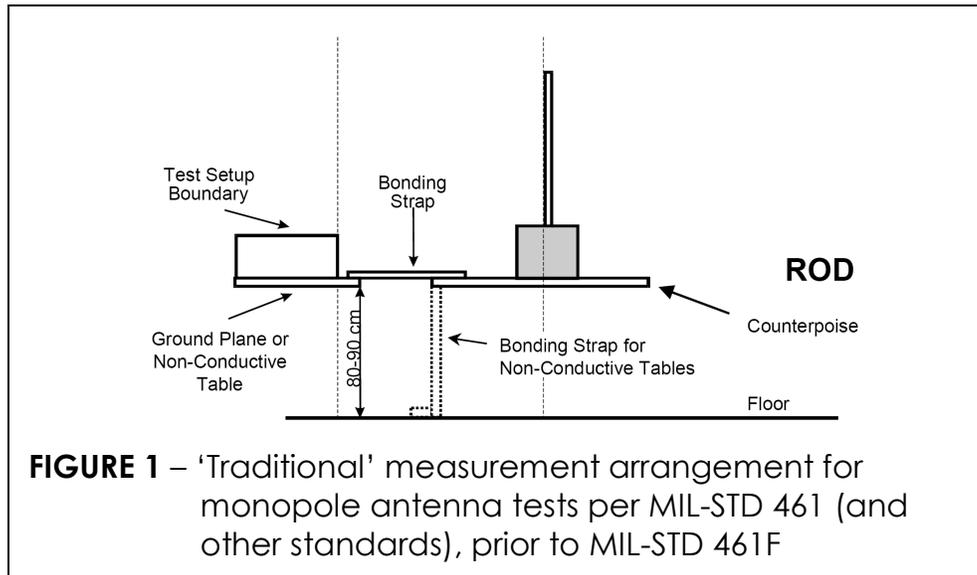


## CHANGES TO MEASUREMENT ARRANGEMENT FOR TESTS PERFORMED WITH ROD (MONOPOLE) ANTENNA

### MIL-STD 461F vs Previous Releases (MIL-STD 461E, D, C, etc.)

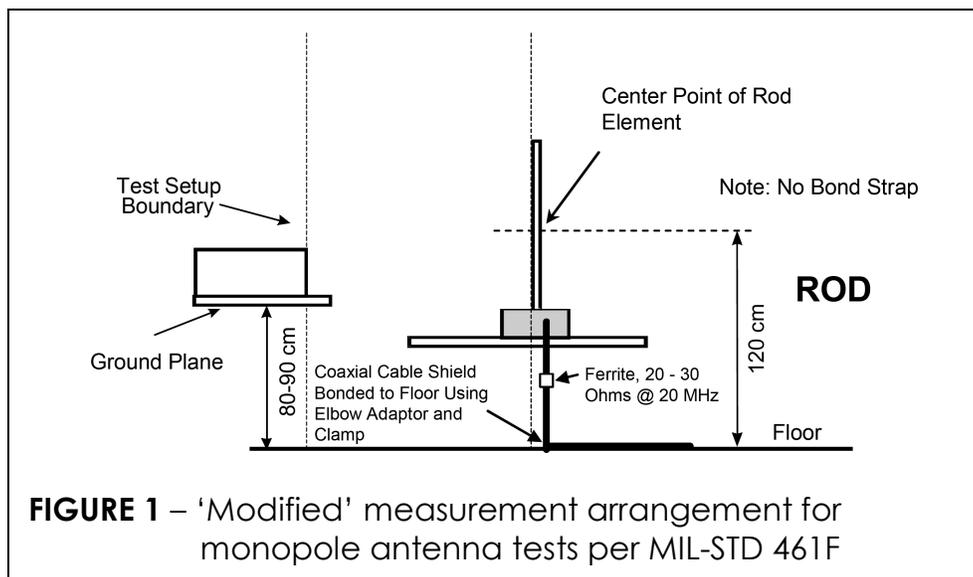
Radiated emissions tests for frequencies up to 30 MHz per RE102 of MIL-STD 461 are performed using a 1.04-meter (41-inch) rod antenna, also known, and referred to hereafter, as a monopole antenna. Prior to the release of MIL-STD 461F (Dec. 10, 2007), the measurement arrangement for monopole antennas was as shown Figure 1.



As shown, the height of the monopole antenna counterpoise was coincident with the height of the ground plane on (or over) which the Equipment Under Test (EUT) is installed. A bonding strap, typically a piece of sheet metal or aluminum foil having the same approximate width as the counterpoise, would bridge the gap between the EUT ground plane and the counterpoise itself.

Similar arrangements to that shown in Figure 1 were adopted in other EMI/EMC standards, such as RTCA DO-160 (aeronautical equipment) and CISPR 25 (automotive), among others.

Based on a series of exploratory experiments with alternative arrangements, in an effort to improve the accuracy and repeatability of measurements made with different types of monopole antennas, the measurement arrangement shown in Figure 2 was introduced in MIL-STD 461F.



As shown, the height of the monopole counterpoise is no longer coincident with the height of the ground plane. The reference point at which the height of the antenna is determined is now at the vertical center of the rod element, which is to be 120 cm above the floor of the shielded room.

The bonding strap bridging the gap between the counterpoise and the ground plane is no longer used, as it was found to enhance readings at higher frequencies, while depressing readings at other frequencies. The only connection to ground in this new arrangement is via the shield of the coaxial antenna output cable, which is to be connected to the floor of the shielded room just below the antenna. In addition, a ferrite with an impedance of 20 to 30 ohms is to be installed on the output cable, near the center, between the antenna output port and the point on the floor at which the shield is grounded.

The MIL-STD 461F document further specifies that antennas utilizing isolated coaxial bulkhead connectors at their output port be modified so as to allow contact between the shell of the output connector and the enclosure of the matching network.