E-Feld Antenne

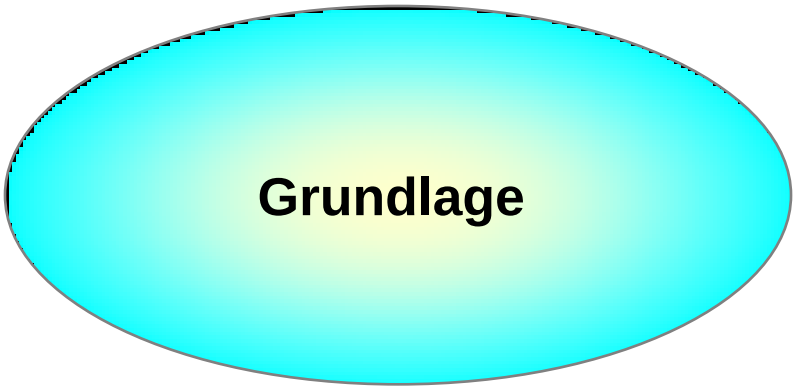
Erwin Rauh, DL1FY
September 2013

E-Feld Antenne

Elektrisches Feld

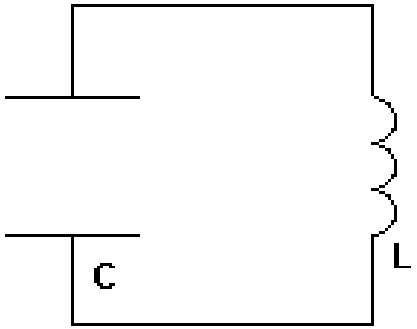
[1]

E-Feld Antenne



E-Feld Antenne
Schwingkreis

- Kondensator C
- Spule L



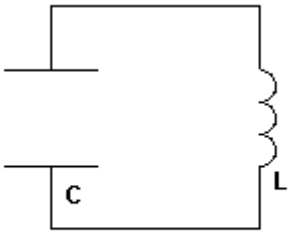
$$f = \frac{1}{2\pi\sqrt{LC}}$$

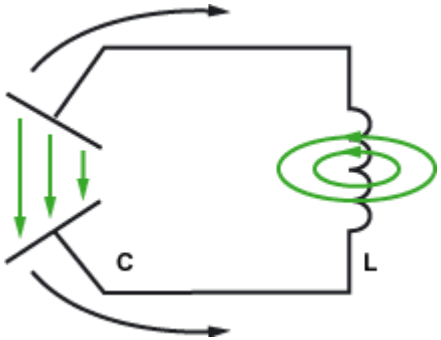
$$f = \frac{1}{2 \cdot \pi \cdot \sqrt{L \cdot C}} \Rightarrow \sqrt{L \cdot C} = \frac{1}{2 \cdot \pi \cdot f} \Rightarrow C = \frac{1}{L \cdot (2 \cdot \pi \cdot f)^2}$$

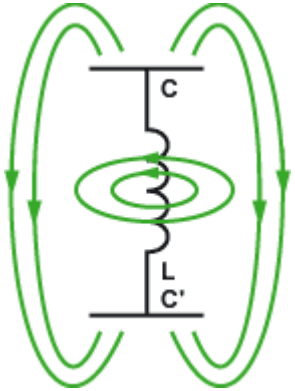
[2]

E-Feld Antenne

Vom Schwingkreis zur Antenne



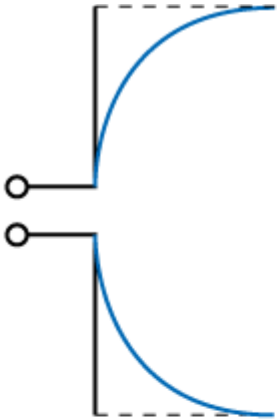




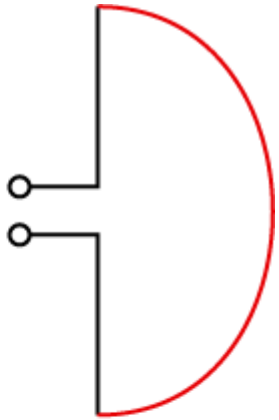
[2]

