

Radio ZS

Volume 79, No 8 August 2026 Augustus



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Contents





Radio ZS



The Journal of the South African Radio League
Die Tydskrif van die Suid-Afrikaanse Radioliga
“Advancing the Spirit of Amateur Radio Through Innovation”

Volume 79, Issue 8 - August 2026 Augustus
Editor: Dennis Green, ZS4BS radiozs@sarl.org.za

In this issue

4. What's happening in August?
5. Silent Keys and Amateur Radio News
7. Our Volunteers
8. SARL News Bulletins / SARL Nuus Bulletins
9. The 27th IARU Region 1 General Conference - Vienna, Austria
10. International Lighthouse/Lightship Weekend
12. Creating the Leffell School Space Engineering Programme
14. Contest Calendar
16. Common Mode Rejection
20. M5Stack Fire Band Conditions Project
25. The new ARRL 10-Band DXCC Award
26. Die Amateur se Kode
27. YAESU FT-710 memories for repeaters
35. Die DX Gedragskode
36. Soldering Tips for Radio Amateurs
38. The W4BOH Fox
42. Blandsdrif Radio-dag 2026
45. Ham radio is lekker
47. Solving the USB charger problem for good
49. The YL.Beam
54. Revisiting the Quagi Directional

On the Cover. The Winter SOTA Activity Weekend from the Eastern Cape with Carlin Mitchell, ZS2NM

Op die Voorblad. Die Winter SOTA Aktiwiteitsnaweek van die Oos-Kaap met Carlin Mitchell, ZS2NM

Disclaimer. The opinions expressed in this publication do not necessarily reflect the official view of the South African Radio League and the South African Radio League cannot be held responsible for incorrect information published.

Antenna

58. Reverse Polarity Prevention
61. Lighthouses: The Durnford Lighthouse
63. HF Update
66. A 5-Band, Lazy-L, Linear-Loaded, Ladder Line Antenna
69. The Museum Piece: SCR-300 WW2 Radio Backpack: The “Walkie Talkie” that Shaped the War
76. Establishing Morse Code as an Intangible Heritage
128. That is all Folks!

South African Radio League

Suid-Afrikaanse Radioliga

Founded 20 May 1925 /
Gestig 20 Mei 1925
The National Body for
Amateur Radio in South
Africa and Member Society
of IARU Region 1
Die Nasionale Liggaam vir
Amateur Radio in Suid-
Afrika en Lidvereniging van
IARU Streek 1
<https://mysarl.org.za/>

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South Africa / Suid-Afrika

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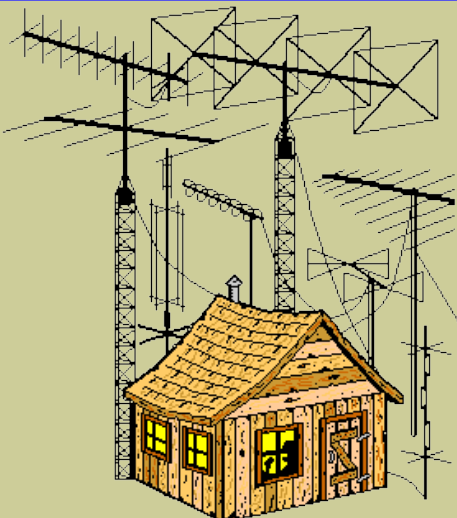
ZS6WN

Gary Immelmann, ZS6YI

What you doing in August?

<i>Sunday</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
26 the IOTA Contest and the ZS1 QSO Party 	27	28 Delta Aquarids Meteor Shower.	29 Delta Aquarids Meteor Shower.	30	31 the October RAE registration opens 	1 AMSATSA Space Symposium, the ZS6PTA Boot sale and the NA CW QSO Party
2 SARL HF Phone Contest, the NA CW QSO Party and 2nd Africa Scout Moot ZS9YOTA	3 the 2nd Africa Scout Moot ZS9YOTA	4 the 2nd Africa Scout Moot	5 the 2nd Africa Scout Moot	6 the 2nd Africa Scout Moot	7 the 2nd Africa Scout Moot	8 International Cat Day and the 2nd Africa Scout Moot
9 the SARL YL QSO Party and the SARL HF Digital Contest 	10 Public Holiday	11	12 International Youth Day and Perseids Meteor Shower. 	13 Perseids Meteor Shower.	14	15 Lighthouse Weekend, the SARL Youth QSO Party and the North American SSB QSO Party
16 Lighthouse Weekend and the North American SSB QSO Party	17	18	19 the SARL Wednesday 80m Club Contest	20	21	22
23 the SARL HF CW contest 	24	25	26 International Dog Day	27	28 Partial Lunar Eclipse 	29 the West Rand Boot Sale and the Worldwide Digital Contest, 
30 Worldwide Digital Contest 	31	1 	2 Secretary's Day	3	4	5

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and contact me on 072 026 8909 or zs2bl@sahamshack.co.za

They shall grow not old, as we that are left grow old,
Age shall not weary them, nor the years condemn.
At the going down of the sun and in the morning
We will remember them.

Hulle word nie oud soos ons wat bly vergrys,
Die jare sal hulle nie raak nog die tyd se eis.
En, soos die son sak of die more ontvou,
Eer hul herinnering - Ons sal onthou.



**Mike Otgaar, ZS2AQ; George Oosthuizen, ZS1GJO; Charles Grimsdell, ZS4CLG; Hennie le Roux, ZS1LR
and Jack Olivier, ZS6JAC**

Amateur Radio News

AMSAT SA Space Symposium Keynote will be delivered by a WRC Expert

At WRC-27 much attention will focus on science communication with respect to communication on and around the moon and support structures on earth. At the AMSAT SA 2026 Space symposium on Saturday 1 August, Linden Petzer will deliver the Keynote address. Linden is the founder and owner of Linden Petzer Consulting, an independent consultancy specialising in spectrum management and ICT regulatory affairs.

Register now for the symposium which will be held virtually on the AMSAT SA Webex platform on Saturday 1 August 2026. Registration is free for members of IARU and AMSAT member societies. For non-members there is a small registration fee.

The keynote presentation will be presented by Gwyn Griffiths, GW3ZIL, a member of the HamSCI community. His paper is entitled "The HamSCI Personal Space Weather Station: Development, Deployment and Data." The HamSCI Personal Space Weather Station (PSWS) is a modular system. After a brief introduction to the technical aspects of each component and their development the talk will show examples of current deployments at home and remote stations and how to access PSWS data and learn what it shows about space weather rounds off the presentation. There is also a newcomer on the South African Satellite scene who is planning to launch a CubeSat later this or early next year. Find out more at the symposium.

Christo Kriek, ZR6KJL will share new development on the BACAR project that the Secunda

Amateur Radio Club will launch on 17 October this year. Burns Fisher, WB1F, AMSAT Engineer for flight software will discuss AMSAT progress on three different satellites to be launched in the next few years. Stewart, ZR1WT will present a paper describing typical amateur radio Pico balloons capable of completing multiple circumnavigations of the Earth while operating at near-space altitudes and transmitting a variety of telemetry data. Furthermore, by using the WSPR (Weak Signal Propagation Reporter) protocol, originally developed by Joe Taylor, virtually any form of telemetry can be transmitted without modification to the protocol itself.

Visit <http://www.amsatsa.org.za> for details on the other presentations as well as the registration link.



The QTH locator app

From IARU Region 1 - Marc Balmer, HB9SSB reports, "I just added Serbian, Swedish and Irish translations to my QTH-locator app for Android and iOS. Ping me if your language is missing and I will add it. Also, let me know of any wrong translations."

QTH-locator app by micro



(Amateur Radio News from page 5)

systems – a yellow logo with little squares in it.

Winlink for Emcomm

Grant, ZS1GRC sent the following, “This e-mail is sent via a Winlink radio network.

I started a Winlink radio station in Cape Town a few years back for SARL Hamnet Emcomm, it has been working great with up to 33 connections a day on some days.

There are now 3 dedicated sys ops stations - ZS1GRC-10, ZR1RF-10 and ZS1DCC-10, all running on 144,575 MHz.

There is a digipeater, ZS1L-10, to reach ZS1GRC-10 until a higher antenna is up.

Although its main function is Emcomm, all are welcome to use it. Winlink has been running a very long time with constant updates.

It covers the Cape Town area to Milnerton and to Gordon's Bay.”

The IARU IWS Newsletter

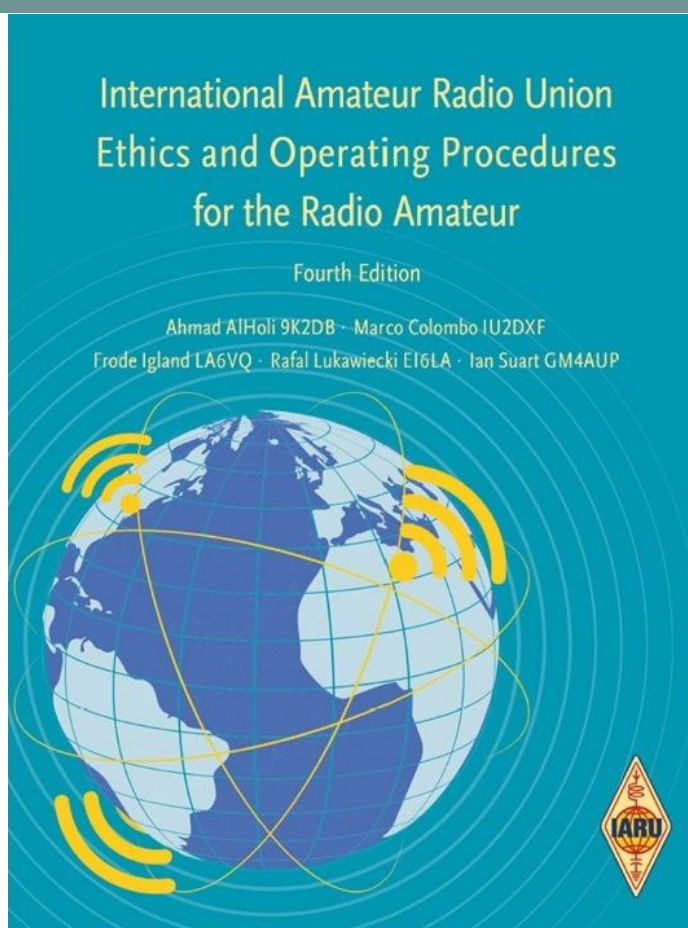
The IARU Intruder Watch System newsletters are available for download from www.iaru-r1.org/spectrum/monitoring-system/iarums-r1-newsletters/. The IARU IWS monthly Newsletter contains all the reports about the received transmissions sent by intruders in amateur bands that IARU IWS National Coordinators of the national societies send to the IARU IWS Coordinator. It may also contain explanations about signals received as many more interesting information related to this kind of transmissions.



There is a vacancy for the IARU IWS Coordinator for South Africa. If you want to join the team, contact the SARL Secretary at secretary@sarl.org.za.

Announcing the release of the IARU Ethics and Operating Procedures for the Radio Amateur, fourth edition

We are pleased to announce the official release of the Ethics and Operating Procedures for the Radio Amateur, Fourth Edition. This revision incorporates the latest developments and best practices in the field of amateur radio. We believe these updates are essential to upholding the high



standards of amateur radio and ensuring our community remains at the forefront of technological innovation and ethical operating practices.

We also wish to acknowledge the valuable comments and the extensive feedback received from the IARU Member Societies on an earlier draft of this new edition. All input has been carefully reviewed and the document has been updated as necessary. We extend our sincere appreciation to the editorial team for their valuable contributions in updating this guide. Their dedication, attention to detail and commitment to upholding the highest standards of amateur radio have been instrumental in enhancing this important document.

The document Ethics and Operating Procedures for the Radio Amateur, Fourth Edition, replaces IARU Region 1 Edition 3 (June 2010). The document is available in English at www.iaru-r1.org/on-the-air/draft-eop/edition-4-versions/ or at <https://mysarl.org.za/operating-practice/>. Thank you to everyone who contributed their time and expertise to ensure this document remains the benchmark for amateur radio operations globally.



Working Groups and Coordinators

Amateur Radio Today: Hans van de Groenendaal, ZS6AKV artoday@sarl.org.za.

ART Relays: Louis Veldkamp, ZR4DJL and Andy Cairns, ZS6ADY

Awards: Tjerk Lammers, ZS1J

Contest WG: Johan Bezuidenhout, ZS6JBZ; Gerhard Coetzee; ZS3TG; Phillip van Tonder, ZS6PVT; Phillip Fischer, ZS6FY; Danie Schnetler, ZS6DPS

Database: Colin de Villiers, ZS6COL

Forum: Roger Conroy, ZR3RC and Andy Cairns, ZS6ADY

IARU IWS:

QSL Manager: Gert du Plessis, ZR6GRT

RAE and Training: Donovan van Loggerenberg, ZS2DL rae@sarl.org.za

Regulatory WG: Hans van de Groenendaal, ZS6AKV; Leon Lessing, ZS6LMG; James Archibald, ZS6NS and Peter Leonard, ZS5PL

Reno Faber Station: Philip van Tonder, ZS6PVT

Repeater Co-ordination:

SARL Beacon Project Manager: Brian Jacobs, ZS6YZ

SARL Hamnet: Brian Jacobs, ZS6YZ; Michael Taylor, ZS1MJT; Andrew Gray, ZS2G; Rickus de Lange, ZS4A; Keith Lowes, ZS5WFD; Gert Botha, ZS6GC and Leon Lessing, ZS6LMG

SARL/ICASA Liaison: Hans van de Groenendaal, ZS6AKV; Nico van Rensburg, ZS6QL and Colin de Villiers, ZS6COL

SARL News/SARL Nuus: Dennis Green, ZS4BS; Dave Reece, ZS1DFR; Rory Norton, ZS2BL; Andy Cairns, ZS6ADY; Vivian Dold, ZS6VD; Herman Erasmus, ZS6CTA; Paul Johnson, ZS1S; Irene Myburg, ZS6IEA; Deon Erwin, ZS1ZL; Christo de Witt, ZS3CDW, Hannes Enslin, ZS6JDE and Kevern Burger, ZR2BK

SARL VHF and Above Records: Paul Smit, ZS6NK

Swap Shop: Rassie Erasmus, ZS1YT

Youth/Jeug: Vacant

Radio ZS Awards

The Gary Immelman RA Heritage Award Floating Trophy awarded by the SARL Council for the best article of a historic nature describing an event that occurred more than five years previously or an interesting personality that has played an important part in the development of Amateur Radio in years gone by. Donated by Gary 1993.



The JJ Pienaar Trophy awarded by the Editor for the best article published in Radio ZS during the past year.

The Radio ZS Shield awarded by the Editor to a South African Radio League affiliated Club or member who best supported Radio ZS during the year. Donated by the Port Elizabeth Branch in 1966.

Radio ZS

Radio ZS is a forum for South African Radio League members to share their amateur radio experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on e-mail are especially welcome. Material may be submitted in MS Word, Open Office or rtf format, using Calibri 12 pt and English (South Africa). Material may be e-mailed to radiozs@sarl.org.za. The League cannot be responsible for loss or damage to any material. <https://mysarl.org.za/radio-zs-archives/>.

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SARL News Bulletins / SARL Nuus Bulletins

The South African Radio League, ZS6SRL broadcasts a news bulletin every Sunday in Afrikaans and English at 08:15 and 08:30 Central African Time respectively, on HF and various VHF and UHF repeaters around the country. The bulletin is relayed on EchoLink and AllStar Node 53511 by Johan, ZS6JPL. Audio bulletins can be



Die Suid-Afrikaanse Radioliga, ZS6SRL saai elke Sondag 'n nuusbulletin uit in Afrikaans en Engels om onderskeidelik 08:15 en 08:30 Sentraal-Afrikaanse Tyd, op HF en verskeie VHF- en UHF-herhalers regoor die land. Die bulletin word deur Johan, ZS6JPL, op EchoLink en AllStar Node 53511 herlei. Oudio bulletins kan afgelaai word vanaf

downloaded from <https://sarlnews.podbean.com>, while the text bulletin is available at <https://mysarl.org.za/sarl-news/>.

<https://sarlnews.podbean.com>, terwyl die teks bulletin beskikbaar is by <https://mysarl.org.za/sarl-news/>.

We invite clubs and individuals to submit news items of interest to radio amateurs and shortwave listeners, in both English and Afrikaans where possible, by uploading the news item at <https://mysarl.org.za/news-inbox/> and/or by sending items to news@sarl.org.za no later than Friday morning preceding the bulletin date.

Ons nooi klubs en individue uit om nuusitems van belang vir radioamateurs en kortgolfuisteraars in te dien, waar moontlik in beide Engels en Afrikaans, deur die nuus item op te laai by <https://mysarl.org.za/news-inbox/> en/of deur items na news@sarl.org.za te stuur nie later nie as Vrydagoggend voor die bulletin datum.

You are welcome to join us every Sunday morning for the weekly radio programme Amateur Radio Today at 10:00 CAT. The programme can be heard on VHF and UHF repeaters countrywide and is relayed on 7 115 kHz lower sideband by Louie, ZR4DJL.

Jy is welkom om elke Sondagoggend by ons aan te sluit vir die weeklikse radioprogram Amateur Radio Today om 10:00 SAT. Die program kan landwyd op VHF- en UHF-herhalers gehoor word en word op die 7 115 kHz laer syband deur Louie, ZR4DJL, herlei.

In Cape Town, you can listen at 10:30 CAT on the 145,700 MHz repeater, with EchoLink to ZS1DCC-R by Dave, ZS1DFR.

In Kaapstad kan jy om 10:30 SAT op die 145,700 MHz-herhaler luister, met EchoLink na ZS1DCC-R deur Dave, ZS1DFR.

A rebroadcast by Andy, ZS6ADY, can be heard on Monday evenings at 19:30 CAT on 3 620 kHz.

'n Heruitsending deur Andy, ZS6ADY, kan Maandagaande om 19:30 SAT op 3 620 kHz gehoor word.

In Bloemfontein, you can listen on the 145,7625 MHz repeater at 08:15 for SARL News and at 10:00 CAT for AR Today.

In Bloemfontein kan jy om 08:15 op die 145,7625 MHz-herhaler na SARL Nuus luister en om 10:00 SAT na AR Today.

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International Amateur Radio Union, Region 1

The 27th General Conference - Vienna, Austria, 18 to 24 September 2026



The 27th IARU Region 1 General Conference, to be held at the Austria Trend Parkhotel Schönbrunn (<https://www.austria-trend.at/en/hotels/parkhotel-schoenbrunn>).

The opening Plenary will take place on Saturday 19 September 2026 and the Final Plenary on Wednesday 23 September 2026. The 100th anniversary celebration of the ÖVSV (Austrian Member Society) with a festive theatrical performance will take place at 19:00 on 21 September 2026.

The business of the Conference will be conducted in English.

The Conference will be an 'in-person' meeting with online streaming of the C3 and Plenary meetings. Remote participants will not be able to take the floor during the discussions and will have to ask their in-person proxies for questions or votes. Day by day detailed information will be made available through a dedicated website. No remote voting procedure will be used.

The Working Group and Committee chairmen may organize preparatory online discussions as soon as the final list of contributions is available.

Conference Papers

The Conference Papers have been made available on the conference website <https://conf.iaru-r1.org/documents/>. There is also a link from <https://mysarl.org.za/special-interest-groups/>

The Papers are divided into the Conference Committees - C2 Credentials and Finance, C3 General Administrative and Organisational, C4 HF, C5 VHF+, C7 EMC and C8 Youth. You are invited to download the documents and go through them. Please send your comments and suggestions to secretary@arl.org.za.

Following the Opening Plenary on 19 September, the meetings of the various Working Groups takes place - Amateur Radio Direction Finding (ARDF), Amateur Radio Space Experiment (ARSPEX), High-Speed Telegraphy (HST), Emergency Communications, the Political Relations Committee (PRC), the Spectrum and Regulatory Liaison Committee (SRLC), Support To the Amateur Service (STARS) and the Programme for Disabled Radio Amateurs (PDRA).

From Sunday 20 to Tuesday 22 September, the meetings of C2, C3, C4, C5, C7 and C8 take place. The final Plenary takes place on Wednesday 23 September and a tour of various places in Vienna is scheduled for Thursday 24 September.

There will be special sessions about the Harmonised Amateur Radio Examination Certificate (HAREC), Electromagnetic Compatibility (EMC), Amateur Radio Space Exploration (ARSPEX), the Constitution and Byelaws, Support To the Amateur Radio Service (STARS) and Emergency Communications (EMCOMM).



2026 Southern African Lighthouse Award



It is hereby certified that

Joe Soap, ZSoJS



Made eighteen QSOs and contacted eight lighthouses in Southern Africa during the
2026 International Lighthouse and Lightship Weekend

Award Custodian

Dassen Island Lighthouse – ILLW number ZA0030 – IOTA AF-064

17 August 2026

000/2026

The Southern African lighthouses that are registered at the time of publication.

Lighthouse	ILLW no	ARLHS no	Operated by
Diaz Point Lighthouse	NA0004	NAM-002	Diaz Point Lighthouse Special Event Station, V55LH
Hondeklip Bay Lighthouse	n/a	SAF-049	Pierre, ZS6PS/3
Doringbaai Lighthouse	ZA0020	SAF-044	The Bo-Karoo ARC, ZR3VDK/1
Cape Columbine Lighthouse	ZA0001	SAF-034	The Boland ARC, ZS1BK
Roman Rock Lighthouse	ZA0027	SAF-024	The Roman Rock ARC, ZS0RR
Green Point Lighthouse	ZA0006	SAF-047	The Cape Town ARC, ZS1CT
Cape Point Lighthouse	ZA0014	SAF-007	The Cape Radio Group, ZS1CRG
Slangkop Lighthouse	ZA0015	SAF-026	Peter, ZS1PZ
Cape Hangklip Lighthouse	ZA0010	SAF-005	The Winelands ARC, ZS1WRC
Danger Point Lighthouse	ZA0005	SAF-012	The Overberg ARC, ZS1OAR
Cape Agulhas Lighthouse	ZA0011	SAF-004	The Boland ARC, ZS1BAK
Ystervark Point Lighthouse	ZA0009	SAF-073	The Eden ARC, ZS1ERZ
Cape St Blaize Lighthouse	ZA0026	SAF-010	The Southern Cape ARC, ZS1SKR
Cape Seal Lighthouse	ZA0033	SAF-038	The Cape Coast ARC, ZS1CCR

The 29th International Lighthouse/Lightship Weekend (ILLW) runs from 00:01 UTC on Saturday 15 August to 23:59:59 UTC on Sunday 16 August 2026 and you can participate for the full 48 hours or part thereof.

What is the ILLW? Is it a contest?

The event is NOT a contest. There are no prizes, certificates or other enticements to participate and

(Continued on page 11)

(ILLW from page 10)

therefore, participation is free. Each station's operators decide how they will operate their station regards modes and bands while complying with their amateur licence. Participants are not committed to being on the air during the entire period - only as much as they can. There are no restrictions on aerials or power. We wish operators to enjoy themselves and have fun whilst contacting as many amateur radio stations as possible. We request that stations take time to work other lighthouses or lightships as well as the slow operator, or the newly-licensed or QRP stations.

How close to the Lighthouse do I have to be?

As most available space in many lighthouses is usually filled to capacity, our activity does not have to take place inside the tower itself. Field day type set-up at the light or other building next to the light is OK. *Our guidelines require that the station must be AT or ADJACENT to the light. Adjacent means next to or as close as possible. The intention behind this requirement is that the station should have a visible presence to the passing public who may be visiting the lighthouse over the weekend.*

Permission to operate from a lighthouse/lightship should be obtained from the relevant authorities. Operation from faux or false lighthouses, lights on poles, etc., is discouraged as they are not within the spirit of the event.

What is regarded as a Lighthouse for this event?

Generally regarded as a structure which is or has been listed officially as an aid to navigation in a recognised publication such as the British Admiralty List of Light and Foghorns and which falls into the classic concept of a lighthouse. For example, a substantial tower having an internal staircase, a revolving Fresnel lens and had or has a designated lighthouse keeper. Also permitted are lighthouses which have been moved to a museum for historic reasons. As stated in the previous paragraph, the lighthouse should also be visible to and visited by the passing public where possible.

The fact that a light has been listed in official documents does not automatically qualify the structure for this event such as range lights, channel markers and break wall lights. Examples of some lights which have been submitted for the

event, but which have been rejected can be seen on [this web page](#).

What frequencies and modes can I use?

Because it is NOT a contest you may operate on any authorised frequency and mode as per your licence. It is not possible to specify particular frequencies as there are over 50 countries involved in this event and each has a different band plan so what is legal in one country may be illegal in another. Licence conditions also vary from one level to another and we are also dependent on propagation.

How do I call "CQ"?

To assist other stations, we request that participating CW stations add LT for lighthouse or LS for lightship, other stations add LIGHT, LGT, LIGHTHOUSE or LIGHTSHIP after their call. Some stations obtain a call sign with the letter L in the suffix to assist other stations identifying them as a participating station in the event.

Why is there a list of numbers for lighthouses at <https://wllw.org>

The ILLW organisers have compiled a list of lights which have participated in the event for the purpose of allocating an identifying number to each lighthouse/lightship. These numbers are simply there for use when conditions make it difficult for the name of the lighthouse to be clearly understood over the air waves.

The list will gradually be expanded but it will never attempt to be a definitive list of every lighthouse in existence. It will assist operators in difficult conditions to issue a contact number in lieu of the lighthouse name. The list thus far is [here](#). If your lighthouse is not listed, do not worry just enter and leave the number field blank. A number will be allocated after your entry is received providing the structure complies with our guidelines. Our numbers are primarily for use during the event. You may, of course, use any other reference number if you so desire, for example if your contact is chasing an award and requires a qualifying number appropriate to that award.

Creating the Leffell School Space Engineering Programme

Raz Idan, KE2FEB. First published in Radio Waves, Q2 2026, News you can use for license instruction and radio science education



Raz Idan, KE2FEB (front) and students from The Leffell School Space Engineering Programme use their homebrewed Yagi antennas to receive slow-scan television images from the ISS. [Raz Idan, KE2FEB, photo]

Like a lot of 5-year-olds, I loved space — the vastness, the mystery and of course the pretty pictures. I never grew out of it and I ultimately decided to study physics and space systems engineering. Now, I get to inspire that same sense of wonder by teaching the next generation of engineers at The Leffell School, a K-12 independent Jewish day school in Hartsdale, New York.

Last year, a discussion with a group of engineering students led me to a decision: We are going to space, or at least the edge of it. We decided to launch a high-altitude balloon, with the aim of reaching 30 480 metres.

I quickly learned that to track the balloon and transmit a beacon, I needed to be a licensed amateur radio operator, so I passed my Technician license exam and we got to work on the high-altitude balloon's pay-load box.

The entire Leffell School community got involved, from 5-year-olds all the way up to teachers and parents, by submitting artwork to be placed in the pay-load and soar to the stratosphere. I believe art provides an approachable and meaningful way to connect the

wider school community to this engineering project.

Five students led the design and fabrication of the payload box, working in collaboration with the Environmental Science class to address specific research questions related to atmospheric conditions. The payload included on-board sensors for monitoring temperature, pressure, ozone and CO₂/particulate, enabling real-time data collection throughout the flight.

When more students joined this programme, what was initially a high-altitude balloon initiative expanded to become The Leffell School Space Engineering elective, a course for 10th, 11th and 12th grade engineering students focused on space systems, orbital mechanics, radio communication and hands-on engineering design.

Students divided into teams and researched, designed and built projects related to space exploration and amateur radio. Current student projects include modifying a recovered Graw DFM-17 radio-sonde for future balloon launches, building and improving the AMSAT CubeSat Simulator and constructing the ISS Mimic, a scale

(Continued on page 13)



(Space Engineering Programme from page 12)

model of the International Space Station.

We successfully launched and re-covered our high-altitude balloon on 12 May 2026. On launch day, students split into four dedicated teams: Payload, Inflation, Tracking and Documentation. Thanks to their seamless teamwork, the entire operation was a resounding success. The flight began in Hudson, New York and concluded near Hartford, Connecticut, after reaching a maximum altitude of 27 675metres! In addition to scientific instruments, the payload carried seven pieces of art created by members of The Leffell School community as part of our “Art at the Edge of Space” community competition.

