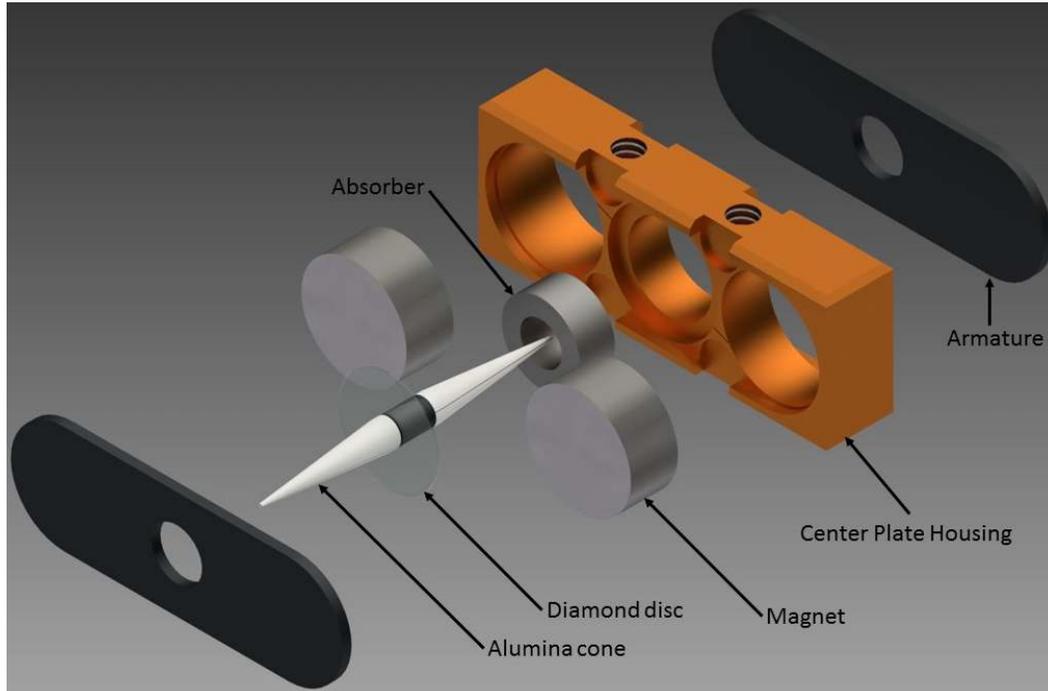
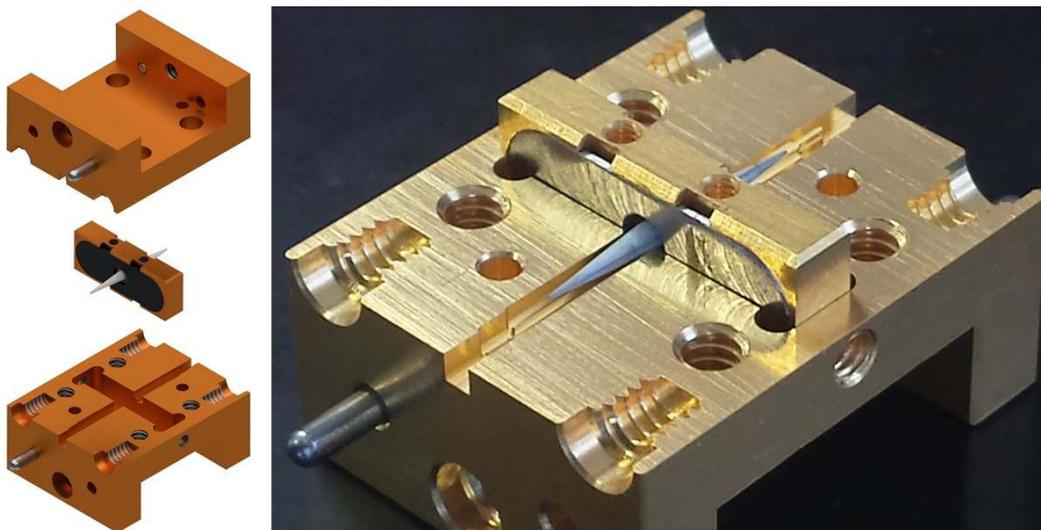


