

Building Your First HF Station



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GETTING STARTED

Interest : CW, SSB, Digital

Time invested in hobby

Money available : 1/2 antenna system, 1/4 radio, 1/4 extras

Shack Location: Remote station option

Antenna Location: Town restrictions /XYL

Feed Line/Coax cables : Remote antenna switch

What Radio should I Buy : Elmer's/Club/HRU

Computer/Radio Software needed

Extra's needed : Test Equipment, Headset, Keyer, Power Supply

STARTING POINT

SHACK LOCATION

Away from house traffic
Easy access to feed line entrance
2 sets of 4 110VAC outlets
One 220VAC outlet (for amplifier)

ANTENNAS

BEAM -- Advantages : Directional, Gain Disadvantages: Cost

VERTICAL -- Advantage : Limited small needed Disadvantage: Omni-Directional, Noisy

DIPOLE/WIRES -- Advantage: Low Cost, Easy to setup Disadvantage: Space required, support

RADIOS

NEW -- Kenwood, Icom, Yaesu, Elecraft -- Cost \$1200-1800

USED -- Many available at Hamfests -- Cost \$500-1200

EXTRAS

Test Equipment, Headset, Keyer , Power Supply, Tuners

ANTENNA TUNERS

- MFJ -949E --300 WATTS
- MFJ-962D -- 1.5K WATTS
- LDG
- PALSTAR



AUTOMATIC ANTENNA TUNERS

Auto tuners provide “one touch” antenna/transmitter VSWR matching.

I don't like auto tuners for the following:

Press button and all is ok

But -- no information about XL or XC

- I have a manual tuner that I use only on 75 meters.
- All other bands I spend time to get best VSWR (1.4 max)
- Noting the position of the XL and XC on the manual tuner, if I see a large change in the positions then may be time to check antenna feedline, remote switch, grounding, etc.

FEED LINES



- RG213/U ---> 1.0 DB LOSS PER 100FT
- LMR400 ---> 0.80 DB LOSS PER 100FT
- RG8X or MINI8 ---> 1.4 DB LOSS PER 100FT

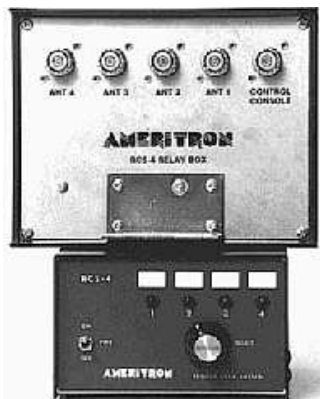
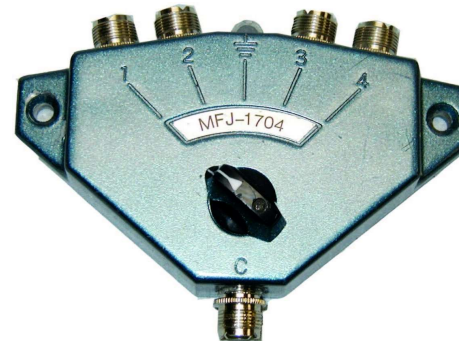
MFJ ANTENNA SWITCHES

