June 2009
Volume 9, Issue 12

ANODE

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Editor's Comments

June 2009
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Next Ham-Comp meetings

Using electronic test equipment – part 1 – Oscilloscope.
Using electronic test equipment – part 2 – Multimeters.
Using electronic test equipment – part 3 – Signal Generators

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Second-used Amateur Radio stuff

I still have a few of [OM ZS6WL] John Whitfield's items for disposal. A UHF Alinco hand-held, a lot of books etc. Please contact me if you are looking for anything specific (old, technical, junk box related).

Ubuntu is now at Version 9.04

http://www.ubuntu.com/

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Notice of Annual General Meeting

This notice in accordance with the Constitution of the West Rand Amateur Radio Club.

Notice is hereby given that The West Rand Amateur Radio Club will be holding an Annual General Meeting on the 4th July 2009 at the West Rand Clubhouse. The meeting will start at 13:30 for 14:00.

The chairman will report back on the 2008 - 2009 year. Some awards will be handed out to members that have made a significant contribution to the club or amateur radio in general. The current committee members will step down. A new chairman, secretary, treasurer and other committee members should be elected for the 2009 - 2010 year.

The proceedings will conclude with a braai to which family members of club members are also invited. Please note that only current paid up members of the club can stand for committee election or vote at the meeting. Membership fees for the new year can be paid to the treasurer between 13:30 and 14:00 just before the start of the AGM.

Members that can't make it to the meeting can hand a signed proxy to any of the current committee members at the Monday General meeting on 8th June 2009, or to the chairman before the start of the AGM.

Any motions to be discussed and voted on at the AGM must be presented at the Monday General meeting on the 8th June 2009. There will be an agenda item for any such motions to be presented. Such motions will need a motivation by a presenter that is a member in good standing.

73 John Brock [secretary] for
Joop Hesp ZS6C Chairman

Special points of interest:

- Contact details on back page (corrected & updated)
- Ham-Comp Latest on web site.

Editor's Comments

(continued from page 1)

Power Fluctuations and glitches - Escom does it again and again!

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If you are with PayPal, you should read this...
From: http://www.theregister.co.uk/2009/05/04/torpig_hijacked/

Excerpt here…

Botnet hijacking reveals 70GB of stolen data
Torpig uncovered
By Dan Goodin in San Francisco
Posted in Security, 4th May 2009 21:49 GMT

Security researchers have managed to infiltrate the Torpig botnet, a feat that allowed them to gain important new insights into one of the world's most notorious zombie networks by collecting an astounding 70 GB worth of data stolen in just 10 days.

During that time, Torpig bots stole more than 8,300 credentials used to login to 410 different financial institutions, according to the research team from the University of California at Santa Barbara. **More than 21 percent of the accounts belonged to PayPal users.** Overall, a total of almost 298,000 unique credentials were intercepted from more than 52,000 infected machines.

One of the secrets behind the unusually large haul is Torpig's ability to siphon credentials from a large number of computer programs. After wrapping its tentacles around Mozilla Thunderbird, Microsoft Outlook, Skype, ICQ, and 26 other applications, Torpig constantly monitors every keystroke entered into them. Every 20 minutes, the malware automatically uploads new data to servers controlled by the authors. Because the software runs at such a low level, it is able to intercept passwords before they may be encrypted by secure sockets layer or other programs.

The researchers were able to hijack the botnet by exploiting weaknesses in the way it updates the master control channels used to send individual machines new instructions. So-called domain flux techniques periodically generate a large list of domain names infected machines are to report to. Typically, the botnet operators use only one address, and all the others are ignored.

The researchers infiltrated the network by registering one of the domains on the list and using it to seize control of the infected machines that reported to it. They were then able to monitor the botnet's behaviour over the next 10 days, until the operators were able to regain control using a backdoor that was built in to each infected machine.

