

# Low-Cost 10 Ghz Receivers Using Consumer Electronics

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GM8BJF

# Getting on 10 GHz

- Traditionally expensive and difficult
- Frequency accuracy
- Construction difficult
- Tuning up frequency multipliers
- Am I on the correct harmonic ??
- Etc etc .....

# Solution- Buy one of these


**ebay** Shop by category  All Categories  Advanced

[Back to search results](#) | Listed in category: [Sound & Vision](#) > [TV Reception & Set-Top Boxes](#) > [Satellite LNBs](#)

You bought this item | [View order details](#)

The listing below has been updated by the seller, but you can see the item you purchased.

**Free P&P**



CTAGON  
Model:OTLS0  
OCTAGON Twin LNB Slim OPTIMA

3 YEAR WARRANTY  
3D

### New Octagon Optima PLL Twin 0.1dB High Gain Slimline LNB With 3 Year Warranty

Item condition: **New** ✉️ | [Facebook](#) | [Twitter](#) | [Pinterest](#) | [Add to Watch list](#)

Quantity:  More than 10 available / 20 sold


Price: **£16.99** [Buy another](#)

[Add to basket](#)

7 watchers [Add to Watch list](#)

[Add to collection](#)

**Free postage** **100% positive feedback** **New condition**

 Collect **17 Nectar points**  
Redeem your points | [Conditions](#)

Postage: **Free Economy Delivery** | [See details](#)  
Item location: **Tonbridge, United Kingdom**  
Posts to: **Europe**

Delivery: **Dispatched within 1 day**  
Estimated between **Tue. 22 Apr. and Wed. 23 Apr.**  
Why not use Express Delivery? Expected arrival date 22 Apr.

Payments: **PayPal** | [See payment information](#)

Returns: **14 days refund, buyer pays return postage** | [See details](#)

Protection: **ebay MONEY BACK GUARANTEE** | [See details](#)

For this item, the seller provides:  
**eBay Premium Service**

#### Seller information

**red\_apple\_digital** (6221) [★](#) [me](#)


100% Positive Feedback

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Visit Shop: [Red Apple Digital ...](#)

Registered as a business seller

**£50 GIFT CARD** BT TV+ BT Infinity extra with Free BT Sport



**£15 a month for 6 months, then £23 a month + £15.99 monthly line rental** [Find out more](#)

[Have one to sell?](#) [Sell it yourself](#)

# ...and one of these

**ebay** Shop by category  All Categories  Search  Advanced

[Back to search results](#) | Listed in category: [Computers/Tablets & Networking](#) > [Computer Components & Parts](#) > [Video Capture & TV Tuner Cards](#) > [Sound & Vision](#) > [TV Reception & Set-Top Boxes](#) > [Satellite Dishes](#)

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### USB RTL-SDR DVB-T Realtek RTL2832U & R820T Tuner Receiver Dongle PAL IEC Input

Item condition: **New** ✉ | [f](#) | [t](#) | [p](#) | [Add to Watch list](#)

Quantity:  More than 10 available / 44 sold

Price: **C \$9.82** [Buy it now](#)  
Approximately **£5.35**

19 watchers  [★ Add to collection](#)

**Experienced seller** **Free postage** **Limited quantity remaining**

Collect 5 Nectar points  
Redeem your points | [Conditions](#)

Postage: **Free** Standard Int'l Shipping | [See details](#)  
See details about international postage here.

Item location: **HK, Hong Kong**  
Posts to: **Worldwide** [See exclusions](#)

Delivery: **Estimated between Tue. 29 Apr. and Thu. 15 May.**  
Seller dispatches within 2 days after **receiving cleared payment.**

Payments: **PayPal** | [See payment information](#)

Returns: **14 days money back, buyer pays return postage** | [See details](#)

Protection: **ebay MONEY BACK GUARANTEE** | [See details](#)

#### Seller information

**kuentl** (22212)

98.8% Positive Feedback

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[+ Follow this seller](#)  
[See other items](#)

