BOLAND AMATEUR RADIO KLUB

Maart 2019

CQ BOLAND

VAN DIE VOORSITTER

BARK is bevooreg om vanjaar as gasheer vir die 2019 Dag Van Die Radio Amateur op te tree. Hierdie is ‘n gulde geleentheid vir ons Kapenaars om die SARL Symposium “Unlocking Amateur Radio Technology” op Vrydag, 12 April 2019 asook die SARL AJV en Toekenningsdinee op Saterdag,13 April 2019 by te woon. Al die inligting rondom die geleentheid asook die registrasievorm is op die SARL webblad beskikbaar. Die link is www.sarl.org.za/members/agm/AGMMembers.asp.

Karl, ZS1KC, is weer besig met die RAE klasse ter voorbereiding vir die Mei 2019 eksamen. Sterkte aan hom en die kandidate.

Weereens baie dankie aan almal wie betrokke is met die onderhoud van die herhalers in die Wes-Kaap. Dit word opreg waardeer.

Onthou dat u radiolisensie hernu moet word voor 1 April 2019. Al is OKASA veronderstel om kennisgewings uit te stuur is dit steeds u verantwoordelikeid om seker te maak dat u lisensie betaal is voor die sperdatum

Ek sien uit om u te sien by die ledevergadering op 9 Maart 2019 by die Wellington Voortrekkers se perseel. Bly asseblief ook vir die gebruiklike ‘bring en braai’ na die vergadering.

Onthou dat u op hoogte kan bly deur BARK se Facebook blad facebook.com/bolandamateurradioklub.

Conradt ZS1ES

RF Remote Control Systems – The Misconceptions

When it comes to RF Remote Control Systems there are many misconceptions within the industry.Below is five common misconceptions that are highlighted on a regular basis.

1. Two products on the same frequency can't work side by side

When it comes to RF Solutions Remote control systems, two products on the same frequency can work side by side. One transmitter will not be able to control another system's receiver without being paired with it.

The firmware or hardware can differ, meaning that a transmitter and receiver will only communicate with each other if they are designed for and paired with each other.

2. The lower the frequency, the longer the range

Low frequencies possess valuable qualities which make them a unique asset compared to higher frequencies. Low-frequency radio waves can diffract around obstacles like mountain ranges and travel beyond the horizon following the contour of the earth.

Lower frequency radio waves can also reflect off the ionosphere, and the earth's surface, multiple times and so can travel for very long distances; therefore, a line of sight is not required.

However, whilst the above statement defines the characteristics of the physics of the wave in practice this is not always the case. This is because the legislation allows a higher transmit power in the 868MHz band compared with the 433MHz band, which means that many of the 868MHz products will provide a longer range.

When considering 2.4GHz (Wifi) whilst a high power can be transmitted, the characteristic of the RF signal is poor, which is one of the main reasons for that poor Wi-Fi performance at the far end of your house!

2. 915MHz can't be used in the UK

915MHz can be used in the UK on short-range devices (SRDs) on a license-exempt basis. This means that the regulatory authorities allow suitably approved and tested radios to be used without the need for an individual user operating license. A wide variety of frequencies and bands are available, although some are only available in particular countries as shown below:

Band	**Region & Comments**
433/868	Europe
433/458/868/915	United Kingdom
433/915	N.America
2400 (2.4GHz)	Worldwide

These are some examples of license-free bands that can be used by SRDs

The regulations for SRDs vary according to the country in question. Applications for short range devices include the below listed; Products applicable with these applications are available at RS Components; www.uk.rs-online.com/web/ or RF Solutions; www.rfsolutions.co.uk:

Omgekeerde T

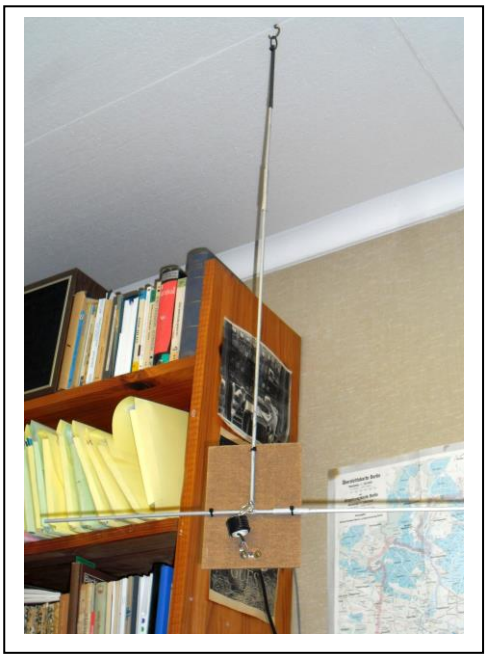
Deur Bernd Brozio ZS1ABN

Die oorspronklike artikel deur Martin Steyer het in FUNKAMATEUR 65 (2016) H. 9, S. 853-855 verskyn. Die afbeelding vertel die hele storie.

Sonder stroom-balun sal die lugdraad nie werk nie, soos enige „antenna analyser“ sal gou wys.
Die binnegeleier van die koaksiaalkabel word met die vertikaalelement verbind,
die mantel met die middel van die horisontale draad.

Die lengte van die horisontale element is 545 mm, vertikaal 695 mm. Hierdie afmetings geld vir 5 mm deursnee.

Dit word aanbeveel om die afmetings van die elemente aanvanklik 10 mm langer te maak



Ek het die volgende e-pos vanaf Leon Korkie ontvang. Ek glo dat almal dit baie interessant sal vind.

Doen mee, en vertel ons van ondervindinge soos hierdie.

Deon ZR1DE

Hallo Deon,

Ek het verlede jaar n klomp PLL DSTV LNB's gekoop en verander na die amateur band vir gebruik vir amateur televisie soos wat ek reeds by een van ons vergaderings gedemonstreer het. Dit is toe heel per toeval dat hierdie LNB's ook perfek is vir ontvangs van die nuwe Es'Hail satelliet. Ek het toe van hulle aan n paar aktiewe mikrogolf amateurs gestuur .

Toe die satelliet uiteindelik aangeskakel word was ons toe dus gereed om hom op te vang. Rickus de Lange ZS4A het my dadelik gebel toe hy die seine van Europese amateurs opvang by sy huis in Bethlehem. Ek het toe besef dat ek nou vinnig n plan moet maak dat ons n sein van Afrika af na die satelliet kan stuur. So twee dae later, Saterdag die 16de Februarie was ek toe gereed om n gelykgolf sein te stuur. Ek het toe my sleutel gedruk en wonder bo wonder kon my eie sein sien terugkom van die satelliet af.

Ek het toe vir Rickus gebel en vir hom daarvan vertel. Hy het toe vir my gese dat ek hom net so n paar minute moet gee sodat hy sy video kamera kan opstel. Ek het hom toe op CW deur die satelliet groep en hy kon my 59 ontvang. Hy het die video aan iemand gestuur wat rekords hou van sulke goed. Ek probeer nou uitvind of ek die eerste persoon in Afrika of die eerste persoon in Suid Afrika is wat n sein deur die satelliet gestuur het. Daarna het ek vir Raoul ZS1C gebel. Hy is mos n kompetiesie CW operateur. Hy was toe geweldig opgewonde en het dadelik in sy kar gespring en Worcester toe gery. Hy het toe met my ou Air Ministry straight key gou n klomp DX kontakte gemaak!! Ek was so verlig, want toe ek die eerste keer CQ roep op die satelliet was ek bang dat daar een van daardie vinnige ouens terugkom na my toe. My gelykgolf het in die laaste 40 jaar nie veel oefening gekry nie.

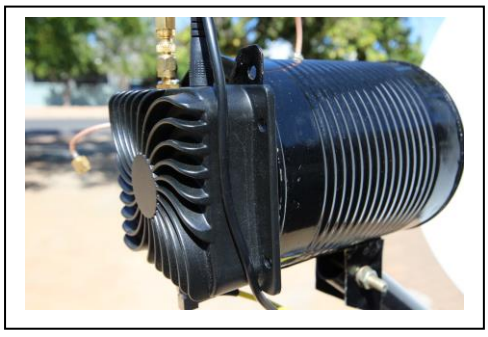
Ek sluit n paar fotos in van my twee tydelike skottels op 3pote en van Raoul waar hy besig is met sy pile up in die kombuis. Ek het net kort kabels by die kombuisdeur uit wat Noord kyk.

