

- [Home](#)
- [About RTL-SDR](#)
- [Quick Start Guide](#)
- [Featured Articles](#)
 - [Tutorials](#)
 - [Air and Marine](#)
 - [ADS-B Aircraft Radar](#)
 - [ACARS Decoding](#)
 - [AIS Ship Tracking](#)
 - [Decoding Weather Balloons](#)
 - [Satellite](#)
 - [NOAA Weather Satellites](#)
 - [Meteor-M Weather Satellites](#)
 - [GOES 16/17 and GK-2A Weather Satellite Tutorial](#)
 - [Inmarsat STD-C NCS EGC Decoding](#)
 - [Decoding and Plotting GPS](#)
 - [Decoding HRPT Weather Satellite Images](#)
 - [Terrestrial](#)
 - [P25 P1 Digital Voice Decoding](#)
 - [P25 P2 Decoding with OP25](#)
 - [Trunked Radio Following](#)
 - [POCSAG Pager Decoding](#)
 - [TETRA Voice Decoding](#)
 - [Analyzing GSM Signals](#)
 - [DRM Radio Decoding](#)
 - [Decoding 433 MHz ISM Band Weather Stations](#)
 - [Single Board Computer](#)
 - [QRP \(FT8, JT9, WSPR etc\) Monitoring Station](#)
 - [Performing Replay Attacks with RTL-SDR and RpiTX](#)
 - [Radio Astronomy](#)
 - [Radio Astronomy Overview](#)
 - [Hydrogen Line Galactic Radio Astronomy](#)
 - [Other](#)
 - [Measuring Filter Characteristics & VSWR](#)
 - [SpyServer Tutorial](#)
 - [Using the V3 Bias Tee on PiAware](#)
 - [Properly Positioning a Preamp/LNA](#)
 - [Product Reviews](#)
 - [SDRs](#)
 - [Airspy HF+ Review](#)
 - [Airspy vs. SDRplay vs. HackRF](#)
 - [SDRplay RSP1A](#)
 - [SDRplay RSP2](#)
 - [FlightAware ADS-B RTL-SDR](#)
 - [Outernet Dreamcatcher](#)
 - [LimeSDR Review](#)
 - [LimeSDR Mini](#)
 - [ThumbNet N3](#)
 - [Airspy Mini](#)
 - [PlutoSDR Unboxing](#)
 - [PlutoSDR Tests](#)
 - [KiwiSDR Review](#)
 - [FlightAware Prostick vs Prostick Plus](#)
 - [HackRF PortaPack Review](#)
 - [SpyVerter Upconverter](#)
 - [9A4QV Folded Monopole ADS-B Antenna](#)
 - [FlightAware ADS-B Antenna and Filter](#)
 - [Outernet LNA and Patch Antenna](#)
 - [moRFeus Review](#)
 - [Interesting](#)
 - [TEMPEST with SDR](#)
 - [Listening to HD Radio](#)
 - [Receiving Dead Satellites](#)
 - [Listening to SCA Broadcasts](#)
 - [Live ADS-B Aircraft Cockpit](#)
 - [Transmitting with a Raspberry Pi](#)
 - [Quick Start Guides](#)
 - [RTL-SDR QSG](#)
 - [V3 Features Users Guide](#)

- [SDRSharp Users Guide](#)
- [PlutoSDR QSG](#)
- [Direct Sampling Mod](#)
- [Roundup of Software Defined Radios](#)
- [KerberosSDR](#)
 - [KerberosSDR Quickstart Guide](#)
 - [Direction Finding Android Demo](#)
 - [Direction Finding Android Tutorial](#)
 - [SignalsEverywhere Direction Finding Tutorial](#)
 - [Networked Direction Finding](#)
 - [Measuring Traffic Volumes with Passive Radar](#)
- [Software](#)
 - [RTL-SDR Supported Software](#)
 - [List of SDRSharp Plugins](#)
 - Experimental Drivers
 - [Experimental HF Driver](#)
 - [Manual gain controls and decimation driver](#)
 - [ExtIO with Decimation & Tuner Bandwidth Controls](#)
 - [Keenerds Driver](#)
 - [L-Band Heat Issue Driver](#)
- [Signal ID Wiki](#)
- [Forum](#)
- [RTL-SDR Store](#)
- [Guide Book](#)
- [Contact](#)

- Navigation - ▼

February 16, 2023

The US Airforce may have shot down an Amateur Radio Pico Balloon over Canada

Since the famous takedown of a suspected Chinese spy balloon, US jets have shot down a total of three more unidentified balloon objects, now confirmed to have been 'commercial or benign'. There is speculation that at least one these three objects may have been an amateur radio 'pico' balloon.

