



WATTS

01-2016

Year 86 ± 1m

Monthly Newsletter of the Pretoria Amateur Radio Club
Maandelikse Nuusbrieff van die Pretoria Amateur Radio Klub

PARC, PO Box 73696, Lynnwood Ridge 0040, RSA
<http://www.parc.org.za> @ zs6pta@zs6pta.org.za



Bulletins : 145.725 MHz on Sundays / Sondae at 08:45

Relays: 1.840, 3.700, 7.066, 10.135, 14.235, 51.400, 438.825, 1297 MHz

Activated frequencies are announced prior to bulletins

Swopshop : 2m and 7.066 MHz live on-air after bulletins

Bulletin repeats on Mondays / herhalings op Maandae : 2m 19:45



It is with great sadness that we have learned of the passing of Bertha Kappetijn, the sw of Hans ZS6KR after a long sick-bed. Our sincere condolences to Hans and his children Dennis and Sonja, and grand children.

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Club Meetings / Klub Vergaderings

Club Social Meeting :

Saturday 9th of January from
11:00 AM at the SAM Clubhouse

Committee Meeting :

Thursday 21st of January 2015
per Skype

PARC Committee Members / Komiteelede : 2015 - 2016

Elected Members

Chairman, Social & Rallies	Johan de Bruyn	ZS6JHB	zs6jhb@gmail.com	012-803-7385	079-333-4107
Vice Chairman, Contests	Pierre Holtzhausen	ZS6PJH	zs6pih@telkomsa.net	012-655-0726	082-575-5799
Treasurer	Andre van Tonder	ZS6BRC	andre.vtonder@absamail.co.za	012-361-3292	082-467-0287
Secretary, Bulletin Coordinator	Jean de Villiers	ZS6ARA	zs6ara@webmail.co.za		083-627-2506
Public Relations, RAE, Bulletins	Etienne Naude	ZS6EFN	etienne@afgrid.com		082-553-0542
Web co-ordination	Graham Reid	ZR6GJR	greid@wol.co.za		083-701-0511
Repeaters	Craig Symington	ZS6RH	zs6rh@hotmail.co.za		081-334-6817
Competitions	Jaco Cronje	ZR6CMG	jacocronje@yahoo.com		081-474-2220
Clubhouse & Contests	Whitey Joubert	ZS6JJJ	zs6jjj@gmail.com		072-120-4516
Technical, Web & Repeaters	Gawie Marais	ZS6GJM	zs6gjm@gmail.com		083-663-2222
Repeaters	Andre Coetzee	ZS6GCA	Johncoetzee@absamail.co.za		082-772-5811
WATTS, RAE & Clubhouse	Louis de Wet	ZS6SK	louis.zs6sk@gmail.com	012-349-1044	072-140-9893
Co-Opted Members					
Fleamarket	Alméro Dupisani	ZS6LDP	almero.dupisani@up.ac.za		083-938-8955
Auditor	Tony Crowder	ZS6CRO	tcrowder@telkomsa.net	011-672-3311	
Historian, Archives, Awards	Tjerk Lammers	ZS6P	zs6p@iafrica.com	012-809-0006	083-976-4387

Birthdays – January / Verjaarsdae – Januarie

05 Pierre Holtzhausen ZS6PJH
09 Carel Kruger ZS6CPK

10 Wynand Wessels ZR6WW
12 Gustav Snyman ZS6BWN

Spouse's Birthdays – January / Januarie

18 Zelda, spouse of Wynand Wessels ZS6WW
25 Magriet, sw of Tobie Jansen van Rensburg ZS6ZX
31 Elize, spouse of Pieter Human ZS6PA

Anniversaries / Herdenkings – January / Januarie

05 Almero ZS6LDP en Louise Du Pisani
07 Johan ZS6JHB en Doreen ZR6DDB de Bruyn
09 Pieter ZS6CN en Annatjie Fourie
11 David ZS6DBB en Judy Botha
17 Charles ZS5CH en Sharon Thompson
20 Hans-Peter ZS6AJS en Helga Knoepfler

Please Note : If your Club fees are not paid up to date, birthday details cannot be displayed in Watts

Contests and Diary of Events – January 2016 / Kompetisies en Dagboek van Gebeure – Januarie 2016 (UTC Times)

09 - 10	Hunting Lions in the Air ; SARL Youth Net
10	NRAU – Baltic Contest SSB : 06h30 – 08h30
10	NRAU – Baltic Contest CW : 09h00 – 11h00
10	DARC 10m Contest : 09h00 – 10h59
10	SARL Youth net on 7 070 MHz from 15h00
15	LZ Open Contest : 18h00 – 22h00
15 - 17	PEARS National VHF and UHF Contest
16 - 17	Hungarian DX Contest : 12h00 – 11h59
23	Summer QRP Contest
29 - 31	CQ 160m Contest CW : 22h00 – 22h00
30 - 31	REF Contest CW : 06h00 – 18h00
30 - 31	UBA DX SSB Contest : 13h00 – 13h00
31	Closing date for nomination for SARL Council and Submission of motions for the AGM

