

# ANTENTOP

ANTENTOP 01 2013 # 017

ANTENTOP is **FREE** e-magazine devoted to **ANTENna's**  
**Theory,**  
**1-2013** **Operation, and**  
**Practice**  
*Edited by hams for hams*

***In the Issue:***  
***Antennas Theory!***

***Practical design of HF Antennas!***

***Magnetic Loop Antennas!***

***Practical design of VHF Antennas!***

***Regenerative Receivers!***

**Loop Antenna by UA3AJO**



**Antenna UA6AGW**



**EDITORIAL:**

Well, my friends, new ANTENTOP – 01 -2013 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 –2013 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.

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**73! Igor Grigorov, VA3ZNW**

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***Nick Kudryavchenko, UR0GT***

***Aleksandr Grachev, UA6AGW***

***Vladimir Fursenko, UA6CA***

***And others.....***



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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. Preview's files will be removed in this case. I do not know what a term for one issue will need, may be 8-10 month or so. A whole issue of ANTENTOP hold nearly 10 MB.

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

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**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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### Antenna Theory

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#### Linear Array Theory- Part I : 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 15: Linear Array Theory- Part I
- Linear arrays: the two-element array; the N-element array with uniform amplitude and spacing; broad - side array; end-fire array; phased array ...
- 5- 26**

### HF- Antenna Practice

#### Modifications for the Multiband UB5UG Antenna : by: Oleg Safiullin, Kazan, UA4PA: Credit Line: Radio # 9, 1969

- 2 Anyway any ham wants to have a separate antenna for each of HF-Bands. But, very often the person has only one antenna that compromised for several bands. The same is for the author of the article. He tested lots compromised antennas. However the best one was the Five Band Antenna designed by UB5UG.
- The antenna may be modified with some improving in the overall antenna performance. See below the improvements...
- 27- 30**

#### Antennas UA6AGW: by: Aleksandr Grachev, UA6AGW: Credit Line: CQ-QRP # 34, pp.: 23- 29

- 3 Two HF- antennas for 80- and 40- meter Bands are described below. The antennas were created after my experimenters with magnetic Loop Antennas...
- 31- 35**

#### Antennas UA6AGW. Modification and Development: by: Aleksandr Grachev, UA6AGW: Credit Line: CQ-QRP # 39, pp.: 22- 27

- 4 In the summer 2011, UA6AGW persistently have been working on improvement of his antennas. Article below is just a digest of the hard work.....
- 36- 40**



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<b>5</b>	<b>Vertical Antenna for the 20-, 15-, 10- meter Bands (Antenna UW4HW) by: Yuri Matiychenko, UW4HW: Credit Line: Radio # 12, 1968, p.:21</b>	<b>41- 42</b>
	Classical Vertical Antenna (aka Ground Plane Antenna) without additional tuning works satisfactory only at one amateur band. However, so called "thick" antennas (looks like three-dimensional geometrical figure) could work with good SWR in the frequencies range $F1/F2= 3$ , where, F1- high working frequency, F2- lower working frequency...	
<b>6</b>	<b>Ferrite Magnetic Antenna for the 160 and 80- meter Bands: by: Vladimir Fursenko, UA6CA and Ashot Bazoyan, UA6ACA Credit Line: <a href="http://www.cqham.ru">www.cqham.ru</a></b>	<b>43</b>
	The Ferrite Magnet Antenna for the 160 and 80- meter Bands is just an experimental prototype. It was done to give some thought and ways for those hams who would like to research the type of antennas. ...	
<b>7</b>	<b>Helical Antenna for the 20- meter Band: by: Igor Grigorov, va3znw</b>	<b>44- 46</b>
	The described below Helical Antenna for the 20- meter band has small sizes, as well it is very easy to tune and moreover the antenna has high performance at the band...	
<b>8</b>	<b>Broadband Sloper for the 80- meter Band: by: Vladimir Fursenko, UA6CA: Credit Line: <a href="http://www.cqham.ru/ant80.htm">http://www.cqham.ru/ant80.htm</a></b>	<b>47</b>
	The antenna works with good SWR at the frequencies 3.500- 4.000- kHz. All antennas, what I made before (there were I.Vs., dipoles and slopers) did not work at such wide band. The antenna has input impedance 75- Ohm. It allows use a chip TV coaxial cable for the feeding of the antenna. The 75- Ohm coaxial as usual is matched well with the 50- Ohm output of the transceiver...	
<b>9</b>	<b>Three- Rod Vertical Ground Plane Antenna for the 10- meter Band: by: DM3SF: Credit Line: Funkamateur # 8, 1968.</b>	<b>48</b>
	Input impedance for a classical Vertical Ground Plane Antenna is 30... 33- Ohm. For matching of the input impedance with a coaxial cable (50- or 75- Ohm) it needs use to a kind of matching device. Often it is not conveniently and complicates the design of the antenna. DM3SF made simple Vertical Ground Plane Antenna that has rigid design, does not require any tuning and has input impedance close to 75- Ohm. It allows use for the antenna a cheap TV-Coaxial cable. The 75- Ohm coaxial as usual may be good matched with most of ham transceivers that has output for antenna "50- Ohm."...	

