

Directional Coupler, 1-20GHz, 10dB, SMA Female

WMC-1-20-10dB-S

Description

Model WMC-1-20-10dB-S from Werbel Microwave is a directional coupler that covers 1 GHz to 20 GHz with broadband flat coupling response, high directivity, and excellent return loss performance. One device covers military octave bands including L, S, C, X, Ku and a portion of K band. The wideband 10dB coupling factor provides a nominal 90/10% splitting ratio and may be used as such where an unequal tap of a signal is required. Assembled and tested in USA. The device is RoHS complaint but may be ordered special with Pb/Sn solder.



Photo is representative.

Specifications	Min.	Typ.	Max.	Units
Frequency	1	--	20	GHz
Impedance	--	50	--	Ohm
Coupling	--	10 ± 1.0	--	dB
Frequency Sensitivity (Flatness)	--	± 0.8	± 1.2	dB
Mainline Loss ¹	--	2.1	2.2	dB
Directivity	10	13	--	dB
Return Loss (In and Out)	13	14	--	dB
Return Loss (Coupling)	12	14	--	dB
Input Power (CW) ²	--	--	20	Watts

Mechanical

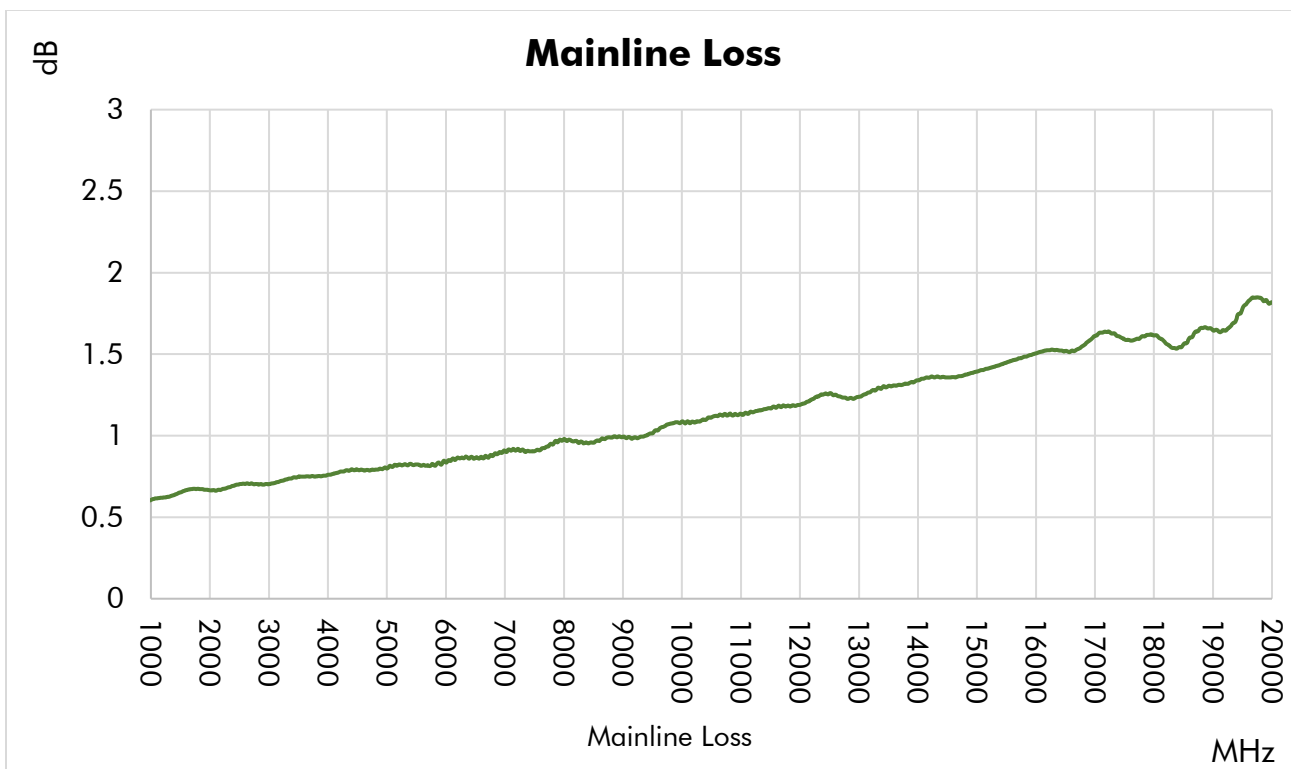
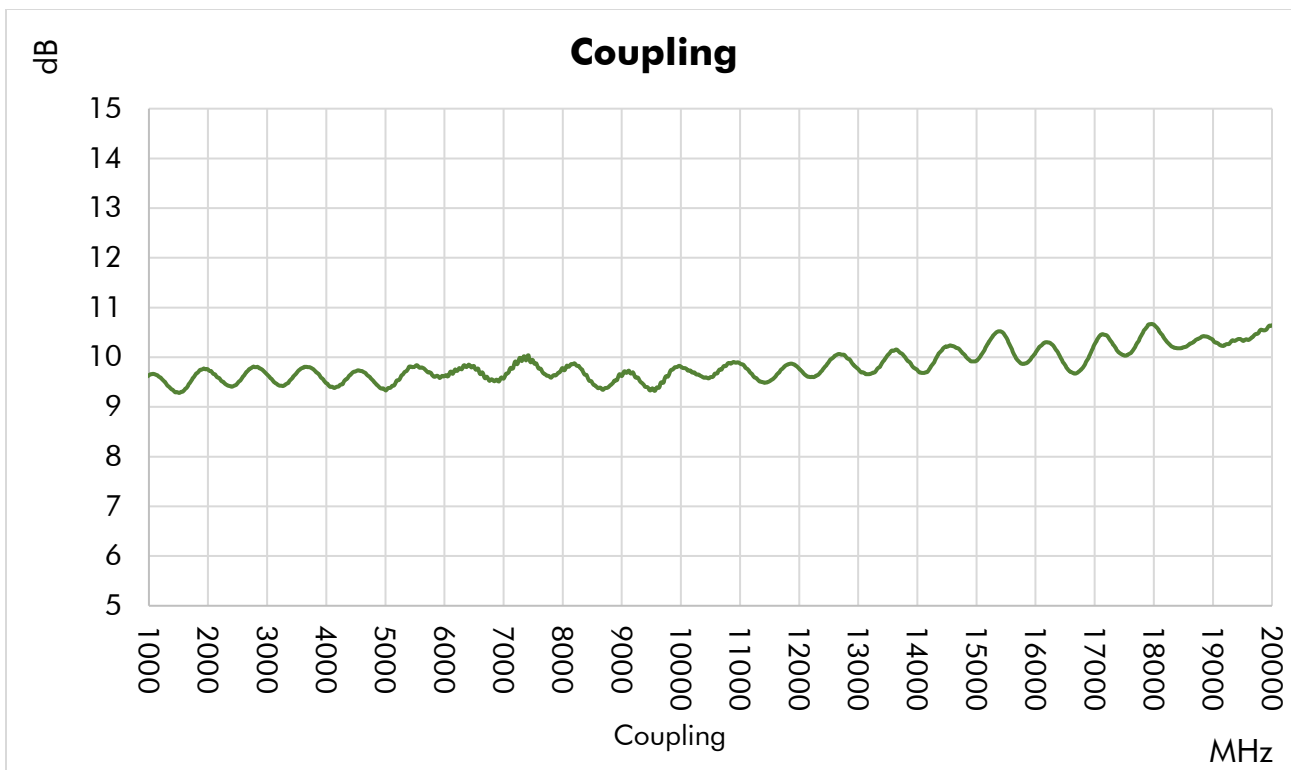
Connector Interface	SMA-Female
Operating Temperature ³	-55 to +85 °C
Storage Temperature	-55 to +100 °C
Weight	3.5 oz (86 g)
Humidity	10-90% non-condensing
Environment	Indoor Use Only