PARC SUBS / LEDEGELD FROM / VAN 31-10-2015

Bank	First National Bank	Ordinary Members / Gewone Lede : R150 Spouses / Pensioners : R50	Your call sign must appear as statement text!
Branch Code	25 20 45		
Account No	546 000 426 73		
Please remit your subs in time to our Treasurer, or pay per transfer into the PARC account Betaal asb. u ledegelde betyds aan ons Tesourier, of betaal per oorplasing in die PARC rekening			

PARC Fleamarkets for 2016 are scheduled for the following dates:

5 March ; 28 May ; 27 August ; 5 November

Please do contact Almero du Pisani ZS6LDP (almero.dupisani@up.ac.za 083-938-8955) for more information or to book a table, or if you wish to donate any old equipment to PARC

RAE Classes for May 2016 Examination

The next RAE will take place on Thursday, the 19th of May 2016. Registration for the RAE opened on the 2nd of February 2016. Preparation for the RAE will commence in January at the offices of Waterlab (Pty) Ltd at 23B de Havilland Crescent, Perseus Park, Pretoria. Please contact Louis de Wet ZS6SK (louis.zs6sk@gmail.com) for instructions to the venue.

An introduction to Amateur Radio will be presented on Saturday the 23rd of January (9h00 – 11h00), while **lectures will commence on Saturday the 30th of January (9h00 – 12h00)**. Final information will be posted on soon on the PARC website. Etienne Naude, the coordinator of RAE training can be contacted for more information: etienne@afgrid.com or 082-553-0542.

Chapter	Description	Week	Tutor
1	Chapter 1 - Introduction to Amateur Radio	1	EN
2	Chapter 2 - Basic Electrical Concepts	2	EN
3	Chapter 3 - Resistance and Ohm's Law	2	EN
4	Chapter 4 - The Resistor and Potentiometer	3	EN
5	Chapter 5 - Direct Current Circuits	3	EN
6	Chapter 6 - Power in D.C. Circuits	3	EN
7	Chapter 7 - Alternating Current	4	LdW
8	Chapter 8 - Capacitance and the Capacitor	4	LdW
9	Chapter 9 - Inductance and the Inductor	4	LdW
10	Chapter 10 - Tuned Circuits	5	PJH
11	Chapter 11 - Decibel Notation	5	PJH
12	Chapter 12 - Filters	5	PJH
13	Chapter 13 - The Transformer	5	PJH
14	Chapter 14 - Semiconductors and the Diode	6	LdW
15	Chapter 15 - The Power Supply	6	LdW
16	Chapter 16 - The Bipolar Junction Transistor	6	LdW
17	Chapter 17 - The Transistor Amplifier	7	PJH
18	Chapter 18 - The Oscillator	7	PJH
19	Chapter 19 - Frequency Translation	7	PJH
20	Chapter 20 - Modulation Methods	7	PJH
21	Chapter 21 - The Transmitter	8	LdW
22	Chapter 22 - Receiver Fundamentals	8	LdW
23	Chapter 23 - The Superheterodyne Receiver	8	LdW
24	Chapter 24 - Transceivers and Transverters	11	LdW
25	Chapter 25 - Antennas	11	EN
26	Chapter 26 - Propagation	11	EN
27	Chapter 27 - Electromagnetic Compatibility	12	EN
28	Chapter 28 - Measurements	12	EN
29	Chapter 29 - Digital Systems	12	EN
30	Chapter 30 - Operating Procedures	13	EN
	Regulations	13	EN
	Regulations	14	EN

EN: Etienne Naude ZS6EFN ; PJH: Pierre Holtzhausen ZS6PJH ; LdW: Louis de Wet ZS6SK

Before registering for the RAE on the SARL website, please consult the RAE registration information sheet. The cost of registration is R475-00 if you are older than 25 years, and R375-00 if you are younger than 25 years. If you have more enquiries, please do email rae@sarl.org.za.

