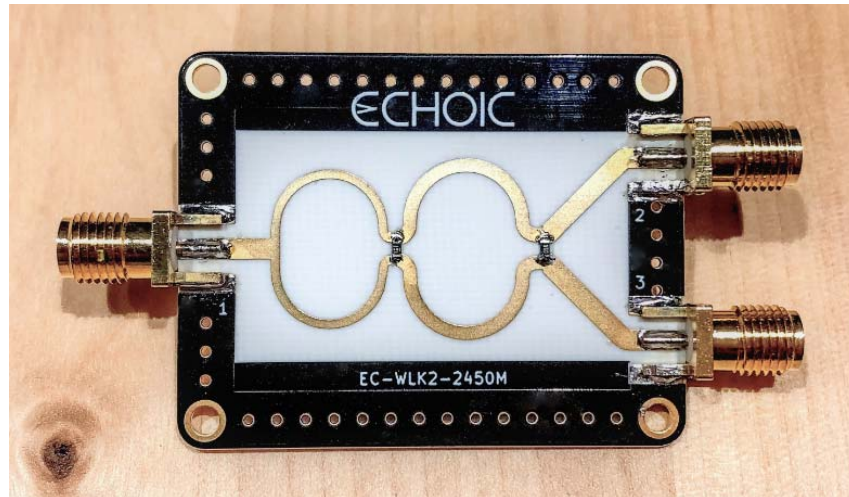


## Data Sheet

### EC-WLK2-2450M Wilkinson Power Divider/Combiner 0.5-4.75 GHz



## Applications

- General-purpose RF, microwave, education
- 802.11 2.4 GHz, UHF, L-/S-Band, Satcom
- Wi-Fi, ISM, GSM, LTE, GPS

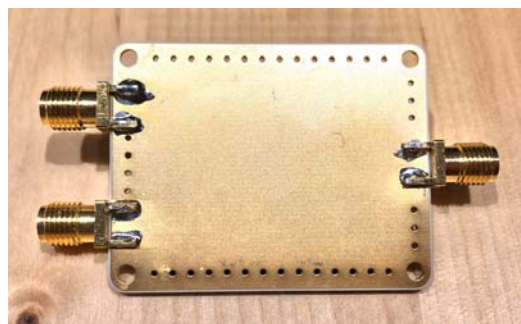
## Features

- Return Loss 10dB over a 4.5 GHz BW
- Insertion loss = 3.13 to 3.8 dB → 0.13 to 0.8 dB loss
- Isolation > 10dB over 3.8 GHz BW

## Description

The EC-WLK2-2450M is an ultra-wide band, two-stage Wilkinson power divider/combiner realized using microstrip transmission-lines on a low-loss microwave laminate. The EC-WLK2-2450M can be used for RF signal processing, test and measurement or educational demonstration. The EC-WLK2-2450M is designed around 2.45 GHz but exhibits an ultra-wide bandwidth of 4.5 GHz when considering a return loss of 10dB. This allows it to operate over a multiplicity of commercial bands including Wi-Fi 2.4GHz, ISM, GSM, LTE and GPS. In-band loss is very low and ranges from 0.13 to 0.8dB providing an equal split to the two ports. The in-band isolation is > 10dB for over 3.8GHz of bandwidth. The EC-WLK2-2450M is realized on high performance, low-loss Rogers substrate material. The EC-WLK2-2450M is equipped with female SMA connectors on all three ports. The backside solder mask is absent, enabling it to be surface mounted if the connectors are removed.