E-Feld Antenne

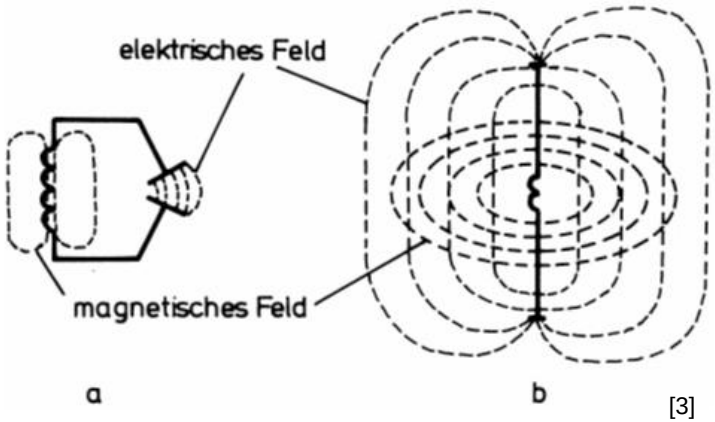
Dipol zur Antenne



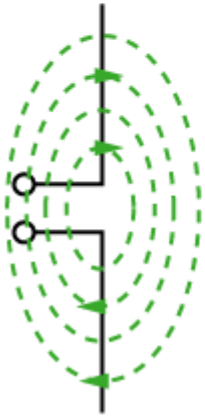
Spannungsverteilung U



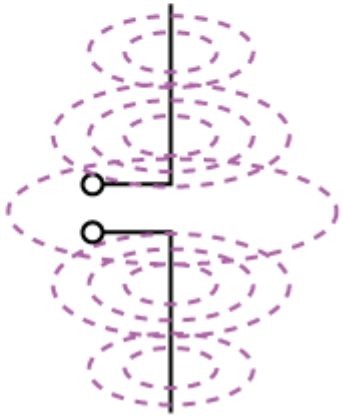
Stromverteilung I



[3]



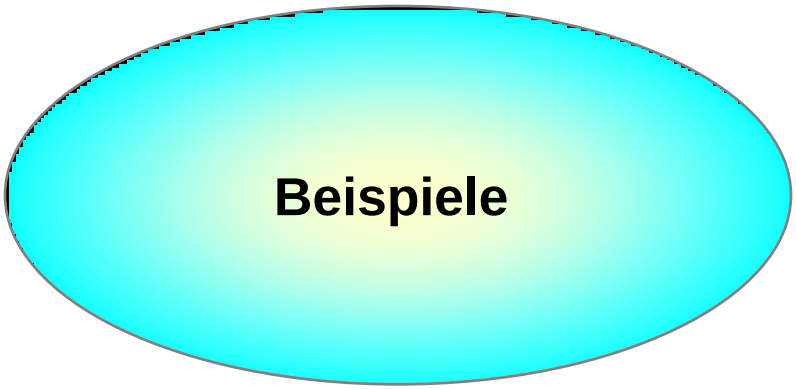
Elektrisches Feld E



Magnetisches Feld H

[2]

