

Directional Coupler, 0.5-2GHz, 6dB, SMA Female

WMC-0.5-2-6dB-S

Description

Model WMC-0.5-2-6dB-S from Werbel Microwave is a directional coupler that covers 500 MHz to 2 GHz with broadband flat coupling response, high directivity, and excellent return loss performance. The device covers the upper portion of the UHF band as well as L band in a single unit measuring just 3.60 x 0.60 x 0.38 inches. The design minimizes reflections and increases accuracy of the measurement. Mainline insertion loss 1.2dB typical includes coupling factor. The 6dB coupling ratio gives an approximate 75/25% splitting ratio and may be used as such to distribute signals unequally where required, often to make up for asymmetrical losses elsewhere in a system. Directivity 23dB typical. Return loss 23dB typical. Designed, assembled, and tested in USA.



Photo is representative.

Specifications	Min.	Typ.	Max.	Units
Frequency	500	--	2000	MHz
Impedance	--	50	--	Ohm
Coupling	--	6 ± 1.0	--	dB
Frequency Sensitivity (Flatness)	--	± 0.75	± 1.25	dB
Mainline Loss ¹	--	1.2	2.00	dB
Directivity	18	23	--	dB
Main Line Return Loss	20	23	--	dB
Secondary Line Return Loss	20	22	--	dB
Isolation	--	29	--	dB
Forward Power (CW) ²	--	--	25	Watts
Reverse Power (CW) ²	--	--	3	Watts
Termination Power	--	--	1	Watt

