Southern African ZSOAWA Antique Wireless Association

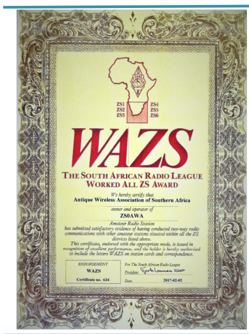
Newsletter

The Antique Wireless Association of Southern Africa

138

January 2018

A Member of the SARL



Inside this issue:

AWA Committee:

* President and Western Cape—John ZS1WJ
* VicePresident—Renato ZS6REN
* Technical Advisor—Rad ZS6RAD
* Secretary/PRO—Andy ZS6ADY
* KZN—Don ZS5DR
* Historian—Oliver ZS6OG
* Member—Jacques ZS6JPS

Reflections:

And so we start off another year with new beginnings. A new committee, well sort of, and a whole new Newsletter, also sort of.

Look out for a regular spot in the newsletter by Renato ZS6REN, titled "On My Bench" and some regular articles to hopefully keep your interest in our Newsletter.

Once again, we will try to bring you what you want to read, all about our hobby and to maintain an interest in the location, acquisition, repair and use of yesterdays radio's and associated equipment.

I am sure many of you will have your projects all lined up and ready to go, just looking for the opportunity to get your grubby little paws into them and see many of them come to life under your skillful watch.

Some people are not that excited yet about the projects that have lined up, me being one of them, because it just seems to take so much longer than what it should. But still, the satisfaction of seeing project through and actually hearing the results of your labour does bring great relief.

There always seems to be that "smoke factor" lurking somewhere in the depths of these projects though. The old adage about how to get the smoke back in comes to mind, and of course the other one, "beware of high voltage".

Let it not be said that the collectors of antique equipment are sissies, by no means, for whenever we put our hands inside these rigs, we are dealing with voltages that most electronic technicians would balk at and many electricians would demand a certificate in operating at high voltages. I distinctly remember an electronics technician on the mines saying anything above 24v was HT for him.

I am sure there would be many of our purveyors of these fine old rigs who would have a few stories to tell about being shocked by some of the voltages present. I was always told to never put both hands inside a radio, always keep one behind your back. This of course prevented a path to earth should stick your fingers in some unwanted place.

But this has never deterred any of us from doing our own repairs and refurbishments. Just kept us more cautious of what exactly we are doing there.

Here's to a New Year filled with many new projects and many happy, satisfied hams operating on old time radio.

Best 73

DE Andy ZS6ADY

WIKIPEDIA

Amateur radio: Fast scan amateur television has gained popularity as hobbyists adapt inexpensive consumer video electronics like camcorders and video cards in PCs. Because of the wide bandwidth and stable signals required, amateur television is typically found in the 70 cm (420–450 MHz) frequency range, though there is also limited use on 33 cm (902–928 MHz), 23 cm (1240–1300 MHz) and higher. These requirements also effectively limit the signal range to between 20 and 60 miles (30–100 km).

Linked repeater systems, however, can allow transmissions of VHF and higher frequencies across hundreds of miles. Repeaters are usually located on heights of land or tall structures and allow operators to communicate over hundreds of miles using hand-held or mobile transceivers. Repeaters can also be linked together by using other amateur radio bands, landline, or the Internet.

Amateur radio satellites can be accessed, some using a hand-held transceiver (HT), even, at times, using the factory "rubber duck" antenna. Hams also use the moon, the aurora borealis, and the ionized trails of meteors as reflectors of radio waves. Hams can also contact the International Space Station (ISS) because many astronauts and cosmonauts are licensed as amateur radio operators.

HF Happenings:

3Y0Z Bouvet DXpedition News

The QSLs for the 3Y0Z Bouvet DXpedition will be handled by Bob, N2OO, and he will again serve as their QSL manager. He and his South Jersey DX Association team members will assure accurate and efficient handling of 3Y0Z QSL cards.
Web Page Update (16 December 2017), "The Bouvet Island DXpedition team has been very busy. In the last week, we have had Skype conference calls with the CEO of our transportation company and with the captain of our ship. We can report that everything we can control is under control.
Our sea container is in Punta Arenas and should be moving out of customs bond or may have already done so. We are gathering some additional last-minute supplies to take as extra baggage, including ice screws, should we find ourselves camping on re-frozen melt areas on the glacier. We have finalized our shelter layouts, fuel calculations, maritime mobile antenna plans, and have assigned some duties relating to flight and cargo staging. The team members will all be taking a formal marine safety course before embarking.
Neither our transportation company nor the ship's captain expressed any worries or concerns over the recent seismic activity near Bouvet. And, yes, we are still struggling with the helicopter flying hours issue."
See their web page at www.bouvetdx.org/news-and-updates

KH1 Baker Island DXpedition :

