AWA Newsletter

92

September 2013

Affiliated to the SARL

Antique Wireless Association of Southern Africa

Inside this issue:

AWA Committee:

- President—Richard ZS6TF
- Technical Advisor—Rad ZS6RAD
- Secretary/PRO— Andy ZS6ADY
- Western Cape—John ZS1WJ

Reflections:

How quickly this year seems to have flown by again. It seems like just last week we were talking about projects for the year and what would be easily attainable goals.

I know that I for one spoke about the various little projects I wanted to get going and how I was going to tackle them one by one.

Well, three quarters through the year and I haven't even managed to complete one of them.

I think I will give up trying to set dates to have things finished by and just tackle things one at a time until it is finished, and then go to the next one. Who cares how long it takes.

I realise of course, there are many other things which take preference to my desires to finish some of the projects in my shack.

Soon we will be looking at the end of another year and the exciting beginnings of a new year.

We will make all sorts of New Year resolutions, make a whole lot of promises to ourselves about what we would like to achieve again, and then watch them slowly erode into nothing—again.

Maybe this just happens with me and most others are able to complete all the projects they have started and resolutions that have been put forward. Maybe its just me that cannot get around to even starting to think about completing projects, but I seriously doubt it.

Anyway, it makes life interesting to keep making promises to yourself that you never know you will achieve. It must be part of our self destructive mode that many of us have in built in to our systems. It keeps you thinking about what's going to happen next.

However, we will not allow this to negatively influence our thought patterns and motivation, or lack of, but be sure that it will kept he grey matter under some duress and make sure that it continues to function in the right way. As some would say, that we keep firing on all cylinders.

Definitely not the time to drop down in to the depths of despair and give up on life completely. After all, what is life without something to look forward to ?

Even if it is just to be able to talk with a bunch of like minded radio enthusiasts who take pleasure in watching valves glow in the dark

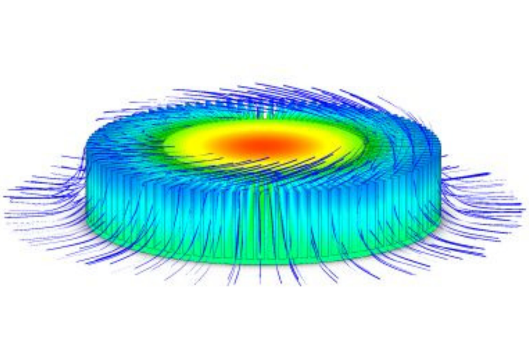
Best 73

DE Andy ZS6ADY

WIKIPEDIA

High Power Triodes:

High power triodes, in contrast to low power triodes, often have a linear construction, with a circular flat cathode, grid, and plate in a line along the axis of the tube, to reduce interelectrode capacitance and allow better heat removal. Tubes with plate power dissipation over about 350 W must be actively cooled. The plate electrode, made of heavy copper, projects through the wall of the tube and is attached to a large external finned metal heat sink which is cooled by forced air or water. The envelope of the tube is often made of more durable ceramic rather than glass, and all the materials have higher melting points to withstand higher heat levels produced.



Radial heat sink with thermal profile and swirling forced convection flow trajectories predicted using a CFD analysis package

CW Net:

One again, it has been a fairly mediocre month of CW on the bands with one or two exceptions.

The majority of times, the AWA CW net provides a lot of activity on the band. There are the regulars who call in on a Saturday afternoon and every now and then there will be a new call sign of someone who was just passing through.

There is always DX to be found on the 20 and 15 meter bands and sometimes even on 40m.

I was surprised the one evening to hear a FH8 station calling on CW and went back to him to get a 599 report. Thereafter I had a few good contacts with some Cape stations who were booming in 589.

This was the exception to me during this time of very low activity on the local bands and what a pleasure it was to be able to work Div 1 under such good conditions.

Unfortunately I have not had the opportunity to get back in to the shack about the same times again, but am certainly looking forward to the opportunity to do so.

As far as I am aware, the QRP group still meet every morning on 80m on 3579 and then there is the Cookie net every afternoon at 14:00 during the week.

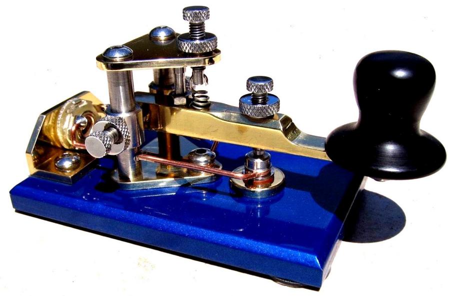
So if you feel like playing some CW at those times, there are people around on the bands to satisfy your needs.

The AWA net was started with the idea of being a slow speed net to encourage others to come along and first timers to get in to some CW, as well as enticing those who had let it slip for a couple of years and felt they could still do a decent bit of pounding the brass.

