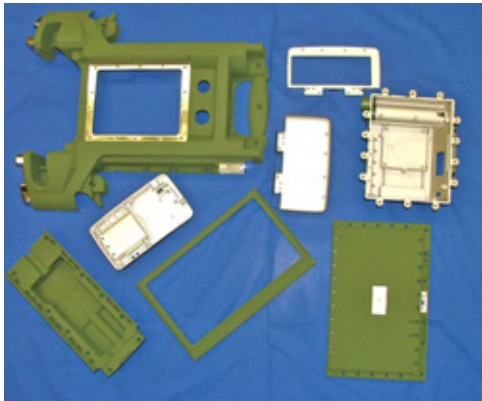




## Application Note

### Military Electronics and Shielded Plastic Enclosures



#### Problem

The modern day battlefield is noisy, and military electronic systems need to be shielded against EMI/RFI interference. With move to rapid force deployment, this drives the need for lightweight mobile electronic systems. Plastics have made significant inroads into the electronic battlefield. Since plastics do not shield against EMI/RFI, they require EMI shielding to protect against wide EMI/RFI frequency range that may be encountered in the field. Additionally, the plated plastic components may require mil-spec finishes protecting the plated parts during decontamination procedures. , including latest generation water borne Chemical Agent Resistant Coating (CARC) paint.

#### Cybershield Solution

Electroless plating and conductive paint systems are well suited for many EMI shielding applications where thin coatings of copper, nickel, tin and/or gold, typically less than 200 micro-inches (5  $\mu\text{m}$ ) for plating and 0.001" (0.025 mm) for conductive paint provide excellent shielding effectiveness from 30 MHz to 10 GHz. For many military applications, however, the EMI frequency can span over a very wide frequency range and have high energy levels. These requirements may exceed the EMI shielding from electroless plating and conductive paint. In these cases higher plating thickness to 0.003" (75  $\mu\text{m}$ ), achieved via electro-plating offers EMI shielding from under 10 KHz to over 10 GHz frequency range.

Cybershield uses its know-how to metallize the plastic part with an electroless flash of copper, which must first be applied onto the plastic part in order to make the plastic part conductive and suitable for electro-plating. The electro-plating process is then used to deposit required metal thickness to the customer specifications with available metals deposited including copper, nickel, tin, gold and/or silver. Cybershield can plate the following plastic resins: ABS, Polycarbonate (PC), PC/ABS, Polyetherimide (Ultem), Syndiotactic Polystyrene, Noryl, Polypropylene, Polyphthalamide (Nylon), Polyethersulfone, Polyetheretherketone (PEEK), plus many more. Consult Cybershield to assess capability to plate your resin of choice.

If Chemical Agent Resistant Coating (CARC) is required onto plated plastic parts or metal parts, Cybershield have extensive experience applying CARC coatings, including water borne primer (MIL-P-53030) and CARC (MIL-DTL-64159, Type I and Type II). Cybershield offers its industry leading robotic spray application methods to apply CARC paint. With Cybershield numerous paint robots, CARC paint thickness can be precisely controlled from part-to-part and lot-to-lot. The consistent and repeatable robotic application of CARC paint overcomes a leading cause of CARC coating failure – incorrect CARC paint thickness caused by manual application methods.

**For more information about this application, Cybershield capabilities and/or to review your application requirements for metallized plastic, contact Cybershield**

**Cybershield**  
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 Lufkin, TX 75904  
 214-227-3680

Email: [sales@cybershieldinc.com](mailto:sales@cybershieldinc.com)

- Fabricate a full range of EMI shielding solutions – Electroless Plating and Conductive Paint
- Electroplating Copper, Nickel, Trivalent Chrome, including decorative plating on plastics and metal
- Offer engineering design assistance – plastic resin selection, metal coating specification and mechanical design recommendations
- Serve applications in volumes from 25 units per month to millions of units per month
- Provide extensive mechanical assembly services to its customers
- Manage entire supply chain, including plastic injection molding to provide customers with turnkey solutions, designed and manufactured to strict OEM requirements

<b>EMI Shielding, ESD and Electroplated Coatings</b>	<b>Assembly Services</b>
All-over & Selective Coverage Electroless Plating Copper, Nickel, Tin, Gold Electroplating Copper, Nickel, Trivalent Chrome Conductive Paint	Dispensed Gaskets (Conductive or Environmental) Insert Installation (Ultrasonic or Heat Staking) Decorative Paint Mechanical Assembly

**Other Cybershield Plastic Metallization Systems**



Plated Plastic  
Router Chassis



Plated Plastic RF  
Filter Housing



Plated Plastic  
Shielded Connectors



Telecommunications  
Faceplates