One part of the amateur radio hobby is launching high altitude balloons with various radio and other payloads. Larger amateur radio balloons launched in the USA require FAA clearance, need a radar reflector attached, and usually continually transmit APRS telemetry before naturally popping and falling back to earth after a few hours, just like a weather balloon.

However there is also the simpler 'pico' ballooning hobby, which involves the launch of small solar powered payloads that are only a few grams in weight. They typically transmit low power WSPR on HF and only whenever there is sufficient solar power available. Amateur radio stations around the world can pick up these transmissions, and report them on [amateur.sondehub.org](#) and/or [wsprnet.org](#).

While considered 'pico', these balloons can still be roughly a meter in size on the ground, potentially expanding to the size of a car at high altitudes due to the low atmospheric pressure. These balloons can be launched from anywhere in the world and due to their tiny payload, there is [no FAA clearance required](#) to launch them in the USA. Well built balloons can totally circumnavigate the globe several times over several months before degrading.

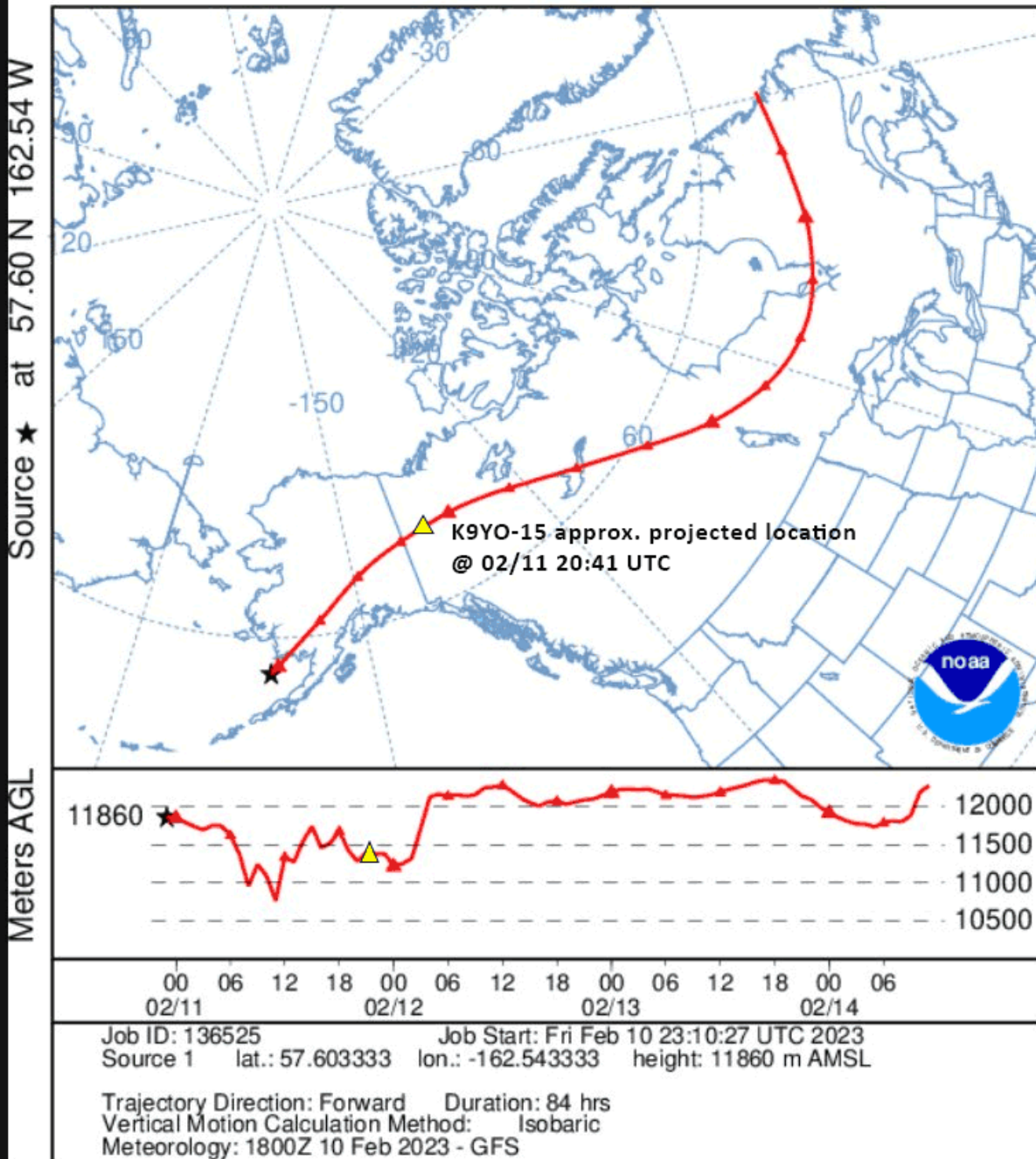


32" Silver Orb Shaped Mylar Balloon used for Pico Ballooning

There is speculation that at least one of the objects shot down over Canada, Yukon by US Airforce jets may have been an amateur radio pico balloon. Amateur radio [pico balloon K9YO](#) was [launched from Illinois in October 10 2022](#) and has circumnavigated the globe seven times. The launch blog post indicates that the K9YO-15 balloon was flying a silver mylar 32" sphere SAG balloon which [appears to be this one](#). It's unknown how large these balloons expand in the low pressure of high altitudes. A [pentagon memo](#) notes that the object shot down over Canada was a "small metallic balloon with a tethered payload" which fits the description of the pico balloon exactly.

K9YO-15 was projected to have been over Yukon on Saturday Feb 11 when the US Airforce shot down the unknown balloon object at Feb 11 20:41 UTC (3:41 PM EST [according to Canadian Defense Minister Anand](#)). Since Feb 11 00:18 UTC the balloon has ceased all [WSPR telemetry transmissions](#) and has recently been [declared as missing in action](#) by the launch group. Reports put the altitude of the shot down object at approximately 40,000ft (~12000 meters), which matches the projected ~11500 meters of K9YO.