In addition to working on these projects, some students studied for and received their own amateur radio licenses and thus The Leffell School Radio Club, W2LFL, was born. Students got to build their own Yagi antennas, receive telemetry and slow-scan television signals from satellites in space, participate in a foxhunt and get on the air. It was clear how excited the students were when they heard those first “beeps” coming down from space!

I believe that this challenging, hands-on, project-based curriculum will show students that even the most ambitious goals are within reach. Space can feel distant and inaccessible, especially to high school students, but amateur radio and hands-on engineering have a way of changing that perspective. When students build systems with



Students from The Leffell School Space Engineering Programme work together to code and test the servo motors for the ISS Mimic. [Raz Idan, KE2FEB, photo]

their own hands, communicate through satellites overhead and work through real engineering challenges, they begin to see themselves as active contributors rather than just observers. My hope is that they carry that mindset forward, not only in space engineering, but in whatever challenges they choose to pursue.



Leffell School Space Engineering Programme students assemble the AMSAT CubeSatSim. [Raz Idan, KE2FEB, photo]

HAM RADIO CONTEST CALENDAR

The SARL HF Phone, Digital and CW Contests

The aim of the three SARL HF Contests is for participants to contact as many amateurs in Southern Africa as possible on the 20, 40 and 80 m amateur bands. There are several trophies to be won for the three contests.

The SARL HF Phone contest runs from 14:00 to 17:00 UTC on Sunday 2 August 2026, the SARL HF Digital contest runs from 13:00 UTC to 16:00 UTC on Sunday 9 August 2026 and the SARL HF CW contest runs from 14:00 to 17:00 UTC on Sunday 23 August 2026.

You can participate as a single operator single radio - single band station; a single operator single radio - all band station; a multi operator - single band station or a multi operator - all band station with a YL or overlay for each category. Individual competitors and club stations are encouraged to compete.

The trophies for the Phone contest are the Silent Keys Memorial Trophy SSB, awarded by the Contest WG to the SARL member who achieves the highest score during the annual HF Phone Contest; the Joseph White Trophy, awarded by the Contest WG to the SARL member who as a Single Operator Single Band operator achieves the highest score on any one band, during the annual HF Phone Contest and the AKYAB Trophy, awarded by the Contest WG to the SARL member who, in his/her first year of licensed activity, achieves the highest score during the annual HF Phone Contest. Candidates for this trophy shall state the date of the issue of the licence on the summary sheet.

The trophy for the Digital contest is the SARL Digital Trophy, awarded by the Contest WG to the SARL member who achieves the highest score during the annual HF Digital Contest.

The trophies for the CW contest are the Silent Keys Memorial Trophy CW, awarded by the Contest WG to the SARL member who achieves the highest score during the annual HF CW Contest and the Anon Trophy, awarded by the Contest WG to the SARL member who as a Single Operator Single Band achieves the highest score on any one band, during the annual HF CW Contest.



Then there are Trophies for the combined results. The HOS Trough is awarded by the Contest WG to the SARL member who achieves the highest aggregate score in the three HF Contests; the Fred Mills Trophy is awarded by the Contest WG to the SARL member who achieves the highest score in the three HF Contests and who has never won a SARL HF Contest Trophy before; the SAWRC Trophy is awarded by the Contest WG to the YL SARL member amateur who achieved the highest aggregate score in the three annual SARL HF Contests; the SARL Youth Trophy is awarded by the Contest WG to the young SARL member amateur 25 years or younger who achieved the highest aggregate score in the three annual SARL HF Contests and the Club Participation Award is awarded by the Contest WG to the SARL affiliated club who achieves the highest participation in the three HF Contests.

The exchange is a RS, RSQ or RST report and a consecutive serial number starting at 001. Each QSO counts one point; each area worked per band counts two points and each station worked on all three bands counts two points. The Call Areas are Area 1 - Western Cape; Area 2 - Eastern Cape; Area 3 - Northern Cape; Area 4 - Free State; Area 5 - KwaZulu-Natal; Area 6 - Gauteng, Mpumalanga; Limpopo and North-West; Area 7: V5 – Namibia; Area 8: 3DA, 7P, 7Q, 9J, C9, A2, D2, Z2, ZD7, ZD9, ZS7, ZS8, FR, 3B8, 5R, FH and D6 and Area 9: Stations in the rest of the world.

Submit your log sheets by 21:59 UTC on Friday 7 August (Phone), Friday 14 August (Digital) and Friday 28 August 2026 (CW) by e-mail to contest@sarl.org.za.



(Continued on page 15)

(Contest Calendar from page 14)

The SARL YL QSO Party

This is a fun activity to celebrate Women's Day between radio amateurs in South Africa. And to get as many YLs on the air as possible. Call "YL Contest." The second leg of the YL QSO Party runs from 14:00 to 15:00 UTC on Sunday 9 August 2026. It is a CW and phone party on the 40 m band with the exchange a RS or RST report and YL or OM.



QSOs between YL stations are worth 6 points, QSOs between YL and OM stations are worth 3 points and QSOs between OM stations are worth 2 points. QSOs between YL Stations and any DX stations (i.e. outside RSA borders) are worth 7 points. If the DX station is a YL, then the QSO is worth 10 points. Submit your log sheet by 21:59 UTC Friday 14 August 2026 to zr3vdk@outlook.com and zr3pa@outlook.com.

SARL Youth QSO Party

This is a fun activity to celebrate the Youth and to promote contacts between young radio amateurs in Southern African countries. Call "CQ Youth Sprint." The second leg of the Youth QSO Party runs from 12:00 to 13:00 UTC Saturday 15 August 2026 - International Youth Day is on 12 August each year.



This is a CW and phone party on the 40 m band, with the exchange as a RS or RST report and the operator's age. QSOs between stations in the age group 26 and younger are worth 5 points, QSOs between stations in the 26 and under group and over 26 group is worth 3 points and QSOs between stations in the age group 27 and older are worth 1 point. Submit your log sheet by 21:59 UTC on Thursday 20 August 2026 by e-mail to zr3vdk@outlook.com and zr3pa@outlook.com.



The SARL Wednesday 80 m Club Contest

The Wednesday 80 m Club contest is a Club activity; the scores of individual operators are added together to get a Club score. The Club with the highest score after the four (4) contests will be awarded the SARL 80 m Club Championship Trophy. It also encourages amateurs to achieve their Worked All ZS Grid Squares on 80 m.

The third leg of the 80 m Club contest runs from on Wednesday 19 August with phone, CW and RTTY activity. The exchange is your name, your Club call sign and your 4-character grid square (e.g. KF76). You score 2 points for each phone QSO, 4 points for each CW QSO and 5 points for each RTTY QSO. You score 2 points for the first QSO with each grid square and 1 point for each Club worked. Submit your log sheet by 21:59 UTC on Monday 24 August to contest@sarl.org.za.



Common Mode Rejection

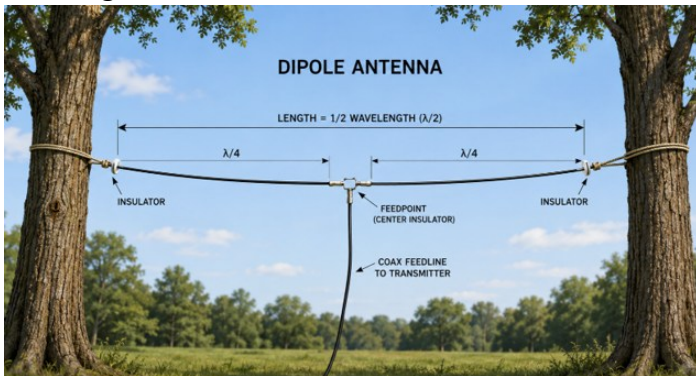
Nico Michael, ZS6BVR

1. Antennas commonly used

Before we can explain what causes currents to run down your coaxial cable in to your shack, we need to paint a picture in your mind as to what happens when you feed a Balanced Antenna from an Unbalanced coaxial transmission line.

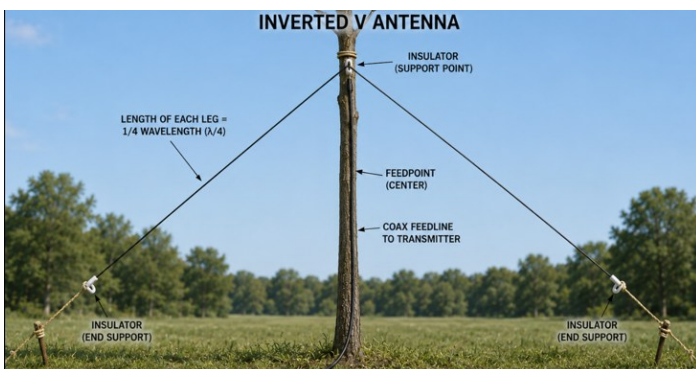
1.1 The Classic Dipole Antenna

This is the most common antenna used. It consists of two equal lengths of wire fed in the centre and is widely appreciated for its simplicity, efficiency and ease of construction. The dipole provides a good radiation pattern and is often the starting point for many amateur radio operators learning about HF antennas.



1.2 Inverted V Antenna

This is a variation of the Dipole known as the Inverted V Antenna which gives a better match to 50 Ohm line. By sloping the legs downward, the antenna also requires less horizontal space and can be supported by a single central mast. It tends to have a slightly more omnidirectional radiation pattern compared to a flat dipole, making it useful in limited-space installations.



1.3 The Yagi Uda Antenna

This is basically a Dipole Antenna with a Reflector and Directors. These additional elements focus the signal in a specific direction, providing gain and improved directivity. Yagi antennas are commonly used for long-distance communication and are especially effective when mounted at height and properly aligned.



2. The problem

When you connect your coax cable directly to your antenna, you are feeding an unbalanced transmission line (the RG58 coax cable) to a balanced antenna.

This mismatch in electrical symmetry is going to give you problems, especially as soon as you transmit 100 W or more, where unwanted effects become more noticeable. Especially today when we use Solid State Linear Amplifiers this becomes a problem.

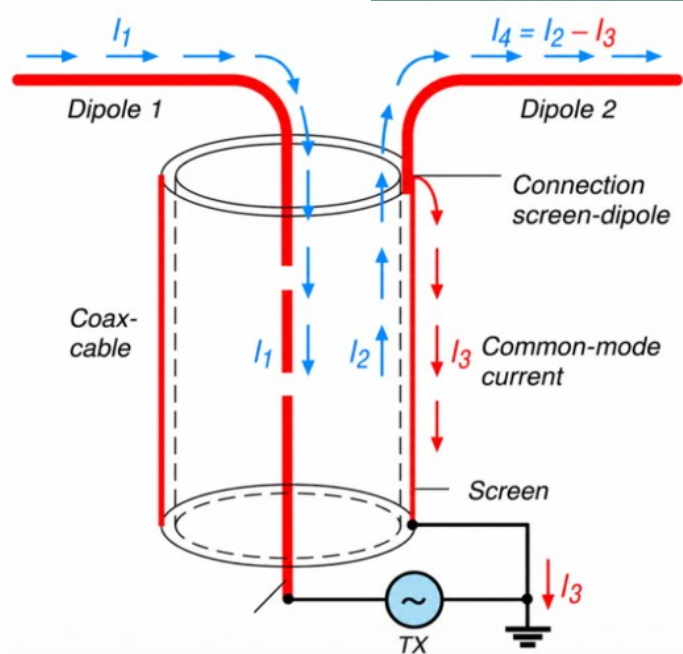
A dipole antenna is balanced, but a coax cable is unbalanced. When you connect them, current does not stay perfectly inside the cable. Some unwanted current flows on the outside of the coax shield. This is called ****common-mode current****.

It can travel back into your shack and along other connected equipment.

This will cause these problems:

- ◆ Interference with nearby equipment (TV, audio systems, computers).
- ◆ Transmitter issues such as overheating or instability.

(Continued on page 17)



(Common Mode Rejection from page 16)

- ♦ Safety risks, especially at higher power levels where RF exposure increases

These problems are often overlooked by beginners but can significantly affect performance and reliability.

How to fix this:

- ♦ Use a Balun (Toroid or Bazooka Balun)
- ♦ Use an "Ugly Balun" (coiled coax)
- ♦ Use a Current Choke, i.e. feed your coax through a ferrite toroid
- ♦ When you connect to an End fed antenna you may have a Balun to connect to the antenna but in this case, you need a dirty Balun or a current choke

These items reduce or block the unwanted current by increasing impedance to common-mode signals. We will now show you how to address this problem in a practical way. Then we will test and measure each solution using a NanoVNA to compare effectiveness.

3. The solutions (Baluns & Current Chokes)

3.1 The Ferrite Balun

The ferrite Balun uses a magnetic core to suppress unwanted currents. By passing the coax through ferrite material, common-mode currents encounter high impedance and are effectively reduced. This is one of the most reliable and widely used solutions, especially for HF applications.



3.2 The Ugly Baluns

The Ugly Balun is simply a length of coax coiled into a loop. While simple and inexpensive, it can still provide decent choking impedance if properly sized for the frequency of operation. However, its performance can vary depending on how tightly it is wound and the frequency band used.



A 2 m band Ugly Balun on a PVC Tube. I do not think it is ugly! Ed.

(Continued on page 18)

(Common Mode Rejection from page 17)

3.3 Other Ferrite Current Chokes

There are many variations of ferrite chokes using different core materials and winding methods. Some use multiple turns, stacked cores, or clamp-on ferrites.

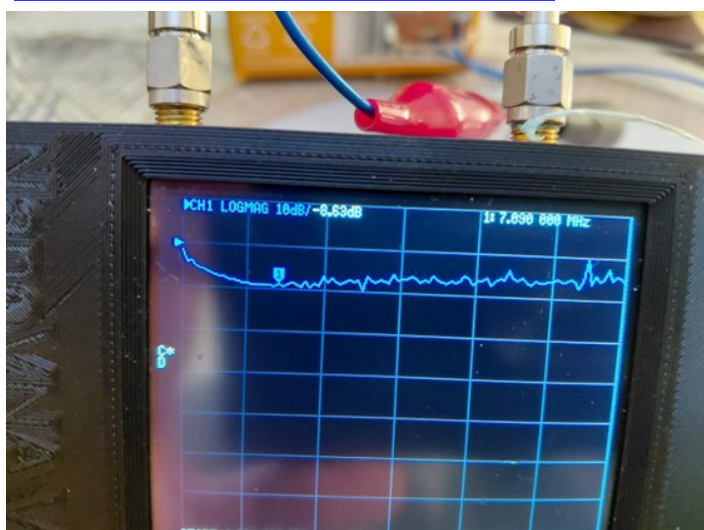
We will prove through measurements that this is the best solution we tested, offering superior suppression across a wide frequency range.



We will prove that this is the best we tested.

4. Measuring the Current Chokes

In order to test these solutions I made a small jig to connect to my Small Vector Network Analyzer. For more information please refer to this article I published in GitHub https://github.com/nic0michael/ZS6BVRs_Articles_electronics_and_hamradio/blob/master/NanoVNAJig/TheNanoVNAJIG.pdf

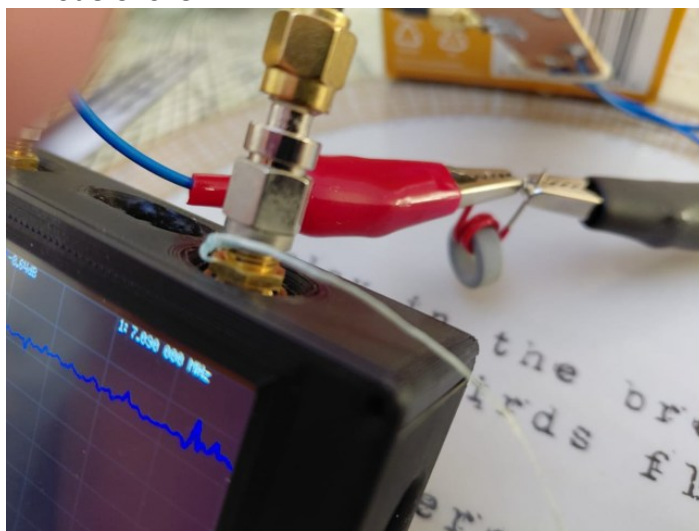


4.1 The "Small" Vector Network Analyzer

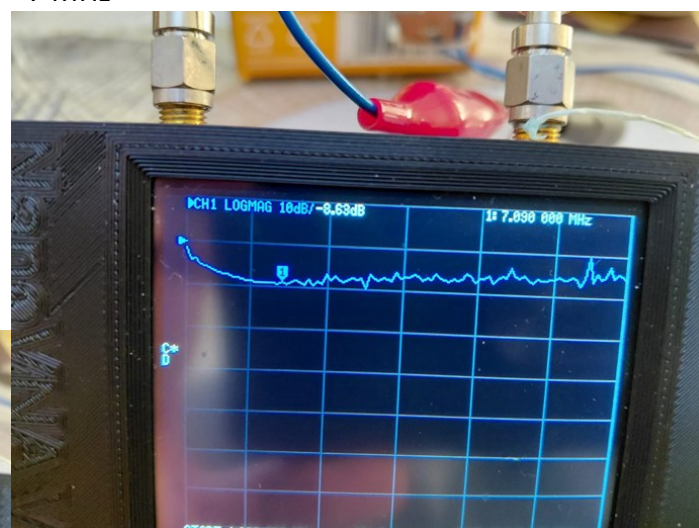
The "Small" VNA is a compact and affordable instrument used to measure RF characteristics such as impedance, SWR and insertion loss. It is ideal for hobbyists and professionals alike, allowing accurate testing of the Baluns and chokes across a wide frequency range 1 to 30 MHz.

4.2 The Common mode Measurements

We tested a 2 turn single Toroid Common Mode Choke



We measured -8,63dB Common Mode Rejection at 7 MHz

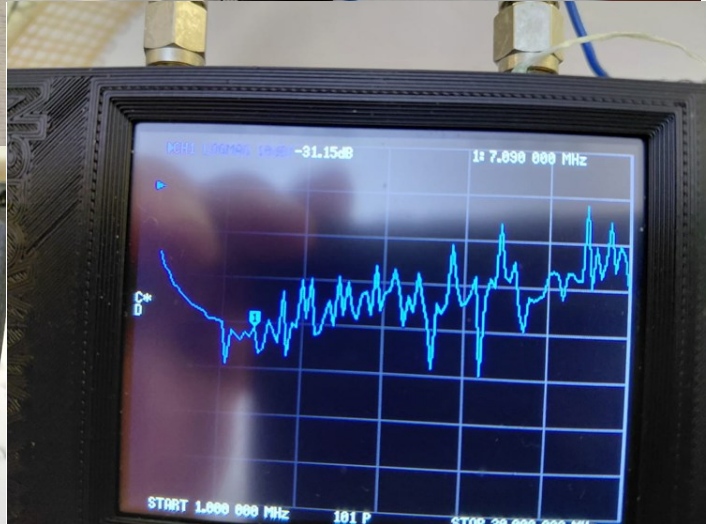
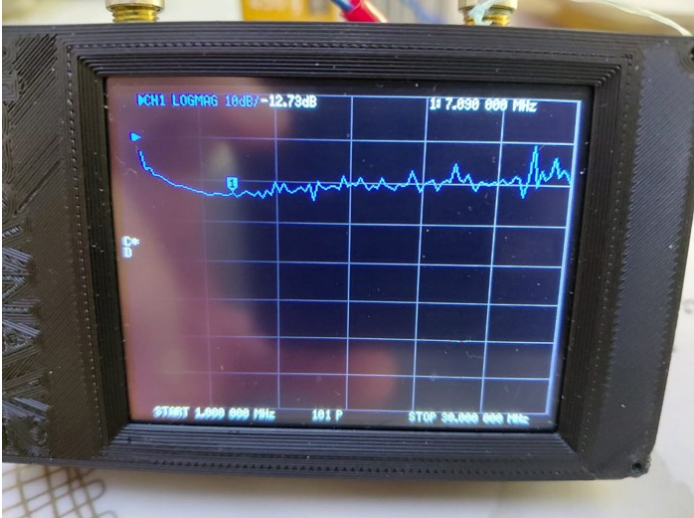
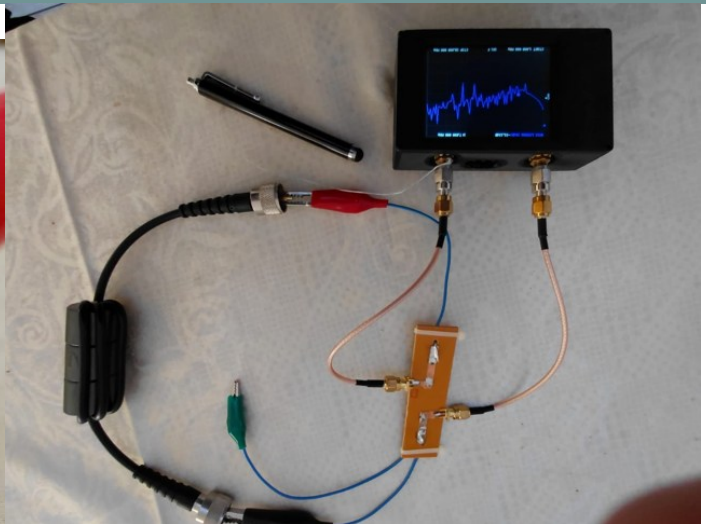


We did something better using two toroids.

We measured -12,7 dB Common Mode Rejection, showing that simply adding cores without proper design does not always improve performance.

(Continued on page 19)

(Common Mode Rejection from page 18)



and construction techniques when building effective current chokes.

Now we tested the what the professionals make.

We measured -31,15 dB Common Mode Rejection at 7 MHz. This clearly demonstrates the importance of proper design, material selection

Bibliography

Antenna Images made by ChatGPT (except photographs)

NanoVNA Jig - https://github.com/nic0michael/ZS6BVRs_Articles_electronics_and_hamradio/blob/master/NanoVNAJig/TheNanoVNAJIG.pdf

**Sometimes I wonder
what happened
to the people who
asked me for
directions...**

**Ducting is the atmospheric
propagation effect whereby
radio waves are refracted by
flying flocks of migrating
ducks.**

M5Stack Fire Band Conditions Project

Georg Lerm, ZS1GFL

Inspiration

This project was inspired by Hobby Steve's Facebook reel, ["I'm lovng the ESP32!!!"](#). The reel presents a compact ESP32-driven round colour display showing key amateur-radio propagation information, including SFI, K-index and grouped HF band conditions. It demonstrated how live solar data could become an immediate, standalone operating aid rather than remain a web page that had to be checked separately.

That concept was adapted to the M5Stack Fire and expanded with Wi-Fi and NTP, Maidenhead-based location awareness, day/night calculations, selectable IANA time zones, diagnostic and editing screens, persistent settings and an RGB power-saving mode.

1. Project overview

The project began as a PlatformIO Arduino firmware test for an M5Stack Fire. Its first objective was simply to display a "Hello World" message and confirm that the toolchain, USB connection, board definition, LCD, build process and firmware upload were all working correctly.

It developed into a self-contained amateur radio information display. The finished application connects to Wi-Fi, synchronizes its clock, downloads live HF band-condition data, calculates location-dependent daylight information and presents the results on the M5Stack Fire LCD. Device settings can be edited with the three front buttons and retained across reboots.

The firmware also includes an automatic power-saving mode that switches off the LCD, slows the ESP32 processor and uses the Fire's RGB LEDs as a dim breathing status indicator.

2. Hardware and software platform

Hardware

- ◆ M5Stack Fire with ESP32 dual-core processor
- ◆ 320 x 240 colour LCD
- ◆ Three front-panel buttons
- ◆ Ten built-in SK6812 3535 RGB LEDs on GPIO15
- ◆ Wi-Fi connectivity
- ◆ ESP32 non-volatile storage
- ◆ USB serial connection for programming and



Figure 1. The completed dashboard running on the M5Stack Fire.

diagnostics

Development environment

- ◆ PlatformIO
- ◆ Arduino framework for ESP32
- ◆ m5stack/M5Stack for the display, buttons and device hardware
- ◆ bxparks/AceTime for IANA time zone handling
- ◆ adafruit/Adafruit NeoPixel for the SK6812 LEDs

The PlatformIO environment is named m5stack-fire and the serial monitor runs at 115200 baud.

3. Development progression

3.1 Display and board validation

The initial firmware displayed a basic test message on the LCD. This confirmed that PlatformIO recognized the M5Stack Fire, the Arduino framework compiled, the LCD initialized correctly and firmware could be uploaded to the board.

Once the display test succeeded, the programme became the foundation for the band-conditions dashboard.

3.2 Wi-Fi and network time

Wi-Fi support was added with credentials stored in the ignored include/secrets.h file rather

(Continued on page 21)

(M5Stack Fire Band Conditions Project from page 20)



Figure 2. A reconstruction of the initial LCD validation milestone, rendered from the completed-device photograph

than committed source code. A `secrets.example.h` template documents the required definitions for another installation.

Startup follows a visible sequence on the LCD:

1. Connect to Wi-Fi.
2. Confirm the connection and display the assigned address.
3. Wait one second for DHCP and routing to settle.
4. Request time from the preferred local NTP server on UDP port 123.
5. Fall back to public pool NTP servers when the local source is unavailable.

NTP requests use an explicit timeout so an unavailable server cannot block the device indefinitely. The synchronized ESP32 system clock is then used by the display, time zone conversion, solar-position calculations and scheduled data refreshes.

3.3 Live HF band conditions

The firmware downloads the NONBH solar XML feed from HamQSL. It extracts:

- ♦ Solar Flux Index (SFI)
- ♦ Sunspot number (SN)
- ♦ A-index

- ♦ K-index
- ♦ Day and night condition ratings for grouped HF bands
- ♦ Feed update information

Band data is refreshed every 15 minutes. If a refresh fails, the last valid data remains available and the programme retries after one minute rather than clearing the display.

The main dashboard was designed from the supplied reference image and refined for readability on the 320 x 240 screen. SFI, SN, A and K use consistent font sizes. Band ratings are colour coded, while the clock includes its time zone context.

4. Location and propagation context

4.1 Maidenhead locator support

The device uses a six-character Maidenhead locator as its station location. The original default was JF95EU. The locator is decoded to the centre latitude and longitude of its grid square.

The decoded coordinates are used to calculate solar elevation and decide whether the station is currently in daylight or darkness. This selects the applicable day or night propagation column instead of treating the feed as fully location independent.

4.2 Locator editing and validation

The locator can be changed directly on the M5Stack Fire using its three buttons. The editor restricts each character to the legal range for its position:

- ♦ Characters 1 – 2: fields A to R
- ♦ Characters 3 – 4: digits 0 to 9
- ♦ Characters 5 – 6: sub-squares a to x

The complete value is validated again before saving. Valid locators are stored in ESP32 non-volatile storage and restored after reboot. Invalid input is rejected with an on-screen warning.

Button-release gates were added so the long middle-button press used to open an editor cannot immediately trigger an action inside that editor. This fixed the original behaviour where the locator screen appeared only momentarily and then closed or changed state.

5. Screens and controls

Dashboard

(Continued on page 22)

(M5Stack Fire Band Conditions Project from page 21)

The dashboard displays:

- ◆ Current local time and time zone context
- ◆ SFI, sunspot number, A-index and K-index
- ◆ Day and night ratings for grouped HF bands
- ◆ The currently applicable daylight state
- ◆ Data update status
- ◆ Active Maidenhead locator

Diagnostics

The diagnostic screen was simplified for readability and uses larger text. It shows:

- ◆ Active Maidenhead locator
- ◆ Decoded latitude and longitude
- ◆ Calculated solar elevation
- ◆ Current DAY or NIGHT decision

Network status, feed status and last-fetch text were removed from this page so the location calculation could be checked more easily.



Figure 3. Maidenhead coordinates, solar elevation and the resulting daylight decision

Locator editor

- ◆ Left button: decrement the selected character
- ◆ Middle button: advance to the next character
- ◆ Right button: increment the selected character
- ◆ Hold middle: validate and save
- ◆ Hold left: cancel

Time zone editor



Figure 4. The on-device six-character Maidenhead editor and decoded position

- ◆ Left button: previous time zone
- ◆ Right button: next time zone
- ◆ Hold right: fast scrolling
- ◆ Hold middle: save
- ◆ Hold left: cancel



Figure 5. Selecting an IANA time zone from the firmware-resident catalogue

6. Time zone support

The initial fixed time zone was expanded into a device-selectable time zone system. AceTime provides a firmware-resident catalogue of approximately 597 IANA zones and aliases.