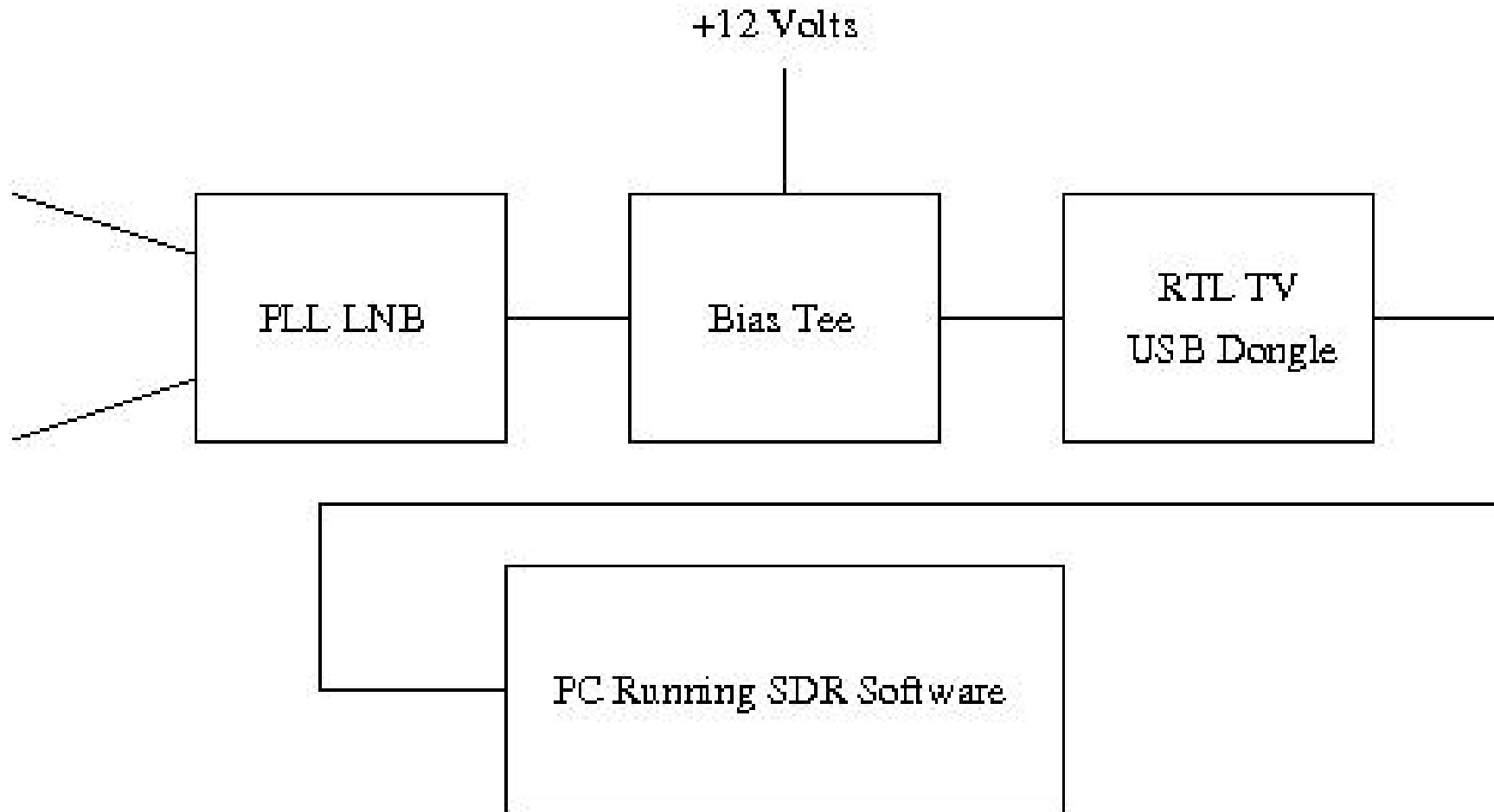
Visit Shop: [kuentl](#)