In all, the researchers counted more than 180,000 infected PCs that connected from 1.2 million IP addresses. The data underscores the importance of choosing the right methodology for determining the actual size of a botnet and, specifically, not equating the number of unique IP addresses with the number of zombies. "Taking this value as the botnet size would overestimate the actual size by an order of magnitude," they caution.

Torpig, which also goes by the names Sinowal and Anserin, is distributed through Mebroot, a rootkit that takes hold of a computer by rewriting the hard drive's master boot record. As a result, Mebroot is executed during the early stages of a PC's boot process, allowing it to bypass anti-virus and other security software.

By infiltrating Torpig, the researchers were able to become flies on the wall that could watch infected users as they unwittingly handed over sensitive login credentials. One victim, an agent for an at-home, distributed call centre, transmitted no fewer than 30 credit card numbers, presumably belonging to customers, the researchers guessed.

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Editor's Comments

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The report (PDF) also documented an epidemic of lax password policy. Almost 28 percent of victims reused their passwords, it found. More than 40 percent of passwords could be guessed in 75 minutes or less using the popular John the Ripper password cracking program.

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VDU's ???

Mitnick testified that he could connect to the control consoles -- quaintly called **"visual display units"** -- on each of Vegas' DMS-100 switching systems through dial-up modems intended to allow the switches to be serviced remotely by the company that makes them, Ontario-based Northern Telecom, renamed in 1999 to Nortel Networks.

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Black Eagles Web Cam

The web cam components were stolen and repairs are under way - leave your email address in the newsletter section and we will send you a message when it is back up.
http://www.blackeagles.co.za/webcam.htm

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Whilst searching for Amateur Radio articles on the Register...

Bluetooth SIG backs Wi-Fi as fast WPAN choices proliferate
Comment Turns to 802.11n
By Wireless Watch Thursday 8 Nov 2007 14:44

Controlling the technology that will underpin the next generation of fast wireless networks, especially for the multimedia home and HDTV, will be a critical competitive advantage, and the jostling for position is already starting. IBM and others are putting their weight behind 60GHz options, and the Wi-Fi community is examining ...

Hams drafted into US emergency comms network
Scraping the pork barrel?
By John Leyden Friday 6 Oct 2006 11:14

President Bush has approved legislation that will make amateur radio hams part of the emergency communications network in the US. The provision was tucked away in a section of the Department of Homeland Security (DHS) 2007 Appropriations Act (HR 5441), which was signed into law on Wednesday following earlier Congressional ...

Ofcom fine tunes high tech ham licence
Porcine radio fans, rejoice
By Lucy Sherriff Thursday 26 May 2005 13:16

Good news for radio hams: communications regulator Ofcom plans to replace annual amateur radio licences with a new electronic licence that lasts for life. The regulator says it is seeking a balance between maintaining regulatory control and reducing expensive and unnecessary bureaucracy. The proposed new system would mean ...

Student-designed satellite set for space
Internet collaboration thumbs lift on commercial launch
By Lucy Sherriff Thursday 21 Oct 2004 09:59

The ESA (European Space Agency) is currently assembling pieces of a satellite that was designed and built by more than 250 students collaborating over the internet. The SSETI (Student Space Education and Technology Initiative) Express, as it is known, is slated for launch in May next year and is a technology tester for a larger ...

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Mast Head
By John Leyden Tuesday 7 Jan 2003 17:19

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Editor's Comments

(Continued from page 3)

Former computer hacker Kevin Mitnick has won his right to renew his ham radio license. Mitnick, 39, and a ham radio enthusiast for 25 years, spent more than $16,000 in legal costs in a three year fight to persuade the Federal Communications Commission to renew his license. Normally such renewals are free. "It's the most …

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A Stuckist Net – you want in
Letters Somehow
By Andrew Orlowski Thursday 22 Aug 2002 18:24

Register readers are dreamers - but not schemers. That's the conclusion from your response to our story, The Stuckist Net - what is your post-Palladium future? - asking how a non-Palladium world might be sustained if the biggest names in the computer industry continue to capitulate to . We suggested that in India and China are …