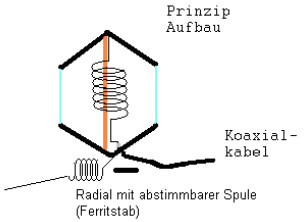
E-Feld Antenne



E-Feld Antenne

Beispiele für E-Feld Antennen

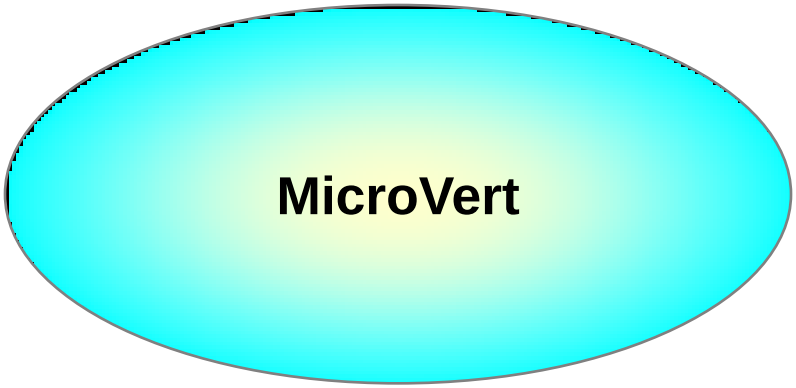
- Isotron Antenne



- OE7OKJ Verkürzter Vertikalstrahler

- DL7AHW Spraydosen Antenne

E-Feld Antenne



E-Feld Antenne

Berechnung einer MicroVert nach DL7PE

$$l_s\,(mm) = \frac{4700}{f\,(MHz)}$$

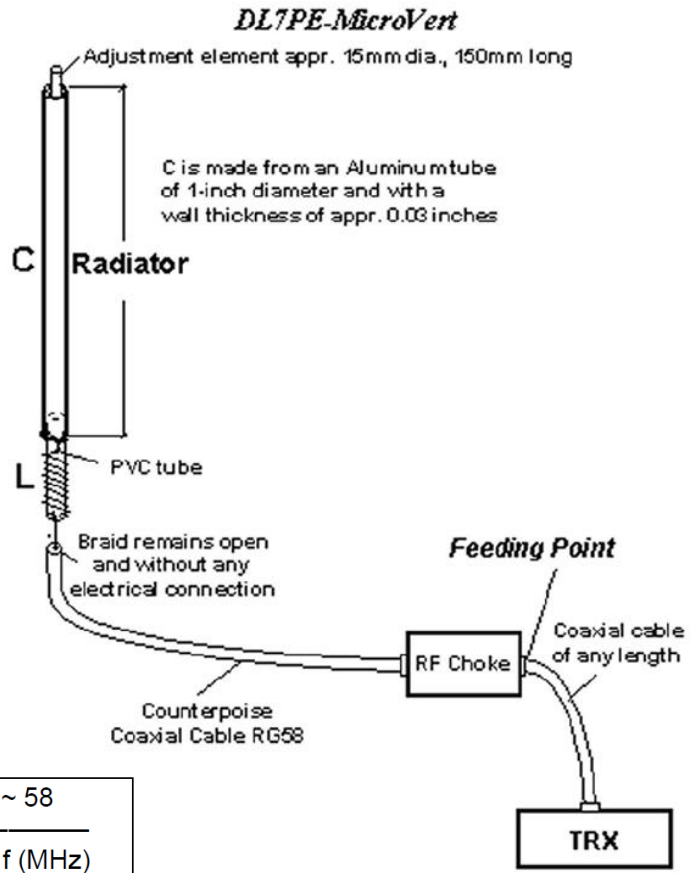
Formula 1: Radiator Length

$$C_{pF} = 19{,}1 \times l_s \times \frac{1}{\log 0{,}575 \times (l_s/d)}$$

Formula 2: Calculation of the capacity of a tubular radiator

$$L_{\mu H} = \frac{(159/f)^2}{C_{pF}}$$

Formula 3: calculation of the required Inductivity of the reactance Coil



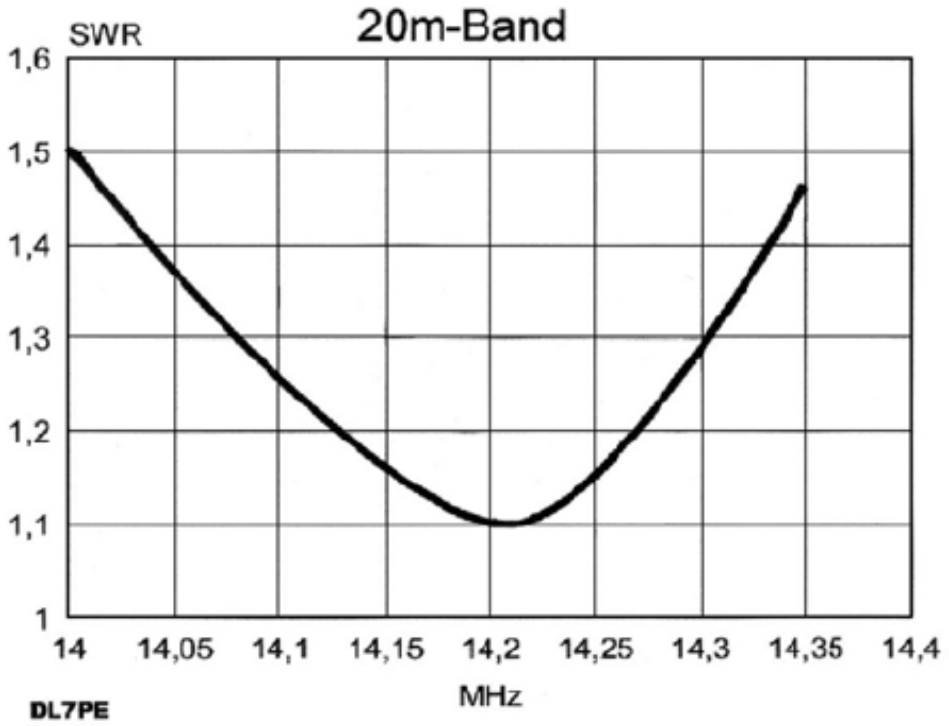
