

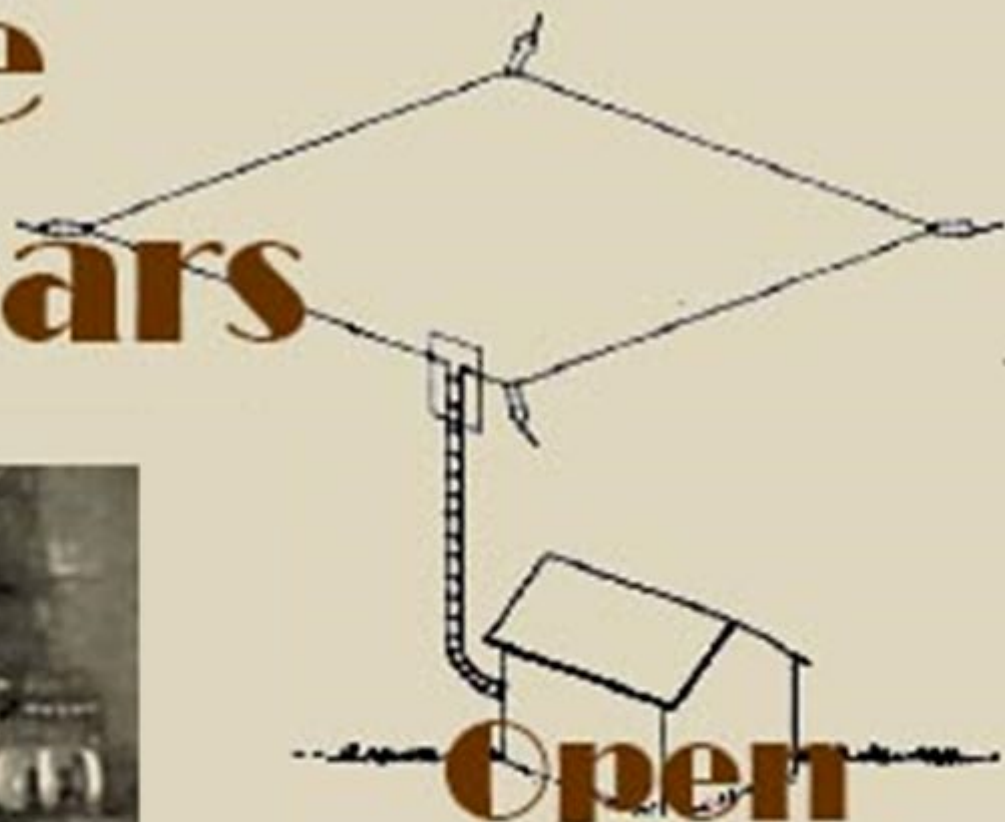
Using Open-Wire Line in “Forbidden” Places

w6nbc.com/slides.html



*Where
Open-Wire Line
Has
Never Gone Before*

In the Early Years



Line
was King



**Still Used Today
For low Loss**

Today we Prefer Coax

**What Caused the
changeover?**

WWII Portable Radios

German Trench Soldiers



SYNTHETICS FOR ELECTRONICS

COAXIAL CABLES

THE LINE THAT REACHES 'ROUND THE WORLD

DEPEND UPON AMPHENOL QUALITY

• Among other radio experts, "hams" now welcome the return of the Amphenol line from honorable service on far-flung battlefronts around the world. Amphenol components—greatly improved by wartime experience and augmented in number, style and type—are currently available for civilian applications. Simplifying buying, this wider selection of high-quality, tested items can be procured from one manufacturer.

To know these popular Amphenol products better—write today for the new Condensed Catalog No. 72.