(Press Release #3, dated 15 December).
The Dateline DX Association is pleased to announce the callsign for its DXpedition to Baker Island in June 2018. The Association already has the callsign KH7Z so we will identify our location and call as KH1/KH7Z.
Visiting a remote DX location like Baker Island is an expensive under-taking. Our budget is over $400 000 and 50% of this cost is being under-written by the team members. That still leaves a large amount of fund-raising. Do you need KH1 for an ATNO? This is the first DXpedition to Baker and Howland Islands since 2002. The FWS ruling that allowed this trip prevents another DXpedition for 10 years. Please help make this happen by donating at our website www.Baker2018.net. A 50% deposit on our vessel is due 31 December 2017, so we have an immediate need for our 2017 fundraising. Please remember that NCDXF members may direct donations above $250 through the Northern California DX Foundation to qualify for a tax deduction. The specific details as well as general donation instructions are on our website at www.baker2018.net/pages/donate.html. Thanks for helping make this happen.
The Dateline DX Association - Don Greenbaum, N1DG, Tom Harrell, N4XP, and Kevin Rowett, K6TD

African DX :

Guinea Bissau, J5. Livio, IZ3BUR, will be active as J52EC from the Cumura High School in Guinea Bissau between 24 January and 21 February 2018. Activity will be mainly on 20, 15 and 10 metres. QSL via IZ3BUR. Please Note - This project is part of "Books for the high school of Cumura" by Father Gianfranco, J52OFM. For information see www.padregianfranco.org. Any donation will be greatly appreciated, it'll be donated to the Cumura Mission.

African Islands

IOTA frequencies
CW: 28 040 24 920 21 040 18 098 14 040 10 114 7 030 3 530 kHz
SSB: 28 560 28 460 24 950 21 260 18 128 14 260 7 055 3 760 kHz
Canary Islands, EA8. Mauro, IV3HAX, will once again be active as EA8/IV3HAX from Fuerteventura Island (AF- 004) between 24 December and 5 January 2018. Activity will be on various HF bands with a focus on 160 and 80 m using CW, RTTY and FT8. QSL via IV3HAX direct, LoTW and ClubLog's OQRS.

Calendar:

December

27 - closing date for January 2018 Ra-dio ZS
31 - End of 2017 CQ Marathon and YOTA month

January 2018

1 – New Year's Day; start of the 2018 CQ DX Marathon and the ARRL Inter-national Grid Chase
6 – Pretoria ARC Flea Market
13 and 14 – Hunting Lions in the Air
17 – Provincial school open
19 to 21 – PEARS National VHF/UHF Contest
20 - SDR Workshop at the NARC
25 – Closing date for the February Ra-dio ZS
27 - Summer QRP contest; Cape Town ARC meeting; International Day of Commemoration in Memory of the Victims of the Holocaust
30 - Closing date for proposals and synopsis for AMSAT SA Space Sym-posium papers
31 - Closing date for Nominations for Council, SARL Awards and AGM Motions

What is my SWR meter trying to tell me?
Part 3

In this part we will look at various antenna types in common use.

A popular antenna for amateurs is the half wave dipole suspended above ground with the wire parallel to the ground. The height of the antenna has a direct bearing on the feed point impedance. If the antenna is at least half a wavelength above ground it behaves as if it were mounted in free space and suffers little degradation from surrounding objects such as buildings, trees etc. For an 80m dipole this implies we need to suspend it at least 40 metres up in the air ! Unfortunately few amateurs can arrange this utopian situation, so we need to consider how a half wave dipole close to ground behaves.

Using antenna-modelling software we can determine how the ground effects the antenna feed point Z. Generally, at very small spacing above ground the Z falls by as much as 30%. So although theoretically a half wave dipole should be a certain Z at resonance when close ground spacing is used it is quite a bit lower. This can be to our advantage. Let us take a closer look at the half wave dipole to see how it behaves.

Half wave dipole parameters

Theoretically the dipole centre fed antenna in free space when adjusted to its resonant length exhibits a feed point Z of 73.1 +j0Ω. It looks like a pure resistance with no reactance. However, we hardly ever see this in practice. As we move in frequency it will change!

The physical length of the antenna is not the same as the electrical length. This is because electromagnetic waves travel a little slower on metallic conductors than free space. The difference in propagation speed varies depending on the material and whether it has any insulating coating on the wire. Silver plated copper wire has the highest speed of propagation, enamelled or PVC coated wire is a little slower.

The electrical length is also a function of the wire diameter compared to wavelength. So we have quite a few variables all pushing or pulling in different directions!

Generally, it is assumed that the wire diameter is much less than 1/200 of the wavelength and if this is the case then the equation is simpler. At 30MHz the wavelength is 10m and a wire of 1/200th of a wavelength is 50mm in diameter. At 160m it would be 800mm in diameter. So a wire of, say, 2mm at 10m is very much less than 1/200th of a wavelength.