**BT Broadband Extra - £6 a month for 6 months, then £12 a month + Free BT Sport**  
+ £15.99 monthly line rental

[Find out more](#)

AdChoice

# And wire them up like this...



# PLL LNB Specifications

- Features & Specifications:
  - \* PLL technology
  - \* Excellent noise figure up to 0.1dB
  - \* Gain 60 ~ 65dB
  - \* Very low power consumption
  - \* Extreme cold and heat resistant
  - \* Very high polarization decoupling
  - \* High frequency stability
  - \* Feed diameter 40mm
  - \* 3 year warranty
  - \* Weatherproof
  - \* DVB-S2 compatible
  - \* Freq. 10.70 - 12.75 GHz
  - \* L.O. 9.75 / 10.6 GHz

# LNB on 10 GHz??

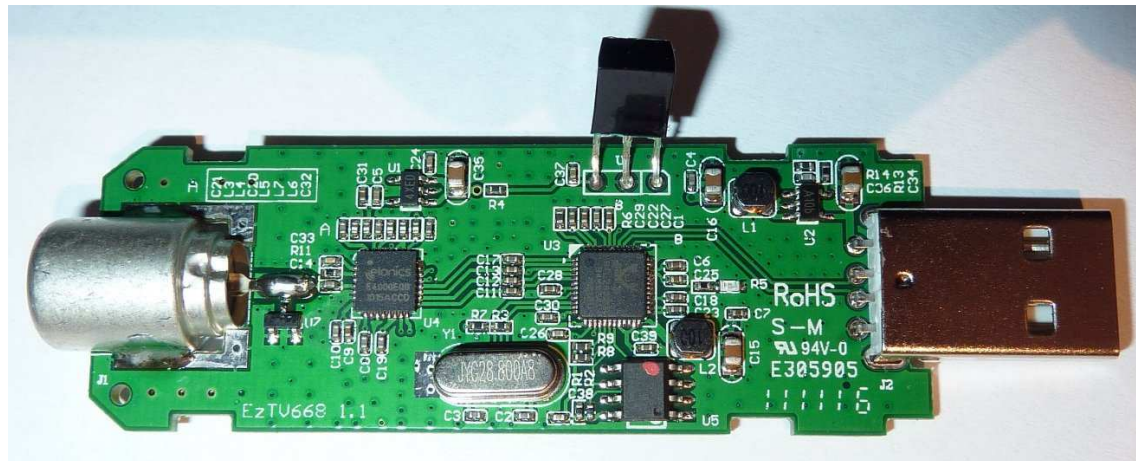
- LNB specified to cover 10.7 to 12.75 GHz
- NB amateur allocation is at 10.368 GHz
- LNB still has great sensitivity in amateur band
- LO at 9.750 GHz
- 10.368 GHz comes out at an IF of 618 MHz
- Although out of band it still performs well
- PLL LNB stable enough for SSB/CW reception
- LO locked to a crystal.