Mechanical

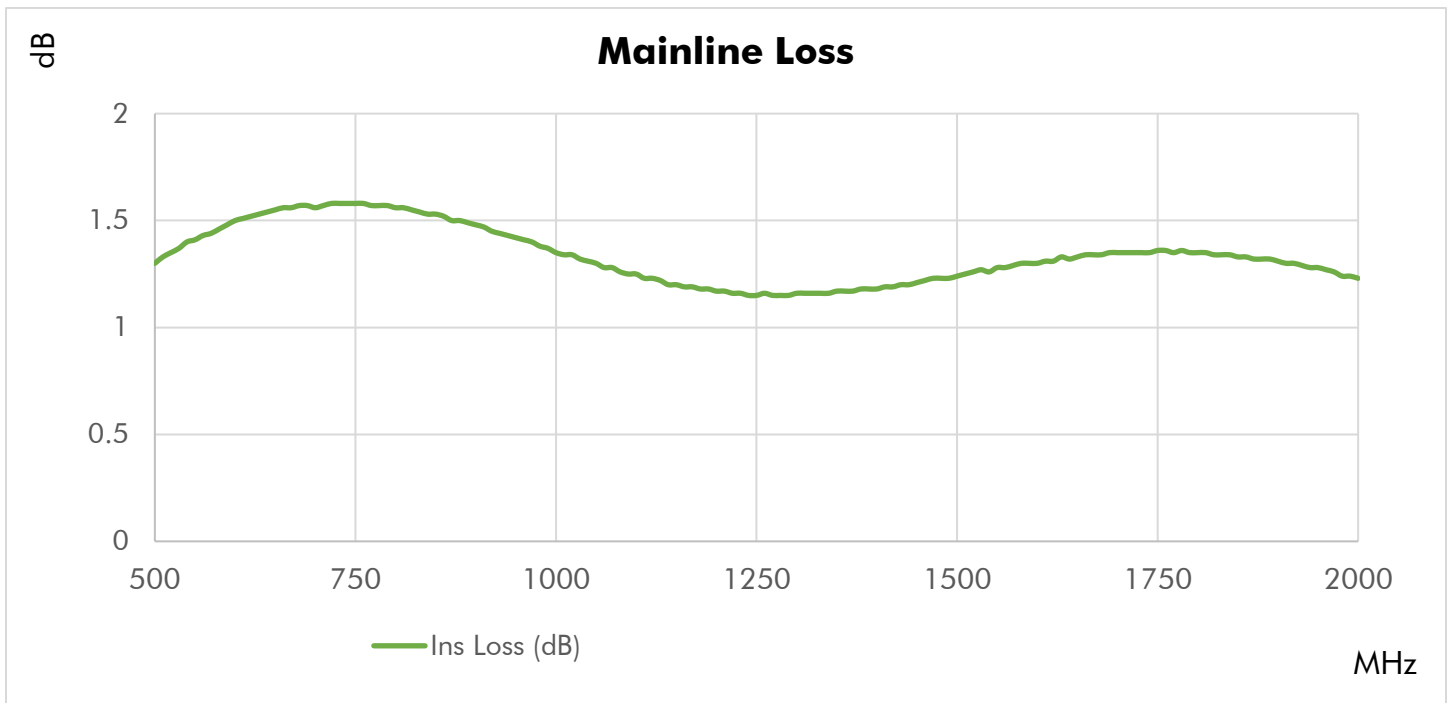
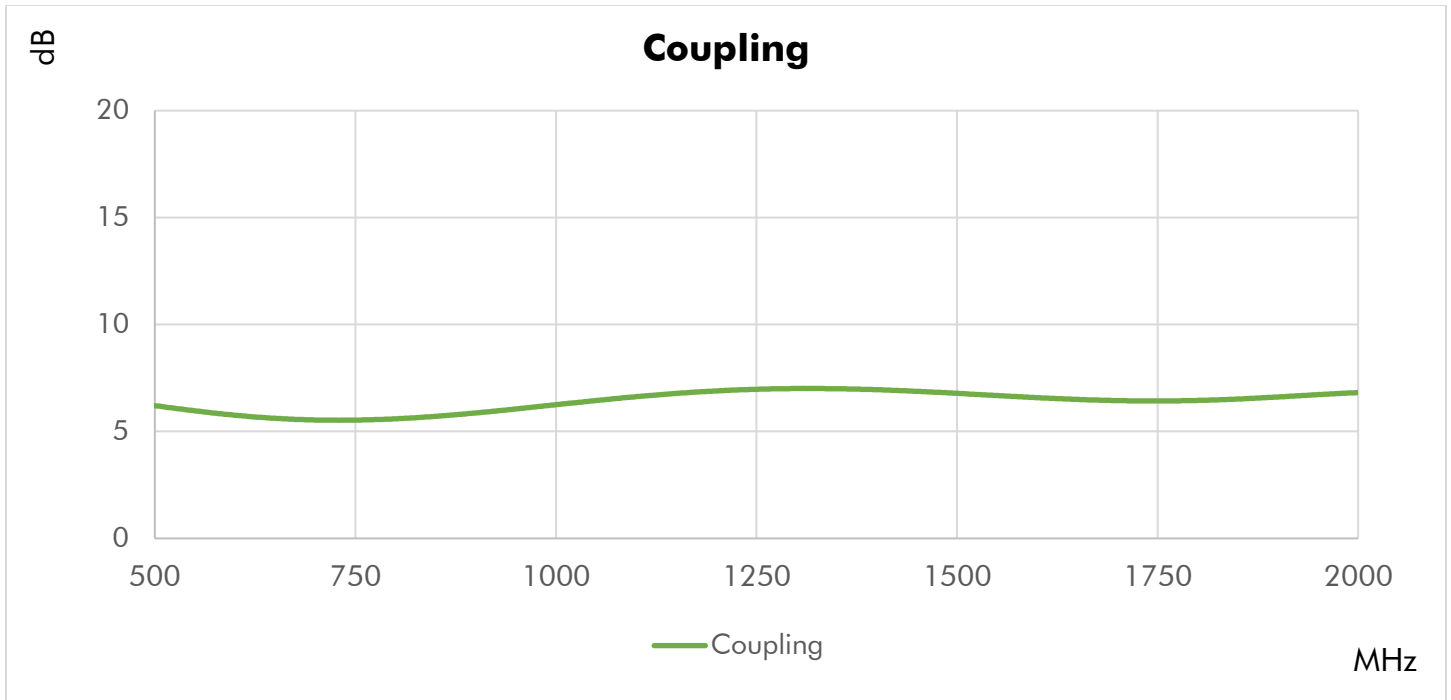
Connector Interface	SMA-Female
Operating Temperature ³	-55 to +85 °C
Storage Temperature	-55 to +100 °C
Weight	1.5 oz (42 g)
Humidity	10-90% non-condensing
Environment	Indoor Use Only