Unfortunately, the net has not been that successful in its aims, but still has managed to keep going for a number of years, with a band of stalwarts who enjoy using straight keys and generally enjoy CW.

I raise my hat to you guys. Thank you for keeping the interest going and keeping me in tow.

DE ZS0AWA/CW



SSB activity:

There is still a general increase in interest again with the SSB net on Saturday mornings.

Who knows why the trends happen the way they do, but during the winter months there is generally a drop in numbers calling in to the net, but as summer approaches, it tends to pick up again and we are back to around 18 to 20 people calling in again from around 10 to 15 in the winter.

Whatever it is, its always good to hear the old call signs coming back again and the interest in the topics been shown.

There has been such a variation in topics over the last year and most of them have generated a good response with a lot of interesting comments and ideas being thrown out for everyone to discuss or add their own comments.

With our President, Richard ZS6TF, having been away for his winter break, the topic idea has continued and though a bit difficult to think of reasonable topics for discussion, has certainly proved worthwhile.

Band conditions continue to be fairly good, even down to the Western Cape at that time of the day, but start to fade fairly quickly. The rest of the divisions seem to do quite well throughout the duration of the net.

The Western Cape net is run on a Saturday morning before the National net and also has a fairly good attendance from all those interested parties in that part of the world. Look out for them on 3625 or 7070 before the National net at 08:30 on 7140, net controllers normally to look out for are ZS1WJ or ZS1MJJ. Band conditions are usually very favourable for their net.

Yaesu FT200

AM:

The AM net still runs at its usual times on Saturday morning and as the summer conditions start to come in, the band opens a little earlier each Saturday morning.

The net is still well attended by the regular group of AM'ers and the standard of AM transmissions is as good as one could expect it to be. The real old timers and original AM guys would be very pleased with what they hear.

And well they should be because the majority of transmitters used are probably the same as those originally used when only AM was available. Before the days of SSB that is.

The musical transmissions still tend to be a draw card for the AM listener, and of course quite a privilege we have here in SA.

It would be nice to think that the AWA has definitely played a big part in encouraging many people to restore the old valve rigs that are heard on the air today. This of course is the purpose of the AWA.

Often rigs are donated to the AWA which would otherwise have been destined to scrap heaps and junk yards and these have been restored to former glory and are used with great pride by the restorers. As well they should be.

If you have an interest in restoring any old AM transmitters, but don't know where to get hold of one, then contact one of the committee members and they will be able to put you in contact with someone who would probably be able to assist. Many of them are also keen collectors.

Do come along and join us at around 06:00 on 3615 on a Saturday morning and make your self known.

Give us a signal report and let us know how the AM is getting out.

Central Electronics 100V

Microphones

(Continued from Issue 91)

Speakers as microphones

A loudspeaker, a transducer that turns an electrical signal into sound waves, is the functional opposite of a microphone. Since a conventional speaker is constructed much like a dynamic microphone (with a diaphragm, coil and magnet), speakers can actually work "in reverse" as microphones. The result, though, is a microphone with poor quality, limited frequency response (particularly at the high end), and poor sensitivity. In practical use, speakers are sometimes used as microphones in applications where high quality and sensitivity are not needed such as intercoms, walkie-talkies or video game voice chat peripherals, or when conventional microphones are in short supply.

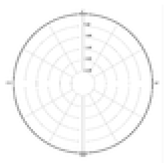
However, there is at least one other practical application of this principle: Using a medium-size woofer placed closely in front of a "kick" (bass drum) in a drum set to act as a microphone. The use of relatively large speakers to transduce low frequency sound sources, especially in music production, is becoming fairly common. A product example of this type of device is the Yamaha Subkick, a 6.5-inch (170 mm) woofer shock-mounted into a 10" drum shell used in front of kick drums. Since a relatively massive membrane is unable to transduce high frequencies, placing a speaker in front of a kick drum is often ideal for reducing cymbal and snare bleed into the kick drum sound. Less commonly, microphones themselves can be used as speakers, almost always as tweeters. Microphones, however, are not designed to handle the power that speaker components are routinely required to cope with. One instance of such an application was the STC microphone-derived 4001 super-tweeter, which was successfully used in a number of high quality loudspeaker systems from the late 1960s to the mid-70s.