Backside of EC-WLK2-2450M



## Specifications

Parameter	Test Cond.	Min.	Typ.	Max.	Units
Impedance			50		Ohm
Center Frequency			2.450		GHz
Bandwidth	10dB Return Loss		4.500		GHz
VSWR	0.50 to 4.75 GHz			1.8:1	
Insertion loss	0.50 to 4.75 GHz	3.13		3.80	dB
Isolation	0.60 to 4.40 GHz	10.00			dB
Phase Imbalance	0.60 to 4.40 GHz, P2 to P3			1	deg
Input power	CW			10*	Watts

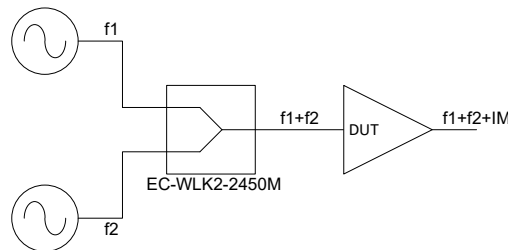
\*to be verified

## Typical Application

The EC-WLK2-2450M can be used in a variety of RF applications which require RF power combining or dividing.

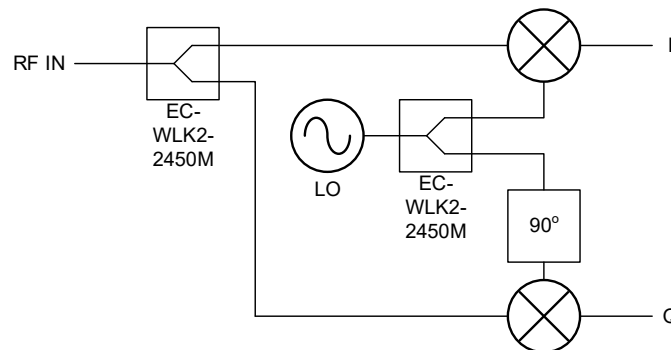
### Combiner

One application of the EC-WLK2-2450M is in combining the outputs from two sources to generate a two-tone test as shown below. One signal source generates a tone at  $f_1$  and the second signal source generates a tone at  $f_2$ . The two signals are combined using the EC-WLK2-2450M. Since the EC-WLK2-2450M is a two-stage broadband combiner, wideband signals as well as signals with large frequency spacing can be used.



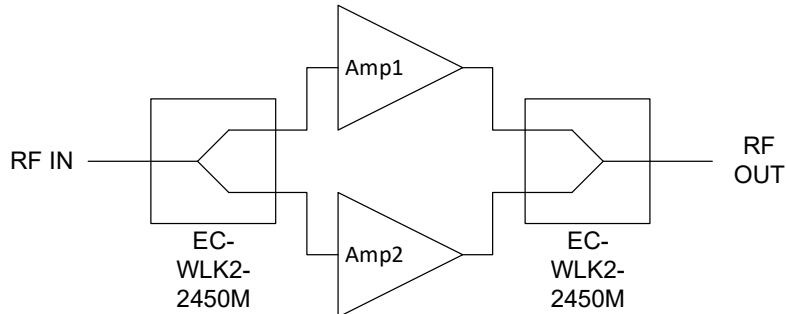
### Divider

The EC-WLK2-2450M can also operate as a power divider. This is especially useful for distributing signal to different parts of the RF system. For example, in a direct-conversion receiver, the RF input is divided to the I and Q mixers. Likewise, the local oscillator LO is divided for use with both mixers.