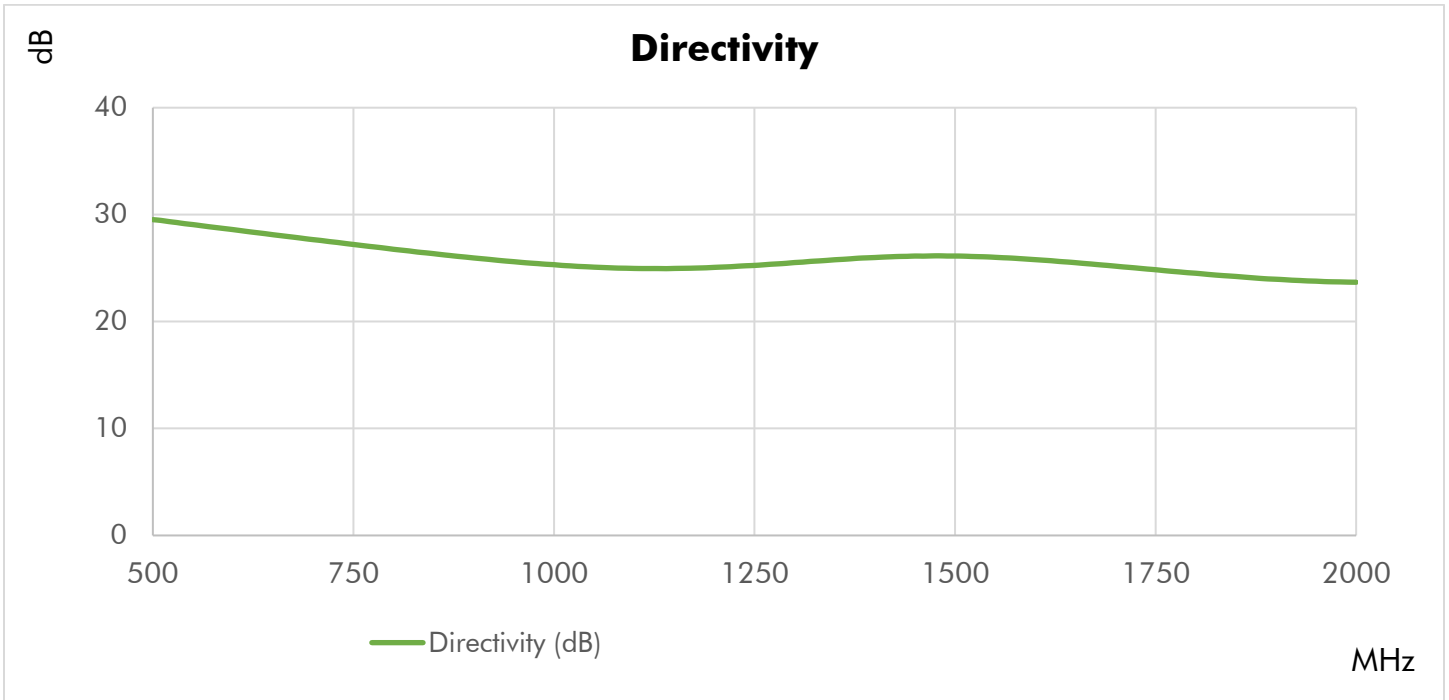
Materials

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

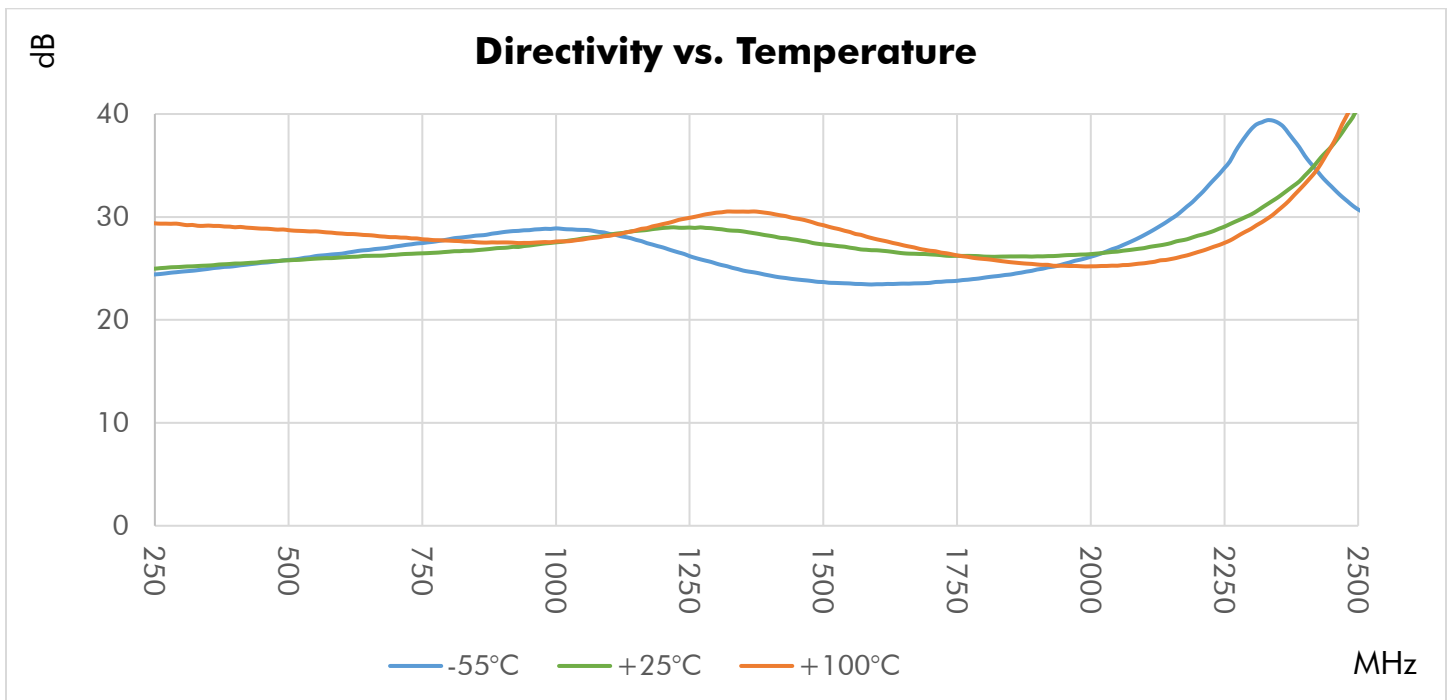
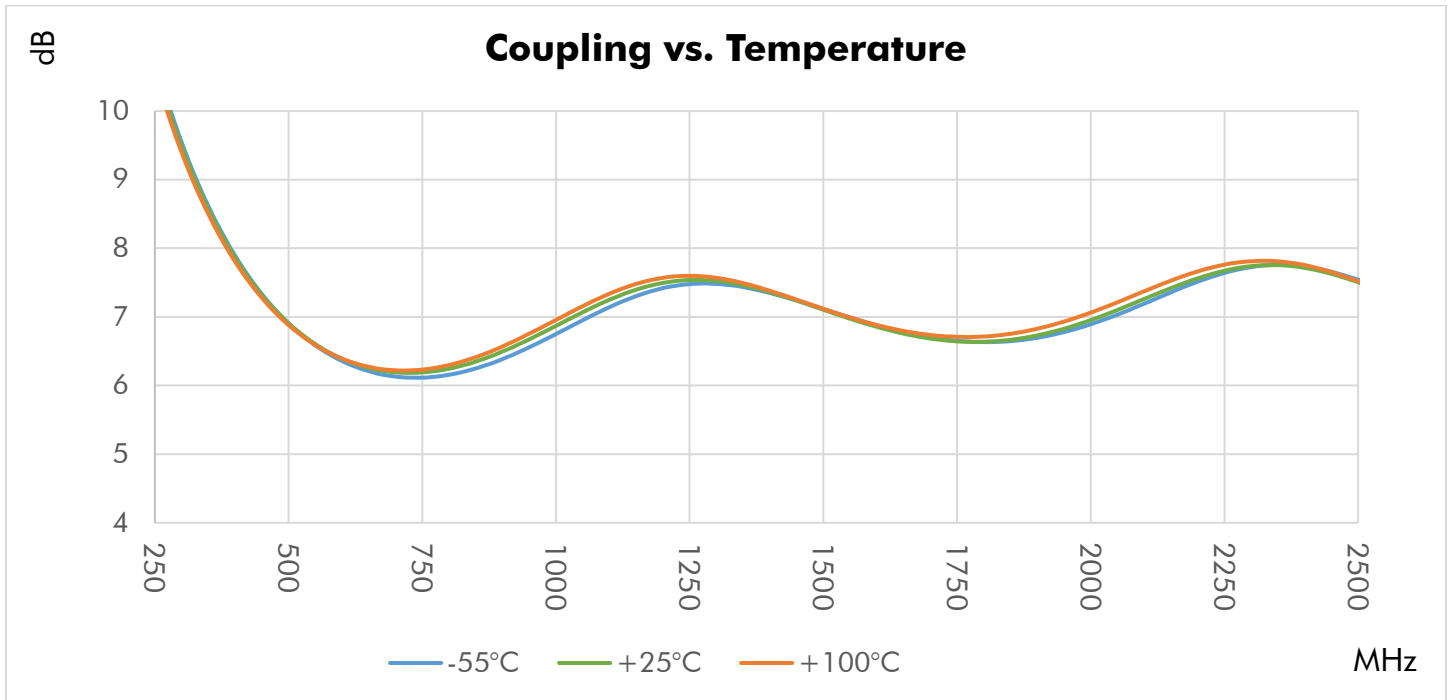
1. Mainline loss includes coupling loss.
2. All output ports should be terminated in a 50-ohm load with 1.2:1 max VSWR.
3. Electrical specifications at +25 °C only.
4. To the best of our knowledge at the time of publication.