Beste groete,

Leon Korkie ZS1MM

Raoul ZS1C in aksie

Antenna

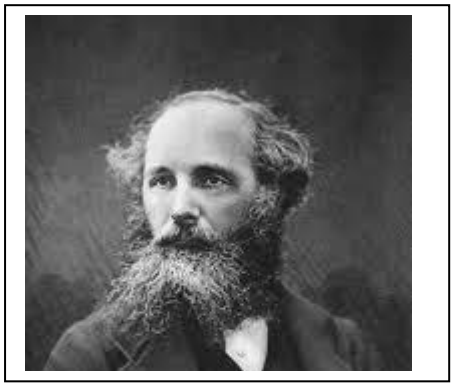


Detail

For The Love Of Radio

Granted, being a Radio manufacturer, all of us at RF Solutions will most definitely be considered bias in the 'I Heart Radio' corner. But, we feel we have every reason to be, working with a technology with amazing heritage, capabilities and the ability to evolve with the times.

Radio seems to hold a special place in our hearts, being an active technology for generations. It often humbly works away in the background whilst other technology has stolen the lime light. So,



James Maxwell

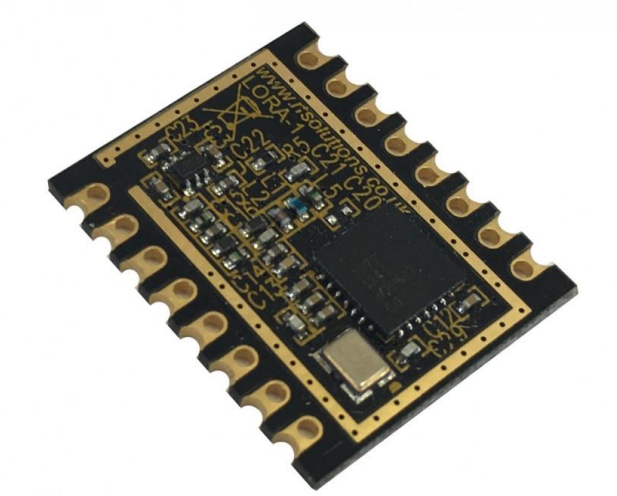
what is it about Radio that has made us so fond of it? And what will be next…

Heritage

RF Solutions have been manufacturing radio equipment for over 25 years, but this is just the tip of the iceberg when it comes to the Radio timeline. The first steps in the development of radio as we know it, can be traced back to the eminent British physicist James Maxwell, who carried out much of the early research into the behaviour of electromagnetic waves. The work of Maxwell led on to experiments by Hertz (who will be well known by anybody working in radio). At the end of the 19th century, Maxwell successfully designed and built what can be regarded as the first radio transmitter. The rest, as many would say "is history".

Capabilities

Radio has had the ability to adapt and grow with the times. We are lucky to live in an incredibly fast-paced technologically advancing world, however this can sometimes be the downfall for some technology. Despite being considered a 'Dark Art' and quite old fashioned when compared to some of the newer tech, Radio has stood its ground well over the years.



It has done this through evolving and continuing to be useful in our modern world. Component size, for instance has decreased dramatically over the years, resulting in radio equipment being a lot more appealing to work with, and also increased the amount of applications in can be used for. Another advancement would be the distance radio can work over. The introduction of technology such as LoRa from SemTech means that products like our RF-LORA can transmit up to 16km!

Simplicity

As mentioned, Radio is often considered quite a 'Dark Art', being that it is a complex and difficult technology to work with from scratch. However, over the years products have been made available where the most complex part is already done. On many of our Radio Modules, such as our GAMMA and BRAVO for instance, there is a microprocessor on-board with the firmware on. This means that when the end user receives them, there is minimal wiring required and they are ready to use out of the box.

