

# Thin-Film Directional Couplers

## DB0805 3dB 90° Couplers



### GENERAL DESCRIPTION ITF TECHNOLOGY

The ITF SMD 3dB 90° Coupler is based on thin-film multilayer technology. The technology provides a miniature part with excellent high frequency performance and rugged construction for reliable automatic assembly.

The ITF 3dB 90° Coupler is offered in a variety of frequency bands compatible with various types of high frequency wireless systems.

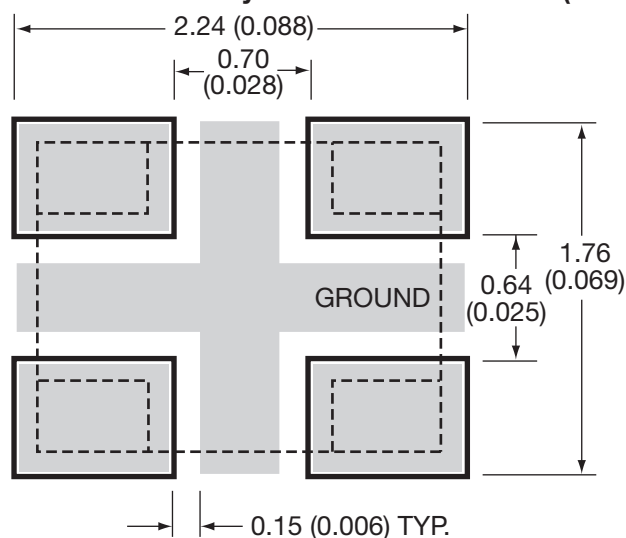
### APPLICATIONS

- Balanced Amplifiers and Signal Distribution in Mobile Communications

### FEATURES

- Miniature 0805 size
- Low I. Loss
- High Isolation
- Power Handling: 10W RF CW
- Surface Mountable
- Supplied on Tape and Reel
- Operating Temperature -40°C to +85°C

### Recommended Pad Layout Dimensions mm (inches)

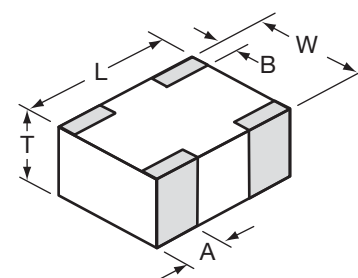


### DIMENSIONS:

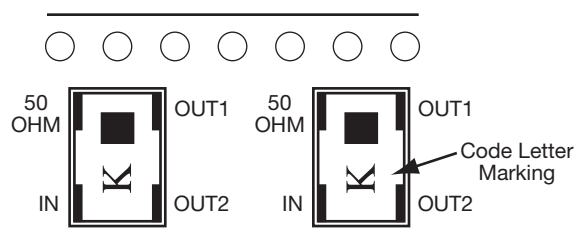
millimeters (inches)

|   |                            |
|---|----------------------------|
| L | 2.03±0.10<br>(0.080±0.004) |
| W | 1.55±0.10<br>(0.061±0.004) |
| T | 0.98±0.15<br>(0.037±0.006) |
| A | 0.56±0.25<br>(0.022±0.010) |
| B | 0.35±0.15<br>(0.014±0.006) |

### Bottom View



### TERMINALS (Top View) Orientation in Tape



### ELECTRICAL PARAMETERS\*

| Part Number**   | Frequency F <sub>0</sub><br>[MHz] | I. Loss @ F <sub>0</sub><br>[dB] | Phase Balance<br>[deg] max. | Code Letter<br>Marking |
|-----------------|-----------------------------------|----------------------------------|-----------------------------|------------------------|
| DB0805A0880AWTR | 880±30                            | 0.35                             | 3                           | Y                      |
| DB0805A0915AWTR | 915±30                            | 0.35                             | 3                           | V                      |
| DB0805A0967AWTR | 967±30                            | 0.35                             | 3                           | V                      |
| DB0805A1350AWTR | 1350±50                           | 0.35                             | 3                           | C                      |
| DB0805A1650AWTR | 1650±50                           | 0.35                             | 3                           | F                      |
| DB0805A1800AWTR | 1800±50                           | 0.30                             | 3                           | F                      |
| DB0805A1850AWTR | 1850±50                           | 0.30                             | 3                           | K                      |
| DB0805A1900AWTR | 1900±50                           | 0.30                             | 3                           | K                      |
| DB0805A1950AWTR | 1950±50                           | 0.25                             | 3                           | K                      |
| DB0805A2140AWTR | 2140±50                           | 0.25                             | 3                           | L                      |
| DB0805A2325AWTR | 2325±50                           | 0.25                             | 3                           | T                      |

\*With Recommended Pad Layout

**\*\*LEAD FREE TERMINATION  
PART NUMBERS:  
DB0805AxxxxASTR**



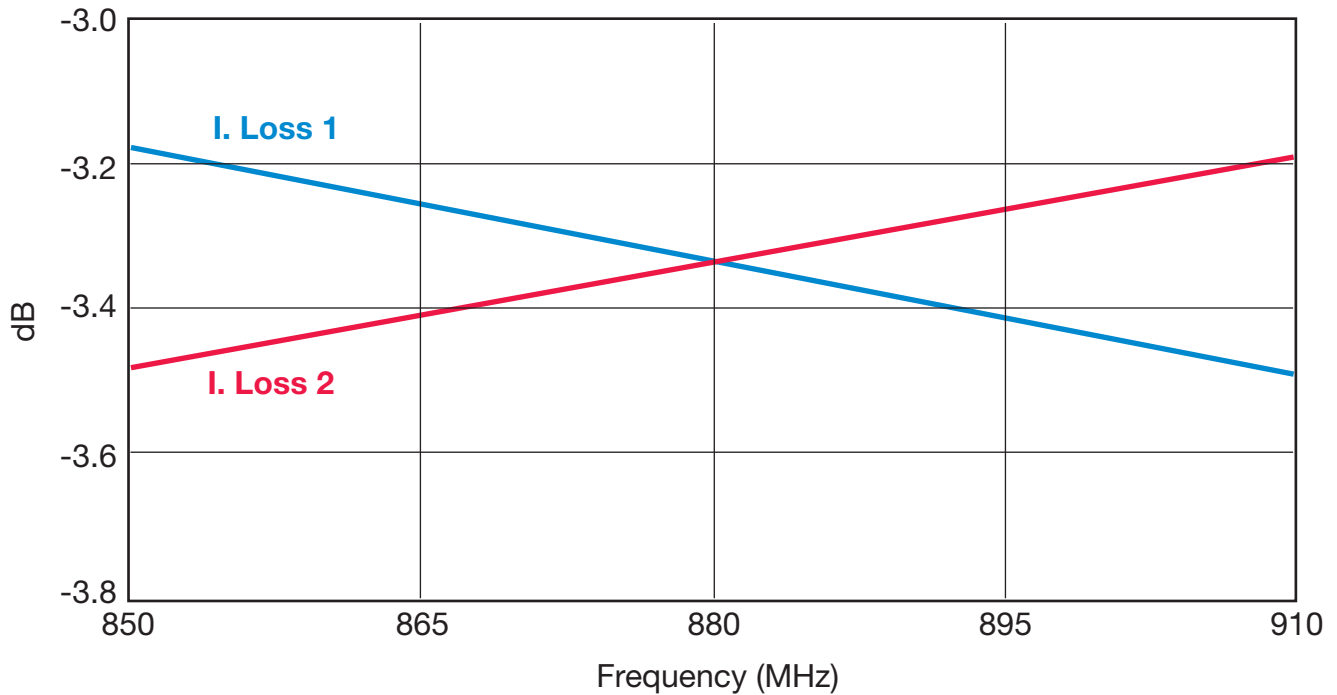
**Important:** All intermediate frequencies within the indicated range are readily available.