AMERICAN PHENOLIC CORPORATION
In Canada • Amphenol Limited • Toronto

J. H. F. CABLES AND CONNECTORS • CONDUIT • CABLE ASSEMBLIES
CONNECTORS (A-N, U. H. F., BRITISH) • RADIO PARTS • PLASTICS FOR INDUSTRY

1945 QST

Companies like
Amphenol
began offering
COAX to hams

300 Ω TV ribbon

450 Ω Window Line

**X Ω
Ladder
Line**

LadderSnap

1:1 SWR dB Loss

<i>100 ft.</i>	80m	10m	2m	70cm
RG58	0.9	2.6	6.7	13.2
RG8	0.3	1	2.4	4.4
LMR400	0.2	0.7	1.5	2.7
300	0.2	0.6	1.3	2.4
450	0.05	0.15	0.4	0.7

***Hams are
afraid of
open-wire
line***



They think



Or

On standoffs

MUST BE
In the open





**On Metal
Roof**



In Conduit



**Metal Window
or Through Wall**

WOULDN'T DREAM OF



On the Ground



Buried

**BUT, Can we Violate
this
Common Wisdom ?**

I set out to
find out

With **simple** ham
methods

A Novel Approach to Using Window Line

John Portune, W6NBC

It was obvious from the start that a recent antenna project would have to be fed by low-loss window line, but there was no stealthy way to do so while avoiding often-heard window-line taboos such as laying the line on the ground. After some thought and experimentation, I found that routing 450 Ω window line through widely available polyethylene foam tubing used for hot water pipe insulation would allow it to be used in places once thought to be the sole domain of coax cable.

