

160m $\frac{1}{4}$ Wave Vertical Antenna

By JA1LZR

Vertical at Misaki



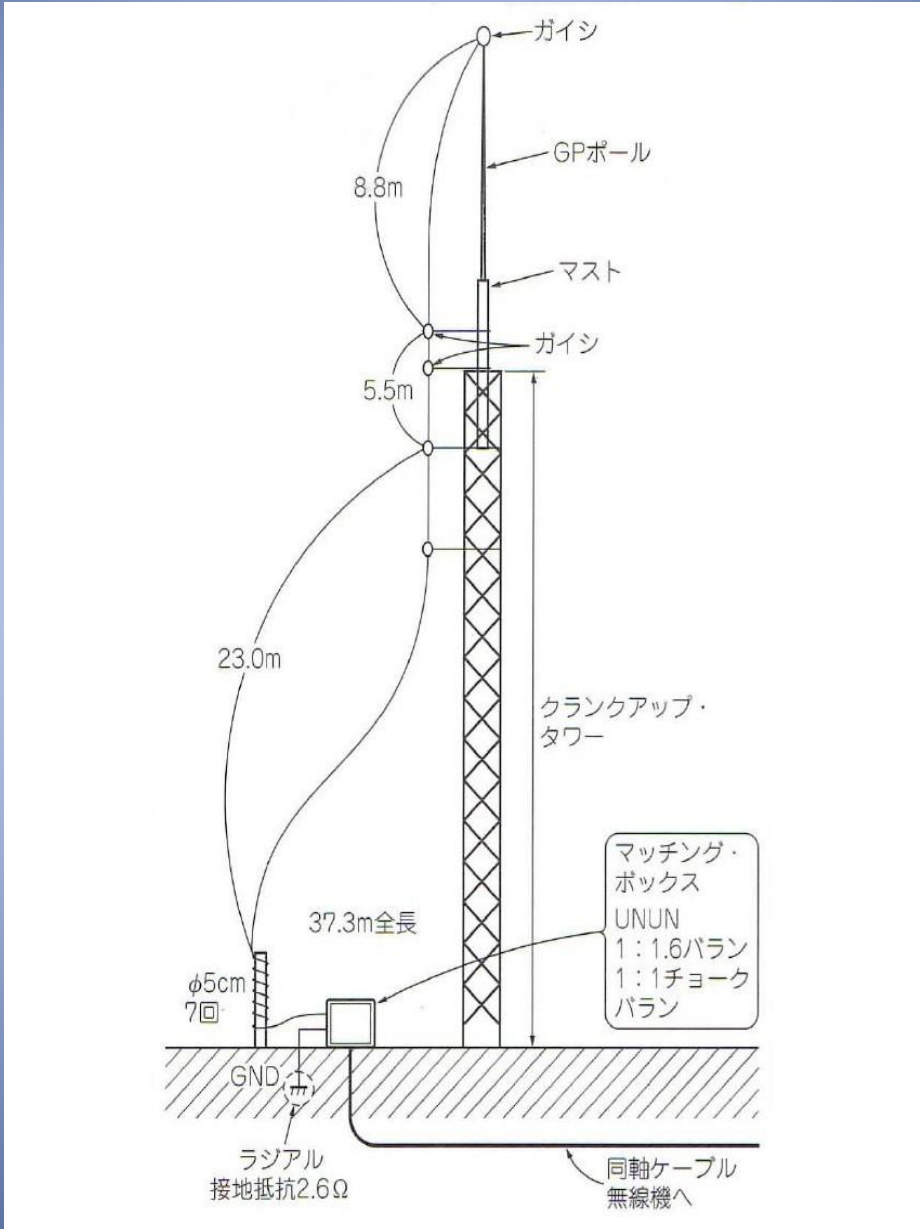
G7VJR Michael at GJ6UW



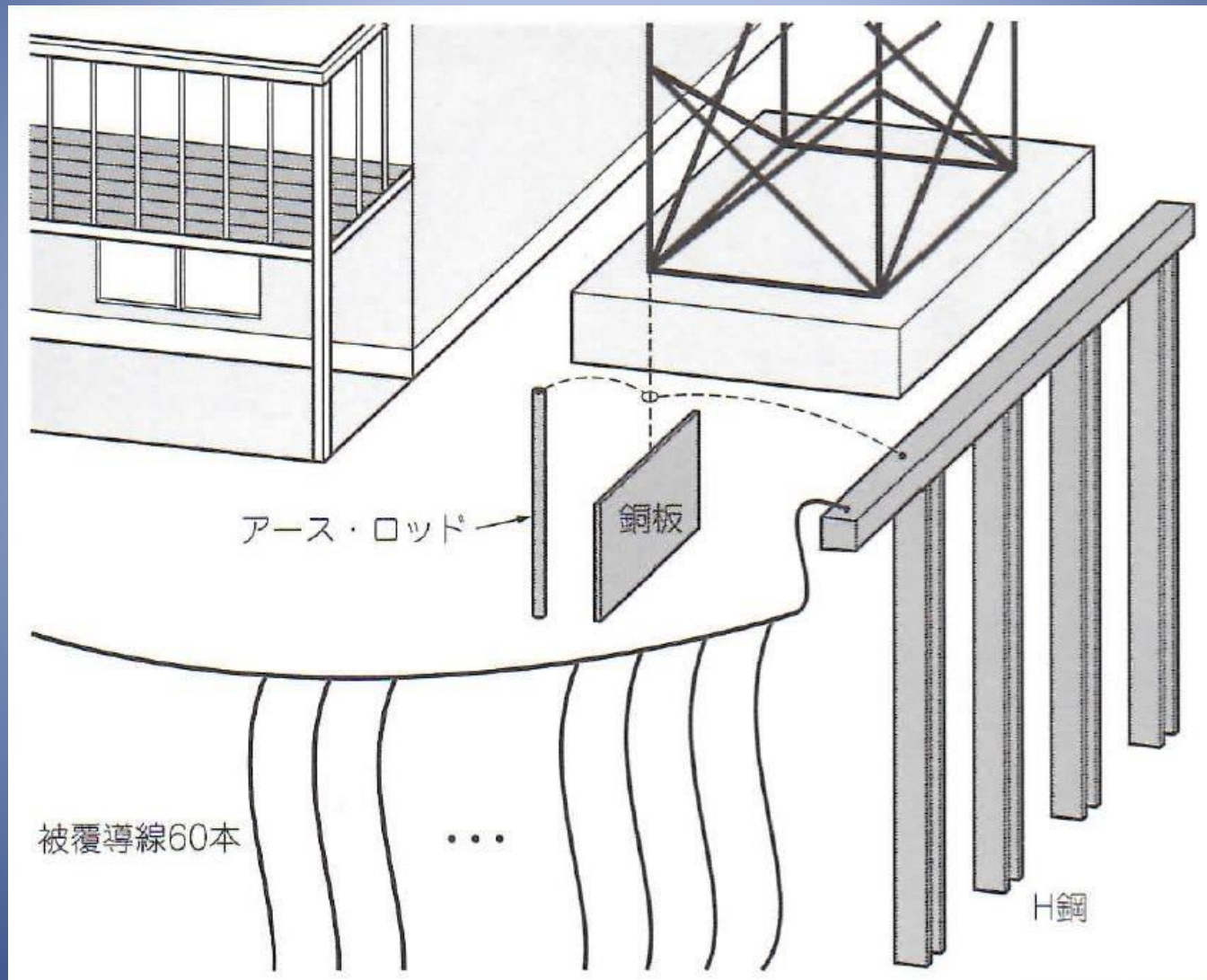
9M0L



全体スケッチ

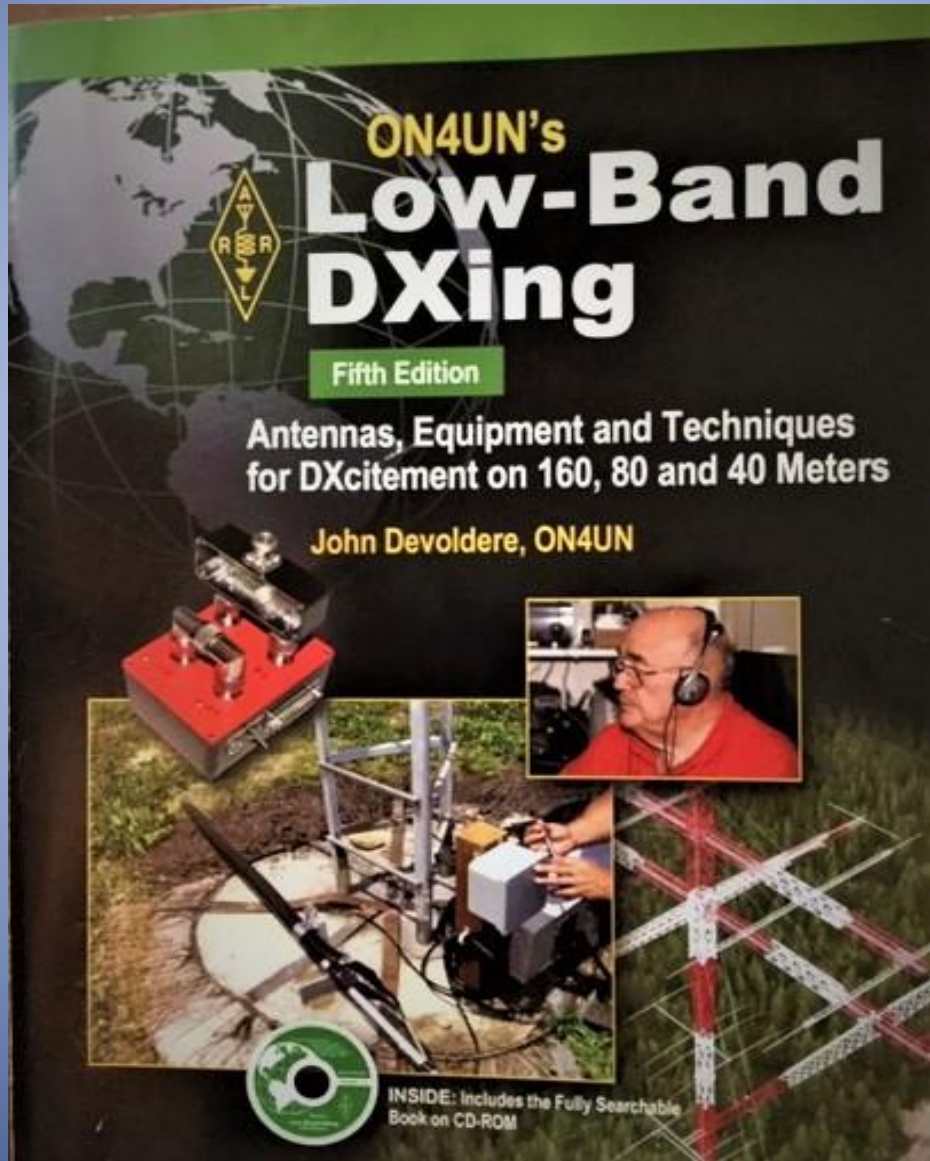