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US to yank Kevin Mitnick's radio license

Legendary phreaker harassed by Feds
By Our investigative reporter Thursday 3 Jan 2002 00:13

In a five-page order released Friday, the US Federal Communications Commission (FCC) claims that 38-year old convicted hacker Kevin Mitnick is not morally fit to be a ham radio operator. "Mr. Mitnick's criminal background raises a substantial and material question of fact as to whether he possesses the requisite character …

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This time it's American shopping network QVC
By Kieren McCarthy Wednesday 17 Jan 2001 16:31

The clean sweep of fat, rich companies in domain name ownership (thanks mostly to WIPO) has given them unjustifiable confidence in their own omnipotence. How else could you explain the fact that American cable company QVC believes it has the right to the URL www.n7qvc.com. Well of course it does! After all, the letters Q, V and …

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Remembering the true*
first portable computer
*The one that melts your face off
By Austin Modine

Posted in Odds and Sods, 5th June 2009 18:42 GMT

A lot of folks tend to honour the Osborne 1 as the world's first mass-produced portable computer. The machine was admittedly an early pioneer in totable systems in 1981, but another, much-earlier computer perhaps really deserves the credit.

Some 20 years before the Osborne's release, the American government was already rocking a line of cutting-edge portable computers that — had they only been more widely released — would have melted any tech lover's heart. And their face. And probably most everything within a mile radius.

We're speaking, of course, of the first-ever guidance system baked into the US Minuteman 1 nuclear missile. Maximum portability: about 9,700 km (6,000 mi). Target demographic: Commies.

On October 4, 1957, the Soviet Union successfully launched the world's first artificial satellite into orbit. Sputnik's celestial beeps gave voice to America's worst Cold War fears, but the true

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Editor's Comments

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cause for concern was the rocket the machine rode in on. Sputnik's SS-6 rocket demonstrated that the Soviets had a launcher capable of hitting a target from thousands of miles away. A few years earlier, the government had detonated its first H-bomb. Add two and two together, and you get four horsemen of the apocalypse taking an American vacation.

Arise the threat of a US "missile gap." America promptly decided to dial its languishing ballistic missile program to eleven. They had called first dibs on the annihilation of humanity, after all.

You see, during this leg of the Cold War, the US was running under a doctrine of "massive retaliation" against a potential Soviet strike. Any attack on US soil meant all the chips were on the table.

But all-out nuclear war, as it happens, has a few major drawbacks (the aforementioned face melting for example, but that's only a concern for sissies. The real issue at hand was engineering).

Atomic explosions in the atmosphere can disrupt radio communications. Missiles at the time were controlled by ground-based computers, so huge amounts of radio interference made America's ability to direct a second volley of fission sandwiches unreasonably hard. And on the other side of such an exchange, not being able to control your rockets can make mutual assured destruction up to 50 per cent less mutual. What's the fun in that?

The solution developed was to put a digital guidance computer right dab on the missile. (Somewhere in the multiverse, Skynet cackles maliciously in anticipation). Easier said than done at the time, as a computer with dimensions less than that of a family sedan was considered slim and chic.

Next page: Just a Minuteman

To read the next page, goto:-
http://www.theregister.co.uk/2009/06/05/tob_minuteman_1/page2.html