Coax, which was first widely used by the military during World War II,

Routing 450 Ω window line through inexpensive polyethylene foam tubing enables its use in places once reserved for coax.

The line easily slips through the tubing, which now takes on the role of a linear stand-off insulator. Further, the closed foam protects the line from moisture, a potential enemy of window line. In its protective shroud, the window line can now be deployed much like coax.

In practice, you only need to encase the line for those portions of the run that lie directly on the ground or right against an object — open-air runs require no protection. Where rigidity or mechanical protection is important,

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well. Figure 3 shows the curves from 18 – 22 MHz for the four situations. We'll see in a moment why I zeroed in on this smaller range.

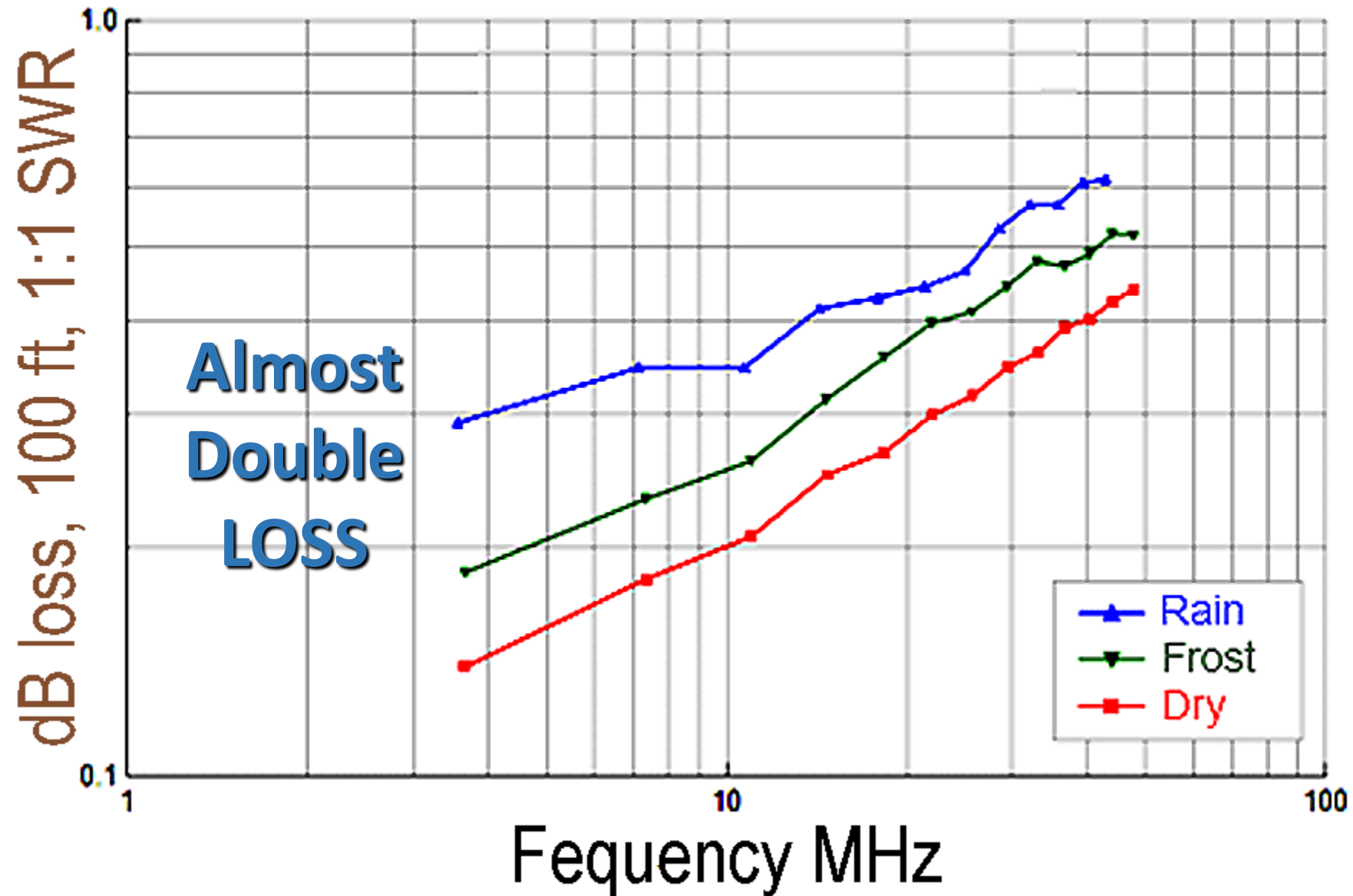
Return loss measurements are made from one end of a line with the other end open. The resulting infinite mismatch at the open end forces the test signal to totally reflect and to make two passes of the line. The loss then is half the measured total.