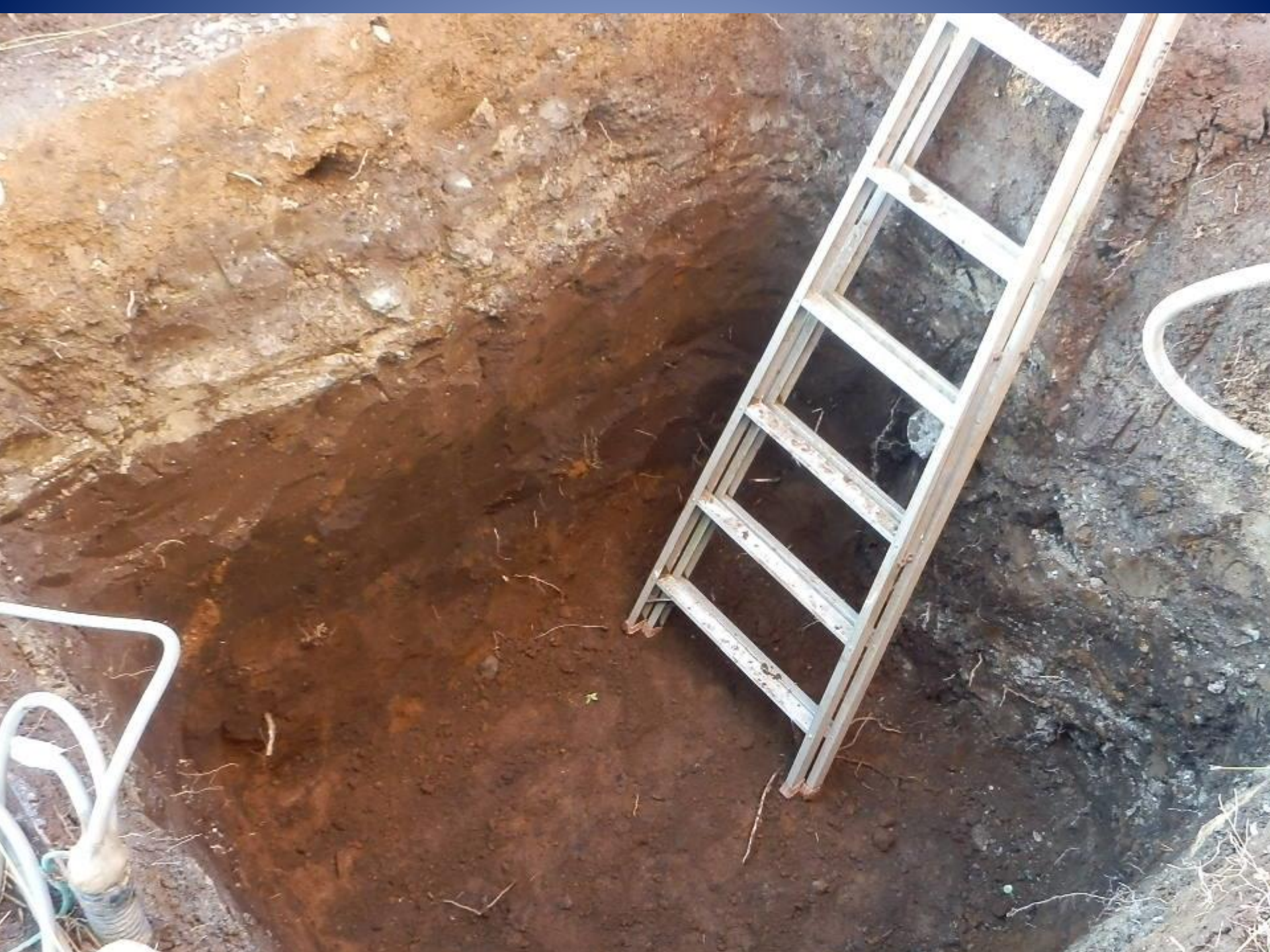
Ground System



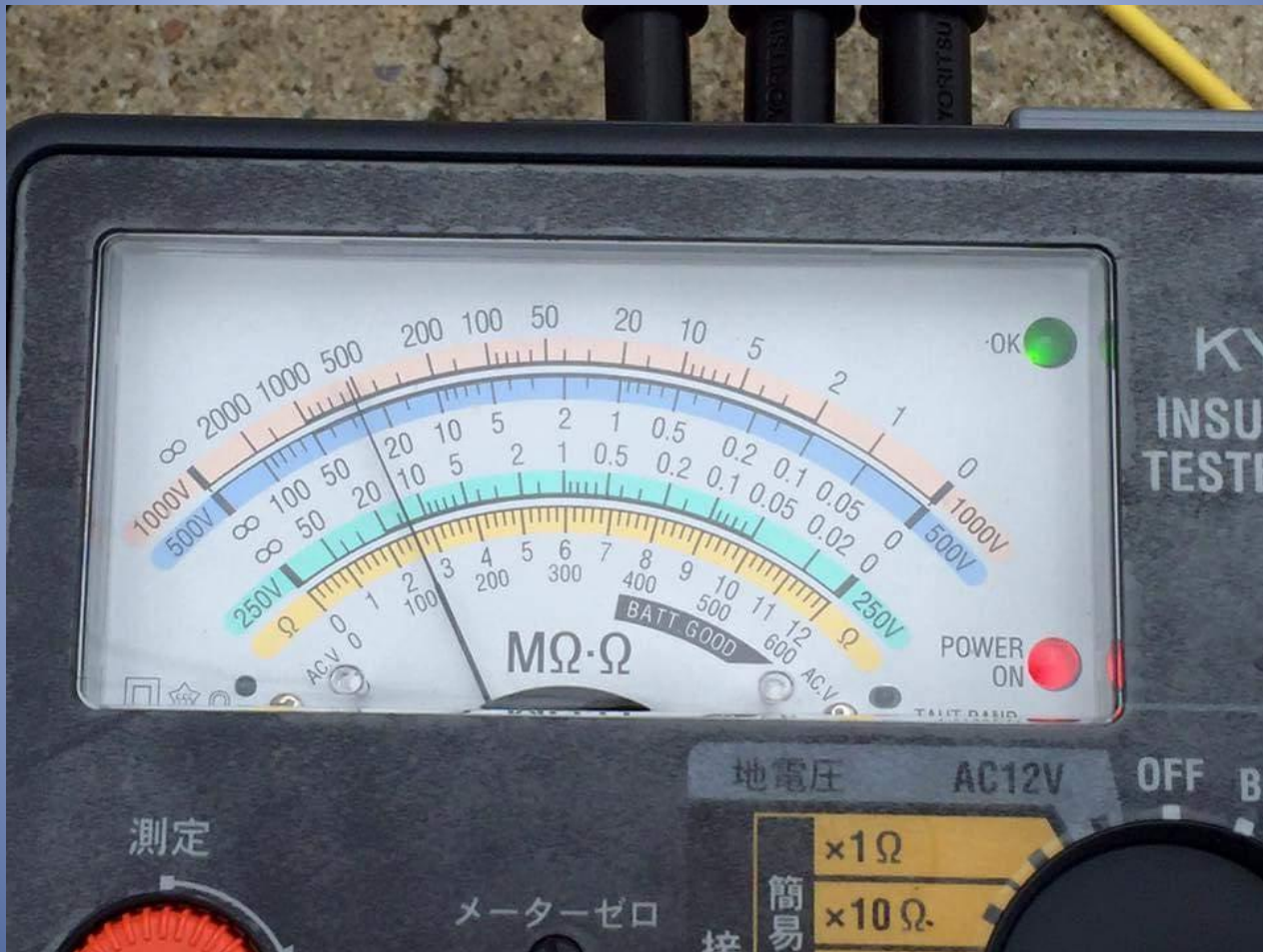
Low-Band Dxing

By ON4UN





接地抵抗



エレメント処理作業



グラスファイバーポールとマスト取付部分



マストクランププレート



エレメント全体



給電部付近



プラボックス



UNUNバラン