$$l_r\,(m) = \frac{\sim 58}{f\,(MHz)}$$

Formula 4: Defined Length of the coaxial cable part acting as counterpoise.

[4]

E-Feld Antenne

MicroVert nach DL7PE



Die MicroVert ist eine Mono-Band Antenne

[4]

E-Feld Antenne

MicroVert nach DL7PE

Technical Data

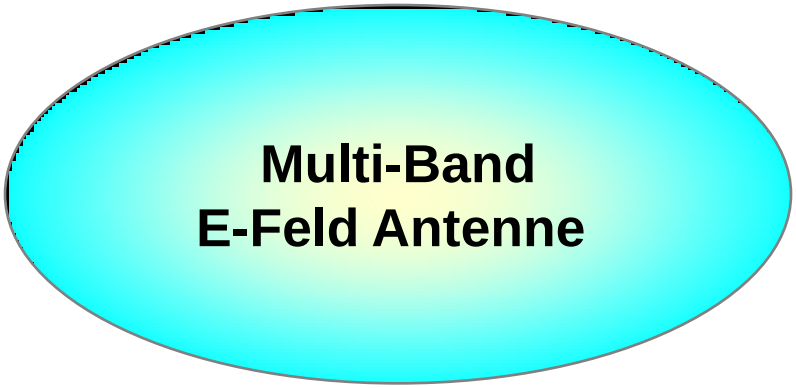
Feeding-point Resistance:	50 Ohm real
Gain:	-6 to –12 dBd (below full size dipole)
Max. Power:	150 to 1000 Watts pep, depending on the design
Polarization:	Vertical or Horizontal, depending on Installation
Counterpoise:	None, except Coaxial Feeder cable
Typical SWR:	1.3 :1 or better

Antenna lengths (m)

80m Band:	≈ ***1.60 m (<6 ft)***
40m Band:	≈ ***0.80m (<3 ft)***
20m Band:	≈ ***0.40m (< 1.5 ft)***
10m Band:	≈ ***0.25m (< 1 ft)***