The reason I selected 19.8 MHz is because of the sudden 180-degree

The ONLY “musts”

- **Keep it out Moisture**
- **Maintain a
Minimum Distance**

Moisture on 450 Ohm Window line



Solution to Both

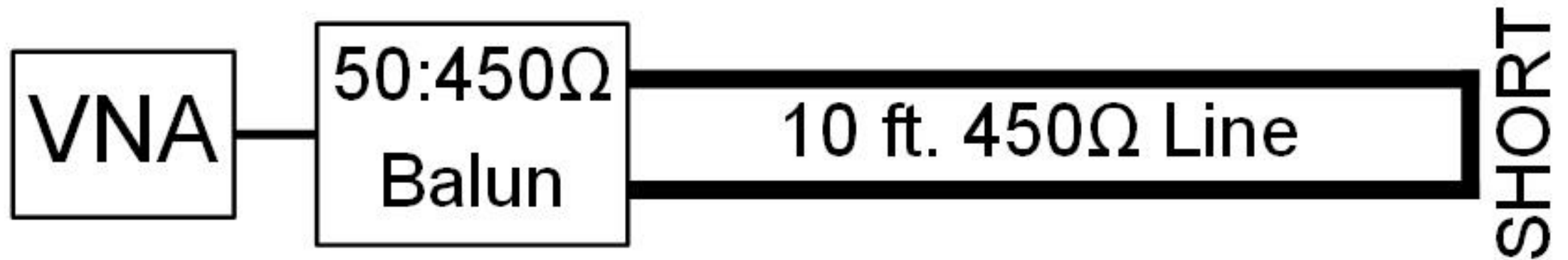


**Closed-Cell ½ in. water pipe
insulating foam wrap**



Water Proof Tape

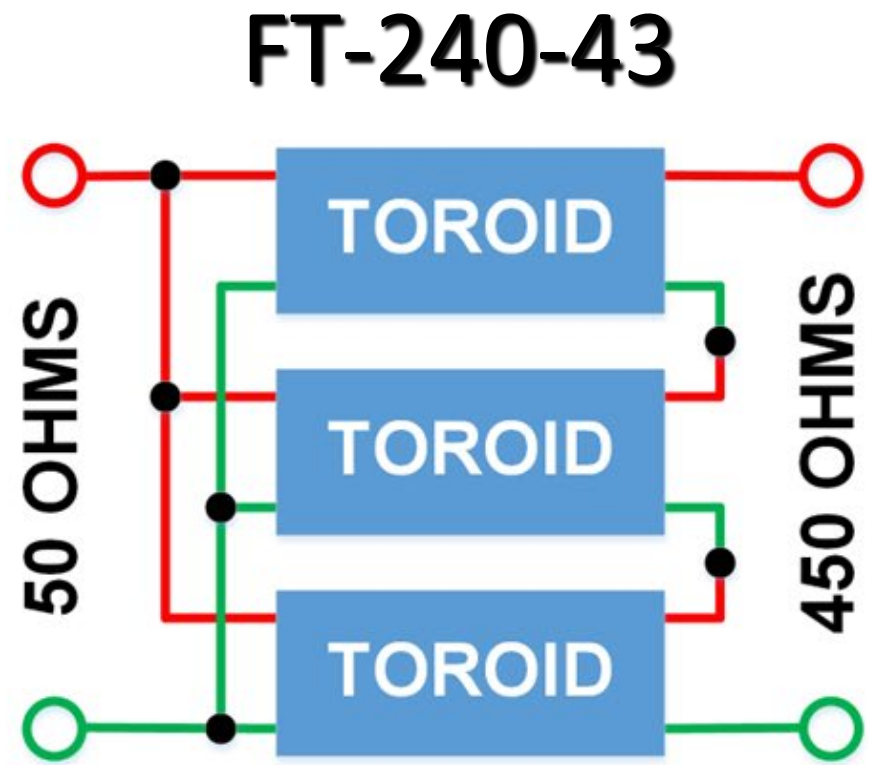
Simple
Test Setup Just to
Estimate **Loss**



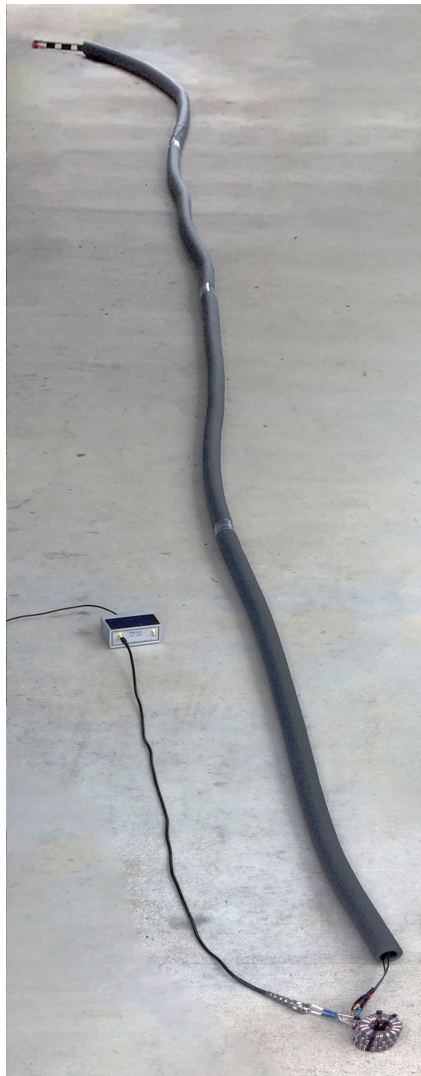
Shorted line,
the test signal is 100% reflected.

