

HAMCALC von VE3ERP

nicht verwechseln mit HamCalc von G4VWL!

"Hamcalc, painless math for radio
amateurs"

15.4.2011

OE6GC

Übersicht interessanter Freeware für AFU 1

	Hamcalc	RF-SIM99	AADE	Multicalc32	MiniRingkern
Filegröße MB	1,3	2,035	12	4,7	1
Betrieb	DOS-Fenster	Windows	Windows	Windows	Windows
Simulation Übertragungskurven	NEIN	x	x	NEIN	NEIN
ASCII-HEX Umrechnung	x			x	
Abschwächer T/Pi	x	(x)	x		
Anpassung R-Match	x	x	x		
Anpassnetzwerk	x	x	x		
Anpassung CL high pass	x	x	x		
Anpassung CLC T high pass	x	x	x		
Anpassung LC low pass	x	x	x		
Anpassung LCL high pass	x	x	x		
Anpassung LCL low pass	x	x	x		
Anpassung LCL T low pass	x	x	x		
Antennendimensionierung	x				

Übersicht interessanter Freeware für AFU 2

	Hamcalc	RF-SIM99	AADE	Multicalc32	MiniRingkern
AWG Drahttabelle	x				
Feldstärke	x				
Filter L/C dimensionieren	x	(x)	x		
Filter Quarz Ladderfilter dimensionieren	x		x		
Induktivitäten Luftspulen	x	x	x	x	
Induktivitäten PCB	x	x			
Induktivitäten PCB Stub	x	x			
Induktivitäten AI Wert von Ringkernen	x				x
Induktivitäten Amidon Ringkernrechner	x				x
Kondensator selbst bauen	x	x		x	
NF-Filter Hochpass Op.Amp.	x			x	
NF-Filter selektiv Op.Amp.	x			x	
NF-Filter Tiefpass Op.Amp.	x			x	
Pegel Leistungs/Spannung	x	x		x	
Phase shift	(x)	x			

Übersicht interessanter Freeware für AFU 3

	Hamcalc	RF-SIM99	AADE	Multicalc32	MiniRingkern
Resonanz LC	x	x		x	x
Returnloss/VSWR	x	x			
Thermal Noise		x			
Hühnerleiter dimensionieren	x			x	
Koaxberechnung	x			x	
Längenmaßumrechnung	x			x	x
Netzteil Ladekondensator				x	
R/L/C parallel/Serienschltg.	x			x	
SWR-Verluste	x			x	
Symmetrierstüb	(x)				
Umwegleitung	x			x	
Widerstandsberechnung f. Drähte	x				x
Widerstandsfarbcode	x			x	
wissenschaftl.Rechner			(x)		

INSTALLING AND RUNNING HAMCALC

- DO NOT UNZIP HamCalc.zip IN DRIVE C - unzip it in a temporary location.
- The Zip-file contains one folder "Hamcalc" and two files "Gwbasic.exe" and Ve3erp.bat".
- MOVE THE FOLDER AND BOTH FILES TO YOUR MAIN DRIVE C ROOT DIRECTORY.

HAMCALC MUST BE INSTALLED IN THE ROOT DIRECTORY OF DRIVE C (i.e. C:HAMCALC) TO OPERATE PROPERLY

HAMCALC Menü A

H A M C A L C Program Menu A

by George Murphy UE3ERP

TYPE one of the 2-digit numbers listed below - DO NOT press <ENTER>:

01: A.C. Circuit Calculator	21: B.& W. Air-Core Inductors
02: Acceleration Calculator	22: Baluns - Ferrite Toroid
03: Antenna Field Strength	23: Band-Reject Filter
04: Antenna Frequency Scaling	24: Bandwidth vs. Q
05: Antenna Impedance Calculator	25: Bandwidths - 2:1 SWR
06: Antenna Length/Pruning calculator	26: Barometer Reading Equivalents
07: Antenna Matching Networks	27: Battery Charger
08: Arch Calculator	28: Beam Element Diameter vs Length
09: ASCII Character Code Page 437	29: Beam Heading Calculator
10: Attenuators: T-Pad and Pi-Pad	30: Beverage Antenna Equations
11: Audio Bandpass Filter - Active	31: Bobtail Curtain Antenna
12: Audio Lowpass Filter(Sallen & Key)	32: Boom Droop - Beam Antennas
13: Audio Filters - Passive	33: Breakdown Voltage
14: Audio Filters - RC Active	34: Calendar - Perpetual/Universal
15: Audio Oscillator (LM 324)	35: Calorie Counter
16: Audio Oscillator (LF 353)dual wave	36: Capacitance - Distributed (stray)
17: Audio Oscillator (Twin-T)	37: Capacitor Design Calculator
18: Audio Programs	38: Capacitor Measurer
19: A.W.G. Wire Size Calculator	39: Capacitor Plate Designer
20: Bend Allowance - Metals	40: Capacitors - Coaxial Cable
	41:MENU 42:INDEX 43:EXIT

HAMCALC Menü B

H A M C A L C Program Menu B

by George Murphy VE3ERP

TYPE one of the 2-digit numbers listed below - DO NOT press <ENTER>:

01: Capacitors - Custom Value	21: Coax Cable Hi-Reactance SuperTrap
02: Capacitors - Precision	22: Code Practice Oscillator
03: Capacitors - Standard Values	23: Code Trainer (Morse Code)
04: Capacitors - Telescoping Variable	24: Coil Calculator- Dehoney equations
05: Capacitors - Trimmer	25: Coil Calculator- Wheeler equations
06: Capacity Hat Geometric Shapes	26: Coil Q Calculator
07: Capacity Hats - Vertical Antennas	27: Coil Designer
08: Cartesian/Polar Plot Rotator	28: Coil Q Quick Estimator
09: CCD Antennas	29: Coil Q - True vs. Apparent
10: Centre Frequency & Wavelength	30: Coil Tap Calculators
11: Centrifugal/Centripetal Force	31: Coil Tap Properties
12: Circle - Properties of	32: Coil Turns Calculator
13: Circular Waveguide Dish Feeds	33: Coils - Coaxially coupled
14: Clamping Voltage Calculator	34: Coils in Tandem
15: Clark Y Airfoil	35: Coils - Insulated Wire
16: CMOS Oscillator	36: Colpitts FET Oscillator
17: Coax Cable Characteristics	37: Cone Calculator
18: Coax Cable L/C Tank	38: Conjugate Match Calculator
19: Coax Cable RF Chokes & Baluns	39: Constant Phase Difference Networks
20: Coax Cable Traps	40: Copper Wire Data
	41:MENU 42:INDEX 43:EXIT

HAMCALC Menü C

H A M C A L C Program Menu C

by George Murphy UE3ERP

TYPE one of the 2-digit numbers listed below - DO NOT press <ENTER>:

01: Cost of Electricity	21: Fat Dipole (broadband)
02: Crossover Networks - Loudspeakers	22: Fibonacci Series
03: Crystal Ladder Filter	23: Filter Tutor
04: Curve Fit program	24: Filters - Butterworth HF
05: CYLOAD antenna	25: Filters - Complementary
06: Daylight Dusk and Dawn Calculator	26: Filters - Coupled Resonator
07: Double Feedback Amplifier	27: Filters - Impedance Matching
08: Decibel Calculator	28: Filters - Passive R/L/C
09: Decimal/Fraction Converter	29: Filters - Stripline Bandpass
10: Decimal Hour/Degree Converter	30: Financial Calculators
11: Decimal to Binary Converter	31: Fishbone Antenna
12: Dehoney Algorithm Index	32: Folded Dipole - 3000 Twin-Lead
13: Delta Match	33: Folded Dipole - Zo Step-Up Ratios
14: Diameter Finder	34: Formula Library
15: Dielectric Constants	35: Fuses - Emergency
16: Discone Multiband Antenna	36: G5RV Multiband Antenna
17: Dual Band Short Dipole Antenna	37: Gamma Match
18: Dual Op Amp Wave Generator	38: Graphs
19: Equinoxes & Solstices	39: Great Circle Paths & Distances
20: Electromagnetic Spectrum	40: Grid Square Locator (Maidenhead)
	41: MENU 42: INDEX 43: EXIT