It only leaves the propagation speed in the wire as the main factor. Another name for propagation speed is *velocity factor* as a percentage of the free space speed of electromagnetic waves.

Light and radio waves travel at 300,000km/s in free space. In copper and other common conductors they slow down to about 97.5% of the free space velocity. Hence, to make the dipole electrically a half wave in length we need to subtract a bit from each end of the dipole. If the copper has an insulating coating then the wave is slowed a little more, so another 0.5% or so needs to subtracted from the antenna. A good ballpark figure is about 97%.

If a wire dipole were cut to the physical length of a half wavelength it is too long and we can see this in the feed point Z. Dr John D Kraus, W8JK, professor at Ohio State University who wrote the antenna bible textbooks, gives some indication of a typical wire dipole with different lengths. For a resonant dipole it measured 73.1 +j0. For a dipole cut to the physical length, without the correction factor for wave speed, it measured 70 +j45Ω. (The +j value tells us it is too long, as it is inductive reactance). Generally, the R portion of the impedance changes much more slowly than the X value.

Short dipole antennas

In many applications we simply do not have the real estate to erect a full size antenna, but a dipole somewhat shorter could be squeezed into the available space. Many scientific stations deliberately use dipoles as little as 1/16th wavelength long to exploit the multi-lobe polar diagram patterns they produce. Kraus also gave some details of these and how they radiate compared to a full size dipole. Although matching to such a short antenna is a challenge it is not that difficult. The surprising thing was how little effective radiation is lost when using a short antenna.

Kraus used a dipole of only l/10 as an example (l/20 per leg) and gave measured radiation values versus a full size dipole. The short antenna was only 0.4dB worse (≈8%) than the full size version, which is insignificant. When one considers that an S point is 6dB then 0.4dB is about the needle thickness of the S meter.

Harmonic operation

Half wave dipoles can be operated on odd multiples of the quarter wavelength; for example a 40m dipole also presents a reasonable match at 21MHz (15m). Here it is behaving as 3l/2 (1.5 wavelengths) in electrical length and the feed point Z is around 90Ω. Without an ATU it is about 1.8:1 SWR, but a tuner can pull this down to 1:1 without any difficulty. It actually radiates better at 21MHz than 7MHz, as there are more high current points along each leg. It is the high current points that cause radiation and being further away from the surrounding object has less degradation. The ideal antenna would be infinitely long and an odd multiple of quarter or half wavelength on each leg.

The inverted V antenna

The major problem with the conventional half wave dipole is a mechanical support issue. It needs two tall supporting masts and the feed line at the centre causes the wire to sag so the antenna is no longer parallel to the ground. Figure 7 shows an exaggerated view of the sag in the dipole.

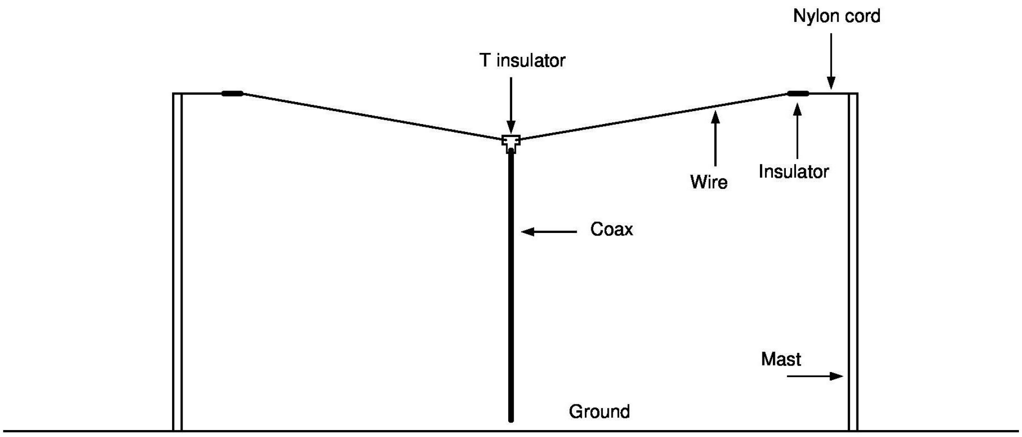


Figure 7 Dipole diagram showing sag due to coax

The inverted V solves this problem but adds another factor.

