

ANODE

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Editor's Comments

**Volume 11, Issue 4
October 2010**

The "Lightning Season is upon Us!"

If you want to monitor the droplet formation in the air above you. You will have to subscribe (that is pay money) to SA Weather. No longer will you be able to view the radar images on the SA Weather web site.

This situation has upset the SA weather and disaster information service. [<http://sawweatherobserver.blogspot.com/>] This site has a lot of Radio Amateurs contributing weather information to the service and web site. Take a look at <http://www.zs6rwt.co.za/wx.htm>

I went looking for the reasons why SAWDIS was started and found this:-

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Local Man Creates Web-based Weather & Disaster Information Service Sunday, December 21st, 2008

An amateur weather observer and radio ham from Mossel Bay has launched a community-based weather and disaster information service which he hopes will help authorities and the general public to be better prepared when storms hit the area.

"Sudden storms – like those in August
(continued on page 2)

Weak Signal Communication Software

[From his home page; WSJT Home Page by K1JT
<http://www.physics.princeton.edu/pulsar/K1JT/index.html>]

WSJT, MAP65, and WSPR are open-source programs designed for weak-signal digital communication by amateur radio. Normal usage requires a standard SSB transceiver and a personal computer with soundcard. SimJT is a utility that generates simulated signals for test purposes. Ready-to-run Windows versions of all four programs are available for free download. Installation files for Linux are available for WSJT and WSPR. For other operating systems, see the Program Development

page.

WSJT ("Weak Signal Communication, by K1JT") offers specific digital protocols optimized for meteor scatter, ionospheric scatter, and EME (moonbounce) at VHF/UHF, as well as HF skywave propagation. The program can decode fraction-of-a-second signals reflected from ionized meteor trails and steady signals 10 dB below the audible threshold. A beta release of WSJT 9.0 is now available.

MAP65 implements a wideband, polarization-matching receiver for JT65 signals. It works together with Linrad (by SM5BSZ) and dual-polarization RF hard-
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Special points of interest:

- Contact details on back page (corrected & updated July 2010)
- Ham-Comp Latest on web site.

Editor's Comments

(continued from page 1)

2007 and early September 2008 from which we're still struggling to recover – are no longer a rare occurrence," said Johan Terblanche of SAWDIS (the South African Weather and Disaster Information Service).

"These storms are not limited to the Southern Cape Area, either – they affect various parts of South Africa and the gathering of real time weather and disaster data, photos and information is essential for monitoring climate change.

"Weather and disaster observers decided to establish SAWDIS on a voluntary and non-profit basis as a service to the country and our local communities, because we saw a need to improve the quality and quantity of surface weather observations in South Africa," he said.

"The pilot project launched in October 2008 seeks to utilise the existing network of amateur radio operators (HAMS) and private weather station operators to improve the reporting of meteorological observations."

Although SAWDIS currently receives no funding or sponsorship, one of its objectives is to create a cooperative observer network that will erect automatic weather stations throughout the country.

"Information can be exchanged effectively by using the Internet and commercial and amateur radio," said Mr Terblanche.

"Not only do roll players help bridge the knowledge gap between less developed regions and their more affluent counterparts – they're also an important source for promoting and improving scientific methodologies and for interpreting weather and disaster observations at grassroots level."

SAWDIS relies on the APRS RF global system which consists of a combination of networks and terrestrial and satellite links that transfer weather-related information around the world –

while at the local level, SAWDIS relies on amateur radio operators (HAMS) and their aperture terminal connections to receive and share information.

"APRS helps to ensure real-time information sharing by connecting Weather Services throughout the world – but in South Africa, many areas lack the necessary infrastructure and knowledge to benefit from this information. So, using existing amateur radio networks, the internet and the media, SAWDIS hopes to keep marginalised communities better informed," said Mr Terblanche.

The project is designed to significantly improve long-range and real time observations to enhance the capabilities of organisations like the SA Weather Services, Global Weather Services, HAMNET, Search and Rescue, Working on Fire, Aeronautical Search and Rescue, The NSRI, S.A. Maritime Net and disaster management as well as any other organisation that can use the data.

"There is an urgent need for members of the public to become weather and disaster observers and SAWDIS is looking for observers in any area of the country," said Mr Terblanche.

"Now is the time to render a service to your community and this beautiful country – as Margaret Mead once said – 'Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed. It's the only thing that ever has.'"