(Continued on page 23)

(M5Stack Fire Band Conditions Project from page 22)

The selected stable zone identifier is saved in ESP32 non-volatile storage and restored during startup. Time conversion and daylight-saving changes are therefore handled automatically for the selected region. The time zone list fits in firmware flash, so an SD card is not required for this feature.

7. Code refactoring and architecture

The early implementation concentrated most behaviour in `main.cpp`. It was later split into focused modules with headers, implementation files and comments:

- ◆ `main.cpp` coordinates startup, screens, buttons and application events.
- ◆ `DisplayUi` contains LCD rendering and layout code.
- ◆ `NetworkTimeService` handles Wi-Fi and NTP synchronization.
- ◆ `SolarDataService` downloads, parses, caches and schedules solar data.
- ◆ `StationLocation` validates, stores and decodes Maidenhead locators and calculates solar elevation.
- ◆ `Time zonesettings` manages the IANA catalogue, local-time conversion and persistent time zone selection.
- ◆ `PowerSaveManager` manages inactivity, LCD sleep and wake, RGB animation and CPU-frequency changes.
- ◆ `AppConfig.h` centralizes hardware pins, timeouts, refresh periods, URLs, NVS keys, brightness values and other application policy.

This separation makes screen layout, networking, calculations, persistent settings and hardware power control easier to read and change independently.

Project directory tree

PlatformIO's generated `.pio/` build directory and repository/tool metadata directories are intentionally omitted from this review tree.

8. Power-saving feature

An inactivity-based power-saving mode was added for battery operation.

When the configured timeout expires:

```
m5-fire-bandconditions/
|-- images/
|   |-- Diagnostic.jpg
|   |-- Hello_World.png
|   |-- Home_Page.jpg
|   |-- MH_Edit.jpg
|   |-- TZ.jpg
|-- include/
|   |-- AppConfig.h
|   |-- DisplayUi.h
|   |-- NetworkTimeService.h
|   |-- PowerSaveManager.h
|   |-- SolarDataService.h
|   |-- StationLocation.h
|   |-- TimeZoneSettings.h
|   |-- secrets.example.h
|   |-- secrets.h                (local and ignored)
|-- src/
|   |-- DisplayUi.cpp
|   |-- NetworkTimeService.cpp
|   |-- PowerSaveManager.cpp
|   |-- SolarDataService.cpp
|   |-- StationLocation.cpp
|   |-- TimeZoneSettings.cpp
|   |-- main.cpp
|-- .gitignore
|-- platformio.ini
|-- README.md
|-- report.md
|-- project.pdf
|-- todo.md
```

The Project directory tree

1. The LCD backlight is set to zero.
2. The LCD controller enters sleep mode.
3. The ESP32 CPU frequency is reduced from 240 to 80 MHz.
4. The ten SK6812 LEDs begin a slowly rotating rainbow breathing animation.

The LED data pin is explicitly returned to `OUTPUT_OPEN_DRAIN` after each transmission, following the M5Stack Fire hardware recommendation for GPIO15.

Pressing any front button stops and clears the LEDs, restores the normal CPU frequency, wakes the LCD and restores its brightness. The wake press is consumed until all buttons are released so it cannot accidentally open a menu or alter a setting.

At the time of this report, the current local configuration is:

- ◆ Display sleep timeout: 120 seconds
- ◆ Maximum sleep-animation LED brightness: 2%
- ◆ Breathing cycle: 8 seconds
- ◆ LED update interval: 40 ms

(Continued on page 24)

(M5Stack Fire Band Conditions Project from page 23)

- ◆ LCD wake brightness: 80/255
- ◆ Power-save CPU frequency: 80 MHz

The 2% LED brightness is a current uncommitted local tuning change; this report does not alter or commit it.

9. Reliability and safety measures

The finished firmware includes several defensive behaviours:

- ◆ Wi-Fi, NTP and feed requests use timeouts.
- ◆ NTP has preferred-local and public fallback sources.
- ◆ Failed solar refreshes preserve the last successful data.
- ◆ Invalid Maidenhead locators cannot be saved.
- ◆ Locator and time zone settings survive reboot in NVS.
- ◆ Hold and release gates prevent button actions from leaking between screens.
- ◆ Wake-button input is consumed before normal controls resume.
- ◆ Configuration assertions reject invalid LED brightness percentages or a zero sleep timeout at compile time.
- ◆ Wi-Fi credentials remain in an ignored private header.

10. Verification performed

Development was repeatedly verified on the actual M5Stack Fire rather than by compilation alone. Checks included:

- ◆ PlatformIO builds of the complete Arduino firmware
- ◆ USB uploads through the detected COM port
- ◆ Initial LCD "Hello World" output

- ◆ Wi-Fi connection and address display
- ◆ NTP synchronization and fallback behaviour
- ◆ Live NONBH data retrieval
- ◆ Dashboard and diagnostic layout readability
- ◆ Maidenhead editing, validation, saving and reboot persistence
- ◆ Time zone selection, saving and local-time display
- ◆ LCD sleep and button wake behaviour
- ◆ RGB breathing animation and LED shutdown on wake
- ◆ CPU-frequency reduction and restoration logic

The power-saving build completed successfully with approximately 1,1% of the available RAM and 16,9% of the configured flash partition in use.

11. Final result

The completed project is a practical M5Stack Fire amateur radio dashboard. It combines live propagation data with an accurate local clock, station-location awareness, persistent user configuration, diagnostic information and a battery -conscious idle mode.

The firmware is modular and documented and the most likely future additions have been recorded separately in `todo.md`. Those ideas include an NCDXF beacon screen, target-locator calculations, greyline tools, enhanced NOAA space weather, observed propagation reports, operating alerts, configuration through a local web page, optional SD-card history and satellite-pass information.

The project source code is available on request by email at zs1gfl@gltech.co.za, using the subject Code Request: M5Stack Fire Band Conditions.

The new ARRL 10-Band DXCC Award

The ARRL Letter for 23 July 2026

The ARRL has introduced the new 10-Band DXCC Award plaque, recognizing radio amateurs who have achieved DXCC on all ten HF amateur bands from 160 to 6 metres.

The new award celebrates the accomplishment of having confirmed at least 100 DXCC entities on each of the following bands: 160, 80, 40, 30, 20, 17, 15, 12, 10 and 6 metres (excludes 60 metres).

Eligibility is based on the total QSLs reflected in your ARRL Logbook of The World® (LoTW®) account. No additional contacts are required beyond those needed to qualify for DXCC on each individual band. If your DXCC credits are not already visible in LoTW, you must first link your DXCC and LoTW profiles by requesting a credit merge from the ARRL Awards Desk.

(Continued on page 25)

(Common Mode Rejection from page 24)

Applicants simply complete and submit a DXCC Item Order Form to order the 10-Band DXCC plaque after self-verifying the qualification requirements in LoTW. Complete details are available at www.arrl.org/10-band-dxcc.

The 10-Band DXCC Award challenges participants in the DXCC programme to establish station capabilities and operator skills for dealing with myriad band conditions in pursuing DXCC across all 10 bands. "Completing DXCC on every HF band is an extraordinary achievement that reflects dedication, skill and years of commitment to amateur radio," said ARRL Radiosport and Regulatory Affairs Manager Bart Jahnke, W9JJ. During last week's ARRL Board of Directors meeting, Second Vice President Rick Niswander, K7GM, learned that he is among the few Board members who qualify for the new award. "I never set out to earn an award like this," said Niswander. "I simply enjoy the challenge of working DX, no matter the band. Perseverance can result in an accomplishment that represents years of operating."

Like the 5-Band DXCC plaque, the new 10-Band DXCC plaque comes as a handsome wooden frame with a ceramic, blue-embellished tile inlay. The plaque is USD \$95 plus shipping and handling.

The new award complements the ARRL's family of DXCC recognitions, which celebrate accomplishments by band, mode and overall DXCC totals. More information about eligibility and award ordering is available on the [ARRL 10-Band DXCC Award web page](http://www.arrl.org/10-band-dxcc).

Last year, the ARRL introduced the [DXCC Trident Award](http://www.arrl.org/dxcc-trident-award), recognizing operators who have confirmed 100 or more DXCC Award countries (entities) on all three operating modes -phone, CW and digital. Like the new 10-Band DXCC Award, the Trident Award celebrates a significant operating milestone and offers another way for DXers to commemorate their accomplishments within the prestigious [DX Century Club](http://www.arrl.org/dx-century-club) – DXCC.



The Amateur's Code

CONSIDERATE...

Never knowingly operates in such a way as to lessen the pleasure of others.

LOYAL...

offers loyalty, encouragement and support to other amateurs, local clubs and the South African Radio League, through which Amateur Radio in South Africa is represented nationally and internationally.

PROGRESSIVE...

with knowledge abreast of science, a well-built and efficient station and operation above reproach.

FRIENDLY...

slow and patient operating when requested; friendly advice and counsel to the beginner; kindly assistance, cooperation and consideration for the interests of others. These are the hallmarks of the amateur spirit.

BALANCED...

radio is an avocation, never interfering with duties owed to family, job, school or community.

PATRIOTIC...

station and skill always ready for service to country and community.



Die Amateur se Kode

BEDAGSAAM...

Die amateur is 'n ware heer. Hy sal nooit bewustelik of moedswillig die radiogolwe op so 'n wyse vir sy eie genot aanwend om daardeur die genot vir ander te bederf nie.

LOJAAL...

Die Amateur is lojaal teenoor die Suid-Afrikaanse Radioliga en bied sy ondersteuning aan. Hy lê hom neer by die onderneming wat die SARL aan die owerheid beloof het.

PROGRESSIEF...

Die Amateur is progressief en sy stasie is in tred met die wetenskap. Sy bedienings praktyk is netjies en ordelik.

VRIENDELIK...

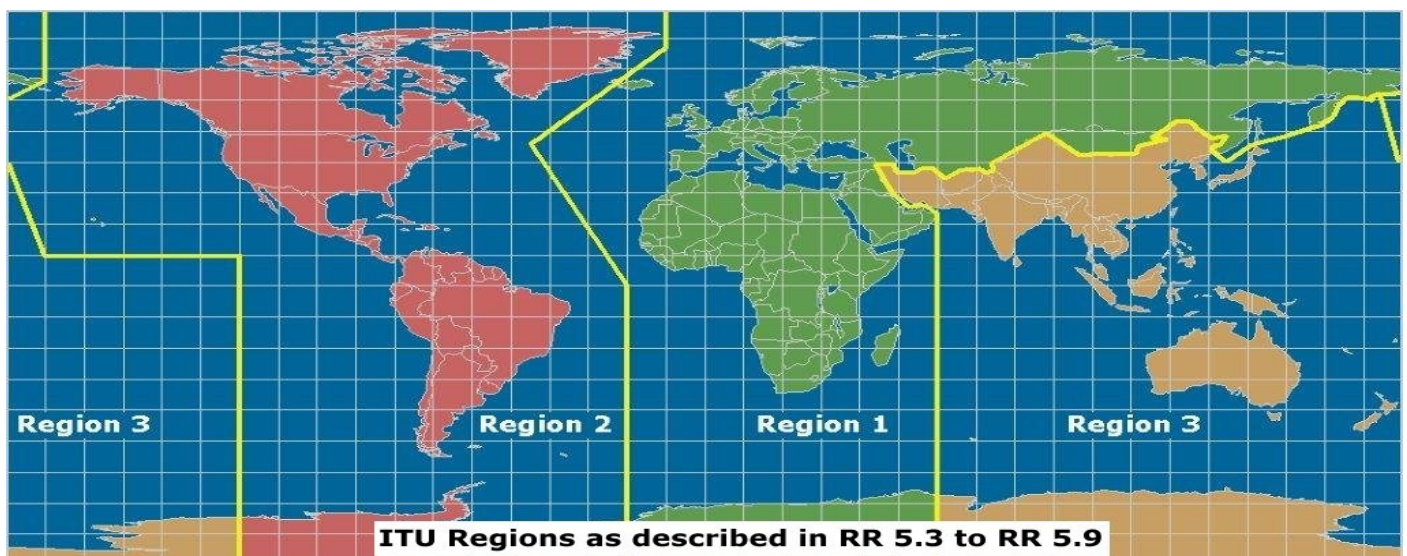
Die Amateur is vriendelik en verdraagsaam wanneer aan hom 'n versoek gerig word. Hy verstrek geredelik raad aan alle amateurs en verleen hulp en samewerking in die gees van amateur radio.

EWEWIGTIG...

Die Amateur is ewewigtig en laat nie toe dat sy stokperdjie met sy gesinslewe, werk of gemeenskap inmeng nie.

PATRIOTIES...

Die Amateur is patrioties, sy kennis en stasie is altyd vir sy land en gemeenskap beskikbaar.



YAESU FT-710 memories for repeaters

Daniel Romila VE7LCC

The YAESU FT710 HF transceiver has the possibility of putting the receive and transmit frequencies of FM repeaters into memories, in addition to memorizing simplex frequencies. This article is about memorizing repeaters, naming the memory and saving on an SD card everything we programmed.

Let us start. Press the FUNC button and you will have:



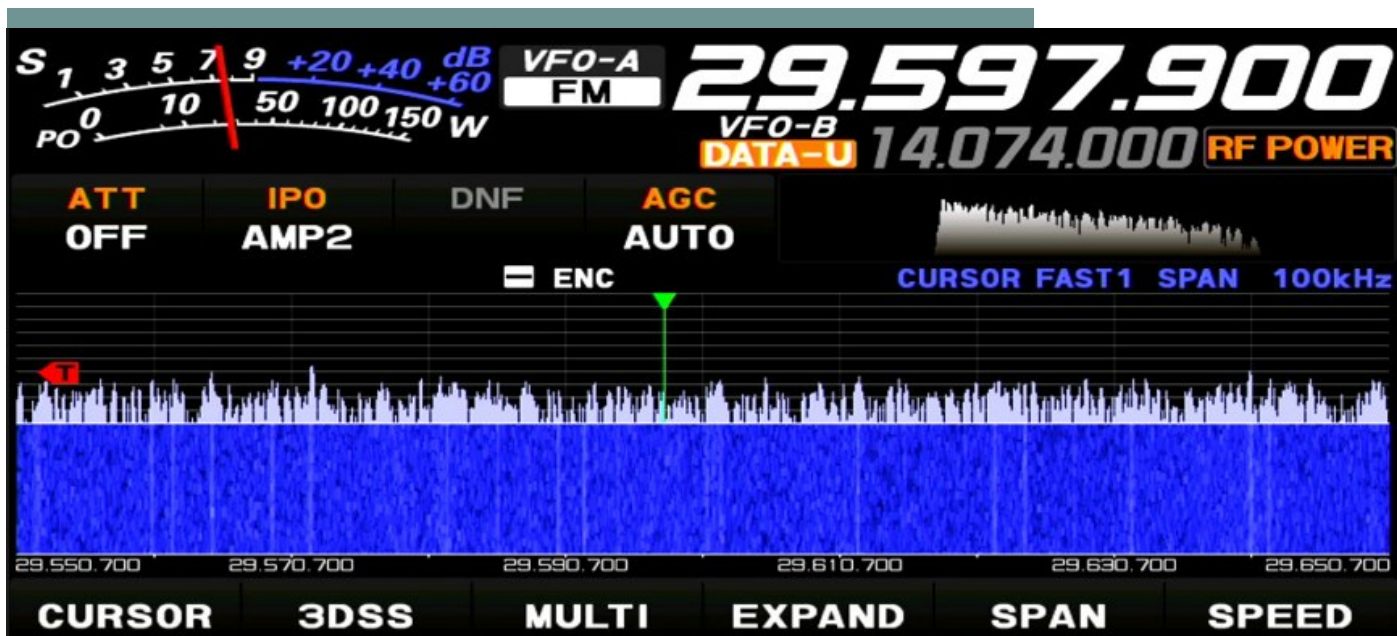
Select RADIO SETTINGS and on the next screen scroll down until you can set the repeater frequency shift, for the 28 MHz band and for the 50 MHz band.



You can see above the values as in my region, Canada. I also had to set ENC and 100 Hz as tone for activating the repeater(s).

Push BACK, twice, until you come into the normal working display.

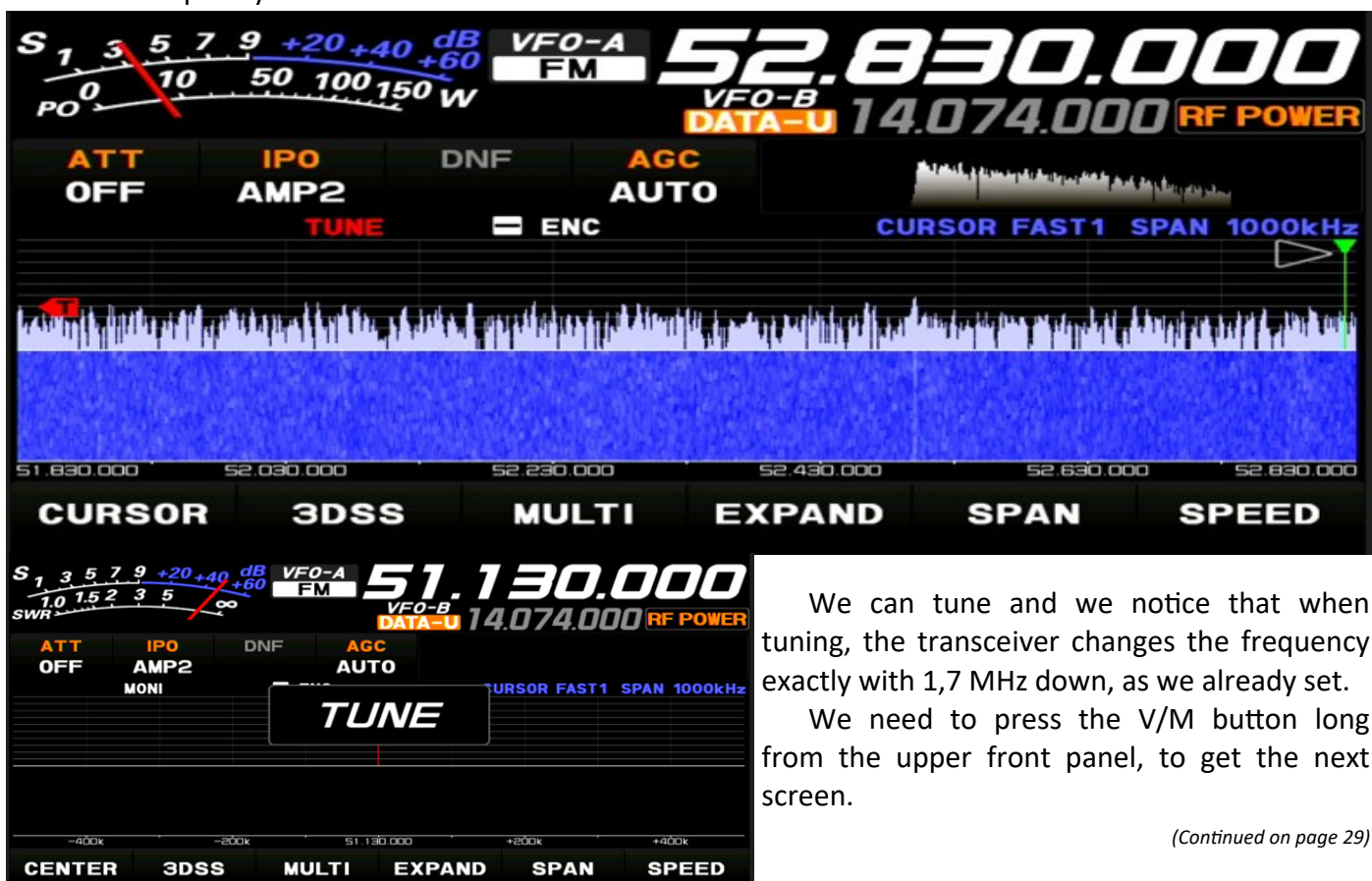
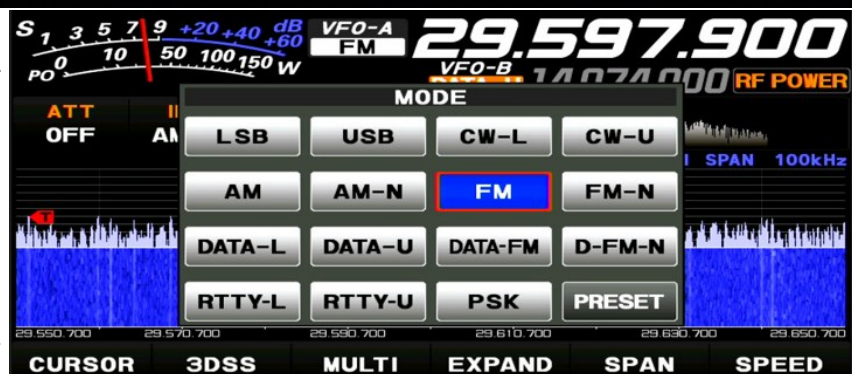
(Continued on page 28)



(YAESU FT-710 memories for repeaters from page 27)

Let us add the repeater VE7RSX, a 6-metre repeater into the memory. The receive frequency of 52,830 MHz and the transmit frequency of 51,130 MHz, PL tone 100 Hz. The shift of frequency is -1,7 MHz.

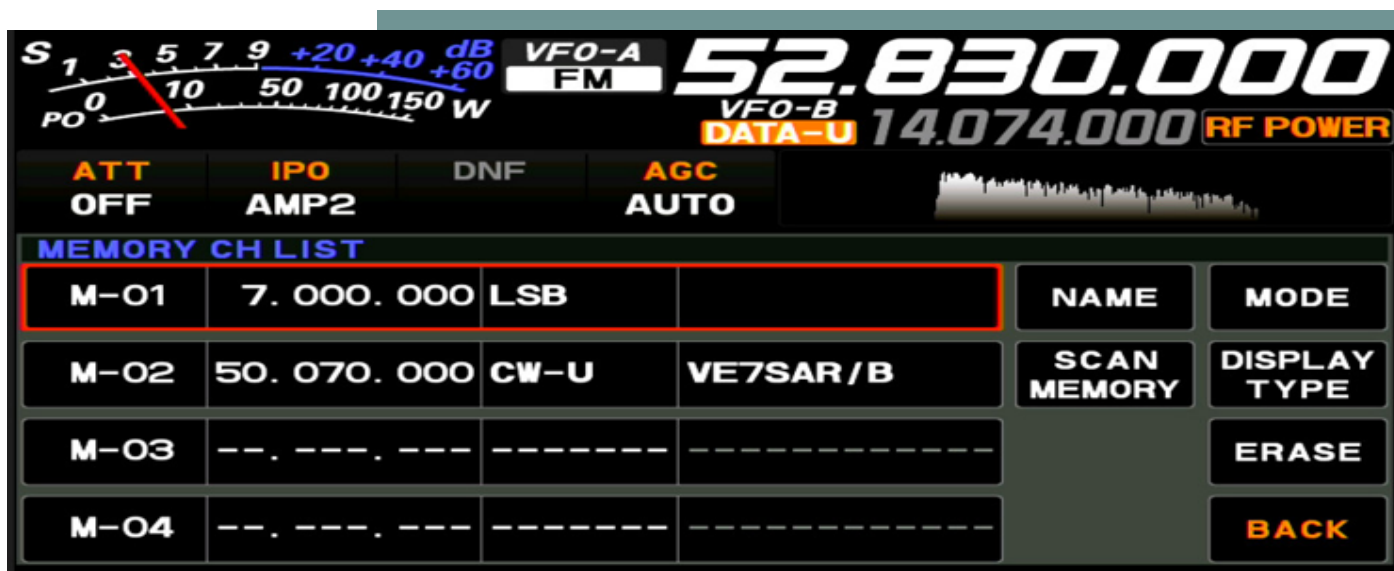
We already set the mode as FM. The MODE button is on top of the Yaesu FT-710, not on the front panel. Now we can write the frequency for our receive.



We can tune and we notice that when tuning, the transceiver changes the frequency exactly with 1,7 MHz down, as we already set.

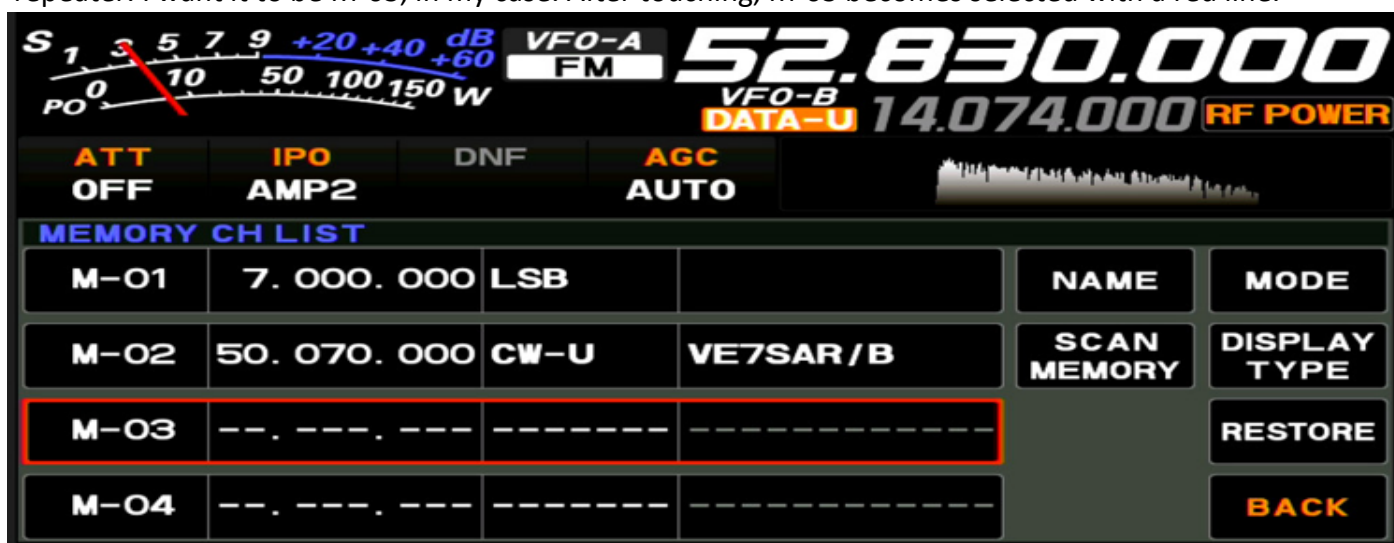
We need to press the V/M button long from the upper front panel, to get the next screen.

(Continued on page 29)

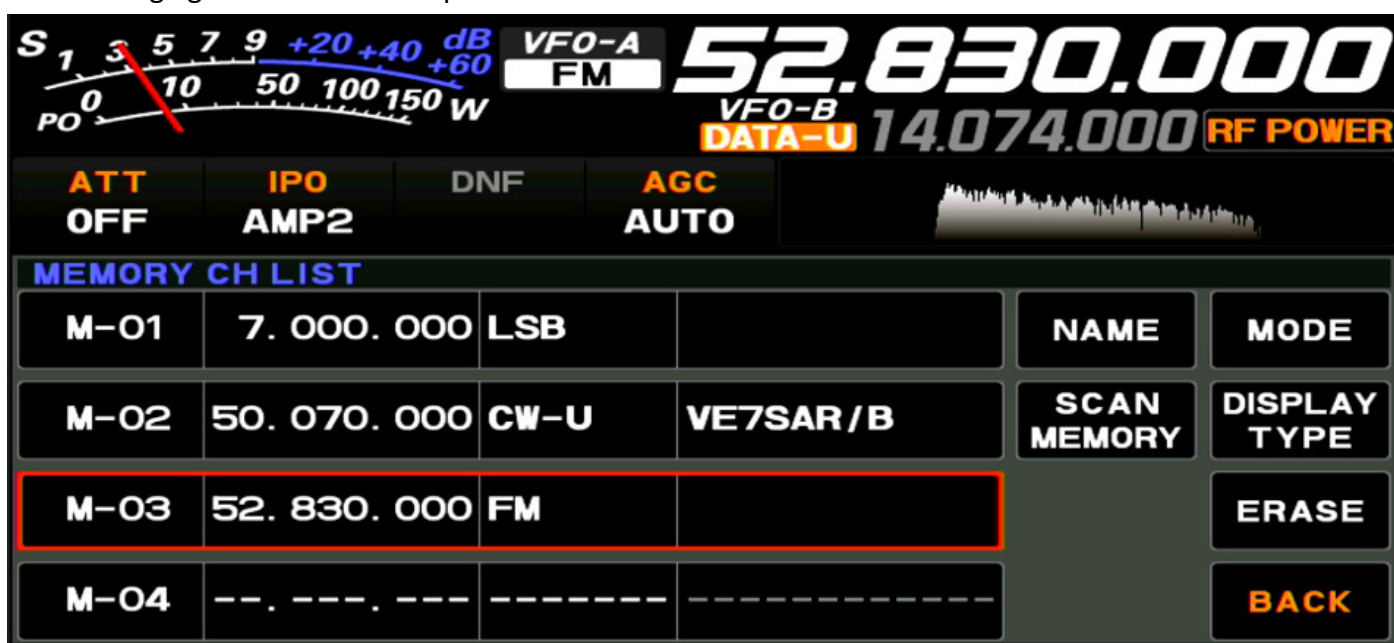


(YAESU FT-710 memories for repeaters from page 28)

Touch on the display (which is a touch screen) on the memory number you want to dedicate for this repeater. I want it to be M-03, in my case. After touching, M-03 becomes selected with a red line.

