ANTENTOP

ANTENTOP 01 2018 # 022

ANTENTOP is *FREE* e-magazine devoted to ANTENna's Theory, Operation, and Practice

1-2018

Edited by hams for hams

In the Issue:
Antenna Theory!

Practical design of HF Antennas!

Practical design of Antennas for the 50-MHz Band!

Practical design of Antennas for the 50-MHz Band!

Design of Broad Band RF Transfformers

UA6AGW Balcony Antenna

Thanks to our authors:

Jack Beever

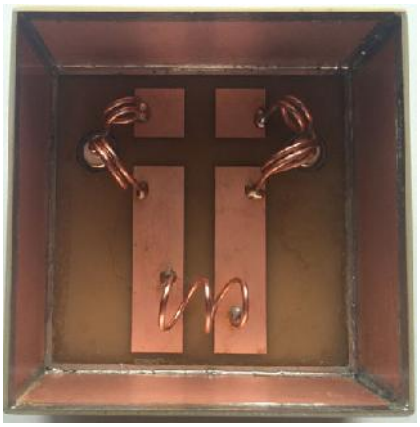
Nick Kudryavchenko, UR0GT

Aleksandr Grachev, UA6AGW

Igor Vakhreev, RW4HFN

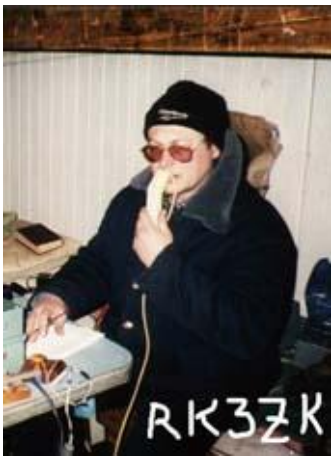
And others…..

RL1L Filter for 145- MHz



EDITORIAL:

Well, my friends, new ANTENTOP – 01 - 2018 come in! ANTENTOP is just authors' opinions in the world of amateur radio. A little note, I am not native English, so, of course, there are some sentence and grammatical mistakes there… Please, be indulgent!
ANTENTOP 01 –2018 contains antenna articles, Books for download, descriptions of broadband RF- Transformers. Hope it will be interesting for you.
Our pages are opened for all amateurs, so, you are welcomed always, both as a reader as a writer.



73! Igor Grigorov, VA3ZNW, CF3ZNW

ex: RK3ZK, UA3-117-386,

UA3ZNW, UA3ZNW/UA1N, UZ3ZK

op: UK3ZAM, UK5LAP, EN1NWB, EN5QRP, EN100GM

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Welcome to ANTENTOP, FREE e - magazine!

ANTENTOP is ***FREE e- magazine***, made in **PDF**, devoted to Antennas and Amateur Radio. Everyone may share his experience with others hams on the pages. Your opinions and articles are published without any changes, as I know, every your word has the mean.

Every issue of ANTENTOP is going to have 100 pages and this one will be paste in whole on the site. I do not know what a term for one issue would be taken, may be 12 month or so. A whole issue of ANTENTOP holds nearly 10- 30 MB.

A little note, I am not native English, so, of course, there are some sentence and grammatical mistakes there… Please, be indulgent!

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Your opinion is important for me, so, contact if you want to say something!

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I have a big collection of pictures. I have got the pictures and stuff in different ways, from ***FREE websites***, from commercial CDs, intended for ***FREE using***, and so on... I use to the pictures (and seldom, some stuff from free and closed websites) in ANTENTOP. ***If the owners of the Copyright stuff have concern***, please, contact with me, I immediately remove any Copyright stuff, or, if it is necessary, all needed references will be made there.

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73! ***Igor Grigorov***, VA3ZNW
ex: UA3-117-386, UA3ZNW, UA3ZNW/UA1N, UZ3ZK, RK3ZK
op: UK3ZAM, UK5LAP,EN1NWB, EN5QRP, EN100GM

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Antenna Theory

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1 **Antenna Installations: Fact and Fiction:**
Jack Beever, Jerrold Electronics Corp 5- 7

Considering that antennas are daily familiars in the life of the average TV technician, it is quite surprising that they are also among the least understood items with which he deals. Some common misconceptions and half truths concerning them have come to the author's attention in the experience he has had with antenna installations.....