DG-4R

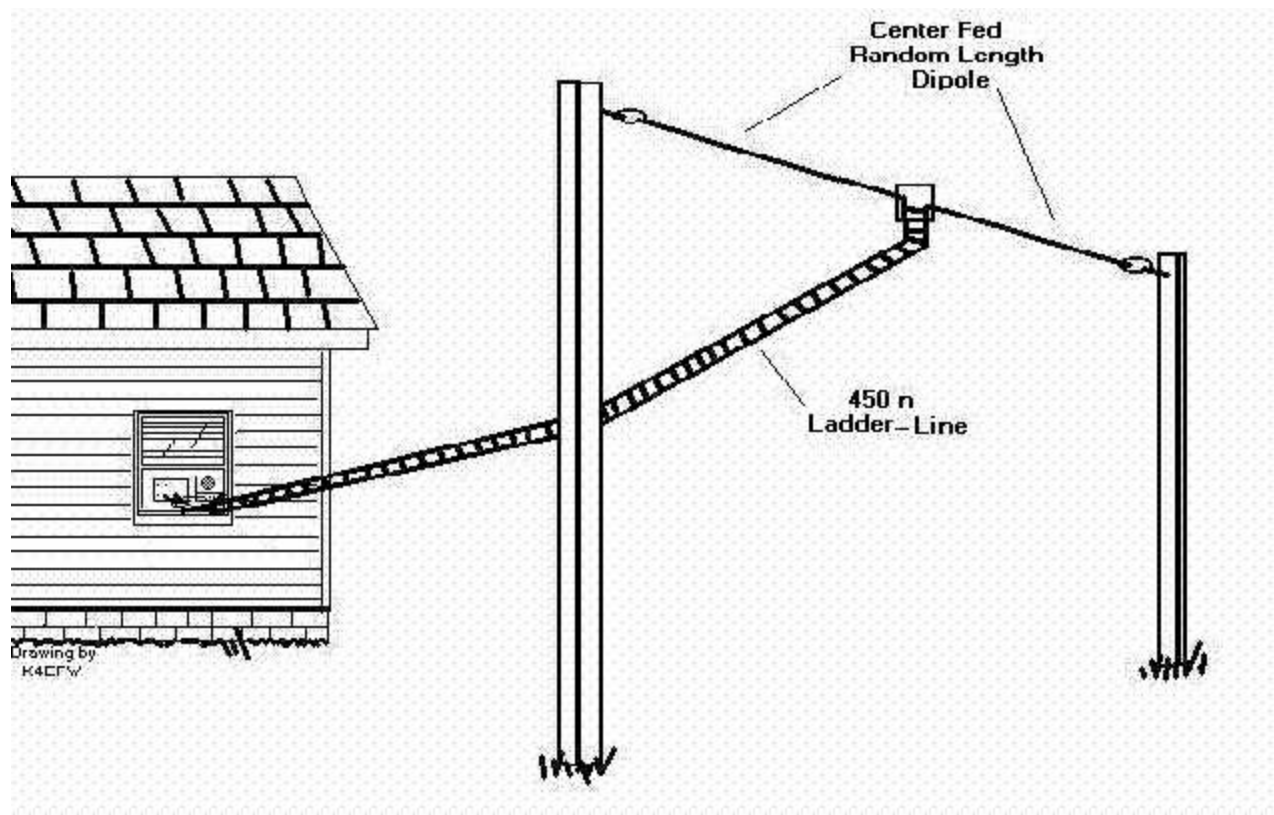
ALPHA DELTA

REMOTE SWITCHES

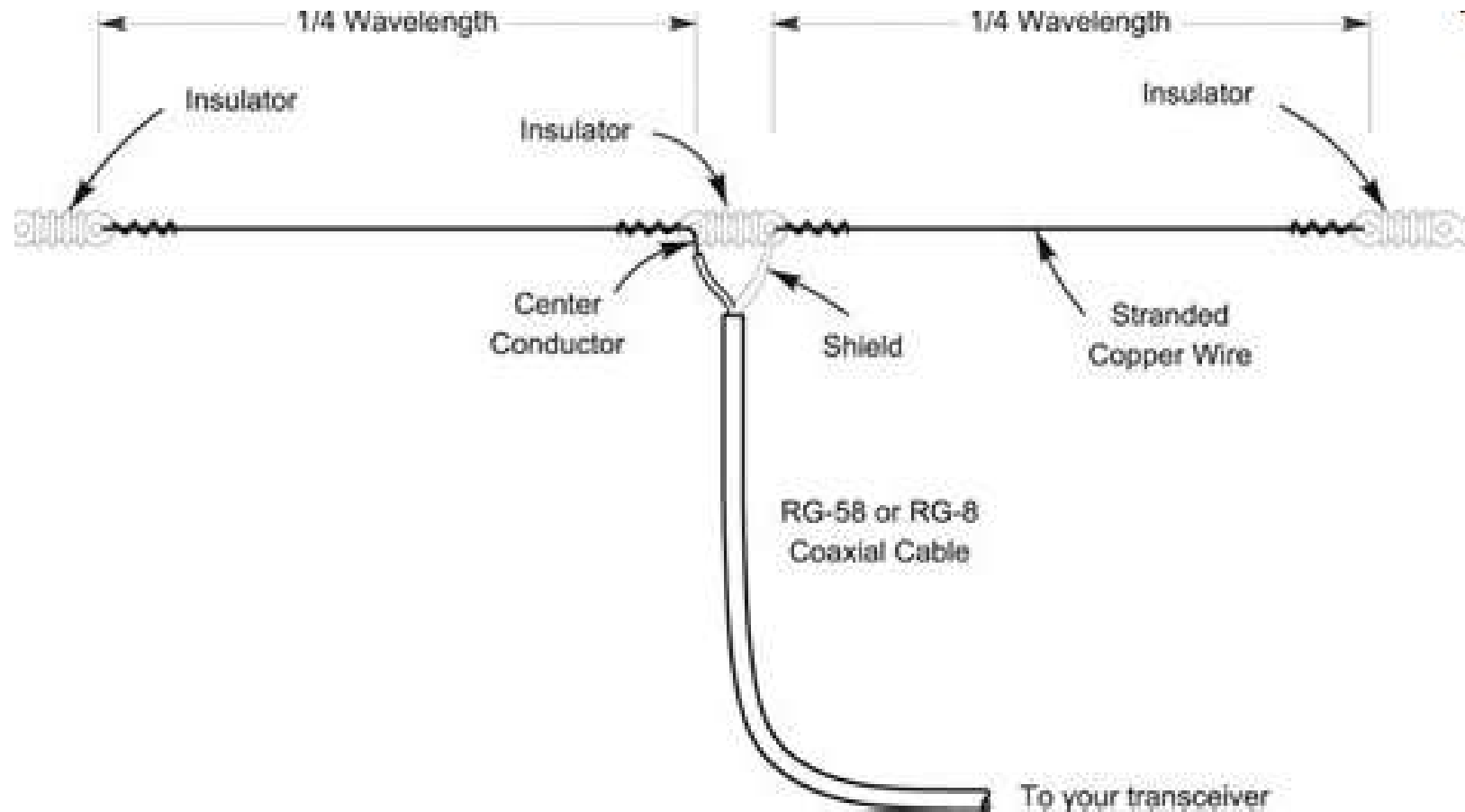