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- 10**      **RA3AAE Antenna for the 10- and 2- meter Band: by: By Vladimir Polyakov, RA3AAE: Credit Line: Credit Line: Radio # 5, 1971, p.: 26**      **49- 50**
- The antenna works on the 10- and 2- meter Bands. Antenna does not require any switching in ATU when the band is changed. Antenna radiates radio wave with vertical polarisation. Antenna is fed by 75- Ohm coaxial cable. The cable is very chip compare to 50- Ohm coaxial cable. It is possible to buy 30- meters good 75- Ohm cable intended for underground placement for 10... 20 dollars. Practically any transceiver (designed for 50- Ohm antenna) could work with 75- Ohm antenna.....
- VHF Antennas**
- 11**      **UR0GT Antenna for the 145 and 50- MHz Band: by:Nikolay Kudryavchenko, UR0GT**      **51- 53**
- The simple antenna effectively works for 145 and 50- MHz. It is a symmetrical antenna. However, unsymmetrical version of the antenna is still working. For the antenna ground should be used good conductivity surface or several resonance counterpoises for each band...
- 12**      **Two Broadband Antennas for the 145- MHz Band: by: Nikolay Kudryavchenko, UR0GT**      **54- 56**
- Below are described two broadband antennas for the 145- MHz. The antennas have low SWR at all 145- MHz Band also those ones are covered nearest parts of the frequencies to the 145- MHz Band. The antennas are easy to make and easy to tune...
- 13**      **All- Metal Three Element Antennas for the 145- MHz Band: by: Valery Suchenkin, UA0SNM @ Igor Vakhreev, RW4HFN: Credit Line: Forum at [www.qrz.ru](http://www.qrz.ru)**      **57- 63**
- All- Metal Antennas are very often used at VHF. The antennas have advantages compare to some other antenna designs. All- Metal antennas are easy to make because very often such antennas are made from one length of a thick strand wire. For some design of the All- Metal Antennas it is possible to use metal traverse that is grounded to the main mast. It is conveniently for design and safety for the lighting strike. Several designs of the All- Metal Antennas for the 145- MHz Band are described below. ...



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	<b>Ferrite Magnetic Antennas by RN3DEK. Design, Experimenters and HF Antennas: by: Yuriy Skutelis, RN3DEK Credit Line: <a href="http://www.cqham.ru">www.cqham.ru</a></b>	
14	Pictures of the real Ferrite Magnetic Antennas ...	64- 69
	<b>Ferrite Magnetic Antennas by RN3DEK. LW, MW and 160- m Antennas: by: Yuriy Skutelis, RN3DEK Credit Line: <a href="http://www.cqham.ru">www.cqham.ru</a></b>	
15	Pictures of the real Ferrite Magnetic Antennas. Some antennas is linked to Audiofiles...	70- 72
	<b>Ferrite Magnetic Antenna for the 160, 80 and 40- meter Bands: by: Vladimir Fursenko, UA6CA and Ashot Bazoyan, UA6ACA Credit Line: <a href="http://www.cqham.ru">www.cqham.ru</a></b>	
16	The experimental antenna made on so called home made "Ferrite Linear Heterogeneous Rod." It is an anisotropic ferrite rod. This one has advantages before isotropic ferrite rod. Heterogeneous Rod does not require special high efficiency ferrite stuff. The "thick" areas are magnetic concentrator....	73
	<b>Receiving Field HF Loop Antenna : by: Pavel Petrov, UU9JAN, Sevastopol : Credit Line: <a href="http://grp.ru/articles">http://grp.ru/articles</a></b>	
17	I need an antenna for my receiver DEGEN- 1103. The antenna should provide a good reception on to HF bands. I would like to take the receiver to a field or hotel room. So, the antenna should be small in sizes and easy to installation. Through some my experimenters I stopped on a Loop Antenna...	74- 75
	<b>TV Ferrite Magnetic Loop Antenna: by: P. Trifonov, Credit Line: Radio # 7, 1960, pp.: 29- 30</b>	
18	The Ferrite Magnetic Loop Antenna works fine at places with heavy reflected signals-near TV transmitters. It allows get clear reception. Antenna made on a ferrite rod with permeability 600. Such ferrite rod use to for internal LW- MW antennas in transistor radio .....	76