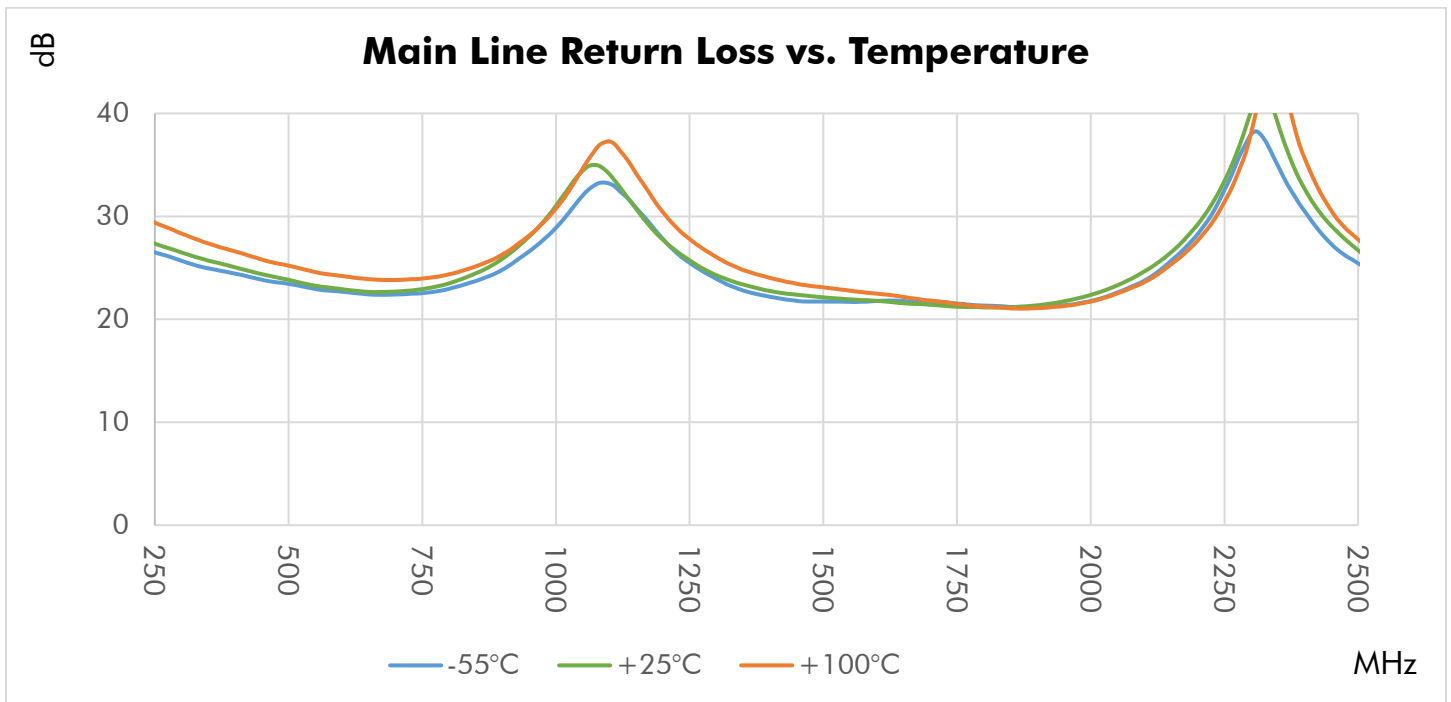
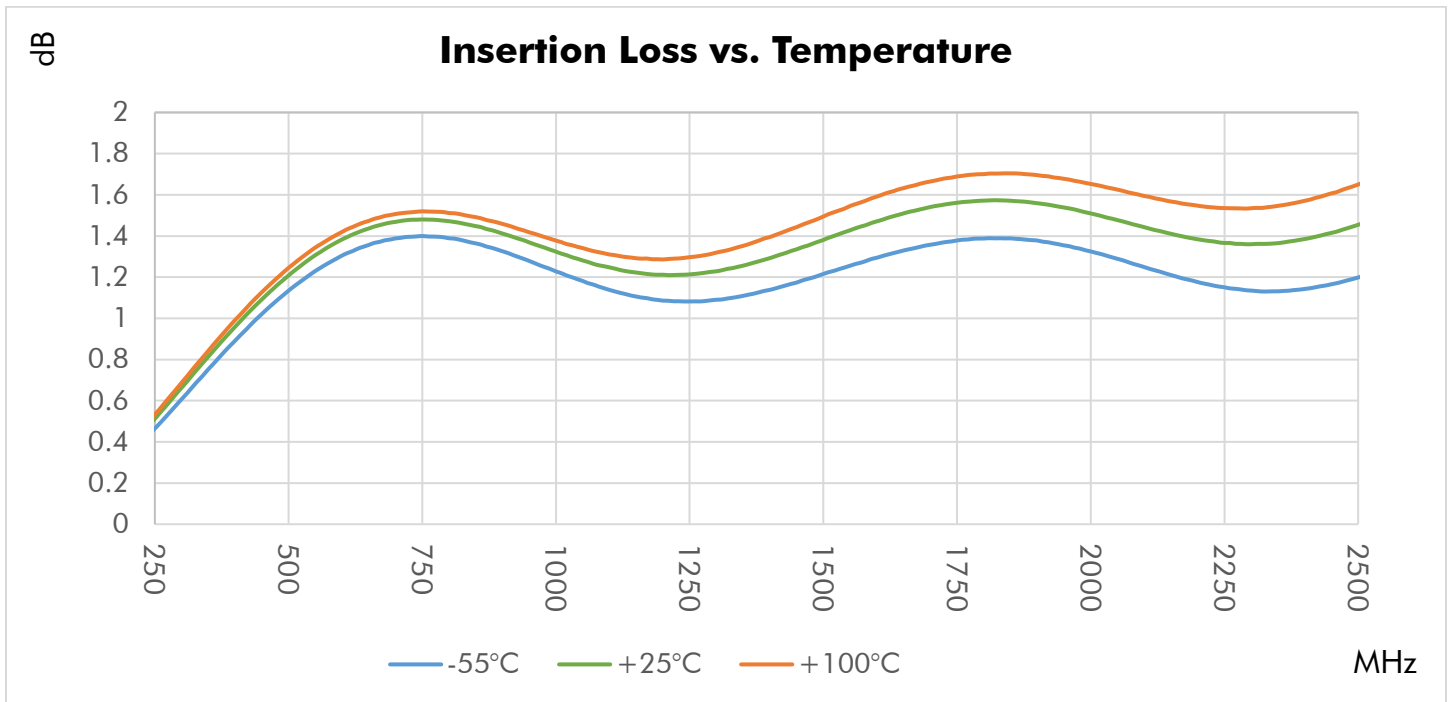
Typical Performance at +25 °C





