ANTENTOP

ANTENTOP 03 2003 # 004

ANTENTOP is *FREE* e-magazine devoted to ANTENnas Theory, Operation, and Practice

3-2003

Edited by hams for hams

In the Issue:

Practical design of HF and VHF Antennas!

Antennas Theory!

Tesla's Mysteries!

WW-II Radio!

And More….

Russian EH - Antennas

Plasma Antennas

Thanks to our authors:

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Nikolay Kisel, UA3AIC
Alex, RA3GBQ
Igor, UA6HJG
And others…..

EDITORIAL:

Well, my friends, new ANTENTOP – 03 -2003 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!

Now ANTENTOP is sponsored by microHAM, please, visit to microHAM's site at http://www.microham.com/

I believe, you find many interesting there!

ANTENTOP 03 –2003 contains huge antenna articles, and several historical articles. Hope, you will like it. Our pages opened for all amateurs, so, you are welcome always, or as a reader or as a writer.

73! Igor Grigorov, RK3ZK

ex: UA3-117-386, UA3ZNW, UA3ZNW/UA1N, UZ3ZK
op: UK3ZAM, UK5LAP, EN1NWB, EN5QRP, EN100GM

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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. Preview's files will be removed in this case. I do not know what a term for one issue will need, may be 2-3 month or so. As I have counted, a whole issue of ANTENTOP will hold nearly 10 - 20 MB .

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

Preview: Some articles from "cooking" issue will be pasted for preview on this site, others no. Because, as I think, it must be something mysterious in every issue.

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73! ***Igor Grigorov***, RK3ZK

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op: UK3ZAM, UK5LAP,EN1NWB, EN5QRP, EN100GM

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Antenna Theory

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Loop Antennas: *by Prof. Natalia K.Nikolova*

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 to chose for ANTENTOP.

1

Now I want to present you one more very interesting Lecture - it is a Lecture about Loop Antennas. I believe, you cannot find such info anywhere for free! Very interesting and very useful info for every ham, for every radio- engineer. 5

The Technology of the Future

Plasma Antenna Technology: http://www.asiplasma.com/

On earth we live upon an island of "ordinary" matter. The different states of matter generally found on earth are solid, liquid, and gas. Sir William Crookes, an English physicist identified a fourth state of matter, now called plasma, in 1879. Plasma is by far the most common form of matter. Plasma in the stars and in the tenuous space between them makes up over 99% of the visible universe and perhaps most of that which is not visible. Important to ASI's technology, plasmas are conductive assemblies of charged and neutral particles and fields that exhibit collective effects. Plasmas carry electrical currents and generate magnetic fields.

2 25

Tesla wireless transmission method

3 ***The Underwater Communication System of Nikola Tesla***: *by Oliver Nichelson* 30

Modern analysts, both those who believe Tesla had discovered something new and those who believe he was mistaken in his observations, see Tesla's transmission method the same as present day broadcast radio technology. The broadcast model assumes that there is an antenna propagating electromagnetic waves omnidirectionally into the air. The Tesla supporters propose many ingenious, but implausible, schemes that would account for Tesla's claims for his wireless system. The Tesla opponents simply point out that according to electromagnetic theory, Tesla's ideas are impossible. Both groups are incorrect in thinking that his wireless method is the same as the broadcast technology used today.

HF Antennas

4 ***Half- Loop Antennas for ALE and Frequency Hoping:*** *by Jean-Pierre GOUIN & Daniel LAFARGUE* 35

The present describes a HF loop antenna and its agile coupler which can be adapted to the new designs of ALE and FH (frequency hopping) radiosets. The original specification in 1993 was : "a small mobile antenna and coupler for HF voice and data communications in driving from 0 to 600 km without silent zone, in association with a 125 Watts CW radioset.

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Multirange Vertical Antennas: *by Igor Grigorov, RK3ZK*

5 At a lack of the place for installation of a separate vertical antenna for each of three upper HF ranges it is possible to use a combined three-band antenna that works at the ranges itself. 42

Old Military HF – Antennas of Communication Cars: *by Igor Grigorov, RK3ZK*

6 I have a small collection of information about old military HF antennas used over the World. Presently, three old military automobile HF antennas are described at the article. The antennas are written "as it is," i.e., I give all information, that I have had. I know, the information is not complete at all, but, nevertheless, the information is interesting and it can help somebody to make own 'car antennas.' 45

Design of Antenna UA1DZ: *by Leonid Hmyz, UA4PNT*

7 Antenna UA1DZ was published at ANTENTOP –01-2003. I was received some questions about design of the antenna. Now, the article contains design of the antenna, suggested by UA4PNT, Leonid Hmyz, and this one gives answer to all questions that I have received from readers. ***73! I.G.*** 50

Current Distribution in the Antenna Loading Coils: By Yuri Blanarovich, K3BU, VE3BMV, VE1BY

8 Very interesting practical and theoretical discussion about Current Distribution in the Antenna Loading Coils. Read it and know more about antenna operation. ***73! I.G.*** 52

Russian EH- Antennas: by Nikolay Kisel, UA3AIC

9 It is not an article, so it is early still to write scientific treatises on this subject. It is while a test, supervision, analysis, searching of answers to many questions. My experience can encourage ones, and others I will disappoint. I think, a EH- antenna can compete to any dipole, IV or GP, EH-antenna can work both at a field, and at restricted urban conditions. 61

VHF/UHF Antennas

5/8λ VHF/UHF Antenna: by Alex, RA3GBQ

10 To do the antenna one can very easy as well as the costs are nothing. You need a box of a sweets- surprise Chupa- Chups, a piece of an old coax, some wire, epoxies, and a little of job.