Balun Design 1.6 : 1

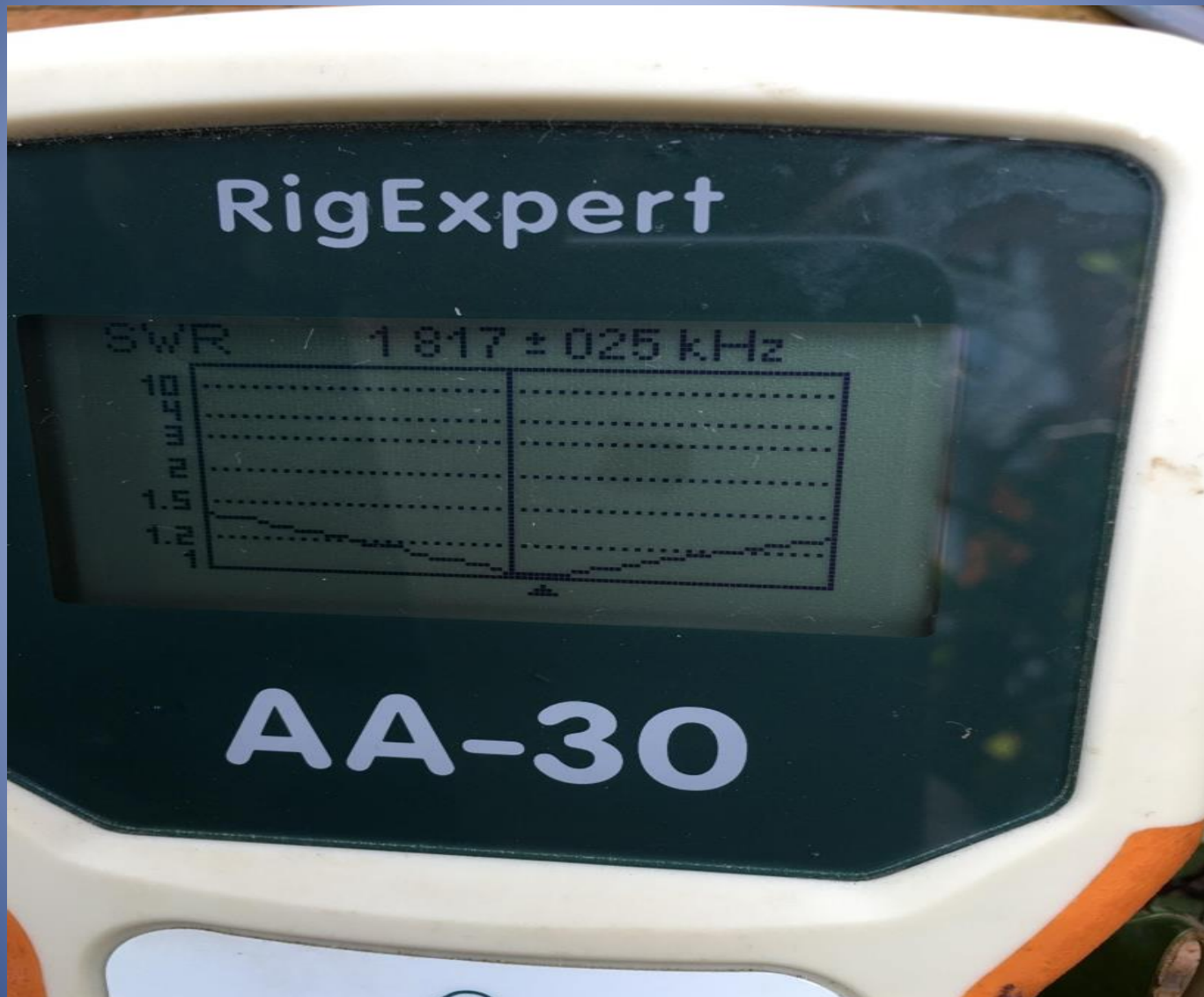


Model 16132t

Common mode Choke



実測SWR





HF Verticalのグラウンドラジアルシステムの効率化

By N6LF Rudy

1. いい加減なラジアルによる輻射損失
2. 地表ラジアルとエレベーターラジアルの比較
3. 実際に必要なラジアルの本数は？
4. 160mVerticalのラジアルシステム

Ground Radial System

- 地面に這わせる Ground Surface Radial
- 10cm埋める Buried Radial
- エレベータードラジアル Elevated Radial

Ground surface radial VS Elevated radials

- エレベーターテッド ラジアルでも
同じパフォーマンス
- 高さとお本数に注意 少ないと輻射損失
- いずれの場合も良好な土壤 (conductivity)が
不可欠