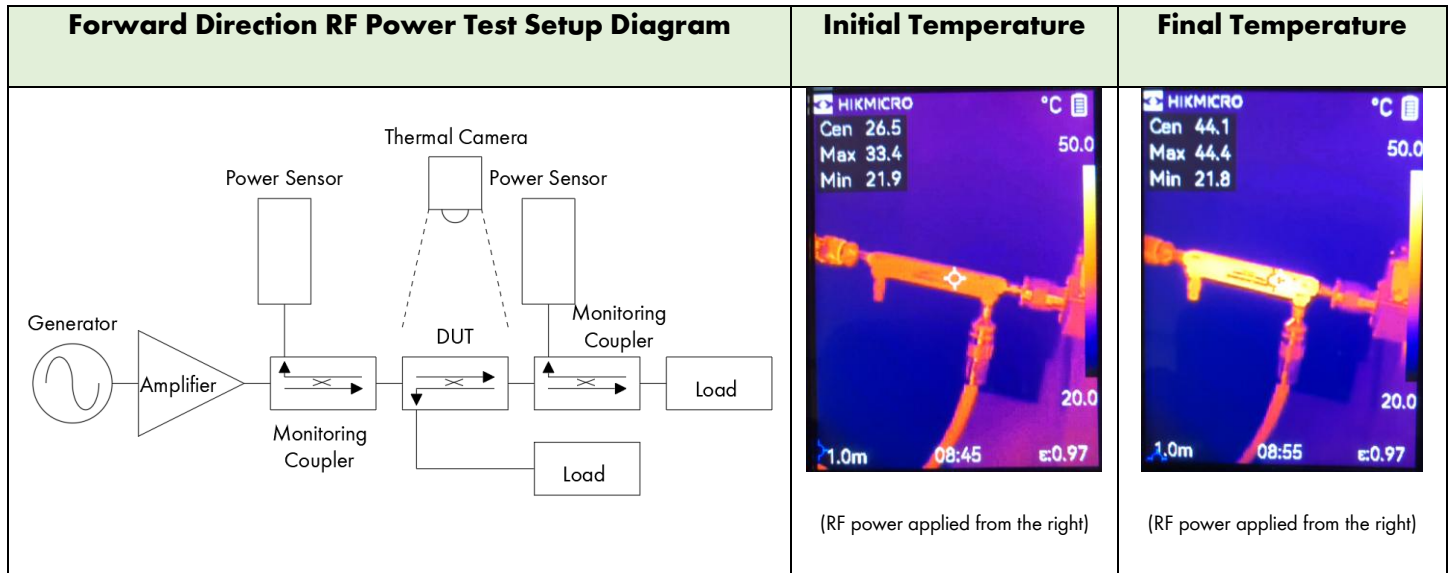
Typical Performance Over Temperature



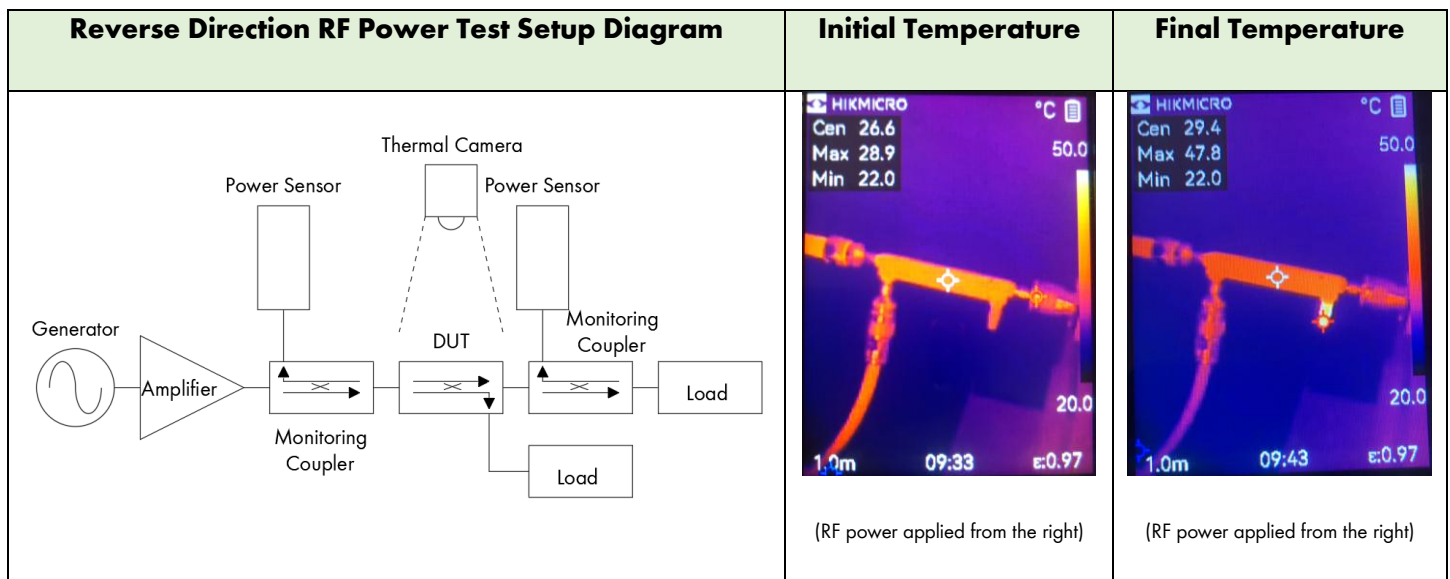


Reliability Testing

RF power test was performed to determine the input power required to produce a nominal temperature rise of 20°C at the hottest point. The test was performed at room temperature without forced air. A heatsink was not used unless it came standard with the product.



- 75 watts CW at 500MHz was applied to the DUT input for a duration of 10 minutes.
- The DUT temperature increased from 26.5°C (initial, center marker) to 44.4°C (final, max marker), resulting in a 17.9°C rise.