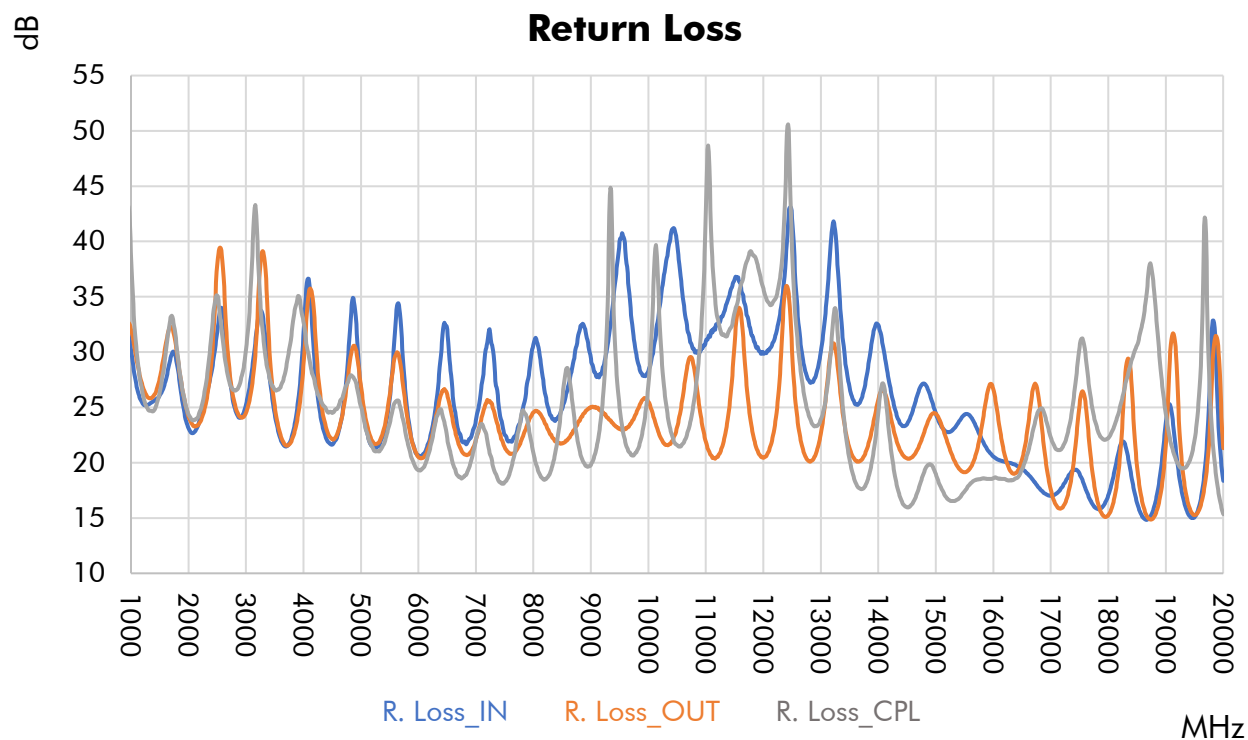
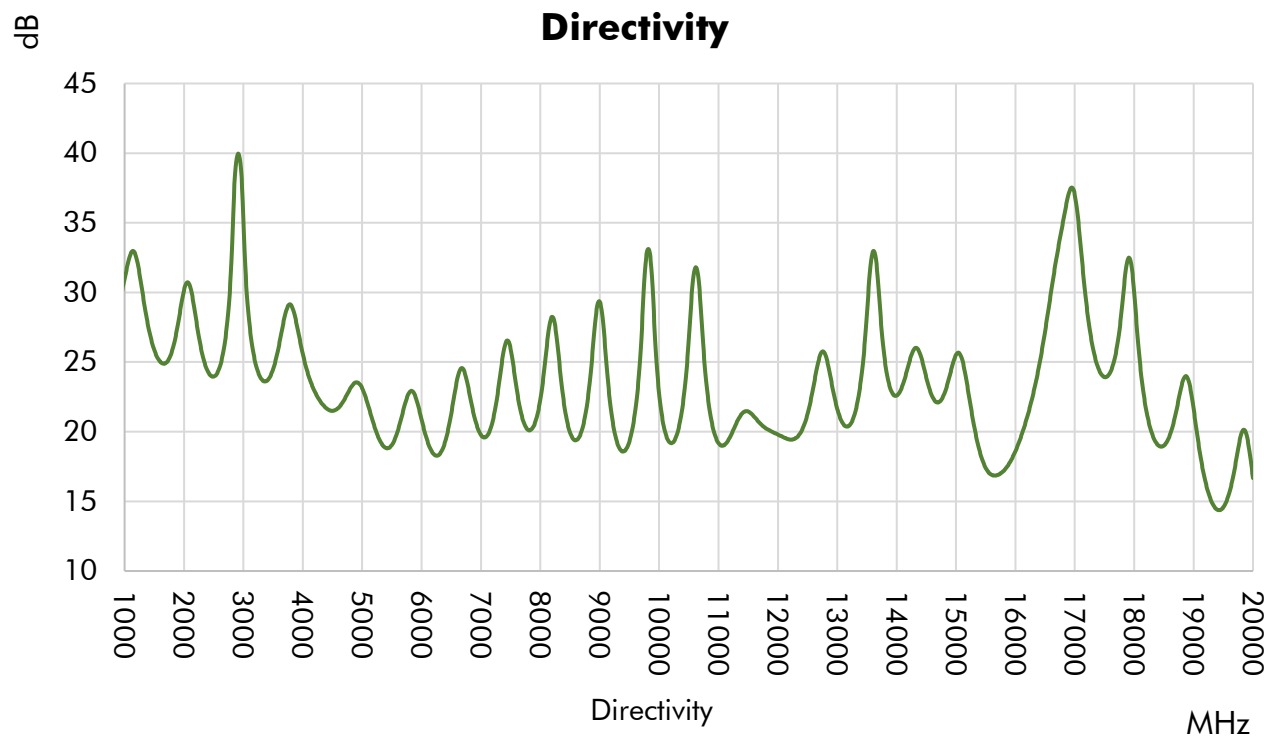
Materials

