ANTENTOP

ANTENTOP 01 2014 # 018

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

1-2014

Edited by hams for hams

In the Issue:
Antennas Theory!

Practical design of HF Antennas!

Underground Antennas!

Practical design of VHF Antennas!

Regenerative Receivers!

Lawn Antenna ***K2MIJ***

Thanks to our authors:

Prof. Natalia K.Nikolova

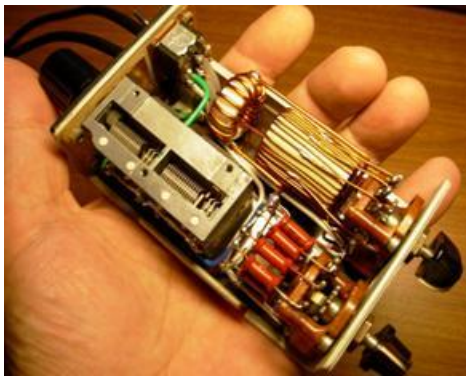
Nick Kudryavchenko, UR0GT

Aleksandr Grachev, UA6AGW

Vladimir Fursenko, UA6CA

And others…..

Pocket Antenna Tuner by *UN7CI*



EDITORIAL:

Well, my friends, new ANTENTOP – 01 - 2014 come in! ANTENTOP is just authors' opinions in the world of amateur radio. I do not correct and re-edit yours articles, the articles are printed "as are". A little note, I am not a native English, so, of course, there are some sentence and grammatical mistakes there… Please, be indulgent! ANTENTOP 01 –2014 contains antenna articles, description of antenna patents, Regenerative Receivers. Hope it will be interesting for you.

Our pages are opened for all amateurs, so, you are welcome always, both as a reader as a writer.

73! Igor Grigorov, VA3ZNW

ex: RK3ZK, UA3-117-386,

UA3ZNW, UA3ZNW/UA1N, UZ3ZK

op: UK3ZAM, UK5LAP,

EN1NWB, EN5QRP, EN100GM

Contact us: Just email me or drop a letter.
Mailing address:
59- 547 Steeles Ave West., Toronto, ON, M2M3Y1, CANADA
Or mail to:antentop@antentop.org
NB: Please, use only plain text and mark email subject as: **igor_ant**. I receive lots spam, so, I delete **ALL** unknown me messages **without** reading.

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!

Publishing: If you have something for share with your friends, and if you want to do it ***FREE***, just send me an email. Also, if you want to offer for publishing any stuff from your website, you are welcome!

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

Copyright Note:

Dear friends, please, note, I respect Copyright. Always, when I want to use some stuff for ANTENTOP, I ask owners about it. But… sometimes my efforts are failed. I have some very interesting stuff from closed websites, but I failed go to touch with their owners… as well as I have no response on some my emails from some owners.

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 are have concern***, please, contact with me, I immediately remove any Copyright stuff, or, if it is necessary, all needed references will be made there.

Business Advertising: ANTENTOP is not a commercial magazine. Authors and I (Igor Grigorov, the editor of the magazine) do not get any profit from any issue. But of course, I do not mention from commercial ads in ANTENTOP. It allows me to do the magazine in most great way, allows me to pay some money for authors to compensate their hard work.

So, if you want paste a commercial advertisement in ANTENTOP, please contact me. A commercial advertisement will do ANTENTOP even greater interesting and various!

Book Advertising: I believe that ***Book Advertising*** is a noncommercial advertisement. So, Book Advertising is ***FREE*** at ANTENTOP. Contact with me for details.

Email: igor.grigorov@gmail.com
subject: **igor_ant**

NB: Please, use only plain text and mark email subject as: **igor_ant**. I receive lots spam and viruses, so, I delete ***ALL unknown me messages*** without reading.

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

Table of Contents

Antenna Theory

Page

Linear Array Theory- Part II : by: Prof. Natalia K. Nikolov

1 Dear friends, I would like to give to you an interesting and reliable antenna theory. Hours searching in the web gave me lots theoretical information about antennas. Really, at first I did not know what information chose for ANTENTOP.