NOAA HYSPLIT MODEL
Forward trajectory starting at 2300 UTC 10 Feb 23
18 UTC 10 Feb GFSG Forecast Initialization



K9YO projected location at the time the object was shot down.

Over on Twitter [@ikluft](#) (KO6YQ) has been reporting on this speculation, and has been keeping an eye on K9YO, awaiting telemetry transmission after having been declared as missing in action.

Ian Klufft  @ikluft@avgeek.social · Feb 16, 2023



@ikluft · [Follow](#)

Replying to @ikluft

As we monitor if K9YO [#HamRadio](#) [#balloon](#) had a data dropout or was Saturday's Yukon "unknown object", keep in mind: harsh cold & Arctic low sun angle for solar panels can cause days-long data gaps. Tracking info from NIBBB club who launched it: nibbb.org/links-to-locat... [#aviation](#)




nibbb.org

Locate and Track

SondeHub Balloon Tracker HabHub Balloon Tracker Tracking K9YO and KD9UQB on APRS QRZ Gridmapper QRP Labs U4...

Ian Klufft  @ikluft@avgeek.social

@ikluft · [Follow](#)

NIBBB [#HamRadio](#) club of Illinois  declared K9YO [#balloon](#) "missing in action" after no telemetry was received for 5 days. It was projected to be over Yukon Saturday when NORAD   shot down an "unknown object", close enough to raise questions. nibbb.org/2023/02/14/feb... [#aviation](#)

nibbb.org


February 14th, 2023, K9YO, Missing in Action, KD9UQB, 7th Circumna...
Pico Balloon K9YO last reported on February 11th at 00:48 zulu near Hagemeister Island after 123 days and 18 hours of flight. Hagemeister ...

1:38 AM · Feb 16, 2023



 5  Reply  Copy link


[Read more on Twitter](#)




Balloon Science by Dan · Feb 15, 2023 
@BalloonSciDan · [Follow](#)
Replying to @BalloonSciDan

Amateur Pico balloons, floating between 10,000m and 15,000m high, with only business card sized circuit board, hanging below a small or vary large mylar balloon. The balloons are silver or clear, spherical or cylindrical. They will drift aimlessly for months, innocent.

Balloon Science by Dan
@BalloonSciDan · [Follow](#)

These tiny amateur pico balloons are some of what the US shot down, and Romania sent jets up after. The rest of this group will wander in the air for months until they fail or are destroyed.

