

## Directional Coupler 10 dB SMA Female 6 to 18 GHz

### Directional Couplers Technical Data Sheet

#### Product Description

Directional couplers are important components for use in isolating, separating, replicating, and combining microwave signals. They can serve as accurate attenuator measurements as they eliminate reflections. They are incredibly useful in sampling RF signals for use in detectors, gain control and feedback loops.

The APTDC-10-06001800-SMA is part of AmpliTech's catalog of single and dual directional couplers that offer a wide range of coupling values and frequency ranges.

Specifications	Min	Typ	Max	Min
Frequency	6		18	GHz
Impedance		50		Ohm
Coupling		10	± 1.25	dB
Frequency Sensitivity (Flatness)		± 0.30	± 1.0	dB
Mainline Loss <sup>1</sup>		0.82	1.05	dB
Directivity	12	15		dB
Return Loss (In and Out)	15	18		dB
Return Loss (Coupling)	14	16		dB
Input Power (CW) <sup>2</sup>			50	Watts (CW)

#### Mechanical

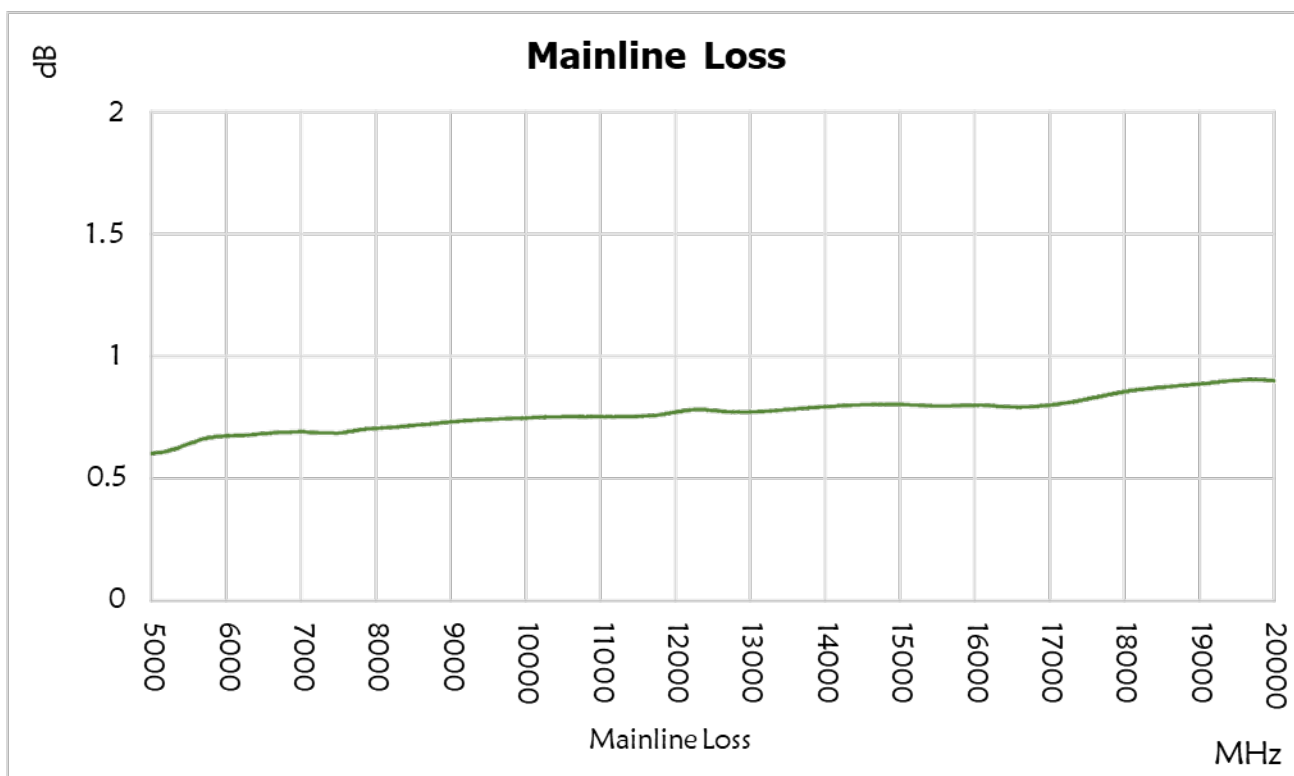
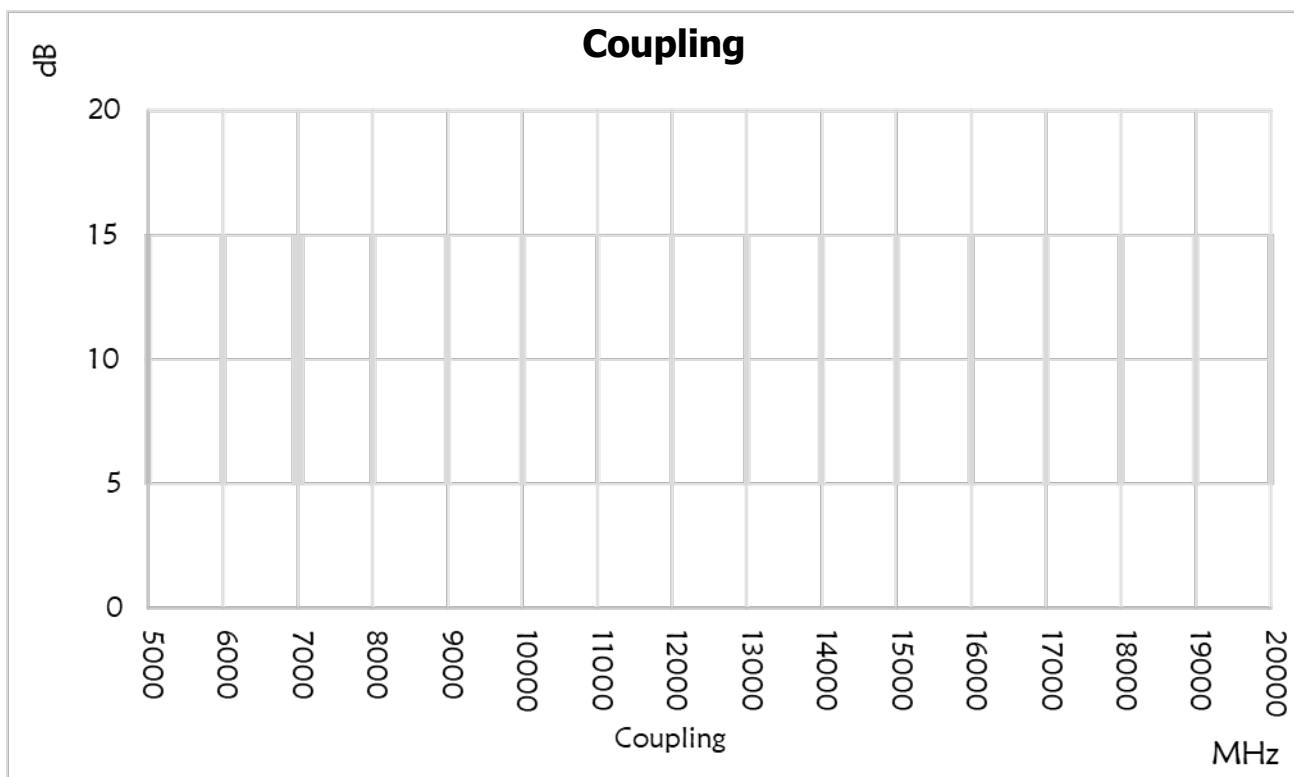
Connector Interface	SMA-Female
Operating Temperature <sup>2</sup>	-55 to +85 °C
Storage Temperature	-55 to +100 °C
Weight Estimate	0.8 oz (22.7 g)
Humidity	10-90% non-condensing
Environment	Indoors Use Only