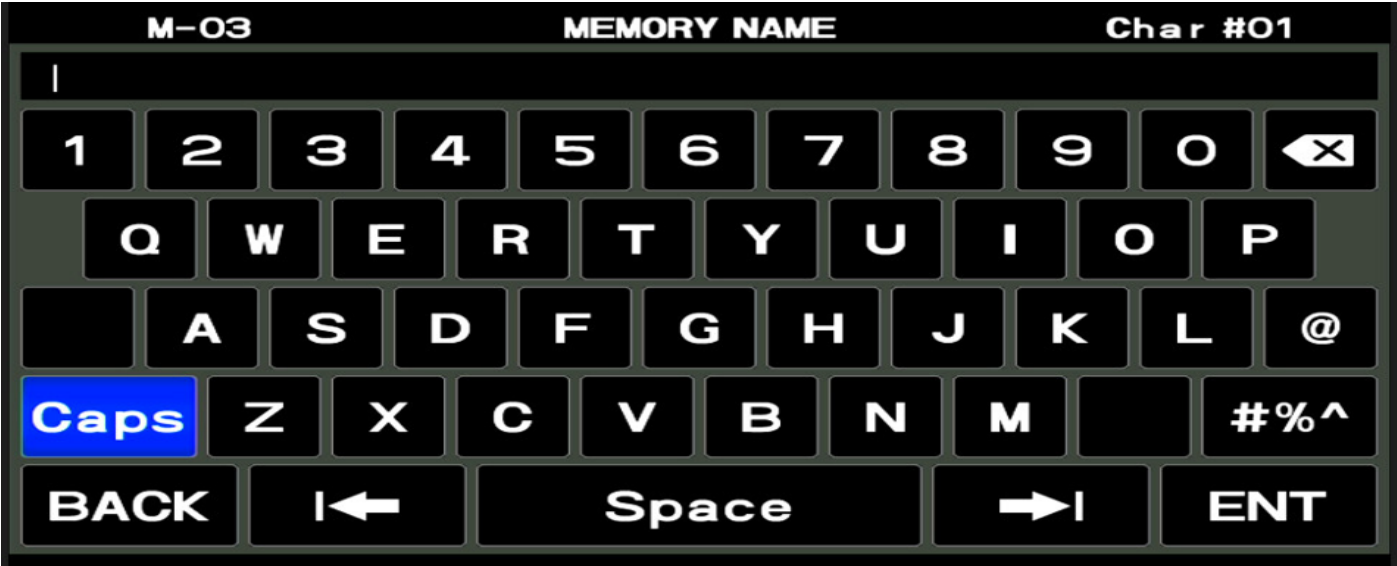


For the working frequencies (receive and transmit) to be introduced into this M-03, I press the V/M button long again from the front panel.

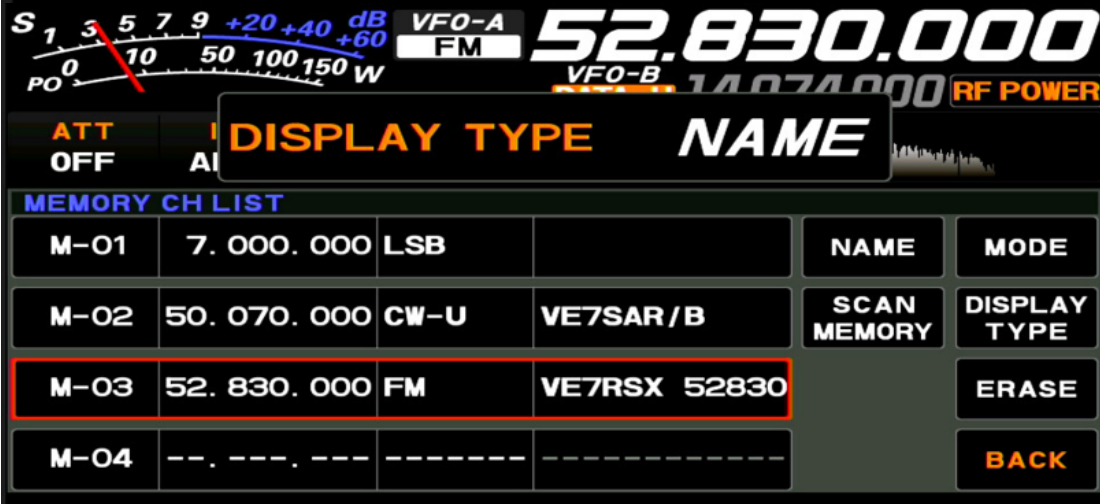
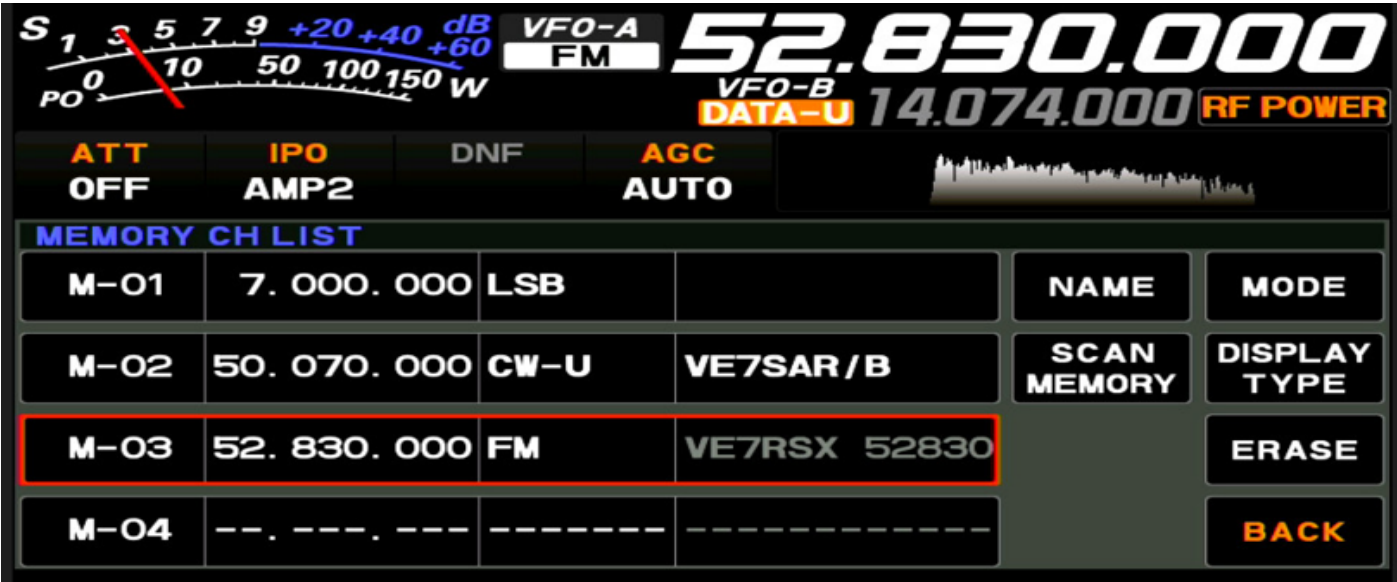


(YAESU FT-710 memories for repeaters from page 29)

Everything is fine, except having a name for the repeater and displaying the name (if you want it, instead of the pair of frequencies). I touch NAME on the display.



I will use this touch screen keyboard for naming the repeater – the memory for it. It is also possible to use a normal USB computer keyboard connected in the back USB port of the transceiver. I name it VE7RSX 52830, for clarity. This operation is not enough – yet – because the name we just introduced is greyed out.



We need to touch the DISPLAY TYPE on the screen and very fast to rotate the lower button from the front panel named STEP/MCH/DSP.

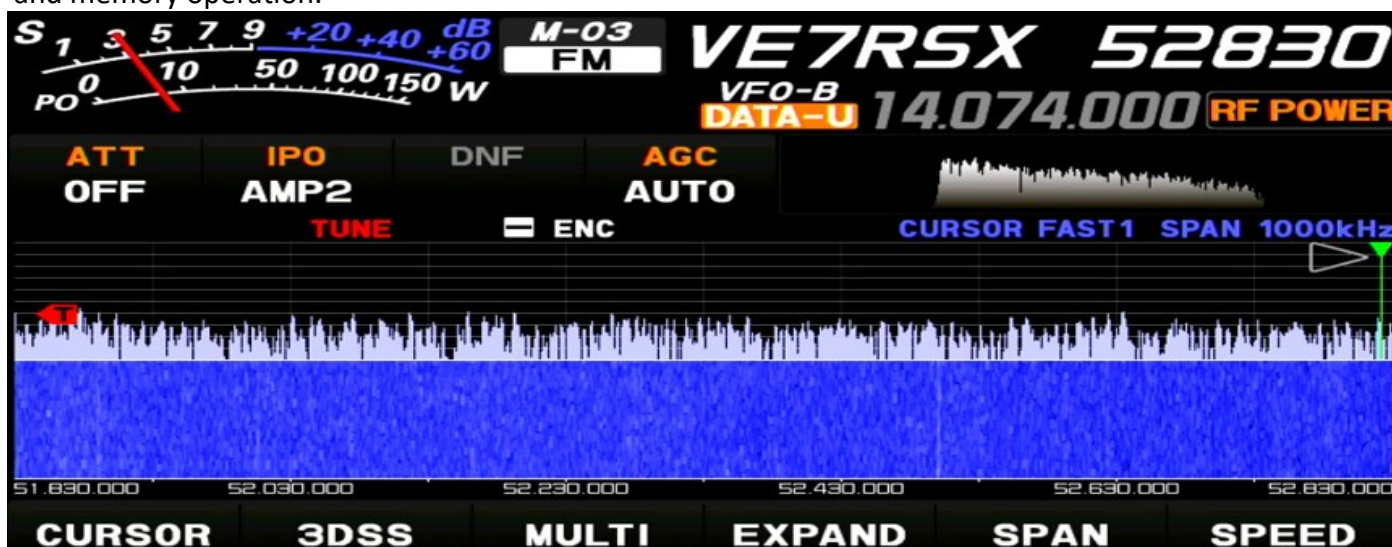
(Continued on page 31)



(YAESU FT-710 memories for repeaters from page 30)

Only now the M-03, our memorized repeater, is with white writing.

By pushing the BACK on the touch screen, we go on the normal transceiver's working display. If we short press the V/M button from transceiver's front panel, we toggle between the normal VFO operation and memory operation.



(Continued on page 32)

(YAESU FT-710 memories for repeaters from page 31)

We can repeat the above steps for adding other repeaters into memories. When we are in the memories kind of using the transceiver, the rotating of the lower front panel button STEP/MCH/DSP switches between the various repeaters (or simplex frequencies) we eventually loaded into the memories.

It is a good practice to come back into the initial settings and set for working simplex when working in FM. Otherwise, if we let it as is in this moment, the transceiver will always work on split frequencies, receive versus transmit. Whatever we already introduced in memories already as repeaters (that meaning split receive versus transmit) will stay as memorized.

We push the FUNC button.



Touch RADIO SETTINGS from the lower left corner (with blue writing).



Set as the above, to have RPT SHIFT SIMP and the ENC/DEC OFF.

Click BACK several times, until you reach the normal working transceiver's display.

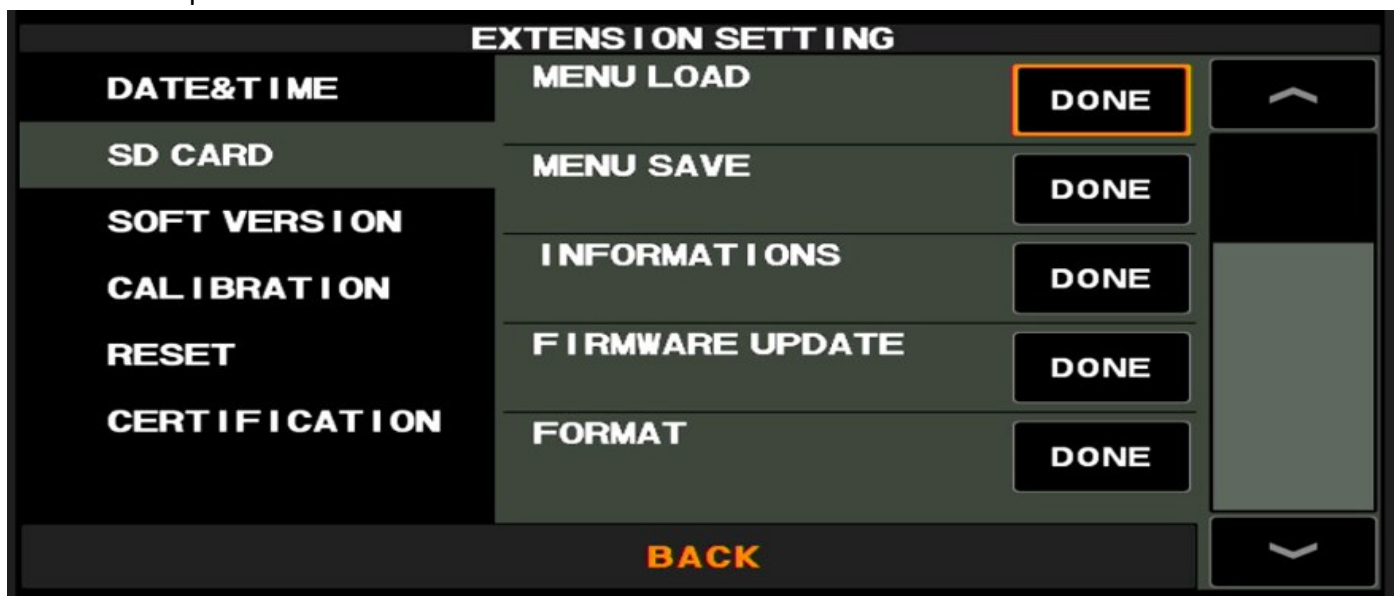
The Yaesu FT-710 has a SD card slot and cards between 2 GB and 32 GB can be used. The SD card slot is on the left side. Introducing and take out of the SD card must be done with the transceiver OFF. Page 68 of the transceiver's manual describes how to use the SD card.

First, we want to have the SD card formatted. We press FUNC button from the front panel and we go into the EXTENSION SETTINGS.

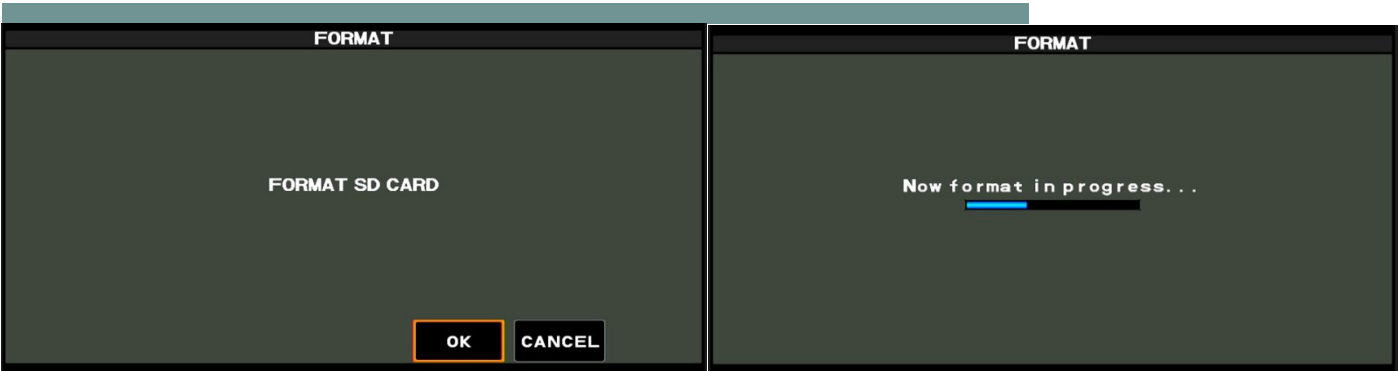
(Continued on page 33)



The last option for SD card is the FORMAT.



Push DONE.



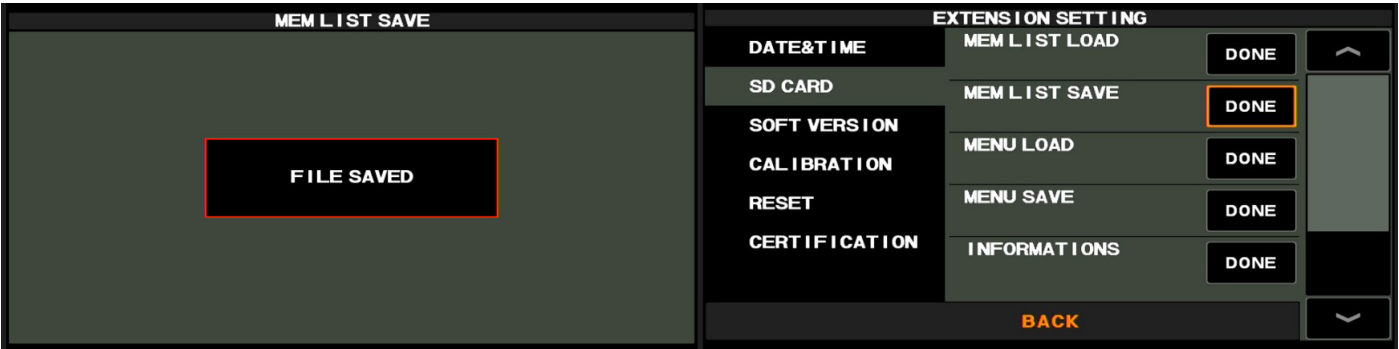
Push OK. Wait for formatting. When the formatting is finished, the following message will be on the screen.



Press the FUNC button from the front panel. Now it is the high time to save the list of the memories we introduced. Push MEM LIST SAVE. We will be prompted to input a name for our list. The default is the current date.



Press ENT and the saving starts. The successful saving message looks like this.



It is required now to press the FUNC button from the front panel, to get the following screen.

We are done. By pressing BACK in several screens, we are back in the normal functioning display. Any time we would change settings, do a RESET, we do not need to do again all the work to input into the memories all the repeaters; it is enough to just puss MEM LIST LOAD and choose our saved list, based on the given name to the list.

The DX Code of Conduct

- ♦ I will listen and listen and then listen again before calling
- ♦ I will only call if I can copy the DX station properly
- ♦ I will not trust the DX cluster and will be sure of the DX station's call sign before calling
- ♦ I will not interfere with the DX station or anyone calling and will never tune up on the DX frequency or in the QSX slot
- ♦ I will wait for the DX station to end a contact before I call
- ♦ I will always send my full call sign
- ♦ I will call and then listen for a reasonable interval
- ♦ I will not call continuously
- ♦ I will not transmit when the DX operator calls another call sign, not mine
- ♦ I will not transmit when the DX operator queries a call sign not like mine
- ♦ I will not transmit when the DX station requests geographic areas other than mine
- ♦ When the DX operator calls me, I will not repeat my call sign unless I think he has copied it incorrectly
- ♦ I will be thankful if and when I do make a contact
- ♦ I will respect my fellow radio amateurs and conduct myself so as to earn their respect

Die DX Gedragskode

- ♦ Ek sal luister, luister en nog luister
- ♦ Ek sal alleenlik roep indien ek die DX hoor.
- ♦ Ek sal nie die DX Kluster blindelings vertrou nie en eers seker maak van die DX se ware roepsein voordat ek roep
- ♦ Ek sal nie steurings veroorsaak vir die DX of enigeen wat hom roep nie en ook nie opstem op die DX of die QRX frekwensie nie
- ♦ Ek sal wag totdat die DX klaar is met sy kontak voordat ek roep
- ♦ Ek sal altyd my volle roepsein stuur
- ♦ Ek sal roep en redelike periode wag
- ♦ Ek sal nie aanhoudend roep nie
- ♦ Ek sal nie uitsaai wanneer die DX 'n ander roepsein as myne roep nie
- ♦ Ek sal nie uitsaai indien die DX 'n roepsein bevraagteken wat nie soos myne klink nie
- ♦ Ek sal nie uitsaai indien die DX 'n ander Geografiese area roep nie
- ♦ Indien die DX my roep, sal ek nie my roepsein herhaal behalwe as ek dink hy het dit verkeerd gehoor nie
- ♦ Ek sal dankbaar wees indien ek die kontak gemaak het
- ♦ Ek sal my mede Amateurs respekteer en myself handhaaf om sodoende hulle respek te verdien

Vertaal deur en met dank aan Raoul, ZS1C



Soldering Tips for Radio Amateurs

Nico Michael, ZS6BVR

About 50 years ago I began my career as a technician working at TMSA on the production lines.

I was taught how to solder and fix Electronic Test equipment. What is provided in this article are some ideas you will not read in books.

Safety Tips (Do this and be Safe)

- ◆ Never use a soldering iron without a proper soldering stand. This prevents serious burns and accidents.
- ◆ Always wear safety glasses. Even if you normally wear glasses, proper safety glasses offer better protection.
- ◆ When clipping long component leads, hold the lead with one hand and cut with side cutters in the other. Long leads can fly off and damage expensive equipment like oscilloscopes.
- ◆ When clipping short leads, place a finger over the end before cutting. This prevents flying debris. (Protect your eyes first — always wear safety glasses.) It is better to stab your finger than your eye.
- ◆ Always use a fan or fume extractor. Avoid breathing in toxic solder fumes.
- ◆ Use a PCB holder when soldering. It keeps the board stable and reduces the risk of burning your fingers.
- ◆ Use needle-nose pliers or tweezers to hold components while heating them. Holding components directly can result in burns.
- ◆ Never chew on solder or put it in your mouth. exposure can cause serious health issues, including brain damage.

Caring for the tip of your Soldering iron

Never do this:

- ◆ Chinese tips are cheaper as the electroplated layer is thinner it needs more care
- ◆ Never put a hot tip onto a wet sponge the thermal shock will eventually crack the tip destroying it. Soon the solder will eat into the tip and you will need to buy a new one
- ◆ Never use Kitchen Brillo pads to wipe the tip, it will scratch into the tip. Soon the solder will

eat into the tip and you will need to buy a new one

- ◆ Never file the tip it will destroy the tip. Soon the solder will eat into the tip and you will need to buy a new one
- ◆ Never apply old solder from your soldering iron to your work (Dry joints)
- ◆ Never use Acid core solder (plumbers solder). It will destroy the components on your circuit board
- ◆ Do not wipe Chinese bits on a wet sponge, this will crack the thinner layer

Always do this: (And your tip will last longer)

- ◆ If you buy an expensive tip from a reputable supplier it will be electroplated with a much thicker layer and will last longer (Weller, Magnum) My one lasted 25 years.
- ◆ The first time you heat your tip apply a generous amount of solder to wet the tip. This will ensure it lasts longer
- ◆ Wipe the tip with a dry rag even better a wad of few dry tissues
- ◆ If you purchased an expensive tip and it is new you can use a soldering Cleaning Ball. Make sure its genuine not a Cheap Chinese knockoff
- ◆ If your iron has been hot for a while apply a generous amount of fresh solder to wet the tip. This will ensure it lasts longer
- ◆ Set the correct temperature for the Solder Alloy you use
- ◆ Always apply fresh solder to the component you are soldering
- ◆ Flux is your best friend although you solder may have flux in certain cases preparing the surface with flux it can improve the final result

What Solder do you use

Solder is like deodorant; every technician has his own favourite brand and alloy ratio. Not all



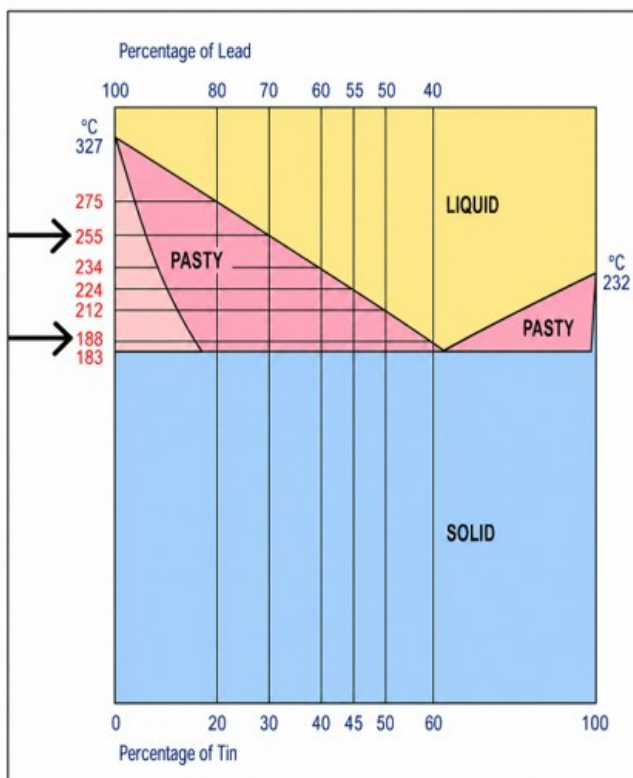
(Continued on page 37)

(Soldering Tips for Radio Amateurs from page 36)



solders are created equal - you generally get what you pay for. For our purposes we should use leaded solder 63/37, it melts at a lower temperature. Tin/lead (Sn/Pb) solders melt at different temperatures depending on their alloy ratio. To make this simple, use 63/37 (tin/lead, eutectic) melts very easily at 183 °C and is ideal for electronics work.

This diagram illustrates the melting points and properties of various alloys.



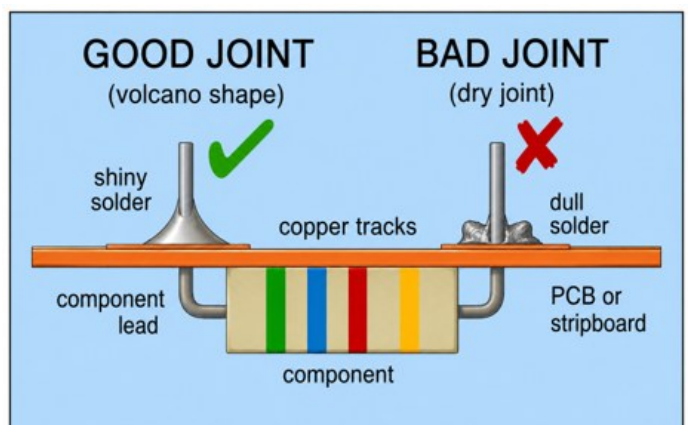
Prepare the surfaces

Clean, polish the Printed Circuit board. Use a piece of steel wool or an eraser. You always want good results when soldering.



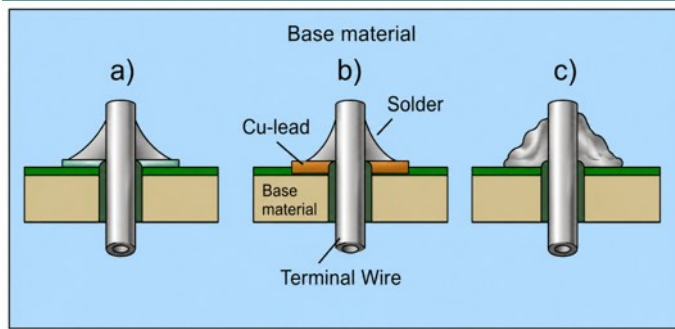
Wear gloves when you work with steel wool, do not use it on your soldering iron tip. Make sure the component leads are in a good condition, old components may have oxidized leads.

The Good the Bad and the Dry joint



- ◆ The solder blob (too much solder)
- ◆ The joint with a good fillet

(Continued on page 38)



◆ The dry joint (dull)

Making the Solder joint

Set the temperature of your Iron to the desired temperature for your solder use 220C.