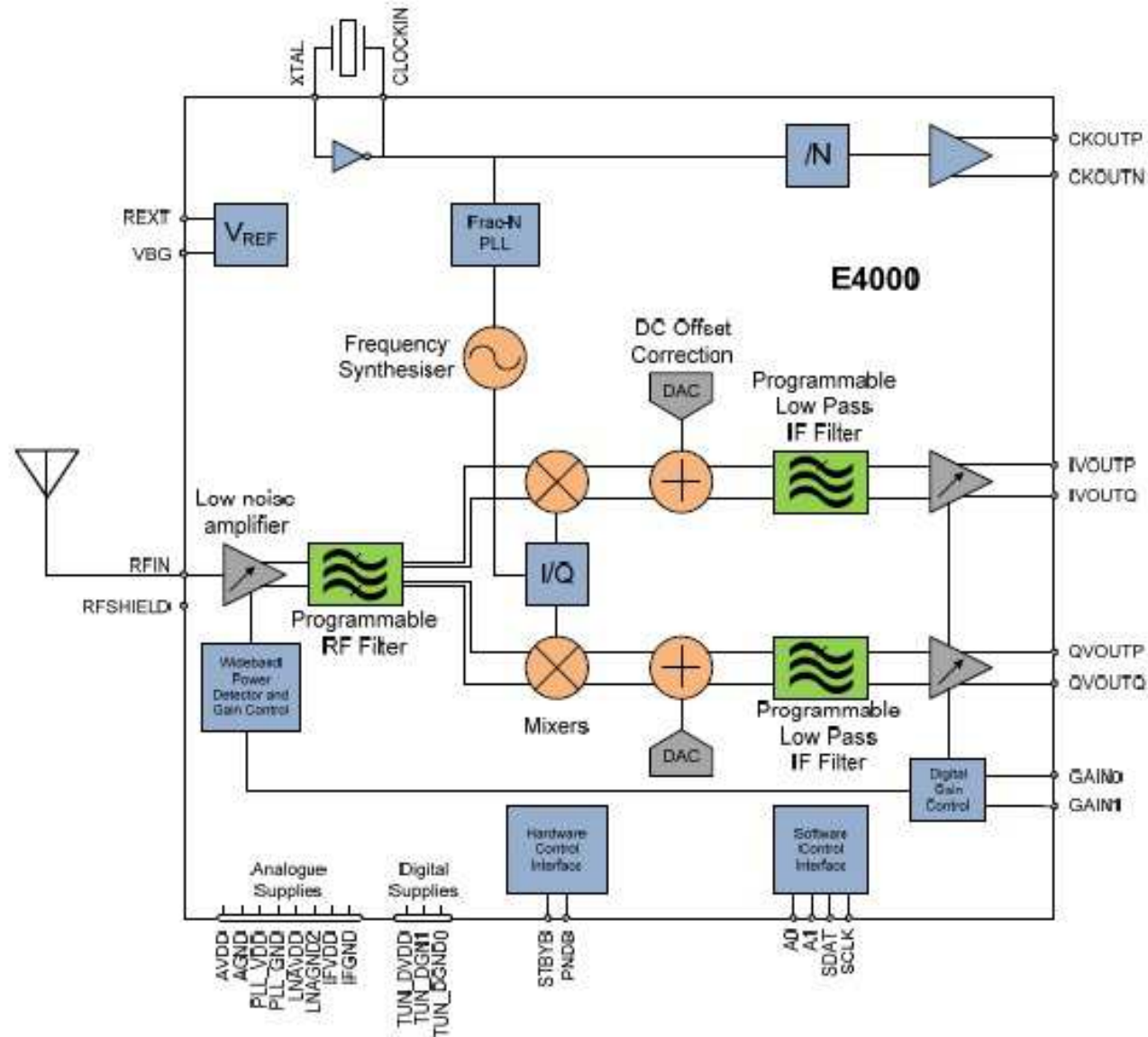


# USB TV Dongle

- Intended for terrestrial digital TV reception
- Coverage is from about 25 MHz to 1.7 GHz
- Outputs digitised I and Q data stream on USB
- “Undocumented feature” of the RTL chip