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JB 2009

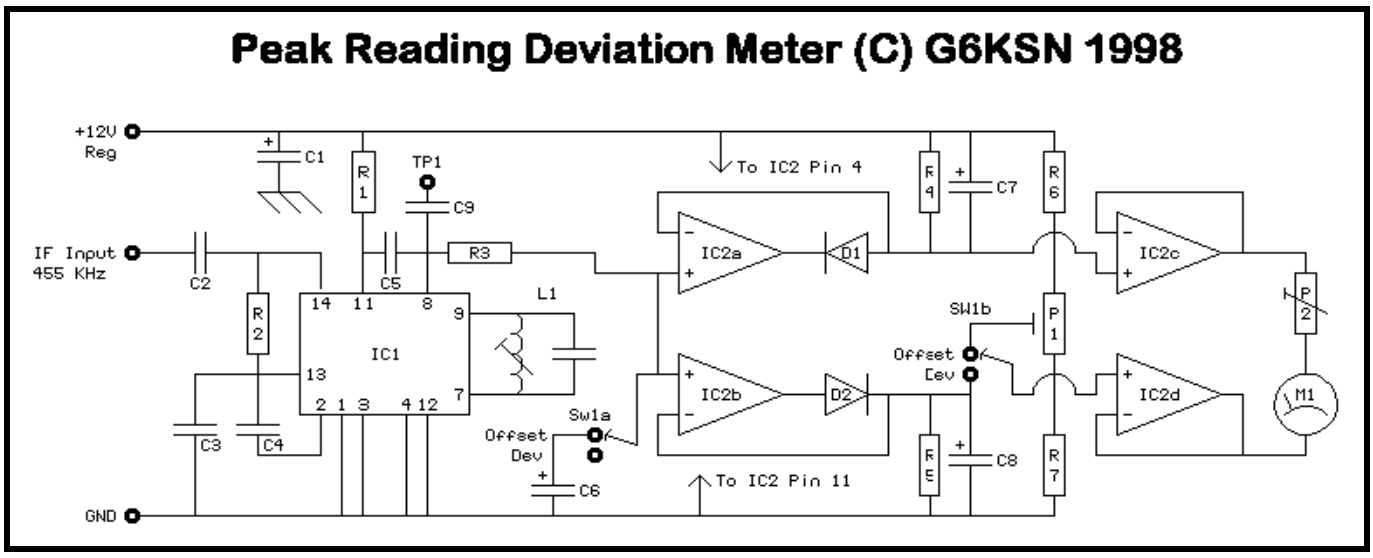
A Peak Reading Deviation Meter

(C) G6KSN 1998

This device will allow measurement of peak deviation up to 5 Khz and is sufficiently accurate for amateur purposes. The unit will also allow measurement of frequency offset although the accuracy will only be as good as that of the receiver it is connected to.

of this receiver must be 455 KHz.

A synthesized PMR set such as a Tait 500 would be ideal. If the transmitters to be tested are synthesized then a Westminster or similar could be used on one spot frequency. The receiver does not need to be FM, it just needs to have a final IF of 455 KHz (as most sets do).



The circuit consists of a frequency discriminator running at 455 KHz which feeds a full wave precision rectifier. This produces a dc output voltage which is directly proportional to the deviation of the incoming signal. By filtering out the audio content of the signal and replacing one arm of the rectifier with a voltage reference. Frequency offset from 455 KHz may be measured. It is by virtue of this facility that calibration can take place without having to worry about Bessel functions or have another Deviation meter to calibrate it against. All that is required for calibration is a signal source that can be tuned fairly accurately to give two (or preferably three) spot frequencies 5 KHz apart. A 2 Metre or 70 Centimetre transmitter would be ideal for this purpose.

In order to be able to make useful measurements, the FM discriminator needs to be able to sniff the IF output of a receiver for the band that measurements are to be taken. The final IF

Alignment Step 1

Connect the circuit up to the IF of a suitable receiver and connect pin TP1 to an audio amplifier or oscilloscope. Set SW1 to OFFSET, P2 to maximum resistance and adjust L1 for maximum noise.

Alignment Step 2

Radiate an unmodulated carrier on the same frequency as the receiver is set to and adjust P1 for a mid scale reading on M1. Now move the transmitters frequency by 5 KHz either way and note the meter readings. If the meter reads past FSD or less than zero then the meter movement is too sensitive and either P2 needs to be increased or a shunt resistor can be connected across M1.