So, go to do it! 64

Short 'Rubber Duck' for VHF/UHF Hand – Held: by Igor, UA6HJG

11 All portable hand – held radios have a short "rubber duck" antenna. Some of the rubber duck antennas are rather long and if it is not necessary to communicate on a far distance, the long antenna just hinders to use a hand- held. I decided to make a short rubber duck antenna that is convenient for daily usage and for short distance communication. 65

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Folding 145-MHz 3-el YAGI for Mountains: Igor, UA6HJG

12 This antenna was developed specially for mountains trip from my experience of radio communication in mountains. The antenna is optimized to the maxima forward gain. At work you can hold the antenna by the "tail" and direct the antenna to your correspondent using vertical or horizontal polarization. 66

Simple 430-MHz 3-el YAGI for Mountains: Igor, UA6HJG

13 This antenna was developed specially for high-mountainous trip proceeding from my previous experience. At the first place I stand following characteristics: gain, weight, reliability. The antenna is optimized of the maxima forward gain. The design is made not knock-down that is very conveniently as the antenna is always ready to operation. You can hold the antenna by its tail and direct the antenna to your correspondent at operation. 67

Simple 430- MHz 4-el YAGI for Mountains: Igor, UA6HJG

14 The purpose of this design is to create an antenna for mountains. The antenna must correspond follow requirements: To have gain not less the 7-dB. Forward Gain is the main characteristic of the antenna. A wide lobe must be. During a QSO you can hold the antenna by the tail and shaking of the antenna should not result to full 'failure' of the communication. Simplicity in making and adjustments. An opportunity of fast repair in field conditions. Antenna weight with coaxial cable both must be up to 500 gram. 50-Ohm coax for the feeding must be used. 68

4- Ovals Antenna for 430- MHz: Igor, UA6HJG

15 Why an oval? At first, from the antenna theory we know that an oval radiates energy a little bit more effectively than a square. At the second, in practical, it is more easy to do an oval then a square.. So choose the OVAL! 69

4- Ovals Antenna for 430- MHz for Mountains: Igor, UA6HJG

16 The antenna is tested at 1997 and at 2000 on the mountain Elbrus and the antenna shows good result. I made QSOs in distance of 200-300 kms with 59 for both ends! 70

QRP

QRP-Tales: by Alexei Rusakov, UA4ARL/qrp

17 On 25 May 2003 I worked the WPX-CW contest. I started calling CQ-WPX at 0000Z but was only answered about every fifth time… 71

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Interferences

Trap on Coaxial Cable: by Igor Grigorov, RK3ZK

18 — If a multi-band antenna or a symmetrical antenna is installed at insufficient environment it is possible when the antenna works to transfer, a part of RF energy is reflected from closest subjects to the antenna itself and to the braid of the coaxial cable of the antenna. From the braid of the coaxial cable the energy goes to ham's shack and causes damage to all radio equipment in to the shack.

A trap on the coaxial cable helps to eliminate the sneaking of the reflected RF- energy to the shack. — 72

Antenna and Towers Tools

Epoxies for Towers: by Bill, W9OL

19 — In my business as a masonry restoration contractor, I used many types of anchor systems. I also use many types of epoxies… — 73

Hysteresis at a Coaxial Cables at VHF ranges: by Igor Grigorov, RK3ZK

20 — The phenomenon, hysteresis at a coaxial cable, was opened randomly. What is the phenomenon? — 74

Fastening of Guys*: by Nick V. Derenko, US8AR*

21 — Different ways apply for fastening guys to a mast or to antenna elements. The common way is to drill holes in the tips. It, undoubtedly, results to easing of rigidity of towers and antennas both. At the same time it is possible to apply "sparing" method of fastening of guys. — 75

Wooden Struts*:* by Igor Grigorov, RK3ZK

22 — In the far eightieth years of 20 century, on to one of Russian radio transmitting radio center I saw a self-made opened transmission line that fed a transmitting antenna. Struts of the line were made of oak tree. What is wonder at that? These struts were about some tens years old. — 76

Tool for Pulling Guys: by Victor. RN9FAB

23 — For several years I use to a home-brew tool, that I made by myself, for puling guys. — 77

Recycling Chokes for the LF-Band : Urban Ekholm, SM5EUF

24 — 77

When experimenting on the LF-band chokes with inductances of some mH are often needed. They are not so easy to get in these days. Those in the junk-box from the tube era are often quite big.

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Parameters of Coaxial Cables: Credit Line: http://radioteh.nm.ru/

25 Just parameters near 40 coaxial cables… 78

LF 136-kHz

LF-Dummy Load

Several Dummy Loads that were described at LF-Forum: rsgb_lf_group@blacksheep.org

26 79

History of LF-Bands: by *Ed, RU6LA*

27 80-85

It is very excellent stock of date for LF- Bands collected by Ed, RU6LA. Ed is well known as an enthusiast of the 1360kHz LF-Band, Ed is the first man who have made the First Asia-Europe QSO at 136-kHz, Ed is… well, I am afraid, there is no place enough to write up all that Ed have made for amateur radio. Just look at his new work for us, the History of LF-Bands.

History

RBM Radio: by Igor Grigorov, RK3ZK

28 86-91

Radio RBM is one of the most famous Russian military radio that was used in the WW-II and after the war as a surplus radio. RBM took place in the WW-II, after the war RBM was used as trial radio for military teaching centers. Lots of Russian hams know well the radio. I want to give some information about RBM and its antennas at ANTENTOP.

73! I.G.

Vacuum Tubes: by Vitaly Brousnikin

29 92-100

Historical notes about development of tubes from early years to our days in the World and in Russia

Belgorod, Russia, December- 2002.