Now I want to present to you one more very interesting Lecture - it is LECTURE 16: Linear Array Theory- Part II
Hansen-Woodyard end-fire array, directivity of a linear array, linear array pattern characteristics – recapitulation; 3-D characteristics of an N-element linear array… **5- 19**

HF- Antenna Practice

44 Feet Dipole. Where is the Truth?: by: Arnie Coro, CO2KK, CUBA

2 After more than half a century working with professional and amateur radio antenna systems... All I can say this is a never ending subject!! The 44 feet long dipole, 22 feet on each leg came out of the work of the prematurely deceased Len Cebik W4RNL... **20- 24**

Lawn Antenna: by: James R Kellner, K2MIJ

3 Ok Gang in case you don't remember me....I am the guy who ran a couple of "Forks" as a dipole awhile back and actually worked W1AW/5 Oklahoma running 5 watts SSB from my trusty Yaesu FT-817....Well I have a new one for you and help will be appreciated to reach my goal!... . **25- 26**

4 Buried Antennas for Emergency Communications: by: John J. Schultz W1DCG/W2EEY: Credit Line: 73 MAGAZINE, April 1967, pp.: 34- 35 **27- 29**

In this article, W1DCG describes some of the properties of buried antennas, particularly in relation to their usefulness for amateur Civil Defense or emergency communications installations....

5 Simple Broadband Antenna for the 40- meter Band: by: Igor Grigorov, va3znw **30- 34**

The Simple Broadband Antenna was designed on base of my local environment and taking into account the ease/cheap to do...

6 Directional Antenna UA6AGW V. 7.00: by: Aleksandr Grachev, UA6AGW **35- 39**

The antenna was born after numerous experiments that were made in past three years. Russian Patent # 125777 was obtained for the antenna...

Table of Contents

Page

Antenna UA6AGW in Experimenters by RU1OZ : by: Nikolay Chabanov, RU10Z

7 **40- 41**

In my native city Archangelsk my house is located very close to the Power Transmission Line. High noise from the line forced me to use Magnetic Loop Antennas. The antennas could work very effective and may eliminate the electrical noise. I can make QSOs with EU and JA (at 10- 18- MHz) using only 4-watts with the Magnetic Loop Antenna. But… Magnetic Loop Antenna has some disadvantages for me...

Antenna UA6AGW V.40.20: by: Aleksandr Grachev, UA6AGW

8

The experimental antenna made on the base of previously described versions of the Antenna UA6AGW for 40- meter Band. Aim of the experiment was to reduce the room that the horizontal wire takes ... **42**

Field Antenna UA6AGW V.40.21 : by: Aleksandr Grachev, UA6AGW

43- 46

9 The antenna was designed for installation in a field conditions or limited space. Antenna may be installed at a low- height mast. Antenna does not required guys and takes small room for installation...

Shortened Antenna G5RV for 14- 50- MHz Bands: by: Alex Karakakan,

10 **UY5ON, Kharkov Ukraine**

Shortened antenna G5RV is a variant classical G5RV with shortened radiation parts and shortened matching two-wire line. Amateur's Bands within 14- 50- MHz spread are mostly welcome for DX operation. So in most cases the antenna could provide good operation with DX- stations. Antenna takes small room... **47**

Shortened Dipole Balcony Antenna for the 20- meter Band: by: Viktor

11 **Kovalensky, RN9AAA**

48- 50

Some years ago, just for fun, I made the Shortened Dipole Antenna for the 20- meter Band at my balcony. The antenna still exists and I use to it for my operation in the Air...

Table of Contents

Page

Simple Window Loop Antenna: by: Aleksandr Sterlikov, RA9SUS

12 The antenna was installed across wooden window frame. Perimeter of the loop in my case was 4.7- meter. Antenna could be tuned from 14 to 30- MHz. I fed the antenna 50- Ohm coaxial cable. However, also I used to 75- Ohm coaxial cable with success..... 51

Simple Folded Dipole Antenna for the 20- meter Band: by: Vladimir E. Tokarev, UA4HAZ

13 The antenna was designed for limited space. It may be installed on balcony, on fence or at backyard and masked on to rope for drying clothes. Antenna has input impedance cloth to 50- Ohm… 52- 53

Simple Wire Antenna for All HF- Bands : by: Vladimir Fursenko, UA6CA

14 The simple wire antenna works well from 160- to 10 meter. The antenna may be tuned (to needed amateur band) at a shack. Antenna contains only one tuning parts- it is a variable capacitor 10- 200- pF. An inductor (near 3… 5- micro-Henry) is switched in serial with the antenna at the 40- meter Band... 54

Twin Triangle Antenna for the 10- meter Band: by: Yuriy Kondrat'ev, UA1ZAS

15 The antenna is used at the 10- meter Band. Antenna made from two wires triangles. The triangles are fastened to my Ground Plane antenna for the 20-meter band. The triangles do not influenced to the ground plane ... 55