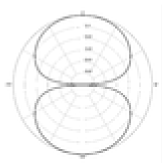
Capsule design and directivity

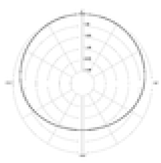
The inner elements of a microphone are the primary source of differences in directivity. A pressure microphone uses a diaphragm between a fixed internal volume of air and the environment, and responds uniformly to pressure from all directions, so it is said to be omnidirectional. A pressure-gradient microphone uses a diaphragm that is at least partially open on both sides. The pressure difference between the two sides produces its directional characteristics. Other elements such as the external shape of the microphone and external devices such as interference tubes can also alter a microphone's directional response. A pure pressure-gradient microphone is equally sensitive to sounds arriving from front or back, but insensitive to sounds arriving from the side because sound arriving at the front and back at the same time creates no gradient between the two. The characteristic directional pattern of a pure pressure-gradient microphone is like a figure-8. Other polar patterns are derived by creating a capsule that combines these two effects in different ways. The cardioid, for instance, features a partially closed backside, so its response is a combination of pressure and pressure-gradient characteristics.

Microphone polar patterns

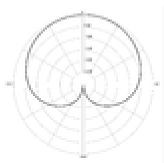
(Microphone facing top of page in diagram, parallel to page):





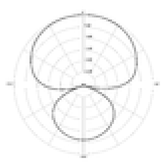


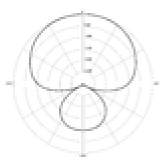
Omnidirectional



Bi-Directional or figure of 8

Sub-cardioid



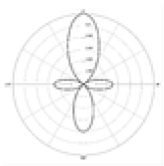


Cardioid

Hyper-cardioid

Super-cardioid

Shotgun



A microphone's directionality or polar pattern indicates how sensitive it is to sounds arriving at different angles about its central axis. The polar patterns illustrated above represent the locus of points that produce the same signal level output in the microphone if a given sound pressure level (SPL) is generated from that point. How the physical body of the microphone is oriented relative to the diagrams depends on the microphone design. For large-membrane microphones such as in the Oktava (pictured above), the upward direction in the polar diagram is usually perpendicular to the microphone body, commonly known as "side fire" or "side address". For small diaphragm microphones such as the Shure (also pictured above), it usually extends from the axis of the microphone commonly known as "end fire" or "top/end address".
Some microphone designs combine several principles in creating the desired polar pattern. This ranges from shielding (meaning diffraction/dissipation/absorption) by the housing itself to electronically combining dual membranes.

Omnidirectional

An omnidirectional (or nondirectional) microphone's response is generally considered to be a perfect sphere in three dimensions. In the real world, this is not the case. As with directional microphones, the polar pattern for an "omnidirectional" microphone is a function of frequency. The body of the microphone is not infinitely small and, as a consequence, it tends to get in its own way with respect to sounds arriving from the rear, causing a slight flattening of the polar response. This flattening increases as the diameter of the microphone (assuming it's cylindrical) reaches the wavelength of the frequency in question. Therefore, the smallest diameter microphone gives the best omnidirectional characteristics at high frequencies.

The wavelength of sound at 10 kHz is little over an inch (3.4 cm). The smallest measuring microphones are often 1/4" (6 mm) in diameter, which practically eliminates directionality even up to the highest frequencies. Omnidirectional microphones, unlike cardioids, do not employ resonant cavities as delays, and so can be considered the "purest" microphones in terms of low coloration; they add very little to the original sound. Being pressure-sensitive they can also have a very flat low-frequency response down to 20 Hz or below. Pressure-sensitive microphones also respond much less to wind noise and plosives than directional (velocity sensitive) microphones.

An example of a nondirectional microphone is the round black *eight ball*.

Unidirectional

A unidirectional microphone is sensitive to sounds from only one direction. The diagram above illustrates a number of these patterns. The microphone faces upwards in each diagram. The sound intensity for a particular frequency is plotted for angles radially from 0 to 360°. (Professional diagrams show these scales and include multiple plots at different frequencies. The diagrams given here provide only an overview of typical pattern shapes, and their names.)

University Sound US664A dynamic super-cardioid

Cardioid

The most common unidirectional microphone is a cardioid microphone, so named because the sensitivity pattern is a cardioid. The cardioid family of microphones are commonly used as vocal or speech microphones, since they are good at rejecting sounds from other directions. In three dimensions, the cardioid is shaped like an apple centred around the microphone which is the "stalk" of the apple. The cardioid response reduces pickup from the side and rear, helping to avoid feedback from the monitors. Since pressure gradient transducer microphones are directional, putting them very close to the sound source (at distances of a few centimeters) results in a bass boost. This is known as the proximity effect.[26] The SM58 has been the most commonly used microphone for live vocals for more than 40 years[27] demonstrating the importance and popularity of cardioid mikes.
A **cardioid microphone** is effectively a superposition of an omnidirectional and a figure-8 microphone; for sound waves coming from the back, the negative signal from the figure-8 cancels the positive signal from the omnidirectional element, whereas for sound waves coming from the front, the two add to each other. A **hyper-cardioid** microphone is similar, but with a slightly larger figure-8 contribution leading to a tighter area of front sensitivity and a smaller lobe of rear sensitivity. A **super-cardioid** microphone is similar to a hyper-cardioid, except there is more front pickup and less rear pickup. While any pattern between omni and figure 8 is possible by adjusting their mix, common definitions state that a hypercardioid is produced by combining them at a 3:1 ratio, while supercardioid is produced with a 5:3 ratio.