AMERITRON REMOTE SW



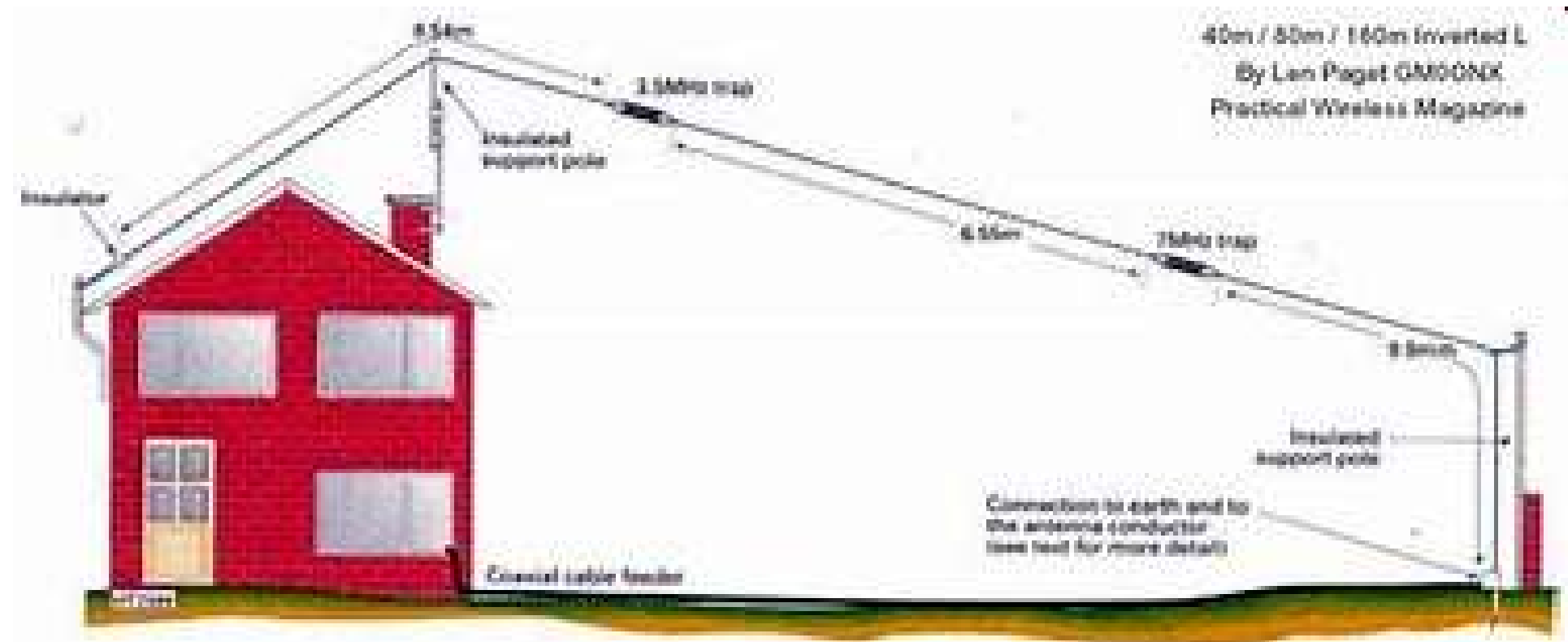
Basic antenna for the beginner



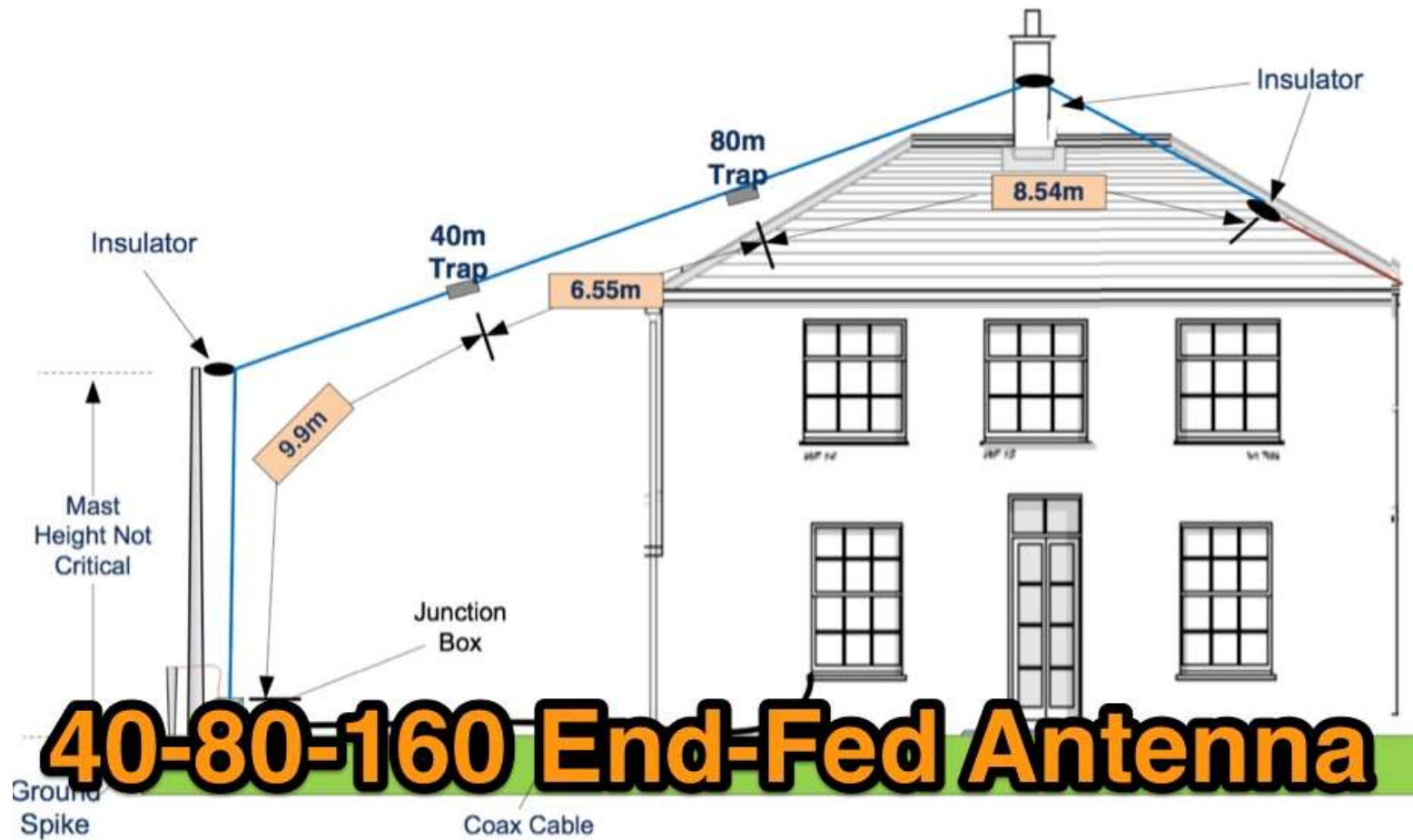