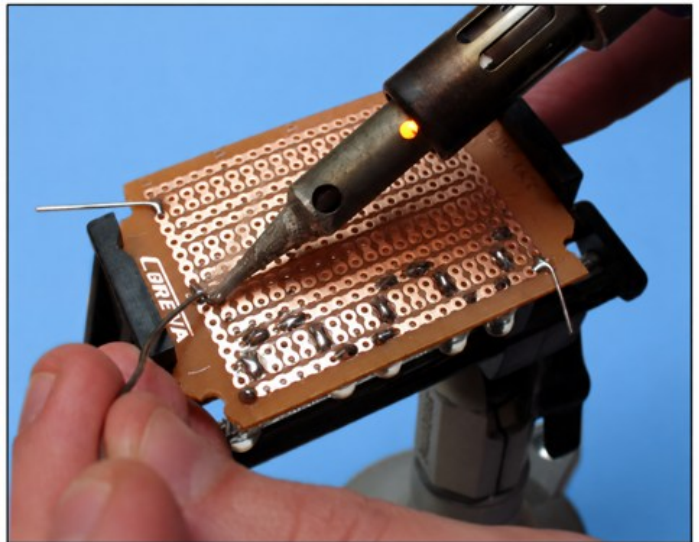
Pre-tin the tip before applying the solder to ensure we have good thermal contact with Now apply solder the PCB and component lead on the other side.

Apply fresh solder to the joint and heat the other side on the component and PCB.

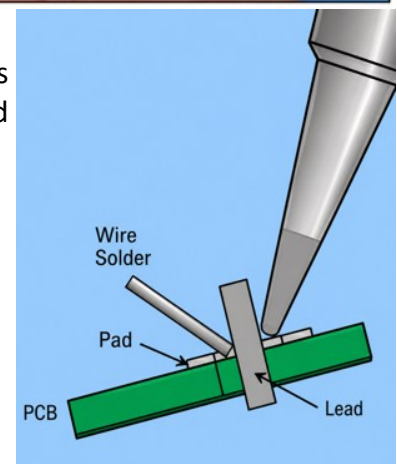
Do not put solder on your iron and transfer it to the joint you may get dry solder joints.

Bibliography

Images generated: ChatGPT and Grok



I trust you found this article interesting and informative.



The W4BOH Fox

Peter Lamb, KM4DNU

Build this simple, affordable transmitter for your next direction-finding adventure

When our local amateur radio club, McDowell Amateur Radio Association, W4HOG, in North Carolina started regularly holding foxhunts on Friday afternoons, my son Hugh and I wanted to improve our direction-finding skills. We needed a simple fox to practice with, so I started looking for something to build that would make noise on 2 meters (see Figure 1).

I found an article online from the November 1998 issue of *73 Magazine* by Dave Pelaez, AH2AR, titled, "Build the Fox TTL Foxhunt Transmitter," about building a small, low-power beacon transmitter as an addition to a balloon tracking device.



Dave wanted something that was simple and low cost and would run

longer than the balloon's primary transmitter, I wanted to build something similar. See Table 1 for a complete list of parts.

The Transmitter's Progression

Version One

The base design of AH2AR's fox consists of a voltage regulator, a crystal oscillator and a 555-timer integrated circuit (IC). The voltage regulator lets you power the fox with 7 to 20 V. The 555 IC generates the tone and the crystal oscillator generates the carrier. In his article, AH2AR used a 48.3 MHz oscillator, which created a third harmonic on 144,900 MHz and is within the 2-metre amateur band. The band-pass filter design helped keep the fox from transmitting on the fundamental and second harmonic, leaving only the 2-metre signal. Unfortunately, I could not find

(Continued on page 39)



IARU Region 2 has 144 to 148 MHz for their 2 metre allocation. IARU Region 1 (RSA) has 144 to 146 MHz.

48.3 MHz crystals — the closest I could find were 49,152 MHz, which gave a third harmonic of 147,456 MHz. Later, I found 48,000 MHz crystals, which gave us a 144,000 MHz third harmonic. This is easier to get on, but also not great because we have a fair amount of local noise on 144 MHz.

My next step was to order a printed circuit board (PCB) from FAR Circuits (<https://farcircuits.net>). I assembled the unit and I found it to be as unstable as AH2AR warns about in his article. The oscillator circuit is susceptible to environmental changes, causing the oscillator to shut down. I could not find the special “critical” capacitor that he said was needed to fix the instability issue. This led me to version two.

I worked with my friend Jason Ross, KG4RVN, to learn about how 555 timers work and how to use a

Qty	Component
1	Crystal oscillator 2 can
1	100 Ω resistor
1	10 k resistor
1	15 k resistor
1	78L05 TO-92 5 V voltage regulator
2	0,1 μ F capacitor
1	Dip switch
1	Flashing LED
1	Antenna connection
1	Packaging

If you are using a low-frequency crystal, you will need two 18 pF capacitors, two 5 pF capacitors and three 0,15 uH chokes.

555 calculator online. The 555 Monostable Circuit Calculator at <https://ohmslawcalculator.com/555-monostable-calculator> allows you to adjust the

(Continued on page 40)

(The W4BOH Fox from page 39)

values to get the timing interval you desire. With this new information, I modified the first version of the circuit described above to include a second 555 timer to create the transmit interval function, instead of using a flashing light-emitting diode (LED), as AH2AR did in his design. I also added an LED to indicate when the unit is powered on. I studied how to use online PCB design software such as *KiCad* (www.kicad.org) and created a schematic and the necessary Gerber files, then I sent the files to a custom PCB printer.

The first iteration of version two was packaged in an Altoids tin, but I set it down on the roof of my van and forgot about it — it flew off the roof never to be seen again. So, I 3D-printed a custom box (see Figure 2). This gave me much more space but



Figure 2. Version two in a 3D-printed case. was clunky and cumbersome.

Version Three

Version two worked great, but after looking at the schematic, my father, Wilson Lamb, W4BOH, felt he could simplify it even more, which brings us to version three.

I took his circuit (see Figure 3), added the band-pass filter from AH2AR's design and created a new circuit board. After the boards were printed and delivered, I assembled the fox and packaged it in an Altoids tin (see Figure 4).

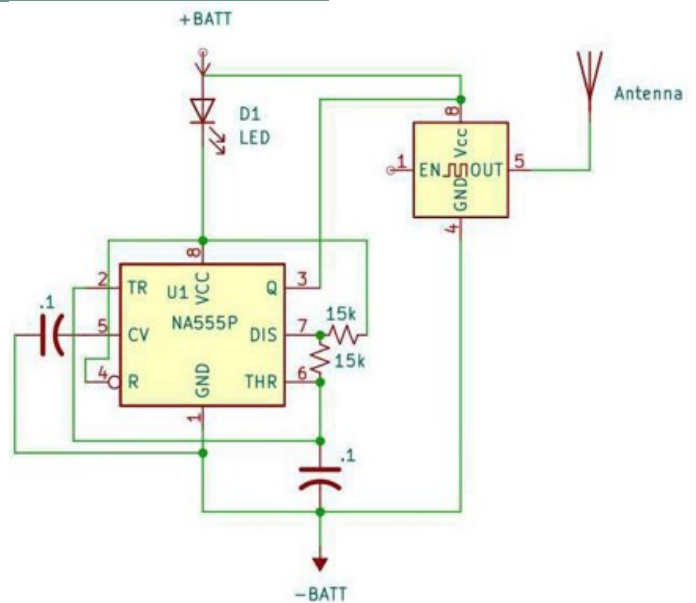


Figure 3. Version three of the schematic, originally drawn by my dad.

Figure 4. Version three in an Altoids tin



Version 3.2

I finally deployed the fox for our group to hunt; it was hidden in a briar patch on the ground. Jim Elkins, KG4IKQ, used his TinySA and read the signal as -54 dB from 30 cm away. At 30 m away, it was in the noise floor. We had good participation and everyone seemed to enjoy being able to foxhunt on

(Continued on page 41)

(The W4BOH Fox from page 40)

their own schedule. But I was a little disappointed in its battery life, despite getting about 48 hours of run time out of a 9 V battery.

This brings us to version 3.2 — the same design but with different capacitors and resistor values to get a better tone and an 18650-power pack for better battery life. I installed this version in a medicine bottle (see Figure 5) rather than an Altoids tin.



Figure 5. Version 3.2 installed in a medicine bottle

Version Four

Version 3.2 worked very well, especially when paired with a 4-wave ground-plane antenna and I renamed it the W4BOH Fox. But rather than continue to use the 48 MHz crystals, I learned that you could order a crystal programmed to whatever frequency you want, so I ordered one programmed to 146,00 MHz. After the new boards arrived, I assembled the board and pack-aged it in a key-hiding container (see Figure 6).

Unfortunately, the new crystal will run for only about 12 hours on a 9 V battery. Changing the 9 V battery to two 18650-batteries extended the run time to more than 100 hours.

In Summary

As you can see, these little foxes can be packaged in a variety of ways, from Altoids tins to medicine bottles to custom-printed enclosures. The antenna can be anything from an old handheld transceiver to a 49,53-centimetre wire. Power and switch connections can be onboard or remote-mounted to an enclosure, whichever works best for you; they are a lot of fun to hunt. The longer run time we gained by using the 18650-batteries lets our members who cannot get out on Friday afternoons have all weekend to decide when they want to hunt.

Foxhunts have been a great tool for our club to get members active in the hobby. It also helps to engage our younger members, some of whom are not yet amateurs. This is a very simple project that anyone can assemble with just a pair of wire cutters and a soldering iron. As is always the case, your fox's range will vary based on where you put it, what is around it and what antenna you attach to it. Due to its extremely low power and limited range, it does not cause any objectionable interference.

All photos provided by the author.

Peter Lamb, KM4DNU, has been an amateur since 1988, but he has been around amateur radio all his life. He can be reached at plamb914@gmail.com.



Figure 6. The final version of the W4BOH Fox in a key-hiding container



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Blandsdrif Radio-dag 2026

'n Dag van Vriendskap, Radios en Goeie Geselskap
Saamgestel deur Vivian Louwrens, ZS1VIV



Die ZS Link Netwerk Groep se jaarlikse Radio-dag by Blandsdrif was weereens 'n reuse sukses. Ten spyte van die digte mis wat die oggend se rit vir baie deelnemers uitdagend gemaak het, het radio-entoesiaste van oral saamgetrek vir 'n dag vol kameraadskap, deel van kennis en lekker kuier.

Altesaam 47 mense het die dag bygewoon, bestaande uit 31 gelisensieerde radio amateurs en 16 LVs en kinders, wat saam bygedra het tot die besondere atmosfeer en gesellige samesyn. Van die 30 amateurs wat teenwoordig was, is 10 lede van die Boland BARK en 25 lede van die SARL, wat die sterk betrokkenheid van hierdie organisasies binne die amateur radio gemeenskap beklemtoon.

Met aankoms is almal hartlik verwelkom met stomende warm sop en vars koffie – net wat nodig was om die winterkoue te trotseer terwyl daar gewag is vir die laaste deelnemers om veilig op te daag.

Die verrigtinge is amptelik geopen, waarna ons die voorreg gehad het om twee besondere gaste te verwelkom. Rassie, ZS1YT namens die SARL en Michael, ZS1MJT van SARL HAMNET, het interessante en insiggewende praatjies gelever waarin hulle meer vertel het oor die rol, doelwitte



Gerhard, ZS1TG bedien ZS1ZSG

(Vervolg op bladsy 45)



Jasper, ZS1WT; Johan, ZS1AAC en Vivian, ZS1VIV

(Blandsdrif Radio-dag vanaf bladsy 44)

en belangrike werk van onderskeidelik die SARL en SARL HAMNET. Hulle bydraes is baie waardeer en het beslis waarde tot die dag gevoeg.

Ná die formele gedeelte is die vure aangesteek en het die ware gees van amateur radio oorgeneem. Daar is heerlik gekuier, ervarings gedeel, tegniese raad uitgeruil en nuwe vriendskappe gesmee. Soos altyd was daar geen tekort aan interessante gesprekke en praktiese wenke nie.

'n Besondere hoogtepunt van die dag was die veldstasie wat onder die ZS Link Netwerk Groep se roepsein, ZS1ZSG, bedryf is. Gedurende die dag is 17 kontakte regoor Suid-Afrika suksesvol gemaak, wat 'n uitstekende demonstrasie van aktiewe amateur-radio en die waarde van sulke byeenkomste wys.

Een van die hoogtepunte van die dag was die trekking van die pryse. Die gelukkige wenner was:

- 1ste prys: Jimmy, ZS1RB
- 2de prys: Barney, ZS1ACP
- 3de prys: Jacobus, ZS1JDJ



Jimmy, ZS1RB gesels met Michael, ZS1MJT die SARL Hamnet Provinsiale Direkteur vir die Weskaap

Baie geluk aan elkeen van julle! Ons wil ook ons opregte waardering uitspreek teenoor almal wat donasies gemaak en op enige wyse bygedra het om hierdie dag moontlik te maak.

Toe breek die tyd aan vir middagete – en soos 'n mens kan verwag, was die koelbokse toe al lankal oop en is daar gesellig saam gekuier. Die tafels was propvol 'n ongelooflike verskeidenheid smaaklike slaai en heerlike bygeregte, saam met Jasper se sappige, perfek voorbereide wors. Opregte dank aan elkeen wat 'n slaai of gereg gemaak en met almal gedeel het. Julle ruimhartigheid het die ete besonders gemaak.

Teen die middag het die kuier stadigaan tot 'n einde gekom. Die voertuie is gepak en elkeen het weer koers gekies na sy eie QTH. Teen laatmiddag was die plaaswerf weer soos altyd – stil, netjies en rustig – met net die mooi herinneringe van 'n besondere dag wat agtergebly het.

'n Baie spesiale woord van dank gaan aan Jasper en sy geliefde vrou, Natasha. Sonder julle sou hierdie Radio-dag eenvoudig nie moontlik

(Vervolg op bladsy 46)

(Blandsdrif Radio-dag vanaf bladsy 45)



David, ZS1AOC; Nick, ZS1N en Matt, ZS1MDT
Andries, ZS1SMP; Bryan, ZS1SSS (ex ZS2SS); Michael,
ZS1MJT en Natasha, LV van Jasper, ZS1WT

Gerhard, ZS1TG (ZS3TG, V51TG); Jasper, ZS1WT; Jimmy
ZS1RB en Skollie, ZS1CJA



gewees het nie. Julle groot harte, gasvryheid en bereidwilligheid om soveel van jul tyd, moeite en liefde in hierdie dag te belê, maak dit jaar ná jaar 'n besondere geleentheid. Namens die hele ZS Link Netwerk Groep wil ons net sê: baie dankie. Ons waardeer julle ongelooflik baie en is dankbaar vir vriende soos julle.

Aan almal wat die dag saam met ons deurgebring het – ons vertrou dat julle dit net soveel geniet het soos ons, lekker geëet het, nuwe kennis opgedoen het en waardevolle herinneringe saam huis toe geneem het.



Blykbaar is die linkerkantse tenk vol rooiwijn en die ander een vol witwijn! My navrae lewer net stilte op!! Red.



Ham radio is lekker

Eddie Leighton, ZS6BNE

Fifty-two years is a long time in this game and I have watched the culture shift quite a bit. The old school value of a properly confirmed QSO whether it was a paper QSL or even just both stations carefully logging and later verifying, was part of what gave amateur radio its weight. It was not just “I worked you,” it was “we both agree this contact happened and here is the proof.”

POTA (and to a lesser extent SOTA) flipped that model. The activator carries the entire logging “burden.” Once they upload the log, the chaser gets the credit automatically. No confirmation required from the other end. That feels like the sportsmanship and mutual accountability got diluted. It becomes more of a “points and parks” game than a genuine two-way radio contact in the classic sense.

I have always known about HOTA and recently joined their ranks on their WhatsApp group. I registered on their online system, locally developed by Shaun, ZS6SHZ. The way they work in confirming activations give me hope once again for amateur radio and these kinds of activities.

I am a believer in using ADIF for information transfers between various amateur radio systems. I had done my first HOTA chase. As always, I log my QSOs on The COOL within minutes, either online or via The COOL’s Offline Logger and then uploaded

into The COOL’s OPEN database. I followed the specification of HOTA’s ADIF transfers but was getting errors trying to upload my logs as confirmation for the chase.

No one else seemed to be having the same problem and a few were guiding me on how to upload my logs. Still, I had errors and I could feel the usual anti COOL bias going through this process. Eventually Shaun came online and I sent him the error messages I was receiving together with my data I was trying to upload. The next day, Shaun reported that there was indeed an error in the ADIF upload code and that it had been resolved. I did a successful ADIF upload from The COOL’s ADIF into the HOTA database. A win for all!

One thing I detest is someone asking me to contact someone directly when the subject could be applicable to all. I believe in open conversation. We can all learn from the results!

So now I would hope that I was in good standing with the HOTA group and not here with an “Agenda” like I was told in the SOTA group before once again leaving them. I noted on all the groups doing activations, condition reports were reported on WhatsApp. Why are we doing radio then?

On The COOL we have implemented a WSPR TX / RX reporting system to report on 40 m propagation to the very hour. I shared this with my new

(Continued on page 48)



(Ham radio is lekker from page 47)

found HOTA friends. "WSPR gives a reasonable indication of band conditions. Here we concentrate mainly on 40 m propagation with ZS6BNE in the Northwest and ZS5DUV in KwaZulu Natal running 1 W output with A2NEW in Botswana as a monitor station. Occasionally ZS4AA does either WSPR transmissions or WSPR reception. The graphs show the past hour. Other WSPR stations may be seen in

the graphs as well. If you can "read between the lines" you may have a good indication as to the present conditions on 40 m, mainly a local band. See the WSPR TX and WSPR RX buttons for the info at www.radarops.co.za

HOTA's WhatsApp admin's comment, wait for it, **HOTA?** The bias remains. I gave a thumbs up, of course, it is applicable!



Solving the USB charger problem for good

Daniel Romila, VE7LCC

My need for 5 V USB chargers grows every week. Not only that I use such USB chargers for charging batteries, for auxiliary measurement equipment, but they became the charger for one of my walkie-talkies, a Quan Sheng having a battery with a USB C port on it.

I started with the classical 5 V 2 A versions. That did not make it for long, because I have a small aquarium under my corner desk, an aquarium that has:

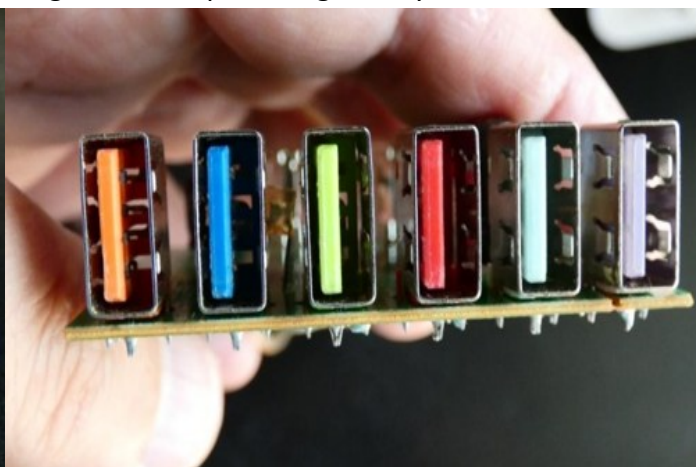
- ♦ Four light LED strips, USB power supplied
- ♦ Two USB heaters (two instead of one for redundancy reasons)



I have bought many USB chargers, they were filling my electrical plugs, my extenders, too. I even said, "let's have a bigger one, some 10 – 20-Amps and just some smaller ones," as, again, redundancy safety. Those 10 – 20-Amps always looked beautiful, with even lit USB mother connectors. And, periodically, they exploded.

In a kind of optimistic thinking, I imagined more sources of noise, coming from multiple USB chargers, will, somehow, cancel each other. Unfortunately, it was not my experience. My last USB charger that exploded looked like in the picture below. It was a 48-Watt charger and I liked it very much.

Unfortunately, it exploded like many others before it. To me, the 48-Watt label does not look like marketing for an actual 24-Watt charger. It was high time to solve, for once and for good, the problem of USB chargers and stop wasting money.



I know the Chinese websites sell switching power supplies in small sizes, like metallic bricks. I have, for many years, used one such power supply for both my HF and VHF/UHF transceivers and never failed me. I was thinking about 5 V (with some adjustment), 70-Amps – that is a 350-Watt power supply. I paid 44 CAD, shipping and taxes included, at the beginning of May 2026. It arrived several days later. I set it up as I wanted it when I received it and it is in function non-stop ever since. We are at the end of June 2026. This is my final product.

As you see, I am using something from my old, exploded USB charger; I needed a lot of USB mother plugs and to have some plastic isolation to them. Nothing better than the small old USB charger having 6

(Continued on page 50)

(The USB charger problem from page 49)

plugs in it, illuminated plugs. I took out most of the components from inside and you can even see the PCB burned where something exploded.



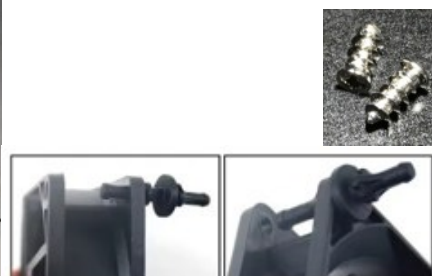
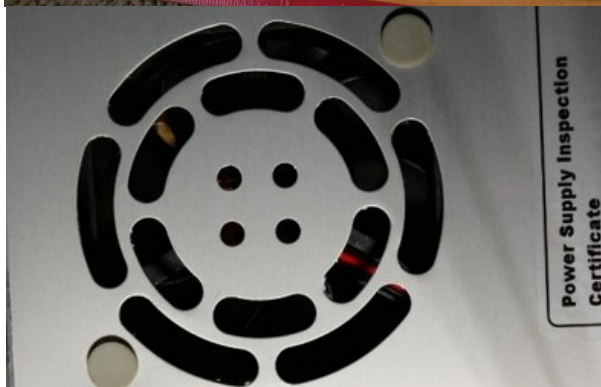
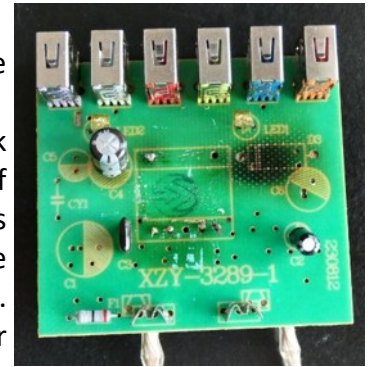
I went with two thick cables from the inside of the plastic box towards the outside, towards the new brick power supply. The newly bought power supply is exactly a brick, with no cables. It has only screws on which to come with your own cables. I inserted some pictures, to have a clear idea what it is, if you also think about buying such switching power supply. They make it for various voltages and there is a small semi-pot accessible and tuneable with a screw driver.

It was unexpected to find out the fan was always ON. It did not have an incredible noise, but I decided to do with that fan what I also did with all my computer fans. I replaced the metallic screws keeping the fan on the case with rubber "nails":

You can find and buy such rubber pieces under the name "Rubber Anti Vibration Mount Screw ", or "Chassis Fan Vibration Dampening Nails."

My new USB charger is far from being used at 350-Watts. Anyhow, once I set the voltage for 5-Volts it stays there with load or without load and it does not seem to "sweat" for my 20-Amps peak consumption – usually under 10-Amps consumption.

I caution you those bricks power supplies have a switch on a side, to be set either for 220-Volt input or for 110 - 120-Volt input.



The YL.Beam

Heather Holland, ZS5YH

"YL in Amateur Radio (1900 - 2026)" a history of women in amateur radio

Dear radio amateur friend,

I am writing to introduce an editorial project dedicated to recovering, documenting and highlighting the history of women in amateur radio. The book "YL in Amateur Radio (1900 - 2026): A century of women in radio, from the pioneers of wireless communication to the space age" aims to collect stories, experiences and memories of all those women who, from the early days of wireless telegraphy to the present day, have been part of the world of communications.

For decades, many YLs have contributed to amateur radio as operators, technicians, builders, contesters, activators, DXers, expedition members, SWLs, or simply as passionate lovers of radio. However, many of these stories remain little known or even forgotten.

For this reason, we kindly ask for your collaboration to help us enrich this historical work. We would be grateful to receive:

- ◆ Articles, personal stories or testimonies about women radio amateurs.
- ◆ Stories from YL clubs, groups or associations.
- ◆ Old and current photographs related to women in amateur radio.
- ◆ Historical or recent QSL cards from YL operators.
- ◆ Letters, magazines, newsletters or historical documents.
- ◆ Memories of DX contacts, contests, activations or expeditions.
- ◆ Any information that may help preserve this part of radio history.

All contributions will be credited with the name of the person or organization providing the material, unless otherwise requested.

We believe that every call sign has a story behind it and every photograph, QSL card or memory can help us complete an important chapter of worldwide amateur radio history.

The story of YLs does not belong only to the past: it continues to be written every day on the bands.

Thank you very much for helping us keep alive

the memory of those who made and continue to make, the female voice travel farther across the airwaves.

73 and best regards, Manel Carrasco, EA3IAZ
Project: YL in Amateur Radio (1900 - 2026)
(Selvamar Noticias) <https://selvamarnoticias.com/selvamarnoticias@gmail.com>

Editorial - Heather ZS5YH

Dear Ladies (YLs), Please seriously consider responding to the above request.

I started reviewing our list of YLs and was surprised to find that many who hold our history in their heads are over 80 years old. Every year some of our ladies' keys become silent, others have moved into assisted living QTHs – we need their knowledge! Perhaps our younger ladies could rescue documents and photographs (with captions and call signs) before they are lost?

Several YL Groups have faded away over the years and we have no central YL archive. If you share events and pictures please add captions with dates and call signs. There have been many pictures of HAM RADIO Friedrichshafen 2026, without names or call signs and in a few years no one will remember who was there!

Hoping to be overwhelmed with your responses. 33/88!

(PS: this is an archival site <https://www.dokufunk.org/index.php?lang=EN>)

2026 Scandinavian Young Ladies Radio Amateurs

There will be a SYLRA or Scandinavian Young Ladies Radio Amateurs meeting from 3 to 6 September 2026. Our call sign is 8SYL and we will be active from the island of Fårö and would love to work with YLs from all over. 73/88 de Kerstin, SM5EUU kerstin@bengtsson.bz.

Sweden's Gotland and Fårö Islands

Located almost directly between the Scandinavian peninsula and Latvia is the island of Gotland,



(Continued on page 52)

(The YL.Beam from page 51)



Sweden's largest island in the Baltic Sea, renowned for its dramatic limestone sea stacks (rauкар), sandy beaches and medieval history. Located roughly 90 km from the Swedish mainland, its capital is the UNESCO World Heritage town of Visby.

Most travellers take a ferry to Gotland. Gotland connects the island and two ports on the mainland: Nynäshamn, south of Stockholm and Oskarshamn in Småland. Wherever you leave from, the journey will take about three hours. There is a flight into Visby Airport from most places in Sweden. Once you have arrived in Gotland's capital, Visby, it is easiest to rent a car and drive to the northeast of Gotland to catch the 10-minute ferry to Fårö.

Fårö is a small and tranquil island off the northern tip of Gotland. Separated from Gotland by the narrow Fårö-strait and connected by two car ferries. Take a free ferry ride for about 5 – 10 minutes to Fårö Island; ideal for a day trip or a few nights' stay.

It is one of Sweden's more secluded holiday resorts; being an island off an island, only 20 km across. The island boasts unique geological

formations such as the rauker, towering limestone stacks that line the coast near Faro. These natural sculptures are described as weather-worn statues. Wear comfortable shoes like trainers while walking around the sea stack fields. Sheep grazing is important on Fårö, a sandy island. Camping is very popular.

Fårö is forever linked to the renowned director Ingmar Bergman, who set many of his iconic films here and resided on Fårö during his later years.

'From Stars to Signals – My Journey into Amateur Radio'

Like many people in amateur radio, my path into the hobby did not begin with a microphone or a transceiver. Instead, it began with astronomy. I have long been fascinated by astronomy and spend a lot of time observing and imaging from my home observatory in Southern Tasmania, where I live with my husband, two teenage children, dog and cat.