Bi-directional

"Figure 8" or bi-directional microphones receive sound equally from both the front and back of the element. Most ribbon microphones are of this pattern. In principle they do not respond to sound pressure at all, only to the *change* in pressure between front and back; since sound arriving from the side reaches front and back equally there is no difference in pressure and therefore no sensitivity to sound from that direction. In more mathematical terms, while omnidirectional microphones are scalar transducers responding to pressure from any direction, bi-directional microphones are vector transducers responding to the gradient along an axis normal to the plane of the diaphragm. This also has the effect of inverting the output polarity for sounds arriving from the back side.


An Audio-Technica shotgun microphone

Shotgun

Shotgun microphones are the most highly directional. They have small lobes of sensitivity to the left, right, and rear but are significantly less sensitive to the side and rear than other directional microphones. This results from placing the element at the back end of a tube with slots cut along the side; wave cancellation eliminates much of the off-axis sound. Due to the narrowness of their sensitivity area, shotgun microphones are commonly used on television and film sets, in stadiums, and for field recording of wildlife.

Boundary or "PZM"

Several approaches have been developed for effectively using a microphone in less-than-ideal acoustic spaces, which often suffer from excessive reflections from one or more of the surfaces (boundaries) that make up the space. If the microphone is placed in, or very close to, one of these boundaries, the reflections from that surface are not sensed by the microphone. Initially this was done by placing an ordinary microphone adjacent to the surface, sometimes in a block of acoustically transparent foam. Sound engineers Ed Long and Ron Wickersham developed the concept of placing the diaphragm parallel to and facing the boundary. While the patent has expired, "Pressure Zone Microphone" and "PZM" are still active trademarks of Crown International, and the generic term "boundary microphone" is preferred. While a boundary microphone was initially implemented using an omnidirectional element, it is also possible to mount a directional microphone close enough to the surface to gain some of the benefits of this technique while retaining the directional properties of the element. Crown's trademark on this approach is "Phase Coherent Cardioid" or "PCC," but there are other makers who employ this technique as well.

Application-specific designs

A lavalier microphone is made for hands-free operation. These small microphones are worn on the body. Originally, they were held in place with a lanyard worn around the neck, but more often they are fastened to clothing with a clip, pin, tape or magnet. The lavalier cord may be hidden by clothes and either run to an RF transmitter in a pocket or clipped to a belt (for mobile use), or run directly to the mixer (for stationary applications).

A wireless microphone transmits the audio as a radio or optical signal rather than via a cable. It usually sends its signal using a small FM radio transmitter to a nearby receiver connected to the sound system, but it can also use infrared waves if the transmitter and receiver are within sight of each other.

A contact microphone picks up vibrations directly from a solid surface or object, as opposed to sound vibrations carried through air. One use for this is to detect sounds of a very low level, such as those from small objects or insects. The microphone commonly consists of a magnetic (moving coil) transducer, contact plate and contact pin. The contact plate is placed directly on the vibrating part of a musical instrument or other surface, and the contact pin transfers vibrations to the coil. Contact microphones have been used to pick up the sound of a snail's heartbeat and the footsteps of ants. A portable version of this microphone has recently been developed. A throat microphone is a variant of the contact microphone that picks up speech directly from a person's throat, which it is strapped to. This lets the device be used in areas with ambient sounds that would otherwise make the speaker inaudible.

A parabolic microphone uses a parabolic reflector to collect and focus sound waves onto a microphone receiver, in much the same way that a parabolic antenna (e.g. satellite dish) does with radio waves. Typical uses of this microphone, which has unusually focused front sensitivity and can pick up sounds from many meters away, include nature recording, outdoor sporting events, eavesdropping, law enforcement, and even espionage. Parabolic microphones are not typically used for standard recording applications, because they tend to have poor low-frequency response as a side effect of their design.

A stereo microphone integrates two microphones in one unit to produce a stereophonic signal. A stereo microphone is often used for broadcast applications or field recording where it would be impractical to configure two separate condenser microphones in a classic X-Y configuration (see microphone practice) for stereophonic recording. Some such microphones have an adjustable angle of coverage between the two channels.

A noise-canceling microphone is a highly directional design intended for noisy environments. One such use is in aircraft cockpits where they are normally installed as boom microphones on headsets. Another use is in live event support on loud concert stages for vocalists involved with live performances. Many noise-canceling microphones combine signals received from two diaphragms that are in opposite electrical polarity or are processed electronically. In dual diaphragm designs, the main diaphragm is mounted closest to the intended source and the second is positioned farther away from the source so that it can pick up environmental sounds to be subtracted from the main diaphragm's signal. After the two signals have been combined, sounds other than the intended source are greatly reduced, substantially increasing intelligibility. Other noise-canceling designs use one diaphragm that is affected by ports open to the sides and rear of the microphone, with the sum being a 16 dB rejection of sounds that are farther away. One noise-canceling headset design using a single diaphragm has been used prominently by vocal artists such as Garth Brooks and Janet Jackson. A few noise-canceling microphones are throat microphones.