# Thin-Film Directional Couplers

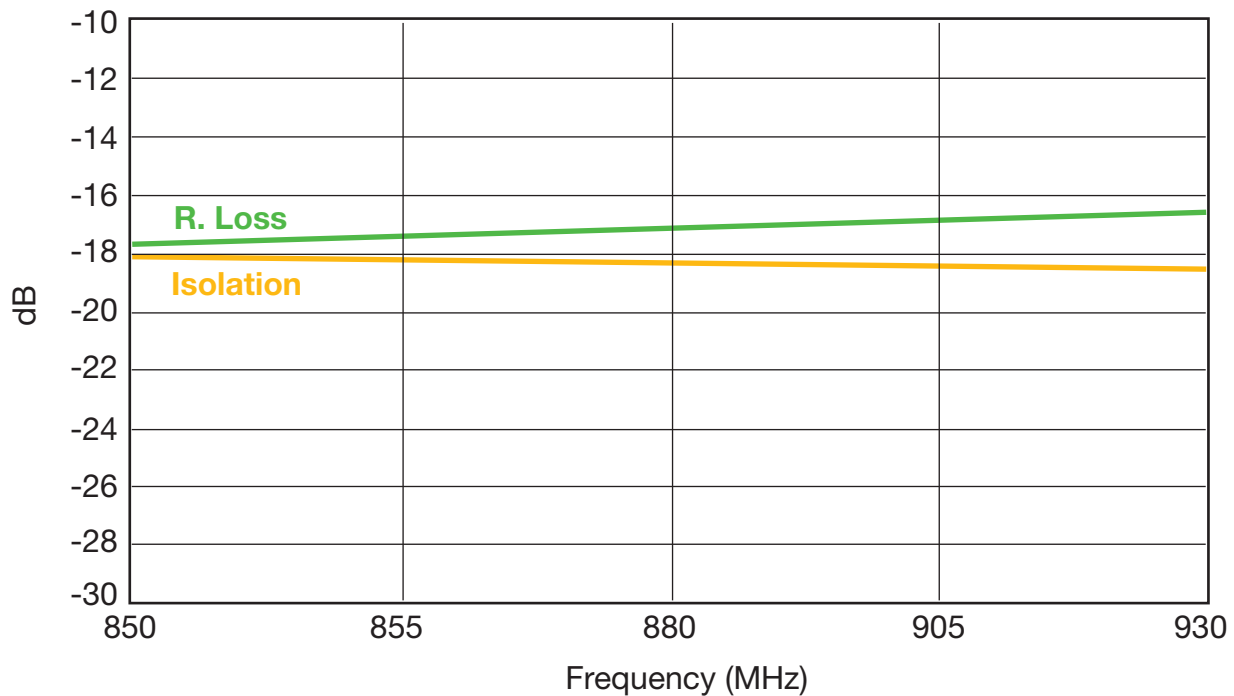
## DB0805 3dB 90° Couplers



880 ± 30MHz DB0805A0880AWTR



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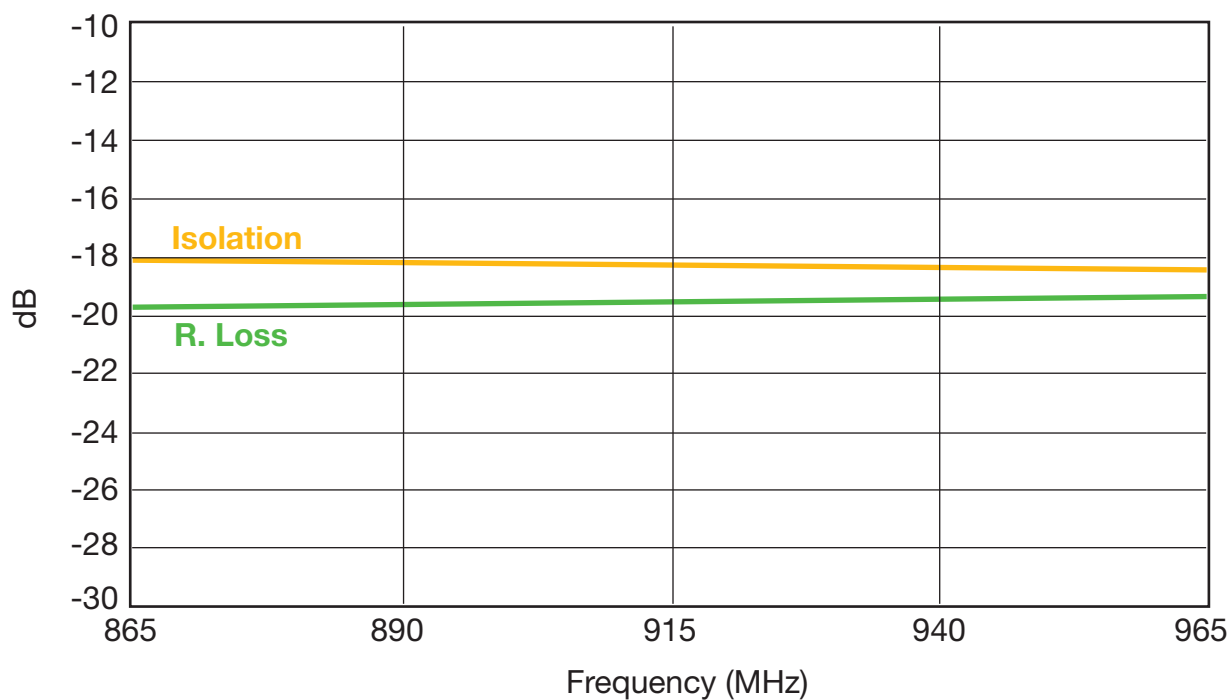
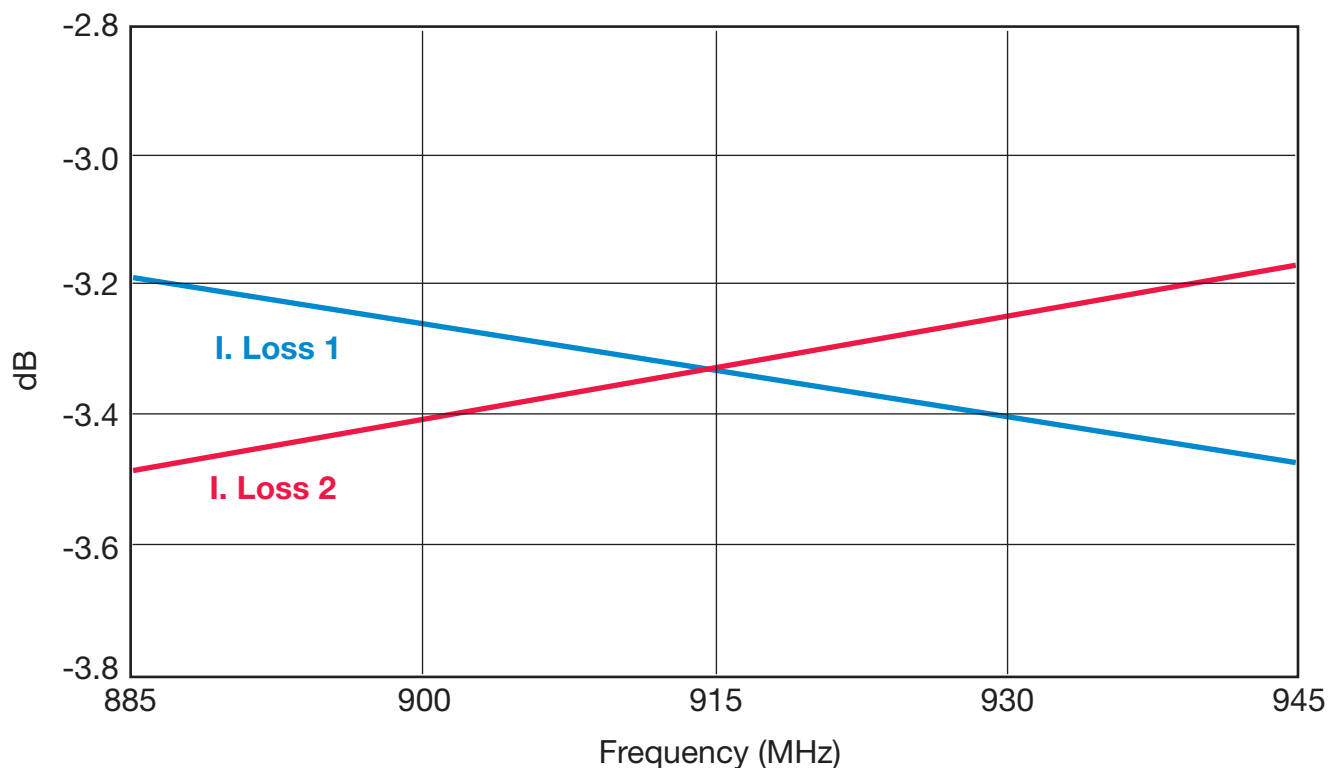