HF- Antenna Practice

2 **Low Profile Antenna for the 30, 20, 17, 15, 10 and 6- meter Bands:**
Igor Grigorov, VA3ZNW 8- 11

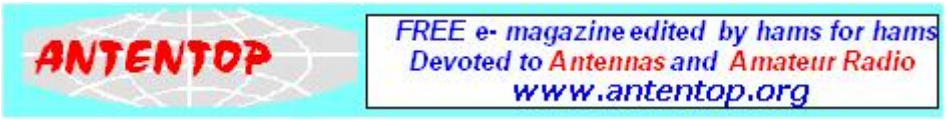
In the summer 2017, when the winter with winds and ice storm was far away, I decided to install a Low Profile wind and ice rain resistant antenna. Why I decided do this? There were some important reasons. My Beverage Antenna was remade. Now the antenna wire was not going along wooden fence but hang upped in the space. Efficiency of the antenna is grown up but reliability went down. Canadian winter with strong winds and ice rain may very make my Beverage antenna down. So I need weather proof antenna in case if the Beverage antenna cannot stand the winter....

3 **Delta Antenna for 80- 10 meter Band:**
Serge Smirnov, RK3BJ, ex: EW7SF, UC2SF 12- 13

The simplest antenna that could provide operation on all HF bands is a Delta Antenna. The antenna made in the shape of Delta needs minimum points for installation, does not required grounding like a vertical does and the antenna is not critical to nearest objects. The antenna does not required high mast for installation. If the antenna made as one band one it may feed direct through a coaxial cable. However for multiband operation the antenna is required a matching device at its feed-points...

4 **UA6AGW Antenna with Vertical Radiators for the 20- meter Band:**
Vitaly Gluhov, RA9MAI 14- 16

The antenna, made on the base of UA6AGW Antenna, was designed and build in 2017, at first at all for fixed and field operation. Author is very appreciated to Andrey, IP50AA, for his very useful advices on the antenna design…



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5 **The Inverted L Ham Antenna:**
Robert M. See, W5LTD 17- 21

Construction of simple antenna and matching network that provides a good compromise in height, cost, and coverage...

6 **UA6AGW Balcony Antenna for the 20 meter Band. (Version 20.23.63) :**
Aleksandr Grachev, UA6AGW 22- 23

The antenna, working Version 20.23.63, has sizes 1 x 2 meters and designed for installing at a limited space. The antenna made like an experimental one and showed good result at the Air test…

7 **Small Directional Antenna for 21- MHz Band:**
Eugeney Shelekasov, RX3AX 24

The antenna is experimental variant of small directional antenna. Antenna is easy to do and for tuning, require a small room for installation, therefore provide good directivity…

8 **OK3TDC Antenna**

OK3TDC DX antenna for 80- meter band was widely known in the former USSR…. 25

9 **Modified T2FD Antenna:**
Vadim Litvikh, RK1AC 26

The antenna is a variant of well- known T2FD antenna. This modified antenna have been working at my ham station for decade years and showed itself as low noise antenna that works from 1.8- MHz to 30- MHz, does not required ATU, easy to repeat, allows to receive weak DX- stations (especially on low HF- Bands), does not receive static interferences and has lots other advantages…

10 **W3DZZ Antenna for the 160, 80, 40 and 10 meter Band:**
Nikolay Miasnikov, UA3DJG 27

W3DZZ antenna may be used at 160, 80, 40 and 10 meter Band. For the times of low solar activity those ones are that live bands…

11 **Simple Vertical Monoband Antenna for HF Band:**
Andrei Kolodistyi, UA6BFE 28- 29

The simple antenna was tested in field condition on 80 and 40- meter Band. The antenna is shown good result in the Air…

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W3DZZ Antenna: Modification by UR0GT :
12 Nikolay Kudryavchenko, UR0GT **30- 31**

The W3DZZ Antenna was optimised by UR0GT. Now the antenna for 80, 40, 20, 15 and 10 meter Band has resonance frequencies inside those bands with good SWR. The antenna was optimised for feeding by 75- coaxial cable. It is possible buy such cable for reasonable price. Transceiver with 50 - Ohm output as well would be work with such antenna…

4- Element YAGI Antenna for the 20- meter Band:
13 Nikolay Kudryavchenko, UR0GT **32- 33**

The simple 4- Element YAGI Antenna for the 20- meter Band has very stable parameters. Antenna has SWR less the 1.1:1 at 14.0- 14.35- MHz. Antenna has input impedance 50 Ohm. The antenna may be made of aluminum tube in diameter of 30- mm. Antenna has high gain, and very easy for tuning...