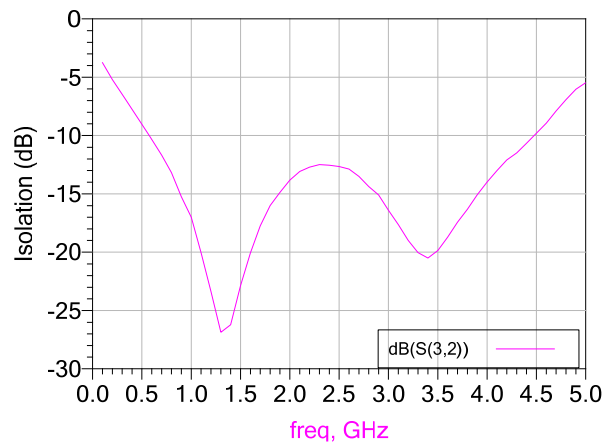
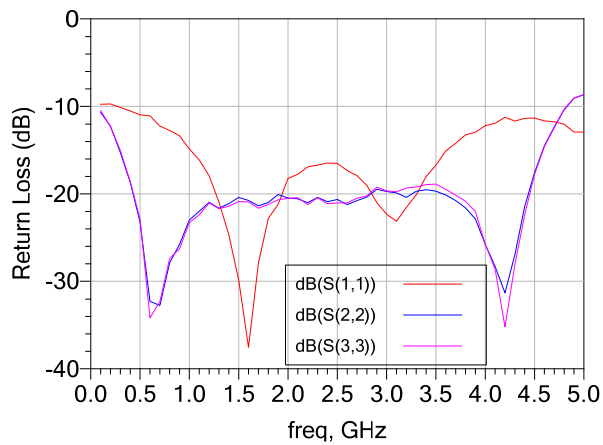
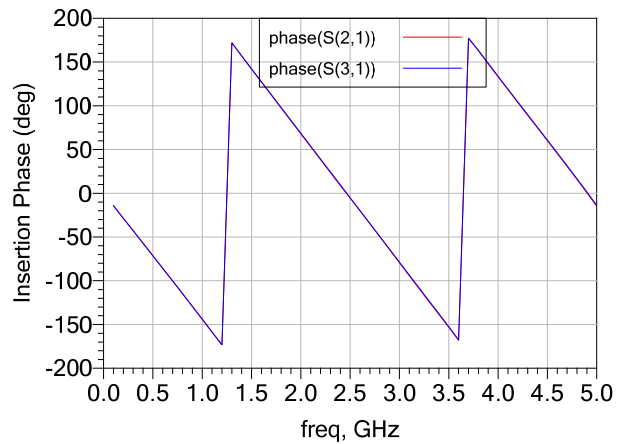
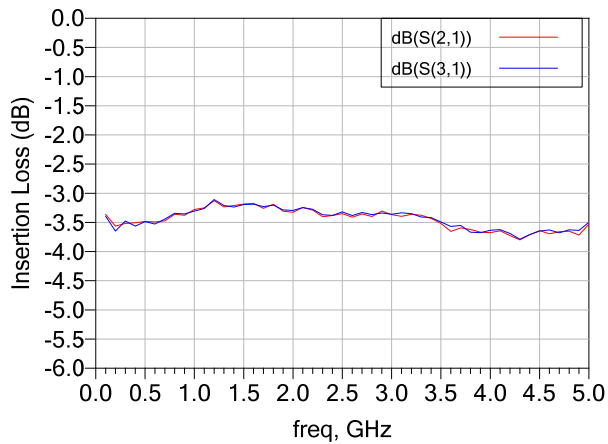
### Amplifiers

Another common application is in power combining and dividing for RF amplifiers. Two amplifiers can operate together by using one EC-WLK2-2450M at the input (divider) and one at the output (combiner). No special impedance matching is needed for Amp1 and Amp2 as the ports of EC-HBD2-2450M are matched to 50 ohms. This means that Amp1 can be designed to operate independently and then combined with a second unit if desired.



### Performance

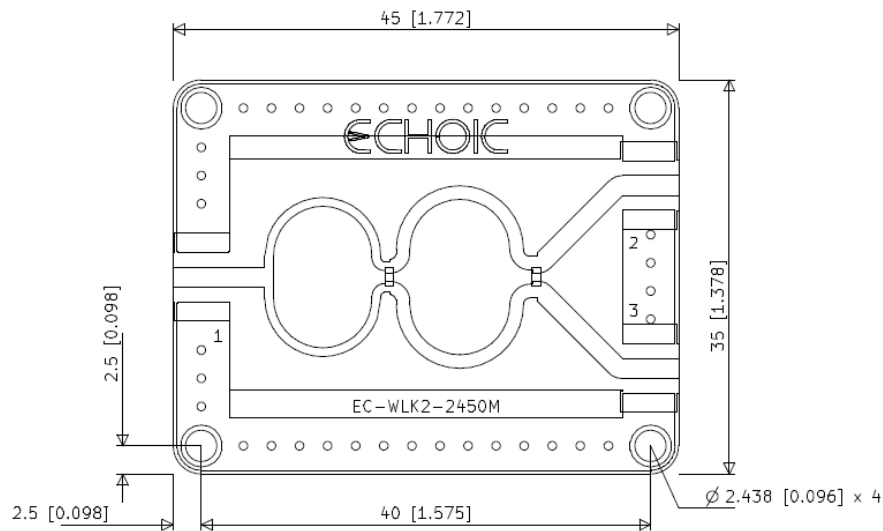
Typical performance shown from 0.1 to 5.0 GHz