[4]

E-Feld Antenne



E-Feld Antenne

9-Band Antenne 6m-80m

$$C_{pF} = 19{,}1 \times l_s \times \frac{1}{\log 0{,}575 \times (l_s/d)}$$

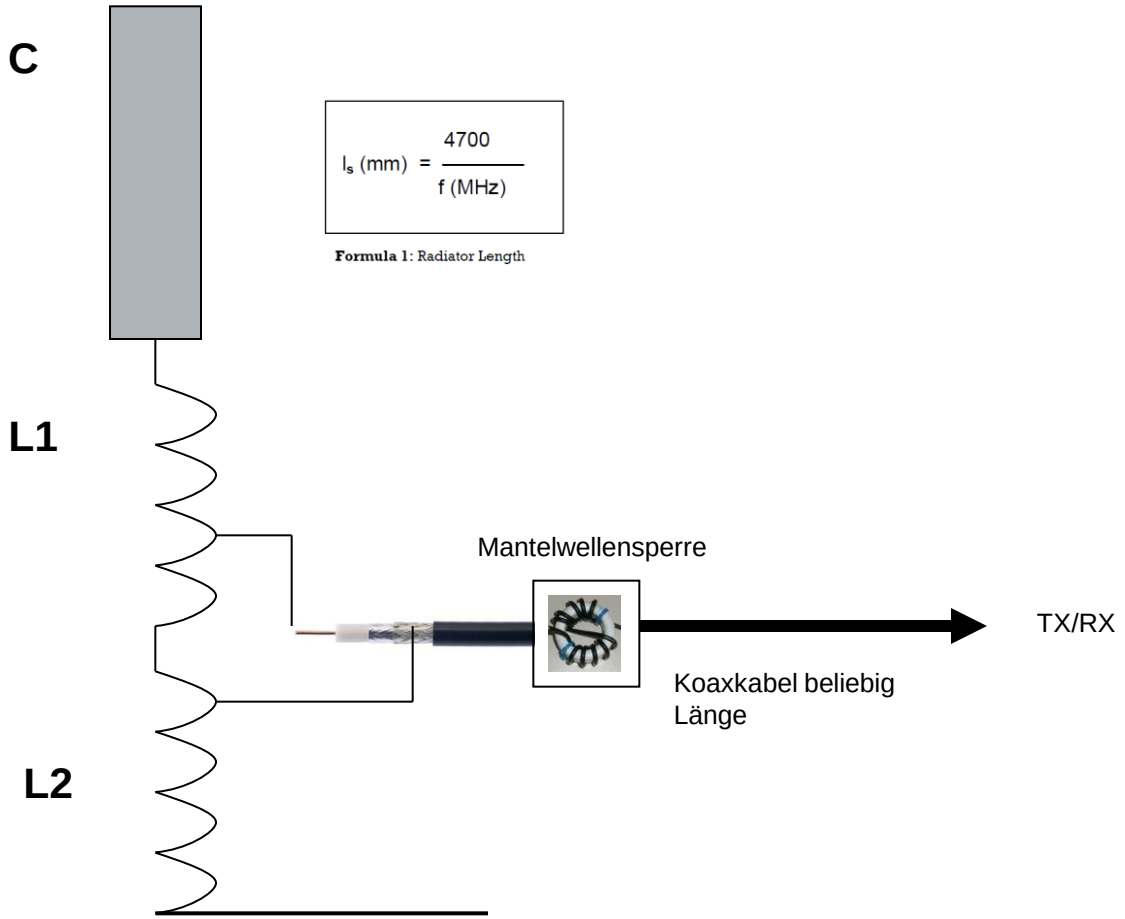
Formula 2: Calculation of the capacity of a tubular radiator