"Here's another example of how a Mossel Bay resident is leading the way," said Mossel Bay Tourism's chairman, Neels Zietsman.

"Our weather is an important asset for the town – indeed, the fact that our wintertime weather is stable and warm (and that outdoor practice can take place on almost every day in the months leading up to the tournament)

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Editor's Comments

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is one of the most important reasons why we believe that Mossel Bay is the perfect Base Camp destination for the FIFA World Cup in 2010.

“Mossel Bay Tourism’s Proud Mossel Bay Campaign congratulates Mr Terblanche and welcomes his contribution to improving the lives of others.

“We’ll definitely be using his services and our web site – www.visitmosselbay.co.za – has already been linked to his blog – <http://saweatherobserver.blogspot.com>.

“I hope everybody else who relies on the weather will do the same,” he said.

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Ham radio co-ordinates Arizona scout rescue

Authorities say a Phoenix Arizona Boy Scout troop had been rescued near the city of Prescott. This after radioing for help via amateur radio.

The Yavapai County Sheriff's Office says one troop became stranded in the Pine Mountain Wilderness. The scouts were reportedly close to running out of drinking water and one scout had fallen ill when they radioed for help.

According to a newspaper account, one troop leader was able to relay G-P-S coordinates to a Prescott resident who received the troop's call for assistance on his ham radio station. He in turn notified county authorities.

The scouts were rescued by a state Department of Public Safety helicopter on Saturday night, September 25th. Authorities say the scouts and the their leaders were all in good condition and did not require medical attention.

The scouting troop included two adults and six children under the age of 15. They were in the mountains with other scout teams, learning to use signal mirrors in case of an emergency and climb different peaks to signal one another. But in the end it was ham radio rather than mirrors that lead to their rescue.

Due to the ages of those involved, no names or call signs were included in news stories on this Arizona mountain rescue.

Amateur Radio Newsline

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SARL construction kits available soon

Shortage of supply of some critical components is one of the main reasons for the delay in the supply of the South African Radio League's construction kits.

These problems have now been overcome and packaging of the kits has been started. As some of the components have to be individually packaged for easy identification by the constructor, this process will take considerable time.

It is now expected that the first kits will be available for shipping in early December.

As soon as supplies arrive, the pre-paid orders on hand will be shipped first. Once this has been completed, an announcement will be made and new orders will then be accepted. SARL NEWS will keep listeners informed.

The SARL apologizes for the delays.

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C91MS Mozambique on the air for JOTA

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Weak Signal Communication Software

(Continued from page 1)

ware to receive and decode all detectable JT65 signals in a 90 kHz passband, matching the linear polarization angle of each one and producing a band map of decoded callsigns sorted by frequency. Its principal application is EME on the VHF and UHF bands. MAP65-IQ is a single-polarization version designed to work with the SDR-14, SDR-IQ, and Perseus receivers. It has all features of MAP65 except the polarization matching capability, and it supports the JT65A, B, and C submodes.

WSPR (pronounced "whisper") stands for "Weak Signal Propagation Reporter." This program is designed for sending and receiving low-power transmissions to test propagation paths on the MF and HF bands. Users with internet access can watch results in real time at WSPRnet.

SimJT generates JT65 and CW test signals with a user-specified signal-to-noise ratio. It is useful for testing the JT65 decoder and the relative capabilities of these two modes.

Additional Reading

1. "WSJT: New Software for VHF Meteor-Scatter Communication." (QST, December 2001)
2. "JT44: New Digital Mode for Weak Signals." (QST, June 2002)
3. "EME with JT65" (QST, June 2005)
4. "The JT65 Communications Protocol" (QEX, September-October 2005).
5. "WSJT: Meteors, Moonbounce, and More." (Mid-Atlantic States VHF Conference, September 2005)
6. "Open Source WSJT: Status, Capabilities, and Future Evolution." (12th International EME Conference, Wurzburg, August 2006)
7. "Open Source WSJT." (PowerPoint presentation)
8. "How Many Bits are Copied in a JT65 Transmission?" (DUBUS, 3/2006)
9. "Recommended Procedures for Random

Digital EME." (DUBUS, 3/2006)

10. "MAP65: A Panoramic, Polarization-Matching Receiver for JT65." (Microwave Update, October 2007)

11. "Quest for Optimum Coding and Modulation Schemes for EME." (13th International EME Conference, Florence, August 2008)

12. Earth-Moon-Earth (EME) Communication (from ARRL Handbook, 2010)

Other Resources

1. Recently updated CALL3.TXT and other VHF databases.

RF Inductance Meter

[To measure RF chokes in the 500 nH to 50 uH range.]