HAMCALC Menü D

H A M C A L C Program Menu D

by George Murphy UE3ERP

TYPE one of the 2-digit numbers listed below - DO NOT press <ENTER>:

01: Guy Wires for Antenna Towers/Masts	21: Inductance - Single Loops
02: Hairpin Beta-Match for Yagis	22: Inductors - Dryer Vent Hose
03: Half-Loop Low Profile Antenna	23: Insertion Loss
04: Ham Band Edge & Centre Frequencies	24: Inverted Vee Antenna
05: Harmonic Frequencies	25: Involute of a Circle
06: Hartley FET Oscillator	26: J Calculator (Complex Impedances)
07: Heat Dissipation	27: J-Pole End-Fed Zepp Antenna
08: Heat Sink Fins	28: K-Factor & Antenna Length (NEC-2)
09: Helical Antenna - UHF/UHF	29: Ladder Line Antenna
10: Helical Resonators (UHF/UHF)	30: Ladder Network - 2 element
11: Helical Winding	31: Ladder Network Analyzer
12: High Q Antenna Traps	32: Lamp Life Expectancy
13: Humidex Calculator	33: Latitude/Longitude Data Base
14: Impedance Bridge (3-meter)	34: LED Series Resistor
15: Impedance Matching Networks	35: Line-of-Sight Radio Wave
16: Impedance Meter	36: Link Coupled Tuners
17: Impedance - Antennas	37: LM317 Voltage Regulator
18: Impedance - Parallel Resonant Cct.	38: Load Resistance Calculator
19: Impedance - Reactance/Resist. Cct.	39: Local Repeaters
20: Inductance Calculator	40: Music Math & Sounds
	41: MENU 42: INDEX 43: EXIT

HAMCALC Menü E

H A M C A L C Program Menu E

by George Murphy UE3ERP

TYPE one of the 2-digit numbers listed below - DO NOT press <ENTER>:

01: Logarithms to any base	21: MINILoop Miniature Loop Antenna
02: LOG-YAG Log-Periodic Yagi Antenna	22: MINIQUAD Coil Shortened Antenna
03: Long-Tailed Pair	23: Mobile Whip Antenna Coils
04: Loop Antenna Coil Inductance	24: Mobile Antenna Matching
05: Loop Antennas - Transmitting	25: Mobile/Maritime Whip Antennas
06: Loop Skywire Dimensions	26: Moon Tracker
07: L/C Networks with NO TRANSFORMERS	27: Moxon Rectangle Antenna
08: L-Pad Calculator	28: Musical Math & Sounds
09: Lossless L/C circuits	29: NiCad Battery Discharger
10: Masonry Estimator	30: Numbered Drills/Screws/Taps/Gauges
11: Matchbox Impedance Transformer	31: Number Sorter
12: Matching into an R/C Load	32: Numbers and Functions
13: Matching Networks for Transistors	33: Octagonal Loop Framework
14: Max. Usable Frequencies (MAXIMUM)	34: OCTALoop Subminiature Loop Antenna
15: MECHANICS Math	35: OCTARING Subminiature Loop Antenna
16: Meteor Shower Predictor	36: Off-Centre Dipole, 3-band trapless
17: Meters (Direct Current)	37: Ohm's Law Calculator
18: Metric Conversions	38: OP AMP Constant Current Circuit
19: Metronome	39: OP AMP Operational Amplifiers
20: MicroVert very short HF Antenna	40: OP AMP Wave Generator
	41: MENU 42: INDEX 43: EXIT

HAMCALC Menü F

H A M C A L C Program Menu F

by George Murphy UE3ERP

TYPE one of the 2-digit numbers listed below - DO NOT press <ENTER>:

01: OP AMPS - Cascaded	21: Pulse Generator
02: OP AMPS - Noise Figure	22: Q Calculator - Resonant Circuits
03: Parabolic Dish Design	23: Q Measurement - L/C Tank Circuit
04: Pedometer	24: QRP Fox Hunt Log
05: PHOTOGRAPHY Math	25: Quad Antenna Dimensions
06: Pi and T Networks	26: Quadratic Equation Calculator
07: Pipe Sizes - ANSI Standard	27: Quarter Wave Transformer
08: Pixel Data for Scanners & Cameras	28: QSK Break-In module
09: Polygon Dimensions	29: Radiation Angle - Antenna
10: Potentiometers - Custom Value	30: Radiation Plots - Phased Verticals
11: Power Divider	31: Random Number Generator
12: Power Supply Analyzer	32: Reactance Programs
13: Power Supply Design	33: Remote Signal Lamp
14: Power Supply - Double Bridge	34: Resistor/Inductor/Capacitor Ccts.
15: Power Supply Performance	35: Resistor Colour Code
16: Power Transformer Design	36: Resistors - Copper Wire Wound
17: Power Transformer Winding Estimator	37: Resistors - Custom Value
18: Prime Number Calculator	38: Resistors - Precision
19: Printed Circuit Board Traces	39: Resistors - Standard Values
20: Pseudo-Brewster Angle	40: S-Meter Readings vs. Power
	41:MENU 42:INDEX 43:EXIT

HAMCALC Menü G

H A M C A L C Program Menu G

by George Murphy UE3ERP

TYPE one of the 2-digit numbers listed below - DO NOT press <ENTER>:

01: Sag in Horizontal Wire Antennas	21: Speed/Time/Distance Calculator
02: Satellite Orbit Parameters	22: Stub Match for Antennas
03: Scale Speed Calculator	23: Stubs - Coaxial Transmission Line
04: Schmidt trigger Op Amp	24: Stubs - Open Wire Transmiss'n Line
05: Series/Parallel/Q Equivalents	25: Sunrise/Sunset Calculator
06: Series-Section Transformer	26: Surveyor's Calculator
07: Short Centre-Loaded Dipole	27: SWR Calculator
08: Short Cylinder-Loaded Dipole	28: T2FD Tilted Folded Dipole
09: Short Dipole for 160/80/40 metres	29: T Match - Dipole to 600 Ω Line
10: Short ES2B (2 band) Trap Dipole	30: Tank Circuit - Power Amplifier
11: Short Off-Centre-Loaded Dipole	31: Telescoping Aluminum Tubing
12: Short Multiband Dipole Array	32: Thermal Resistance
13: Shuttle	33: Thermodynamics
14: Simultaneous Equation Calculator	34: Time Quiz
15: Single Wire Antenna Systems	35: Time Zones (UTC)
16: Skin Effect	36: Timer (555 IC)
17: Skip Distance Calculator	37: Tiny Coils
18: Sloper Antenna Dimensions	38: Toroid Antenna Traps
19: Smith Chart Calculations	39: Toroid Baluns & Transformers
20: Sorter	40: Toroid Inductors
	41: MENU 42: INDEX 43: EXIT

HAMCALC Menü H

H A M C A L C Program Menu H

by George Murphy UE3ERP

TYPE one of the 2-digit numbers listed below - DO NOT press <ENTER>:

01: Tracker - Receiver Tuned Circuits	21: Traps - Coaxial Cable
02: Transformer Design	22: Triangles - solution of
03: Transformer - Narrow Band	23: Trigonometric Functions
04: Transformer Ratios	24: Trip Planner
05: Transformer Winding Calculator	25: True North via the Sun
06: Transistor Circuit Design	26: Tuned Circuit Design - L/C network
07: Transmatch Design (ZL1LE)	27: Turning Radius - Beam antennas
08: Transmission Line Choke	28: TV Channels (North America)
09: Transmission Line Length	29: Unit Value Comparator
10: Transmission Line Losses	30: Vertical Antenna - Helically Wound
11: Transmission Line Mismatch	31: Vertical Antenna Array Feed Method
12: Transmission Line Node Locator	32: UFO Frequency Calculator
13: Transmission Line Performance	33: Voltage Divider
14: Transmission Line - Square Coaxial	34: Voltage Divider - Thevinin
15: Transmission Line - Open Wire	35: Walker
16: Transmission Line Q	36: Wall Wart Ratings Calculator
17: Trap Antenna Design	37: Wall Wart Properties
18: Trap Design Calculator	38: Wave Trap Filters
19: Trap Dipole - 3 Band Single Trap	39: Wheatstone Bridge #1
20: Trap Properties Estimator	40: Wheatstone Bridge #2
	41:MENU 42:INDEX 43:EXIT