# Thin-Film Directional Couplers

## DB0805 3dB 90° Couplers



915  $\pm$  30MHz DB0805A0915AWTR

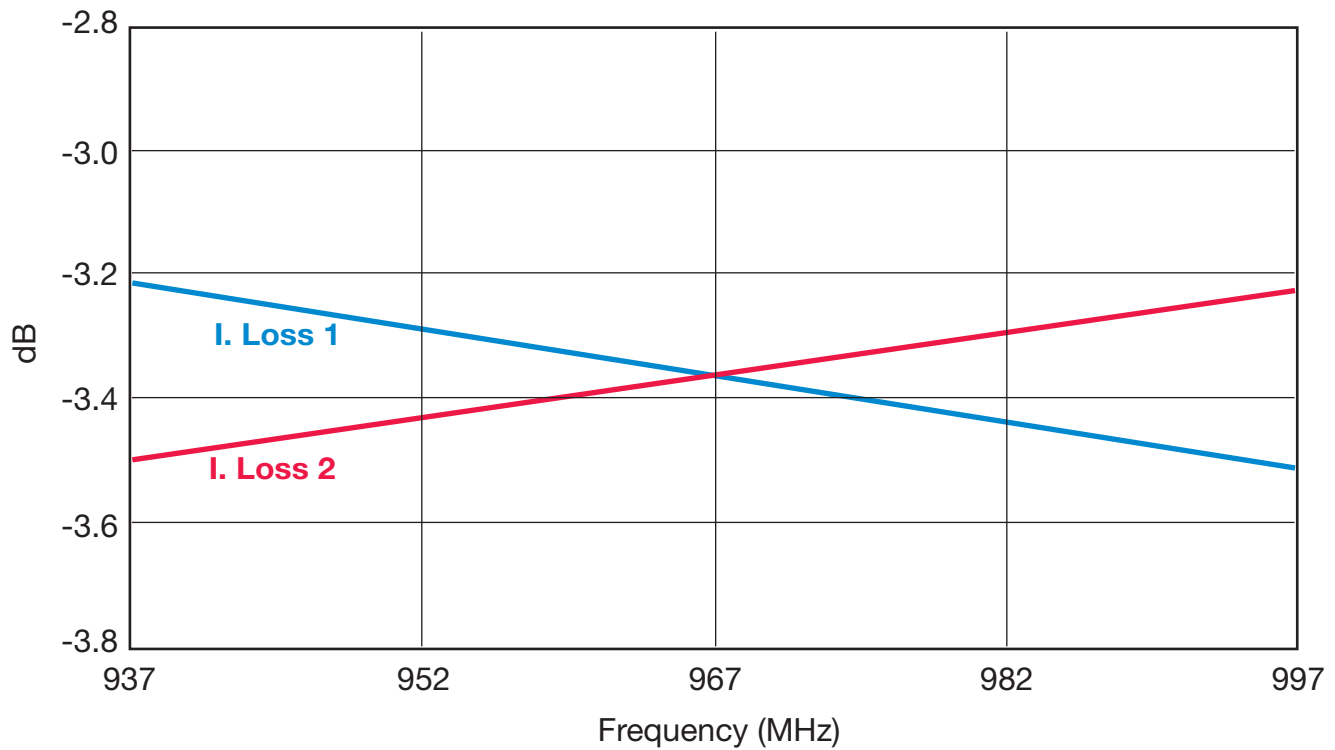


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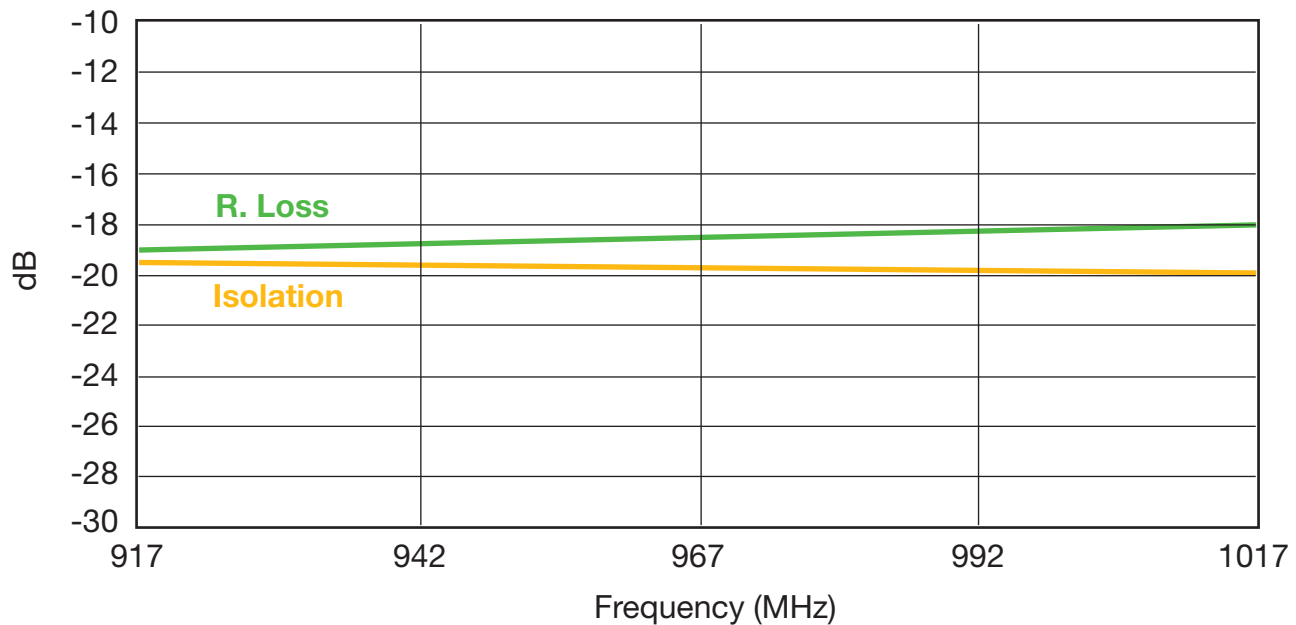
## DB0805 3dB 90° Couplers



967± 30MHz DB0805A0967AWTR



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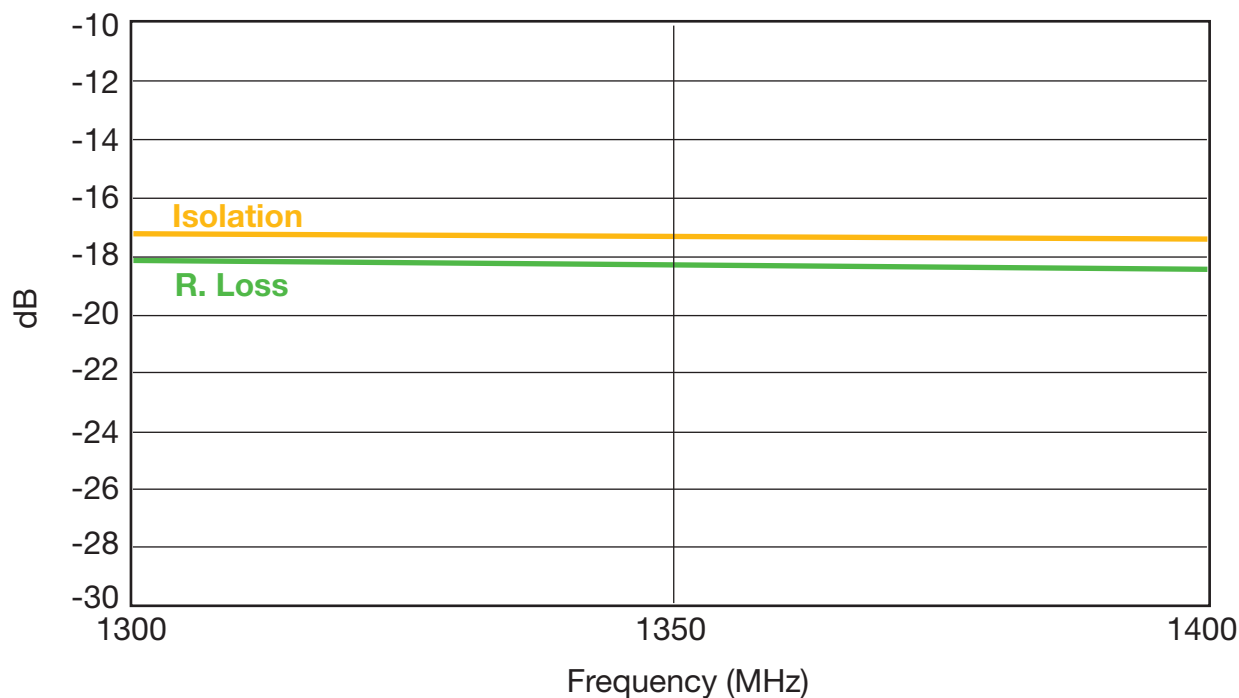
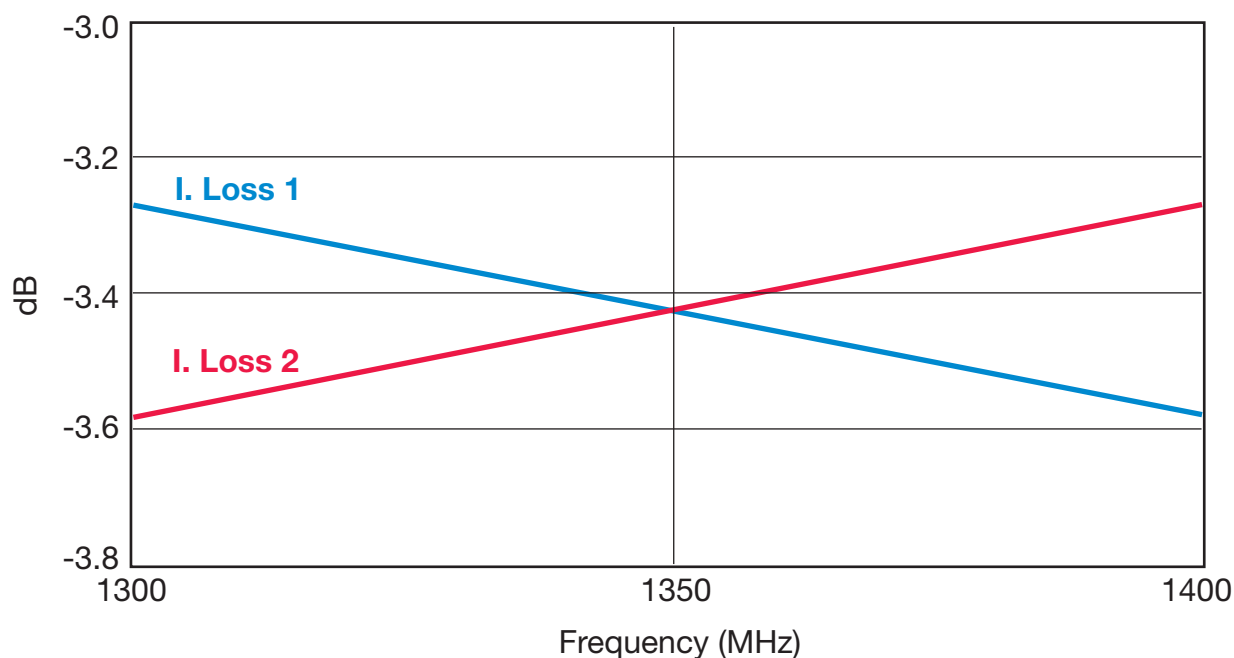