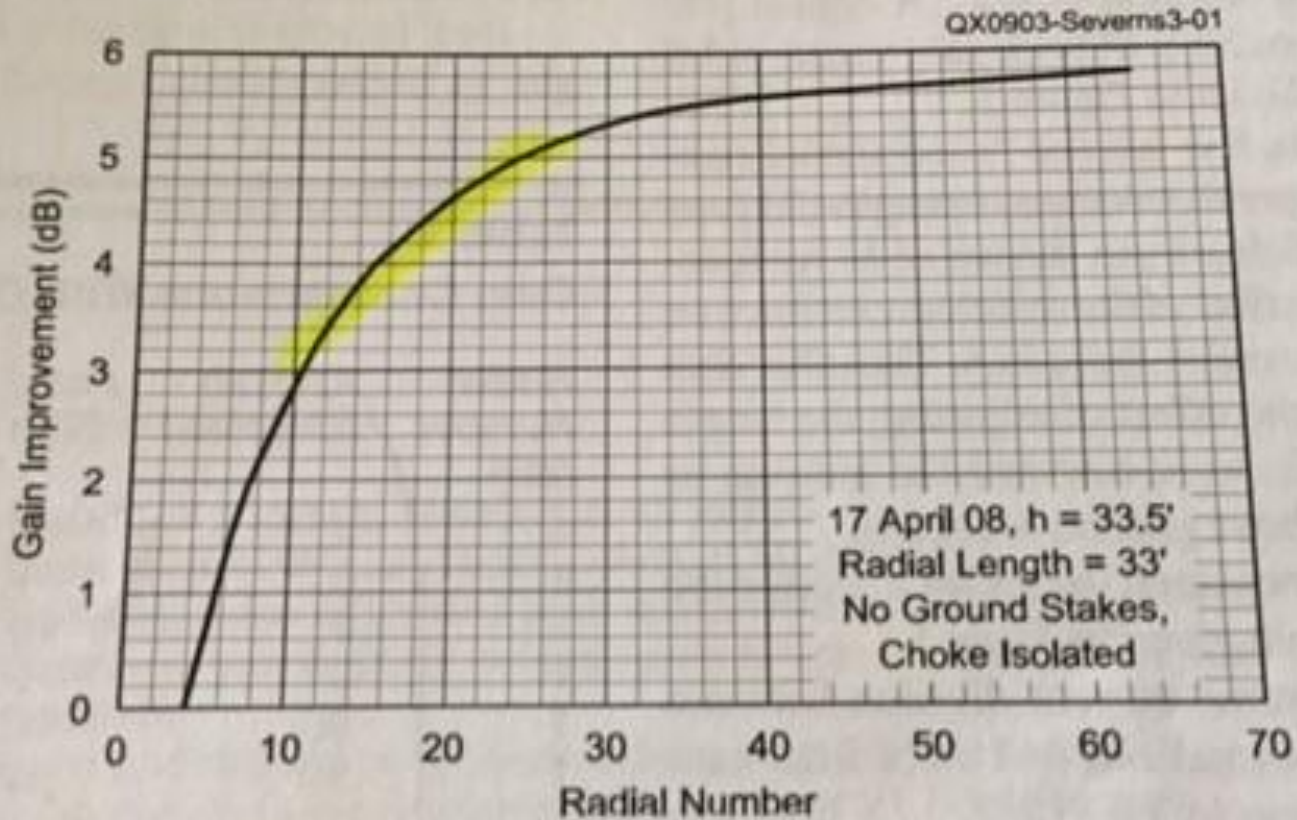


Figure 1 — $|S_{21}|$ as a function of radial number. All radials are lying on the ground surface.

1/4波長バーチカルにおいてピークゲインをもたらす グランドシステムの考察

K3LC NCJ 2004 Mar/Apr

要 約

1. Total Wire Length 16,000Feet (4,800m)
2. Soil Conductivity 導電率 0.005 [S/m] 以上
3. 1/8WL 32本以上
4. Buried 10cm埋める
5. 給電点にチヨーク挿入

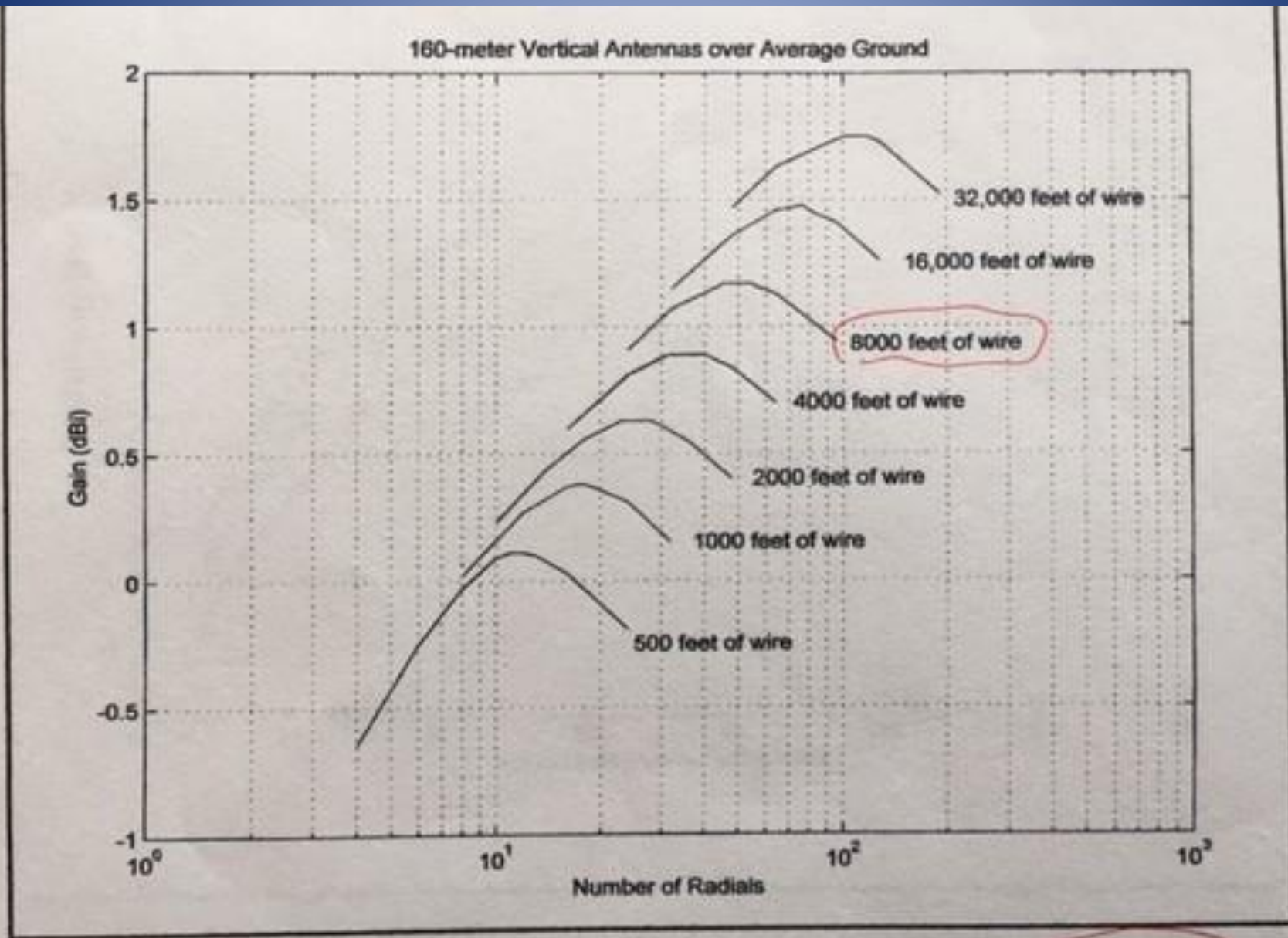


Figure 3—Gain of a quarter-wave 160 meter vertical antenna over average soil, as the number of buried radials is varied, for seven different total lengths of wire.