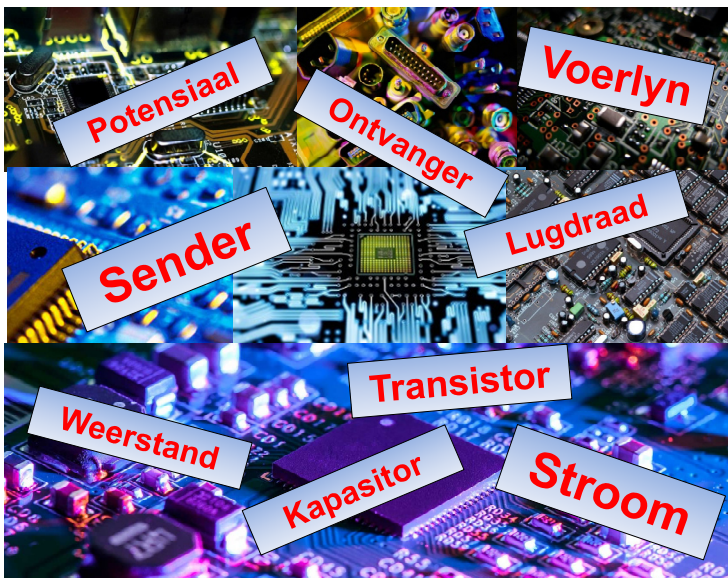
Die projek om 'n radio amateur terminologie woordeboek saam te stel is nou in volle swang en die projekspan is aan die werk om die doel te verwesenlik. Die projek is simbolies van hoe Afrikaans dinge maak gebeur en hoe die taal dinge maak werk. Hierdie projek is innoverend en waaraan die hele radio amateur gemeenskap, Engels en Afrikaans sprekend daaraan kan deelneem. Die idee is om 'n woordeboek van radio amateur terminologie saam te stel wat Afrikaans as taal onder ons Afrikaans sprekende radio amateurs en ander belangstellendes bevorder. Dit is so dat 'n taal soos Afrikaans baie maklik kan kwyn omdat daar in sekere vak gebiede geen korrekte Afrikaanse gebruike en vertalende woorde en termes is nie, en dit dan lei na 'n verbastering van die taal waar anglismes en nie-korrekte vertalings standaard omskruiwings word.

Die radio amateur woordeboek sal sy kredietwaardigheid behou deur die samewerking en bydraes van taalkundiges en taal spesialiste. Verder word daar beplan om die handleiding op ander vlakke bekend te stel. Ons beoog om dié projek 'n nasionale projek te maak. Ons wêreld groei ongelooflik vinnig met nuwe tegnologie wat daaglik ontwikkel word. Enige taal wat nie saam groei nie sal verlore gaan en dit dryf ons om nuwe woorde vir die tegnologie te voorsien, nuwe woorde wat nog nooit gebruik of gehoor was nie weens die tegnologie nog nooit bestaan het nie. Dit is nou die tyd om jouself deel te maak van die projek en om deel te hê om 'n wêreld eerste Amateur Radio woordeboek in Afrikaans saam te stel.

Ons hou op sekere Donderdae om 20:00 'n groepsgebesprek op die Pretoria Amateur Radio Klub se 145.725 MHz herhaler om mede amateurs bewus te maak waarmee ons besig is en om 'n groter groep amateurs se insette, kommentaar en voorstelle deel van die projek te maak. Enige radio amateur is welkom om deel te neem aan die pret en opwinding en om te kom met voorstelle en bydraes. Die projekspan wil jou graag nooi om saam te luister via die Pretoria Amateur Radio Klub se netwerk of IRLP/Echolink (ZS0JPL) op sekere Donderdag aande om 20:00.

Verder sal ons binnekort 'n webtuiste skep vir die breër gemeenskap om saam met ons te kan werk en hulle voorstelle te gee, meer hieroor op 'n latere stadium. As jy reeds 'n voorstel of kommentaar het, stuur dit gerus aan Etienne Naude, ZS6EFN, te e-pos by etienne@afrigrid.com.

Die projekspan vir die Afrikaanse Radio Amateur Terminologie Woardeboek is soos volg:



Pine Pienaar ZS6GST
Etienne Naude ZS6EFN
Cobus Rabe ZS1DJR
Louis de Wet ZS6SK
Ryan Gibson ZS6GGR
Fritz Sutherland ZS6SF
Johan du Bruyn ZS6JHB
Jan Pieper PE1PMO
Chris Meyer ZS1M

RALLY EVENTS 2016 : PRELIMINARY DATES

Rd 1 : 4/5 March TBA

Rd 2 : 22/23 April – SASOL Rally

Rd 3 : 20/21 May – Secunda Rally

Rd 4 : 15/16 July – Volkswagen Rally

Rd 5 : 19/20 August – Tshwane Rally

Rd 6 : 23/24 September – Cape Rally

Rd 7 : 21/22 October – Polokwane Rally

For more information please contact Johan de Bruyn ZS6JHB

PARC Shirts, Caps and Hats For Sale



PARC shirts, hats and caps are again available, and can be ordered directly from Joey Reid.