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A Peak Reading Deviation Meter

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Step 3

What we are trying to achieve is a zero reading at -5 KHz and a full scale reading at +5 KHz of nominal frequency. Assuming the meter readings are not as far apart as this then decrease P2 slightly, radiate a carrier on the nominal frequency and adjust P1 for a mid scale reading. Now move the transmitters frequency by 5 KHz either way and note the meter readings.

If the readings are less than we require then go back to step 3.

The meter is now calibrated and when set to the DEV position, will read 5 KHz peak modulation FSD (10 KHz peak to peak).

Components

Semiconductors
IC1.....TBA120S.
IC2.....TL074, TL084 etc.
D1.....1N4148.
D2.....1N4148.

Resistors
R1.....120 ohm.
R2.....2.2K.
R3.....47K.
R4.....100K.
R5.....100K.
R6.....10K.
R7.....10K.
P1.....22K.
P2.....2.2K.

Inductor
L1.....Any 455 KHz IFT with internal capacitor e.g. RMC41997.

Capacitors
C1.....10mF 16 Volt electrolytic.
C2.....22nF. Disk Ceramic.
C3.....220nF polyester.
C4.....220nF polyester.
C5.....10nF Disk Ceramic.
C6.....1mF 16 Volt electrolytic.
C7.....10mF 16 Volt electrolytic.
C8.....10mF 16 Volt electrolytic.
C9.....100nF polyester.

Miscellaneous
M1.....Moving Coil to suit, the one used in the prototype had a coil resistance of 390 ohms and an FSD of 300 micro Amps.
SW1.....DPCO toggle switch.

Other Uses For This Circuit

In addition to the circuits primary function, it can also be used to convert AM equipment to NBFM on receive. This would allow AM PMR equipment to be used for 1200 baud and 9K6 packet radio! The output at pin 8 of IC1 is good right the way down to DC and so makes an ideal discriminator to use for FSK whether scrambling (a la G3RUH) is used or not.

If output down to DC is required then try replacing C9 with a 4.7K resistor. This output will be fairly high impedance and should ideally be buffered.

The resting DC voltage at pin 8 of IC1 will typically be 6.5 volts for a 455 KHz input with a slope of -60 mV per KHz (this depends a lot on the Q of L1). If the output is found to be insufficiently linear then resistance can be added in parallel with L1 to lower the Q (at the expense of lower recovered audio).

In order to frequency modulate the transmitter it will be necessary to add a varicap diode and a couple of other components to the transmit crystal oscillator circuit (or VCO if the set is synthesised).

Please DO NOT ask me for conversion details for specific radios because I don't know. All I can say is that crystal controlled equipment with wide filtering is going to be most suitable for 9K6 operation. Much of the early Pye

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A Peak Reading Deviation Meter

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equipment falls into this category ie the Westminster etc. These sets are easy to work with and have plenty of space for mods and additions. Sets of this type are also VERY reliable.

The only slight problem with these sets is the relay switching which although a little slow will not be of much consequence at 9K6 with paclen set high and maxframe set to 7.

A discriminator only version is also given for those wishing to convert AM equipment to FM but where space is limited. The component values follow those of the main board.

Note

Please note that the p.c.b layout is shown as viewed from the component side and needs to be flipped over before transferring to PCB. This is not a problem since when the layout is printed on acetate it can simply be turned over.