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

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

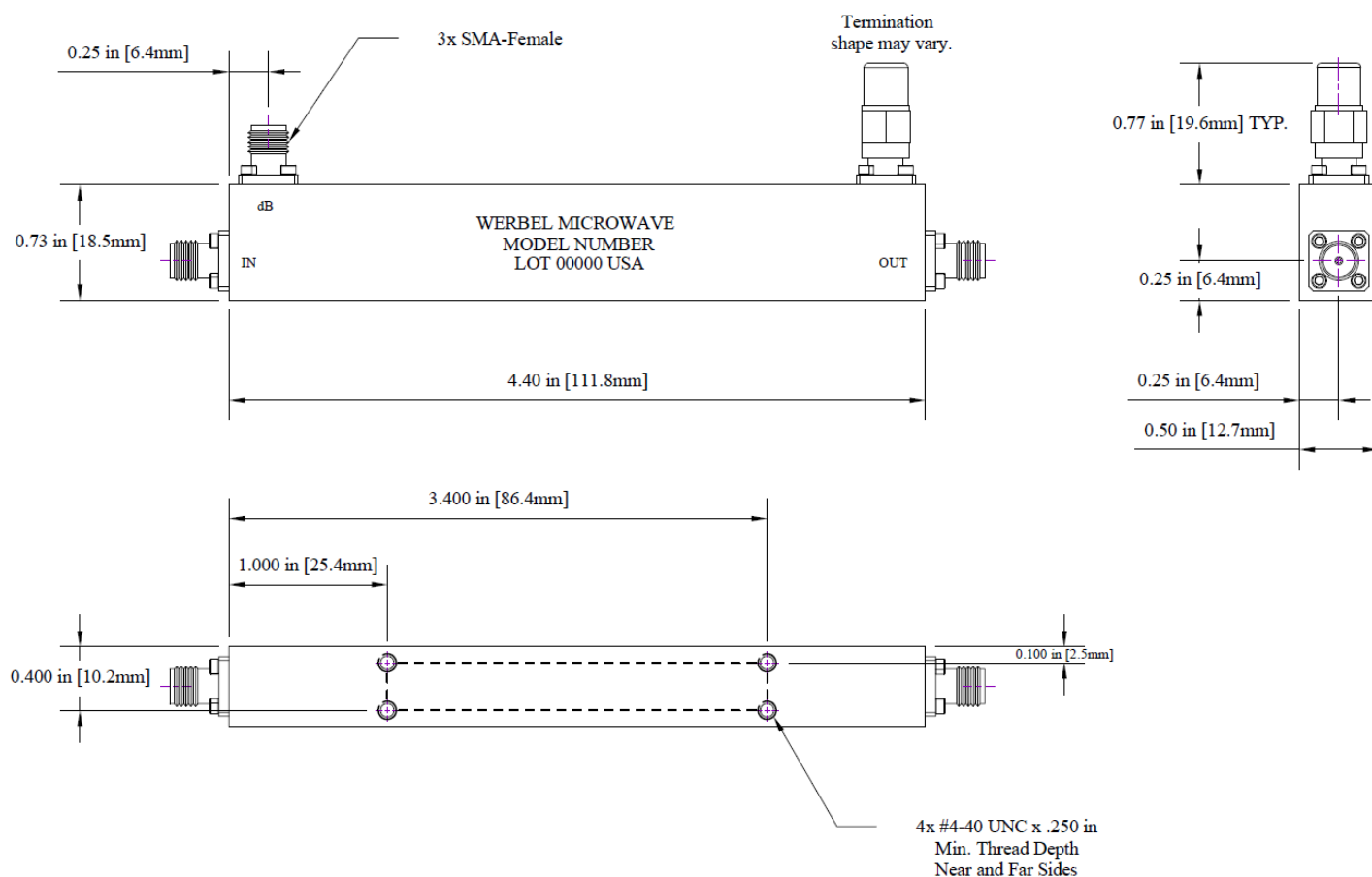




Typical Performance Data

Frequency (MHz)	Return Loss (dB)			Mainline Loss (dB)		Coupling (dB)	Directivity (dB)
	In	Out	Cpl.	In-Out	In-Cpl.	In-Cpl.	
1000	28.4	30.0	36.4	0.6	9.7		32.8
1500	26.7	29.5	27.1	0.7	9.2		25.0
2000	22.7	23.3	24.2	0.7	9.7		31.2
2500	33.8	40.0	34.4	0.7	9.6		24.3
3000	26.6	25.9	31.4	0.7	9.6		28.0
3500	23.0	22.9	26.6	0.8	9.8		25.8
4000	36.1	34.4	32.0	0.8	9.5		24.1
4500	21.6	22.2	24.4	0.7	9.7		21.6
5000	24.3	24.0	24.7	0.8	9.3		22.1
5500	28.0	29.0	24.1	0.8	9.8		19.8
6000	20.9	20.5	19.2	0.8	9.6		19.4
6500	28.5	23.6	21.3	1.0	9.9		23.6
7000	25.2	23.6	22.8	0.8	9.5		19.5
7500	22.4	20.9	18.4	1.0	9.9		23.4
8000	32.3	25.2	20.2	1.1	9.9		24.9
8500	25.8	21.8	26.8	0.9	9.5		19.2
9000	27.6	24.3	20.0	1.0	9.3		26.2