$$l_s\,(\text{mm}) = \frac{4700}{f\,(\text{MHz})}$$

Formula 1: Radiator Length

$$L_{\mu H} = \frac{(159/f)\text{^}2}{C_{pF}}$$

Formula 3: calculation of the required Inductivity of the reactance Coil



[4] Formeln

E-Feld Antenne

9-Band Antenne 6m-80m

$$l_s\,(mm) = \frac{4700}{f\,(MHz)}$$

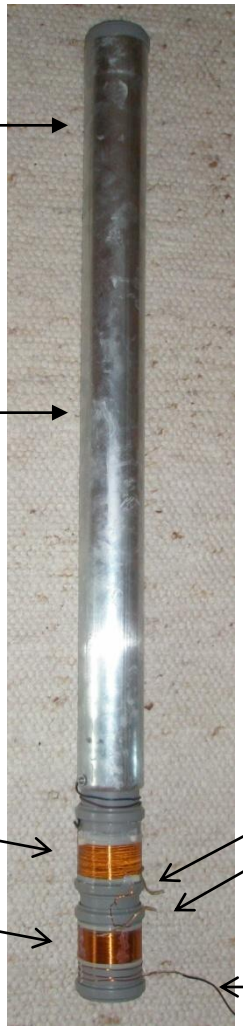
Formula 1: Radiator Length

$$C_{pF} = 19{,}1 \times l_s \times \frac{1}{\log 0{,}575 \times (l_s/d)}$$

Formula 2: Calculation of the capacity of a tubular radiator

$$L_{\mu H} = \frac{(159/f)^{\wedge}2}{C_{pF}}$$

Formula 3: calculation of the required Inductivity of the reactance Coil



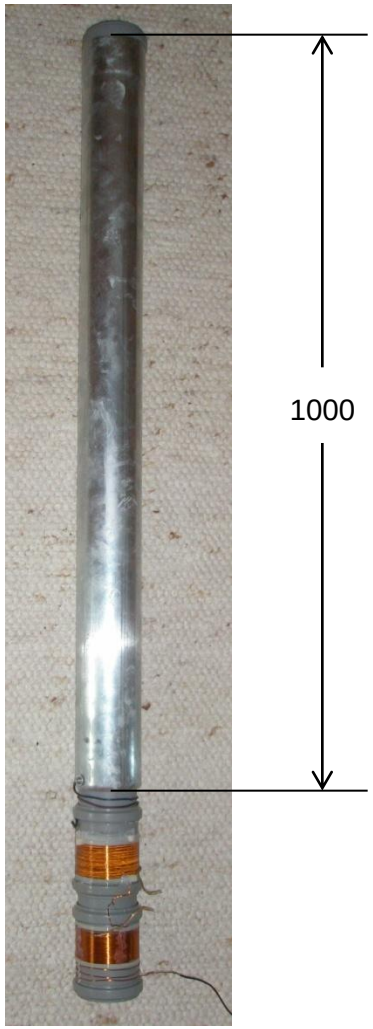
Einspeisung:
Innenleiter Koaxkabel
Schirm Koaxkabel
Achtung :keine Erde anschließen