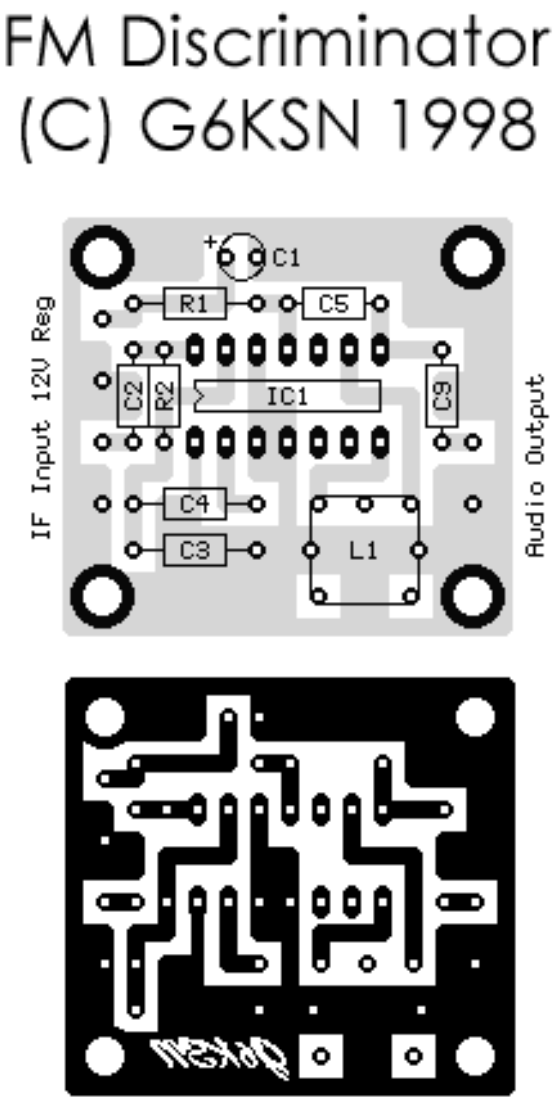
The PCB images are 120 pixels per inch.

Disclaimer

The above information is supplied 'as is' in good faith and may not be used for financial gain. I will not be held responsible for any loss or injury whatsoever that may arise as a result of the use of this information.

73's Have fun..

De Adrian, G6KSN @ GB7COV.



The West Rand Amateur Radio Club
Established in 1948
KG33XU 26.14122 South - 27.91870 East

P.O. Box 562
Roodepoort
1725

Phone: 082 342 3280 (Chairman)
Email: zs6wr.club@gmail.com
Web page: www.jbcs.co.za/ham_radio

Bulletins (Sundays at …)
11h15 Start of call in of stations
11h30 Main bulletin start

Frequencies
439.000MHz 7.6MHz split
Input: 431.4MHz (West Rand Repeater)
145,625 MHz (West Rand Repeater)
10,135 MHz (HF Relay)

Radio Amateurs do it with more frequency!

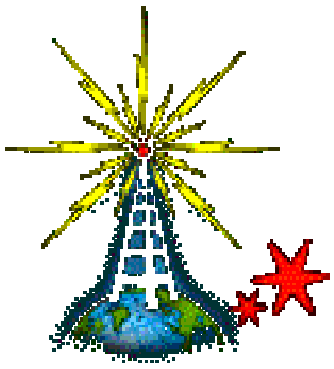
Chairman	Joop Hesp	ZS6C	082 342 3280	**zs6wr.club@gmail.com OR joophesp@telkomsa.net**
Vice Chairman	Geoff	ZS6GRL	082 546 5546	glevey@gmail.com
Secretary (Anode)	John Brock	'PieRat'	011 768 1626	brockjk@gmail.com
Treasurer	Craig Woods	ZS6CRW	082 700 0163	craig.woods@absamail.co.za
Member	Romeo Nardini	ZS6ARQ	082 552 4440	roshelec@global.co.za
Member (Repeater)	Phillip	ZS6PVT	083 267 3835	phillipvt@sse.co.za
Member (Technical)	Ron	ZR6RON	082 902 8343	ronnie@calidus.co.za
SARL Liaison	Willem	ZS6WWJ	082 890 6775	marie.w@absamail.co.za

West Rand members - we need your input!

To make this the best ham radio magazine in South Africa we need your input. Please submit articles, comments, suggestions etc.

Please send plain text with no formatting to the email address below.

In July 2003, we re-published an Anode Compendium on CD. It has the issues from July 2000 until June 2005. This included the new Adobe reader. It has been updated, check with the chairman for details.



We need your input! Email us articles, comments and suggestions please.
zs6wr.club@gmail.com