HAMCALC Menü I

H A M C A L C Program Menu I

by George Murphy VE3ERP

TYPE one of the 2-digit numbers listed below - DO NOT press <ENTER>:

01: Windom Antenna	21: -
02: Wind Chill Factor	22: -
03: Wire Antenna Index	23: -
04: Wire Mesh Screens - Wind Loads	24: -
05: Wires in Conduit	25: -
06: Xmtr. Transistor Stage Coupling	26: -
07: YAGI 3-Element Beam Design	27: -
08: YAGI Element Diameter vs. Length	28: -
09: YAGI Element Spacing/NBS Standard	29: -
10: YAGI Tapered Elements	30: -
11: YAGI Through-Boom Elements	31: -
12: YAGI Extremely Long UHF/UHF Antenna	32: -
13: Zener Diode Voltage Regulator	33: -
14: Zepp (extended double) Antenna	34: -
15: Zepp Multi-band antenna	35: -
16: -	36: -
17: -	37: -
18: -	38: -
19: -	39: -
20: -	40: -
	41: MENU
	42: INDEX
	43: EXIT

80m Vertikal auf 10m Glasfibernmast

```
C:\WINDOWS\system32\cmd.exe
MOBILE/MARITIME HF WHIP ANTENNAS by George Murphy UE3ERP

SINGLE ELEMENT
  H1  E
  |   |
  |   | «single element
  |   |
  |   | «loading coil
  |   | «feed
  |   | «point
  |   | «vehicle body

DOUBLE ELEMENT
  H2  E
  |   | «upper element
  |   | «loading coil
  |   |
  H1  E
  |   | «lower element
  |   | «feed
  |   | «point
  |   | «vehicle body

This program purposely omits end effect calculation to ensure that
an antenna is electrically overlength. This is so that resonance at
the design frequency can be obtained easily by removing a turn or
two from the loading coil.

Optimum loading coil Q is attained when the coil Length/Diameter
ratio is at or near 0.5. Diameter of loading coil conductor
(wire or tubing) should be as large as practicable. Loading coil
turns should be removed, NOT shorted, for tuning purposes.

(Ref. THE ARRL ANTENNA BOOK, 18th Edition, pages 16-5 TO 16-11)

Press 1 to continue or 0 to EXIT....
```

Auswahl Fuß oder Mittelspule

```
C:\WINDOWS\system32\cmd.exe
MOBILE/MARITIME HF WHIP ANTENNAS by George Murphy VE3ERP

SINGLE ELEMENT
  H1 || E
      || «single element
      ||
      || d «loading coil
      || «feed
      || «point
      || «vehicle body

DOUBLE ELEMENT
  H2 || E «upper element
  L || d «loading coil
  H1 || E «lower element
  L || d «feed
      || «point
      || «vehicle body

Do you want to input data in (c)entimetres or (i)nches? (c/i)
```


Frequenzeingabe

```
C:\WINDOWS\system32\cmd.exe
SINGLE ELEMENT MOBILE/MARITIME WHIP
  » E
  |
H1 | «-single element
  |
  » o «-loading coil
  |
  «-feed
  |
  «-point
  \ \ «-vehicle body

ENTER: Frequency of operation (1.8 - 30 MHz).....(MHz)? 3.6
```

Strahlerdurchmesser

```
C:\WINDOWS\system32\cmd.exe
SINGLE ELEMENT MOBILE/MARITIME WHIP
Operating frequency..... 3.600 MHz = 83.33 m.
» E
H1 | «←single element
  | |
  | | «←loading coil
  | | «←feed
  | | «←point
  | | «←vehicle body
ENTER: Diameter of element H1.....(cm.)? 0.1_
```