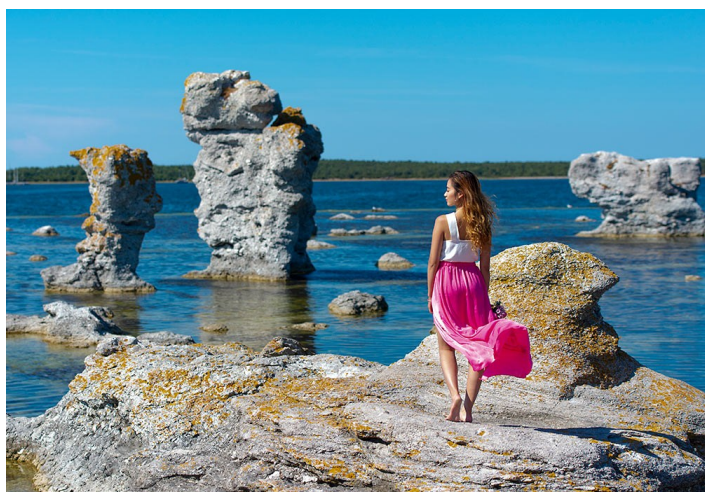
Through astronomy I became interested in radio astronomy and started experimenting with software defined radios (SDRs). What began as curiosity quickly turned into a series of small projects. I built a QFH antenna to receive weather satellite images and experimented with tracking aircraft and weather balloons. These early projects opened a whole new world to me.

As I learned more about radio systems and propagation, I realised there was an entire community of people exploring the same invisible landscape, but a different part of the spectrum to visual astronomy. That curiosity eventually led me to pursue my amateur radio licence as a way of furthering my knowledge.

I received my Foundation licence on 30 August 2025 and was assigned the call sign VK7SGZ (the SGZ is for Stargazer). Since then, I have been exploring the hobby in the same way I approached astronomy, by experimenting, learning and asking lots of questions (I also like to press all the buttons to see what happens).

My station is still very much a work in progress and antenna experiments seem to be a constant part of the journey! Recently I began experimenting with digital modes using WSJT-X and an end-fed half-wave antenna. I was thrilled to

(Continued on page 53)



(The YL.Beam from page 52)



Lisa Bromfield, VK7SGZ

(The Australian Foundation Licence is the same as the ZU (Class B) licence, but without the silly age restriction. Ed.)

make my first contacts, including interstate stations and New Zealand.

What has surprised me most during this journey is just how welcoming the amateur radio community has been to newcomers. As someone still very much in the learning phase, I have received encouragement and advice. That willingness to help newcomers makes the hobby incredibly approachable and enjoyable. For me, amateur radio feels like a natural extension of astronomy. Both hobbies involve curiosity, experimentation and exploring phenomena that we cannot see directly. In astronomy we study the visible spectrum, the light has travelled across space for thousands or even millions of years. In amateur radio we explore signals travelling through our own atmosphere, bouncing off the ionosphere and connecting people across continents. I still feel very much at the beginning of my radio journey and there is an enormous amount to learn - from antennas and propagation to different operating modes. But that sense of discovery is exactly what makes the hobby so exciting to me. You can check out my astrophotography at Tasmanian Stargazer – Astrophotography <https://lisabromfield.space/>.

I look forward to continuing to learn, experiment and hopefully make many more

contacts along the way, as well as meet more of the wonderful people who make amateur radio such a welcoming community. 73, Lisa Bromfield VK7SGZ

ALARA Newsletter Issue 197 April 2026 <https://drive.google.com/drive/folders/177qlj3UyABag6LUcXW9730IUuFYrE0t6>

Out-and-About at HAM RADIO

German Amateur radio is female!

What an inspiring event on HAM RADIO! The international YL meeting has impressively shown how strong, global and engaged the radio amateurs are networked worldwide. After a great review of YL referee Heike Drechsler, DL3HD, two absolute high-lights of the year were celebrated - the presentation of the YL Honors 2026! Here are the deserving winners:

2026 YL Honorary Plate: Tina Ockert, DL5YL. An award for decades of passion, reliability, professional excellence and human warmth. Thank you, Tina, for your tireless dedication to our hobby!

YL Honorary Award: The team ham.award Awarded for organizing the YL WWA - the first international radio project that brought women together at stations worldwide. The balance sheet is crazy: almost 50 000 participants from over 200 countries! Congratulations to all awardees! You are a true inspiration to the entire community.

From HAM RADIO 2026: Rabea Rogge, LB9NJ/KD3AID, wowed the crowd! Absolute highlight of the fair at the DARC meeting! Visitors flocked to the "Speakers Corner" to experience the first German woman in space, up close. An exciting interview with host Stephanie C. Heine, DO7PR gave Rabea Rogge and opportunity to highlight her fascinating insights into her making and her historic Fram2 mission with SpaceX. Particularly inspiring -

Contact

yl.beam news: Editor Eda (Heather)
zs6ye.yl@gmail.com

The Newsletters can be found at <https://wrarc-anode.blogspot.com/>; the Italian Radio Amateurs Union: QTC U.R.I. www.unionradio.it/qtc-la-rivista-della-unione-radioamatori-italiani/; the West of Scotland Amateur Radio Society <https://wosars.club/category/yl-news/>; the YLs-Amateur Radio Ladies-Portugal www.facebook.com/CT2ISX and Ham YL www.facebook.com/ham.yls (Continued on page 54)

(The YL.Beam from page 53)

Her personal turning point was the Perseverance March Mission, the moment she realised, "Hey, I can work on the future!"

After a successful signing session of her book "A

(little) space for everyone," Rabea once again reports in detail about her polar orbit and the exciting project Fram2Ham, where she sent SSTV images from space!

The South African Maritime Mobile Weather Net

The Maritime Net is on the air daily at 06:35 UTC [08:35 CAT] and 11:35 UTC [13:35 CAT] on 7,120 MHz LSB and 14,316 MHz USB.

The 06:35 UTC and 11:30 UTC transmissions are for High Seas METAREA 7 which covers from Ascension Island down to Madagascar East and Marion Forties on 14,316 USB.

The coastal weather and general sails are on 7,120 MHz LSB after the main weather broadcast.

The team is Peter, ZS1CH; Marjoke, ZS5V; Woody, ZS3WL and Johan, ZS6WZ.

The IARU Intruder Watch Service (formerly the IARU Monitoring System or IARUMS) is a worldwide service authorised by the IARU Administrative Council. It is served by dedicated volunteers.

A monthly IWS Newsletter is published and can be downloaded from <https://www.iaru-r1.org/spectrum/monitoring-system/iarums-r1-newsletters/>





dB vs. dBm



Understand RF Power the Right Way

dB (DECIBEL)

Relative Unit

Compares two power levels

FORMULA

$$\text{dB} = 10 \log_{10} \left(\frac{P_2}{P_1} \right)$$

KEY POINTS

- ✓ No absolute reference
- ✓ No unit
- ✓ Can be positive, negative, or zero
- ✓ Used for Gain, Loss, Attenuation, Link Budget

POWER RATIO GUIDE

Power Ratio (P_2 / P_1)	dB Value
100 (100x)	+20 dB
10 (10x)	+10 dB
2 (2x)	+3 dB
1 (Same)	0 dB
0.5 (1/2x)	-3 dB
0.1 (1/10x)	-10 dB
0.01 (1/100x)	-20 dB



dB tells you
HOW MUCH CHANGE

dBm (DECIBEL-MILLIWATT)

Absolute Unit

Measures actual power level

FORMULA

$$\text{dBm} = 10 \log_{10} \left(\frac{P}{1 \text{ mW}} \right)$$

KEY POINTS

- ✓ Referenced to 1 milliwatt (1 mW)
- ✓ 0 dBm = 1 mW
- ✓ Used to express actual power
- ✓ Easy to measure with RF instruments

COMMON dBm VALUES

- ⦿ +30 dBm = 1 Watt
- 📶 +20 dBm = 100 mW
- 📶 +10 dBm = 10 mW
- 📶 0 dBm = 1 mW
- 📶 -10 dBm = 0.1 mW
- 📶 -30 dBm = 0.001 mW (1 μ W)
- 📶 -60 dBm = 1 nW
- 📶 -100 dBm = 0.1 pW



dBm tells you
HOW MUCH POWER

QUICK TAKEAWAY



dB = Comparison
(Relative)



dBm = Absolute Power
(Referenced to 1 mW)

Revisiting the Quagi Directional Antenna

Richard “Rick” Lawn, W2JAZ

First published in QST. March 2026

An inexpensive 70-centimeter Yagi for satellite or terrestrial operation

While thumbing through the 21st edition of *The ARRL Antenna Book*, I came across a design that I remembered reading about in the early 1970s. Maybe it was the name “Quagi” that first caught my eye, but after looking at more articles about this antenna that emerged 30 years ago or more, I decided it might be worth revisiting for my satellite operations, as I am always looking for inexpensive ways to operate the “birds.”

The Quagi gets its name from the characteristics it shares with quad and Yagi antennas. Further online research led me to an excellent article by Wayne Overbeck, N6NB (SK), who was one of the founding designers of the Quagi in 1972. Subsequent articles by Overbeck appeared in the April 1977 issue of *QST* (“The VHF Quagi”), the February 1978 issue (“The Long-Boom Quagi”) and the August 1981 issue (“Reproducible Quagi Antennas for 1 296 MHz”).

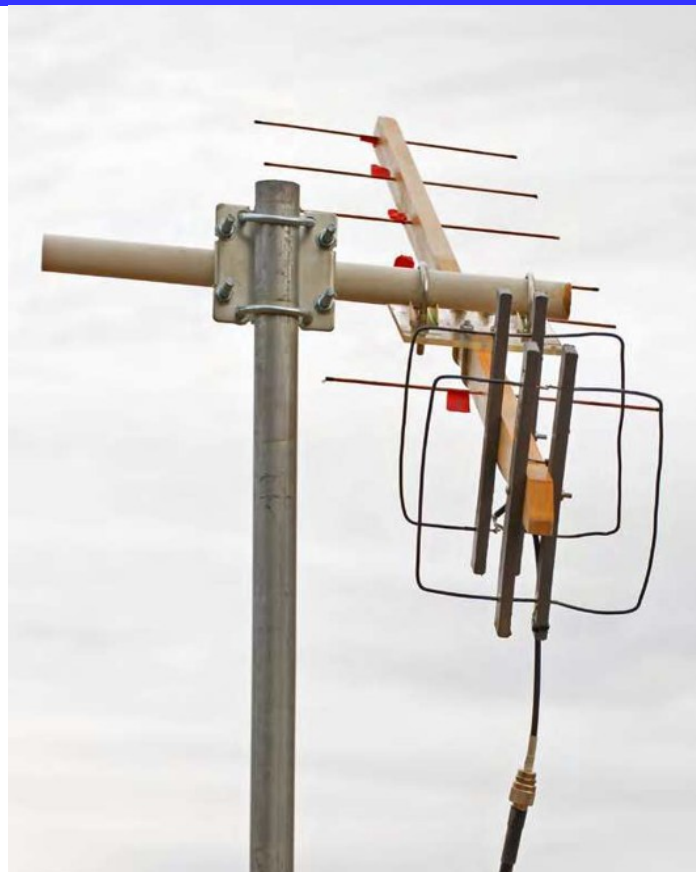
Surprisingly, it seems this antenna has not caught the eye of commercial manufacturers, aside from a hybrid crossed-polarity design by WiMo.

What made the Quagi more appealing to me was the fact that the driven element is a quad loop, as is the reflector, making it simple to feed directly with 50 Ω coax. Easy-to-find materials also make it a great home-brew project.

I had already built a quadrafilar helix antenna (QHA) for 2-metre satellite operation that might pair well with a 70-centimetre Quagi, so I decided to build an eight-element version following specifications in the 24th edition of the *ARRL Antenna Book*. I designed it for resonance centred around the satellite portion of the band at 435 MHz. Square quad elements would provide the driven element and reflector and six horizontal elements would provide the Yagi-like directors.

Materials, Preparation and Tools

I fashioned the boom from a 1 × 2-inch (2,54 × 5,08 cm) piece of 4-foot (1,22 m), 10-inch (25,4 cm) long hardwood and coated it several times with clear polyurethane to seal it from weather effects. I slightly tapered the ends with a jigsaw. I also used



The author's fully assembled Quagi. [Bill Saidel photo]

#12 AWG solid insulated house wire to make the square director and reflector. Wire with white insulation will clearly show Sharpie® markings, though black insulation is more UV resistant. To support these quad loops, I used four plastic strips (two for each loop) cut from a dollar store cutting board; these strips should be 8 inches (20,32 cm) long and 1 – 1,5 inches (2,54 to 3,81 cm) wide.

I used inexpensive 1/8-inch (3,175 mm) welding rods from Harbor Freight for the director elements. You will have to buy a package of a dozen or so, but you will need only two 36-inch-long (91,44 cm) pieces for this design. Consider donating the excess to your local amateur club for a club antenna kit project.

For the short coaxial pigtail feed line with an N-connector, eBay is an excellent source for materials. There, you can find short pieces of coax with an N-connector already attached, which is helpful if you prefer not to make your own. N-

(Continued on page 57)

Table 1. Element Dimensions

Element	Length	Spacing Distance
Reflector	28 inches/71,12 cm (7 in/17,78 cm each side)	N/A
Driven element	26 ³ / ₈ in/67,6275 cm (6,65 in/16,891 cm each side)	6,8 in (17,272 cm from reflector)
Director 1	11 ⁶ / ₁₆ in (28,8925 cm)	5,34 in (13,5636 cm from driven element)
Director 2	11 ⁵ / ₁₆ in (28,73375 cm)	10,7 in (27,178 cm from director 1)
Director 3	11 ³ / ₄ in (28,575 cm)	5,6875 in (14,446 cm from director 2)
Director 4	11 ³ / ₁₆ in (28,41625 cm)	8,46 in (21,4884 cm from director 3)
Director 5	11 ³ / ₈ in (28,2575 cm)	8,46 in (21,4884 cm from director 4)
Director 6	11 ¹ / ₁₆ in (28,09875 cm)	8,46 in (21,4884 cm from director 5)

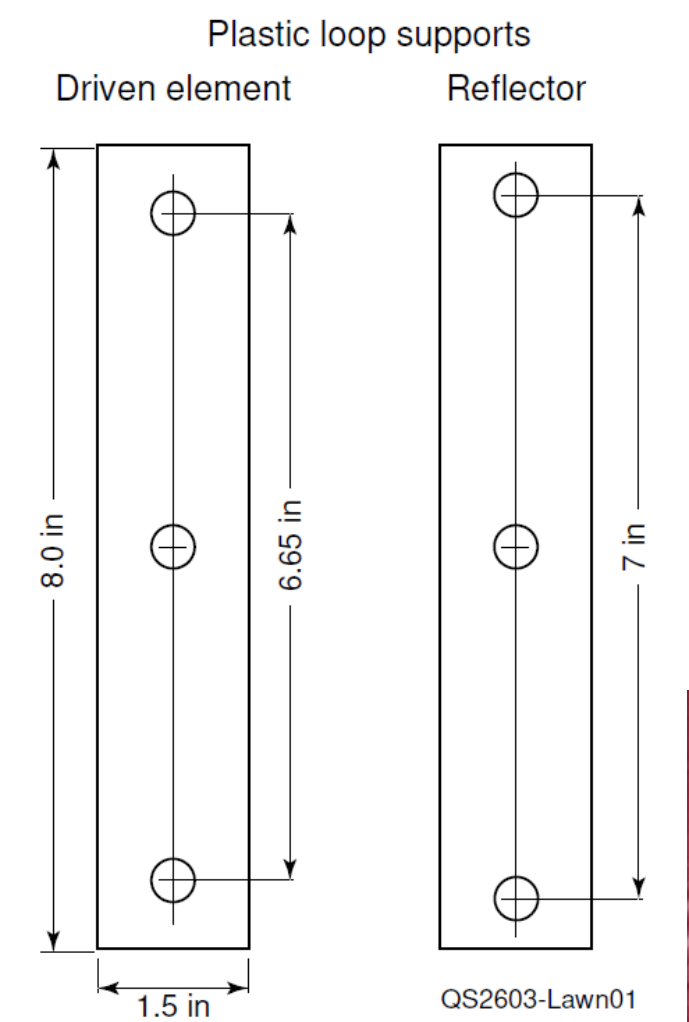


Figure 1. Diagram of the loop supports

Figure 2. A view of the quad loops. [Richard Lawn, W2JAZ, photo]

Figure 3. The Quagi with a cross-boom mount. [Richard Lawn, W2JAZ, photo]

(The Quagi Directional Antenna from page 56)

connectors are generally recommended for use at UHF and above because they have negligible signal loss at higher frequencies.

You will also need two stainless-steel bolts, nuts and washers to attach the two pairs of plastic spreaders to the 2-inch (5,08 cm) side of the 1 × 2-

inch (2,54 × 5,08 cm) boom. Length is not critical and you can judge it by what you have in your toolbox or by measuring the diameter of the plastic spreader supports and the thickness of the boom.

The tools you will need to assemble this include an accurate ruler or measuring device that shows

(Continued on page 58)

(The Quagi Directional Antenna from page 57)

32nd and 64th increments (*if you work in inches and feet. Ed.*), a high-wattage soldering iron or gun, a hacksaw or some other means of cutting the welding rods, a Sharpie marker, a straight edge, heat shrink-wrap or electrical tape, masking tape to label directors after cutting them, epoxy for locking elements in place and an electric hand drill or drill press with bits.

Preparing the Components

Table 1 includes the exact measurements I used to construct the Quagi for 435 MHz. It should not take long to mark and cut the various components.

Plastic Quad Loop Supports

To prepare the loop supports, drill a centre mounting hole in each of the four plastic loop supports (see Figure 1). Next, drill 1/8-inch holes spaced equal distances from the centre hole and measure the total distance of the driven element and the reflector sides. In this case, it should be 7 inches for the reflector and 6 21/32 inches (6,656 inches/16,09 cm) for the driven element. This should leave approximately an inch or so at the end of each support.

Boom Holes for Directors

Measure 2 inches (5,08 cm) in from each end of the boom and then mark the centre point of the wide side of the boom, which should be at 3/4 of an inch (1,9 cm) and draw a centre line using a straight edge. This will ensure that the holes for the directors and quad loop supports are aligned. Mark drill points along this line according to Table 1 to mount the directors, the driven element and the reflector supports and drill the holes. If possible, use a drill press to ensure the holes are straight, 1/8-inch (3,175 mm) holes will make a perfect, snug fit for the directors.

Element Preparations

Using a Dremel-like tool or a hacksaw, cut the six directors from 1/8-inch (3,175 mm) welding rod per the dimensions in Table 1. Mark a piece of tape with Sharpie to label each element.

Use #12 AWG insulated solid copper wire to form the loops. They are easier to form if you mark the bends with Sharpie before inserting the wire

into the plastic supports. Once the loops are formed and inserted through the supports, use epoxy or silicone to fix the wire loops to the supports. The reflector is a closed loop, so you must solder the two open ends at the bottom of the loop once the loop is passed through both spreaders. Leave the driven element loop open to attach the short coaxial feed-line jumper (see Figure 2).

Final Assembly

Before attaching the elements to the boom, it helps to find the centre or balance point on each director.

I made a little jig from a piece of balsa wood and carved a small notch in the end. Then, I clamped it in a vice to make it vertically level and balanced each director on it to find the centre. You can probably use a Popsicle® stick or a chopstick to help find a balancing point, or you can just measure each side to ensure the elements are centred. Mark the centre of each director with Sharpie and then add marks at 3/8 of an inch (3,175 mm) on either side of the centre. These marks will make the job of centring each director on the boom easier. Before the driven elements are in place, find the boom's balance point and drill holes for a mast-mounting C clamp.

Mount the elements to the boom and use a little epoxy or silicone to fix the elements to the boom. I learned the hard way that the ends of these elements are sharp even after filing, so I used small pieces of heat-shrink tubing on the ends. You can also use electrical tape for this purpose. The Quagi can be mounted for a vertical mast or horizontal satellite-style boom (see Figure 3).

The completed antenna can be seen in the lead photo.

Using stainless-steel bolts, nuts and washers, attach the driven element and reflector to the boom. Once the driven element is attached, solder a short coaxial jumper terminated in a female N-connector to the open ends of the wire quad loop. You can use epoxy or wire ties to keep the ends of the wire loop from pulling through the holes in the plastic spreader supports.

Once these two elements and the coaxial jumper are in place, I suggest using wire ties to

(Continued on page 59)

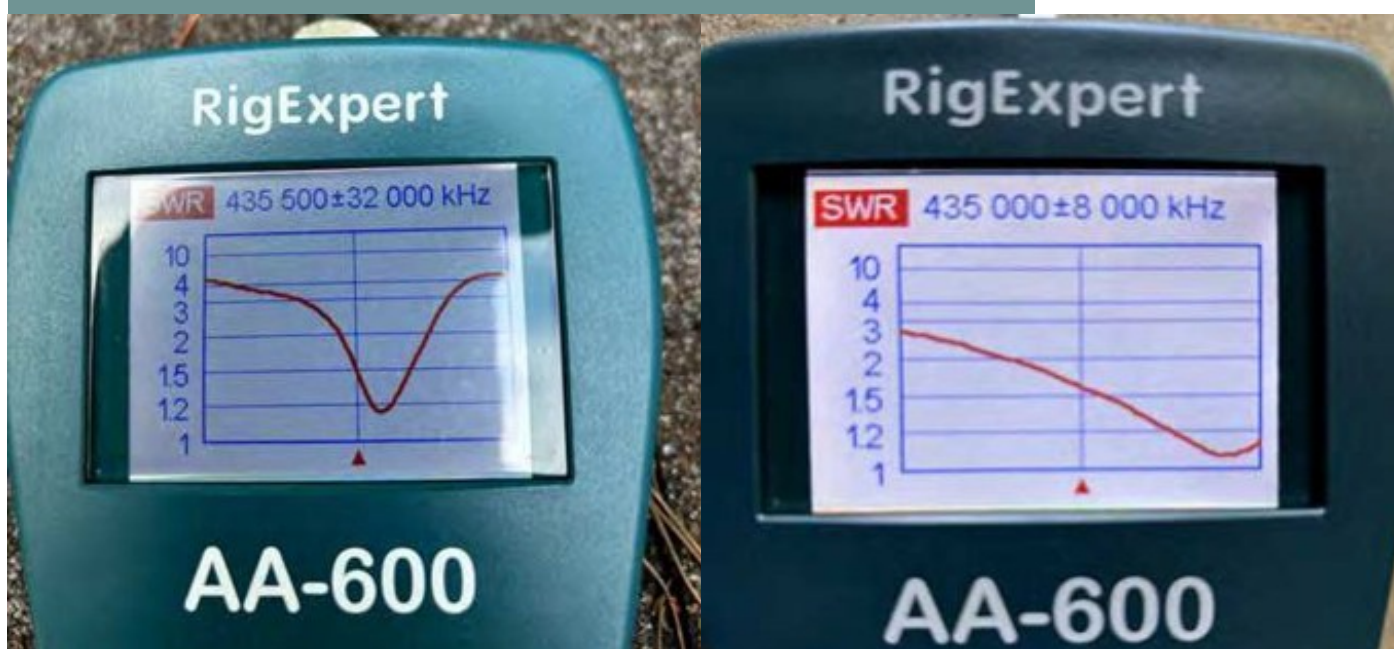


Figure 4. The SWR at 435 MHz. Figure 5. The SWR with shorter quad loops. Making the loops longer will lower the resonant frequency. [Richard Lawn, W2JAZ, photos]

(The Quagi Directional Antenna from page 58)

anchor the jumper to the boom so that the N connector exits the antenna via the back of the boom (see Figure 2).

Testing and Performance

Initial testing can be done at near-ground level using a 6-foot (1,82 m) fibreglass stepladder or a small tripod. My standing wave ratio (SWR) readings that I took with a RigExpert AA-600 were impressive. Not only was the SWR at resonance more than acceptable, but the curve suggested the antenna was fairly broad banded, showing 2:1 or less for a large portion of the band (see Figure 4). If you find that the resonant point is too low, just shorten the loops slightly — remember, it does not take much to shift the frequency at 70 centimetres! If the antenna resonance is too high, re-make the loops with slightly longer dimensions (see Figure 5). For such minor adjustments, you should not need to adjust the director element lengths.

The real test was to replace my M2 Antenna Systems circularly polarized 70-centimetre antenna with the newly minted Quagi and see how it performed for satellite contacts. Of course, the SWR changed slightly when I mounted it to my roof, but the changes were not significant enough to negatively impact performance.

I used it on the FM and linear satellites for a week or so with good reports. I did not notice a significant signal degradation compared to the M2

antenna — at least not enough to make contacts difficult. The circular polarization provided by the M2 antenna would no doubt be better at handling very weak signals or signals subject to satellite spinning. The gain on this eight-element design, as measured at the 1972 West Coast VHF Conference, was 12 – 13 dBd over a reference dipole! By comparison, the M2 456CP34 with a 125-inch (3,17 m) boom is listed at 16 dBi gain and their smaller 436CP16 with a 65-inch (1,65 m) boom in their low-earth-orbit pack posts a gain of 13,3 dBi. Therefore, the Quagi is not too shabby for an easily constructed antenna that should cost about \$25 or less to build.

Future Experimentation

I have not yet tried staggering the director elements so that three are mounted horizontally and three vertically, nor have I used *EZNEC* or similar software to model this variation in design. If someone builds the Quagi with this design variation, I would love to know how it performs. My next experiment will be to combine this with the homebrew 2-metre QHA and see how my satellite station performs.

Richard “Rick” Lawn, W2JAZ, has authored reviews and articles for *QST* and *CQ* magazines and currently serves as President of the South Jersey Radio Association. He holds undergraduate and

(Continued on page 60)

(The Quagi Directional Antenna from page 59)

graduate degrees from the Eastman School of Music and has performed with Chuck Mangione,

Lionel Hampton and a host of other noted performers and ensembles. Rick can be reached at rjlawn@gmail.com.

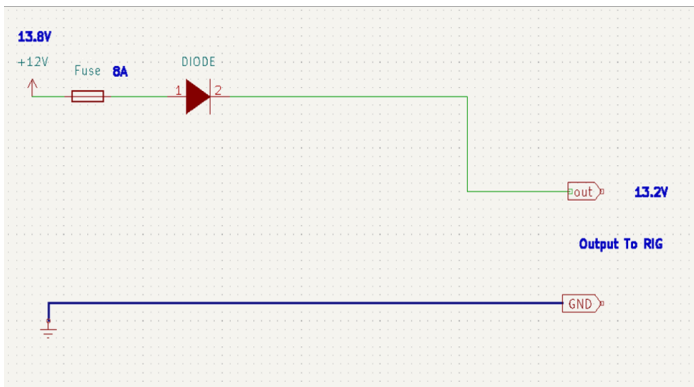
Reverse Polarity Prevention

Nico Michael, ZS6BVR

How many times have rigs and expensive equipment been damaged by accidentally reversing the polarity of the power supply? This article will show you a few simple circuits that you can use to protect your equipment from reverse polarity damage.

1. The Simplest Solution Using a Diode

Here, we place a silicon diode in series with the equipment. This prevents damage to the equipment if the power supply polarity is reversed. **Do not use this for current over 1 A.**



1.1 The Problem with this method

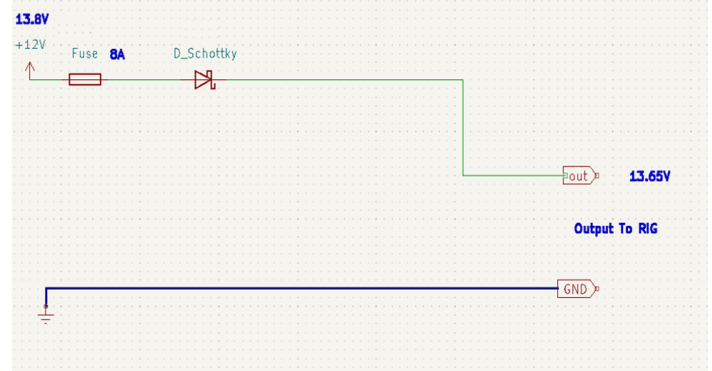
A silicon diode has a forward voltage drop of between **0,6 V and 0,7 V**. You should not use this method on the power input of a transmitter because the power dissipated by the diode is $P = I \times Vf$

Assume your transmitter is drawing **5 A** - $P = 5 \times 0,6 = 3 \text{ W}$. This may be acceptable for an instrument that draws less than **1 A**. For low-current applications, you can use a **1N4007** diode.