# Thin-Film Directional Couplers

## DB0805 3dB 90° Couplers



1350 ± 50MHz DB0805A1350AWTR



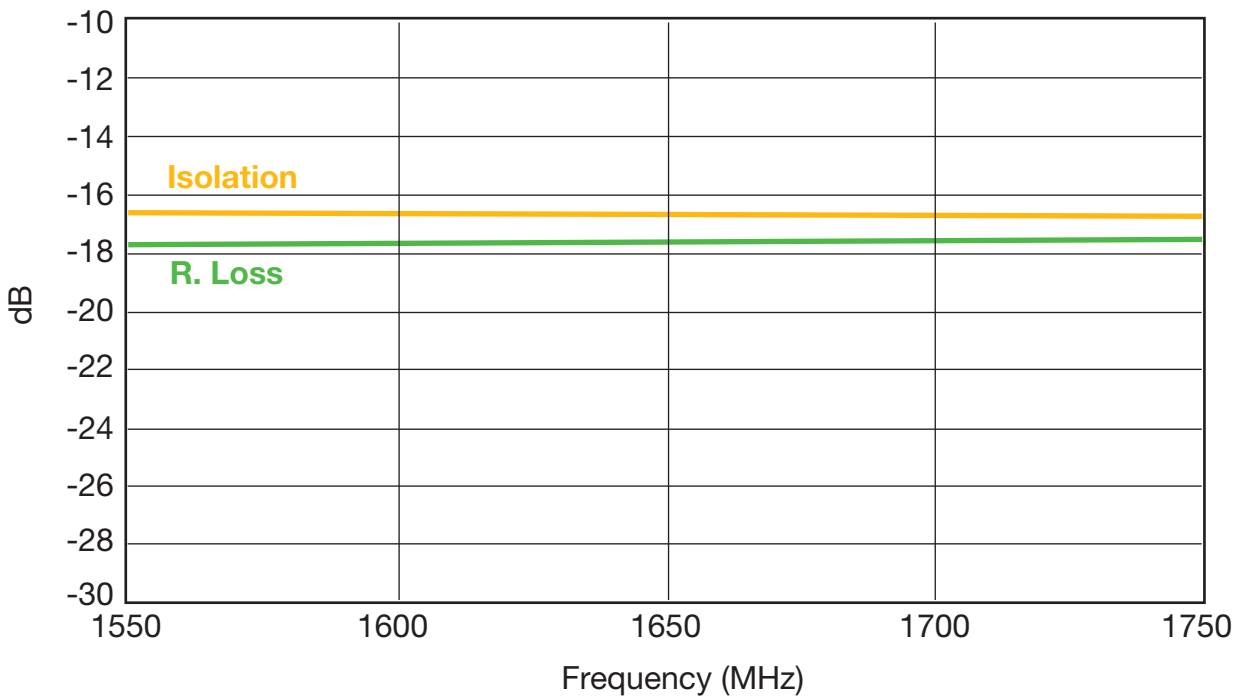
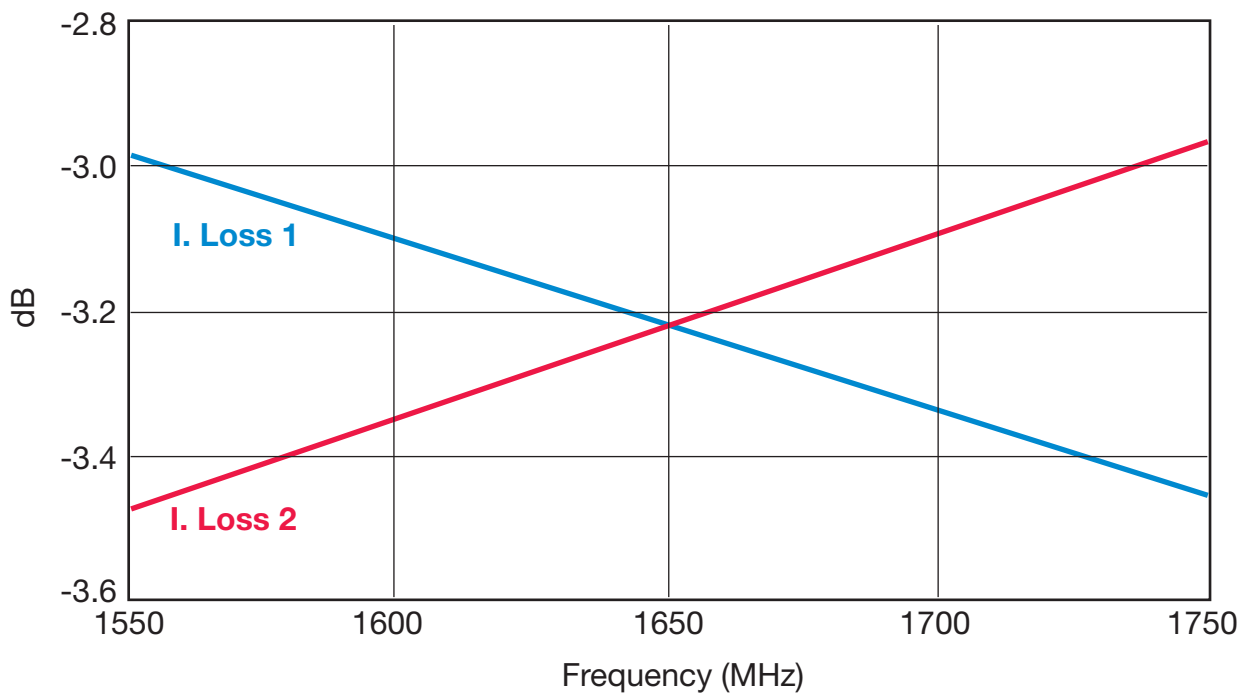
# Thin-Film Directional Couplers