Joey's contact details are as follows for more information on prices:

Cell: 083-252-7912 ; Phone: 012-667-2720 ; Email : jreid@wol.co.za

Bank payments can be made to: JD Enterprises ; Capitec Bank ; Acc No : 1273634991 ; Branch No : 470010



The Discone Antenna : By Louis de Wet ZS6SK

Recent changes in legislation now allows licenced Radio Amateurs who are members of the South African Radio League (SARL) to own and use scanner receiver typically operating in the range of 30 to 2000 MHz. Of course using this type of receiver goes hand in hand with a high degree of responsibility, as is required from Radio Amateurs when operating any radio receiver or transceiver. It was however interesting when I purchased the Icom IC-R7000 (below) second hand and switched it on for the first time using just a piece of long wire for an antenna. Of course the only activity I could receive was Jacaranda and RSG, and I realised that this piece of long wire is not going to do the job! I urgently needed to do a bit of reading up and get started on building a suitable antenna for this receiver.



Icom IC-R7000 Scanner Receiver

Working through the operation manual, and being intrigued beyond the point of excitement, the Discone antenna seemed to be something utterly beyond the conventional design of antennas we are used to. In essence the discone is vertically mounted, with a horizontal disc on top and a vertically orientated cone below, generally fabricated from copper plate, wire mesh or metal rods. Being omnidirectional, vertically polarized and offering unity gain, this antenna is exceptionally wideband, and offers a frequency range ratio of up to approximately 10:1.

Due to the wideband coverage of the discone, it is found to be most attractive in military, commercial, amateur radio and radio scanner applications. It is however less efficient than an antenna specifically designed for a limited frequency range, when employed as a transmitting antenna.

As seen in the photograph right, the antenna is composed of a disc shaped radiator on top of a cone shaped ground plane. The two components of the discone can be either solid (right) or composed of separate elements (below), which make it cheaper, lighter and cost effective to construct.

However, due to relatively large gaps between the elements of both the radiator and the ground plane, this variation is not as effective as the discone consisting of solid elements. Therefore, trade-offs are often made between the two designs shown.



To calculate the dimensions of the antenna components, the lowest resonant frequency at which the antenna is to operate, is required. The diameter of the top of the cone will determine the upper frequency of the antenna. The length of the cone or cone elements should be a quarter of the wavelength of the minimum frequency to be received or transmitted. The diameter of the disc should be 70% of one quarter of the wavelength of the minimum frequency to be received by the antenna. The skirt diameter of the cone should be equal to the length of the elements or quarter wave length. An antenna which is properly designed should be capable of receiving up to 10 times the lower frequency limit and transmitting up to 5 times the lower limit.

In order to do the calculations required for the elements of the Discone, the following equations are applicable:

$$\text{Cone Element Length (mm)} = 75000 / \text{Frequency (MHz)}$$

$$\text{Disc Diameter (mm)} = 52550 / \text{Frequency (MHz)}$$

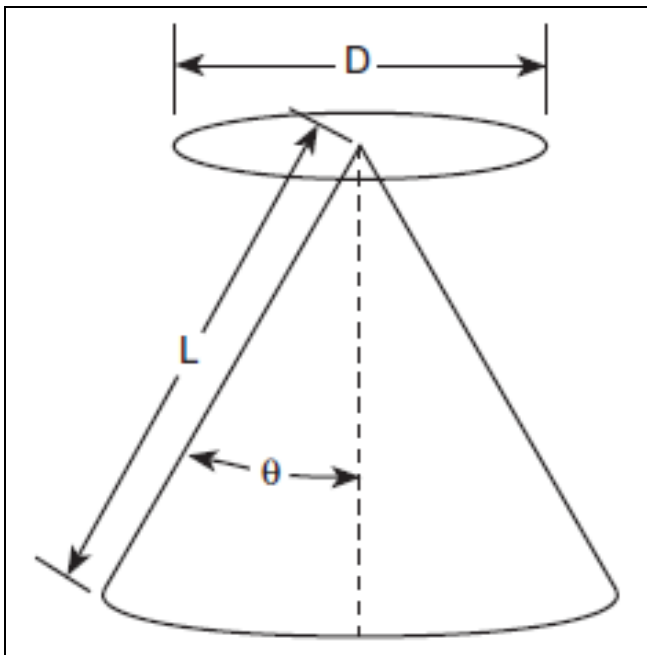
The distance between the disc and the top of the cone should be about $\frac{1}{4}$ of the minimum radius of the cone.