2. Using a Schottky diode

A 10 A Schottky diode has a lower forward voltage drop, typically between 0,15 V and 0,45 V. **Trying to find the right Schottky diode may be a problem. You may have too much leakage current.**

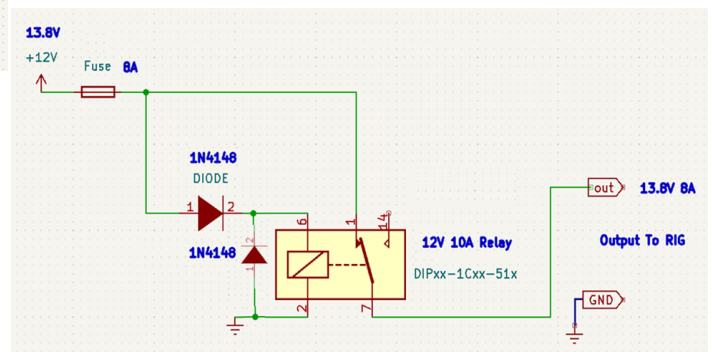
In this example, we will use **0,15 V** and assume your transmitter is drawing **5 A** - $P = 5 \times 0,15 = 0,75 \text{ W}$. This is considerably better. However, I have had bad experiences with **Schottky diodes failing short-**



circuit, which leaves your equipment with no reverse polarity protection.

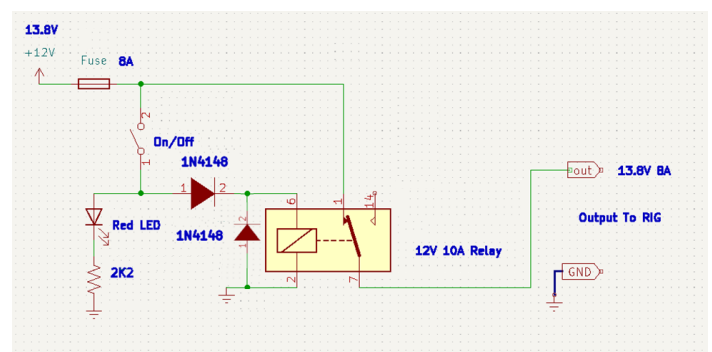
3. The Pine, ZS6GST's magic Relay

I remember my late boss talking about a design that Uncle Pine, ZS6GST used to protect his rigs. He placed a diode in series with the relay coil so that, if the polarity was correct, the relay would energise and power the rig. Here is a circuit based on his design concept.

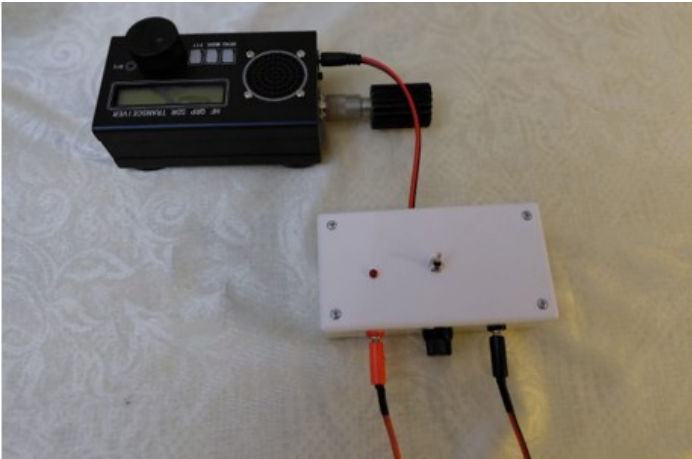


3.1 My Modification to the original design

I have made a small refinement to this design by adding an On/Off switch in series with the diode and an LED.



(Reverse Polarity Prevention from page 60)



This is what my reverse polarity protector looks like with the polarity reversed on the other side.



Here the polarity protector is working with the correct polarity.

3.2 A Fixed and Variable Power source based on my design

I made a variation of my design giving me a fixed output voltage +13,8 V and a variable output voltage from +3 V to +36 V. This circuit is fed from a 13,8 V 10A DC power supply giving me a bench power supply.

Here I used a DPDT Toggle Switch with Centre Off that could handle 10A. I needed to add Clamp-on Ferrites to the positive and negative outputs. Then I got less than 1 mV noise at 33 V output on my Oscilloscope.

Exclusions

Please note that I will not be including MOSFET reverse polarity protectors, as I feel they are beyond the scope of this article.

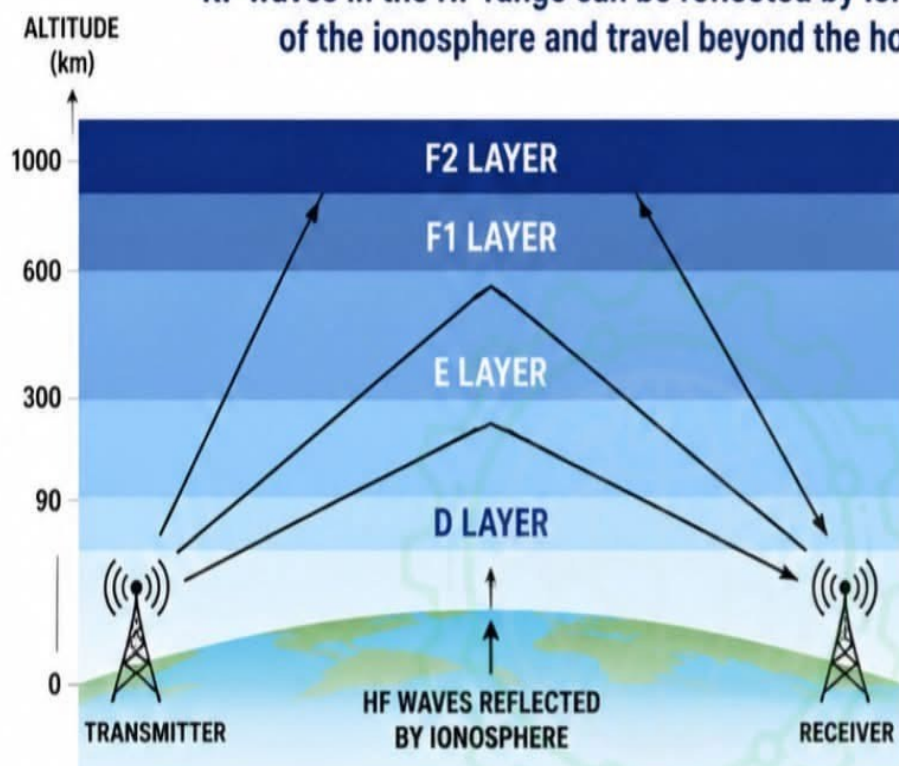
Yes, you can use an **IRF5305PBF** P Channel MOSFET with the correct Zener diode, but that is a topic for another article.

I trust you found these designs simple and easy to use and useful.



RF WAVE PROPAGATION IN IONOSPHERIC LAYERS

RF waves in the HF range can be reflected by ionized layers of the ionosphere and travel beyond the horizon.



IONOSPHERIC LAYERS

- **F2 Layer (250–1000 km)**
Highest and most critical layer for long-distance communication. Reflects high-frequency HF waves.
- **F1 Layer (150–250 km)**
Appears during daytime. Absorbs some HF waves.
- **E Layer (90–150 km)**
Reflects medium-frequency waves. Strongly affected by solar activity.
- **D Layer (60–90 km)**
Lowest layer. Absorbs LF, MF, and lower HF waves. Exists only in daytime.

LAYER CHARACTERISTICS

LAYER	ALTITUDE RANGE (km)	EXISTS	PRIMARY EFFECT	BEST WORKING FREQUENCY
F2	250 – 1000	Day & Night	Reflects HF waves over long distances	3 – 30 MHz
F1	150 – 250	Daytime	Partial reflection and absorption	3 – 25 MHz
E	90 – 150	Day & Night	Reflects MF and some HF waves	2 – 10 MHz
D	60 – 90	Daytime	Absorbs LF, MF and lower HF waves	Below 2 MHz

HF FREQUENCY GUIDE

3 – 5 MHz		Long distance (day & night)
5 – 10 MHz		Reliable worldwide
10 – 20 MHz		Good daytime propagation
20 – 30 MHz		Shorter daytime range
Above 30 MHz		Generally line-of-sight

KEY POINTS



Ionospheric conditions vary with time of day, season, and solar activity.



HF communication enables beyond line-of-sight (BLOS) communication.



Used in aviation, maritime, military, broadcasting, and amateur radio.



Always follow licensed and safe communication practices.

The Durnford Lighthouse

The deputy assistant lighthouse keeper (suspended with full salary)

The Durnford Lighthouse is an unattended acetylene gas lighthouse, it was originally erected starting on 1 March 1916 on a headland 15 kilometres south of Richards Bay. The headland on which the lighthouse rests takes its name from a Colonel AW Durnford, who was colonial engineer for Natal in the 1870s.

The lighthouse is essential for coastal shipping lanes approaching and departing Richards Bay, guiding vessels safely past the headland.

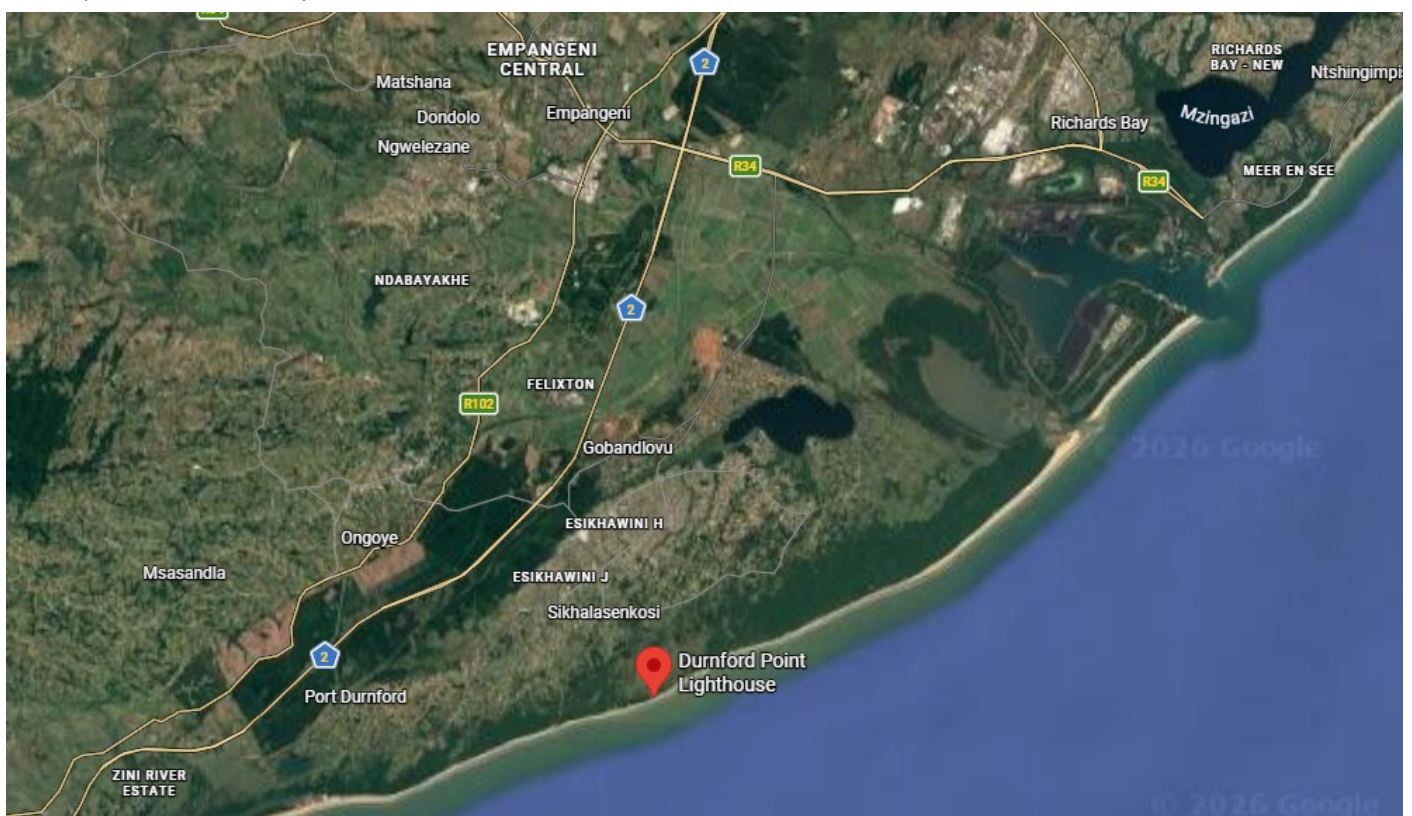
Today the lighthouse looks completely different, but the original lattice steel tower stood 12 metres high with an AGA lantern, similar to that at Cape St Lucia, on top. One white flash was emitted every five seconds, carried some 13 nautical miles/24 km out to sea. The lighthouse cost £8 000 to build.

Durnford Point Lighthouse stands as a white cylindrical concrete tower standing 12 metres tall. It features a red lantern and gallery, atop a 1-story concrete equipment building. This 2005-built structure replaced the earlier skeletal tower. The focal height of its light is 49 meters, casting a white beam with three flashes followed by one flash every 40 seconds. The light has a geographic range of 18,5 nautical miles/34 km. Access to the site is



permitted, but the tower itself is closed to the

(Continued on page 64)





(Lighthouses from page 63)

public. It is protected by armed security guards due to vandalism concerns. The lighthouse is situated in the Port Durnford Forestry Reserve.

Access to the now modern completely white stone lighthouse, with a tower that stands close to a little building, is not as difficult as it once was when animal-drawn transport was all there was to travel the road that was barely there. Now you can reach the lonely outpost by car. The white lighthouse tower is said to come from the plans of army watch towers and is the same as Hondeklop Baai and South Sand Bluff lighthouses.

Originally a young Zulu man was employed as a part-time custodian of the light and he maintained the grounds and reported any malfunctions to a



shopkeeper in Umhlatuzi, who then let Durban know.

Coordinates: -28,91648 S 31,92232 E

Grid: KG51XC

Admiralty No: D6482

ARLHS No: SAF045

ILLW No: No issued yet

https://journals.co.za/doi/pdf/10.10520/AJA10120750_345

<https://www.sa-venues.com/things-to-do/kwazulunatal/durnford-lighthouse/>

<https://lighthouses-of-sa.blogspot.com/2006/11/durnford-lighthouse.html>

<https://www.marineradar.com/lighthouse/durnford-point-9026>

LIFE IS SIMPLE



HF Update

Dennis Green, ZS2B

The All-Africa Award

The All-Africa Award is sponsored by the South African Radio League. Its aim is to encourage more QSOs with African countries. Applicants must prove having contacted the following 31 areas:

- ♦ One contact with a station in each of the six call areas of South Africa (ZS1 to ZS6).
- ♦ One contact in each of 25 African countries outside South Africa.

Only contacts with stations on the African continent are valid. Islands and ship-based stations do not count. "Country" means an entity included in the DXCC entities list maintained by the ARRL. Deleted countries also count if contacts were made while the country existed. ZS3 stations in South West Africa (before 1990) count as Namibia.

Application must be made in writing. Endorsements for a single mode or a single band can be requested. A list of confirmations must be included. The list must be certified by an official of a local radio club or two licenced radio amateurs, who have seen the confirmations. The list must contain at least the following information:

- ♦ UTC date of the contact
- ♦ Callsign of the station
- ♦ Transmission mode
- ♦ Frequency band
- ♦ Name of the country
- ♦ Type of confirmation, if not a paper QSL card

Valid confirmations are either paper QSL cards confirming all the details listed above or LoTW confirmations personally seen on-screen by the person signing the certification. If any LoTW confirmations are included, the certification can only be signed by registered LoTW user. A mixture of paper and electronic confirmations may be used in a single application.

Include R200, US\$10 or €10 to cover handling charges. The award is free to members of the South African Radio League. Applications should be addressed to: T Lammers, Palm Brook G03, Oasis Retirement Resort Oasis Lane, Century City 7441 South Africa. Enquiries and electronic submissions can be made to zs1j@iafrica.com. PayPal facility is available.



All-Africa Award

Benin, TY. Red, DL1BUG is once again active as TY5FR until 4 August with operation from 160 to 10 metres using CW and SSB. QSL via home call direct.

Tanzania, 5H. With dates not yet certain, Dov, 4Z4DX and Eyal, 4X1RE plan to be active from Tanzania as 5H2DX (CW and SSB) and 5H2RE (SSB) sometime in August or September '26. They hope to activate different National Parks within the country. Updates to follow.

Namibia, V5. Gunter, DK2WH will be operating as V51WH from 25 August until 10 October from a farm near Omaruru. Operation will be from 160 to 6 metres including 60 metres. An entry in the CQ WW RTTY contest is included as V55Y. QSL via home call.

Namibia, V5. Hanspeter, HB9BFM will be active as V5/HB9BFM between 26 August and 20 September. He will be active from different locations between 16:00 and 19:00 UTC using Olivia 8/250 at 14 072.000 kHz.

DR of Congo, 9Q. The Mediterranean DX Club will be active as 9T0MD between 30 September and 11 October. The 9T prefix has never been used

(Continued on page 66)

(HF Update from page 65)

before. Operation from 160 to 6 metres using CW, SSB and digital. Also, on QO-100 and EME. <https://www.mdxc.support/9t0md/>

Lesotho, 7P. Wolfgang, HB9CCS will be active as 7P8EA during end October and the end of November. Operation mainly on 15 metres using CW and SSB. QSL via LoTW.

Senegal, 6W. The Italian DXpedition Team has announced their next trip to Senegal sometime between October and November. Operation with 4 stations on all modes and frequencies. More to follow.

The Gambia, C5. Lui, YT3PL and Luc, F5RAV will once again be active as C5R from near Banjul from 1 October until 4 November. Their humanitarian work is ongoing – so far, they made 3 new classrooms for WILCOS school for children aged 3 to 5 years old. All the money that is donated will be invested in this project – they already spent €7 500 but still need to make new toilets and add new tiles to make new floors.

Mozambique, C9. The Czech DXpedition group will be active as C8K between 10 and 19 November with activity from 160 to 6 metres using CW, SSB and digital with several stations. They will also be active on the QO-100 satellite. Club Log livestream, QSL via OQRS or via OK6DJ. <https://www.cdxc.cz/>

Somalia, 6O. The DX-adventure Team will be active as 6O6X during February 2027. Team leader Max ON5UR mentions: *'On 14 February 2026, our local contact was invited to the Ministry of Information and Communication Technology in Hargeisa, where Minister Jamaal Mohamed Jama personally handed over the official licence. During the DXpedition, we will be active under the call sign 6O6X ("six oscar six x-ray"). Although the Belgian government still advises against travel to Somalia, several reliable sources confirm that Somaliland, located in the northwest, is the safest region of the country. The safety of the team is the top priority, which is why we have deliberately chosen to organise our activities in this area. On average, the country receives barely 500 visitors per year.'*

A Belgian-Dutch-American team with Paul, N6PSE; Marc, ON4AMX; Patrick, ON4HIL; Max, ON5UR; Karel, ON5TN; Marc, ON6CC; Wim, ON6DX; Franky, ON7RU; Geert, ON7USB; Francis, ON8AZ; Casper, PA7DX and Ronald, PA3EWP. They will be active on

HF and perhaps QO-100 and EME. Website under construction.

African Islands

Seychelles, S7. Kasimir, DL2SBY will again be active as S79/DL2SBY between 11 and 21 September with operation from 80 to 6 metres using CW, SSB and digital. QSL via home call or LoTW.

Sao Tome, S9. Francisco, CT7AKS will be active as S9R with EC7R, D2ACE, CT1BOL, D2IM, CT1BZG and CT3MD between 17 and 31 October with 3 stations from 160 to 6 metres using CW, SSB and digital. <https://s9r.viacom.ao/>

Rodrigues Island, 3B9. Kazu M0CFW will once again be operating as 3B9KW during the CQ WW SSB contest (24 and 25 October) and during the CQ WW CW contest (28 and 20 November.) Operation before and after the contest as 3B9/M0CFW between 20 and 28 October and between 22 November and 2 December. QSL via LoTW.

Seychelles, S7. Rudi, OLK2ZA and David, OK6DJ will be active as S79/OL1T between 28 December and 8 January 2027. Operation on various bands and modes. More to follow. QSL via LoTW.

Other DX

Christmas Island, VK9. The Pacific Islands DXpedition Group (PIDXG), in partnership with Youth on the Air (YOTA), is proud to announce a DXpedition to Christmas Island between 16 November and 4 December that will be planned, led, and operated by the next generation of DXers.

For the first time, the veterans are the support crew. The eight-operator on-island team is composed entirely of operators under the age of 25, led by Max Freedman, N4ML. Veteran DXpeditioners Glenn Johnson, W0GJ, and Gregg Marco, W6IZT, join the team as on-island advisors and mentors. Confirmed team members include Connor Black, W4IPC; Tyler Schroder, NT1S; Lukas Bartkus, LY7J and Urgent Jere, 7Q6UJ, several of whom cut their DXpedition teeth on 3D2Y and PJ6Y, first from the remote side and now leading in the DXpedition. We will be rounding out the team over the next few weeks.

Operation from 160 to 6 metres with 4 local stations and 2 remote. An entry in the CQ WW CW

(Continued on page 67)

(HF Update from page 66)

contest is included. QSL via M0OXO.

Andaman Islands, VU4. The World DXpedition team will be operating during November 2027 from 3 POTA locations. A team with 11 operators Dave WJ2O, K1NZ Nick Maslon; K2SAV, William "Savo" Savacool; K1ZM, Jeff Briggs; N1QV, Miriam Briggs; W0ZB, Steve Keithahn; K3PT, Kyle Snavely; KD0IVB, Emily Snavely; K1LZ, Krassy Petkov; VU2RS, Sarath Rayaprollu; and N4VGE, Van Herridge Organizer. Team support members are XYL Judi Savacool and XYL Vicki Herridge is active with 5 stations 24/7.

Andaman - World DXpeditions

Aland Island, OH0. A team (DL1TAM, DL5AXI, DL5ARI, DO6KD, DL1STL and DG0OCG) will be active as OH0ERF from 5 and 12 August. Operation in 'holiday-style' from 160 to 10 metres using CW, SSB and digital.

Franz Josef Land, R1/F. After two years of planning the RUDXT are proud to announce a DXpedition to the northern-most DXCC in the world – Franz Josef Land. Team of 6 operators will be active from Heiss Island (FJL) for 15 days starting around 15 August. <https://www.rudxt.org/ri1fjl>

Uzbekistan, UK. Darek, SP9DLM and his son Greg, SN9GM will be operating as UK/SP9DLM and UK/SN9GM from 27 July to 15 August. The second and most important element of this expedition is the launch of the APRS network in Uzbekistan and Tajikistan. Equipment will be left in these countries to enable the launch of the first APRS and APRS LORA gateways. www.grz.com/db/UK/SP9DLM

Corsica, TK. Alex, OE5AUH and David, OE5DDJ will be operating as TK/OE5AUH and TK/OE5DDJ from 9 to 22 August. They plan to hike the GR20 trail. Low power station with 10 W.

Kosovo, Z6. Giovanni, IZ2DPX will be operating as Z68PX between 4 and 11 September with activity from 60 to 6 metres using SSB and digital into a vertical antenna and dipoles. QSL via home call, Club Log OQRS and LoTW.

Bahamas, C6. Eric, K9GY will be operating as C6AYM between 5 and 10 August with activity from 80 to 6 metres using CW. An entry in the Worked All Europe CW contest is included. QSL via LoTW.

Aruba, P4. Mat, DL4MM will once again be active as P40AA between 6 and 10 August with a focus on the WAE CW contest, outside the contest from 160 to 6 metres using CW, SSB and digital.

QSL via home call, Club Log.

Antigua, V2. Look for JA3FHL, JA3PJL, JH3UHG, JJ2RCJ and JA0JHQ as V26JJ between 30 October and 6 November. Operation on HF using various modes. QSL via Club Log. <https://oba.to/V26JJ/>

St Pierre and Miquelon, FP. Matt, WF2A will be operating as FP/WF2A from 21 to 26 October. An entry in the CQ WW SSB contest is included with an activity from POTA PM-0025. QSL via LoTW. <https://www.grz.com/db/FP/W2MJR>

Saint Martin, FS. Look for team TO9W with more operators and new equipment from 29 November until 11 December. An entry in the CQ WW CW DX contest is included. Updates will be posted on their Facebook page.

South Cook Island, E51. Steve, ZL2KE and Steve, ZL4CZ are once again active as E51CZZ and E51KEE until 14 August for E51KEE (CW, SSB) and E51CZZ (SSB) between 26 July and 6 August. They will be active from Rarotonga. QSL via IK2DUW.

Solomon Islands, H44. A team with 9A2NA, 9A3MR, 9A3CJY, 9A4WY, 9A7Y and DK8ZZ will be active from Guadalcanal as H49A between 9 and 21 October. Operation on HF and perhaps 6 metres. *'H49A call sign has been issued for our expedition, honouring 15 years of charity work of Croatian Sisters of Charity of St. Vincent de Paul in Buma, Malaita Island, OC-047. Our special call sign itself symbolises ties between Solomon islands and Croatia. Part of ham donations for the expedition will be redirected to charity work in the mission.'*

Tonga, A3. The Tongan Paradise Contesters will be active as A31W during the CQ WW CW contest in November. More to follow.

Falkland Islands, VP8. Santiago, LU2DUR will be active from the Falklands between 10 and 17 January 2027. Operation during his spare time on HF using SSB with some digital. More to follow.

South Georgia Island, VP8. Amateur Radio DXpeditions (ARDX) is proud to announce plans for a groundbreaking DXpedition to South Georgia Island, set to take place in March 2027. Operating under the allocated call sign VP0SG, this ambitious activation will target one of the rarest and most logistically challenging DXCC entities, well ranked on top of the Club Log's Most Wanted List, with particularly high demand in some areas of the world. www.ardxpeditons.com/dxpeditons/vp0sg



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A 5-Band, Lazy-L, Linear-Loaded, Ladder Line Antenna (aka the “5B6L”)

John VA3KOT

About a year ago I mentioned an antenna devised by Peter Waters, G3OJV that used a 13 feet (4 m) vertical wire to create a multiband antenna. I used Peter’s idea to create [“A Simple, Low Profile, Multiband Antenna for POTA.”](#) The antenna was designed to work on 20, 17, 15, 12 and 10 m with the aid of a tuner. But I discovered a small problem on the 17 m band. If we do the elementary calculation for the length of a quarter-wave radiator at the bottom end of the band (18,068 MHz) we find that it works out to be 12,95 ft – just a whisker short of the 13 ft recommended by G3OJV. So why is that a problem?

The problem arises because the antenna uses a 4:1 unun at the feed point. Since the 13 ft length is

already almost resonant on 17 metres, the 4:1 unun makes the job of the tuner much harder. That did indeed prove to be the case when I tested my derivative in the field. So, I made a small change when designing the new 5B6L antenna – I increased the length to 14 feet (4,2672 metres) – well ... not quite true, but that is the underlying principle behind the linear-loaded equivalent.

Here are the calculated lengths of a quarter-wave radiator at the mid-point of each of the five bands of interest:

20 m: 16.6 feet
17 m: 12.92 feet
15 m: 11 feet
12 m: 9.39 feet

(Continued on page 69)



(A 5-Band, Lazy-L, Linear-Loaded, Ladder Line Antenna from page 68)

10 m: 8.11 feet

A 14 ft radiator slips nicely in between the 20 m and 17 m quarter wavelengths and becomes a “random length” on all 5 bands. Nice. But this is a linear-loaded antenna made from ladder line. Linear-loading shortens the required length by around 30%. Fourteen feet, shortened by 30% works out to 9.8 feet (~3 metres). After field adjustments I settled on a length of 9.75 ft (a little less than 3 metres).

Lose the radials!

I wanted this antenna to be what could be loosely described as a random length dipole – two equal lengths of ladder line (each shorted at one end) so that was how it was constructed. Now we have the benefit of versatility. It could be erected as a traditional dipole although with two very short arms it would be tricky to get it up in the air. It

could also be erected as a vertical dipole on a support pole about 7 metres (23 feet) tall like my Spiderbeam. But that would make it difficult to orient the coax feedline so that it comes away from the antenna at 90 degrees, as is required to prevent the feedline picking up some of the radiated signal. Perhaps a sloper would work; now that is a very viable solution.

How ‘Bout a Lazy-L?