#### Materials

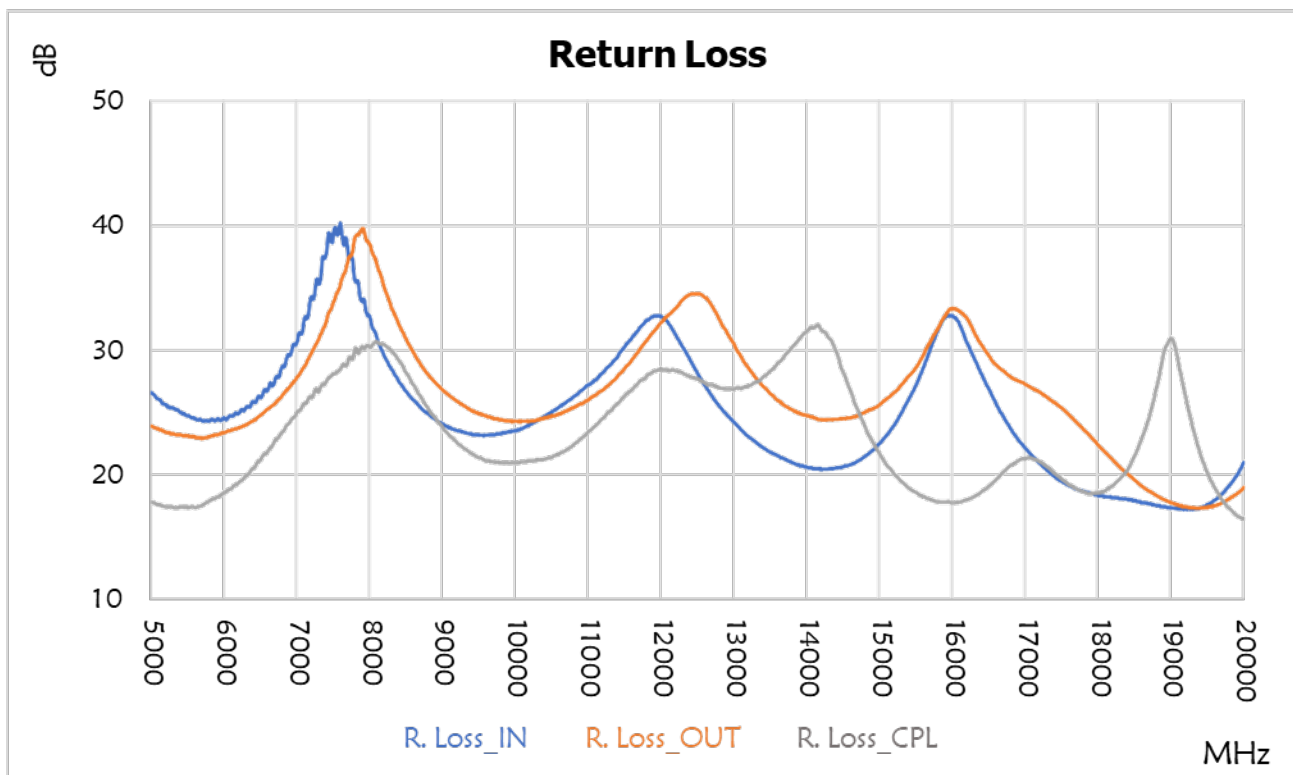
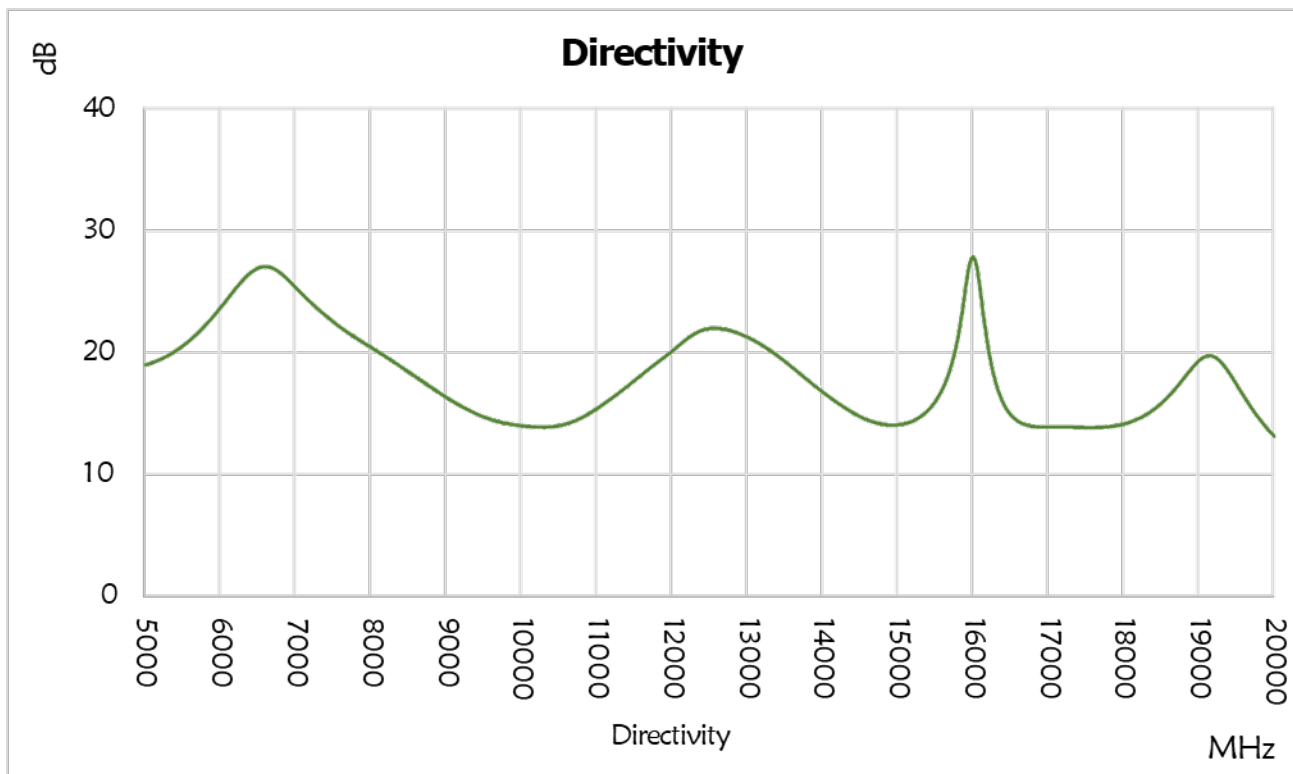
RoHS /REACH Compliant <sup>3</sup>	Yes
Enclosure	Aluminum
Connectors	Stainless Steel
Contacts	Be Cu, Gold Plated
Insulators	PTFE
Finish	Gray Paint