Compact Twin Delta Antenna for the 80- and 40- meter Bands: by: John J. Schultz, W2EEY/7

16 The antenna has wide broadband at the 80- and 40- meter Bands. So the antenna does not require any tuning. Antenna is simple in design and takes lots room for installation. Antenna radiates a vertical polarisation wave with almost circle DD in horizontal plane. Antenna is not critical to the sizes. It could be got good result at perimeter of each triangle lambda/4 at lower band at the antenna.... 55

Delta Antenna for 80-. 40-, 20- and 15- meter Bands: By: Nikolay Kudryavchenko, UR0GT

17 The Delta Antenna has perimeter 86- meter. Antenna has resonances at four amateur bands. There are 80, 40, 20 and 15 meter. However, input impedance at the bands not allows use a 50- Ohm coaxial cable to feed the antenna with low SWR at all the bands. Best solution is to use a 100- Ohm coaxial cable.... 56- 58

Table of Contents

Page

Windom UA6CA for 80-, 40-, 20- and 10- meter Bands: by: Vladimir Fursenko, UA6CA

18 Antenna was installed at the edge of the roof of the 5- store house. Transmitter was placed at the first floor. For improving of the efficiency of the antenna a grounding "mirror" wire was dug in the ground. Mirror wire was in plastic insulation. Ends of the mirror wire and connection to the wire were insulated from the ground. ... 59

Air Plane HF Antennas

19 Some pictures of real HF-Antennas installed at Air Planes and Helicopters… 60

VHF- UHF Antennas

Car Antenna for 435- MHz : by: Nikolay Kudryavchenko, UR0GT

20 The Car Antenna for the 435- MHz has very good parameters- circle DD in Horizon Plane and small angle lobe at Vertical Plane. Antenna has input impedance 50- Ohm. Antenna has wide pass band..... 61- 63

Antenna for 2-meter Band, LPD (433), 70- cm Band and for RMR (446): by: Igor Vakhreev, RW4HFN

21 It is very simple antenna that allows works at several frequencies bands with low SWR. The antenna is enough broadband that does not required hold strictly sizes at the design. ... 64-66

Twin Delta Antenna for the 2- meter Band: by: Nikolay Kudryavchenko, UR0GT

22 The simple Twin Delta Antenna works fine at the 2- meter Band. The antenna is enough broadband that does not required hold strictly sizes at the design. Antenna could be made from wide range diameters of wire - 2… 10- mm would be good. Antenna does not require any symmetrical devices.... 67-68

Conversion Auto CB-Antenna HUSTLER-1C-100 to Antenna for the 2- meter Band : by: Igor Mishin, UT3IM

23 It is very easy convert Auto CB-Antenna HUSTLER - 1C-100 (on magnet base) to antenna working at 2- meter Band. Figure 1 shows the conversation..... 69

Table of Contents

Page

UB5UG Snake Antenna : by: Yuri Medinets, UB5UG

24 Note from I.G.: The Snake Antenna was very popular in the ex-USSR. The antenna came to ham from a page of paper with hand writer schematic. The schematic was introduced by Yuri, UB5UG. At first, the antenna was widely used at Ukraine then it came to other republics of the ex-USSR. It was a very simple antenna that very easy could be made from a coaxial cable. The antenna could be very easy redesign for other (as well for TV) bands. **70**

25 Horizontal Antenna with Vertical Polarization for the 2- meter Band : by: Vasiliy Oleynik, RW4HX **71- 73**

At my vacation I guested my friends at their cottage near 40-km from the city. On the second day I decided to try my FT51. Oops, nobody can copy me when I transmitted on to the transceiver's rubber duck. So I need an antenna that could take the 40 km. ....

TV Antennas

Broadband TV Antenna: By: Nikolay Kudryavchenko, UR0GT

26 The simple broadband TV antenna works at the 580- 760- MHz. Passband of the antenna is 180- MHz. Antenna has input impedance 300- Ohm at the pass band. Antenna may be used with antenna amplifier that has such input impedance. Antenna may be used with coaxial cable with broadband transformer. **74- 75**

Chireix- Mesny TV Antenna: By: Nikolay Kudryavchenko, UR0GT

27 The simple broadband TV antenna works at the 615- 765- MHz. Antenna has input impedance 300- Ohm at the pass band. Antenna may be used with antenna amplifier that has such input impedance. **76- 77**