One of the YouTube channels I follow is [“Jim’s Cool Stuff.”](#) In one of his videos Jim suggested using a “Lazy-L” orientation of a vertical simple wire radiator and single raised radial wire. Why? The purpose is to increase the take-off angle. A vertical antenna usually has a very low take-off angle which is great for chasing DX, but what about shorter-range contacts? From my location in Southern Ontario, Canada it is only a short hop down to the

(Continued on page 70)

(A 5-Band, Lazy-L, Linear-Loaded, Ladder Line Antenna from page 69)

north-eastern states in the USA. The US northeast has a very large concentration of amateur radio operators many of which participate in popular activities like POTA. A vertical antenna is likely to send my signal whistling over their heads, or at the very least, be received at a reduced level.

A Lazy-L configuration optimizes radiation to favour short to mid-range contacts by raising the take-off angle to achieve much shorter hops. Does it work? Yes indeed, during test operations I have been able to make contacts, just over the shallow puddle they call Lake Erie, into Pennsylvania, and across Lake Ontario into the state of New York, with quite respectable signal reports for my QRP CW signal.

But what about DX?



Stations on the west coast of the US or western Canada could be considered almost DX – each is thousands of kilometres away. No problem! I said this antenna has versatility. The Lazy-L configuration can be re-oriented to a straight-forward regular vertical with a raised counterpoise very easily. In fact, the angle at which the radiating element leans can be adjusted to find an optimum at which near-DX and short hop stations all fall within its radiation pattern.

How to Build a 5B6L

The following describes construction of a 5-Band, Linear-Loaded, Ladder Line antenna that can be operated on 20, 17, 15, 12 and 10 m with the use of a tuner. Materials needed are:

- ◆ Ladder Line. I recommend stranded conductors because this makes the ladder line more flexible than solid copper conductors. Use of the 5B6L as a field portable antenna may stress solid conductors and lead to failures.
- ◆ A 4:1 unun. This item can be purchased, or you can build your own using twin lead speaker wire (or similar) wound around a type-43 ferrite toroid.



Ham Made 4:1 unun

Instructions

- ◆ Cut two lengths of ladder line each 10 feet (3 metres) long. These may need to be trimmed during testing.
- ◆ Connect the two conductors of each piece of ladder line together at one end only.
- ◆ At the other end of each piece of ladder line, cut off the end of one of the conductors.
- ◆ Strip the insulation from the other conductor – this will be connected to the 4:1 unun.

(Continued on page 71)

(A 5-Band, Lazy-L, Linear-Loaded, Ladder Line Antenna from page 70)

- ◆ Connect each piece of ladder line to the unun.

Erection of the antenna

Attach a coax feedline to the 4:1 unun. A tuner may be inserted at this end if desired. For practical purposes, unless a very long coax is used, the SWR losses in the coax will not be significant so a tuner at the radio end can be used.

Set up your choice of pole, or other support, attach one end of the antenna to the top of the pole. The other end of the sloping radiating element (the feed point) should be supported on a short stick.

The other half of the antenna serves as a raised counterpoise and its far end can be supported by, for example, a trekking pole.

The slope angle can be adjusted by simply moving the counterpoise support sticks. See what works best for you. The whole antenna can be quite stealthy. I erected mine on only a 10 feet high pole. Efficiency may be improved by using a taller support, but I prefer stealth when operating in public spaces. Tall antennas arouse suspicion!

The end is nigh!

A generous friend donated a lot of ladder line some time ago and I have used all but a few feet of it. Maybe it is time to experiment with something

different. So, my next project – take a deep breath – is something I have been writing about in unflattering terms recently – a short, base loaded whip! What? Have I been enjoying too much Scottish champagne? Well, I thought it would be an interesting challenge to see how efficient I could make a shortish whip antenna with a base-loading coil. A prototype has been constructed and has made contacts in backyard tests (with my helping fingers tapping on the key). When the design has been completed you will be able to read about here on Ham Radio Outside the Box. Stay tuned.

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The Museum Column

SCR-300 WW2 Radio Backpack: The “Walkie Talkie” That Shaped the War

The development of the US Army’s “Walkie-Talkie” SCR-300 backpack radio was a game-changer for frontline troops.

John Niesel. <https://warfarehistorynetwork.com/article/scr-300-ww2-radio-backpack-the-walkie-talkie-that-shaped-the-war/>

Early in 1945, in the Northern Apennine mountains of Italy, Technician Fifth Grade (T/5) Harvey, a radioman with the 10th Mountain Division, is carrying his WW2 radio backpack, the ever-handly SCR-300, into combat for the first time. His company is part of an advance by the Tenth, the only US Army division that has extensively trained for mountain warfare. The Tenth’s objective is to push the Germans off the mountainous high ground that they have held for many months despite repeated, persistent attempts by the Americans and British to take the heights. But the mountain troopers of the Tenth are up to the task.

Harvey is moving slowly forward with his company commander, monitoring the airwaves for any incoming transmissions. He and his fellow GIs are at the point of the attack in their sector and soon they run into the German main line of resistance. Heavy firing breaks out directly in front of the Americans and Harvey hits the deck along with the other mountain troopers. “I could hear the bullets whizzing over my back and smacking in the dirt around me,” he recalls.

So, Harvey keeps his head down and radios in a contact report. His company quickly gets organized and starts bringing steady return fire to bear in the direction of the German positions. After a short while the enemy fire subsides and the troopers continue their advance. But soon German rifle fire forces Harvey to hit the ground again, with 35 pounds/16 kg of radio strapped to his back. He transmits another contact report while and once more, the enemy bullets buzz close overhead and hit the earth around him.

This same scenario repeats itself many times over the next few days and Harvey keeps hitting the dirt, the SCR-300 pounding his back, bullets still flying close over his head and smacking into the ground around him, while the radio’s antenna is



A drawing from the SCR-300 Technical Manual shows the unit in action

wagging back and forth.

“After a week of this,” he relates with a wry smile, “I suddenly realized that whenever we came under heavy fire and hit the ground, most of the other guys around me were not taking any direct fire at all while I had bullets flying all around me. Then it hit me, it was the radio’s antenna that was attracting the German rifle fire! To maintain good reception, I had to keep the antenna vertical, which was easy to do as it had a flexible mount. Whenever I was lying prone on the ground, I would swing the antenna vertical. So, there I am, my face in the dirt and there is that antenna poking up, dancing around and drawing all kinds of attention

(Continued on page 74)

(The Museum Column from page 73)

to me. After the firing stopped, I turned to the captain and told him that I did not want to carry the radio anymore, I was tired of getting shot at!"

Designing the WW2 Radio Backpack that Became the "Walkie Talkie"

On the World War II battlefield, there were few options for sending messages. One was to send a messenger or runner, who risked getting killed, wounded, lost, or captured. Another was the field telephone. But it was dependent on wire, which, when strung along bushes and trees, or, more likely, just laid on the ground, was easily damaged by boots, tires, tank treads and exploding munitions. GIs of the US Army Signal Corps and the US Marine Corps devoted a lot of time to locating and repairing line breaks. All the while, messages were not getting through unless sent by runner, jeep, etc.

Effective though it was, the field telephone just was not portable enough to move out with the troops at a moment's notice. However, as is often the case in peace and war, technology came to the rescue with an innovative, game-changing invention: wireless - better known as a radio.

The vacuum tube made radio possible. These cylindrical shape, glass-enclosed electronic devices were the precursor to the modern transistor. With a design that was refined throughout the early 20th century, vacuum tubes became increasingly smaller and more robust. By 1940 they were dependable, of compact design (about the size of a small pill bottle) and could be made rugged enough to withstand shock, vibration, heat, cold and wet. With these attributes in mind, the US Army Signal Corps embarked upon a design programme to develop a "Walkie-Talkie," a portable AM frequency radio that could be carried on a soldier's back.

Prior attempts at designing a portable radio were made in the late 1930s and early 1940s, with some success achieved with the SCR (Signal Corps Radio) 194 and 195 backpack radios, but they were cumbersome and heavy and had tuning and reliability issues. Another radio that made it to operational status was the SCR-511, issued to the troops in 1942. The 511, with its long, staff-like antenna that was bisected by the coffee can-size

transceiver, was given the nickname "Pogo Stick." Designed for cavalry use, it was outmoded by the time of America's entry into World War II, but saw service, nonetheless.

Galvin Manufacturing Corporation's FM Radio

In 1940, Galvin Manufacturing Corporation, maker of Motorola products, had developed the "Handie-Talkie" SCR-536 handheld two-way AM radio that would see extensive use in the upcoming war. But with an effective range of only a quarter of a mile (400 m), the SCR-536 was not powerful enough for communications between advancing troops and company/battalion headquarters situated farther back from the front line. Nor was it manually tuneable to other frequencies or "channels," thereby limiting its usefulness. A new radio was needed, one that could reliably operate over a longer range, but still be portable enough to not be overly burdensome to the soldier carrying it. As previously mentioned, the initial Signal Corps design parameters were for a radio that would operate on the AM (Amplitude Modulation) band. However, one of Galvin's engineers, Daniel Noble, was sold on the advantages of FM (Frequency Modulation) design for clear, interference-free radio communication. He met with representatives from the Signal Corps and convinced them of the superiority of FM technology for their new radio.

Noble's confidence in the viability of the concept and in Galvin's ability to produce such a radio carried the day. Although various sources give differing dates for when these initial design discussions transpired, in 1942 the Signal Corps issued to Galvin Manufacturing a contract for the development of a portable transmitter-receiver utilizing the FM band. It was a high-priority project and Galvin began design work without delay.

The SCR-300

Daniel Noble was tasked with assembling the project team. Joining him were Marion Bond, Henryk Magnuski, Lloyd Morris and Bill Vogel. The Signal Corps stipulated that the radio, designated SCR-300, was to be powered by batteries and, weighing no more than 35 pounds (16 kg), be portable enough to be carried on a soldier's back. The transmitter and receiver would utilize the FM

(Continued on page 75)

(The Museum Column from page 74)

band of 40,0 to 48,0 megacycles, divided into 200 MHz segments to yield a total of 41 channels. An operational distance of three miles (4,8 km) was specified, with the appropriate noise-cancelling circuits to facilitate clear reception.

Finally, as the unit was intended for extended use outdoors in all types of weather conditions, the radio set had to be resistant to water entry. Noble informed the men that the Signal Corps “placed a life-and-death priority on this programme for the infantry.”

The SCR-300 team took their responsibility to heart and by spring 1942 they had two prototypes ready for review. After successfully testing the radios eight miles (12 km) apart (more than twice the distance called for in the initial specifications), the units were demonstrated for representatives from the Signal Corps. So impressed were they that the go-ahead was given to proceed with the programme. Further development and testing led to the production radio, the BC-1000. This unit, when combined with all the required accessories, comprised the SCR-300 “Walkie-Talkie” radio.

For the Army’s final acceptance tests, Galvin’s production version of the SCR-300 travelled to the home of the US Army’s Armoured Force School at Fort Knox, Kentucky. There in the woods and fields the unit was put through its paces, with trials and tests designed to verify the performance characteristics, ruggedness and overall quality and usability of the radio. As the results demonstrated at day’s end, Daniel Noble’s project team had designed a winner that met or exceeded the specifications laid out in the initial Signal Corps parameters.

Full-scale production ramped up following the conclusion of the acceptance tests, with ensuing delivery of operational units to the Army for the purpose of writing the requisite technical manual that would accompany every SCR-300 issued to a radioman. This manual, which was titled “TM 11-242 RADIO SET SCR-300-A,” detailed the correct set-up, operation and troubleshooting of the BC-1000 radio and accessories.

An Easy-to-Use System

Initially assigned to GIs who had completed the required courses on radio communication, the SCR-



In another image from the Technical Manual, the unit is shown in a lighter weight configuration of a WW2 radio backpack using only the essential components.

300 was nonetheless fairly easy and straightforward to use. As such, the unit could be operated by just about anyone after a brief introduction regarding tuning, transmitting and receiving. Once powered on, the vacuum tubes required a 10-minute warm-up period, then the unit was ready to operate. Select a channel with the tuning dial, adjust the squelch knob (to reduce background noise or “roar” that occurs when the radio is not transmitting or receiving) and simply push the butterfly switch on the telephone-like handset to transmit, release the switch to receive (as the SCR-300 was a radio, it could not transmit and receive simultaneously) and that was all that was required for basic operation.

One major reason for the SCR-300’s ease of use

(Continued on page 76)



The telephone-like Handset TS-15-A. Note the “butterfly” switch that, when rotated either direction, activated the transmit circuit.

(The Museum Column from page 75)

is that Noble’s team designed the BC-1000 radio unit with an electronic circuit, called Automatic Frequency Control, that would automatically fine-tune the radio to match the frequency of an incoming signal. This circuit allowed outgoing transmissions from the BC-1000 to be sent out on the exact same frequency, negating the need for a separate tuning control for transmitting. This was a simple concept, perhaps, but an important feature that made the radio easy to use by those who may have to operate the unit if the radioman was wounded or killed. One hallmark of a successful design is simplicity of use and as Galvin would end up producing nearly 50 000 SCR-300s, many of which remained in use well into the 1950s, the success of the radio’s design was clearly proven.

Combat Debut in Italy

As the Allies were concluding the campaign in Sicily in August 1943, operational planning for the upcoming invasion of Italy was in its final stages. Communication SNAFUs throughout the North African and Sicilian campaigns served to reinforce the immediate need for more effective means of

portable communication.

Because of this need and since there were now enough units available for deployment, Galvin’s SCR-300 would be slated to make its combat debut during the invasion of southern Italy. In fact, such importance was placed on including the new radios in the operation that they were transported by air to the invasion staging areas. Alternate shipment by cargo ship was considered too slow and many times urgently needed items had been “lost” in the vast cargo holds of the hundreds of Allied ships plying the Atlantic. Consequently, assigning precious air transport space to the delivery of the radios ensured they would be in the hands of those who would desperately need them once the bullets started to fly.

Deployed primarily to facilitate timely communications between infantry companies and battalion HQ, the SCR-300s were also frequently used by forward observers who would spot the fall of artillery rounds, then, if needed, quickly radio back aiming corrections. The practical usefulness of the units and the dependability of the radio’s rugged design, quickly became apparent once the

(Continued on page 77)

(The Museum Column from page 76)

GIs waded ashore in Italy. The US Army was still experiencing many teething troubles in 1943 when fighting the Axis and the instant communication afforded by the new radios was a godsend to the frontline soldiers and commanders. When there was an immediate need for reserve troops or a concentrated artillery barrage, the SCR-300 was worth its weight in gold.

The SCR-300 in the European and Pacific Theatres

As production of the SCR-300 continued, the radios were issued to other units and branches of the US military besides the infantry. The Army Airborne, the Marines and the US Navy all received radios for their own use. By the time of the invasions of northern and southern France in June and August of 1944, Galvin's "Walkie-Talkie" was playing a prominent role in communications in the European Theatre of Operations, as it also was with Marine and Army units that were carrying out the island-hopping campaign against the forces of Imperial Japan in the South Pacific.

Use of the SCR-300 and any other electronic device for that matter in the extreme heat and humidity that was encountered in the Pacific Theatre required a fungicide treatment if the equipment was expected to function reliably. Galvin employed a fungus-prevention process that applied a protective coat of varnish over the entire assembled circuit board. This coating, along with the rubber grommets that sealed the case sections,



The harness attached to the BC-1000 radio unit is imprinted with "Mid-West Duck & Canvas Co 1943." Note the thick felt pads that have been slipped over the shoulder straps. The felt cushioned the shoulders, vastly improving the comfort of the harness.

were effective at preventing moisture-induced damage to the radio's electronic components.

The Problematic SCR-300 Battery

As indispensable as the SCR-300 proved itself to

(Continued on page 78)



The control panel of the BC-1000 transmitter/receiver, with the hinged cover up

(The Museum Column from page 77)

be in the field, one inherent characteristic of a portable radio could render the unit useless: battery life, or, more specifically, unavailability of replacement batteries. This could turn the radio into nothing more than 35 pounds (16 kg) of dead weight on an infantryman's back. To minimize the possibility of such scenarios, the Army and Marines made replacement batteries a high-priority supply item, similar in importance to ammunition and rations.

One radioman who was interviewed for this article went ashore in southern France with the 103rd Division in fall 1944. He recalls few problems with obtaining replacement batteries throughout his seven months in combat. From the port of Marseilles to Brenner Pass in southern Austria, he

does not recall having to go any extended amount of time with a dead battery.

The multi-voltage SCR-300 batteries, available in two sizes, were more complicated than a single-voltage jeep or truck battery. The 15-pound (6,8 kg) BA-70, with an operational life of 20 to 25 hours, was the first SCR-300 battery produced. It was later followed by the lighter-weight (9 pounds/4 kg) BA-80, which had an operational life of 12 to 15 hours. Inside of both battery assemblies were three groups of power cells, with each group supplying a different voltage. A 4½-volt group powered the filaments of the 18 vacuum tubes, while a 90-volt group powered the receiver plate. Power from the third group of 60 volts was combined with the receiver's 90-volt cells to provide the 150 volts

(Continued on page 79)



Men of the 1st US Army use a Walkie-Talkie at a crossroads inside Germany. The new SCR-300 radio allowed for better communication over longer distances, allowing frontline troops to speak to their headquarters several miles to the rear.

(The Museum Column from page 78)

required by the transmitter plate.

With the existing battery technology of the day, such a diverse power supply required a large physical package. As a result, the lower two-thirds of the SCR-300 unit was occupied by the battery, which connected to the BC-1000 receiver/transmitter via a thick seven-prong cable. The inclusion of such heavy-duty components as the cable; the rubber grommets between case sections; hinged seal covers over the headset, handset and relay jacks; strong steel outer case; and the compact but sturdy circuit board construction played a big role in the radio's ruggedness, the benefits of which were experienced firsthand by frontline troops.

WWII's Invaluable "Walkie-Talkie"

Throughout World War II, the SCR-300 radios distinguished themselves under combat conditions in hot weather and cold, wet and dry. Battalion and company commanders finally had a dependable radio that was truly portable, allowing instantaneous communications regarding immediate tactical needs and actions. Forward observers were able to quickly call in the US Army's substantial artillery assets, making corrections rapidly and often with devastating effects on enemy infantry and armour.

Marines fighting in the jungles and on the islands of the Pacific could coordinate with Marine armour via the "Walkie-Talkie," bringing much-needed heavy, close-in firepower to bear on Japanese pillboxes, caves and strongpoints.

And, of course, untold numbers of American and Allied lives were saved by the timely and accurate communication allowed for by Galvin Manufacturing Corporation's SCR-300 Radio Set. The US Army placed such importance on the development of the radio that they awarded Daniel Noble the Certificate of Merit for his role in the design and production of the "Walkie-Talkie."

By the end of the war, Daniel Noble's design for a dependable, rugged, easy-to-use WW2 radio backpack saw extensive use in combat with the Marines, Army Infantry and Airborne, Army Air Force and Navy.

Portable in theory and portable when put into use, Galvin Manufacturing Corporation's "Walkie-Talkie" was arguably one of the most useful items provided to US servicemen during World War II, even though that "dancing" antenna may have brought a few more enemy bullets zipping over the radioman's head!

The Tinus Lange 7066 Technical Excellence Award

Do you enjoy building pieces of equipment to use in or outside the Shack? Or software to use for amateur radio? Well then how about entering for the Tinus Lange 7066 Technical Excellence Award?

The award is bestowed annually on the League member who submits a technical project in any of the following categories – a) the design and/or construction of projects such as a pre-amp, SWR bridge, patching unit, automatic ID'er, practical antenna ideas, mast, portable gear, power supplies, etc., or b) any software for use in Amateur Radio.

The submission must include the actual items (if size and mass allow) or photographs (particularly in the case of antennas, masts, etc.) And a complete write-up in article form with illustrations/pictures, ready for publication in Radio ZS.

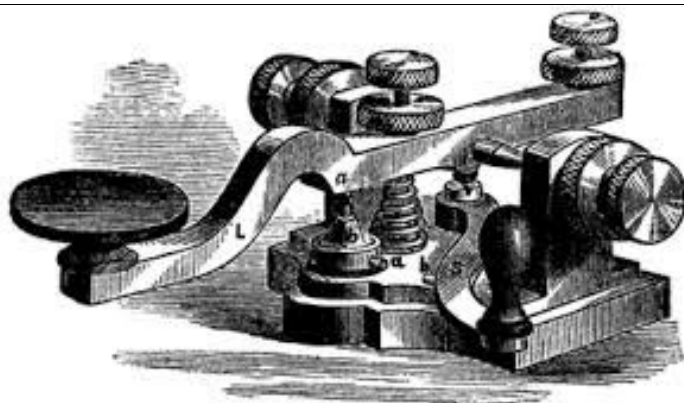
The Award is a framed certificate and a cash award of R1 000. The closing date for entries is midnight on Sunday 31 January 2027 and must be sent to secretary@sarl.org.za.



	International Amateur Radio Union, Region 1 27th General Conference - Vienna, Austria 19 September - 23 September 2026			
Subject	Establishing Morse Code as an Intangible Heritage			
Society	VERON	Country:	The Netherlands	
Committee:	C3	Paper number:	VI26_C3_03	
Author:	Remy F.G. Denker PA0AGF			

Introduction

Morse code was a real milestone in the development of wireless communications technology. Morse code as a kind of language especially in amateur radio has overcome barriers of language. Because of this Morse code contributed to international understanding. This artificial language with all its abbreviations is still very much alive in amateur radio despite of all the modern transmission modes.



Key points and proposal

Becoming an Intangible Heritage would be an adequate honour for Morse code and could gain the popularity even in our modern times. The process has already been successfully implemented at national level in Belgium and The Netherlands.

Proposals with the same intention were on the agenda of the following Regio-1 conferences in:

South Africa - 2011: SC11_C3_32

Landshut - 2017: LA17_C3_40 VERON

Zlatibor - 2023: ZL23_C3_04

Just before the IARU R-1 conference in Landshut a reminder has been communicated by letter signed by Oliver Tabakovski Z32TO, member of the EC, and Remy F.G. Denker PA0AGF dated 22-03-2023. A copy of this letter is attached to this recommendation.

Result of the three proposals and the letter - only VERON and UBA received a certification.

It is PA0AGF's objective to get this topic, Establishing Morse Code as an Intangible Heritage, on the agenda of the next WW UNESCO meeting, which will most probably take place in 2028 or 2029 with the aim to get this heritage recognized on a world-wide scale supported by UNESCO.

It is proposed to the member societies to get Morse code as an Intangible Heritage recognized by their Government or responsible institute in the

form of a certificate or diploma. The more certificates are received, the better we stand a chance to be placed on the agenda. The first result is already there as UBA and VERON got the certificate.

VERON (PA0AGF) is willing to coordinate this with the responsible institute in The Netherlands.

Recommendations

It is recommended to continue the process of recognition at national level as the first step towards global recognition by UNESCO.

Financial implications

There are no financial implications.

Why so much emphasis to get the approval in your country?

As said earlier, it is PA0AGF's objective to get this topic, Establishing Morse Code as an Intangible Heritage, on the agenda of the next WW UNESCO meeting.

The race is not won yet and I would like to get support from as many societies as possible. Hence my call on you, the societies, to get to know how a recognition can be achieved and get it done in

(Continued on page 81)



Morse code als communicatiemiddel staat op de Nationale Inventaris Immaterieel Cultureel Erfgoed Nederland

Logo granted to the VERON in 2015

(Establishing Morse Code as an Intangible Heritage from page 80)

order to facilitate PA0AGF to put this objective on the agenda.

It is fair enough to say that I need to convince my point of contact that VERON gets support from many more societies. Only then we might stand a chance.

Once locally achieved, your society then has a very strong PR tool towards your members and those who are using morse code as a means of communication as the society can show that Morse code as such is recognised. The logo as shown is on our website and in our magazine called Electron. We have received many positive reactions.

Background information

In 2015 the Dutch Government has approved the proposal whereby VERON is allowed to carry this logo on all its public activities. This supports the acknowledgement enormously. PA0AGF has held several lectures on this topic over the past few years.

The UBA has been granted the proposal by their Government.

In Germany the process was started but the local UNESCO representative has made it clear that the process can only be started once four other societies can show the approval. Unfortunately, only two societies could show a result. Your support is required and appreciated.

Result

Which society can be put on the list next to VERON and UBA?

Remy F.G. Denker PA0AGF

PA3AGF@gmail.com

Appendix

Copy of the above-mentioned communication to the MS.

**To All IARU Member Societies
February 23rd 2023**

Skopje,

Introduction

The International Amateur Radio Union has since 1925 been the worldwide federation of national amateur radio member societies. Currently it has a membership of some 170 countries throughout the world. The Amateur Radio Service is regulated by the International Telecommunication Union (ITU) which is a specialized agency of the United Nations Organization.

In the early 20th century, the Maritime and the Amateur Radio Services were the first users of the newly discovered radio waves. From the very beginning, the Amateur Radio Service utilized Morse Code, which had been used for many decades previously for land-line communication. After 1999 the ITU discontinued Morse code telegraphy for any professional or commercial services, but this communication mode continues to be extensively used by radio amateurs on a voluntary basis.

The knowledge and skill to communicate by manually generating Morse code telegraphy, which became an international standard in 1865, is in danger of decreasing. Our member societies wish to continue to utilize Morse code telegraphy in future years, not only because it is a very efficient form of radio communication for low-power transmissions, but also to safeguard this Intangible Cultural Heritage for coming generations.

IARU-R1 General Conference in Suncity 2011

(Continued on page 82)

(Establishing Morse Code as an Intangible Heritage from page 81)

Some of you will recollect that more than ten years ago at Sun City, the General Conference of IARU R1 adopted the recommendation SC11 C3 Rec 16 to safeguard Morse code as an Intangible Heritage. This recommendation was reaffirmed with two other recommendations LA17 C3 Rec 28 and NS20 C3 Rec 06. Few years back, former President of R1 Don Beattie sent an official letter to UNESCO with the request Morse code to be included in the list of representative Intangible cultural heritages. Unfortunately, no reply was received.

UNESCO

Recently, few member societies within Region 1 (Germany, The Netherlands and Belgium) managed to make a significant breakthrough on this topic by reaching recognition of Morse code at a national level. The teams are working on that. We are still at a national non-UNESCO level. It seems that this is the right way to approach this issue.

Therefore, we kindly ask all Member Societies within R1 and CW enthusiasts to join our efforts and move this initiative forward. The best way to do this is to approach your national coordinator of UNESCO. You can find all necessary information on the following link:

<https://en.unesco.org/creativity/convention/points-of-contact>

When approaching your national branch of UNESCO, several facts can be pointed out to support your request:

- ♦ Morse code telegraphy is a heritage which has been used universally in all countries of the world,
- ♦ although Morse Code carries the name of its inventor in the USA, a German national converted the original complicated alphabet into the form which since 1865 is administered by the ITU,
- ♦ this basic system is converted for the use of special characters in various languages
- ♦ (e. g. Arabic, Chinese, Greek, Hebrew, Japanese, Korean, Russian/ Cyrillic ...),
- ♦ in some countries, communication via Morse code telegraphy is historically connected to important events (England, Italy, Norway, Russia, Sweden, Tanzania, USA ...),

All this points out that to the fact that the cultural impact of Morse Code cannot be attributed to a specific or single country.

Additionally, Morse Code as an intangible heritage would seem to fully comply with the criteria in Article 2 (2) of the relevant UNESCO Convention.

The worldwide community of radio amateurs, as the last group able to safeguard the cultural heritage of Morse code, follows detailed international and national rules and regulations.

It also follows a very strict code of honour which is in full accordance with the requirement of the Operational Directives (No. 102(c) of the relevant Convention which reads: "102. All parties are encouraged to take particular care to ensure that awareness raising actions will not:

(c) contribute to justifying any form of political, social, ethnic, religious, linguistic or gender-based discrimination"

Morse code internationally recognized by other organizations

A respectable list of international organization which were able to fulfil their everyday duties and obligations by implementing morse code can also be added as argument to your request:

- ♦ International Maritime Organization – IMO
- ♦ International Civil Aviation Organization - ICAO
- ♦ International Association of Marine Aids to Navigation and Lighthouse Authorities – IALA
- ♦ International Federation of Red Cross and Red Crescent Societies – IFRC
- ♦ International Amateur Radio Union – IARU

Respected colleagues

We are aware that this procedure will not be an easy task, but at the same time we are capable to implement this project.

We are looking for your involvement and we support you in this process.

For that, we sincerely thank you in advance.

Yours sincerely,

Oliver Tabakovski, Z32TO, IARU R1 HSTWG chairman

Remy F.G. Denker, PAØAGF, Advisor



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