SHACKNEWS

HIGHVELD AMATEUR RADIO CLUB

PO Box 1111, Bedfordview, 2008 **July 2004**
e-mail zs6bfl@telkomsa.net

COMMITTEE

Office		Call sign	Telephone number
Chairman:	Rex Pattison	ZS6REX	011-948-9533
Secretary / Treasurer:	Berridge Emmett	ZS6BFL	011-893-1291
Repeater/Packet Radio/Technical	Ton Van Dijk	ZS6ANA	011-683-2424
Shacknews Editor:	Berridge Emmett	ZS6BFL	011-893-1291
Shacknews-Print & Posting:	Harry Lautenbach	ZS6LT	011-888-5362
Website manager	Yvonne Van Dijk	ZR6TBL	082-623-3704
QSL Manger:	Reg Hartslief	ZS6ALH	011-902-1432

Sunday morning BULLETINS - 145.7875 MHz & 7062 KHz @ ±08h45.

COMMUNICATION IS THE NAME OF THE GAME

Meeting The last meeting saw 16 amateurs present. Nice to see so many faces. There was a discussion on possible future meetings taking place at the Transvaal Aviation Club house together with other clubs from the East Rand. The formation of an East Rand Amateur Radio forum was also discussed. This is one of the ways that we in amateur can take the hobby forward and interest the youngsters of the local communities in amateur radio. There are many high schools and technical colleges in the area. The president of the SARL, Graham Hartlett ZS6GJH, paid us a visit and gave updated information on the happenings within the league. Much of the information given can be found at the leagues website. Pay it a visit. http://www.sarl.org.za/
What Graham told us will fit in very well with the proposal of an "East Rand Amateur Radio Forum".
Welcome to Errol ZS6KED who has joined the HARC.

SSC What a wonderful turnout of amateurs, 22 as per the register. This meeting was held at the TAC (Transvaal Aviation Club) clubhouse, which is situated at the Rand airport. The only accommodation available at the time was the SAA aviation museum. Much of the proceedings were taken up by what had been discussed at the HARC the previous Saturday. It was also decided to form a committee to get the East Rand Forum off the ground. This committee also needs to meet with the management of the TAC regarding possible accommodation at the clubhouse. A few other ideas regarding accommodation has been put forward. I anyone has any suggestions for suitable accommodation, which is safe and secure please let me know. (ed) There was also an information session from Koos, ZS6JPY, about the repeater-working group that had taken place that Saturday morning. More info at the next HARC meeting.

Venus transiting the Sun – near the right-hand edge of the sun. Looks better when viewed on a high resolution screen.

Surround Sound

In the early days of filmmaking, movies were made with images only, no sound. In 1927, however, a new era was entered with the movie "Jazz Singer', in which sound was introduced. This was the first step in theatre sound-effects technology, one that has led to major developments in the industry. Movie sound technology began with monaural sound and has evolved to include stereophonic and Surround Sound.

Now, there are a number of advanced technologies that significantly improve audio performance in movie theatres. These advanced technologies include Dolby Digital, DTS, and the THX system. These technologies can also be enjoyed at home. Let's take a look at these technologies.

In a movie theatre viewed from above, you would find the speakers are arranged so as to surround the audience. Speakers are placed In front of the screen along the walls to the left and right oft the audience and to the rear.

By contrast, at home it is not easy to arrange the same equipment in the same position as in the theatre because of differences in room size and layout as well as acoustical problems. The layout, therefore, usually consists of left and right front, centre, and 2 surround speakers normally placed at the rear. Depending on the system used you may also have a Low Frequency Effect (LFE) speaker also known as a subwoofer.

Dolby Pro-Logic was the first major step forward in home theatre systems it encodes a centre and rear channel in the existing analogue audio tracks, a good effect could be achieved with a pro-logic amp. Today's Dolby Digital and DTS systems use a totally digital signal to achieve 5.1 channels.

All six speakers are controlled independently in the Dolby Digital and the DTS sound systems. In addition, in the Dolby Pro Logic system, the Left Surround (LS) speaker and the Right Surround (RS) speaker receive the same signals (monaural), and the system does not have Low Frequency Effect (LFE). The LFE is for low sound and counted as 0.1 channel and it is this reason that Dolby Digital and DTS are often called 5.1 systems. Therefore the pro-logic system would be called a 4 system (seeing the rear speakers are mono).

Most amps sold today are backward compatible, therefore if you purchase a DTS amp you will be able to play Dolby digital and Pro-Logic signals as well as the DTS signals.