9500	43.3	23.7	24.0	1.2	9.6		20.8
10000	28.9	24.3	28.6	1.0	9.8		20.0
10500	37.5	24.9	21.5	1.2	9.7		33.1
11000	32.8	21.1	49.1	1.0	9.8		18.9
11500	37.6	37.0	34.0	1.3	9.5		21.2
12000	29.5	20.4	35.4	1.2	9.7		19.6
12500	36.9	24.1	36.0	1.3	10.0		22.8
13000	32.0	25.4	24.3	1.3	9.8		20.6
13500	25.4	20.1	19.7	1.3	10.1		34.8
14000	31.7	27.2	25.9	1.4	9.7		23.0
14500	23.9	20.4	15.9	1.3	10.2		22.6
15000	23.7	23.9	18.6	1.4	10.0		25.8
15500	24.4	19.3	17.6	1.5	10.3		16.9
16000	20.4	24.3	18.7	1.5	10.1		19.5
16500	19.3	22.1	19.7	1.6	9.8		29.6
17000	17.1	16.2	21.9	1.6	10.3		34.0
17500	18.3	27.7	31.3	1.5	10.0		24.0
18000	17.8	15.9	22.4	1.6	10.7		25.1
18500	15.5	16.7	30.9	1.7	10.2		19.5
19000	26.0	28.3	23.7	1.6	10.3		19.0
19500	15.5	15.5	22.9	2.1	10.4		15.3
20000	16.7	17.2	15.0	1.9	10.7		14.0

Outline Dimensions



Outline # OL-1185

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.