TECH SERVICE BULLETIN

ISSUE

For BreadCrumb products deployed in outdoor installations, it is recommended to waterproof all RF connections to the BreadCrumb. Waterproofing is recommended for both direct attach antenna applications and cabled antenna applications.

REQUIRED MATERIALS

Self-fusing, all weather, ethylene propylene rubber (EPR) tape. McMaster-Carr 7682A65 or equivalent.

Scotch® Premium Vinyl Electrical Tape 88-Super-3/4x44FT, 3/4 in x 44 ft (19 mm x 13.4 m)

SEALING BREADCRUMB RF CONNECTIONS

1. Clean the RF connectors on the BreadCrumb and the antenna. Clean the RF coupler (if used). For cabled antennas, clean the connector on the antenna cable that connects to the BreadCrumb. Allow all connections to dry. Attach antennas or antenna cables to the BreadCrumb.
2. For direct attach antenna applications, identify weep holes that may be present in the body of the antenna. Do not cover the weep holes with sealing tape as they are required to allow condensation to drain from the antenna.
3. The sealing process applies a single layer of EPR tape and two layers of all-weather electrical tape. For a direct attach antenna, the tape is applied from the RF connector on the antenna to the case of the Breadcrumb. For an antenna that is connected to a cable, the tape is applied starting 1” behind the cable connector and continues to the case of the BreadCrumb.

4. For either the direct attach antenna configuration, or the cabled antenna configuration, the installation sequence of each tape wrap is critical to the performance of the environmental seal.

   a. **Application of EPR tape layer:**
   Remove the backing liner from the EPR tape prior to installation. To maximize protection from water ingress, the layer of EPR tape must be applied opposite to the direction of water flow.

   For an RF connection to the top side of the BreadCrumb case, the wrap would start at the case of the BreadCrumb and wrap up to just above the antenna connector. For an RF connection to the bottom side of the BreadCrumb case, the wrap would start just below the antenna connector and wrap up to the BreadCrumb case.

   Slightly stretch the EPR tape while wrapping to insure a good seal. The target overlap of the EPR tape layer is ½ the width of the EPR tape. When the EPR tape is applied per this procedure, the seams of the EPR wrap layer will have full overlap in the direction of water flow. Figure 1 and Figure 2 show a properly installed layer of EPR tape for a directly mounted antenna installed on the top side of the BreadCrumb (antenna ray dome facing up). Note the full overlap of the EPR tape seams in the direction of water flow.

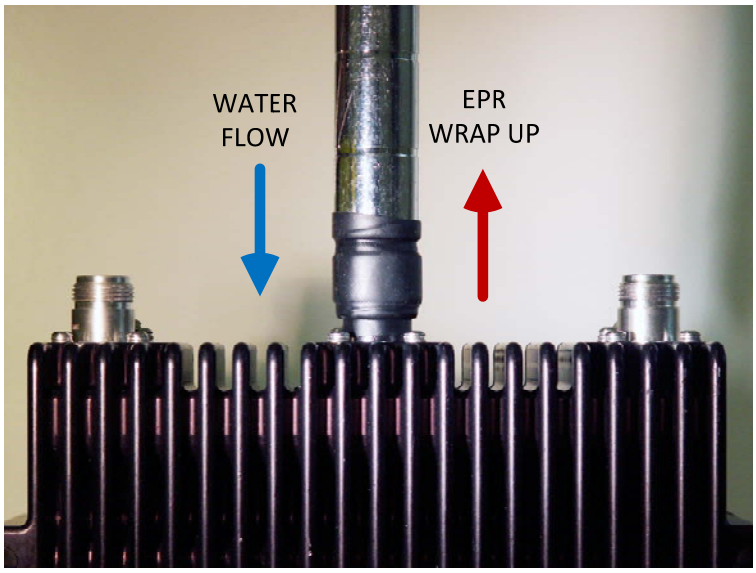

FIGURE 1 VIEW OF EPR TAPE APPLIED TO DIRECT ATTACH ANTENNA INSTALLED ON TOP SIDE OF BREADCRUMB

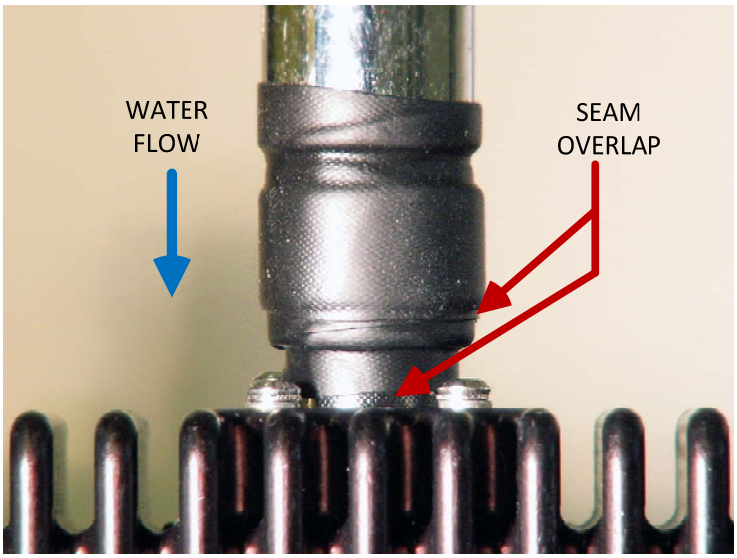

FIGURE 2 CLOSE-UP VIEW OF SEAM OVERLAP OF EPR TAPE

b. **Application of All-Weather Electrical Tape Layers**
Two layers of all-weather electrical tape are applied over the single layer of EPR tape. To maximize protection from water ingress, it is critical that the second layer of electrical tape is wrapped in the opposite direction of water flow (wrap up).

