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To: EDGES Group
From: Alan E.E. Rogers
Subject: Low band balun with slightly lower loss

There have been 3 low band baluns built as follows:

- 1] Original unit which is still in operation at the MRO. The performance is given in memo 181.
- 2] Second unit built in August 2016 and sent to the MRO as a spare. The performance is given in memo 210.
- 3] Current unit with slightly lower loss built in October 2016.

The third unit was made with 2 improvements:

- a) Thicker copper plating of the center conductor (Mil. Spec. MIL-C-14550B class 1) to ensure 1.0 milli-inch thickness which ensures 2 skin depths of copper at 50 MHz.
- b) Substitution of Flush mount male connector (Amphenol 901-9767) for Fairview (SC3792) connector to reduce the length of 0.05" diameter path by a factor of about 2 which reduces the 2-way loss by about 0.015 dB. See Figures 1 and 2 for the measured S11 for an open and shorted end.

The model parameters for the connector are:

- Length 0.5 inches
- Inner diameter 0.05 inches
- Outer diameter 0.16 inches
- Dielectric 2.05
- Conductivity 0.24 times that of copper

Figure 3 shows a photo of connection from the center conductor to the SMA connector. The protective plug has been removed to expose the connection.

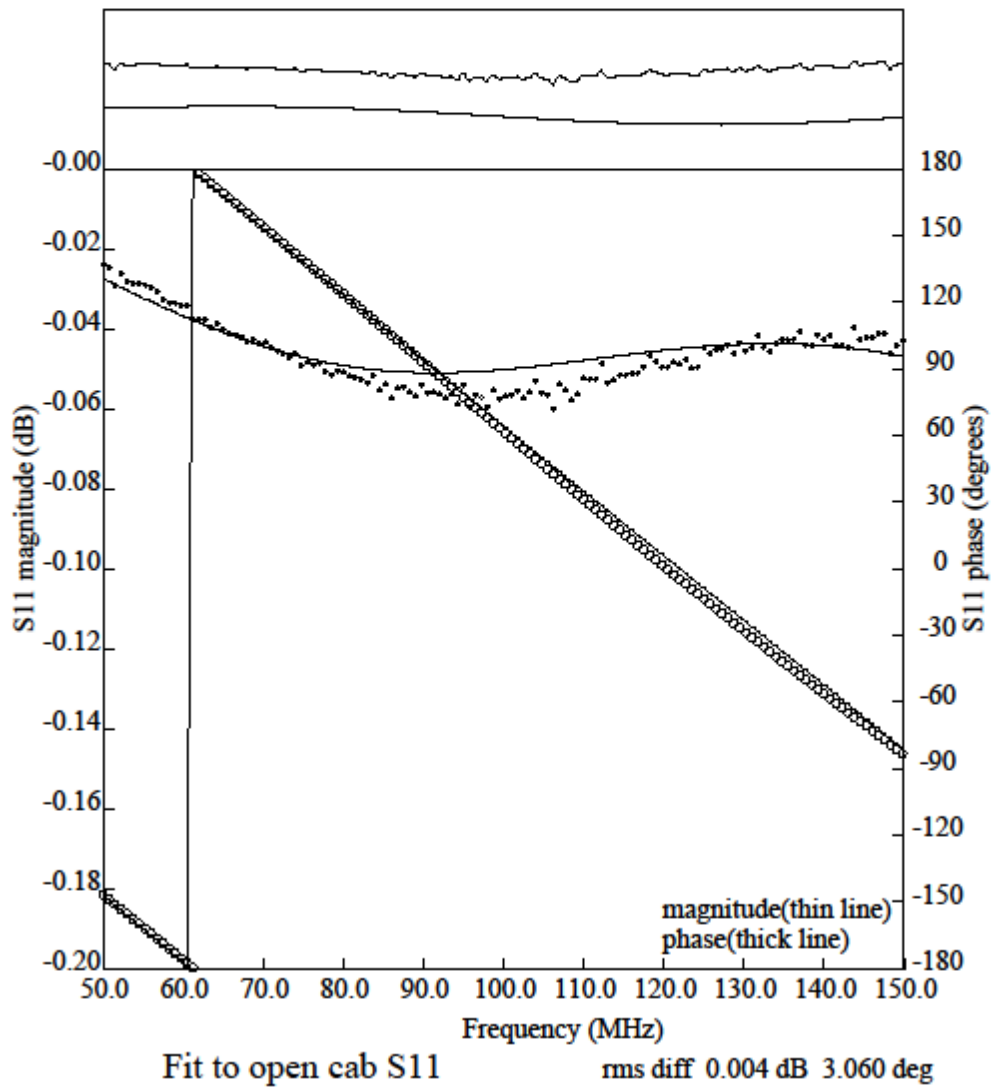


Figure 1.

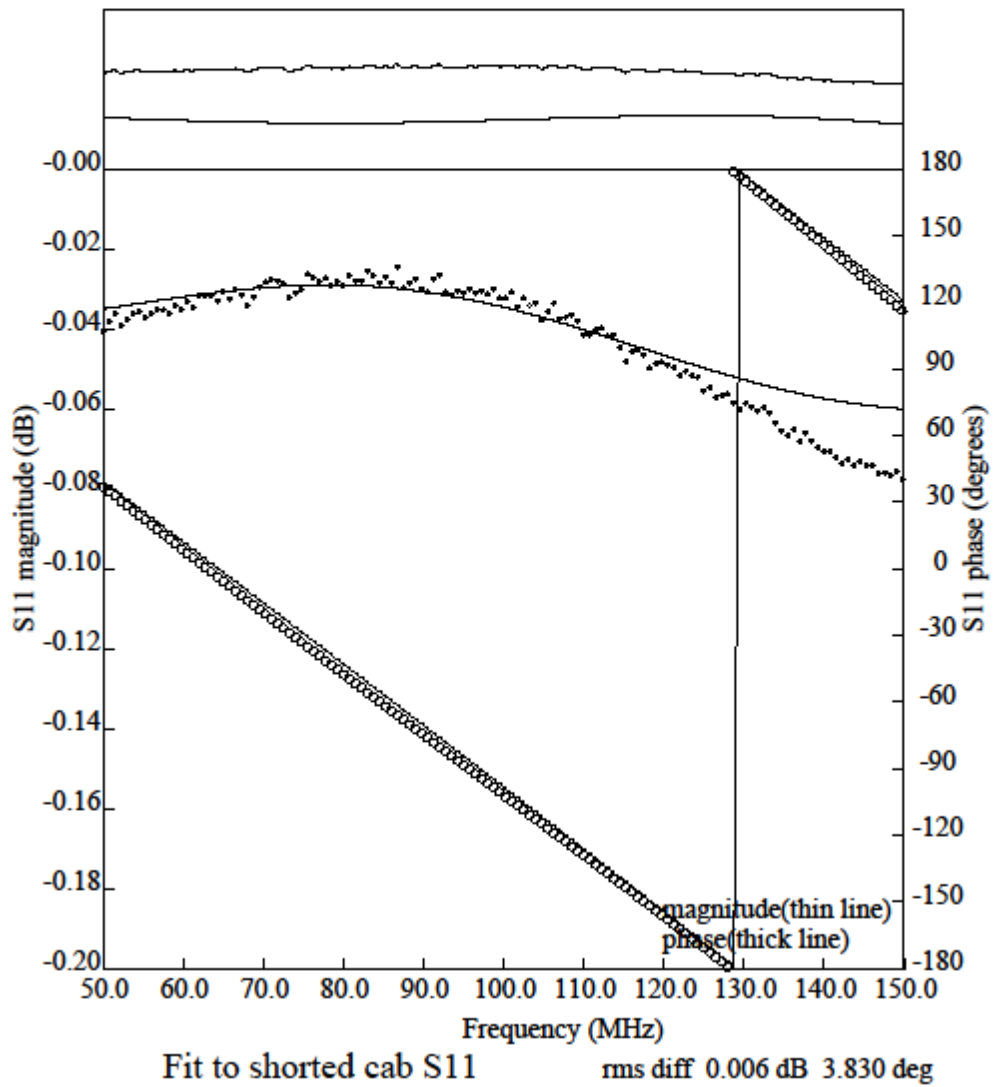


Figure 2.