Check the HOME page for other projects including other inductance and LC meters.

Taken from: Dick Cappels' project pages <http://www.projects.cappels.org>

I needed a way to measure hand-wound RF inductors in my second lab, and since I would only be doing this occasionally, I didn't need anything fancy, and since once a friend finishes his AT90S1200-based design, I plan to make one myself, I figured I'd use this for less than a year, so I didn't want to invest a lot of time in making it. I had run across the forerunner of this circuit, one that is more sophisticated in that it has a zero adjustment and range switch, but it was limited to higher inductances. I adapted it to the components I had on hand and changed it so that it would work in the 500 nano Henry to 50 micro Henry range. The original circuit was reportedly published a few years ago by the American Radio Relay League, so it is with appreciation of the ARRL that I make this circuit available (Wouff Hong members: dit dit dit dit....dit dit).

The Circuit

The circuit's operating principle is that if you make a pulse width proportional to inductance, and keep the pulse frequency and amplitude constant, and then pass the pulse through a low pass filter so that only the average voltage comes out, the resulting DC voltage is proportional to the inductance.

Stated another way:

Pulse width = Inductance X some constant

DC out = Pulse width X Pulse Amplitude X Frequency

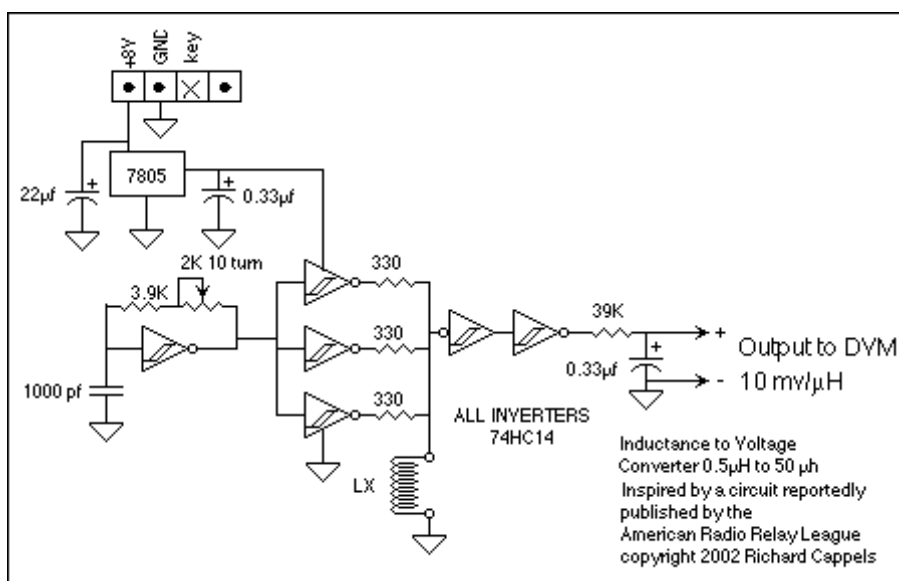
Where DC out and Pulse Amplitude is in volts, and Pulse width is in seconds and pulse frequency is in Hz (1/seconds).

The pulse frequency is set by a schmitt trigger oscillator composed of a feedback resistance (2k pot and 3.9k fixed resistor), a 1000 pf capacitor to ground, and a schmitt trigger. The hysteresis in the schmitt trigger allows it to oscillate with the simple feedback circuit. The pulse width that is proportional to the inductance is made by driving the unknown inductance through a resistor and connecting the resultant saw tooth waveform to the input of another schmitt trigger which, because of the sharp switching action on its output that results from its hysteresis, provides a nice rectangular pulse. The pulse width is proportional to the inductance and inversely proportional to the resistance. In order to get a pulse with a width that is substantial longer than the rise and fall time of the Schmitt trigger, which is a requirement for good linearity, while the inductance was in the 500 nH range, I had to use a very low resistance, hence the three 330 ohm resistors and their drivers in parallel. The last inverter in merely to make the pulse positive in po-

Output to DVM
+
- 10 mV/ μ H

Inductance to Voltage Converter 0.5 μ H to 50 μ H
Inspired by a circuit reportedly published by the American Radio Relay League
copyright 2002 Richard Cappels

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RF Inductance Meter

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larity so that the voltage increases as the inductance increases.