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.
5. Non-RoHS solder is available upon request.

**Typical Performance at +25 °C**



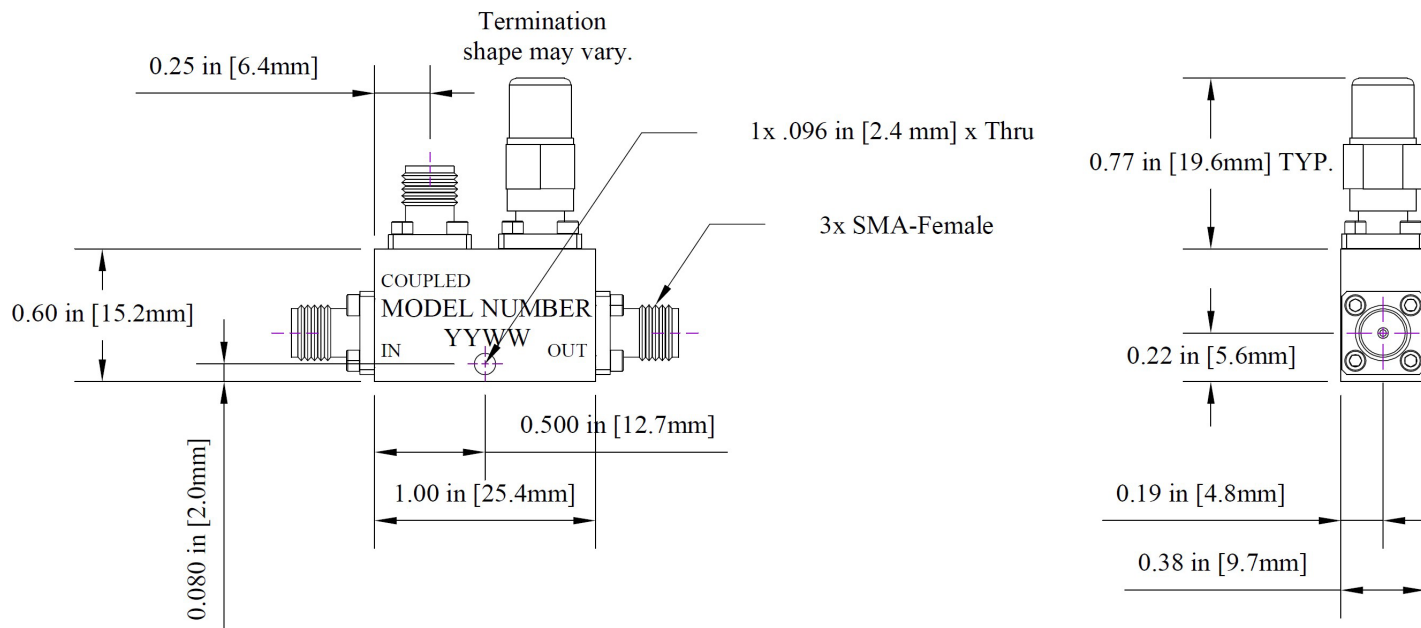
**Typical Performance at +25 °C**



### Typical Performance at +25 °C

Frequency (MHz)	Return Loss (dB)			Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl.	Directivity (dB)
	In	Out	Cpl.			
5000	26.3	24.1	17.9	0.6	10.3	19.2
5500	25.0	22.8	17.3	0.7	10.1	21.0
6000	24.6	23.4	18.6	0.7	9.9	24.4
6500	25.9	25.2	21.8	0.7	9.8	27.2
7000	31.7	28.6	25.3	0.7	9.8	24.9
7500	42.7	34.4	28.0	0.7	9.8	22.2
8000	32.1	37.7	30.7	0.7	9.8	20.2
8500	26.4	30.2	28.1	0.7	9.7	18.2
9000	24.0	26.5	23.5	0.8	9.7	16.1
9500	23.3	24.7	21.4	0.7	9.7	14.6
10000	23.7	24.4	21.0	0.8	9.7	14.0
10500	25.3	24.8	21.6	0.8	9.7	14.2
11000	27.3	26.6	23.6	0.8	9.8	15.8
11500	30.7	29.3	26.7	0.8	9.7	18.2
12000	32.5	32.7	28.4	0.8	9.7	20.6
12500	27.7	34.8	27.7	0.8	9.7	22.0
13000	23.9	29.4	27.0	0.8	9.7	21.0
13500	21.8	26.3	28.5	0.8	9.8	18.9
14000	20.5	24.6	31.7	0.8	9.8	16.4
14500	20.9	24.6	28.0	0.8	9.7	14.6
15000	22.9	26.0	21.4	0.8	9.7	14.2
15500	28.1	29.5	18.5	0.8	9.9	16.9
16000	32.5	33.4	17.8	0.8	10.1	25.4
16500	26.4	28.8	19.3	0.8	9.9	14.4
17000	21.8	27.2	21.4	0.8	9.8	13.9
17500	19.3	25.0	19.6	0.9	9.7	13.9
18000	18.4	22.0	18.6	0.9	9.8	14.4
18500	17.9	19.2	21.9	0.9	10.0	16.4
19000	17.4	17.7	31.0	0.9	10.1	19.8
19500	17.8	17.5	19.8	0.9	10.1	16.5
20000	21.7	19.7	16.5	0.9	10.1	12.7

## Outline Dimensions



Dimensions are in inches, [mm] shown for convenience.  
Tolerances on 2-pl decimals:  $\pm .03$ . 3-pl decimals:  $\pm .015$ .