Drop-in Isolators

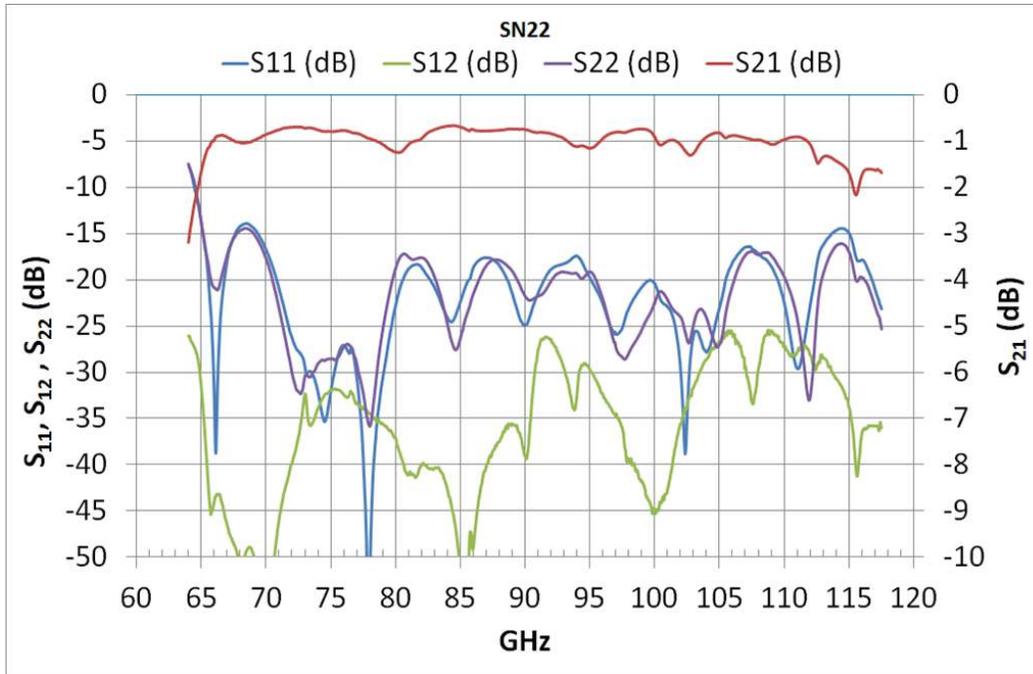
Micro Harmonics has developed a Faraday rotation isolator that can be integrated with other components in a single waveguide block. The drop-in isolator comprises a centerplate that houses the core assembly (ferrite, cones, absorber, magnets, armatures) and an E-plane split waveguide block that houses the centerplate and provides stepped waveguide twists on both the input and output ports. An exploded view diagram of the centerplate assembly is shown below.



The graphic below shows how the centerplate assembly fits into the E-plane split waveguide block. On the righthand side is a photograph showing a centerplate assembly sitting in the base half of the E-plane split waveguide block. The features of the machined twist step are visible in the photo.



The graph below shows measured data from one of our WR-10 drop-in isolator prototypes. In the standard WR-10 band from 75-110 GHz, the insertion loss is less than 1.3 dB, the isolation is greater than 25 dB and the input and output return loss is less than 17 dB. The insertion loss is less than 1.5 dB over the extended band 66-115 GHz and isolation is greater than 25 dB over the band 64-117 GHz.



The drop-in isolator offers some unique advantages. First, it can be integrated into a larger waveguide block. Second, the waveguides on the flanges are perfectly aligned in the drop-in isolator whereas in our standard isolators the waveguides are canted at 11.25 degrees from normal. Although this difference is mostly cosmetic, it may be important to some users. Third, the drop-in topology makes it possible to access two of the waveguide flange screws on each flange from the block interior which can eliminate the need for interconnecting waveguides.

Our drop-in isolators are sold and shipped with the centerplate assembly housed in the outer waveguide block. This provides protection of the centerplate assembly and allows the drop-in isolator to be tested and used as a standalone component. If the customer wishes to integrate the isolator into their system, they can remove the outer housing, return it to micro Harmonics and receive a reimbursement. Micro Harmonics will provide customers with detailed drawings for the stepped twists and other features necessary to incorporate the isolator into their system. All of the required machine features including the stepped twist transitions are produced using standard end mil cuts.

Currently, the drop-in isolator is only available in W band (75-110 GHz). However, we are developing an E-band version (60-90 GHz) and depending on demand may extend the technology to higher frequency bands.