Antennas for 50- MHz Band

Tin Woodman Antenna for the 50- MHz Band:
14 Igor Vakhreev, RW4HFN **34- 35**

There is presented Tin Woodman Antenna for the 50- MHz Band. The antenna is very simple in design. The antenna is electrically closed so this one is safe in a lighting period. Antenna has good SWR at the band. Antenna has 50- Ohm input impedance that allows feed the antenna directly by 50- Ohm coaxial cable. Antenna allows to be made with some tolerance. Antenna installed on a mast in 6 meter high...

2 Element Tin Woodman Antenna for the 50- MHz Band:
15 Igor Vakhreev, RW4HFN **36- 37**

There is presented 2 elements directional antenna for the 50- MHz Band. The antenna is very simple in design. All elements of the antenna are electrically closed and connected to metal traverse so the antenna is safe in lighting period. Antenna has good SWR at good F/B ratio at the band. Antenna has 50- Ohm input impedance that allows feed the antenna directly by 50- Ohm coaxial cable. Antenna allows to be made with some tolerance. Antenna installed on a mast in 5 meter high...

3 Element Antenna for the 50- MHz Band:
16 Yuriy Skutelis, RN3DEK **38- 39**

There is presented 3 elements directional antenna for the 50- MHz Band. Antenna has good SWR at the band and excellent F/B ratio. Antenna allows to be made with some tolerance. It is very convenient for because in real life it is very hard to note all outer environment objects. Antenna has 50- Ohm input impedance that allows feed the antenna directly by 50- Ohm coaxial cable...

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17 **5 Element Antenna for the 50- MHz Band:**
Yuriy Skutelis, RN3DEK 40- 41

There is presented 5 elements directional antenna for the 50- MHz Band. Antenna has good SWR at the band and excellent F/B ratio. Antenna has 50- Ohm input impedance that allows feed the antenna directly by 50- Ohm coaxial cable...

18 **6 Element Antenna for the 50- MHz Band:**
Yuriy Skutelis, RN3DEK 42- 43

There is presented 6 elements directional antenna for the 50- MHz Band. Antenna has good SWR at the band and excellent F/B ratio. Antenna allows to be made with some tolerance. It is very convenient for because in real life it is very hard to note all outer environment objects. Antenna has 50- Ohm input impedance that allows feed the antenna directly by 50- Ohm coaxial cable…

19 **Broadband 50- MHz Antenna :**
Igor Grigorov, VA3ZNW 44- 48

I just want a little privacy- sad Shrek (or something similar to that thing to avoid me a copyright problem). So I am. I decided to install plastic net for clementine flowers at my desk on the backyard. The clementine flowers are perfect do masking me when preparing BBQ, reading a book or just do experiments with antennas and home- brew radios. However it seems to me no sense to install just a net for clementine flowers without putting an antenna to this one. The net with flowers should perfect masking an antenna on it. The sizes of the net allow install there just antenna for 10 or 6 meter Band. I have chosen an antenna for 6 meters…

VHF Antennas

20 **RN3DEK 4- Element Antenna for the 145- MHz Band :**
Yuriy Skutelis, RN3DEK 49- 50

There is presented 4- element antenna for the 145- MHz Band. Antenna has good SWR at the band. Antenna has input impedance 28- Ohm. For matching of the antenna with 50- Ohm coaxial cable there is used known matching device on two parallel length of 75- Ohm coaxial cable. To compensate reactive component a capacitor is switched on with the vibrator…

21 **RN3DEK 4- Element Antenna for the 145- MHz Band with Gamma Match:**
Yuriy Skutelis, RN3DEK 51- 52

There is presented 4- element antenna for the 145- MHz Band. Antenna has good SWR at the band. Antenna does not require follow to strictly dimension of the elements. So the antenna may be done ever by a ham who has no large experience in the antenna building…

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22 **RN3DEK 3- Element Arrow Directional Antenna for the 145- MHz Band:**
Yuriy Skutelis, RN3DEK 53- 54