Check out this video to see how simple it is to use 2 BRAVO modules to make a simple remote control system…

Problem Solver

Radio is often considered a problem solver, as people come up with so many weird and wonderful uses for it. We often get contact by people who ask "Can I used your modules for this…?, "Do you have anything that will switch…", "Is Radio able to…?" and 9 times out of 10 the answer is yes.

Due to the diverse nature of radio, it is used for a large variety of different challenges and even we are frequently surprised and impressed by what our customers use the products for. For instance, they have been used by a lot of special effects companies and on movie sets.

https://youtu.be/6IG6RRa_x6U

With lots planned for Radio in the future, it will continue to impress us with what it can achieve. Over the past few years with the introduction of LoRa and other similar technologies, Radio will

be a big contender in our future tech, not to mention IoT. It will be exciting to see where the path leads next, and how this humble technology will continue to impact our lives.

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INVERTED V DIPOLE FOR HF

AMATEUR RADIO

Submitted by David de Kock ZS1DDK

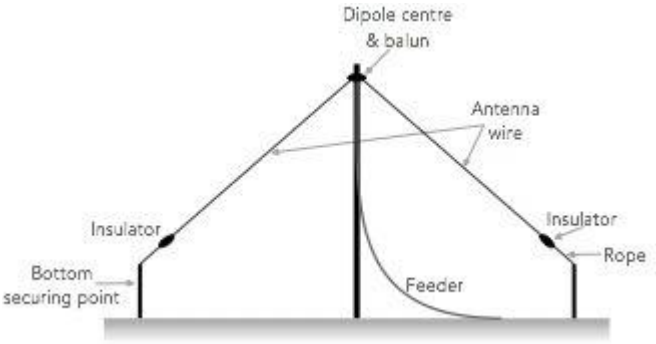
The inverted V dipole can form an effective antenna system for use on the HF amateur radio bands, or for other applications in many circumstances.

The advantage of the inverted V is that it only requires one high support whilst still achieving a high level of performance - the difference between an inverted V with its centre at the same height as a horizontal dipole is very marginal, and in most instances the difference in performance may not be detectable.

Normally the inverted V dipole is used for HF operation as the advantages of the single support are apparent on these frequencies.

What is an inverted V dipole

As the name implies an inverted V dipole is a form of dipole that is in the form of a V which has been inverted. Instead of having two main supports - one for either end, both of which need to be as high as possible, the inverted V uses its main high support in the middle, having with ends having lower supports or anchorage points.



Basic inverted V dipole antenna concept

The inverted V dipole antenna has a number of advantages. One is that the maximum radiation from any antenna is from the points of high RF current, and a half-wave dipole has this maximum at its centre and for a few feet on either side of the feeder connections. Therefore it is best to make the centre of the dipole as high as possible.

If it is only possible to have one high support, an inverted-V arrangement is obviously ideal. In this way it is possible to use one fairly high mast in the centre of a garden or plot in locations where the erection of a pair of similar supports with their attendant guy wires would be difficult. A roof-mounted or chimney-mounted mast may also serve as the centre support for a 'V', and the two ends of the dipole can then drop down on either side of a house or bungalow roof. Such chimney mounting will allow the feeder to be dropped to the shack quite easily if it is located in the house.

Inverted V dipole performance

Although an inverted-V has its greatest degree of radiation at right angles to the axis of the antenna, its radiation pattern is more omnidirectional than that of a horizontal dipole as a result of the fact that the legs are angled downwards.

The inverted-V has an excellent reputation for long distance communication on the lower-frequency amateur bands where the installation of large verticals or high horizontal dipoles is not practicable.

As an example, the inverted V dipole performance very well at low frequencies and will give good results on the 3.5MHz ham radio band when the mast is only about 14 metres or 45 feet high. This makes it a very attractive proposition for many amateur radio stations. Similarly it inverted V dipole antennas for other bands also perform well.