Dipole Measurements



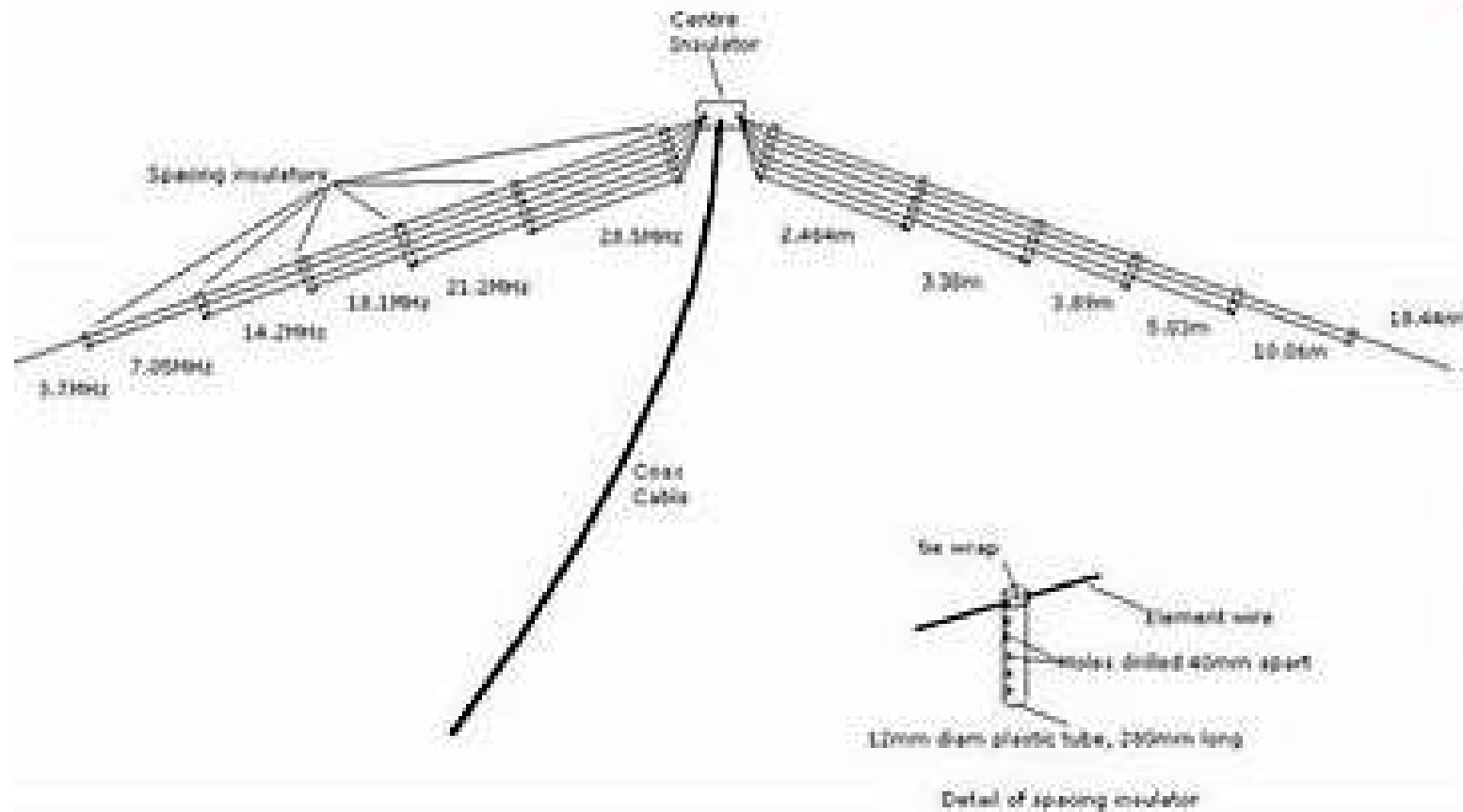
Tri-band (40/80/160) Inverted L