(*An article from Wikipedia 2013)*

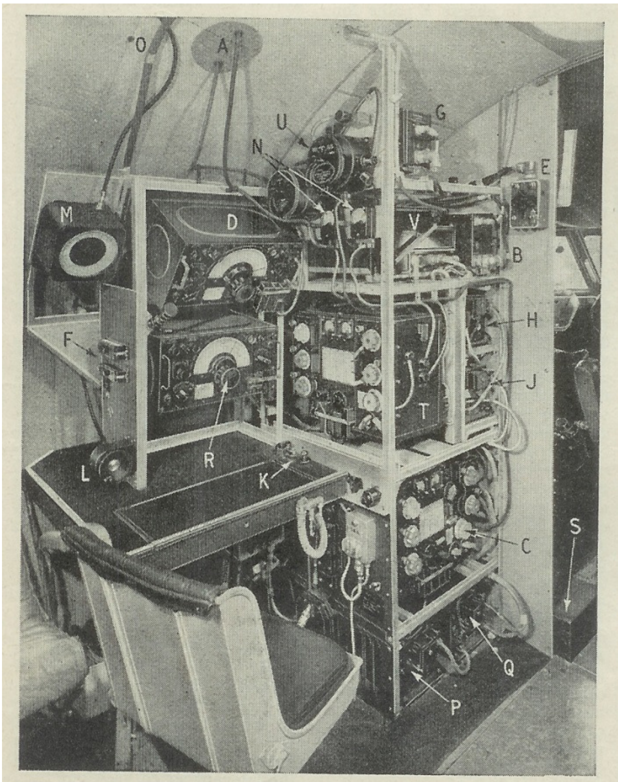
President's Corner

by Richard ZS6TF

Marconi R1155/T1154 Revisited by Richard ZS6TF.

There is a lot of readily available technical information on the Web about this WW2 equipment which is enjoying a revival of interest amongst radio amateurs concerned with the conservation and operation of airborne radios from this era.
Marconi Wireless and Telegraph Company were the pre-WW2 world leaders in design of airborne HF communication and direction finding equipment on the back of the expansion of air links to Europe the Empire by Imperial Airways in the period from 1921 to 1938. In October 1939 Marconi was contracted by the UK air ministry to develop a replacement for the antiquated T1083/R1082(RAF) and T1115/R1116 (Fleet air arm) radios to be standard in all new multi-crew aircraft, particularly long range bombers. Contemporary accounts of how this took place lead one to the conclusion that the Marconi design team under Christopher Cockerell (later Sir, of Hovercraft fame) had a fairly free hand and used it to incorporate all the best features of their commercial equipment into what turned out to be the first fully integrated HF communication and radio direction finding system ever produced. Designated the R1155/T1154 the prototype equipment had air trials and was approved by January 1940 and by June of that year, a massive installation campaign was under way in both new aircraft and retrofit. The equipment was still in use in civil aviation in 1950, and the basic concept of all the component units plugging together with multicore cables is still utilised in modern avionics.

Post war Avro Shackleton Mk 2



BSAA Avro Tudor IV 1948

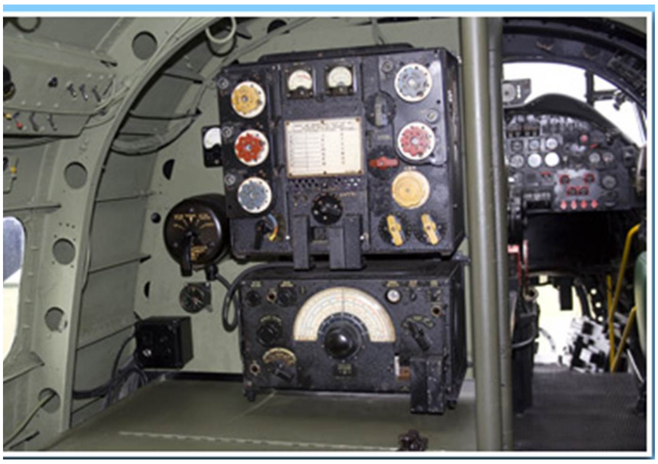
The entire system, including the rotary converters that supplied the transmitter plate, receiver HT, and LT supplies to both units is controlled by one master switch centrally positioned on the transmitter. The aircraft had 3 antennas, a fixed HF aerial strung between the tail and an insulator above the radio, a 240ft trailing MF aerial on a hand winch, and a calibrated rotatable DF loop mounted above the operators head.
The antennas were selected by a massive Bakelite switch which had positions for DF, MF on fixed, normal HF and MF operation, HF on trailing for emergencies, and earthing through a capacitor which could also be used for initial loading. Auxiliary contacts provided interlocks to prevent transmitter operation whilst direction finding.The radio was linked through a plug-board to the aircraft intercom system operating from separate battery power so that the rest of the crew could be switched through to the radio for reception and the transmitter could be modulated through it for example from the pilots headset.