## DB0805 3dB 90° Couplers



1650 ± 50MHz DB0805A1650AWTR

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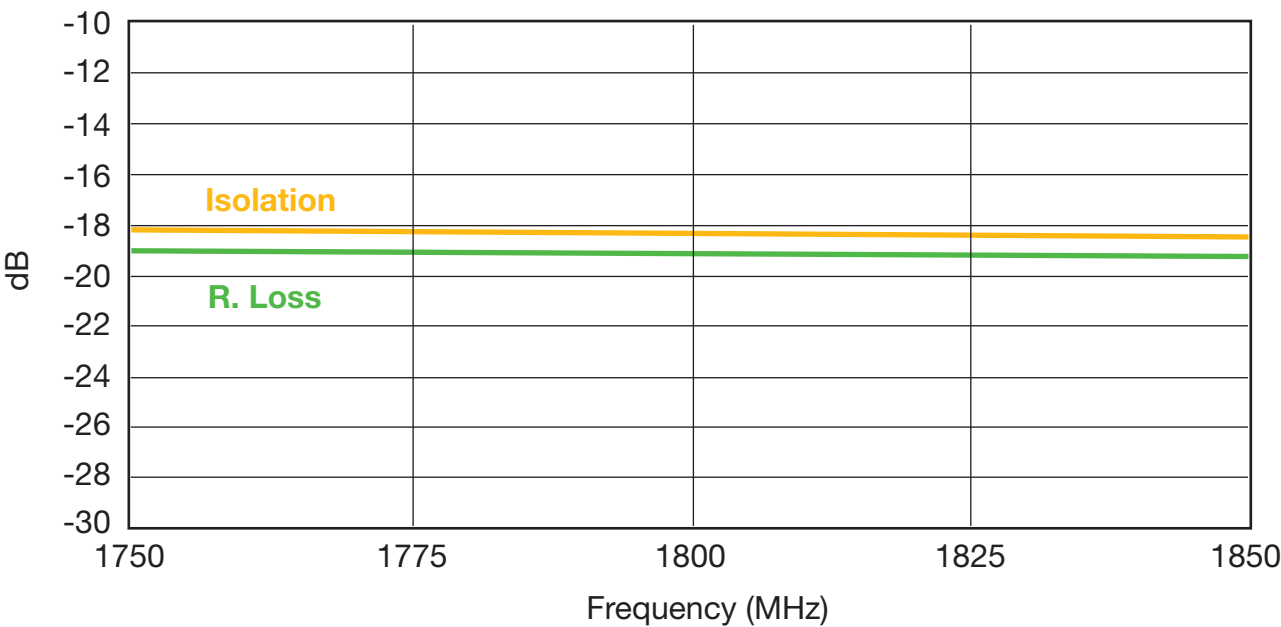
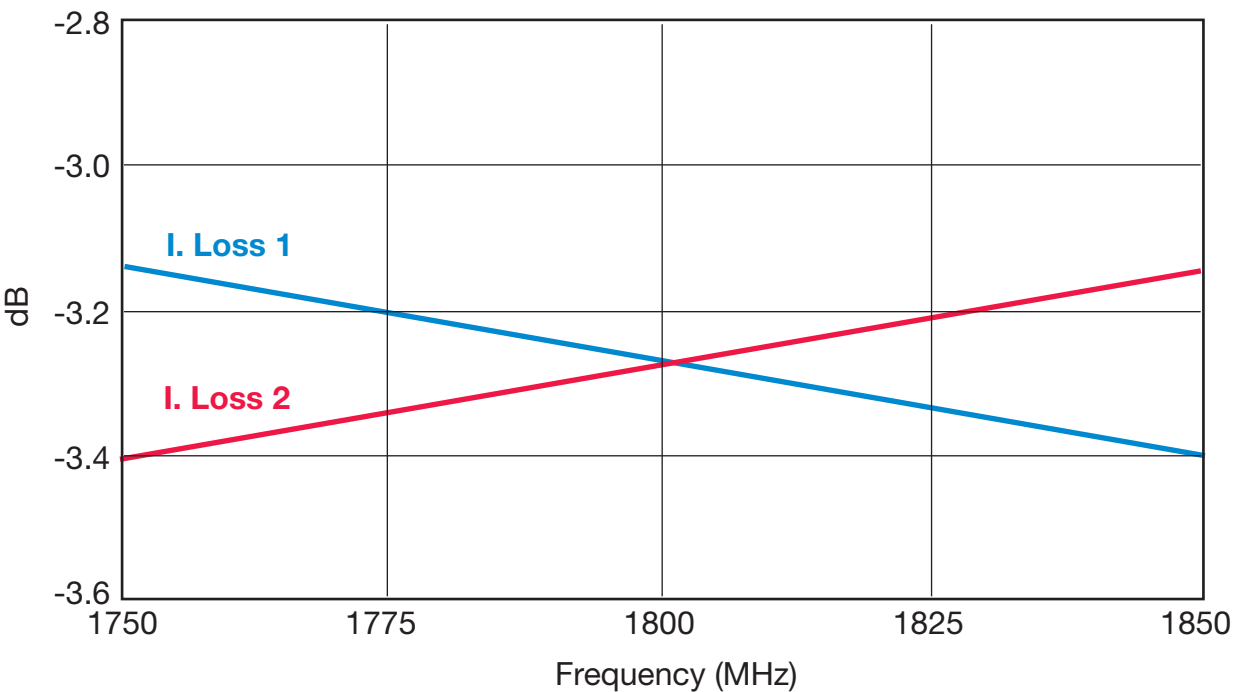
# Thin-Film Directional Couplers

## DB0805 3dB 90° Couplers



1800 ± 50MHz DB0805A1800AWTR

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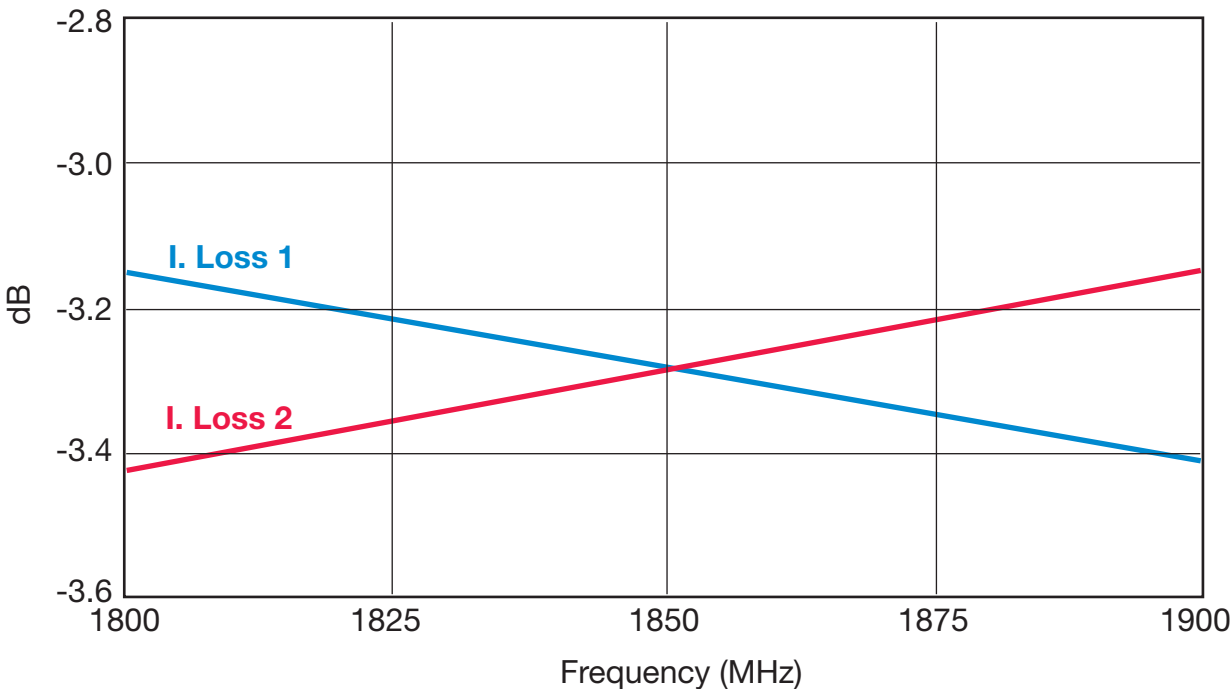