This circuit is only accurate for broadband inductors. Inductors with iron cores, high permeability ferrites, or with large amounts of shunt capacitance cannot be measured accurately.

The circuit relies on a voltmeter with a millivolts range and a high input impedance as a readout device, so it doesn't have a buffer on the output.

I happened to have the 74HC14 in an SO package so I soldered it onto the metalized side of a prototyping board. If you use a DIP, your life will be much easier. When you built this, keep the connections, including ground connections, short because tens of nanoseconds count. Pay particular attention to the leads and contacts for LX. Any inductance in that path will add to the measured inductance, so keep it short and small. In the one I built I used a pair of alligator clips soldered to stout wires a couple of cm long.

Calibration:

The procedure is straightforward: Connect a battery and a DVM (digital volt meter), put a known inductor in the LX position then adjust the potentiometer until you get the anticipated reading on the DVM. For example, use a 1 microHenries inductor and adjust the potentiometer to get 100 mV on the DVM.

You might have some trouble getting the thing to calibrate if the switching thresholds on your 74HC14 are very different from the one I used, so you might have to change the resistance in the oscillator or the capacitor in order to calibrate the circuit.

Here are some things to check when calibrating:

When LX is shorted, the output should be very

close to zero volts. If not, you may have too much inductance in the leads to LX or have connected LX to a noisy ground point. There is a remote possibility that you are using a damaged 74HC14, but check this last since it isn't very likely.

When LX is open, the output should be around 2.5 volts (50% of the power supply). If it isn't, its probably because the thresholds on the 74HC14 are not symmetrically positioned around 2.5 volts. Never mind, just adjust the oscillator frequency until you get it to calibrate. If you find the voltage to be very low, say under a volt, then this points to a wiring error, a problem with the 5V regulator or the battery, a damaged 74HC14, or you are using a very low resistance voltmeter. DVMs tend to be 10 Meg Ohms but VOMs (Volt-Ohm-Meters) can be down in the 10K to 20K range and are not suitable for this use.

The oscillator in the one I made runs at 173 KHz. If yours runs at a greatly different frequency, try changing the oscillator components or try using a 74HC14 made by a different manufacturer.

The circuit gives a pretty constant 10 mV/uH through 50 uH.

Check the HOME page for other projects including other inductance and LC meters.

Editor's Comments

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A team of amateur radio operators will be QRV from Bilene in Mozambique (locator KG64or) for Jamboree on the Air (JOTA), October 16-17, with the call sign C91MS (Mozambique Scouts).

Operators are Tony G4LDL/C91DL, David GI4FUM/C91DJ, Daniel ZS6JR/C91JR, Gillian GI8MIV/C91MV and Glenys G8KWD/C91KW.

The team will also operate on HF (160m - 10m) under their own C91 call signs from Friday, October 22 to Friday, October 29 and as C91WW in the CQWW SSB contest.

David GI4FUM/3DA0DJ/C91DJ
<http://www.3da0ss.net/>

GI4FUM
<http://www.qsl.net/gi4fum/>

CQ - DX African Safaris
<http://www.3da0ss.net/news.htm>

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Power Line Adaptors collapse in the presence of RF

John Petters G3YPZ has produced a video showing how Power Line Adaptors (PLA) fail in the presence of low power RF signals.

In this video John tries low power (10 watts) RF on the 18.MHz Amateur Radio band.

Watch - Belkin Gigabit Power line Adaptors Being Shut Down By Local Radio Signal

UKQRM is a group fighting the radio interference caused by PLA and PLT technology
<http://www.ukqrm.org/>

UKQRM Yahoo Group
<http://tech.groups.yahoo.com/group/UKQRM/>

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Here is a little something someone sent me that is indisputable mathematical logic. It is a strictly mathematical viewpoint...it goes like this:

What Makes 100%? What does it mean to give MORE than 100%? Ever wonder about those people who say they are giving more than 100%? We have all been to those meetings where someone wants you to give over 100%. How about achieving 103%? What makes up 100% in life?

