



REV.2022.A

3dB VHF Compact Coupler

MODEL **CW-31**

OUTLINE DRAWING

UNIT: INCH



L = 11.625 inches at Center Frequency 160 MHz

*Please note other frequency bands available.

TYPICAL ELECTRICAL SPECIFICATIONS	BANDWIDTH OPTIMIZATION		NARROW	
		COUPLING	3.0±0.25	dB
	COUPLING, UNBALANCE	0.50	dB (Typical)	
	VSWR	1.30:1	(Typical)	
	ISOLATION	17.0	dB (Typical)	
	INPUT POWER	100.0	Watt (Avg.)	
		2.0	kW (Peak)	
	PHASE UNBALANCE	3.0	Deg. (Typical)	
	DIELECTRIC BREAKDOWN	500.0	V RMS (Typical)	
MECHANICAL SPECIFICATIONS	C/L BEND RADIUS	0.375	inches	
	STANDARD LENGTH	58.0	inches	
	A DIELECTRIC DIAMETER	0.106	inches	
	B OUTER SHIELD DIAMETER	0.120	inches	
	D WIRE DIAMETER	0.0159	inches	
	OUTER SHIELD PLATING	BARE COPPER		
PHYSICAL SPECIFICATIONS	OPERATIONAL TEMP	55 to 155°C		





Specification Materials

Specifications - Materials

1. Copper wire per QQ-W-343.
2. Polyimide film per insulation MIL-P-46112 with FEP binder per ASTM-3368.
3. Polytetrafluoroethylene (PTFE) inner jacket material per ASTM-D1457.
4. Outer shield material (seamless copper alloy tube): copper.
5. Outer shield plating:
Bare/unplated
6. VHF Compact Coupler is RoHS compliant when outer shield is Bare / unplated.

Computing the Length of Cut & Trimmed VHF Compact Coupler 3 dB Quadrature Hybrids:

To determine the length "L" of a 3 dB VHF Compact Coupler quadrature hybrid:

1. Compute the quarter wavelength frequency (center frequency of your band of use) as follows:

$$F_q \text{ (MHz)} = (F_{\min} + F_{\max}) / 2$$

2. Compute the hybrid length "L" as follows:

$$\text{"L" (inches)} = 1860 / F_q \text{ (MHz)}$$

Ordering Information

VHF Compact Coupler can be purchased in bulk (5) five foot lengths or precut and trimmed ready for installation. For trimmed lengths, use the formulas in the prior section to determine the length corresponding to your center frequency and coupling values. Contact ETI for other than straight cut & trimmed lengths.



Performance Graphs at 160MHz, 12.5" Length



Figure 1: Coupling at 160 MHz and 12.5" Length



Figure 2: Isolation at 160 MHz and 12.5" Length



Figure 3: Phase at 160 MHz and 12.5" Length

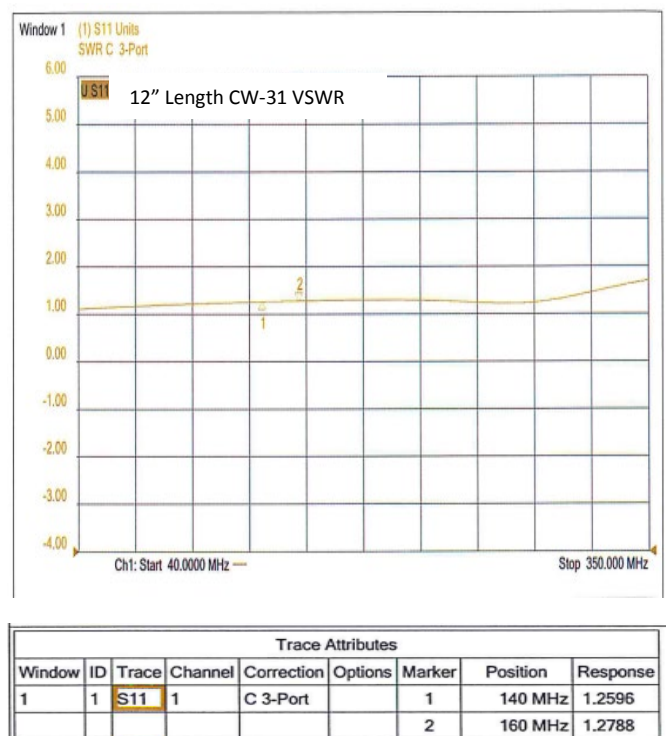
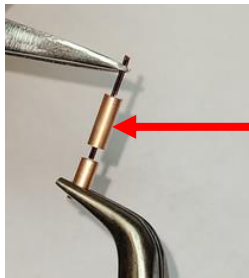


Figure 4: VSWR at 160 MHz and 12.5" Length



Work Instructions for Trimming Short VHF Compact Coupler

1. When the length of the VHF Compact coupler is less than 15mm, care must be taken not to dislodge the inner connector.
2. When removing the jacket of the trimmed end of the VHF Compact coupler, hold the inner conductor while force is applied to the trim to remove the trim. See below.



VHF Compact Coupler Main Body

3. DO NOT AT ANY TIME HOLD THE VHF COMPACT COUPLER MAIN BODY WHILE REMOVING THE TRIM END.
4. No force or torque shall be applied to the main body as this will force the main body to be detached from the inner conductor. And, as such, the inner conductor will no longer be secured.