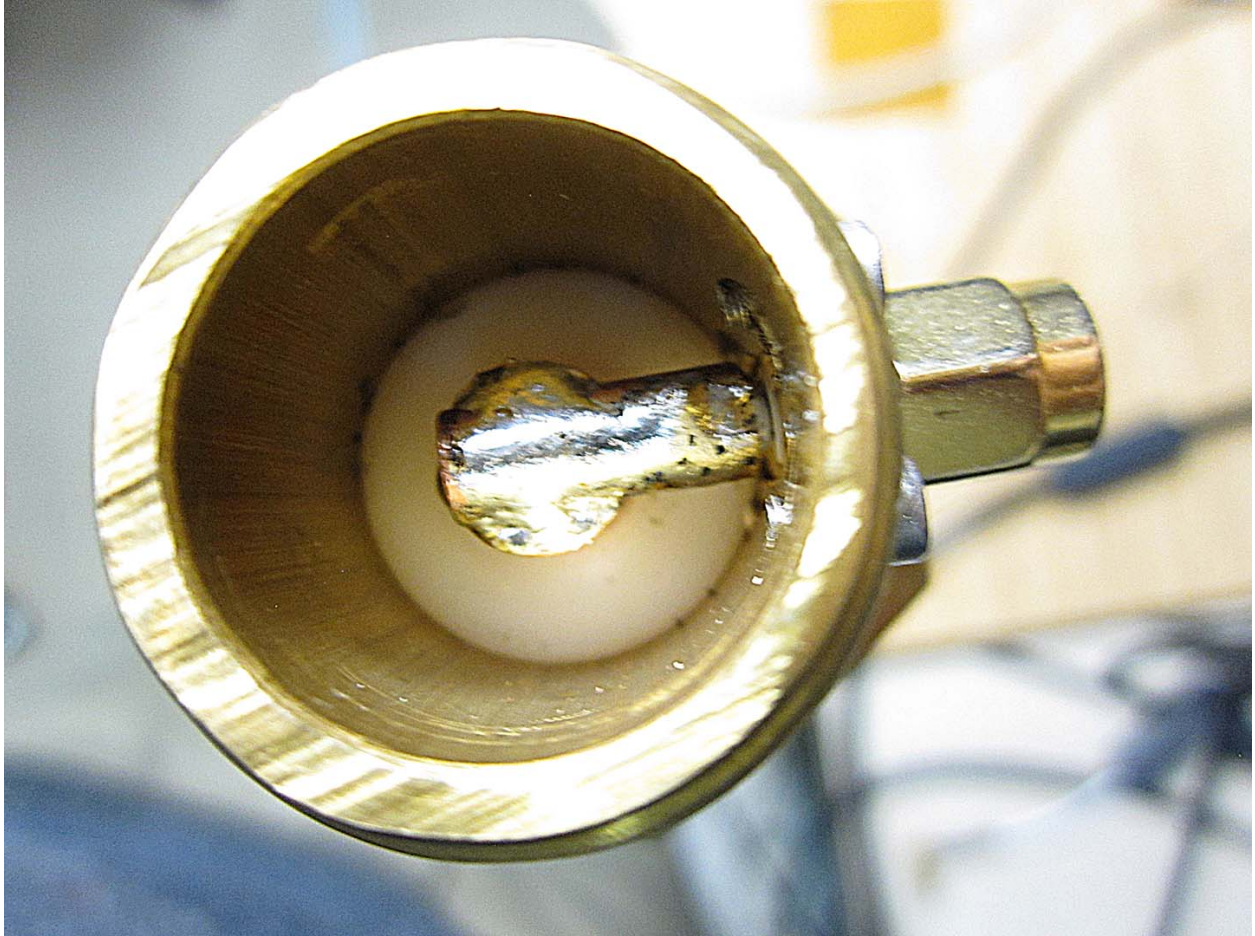


Figure 3. Photo of connection to SMA connector.