Here's a little mathematical formula that might help you answer these questions:

If:

*A B C D E F G H I J K L M N O P Q R S T
 U V W X Y Z*

Is represented as:

*1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
 18 19 20 21 22 23 24 25 26.*

Then:

H-A-R-D-W-O-R-K

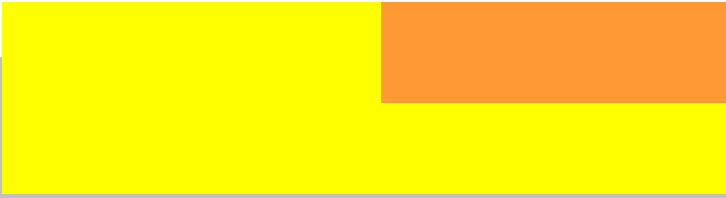
8+1+18+4+23+15+18+11 = 98%

And

K-N-O-W-L-E-D-G-E

11+14+15+23+12+5+4+7+5 = 96%

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Clip-on RF Current Meter

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But ,

A-T-T-I-T-U-D-E

$$1+20+20+9+20+21+4+5 = 100\%$$

And,

B-U-L-L-S-H-I-T

$$2+21+12+12+19+8+9+20 = 103\%$$

AND, look how far ass kissing will take you.

A-S-S-K-I-S-S-I-N-G

$$1+19+19+11+9+19+19+9+14+7 = 118\%$$

So, one can conclude with mathematical certainty, that while Hardwork and Knowledge will get you close, and Attitude will get you there, its the **Bullshit** and **Ass kissing** that will put you over the top.

'REMEMBER SOME PEOPLE ARE ALIVE SIMPLY BECAUSE IT IS ILLEGAL TO SHOOT THEM!'

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Just a little bit 'out there'

<http://home.datacomm.ch/th.frey/ham2/wish.html>

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So you wanted to learn PIC programming but don't have the time...No electronic construction needed

See the 'screen shot' below? It shows GPSIM running a simple program for a PIC. It not only 'traces' the program, it even 'toggles' the pins. If you want to emulate an LCD, you can add a window with an 'attached' LCD which is 'driven' by your software. Various other 'attachments' are available. All software (GPSIM, GNUutils, GNUPIC and GPASM) are Open Source and available for download.

The screenshot shows the GPSIM 0.25.0 interface. The main window displays a breadboard simulation of a PIC16F627 microcontroller with various pins connected. The 'Program memory' window on the right shows the following assembly code:

address	opcode	instruction
0x00C5	0x00FC	movwf REG07C
0x00C6	0x087D	movf REG07D,w
0x00C7	0x00FF	movwf REG07F
0x00C8	0x087C	movf REG07C,w
0x00C9	0x0008	return
0x00CA	0x30FD	movlw 0xfd
0x00CB	0x1683	bsf status,5
0x00CC	0x1303	bcf status,6
0x00CD	0x0086	movwf portb
0x00CE	0x3002	movlw 0x02
0x00CF	0x1283	bcf status,5
0x00D0	0x1303	bcf status,6
0x00D1	0x0686	xorwf portb,f
0x00D2	0x28CE	goto 0x00ce
0x00D3	0x0008	return
0x00D4	0x3401	retlw 0x01
0x00D5	0x3400	retlw 0x00
0x00D6	0x34DC	retlw 0xdc
0x00D7	0x3400	retlw 0x00
0x00D8	0x342C	retlw 0x2c
0x00D9	0x3401	retlw 0x01
0x00DA	0x3401	retlw 0x01
0x00DB	0x3400	retlw 0x00
0x00DC	0x3400	retlw 0x00
0x00DD	0x0000	INVALID
0x00DE	0x0000	INVALID
0x00DF	0x0000	INVALID

The West Rand Amateur Radio Club

Established in 1938

KG33XU 26.14122 South - 27.91870 East

P.O. Box 5344
Weltevreden Park
1715

Phone: 083 267 3835 (Chairman)**Email:** zs6wr.club@gmail.com**Web page:** www.zs6wr.co.za**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!

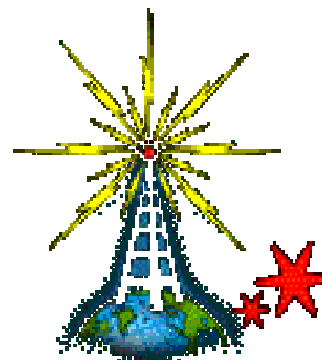
Chairman (technical)	Phillip van Tonder	ZS6PVT	083 267 3835	zs6wr.club@gmail.com OR zs6pvt@gmail.com
Vice Chairman	Geoff Levey	ZS6GRL	082 546 5546	gleyey@gmail.com
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West Rand members - we need your input!

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.

See Club website at www.zs6wr.co.za for all ANODE back issues.



We need your input! Email us articles, comments and suggestions please.
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