

Ham 52 – Talking Through Dirt, How to
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1. Many articles appear to be just about things and pieces. Hams want to know how to. In our area, the most difficult problem is talking through dirt. With our rolling hills, two locations more than a few miles apart are likely separated by hills. Normal line-of-sight (LOS) installations just do not talk through dirt. Conventional wisdom dictates raising the antenna higher, but our design is to be HOA (& lightning) friendly.
2. Just like many, Brett (KI5TAX) is a brand new ham, not bound by traditions. He passed exams for Technician and General on the same day, then the Extra a few days later. As an engineer, he approached his station very analytically and scientifically. He lives on the back side of one hill with another hill between his station and the repeater. Prior systems did not work. This is results from his working station. We are predominantly using pictures. Other articles discuss the why.
3. The antenna is a Not-Line-of-Sight (NLOS) COMPACTenna 9” mounted on a counterpoise. The mast is 1” – 1.25” PVC conduit. The base is a pipe floor flange. Coax is RG-213/U for low loss of signal. PL259 male connectors are pre-fabricated. Five Type-31 ferrite beads are near the antenna to block atmospheric noise and lightning.
4. The coax enters the shack into a PolyPhaser IS-50UX-CO lightning protector. The protector mounts to a single point ground bar. All grounds attach to the ground bar. Grounding strap runs less than 20’, directly to an 8’ ground rod driven into the earth and bonded to the other ground rods. The ground is a critical part of the antenna system, for safety, and to eliminate noise. All these make the signal to noise ratio (S/N) stronger, so you can hear (and transmit) better.
5. The radio is a premium digital Icom 5100A with 50-Watts. The less expensive analog Icom 2730A with 50-Watts is a practical alternative. Snap-on ferrite beads are installed on every power cord and coax. These reduce noise, which effectively increases signal.
6. The 13.8 Vdc power derives from a switched mode supply designed for ham use. Switched modes can be noisy, if poorly designed. Noise overwhelms signal.



7. Every component is specifically chosen to increase the signal (antenna), mitigate loss (coax), eliminate noise (ferrite), increase safety (protector), and provide a noise path out (ground).
8. Discipline works.
9. Life is good. Enjoy!