Radials / Base Rs

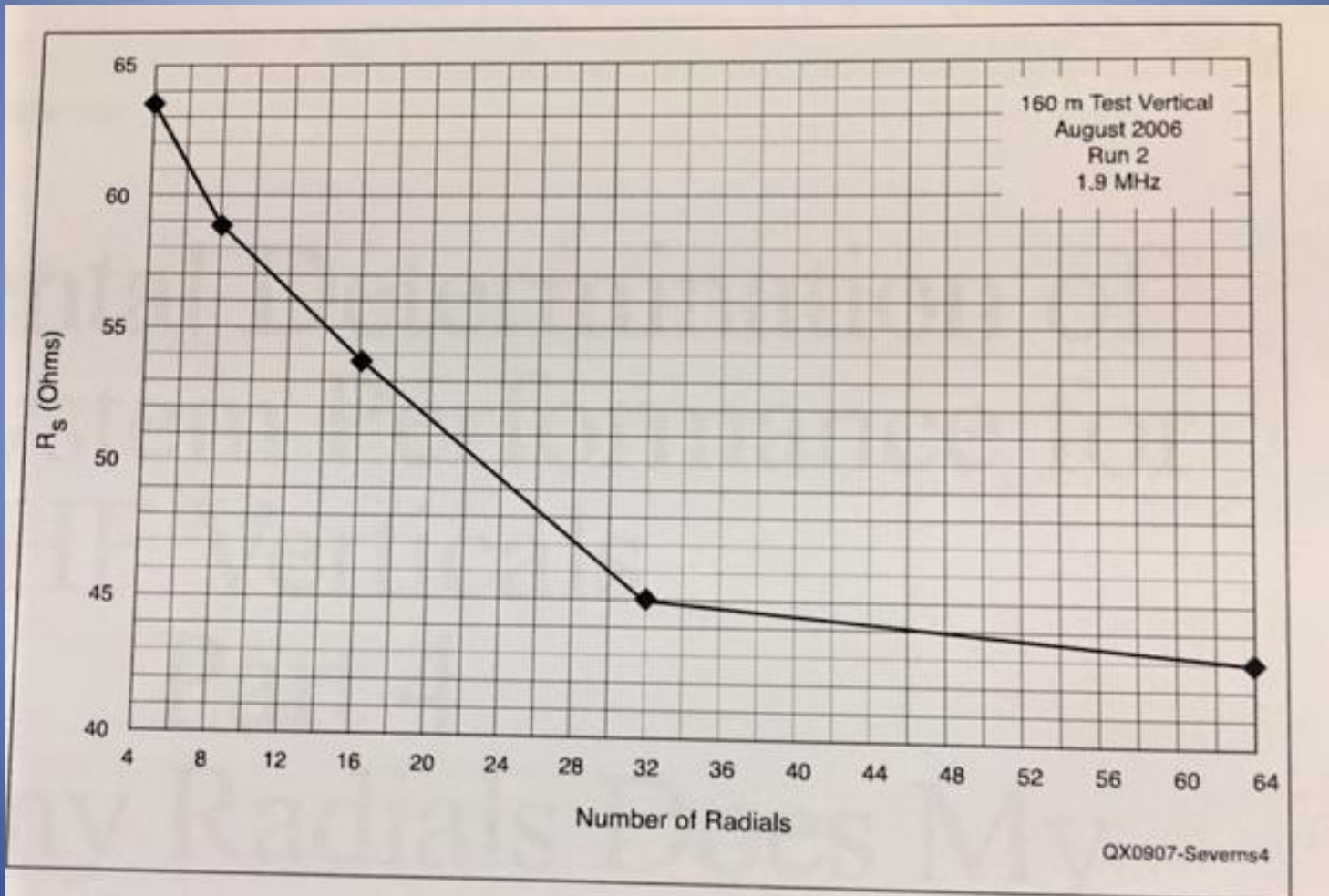


Figure 4 — This graph shows the base resistive component versus radial number at 1.9 MHz.

Radials

19:27 7月24日(水)