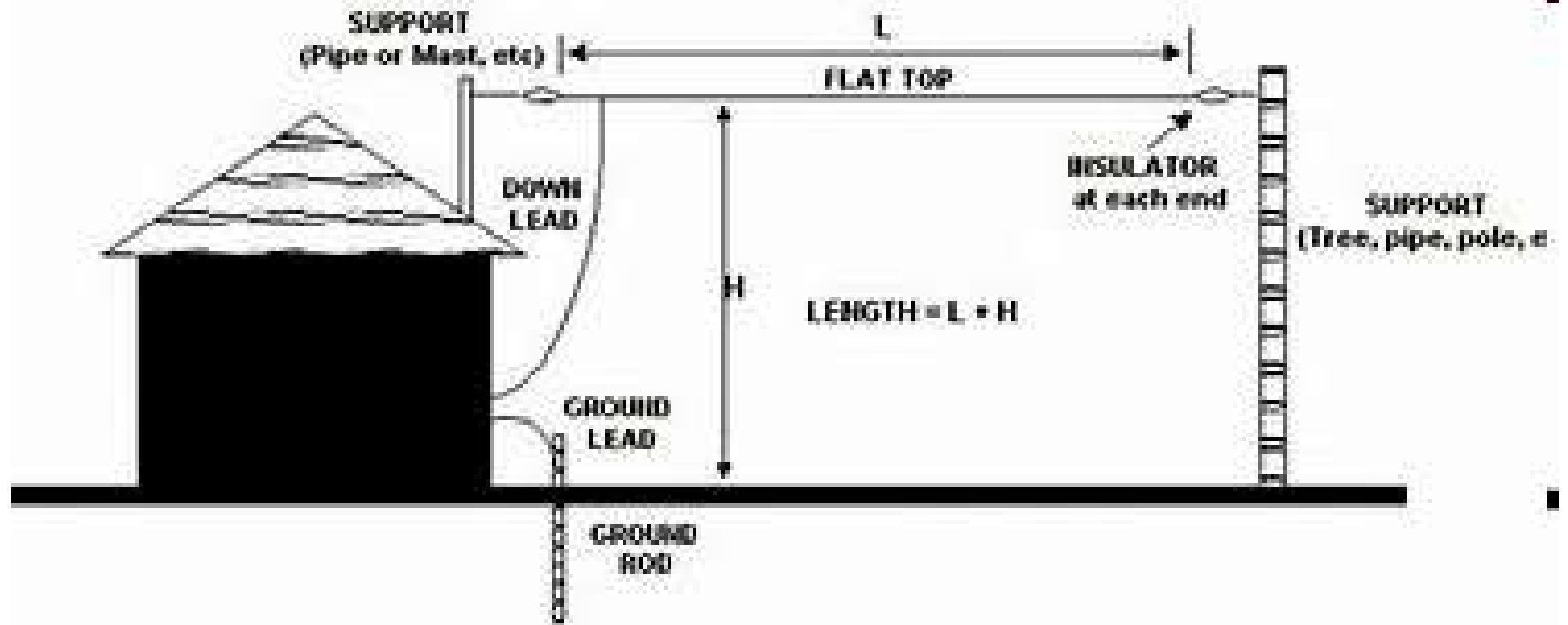
End-Fed Triband (40/80/160) Antenna



4-Band (40/20/15/10) Fan Dipole



Long Wire



TYPICAL LONG WIRE ANTENNA

STATION GROUNDING



TOWERS / ROTATORS

TOWERS:

- ROHN
- TRIPOD ROOF
- US TOWER
- UNIVERSAL



ROTATORS:

- YAESU
- HY-GAIN



TEST EQUIPMENT

J ANALYZERS MFJ-259C

GEXPERT ANTENNA ANALYZER AA-30

ULTI METER WAVETEK

ENGINEERING ULTRA CRIMING KIT



INTERFACE

REMOTE RIG INTERFACE SET

FOR RADIO'S WITH DETACHABLE FRONT
PANELS(TS480HX,TS2000,IC706,ELECRAFT



SIGNAL LINK USB



RIGBLASTER



EXTRAS

MFJ KEYS/PADDLE COMBO

MFJ VOICE KEYS

HEIL HEADSET

STRON POWER SUPPLY

LOGGING PROGRAM

1MM Plus

AM RADIO DeLUXE



HELPFUL TRICKS

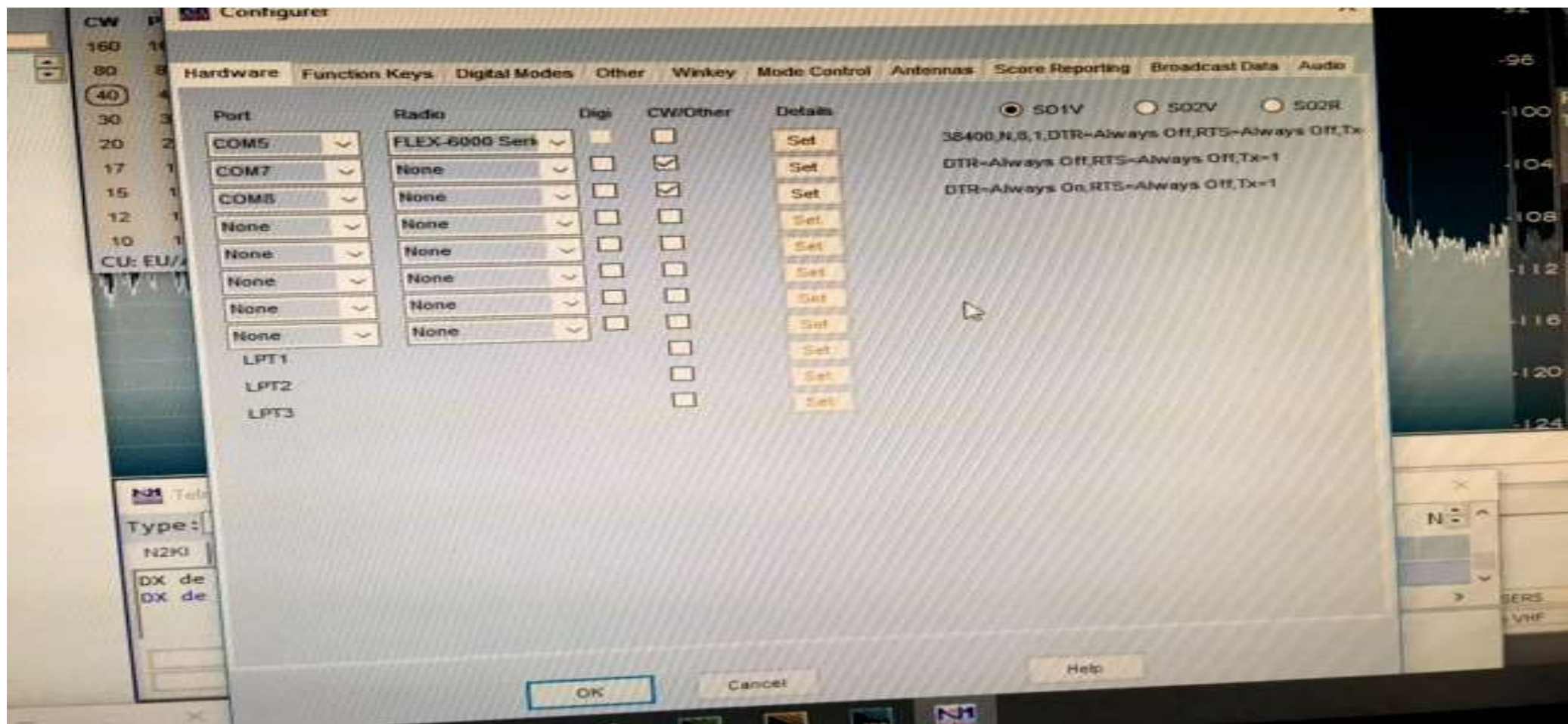
After setting up your station take pictures

