



Soldering of satellite antennas

Objective Soldering steel onto GPS body for phone antenna

Material Thin copper foil 0.3mm (0.01 in) thick
Ceramic body 12mm (0.47 in.) long x 7mm (0.28 in.) wide

Temperature 200° C (392° F)

Frequency 371 kHz

Process Time 5 seconds

Equipment

- Ambrell 2 kW induction heating system, equipped with a remote workhead containing (2).33µF capacitors (for a total of .66 µF).
- Two coils (one for each stage of process) designed and developed specifically for this application. The first stage uses a two-turn solenoid coil with a 15mm (0.6 in) ID and the second stage uses a plate coil, 25 mm (1 in.) dia. with a 6mm (0.24 in.) hole.

Process **Stage 1:** A two-turn solenoid coil is used to heat the top end of a GPS antenna. Solder paste is used to solder the walking stick loop to the copper foil.

Stage 2: A plate coil is used to heat the bottom part of the GPS to solder a top hat to the copper foil and also the bottom part of the walking stick.

Results/Benefits Induction heating benefits:

- increased production rate due to speed of heating
- higher quality vs. a soldering iron due to precision and repeatability
- cost savings due to reduced scrap and higher quality production

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