There is presented 3- Element Arrow Directional antenna for the 145- MHz Band. The antenna is matched with coaxial cable with help of gamma- matching. Antenna has good SWR at the band and excellent F/B ratio. Antenna does not require follow to strictly dimension of the elements. So the antenna may be done ever by a ham who has no large experience in the antenna building…

23 **UR0GT Directional DEWD Antenna for the 145- MHz Band:**
Yuriy Skutelis, RN3DEK 55- 56

There is presented directional antenna for the 145- MHz Band with active vibrator made on the base of UR0GT DEWD Antenna. Antenna has good SWR at the band and excellent F/B ratio. Antenna does not require follow to strictly dimension of the elements. So the antenna may be done ever by a ham who has no large experience in the antenna building…

24 **UR0GT Chireix- Mesny Directional Antenna for the 145- MHz Band:**
Nikolay Kudryavchenko, UR0GT 57- 58

Chireix- Mesny Directional Antenna may be used for operation on 145 MHz. designs of the antenna is presented here. The antenna has wide passband, high gain, not critical to installation and nearest environment. Chireix- Mesny antenna has input impedance 200 Ohm so it is possible match the antenna with 50- Ohm coaxial cable with help of 4:1 transformer…

25 **Twin Delta Direction Antenna for the 145- MHz Band:**
Nikolay Kudryavchenko, UR0GT 59- 60

Twin Delta Antenna is a good variant of a directional antenna for the 145- MHz Band. The antenna is simple to make and has good parameters. Antenna has high gain and does not require any tuning when made according to the drawing…

26 **3- Element Broadband Antenna for the 145- MHz Band:**
Nikolay Kudryavchenko, UR0GT 61- 62

The simple 3- Element Broadband Antenna for the 145- MHz Band has very stable parameters. Antenna has wide passband that makes the antenna not critical to implementation and to near environment. Antenna has SWR less the 1.5:1 in 11- MHz passband and SWR less the 2:1 in 21- MHz passband…

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UHF Antennas

27 UR0GT Dual Band Antenna for the 145 and 435- MHz Band:
Nikolay Kudryavchenko, UR0GT 63- 65

The simple dual band antenna for 145 and 435- MHz band is easy to do and almost does not required tuning. Only tuning is to change angle of the counterpoises to make exact match with 50- Ohm coaxial cable. Antenna maybe installed on the top of a mast, on balcony rail or at any suitable place…...

28 10 Element Antenna for the 432- MHz Band:
Nikolay Kudryavchenko, UR0GT 66- 67

The 10 element antenna has good SWR from 428 to 436- MHz. Antenna is matched with 50- Ohm coaxial cable with help of a loop. The loop is made from insulated wire in diameter of 2- mm. Loop may be moved along vibrator to find optimal matching. Then by shortening of the right length of the coaxial cable (it is a capacitor) do final matching.…

29 10 Element Antenna for the 436- MHz Band:
Nikolay Kudryavchenko, UR0GT 68- 69

The 10 element antenna has good SWR from 430 to 440 MHz. Antenna is matched with 50- Ohm coaxial cable with help of a loop. The loop is made from insulated wire in diameter of 2- mm. Loop may be moved along vibrator to find optimal matching. Then by shortening of the right length of the coaxial cable (it is a capacitor) do final matching…

30 10 Element Antenna for the 433- MHz Band:
Nikolay Kudryavchenko, UR0GT 70- 71

The 10 element antenna has good SWR from 430 to 434 MHz. Antenna has input impedance 28- Ohm. For matching of the antenna with 50- Ohm coaxial cable there is used known matching device on two parallel length of 75- Ohm coaxial cable…

31 Simple Antenna for the 435- MHz Band:
Nikolay Kudryavchenko, UR0GT 72- 73

The question that usually stands before beginner amateur that makes first steps on the 435- MHz band is what antenna should be chosen. Antenna that easy to design has high gain and does not require any tuning…

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Low Pass Filters for 145 - MHz Band

Two Simple Low Pass Filters for 145 - MHz Band:
Anatoli, RL1L ex. (RA0C, EY9AF, RA6XPL, RA6PS, RA6PGY)

74- 79

32 A Low Pass Filter is recommended to use in a Field Day operation when several amateur radios that work at 145 and 430- MHz are placed close to each other. In this case the third harmonic of the 145- MHz radio (when it transmits) may cause interferences for 430- MHz radio…

Antenna Switching Units

Antenna Switching Units:
Igor Grigorov, VA3ZNW

33 Oh, it was very good times long ago. I had one antenna on the roof and one home-made transceiver in the shack. My antenna was connected to transmitter without even using an RF-connector. Coaxial cable from the antenna just was soldered to transmitter's PA. These are the times that every radio amateur remembers as being the best in one's radio amateur life. **80- 86**

But in due course, new antennas were installed, to first home made transceiver was added a commercial made second one then an old military third... Antenna connectors on these transceivers were differed from each other. That situation caused to use RF adapters and special coaxial cables to alter the arrangement of rigs and antennas.