Strahlerlänge wählen

```

C:\WINDOWS\system32\cmd.exe
SINGLE ELEMENT MOBILE/MARITIME WHIP
  » E
  H1  «←single element
  »  «←loading coil
     «←feed
     «←point
  \  «←vehicle body
Operating frequency..... 3.600 MHz = 83.33 m.
Diameter of element H1..... 0.10 cm. = 0.04 in.

===== TYPICAL VALUES =====
|-----|-----|-----|-----|
| Length H1 | Radiation | Antenna | Antenna | Loading |
| deg | cm. | in. | Resistance | Impedance | Reactance | Coil |
|-----|-----|-----|-----|-----|
| 5° | 115.71 | 45.56 | 0.08 Ω | 446.40 Ω | -j 5102.36 Ω | 225.57 μH |
| 10° | 231.42 | 91.11 | 0.32 Ω | 487.99 Ω | -j 2767.51 Ω | 122.35 μH |
| 15° | 347.13 | 136.67 | 0.72 Ω | 512.32 Ω | -j 1911.99 Ω | 84.53 μH |
| 20° | 462.84 | 182.22 | 1.28 Ω | 529.58 Ω | -j 1455.00 Ω | 64.33 μH |
| 25° | 578.56 | 227.78 | 2.00 Ω | 542.96 Ω | -j 1164.39 Ω | 51.48 μH |
| 30° | 694.27 | 273.33 | 2.88 Ω | 553.90 Ω | -j 959.39 Ω | 42.41 μH |
| 35° | 809.98 | 318.89 | 3.93 Ω | 563.15 Ω | -j 804.27 Ω | 35.56 μH |
| 40° | 925.69 | 364.44 | 5.13 Ω | 571.17 Ω | -j 680.69 Ω | 30.09 μH |
| 45° | 1041.40 | 410.00 | 6.49 Ω | 578.23 Ω | -j 578.23 Ω | 25.56 μH |
|-----|-----|-----|-----|-----|
to select length.....press 3
Send this page to:(1)Printer Queue? (2)Printout? (3)Next page? (1/2/3)
  
```

Ergebnis mit Spuleninduktivität

```
C:\WINDOWS\system32\cmd.exe

SINGLE ELEMENT MOBILE/MARITIME WHIP
      E
      ||
H1  ||  «single element
      ||
      ||  «loading coil
      ||  «feed
      ||  «point
      ||  «vehicle body
      ||

Operating frequency..... 3.600 MHz = 83.33 m.
Diameter of element H1.... 0.10 cm. = 0.04 in.
Length of element H1..... 1000.00 cm. = 393.70 in.

Length H1 (electrical degrees)....H1= 43.211°
Degree-ampere area.....A= 21.6055
K constant.....K= 0.0128
Radiation resistance.....RR= 5.985 Ω
H1 characteristic impedance.....Km= 575.798 Ω
Capacitive reactance.....XL= 612.925 Ω
Loading coil inductance.....= 27.097 µH

Do you want to design this coil? (y/n)
```

Spule dimensionieren

```
C:\WINDOWS\system32\cmd.exe
COIL DESIGNER by George Murphy VE3ERP

This program designs single-layer air-core coils using equations
published in the 1997 ARRL HANDBOOK, page 6.22. These equations
provide close approximations of values for frequencies in the 1-30
MHz range that are sufficiently accurate for most Amateur Radio
purposes. The calculations are useful in the VHF and UHF range but
only as a basis for further calculation and experimentation. The
program designs coils with pitches (c.c. distance between turns)
as follows:
- BARE CONDUCTOR (wire or tubing) @ twice its diameter.
  (use scraps of the same size conductor as turn spacers).
- ENAMELLED WIRE @ outside diameter of the enamel.
- INSULATED WIRE @ outside diameter of the insulation.
WIRE INSULATION MAY INTRODUCE DIELECTRIC LOSSES, AFFECTING COIL Q!

The accuracy of equations used in this program may decrease if
the recommended turn spacing is greatly increased. In every case
spread the windings evenly over the winding length and secure in
place with shellac or other suitable coating.
If coil Q is critical to your application, exit this program now
and run the "Coil Q Calculator" program. Then run this program
again from the Coil Q Calculator program menu.

Press 1 to continue or 0 to EXIT
```