# Thin-Film Directional Couplers

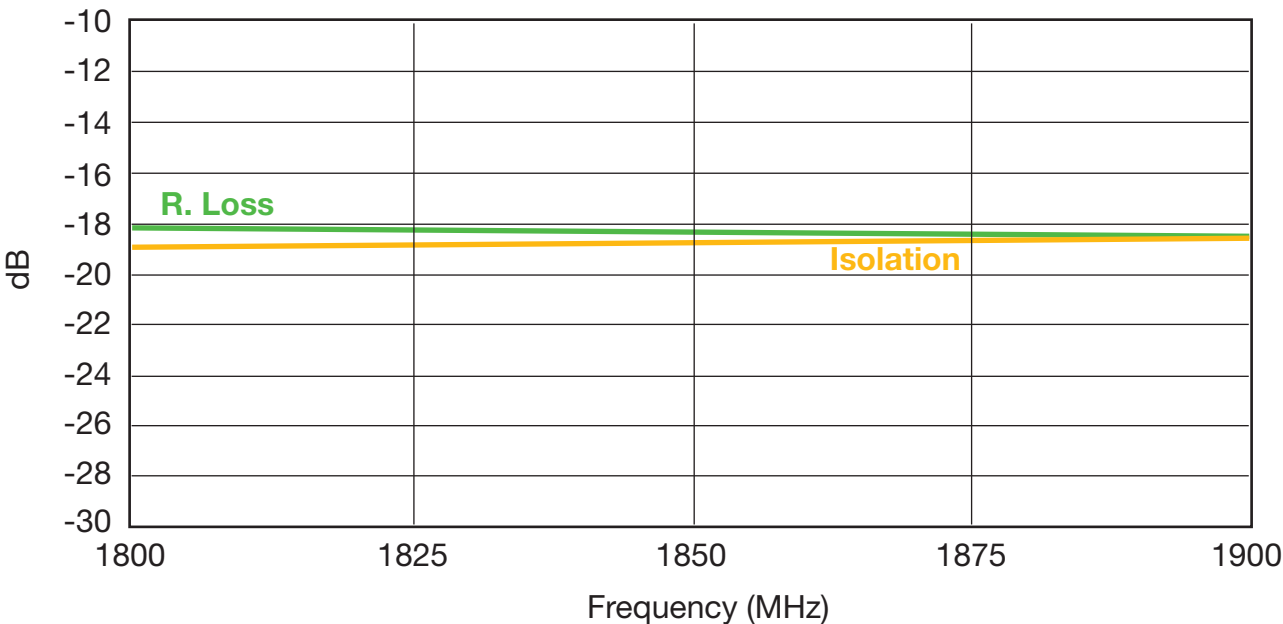
## DB0805 3dB 90° Couplers



1850 ± 50MHz DB0805A1850AWTR



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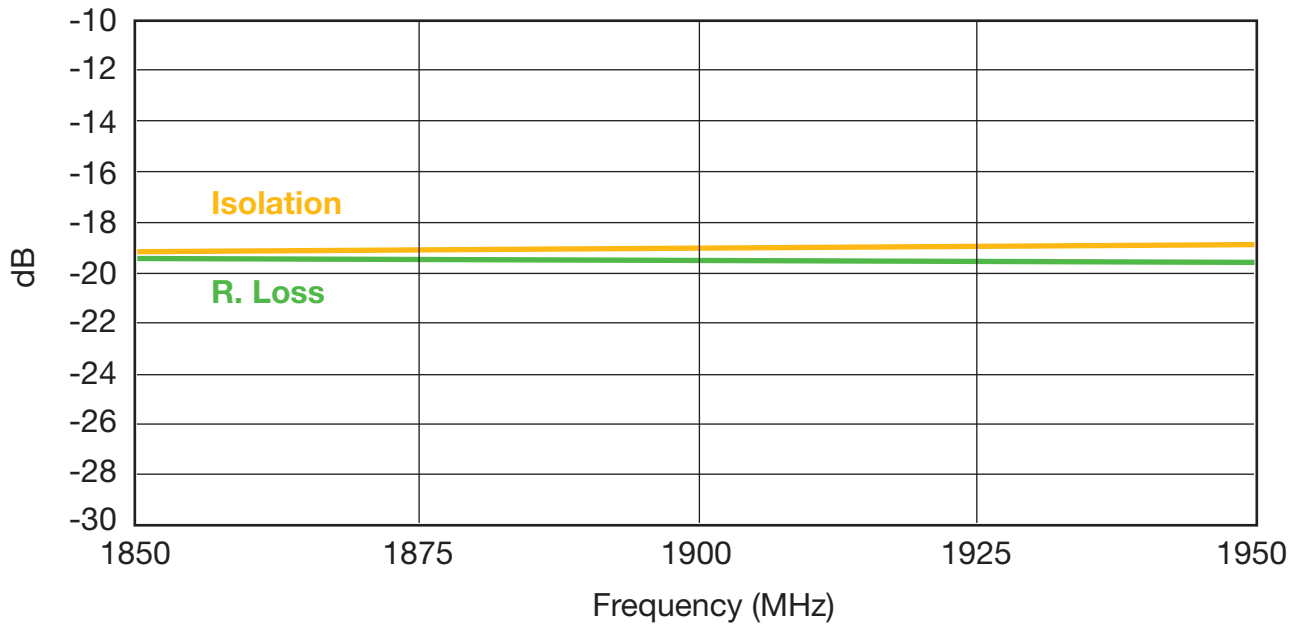
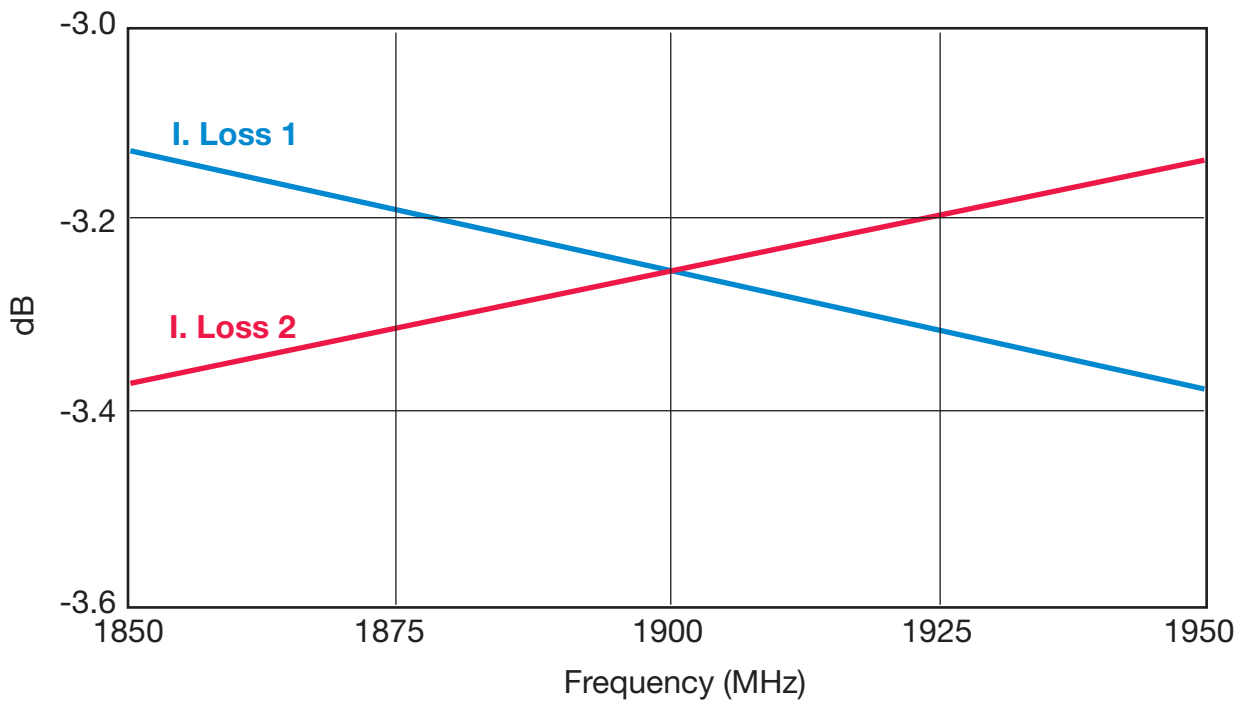