For a minimum frequency of 200MHz the following calculations apply:

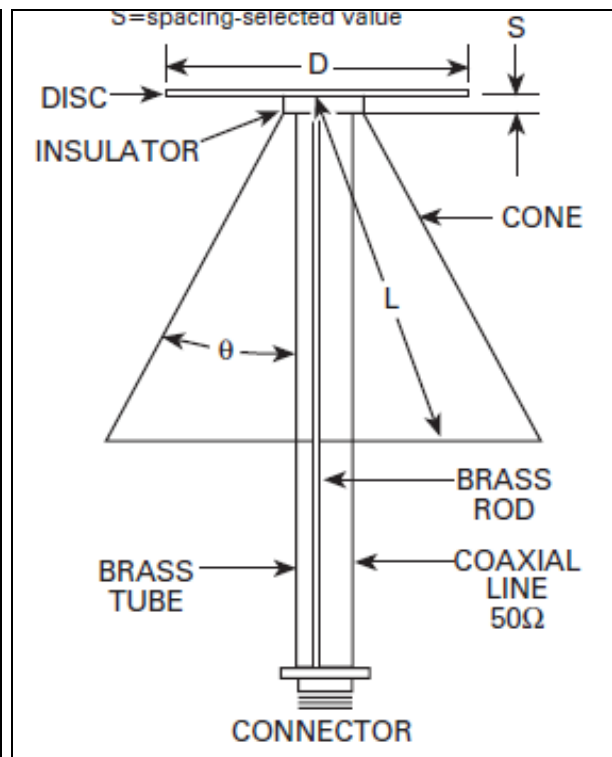
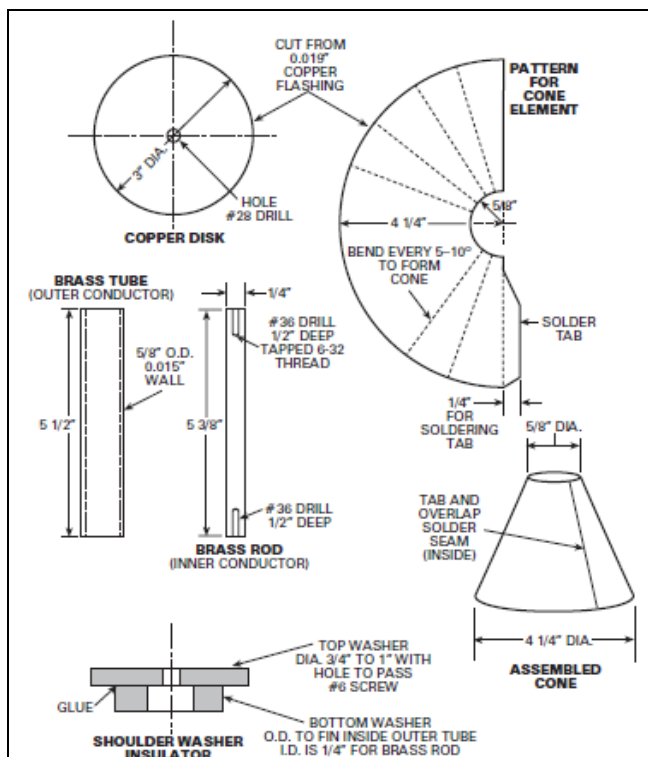
$$\text{Cone Element Length (mm)} = 75000 / 200 = \underline{375\text{mm}}$$

$$\text{Disc Diameter (mm)} = 52550 / 200 = \underline{263\text{mm}}$$

The feed point for the discone antenna is at the centre of the disc. A 50 Ω coaxial cable is used, with the centre conductor connected to the disc, and the outer conductor to the cone.