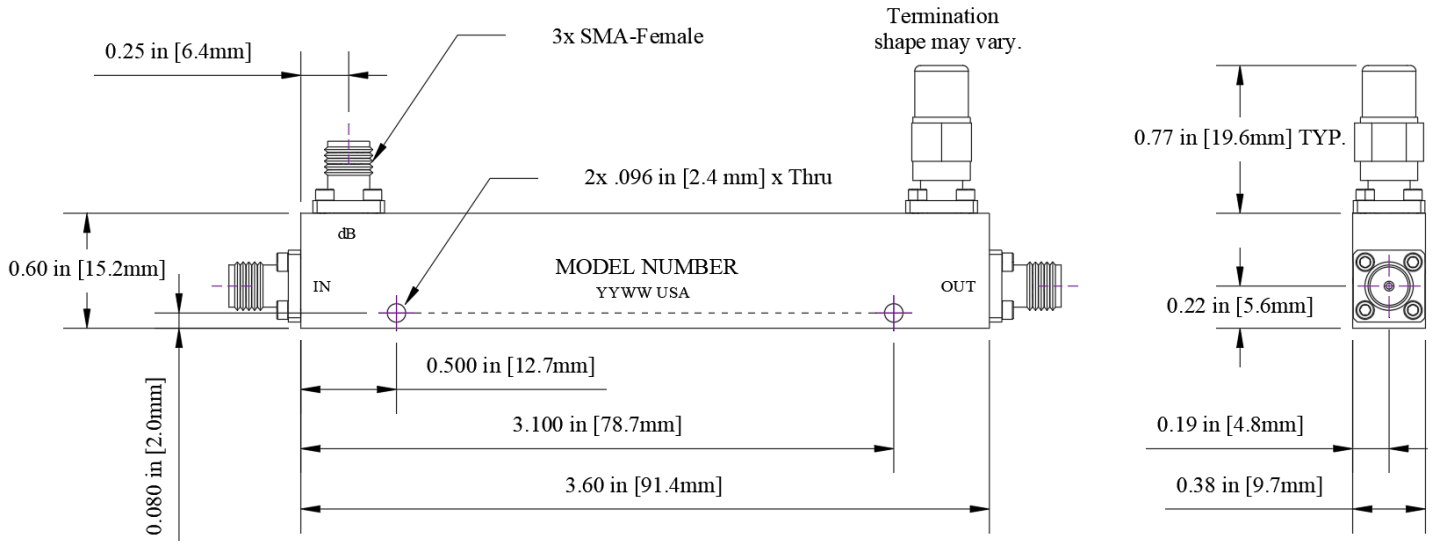


- 4 watts CW at 500MHz was applied to the DUT output for a duration of 10 minutes.
- The DUT temperature increased from 26.6°C (initial, center marker) to 47.8°C (final, max marker), resulting in a 21.2°C rise.
- The DUT termination was receiving an estimated power of 1W, based on a 6dB coupling factor.

Typical Performance Data

Frequency (MHz)	Return Loss (dB)			Mainline Loss (dB)	Coupling (dB)	Directivity (dB)
	In	Out	Cpl.	In-Out	In-Cpl.	
500	25.9	28.0	28.4	1.3	6.3	29.5
550	24.9	27.6	28.1	1.4	6.0	29.1
600	24.3	27.4	27.9	1.5	5.7	28.6
650	24.1	27.5	28.2	1.6	5.6	28.1
700	23.9	27.7	28.1	1.6	5.5	27.7
750	24.0	27.7	28.4	1.6	5.6	27.2
800	24.5	28.0	28.8	1.6	5.6	26.8
850	25.1	28.4	28.8	1.5	5.7	26.4
900	26.0	28.8	29.3	1.5	5.9	26.0
950	27.3	29.4	29.7	1.4	6.0	25.6
1000	28.7	29.7	29.9	1.4	6.2	25.3
1050	29.2	30.4	29.9	1.3	6.4	25.1
1100	28.4	30.5	29.6	1.3	6.6	25.0
1150	27.0	30.6	29.0	1.2	6.8	25.0
1200	25.5	30.0	28.4	1.2	6.9	25.1
1250	24.4	28.8	27.5	1.2	7.0	25.3
1300	23.6	28.2	26.8	1.2	7.0	25.5
1350	23.1	27.2	26.1	1.2	7.0	25.8
1400	22.9	26.3	25.3	1.2	7.0	26.0
1450	23.0	25.6	24.8	1.2	6.9	26.1
1500	23.2	25.0	24.4	1.2	6.8	26.1
1550	23.3	24.5	24.0	1.3	6.7	26.0
1600	23.3	24.2	23.7	1.3	6.6	25.8
1650	23.3	24.1	23.5	1.3	6.5	25.5
1700	23.0	24.1	23.5	1.4	6.5	25.2
1750	22.7	24.4	23.6	1.4	6.4	24.9
1800	22.5	24.9	23.8	1.4	6.5	24.5
1850	22.4	25.3	24.1	1.3	6.5	24.2
1900	22.5	26.3	24.7	1.3	6.6	24.0
1950	23.0	27.4	25.3	1.3	6.7	23.8
2000	23.7	28.8	26.3	1.2	6.9	23.7

Outline Dimensions



Outline # OL-1002

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

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

The information contained in this document is accurate to the best of our knowledge and representative of the product described herein at the date of publication. It may be necessary to make modifications to the product and/or documentation of the product. Werbel Microwave LLC reserves the right to make such changes as required without notice. Unless otherwise stated, all specifications and dimensions are nominal. Werbel Microwave LLC does not make any representation or warranty regarding the suitability of the product described herein for any particular purpose or application, and Werbel Microwave LLC does not assume any liability arising out of the use of any part of documentation. This document gives only a description of the product(s) and shall not form part of any contract. Please contact a Werbel Microwave LLC Applications Engineer for the most current specification drawing.

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.