## Mechanical

<i>Configuration</i>	<i>Parameter</i>	<i>Typical</i>	<i>Units</i>
PCB only (without case and without connectors)	Width	35	mm
	Length	45	mm
	Height	0.95	mm
PCB and case (without connector)	Width	35	mm
	Length	45	mm
	Height	12.6	mm
Connector	Torque	8	In-lbs

PCB mechanical drawing. All units in mm [inches]. Connectors not shown.

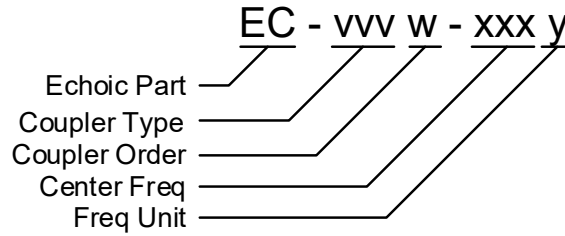


The EC-WLK2-2450M can be used with an optional case .



## Ordering Information

Please use the following model number designation for ordering this and any other part from our coupler line:



For example, EC-WLK2-2450M is an Echoic part, two-stage Wilkinson power divider/combiner with center frequency of 2450 MHz.

## Web Resource

For more information on other industrial RF and microwave solutions please visit our online store 5G Links: [www.5glinks.com](http://www.5glinks.com)

Copyright © 2021

Echoic Engineering LLC. All Rights Reserved.

Information in this document is provided in connection with Echoic Engineering LLC ("Echoic") products or services. These materials, including the information contained herein, are provided by Echoic as a service to its customers and may be used for informational purposes only by the customer. Echoic assumes no responsibility for errors or omissions in these materials or the information contained herein. Echoic may change its documentation, products, services, specifications or product descriptions at any time, without notice. Echoic makes no commitment to update the materials or information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from any future changes.

No license, whether express, implied, by estoppel or otherwise, is granted to any intellectual property rights by this document. Echoic assumes no liability for any materials, products or information provided hereunder, including the sale, distribution, reproduction or use of Echoic products, information or materials, except as may be provided in Echoic Terms and Conditions of Sale.

THE MATERIALS, PRODUCTS AND INFORMATION ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE, INCLUDING FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT; ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED. ECHOIC DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. ECHOIC SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING BUT NOT LIMITED TO ANY SPECIAL, INDIRECT, INCIDENTAL, STATUTORY, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THE MATERIALS OR INFORMATION, WHETHER OR NOT THE RECIPIENT OF MATERIALS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Echoic products are not intended for use in medical, lifesaving or life-sustaining applications, or other equipment in which the failure of the Echoic products could lead to personal injury, death, physical or environmental damage. Echoic customers using or selling Echoic products for use in such applications do so at their own risk and agree to fully indemnify Echoic for any damages resulting from such improper use or sale. FOR NON-CRITICAL RESEARCH LAB USE ONLY.

Customers are responsible for their products and applications using Echoic products, which may deviate from published specifications as a result of design defects, errors, or operation of products outside of published parameters or design specifications. Customers should include design and operating safeguards to minimize these and other risks. Echoic assumes no liability for applications assistance, customer product design, or damage to any equipment resulting from the use of Echoic products outside of stated published specifications or parameters.

Echoic, the Echoic symbol, 5G Links and the 5G Links symbol are trademarks or registered trademarks of Echoic Engineering LLC, in the United States and other countries. Third-party brands and names are for identification purposes only, and are the property of their respective owners. Additional information, including relevant terms and conditions, posted at [www.5glinks.com](http://www.5glinks.com), are incorporated by reference.