The system was a curious mixture of anachronism and innovation doubtless due to extreme pressure to produce the equipment under wartime circumstances, and that the transmitter was designed by Marconi at Writtle near Chelmsford but the receiver was a joint development by Ecko and Marconi at Southend on sea. In addition the airborne military environment was hostile to fragile equipment with extreme temperatures, noise and vibration. Due to the large quantities ordered and dispersal of key resources, production was centred on Marconi's production facilities at Hackbridge, Surrey but four companies were sub contracted in addition to share production under the auspices of Marconi, namely Ekco, Plessey, Mullard and EMI. Overall production exceeded 80,000 units and serial numbers over 100,000 were likely to have occured as a result of reservation of blocks of numbers for the 5 manufacturers and not as some folklore would have it "to fool the Germans".

Mechanically, the T1154 transmitter was built within a fabricated exo-skeletal frame made of aluminium angle, or spot welded folded steel. The Master oscillator and aerial tuning passive components could be removed as sub-assemblies after unsoldering a few connections and removing many screws, leaving behind the central valve and switching compartment which could also be dismantled with patience. The bias for the valves and HT for the MO and modulator was derived from massive vitreous resistors mounted at the rear, operating as a divider chain across the 1.2KV supply to the plates of the directly heated final valves. The receiver shared this design concept with smaller components across the 200 volt supply, HT negative floating around 30 volts below earth. Both units slid into enclosed cases for shielding with apertures only for the Jones plug, and antenna connectors and the receiver had cork sheeting inserts to combat microphony in the valves. The transmitter was usually mounted above the receiver, each suspended from a back plane by hooks incorporating flexible rubber blocks and secured by set-screws. The receiver chassis was a spot welded fabrication, immensely strong and in aluminium extremely light. Serviceability was however impeded by the non-removable front panel and myriad of different types of BA screws each thread-locked with a dab of shellac. The T1154 transmitter frequency ranges and knobs were colour coded Yellow for MF, 200 to 500kHz, and red and blue for HF ranges up to 10Mhz although the suffix M model had an extra range up to 16.7mHz. Output was nominally 40-70 Watts on CW, and 10-17.5 Watts on AM or MCW. The receiver had corresponding coloured arcs on its dial scale but went up to 18.5 mHz. The otherwise rudimentary screen grid modulated, 4 valve transmitter is often overlooked for the features of the click-stop mechanism providing up to 8 pre-set channels on 3 ranges, the incredibly wide MF coverage of 2.5 times achieved by 27 taps on the plate and aerial coils, fine-tuned by a whopping brass slug on a worm drive, and its ability to load on HF into almost any antenna length, often damaged in battle.

The R1155 receiver has 10 valves, of which 6 are employed in a basic but adequate single conversion superheterodyne with a BFO, the 7th is a magic eye, the remaining 3 being dedicated to the DF function, controlled from the receiver front panel where aural or visual output to phones or a cross pointer meter can be selected. The first version of the slow motion tuning drive called the type 21 was a well-engineered friction drive with the slow motion knob inside the direct knob. This gave about 1000:1 ratio but was not popular with aircrews who found they could not operate it easily wearing gloves without disturbing the direct knob. Marconi developed a new gear drive in 1942 called type 35 with the slow motion on the outside, a bigger knob with large indentations which solved this problem on new and some retrofit installations. The Achilles heel of the R1155 is its natural rubber insulation which often crumbles to dust after 70 years, compared to contemporary German radios, forced to use synthetic rubber during the war, their wiring is often preserved like new.

Whether your following for this radio is based on its undoubted visual appeal, superb receiver dial, and colour coded transmitter knobs, or a deeper sense of respect for the 55,573 WW2 bomber command crew killed (a 44.4% death rate), and a further 8,403 wounded in action and 9,838 who became prisoners of war so that we could be free today, there is no doubt that the R1155/T1154 was fit for purpose in its time and a significant aid to the men who took the war into the heartland of Germany.



Next time you encounter a dialogue comparing the R1155 with the AR88, HRO, SX28 or maybe the WS19, you may observe that there is no comparison because these other radios never flew and could not find the way home.