Kapazitive Kopplung zur Erde
Länge = (300/ f Mhz) *0,005

[4] Formeln

E-Feld Antenne

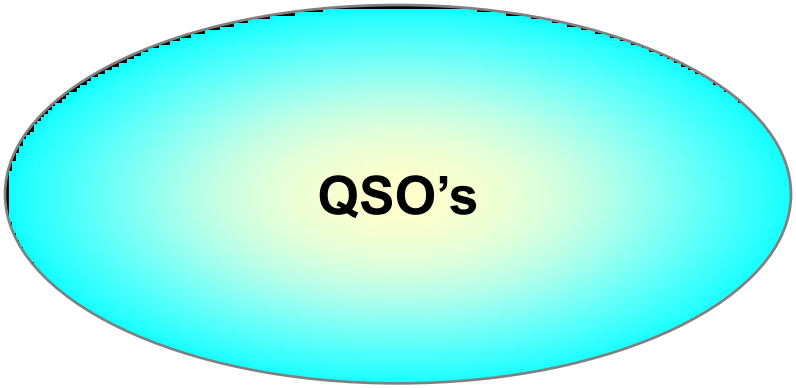
9-Band Antenne 6m-80m



Rohr d = 80

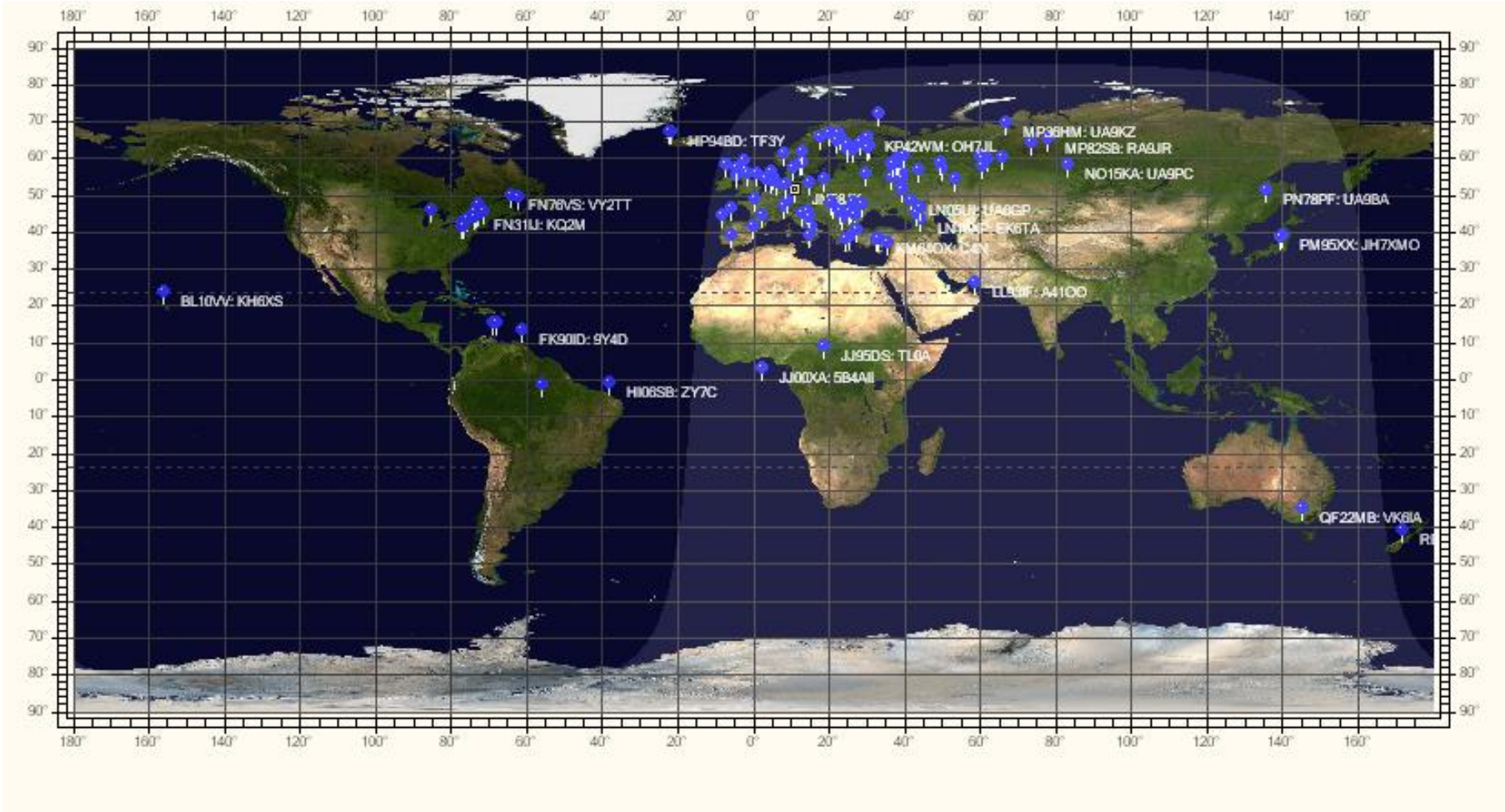
[4] Formeln

E-Feld Antenne



E-Feld Antenne

Oferrohr-Antenne 486 QSO‘s 2010



E-Feld Antenne
Quellenangabe

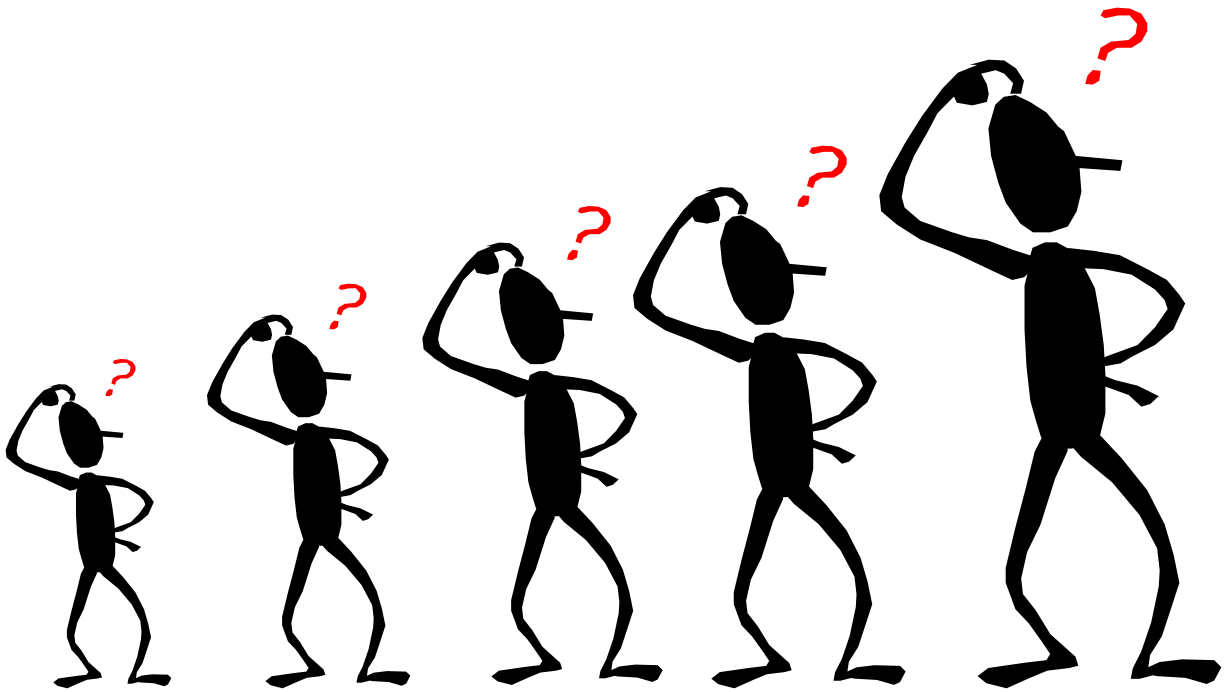
[1] Tesla Spule 5/29/2011/ Eingestellt von CST/
http://zeuk.blogspot.com/2011/05/tesla-spule.html

[2] www.elektronik-kompendium.de

[3] E. Moltrecht, DJ4UF
http://www.dj4uf.de/lehrg/a08/a08.html

[4] Juergen Schaefer, DL7PE
Artikel: Progress in Design of Extremely Short Transmitting Antennas
http://www.dc4fs.de/microvert.pdf

Vielen Dank!



Have you any questions?