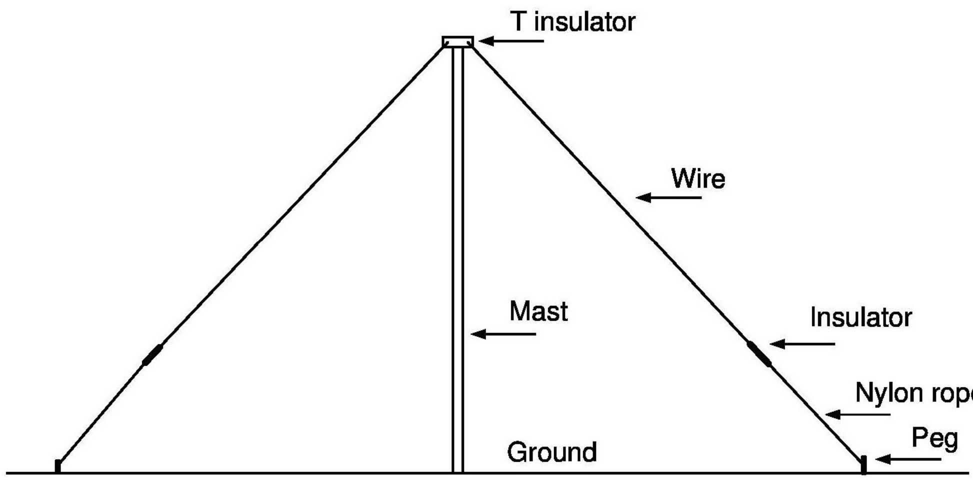


Figure 8 Inverted typical installation

The inverted V only requires a centre support mast and the two ends of the antenna terminate close to the ground and can be pegged down or tied onto suitable existing fence posts etc. The angle at the apex is generally chosen to be 90° and hence the height can be less than a normal dipole.

However, the high impedance ends now being close to the ground causes the antenna to appear to be too long, as the proximity of the ground adds capacitance to the antenna ends. This capacitive reactance is inverted as it travels towards the feed point along the quarter wave long wire and now appears as an inductive reactance. If a normal dipole length is used we find it resonates about 10 to 15% lower than when mounted parallel to the ground. The conductivity of the ground also has a marked effect, good damp ground affect it more than dry sandy ground. So some messing around to find the exact optimum lengths is necessary.

The radiation pattern of an inverted V is different to a half wave dipole mounted parallel to the ground. Normally we expect it to be horizontally polarised and to have two major lobes firing forwards and backwards, so we cover two directions. The wire direction can be chosen to favour the areas we wish to communicate with.

The inverted V does not have the same pattern. Firstly, it is predominantly vertically polarised and the main lobe is skywards off each wire at 90°. If the apex angle is 90° then the main lobe is at 45° elevation. The other factor is that is almost perfectly Omni-directional. So it is a good choice for short skip stations as it is a type of NVIS antenna (Near Vertical Incidence Signals). If it is operated on multiple frequencies, for example a 40m antenna used on 15m, the polar diagram is radically different to the 40m case. The signal off the ends bounces off the conducting ground below the antenna and send a secondary signal skywards, which may be beneficial or not depending on the skip distance required!

Buildings and trees close to the ground ends have more effect and these should be chosen to be as far away as possible when choosing the anchor points for the ends. It should be obvious that good insulators are needed for the two ends as very high RF voltages exist at these points. With a 100W transmitter expect to see about 5kV or more. The insulated anchor rope or cord from the insulators should be as long as possible, which means the ends should be above head height for the average person.

When adjusting an antenna length to get it on frequency we often need to cut a little off each end. However, once we remove the extra bit of wire we can't easily put it back if we have taken too much off the ends. A better method is to pull the excess wire through the end insulator and to wrap it around the wire tightly. This has no effect on the antenna Z or polar pattern and means we can undo the wrapping and extend the wire again if needed.

Baluns

All the centre fed and most other types of dipole antennas require a balanced feed. Often a balanced wire line is used with a balanced to unbalanced transformer (balun) at the ATU end to convert it back to the normal unbalanced system which transmitters and receivers commonly use. Alternatively today the norm is to use unbalanced coax cable from the ATU to the antenna with the balun connected at the antenna feed point.

Omission of the balun generally alters the radiation pattern and the impedance match, in some cases quite severely. The type of balun to use is a Current Balun and not a voltage balun. The use of a current balun prevents RF current flowing back down the coax cable on the outer sheath to ground. These RF currents are lost power and they alter the polar pattern by setting up interfering waves radiated off the outer coax cable sheath.

The writer first came across the current balun in Walter Maxwell's (W2DU) book *Reflections* (ARRL) which is a reprint of several articles from QST. Having experimented with the W2DU balun at many different frequencies, and measured the effect with professional laboratory instruments, I can vouch for their performance. I have yet to find anything that performs better or is so simple to make. The W2DU coaxial sleeve design uses a short piece of coax with several ferrite toroidal cores slipped onto the outer jacket. Analysing the device it is a Common Mode choke which chokes off any RF current flowing on the outer of the coax. A current balun covering 160m to 10m is only about 300mm long. The power handling of the balun is essentially limited by the coax in use. For RG-8/U type coax it will handle several kilowatts without stress. For 100W type transmitters RG-58/U coax is more than adequate. Unlike a normal toroidal wound balun the ferrite cores do not have to carry the full power, they only have to choke off the small but significant outer sheath current. Hence, they run much cooler and can be smaller diameter.