For an RF connection at the top side of the BreadCrumb case, the first wrap layer of all-weather electrical tape would start at the antenna connector just above EPR tape and wrap down to the case of the BreadCrumb. The second layer of all-weather electrical tape would start at the case of the BreadCrumb and wrap up to overlap the first layer of electrical tape.

For an RF connection to the bottom side of the BreadCrumb case, the first wrap layer of all-weather electrical tape would start at the BreadCrumb case and wrap down to antenna connector just past the layer of EPR tape. The second layer of all-weather electrical tape would wrap up toward the case of the BreadCrumb and fully overlap the first layer of electrical tape.

Slightly stretch the all-weather electrical tape while wrapping to insure a good seal. The target overlap of the layer of all-weather electrical tape is ½ the width of the tape.

FIGURE 3 and FIGURE 4 show the two layers of all-weather electrical tape for a directly mounted antenna installed on the top side of the BreadCrumb (antenna ray dome facing up). Note: FIGURE 4 shows the full overlap of the tape seams in the direction of water flow.

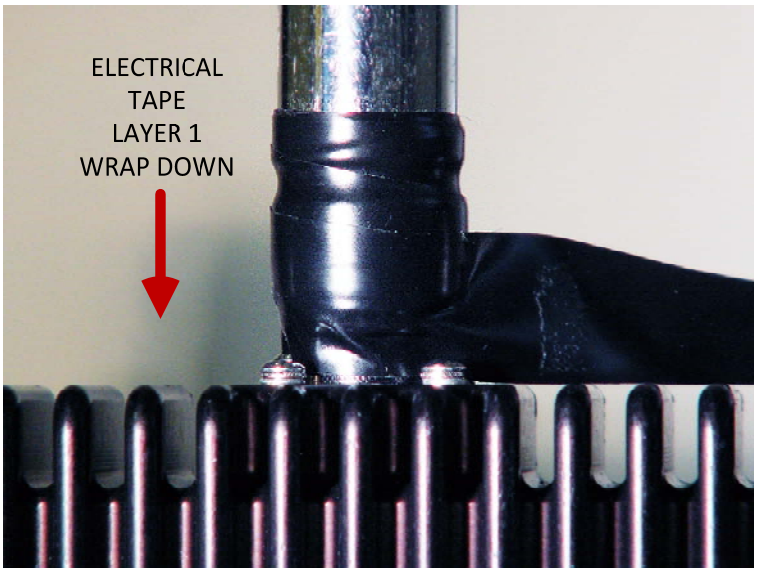

FIGURE 3 FIRST LAYER OF ALL-WEATHER ELECTRICAL TAPE APPLIED TO DIRECT ATTACH ANTENNA INSTALLED ON TOP SIDE OF BREADCRUMB

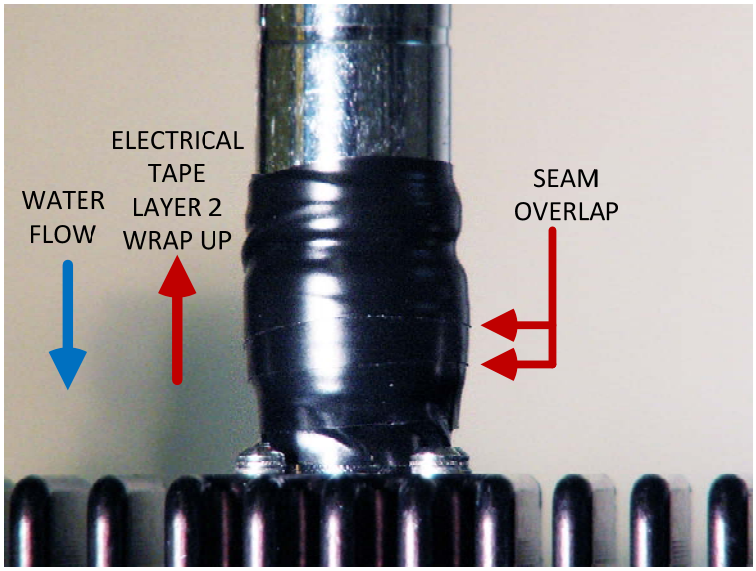

FIGURE 4 SECOND LAYER OF ALL-WEATHER ELECTRICAL TAPE APPLIED TO DIRECT ATTACH ANTENNA INSTALLED ON TOP SIDE OF BREADCRUMB