There came a time when I entangled in antennas, receivers, transceivers, and the methods of switching to alternate antennas and change from one rig to another. Solution was clear- it should be used clear marked an Antenna Switching Unit (ASU)...

Experimenters

RF Sniffer:
34 **Igor Grigorov, VA3ZNW** **87- 90**

FSM (Field Strength Meter) is the device that should be present on any amateur radio station. As for me, I have been using MFJ- 801 FSM for a long time. I use this device on all HF bands as well successfully tried it on the 145 and 430- MHz band. I used to the MFJ- 801 in the field under rain and snow and, of course, at home without problem from this one. However I've decided add to my radio station a simple RF Sniffer that may sniff the radio waves up to 3000 MHz i.e. that device should react on to cell phones and internet routers....

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Wideband Transformer

35 **Wide Band 1:4 RF Transformer for Matching 200 Ohm Antenna to 50 Ohm Coaxial Cable :** 91- 92
Anatoli, RL1L

Yeh, it is too long title for the article however it is the right one. Below it is described two variants of wide band 1:4 RF transformer for matching 200 Ohm antenna to 50 Ohm coaxial cable. One transformer for unbalanced another one for balanced antenna. Transformer works well at all HF- Band from 160 to 10 meter. Transformer is very simple to do. Design of the transformer is clear understandable from the schematic and pictures…

36 **Design of Wide Band RF Transformer on Ferrite Tubes :**
Vladislav Shcherbakov, RU3ARJ 93- 94

Ferrite transformer on ferrite tubes performs several functions at once: this one does match of the feeding coaxial cable to the antenna (or transform impedance of the antenna to impedance of the coaxial cable), balances RF current at feeding terminals of a symmetrical antenna and suppresses the common-mode current on to outer side of the coaxial cable braid…

BOOKs

Fundamentals of Microwave Communications 95

37 This is old and reliable book on the subject of the Fundamentals of Microwave Communications. The book was published in 1994. The book is a sub-course of the Signal Officer Basic Course. It contains information data, questions and answers on the subject, so it is possible to check gained knowledge of the themes. The book is very easy to read and gives useful information and basic knowledge on the Fundamentals of Microwave Communications...

Antenna Handbook

38 There is Antenna Handbook from far 1936… The book contains only 82 pages but the pages soak lots information relative to antennas. Radio wave propagation, antenna theory and practice, ATU and antenna feeding- all of this question were lighting on the pages… 96

Principles of Radio Wave Propagation

39 This is old and reliable book on the subject of the Radio Wave Propagation. The book was published in 1994. The book is a sub-course of the Signal Officer Basic Course. It contains information data, questions and answers on the subject, so it is possible to check gained knowledge of the themes. The book is very easy to read and gives useful information and basic knowledge on the Radio Propagation..... 97

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Microwave Techniques

40 98

This is old and reliable book on the subject of the Microwave Techniques. The book was published in 1994. The book is a sub-course of the Signal Officer Basic Course. It contains information data, questions and answers on the subject, so it is possible to check gained knowledge of the themes. The book is very easy to read and gives useful information and basic knowledge on the Microwave Techniques....

Radiotron Designer's Handbook

41 99

I try paste in the AntenTop site books that would be useful and interesting at all times. One of such book is Radiotron Designer's Handbook. The book was prepared by Pete Millett and taken from his site http://pmillett.com/.....

Lunokhod: Secret Report

42 100

Lunokhod 1 was the first of two unmanned lunar roverslanded on the Moon by the Soviet Union as part of its Lunokhod program. The Luna 17 spacecraft carried Lunokhod 1 to the Moon in 1970. Lunokhod 1 was the first remote-controlled robot "rover" to freely move across the surface of an astronomical object beyond the Earth.....