7:23 AM · Feb 15, 2023 

 14  Reply  Copy link

[Read 3 replies](#)

Over on Reddit @ikluft (KO6YQ) has also [written some insightful information](#):

I see you're all talking about my tweet. Yes, we are still watching to see if K9YO-15 transmits any telemetry today.

So far K9YO-15 has not sent any new telemetry since Friday before sunset over Alaska. Some have misread confusing data presentation on Sondehub which lists last known telemetry as covering a time range from then to now. Currently the last we've heard from K9YO-15 was Friday Feb 10 before sunset over Alaska (00:48 GMT Feb 11). But the map on Sondehub does show the last reported position.

These floater balloons often use only solar panels, no batteries. Batteries were dropped from the projects early on because they have limited charging cycles before they stop accepting a charge, especially in the harsh temps at altitude, -40F/-40C or worse. When the battery stops accepting a charge, it ends telemetry from the mission. So they only report telemetry during daylight, when the sun is at a high enough angle to illuminate the tiny solar panels. In the Arctic winter, the days are short and the sun might not get high enough to wake up the electronics. So it stays dormant for one or more days until it drifts back down to lower latitudes where there's more sunlight. So K9YO-15 was in a period where watchers didn't expect to hear from it for a few days. But we expected it today. So far nothing. As I write this, daylight is almost done way up there for Tuesday, Feb 14.

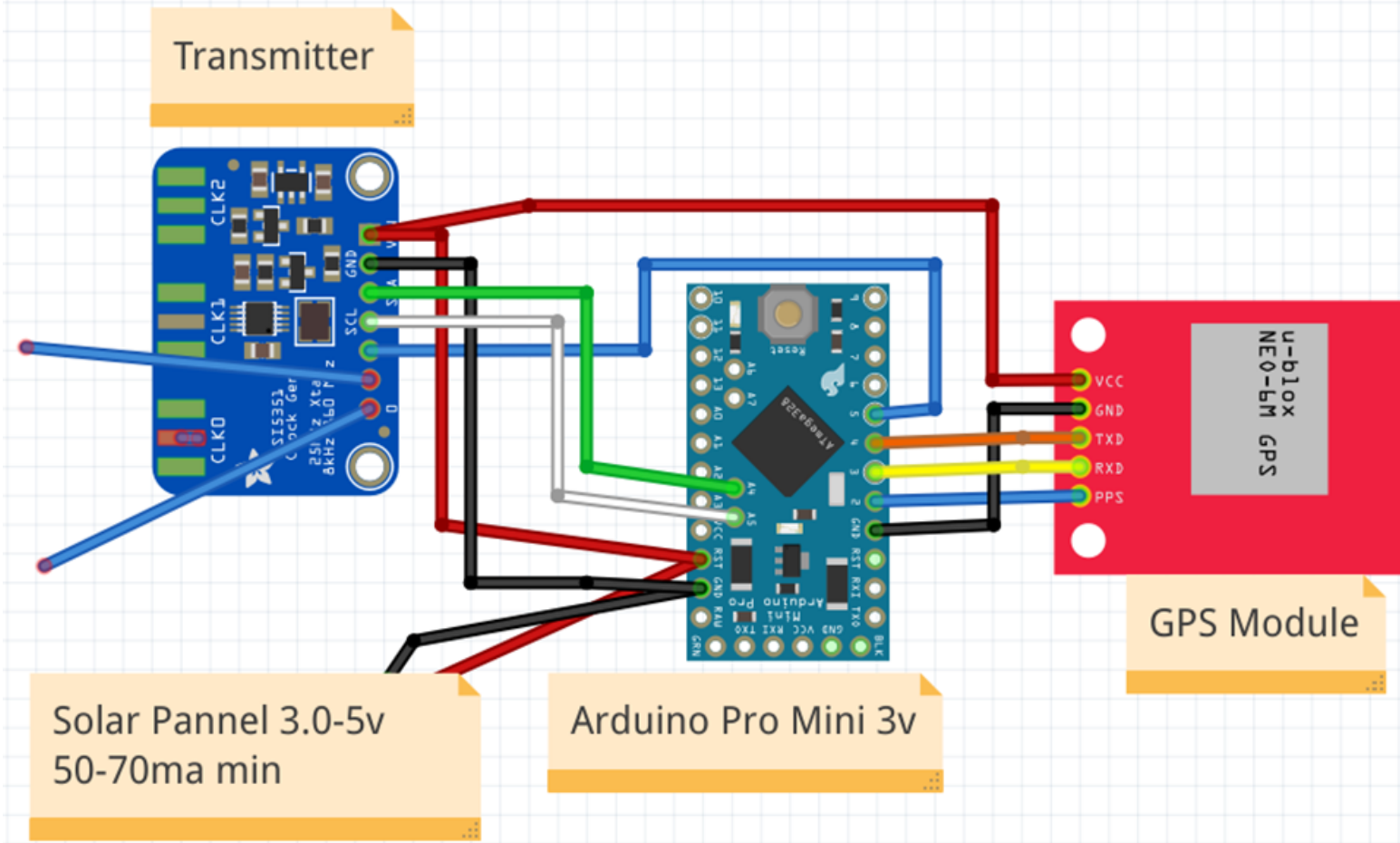
We (the Amateur Radio balloon community) only expect any telemetry from it today would be via WSPR, none via APRS. WSPR uses HF and can be received at long distances, where it's relayed to Internet map sites. APRS is (usually) on VHF and UHF, only received by line of sight. There are no relay stations in range of today's projected flight course in northern Ontario and James Bay, Canada. So APRS-fed sites wouldn't show updates today anyway.