# Thin-Film Directional Couplers

## DB0805 3dB 90° Couplers



1900  $\pm$  50MHz DB0805A1900AWTR

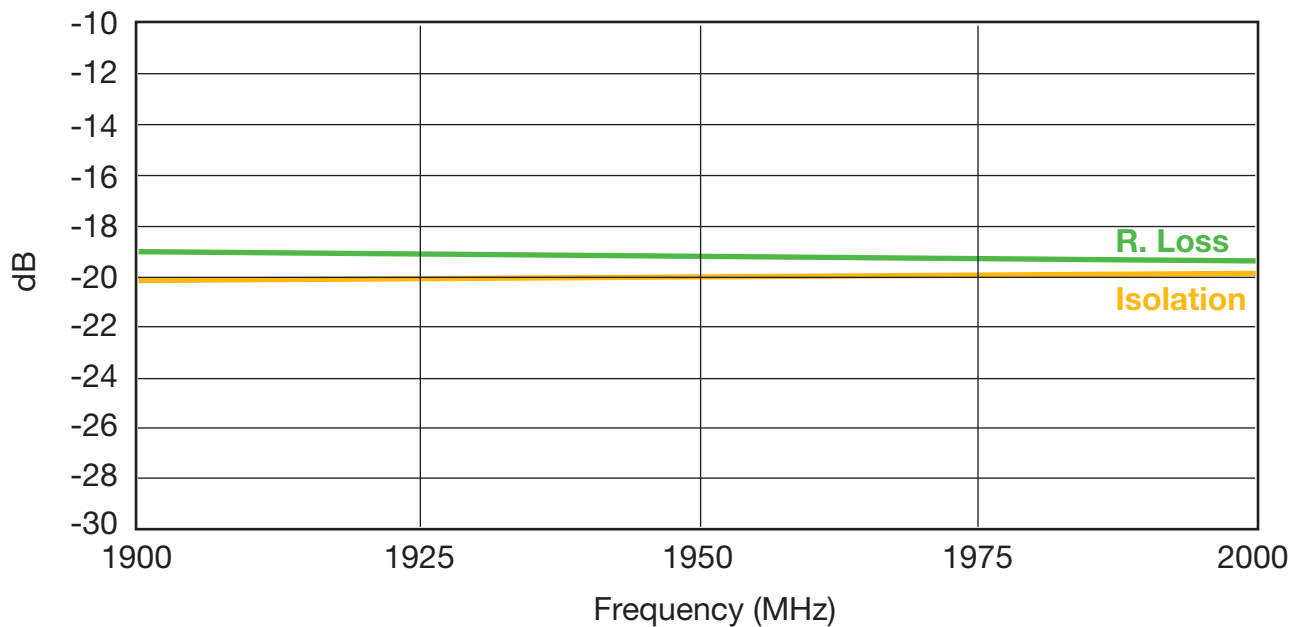
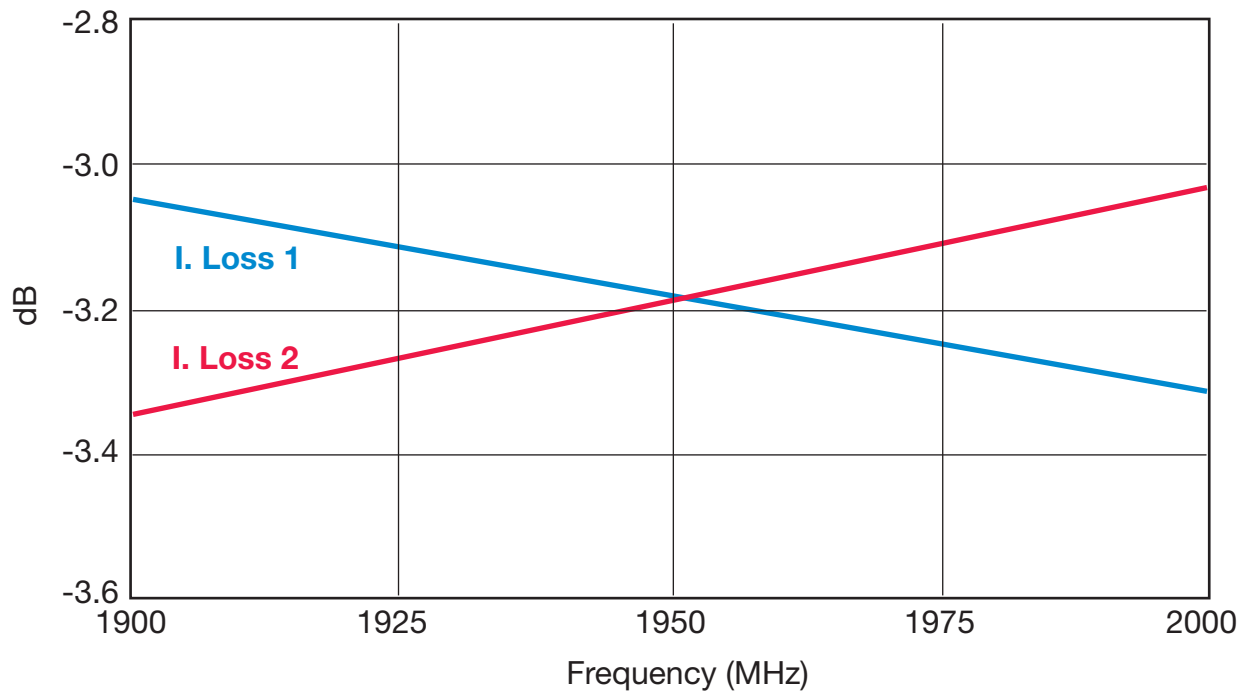


# Thin-Film Directional Couplers

## DB0805 3dB 90° Couplers



1950 ± 50MHz DB0805A1950AWTR

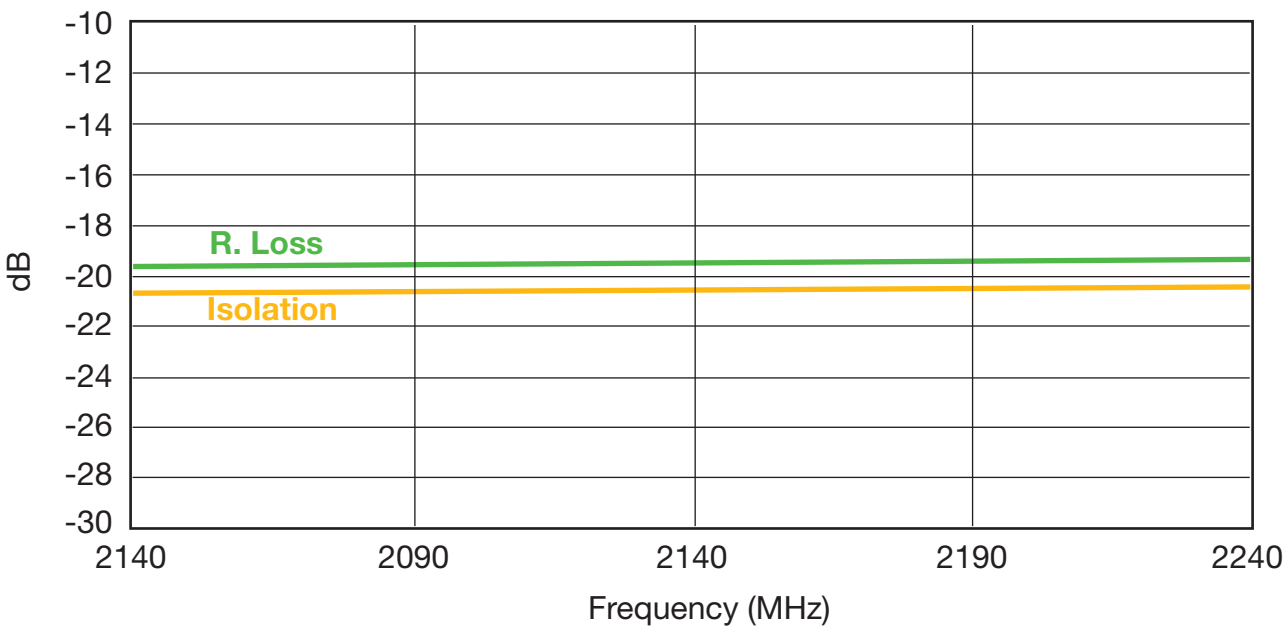
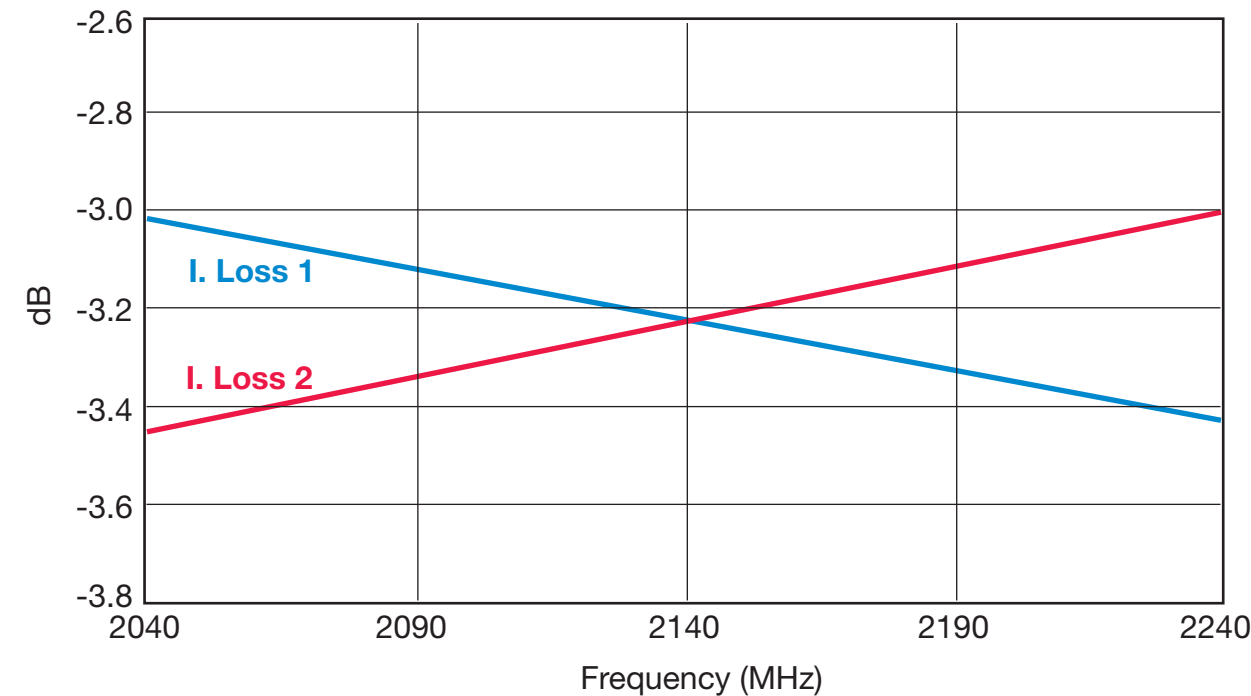


