

## EME USB Tower Camera: uses no external DC power supply

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For Earth-Moon-Earth (EME) visual moon tracking, many hams put a closed-circuit TV camera (CCTV) onto the antenna mounting. An analog TV monitor in the hamshack is then used to view the moon position.

The CCTV approach, however, requires a DC power supply, a shielded DC power cable plus a 75 Ohm video Coaxial cable. Both cables must be rated for outdoor use (Ultraviolet light resistant).

An alternate approach is to use a USB computer webcam connected to the hamshack computer. The USB cable contains both the DC power and the video signal so only one cable is needed. However, the USB maximum cable length allowed for reliable operation is only about 15 feet. To operate a webcam on a tower, another approach is needed.

Solution:

Move the USB signals onto an ethernet RJ45 LAN by using low-cost extension cable adapters. The standard Cat5/Cat6 extension cable length can then be up to 150 feet with this approach.

Thus, the result would be self-powered, no additional DC power source or cabling is required.

The combined USB/Ethernet hookup will be compliant with USB 1.1 Specifications: this means that the video cannot catch up with fast moving scenes, but the moon moves slowly!

To run the Cat5/6 cable into the hamshack, it is also desirable to mount a grounded Ethernet panel-mount (Female-Female) coupler at the entrance panel.

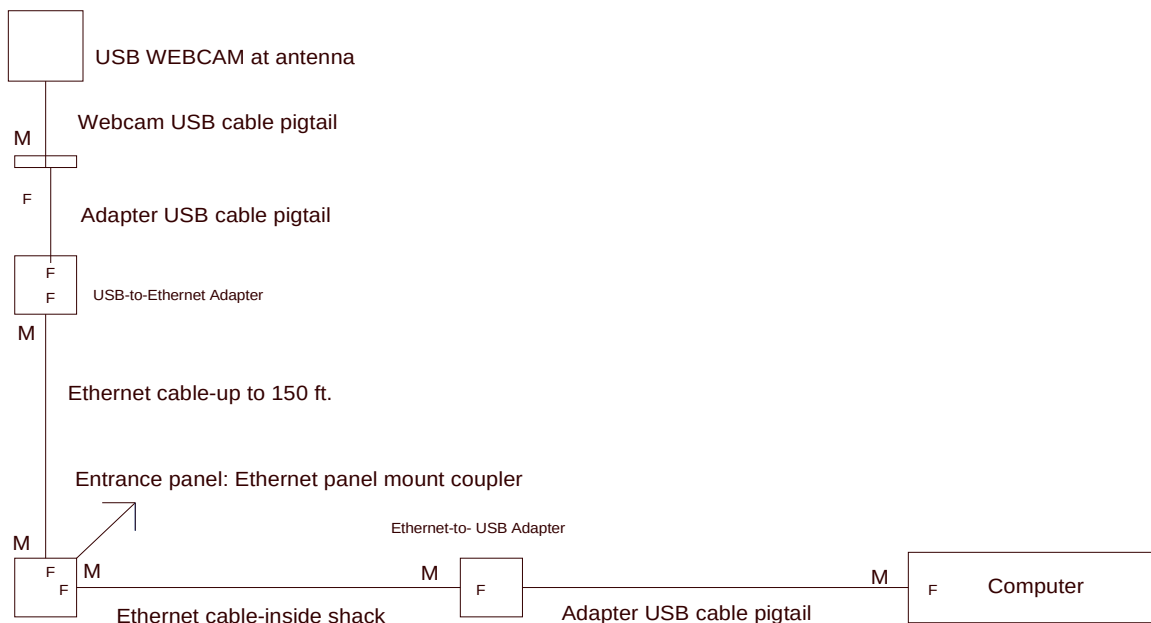


Fig. 1 connection diagram

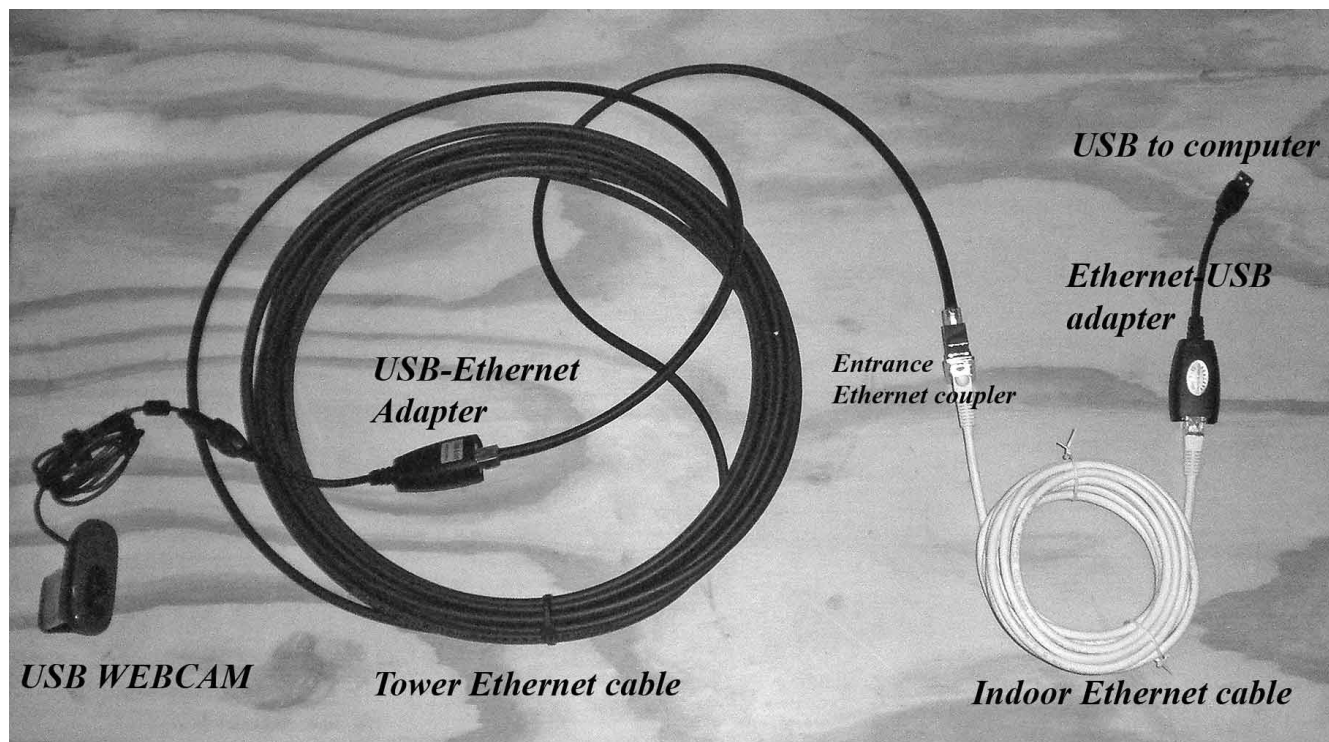


Fig. 2 Cable Picture

### Parts to order:

USB over RJ45 CAT5E CAT6 cable extender adapter pair (USB-A male to RJ45 Female plus USB-A Female to RJ45 Female). This pair is available via online auction (Approx. US\$6.00).

A suitable shielded Panel-mount CAT5E RJ45 modular coupler: L-Com TGD1026KS-C5E, plus mounting plate ECF504-SC5E available direct at [www.L-com.com](http://www.L-com.com) or from your favorite auction site (approx. US\$5.00)

OUTDOOR RATED SHIELDED Cat5e or Cat6 RJ45 ethernet cable, with shielded connectors, available from your favorite online auction site. (Less than US\$1.00 per foot).

INDOOR RATED SHIELDED Cat5e or Cat6 RJ45 ethernet cable, with shielded connectors. This is used to connect from the RJ45 entrance panel jack to the other USB/RJ45 adapter which then plugs into the USB port on the computer.

Webcam: available at your local electronics store or via online auction. Weatherproofing and a sun shade or shutter must be provided for long-term use (not discussed in this article).

Many thanks to Ron Jones, K7RJ, for this idea. He put me onto this approach by sending me a set of the USB/RJ45 adapters for use with my 70 cm EME antenna project.