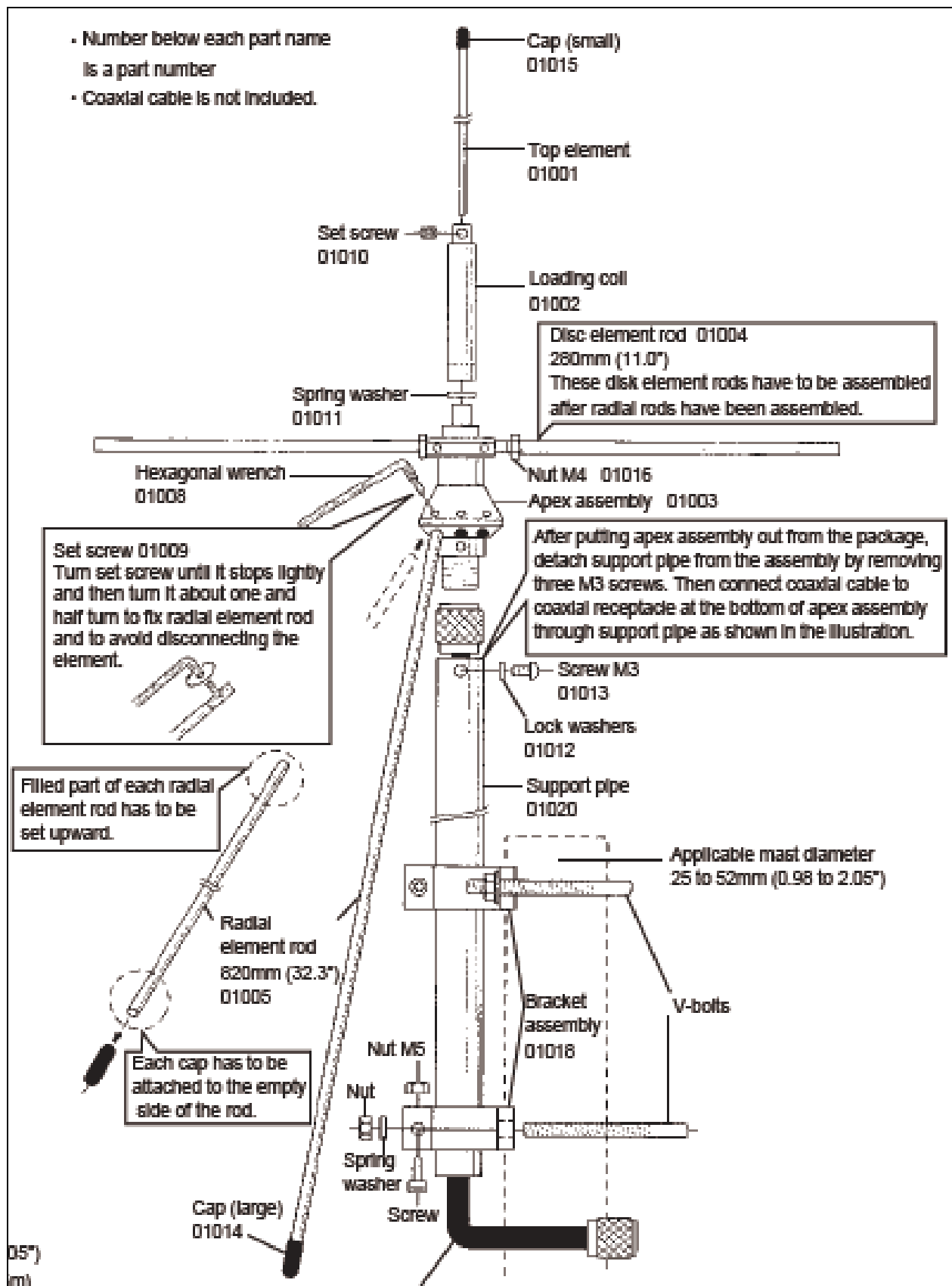


A short publication by William Sheets KPMQJ and Rudolf Graf KAS CWL in Poptronix (1997) describe in detail the construction of a solid plate discone antenna effective in the range of 700 – 2000 MHz. The figure left shows an idealized discone antenna, while the figures below show some details of the construction of the discone. The two elements of the antenna are cut from 0.019 gauge copper plate. The cone is formed by drawing radial lines on the inside surface, bending the pattern a little at each line around a piece a cylinder, repeating until the edges meet, where they can be soldered together. The disc is connected to a brass rod, which is inside a brass tube, which in turn is connected to the cone. The rod and tube are soldered to a standard coaxial connector.

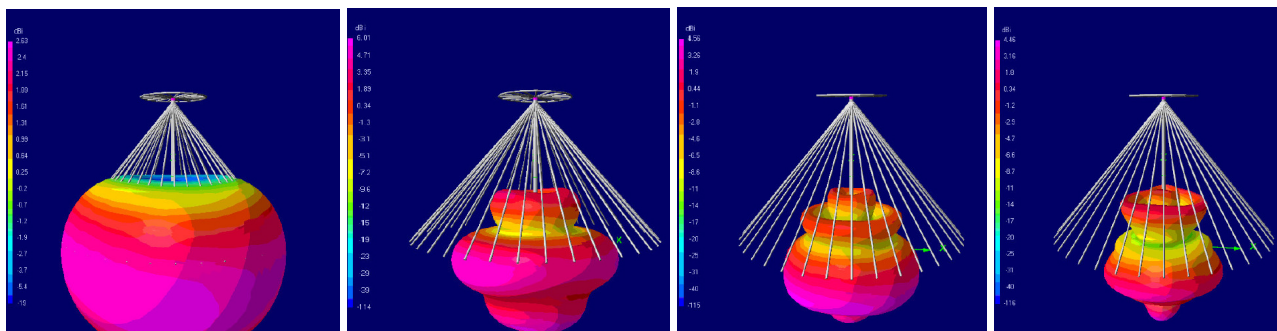


The commercially available Diamond D130J/D130NJ Super Discone Antenna is according to the suppliers the first ultra-wideband antenna which can cover amateur radio, as well as commercial radio and various other utility frequency bands, able to cover the 25 – 1300 MHz frequency range.