Note: It is a 1:1 balun so whatever impedance is presented by the antenna feed point is transferred through to the unbalanced end.

Figure 9 below shows the basic construction and the test arrangement to prove the balun work correctly. All grounded points are connected to a sheet of conducting metal to provide a low impedance ground. The output end with the resistors is probed with a Vector Voltmeter that can measure both absolute level and phase between the two resistors.

The value of RF voltage appearing across R1 and R2 is directly proportional to the current flowing in them. If R2 is twice the value of R1 then it should have twice the voltage as R1 if the currents are equal value, which indeed it does. The phase relationship between R1 and R2 is 180° across a wide range of frequency.

Electrically the W2DU current balun looks like a common mode choke and this is shown in Figure 10. Although the coax sheath is grounded at the input end the other end is completely isolated because of the high impedance the ferrite cores produce. If the ferrite cores were not working as intended then the current in R1 would be very low, as it is shorted to ground by the sheath.

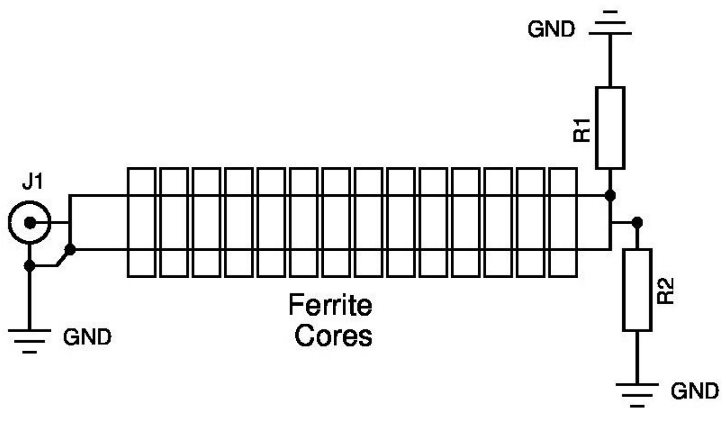
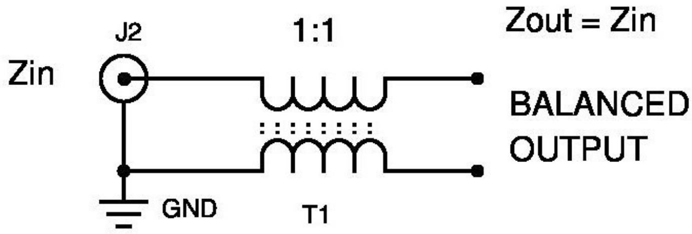


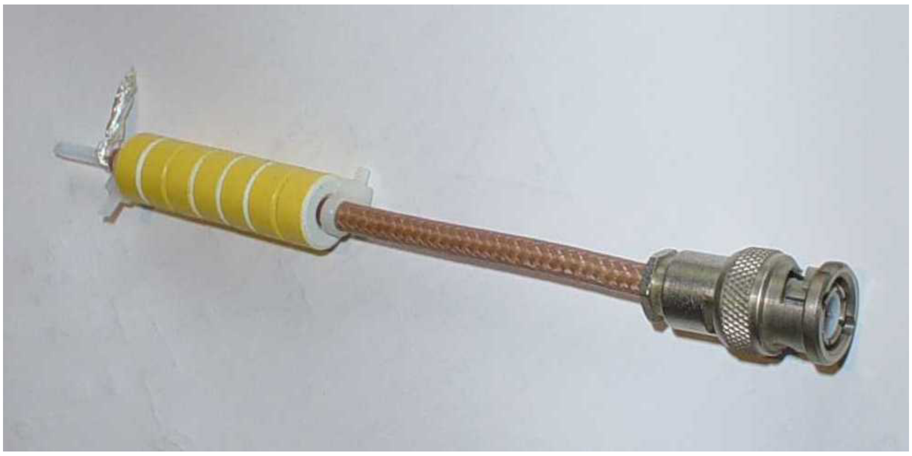
Figure 9 Test arrangement for W2DU current balun

Figure 10 Schematic for W2DU current balun



The beauty of the W2DU current balun is not only its simplicity, but also its very low loss. It is a tiny fraction of a dB, as it is the same as 300mm of RG-8/U coax. The ferrite cores need to be high permeability, EMI suppression beads or sleeves work well, and a good fit on the coax jacket. To hold them in place a piece of heat shrink sleeve can be fitted over the cores, or a cable tie at the top and bottom also works.