L/d für Gütebereiche

```

C:\WINDOWS\system32\cmd.exe
Q refers to True Q, as opposed to Apparent Q read by a Q meter.
- Q increases with coil diameter. Q increases with coil length.
- Max.Q occurs at about .35-.45 L/d ratio, decreasing rapidly below this range.
- 0.5 to 2.0 L/d ratios are commonly used in many Amateur radio applications.
Typical L/d Ratios for Various Coil Diameters and Q Values at 3.6 MHz
| Q= 50 | Q= 71 | Q=100 | Q=141 | Q=200 | Q=283 | Q=400 | Q=566 | Q=800
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
0.50" | | | 0.52 | 1.67 | | | | | |
0.75" | | | | 0.46 | 1.26 | | | | |
1.00" | | | | | 0.52 | 1.67 | | | |
1.25" | | | | | | 0.72 | 4.28 | | |
1.50" | | | | | | 0.46 | 1.26 | | |
1.75" | | | | | | | 0.74 | 4.87 | |
2.00" | | | | | | | 0.52 | 1.67 | |
2.25" | | | | | | | 0.41 | 1.01 | |
2.50" | | | | | | | | 0.72 | 4.28 |
2.75" | | | | | | | | 0.56 | 1.95 |
3.00" | | | | | | | | 0.46 | 1.26 |
3.25" | | | | | | | | 0.39 | 0.93 |
3.50" | | | | | | | | | 0.74 |
3.75" | | | | | | | | | 0.61 |
4.00" | | | | | | | | | 0.52 |
4.25" | | | | | | | | | 0.46 |
4.50" | | | | | | | | | 0.41 |
To compute coil diameter, ENTER: ANY desired L/d ratio....?
  
```

Drahtauswahl für Spule

```
C:\WINDOWS\system32\cmd.exe
DESIGN SPECIFICATIONS for a 3.000:1 length-to-diameter ratio coil:
Inductance..... 27.097 µH

FOR MOBILE WHIP LOADING COILS USE THE LARGEST PRACTICABLE DIAMETER
WIRE OR TUBING CONDUCTOR.

Press letter in < > to enter your choice of coil conductor size:
< a > Diameter in millimetres
< b > Diameter in inches
< c > AWG#
```

Ergebnis Spulendaten

```
C:\WINDOWS\system32\cmd.exe
DESIGN SPECIFICATIONS for a 3.000:1 length-to-diameter ratio coil:
Inductance..... 27.097 µH
Coil diameter..... 55.271 mm
Outside diameter of coil form.... D= 53.271 mm *
Number of turns..... 41.454
Length of coil..... 165.814 mm
Number of turns per 25 mm (inch).... 6.4
Length-to-Diameter ratio..... 3.000:1
* Coil form diameter can be any size near D

===== SOME SUGGESTED SOURCES OF COIL FORM MATERIAL =====
PVC pipe outside diameters:
nom. 3/8 = 0.675 in. < 17.1 mm>
nom. 1/2 = 0.840 in. < 21.3 mm>
nom. 3/4 = 1.050 in. < 26.7 mm>
nom. 1 = 1.315 in. < 33.4 mm>
nom. 1¼ = 1.660 in. < 42.2 mm>
nom. 1½ = 1.900 in. < 48.3 mm>
nom. 2 = 2.375 in. < 60.3 mm>
nom. 2½ = 2.875 in. < 73.0 mm>
nom. 3 = 3.500 in. < 88.9 mm>
nom. 3½ = 4.000 in. <101.6 mm>

Shotgun shell diameters:
.410 0.410 in. < 10.4 mm>
28-Ga. 0.550 in. < 14.0 mm>
20-Ga. 0.615 in. < 15.6 mm>
16-Ga. 0.662 in. < 16.8 mm>
12-Ga. 0.729 in. < 18.5 mm>
10-Ga. 0.775 in. < 19.7 mm>

KODAK 35mm film plastic canister:
1.245 in. < 31.6mm > dia.
1.750 in. < 44.5mm > long
* ENTER: Coil form dia.< mm> ?
```