100%



Optimum radial wire length vs. number of ground radials
www.w0btu.com



Optimum Ground Radial Wire Length vs. Number of Ground Radials

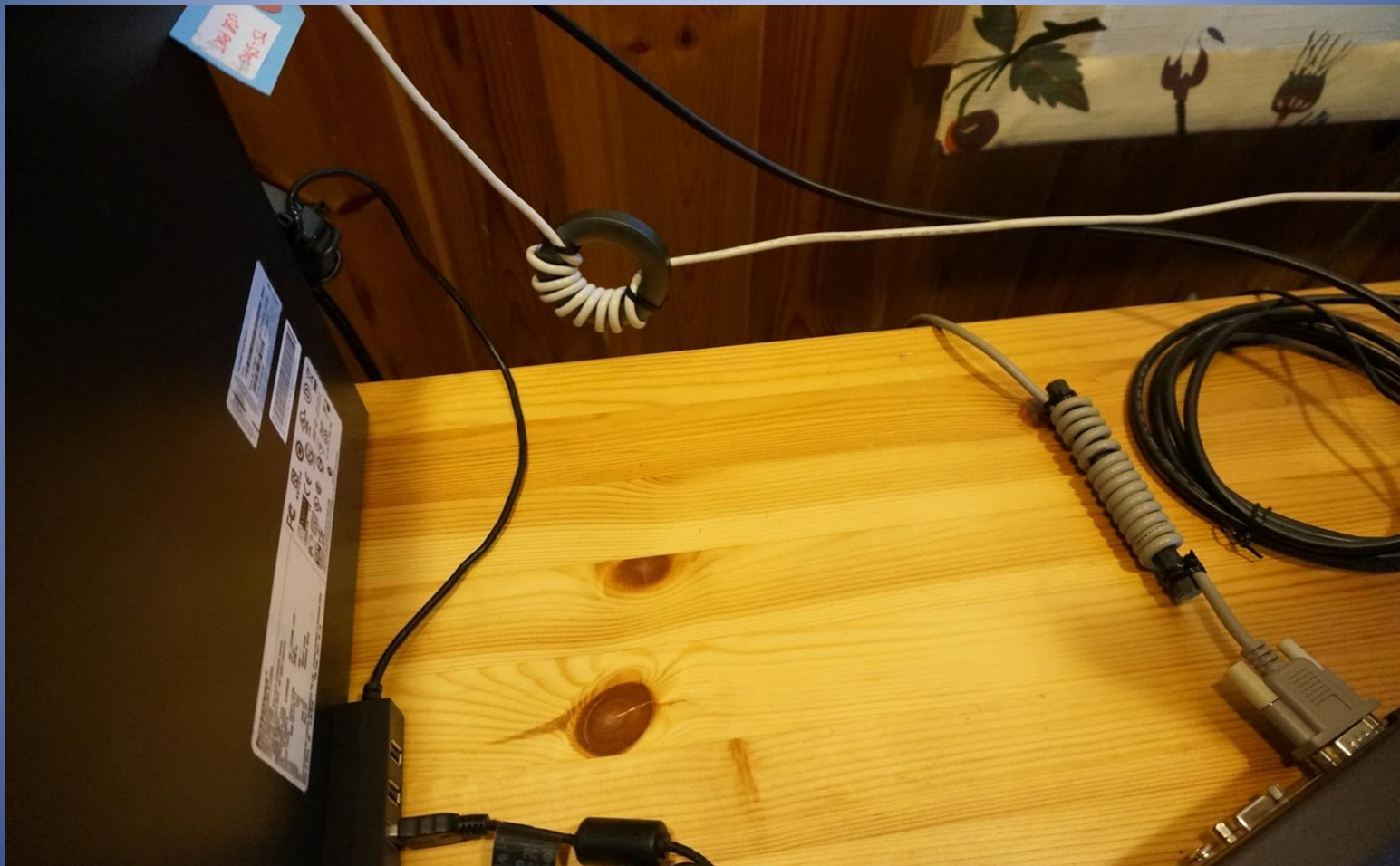
SHARE

For ground radial wires laid on the earth's surface or *slightly* below.
Not for [elevated radial wires](#). Wire insulation is irrelevant.

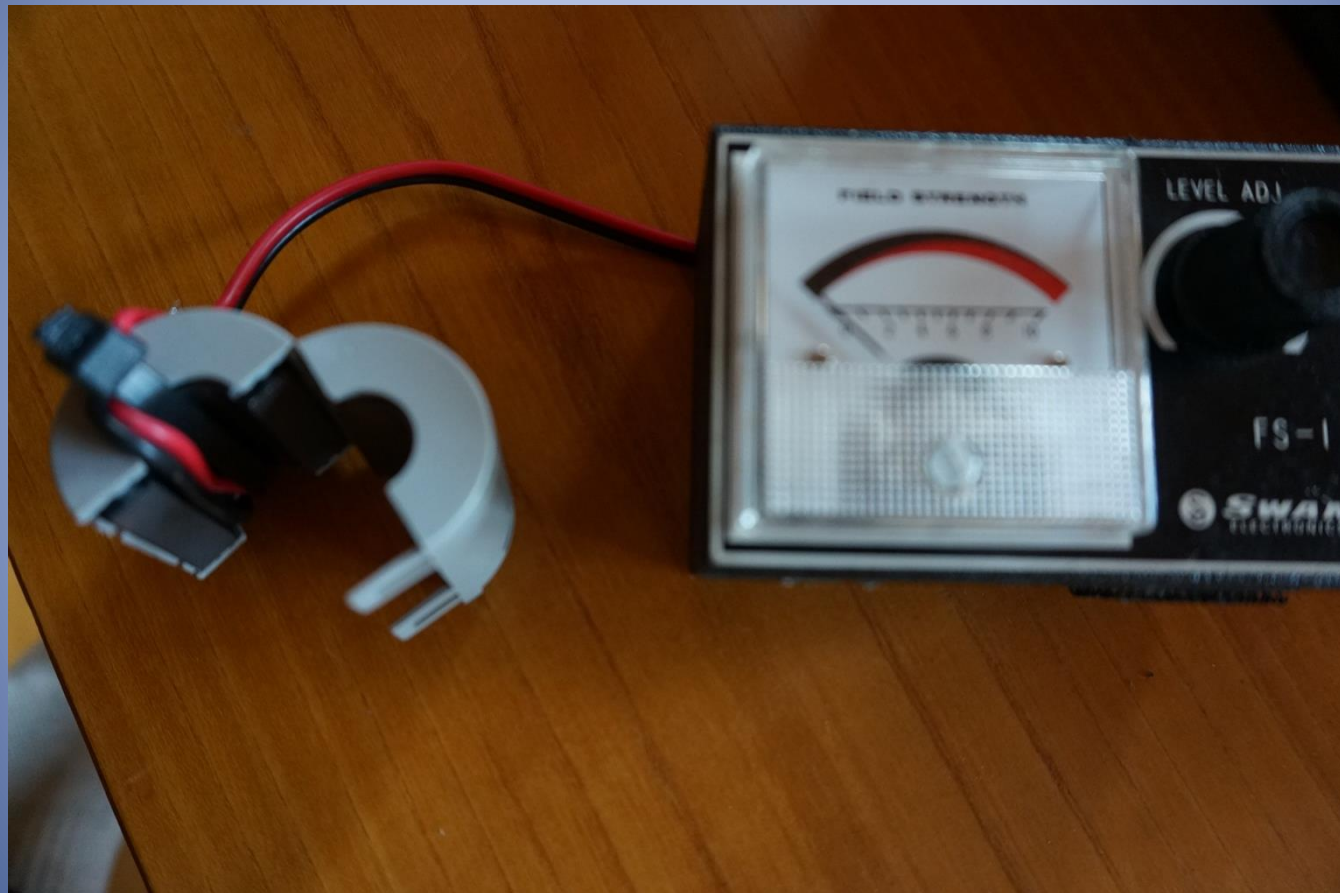
Optimum radial wire length vs. # of ground radials						
Number of radials	16	24	36	60	90	120
Optimum length of each radial in wavelengths	0.10	0.125	0.15	0.2	0.25	0.4
Spacing of radials in degrees	22.5	15	10	6	4	3
Total length of radial wire installed in wavelengths	1.6	3	5.4	12	22.5	48
Power loss in dB at low angles with a $\lambda/4$ radiating element, compared to a perfectly conducting ground	3	2	1.5	1	0.5	0
Feed-point impedance in ohms with a $\lambda/4$ radiating element	52	46	43	40	37	35
ARRL ANTENNA BOOK 20 th Edition, Chapter 3 (The Effects of the Earth), p. 3-10, Table 1						
<i>Ground radials under an end-fed antenna (such as a vertical monopole, inverted-L, or a "long wire") are important!</i>						