The impedance is determined by the coax type used, so a 75Ω or 93Ω balun can also be made by substituting cable type and ferrite cores that fit snugly on the outer jacket. The writer has made many different W2DU current baluns from HF through to 23cm and all worked as W2DU predicted. A picture of a balun for a 2m Yagi is shown below. This easily handles 1kW of RF power. At very high frequencies the number of ferrite cores needed is less. This balun covers from 40MHz to 400MHz with virtually no change in phase balance or insertion loss. The coax cable is 6mm diameter with PTFE dielectric.



Picture 1 W2DU coaxial sleeve balun for 144MHz Yagi

Vertical antennas

The most popular limited space antenna is the quarter wave vertical or Marconi antenna. In fact this is a fallacy, they really need a lot of space to work correctly as the ground radial system can extend out from the base over a long distance! If only a few radials are used, which are much less than l/4, then although they seem to match to the coax fairly well they are not putting all the power into the antenna. The reason is the ground loss resistance is effectively in series with the antenna radiation resistance and it can be that as much as 50% of the power is wasted in the ground with a poor radial system.

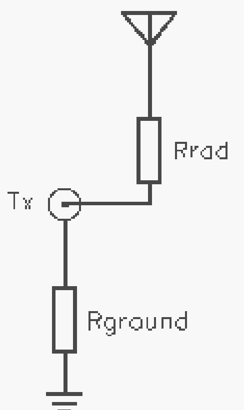


Figure 11 Vertical antenna

Short vertical antennas are like short dipoles; in fact the vertical is really one half of a dipole and the missing half occurs in the lossy ground forming a mirror image of the radiating portion. The feed point impedance at resonance is half that of a dipole, being 36.5Ω +j0, but it can also be as low as 10Ω if a shortened version is used. If the ground loss resistance is a similar value then a lot of power is wasted warming up the worms. Figure 11 shows the two resistances R_{rad} and R_{ground}. Another factor is that vertical antennas, including the trapped multi-band types, need to be mounted as far away as possible from any buildings or trees as these absorb the radiated power and degrade the polar pattern. The best mounting is on a tall mast with the ground radials strung out and sloping downwards at about 30°. This places the antenna in the clear and makes a significant difference to its radiation efficiency.

Some amateurs believe that with a ground mounted vertical antenna you can just knock in a short ground spike and use that without any radials, well they are dead wrong. Although they may get a good SWR it is because the ground loss resistance is very high. For a true resonant length quarter wave vertical over a perfect ground the feed point Z is 36.5Ω, so the SWR should measure about 1.5:1.

Matching to a low Z antenna is not too difficult and again we have the choice of having the ATU at the antenna base or in the shack. Waterproofing an external ATU, where the RF voltages can be high and may cause arcing to occur in damp weather, is not a simple task and unless the tuning can be done remotely by some method it makes moving about the bands more tedious. With the ATU at the operating position it is so much simpler.

This however does mean that the feed line from the ATU to the antenna will have a fairly high SWR in some cases. A high SWR on a coaxial line does increase the feed line loss, but not by as much as some people think. If the feed line from the shack is less than about a wavelength then the losses are minimal. The problem is when the feeder is many wavelengths in length then the extra losses become significant and may require lower loss cable to compensate.

A good plan is to parallel two 75Ω coax cables (connect both centres and sheaths together at each end) and use this to feed the vertical. This arrangement presents a near perfect match to the antenna and the ATU in the shack can easily match to this new feed line Z of 37.5Ω. If you are using a transmitter with 6146s in the PA then generally there is enough tuning range to accommodate this small mismatch, modern solid state transmitters will certainly need an extra bit of tuning with an ATU.

John ZS5JF

On my bench

Renato Bordin ZS6REN November 2017

I've had this Yaesu FRDX400 receiver on my radio desk for many months, our devoted Collins collector Cliff decided he will not have any Jap radio next to his American collection so he handed it over and it got allocated project number 12567. Yes I have many unfinished projects.

This FRDX400 features the 2M and 6M receive modules with a homebrew FM demodulator. The 100Kc marker option is also installed. The radio is clean with a very nice front panel but deaf…I mean seriously deaf, 10mV was needed at the antenna to just lift the S meter and hear an AM tone! I have fired this receiver up on a few occasions with my simple wire antenna but could hear very little, only very strong stations could be heard on 40M. I did not try the 2 or 6M modules and the FM board was installed but not connected until now.

The Yaesu FRDX400

And with that the radio was relocated to my repair bench. Cliff had handed over a printed copy of the manual together with the schematic printed and cello taped, to form 1 large easy to follow schematic. The signal flow is quite normal with an RF amplifier valve and bandpass filters, crystal controlled 1st IF filter and the second IF from the VFO delivering the 455Khz IF ready for the mechanical filter. Thereafter some gain stages and mode switching before ending up in a single output pentode, which is exactly what I tested first.