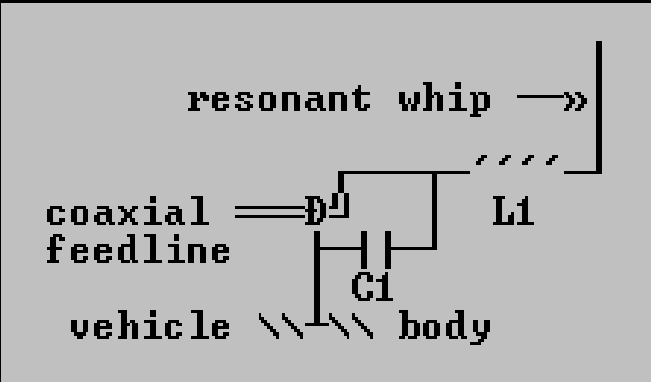

Alternatives Spulendesign

```
C:\WINDOWS\system32\cmd.exe
DESIGN SPECIFICATIONS for a 3.000:1 length-to-diameter ratio coil:
Inductance..... 27.097 µH
Coil diameter..... 55.271 mm
Outside diameter of coil form.... D= 53.271 mm *
Number of turns..... 41.454
Length of coil..... 165.814 mm
Number of turns per 25 mm (inch).... 6.4
Length-to-Diameter ratio..... 3.000:1
* Coil form diameter can be any size near D
===== SOME SUGGESTED SOURCES OF COIL FORM MATERIAL =====
ALTERNATE DESIGN for a 60 mm diameter Coil Form:
Inductance..... 27.097 µH
Conductor diameter..... 2.000 mm, bare (AWG 12.2)
Approximate spacing of coil turns.... 4.000 mm
Coil diameter..... 62.000 mm
Outside diameter of coil form..... 60.000 mm
Number of turns..... 34.448
Length of coil..... 137.793 mm
Number of turns per 25 mm (inch).... 6.4
Length-to-Diameter ratio..... 2.22:1
Do you want to round-off the number of turns? (y/n) ←
Approximate True Q = 725 at 3.6 MHz.
```

Anpaasung an 50 Ohm

C:\WINDOWS\system32\cmd.exe

MOBILE ANTENNA MATCHING



resonant whip →

coaxial feedline

vehicle body

L1

C1

Any resonant mobile antenna that has a feed-point impedance less than the characteristic impedance of the transmission line can be matched to the line by means of a simple L-network as shown above.

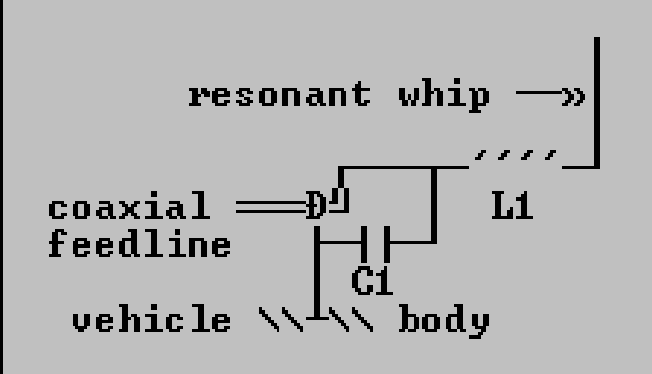
<The 1997 ARRL HANDBOOK for RADIO AMATEURS, pages 20.46 & 20.47>
<The ARRL ANTENNA BOOK, 18th edition, page 16-18>

Press 1 to continue or 0 to EXIT

Ergebnis Anpassnetzwerk

C:\WINDOWS\system32\cmd.exe

MOBILE ANTENNA MATCHING



resonant whip →

coaxial feedline

vehicle body

C1

L1

Frequency of operation.....	3.600	MHz
Antenna Feedpoint Resistance.....	5.985	ohms
Characteristic Impedance of Feedline.....	50.000	ohms
Capacitance C1.....	2397.816	pF
Inductance L1.....	0.718	µH

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