Suitable for transmission on the 6m, 2m, 70cm, 33cm and 23cm amateur bands, this discone is easily assembled with the radial cone elements fitting onto a central apex assembly, and the disc elements, as well as an additional vertical top element fitted on top of the apex assembly.



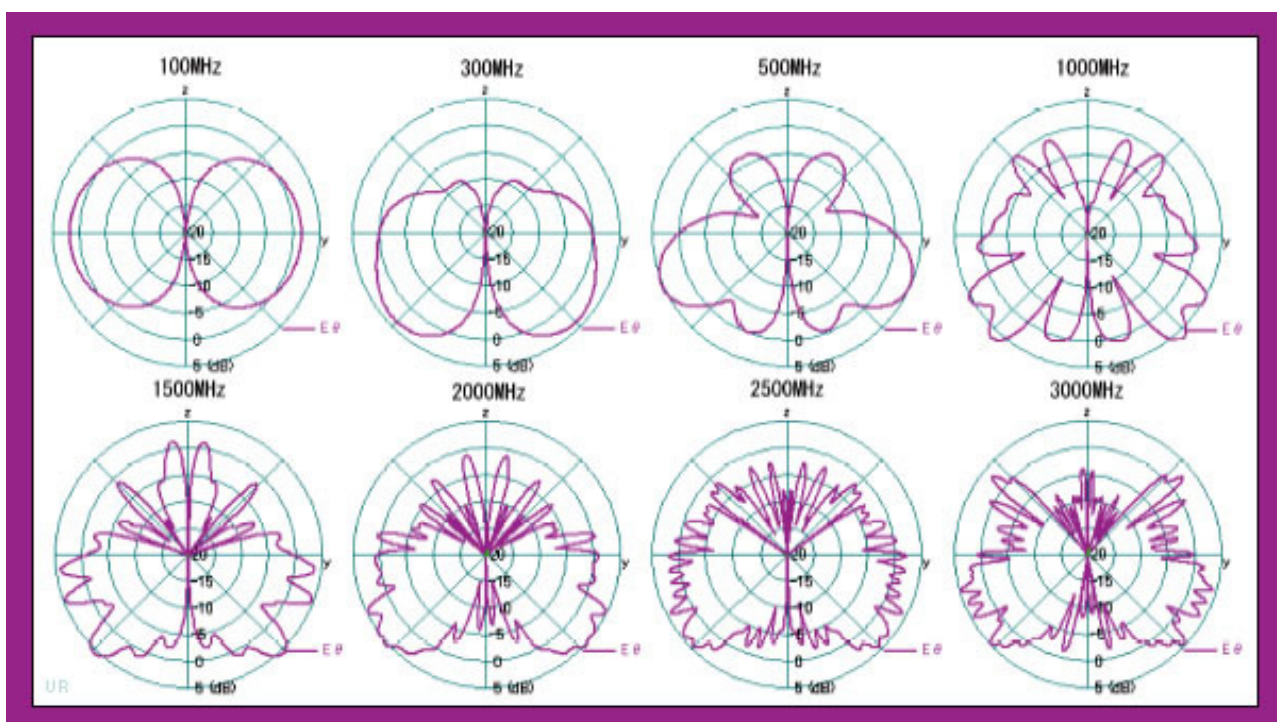
Radiation patterns and physical dimensions for discone antennas at different frequency bands vary considerably. For the HF bands, as seen below, the dimensions of the antenna can be quite spectacular, with radiation patterns from 7 – 28 MHz being rather uniform and globular in shape, providing quite a good coverage in all directions.