Useful Pieces

Tube Socket from Surplus VHF Resonator: by: Robert Akopov, UN7RX

28 Simple Home Brew Power Tube Socket from Surplus VHF Resonators.... **78**

Table of Contents

Page

Tube Transceiver

Regenerative Transceiver for 160- meter Band: by: Georgiy Gorelashvili , 4L1G

29 There is experimental AM transceiver that may be used at local communication. Practically any pentode would work at the circuit. Frequency of the transmitter is not stable because antenna is switched on directly to the oscillator's inductor. Regime of the regenerative receiver could not be optimal because of high coupling of the antenna with receiver's inductor. However, at small antenna length - in 2… 5 meter and small distances the transceiver is quite well for experimental work... 79

Tube Transmitters

Retro AM Tube Transmitter for 160-meter: by: Georgiy Gorelashvili , 4L1G

30 The schematic (in different variations) was very popular in ex-USSR. There is possible use any powerful pentode with tap from the third grid (for modulation). Of course, frequency of the transmitter is not stable but it is quite possible use for experimental purposes.... 80

CW Tube Transmitter for 40 and 80- meter Band: by: Georgiy Gorelashvili, 4L1G

31 The schematic (in different variations) was very popular in ex-USSR. There is possible use any powerful tetrode for the rig. (Note from I.G.: I also used such rig in 70s- 80s years. The rig works fine. I used pentode 6P15P, 6P14P, 6P3S at the transmitter.).... 81

Simple AM Tube Transmitter for 1.5- 3.5- MHz: by: Georgiy Gorelashvili , 4L1G

32 The schematic (in different variations) was very popular in ex-USSR. There is possible use any powerful pentode with tap from the third grid (for modulation). Of course, frequency of the transmitter is not stable but it is quite possible use for experimental purposes..... 82

Regenerative Receivers

Simple MW- HF- Regenerative Receiver: by: Seiji: Credit Line: Forum at www.cqham.ru

33 Simple MW- HF Regenerative receiver has two independently stages- one for MW-Band another one for HF-Band.... 83

Table of Contents

Page

Simple Regenerator Receiver with Loop Antenna: by: Aleksandr Bulanenko, UA6AAK

34 — 84

It is next generation of simple battery powered regenerative receiver. The receiver used to the input inductor as antenna. It was made two inductors, one for 3.3- 14.6- MHz another one for 4.0- 19.0- MHz...

Antenna Tuning Units

Simple HF ATU on Lengths of Coaxial Cable: by: Igor Grigorov, va3znw

35 — 85- 88

The ATU was made by me in far 80s. It was may be a simplest ATU what I made ever. It contains only one rotary switch and rolls of a coaxial cable. But the ATU works very well. The ATU has only one lack- sizes. Sizes of the ATU are not small. Below there are several words to the theoretical base of the ATU...

Converting Antenna Tuner MFJ-962D for Operation with Symmetrical Ladder Line: By: Viktor Drobot, RK3DL

36 — 89

For operation in the Air at all HF- Bands I use to antenna Delta. The antenna is fed by 300- Ohm Ladder Line. To match the antenna with my transceiver I use to ATU MFJ-962D. The ATU has symmetrical transformer at output. The transformer could provide good symmetrical operation … but with antennas that has low reactance. My Delta has significant reactance through amateur's bands. So the concept is not for me....

Pocket Antenna Tuner

37 — 90- 92

This article is described a small (almost pocket) Antenna Tuner that can work with 100- Watt transceiver....

Books

GROUNDING, BONDING, AND SHIELDING

38 — 93

Excellent Reference to Grounding, Bounding and Shielding. The two books are covered lots practical questions. It is really good books that you can find in the Internet.....

Table of Contents

Page

Propagation

Bridge Effect: by: Igor Grigorov, va3znw

39 Every day when I drive my car to and from my job I drive under bridges and arches. 94- 96

Inside my car I usually listen to radio. My favorite radio is 680 News Radio. The radio station works on 680- kHz. This radio transmits useful news for me. It's the weather, what is and what will be news in Toronto and the World, as well as local traffic, which road is open, what the road is closed due to an accident construction. Knowledge of the traffic saves me a lot of time. I noticed that volume of the 680-News usually is changed when I drove under a bridge or under an arch.....

Noise and Hum

Nature of Hum : by: Michael J Hebert, NH7SR

97

40 Nature of Hum that harm to DC or regenerative receiver. What is the question that is stay before a ham who try such type of receivers....

PATENTS

Antenna for Mobile Communications: by: A.G. Kandoian

41

Description of Patent of a Patent for Antenna for Mobile Communications. 98- 100

Обеспечение питанием радиостанции в полевых условиях.