Cyclic QSB
By Jan ZS6BMN

I began with the recording of the CW activities just over a year ago and when I became curious to 'see' just what the signals 'looked' like, I also started doing these graphs of specific signals or events. Unfortunately some of the effects shown on the graphs came from the specific receiver that was used, but they are still useful for comparison purposes and the receiver effects are also interesting in their own right.

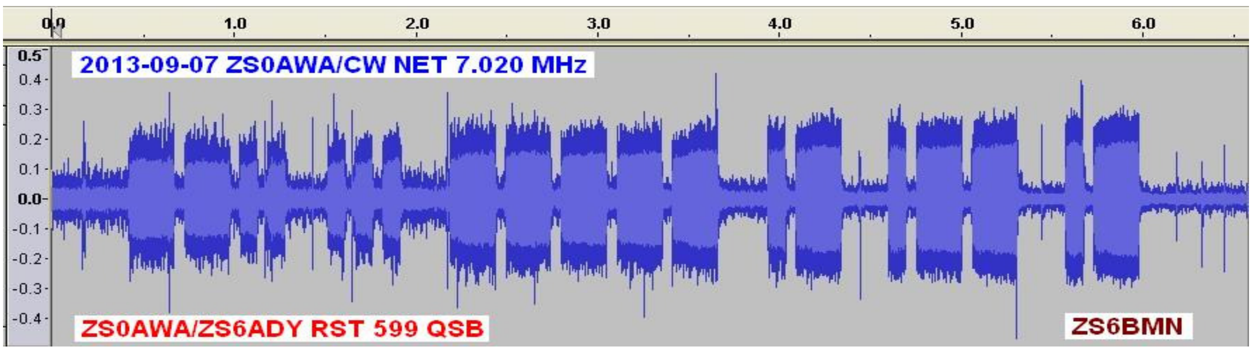
I now have such 'signatures' of the Yaesu FRG-7, FT-817, Kenwoods R-600, R-1000, TS-140S and then also of the little Argonaut 509. The Kenwood TS-140S is by far my best receiver and its recordings show very little of these ill effects, but unfortunately cannot not operate at the real QRP power levels that I have to use in this complex. The little Argonaut is the worst of the lot with its audio-derived AGC, but it just has the nicest sound on CW - on strong signals it is really as 'clear as a bell' and sounds like an audio oscillator being keyed! No wonder OM Barrie likes his Ten-Tec collection so much.

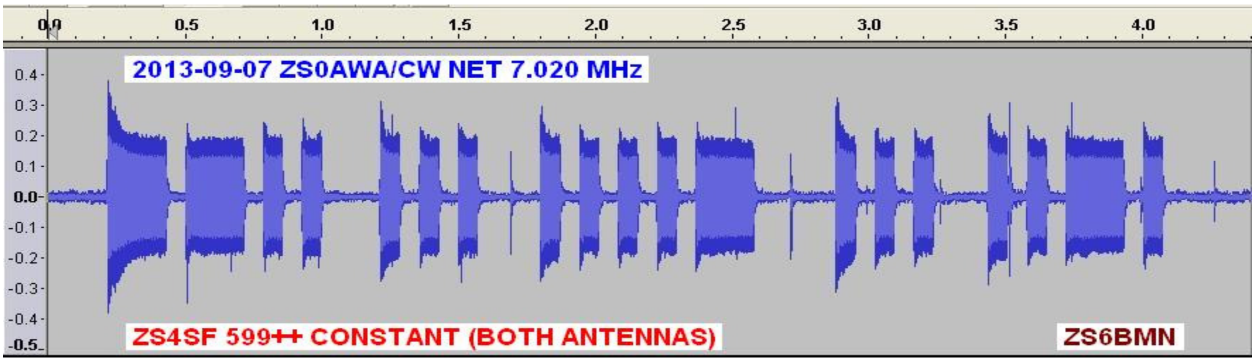
I recorded last Saturday's CW Net and have attached graphical signal strength reports of all the participants. This was a particularly interesting session due to the different propagation effects that were experienced on signals from different directions and over different path lengths.