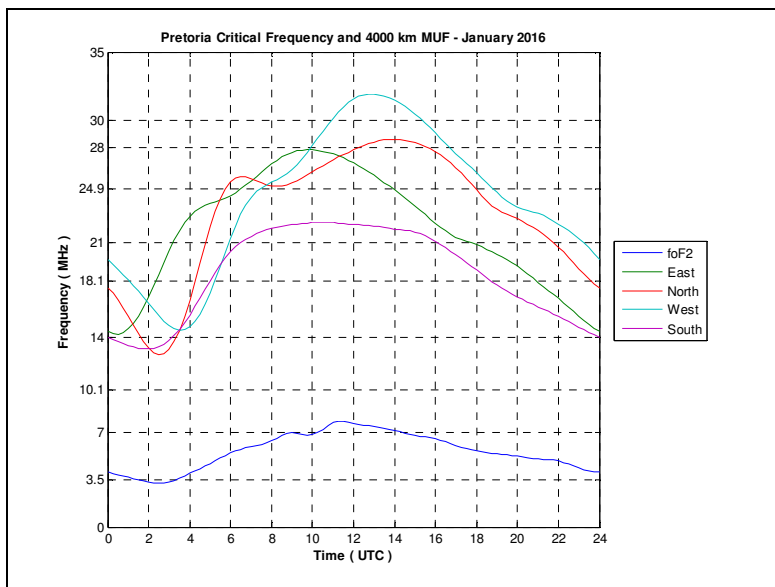


Radiation patterns of a discone antenna for HF at 7 MHz, 14 MHz, 21 MHz and 28 MHz respectively (radius of cone $d = 4.2\text{m}$; length $l = 16.8\text{m}$)



In contrast to the HF bands, the radiation pattern in the VHF and UHF frequency ranges, from 100 – 3000 MHz are not as uniform and may vary considerably with an increase in frequency. However, it still provides lots of opportunities for experimentation by the Radio Amateur. I will most certainly start off the new year with the construction of a copper plate discone, and will report back in the near future on an evaluation of the performance of the Discone Antenna.





Long Term HF Propagation for January 2016

DX Operating

The graph shows the 4000 km maximum useable frequency (MUF) to the East, North, West and South from Pretoria for the first hop using the F2 layer.

Local Operating

The F2 critical frequency (foF2) is the maximum F-layer frequency for short range communications.

See also the Propagation tab at <http://www.parc.org.za/>

Courtesy Vincent ZS6BTY

C/O NELSPOORT & 801 MALMESBURY STR, WINGATE PARK, PRETORIA [S25.49.36 & E28.16.07]

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SPECIALLY MANUFACTURED VHF/UHF EX60B ANTENNA SYSTEMS FOR:
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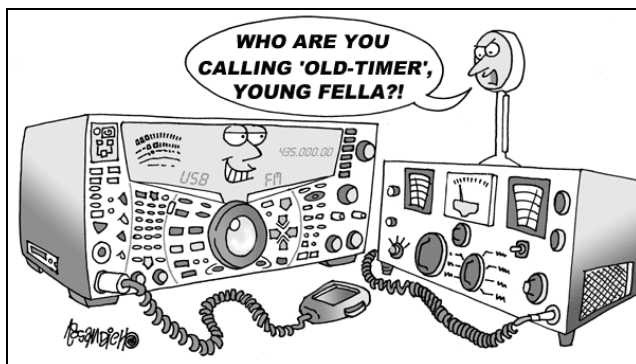
QRV Services offers the following expertise:

- General equipment and Television repairs
- Small-scale design and manufacturing
- Precise frequency and power calibration
- Technical writing
- 3rd Party scrutiny of projects and documents
- MFJ 259/69 Analyzer repairs and calibration
- Ham radio and solid state amplifier repairs
- Valuation of ham estates and their disposal.

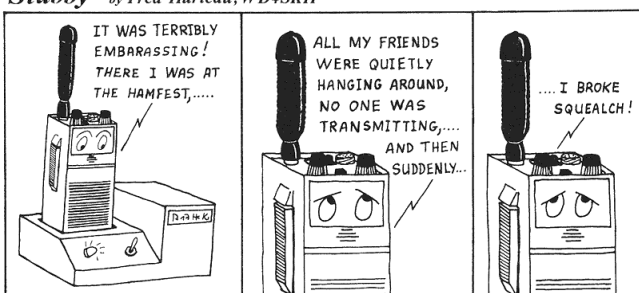
Products:

- Legal limit 30m and 40m dipole traps
- Linear power supply O.V. protection kits
- 30A DC switching supplies
- 30A DC Anderson Power Poles
- Connectors RF and Audio
- Plug-in triple sequential industrial timers

Contact Hans at 012-333-2612 or 072-204-3991



Stubby by Fred Hurteau, WD4SKH



Punography

- I tried to catch some Fog. I mist
- When chemists die, they barium
- Jokes about German sausage are the wurst
- A soldier who survived mustard gas and pepper spray is a seasoned veteran
- I stayed up all night to see where the sun went. Then it dawned on me
- The girl said she recognized me from the vegetarian club, but I'd never met herbivore
- I'm reading a book about anti-gravity. I can't put it down.
- They told me I had type A blood, but it was a Type O
- A dyslexic man walks into a bra
- PMS jokes aren't funny. Period.
- Class trip to the Coca-Cola factory. I hope there's no pop quiz!
- Energizer Bunny arrested. Charged with battery.
- What does a clock do when it's hungry? It goes back four seconds!