Planning for Portable Amateur Radio Equipment to Survive an Electromagnetic Pulse

by

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Version 1.0
http://www.charlespreston.net/EMP-Protection/PortableEMPProtection.pdf

For good protection from an electromagnetic pulse, portable field gear needs to be in a properly closed shielded container. The smallest and cheapest reusable version of these is a metallic coated bag tested for good wideband attenuation. Single layer bags offer 50-60 dB attenuation, which may be enough protection, but a good quality double layer bag has about 80 dB attenuation for better insurance.

Antennas need to be shielded as well.

A very small NVIS antenna for regional propagation is the linked dipole Band Hopper IV from SOTABEAMS. Quick deployment, 21 oz.

https://www.sotabeams.co.uk/antennas/

Although the wire size seems small and fragile, I have not broken a wire after several years use of these antennas.

For vertical propagation 40-10 meters, the Super Antenna MP1 or Buddistick Pro pack very small and work well with a 9.5' vertical element, although the MP1 works much better with 15 10' ground radials.

Antenna analyzers are now available in a very small size, and need to be shielded along with coax, microphones, power cables, and other parts.

I also include small folding solar panels and a solar controller for LiFePO4 battery packs.

Most shield bags are fragile and need to be protected inside a pack, Pelican case, or other waterproof container.

As backup transceivers, the Elecraft KX1 or K2 are worth consideration, since they are very small, and are older designs with a higher percentage of discrete components that would be easier to source for replacement than the high level integrated circuits in the KX3 and KX2. The KX1 and K2 were designed with low current consumption as a goal. They can be equipped with internal wide range antenna tuners that cut down on extra cables and connectors that can be failure points.

Buddipole 4S2P A123 battery packs are compact, have a long charge/discharge cycle life, and do not have internal battery management circuits subject to EMP damage. Also, they have a very low rate of self discharge while stored, unlike other brands with a PCM. They have a self resetting polyswitch which might not be damaged by an EMP, but since these battery packs are small, they can be included in the shielded container. These battery packs can be charged much faster than other LiFePO4 battery packs, and they hold up better to field handling like being dropped.

The combination of all of these components is small enough to fit current low cost shield bags, and light enough to be portable.

Thank you.
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