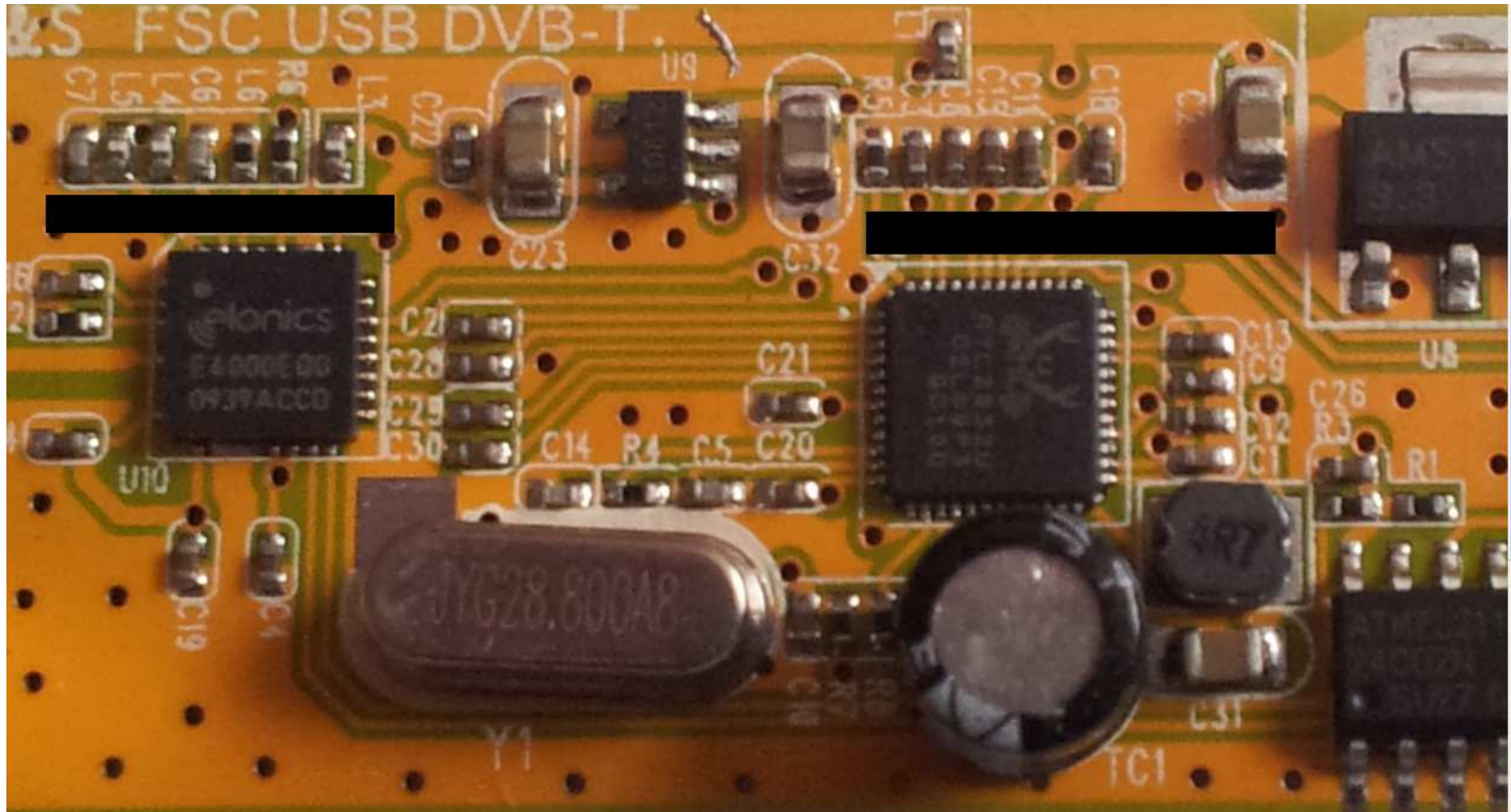
# Elonics (RIP) E4000 Tuner chip



# Realtek RTL2382U Chip

- Check that the dongle you get uses this chip
- Designed for streaming TV data
- Takes the analogue I and Q signals from tuner chip and digitises them and does all the “USB stuff”.

# Close-up



# SDR Software

- Recommend that you use SDR#
- Available for Windows, Linux and Mac.
- Fairly basic, but does a good job
- Freely downloadable
- Zero cost!
- Need to install Zadig USB drivers
- Installation well documented on internet

# Other Possibilities

- USB TV dongle can be run with a Raspberry Pi as a SDR server on the internet
- Allows the remote operation of receivers provided an internet connection is available.
- Spectrum surveillance – possible to record 2 MHz chunks of spectrum for later analysis.
- Ideal for contests when signals are missed in the heat of battle!

# Demonstrations

- GM8BJF personal beacon on 10G
- GM4CXM/B from Glasgow
- GB3TC CSFMG 10 G beacon/repeater output on 10,471.3 MHz, note FM keying on trace
- Located at Berryhill farm site near Kilsyth.