Draw schematic

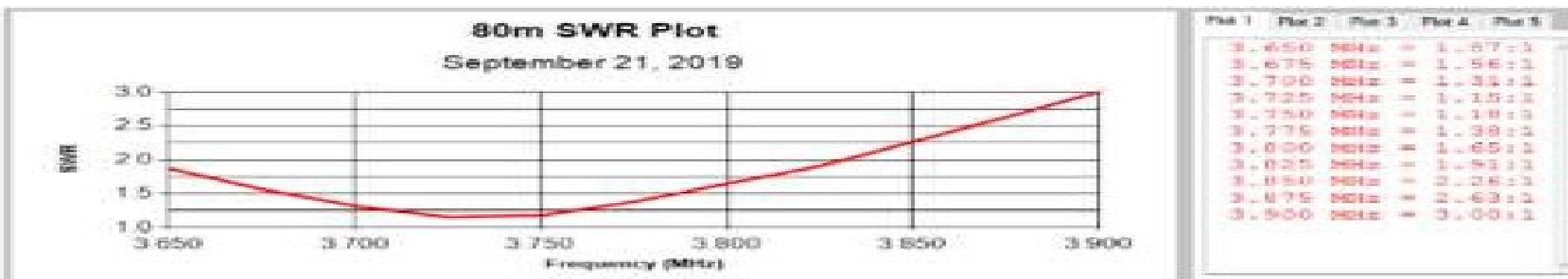
Download Manuals



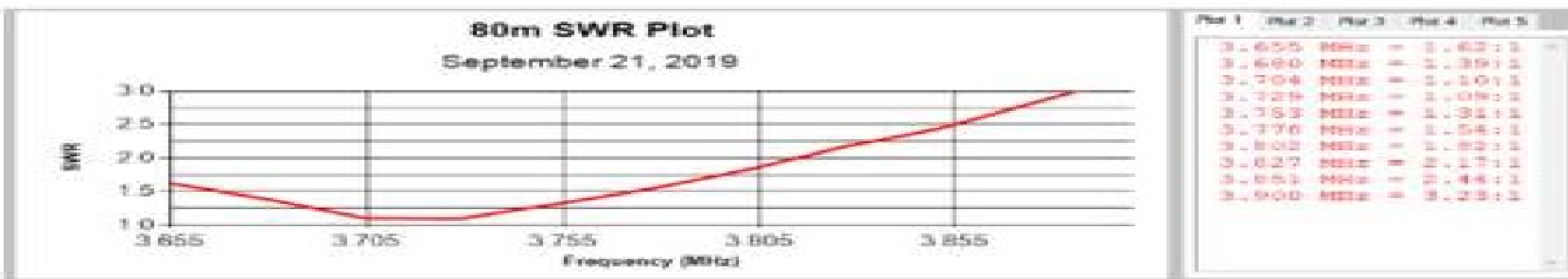
Take screen shots of program settings (N1MM)



the spring and fall check coax cables and antennas



Replaced RG8 with LMR400 + RG213



ON-AIR PERFORMANCE

Ask For Detailed Signal Reports -- Not just “59”

- Actual Signal Strength
- Audio Quality
- Compare With Previous Contacts

Think About Possible Improvements

- Better Antenna System
- Higher Quality Coax Cables

Improve Receiver Performance By Reducing In-Shack (Local) Noise Floor

Replace fluorescent lighting with LED's

Identify and replace noisy “wall wort” power cubes

Use EMI power strips

Shielded Cables

External Noise Floor -- Determined by Location

Compare 20-Meter Noise at QTH of N2MUN vs. W2JV

- N2MUN
 - South Shore - Elevation 8 ft
 - Flex 6400M Xcvr
 - Antenna - C3SS
 - Ambient Noise Floor:
 - S-5 to S-6
- W2JV
 - North Shore - Elevation 150
 - Flex 6400M Xcvr
 - Antenna - Navassa-5
 - Ambient Noise Floor:
 - S-3

HF DURING LOW PROP CYCLE

- 40 AND 80 METERS

- I use Butternut Vertical For Transmit

- Receive-only Magnetic Loop - Reduces Noise Floor three S units

- 17 METERS

- DIGITAL MODES

- CW

- SATELLITE

- ARRL BOOK “LOW BAND Dxing” BY ON4UN

Any Questions?