The club in Illinois that built the balloon has tracking links at <https://nibbb.org/links-to-locate-and-track/> - you'll have to scroll down to find K9YO-15.

For an introduction, I'm Ian KO6YQ. I was involved in the first Ham Radio balloons that circumnavigated the globe starting in 2016, launched from San Jose, California. I had roles on them including tracking analyst and social media spokesman. I also organized and led the Ham Radio tracking teams which recovered the Civilian Space eXploration Team (CSXT) first amateur rocket to (suborbital) space in 2004.

Explaining a discrepancy with time reporting on Sondehub, KO6YQ notes:

Time has run out for solar power to provide any telemetry on Wednesday, February 15. So far, no new data. For those who were confused by it, remember that Sondehub has problematic data presentation so don't use it for anything other than mapping the last known position. A reliable place to check for K9YO on WSPR is the WSPR Spots: <https://www.wsprnet.org/olddb?mode=html&band=all&limit=200&findcall=k9yo&findreporter=&sort=date>



The K9YO Pico Balloon Payload

Related Posts:

1. [Listening to a Radio Amateur Stratosphere Balloon with an RTL-SDR](#)
2. [Tracking Multiple Amateur Radio APRS Balloons with RTL-SDRs](#)
3. [HackRF Decoding PICO High Altitude Balloons \(HAB\)](#)
4. [IEEE Spectrum: Chasing Weather Balloons with Software Defined Radio](#)
5. [SignalsEverywhere: Playing Classic Games over Amateur Radio with NPR-70 TCP/IP Modems](#)

Written by [admin](#) Posted in [Amateur Radio](#), [Applications](#), [RTL-SDR](#), [Security](#). Tagged with [amateur radio](#), [APRS](#), [high altitude balloons](#), [WSPR](#)

Post a comment

Comment

You may use the following [HTML](#):

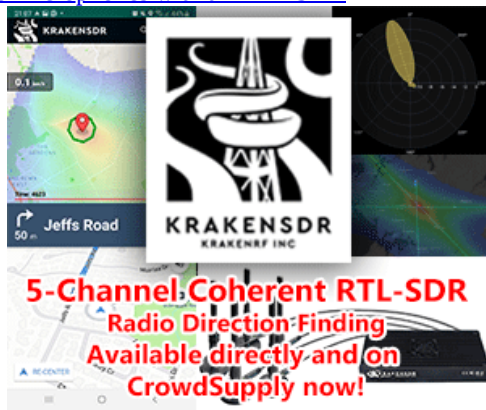
 <abbr title=""> <acronym title=""> <blockquote cite=""> <cite> <code> <del datetime=""> <i>
<q cite=""> <s> <strike>

Name Email Website

Save my name, email, and website in this browser for the next time I comment.

ANTISPAM: What does the 'R' in SDR stand for? (Required)

Notify me of followup comments via e-mail. You can also [subscribe](#) without commenting.