In two passes,

Loss = $\frac{1}{2}$ Return Loss in dB



**9:1 Choke
Current Balun**



Concrete



**Wet
Soil**

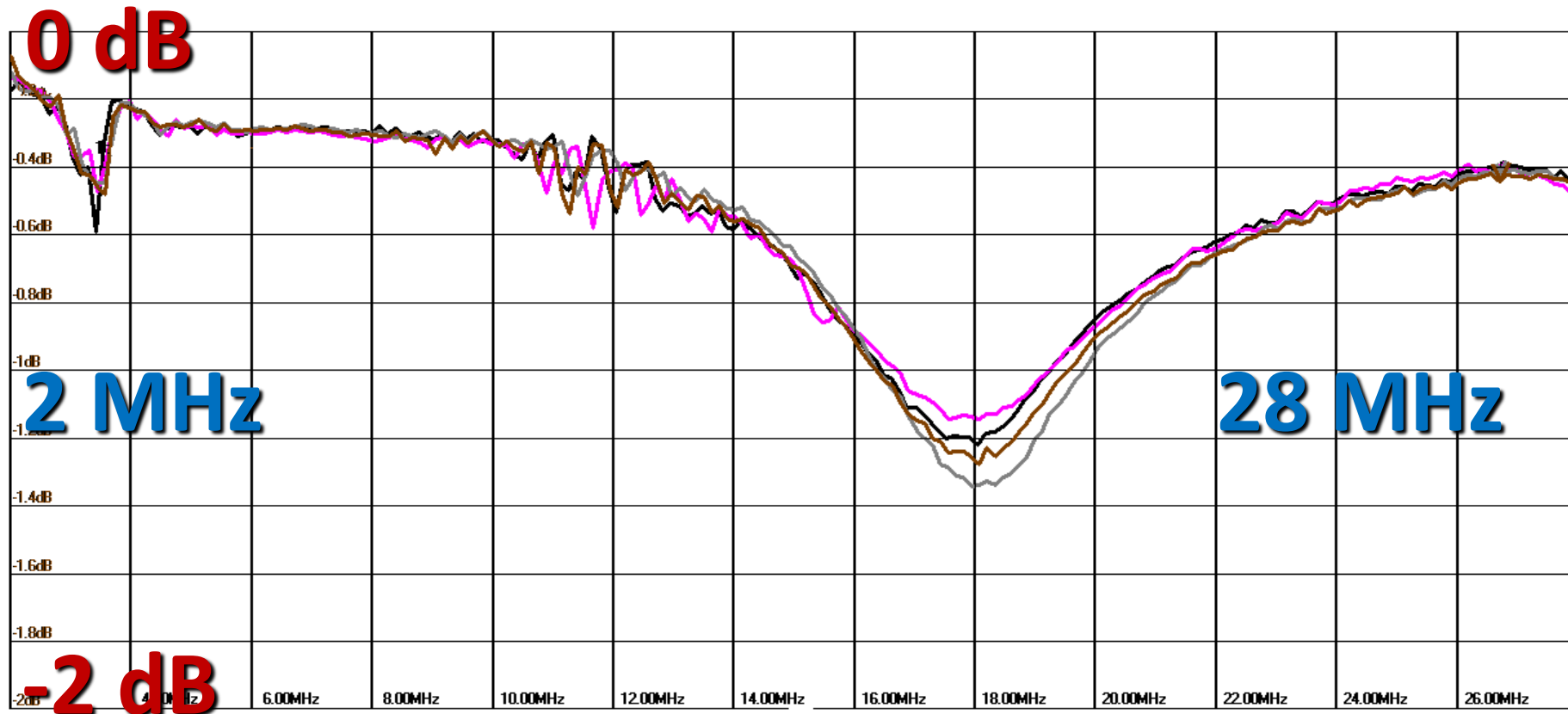


**Aluminum
Roof**

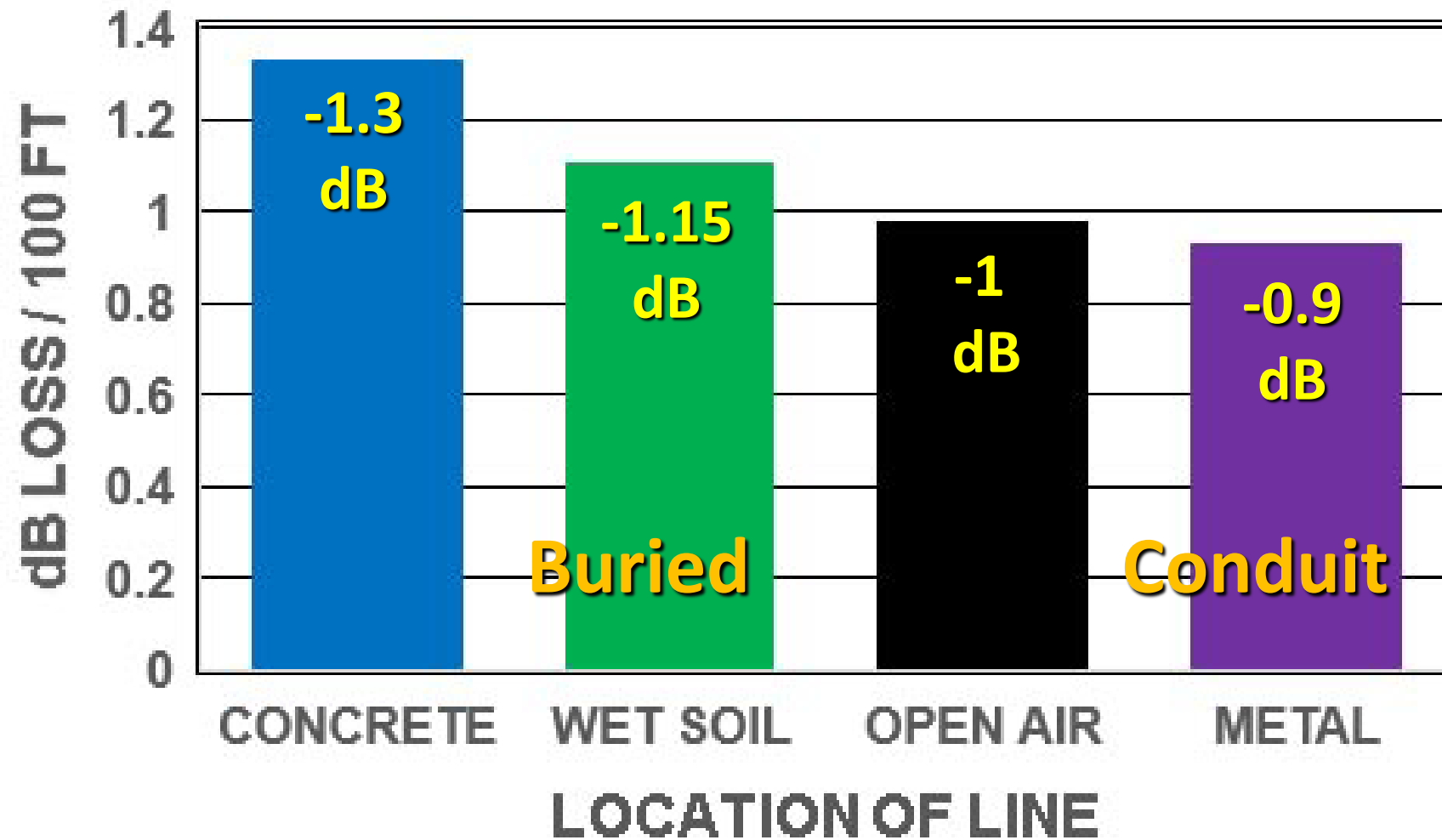


Open Air

Raw Data of $\frac{1}{2}$ Return Losses in dB



100 ft. of Line

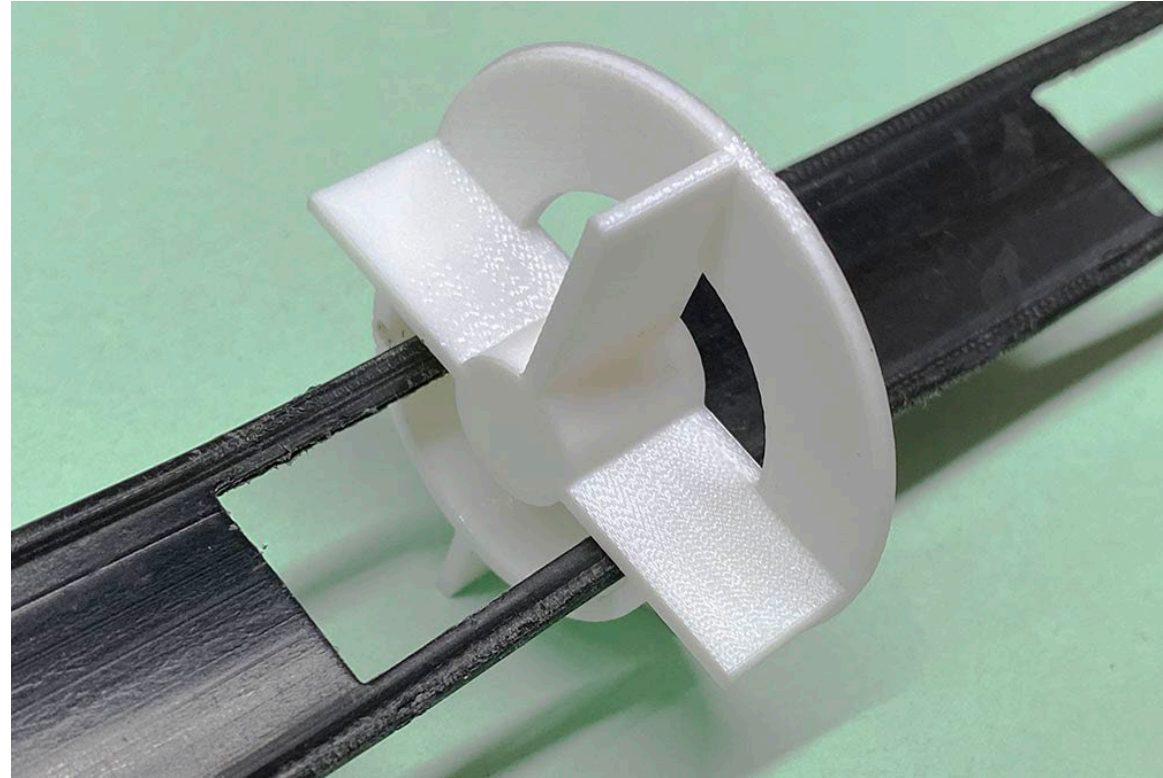
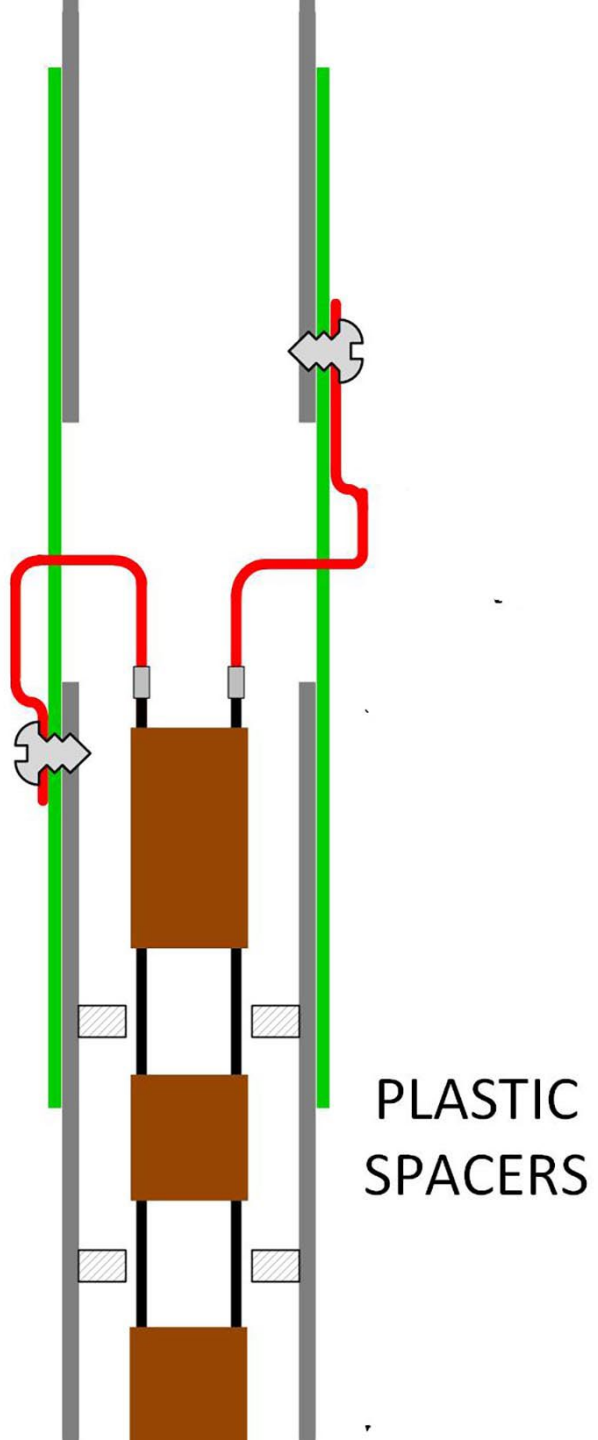