I removed the ceramic capacitor feeding the grid and injected a tone from an audio oscillator. Good clean and loud audio was heard on the external speaker. I decided to revisit the front end and have a look at the 6BM6 and ferrite slugs of the bandpass filter coils. Unfortunately the ferrite slugs are cracked, no doubt due to some chap using the wrong tool to tweak the coils but not to a completely useless point. I connected my RF generator set to 100mV AM modulated output and could clearly trace the signal on its way to the filter.

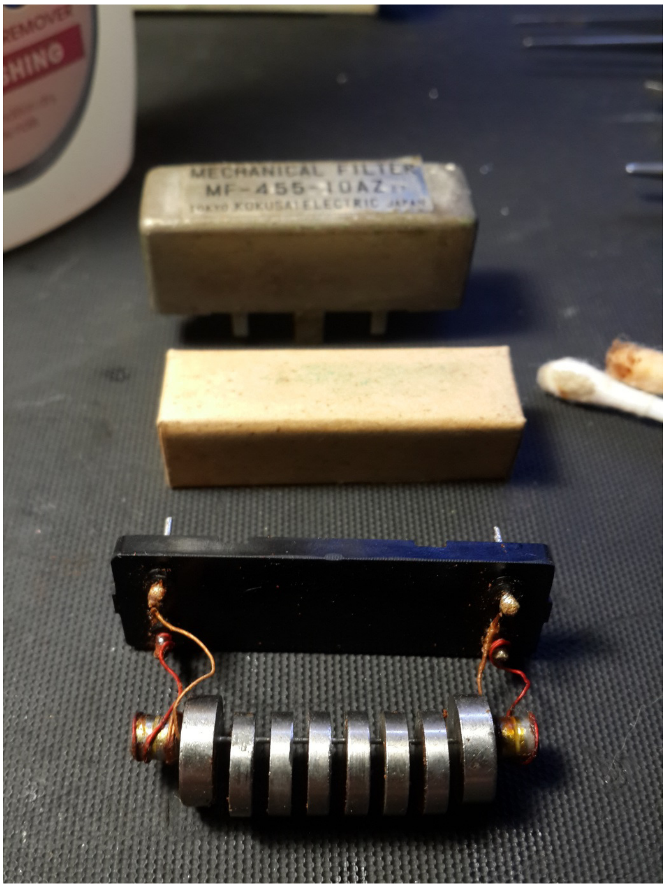
Now I have very little experience repairing boatanchor radio's so I'm starting to scratch my head trying to figure out what's wrong with this dam radio.

Next I dialled up 455KHz on my signal genie also AM modulated and fed that on the output of the mechanical filter and again good loud tone on the speaker and yes you guessed, I injected the same signal to the input of the mechanical filter and nothing. I'm sure there must be a mismatch between generator and filter but I'm pretty sure one should hear something considering the fairly high signal from my generator.

Well I was hoping to have 12566 projects by completing this repair but was overwhelmed by the seriousness of the fault. Where on earth was I going to find a 455KHz mechanical filter for this FRDX400? I was about to put everything back together and bow down to defeat until I came across this web site http://people.zeelandnet.nl/wgeeraert/koku/koku.htm . Seemed easy. Unsolder the filter, take the thing apart, clean it and put it all back together. That's exactly what I did and this is what I found when I removed the filter housing.

The sponge supporting the filter had deteriorated so badly that it turned into gunk caking the filter with this gooey stuff. "Sausage" I yelled, my wife's pet name. "Do you have any of that nail polish stuff" "You mean nail polish remover?"

And so it arrived. The Acetone washed away the gooey mess applied with an earbud. I do not recommend alcohol, use Acetone and possibly thinners but this I did not try. You end up with the picture below. A shiny filter as you would expect to see it. After following the web sites instruction, I turned the radio back on after re-installing the filter and was blessed with