Follow Us



Weekly Newsletter + Product Updates

Search

Recent Posts

- [The US Airforce may have shot down an Amateur Radio Pico Balloon over Canada](#)
- [Listening in on Hollywood Reality TV Show Wireless Microphones with an RTL-SDR](#)
- [Hacking Beepers at a Fish & Chip Shop with an RTL-SDR and HackRF](#)
- [SDRDue Updated: Passive Radar Software for RTL-SDRs](#)
- [Job's Radio Telescope Observes Maser W3\(OH\)](#)

Recent Comments

Chris Z. on [Listening in on Hollywood Reality TV Show Wireless Microphones with an RTL-SDR](#): “Use a different mode than good, old, and reliable could possibly introduce artifacts in the audio and reduce the quality...”
Feb 15, 19:51

Jim on [Preorder Sale: Active L-Band 1525-1660 Inmarsat and Iridium Patch Back In Stock for \\$44.95](#): “Thank you very much!”
Feb 15, 13:20

Trevor on [RTL433 Plugin for SDR# Now Available](#): “Well, the problem computer and the one with the fresh install are the same machine, but I am happy to...”
Feb 15, 06:02

[admin](#) on [Preorder Sale: Active L-Band 1525-1660 Inmarsat and Iridium Patch Back In Stock for \\$44.95](#): “Yes please check the contact page in the navigation bar, or just email your order details to admin@rtl-sdr.com. Please include...”
Feb 15, 02:44

Jim on [Preorder Sale: Active L-Band 1525-1660 Inmarsat and Iridium Patch Back In Stock for \\$44.95](#): “That is very good to hear. Would you know how I go about getting started on a warranty claim?”
Feb 14, 23:57

[admin](#) on [Buy RTL-SDR Dongles \(RTL2832U\)](#): “In six months the unit will still be under the two year warranty. The newer grey cases are made with...”
Feb 14, 21:53

[admin](#) on [Preorder Sale: Active L-Band 1525-1660 Inmarsat and Iridium Patch Back In Stock for \\$44.95](#): “In six months the unit will still be under the two year warranty. The newer grey cases are made with...”
Feb 14, 21:51


Tweets from @rtlsdrblog

rtl-sdr.com 
@rtlsdrblog · 2h



The US Airforce may have shot down an Amateur Radio Pico Balloon over Canada rtl-sdr.com/the-us-airforc...

Categories

Select Category 



Archives

Select Month ▾

[Full Archives List](#)

Tags

[ads-b](#) [airspy](#) [AIS](#) [amateur radio](#) [android](#) [antenna](#) [APT](#) [Automatic dependent surveillance broadcast](#) [bladerf](#) [DAB](#) [direction finding](#) [dsd](#) [E4000](#) [gnu radio](#) [GOES](#) [GPS](#) [hackrf](#) [HF](#)

[hydrogen line](#) [inmarsat](#) [kerberosdr](#) [l-band](#) [limesdr](#) [LNA](#) [NOAA](#) [outernet](#) [P25](#) [passive radar](#) [plutosdr](#) [R820T](#) [radio astronomy](#) [raspberrypi](#) [reverse engineering](#) [rtl-sdr](#)

[rtl2832](#) [rtl2832u](#) [satellite](#) [sdr#](#) [sdrplay](#) [sdrsharp](#) [security](#) [Software-defined radio](#) [upconverter](#) [usrp](#) [weather](#) [satellite](#)

Latest Forum Posts

- [RTL-SDR Discussion • Re: Piaware 1090Mhz Filter cancels RTLSDR LNA bias Tee power](#)
- [RTL-SDR Discussion • Piaware 1090Mhz Filter cancels RTLSDR LNA bias Tee power](#)
- [RTL-SDR Discussion • Re: Noise or static drowning out all HF signals](#)
- [Troubleshooting Help • Re: Defect or driver problem?](#)
- [Troubleshooting Help • Defect or driver problem?](#)

Submit a Story/Contact

[Submit a Story/Contact](#)



Meta

- [Log in](#)
- [Entries feed](#)
- [Comments feed](#)
- [WordPress.org](#)

What is RTL-SDR

The RTL-SDR is an ultra cheap software defined radio based on DVB-T TV tuners with RTL2832U chips. The RTL-SDR can be used as a wide band radio scanner. It may interest ham radio enthusiasts, hardware hackers, tinkerers and anyone interested in RF.

- [Privacy Policy](#)