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19	<p><b>Two Receiving Magnetic Loop Antennas Twin Magnetic Loop Antenna: By: Dobrynin I., Moscow Loop Antenna for DEGEN- 1103: by: Vitali Tyurin, UA3AJO</b></p> <p>Twin Magnetic Antenna has some advantage compare to a usual magnetic antenna. The advantages are that the twin magnetic antenna, compare to usual magnetic antenna, has higher Selectivity and higher Effective Height...</p> <p>Receiver DEGEN- 1103 (in the USA/Canada it is sold as Kaito 1103) has sensitivity at MW near 100-micro-volt/m and at LW near 1- milli- volt/m. The sensitivity may be increased at least in 20- times if the receiver would be placed inside a loop antenna...</p>	77

## The Tube Power Amplifiers

20	<p><b>Pictures of the Real P.A.</b>  <b>Credit Line: forum at <a href="http://www.cqham.ru">www.cqham.ru</a></b></p> <p>Below there are shown pictures of real P.As. Mostly of their output inductor circuit are shown. The pictures could help to amateur to design a new P.A. or find errors at already existing one. The pictures show home- made and commercial- made P.As....</p>	78- 79
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## Regenerative Receiver

21	<p><b>Simple HF Regenerative Receiver: by: Nikolay Tyapkin: Credit Line: Radio # 3, 1946. Pp.: 42- 47</b></p> <p>This receiver works at all ham HF Bands- 160, 80, 40, 20, 15 and 10- meters. Bands are changed with help of plug-in coils. Receiver contains only two tubes. One tube is a pentode. This one used at an RF-amplifier. Another tube is twin triode. The tube used for the regenerative detector and audio amplifier.</p>	80- 82
22	<p><b>Regenerative Receiver BARABASHKA-3: by: Rinat Shayhutdinov, Miass: Credit Line: CQQR- 36, pp.: 22- 24</b></p> <p>This simple regenerative receiver works well using a small wire antenna in length 2... 3 meters. The receiver is easy to tune up and does not contain hard-to find parts. At the design two amateurs bands are included- 40 and 20- meters. However it is possible to retune the receiver to any other bands...</p>	94- 97



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**Simple Three Bands Regenerative Receiver: by: Aleksandr Bulanenko,  
UA6AAK: Credit Line: Forum at <http://www.cqham.ru/>**

85- 86

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Some days ago I find at my convenient store an aluminum form for baking bread. I have bought it. But I never bake bread with it I make a simple Three Bands Regenerative Receiver inside of the form. Nothing new it is in the schematic. It is widely known in Russia so called multivibrator regenerative receiver...

### History

**Soviet Legendary HF Receiver KUB- 4**

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87- 89

The regenerative HF receiver was designed by a group of ham radio in the Leningrad Central Radio Laboratory in the 1929. It was in the group: B. Guk, S. Briman, A. Kershakov and B. Dobrozhansky. The group was called in Russian "Korotkovolnovaya Udarnaya Brigada", or, in English translation: "HF high-extensive work team". So, the receiver was named KUB- 4. Digit "4" means that just four tubes there were used in the receiver...

### Useful Data

**Wires for Antenna and Grounding: by: va3zwn**

25

What kind of conductor should and should not use for an antenna wire and grounding system? It is usual question that amateur asks himself at a shop when the person sees lots different wires on the shelves....

90- 91

### PATENTS

**Dielectric Loaded Colinear Vertical Dipole Antenna: by: W. B. Bryson**

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Just Description of Patent of a Patent for Dielectric Loaded Colinear Dipole Antenna that has good pattern, gain and some others advantages....

**Tunable Antenna: by: A.G. Kandoian**

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98- 100

Description of Patent of a Patent for Tunable Antenna that could be tune at a very wide frequencies range.