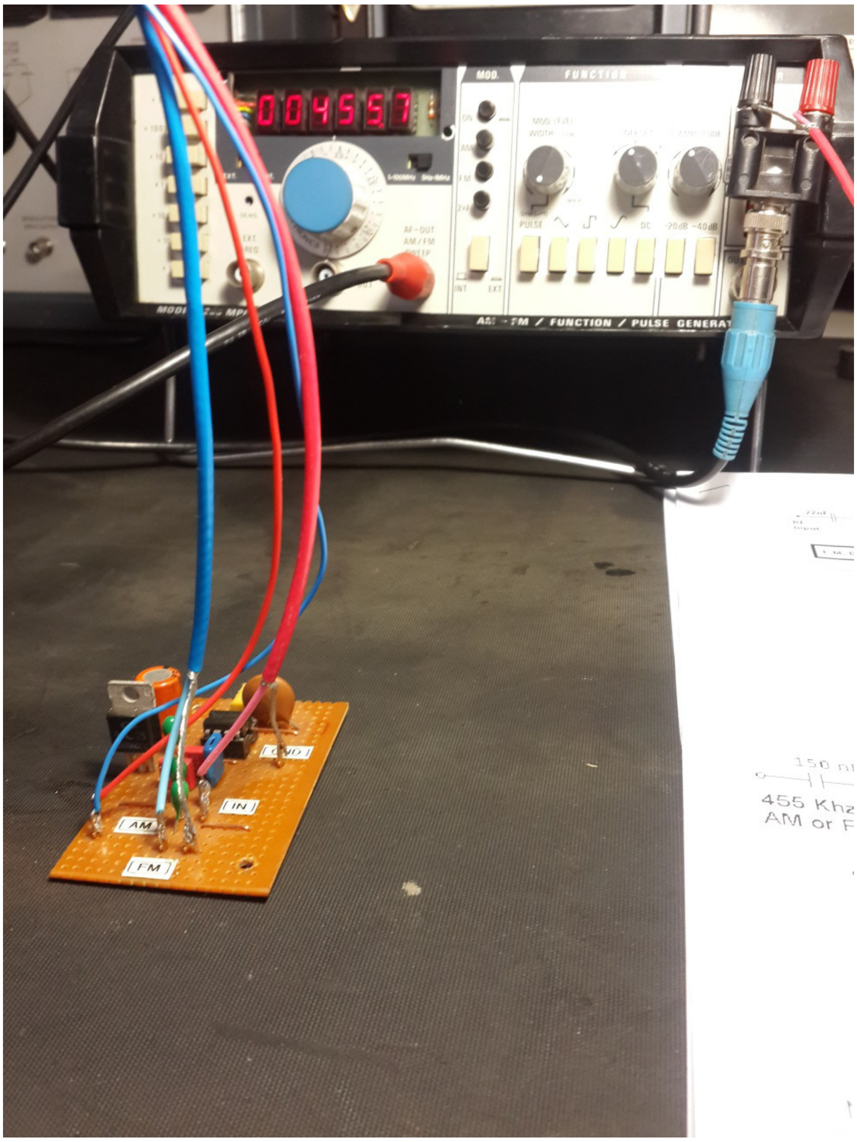


a loud hiss, crackle and pop just like a shortwave receiver should sound. This fault I will remember. With 10uV AM coming from the gennie to the antenna, the S meter is now in the red without any alignment done on the front end or IF filter cans. I'll be on the lookout for replacement frontend ferrite slugs before alignment but I'm very happy with the radio as is.

Day 2 of this repair came and focused on the 2 and 6M converter option and FM demodulator. The convertors simply mix the incoming VHF signal, let's say 50MHz with an oscillator at 22Mhz. The product is what we listen to on the 10M band, which will be 28MHz. The 2M option works in a similar fashion. There is some 2M SSB activity that I can hear from my QTH but FM would be better. Lots of chaps on the Sandton repeater and on 145.500 simplex so next was figuring out this homebrew FM option.

Built on a piece of Vero board featuring an NE567 but not connected. The 567 is intended for tone decoding and should do just fine demodulating FM.

I removed the board from the radio so I could comfortably work on the device. I simply injected a FM modulated 455KHz signal on the input and heard a tone on the output via an external audio amplifier. The board was quickly reinstalled on the radio's chassis. A suitable 455Khz was sourced from the last IF amplifier with the audio fed directly to the mode switch wafer on the FM position. Again the familiar FM hiss could be heard. I got Sausage to count to ten on a hand held while I listened to the audio quality. Yes, yes the handy talkie was on low power but more importantly the audio was excellent with nice punchy bass qualities.



Well there you have it chaps my first FRDX400 with some very interesting faults. I wonder if Cliffy will want the radio back?

73 Renato

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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 yester-days radio's and associated equip-ment. To encourage all like minded amateurs to do the same thus ensur-ing the maintenance and preservation of our amateur heritage.

Membership of this group is free and by association. Join by logging in to our website: www.awasa.org.za

Notices:

Net Times and Frequencies (SAST):
Saturday 06:00 (04:00 UTC) —AM Net—3620
Saturday 07:00 (05:00 UTC) —Western Cape SSB Net— 3630
Saturday 07:30 (05:00 UTC) —KZN SSB Net—3615
Saturday 08:30 (06:30 UTC)— National SSB Net— 7140; (Echolink, connect to Sandton repeater ZS6STN-R)
Experimental relay on 3620 for those having difficulty with local skip conditions.
Saturday 14:00 (12:00 UTC)— CW Net—7020; (3550 after 15 min if band conditions not good on 40)
Wednesday 19:00 (17:00 UTC) — AM Net—3620, band conditions permitting.

Notice:

There will be no Echolink connection, 2m or 80m relay for the SSB net on Saturday 31st December and 06 January due to Rad and Henry both being away on leave.

There will be a call in on 7140 at 08:30 and lets hope the band plays in our favour.

Please do not let this put you off, we will have monitoring stations all over to make sure we don't miss anybody.
John ZS5JF in KZN and Andy ZS6ADY in GT.