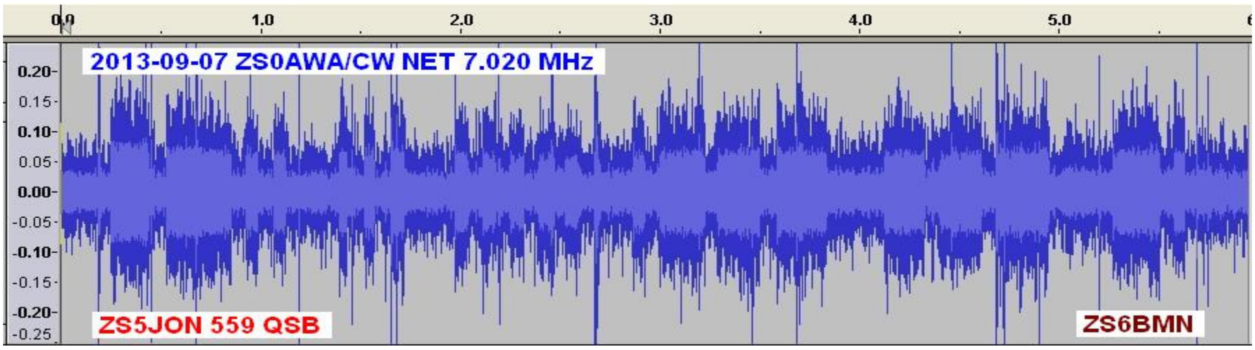
Recently this cyclic QSB over the shorter distances on 40m became very noticeable and that shows up as a ripple on the graph - it was very pronounced on the signals from Andy and Barrie and to a lesser extent on Dick's signal. OM Monk, however, was booming in with a consistent QSB-free signal and no difference could be detected between his two antennas!
From here the band only opens up to KZN much later and thus John, ZS5JON, has never registered more than 559 with me. There was very little QSB on the signal from OM John, ZS6JBJ - possible also due to the slightly longer propagation path. The antenna is a 40m NVIS dipole at a height of 2.4 metres. It is located in-between buildings and to make it less visible from anywhere in the townhouse complex.

The set that I have used was my old (1977 model) Ten-Tec Argonaut 509 and it makes use of an audio-derived AGC system and that is responsible for the overshoot on the first element of transmissions that you can see on the graphs. With very strong signals (like that of OM Monk) this system is less than ideal, but nevertheless gives excellent reception without any audible distortion. The RIT tuning on this set is not so good and neither is that analogue frequency display... It is difficult to monitor the different stations in a net without touching the main tuning - so I always end up being off frequency. Sorry about that!
I have since checked up on the CW generation methods on the Argonaut and the KWM-2 and discovered that one goes 750 Hz the one way (509 LSB) and the other 1500 Hz in the opposite direction (KWM-2 USB) relative to the carrier frequency. That is about the worst situation one can get :-) Not too bad with only two stations in QSO, but in the AWA Net my set was the only one to use LSB for CW generation and I had to retune all the time in order to hear everyone.

This is also why OM Barrie is using his Century or Omni and not the Triton when operating in a net. The Triton is the big brother of the Argonaut and has the same problem. Interesting, though! I am sure that it should be relatively easy to modify the Argonaut to allow CW operation on either of the sidebands. (On the later Ten-Tec models like the Omni they have CW-N and CW-R positions).




2013-09-07 ZS0AWA/CW NET 7.020 MHz
ZS4SF 599++ CONSTANT (BOTH ANTENNAS)
ZS6BMN


2013-09-07 ZS0AWA/CW NET 7.020 MHz
ZS5JON 559 QSB
ZS6BMN


2013-09-07 ZS0AWA/CW NET 7.020 MHz
ZS6AJY 599 QSB
ZS6BMN


2013-09-07 ZS0AWA/CW NET 7.020 MHz
ZS6JBJ 599 CONSTANT
ZS6BMN


2013-09-07 ZS0AWA/CW NET 7.020 MHz
ZS6RSH QRP 579 QSB
ZS6BMN

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Antique Wireless Association of Southern Africa

Mission Statement

Our aim is to facilitate, generate and maintain an interest in the location, acquisition, repair and use of yesterdays radio's and associated equipment. To encourage all like minded amateurs to do the same thus ensuring the maintenance and preservation of our amateur heritage.

Membership of this group is free and by association.

Notices:

VINTAGE COMPONENTS AND EQUIPMENT FOR SALE

6146
6146A
6146B
QV06/20
803
805
807
809
814
866
1625
TZ40
8560AS
RF CHOKES, CERAMIC VALVE BASES.TX VARIABLE CAPACITORS, CERAMIC STANDOFFS AND BUSHINGS, FLEXIBLE SHAFT COUPLERS,MISC COILS AND COIL STOCK, MISC MOVING COIL METERS,TS515 MAINS TRANSFORMER, CERAMIC TRIMMERS,HIGH VOLTAGE OIL FILLED CAPS

HRO TUNING GANGS, DIALS, IFT'S,KNOBS, BARE CHASSIS AND CABINET PARTS.

2/HRO (UX BASED TUBES)
1/HRO (OCTAL TUBES) ALL NEED TO BE REBUILT
1/AR88D CHASSIS PARTLY STRIPPED PLUS VARIOUS DIALS, KNOBS AND IFT'S ETC
1/SX28 SPEAKER AND CABINET
1/ TYPE 21 ARTIFICIAL AERIAL FOR T1154/TR9

I also have a Heathkit HX20 CW transmitter available. I believe that it is working, but no power supply, so unable to test. I am on the lookout for valve hifi amplifiers , either to restore or to use as spares.

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