**In conduit is is like
TWINAX
100 Ohm Twin Coax**





OCF Electrical Half Wavelength Flagpole Antenna



**Centered
Minimum Distance**



Reader Examples

Closing Extra

**Where Open-Line
is Still King**



**KPH Ship-to-Shore
CW Coastal Station
Pt. Reyes**

**KPH
(KSM)**





RX
Site



TX Site
500 KHZ TX

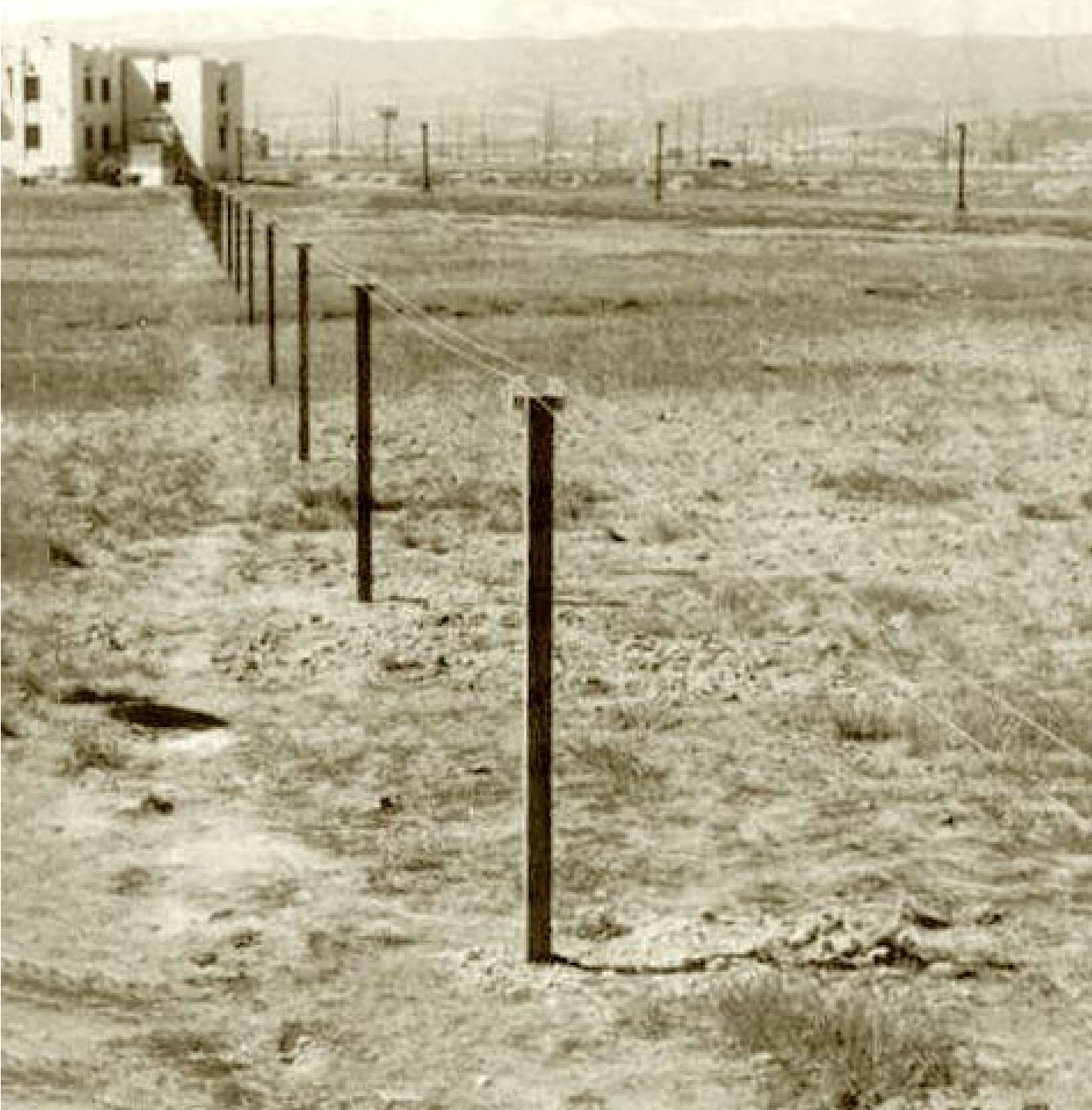
Joe Peterson
KE6YHI SK

Richard
Dilman

50 Ohm Unbalanced to 600 Ohm Balanced Tuners







The Early Days



Today



Moi
18 KW
CW

NOW

*You too can go with
open wire line
where no ham has
gone before*



w6mail@gmail.com

DØGGY



w6nbc.com/slides.html

"That's all Folks!"