Technical

S-Meter Info and Table

One S-unit is a change of 6dB in signal strength, which corresponds to double the VOLTAGE or four times the POWER at the receiver input.
A S-METER is calibrated by connecting a signal generator to the antenna terminal and setting the output power to 50uV, or -73dBm and adjusting the S-meter calibration pot for a reading of S-9. Since the S-meter is usually derived from the receiver AGC line, it "is" relatively linear from about S3-S4 and upward (since a good AGC usually "kicks in" around -100 to -105dBm).
This linearity is also due to the diodes used for the AGC detector, once they are conducting in the linear region (again, around S3-S4). Statements that "S-meters are totally worthless" or "a change in 2 S-units means nothing" are thus actually quite incorrect. An S-meter "is" a fairly good RELATIVE power indicator for received signal strengths and noise levels.

So what is a S-meter good for?

The purpose of an S-meter is not to provide any absolute indication of power or voltage, but a RELATIVE indication between received signal strengths ... such as between two different signals, or between a signal and the "noise floor" of the band.

Example: On 40M, typically the "noise" will be S4, or about -103dBm. If your receiver has an MDS (minimum detectable signal) of -133dBm, it means you're loosing 30dB of your dynamic range to the noise! (133-103=30dB). In this case, the S-meter is more-or-less giving you an absolute power DIFFERENCE between its MDS and the noise floor in dB.

Example: A station claims his beam antenna has 12dB gain over his dipole. So he switches between the two and asks you for an "A-B" comparison. His signal goes from S7 to S8 ...a 6dBchange. That is not 12dB! 12dB should have shown 2 S-units of change. (assuming his beam antenna was properly pointed at you).

Likewise, YOU are comparing two antennas at your shack. You are LISTENING to a QSO in progress, switching between the two antennas. One antenna causes the S-meter to rise about 1/2 S unit. Well, that's 3dB, and that's not bad for most wire antennas. Or ... you are switching between two antennas and notice that the noise seems to be much less on one, in fact, the S-meter drops from S4 to S3. You have a problem with the antenna with the higher noise. If the noise drops 2 S-units, you have a BIG problem with that antenna! Obviously, you want to use the antenna with the lowest noise, because an S5 signal will be an S5 signal on
the same receiver. The difference is if one antenna has an S4 to S5 noise, you'll be digging that S5 signal "out of the mud." With an antenna at S3 noise level, that S5 signal now has a 2 S-unit (12dB) improvement in signal-to-noise, and will obviously be much easier to work.
An S-meter also makes it convenient to make internal tuning adjustments to your receiver, such as peaking any IF cans, filters, etc. You can tune to a carrier or QSO in the S8 range, then tune above and below and mark the frequency where the S-meter drops 1 S-unit (6dB), 2 S-units (12dB), etc. to make a rough graph of your overall selectivity/filtering of your receiver. If your receiver claims the RF amplifier, when kicked in, provides 12dB of gain, well, you should clearly see about a 2 S-unit change. Or if the 3dB filter bandwidth is 300Hz, then you should clearly see a 1 S-unit change over about twice that, huh? You can do the same with a DVM on your audio

output, but an S-meter sure makes it more convenient, and quite easy to verify some of the specs and claims the rig/kit vendor is claiming or to check for a change in performance later on for troubleshooting purposes. It is ALWAYS beneficial to do some of these basic measurements when you put a new rig on-line, so you have a baseline to check performance later on if troubles begin. A simple S-meter is all you need to record some of these important specs.

What about this QRO vs. QRP thing?

You have to QUADRUPLE (X4) your signal to DOUBLE your signal strength at the receiver end. Likewise, if you drop your power by one-fourth, your received signal strength will be one-half less, or 1 S-unit. You are working a station running 100W and he is S8. If he drops his power to 1/4th, or 25W, his signal strength should drop about 1 S-unit, or to S7.
If he drops another 1/4th, to about 6W, he should drop another S unit, or to about S6.
Therefore, the difference between 100W and 5W QRP is about 2 S-units. Big deal. Dropping to 1W is about another S-unit, then to 250mW another S-unit, etc. OK, now you're getting down into the S4 noise level on 40M. Now you're hoping the guy on the other end has only a S3 noise level on his end :-)
Hopefully this answers some of the questions raised about S-meters and how to use them.

S-Meter chart

VOLTS	POWER
S9+20dB 500uV	= - 53 dBm
S9+6dB 100uV	= - 67 dBm
S9 50uV	= - 73 dBm
S8 25uV	= - 79 dBm
S7 12.5uV	= - 85 dBm
S6 6.2uV	= - 91 dBm
S5 3.1uV	= - 97 dBm
S4 1.6uV	= -103 dBm
S3 .77uV	= -109 dBm
S2 .39uV	= -115 dBm
S1 .19uV	= -121 dBm

Gene ZS6TA

Shack of OM
Gene ZS6TA

Brainteaser from previous issue's solution held over to next issue.

(That's all folks. 73 ed.)