.5	0.3	20.1	30.0
3500	41.1	38.2	38.5	0.3	19.9	27.9
3700	35.4	34.3	40.1	0.3	20.5	31.7
3900	28.2	27.4	38.0	0.3	20.1	28.3
4100	31.8	30.7	46.2	0.3	19.8	27.1
4300	31.5	29.7	43.0	0.3	20.5	27.1
4500	25.2	25.0	50.5	0.3	20.2	26.1
4700	29.8	28.9	47.9	0.4	19.8	26.2
4900	33.0	30.3	42.8	0.4	20.5	25.1
5100	25.5	24.9	36.6	0.4	20.3	26.3
5300	32.1	29.7	45.1	0.3	19.7	29.0
5500	32.8	28.9	34.3	0.3	20.3	25.4
5700	28.1	27.2	30.5	0.4	20.2	25.9
5900	37.7	32.2	36.9	0.4	19.7	29.7
6100	30.3	28.9	30.2	0.5	20.3	26.0
6300	32.1	31.7	28.0	0.4	20.3	25.9
6500	30.8	28.2	28.7	0.4	19.9	27.3
6700	24.5	23.5	27.4	0.5	20.2	25.7
6900	23.4	23.1	28.5	0.4	20.5	26.5
7100	32.1	27.2	30.2	0.5	19.8	27.5
7300	29.6	32.8	31.2	0.4	19.9	27.0
7500	27.2	26.5	30.3	0.5	20.5	25.3
7700	28.6	25.8	28.3	0.6	19.7	24.9
7900	32.9	29.7	34.8	0.6	19.7	30.0
8100	27.8	26.4	27.6	0.4	20.1	23.6
8300	25.8	24.8	23.8	0.4	19.3	21.6
8500	28.1	28.2	31.9	0.6	19.4	31.2
8700	29.8	28.2	24.7	0.6	20.1	23.9

Simplified Electrical Schematic



Outline Dimensions



Outline # OL-1830

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.