Building an inverted V dipole for amateur radio

Building an inverted V dipole is very much like that of a standard dipole. There are several elements to the installation and erection of the inverted V dipole.

- ***Mast:*** One major requirement for the inverted V dipole installation is the mast. This should be robust and firmly mounted into the ground. If it is metal construction it is suggested that a good earth connection is provided. Also a pulley should be installed at the top to enable easy hoisting of the inverted V dipole antenna
- ***End anchor points:*** When building an inverted V dipole and erecting it, the anchor points for the two ends should be considered. These must be located so that they do not posed a hazard to anyone in the area. They should also be located so that the antenna wire ends are out of reach. In addition to this the inverted V dipole anchor points should enable the wires to subtend an angle greater than 90° at the top centre point.
- ***Antenna wire:*** The antenna wire should be of suitable quality for use externally. Ideally hard-drawn copper wire so it does not stretch, it can be single or multi-stranded.
- ***Dipole centre:*** Like any dipole there needs to be a centre piece. The centre of the dipole requires the coaxial or open-wire feeder to be connected to it and whilst it may be tempting to simply connect the feeder and let it take the strain, this is not particularly satisfactory when there is a long drop for the feeder – a dipole centre should be used. This will take the strain caused by the tension on the wire, thereby avoiding damage to the feeder over a period of

  time. Dipole centre piece providing strain relief
  *Strictly speaking a balun should be used but it is often omitted especially for receiving applications*The dipole centre will also provide a means of attaching a rope to enable the pulley system to hoist the antenna centre. A good quality centre should be used wherever possible.

Inverted V dipole installation considerations

When considering erecting an inverted V dipole there are a number of considerations that should be kept in mind when its is being planned

- ***Angle between dipole legs:*** The angle between the sloping wires must be at least 90° and preferably 120° or more. This angle dictates the centre support height as well as the length of groundeeded to accommodate the antenna.

  Angle between dipole legs should be at least 90° and preferably around 120°.For example, when designed for the 3.5MHz band an inverted-V will need a centre support at least 14m (45ft) high and a garden length of around 34m (110ft). By contrast, a horizontal dipole needs at least 40m of garden and that neglects to take into account guys to the rear of the end support masts. Again, the inverted-V is ideal for portable operation because one for operation on 20m (14MHz) only needs a lightweight 5m (15ft) pole to hold up its centre.
- ***Dimensions need adjusting:*** The sloping of the dipole wires causes a reduction of the resonant frequency for a given dipole length, so about 5% must be subtracted from standard dipole dimensions. However as with an ordinary dipole it is always best to start with the inverted V a bit too log and trim it to operate with its best performance in the areas of the band most used. Also remember that the same amount must be trimmed from each end so that the dipole remains centre fed and there is not an imbalance.
- ***Length measurement:*** Remember when cutting he antenna wire, that the electrical length is measured from the centre of the antenna dipole centre piece to the furthest extremity of the wire.

  Remember when cutting the wire for the dipole to allow extra for fixing to insulators and dipole centre piece.Any wire used to fold back around the insulator does not contribute to the electrical length, but needs to be considered when cutting the physical wire length. An allowance also needs to be made for the dipole centre piece as well.
- ***Radiation resistance:*** A further consequence arising from sloping the dipole wires is a change in its radiation resistance. The centre feed impedance of the inverted V dipole falls from the nominal 75 ohms of a horizontal dipole to just 50 ohms. This of course is ideal for matching the antenna to standard 50 ohm impedance coaxial cable.
- ***Bandwidth:*** An inverted-V dipole antenna has a higher Q than a simple dipole so it tends to have a narrower bandwidth.
- ***Keep inverted V dipole ends out of reach:*** It is not recommended that the ends of an inverted-V are allowed closer to the ground than about 3 metres or about 10 feet, even on the higher-frequency bands, because there can be a possible danger to people and especially children or animals touching the wire ends which will be at a high RF potential when energised. The effects, although not likely to prove lethal, nevertheless could result in a nasty shock or RF burn, and it seems unlikely that an insurance company would look kindly at any claims resulting from such an accident.

This article appeared in **electronics**notes