Ham 48 – Radio Order

Dr. Marc & Rosemary © 221013

1. The Show 'n Tell of building a ham station went very well. We have been requested to give a exemplar purchase order of the components we used. This is by no means exclusive, but is the most workable system at competitive pricing. The part numbers are DX Engineering, but others such as Ham Radio Outlet and Main Trading are competitive.
2. The order is backward from what most people consider. The antenna is perhaps the most critical part. With a great antenna, a mediocre radio will perform well. A great radio with a poor antenna is just an expensive boat anchor. We have repeatedly demonstrated this reality.
3. ANTENNA: COMPACTenna 9" 2M/440+ gives the best bang for buck, is very compact, and usable for base or mobile. This is a paradigm shift in antenna design with diminutive size, but with real 3 dB gain. For base, add the COMPACTenna counterpoise with quarter wave drooping radials. For mobile, use a standard NMO (New MOtorola) mount whether permanent through hole, magnetic, or bracket.

4. COAX: For distances up to 100', use RG-213/U. For distances up to 20' with strong signals, use the more flexible, but higher loss RG-8X. The standard connector for VHF/UHF is a PL-259 male plug on each end of the coax. Apply a barrel connector then a short 3'-5' jumper of RG-8X for connection to the radio. For best performance buy coax with premade ends. The table has typical lengths. Get the length you need. Avoid Amazon for coax, since quality of this critical component is hard to evaluate.
5. PROTECTOR: For decades, the go-to protection is PolyPhaser. For VHF/UHF, use IS-50UX-C0 with SO-239 female receptacles. Ham Radio Outlet is less expensive. Some hams do not use protection if totally under roof. However, as we saw from Ashley, lightning can penetrate the attic and damage unprotected electronics.
6. GROUND PLATE: Mount protector on a common bonding plate, near an outside wall to shorten the ground wire. Install an 8' ground rod as close as practical. Connect a #10 AWG wire from the protector to the ground rod. Attach a proper clamp (acorn) to the rod. Connect all station grounds to the protector bonding plate near the wall.
7. POWER SUPPLY: A switched mode for radios is acceptable, small, and less expensive. Get 13.8 Vdc fixed supply. Meters are nice option.
8. RADIO: The Icom 2730A radio gives the best performance to cost ratio. For dependable connection in our varied terrain, 50 Watts should be the minimum power rating. The same radio makes a base or mobile. It is two separate receivers with a small removable head to allow a variety of location configurations.

Device	Manufacturer	Model	Description	Vendor	Stock #	Price $
Antenna	COMPACTenna	2M/440+	9", VHF/UHF	DX Engineering	CAN-2M-440PLUS	110
Counterpoise	COMPACTenna		NMO mount base station	DX Engineering	CAN-COUNTERPOISE	100
Coax to Poly	DXE	RG-213/U	25', 50-Ohm, copper	DX Engineering	DXE-213UDX025	52
Coax from Poly	DXE	RG-213/U	25', 50-Ohm, copper	DX Engineering	DXE-213UDX025	52
Surge protection*	PolyPhaser	IS-50UX-C0	Coaxial lightning protector	DX Engineering	PPR-IS-50UX-C0	87
Barrel connector	DXE	PL-258	Double SO-239 adapter	DX Engineering	DXE-536-4	15
Coax to radio	DXE	RG-8X	3', 50-OHM,	DX Engineering	DXE-8XDX003	29
Power supply*	MFJ	MFJ-4125	13.8 Vdc, over15A	DX Engineering	MFJ-4125	130
Radio*	Icom	2730A	VHF/UHF, 13.8 V, mobile	DX Engineering	ICO-IC-2730A	310

9. INTERIM: Budgets have limits. If constrained, install the antenna and coax. Then use a connector to a cheap handi-talkie. It is less dependable for emergency situations and may not work well in some locations. Instead of power supply and real radio, use a coax adapter with a Baofeng UV5R. Hold off protection since that costs more than radio.

Device	Manufacturer	Model	Description	Vendor	Stock #	Price $
Coax adapter	Generic		SMA female to SO239	Amazon		7
Handi-talkie	Baofeng	UV5R	4-Watt w/ charger &headset	Amazon		24

10. Life is good. Enjoy!