1. Overview

This technical note describes the recommended antenna installation procedures for all Cypress Envirosystems wireless devices with external antennas. A troubleshooting section is provided if any non-ideal behavior is noticed.

1.1. Tools Required for Installation

- None

2. Antenna Installation

2.1. Background

All Cypress Envirosystems 2.4GHz external antennas, of the type shown in Figure 1 have an RP-SMA connector and an articulating knuckle that allows the antenna to be positioned perpendicular to the ground, regardless of the products mounting orientation.

Figure 1: 2dBi 2.4GHz omni-directional antenna

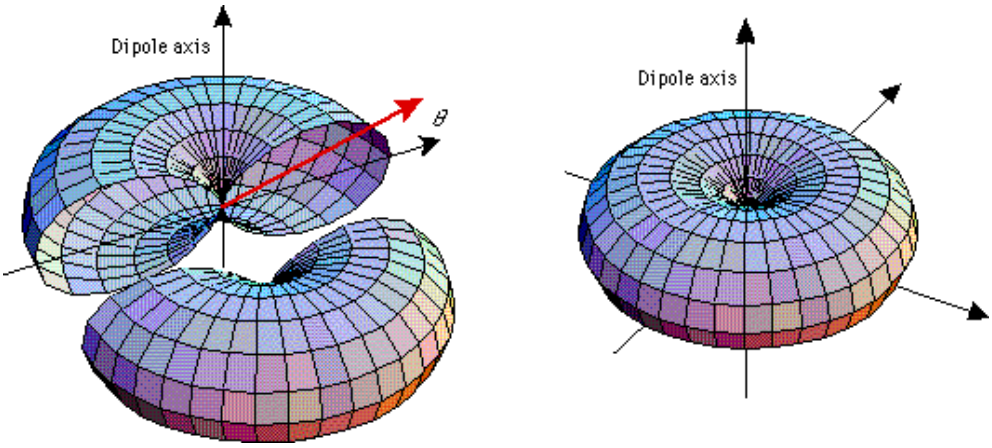

Figure 2: Polar plot of a typical dipole antenna radiation pattern. The "z" axis, pointing up in the above figure, represents the antenna with nulls (weak signal strength) on both ends.

Figure 2 shows a typical radiation pattern for an omni-directional dipole antenna. To maximize the wireless range, it is best to orient the null axes perpendicular to the transmission direction (direction of the next repeater or wireless device). For most installations the transmission axis will be parallel to the ground. In these cases, point the antenna up.

2.2. Installation

To attach the antenna, bend the antenna at the knuckle. Using the ferruled nut, screw the antenna onto the gold plated RP-SMA bulkhead port of the wireless product as shown in Figure 3 . Care should be taken not to rotate the entire antenna more than 360° while attaching device to the wirele ss product.

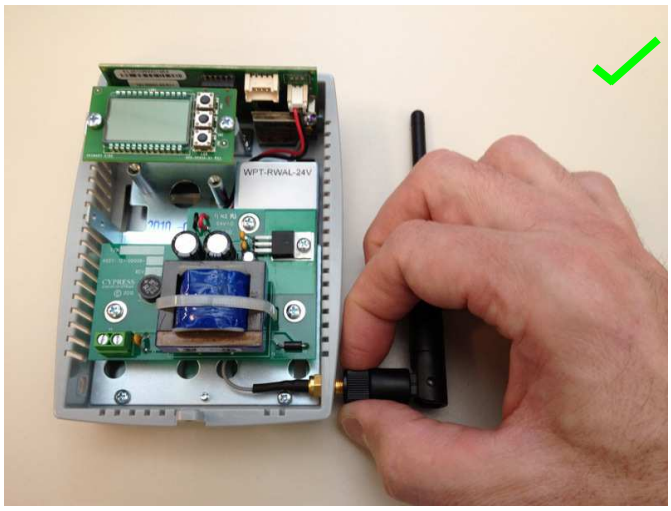

Figure 3: Holding the antenna stationary and rotating only the outer knurled ferrule is the advised attach method. This will insure the center conductor does not see any rotational stresses.

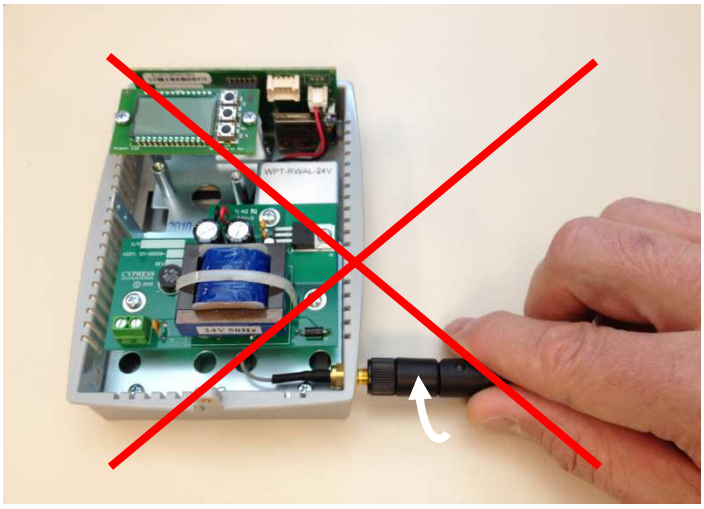

Figure 4: Rotating the entire antenna assembly is not advised. Attaching the antenna in this manner will placed rotational strain on the center conductor. Wear of the center conductor can cause degradation in the wireless range.

3. Troubleshooting

For the WPT family products, after installation and commissioning, it is advisable to insure all wireless links are sufficiently high; RSSI > 3.

3.1. Checking RSSI (GBC only)

1. Log into the GBC
2. Navigate to the **Advanced → Node Status** menu
3. Look over the RSSI values (RSSI Current, RSSI 24-HR, RSSI 24-Ave)
4. If the RSSI Current or RSSI 24-Ave are below 3, the RWAL may need to be repositioned.
    - First try and reposition the antenna.
    - After the antenna is repositioned, wait 15 minutes and recheck the Current RSSI value.
    - If the Current RSSI is still not 3 or above, it is advised that another RWAL be installed or the current RWAL be repositioned.

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