RFI対策



RF電流検知器



¼波長バーチカルの評価

DXSCAPE

DXSCAPE Database search result at 1131Z:

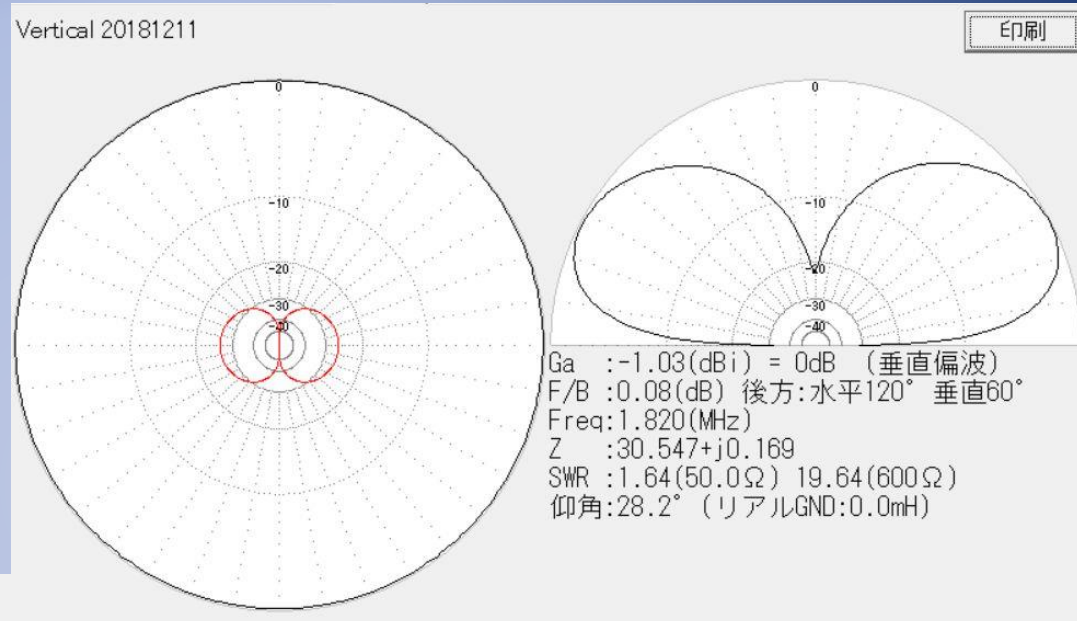
Callsign=JA1LZR Band=ALL Reporter=WW Number=50 Search_before=2018-12-16

Callsigns	YY/MM/DD UTC	FREQ	Remarks	Reporter
JA1LZR	18/12/15 2138Z	1815.5	many callers	OG2M
JA1LZR	18/12/15 2130Z	1815.5	CW	RU4PU
JA1LZR	18/12/15 1417Z	1817.4		N9RV
JA1LZR	18/12/15 1408Z	1817.5	Heard in UT	W3LPL
JA1LZR	18/12/15 1307Z	1817.5	Heard in NV	W3LPL
JA1LZR	18/12/15 1206Z	1817.5	TNX QSO CW	BG4GOV
JA1LZR	18/12/15 1154Z	1817.5	Heard in UT	W3LPL
JA1LZR	18/12/15 1104Z	1818.6	Heard in AZ	W3LPL
JA1LZR	18/12/15 0957Z	1818.6	Heard in UT	W3LPL
JA1LZR	18/12/15 0834Z	1818.6	Heard in AZ	W3LPL
JA1LZR	18/12/15 0733Z	1818.6		WN6W
JA1LZR	18/12/15 0731Z	1818.5	getting stronger	KORF
JA1LZR	18/12/15 0724Z	1818.6	Heard in UT	W3LPL

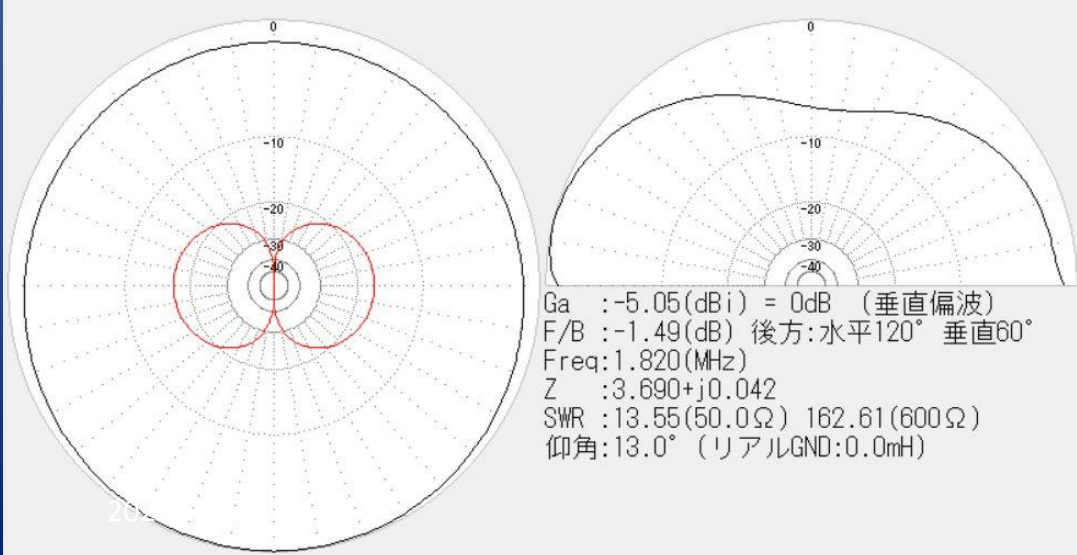
Searched until 18/10/28 , if you need more search please set "Search before" and search again .

アンテナ解析

Vertical Antenna



TowerDrive 20181211



Tower Drive Antenna



ファイナルコメント

1. 作業の安全性
2. 調整簡単
3. 土壌次第で高効率
4. タワーの影響なく安定動作

出典

- Top Band Dxing by ON4UN 5th Edition
- DXing on the Edge by K1ZM
- QEX – March/April 2009 by ARRL
- National Contest Journal March /April 2004
by ARRL
- Top Band Reflector