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## DB0805 3dB 90° Couplers



2140 ± 50MHz DB0805A2140AWTR

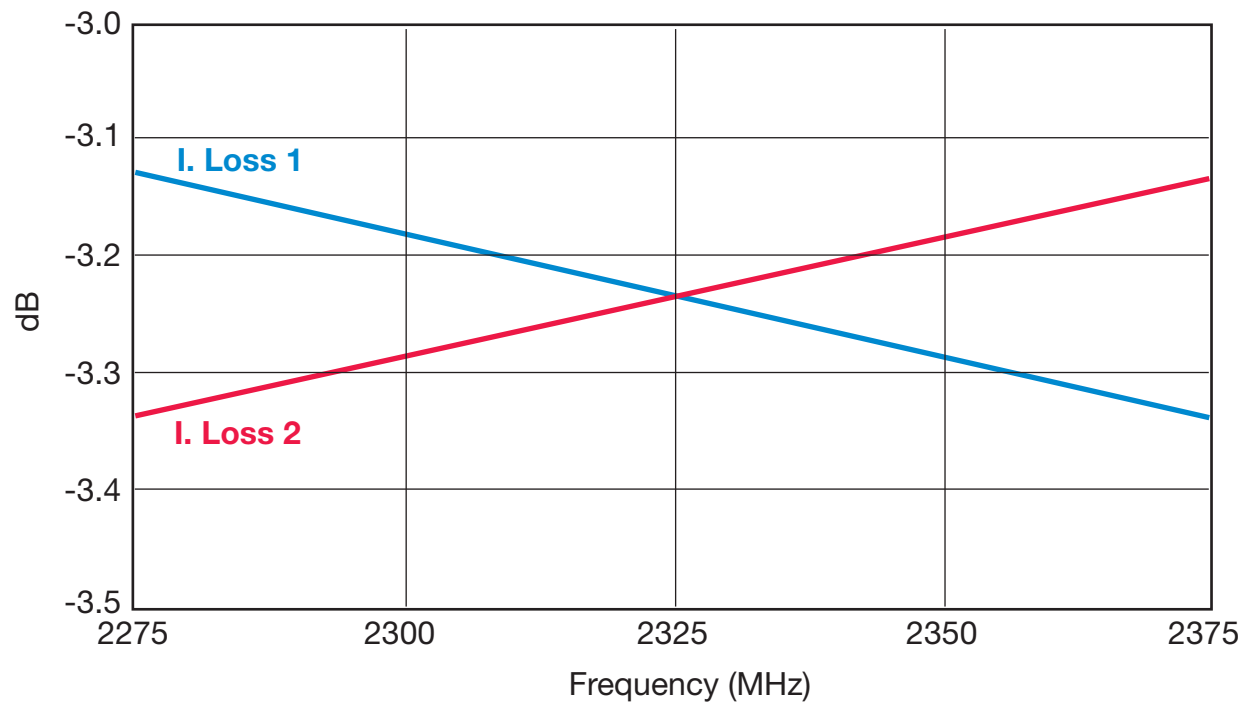


# Thin-Film Directional Couplers

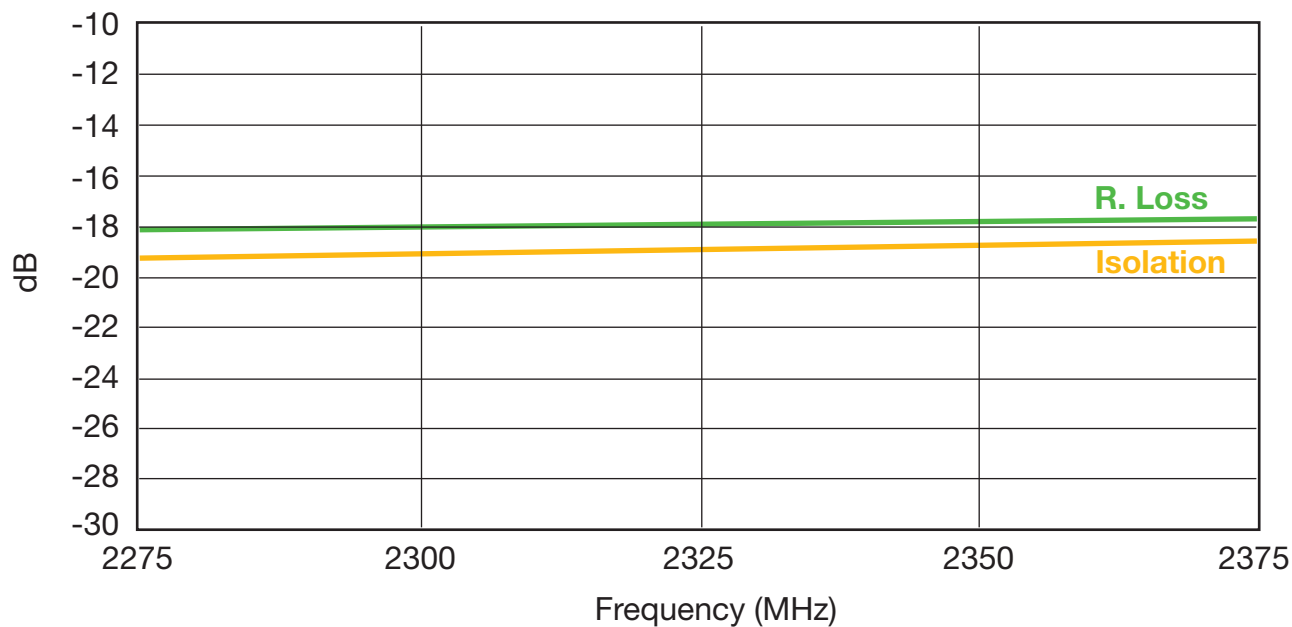
## DB0805 3dB 90° Couplers



2325 ± 50MHz DB0805A2325AWTR



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## DB0805 3dB 90° Test Jigs

### GENERAL DESCRIPTION

These jigs are designed for testing the DB0805 3dB 90° Couplers using a Vector Network Analyzer.

They consist of a dielectric substrate, having 50Ω microstrips as conducting lines and a bottom ground plane located at a distance of 0.254mm from the microstrips.

The substrate used is Neltec's NH9338ST0254C1BC.

The connectors are SMA type (female), 'Johnson Components Inc.' Product P/N: 142-0701-841.

Both a measurement jig and a calibration jig are provided.

The calibration jig is designed for a full 2-port calibration, and consists of an open line, short line and through line. LOAD calibration can be done by a 50Ω SMA termination.

### MEASUREMENT PROCEDURE

When measuring a component, it can be either soldered or pressed using a non-metallic stick until all four ports touch the appropriate pads. Set the VNA to the relevant frequency band. Connect the VNA using a 10dB attenuator on the jig

terminal connected to port 2. Follow the VNA's instruction manual and use the [calibration jig](#) to perform a full 2-port calibration in the required bandwidths.

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#### Place the coupler on the [measurement jig](#) as follows:

|                                     |                                        |
|-------------------------------------|----------------------------------------|
| Input (Coupler) → Connector 1 (Jig) | Output 1 (Coupler) → Connector 3 (Jig) |
| 50Ω (Coupler) → Connector 2 (Jig)   | Output 2 (Coupler) → Connector 4 (Jig) |

#### To measure [R. Loss](#) and [I. Loss 1](#) connect:

|                                  |                                  |
|----------------------------------|----------------------------------|
| Connector 1 (Jig) → Port 1 (VNA) | Connector 3 (Jig) → Port 2 (VNA) |
| Connector 2 (Jig) → 50Ω          | Connector 4 (Jig) → 50Ω          |

#### To measure [R. Loss](#) and [I. Loss 2](#) connect:

|                                  |                                  |
|----------------------------------|----------------------------------|
| Connector 1 (Jig) → Port 1 (VNA) | Connector 3 (Jig) → 50Ω          |
| Connector 2 (Jig) → 50Ω          | Connector 4 (Jig) → Port 2 (VNA) |

#### To measure [Isolation](#) connect:

|                         |                                  |
|-------------------------|----------------------------------|
| Connector 1 (Jig) → 50Ω | Connector 3 (Jig) → Port 1 (VNA) |
| Connector 2 (Jig) → 50Ω | Connector 4 (Jig) → Port 2 (VNA) |

